Cl **00**   *SC* **0**   *P* **1**   *L* **2**   # 428

Ganga, Ilango   Intel

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

    Page1, Line 2, 30: Typo, change "Amendement" to "Amendment"
    Page3, Line 8: Typo, change "conciously" to "consciously"
    page 3, line 10: typo, change consecuively to consecutively
    page 3, line 37, typo, change to "superseded"
    page 3, line 52, two periods, remove one period at end of sentence

SuggestedRemedy

    As per comment

Response   *Response Status*   **C**

    ACCEPT.

Cl **00**   *SC* **0**   *P* **4**   *L* **29**   # 417

Ganga, Ilango   Intel

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

    IEEE 802.3az: Replace Clause xx with appropriate clause/annex number used by EEE.

SuggestedRemedy

    Replace with "This amendment includes changes to IEEE Std 802.3-2008 and adds
    Clause 78."

Response   *Response Status*   **C**

    ACCEPT.

Cl **01**   *SC* **1.1.3.2**   *P* **22**   *L* **22**   # 429

Ganga, Ilango   Intel

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

    "CGMII is is": delete one "is"

SuggestedRemedy

    As per comment

Response   *Response Status*   **C**

    ACCEPT.

Cl **01**   *SC* **1.1.3.2**   *P* **22**   *L* **30**   # 147

D'Ambrosia, John   Force10 Networks

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

    add "PPI" as a compatibility interface

SuggestedRemedy

    add the following
    Parallel Physical Interface (PPI). The PPI is provided as a physical instantation of the
    PMD service interface for 40GBASE-SR4 and 100GBASE-SR10 PHYs. While
    conformance with implementation of this interface is not strictly necessary to ensure
    communication, it is recommended, since it allows maximum flexibility in intermixing PHYs
    and DTEs. THe PPI is optional

Response   *Response Status*   **C**

    ACCEPT IN PRINCIPLE.

    add the following:

    Parallel Physical Interface (PPI). The PPI is provided as a physical instantiation of the
    PMD service interface for 40GBASE-SR4 and 100GBASE-SR10 PHYs. While
    conformance with implementation of this interface is not strictly necessary to ensure
    communication, it allows maximum flexibility in intermixing PHYs and DTEs. The PPI is
    intended for use as a chip-to-module interface. No mechanical connector is specified for
    use with the PPI. The PPI is optional.

Cl **01**   *SC* **1.3**   *P* **22**   *L* **41**   # 248

Trowbridge, Stephen   Alcatel-Lucent

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

    Add reference to ITU-T Recommendation G.694.2 (CWDM grid) as this is now necessary
    for the 40GBASE-LR4 interface

SuggestedRemedy

    Add:
    ITU-T Recommendation G.694.2, 2003, Spectral grids for WDM applications: CWDM
    wavelength grid

    after reference to G.694.1

Response   *Response Status*   **C**

    ACCEPT IN PRINCIPLE.

    and delete subclause 87.14 where it is currently specified.

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 **01**
SC **1.3**

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Cl **01**   *SC* **1.3**   *P* **22**   *L* **45**   # 352
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **A**
Another reference for the list (not sure if it's a normative or informative reference)

SuggestedRemedy
Add G.709

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

G.709 is the standard for OTN
Add the following reference to Annex A (informative references):

ITU-T G.709 Interfaces for the optical transport network (OTN)

Cl **01**   *SC* **1.3**   *P* **22**   *L* **52**   # 351
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **A**
As we are not doing the maintenance work to remove all references to ANSI/EIA/TIA-455-
127-1991, we can't do this by a 'change'

SuggestedRemedy
In the draft replace
'Change the following reference... Laser Diodes.'
with another entry for the 'insert' list,
TIA-455-127-A-2006, FOTP-127-A-Basic Spectral Characterization of Laser Diodes.

Response   *Response Status* **C**
ACCEPT.

See also comment # 354

Cl **01**   *SC* **1.4**   *P* **23**   *L* **1**   # 11
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
The definition of 40GBASE-LR4 is missing

SuggestedRemedy
Add the definition as:
"40GBASE-LR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R
encoding over four WDM lanes on single mode fiber with long reach. (See IEEE 802.3,
Clause 87.)"

Response   *Response Status* **C**
ACCEPT.

also see comment 607

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 **01**
SC **1.4**

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Cl **01**   *SC* **1.4**   *P* **23**   *L* **20**   # 9

Anslow, Peter   Nortel Networks

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

The definition of 40GBASE-SR4 is "IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four lanes of, short reach, multi mode fiber." This implies that the fibre alone determines the reach.

SuggestedRemedy

Re-word as: "40GBASE-SR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four lanes of multi mode fiber with short reach. (See IEEE 802.3, Clause 86.)"

Similarly re-word 100GBASE-SR10 definition to:

"100GBASE-SR10: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over ten lanes of multi mode fiber with short reach. (See IEEE 802.3, Clause 86.)"

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

change:
"IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four lanes of, short reach, multi mode fiber."

to:
"40GBASE-SR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four lanes of multimode fiber, with short reach. (See IEEE 802.3, Clause 86.)"

Similarly re-word 100GBASE-SR10 definition to:
"100GBASE-SR10: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over ten lanes of multimode fiber, with short reach. (See IEEE 802.3, Clause 86.)"

Cl **01**   *SC* **1.4**   *P* **23**   *L* **22**   # 607

Ganga, Ilango   Intel

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

Add 40GBASE-LR4 to the definitions list in 1.4

SuggestedRemedy

Insert the following text at line 22:

1.4.x 40GBASE-LR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four WDM lanes, long reach, single mode fiber. (See IEEE 802.3, Clause 87.)

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See comment #11 for remedy

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 **01**
SC **1.4**

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Cl **01**   *SC* **1.4**   *P* **23**   *L* **35**   # 10
Anslow, Peter   Nortel Networks

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

The definition of 100GBASE-ER4 "IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes, extended long reach, single mode fiber." This implies that the fibre alone determines the reach.

SuggestedRemedy

Re-word as: "100GBASE-ER4: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single mode fiber with extended reach. (See IEEE 802.3, Clause 88.)"

Similarly re-word 100GBASE-LR4 definition to:

"100GBASE-LR4: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single mode fiber with long reach. (See IEEE 802.3, Clause 88.)"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

add comma after fiber in suggested remedy:

Re-word as: "100GBASE-ER4: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single mode fiber, with extended reach. (See IEEE 802.3, Clause 88.)"

Similarly re-word 100GBASE-LR4 definition to:

"100GBASE-LR4: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single mode fiber, with long reach. (See IEEE 802.3, Clause 88.)"

Cl **01**   *SC* **1.4**   *P* **23**   *L* **44**   # 12
Anslow, Peter   Nortel Networks

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

The definition of virtual lanes is awkwardly worded:
"Virtual Lane: In 40GBASE-R and 100GBASE-R, the PCS distributes encoded data to multiple logical lanes, these logical lanes are called virtual lanes. They are called virtual lanes since one or more of PCS lanes can be multiplexed and carried on a physical lane together at the PMA interface."

SuggestedRemedy

Re-word as:
"Virtual Lane: In 40GBASE-R and 100GBASE-R, the PCS distributes encoded data to multiple logical lanes, these logical lanes are called virtual lanes since one or more of the PCS lanes can be multiplexed and carried on a physical lane together at the PMA interface."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. See response to comment #334.

Change Virtual Lane definition to PCS Lane (PCSL) and also add abbreviation to 1.5

Cl **01**   *SC* **1.4**   *P* **23**   *L* **44**   # 148
D'Ambrosia, John   Force10 Networks

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

Parallel Physical Interface (PPI) is not defined.

SuggestedRemedy

Add
Parallel Physical Interface (PPI) - The interface between the Physical Medium Attachment (PMA) sublayer and the Physical Medium Dependent (PMD) sublayer. (See IEEE 802.3, Clause 86)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Parallel Physical Interface (PPI) - The interface between the Physical Medium Attachment (PMA) sublayer and the Physical Medium Dependent (PMD) sublayer for 40GBASE-SR4 and 100GBASE-SR10 PHYs. (See IEEE 802.3, Clause 86)

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 **01**
SC **1.4**

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12/18/2008 11:15:30 P

Cl **01**   *SC* **1.4**   *P* **23**   *L* **50**   # 13

Anslow, Peter   Nortel Networks

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

The modified definition for "1.4.311 RMS spectral width" is shown in italic font. The font should match the base document

SuggestedRemedy

Change the font of the modified definition for RMS spectral width to match the base document

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change font style to normal from italic and make the subclause title 1.4.311 to bold.

Cl **01**   *SC* **1.5**   *P* **24**   *L* **11**   # 15

Anslow, Peter   Nortel Networks

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

The abbreviation OPU3 is expanded as "Optical Payload Unit 3" but OPU is defined in ITU-T G.709 as "Optical channel Payload Unit"

SuggestedRemedy

Change to "Optical channel Payload Unit 3"

Response   *Response Status* **C**

ACCEPT.

Cl **01**   *SC* **1.5**   *P* **24**   *L* **5**   # 14

Anslow, Peter   Nortel Networks

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

The abbreviation for CAUI is expanded as "100Gb/s Attachment Unit Interface" but the other abbreviations use "Gigabit" rather than "Gb/s"

SuggestedRemedy

Change to "100 Gigabit Attachment Unit Interface"

Response   *Response Status* **C**

ACCEPT.

Cl **04**   *SC* **4.4.2**   *P* **25**   *L* **17**   # 246

Trowbridge, Stephen   Alcatel-Lucent

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

Should "96 bits" entry for 40 Gb/s and 100 Gb/s include reference to "NOTE 7" below the table? Note 7 explains that this could be as little as 8 bits in the Rx direction

SuggestedRemedy

Include reference to Note 7 in this table cell

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

change Note 7 to foot note b against 96 bits in last column.

Cl **04**   *SC* **4.4.2**   *P* **25**   *L* **46**   # 16

Anslow, Peter   Nortel Networks

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

Underneath the new note 7 there is a box containing "WARNING Any deviation from the above specified values may affect proper operation of the network."
This warning box is already present in the base standard beneath the notes to Table 4-2.
Is this warning to be added again part way through the notes? If so, this has the effect of effectively removing the warning from all of the notes except new note 7 and the last note.

SuggestedRemedy

Remove the warning box from below the new note 7

Response   *Response Status* **C**

ACCEPT.

Cl **30**   *SC* **30.3.2.1.2**   *P* **27**   *L* **11**   # 151

D'Ambrosia, John   Force10 Networks

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

30.3.2.1.2 aPhyType needs updated

SuggestedRemedy

add
40GBASE-R Clause 82 40 Gb/s 64B/66B
100GBASE-R Clause 82 100 Gb/s 64B/66B

Response   *Response Status* **C**

ACCEPT.

See comment #150

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**
SC **30.3.2.1.2**

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Cl **30**	*SC* **30.3.2.1.2**	*P* **27**	*L* **15**	# 612

Ganga, Ilango   Intel

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

Add appropriate attribute for 40GBASE-R and 100GBASE-R

SuggestedRemedy

Insert the following attributes to the end of the list APPROPRIATE SYNTAX:

40GBASE-R Clause 82 40 Gb/s multilane 64B/66B
100GBASE-R Clause 82 100 Gb/s multilane 64B/66B

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**	*SC* **30.3.2.1.3**	*P* **27**	*L* **21**	# 613

Ganga, Ilango   Intel

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

Add appropriate attribute for 40GBASE-R and 100GBASE-R to aPHYTypeList

SuggestedRemedy

Insert the following attributes to the end of the list APPROPRIATE SYNTAX:

40GBASE-R Clause 82 40 Gb/s multilane 64B/66B
100GBASE-R Clause 82 100 Gb/s multilane 64B/66B

Also change the Note at the end of 30.3.2.1.3 (IEEE Std 802.3-2008) as follows:

NOTE-At 10 Gb/s, 40 Gb/s or 100 Gb/s the ability of the PMD must be taken into account
when reporting the possible types
that the PHY could be.;

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**	*SC* **30.5.1.1.14**	*P* **27**	*L*	# 608

Ganga, Ilango   Intel

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

update the text in 30.5.1.1.44 (802.3-2008) for 40 Gb/s and 100 Gb/s:

SuggestedRemedy

Change following text in 30.5.1.1.44 aFECmode after BEHAVIOUR DEFINED AS:

or FEC enable bit in 10/40/100GBASE-R FEC control register (see 45.2.1.85).;

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**	*SC* **30.5.1.1.15**	*P* **27**	*L*	# 609

Ganga, Ilango   Intel

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

update text in 30.5.1.1.15 aFECCorrectedBlocks for 40 Gb/s and 100 Gb/s

SuggestedRemedy

change text after BEHAVIOUR DEFINED AS as follows:

For 1000BASE-PX or 10GBASE-R or 40GBASE-R or 100GBASE-R PHYs, a count of
corrected FEC blocks. This counter will not increment for other PHY types.

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**	*SC* **30.5.1.1.16**	*P* **27**	*L*	# 610

Ganga, Ilango   Intel

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

update text in 30.5.1.1.16 aFECUnCorrectableBlocks for 40 Gb/s and 100 Gb/s

SuggestedRemedy

change text after BEHAVIOUR DEFINED AS as follows:

For 1000BASE-PX or 10GBASE-R or 40GBASE-R or 100GBASE-R PHYs, a count of
corrected FEC blocks. This counter will not increment for other PHY types.

Response   *Response Status* **C**

ACCEPT.

See comment #150

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**
SC **30.5.1.1.16**

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Cl **30**   *SC* **30.5.1.1.2**   *P* **27**   *L* **22**   # 614

Ganga, Ilango   Intel

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

Insert the following subclause 30.5.1.1.2 aMAUType and add 40G and 100G list

SuggestedRemedy

Insert the following to the aMAUType attribute list after 10GBASE-T.

40GBASE-R Multilane R PCS/PMA as specified in Clause 82 over undefined PMD
40GBASE-KR4 40GBASE-R PCS/PMA over an electrical backplane PMD as specified in
Clause 84
40GBASE-CR4 40GBASE-R PCS/PMA over 4 lane shielded copper balanced cable PMD
as specified in Clause 85
40GBASE-SR4 40GBASE-R PCS/PMA over 4 lane OM3 multimode fiber PMD as specified
in Clause 86
40GBASE-LR4 40GBASE-R PCS/PMA over 4 WDM lane long reach single mode fiber
PMD as specified in Clause 87

100GBASE-R Multilane R PCS/PMA as specified in Clause 82 over undefined PMD
100GBASE-CR10 100GBASE-R PCS/PMA over 10 lane shielded copper balanced cable
PMD as specified in Clause 85
100GBASE-SR10 100GBASE-R PCS/PMA over 10 lane OM3 multimode fiber PMD as
specified in Clause 86
100GBASE-LR4 100GBASE-R PCS/PMA over 4 WDM lane long reach single mode fiber
PMD as specified in Clause 88
100GBASE-ER4 100GBASE-R PCS/PMA over 4 WDM lane extended long reach single
mode fiber PMD as specified in Clause 88

Update the Register names in first paragraph after BEHAVIOUR DEFINED AS

PMA/PMD control 2 register
PCS control 2 register

Change the last paragraph after BEHAVIOUR DEFINED AS as follows:
The enumerations 1000BASE-X, 1000BASE-XHD, 1000BASE-XFD, 10GBASE-X,
10GBASE-R, 10GBASE-W, 40GBASE-R and 100GBASE-R shall only be returned if the
underlying PMD type is unknown.;

Response   *Response Status* **C**
ACCEPT.

See comment #150

Cl **30**   *SC* **30.5.1.1.2**   *P* **27**   *L* **22**   # 149

D'Ambrosia, John   Force10 Networks

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

30.5.1.1.2 needs to be updated.

SuggestedRemedy

Add

30.5.1.1.2 aMAUType
40GBASE-KR4 - R PCS/PMA over an electrical backplane PMD as specified in Clause 84
40GBASE-CR4 - R copper over 8 pair 100-Ohm blanaced cable as specified in Clause 85
40GBASE-SR4 - R fiber over 8 OM3 multi-mode fibers as specified in Clause 86
40GBASE-LR4 - R fiber over 4 wavelengths on single mode fiber as specified in Clause 87
100GBASE-CR4 - R copper over 20 pair 100-Ohm blanaced cable as specified in Clause
85
100GBASE-SR10 - R fiber over 20 OM3 multi-mode fibers as specified in Clause 86
100GBASE-LR4 - R fiber over 4 wavelengths on 10km single mode fiber as specified in
Clause 88
100GBASE-ER4 - R fiber over 4 wavelengths on 40km single mode fiber as specified in
Clause 88

Response   *Response Status* **C**
ACCEPT.

See comment #150

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 7 of 162
SC **30.5.1.1.2**   12/18/2008 11:15:31 P

Cl **30**   *SC* **30.5.1.1.4**   *P* **27**   *L*   # 615
Ganga, Ilango   Intel

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

Update the text in 30.5.1.1.4 (802.3-2008) for 40 Gb/s and 100 Gb/s:

Change following text in 30.5.1.1.4 aMediaAvailable after BEHAVIOUR DEFINED AS:

SuggestedRemedy

Change following text in 30.5.1.1.4 aMediaAvailable after BEHAVIOUR DEFINED AS:

Any MAU that implements management of Clause 28 or Clause 73 Auto-Negotiation will map remote fault indication to MediaAvailable "remote fault."

Change following text in 30.5.1.1.4 aMediaAvailable after BEHAVIOUR DEFINED AS in last paragraph:

10/40/100GBASE-R PCS Latched high BER status bit (45.2.3.12.2)

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**   *SC* **30.6.1.1.5**   *P* **27**   *L*   # 616
Ganga, Ilango   Intel

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

Update attribute 30.6.1.1.5 aAutoNegLocalTechnologyAbility for 40G and 100G PHY types

SuggestedRemedy

Insert the following to the list after 10GBASE-KRFD:

40GBASE-KR4FD Full duplex 40GBASE-KR4 as specified in Clause 84
40GBASE-CR4FD Full duplex 40GBASE-CR4 as specified in Clause 85
100GBASE-CR10FD Full duplex 100GBASE-CR10 as specified in Clause 85

Change the text after BEHAVIOUR DEFINED AS as follows:

This indicates the technology ability of the local device, as defined in Clause 28, Clause 37 and Clause 73.

Response   *Response Status* **C**

ACCEPT.

See comment #150

Cl **30**   *SC* **30.6.1.1.5**   *P* **27**   *L* **22**   # 150
D'Ambrosia, John   Force10 Networks

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

need to update 30.6.l.1.5 aAutoNegLocalTechnologyAbility

SuggestedRemedy

Add
30.6.l.1.5 aAutoNegLocalTechnologyAbility
40GBASE-KR4FD - Full duplex 40GBASE-KR4 as specified in Clause 84
40GBASE-CR4FD - Full duplex 40GBASE-CR4 as specified in Clause 85
100GBASE-CR10FD - Full duplex 100GBASE-CR10 as specified in Clause 85

Response   *Response Status* **C**

ACCEPT.

[Editor's note: corrected subclause number]

The editor will implement this and many other additions to Clause 30 in the next draft.

Cl **30B**   *SC* **30B.2**   *P* **270**   *L* **17**   # 619
Ganga, Ilango   Intel

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

Update 30B.2 ASN.1 module for CSMA/CD managed objects to add 40G and 100G PHY types

SuggestedRemedy

Insert following lines to the list PhyTypeValue::= ENUMERATED:
Insert to the end of the list after 2BASE-TL

40GBASE-R (82) --Clause 82 40 Gb/s multilane 64B/66B
100GBASE-R (821) --Clause 82 100 Gb/s multilane 64B/66B

Response   *Response Status* **C**

REJECT.

Given that project 802.3.1 will be taking responsibility for MIB updates based on the contents of Clause 30. Further changes to annexes 30A & 30B are no longer necessary.

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 **30B**
SC **30B.2**

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Cl **30B**   *SC* **30B.2 ASN.1**   *P* **270**   *L* **15**   # 617

Ganga, Ilango   Intel

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

Update 30B.2 ASN.1 module for CSMA/CD managed objects to add 40G and 100G PHY types

SuggestedRemedy

Insert following 3 lines to the list "AutoNegTechnology::= ENUMERATED" as follows:
Insert after 1000GBASE-TFD:
40GBASE-KR4 (822), --40GBASE-KR4 PHY as defined in Clause 84
40GBASE-CR4 (823), --40GBASE-CR4 PHY as defined in Clause 85
100GBASE-CR4 (8211), --100GBASE-CR10 PHY as defined in Clause 85

Response   *Response Status*   **C**

REJECT.

See comment #619

Cl **30B**   *SC* **30B.2 ASN.1**   *P* **270**   *L* **16**   # 618

Ganga, Ilango   Intel

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

Update 30B.2 ASN.1 module for CSMA/CD managed objects to add 40G and 100G PHY types

SuggestedRemedy

Insert following lines to the list after "TypeValue::= ENUMERATED" as follows:
Insert after 10GBASE-T:

40GBASE-R (821) Multilane R PCS/PMA as specified in Clause 82 over undefined PMD
40GBASE-KR4 (822) 40GBASE-R PCS/PMA over an electrical backplane PMD as specified in Clause 84
40GBASE-CR4 (823) 40GBASE-R PCS/PMA over 4 lane shielded copper balanced cable PMD as specified in Clause 85
40GBASE-SR4 (824) 40GBASE-R PCS/PMA over 4 lane OM3 multimode fiber PMD as specified in Clause 86
40GBASE-LR4 (825) 40GBASE-R PCS/PMA over 4 WDM lane long reach single mode fiber PMD as specified in Clause 87

100GBASE-R (8210) Multilane R PCS/PMA as specified in Clause 82 over undefined PMD
100GBASE-CR10 (8211) 100GBASE-R PCS/PMA over 10 lane shielded copper balanced cable PMD as specified in Clause 85
100GBASE-SR10 (8212) 100GBASE-R PCS/PMA over 10 lane OM3 multimode fiber PMD as specified in Clause 86
100GBASE-LR4 (8213) 100GBASE-R PCS/PMA over 4 WDM lane long reach single mode fiber PMD as specified in Clause 88
100GBASE-ER4 (8214) 100GBASE-R PCS/PMA over 4 WDM lane extended long reach single mode fiber PMD as specified in Clause 88

Response   *Response Status*   **C**

REJECT.

See comment #619

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 **30B**   Page 9 of 162
SC **30B.2 ASN.1**   12/18/2008 11:15:31 P

Cl **45**   *SC*   *P* **29**   *L* **2**   # 551

Ghiasi, Ali   Broadcom

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

    MDIO base on 1.5 V HSTL logic in CL 45 is outdated and often require extra power source.

SuggestedRemedy

    Suggest to use JESD8-14A-01 duplicate table 45-65 MDIO electrical interface
    characteristics for 40/100 GbE
    Vdd - Supply Voltage 0.9 to 1.1 V
    Vih - Input high voltage 0.65*Vdd to Vdd+0.2
    VIL - Input low voltage -0.2 to 0.35*Vdd
    Voh - Output high voltge at Ioh=-2 mA, 0.75*Vdd (min)
    Vol - Ouput low voltage at Iol=2 mA, 0.25*Vdd (max)
    Ci - Input capacitace - 10 pf
    CL - Bus loading - 470 pf

Response   *Response Status* **C**

    REJECT.

    [Editor's note: Removed text "all" from subclause field]

    There is no demonstrated demand to make such a substantial change. If the TF decides
    that it wishes to expand its scope to include such a change then text will be developed to
    define the new signaling in a manner that includes backward compatibility.

Cl **45**   *SC*   *P* **58**   *L*   # 533

Vijayaraghavan, Divya   Altera Corp.

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

    Page: 58, 63

    - Table 45

    -97a: register value should be 3.51 not 3.50
    - Table 45

    -99a: register value should be 3.53 not 3.50

SuggestedRemedy

    Always compare to 2 or 4, but not both.

Response   *Response Status* **C**

    ACCEPT IN PRINCIPLE.

    The editor does not understand the proposed remedy.

    Change Table 45-97a, register number from 3.50 to 3.51

    Change Table 45-99a, register number from 3.50 to 3.53

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

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12/18/2008 11:15:31 P

Cl **45**   *SC* **45.2.1**   *P* **29**   *L* **15**   # 439

Barrass, Hugh   Cisco

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

The use of "Backplane/Copper/TBD" is particularly ugly. The TF needs to settle on a vergage and stick to it. It doesn't need to be perfect - exceptions and usage changes can always be noted where required.

All of the usage in 802.3ba is BASE-R copper so that usage seems to be the most obvious. There may be some small exceptions for non BASE-R backplane (I haven't checked all the details) but these can be covered with specific notes. Future BASE-R copper may not use the same registers, but that bridge can be crossed when (if) we reach it.

SuggestedRemedy

Change "Backplane/Copper/TBD" to "BASE-R copper"

Table 45-3 and all related 45.2.1 register definitions.

The footnote below Table 45-3 can be retained (with the name change). The verbage at the beginning of each register definition should mimic the footnote.

Remove the editor's note.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Backplane/Copper/TBD" to "BASE-R"

Table 45-3 and all related 45.2.1 register definitions.

The footnote below Table 45-3 can be retained (with the name change). The verbage at the beginning of each register definition should mimic the footnote.

Remove the editor's note.

Cl **45**   *SC* **45.2.1**   *P* **29**   *L* **6**   # 368

Dawe, Piers   Avago Technologies

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

The device address structure of Clause 45 dates from XENPAK days. As the PMD and PMA may now be separate, they cannot always be managed as a single MMD unless a proxy is used. Even then, one loses the ability to control each one independent of the other with the present allocation of MMDs to registers. Also, there can be multiple separate PMAs for any port, with multiple possible loopback positions for example.

SuggestedRemedy

Continue to manage the PMD with device address 1, but allocate a device address number (the next available is 8) to PMA. Use a register within address 8 as an addressing scheme to distinguish between multiple PMDs of the same port. Copy the old stuff relevant to 40G/100G PMAs from 1 to 8, put the new stuff in 8. I believe a nAUI interface can count as a n:n PMA, but there could be two sorts like the 'PHY XS and DTE XS' in 10G.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Current device address 1 is defined for PMA/PMD and it is approriate to leave it as such. There must always be a PMA sublayer bound to the PMD and this device address should refer to those two sublayers.

A new and separate device address can be used to address higher PMA sublayers. It may be advantageous to use a different sublayer name to apply to these higher level PMA layers. Each separate PMA that is distinct from the PMA/PMD should be allocated a device address.

Therefore device address 8 will be PMAx-1 the lowest PMAx layer; device address 9 will be PMAx-2 the next lowest PMAx layer and device address 10 will be PMAx-3 the next PMAx layer. The editor believes that 4 total PMA layers will be sufficient.

The PMAx layers will share the same register addresses and definitions as each other. Only functions that are required to be separate from the PMA/PMD will be defined in the PMAx layers (e.g. loopback). Clearly there will be need for careful review of the register set that is included for PMAx layers.

On a practical note - it can be expected that silicon manufacturers will offer select pins or other means to allow system developers to use silicon devices to perform PMAx functions in a flexible manner.

Align with Clause 83 per comment responses (#157 etc).

dawe_04_1108 addresses this comment.

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 **45.2.1**

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Cl **45**   *SC* **45.2.1**   *P* **33**   *L* **13**   # 17

Anslow, Peter   Nortel Networks

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

Table 45-3 Note a says "The name "Backplane/Copper/TBD" is used to denote PHYs that use the PMD described in Clause 72, including PHYS designated as BASE-KR and BASE-CR"
but Clause 72 only covers 10GBASE-KR

SuggestedRemedy

change "The name "Backplane/Copper/TBD" is used to denote PHYs that use the PMDs described in Clause 72, 84 or 85, including PHYs designated as BASE-KR and BASE-CR"

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.1.3**   *P* **34**   *L* **25**   # 128

D'Ambrosia, John   Force10 Networks

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

note states "Change Table 45-7 for 40Gb/s and 100 Gb/s PMA /PMD type selection," and then 45.2.1.6.1 is also noted to be changed for 40 Gb/s and 100 Gb/s PMA/PMD type selections. However, 45.2.1.1.3 states "When bits 5 through 2 are set to 0000 the use of a 10G PMA/PMD is selected. More specific
selection is performed using the PMA/PMD control 2 register (Register 1.7)"

SuggestedRemedy

modify 45.2.1.1.3 to state

"When bits 5 through 2 are set to 0000 the use of a >=10G PMA/PMD is selected. More specific selection is performed using the PMA/PMD control 2 register (Register 1.7)"

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.4**   *P* **33**   *L* **47**   # 18

Anslow, Peter   Nortel Networks

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

The editing instruction says "Insert 45.2.1.4.7 and 45.2.1.4.8 as follows:" but the inserted clauses are 45.2.1.4.8 and 45.2.1.4.9 (leaving room for 802.3av to insert 45.2.1.4.7

SuggestedRemedy

change editing instruction to "Insert 45.2.1.4.8 and 45.2.1.4.9 as follows:"

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.4.8**   *P* **33**   *L* **49**   # 152

D'Ambrosia, John   Force10 Networks

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

Note reads to "Insert 45.2.1.4.7 and 45.2.1.4.8 as follows" but the sections are entered in as 45.2.1.4.8 and 45.2.1.4.9

SuggestedRemedy

The section #'s are correct per Table 45-6, but the note is incorrect. Ignore note.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #18

Cl **45**   *SC* **45.2.1.6.1**   *P* **34**   *L* **29**   # 19

Anslow, Peter   Nortel Networks

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

The first sentence is modified to be "The PMA/PMD type of the PMA/PMD shall be selected using bits 4 through 0." However Table 45-7 uses bits 5 through 0

SuggestedRemedy

Change "using bits 4 through 0." to "using bits 5 through 0."

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.6.1**   *P* **34**   *L* **32**   # 20

Anslow, Peter   Nortel Networks

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

The text "and the 40G/100G PMA/PMD extended ability register 2" has been added, but the register is now called just "40G/100G PMA/PMD extended ability register" in Table 45-12a

SuggestedRemedy

change added text from "and the 40G/100G PMA/PMD extended ability register 2" to "and the 40G/100G PMA/PMD extended ability register"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also change register number 1.12 to 1.13 in 45.2.1.12a

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 12 of 162
SC **45.2.1.6.1**   12/18/2008 11:15:31 P

Cl **45**   *SC* **45.2.1.6.1**   *P* **34**   *L* **33**   # 21
Anslow, Peter   Nortel Networks

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

This states "A PMA/PMD shall ignore writes to the PMA/PMD type selection bits that select PMA/PMD types it has not advertised in the PMA/PMD status 2 register." However the PMA/PMD type is now advertised in three registers as per the preceeding text.

SuggestedRemedy

change "it has not advertised in the PMA/PMD status 2 register" to "it has not advertised"

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.76**   *P* **39**   *L* **33**   # 464
Dudek, Mike   JDSU

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

Clause 72 is not being changed in this draft (including no change in title). It doesn't make sense to be changing this subclause if Clause 72 PMD's are the only ones being used and clause 72 is the single PMD 10GBASE-KR (ie Clause 72 is not being changed to include reference to other PMD's than 10GBASE-KR). Otherwise the ISO reference models in the other clauses should indicate 10GBASE-KR as the PMD layer.

SuggestedRemedy

reference other clauses besides clause 72 on line 36 or change clause 72 to include other items besides 10GBASE-KR (and change it's title). Also do the equivalent for Clause 45.2.1.77 to 45.2.1.87

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #17 - 2 locations.

Cl **45**   *SC* **45.2.1.8**   *P* **35**   *L* **9**   # 430
Ganga, Ilango   Intel

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

Fix typo "usee" to "use"

SuggestedRemedy

Per comment

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.81a**   *P* **43**   *L* **5**   # 283
Anslow, Peter   Nortel Networks

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

Several very minor editorial issues in clause 45 collected in to one comment.

SuggestedRemedy

Remove underline from Table 45-58a page 43 line 5
Remove underline from Table 45-58b page 44 line 21
Space missing in "status register3" page 61 line 8
Space missing in "Table45-133" page 65 line 13

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.84**   *P* **45**   *L* **15**   # 376
Dawe, Piers   Avago Technologies

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

Need a shorter name than 'Backplane/Copper/TBD FEC'. Something neutral as to application, which may evolve over the months and years.

SuggestedRemedy

K-FEC ?

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #439

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 **45.2.1.84**

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Cl **45**   *SC* **45.2.1.84**   *P* **45**   *L* **28**   # 375

Dawe, Piers   Avago Technologies

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

The moderate power taken by FEC is spent four ways: encoding (basically a CRC generation), error detection (CRC checking), error correction, and re-coding as non-FEC 64B/66B and error marking. A significant fraction of the power and complexity goes in error correction; all the rest is straightforward. Most of the latency is taken by error correction and optional PCS error marking. In some scenarios e.g. a copper cable approaching 10 m, we need FEC for its excellent error detection capability. In other scenarios e.g. 40GBASE-KR4, 100GBASE-ER4, we do (or should) allow FEC for its error detection as well.

But when a particular link is up and running, a receiver that is happy with its received BER can switch the correction off, with no need for handshaking with the transmitter. This still gives excellent error detection, and remains compatible with PCS error indication. In principle this could be done lane by lane but the remedy below treats all the lanes as a group. There is another comment for Clause 74, and a short presentation.

SuggestedRemedy

Add another register bit in Table 45-61,
1.170.2
xxx FEC error correction disable ability
A read of 1 in this bit indicates that the xxx FEC sublayer is able to operate while detecting but not correcting received errors.
RO
Insert new 45.2.1.84.1 xxx FEC error correction disable ability (1.170.2)
When read as a one, bit 1.170.2 indicates that the xxx FEC decoder is able to operate while detecting but not correcting received errors (see 74.7.4.5). When read as a zero, the xxx FEC decoder is not able to operate while detecting but not correcting received errors.
Add another register bit in Table 45-62,
1.171.2
FEC error correction disable
A write of 1 to this bit configures the xxx FEC decoder to operate while detecting but not correcting received errors.
R/W
Insert new 45.2.1.85.1 10 Gb/s FEC error correction disable (1.171.2)
This bit instructs the xxx FEC decoder to operate while detecting but not correcting received errors (see 74.7.4.5)
When bit 1.171.2 written as a one, if 1.171.1 is one, the xxx FEC decoder shall operate while detecting but not correcting received errors (see 74.7.4.5). When bit 1.171.2 is written as a zero, the xxx FEC decoder shall either correct as well as detect received errors according to 74.7.4.5, or neither detect nor correct, as determined by bits 1.170.0 and 1.171.0.
The default value of bit 1.171.2 is zero.

Response   *Response Status* **C**

REJECT.

In the event that the TF decides to change the definition in Clause 74 to allow "partial FEC"

then ability and control bits will be added to Clause 45.

See comment #322 which was rejected.

Cl **45**   *SC* **45.2.1.86**   *P* **47**   *L* **2**   # 431

Ganga, Ilango   Intel

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

Double period (..), delete a period

SuggestedRemedy

As per comment

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.87b**   *P* **48**   *L* **12**   # 411

Ganga, Ilango   Intel

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

repetition of lanes lanes, delete "lanes"

SuggestedRemedy

per comment

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.3**   *P* **48**   *L* **10**   # 432

Barrass, Hugh   Cisco

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

Table 45-82 is incomplete - there are more elements in the base document that are not shown here.

SuggestedRemedy

Show table elements from the base document or elipses where blocks are ommitted.

Response   *Response Status* **C**

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 **45.2.3**

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Cl **45**　　*SC* **45.2.3.11**　　　　*P* **52**　　*L* **24**　　# 86

Szczepanek, Andre　　　　　　　　Texas Instruments

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

Bit 3.23.3 advertises the ability to test a PRBS9 pattern.
However there is no corrsponding "PRBS9 receive test-pattern enable" in Table 45-94.

SuggestedRemedy

I dont think there was any intention to add PRBS9 pattern verification.
There is no mention of it in the PMA clause iether.
Remove Bit 3.23.3

Response　　　　　　　*Response Status*　**C**

REJECT.

[Editor's note: corrected subclause number field from 45-90 to 45.2.3.11]

The ability and control for PRBS9 was defined in 802.3aq and cannot be deleted.

Cl **45**　　*SC* **45.2.3.11**　　　　*P* **52**　　*L* **9**　　# 229

Gustlin, Mark　　　　　　　　　　Cisco

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

The description implies that the PCS can support a PRBS31 or PRBS9 test pattern, but for 100/40GBASE-R these are now part of the PMA functions, not the PCS (and there can be multiple locations of the test patterns).

SuggestedRemedy

Clarify the text that for 100/40GBASE-R PRBS patterns are in the PMA, and add the appropriate PMA registers for this functionality.

This also has to be corrected in table 45-94.

Response　　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Add register bits in MMD 1 (PMA/PMD) for ability and enable to match the test patterms defined in 83.6.7.

Update PMA register block with the following:

1.x.15 PRBS31 pattern testing ability
1.x.11:0 PRBS31 error count

1.y.15 PRBS31 transmit test pattern enable
1.y.14 PRBS31 receive test pattern enable

The wording of 45.2.3.11 is correct as it covers 10G, 40G and 100G.

Cl **45**　　*SC* **45.2.3.12.3**　　　*P* **54**　　*L* **23**　　# 645

Nicholl, Gary　　　　　　　　　　Cisco

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

In keeping with nicholl_02_0508 and the follow-up discussion at the Munich meeting I would like to request that the size of the BER be increased from 6 bits to at least 24 bits.

SuggestedRemedy

I will be providing a contribution in Dallas with a suggested remedy

Response　　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected subclause number]

See also comment #646

Notwithstanding that the TF will review presentation and in the absence of an alternative at this time, the editor suggests:

Add 2 registers - 3.44, 3.45
3.44 BER high order
3.45 Errored blocks high order

Each register is defined in tandem with the existing 8 bit counters. The high order counter contains bits 23:8 and the value latches on read of the lower 8 bits (status register 2). The counter also resets on read of status register 2. These bits shall be held at all ones in the case of overflow.

Also change the last sentence of 45.2.3.12.3 & 45.2.3.12.4 to "If the [corresponding high order register] is not implemented then these bits shall be held at all ones in the case of overflow."

Also look at text for multi-word registers in the beginning of Clause 45 to make the best editorial solution. Make sure that the new function is for 40/100 only. Consider ability indication.

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 **45.2.3.12.3**

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Cl **45**   *SC* **45.2.3.12.4**   *P* **54**   *L* **30**   # 646
Nicholl, Gary   Cisco

Comment Type   **TR**   *Comment Status* **A**
In keeping with nicholl_02_0508 and the follow-up discussion at the Munich meeting I
would like to request that the size of the Errored Block counter be increased from 8 bits to
at least 24 bits.

SuggestedRemedy
I will be providing a contribution in Dallas with a suggested remedy.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected subclause number]

See comment #645

Cl **45**   *SC* **45.2.3.13**   *P* **54**   *L* **37**   # 230
Gustlin, Mark   Cisco

Comment Type   **TR**   *Comment Status* **A**
In 100/40GBASE-R the pseudo random test pattern is just sending idles scrambled, so
there are no seed patterns needed.

SuggestedRemedy
Remove the additions of 100/40GBSE-R to this register.

Response   *Response Status* **C**
ACCEPT.

No change to this register - remove it from the draft.

Cl **45**   *SC* **45.2.3.15**   *P* **55**   *L* **18**   # 220
Gustlin, Mark   Cisco

Comment Type   **ER**   *Comment Status* **A**
Currently it says:

"The test-pattern methodology is described in 49.2.8"

But this should also refer to clause 82 for 40/100G.

SuggestedRemedy
Change to:

"The test-pattern methodology is described in 49.2.8 for 10 Gb/s and in 82.2.10 for
40/100GBASE-r"

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change to

The test-pattern methodology is described in 49.2.8 and 82.2.10

Cl **45**   *SC* **45.2.3.16**   *P* **56**   *L* **1**   # 221
Gustlin, Mark   Cisco

Comment Type   **ER**   *Comment Status* **A**
Table name is incorrect, should include 40/100.
Is:
Table 45-95-10GBASE-R PCS test-pattern error counter register bit definitions

SuggestedRemedy
Change to:
Table 45-95-10/40/100GBASE-R PCS test-pattern error counter register bit definitions

Response   *Response Status* **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.17a**   *P* **56**   *L* **19**   # 23
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
This refers to Table 45-96 but the new table is 45-96a

SuggestedRemedy
Change reference to Table 45-96a

Response   *Response Status* **C**
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 **45.2.3.17a**
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Cl **45**   *SC* **45.2.3.17a**   *P* **57**   *L* **1**   # 219
Gustlin, Mark   Cisco

Comment Type **ER**   *Comment Status* **A**
Table title should include "register 1" since there are register 2,3 etc...

Table 45-96a-Multi-lane BASE-R PCS alignment status register bit definitions

SuggestedRemedy
Change it to:

"Table 45-96a-Multi-lane BASE-R PCS alignment status register 1 bit definitions"

Response   *Response Status* **C**
ACCEPT.

[Editor's note: Corrected subclause field from Table 45-96a to 45.2.3.17a]

Cl **45**   *SC* **45.2.3.18a**   *P* **58**   *L* **15**   # 24
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
This refers to Table 45-97 but the new table is 45-97a

SuggestedRemedy
Change reference to Table 45-97a

Response   *Response Status* **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.18a**   *P* **59**   *L*   # 235
Gustlin, Mark   Cisco

Comment Type **TR**   *Comment Status* **A**
In table 45-97a, the bits are numbered incorrectly, they should all be 3.51.x vs. 3.50 since
the previous register used 3.50.x already.

SuggestedRemedy
Change to 3.51.x in this table.

Response   *Response Status* **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.18a.4**   *P* **60**   *L* **1**   # 25
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
Titles of 45.2.3.18a.4 through 45.2.3.18a.8 refer to the wrong bits and in 45.2.3.18a.4 "bit
3.51.9" should be "bit 3.51.8"

SuggestedRemedy
change titles of 45.2.3.18a.4 through 45.2.3.18a.8:
from "Lane 16 lock (3.51.9)" to "Lane 16 lock (3.51.8)"
from "Lane 15 lock (3.51.3)" to "Lane 15 lock (3.51.7)"
from "Lane 14 lock (3.51.2)" to "Lane 14 lock (3.51.6)"
from "Lane 13 lock (3.51.1)" to "Lane 13 lock (3.51.5)"
from "Lane 12 lock (3.51.0)" to "Lane 12 lock (3.51.4)"
and in 45.2.3.18a.4 change "bit 3.51.9" to "bit 3.51.8"

Response   *Response Status* **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.19a**   *P* **61**   *L* **3**   # 26
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
This refers to Table 45-98 but the new table is 45-98a

SuggestedRemedy
Change reference to Table 45-98a

Response   *Response Status* **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.19a.1**   *P* **61**   *L* **45**   # 27
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
In 45.2.3.19a.1 through 45.2.3.19a.8 the text refers to "bit 3.50.x" which should be "bit
3.52.x"

SuggestedRemedy
Change "bit 3.50." to ""bit 3.52." in 16 places

Response   *Response Status* **C**
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 **45.2.3.19a.1**

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Cl **45**   *SC* **45.2.3.20a**   *P* **62**   *L* **37**   # 522
Ofelt, David   Juniper Networks

Comment Type   **E**   *Comment Status*   **A**
There are some cut-paste errors.
In 20a - there are references to "register 2" that should be "register 4"
In 20a.1 - There are references to bit "3.51" that should be "3.53"
In table 45-99a - The bit numbers references in the table are listed as "3.50", they should
be "3.53".
All the other sections in 20a.3 reference "3.51" and instead of "3.53"

SuggestedRemedy
Change the references to "register 2" to "register 4"
Change the references to "3.51" to "3.53"

Response   *Response Status*   **C**
ACCEPT.

[Editor's note: corrected subclause number]

Cl **45**   *SC* **45.2.3.20a**   *P* **62**   *L* **39**   # 28
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status*   **A**
This refers to Table 45-98 but the new table is 45-99a
also text contains "Multi-lane BASE-R PCS alignment status register 2" which should be
"Multi-lane BASE-R PCS alignment status register 4" in 4 places

SuggestedRemedy
Change reference to Table 45-99a
Change "Multi-lane BASE-R PCS alignment status register 2" to "Multi-lane BASE-R PCS
alignment status register 4" in 4 places

Response   *Response Status*   **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.20a**   *P* **63**   *L* **5**   # 236
Gustlin, Mark   Cisco

Comment Type   **TR**   *Comment Status*   **A**
In table 45-99a, the bits are numbered incorrectly, they should all be 3.53.x vs. 3.50 since a
previous register used 3.50.x already.

SuggestedRemedy
Change the numbering to 3.53.x

Response   *Response Status*   **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.20a**   *P* **63**   *L* **5**   # 30
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status*   **A**
In Table 45-99a in the first column 3.50.x should be 3.53.x

SuggestedRemedy
Change "3.50." to "3.53." in 13 places

Response   *Response Status*   **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.20a.1**   *P* **62**   *L* **50**   # 29
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status*   **A**
In 45.2.3.20a.1 through 45.2.3.20a.12 the text refers to "bit 3.51.x" which should be "bit
3.53.x"

In 45.2.3.20a.4 "bit 3.51.9" should be "bit 3.53.8"

SuggestedRemedy
Change "bit 3.51." to ""bit 3.53." in 23 places and in 45.2.3.20a.4 change "bit 3.51.9" to "bit
3.53.8"

Response   *Response Status*   **C**
ACCEPT.

Cl **45**   *SC* **45.2.3.20a.4**   *P* **64**   *L* **1**   # 31
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status*   **A**
Titles of 45.2.3.20a.4 through 45.2.3.20a.8 refer to the wrong bits

SuggestedRemedy
change titles of 45.2.3.20a.4 through 45.2.3.20a.8:
from "Lane 16 aligned (3.53.9)" to "Lane 16 aligned (3.53.8)"
from "Lane 15 aligned (3.53.3)" to "Lane 15 aligned (3.53.7)"
from "Lane 14 aligned (3.53.2)" to "Lane 14 aligned (3.53.6)"
from "Lane 13 aligned (3.53.1)" to "Lane 13 aligned (3.53.5)"
from "Lane 12 aligned (3.53.0)" to "Lane 12 aligned (3.53.4)"

Response   *Response Status*   **C**
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 **45.2.3.20a.4**

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12/18/2008 11:15:32 P

Cl **45**   *SC* **45.2.3.6.1**   *P* **50**   *L* **54**   # 234
Gustlin, Mark   Cisco

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

In clause 45, subclause 45.2.3.2.2, PCS recieve link status(3.1.2) , the supporting
paragraph talks about 10GBASE-R using this bit as a latching low version of bit 3.32.12.
This should be the same for 40/100GBASE-R.

SuggestedRemedy

Add in appropriate text for 40/100GBASE-R.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 45.2.3.2.2 change:

"10GBASE-R, 10GBASE-W, or 10GBASE-T"

to

"10/40/100GBASE-R, 10GBASE-W, or 10GBASE-T"

Cl **45**   *SC* **45.2.3.7**   *P* **51**   *L* **33**   # 22
Anslow, Peter   Nortel Networks

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

In Table 45-87 new rows are added for bits 3.8.4 and 3.8.4 but the text is not in underline
font

SuggestedRemedy

Change text of added rows to underline font

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.7**   *P* **65**   *L* **46**   # 440
Barrass, Hugh   Cisco

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

"Backplane/Copper/TBD" is ugly. This needs to be replaced with "BASE-R copper" for
802.3ba, but also needs "Backplane" for the other backplane functions.

SuggestedRemedy

Change "Backplane/Copper/TBD" to "Backplane, BASE-R Copper" in Table 45-133 and in
45.2.7.12.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Backplane/Copper/TBD" to "Backplane, BASE-R copper" in Table 45-133 and in
45.2.7.12.

Cl **45**   *SC* **45.2.7.12**   *P* **66**   *L* **17**   # 32
Anslow, Peter   Nortel Networks

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

In Table 45-142 bit 7.48.7 has been Reserved. However the whole row should be shown in
underline font as it is new.

SuggestedRemedy

Show whole row for bit 7.48.7 in underline font

Response   *Response Status* **C**

ACCEPT.

Cl **4A**   *SC* **4A.4.2**   *P* **267**   *L* **21**   # 70
Chung, Hwan Seok   ETRI

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

Rephrase sentence for consistency. Change "For 40 and 100 Gb/s operation, " to " For 40
Gb/s and 100 Gb/s operation,"

SuggestedRemedy

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Apply the same change to Note 7 in 4.4.2 in page 25

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 **4A**
SC **4A.4.2**

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12/18/2008 11:15:32 P

Cl **4A**   *SC* **4A.4.2**   *P* **267**   *L* **28**   # 294
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
Under the new note 4 there is a warning box containing "WARNING Any deviation from the above specified values may affect proper operation of the network." This implies that this warning note must be included again.

SuggestedRemedy
Delete the warning box and change the editing instructions to say that the new note 4 is inserted before the warning box.

Response   *Response Status* **C**
ACCEPT.

See also comment #16

Cl **69**   *SC* **69.1.1**   *P* **69**   *L* **11**   # 378
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **R**
Don't say 'family of xxx Physical Layer signaling systems is extended' The reader is not required to know or care which Physical Layer signaling systems were standardised before which.

SuggestedRemedy
Change 'is extended to include' to 'includes', three times.

Response   *Response Status* **C**
REJECT.

This is existing text from the base standard and does not need to be changed for 802.3ba.

Also the suggested remedy does not improve the readability of the text.

Cl **69**   *SC* **69.1.3**   *P* **70**   *L* **20**   # 523
Ofelt, David   Juniper Networks

Comment Type   **E**   *Comment Status* **A**
The "I" in the "MDI" label is the wrong font size :).

SuggestedRemedy
Make it bigger...

Response   *Response Status* **C**
ACCEPT.

[added 69 to subclause number in comment]

Cl **69**   *SC* **69.1.3**   *P* **70**   *L* **34**   # 153
D'Ambrosia, John   Force10 Networks

Comment Type   **T**   *Comment Status* **A**
Implementors may not specify a different data width for 40GBASE-KR4.

SuggestedRemedy
Add the following-
Modify bullet f as follows:

The MDI as specified in Clause 70 for 1000BASE-KX, Clause 71 for 10GBASE-KX4, Clause 72 for 10GBASE-KR, or Clause 84 for 40GBASE-KR4.

Response   *Response Status* **C**
ACCEPT.

Cl **69A**   *SC* **69A.3**   *P* **271**   *L* **21**   # 427
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
typo, change to "tolerance"

SuggestedRemedy
per comment

Response   *Response Status* **C**
ACCEPT.

This is fixing a typo in the base standard so needs to done as a change.

Cl **73**   *SC* **73**   *P* **73**   *L* **5**   # 33
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
Format of Note does not conform to style guide

SuggestedRemedy
Either change "Note that" to "NOTE-" to make the note informative or change the font of the note to "Text" (10 point) for normative text.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change to informative text and also change the editing instruction appropriately.

