

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

Cl 0 SC 0 P L # i-15

Ran, Adee Intel Corporation

Comment Type G Comment Status D Bucket

This amendment adds the new PHY type "400GBASE-SR4.2". The "4.2" notation for a bi-directional link is new, not intuitively understood, and is only explained in clause 150.

There are a few existing bi-directional PHYs in Ethernet, namely 100BASE-BX10 and 1000BASE-BX10. And subclause 1.2.3 specifically assigns "B" for bidirectional optics.

If this working group ever gets to define 400GBASE-SR4 (with 4 pairs of multimode fiber) or - who knows - 400GBASE-SR2 (with 2 pairs), it will become very confusing.

The PHY type notation "400GBASE-BR4" is available and would be less confusing.

*SuggestedRemedy*

Consider changing the nomenclature from "400GBASE-SR4.2" to "400GBASE-BR4" across this amendment.

Proposed Response Response Status W

PROPOSED REJECT.

The "4.2" nomenclature is explained in 150.1. See the responses to comments #i-27 and #i-33.

The "B" nomenclature has been used for "conventional" bidirectional optics, i.e. using a single wavelength in each direction. However, Clause 150 specifies a PMD that combines both bidirectional and WDM optics. Hence, the nomenclature needs to provide more information, i.e. both the number of fiber pairs and the number of wavelengths. It is also desirable to maintain continuity with the shortwave "S" designation with which the user community is familiar.

The nomenclature is expected to be easily adapted to future PMDs. For example, a 400G PMD supporting four MMF pairs using 100G VCSELS could be designated "400GBASE-SR4.1".

Cl 0 SC 0 P L # i-11

Anslow, Peter Ciena

Comment Type E Comment Status D Bucket

The IEEE 802.3 chair has announced the assumed order of amendments to be:

- IEEE Std 802.3cn-20xx - Amendment 4
- IEEE Std 802.3cg-20xx - Amendment 5
- IEEE Std 802.3cq-20xx - Amendment 6
- IEEE Std 802.3cm-20xx - Amendment 7

*SuggestedRemedy*

Change the draft to be Amendment 7 and include any changes due to P802.3cn, P802.3cg, and P802.3cq that are now assumed to be ahead of this draft.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 0 SC 0 P 0 L 0 # i-10

Turner, Michelle

Comment Type G Comment Status D Bucket

This draft meets all editorial requirements.

*SuggestedRemedy*

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 1 SC 1.4.110a P 18 L 9 # i-14

Ran, Adee Intel Corporation

Comment Type E Comment Status D Bucket

In "over eight lanes on multimode fiber", "on" seems to be a typo.

*SuggestedRemedy*

Change to "over eight lanes of multimode fiber".

Proposed Response Response Status W

PROPOSED REJECT.

Prior definitions for multimode PHYs over multiple fibers (100GBASE-SR10, 100GBASE-SR4, 100GBASE-SR2, 200GBASE-SR4, 400GBASE-SR16, 40GBASE-SR4) and also the new definition for 400GBASE-SR8 in 1.4.110b have used "over X lanes of multimode fiber" because the number of lanes in each direction equals the number of fibers in each direction. For 400GBASE-SR4.2 this is not the case as there are eight lanes in each direction, but only eight fibers in total. Consequently, the wording for this definition (here and in Table 116-2) has been changed to "over eight lanes on multimode fiber".

Cl 9 SC 9.8 P 88 L 41 # i-12

Rannow, R K Self

Comment Type TR Comment Status D Bucket

use of "i.e.," in this context appears ambiguous.

*SuggestedRemedy*

Remove "i.e.," to make a grammatically superior statement that is not potentially confusing.

Proposed Response Response Status W

PROPOSED REJECT.

Clause 9, Subclause 9.8 and Page 88 do not exist in the draft.

