

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

CI 00 SC 0 P L # 1
Fritsche, Matthias HARTING Technology

Comment Type E Comment Status X

The IEC 61076-3-125 is now renumbered from IEC SC48B secretary to IEC 63171-6 during the publishing process of the document 48B_2720e_CDV at the 2019-03-01.

SuggestedRemedy

Change in the complete document the references from "IEC 61076-3-125" to "IEC 63171-6"

Proposed Response Response Status O

CI 00 SC 0 P 0 L 0 # 44
Kim, Yong NIO

Comment Type TR Comment Status X

[CSD] One of the responsibilities as a balloter is to ensure that draft is consistent with the criteria for standards development (CSD) responses which are available at <<https://mentor.ieee.org/802-ec/dcn/18/ec-18-0079-00-ACSD-802-3cg.pdf>>. An Approve vote indicates your agreement that the draft is consistent with the CSD responses.

Fullfilling my responsibilities as a balloter, I am attaching a file that summerizes CSD as well as PAR concern, with the filename 802.3 cg PAR and CSD Issues D2-4_v1_Kim_2019-03-08.pdf

SuggestedRemedy

Posted CSD no longer represents the expectation it set compared to the draft standard in regard to PLCA RS operation on shared medium. Modify the CSD as appropriate to match 802.3cg draft contents.

Proposed Response Response Status O

CI 00 SC 0 P 0 L 0 # 16
Ran, Adeo Intel Corp.

Comment Type T Comment Status X

Per the stype manual "The use of the word will is deprecated and shall not be used when stating mandatory requirements; will is only used in statements of fact".

The word "will" appears in several places throughout the draft where it seems to state mandatory requirements or expectations.

P38 L53
P76 L35
P94 L8
146.1.3.1, 147.1.3.1, and 148.1.3.1 (several occurrences each)
P114 L26, L28
P117 L33
P130 L35
P227 L37

SuggestedRemedy

Edit to change "will" to "shall" and/or rephrase as necessary.

Proposed Response Response Status O

CI 01 SC 1.3 P 28 L 24 # 2
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

The IEC SC48B have changed the project no. from IEC 61076-3-125 to IEC 63171-6

SuggestedRemedy

change: IEC 61076-3-125 to IEC 63171-6

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl 30 SC 30.30.9 P 38 L 3 # 45
Kim, Yong NIO

Comment Type ER Comment Status X

PLCA managed object class is put in the wrong part of the CL30. It should follow other CL30 additions and go after 30.15, So 30.16, unless other project ahead of this inserts one (unlikely)

SuggestedRemedy

Renumber and change the instructions to add this proposed 30.3.9 to be inserted after current 30.15

Proposed Response Response Status O

Cl 30 SC 30.3.9.2.5 P 39 L 24 # 41
Kim, Yong NIO

Comment Type TR Comment Status X

aPLCATransmitOpportunityTimer seem to be a tuning parameter that is related with both PHY delay and given propagation delay (network diameter). And the PHY delays of *all* the nodes in the system. The default value of 20 bit times does not match 8 node 15 meter network worst case parameter.

SuggestedRemedy

Provide the default value that represent the worst case delays and supported network diameter such that a network using all defaults (plug and play and no configuration) is assured to work. If

Proposed Response Response Status O

Cl 30 SC 30.3.9.2.6 P 39 L 36 # 47
Kim, Yong NIO

Comment Type TR Comment Status X

Capability for aPLCAMaxBurstCount set to 255 packet bursts would significantly impact fairness ("multiple-access") and would cause upper layer protocol time-outs.

SuggestedRemedy

Reduce the burst down to maximum size frame worth of packet packing (which I believe is not possible in current MAC services model), or some reasonable length such as 2 x max size frame (which I believe is achievable), or demonstrate the max range still provides fairness and provide confidence that properly (in-range value) configured nodes in a given network would not cause upper layer protocol time-outs.

