

IEEE P802.3cb D3.0 2.5 Gb/s and 5 Gb/s Operation over Backplane Initial Sponsor ballot comments

CI 1 SC 1.3 P 28 L 15 # i-45
Grow, Robert RMG Consulting

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

I can find a 2006 document, but cannot find the 2015 document. It is not appropriate to include a normative reference to a document that is not available publically. It also appears that footnote 22 in the base document requires update for SFF documents (a redirection from ftp.seagate.com to ta.snia.org should not be necessary).

SuggestedRemedy

Change footnote 22 of base document and include appropriate information for how to get the new proposed SFF normative reference (if not SNIA, then a new footnote is required).

Response Response Status **U**

ACCEPT IN PRINCIPLE.

Change reference to:

SFF-8482 - Specification for Serial Attachment 2X Unshielded Connector.

Add a footnote with the following link:

SFF documents are available from the Storage Networking Industry Association (www.snia.org/sff/specifications).

CI 1 SC 1.4 P 29 L 3 # i-47
Grow, Robert RMG Consulting

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

P802.3bs has been assigned Amendment 10.

SuggestedRemedy

Rewrite editors note, editing instruction and text for an edit to 802.3bs text. Suggest this note should still note the definition is being modified by P802.3bs, and base text is from P802.3bs/D3.2 (unless D3.3 is available before your editing is ready for ballot).

Response Response Status **U**

ACCEPT IN PRINCIPLE.

The base text for this change is from P802.3bs/D3.3 .

[Editor's note added after comment resolution completed.

Based on the comment response the editor's note has been deleted and replaced with editing instructions that reads 'Change the base text of the definition to that of 802.3bs as shown.']

CI 127 SC 127.2.6.2.1 P 85 L 34 # i-64
RAN, ADEE Intel Corporation

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

It seems that some conditions are missing in the state transition arrows out of states TX_2.5GPIL_4 through TX_2.5GPIL_6.

Should the condition be "cg_timer_done"?

SuggestedRemedy

Add conditions as required.

Response Response Status **U**

ACCEPT.

CI 128 SC 128.2 P 103 L 45 # i-67
RAN, ADEE Intel Corporation

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

"The PMD Service Interface supports the exchange of encoded and scrambled 8B/10B blocks between the PMA and PMD entities"

Scrambling is not specified or mentioned anywhere else in 2.5GBSE-X. Unlike BASE-R, 8B/10B encoding does not include scrambling.

Moreover, the PMD service interface is specified in terms of bits, not 8B/10B blocks.

The sentence is wrong and should be corrected.

SuggestedRemedy

Change FROM

"The PMD Service Interface supports the exchange of encoded and scrambled 8B/10B blocks between the PMA and PMD entities"

TO

"The PMD Service Interface supports the exchange of bit streams representing 2.5GBASE-X 8B/10B encoded data between the PMA and PMD entities" .

Response Response Status **U**

ACCEPT.

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CI 128 SC 128.6.6 P 108 L 49 # i-70
RAN, ADEE Intel Corporation

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

"A device must be explicitly placed in loopback mode because loopback mode is not the normal mode of operation of a device"

Per the style manual (10.2.2) "must is used only to describe unavoidable situations". Loopback is not unavoidable, so it is inappropriate here.

Recent PMA/PMD clauses (72 and later) do not state anything about explicit loopback setting, so this statement is not necessary here.

SuggestedRemedy

Delete the quoted sentence.

Response Response Status **U**

ACCEPT.

CI 128 SC 128.7.1.4 P 111 L 50 # i-73
RAN, ADEE Intel Corporation

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

The test pattern defined in 52.9.1.2 is for 10GBASE-R. This PMD uses 8B/10B encoding and devices don't need to be able to generate or tolerate square waves with runs longer than 5 UI, so this pattern is inappropriate here.

The pattern used for this encoding (e.g. in 71.7.1.4) is defined in 48A.2.

SuggestedRemedy

Change the reference to 48A.2, and delete "with a run of at least eight consecutive ones followed by at least eight consecutive zeros (i.e., 1111111100000000...)"