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

**Cl 9 SC 9.8.2 P 89 L 38 # i-13**  
 Rannow, R K Self  
**Comment Type GR Comment Status D Bucket**  
 Two instances of, "defined in that specification ..."  
**SuggestedRemedy**  
 Perhaps a pointer/reference to "that specification".  
**Proposed Response Response Status W**  
 PROPOSED REJECT.  
 Clause 9, Subclause 9.8.2, Page 89 and the text "defined in that specification" do not exist in the draft.

**Cl 116 SC 116.1.4 P 25 L 12 # i-16**  
 Ran, Adee Intel Corporation  
**Comment Type E Comment Status D Bucket**  
 Columns in this table and similar ones in the standard are ordered by clause/annex numbering. According to this order, the column for 400GBASE-SR4.2 clause 150 should be rightmost.  
**SuggestedRemedy**  
 Change column order to make 150 400GBASE-SR4.2 appear on the right.  
**Proposed Response Response Status W**  
 PROPOSED REJECT.  
 There is a well-established precedent for the row order in the left-hand column. Adopting the column order shown then ensures that the Ms under the optical PMD clauses form a clean diagonal. Ordering the columns by clause number generates a table that is much harder to read (particularly by the time that the P802.3cn, P802.3cu, and P802.3ct amendments have also modified this table).

**Cl 138 SC 138.5.1 P 35 L 13 # i-17**  
 Ran, Adee Intel Corporation  
**Comment Type E Comment Status D Bucket**  
 The original Figure 138-2 had signal-detect lines from the optical receivers vertically aligned, so that it was visually hinted that the signal from L0 is passes "underneath" optical receiver L1, and so on.  
 The updated figure has 7 lines at the top of the L7 optical receiver, but they are not aligned with the lines from optical receivers L0 and L1 above.  
 Also, many lines are not flushed with the boxes they are touching. This can be made cleaner (edit with high zoom factor).

Also applies to Figure 150-2.  
**SuggestedRemedy**  
 Correct the alignment and make sure that lines are flush with boxes, in both figures.  
**Proposed Response Response Status W**  
 PROPOSED ACCEPT.

**Cl 138 SC 138.5.8 P 37 L 9 # i-18**  
 Ran, Adee Intel Corporation  
**Comment Type E Comment Status D Bucket**  
 "Table 138-8" appears in smaller font than the text. Also in line 51 in this page.  
**SuggestedRemedy**  
 Correct the font size.  
**Proposed Response Response Status W**  
 PROPOSED ACCEPT.

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

CI 138 SC 138.7.2 P 38 L 34 # i-1

Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status D Bucket

Note (a) states a normative requirement ("shall" is the clue). Notes to tables are informative:  
 Subclause 6.4.1 of the IEEE-SA Standards Board Operations Manual defines which parts of a standard are normative and which parts of a standard are informative. A table note (a note to a table) is informative. A table footnote is normative. This distinction should be kept in mind when determining whether information should go in a table note or a table footnote.

*SuggestedRemedy*

Move statement of requirements to a footnote or move requirement text to an appropriate sub-clause.

Proposed Response Response Status W

PROPOSED REJECT.  
 The draft is correct as it stands. In Table 138-9, all the notes are "table footnotes" since they are set outside of the boxed table (see p. 23 of the IEEE-SA Standards Style Manual). These table footnotes are therefore normative and the use of "shall" in footnote (a) is consistent with this.

CI 138 SC 138.8.5 P 39 L 29 # i-19

Ran, Adeo Intel Corporation  
 Comment Type T Comment Status D Bucket

The additional text referring to the optical splitter and variable reflector does not seem to be related to "optical channel requirements in 121.8.5.2".

121.8.5.2 does not mention the splitter and the reflector, and it is excluded by the existing text anyway.

The additional text for 40GBASE-SR8 would better be listed in a separate exception.

*SuggestedRemedy*

Separate the new text into a separate exception.

Proposed Response Response Status W

PROPOSED REJECT.  
 The draft is correct as it stands.  
 "The optical channel requirements in 121.8.5.2 do not apply" indicates to the reader that the SMF specifications (Table 121-11 and related text) are not relevant to the TDECQ test for MMF PMDs, since the worst-case MMF channel is represented by an electrical low-pass filter. However, Table 121-11 specifies an optical return loss (for 200GBASE-DR4) for which the value of optical return loss tolerance (max) in Table 138-8 should be used instead.  
 Furthermore, 138.8.5 refers to "the methods specified in 121.8.5", which describe the use of an optical splitter and variable reflector.