Proposed Response Response Status O

Cl 30 SC 30.3.9.2.7 P 39 L 47 # 46
Kim, Yong NIO

Comment Type TR Comment Status X

aPLCABurstTimer measure bit times inside the internal process where the entire packet is transferred atomically. This is entirely (externally) invisible parameter, meaning any number of bit-times an implementation uses, it is indistinguishable from other MAC transmit scheduling; therefore meaningless. IPG is generated by PLS/RS. The default value of 128 *may be* relevant if this timer is measuring the gap at the PCS. But at RS, this timer is meaningless.

SuggestedRemedy

Delete this timer.

Proposed Response Response Status O

Cl 98 SC 98.5.1 P 73 L 46 # 10
Ran, Adele Intel Corp.

Comment Type E Comment Status X

In 98.5.6.1 the variable autoneg_speed refers to 98.5.1 but there is no variable with that name here. The variable that is defined is ANSP. Should these be the same variable?

SuggestedRemedy

Rename ANSP to autoneg_speed in 98.5.1

Proposed Response Response Status O

Cl 98 SC 98.5.6.3 P 81 L 54 # 9
Ran, Adele Intel Corp.

Comment Type E Comment Status X

Should "under laying" be "underlying"?

SuggestedRemedy

per comment

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

CI 104 SC 104.2 P 86 L 26 # 11
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

The modified text in this subclause is becoming a table in text and is very unfriendly. It would be preferable to add the DC loop resistance as rows in the existing tables (which already include link parameters such as cable length).

I assume this kind of change is undesired at this stage of working from ballot but I trust the editors to correct it in future drafts assumint it is considered an improvement.

SuggestedRemedy

Add "DC loop resistance" as rows in tables 104-1 and 104-1a.

Replace the text in this subclause to "The dc loop resistance of the link segment shall be within the limits in Table 104-1 for classes 0 through 9 and within the limits in Tble 104-1a for classes 10 through 15".

Proposed Response Response Status O

CI 104 SC 104.5.1 P 90 L 15 # 12
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

Here "For PoDL systems there are five types" whereas in 104.4.1 "For PoDL systems there are multiple types".

Changing to "multiple" would be more consistent and somewhat future proof.

SuggestedRemedy

change "five" to "multiple".

Proposed Response Response Status O

CI 146 SC 146.2.10.3 P 113 L 37 # 13
Ran, Adeo Intel Corp.

Comment Type T Comment Status X

"The receiver may adjust the link training and clock recovery"

"Link training" is defined as a mode of operation, and mentioning it here does not make sense.

SuggestedRemedy

Change to "The receiver may adjust the clock recovery".

Proposed Response Response Status O

CI 146 SC 146.3.3.1 P 117 L 20 # 14
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

"The integer, n, is a time index" should have no commas.

(Commas appear in similar text in several places in the base standard, but in most places there are no commas, so I would recommend choosing the better precedence).

SuggestedRemedy

Change to "The integer n is a time index".

Proposed Response Response Status O

CI 146 SC 146.3.3.1 P 117 L 33 # 15
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

"Therefore, this symbol triplet will be used"

Not standard language. See style manual.

SuggestedRemedy

Change to "This symbol triplet is used"

Proposed Response Response Status O

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CI **146** SC **146.3.3.1.1** P **118** L **27** # **17**
 Ran, Adeo Intel Corp.

Comment Type **T** Comment Status **X**

"The loc_lpi_req is set TRUE, if low power idle mode is requested."

This can be understood as if the request is either local or remote. The variable name suggests that it is a local request. I assume the request is from the PMA (per figure 146-3).

In addition, loc_lpi_req is defined twice in this clause (also in 146.4.4.1) and it seems that both definitions refer to the same variable, so perhaps a reference to 146.4.4.1 is enough.

SuggestedRemedy

Replace the definition here to "See 146.4.4.1".

