

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

Cl 00 SC 0 P 2 L 44 # 1
 WILKENS, ROBERT D Individual
 Comment Type G Comment Status A
 *** Field Comment Type updated on 12/24/2005 from GR to G ***
 Says "Section Five Five" when should say "Section 5"
 SuggestedRemedy
 Change to just "Section five"
 Response Response Status C
 ACCEPT.

Cl 55A SC 55A P 169 L 17 # 2
 KASTURIA, SANJAY Individual
 Comment Type E Comment Status A
 The notation for the matrices is confusing. The _b qualifier on H, col_swap and row_swap adds no value.
 What is currently listed as H is solely of historical interest.
 Multiple zip files are unnecessary.
 Provide official URLs to post matrices.zip
 SuggestedRemedy
 Use the term H for the parity check matrix (in place of the currently used H_b). Remove the _b qualifier on col_swap and row_swap.
 What is currently listed as H is solely of historical interest. Remove reference to this.
 Put gen_802.3an.txt, H.txt, col_swap.txt and row_swap.txt into one zip file called matrices.zip (pick a different name if the editorial staff of the IEEE has a better recommendation).
 The value of presenting col_swap.txt is not clear. If the task force agrees, remove col_swap.txt also.
 Get official URLs to post matrices.zip
 Update 802.3an private site to carry matrices.zip
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Also clarify as per comment #22

Cl 45 SC 45 P 46 L 3 # 3
 MARRIS, ARTHUR Individual
 Comment Type E Comment Status A
 45.2.1.59 change 'bit' to 'bits'
 SuggestedRemedy
 change 'bit' to 'bits'
 Response Response Status C
 ACCEPT.

Cl 45 SC 45 P 51 L 1 # 4
 MARRIS, ARTHUR Individual
 Comment Type E Comment Status A
 Move Table 45-53 up out of the PCS section
 SuggestedRemedy
 Move Table 45-53 up out of the PCS section
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Table floated from end of page. Staff editors will assure proper final location.

Cl 45 SC 45 P 57 L 30 # 5
 MARRIS, ARTHUR Individual
 Comment Type E Comment Status A
 45.2.7.1.3
 SuggestedRemedy
 change 'bit' to 'bits' and change 'then bits 1.0.13' to 'then speed selection bits 1.0.13'
 Response Response Status C
 ACCEPT.

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Cl 45 SC 45 P58 L 40 # 6
MARRIS, ARTHUR Individual
Comment Type T Comment Status R
This could be confused with base page reception
SuggestedRemedy
Change 'Page Received' to 'Next Page Received'
Response Response Status C
REJECT.
See response to comment 80. The change called out in the response to comment 80 resolves any potential confusion.

Cl 45 SC 45 P58 L 45 # 7
MARRIS, ARTHUR Individual
Comment Type E Comment Status A
Missing space
SuggestedRemedy
change 'or' to ') or'
Response Response Status C
ACCEPT.

Cl 45 SC 45 P59 L 22 # 8
MARRIS, ARTHUR Individual
Comment Type E Comment Status A
45.2.7.2.6 spell out '='
SuggestedRemedy
change '=' to 'equals' where appropriate
Response Response Status C
ACCEPT.

Cl 45 SC 45 P60 L 3 # 9
MARRIS, ARTHUR Individual
Comment Type T Comment Status R
This register is not 10GBASE-T specific
SuggestedRemedy
delete the first sentence and replace with 'The Link Partner (LP) base page ability register is described in Table 45-121.'
Response Response Status C
REJECT.
Remedy inconsistent with comment. Do you mean 45.2.7.7?
See comments 13 & 15 also.

Cl 45 SC 45 P60 L 38 # 10
MARRIS, ARTHUR Individual
Comment Type T Comment Status A
Missing 16
SuggestedRemedy
change '7.4:0' to '7.16.4:0' and '7.11:5' to '7.16.11:5'
Response Response Status C
ACCEPT.

Cl 45 SC 45 P60 L 41 # 11
MARRIS, ARTHUR Individual
Comment Type E Comment Status A
Redundancy
SuggestedRemedy
delete (Register 7.0)
Response Response Status C
ACCEPT.

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Cl 45 SC 45 P60 L 48 # 12
MARRIS, ARTHUR Individual
Comment Type T Comment Status A
The LP base page register also needs to be examined to determine HCD
SuggestedRemedy
change 'examined by' to 'examined along with the LP base page register by'
Response Response Status C
ACCEPT IN PRINCIPLE.
change 'examined by' to 'examined along with the LP base page ability register by'

Cl 45 SC 45 P61 L 8 # 13
MARRIS, ARTHUR Individual
Comment Type T Comment Status R
This register is not 10GBASE-T specific
SuggestedRemedy
change '7.4:0' to '7.16.4:0' and '7.11:5' to '7.16.11:5'
Response Response Status C
REJECT.
Remedy doesn't match comment.
I believe this is related to comment 9 & 15.

Cl 45 SC 45 P61 L 1 # 14
MARRIS, ARTHUR Individual
Comment Type E Comment Status A
Missing 's'
SuggestedRemedy
On lines 1,2,36 and 37 change 'support' to 'supports'
Response Response Status C
ACCEPT.

Cl 45 SC 45 P62 L 38 # 15
MARRIS, ARTHUR Individual
Comment Type T Comment Status A
45.2.7.9 This register is not 10GBASE-T specific
SuggestedRemedy
Reword to remove reference to 10GBASE-T
Response Response Status C
ACCEPT.
Remove the "10GBASE-T" qualifier on the registers specified in comments 9, 13 and 15 as a service to humanity (specifically backplane folks)

Cl 45 SC 45.5 P67 L 67 # 16
KASTURIA, SANJAY Individual
Comment Type E Comment Status A
The introduction in 45.5 starts with the numbering 45.5.8. This should be 45.5.1
SuggestedRemedy
Change the numbering of the Introduction to 45.5.1 and adjust the subsequent subsection numbering
Response Response Status C
ACCEPT.

Cl 00 SC 0 P L # 17
GOERGEN, JOEL R Individual
Comment Type TR Comment Status A short reach
The current implementation requires 10watts to 15watts, as stated by most chip suppliers, thru 2007. It does not look promising for multi-vendor solutions in the 2watt to 4watt range, thus making xfp or LRM type optics the only useable high density solutions. It looks highly unlikely that 16ports or 24ports of 10Gbps twisted pair will be viable into 2008.
SuggestedRemedy
Identify a lower power solution using techniques that require lesser amounts of power so low cost - high density solutions are achievable by 2007.
Response Response Status W
ACCEPT IN PRINCIPLE.
See response to comment #33

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Cl 55 SC 55.1.3.1 P77 L 14 # 18
 KAROCKI, PIOTR Individual

Comment Type T Comment Status A clarification

This, and figure 55.6 - mismatch order of actions.
 Figure stands: get 64 bits, add control bit, scramble, aggregate 50 blocks
 Text stands: "The resulting 65 bit blocks are assembled in a group of 50 blocks and scrambled."
 I don't know which one is correct...

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

The order of the two operations scrambling and aggregating the 50 blocks does not affect the end result, but for description consistency we will modify the description to match figs 55-6 and 55-8

Cl 55 SC 55.9.4 P159 L 17 # 19
 KAROCKI, PIOTR Individual

Comment Type E Comment Status A

Why full-stop? Change "Although there is no universal standard. The following maximums generally apply." to "Although there is no universal standard, the following maximums generally apply."

SuggestedRemedy

Response Response Status C

ACCEPT.

Cl 00 SC 0 P L # 20
 BHUSHAN, RAHUL B Individual

Comment Type G Comment Status R

Missing a stream structure like 1000BaseT - Clause 40.3.2....Figure 40-7.

SuggestedRemedy

Response Response Status C

REJECT.

This is not necessary and also will not be useful because idles are embedded in the LDPC coded stream

Cl 55A SC 0 P 1 L 1 # 21
 TILLINGHAST, MARK A Individual

Comment Type G Comment Status A

Not clear from the GandH_Matrices.zip whether they are normative or informative

SuggestedRemedy

Make an explicit statement in description.pdf, It seems that the H is informative and G is normative

Response Response Status C

ACCEPT.

Cl 55A SC 0 P 1 L 18 # 22
 TILLINGHAST, MARK A Individual

Comment Type G Comment Status A

Description.pdf does not seem to make sense. It says all of the other entries in [H.txt] are zero.

SuggestedRemedy

Should Read:All of the other entries that are zero("O") are excluded from H.txt.

Response Response Status C

ACCEPT IN PRINCIPLE.

The description will be cleaned up as suggested. Also see response to comment #2

Cl 55A SC 0 P 1 L 1 # 23
 TILLINGHAST, MARK A Individual

Comment Type G Comment Status A

Not clear if this is informative or Normative: Gb.txt is the generator matrix corresponding to Hb.txt. This specifies how bits are encoded in the transmitter to be consistent with the parity check matrix, Hb.txt

SuggestedRemedy

Please clarify which are implementation Dependent.

Response Response Status C

ACCEPT IN PRINCIPLE.

G uniquely specifies the parity check bits that are generated at the transmitter.

H is used for decoding and can be implementation dependent and hence is informative

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Cl 55A SC 0 P 1 L 1 # 24
 TILLINGHAST, MARK A Individual

Comment Type G Comment Status R

Huffman Run length Encoding may make Gb more tractible and easier to put into the standard.

SuggestedRemedy

I have analyzed the current representation, and it is not clear how this should be represented in the standard in a compact way rather than report on the non-zero elements. Based on Win Zip compression Gb is 131/656 and G is 198/954 so there is with these information ratios a likely compressed, yet human readable format that can be standardized.

Response Response Status C

REJECT.

The txt files are small and the value of compression is not clear

Cl 00 SC 0 P 0 L # 25
 COORDINATION, EDITORIAL

Comment Type GR Comment Status A

This draft has met all editorial requirements.

Michelle

SuggestedRemedy

Response Response Status W

ACCEPT.

Cl 55 SC 55.7.3.3 P 151 L 31 # 26
 DIMINICO, CHRISTOPHER T Individual

Comment Type E Comment Status A

Eliminate unecary variable names to simplify specification.

SuggestedRemedy

Clause:55.7.3.3 Alien Crosstalk Margin Computation:
 Page 151 and 152: Line 31 and Line 34:
 Replace AN(f) with PSANEXTn(f).
 Replace AF(f) with PSAFEXTn(f).

Response Response Status C

ACCEPT.

Cl 55 SC 55.1.1 P73 L38 # 27
 GHIASI, ALI Individual

Comment Type TR Comment Status A short reach

10GBaseT is not meeting broad market potential due to the power dissipation associated with driving 100 m of CAT-6A.

SuggestedRemedy

Currently defined 10GBase-T standard volume market is more than 5 years from now, by then the standard my become irrelevant. Propose to add a short reach variant ~ 30 m, which is compatible with 10GbaseT and can operate over 100 m of CAT-5E.

Response Response Status W

ACCEPT IN PRINCIPLE.

This comment has been updated by comment #28 submitted by the same commenter

See response to comment #33

Cl 55 SC 55.1.1 P73 L38 # 28
 GHIASI, ALI Individual

Comment Type TR Comment Status A short reach

10GBaseT is not meeting broad market potential due to the power dissipation associated with driving Gigabit/s over 100 m over CAT-6A. (Please use this comment instead of comment #1 by this submitter)

SuggestedRemedy

Currently defined 10GBase-T standard volume market is more than 5 years from now, by then the standard my become irrelevant. Propose to add a short reach variant operating at 10Gigabit/s over ~ 30 m of CAT-6A and is compatible with 10GbaseT. The short reach 10GBaseT variant will also operate at 1Gigabit/s over 100 m of CAT-5E.

Response Response Status W

ACCEPT IN PRINCIPLE.

See response to comment #33

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Cl 55 SC 55.4.3.1 P 118 L 53 # 29
 HO, KEANG P Individual

Comment Type G Comment Status A thp

"M(x) = x mod 32 - 16" and "M(x) = x + 32m" are not consistent. If x = 0, using the first formula, we get M(0) = 0 mod 32 - 16 = -16. Using the second formula, we set m = 0 and M(0) = 0.

SuggestedRemedy

Please change the first formula to M(x) = (x + 16) mod 32 - 16.

Response Response Status C

ACCEPT.

Cl 00 SC 0 P 2 L 56 # 30
 HO, KEANG P Individual

Comment Type E Comment Status A

Two "five"s, one at the end of line #56 and one at the beginning of line #57

SuggestedRemedy

Delete one of the "five"

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.61 P 47 L 34 # 31
 DOVE, DANIEL J Individual

Comment Type T Comment Status A

This register definition is incomplete. It does not include a definition for the bits 1.131.12:10.

SuggestedRemedy

Replace "Partner." with "Partner, and bits 1.131.12:10 will indicate the TX power backoff setting of the PMD." and insert the word "complete" between "The" and "assignment".

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.61 P 47 L 35 # 32
 DOVE, DANIEL J Individual

Comment Type TR Comment Status R PBO

Power Backoff is only required for Unshielded Twisted Pair (UTP) installations to mitigate Alien NEXT, but on Shielded Twisted Pair (STP) installations only serves to reduce Signal to Noise Ratio. (SNR)

I believe that a bit should be provided in this register to allow users to optimize performance by over-riding the default configuration which enables power backoff.

SuggestedRemedy

Insert between the words "Partner" and "The assignment..." the following sentence. "Bit 1.131.9 disables the TX power backoff function when set to a one. The default setting for this bit is zero."

Make the appropriate change to table 45-51 to accomodate this change.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

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Cl 55 SC 55.6.1.2 P135 L 36 # 33

DOVE, DANIEL J Individual

Comment Type TR Comment Status A short reach

I have a serious concern that 10GBASE-T, as currently defined, does not have the ability to achieve broad market potential, or at least, will suffer a substantial delay in deployment due to the high power requirements of this technology, and the cost factors related to that power.

I believe a way to jump-start 10GBASE-T deployment would be to provide a low-power mode that reduces type and lengths of cable to a value that is sufficient for most data center applications, but reduces power to the point that it is feasible to construct modular transceivers in the industry standard MSA configurations that require < 4W.

This will require two key functional differences be addressed to 10GBASE-T.

1) A means of configuring a PHY so that it will not demand more than 4W to operate over a specific link.

2) A means of communicating the state of this PHY to the other end of the link so that both ends of the link understand the operating limitations imposed in this mode.

SuggestedRemedy

Change "U31:U21" to "U31:U22"

Insert row

Add "U31:22 | Low Power Mode | Defined in 45.2.7.10.7"

Page 64 Add "45.2.7.10.7 Low Power Mode (7.32.11)

Low Power Mode is an operating mode of the 10GBASE-T PHY that provides a means for operation on a cable plant that has parametric performance equivalent to 30m of Class F cabling as defined in xxx. If bit 7.32.11 is a one, the PHY is in Low Power Mode. If bit 7.32.11 is a zero, this is the default state and the PHY is operating in normal mode."

Response Response Status C

ACCEPT IN PRINCIPLE.

Accept Resolution offered in attached slides (dove_1_0106.pdf) as the basis for resolution with the following enhancements, and the understanding that the task force will continue to enhance the specific channel requirements on the next review of the draft.

Change "1.131.0" to indicate Short Reach Mode

Page 48 Add "45.2.1.62.3" Short Reach Mode (1.131.0)

Short Reach Mode of the 10GBASE-T PHY provides a means for operation on a cable plant that has parametric performance equivalent to 30m of Class F and Class EA cabling as defined in xxx. If bit 1.131.0 is a one, the PHY is in Short Reach Mode. If bit 1.131.0 is a zero, this is the default state and the PHY is operating in normal mode.

Communicate the contents of 1.131.0 through an extended next page bit (left to the editor to assign)

Modifications to proposal as shown in attached slides in Dove_1_0106.pdf.

As per motion by Dove.

Cl 55 SC 55.4.3.1 P118 L 55 # 34

EPSTEIN, DAVID I Individual

Comment Type TR Comment Status R margin

DSQ 128 signalling provides too little SNR margin.
Too few vendors will be able to meet acceptable sensitivity without unacceptable costs or power.

SuggestedRemedy

8-PAM or 12-PAM

Response Response Status W

REJECT.

See response to comment #213

PAM12 was also reviewed earlier by the task force when the decision to select DSQ128 was made.

Cl 00 SC 0 P L # 35

KAMGAR, HASSAN Individual

Comment Type GR Comment Status R thp

The THP coefficients are evaluated and exchanged only for half-scale 2PAM training signal and not for full scale DSQ128 signal.

SuggestedRemedy

Response Response Status W

REJECT.

See response to comment #40

Cl 55 SC 55.1.3 P74 L 47 # 36

BABANEZHAD, JOSEPH N Individual

Comment Type TR Comment Status R margin

The DSQ128 line-signaling is not optimum for 10GBASE-T since the resulting SNR margin is small

SuggestedRemedy

Other line-signalings, such as 8PAM, will result in higher SNR margin

Response Response Status U

REJECT.

See response to comment #213

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Cl 55 SC 55.1.3 P74 L 47 # 37
 BABANEZHAD, JOSEPH N Individual
 Comment Type TR Comment Status R margin
 DSQ128 has higher sensitivity to impulse noise compared to other proposed line signals
 SuggestedRemedy
 Other line-signalings, such as 8PAM, have lower impulse noise sensitivity
 Response Response Status U
 REJECT.
 Yes: 22
 No: 1
 See related comment #213

Cl 55 SC 55.5.3 P 130 L 30 # 38
 BABANEZHAD, JOSEPH N Individual
 Comment Type TR Comment Status R
 The standard requires there to be AC coupling between PMA and MDI but does not specify the frequency of lower -3dB bandwidth
 SuggestedRemedy
 Specify the lower -3dB bandwidth. I suggest 200kHz
 Response Response Status W
 REJECT.
 This is already specified in the 55.5.3.1, the droop test. Additional specification is redundant and could be conflicting.

Cl 55 SC 55.5.3.4 P 131 L # 39
 BABANEZHAD, JOSEPH N Individual
 Comment Type TR Comment Status R tx voltage
 While the standard specifies the upper and lower TX PSD masks it does not provide TX maximum output voltage. The data sheet for any part needs to specify the absolute maximum and minimum output voltages
 SuggestedRemedy
 Specify the maximum peak to peak output voltage
 Response Response Status W
 REJECT.
 Motion to reject the comment
 Moved by T. Cobb
 Seconded by R. Mei
 Yes: 32
 No: 8
 Abstain: 8
 Motion passes
 This issue was addressed by several motions earlier. What was resolved earlier was to specify the TX power. Specifying TX power and PSD was considered adequate to ensure interoperability.
 There is nothing to prevent a PHY vendor to provide max output voltages in their datasheets
 See comments 39 and 212

Cl 55 SC 55.4.3.1 P118 L # 40
 BABANEZHAD, JOSEPH N Individual
 Comment Type TR Comment Status R thp
 The THP coefficients are evaluated and exchanged only for half-scale 2PAM training signal and not for full scale DSQ128 signal
 SuggestedRemedy
 Exchange coefficients for DSQ128
 Response Response Status W
 REJECT.
 If the PAM2 and DSQ symbol sequences are uniform IID and have the same power [which they do, approximately], then there is no significant reason for the THP coefficients to differ between the two cases.
 In addition, for a given slicer performance (e.g. slicer error), the required SNR to slice DSQ128 is 15dB higher than PAM2 (6dB/bit x (3.5-1)bits) and therefore DSQ128 will not be reliable

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CI 55 SC 55.4.3.1 P 119 L 26 # 41
 KOEMAN, HENRIECUS Individual

Comment Type ER Comment Status A

During evaluation of PSAXtalk performance, the measured IL will always be used (instead of length). Relevant measured values should be used to estimate the power backoff.

