Cl **00**   *SC*   *P* **2**   *L* **7**   # 1
Marris, Arthur   Cadence

Comment Type **E**   *Comment Status* **D**   e
    Missing word 'for'

SuggestedRemedy
    (FEC) sublayer for 10GBASE-R PHYs

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **01**   *SC* **1.4**   *P* **16**   *L* **35**   # 61
Ganga, Ilango   Intel

Comment Type **E**   *Comment Status* **D**   e
    Line 35: Replace ""Clauses 72"" with ""Clause 72""

SuggestedRemedy
    Line 35: Replace ""Clauses 72"" with ""Clause 72""

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **01**   *SC* **1.4**   *P* **16**   *L* **38**   # 62
Ganga, Ilango   Intel

Comment Type **E**   *Comment Status* **D**   e
    Line 38: Missing hyperlink. Add reference link to ""Clause 70""

    Line 43: Missing hyperlink. Add reference link to ""Clause 71""

SuggestedRemedy
    Line 38: Add reference link to ""Clause 70""

    Line 43: Add reference link to ""Clause 71""

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **30**   *SC* **30.5.1.1.13**   *P* **17**   *L* **45**   # 63
Ganga, Ilango   Intel

Comment Type **E**   *Comment Status* **D**   e
    Missing Hyperlinks:

    Line 45: Add reference link to ""Clause 74""

SuggestedRemedy
    Line 45: Add reference link to ""Clause 74""

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **30**   *SC* **30.5.1.1.14**   *P* **18**   *L* **19**   # 82
Dawe, Piers   Avago Technologies

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

SuggestedRemedy
    sublayer

Proposed Response   *Response Status* **W**
    PROPOSED REJECT.

    Stray capitals for Sublayer can not be changed because they are part of the base text and are not included in the change text.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **30**   Page 1 of 22
SC **30.5.1.1.14**   5/19/2006 9:26:03 PM

Cl **30**	*SC* **30.5.1.1.14**	*P* **18**	*L* **19**	# 64

Ganga, Ilango   Intel

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

Line 19: Fix stray capitals: ""Sublayer"" to ""sublayer""

Line 20: Missing reference link: Add reference link to ""Clause 74""

SuggestedRemedy

Line 19: Fix stray capitals: change ""Sublayer"" to ""sublayer""

Line 20: Missing reference link: Add reference link to ""Clause 74""

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Line 19: (Reject): Stray capitals for Sublayer can not be changed because they are part of the base text and are not included in the change text.

Line 20: (Propose Accept)

Cl **30**	*SC* **30.6.1.1.5**	*P* **20**	*L* **16**	# 68

Ganga, Ilango   Intel

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

In 30.6.1.1.5 aAutoNegLocalTechnologyAbility:

Current definition for FEC-Capable is as follows.
FEC-CAPABLE: FEC capability (F0 bit defined in Clause 73.6.5)

Wheras FEC Capability bits are two bits F0:F1 (FEC ability, FEC Enable).

Fix FEC-CAPABLE to indicate F0:F1. or expand the mnemonic to include both FEC ability (F0) and FEC enable (F1)

SuggestedRemedy

Modify FEC-CAPABLE as follows:

FEC-CAPABLE: FEC capability (F0:F1 bits as defined in Clause 73.6.5)

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **30**	*SC* **30.6.1.1.7**	*P* **20**	*L* **40**	# 65

Ganga, Ilango   Intel

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

Page 20, Line 40: Missing reference link to ""73.6""
Page 21, Line 2, line 11 & line 25: Missing reference link to ""73.6.1""
Page 21, Line 10 & line 23: Missing reference link to ""Clause 73""
Page 21, Line 41 : Missing reference link to ""Clause 69""
Page 22, Line 2: Missing reference link to ""Clause 69""
Page 22, Line 4: Missing reference link to ""Clause 74""

SuggestedRemedy

Page 20, line 40: Fix the missing reference link to ""73.6""
Page 21, line 2, line 11 & line 25: Fix the missing reference link to ""73.6.1""
Page 21, Line 10 & line 23: Fix the missing reference link to ""Clause 73""
Page 21, Line 41 : Fix the Missing reference link to ""Clause 69""
Page 22, Line 2: Fix the missing reference link to ""Clause 69""
Page 22, Line 4: Fix the missing reference link to ""Clause 74""

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **45**	*SC*	*P* **23**	*L* **7**	# 3

Marris, Arthur   Cadence

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

The latest draft of 802.3an is D4.0. The next revision of 802.3ap should reference the latest revision of 802.3an.

SuggestedRemedy

Change editing instructions to reference latest draft of 802.3an.

Add (Register 1.9) at end of subclause 45.2.1.8 heading

Change description of bit 7.1.7 in Table 45-119 to match 802.3an

Scan 802.3an for any other differences and implement as necessary.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **45**
SC

Page 2 of 22
5/19/2006 9:26:03 PM

Cl **45**   *SC* **45.2.1**   *P* **23**   *L* **42**   # 66

Ganga, Ilango   Intel

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

Register 1.170 name has been changed in Clause 45.2.1.84 to FEC ability register. Whereas it is still FEC capability in Table 45-3.

SuggestedRemedy

Change 1.170 to ""10GBASE-R FEC ability"" to be consistent with the rest of Clause 45.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **45**   *SC* **45.2.1.1**   *P* **24**   *L* **1**   # 43

Baumer, Howard   Broadcom

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

802.3an added 10M/100M/1000M bit encodings to register bits 1.0.13 & 1.0.6 that are supposed to match teh Clause 22 encodings. This now means there is a way to select 10M or 100M data rates that do not apply to 802.3ap.

SuggestedRemedy

Add wording stating that the 10M & 100M selections are to be ignored

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

There is no need to add any wording. The existing text in 45.2.1.1 makes it clear that the 10M and 100M selections are inappropriate for 1G and 10G PHYs.

Cl **45**   *SC* **45.2.1.1**   *P* **24**   *L* **1**   # 42

Baumer, Howard   Broadcom

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

802.3an added 10M/100M/1000M bit encodings to register bits 1.0.13 & 1.0.6 that are supposed to match teh Clause 22 encodings, however, bits 13 and 6 are swapped compared to Clause 22.

SuggestedRemedy

Swap the bits such that they match Clause 22.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

This is more than an editorial comment.

Correcting this would be a significant change to the spec as 802.3ap is modifying 802.3an.

It might be better to just add a note pointing out that the bit positions are reversed.

This needs discussion within 802.3.

Cl **45**   *SC* **45.2.1.1**   *P* **24**   *L* **1**   # 39

Baumer, Howard   Broadcom

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

802.3an added 10M/100M/1000M bit encodings to register bits 1.0.13 & 1.0.6 that are supposed to match teh Clause 22 encodings. There is now a selection for 1000M (1Gbps) via these bits

SuggestedRemedy

Add wording that states this encoding shal be ignored or that it selects the 1000BASE-KX phy.