Proposed Response Response Status **O**

CI **146** SC **146.3.3.2.2** P **122** L **28** # **18**
 Ran, Adeo Intel Corp.

Comment Type **T** Comment Status **X**

$g(x)$ as a generating polynomial should be defined as $x^3 + x^8$ (a polynomial over GF(2) is a sum of powers). This would be consistent with the definitions in equations 146-1 and 146-2.

(This appears several times in the base document and should be fixed in maintenance)

SuggestedRemedy

Change equation 146-3 per comment.

Proposed Response Response Status **O**

CI **146** SC **146.3.3.2.3** P **123** L **1** # **8**
 Maguire, Valerie Simon

Comment Type **E** Comment Status **X**

Eight Editor's Notes appear in the draft that are no longer needed. Indicated actions related to deleting clause placeholders, if present, need to be taken and the Editor's Notes deleted.

SuggestedRemedy

1) Page 123, Line 1 - Delete clause 146.3.3.2.3 header and Editor's Note; 2) Page 125, Line 34 - Delete Editor's Note; 3) Page 179, Line 22 - Delete clause 147.3.2.5 header and Editor's Note; 4) Page 185, Line 1 - Delete clause 147.3.7 header and Editor's Note; 5) Page 196, Line 29 - Delete clause 147.5.4.5 header and Editor's Note; 6) Page 204, Line 30 - Delete Editor's Note; 7) Page 210, Line 50 - Delete clause 147.12.4.5 header and Editor's Note; 8) Page 234, Line 2 - Delete clause 148.5.3 header and Editor's Note. Renumber subsequent clauses when a clause header is deleted.

Proposed Response Response Status **O**

CI **146** SC **146.3.4.1.1** P **126** L **44** # **21**
 Ran, Adeo Intel Corp.

Comment Type **T** Comment Status **X**

The data type of disparity_error is not defined. In Figures 146-8 and 146-9 this variable is added to itself, but I assume it is a boolean value.

SuggestedRemedy

Define it as Boolean.

Proposed Response Response Status **O**

CI **146** SC **146.3.4.1.2** P **127** L **3** # **19**
 Ran, Adeo Intel Corp.

Comment Type **E** Comment Status **X**

The "functions" valid_idle, check_idle, rem_lpi_req, and valid_dispreset are used in the state diagrams as variables (they are not executed in any of the states, but their values are used transitions conditions). They should be moved to the "variables" section.

In addition the difference between check_idle and valid_idle is unclear. Should they be merged?

SuggestedRemedy

per comment

Proposed Response Response Status **O**

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CI 146 SC 146.3.4.1.2 P 127 L 28 # 20
Ran, Adee Intel Corp.

Comment Type T Comment Status X

The definitions of DECODE and CHECK_DISP use the terms table_4B3T and inverse_table_4B3T, which are not defined anywhere. I guess these tables should be defined using the content of Table 146-1.

SuggestedRemedy

Rephrase the definition.

Proposed Response Response Status O

CI 146 SC 146.3.4.1.2 P 127 L 32 # 22
Ran, Adee Intel Corp.

Comment Type T Comment Status X

The function CHECK_DISP should not assign a value to disparity_error, since if it returns false it should always clear disparity_error (if I understand Figure 146-8 correctly).

Also it is not clear what are the arguments that this functino takes when it is called in the figures.

SuggestedRemedy

Delete the assignment of the returned value into disparity_error.

Change "the currently received triple ternary symbol" to "the received triple ternary symbol Rx_n" or clarify otherwise.

Proposed Response Response Status O

CI 146 SC 146.3.4.1.3 P 127 L 41 # 23
Ran, Adee Intel Corp.

Comment Type T Comment Status X

The definition of RSTCD is unclear. From the phrase "Receive Symbol Tripled Conversion Done" I assume this timer has a time of 3 ternary symbols, but it is not explicitly stated. The text only says it is synchronized with the PCS receive clock.

Also, this timer is not explicitly started anywhere.

