Cl **01**   *SC* **1.4**   *P* **13**   *L* **33**   **#** **176**

Healey, Adam   Agere Systems   Editor 1

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

This is the definition of ""Differential Manchester Encoding"" and not ""DME"". The ""DME"" abbreviation is defined in 1.5.

Suggested Remedy

Delete ""DME: "".

Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **73**   *SC* **73.6**   *P* **29**   *L* **22**   **#** **149**

Lynskey, Eric   UNH-IOL   Editor 1

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

It says the RF, Ack, and NP bits function as specified in 28.2.1.2. If this is the case, there is no need to define them in 73.6.6, 73.6.7, and 73.6.8.

Suggested Remedy

Remove the sentence ""These bits shall function...""

Response   *Response Status* **O**

Cl **45**   *SC* **2**   *P* **32**   *L* **5**   **#** **110**

Spagna, Fulvio   INTEL   Editor 1

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

Since ""the (...) register mirrors the contents of the most recently received training frame"" it is not clear why we are calling this the REMOTE coefficient update register since it applies to the LOCAL transmitter.

Suggested Remedy

I propose to call this register the LOCAL coefficient update register to stress that the content of this control field relates to the LOCAL transmitter.

Response   *Response Status* **O**

Cl **45**   *SC* **2**   *P* **32**   *L* **22**   **#** **111**

Spagna, Fulvio   INTEL   Editor 1

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

Since ""the (...) register mirrors the contents of the most recently received training frame"" it is not clear why we are calling this the REMOTE coefficient update register since it applies to the LOCAL transmitter.

Suggested Remedy

Change the table header to read : 10GBASE-KR local coefficient update register.

Response   *Response Status* **O**

Cl **45**   *SC* **2.1.78**   *P* **32**   *L* **50**   **#** **45**

Szczepanek, Andre   Texas Instruments   Editor 1

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

The text says ""Coefficient update"" in a section which describes the status report register. This typo is repeated in subclause 45.2.1.80 on page 34

Suggested Remedy

Replace ""coefficient update"" with ""status report"" throughout both subclauses

Response   *Response Status* **O**

Cl **45**   *SC* **2**   *P* **33**   *L* **39**   **#** **112**

Spagna, Fulvio   INTEL   Editor 1

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

Since ""the (...) register represents the contents of the current outgoing training frame ..."" it is not clear why we are calling this the LOCAL coefficient update register since it applies to the REMOTE transmitter.

Suggested Remedy

Change register name to: 10GBASE-KR remote coefficient update register.

Response   *Response Status* **O**

Cl **45**   *SC* **2.1.79**   *P* **33**   *L* **39**   # **50**

Szczepanek, Andre   Texas Instruments   Editor 1

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

The local coefficient update/status registers in Clauses 45.2.1.79 & 45.2.1.80 provide a Read-Only view of the contents of the outgoing (local) training frame.
What is the value of these registers if they are read-only ?. If they were R/W then there would be an option of implementing the start-up protocol in software. Otherwise they are just clutter.

Suggested Remedy

Remove the clauses or make them read/write.

Response   *Response Status* **O**

Cl **45**   *SC* **2**   *P* **34**   *L* **6**   # **101**

Spagna, Fulvio   INTEL   Editor 1

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

Since ""the (...) register represents the contents of the current outgoing training frame ..."" it is not clear why we are calling this the LOCAL coefficient update register since it applies to the REMOTE transmitter.

Suggested Remedy

Change the table header to read : 10GBASE-KR remote coefficient update register.

Response   *Response Status* **O**

Cl **45**   *SC* **45.2.7.1**   *P* **39**   *L* **11**   # **171**

Ganga, Ilango   Intel   Editor 1

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

Refer to previouse Comment #14(clause 73): Table 45-119, Add Register bits ""7.1.10 Link Partner Next Page Able"" and ""7.1.11 Next Page Able"" to AN status register.

Suggested Remedy

Add following lines to table 45-119:
modify line 11 to read as: ""7.1.10 Link Partner Next Page Able"" 1 = LP Next pageable, 0 = LP is not Next pageable
modify line 10 to read as: ""7.1.11 LD Next Page Able"" 1 = LD Next pageable, 0 = LD is not Next pageable
Add corresponding subclauses to 45.2.3.2.x defining the bits.

Response   *Response Status* **O**

Cl **45**   *SC* **45.2.7.2.1**   *P* **39**   *L* **41**   # **12**

Marris, Arthur   Cadence   Editor 1

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

A number of problems here:
1) Delete the extra clause number
2) Change 7.1.6 to 7.1.9
3) Change 10GBASE-R to 10GBASE-KR
4) Delete ""the Receive Link Integrity Test function,"".
5) According to the AN arbitration state diagram in figure 73-9 the parallel detection fault cannot be set if zero of the PMA types have reported synchronisation.

Suggested Remedy

As above and review the 802.3ap spec for mentions of the ""Link Integrity Test function"" which I do not believe is part of 802.3ap.
If the state machine in 73-9 is correct then delete ""zero or"" otherwise correct the state machine in figure 73-9.

Response   *Response Status* **O**

Cl **45**   *SC* **45.2.7.3**   *P* **41**   *L* **28**   # **13**

Marris, Arthur   Cadence   Editor 1

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

The selector field is defined in Annex 28A

Suggested Remedy

Change 73A to 28A

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.2**   *P* **45**   *L* **1**   # **27**

Mellitz, Richard   Intel   Editor 1

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

Fit line not described. difference equation not described

Suggested Remedy

Add equation in mellitz_02_0605 to 69.3.3.1 $ILD(f)=sdd21(t)|\_db-LMS\_fit(f)\_db$ The insertion loss deviation, ILD(f) is defined to be the difference between the insertion loss in dB and the least mean   squares line fit defined in dB in 69.3.3.1 over the frequency range f1 to f2. The insertion loss deviation, ILD(f) is   recommended to be constrained within the limits defined by the equations

Response   *Response Status* **O**

Cl **69**   *SC* **69.1.1**   *P* **47**   *L* **18**   # **1**

Marris, Arthur   Cadence   Editor 1

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

> Backplane utonegotiation is defined in Clause 73 not Clause 28, so change ""modifications to the Clause 28"" to ""an""

Suggested Remedy

> As above

Response   *Response Status*   **O**

Cl **69**   *SC* **69.1.1**   *P* **47**   *L* **18**   # **138**

Lynskey, Eric   UNH-IOL   Editor 1

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

> I think the group is doing more than modifying Clause 28; it's creating a whole new clause and redefining everything from scratch. Also, the reader doesn't have to go to Clause 28 to implement the new auto-negotiation function.

Suggested Remedy

> Change sentence to read ""Backplane Ethernet also specifies an auto-negotiation function to enable...""

Response   *Response Status*   **O**

Cl **69**   *SC* **69.1.2**   *P* **47**   *L* **34**   # **14**

Marris, Arthur   Cadence   Editor 1

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

> ""up to at least"" does not make sense

Suggested Remedy

> Change ""up to at least"" to ""of at least""

Response   *Response Status*   **O**

Cl **69**   *SC* **69.2.2**   *P* **49**   *L* **10**   # **139**

Lynskey, Eric   UNH-IOL   Editor 1

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

> A device supporting 1000BASE-KX also needs to support certain Clause 22 management registers.

Suggested Remedy

> Change text to add reference to Clause 22.

Response   *Response Status*   **O**

Cl **69**   *SC* **69.2.3**   *P* **49**   *L* **17**   # **140**

Lynskey, Eric   UNH-IOL   Editor 1

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

> Should add text explaining modifications in Clause 70.

Suggested Remedy

> Change text to ""This system employs the 1000BASE-X PCS and PMA defined in Clause 36 with the exceptions stated in Clause 70.""

Response   *Response Status*   **O**

Cl **69**   *SC* **69.2.3**   *P* **49**   *L* **46**   # **120**

Lynskey, Eric   UNH-IOL   Editor 1

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

> In Table 69-1, it should be noted that the 1000BASE-KX PCS and PMA must also be implemented from Clause 70.

Suggested Remedy

> Add PCS/PMA to the table cell for Clause 70.

Response   *Response Status*   **O**

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Page, Line   Page 3 of 31

RESPONSE STATUS: O/open   W/written C/closed   U/unsatisfied Z/withdrawn   Editor: 1/open 2/waiting 3/No Edit 4/done   *Cl* **69**   *SC* **69.2.3**

Cl **69**   *SC* **69.2.4**   *P* **50**   *L* **1**   # **121**
Lynskey, Eric   UNH-IOL   Editor 1

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

Throughout much of 802.3, Auto-Negotiation is spelled with a capital A and N. On lines 3 and 4 of this page, it is spelled both Auto-Neg and auto-neg.

Suggested Remedy

Use the form of ""Auto-Negotiation"" throughout 802.3ap or use some other form that is consistent withing 802.3ap.

Response   *Response Status* **O**

Cl **69**   *SC* **69.2.4**   *P* **50**   *L* **4**   # **2**
Marris, Arthur   Cadence   Editor 1

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

Suggest renaming ""parallel detect"" to ""parallel detection"" for consistancy

Suggested Remedy

As above and correct heading for 73.7.4.1

Response   *Response Status* **O**

Cl **69**   *SC* **2**   *P* **50**   *L* **4**   # **106**
Spagna, Fulvio   INTEL   Editor 1

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

Is parallel detect functionality explained anywhere?

Suggested Remedy

Response   *Response Status* **O**

Cl **69**   *SC* **69.2.4**   *P* **50**   *L* **17**   # **122**
Lynskey, Eric   UNH-IOL   Editor 1

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

Should be Clause 73.

Suggested Remedy

Add ""Clause"" in front of 73.

Response   *Response Status* **O**

Cl **69**   *SC* **3**   *P* **50**   *L* **41**   # **107**
Spagna, Fulvio   INTEL   Editor 1

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

Does this exclude the possibility of on-chip AC coupling? Does it contraddict text in clauses 70, 71 and 72 stating that there may be various methods for AC-coupling implementation ?

Suggested Remedy

Add figure showing interconnect reference model for a case where ac coupling is implemented on-chip (?)

Response   *Response Status* **O**

Cl **69**   *SC* **eq.69-1**   *P* **51**   *L* **29**   # **23**
Mellitz, Richard   Intel   Editor 1

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

Replace eq 69.1
Have one equation specify limit. The problem is Amin(f) is not specified at this point.

Suggested Remedy

$IL(f) < ILmin(f) = $ $Amin(f) - 0.9e-9*f - 1.1$
  $f1 < f < f2$
           $Amin(f) - 0.9e-9*f2 - 1.1 - 10*(f-f2)$
$f2 < f < fmax$

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3**   *P* **51**   *L* **34**   # **24**
Mellitz, Richard   Intel   Editor 1

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

Replace text so new equation works

Suggested Remedy

Where the values of f2 Table 69û2. Amin(f) is defined in eq. ??. The insertion loss limit is illustrated in Figure 69-2.
In addition, it is recommended that the insertion loss also satisfy the attenuation limit defined in 69.3.3.?? And the insertion loss deviation limit defined 69.3.3.??.

Response   *Response Status* **O**

Cl **69**   *SC* **3.3**   *P* **51**   *L* **38**   # **163**
D'Ambrosia, John   Tyco Electronics   Editor 1

Comment Type **E**   *Comment Status* **X**
Statement - ""It is recommended that the .... defined 693.3.2"" is redundant since these items are part of the overall informative model as specified in 69.3.1.1

Suggested Remedy
Delete statement in 69.3.3 at Line 38.

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3**   *P* **52**   *L* **1**   # **25**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
Figure 69-3 Curve should be representive of KX,KX4,and KR

Suggested Remedy
Use curves in mellitz_02_0605.

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.1**   *P* **52**   *L* **30**   # **22**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
Need to have Amin(f) defined before IL limits because it's dependant.

Suggested Remedy
Move 69.3.3.1 as the first part of 69.3.3

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.2**   *P* **53**   *L* **1**   # **28**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
Change eq 69.3

Suggested Remedy
ILDf(f)>= ILD_min(f)=1.0e-9*f+1.5
ILDf(f)<= ILD_max(f)=(0.9e-9*f+2.1)

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.2**   *P* **53**   *L* **11**   # **30**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
delta are gone

Suggested Remedy
where the values of f1, f2 are given in Table 69-2. The insertion loss limit deviation is illustrated in Figure 69-4

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.2**   *P* **53**   *L* **15**   # **26**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
Curve should be representive of equations

Suggested Remedy
Use curves in mellitz_02_0605.

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.3.2**   *P* **53**   *L* **15**   # **29**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
Make figure 69.4 representive of equations

Suggested Remedy
as in mellitz_02_0605

Response   *Response Status* **O**

Cl **69**   *SC* **69.3.2**   *P* **54**   *L* **6**   # **31**
Mellitz, Richard   Intel   Editor 1

Comment Type **T**   *Comment Status* **X**
make Table 69-2 more representative

Suggested Remedy
See mellitz_02_0605

Response   *Response Status* **O**

Cl **69**	*SC* **3.4.1**	*P* **54**	*L* **38**	# **164**

D'Ambrosia, John   Tyco Electronics   Editor 1

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

Crosstalk due to single aggressor is fixed to an equation, which makes it independent of system SDD21.

Suggested Remedy

Propose changing differential crosstlk - single aggressor from an equation based specification as it currently is to an ICR - single aggressor, similar to Equation 69.9

Response   *Response Status* **O**

Cl **69**	*SC* **3.4.2.3**	*P* **56**	*L* **8**	# **162**

D'Ambrosia, John   Tyco Electronics   Editor 1

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

Line 8, Equation 69-8, and Figure 69-6 is redundant from 69.3.4.1

Suggested Remedy

delete, and renumber equations and figures afterwards

Response   *Response Status* **O**

Cl **69**	*SC* **3.5**	*P* **57**	*L* **3**	# **165**

D'Ambrosia, John   Tyco Electronics   Editor 1

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

Equation 69-10, Figure 69.7 need to be updated

Suggested Remedy

See presentation by D'Ambrosia at interim.

Response   *Response Status* **O**

Cl **69**	*SC* **69.5**	*P* **58**	*L* **23**	# **123**

Lynskey, Eric   UNH-IOL   Editor 1

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

No state diagrams exist in this clause.

Suggested Remedy

Delete subclause 69.5.

Response   *Response Status* **O**

Cl **69**	*SC* **69.6**	*P* **58**	*L* **30**	# **141**

Lynskey, Eric   UNH-IOL   Editor 1

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

PICS are missing.

Suggested Remedy

Add PICS or remove shall statements and mandatory requirements from this introductory clause.

Response   *Response Status* **O**

Cl **69**	*SC* **69.6**	*P* **58**	*L* **33**	# **3**

Marris, Arthur   Cadence   Editor 1

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

Change 72 to 73. Clause 73 has a PICS also.

Suggested Remedy

As above.

Response   *Response Status* **O**

Cl **70**	*SC* **70**	*P* **59**	*L* **3**	# **32**

Healey, Adam   Agere Systems   Editor 1

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

Editor's note is no longer relevant.

Suggested Remedy

Delete editor's note.

Response   *Response Status* **O**

Cl **69**	*SC* **99**	*P* **59**	*L* **11**	# **96**

Moore, Charles   Agilent Technologies   Editor 1

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

Since we have approved normative Interference Tolerance test for all PMDs we need a common test annex.

Suggested Remedy

Add text provided a separate document as annex 69A.
Delete annex 72A which is now redundant

Response   *Response Status* **O**

Cl **70**	*SC* **70.1**	*P* **59**	*L* **24**	# **124**

Lynskey, Eric   UNH-IOL   Editor 1

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

Spelling in title of Table 70-1.

Suggested Remedy

Change to 1000BASE-KX PMD.

Response   *Response Status* **O**

Cl **70**	*SC* **70.2.1**	*P* **59**	*L* **43**	# **21**

Marris, Arthur   Cadence   Editor 1

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

The synchronization process is the same as Clause 36. It is confusing to imply that it is not.
Delete the entire contents of 70.2.1 and 70.2.1.1 and delete figure 70-1.
Add following text: 70.2.1 Synchronization
The PCS shall implement the Synchronization process as depicted in Figure 36-9 except that
the state variable sync_status is renamed sync_status_KX.
sync_status_KX is used by the parallel detection function. The condition sync_status_KX=FAIL
does not restart auto-negotiation.

Suggested Remedy

As above.

Response   *Response Status* **O**

Cl **70**	*SC* **70.2.1.1**	*P* **60**	*L* **3**	# **125**

Lynskey, Eric   UNH-IOL   Editor 1

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

Typo

Suggested Remedy

Change 10000BASE-KX to 1000BASE-KX.

Response   *Response Status* **O**

Cl **70**	*SC* **70.2.1**	*P* **61**	*L* **1**	# **142**

Lynskey, Eric   UNH-IOL   Editor 1

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

In Figure 70-1, it appears that the only difference between this clause and clause 36 is the
replacement of the sync_status variable with the sync_status_KX variable. The sync_status
variable is used in other places within Clause 36, including Figure 36-7a and in a number of
places in the text. If the intent is to fully replace this variable, then it should be replaced in every
instance in Clause 70.

Suggested Remedy

In 70.2.1.1 change the first sentence to ""The following state variable is defined for the
1000BASE-KX and is meant to replace the sync_status variable found in Clause 36:""
Also, this should allow you to delete FIgure 70-1.

Response   *Response Status* **O**

Cl **70**	*SC* **6**	*P* **62**	*L* **17**	# **108**

Spagna, Fulvio   INTEL   Editor 1

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

CX instead of KX

Suggested Remedy

Change "1000BASE-CX" to "1000BASE-KX"

Response   *Response Status* **O**

Cl **70**	*SC* **70.6.1**	*P* **62**	*L* **23**	# **35**

Healey, Adam   Agere Systems   Editor 1

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

Delete editor's note. Add link block diagram figure.

Suggested Remedy

I will supply the figure.

Response   *Response Status* **O**

Cl **70** *SC* **70.6.2** *P* **62** *L* **35** # **58**

Healey, Adam Agere Systems Editor 1

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

Correct notation to show that this is a single-lane PHY.

Suggested Remedy

Change text: ""A positive output voltage of SLn<p> minus SLn<n> (differential voltage) shall correspond to tx_bit = ONE.""
to: ""A positive output voltage of SL<p> minus SL<n> (differential voltage) shall correspond to tx_bit = ONE.""

Response *Response Status* **O**

Cl **70** *SC* **70.6.3** *P* **62** *L* **41** # **59**

Healey, Adam Agere Systems Editor 1

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

Correct notation in definition of rx_bit.

Suggested Remedy

Change text: ""A positive output voltage of RLn<p> minus RLn<n> (differential voltage) shall correspond to rx_bit = ONE.""
to: ""A positive output voltage of DL<p> minus DL<n> (differential voltage) shall correspond to rx_bit = ONE.""

Response *Response Status* **O**

Cl **70** *SC* **70.6.4** *P* **62** *L* **54** # **126**

Lynskey, Eric UNH-IOL Editor 1

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

Should be 1000BASE-KX.

Suggested Remedy

Change to 1000BASE-KX, also in Table 70-4.

Response *Response Status* **O**

Cl **70** *SC* **70.6.4** *P* **63** *L* **15** # **36**

Healey, Adam Agere Systems Editor 1

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

It is more appropriate to reference the high frequency pattern of 36A.1.

Suggested Remedy

Change reference from ""48A.1"" to ""36A.1"".

Response *Response Status* **O**

Cl **70** *SC* **70.6.4** *P* **63** *L* **15** # **127**

Lynskey, Eric UNH-IOL Editor 1

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

Change reference to Annex 36A.

Suggested Remedy

Change 48A.1 to Annex 36A.1.

Response *Response Status* **O**

Cl **70** *SC* **70.6.8** *P* **64** *L* **8** # **33**

Healey, Adam Agere Systems Editor 1

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

Rephrase to eliminate references to ""lane"". This is not a multi-lane PHY.

Suggested Remedy

Change text to: ""If the MDIO is implemented, and the PMD has detected a local fault on the transmitter, the PMD shall set the PMD_transmit_fault variable to ONE, otherwise the PMD shall set PMD_transmit_fault to ZERO.""

Response *Response Status* **O**

Cl **70**   *SC* **70.6.9**   *P* **64**   *L* **13**   # **34**

Healey, Adam   Agere Systems   Editor 1

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

Rephrase to remove references to ""lane"". This is a single-lane PHY.

Suggested Remedy

Change text to:
""If the MDIO is implemented, and the PMD has detected a local fault on the receiver, the PMD
shall set the PMD_receive_fault variable to ONE, otherwise the PMD shall set
PMD_receive_fault to ZERO.""

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.1.5**   *P* **64**   *L* **25**   # **62**

Healey, Adam   Agere Systems   Editor 1

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

In the interest of controlling crosstalk, it would seem prudent to add a transition time
requirement to the transmitter specifications.

Suggested Remedy

Suggest same range, as a percentage of 1 UI, used by 10GBASE-KX4. This would
correspond to a recommended range of 150 to 320 ps.
Add characteristic after ""Differential output return loss"" with subclause reference to 70.7.1.6
and value 150-320 ps.
Change the subclause reference for Output Jitter from 70.7.1.6 to 70.7.1.7
Add a new section after 70.7.1.6 titled ""Transition Time (1000BASE-KX)"" and add the
following text: ""The rising edge transition time is recommended to be between 150 ps and 320
ps as measured at the 20% and 80% levels of the peak-to-peak differential value of the
waveform using the high frequency test pattern of 36A.1. The falling edge transition time is
recommended to be between 150 ps and 320 ps as measured at the 80% and 20% levels of the
peak-to-peak differential value of the waveform using the high frequency test pattern of 36A.1.""
Relabel section ""70.7.1.6 Transmit Jitter for 1000BASE-KX"" to ""70.7.1.7 Transmit Jitter for
1000BASE-KX""

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.1**   *P* **64**   *L* **29**   # **180**

Healey, Adam   Agere Systems   Editor 1

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

No subclause reference for ""signaling speed"". Add one. Also, since 1000BASE-KX is a
single-lane PHY, the ""per-lane"" clarification is not appropriate.

Suggested Remedy

Change name of characteristic from ""Signaling speed, per lane"" to ""Signaling speed"".
Create subclause reference 70.7.1.3 for signaling speed, and renumber other references
accordingly.
Insert new subclause 70.7.1.3 with the title ""Signaling speed"". Add the following text: ""The
1000BASE-KX signaling speed shall be 1.25 GBd +-100 ppm.""
Renumber subsequent subclauses accordingly.

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.1**   *P* **64**   *L* **34**   # **37**

Healey, Adam   Agere Systems   Editor 1

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

Reference to equations 70-1 and 70-2 (and, actually, the equations themselves) do not appear
to be necessary. 70.7.1.5 states that return loss is defined for frequencies from 50 to 625
MHz, which makes sense of 1000BASE-KR. However, equations 70-1 and 70-2 then go on to
define the return loss from 100 MHz to 2 GHz. Clearly, this is an issue created by cutting and
pasting 10GBASE-CX4 equations into this clause.
Given the frequency range of 50 to 625 MHz, it appears that a statement that the return loss
shall be greater than or equal to 10 dB appears to be all that is necessary.

Suggested Remedy

To fix this issue throughout clause 70, the following changes are required:
Change ""Differential output return loss minimum"" in Table 70-5 to ""10"".
Change ""Differential output return loss minimum"" to ""Differential input return loss minimum""
and change the value to ""10"".
Change 70.7.1.5 to: ""The transmitter differential output return loss shall be greater than or
equal to 10 dB over a frequency range of 50 MHz to 625 MHz. This impedance requirement
applies to all valid input levels. The reference impedance for differential return loss
measurements is 100 Ohms.""
Change 70.7.2.6 to: ""The receiver differential input return loss shall be greater than or equal to
10 dB over a frequency range of 50 MHz to 625 MHz. The reference impedance for differential
return loss measurements is 100 Ohms.""
Delete equations 70-1 and 70-2. Delete Figure 70-5.

Response   *Response Status*   **O**

Cl **71**　　*SC* **6.2**　　　　*P* **65**　　*L* **32**　　# **98**
Moore, Charles　　　　　Agilent Technologies　　Editor 1

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

We have approved a normative Interference tolerance test for KX4 we need to add it to specification document.

Suggested Remedy

add new sub clause to 71.6.2 stating:
Compliant Receiver shall pass Interference tolerance test as defined in annex 69A with
EITbase　= 100mV p-p
f1　　= 0.5GHz
f2　　= 3.125GHz
minISIloss = 11dB

Response　　　　　*Response Status*　**O**

Cl **70**　　*SC* **70.7.1.3**　　　*P* **65**　　*L* **37**　　# **38**
Healey, Adam　　　　　Agere Systems　　　Editor 1

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

Numerous problems resulting from blind cut and paste of 10GBASE-CX4 text.
1. This is a single-lane PHY, so what does it mean to have ""all transmitters active"" as a test condition?
2. There is a statement that the measurement is taken at TP1, but also that adequate transmit equalization must be applied to satisfy the eye diagram. I have assumed that 1000BASE-KX did not require transmit emphasis, especially to supply a compliant waveform at TP1.
3. Test pattern described in 48A.2 is for a 4-lane 10-Gigabit PHY. This is a 1-Gigabit serial PHY.
4. There are cross-referencing issues and redundant sentences.

Suggested Remedy

Change to:
""The transmitter differential output signal is defined at TP1, as shown in Figure 70-2. The transmitter output waveform shall fall within the template shown in Figure 70-3 for the test pattern specified in 36A.5. Voltage and time coordinates for inflection points on Figure 70-3 are given in Table 70-6.""

Response　　　　　*Response Status*　**O**

Cl **70**　　*SC* **70.7.1.3**　　　*P* **65**　　*L* **39**　　# **143**
Lynskey, Eric　　　　　UNH-IOL　　　　Editor 1

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

For 1000BASE-KX, there is only a single transmitter defined.

Suggested Remedy

Change text to ""The transmitter shall provide...shown in Figure 70-3 for the test pattern specified in 36A.2.""
Also, for the last sentence in this paragraph change to ""The signals at TP1 shall meet...shown in Figure 70-2.""

Response　　　　　*Response Status*　**O**

Cl **70**　　*SC* **70.7.1.3**　　　*P* **65**　　*L* **39**　　# **128**
Lynskey, Eric　　　　　UNH-IOL　　　　Editor 1

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

Change reference to 36A.2.

Suggested Remedy

See comment.

Response　　　　　*Response Status*　**O**

Cl **70**　　　*SC* **70.7.1.4**　　　　*P* **66**　　　*L* **32**　　# **39**

Healey, Adam　　　　　　　　Agere Systems　　　　Editor 1

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

SLn<p> and SLn<n> imply a multi-lane PHY (lane ""n"") and these signals are not shown on the transmit test fixture in Figure 70-2. In addition, it is ""signal ground"" and not backplane ground which is shown as the reference in Figure 70-2.
Make these requirements consistent with a single lane PHY and the test fixture shown in Figure 70-2.
Also, shouldn't differential output voltage be mentioned somewhere in this section?

Suggested Remedy

Change to text of this section to the following:
""While transmitting the test pattern specified in 36A.2, the transmitter differential peak-peak output voltage shall be between 800 mV and 1600 mV. See Figure 70-4 for an illustration of the definition of differential peak-to-peak output voltage. DC-referenced logic levels are not defined since the receiver is AC-coupled. The common mode voltage of SL<p> and SL<n> shall be between -0.4 V and 1.2 V with respect to signal ground as measured at Vcom in Figure 70-2.""
Change Figure 70-4 to show the correct equation: SL<p>-SL<n>
Change NOTE below Figure 70-4 to: ""NOTE- SL<p> and SL<n> are the positive and negative sides of the differential signal pair respectively.""
Change Figure 70-2 so correctly show the locations of SL<p> and SL<n>.

Response　　　　　　*Response Status* **O**

Cl **70**　　　*SC* **70.714**　　　　*P* **66**　　　*L* **45**　　# **129**

Lynskey, Eric　　　　　　　　UNH-IOL　　　　Editor 1

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

There is only a single lane in 1000BASE-KX.

Suggested Remedy

Remove ""for Lane n.""

Response　　　　　　*Response Status* **O**

Cl **70**　　　*SC* **70.7.1.6**　　　　*P* **67**　　　*L* **32**　　# **63**

Healey, Adam　　　　　　　　Agere Systems　　　　Editor 1

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

Redundant reference.

Suggested Remedy

Change text: ""The transmitter shall satisfy the jitter requirements of 70.7.1.7 with a maximum total jitter of 0.25 UI peak-to-peak and a maximum deterministic component of 0.10 UI peak-to-peak.""
to: ""The transmitter shall have a maximum total jitter of 0.25 UI peak-to-peak and a maximum deterministic component of 0.10 UI peak-to-peak.""

Response　　　　　　*Response Status* **O**

Cl **70**　　　*SC* **70.7.1.7**　　　　*P* **67**　　　*L* **40**　　# **42**

Healey, Adam　　　　　　　　Agere Systems　　　　Editor 1

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

High-pass cut-off for 1000BASE-KR output jitter is provisionally set to 1.875 MHz. However, (1.25 GHz)/1667 works out to 750 kHz.

Suggested Remedy

Change cut-off frequency to 750kHz or rationalize why 1000BASE-KX will deviate from the f_baud/1667 rule-of-thumb.

Response　　　　　　*Response Status* **O**

Cl **70**　　　*SC* **70.7.1.7**　　　　*P* **67**　　　*L* **41**　　# **40**

Healey, Adam　　　　　　　　Agere Systems　　　　Editor 1

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

Reference to Annex 48A.5 test pattern may not be appropriate since it was crafted for a 4-lane PHY. Unfortunately, a single-lane CJTPAT is not defined in Annex 36A. Suggest that we may want to use the long contiuous random pattern (36A.5) instead.

Suggested Remedy

Change reference from 48A.5 to 36A.5. Alternately, we could define a single-lane version of CJTPAT for 802.3 and put it in an Annex 70A. We could also continue to use the 48A.5 pattern, but I want to make this a concious decision rather than a copy-paste artifact.

Response　　　　　　*Response Status* **O**

Cl **70**   *SC* **70.7.1.7**   *P* **67**   *L* **41**   # **137**
Lynskey, Eric   UNH-IOL   Editor   1

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

The CJPAT sequence was originally designed to be striped across 4 lanes. Since 1000BASE-KX only uses a single lane, although the overall hex pattern will be the same, the actual 10-bit pattern will be different. Specifically, with respect to the phase jump areas of the pattern, instead of having F4 EB F4 EB F4 EB F4 AB (as you would have on each lane in CJPAT), you will end up with F4 F4 F4 F4 EB EB EB EB F4 F4 F4 F4 EB EB EB EB..., and due to running disparity, the specific bit pattern will be different than in CJPAT.
Also, Annex 48A.5 talks about Clause 48 specific delimiters and idle, and states that the pattern is defined as observed at the XGMII. 1000BASE-KX must follow the Clause 36 PCS and must implement a GMII or equivalent interface.

Suggested Remedy

Option A: Restructure the pattern such that it is the equivalent of a CJPAT sequence on a single lane only.
Option B: Reference the Jitter pattern defined by EFM in Clause 59.7.1.
Option C: Define a new jitter frame.
Option D: Keep the existing frame.
Option E: Reference the pattern specified in 36A.

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.2**   *P* **68**   *L* **3**   # **144**
Lynskey, Eric   UNH-IOL   Editor   1

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

In Table 70-7, all values are covered by a shall statement. There seem to be duplicate shalls in the subsequent subclauses that reiterate what is already in the table.

Suggested Remedy

Either remove the shall from the table or from the following subclauses 70.7.2.1 - 70.7.2.7.

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.2**   *P* **68**   *L* **3**   # **64**
Healey, Adam   Agere Systems   Editor   1

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

Redundant ""shalls"". Each requirement has a corresponding ""shall"" so this ""global shall"" seems to have no purpose.

Suggested Remedy

Change text to: ""Receiver characteristics are summarized in Table 70-7 and detailed in the following subclauses.""

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.2**   *P* **68**   *L* **13**   # **57**
Healey, Adam   Agere Systems   Editor   1

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

For consistency with other clauses, the ""Signaling speed"" parameters should be accompanied by an explanatory subclause. Furthermore, since 1000BASE-KX is a single-lane PHY, the ""per lane"" clarification is not appropriate.

Suggested Remedy

Change parameters ""Signaling speed, per lane"" to ""Signaling speed"".
Add subclause reference for ""Signaling speed""; this reference will be 70.7.2.2.
Renumber following subclause references accordingly.
Add subclause 70.7.2.2 titled ""Signaling speed range (1000BASE-KX)"" and add the following text: ""A 1000BASE-KX receiver shall comply with the requirements of Table 70-7 for any signaling speed in the range 1.25 GBd +/- 100 ppm. The corresponding unit interval is nominally 800 ps.""
Renumber following subclauses appropriately.

Response   *Response Status*   **O**

Cl **70**   *SC* **70.7.2.1**   *P* **68**   *L* **26**   # **65**
Healey, Adam   Agere Systems   Editor   1

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

Per motion #8 from the May interim meeting, the interference tolerance methodology will be the basis for receiver compliance. This supercedes subclause 70.7.2.1 and 70.7.2.4.

Suggested Remedy

Re-word subclause 70.7.2.1 to refer to Annex 72A (or the place where this annex eventually ends up) and list 1000BASE-KX specific parameters and requirements related to this methodology. These parameters and requirements are expected to be decided at the June interim meeting.
Delete subclause 70.7.2.4.

Response   *Response Status*   **O**

Cl **70**   *SC* **7.2**   *P* **69**   *L* **31**   # **97**

Moore, Charles   Agilent Technologies   Editor 1

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

We have approved a normative Interference tolerance test for KX we need to add it to specification document.

Suggested Remedy

add new sub clause to 70.7.2 stating:
    Compliant Receiver shall pass Interference tolerance test as defined in annex 69A with
EITbase   = 100mV p-p
    f1   = 0.1GHz
    f2   = 1.875GHz
    minISIloss = 9dB

Response   *Response Status* **O**

Cl **70**   *SC* **70.7.2.7**   *P* **69**   *L* **41**   # **41**

Healey, Adam   Agere Systems   Editor 1

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

The heading says that this is a common-mode return loss section. However, all this section talks about is differential return loss.

Suggested Remedy

Change text to: ""The receiver common-mode return loss shall be greater than or equal to 6 dB over a frequency range of 50 MHz to 625 MHz. The reference impedance for common-mode return loss measurements is 25 Ohms.""

Response   *Response Status* **O**

Cl **70**   *SC* **70.8**   *P* **69**   *L* **47**   # **60**

Healey, Adam   Agere Systems   Editor 1

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

Missing space.

Suggested Remedy

Change text: ""characteristics for1000BASE-KX""
to: ""characteristics for 1000BASE-KX""

Response   *Response Status* **O**

Cl **70**   *SC* **70.9**   *P* **70**   *L* **1**   # **66**

Healey, Adam   Agere Systems   Editor 1

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

Measurement requirements for 1000BASE-KX are adequately handled in the preceding subclauses.

Suggested Remedy

Delete this section and corresponding editor's note.

Response   *Response Status* **O**

Cl **70**   *SC* **70.10**   *P* **70**   *L* **14**   # **67**

Healey, Adam   Agere Systems   Editor 1

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

Environmental specifications are required to complete this clause. Add specifications per suggested remedy and delete corresponding editor's note.
BACKGROUND: XAUI (Clause 47) and 10GBASE-CX4 (Clause 54) currently point back to subclause 14.7 (10BASE-T).
Subclause 14.7 addresses safety, electromagnetic emission, and temperature and humidity in the context of a twisted pair link segment. Therefore, some aspects, such as wiring faults which cause devices to be connected to telephony equipment/voltages are clearly not applicable. Furthermore, the reader must imply that references to a ""twisted pair link segment"" need to be translated to   chip-chip PCB interconnect in the context of XAUI, or to the sheilded, balanced cable assembly for 10GBASE-CX4. However, if these assumptions were acceptable for these other projects, then a similar approach seems to be a reasonable starting point for Backplane Ethernet.

Suggested Remedy

Add the following text to subclause 70.10: ""All equipment subject to this clause shall conform to the applicable requirements of 14.7.""
Delete the editor's note.
This also applied to subclause 71.9 and an additional subclause that needs to be created in clause 72.

Response   *Response Status* **O**

Cl **71**   *SC* **71**   *P* **74**   *L* **3**   # **85**

Healey, Adam   Agere Systems   Editor 1

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

Editor's note is no longer relevant.

Suggested Remedy

Delete editor's note.

Response   *Response Status* **O**

Cl **71**   *SC* **3**   *P* **75**   *L* **10**   # **102**

Spagna, Fulvio   INTEL   Editor 1

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

Replace ""BT"" with ""bit times"" for consistency with clause 70.

Suggested Remedy

Response   *Response Status* **O**

Cl **71**   *SC* **71.5.1**   *P* **76**   *L* **6**   # **89**

Healey, Adam   Agere Systems   Editor 1

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

Need link block diagram.

Suggested Remedy

I wil supply the block diagram. Delete editor's note.

Response   *Response Status* **O**

Cl **71**   *SC* **71.5.7**   *P* **78**   *L* **1**   # **86**

Healey, Adam   Agere Systems   Editor 1

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

This note does not appear to use a font consistent with other notes.

Suggested Remedy

Correct font.

Response   *Response Status* **O**

Cl **71**   *SC* **71.6.1**   *P* **79**   *L* **13**   # **181**

Healey, Adam   Agere Systems   Editor 1

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

No subclause reference for ""signaling speed"" or ""unit interval"". Add one.

Suggested Remedy

Create subclause reference 71.7.1.3 for signaling speed, and renumber other references accordingly.
Insert new subclause 71.7.1.3 with the title ""Signaling speed"". Add the following text: ""The 10GBASE-KX4 signaling speed shall be 3.125 GBd +-100 ppm. The corresponding unit interval is nominally 320 ps.""
Renumber subsequent subclauses accordingly.

Response   *Response Status* **O**

Cl **71**   *SC* **71.6.1**   *P* **79**   *L* **29**   # **68**

Healey, Adam   Agere Systems   Editor 1

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

Note 1 states that ""Deterministic jitter is already incorporated into the differential output template."" I do not understand why this statement is necessary or useful.

Suggested Remedy

Delete note.

Response   *Response Status* **O**

Cl **71**   *SC* **71.6.1.1**   *P* **80**   *L* **14**   # **87**

Healey, Adam   Agere Systems   Editor 1

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

For clarity, label signals SLn<p> and SLn<n> on Figure 71-1.

Suggested Remedy

Label signals accordingly.

Response   *Response Status* **O**

TYPE: TR/technical required T/technical E/editorial   COMMENT STATUS: D/dispatched A/accepted R/rejected   SORT ORDER: Page, Line   Page 14 of 31

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Editor: 1/open 2/waiting 3/No Edit 4/done   *Cl* **71**   *SC* **71.6.1.1**

Cl **71**   *SC* **71.6.3**   *P* **80**   *L* **49**   **#** **90**

Healey, Adam   Agere Systems   Editor 1

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

There is no ""backplane"" ground in Figure 71-1. Only signal ground is referenced. Change text to be consistent with the figure.

Suggested Remedy

Change ""backplane ground"" to ""signal ground"".

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.1.5**   *P* **82**   *L* **3**   **#** **91**

Healey, Adam   Agere Systems   Editor 1

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

Update references for clarity. Remove redundancy. Also, it is worth clarifying that the other transmitters should be terminated during the test (both the figure and text are ambiguous on this point).

Suggested Remedy

Change opening paragraph to: ""The transmitter differential output signal is defined at TP1, as shown in Figure 71-2 and Figure 71-2. The transmitter shall provide equalization such that the output waveform falls within the template shown in Figure 71-4 for the test pattern specified in 48A.2, with all other transmitters active. All other transmitters shall be terminated with a load meeting the requirements described in 71.6.1.2. Voltage and time coordinates for inflection points on Figure 70û3 are given in Table 70û6. The waveform under test shall be normalized by using the following procedure:""

Response   *Response Status*   **O**

Cl **71**   *SC* **6**   *P* **82**   *L* **10**   **#** **103**

Spagna, Fulvio   INTEL   Editor 1

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

Why does numbering start at ""4)""?

Suggested Remedy

Renumber using: 1 to 7.

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.1.5**   *P* **82**   *L* **18**   **#** **92**

Healey, Adam   Agere Systems   Editor 1

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

In item 9, the normalization term 0.69 is marked in red (""to be confirmed""). The Task Force needs to confirm this value or select another. Selecting another will likely results in changes to the transmit template.

Suggested Remedy

Set the normalization term to 0.69 and accept the transmit template as it stands today, in the interest of compatibility with 10GBASE-CX4.

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.1.7**   *P* **83**   *L* **35**   **#** **69**

Healey, Adam   Agere Systems   Editor 1

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

Circular and incorrect references.

Suggested Remedy

Change text to: ""The transmitter shall have a maximum total jitter of 0.350 UI peak-to-peak, a maximum deterministic component of 0.170 UI peak-to-peak and a maximum random component of 0.270 UI peak-to-peak. Jitter specifications include all but 10-12 of the jitter population. Transmit jitter test requirements are specified in 71.6.1.8.""

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.1.8**   *P* **83**   *L* **45**   # **93**

Healey, Adam   Agere Systems   Editor 1

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

The transmit jitter test requirements are to be performed with ""All four Channels are active in both directions, and opposite ends of the link use asynchronous clocks."" However, 71.6.1.1 states that the test fixture shown in Figure 71-1 is the basis of all transmitter measurements, and this figure shows no provision for the ""opposite end of the link"". The aim of this appears to be able to account for crosstalk in the local transmit jitter measurement, but:
1. This is not feasible in the backplane environment
2. Crosstalk tolerance will be accounted at the receiver via the interference test meththology.

Suggested Remedy

Change section to: ""Transmit jitter is defined with respect to the transmitter differential output signal at TP1, as shown in Figure 71-1 and Figure 71-2, and the test procedure resulting in a BER bathtub curve such as that described in Annex 48B. For the purpose of jitter measurement, the effect of a single-pole high pass filter with a 3 dB point at 1.875 MHz is applied to the jitter. The data pattern for jitter measurements shall be the CJPAT pattern defined in Annex 48A.5. For this test, all other transmitters shall be active and terminated with a load meeting the requirements described in 71.6.1.2. Crossing times are defined with respect to the mid-point (0 V) of the AC-coupled differential signal.""

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.2**   *P* **84**   *L* **3**   # **88**

Healey, Adam   Agere Systems   Editor 1

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

Redundant ""shalls"". Each requirement has a corresponding ""shall"" so this ""global shall"" seems to have no purpose.

Suggested Remedy

Change text to: ""Receiver characteristics are summarized in Table 71-7 and detailed in the following subclauses.""

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.2**   *P* **84**   *L* **21**   # **94**

Healey, Adam   Agere Systems   Editor 1

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

No receiver common-mode return loss specifications. Suggest using XAUI common-mode return loss requirements as a starting point.

Suggested Remedy

Change Table 71-7 characteristic ""Return loss differential (minimum)"" to ""Differential input return loss (minimum)"".
Add Table 71-7 characteristic ""Common-mode input return loss (minimum) and assign value 6 dB. The subclause reference for this new characteristic will be 7.1.6.2.6.
Add section 71.6.2.6 titled ""Common-mode return loss (10GBASE-KX4)"" with the following text:
""The receiver common-mode return loss shall be greater than or equal to 6 dB over a frequency range of 100 MHz to 2000 MHz. The reference impedance for common-mode return loss measurements is 25 Ohms.""

Response   *Response Status*   **O**

Cl **71**   *SC* **71.6.2.1**   *P* **84**   *L* **25**   # **70**

Healey, Adam   Agere Systems   Editor 1

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

Per motion #8 from the May interim meeting, the interference tolerance methodology will be the basis for receiver compliance. This supercedes subclause 71.6.2.1.

Suggested Remedy

Re-word subclause 71.6.2.1 to refer to Annex 72A (or the place where this annex eventually ends up) and list 10GBASE-KX4 specific parameters and requirements related to this methodology. These parameters and requirements are expected to be decided at the June interim meeting.

Response   *Response Status*   **O**

Cl **71**   *SC* **6.2.1**   *P* **84**   *L* **28**   # **114**

Gaither, Justin   Xilinx   Editor 1

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

This needs to change due to events at last inirim meeting

Suggested Remedy

Change to """,through a channel of acceptable quality and received by a compliant receiver as defined in 71.6.2.""

Response   *Response Status*   **O**

Cl **71** *SC* **71.8** *P* **85** *L* **39** **#** **95**

Healey, Adam Agere Systems Editor 1

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

Measurement requirements are adequately addressed in 71.6 and reference annexes. Delete this subclause and editor's note.

Suggested Remedy

Delete this 71.8 and delete the corresponding editor's note.

Response *Response Status* **O**

Cl **70** *SC* **71.9** *P* **86** *L* **1** **#** **71**

Healey, Adam Agere Systems Editor 1

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

Need environmental specifications to complete this clause.

Suggested Remedy

Add the following text to subclause 71.9: ""All equipment subject to this clause shall conform to the applicable requirements of 14.7.""
Delete the editor's note.

Response *Response Status* **O**

Cl **72** *SC* **72** *P* **93** *L* **3** **#** **61**

Healey, Adam Agere Systems Editor 1

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

Editor's note is no longer relevant. Delete editor's note.

Suggested Remedy

Delete editor's note.

Response *Response Status* **O**

Cl **72** *SC* **1** *P* **93** *L* **37** **#** **113**

Gaither, Justin Xilinx Editor 1

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

change must to shall

Suggested Remedy

Response *Response Status* **O**

Cl **72** *SC* **3** *P* **94** *L* **10** **#** **104**

Spagna, Fulvio INTEL Editor 1

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

Replace ""BT"" with ""bit times"" for consistency with other clauses.

Suggested Remedy

Response *Response Status* **O**

Cl **72** *SC* **72.4** *P* **94** *L* **13** **#** **179**

Healey, Adam Agere Systems Editor 1

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

PMD MDIO function mapping is missing.

Suggested Remedy

Create table and supporting text that defines the mapping. Delete editor's note.

Response *Response Status* **O**

Cl **72** *SC* **72.4** *P* **94** *L* **16** **#** **72**

Healey, Adam Agere Systems Editor 1

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

PMD MDIO Function Mapping is missing. Create mapping. Delete editor's note.

Suggested Remedy

I will supply the appropriate mapping.

Response *Response Status* **O**

Cl **72** *SC* **72.5.1** *P* **95** *L* **4** **#** **73**

Healey, Adam Agere Systems Editor 1

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

Link block diagram must be added. Delete editor's note.

Suggested Remedy

I will supply the link block diagram.

Response *Response Status* **O**

Cl **72**   *SC* **72.5.2**   *P* **95**   *L* **12**   # **74**

Healey, Adam   Agere Systems   Editor 1

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

Definition of ""tx_bit = ONE"" could be more robust. A more robust definition is used in the other Backplane Ethernet port types.

Suggested Remedy

Change text: ""The higher power level on the positive line of the transmit differential pair shall correspond to tx_bit = ONE.""
to: ""A positive output voltage of SL<p> minus SL<n> (differential voltage) shall correspond to tx_bit = ONE.""

Response   *Response Status*   **O**

Cl **72**   *SC* **72.5.3**   *P* **95**   *L* **20**   # **75**

Healey, Adam   Agere Systems   Editor 1

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

Definition of ""rx_bit = ONE"" is not correct or very robust. A more robust definition is used in the other Backplane Ethernet port types.

Suggested Remedy

Change text: ""The higher power level on the positive line of the receive differential pair shall correspond to tx_bit = ONE.""
to: ""A positive output voltage of DL<p> minus DL<n> (differential voltage) shall correspond to rx_bit = ONE.""

Response   *Response Status*   **O**

Cl **72**   *SC* **5.3**   *P* **95**   *L* **20**   # **115**

Gaither, Justin   Xilinx   Editor 1

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

This is not an optical system.

Suggested Remedy

Change ""optical"" to ""electrical""   Also change tx_bit to rx_bit

Response   *Response Status*   **O**

Cl **72**   *SC* **72.5.4**   *P* **95**   *L* **25**   # **178**

Healey, Adam   Agere Systems   Editor 1

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

The PMD Signal Detect function is awaiting proposed text.

Suggested Remedy

Add the text in healey_01_0605 to 72.5.4. Delete the editor's note.

Response   *Response Status*   **O**

Cl **72**   *SC* **5.6**   *P* **95**   *L* **48**   # **116**

Gaither, Justin   Xilinx   Editor 1

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

Loopback is optional for 10GBase-KR PMD

Suggested Remedy

Change shall to can

Response   *Response Status*   **O**

Cl **72**   *SC* **72.5.5**   *P* **95**   *L* **164**   # **177**

Healey, Adam   Agere Systems   Editor 1

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

The transmit disable function is awaiting proposed text.

Suggested Remedy

Remove editor's note. Add the following text to 72.5.5.
""The Global_PMD_transmit_disable function is optional. When this function is supported, it shall meet the requirements of this subclause.
a) When the Global_PMD_transmit_disable variable is set to ONE, this function shall turn off the transmitter such it drives a constant level (i.e. no transitions) and does not exceed the maximum differential peak-to-peak output voltage in Table 72-5.
b) If a PMD_fault (72.5.7) is detected, then the PMD may turn off the electrical transmitter.
c) Loopback, as defined in 72.5.6, shall not be affected by Global_PMD_transmit_disable.
If the MDIO interface is implemented, then this function shall map to the PMD_global_transmit_disable bit as specified in 45.2.1.8.5.""

Response   *Response Status*   **O**

Cl **72**   *SC* **72.5.7**   *P* **96**   *L* **15**   # **76**

Healey, Adam   Agere Systems   Editor   1

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

Editor's note indicates that the PMD fault functions were not adopted as part of the baseline.
There are three options:
1. The proposed definition must be adopted.
2. An alternate definition must be drafted and adopted.
3. The feature must be removed from the clause.
Due to the fact that this feature is supported by the 1000BASE-KX and 10GBASE-KX4 port types, it is my opinion that this feature by adopted, as defined, for 10GBASE-KR.
Adoption of 72.5.7 implies that 72.5.8 and 72.5.9 also be adopted.

Suggested Remedy

Adopt definitions for PMD_fault, PMD Transmit Fault, and PMD Receive Fault as written.
Delete editor's notes accompanying subclauses 72.5.7, 72.5.8 and 72.5.9.

Response   *Response Status*   **O**

Cl **72**   *SC* **5**   *P* **98**   *L* **3**   # **109**

Spagna, Fulvio   INTEL   Editor   1

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

The control channel is 256 bit long. The assertion that the 32bit pattern 0XFFFF0000 does not appear in the control channel is:
(1) true for the coefficient update field but only under the assumption that ""11"" be not allowed as a coefficient update
(2) false for the status report field where the 120 bit associated with the update status can, in principle, be any sequence.

Suggested Remedy

Response   *Response Status*   **O**

Cl **72**   *SC* **5.10.2.4**   *P* **99**   *L* **3**   # **52**

Szczepanek, Andre   Texas Instruments   Editor   1

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

Shouldn't the value of the gain field be constrained to not change during any update requests (for any coefficient) ?

Suggested Remedy

Add the following or similar : ""The value of the update gain field shall only be changed if all coefficient update fields have the ""hold"" value.""

Response   *Response Status*   **O**

Cl **72**   *SC* **5.10.2.6**   *P* **99**   *L* **39**   # **51**

Szczepanek, Andre   Texas Instruments   Editor   1

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

The meaning of the ""overflow"" and ""underflow"" status indications is not clear.
Overflow and underflow normally indicate a corruption of an arithmetic result due to a rollover/rollunder.
In our context (I believe) we actually mean saturation of the tap coefficient at its positive and negative limits.

Suggested Remedy

Change ""overflow"" to ""maximum limit"" and ""underflow"" to ""minimum limit"", or similar.
Note that saturation should be indicated whenever the tap coefficient equals the corresponding limit, So there is no need to over/underflow beyond it.

Response   *Response Status*   **O**

Cl **72**   *SC* **5.10.2.6.2**   *P* **100**   *L* **10**   # **53**

Szczepanek, Andre   Texas Instruments   Editor   1

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

Coefficient update operations are incompletely defined for the target of the operation.
Although the sender is required to stop sending inc/dec requests once an updated response is seen, there is no requirement on the target to accept only one request.
This kind of handshake really needs a State Machine to define it properly.

Suggested Remedy

I will provide a SM presentation at the interim meeting

Response   *Response Status*   **O**

Cl **72**   *SC* **5.10.2.6.2**   *P* **100**   *L* **10**   # **49**

Szczepanek, Andre   Texas Instruments   Editor   1

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

""Four status encodings are defined : not updated underflow, and overflow""   I make that 3 !

Suggested Remedy

Change to : ""Four status encodings are defined : not updated, updated, underflow, and overflow""

Response   *Response Status*   **O**

Cl **72**   *SC* **5**   *P* **100**   *L* **10**   # **105**

Spagna, Fulvio   INTEL   Editor 1

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

For clarity change: ""Each coefficient, k, is assigned a 2-bit field describing the status of pending updates to the coefficient.""

Suggested Remedy

to ""Each coefficient, k, is assigned a 2-bit field describing the status of pending updates to the local transmitter coefficients.""

Response   *Response Status* **O**

Cl **72**   *SC* **72.6.1**   *P* **105**   *L* **5**   # **77**

Healey, Adam   Agere Systems   Editor 1

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

Subclause text could use some help.

Suggested Remedy

Change: ""Transmitter characteristics in Table 72-5 shall meet specifications at TP1, unless otherwise noted.""
to: ""Transmitter characteristics shall meet the specifications in Table 72-5 at TP1 while transmitting the square-wave test pattern specified in 49.2.8, unless otherwise noted.""

Response   *Response Status* **O**

Cl **72**   *SC* **72.6.1**   *P* **105**   *L* **13**   # **80**

Healey, Adam   Agere Systems   Editor 1

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

No subclause reference for ""signaling speed"". Add one. Also, since 10GBASE-KR is a single-lane PHY, the ""per-lane"" clarification is no appropriate.

Suggested Remedy

Change name of characteristic from ""Signaling speed, per lane"" to ""Signaling speed"".
Create subclause reference 72.6.1.3 for signaling speed, and renumber other references accordingly.
Insert new subclause 72.6.1.3 with the title ""Signaling speed"". Add the following text: ""The 10GBASE-KR signaling speed shall be 3.125 GBd ??? 100 ppm.""
Renumber subsequent subclauses accordingly.

Response   *Response Status* **O**

Cl **72**   *SC* **72.6.1.4**   *P* **105**   *L* **16**   # **78**

Healey, Adam   Agere Systems   Editor 1

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

Common mode voltage limits in Table 72-5 are ""TBD"". These limits must be defined. These limits also appear in 72.6.1.3 (page 106, line 49) and must be defined there as well. While modifying that text, it also makes sense to implement the following editorial corrections:
1. SLn<p> and SLn<n> should be changed to SL<p> and SL<n> since this is a single-lane PHY.
2. There is no ""backplane ground"" in Figure 72-5. The reference in the figure is ""signal ground"" and should be referenced as such.
3. Correct equation in Figure 72-6 to read ""SL<p>-SL<n>""
4. Correct note below Figure 72-6 to read ""NOTE - SL<p> and SL<n> are the positive and negative sides of the differential signal pair.""

Suggested Remedy

Set the common-mode voltage range to -0.4-1.9 V.
In section 72.6.1.3, Change text to read: ""DC-referenced logic levels are not defined since the receiver is AC-coupled. the common mode voltage of SL<p> and SL<n> shall be between -0.4 V and 1.9 V with respect to signal ground as measured at Vcom in Figure 72-5.""
Change equation in Figure 72-6 to read: ""SL<p>-SL<n>"".
Change note below Figure 72-6 to read: ""NOTE - SL<p> and SL<n> are the positive and negative sides of the differential signal pair.""

Response   *Response Status* **O**

Cl **72**   *SC* **72.6.1**   *P* **105**   *L* **25**   # **182**

Healey, Adam   Agere Systems   Editor 1

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

Note 1 states that ""Deterministic jitter is already incorporated into the differential output template."" I do not understand why this statement is necessary or useful.

Suggested Remedy

Delete note.

Response   *Response Status* **O**

Cl **72**   *SC* **72.6.1.1**   *P* **106**   *L* **13**   # **79**

Healey, Adam   Agere Systems   Editor 1

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

For clarity, label signals SL<p> and SL<n> on Figure 72-5.

Suggested Remedy

Add labels to Figure.

Response   *Response Status* **O**

Cl **72**   *SC* **6.1.4**   *P* **107**   *L* **16**   # **155**

Ghiasi, Ali   Brodcom   Editor 1

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

Common mode output return loss is missing. In backplane Ethernet applications with 2 connectors and long challenging FR4 traces common signal are generated. A driver with unterminated common mode will cause significant signal degradation.

Suggested Remedy

Define common mode base on the following equation   RL > 6 dB for 100 MHz to 7.5 GHz   RL > 6 - 16.66 LOG10(f/7.5 GHz) dB for 7.5 GHz to 15 GHz

Response   *Response Status*   **O**

Cl **72**   *SC* **6.1.4**   *P* **107**   *L* **17**   # **154**

Ghiasi, Ali   Brodcom   Editor 1

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

It is specified that output return loss shall meet Eq 72-2 for all valid output levels. No procedure is specified on how to test for the output return loss and to test for each level including during transition is currently not possible with the test equipments.

Suggested Remedy

To test for return loss one leg of the output driver will be turned On and the other to OFF state. The output driver may require external biasing to get nominal VOH and VOL. An NWA will then measure output return loss. This measurement will the average of the On and Off state.

Response   *Response Status*   **O**

Cl **72**   *SC* **72.6.1.4**   *P* **107**   *L* **17**   # **81**

Healey, Adam   Agere Systems   Editor 1

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

Return loss equation now only applies from 100 MHz to 7500 MHz. In addition, the return loss figure (Figure 72-7) needs to be updated to reflect the new equation.

Suggested Remedy

Change text: ""For frequencies from 100 MHz to 15 GHz, the differential return loss, in dB with f in MHz, of the transmitter shall meet Equation 72-1 and Equation 72-2.""
to: ""For frequencies from 100 MHz to 7500 MHz, the differential return loss, in dB with f in MHz, of the transmitter shall meet Equation 72-1 and Equation 72û2.""
Change Equations 72-1 and 72-2 such that f is in MHz, consistent with subclause text.
Update Figure 72-7.

Response   *Response Status*   **O**

Cl **72**   *SC* **6.1.4**   *P* **107**   *L* **28**   # **46**

Szczepanek, Andre   Texas Instruments   Editor 1

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

in equation 72-2 the slope should be referenced from the 2.5Ghz corner frequency.

Suggested Remedy

f/7.5Ghz should be f/2.5Ghz

Response   *Response Status*   **O**

Cl **72**   *SC* **72.6.1.4**   *P* **107**   *L* **2829**   # **44**

Mellitz, Richard   Intel   Editor 1

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

eq 72-2 is not a consistant piecewise linear equation

Suggested Remedy

Replace the denominator 7.5 GHz the 2.5GHz

Response   *Response Status*   **O**

Cl **72**   *SC* **Figure 72-7**   *P* **108**   *L*   # **47**

Szczepanek, Andre   Texas Instruments   Editor 1

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

Figure needs updating to reflect revised corner frequency

Suggested Remedy

Response   *Response Status*   **O**

Cl **72**   *SC* **6.1.4**   *P* **108**   *L* **10**   # **117**

Gaither, Justin   Xilinx   Editor 1

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

Graph does not match equations

Suggested Remedy

Update Graph

Response   *Response Status*   **O**

Cl **72** *SC* **72.6.1.5** *P* **108** *L* **31** # **82**

Healey, Adam Agere Systems Editor 1

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

Incorrect test pattern reference.

Suggested Remedy

Change text: ""The rising edge transition time shall be no less than 24 ps as measured at the 20% and 80% levels of the peak-to-peak differential value of the waveform using the high frequency test pattern of 48A.1. The falling edge transition time shall be no less than 24ps as measured at the 80% and 20% levels of the peak-to-peak differential value of the waveform using the high frequency test pattern of 48A.1.""

to: ""The rising edge transition time shall be no less than 24 ps as measured at the 20% and 80% levels of the peak-to-peak differential value of the waveform using the square wave test pattern of 49.2.8. The falling edge transition time shall be no less than 24ps as measured at the 80% and 20% levels of the peak-to-peak differential value of the waveform using the square wave test pattern of 49.2.8.""

Response *Response Status* **O**

Cl **72** *SC* **6.1.6** *P* **108** *L* **35** # **152**

Ghiasi, Ali Brodcom Editor 1

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

Jitter specification include all but 10-12 of the jitter population is not clear.

Suggested Remedy

You can say ""Jitter specifications are specified for BER 1E-12""

Response *Response Status* **O**

Cl **72** *SC* **72.6.1.6** *P* **108** *L* **37** # **83**

Healey, Adam Agere Systems Editor 1

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

Circular and incorrect references.

Suggested Remedy

Change text to: ""The transmitter shall have a maximum total jitter of 0.30 UI peak-to-peak, a maximum deterministic component of 0.15 UI peak-to-peak and a maximum random component of 0.15 UI peak-to-peak. Jitter specifications include all but 10-12 of the jitter population. Transmit jitter test requirements are specified in 72.6.1.7.""

Response *Response Status* **O**

Cl **72** *SC* **6.1.6** *P* **108** *L* **40** # **153**

Ghiasi, Ali Brodcom Editor 1

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

Transmitt jitter specified in 72.6.1.6 is missing

Suggested Remedy

Please add proper reference or add the jitter test requirement to the section

Response *Response Status* **O**

Cl **72** *SC* **72.6.1.7** *P* **108** *L* **44** # **56**

Healey, Adam Agere Systems Editor 1

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

The transmit jitter test requirements are to be performed with ""Channels active in both directions, and opposite ends of the link use asynchronous clocks."" However, 72.6.1.1 states that the test fixture shown in Figure 72-5 is the basis of all transmitter measurements, and this figure shows no provision for the ""opposite end of the link"". The aim of this appears to be able to account for crosstalk in the local transmit jitter measurement, but:

1. This is not feasible in the backplane environment

2. Crosstalk tolerance will be accounted at the receiver via the interference test methdology.

In addition, 48B.3 is the correct reference for output jitter measurement methodologies.

Also, some improved wording regarding the relationship between seed patterns in Table 72-6 may add clarity.

Finally, rather than state Fbaud/1667, use the approximate actual value (6 MHz) to add clarity.

Suggested Remedy

Change text to: ""Transmit jitter is defined with respect to a test procedure resulting in a BER bathtub curve such as that described in Annex 48B.3. For the purpose of jitter measurement, the effect of a single-pole high pass filter with a 3 dB point at 6 MHz is applied to the jitter. The data pattern for jitter measurements shall be the psuedo-random pattern defined in 49.2.8 with the seed values shown in Figure 72-6. Crossing times are defined with respect to the mid-point (0 V) of the AC-coupled differential signal.""

Response *Response Status* **O**

Cl **72** *SC* **72.6.1.8** *P* **109** *L* **40** # **175**

Healey, Adam Agere Systems Editor 1

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

Check subscripts for Rpre, Rpst, Dpre, and Dpst. In some instances, the font is not subscript.

Suggested Remedy

Check all occurences and make consistent.

Response *Response Status* **O**

TYPE: TR/technical required T/technical E/editorial COMMENT STATUS: D/dispatched A/accepted R/rejected SORT ORDER: Page, Line Page 22 of 31

RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn Editor: 1/open 2/waiting 3/No Edit 4/done *Cl* **72** *SC* **72.6.1.8**

Cl **72**   *SC* **6.1.8**   *P* **109**   *L* **41**   **#** **119**

Gaither, Justin   Xilinx   Editor 1

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

The test criteria does not define C0 values or ranges or resolution. We need to address and test Main cursor.

Suggested Remedy

Change ""For all possible configurations of the transmit equalizer"" to ""For C0 value of 550mV +/- 50mV the following conditions shall be met:""
add sentence: ""With equalization disabled (C-1, and C1) the value of C0 shall be capable of decrementing to value no greater than 100mV for any C0 decrement request that returns underflow. For adjacent main-cursor settings (k) and (k-1) resulting from a single increment or decrement operation on tap C0, the difference in output value shall be greater than 0 and less than 50mV.""

Response   *Response Status*   **O**

Cl **72**   *SC* **6.1.8**   *P* **109**   *L* **43**   **#** **48**

Szczepanek, Andre   Texas Instruments   Editor 1

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

The equalizer specification ratios a) through g) have inconsistent units.
a) through e) are defined in dB. f) & g) as a simple ratio.

Suggested Remedy

Define all the ratios in the same units. I prefer simple ratios to dB's.

Response   *Response Status*   **O**

Cl **72**   *SC* **6.2**   *P* **111**   *L* **28**   **#** **151**

Ghiasi, Ali   Brodcom   Editor 1

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

Assuming a source and load with return loss of -8 dB can produce 16% of signal may add constructively to the actual signal.

Suggested Remedy

With max 1200 mV launch signal, -8 dB return loss will produce 191 mV. Suggest to change max RX input to 1400 mV operating.

Response   *Response Status*   **O**

Cl **72**   *SC* **72.6.2**   *P* **111**   *L* **30**   **#** **183**

Healey, Adam   Agere Systems   Editor 1

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

Should have common-mode return loss specifications.

Suggested Remedy

Change Table 72-7 characteristic ""Return loss differential (minimum)"" to ""Differential input return loss (minimum)"".
Add Table 72-7 characteristic ""Common-mode input return loss (minimum) and assign value 6 dB. The subclause reference for this new characteristic will be 72.6.2.6.
Add section 72.6.2.6 titled ""Common-mode return loss (10GBASE-KR)"" with the following text:
""The receiver common-mode return loss shall be greater than or equal to 6 dB over a frequency range of 100 MHz to 7500 MHz. The reference impedance for common-mode return loss measurements is 25 Ohms.""

Response   *Response Status*   **O**

Cl **72**   *SC* **72.6.2.1**   *P* **111**   *L* **36**   **#** **184**

Healey, Adam   Agere Systems   Editor 1

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

Per motion #8 from the May interim meeting, the interference tolerance methodology will be the basis for receiver compliance. This supercedes subclauses 72.6.2.1 and 72.6.6.

Suggested Remedy

Re-word subclause 72.6.2.1 to refer to Annex 72A (or the place where this annex eventually ends up) and list 10GBASE-KR specific parameters and requirements related to this methodology. These parameters and requirements are expected to be decided at the June interim meeting.
Delete 72.6.2.6, 72.6.2.6.1, and Figure 72-10.

Response   *Response Status*   **O**

Cl **72**   *SC* **6.2.1**   *P* **111**   *L* **38**   **#** **118**

Gaither, Justin   Xilinx   Editor 1

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

There is no such thing as compliant channel anymore

Suggested Remedy

change text to "",through a channel of acceptable quality and recieved by a compliant receiver as defined in this clause.""

Response   *Response Status*   **O**

Cl **72**   *SC* **6.2.5**   *P* **112**   *L* **15**   # **150**

Ghiasi, Ali   Brodcom   Editor 1

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

Common mode input return loss is missing. In backplane Ethernet applications with 2 connectors and long challenging FR4 traces common signal are generated. A driver with unterminated common mode will cause significant signal degradation.

Suggested Remedy

Define common mode base on the following equation
RL > 6 dB for 100 MHz to 7.5 GHz
RL > 6 dB - 16.66 LOG10 (f/7.5 GHz) for 7.5 GHz to 15 GHz

Response   *Response Status* **O**

Cl **72**   *SC* **6.2**   *P* **112**   *L* **23**   # **99**

Moore, Charles   Agilent Technologies   Editor 1

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

e have approved a normative Interference tolerance test for KR we need to add it to specification document.

Suggested Remedy

add new sub clause to 72.6.2 stating:
    Compliant Receiver shall pass Interference tolerance test as defined in annex 69A with
    EITbase   = 45mV p-p
    f1   = 1.0GHz
    f2   = 6.0GHz
    minISIloss = 22dB

Response   *Response Status* **O**

Cl **72**   *SC* **6.2.6.1**   *P* **112**   *L* **24**   # **156**

Ghiasi, Ali   Brodcom   Editor 1

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

This section is missing test conditions, stressor, etc.

Suggested Remedy

You can either write the section or reference OIF CEI

Response   *Response Status* **O**

Cl **72**   *SC* **72**   *P* **113**   *L* **1**   # **84**

Healey, Adam   Agere Systems   Editor 1

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

Environmental specifcations are required to complete this subclause.

Suggested Remedy

Create new subclause 72.8 and add the following text: ""All equipment subject to this clause shall conform to the applicable requirements of 14.7.""
Delete the editor's note.
Renumber following subclauses accordingly.

Response   *Response Status* **O**

Cl **72A**   *SC* **72A.1**   *P* **117**   *L* **33**   # **4**

Marris, Arthur   Cadence   Editor 1

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

Change ""Bit Error Rate"" to ""Bit Error Ratio""

Suggested Remedy

Change ""Bit Error Rate"" to ""Bit Error Ratio""

Response   *Response Status* **O**

Cl **72A**   *SC* **72A.2**   *P* **118**   *L* **1245**   # **43**

Mellitz, Richard   Intel   Editor 1

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

DFE capture window not considered.

Suggested Remedy

Add ""emulatated reflection"" blocks as illustrated in palkert_01_0505 slide 5 an 6.
Add after line 44: "The emulated refection delay is 8 UI and the amplitude of the reflection in 8%."

Response   *Response Status* **O**

Cl **72A** *SC* **4.1** *P* **120** *L* **23** **#** **100**

Moore, Charles Agilent Technologies Editor 1

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

This section defines the ""data like"" interference tolerance test. No one seems to show much interest in this test.

Suggested Remedy

Delete this test in 72A and/or 69A if appropriate

Response *Response Status* **O**

Cl **73** *SC* **73.1** *P* **124** *L* **41** **#** **130**

Lynskey, Eric UNH-IOL Editor 1

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

Extra period after Clause 73.

Suggested Remedy

Remove period.

Response *Response Status* **O**

Cl **73** *SC* **73.5.1.1** *P* **126** *L* **28** **#** **131**

Lynskey, Eric UNH-IOL Editor 1

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

Change disable to disabled.

Suggested Remedy

See comment.

Response *Response Status* **O**

Cl **73** *SC* **73.5.1.1** *P* **126** *L* **39** **#** **157**

Ganga, Ilango Intel Editor 1

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

In Table 73-1 Receive differential peak-to-peak input voltage is specified as 100-1200mV. This is inconsistent with the text in 73.7.1 (page 132, line 16) which correctly states minimum receive sensitivity as 200mV. Please fix Table 72-1 to read as 200-1200mV

Suggested Remedy

Change page 126, line 39 (Table 73-1) to read as ""Receive differential peak-to-peak input voltage"" as ""200-1200"" mV.

Response *Response Status* **O**

Cl **73** *SC* **73.5.2** *P* **126** *L* **45** **#** **132**

Lynskey, Eric UNH-IOL Editor 1

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

autonegotiation

Suggested Remedy

Change to Auto-Negotiation and make consistent throughout clause.

Response *Response Status* **O**

Cl **73** *SC* **73.5.2** *P* **126** *L* **51** **#** **145**

Lynskey, Eric UNH-IOL Editor 1

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

A figure showing the Manchester violation would be very helpful here.

Suggested Remedy

Add figure.

Response *Response Status* **O**

Cl **73** *SC* **73.5.2** *P* **127** *L* **5** **#** **5**

Marris, Arthur Cadence Editor 1

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

Speeling of ""position""

Suggested Remedy

Change ""postion"" to ""position""

Response *Response Status* **O**

Cl **73** *SC* **73.5.2** *P* **127** *L* **6** **#** **15**

Marris, Arthur Cadence Editor 1

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

""pseudon-random source as defined in 42.2.4.2""
Change ""pseudon"" to ""pseudo""
There is no 42.2.4.2

Suggested Remedy

Either correct the reference or change to ""pseudo-random source""

Response *Response Status* **O**

Cl **73**	*SC* **73.5.2**	*P* **127**	*L* **6**	**#**	**146**

Lynskey, Eric UNH-IOL Editor 1

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

42.2.4.2 is wrong reference.

Suggested Remedy

Replace with correct reference.

Response *Response Status* **O**

Cl **73**	*SC* **73.5.2**	*P* **127**	*L* **6**	**#**	**133**

Lynskey, Eric UNH-IOL Editor 1

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

pseudon-random

Suggested Remedy

Change to pseudo-random.

Response *Response Status* **O**

Cl **73**	*SC* **73.5.2**	*P* **127**	*L* **14**	**#**	**134**

Lynskey, Eric UNH-IOL Editor 1

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

Clock DMEs and data DMEs doesn't make sense.

Suggested Remedy

Change to Clock DME bits and data DME bits, or something similar.

Response *Response Status* **O**

Cl **73**	*SC* **73.5.2**	*P* **127**	*L* **34**	**#**	**135**

Lynskey, Eric UNH-IOL Editor 1

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

This is a repetition of text on the previous page.

Suggested Remedy

Delete sentence.

Response *Response Status* **O**

Cl **73**	*SC* **73.5.3**	*P* **127**	*L* **38**	**#**	**147**

Lynskey, Eric UNH-IOL Editor 1

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

It looks like T1 is the only value associated with a shall statement. The other values should also be covered.

Suggested Remedy

Add sentence ""The timing parameters for DME pages shall be followed as in Table 73-2."" Remove shall from line 28.

Response *Response Status* **O**

Cl **73**	*SC* **73.5.3**	*P* **127**	*L* **38**	**#**	**160**

Ganga, Ilango Intel Editor 1

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

Line 38 reads as ""The transition positions within a DME page shall be spaced with a period of T1 ??? 0.01% as enumerated in Table 73-2"" T1 is the nominal value and T3 specifies the variation (min, max, typ) and is specified in table 73-2. Also there is inconsistency between the text and table. Hence remove the redundant information (+/-.01%) from this line.

Suggested Remedy

Modify the line 38, page 128 to read as ""The transition positions within a DME page shall be spaced with a period of T1 as enumerated in Table 73-2""

Response *Response Status* **O**

Cl **73**	*SC* **73.5.3**	*P* **128**	*L* **7**	**#**	**158**

Ganga, Ilango Intel Editor 1

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

The table 73-1 DME page timing summary specifies a timing variation of 0.1%. For example this provides only 3.2ps variation for clock to data transition which is very tight. It is proposed to have the transition variation same as the transmit jitter for the lowest baud rate PHY (1000BASE-KX). This amounts to 200ps. So the transitions should be within +/- 200ps. Modify the table 73-2 as per the attached document.

Suggested Remedy

Modify the table 73-2 as per the attached document: The table shows min, typ and max timing for each T values instead of percentage of Tx.

Response *Response Status* **O**

Cl **73**   *SC* **73.5.3**   *P* **128**   *L* **32**   # **168**

Ganga, Ilango   Intel   Editor 1

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

Add a subclause 73.5.3.1 that defines Manchester violation delimiter and illustrate with a timing diagram with T6. Where T6 = 12.8 +/- 200ps. Specify T6 in DME page timing summary. Currently this is only defined in variable mv_pair_detect and not specified in 73.5.3 DME timing subclause.

Suggested Remedy

Add subclause 73.5.3.1 Manchester violation delimiter: Use the timing diagram illustration for Manchester violation from thaler_01_0105 page 13. Show T6 as time between MV transitions. Add T6 = 12.8 +/- 200ps to Table 73-2.

Response   *Response Status*   **O**

Cl **73**   *SC* **73.6**   *P* **129**   *L* **22**   # **16**

Marris, Arthur   Cadence   Editor 1

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

RF, ACK and NP are defind later in 73.6 so delete ""These bits shall function as specified in 28.2.1.2.""

Suggested Remedy

delete ""These bits shall function as specified in 28.2.1.2.""

Response   *Response Status*   **O**

Cl **73**   *SC* **73.6.4**   *P* **130**   *L* **18**   # **136**

Lynskey, Eric   UNH-IOL   Editor 1

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

The technology ability field should only contain A0:A26. Table 73-4 should not show bits outside this range.

Suggested Remedy

Remove extra bits from the table or rename the table.

Response   *Response Status*   **O**

Cl **73**   *SC* **73.6.6**   *P* **131**   *L* **9**   # **17**

Marris, Arthur   Cadence   Editor 1

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

Register definitions for remote fault are wrong.

Suggested Remedy

Change 1.129 to 7.16.13 and 1.121 to 7.19.13

Response   *Response Status*   **O**

Cl **73**   *SC* **73.6.7**   *P* **131**   *L* **24**   # **18**

Marris, Arthur   Cadence   Editor 1

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

Next page registers are wrong

Suggested Remedy

Change to 7.22, 7.23, 7.24 and 7.25, 7.26, 7.27

Response   *Response Status*   **O**

Cl **73**   *SC* **9.1**   *P* **132**   *L* **1**   # **172**

Joergensen, Thomas   Vitesse Semiconductor   Editor 1

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

Variable ability_match_word [48:1] is not set anywhere

Suggested Remedy

Add following note: NOTE: This variable is set by this variable definition; it is not set explicitly in the state diagrams.

Response   *Response Status*   **O**

Cl **73**   *SC* **73.7.4.1**   *P* **132**   *L* **42**   # **19**

Marris, Arthur   Cadence   Editor 1

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

For consistancy should it not be ""Detection"" rather than ""Detect""

Suggested Remedy

Change ""Detect"" to ""Detection""

Response   *Response Status*   **O**

Cl **73**   *SC* **7.4.1**   *P* **133**   *L* **10**   # **186**

Koenen, David   Hewlett Packard   Editor 1

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

This sentence has lost it context from previos paragraph.
If any other technology-dependent PHYs indicates link_status=READY

Suggested Remedy

If more than one technology-dependent PHYs indicates link_status=READY

Response   *Response Status* **O**

Cl **73**   *SC* **7.4.1**   *P* **133**   *L* **10**   # **185**

Koenen, David   Hewlett Packard   Editor 1

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

Statement poorly written.
If auto-negotiation detects link_status=READY or link_status=OK from any of the technology-dependent PHYs prior to DME page detection, the autoneg_wait_timer is started.

Suggested Remedy

If auto-negotiation detects link_status=READY or link_status=OK from any of the technology-dependent PHYs prior to DME page detection, the autoneg_wait_timer shall start.

Response   *Response Status* **O**

Cl **73**   *SC* **73.7.5**   *P* **133**   *L* **22**   # **20**

Marris, Arthur   Cadence   Editor 1

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

In the Renegotiation subclause
i) delete ""(28.3.2)""
ii) change ""tx_link_code_word[32:1]"" to ""tx_link_code_word[48:1]""

Suggested Remedy

As above

Response   *Response Status* **O**

Cl **73**   *SC* **73.7.6**   *P* **134**   *L* **6**   # **6**

Marris, Arthur   Cadence   Editor 1

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

Typo HCD

Suggested Remedy

Change HDC to HCD

Response   *Response Status* **O**

Cl **73**   *SC* **73.7.6**   *P* **134**   *L* **8**   # **169**

Ganga, Ilango   Intel   Editor 1

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

As per Figure 73-1 Clause 73 Auto-Neg is below PMD for the .3ap PHYs KX, KX4 and KR. It is possible for legacy 1Gb/s devices connected to 802.3ap PHY can also have clause 37 Auto-Neg. Currently the .3ap standard does not discuss the priority resolution if both clauses are present. This might cause interoperability issues. Because 802.3ap PHY will negotiate abilities using clause 73(Management through MMD7).

Suggested Remedy

Provide normative or informative text to explain this configuration (could be a subclause in 73 or added to Annex 73A): If both Local Device and Link Partner are 802.3ap compliant PHYs then both ends shall use abilities exchanged through Clause 73 Auto-Neg(management function shall use MMD7) function. If the Link partner is a legacy device (or has disabled Auto-Negotiation) as indicated by the parallel detect function, then the peer 1Gb/s devices can opt to use abilities exchanged through clasue 37. This will ensure there are no interoperability issues when connected to a 802.3ap PHY.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9**   *P* **136**   *L* **52**   # **54**

Marris, Arthur   Cadence   Editor 1

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

It is not clear what the behaviour of variables is when there is a default.

Suggested Remedy

Add a new sentence after ""State diagram variables follow the conventions of 21.5.2 except when the variable has a default value."" ""A variable reverts to its default value when not explicit set within a state.""

Response   *Response Status* **O**

Cl **73**   *SC* **73.8.1**   *P* **136**   *L* **3138**   # **170**

Ganga, Ilango   Intel   Editor 1

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

variable mr_lp_np_able ""1.126.3 Link Partner Next Page Able"" incorrect reference to register bit. Add ""Link Partner next page Able"" bit to the 7.1 AN Status register and do a correct cross reference.
variable mr_np_able ""1.126.2 Next Page Able"" incorrect reference to register bit. Add ""Local Device Next Page Able bit"" to 7.1 status register and do a correct cross reference.

Suggested Remedy

Add corresponding bits back to MMD7 Status register and modify the cross reference as shown below:
modify line 31 to read as: mr_lp_np_able""7.1.10 Link Partner Next Page Able""
modify line 38 to read as: mr_np_able ""7.1.11 Next Page Able""

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.1**   *P* **137**   *L* **14**   # **7**

Marris, Arthur   Cadence   Editor 1

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

What is the ""the NLP Receive Link Integrity Test state diagram""?

Suggested Remedy

Delete ""and the NLP Receive Link Integrity Test state diagram""

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.1**   *P* **140**   *L* **32**   # **167**

Ganga, Ilango   Intel   Editor 1

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

In the Definition of detect_mv_pair variable: ""Manchester Violation delimiter - a sequence of three consecutive transitions with 12.8ns between each pair of transitions"". Modify this transisition time to include variations: 12.8 +/-200ps

Suggested Remedy

Modify the line to read as follows: ""Manchester Violation delimiter - a sequence of three consecutive transitions with 12.8ns +/- 200ps between each pair of transitions""

Response   *Response Status* **O**

Cl **73**   *SC* **9.1**   *P* **140**   *L* **50**   # **187**

Koenen, David   Hewlett Packard   Editor 1

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

Missing link_status definition.

Suggested Remedy

Recommend: link_status   This variable is defined in 28.2.6.1.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.1**   *P* **143**   *L* **6**   # **166**

Ganga, Ilango   Intel   Editor 1

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

Definition for pulse_too_long: Modify ""spaced to far apart"" to read as ""spaced too far apart""

Suggested Remedy

Modify page 143 line 6, ""spaced to far apart"" to read as ""spaced too far apart""

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.1**   *P* **144**   *L* **8**   # **55**

Marris, Arthur   Cadence   Editor 1

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

Please explain the purpose of the 'transmit_ability' variable. This variable is used to keep the transmit state machine in the 'transmit delimiter' state. It is not clear why this is necessary. The 'transmit_disable' and 'an_link_good' move the state machine to the IDLE state so the need for the 'transmit_ability' variable is not clear.

Suggested Remedy

Either explain the purpose of the 'transmit_ability' variable or consider deleting it from the AN state machines.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.2**   *P* **146**   *L* **12**   **#** **161**

Ganga, Ilango   Intel   Editor 1

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

In Table 73-7 data_detect_min_timer max value is specified as 3.01ns and data detect_max_timer min value is specified as 3.39ns. This implies the clock to data transition at receiver as 3.2ns +/- 190ps. This is tighter than the variation allowed by the transmitter spec as per earlier comment 3.2ns +/- 200ps. Hence it is proposed to make this variation greater than or equal to +/-200ps.

Suggested Remedy

In table 73-7 line 12, change data_detect_min_timer max value to be 3.0ns.
In table 73-7 line 13, change data_detect_max_timer min value to be 3.4ns.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.4.1.2**   *P* **147**   *L* **34**   **#** **8**

Marris, Arthur   Cadence   Editor 1

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

What is ""the NLP Receive Link Integrity Test state diagram (Figure 73-9)""? Figure 73-9 describes something else.

Suggested Remedy

Suggest deleting ""and the NLP Receive Link Integrity Test state diagram (Figure 73-9)"" or improving the description of how link status is generated.
Also please consider changing subclause 73.9.4.2.3 on page 148.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.4.3**   *P* **148**   *L* **23**   **#** **9**

Marris, Arthur   Cadence   Editor 1

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

Consider deleting subclause 73.9.4.3 PMA_LINKPULSE.request (and 73.9.4.3.1, 73.9.4.3.2, 73.9.4.3.3) as I don't think link pulses are used in Clause 73.

Suggested Remedy

As above.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.5**   *P* **150**   *L* **13**   **#** **10**

Marris, Arthur   Cadence   Editor 1

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

In figure 73-7 the transfer between IDLE and TRANSMIT DELIMITER is not really unconditional. The transmit state machine will remain in IDLE as long as the global reset conditions remain true.

Suggested Remedy

Delete UCT on line 13.

Response   *Response Status* **O**

Cl **73**   *SC* **73.9.5**   *P* **151**   *L* **30**   **#** **159**

Ganga, Ilango   Intel   Editor 1

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

In figure 73-8 Receive State diagram , there is a potential for the state machine to be stuck at state DME_CLOCK and/or state DME_DATA_1 if detect_mv_pair = not true due to error condition (data corruption). Just having detect_mv_pair=true is alone sufficient condition. (For example Clause 28, Fig2 8-15 state machine has an escape path to IDLE state with nlp_test_min/max_timer_done.   Hence provide an escape path to go to IDLE state even for cases where detect_mv_pair=true condition never happened, and page_test_max_timer expired. Modify the state machine as proposed in the attached document

Suggested Remedy

Modify Fig 73-8 Receive state diagram as modified in the attached document.

Response   *Response Status* **O**

Cl **73**　　　*SC* **73.9.5**　　　　　*P* **152**　　　*L*　　　　　# **11**
Marris, Arthur　　　　　　　　　Cadence　　　　　Editor　1

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

A few comments on figure 73-9 the Arbitration state diagram
i) mr_parallel_detection_fault is only set true if more than one link comes up while the text suggests that it is also set true if no links are detected during parallel detection.
ii) DME page exchange goes on concurrently with parallel detection. This unnecessarily complicates implementation.

Suggested Remedy

Make parallel detection happen before ability detection. Move LINK STATUS CHECK state so that it comes between TRANSMIT DISABLE and ABILITY DETECT. This fixes both problems. Practical implementations of link status checking will check for each PHY type is sequence rather than in parallel. It would be good if the spec could acknowledge this. For example say that link status checking will check for each of the PHY types supported in sequence for 20ms each.

Response　　　　　　　*Response Status*　**O**

Cl **73**　　　*SC* **9.5**　　　　　*P* **152**　　　*L* **12**　　　# **173**
Joergensen, Thomas　　　　　　Vitesse Semiconductor　　Editor　1

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

Figure 73-9
The brackets in the condition for transition from ACKNOWLEDGE_DETECT to TRANSMIT_DISABLE are uncomplete.

Suggested Remedy

Replace with: (acknowledge_match=true * (consistency_match=false + ack_nonce_match=false)) or an_receive_idle=true

Response　　　　　　　*Response Status*　**O**

Cl **73**　　　*SC* **9.5**　　　　　*P* **152**　　　*L* **12**　　　# **174**
Joergensen, Thomas　　　　　　Vitesse Semiconductor　　Editor　1

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

Figure 73-9
tx_link_code_word[10:6] is loaded with the nonce field in state ACKNOWLEDGE DETECT.
This means for both base pages and next pages.
I assume NONCE fields are only used for base pages.

Suggested Remedy

Change state machine to only use nonce field for base pages.

Response　　　　　　　*Response Status*　**O**

Cl **73**　　　*SC* **73.6.2**　　　　*P* **192**　　　*L* **43**　　　# **148**
Lynskey, Eric　　　　　　　　　UNH-IOL　　　　　Editor　1

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

This subclause says that bits E[4:0] are used for something. In the previous subclause it says these bits, which are also D5:D9 are reserved for future use.

Suggested Remedy

Change the previous text to say that D5 to D9 contain the Echoed Nonce field.

Response　　　　　　　*Response Status*　**O**