Change PICS item TC4 accordingly to use run length of 5.

Response Response Status **U**

ACCEPT.

CI 128 SC 128.7.1.4 P 112 L 19 # i-74
RAN, ADEE Intel Corporation

Comment Type **GR** Comment Status **A**

A note is by definition informative, so it can't include a "shall" statement.

(The formatting of this statement uses mixed font sizes. Should it be part of the note at all?)

SuggestedRemedy

Change "shall be as specified" to "is specified".

Decide whether this is part of the note or a separate paragraph; use appropriate format consistently.

Response Response Status **U**

ACCEPT IN PRINCIPLE.

Make 2nd sentence below Note 2 a separate paragraph.

[Editor's note added after comment resolution completed.

The comment response was corrected from ACCEPT to ACCEPT IN PRINCIPLE as there is text is provided in the response.]

CI 0 SC 0 P 114 L 29 # i-75
RAN, ADEE Intel Corporation

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

Annex 36A defines test patterns for 1000BASE-X PMDs, which use a different signaling frequency. They are also specified in bit times instead of UI, which is incorrect.

Also, the interference tolerance test pattern has to be compatible with the PCS/XGMII defined in in clause 127. The one in 36A.4 seems to assume GMII.

The test patterns for the signaling frequency and PCS used in this PHY are defined in Annex 48A.

SuggestedRemedy

Change 36A.1 to 48A.1, twice in 128.7.1.7. Also fix the wrong reference in PICS item TC17.

Change 36A.2 to 48A.2 in 128.7.1.8.

Change 36A.4 to 48A.4 in 128.7.2.1.

Change similarly in other places if I missed some.

Response Response Status **U**

ACCEPT.

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CI 128 SC 128.10.3 P 119 L 25 # i-76
 RAN, ADEE Intel Corporation
 Comment Type **TR** Comment Status **A**
 Signal detect is mandatory for EEE (per 128.6.4). Its status should be LPI:M.
 SuggestedRemedy
 Change status of item SD to LPI:M and Support to "Yes" / "N/A".
 Response Response Status **U**
 ACCEPT.

CI 127 SC 127.2 P 67 L 21 # i-78
 RAN, ADEE Intel Corporation
 Comment Type **TR** Comment Status **A**
 The PCS used in a PHY that uses auto-negotiation has to support Auto-negotiation by additional primitive AN_LINK.indication(link_status) to inform the AN of the PCS status (see 73.9.1).
 See for example 48.2.7, 49.2.16, 107.4.
 SuggestedRemedy
 Add a new subclause to clause 127 with contents based on one of the subclauses listed above.
 The appropriate place seems to be after 127.2.2 "Functions within the PCS".
 Response Response Status **U**
 ACCEPT IN PRINCIPLE.

Just above the subclause header, "127.2.3 Use of code-groups", insert new subclause shown below: (subclauses below this one will be renumbered)

127.2.2 PCS used with 2.5GBASE-KX PMD

The following requirements apply to a PCS used with a 2.5GBASE-KX PMD. Support for the Auto-Negotiation process defined in Clause 73 is mandatory. The PCS shall support the primitive AN_LINK.indication(link_status) (see 73.9). The parameter link_status shall take the value FAIL when code_sync_status=FAIL and the value OK when code_sync_status=OK. The primitive shall be generated when the value of link_status changes.

CI 128 SC 128.10.4.3 P 122 L 4 # i-79
 RAN, ADEE Intel Corporation
 Comment Type **TR** Comment Status **A**
 "5 sec" in TC13 is wrong, should be 5 microseconds. according to the reference subclause.
 SuggestedRemedy
 Change "sec" to "\mu sec" (Greek letter mu)
 Response Response Status **U**
 ACCEPT.

CI 128 SC 128.10.4.3 P 122 L 5 # i-80
 RAN, ADEE Intel Corporation
 Comment Type **TR** Comment Status **A**
 Common mode voltage has to be within this range, not equal to the boundaries
 SuggestedRemedy
 Change "=" to "within"
 Response Response Status **U**
 ACCEPT.