CI 138 SC 138.8.10 P 39 L 51 # i-20

Ran, Adeo Intel Corporation  
 Comment Type E Comment Status D Bucket

Missing period at the end of the sentence

*SuggestedRemedy*

Add a period.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 138 SC 138.10.3.1 P 41 L 19 # i-21

Ran, Adeo Intel Corporation  
 Comment Type E Comment Status D Bucket

In the sentence "The interface contains sixteen active lanes within sixteen total positions", "within sixteen total positions" is redundant.

See for comparison 123.11.3.1.

*SuggestedRemedy*

Delete "within sixteen total positions".

Proposed Response Response Status W

PROPOSED REJECT.  
 The draft is correct as it stands. The sentence emphasizes that all positions are active in the single-row sixteen-fiber interface, unlike the two-row twelve-fiber interface.

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

CI 138 SC 138.11.4.2 P46 L1 # i-25

Healey, Adam Broadcom Inc.

Comment Type T Comment Status D Bucket

In the base document, the subclause number for "Characteristics of the fiber optical cabling and MDI" is 138.11.4.6 (as stated in the editing instruction) and not 138.11.4.2.

Also implement Maintenance Request #1332  
<[http://www.ieee802.org/3/maint/requests/maint\\_1332.pdf](http://www.ieee802.org/3/maint/requests/maint_1332.pdf)> which points out that PICS items originally numbered OC9 and OC10 (OC11 and OC12 in this draft) have contents that do not reflect the requirements of the subclause that they reference.

*SuggestedRemedy*

Change the subclause number from 138.11.4.2 to 138.11.4.6.

In 138.11.4.6, Item OC11 (formerly OC9), Value/Comment field change:

"Per IEC 61754-7-1 interface 7-1-1"

to:

"Per IEC 61754-7-1 interface 7-1-3 or interface 7-1-10"

In 138.11.4.6, Item OC12 (formerly OC10), Value/Comment field change:

"Per IEC 61754-7-1 interface 7-1-1"

to:

"Per IEC 61754-7-1 interface 7-1-4"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 150 SC 150.1 P47 L12 # i-33

Kolesar, Paul CommScope, Inc.

Comment Type TR Comment Status D Bucket

The following existing sentence needs clarification to avoid overly constraining the meaning of the SR4.2 suffix as being tied to counter propagation.

"The 4.2 nomenclature is used to indicate that transmission is over four fiber pairs (eight individual fibers) with the use of two wavelengths propagating in opposite directions on each individual fiber."

The use of two wavelengths would be encoded in the suffix as ".2" independent of the propagation direction, be it co-propagating or counter-propagating (i.e. bidirectional). But here it is implied to be only applicable to wavelengths propagating in opposite directions. Changing the description will avoid setting an unintended precedent.

*SuggestedRemedy*

Break the sentence into two as follows.

"The 4.2 nomenclature is used to indicate that transmission is over four fiber pairs (eight individual fibers) with the use of two wavelengths. For 400GBASE-SR4.2 these wavelengths propagate in opposite directions on each individual fiber."

Here the general description is conveyed in the first sentence. The second sentence describes how these wavelengths propagate in this particular PMD.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 150 SC 150.1 P47 L12 # i-27

Dawe, Piers J G Mellanox Technologies

Comment Type E Comment Status D Bucket

The 4.2 nomenclature tells us the number of fibres divided by 2 (they aren't really pairs in this PMD type, by the way) and the number of wavelengths per fibre. It doesn't tell us that it's bidirectional; had we chosen the co-directional option I think we would still have called it 400GBASE-SR4.2. No need to introduce a controversial assertion that would interfere with a future project.

*SuggestedRemedy*

Delete "propagating in opposite directions". If wished, add a separate sentence "The two wavelengths propagate in opposite directions on each fiber."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See response to comment #-i-33.