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 20 of 162
SC **73**   12/18/2008 11:15:32 P

Cl **73** *SC* **73.10.1** *P* **75** *L* **22** # 34
Anslow, Peter   Nortel Networks

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

The PD definition has changed from "represents all of the following that are present: 1000BASE-KX PMA, 10GBASE-KX4 PMA, and 10GBASE-KR PMA."
to
"represents all of the following that are present: 1000BASE-KX PMA, 10GBASE-CX4, 10GBASE-KX4 PMA, 10GBASE-KR PMA, 40GBASE-KR4, 40GBASE-CR4, 100GBASE-CR10." where some have PMA afterwards and some don't

SuggestedRemedy

Change to "represents all of the following that are present: 1000BASE-KX PMA, 10GBASE-CX4 PMA, 10GBASE-KX4 PMA, 10GBASE-KR PMA, 40GBASE-KR4 PMA, 40GBASE-CR4 PMA, 100GBASE-CR10 PMA."

Response *Response Status* **C**

ACCEPT.

Cl **73** *SC* **73.10.1** *P* **76** *L* **40** # 521
Valliappan, Magesh   Broadcom

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

For KR4/CR4/CR10 implementations where PMD&AN are in one device and the PCS&MAC are in a different device separated by an XLAUI interface, there isn't a well defined way for autoneg to access link status from the PCS.

SuggestedRemedy

The best remedy is an in-band indication of link status through the XLAUI interface, but I dont know how this can be done.

Will submit a presentation if suitable solution is available.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The commenter makes a valid point but the task force will need to agree a solution.

This problem really concerns CAUI/XLAUI rather than Clause 73.

Add editor's note "A mechanism has yet to be specified for indicating link status from a PCS connected to a KR4/CR4/CR10 PMD through a CAUI/XLAUI interface".

[added 73 to subclause number in comment]

Cl **73** *SC* **73.10.2** *P* **77** *L* **1** # 241
Meyer, Jeffrey   Centellax

Comment Type **E** *Comment Status* **R** *FEC*

This is merely a grammar comment for the sentence "Timer for the amount of time to wait...".   The sentence should begin with an article like "The timer for the amount of time to wait..".   This also appears on line 9.

SuggestedRemedy

Begin the sentence with an article like "The".

Response *Response Status* **C**

REJECT.

This is text from the base standard. Making a change like this is unnecessary and would require changing the definition of all ten timers in Clause 73.

Cl **73** *SC* **73.2** *P* **73** *L* **7** # 154
D'Ambrosia, John   Force10 Networks

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

Figure 73-1 only reflects 1 Gb/s and 10 Gb/s, and does not reflecto 40 Gb/s for 40GBASE-KR4 and 40GBASE-CR4 or 100 Gb/s for 100GBASE-CR10.

SuggestedRemedy

Add Fig 73-1 with the following modification : show location of auto-negotation sublayer for 40 Gb/s and 100 Gb/s.

Response *Response Status* **C**

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**
SC **73.2**

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12/18/2008 11:15:32 P

Cl **73**   *SC* **73.3**   *P* **73**   *L* **19**   # 155

D'Ambrosia, John   Force10 Networks

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

lane for auto-negotiation for 40GBASE-KR4, CR4, and CR10 is not indicated.

SuggestedRemedy

Add last paragraph of 73.3, as modified, per below:

When the MDI supports multiple lanes, then lane 0 of the MDI shall
be used for Auto-Negotiation and for connection of any single-lane PHYs (e.g., 100BASE-
KX or 10GBASE-KR).

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[corrected subclause number in comment]

implement suggested remedy and correct typo change '100BASE-KX' to '1000BASE-KX'

Cl **73**   *SC* **73.5.1**   *P* **73**   *L* **1**   # 270

Healey, Adam   LSI Corporation

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

Subclause 73.5.1.1 needs to be amended for 40GBASE-KR4, 40GBASE-CR4, and
100GBASE-CR10 to ensure the PHYs exchange DME pages on a common lane.

SuggestedRemedy

Amend last sentence of 73.5.1.1 to read: "When the PHY has 10GBASE-KX4, 40GBASE-
KR4, 40GBASE-CR4, or 100GBASE-CR10 capability, DME pages shall be transmitted only
on lane 0. The transmitters for unused lanes should be disabled as specified in 71.6.7,
<insert appropriate cross-references>."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[corrected subclause number in comment]

See remedy in comment # 441

Cl **73**   *SC* **73.5.1**   *P* **73**   *L* **27**   # 441

Barrass, Hugh   Cisco

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

The editor's note notwithstanding, the paragraph needs rewording (because it's ugly!) and
more importantly, the following paragraph regarding operation over multilane media must
be changed.

SuggestedRemedy

Delete the editor's note and the paragraph in the existing draft. Replace with:

Change text as follows (underlines & strikeouts will need to be added by the editor):

DME pages can be transmitted by local devices capable of operating in 1 Gb/s, 10Gb/s,
40Gb/s and 100Gb/s; using 1, 4 or 10 lanes.

73.5.1.1 DME electrical specifications

Change text as follows:

Transmitter characteristics shall meet the specifications in Table 73-1 at TP1 while
transmitting DME pages. Receiver characteristics shall meet the specifications in Table 73-
1 at TP4 while receiving DME pages.

For any multi-lane PHY, DME pages shall be transmitted only on lane 0. The transmitters
on other lanes should be disabled as specified in 71.6.7.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the editor's note and the following paragraph as this text is redundant.

Renumber 73.5.1.1 to 73.5.1 and use the title "DME electrical specifications"

Implement the commenter's suggested remedy for 73.5.1.1 using appropriate underlines &
strikeouts

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 22 of 162
SC **73.5.1**   12/18/2008 11:15:32 P

Cl **73**   *SC* **73.6.4**   *P* **73**   *L* **49**   # 462
Chalupsky, David   Intel Corp.

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

There is unnecessary distinnction between CR4 and KR4 in autonegotiation.
In Table 45-3 (PMA/PMD registers) we have already set the precedent that backplane and copper registers should be kept common as much as feasible.
We should continue this practice.
Propose combining KR4 and CR4 Technology Ability fields, priority resolution, and state variables as indicated in Remedy.
Beyond simplicity there is a problem with advertising CR4 & KR4 in separate bits and allowing them both to be set. In this case the the underlying PHY cannot distinguish if the media is backplane or copper. The Priority Resolution Table says to pick CR4, but the meida may actually be a bakplane, so the result would be to indicate a CR4 reslution when it is actually KR4... and it doesn't matter. Combine the bits.

SuggestedRemedy

Table 73-1: Rename bit A3 "40GBASE-KR4/CR4"   Reclaim the remaining bits by naming A4 as CR10 & returning A5 to reserved.

Table 73-2: Combine CR4 and KR4 into the same resolution priority level.

subclause 73.10.1: 40GKR4 and 40GCR4 into the same variable. Either pick one of the two existing varable names, or make a combined name like "40GCKR4". Change the description to "represents that the 40GBASE-KR4 or 40GBASE-CR4 PMA is the signal source"

subclause 73.10.1: definition of single_link_ready: combine CR4 & KR4 (5 & 6) into one line: "5) link_status_[40GCKR4] = OK" as appropriate for the variable name used ablve.

Table 45-142 (and subclause 45.2.7.12.2): combine autoneg resolution for CR4 and KR4 into the same bit, since autoneg cannot distiguish. Suggest using bit 5. Change the bit 5 description to read "...is negotiated to perform 40GBASE-KR4 or 40GBASE-CR4" (The name for this bit can be resolved in the future to be consistent with the "Backplane/Copper/TBD" names that need to be resolved elsewhere in the draft.)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CR4 and KR4 PMDs have different electrical specifications so the distinction is necessary.

Therefore reject suggested remedy to make these equivalent.

The commenter makes a valid point that a system should never advertise capability for both CR4 and KR4 simultaneously.

Add a note to say that CR4 and KR4 should not be advertised simultaneously.

Cl **73**   *SC* **73.7.4.1**   *P* **75**   *L* **17**   # 463
Chalupsky, David   Intel Corp.

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

Unecessary distinction between CX4 and KX4 in autonegotiation variables.
Subclause 74.7.4.1 line 17-18 already indicate sthat CX4 may be parallel detected, and that it is up to the system implementer to distiguish KX4 form CX4 as the PHY cannot.
To be consistent with that we should remove CX4 state variables from autoneg, because the PHY cannot distiguish parallel detected KX4 from CX4.

SuggestedRemedy

73.7.4.1, line 17. After sentence "Additionally, parallel detection may be used for 10GBASE-CX4" insert "Parallel detection of 10GBASE-CX4 should be indicated by setting the Negotiated Port Type to 10GBASE-KX4 in the management register 7.48.2."

subclause 73.10.1, page 76 line 8: delete the variable definition 10GCX4.
Page 76, line 37: delete line with "link_status_[10GCX4]=OK"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify 7.48.2 bit definition of 10GBASE-KX4 negotiated port-type to include CX4 in Clause 45.

1 = PMA/PMD is negotiated to perform 10GBASE-KX4 or 10GBASE-CX4
0 = PMA/PMD is not negotiated to perform 10GBASE-KX4 or 10GBASE-CX4

Add paragraph at end of '45.2.7.12.2 Negotiated Port Type'

System developers need to distinguish between parallel detection of 10GBASE-KX4 and 10GBASE-CX4 based on the MDI and media type present.

73.7.4.1, line 17. After sentence "Additionally, parallel detection may be used for 10GBASE-CX4" insert "Parallel detection of 10GBASE-CX4 will be indicated by the setting of the Negotiated Port Type to '10GBASE-KX4 or 10GBASE-CX4' in the management register bit 7.48.2."

subclause 73.10.1, page 76 line 8: delete the variable definition 10GCX4.

change:
10GKX4; represents that the 10GBASE-KX4 PMA is the signal source.
to:
10GKX4; represents that the 10GBASE-KX4 or 10GBASE-CX4 PMA is the signal source.

Page 76, line 37: delete line with "link_status_[10GCX4]=OK"

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**
SC **73.7.4.1**

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Cl **74**   *SC* **74.3**   *P* **79**   *L* **21**   # 156

D'Ambrosia, John   Force10 Networks

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

Fig 74-1 only shows FEC for 10GBASE-R. The clause is being modified elsewhere to separate between serial and multi-lane PHY. It should be done in this figure as well.

SuggestedRemedy

Add Fig 74-1 with modification to show 40GBASE-R and 100GBASE-R layers as well.

Response   *Response Status* **C**

ACCEPT.

Cl **74**   *SC* **74.4.2**   *P* **79**   *L* **34**   # 442

Barrass, Hugh   Cisco

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

As the editor's note suggests - a diagram is needed.

SuggestedRemedy

Delete the editor's note after doing what it says.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. New Figure for 40GBASE-R and 100GBASE-R like Figure 74-2, but should show less detail about what is in PCS, and focus on multi-lane FEC. Editorial license to create the figure.

Cl **74**   *SC* **74.4.2**   *P* **79**   *L* **41**   # 239

Gustlin, Mark   Cisco

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

Today in clause 74, subclause 74.5.3 it describes the primitive FEC_SIGNAL_indication. This states if the FEC recieve is in lock or not. This is fine for the legacy 16 bit parallel interface, but for 40/100GbE the FEC block could be across a XLAUI or CAUI interface from the PCS. It would be better if we defined the behavior for loss of FEC lock also for the case where we just have the XLAUI or CAUI i/f between the PCS and FEC block.

SuggestedRemedy

Define the FEC loss of lock behavior as sending the raw unsynchronized bit stream to the PCS. Without FEC lock, and without the FEC block lock restoring the 66b blocks, the recieve PCS will be down and out of lock which is what we want in this situation.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Define the FEC loss of lock behavior as sending the raw unsynchronized bit stream to the PCS. Editorial license to match primitive naming. This only affects 40GBASE-R and 100GBASE-R FEC, not 10GBASE-R.

Cl **74**   *SC* **74.4.2**   *P* **79**   *L* **41**   # 222

Gustlin, Mark   Cisco

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

Subclause 74.5 (which is not part of our D1.0) needs to be changed to enable it to hook up to our PCS and PMA sublayers.

Here are the current primitives for the FEC clause (based on the 16 bit wide parallel bus):
FEC (clause 74) primitives:
a) FEC_UNITDATA.request(tx_data-group<15:0>)
b) FEC_UNITDATA.indication(rx_data-group<15:0>)
c) FEC_SIGNAL.indication(SIGNAL_OK)

Right now this clause won't hook up to the PCS or PMA clause. Right now for the 40/100G PCS:
PMA_UNITDATA.requestx (x = 0-3 for 40GBASE-R) PMA_UNITDATA.indicatex (x = 0-3 for 40GBASE-R) PMA_SIGNAL.indication

We need to add the correct primitives to the FEC clause so it hooks up to the 40/100G PCS/PMA.

SuggestedRemedy

This could just be:
40GBASE-R and 100GBASE-R run one instance of the FEC sublayer on each PCS lane. To hook up to the PCS or PMA sublayers, the following primitives are used.
For 40GBASE-R the primitives are:
PMA_UNITDATA.requestx (x = 0-3)
PMA_UNITDATA.indicatex (x = 0-3)
PMA_SIGNAL.indication

For 100GBASE-R the primitives are:
PMA_UNITDATA.requestx (x = 0-19)
PMA_UNITDATA.indicatex (x = 0-19)
PMA_SIGNAL.indication

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add subclause 74.5 with indicated service interface definition for 40GBASE-R and 100GBASE-R. Should be consistent with primitive naming comment 620. Editorial license. Description is for a single bit-wide PCS lane (not 16-bit as in current clause 74) FEC block instantiated 4 or 20 times.

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 **74**
SC **74.4.2**

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Cl **74**   *SC* **74.7.4.5**   *P* **79**   *L* **39**   # 433
Barrass, Hugh   Cisco

Comment Type   **E**   *Comment Status*   **A**
   The editor's note i sno longer required.

SuggestedRemedy
   Delete the editor's note

Response   *Response Status*   **C**
   ACCEPT.

Cl **74**   *SC* **74.7.4.5**   *P* **79**   *L* **46**   # 322
Dawe, Piers   Avago Technologies

Comment Type   **TR**   *Comment Status*   **R**
   The moderate power taken by FEC is spent four ways: encoding (basically a CRC generation), error detection (CRC checking), error correction, and re-coding as non-FEC 64B/66B and error marking. A significant fraction of the power and complexity goes in error correction; all the rest is straightforward. Most of the latency is taken by error correction and optional PCS error marking. In some scenarios e.g. a copper cable approaching 10 m, we need FEC for its error detection. In other scenarios e.g. 40GBASE-KR4, 100GBASE-ER4, we do (or should) allow FEC for its error detection as well.
   But when a particular link is up and running, a receiver that is happy with its received BER can switch the correction off, with no need for handshaking with the transmitter. This still gives excellent error detection, and remains compatible with PCS error indication. In principle this could be done lane by lane but the remedy below treats all the lanes as a group. There is another comment for Clause 74.

SuggestedRemedy
   Add sentence 'For reduced power, latency and complexity, in some circumstances the FEC decoder detects errors but does not attempt to correct them. These circumstances are explained in the relevant PMD clauses e.g. Clause 84 to Clause 88.'
   I intend to provide a short presentation showing the difference between error detection and error correction.

Response   *Response Status*   **C**
   REJECT.

   This needs approval by the task force.

   Also the proposed remedy is not complete. MTTFPA, power, latency need to be analyzed before a change can be proposed.

   Cannot use as background error monitor alone without adding latency because giving up sync header redundancy without being able to mark blocks bad due to FEC code will significantly increase MTTFPA.

   Could affect PCS high BER and lock state machines if a single error multiplies to mark the entire block bad.

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 **74**   Page 25 of 162
SC **74.7.4.5**   12/18/2008 11:15:32 P

Cl **74**   *SC* **74.7.4.5**   *P* **79**   *L* **49**   # 524
Ofelt, David   Juniper Networks

Comment Type **E**   *Comment Status* **R**

Punctiation missing for "In case of sucessful decoding the decoder..."

SuggestedRemedy

Change to

"In case of sucessful decoding, the decoder..."

or possibly

"In the case of sucessful decoding, the decoder..."

Response   *Response Status* **C**

REJECT.

[corrected subclause number in comment]

This is text from the base standard so should not be modified unless there is a serious problem with it.

Cl **74**   *SC* **74.7.4.5**   *P* **80**   *L* **2**   # 87
Szczepanek, Andre   Texas Instruments

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

"The single lane PHY marks every 8th 64B/66B block"
is not strictly true. It also always marks the last block in a frame (+7!)
This is repeated on line 31 on the same page

SuggestedRemedy

Change to
"The single lane PHY marks every 8th and the last 64B/66B word in an FEC block"
or similar. The four lane wording may need the same change.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[corrected subclause number in comment]

See remedy to comment # 227

Cl **74**   *SC* **74.7.4.5**   *P* **80**   *L* **2**   # 227
Gustlin, Mark   Cisco

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

So that 40G and 100G will have similar behavior when it comes to the PCS SM interactions with uncorrectable FEC blocks, change 40G marking behavior to be consistent with 100G (mark all blocks bad).

SuggestedRemedy

Change: The single lane PHY marks every 8th 64B/66B block, the four PCS-lane PHY marks every second
64B/66B block and the twenty PCS-lane PHY marks every 64B/66B block.

To: The single lane PHY marks every 8th 64B/66B block, the four and twenty PCS-lane PHYs marks every 64B/66B block.

Make the same change on line 31 of the same page also.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 87, it is not strictly true to say the single lane PHY marks every 8th block.

Change text from:
When the decoder is configured to indicate decoding error, the decoder indicates
error to the PCS by means of setting both sync bits to the value 11 in the 1st, 9th, 17th, 25th, and 32nd of the
32 decoded 64B/66B blocks from the corresponding errored FEC block, thus forcing the PCS sublayer to
consider this block as invalid for a single lane PHY. Multi-PCS-lane PHYs require errors to be marked in more of the 64B/66B blocks to ensure that detected errors are signaled to the MAC for every frame containing
an error. The single lane PHY marks every 8th 64B/66B block, the four PCS-lane PHY marks every second
64B/66B block and the twenty PCS-lane PHY marks every 64B/66B block.

Change to:
When the decoder for 10GBASE-R is configured to indicate decoding error, the decoder indicates error to the PCS by means of setting both sync bits to the value 11 in the 1st, 9th, 17th, 25th, and 32nd of the
32 decoded 64B/66B blocks from the corresponding errored FEC block, thus forcing the PCS sublayer to consider this block as invalid.

When the decoder for 40GBASE-R or 100GBASE-R is configured to indicate decoding error, the decoder needs to mark errors in more of the 64B/66B blocks to ensure that detected errors are signaled to the MAC for every frame containing an error. The FEC sublayers for 40GBASE-R and 100GBASE-R mark all thirty-two 64B/66B blocks to indicate error to the PCS.

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 **74**   Page 26 of 162
SC **74.7.4.5**   12/18/2008 11:15:32 P

Editorial license to make equivalent correction to line 31 page 80.

Cl **74**   *SC* **74.8**   *P* **81**   *L* **11**   # 443
Barrass, Hugh   Cisco

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

All of the register names need to change to match Clause 45.

SuggestedRemedy

Change the register names for all the registers in Table 74-1 to match Clause 45 (may be changed by another comment).

Response   *Response Status* **C**

ACCEPT.

comments # 377, 443, and 461 all raise this issue. See comment 439 for register naming changes to clause 45.

Cl **74**   *SC* **74.8**   *P* **81**   *L* **11**   # 461
Chalupsky, David   Intel Corp.

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

Table 74-1 register names are "Backplane" but they are named "Backplane/Copper/TBD" in Clause 45.   This is just a reminder that resolving the naming issue in Cl45 also applies to Table 74-1.

SuggestedRemedy

Apply resolution of Table 45-3 "Backplane/Copper/TBD" naming issue to Table 74-1.

Response   *Response Status* **C**

ACCEPT.

Comments # 377, 443, 461 all raise this issue

Cl **74**   *SC* **74.8**   *P* **81**   *L* **25**   # 377
Dawe, Piers   Avago Technologies

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

PMA/PMD register names ('Backplane FEC') do not match Clause 45 ('Backplane/Copper/TBD FEC') in this draft. The former is too specific, the latter is too long. Need a shorter name: something neutral as to application, which may evolve over the months and years.

SuggestedRemedy

K-FEC ?

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comments # 377, 443, 461 all raise this issue. See comment 439 for register naming changes to clause 45.

Cl **80**   *SC* **1.4**   *P* **87**   *L* **21**   # 85
Szczepanek, Andre   Texas Instruments

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

"at teast 100m"

SuggestedRemedy

"at least 100m"

Response   *Response Status* **C**

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 **80**
SC **1.4**

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Cl **80**   *SC* **80.1.1**   *P* **85**   *L* **12**   # 311
Dawe, Piers   Avago Technologies

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

The paragraph quoted has several problems and seems to have no purpose beyond
advertisement. Any reader of a document like this will be above such material.
'The 40 and 100 Gigabit Ethernet extends the IEEE 802.3 protocol to operating speeds of
40 Gb/s and 100 Gb/s. The bit rate is faster and the bit times are shorter-both in proportion
to the change in bandwidth while maintaining maximum compatibility with the installed
based of IEEE 802.3 interfaces. The minimum packet transmission time has been reduced
by a factor of four for 40 Gb/s and ten for 100 Gb/s.'
Extends? will be wrong when .3ba is rolled into the base standard. 'bandwidth' is wrong
term. 'while maintaining maximum compatibility with the installed based of IEEE 802.3
interfaces' There is very little compatibility with the installed based of IEEE 802.3
interfaces intended (and none spelled out in the objectives). 'packet transmission time'
means? For links up to 10 and 40 km, transmission time is substantially determined by the
speed if light, not the MAC rate. 'factor of four' as compared with what?

SuggestedRemedy

Delete the paragraph. Anyone who thinks it leaves a void can bring in something better
next time.

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.1.1**   *P* **85**   *L* **15**   # 465
Dudek, Mike   JDSU

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

typo

SuggestedRemedy

Change "based" to "base"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. See comment # 311

Cl **80**   *SC* **80.1.2**   *P* **85**   *L* **3138**   # 71
Chung, Hwan Seok   ETRI

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

There are two types of description for MMF in D1.0 such as "multi mode fiber" and
"multimode fiber". Across the entire document, "multimode fiber" was mostly used. So, to
maintain consistency, it will be better to change "multi mode fiber" to "multimode fiber."
The change should be done in following lines.

Clause 1, page 23, line 21: multi mode fiber->multimode fiber
Clause 1, page 23, line 42: multi mode fiber->multimode fiber
Clause 80, page 85, line 31: multi mode fiber->multimode fiber
Cluase 80, page 85, line 38: multi mode fiber->multimode fiber

SuggestedRemedy

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.1.3**   *P* **85**   *L* **45**   # 118
Marris, Arthur   Cadence

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

Style:
The word "respectively" is redundant.

SuggestedRemedy

Delete "respectively"

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.1.3**   *P* **86**   *L* **1**   # 116
Marris, Arthur   Cadence

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

Punctuation
delete comma before and

SuggestedRemedy

Change
"MAC, and"
to
"MAC and"

Response   *Response Status* **C**

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 **80**
SC **80.1.3**

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12/18/2008 11:15:32 P

Cl **80**   *SC* **80.1.3**   *P* **86**   *L* **36**   # 380
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
'It is important to note that': is just padding. If it didn't matter, we wouldn't say it.

SuggestedRemedy
Delete

Response   *Response Status* **C**
ACCEPT.

Cl **80**   *SC* **80.1.3**   *P* **86**   *L* **5**   # 379
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **R**
New figures in new clauses should do things properly.

SuggestedRemedy
Use upper and lower case as normal, e.g. change 'LAN CSMA/CD LAYERS' to 'LAN
CSMA/CD layers'. Also in following clauses.

Response   *Response Status* **C**
REJECT.

This issue was also discussed during 802.3 maintenance. All the layer diagrams in
802.3ba have been updated for consistency with the base spec.

Cl **80**   *SC* **80.1.3**   *P* **86**   *L* **53**   # 35
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
item e) currently reads "The PMD Service Interface, which, when physically implemented at
an observable interconnection port, uses a 4 or 10 lane data path as specified in Clause
86."
To match the other items the name PPI should be included.

SuggestedRemedy
change "when physically implemented at an observable interconnection port" to "when
physically implemented as PPI (Parallel Physical Interface) at an observable
interconnection port"

Response   *Response Status* **C**
ACCEPT.

Cl **80**   *SC* **80.1.4**   *P* **87**   *L* **18**   # 284
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
Several very minor editorial issues in clause 80 collected in to one comment.

SuggestedRemedy
Change "for e.g." to "e.g." in page 87 lines 18 and 21
Change "concepts of MII:" to "concepts of the MII:" page 94 line 15
Change "implemented DIC" to "implemented the DIC" page 104 line 3
Change "a RXC" to "an RXC" page 106 line 38
Page 111 line 12 external reference to clause 21 should be blue

Response   *Response Status* **C**
ACCEPT.

This comment also affects Clause 81

Cl **80**   *SC* **80.1.4**   *P* **87**   *L* **18**   # 36
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
This says "The letter C in the port type (e.g. 40GBASE-CR4 or 100GBASE-CR10)
represents a physical medium of shielded balanced copper cabling assembly of at least 10
m in length.". But the physical medium is up to 10 m in length. It is the PMD that is
capable of at least 10 m.

SuggestedRemedy
Either change "at least" to "up to" in 5 places in this paragraph,
or
change "represents a physical" to "represents a port capable of operation over a physical"
in 5 places

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

see response to comment 466

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 **80**
SC **80.1.4**

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Cl **80**	*SC* **80.1.4**	*P* **87**	*L* **18**	# 466

Dudek, Mike   JDSU

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

The wording in this paragraph implies that shorter cables are not compliant.

SuggestedRemedy

Change "represents a physical medium of ....." to "represents the ability to operate over a physical medium of ......"   5 places.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Accept suggested remedy and also:

add 'up to'

and change "teast" to "least" on line 21.

For example change:
The letter C in the port type (e.g. 40GBASE-CR4 or 100GBASE-CR10) represents a physical medium of shielded balanced copper cabling assembly of at least 10 m in length

to:
The letter C in the port type (e.g. 40GBASE-CR4 or 100GBASE-CR10) represents the ability to operate over a physical medium of shielded balanced copper cabling assembly of up to at least 10 m in length.

Make similar change for the other port types.

also update the example in 1.2.3 in the base spec

See response to comments # 36 and # 112

Cl **80**	*SC* **80.1.4**	*P* **87**	*L* **18**	# 112

Marris, Arthur   Cadence

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

The PHYs need to be able to drive at least these distances while the media can be up to these distances.

SuggestedRemedy

Consider changing
"of at least"
to
"of up to at least"
in three places

Also change "teast" to "least" on line 21.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

see response to comment 466

Cl **80**	*SC* **80.1.4**	*P* **87**	*L* **21**	# 412

Ganga, Ilango   Intel

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

Typo: change to "at least"

SuggestedRemedy

per comment

Response   *Response Status*   **C**

ACCEPT.

Also see comment #85

Cl **80**	*SC* **80.11**	*P* **91**	*L* **1**	# 121

D'Ambrosia, John   Force10 Networks

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

Clause 80.11 needs to be renumbered.

SuggestedRemedy

80.11 should be 80.6

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. PICS defined in respective clauses.

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 **80**
SC **80.11**

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Cl **80**   *SC* **80.11**   *P* **91**   *L* **1**   # 130

D'Ambrosia, John   Force10 Networks

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

subclauses not numbered properly - 80.11 should be 80.6

SuggestedRemedy

renumber 80.11 to 80.6

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Same as comment #121

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **10**   # 145

D'Ambrosia, John   Force10 Networks

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

Optional XLAUI / CAUI not shown in Table 80-1.

SuggestedRemedy

show columns for 83A and XLAUI / CAUI. All 40GBASE-R PMDs should be optional for
XLAUI and NA CAUI. All 100GBASE-R PMDs should be optional for CAUI and NA for
XLAUI.

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **23**   # 312

Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**   *FEC*

Clause 74 FEC is applicable to all these port types. Whether we like it or not, it can be
applied. At least as far as error detection, it should be mandatory for 40GBASE-CR4 and
100GBASE-CR10. I expect it will turn out to be a practical necessity for 100GBASE-ER4.

SuggestedRemedy

Make Clause 74 FEC mandatory for 40GBASE-CR4 and 100GBASE-CR10, optional for all
other port types in this table. The distinction between mandatory FEC detection and
mandatory FEC correction can be explained elsewhere.

Response   *Response Status* **C**

REJECT.

FEC is specified as optional in Clauses 84 and 85. This table captures this correlation.

Any change to FEC requirement for respective PMDs need to be discussed in the task
force.

Related to comments #322, and #370

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **23**   # 313

Dawe, Piers   Avago Technologies

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

Auto-negotiation is an unnecessary burden on front-side ports. See another comment.

SuggestedRemedy

Provide two columns under '73', Auto-negotiation M for 40GBASE-KR4 only (blank for all
others), Link Negotiation (if we keep that name) O or M as decided for 40GBASE-CR4 and
100GBASE-CR10. Revise 82.2.20.

Response   *Response Status* **C**

REJECT.

AN requirement for CR PMDs is specified in Clause 85. This table captures this correlation.

See comment # 341 which was rejected by the copper sub task force.

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 **80**
SC **80.2.3**

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12/18/2008 11:15:33 P

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **37**   # 38
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status*   **A**
This paragraph mentions all of the PHY types except 40GBASE-LR4. Also, the english could be improved.

SuggestedRemedy
Add 40GBASE-LR4 to the list of 40G PHY types, change "The terms 40GBASE-R and 100GBASE-R refers to" to "The terms 40GBASE-R and 100GBASE-R refer" and change "based upon 64B/66B data coding method" to "based upon the 64B/66B data coding method"

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Overtaken by events.

See response to comment #113

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **38**   # 113
Marris, Arthur   Cadence

Comment Type   **T**   *Comment Status*   **A**
This text is redundant as it repeats what is described in 80.1.4 Nomenclature. Also it does not mention 40GBASE-LR4 and 'terms' should be 'term'.

SuggestedRemedy
Delete
The term 40GBASE-R refers to a specific family of Physical Layer implementations for 40 Gb/s such as 40GBASE-KR4, 40GBASE-CR4 and 40GBASE-SR4. The term 100GBASE-R refers to a specific family of Physical Layer implementations for 100 Gb/s such as 100GBASE-CR10, 100GBASE-SR10, 100GBASE-LR4 and 100GBASE-ER4.
All 40GBASE-R and 100GBASE-R PHY devices share a common PCS specification defined in Clause 82,

So that the text reads:
The term '40GBASE-R and 100GBASE-R' refers to a specific family of Physical Layer implementations based upon 64B/66B data coding method specified in Clause 82 and the PMA specification defined in Clause 83.

Response   *Response Status*   **C**
ACCEPT.

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **45**   # 323
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status*   **A**
Good introductory material overlooked in 82.1.3.

SuggestedRemedy
Either add sentence here 'The functions of the PCS, FEC, PMA, PMD and AN sublayers are summarized in 82.1.3.' or move 82.1.3. into 80.2.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Move appropriate definitions from 82.1.3 to Clause 80. Grant editiorial license to this in the best way.

Cl **80**   *SC* **80.2.3**   *P* **88**   *L* **5**   # 37
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status*   **A**
This contains "implementations and the Table 80-1 specifies" which reads awkwardly.

SuggestedRemedy
"implementations and the Table 80-1 specifies" to "implementations. Table 80-1 specifies"

Response   *Response Status*   **C**
ACCEPT.

[corrected page number from 87 to 88]

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 **80**
SC **80.2.3**

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Cl **80**		*SC* **80.2.6**				*P* **89**		*L* **11**			# 620

Ganga, Ilango						Intel

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

Service interface specification method and notation:

For all the service interfaces used in 802.3ba follow the defintion used in 1.2.2 and be consistent with service interfaces used in the base specification (IEEE 802.3-2008)

This comment applies to Clause 82 to Clause 88

In the base specification the only the parameters used in the primitive is a vector, none of the primitives are vectors. Whereas in 802.3ba the primitive is defined as a vector with just a single parameter. This is inconsistent with the base standard (IEEE Std 802.3-2008)

Change the service interface definition in 802.3ba to be consistent with the base standard

For example the PMD service interface in Clause 86 is defined as follows:
PMD_UNITDATA.request<n:0>(tx_biti), i=0..n
or in otherwords
PMD_UNITDATA.request0(tx_bit0)
PMD_UNITDATA.request1(tx_bit1)
...
PMD_UNITDATA.requestn(tx_bitn)

Instead define the primitives with parameter as vectors as in 802.3-2008
PMD_UNITDATA.request(tx_bit<n:0>)
or in otherwords
PMD_UNITDATA.request(tx_bitn, .. tx_bit2, tx_bit1, tx_bit0)

SuggestedRemedy

Change service interface definition in 802.3ba to be consistent with the base specification (IEEE Std 802.3-2008). Make this change globally to Clauses 80 through 88 and remove the editorial notes.

For example the PMD_UNIDATA.request primitive in PMD service interface will be redefined as follows:
PMD_UNITDATA.request(tx_bit<n:0>)
or in otherwords
PMD_UNITDATA.request(tx_bit<n>, .. tx_bit2, tx_bit1, tx_bit0)

Response			*Response Status*	**C**

ACCEPT IN PRINCIPLE.

This comment affects Clauses 80 through 88

For example change to:

PMD_UNITDATA.request0(tx_bit)

PMD_UNITDATA.request1(tx_bit)
...
PMD_UNITDATA.requestn(tx_bit)

and equivalent change to the receive side

except for the service interface between the RS and PCS which remains how it is currently defined.

Grant editorial license to make the necessary changes to accommodate this update.

Cl **80**		*SC* **80.2.6**				*P* **89**		*L* **14**			# 314

Dawe, Piers						Avago Technologies

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

'Editor's note... The service interface notation used in 802.3ba PMD PMA clauses have some differences from the notations used for10GbE sublayer interfaces. The differences need to be explained in the introductory Clause 80
The definitions and notation for service interfaces in 802.3ba PMD/PMA will be reconciled, during TF review, as per the service interface definitions specified in 1.2.2 .'
What is the difference/issue?

SuggestedRemedy

If found to be OK, delete this and similar notes.

Response			*Response Status*	**C**

ACCEPT IN PRINCIPLE.

See response to comment #620.

Delete Editor's note as appropriate.

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 **80**
SC **80.2.6**

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12/18/2008 11:15:33 P

Cl **80**   *SC* **80.3**   *P* **89**   *L* **23**   # 315
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**   *Delay*

MAC Control PAUSE can't be used with long links because the round trip latency becomes too much to cope with. At each higher MAC rate, this is ever more true. If the entity above the MAC wants to know the round trip latency, it should use Ping or similar method to find it out for a particular link. Even with this table, for many port types there is no guarantee that the nominal maximum latency is not exceeded because 'A PMD which exceeds the operational range requirement while meeting all other optical specifications
is considered compliant'.

SuggestedRemedy

Remove the table rows for 40GBASE-LR4 PMD, 100GBASE-LR4 PMD and 100GBASE-ER4 PMD. Delete 87.2.1 and 88.2.1, change '87.2 Delay and skew' to '87.2 Skew', similarly 88.2.

Response   *Response Status* **C**

REJECT.

The Pause requirement and text is consistent with 802.3-2008 base standard for different Physical layers.

Cl **80**   *SC* **80.3**   *P* **89**   *L* **25**   # 418
Ganga, Ilango   Intel

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

Change "PHY implementors" to "PHY implementations"

SuggestedRemedy

per comment

Response   *Response Status* **C**

REJECT.

This text is consistent with rest of the sentence.

Cl **80**   *SC* **80.3**   *P* **89**   *L* **32**   # 316
Dawe, Piers   Avago Technologies

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

With multi-lane sublayers, these time units are confusing. 'bit time' was always confusing to PMD and PMA engineers.

SuggestedRemedy

Add a column in ns. Consider deleting one of the two 'Maximum' columns in D3.0. If we keep a column in bit times, change 'bit time' to 'MAC bit time'.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add footnote to table explaining what the bit-times represent in nanoseconds for each speed.

Cl **80**   *SC* **80.3**   *P* **89**   *L* **34**   # 300
Shafai, Farhad   Sarance Technologies

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

Based on implementations in FPGAs, I have measured the delay through the MAC, RS and MAC Control layers and would like to suggest the values for this delay that is currently in table 150-1 to be changed as per this comment.

SuggestedRemedy

In table 150-1, row 1, change 8129 to 17920.
In table 150-1, row 1, change 16 to 35.
Supplemental material is provided in support of this remedy.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Commenter has used old clause numbers. Changed Clause number from 150 to 80]

In table 80-1
add row for 40G MAC, RS and MAC control delays
maximum bit time 4800

change 100G delays
add row for 100G MAC, RS and MAC control delays
maximum bit time 17920

editorial license to calculate the matching pause quanta

Also see comment #301

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 **80**
SC **80.3**

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12/18/2008 11:15:33 P

Cl **80**   *SC* **80.3**   *P* **89**   *L* **35**   # 301

Shafai, Farhad   Sarance Technologies

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

Based on implementations in FPGAs, I have measured the delay through the PCS and would like to suggest the TBD values for the PCS round trip delays to be changed as described here. These delays are specified in table 150-1.

SuggestedRemedy

Change the TBD fields for 40GBASE-R PCS round trip delay to: 11264 bit time in column 2, and 22 pause quanta in column 3.
Change the TBD fields for 100GBASE-R PCS round trip delay to: 35328 bit time in column 2, and 69 pause quanta in column 3.
Supplemental material is provided in support of this remedy.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Commenter has used old clause numbers. Changed Clause number from 150 to 80]

In table 80-1 on page 89
Correct table number to 80-2

add row for 40G PCS delays
maximum bit time 11264

change 100G PCS delays
maximum bit time 35328

editorial license to calculate the matching pause quanta

Also see comment #300

Cl **80**   *SC* **80.3**   *P* **89**   *L* **44**   # 317

Dawe, Piers   Avago Technologies

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

TBDs

SuggestedRemedy

Accept the proposed Round-trip delay limit for 40GBASE-SR4 and 100GBASE-SR10.

Response   *Response Status* **C**

ACCEPT.

update   SR4 to 1024 bit times
         SR10 to 2048 bit times

Cl **80**   *SC* **80.3**   *P* **89**   *L* **46**   # 39

Anslow, Peter   Nortel Networks

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

In Table 80-1 the reference for 40GBASE-LR4 is only to clause 87 rather than 87.2.1

SuggestedRemedy

Change "See 87." to "See 87.2.1."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In addition change any references in table to point to relevant subclauses that specify delays

---

Cl **80**   *SC* **80.3**   *P* **89**   *L* **54**   # 240

Gustlin, Mark   Cisco

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

Currently clause 80 does not have the allowed skew constraints. It seems to me that it would be good to add in a table and some background on the skew constraints in this clause as well as putting the applicable skew constraints in each appropriate clause (PCS, PMA , PMD etc).

SuggestedRemedy

Add in a section based on the attached presentation into clause 80 and other appropriate clauses.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

From giannakopoulos_01_1108.pdf

Add diagrams from slides 5 and 6 to define the skew measurement points.

Copy data from tables on slide 15 for max skew and 18 for dynamic skew values.

Grant editorial license to make appropriate changes and organize the data based on this material.

Define skew in nanoseconds with explanation of UI to ns convertion.

Also add skew numbers and appropriate text to relevant Clauses (PMA and all the PMDs, that is 83 - 88)

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 **80**   Page 35 of 162
SC **80.3**   12/18/2008 11:15:33 P

Cl **80**   *SC* **80.3**   *P* **90**   *L* **5**   # 119
Marris, Arthur   Cadence

Comment Type   **E**   *Comment Status*   **R**
spelling of meter. Should this be 'metre'?

SuggestedRemedy
Consider changing to 'metre'.

Response   *Response Status*   **C**
REJECT.

Meter is the correct spelling

Cl **81**   *SC* **81.1**   *P* **93**   *L* **46**   # 131
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status*   **A**
choice of wording

SuggestedRemedy
reword
The purpose of the MII is to provide a simple and easy-to-implement logical
interconnection between the Media Access Control (MAC) sublayer and the Physical Layer
(PHY). The MII is not intended to be electrically
instantiated, rather it can logically connect layers within a device.

The MII is an optional logical interface between the Media Access Control (MAC) sublayer
and the Physical Layer (PHY).

Response   *Response Status*   **C**
ACCEPT.

Cl **81**   *SC* **81.1**   *P* **93**   *L* **5**   # 133
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status*   **A**
Use of "MII" is ambiguous.

SuggestedRemedy
Suggest XLGMII and CGMII be used when referring to speed appropriate MII.

Response   *Response Status*   **C**
ACCEPT.

Will change the references that are speed specific to XLGMII and CGMII. For example
sublcause 81.1.3 would change from:
"The MII has been specified to suport 40 Gb/s and 100 Gb/s"
to:
"The XLGMII has been specified to suport 40 Gb/s and the CGMII has been specified to
support 100 Gb/s"

Cl **81**   *SC* **81.1.5**   *P* **95**   *L* **17**   # 114
Marris, Arthur   Cadence

Comment Type   **T**   *Comment Status*   **A**
OSI not ISO

SuggestedRemedy
Change
"ISO (IEEE)"
to
"OSI"

Response   *Response Status*   **C**
ACCEPT.

Change
"This MII (like the original MII, GMII and XGMII) maximizes media independence by cleanly
separating the Data Link and Physical Layers of the ISO (IEEE) seven-layer reference
model"

To:
This MII (like the original MII, GMII and XGMII) maximizes media independence by cleanly
separating the Data Link and Physical Layers of the OSI seven-layer reference model"

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 **81**   Page 36 of 162
SC **81.1.5**   12/18/2008 11:15:33 P

Cl **81**   *SC* **81.3.1.1**   *P* **100**   *L* **53**   # 104
Ebbers, Jonathan   IBM

Comment Type **T**   *Comment Status* **R**

For 100G, are we really going to run with TX_CLK and RX_CLK at 1.56GHz? This seems
like quite a frequency jump; I'm surprised no consideration was given to expanding the bus
width from 4 bytes to 8 or 16. We typically time the cores with 200 ps of margin, but 1.56G
only gives us a 640ps cycle time. I think even at 45nm this would be very tight to time.

SuggestedRemedy

Clarify the frequency requirements or allow for a wider MII bus definition.

Response   *Response Status* **C**

REJECT.

[changed subclause number from 3.1.1 to 81.3.1.1]
This is a logical interface. Implementation left up to the user.

Cl **81**   *SC* **81.3.1.3**   *P* **102**   *L* **7**   # 318
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**

Some of the lines shown are impossible with the hex values given.

SuggestedRemedy

Remove the lines below '0xFF' and above '0x00'. Also Fig. 81-6, 81-7.

Response   *Response Status* **C**

REJECT.

Although the comment makes some sense, the way that the data bus is shown is
consistent with typical conventions on how a data bus is shown in a timing diagram, and is
consistent with clause 46.

Cl **81**   *SC* **81.3.4**   *P* **108**   *L* **17**   # 115
Marris, Arthur   Cadence

Comment Type **T**   *Comment Status* **A**   *clause49*

Most of the text and the state diagram in 81.3.4 has been copied verbatim from Clause 46.

SuggestedRemedy

Consider referencing sub clause 46.3.4 for link fault signalling rather than having a direct
copy. Something along the lines of:

"Link fault signalling shall be implemented as described in 46.3.4. The four octet sequence
ordered set shall start in lane 0 with the octets in lanes 4, 5, 6 and 7 set to 0x00."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a sentence to clause 81.3.4 describing the difference from 46.3.4, and remove
duplication of state machine Figure 81-9.

Cl **81**   *SC* **81.3.4**   *P* **108**   *L* **22**   # 237
Gustlin, Mark   Cisco

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

Remove
"[Editor's note (to be removed prior to publication) - The behavior described below does not
allow unidirectional
operation]"

The behavior does not allow unidirectional operation which is what is intended.

SuggestedRemedy

As above.

Response   *Response Status* **C**

ACCEPT.

Remove the editors note.

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 **81**
SC **81.3.4**

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12/18/2008 11:15:33 P

Cl **81**   *SC* **81.3.4**   *P* **108**   *L* **22**   # 319
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **A**
Decide once and for all whether to allow 'unidirectional' operation at 40 and 100G. Per conversation at last meeting, it seems it's possibly helpful for an unprotected link, probably harmful for a protected link. Will there be unprotected managed 40G or 100G Ethernet links?

SuggestedRemedy
Decide and write it down. If we do allow unidirectional, the bad Hamming distance of the Sequence ordered_sets might be worth changing.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

There has been no mention in the baseline or any objectives of supporting operation in unidirectional mode. We should state that this clause only supports bi-directional operation. Hamming distance between sequence ordered sets is not important as they are sent multiple times.

Cl **81**   *SC* **81.3.4.3**   *P* **109**   *L* **51**   # 275
Healey, Adam   LSI Corporation

Comment Type **T**   *Comment Status* **A**
"...with each pair of fault sequences separated by less than 128 columns and no intervening fault_sequences of a different fault value."

...seems to be inconsisent with the Link Fault Signaling state diagram (Figure 81-9). Ordered sets do not need to arrive in pairs.

SuggestedRemedy
Change to read "...with each fault sequence separated by less than 128 columns and no intervening fault_sequences of a different fault value."

Response   *Response Status* **C**
ACCEPT.

Change
"...with each pair of fault sequences separated by less than 128 columns and no intervening fault_sequences of a different fault value."
to:
"...with each fault sequence separated by less than 128 columns and no intervening fault_sequences of a different fault value."

Cl **81**   *SC* **81.3.5**   *P* **110**   *L* **51**   # 223
Gustlin, Mark   Cisco

Comment Type **TR**   *Comment Status* **A**
Remove the following:

"81.3.5 PCS MDIO function mapping

[Editor's note (to be removed prior to publication) - Insert MDIO/MII variable mapping"

Clause 81 has no function mapping.

SuggestedRemedy
As above

Response   *Response Status* **C**
ACCEPT.

Remove:

"81.3.5 PCS MDIO function mapping
[Editor's note (to be removed prior to publication) - Insert MDIO/MII variable mapping"

Cl **82**   *SC* **2.8**   *P* **125**   *L* **49**   # 250
Estes, Dave   UNH - IOL

Comment Type **E**   *Comment Status* **A**
Typo, "or" instead of "of"

SuggestedRemedy
Change "and has lots or transitions" to "and has lots of transitions"

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.8 to 82.2.8]

Duplicate of #178, which was accepted.

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* **82**   Page 38 of 162
                                                                                         SC **2.8**   12/18/2008 11:15:33 P

Cl **82**   *SC* **82**   *P* **112**   *L* **1**   # 444
Barrass, Hugh   Cisco

Comment Type   **T**   *Comment Status*   **A**   clause49

This clause reproduces most of Clause 49 without any reference to that clause. There are a number of reasons why this is a bad idea.

Firstly, it allows the definition of the 64B/66B PCS to diverge more than necessary for the development of 40 & 100G. This may cause problems, especially with developers who are planning to reuse parts of their 10GBASE-R designs for 40G or 100G. Subtle differences between the clauses will not easily be noticed. This may be particularly difficult for developers of multi-rate implementations (e.g. 4 x 10G that also supports 40G - or other combination silicon development).

It also wastes time reviewing and commenting on pages of specification that are already in the standard. Not to mention that LOAs may have to be resubmitted for IP that is already in Clause 49.

SuggestedRemedy

Rewrite the clause so that copied text is referenced and only the changes and additions are included in this clause.

The commenter will supply complete text if required (based on the existing Clauses 49 and 82).

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Some subclauses that are unchanged are:
82.2.6, 82.2.14, figure 82-16 (PCS tx SM).
I propose that clause 82 just refer back to 49 for these.

All other subclauses that I saw have some differences. Figure 82-17 has just one minor difference for the entry requirements for RX_INIT, not sure how I would best address cases like this?
Changing many of the subclauses to refer back to clause 49 and then adding a number of changes seems to me that it will reduce the readability.

Cl **82**   *SC* **82.1.1**   *P* **113**   *L* **12**   # 120
Marris, Arthur   Cadence

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

Punctuation, delete comma before and.

SuggestedRemedy

Change
', and'
to
'and'

on lines 12 and 13

Response   *Response Status*   **C**

ACCEPT.

Cl **82**   *SC* **82.1.1**   *P* **113**   *L* **23**   # 321
Dawe, Piers   Avago Technologies

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

'medium be compliant at the PMA level.' The medium is not at the PMA level, and not connected directly to the PMA. Also, there could be FEC between PMA and PCS.

SuggestedRemedy

Does this work: 'The 40GBASE-R and 100GBASE-R PCSs can operate with any full duplex medium requiring only that the sublayers below the PCS provide a compliant service interface to the PCS.'

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Delete the sentence:
"40GBASE-R and 100GBASE-R can be extended to support any full duplex medium requiring only that the
medium be compliant at the PMA level." The sentence does not provide any value

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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 **82**   Page 39 of 162
SC **82.1.1**   12/18/2008 11:15:34 P

Cl **82**   *SC* **82.1.1**   *P* **146**   *L* **1**   # 320
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status*   **R**

Draft says 'The terms 40GBASE-R and 100GBASE-R are used when referring generally to Physical Layers using the PCS defined here.' There should be nothing rate-specific in the PCS clause; these are generically useful PCSs that could be re-used at faster VL rates in future. The PCSs could be thought of as 'R4' and 'R20'.

SuggestedRemedy

No urgent need to rename them, but it's worth adding a sentence to say that one uses 4 PCS lanes and the other uses 20 PCS lanes, here in the Scope.

Response   *Response Status*   **C**

REJECT.

Right now this PCS is rate specific for 40 and 100G

Cl **82**   *SC* **82.1.3.1**   *P* **115**   *L* **1**   # 129
D'Ambrosia, John   Force10 Networks

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

Bullet C is confusing in relation to what the actual functions in the PCS are, as the Tx PCS and Rx PCS seem to both be capable of adding / deleting idles.

SuggestedRemedy

Replace bullet c with the following text -

Compensation through insertion or deletion of idles for any rate difference caused by the insertion or deletion of alignment markers due to any rate difference between the MII and PMA

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Change:
"Deleting (inserting) idles to compensate for the rate difference between the MAC and PMD due to the insertion (deletion) of alignment markers and due to any rate difference between the MII and PMA."

to:
"Compensation for any rate differences caused by the insertion or deletion of alignment markers or due to any rate difference between the MII and PMA through the insertion or deletion of idles."