SuggestedRemedy

Add an informative column with the IL limits. IL @ 250 MHz (dB) (Reference), 0 to 9.9, 0.9 to 13.4, 13.4 to 16.9, 16.9 to 20.3, 20.3 to 23.8, 23.8 to 27.3, 27.3 to 30.7, > 30.7

Response Response Status W

ACCEPT IN PRINCIPLE.

Not required.

The interested reader can use the equations in 55.7 to derive this proposed informative column.

For the existing reference length column, we should specify that these values were computed with eq 55-11

CI 55 SC 55.7.2.1 P 140 L 10 # 42
 KOEMAN, HENRIECUS Individual

Comment Type E Comment Status A

All equations should have a left side identifier and a "=", ">" or "<" symbol. This is already done for return loss (see equation 55-12).

SuggestedRemedy

Suggest: IL(f) = 1.05(&..)

Response Response Status C

ACCEPT IN PRINCIPLE.

Add variable to the left of every expression in equations listed in 55.7 where one does not currently exist.

Also see comment #168 from Ungerboeck

Editor's Comment: The equation style is consistent with 1000BASE-T. Considering other comments on equation style and formatting I'd like the task group's guidance here on the commenter's recommended changes (take a vote). I'd prefer to maintain the equation style of 1000BASE-T for consistency and not to implement the editorial changes.

CI 55 SC 55.7.2.3 P 140 L 40 # 43
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A

The equal sign must be replaced by a = sign.

SuggestedRemedy

Change equal sign "=" to "=

Response Response Status W

ACCEPT.

= (Greater than or equal to)

CI 55 SC 55.7.2.4.1 P 141 L 12 # 44
 KOEMAN, HENRIECUS Individual

Comment Type E Comment Status A

All equations should have a left side identifier and a "=", ">" or "<" symbol. This is already done for return loss (see equation 55-12).

SuggestedRemedy

Suggest: NEXT(f) ">" &

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to Comment#42 from Koeman

CI 55 SC 55.7.2.4.2 P 141 L 39 # 45
 KOEMAN, HENRIECUS Individual

Comment Type E Comment Status A

All equations should have a left side identifier and a "=", ">" or "<" symbol. This is already done for return loss (see equation 55-12).

SuggestedRemedy

Suggest: PSNEXT(f) ">" à

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #42 from Koeman

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Cl 55 SC 55.7.2.4.3 P 142 L 3 # 46
 KOEMAN, HENRIECUS Individual

Comment Type E Comment Status A

An equation should be used along with an identifier (55-12) (like done in equation (55-16)).

SuggestedRemedy

Suggest: PSNEXT = à

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #42 from Koeman

Cl 55 SC 55.7.2.4.4 P 142 L 36 # 47
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

The formal definition in ISO/IEC standards is that the insertion loss (IL) of the disturbing channel is used rather than the disturbed (victim) channel. Practically, all the IL of all channels in a link segment are close to the same. It appears appropriate to note this. Otherwise, it will be necessary to use a term like: "ACR-F" for "ACR, far end".

SuggestedRemedy

Add note following line 43. "Note. The formal definition for ELFEXT in ISO/IEC-11801 uses the insertion loss of the disturbing channel. The insertion loss of all channels in a link segment are close, and therefore is no practical impact from this difference of formal definition."

Response Response Status C

ACCEPT IN PRINCIPLE.

Yes: 17

No: 9

Motion to reject fails.

Making this change of names in 802.3an may introduce inconsistencies in notation in the Standard IEEE 802.3. Such work is outside the scope of 802.3an. The appropriate time to make such a change would be after the completion of the harmonization efforts between TIA and ISO and within a maintenance request.

Motion to accept the above proposed response:

Yes: 35

No: 0

Motion passes.

Editor's comment: The 55.7 specifications are self consistent. An ELFEXT definition is provided in 55.7 and used as specified. Although I agree with commenter's conclusions, I'd avoid adding informational notes of this type which infer channel or link characteristics outside of the scope 55.7.

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CI 55 SC 55.7.2.4.4 P 142 L 50 # 48
 KOEMAN, HENRIECUS Individual
 Comment Type E Comment Status A
 All equations should have a left side identifier and a "=", "≠" or "≡" symbol. This is already done for return loss (see equation 55-12).
 SuggestedRemedy
 Suggest: ELFEXT(f) "="
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to comment #42 from Koeman

CI 55 SC 55.7.2.4.5 P 143 L 28 # 51
 KOEMAN, HENRIECUS Individual
 Comment Type E Comment Status A
 All equations should have a left side identifier and a "=", "≠" or "≡" symbol. This is already done for the definition of PSELFEXT in eq (55-21).
 SuggestedRemedy
 Suggest: PSELFEXT(f) "="
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to comment #42 from Koeman

CI 55 SC 55.7.2.4.4 P 143 L 1 # 49
 KOEMAN, HENRIECUS Individual
 Comment Type E Comment Status R
 The scaling information on internal ELFEXT is irrelevant for this standard and can be deleted. Otherwise, many other aspects related to modeling should be included as well. Moreover, it only applies to raw cable, and not cable assemblies.
 SuggestedRemedy
 Delete lines 1 through 15.
 Response Response Status C
 REJECT.
 Length scaling is relevant to the standard. The inclusion of an explicit definition for ELFEXT scaling resolved a technical comment. Due to the weak dependence on length for distances > 20 meters, NEXT is not included. The 100 meter ELFEXT channel specification does not distinguish between cable and cable cords i.e., the 100 m channel ELFEXT is consistent with the 100 m cable requirements.

CI 55 SC 55.7.3.1.1 P 144 L 34 # 52
 KOEMAN, HENRIECUS Individual
 Comment Type TR Comment Status R cabling
 The computation of PSANEXT shall include the power backoff considerations which apply to the PSAXtalk margin computations as well. This causes a significant re-organization of the text.
 SuggestedRemedy
 See separate file for the proposed re-arrangement of text.
 Response Response Status W
 REJECT.
 Yes: 24
 No: 1
 The inclusion of backoff is adequately addressed in 55.7.3.3. Alien Crosstalk Margin Computation in the event that the PSANEXT limits specified in 55.7.3.1.1 (equation (55û23) and equation (55û25)) or the PSAELFEXT limits specified in 55.7.3.2. (equation (55û29) and equation (55û31)) are not met. The link segment specifications (cabling) should be specified independent of the backoff implementation.

CI 55 SC 55.7.2.4.4 P 143 L 7 # 50
 KOEMAN, HENRIECUS Individual
 Comment Type E Comment Status A
 Equation (55-19) should be a true equation with a left side identifier.
 SuggestedRemedy
 Suggest: ELFEXTcable(f) >= ...
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to comment #42 from Koeman

CI 55 SC 55.7.3.1.1 P 144 L # 53
 KOEMAN, HENRIECUS Individual
 Comment Type E Comment Status A
 (55-22) needs to be an equation with a left hand side.
 SuggestedRemedy
 PS ANEXT = à
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to comment #42 from Koeman

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CI 55 SC 55.7.3.1.1 P 145 L 52 # 54
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

There needs to be an upper limit which can be verified (there is an objection to specifying performance requirements that cannot be reliably verified). At the same time, 10GBASE-T operation will still be satisfactory.

SuggestedRemedy

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

Response Response Status C

ACCEPT.

CI 55 SC 55.7.3.1.2 P 146 L 18 # 55
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

For PSANEXT, there are potentially 5 very slightly different limits. The practical outcome on the evaluation results is negligible. The currently present additional complexity must be avoided.

SuggestedRemedy

Sentence to read: "For measurement based calculations (e.g., field testing), the average of measured IL values of all wire pairs at 250 MHz shall be used for the computation of the PSANEXT constant applicable to all wire pairs and the average of all wire pairs." See also separate file.

Response Response Status C

ACCEPT IN PRINCIPLE.

(1) Delete: 55.7.3.1.2 - PG146: L16 For measurement based calculations, IL(250MHz) shall be the actual measured insertion loss of the link under test at 250. Replace with: For measurement based calculations, IL(250MHz) shall be the average of the insertion loss of the 4-pairs at 250 MHz.

(2) Delete: 55.7.3.3 - Page 151: Line34: AN_{ipl}(f) is the individual-pair limit line for PSANEXT as specified by equation (55₂₃) utilizing the measured insertion loss of the individual-pair to calculate the PSANEXT constant using equation (55₂₆). Replace with: AN_{ipl}(f) is the individual-pair limit line for PSANEXT as specified by equation (55₂₃) utilizing the average of the insertion loss of the 4-pairs at 250 MHz to calculate the PSANEXT constant using equation (55₂₆). .

(3) Delete: 55.7.3.3 - Page 151: Line34: AN_{avgl}(f) is the average limit line for PSANEXT as calculated using equation (55₄₄). AN_{avgl}(f) is derived using the PSANEXT constant that is the minimum of the individual-pair PSANEXT constants. Replace with: AN_{avgl}(f) is the average limit line for PSANEXT as calculated using equation (55₄₄). AN_{avgl}(f) is derived using the PSANEXT constant determined in step 5. (revise equation 55-44 to reflect replacement test).

CI 55 SC 55.7.3.2.1 P 147 L 34 # 56
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status R cabling

The computation of PSAFEXT and PSAELFEXT shall include the power backoff considerations which apply to the PSAXtalk margin computations as well. This causes a significant re-organization of the text.

SuggestedRemedy

See separate file.

Response Response Status W

REJECT.

See response to comment #42 from Koeman

CI 55 SC 55.7.3.2.1 P 148 L 44 # 57
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

There needs to be an upper limit which can be verified (there is an objection to specifying performance requirements that cannot be reliably verified). At the same time, 10GBASE-T operation will still be satisfactory. This level is 10 dB tighter than the worst case PSANEXT requirements for Augmented Cat 6/Class E cabling.

SuggestedRemedy

When the measured PSAFEXT limit value at a certain frequency exceeds 70-15log(f/100) dB, 67 dB max, the PSAELFEXT result at that frequency is for information only.

Response Response Status C

ACCEPT IN PRINCIPLE.

Yes: 18

No: 5

When the measured PSAFEXT limit value at a certain frequency exceeds 72-15log(f/100) dB, 67 dB max, the PSAELFEXT result at that frequency is for information only.

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

Cl 55 SC 55.7.3.2.2 P 149 L 18 # 58
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

For PSAELFEXT, there are potentially 5 very slightly different limits. The practical outcome on the evaluation results is negligible. This additional complexity must be avoided.

SuggestedRemedy

Sentence to read: "For measurement based calculations (e.g., field testing), the average of measured IL values of all wire pairs at 250 MHz shall be used for the computation of the PSAELFEXT constant applicable to all wire pairs and the average of all wire pairs." See also separate file.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to Comment #55

Delete: 55.7.3.2.2 - PG149: L6 For measurement based calculations, IL(250MHz) shall be the actual measured insertion loss of the link under test at 250.

Add: For measurement based calculations , IL(250MHz) shall be the average of the insertion loss of the 4-pairs at 250 MHz.

(2) Delete: 55.7.3.3 - Page 151: L39 AF_{ipl}(f) is the individual-pair limit line for PSAFEXT calculated from the PSAELFEXT equation specified by equation (55-29) utilizing the measured insertion loss of the individual-pair.

Replace with: AF_{ipl}(f) is the individual-pair limit line for PSAFEXT calculated from the PSAELFEXT equation specified by equation (55-29) utilizing the average of the insertion loss of the 4-pairs at 250 MHz (provide equation).

(3) Delete: 55.7.3.3 - Page 153: L27 AF_{avgl}(f) is the average limit line for PSAFEXT calculated using equation (55-45). AF_{avgl}(f) is derived by adding the measured IL from the pair with the minimum PSAELFEXT constant to the PSAELFEXT limit line using the PSAELFEXT constant that is the minimum of the individual-pair PSAELFEXT limits.

Replace with: AF_{avgl}(f) is the average limit line for PSAFEXT calculated using equation (55-45). AF_{avgl}(f) is derived by adding the average of the measured insertion loss of the 4-pairs at 250 MHz to the PSAELFEXT limit line using the PSAELFEXT constant determined in step 5. (revise equation 55-45 to reflect replacement test).

Cl 55 SC 55.7.3.3 P 149 L 58 # 59
 KOEMAN, HENRIECUS Individual

Comment Type TR Comment Status A cabling

The formulation can be simplified using changes to the PSANEXT and PSAELFEXT requirements. No technical requirement changes are proposed. To compute the PSAFEXT from PSAELFEXT and IL, it is proposed to use the average IL of all wire pair combinations for all wire pairs and the average of all wire pairs. The evaluation of margin can be simplified also by computing the margins for each wire pair and the average of all wire pair margins. The worst case margin of all 5 conditions can be used directly.

SuggestedRemedy

See separate file for the proposed re-arrangement of text.

Response Response Status C

ACCEPT IN PRINCIPLE.

Accept to use the average IL.

See Koeman#55 and Koeman#58

Cl 55 SC 55.7 P 149 L # 60
 KOEMAN, HENRIECUS Individual

Comment Type T Comment Status R

Consideration should be given to deleting requirements for PSANEXT as in 55.7.3.1.1, equation (55-23) and (55-25) and PSAELFEXT 55.7.3.2.1, equation (55-29) and (55-31), and instead use only the requirements for PSAXtalk margin as in 55.7.3.3.

SuggestedRemedy

Just keep the margin requirements along with a definition of reference limit lines.

Response Response Status C

REJECT.

The 55.7 Link segment characteristics are specified to establish the minimum conformance criteria and used to evaluate operation over the objective media types and distances. Establishing specific alien crosstalk link segment parameters enables conformance validation and are used to specify link segments (and cabling) that will support 10GBASE-T operation. In addition, the link segment specifications are translated into link models for computational analysis.

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

Cl 00 SC 0 P 0 L 0 # 61
 BARRASS, HUGH Individual

Comment Type GR Comment Status R

The use of "MyBallot" as a comment entry tool is unacceptable for any serious standard.

SuggestedRemedy

Resubmit the standard for approval using an acceptable comment handling tool or select a professional standards development organization for this subject

Response Response Status W

REJECT.

MyBallot capabilities are out of the scope of P802.3an. We will forward the commenter's concerns to the appropriate IEEE SA staff.

The commenter is satisfied by this response.

Cl 45 SC 45.2.1 P 42 L 41 # 62
 BARRASS, HUGH Individual

Comment Type TR Comment Status A short reach

In order to support applications that are sensitive to power, it is necessary to manage the power modes within the PHY.

In particular, it should be expected that many PHY implementations will be able to operate with lower power when attached to a medium that is less than the maximum supported length. In order to exploit this capability a management register must be added to allow management to set the PHY into a lower power (short reach) mode. Additionally, it is very useful to add a specific test that allows system implementers to verify that the PHY operates correctly (and at the specified power) for the reduced distance medium.

SuggestedRemedy

The remedy for this comment will be split into 3 parts:

- Part # HB-TR1 : Change to the title of register 1.131
- Part # HB-TR2 : Addition of specific control parameters and definitions into 45.2.1.61
- Part # HB-TR3 : Addition of a test fixture for short reach operation into 55.5.2.1

Remedy:

Change ""10GBASE-T TX power backoff setting"" to ""10GBASE-T TX power backoff and PHY low power settings""

Response Response Status C

ACCEPT IN PRINCIPLE.

See response comment #33
 Also change title of register 131 appropriately based on the response to comment #33 to PMA/PMD power control

Cl 45 SC 45.2.1.61 P 47 L 30 # 63
 BARRASS, HUGH Individual

Comment Type TR Comment Status A short reach

In order to support applications that are sensitive to power, it is necessary to manage the power modes within the PHY.

SuggestedRemedy

Remedy HB-TR2 : following from HB-TR1
 Change title from ""10GBASE-T TX power backoff setting"" to ""10GBASE-T TX power backoff and PHY low power settings""

Add paragraph:

""The assignment of bits in the 10GBASE-T TX power backoff and PHY low power settings register is shown in Table 45-51. If the low power settings are writable, the default values should be chosen so that the initial state of the device upon power up or reset is suitable to support all media types.""

Add sub clause title:

""45.2.1.61.1 10GBASE-T TX power backoff setting (Register 1.131.15:10)""

At the end of current subclause, add the following:

""45.2.1.61.2 10GBASE-T PHY low power settings (Register 1.131.2:0)

The three PHY low power settings are 1.131.2, 55m mode; 1.131.1, 30m mode; 1.131.0, 15m mode. These bits indicate that the PHY is operating in one of three low power modes that support 55m, 30m and 15m respectively of Category 6a or better media (see 55.7 for media characteristics).

Support for low power modes is optional, a PHY may support any number or combination of the modes defined. The low power settings may be read-only or read-write. A PHY may automatically select a low power mode and indicate this to the management using a read-only register bit or management may determine that a low power mode is required and indicate this to the PHY by writing the appropriate register bit.

Operation of the PHY over media that is beyond that defined for the selected low power mode is not guaranteed.""

Add lines to Table 45-51:

- 1.131.2 | 55m mode | 1 indicates 55m low power mode | RO/RW
 - 1.131.1 | 30m mode | 1 indicates 30m low power mode | RO/RW
 - 1.131.0 | 15m mode | 1 indicates 15m low power mode | RO/RW
- Change ""1.131.9:0"" to ""1.131.9:3""

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #62

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

Cl 55 SC 55.5.2.1 P 129 L 9 # 64
 BARRASS, HUGH Individual

Comment Type TR Comment Status A short reach

In order to support applications that are sensitive to power, it is necessary to manage the power modes within the PHY.

