

Cl 00 SC 0 P L # 4
Anslow, Peter Ciena

Comment Type E Comment Status A

IEEE Std 802.3ba is now approved so references to it should include 2010

SuggestedRemedy

Change "IEEE Std 802.3ba-201x" to "IEEE Std 802.3ba-2010" throughout the draft. (9 instances)

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "IEEE Std 802.3ba-201x" to "IEEE Std 802.3ba-2010" throughout the draft. (9 instances).

For the first instance, add a superscripted "TM" after "ba"

See also comment #5

Cl 00 SC 0 P L # 65
Diab, Wael Broadcom

Comment Type E Comment Status R

Why are we using colored text in the clean draft, specifically green. I understand the coloring when a diff is done but not on the base

SuggestedRemedy

Pls. remove the coloring on the clean document

Response Response Status C

REJECT.

The green colour is explained on Page 15 line 20:

"Cross references that refer to clauses, tables, equations, or figures not covered by this amendment are highlighted in green."

Since cross references to text that is included in the draft can be clicked on to jump to that text, the use of colour to show cross references that are not in the draft is helpful to the reviewers.

This has been done in several IEEE 802.3 drafts, for example:

This was done in drafts of IEEE 802.3av using dark green.

It was also done in drafts of IEEE 802.3ba using dark blue which is easy to confuse with diff marking which also used dark blue for inserted text.

It is present in P802.3bf D 2.0 using dark green.

Cl 00 SC 0 P L # 66
Diab, Wael Broadcom

Comment Type E Comment Status A

Change "802.3ba-201x" to "802.3ba-2010"

SuggestedRemedy

Per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

See Response to comment #4

Cl 00 SC 0 P L # 69
Diab, Wael Broadcom

Comment Type T Comment Status A

The reference to ITU-T G.693 is listed in the bibliography however it appears in normative text.

SuggestedRemedy

Either change the reference from a bibliography to a normative reference or change the way the reference is used in the document so it is truly a bibliography

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #28 for changes to this text.

The "Normative references" section starts with the text:

"The following standards contain provisions that, through reference in this text, constitute provisions of this standard."

Clause 89 is a separate standalone specification that does not refer to G.693 for any of its values or methods.

The IEEE Style manual 10.4.1 contains:

"Normative references are those documents that contain material that must be understood and used to implement the standard. Thus, normative references are indispensable when applying the standard."

and:

"h) Documents to which reference is made only for information or background, and documents that served merely as references in the preparation of the standard are not normative references. Such documents may, however, be included in a bibliography. (See Clause 19 for the format of bibliographic entries.)"

The reference to G.693 is purely for information so the correct place for the reference is the Bibliography.

There is no prohibition from placing informative references to bibliography entries in normative text. There are a large number (over 100) of these in the current 802.3 standard and in recent amendments.

Cl 00 SC 0 P1 L1 # 9
 Booth, Bradley AppliedMicro
 Comment Type E Comment Status A
 No space required between the D and the draft number.
 SuggestedRemedy
 For the next revision, should be Dx.y with no space.
 Response Response Status C
 ACCEPT.

Cl 00 SC 0 P1 L30 # 60
 Dawe, Piers IPtronics
 Comment Type TR Comment Status R
 An objective is "Provide Physical Layer specification which support 40 Gb/s operation over at least 2 km on SMF" and from the PAR, "5.4 Purpose: This project will define a 40 Gb/s serial PMD that supports a link distance of at least 2km over single-mode fiber ... which will enable interconnection ...". This draft allows excessive penalties and I do not believe it provides a robust interoperability spec. The transmitter can pass the draft and be poor, and the receiver can pass the draft and fail to receive that transmitter after the fibre. Some changes are needed to come up to 802.3's traditional standards for an interoperability spec.
 SuggestedRemedy
 See other comments for remedies
 Response Response Status W
 REJECT.
 The level of interoperability provided by the specifications for VSR2000-3R2 in G.693 has not been demonstrated to be inadequate by industry use and Clause 89 follows this methodology.
 This comment does not propose any specific changes to the draft, for these see the other comment responses.

Cl 00 SC 0 P15 L1 # 64
 Diab, Wael Broadcom
 Comment Type E Comment Status A
 The term "Revisions" has a specific meaning to indicate a revision to 802.3 (like what we would do in a maintenance project). I believe that this is an ammendment. I believe the intent is to describe how change instructions would work.
 SuggestedRemedy
 Suggest changing the term "Revisions" to "Changes"
 Response Response Status C
 ACCEPT.

Cl 00 SC 0 P44 L53 # 78
 Maguire, Valerie Siemon
 Comment Type E Comment Status A
 The current revision of '568-B.3 is ANSI/TIA-568-C.3-2008. Table 1 of of '568-C.3 still contains the 0.5dB/km attenuation for outside plant cables. Note that "EIA" no longer appears in the title of the Standard.
 SuggestedRemedy
 Replace "ANSI/TIA/EIA 568-B.3-2000" with "ANSI/TIA-568-C.3-2008".
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Since ANSI/TIA/EIA 568-B.3-2000 is referred to by clauses 53, 87 and 88 of 802.3: Replace "ANSI/TIA/EIA 568-B.3-2000" with "ANSI/TIA-568-C.3-2008" and also add "ANSI/TIA-568-C.3-2008; Optical Fiber Cabling Components Standard." to 1.3 Normative references

Cl 01 SC 1.4 P15 L51 # 105
 Law, David Hewlett-Packard
 Comment Type T Comment Status A
 I'm not too sure about '.. over one lane on single-mode fibre ..'. For multiple 'physical' lane optical links we mentioned the fibres - for example 100GBASE-SR10 is '.. over ten lanes of multimode fibre ..', for multiple 'wavelength' lane optical links we mentioned wavelengths - for example 100GBASE-ER4 is '.. over four WDM lanes on single-mode fibre ..'. Following on this logic maybe 40GBASE-FR should be '.. over one wavelength ..'.
 SuggestedRemedy
 Suggest that '.. over one lane on sigle-mode fibre ..' should be changed to read '.. over a one wavelength on sigle-mode fibre ..'.
 Response Response Status C
 ACCEPT IN PRINCIPLE.
 Change definition to:
 "IEEE 802.3 Physical Layer specification for 40 Gb/s serial transmission using 40GBASE-R encoding over one wavelength on single-mode fiber, with reach up to at least 2 km. (See IEEE 802.3, Clause 89.)"

Cl 01 **SC 1.4.3** **P15** **L44** # **14**
Booth, Bradley AppliedMicro

Comment Type ER **Comment Status R**

I'm adverse to changing the definition for 10BASE-F to include the statement of multimode. While it is technically correct, there is no statement about "multimode" to be found in Clause 15. There is not likely to be confusion between the types of fiber used for 10BASE-F and 40GBASE-FR.

SuggestedRemedy

Delete 1.4.3.

Response **Response Status C**

REJECT.

The change to 1.4.3 was inserted due to comment #10 against D1.0, see:
http://www.ieee802.org/3/bg/public/jul10/P802d3bg_D1p0_final_resp_ID.pdf

The optical fiber requirements for Clause 15 are in 15.3.1 which states:
"The optical medium requirements are satisfied by the 62.5/125 µm nominal diameter fiber specified in IEC 60793-2:1992, type A1b ..." which is clearly multimode.

This is a minor change and since it is technically correct and including this information helps to minimise any possible confusion around assumptions on the meaning of "F" in a PMD name, it should remain.

The Task force voted:

Should the Task force accept the proposed response above?

Yes (keep the addition of the word "multimode" in 1.4.3)

No (leave 1.4.3 unchanged)

Yes 14

No 1

Cl 01 **SC 1.4.x** **P15** **L49** # **79**
Thompson, Geoff GraCaSI

Comment Type TR **Comment Status A**

The definition:

1.4.x 40GBASE-FR: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over one lane on single-mode fiber, with reach up to at least 2 km. (See IEEE 802.3, Clause 89.)

is needlessly obscure. Replace with something more straightforward and descriptive

SuggestedRemedy

I suggest the following definition:

1.4.x 40GBASE-FR: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over a single wavelength of one single-mode fiber for each direction, with reach up to at least 2 km. (See IEEE 802.3, Clause 89.)

Response **Response Status W**

ACCEPT IN PRINCIPLE.

Adding "for each direction" would make this definition different to that for all of the 10GBASE definitions and 40GBASE-CR4, KR4, LR4, SR4, 100GBASE-CR10, ER4, LR4, SR10

See Response to comment #105

Cl 01 **SC 1.5** **P16** **L5** # **83**
Frazier, Howard Broadcom Corporation

Comment Type E **Comment Status A**

DGD should appear in the list of abbreviations.

SuggestedRemedy

Add
DGD differential group delay

Response **Response Status C**

ACCEPT.

Cl 30 **SC 30.5.1.1.2** **P17** **L11** # **90**
Ganga, Ilango Intel

Comment Type E **Comment Status A**

Change to ..."as specified in Clause 89"

SuggestedRemedy

As per comment

Response **Response Status C**

ACCEPT.

Cl 45 SC 45.2.1.11a P21 L41 # 101
 Law, David Hewlett-Packard
 Comment Type E Comment Status A
 Typo.
 SuggestedRemedy
 The R/W column should read 'RO'.
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.11a P21 L41 # 24
 Marris, Arthur Cadence
 Comment Type E Comment Status A
 Missing RO
 SuggestedRemedy
 Add RO to bit 1.13.4 in Table 45-12a
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.11a P21 L41 # 94
 Ganga, Ilango Intel
 Comment Type T Comment Status A
 Show bit 1.3.4 FR ability bit as Read Only
 SuggestedRemedy
 FR ability bit: Add RO to column R/W
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.11a P21 L41 # 20
 Trowbridge, Steve Alcatel-Lucent
 Comment Type T Comment Status A
 The 40GBASE-FR ability bit is read-only
 SuggestedRemedy
 Insert "RO" in the "R/W" column of the 40GBASE-FR ability row of Table 45-12a
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.11a P21 L42 # 27
 Nowell, Mark Cisco Systems
 Comment Type E Comment Status A
 40GBASE-FR ability does not have a register bit "RO" designation in Table 45-12a
 SuggestedRemedy
 Add "RO" to the 40GBASE-FR row
 Response Response Status C
 ACCEPT.

Cl 45 SC 45.2.1.7.4 P20 L18 # 47
 Dawe, Piers IPtronics
 Comment Type E Comment Status R
 We now have more than 10 lines in the format "The description of the transmit fault function for the xxx PMD is given in n.m.o".
 SuggestedRemedy
 Consider resetting the references as a table.
 Similarly for 45.2.1.7.5 and 45.2.1.8.
 Response Response Status C
 REJECT.
 Making this change to the base text of IEEE 802.3 seems more appropriate to a revision project than this amendment.

Cl 45 SC 45.2.1.8 P20 L45 # 89
 Ganga, Ilango Intel
 Comment Type E Comment Status A
 Enclose "as modified by IEEE Std 802.3ba-2010" in parenthesis as shown below:
 Change 45.2.1.8 (as modified by IEEE Std 802.3ba-2010) as follows...
 Make similar changes to other Editing instructions as appropriate
 SuggestedRemedy
 As per comment
 Response Response Status C
 ACCEPT.

Cl 80 SC 80.1.2 P23 L12 # 102
Law, David Hewlett-Packard

Comment Type E Comment Status A

There were minor editorial changes made to the objectives text during the preparation for publication of IEEE Std 802.3ba-2010, for example '.. of IEEE 802.3 standard.' was changed to read '.. of IEEE Std 802.3'.

SuggestedRemedy

Please update the base text that is being modified here to match the published text in IEEE Std 802.3ba-2010.

Response Response Status C

ACCEPT IN PRINCIPLE.
See response to comment #6

Cl 80 SC 80.1.2 P23 L12 # 6
Anslow, Peter Ciena

Comment Type E Comment Status A

The exact wording of the text in 80.1.2 is different in the published version of IEEE Std 802.3ba compared to D 3.2.

e.g.
in item c) "frame size of IEEE 802.3 standard" has changed to "frame size of IEEE Std 802.3"
in item g) "Provide Physical Layer specifications which support 40 Gb/s operation over up to:" has changed to "Provide Physical Layer specifications that support 40 Gb/s operation over up to the following:"
etc.

SuggestedRemedy

Change the base text of 80.1.2 to be the same as the published version of IEEE Std 802.3ba-2010.
Do the same for any other text in 802.3bg that is modifying text from IEEE Std 802.3ba-2010

Response Response Status C

ACCEPT IN PRINCIPLE.
Where 802.3bg is modifying text from IEEE Std 802.3ba-2010, change the base text to be the same as the published version.

Cl 80 SC 80.1.2 P23 L19 # 91
Ganga, Ilango Intel

Comment Type ER Comment Status A

Update the base text for objectives as per the latest IEEE Std 802.3ba-2010 document.

Alternatively just insert the new objective to item 1). No need to repeat the entire list in this amendment.

Also delete the informative instruction at line 3.

SuggestedRemedy

As per comment.

Response Response Status W

ACCEPT IN PRINCIPLE.
See Response to comment #6

The informative statement at line 3:
"Clause 80 has been added to IEEE Std 802.3-2008 by IEEE Std 803.3ba-201x." is very helpful to users of the document who are not IEEE 802.3 insiders who may not know where to find the rest of the base text for clause 80 and therefore it should not be removed.

If at the time of publication of P802.3bg, this is no longer correct, the IEEE SA editor will remove it.

Cl 80 SC 80.1.2 P23 L19 # 25
Marris, Arthur Cadence

Comment Type T Comment Status R

The 2km reach objective for SMF appears redundant coming after the 10km reach objective.

SuggestedRemedy

Consider qualifying the 2km reach objective for example as follows:

"at least 2 km on single-mode fiber (SMF) using 1500nm optics"

Response Response Status C

REJECT.

The 2km reach objective is no more redundant than the fact that there are both:
at least 40 km on single-mode fiber (SMF)
at least 10 km on single-mode fiber (SMF)
in the 100G objectives list.

The use of 1500 nm optics was not an objective, it was a choice that the Task Force made.

Cl 80 SC 80.1.2 P23 L19 # 68
Diab, Wael Broadcom

Comment Type T Comment Status R

I understand the motivation to change the objectives in Clause 80, however these were project objectives not Clause objectives and should either be preserved that way or removed

SuggestedRemedy

Please either retain the 802.3ba project objectives as is or simply remove all objectives as the clause no longer just supports one original project

Response Response Status C

REJECT.

These are the objectives of 40 Gigabit and 100 Gigabit Ethernet, not specific to a particular project.

40GBASE-FR is being added as an extra member of the family of 40 and 100 Gbit PMDs and therefore it is appropriate to modify the list of objectives accordingly.

This amendment is adding to the list of objectives in just the same way as the objectives of 10 Gigabit Ethernet listed in subclause 44.1.2 were added to by 802.3ak-2004 and also by 802.3an-2006

Cl 80 SC 80.1.2 P23 L19 # 80
Thompson, Geoff GraCaSI

Comment Type TR Comment Status R

The text:

2) at least 2 km on single-mode fiber (SMF) is not sufficiently descriptive.

Whether fiber plant is duplex on a single fiber or dual simplex on two fibers is not given in the world. It needs to be specified.

Parallel change also needed on page 24 line 16.

SuggestedRemedy

Change to:

2) at least 2 km on dual simplex single-mode fiber (SMF)

(I suggest that other definitions in this same section that are outside the scope of this ballot also be corrected as a service to humanity.)

Response Response Status W

REJECT.

This table describes the nomenclature, it is not intended to be a complete description of the PMD.

Whether fiber plant is duplex on a single fiber or dual simplex on two fibers is clearly specified in Clause 89.

Cl 80 SC 80.1.3 P23 L34 # 81
Thompson, Geoff GraCaSI

Comment Type TR Comment Status R

The text:

"g) The MDI as specified in Clause 89 for 40GBASE-FR uses a single lane data path." is correct and not sufficiently precise.

SuggestedRemedy

Change to:

"g) The MDI as specified in Clause 89 for 40GBASE-FR uses a single lane data path in each direction."

Response Response Status W

REJECT.

This text must be read in the context of subclause 80.1.3 from IEEE Std 802.3ba-2010 which says:

"While this specification defines interfaces in terms of bits, octets, and frames, implementations may choose other data-path widths for implementation convenience. The only exceptions are as follows:"

This text is not defining the MDI, but just pointing out that the implementor does not have freedom to choose the data-path width at the Clause 89 MDI.

Also, "lane" is already defined in 1.4.199 and adding "in each direction" is not necessary.

Consequently, it is not necessary to make the new exception different from the existing ones by adding "in each direction" as that is clear from the specifications in Clause 89.

Cl 80 SC 80.1.4 P24 L1 # 49
Dawe, Piers IPtronics

Comment Type E Comment Status R

The entries in this table are very repetitive and the table may grow further in future.

SuggestedRemedy

Consider setting it out as a multi-column table, with columns

Name Data rate (Gb/s) Encoding Number of lanes Medium Minimum reach Clause

Response Response Status C

REJECT.

In generating this table, the current layout was chosen so that no "rules" for how the nomenclature is structured could be inferred.

Cl 80 SC 80.1.4 P24 L1 # 48
Dawe, Piers IPtronics

Comment Type E Comment Status A

I think that the ordering within a speed (group) is from short to long. Ordering by distance would be more use in Clause 80 than ordering by MDIO code.

SuggestedRemedy

Move the 40GBASE-FR entry up one. Similarly for the rows in Table 80-2, and move the 40GBASE-FR PMD column to between CPP1 and 40GBASE-LR4 PMD. For 80.4, change "Table 80-3 below 40GBASE-LR4 PMD" to "Table 80-3 above 40GBASE-LR4 PMD".

Response Response Status C

ACCEPT IN PRINCIPLE.
In Table 80-1, move the 40GBASE-FR entry up one.

In Table 80-2, move the 40GBASE-FR entry up one but leave the columns as they are in Clause order.

In 80.4, change "Table 80-3 below 40GBASE-LR4 PMD" to "Table 80-3 below 40GBASE-SR4 PMD".

Cl 80 SC 80.1.4 P24 L2 # 99
Ganga, Ilango Intel

Comment Type E Comment Status R

No need to repeat entire Table 80-1 in this amendment. Just have editing instruction to insert the 40GBASE-FR row to the table (similar to Table 80-3 on page 27)

SuggestedRemedy

As per comment

Response Response Status C

REJECT.
Showing the entire table allows reviewers to see how the description fits with the existing descriptions for the other PMDs without having to refer to another document.

Cl 80 SC 80.3.2 P25 L47 # 92
Ganga, Ilango Intel

Comment Type ER Comment Status A

Change the editing instruction as follows:

"Change Figure 80-2 to add Note 2 as follows"

No need to provide a reason in the Editing instruction.

Also underline Note 2 in Figure 80-2 on page 26 to highlight the changes.

SuggestedRemedy

As per comment

Response Response Status W

ACCEPT IN PRINCIPLE.
Change the editing instruction from :
"Change Figure 80-2 as follows because the 40GBASE-FR PMD does not use the PMD:IS_UNITDATA_1.request to PMD:IS_UNITDATA_3.request or PMD:IS_UNITDATA_1.indication to PMD:IS_UNITDATA_3.indication primitives:"
to:
"Replace Figure 80-2 (to add NOTE 2) as follows:"

Cl 80 SC 80.3.2 P26 L48 # 15
Booth, Bradley AppliedMicro

Comment Type ER Comment Status A

In Figure 80-2, the note about the primitives could be confusing. The lowest PMA for 40GBASE-FR will be a 4:1; therefore, the other primitives do not exist.

SuggestedRemedy

Change to read:
NOTE 2—DOES NOT EXIST FOR 40GBASE-FR PMD

Response Response Status C

ACCEPT.

Cl 80 SC 80.5 P27 L 20 # 8
Anslow, Peter Ciena

Comment Type T Comment Status A

Figures 80-4 and 80-5 in subclause 80.5 both show the lowest PMA in the 40G stack as a PMA (4:4), but with 40GBASE-FR this could be a PMA (4:1)

SuggestedRemedy

Include Figures 80-4 and 80-5 in the draft and change them to have the lowest 40G PMA as (4:m) with: m = 1 or 4

Response Response Status C

ACCEPT.

Cl 80 SC 80.5 P27 L 34 # 50
Dawe, Piers IPtronics

Comment Type E Comment Status R

The notes (column) are getting increasingly unwieldy.

SuggestedRemedy

Use commas, e.g. "See 83.5.3.3, 84.5, 85.5, 86.3.2, 87.3.2, 88.3.2 or 89.3.2"
Make columns 1 and 2 narrower, column 5 wider.

Response Response Status C

REJECT.

Changing from:

See 83.5.3.3 or 84.5 or 85.5 or 86.3.2 or 87.3.2 or 88.3.2 or 89.3.2

to:

See 83.5.3.3, 84.5, 85.5, 86.3.2, 87.3.2, 88.3.2 or 89.3.2

makes it less clear that only one reference is relevant for each instantiated skew point

Cl 80 SC 80.5 P28 L 29 # 17
Firoozmand, Farzin Semtech

Comment Type E Comment Status A

Fig 80-4 and 80-5 shows PMA 4:4 only. With the addition of 40GBaseFR they need to be modified

SuggestedRemedy

Add:

In Figures 80-4 and 80-5 in 802.3ba, change the PMA blocks between SP1 and SP2 from 4:4 to 4:n

Also change n=4 or 10 to n=1,4 or 10

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #8

[Editor's note: Subclause changed from 5 to 80.5]

Cl 83 SC P29 L 4 # 100
Ganga, Ilango Intel

Comment Type E Comment Status R

Remove this informative note in editing instruction.

SuggestedRemedy

As per comment

Response Response Status C

REJECT.

The informative statement at line 4:

"Clause 83 has been added to IEEE Std 802.3-2008 by IEEE Std 803.3ba-201x." is very helpful to users of the document who are not IEEE 802.3 insiders who may not know where to find the rest of the base text for clause 83 and therefore it should not be removed.

Cl 83 SC 83.7 P29 L # 93
Ganga, Ilango Intel

Comment Type ER Comment Status R

Add the changes to PICS item for LANES-UPSTREAM to include option for 1 lane. (similar to downstream)

SuggestedRemedy

As per comment

Response Response Status W

REJECT.

The feature column for LANES_UPSTREAM contains: "Number of lanes in direction of PCS"

The P802.3bg amendment does not require a PMA with only one lane in the direction of the PCS as this would imply 40Gbit/s electrical signalling.

Cl 89 SC 89.1 P L # 67
Diab, Wael Broadcom

Comment Type T Comment Status A

The overview text with the statement that the PMD can be compliant to the ITU PMD is confusing.

SuggestedRemedy

Please split out the text regarding the ITU PMD into a new section/sub section called "Relationship to ITU-T G.693". Please also avoid statements that the PMD should be compliant for that application. Use terminology such as "maybe compatible with"

Response Response Status C

ACCEPT IN PRINCIPLE.

It is not appropriate to place this text in a subclause called "Relationship to ITU-T G.693" since this is a separate standalone specification that does not refer to G.693 for any of its values or methods.

Use of the word "compatible" should be avoided since it could be taken to mean that a 40GBASE-FR transmitter can be connected to a VSR2000-3R2 receiver.

See Response to comment #28 for changes to this text.

Cl 89 SC 89.1 P31 L 10 # 53
Dawe, Piers IPtronics

Comment Type T Comment Status A

Draft says "different from the methodology used in the other 40GBASE-R optical PMDs." But it's worse than that, it's different from all other 802.3 optical PMDs from at least the last 12 years.

SuggestedRemedy

Use a TDP/stressed sensitivity spec method, or change "the other 40GBASE-R optical PMDs" to "other BASE-R optical PMDs".

Consider making that "other 802.3 optical PMDs".

Response Response Status C

ACCEPT IN PRINCIPLE.

See Response to comment #28

Cl 89 SC 89.1 P31 L 10 # 33
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

A more deatial disclaimer need to be added including the fact VSR2000-3R2 does not have the same level of interoperability or BER objective

SuggestedRemedy

The specifications in this clause therefore use a similar methodology to that used in ITU-T G.693 [Bx1] and not recomended for reuse as it does not provide the same level of interoperability or BER other 40GBASE-R PMDs provide.

Response Response Status C

ACCEPT IN PRINCIPLE.

The BER objective for 40GBASE-FR is 1E-12 which is the same as for the other 40 and 100G PMDs and also VSR2000-3R2 in ITU-T G.693.

The level of interoperability provided by the specifications in ITU-T G.693 has not been demonstrated to be inadequate by industry use, so we should not include text in an IEEE specification that suggests that it is not adequate.

See Response to comment #28 for changes to this text.

[Editor's note: Subclause changed from 1 to 89.1 and Page changed from 30 to 31]

Cl 89 SC 89.1 P31 L9 # 28
Nowell, Mark Cisco Systems

Comment Type E Comment Status A

The description of the use of alternative methodologies used in this clause is fairly broad. It is only the optical link specifications that follow the ITU methodology and not the whole of the clause 89 which closely follows the specifications methodology from the 802.3ba clauses.

SuggestedRemedy

Add the words "optical link" or equivalent into the sentence. "The optical link specifications in this clause therefore use a similar methodology"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change text from:

"It is intended that devices compliant with this specification can also be compliant with application VSR2000-3R2 as defined in ITU-T G.693 [Bx1]. The specifications in this clause therefore use a similar methodology to that used in ITU-T G.693 [Bx1], which is different from the methodology used in the other 40GBASE-R optical PMDs."

to:

"It is intended that devices compliant with this specification could be implemented to also be used for application VSR2000-3R2 as defined in ITU-T G.693 [Bx1] (but that is beyond the scope of this standard). The 40GBASE-FR PMD is defined using a specification and test methodology that is similar to that used in ITU-T G.693 [Bx1], which is different from the specification and test methodologies used for other optical PMDs at 1000 Mb/s and above in IEEE Std 802.3. For example, the transmitter specifications for 40GBASE-FR do not include OMA or TDP parameters but do include a dispersion penalty limit, and the receiver specifications for 40GBASE-FR do not include stressed receiver sensitivity parameters but do include a part-stressed sensitivity limit and a separate jitter tolerance limit. See 89.6.4."

Cl 89 SC 89.1 P31 L9 # 85
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status A

The last sentence of this paragraph does not go far enough in highlighting the difference between this PMD specification and the ones that preceded it in IEEE Std 802.3. There may be good and valid reasons for using a different specification and test methodology for this PMD, but I am concerned about setting a precedent that will lead to a regression of our methodology.

SuggestedRemedy

Change the last sentence of the first paragraph of 89.1 to read:

The 40GBASE-FR PMD is defined using a specification and test methodology that is similar to that used in ITU-T G.693 [Bx1], which is different from the specification and test methodologies recently used for other optical PMDs in IEEE Std 802.3. For example, the transmit characteristics for 40GBASE-FR do not include optical modulation amplitude or transmitter and dispersion penalty parameters, and the receive characteristics for 40GBASE-FR do not include stressed receiver sensitivity parameters.

Response Response Status W

ACCEPT IN PRINCIPLE.

See Response to comment #28 for changes to this text.

Cl 89 SC 89.10 P44 L25 # 42
Dudek, Mike QLogic

Comment Type TR Comment Status R

Table 89-13 is the specification for the channel. In order to close the budget the DGD of the channel should be limited. The footnote to the table refers to the amount of DGD that the system must tolerate it does not limit the DGD of the channel.

SuggestedRemedy

In the footnote replace "DGD_max is the maximum differential group delay that the system must tolerate" with "DGD_max is the maximum differential group delay that the channel is allowed to have."

Response Response Status C

REJECT.

DGD_max is the maximum DGD that the receiver has to tolerate. Maximum DGD is not an appropriate specification to apply to a fibre as for any particular DGD value there is an associated probability that that DGD will be exceeded. Fibre is usually specified as having a maximum PMD coefficient specified in ps/sqrt(km).

The methodology used in clause 89 is the same as that in Clauses 52, 87, 88

Cl 89 SC 89.10.1 P44 L37 # 2
Kolesar, Paul CommScope

Comment Type E Comment Status A

The suffix "A" of fiber type B6_A should not be capitalized. Note that this same minor error appears a few times in clauses 87 and 88 (802.3ba).

SuggestedRemedy

Change B6_A to B6_a.

Response Response Status C

ACCEPT IN PRINCIPLE.
See Response to comment #1

Cl 89 SC 89.10.1 P44 L38 # 104
Law, David Hewlett-Packard

Comment Type T Comment Status A

Isn't it 'Type B6_a' rather than 'Type B6_A'?

SuggestedRemedy

Could you please check IEC 60793-2-50:2008 and correct if required.

Response Response Status C

ACCEPT IN PRINCIPLE.
See Response to comment #1

Cl 89 SC 89.11.3 P47 L11 # 22
Trowbridge, Steve Alcatel-Lucent

Comment Type T Comment Status A

There is no specified physical instantiation of the PMD service interface for 40GBASE-FR: only the logical aspects (bit order) can be inferred from this standard. Therefore TP1 and TP4 are described only logically with no electrical characteristics (amplitude, jitter generation or tolerance) specified for the (very short) 40G serial electrical interface.

SuggestedRemedy

Consider whether there is value in including XLTP1 or XLTP4 in the PICS tables, as anything which might be measured at these reference point is according to specifications which are outside of the scope of this standard.

Response Response Status C

ACCEPT IN PRINCIPLE.
Remove XLTP1 and XLTP4 from the PICS tables.

Cl 89 SC 89.11.4.4 P50 L13 # 72
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status R

Item XLOM3 - value / comment field focuses on test methodology, but does not point to the table that has the values that need to be met.

SuggestedRemedy

Add reference in value field to Table 89-6 AND 89-7.

Response Response Status C

REJECT.
The PICS element that records compliance with the values in Table 89-6 is XLLR1 on Page 49 line 29.
Similarly, the PICS element that records compliance with the values in Table 89-7 is XLLR2 on Page 49 line 31.
Item XLOM3 is only about test methodology and should not point to the tables as well.
This is the same arrangement as for Clauses 52, 86, 87 and 88.

Cl 89 SC 89.11.4.4 P50 L14 # 73
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

XLOM4 subclause reference is not specific enough.

SuggestedRemedy

change subclause reference to 89.7.5.3

Response Response Status C

ACCEPT.

Cl 89 SC 89.11.4.4 P50 L15 # 74
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status R

Item XLOM5 - value / comment field focuses on test methodology, but does not point to the table that has the values that need to be met.

SuggestedRemedy

Response Response Status C

REJECT.
The PICS element that records compliance with the values in Table 89-6 (including extinction ratio) is XLLR1 on Page 49 line 29.
Item XLOM5 is only about test methodology and should not point to the table as well.
This is the same arrangement as for Clauses 52, 86, 87 and 88.

Cl 89 SC 89.11.4.4 P50 L8 # 52
Dawe, Piers IPtronics

Comment Type E Comment Status A
PICS XLOM2 says "Per TIA-455-127-A or IEC 61280-1-3 under modulated conditions". Other PICS, for tests that also need modulated conditions, don't say "under modulated conditions", so picking out this one is misleading. 89.7.3 says just "per TIA/EIA-455-127-A or IEC 61280-1-3 using the test pattern".

SuggestedRemedy
Delete "under modulated conditions".

Response Response Status C
ACCEPT.

Cl 89 SC 89.11.4.4 P50 L8 # 76
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status R
Item XLOM2 - value / comment field focuses on test methodology, but does not point to the table that has the values that need to be met.

SuggestedRemedy
Add reference in value field to Table 89-6.

Response Response Status C
REJECT.
The PICS element that records compliance with the values in Table 89-6 (including Center wavelength) is XLLR1 on Page 49 line 29.
Item XLOM2 is only about test methodology and should not point to the table as well.
This is the same arrangement as for Clauses 52, 86, 87 and 88.
[Editor's note: Line changed from 88 to 8]

Cl 89 SC 89.2 P32 L16 # 87
Ganga, Ilango Intel

Comment Type E Comment Status A
In Figure 89-1 change shading for the PMD to match the style of similar PMD figures in based document (See Fig 87-1 in IEEE Std 802.3ba-2010)

SuggestedRemedy
As per comment

Response Response Status C
ACCEPT.

Cl 89 SC 89.2 P32 L48 # 71
Diab, Wael Broadcom

Comment Type T Comment Status R
The content of this note seems more appropriate under Table 89-4. Furthermore, a note technically is not part of the specification, I am not sure if this was the intent of the group

SuggestedRemedy
Suggest either
(a) Moving the note to be under Table 89-4
(b) Changing the note to be a footnote to Table 89-4

If more explanatory text is needed under the diagram, change the note to regular text.

Response Response Status C
REJECT.

This is the part of the draft that discusses the signals passed across the PMD service interface and their meaning. This is not a requirement on the PMD, but informative text that explains the consequence of the requirements that are elsewhere in the draft. Consequently, the location and format of this text in a note seems appropriate. This is the same location and format as was used in clauses 38, 52, 53, 58, 59, 60, 75, 86, 87, 88

Cl 89 SC 89.3.2 P33 L17 # 77
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Skew limit at SP2 is limited to 43ns and variation at same point is 400 ps. It is not clear why this is not a normative limit. If it isn't normative, then statement should be modified.

SuggestedRemedy

Depends on the nature of the specification.

If normative - change "limited to" to "shall be less than"

If informative - change "limited to" to "should be less than"

Response Response Status C

ACCEPT IN PRINCIPLE.

This is the same wording as was used in all of the PMD clauses in IEEE Std 802.3ba

See 84.5, 85.5, 86.3.2, 87.3.2, 88.3.2.

The normative requirement on Skew at SP2 (the PMD service interface) is in 83.5.3.3 (the PMA)

The reason to include this information here is to clarify for the implementor of the PMD the largest skew that could exist at the PMD input.

It is not appropriate to use "shall" since skew at SP2 is not controlled by the PMD layer. It is not appropriate to use the term "should" since there is a normative requirement elsewhere in 802.3.

Change "then the Skew at SP2 is limited to 43 ns" to "then the Skew at SP2 is limited to 43 ns as defined by 83.5.3.3"

See also response to comment 41

Cl 89 SC 89.3.2 P33 L18 # 41
 Dudek, Mike QLogic

Comment Type TR Comment Status A

The PMD service interface is a serial interface and therefore skew variation is not appropriate.

SuggestedRemedy

On page 33 line 18 replace "and the Skew Variation at SP2 is limited to 400ps" with ". Since the signal signal at the PMD service interface represents a serial bit stream, there is no Skew Variation at this point."

On Page 33 line 27 replace "and the Skew Variation at SP5 shall be less than 3.6ns" with ". Since the signal signal at the PMD service interface represents a serial bit stream, there is no Skew Variation at this point."

Also in section 89.7.2. page 38 line 51 Replace "is a serial bit stream at the MDI, there is no Skew Variation at skew points SP3 and SP4" with "is a serial bit stream at the PMD service interface and MDI, there is no Skew Variation at skew points SP2, SP3 SP4 and SP5"

Response Response Status C

ACCEPT IN PRINCIPLE.

In 89.3.2 replace "and the Skew Variation at SP2 is limited to 400ps" with ". Since the signal at the PMD service interface represents a serial bit stream, there is no Skew Variation at this point."

Also replace "and the Skew Variation at SP5 shall be less than 3.6ns" with ". Since the signal at the PMD service interface represents a serial bit stream, there is no Skew Variation at this point."

In section 89.7.2. Replace "is a serial bit stream at the MDI, there is no Skew Variation at skew points SP3 and SP4" with "is a serial bit stream at the PMD service interface and the MDI, there is no Skew Variation at skew points SP2, SP3, SP4 and SP5"

Cl 89 SC 89.5.1 P34 L24 # 7
Anslow, Peter Ciena

Comment Type E Comment Status A

The exact wording of the text is different in the published version of IEEE Std 802.3ba compared to D 3.2. Since clause 89 is intended to follow clause 87 as far as possible, there is a minor change that should be made to clause 89 to bring it closer to the published version of clause 87.

SuggestedRemedy

On page 34, line 24 change "implementers" to "implementors"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the three instances in Clause 89 of "implementers" to "implementors"

Cl 89 SC 89.5.1 P34 L33 # 34
Ghiasi, Ali Broadcom

Comment Type TR Comment Status R

PMD service interface TP1 and TP4 are not applicable as they are not currently defined

SuggestedRemedy

Remove TP1 and TP4
Add XLAUI interface to the PMA

Response Response Status C

REJECT.

TP1 and TP4 are defined here in Figure 89-2.

Equivalent TP1 and TP4 reference points are defined in Clauses 53, 87 and 88.

If TP1 and TP4 were removed, it would be very undesirable to change TP2 and TP3 since these reference points are used in all recent optical PMD clauses and the reader would be left wondering where TP1 is.

The XLAUI interface is optional so it is inappropriate to include it in Figure 89-2

[Editor's note: Subclause changed from 5.1 to 89.5.1]

Cl 89 SC 89.5.1 P34 L43 # 16
Booth, Bradley AppliedMicro

Comment Type ER Comment Status A

In Figure 89-2, the note is a bit confusing. I'm sure the note has been used previously, but to state that the retimer function is part of the PMA and then to state that the specification of it is beyond the scope of this standard just doesn't read correct. IMHO, the statement should be related to the implementation of the retimer function.

SuggestedRemedy

Change note to read:

NOTE—Retimer function is left up to the implementer.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace the current boxes and "Retimer function (part of PMA)" labels with open boxes labelled "PMA" and remove the note.

Cl 89 SC 89.5.4 P35 L20 # 63
Carroll, Martin Verizon

Comment Type E Comment Status R

The statement beginning on line 20, "The PMD receiver is not required to verify whether a compliant 40GBASE-R signal is being received...", seems to be in conflict with the Table 89-4—SIGNAL_DETECT value definition for an "OK" value. According to the Table, an OK value is achieved based on two Receive Conditions. The second Receive Condition requires a "(compliant 40GBASE-R signal input)"; therefore, shouldn't the PMD receiver be required to verify that a compliant 40GBASE-R signal is being received in order to comply with the second condition?

SuggestedRemedy

Remove the word "not" from the statement beginning on line 20 resulting in the following text, "The PMD receiver is required to verify whether a compliant 40GBASE-R signal is being received."

Response Response Status C

REJECT.

There is no conflict.

If a compliant signal with a power greater than the receiver sensitivity crosses the MDI then the SIGNAL_DETECT is required to be OK.

If some other type of signal (e.g. CW light) with a power greater than the receiver sensitivity crosses the MDI then the SIGNAL_DETECT value is unspecified, i.e., SIGNAL_DETECT is allowed to be OK or FAIL.

Whether it is a compliant 40GBASE-R signal is determined by other layers e.g. the PCS looks for 64B/66B blocks, lane markers etc.

There is no need for the PMD layer to determine if the signal is compliant, it only has to assert SIGNAL_DETECT correctly when a compliant signal is present.

Cl 89 SC 89.5.4 P35 L29 # 84
Frazier, Howard Broadcom Corporation

Comment Type T Comment Status R

There is quite a broad range (24 dB) of receive conditions over which SIGNAL_DETECT has an unspecified value. The -30 dBm threshold is there for historical reasons, going back at least as far as FDDI, when the receiver sensitivity was on the order of a few dB higher than the signal detect "must deassert" threshold. Perhaps it is time to bring the threshold up to a more relevant level, as I doubt that a 40GBASE-FR PMD is going to produce anything intelligible out of its receiver with an input signal of less than -10 dbm.

SuggestedRemedy

Change the SIGNAL_DETECT (FAIL) threshold to -20 dBm, from -30 dBm.

Response Response Status C

REJECT.
SIGNAL_DETECT provides an indication of whether or not there is a signal present at the MDI. It is used in the PCS layer to determine whether to accept data-units from the PMA. It is also useful as a fault-finding aid to determine whether there is an optical signal present. What SIGNAL_DETECT is unable to do, however, is determine whether the optical signal level is high enough to allow an adequate BER. Two reasons for this are that making the SIGNAL_DETECT threshold accurate adds significant cost and setting this threshold near to the minimum receive light level could cause the link to shut down when the BER is much better than the minimum requirement, especially if a receiver has better than worst case sensitivity.
Increasing the level below which SIGNAL_DETECT is required to be FAIL from -30 dBm to -20 dBm will not significantly improve the function for the two uses listed above. -20 dBm is not enough light to ensure a sensible output from many receivers so the PCS layer must be robust against passing through non-valid data anyway (which it is). A threshold of -30 dBm where SIGNAL_DETECT is required to be FAIL is arguably more useful for fault diagnosis since to verify whether the light level is within specification, an analogue measurement is required in both cases.
An implementer who wishes to set his SIGNAL_DETECT threshold at -20 dB or higher is already free to do so.

Cl 89 SC 89.5.6 P36 L6 # 106
Law, David Hewlett-Packard

Comment Type T Comment Status A

Shouldn't we have text that maps this function to the MDIO bits as is done for subclause 89.5.7 through 89.5.9 below. Also suggest a note similar to the one provided in 52.4.7 in relation to not using the Lane 0 control bit for serial PMDs also be included.

SuggestedRemedy

Suggest that the following be added:

If the MDIO interface is implemented, then this function shall map to the PMD_global_transmit_disable bit as specified in 45.2.1.8.5.

NOTE—PMD Transmit Disable 0 is not used for serial PMDs.

Response Response Status C

ACCEPT IN PRINCIPLE.
Add the suggested text at the end of 89.5.6

Cl 89 SC 89.5.7 P36 L9 # 39
Dudek, Mike QLogic

Comment Type T Comment Status A

This is a serial PMD. There is only one Tx path and one Rx path

SuggestedRemedy

replace "on any of the transmit or receive paths" with "on the transmit or receive path"

Response Response Status C

ACCEPT IN PRINCIPLE.
See response to comment #103

Cl 89 SC 89.5.7 P36 L9 # 103
Law, David Hewlett-Packard

Comment Type E Comment Status A

Since there is only one transmit and receive path suggest that '.. a local fault on any of the transmit or receive paths ..' should be changed to read '.. a local fault on either the transmit or receive path ..'

SuggestedRemedy

See comment.

Response Response Status C

ACCEPT.

Cl 89 SC 89.6 P36 L28 # 29
Nowell, Mark Cisco Systems

Comment Type E Comment Status A
Where are SMF fiber types B1.1, B1.3 and B6_A defined?

SuggestedRemedy
Add a reference.

Response Response Status C
ACCEPT IN PRINCIPLE.
See Response to comment #26

Cl 89 SC 89.6 P36 L28 # 51
Dawe, Piers IPtronics

Comment Type E Comment Status A
This subclause uses "operating range" once, "required operating range" twice, "operating range requirement" once and "40GBASE-FR operating range" once.

SuggestedRemedy
Change the first "operating range" to "required operating range", and "40GBASE-FR operating range" to "40GBASE-FR required operating range".

Response Response Status C
ACCEPT.

Cl 89 SC 89.6 P36 L28 # 26
Marris, Arthur Cadence

Comment Type T Comment Status A
What are type B1.1, B1.3 or B6_A single-mode fibers?

SuggestedRemedy
Consider adding a reference here (should it be to IEC 60793-2-50?) particularly as the current text can be read as saying these types of fiber are defined in Table 89-13.

Response Response Status C
ACCEPT IN PRINCIPLE.
In 89.6 change:
"operates on type B1.1, B1.3 or B6_A single-mode fibers" to:
"operates on IEC 60793-2-50 type B1.1, B1.3 or B6_a single-mode fibers"

Cl 89 SC 89.6 P36 L29 # 1
Kolesar, Paul CommScope

Comment Type E Comment Status A
The suffix "A" of fiber type B6_A should not be capitalized.

SuggestedRemedy
Change B6_A to B6_a.

Response Response Status C
ACCEPT IN PRINCIPLE.
Change "B6_A" to "B6_a" in 89.6 and 89.10.1

Cl 89 SC 89.6.1 P37 L14 # 61
Dawe, Piers IPtronics

Comment Type TR Comment Status R

I do not believe that this draft is "optically compatible with existing carrier 40Gb/s client interfaces" (from the PAR and objectives).
An implementer could make a very slow transmitter with excessive transmitter penalty as long as he got the dispersion penalty OK, and call it compliant. I don't believe that existing VSR2000-3R2 transmitters are that bad, and I don't believe that existing VSR2000-3R2 receivers could receive this worst allowed signal with confidence, and I doubt that folks want to redesign their receivers.
A motion in Geneva doesn't fix this.
Notice that TDP uses the same with/without dispersion measurement that this draft uses already. After the sensitivity to the reference transmitter has been established as a one-off, using a TDP spec will be a cost-effective way to plug the gap and avoid interoperability problems.

SuggestedRemedy

As TDP uses the same tests as DP, after the reference transmitter/sensitivity has been established as a one-off, using a TDP spec will be a cost-effective way to plug the gap and avoid interoperability problems. Suggested TDP limit 3.3 dB (the largest limit in 802.3ae less the polarisation penalty here).

Response Response Status W

REJECT.
Including TDP in the transmitter spec would be inconsistent with Motion #1 from the Geneva Task Force meeting in May 2010.
Move to adopt the ITU-T style of optical power budget specification as proposed in slide 4 of anslow_03_0510.
Y: 32, N: 0, A: 0
There is an eye mask requirement to protect against excessively slow transmitter waveforms. The dispersion penalty is measured with the actual transmitter and therefore takes in to account any effect of a slow transmitter waveform and includes the effect of reflections. The PMD penalty has been significantly reduced due to the response to comment #62 which has changed DGD_max to 3ps.
This means that a TDP test is not required to ensure interoperability.

The level of interoperability provided by the specifications for VSR2000-3R2 in G.693 has not been demonstrated to be inadequate by industry use and Clause 89 follows this methodology.

Cl 89 SC 89.6.1 P37 L14 # 62
Dawe, Piers IPtronics

Comment Type TR Comment Status A

The dispersion penalty limit of 2 dB is the same as VSR2000-3R2's path penalty and this draft's "allocation for penalties". Path penalty includes at least some of the polarisation dispersion penalty. So it appears that this draft overlooks the dispersion penalty, which is just over 0.5 dB for the 7.5 ps DGD_max given in Table 89-13.

SuggestedRemedy

As the penalties are too high in this draft, use a TDP limit and eliminate the separate dispersion penalty, or reduce the dispersion penalty limit by 0.5 dB to 1.5 dB.

Response Response Status W

ACCEPT IN PRINCIPLE.

In Table 89-13, change the value of DGD_max from 7.5 ps to 3 ps

[The value of 3 ps is derived from a value of 0.5 ps/sqrt(km) for the fibre, a 2 km link and a peak to mean ratio (S) of 3.75. A 3 ps DGD_max is associated with about 0.08 dB penalty]

Cl 89 SC 89.6.1 P37 L25 # 30
Nowell, Mark Cisco Systems

Comment Type T Comment Status R

Do the transmitter eye mask definition coordinates (X1,X2,X3,Y1,Y2,Y3) reference a diagram to indicate the correct usage?

SuggestedRemedy

Add a reference to an existing diagram or add a diagram.

Response Response Status C

REJECT.
Subclause 89.7.8 Transmitter optical waveform (transmit eye) contains: "The required optical transmitter pulse shape characteristics are specified in the form of a mask of the transmitter eye diagram as shown in Figure 86.4."

CI 89 SC 89.6.2 P37 L36 # 86
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status R

The receive characteristics in Table 89-7 include two center wavelength ranges. Given that the transmitter is constrained to a center wavelength range of 1530 to 1565 nm, the addition of the 1290 to 1330 nm wavelength range at the receiver might add unnecessary cost. It doesn't make sense to force the receiver to accept a range of center wavelengths that are so far removed from the transmitter's.

SuggestedRemedy

Remove the 1290 to 1330 nm wavelength range from Table 89-7.

Response Response Status W

REJECT.
The cost impact of this extra requirement is expected to be very small and it has the benefit that a possible future 1310 nm serial PMD with a greater distance capability could interwork with a 40GBASE-FR transceiver over up to 2 km.
This characteristic was the subject of a motion of the task force in the Geneva meeting May 2010:
Motion #2
Move to adopt the receiver characteristics from slide 6 of anslow_03_0510, with the modification that the operating wavelength range will be 1290-1330 nm and 1530-1565 nm.
All in room: Y: 28, N: 0, A: 3
802.3, Y: 21, N: 0, A: 1

The Task force voted on comment #35 which also proposed to remove the 1310 nm requirement and contained an identical rebuttal:
Should the Task force accept the proposed response above?
Yes (keep the 1310 nm requirement)
No (remove the 1310 nm requirement)
Yes 19
No 1

CI 89 SC 89.6.2 P37 L36 # 35
Ghiasi, Ali Broadcom

Comment Type TR Comment Status R

With the transmitter center wavelength at 1550 nm compatible with VSR3, there is not need to require FR receiver be dual wavelength. If the reason to add 1310 nm band for some future 1310 nm targeted for lower power and cost but we already declared at the beginning SONET VSR methodology is not recommended for reuse for not having same level of interoperability as IEEE specifications.

SuggestedRemedy

Remove the 1310 nm window

Response Response Status C

REJECT.
The cost impact of this extra requirement is expected to be very small and it has the benefit that a possible future 1310 nm serial PMD with a greater distance capability could interwork with a 40GBASE-FR transceiver over up to 2 km.
This characteristic was the subject of a motion of the task force in the Geneva meeting May 2010:
Motion #2
Move to adopt the receiver characteristics from slide 6 of anslow_03_0510, with the modification that the operating wavelength range will be 1290-1330 nm and 1530-1565 nm.
All in room: Y: 28, N: 0, A: 3
802.3, Y: 21, N: 0, A: 1

The Task force voted:
Should the Task force accept the proposed response above?
Yes (keep the 1310 nm requirement)
No (remove the 1310 nm requirement)
Yes 19
No 1

[Editor's note: Subclause changed from 6.3 to 89.6.2]

Cl 89 SC 89.6.2 P37 L47 # 57
Dawe, Piers IPtronics

Comment Type T Comment Status R

I see there is a receiver 3 dB electrical upper cutoff frequency spec in this draft although I do not see any equivalent in VSR2000-3R2.

SuggestedRemedy

If you can add this you can add the much more important TDP spec (which is based on the measurements (or predictions) with/without dispersion that must already be done to satisfy the dispersion penalty spec).

Response Response Status C

REJECT.
The Receiver 3 dB electrical upper cutoff frequency specification moderates the penalty seen for ringing laser waveforms.
See response to comment 61

Cl 89 SC 89.6.2 P37 L51 # 40
Dudek, Mike QLogic

Comment Type T Comment Status A

It would be good to point out at the point of use that "Receiver sensitivity (average power) (max) in table 89-7 is not the same as has been used in other clauses in IEEE 802.3

SuggestedRemedy

Add at the end of footnote b. This is a different definition of receiver sensitivity than that used in other IEEE 802.3 clauses (eg that in Clause 38). See 89.6.4 for a comparison.

Add new clause 89.6.4 Titled "Comparison of link power budget methodology" that will be included in dudek_01_0910.

Response Response Status C

ACCEPT IN PRINCIPLE.
Make the text changes as described on slide 8 of dudek_01_0910.
Add a new Figure 89-3 similar to that shown on slide 6 of dudek_01_0910 with editorial licence.

Cl 89 SC 89.6.3 P37 L46 # 36
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Receiver jitter tolerance test method missing

SuggestedRemedy

Add receiver jitter tolerance

Response Response Status C

ACCEPT IN PRINCIPLE.
See Response to comment #59
[Editor's note: Subclause changed from 6.3 to 89.6.3]

Cl 89 SC 89.6.3 P38 L19 # 56
Dawe, Piers IPtronics

Comment Type T Comment Status A

Draft has a row "Allocation for penalties" which at present is just one penalty (dispersion penalty), which in spite of the footnote, is a requirement, and it could be given a more accurate title. This row should contain either all the penalties or at least all the path penalties.
I don't see any calculations, except in this table 4+2=6.

SuggestedRemedy

Use a proper TDP specification, or rename to "Path penalty" and change note c to "Path penalty is the combined penalty caused by chromatic dispersion and polarization mode dispersion."

Response Response Status C

ACCEPT IN PRINCIPLE.
In Table 89-8 change "Allocation for penalties" to "Path penalty". Change note c to "Path penalty is the combined penalty caused by chromatic dispersion and polarization mode dispersion."

Cl 89 SC 89.7.10 P42 L20 # 19
Trowbridge, Steve Alcatel-Lucent

Comment Type E Comment Status A

It is called "Sinusoidal jitter" in all places but one

SuggestedRemedy

Change "sine jitter" to "sinusoidal jitter"

Response Response Status C

ACCEPT.

Cl 89 SC 89.7.10 P42 L20 # 82
Frazier, Howard Broadcom Corporation

Comment Type E Comment Status A

In footnote a to Table 89-12, "sine" should be "sinusoidal".

SuggestedRemedy
per comment.

Response Response Status C
ACCEPT.

Cl 89 SC 89.7.10 P42 L4 # 37
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

The receiver jitter tolerance here is unstress which is different than 802.3 and note should be added to clarify

SuggestedRemedy
Add note receiver jitter tolerance is unstress

Response Response Status C
ACCEPT IN PRINCIPLE.
Add:
NOTE—receiver jitter tolerance as defined here is measured without additional amplitude stress.

[Editor's note: Subclause changed from 7.10 to 89.7.10]

Cl 89 SC 89.7.10 P42 L4 # 31
Lewis, David JDSU

Comment Type TR Comment Status R

Receiver jitter tolerance is defined for a BER of 1E-10 whereas one of the objectives for 40 Gigabit Ethernet is to support a BER better than or equal to 1E-12 (80.1.2 d). Since receiver sensitivity (sec 89.7.9) is defined at 1E-12, with no added jitter, it makes sense to define jitter tolerance at that level and not the higher 1E-10 level. I think the magnitude of jitter tolerance (1dB max) and the amount of added jitter (0.18 UI increasing below 16 MHz) can stay the same if we assume linear behavior of sensitivity from 1E-10 to 1E-12 BER.

SuggestedRemedy
Change the 1st sentence of 89.7.10 to ".....maintain a BER of 10-12.....".

Response Response Status C

REJECT.
Receiver jitter tolerance is defined for a BER of 1E-10 for practical measurement reasons and to make the test the same as defined for the ITU application VSR2000-3R2 as defined in ITU-T G.693.
As pointed out in the Comment, the penalty at a BER of 1E-10 is likely to be representative of the penalty at 1E-12 and this measurement has to be made many times for each tested receiver (for different jitter frequencies) so requiring a BER of 1E-12 is overly onerous.

CI 89 SC 89.7.10 P42 L4 # 59
Dawe, Piers IPtronics

Comment Type TR Comment Status A

Draft says "when the sinusoidal jitter ... is applied to the signal" but it doesn't say what "the signal" is. So we have to assume it's any signal that the receiver might receive in service: best or worst transmitter, most or least dispersion, possibly with polarisation dispersion. But maybe this is not what is meant.

SuggestedRemedy

State explicitly what "the signal" is and give enough information so that an implementer can generate it reproducibly enough for a jitter tolerance measurement. Alternatively, use a stressed sensitivity spec and get rid of the jitter tolerance spec.

Response Response Status W

ACCEPT IN PRINCIPLE.

Change the first paragraph of 89.7.10 to:

"Receiver jitter tolerance is defined as the largest increase in received optical power required to maintain a BER of 10⁻¹⁰ when the sinusoidal jitter defined in Table 89-12 is applied to the signal from a reference transmitter across the defined range of jitter frequencies."

Add a new second paragraph:

"The reference transmitter is a high-quality instrument-grade device, which can be implemented by a CW laser modulated by a high-performance modulator. The basic requirements are:

- a) Rise/fall times of less than 10 ps at 20% to 80%.
- b) The output optical eye is symmetric and passes the transmitter optical waveform test of 89.7.8.
- c) In the center 20% region of the eye, the worst case vertical eye closure penalty as defined in 52.9.9.2 is less than 0.5 dB.
- d) Total Jitter less than 0.2 UI peak-to-peak."

CI 89 SC 89.7.2 P39 L1 # 13
Booth, Bradley AppliedMicro

Comment Type E Comment Status A

Table 89-10 is inserted into the middle of the paragraph of 89.7.2.

SuggestedRemedy

Change table properties so it doesn't split the paragraph.

Response Response Status C

ACCEPT IN PRINCIPLE.

Modify properties of paragraph to avoid splitting.

CI 89 SC 89.7.3 P39 L31 # 18
Trowbridge, Steve Alcatel-Lucent

Comment Type E Comment Status A

Table 89-10 does not define test patterns: it indicate which pattern to use to measure a given parameter

SuggestedRemedy

Change:

"using the test pattern defined in Table 89-10."

to:

"using the test pattern indicated in Table 89-10."

Make same correction to sub-clause 89.7.4 page 39 line 36

Make same correction to sub-clause 89.7.7 page 41 line 21

Response Response Status C

ACCEPT IN PRINCIPLE.

Since it is more than an indication, change to "test pattern referenced in Table 89-10" in subclauses 89.7.3, 89.7.4 and 89.7.6

CI 89 SC 89.7.5.2 P40 L28 # 58
Dawe, Piers IPtronics

Comment Type T Comment Status A

A CRU passes jitter from its input (an analog signal) to its recovered clock, and possibly to recovered data. It doesn't pass jitter from the data to the clock.

SuggestedRemedy

Change "data" to "signal".

Response Response Status C

ACCEPT.

Cl 89 SC 89.7.5.3 P40 L 34 # 21
Trowbridge, Steve Alcatel-Lucent

Comment Type T Comment Status A

It is unclear from the text in (a), (b) and Figure 89-3 exactly what the configuration is for making the first measurements. If one simply omits the test fiber (without, for example, replacing it with a short fiber), the transmitter is not connected via the optical attenuator to the reference receiver and the measurement cannot be made. Presumably the intent for the setup is to either connect the output of the splitter via a short fiber to the input of the attenuator and to set the variable reflector to zero, or perhaps even to just connect the output of the transmitter via a short fiber directly to the optical attenuator (skipping the splitter and variable reflector since the reflection is not supposed to exist)

SuggestedRemedy

Clarify by improvements to the text of (a) and (b) and/or figure 89-3 what the setup is for the measurement taken in (c).

Response Response Status C

ACCEPT IN PRINCIPLE.

Change item b) to read:

With a short patch cable rather than the test fiber and with no reflection, adjust the attenuation of the optical attenuator to obtain a BER of 10-12.

Cl 89 SC 89.7.9 P41 L 43 # 54
Dawe, Piers IPtronics

Comment Type T Comment Status R

This recipe for receiver testing "This shall be met with a transmitter with worst-case transmit eye, extinction ratio, transmitter reflectance and RIN200MA." is vague, therefore likely to cause disagreement, and not to be applied thoroughly and consistently. There should be a clear recipe for a (part)-stressed sensitivity procedure, although we add words saying that people can use other methods if they want to. We made good progress on stressed eye generation in 802.3ba; we can leverage that.

Motion 1 from the Geneva Task Force meeting in May 2010 "Move to adopt the ITU-T style of optical power budget specification as proposed in slide 4 of anslow_03_0510" is not binding, and in any case does not explicitly require unclear specs.

SuggestedRemedy

Say that the methods of 87.8.11 may be used with appropriate exceptions. If these are not suitable, write down a method that is suitable, with sufficient information that implementers in a broad market can reproducibly implement this test.

Response Response Status C

REJECT.

Subclause 87.8.11 is the stressed receiver sensitivity measurement procedure. Including this in the receiver spec would be inconsistent with Motion #1 from the Geneva Task Force meeting in May 2010.

Move to adopt the ITU-T style of optical power budget specification as proposed in slide 4 of anslow_03_0510.

Y: 32, N: 0, A: 0

The intention of the above motion was to allow module manufacturers to test tri-rate devices without incurring the extra expense of multiple test methodologies, e.g. creating a different 40GBaud stressed receiver sensitivity setup.

ITU-T specification methods have succeeded in enabling multi-vendor interoperability for VSR2000-3R2 interfaces which have been deployed in significant numbers.

Cl 89 SC 89.7.9 P41 L46 # 55
Dawe, Piers IPtronics

Comment Type T Comment Status R

As this appears to be a dispersion-limited link (not loss-limited), specifying the receiver without the dispersion penalty is missing the point.

SuggestedRemedy

Include the dispersion penalty in the receiver spec.