Cl **82**   *SC* **82.1.3.2**   *P* **115**   *L* **6**   # 324
Dawe, Piers   Avago Technologies

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

Missing sublayers

SuggestedRemedy

Add new subclauses summarizing the FEC and AN sublayers.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Subclauses 82.1.3.x will be removed from clause 82 since they are redundant with what is already in clause 80.

82.1.3.1 Physical Coding Sublayer (PCS)
82.1.3.2 Physical Medium Attachment (PMA) sublayer
82.1.3.3 Physical Medium Attachment (PMD) sublayer
Overtaken by events - see comment 323

Cl **82**   *SC* **82.1.3.3**   *P* **115**   *L* **21**   # 195
Baldwin, Thananya   Ixia

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

Title is incorrect:
82.1.3.3 Physical Medium Attachment (PMD) sublayer

SuggestedRemedy

Title should read:
82.1.3.3 Physical Medium Dependent (PMD) sublayer

Response   *Response Status*   **C**

REJECT.

Subclause 82.1.3.3 is going to be deleted.

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 **82**
SC **82.1.3.3**

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12/18/2008 11:15:34 P

Cl **82**   *SC* **82.1.3.3**   *P* **115**   *L* **22**   # 40

Anslow, Peter   Nortel Networks

Comment Type **E**   *Comment Status* **R**

The title of 82.1.3.3 is "Physical Medium Attachment (PMD) sublayer". This should be "Physical Medium Dependent (PMD) sublayer"

SuggestedRemedy

Change "Physical Medium Attachment (PMD) sublayer" to "Physical Medium Dependent (PMD) sublayer"

Response   *Response Status* **C**

REJECT.

Subclause 82.1.3.3 is to be deleted.

Cl **82**   *SC* **82.1.3.3**   *P* **115**   *L* **22**   # 107

Marris, Arthur   Cadence

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

The title of this subclause is wrong. Also there is no need to mention the PMD and MDI here. All in all this is just adding confusion.

SuggestedRemedy

Delete subclause 82.1.3.3.

Response   *Response Status* **C**

ACCEPT. Overtaken by events, see comment 323

Cl **82**   *SC* **82.1.4**   *P* **115**   *L* **30**   # 132

D'Ambrosia, John   Force10 Networks

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

wording is confusing, as it implies that the two pcs's use two interfaces.

SuggestedRemedy

Reword
There are two interfaces employed by the 40GBASE-R and 100GBASE-R PCSs.

to

There is one distinct interface employed for each rate of PCS.

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.1.4**   *P* **115**   *L* **34**   # 108

Marris, Arthur   Cadence

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

The sentence "The Reconciliation sublayer provides the same service interface to the PCS." does not make sense.

SuggestedRemedy

Delete this sentence.

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.1.4**   *P* **115**   *L* **37**   # 100

Ebbers, Jonathan   IBM

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

The 40GBASE-R PCS has a nominal rate at the PMA service interface of 10.3125 Mtransfers/s, which provides capacity for the MAC data rate of 40 Gb/s.
The 100GBASE-R PCS has a nominal rate at the PMA service interface of 5.15625 Mtransfers/s, which provides capacity for the MAC data rate of 100 Gb/s.

I think Mtransfers/s should be Gtransfers/s.

SuggestedRemedy

Change "The 40GBASE-R PCS has a nominal rate at the PMA service interface of 10.3125 Mtransfers/s, which provides capacity for the MAC data rate of 40 Gb/s. The 100GBASE-R PCS has a nominal rate at the PMA service interface of 5.15625 Mtransfers/s, which provides capacity for the MAC data rate of 100 Gb/s."

to

"The 40GBASE-R PCS has a nominal rate at the PMA service interface of 10.3125 Gtransfers/s, which provides capacity for the MAC data rate of 40 Gb/s. The 100GBASE-R PCS has a nominal rate at the PMA service interface of 5.15625 Gtransfers/s, which provides capacity for the MAC data rate of 100 Gb/s."

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number 1.4 to 82.1.4]

Will correct this.

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 **82**   Page 41 of 162
SC **82.1.4**   12/18/2008 11:15:34 P

Cl **82**   *SC* **82.1.4**   *P* **115**   *L* **39**   # 187
Baldwin, Thananya   Ixia

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

Incorrect units (Mtransfers/s) in the following sentences.
"The 40GBASE-R PCS has a nominal rate at the PMA service
interface of 10.3125 Mtransfers/s, which provides capacity for the MAC data rate of 40
Gb/s. The 100GBASE-R PCS has a nominal rate at the PMA service interface of 5.15625
Mtransfers/s, which provides
capacity for the MAC data rate of 100 Gb/s."

SuggestedRemedy

The units should be Btransfers or Gtransers to convey billion transfers per second.

Response   *Response Status* **C**

ACCEPT.

Already covered by comment #100, will be changing this.

Cl **82**   *SC* **82.1.5**   *P* **115**   *L* **47**   # 285
Anslow, Peter   Nortel Networks

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

Several very minor editorial issues in clause 82 collected in to one comment.

SuggestedRemedy

Change "PMA service interfaces" to "PMA service interface" page 115 line 47
Change "wide, data" to "wide data" page 117 line 9
Change "to 64B/66B block" to "to 64B/66B blocks" page 117 line 10
Change "markers are shown" to "markers is shown" page 126 line 20
Change "for 40GBASE-R PCS:" to "for the 40GBASE-R PCS:" page 126 line 47
External links "21.5" and "14.2.3.2" should be blue page 130 lines 1 and 2
All blue text in 82.2.18.1 are register numbers which should not be blue
Blue text in 82.2.18.4 is a register number which should not be blue

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **18**   # 190
Baldwin, Thananya   Ixia

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

Figure 82-2-Functional block diagram
is missing the lane re-ordering function in the rx path.

SuggestedRemedy

Insert a block called "Lane Reorder" after "Alignment Lock Lane Deskew" block.
The new block must be before the PCS Receive block

Response   *Response Status* **C**

ACCEPT.

Insert block in the figure and make appropriate changes to the sub-clause, with editorial
license.

Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **20**   # 639
Ganga, Ilango   Intel

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

typo in the block diagram, change "AIIGNMENT" to "ALIGNMENT"

SuggestedRemedy

per comment

Response   *Response Status* **C**

ACCEPT.

Already covered by #103.

Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **29**   # 336
Dawe, Piers   Avago Technologies

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

PMA_UNITDATA.indicate

SuggestedRemedy

PMA_UNITDATA.indication
Search and replace, 10 instances

Response   *Response Status* **C**

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 **82**
SC **82.1.6**

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Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **44**   # 225
Gustlin, Mark   Cisco

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

Remove:

"[Editor's note (to be removed prior to publication) - The primitive descriptions below need to be reconciled
with the FEC primitives.]"

Another comment has been added to clause 74 to make the changes so it can connect to clause 82.

SuggestedRemedy

As above

Response   *Response Status*   **C**

ACCEPT. See comment 222, clause 74 for the alignment of the FEC clause

---

Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **52**   # 103
Ebbers, Jonathan   IBM

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

Figure 2

"AIIGNMENT LOCK LANE DESKEW" should be "ALIGNMENT LOCK LANE DESKEW".

SuggestedRemedy

Change "AIIGNMENT LOCK LANE DESKEW" to "ALIGNMENT LOCK LANE DESKEW".

Response   *Response Status*   **C**

ACCEPT.

[Changed subclause number 1.6 to 82.1.6]

Cl **82**   *SC* **82.1.6**   *P* **116**   *L* **6**   # 224
Gustlin, Mark   Cisco

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

In figure 82-2 there is a box around the encode and scramble blocks that is labeled PCS transmit. Enlarge this box to incorporate the block distribution and alingment insertion also. Also enlarge the box labeled PCS recieve in include the BER monitor, alignment lock and lane block lock blocks.

Historically these boxes tried to include what was part of what state machine in clause 49, but it was not clear and confuses the issue.

SuggestedRemedy

As above

Response   *Response Status*   **C**

ACCEPT. Remove boxes around Tx and Rx, leaving only functional blocks

---

Cl **82**   *SC* **82.2**   *P* **116**   *L* **48**   # 325
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status*   **A**   *clause49*

This PCS is extremely like the Clause 49 PCS. It costs a lot of unnecessary time going through it with a fine toothcomb to find where there are differences and where there are not.

SuggestedRemedy

Please add a subclause listing the similarities and differences. You might want to cover yourself by making it informative.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

This is similar to comment #444. For that comment I will delete subclauses that are unchanged from 49 and refer to clause 49.

I also think it might be appropriate to add the following to subclause 82.1.2 which defines the relationship between this clause and others:

"This clause borrows heavily from Clause 49. 64B/66B endcoding is re-used with appropriate changes made to support 8 byte alignment vs. the 4 byte alingment in Clause 49. On top of 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes in order to support PMDs with multiple lanes."

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 **82**
SC **82.2**

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Cl **82**   *SC* **82.2.10**   *P* **128**   *L*   *#* 438
Barrass, Hugh   Cisco

Comment Type   **E**   *Comment Status* **A**
"sends 4 bits at a time" implies that the bits are sent as a vector.

SuggestedRemedy
Change:

it sends 4 bits (for 40GBASE-R) or 20 bits (for 100GBASE-R) of test pattern at a time

to

it sends the test pattern in 4 separate data streams (for 40GBASE-R) or 20 separate data streams (for 100GBASE-R)

Response   *Response Status* **C**
ACCEPT.

Cl **82**   *SC* **82.2.10**   *P* **128**   *L* **1**   *#* 446
Barrass, Hugh   Cisco

Comment Type   **T**   *Comment Status* **A**
The Test-pattern generators description is incomplete - when compared to the source in Clause 49.

It does not describe how the seed is placed in the scrambler, inverted etc.

SuggestedRemedy
The full text of 49.2.8 needs to be copied in, then the references to the square wave and PRBS sequences removed.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Most of 49.2.8 is not applicable. Comment #90 adds in more detail about the pattern (idle control). There are no plans to have invert patterns etc. Here is one clarification that might help people undertand the differences between clause 49 and this clause:
From:
When pseudo-random pattern is selected, the test pattern is generated by the scrambler using a random seed
loaded through the MDIO registers.
To:
"When pseudo-random pattern is selected, the test pattern is generated by the scrambler.
No seeding of the scrambler is required during test pattern operation."

Cl **82**   *SC* **82.2.10**   *P* **128**   *L* **1**   *#* 90
Szczepanek, Andre   Texas Instruments

Comment Type   **TR**   *Comment Status* **A**
The test-pattern generator and checker sub-clauses require definition of the test pattern.

SuggestedRemedy
Use the 10GBASE-R pseudo-random pattern ?

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Changed subclause number 2.10 to 82.2.10]

Line 11 in subclause 82.2.10 does define it, but to make it clearer I propose:
Change:
"The input to the scrambler is the control block type with all idles."

to:
"The input to the scrambler is a control block (block type=0x1e) with all idles as defined in figure 82-5."

Cl **82**   *SC* **82.2.10**   *P* **128**   *L* **10**   *#* 102
Ebbers, Jonathan   IBM

Comment Type   **E**   *Comment Status* **A**   *testing*
82.2.10 says that the scrambler starts off with a seed loaded from the MDIO registers. This seems to contradict 82.2.6 which says that there is no initial value for the scrambler. We suspect that there is no initial value for regular operation and a defined seed for test operation. Should the specification be more specific on this point?

SuggestedRemedy
Clarify the sentence in 82.2.6, "There is no requirement on the initial value for the scrambler." to "There is no requirement on the initial value for the scrambler for regular operation; test-patterns shall load an initial value from the MDIO registers."

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.10 to 82.2.10]

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 **82**
SC **82.2.10**

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Cl **82**   *SC* **82.2.12**   *P* **128**   *L* **30**   # 204

Marris, Arthur   Cadence

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

Inappropriate use of the word "must".

SuggestedRemedy

Change "must reorder" to "reorders".

Also similar problem on line 34 but in this case consider using shall.

Response   *Response Status* **C**

ACCEPT.

From:
"The PCS must reorder lanes if they are received out of order"
To:
"The PCS reorders lanes if they are received out of order"

And
From:
"The skew budget that the PCS receiver must support is shown in Table 82-4"
To:
"The skew budget that the PCS receiver shall support is shown in Table 82-4"

Cl **82**   *SC* **82.2.12**   *P* **128**   *L* **34**   # 274

Healey, Adam   LSI Corporation

Comment Type **T**   *Comment Status* **R**   *skew*

This subclause states that "the skew budget that the PCS receiver must support is shown in Table 82-4." The skew budget in Table 82-4 presumes a concatenation of optional interfaces and a generous allocation for media skew that may not be present in every compliant implementation. Consider, for example, that a 40GBASE-KR4 PHY has a need for considerably less skew tolerance. By mandating a fixed tolerance, needless latency is introduced for this PHY type. One can expect a demand for low latency interfaces in the marketplace.

Also note that the receiver skew tolerance requirements are not defined in Clause 48 which defines similar deskew functionality.

SuggestedRemedy

It is sufficent to define the maximum skew contributions for each component of a 40 Gb/s and 100 Gb/s link leading up to the input of the PCS receiver. These contributions may be summarized in a table (such as Clause 48, Table 48-5) so that the implementer may easily calculate the skew tolerance required for the targeted application. Remove the normative requirement for PCS skew tolerance (including Table 82-4).

Response   *Response Status* **C**

REJECT.

Overtaken by events. The skew will be specified in clause 80 and removed from clause 82 (see comment 240). The maximum skew to be tolerated does not equate to latency.

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 **82**   Page 45 of 162
SC **82.2.12**   12/18/2008 11:15:34 P

Cl **82**   *SC* **82.2.12**   *P* **128**   *L* **38**   # 526

Ofelt, David   Juniper Networks

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

People sometimes assume that designing in a large skew buffer will add latency.   It would be good to add some clarifying text.

SuggestedRemedy

Add something like:

A design that allows for a large amount of skew tolerance does not add any additional latency. Latency due to skew only occurs due to the differential delay between all paths between the source and destination. The path with the largest latency will end up with the smallest skew buffer.

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number 2.12 to 82.2.12]

I agree that something like this should be added somewhere in the document. At this point it is not clear where it belongs though. Once we determine where the bulk of the skew information is presented we should add this note there. I personally would like to see most of the skew information to move to clause 80.

A note was added.

Cl **82**   *SC* **82.2.13**   *P* **129**   *L* **4**   # 88

Szczepanek, Andre   Texas Instruments

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

There is confusion on this page as to where compensation for alignment marker removal is located.
* 82.2.13 says it is an RS sublayer function
* 82.2.15 says it is a Receive Process function
So which is it

SuggestedRemedy

compensation for marker insertion is a PCS transmit function So to be symmetrical compensation for removal should be in the receive process

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number 2.13 to 82.2.13]

Change:
"The difference in rate from the deleted alignment markers is compensated for by inserting idles by a function in the RS sublayer."

To:
"The difference in rate from the deleted alignment markers is compensated for by inserting idles by a function in the Receive process."

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 **82**   Page 46 of 162
SC **82.2.13**   12/18/2008 11:15:34 P

Cl **82**   *SC* **82.2.15**   *P* **129**   *L* **27**   # 266

Healey, Adam   LSI Corporation

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

Receive process must also insert idles to compensate for removal of alignment markers.
Also suggest using similar language as 48.4.2.3 for the concept of clock rate compensation.

SuggestedRemedy

Suggest:

"The receive process must insert idles to compensate for the removal of alignment
markers. If the PCS receive process spans multiple clock domains, it may also perform
clock rate compensation via the deletion of idles or sequence ordered sets or the insertion
of idles."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.
Change:
"Where the MII and PMA sublayer data rates are not synchronized
to a 32:33 ratio, the receive process will insert idles, delete idles, or delete sequence
ordered sets to adapt between rates."

"The receive process must insert idles to compensate for the removal of alignment
markers. If the PCS receive process spans multiple clock domains, it may also perform
clock rate compensation via the deletion of idles or sequence ordered sets or the insertion
of idles."

Cl **82**   *SC* **82.2.17.2.2**   *P* **130**   *L* **19**   # 189

Baldwin, Thananya   Ixia

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

Incorrect inteval in the following definition. Should be 16384.
"am_valid
Boolean indication that is set true if received block rx_coded is a valid alignment marker. A
valid alignment marker will match one of the encodings in Table 82-2 and it will be
repeated every 16385 blocks. Note that we do not know which marker to expect on which
lane."

SuggestedRemedy

Replace 16385 with 16384.
"am_valid
Boolean indication that is set true if received block rx_coded is a valid alignment marker. A
valid alignment marker will match one of the encodings in Table 82-2 and it will be
repeated every 16384 blocks. Note that we do not know which marker to expect on which
lane."

Response   *Response Status*   **C**

ACCEPT.

Already covered by comment #251, will be corrected.

Cl **82**   *SC* **82.2.17.2.2**   *P* **130**   *L* **43**   # 251

Estes, Dave   UNH - IOL

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

The spacing of alignment markers is incorrectly stated as 16385 instead of 16384.

SuggestedRemedy

Change 16385 to 16384

Response   *Response Status*   **C**

ACCEPT.

[Changed subclause number 2.17.2.2 to 82.2.17.2.2]

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 **82**
SC **82.2.17.2.2**

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12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.17.2.2**   *P* **130**   *L* **51**   # 268

Healey, Adam   LSI Corporation

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

What is the difference between deskew_error and !alignment_valid?

SuggestedRemedy

Clarify the difference. If there is no difference, delete deskew_error and substitute !alignment_valid in PCS deskew state diagram (Figure 82-14).

Response   *Response Status* **C**
ACCEPT.

Makes sense, will change 82-14 appropriately and delete deskew_error

---

Cl **82**   *SC* **82.2.17.2.2**   *P* **131**   *L* **18**   # 527

Ofelt, David   Juniper Networks

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

bit number is wrong- rx_raw is 72 bits wide, but the description does not number the bits properly.

SuggestedRemedy

OLD:

Vector containing one MII transfers. RXC<0> through RXC<7> are from rx_raw<0> through rx_raw<7>, respectively. RXD<0> through RXD<63> are from rx_raw<8> through rx_raw<63>,
respectively.

NEW:
Vector containing one MII transfers. RXC<0> through RXC<7> are from rx_raw<0> through rx_raw<7>, respectively. RXD<0> through RXD<63> are from rx_raw<8> through rx_raw<71>,
respectively.

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.17.2.2 to 82.2.17.2.2]

Cl **82**   *SC* **82.2.17.2.2**   *P* **131**   *L* **18**   # 3

Seung-Hwan, Kim   ETRI

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

Should be change 'rx_raw<63>' to 'rx_raw<71>'.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

change 'rx_raw<63>' to 'rx_raw<71>'.
Dupe of #527

Cl **82**   *SC* **82.2.17.2.2**   *P* **131**   *L* **29**   # 252

Estes, Dave   UNH - IOL

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

test_am is currently defined similarly to test_sh which will cause the PCS alignment marker lock state diagram to run on every received 66-bit block, instead of only running the state diagram on candidates for valid alignment markers.

SuggestedRemedy

State that test_am is set to true when the Lane deskew process has accumulated enough bits (16384*66) from the PMA to evaluate the next alignment marker.

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.17.2.2 to 82.2.17.2.2]

Add this to the definition. Dup of 106

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 **82**
SC **82.2.17.2.2**

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12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.17.2.4**   *P* **133**   *L* **3**   # 253
Estes, Dave   UNH - IOL

Comment Type **T**   *Comment Status* **A**   *amsm*
am_cnt is currently written to use the last 4 block received.

SuggestedRemedy
Change the definition to use a "4*16384 block window"

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.17.2.4 to 82.2.17.2.4]

I will re-define it and make it clear that the window refers to alingment marker windows
which are 16384*66 bits (not block windows). Dup of 252, 106

Cl **82**   *SC* **82.2.17.2.4**   *P* **133**   *L* **5**   # 254
Estes, Dave   UNH - IOL

Comment Type **T**   *Comment Status* **A**   *amsm*
am_invalid_cnt is currently written to use a 4 block window.

SuggestedRemedy
Change the definition to use a "4*16384 block window"

Response   *Response Status* **C**
ACCEPT. Dup of 252, 106

Cl **82**   *SC* **82.2.17.2.5**   *P* **133**   *L* **19**   # 255
Estes, Dave   UNH - IOL

Comment Type **T**   *Comment Status* **A**
31.25us_timer and 12.5us_timer are not referenced by the BER monitor state diagram.

SuggestedRemedy
Remove 31.25us_timer and 12.5us_time and define xus_timer as "Timer that is triggered
every 31.25 us +1%, -25% (for 40GBASE-R) or 12.5 us +1%, -25% (for 100GBASE-R)"

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.17.2.5 to 82.2.17.2.5]

Cl **82**   *SC* **82.2.17.3**   *P* **133**   *L* **26**   # 41
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
In clause 81.3.4.3 there is a simple description of the Link Fault State Diagram. This says
"The variable link_fault is set to indicate the value of a received Sequence ordered_set
when four fault_sequences containing the same fault value have been received with each
pair of fault sequences separated by less than 128 columns and no intervening
fault_sequences of a different fault
value."
Simple descriptions for Figure 82-12-PCS lane lock state diagram, Figure 82-13-PCS
alignment marker lock state diagram and Figure 82-15-BER monitor state diagram alon the
lines of that above would be very helpful.

SuggestedRemedy
Add simple descriptions of the state diagrams for Figures 82-12, 82-13 and 82-15

Response   *Response Status* **C**
ACCEPT.

Add simple text descriptions of the PCS state diagrams.

Cl **82**   *SC* **82.2.17.3**   *P* **134**   *L* **1**   # 226
Gustlin, Mark   Cisco

Comment Type **TR**   *Comment Status* **A**
The PCS lane lock and high ber SMs won't work properly with the FEC block due to how
the FEC block marks errors.

SuggestedRemedy
Make the changes to the state machine to implement what is in gustlin_03_1108. This will
be presented at the meeting.

And Remove:
"[Editor's note (to be removed prior to publication) - FEC errored block marking will likely
change some of the state machines since the FEC sublayer will need to mark many blocks
bad to ensure that all 64B
packets are dropped.]"

Response   *Response Status* **C**
ACCEPT.

Make the changes as stated in slides 13 and 15 of gustlin_03_1108.

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 **82**   Page 49 of 162
SC **82.2.17.3**   12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.17.3**   *P* **136**   *L*   *#* 192

Baldwin, Thananya   Ixia

Comment Type   **T**   *Comment Status*   **R**

"UCT" appears in Figure 82-12-PCS lane lock state diagram but not defined in the document.

SuggestedRemedy

Define UCT and list it in the Abbreviations section.

Response   *Response Status*   **C**

REJECT.

[Added missing subclause number 82.2.17.3 to subclause field]

UCT is defined in subclause 1.2.1 and is in subclause 1.5 Abbreviations.
Also looking at many other clauses, I do not see UCT defined within other clauses. So to remain consistent it will not be defined in clause 82.

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L*   *#* 258

Estes, Dave   UNH - IOL

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

Figure 82-13 - PCS alignment marker lock state diagram.

There is no valid exit from state INVALID_AM if am_lock<x> = false and am_invalid_count < 4.

SuggestedRemedy

Remove am_lock<x> from the exit condition to transition from state INVALID_AM to TEST_AM, making the exit condition "test_am * am_cnt < 4 * am_invalid_cnt < 4".

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Changed subclause number 2.17.3 to 82.2.17.3]

Looking at the SM, if you are in INVALID_AM, and you do not have am_lock, then you go to AM_SLIP. That is because when you are looking for am_lock you need to see two non errored ones in a row to declare lock. If you are not in lock, and you see an error, then you drop out, the invalid count at that point does not matter.

Talked to Dave by email:
I see what I did wrong, I misread the transition from INVALID_AM to AM_SLIP, I read it as "am_invalid_cnt=4 * !am_lock<x>" when it is really "am_invalid_cnt=4 + !am_lock<x>".
This way makes more sense!
He agrees to reject the comment.

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 **82**   Page 50 of 162
SC **82.2.17.3**   12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L*   # 106
Ebbers, Jonathan   IBM

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

The definition of test_am appears to be inadequate. As defined, test_am will be true once for every 66-bit block and TEST_AM will be entered very frequently, causing !am_valid to be the exit path from TEST_AM almost every time, causing the FSM to never reach the 2_GOOD state.

SuggestedRemedy

Refine test_am's definition to be less like that of test_sh. After the first detection of a valid AM, test_am should be tied to a timer that counts down from 16383 before asserting the next test_am.

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number from Figure 13 to 82.2.17.3]

Agree, several other comments have also pointed this out. It will be fixed. Editorial license for how to fix state machine. Dup of 106

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **21**   # 191
Baldwin, Thananya   Ixia

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

In Figure 82-13-PCS alignment marker lock state diagram, it appears the loop to fall out of lock will take either 4 or 7

SuggestedRemedy

We will submit a new diagram to Mark G

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number from Figure 82-13 to 82.2.17.3]

This is also addressed by comment #8. It will be fixed. Use sliding window rather than fixed window to look for alignment markers. Duplicate of comment 8. Editorial license to change the state machine appropriately

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **21**   # 188
Baldwin, Thananya   Ixia

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

In Figure 82-13-PCS alignment marker lock state diagram, the Test_AM loop is not skipping 16383 blocks before checking for the next valid AM.

SuggestedRemedy

Insert a state and associated "16383 block" counter in the path between VALID_AM and TEST_AM to skip 16383 blocks before checking for the next valid AM.

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number from Figure 82-13 to 82.2.17.3]

Agreed, Several other comments have pointed this out. It will be fixed. Duplicate of 106.

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **23**   # 8
Shafai, Farhad   Sarance Technologies

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

The state diagram in figure 152-12 shows that after am_lock is achieved, if there are 4 !am_valid conditions in a fixed window of 4 alignment marker periods, then am_lock is set to false. Because the window is fixed in time, it is possible that up to 6 !am_valid conditions may occur and the state machine will remain in lock (i.e. 3 !am_valid conditions in one window followed immediately by 3 more !am_valid conditions in the next window).

SuggestedRemedy

Suggested remedy is to make the window "sliding". That is, if there are four consecutive !am_valid conditions over any four align maker periods, then the am_lock is set to false.

Response   *Response Status* **C**

ACCEPT.

Make the appropriate changes to the state machine to have a sliding window.

Apparantly the commenter has commented using Draft 0.9 with old clause numbers. The clause number and subclause fields have been corrected to 82 to import into the comment database. Same remedy as 191

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 **82**   Page 51 of 162
SC **82.2.17.3**   12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **27**   # 99

Ebbers, Jonathan   IBM

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

It may require as many as 100,000 test_am instances before the AM Lock FSM will reach 2_GOOD (assuming that the location of the Alignment Marker is in the last of the 16384 possible locations checked by the PCS AM Lock State Machine). Is this a reasonable worst-case start-up delay?

SuggestedRemedy

Even though the AM_SLIP function is listed as implementation specific, indicate to the reader that the delay caused by the PCS AM Lock State Machine may take up to 100,000 blocks before reaching am_lock.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed subclause number from Figure 13 to 82.2.17.3]

Add a statement about the typical time required to lock.

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **27**   # 534

Vijayaraghavan, Divya   Altera Corp.

Comment Type   **T**   *Comment Status* **R**   *amsm*

Inconsistency in am_cnt in alignment marker state machine

SuggestedRemedy

Always compare to 2 or 4, but not both.

Response   *Response Status* **C**

REJECT.

[Changed subclause number from Figure 82-13 to 82.2.17.3]

It compares to 2 for going in lock, 4 for out of lock, this is the baseline.

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **30**   # 5

Seung-Hwan, Kim   ETRI

Comment Type   **T**   *Comment Status* **R**   *amsm*

Should be change 'am_cnt = 2 *' to 'am_cnt = 4 *'.

SuggestedRemedy

Response   *Response Status* **C**

REJECT.

If I understand the comment correctly, the am_cnt = 2 * is from the VALID_AM to 2_GOOD state transition. This should be 2, only two good markers in a row gets in you lock.

Cl **82**   *SC* **82.2.17.3**   *P* **137**   *L* **33**   # 6

Seung-Hwan, Kim   ETRI

Comment Type   **T**   *Comment Status* **R**   *amsm*

Should be change '2_GOOD' to '4_GOOD'.

SuggestedRemedy

Response   *Response Status* **C**

REJECT.

This should remain 2_GOOD. The baseline has two good markers to get in lock.

Cl **82**   *SC* **82.2.17.3**   *P* **138**   *L*   # 256

Estes, Dave   UNH - IOL

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

Figure 82-14 - PCS deskew state diagram

Using "am_status" as an exit condition from state LOSS_OF_ALIGNMENT is redundant. It is redundant because !am_status is a global transition to the same state.

SuggestedRemedy

Change the exit condition from LOSS_OF_ALIGNMENT to ALIGN_ACQUIRED to "alignment_valid"

Response   *Response Status* **C**

ACCEPT.

[Changed subclause number 2.17.3 to 82.2.17.3]

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 **82**
SC **82.2.17.3**

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12/18/2008 11:15:35 P

Cl **82**　　　*SC* **82.2.17.3**　　　　　　*P* **138**　　　*L* **10**　　　　*#* 267
Healey, Adam　　　　　　　　　　　LSI Corporation

Comment Type　**T**　　　*Comment Status*　**A**
Per the PCS deskew state diagram (Figure 82-14), the definition of deskew_error in 82.2.17.2 (page 130, line 51), and the use of align_status in the Receive state diagram (Figure 82-17, page 141, line 2), a spurious bit error that occurs during an alignment marker will supress the receipt of all packets until the next next group of alignment markers arrives, which could be a significant number of packets. Hysteresis should be added to Figure 82-14 to avoid this hair-trigger behavior.

SuggestedRemedy
Modify state diagram such that four consecutive deskew_error indications are required to set align_status = FALSE. Due to the hysteresis in PCS alignment marker lock state diagram (Figure 82-13), it seems acceptable to set align_status = TRUE based on the single alignment_valid indication.

Response　　　　　　*Response Status*　**C**
ACCEPT IN PRINCIPLE.

Had a long email conversation with Adam on this. The problem is with the following statement:

"alignment_valid
Boolean indication that is set true if all lanes are aligned. In order to be valid, each lane must be in am_lock, with each alignment marker matching a marker from Table 82-2. In addition each lane must have a unique marker value and the lanes must be deskewed so that each marker from all lanes are aligned. It is false otherwise."

This can mean that a single bit error that cause the alignment marker to not match would cause the SW to go out of alignment. This is bad, so here is the change:

Chang it to:

"alignment_valid
Boolean indication that is set true if all lanes are aligned. It is valid when each lane is in am_lock, with each lane locked to a unique alignment marker from Table 82-2. All lanes are deskewed, aligning all alignment markers. alignment_valid is false otherwise."

Comment #268 where is it is proposed that the variable deskew_error is to be deleted is also related to this.

Cl **82**　　　*SC* **82.2.17.3**　　　　　　*P* **139**　　　*L* **35**　　　　*#* 257
Estes, Dave　　　　　　　　　　　UNH - IOL

Comment Type　**T**　　　*Comment Status*　**A**
Figure 82-15 - BER monitor state diagram

The sentence "xus_timer = 31.25 usec for 40GBASE-R or 12.5 usec for 100GBASE-R" is not necessary if xus_timer is defined in subclause 82.2.17.2.5. This sentence does not fully define the timer because it does not include the +1%/-25% tolerance.

SuggestedRemedy
Remove this sentence.

Response　　　　　　*Response Status*　**C**
ACCEPT.

[Changed subclause number 2.17.3 to 82.2.17.3]

Cl **82**　　　*SC* **82.2.18**　　　　　　*P* **134**　　　*L* **8**　　　　*#* 233
Gustlin, Mark　　　　　　　　　　　Cisco

Comment Type　**TR**　　　*Comment Status*　**A**
Change the format of the PCS management clause with one consistent with the lastest table based format.

SuggestedRemedy
Replace subclause 82.2.18 with the attached document (gustlin_04_1108.pdf).

Response　　　　　　*Response Status*　**C**
ACCEPT.

Cl **82**　　　*SC* **82.2.18.2**　　　　　　*P* **134**　　　*L* **41**　　　　*#* 4
Seung-Hwan, Kim　　　　　　　　　　　ETRI

Comment Type　**T**　　　*Comment Status*　**A**
Should be change 'per 31.25' to 'per 31.25 us'.

SuggestedRemedy

Response　　　　　　*Response Status*　**C**
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 **82**
SC **82.2.18.2**

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Cl **82**   *SC* **82.2.18.4**   *P* **135**   *L* **14**   # 269
Healey, Adam   LSI Corporation

Comment Type   **T**   *Comment Status*   **A**
The data pattern that the PCS transmits to the PMA during loopback is not defined (TBD).

SuggestedRemedy
Recommend a continuous stream of of 0x00FF data words per Clause 49.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

0x00ff is not good since it would be mangled through the PMA gearbox and may result in insufficient clock content on individual lanes, confusing SERDES, etc.

Following the PMA loopback methodology, the PCS should send onward the signal it is looping back.

Cl **82**   *SC* **82.2.2**   *P* **117**   *L* **10**   # 117
Marris, Arthur   Cadence

Comment Type   **E**   *Comment Status*   **A**
grammar, independent needs to be an adverb.

SuggestedRemedy
change to 'independently'.

Response   *Response Status*   **C**
ACCEPT.

Cl **82**   *SC* **82.2.2**   *P* **117**   *L* **3**   # 141
D'Ambrosia, John   Force10 Networks

Comment Type   **ER**   *Comment Status*   **A**
Wording of statement: "The PCS comprises the PCS Transmit and PCS Receive processes for 40GBASE-R and 100GBASE-R." implies that a single PCS is defined for both 40G and 100G rates.

SuggestedRemedy
change sentence to:

The 40GBASE-R and 100GBASE-R PCS's comprise the PCS Transmit and PCS Receive processes for each rate of operation.

Response   *Response Status*   **C**
ACCEPT.

Change:
"The PCS comprises the PCS Transmit and PCS Receive processes for 40GBASE-R and 100GBASE-R"
To:
"The 40GBASE-R and 100GBASE-R PCS's comprise the PCS Transmit and PCS Receive processes for each rate of operation"

Cl **82**   *SC* **82.2.21**   *P* **135**   *L* **35**   # 228
Gustlin, Mark   Cisco

Comment Type   **TR**   *Comment Status*   **A**
Remove this subclause. And remove the editors note saying to add it in, and remove this section since this is being put in section 82.2.18.

SuggestedRemedy
Remove section 82.2.21.

Response   *Response Status*   **C**
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 **82**   Page 54 of 162
SC **82.2.21**   12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.21**   *P* **136**   *L* **27**   # 242

Meyer, Jeffrey   Centellax

Comment Type **E**   *Comment Status* **R**

What does the "*" in the conditional statements mean? I suspect that this is a boolean AND?   However most people use a & or && from what i have seen.   You might explain your conventions for the state diagrams. I did see where the ++ operator was explained earlier in the document. Maybe "*" was explained and I missed it.

SuggestedRemedy

Add a footnote for the conventions or explain the "*" and "+" where the "++" operator was explained.   It is confusing with a mulltiply and add.

Response   *Response Status* **C**

REJECT.
This seems to be standard IEEE SM notation. See Clause 1, Figure 1-2 where this is defined.

Cl **82**   *SC* **82.2.21**   *P* **137**   *L* **30**   # 530

Ofelt, David   Juniper Networks

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

Figure 82-13 - The state diagram is confusing (at least to me) about whether it is intending to declare alignment lock after 2 or 4 alignment blocks. The state diagram has a back arc from VALID_AM to TEST_AM if am_cnt < 4, but if am_cnt is two, then it exits to the 2_GOOD state and we declare that we have alignment lock for that lane.

There does not seem to be any text description of the process, so I can't double-check the intent that way.

SuggestedRemedy

If the state diagram is in error (should be am_cnt==4 to get lock), then fix it. Otherwise, add some descriptive text to 82.2.12 to describe the general algorithm. Actually, adding descriptive text in either case would be good.

Response   *Response Status* **C**

ACCEPT.

Comment #41 also addressed part of this. The intent is to create lock after two markers. Descriptive text will be added.

Cl **82**   *SC* **82.2.21**   *P* **139**   *L* **35**   # 413

Ganga, Ilango   Intel

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

instead of usec, use the "micro" symbol for microsecond. See page 10 for symbols used in document.

SuggestedRemedy

Per comment

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.2.4**   *P* **122**   *L* **12**   # 247

Trowbridge, Stephen   Alcatel-Lucent

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

Align control block type 4b with other 66B codes. The mapping of 40GbE into ODU3 will use a transcoding algorithm that is used for other purposes (e.g., mapping of FC1200 into ODU2e) and there is improved reuse if codes are aligned. This would also leave the door open to future use of the Ethernet PCS format, for example if FC in the future were to do a 40G or 100G spec. Since the sequence ordered set only has two values (LF and RF), three bytes are plenty- we don't need 7 bytes.

SuggestedRemedy

Block type 4b should explicitly include the "O" code as in Figure 49-7 (rather than assuming a sequence ordered set) and four control characters (always idles in this case) in the latter half of the 66B block. An alternate solution would be to have 802.3ba use control code 0x55 rather than 0x4b and simply send the ordered set which appears once on the MII twice on the PCS.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Here are some proposed changes:
Change figure 82-5, keep block type 0x4b and remove block type 0x55. Re-define block type 0x4b to exactly what it was in clause 49 with the O type field to differentiate between sequence and signal ordered sets. Make appropriate changes to the text also. Note that the MII stays the same, but the upper bytes are dropped.

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 **82**
SC **82.2.4**

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12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.4.10**   *P* **123**   *L* **37**   # 262
Healey, Adam   LSI Corporation

Comment Type   **E**   *Comment Status*   **A**
It is not necessary to have two sub-clauses addressing ordered sets at the same level in
the clause heirarchy.

SuggestedRemedy
Merge information in 82.2.4.10 and 82.2.4.5.

Response   *Response Status*   **C**
ACCEPT.

Cl **82**   *SC* **82.2.4.10**   *P* **123**   *L* **41**   # 525
Ofelt, David   Juniper Networks

Comment Type   **E**   *Comment Status*   **A**
Sentence unclear...

"When it is necessary to designate
the control character for the sequence ordered_set specifically, /Q/ will be used."

SuggestedRemedy
Clarify what is meant by needing to specify the control character.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

[Changed subclause number 2.4.10 to 82.2.4.10]

There have been several comments on the ordered set description. This will be clarified by
combining the text from 82.2.4.5 and 82.2.4.10.

Cl **82**   *SC* **82.2.4.11**   *P*   *L*   # 101
Ebbers, Jonathan   IBM

Comment Type   **E**   *Comment Status*   **A**
"sent" and "received" are pretty ambiguous terms, especially since this is meant to apply to
both the encoder (egress path) and decoder (ingress path).   "received" is an especially
poor choice of word given that it applies also to the Tx path.

SuggestedRemedy
Change
"The /E/ is sent whenever an /E/ is received. It is also sent when invalid blocks are
received. The /E/ allows the PCS to propagate received errors."
to
"For both the encoder and decoder, the /E/ is generated whenever an /E/ is detected. The
/E/ is also generated when invalid blocks are detected. The /E/ allows the PCS to
propagate detected errors."

Response   *Response Status*   **C**
ACCEPT.

[Changed subclause number 2.4.11 to 82.2.4.11]

Cl **82**   *SC* **82.2.4.2**   *P* **119**   *L* **22**   # 110
Marris, Arthur   Cadence

Comment Type   **T**   *Comment Status*   **A**
There is no mention of alignment marker insertion in Figure 82-3

SuggestedRemedy
Change "Block Distribution" to "Block Distribution and Alignment Marker Insertion"

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Also in Figure 82-4 indicate "Lane Block Sync, Deskew and Alignment Marker Removal".

Cl **82**   *SC* **82.2.4.3**   *P* **119**   *L* **34**   # 193
Baldwin, Thananya   Ixia

Comment Type   **E**   *Comment Status*   **A**
Figure 82-3-PCS Transmit bit ordering has "0 0 0" between the columns. Should be "..."

SuggestedRemedy
Replace "0 0 0" with "..."

Response   *Response Status*   **C**
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 **82**
SC **82.2.4.3**

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12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.4.3**   *P* **120**   *L* **34**   # 194
Baldwin, Thananya   Ixia

Comment Type **E**   *Comment Status* **A**
Figure 82-4-PCS Receive bit ordering has "0 0 0" between the columns. Should be "..."

SuggestedRemedy
Replace "0 0 0" with "..."

Response   *Response Status* **C**
ACCEPT.

Cl **82**   *SC* **82.2.4.3**   *P* **121**   *L* **14**   # 111
Marris, Arthur   Cadence

Comment Type **T**   *Comment Status* **A**
Redundant text. Isn't this paragraph just repeating what has already been said in 82.2.4.1, page 118 line 32?

SuggestedRemedy
Consider deleting the redundant text from either 82.2.4.1 or 82.2.4.3.

Response   *Response Status* **C**
ACCEPT.

delete the redundant text from 82.2.4.3

Cl **82**   *SC* **82.2.4.3**   *P* **122**   *L*   # 259
Estes, Dave   UNH - IOL

Comment Type **TR**   *Comment Status* **A**
Figure 82-5 - 64B/66B block formats

The Block Payload descriptions for block types 0xb4, 0xcc, 0xd2, and 0xe1 are incorrect. They do not include enough single bit fields. 0xb4 should have 4 but only 3 are displayed, 0xcc should have 3 but only 2 are displayed, 0xd2 should have 2 but only 1 is displayed, 0xe1 should have 1 but none are displayed.

SuggestedRemedy
Add one single bit field to the Block Payload descriptions for block types 0xb4, 0xcc, 0xd2, and 0xe1.

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.4.3 to 82.2.4.3]

Already covered by comment #7 and proposed accepted.

Cl **82**   *SC* **82.2.4.3**   *P* **122**   *L* **12**   # 264
Healey, Adam   LSI Corporation

Comment Type **E**   *Comment Status* **R**
In Figure 82-5, it could be made more clear which control block format corresponds to a sequence ordered set and which corresponds to a signal ordered set without requiring the reader to cross-reference to Table 82-1.

SuggestedRemedy
Add a footnote to the table distinguishing the two ordered set block formats.

Response   *Response Status* **C**
REJECT.
The way that ordered sets is handled has changed. (#247) This comment no longer is necessary, OTBE.

Cl **82**   *SC* **82.2.4.4**   *P* **121**   *L* **35**   # 164
D'Ambrosia, John   Force10 Networks

Comment Type **TR**   *Comment Status* **R**
The TF is waiting to hear back for confirmation from the ITU-T SG15 regarding the following statement -

The mapping of 40GBASE-R PCS into OPU3 specified in ITU-T Recommendation G.709 depends on the set of control block types shown in Figure 82-5. Any change to the coding specified in Figure 82-5 must be
coordinated with ITU-T Study Group 15.

SuggestedRemedy
Add Editor's note stating that awaiting confirmation from ITU-T SG15 of the statement above from Liaison sent from July 08 Plenary meeting.

Response   *Response Status* **C**
REJECT.

Editor's note not needed because liaison letter received from ITU-T SG15 with confirmation http://www.ieee802.org/3/minutes/nov08/1108_ITU_SG15_to_802_3_LS02.pdf

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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 **82**
SC **82.2.4.4**

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Cl **82**   *SC* **82.2.4.4**   *P* **122**   *L*   *#* 7

Wong, Don   Cisco Systems

Comment Type **ER**   *Comment Status* **A**
Figure 82-5

For BlockTypeField 0xb4, 0xcc, 0xd2 & 0xe1, missing one more "single bit" field (marked by thin rectangle).

SuggestedRemedy
Add "thin rectangle" for BlockTypeField 0xb4, 0xcc, 0xd2 & 0xe1.

Response   *Response Status* **C**
ACCEPT.

[Added missing subclause number 82.2.4.4 to subclause field]

Will add the appropriate rectangles.

Cl **82**   *SC* **82.2.4.4**   *P* **122**   *L* **7**   *#* 202

Marris, Arthur   Cadence

Comment Type **T**   *Comment Status* **A**
Figure 82-5 improvements

SuggestedRemedy
Remove the slash (/) in the middle of the block foramt description. For example change D3/D4 to D3 D4.

Delete redundant row with block type field 0x4b

Width of C5, C6 and C7 is wrong for block type files 0xcc 0xd2 0xe1

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Yes on:Remove the slash (/) in the middle of the block foramt description. For example change D3/D4 to D3 D4.
Width of C5, C6 and C7 is wrong for block type files 0xcc 0xd2 0xe1

Delete row for 0x55 per comment 247.

Cl **82**   *SC* **82.2.4.4**   *P* **122**   *L* **725**   *#* 2

Seung-Hwan, Kim   ETRI

Comment Type **T**   *Comment Status* **A**
At Data Block Formats and Control Block Formats :
The slash('/') is used to seperate and represent two 4 bytes transfer in 10GBase-R, but in 40G/100GBase-R there is no need slash('/') between 8 bytes.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Also covered by #202

Cl **82**   *SC* **82.2.4.5**   *P* **122**   *L* **12**   *#* 532

Vijayaraghavan, Divya   Altera Corp.

Comment Type **T**   *Comment Status* **A**
Block Types 4b and 55 have the same format in the 64b/66b table (figure 82-5). Typo in block type 55.

SuggestedRemedy
Remove block type 55. Does not apply to 8 byte alignment.

Response   *Response Status* **C**
ACCEPT. See comment 247.

Cl **82**   *SC* **82.2.4.5**   *P* **123**   *L* **37**   *#* 263

Healey, Adam   LSI Corporation

Comment Type **E**   *Comment Status* **R**
It may be useful to point out that sequence and signal ordered set encoding differs from the encoding defined in Clause 49.

SuggestedRemedy
Add a note to highlight this difference.

Response   *Response Status* **C**
REJECT.

This to me seems like a slippery slope, since many things in clause 82 differ from clause 49, do I put a note everywhere where this a difference?

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 **82**   Page 58 of 162
SC **82.2.4.5**   12/18/2008 11:15:35 P

Cl **82**   *SC* **82.2.5**   *P* **124**   *L* **9**   # 265

Healey, Adam   LSI Corporation

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

Text seems essentially correct but could be compacted and clarified, using similar
language to 48.4.2.3. A lot of words are used to describe the concept of traversing clock
domains, which really shouldn't be necessary for a user of the standard.

SuggestedRemedy

Suggest:

"The transmit process must delete idles or sequence ordered sets to accomodate the
transmission of alignment markers. If the PCS transmit process spans multiple clock
domains, it may also perform clock rate compensation via the deletion of idles or sequence
ordered sets or the insertion of idles."

Response   *Response Status* **C**

ACCEPT.

Change:
"Therefore, if the PCS is connected to an MII and PMA sublayer where
the ratio of their transfer rates is exactly 32:33, then the transmit process only needs to
perform rate adaptation to make room for the alignment markers. This will consist of
deleting idles or deleting sequence ordered sets. Where the MII and PMA sublayer data
rates are not synchronized to that ratio, the transmit process will need to insert idles, delete
idles, or delete sequence ordered sets to adapt between the rates in addition for making
room for alignment markers."
To:
"The transmit process must delete idles or sequence ordered sets to accomodate the
transmission of alignment markers. If the PCS transmit process spans multiple clock
domains, it may also perform clock rate compensation via the deletion of idles or sequence
ordered sets or the insertion of idles."

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **23**   # 105

Ebbers, Jonathan   IBM

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

82.2.8 states that the alignment markers are inserted after 16383 66-bit blocks are
transmitted. We assume this includes interrupting a data packet and not waiting until an
IPG. Since we cannot possibly write over data, is this process handled at the same time
and in the same way as clock compensation (idle/OSet insert/delete) in the async
crossing? How can we be sure that the MII data presented to the PCS Transmitter will
have enough excess bandwidth to allow for AM insertion and clock compensation?

SuggestedRemedy

Provide a more explicit description of the relationship between alignment marker insertion
and idle insertion/deletion. Provide a specific minimum inter-frame size for transmitted MII
data (from the MAC or RS) to allow for proper AM insertion and +/- 100 PPM clock
frequency compensation.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed subclause number 2.8 to 82.2.8]

The numbering in figure 82.8 shows that the markers interrupt the regular data. See
folkens_01_0508 for calculations of sufficient space even with jumbo frames.

Add to the 1st paragraph of 82.2.5 a sentence indicating that there is more than sufficient
IPG+ordered sets to delete to make room for alignment markers in addition to clock
compensation and a sentence that the algorithm for IPG deletion is implementation
dependent.

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 **82**
SC **82.2.8**

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Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **23**   # 249
Estes, Dave   UNH - IOL

Comment Type   **E**   *Comment Status*   **A**
It is unclear how the Alignment markers are inserted without changing the PMA clock rate.

SuggestedRemedy
Insert a note indicating that columns of Idle will need to be deleted prior to the scrambler. The number of columns to delete will be an average of 1 column of Idle for every 16384 MII columns, however this is just an average since the alignment markers will be inserted on all lanes at the same time.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

[Changed subclause number 2.8 to 82.2.8]

Change:
"They interrupt any transfer that is already occurring so that the alignment markers can be inserted into all lanes at the same time."

to:
"They interrupt any transfer that is already occurring so that the alignment markers can be inserted into all lanes at the same time. Room for the alingment markers is created by periodically deleting IPG from the MII data stream"

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **24**   # 186
Baldwin, Thananya   Ixia

Comment Type   **ER**   *Comment Status*   **A**
Another function of the alignment marker (lane re-order) is missing in the following sentence...
"In order to support alignment and de-skew of individual lanes at the receive PCS, alignment markers are added periodically to each lane."

Also, the words "alignment"and "de-skew" are redundant.

SuggestedRemedy
Add "lane reordering" and delete "alignment" in the sentence :
"In order to support de-skew and lane reordering of individual lanes at the receive PCS, alignment markers are added periodically to each lane."

Response   *Response Status*   **C**
ACCEPT.

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **25**   # 1
Seung-Hwan, Kim   ETRI

Comment Type   **E**   *Comment Status*   **R**
Spelling: Should be change 'de-skew' to 'deskew' for consistency.

SuggestedRemedy

Response   *Response Status*   **C**
REJECT.

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **26**   # 434
Barrass, Hugh   Cisco

Comment Type   **E**   *Comment Status*   **A**
It's not really a "regular 66-bit block" since it doesn't use a defined 64B/64B code.

SuggestedRemedy
Change "regular 66-bit block" "specially defined 66-bit block"

Response   *Response Status*   **C**
ACCEPT.

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **49**   # 200
Marris, Arthur   Cadence

Comment Type   **E**   *Comment Status*   **A**
change "lots or" to "many"

SuggestedRemedy
as above

Response   *Response Status*   **C**
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 **82**
SC **82.2.8**

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12/18/2008 11:15:36 P

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **49**   # 435
Barrass, Hugh   Cisco

Comment Type **E**   *Comment Status* **A**
"that looks random and has lots or transitions"

Apart from the obvious typo, this phrase does not seem right - what does it mean to "look randon?"

SuggestedRemedy
Change "that looks random and has lots or transitions" to "that is defined to be balanced and irregular with many transitions"

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change "that looks random and has lots or transitions"
 to
"that is defined to be balanced and with many transitions"

Cl **82**   *SC* **82.2.8**   *P* **125**   *L* **49**   # 178
Alping, Arne   Ericsson AB

Comment Type **ER**   *Comment Status* **A**
...has lots or transitions... (spelling error)

SuggestedRemedy
Change to: ...has lots of transitions...

Response   *Response Status* **C**
ACCEPT.

[Changed subclause number 2.8 to 82.2.8]

Cl **82**   *SC* **82.2.8**   *P* **126**   *L* **32**   # 203
Marris, Arthur   Cadence

Comment Type **T**   *Comment Status* **A**
Use of boolean NOT operator. Is the use of the boolean operator ! appropriate for bit vector negation?

SuggestedRemedy
Consider changing M0 = !M4 to M4 is the inverse of M0 etc.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
Change "Note that M0 = !M4, M1 = !M5, M2 = !M6, and M3 = !M7" to

"Note that M4 through M7 are the bit-wise inversion of M0 through M3, respectively"

Cl **82**   *SC* **82.2.8**   *P* **126**   *L* **33**   # 299
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**   *markers*
During the review of Draft 0.9 Piers Dawe proposed that different lane markers should be used for 40GBASE-R and 100GBASE-R. If this is agreed, suitable lane markers have been generated and evaluated in the accompanying presentation.

SuggestedRemedy
If different lane markers are agreed for 40GBASE-R from 100GBASE-R then use the values in anslow_06_1108.pdf as the lane markers for 40GBASE-R

Response   *Response Status* **C**
ACCEPT.

Cl **82**   *SC* **82.2.8**   *P* **127**   *L* **6**   # 326
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *markers*
The two PCSs are distinguished by width not lane rate. In future we will consider using one or both at faster lane rates, and quite likely consider 20 x 10G for 200G. The lane markers for a 4-wide PCS should be distinct from a 20-wide PCS.

SuggestedRemedy
Add four new lane markers for the 4-wide 40GBASE-R PCS. Pete Anslow has the markers and a presentation.

Response   *Response Status* **C**
ACCEPT.
See comment 299 for specific values

Cl **82**   *SC* **82.2.9**   *P* **126**   *L* **42**   # 445
Barrass, Hugh   Cisco

Comment Type **T**   *Comment Status* **A**
The phrase "sends four bits of transmit data at a time" implies that the PCS is sending a 4 bit vector. This is not the case, it is sending 4 data streams.

Also, is there a reason why "four" is spelt out and "20" is not?

SuggestedRemedy
Change "sends four bits of transmit data at a time" to "sends four data streams"

Also change "sends 20 bits of transmit data at a time" to "sends twenty data streams"

Response   *Response Status* **C**
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 **82**
SC **82.2.9**

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Cl **82**   *SC* **82.2.9**   *P* **126**   *L* **46**   *#* 436
Barrass, Hugh   Cisco

Comment Type **E**   *Comment Status* **A**
"parallel" is not a good word - especially when it is followed by "serial"

SuggestedRemedy
Replace "parallel" with "separate"

Response   *Response Status* **C**
ACCEPT.

Cl **82**   *SC* **82.2.9**   *P* **126**   *L* **47**   *#* 437
Barrass, Hugh   Cisco

Comment Type **E**   *Comment Status* **A**
"on lane 0 bits 0 to 65 are sent"

This paragraph written by Yoda was...

Change to a more traditional word order

SuggestedRemedy
Change

"on lane 0 bits 0 to 65 are sent, on lane 1 bits 66 to 131 are sent; on lane 2 bits 132 to 197
are sent, on lane 3 bits 198 to 263 are sent, then on lane 0 bits 264 to 329 are sent etc."

to

"bits 0 to 65 are sent on lane 0, bits 66 to 131 are sent on lane 1; bits 132 to 197 are sent
on lane 2, bits 198 to 263 are sent on lane 3, then bits 264 to 329 are sent on lane 0 etc."

With similar changes to the following paragraph for 100G.

Response   *Response Status* **C**
ACCEPT.

Nice Star Wars reference, I agree it make sense to change the order.

Cl **82**   *SC* **82.2.9**   *P* **127**   *L* **44**   *#* 327
Dawe, Piers   Avago Technologies

Comment Type **TR**   *Comment Status* **R**   *skew*
Tracking the last little bit of skew costs power in high speed analog circuitry. The PCS is
implemented as a silicon chip in a package on a PCB. It has no need to generate anything
remotely like 2 bits of Dynamic Skew (if 'bits' means UI). There could be several x 10 ps
gate delay, most of which is correlated lane to lane (giving maybe 5 ps Dynamic Skew)
plus perhaps 2" or 400 ps mismatched lane lengths on the PCBs, which might change by
5% over temperature and humidity: that's 20 ps. Total 25 ps (0.25 UI at 10G, 1 MAC BT
for 40G, 2.5 MAC BT for 100G).

SuggestedRemedy
Change PCs dynamic skew output limit to 25 ps.

Response   *Response Status* **C**
REJECT.

Overtaken by events. Skew will be covered in clause 80 and not in the PCS clause. See
comment #240. Commenter can resubmit against clause 80 if solution from
giannakopoulos_01_1108 is not acceptable.

Cl **82**   *SC* **82.2.9**   *P* **127**   *L* **5**   *#* 535
Vijayaraghavan, Divya   Altera Corp.

Comment Type **TR**   *Comment Status* **A**
Lane 10: 2d and de are not inversions of each other. Which is right and which needs
correction?

SuggestedRemedy
Fix incorrect value

Response   *Response Status* **C**
ACCEPT.

In Lane 10, change 0x2d to 0x21

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 **82**
SC **82.2.9**

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Cl **83**   *SC* **0**   *P*   *L*   *#* 95
Jongyoon, Shin   ETRI

Comment Type   **E**   *Comment Status* **A**
Change all "sub-layer"
to
"sublayer" in clause 83 to keep consistency with other clauses.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **83**   *SC* **83**   *P* **143**   *L* **1**   *#* 331
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
sub-layer
SuggestedRemedy
To match base document, sublayer. Search and replace, 18 instances.

Response   *Response Status* **C**
ACCEPT.

Also see comment #95

Cl **83**   *SC* **83**   *P* **146**   *L* **10**   *#* 332
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **A**
Text says 'the supportable PMA stages' but table is not complete. For example, Tx 2:1 is
missing. If you add all the missing possibilities the table might get rather long, although the
rows could be shallower. I don't think we should talk about 'initial version of the standard':
802.3 is very old, and we have not yet made any promises that there will be a version
which will use more of this table.

SuggestedRemedy
Suggest you list only the 'prime factors'. For 40G, that's 4:2, 2:1, 1:2, 2:4., 1:1, 2:2, 4:4.
Say in main text, not just a table note, that PMAs such as 4:1 and 1:4 may be made
without going though the intermediate (in this case 2-wide) stage (and if such is true, they
could map the lanes a bit differently to how a tree of atomic PMAs would).

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Delete table 83-1. Replace with text to indicate that for 40GBASE-R, the number of input
and output lanes are divisors of 4 and for 100GBASE-R, the number of input and output
lanes are divisors of 20.

Cl **83**   *SC* **83**   *P* **146**   *L* **6**   *#* 333
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **A**
Are these _logical_ lanes or just lanes?

SuggestedRemedy
?

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events. Table 83-1 removed, and replacement text does not use the word
"logical".

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 **83**
SC **83**

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12/18/2008 11:15:36 P

Cl **83**   *SC* **83.1.1**   *P* **143**   *L* **21**   # `158`

D'Ambrosia, John   Force10 Networks

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

Per the baseline proposal, trowbridge_01_0708, PMA interfaces are abstract, logical, or physical.

SuggestedRemedy

Change wording
Electrical and timing specifications for the XLAUI and CAUI interfaces based on 10Gb/s per lane signaling are covered in Annex 83A. The PMD service interfaces for 40GBASE-SR and 100GBASE-SR PMD are covered in 86.1.1. Other PMA interfaces are specified as logical interfaces, and may not be realized physically.

to

The interfaces for the inputs of the 40GBASE-R and 100GBASE-R PCS's are defined in an abstract manner and do not imply any particular implementation. The PMD service interfaces for 40GBASE-SR and 100GBASE-SR PMDs are defined in 86.1.1. Other PMD service interfaces are defined abstractly. For 40GBASE-R PMA's, an interface, known as XLAUI, connecting PMA stages is been defined in Annex 83A. For 100GBASE-R PMA's, an interface, known as CAUI, connecting PMA stages has been defined in Annex 83A.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change wording
Electrical and timing specifications for the XLAUI and CAUI interfaces based on 10Gb/s per lane signaling are covered in Annex 83A. The PMD service interfaces for 40GBASE-SR and 100GBASE-SR PMD are covered in 86.1.1. Other PMA interfaces are specified as logical interfaces, and may not be realized physically.

to

The interfaces for the inputs of the 40GBASE-R and 100GBASE-R PCS's are defined in an abstract manner and do not imply any particular implementation. The PMD service interfaces for 40GBASE-SR and 100GBASE-SR PMDs are defined in 86.1.1. Other PMD service interfaces are defined abstractly. For 40GBASE-R PMA's, an interface, known as XLAUI, connecting PMA stages is defined in Annex 83A. For 100GBASE-R PMA's, an interface, known as CAUI, connecting PMAs is defined in Annex 83A.

Cl **83**   *SC* **83.1.1**   *P* **143**   *L* **22**   # `134`

D'Ambrosia, John   Force10 Networks

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

Wording - A PMA connects to other sublayers.

SuggestedRemedy

change
The 40GBASE-R PMA can connect directly to one of the following Physical Layers: 40GBASESR4, 40GBASE-LR4, 40GBASE-CR4, or 40GBASE-KR4. The 100GBASE-R PMA can connect directly to one of the following Physical Layers: 100GBASE-SR10, 100GBASE-LR4, 100GBASE-ER4, or 100GBASE-CR10.

to

The purpose of the 40GBASE-R PMA is to attach the 40GBASE-R PMD of choice to the 40GBASE-R PCS. The purpose of the 100GBASE-R PMA is to attach the 100GBASE-R PMD of choice to the 100GBASE-R PCS.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events - description of connections to other sublayers improved by changes per trowbridge_02_1108

Cl **83**   *SC* **83.1.1**   *P* **143**   *L* **22**   # `286`

Anslow, Peter   Nortel Networks

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

Two very minor editorial issues in clause 83 collected in to one comment.

SuggestedRemedy

Change "for 40GBASE-SR and 100GBASE-SR PMD" to "for the 40GBASE-SR and 100GBASE-SR PMDs" page 143 line 22
Space missing in "isin" page 148 line 44

Response   *Response Status* **C**

ACCEPT.

Also see reponse to comment #158

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 **83**
SC **83.1.1**

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12/18/2008 11:15:36 P

Cl **83**   *SC* **83.1.1**   *P* **143**   *L* **23**   # 330
Dawe, Piers   Avago Technologies

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

Draft says 'Other PMA interfaces are specified as logical interfaces, and may not be realized physically.' This looks like a prohibition.

SuggestedRemedy

Suggest 'Other PMA interfaces are specified as logical interfaces, without electrical or timing specifications.' ?

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Replace:
Other PMA interfaces are specified as logical interfaces, and may not be realized physically.

with:
Other PMA interfaces are specified as abstract interfaces.

Also see response to comment #158

Cl **83**   *SC* **83.1.2**   *P* **143**   *L* **30**   # 334
Dawe, Piers   Avago Technologies

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

PCS lanes are not always virtual.

SuggestedRemedy

I think we should rename 'virtual lane' to 'PCS lane' throughout.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Need an acronym: suggest PCSL. In figure 83-4 and elsewhere, use z as lane count instead of v, and add to legend that z=4 for 40GBASE-R and z=20 for 100GBASE-R (consistent with p149 lines 32-40).

Also affects Clause 82. Remove Virtual Lane comments from clause 82.

Cl **83**   *SC* **83.1.3**   *P* **144**   *L* **36**   # 643
Nicholl, Gary   Cisco

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

I would like to see a PMA line loopback (by which I mean data loopback from/to the PMD service interface) as a mandatory requirement. This is something that was not included in the original 802.3ae spec (10GE), but is widely implemented and used by the industry (primarily for PMD compliance testing).

SuggestedRemedy

I will be making a contribution in Dallas to propose a remedy.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Changed subclause from 1.3 to 83.1.3]

An optional PMA line loopback at the lowermost PMA level (nearest the PMD). The loopback would use the received clock for the transmit side and loop back the data on a per PMA lane basis. Also add in appropriate MDIO register to control the loopback if it is implemented. Change the name of the current PMA loopback to "system PMA loopback" in order to differentiate it from the line loopback. Editorial license to fit it into the text in the appropriate place. Add a similar figure to 83-5 but in the opposite direction to explain line loopback operation. Line loopback and system loopback should each have two MDIO bits: one to indicate whether line/system loopback is supported and the other to enable.

Cl **83**   *SC* **83.1.3**   *P* **144**   *L* **46**   # 96
Jongyoon, Shin   ETRI

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

Change "optionally provides data loopback"
to
"optionally provide data loopback".

SuggestedRemedy

Response   *Response Status*   **C**

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 **83**   Page 65 of 162
SC **83.1.3**   12/18/2008 11:15:36 P

Cl **83**   *SC* **83.1.3**   *P* **144**   *L* **47**   # 626
CHANG, Frank   Vitesse

Comment Type   **T**   *Comment Status* **R**

Feel "provide test generation and detection" not sufficient.

SuggestedRemedy

Change to "provide build-in-self-test (BIST) function with test pattern generator and checkor"

Response   *Response Status* **C**

REJECT.

[Changed subclause from 1.3 to 83.1.3]

BIST would be a new function that requires a presentation to justify adding the feature and to specify its operation. It depends on implementation architecture and is not normally considered in the scope of 802.3 standardization.

Cl **83**   *SC* **83.1.4**   *P* **145**   *L* **6**   # 157
D'Ambrosia, John   Force10 Networks

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

Aspects of the PMA layering are incorrect.

SuggestedRemedy

XLAUI / CAUI should be marked as optional.
PMA (4:4) and PMA (10:10) with optional notes are actually conditional based on implementation of optional interface.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
Stack in figure 83-2 should be replaced. Suggestion is to include most expanded case of multiple PMAs as an example, using "Example" in the title to clarify that this is not the only layering. Editorial license granted to construct an appropriate figure consistent with other changes to clause 83. An informative Annex should be prepared to illustrate a variety of other example configurations.

Cl **83**   *SC* **83.1.4**   *P* **146**   *L* **1**   # 467
Dudek, Mike   JDSU

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

The statement on line 1 implies that only the items in table 83-1 are supportable.   However the table is titled "example PMA variants".   A 2 lane solution I believe is supportable at 100G and might be used in the future.

SuggestedRemedy

Either include all the supportable PMA stages in table 83-1 or change the sentence on line 1 to "Table 83-1 summarizes some examples of the supportable PMA stages for each interface rate however it is not exhaustive"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. Table will be removed. See comment 332.

Cl **83**   *SC* **83.1.4**   *P* **146**   *L* **4**   # 624
CHANG, Frank   Vitesse

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

In table 83-1, some PMA stage examples become irrelavant such as 4 inputs to 1 outputs to cover 40g serial in 40GBASE-R transmit (& Receive), or 4(5) inputs to 1 outputs to cover 100g serial in 100GBASE-R transmit (& Receive).

SuggestedRemedy

Suggest take them out from the table.

Response   *Response Status* **C**

ACCEPT.

Need to reconcile with multiple comments on this table: comments #467, #624, #42, #43 plus a related comment #625.

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 **83**   Page 66 of 162
SC **83.1.4**   12/18/2008 11:15:36 P

Cl **83**		*SC* **83.1.4**					*P* **146**			*L* **41**			# 42
Anslow, Peter							Nortel Networks

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

In Table 83-1 the 100GBASE-R receive list is almost the Tx list in reverse and swapped over, but not quite. Swapping 5:10 and 4:10 over would fix this

SuggestedRemedy

Swap the 5:10 and 4:10 rows in the table

Response			*Response Status* **C**

ACCEPT IN PRINCIPLE.

Need to reconcile with multiple comments on this table: comments #467, #624, #42, #43 plus a related comment #625.

Cl **83**		*SC* **83.1.4**					*P* **146**			*L* **48**			# 43
Anslow, Peter							Nortel Networks

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

In Table 83-1 Note 1 says "Not used in initial version of the standard" this would be better as "Not used in this version of the standard"

SuggestedRemedy

change "Not used in initial version of the standard" to "Not used in this version of the standard"

Response			*Response Status* **C**

ACCEPT IN PRINCIPLE.

Need to reconcile with multiple comments on this table: comments #467, #624, #42, #43 plus a related comment #625.

Cl **83**		*SC* **83.1.4**					*P* **146**			*L* **6**			# 97
Jongyoon, Shin							ETRI

Comment Type **E**		*Comment Status* **R**

In Table 83-1 change "Logical output Lanes"
to
"Logical output lanes".

SuggestedRemedy

Response			*Response Status* **C**

REJECT.
Overtaken by events - table removed

Cl **83**		*SC* **83.2**					*P* **147**			*L* **4**			# 642
Ganga, Ilango							Intel

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

A PMA is always bidirectional and contains both Transmit and Receive functions. So calling this as a separate RX PMA and a TX PMA is confusing and this is not consistent through out the clause. In some references in this clause the PMA implies both for e.g 20:10 PMA which includes both TX PMA and RX PMA.

So instead of referring this as RX and TX PMA, simply define the PMA as a single block which includes both Transmit and Receive functions. This medthodology is consistent with the definitions of PCS/PMA/PMD which are all bidirectional with TX and RX functions.

SuggestedRemedy

Define the PMA as a single block which includes both Transmit and Receive functions, illustrated in Fig 83-3 as single PMA block with TX and RX blocks inside the PMA. The TX function in the PMA connects to p input lanes and q output lanes. The RX function in the PMA connects to q input lanes and p output lanes. In this case the link status is associated with the RX function.

Also Change Fig 83-4 to illustrate both TX and RX functions

Also for primitives, the TX function can use PMA_UNIDATA.request and the RX function use PMA_UNIDATA.indication in the following manner

Transmit direction for data flowing from MAC to MDI
PMA_UNIDATA.request_in
PMA_UNIDATA.request_out

Receive direction
PMA_UNIDATA.indication_in
PMA_UNIDATA.indication_out

Signal indication
PMA_SIGNAL.indication_in
PMA_SIGNAL.indication_out

So this can be consistently mapped to the request and indication of PMD primitives or FEC primitives

Accordingly, update the text description and primitive definitions in 83.3

Response			*Response Status* **C**

REJECT.

We discussed this in trowbridge_01_0708. There is a great deal of text that gets replicated if the general operation of m input lanes to n output lanes needs to be described twice because it occurs in Tx and Rx directions. The primitive naming all changes also if this proposal is accepted.

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 **83**		Page 67 of 162
SC **83.2**		12/18/2008 11:15:36 P

Cl **83**   *SC* **83.2**   *P* **148**   *L* **4**   # 528
Ofelt, David   Juniper Networks

Comment Type   **E**   *Comment Status* **A**
    Figure 83-4

    Every variable in the figure is defined except for "v".

SuggestedRemedy
    Add a label to define "v" to the figure.

Response   *Response Status* **C**
    ACCEPT IN PRINCIPLE.

    [Changed subclause 2 to 83.2]
    v is changed to z now that virtual lanes are PCS lanes

Cl **83**   *SC* **83.2**   *P* **148**   *L* **44**   # 201
Marris, Arthur   Cadence

Comment Type   **E**   *Comment Status* **A**
    change isin to "is in".

SuggestedRemedy
    As above

Response   *Response Status* **C**
    ACCEPT.

    Multiple comments # 135, 414, 201, and 550

Cl **83**   *SC* **83.2**   *P* **148**   *L* **44**   # 414
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
    typo change to "PMA is in"

SuggestedRemedy
    per comment

Response   *Response Status* **C**
    ACCEPT.

    Multiple comments # 135, 414, 201, and 550

Cl **83**   *SC* **83.2**   *P* **148**   *L* **44**   # 550
Ghiasi, Ali   Broadcom

Comment Type   **E**   *Comment Status* **A**
    No space between is and in

SuggestedRemedy
    Add space

Response   *Response Status* **C**
    ACCEPT.

    [Changed subclause 2 to 83.2]

    Also see comments #135, #414, and #201

Cl **83**   *SC* **83.2**   *P* **148**   *L* **44**   # 135
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status* **A**
    Need a space between "isin"

SuggestedRemedy
    change
    Whether the PMA isin the Tx or Rx direction.

    to

    Whether the PMA is in the Tx or Rx direction.

Response   *Response Status* **C**
    ACCEPT.

    Multiple comments # 135, 414, 201, and 550

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 **83**
SC **83.2**

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12/18/2008 11:15:36 P

Cl **83**   *SC* **83.2**   *P* **148**   *L* **44**   # 627
CHANG, Frank   Vitesse

Comment Type   **T**   *Comment Status* **A**
Dono't feel "Where the PMA isin the TX or RX direction" is enough to cover loopback function.

SuggestedRemedy
Suggest such change sth like "Whether the PMA is unidirectiona in the TX or RX direction, or bidirectional (for the sake o loopback)".

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events - loopback and other aspects will be described differently than in the previous draft. Where a similar concept is described, it should be clarified that the top of the stack is the PMA closest to the PCS while the bottom of the stack is the PMA closest to the PMD.

Cl **83**   *SC* **83.3**   *P* **149**   *L* **10**   # 529
Ofelt, David   Juniper Networks

Comment Type   **E**   *Comment Status* **A**
I find the usage of m, n, p, q, and x, y to be inconsistent throughout the text.

p and q seem to always be the the number of links on the RS/FEC facing and PMD sides of a given PMA.

x and y are introduced here "A Tx PMA with x input lanes and y output lanes is paired with an Rx PMA with y input
lanes and x output lanes" but then in 83.3.1 and 83.3.2, x is always used as the input lane count and y as the output lane count - this is direction independent.

Then in figure 83-4 and in the text that deals with bits assigned to virtual lanes (e.g. 83.6.2), m and n are used for the input and output lane count and "x" is used for the offset of the current bit.

SuggestedRemedy
Make the variable usage more consistent. One way would be to have the generic input and output lane counts be "m" and "n" and the direction-specific counts as "p" and "q". x and y can then be reserved for talking about bit positions or any other need for a generic variable.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events. Update per trowbridge_02_1108 gives fewer opportunities to use different lane count variables.

Cl **83**   *SC* **83.3**   *P* **149**   *L* **12**   # 142
D'Ambrosia, John   Force10 Networks

Comment Type   **ER**   *Comment Status* **A**
THe reference to the PMA or PMA stages is inconsistent and can cause confusion.

SuggestedRemedy
Reword -
Several PMA stages may be required to adapt between the number of VLs emerging from the PCS to the number of lanes required by a particular PMD. For example, a 4-lane interface for 100GBASE-R may involve a 20:10 PMA from the PCS, two 10:10 PMAs on either side of a CAUI for an extender, and a 10:4 PMA which finally interfaces with the PMD.

to

Several PMA stages may be required to adapt between the number of VLs emerging from the PCS to the number of lanes required by a particular PMD. For example, a 4-lane interface for 100GBASE-R may involve a 20:10 PMA stage from the PCS, two 10:10 PMA stages on both sides of a CAUI for an extender,
and a 10:4 PMA stage which finally interfaces with the PMD.

An example drawing would be useful.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
Overtaken by events. Multiple PMA description updated per trowbridge_02_1108

Cl **83**   *SC* **83.3.1.1**   *P* **150**   *L* **6**   # 335
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
PMA_UNITDATA.inputx (input_bit_lane_x)

SuggestedRemedy
PMA_UNITDATA.inputx(input_bit_lane_x)
i.e. without the space. Same in following subclauses.

Response   *Response Status* **C**
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 **83**
SC **83.3.1.1**

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Cl **83**   *SC* **83.4**   *P* **151**   *L* **44**   # 606
D'Ambrosia, John   Force10 Networks

Comment Type   **T**   *Comment Status* **A**
The first sentence of this clause is

The PMA Service Interface exists between the PMA client (the PCS or FEC sub-layer) and
the uppermost PMA in a set of one or more stacked PMAs (possibly including an extender
sub-layer).

An extender sub-layer was not been defined by the baseline, though the XLAUI / CAUI can
be perceived in this fashion.

SuggestedRemedy
Suggested rewording -

The PMA Service Interface exists between the PMA client (the PCS or FEC sub-layer) and
the uppermost PMA in a set of one or more stacked PMAs, as well as between stages in a
stacked PMA.

Presentation to be provided

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events. PMA service interface will be more clearly defined in new
formulation. Editorial license to change the PMA description per discussion and
trowbridge_02_1108

Cl **83**   *SC* **83.5**   *P* **152**   *L* **12**   # 98
Jongyoon, Shin   ETRI

Comment Type   **T**   *Comment Status* **A**
Need to clarify "40GBASE-SR4 and 100GBASE-SR10 interfaces" in the following text.

"Note that electrical and timing specifications of the PMD service interface are defined only
for 40GBASE-SR4 and 100GBASE-SR10 interfaces."

SuggestedRemedy
Change "Note that electrical and timing specifications of the PMD service interface are
defined only for 40GBASE-SR4 and 100GBASE-SR10 interfaces."
to
"Note that electrical and timing specifications of the PMD service interface are defined only
for 40GBASE-SR4 and 100GBASE-SR10 PMDs."

Response   *Response Status* **C**
ACCEPT.

Cl **83**   *SC* **83.5**   *P* **152**   *L* **14**   # 415
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
typo, change to "specified"

line 23, typo change to "adjascent"

SuggestedRemedy
per comment

Response   *Response Status* **C**
ACCEPT.

Cl **83**   *SC* **83.5**   *P* **152**   *L* **14**   # 44
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
This says "For other PMDs, the PMA service interface is specificied only logically." This
should be "PMD service interface"

SuggestedRemedy
change "the PMA service interface is specificied only logically." to "the PMD service
interface is specificied only logically."

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
Change "the PMA service interface is specificied only logically." to "the PMA service
interface is specificied only abstractly."

Cl **83**   *SC* **83.6**   *P* **152**   *L* **3435**   # 625
CHANG, Frank   Vitesse

Comment Type   **ER**   *Comment Status* **A**
Since the TF decide not to define optical modules with 2x20g or 40g, so feel it is not
appropriate to define the possible numbers of input of 2, 1 for 40GBASE-R. Same for
100GBASE-R with 2,1.

SuggestedRemedy
Suggest to take it out.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events - table 83-1 is removed. The sentence can be removed entirely
since it replicates one in 83.1.3

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 **83**
SC **83.6**

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Cl **83**   *SC* **83.6**   *P* **156**   *L* **3**   # 469
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status* **A**
I agree that 8ones followed by 8 zeros is a good choice

SuggestedRemedy
Implement the 8one 8 zero and remove the TBD's

Response   *Response Status* **C**
ACCEPT.

Cl **83**   *SC* **83.6.2**   *P* **153**   *L* **28**   # 337
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **R**
What does 'Tx PMA implemented synchronously with PCS' mean? For PMA implemented together with PCS, or integrated with PCS, surely the spec is 'Not applicable'?

SuggestedRemedy
For a Tx PMA receiving from the PCS, I believe 25 ps (which is 0.25 UI at 10 GBd) is adequate: see another comment for explanation.

Response   *Response Status* **C**
REJECT.

Overtaken by events. The new skew budgets are expressed per exposed skew points and moved to clause 80. If the commenter is not satisfied, another comment can be submitted against clause 80. See comment 240.

Cl **83**   *SC* **83.6.2**   *P* **153**   *L* **3**   # 416
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **R**
to be consistent change to R x (v/m)

also on line 8, change to R x (v/n)

SuggestedRemedy
per comment

Response   *Response Status* **C**
REJECT.

R x (v/m)=(R x v)/m, so no help is needed to evaluate correctly

---

Cl **83**   *SC* **83.6.2**   *P* **153**   *L* **31**   # 338
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **R**
Other Tx PMA Dynamic Skew tolerance should not have unnecessary padding, as compensating the last couple of UI with analog circuitry costs power. I believe CEI have a 1.5 UI limit for 'Relative Wander' (their term for Dynamic Skew). 'bits/VL' would need explaining.

SuggestedRemedy
Make this 150 ps (which is 1.5 UI at 10 GBd). Don't quote bits/VL.

Response   *Response Status* **C**
REJECT.

Overtaken by events. The new skew budgets are expressed per exposed skew points and moved to clause 80. If the commenter is not satisfied, another comment can be submitted against clause 80. See comment 240.

Cl **83**   *SC* **83.6.6**   *P* **154**   *L* **34**   # 628
CHANG, Frank   Vitesse

Comment Type   **TR**   *Comment Status* **A**
In 83.6.6, PMA loopback mode should support lineside loopback and diagnostic loopback functions.

SuggestedRemedy
Suggest to define two kinds of loopback. in addition to lineside loopback illustrated in Fig 83-5, add the host-side loopback as 2nd option.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Overtaken by events. See 643.

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 **83**
SC **83.6.6**

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12/18/2008 11:15:36 P

Cl **83** *SC* **83.6.6**   *P* **154** *L* **39**   # 143
D'Ambrosia, John   Force10 Networks

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

Description of the multi-stage PMA concept is confusing

SuggestedRemedy

At the PMA service interface, the uppermost PMA in a set of one or more stacked PMAs may provide a loopback function. The function involves looping back each input lane of the uppermost Tx PMA to an output lane of the uppermost Rx PMA.

to

The uppermost PMA stage in a set of one or more s PMA stages may provide a loopback function. The function involves looping back each input lane of the uppermost Tx PMA stage to an output lane of the uppermost Rx PMA stage.

Presentation to be provided.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE. Overtaken by events. Multiple PMAs are described per trowbridge_02_1108

Cl **83** *SC* **83.6.6**   *P* **154** *L* **39**   # 640
Ganga, Ilango   Intel

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

As per the 83.6.6 the "uppermost" PMA in the stack provides loopback function. It is ambiguous which one is the "uppermost", on the linkside or the host side?

Also in a stacked PMA where the PMA's are separated, loop back is desirable in both places in the stack. E.g MAC/PCS/PMA implemented in a separate chip and PMA/PMD or PMA/FEC/PMA/PMD in a separate chip.

SuggestedRemedy

Clarify the term "uppermost" PMA in 83.6.6.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #143 which contains a suggested remedy.

Cl **83** *SC* **83.6.6**   *P* **154** *L* **43**   # 339
Dawe, Piers   Avago Technologies

Comment Type **T** *Comment Status* **R**

Lane mapping in loopback: as fibre-optic PMDs can't do loopback, one wants the PMA loopback to occur near the bottom of any tree of PMAs (e.g. this from 48.3.3 'NOTE-The signal path that is exercised in the Loopback mode is implementation specific, but it is recommended that this signal path encompass as much of the circuitry as is practical.' A 2^n-1 PRBS spread across 4 lanes is four 2^n-1 PRBSs, so I think we can still validate working silicon if the lanes get mixed up. Although if the silicon is faulty, it may be harder to know which lane is at fault.

SuggestedRemedy

Expect and allow the lanes to be repositioned in loopback.

Response   *Response Status* **C**

REJECT.

Note that this applies to the proposed line side loopback rather than the existing host side loopback. As the comment observes, if you mix up the lanes, you can't tell which lane is at fault as the fault may be at the Tx or Rx. Other comments propose separate error counters per lane. This capability seems most useful if you do not mix up the lanes. If this refers to line side loopback, it has been overtaken by events. See comment 643. Not entirely sure if commenter was referring to system or line side loopback, but in either case, you shouldn't mix up the lanes as it reduces diagnostic ability. You can't gearbox a PRBS if this is what was intended.

Cl **83** *SC* **83.6.7**   *P* **155** *L* **25**   # 231
Gustlin, Mark   Cisco

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

Officially adopt the test pattern strategy that is described here. Delete the editor's note.

SuggestedRemedy

Remove:
"[Editor's Note (to be removed prior to publication): There is no adopted baseline for test patterns - the following
is a placeholder based on gustlin_03_0708.pdf]"

Response   *Response Status* **C**

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* **83**   Page 72 of 162
                                       SC **83.6.7** 12/18/2008 11:15:36 P

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **38**   # 232
Gustlin, Mark   Cisco

Comment Type **TR**   *Comment Status* **A**
Add in support for a PRBS9 pattern.

SuggestedRemedy
Change: "When transmit PRBS31 test pattern (see 49.2.8) is enabled (TBD - should a shorter pattern, e.g., PRBS9 (see 68.6.1) be included also?), the PMA generates a PRBS31 pattern on each of its output lanes."

To: "When transmit PRBS31 test pattern (see 49.2.8) is enabled, the PMA generates a PRBS31 pattern on each of its output lanes. When transmit PRBS9 test pattern is enabled, the PMA generates a PRBS31 pattern on each of its output lanes."

Also add in anywhere else in the clause where it is appropriate the support for the PRBS9.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add an editor's note indicating that there is agreement to add support for a short test pattern, and it is TBD whether that pattern is PRBS7, PRBS9, or a manufactured pattern. Operation of the short test pattern can be specified while the pattern itself is TBD. Editorial license.

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **38**   # 243
Meyer, Jeffrey   Centellax

Comment Type **T**   *Comment Status* **A**
Why is PRBS9 used for the short pattern?   There are many more test equipment vendors and FPGA vendor cores for the ITU-T V.29 PRBS7 with $1+x^6+x^7$ polynomial. It is shorter and quicker to see ISI evolving on a sampling scope.

SuggestedRemedy
Use the ITU-T V.29 PRBS polynomial

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #232 for the editor's note to be added.

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **39**   # 468
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**
It would be highly desirable to include the prbs9 function as suggested in the TBD note

SuggestedRemedy
Add the PRBS9 test pattern.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
See comment #232 for the editor's note to be added.

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **39**   # 629
CHANG, Frank   Vitesse

Comment Type **TR**   *Comment Status* **A**
Agree with Editor comment on PRBS31 pattern is too long.

SuggestedRemedy
Suggest to add short patterns like PRBS7, PRBS9 or even CJPAK etc in the text. (PRBS9 is well established in LRM.)

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #232 for the editor's note to be added

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **47**   # 531
Ofelt, David   Juniper Networks

Comment Type **T**   *Comment Status* **A**
Response to the Editor's question about should the BIST logic report errors per lane...

SuggestedRemedy
I think that we either need to provide a error counter per lane or there needs to be registers that capture the lane number of the first lane to see errors and then the error count for that lane.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Changed subclause 6.7 to 83.6.7]

Provide pattern error counters per lane. Assuming BIST refers to a self-test other than the pattern interface tests, this is out of scope and should be rejected..

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 **83**   Page 73 of 162
SC **83.6.7**   12/18/2008 11:15:36 P

Cl **83**   *SC* **83.6.7**   *P* **155**   *L* **67**   *#* 89
Szczepanek, Andre   Texas Instruments

Comment Type   **T**   *Comment Status*   **R**

Whilst defining the operation of the PRBS error counter for the PMA, the deficiencies of the
current 10GBASE-R function should be considered.
The self-synchronous descrambling of the PRBS31 sequence shown in Figure 49-11 is
both inaccurate and costly to implement.
1) The error count is 3x the number of received error bits only if errored bits do not appear
3 or 28 bits apart (the PRBS tap seperation). So in bursty environments the count will not
be 3x the number of errors.
2) Compliance with the Figure 49-11 requires the ability to increment a counter at 10Ghz.
Any practical implementation will have to be implemented in parallel and increment a
counter at a lower rate (create a backlog of increments and do them whilst no errors are
received).
Absolute compliance to Figure 49-11 at high bits rates is not practical.

Aggregation of these counters to 40/100G will only compound these issues

SuggestedRemedy

Set an accuracy limit for the error counter
eg indicate that the counter need only be bit accurate at error rates above say 1e-4, and for
burst lengths of say less than 32bits

Response   *Response Status*   **C**

REJECT.

[Changed subclause 6.7 to 83.6.7]

Presentations made so far were entirely reuse of PRBS31 from 10GBASE-R. Need a
presentation to justify why this cannot be reused and why the proposed alternative
approach would be more feasible and would provide equivalent verification of the lanes.

Cl **83**   *SC* **83.7**   *P* **156**   *L* **8**   *#* 136
D'Ambrosia, John   Force10 Networks

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

registers provide information., not "may provide"

SuggestedRemedy

change
The optional MDIO capability described in Clause 45 describes several variables that may
provide control and status information for and about the PMA. Mapping of MDIO control
variables to PMA control variables is shown in Table 83-3.

to

The optional MDIO capability described in Clause 45 describes several variables that
provide control and status information for and about the PMA. Mapping of MDIO control
variables to PMA control variables is shown in Table 83-3.

Response   *Response Status*   **C**

ACCEPT.

Cl **83A**   *SC* **3.4**   *P* **286**   *L* **33**   *#* 602
Ghiasi, Ali   Broadcom

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

please replace +- with symbol

SuggestedRemedy

Replace with the frame symbol

Response   *Response Status*   **C**

ACCEPT.

Cl **83A**   *SC* **3.4**   *P* **286**   *L* **41**   *#* 598
Ghiasi, Ali   Broadcom

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

With faster process 24 ps is becoming limits the desing options

SuggestedRemedy

Change 24 ps Rise/Fall time to 20 ps

Response   *Response Status*   **C**

REJECT.

Technical justification needs to be provided to support comment. Concern that faster rise
impact SI were voiced.

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 **83A**
SC **3.4**

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Cl **83A** *SC* **3.4**   *P* **286** *L* **46** # 597

Ghiasi, Ali   Broadcom

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

Error rate for the Total jitter not defined

SuggestedRemedy

Add note TJ defined at BER 1E-15 with value of 0.64 UI

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remedy provided in comment#596

Cl **83A** *SC* **831.3.3**   *P* **283** *L* **11** # 651

Li, Mike   Altera

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

Transmitter equalization is not defined. As such channel jitter will be specificaed with the assumption that ISI is not compensated. This will eat the DJ margin of Tx and Rx while most of them today have the equlization capabilities.

Not defining equlization will result in expensive nXAUI specification, with ready silicon equlization unused.

SuggestedRemedy

Technical proposal is needed and approved to determine
what type of equlization is best suitable for nXAUI channel (Tx, Rx, Tx+Rx)
in terms of cost and performance.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add Editors note: [83A.3.3- transmiter eyemask as defined in figure 83A-5 is not considered a sufficient description to guarantee performance; additional test methods are required]

Cl **83A** *SC* **83A**   *P* **279** *L* **1** # 278

Anslow, Peter   Nortel Networks

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

This Note says "NOTE-This annex is numbered in correspondence to its associated clause; i.e., Annex 83A corresponds to Clause 83." However, the only Annex with a note of this kind is the first one, Annex 4A

SuggestedRemedy

Remove the note

Response   *Response Status* **C**

ACCEPT.

Cl **83A** *SC* **83A**   *P* **280** *L* **1** # 649

Li, Mike   Altera

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

BER for the nAUI link needs to be defined

SuggestedRemedy

A proposal on the BER for nXAUI is needed and approved.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remedy provided in #596.

Cl **83A** *SC* **83A.1**   *P* **280** *L* **31** # 170

D'Ambrosia, John   Force10 Networks

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

There is an issue with Fig 83A-1. The PMA blocks above and below the XLAUI / CAUI are labeled "PMA." While some may think this is just a naming nomenclature, it does have the potential to cause confusion, as there are very different functions inherent in these PMA blocks.

SuggestedRemedy

Replace Fig 83A-1 with Fig 83-2, except only shadowed areas are the two AUIs.

Response   *Response Status* **C**

ACCEPT.

Replace Fig 83A-1 with Fig 83-2, except only shadowed areas are the two AUIs.

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 **83A**   Page 75 of 162
SC **83A.1**   12/18/2008 11:15:37 P

Cl **83A**   *SC* **83A.1**   *P* **281**   *L*   *#* 196
Mezer, Amir   Intel

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

The XLAUI/CAUI specification is such that:
a. The transmit test point is defined right at the transmitter output.
b. The channel is normative
c. The receiver test point is defined right at the receiver input.
The question is:
Whose responsibility is it to ensure that the receiver input meets the specification defined in 83A.3.4.2 "Input signal definition"?
There may be a situation where each of the components meets the spec. requirements but the system does not work, i.e.
1. The tranmitter meets the spec. requirements at its input.
2. The channel meets its specifications.
3. The receiver operates flawlessly with the input signal as defined in 83A.3.4.2.
But, since the resultant receiver input Of transmitter+channel is not a requirement, the actual input signal will be different and the system will not work.

SuggestedRemedy

Leave the normative channel requirements.
Change the transmit test point so that it is tested at the receiver input.
If the transmitter meets the requirements, this will ensure a minimal input signal for the receiver.
In addition, define the tranmitter spec. requirements at that point so that they match 83A.3.4.2 "Input signal definition".

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #651.

Cl **83A**   *SC* **83A.1**   *P* **281**   *L* **16**   *#* 360
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **R**

Isn't it quite feasible to interoperate between a nAUI lane and an XFI spec part? Even to comply to both at once?

SuggestedRemedy

Unless this is not so, say that this spec is similar to XFI (part of XFP), add reference for XFP document.

Response   *Response Status* **C**
REJECT.

Although this is feasible, there may be risks in explicitly stating it is interoperable with XFI.
XFI loss budget including connector at 5.5GHz is 6dB. nAUI is looking at a 10dB budget.

Cl **83A**   *SC* **83A.1**   *P* **281**   *L* **3**   *#* 638
CHANG, Frank   Vitesse

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

I donot agree XLAU or CAUI is just for chip-to-chip interconnect, this is only true for nx10g MMF module with non-retimed interface. For optical 4x25g SMF or 4x10g X40 modules, CAUI or XLAU could be interface connecting optical modules to host oard.

SuggestedRemedy

Suggest the change as:
The purpose of the XLAUI or CAUI is to provide a flexible chip-to-chip internection as well as the connection between optical module and host ASIC board..........

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

change to:
The purpose of the XLAUI or CAUI is to provide a flexible chip-to-chip internection as well as the connection between optical module and the host ....

Cl **83A**   *SC* **83A.1**   *P* **281**   *L* **6**   *#* 291
Anslow, Peter   Nortel Networks

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

Several very minor editorial issues in clause 83A collected in to one comment.

SuggestedRemedy

Change "example application of XLAUI includes providing lane" to "example application of XLAUI is to provide lane" page 281 line 6
Remove spurious empty paragraph from page 282 line 39
Use the +- symbol (Ctrl-q 1) page 283 line 14 and page 286 line 32
Use Greater than or equal to sign (Crtl-q 3) and Less than or equal to sign (Ctrl-q #) page 284 line 38, page 285 line 2 and page 288 line 5
Space missing in "10MHz" page 284 line 48

Response   *Response Status* **C**
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 **83A**
SC **83A.1**

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Cl **83A**   *SC* **83A.1.1**   *P* **281**   *L* **23**   # 512
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status*   **R**
I think that XLAUI and CAUI can only be used between PMA's not between other layers in the model

SuggestedRemedy
Delete bullet a)

Response   *Response Status*   **C**
REJECT.

Electrical interface can be used in other areas

Cl **83A**   *SC* **83A.2**   *P* **282**   *L* **19**   # 328
Dawe, Piers   Avago Technologies

Comment Type   **TR**   *Comment Status*   **R**
The primary purpose of the nAUI spec is the same as the XFI spec at 10G: to provide a standardised and interoperable spec for plugging retimed transceiver modules into line cards or similar. Like XFI (part of XFP), it needs to take a connector into account (does not need to define the connector mechanicals) and define the compliance points with reference to the connector.

SuggestedRemedy
Use the six TP compliance points defined in 86.7.1, relegate the points in Fig 83A-2 to informative reference points like A and D in SFP+.

Response   *Response Status*   **C**
REJECT.

Additional compliance points may be required in nAUI, but they may not be the same six TP defined in 86.7.1.

Additional presentation material required.

Cl **83A**   *SC* **83A.2.2**   *P* **282**   *L* **11**   # 218
Mellitz, Richard   Intel Corporation

Comment Type   **TR**   *Comment Status*   **A**
Its not clear how to perform Tx and Rx compliance testing without details of context.

SuggestedRemedy
Define test fixtures and coordinate test point through out document.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Remedy provided in comment#556.

Cl **83A**   *SC* **83A.2.2**   *P* **282**   *L* **20**   # 555
Ghiasi, Ali   Broadcom

Comment Type   **TR**   *Comment Status*   **A**
Transmitt and Receive function are missing from Fig 83A

SuggestedRemedy
Please add transmitt and receive function to Fig 83A

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Please add transmitt and receive function to Fig 83A (see figure 85.2)

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 **83A**
SC **83A.2.2**

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Cl **83A**   *SC* **83A.3.2**   *P* **282**   *L* **53**   # 556
Ghiasi, Ali   Broadcom

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

Missing definition of loss between transmitt and receive complinace points, add definition for transmitt and receive compliance points

SuggestedRemedy

Transmitt Compliance Point - Any interconnect may be used between the XLAUI/CAUI transmitt funciton and Transmitt Compliance Point as long as transmitter parameters of Table 83A-1 are met.

Receive Compliance Point - The interconnect from the Receive Compliance Point to the XLAUI/CAUI receive function including AC coupling SDD21 response shall be
SDD21(dB) >= (-0.007 - 0.1684*SQRT(f) - 0.0617*f)
f is given in GHz.
SDD21 loss a Nyquist is 0.7 dB and 0.2 larger than SFP+ loss.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add 83A.2.1-Transmitters Compliance Points for the transmitter - Any interconnect which has a loss less than (SDD21(dB) (TBD))
f is given in GHz) between the XLAUI/CAUI transmit pin and Transmit Compliance Point may be used as long as transmitter parameters of Table 83A-1 are met.

Add 83A.2.2- Receivers Compliance Points for the receivers - Any interconnect which has a loss less than (SDD21(dB) (TBD))
f is given in GHz) between the XLAUI/CAUI receive pin and Receive Compliance Point may be used as long as receiver parameters of Table 83A-2 are met.

Cl **83A**   *SC* **83A.3.2**   *P* **283**   *L* **37**   # 562
Ghiasi, Ali   Broadcom

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

PWS (Pulse Width Shrinkage) a critical parameter on transmitter high frequncy performance is missing from lis tof parameters in table 83A-1.

SuggestedRemedy

Puropose to add PWS (Pulse Width Shrinkage) with 0.12 UI value.
PWS is measured per FC-PI-4 Annex A.1.3.2 using PRBS9 pattern

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: proposals for jitter methodology to be submitted against D1.1 for completion of TBDs]

Cl **83A**   *SC* **83A.3.3**   *P* **282**   *L* **27**   # 567
Ghiasi, Ali   Broadcom

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

With faster processes 24 ps transition time starting to be an issue

SuggestedRemedy

Suggest to change 24 ps to 20 ps

Response   *Response Status* **C**

REJECT.

Presentation material was requested to support comment. SI concrns were raised regarding faster rise time.

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 **83A**
SC **83A.3.3**

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Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **11**   # 215
Mellitz, Richard   Intel Corporation

Comment Type **T**   *Comment Status* **A**
Jitter not consistent with electrical characteristics of 10GBASE-KR/ 40GBASE-KR

SuggestedRemedy
Add:

Max output jitter (peak-to-peak)
Random jitter
Deterministic jitter
Duty Cycle Distortion

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remedy provided in #562.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **11**   # 652
Li, Mike   Altera

Comment Type **TR**   *Comment Status* **A**
Jitter transfer function (JTF) is not defined for Tx jitter definition/testing. This will grossly
oversetimate the jitter, leaving the jitter margin created by clock and data receeovery (CDR)
unused, resulting in expensive nXAUI specification.

SuggestedRemedy
Technical proposal for JTF asscoated with CDR is needed and approved.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add to 83A.4.3.1 - The clock recovery unit (CRU) used in the transmit jitter measurement
has a corner frequency of less than or equal to
4 MHz and a slope of -20 dB/decade (need figure consistent with text). When using a CRU
as a clock for jitter measurements.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **12**   # 599
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
Transmitt compliance not yet defined

SuggestedRemedy
Puropose to use ghiasi_01_0708 min and max loss channel for transmitter compliance
subset of s4p file cn be included in the draft for either soft testing or buidling actual boards

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remedy provided in comment#651.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **14**   # 601
Ghiasi, Ali   Broadcom

Comment Type **ER**   *Comment Status* **A**
please replace +- with symbol

SuggestedRemedy
Replace with the frame symbol

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **14**   # 74
Chung, Hwan Seok   ETRI

Comment Type **T**   *Comment Status* **A**
Across the entire document D1.0, the usual descrption of signaling speed per lane (range)
in table is 10.3125 +- 100 ppm. So, to maintain consistency, the signaling speed per lane
in Table 83A-1 should be "10.3125 +- 100 ppm" not "10.3125 GBd +- 100 ppm". In
addition, the +- sign should be changed to mathmatical symbolic font style.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

So, to maintain consistency, the signaling speed per lane in Table 83A-1 should be
"10.3125 +- 100 ppm" not "10.3125 GBd +- 100 ppm". In addition, the +- sign should be
changed to mathmatical symbolic font style.

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 **83A**
SC **83A.3.3**

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Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **16**   # 181
Alping, Arne   Ericsson AB

Comment Type **ER**   *Comment Status* **A**
96.96969697 (too many significant numbers)

SuggestedRemedy
Change to: 96.9697 ps

(compare to, e.g, Table 85-4 on page 181)

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: Corrected / replaced table number in subclause field with 83A.3.3]

See comment # 362

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **21**   # 361
Dawe, Piers   Avago Technologies

Comment Type **E**   *Comment Status* **A**
Table too narrow

SuggestedRemedy
Resize LH column to contents

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **28**   # 514
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**
In table 83A-1 it would be good to reference the rise/fall test methodology as with a Tx with pre-emphasis the value depends greatly on the exact methodology.