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

CI 150 SC 150.7 P 54 L # i-24

Ran, Adeo Intel Corporation

Comment Type T Comment Status D Bucket

It seems that most of the specifications in 150.7 are copied over from the 200GBASE-SR4 equivalents, with changes possibly only in the wavelength-dependent parameters.

Same goes for 150.8 with seems to be practically a copy of 136.8 (unless I'm missing something).

These subclauses are long and are the most important part of clause 150, and it is difficult to see what exactly is different from previous specifications.

It would be preferable to provide reference to existing specifications for anything that is unchanged. This would make the clause easier to read (and review).

SuggestedRemedy

Go over 150.7 and 150.8 and their subclauses, and replace as much as possible with references to clause 138. Wherever there are changes, add exceptions.

Proposed Response Response Status W

PROPOSED REJECT.

The draft is correct as it stands. When creating a new clause, how much of the text is copied and how much is referenced is an editorial choice that each project makes. The more that is local, the easier it is for someone looking at just this PMD type to read the specification. The more that is referenced, the easier it is for someone who is already familiar with the referenced clause to see what is different. At this point in time, the draft has progressed through detailed technical reviews in Task Force and Working Group ballot using the first approach. Accepting the proposed change carries a high risk of causing a cascade of other changes that would need to be identified when implementing exceptions to the referenced clause.

CI 150 SC 150.7.1 P 55 L 39 # i-9

Rolfe, Benjamin Blind Creek Associates

Comment Type G Comment Status D Bucket

(1) What is the Encircled flux requirement when not measured as specified?  
Guessing you really don't mean "if" but rather meant that the measurement is to be made per the referenced specification, in which case delete "if"

SuggestedRemedy

Delete "if"

Proposed Response Response Status W

PROPOSED REJECT.

The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see Table 95-6) and the in-force amendment IEEE Std 802.3cd-2018 (see Table 138-8).

CI 150 SC 150.7.2 P 56 L 8 # i-35

Kolesar, Paul CommScope, Inc.

Comment Type TR Comment Status D Bucket

Both TxRx pair types are associated with the incorrect receive wavelength. The receive wavelength for TxRx pair type TR is lambda 2 (900 - 918 nm), not lambda 1 (844 - 863nm). The receive wavelength for TxRx pair type RT is lambda 1, not lambda 2.

SuggestedRemedy

Change TR to RT and change RT to TR at lines 8 and 9 respectively.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 150 SC 150.7.2 P 56 L 27 # i-2

Rolfe, Benjamin Blind Creek Associates

Comment Type G Comment Status D Bucket

Per Subclause 6.4.1 of the IEEE-SA Standards Board Operations Manual notes to tables are informative. Thus statement of mandatory requirement ("shall") is not appropriate in a note to a table

SuggestedRemedy

Move requirement statement to text following the table or include in the table properly

Proposed Response Response Status W

PROPOSED REJECT.

The draft is correct as it stands. In Table 150-8, all the notes are "table footnotes" since they are set outside of the boxed table (see p. 23 of the IEEE-SA Standards Style Manual). These table footnotes are therefore normative and the use of "shall" in footnote (a) is consistent with this.

CI 150 SC 150.8.2 P 58 L 38 # i-3

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status D Bucket

"if measured per IEC 61280-1-3" is incomplete, as you don't state what the limits are if measured some other way.  
I \*think\* you mean "as measured per IEC 61280-1-3" which makes sense.

SuggestedRemedy

change "if" to "as"

Proposed Response Response Status W

PROPOSED REJECT.

The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.2) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.2).

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

CI 150 SC 150.8.3 P 58 L 44 # i-4  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type G Comment Status D Bucket  
 "if measured" again  
 SuggestedRemedy  
 Either change to "as measured" or specify what the limits would be if NOT measured according to the methods given in IEC 61280-1-1  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.3) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.3).

CI 150 SC 150.8.5 P 59 L 16 # i-31  
 Dawe, Piers J G Mellanox Technologies  
 Comment Type E Comment Status D Bucket  
 This is very hard to understand: "with a fourth-order Bessel-Thomson response to at least 1.5 x 17.92 GHz and at frequencies above 1.5 x 17.92 GHz the response should not exceed -24 dB".  
 SuggestedRemedy  
 Break it up as in P802.3cn/D3.1 definition of transition time: Change to: "with a fourth-order Bessel-Thomson response to at least 1.5 x 17.92 GHz. At frequencies above 1.5 x 17.92 GHz the response should not exceed -24 dB". Similarly in 150.8.10.  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 150 SC 150.8.4 P 58 L 50 # i-5  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type G Comment Status D Bucket  
 "if measured" again  
 SuggestedRemedy  
 delete "if"  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.4) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.4).

CI 150 SC 150.8.6 P 59 L 47 # i-7  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status D Bucket  
 "if measured" again (still wrong).  
 SuggestedRemedy  
 "when measured"  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.6) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.6).

CI 150 SC 150.8.5 P 59 L 8 # i-6  
 Rolfe, Benjamin Blind Creek Associates  
 Comment Type T Comment Status D Bucket  
 "if measured" is wrong. "as measured", would not be wrong. Just "measured" would not be wrong. Possibly "when measured" even.  
 I'd suggest pick one of the not wrong options and use consistently throughout.  
 SuggestedRemedy  
 "as measured" works  
 Proposed Response Response Status W  
 PROPOSED REJECT.  
 The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.5) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.5).

IEEE P802.3cm D3.0 400 Gb/s over Multimode Fiber Initial Sponsor ballot comments

CI 150 SC 150.8.7 P 60 L # i-32

Dawe, Piers J G Mellanox Technologies

Comment Type E Comment Status D Bucket

Readers struggle to understand "as measured through an O/E converter and oscilloscope with a combined 3 dB bandwidth of approximately 13.28125 GHz with a fourth-order Bessel-Thomson response to at least 1.5 x 26.5625 GHz and at frequencies above 1.5 x 26.5625 GHz the response should not exceed -24 dB". 5-line sentence is too long. Similar issue in three other places.

SuggestedRemedy

Break it up as in P802.3cn/D3.1 definition of transition time: Change to: "as measured through an O/E converter and oscilloscope with response defined as follows. The combined response of the O/E converter and oscilloscope has a 3 dB bandwidth of approximately 13.28125 GHz with a fourth-order Bessel-Thomson response to at least 1.5 x 26.5625 GHz. At frequencies above 1.5 x 26.5625 GHz the response should not exceed -24 dB."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 150 SC 150.8.10 P 61 L 33 # i-8

Rolfe, Benjamin Blind Creek Associates

Comment Type T Comment Status D Bucket

another "if measured"

SuggestedRemedy

"when measured"

Proposed Response Response Status W

PROPOSED REJECT.

The draft is correct as it stands. There is no ambiguity since only one measurement method is specified. Furthermore, the text is consistent with the in-force standard IEEE Std 802.3-2018 (see 95.8.8) and the in-force amendment IEEE Std 802.3cd-2018 (see 138.8.10).

CI 150 SC 150.10 P 63 L 38 # i-28

Dawe, Piers J G Mellanox Technologies

Comment Type E Comment Status D Bucket

Someone who is interested in the cabling rather than the transceiver technology may not be familiar with "TxRx pairs", which aren't used in any other clause.

SuggestedRemedy

After the first mention of TxRx pairs in this subclause, insert "(see 150.6)".

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 150 SC 150.10.2.1 P 65 L 11 # i-34

Kolesar, Paul CommScope, Inc.

Comment Type TR Comment Status D Bucket

Footnote e is incorrectly applied to the 2470 MHz.km entry for OM5. The footnote applies only to entries that are characterized (i.e. informative in nature), not those that are specified. 2470 MHz.km is a specification of OM5, not a characterization.

SuggestedRemedy

Delete footnote e on 2470.

Proposed Response Response Status W

PROPOSED ACCEPT.