SuggestedRemedy

Remedy HB-TR3 : following from HB-TR1
 Add a sentence at the end of the first paragraph:
 ""The fixtures (illustrated by Figure 55-31), or its functional equivalent, can be used for testing transceivers with PHY low power modes selected as described in 45.2.1.61.""
 Add a figure after Figure 55-30, designated Figure 55-31
 The figure shows three boxes: Transceiver under test; Specified medium; Link partner transceiver. It is left to the editor to produce an appropriate figure.
 Add the descriptive text:
 ""For a transceiver indicating PHY low power 55m mode (register 1.131.2), the specified medium is 55m of CAT-6a or better cabling; for a transceiver indicating PHY low power 30m mode (register 1.131.1), the specified medium is 30m of CAT-6a or better cabling; for a transceiver indicating PHY low power 15m mode (register 1.131.0), the specified medium is 15m of CAT-6a or better cabling. The transceiver under test shall support all PHY functions over the appropriate media for the PHY low power modes indicated or selected.""
 Add a PICS item after PME16:
 PME17 | low power mode | 55.5.2.1 | O | 55m Yes[], N/A[]; 30m Yes[], N/A[]; 15m Yes[], N/A[]

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 45 SC 45.2.1.1.3 P 43 L 13 # 65
 BARRASS, HUGH Individual

Comment Type TR Comment Status A multispeed

It is expected that 10GBASE-T PHYs will support multispeed operation, therefore we will need entries in control 1 register for the other speeds.

SuggestedRemedy

Edit table 45-4
 Rows starting 1.0.6 Speed selection and 1.0.13 Speed selection, add items:
 13 6
 - -
 1 0 = 1000 Mb/s
 0 1 = 100 Mb/s
 0 0 = 10 Mb/s
 (the last of these might not be needed :-)
 Change 45.2.1.1.3 first paragraph from
 ""Speed selection bits 1.0.13 and 1.0.6 shall both be written as a one. Any attempt to change the bits to an invalid setting shall be ignored. These two bits are set to one in order to make them compatible with Clause 22.""
 to
 ""For devices operating at 10, 100 or 1000Mb/s the speed of the PMA/PMD may be selected using bits 13 and 6. The speed abilities of the PMA/PMD are advertised in the PMA/PMD speed ability register. These two bits use the same definition as the speed selection bits defined in Clause 22.""
 Precede the first sentence of the 2nd paragraph with ""For devices not operating at 10, 100 or 1000 Mb/s, ""

Response Response Status C

ACCEPT.

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

Cl 45 SC 45.2.1.4 P43 L 14 # 66
 BARRASS, HUGH Individual

Comment Type TR Comment Status A multispeed

It is expected that 10GBASE-T PHYs will support multispeed operation, therefore we will need entries in the speed ability register for the other speeds.

SuggestedRemedy

Edit Table 45-6
 Change ""1.4.15:3"" to ""1.4.15:6""
 Add rows:
 1.4.3 | 1000M capable | 1 = PMA/PMD is capable of operating at 1000 Mb/s
 0 = PMA/PMD is not capable of operating at 1000 Mb/s
 1.4.3 | 100M capable | 1 = PMA/PMD is capable of operating at 100 Mb/s
 0 = PMA/PMD is not capable of operating at 100 Mb/s
 1.4.3 | 10M capable | 1 = PMA/PMD is capable of operating at 10 Mb/s
 0 = PMA/PMD is not capable of operating at 10 Mb/s
 Add new subclauses:
 45.2.1.4.1 10M capable (1.4.5)
 When read as a one, bit 1.4.5 indicates that the PMA/PMD is able to operate at a data rate of 10 Mb/s. When read as a zero, bit 1.4.5 indicates that the PMA/PMD is not able to operate at a data rate of 10 Mb/s.
 45.2.1.4.2 100M capable (1.4.4)
 When read as a one, bit 1.4.4 indicates that the PMA/PMD is able to operate at a data rate of 100 Mb/s. When read as a zero, bit 1.4.4 indicates that the PMA/PMD is not able to operate at a data rate of 100 Mb/s.
 45.2.1.4.3 1000M capable (1.4.3)
 When read as a one, bit 1.4.3 indicates that the PMA/PMD is able to operate at a data rate of 1000 Mb/s. When read as a zero, bit 1.4.3 indicates that the PMA/PMD is not able to operate at a data rate of 1000 Mb/s.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.6 P43 L 15 # 67
 BARRASS, HUGH Individual

Comment Type TR Comment Status A multispeed

It is expected that 10GBASE-T PHYs will support multispeed operation, therefore we will need entries in control 1 register for the other speeds.

SuggestedRemedy

Change subclause title from ""10G PMA/PMD control 2 register"" to ""PMA/PMD control 2 register""
 Add definitions in Table 45-7:
 1 1 1 1 = 10BASE-T PMA/PMD type
 1 1 1 0 = 100BASE-TX PMA/PMD type
 1 1 0 1 = 1000BASE-KX PMA/PMD type
 1 1 0 0 = 1000BASE-T PMA/PMD type
 Change references to ""10G PMA/PMD"" to ""PMA/PMD"" in 7 locations: First line of subclause; table title; first line of 45.2.1.6.1; second line of 45.2.1.6.1 (twice); third line of 45.2.1.6.1 (twice).

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.6.1 P44 L 1 # 68
 BARRASS, HUGH Individual

Comment Type T Comment Status A

The abilities are advertized in bits 0-4 (maybe bits 0-8) of extended ability register.

SuggestedRemedy

Change ""bit 0"" to ""bits 8 through 0""

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "bit 0" to "bits 0 through 4"

Change to "bit 0 through 8" if necesitated by other comment resolutions

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

Cl 45 SC 45.2.1.10 P45 L 1 # 69
 BARRASS, HUGH Individual

Comment Type TR Comment Status A multispeed

It is expected that 10GBASE-T PHYs will support multispeed operation, therefore we will need entries in the extended ability register for the other speeds.

SuggestedRemedy

Change Clause title from ""10G PMA/PMD"" to ""PMA/PMD""
 Change ""10G PA/PMD"" to ""PMA/PMD"" in three locations: First line of first paragraph; second line of first paragraph (twice).

Add the following lines to Table 45-11:

1.11.8 | 10BASE-T | 1 = PMA/PMD is able to perform 10BASE-T

0 = PMA/PMD is not able to perform 10BASE-T

1.11.7 | 100BASE-T | 1 = PMA/PMD is able to perform 100BASE-TX

0 = PMA/PMD is not able to perform 100BASE-TX

1.11.6 | 1000BASE-KX | 1 = PMA/PMD is able to perform 1000BASE-KX

0 = PMA/PMD is not able to perform 1000BASE-KX

1.11.5 | 1000BASE-T | 1 = PMA/PMD is able to perform 1000BASE-T

0 = PMA/PMD is not able to perform 1000BASE-T

Insert subclauses:

45.2.1.10.1 10BASE-T ability (1.11.8)

When read as a one, bit 1.11.8 indicates that the PMA/PMD is able to support a 10BASE-T PMA/PMD type. When read as a zero, bit 1.11.8 indicates that the PMA/PMD is not able to support a 10BASE-T PMA/PMD type.

45.2.1.10.2 10BASE-T ability (1.11.7)

When read as a one, bit 1.11.7 indicates that the PMA/PMD is able to support a 100BASE-TX PMA/PMD type. When read as a zero, bit 1.11.7 indicates that the PMA/PMD is not able to support a 100BASE-TX PMA/PMD type.

45.2.1.10.3 1000BASE-KX ability (1.11.6)

When read as a one, bit 1.11.6 indicates that the PMA/PMD is able to support a 1000BASE-KX PMA/PMD type. When read as a zero, bit 1.11.6 indicates that the PMA/PMD is not able to support a 1000BASE-KX PMA/PMD type.

45.2.1.10.4 10BASE-T ability (1.11.5)

When read as a one, bit 1.11.5 indicates that the PMA/PMD is able to support a 1000BASE-T PMA/PMD type. When read as a zero, bit 1.11.5 indicates that the PMA/PMD is not able to support a 1000BASE-T PMA/PMD type.

Response Response Status C

ACCEPT.

Cl 30 SC 30.2.5 P31 L 45 # 70
 BARRASS, HUGH Individual

Comment Type TR Comment Status R

Many useful diagnostic values are defined for Clause 45 but there is no corresponding MIB definition. Bearing in mind that Clause 45 defines only optional register access mechanisms for MDIO implementation, these diagnostic capabilities should be exposed to the world as part of the (Clause 30) MIB.

SuggestedRemedy

Add objects:

a10GBTPolarityA

a10GBTPolarityB

a10GBTPolarityC

a10GBTPolarityD

a10GBTPwrBackoff

aMDIXStatus

aSNRMinMarginChnIA

aSNRMinMarginChnIB

aSNRMinMarginChnIC

aSNRMinMarginChnID

aRxPowerChnIA

aRxPowerChnIB

aRxPowerChnIC

aRxPowerChnID

a10GBTSkewDelayB

a10GBTSkewDelayC

a10GBTSkewDelayD

These objects must be defined in a manner that follows the Clause 45 definitions. Detailed text may be supplied if requested.

Response Response Status W

REJECT.

Exposure of diagnostic capabilities is only useful if there is a demarcation point that requires the ability of one end of the link to access the diagnostic information at the other end of the link. There is no demarcation point for a 10GBASE-T link. Exposure of the diagnostic capabilities of a 10GBASE-T PHY is left up to the implementer.

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

Cl 55 SC 55.5.3.5 P 132 L 42 # 71
DOVE, DANIEL J Individual

Comment Type T Comment Status R clock ppm

Requirement for +-50ppm renders 10GBASE-T incompatible with installed base of networking equipment which are designed all other 10GBASE-x PMA/PMD devices with +-100ppm reference clocks.

SuggestedRemedy

Change +-50ppm to +-100ppm

Response Response Status C

REJECT.

Cl 55 SC 55.5.4.2 P 133 L 5 # 72
DOVE, DANIEL J Individual

Comment Type T Comment Status R clock ppm

Requirement for +-50ppm renders 10GBASE-T incompatible with installed base of networking equipment which are designed all other 10GBASE-x PMA/PMD devices with +-100ppm reference clocks.

SuggestedRemedy

Change +-50ppm to +-100ppm

Response Response Status C

REJECT.

See response to comment 71

Cl 28 SC 28.3.1 P 19 L 44 # 73
THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

The receive/transmit functions are asynchronous to each other. By design of the transmit, receive, and arbitration functions, it is possible to be transmitting a next page while continuing to receive a base page and vice versa. This means a single variable, page_size, to hold the size of the transmit and receive LCW is not sufficient (unless page_size can have two different values at the same time).

SuggestedRemedy

On page 19, row 44: Remove page_size variable and replace with tx_page_size and rx_page_size. The descriptions should be identical but separate the "prepared to transmit and receive" to "prepared to transmit" and "prepared to receive" respectively. On page 19, row 52: Change page_size to rx_page_size. On page 20, rows 3-29: Change all page_size variables to tx_page_size. On page 21, rows 46-57: Change all page_size variables to rx_page_size. On page 22, rows 2-9: Change all page_size variables to tx_page_size.

Response Response Status W

ACCEPT IN PRINCIPLE.

Only a single page_size variable will be used. The value of page_size will always only take on a single value at a time.

The definition of page_size will be modified as follows:

page_size

Status indicating the size of Next Page that the device is prepared to transmit and receive.

Values:

16; the device does not support extended Next Pages or extended Next Page ability has not been enabled (default).

48; extended Next Page ability is supported and has been enabled. If the variable is to be set to 48, it will happen upon entry into the NEXT PAGE WAIT state.

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

Cl 28 SC 28.3 P19 L 25 # 74
 THOMPSON, JEFFREY T Individual

Comment Type G Comment Status A

The relationship between the "page_size" variables and the three state diagrams is not clear.

SuggestedRemedy

To Figure 28-13 in 802.3-2002: Add tx_page_size as an output from Arb function to the Tx function, and add rx_page_size as an output from the Rx function to the Arb function. Also, the Rx function will need to know whether the expected page is a base page or not (add base_page from Arb function to the Rx function), and will need to know whether or not extended next pages will be used (7.1.7).

Response Response Status C

ACCEPT IN PRINCIPLE.

Figure will be added and modified to show page_size.

Cl 28 SC 28.2 P19 L 14 # 75
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

mr_np_tx[16:1] is no longer accurate now that extended next page support has been added. (pages may be 16 or 48 bits in length).

SuggestedRemedy

mr_np_tx[tx_page_size:1] (if above change is accepted) otherwise change to mr_np_tx[page_size:1].

Response Response Status W

ACCEPT IN PRINCIPLE.

Will go mr_np_tx[page_size:1]

Cl 28 SC 28.2 P19 L 14 # 76
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

MDIO registers are missing for the next page transmit registers in Table 28-1.

SuggestedRemedy

Add to "MDIO register" column: "No support of extended next pages: 7.22, Support of extended next pages: 7.22, 7.23, 7.24"

Response Response Status W

ACCEPT IN PRINCIPLE.

Add to "MDIO register" column: "No support of extended next pages: 7.22, Support of extended next pages: 7.22, 7.23, 7.24"

Cl 28 SC 28.3.1 P19 L 39 # 77
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

In 802.3-2002, the description for mr_np_tx[] does not account for extended next pages. The next page transmit register may now be either 16 bits or 48 bits, however the variable as defined and used in the state machines do not reflect this. They only reflect a 16-bit page size.

SuggestedRemedy

Modify the name of mr_np_tx[16:1] to either mr_np_tx[tx_page_size:1] or mr_np_tx[page_size:1] depending on whether above change is accepted or not. Modify description to state "A 16-bit or 48-bit array..."

Response Response Status W

ACCEPT IN PRINCIPLE.

Name will be modified to [page_size:1].

Cl 28 SC 28.3.4 P22 L 10 # 78
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

In Figure 28-16 of 802.3-2002, the "NEXT PAGE WAIT" state does not indicate that all bits of the extended next page should be copied from the next page transmit register. The standard specifically states that where verbage differs with the state diagram, the state diagram shall be considered correct. This implies that the state diagram must be modified to include the fact that 16 or 48 bits may be transmitted.

SuggestedRemedy

Figure 28-16, Page 245: In the "NEXT PAGE WAIT" state change mr_np_tx[16:13] to mr_np_tx[tx_page_size:13] or mr_np_tx[page_size:13] and change tx_link_code_word[16:13] to tx_link_code_word[tx_page_size:13] or tx_link_code_word[page_size:1]. (Use tx_page_size or page_size depending on acceptance of above suggestion.)

Response Response Status W

ACCEPT IN PRINCIPLE.

In the NEXT PAGE WAIT state, make the following changes:

mr_np_tx[16:13] to mr_np_tx[page_size:13]
 tx_link_code_word[16:13] to tx_link_code_word[page_size:13]

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

Cl 28 SC 28.3.2 P21 L 40 # 79
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

In order to support extended next pages, the burst-to-burst time was modified (see T7 in Table 28-1), and the number of data bits per page was modified from 16 to 48. However, in the transmit state diagram, the burst-to-burst time is enforced by a timer that measures from the last bit transmitted to the start of the next burst. This timer is called the "transmit_link_burst_timer". The current min/max values as defined for this variable, will not result in a burst-to-burst time as defined by T7.

SuggestedRemedy

In Table 28-9, page 21: For transmit_link_burst_timer as defined add "(no support of extended next pages)" Then add two more entries in the table:
 transmit_link_burst_timer(support of extended next pages when tx_page_size is 16) Min = 5.7 ms Typ = 6.25 ms Max = 6.7 ms, transmit_link_burst_timer(support of extended next pages when tx_page_size is 48) Min = 1.3 ms Typ = 2.25 ms Max = 3.1 ms Modify description to the definition of transmit_link_burst_timer on page 241 in 802.3-2002. Was: The transmit_link_burst_timer shall expire 5.7-22.3 ms after the last transmitted link pulse in an FLP Burst. Is: The transmit_link_burst_timer shall expire 5.7-22.3 ms after the last transmitted link pulse in an FLP Burst when extended next pages are not supported. When extended next pages are supported, the timer shall expire 5.7-6.7 ms after the last transmitted link pulse when transmitting 16-bit pages, and shall expire 1.3-3.1 ms after the last transmitted pulse when transmitting 48-bit pages.

Response Response Status W
 ACCEPT IN PRINCIPLE.

The transmit_link_burst_timer will be added with a value of 1.3 ms to 3.2 ms.

Cl 45 SC 45.2.7.2 P58 L 16 # 80
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

In Table 45-119, the description of the "Page received" bit is incorrect. This bit is a copy of the bit 6.1, and reflects the variable mr_page_rx in the arbitration state diagram. The bit is set any time a page is received (base page or next page).

SuggestedRemedy

Remove the word "Next" from the description.

Response Response Status W
 ACCEPT.

Related comment #6 rejected.

Cl 45 SC 45.2.7.2.3 P58 L 51 # 81
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status R

Register 7.16 is valid prior to the auto-negotiation complete bit being set. The value in this register is valid from the beginning of auto-negotiation.

SuggestedRemedy

Remove "7.16" from the list of registers that are valid once auto-negotiation is complete.

Response Response Status W
 REJECT.

See subsequent comment #151 submitted by the same commenter on the same issue

Cl 45 SC 45.2.7.7 P61 L 23 # 82
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

In Table 45-121, the description of 7.19.12 is incorrect. This bit does not report whether extended next pages will or will not be used, but instead reports whether the link partner is "extended next page capable".

SuggestedRemedy

Use the description field from 7.16.12 also for 7.19.12 (i.e. "Extended next page capable/Is not extended next page capable").

Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.7.10 P63 L 40 # 83
 THOMPSON, JEFFREY T Individual

Comment Type G Comment Status A

In Table 45-123, the control bit 7.32.0 does not control whether the local device is capable of loop timing or not, but rather it controls whether or not the PHY will advertise it is capable of loop timing or not for purposes of auto-negotiation. This bit controls whether or not bit U17 will be set in the extended next page.

SuggestedRemedy

Modify the description in Table 45-123. Was: 1 = LD is capable of loop timing, 0 = LD is not capable of loop timing Is: 1 = Advertise PHY as capable of loop timing, 0 = Do not advertise PHY as capable of loop timing. Also, modify the description of this bit on Page 64, Rows 30-33 to: Bit 7.32.0 is to be used to select whether or not Auto-Negotiation will advertise the ability to perform loop timing. If bit 7.32.0 is set to one the PHY will advertise loop timing capability. If bit 7.32.0 is set to zero the PHY will not advertise loop timing capability.

Response Response Status C
 ACCEPT.

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

Cl 45 SC 45.5.10.9 P71 L 8 # 84
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

PICS Features do not match Subclause text for items AM24-28 and AM36. Subclause is incorrect.

SuggestedRemedy

AM24 Is: 45.2.7.2.3 Should be: 45.2.7.2.2, AM25 Is: 45.2.7.2.3 Should be: 45.2.7.2.2, AM26 Is: 45.2.7.2.4 Should be: 45.2.7.2.3, AM27 Is: 45.2.7.2.4 Should be: 45.2.7.2.5 (first AM27, row 16), AM27 Is: 45.2.7.2.5 Should be: 45.2.7.2.4 (second AM27, row 19), AM28 Is: 45.2.7.2.5 Should be: 45.2.7.2.4, AM36 Is: 45.2.7.10 Should be: 45.2.7.11

Response Response Status W

ACCEPT.

Cl 45 SC 45.5.10.9 P71 L 19 # 85
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

AM27 is duplicated in PICS.

SuggestedRemedy

(Second) AM27 change to AM28 and re-number accordingly.

Response Response Status W

ACCEPT.