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

For the 1000BASE-KX PHY 1000 mb/s would be selected.

There is no need to add any further wording.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **45**   Page 3 of 22
SC **45.2.1.1**   5/19/2006 9:26:03 PM

Cl **45**   *SC* **45.2.7**   *P* **41**   *L* **7**   # 67
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status*   **D**
    Indicate that this is a 802.3an change. (802.3an will be published before 802.3ap).

SuggestedRemedy
    As per comment

Proposed Response   *Response Status*   **W**
    PROPOSED REJECT.

    The editors notes at the start of Clause 45 makes it clear that all Clause 45 edits are
    802.3an changes unless otherwise stated.

Cl **45**   *SC* **45.2.7.100.1**   *P* **49**   *L* **46**   # 77
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status*   **D**
    Put the 'only' right beside whatever it restricts: which is not setting.

SuggestedRemedy
    'This bit is set only if 10GBASE-KR operation has also been negotiated.' Also change 9
    point font to default 10 point.

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

Cl **45**   *SC* **45.2.7.100.1**   *P* **49**   *L* **47**   # 69
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status*   **D**
    Smaller font size used for this line. Fix the font size for this sentence.

SuggestedRemedy
    Fix the font size for this sentence to match with rest of the paragraph.

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

Cl **45**   *SC* **45.2.7.2.2**   *P* **42**   *L* **54**   # 14
Marris, Arthur   Cadence

Comment Type   **T**   *Comment Status*   **D**
    In the page received bit (7.1.6) definition it says that the AN advertisement register is valid
    when the page received bit is set the first time.

    In fact it is the AN LP base page ability register that is valid the first time this bit is set.

    This text is wrong in 802.3an and as it may be too late to correct this in 802.3an it should
    be corrected here in 802.3ap.

SuggestedRemedy
    Change 'AN advertisement register(s) 7.16-7.18' to 'AN LP base page ability registers 7.19-
    7.21' and insert a struck through '7.16' to indicate the change from 802.3an.

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

Cl **45**   *SC* **45.2.7.6**   *P* **43**   *L* **7**   # 4
Marris, Arthur   Cadence

Comment Type   **T**   *Comment Status*   **D**
    802.3ap does not use extended next pages.

SuggestedRemedy
    Add text to 45.2.7.6 to say bit 7.16.12 is reserved/tied low for 802.3ap PHYs
    Add text to 45.2.7.7 to say bit 7.19.12 is reserved for 802.3ap PHYs
    Add text to 45.2.7.8 and 45.2.7.9 to say that even though these registers have XNP in their
    titles backplane ethernet treats these as next page registers.

    Also change LD NP to XNP on line 40 on page 45 and NP to XNP on line 33 on page 46.

Proposed Response   *Response Status*   **W**
    PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **45**   Page 4 of 22
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *SC* **45.2.7.6**   5/19/2006 9:26:03 PM

Cl **69**   *SC* **69A.3**   *P* **207**   *L* **50**   # `59`

Telang, Vivek   Broadcom Corp.

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

This is a pile-on to the Unsatisfied Comment (#31) on Draft 2.3 that proposed the use of a
broadband (white) noise source as an interferer in the EIT test.
That comment was rejected primarily because it did not include a technically complete
remedy, but a straw poll showed that there was broad support for the concept.
At this meeting I am bringing in proposed draft text that describes a technically complete
remedy. I am submitting this comment to trigger the discussion of the draft text.

SuggestedRemedy

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

Refer to telang_01_0506.pdf (expected document number)

Cl **69**   *SC* **69B.4.6**   *P* **217**   *L* **5**   # `13`

Mellitz, Richard   Intel

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

It was demonstrated in "valliappan_c2_0506.pdf" that the crosstalk aggressor amplitude
effects channel performance. I believe we need to add some test to direct to system
designers to consider this. In my opinion this is system issue is outside the domain of this
standard.

SuggestedRemedy

Change:
""assume that aggressors and victim are driven by PHYs of the same type.""
To:
""assume that aggressors and victim are driven by PHYs of the same type and
characteristics. It is the system designer's responsibility to adjust the power sum crosstalk
based on system design constraints. The worst case adjustment can not exceed 3.5 dB."

Proposed Response   *Response Status*   **W**
PROPOSED ACCEPT IN PRINCIPLE.

The commenter appears to wish add guidance to the appropriate adjustment of the
quantities PSNEXT and PSFEXT based on the peak amplitude of the aggressor relative to
the peak amplitude of the victim,

This seems to be an oversimplification of the issue. The coupled voltage from the
aggressor to the victim is a function of the amplitude, symbol rate, rise time, and
equalization setting (if appropriate) of the aggressor transmitter. The relationships were
illustrated in healey_01_0206.

In addition, no rationale is supplied for the 3.5 dB correction limit. It seems that any
correction would be appropriate so long as the ICR requirements are met.

A more comprehensive correction factor may be in order. This is a topic of discussion for
the TF.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **69**   Page 5 of 22
SC **69B.4.6**   5/19/2006 9:26:03 PM

Cl **69A**   *SC* **2**   *P* **206**   *L* **31**   # 35

Spagna, Fulvio   INTEL

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

BER pattern generators do not, in general, have direct control of the rise and fall time. Furthermore, it has been shown that the EIT baseline value depends on the rise and fall time of the pattern generator (re. valliappan_c1_0506).

SuggestedRemedy

Introduce a dependency between the EIT baseline and the generator rise/fall time.

A supporting presentation will be shown at the May interim meeting.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refer to spagna_01_0506 (expected document number).

Cl **69B**   *SC* **69B.4.6**   *P* **217**   *L* **5**   # 28

radhakrishnan, prakash   Intel

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

As was shown by Magesh the crosstalk amplitude has a significant effect on the Channel performance. The Reciever eye can get closed depedeing on the amplitude and equalizer settings of the victim and aggressor.
In a real system we can have a KX4 channel whose max amplitude can be 1.6V adjacent to a KR channel with 800mV amplitude. This can cause a significant amount of crosstalk coupling and the RX eye can be closed.

SuggestedRemedy

The spec should be changed to restrict the amplitude of the transmitter or we need to come up with a common set of crosstalk assumtions to enable the system designer to make the tradeoff between Insertion loss and crosstalk.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refer to comment 13. Note that the commenter is not a member of the P802.3ap Working Group Ballot pool and this comment should be treated as technical.

Cl **69b**   *SC* **69B.4.6**   *P* **217**   *L* **7**   # 11

Mellitz, Richard   Intel

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

It was shown in ""dambrosia_c1_0506.pdf"" implementation plays an important role in determining crosstalk. Considering it took us 3 years to figure this out, I think it would be worth mentioning.

SuggestedRemedy

Insert before line 7

The assignment for which channels are considered as near and far end crosstalk aggressors should be based on an analysis of connector pinouts, system channel characteristics, and backplane architecture. The half duplex nature the PHY dictates that channels cannot simultaneously be both a NEXT and FEXT aggressors even thought s parameter measurement of such are possible.

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

The proposed statement seems implicit in the definition of the terms NEXT and FEXT, and does not need to be re-stated.

Cl **69b**	*SC* **69B.4.6.4**	*P* **217**	*L* **45**	*#* 12

Mellitz, Richard   Intel

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

It has been demonstrated in "spagna_c1_0406.pdf" that ICR needs to be account for channel self impairments to distinguish a "good" from "bad" channel. An ILD penalty is required to either adjust the ICR limit or the ICR fit. This need be reflective of potential receiver gain and channel return loss.

SuggestedRemedy

Change eq 69b-24 to

$ICRfit(f) - ICR\_penalty >= ICRmin(f) = 14.8 - 18.7*\log(f/5GHz)$

Add the following text before line 11 on page 218

The ICR computed in equation 69b-23 inherently incorporates channel self-impairments and can not distinguish between channels that have large ILD and channels that have no ILD. An ICR penalty respective of ILD is defined to adjust the ICR test. Two parameters are used to determine the ICR penalty, FBX(fb) and IILD^2.

The attenuation fit below Amax at frequency fb, FBX(fb) is defined equation 69B-XX

$FBX(fb) = Amax(fb) - A(fb)$ (69B-XX)

The integral of insertion loss deviation squared, IILD^2 is defined in equation 69B-YY

$IILD^2 = int(ILD(f)^2 \, df)/1e9$ | from fa to fb.   (69B-YY)

The parameter ILD_penalty is defined in equation 69B-ZZ

ILD_penalty =
    IF $(-2.21 + 0.9 \, IILD^2 + 0.0351 * (FBX(fb) - 3.57)) > 0$
        THEN $(-2.21 + 0.9 \, IILD^2 + 0.0351 * (FBX(fb) - 3.57))$
         ELSE 0   (69B-ZZ)

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refer to mellitz_01_0506 (expected document number). In addition, will supply formatted FrameMaker text for review.

Cl **70**	*SC* **70.7.2.1**	*P* **72**	*L* **34**	*#* 57

Baumer, Howard   Broadcom

Comment Type **TR**   *Comment Status* **D**   *for TF*

It has not been shown that this EITbase limit is the appropriate value. Since this is the one value that is meant to show that a 1000BASE-KX receiver will work and that existing 1000BASE-X phys are meant to be included the task force needs to demonstrate this level screens out phys that won't work on the targeted media as well as passes those that meet 1000BASE-X.

SuggestedRemedy

Demonstrate this value is approriate and / or change to a properly demonstrated value that is.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **70**	*SC* **70.7.2.1**	*P* **72**	*L* **43**	*#* 75

Ganga, Ilango   Intel

Comment Type **T**   *Comment Status* **D**   *for TF*

Table 70-8 Test pattern refers to Jitter test frame as defined in 59.7.1.

In Clause 59.7.1, table 59-14, row ""Phase Jump, Repeat one time for 9 bytes"", however there are only 8 bytes defined in the corresponding rows. Either this should be 8 bytes or if it is 9 one more byte pattern has to be defined.

SuggestedRemedy

Either add a note below 70-8 indicating this error or submit errata to 802.3-2005. For Jitter test frame ""Refer to 59-14 with following correction, ""Phase Jump, Repeat one time for 8 bytes"" (instead of 9 bytes).

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **70**   Page 7 of 22
SC **70.7.2.1**   5/19/2006 9:26:03 PM

Cl **71**   *SC* **71.7.2.1**   *P* **90**   *L* **6**   # 58

Baumer, Howard   Broadcom

Comment Type **TR**   *Comment Status* **D**   *for TF*

It has not been shown that this EITbase limit is the appropriate value. Since this is the one value that is meant to show that a 1000BASE-KX4 receiver will work and that existing 1000BASE-CX4 like phys are meant to be included the task force needs to demonstrate this level screens out phys that won't work on the targeted media as well as passes those that meet 1000BASE-X4.

SuggestedRemedy

Demonstrate this value is approriate and / or change to a properly demonstrated value that is.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **72**   *SC* **36.10.2.**   *P* **102**   *L* **15**   # 7

Andre, Szczepanek   Texas Instruments

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

transmiteequalizer

SuggestedRemedy

transmit equalizer

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **6.10**   *P* **111**   *L* **45**   # 36

Spagna, Fulvio   INTEL

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

There is a disconnect in the Frame Lock state diagram in Figure 72-4 on page 99 between the Function of SLIP which defines the ôframe sync positionö and the new_marker variable which defines when a ôcandidate frame marker is available.ö The disconnect occurs because for each ôframe sync positionö there are 137 possible candidate frame marker positions. Note that 137 is a 4384 UI frame divided by the 32 UI marker.

The Frame Lock state diagram seems to either a) only check one of the 137 frame marker positions for five frames or b) only check five frame marker positions for one frame sync position. Both of these behaviors seem sub-optimal as a) would take 137 times longer to gain ôframe_lock = trueö and b) would not test all of the possible frame marker positions

SuggestedRemedy

Change the Frame Lock state diagram to check all 137 possible candidate frame marker positions for each ôframe sync position.ö

A supporting presentation will be shown at the May Interim.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Need presentation

Cl **72**   *SC* **6.10.2.6**   *P* **105**   *L* **51**   # 10

Andre, Szczepanek   Texas Instruments

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

""The pseudo-random generator shall have a random seed at the start of the training pattern"".

My reading of this is that the generator must be reseeded for every training pattern, and it is not acceptable to free-run the generator between sucessive patterns.
Was this what was agreed ?.

SuggestedRemedy

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Needs discussion. Not clear from the meeting minutes.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72**   *SC* **6.10.3.1**   *P* **106**   *L* **33**   # 8

Andre, Szczepanek   Texas Instruments

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

   Definition of gain, deleted, yet gain is still referenced in definition of COEFF_UPDATE.

SuggestedRemedy

   Re-instate definition of gain with the following text:
   Integer variable containing the increment/decrement value used for coefficient updates.
   The value of gain is implementation dependant.

   You can also remove the proviso
   ""The value of gain is implementation dependant"" from the definition of COEFF_UPDATE.

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT.

Cl **72**   *SC* **7**   *P* **114**   *L* **45**   # 32

Spagna, Fulvio   INTEL

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

   For consitency with clause 70 and 71 specify the nominal Unit Interval.

SuggestedRemedy

   Add following text: ""The corresponding unit interval is nominally 96.96 pS.""

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT.

Cl **72**   *SC* **7**   *P* **115**   *L* **1**   # 33

Spagna, Fulvio   INTEL

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

   Capitalization error.

SuggestedRemedy

   Change ""the common mode ..."" to ""The common mode ..""

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT.

Cl **72**   *SC* **7**   *P* **117**   *L* **33**   # 34

Spagna, Fulvio   INTEL

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

   Incomplete reference

SuggestedRemedy

   Change reference 45.2.1.78 to 45.2.1.78.3

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT.

Cl **72**   *SC* **7**   *P* **122**   *L* **34**   # 37

Spagna, Fulvio   INTEL

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

   Consolidate simulation work presented at the Channel-ad-hoc meetings and update the
   EITR baseline limit.

SuggestedRemedy

   Change EIT baseline limit to 16 mVpp.

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT IN PRINCIPLE.

   Needs presentation (See comment #: 30)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72**   Page 9 of 22
SC **7**   5/19/2006 9:26:03 PM

Cl **72**   *SC* **7.1.10**   *P* **107**   *L*   # 38

Valliappan, Magesh   Broadcom

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

If aggressor transmitters are at their highest amplitude setting, receivers will not be able to interoperate. We should limit the transmit amplitude to a smaller range and limit the equalization.

SuggestedRemedy

Change Transmitter max Vpp to 1000mV.
In 72.7.2.4, at the end of the paragraph add -

In table 72-8, row 1, change Vss range to 220mV to 275mV
In table 72-8, row 2, change Vss range to 400mV to 500mV
On line 36 on same page change 600mV to 500mV

change 1200mV to 1000mV in
1) On Line 52, 72.7.2.4, page 110,
2) In table 72-6 change 1200 to 1000
3) 72.7.1.4 page 102, line 50
4) 72.10.4.4 item TC4

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

Needs supporting simulations to justify changes.

Cl **72**   *SC* **7.1.10**   *P* **119**   *L* **37**   # 9

Andre, Szczepanek   Texas Instruments

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

Note d) refers to ""Vpk greater than 600mV"" whereas note c) has had such text replaced with a reference to ""a violation of 72.7.1.4"".

SuggestedRemedy

change note d) to form of c)

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **72.6.10.2.1**   *P* **101**   *L* **47**   # 23

Healey, Adam   Agere Systems

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

This wording applied when the training pattern was PRBS58, but it is not true now that the pattern is PRBS11. The frame marker does not occur in the training pattern.

SuggestedRemedy

Change sentence to read:

""This pattern does not appear in the control channel or the training pattern and therefore serves as a unique indicator of the start of a training frame.""

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **72.6.10.2.3**   *P* **102**   *L* **15**   # 21

Healey, Adam   Agere Systems

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

""transmiteequalizer"" should be ""transmit equalizer""
Also, missing comma from line 17, ""initialize, and coefficient updates""

SuggestedRemedy

Per comment.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **72.6.10.2.3**   *P* **102**   *L* **15**   # 70

Ganga, Ilango   Intel

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

Fix typo on line 15: ""transmiteequalizer"" taps.

SuggestedRemedy

Fix typo: transmit equalizer taps.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72**   Page 10 of 22
SC **72.6.10.2.3**   5/19/2006 9:26:03 PM

Cl **72**   *SC* **72.6.10.2.3.2**   *P* **103**   *L* **22**   # 24

Healey, Adam   Agere Systems

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

This is beyond the scope of this recirculation ballot, but it is a problem that the Task Force may want to address prior to sponsor ballot.

72.6.10.2.3.2 states that preset shall not be asserted in conjunction with initialize or coefficient updates. In the event that this should happen, it is implied that preset takes precedence. However, 72.6.10.2.3.3 has similar statements yet implies that initialize takes precedence. Which is it?

SuggestedRemedy

Establish self-consistent ranking of coefficient update operations (for example, from highest precedence to lowest: preset, initialize, coefficient update).

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.
Added priority to the description of the UPDATE_COEFF function:

If multiple actions are requested in the coefficient update field priority will be:
1) preset
2) initialize
3) inc/dec

Cl **72**   *SC* **72.6.10.2.3.2**   *P* **103**   *L* **8**   # 26

Healey, Adam   Agere Systems

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

This is beyond the scope of this recirculation ballot, but it is an issue that I wanted to put to the Task Force for consideration.

I am concerned that the preset and initialization control have no protection from decoding errors. The differential coefficient update scheme was adopted so that the system could recover from the occasional error in control field reception, and the ""receiver ready"" indications require that the same value be received in three consecutive control frames before the change in state is acknowledged. However, a single decoding error can cause the transmitter to default to a state, possibly very far away from the optimum transmitter value. On the very challenging channels where this scenario is more likely, this may be an error from which the link cannot recover.

SuggestedRemedy

If the Task Force wishes to address this issue, there are several ways that the protocol can be made more robust. The simplest may the application of a consistency check to all fields and not just receiver ready.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.
Need proposal

Cl **72**   *SC* **72.6.10.2.3.4**   *P* **103**   *L* **42**   # 31

Abler, Joe   IBM

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

""The amount of change implemented by the transmitter in response to the coefficient update request is not specified in the standard.""
This is inconsistent with section 72.7.1.10

SuggestedRemedy

delete Table 72-7 (page 118) and associated text.

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

See comment 25

Cl **72**   *SC* **72.6.10.2.3.4**   *P* **103**   *L* **42**   # 25

Healey, Adam   Agere Systems

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

The sentence ""The amount of change implemented by the transmitter in response to the coefficient update request is not specified in the standard"" is not a true statement. The change is bounded to a range as defined in 72.7.1.10.

SuggestedRemedy

Strike the sentence.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change sentence from:
The amount of change implemented by the transmitter in response to the coefficient update request is not specified in the standard.

To:
The amount of change implemented by the transmitter in response to the coefficient update request shall meet the requirements of Table 72-7 and section 72.7.1.10.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72**   Page 11 of 22
SC **72.6.10.2.3.4**   5/19/2006 9:26:03 PM

Cl **72**   *SC* **72.6.10.3.4**   *P* **108**   *L* **46**   # 27

Healey, Adam   Agere Systems

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

The new definition of coefficient update is not consistent with its usage in the corresponding state machine (Figure 72-8).

In addition, use of the term ""gain"" to indicate the change in the coefficient does not seem to be appropriate. The term ""step"" is recommended and the note at the end of the definition on page 109 should refer to the requirements of 72.7.1.10 and Table 72-7. Simply saying that the gain/step is implementation dependent is not satisfactory.