SuggestedRemedy

Clarify the period, clarify when it is initially started (in PCS Receive symbol decoder?), and the fact that it is started by restarted every time it expires.

Proposed Response Response Status O

CI 146 SC 146.3.4.1.3 P 128 L 4 # 24
Ran, Adee Intel Corp.

Comment Type T Comment Status X

Figure 146-8 has two open-ended branches with conditions including "rcv_jab_detected", but this variable is not defined anywhere.

Should it be rcv_overrun_detected?

SuggestedRemedy

Correct as necessary.

Proposed Response Response Status O

CI 146 SC 146.3.4.2 P 130 L 38 # 25
Ran, Adee Intel Corp.

Comment Type T Comment Status X

"The descrambler can acquire synchronization during the PHY training"

Per the style manual "The word can is used for statements of possibility and capability" but here it is practically a requirement.

SuggestedRemedy

Change to either

"The descrambler shall acquire synchronization during the PHY training"

or

"The descrambler acquires synchronization during the PHY training".

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **146** SC **146.3.4.3** P **131** L **7** # **26**
Ran, Adeo Intel Corp.

Comment Type **E** Comment Status **X**

The equations here use upper case subscripts M and S, whereas in 146.3.3.2.1 the transmitter polynomials (the same as here but master/slave swapped) use lower case subscripts m and s. It seems that they should be consistent.

The polynomials for the transmitter could be re-used by reference.

SuggestedRemedy

Use m and s subscripts.

Consider deleting equations 136-4 and 146-5 and instead referring to equations 146-1 and 146-2.

Proposed Response Response Status **O**

Cl **146** SC **146.4.4** P **134** L **25** # **27**
Ran, Adeo Intel Corp.

Comment Type **T** Comment Status **X**

The term "FORCE mode" is not defined anywhere in this clause, nor in the base standard. The setting of MASTER and SLAVE roles is not a mode, it is a function.

In clause 96 there is a similar specification in 96.4.4, and the text there can be re-used.

Note that this information is repeated in 146.6.2 and in 146.6.3 so it may not be necessary here at all.

SuggestedRemedy

Replace the first paragraph of 146.4.4 with the following (taken from 96.4.4)

If the Auto-Negotiation process (Clause 98) is not implemented or not enabled, PMA_CONFIG MASTER-SLAVE configuration is predetermined to be MASTER or SLAVE via management control during initialization or via default hardware setup.

Proposed Response Response Status **O**

Cl **146** SC **146.5.4.1** P **141** L **49** # **28**
Ran, Adeo Intel Corp.

Comment Type **E** Comment Status **X**

The information about existence of two transmitter output voltage modes and the rules for selection between them using auto-negotiation appears here for the first time. This information is somewhat out of place in the transmitter electrical specification subclause.

Note that the resolution rules are repeated in 146.6.4, but that subclause is about the management interface and should not discuss AN at all. The appropriate place for AN rules is in clause 98 where similar rules for master/slave configuration are described.

SuggestedRemedy

Add text about the two voltage modes in 146.1.2 where similar features like MASTER/SLAVE modes and AN are described.

Move the rules for AN resolution of Tx modes to clause 98.

Move the management interface information to 146.6.4. 146.6.4 should not include AN resolution rules but only refer to clause 98.

Proposed Response Response Status **O**

Cl **146** SC **146.5.5.1** P **144** L **15** # **29**
Ran, Adeo Intel Corp.

Comment Type **T** Comment Status **X**

The BER is not a purely electrical specification. Bits are only available after the PCS processing, and any required performance can only be achieved after training has completed.

Also, there is no way to verify a requirement of the BER at the PCS since it does not have bit-level error testing capability. As it stands this can't be a normative specification.

Clause 113 includes more complete text that can be used here.

SuggestedRemedy

Align the text here with 113.5.4.1 including statements about PCS processing, link training, and how the specification can be verified (I assume the frame loss ratio of 1e-6 mentioned in 146.5.5.3 is adequate here).