Cl 55 SC 55.7.3.3 P 149 L # 86
 ZHU, XING Individual

Comment Type T Comment Status R

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

However, we think the proposed way

(1) is not a conventional way for cross-talk measurements. Because in-channel (pair-to-pair) cross-talk measurement does not account for the effect of attenuation on the victim pair (longer or short cable) on the near-end cross-talk induced SNR. The fact that lower signal strength makes the cross-talk induced SNR worse is not historically reflected in cross-talk (NEXT) measurements.

(2) is not applicable to all cable laying topologies

For example, when the near ends of the victim and the disturber cables are not co-located, the power back-off considerations are not relevant.

Considering these factors, the power back-off terms make the problem complex and confusing while the obtained result may be wrong. Thus it should be removed from the alien crosstalk margin computation procedure.

SuggestedRemedy

Remove the power back-off terms from Clause 55.7.3.3.

Response Response Status C

REJECT.

The IL is not applied to the crosstalk measurements in an unconventional way. The insertion loss is applied to derive the length of the link segment and is not directly applied to calculate the power backoff level. The power backoff level is determined from the receiver power level. The margin computation is not wrong for co-located links calculation. The margin computation is applied when the individual limit tests fail.

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

Cl 55 SC 55.4.6.1 P124 L 19 # 87
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status A startup

This is a re-submission by the Chair of a comment made by Scott Powell against D2.4.

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 set "master_init_step <= 0".

Response in D2.4 was:

Having the Slave initialize master_init_step to 0 is not required, but this action will not generate any negative behavior.

Response Response Status C

ACCEPT.

Cl 55 SC 55.4.6.1 P124 L 27 # 88
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status R startup

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

Response Response Status C

REJECT.

This comment is a subset of #89

See response to comment #89

Cl 55 SC 55.4.6.1 P124 L 27 # 89
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status R startup

This is a re-submission by the Chair of a comment made by Scott Powell against D2.4.

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

Response in D2.4 was:

Eliminating 'minwait_timer_done' can generate a bypass of state PMA_Training_Init_S. This condition was added in D2.3 for this reason. Leaving as is will keep the Slave in this state for a minimum of 1ms

Response Response Status C

REJECT.

The modification suggested is not essential because the state machine is not broken.

Yes: 20

No: 2

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

Cl 55 SC 55.3.6.2 P 106 L 33 # 90
 BOOTH, MR BRAD J Individual

Comment Type G Comment Status R

This is a re-submission by the Chair of a comment made by Scott Powell against D2.4:

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.

Response in D2.4 was:

This state machine has been copied directly from Clause 49 and is currently in use. No need for a change at this point but we can reconsider during Sponsor Ballot

Response Response Status C

REJECT.

This state machine has been copied directly from Clause 49. The Clause 49 state machine works, changes may introduce errors.

The clause 49 state machine is designed to detect various 3 bit errors that could cause a false start of packet.

Cl 55 SC 55.7 P 139 L 1 # 91
 COBB, TERRY R Individual

Comment Type G Comment Status R

Clause 55.7 is confusing and difficult to read

cabling

SuggestedRemedy

Proposed re-write of Clause 55.7

(NOTE: There are no technical changes asked for)

55.7 Same

55.7.1 Same

55.7.2 Class Ea or better link segment transmission parameters

Included in this sub clause would be the channel requirements for a 100 meter Class Ea or better channel. The channel requirements would be written in the same format as previous Ethernet documents, i.e.: 1000Base-T. All equations would have fixed limits no variables.

55.7.3 Class E link segment transmission parameters

Included in this sub clause would be the channel requirements for a 55 100 meter Class E UTP or FTP channel. Essentially the text as in the present document without the Class distinction. This would include all the equations, mitigation, and trade offs. It would be helpful if the text could be made to be more clear.

Response Response Status C

REJECT.
 Yes: 16
 No: 10

Proposed reject fails.

In favor of accepting the suggested remedy:

Yes: 10
 No: 17

There is no consensus on this comment and its suggested remedy or proposed response.

No objection was noted.

The recommendation does not help resolve the general comment that 55.7 is confusing and difficult to read. The alien crosstalk to insertion loss tradeoff's requires the use of variables resulting in the difficult reading. The recommendation to include a Class Ea or better link segment is a significant technical change to the document. The explicit inclusion of Ea as a "link segment" further complicates the 55.7 specification by introducing a second "link segment" definition establishing another set of minimum requirements. 55.7 specifies the minimum requirements for a link segment. A reference is provided for both

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Class Ea and Class F.

Cl 55 **SC 55.7.2** **P 139** **L 37** # **92**

COBB, TERRY R Individual

Comment Type **T** *Comment Status* **A** *short reach*

Include a low power link segment.

SuggestedRemedy

Add the following row to table 55-12:

Class EA or better 30 m ISO/IEC 11801 Ed2.1/TIA/EIA-568-B.2-10

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 55 **SC 55B.1.3** **P 172** **L 45** # **93**

COBB, TERRY R Individual

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

ScTP should not be used to mitigate for alien in a UTP link segment. See contribution from tcobb.

SuggestedRemedy

Remove Category 6 ScTP from the sentence and add this sentence:

ScTP components should not be used in a UTP link segment to mitigate alien crosstalk.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change item 4 on page 172 to read:

4) An alternative to separating equipment cords is to utilize equipment cords sufficiently specified to mitigate the alien crosstalk coupling.

Also add references to first paragraph of 55B.1.3 on mitigation practices in TSB-155 and ISO/IEC TR24750

Cl 99 **SC 99** **P 2** **L 40** # **94**

BOOTH, MR BRAD J Individual

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

Because section 5 contains more physical layers and sublayers at rates addressed by sections 1-3, we should not say 'Section one includes THE specifications for 10 Mb/s...'. If Backplane Ethernet goes in a section six, this will be even more the case.

SuggestedRemedy

Please delete 'the' three times, for the first three sections. Consider doing the same for section four.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the 'the' for all four of the sections

Cl 01 **SC 1.3** **P 12** **L 19** # **95**

BOOTH, MR BRAD J Individual

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

Double space after 'Draft', double dot at end

SuggestedRemedy

Tidy up

Response *Response Status* **C**

ACCEPT.

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CI 28 SC 28.3.2 P21 L1 # 96
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A

Don't use a hyphen, minus or dash to mean 'to' because it can be read as 'minus'

SuggestedRemedy

Change to '6.75 ms to 7.25 ms' here - make similar changes throughout document as appropriate - e.g. PICS for this item.

Response Response Status C

ACCEPT IN PRINCIPLE.

Make the following changes.

Page 20 lines 40, 42, 58
 750 - 1000 ms changes to 750 ms to 1000 ms
 2000 - 2250 ms changes to 2000 ms to 2250 ms
 5 - 7 ms changes to 5 ms to 7 ms

Page 21 line 1
 6.75 - 7.25 ms changed to 6.75 ms to 7.25 ms

Also PICS item 11, 11a, 13a on page 24.

CI 28 SC 28.3.3 P22 L26 # 97
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A

Table needs reshaping to revised contents

SuggestedRemedy

Try this: Select the whole table (all the columns). Table > Resize Columns... To Width of Selected Cell's Contents, with maximum width 432 points.

Response Response Status C

ACCEPT.

CI 30 SC 30.12.1.1.2 P32 L32 # 98
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A

Consistency: 30.12.1.1.1 above says 'this attribute maps' (change made for D2.4, preferred style).

SuggestedRemedy

Change 'will map' to 'maps' here, in 30.12.1.1.3 and 30.12.1.1.4.

Response Response Status C

ACCEPT IN PRINCIPLE.

Also change in 30.12.1.1.2.

CI 30 SC 30.2.2.1 P31 L10 # 99
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A

Do you need to add an entry for o10GBT to 30.2.2.1 Text description of managed objects?

SuggestedRemedy

per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #197.

CI 45 SC 45.2 P41 L40 # 100
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status R

Good English (although there's little ambiguity in this case as 29 is listed immediately below).

SuggestedRemedy

Please change to '8 to 28'. Similarly in Table 45-117

Response Response Status C

REJECT.

"Through" is consistent with 802.3-2005 as was maintained despite the editors opinion that it should have properly been "thru".

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Cl 30 SC 30.12.1.1.1 P32 L 31 # 101
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 To keep in step with clause 45
 SuggestedRemedy
 Change 'with 0.1 dB of resolution' to 'in units of 0.1 dB' here, in 30.12.1.1.2 to 30.12.1.1.4.
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.63 P49 L 4 # 102
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 Consistency: 45.2.1.64 below says 'reported in units of 0.1 dB' (change made for D2.4, preferred).
 SuggestedRemedy
 Change 'with 0.1 dB of resolution' to 'in units of 0.1 dB' here, in 45.2.1.65 to 45.2.1.75.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Change only covers 45.2.1.65 thru 45.2.1.74

Cl 45 SC 45.2.3.1.2 P51 L 39 # 103
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 Lower case 'loopback mode' per 802.3-2005. Clause 45 register names don't automatically get a capital, so I assume the same is true for clause 45 bits.
 SuggestedRemedy
 Three changes here, two in 55.3.6.3.
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.3.2.2 P52 L 4 # 104
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 This sentence seems to describe the same situation as 10GBASE-R or 10GBASE-W.
 SuggestedRemedy
 Instead of the new sentence, can you say 'When a 10GBASE-R or 10GBASE-W or 10GBASE-T mode' on the previous page?
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.7.1.1 P55 L 52 # 105
 BOOTH, MR BRAD J Individual
 Comment Type T Comment Status A
 Multiple bits called 'Reset' - at least let us not make the situation worse
 SuggestedRemedy
 Change this one to 'AN reset'
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.7.1.2 P56 L 54 # 106
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 Avoid 'will', unless per style guide
 SuggestedRemedy
 Change to 'Otherwise bit 7.0.13 defaults to zero.'
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.61 P47 L 34 # 107
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 Avoid 'will', unless per style guide
 SuggestedRemedy
 Change 'will indicate' to 'indicates'. Similarly in 45.2.1.62.2
 Response Response Status C
 ACCEPT.

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

Cl 45 SC 45.2.7.1.4 P57 L47 # 108
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A
 any attempt to write a one to bit 7.0.9 will be ignored?
 SuggestedRemedy
 shall be ignored?
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Will need to make the appropriate entry in the pics as well.

Cl 55 SC 55 P73 L2 # 109
 BOOTH, MR BRAD J Individual
 Comment Type T Comment Status R
 It's clear from fig 55-1 that the medium is agnostic as to whether it is used for baseband or not - it's basically a cable. See 1.2.3 Physical Layer and media notation
 SuggestedRemedy
 Delete 'medium' from title and 55.1, 55.4.1 and 55.12. It's correct in 55.1.3.
 Response Response Status C
 REJECT.
 I believe medium refers to the link segment and should not be removed. This is consistent with 802.3-2005

Cl 55 SC 55.1.4 P78 L45 # 110
 BOOTH, MR BRAD J Individual
 Comment Type T Comment Status A clarification
 'The PHY operates in two modes, normal mode or training mode.' Yet 55.5.2 has test modes (45.2.3.11 and 55.3.3 have test-pattern modes), 55.2.2.1.1 has a startup mode, 55.3.5.2.2 mentions low-power mode.
 SuggestedRemedy
 Revise the description. And should 'startup mode' be changed to 'training mode'?
 Response Response Status C
 ACCEPT.
 55.2.2.1.1 'start-up mode' should be 'training mode'.

Cl 55 SC 55.2.2 P81 L4 # 111
 BOOTH, MR BRAD J Individual
 Comment Type T Comment Status A clarification
 D2.3 comment 19 revised: 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?

Response Response Status C
 ACCEPT IN PRINCIPLE.
 MDIO has been changed to bidirectional after comment 19 on D2.3.
 Management should remain Management.

Cl 55 SC 55.2.3 P82 L4 # 112
 BOOTH, MR BRAD J Individual
 Comment Type E Comment Status A font
 Unnecessarily small font
 SuggestedRemedy
 Change all 7 (or 6) point to 8 (or 7 if space is tight) point. Here and e.g. figs. 55-30, 55-32.

Response Response Status C
 ACCEPT IN PRINCIPLE.
 Editor to decide if 7 point of 8 point are better based on space.

Cl 55 SC 55.3.2.2.7 P91 L54 # 113
 BOOTH, MR BRAD J Individual
 Comment Type T Comment Status A duplication
 Duplication? This seems to duplicate 49.2.4.5 - but the reader has to read every detail in case it were different.
 SuggestedRemedy
 Preferably, replace whole subclause and table with 'The use of ordered sets and their mappings is identical to 10GBASE-R. See 49.2.4.5.' Or, if the duplication must be kept, add this proposed sentence as a NOTE near the beginning of the subclause.

Response Response Status C
 ACCEPT IN PRINCIPLE.
 The differences between these clause 55.x subclauses and the corresponding 49.y are very slight. Will do a diff and reference the corresponding 49.y.

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CI 55 SC 55.4.3.1 P119 L 34 # 114
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A cleanup

D2.2 #95 SC 55.1.3.2 P 78 L 59 Comment Type ER 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! ... SuggestedRemedy ... Get rid of this notation from the whole document. Response ACCEPT.

SuggestedRemedy

Change the entries in the first column of Table 55-6 to: $P > 0.3$, $-1.1 < P \leq 0.3$... $P \leq -5.7$. If there are any more uses of this [) notation, get rid of them, please.

Response Response Status C

ACCEPT.

CI 55 SC 55.4.3.1 P119 L 32 # 115
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A clarification

Don't use a hyphen, minus or dash to mean 'to' because it can be read as 'minus'

SuggestedRemedy

Change to '0 to 25' and so on

Response Response Status C

ACCEPT IN PRINCIPLE.

CI 55 SC 55.4.3.1 P119 L 29 # 116
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A cleanup

Stray capitals

SuggestedRemedy

(reference) , Minimum power backoff (dB)

Response Response Status C

ACCEPT.

Correct here and a few other instances of (P)ower (B)ackoff

CI 55 SC 55.4.3.2 P120 L 28 # 117
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A cleanup

If you make the columns wider the table can be at least one line shorter.

SuggestedRemedy

per comment

Response

Response Status C

ACCEPT.

CI 55 SC 55.4.6.2 P125 L 6 # 118
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A font

There's enough space to avoid the small font in this and the next figure

SuggestedRemedy

Change 7.5 point to 8 point wherever practicable.

Response

Response Status C

ACCEPT.

CI 55 SC 55.5.3.3 P 131 L 23 # 119
 BOOTH, MR BRAD J Individual

Comment Type T Comment Status R

I do not agree with this definition of RMS jitter (see 1.4.190). I think RMS jitter is the RMS deviation of the measured transition times (instants) from the expected transition times. This is what you would get if you took a histogram of an edge on a scope, using a clean clock.

SuggestedRemedy

Change 'root mean square period difference from the average period (T - T avg)' to 'root mean square difference between actual and ideal transition instants'.

Response

Response Status C

REJECT.

The current definition is correct and more precise.

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Cl 55 SC 55.7 P 139 L 8 # 120
 BOOTH, MR BRAD J Individual

Comment Type E Comment Status A

You say 'It is recommended that the guidelines (proposed) in ANSI/TIA/EIA-TSB-155, ISO/IEC TR-24750, ANSI/TIA/EIA-568-B.2-10 and ISO/IEC 11801 Edition 2.1 be considered before the installation of 10GBASE-T equipment for any cabling system.' and in 55.7.1, 'Mitigation practices may be required - see Annex 55B.' Yet nothing about it in 55.9.3 Installation and maintenance guidelines!

SuggestedRemedy

Refer to these remarks from 55.9.3, or move them there and refer to them.

Response Response Status C

ACCEPT IN PRINCIPLE.

Include a reference in 55.9.3 to point to Annex55B.

Cl 55 SC 55.8.1 P 155 L 9 # 121
 SAVI, OLINDO Individual

Comment Type TR Comment Status A

The present 802.3an objectives call out for supporting media reach over class E (UTP or FTP) or Class F cabling (S/FTP). The present MDI spec is not consistent with all cabling media types. The correct approach would be to reference the present (and future) ISO/IEC 11801 standard. The present standard provides a table (table 29) that summarizes the Electrical characteristics of telecommunications outlets intended for use with balanced cabling. Table 29 provides further reference to the applicable IEC test/component standard for the MDI outlet type.

Replace the following sentence:

Eight-pin connectors meeting the requirements of subclause 3 and Figures 1 through 4 of IEC 60603-7: 1996

SuggestedRemedy

Replace the following sentence (reference: Pg 155, sub clause 55.8.1, Line 9):

Eight-pin connectors meeting the requirements of subclause 3 and Figures 1 through 4 of IEC 60603-7: 1996

With:

Eight-pin connectors meeting the requirements of Table 29 of ISO/IEC 11801:2002 (or later version).

Response Response Status W

ACCEPT IN PRINCIPLE.

Motion to:

Replace the reference to IEC 60603-7:1996 by a reference to IEC 60603-7-4 (unscreened) and IEC 60603-7-5 (screened)

Moved by: R. Mei
 Seconded by: H. Koeman
 Yes: 22
 No: 13
 Motion fails.

Motion to reconsider:

Moved by: G. Zimmerman
 Seconded by: T. Cobb
 Yes: 30
 No: 4

Motion to reconsider passes.

Motion is being reconsidered:

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Yes: 35
 No: 10
 Motion passes

Motion: Replace the reference to IEC 60603-7:1996 by a reference to IEC 60603-7-4 (unscreened), IEC 60603-7-5 (screened) or IEC 60603-7-7
 Moved by: A. Flatman
 Seconded by: O. Savi
 Yes: 14
 No: 13
 Motion fails.

Cl 55 SC 55.5.4.4 P 133 L 19 # 122
 ZIMMERMAN, GEORGE A Individual

Comment Type TR Comment Status A short reach

Although the objectives state operation on links up to 100m on (new) Class E or Class F cabling, the only link tests specified are in this section, and are on 100m links. Short links, particularly with multiple connectors are known to have difficulties related to reflections and discontinuities at the far end, which will now be not so far.

SuggestedRemedy

At a minimum, add a parallel specification (and PIC) to the one in this section, without added noise, using a 30m Class F 2-connector channel. Further specifics of the segment configuration can be provided and discussed at the January interim.

Change the title of the section to "link tests"

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 55 SC 55.3.5.2.2 P 101 L 50 # 123
 MCCLELLAN, MR BRETT A Individual

Comment Type ER Comment Status A cleanup

variables "config" and "link_status" are not used in the state machines of this section

SuggestedRemedy

move both variable definitions to section 55.4.5.1

Response Response Status W

ACCEPT.

Cl 55 SC 55.3.5.2.2 P 102 L 13 # 124

MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A cleanup

variable "power_on" is not used, it could be eliminated

SuggestedRemedy

remove the variable

Response Response Status C

ACCEPT.