Response Response Status C

REJECT.
Including the dispersion penalty in the receiver spec would be inconsistent with Motion #1 from the Geneva Task Force meeting in May 2010.
Move to adopt the ITU-T style of optical power budget specification as proposed in slide 4 of anslow_03_0510.
Y: 32, N: 0, A: 0
The intention of the above motion was to allow module manufacturers to test tri-rate devices without incurring the extra expense of multiple test methodologies, e.g. creating a different 40GBaud stressed receiver sensitivity setup.
ITU-T specification methods have succeeded in enabling multi-vendor interoperability for VSR2000-3R2 interfaces which have been deployed in significant numbers.
Note that the worst case penalty has been reduced due to the response to comment #62 which has changed DGD_max to 3ps

Cl 89 SC 89.9 P44 L17 # 38
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Definition and test method for dispersion is missing

SuggestedRemedy

Add definition and test method

Response Response Status C

ACCEPT IN PRINCIPLE.
Change "Insertion loss measurements of installed fiber cables are made in accordance with ANSI/TIA/EIA-526-7/method A-1." to:
"Insertion loss measurements of installed fiber cables are made in accordance with ANSI/TIA/EIA-526-7/method A-1, chromatic dispersion is measured in accordance with IEC 60793-1-42 and polarization mode dispersion is measured in accordance with IEC 60793-1-48."

Also, add to 1.4:
"IEC 60793-1-48:2007, Optical fibres—Part 1-48: Measurement methods and test procedures—Polarization mode dispersion."

[Editor's note: Subclause changed from 9 to 89.9 and Page changed from 4 to 44]

Cl 89 SC 89.9 P44 L19 # 32
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Test method for DGD is missing

SuggestedRemedy

Add test method

Response Response Status C

ACCEPT IN PRINCIPLE.
See response to comment #38
[Editor's note: Subclause changed from 9 to 89.9 and Page changed from 4 to 44]

Cl 99 SC P13 L1 # 88
Ganga, Ilango Intel

Comment Type E Comment Status A

Indicate Annex A (informative) in ToC

SuggestedRemedy

As per comment

Response Response Status C

ACCEPT.

Cl 99 SC P2 L1 # 96
Ganga, Ilango Intel

Comment Type E Comment Status A

Page 2, line 1: In "IEEE Std 802.3-2008" change em dash to en dash

SuggestedRemedy

As per comment

Response Response Status C

ACCEPT.

Cl 99 SC P3 L19 # 5
Anslow, Peter Ciena

Comment Type E Comment Status A

In previous amendments the sentence "Each IEEE 802.3 project/amendment is identified with a suffix (e.g., IEEE Std 802.3ba-20XX)." uses its own designation as an example.

SuggestedRemedy

Change "(e.g., IEEE Std 802.3ba-20XX)" to "(e.g., IEEE Std 802.3bg-201x)"

Response Response Status C

ACCEPT.

Cl 99 SC P4 L34 # 23
Marris, Arthur Cadence

Comment Type E Comment Status A

IEEE Std 802.3ba-2010 has now been published

SuggestedRemedy

Change 201x to 2010 here and in the editing instructions elsewhere in the document

Response Response Status C

ACCEPT IN PRINCIPLE.
See Response to comment #4

Cl 99 SC P4 L35 # 97
Ganga, Ilango Intel

Comment Type E Comment Status A

Page 4, line 35: change "802.3ba-201x" to "802.3ba-2010". Make this change throughout the document

SuggestedRemedy

Search and replace 802.3ba-20xx (and 201x) to 802.3ba-2010 throughout the document.

Response Response Status C

ACCEPT IN PRINCIPLE.
See Responses to comments #4 and #5

Cl 99 SC P4 L42 # 95
Ganga, Ilango Intel

Comment Type E Comment Status D

Change 802.3ba-20xx to

SuggestedRemedy

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl 99 SC P6 L10 # 98
Ganga, Ilango Intel

Comment Type E Comment Status A

Fix the URL. It points to invalid page.

Change:

<http://standards.ieee.org/reading/ieee.interp/index.html>
to:
<http://standards.ieee.org/reading/ieee/interp/index.html>

SuggestedRemedy

As per comment

Response Response Status C

ACCEPT.

Cl 99 SC P9 L47 # 3
Takahashi, Hidenori KDDI R&D Laboratorie

Comment Type E Comment Status A

Even though the symbol is "micro", the explanation is shown as "Lower case omicron" in the table of "Special symbols and operators".

SuggestedRemedy

Change the explanation from "Lower case omicron" to "Micro" same as 802.3ba-2010.

Response Response Status C

ACCEPT IN PRINCIPLE.
Change to "Lower case micro" in line with latest WG frontmatter.

Cl 99 SC 99 P1 L 29 # 11
Booth, Bradley AppliedMicro

Comment Type E Comment Status A
This isn't just an amendment to IEEE Std 802.3-2008 as it also amends IEEE Std 802.3ba-2010 with the changes to Clauses 80 and 83.

SuggestedRemedy
Change to read:
This draft is an amendment of IEEE Std 802.3-2008 as amended by IEEE Std 802.3ba-2010.

Response Response Status C
ACCEPT.

Cl 99 SC 99 P3 L 19 # 10
Booth, Bradley AppliedMicro

Comment Type E Comment Status A
Reference to 802.3ba is incorrect.

SuggestedRemedy
Change first reference on page 3, line 19 to be:
IEEE Std 802.3ba(tm)-2010
Change subsequent references to be:
IEEE Std 802.3ba-2010

Response Response Status C
ACCEPT IN PRINCIPLE.
See Responses to comments #4 and #5

Cl 99 SC 99 P3 L 36 # 43
Dawe, Piers IPtronics

Comment Type E Comment Status R
Comprises is like contains: the bigger thing comprises its constituents, not the other way round. See <http://www.oxforddictionaries.com/definition/comprise>

SuggestedRemedy
Change "IEEE Std 802.3 is comprised of the following documents" to "IEEE Std 802.3 comprises the following documents". Or consists of, or is composed of, or is made up of, or contains.

Response Response Status C
REJECT.
The text for the frontmatter is provided to the Task Force by the Working Group chair. Any changes that are made to this part of the text will be reversed when the amendment is published. The commenter is invited to request this change from the WG chair or submit a comment in a future revision project for 802.3.

Cl 99 SC 99 P4 L 6 # 44
Dawe, Piers IPtronics

Comment Type E Comment Status R
There's only one Physical Layer.

SuggestedRemedy
Change "Physical Layers" to "Physical Layer types". Also at lines 16, 38 and 44.

Response Response Status C
REJECT.
Page 4 line 6 is the text for "Section Five". This text is provided to the Task Force by the Working Group chair. Any changes that are made to this part of the text will be reversed when the amendment is published.

Page 4 line 16 is the text for IEEE Std 802.3av-2009 and is the same as per the published version, so should not be changed.

Page 4 line 38 is the text for IEEE Std 802.3ba-2010 and is the same as per the published version, so should not be changed.

Page 4 line 44 is the text for IEEE P802.3az and is the same as per D3.2 of P802.3az. Changes to this text should have been made through the balloting process for that project (the P802.3az draft is on the September RevCom agenda)

Cl 99 SC 99 P6 L 10 # 45
Dawe, Piers IPtronics

Comment Type E Comment Status A
Bad URL

SuggestedRemedy
Should be <http://standards.ieee.org/reading/ieee/interp/index.html>

Response Response Status C
ACCEPT.

Cl 99 SC 99 P7 L9 # 12
Booth, Bradley AppliedMicro

Comment Type E Comment Status A
Incorrect order of officers, and space should be removed.

SuggestedRemedy

- Change to be:
- Working Group Chair
- Working Group Vice-chair
- Working Group Executive Secretary
- Working Group Secretary
- Working Group Treasurer

Response Response Status C

ACCEPT IN PRINCIPLE.
The order of officers is as per the frontmatter provided by the 802.3 Working Group Chair.
The text and formatting will be changed to match the latest version of this with no blank line and a different word order for the Task Force officers.

Cl 99 SC 99 P9 L40 # 46
Dawe, Piers IPtronics

Comment Type E Comment Status A
The multiplication symbol and some of the Greek letters are in 10 point.

SuggestedRemedy

Should all be 9 point in a table.

Response Response Status C

ACCEPT.

Cl 99 SC ToC P11 L15 # 75
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A
Subclauses have the appearance of being under subclauses that they aren't. For example, 45.2.1.7.4 and .5 appear to be subclauses under 45.2.1.6, but they clearly aren't. Same is true with subclauses in Clause 80.

SuggestedRemedy

correct table of contents. This may require adding headers for the main clauses that the subclause sections are under.

Response Response Status C

ACCEPT IN PRINCIPLE.
Add headings for 45.2.1.7, 80.1, 80.2 and 80.3

Cl A SC P51 L10 # 70
Diab, Wael Broadcom

Comment Type T Comment Status R
The reference to ITU-T G.693 is not dated. This means that the specification could change after this document is published

SuggestedRemedy

Please date the reference

Response Response Status C

REJECT.
This is an informative reference (see justification in response to comment #69) and therefore it is best to use an undated reference. It makes no difference to the IEEE 802.3 specification if G.693 changes.