Proposed Response Response Status **O**

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl 146 SC 146.5.5.3 P 144 L 28 # 30
Ran, Adeo Intel Corp.

Comment Type T Comment Status X

"The BER is expected to be less than 10⁻⁹, and, to satisfy this specification, the frame loss ratio..."

An expectation is not a specification.

SuggestedRemedy

Change to

"The BER shall be less than 10⁻⁹. This specification is satisfied when the frame loss ratio"

Proposed Response Response Status O

Cl 146 SC 146.7.1.1 P 147 L 37 # 31
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

"For PHYs in the 2.4 Vpp operation mode, the insertion loss of each 10BASE-T1L link segment shall meet..."

The link segment is not a part of the PHY and does not know in what operation mode the PHY is.

Similarly in P148 L26.

SuggestedRemedy

There should be two specifications for link segments, a high-loss link segment that is only supported when the link (both PHYs) is in 2.4 Vpp mode and a low-loss segment that is supported regardless of the mode. The text in 110.10 can be used as a reference.

I think the electrical specifications in 146.5.5.3 should also be specified separately for PHYs that support 2.4 Vpp mode (these have to be tested in both modes with two corresponding link segments) and for PHYs that don't.

Proposed Response Response Status O

Cl 146 SC 146.7.2 P 151 L 33 # 33
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

The specifications of coupling parameters in this subclause and the multiple "shall" statements in subclauses are not something that a PHY vendor or a cable vendor can satisfy or state (in PICS). It is practically a result of the cabling plant installation.

I wonder if these should be made recommendations for installation instead of normative requirements. Is there any external specification for installation that can be referenced?

Comment also applies to 147.7.4 and 147.7.5.

SuggestedRemedy

Consider changing "specify" to "recommend" (all inclinations) and "shall" to "should", and clarifying whom these recommendations apply to.

Proposed Response Response Status O

Cl 146 SC 146.7.2 P 151 L 35 # 34
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

"is" refers to two things, so should be "are"

SuggestedRemedy

per comment

Proposed Response Response Status O

Cl 146 SC 146.7.2.1 P 151 L 37 # 35
Ran, Adeo Intel Corp.

Comment Type E Comment Status X

There are two subclauses for NEXT, one referring to MDANEXT and another to PSANEXT, while for FEXT there is only one subclause which includes both.

In practice only the PSANEXT/PSAFEXT are specified so the terms MDANEXT and MDAFEXT are not useful.

SuggestedRemedy

Merge 146.7.2.2 into 146.7.2.1. Consider removing the terms MDANEXT and MDAFEXT.

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

CI 146 SC 146.7.2.1 P 151 L 42 # 36
Ran, Adee Intel Corp.

Comment Type T Comment Status X
"Ensure" is a strong word that will cause trouble further in the process.

Similarly in 146.7.2.3.

SuggestedRemedy

Change the sentence to "to limit the total alien NEXT"... and similarly for FEXT.

Proposed Response Response Status O

CI 146 SC 146.7.2.2 P 152 L 7 # 32
Ran, Adee Intel Corp.

Comment Type T Comment Status X
Equation 146-13 is a definition, not a specification, so it should have an equal sign, not "greater than or equal".

Similarly in equation 146-15.

SuggestedRemedy

per comment

Proposed Response Response Status O

CI 147 SC 147.3.2.2 P 177 L 49 # 37
Ran, Adee Intel Corp.

Comment Type E Comment Status X
"not present or enabled" - seems incorrect.

SuggestedRemedy

Change to "not present or disabled".

Proposed Response Response Status O

CI 147 SC 147.3.2.9 P 180 L 21 # 38
Ran, Adee Intel Corp.

Comment Type E Comment Status X
"can" is not used for options

SuggestedRemedy

change "can" to "may"

Proposed Response Response Status O

CI 147 SC 147.5.2 P 193 L 24 # 39
Ran, Adee Intel Corp.