Cl 55 SC 55.3.5.2.2 P 102 L 22 # 125

MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A clarification

rx_raw variable definition doesn't make it clear that this variable will drive the XGMII outputs

SuggestedRemedy

change "XGMII transfers" to "XGMII output transfers" and replace "placed in" with "taken from"

Response Response Status C

ACCEPT.

The original text was copied from clause 49.2.13.2.2. There, the text for tx_raw and rx_raw was basically the same without differentiating the input from the output

Cl 00 SC 0 P 1 L 44 # 126

MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status R

XAUI is listed as a keyword but it is not discussed in this draft

SuggestedRemedy

remove XAUI from the keyword list

Response Response Status C

REJECT.

Cl 01 SC 1.5 P 13 L 11 # 127

MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A

IIR is listed under abbreviations, but is not used in the draft

SuggestedRemedy

remove IIR from the abbreviations list

Response Response Status C

ACCEPT.

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

Cl 28D SC 28D.6 P 29 L 59 # 128
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A
 "The information is specified in MDIO registers 45.2.7." should be "The information is specified in 45.2.7."
 SuggestedRemedy
 change as indicated
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.3.2.2.8 P 92 L 50 # 129
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A clarification
 "e) The block contains the payload of an invalid PHY frame or the first 64/65B block of the following PHY frame to account for self-synchronizing scrambler error propagation." It is not clear that this is for a received PHY frame.
 SuggestedRemedy
 change to "e) The block contains the payload of an invalid received PHY frame or the first 64/65B block following an invalid received PHY frame to account for self-synchronizing scrambler error propagation."
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.4.2.5.6 P 114 L 13 # 130
 MCCLELLAN, MR BRETT A Individual
 Comment Type TR Comment Status A startup
 The last 3 entries in table 55-4 for loc_rcvr_status conflict with the text on page 117 line 50. Same issue for last 3 entries of table 55-5.
 SuggestedRemedy
 The entries should be changed from: 0/1, 0/1, 0/1 to 0, 0, 1.
 Response Response Status W
 ACCEPT.

Cl 55 SC 55.4.2.5.14 P 116 L 33 # 131
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A punctuation
 unnecessary comma
 SuggestedRemedy
 change "If the MASTER does not detect the SLAVE, when the transition_counter expires," to "If the MASTER does not detect the SLAVE when the transition_counter expires,"
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.4.2.5.14 P 116 L 50 # 132
 MCCLELLAN, MR BRETT A Individual
 Comment Type TR Comment Status A clarification
 The text states that "scr_status=OK" is a gating condition to enter the PMA_Training_Init_S, but it is not shown in the state diagram (Fig 55-24).
 SuggestedRemedy
 Either delete scr_status from the text or add it to the state diagram. If scr_status is deleted from the text, also remove the variable on page 122 line 4.
 Response Response Status W
 ACCEPT IN PRINCIPLE.
 Will delete scr_status from text and page 122

Cl 55 SC 55.4.2.5.14 P 117 L 1 # 133
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A clarification
 This text lacks a description of the conditions for entering the PMA_Coeff_Exch state.
 SuggestedRemedy
 Response Response Status C
 ACCEPT.

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

CI 55 SC 55.4.2.5.14 P117 L 1 # 134
 MCCLELLAN, MR BRETT A Individual
 Comment Type ER Comment Status A cleanup
 "While both MASTER and SLAVE are in state PMA_Training_Init_M and PMA_Training_Init_S," should be "While both MASTER and SLAVE are in state PMA_Coeff_Exch,"
 SuggestedRemedy
 change as indicated
 Response Response Status W
 ACCEPT.

CI 55 SC 55.4.2.5.14 P117 L 8 # 135
 MCCLELLAN, MR BRETT A Individual
 Comment Type ER Comment Status A clarification
 The text lacks a clear description of when the requested PBO setting is sent to the link partner.
 SuggestedRemedy
 Add the following to the end of bullet item a) on line 8: "At this time the PHY will begin sending the requested PBO value in octet 7 of the InfoField."
 Response Response Status W
 ACCEPT.

CI 55 SC 55.4.2.5.14 P117 L 27 # 136
 MCCLELLAN, MR BRETT A Individual
 Comment Type ER Comment Status A clarification
 The order of the sequence would be more clear if "Coefficient Group and Coefficient Pair" was changed to "Coefficient Group and then Coefficient Pair".
 SuggestedRemedy
 change as indicated
 Response Response Status W
 ACCEPT.

CI 55 SC 55.4.5.1 P121 L 21 # 137
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status R cleanup
 PBO appears to be an unused variable.
 SuggestedRemedy
 remove the variable
 Response Response Status C
 REJECT.
 The variable PBO is described in 55.4.2.5.14 (page 116, line 17) and is communicated to the LP in the InfoField

CI 55 SC 55.4.5.1 P122 L 16 # 138
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A cleanup
 THP appears to be an unused variable.
 SuggestedRemedy
 remove the variable
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.5.1 P122 L 6 # 139
 MCCLELLAN, MR BRETT A Individual
 Comment Type E Comment Status A clarification
 It should be made clear that scr_status relates to the training mode scrambler.
 SuggestedRemedy
 change "The descrambler" to "The training mode descrambler"
 Response Response Status C
 ACCEPT.

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

CI 55 SC 55.4.5.2 P123 L 43 # 140
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A cleanup

SILENT and PMA_Training_Init_S are missing from the list of states where minwait_timer is used

SuggestedRemedy

change:"PCS_Test and PCS_Data states." to "SILENT, PMA_Training_Init_S, PCS_Test and PCS_Data states."

Response Response Status C

ACCEPT.

CI 55 SC 55.4.6.1 P124 L 6 # 141
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A

Since link_control can take the state SCAN_FOR_CARRIER, then "link_control = DISABLE" should probably be "link_control != ENABLE".

SuggestedRemedy

change as indicated

Response Response Status C

ACCEPT.

CI 55 SC 55.4.6.2 P125 L 1 # 142
 MCCLELLAN, MR BRETT A Individual

Comment Type ER Comment Status A clarification

The sequence of states would be more clear if there was an arrow from the bottom of "STOP_COUNTER_PMA_Training_Init" to the top of "START_COUNTER_PMA_Fine_Adjust" leaving the same entrance condition. Also from bottom of "START_COUNTER_PMA_Fine_Adjust" to top of "START_COUNTER_PCS_Test". And in fig 55-26 from bottom of "STOP_COUNTER_PMA_Fine_Adjust" to top of "START_COUNTER_PCS_Test". This would also prevent the state machine from being stuck in any state while the input conditions are true.

SuggestedRemedy

change as indicated

Response Response Status C

ACCEPT.

CI 55 SC 55.6.1 P134 L 23 # 143
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A

"c) To negotiate that the PHY is or is not capable of supporting loop timing." This bullet item is not necessary since the PHY's are not negotiating whether they support loop timing, the loop timing support capability is used to decide which PHY is MASTER and SLAVE.

SuggestedRemedy

remove this line

Response Response Status C

ACCEPT.

CI 55 SC 55.6.1 P134 L 23 # 144
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A

This list should state that PMA Training pattern reset will be negotiated.

SuggestedRemedy

Add line: " c) To determine whether the local PHY will perform PMA training pattern reset."

Response Response Status C

ACCEPT.

CI 55 SC 55.5.1 P 127 L 8 # 145
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A

P802.3-2005/Cor 1/D1.0 has updated Clause 40.6.1.1 (Isolation requirement). Does 55.5.1 require the same updates? By comparison, it appears this subclause is referencing the wrong section of IEC 60950.

SuggestedRemedy

change:"Section 5.3.2 of IEC 60950-1: 2001" to "subclause 5.2.2 of IEC 60950-1: 2001", change:"IEC 60060" to "60950-1:2001 annex N"

Response Response Status C

ACCEPT.

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

Cl 55 SC 55.12.8 P 167 L 56 # 146
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A
 MDI4 is unnecessary. See PMF20 on page 164 line16.

SuggestedRemedy
 Remove MDI4 and the associated text in 55.8.1.

Response Response Status C
 ACCEPT.
 Remove the last sentence in page 155 (approx line 14)

Cl 55 SC 55.3.4 P 100 L 23 # 147
 MCCLELLAN, MR BRETT A Individual

Comment Type TR Comment Status A clarification
 "SB10 to SB0 of Table 55 -10" It is unclear whether this refers to SB10 to SB0 generated by the local device or the link partner.

SuggestedRemedy
 Change to: "SB10 to SB0 of Table 55 -10 generated by the local device."

Response Response Status W
 ACCEPT.

Cl 55A SC 55A P 169 L 18 # 148
 MCCLELLAN, MR BRETT A Individual

Comment Type E Comment Status A
 The description of the permutation of H_b from H is unclear and is also unnecessary for the specification of the generator matrix and the parity check matrix. The generator matrix is first referred to as G, but the linked filename is Hb_Gb_matrices.zip. This annex should have a clear specification of a single generator matrix and parity check matrix. Additional detailed background information is available in the task force web site public area.

SuggestedRemedy
 Remove references to permutation vectors, and the original H & G matrices.

Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to Comment #2

Cl 55 SC 55 P L # 149
 THOMPSON, GEOFFREY O Individual

Comment Type GR Comment Status A short reach

It is apparent that the objectives chosen by this project and the implementations dictated to satisfy those objectives along with the laws of physics and silicon fabrication for atleast the next several years will result in a part that will consume more power than is acceptable to the data center marketplace. Without success in this marketplace, it is unlikely that this standard will succeed in the market.

SuggestedRemedy
 I propose that a reduced functionality version be specified and distinctly identified so that it can be fabricated and marketed as a separate product. In order for this to be successful, I believe it will need:

- Reduced functionality (shorter reach and/or only "better" cabling) to allow
- Significantly lower (maximum) power per port (to allow)
- Smaller chip packages (because of lower dissipation) allowing
- Smaller PC board sites
- The ability to live in "garage modules"
- Signal interoperability with full spec chips
- A distinct auto-negotiation personality
- A distinct market identity designation
- Crisp and distinct distance and cabling specifications
- (I would suggest Cat-7 only and 35 meters max)

Response Response Status W
 ACCEPT IN PRINCIPLE.

A consensus of the task force believes that your objectives can be achieved and that it will be possible to distinguish a short-reach solution in the market by providing a short-reach test channel to ensure compliance for PHYs configured in a low-power mode. See response to comment #33

Cl 45 SC 45.2.7.11 P 65 L 10 # 150
 THOMPSON, JEFFREY T Individual

Comment Type G Comment Status A
 In Table 45-125, name of bit 7.33.10 does not match text.

SuggestedRemedy
 Change name to LP loop timing ability.

Response Response Status C
 ACCEPT.

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

CI 45 SC 45.2.7.3 P58 L 51 # 151
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

This comment is to supersede my previous comment of the same place. The list of registers which are not valid until bit 7.1.5 is set is incorrect. Register 7.16 is valid before this bit is set, and registers 7.22-24 are also valid before 7.1.5 is set.

SuggestedRemedy

Change the list of registers from "7.16, 7.19 and 7.22 through 7.27" to "7.19, 7.19, 7.25 through 7.27 and 7.33"

Response Response Status W

ACCEPT IN PRINCIPLE.

Change paragraph 45.2.3.7:

"When read as a one, bit 7.1.5 indicates that the Auto-Negotiation process has been completed, and that the contents of the Auto-Negotiation register 7.16 and 7.19 are valid. When read as a zero, bit 7.1.5 indicates that the Auto-Negotiation process has not been completed, and that the contents of 7.19, 7.22 through 7.27 and 7.33 registers are as defined by the current state of the Auto-Negotiation protocol, or as written for manual configuration. A PMA/PMD shall return a value of zero in bit 7.1.5 if Auto-Negotiation is disabled by clearing bit 7.0.12. A PMA/PMD shall also return a value of zero in bit 7.1.5 if it lacks the ability to perform Auto-Negotiation. Bit 7.1.5 is a copy of bit 1.5 in register 1, if present (see 22.2.4)."

Change paragraph 45.2.7.2.2

"The Page Received bit (7.1.6) shall be set to one to indicate that a new Link Code Word has been received and stored in the AN LP XNP ability registers 7.25-7.27. The contents of register 7.16 will be valid when bit 7.1.6 is set the first time during the Auto-Negotiation. The Page Received bit shall be reset to zero on a read of the AN status register (Register 7.1) or if present, the Auto-Negotiation expansion register 6 (see 28.2.4.5). This bit is a copy of bit 6.1 in register 6, if present (see 28.2.4.1)."

CI 45 SC 45.2.7.10 P63 L 40 # 152
 THOMPSON, JEFFREY T Individual

Comment Type G Comment Status A

In my previous comment of the same location, Table 45-123 should have referred to Table 45-124.

SuggestedRemedy

See other comment, except refer to Table 45-124.

Response Response Status C

ACCEPT.

CI 28 SC 28.3.2 P21 L 40 # 153
 THOMPSON, JEFFREY T Individual

Comment Type GR Comment Status A

A rounding error was made in my comment for the same location.

SuggestedRemedy

In my previous "proposed change" change 6.7 to 6.8 and change 3.1 to 3.2

Response Response Status W

ACCEPT IN PRINCIPLE.

See response to comment 79.

CI 00 SC 0 P 27 L 38 # 154
 DALLESSASSE, JOHN Individual

Comment Type E Comment Status A

Extra "a" in "Message" ("Messaage")

SuggestedRemedy

Remove extra "a"

Response Response Status C

ACCEPT.

CI 00 SC 0 P 100 L 22 # 155
 MUNROE, MICHAEL J Individual

Comment Type E Comment Status A

*** Comment submitted with the file 874700024-munroecomments.xls attached ***

M of the single equation lines end in period, so adding them in the places mentioned is only for consistency. Similarly, most chapter references are not followed by periods so removing them is only for consistency.

SuggestedRemedy

Spelling, formatting, removal of periods and addition of periods. I have attached a table of changes but the form keeps being rejected. Sorry.

Response Response Status C

ACCEPT IN PRINCIPLE.

Accept all except the instruction to remove commas on page 135. The commas are there to separate multiple entries in some of the cells of the table.

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

Cl 55 SC 55.7.3.1 P 147 L 18 # 156
 VADEN, STERLING Individual

Comment Type G Comment Status A cabling

Move text from note to normative text, since the 3.5 dB factor is used in calculating PSANEXT compliance. Should this be reflected in the table values? The table shows an increase of 2.25 dB for average "of the four pairs" Should the value be 63.5 and 65.5, respectively?

SuggestedRemedy

The PS ANEXT constant is increased by 3.5 dB to account for an averaging of the PS ANEXT over frequency and averaging the PS ANEXT "across the 4-pairs".

Response Response Status C

ACCEPT IN PRINCIPLE.

delete the word "Note" at the beginning of the sentence.

Cl 55 SC 55.7.3.3 P 150 L 32 # 157
 VADEN, STERLING Individual

Comment Type G Comment Status A cabling

Provide supporting evidence of implementation of power backoff computation applied to Alien crosstalk margin computation. My attempts at the computation have yielded inconsistent results. Looking for proof of principle. To date, alien crosstalk margin computation examples have not included power backoff computation.

SuggestedRemedy

No change proposed unless there is shown anomalous behavior or inconsistency between the calculated margins and the true margins under actual conditions.

Response Response Status C

ACCEPT.

No change proposed

Cl 55 SC 55.8.2 P 156 L 7 # 158
 VADEN, STERLING Individual

Comment Type G Comment Status A

Add MDI NEXT loss requirements consistent with TIA 568-B.2-1 connecting hardware NEXT loss requirements. and addition of requirement from 250 MHz to 500 MHz. This is consistent with the statement in lines 3-6 and either has been left out intentionally or inadvertently. If it was intentional, then the statement of lines 3-6 is inconsistent with the stated requirements of clause 55.8.2.

SuggestedRemedy

MDI pair-to-pair NEXT loss
 For all frequencies from 1 MHz to 500 MHz, category 6 connecting hardware NEXT loss shall meet the values determined using equation (14) when mated to the range of test plugs specified in annex E.4. Calculations that result in NEXT loss values greater than 75 dB shall revert to a requirement of 75 dB minimum.

NEXT loss 54 - 20log10 f / 100 where 1 < f < 250 MHz
 NEXT loss 46.1 - 60log f / 250 where 250 < f < 500 MHz

Response Response Status C

ACCEPT IN PRINCIPLE.

Add text qualifying that the MDI shall meet the requirements of Category 6 connectors as defined in 55.8.2

The clause is intended to only specify requirements that are for interoperability between PHY's, those things that would have an affect on a PHY at the opposite end of the link. NEXT is an internal impairment, and depends on the vendor's implementation, whereas FEXT or Return Loss is something the PHY at the other end of the link would have to deal with. Also these are requirements that can be tested to insure conformance.

Cl 00 SC 3 P 25 L 56 # 159
 BARNETTE, JAMES D Individual

Comment Type TR Comment Status A short reach

*** Comment submitted with the file 877400024-LowPowerUTPMODE.ppt attached ***

There is a market need to support operation of a 10G PHY with low power over up to 30m of Class EA (Category 6 augmented) or better cabling.

SuggestedRemedy

The attached presentation identifies 12 specific changes needed to add a 10GBASE-T low power UTP operating mode.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

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

Cl 00 SC 3 P25 L55 # 160
 BARNETTE, JAMES D Individual

Comment Type GR Comment Status A short reach

*** Comment submitted with the file 877500024-LowPowerSTPMode.ppt attached ***

There is a market need to support operation of a 10G PHY with low power over up to 30m of Class F (Category 7) shielded twisted-pair or better cabling in addition to an operating mode supporting up to 30m of Class EA (Category 6 augmented) cabling.

SuggestedRemedy

The attached presentation identifies a total of 16 changes needed to add support for both a 10GBASE-T low power UTP and a 10GBASE-T low power STP operating mode (Note that the attached presentation includes all comments that were made in the LowPowerUTPMode.ppt attached to a comment on page 25, sub-clause 3, line #56).

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 00 SC 3 P40 L6 # 161
 BARNETTE, JAMES D Individual

Comment Type TR Comment Status A short reach

*** Comment submitted with the file 877700024-LowPowerLatencyReduction.ppt attached ***

There is a market need to support reduced latency operation of a 10G PHY with low power.

SuggestedRemedy

Reduce the maximum bit-time delay from 25,600 BT to 15,000 BT when the PHY is operating in the 10GBASE-T low power UTP or 10GBASE-T low power STP modes. The attached presentation identifies 3 changes necessary to add a reduced latency requirement when operating in the above operating modes.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 00 SC 3 P25 L55 # 162
 BARNETTE, JAMES D Individual

Comment Type G Comment Status A short reach

Comment #2 was incorrectly submitted as a General comment, but should have been a "Technical" comment. The comment text was:

There is a market need to support operation of a 10G PHY with low power over up to 30m of Class F (Category 7) shielded twisted-pair or better cabling in addition to an operating mode supporting up to 30m of Class EA (Category 6 augmented) cabling.

SuggestedRemedy

Correct the category for comment #2 to Technical.

Response Response Status C

ACCEPT IN PRINCIPLE.