CI 128 SC 128.10.4.3 P 122 L 16 # i-81
 RAN, ADEE Intel Corporation
 Comment Type **TR** Comment Status **A**
 "Jitter test frame per 52.9.1.1" is not mentioned in the referenced subclause.
 SuggestedRemedy
 Fix to whatever this should be, or delete item
 Response Response Status **U**
 ACCEPT IN PRINCIPLE.
 Change the 'Feature' column to read:
 'Jitter test pattern' (singular).
 Change the 'Value/Comment' column to read:
 As defined in 36A.2.

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CI 128 SC 128.10.4.3 P 122 L 19 # i-82
RAN, ADEE Intel Corporation

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

"11111111 00000000" is not alternating polarity.

The pattern is specified in the referenced subclause. If more detailed definition is required it should be placed there, not in the PICS.

SuggestedRemedy

Delete this pattern from the PICS item.

Response Response Status **U**

ACCEPT IN PRINCIPLE.

Change Value/Comment column to contain:

See pattern definition in 128.7.1.8.

CI 128 SC 128.10.4.3 P 122 L 23 # i-83
RAN, ADEE Intel Corporation

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

Item TC22 is in the transmitter PICS but refers to 128.7.2 which is a receiver specification.

There is no "shall" in the referenced subclause and no "transmitter output waveform" specification in this clause.

SuggestedRemedy

Delete item TC22.

Response Response Status **U**

ACCEPT.

CI 128 SC 128.10.4.4 P 123 L 10 # i-85
RAN, ADEE Intel Corporation

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

The reference subclause does not exist. Clause 59 is for a totally different PMD (optical, 1G), and seems irrelevant.

The pattern for this test should be the one in 46A.4 (per another comment).

SuggestedRemedy

Use the right reference.

Response Response Status **U**

ACCEPT.

CI 129 SC 129.1.2 P 125 L 23 # i-87
RAN, ADEE Intel Corporation

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

In 45.2.3.13.4 it is stated that hi_ber indicates a BER>=1e-4. This meaning was maintained in several PCS definitions (e.g. clauses 49, 82, 107) by choosing the timers and counter thresholds appropriately.

This PCS has half the data rate of 10GBASE-R, so the exception of hi_ber asserted when reaching 32 in the same time period effectively enables 4 times higher BER before hi_ber is asserted, compared to 10GBASE-R.

In 129.2.1 it is stated that the maximum is 16, but the period is 250 microseconds, which contradicts the statement here (and seems to be more correct).

The BER PICS item is still in contradiction.

Note that in 107.2 (PCS for 25GBASE-R, which also changes the hi_ber function) the definitions of 125us_timer, ber_cnt, and hi_ber are modified together.

SuggestedRemedy

Change this subclause to align it with the definitions in 129.2.1, that is, a count up to 16 in a period of 250 microseconds.

Change the BER PICS item similarly.

Consider defining all related variables that may need to change, as in 107.2.

Response Response Status **U**

ACCEPT IN PRINCIPLE.

Change this subclause to align it with the definitions in 129.2.1, that is, a count up to 16 in a period of 250 microseconds.<done>

Change the BER PICS item similarly.<129.7.3>

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CI 129 SC 129.2 P 127 L 32 # i-89
RAN, ADEE Intel Corporation

Comment Type TR Comment Status A

The PCS used in a PHY that uses auto-negotiation has to support Auto-negotiation by additional primitive AN_LINK.indication(link_status) to inform the AN of the PCS status (see 73.9.1).

See for example 48.2.7, 49.2.16, 107.4.

Strangely, there is a PICS table for this requirement, although it is not stated in the clause body.

SuggestedRemedy

Add a new subclause to clause 129 with contents based on one of the subclauses listed above.

The appropriate place seems to be at the end of 129.2.

Use the new clause as reference for the PICS items in 129.7.6.5.

Response Response Status U

ACCEPT IN PRINCIPLE.

At the end of 129.2, add a new subclause that says:

129.new PCS used with 5GBASE-KR PMD

The following requirements apply to a PCS used with a 5GBASE-KR PMD. Support for the Auto-Negotiation process defined in Clause 73 is mandatory. The PCS shall support the primitive AN_LINK.indication(link_status) (see 73.9). The parameter link_status shall take the value FAIL when PCS_status=false and the value OK when PCS_status=true. The primitive shall be generated when the value of link_status changes.