SuggestedRemedy

Make Figure 72-8 consistent with the COEFF_UPDATE function defined in 72.6.10.3.4 or vice versa. Modify nomenclature in the function definition according to the recommendations in the comment.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

New text:
FUNCTION:

COEFF_UPDATE(coefficient, preset, initialize, inc, dec)
Returns an updated coefficient based on the contents of the coefficient update field in the training frame. Sets a fixed coefficient value, or adds, or subtracts from the current coefficient value to create the updated coefficient. If multiple actions are requested in the coefficient update field priority will be:
1) preset
2) initialize
3) inc/dec

Values:
preset: If preset is TRUE then the function returns the coefficient value equivalent to no equalization (C(-1) & C(1) coefficients are set to zero, C(0) set to maximum).
initialize: If initialize is TRUE then the function returns the coefficient value such that the transmit output meets the conditions defined in 72.6.10.3.2
inc: If inc is TRUE then the function returns coefficient + gain in compliance with 72.7.1.10 and Table 72-7.
dec: If dec is TRUE then the function returns coefficient-gain in compliance with 72.7.1.10 and Table 72-7.

Cl **72**   *SC* **72.6.5**   *P* **100**   *L* **2**   # 19

Healey, Adam   Agere Systems

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

This is beyond the scope of this recirculation ballot, but it is an issue that I wanted to put to the Task Force for consideration.

Requirement (a) states that the transmitter shall be turned off such that it drives a constant level (i.e. no transitions). The definition of no transitions is somewhat dependent on the sensitivity of the receiver, as it can be expected that the ""constant"" level will have some ripple about the average value. This value should be bounded so that the receiver may set a squelch level appropriately and prevent false locking.

SuggestedRemedy

Adopt a maximum voltage ripple limit for an ""off"" transmitter and list it in table 72-6. Also consider comparable specifications for clauses 70 and 71. This values should be less than the minimum sensitivity assumed in the simulation models (e.g. less than 20 to 30 mVpk-pk).

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72**   Page 12 of 22
SC **72.6.5**   5/19/2006 9:26:03 PM

Cl **72**   *SC* **72.7.1.10**   *P* **118**   *L* **1**   # 18

Healey, Adam   Agere Systems

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

While all of the critical pieces appear to be present, the modifications adopted at the March plenary meeting have not been correctly woven into the original text. A list of the most egregious issues is below:

1. Page 118, line 29: Per 72.7.1.11, transmit equalizer performance is now based on 6 voltages, 2 ripple bounds, and 2 ratios. These changes are not reflected this sentence. The text continues to reference the old variable definitions.
2. Table 72-7 still refers to Vpre, Vpst, and Vss even though, per 72.7.1.11, these variables no longer exist
3. Table 72-8 still refers to Vss even though this variable no longer exists
4. Requirements for Vrripple, Vfripple, and Vpre/Vpst/Vss matching are compliance requirements and should appear in 72.7.1.10, rather than 72.7.1.11 which is concerned with measurement requirments.
5. Page 119, line 35. The text for item (c) was changed to represent a requirment which are identical to the original text and current text of item (d). The referenced subclause really does little more than say that Vpk cannot exceed 600 mV. It is suggested that one consistent phrasing of the requirement be used.
6. There is no rigorous definition of the term ""ripple"" in 72.7.1.11.

SuggestedRemedy

The required corrections are difficult to thoroughly enumerate in this comment form so a document illustrating the proposed corrections will be submitted prior to the interim meeting.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

1) Accept
2)Accept
3) Accept
4)Add
 'The absolute value of Vrpreand Vfpre must be within 5%. The absolute value of Vrpst and Vfpst must be within 5% and the absolute value of Vrss and Vfss must be within 5%. The maximum value of Vrripple and Vfripple shall be
+/-20mv."
 to the note section of Table 72-8.
5) Accept: See comment #47
6) Accept in Principle, Need proposal

Cl **72**   *SC* **72.7.1.10**   *P* **118**   *L* **29**   # 44

Baumer, Howard   Broadcom

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

Vpre, Vpst, Vss are no longer being used in the output waveform template.

SuggestedRemedy

Change these to Vrpre, Vrpst, Vrss, Vfpre, Vfpst & Vfss

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **72.7.1.10**   *P* **118**   *L* **44**   # 45

Baumer, Howard   Broadcom

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

Vpre, Vpst & Vss are no longer used in the output waveform figure 72-14

SuggestedRemedy

Add note to table 72-7 stating that Vpre represents either Vrpre or Vfpre, the Vpst represents Vrpst or Vfpst and Vss represents Vrss or Vfss. OR
Just replace Vpre(k)-Vpre(k-1) with ""Vrpre(k)-Vrpre(k-1) or Vfpre(k)-Vfpre(k-1)"" and then the same with Vpst & Vss.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Add note to table 72-7 stating that Vpre represents either Vrpre or Vfpre, the Vpst represents Vrpst or Vfpst and Vss represents Vrss or Vfss.

Cl **72**   *SC* **72.7.1.10**   *P* **118**   *L* **46**   # 54

Baumer, Howard   Broadcom

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

If the suggested remedies for the polarity of Vrpre, Vfpst and Vfss are accepted the requirements for the Vpre column also need to have their polarity reversed.

SuggestedRemedy

Reverse (invert) the polarity of the requirements for Vpre column.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **72**   *SC* **72.7.1.10**   *P* **119**   *L* **18**   # 46

Baumer, Howard   Broadcom

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

Vss no longer exists

SuggestedRemedy

Replace with Vrss & Vfss

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **72.7.1.10**   *P* **119**   *L* **35**   # 47

Baumer, Howard   Broadcom

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

Both the increment and decrement commands for C(-1) & C(1) can cause a violation of 72.7.1.4 but only decrement is stated.

SuggestedRemedy

change ""... decrement applied ..."" to ""... decrement or increment applied ..."""

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change from:
'Any coefficient update equal to decrement applied to c(-1) or c(1) that would result in a violation of 72.7.1.4 shall return a coefficient status value maximum.'

to:
'Any coefficient update applied to c(-1) or c(1) that would result in a violation of 72.7.1.4 shall return a coefficient status value maximum.'

Cl **72**   *SC* **72.7.1.10**   *P* **119**   *L* **37**   # 56

Baumer, Howard   Broadcom

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

Table 72-8 says that a c(0) status of maximum has Vss between 400-600mV and since this is the non-equalized case vpk = Vss. Line d) here says that a c(0) status of maximum has Vpk at 580-595mV, status of maximum given if Vpk would be greater than 600mV if the increment were to take place. This places two seperate meanings for maximum.