This has been replaced by comment #160 as per request of commenter

And see response to comment #33

Cl 00 SC 0 P L # 163
 UNGERBOECK, GOTTFRIED Individual

Comment Type GR Comment Status A short reach

Draft 3.0 does not address the largest market currently envisaged for 10Gbit/s transmission over twisted-pair cables: providing connectivity in data center environments where cable lengths are shorter than 55m. Transceivers satisfying the current 10GBASE-T specifications will require too much power and circuit complexity for being competitive with possible proprietary shorter-range solutions.

SuggestedRemedy

Include in the 10GBASE-T standard an option for shorter than 55m reach over Class Ea / Category 6a cabling.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

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

Cl 55 SC 55.4.2.5.14 P116 L1 # 164
 UNGERBOECK, GOTTFRIED Individual

Comment Type ER Comment Status R clarification

The important topic of the startup sequence is addressed at header level 5 and takes only two pages. Other functional aspects of the startup sequence are scattered around elsewhere in the InfoField descriptions 55.4.2.5.x , in 55.4.5 (state variables), and in 55.4.6 (state diagrams). Even for participants in the work of the 10GBASE-T task force it is very hard to understand what is written in Draft 3.0 and to get convinced that there are no flaws in this startup procedure. One gets the impression of a general lack of engineer-ing elegance.

SuggestedRemedy

The description of the startup sequence should be thoroughly revised and presented under higher header levels. PHY Control itself should be elevated to header level 2 like Overview (55.1), Service Primitives and Interfaces (55.2), Physical Coding Sublayer (55.3), etc. In the revised text, in separate subsections complete descriptions of the operations in each PHY control state and the conditions for transitioning to the next state should be provided.

Response Response Status U

REJECT.

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

Cl 55 SC 55.4.6.1 P124 L3 # 165
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status A pbo

The power backoff level of the SLAVE is set once when entering state PMA_Training_Init_S and most likely once again when entering state PMA_Fine_Adj, after THP coefficients have been exchanged. The text on page 116, line 54 "highly recommends" that the SLAVE responds to the MASTER only when the SLAVE observes a decision-point SNR of at least 20 dB for making binary decisions. This high SNR (high for binary decisions) is needed to ensure that the MASTER will likewise be able to make reliable binary decisions when the SLAVE responds with the same nominal transmit power level as used by the MASTER, despite uncertainties about the actual transmit power level and PSD of the SLAVE and the noise and crosstalk situation at the MASTER. Furthermore, the SNRs of both link partners must be sufficient for adjusting feedforward equalizers and DFE = THP coefficients accurately for subsequent operation in the PCS_Test and PCS_Data states. To achieve an SNR of at least 20 dB, the SLAVE will often have to wait until the MASTER has stepped up its transmit power after waiting times of 168 ms and then 100 ms to the highest level permitted in state PMA_Training_Init_M. This will often unnecessarily prolong startup time and preclude implementations achieving shorter startup time.

SuggestedRemedy

Include in PHY control the option for the MASTER and SLAVE to request an additional transmit power change by the link partner before advancing to state PMA_Coeff_Exch. The SLAVE may then respond sooner to the MASTER when the SNR margin at the decision point of the SLAVE is adequate for making reliable binary decisions. The transmit power level of the SLAVE may be chosen higher than the communicated transmit level of the MASTER to ensure that likewise the MASTER will be able to make reliable binary decision after the necessary receiver adjustments despite the uncertainties mentioned above. After having obtained a response from the SLAVE both MASTER and SLAVE can determine the transmit power level actually required for later operation in states PCS_Test and PCS_Data before entering PMA_Coeff_Exch. This allows for determination of DFE = THP coefficients in the SNR environment required for the final operating point and permits to avoid a further disruptive change of transmit power after PMA_Coeff_Exch.

Response Response Status C

ACCEPT IN PRINCIPLE.

Yes: 15
 No: 5

The DFE/THP coefficients are a function of the PBO setting. Thus computing the DFE/THP coefficients prior to exchanging refining PBO levels is suboptimal.

Add a state prior to PMA_Coeff_Exchange, called PMA_PBO_Exchange that permits one PBO exchange. The state exit criteria should mimic the other state transitions using a IF message bit and transition counter

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

CI 55 SC 55.5.3.4 P 131 L 31 # 166
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status R psd

The specifications of nominal transmit power without power backoff (3.2 5.2 dBm) and shape of the PSD given in this section are too loose. The upper and lower PSD masks (=limits) permit PSD shapes to vary between being (a) flat from dc to almost 400 MHz, (b) rolling off continuously to about -30dB relative to dc at 400 MHz, and (c) magnitude variations/ripples of over 4.5dB across the passband. Only one thing is not allowed: a spectral notch around dc wider than 5 MHz (1.25 % of the Nyquist bandwidth).

SuggestedRemedy

The 10GBASE-T task force should agree on narrowing these specifications.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 55 SC 55.7 P 139 L 43 # 167
 UNGERBOECK, GOTTFRIED Individual

Comment Type TR Comment Status A cabling

The first row of Table 55-12 remains pretty mysterious for readers wanting to understand this cabling with reasonable effort. The note "a" below the table refers to 55.7.3.1.2 and 55.7.3.2.2. The first sentence in 55.7.3.1.2 "To ensure reliable operation, a minimum insertion loss to alien crosstalk (attenuation) ratio shall be maintained" is still understandable. However, the rest is confusing. The same holds for 55.7.3.2.2.

SuggestedRemedy

In 55.7.3.1.2 specify explicitly in dB an allowed minimum difference between the cable squared-magnitude function and the PSANEXT coupling function at 400 MHz (or 250 MHz). Proceed similarly in 55.7.3.2.2 by specifying an allowed minimum difference between the cable squared-magnitude function and the PSAELFEXT coupling function at 400 MHz (or 250 MHz). A cabling according to the first row in Table 55-12 should be acceptable if both criteria (or a combination of thereof) are satisfied. In addition, in the header row of Table 55-12 replace "Supported link segment distances" by "Supported maximum link segment length".

Response Response Status C

ACCEPT IN PRINCIPLE.

In 55.7.3.1.2 provide explicit minimum dB difference between the IL at 250 MHz and the PSANEXT at 250 MHz. In 55.7.3.2.2 provide explicit minimum dB difference between the IL at 250 MHz and the PSAELFEXT (PSAFEXT) at 250 MHz.

CI 55 SC 55.7 P 139 L 1 # 168
 UNGERBOECK, GOTTFRIED Individual

Comment Type ER Comment Status A cabling

Equations and formulae throughout the entire section 55.7 are awfully written.

SuggestedRemedy

Rewrite equations and formulae in better style. --- Actually, the entire section 55.7 should be significantly re-written.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to Comment#42 from Koeman

CI 00 SC 0 P 1 L # 169
 TEENER, MICHAEL D JOHAS Individual

Comment Type G Comment Status A short reach

Although I have no substantive problem with the technical content of this draft, I'm concerned with the technical complexity of any resulting implementation. I would suggest that 802.3 strongly consider the development of a new PHY that has the same speed capabilities, but is not required to support 100m links. I would suggest that something that would run 30m over CAT 6a might be good for most of the market, and that an *extremely* low cost version that would run 10m over CAT 5E or 6A would be rather useful for consumer electronics and high-density data centers

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

CI 45 SC 45.2.7 P 63 L 31 # 170
 KASTURIA, SANJAY Individual

Comment Type T Comment Status A short reach

Add bits to clause 45 to enable configuring PHY to operate over shorter reaches than the 100m max required.

See attached presentation

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

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

CI 00 SC 0 P L # 171
 JOVER, JUAN M Individual
 Comment Type TR Comment Status R margin
 I disagree with the appropriateness of the 128 DSQ line code for this problem.
 Issues:
 a) Total noise budget is too low.
 b) Unprotected bits by the LDPC code present problems with noise events as described in Rao_1_1104.pdf, slide 23.
 SuggestedRemedy
 Change line code.
 Response Response Status U
 REJECT.
 See response to comment #213

CI 55 SC 55.4.6.1 P124 L1 # 172
 LYNSKEY, ERIC R Individual
 Comment Type G Comment Status A
 A race condition currently exists between Figure 55-24, 55-25 and 55-26. Referring to Figure 55-24, the transitions to PMA_Fine_Adjust and PCS_Test are governed by trans_to_Fine_Adjust = 1 and trans_to_PCS_Test = 1 respectively, while transition_count = 0. However, Figure 55-25 shows that for a MASTER, once transition_count = 0 these variables (trans_to_Fine_Adjust, trans_to_PCS_Test) are instantaneously changed to zero. Similarly Figure 55-26 shows the same behavior for a SLAVE.
 SuggestedRemedy
 1. Remove "trans_to_Fine_Adjust <= 0" from STOP_COUNTER_PMA_Fine_Adjust state in both Figure 55-25 and 55-26.
 2. Remove "trans_to_PCS_Test <= 0" from STOP_COUNTER_PCS_Test state in both Figure 55-25 and 55-26.
 3. In Figure 55-24, Add to state PMA_Fine_Adjust "trans_to_Fine_Adjust <= 0"
 4. In Figure 55-24, Add to state PCS_Test "trans_to_PCS_Test <= 0"
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Proposed changes:
 "MessageField_IF= trans_to_Fine_Adjust" to "trans_to_Fine_Adjust = 1"
 and
 "MessageField_IF= trans_to_PCS_Test" to "trans_to_PCS_Test = 1"
 so that the transition is based only on the local values, not the received values.
 Since transition_count=0 occurs for a nonzero time, the conditions:
 trans_to_Fine_Adjust = 1 * transition_count = 0 and
 trans_to_PCS_Test = 1 * transition_count = 0
 will be true and there will not be a race condition.

CI 55 SC 55.7.2.4.1, 55.7.2.4.4, 5 P 141 L # 173
 TAICH, DIMITRY Individual
 Comment Type E Comment Status A
 Chapter 55.7.2.4.1 refers to chapter 55.1 as one that specifies BER requirements.
 Chapter 55.7.2.4.4 refers to chapter 55.1.1 as one that specifies BER requirements.
 Chapter 55.7.3.1/2 refers to chapter 55.1 as one that specifies BER requirements.
 This looks as a minor inconsistency.
 SuggestedRemedy
 Since BER is specified in the objectives - chapter 55.1.1, I recommend changing reference on page 141, 144 and 147 to chapter 55.1.1 (instead of 55.1).
 Response Response Status C
 ACCEPT.

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

Cl 55 SC 55.4.5.1 P121 L 29 # 174
 TAICH, DIMITRY Individual

Comment Type E Comment Status A clarification

PBO_next parameter definition: PBO_next is a variable that can take any integer value from 0 to 7 and indicates the next power backoff level CURRENTLY used at the local transmitter. This looks like a typo.

SuggestedRemedy

Modify above sentence to PBO_next is a variable that can take any integer value from 0 to 7 and indicates the next power backoff level TO BE used at the local transmitter.

Response Response Status C

ACCEPT.

Cl 55 SC 55.4.3.1 P119 L 26 # 175
 TAICH, DIMITRY Individual

Comment Type E Comment Status A cleanup

Table 55-6 Power Backoff schedule table has 2 unnecessary rows (second and last one) with minimum requested PBO levels identical to those sitting one row above.

SuggestedRemedy

Modify first row to have next entries:
 Received signal power > -1.1dBm, Length(m) 0-35, Minimum Power Backoff 10dB

Remove second row

Remove the row before last

Modify last row to have next entries:
 Received signal power <= -5.0dBm, Length(m) >75, Minimum Power Backoff 0dB

Response Response Status C

ACCEPT.

Cl 55 SC 55.4.2.5.14 P116 L 16 # 176
 TAICH, DIMITRY Individual

Comment Type E Comment Status A clarification

No reference to specific Table/Field in the MDIO Register is provided when PBO levels settings are requested. To prevent any ambiguity, we should have a clear reference for these PBO setting requests.

SuggestedRemedy

Table 45-51 should be used as a reference for above PBO setting request.

Response Response Status C

ACCEPT.

Cl 55 SC 55.4.2.5.1, 55.4.5.1 P112121 L 40 # 177
 TAICH, DIMITRY Individual

Comment Type E Comment Status A cleanup

There are several places in the draft where PBO levels are outlined. I think this is a good habit to define these levels once (and this is done already in table 45-51), and provide a reference to this table each time PBO levels are discussed.

SuggestedRemedy

Provide reference to associated fields in Table 45-51 for PBO, PBO_next and PBO_tx variable definitions on page 121. Same action should take place regarding Infield Notation description (sub-clause 55.4.2.5.1, page 112).

Response Response Status C

ACCEPT.

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

Cl 55 SC 55.4.2.5.14 P117 L # 178
 TAICH, DIMITRY Individual

Comment Type T Comment Status A pbo

Draft 3.0 allows completely asymmetrical PBO setting. The only regulatory mechanism (Table 55-6 PBO schedule) is based on the nominal power (coming from the far-end) estimation at the MDI. The quality of this estimation is limited by several factors and assumptions - (AFE estimated gain, RJ-45-to-transceiver attenuation, exact PBO levels of the link partner, etc). In any case, there is no any requirement in the standard that outlines required quality for this estimation. As a result, two link partners can end up with completely different PBO settings. This situation can turn out to be unfair from the higher power transmitter point of view as level of local impairments can be as bad as worst-case situation while energy coming from the far-end is non-negligibly backed-off. While some freedom in the PBO level selection is beneficial to compensate for the differences in the environmental noise (like ANEXT, nominal transmit power, implementation losses, etc), leaving this difference completely unrestricted raises severe interoperability concern.

SuggestedRemedy

I recommend to restrict PBO levels difference by single level (2 dB). This can be done by modifying lines 1-8 on page 117 as following:

While both MASTER and SLAVE are in state PMA_Training_Init_M and PMA_Training_Init_S, when Master has computed the programmable THP settings and final PBO setting, the programmable THP coefficient exchange process can begin, using the 1.5 octet Coefficient exchange handshake and the 4 octet Coefficient Field as follows:
 a) During PMA_Coeff_Exch MASTER will begin a coefficient exchange by setting the Coeff_Exchange flag to 1 in the Message Field. SLAVE will follow MASTER by setting the Coeff_Exchange flag to 1 in the Message Field. The final PBO level requested by SLAVE should not differ from the MASTERS requested PBO level by more then one level.

Response Response Status C

ACCEPT IN PRINCIPLE.

Restrict PBO levels difference by two levels (4 dB). This can be done by modifying lines 1-8 on page 117 as following:

While both MASTER and SLAVE are in state PMA_Training_Init_M and PMA_Training_Init_S, when Master has computed the programmable THP settings and final PBO setting, the programmable THP coefficient exchange process can begin, using the 1.5 octet Coefficient exchange handshake and the 4 octet Coefficient Field as follows:
 a) During PMA_Coeff_Exch MASTER will begin a coefficient exchange by setting the Coeff_Exchange flag to 1 in the Message Field. SLAVE will follow MASTER by setting the Coeff_Exchange flag to 1 in the Message Field. The final PBO level requested by SLAVE shall not differ from the MASTERS requested PBO level by more than two levels.

Add Pics.

Cl 55 SC 55.4.6.1 P124 L 29 # 179
 TAICH, DIMITRY Individual

Comment Type T Comment Status R startup

I believe that usage of the minwait_timer in the Silent stage of the Startup is redundant here is why:
 If devices resolution is Master, minwait_timer_done condition causes the MASTER to stay in Silent stage for whole minwait_timer period. This looks as compete waste of time two PHYs that successfully passed AutoNeg stage will be stuck at Silent stage and do nothing until minwait_timer is done.
 If devices resolution is Slave, minwait_timer_done_done condition will be by far overruled by other transition conditions loc_SNR_margin = OK, for example. In any case, I dont see any justification for using of minwait_timer_done condition while transitioning from Silent to PMA_Training_Init_S stage.
 As an example, in 1000BASE-T startup state machine (see 40.4.6.1) minwait_timer is used neither for MASTER nor for SLAVE when transitioning from Silent to Training stage.

SuggestedRemedy

Remove Start minwait_timer operation from the Silent stage description.

Remove minwait_timer_done condition from the Silent to PMA_Training_Init_M transitioning branch.

Remove minwait_timer_done condition from the Silent to PMA_Training_Init_S transitioning branch.

Correct associated verbal explanation on page 116. Instead of saying In MASTER mode, PHY Control transitions to the PMA_Training_Init_M state after the expiration of minwait_timer, say In MASTER mode, PHY Control transitions to the PMA_Training_Init_M state immediately upon execution Silent stage instructions.

Response Response Status C

REJECT.

No change will be made

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

CI 55 SC 55.4.5.2 P123 L 41 # 180
 TAICH, DIMITRY Individual

Comment Type E Comment Status A cleanup

minwait_timer is defined as A timer used to determine the minimum amount of time the PHY Control stays in the PCS_Test and PCS_Data states. In fact, minwait_timer is used in PMA_Training_INIT_S stage and in Silent stage.

SuggestedRemedy

Upon positive resolution on my comment regarding redundant minwait_timer usage in Silent stage, the above definition should be updated as following: A timer used to determine the minimum amount of time the PHY Control stays in the PMA_Training_Init_S, PCS_Test and PCS_Data states.

Otherwise, the correction should be A timer used to determine the minimum amount of time the PHY Control stays in the Silent, PMA_Training_Init_S, PCS_Test and PCS_Data states.

Response Response Status C

ACCEPT.

CI 55 SC 55.4.2.5.6 P113 L # 181
 TAICH, DIMITRY Individual

Comment Type T Comment Status A startup

When Slave device is operated in Loop timing mode, the status of its clock recovery mechanism has direct effect on the Master's operation. Any time the Slave's timing loop slips (which is quite expected during half-duplex to full-duplex mode transition), Master's adaptation mechanisms are going to take a hit which can be prevented if Master would have information about forthcoming high-jitter period ahead of time. There is no such a mechanism in current version of the draft.

SuggestedRemedy

Message field should be modified as following:

- Rename en_slave_tx bit to en_slave_tx/timing_lock_OK
- Table 55-4 on page 114 third column header should be changed to en_slave_tx/timing_lock_OK
- Table 55-5 on page 114 - third column header should be changed to en_slave_tx/timing_lock_OK. Associated bit should be set to 1 whenever Slave's timing mechanism is locked and no major distractions are expected. Whenever Slave's timing mechanism is not locked or severe distractions are expected (for example, as a result of the transition to the full-duplex mode) - en_slave_tx/timing_lock_OK bit should set to 0.

Response Response Status C

ACCEPT IN PRINCIPLE.

Keep table 55-4 as is and change 3rd column of table 55-5 to timing_lock_OK

CI 45 SC 45 P63 L # 182
 KASTURIA, SANJAY Individual

Comment Type T Comment Status A short reach

Add register bits to the clause 45 registers to enable configuration of the PHY to operate over specific media types called out in 55.7.

As an example, add two bits where the default value 00 indicates that the PHY must operate over any allowed media type.

01 indicates that the PHY is being configured to operate over screened cable.