Comment Type E Comment Status X
"The test modes can be enabled"

Per the style manual "The word can is used for statements of possibility and capability".

SuggestedRemedy

change "can be enabled" to "are controlled"

Proposed Response Response Status O

CI 147 SC 147.7.4 P 199 L 3 # 40
Ran, Adee Intel Corp.

Comment Type T Comment Status X
PSANEXT limit is specified but there is no definition of how it is calculated. Compare to 146.7.2.2.

Similarly for PSAACRF in 147.7.5. That parameter has not definition anywhere in this draft. In the whole standard it is only used in clause 113 where it is defined in 113.7.3.2.1.

SuggestedRemedy

Add equations to define PSANEXT and PSAACRF as in 146.7.2.2 and 113.7.3.2.1.

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl 147 SC 147.8.1 P 199 L 52 # 42
Kim, Yong NIO

Comment Type TR Comment Status X

The mixing segment shall meet the insertion loss characteristics specified for link segments in 147.7.1 between any two MDI attachment points. And from 147.8 "A mixing segment is specified based on cabling that supports up to at least 8 nodes and 25 m in reach". From both of this statement, this specification is requiring 28 (combination of any two) measurement taken. And any added nodes requires all combinations to be measured again, and with no assurances that the prior conformant MDI may fall out of range.

SuggestedRemedy

Provide better medium specification and cable design considerations that can be followed assured scaleable MDI and medium construction.

Proposed Response Response Status O

Cl 147 SC 147.9.1 P 200 L 28 # 3
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

target of this comment is, then be used an other MDI jack connector, it is important the MDI connector has the requirements accordance to the IEC 63171. The limit will once again more to the connectors accordance the IEC 63171-1 and IEC 63171-6 (IEC 61076-3-125)

SuggestedRemedy

add:interface to the balanced cabling and other connector types suitable for 1-pair applications with requirements accordance the IEC 63171 requirements

Proposed Response Response Status O

Cl 147 SC 147.9.1 P 200 L 31 # 4
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

The IEC SC48B have changed the project no. from IEC 61076-3-125 to IEC 63171-6

SuggestedRemedy

change: IEC 61076-3-125 to IEC 63171-6

Proposed Response Response Status O

Cl 147 SC 147.8.2 P 200 L 52 # 43
Kim, Yong NIO

Comment Type TR Comment Status X

The mixing segment shall meet the return loss characteristics specified for link segments in 147.7.2 between any two MDI attachment points. And from 147.8 "A mixing segment is specified based on cabling that supports up to at least 8 nodes and 25 m in reach". From both of this statement, this specification is requiring 28 (combination of any two) measurement taken. And any added nodes requires all combinations to be measured again, and with no assurances that the prior conformant MDI may fall out of range.

SuggestedRemedy

Provide better medium specification and cable design considerations that can be followed assured scaleable MDI and medium construction.

Proposed Response Response Status O

Cl 147 SC Figure 147-24 P 202 L 13 # 5
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

The IEC SC48B have changed the project no. from IEC 61076-3-125 to IEC 63171-6

SuggestedRemedy

change: IEC 61076-3-125 to IEC 63171-6

Proposed Response Response Status O

Cl 147 SC Figure 147-25 P 202 L 26 # 6
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

The IEC SC48B have changed the project no. from IEC 61076-3-125 to IEC 63171-6

SuggestedRemedy

change: IEC 61076-3-125 to IEC 63171-6

Proposed Response Response Status O

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

CI 147 SC Figure 147-26 P 202 L 43 # 7
Tillmanns, Ralf Weidmüller Interface

Comment Type E Comment Status X

The IEC SC48B have changed the project no. from IEC 61076-3-125 to IEC 63171-6

SuggestedRemedy

change: IEC 61076-3-125 to IEC 63171-6

Proposed Response Response Status O