For each c(0) increment that returns a status of updated Vpre, Vpst, Vss has to increase by at least 5mV, therefor the differential output amplitude has to increase by at least 10mV. Therefore if a c(0) status for increment returns maximum the output amplitude has to be between 1160-1190mV. If the output amplitude cannot reach 1080-1190mV and an increment is given to c(0) the only recourse is to return a status of not updated. This places two seperate meanings for not updated.

SuggestedRemedy

Change requirement ""d"" to:

d) Any coefficient update equal to increment applied to c(0) that would result in Vpk between 400mV and 600 mV and Vrpre, Vrpst, Vrss, Vfpre, Vfpst and Vfss to increase by less than 5mV shall return a coefficient status value of maximum.

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

Cl **72**   *SC* **72.7.1.11**   *P* **119**   *L* **47**   # 53

Baumer, Howard   Broadcom

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

This comment ties together with the comments on the polarity of Vrpre, Vfpst and Vfss. If the suggested remidy for changing the polarity of these measurements is accepted there is no longer a need for ""absolute value"" in this paragraph.

SuggestedRemedy

Remove the the three instances of ""absolute""

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **72** *SC* **72.7.1.11** *P* **119** *L* **47** # 48
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
the tollerance of Vrpre to Vfpre and Vrpst to Vfpst and Vrss to Vfss are all state with ""must be"" instead of shall

SuggestedRemedy
replace the 3 instances of ""must be"" with ""shall"".

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **72** *SC* **72.7.1.11** *P* **120** *L* **27** # 49
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
In Figure 72-14: Vrss is incorrectly labeled as Vrrss.

SuggestedRemedy
Change Vrrss to Vrss

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **72** *SC* **72.7.1.11** *P* **120** *L* **28** # 52
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
Vfpst has the opposit polarity as Vrpst. It would be much easier and straight forward if Vrpst and Vfpst were the same polarity.

SuggestedRemedy
Change Vfpst to -Vfpst

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **72** *SC* **72.7.1.11** *P* **120** *L* **30** # 50
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
Vfss is incorrectly labeled as VfRss. Also Vfss has the opposite polarity of Vrss. It would be much easier and straight forward if Vfss and Vrss are the same polarity.

SuggestedRemedy
Change Vfrss to -Vfss.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **72** *SC* **72.7.1.11** *P* **120** *L* **37** # 51
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
Vrpre is labeld shuch that it is the opposite polarity as Vfpre. It would be much easier and straight forward if Vfpre and Vrpre are the same polarity.

SuggestedRemedy
change Vrpre to -Vrpre

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **72** *SC* **72.7.1.11** *P* **120** *L* **47** # 55
Baumer, Howard Broadcom

Comment Type **T** *Comment Status* **D**
The definition for ""t2"" is exactly the same as for ""t0"". This can cause confusion and needs to be changed

SuggestedRemedy
change the definition to: ""... of the first rising edge, later in time than t1, of the ...""

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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| *Cl* **72** | *SC* **72.7.1.8** | *P* **117** | *L* **39** | # 15 |

Healey, Adam   Agere Systems

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

The definition of peak-peak duty cycle distortion is not consistent with the conventions used to define peak-peak deterministic jitter yet the wording of the clause indicates that they are.

Peak-peak deterministic jitter is range of time deviation for transitions.
Peak-peak duty cycle distortion is the difference between the width of a one pulse and a zero pulse, which twice the range of the deviation measured on a given transition.

Therefore, when it is stated that DCD is considered a component of the 0.15 UI peak-peak DJ, and its limit is 0.05 UI peak-peak, this misleads the reader to beleive that 0.10 UI peak-peak is left for other forms of DJ, when in fact is is 0.125 UI peak-peak.

Language should be added to clarify this discrepancy, or the definitions should be made consistent.

SuggestedRemedy

Add lanuguage to differentiate peak-peak DCD from peak-peak DJ (including an appropriate footnote in Table 72-6, or redefine DCD to be half of the difference between the width of the one pulse and width of the zero pulse.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment #29

| *Cl* **72** | *SC* **72.7.1.8** | *P* **117** | *L* **40** | # 29 |

Abler, Joe   IBM

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

DCD is defined to be a portion of the jitter budget with a value of 0.05UIpp. The description however results in a unitless ratio that is inconsistent with this definition and is causing confusion as evidenced by recent reflector exchanges.

SuggestedRemedy

Following wording is recommended:
Duty cycle distortion (DCD) is considered a component of deterministic jitter and shall not exceed 0.05 UI peak-to-peak. The Duty Cycle Distortion is defined as the absolute value of the difference in the mean pulse width of a ""1"" pulse or the mean pulse width of a ""0"" pulse (as measured at the mean of the high and low voltage levels in a clock-like repeating 0,1,0,1 bit sequence) and the nominal pulse width.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

| *Cl* **72** | *SC* **72.7.1.8** | *P* **117** | *L* **42** | # 16 |

Healey, Adam   Agere Systems

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

This test calls for a test pattern consisting of an clock-like {1, 0, 1, 0} sequence, yet provides no guidance as to how this pattern is to be generated by the DUT, or how long the repetition should continue.

This issue is also present in 72.7.1.4, which calls for a clock-like test pattern to verify peak-peak differential output voltage.

The transmit jitter test requirements call out that the pseudo-random pattern defined in 49.2.8 with the seed values shown in 52-20 be used. This would lead the reader to believe that the An and Bn seeds should be loaded into the appropriate registers for the test. However, this understanding would be due to a unfortunate use of nomenclature in clause 52. The intent was to define two test patterns. Test pattern 1 uses the seeds BnBiBnBi and test pattern 2 uses the seeds AnAiAnAi. For other 10GBASE-R PMDs, test pattern 2 or PRBS31 is prescribed for stressed receiver testing, so it is proposed that these patterns be used for 10GBASE-KR transmit jitter testing and interference tolerance testing.

Within test pattern 2, there are three occcurences of an 11-bit series of clock-like data {0, 1, 0, 1...}. It would seem appropriate to require that the minimum clock-like waveform sequence length should some value smaller than this to enable to use of test pattern 2 or PRBS31 to verify duty cycle distortion requirements. Such a scheme would spare the task force the effort to allocation additional bits in management (clause 45) to support the generation of clock-like sequences.