SuggestedRemedy
Add footnote d to the Rise/fall time row. Footnote d to say "Rise and Fall times are defined in 83A.4.4

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add foot note which says "Rise/Fall time measurement methodology defined in 83A.4.4"

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **29**   # 279
Anslow, Peter   Nortel Networks

Comment Type **E**   *Comment Status* **A**
In table 83A-1 the specification for the Differential Output S-parameters is "(see "Equation 83A-1")". This should refer to the clause defining the requirement not just the equation. This also applies to the next row in this table and also two places in Table 83A-2

SuggestedRemedy
Change "(see "Equation 83A-1")" to "see 83A.3.3.3"
in the next row change "(see "Equation 83A-2")" to "see 83A.3.3.4"
in Table 83A-2 change "(see "Equation 83A-3")" to "see 83A.3.4.4"
in Table 83A-2 change "(see "Equation 83A-4")" to "see 83A.3.4.5"

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **32**   # 295
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **R**
In Table 86-6 There are two jitter parameters "Maximum Total Jitter" and "Maximum Deterministic Jitter" where it is not clear if this is UI peak to peak or not.
Also applies to:
Table 83A-2 "Maximum Total Jitter"
Table 83A-2 "Maximum non-EQ Jitter (TJ - ISI)"

SuggestedRemedy
Either change the parameter names to include "(pk-pk)" or change the units to be UIptp

Response   *Response Status* **C**
REJECT.

The definitions are inappropriate for pk-pk.

Cl **83A**   *SC* **83A.3.3**   *P* **283**   *L* **33**   # 596
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
Error rate for the Total jitter not defined

SuggestedRemedy
Add note TJ defined at BER 1E-15

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editors note state condition for total jitter error rate at 1E-15 is proposed]
Place note 83A.1.1

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 **83A**
SC **83A.3.3**

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Cl **83A**		*SC* **83A.3.3**				*P* **283**		*L* **35**			# 566
Ghiasi, Ali								Broadcom

Comment Type	**TR**		*Comment Status*	**A**
The classical DJ and RJ measured jitter are jitter PDF dependent and not valid for jitter distribution which are not dual-dirac.

SuggestedRemedy
To limit the uncorrelated jitter add UJ of 0.025 UI (RMS) per IEEE CL 68.6.8 method Replace DJ with DDJ of 0.17 UI per method of FC-PI4 A.1.3.1 with PSBS 9 pattern

Response				*Response Status*	**C**
ACCEPT IN PRINCIPLE.

Remedy provided in #562.

Cl **83A**		*SC* **83A.3.3**				*P* **283**		*L* **7**			# 513
Dudek, Mike							JDSU

Comment Type	**T**		*Comment Status*	**A**
Spurious precision in the Baud period.   The tolerance of the signaling rate is +/-100ppm and is only listed to 6 significant digits

SuggestedRemedy
Round the Baud period to 6 significant figures here and in tables 83A-1 and 83A-2

Response				*Response Status*	**C**
ACCEPT IN PRINCIPLE.

See remedy in 362.

Cl **83A**		*SC* **83A.3.3**				*P* **283**		*L* **7**			# 362
Dawe, Piers							Avago Technologies

Comment Type	**T**		*Comment Status*	**A**
If you have stated the signalling rate there is no need to give the unit interval, and 'Baud period' is slang.

SuggestedRemedy
Delete 'The corresponding Baud period is nominally 96.96969697 ps.' and the similar row in Table 83A-1.

Response				*Response Status*	**C**
ACCEPT.

Delete 'The corresponding Baud period is nominally 96.96969697 ps.' and the similar row in Table 83A-1 and the similar row in Table 83A-2.

Cl **83A**		*SC* **83A.3.3**				*P* **283**		*L* **8**			# 180
Alping, Arne							Ericsson AB

Comment Type	**ER**		*Comment Status*	**R**
...is nominally 96.96969697 ps... (to many significant numbers)

SuggestedRemedy
Change to: ...is nominally 96.9697 ps...

(compare to, e.g, Table 85-4 on page 181)

Response				*Response Status*	**C**
REJECT.

See comment # 362

Cl **83A**		*SC* **83A.3.3.1**			*P* **284**		*L* **19**			# 280
Anslow, Peter							Nortel Networks

Comment Type	**E**		*Comment Status*	**A**
The title of Figure 83A-3 is "Figure 83A-3-Driver output voltage limits and definitions [SLi<P> and SLi<N> are the positive and negative sides of the differential signal pair for lane i (i = 0, 1, 2, 3 for XLAUI. For CAUI i = 0:9)]". The text within the square brackets should not be part of the figure title.

SuggestedRemedy
Move this text to be a note under the figure as is done for Figure 85-2 and 85-9

Response				*Response Status*	**C**
ACCEPT.

Cl **83A**		*SC* **83A.3.3.2**			*P* **284**		*L* **22**			# 492
Dudek, Mike							JDSU

Comment Type	**T**		*Comment Status*	**A**
Transition time appears to be the same as rise/fall time.   If they are the same they should be called the same thing here and in table 83A-1, and 83A.4.4

SuggestedRemedy
Change "Transition time" to "Rise/fall time" in the title of this subclause and in the first sentence.

Response				*Response Status*	**C**
ACCEPT.

Change "Transition time" to "Rise/fall time" in the title of this subclause and in the first sentence.

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 **83A**				Page 81 of 162
SC **83A.3.3.2**			12/18/2008 11:15:37 P

Cl **83A**   *SC* **83A.3.3.3**   *P* **284**   *L* **37**   # 211

Mellitz, Richard   Intel Corporation

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

Avoid s-parameter designations and keep loss definition consistent in document.

SuggestedRemedy

Make loss positive dB

Response   *Response Status*   **C**

ACCEPT.

Changes also required in PPI. Require suggestion to avoid s-parameter designations.

Cl **83A**   *SC* **83A.3.3.3**   *P* **284**   *L* **41**   # 611

Ganga, Ilango   Intel

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

Update the the Return loss definition and plots to be consistent with the definition and plots in the base standard (IEEE Std 802.3-2008, Annex 69B)

The Return Loss limits in Figure 83A-4 and Figure 83A-7 to be plotted in log linear scale with loss being positive (See 69B.4.5)

SuggestedRemedy

Response   *Response Status*   **C**

ACCEPT.

Require values for return loss definition and plots which are consistent with Annex 69B.

See remedy 139.

Cl **83A**   *SC* **83A.3.3.3**   *P* **284**   *L* **42**   # 363

Dawe, Piers   Avago Technologies

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

Editor's note says 'The Return Loss limits in Figure 83A-4 and Figure 83A-7 may have to be plotted in log linear scale with loss being positive. The definition or formatting to be reconciled similar to the definition or plots in base spec 802.3-2008 Annex 69B'.
Just because another clause did or didn't use a log frequency scale does not tie our hands. Just because another clause didn't use S-parameters doesn't preclude us from using S-parameters.

SuggestedRemedy

Do the right thing for our circumstances. S-parameters are good. Vertical grid lines would be welcome.

Response   *Response Status*   **C**

REJECT.

Although I am always up for doing the right thing, I think the group is leaning towards reusing Annex 69B

Cl **83A**   *SC* **83A.3.3.3**   *P* **285**   *L* **1**   # 212

Mellitz, Richard   Intel Corporation

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

Avoid s-parameter designations and keep loss definition consistent in document.

SuggestedRemedy

Make loss positive dB in Figure 83a-4

Response   *Response Status*   **C**

ACCEPT.

Input required on how to avoid s-parameter designations.

SDD21 for PPI also in (-)

See Figure 86-4

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 **83A**   Page 82 of 162
SC **83A.3.3.3**   12/18/2008 11:15:37 P

Cl **83A**   *SC* **83A.3.3.4**   *P* **284**   *L* **50**   # 603
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
The reference impedance for differential return loss measurement is 100 ohms in the common mode section

SuggestedRemedy
please change to "The reference impedance for common mode s-parameters measurement is 25 ohms.

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.3.4**   *P* **285**   *L* **9**   # 139
D'Ambrosia, John   Force10 Networks

Comment Type **E**   *Comment Status* **A**
Fig 83A-4 is inconsistent with similar diagrams in 802.3

SuggestedRemedy
correct figure. Updated figure to be provided.

Response   *Response Status* **C**
ACCEPT.

Correct figure. Updated figure in D'Ambrosia_03_11_08.pdf and changes listed below.

Change high confidence region to pass region.

Delete SDD22 and SCC22. Add differential to return loss and common mode return loss.

0 db at the top for loss based impaiments.

Cl **83A**   *SC* **83A.3.3.5**   *P* **286**   *L* **18**   # 493
Dudek, Mike   JDSU

Comment Type **E**   *Comment Status* **A**
misalignment of label

SuggestedRemedy
Move the labels X2 and 1-X2 to line up with the dotted lines.

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **1225**   # 600
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
Inteference tolerance test not yet defined

SuggestedRemedy
Puropose to use ghiasi_01_0708 min and max loss channelas the frequency dependent attenuator in 69A.2 test setup followed by a limiting Amplifier prior to inteference injection. TP1 must have maximum jitter as defiend in table 83A-1. Pre-emhasais can be adjusted to reach the TP4 J2=0.42 UI, Inteference generator then adjsuted to increase the total jitter to value listed in table 83A-2

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add Editors note 83A.4.3.2 :[An interference tolerance test is required]

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **25**   # 216
Mellitz, Richard   Intel Corporation

Comment Type **T**   *Comment Status* **A**
Receiver compliance not consistent with electrical characteristics of 10GBASE-KR/ 40GBASE-KR

SuggestedRemedy
Use section 69A (Interference tolerance testing)

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Response provided in comment#600.

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 **83A**   Page 83 of 162
SC **83A.3.4**   12/18/2008 11:15:37 P

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **34**   # 182
Alping, Arne   Ericsson AB

Comment Type **ER**   *Comment Status* **R**
96.96969697 (too many significant numbers)

SuggestedRemedy
Change to: 96.9697 ps

(compare to, e.g, Table 85-4 on page 181)

Response   *Response Status* **C**
REJECT.

[Editor's note: Corrected / replaced table number in subclause field with 83A.3.4]

See comment # 362

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **41**   # 494
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**
In table 83A-2 it would be good to reference the rise/fall test methodology

SuggestedRemedy
Add footnote d to the Rise/fall time row. Footnote d to say "Rise and Fall times are defined in 83A.4.4

Response   *Response Status* **C**
ACCEPT.

Add footnote d to the Rise/fall time row. Footnote d to say "Rise and Fall times are defined in 83A.4.4

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **4647**   # 648
Li, Mike   Altera

Comment Type **TR**   *Comment Status* **A**
The frequency spectrum content needs to be specified. Otherwise one may use a easy spectrum jitter input (e.g., low frequency dominanted) to pass the receiver tolerance test, while such a receiver will fail in the presence of worst case jitter input spectrum (e.g., high-frequency DCD, ISI, Xtalk, or RJ) in real-world.

SuggestedRemedy
A technical proposal is needed and approved to address this important aspect for Rx.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add editors note: in jitter test methodology need a proposal to use a reference clock recovery unit.

Cl **83A**   *SC* **83A.3.4**   *P* **286**   *L* **48**   # 650
Li, Mike   Altera

Comment Type **TR**   *Comment Status* **A**
Non-Eq jitter is NOT (TJ-ISI) and needs to be well-defined, and (TJ-ISI) needs to be removed.

SuggestedRemedy
remove TJ-ISI for non-EQ jitter and spell-out and exactly what is No-EQ jitter e.g., DCD, PJ, BUJ, RJ).

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remedy provided in #562.

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 **83A**
SC **83A.3.4**

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12/18/2008 11:15:37 P

Cl **83A**   *SC* **83A.3.4.1**   *P* **287**   *L* **8**   # 238
Gustlin, Mark   Cisco

Comment Type   **TR**   *Comment Status* **A**
Currently the BER target is TBD. Change this to a BER of 10-15. The PMD BER target is
10-12, but if you have two CAUI/XLAUI interfaces in series with a PMD interface, all with a
BER of 10-12, you won't meet the overall goal of 10-12. In addition this is a chip to chip
interface which typically requires a higher BER target. 10-15 seems to be a reasonable
and achievable target.

SuggestedRemedy
Change: "The receiver shall operate with a BER of better than TBD in the presence of a
reference input signal as
defined in 83A.3.4.2"

To:
"The receiver shall operate with a BER of better than 10^-15 in the presence of a reference
input signal as
defined in 83A.3.4.2"

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected Clause number from 83 to Annex 83A as this comment refers to
Annex 83A]

Cl **83A**   *SC* **83A.3.4.4**   *P* **287**   *L* **52**   # 495
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status* **A**
There is still a lot of energy at frequencies below 50MHz.   Having an unconstrained return
loss at one end of the trace and only 12dB return loss at the other end can lead to large
signal distortion.

SuggestedRemedy
Change 50MHz to 10 MHz here and in equation 83A-3 (page 288 line 4)

Response   *Response Status* **C**
ACCEPT.

Change 50 MHz to 10 MHz here and in equation 83A-3 (page 288 line 4)

Cl **83A**   *SC* **83A.3.4.5**   *P*   *L*   # 140
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status* **A**
Fig 83A-7 is inconsistent with similar diagrams in 802.3

SuggestedRemedy
correct figure. Updated figure to be provided.

Response   *Response Status* **C**
ACCEPT.

Cl **83A**   *SC* **83A.3.4.5**   *P* **286**   *L* **48**   # 365
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **A**
'non-EQ Jitter (TJ - ISI)' There's no definition of what 'non-EQ Jitter' means in this
document, nor this usage of 'ISI'. I suspect if I saw one I would not agree with it ;-)

SuggestedRemedy
Find a better metric, or explain these terms.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remedy provided in comment#562.

Cl **83A**   *SC* **83A.3.4.5**   *P* **288**   *L* **16**   # 213
Mellitz, Richard   Intel Corporation

Comment Type   **ER**   *Comment Status* **A**
Avoid s-parameter designations and keep loss definition consistent in document.

SuggestedRemedy
Make loss positive dB in Figure 83a-7

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Input required on how to avoid s-parameter designations.

SDD21 for PPI also in (-)

See Figure 86-4

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 **83A**   Page 85 of 162
SC **83A.3.4.5**   12/18/2008 11:15:38 P

Cl **83A**   *SC* **83A.3.4.5**   *P* **288**   *L* **23**   # 364
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**
As one of these lines is the same as a line in Fig 83A-4

SuggestedRemedy
Remove this figure and put the four limits (three traces) on Fig 83A-4 (extending the vertical scale to -16).

Response   *Response Status* **C**
REJECT.

Consensus to keep independent limits lines to distinguish individual parameters are favoured.

Cl **83A**   *SC* **83A.3.4.5**   *P* **288**   *L* **8**   # 496
Dudek, Mike   JDSU

Comment Type **TR**   *Comment Status* **A**
This section is describint SCD11 which is not common mode input return loss

SuggestedRemedy
Change the title of the section to "Reflected differential to common mode conversion.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change the title of the section to " differential to common mode conversion"

Cl **83A**   *SC* **83A.3.4.8**   *P* **289**   *L* **14**   # 329
Dawe, Piers   Avago Technologies

Comment Type **TR**   *Comment Status* **R**
It's not clear that these jitter specs allow the two concatenated CDRs and an optical link, XFP style, that will be wanted when connecting e.g. a 40GBASE-LR4 module.

SuggestedRemedy
Modify the jitter specifications to be sure they do. This may mean that the specs on the transmit side and receive side differ. See presentation.

Response   *Response Status* **C**
REJECT.

It is not necessary for XAUI / CAUI specifications to spell this out. nAUI needs to ensure the nAUI link works properly. TP2/3 needs to make sure the optical link works properly

---

Cl **83A**   *SC* **83A.3.5**   *P* **289**   *L* **40**   # 498
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**
The Interconnect characteristics deserve their own section, not a subsection of the receiver (and partly in measurement methods) and are missing return loss

SuggestedRemedy
Make 83A.3.5 into 83A.4 (and relabel 83A.4)
Move present section 83A.4.1 and Figure 83A-9 into this new section.
Rename present 83A.4.1 to "Interconnect Loss"

Add to the Characteristic Impedeance editors note (page 289 line 49) "and return loss specifications"

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Editors note:[add 83A.4-resolve channel requirements i.e., normative or informative]

Make 83A.3.5 into 83A.4 (and relabel 83A.4)
Move present section 83A.4.1 and Figure 83A-9 into this new section.
Rename present 83A.4.1 to "Interconnect Loss"

Add to the Characteristic Impedeance editors note (page 289 line 49) "and return loss specifications"

Cl **83A**   *SC* **83A.4**   *P* **290**   *L* **7**   # 217
Mellitz, Richard   Intel Corporation

Comment Type **T**   *Comment Status* **A**
Interconnect definetion not consistent with electrical characteristics of 10GBASE-KR/ 40GBASE-KR Annex 69b.

SuggestedRemedy
Utilize style of IL, A, ILD, RL, and ICR in Annex 69b if parameters are applicable.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Editors note 83A.4 :[XLAUI / CAUI channel will consider using parameters 69B when appropriate.]

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 **83A**
SC **83A.4**

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12/18/2008 11:15:38 P

Cl **83A**   *SC* **83A.4.1**   *P* **290**   *L* **11**   # 214

Mellitz, Richard   Intel Corporation

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

    Avoid s-parameter designations and keep loss definition consistent in document.

SuggestedRemedy

    Make similar to Annex 69b

Response   *Response Status* **C**

    ACCEPT IN PRINCIPLE.

    Additional material required on actual values

Cl **83A**   *SC* **83A.4.2**   *P* **290**   *L* **43**   # 497

Dudek, Mike   JDSU

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

    An eye mask that does not state at what probability it is to be met has led to confusion in
    the past.

SuggestedRemedy

    Add to the editors note here "This section should include at what probability the eye mask
    has to be met"

    or state the probabilities in Sections 83A.4.2 and 83A.3.3.5

Response   *Response Status* **C**

    ACCEPT IN PRINCIPLE.

    Add to the editors note here ["This section should include at what BER the eye mask has
    to be met"]

Cl **83A**   *SC* **83A.4.3**   *P* **291**   *L* **28**   # 199

SUZUKI, TOSHIHIRO   ANRITSU

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

    For XLAUI/CAUI should be tested under the worst condition.
    So jitter tolerance test should be executed with MLD pattern not PRBS.

SuggestedRemedy

    So jitter tolerance test should be executed with MLD pattern not PRBS.

Response   *Response Status* **C**

    ACCEPT IN PRINCIPLE.

    PRBS31 is defined as a PMA test pattern in 83.6.7

    Editors note:83A.4.3- In addition to PRBS31, consider including appropriate patterns when
    performing jitter measurements e.g., MLD and other representative patterns.

Cl **83A**   *SC* **83A.5**   *P* **291**   *L* **36**   # 366

Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**

    Like a PMA or PCS clause, nAUI is completely on a single line card or similar, so the draft
    doesn't need environmental specifications for it.

SuggestedRemedy

    Delete the subclause

Response   *Response Status* **C**

    REJECT.

    83A.5. Environmental specifications need to be addressed.

Cl **83A**   *SC* **83A3.3.3**   *P* **283**   *L* **11**   # 647

Li, Mike   Altera

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

    Pulse width jitter (PWJ) is needed at about 8Gbps or above to aviod jitter amplification (JA)
    due to the lossy channel. If PWJ is not defined and bounded, nXAUI link will break in the
    presence of large PWJ.

SuggestedRemedy

    PWJ needs to be defined and specified. I suggest that 802.3ba adopt the definition and
    vaule similiar to these of Fibre Channel 8X and PCIe Gen 3.

Response   *Response Status* **C**

    ACCEPT IN PRINCIPLE.
    Remedy provided in #562.

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 **83A**   Page 87 of 162
SC **83A3.3.3**   12/18/2008 11:15:38 P

Cl **84**   *SC* **84.1**   *P* **159**   *L* **12**   # 62
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **A**
'40GBASE-KR' is wrong in the title of Table 84-1.

SuggestedRemedy
'40GBASE-KR' has to be replaced by '40GBASE-KR4'

Response   *Response Status* **C**
ACCEPT.

[added 84 to subclause number in comment]

Cl **84**   *SC* **84.1**   *P* **159**   *L* **14**   # 197
Gu, Yuan   ZTE Corporation

Comment Type **E**   *Comment Status* **A**
In table 84-1,
Change the 2nd column sub-title "10GBASE-KR" to "40GBASE-KR4"

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Also see comment # 63

Cl **84**   *SC* **84.1**   *P* **159**   *L* **14**   # 63
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **A**
It is wrong that '10GBASE-KR' is written at line 14 of Table 84-1.

SuggestedRemedy
'10GBASE-KR' has to be replaced by '40GBASE-KR4'

Response   *Response Status* **C**
ACCEPT.

[added 84 to subclause number in comment]

Also see comment # 197

Cl **84**   *SC* **84.2**   *P* **160**   *L* **51**   # 45
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
The service primitives in clause 84 are not in the same format (e.g.
PMD_UNITDATA.request<0:3>) as for clauses 85 through 88

SuggestedRemedy
Change the format of the service primitives in clause 84 to be in the same format (e.g.
PMD_UNITDATA.request<0:3>) as for clauses 85 through 88

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

The service interface definition will be reconciled to what will be adopted for the other
clauses.

Cl **84**   *SC* **84.7.4**   *P* **164**   *L* **49**   # 46
Anslow, Peter   Nortel Networks

Comment Type **T**   *Comment Status* **A**
This says "Upon completion of training, SIGNAL_DETECT shall be set to OK" but it is not
clear that training must be completed on all lanes.
The same issue for clause 85.7.4

SuggestedRemedy
Change "Upon completion of training, SIGNAL_DETECT shall be set to OK" to "Upon
completion of training on all lanes, SIGNAL_DETECT shall be set to OK"

Do the same in clause 85.7.4

Response   *Response Status* **C**
ACCEPT.

Cl **84**   *SC* **84.7.4**   *P* **165**   *L* **2**   # 205
Marris, Arthur   Cadence

Comment Type **T**   *Comment Status* **A**
Change "1 or 0" to "one or zero" to match nomenclature in 45.2.1.9.5

SuggestedRemedy
as above

Response   *Response Status* **C**
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 **84**
SC **84.7.4**

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12/18/2008 11:15:38 P

Cl **84**   *SC* **84.7.6**   *P* **165**   *L* **24**   # 47
Anslow, Peter   Nortel Networks

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

When in loopback mode this says "When loopback mode is selected, transmission requests passed to the transmitter are shunted directly to the receiver, overriding any signal detected by the receiver on its attached link. Note, this bit does not affect the state of the transmitter." This text is not entirely clear whether the transmitter continues to send data?.

This also applies to 85.7.8

SuggestedRemedy

Change "are shunted directly" to "are sent directly"
Change "Note, this bit does not affect the state of the transmitter." to "Note that this bit does not affect the state of the transmitter which continues to send data (unless disabled)."

Also make these changes in 85.7.8

Response   *Response Status*   **C**
ACCEPT.

Cl **84**   *SC* **84.7.6**   *P* **165**   *L* **33**   # 287
Anslow, Peter   Nortel Networks

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

Two very minor editorial issues in clause 84 collected in to one comment.

SuggestedRemedy

Note 2 is in 10 point font rather than the usual 9 point page 165 line 33
External references to clause 21 should be blue page 168 lines 15 and 48

Response   *Response Status*   **C**
ACCEPT.

Cl **84**   *SC* **84.8**   *P*   *L* **166**   # 470
Dudek, Mike   JDSU

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

There is likely to be more crosstalk in a KR4 system than in a KR system.

SuggestedRemedy

Evaluate the effects of additional crosstalk and include them in changed specs. In the meantime add an editors note saying "Editors note to be removed prior to pulication. The effect of additional crosstalk in the KR4 system is under investigation.

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

See response to comment # 167

Cl **84**   *SC* **84.8**   *P* **166**   *L* **12**   # 64
Sun Hyok, Chang   Electronics and Teleco

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

'40GBASE-KR' is wrong in the title of Subclause 84.8.

SuggestedRemedy

'40GBASE-KR' has to be replaced by '40GBASE-KR4'

Response   *Response Status*   **C**
ACCEPT.

[added 84 to subclause number in comment]

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 **84**
SC **84.8**

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12/18/2008 11:15:38 P

Cl **84**   *SC* **84.8**   *P* **166**   *L* **16**   *#* 374

Dawe, Piers   Avago Technologies

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

84.8 refers to 72.7, which says '...the PMD sublayer is standardized at test points TP1 and TP4 as shown in Figure 72-1. The electrical path from the transmitter block to TP1, and from TP4 to the receiver block, will affect link performance and the measured values of electrical parameters used to verify conformance to this standard. Therefore, it is recommended that this path be carefully designed.' In other words, there is no expectation that a board from vendor A, a backplane from B and another board from C can be expected to interoperate reliably, because each of them can spend as much of the shared channel budget as he pleases. This is not an interoperability spec, it's just an advertisement for some ICs. Is this what we want?

SuggestedRemedy

Discuss. Options are: make it into a proper interoperability spec with test points related to the connectors (Clause 86 will have to do much of that work anyway), delete the clause, move it to an annex, or accept that it's not a proper spec.

Response   *Response Status* **C**

REJECT.

The 802.3ap project specified the backplane interconnect characterisitcs to be informative, with a normative description of receiver testing, which ensures interoperability.

The baseline proposal voted in by the task force for 40GBASE-KR4 adopted the 802.3ap informative channel. Making the channel normative as the commenter seems to request would be big change.

Cl **84**   *SC* **84.8.2.1**   *P* **167**   *L* **1**   *#* 271

Healey, Adam   LSI Corporation

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

Receiver interference tolerance requirement is unclear. Annex 69A defines a test for a 10GBASE-KR receiver in isolation.

Does this requirement imply that a single 40GBASE-KR4 lane is tested in isolation? If so, should the unused lanes be terminated by the reference impedance, and what is their operational state (active or quiescent)?

If all lanes are to be tested in parallel, are parallel instances of the Annex 69A set-up required, or does a new multi-lane test apparatus need to be defined?

SuggestedRemedy

A supporting presentation will be provided to compare several approaches to this problem and suggest a direction.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Follow proposal in summary slide of healey_01_1108.pdf and test in isolation with other lanes transmitters active.

add paragraph at end of 84.8.2.1 so 84.8.2.1 reads as follows:

The receiver interference tolerance tests are the same as those described for 10GBASE-KR in 72.7.2.1 and Annex 69A.

For 40GBASE-KR4 each lane shall be tested individually using the methodology defined in Annex 69A with the transmitters of the unused lanes active and terminated by the reference impedance.

See also comment # 166

Cl **84**   *SC* **84.8.2.1**   *P* **167**   *L* **1**   *#* 166

D'Ambrosia, John   Force10 Networks

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

This section needs clarification, as it is ambiguous as to whether a single isolated lane is being tested or are all channels as an aggregate being tested.

SuggestedRemedy

test on a single lane basis, (joint) presentation to be provided

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

see response to comment # 271

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 **84**   Page 90 of 162
SC **84.8.2.1**   12/18/2008 11:15:38 P

Cl **84**   *SC* **84.8.2.1**   *P* **167**   *L* **3**   # 552
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
Learning KR specifications weakness the current interference tolerance test is not
comprehensive since there is no group delay or phase info in the channel

SuggestedRemedy
For 40GBase-KR4 replace magnitude response of Fig 69B.2 with pulse response of the
channel

Response   *Response Status* **C**
REJECT.

group delay info is not necessary for short channels one meter in length

also see comment 553

[added 84 to subclause number in comment]

Cl **84**   *SC* **84.9**   *P* **167**   *L* **7**   # 553
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
Lnformative channel in 69B has no phase or group delay, this is major weakness when KR
specifications are proposed to be used for CR4 and CR10

SuggestedRemedy
Please fix the problem as KR is not the gold standard, either provide group delay info for
Fig 69B.2 or better provide pulse response for the channel

Response   *Response Status* **C**
REJECT.

see responses to comment 552 and 571

[added 84 to subclause number in comment]

Cl **84**   *SC* **84.9**   *P* **167**   *L* **8**   # 167
D'Ambrosia, John   Force10 Networks

Comment Type **TR**   *Comment Status* **A**
Informative interconnect characteristics are specified, "Crosstalk requirements Informative
interconnect characteristics for 40GBASE-KR4 are provided in Annex 69B." However, the
crosstalk requirements for 10GBASE-KR were specified under the assumption that all
crosstalk was uncorrelated. For a multilane approach crosstalk will come from correlated
and uncorrelated sources.

SuggestedRemedy
provide a multi-lane xtalk specification that takes into account correlated & uncorrelated
crosstalk sources. Presentation to be provided.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add editors note at end of 84.9
"Editors note to be removed prior to publication. Requirements for multi-lane crosstalk for
40GBASE-KR4 are being considered. See healey_01_1108.pdf page 21."

Also please provide more detailed remedy in follow up comment against 69B.

Also see comment # 470

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* **84**   Page 91 of 162
                                                                                                               SC **84.9**   12/18/2008 11:15:38 P

Cl **85**   *SC* **85.1**   *P* **171**   *L* **10**   # 288

Anslow, Peter   Nortel Networks

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

Several very minor editorial issues in clause 85 collected in to one comment.

SuggestedRemedy

Reference to Clause 45 should be cross-reference page 171 line 10
The dash between 81 and RS should be an em-dash page 171 line 18
The dash between 73 and Auto-Negotiation should be an em-dash page 171 line 30
Change "interface for these" to "interfaces for these" page 172 line 45
Reference to Clause 45 should be cross-reference page 174 line 49
Space missing in "disable 9to" page 175 line 17
The word "Global_" is in 10 point font right side of page 175 line 33
Force the second "PMD" to next line on left side of page 175 line 35
Change ".." to "." page 177 line 10
Remove space between "PMD_SIGNAL.indication" and "(SIGNAL_DETECT)" in two places page 178 lines 38 and 39
Change "When a Global_PMD_..." to "When Global_PMD_..." page 179 line 24
Change "NOTES
 1" to "NOTE1" page 179 line 51
Change "2" to "NOTE2" page 180 line 3
It would be useful to colour external equation references blue (see comment on front matter) page 181 lines 28, 29, 30, 31 also page 183 lines 18 an 19
Set pagination to "Anywhere" to remove blank half page for heading 85.9.1 page 185 line 1
Do Special, Equations, Equations, "shrink wrap" on equation 85-6 to fix cropping page 187 line 26
External reference to clause 21 should be blue page 197 line 11

Response   *Response Status* **C**
ACCEPT.

Cl **85**   *SC* **85.1**   *P* **171**   *L* **22**   # 471

Dudek, Mike   JDSU

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

There is a problem in Table 85-1. XLAUI isn't applicable to 100GBASE-CR, but CAUI is optional

SuggestedRemedy

Either label the 83A row as XLAUI/CAUI or insert an additional row for CAUI and make the appropriate changes.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Suggested remedy comment #159

Cl **85**   *SC* **85.1**   *P* **171**   *L* **23**   # 159

D'Ambrosia, John   Force10 Networks

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

Reference only to XLAUI is made, and then 40G and 100G PMDs list XLAUI as optional.

SuggestedRemedy

Add another row for 83A CAUI
for row 83A XLAUI, mark 100GBASE-CR10 not applicable
for row 83A CAUI, mark 40GBASE-CR4 not applicable

Response   *Response Status* **C**
ACCEPT.

Add another row for 83A CAUI
for row 83A XLAUI, mark 100GBASE-CR10 not applicable
for row 83A CAUI, mark 40GBASE-CR4 not applicable

Cl **85**   *SC* **85.1**   *P* **171**   *L* **30**   # 341

Dawe, Piers   Avago Technologies

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

Auto-negotiation is an unnecessary burden on the host. It is not necessary for these copper links, and should not appear on front-panel ports.

SuggestedRemedy

Delete Auto-negotiation from Clause 85. Remove the Note at Clause 73, but provide a table showing which port types could use Auto-negotiation proper, which could use Parallel Detection (see below), and which could use Training.
Formalize and extend 'Parallel Detection' (73.7.4.1 Parallel Detection function) as a properly specified Link Negotiation based on the principles of Fibre Channel's Link Speed Negotiation.
See presentation.

Response   *Response Status* **C**
REJECT.

Draft 1 reflects consensus for AN usage for negotiating FEC capability (commanality with KR/KR4) and parallel detection function to detect legacy 10GBASE-CX4.

The sub-task force reviewed and discussed dawe_01_11_08.pdf

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 **85**
SC **85.1**

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12/18/2008 11:15:38 P

Cl **85**   *SC* **85.1**   *P* **171**   *L* **32**   # 370
Dawe, Piers   Avago Technologies

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

The copper-cable receivers are expected to rely even more on long DFE than Backplane Ethernet, and so when errors happen, moderately long error bursts are very probable. This overwhelms the CRC's error-detecting guarantee. These port types do not go into closed systems as Backplane Ethernet ports do, so the standard has to take responsibility for avoiding false packet acceptance rather than the system implementer.

SuggestedRemedy

FEC encoding and error detection must be mandatory, to provide adequate error detection. This is significantly less onerous than requiring mandatory full FEC error correction (correcting errors is a step beyond detecting them) which can remain optional.

Response   *Response Status* **C**
REJECT.

refer to response to comment 322 against Clause 74

More work is needed to determine whether MTFPA is a real issue with DFE. This work is going to be done in the logic track.

Cl **85**   *SC* **85.1**   *P* **171**   *L* **35**   # 48
Anslow, Peter   Nortel Networks

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

Table 85-1 Note b contains two instances of "XLGMII" which should be "CGMII"

SuggestedRemedy

Change "XLGMII" to "CGMII" in two places

Response   *Response Status* **C**
ACCEPT.

Change "XLGMII" to "CGMII" in two places

Cl **85**   *SC* **85.1**   *P* **171**   *L* **35**   # 198
Gu, Yuan   ZTE Corporation

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

Change "XLGMII" to "CGMII"

also in line 36
the same change

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **85**   *SC* **85.1**   *P* **171**   *L* **7**   # 168
D'Ambrosia, John   Force10 Networks

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

A normative statement for the combination of sublayers is needed.

In order to form a complete PHY (Physical Layer device), a PMD is combined with the appropriate sublayers (see Table 85-1) and with the management functions, which are optionally accessible through the management interface defined in Clause 45, or equivalent.

SuggestedRemedy

change noted sentence to

In order to form a complete PHY, the desired PMD shall be combined with the appropriate sublayers (see Table 85-1) and with the management functions that are optionally accessible through the management interface defined in Clause 45, or equivalent.

Response   *Response Status* **C**
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 **85**
SC **85.1**

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12/18/2008 11:15:38 P

Cl **85**   *SC* **85.10**   *P* **191**   *L*   # 547

Fogg, Michael   Tyco Electronics

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

Replace Trace Loss (TBD from Nicholl_01_0708.pdf) with specific values

SuggestedRemedy

Provide values to discuss with Diminico Subgroup

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Corrected missing subclause number 85.10 to subclause field]

Remedy provided in comment #448

Cl **85**   *SC* **85.10**   *P* **191**   *L* **16**   # 448

DiMinico, Christopher   MC Communications

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

Provide TBD values for 85.10 Transmitter and receiver diferential printed circuit board trace loss equation (85-10). Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

SuggestedRemedy

The maximum insertion loss (in dB with f in MHz) for the transmitter and receiver differential controlled
impedance printed circuit boards for each differential lane shall be:
Insertion Loss(f)</=(0.2032)*[20*log(e)*(2.00E-05*sqrt(f*10^6)+1.1E-10*(f*10^6)+3.2E-20*((f*10^6)^2+-1.2E-30*(f*10^6)^3)] TBD dB

for all frequencies from 100 MHz to 6000 MHz.

Insertion Loss(f) represents 8 inches (0.2032 m) of the maximum fitted attenuation (Amax) due to trace skin effect and dielectric properties as defined in Annex 69B.4.2.

Response   *Response Status* **C**

ACCEPT.

[Editor's note: Added missing Clause and subclause numbers (85.10) to clause/subclause number fields]

The maximum insertion loss (in dB with f in MHz) for the transmitter and receiver differential controlled
impedance printed circuit boards for each differential lane shall be:
Insertion Loss(f)</=(0.2032)*[20*log(e)*(2.00E-05*sqrt(f*10^6)+1.1E-10*(f*10^6)+3.2E-20*((f*10^6)^2+-1.2E-30*(f*10^6)^3)] TBD dB

for all frequencies from 100 MHz to 6000 MHz.

Insertion Loss(f) represents 8 inches (0.2032 m) of the maximum fitted attenuation (Amax) due to trace skin effect and dielectric properties as defined in Annex 69B.4.2.

Cl **85**   *SC* **85.10**   *P* **191**   *L* **16**   # 460

Chalupsky, David   Intel Corp.

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

typo: "differential" is misspelled as "diferential" in 85.10 section heading.

SuggestedRemedy

Change "diferential" to "differential"

Response   *Response Status* **C**

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 **85**
SC **85.10**

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Cl **85**   *SC* **85.10**   *P* **191**   *L* **17**   # 420

Ganga, Ilango   Intel

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

line 17: typo, change to "differential"
line 24: typo, change to "transmitter"

SuggestedRemedy

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.11**   *P* **192**   *L*   # 536

Fogg, Michael   Tyco Electronics

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

Figures 85-10 and 85-11
Add Figure

SuggestedRemedy

Figures to be provided on supporting documents

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.11 to subclause field]

Supporting documentation to be reviewed by sub-task force.

Figure 85-10 and 85-11 shall be Style-1 40GBASE-CR4 MDI connectors
plug and receptacle referenced in
small form factor pluggable (QSFP), SFF-8436.

Cl **85**   *SC* **85.11**   *P* **196**   *L*   # 549

Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **R**

Add lane to MDI connector pin mapping

SuggestedRemedy

Table to be provided in supporting documentation

Response   *Response Status* **C**

REJECT.

[Editor's note: corrected missing subclause number 85.11 to subclause field]

More details on comment and suggested remedy required.
Supporting documentation to be reviewed by sub-task force.

Cl **85**   *SC* **85.11.1**   *P* **191**   *L* **42**   # 473

Dudek, Mike   JDSU

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

Connectors can't meet the requirements of both style 1 and style 2.

SuggestedRemedy

Change "(Style 1) and 85.11.1.2 (Style 2)" to "(Style 1) or 85.11.1.2 (Style 2)"

Response   *Response Status* **C**

ACCEPT.

Change "(Style 1) and 85.11.1.2 (Style 2)" to "(Style 1) or 85.11.1.2 (Style 2)"

Cl **85**   *SC* **85.11.1**   *P* **191**   *L* **43**   # 53

Anslow, Peter   Nortel Networks

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

This says "between the PMD of 85.7.1 and" but 85.7.1 is the link block diagram

SuggestedRemedy

change "between the PMD of 85.7.1 and" to "between the PMD of 85.8 and"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change: "between the PMD of 85.7.1 and"
To: "between the PMD of 85.7 and"

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 **85**
SC **85.11.1**

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12/18/2008 11:15:38 P

Cl **85**   *SC* **85.11.2**   *P* **195**   *L*   # 548
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **R**
Add Figures 85-14 and 85-15

SuggestedRemedy
Add mating face views from the SFF-8632 (referenced by 8092)
Figure 6.2 (Plug) and 6.3 (Receptacle)

Response   *Response Status* **C**
REJECT.

[Editor's note: Added missing Clause number and subclause numbers to clause/subclause number fields]

IBTA has selected the CXP connector (SFF-8642) . Per (diminico_02_0708.pdf) the intent is to reference IBTA selected connector.

Cl **85**   *SC* **85.11.2**   *P* **195**   *L* **6**   # 447
DiMinico, Christopher   MC Communications

Comment Type   **T**   *Comment Status* **A**
IBTA has selected the CXP connector currently specified as
Version 0.3 - Oct. 2, 2008 "120 Gb/s 12x Small Form-factor
Pluggable (CXP) Interface Specification for Cables, Active
Cables, & Transceivers". Replace SFF-8092 with the IBTA selected connector
SFF-8642 which has been the stated intent (diminico_02_0708.pdf).

SuggestedRemedy
Page 195 line 6 replace SFF-8092 with SFF-8642.

Response   *Response Status* **C**
ACCEPT.

Cl **85**   *SC* **85.11.2**   *P* **195**   *L* **6**   # 421
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
typo, change to "considered"

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **85**   *SC* **85.7**   *P* **177**   *L*   # 538
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Figure 85-2
Location of TP-1 and TP-4

SuggestedRemedy
Recommend either placing two new test points TP-0 and TP-5 located 4" from connector (per nicholl_01_0708.pdf) or to move TP-1 and TP-4 a specified amount of loss (possibly 2dB @ 5.1625GHz)

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.7 to subclause field]

SuggestedRemedy in comment#451

Cl **85**   *SC* **85.7**   *P* **189**   *L*   # 546
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Remove MDELFEXT - Use ICR specification
Remove Figure 85-7
Remove Figure 85-8

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.7 to subclause field]

Suggested Remedy in comment#454

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* **85**   Page 96 of 162
                                                                                                              SC **85.7**   12/18/2008 11:15:39 P

Cl **85**   *SC* **85.7**   *P* **193**   *L*   # 537
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Table 85-7
Add values

SuggestedRemedy
Add values from QSFP Specification, to be provided in supporting documentation

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.11 to subclause field]

Supporting documentation to be reviewed by sub-task force.
Table 85-7-Style-1 40GBASE-CR4 lane to MDI connector pin mapping shall be
plug and receptacle referenced in
small form factor pluggable (QSFP), SFF-8436.

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **10**   # 419
Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
double period (..). delete a period

Line 14, typo: change to "transmitter"

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **15**   # 273
Healey, Adam   LSI Corporation

Comment Type   **T**   *Comment Status* **A**
Clause 85 references Clause 72 in multiple places, yet uses a definition of TP1 and TP4
that is inconsistent with definition in Clause 72. This will inevitably lead to confusion.

SuggestedRemedy
Define TP1 and TP4 in a manner consistent with their use in Clause 72, or add a note
explaining the mapping.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Sugessted remedy comment #450

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **20**   # 574
Ghiasi, Ali   Broadcom

Comment Type   **TR**   *Comment Status* **A**
802.3ap backplanes support KX, KX4 and KR. CR4/CR10 are based on the 802.3ap and
has the full provision to support another IEEE803.3ak (CX4)

SuggestedRemedy
Add badrate of 3.125 GBd to line 22. Duplicate Transition time line for CX4 with min value
of 20 ps and max value of 130 ps .
Add differential output voltage p-p 800 mV to 1200 mV for CX4

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.7.1 to subclause field]

The provisions to support IEEE803.3ak (CX4)
are embodied in compatability at the MDI and auto-negotiation.

Editors note: Support of compatability with IEEE803.3ak (CX4) is at the the MDI.

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **22**   # 450
DiMinico, Christopher   MC Communications

Comment Type   **TR**   *Comment Status* **A**   *channel*
Add channel test/reference points TP0 and TP5 to
Figure 85-2 to provide channel definition demarcation points for tests and/or references.

SuggestedRemedy
Add channel test/reference points TP0 and TP5 to
Figure 85-2.

Response   *Response Status* **C**
ACCEPT.

[Editor's note: Corrected/replaced figure number in subclause field to 85.7.1]
Add channel test/reference points TP0 and TP5 to
Figure 85-2.

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 **85**   Page 97 of 162
SC **85.7.1**   12/18/2008 11:15:39 P

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **30**   # 586

Ghiasi, Ali   Broadcom

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

Max and min loss between PMA IC and TP1a and TP4a are not defined, the link will not
work if there is 10 dB loss on the PCB

SuggestedRemedy

Loss from PMA function to TP1a and loss from TP4a to PMA function is SDD21<=(-
0.0788 -0.6169*SQRT(f) - 0.5855*f)
Min loss
SDD>=(2/6 - 2*f/6)
Where is in GHz
The maximum SDD21 assumes the HCB PCB loss at Nyquist is <=1.0 dB

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.7.1 to subclause field]

[Editors note: transmitter testing from TP2 needs to be addressed]

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **33**   # 581

Ghiasi, Ali   Broadcom

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

AC coupling in CR4/CR10 are between TP4 and Chip which comes from leagacy KR,
specially with SR4/S10 defining the AC coupling in the module.

SuggestedRemedy

AC coupling need to be between TP3 and MDI

Response   *Response Status* **C**

ACCEPT.

[Editor's note: corrected missing subclause number 85.7.1 to subclause field]

Editors note:[the location of the AC coupling needs to be defined]

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **33**   # 554

Ghiasi, Ali   Broadcom

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

There is no definition of TP1 or TP4, Please provide definition for TP1 and TP4

SuggestedRemedy

TP1 definition - Any interconnect may be used between the SR4 or SR10 transmit function
and TP1 as long as transmitter parameters of Table 85-4 are met.

TP4 definition - The interconnect from TP4 to SR4 or SR10 receive function shall be
SDD21(dB) >= (-0.007 - 0.1684*SQRT(f) - 0.0617*f)
f is given in GHz.
SDD21 loss a Nyquist is 0.7 dB and 0.2 larger than SFP+ loss.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.7.1 to subclause field]

[Editors note: transmitter and receiver testing and definitions]

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 **85**
SC **85.7.1**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.7.1**   *P* **177**   *L* **5**   # 451

DiMinico, Christopher   MC Communications

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

Add text for inclusion of TP0 and TP5 in subclause 85.7.1.

SuggestedRemedy

Delete text: The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the
transmitter and receiver blocks
to include the transmiter and receiver differential controlled impedance printed circuit board
insertion loss
and the cable assembly insertion loss as illustrated in Figure 85-2.

Add text:The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the
transmitter (TP0) and receiver blocks (TP5)
to include the transmiter and receiver differential controlled impedance printed circuit board
insertion loss
and the cable assembly insertion loss as illustrated in Figure 85-2.
TP0 and TP5 are reference points that may not be testable in an
implemented system.

Response   *Response Status* **C**

ACCEPT.
Delete text: The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the
transmitter and receiver blocks
to include the transmiter and receiver differential controlled impedance printed circuit board
insertion loss
and the cable assembly insertion loss as illustrated in Figure 85-2.

Add text:The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the
transmitter (TP0) and receiver blocks (TP5)
to include the transmiter and receiver differential controlled impedance printed circuit board
insertion loss
and the cable assembly insertion loss as illustrated in Figure 85-2.
TP0 and TP5 are reference points that may not be testable in an
implemented system.

Cl **85**   *SC* **85.7.2**   *P* **178**   *L* **4**   # 49

Anslow, Peter   Nortel Networks

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

The format of the messages PMD_UNITDATA.request and PMD_UNITDATA.indication in
clauses 85.72 and 85.7.3 do not match the definitions in 85.2

SuggestedRemedy

change "message PMD_UNITDATA.request (tx_bit<0:3>)" to "messages
PMD_UNITDATA.request<0:3>" in two places.
change "message PMD_UNITDATA.request(tx_bit<0:9>)" to "messages
PMD_UNITDATA.request<0:9>" in two places (Note, the first one has 0:3 where it should
be 0:9).
change "message PMD_UNITDATA.indication (rx_bit<0:3>)" to "messages
PMD_UNITDATA.indication<0:3>" in two places (clause 85.7.3)
change "message PMD_UNITDATA.indication (rx_bit<0:9>)" to "messages
PMD_UNITDATA.indication<0:9>" in two places (clause 85.7.3)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to clause 80 comment#620

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 **85**   Page 99 of 162
SC **85.7.2**   12/18/2008 11:15:39 P

Cl **85**   *SC* **85.7.4**   *P* **178**   *L* **37**   # 109

Marris, Arthur   Cadence

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

Reword first two paragraphs to be similar to subclause 84.7.4 for clarity.

SuggestedRemedy

Change:
"The Global PMD signal detect function shall report to the PMD service interface, using the message PMD_SIGNAL.indication (SIGNAL_DETECT) for 40GBASE-CR4 and PMD_SIGNAL.indication (SIGNAL_DETECT) for 100GBASE-CR10, which is signaled continuously. SIGNAL_DETECT in 40GBASE-CR4 and 100GBASE-CR10 indicates the successful completion of the start-up protocol on all
four or ten lanes."

SIGNAL_DETECT, while normally intended to be an indicator of signal presence, is used by 40GBASECR4 and 100GBASE-CR10 to indicate the successful completion of the start-up protocol on each lane."

to
"The Global PMD signal detect function shall continuously report the message PMD_SIGNAL.indication (SIGNAL_DETECT) to the PMD service interface. SIGNAL_DETECT, while normally intended to be an indicator of signal presence, is used by 40GBASE-CR4 and 100GBASE-CR10 to indicate the successful completion of the start-up protocol on all lanes."

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.7.4**   *P* **178**   *L* **44**   # 472

Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status* **R**

Cables are removable (not like backplanes).   What will cause Signal Detect to become Fail if the link is broken.

SuggestedRemedy

If a broken link will create system reset then an informative note to that effect would be good.   If it won't then change the function to include a signal present detection in addition to successful completion of start up protocol.

Response   *Response Status* **C**

REJECT.

Signal detect is implemented in 85.7.4; if the link is broken auto-negotiation restarts and training.

Cl **85**   *SC* **85.7.4**   *P* **178**   *L* **54**   # 206

Marris, Arthur   Cadence

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

Change "1 or 0" to "one or zero" to match nomenclature in 45.2.1.9.5

SuggestedRemedy

as above

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.7.7**   *P* **179**   *L* **30**   # 50

Anslow, Peter   Nortel Networks

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

Clause 85.7.7 is about lane-by-lane transmit disable function, but the text discusses "Global_PMD_transmit_disable function". This needs to be changed along the lines of clause 86.4.8

SuggestedRemedy

Change the first two sentences from "The Global_PMD_transmit_disable function is optional. It allows the electrical transmitters in each lane to be selectively disabled." to "The PMD_transmit_disable_i function (where i represents the lane number in the range 0:3 or 0:9) is optional and allows the optical transmitter in each lane to be selectively disabled."

in item a) change "the Global_PMD_transmit_disable variable" to "a PMD_transmit_disable_i variable" and change "the transmitter such that" to "the transmitter associated with that variable such that"

in item b) change "may turn off the electrical transmitter." to "may set each PMD_transmit_disable_i to ONE, turning off the electrical transmitter in each lane."

in item c) change "Global_PMD_transmit_disable" to "PMD_transmit_disable_i"

Response   *Response Status* **C**

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 **85**
SC **85.7.7**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.8.2**   *P* **18**   *L* **3**   # 342

Dawe, Piers   Avago Technologies

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

I understand that 10 m is extremely challenging. A link like this if it fails will create error
bursts not just single errors, endangering mean time to false packet acceptance.

SuggestedRemedy

Do investigations to quantify the level of difficulty. First, can a reasonable 10 m cable with
reasonable lengths of PCB traces give a channel within the high confidence region as
defined for 10GBASE-KR in 802.3ap Annex 69B?   Second, is that an adequate or
complete condition for as low-BER link?
Define a length and cable electrical spec above which FEC is mandatory, and/or reduce
the distance objective for Clause 85.

Response   *Response Status* **C**

REJECT.

Many of the steps in the suggested remedy have been performed. Yes, a reasonable 10 m
cable with reasonable lengths of PCB traces gives a channel within the high confidence
region as defined for 10GBASE-KR in 802.3ap Annex 69B; please see
diminico_02_0708.pdf "802.3ba copper cable
assembly baseline proposal".