10 indicates that the PHY is being configured to operate over Cat 6A cable

11 indicates that the PHY is being configured to operate over Cat 7 cable.

This configuration knowledge can be used by the PHY to reduce operating power consumption.

For instance, knowledge that it has been configured to operate over Cat 7 can be used to turn off FEXT cancellers and reduce the requirements on the LDPC decoder.

Specific proposal is in attached presentation.

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

CI 55 SC 55.5.4.4 P 133 L 20 # 183
 KASTURIA, SANJAY Individual

Comment Type T Comment Status A short reach

Qualify the alien noise test by the PHY configuration bits specified in my previous two comments.

Add a test for operation over 30m of CAT7

Add a test for operation over 30m of Cat 6A

Add a test for operation over 55m of Cat 6A

Add a test for operation over 75m of Cat 6A

See presentation for details

SuggestedRemedy

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

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

CI 00 SC 0 P L # 184
 RAO, SAILESH K Individual

Comment Type TR Comment Status R margin

It is not feasible to implement a robust receiver using the 128-DSQ line coding scheme documented in Draft D3.0, 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 noise budget is inadequate.
 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 (non-Gaussian) noise events on the order of a few millivolts (ref. rao_1_1104.pdf, slide 23).

SuggestedRemedy

Change the line code to any of the appropriate alternatives presented in rao_2_1104.pdf.

Response Response Status U

REJECT.

See response to comment #213

CI 30 SC 30.2.5 P31 L 22 # 185
 LAW, DAVID J Individual

Comment Type T Comment Status A

There are two new packages defined but one doesn't seem to have any content, the 'Basic' package is empty and there is a recommended package will four attributes in it. Since it seems all the attribute should be in the one package there is no need for the basic and recommended qualifiers.

SuggestedRemedy

Delete the '10GBASE-T Basic Package' column, rename the '10GBASE-T Recommended Package' to simply be the '10GBASE-T Operating Margin package'.

Response Response Status C

ACCEPT.

Name may have to change depending on decision on adding a link diagnostics MIB

CI 00 SC 0 P 34 L 43 # 186
 LAW, DAVID J Individual

Comment Type T Comment Status A

The registration arc should have been added as part of the preparation for Sponsor ballot.

SuggestedRemedy

Add registration arcs.

Response Response Status C

ACCEPT.

Will be put into Clause 30 by Brad Booth in draft 3.1

CI 30A SC 30A.23 P34 L 21 # 187
 LAW, DAVID J Individual

Comment Type E Comment Status A

The subclause numbering seems to have gone wrong - AD.1.24 should be 30A.23.1.

SuggestedRemedy

Correct subclause numbering.

Response Response Status C

ACCEPT.

CI 55 SC 55.4.2.5.14 P116 L 17 # 188
 TELLADO, JOSE Individual

Comment Type T Comment Status A pbo

The fixed PBO settings used during PMA_training_init_M are 14dB, 10dB and 6dB respectively. Since the minimum required PBO setting during final PBO selection is 10dB (table 55-6), there is no need to enforce more PBO during start-up than during data mode

SuggestedRemedy

Change the fixed PBO settings used during PMA_training_init_M to 10dB, 8dB and 6dB respectively. This will make start-up more efficient and more reliable without and drawbacks (i.e. not generating more alien crosstalk than data mode).

Response Response Status C

ACCEPT IN PRINCIPLE.

Eliminate the 14dB step and start at 10dB. Make appropriate changes in the rest of the text and state machines

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

Cl 30A SC 30A.23 P34 L 50 # 189
 LAW, DAVID J Individual
 Comment Type T Comment Status A
 Rather than defining a new type '10GBT' use the existing type 'Integer16' which has the same definition:
 Integer16::= INTEGER (0..2^16-1)
 SuggestedRemedy
 Change the four instances of IEEE802Dot3-MgmtAttributeModule.10GBT to read IEEE802Dot3-MgmtAttributeModuleInteger16
 Response Response Status C
 ACCEPT.

Cl 00 SC 0 P 7 L 1 # 190
 LAW, DAVID J Individual
 Comment Type E Comment Status A
 Please update to latest Special Symbols list.
 SuggestedRemedy
 See comment.
 Response Response Status C
 ACCEPT.
 Done as per latest special symbol list provided by David Law

Cl 01 SC 1.4 P12 L 51 # 191
 LAW, DAVID J Individual
 Comment Type E Comment Status A
 Typo.
 SuggestedRemedy
 Hybrid should be in bold.
 Response Response Status C
 ACCEPT.

Cl 01 SC 1.4 P12 L 15 # 192
 LAW, DAVID J Individual
 Comment Type T Comment Status A
 Based on my understanding of the current draft of 11801 Edition 2.1, it will not change the existing Classes, although it will of course include new ones. Hence when Edition 2.1 is published our reference to the 2002 edition can be removed - but our reference to the 1995 cannot.
 SuggestedRemedy
 Suggest that an editors note be added detailing this so that this doesn't become an issue during preparation for publication.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Editor's note will be added

Cl 00 SC 0 P 1 L 1 # 193
 LAW, DAVID J Individual
 Comment Type E Comment Status A
 Please make sure these version of various words are used throughout the draft. These words may or not appear in this document but are some that we attempted to use consistently throughout IEEE Std 802.3-2005.
 aggregateable
 implementor
 interlayer
 intersymbol
 multimode
 multiport
 peak-to-peak (in text)
 pk-pk (in tables and subscripts)
 Physical Layer (always capped)
 point-to-point
 remateable
 signal-to-noise ratio
 subcarrier
 subchannel
 subdomain
 single-mode
 sublayer
 writeable
 zeros
 SuggestedRemedy
 See comment.
 Response Response Status C
 ACCEPT IN PRINCIPLE.

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

Cl 00 SC 0 P 1 L 1 # 194
LAW, DAVID J Individual

Comment Type E Comment Status A

External links to references in IEEE Std 802.3-2005 can be made to operate (when clicked will open the correct section of IEEE Std 802.3-2005 and jump to the Clause/subclause). This has been used during the production of IEEE Std 802.3-2005 to provide active links between the sections.

SuggestedRemedy

Please consider using this for IEEE P802.3an. This will have two advantages:

- [1] Review of links will be much easier.
- [2] When IEEE Std 802.3an 10GBASE-T is merged into the base standard the links will not have to be set up then but will already be working.

Response Response Status C

ACCEPT IN PRINCIPLE.

Will be done in final release

Cl 44 SC 44.5 P L # 195
LAW, DAVID J Individual

Comment Type T Comment Status A

Either update existing subclause 44.5 to include 10GBASE-T or, if it is assumed this is not needed due to the publication of Edition 2.1 of Is/IEC 11801. include instructions to removed it.

SuggestedRemedy

Include instruction to either updated or remove subclause 44.5.

Response Response Status C

ACCEPT IN PRINCIPLE.

Annex F in ISO/IEC 11801 Ed. 2.0 is informative. It is unknown whether or not Ed. 2.1 will have the changes as suggested in 802.3-2005 subclause 44.5; therefore, subclause 44.5 should not be removed.

Table F.1 is based upon ISO/IEC 8802-3 standards. Guidance needed on suitable entries for this table.

Table F.2 is for the modular pin connector and 802.3an will propose changes to subclause 44.5 for suitable entries in Table F.2 of ISO/IEC 11801:2002.

Cl 00 SC 0 P L # 196
LAW, DAVID J Individual

Comment Type T Comment Status A

Just in case SCC14 don't submit a comment this time round please consider the following which was submitted against IEEE P802.3REVam:

The letter symbols for physical quantities, e.g., I for current, are always printed in italic. The letter symbols for units, e.g., A for ampere and m for meter, are always printed in upright font.

Mathematical functions and operators, e.g., sin, tan, log, are always printed in upright font. This carries through to mathematical constants, especially p and e and j. But g for the acceleration of gravity is a physical constant, not a mathematical constant.

Multiplication of quantity symbols is indicated simply by printing them next to each other, e.g., F = ma.

Multiplication of unit symbols is indicated by use of a multidot; multiplication of numbers, by use of multiplication symbol. The asterisk is never to be used in text or equations in technical writing to indicate multiplication. Computer programs are another matter, of course.

Numbers that appear in equations or with quantity symbols or unit symbols are printed in upright font. With unit symbols, a space is left; with quantity symbols, no space. For example, 12 kV for twelve kilovolts; 2I for two times a current I.

SuggestedRemedy

Examples:

Subclause 55.3.2.2.18, line 33, 'the first 1290 (3*430)' seems to be using * where it should be a multiplication symbol.

Subclause 55.5.3.3, line 28. I suspect the T for time here should be in italic.

Subclause 55.7.2.4.1, line 12. I suspect the symbol for units here, dB, should be in upright font.

Response Response Status C

ACCEPT IN PRINCIPLE.

Cl 30 SC 30.2.5 P31 L23 # 197
LAW, DAVID J Individual

Comment Type T Comment Status A

If this is to be a new object it will have to be added to the text in 30.2.1, to Figure 30-3 and an ID object attribute added. Instead suggest that these four new attributes should be a new package that is part of existing OMAU managed object class.

SuggestedRemedy

Change Table 30-6 to be a modification to Table 30-1e. These four attributes will be added to 30-1e below aldleErrorCount. The other Package/Capabilities columns will need to be shown.

Change 30.12 to be additions to the end of the oMAU managed object class 30.5.1.

Response Response Status C

ACCEPT.

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

Cl 55 SC 55.1.3.1 P77 L 24 # 198
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 DSQ is defined earlier in clause 55.
 SuggestedRemedy
 Eliminate "a constellation called DSQ128"
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.1.3.1 P77 L 57 # 199
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Choose Tomlinson-Harashima or Tomlinson Harashima throughout document
 SuggestedRemedy
 Choose Tomlinson-Harashima or Tomlinson Harashima throughout document
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.1.3.1 P77 L 24 # 200
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Choose "1D" or "1-D" notation for all document
 SuggestedRemedy
 Choose "1D" or "1-D" notation for all document
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.1.3.1 P77 L 25 # 201
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Replace "two 1D 16-PAM" with "two time-adjacent 1D PAM16". Use PAM16 instead of 16-PAM consistently
 SuggestedRemedy
 Replace "two 1D 16-PAM" with "two time-adjacent 1D PAM16". Use PAM16 instead of 16-PAM consistently
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.1.3.1 P77 L 26 # 202
 TELLADO, JOSE Individual
 Comment Type E Comment Status A punctuation
 Replace "combinations 128" with "combinations, the 128"
 SuggestedRemedy
 Replace "combinations 128" with "combinations, the 128"
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.1.3.2 P78 L 9 # 203
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Use "Near End Cross Talk" or "near end crosstalk" or "Near End Crosstalk" consistently in document
 SuggestedRemedy
 Use "Near End Cross Talk" or "near end crosstalk" or "Near End Crosstalk" consistently in document
 Response Response Status C
 ACCEPT.
 Section editors to decide

Cl 55 SC 55.4.2.5.14 P117 L 23 # 204
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Change the two use of "&" for "and"
 SuggestedRemedy
 Change the two use of "&" for "and"
 Response Response Status C
 ACCEPT.

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

CI 55 SC 55.4.2.5.14 P117 L 33 # 205
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Eliminate lines 33 and 34
 SuggestedRemedy
 Eliminate lines 33 and 34
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.2.5.14 P117 L 36 # 206
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Use "octect" instead of "byte" for consistency
 SuggestedRemedy
 Use "octect" instead of "byte" for consistency
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.3 P118 L 53 # 207
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Change "mod_subscript32" to "mod32" for consistency with "mod16" format
 SuggestedRemedy
 Change "mod_subscript32" to "mod32" for consistency with "mod16" format
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.3.1 P118 L 54 # 208
 TELLADO, JOSE Individual
 Comment Type G Comment Status A cleanup
 Replace "value between the interval" for "value in the interval"
 Replace "in the above equation" for "in equation 55-4"
 Replace "symbol response" for "impulse response"
 Replace "with 8 bits values as" for "as an 8-bit value"
 SuggestedRemedy

Replace "value between the interval" for "value in the interval"
 Replace "in the above equation" for "in equation 55-4"
 Replace "symbol response" for "impulse response"
 Replace "with 8 bits values as" for "as an 8-bit value"
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.3.1 P119 L 1 # 209
 TELLADO, JOSE Individual
 Comment Type E Comment Status A cleanup
 Replace "values of programmable" for "values of the programmable"
 Replace "symbol response" for "impulse response"

SuggestedRemedy
 Replace "values of programmable" for "values of the programmable"
 Replace "symbol response" for "impulse response"
 Response Response Status C
 ACCEPT.

CI 55 SC 55.4.3.1 P119 L 28 # 210
 TELLADO, JOSE Individual
 Comment Type E Comment Status A clarification
 Explain that the Length column is for reference only

SuggestedRemedy
 The values under the "Length" column in Table 55-6 are for reference only and are not required for computation of the minimum power backoff
 Response Response Status C
 ACCEPT.

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

Cl 55 SC 55.4.3.2 P119 L 56 # 211
 TELLADO, JOSE Individual
 Comment Type E Comment Status A clarification
 Explain that M(x) is defined in 55.4.3.2
 SuggestedRemedy
 Explain that M(x) is defined in 55.4.3.2
 Response Response Status C
 ACCEPT.

Cl 55 SC 55.5.3.4 P 131 L # 212
 MICK, C Individual
 Comment Type TR Comment Status R tx voltage
 The standard specifies the upper and lower TX PSD masks, but it it does not provide TX maximum output voltage.
 SuggestedRemedy
 Specify the absolute maximum and minimum output voltages.
 Response Response Status W
 REJECT.
 See response to comment 39

Cl 55 SC 55.1.3 P74 L # 213
 MICK, C Individual
 Comment Type TR Comment Status R margin
 The DSQ128 line-signaling is not optimum for 10GBASE-T since the resulting SNR margin is small.
 SuggestedRemedy
 Change to line signaling technique with high SNR such as PAM8.
 Response Response Status C
 REJECT.
 The task force previously reviewed the PAM8 line code for the 10GBASE-T application and decided, based on the information presented to the task force, that DSQ 128 was a superior choice. No data has been presented to reconsider the DSQ 128 line signaling that is currently in the draft.
 Also using PAM8 would drive the symbol rate higher than the qualified link segment frequency range.

Cl 55 SC 55.1.3 P74 L # 214
 MICK, C Individual
 Comment Type GR Comment Status R margin
 Several presentations suggest that DSQ128 has higher sensitivity to impulse noise compared to other proposed line signals.
 SuggestedRemedy
 Change to a more robust line signaling approach such as PAM 8.
 Response Response Status C
 REJECT.

See response to comment #213

Cl 01 SC 1.3 P12 L 11 # 215
 GROW, ROBERT M Individual
 Comment Type TR Comment Status A
 The reference needs a year or indication that it is a draft
 SuggestedRemedy
 Insert appropriate text
 Response Response Status W
 ACCEPT IN PRINCIPLE.
 Add "draft 2006" in parenthesis.

Cl 01 SC 1.4 P12 L 51 # 216
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Missing bold
 SuggestedRemedy
 Put "Hybrid:" in bold
 Response Response Status C
 ACCEPT.

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

CI 28 SC 28.2.1.1.1 P15 L 53 # 217
 GROW, ROBERT M Individual

Comment Type TR Comment Status A

What happened to the single sentence second paragraph of this subclause?

SuggestedRemedy

As appropriate, change editing instruction to refer to first paragraph; or, show second paragraph struck out.

Response Response Status W

ACCEPT IN PRINCIPLE.

The editing instructions will be changed to clearly state that only the first paragraph of 28.2.1.1.1 is being changed.

CI 00 SC 0 P L # 218
 GROW, ROBERT M Individual

Comment Type GR Comment Status A

Make sure all appropriate editorial review comments are implemented.

SuggestedRemedy

See comment

Response Response Status W

ACCEPT.

See comment #25

CI 00 SC 0 P L # 219
 GROW, ROBERT M Individual

Comment Type GR Comment Status A

Make sure base text is updated to now available IEEE Std 802.3-2005

SuggestedRemedy

See comment. Many specific instances will be in separate comments.

Response Response Status W

ACCEPT IN PRINCIPLE.

Each specific instance is dealt with in the relevant comment

CI 28 SC 28.2.1.1.2 P15 L 1 # 220
 GROW, ROBERT M Individual

Comment Type ER Comment Status A

Units need to be included in both base number and tolerance

SuggestedRemedy

16 ms +/- 8 ms

Response Response Status W

ACCEPT.

Also check other instances for calling out units in the base number and the tolerance.

CI 28 SC 28.2.3.4 P16 L 13 # 221
 GROW, ROBERT M Individual

Comment Type ER Comment Status A

802.3-2005 has changed Code Word to Codeword

SuggestedRemedy

Replace hear and search on "Code Word" replacing with "Codeword".

Response Response Status W

ACCEPT.

CI 00 SC 0 P 16 L 21 # 222
 GROW, ROBERT M Individual

Comment Type ER Comment Status A

Though this might have been an editor introduced technical change, 802.3 has changed multiple occurrences of "Next Page Able" to "Next Page able"

SuggestedRemedy

Make base text consistent with 2005.

Response Response Status W

ACCEPT.

Change every instance to "Next Page able"

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CI 28 SC 28.2.3.4.13 P18 L 8 # 223
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Editorial instruction could be more helpful.
 SuggestedRemedy
 "Change subclause 28.2.3.4.13 (renumbered from 28.2.3.11)&"
 Response Response Status C
 ACCEPT.

CI 28 SC 28.3 P19 L 29 # 224
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 802.3-2005 is "Figure 28-14 to Figure 28-17"
 Response Response Status C
 ACCEPT.
 This should automatically update, as it is a figure reference. Will make it clear that the base text is being changed.

CI 28 SC 28.3 P19 L 37 # 225
 GROW, ROBERT M Individual
 Comment Type TR Comment Status A
 What happened to the second and third paragraph and the figure that the editing instruction says is supposed to be shown below?
 SuggestedRemedy
 Either fix the editing instruction and show stuckout text or find missing text in earlier draft and add back into the next draft
 Response Response Status W
 ACCEPT IN PRINCIPLE.
 The editing instruction will be fixed to make it clear that only the first paragraph of 28.3 is being changed.
 In order to address the second part of the comment, we need to look back to working group ballot 2.0, comment 379. This comment was to change the figure to include either 16 or 48 bits for the tx and rx_link_code_word. Although present in a pre-released version of D2.1, this modified figure did not make it into the final D2.1 version.
 The modified figure will be added for draft 3.1.

CI 28 SC 28.3.1 P20 L 4 # 226
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 Codeword
 Response Response Status C
 ACCEPT.
 Code Word to be changed to Codeword.

CI 28 SC 28.3.2 P20 L 58 # 227
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 Also correct to "5 ms to 7 ms"
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See response to comment 96.