Refer to http://ieee802.org/3/bladesg/email/msg00729.html for a more detailed overview of the clause 52 test patterns

SuggestedRemedy

1. Define the test pattern for transmit jitter measurement (72.7.1.9) be test patterns 2 or 3 as defined in 52.9.1.1
2. Define the test pattern for interference tolerance testing (Table 72-11) be test patterns 2 or 3 as defined in 52.9.1.1
3. Re-define the duty cycle distortion test pattern in 72.7.1.8 to be no fewer than eight symbols of alternating polarity. Add a note that such patterns may be found in the training pattern field of the training frames or test patterns 2 or 3 as defined in 52.9.1.1.
4. Re-define the test pattern for differential output voltage (72.7.1.4) in a similar fashion to (3) above.
5. It is also suggested that the duty cycle distortion measurement requirements text be moved to 72.1.7.9 with the other transmitter jitter test requirements

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

1) Accept
2) Accept
3) Concerns that the 'mean' pulse width will be different for the first 1-2 pulses of the 8

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
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symbols. i.e. do we allow measurement of any of the 8 symbols? The DCD measurement would be much cleaner if we could produce a continuous 1010 pattern.

4) See (3)

5) Move 'The Duty Cycle Distortion is defined as the absolute value of the difference in the mean pulse width of a ""1"" pulse or the mean pulse width of a ""0"" pulse (as measured at the mean of the high and low voltage levels in a clock-like repeating 0,1,0,1 bit sequence) and the nominal pulse width.' from 72.7.1.8 to 72.7.1.9.

Cl **72**   *SC* **72.7.1.8**   *P* **117**   *L* **43**   # 40

Baumer, Howard   Broadcom

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

Sentce fragment ""and the nominal pulse width."" nolonger makes sense with the latest changes to this paragraph.

SuggestedRemedy

Remove ""and the nominal pulse width""

Proposed Response   *Response Status*   **W**

PROPOSED REJECT.

See comment 29

Cl **72**   *SC* **72.7.2.1**   *P* **122**   *L* **28**   # 30

Abler, Joe   IBM

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

The EIT test requirements do not account for the impact of DCD, which is a significant portion of the test budget. See abler_c1_0506

SuggestedRemedy

Add an entry to Table 72.11 requiring that a minimum of 0.05UIpp DCD be applied during testing. The 15mVpp baseline spec is then appropriate for the test.

Alternatively, allow 2 testing options, one where a minimum of 0.05UIpp DCD is applied, and another with no specification on DCD. The EIT baseline spec needs to change. For the option with min 0.05UIpp DCD applied a value of 15mVpp is appropriate. For the option with no DCD spec the EIT baseline should be increased to 25mVpp.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Need presentation (see comment 37)

Cl **72**   *SC* **Figure 72-1**   *P* **99**   *L* **13**   # 20

Healey, Adam   Agere Systems

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

Insert missing underscore in ""tx_bit"" and ""rx_bit"".

Expand text box for ""signal_detect"" so that it does not word-wrap.

Also check Figures 70-1 and 71-1 for similar editorial corrections.

SuggestedRemedy

Per comment

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **Figure 72-9**   *P* **114**   *L* **12**   # 17

Healey, Adam   Agere Systems

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

This is beyond the scope of this recirculation ballot, but it is an issue that I wanted to put to the Task Force for consideration.

The capacitor value for the transmitter test fixture is defined to be 4.7 nF while the maximum recommended value in 72.7.2.3 is 100 nF. For the prescribed mixed frequency test patterns, 4.7 nF will yeild considerably more baseline wander which will impact measurement results (namely, transmit jitter).

While such baseline wander should be budgeted for in applications that choose to use coupling capacitor values in this range, it is inherent to the pattern and not necessarily relevant to transmitter compliance tests. It is recommended that the higher coupling capacitor value be reflected in the figure.

This was brought to my attention by the fact the Figure 70-2 should a 100 nF coupling capacitor, and reasoning for this escapes me. It is suggested that this be reverted to 4.7 nF.

SuggestedRemedy

1. Change coupling capacitor values in Figure 72-9 to 100 nF

2. Change coupling capacitor values in Figure 70-2 to 4.7 nF

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **72**   *SC* **Table 72-11**   *P* **122**   *L* **35**   # 22

Healey, Adam   Agere Systems

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

Suggest changes to the nomenclature to clean up the table and avoid the gratuitous use of subscripts...

""Rise time min"" to ""Applied transition time (min)"". Units remain ""ps"".
""Applied jitter"" to ""Applied jitter (rms)"". Units change to ""mUI"".

SuggestedRemedy

Per comments. Also change clauses 70 and 71 for the sake of consistency.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **73**   *SC* **73.10.1**   *P* **153**   *L* **43**   # 72

Ganga, Ilango   Intel

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

The Next page transmit register is now called AN XNP transmit register in clause 45.

Also fix the missing hyper link to 45.2.7.8 (this is a local reference)

SuggestedRemedy

Modify Next page transmit register to ""AN XNP transmit register"".

Fix the missing hyper link to 45.2.7.8

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **73**   *SC* **73.10.4**   *P* **162**   *L* **45**   # 41

Baumer, Howard   Broadcom

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

Since next pages are manditory this note is no longer needed

SuggestedRemedy

Remove note.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **73**   *SC* **73.6**   *P* **140**   *L* **52**   # 5

Marris, Arthur   Cadence

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

Next page support is mandatory

SuggestedRemedy

Change 'may support' to 'supports'

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **73**   *SC* **73.6.4**   *P* **142**   *L* **12**   # 71

Ganga, Ilango   Intel

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

Typo: Line 12 should read as ""Backplane Ethernet""

SuggestedRemedy

Modify line to read as follows:

...Auto-Negotiation for Backplane Ethernet is described...

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **73**   Page 18 of 22
SC **73.6.4**   5/19/2006 9:26:03 PM

Cl **73**   *SC* **73.6.5**   *P* **142**   *L* **40**   # 83

Dawe, Piers   Avago Technologies

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

This statement that FEC is only used with 10GBASE-KR is too sweeping. There are other FECs, for example in 65.2: designed for 1000BASE-PX but could be applied to 1000BASE-KX, and this FEC is available for other 10GBASE-R types, as it is a separate sublayer. But 10GBASE-KR is the only 10GBASE-R port type that can use Clause 73 Auto-Negotiation for Backplane Ethernet and FEC.

SuggestedRemedy

Delete 'and FEC is only used with 10GBASE-KR' (or rewrite it). If not already done, consider if you want to address 65.2 1000BASE-X FEC for 1000BASE-KX in this AN clause - there may be no interest in it.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
There is no interest in using 1000BASE-X FEC for 1000BASE-KX (as evidenced by there having been no proposals to do so). Also that aspect of this comment is out of scope for this recirculation as there has been no change in that aspect of Backplane Ethernet.

Change "and FEC is only used with 10GBASE-KR" to "this FEC capability is only used with 10GBASE-KR".
The previous paragraph makes it clear that this bit is for 10GBASE-KR FEC. If another optional FEC is added for another Clause 73 PHY in the future, it would probably need its own bit because having the optional FEC associated with one PHY doesn't mean one has the optional FEC associated with another PHY.

Cl **73**   *SC* **73.6.8**   *P* **143**   *L* **31**   # 6

Marris, Arthur   Cadence

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

If next pages are to be sent and the XNP transmit register has not been loaded the Link Codeword may be transmitted more than 8 times.

Also the names of the registers in 73.6.8 need to be updated.

SuggestedRemedy

Add the following to the last sentence: 'or more if next pages are to be exchanged and the AN XNP transmit register has not yet been loaded.'

Change 'Auto-Negotiation Next Page transmit' to 'AN XNP transmit'.

Change 'Auto-Negotiation link partner ability' to 'AN LP XNP ability'.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Instead change "six to eight" to "at least six to eight"

Also, since this aspect is controlled by the state machine, it doesn't need an independent shall. Change shall to will?

Accept the register name changes.

Cl **73**   *SC* **73.7.7**   *P* **146**   *L* **21**   # 2

Marris, Arthur   Cadence

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

Change 'sent' to 'set'

SuggestedRemedy

as above

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **73**   Page 19 of 22
SC **73.7.7**   5/19/2006 9:26:03 PM

Cl **74**   *SC* **74.12**   *P* **196**   *L* **5**   # 85

Dawe, Piers   Avago Technologies

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

Won't one want to test the FEC sublayer too? Is FEC compatible with PCS test patterns 1 and 2? I think I would want to test with FEC both on and off, so this subclause looks like it's too restrictive and not necessarily good advice. Does it serve any purpose any more?

SuggestedRemedy

Delete the subclause

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

74.12 is an informative text that outlines to disable FEC functions while 10GBASE-R PCS is configured for test pattern mode.

The phrase "should also be" can be modified to "may be" in line #9 as follows:

"When the 10GBASE-R PHY is configured
for test-pattern mode the FEC function may be disabled by setting the FEC Enable variable to
zero"

Cl **74**   *SC* **74.13.3**   *P* **199**   *L* **7**   # 76

Ganga, Ilango   Intel

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

test_fec_parity variable is not defined or used in state machine (Fig 74-15). Delete initialization of test_fec_parity in FEC_LOCK_INIT state

SuggestedRemedy

Delete initialization of test_fec_parity in FEC_LOCK_INIT state.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "test_fec_parity <= false" with test_fec_block <= false" in the FEC_LOCK_INIT state.

Cl **74**   *SC* **74.14.3**   *P* **201**   *L* **25**   # 74

Ganga, Ilango   Intel

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

Inconsistent font size in tables in 74.14.3

SuggestedRemedy

Fix the font sizes to be uniform across all tables in 74.14.3

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Fix the font size as per suggested remedy.

Cl **74**   *SC* **74.14.5**   *P* **203**   *L* **54**   # 80

Dawe, Piers   Avago Technologies

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

This isn't a proper name. Also only one state machine

SuggestedRemedy

Change 'State Machines' to 'state machine'

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Cl **74**   *SC* **74.2**   *P* **172**   *L* **17**   # 81

Dawe, Piers   Avago Technologies

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

In 'support Forward Error Correction mechanism', this isn't the name of the sublayer so I think the capitals are unnecessary.

SuggestedRemedy

Change to lower case.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
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SORT ORDER: Clause, Subclause, page, line

Cl **74**   Page 20 of 22
SC **74.2**   5/19/2006 9:26:03 PM

Cl **74**   *SC* **74.8**   *P* **193**   *L* **25**   # 78

Dawe, Piers   Avago Technologies

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

The short tables 74-2 and 74-2 have the same column headings: might as well combine them into one table 'MDIO/FEC variable mapping'. It would be nice to put the ability bits first (lower numbered register)

SuggestedRemedy

Please combine the tables, and put all the descriptions under 74.8

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Combine the tables 74-2 and 74-3 and put the ability bits first in the table. Modify the text in 74-8 that references this table.

Cl **74**   *SC* **74.8.1**   *P* **194**   *L* **18**   # 79

Dawe, Piers   Avago Technologies

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

Put the 'only' right beside whatever it restricts: which is not enabling.

SuggestedRemedy

The FEC function is enabled on the link only if...

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT.

Modify the text as follows:

"The FEC function is enabled on the link only if both link partners advertise they have FEC ability..."

Cl **74**   *SC* **74.8.1**   *P* **194**   *L* **5**   # 73

Ganga, Ilango   Intel

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

There is inconsistency in the register naming conventions for FEC ability register in Clause 74 and Clause 45.

Clause 74 names FEC Capability register whereas Clause 45 names it as FEC ability

SuggestedRemedy

Fix line 6, line 8 & 12 to read as ""10GBASE-R FEC ability register""

Fix similar inconsistency throughout the document including Clause 73, 74 and 45.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Modify FEC capability register to FEC ability register in table 74-2 and corresponding text in 74.8.1.

Check and replace "FEC capability" with "FEC ability" in Clauses 74, 73 and 45.

Cl **74**   *SC* **74.8.4.3**   *P* **187**   *L* **13**   # 84

Dawe, Piers   Avago Technologies

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

D2.3 comment 4: "During the IEEE 802. 3" meetings, after a (very) lengthy debate on whether to refer to the type of WDM used in 10GBASE- LX4 as "WWDM" or "CWDM", it was the concensus of the group to refer to it as "LX4- WDM". After this debate, it was discovered that all references to "WWDM" or "CWDM" had been previously removed from the document, so the concensus was not captured. Change all instances of "WWDW" to "LX4-WDM" (multiple instances).' Like my comments last time about error counter rates (rejected), this is nothing to do with Backplane Ethernet. Also, the whole of 802.3 should be changed or none of it: ' WWDM' is also used in Clause 44, Introduction to 10 Gb/s baseband network, and survived last year's revision project. So I believe we should not make irrelevant changes now: the maintenance or revision processes are more appropriate.

SuggestedRemedy

Undo the 'WDM' changes.

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

This comment does not apply to Clause 74. The LX4-WDM change is already made in 802.3ap-D2.4 subclauses 45.2.1.7.4, 45.2.1.7.5, 45.2.1.8.

So the WWDM or CWDM to LX4-WDM changes made in Clause 45 should be undone in 802.3ap-D2.4

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
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SORT ORDER: Clause, Subclause, page, line

Cl **74**   Page 21 of 22

SC **74.8.4.3**   5/19/2006 9:26:03 PM

Cl **99**   *SC*   *P* **2**   *L* **7**   # 60

Ganga, Ilango   Intel

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

   Insert ""for"" before ""10GBASE-R PHYs"" in line 7.

SuggestedRemedy

   Modify line 7 as follows:

   Finally, Clause 74 defines an optional forward error correction (FEC) sublayer for
   10GBASE-R PHYs for improved link performance.

Proposed Response   *Response Status*   **W**

   PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **99**
SC

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