Update PICS 129.7.6.4, row AN2, to reflect this change in the Value/Comment column.

CI 129 SC 129.7.3 P 133 L 16 # i-90
RAN, ADEE Intel Corporation

Comment Type GR Comment Status A

Item JTM has status "PMA:M" but PMA is not a defined option.

It is unclear what "supports test pattern mode" means when its reference is the whole clause 49.

Many other PICS items are conditional on JTM, so they all become ill-defined.

Also, 129.2.1 includes the statement: "The 5GBASE-R PCS shall have all the functionality of the 10GBASE-R PCS specified in Clause 49." This statement does not have a PICS item. If it did have one, it could remove the need for many items that refer to clause 49 or its subclauses, and have no explicit equivalents in this clause.

SuggestedRemedy

Work on the PICS to make it clear and consistent. The major options and conditions must be well defined.

Add a mandatory PICS item for the quoted statement that would cover all the requirements included in clause 49.

PICS must always have a reference. If the reference is in clause 49 then consider removing the PICS item.

Response Response Status U

ACCEPT IN PRINCIPLE.

At 129.7.3, delete JTM row.

CI 130 SC 130.6.4 P 141 L 48 # i-94
RAN, ADEE Intel Corporation

Comment Type ER Comment Status A

"2.5G-KX and 5G-KR" is undefined nomenclature.

This clause is only about 5GBASE-R.

SuggestedRemedy

Change "by 2.5G-KX and 5G-KR" to "by 5GBASE-R PHYs".

Alternatively, delete these words.

Response Response Status U

ACCEPT IN PRINCIPLE.

Change "by 2.5G-KX and 5G-KR" to "by 5GBASE-R PHYs".

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Cl 130 SC 130.7.1.4 P 146 L 14 # i-126
RAN, ADEE Intel Corporation

Comment Type TR Comment Status A

Here there is a normative statement in an informative note, with detailed specification that does not appear elsewhere.

SuggestedRemedy

Change FROM
"shall be between 0 V and 1.9 V with respect to signal ground as measured at Vcom in Figure 130-2"
TO
"is defined in Table 130-4".

Add a table footnote in table 130-4 item "Common-mode voltage limits":
"Defined with respect to signal ground as measured at Vcom in Figure 130-2".

Response Response Status U

ACCEPT.

Cl 130 SC 130.7.1.7 P 148 L 31 # i-127
RAN, ADEE Intel Corporation

Comment Type TR Comment Status A

"with no equalization"

There is no variable that controls equalization in this PMD, so this can't be done in a standard way.

Also applies to the requirement of 130.7.1.8, jitter measurement. In this case, equalization may be required based on where the measurement is performed.

SuggestedRemedy

Add a control variable to disable equalization.

Alternatively, if equalization is fixed, remove the words "with no equalization" here and "Equalization shall be off during jitter testing" in 130.7.1.8, and change the required transition time and jitter to account for the equalization.

Response Response Status U

ACCEPT IN PRINCIPLE.

Use Table 45-60 reserved bit for the equalizer enable control bit.

Add a second paragraph that says:
The BASE-R PMD control register is also used by 5GBASE-KR described in Clause 130 to disable the transmitter equalizer for test purposes. 5GBASE-KR does not use the start-up protocol.

In the table 'Name' field use the following:
transmitter equalizer disable

In the table 'Description' field use the following:
1 = Disable the 5GBASE-KR transmitter equalizer
0 = normal operation

Add words in a new subclause 45.2.1.80.3 for the equalizer disable:

When bit 1.150.2 is set to one, 5GBASE-KR transmitter equalization is disabled. The default value of bit 1.150.2 is zero.

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CI 130 SC 130.10.4.4 P 156 L 21 # i-131
RAN, ADEE Intel Corporation

Comment Type **TR** Comment Status **A**
TC8 description includes "5 sec", it should be microseconds.