CI 28 SC 28.3.2 P21 L 1 # 228
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need units on base and tolerance
 SuggestedRemedy
 6.75 ms to 7.25 ms
 Response Response Status W
 ACCEPT.
 Check other instances and add units if missing

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CI 28 SC 28.5 P23 L3 # 229
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 See comment
 Response Response Status C
 ACCEPT.

CI 28 SC 28.5.4.3 P24 L5 # 233
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Add is not a defined instruction
 SuggestedRemedy
 Change "add" to "insert". Change also on line 24.
 Response Response Status C
 ACCEPT.

CI 28 SC 28.5.1 P23 L14 # 230
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 See comment
 Response Response Status C
 ACCEPT IN PRINCIPLE.

CI 28 SC 28.5.4.8 P24 L30 # 234
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Remove comma
 SuggestedRemedy
 Search for 1,000 and replace with 1000 as appropriate. 10/100/1,000 should work as the search string.
 Response Response Status C
 ACCEPT.

CI 28 SC 28.5.3 P23 L19 # 231
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Improve instruction
 SuggestedRemedy
 Insert rows at end to table to add &
 Response Response Status C
 ACCEPT.

Changes will be made in the following locations:
 Page 20, line 40
 Page 21, line 26
 Page 24, line 30

CI 28 SC 28.5.4.8 P24 L29 # 235
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need units on both ends of range
 SuggestedRemedy
 750 ms - 1000 ms, fix also lines 32 and 37 similarly
 Response Response Status W
 ACCEPT.

CI 28 SC 28.5.4.2 P23 L56 # 232
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Update base text
 SuggestedRemedy
 PICS will not be downloadable. Update to text of 802.3-2005
 Response Response Status W
 ACCEPT.

Fix in all three places and other places where units are implied but not spelt out.

This applies to all clauses.

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Cl 28 **SC 28.5.4.10** **P 24** **L 32** # **236**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 Bad line break
SuggestedRemedy
 force line break or change so / isn't a breaking character
Response *Response Status* **C**
 ACCEPT.

Cl 28 **SC 28.5.4.8** **P 24** **L 48** # **237**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 Inconsistent marking
SuggestedRemedy
 Inserts are not underlined. Remove underline in second cell
Response *Response Status* **C**
 ACCEPT.

Cl 28B **SC 28B.2** **P 25** **L 33** # **238**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 Inconsistent capitalization of special words
SuggestedRemedy
 Capitalize Next Page, also on line 34
Response *Response Status* **C**
 ACCEPT.

Cl 28D **SC 28D.5** **P 29** **L 39** # **239**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 Service to humanity
SuggestedRemedy
 Change NEXT to Next
Response *Response Status* **C**
 ACCEPT.

Cl 28D **SC 28D.6** **P 29** **L 40** # **240**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 Inserts aren't underlined.
SuggestedRemedy
 Remove underline to page 30 line 6.
Response *Response Status* **C**
 ACCEPT.

Underline to be removed completely from subclause 28D.6.
Cl 00 **SC 0** **P 31** **L 1** # **241**
 GROW, ROBERT M Individual
Comment Type **G** *Comment Status* **A**
 Correct order of clauses and annexes
SuggestedRemedy
 Publication order is changed clauses, changed annexes, new clauses and new annexes.
Response *Response Status* **C**
 ACCEPT.

Will identify errors in ordering and fix them.
 Move annexes 28B, 28C, 28D, 30A and 30B to follow Annex A.
Cl 44 **SC 44.1** **P 38** **L 32** # **242**
 GROW, ROBERT M Individual
Comment Type **E** *Comment Status* **A**
 This item is being updated by aq.
SuggestedRemedy
 Insert Editor's Note similar to that on page 37 line 35
Response *Response Status* **C**
 ACCEPT.

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CI 44 SC 44.1.4.1 P38 L 43 # 243
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 Clause occurs before all clause numbers
 Response Response Status C
 ACCEPT.

CI 44 SC 44.4 P40 L 13 # 247
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 This item is being updated by aq.
 SuggestedRemedy
 Insert Editor's Note similar to that on page 37 line 35
 Response Response Status C
 ACCEPT.

CI 44 SC 44.1.4.4 P39 L 1 # 244
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Table is also being modified by aq
 SuggestedRemedy
 Add Editor's Note that aq is adding row and column and that information should be preserved if aq is published before or simultaneous with an.
 Response Response Status W
 ACCEPT.
 This is for Table 44-1

CI 44 SC 44.4 P40 L 15 # 248
 GROW, ROBERT M Individual
 Comment Type E Comment Status R
 Update base text
 SuggestedRemedy
 See comment
 Response Response Status C
 REJECT.
 Suggested remedy and comment propose no change to the draft.

CI 44 SC 44.1.4.4 P39 L 30 # 245
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Text under and insert instruction isn't underlined
 SuggestedRemedy
 Remove underline.
 Response Response Status C
 ACCEPT.

CI 45 SC 45.2 P41 L 48 # 249
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Why is unchanged text included?
 SuggestedRemedy
 Delete paragraph
 Response Response Status C
 ACCEPT.

CI 44 SC 44.1.4.4 P39 L 41 # 246
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Update base text
 SuggestedRemedy
 All clause numbers are preceded by Clause
 Response Response Status C
 ACCEPT.

CI 45 SC 45.2 P42 L 9 # 250
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need editing instruction
 SuggestedRemedy
 Change m.5.15:8 row of Table 45-2 as follows:
 Response Response Status W
 ACCEPT.

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Cl 45 SC 45.2.1 P42 L 25 # 251
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 What is "(Continued)" doing in the instruction
 SuggestedRemedy
 Remove
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1 P42 L 28 # 252
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Why is unchanged text included?
 SuggestedRemedy
 Remove paragraph on line 28, row at line 34, row on page 43 line 31
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.6 P43 L 16 # 253
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Why is unchanged text included? Missing editorial instruction.
 SuggestedRemedy
 Remove sentence, insert instruction "Change Table 45-7 as follows:"
 OR change float characteristic of Table 45-7 so that it doesn't appear so early.
 Response Response Status C
 ACCEPT IN PRINCIPLE.

Cl 45 SC 45.2.1.6 P43 L 24 # 254
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Correct Editor's Note after update of base text
 SuggestedRemedy
 Remove last sentence of note and make sure base text is correct.
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.6.1 P43 L 56 # 255
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Bad instruction
 SuggestedRemedy
 Instruction shouldn't follow table. The instruction could reference first paragraph of
 45.2.1.6.1 and then delete unchanged second paragraph.
 Response Response Status C
 ACCEPT IN PRINCIPLE.

Cl 45 SC 45.2.1.7 P44 L 8 # 256
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Don't need this unchanged heading
 SuggestedRemedy
 Remove
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.7 P44 L 12 # 257
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need editing instruction
 SuggestedRemedy
 Change first paragraph of 45.2.1.7.4 as follows:
 Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.1.7.5 P44 L 27 # 258
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need editing instruction
 SuggestedRemedy
 Change the first paragraph of 45.2.1.7.5 as follows: and then remove the second
 paragraph at line 39.
 Response Response Status W
 ACCEPT.

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Cl 45 SC 45.2.1.8 P44 L 53 # 259
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 New text that isn't underlined
 SuggestedRemedy
 Underline
 Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.1.10 P45 L 40 # 262
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Remove box around editing instruction
 SuggestedRemedy
 See comment
 Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.1.10 P45 L 10 # 260
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Don't need unchanged text
 SuggestedRemedy
 Remove paragraph.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 See comment #69.

Cl 45 SC 45.2.1.59 P45 L 55 # 263
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Multiple errors in editing instruction
 SuggestedRemedy
 Inserts go through 45.2.1.75, unbox this, it is an editing instruction, update content after correction of base text to 802.3-2005
 Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.1.10 P45 L 13 # 261
 GROW, ROBERT M Individual
 Comment Type ER Comment Status A
 Need editing instruction and Editor's Note
 SuggestedRemedy
 Change Table 45-11 as follows
 Need editor's note that if P802.3ap is not published prior to P802.3an, bits 1.11.4, 1.11.3 are to be published as reserved. If P802.3aq is not published first, bit 1.11.1 is to be published as reserved.
 Response Response Status W
 ACCEPT.

Cl 45 SC 45.2.1.59.1 P46 L 15 # 264
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 Is this Table 45-48 or 49?
 SuggestedRemedy
 I think it is 45-48.
 Response Response Status C
 ACCEPT.
 Agree with Remedy.

Cl 45 SC 45.2.1.59.1 P46 L 20 # 265
 GROW, ROBERT M Individual
 Comment Type E Comment Status A
 The instructions for Reserved bits should be consistent throughout Clause 45.
 SuggestedRemedy
 Search and replace for consistency
 Response Response Status C
 ACCEPT.

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Cl 45 SC 45.2.3 P50 L 49 # 266
 GROW, ROBERT M Individual

Comment Type E Comment Status A

No changes except unmarked table renumbering in this paragraph.

SuggestedRemedy

Number doesn't agree with following table. I don't think either is right. Need instruction.
 Insert Table 45-65 as follows and renumber subsequent tables as required:

Response Response Status C

ACCEPT IN PRINCIPLE.

Table 45-53 floated incorrectly to new page below heading 45.2.3.

Will need to verify table numbering based on newly added tables in preceding sections.

Cl 45 SC 45.2.3 P51 L 1 # 267
 GROW, ROBERT M Individual

Comment Type E Comment Status A

Correct Table number.

SuggestedRemedy

I think it is 45-65 (????)

Response Response Status C

ACCEPT IN PRINCIPLE.

Cl 45 SC 45.2.3.1.2 P51 L 36 # 268
 GROW, ROBERT M Individual

Comment Type E Comment Status A

Improve instruction

SuggestedRemedy

Change first paragraph of 45.2.3.1.2 as follows:, revmove unchanged second paragraph and NOTE.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.3.2.2 P51 L 56 # 269
 GROW, ROBERT M Individual

Comment Type ER Comment Status A

Each skipped section needs an editing instruction.

SuggestedRemedy

Create editing instruction here and also at P. 52, L. 9; P. 52, L. 34;

Response Response Status W

ACCEPT.

Cl 45 SC 45.2.3.6 P52 L 10 # 270
 GROW, ROBERT M Individual

Comment Type E Comment Status A

Don't need unchanged text

SuggestedRemedy

Remove unchanged paragraph

Response Response Status C

ACCEPT.

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Cl 00 SC 0 P L # 271

MICK, C Individual

Comment Type TR Comment Status A

I am concerned that 10GBASE-T as specified may not be economically viable because PHYs will consume too much power for use in legacy switches and routers and have too much latency for data center applications. I propose adding support for short-haul lower-latency, lower power solutions that operate over distances of up to 30 meters of UTP and STP cabling. Some specific changes to accommodate this are defined below. .

SuggestedRemedy

Section Annex 28B.3
Modification to priority resolution table page 25 line 56 for low power modes:
Change the list in 28B.3 by placing 10GBASE-T low power UTP as bullet (b) and renumbering other bullets.
Change the list in 28B.3 by placing 10GBASE-T low power STP as bullet (c) and renumbering other bullets.

Section 44.3
Page 39, line 6 Add comment to Table 44-2 column Maximum (bit time) as follows:
Comment footnote #1) 1 Maximum bit time delay for 10GBASE-T is 25,600 BT. Maximum bit time delay for 10GBASE-T low power UTP or 10GBASE-T low power STP mode is 15,000 BT.

Section 45.2.7.10
Modify Table 45-124 as follows:
Change 7.32.11:3 to 7.32.9:3
Insert two new rows in Table 45-124, page 63 line 32 as indicated:
Bit(s) Name Description R/W
7.32.11 10GBASE-T low power UTP 1= Advertise PHY as 10GBASE-T low power UTP capable R/W
0=Do not advertise PHY as 10GBASE-T low power UTP capable
7.32.10 10GBASE-T low power STP 1= Advertise PHY as 10GBASE-T low power STP capable R/W
0=Do not advertise PHY as 10GBASE-T low power STP capable

Insert descriptions for the two new bits and renumber the paragraphs as follows:
Renumber subsection 45.2.7.10.5 to 45.2.7.10.7 page 64 line 22 and renumber subsection 45.2.7.10.6 to 45.2.7.10.9 page 64 line 28.
Insert new descriptions for bits 7.32.11 and 7.32.10 page 64 line 21.

45.2.7.10.5 10GBASE-T low power UTP
Bit 7.32.11 is to be used to select whether or not Auto-Negotiation will advertise the ability to operate in 10GBASE-T low power UTP PHY capability. If bit 7.32.11 is set to one the PHY will advertise 10GBASE-T low power UTP capability. If bit 7.32.11 is set to zero the PHY will not advertise 10GBASE-T low power UTP PHY capability. Additional information regarding the resolution and selection of 10GBASE-T low power UTP mode is contained in 55.6.3. 10GBASE-T low power UTP capability is defined in section 55.6.3. Only full duplex operation is supported in this mode.

45.2.7.10.6 10GBASE-T low power STP
Bit 7.32.10 is to be used to select whether or not Auto-Negotiation will advertise the ability to operate in 10GBASE-T low power STP PHY capability. If bit 7.32.10 is set to one the PHY will advertise 10GBASE-T low power STP capability. If bit 7.32.10 is set to zero the PHY will not advertise 10GBASE-T low power STP PHY capability. Additional information regarding the resolution and selection of 10GBASE-T low power STP mode is contained in 55.6.3. 10GBASE-T low power STP capability is defined in section 55.6.3. Only full duplex operation is supported in this mode.

Section 45.2.7.11
Modify Table 45-125 as follows:
Change page 65 line 17:
7.33.8:0 to 7.33.6:0
Change bit 7.33.10 to 7.33.8 in Table 45-125, page 65 line 10
Change bit 7.33.9 to 7.33.7 in Table 45-125, page 65 line 13
Insert two new rows in Table 45-125, page 65 line 10 as indicated:
Bit(s) Name Description R/W
7.33.10 Link partner 1= Link partner is able to operate as 10GBASE-T low power UTP R/O
0= Link partner is not able to operate as 10GBASE-T low power UTP
7.33.9 Link partner 1= Link partner is able to operate as 10GBASE-T low power STP R/O
0= Link partner is not able to operate as 10GBASE-T low power STP

Insert descriptions for the two new bits and renumber the paragraphs as follows:
Renumber subsection 45.2.7.11.6 to 45.2.7.11.8 page 66 line 7 and change text as follows:
45.2.7.11.8 Link partner loop timing ability (7.33.8)
When read as a one, bit 7.33.8 indicates that the Link Partner has the ability to support loop timing as specified in 55.1.3. When read as a zero, bit 7.33.8 indicates that the Link Partner lacks the ability to support loop timing.

Renumber subsection 45.2.7.11.7 to 45.2.7.11.9 page 66 line 14 and change text as follows:
45.2.7.11.9 Link partner PMA training reset request (7.33.7)
If bit 7.33.7 is set to one then the Link Partner is expecting the Local Device to reset the PMA training PRBS for every PMA training frame. If bit 7.33.7 is zero then the Link Partner expects Local Device to run PMA Training PRBS continuously through every PMA Training frame.

Insert new descriptions for bits 7.33.10 and 7.33.9 page 66 line 7 as follows:
45.2.7.11.6 Link partner 10GBASE-T low power UTP (7.33.10)
This bit will only be valid when page receive bit 7.1.6 in is set to one. When read as a one, bit 7.33.10 indicates that the Link Partner is able to operate as 10GBASE-T low power UTP. When read as a zero, bit 7.33.10 indicates that the Link Partner is not able to operate as 10GBASE-T low power UTP.

45.2.7.11.7 Link partner 10GBASE-T low power STP (7.33.9)
This bit will only be valid when page receive bit 7.1.6 in is set to one. When read as a one, bit 7.33.9 indicates that the Link Partner is able to operate as 10GBASE-T low power STP.

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When read as a zero, bit 7.33.9 indicates that the Link Partner is not able to operate as 10GBASE-T low power STP.

Section 55.6.1

Insert text page 134 line 24 as follows:

d) To negotiate that the PHY is or is not capable of supporting 10GBASE-T, 10GBASE-T low power UTP or 10GBASE-T low power STP.

Section 55.6.1.2

Modify Table 55-10 as follows:

Change page 135 line 36:

U31:U21 to U31:U23

Insert two new rows in Table 55-10 page 135 line 36 as indicated:

Bit Name Description

U21 10GBASE-T low power UTP ability

(1 = support of 10GBASE-T low power UTP and 0 = no support) Defined in 45.2.7.10.5

U22 10GBASE-T low power STP ability

(1 = support of 10GBASE-T low power STP and 0 = no support) Defined in 45.2.7.10.6

Section 55.6.3

Insert new section 55.6.3 page 138 line 44

55.6.3 Operating modes for 10GBASE-T

10GBASE-T includes provision for multiple modes of operation. 10GBASE-T mode will support all link segments shown in Table 55-12 and defined in 55.7.2. 10GBASE-T low power UTP mode will support up to 30 meters of Class EA /Augmented Category 6 or up to 30 meters of Class F of cabling. 10GBASE-T low power STP will support 30 meters of Class F cabling. In addition to reduced reach on specified channels, 10GBASE-T low power UTP and 10GBASE-T low power STP both have reduced delay requirements as stated in 44.3 and 55.11.

Section 55.7

Scale and specify the channels for the new modes including the reduced alien crosstalk limit line for Class F.

Section 55.11

Insert text immediately following the first sentence of the paragraph page 160 line 7

(section 55.11):

For an implementation of a 10GBASE-T PHY operating in 10GBASE-T low power UTP or 10GBASE-T low power STP mode the sum of the transmit and receive data delay shall not exceed 15,000 BT.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #33

Cl 28 SC 28.2.3.4 P 16 L 25 # 272

Lynskey, Eric

Comment Type E Comment Status A

I can find no PICS item for the shall in this line. Add PICS item.

SuggestedRemedy

Item - X, Feature - Extended Next Page Exchange, Subclause - 28.2.3.4, Status - ENP:M, Support - , Value/Comment - If both device and link partner are ENP able, any NP exchange uses ENP.

Response Response Status C

ACCEPT.

Cl 28 SC 28.2.3.4.13 P 18 L 15 # 273

Lynskey, Eric

Comment Type E Comment Status A

In bullet d, this shall statement is redundant with the shall statement in page 16 line 25. Remove the shall statement.

SuggestedRemedy

Change to "...then both devices only transmit..."

Response Response Status C

ACCEPT.

Cl 28 SC 28.3.2 P 21 L 40 # 274

Lynskey, Eric

Comment Type T Comment Status A

Transmit_link_burst_timer needs to be defined for extended Next Page operation. This timer measures from the last pulse of one FLP burst to the first pulse of the next FLP burst. Since we have increased the pulse size, this timer needs to be modified.

SuggestedRemedy

Add transmit_link_burst_timer for extended next page operation, with values ranging from 1.3 - 3.2ms.

Response Response Status C

ACCEPT.

Also see response to comment 79

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Cl **28C** SC **28C** P **27** L **28** #

Lynskey, Eric

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

SuggestedRemedy
Replace Messaage with Message.

Response Response Status **C**
ACCEPT.