What's reasonable in PCB trace length is subjective; the baseline includes guidance to use
nicholl_01_0708.pdf.

A length and electrical specification is embodied in draft 1 for review and comment.

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **14**   # 51

Anslow, Peter   Nortel Networks

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

This says "with the exception of the transmitter specified in 85.8.3.3." but 85.8.3.3 is the
"Signaling speed range" and does not specify a transmitter.

SuggestedRemedy

Change this cross-reference to the intended subclause

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggested remedy

Change: "with the exception of the transmitter
specified in 85.8.3.3."

To:" with the exception of the transmitter
characteristics specified in 85.8.3.3."

Also see comment #144

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **15**   # 144

D'Ambrosia, John   Force10 Networks

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

Reference in following sentence is unclear.

The specifications are summarized in Table 85-4 and detailed in 72.7.1.1 through 72.7.1.11
with the exception of the transmitter specified in 85.8.3.3.

85.8.3.3 is for signaling speed range, and is same for -KR.

SuggestedRemedy

Corrrect reference from 85.8.3.3 to correct reference.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer response to comment # 51

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 **85**
SC **85.8.3**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **22**   # 52

Anslow, Peter   Nortel Networks

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

The nominal unit interval is given in Table 85-4 as "96.9697" but in clause 83A it is given as "96.96969697". Since the UI is the same for these two clauses, the number of significant figures quoted should be the same. Considering the 100 ppm tolerance, somewhere between these two seems appropriate.

SuggestedRemedy

Change all ocurrences of "96.9697" and "96.96969697" to "96.969697" (four places in clause 85 and three places in clause 83A)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change all ocurrences of "96.9697" and "96.96969697" to "96.969697"

Note: if applicable three places in clause 83A

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **25**   # 568

Ghiasi, Ali   Broadcom

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

Currently table 85-4 only has transmitter off level which is 30 mV and you wouldn't go that far with it!

SuggestedRemedy

Please add VMA per defintion of IEEE CL 68.6.2 with min value of 360 mV

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

Add editors note as before to consider with transmitter compliance testing.

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **25**   # 564

Ghiasi, Ali   Broadcom

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

To gurantee interoperablity a transmitter compliance test method is required.

SuggestedRemedy

Purpose to use software method of IEEE 802.3 CL 68 TWDP which uses cable impulse response.

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

Transmitter characteristics are tested at TP2. Subclause 85.8.3.1 specifies test fixtures, or functional equivalence, to measure the transmitter specifications described in 85.8.3. Contributions to improve 85.8.3.1 welcome.

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **28**   # 569

Ghiasi, Ali   Broadcom

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

Differential Output return loss is TBD

SuggestedRemedy

Purpose to use SDD11 per equation 83A-1

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: Added missing subclause number 85.7.1 to subclause field]

The draft reflects the consensus to utilize 10GBASE-KR (Clause 72) for 4x and 10x KR transmit and receive functions.

The TBD is applied to either utilize the Differential output return loss (min.) in 72.7.1.5 [See Equation (72-4) and
Equation (72-5)] (TBD) or if deemed insufficient create new requirement in 85.9.x

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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 **85**
SC **85.8.3**

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Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **31**   # 570

Ghiasi, Ali   Broadcom

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

Common mode Output return loss is TBD

SuggestedRemedy

Purpose to use SCC11 per equation 83A-2

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

The draft reflects the consensus to utilize 10GBASE-KR (Clause 72) for 4x and 10x KR transmit and receive functions.

The TBD is applied to either utilize the Common-mode voltage limits 72.7.1.4 or if deemed insufficient create new requirement in 85.9.x.

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **31**   # 572

Ghiasi, Ali   Broadcom

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

Differential input return loss is TBD

SuggestedRemedy

Purpose to use SDD22 per equation 83A-1

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

The draft reflects the consensus to utilize 10GBASE-KR (Clause 72) for 4x and 10x KR transmit and receive functions.

The TBD is applied to either utilize the Differential input return loss (minimum) 72.7.2.5
[See Equation (72-4)
and Equation (72-5) or if deemed insufficient create new requirement.

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **33**   # 563

Ghiasi, Ali   Broadcom

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

With faster processes 24 ps transition time starting to be an issue

SuggestedRemedy

Suggest to change 24 ps to 20 ps

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

Recommend submitting supporting presentation for sub-task force review..

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **36**   # 558

Ghiasi, Ali   Broadcom

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

The classical DJ and RJ measured jitter are jitter PDF dependent and not valid for jitter distribution which are not dual-dirac.

SuggestedRemedy

Repalce RJ with UJ of 0.025 UI (RMS) per IEEE CL 68.6.8 method
Replace DJ with DDJ per method of FC-PI4 A.1.3.1 with PSBS 9 pattern

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

Add editors note per 83A regarding jitter.

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 **85**
SC **85.8.3**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.8.3**   *P* **181**   *L* **38**   # 559
Ghiasi, Ali   Broadcom

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

Duty Cycle distortion is classified to be 0.035 UI and is part of deterministic jitter, except the current definition of DCD does not capture pattern dependent component of DCD.

SuggestedRemedy

Puropose to repalace DCD with PWS (Pulse Width Shrinkage) with 0.1 UI value.
PWS is measured per FC-PI-4 Annex A.1.3.2 using PRBS9 pattern

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

editors note: data dependent pulse width shrinkage needs to be addressed; not currently included in the DCD.

Cl **85**   *SC* **85.8.4**   *P* **182**   *L* **50**   # 590
Ghiasi, Ali   Broadcom

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

There is no definition how to test the receiver for compliance

SuggestedRemedy

Puropose to use the pulse response from the 10 m cable assembly as the frequency dependent attenuator in the Fig 69A-1. In Fig 69A-1 TP1 must have maximum jitter as defined by table 85-4.

Response   *Response Status* **C**

REJECT.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

85.8.4.1 Bit error ratio
The receiver shall operate with a BER 10-12 or better when receiving a compliant transmit signal, as defined
in 85.8.3, through a compliant cable assembly as defined in 85.9 exhibiting the maximum insertion loss of 85.9.2. The cable assembly is normative. This approach is consistent with CX4.

In addition, Receiver characteristics are summarized in Table 85-5 and as detailed in 72.7.1.1 through 72.7.2.5 with the
exception of the receiver characteristics specified in 85.8.4.1, 85.8.4.2, and 85.8.4.3.

Cl **85**   *SC* **85.8.4**   *P* **182**   *L* **50**   # 604
Ghiasi, Ali   Broadcom

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

KR can not operate over 10 m of 24 AWG cable which is the largest pratical size with max host PCB loss. KR standard was devloped 3 years ago and with improved process and technology we should not limit the application to shorter than 10m or have unreasonable PCB trace loss.

SuggestedRemedy

Assuming PMA IC loss to TP1a and TP4a to PMA IC loss are Nyquist is 4.5 dB then based on diminico results the KR refrence channel loss at Nyquist need to be increasaed to 27 dB. This will allow 4" of FR4-6 on each end or about 6" of improved FR4.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.8.4 to subclause field]

See suggested remedy in comment#456.

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 **85**   Page 104 of 162
SC **85.8.4**   12/18/2008 11:15:39 P

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **1**   # 272
Healey, Adam   LSI Corporation

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

"Receiver characteristics are summarized in Table 85-5 and as detailed in 72.7.1.1 through 72.7.2.5 with the exception of the receiver characteristics specified in 85.8.4.1, 85.8.4.2, and 85.8.4.3."

Subclause 71.7.2.1, Receiver interference tolerance, which references Annex 69A, defines a test for a 10GBASE-KR receiver in isolation.

At the same time, subclause 85.8.4.1 states that "the receiver shall operate with a BER 10^{-12} or better when receiving a compliant transmit signal, as defined in 85.8.3, through a compliant cable assembly as defined in 85.9 exhibiting the maximum insertion loss of 85.9.2."

This implies that all lanes as tested as an aggregate using a cable assembly model spanning TP2 to TP3.

Which requirement applies?

SuggestedRemedy

A supporting presentation will be provided to compare several approaches to this problem and suggest a direction.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Editors note added to be added add end of 85.8.4.1: to clarify ambiguity recognized by commentor.

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **1**   # 169
D'Ambrosia, John   Force10 Networks

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

This clause points to receiver characteristics detailed in 72.7.1.1 through 72.7.2.5, which includes Rx interference tolerance testing specified in 72.7.2.1. This is ambiguous, as it does not indicate whether a single isolated lane is being tested or are all channels as an aggregate being tested.

SuggestedRemedy

test on a single lane basis, (joint) presentation to be provided

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remedy per comment#272

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **1**   # 165
D'Ambrosia, John   Force10 Networks

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

This clause points to receiver characteristics detailed in 72.7.1.1 through 72.7.2.5, which includes Rx interference tolerance testing specified in 72.7.2.1.   There are potential differences in rx interference tolerance testing between backplane and cabling testing.

SuggestedRemedy

Create an annex 85A, which details tests for -c4 testing. Presentation to be provided.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add editors note per Adam Healey comment#272

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **16**   # 591
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
There is no requirement on the min receive signal

SuggestedRemedy

Purpose to use min receive VMA of 180 mV diff p-p per definition of IEEE CL68.6.2.

Response   *Response Status* **C**
REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

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 **85**
SC **85.8.4**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **17**   # 573
Ghiasi, Ali   Broadcom

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

Max input differential p-p level of of 1200 mV is not compatible with the SR4 and SR10, where both SRxx and CRxx serve the front panel market and some time on the same port!

SuggestedRemedy

Reduce max input level to 850 mV

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.4 to subclause field]

Proposal inconsistent with Differential peak-to-peak output voltage (max.) 72.7.1.4 1200 mV.

Receiver specifications are
summarized in Table 85-4 and detailed in 72.7.1.1 through 72.7.1.11 with the exception of the transmitter specified in 85.8.3.3

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **21**   # 575
Ghiasi, Ali   Broadcom

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

Since CR4/CR10 does not interface with KX there is not no reason to have 1600 mV damage threshold

SuggestedRemedy

Remove 1600 mV damage threshold

Response   *Response Status*   **C**

REJECT.

[Editor's note: corrected missing subclause number 85.8.4 to subclause field]

Not sure why this isn't usefull guidance.

For sub-task force discussion.

Cl **85**   *SC* **85.8.4**   *P* **183**   *L* **9**   # 576
Ghiasi, Ali   Broadcom

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

Support for CX4 is missing from the table. 802.3ap already has support for KX4 operation which is simialr to CX4.

SuggestedRemedy

Add Signaling rate of 3.125 GBd to table 85-5.

Response   *Response Status*   **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.8.3 to subclause field]

Not necessary in specifying the
40GBASE-CR4 and 100GBASE-CR10 PMD.

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 **85**
SC **85.8.4**

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12/18/2008 11:15:39 P

Cl **85**   *SC* **85.9**   *P* **183**   *L* **49**   # 452

DiMinico, Christopher   MC Communications

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

Add channel subclause before cable assembly subclause and move 85.10 (Tx_pcb and
Rx_pcb IL) under channel subclause to provide hierichical structure to specification
consistent with channel/link topology.

SuggestedRemedy

(1)Add channel subclause before cable assembly subclause- Page 183, Line 49;
>>85.x Channel
The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the transmitter and
receiver blocks to include the transmitter and receiver differential controlled impedance
printed circuit board insertion loss and the cable assembly insertion loss as illustrated in
Figure 85-2.
(2)Delete page 191, line 16-34 and move deleted text as new subclause under new
channel subclause 85.x

Response   *Response Status* **C**

ACCEPT.

[Editor's note: added missing subclause number 85.9 to subclause field]

(1)Add channel subclause before cable assembly subclause- Page 183, Line 49;
>>85.x Channel
The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the transmitter and
receiver blocks to include the transmitter and receiver differential controlled impedance
printed circuit board insertion loss and the cable assembly insertion loss as illustrated in
Figure 85-2.
(2)Delete page 191, line 16-34 and move deleted text as new subclause under new
channel subclause 85.x

Cl **85**   *SC* **85.9**   *P* **184**   *L*   # 539

Fogg, Michael   Tyco Electronics

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

Figure 85-6
Replace TBD values with actual limit numbers, and remove ELFEXT and MDELFEXT as
they are redundant

SuggestedRemedy

Values to be supplied with supporting documents

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #453 and comment #454

Cl **85**   *SC* **85.9**   *P* **184**   *L* **2**   # 343

Dawe, Piers   Avago Technologies

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

It is very good that TP1, TP2 TP3 TP4 are positioned in relation to the connector, but not
clear enough where they are exactly with respect to the connector. While for some
measurements like S-parameter measurements on a passive cable, de-embedding can be
used to infer the performance right next to the connector, For measurements of nonlinear
active elements like transmitters and receivers, in general this cannot be done.

SuggestedRemedy

Use the same defined reference losses between each TP and the connector as in Clause
86: this includes specifying the loss between PMD and TP2 in 85.8.3.1 Fig 85-3. For the S-
parameter specs, where de-embedding is viable, give the equivalent de-embedded specs
also so that the cables can be assessed using either approach.

Response   *Response Status* **C**

REJECT.

Consistent with CX4, all cable assembly measurements are to be made between TP1 and
TP4 as illustrated in Figure 85-2. Two mated connector pairs have been included
in the cable assembly specifications defined in 85.9.

TP1 and TP4 are not test points for the measurements of nonlinear active elements like
transmitters and receivers.

PCB trace loss at TP0 defined (Tx_pcb) and
at TP5 (Rx_pcb.).

We intend to close on the test point measurements regrding de-embedding utizing editors
note.

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 **85**   *SC* **85.9**   *P* **184**   *L* **6**   # 449
DiMinico, Christopher   MC Communications

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

Update Table 85-6-Cable assembly differential characteristics based on accepted cable assembly TBD values and additions/deletions of cable assembly parameters.

SuggestedRemedy

Editor to update Table 85-6-Cable assembly differential characteristics' summary with accepted cable assembly TBD values and additions/deletions of cable assembly parameters.

Response   *Response Status*   **C**

ACCEPT.

[Editor's note: added missing subclause number 85.9 to subclause field]

Editor to update Table 85-6-Cable assembly differential characteristics' summary with accepted cable assembly TBD values and additions/deletions of cable assembly parameters.

Cl **85**   *SC* **85.9**   *P* **185**   *L*   # 540
Fogg, Michael   Tyco Electronics

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

Figure 85-4 - Provide specific values for cable assembly (TP-1 to TP-4), and for cable assembly including fixturing (TP-0 to TP-5?)

SuggestedRemedy

Add values from supporting document

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

All cable assembly measurements are to
be made between TP1 and TP4 as illustrated in Figure 85-2. Two mated connector pairs have been included
in the cable assembly specifications defined in 85.9.

We intend to close on the test point measurements regrding de-embedding utizing editors note.

Cl **85**   *SC* **85.9**   *P* **185**   *L* **50**   # 457
DiMinico, Christopher   MC Communications

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

Add cable assembly ILD specifications to limit cable assembly ILD.Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

SuggestedRemedy

Add subclause page 185 line 50 85.9.x Cable assembly insertion loss deviation
Insert text under subclause
The cable assembly insertion loss deviation is the difference between the cable insertion loss and the fitted insertion loss determined using Equation (85-x).

$ILD(f) = IL(f) - IL_{fitted}(f)$ (85-x)

The fitted insertion loss is determined using Equations (85.xx)-(85.xx); use 69B-1 to 69B-5 for (85.xx)-(85.xx)replacing A(f) with ILfitted(f). Add TBDs beside equations to indicate that an alternate to the least mean square line fit to the cable assembly IL is under consideration.

The ILD shall be within the region bounded by the following equations:

ILDmax= 0.7(TBD)+0.2(TBD)*10^-9*(f*10^6) TBD dB
ILDmin= -0.7(TBD)+0.2(TBD)*10^-9*(f*10^6) TBD dB

1000 MHz</=f</= 6000 MHz

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Editor's note: added missing subclause number 85.9 to subclause field]

Fixed typo in equation:
From: ILDmin= -0.7(TBD)+0.2(TBD)*10^-9*(f*10^6) TBD dB

To: ILDmin= -0.7(TBD)-0.2(TBD)*10^-9*(f*10^6) TBD dB

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 **85**   Page 108 of 162
SC **85.9**   12/18/2008 11:15:39 P

Cl **85**   *SC* **85.9**   *P* **186**   *L*   # 541
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Add specific values for cable assembly and cable assembly with fixturing for return loss

SuggestedRemedy
Values to be provided in supporting document

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #459

Cl **85**   *SC* **85.9**   *P* **187**   *L*   # 542
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Replace TBD values for NEXT with specific values

SuggestedRemedy
Values to be provided from supporting documents

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #453.

Cl **85**   *SC* **85.9**   *P* **187**   *L*   # 543
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Replace TBD values on MDNEXT with specific values

SuggestedRemedy
Values to be provided from supporting documents

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #453.

Cl **85**   *SC* **85.9**   *P* **188**   *L*   # 544
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Figure 85-6
Remove or add specific values

SuggestedRemedy
Add values from supporting documents

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #453.

Cl **85**   *SC* **85.9**   *P* **188**   *L*   # 545
Fogg, Michael   Tyco Electronics

Comment Type   **T**   *Comment Status* **A**
Remove ELFEXT values (Use ICR)

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #454.

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 **85**
SC **85.9**

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12/18/2008 11:15:40 P

Cl **85**   *SC* **85.9**   *P* **190**   *L* **45**   # 455
DiMinico, Christopher   MC Communications

Comment Type **TR**   *Comment Status* **A**
   Define total power sum crosstalk to be used in the ICR calculation.

SuggestedRemedy
   Add subclause line 45 page 190 85.9.x Cable assembly power sum differential crosstalk

   Add text below new subclause: The combined multi-disturber FEXT and multi-disturber
   NEXT, specified as the power sum of MDFEXT and MDNEXT, is determined using
   Equation (85-XX).

   Add power sum equation (85-XX) for total power sum crosstalk calculated from MDFEXT
   and MDNEXT.

Response   *Response Status* **C**
   ACCEPT.

   [Editor's note: Added missing Clause and subclause numbers (85.9) to clause/subclause
   number fields]
   Add subclause line 45 page 190 85.9.x Cable assembly power sum differential crosstalk

   Add text below new subclause: The combined multi-disturber FEXT and multi-disturber
   NEXT, specified as the power sum of MDFEXT and MDNEXT, is determined using
   Equation (85-XX).

   Add power sum equation (85-XX) for total power sum crosstalk calculated from MDFEXT
   and MDNEXT.

Cl **85**   *SC* **85.9.1**   *P* **185**   *L* **16**   # 577
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
   3.125 GBd operation insertion loss missing

SuggestedRemedy
   Add insertion loss limit from from 54-3.

Response   *Response Status* **C**
   REJECT.

   This comment was WITHDRAWN by the commenter.

   [Editor's note: corrected missing subclause number 85.9.1 to subclause field]

   Not necessary in specifying the
   40GBASE-CR4 and 100GBASE-CR10
    PMD.

Cl **85**   *SC* **85.9.2**   *P* **185**   *L* **10**   # 588
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
   Cable assembly is missing common mode return loss parameter.

SuggestedRemedy
   Propose the following SCC22/SCC11 mask
   SCC22<= (-12 + 2.8*f) from 0.01 to 2.5 GHz and (-5.2+0.08*f) from 2.5 to 11.1 GHz.

Response   *Response Status* **C**
   ACCEPT IN PRINCIPLE.

   [Editor's note: corrected missing subclause number 85.9.2 to subclause field]

   Editors note:[Include cable assembly common mode return loss.]

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 **85**
SC **85.9.2**

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12/18/2008 11:15:40 P

Cl **85**   *SC* **85.9.2**   *P* **185**   *L* **14**   # 458
DiMinico, Christopher   MC Communications

Comment Type **TR**   *Comment Status* **A**
Provide values for TBDs in cable assembly insertion loss (85-1) for sqrt(f) and f. Remove
1/sqrt(f) term. Add TBD cable assembly insertion loss equation as contributions from IL
and power sum crosstalk to ICR are still under consideration.

SuggestedRemedy
Replace TBDs with values in (85-1) Add TBD to equation as contributions from IL and
power sum crosstalk to ICR under consideration.

Insertion Loss (f) = 0.192749*sqrt(f)+0.001494*f TBD dB

Remove 1/sqrt(f) term. Given the CR4 and CR10 bandwidth compared to CX4 the 1/sqrt(f)
loss function term is not necessary as a regression term.

Response   *Response Status* **C**
ACCEPT.

Replace TBDs with values in (85-1) Add TBD to equation as contributions from IL and
power sum crosstalk to ICR under consideration.

Insertion Loss (f) = 0.192749*sqrt(f)+0.001494*f TBD dB

Remove 1/sqrt(f) term. Given the CR4 and CR10 bandwidth compared to CX4 the 1/sqrt(f)
loss function term is not necessary as a regression term.

Cl **85**   *SC* **85.9.2**   *P* **185**   *L* **15**   # 244
Meyer, Jeffrey   Centellax

Comment Type **T**   *Comment Status* **A**
Why is there a term for 1/sqrt(f) in the insertion loss formula.   The coefficient will most
likely be 0.000 becuase it blows up at low frequencies.   Read and microwave transmission
line book and you see that the loss approaches a constant a low frequencies.   Instead
you need a constant term for the DC loss.

SuggestedRemedy
Insertion loss (d) <= TBD + TBD * sqrt(f) + TBD * f

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Suggested remedy comment #458

Cl **85**   *SC* **85.9.2**   *P* **185**   *L* **15**   # 571
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
Group delay information are necessary to gurantee cable interoperablity

SuggestedRemedy
Either add cable group delay or the cable pulse response

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Add editor's note in 85.9.x : [Editor's note (to be removed prior to publication) - subclause
to specify group delay or other means to characterize post cursor response (TBD)]

Cl **85**   *SC* **85.9.2**   *P* **185**   *L* **17**   # 340
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**
Specification range for cable insertion loss is not adequate at either end. SFP+ Annex E
cable S-parameter specs go from 10 MHz to 11.1 GHz.

SuggestedRemedy
Extend the range of Cable assembly insertion loss, Cable assembly return loss, Near-End
Crosstalk, MDNEXT, FEXT and MDELFEXT to at least 10 MHz to 10 GHz.

Response   *Response Status* **C**
REJECT.

SFP+ "SFF-8431 Specifications for
Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable Module" defines the electrical
interface specifications for 8.5 and 10 Gigabit/s Small Form Factor Pluggable
(SFP+) modules and hosts and optionally support lower signaling rates as well.

Per baseline agreement channel parameters to be consistent with 10GBASE-KR in
802.3ap Annex 69B.

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 **85**
SC **85.9.2**

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12/18/2008 11:15:40 P

Cl **85**   *SC* **85.9.3**   *P* **186**   *L* **10**   # 589

Ghiasi, Ali   Broadcom

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

Cable assembly return loss does not specify if it is SCC or SDD but I am assuming it is
Differential return loss.

SuggestedRemedy

Propose to use SDD22/SDD11 per equation 83A-1

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9.3 to subclause field]

Suggested remedy comment#459

Cl **85**   *SC* **85.9.3**   *P* **186**   *L* **6**   # 459

DiMinico, Christopher   MC Communications

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

Provide TBD values for 85.9.3 Cable assembly return loss.

SuggestedRemedy

85.9.3 Cable assembly return loss
The return loss (in dB with f in MHz) of each pair of the 40GBASE-CR4 and 100GBASE-
CR10 cable
assembly shall be:

Return_loss(f)= 10 dB

for 100 MHz </= f < 4000 MHz

Return_loss(f)=10-10*log(f/4000)

for 4000 MHz </= f </= 10000 MHz

Figure 85-5-Minimum cable assembly return loss (informative) to be provided in attachment.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

85.9.3 Cable assembly return loss
The return loss (in dB with f in MHz) of each pair of the 40GBASE-CR4 and 100GBASE-
CR10 cable assembly shall be:

Return_loss(f)   >/= 10 dB

for 100 MHz </= f < (TBD) < (TBD)4000 MHz

Return_loss(f)=10-10*log(f/(TBD)4000)

for (TBD)4000 MHz </= f </= 10000 MHz

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 **85**
SC **85.9.3**

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12/18/2008 11:15:40 P

Cl **85**   *SC* **85.9.3**   *P* **186**   *L* **9**   # 557
Ghiasi, Ali   Broadcom

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

Cable return loss is missing, please add cable return loss

SuggestedRemedy

Purpose to use SDD22 as defined by EQ 83A-1
and SCC22 as defined by EQ 83A-2

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: corrected missing subclause number 85.9 to subclause field]

Suggested remedy comment #459

See editors note for SCC22.

Cl **85**   *SC* **85.9.4**   *P* **186**   *L* **46**   # 453
DiMinico, Christopher   MC Communications

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

Define NEXT and MDNEXT to be used in the ICR calculation and remove individual limit
specifications The use of independent limit lines for each disturber is unnecessary as the
individual impairments are not uniquely distinguished i.e., they are combined on a power
sum basis to limit crosstalk in relation to insertion loss.

SuggestedRemedy

(1)Delete lines 48-54 page 186. (2)Delete equation (85-4) page 187. delete lines 4-5 page
187. (3) Add text under 85.9.4.1 Differential Near-End Crosstalk: Since four or ten transmit
and four or ten receive lanes are used to transfer data between PMDs, the NEXT that is
coupled into a receive lane will be from the four or ten transmit lanes. (4) Delete lines 8-9
page 187
Since four or ten transmit and four or ten receive lanes are used to transfer data between
PMDs, the NEXT that is coupled into a receive lane will be from the four or ten transmit
lanes.(5)Delete lines 13-20 page 187.(6) Delete lines 1-28 page 188.

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.9.4.2**   *P* **187**   *L* **26**   # 245
Meyer, Jeffrey   Centellax

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

In equation (85-6) the power of the NEXT loss is denoted NL(f)i.   This is poor notation.
Subscripts should not appear after function arguments.

SuggestedRemedy

More appropriate notation would be   NLi(f).

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.9.4.2**   *P* **187**   *L* **5**   # 561
Ghiasi, Ali   Broadcom

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

NEXT has large high frequncy component but the NEXT frequncy is limited 6 GHz.

SuggestedRemedy

Increase NEXT frequncy range to 11 GHz or show there is no impact limiting NEXT to 6
GHz.

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.9.4.2 to subclause field]

Recommend supporting presentation that shows impact requireing increase of NEXT
frequency range to 11 GHz.

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 **85**
SC **85.9.4.2**

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12/18/2008 11:15:40 P

Cl **85**   *SC* **85.9.5**   *P* **188**   *L* **30**   # 454

DiMinico, Christopher   MC Communications

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

Define FEXT and MDFEXT to be used in the ICR calculation and remove individual limit specifications The use of independent limit lines for each disturber is unnecessary as the individual impairments are not uniquely distinguished i.e., they are combined on a power sum basis to limit crosstalk in relation to insertion loss. In addition, ELFEXT is unnecessary as ICR enables crosstalk to insertion loss tradeoff.

SuggestedRemedy

(1)Delete lines 30-54 page 188. (2)Delete lines 1-5 page 189.

(3)Add text line 31 page 188>> Since four lanes or ten lanes are used to transfer data between PMDs, the FEXT that is coupled into a data
carrying lane will be from the three other lanes or nine other lanes in the same direction.

(4)Remove equal level line 6 page 189 in subclause title.
(5)Replace ELFEXT with FEXT 85.9.5.2 Multiple Disturber Far-End Crosstalk (MDFEXT) loss and globally.
(6)Delete lines 8-9 page 189. (7)Delete lines 13-54 page 189.(7)Delete lines 15-43 page 190.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
(1)Delete lines 30-54 page 188. (2)Delete lines 1-5 page 189.

(3)Add text line 31 page 188>> Since four lanes or ten lanes are used to transfer data between PMDs, the FEXT that is coupled into a data
carrying lane will be from the three other lanes or nine other lanes in the same direction.

(4)Remove equal level line 6 page 189 in subclause title.
(5)Replace ELFEXT with FEXT 85.9.5.2 Multiple Disturber Far-End Crosstalk (MDFEXT) loss and globally.
(6)Delete lines 8-9 page 189. (7)Delete lines 13-54 page 189.(7)Delete lines 15-43 page 190.

Editor note: include near power sum equation - need to consider need for voltage sum.

Cl **85**   *SC* **85.9.x**   *P* **190**   *L* **45**   # 456

DiMinico, Christopher   MC Communications

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

Add cable assembly ICR specification to limit the total multi-disturber cable assembly crosstalk noise. Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

SuggestedRemedy

Add new subclause below 85.9.x Cable assembly power sum differential crosstalk
>>85.9.x Cable assembly insertion loss to crosstalk ratio (ICR)

The cable assembly insertion loss to crosstalk ratio (ICR) is the ratio of the cable assembly insertion loss to the total cable assembly crosstalk loss determined using Equation (89.xx).

$ICR(f) = -IL(f) + PSXT(f)$ (TBD) dB

$100MHz</=f</=5156.25$ MHz

Add text: Assuming ICR is computed at N uniformly-spaced frequencies fn spanning the frequency range 100 MHz to 5156.25 MHz,
ICRfit may be computed using Equations (85-x) through (85-x); utilize Equations (69B-19) through (69B-23.

Add text: ICRfit shall be greater than or equal to ICRmin as defined by the following equation:Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

Add equation: $ICRfit(f)>/=ICRmin(f)=23.3-18.7*LOG((f*10^6)/(5*10^9))-2.5$ (TBD) dB

Add Figure to illustrate insertion loss to crosstalk ratio limit.

Note: 2.5 dB of the 3 dB signal-to-noise ratio penalty related to insertion loss deviation embodied in 802.3ap ICRmin is applied as 2.5 dB ICRmin margin to account for reduction in ILD penalty for CR4 and CR10

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Suggested remedy applies to channel ICR.
Add new subclause below 85.9.x for channel insertion loss to crosstalk ratio (ICR)
>>85.9.x Channel insertion loss to crosstalk ratio (ICR)

The channel insertion loss to crosstalk ratio (ICR) is the ratio of the channel insertion loss to the total channel crosstalk loss determined using Equation (89.xx).

$ICR(f) = -IL(f) + PSXT(f)$ (TBD) dB
$100MHz</=f</=5156.25$ MHz

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 **85**   Page 114 of 162
SC **85.9.x**   12/18/2008 11:15:40 P

Add text: Assuming ICR is computed at N uniformly-spaced frequencies fn spanning the frequency range 100 MHz to 5156.25 MHz,
ICRfit may be computed using Equations (85-x) through (85-x); utilize Equations (69B-19) through (69B-23.
Add text: ICRfit shall be greater than or equal to ICRmin as defined by the following equation:Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

Add equation: ICRfit(f)>/=ICRmin(f)=23.3-18.7*LOG((f*10^6)/(5*10^9)) (TBD) dB
Add Figure to illustrate insertion loss to crosstalk ratio limit.
Note: 2.5 dB of the 3 dB signal-to-noise ratio penalty related to insertion loss deviation embodied in 802.3ap ICRmin is applied as 2.5 dB ICRmin margin to account for reduction in ILD penalty for CR4 and CR10

Add new subclause below 85.9.x Cable assembly power sum differential crosstalk
 >>85.9.x Cable assembly insertion loss to crosstalk ratio (ICR)
The cable assembly insertion loss to crosstalk ratio (ICR) is the ratio of the cable assembly insertion loss to the total cable assembly crosstalk loss determined using Equation (89.xx).
ICR(f) = -IL(f) + PSXT(f) (TBD) dB
100MHz</=f</=5156.25 MHz
Add text: Assuming ICR is computed at N uniformly-spaced frequencies fn spanning the frequency range 100 MHz to 5156.25 MHz,
ICRfit may be computed using Equations (85-x) through (85-x); utilize Equations (69B-19) through (69B-23.

Add text: ICRfit shall be greater than or equal to ICRmin as defined by the following equation:Add TBD to equation as contributions from IL and power sum crosstalk to ICR under consideration.

Add equation: ICRfit(f)>/=ICRmin(f)=23.3-18.7*LOG((f*10^6)/(5*10^9)) (TBD) dB

Add Figure to illustrate insertion loss to crosstalk ratio limit.

Cl **85**   *SC* **9.3**   *P* **186**   *L* **3**   # 580

Ghiasi, Ali   Broadcom

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

It is not clear how the HOST NEXT is accounted for in current draft and there is nothing that prevents the host having excessive NEXT. If the amount of NEXT and FEXT for the host is equal to the test board the cable are tested with then the curent methodology hold. I can see case there will be double counting of NEXT and FEXT in the case of a low noise host but in the cases of noisy noisy host NEXT and FEXT can be under-estimated under estimated.

SuggestedRemedy

To eliminated the case of noisy host, the host NEXT and FEXT must also meet 85-4, 85-5, and 85-6 equations.

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: corrected missing subclause number 85.9.3 to subclause field]

Add editor's note in 85.9.x channel ICR: [Editor's note (to be removed prior to publication) - (TBD) considerations for crosstalk contributions from Tx_pcb and Rx_pcb need to be considered in the channel ICR]

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 **85**   Page 115 of 162
SC **9.3**   12/18/2008 11:15:40 P

Cl **86**   *SC* **86.1**   *P* **199**   *L* **16**   # 260
Vanderlaan, Paul   Nexans

Comment Type **E**   *Comment Status* **R**

Change from:
Table 86-1
Type A1a.2a (50/125 ìm multimode) "OM3"

SuggestedRemedy

Change to:
Table 86-1
Type A1a.2a (50/125 ìm multimode) "OM3 or better"

Indicates higher performing fibers will be suitable

Response   *Response Status* **C**
REJECT.

[Editor's note: corrected subclause number to 86.1 in subclause number field]

One is always allowed to use better; no need to say it.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **16**   # 630
CHANG, Frank   Vitesse

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

To make Fiber type OM3 clear.

SuggestedRemedy

Suggest to be consistent with Clause 52.5 10GBASE-S definition, indicating 2000MHz.km Minimum modal BW @850nm.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change footnote "a" from "Specified in IEC 60793-2-10" to "Specified in IEC 60793-2-10. See 86.10.2.1"

Cl **86**   *SC* **86.1**   *P* **199**   *L* **21**   # 583
Ghiasi, Ali   Broadcom

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

In some applications products will be developed dual purpose, 40GbE or 4 10GbE per CL 52. These products will be able to operate longer and on leacy OM1 and PM2 fibres. A note should be added to the reach with Ref to CL 52

SuggestedRemedy

Note. If the transmitter and receiver are compliant to IEEE 10GBase-S CL 52.5 the reach on OM3 fibre would be 300 m.

Response   *Response Status* **C**
REJECT.

[Editor's note: subclause number changed from 1 to 86.1]

Duplicates comment 582.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **21**   # 582
Ghiasi, Ali   Broadcom

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

In some applications products will be developed dual purpose, 40GbE or 4 10GbE per CL 52. These products will be able to operate longer and on leacy OM1 and PM2 fibres. A note should be added to the reach with Ref to CL 52

SuggestedRemedy

Note. If the transmitter and receiver are compliant to IEEE 10GBase-S CL 52.5 the reach on OM3 fibre would be 300 m.

Response   *Response Status* **C**
REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: subclause changed from 1 to 86.1]

4 or 10 x 10GBASE-S is not the same PMD as 40GBASE-SR4 or 100GBASE-SR10 and this clause would not apply in that scenario.

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 **86**
SC **86.1**

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Cl **86**   *SC* **86.1**   *P* **199**   *L* **22**   # 54
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
In Table 86-1 the abbreviation "Gbd" should be "GBd"

SuggestedRemedy
change "Gbd" to "GBd"

Response   *Response Status* **C**
ACCEPT.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **22**   # 73
Chung, Hwan Seok   ETRI

Comment Type   **T**   *Comment Status* **A**
At Table 86-1, the unit for signaling rate should be 'GBd', not 'Gbd'.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **23**   # 302
Oulundsen III, George   OFS

Comment Type   **E**   *Comment Status* **R**
Footnote to Table 86-1: Should we add reference to the TIA-492AAAC-A standard. The
IEC standard is currently referenced.

SuggestedRemedy

Response   *Response Status* **C**
REJECT.

See response to comment #305.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **32**   # 55
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
This says "The purpose of each PHY sublayer is summarized in 82.1.4. 40 Gb/s and 100
Gb/s Ethernet is introduced in Clause 80." which would be better re-arranged

SuggestedRemedy
Change to "40 Gb/s and 100 Gb/s Ethernet is introduced in Clause 80 and the purpose of
each PHY sublayer is summarized in 82.1.4."

Response   *Response Status* **C**
ACCEPT.

Cl **86**   *SC* **86.1**   *P* **199**   *L* **34**   # 289
Anslow, Peter   Nortel Networks

Comment Type   **E**   *Comment Status* **A**
Several very minor editorial issues in clause 86 collected in to one comment.

SuggestedRemedy
Clause 1 should be an internal cross-reference page 199 line 34
Annex A should be an internal cross-reference page 199 line 35
Clause 45 should be an internal cross-reference page 199 line 40
Clause 45 should be an internal cross-reference page 203 line 21
"." missing at the end of the sentence page 209 line 54
Seperator too thick below "Nominal core diameter" page 219 line 22

Response   *Response Status* **C**
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 **86**
SC **86.1**

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12/18/2008 11:15:40 P

Cl **86**   *SC* **86.1**   *P* **199**   *L* **8**   # 137
D'Ambrosia, John   Force10 Networks

Comment Type **E**   *Comment Status* **A**   *Review*
Overview is done in a manner that is inconsistent with other PMD clauses in 802.3ba

SuggestedRemedy
Put text below and Table 86-2 in front of current "Overview" intro text.
This clause specifies the 40GBASE-SR4 PMD and 100GBASE-SR10. In order to form a
complete PHY, the desired PMD shall be connected to the appropriate sublayers (see
Table 86-1) and with the management functions that are optionally
accessible through the management interface defined in Clause 45, or equivalent.

Renumber current Table 86-1 to 86-2.

Label new Table 86-1 as
Table 86-1-PHY (Physical Layer) clauses associated with the 40GBASE-SR4 and
100GBASE-SR10 PMDs

add row in new table 86-1 for Annex 83A-XLAUI - mark optional under 40G and "na" under
100G
add row in new table 86-1 for Annex 83A-CAUI - mark optional under 100G and "na" under
40G

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

It is consistent (can see that by reading lines 31-40 first) although it looks like clauses 58,
59, and it provides an overview to help first-time readers. Add nAUI to table but explain
that it's not applicable next to the PMD.<CR>As to ' In order to form a complete PHY, the
desired PMD shall be connected to the appropriate sublayers (see Table 86-1)...', see line
37. The preferred first words are now 'When forming a complete PHY' (e.g. Clause 72;
acknowledging that a PMD can still be compliant even if not connected). Strictly, the PMD
is connected to only three things; PMA, management, and medium through MDI. It cannot
be asked about higher sublayers - if that is desired it should be done in Clause 80. As to
'management functions that are optionally accessible through the management interface
defined in Clause 45, or equivalent.', 86, 87 and 88 have has 'management functions that
may be accessible through the management interface defined in Clause 45.' In general
management is optional as well as the form of its interface (for some clauses in e.g. BP
Ethernet this is not the case).
As to table 'PHY (Physical Layer) clauses associated with the 40GBASE-SR4 and
100GBASE-SR10 PMDs', this table exists in 86, 87 and 88 as 'PMD type and associated
clauses'. The RS is not part of the PHY although it is part of the Physical Layer.

Cl **86**   *SC* **86.1**   *P* **201**   *L* **22**   # 75
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **A**
'XLMII' is written at line 22 below Table 86-2.

SuggestedRemedy
'XLMII' has to be replaced by 'XLGMII'

Response   *Response Status* **C**
ACCEPT.

Cl **86**   *SC* **86.1**   *P* **201**   *L* **23**   # 76
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **A**
'XLMII' is written at line 23 below Table 86-2.

SuggestedRemedy
'XLMII' has to be replaced by 'XLGMII'

Response   *Response Status* **C**
ACCEPT.

[Editor's note: subclause changed from 1 to 86.1]

Cl **86**   *SC* **86.1**   *P* **208**   *L* **12**   # 560
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**
PWS (Pulse Width Shrinkage) a critical parameter is missing from table 86-6 list of
parameters.

SuggestedRemedy
Puropose to add PWS (Pulse Width Shrinkage) with 0.1 UI value.
PWS is measured per FC-PI-4 Annex A.1.3.2 using PRBS9 pattern

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See response in comment 476

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 **86**
SC **86.1**

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Cl **86**   *SC* **86.1**   *P* **217**   *L* **44**   # 146
D'Ambrosia, John   Force10 Networks

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

organization of 86.10 is not done in a manner consistent with 87.12 and 88.13 (which is consistent with 52.14).

SuggestedRemedy

organize and name in manner consistent with 87.12 and 88.13.
Change title of 86.10 to "Characteristics of the fiber optic cabling (channel)
Change title of 86.10.1 to "Optical Fiber Cable"
change 86.10.2 to 86.11
Add 86.10.2 Optical fiber connection - An optical fiber connection, as shown in Figure 86-5 consists of a mated pair of optical connectors for the appropriate number of fibers for the PMD type.
change 86.10.2.2 to 86.10.2.1 - Connection insertion loss
change 86.10.2..2.1 to 86.10.2.2 - Maximum discrete reflectance
change 86.10.2.3 to 86.10.3

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The organisation is consistent with other clauses. The subclauses have been grouped together under 86.10 Optical channel to distinguish them from the electrical channel.

Add a Maximum discrete reflectance subclause containing a specification of -20 dB

Cl **86**   *SC* **86.1**   *P* **219**   *L* **3**   # 357
Dawe, Piers   Avago Technologies

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

A question and two editor's notes on this page

SuggestedRemedy

Consult the experts and clear up.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "simplex[?]" to "unidirectional"

Cl **86**   *SC* **86.10.1**   *P* **218**   *L* **1**   # 210
Mellitz, Richard   Intel Corporation

Comment Type **ER**   *Comment Status* **R**   *Review*

Avoid s-parameter designations and keep loss definition consistent in document. Figure 86-5

SuggestedRemedy

Make loss positive dB
Channel loss is IL not SDD21

Response   *Response Status* **C**

REJECT.

[Editor's note: corrected subclause number to 86.10.1 in subclause number field]

S-parameters are very well established and are a good way of presenting the information; see e.g. diminico_02_0708.pdf slide 22.

Cl **86**   *SC* **86.10.1**   *P* **218**   *L* **45**   # 308
Oulundsen III, George   OFS

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

Table 86-17: Currently, there are a lot of TBDs regarding skew constraints. The 802.3ba Task Force adopted "kolesar_02_0508.xls" as the MMF cable skew spreadsheet model. At that time we understood that the values could change, but the concept of the model spreadsheet was adopted. Should we use the values proposed in "kolesar_02_0508.xls" as a starting point and replace the TBD with the model values where we can? Better values can be entered when discovered.

SuggestedRemedy

Replace the TBD for "Cabling Skew Max" value with the value of 45.4 ps/m or 4.54 ns for 100-m of MMF cable given in "kolesar_02_0508.xls". See the presentation "kolesar_01_0508.pdf" for reference.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Since the resolution of comment 240 has set the maximum skew at SP3 to 44 ns and the maximum skew at SP4 to 144 ns, change the Cabling skew value from "TBD" to "100 ns"

See comments # 355, 517.

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 **86**   Page 119 of 162
SC **86.10.1**   12/18/2008 11:15:40 P

Cl **86**   *SC* **86.10.1**   *P* **218**   *L* **45**   # 355
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *Skew*
Skew of medium per Gustlin is 45 UI (4.5 ns).

SuggestedRemedy
If this seems high, revisit the stress assumptions in the skew model.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
See resolution of comment # 308

See also comments 517.

Cl **86**   *SC* **86.10.1**   *P* **218**   *L* **46**   # 517
Kolesar, Paul   CommScope

Comment Type **T**   *Comment Status* **A**   *Skew*
Cabling skew value is presently TBD and needs to be defined.

SuggestedRemedy
Replace TBD with 4.5. This value is consistent with the worst-case value for a 100 m link
as determined using the MM skew model kolesar_02_0508.xls.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See resolution of comment # 308

See comments # 355.

Cl **86**   *SC* **86.10.2**   *P* **219**   *L* **2**   # 518
Kolesar, Paul   CommScope

Comment Type **T**   *Comment Status* **A**
The insertion loss measurment referenced in under revision and has passed CVD ballot
and is entering FDIS stage. The methods have been renamed. Method 2 is becoming the
method of Annex A.

SuggestedRemedy
Replace "Method 2" with "Annex A".

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add this information as an editor's note and adopt it when the new IEC 61280-4-1 is
published.

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **10**   # 519
Kolesar, Paul   CommScope

Comment Type **TR**   *Comment Status* **A**   *Fibre specs*
The present specification references a fiber specification as if it were a cabling
specification. This can be remedied by referencing the cabling specifications for ribbon
and multifiber cable forms, and also stating that the fiber contained within these cable shall
meet the OM3 fiber performance code. The presently referenced cable specs are
inappropriate, as the first is for simplex and duplex indoor cable, and the second for
premises outdoor cable.

SuggestedRemedy
Replace:
The 40GBASE-SR4 and 100GBASE-SR10 fiber optic cabling shall meet the requirements
of IEC 60793-2-10 and the requirements given in Table 86-18, where they differ. Multimode
cables chosen from [Editor's note (to be removed prior to publication) - Insert additional
reference for multiway cable if appropriate], IEC 60794-2-11 or IEC 60794-3-12 may be
suitable.
With:
The 40GBASE-SR4 and 100GBASE-SR10 fiber optic cabling shall meet the requirements
of IEC 60794-2-21 or IEC 60794-2-31. The fiber contained within these cables shall meet
the requirements of IEC 60793-2-10 type A1a.2.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

40GBASE-SR4 and 100GBASE-SR10 can operate over duplex cables (using several
pairs); special ribbon cable is not required.

Change first two sentences of 86.10.2.1 to:
The fiber contained within the 40GBASE-SR4 and 100GBASE-SR10 fiber optic cabling
shall meet the requirements of IEC 60793-2-10 type A1a.2 and the requirements given in
Table 86-18, where they differ. A variety of multimode cable types may fulfil these
requirements, provided the resulting channel also meets the cabling skew requirement in
Table 86-17.

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 **86**   Page 120 of 162
SC **86.10.2.1**   12/18/2008 11:15:40 P

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **12**   *#* 68
Chung, Hwan Seok   ETRI

Comment Type **T**   *Comment Status* **A**   *Fibre specs*
As editor recomended, it will be better to insert addtional reference for multimode fiber. So, change from "Multimode cables chosen from IEC 60792-2-11 or IEC 60794-3-12 may be suitable," to "Multimode cables chosen from TIA/EIA-492AAAC,ISO/IEC-11801,IEC 60792-2-11 or IEC 60794-3-12 may be suitable."

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See response to comment # 519

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **27**   *#* 356
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *Fibre specs*
3.5 dB/km for fibre cable loss seems pretty gross, much higher than the uncabled fibre loss. Is it still that bad?

SuggestedRemedy
?

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

The value of 3.5 dB is still current in ISO/IEC 11801 Ed 2.0

Replace "3.5 TBD" with "3.5" in Table 86-18

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **29**   *#* 486
Dudek, Mike   JDSU

Comment Type **TR**   *Comment Status* **A**   *Fibre specs*
I understand that the chromatic specifications for OM3 fiber are now tighter than listed here.

SuggestedRemedy
Change the max value of the zero disperions wavelength from 1320nm to 1316nm.
Change the Chromatic dispersion slope max line to 0.1028 for 1300<=lambda <= 1316 and
....

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Replace the zero dispersion wavelength value with:
1295 <= lambda0 <= 1340

Replace the dispersion slope value with:
<= 0.105 for 1295 nm <= lambd0 <= 1310
<= 0.000375(1590 - lambda0) for 1310 nm <= lambda0 <= 1340 nm

See also comment # 520

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **29**   *#* 520
Kolesar, Paul   CommScope

Comment Type **TR**   *Comment Status* **A**
The dispersion characteristics quoted have been superseded. The third edition of IEC 60793-2-10 published in 2006 adjusted the characteristics to more closly reflect that actual dispersion characteristics of 50um fibers. Requiring the fiber to meet IEC 60793-2-10 makes repeating the dispersion characteristic in table 86-18 redundant. But if these specs must be repeated, then they should be in harmony with the IEC spec.

SuggestedRemedy
Replace the zero dispersion wavelength value with:
1295 < lambda0 < 1340

Replace the dispersion slope value with:
< 0.105 for 1295 nm < lambd0 < 1310
< 0.000375(1590 - lambda0) for 1310 nm < lambda0 < 1340 nm

Note: All the above < symbols should be "less than or equal to" symbols.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
[Page changed from 210 to 219]

See response to comment # 486

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 **86**
SC **86.10.2.1**

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12/18/2008 11:15:40 P

Cl **86**   *SC* **86.10.2.1**   *P* **219**   *L* **34**   # 306
Oulundsen III, George   OFS

Comment Type   **E**   *Comment Status* **A**   *Fibre specs*
Footnote to Table 86-18: Reference is made to TIA-492AAAC-2002 and the question is asked if there is an IEC equivalent. The answer is yes. The IEC equivalent is IEC 60793-1-49:2006.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

In Table 86-18 change "Effective modal bandwidth" to "Effective modal bandwidth (min)"

Change
"Effective modal bandwidth for fiber meeting TIA/EIA-492AAAC-2002 [Editor's note (to be removed prior to publication) - Is there an IEC equivalent now?] when used with sources meeting the wavelength and encircled flux specifications
of Table 52-7."
to
"When measured with the launch conditions specified in Table 86-8"

See comment #520.

Cl **86**   *SC* **86.10.2.2.1**   *P* **219**   *L* **43**   # 382
King, Jonathan   Finisar

Comment Type   **TR**   *Comment Status* **A**
The TBDs in 86.10.2.2.1 are inconsistent with the standard cabling model shown in Fig 86-5

SuggestedRemedy
Make text consistent with other SR applications. Paragraph should become:
The maximum link distances for multimode fiber are calculated based on an allocation of 1.5 dB total connection and splice loss. For example, this allocation supports 2 connections with an average insertion loss per connection of 0.75 dB. Connections with different loss characteristics may be used provided the requirements of Table 86-17 and Table 86-18 are met.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change paragraph to:
The maximum link distances for multimode fiber are calculated based on an allocation of 1.5 dB total connection and splice loss. For example, this allocation supports 2 connections, each with an insertion loss of 0.75 dB. Connections with different loss characteristics may be used provided the requirements of Table 86-17 and Table 86-18 are met.

See also comment # 348.

Cl **86**   *SC* **86.10.2.3**   *P* **220**   *L* **4**   # 163
D'Ambrosia, John   Force10 Networks

Comment Type   **T**   *Comment Status* **R**
no connectors waere proposed in baseline for BASE-SR PMDs.

SuggestedRemedy
Replace references to IEC 61753-1-1 and IEC 61753-022-2 with TBD.

Response   *Response Status* **C**
REJECT.

Specifications are for performance and do not apply to specific connector types

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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 **86**
SC **86.10.2.3**

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12/18/2008 11:15:41 P

Cl **86**   *SC* **86.10.2.3**   *P* **220**   *L* **6**   # 515

Kolesar, Paul   CommScope

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

The MPO connector is the form of choice on cabling infrastructure supporting array connectivity. It is also the connector selected in MSAs like the QSFP and SNAP12. Unlike past standardization periods where two-fiber connector forms were hotly debated, the MPO is virtually uncontested in the array connectivity space. This permits straight forward specification of the MPO to terminate the cabling at the MDI. Note that the proposed interface type 7-4 permits from 2 to 24 fibers. It is expected that this may be further defined to be fiber-count specific. This specificity is already possibel in the cans of 40GBASE-SR4 as the 12 fiber type. It may be either 12 or 24 fibers as the MSA for 100GBASE-SR10 is defined.

SuggestedRemedy

Add the following:
The connector type terminating the cabling at the MDI shall meet the specifications of IEC 61754-7 interface 7-4 (MPO female plug connector with flat interface).

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add an editor's note to say that the MPO connector is an example of a suitable connector for the MDI

Cl **86**   *SC* **86.2.1**   *P* **202**   *L* **44**   # 344

Dawe, Piers   Avago Technologies

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

Accepting the proposed delay limits.

SuggestedRemedy

Accept the proposed delay limits. If we continue to specify delay in BT, change 'bit-times' to 'MAC bit-times' twice. Now that reviewers have had a chance to read the editor's note, delete it.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change first two sentences of clause 86.2.1 to:
"A 40GBASE-SR4 PMD shall incur a round-trip delay (transmit and receive) of not more than 1024 bit-times, or 2 pause_quanta, including 2 m of fiber. A 100GBASE-SR10 PMD shall incur a roundtrip delay (transmit and receive) of not more than 2048 bit-times, or 4 pause_quanta, including 2 m of fiber."

Also delete editor's note.

The commenter is invited to submit a comment regarding changing 'bit-times' to 'MAC bit-times' against the whole draft rather than one PMD type.

See also comment #317

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **86**   Page 123 of 162
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **86.2.1**   12/18/2008 11:15:41 P
SORT ORDER: Clause, Subclause, page, line

Cl **86**   *SC* **86.2.2**   *P* **203**   *L* **10**   # 393
Petrilla, John   Avago Technologies

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

The attribute skew is not defined nor does there appear a defined measurement. While this may not be essential in the logical domain, where dynamic skew is being considered and the signals are electrical or optical it appears important to define skew such that jitter is not included.

SuggestedRemedy

Add a skew measurement sub-clause to clause 86.7 such that jitter is not captured in the skew measurement.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert a new subclause to define the measurement of skew and dynamic skew on multimode fibers containing an editor's note as a placeholder including the principle that the dynamic skew does not double count jitter and that the definition of skew in clause 82.2.9 may need to be modified.

Also add a new subclause to clause 87 to define the measurement of skew and dynamic skew for a WDM based PMD containing an editor's note as a placeholder.

Also add a new subclause to clause 88 referring to the measurement definition in clause 87.

Cl **86**   *SC* **86.2.2**   *P* **203**   *L* **10**   # 345
Dawe, Piers   Avago Technologies

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

Proposing skew limits

SuggestedRemedy

For overall skew, see Gustlin presentation. For dynamic skew: 200 ps from PMA, 100 ps PMD Tx add, 700 ps medium add, 200 ps PMD Rx add, giving 1200 ps returned to PMA. Remove editor's note.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
Insert editors note at the end of clause 86.2.2 to say:
"The dynamic skew limit at SP2 may be too high, further information is invited"

Commenter is invited to review the implementation of the resolution of comment #240 in draft 1.1 and comment against that if it is not acceptable

Cl **86**   *SC* **86.2.2**   *P* **203**   *L* **13**   # 516
Kolesar, Paul   CommScope

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

The maximum skew and dynamic skew for the multimode fiber medium are TBDs that require values. The values suggested are calculated using the skew model adopted by the TF in May 2008 found in kolesar_02_0508.xls with the default worst-case parameters at a link length of 300 m to allow for the possibility of extended reach technologies. Engineering the de-skew circuits to handle this amount of skew will permit support for possible future enhancements. Note that the skew value suggested here three times larger than that suggested in another comment submitted against line 46 of page 218 (table 86-17) wherein the channel distance is explicitly defined as a 100 m maximum.

SuggestedRemedy

Replace the existing sentence with:
The delays through the medium shall match to within 13.6 ns and do not change by more than 20.3 ns including the effects of varying launch conditions and operating wavelength.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Same resolution as comment # 345

Cl **86**   *SC* **86.2.2**   *P* **203**   *L* **817**   # 307
Oulundsen III, George   OFS

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

Currently, there are a lot of TBDs regarding skew constraints. The 802.3ba Task Force adopted kolesar_02_0508.xls as the MMF cable skew spreadsheet model. At that time we understood that the values could change, but the concept of the model spreadsheet was adopted. Should we use the values proposed in kolesar_02_0508.xls as a starting point and replace the TBD with the model values where we can? Better values can be entered when discovered.

SuggestedRemedy

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Same resolution as comment # 345

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   *Cl* **86**   Page 124 of 162
SORT ORDER: Clause, Subclause, page, line   *SC* **86.2.2**   12/18/2008 11:15:41 P

Cl **86**   *SC* **86.4.1**   *P* **204**   *L* **30**   *#* 346
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status*   **A**
   Editor's note

SuggestedRemedy
   See Anslow presentation and comment, remove editor's note

Response   *Response Status*   **C**
   ACCEPT.

   Replace Figure 86-2 with the version shown in anslow_05_1108.pdf
   Also remove editor's note.
   See also comment # 298.

Cl **86**   *SC* **86.4.2**   *P* **204**   *L* **47**   *#* 392
Petrilla, John   Avago Technologies

Comment Type   **E**   *Comment Status*   **A**
   The phrase, the four or ten, is introduced and used in several places. Previously, page
   199, line 30, the term, n + 1, is used and is more succinct.

SuggestedRemedy
   Except for page 199, replace all instances of the phrase, the four or ten, with n + 1.

Response   *Response Status*   **C**
   ACCEPT IN PRINCIPLE.

   Deleted a few "four or ten"s and one erroneous n.

Cl **86**   *SC* **86.4.2**   *P* **204**   *L* **51**   *#* 578
Ghiasi, Ali   Broadcom

Comment Type   **TR**   *Comment Status*   **A**
   Transmit function is missing AC coupling

SuggestedRemedy
   Transmit function include AC coupling.

Response   *Response Status*   **C**
   ACCEPT IN PRINCIPLE.

   Give editor licence to modify the draft to include AC coupling in the PMD transmit side and
   receive side.

Cl **86**   *SC* **86.4.2**   *P* **205**   *L* **1**   *#* 298
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status*   **A**
   During the review of version 0.9 of the draft, some issues were raised concerning the block
   diagrams in clauses 86, 87 and 88. These diagrams should be clear and also consistent
   with each other and with Figure 86-3 for the symbols used for optical and electrical
   connectors

SuggestedRemedy
   Replace Figures 86-1, 87-1 and 88-1 with those shown in anslow_05_1108.pdf

Response   *Response Status*   **C**
   ACCEPT IN PRINCIPLE.

   Replace Figures 86-2, 87-2 and 88-2 with those shown in anslow_05_1108.pdf

   For Fig 86-2, this is same as comment # 346.

Cl **86**   *SC* **86.4.3**   *P* **205**   *L* **29**   *#* 579
Ghiasi, Ali   Broadcom

Comment Type   **TR**   *Comment Status*   **A**
   AC coupling are missing from receive function

SuggestedRemedy
   Receive function include AC coupling.

Response   *Response Status*   **C**
   ACCEPT IN PRINCIPLE.
   See resolution of comment 578

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 **86**
SC **86.4.3**

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12/18/2008 11:15:41 P

Cl **86**   *SC* **86.5**   *P* **207**   *L* **18**   # 347
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**

Note to clause editor: check that 'There are no lane assignments' is compatible with e.g. lane by lane signal detect function.

SuggestedRemedy

Per comment

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Also see comment # 474.

Cl **86**   *SC* **86.5**   *P* **207**   *L* **21**   # 303
Oulundsen III, George   OFS

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

Remove the word "with". This appears to be a typographical error.

SuggestedRemedy

Response   *Response Status* **C**

ACCEPT.

It wasn't, but the sentence works without it.

Cl **86**   *SC* **86.5**   *P* **207**   *L* **21**   # 474
Dudek, Mike   JDSU

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

Although there are no requirements on the physical location of the various lanes within the group of lanes there is a requirement for knowing which fibers in the MTP are used for Tx, which are used for Rx and which are not used.

SuggestedRemedy

insert the word "electrical" so that the sentence becomes ".... where the electrical lanes are physically....."

insert two subsections.
"86.5.1 Optical lane assignments for 40GBASE-SR4
Although the location of lanes within the group of Tx lanes is not required, it is necessary to define the positions of the Tx lanes and Rx lanes within the ribbon fiber connector.   Figure xxx shows the location.
86.5.2 Optical lane assignments for 100GBASE-SR10
Although the location of lanes within the group of Tx lanes is not required, it is necessary to define the positions of the Tx lanes and Rx lanes within the ribbon fiber connector.   Figure yyy shows the location."

Figure xxx to be as in INF-8438i figure 20 with the following changes.   Title becomes 40GBASE-SR MDI optical receptacle and channel orientations. Replace the row saying Fiber number with "Fiber positions xxxxxxxxxxxxxx (12 x's). Replace the numbers in the Transmit and recieve Channel rows with xxxx . Add an additional row with "Unused positions" and place XXXX in the middle 4 positions.

Figure yyy to say "TBD. Editors note to be removed prior to publication The figure will show the fibers at the edge of a 12 fiber ribbon as unused positions (ie fiber numbers 1 and 12 are unused.) "

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
In clause 86.5 Change "define where the lanes are physically" to "define where the electrical lanes are physically"

insert two subsections.
"86.5.1 Optical lane assignments for 40GBASE-SR4"
"86.5.2 Optical lane assignments for 100GBASE-SR10"
Add editor's note to each subclause to say presentations to define the contents of this subclause are invited.

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* **86**   Page 126 of 162
                                                                                          SC **86.5**   12/18/2008 11:15:41 P

Cl **86**		*SC* **86.6**				*P* **207**		*L*			# 138
D'Ambrosia, John					Force10 Networks

Comment Type **E**		*Comment Status* **R**							*Review*

Recommend creating Annex 86A and moving PPI electrical specifications, as the PPI might eventually be used with PMDs.

SuggestedRemedy

Move all PPI electrical specifications into Annex 86A.

Response			*Response Status* **C**

REJECT.

At present, only n0GBASE-SRn uses PPI although we hope to achieve some compatibility with Clause 83A and Clause 85, and we are more likely to do a good job of making PPI consistent with the rest of Clause 86 where it is. Best to develop it in place and then revisit this question when we go to WG ballot.

Cl **86**		*SC* **86.6.1**				*P* **208**		*L* **1**		# 475
Dudek, Mike					JDSU

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

It would be good to label Table 86-6 with "at TP1a" at the end of the title.

SuggestedRemedy

Response			*Response Status* **C**

ACCEPT.

[Editor's note: Added missing Clause, subclause (86.6.1), page and line numbers to appropriate fields]

Cl **86**		*SC* **86.6.1**				*P* **208**		*L* **10**		# 293
Anslow, Peter					Nortel Networks

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

In Table 86-6 There are two jitter parameters "TP1a Total Jitter output" and "TP1a Deterministic Jitter output" where it is not clear if this is UI peak to peak or not.
Also applies to:
Table 86-7 "Total Jitter tolerance at TP1a"
Table 86-11 "Total Jitter output at TP4"
Table 86-12 "Total Jitter tolerance"

SuggestedRemedy

Either change the parameter names to include "(pk-pk)" or change the units to be UIptp

Response			*Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to 402

Cl **86**		*SC* **86.6.1**				*P* **208**		*L* **11**		# 402
Petrilla, John					Avago Technologies

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

Table 86-6, has blank entries for TP1a Deterministic Jitter output and units of UI. There are several other instances of units for TJ and DJ shown as UI

SuggestedRemedy

For Table 86-6, TP1a Deterministic Jitter output, enter 0.15 in the Max column and change the Units column entry to UI pk-pk. Check other TJ and DJ entries in Tables 86-6, 7, 11 & 12 and, where appropriate, change UI to UI pk-pk.

Response			*Response Status* **C**

ACCEPT IN PRINCIPLE.

Create a subclause within clause 86.7.3 to define jitter measurements.
Add an editor's note to this subclause to say that when the jitter parameters and their measurement methods have been defined the units of the jitter parameters in the tables of clause 86 will be reviewed.

See also response to comment 476

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* **86**			Page 127 of 162
											SC **86.6.1**			12/18/2008 11:15:41 P

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **11**   # 476

Dudek, Mike   JDSU

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

Dj in the Tx has been shown by the SFF8431 committee to be a poorer predictor of link performance than DDPWS and DDJ

SuggestedRemedy

Replace the Deterministic Jitter Output rows in Table 86-6 and Table 86-7 with two rows.
"TP1a Data Dependent Jitter Output   Max TBD
"TP1a Data Dependent Pulse Width Shrinkage Output Max TBD
Add "editors note to be removed prior to publication. Max values of DDJ and DDPWS are TBD, however for comparison SFF8431 has DDJ max 0.1UI and DDPWS max 0.05UI."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 86-6 and 86-7, add a row "Data Dependent Pulse Width Shrinkage (DDPWS)" with unit "UI" and with "TBD" in the Max column for table 86.6 and the Min column for table 86-7.

Add an editor's note below table 86-6 to say that proposals have been made to replace Deterministic Jitter with Data Dependent Jitter or 99% Jitter. A value of 0.15 UI has been proposed for Dual Dirac Deterministic Jitter.

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **11**   # 477

Dudek, Mike   JDSU

Comment Type **TR**   *Comment Status* **A**   *S-par*

In order to ensure that reflections don't overally degrade performance, the differential return loss of the host needs to be specified.   To control EMI the common mode return loss of the host also needs to be specified.

SuggestedRemedy

Add rows to Table 86-6 after AC common mode.

"Differential output reflection coefficient, SDD22 Max see 86.6.1.1
Differential Output common mode reflection coefficient, SCC22 Max -6dB 10MHz to 2.5GHz, -3dB 2.5GHZ to 11.1GHz"

Change title and text of 86.6.1.1 to say "SDD11 at TP1 and SDD22 at TP1a" (ie 2 places)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: subclause changed from 86.6 to 86.6.1]

Add rows to Table 86-6 after AC common mode:
"Differential output reflection coefficient, SDD22"
 Max value: "see 86.6.1.1"

"Common mode output reflection coefficient, SCC22"
Max value: "see [new subclause created by comment 587]"

Change title and text of 86.6.1.1 to say "SDD11 at TP1 and SDD22 at TP1a" (ie 2 places)

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **11**   # 349

Dawe, Piers   Avago Technologies

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

Deterministic Jitter spec or 99% jitter spec? Also at PPI receive side.

SuggestedRemedy

?

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 476

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 **86**
SC **86.6.1**

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Cl **86**　　*SC* **86.6.1**　　　　　　*P* **208**　　*L* **11**　　　# 290
Anslow, Peter   Nortel Networks

Comment Type **E**　　*Comment Status* **A**
In Table 86-6 The "TP1a Deterministic Jitter output" min and max values are blank
Same issue for Table 86-7 "AC common mode input voltage tolerance" max

SuggestedRemedy
Make the "TP1a Deterministic Jitter output" min "-" and the Max "TBD" if no values are available
Make the "AC common mode input voltage tolerance" max "-"

Response　　　　　　　*Response Status* **C**
ACCEPT.

Cl **86**　　*SC* **86.6.1**　　　　　　*P* **208**　　*L* **12**　　　# 565
Ghiasi, Ali   Broadcom

Comment Type **TR**　　*Comment Status* **A**　　　　　　　　　*DJ*
The classical DJ and RJ measured jitter are jitter PDF dependent and not valid for jitter distribution which are not dual-dirac.

SuggestedRemedy
Repalce RJ with UJ of 0.025 UI (RMS) per IEEE CL 68.6.8 method
Replace DJ with DDJ of 0.15 UI per method of FC-PI4 A.1.3.1 with PSBS 9 pattern

Response　　　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

See response in comment 476

Cl **86**　　*SC* **86.6.1**　　　　　　*P* **208**　　*L* **14**　　　# 389
King, Jonathan   Finisar

Comment Type **TR**　　*Comment Status* **A**　　　　　　　*Elec Mask*
Table 86-6
Eye mask coordinates: X1,X2,Y1,Y2 and conditions contain TBDs.

Use SFP+MSA mask and coordinates for TP1

SuggestedRemedy
Use SFP+MSA mask and coordinates for TP1

Eye mask coordinates: X1,X2,Y1,Y2 become 0.12, 0.33, 95, 350
Condition becomes <5e-5 hit rate.

Response　　　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

A show of hands was taken as to whether to accept this proposal:
Yes 10
No 2

Eye mask coordinates: X1,X2,Y1,Y2 become 0.12, 0.33, 95, 350
Condition becomes <5e-5 hit ratio.

See also comments 403, 390, 404.

Cl **86**　　*SC* **86.6.1**　　　　　　*P* **208**　　*L* **14**　　　# 403
Petrilla, John   Avago Technologies

Comment Type **TR**　　*Comment Status* **A**　　　　　　　*Elec Mask*
In Table 86-6, there's a TBD for eye mask coordinate X2 and another in the Conditions column.

SuggestedRemedy
In Table 86-6, replace the TBD for eye mask coordinate X2 with 0.25 and delete the TBD in the Conditions column or replace it with a reference to subclause 86.7.4.7.

Response　　　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

See resolution to comment #389

See also comments # 389, 390, 404.

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 **86**
SC **86.6.1**

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Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **36**   # 56
Anslow, Peter   Nortel Networks

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

In table 86-7 the parameter "Total Jitter tolerance at TP1a" is at TP1a wheras the table title
says "at TP1"

SuggestedRemedy

change table title from "PPI electrical transmit signal input specifications at TP1" to "PPI
electrical transmit signal input specifications at TP1 and TP1a"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

change table title from "PPI electrical transmit signal input specifications at TP1" to "PPI
electrical transmit signal input specifications at TP1a"

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **37**   # 394
Petrilla, John   Avago Technologies

Comment Type   **T**   *Comment Status* **R**

In Table 86-7 the min entry for Total Jitter tolerance at TP1a has a value of 0.3. This has
insufficient precision for jitter since it permits a range of 0.25 to 0.349. All jitter entries
should have, at least, two significant digits.

SuggestedRemedy

In Table 86-7, change the min entry for Total Jitter tolerance at TP1a from 0.3 to 0.30.

Response   *Response Status* **C**

REJECT.

The task force believes a standard doesn't use the significant digits convention; it takes
things at face value.
This issue affects the whole 802.3 standard and should be submitted to the maintainence
task force

Do you agree with this response?
Yes 13
No   3

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **38**   # 584
Ghiasi, Ali   Broadcom

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

The classical DJ and RJ measured jitter are jitter PDF dependent and not valid for jitter
distribution which are not dual-dirac.

SuggestedRemedy

Repalce RJ with UJ of 0.025 UI (RMS) per IEEE CL 68.6.8 method
Replace DJ with DDJ of 0.15 UI per method of FC-PI4 A.1.3.1 with PSBS 9 pattern

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response in comment 476

Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **42**   # 404
Petrilla, John   Avago Technologies

Comment Type   **TR**   *Comment Status* **A**   *Elec Mask*

In Table 86-7 there's a TBD for Eye mask coordinate X2 and another in the Conditions
column.

SuggestedRemedy

In Table 86-7, replace the TBD for eye mask coordinate X2 with 0.25 and delete the TBD in
the Conditions column or replace it with a reference to subclause 86.7.4.7.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment #390

See also comment # 389, 390, 403.

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 **86**
SC **86.6.1**

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Cl **86**   *SC* **86.6.1**   *P* **208**   *L* **42**   # 390
King, Jonathan   Finisar

Comment Type **TR**   *Comment Status* **A**   *Elec Mask*
Table 86-7
Eye mask coordinates: X1,X2,Y1,Y2 and conditions contain TBDs.

Use SFP+MSA mask and coordinates for TP1

SuggestedRemedy
Use SFP+MSA mask and coordinates for TP1

Eye mask coordinates: X1,X2,Y1,Y2 become 0.12, 0.33, 95, 350
Condition becomes <5e-5 hit rate.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Eye mask coordinates: X1,X2,Y1,Y2 become 0.12, 0.33, 95, 350
Condition becomes <5e-5 hit ratio.

See also comments # 403, 389, 404.

Cl **86**   *SC* **86.6.2**   *P* **209**   *L*   # 309
Dallesasse, John   Emcore Corporation

Comment Type **TR**   *Comment Status* **R**
Given the target distance of 100 meters, we need to evaluate the possibility of eliminating
the encircled flux specification. This will likley be a challenging specification to meet over
temperature (or even at a single temperature on all lanes) for a parallel optical module.
General discussions on the expected impairment in modal bandwidth for an overfilled as
opposed to restricted launch into OM3 fiber suggest that eliminating encircled flux may be
possible, but further analysis of this question by an ad-hoc group may be necessary.

SuggestedRemedy
Eliminate the encircled flux specification from Table 86-8 and any other places referenced
in these clauses.

Response   *Response Status* **C**
REJECT.

[Editor's note: subclause changed from "Table 86-8" to "86.6.2"]

Removing the encircled flux specification would lead to an unknown fiber modal bandwidth
which could be less than that for overfilled launch and unknown connector loss (which
could be more than that for overfilled launch).

Cl **86**   *SC* **86.6.2**   *P* **209**   *L* **15**   # 631
CHANG, Frank   Vitesse

Comment Type **TR**   *Comment Status* **A**
Table 86-8 need more rows, lack parameters.

SuggestedRemedy
Suggest to edit the following
- Extra row for signaling speed as 4/10 x 10.3125GBd +/-100ppm.
- Add Average lanch power, each lane MIN specs as TBD
- ORL tolerance should be MAX, not min, specs.
- RIN12OMA should set to -128dB/HZ (-132dB/Hz would affect cost/yield)
- Add TDP specs as TBD.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: subclause changed from 86.82 to 86.6.2]

In Table 86-8
Add row for "Average lanch power, each lane" with a Min value of "TBD"
Change the "Optical return loss tolerance" to be a Max value
Change the value of "RIN12OMA" to be "-128 dB/Hz"

Cl **86**   *SC* **86.6.2**   *P* **209**   *L* **23**   # 395
Petrilla, John   Avago Technologies

Comment Type **T**   *Comment Status* **R**
In Table 86-8, values for entries Average launch power, Optical Modulation Amplitude
(OMA) and Extinction ratio show only one significant digit. These have insufficient
precision and should have two significant digits.

SuggestedRemedy
In Table 86-8, change the entries for Average launch power, Optical Modulation Amplitude
(OMA) and Extinction ratio to show two significant digits.

Response   *Response Status* **C**
REJECT.

See response to comment # 394.

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 **86**
SC **86.6.2**

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Cl **86**   *SC* **86.6.2**   *P* **209**   *L* **23**   # 478
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**   *Optical Power*

Optical receivers are in general limited by the peak power of the input signal (Average power is less important).   As the spec stands the receiver has to cope with the maximum input average power at infinite extinction ratio with the allowed eye mask overshoot.   This is much more than is likely to happen in practice.   We should limit the peak power explicitly.

SuggestedRemedy

Add extra rows to Tables 86-8, 86-9, 86-10.

Peak Power Max 3dBm. (no min)

To this row in table 86-8 add a footnote.   Peak Power is the maximum value of the power as measured on the eye diagram see 86.7.4.7

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert an editor's note that a possible peak power specification or a maximum OMA limit is under consideration for 40/100GBASE-SR

See also comment # 406.

Cl **86**   *SC* **86.6.2**   *P* **209**   *L* **24**   # 405
Petrilla, John   Avago Technologies

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

In Table 86-8, the characteristics, Optical Modulation Amplitude (OMA), Optical Modulation Amplitude(OMA), Aggregate signal parameter, and RIN12OMA can be replaced by using the Transmitter eye mask as the aggregate signal parameter.

SuggestedRemedy

In Table 86-8, delete or label as informative the characteristics, Optical Modulation Amplitude (OMA), Aggregate signal parameter, and RIN12OMA and use the Transmitter eye mask as the aggregate signal parameter.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

Cl **86**   *SC* **86.6.2**   *P* **209**   *L* **36**   # 406
Petrilla, John   Avago Technologies

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

In Table 86-8, the entry for Transmitter eye mask definition calls for X3, Y2 and Y3 coordinates which are not required, does not label the coordinates as Specification values and has TBD as entries in the Type and Value columns and no entry in the Unit column.

SuggestedRemedy

In Table 86-8, add a header row to label the Transmitter eye mask coordinates as Specification values (See Tables 86-6 & 7 as examples.), delete X3, Y2 and Y3 coordinates, split the remaining coordinates into two rows, one for X1 & X2 and the other for Y1 (againing using Tables 86-6 & 7 as examples), replace the TBD and enter 0.225 as the value for X1, 0.355 as the value for X2 and 176 as the value for Y1, enter UI as units for X1 & X2 and uW as units for Y1 and add a reference to subclause 86.7.4.7. Since there is no applicable figure in subclauses 86.6.2 or 86.7.4.7 (nor 83A.3.3.5) for Tx eye masks where Y1 is an absolute value, create a new figure and insert in subclause 86.6.2, 86.7.4.7 or where otherwise appropriate.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

More evaluation of this proposal is required before it could be incorporated in to the draft. See resolution of comment #385

Cl **86**   *SC* **86.6.3**   *P* **209**   *L* **52**   # 396
Petrilla, John   Avago Technologies

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

Including the phrase, "power in OMA" in the sentence, "A signal with power in OMA and average power not within the ranges given cannot be compliant." is not applicable if OMA is deleted from Table 86-8 or is changed to informative.

SuggestedRemedy

Change the sentence, A signal with power in OMA and average power not within the ranges given cannot be compliant, to, A signal with average power not within the ranges given cannot be compliant.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

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 **86**
SC **86.6.3**

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Cl **86**   *SC* **86.6.3**   *P* **209**   *L* **53**   # 57
Anslow, Peter   Nortel Networks

Comment Type   **T**   *Comment Status* **A**
This says "A signal with power in OMA and average power not within the ranges given cannot be compliant.". However either condition makes the signal non-compliant so it should be "or" not "and"

SuggestedRemedy
change "in OMA and average" to "in OMA or average"

Response   *Response Status* **C**
ACCEPT.

Cl **86**   *SC* **86.6.3**   *P* **210**   *L* **11**   # 397
Petrilla, John   Avago Technologies

Comment Type   **T**   *Comment Status* **A**   *Aggregate*
In Table 86-9, the characteristic, "Optical Modulation Amplitude (OMA), each lane", is not applicable if OMA is deleted from Table 86-8 or is changed to informative.

SuggestedRemedy
In Table 86-9, delete the characteristic, "Optical Modulation Amplitude (OMA), each lane", if OMA is deleted from Table 86-8 or is changed to informative.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

Cl **86**   *SC* **86.6.3**   *P* **210**   *L* **6**   # 348
Dawe, Piers   Avago Technologies

Comment Type   **T**   *Comment Status* **R**
Have we allowed enough for connector loss?

SuggestedRemedy
Check that we have allowed enough for 100 m of fibre and a reasonable number of connectors, remembering that with a restricted launch, the actual connector loss is less than the measured connector loss. Reduce the numbers in the minimum column by 0.1 dB if appropriate, and adjust Table 86-13, fill in TBDs in 86.10.2.2.1. Remove the footnote here.

Response   *Response Status* **C**
REJECT.

This comment was WITHDRAWN by the commenter.

See also comment # 382.

Cl **86**   *SC* **86.6.4**   *P* **210**   *L*   # 398
Petrilla, John   Avago Technologies

Comment Type   **T**   *Comment Status* **R**
In Table 86-10 Value entries for "Damage threshold" and "Average power at receiver input" show only a single significant digit and lack sufficient precision.

SuggestedRemedy
In Table 86-10 change Values entries for "Damage threshold" and "Average power at receiver input" to show at least two significant digits as needed for the desired precision.

Response   *Response Status* **C**
REJECT.

The number of significant digits does not indicate the precision of a limit in this standard. The limits are taken to be exact. For the damage threshold limit of +2 dBm, a value of 2.000001 would be compliant and a value of 1.9999999 would not.

See also comment # 394.

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 **86**
SC **86.6.4**

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Cl **86**   *SC* **86.6.4**   *P* **210**   *L* **35**   # 407
Petrilla, John   Avago Technologies

Comment Type **TR**   *Comment Status* **A**   *Optical Power*

In Table 86-10, Value column entries are TBD for attributes, Stressed receiver sensitivity in OMA, Vertical eye closure penalty, and Stressed eye jitter J.

SuggestedRemedy

In Table 86-10, change Value column TBD for Stressed receiver sensitivity in OMA to -5.4, Vertical eye closure penalty to 1.67, and Stressed eye jitter J to 0.37.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert editor's note under the Table 86.10 to say:
"Values of -5.4 dBm for Stressed receiver sensitivity in OMA, 1.67 dB for Vertical eye closure penalty and 0.37 UI Stressed eye jitter J have been proposed. Further information is invited"

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **19**   # 587
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**   *S-par*

With stacked connector -6 dB SCC can not be met which could eliminated SR10

SuggestedRemedy

Propose the following SCC2 mask
SCC22<= (-12 + 2.8*f) from 0.01 to 2.5 GHz and (-5.2+0.08*f) from 2.5 to 11.1 GHz.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a new subclause titled "Common mode output reflection coefficient SCC22 at TP4 and TP1a" to define the following SCC22 mask
SCC22<= (-12 + 2.8*f) from 0.01 to 2.5 GHz and (-5.2+0.08*f) from 2.5 to 11.1 GHz.

Change the values of "Common mode output reflection coefficient, SCC22" in Table 86-11 to refer to new subclause.

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **24**   # 605
Ghiasi, Ali   Broadcom

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

Total jitter at TP4 is 0.7 UI which is the same as SFP+ single channel. The SR4/SR10 optics are more relax than SR optics but the SerDes tolerance is the same.

SuggestedRemedy

The Total Jitter at TP4 for SR4 and SR10 should be 0.65 UI. Since CR4/CR10 TJ are 0.28 UI if the optical link does not close then TJ in table 86-6 and 86-7 are suggested to be reduced to 0.28 UI

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add an editors note under table 86-11 to say that a proposal has been made to reduce the "Total Jitter output at TP4" in Table 86-11 to 0.65 UI. supporting evidence for this would be required

---

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **27**   # 592
Ghiasi, Ali   Broadcom

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

MJSQ method of DJ and RJ breakdown is only valid for dual-Dirac jitter pdf, the DJ reported can even be 0 for cases the actual high freq jitter is very large.

SuggestedRemedy

Replace DJ with 99% probability jitter with symbol J2

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment 476

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **29**   # 408
Petrilla, John   Avago Technologies

Comment Type **TR**   *Comment Status* **A**   *Elec Mask*

In Table 86-11, there's a TBD for Eye mask coordinate X2 and another in the Conditions column.

SuggestedRemedy

In Table 86-11, change the TBD for Eye mask coordinate X2 from TBD to 0.50 and either delete the TBD in the Conditions column or change to reference subclause 86.7.4.7.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 86-11, change the TBD for Eye mask coordinate X2 from TBD to 0.50
Also change the TBD in the Conditions column to reference subclause 86.7.4.7.

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 **86**   Page 134 of 162
SC **86.6.5**   12/18/2008 11:15:41 P

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **41**   # 479
Dudek, Mike   JDSU

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

It is good to be explicit at what test point the specifications apply

SuggestedRemedy

Add at TP4a to the title of Table 86-12

Response   *Response Status* **C**

ACCEPT.

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **49**   # 593
Ghiasi, Ali   Broadcom

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

MJSQ method of DJ and RJ breakdown is only valid for dual-Dirac jitter pdf, the DJ reported can even be 0 for cases the actual high freq jitter is very large.

SuggestedRemedy

Replace DJ with 99% probability jitter with symbol J2

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add an editor's note below table 86-12 to say that proposals have been made to replace Deterministic Jitter with 99% Jitter.

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **49**   # 304
Oulundsen III, George   OFS

Comment Type **E**   *Comment Status* **R**

Table 86-12: I believe that the footnote superscript "a" should be added to the "Deterministic Jitter tolerance (pk-pk)" value of 0.40 in the "Min" column of the table. I believe that this is a typographical error.

SuggestedRemedy

Response   *Response Status* **C**

REJECT.

Maybe it was a typographical error in the baseline.

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **50**   # 480
Dudek, Mike   JDSU

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

In order to ensure that reflections don't overally degrade performance, the differential return loss of the host needs to be specified.   To control EMI the differential to common mode reflection coefficient of the host also needs to be specified.

SuggestedRemedy

Add rows to Table 86-12 after Deterministic jitter tolerane

"Differential input reflection coefficient, SDD11 Max see 86.6.5.1
Reflected Differential to common mode conversion, SCD11 Max -10dB 10MHz - 11.1GHz

Change title and text of 86.6.5.1 to say "SDD22 at TP4 and SDD11 at TP4a" (ie 2 places)

Response   *Response Status* **C**

ACCEPT.

Cl **86**   *SC* **86.6.5**   *P* **211**   *L* **52**   # 409
Petrilla, John   Avago Technologies

Comment Type **TR**   *Comment Status* **A**   *Elec Mask*

In Table 86-12, there's a TBD for Eye mask coordinate X2 and another in the Conditions column.

SuggestedRemedy

In Table 86-12, change the TBD for Eye mask coordinate X2 from TBD to 0.50 and either delete the TBD in the Conditions column or change to reference subclause 86.7.4.7.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 86-12, change the TBD for Eye mask coordinate X2 from TBD to 0.50
Also reference subclause 86.7.4.7 in the conditions

See also comment # 408.

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 **86**
SC **86.6.5**

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Cl **86**   *SC* **86.6.5.1**   *P* **212**   *L* **37**   # 305
Oulundsen III, George   OFS

Comment Type   **E**   *Comment Status* **R**

Footnote to Table 86-13: Should we add the TIA-492AAAC-A standard to footnote a. The IEC standard is already referenced.

SuggestedRemedy

Response   *Response Status* **C**
REJECT.

No; if international standards are available, we should use them. Now if TIA documents were free and IEC ones paid for, there would be an incentive.

Cl **86**   *SC* **86.6.6**   *P* **212**   *L* **26**   # 261
Vanderlaan, Paul   Nexans

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

Change From
"Effective modal bandwidth at 850 nm"

SuggestedRemedy

Change to:
"Minimum Effective modal bandwidth at 850 nm"

Indicates higher performing fibers will be suitable

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

[Editor's note: corrected subclause number to 86.6.6 in subclause number field]

This is an example, with 'worst allowed' fibre. See 86.10 for the actual specs. In Table 86-18, make Effective modal bandwidth a minimum.

Cl **86**   *SC* **86.6.6**   *P* **212**   *L* **34**   # 410
Petrilla, John   Avago Technologies

Comment Type   **TR**   *Comment Status* **A**   *Optical Power*

In Table 86-13 there's a TBD for Allocation for penalties.

SuggestedRemedy

In Table 86-13 change the TBD for Allocation for penalties to 6.8.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

change the TBD for Allocation for penalties to 6.4

And see comment # 632.

Cl **86**   *SC* **86.6.6**   *P* **212**   *L* **34**   # 632
CHANG, Frank   Vitesse

Comment Type   **TR**   *Comment Status* **A**   *Optical Power*

Allocation for penalty state TBD, which should be 8.3-1.9=6.4dB, the difference as compared with 10GABSE-SR should come related to the contribution from channel-to-channel xtalk.

SuggestedRemedy

Pls clarify.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See remedy of comment # 410.

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 **86**
SC **86.6.6**

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Cl **86**   *SC* **86.7.2**   *P* **214**   *L* **34**   # 481
Dudek, Mike   JDSU

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

For consistency and to ensure reproducible measurements the square test pattern with a fixed number of ones and zeros should be used for the measurements of OMA, and RIN.

The budgeting for the link assumes that the difference between the OMA for the Tx and the OMA for the Rx is the optical loss (average power).   If the prbs9 is used to measure OMA for the Tx while square wave is used for the Rx this may no longer be true as the prbs9 pattern and square wave pattern will not always give the same answer.   (If a vendor wishes to use prbs9 for production test the vendor should guard band his measurements for the differences the guard band being based on his own product characteristics.)

SuggestedRemedy

Make the measurements of OMA and RIN patterns Square eight ones and eight zeros for all three rows in standard font.   Remove the editor preference note. Change the footnote to say "The items in italics" instead of "The second column"

Response   *Response Status* **C**

ACCEPT.

Cl **86**   *SC* **86.7.3**   *P* **215**   *L* **1**   # 350
Dawe, Piers   Avago Technologies

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

For AC common mode voltage, Termination mismatch and Transition time, copy text from SFF-8431 D3.1 with appropriate modifications (this is not issued at time of writing but will be issued before the P802.3ba co-located interim)

SuggestedRemedy

Use text from SFF-8431 D3.1 with appropriate modifications (this is not issued at time of writing but will be issued before the P802.3ba co-located interim)

Response   *Response Status* **C**

ACCEPT.

And see comments # 482, 483.

Cl **86**   *SC* **86.7.3.1**   *P* **215**   *L* **3**   # 482
Dudek, Mike   JDSU

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

Missing definition of AC common mode voltage

SuggestedRemedy

Copy the section from SFF8431 D.15 with editorial changes to remove SFP+ references.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment 350

Cl **86**   *SC* **86.7.3.2**   *P* **215**   *L* **8**   # 483
Dudek, Mike   JDSU

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

Missing Test procedure for Termination mismatch.

SuggestedRemedy

Copy the section from SFF8431 D.16

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment 350

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 **86**
SC **86.7.3.2**

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Cl **86**   *SC* **86.7.4.1**   *P* **215**   *L* **20**   # 484
Dudek, Mike   JDSU

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

It is bad practice to specify things in two places.

SuggestedRemedy

Delete the test pattern description "appropriate portion........to end of sentence" and replace with "pattern defined in Table 86-15.

Do the equivalent at line 39.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "modulated using the appropriate portion of a valid 40GBASE-R4 or 100GBASE-R10 signal, or with a valid 10GBASE-R signal." to
"modulated using the test pattern defined in Table 86-15."

Also on line 39 change "using TBD test pattern or a valid 40GBASE-R4 or 100GBASE-R10 signal." to
"using the test pattern defined in Table 86-15."

Cl **86**   *SC* **86.7.4.3**   *P* **215**   *L* **28**   # 399
Petrilla, John   Avago Technologies

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

There is a proposal for Table 86-8 to replace OMA with an aggregate test. If accepted subclause 86.7.4.3 can be deleted or labeled as informative.

SuggestedRemedy

If the proposal for Table 86-8 to replace OMA with an aggregate test is accepted, deleted or labeled subclause 86.7.4.3 as informative.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

Cl **86**   *SC* **86.7.4.6**   *P* **215**   *L* **43**   # 391
Petrilla, John   Avago Technologies

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

There is a proposal for Table 86-8 to use the Tx eye mask as the aggregate test. If accepted subclause 86.7.4.6 can be deleted.

SuggestedRemedy

If proposal for Table 86-8 to use the Tx eye mask as the aggregate test is accepted, delete subclause 86.7.4.6.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

Cl **86**   *SC* **86.7.4.6**   *P* **215**   *L* **45**   # 485
Dudek, Mike   JDSU

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

We need to say what test pattern is on the channels not under test

SuggestedRemedy

Add the sentence. "The pattern on the lanes not under test should be prbs31 or valid 40GBASE-R encoded data.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the sentence: "The signal on the lanes not under test should be Pattern 3 (PRBS31) or a valid 40GBASE-R or 100GBASE-R signal."

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 **86**
SC **86.7.4.6**

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Cl **86**		*SC* **86.7.4.7**			*P* **215**		*L* **50**			# 385
King, Jonathan						Finisar

Comment Type	**T**		*Comment Status*	**A**					*Optical Mask*
Generic eye mask measurement details missing.

SuggestedRemedy
Use text from 802.3aq (Clause 68.6.5) describing fionite hit rate eye mask measurements.

Response			*Response Status*	**C**
ACCEPT IN PRINCIPLE.

Apply the changes in anslow_07_1108.pdf except for:
"In Table 86-8 set {X1, X2, X3, Y1, Y2, Y3} to {0.25, 0.40, 0.45, 0.25, 0.28, 0.40} with editor's note that the numbers are provisional." which leaves the eye mask in Table 86-8 "TBD"

Also add a second editor's note under the existing note in 86.7.4.7 to say "an absolute eye mask is being considered as the aggregate signal parameter for 40GBASE-SR4 and 100GBASE-SR10 replacing the relative mask defined in clause 86.7.4.7"

Cl **86**		*SC* **86.7.4.7.1**			*P* **216**		*L* **1**			# 292
Anslow, Peter						Nortel Networks

Comment Type	**E**		*Comment Status*	**A**
Clause 86.7.4.7.1 "Eye mask for TP1a and TP4" should be a subclause of 86.7.3 "Electrical parameters" and not 86.7.4 "Optical parameter definitions"

SuggestedRemedy
Move the "Eye mask for TP1a and TP4" clause to 86.7.3

Response			*Response Status*	**C**
ACCEPT IN PRINCIPLE.

Eye mask material now in three sections; common, electrical and optical

---

Cl **86**		*SC* **86.7.4.7.1**			*P* **216**		*L* **3**			# 401
Petrilla, John						Avago Technologies

Comment Type	**T**		*Comment Status*	**A**					*Aggregate*
There is a proposal for Table 86-8 to use the Tx eye mask as the aggregate test. Since this mask has an absolute values for the vertical coordinate, the sentence "Unlike the optical eye mask, the vertical dimensions are fixed rather than scaled to the signal." is no longer applicable

SuggestedRemedy
If proposal for Table 86-8 to use the Tx eye mask as the aggregate test is accepted, delete the sentence "Unlike the optical eye mask, the vertical dimensions are fixed rather than scaled to the signal."

Response			*Response Status*	**C**
ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

Cl **86**		*SC* **86.7.7.4**			*P* **215**		*L* **32**			# 400
Petrilla, John						Avago Technologies

Comment Type	**T**		*Comment Status*	**A**					*Aggregate*
There is a proposal for Table 86-8 to use the Tx eye mask as the aggregate test. If accepted subclause 86.7.4.4 can be deleted.

SuggestedRemedy
If proposal for Table 86-8 to use the Tx eye mask as the aggregate test is accepted, delete subclause 86.7.4.4.

Response			*Response Status*	**C**
ACCEPT IN PRINCIPLE.

This comment would need to be re-submitted if an aggregate signal parameter is accepted in to the draft.

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 **86**
SC **86.7.7.4**

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Cl **86**   *SC* **86.9**   *P* **217**   *L* **28**   # 209

Mellitz, Richard   Intel Corporation

Comment Type **ER**   *Comment Status* **R**   *Review*

Avoid s-parameter designations and keep loss definition consistent in document. Figure 86-5

SuggestedRemedy

Use A for attenuation.

Response   *Response Status* **C**

REJECT.

[Editor's note: corrected subclause number to 86.9 in subclause number field]

S-parameters are very well established and are a good way of presenting the information; see e.g. diminico_02_0708.pdf slide 22.

Cl **86**   *SC* **86.9**   *P* **217**   *L* **28**   # 353

Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *S-par*

Need a channel S-parameter equation

SuggestedRemedy

One way to develop one would be to scale the SFP+ channel by the ratio of recommended trace lengths, but the SFP+ equations don't have f^3 terms.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment # 585.

Cl **86**   *SC* **86.9**   *P* **217**   *L* **30**   # 585

Ghiasi, Ali   Broadcom

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

Max and min loss between PMA IC and TP1a and TP4a are listed as TBD

SuggestedRemedy

SDD21<=(-0.0788 -0.6169*SQRT(f) - 0.5855*f)
Min loss
SDD>=(2/6 - 2*f/6)
Where is in GHz
The maximum SDD21 assumes the HCB PCB loss at Nyquist is <=1.0 dB

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add editor's note in clause 86.9 to say
 The maximum loss at the Nyquist frequency for the host PCB trace under consideration is from 2.75 to 3.5 dB. The SDD21 equation includes the loss of the connector and the host compliance board.
an equation has been proposed as below:
SDD21<=(-0.0788 -0.6169*SQRT(f) - 0.5855*f)
Min loss
SDD>=(2/6 - 2*f/6)
Where is in GHz
The maximum SDD21 assumes the HCB PCB loss at Nyquist is <=1.0 dB

See also comment # 353.

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 **86**
SC **86.9**

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Cl **86**   *SC* **86.9**   *P* **218**   *L*   # 162
D'Ambrosia, John   Force10 Networks

Comment Type **T**   *Comment Status* **A**   *S-par*

the equations driving Figure 86-4 use variables that are TBD, therefore the figure should be
blank.

furthermore, Note Figure 86-4 is inconsistent with similar figures in 802.3. Loss is a
positive number.

SuggestedRemedy

remove curves in Figure 86-4

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Page 218. The frequency breaks are in the equations. Will turn the y axis 0 -2 etc to TBD
until the equations have parameters, then will redraw the figure.

Add "SDD21 limits are TBD see equation 86-3 and 86-4" to the figure

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Cl **87**   *SC* **87.1**   *P* **223**   *L* **12**   # 160
D'Ambrosia, John   Force10 Networks

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

Table 87-1 does not include reference to Annex 83A, XLAUI.

SuggestedRemedy

add row for Annex 83A, XLAUI and mark optional.

Response   *Response Status* **C**

ACCEPT.

Cl **87**   *SC* **87.1.1.2.3**   *P* **225**   *L* **23**   # 276
Anslow, Peter   Nortel Networks

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

It would be helpful to indicate where in clause 83 the effect of receipt is defined.
Also applies to 88.1.1.2.3

SuggestedRemedy

Change "in Clause 83" to "in 83.3.1.3"
Also make this change in 88.1.1.2.3

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the reference to 83.4 in 87.2.3.3 and 88.2.3.3

Cl **87**   *SC* **87.1.1.3.3**   *P* **225**   *L* **47**   # 277
Anslow, Peter   Nortel Networks

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

It would be helpful to indicate where in clause 83 the effect of receipt is defined.
Also applies to 88.1.1.3.3

SuggestedRemedy

Change "in Clause 83" to "in 83.3.3.3"
Also make this change in 88.1.1.3.3

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the reference to 83.4 in 87.2.3.7 and 88.2.4.3

Cl **87**   *SC* **87.11**   *P* **239**   *L* **14**   # 91
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **R**   *Optical*

In Table 87-13, 'DGD_max' is represented to describe the PMD (polarization mode
dispersion) specification. But 'DGD_max' is not sufficient to give the PMD specification of
the fiber link. Parameter of P(DGD_tot > DGD_max) is needed.(from the Method 2 of IEC
61282-3). P(DGD_tot > DGD_max) is the probability that a system DGD value, DGD_tot,
exceeds DGD_max.

SuggestedRemedy

Parameter of P(DGD_tot > DGD_max) per each lane is needed in Table 87-13.

Response   *Response Status* **C**

REJECT.
[Subclause changed from 11 to 87.11]

See response to comment 94

802.3 specifies only the DGD_max that the system must tolerate for BER within specified
limits . See clause 52.13. This is consistent with ITU specifications for optical systems (eg
G.691, G.959.1). Different users are able to tolerate different probabilities of the actual
DGD exceeding DGD_max, so it inappropriate to specify this value.

See also comments #92 and #93

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 **87**
SC **87.11**

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12/18/2008 11:15:42 P

Cl **87**   *SC* **87.11**   *P* **239**   *L* **15**   # 296

Anslow, Peter   Nortel Networks

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

In Table 87-13 the value of DGD_max is "TBD". The DGD_max value for 10GBASE_LR in
Table 52-24 is 10 ps. This equates to a link PMD coefficient of 0.8 ps/sqrt(km) (assuming
S = 3.75) and is expected to give only a small penalty at 10.3125 GBd.

SuggestedRemedy

In Table 87-13 set the value of DGD_max to 10 ps
See anslow_04_1108.pdf for more detail.

Response   *Response Status* **C**

ACCEPT.
See also comment 207

Cl **87**   *SC* **87.11**   *P* **239**   *L* **16**   # 381

King, Jonathan   Finisar

Comment Type **TR**   *Comment Status* **A**   *Optical Reflections*

In Table 87-13, Optical return loss is TBD dB
Limiting factor here is round trip reflections leading to coherent interference at the receiver.
Optical return loss 26dB or greater is consistent with Clause 52 10GBASE-ER Fibre optic
cabling channel characteristics; with a transmitter reflectance of -12dB max, this would
keep penalties due to cround trip coherent interference down to approx 0.25dB
....
also applies to Table 88-176

SuggestedRemedy

Last row of Table 87-13 becomes

Optical return loss (min) 26   dB
....

Last row of Table 87-13 becomes

Optical return loss (min) 26   26   26 dB

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Set values to 21 dB as per comment 487 and consistent with Clause 52.7.1

Cl **87**   *SC* **87.11**   *P* **239**   *L* **21**   # 92

Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **R**   *Optical*

In line 21, it is written that 'DGD_max is the maximum differential group delay that the
system must tolerate'. It is wrong. 'DGD_max' is defined in the Method 2 of IEC 61282-3.
'DGD_max' is defined with P(DGD_tot > DGD_max), which is the probability that a system
DGD value, DGD_tot, exceeds DGD_max. 'DGD_max' and 'P(DGD_tot > DGD_max)' give
the DGD specification of the fiber link.

SuggestedRemedy

The sentence 'DGD_max is the maximum differential group delay that the system must
tolerate' is needed to be replaced by ''DGD_max is defined in the Method 2 of IEC 61282-3'

Response   *Response Status* **C**

REJECT.
[Subclause changed from 11 to 87.11]
See response to comment 94

802.3 specifies only the DGD_max that the system must tolerate for BER within specified
limits . See clause 52.13. This is consistent with ITU specifications for optical systems (eg
G.691, G.959.1). Different users are able to tolerate different probabilities of the actual
DGD exceeding DGD_max, so it inappropriate to specify this value.

See also comments #91 and #93

Cl **87**   *SC* **87.12**   *P* **239**   *L* **18**   # 500

Dudek, Mike   JDSU

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

The channel characteristics for max channel insertion loss, and Positive and negative
dispersion are a function of wavelength it would be good to note the wavelength range for
which the values in table 87-13 apply.

SuggestedRemedy

Add a footnote to Channel insertion loss (max), Positivie dispersion (max), and negative
dispersion (min).   The footnote to say.   Over the wavelength range 1264.5nm to
1337.5nm.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the footnote as per the suggested remedy and remove editor's note below table 87-13

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 **87**
SC **87.12**

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Cl **87**   *SC* **87.13**   *P* **239**   *L* **15**   # 207

Chung, Hwan Seok   ETRI

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

In Table 87-13, we propose DGD_max characteristics as "10 ps"

SuggestedRemedy

The datails of DGD_max for 40GBASE-LR4 will be presented in November plenary.

Response   *Response Status* **C**

ACCEPT.

See also comment 296

Cl **87**   *SC* **87.4.4**   *P* **228**   *L* **27**   # 594

Ghiasi, Ali   Broadcom

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

PMD loopback function is missing

SuggestedRemedy

Please add PMD loopback function

Response   *Response Status* **C**

REJECT.

For same reasons given in response to comment 595

Cl **87**   *SC* **87.5**   *P*   *L*   # 310

Dallesasse, John   Emcore Corporation

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

The lane wavelengths used for the 40GBASE-LR4 PMD should be the same as the wavelengths used for the Clause 53 10GBASE-LX4 PMD. This will allow maximum re-utilization of laser and optical demultiplexer technologies developed for 10GBASE-LX4. Reducing development costs have a direct impact on the economic feasibility of this project. It would be a mistake to walk away from a technology investment that has been paid for and proven over years of manufacturing. Additionally, the proposed reduction of the channel bandwidth from 13.4 nm (10GBASE-LX4) to 13 nm (40GBASE-LR4) would have some impact on laser yields and consequently cost. In order to allow a 0-70 C module operating range, the lasers need to be in spec from -5 to +85C. Assuming 0.1 nm/C, 9 nm of the band is taken by temperature. Approximately 1.5 nm is allocated for guard bands. Consequently, the window that is being targeted for laser operation at a given temperature is 2.5 nm for the proposed 40GBASE-LR4 versus 2.9 nm for 10GBASE-LX4.

SuggestedRemedy

Change all references for L0, L1, L2, and L3 to match the wavelength specifications in Clause 53 (10GBASE-LX4).

Response   *Response Status* **C**

REJECT.

[Editor's note: added missing subclause number 87.5 to subclause field]

Baseline proposal wavelengths were selected to minimize worst case dispersion penalty and loss.

Cl **87**   *SC* **87.5**   *P* **230**   *L* **11**   # 69

Chung, Hwan Seok   ETRI

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

correct typo and insert space between 20 and nm. Change from "20nm" to "20 nm"

SuggestedRemedy

Response   *Response Status* **C**

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 **87**   Page 143 of 162
SC **87.5**   12/18/2008 11:15:42 P

Cl **87**   *SC* **87.6**   *P* **230**   *L* **34**   # 80
Sun Hyok, Chang   Electronics and Teleco

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

In line 34, 'operational range' is written. The term 'operating range' is used in line 32 and in the title of Table 87-6. So, 'operational range' needs to be changed to 'operating range'.

SuggestedRemedy

'operational range' has to be replaced by 'operating range'.

Response   *Response Status* **C**

ACCEPT.

[Editor's note: added missing subclause number 87.6 to subclause field]

Cl **87**   *SC* **87.6**   *P* **230**   *L* **41**   # 77
Sun Hyok, Chang   Electronics and Teleco

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

In Table 87-6, I think 'Minimum range' is confusing expression. Because '2m to 10 km' is not 'minimum'.

SuggestedRemedy

'Operating range' is easier to be understood. 'Minimum range' has to be replaced by 'Operating range'.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: added missing subclause number 87.6 to subclause field]

Change "Minimum range" to "Required operating range" in Table 87-6.
Also change "operating at 12.5 km meets the minimum range requirement of 2 m to 10 km" to "operating at 12.5 km meets the operating range requirement of 2 m to 10 km" on page 230 line 43.

Cl **87**   *SC* **87.6.1**   *P* **231**   *L* **13**   # 488
Dudek, Mike   JDSU

Comment Type   **TR**   *Comment Status* **A**   *Optical Power*

Optical receivers are in general limited by the peak power of the input signal (Average power is less important).   As the spec stands the receiver has to cope with the maximum input average power at infinite extinction ratio with the allowed eye mask overshoot.   This is much more than is likely to happen in practice.   We should limit the peak power explicitly.   (The suggested value equates to the Maximum average power at 9dB ER without overshoot).

SuggestedRemedy

Add extra rows to Tables 87-7, and 87-8,

Peak Power Max 4.5dBm. (no min)

To this row in table 87-7 add a footnote.   Peak Power is the maximum value of the power as measured on the eye diagram see 86.7.4.7

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert an editor's note that a possible peak power specification or a maximum OMA limit is under consideration for 40GBASE-LR4

Cl **87**   *SC* **87.6.1**   *P* **231**   *L* **30**   # 487
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status* **A**   *Optical Reflections*

With a specification for the receiver reflection of -26dB there is no need to require the Transmitter to tolerate a 12dB reflection. The cable is limited to 26dB return loss at any discrete reflection.   A tolerance to 20dB reflection would appear adequate.

SuggestedRemedy

Change optical return loss tolerance from 12dB to 20dB on line 30.   Change RIN12 to RIN20 on line 28.   Change RIN12 to RIN20 in 87.7.7 page 236 line 20 and insert "that the reflection is 20dB and" between "exception" and "that" on page 236 line 21, change 12db to 20dB for optical retun loss in table 87-11 on page 235 line 17, and change from TBD to 21 for the optical retun loss in table 87-13 page 239 line 17.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In addition to the changes proposed in this comment, in Table 87-13 change "Optical return loss" to "Optical return loss (min)"

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 **87**
SC **87.6.1**

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Cl **87**   *SC* **87.6.1**   *P* **231**   *L* **33**   # 185

Cole, Chris   Finisar

Comment Type **T**   *Comment Status* **A**   *Optical Mask*

Table 87-7-40GBASE-LR4 transmit characteristics
Transmit eye mask definition {X1, X2, X3, Y1, Y2, Y3} TBD
The adopted 40GBASE-LR4 baseline (cole_01_0908) also had a footnote which stated "Tx eye mask spec to be specified as per eye mask methodology discussions." This specifically referred to using the results of the Statistical Eye discussions, which have now been formalized in the Statistical Eye Ad Hoc.
Since there is no final concensus recommendation from the Statistical Eye Ad Hoc, the specification TBD can not be completed.

SuggestedRemedy

Replace TBD in Table 87-7 with eye mask coordinates as in Clause 52, Table 52.12. Add Transmitter Optical Waveform measurement procedure as in Clause 52 Section 52.9.7. Remove references to 10GBASE-L and 10GBASE-W, from second and third sentence, respectively.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment #385

Cl **87**   *SC* **87.6.3**   *P* **232**   *L* **17**   # 633

CHANG, Frank   Vitesse

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

edits in table 87-8,

SuggestedRemedy

Suggest the change:
- Feel Rx reflectance should be MAX, not min specs.
- Add Stress eye jitter specs as conition for SRS.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Editor's note: Note Page number and line corrected to point to Table 87-8]

Change to 'Receiver reflectance (max)'
In table 87-8 add row for stressed eye jitter and format this together with the vertical eye closure in a similar way to table 86-11

Cl **87**   *SC* **87.6.3**   *P* **233**   *L* **2**   # 634

CHANG, Frank   Vitesse

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

In Table 87.9, Allocation for penalties sound too optimistic. 10GBase-L allocate 3.2dB while LR4 is only 2.3dB with xtlk.

SuggestedRemedy

Suggest to consider 4-4.2dB, and change RX parameters in Table 87-8 accordingly.

Response   *Response Status* **C**

REJECT.

The allocation for penalties was part of baseline proposal adopted by the task force. The commenter is invited to present evidence to the task force to support a change in values.

Cl **87**   *SC* **87.7.1**   *P* **233**   *L* **31**   # 384

King, Jonathan   Finisar

Comment Type **T**   *Comment Status* **A**   *Test Patterns*

No Table of Test Patterns
....

also applies to Clause 88

SuggestedRemedy

Insert table similar to Table52-21-Test patterns in clause 52

into section 87.7.1 and 88.8.1

with:
Pattern 1 TBD
Pattern 2 TBD
Pattern 3 PRBS31b PRBS31c

and notes under table as:

aThis pattern is defined in TBD.
bThis is the test-pattern checker defined in 49.2.12.
cThis is the test-pattern checker defined in 50.3.8.2.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert tables in clauses 87.7.1 and 88.8.1 with contents consistent with resolutions of other comments on test patterns and with licence to the editors on the format.

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 **87**   Page 145 of 162
SC **87.7.1**   12/18/2008 11:15:42 P

Cl **87**   *SC* **87.7.1**   *P* **233**   *L* **36**   # 422

Ganga, Ilango   Intel

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

double period (..), Delete one period at the end of the Note.

SuggestedRemedy

per comment

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 87.8.1, change double period to single period in the next version

---

Cl **87**   *SC* **87.7.1**   *P* **233**   *L* **36**   # 387

King, Jonathan   Finisar

Comment Type **T**   *Comment Status* **R**   *Test Patterns*

NOTE has unnecessary TBD, this is a general statement about test patterns used for testing optical parameters

also applies to 88.8.2

SuggestedRemedy

New text for Note

NOTE- Although test patterns are designed to emulate system operation, they do not form valid 40GBASE-R signals.

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **87**   *SC* **87.7.2**   *P* **233**   *L* **42**   # 490

Dudek, Mike   JDSU

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

It is bad practice to specify things in two places.

SuggestedRemedy

Change "using a valid 40GBASE-R signal" with "using the test pattern defined in table 87-10."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolution as comment 383
See also comments 499, 507, 510

Cl **87**   *SC* **87.7.2**   *P* **233**   *L* **42**   # 383

King, Jonathan   Finisar

Comment Type **T**   *Comment Status* **A**   *Test Patterns*

paragraph requires a valid 40GBASE-R signal; should also allow an appropriate test pattern to be used.
(the note in 87.7.1 says test patterns are not valid 40GBASE-R signals)

also applies to 88.8.2

SuggestedRemedy

add text to end of paragraph:

 '... valid 40GBASE-R signal, or test pattern referenced in Table 87-10.'

similar remedy for 88.8.2

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
See also comment 490, 499

Change "modulated using a valid 40GBASE-R signal." to "modulated using the test pattern defined in Table 87-10."
Change the relevant TBD in Table 87-10 to "TBD or valid 40GBASE-R signal"
For resolution of text in clause 88.8.2 see comment 507
See also comments 484, 490, 499 and 510

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 **87**
SC **87.7.2**

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Cl **87**   *SC* **87.7.2**   *P* **233**   *L* **42**   # 388

King, Jonathan   Finisar

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

OSA resolution is TBD
Suggest use 0.1nm
This value is small enough to allow accurate wavelength measurement, and is readily
achievable with currently available OSAs
....

Also applies to 88.8.2

SuggestedRemedy

replace TBD with 0.1nm

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "An optical spectrum analyzer (OSA) or equivalent instrument is used, with the
resolution bandwidth of TBD, and the lane under test is modulated using a valid 40GBASE-
R signal."
to
"An optical spectrum analyzer (OSA) or equivalent instrument is used and the lane under
test is modulated using a valid 40GBASE-R signal."

Make the same change in 88.8.2

Cl **87**   *SC* **87.7.5**   *P* **234**   *L* **37**   # 386

King, Jonathan   Finisar

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

The optical filter is undefined

also applies to 88.8.5

SuggestedRemedy

Add wording extracted from Editors note (p234 line 42ff), and reference to G959.1 :

The optical filter passband ripple shall be limited to 0.5 dB and the isolation is chosen such
that the ratio of the power in the lane being measured to the sum of the powers of all of the
other lanes is greater than 20 dB (See G959.1 Annex B).

and remove Editors note

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the text "The optical filter passband ripple shall be limited to 0.5 dB and the isolation is
chosen such that the ratio of the power in the lane being measured to the sum of the
powers of all of the other lanes is greater than 20 dB (See ITU-T G.959.1 Annex B)."

Cl **87**   *SC* **87.7.5.1**   *P* **235**   *L* **4**   # 491

Dudek, Mike   JDSU

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

There are multiple different jitter measurements.

SuggestedRemedy

Change "Jitter less than 0.2UI" to "Total Jitter less than 0.2UI".

Response   *Response Status* **C**

ACCEPT.

Cl **87**   *SC* **87.7.5.4**   *P* **236**   *L* **7**   # 489

Dudek, Mike   JDSU

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

wrong spelling

SuggestedRemedy

change sererate to separate.

Response   *Response Status* **C**

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 **87**
SC **87.7.5.4**

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Cl **87**   *SC* **87.7.5.4**   *P* **236**   *L* **7**   # 423
Ganga, Ilango   Intel

Comment Type **E**   *Comment Status* **A**
typo, change to "seperate"

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Change to 'separate', see 489

Cl **87**   *SC* **87.7.6**   *P* **236**   *L* **14**   # 499
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**   *Test Patterns*
It is bad practice to specify things in two places.

SuggestedRemedy
Change "using TBD test pattern or a valid 40GBASE-R signal" with "using the test pattern defined in table 87-10."

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change "measured using TBD test pattern or a valid 40GBASE-R signal" to "measured using the test pattern defined in Table 87-10"
Change the relevant TBD in Table 87-10 to "TBD or valid 40GBASE-R signal"
See also comments 383, 484, 490, 507 and 510

Cl **88**   *SC* **88.1**   *P* **243**   *L* **12**   # 161
D'Ambrosia, John   Force10 Networks

Comment Type **T**   *Comment Status* **A**
Table 88-1 does not include reference to Annex 83A, CAUI.

SuggestedRemedy
add row for Annex 83A, CAUI and mark optional.

Response   *Response Status* **C**
ACCEPT.

Cl **88**   *SC* **88.1**   *P* **243**   *L* **21**   # 367
Dawe, Piers   Avago Technologies

Comment Type **T**   *Comment Status* **R**   *FEC*
Won't 100GBASE-ER4 suffer from SOA noise and will benefit from FEC to achieve a suitably low BER reliably?

SuggestedRemedy
Add FEC to Table 88-1, at least as an option, and I suspect mandatory for 100GBASE-ER4. Do more investigation to find out if it needs be mandatory: maybe only for the longest links.

Response   *Response Status* **C**
REJECT.

The optical power budgets in the adopted baseline were chosen to enable a BER of 10^-12 withiout the use of FEC. See for instance slide 17 of cole_02_0508.pdf

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Cl **88**   *SC* **88.12**   *P* **262**   *L* **14**   # 93
Sun Hyok, Chang   Electronics and Teleco

Comment Type **T**   *Comment Status* **R**
In Table 88-17, 'DGD_max' is represented to describe the PMD (polarization mode dispersion) specification. But 'DGD_max' is not sufficient to give the PMD specification of the fiber link. Parameter of P(DGD_tot > DGD_max) is needed.(from the Method 2 of IEC 61282-3). P(DGD_tot > DGD_max) is the probability that a system DGD value, DGD_tot, exceeds DGD_max.

SuggestedRemedy
Parameter of P(DGD_tot > DGD_max) per each lane is needed in Table 88-17.

Response   *Response Status* **C**
REJECT.

[Subclause changed from 12 to 88.12]

See comment #94 for justification
See also comments #91 and #92

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 **88**
SC **88.12**
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Cl **88**		*SC* **88.12**			*P* **262**		*L* **15**		# 297
Anslow, Peter					Nortel Networks

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

In Table 88-17 the values of DGD_max for 100GBASE-LR4 and 100GBASE-ER4 are "TBD".

SuggestedRemedy

Set DGD_max for 100GBASE-LR4 to 10 ps
Set DGD_max for 100GBASE-ER4 30 km to 10.3 ps
Set DGD_max for 100GBASE-ER4 40 km to 10.3 ps
See anslow_04_1108.pdf for detailed justification.

Response			*Response Status*	**C**

ACCEPT IN PRINCIPLE.

Resolution for 100GBASE-LR4 is 10 ps as proposed by both comments.

Resolution for 100GBASE-ER4 as comment #208

Cl **88**		*SC* **88.12**			*P* **262**		*L* **15**		# 208
Chung, Hwan Seok				ETRI

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

In Table 87-17, we propose DGD_max characteristics for 100GBASE-LR4 and 100GBASE-ER4 as "10 ps" and "7.6 ps", respectively.

SuggestedRemedy

The datails of DGD_max for 100GBASE-LR4 and 100GBASE-ER4 will be presented in November plenary.

Response			*Response Status*	**C**

ACCEPT IN PRINCIPLE.

[This comment taken to refer to Table 88-17]
[Subclause changed from 88-17 to 88.12]

Resolution for 100GBASE-LR4 is 10 ps as proposed by both comments.

Resolution for 100GBASE-ER4 is 10.3 ps

See also comment #297

Cl **88**		*SC* **88.12**			*P* **262**		*L* **20**		# 94
Sun Hyok, Chang				Electronics and Teleco

Comment Type	**T**		*Comment Status*	**R**

In line 20, it is written that 'DGD_max is the maximum differential group delay that the system must tolerate'. It is wrong. 'DGD_max' is defined in the Method 2 of IEC 61282-3. 'DGD_max' is defined with P(DGD_tot > DGD_max), which is the probability that a system DGD value, DGD_tot, exceeds DGD_max. 'DGD_max' and 'P(DGD_tot > DGD_max)' give the DGD specification of the fiber link.

SuggestedRemedy

The sentence 'DGD_max is the maximum differential group delay that the system must tolerate' is needed to be replaced by 'DGD_max is defined in the Method 2 of IEC 61282-3'

Response			*Response Status*	**C**

REJECT.

[subclause changed from 12 to 88.12]

IEEE 802.3 has chosen to specify only the DGD_max that the system has to tolerate with the BER remaining within the specified limit. See 802.3 clause 52.13. This is also in line with ITU-T specifications for optical systems (e.g. G.691, G.959.1). Different users are able to tolerate a range of probabilities of the actual DGD exceeding the DGD_max value. (see anslow_01_0308.pdf slides 8 and 9). For a user to determine what average DGD his link should have the DGD_max value should be divided by the value of "S" corresponding to the probability acceptable to that user. Because of the wide range of probabilities that are acceptable for different Ethernet applications it is inappropriate to specify this value.

See also comments #91, #92 and #93

Cl **88**		*SC* **88.12**			*P* **262**		*L* **21**		# 511
Dudek, Mike					JDSU

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

The channel characteristics for max channel insertion loss, and Positive and negative dispersion are a function of wavelength it would be good to note the wavelength range for which the values in table 87-13 apply.

SuggestedRemedy

Add a footnote to Channel insertion loss (max), Positivie dispersion (max), and negative dispersion (min).   The footnote to say.   "Over the wavelength range 1294.53nm to 1310.19nm."

Remove the editors note.

Response			*Response Status*	**C**

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 **88**
SC **88.12**

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Cl **88**   *SC* **88.3**   *P* **246**   *L* **17**   # 595
Ghiasi, Ali   Broadcom

Comment Type   **TR**   *Comment Status*   **R**
PMD loopback function is missing

SuggestedRemedy
Please add PMD loopback function

Response   *Response Status*   **C**
REJECT.

[Subclause changed from 3 to 88.3]

Providing an optical loopback is not really practical. Providing an electrical loopback
function will constrain the implementation options for the PMD circuitry as it requires a 100
Gbit/s path from the Tx side to the Rx side.
This was not a function included in 10GBASE-R PMDs

See also comment #594

Cl **88**   *SC* **88.4**   *P* **246**   *L* **44**   # 174
Alping, Arne   Ericsson AB

Comment Type   **E**   *Comment Status*   **A**
...and Receive functions which convey... (comma is missing)

SuggestedRemedy
Change to: ...and Receive functions, which convey...

Response   *Response Status*   **C**
ACCEPT.

[Subclause changed from 4 to 88.4]

Comma should also be added to 87.4

Cl **88**   *SC* **88.4.1**   *P* **247**   *L* **26**   # 501
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status*   **A**
It would be helpful to the reader to explicitly point out that there are no electrical specs for
the 25G PMD service interface in this document.   (See also Anslow_05_1108.pdf)

SuggestedRemedy
Change the first part of the note on figure 88-2 to "Specification of the retimer function and
the electrical implementation of the PMD service interface is beyond the scope of this
standard".

Response   *Response Status*   **C**
ACCEPT.

This is done in the proposed diagram on slide 5 of anslow_05_1108.pdf

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Cl **88**   *SC* **88.4.4**   *P* **248**   *L* **45**   # 502
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status*   **R**
The Signal Detect does not need to be guaranteed to be OK when the input signal is less
than a valid link will supply.   This level is the stressed sensitivity not the sensitivity.

SuggestedRemedy
Insert the word "stressed" in front of receiver on line 44 in table 88-4.

Response   *Response Status*   **C**
REJECT.

This comment was WITHDRAWN by the commenter.

Cl **88**   *SC* **88.4.5**   *P* **249**   *L* **11**   # 175
Alping, Arne   Ericsson AB

Comment Type   **E**   *Comment Status*   **R**
...of the Signal Detect function... (upper case letter for Signal Detect)

SuggestedRemedy
Change to: ...of the SIGNAL_DETECT function...

Response   *Response Status*   **C**
REJECT.

[Subclause changed from 4.5 to 88.4.5]

The parameter is "SIGNAL_DETECT" but the function that generates it is "Signal Detect"

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 **88**
SC **88.4.5**

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Cl **88**   *SC* **88.6**   *P* **250**   *L* **34**   # 81

Sun Hyok, Chang   Electronics and Teleco

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

In line 34, 'operational range' is written. The term 'operating range' is used in line 32 and in the title of Table 88-6. So, 'operational range' in line 34 needs to be changed to 'operating range'.

SuggestedRemedy

'operational range' has to be replaced by 'operating range'.

Response   *Response Status* **C**

ACCEPT.

[Subclause changed from 6 to 88.6]
See also comments #80 and #82

Cl **88**   *SC* **88.6**   *P* **250**   *L* **41**   # 78

Sun Hyok, Chang   Electronics and Teleco

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

In Table 88-6, I think 'Minimum range' is confusing expression. Because '2m to 10 km' is not 'minimum'.

SuggestedRemedy

'Operating range' is easier to be understood. 'Minimum range' has to be replaced by 'Operating range'.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Subclause changed from 6 to 88.6]

Change "Minimum range" to "Required operating range" in Table 88-6.
Also change "operating at 12.5 km meets the minimum range requirement of 2 m to 10 km" to "operating at 12.5 km meets the operating range requirement of 2 m to 10 km" on page 250 line 35.

See also comments #77 and #79

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **13**   # 84

Hirotaka , Oomori   Sumitomo Electric

Comment Type   **T**   *Comment Status* **A**   *Optical Power*

The range between Max and Min transmitter launch OMA seems to be too narrow to have good yield.
The root cause is located at the low launch OMA max and the low receive OMA sensitivity.

Several numbers in Table.88-7 and 88-8 need to be modified.
A full justification is given in the attached file Oomori_01_1108.pdf

SuggestedRemedy

1) Change Transmitter launch OMA max from 4.0dBm to 4.5dBm
2) Change Transmitter average launch power (max) from 4.0dBm to 4.5dBm
3) Change Reciever OMA sensitivity from -8.1dBm to -8.6dBm

Other parameters are required to change as a consequence of this. For a full list see slide 13 of attached file Oomori_01_1108.pdf

Response   *Response Status* **C**

ACCEPT.

[Page changed from 250 to 251]

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 **88**
SC **88.6.1**

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Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **19**   # 505
Dudek, Mike   JDSU

Comment Type **T**   *Comment Status* **A**   *Optical Power*

Optical receivers are in general limited by the peak power of the input signal (Average power or OMA is less important).   As the spec stands the receiver has to cope with the maximum input average power with the maximum OMA and the allowed eye mask overshoot.   This is much more than is likely to happen in practice and is also restricting the maximum OMA at lower average powers.   We should limit the peak power explicitly, and relax the maximum OMA value. (The suggested value equates to a maximum OMA of 4.5dBm with a maximum Average power of 4.5dBM, or an ER of 4.7 at 4.5dBm average power).

SuggestedRemedy

Add an additional row in tables 88-7,88-8, with

Peak Power Max 6.3dBm. (no min)
Increase the Maximum OMA to 5.5dBm.

To the peak power row in table 87-7 add a footnote.   Peak Power is the maximum value of the power as measured on the eye diagram see 88.8.8

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert an editor's note that a possible peak power specification is under consideration for 100GBASE-LR4 and ER4

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **24**   # 176
Alping, Arne   Ericsson AB

Comment Type **E**   *Comment Status* **R**

Transmitter and dispersion penalty, each lane (max) (acronyme is missing)

SuggestedRemedy

Cgange to: Transmitter and Dispersion Penalty (TDP), each lane (max)

Response   *Response Status* **C**

REJECT.

[Subclause changed from "Table 88-7" to 88.6.1]

The current version is consistent with Table 87-7 and Table 52-12 of the base standard.

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **3**   # 621
CHANG, Frank   Vitesse

Comment Type **T**   *Comment Status* **R**

What is the inherent reason to use ER of 4dB, which seems ovioulsy odd?

SuggestedRemedy

suggest to change ER as 3.5dB or 6dB which look more realistic. (need to re-calculate the launch power numbers accordingly).

Also RIN to be -132dB/Hz is tough, suggest -128dB/Hz.

Response   *Response Status* **C**

REJECT.

The ER of 4 dB was in the adopted baseline proposal. The suggested remedy has values that are both higher and lower than the current value suggesting that there is no good technical justification for the change.
The RIN value of -132 dB/Hz comes from the 128 dB/Hz requirement for 10GBASE-LR scaled by the relative receiver bandwidths. Using a value of 128 dB/Hz would significantly increase the penalty due to this effect.
The commenter is invited to bring technical justification for these proposals.

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **32**   # 503
Dudek, Mike   JDSU

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

With a specification for the receiver reflection of -26dB there is no need to require the Transmitter to tolerate a 12dB reflection. The cable is limited to 26dB return loss at any discrete reflection.   A tolerance to 20dB reflection would appear adequate.

SuggestedRemedy

Change optical return loss tolerance from 12dB to 20dB on line 32 table 88-7.   Change RIN12 to RIN20 on line 30.   Change RIN12 to RIN20 in 87.8.7 page 259 line 16 and insert "that the reflection is 20dB and" between "exception" and "that" on page 259 line 18, Also change the Optical return loss (min) for LR4 in Table 88-15 to 20dB.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In addition to the changes proposed in this comment, in Table 88-17 change "Optical return loss" to "Optical return loss (min)" and set the value for 100GBASE-LR4 to 21 dB.

See also comment #381

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 **88**   Page 152 of 162
SC **88.6.1**   12/18/2008 11:15:43 P

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **35**   # 183

Cole, Chris   Finisar

Comment Type **T**   *Comment Status* **A**   *Optical Mask*

Table 88-7-100GBASE-LR4 transmit characteristics
Transmit eye mask definition {X1, X2, X3, Y1, Y2, Y3} TBD
The adopted 100GBASE-LR4 baseline (cole_01_0708) also had a footnote which stated
"Tx eye mask spec to be specified as per eye mask methodology discussions." This
specifically referred to using the results of the Statistical Eye discussions, which have now
been formalized in the Statistical Eye Ad Hoc.
Since there is no final concensus recommendation from the Statistical Eye Ad Hoc, the
specification TBD can not be completed.

SuggestedRemedy

Replace TBD in Table 88-7 with eye mask coordinates as in Clause 52, Table 52.12. Add
Transmitter Optical Waveform measurement procedure as in Clause 52 Section 52.9.7.
Remove references to 10GBASE-L and 10GBASE-W, from second and third sentence,
respectively.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment #385

See also comments #184, #185, #385

Cl **88**   *SC* **88.6.1**   *P* **251**   *L* **48**   # 281

Anslow, Peter   Nortel Networks

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

The second Editors Note underneath Table 88-7 beginning "The adopted baseline for
100GBASE-LR4 in anslow_01_0708.pdf had a value of 3.2 dBm" was only relevant before
the draft was accepted by the Task Force and should now be deleted.

SuggestedRemedy

Delete this Editors Note

Response   *Response Status* **C**

ACCEPT.

Cl **88**   *SC* **88.6.2**   *P* **252**   *L* **24**   # 635

CHANG, Frank   Vitesse

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

In Table 88-8, RX reflectance should not be MIN specs. Also need Stress eye jitter specs
as condition for SRS test.

SuggestedRemedy

- Change RX reflectance as MAX specs.
- Also Stress eye jitter specs as condition for SRS test.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to 'Receiver reflectance (max)'
In table 88-8 add row for stressed eye jitter and format this together with the vertical eye
closure in a similar way to table 86-11

Cl **88**   *SC* **88.6.2**   *P* **252**   *L* **26**   # 644

Nicholl, Gary   Cisco

Comment Type **T**   *Comment Status* **R**

Do we need to specify what BER the Receiver sensitivity (OMA) paramter is specified for ?
I am assuming that it is BER=10-12 (same as stressed receiver sensitivity) ?

We also need to clarify is this is the raw BER on the line or whether it is the effective BER
after the error multiplication of the scrambler is taken into consideration (in which case the
BER on the line is a factor of 3 less than specified). If it is indeed the former then we need
to specify a way that it can be tested as this was an issue that came up in 10GE testing.

SuggestedRemedy

One possible solution would be to define an unframed PRBS test mode with no 64/66B
encoding or scrambling enabled, to be used for testing all of the PMD optical parameters.
However I am not sure how this would work for a MLD based interface (which needs the
64/66B encoding and MLD lane markers to operate) ?

Response   *Response Status* **C**

REJECT.

[Subclause changed from 6.2 to 88.6.2]

Clause 88.8.10 starts "Receiver sensitivity, which is defined for an ideal input signal, is
informative and testing is not required."

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 **88**   Page 153 of 162
SC **88.6.2**   12/18/2008 11:15:43 P

Cl **88**   *SC* **88.6.3**   *P* **253**   *L* **13**   # 622
CHANG, Frank   Vitesse

Comment Type   **T**   *Comment Status*   **R**

In Table 88-9, Allocation for penalties is too optimistic, which is not conparable to even 10Gbase-LR signal channel specs.

SuggestedRemedy

Suggest to consider adding the extra xtalk spenalty, which should let the total penalties to fall within 3.5 to 4dB.

Response   *Response Status*   **C**

REJECT.

The penalty due to crosstalk in the receiver is the responsibility of the receiver. It is not necessary (or desirable) to specify this crosstalk penalty. This penalty is taken in to account when a realistic value is set for the required sensitivity.
Crosstalk in the transmitter is part of the penalty, but is assumed to be small.
This is assumed to be an EA modulated laser with lower penalties than direct mod laser assumed in 10G-BASE-LR. The 26 dB return loss of the reciever will make the reflection penalty less than that for 10G_BASE-LR

Cl **88**   *SC* **88.7**   *P* **253**   *L* **33**   # 79
Sun Hyok, Chang   Electronics and Teleco

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

In Table 88-10, I think 'Minimum range' is confusing expression. Because '2m to 30 km' or '2m to 40 km' is not 'minimum'.

SuggestedRemedy

'Operating range' is easier to be understood. 'Minimum range' has to be replaced by 'Operating range'.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Subclause changed from 7 to 88.7]

Change "Minimum range" to "Required operating range" in Table 88-10.
Also change "operating at 42.5 km meets the minimum range requirement of 2 m to 30 km" to "operating at 42.5 km meets the operating range requirement of 2 m to 30 km" on page 253 line 26.
See also comments #77 and #78

Cl **88**   *SC* **88.7**   *P* **253**   *L* **26**   # 82
Sun Hyok, Chang   Electronics and Teleco

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

In line 26, 'operational range' is written. The term 'operating range' is used in line 23 and in the title of Table 88-10. So, 'operational range' in line 26 needs to be changed to 'operating range'.

SuggestedRemedy

'operational range' has to be replaced by 'operating range'.

Response   *Response Status*   **C**

ACCEPT.

[Subclause changed from 7 to 88.7]

See also comments #80 and #81

Cl **88**   *SC* **88.7.1**   *P* **254**   *L* **19**   # 506
Dudek, Mike   JDSU

Comment Type   **TR**   *Comment Status*   **A**   *Optical Power*

Optical receivers are in general limited by the peak power of the input signal (Average power or OMA is less important).   As the spec stands the receiver has to cope with the maximum input average power with the maximum OMA and the allowed eye mask overshoot.   This is much more than is likely to happen in practice and is also restricting the maximum OMA at lower average powers.   We should limit the peak power explicitly, and relax the maximum OMA value. (The suggested value equates to a maximum OMA of 4.0dBm with a maximum average power of 2.4dBM without overshoot,

SuggestedRemedy

Add an additional row in tables 88-11 and 88-12 with

Peak Power Max 4.8dBm. (no min)
Increase the Maximum OMA to 5.0dBm.

To the peak power row in table 87-11 add a footnote.   Peak Power is the maximum value of the power as measured on the eye diagram see 88.8.8

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See response to comment #505

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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SC **88.7.1**   12/18/2008 11:15:43 P

Cl **88**   *SC* **88.7.1**   *P* **254**   *L* **25**   *#* 623
CHANG, Frank   Vitesse

Comment Type **T**   *Comment Status* **R**
ER=8dB sound odd as compare with prevailing TX specs.

SuggestedRemedy
As EML at 1310nm is assumed, suggest ER=8.2d or 6dB, which is more popular in ITU or IEEE specs. Also change RIN <-132dB/Hz to -128dB/Hz for std specs.

Response   *Response Status* **C**
REJECT.

See response to comment #621

The ER of 8 dB was in the adopted baseline proposal. The suggested remedy has values that are both higher and lower than the current value suggesting that there is no good technical justification for the change.
The RIN value of -132 dB/Hz comes from the 128 dB/Hz requirement for 10GBASE-LR scaled by the relative receiver bandwidths. Using a value of 128 dB/Hz would significantly increase the penalty due to this effect.
The commenter is invited to bring technical justification for these proposals.

Cl **88**   *SC* **88.7.1**   *P* **254**   *L* **33**   *#* 184
Cole, Chris   Finisar

Comment Type **T**   *Comment Status* **A**   *Optical Mask*
Table 88-11-100GBASE-ER4 transmit characteristics
Transmit eye mask definition {X1, X2, X3, Y1, Y2, Y3} TBD
The adopted 100GBASE-ER4 baseline (cole_02_0708) also had a footnote which stated "Tx eye mask spec to be specified as per eye mask methodology discussions." This specifically referred to using the results of the Statistical Eye discussions, which have now been formalized in the Statistical Eye Ad Hoc.
Since there is no final concensus recommendation from the Statistical Eye Ad Hoc, the specification TBD can not be completed.

SuggestedRemedy
Replace TBD in Table 88-11 with eye mask coordinates as in Clause 52, Table 52.12. Add Transmitter Optical Waveform measurement procedure as in Clause 52 Section 52.9.7. Remove references to 10GBASE-L and 10GBASE-W, from second and third sentence, respectively.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

See resolution of comment #385

See also comments #183, #185, #385

Cl **88**   *SC* **88.7.2**   *P* **254**   *L* **30**   *#* 504
Dudek, Mike   JDSU

Comment Type **TR**   *Comment Status* **A**
With a specification for the receiver reflection of -26dB there is no need to require the Transmitter to tolerate a 12dB reflection. The cable is limited to 26dB return loss at any discrete reflection.   A tolerance to 20dB reflection would appear adequate.

SuggestedRemedy
Change optical return loss tolerance from 12dB to 20dB on line 30 Table 88-11.   Change RIN12 to RIN20 on line 28. And if my comment 35 is not accepted Change RIN12 to RINx in 87.8.7 page 259 line 16 and insert "that the reflection is xdB and" between "exception" and "that" on page 259 line 18. Also add a sentence at the end of this sentence.   The value of x is given in the relevant table. Also change the optical return loss (min) for ER4 to 20dB in Table 88-15

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

In addition to the changes proposed in this comment, in Table 88-17 change "Optical return loss" to "Optical return loss (min)" and set the value for 100GBASE-ER4 to 21 dB for both the 30km and 40km operating distances.

See also comment #381

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 **88**   Page 155 of 162
SC **88.7.2**   12/18/2008 11:15:43 P

Cl **88**   *SC* **88.7.2**   *P* **255**   *L* **1**   *#* 83
Cole, Chris   Finisar

Comment Type **T**   *Comment Status* **A**   *Optical Power*
Table 88-12

A comment has been submitted for Table 88-7 and 88-8 (10GBASE-LR4 transmit characteristics) to increase the max optical power by 0.5dB. The purpose of this comment for Table 88-12 is to align the 10GBASE-ER spec (40km) with the changes proposed to the 10GBASE-LR (10km) spec. This will make the 40km spec consistent with the intent of 802.3ba when it adopted it as baseline, specifically that it have interoperable overload characteristics with the 10km spec.

SuggestedRemedy
The following three changes are proposed for table 88-12-100GBASE-ER4 receive characteristics:

Receive power, per lane OMA (max): 4.0dBm => 4.5dBm
Average receive power, per lane (max): 4dBm => 4.5dB
Damage threshold: 5.0dBm -> 5.5dBm

The SOA overload data presented in 802.3ba during this year fully supports increasing overload by 0.5dB.

Response   *Response Status* **C**
ACCEPT.

Cl **88**   *SC* **88.7.2**   *P* **255**   *L* **21**   *#* 636
CHANG, Frank   Vitesse

Comment Type **TR**   *Comment Status* **A**
In Table 88-12, RX reflectance should not be MIN specs.

SuggestedRemedy
Change RX reflectance as MAX specs. Add Stress eye jitter as condition to SRS test.

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.
Change to 'Receiver reflectance (max)'
In table 88-12 add row for stressed eye jitter and format this together with the vertical eye closure in a similar way to table 86-11

Cl **88**   *SC* **88.7.3**   *P* **256**   *L* **12**   *#* 637
CHANG, Frank   Vitesse

Comment Type **TR**   *Comment Status* **R**
In Table 88-13, the penalties for 40km sound too optimistic, which should show larger penalty than 30km.

SuggestedRemedy
The penalties for 40km should be 0.5dB higher than 30km, also suggest to change 40km IL as 16dB, as the IL is too pessimistic, keeping in mind ER4 has very tight link budget.

Response   *Response Status* **C**
REJECT.

The allocation for penalties for the 40 km case has been supported by various contributions to the Task Force. Reducing the penalties for the 30 km case achieves little as it simply increases the additional insertion loss allowed.

If we assume 1.5 dB for connector loss, then the 18 dB insertion loss gives 16.5 dB for the loss of the fibre and splices. From the data used to produce slide 10 of anslow_01_0307.pdf referred to 1295 nm this covers about 70% of installed 40 km links. If we reduce the insertion loss from 18 dB to 16 dB, then we only get 14.5 dB for the loss of the fibre and splices. From the same data set as above, this only covers 6% of real installed links. Even reducing the connector loss to 1 dB results in a coverage of only 16% of links.

Cl **88**   *SC* **88.8.1**   *P* **256**   *L* **34**   *#* 424
Ganga, Ilango   Intel

Comment Type **E**   *Comment Status* **A**
double period (..). Delete a period at end of note.

SuggestedRemedy

Response   *Response Status* **C**
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 **88**   Page 156 of 162
SC **88.8.1**   12/18/2008 11:15:43 P

Cl **88**   *SC* **88.8.10**   *P* **259**   *L* **43**   # 177
Alping, Arne   Ericsson AB

Comment Type   **E**   *Comment Status*   **R**
...jitter and RIN... (missing comma)

SuggestedRemedy
Change to: ...jitter, and RIN...

Response   *Response Status*   **C**
REJECT.

[Subclause changed from 8.10 to 88.8.10]
[Page change from 250 to 259]

In a list, for example "Monday, Tuesday, Wednesday and Thursday" it is not usual to put a comma before the "and".

Cl **88**   *SC* **88.8.2**   *P* **256**   *L* **40**   # 507
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status*   **A**
It is bad practice to specify things in two places.

SuggestedRemedy
Change "using a valid 40GBASE-R signal" with "using the test pattern defined in table 88-14."

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Change "modulated using a valid 100GBASE-R signal." to "modulated using the test pattern defined in Table 88-14"
Change the relevant TBD in Table 88-14 to "TBD or valid 100GBASE-R signal"

See also comments #383, #484, #490, #499 and #510

Cl **88**   *SC* **88.8.5.1**   *P* **257**   *L* **51**   # 508
Dudek, Mike   JDSU

Comment Type   **T**   *Comment Status*   **A**
There are multiple different jitter measurements.

SuggestedRemedy
Change "Jitter less than 0.2UI" to "Total Jitter less than 0.2UI".

Response   *Response Status*   **C**
ACCEPT IN PRINCIPLE.

Change from "Jitter less than 0.20 UI peak-peak" to "Total jitter less than 0.20 UI peak-peak"

See also comment #491

Cl **88**   *SC* **88.8.5.4**   *P* **259**   *L* **4**   # 179
Alping, Arne   Ericsson AB

Comment Type   **ER**   *Comment Status*   **A**
...filter to sererate the lane... (spelling error)

SuggestedRemedy
Change to: ...filter to separate the lane...

Response   *Response Status*   **C**
ACCEPT.

[Subclause changed from 8.5.4 to 88.8.5.4]

See also comment #425

Cl **88**   *SC* **88.8.5.4**   *P* **259**   *L* **4**   # 509
Dudek, Mike   JDSU

Comment Type   **E**   *Comment Status*   **A**
spelling error

SuggestedRemedy
Change sereate to separate.

Response   *Response Status*   **C**
ACCEPT.

[Clause number changed from 87 to 88]

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 **88**
SC **88.8.5.4**

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Cl **88**	*SC* **88.8.5.4**	*P* **259**	*L* **6**	# 425
Ganga, Ilango	Intel

Comment Type **E**	*Comment Status* **A**
typo, change to "seperate"

SuggestedRemedy
per comment

Response	*Response Status* **C**
ACCEPT IN PRINCIPLE.
Changed to "separate"
See also comment #179

Cl **88**	*SC* **88.8.6**	*P* **259**	*L* **11**	# 510
Dudek, Mike	JDSU

Comment Type **T**	*Comment Status* **A**
It is bad practice to specify things in two places.

SuggestedRemedy
Change "using aTBD test pattern or a valid 40GBASE-R signal" with "using the test pattern defined in table 88-14."

Response	*Response Status* **C**
ACCEPT IN PRINCIPLE.

Change "measured using TBD test pattern or a valid 100GBASE-R signal." to "measured using the test pattern defined in Table 88-14."
Change the relevant TBD in Table 88-14 to "TBD or valid 100GBASE-R signal"
See also comments #383, #484, #490, #499 and #507

Cl **99**	*SC*	*P*	*L*	# 641
Ganga, Ilango	Intel

Comment Type **T**	*Comment Status* **A**
Add Protocol implementation conformance statement (PICS) proforma to the end of the Clauses 82 to 88 and annex 83A.

SuggestedRemedy

Response	*Response Status* **C**
ACCEPT.

Affects clauses 81 through 88 and annex 83A

Cl **99**	*SC*	*P* **11**	*L*	# 125
D'Ambrosia, John	Force10 Networks

Comment Type **E**	*Comment Status* **A**
Global - multiple instances where there are wrap-around issues with ToC. also multiple instances where there is no space between the clause # and the title of the clause or sub-clause.

SuggestedRemedy
Fix wraparound issues and add a space between the Clause # and title text.

Response	*Response Status* **C**
ACCEPT IN PRINCIPLE.

Fix formatting where possible, some of this is tool issue in generating ToC.

Will update the TOC template in next release

Cl **99**	*SC*	*P* **16**	*L* **22**	# 127
D'Ambrosia, John	Force10 Networks

Comment Type **E**	*Comment Status* **A**
Clause 86.8.2 - Laser Safety does not show up in ToC. Not sure if this is related to the fact that in the bookmarks that 86.8.2 shows up as a subclause under 86.8.1.

SuggestedRemedy
Correct ToC to show 86.8.2
correct bookmark in pdf file

Response	*Response Status* **C**
ACCEPT.

Check and fix any paragraph heading formatting issue in 86.8.2

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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Cl **99**   *SC*   *P* **18**   *L* **52**   *#* 126

D'Ambrosia, John   Force10 Networks

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

The annex and the title of the annex are listed as separate entries in the ToC. Annex 30A - GDMO Specification for IEEE 802.3 Managed Object Classes
Annex 30B - GDMO and ASN.1 definitions for Management
Annex 69A - Interference Tolerance Testing
Annex 69B - Interconnect Characteristics
Annex 83A - 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s Attachment Unit Interface (CAUI)

SuggestedRemedy

in ToC list Annex # and title on same line

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Check and update formatting of Annex title or ToC as appropriate

This is an issue with formatting issue with current ToC template

Will update ToC template in the next release

Cl **99**   *SC*   *P* **2**   *L* **8**   *#* 122

D'Ambrosia, John   Force10 Networks

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

PPI is not listed as a keyword.

SuggestedRemedy

Add PPI to Keywords.

Response   *Response Status*   **C**

ACCEPT.

Cl **99**   *SC*   *P* **21**   *L* **43**   *#* 282

Anslow, Peter   Nortel Networks

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

It would be useful to add external equations to the list of references marked in dark blue

SuggestedRemedy

Change "NOTE- Cross references that refer to clauses, tables, or figures not covered by this amendment are highlighted in dark blue." to "NOTE- Cross references that refer to clauses, tables, figures or equations not covered by this amendment are highlighted in dark blue."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Change to:
NOTE- Cross references that refer to clauses, tables, equations, or figures not covered by this amendment are highlighted in dark blue.

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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12/18/2008 11:15:43 P

Cl **99**   *SC*   *P* **6**   *L* **16**   # 123
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status* **A**
Listing of Editorial Team and Officers is incomplete.

SuggestedRemedy
Complete list provided below.

John D'Ambrosia
 Task Force Chair

Ilango Ganga
 Task Force Editor-in-Chief,
 Editor, Clauses 1, 4, 80, Annexes A, 4A

Mark Gustlin
 "Logic" Sub-task Force Chair
 Editor, Clauses 81& 82

Chris DiMinico
 "Cu" Sub-task Force Chair
 Editor, Clause 85

Pete Anslow
 "Optical" Sub-task Force Chair
 Editor, Clause 88

Hugh Barrass
 Editor, Clauses 30, 45, Annexes 30A, 30B

Piers Dawe
 Editor, Clause 86

Jonathan King
 Editor, Clause 87

Ryan Latchman
 Editor, Annex 83A

Arthur Marris
 Editor, Clauses 69, 73, 74, 84, Annexes 69A, 69B

Steve Trowbridge
 Editor, Clause 83

George Oulundsen
 Task Force Secretary

Frank Chang
 Task Force Web Master

Response   *Response Status* **C**
ACCEPT.

Cl **99**   *SC*   *P* **9**   *L* **17**   # 124
D'Ambrosia, John   Force10 Networks

Comment Type   **E**   *Comment Status* **A**
Approval of standards is listed as 15 September 200x. Schedule for standard approval at
June standards board meeting.

SuggestedRemedy
Change "15 September 200x" to "xx June 2010"

Response   *Response Status* **C**
ACCEPT.

Cl **99**   *SC* **99**   *P* **10**   *L* **49**   # 373
Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
There is a newer version of this page

SuggestedRemedy
Ask P802.3av for it

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Check and update if appropriate

Confirmed that the page used is the latest

Cl **99**   *SC* **99**   *P* **14**   *L* **30**   # 72
Chung, Hwan Seok   ETRI

Comment Type   **T**   *Comment Status* **A**
In page 14, line 30, the title 40GBASE-KR should be changed to 40GBASE-KR4.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Fix the paragraph heading in 84.8. (ToC will get updated)

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**   Page 160 of 162
SC **99**   12/18/2008 11:15:43 P

Cl **99**   *SC* **99**   *P* **3**   *L* **8**   # 371

Dawe, Piers   Avago Technologies

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

SuggestedRemedy
consciously

Response   *Response Status* **C**
ACCEPT.

Cl **99**   *SC* **99**   *P* **4**   *L* **49**   # 369

Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
I doubt that errata for all the world's standards are available at this URL.

SuggestedRemedy
Change 'all other standards' to 'all other IEEE standards'

Response   *Response Status* **C**
ACCEPT.

Cl **99**   *SC* **99**   *P* **4**   *L* **5**   # 372

Dawe, Piers   Avago Technologies

Comment Type   **E**   *Comment Status* **A**
.Section

SuggestedRemedy
Section
Line 12, 10 split from Gb/s over a line break. Use non-breaking space and if necessary, the Frame option to stop s being split from Gb/.
Line 18, change 'of the IEEE Std 802.3 standard with' to 'of IEEE Std 802.3 with'
Line 23, use new .3av clause numbers (75 to 77, 75A, 75B, 75C, 76A)
Line 24, change 'operation point-to-multipoint' to 'operation on point-to-multipoint'

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Fix typos as suggested

Update clause numbers for .3av as suggested

Check and update formatting as appropriate.

Also update second sentence of 802.3az to: "This amendment includes PHY enhancements for a selected set of PHY types to improve energy efficiency.."

Also update second sentence of 802.3ba to:
"..and adds Clause 80 through Clause 88.."

Cl **A**   *SC*   *P* **265**   *L* **12**   # 426

Ganga, Ilango   Intel

Comment Type   **E**   *Comment Status* **A**
Line 12, typo change to "Alphabetical"
Line 19, extra space, change to "2008."

SuggestedRemedy
per comment

Response   *Response Status* **C**
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 **A**
SC

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Cl **A**   *SC* **A**   *P* **265**   *L* **14**   # 354

Dawe, Piers   Avago Technologies

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

As we are not doing the maintenance work to remove all references to ANSI/EIA/TIA-455-127-1991, we can't do this by a 'change'. But we should add the new TIA-455-127-A to the normative references, so no point adding it here also. Nothing to do.

SuggestedRemedy

Delete 'Change B8 as follows... Lasers Diodes.'

Response   *Response Status*   **C**

ACCEPT.

remove change to B8

See response to comment # 351

Cl **A**   *SC* **A**   *P* **265**   *L* **21**   # 358

Dawe, Piers   Avago Technologies

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

SFP+ D3.1 should be available

SuggestedRemedy

Update reference Bx2

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Remove the version number and date from this informative reference, so we do not have to track the version/date.

Cl **A**   *SC* **A**   *P* **266**   *L* **1**   # 359

Dawe, Piers   Avago Technologies

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

Blank page

SuggestedRemedy

Continue learning how to stop Frame from doing this!

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Check and update frame options in Annex A

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 **A**
SC **A**

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