SuggestedRemedy
Change "5 sec" to "5 /mu s" (Greek letter mu)

Response Response Status **U**
ACCEPT.

CI 130 SC 130.10.4.4 P 156 L 40 # i-132
RAN, ADEE Intel Corporation

Comment Type **TR** Comment Status **A**
The test pattern in the reference subclause is the one specified in 52.9.1.2, not 36A.1 (the latter is the alternating bits pattern for 8B/10B encoding).

SuggestedRemedy
Change the test pattern definition to 52.9.1.2 in TC15 and TC16.

Response Response Status **U**
ACCEPT.

CI 130 SC 130.10.4.4 P 157 L 10 # i-133
RAN, ADEE Intel Corporation

Comment Type **TR** Comment Status **A**
"11111111 00000000" is not alternating polarity.

The pattern is specified in the referenced subclause. If more detailed definition is required it should be placed there, not in the PICS.

SuggestedRemedy
Delete this pattern from the PICS item.

Response Response Status **U**
ACCEPT IN PRINCIPLE.

Change the Value/Comment column of the TC20 row to read:
See pattern definition in 130.7.1.8.

[Editor's note added after comment resolution completed.

The comment response was corrected from ACCEPT to ACCEPT IN PRINCIPLE as there is text is provided in the response.]

CI 130A SC 130A.3.1 P 212 L 30 # i-136
RAN, ADEE Intel Corporation

Comment Type **TR** Comment Status **R**
Pre-cursor ratio range is unreasonably wide, allowing any ratio between 0 to 1.3. This practically means "anything goes".

Compare to Table 130-4 where the nominal value at the PMD is 1.25 +/-0.05.

The precursor ratio can degrade somewhat after passing through a channel, but can't change from larger than 1 to smaller than 1. From the 130.7.1.11 definition, a value of R_pre less than 1 requires the signal to be deliberately shaped to create a slow transition (positive value for c(-1) in figure 130-6).

Such shaping would be detrimental for receiver performance and should not be allowed. But with the current allowed range, drive receiver can't know what equalization to expect. It's like not specifying anything.

SuggestedRemedy
Change the allowed range to 1.2 +/- 0.1, allowing some channel degradation compared to the PMD specification, but preventing no-equalization or low-pass equalization.

Response Response Status **U**
REJECT.

No consensus within the comment resolution Task Force to make a change.

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CI 130A SC 130A.3.3 P 214 L 30 # i-138
 RAN, ADEE Intel Corporation

When bit 1.150.2 is set to one, 5GBASE-KR transmitter equalization is disabled. The default value of bit 1.150.2 is zero.

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

"The state of the transmit equalizer and hence the transmitted output waveform may be manipulated via the management interface"

Unfortunately variables for equalization in the management interface are not defined in this draft. This sentence does not appear in the parallel subclause 130.7.1.10.

It would be good if such variables be added, but if they are not, this sentence is misleading the reader.

SuggestedRemedy

Consider adding management variables in clause 130 for controlling the equalization coefficients in figure 130-6, and suitable MDIO register mapping in clause 45. This would also require a test method to verify implementations.

I would recommend using the variables and measurement method specified in 83D.3.1 (which relies on linear fitted pulse measurement, also used in the current project), and changing the definition to use only the precursor and main taps, with the same choice of coefficient values for c(-1).

I realize that this would be a deviation from this project's current method (130.7.1.11), but it is now an established solution in several PMDs and electrical interfaces.

Alternatively, if this solution is not accepted, delete the quoted sentence.

Response Response Status **U**

ACCEPT IN PRINCIPLE.

Same response as comment number i-127 which is:

Use Table 45-60 reserved bit for the equalizer enable control bit.

Add a second paragraph that says:

The BASE-R PMD control register is also used by 5GBASE-KR described in Clause 130 to disable the transmitter equalizer for test purposes. 5GBASE-KR does not use the start-up protocol.

In the table 'Name' field use the following:
 transmitter equalizer disable

In the table 'Description' field use the following:
 1 = Disable the 5GBASE-KR transmitter equalizer
 0 = normal operation

Add words in a new subclause 45.2.1.80.3 for the equalizer disable: