Cl **00** *SC* **0** *P* *L* # 194

Schicketanz, Dieter consultant

Comment Type **TR** *Comment Status* **D** *Cabling*

There is a disruption in the max frequencies used:
for 2.5G the link is specified up tp 100 MHz, for 5 G up to 250 MHz.

In The ALSNR clause the frquencies are 100 MHz for 2.5 G and 200 MHz for 5G.

SuggestedRemedy

Explain the issue or correct it.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The ALSNR computation frequencies are not specifications for the link segment but are based on equations for optimal DFE, hence they do not need to be completely consistent with the link segment specifications.

Cl **00** *SC* **0** *P* *L* # 193

Schicketanz, Dieter consultant

Comment Type **ER** *Comment Status* **D** *References*

the Reference ISO/IEC 11801:2002 does not exist any more and would confuse the reader. There is an actual consolidated version with all information needed

SuggestedRemedy

The exact reference is:
ISO/IEC 11801:2002/AMD 1:2008, AMD 2:2010

The shortcut ISO/IEC 11801 could be used if in the bibliography the complete reference is shown.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
According to IEEE Std 802.3-2015, the current reference for the full 11801 standard is still ISO/IEC 11801:2002, which is listed in the bibliography of IEEE Std 802.3-2015 including the two amendments cited.

Cl **1** *SC* **1.3** *P* **20** *L* **20** # 178

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **D** *References*

Do we need to add "ISO/IEC TR 11801- 9904" to "1.3 Normative references"?

SuggestedRemedy

Add if needed.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task force to discuss - should be either in the bibliography or normative references.
In 1.3 Normative references we have
TIA TSB-5021-201x, Guidelines for the use of Installed Cabling to Support 2.5GBASE-T and 5GBASE-T. This suggests we treat ISO 9904 the same.

However, there are currently no requirements refer to the TR, so bibliography might be more appropriate. Additionally, including the TR normatively would both couple IEEE 802.3bz to requirements we have not yet seen, and also possibly delay publication of the standard unnecessarily.

Cl **1** *SC* **1.4.127** *P* **20** *L* **50** # 175

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **D** *Definitions*

This comment applies to subclause 1.4.127a.

Revisions to the category definitions, as proposed by Val Maguire and implemented during 802.3bz comment resolution, were not accepted by the Maintenance Task Force. A revised Maintenance Request has been submitted to correct application references only. The change proposed below is aligned with 802.3-2015 and this new Maintenance Request.

Note: "W" below should be replaced with the ohms symbol.

SuggestedRemedy

Replace: Category 5e balanced cabling: Balanced 100 W cables and associated connecting hardware whose transmission characteristics are specified up to 100 MHz per ISO/IEC 11801:2002 and ANSI/TIA-568-B.2-2001. (See IEEE Std 802.3, Clause 14, Clause 25, Clause 40, Clause 33, and Clause 126.)

with: Category 5e balanced cabling: Balanced 100 W cables and associated connecting hardware whose transmission characteristics are specified up to 100 MHz (i.e., cabling components meet the performance specified in ISO/IEC 11801:2002 and ANSI/TIA-568-B.2-2001). In addition to the requirements outlined in ISO/IEC 11801:2002 and ANSI/TIA-568-B.2-2001, IEEE 802.3 Clause 14, Clause 23, Clause 25, Clause 40, and Clause 126 specify additional requirements for this cabling when used with 10BASE-T, 100BASE-T4, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, and 5GBASE-T.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align draft with outcome of maintenance, and add in 2.5G/5GBASE-T and clause 126 references.

Cl **1** *SC* **1.4.128** *P* **21** *L* **3** # 176

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **D** *Definitions*

Revisions to the category definitions, as proposed by Val Maguire and implemented during 802.3bz comment resolution, were not accepted by the Maintenance Task Force. A revised Maintenance Request has been submitted to correct application references only. The change proposed below is aligned with 802.3-2015 and this new Maintenance Request.

Note: "W" below should be replaced with the ohms symbol.

SuggestedRemedy

Using revision marks, change the 802.3-2015 defintion for category 6 to read:
Category 6 balanced cabling: Balanced 100 W cables and associated connecting hardware whose transmission characteristics are specified up to 250 MHz (i.e., cabling components meet the performance specified in ISO/IEC 11801:2002 and ANSI/TIA-568-C.2). In addition to the requirements outlined in ISO/IEC 11801:1995 and ANSI/TIA-568-C.2, IEEE 802.3 Clause 14, Clause 23, Clause 25, Clause 40, Clause 55, and Clause 126 specify additional requirements for this cabling when used with 10BASE-T, 100BASE-T4, 100BASE-TX, 1000BASE-T, 2.5GBASE-T, 5GBASE-T, and 10GBASE-T.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align draft with maintenance outcome, and add in 2.5G/5GBASE-T and clause 126 references.

Cl **1** *SC* **1.4.129** *P* **21** *L* **13** # 177

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **D** *Definitions*

2.5GBASE-T and 5GBASE-T are also supported by category 6A, category 7, and category 7A cabling.

SuggestedRemedy

Include the subclause 1.4.129, 1.4.130, and 1.4.131 defintions from 802.3-2015 and modify accordingly to include references to clause 126, 2.5GBASE-T, and 5GBASE-T.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy.
Additionally, add 2.5GBASE-T and 5GBASE-T and Clause 126 references to 1.4.131a category 8.

Cl **125** *SC* **125.1.1** *P* **59** *L* **14** # 179

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **D** *EZ*

In "125.1.1 Scope" there is a typo in the 2nd para thta sayw "2.5 Gigabit and 5 Gigabit Ethernet is defined for full duplex operation only.", "is" should be "are".

SuggestedRemedy

"2.5 Gigabit and 5 Gigabit Ethernet are defined for full duplex operation only."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **125** *SC* **125.1.2** *P* **59** *L* **18** # 180

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **D** *EZ*

Typo in first sentance of "125.1.2 Relationship of 2.5 Gigabit and 5 Gigabit Ethernet to the ISO OSI reference model". "Couples" should be "couple"

"2.5 Gigabit and 5 Gigabit Ethernet couples the IEEE 802.3 MAC to a family of 2.5 Gb/s and 5 Gb/s Physical Layers"

SuggestedRemedy

"2.5 Gigabit and 5 Gigabit Ethernet couple the IEEE 802.3 MAC to a family of 2.5 Gb/s and 5 Gb/s Physical Layers"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.4.2.5.15** *P* **126** *L* **9** # 198

Yu, Jerome — Realtek

Comment Type **T** *Comment Status* **D** *Startup*

Power backoff of 8dB is not a requirement for 2.5G, and there is only one power backoff of 2dB. Should we change the PBO transmit power level to 2dB in PMA_Training_Init_M and PMA_Training_Init_S state ?

SuggestedRemedy

Change 2.5G PBO transmit power level to 2dB in PMA_Training_Init_M and PMA_Training_Init_S state.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
There is only one level of power backoff that a receiver is required to request. Transmitters are required to support all levels of power backoff, and receivers may request more power backoff either for power savings or interference management.

Cl **126** *SC* **126.4.4** *P* **131** *L* **41** # 181

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **D** *EZ*

in "126.4.4 Automatic MDI/MDI-X configuration" there is a missing space in the following "for 2.5GBASE-Tand 5GBASE-T"

SuggestedRemedy

"for 2.5GBASE-T and 5GBASE-T"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.6.2** *P* **156** *L* **2** # 182

Jones, Peter — Cisco Systems

Comment Type **E** *Comment Status* **D** *EZ*

in "126.6.2 MASTER-SLAVE configuration resolution", there is a missing "and" in "U12 is bit 12 of MultiGBASE-T 1000BASE-T Technology message code"

SuggestedRemedy

"U12 is bit 12 of MultiGBASE-T and 1000BASE-T Technology message code"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.1** *P* **158** *L* **17** # 195

Schicketanz, Dieter — consultant

Comment Type **TR** *Comment Status* **D** *Cabling*

In line 17 and 19 the sentence includes "with additional installation requirements".

First there are are no installation requirements in this clause and second in line 5 it is mentioned to look at the TRs

SuggestedRemedy

delete this part of the sentence twice

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Language is consistent with other 802.3 clauses. 'This clause' refers to Clause 126 (not subclause 126.7.1). Clause 126.9.3 contains installation and maintenance guidelines.

Cl **126** *SC* **126.7.3** *P* **164** *L* **6** # 191

Schicketanz, Dieter consultant

Comment Type **E** *Comment Status* **D** *References*

ISO TR missing

SuggestedRemedy

Add ISO/IEC 11801-9904 like in line 22

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.3.1** *P* **166** *L* **14** # 196

Schicketanz, Dieter consultant

Comment Type **TR** *Comment Status* **D** *Cabling*

While the formulas of Step 8 are correct they may not be applicable if alien crosstalk had been measured using IEC 91635 (field measurements of installed cabling) were the summation had allready been done and details to use Step 8 are lost.

SuggestedRemedy

Add a note that if alien crosstalk had been measured allready the summation has to be applied differently.

- Either show this difference or just mention it.

in step 8 the frequency should be up to 100 MHz line 35 and for step 9 200 MHz are missing.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
IEEE Std 802.3bz is specifying the characteristics of the link segment, not the measurement of it. Referenced cabling standards are expected to provide detail on the field measurements and any necessary conversions.

Cl **126** *SC* **126.7.3.1** *P* **167** *L* **33** # 192

Schicketanz, Dieter consultant

Comment Type **E** *Comment Status* **D** *Cabling*

Step 12 is rather cumbersome

SuggestedRemedy

Symplify step 12 to :
ALSNR from step 11 should be greater than 32 dB

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
SNRlinkreq notation is used and explained earlier in the subclause.
See comment 199.

Cl **126** *SC* **126.7.3.1** *P* **167** *L* **37** # 199

Yu, Jerome Realtek

Comment Type **T** *Comment Status* **D** *Cabling*

The ALSNRcriteria shall be greater than zero. As a result, the equation 126-35 should be rewritten as ALSNRcriteria = ALSNRlinkNR - SNRlinkreq

SuggestedRemedy

the equation 126-35 should be rewritten as ALSNRcriteria = ALSNRlinkNR - SNRlinkreq

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.9.3** *P* **170** *L* **36** # 183

Jones, Peter Cisco Systems

Comment Type **E** *Comment Status* **D** *Cabling*

in "126.9.3 Installation and maintenance guidelines" it says
"In addition, Annex 55B provides additional cabling guidelines for 2.5G/5GBASE-T deployment on balanced copper cabling systems, which may be helpful to 2.5G/5GBASE-T installations."

Annex 55B (Additional cabling design guidelines for 10GBASE-T) is not modified by 802.3bz, so I suspect that the first use of "2.5G/5GBASE-T" is search/replace error and it should say "10GBASE-T"

SuggestedRemedy

"In addition, Annex 55B provides additional cabling guidelines for 10GBASE-T deployment on balanced copper cabling systems, which may be helpful to 2.5G/5GBASE-T installations."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **7.2** *P* **159** *L* **18** # 197

Brillhart, Theodore — Fluke Electronics Corp

Comment Type **T** *Comment Status* **D** *Cabling*

Statements that link segment transmission parameters for 2.5GBASE-T and 5GBASE-T are equivalent to ISO/IEC 11801 Class D and ANSI/TIA-568-C.2 Category 5e (with any exceptions listed in clause 126) has led to some confusion as to requirements for impedance balance characteristics like TCL and ELTCTL. The aforementioned parameters are specified by the referenced ISO/IEC cabling standard but not the referenced ANSI/TIA standard for this cabling category/class. One is left wondering whether, or when, to account for the minimum perfrmance of these parameters when implementing the 2.5/5GBASE-T standard.
Additional considerations for the TG:
Given that vast majority of installed ClassD and Category 5e cabling is unshielded construction, and given that impeadance balance is the primary noise rejection mechanism for differential mode transmission in twisted pair wiring, then it follows that clear minimum performance requirements for these properties are needed for consistant implementation.

SuggestedRemedy

Insert a new sub-clause wihin clause 126.7 with specific requirements for TCL and ELTCTL that are equivilent to the ISO/IEC Class D requirements for these parameters.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
These parameters have not been been recognized as necessary for other BASE-T PHYs. Commenter fails to provide information detailing the need to include the new requirements for TCL and ELTCTL. Inclusion as requirements would preclude the reference to ANSI/TIA-568-C.2 Category 5e.

Remove "equivalent to";

Change: The link segment transmission parameters for 2.5GBASE-T are equivalent to ISO/IEC 11801 Class D and
ANSI/TIA-568-C.2 Category 5e.
To:The link segment transmission parameters for 2.5GBASE-T are ISO/IEC 11801 Class D and ANSI/TIA-568-C.2 Category 5e specifications.
Change: The link segment transmission parameters for 5GBASE-T are equivalent to ISO/IEC 11801 Class D and ANSI/TIA-568-C.2 Category 5e specifications with the upper frequency extended to 250 MHz and appropriate adjustments for length when applicable as specified in ISO/IEC TR 11801-9904 and TIA TSB-5021.
To:The link segment transmission parameters for 5GBASE-T are ISO/IEC 11801 Class D and ANSI/TIA-568-C.2 Category 5e specifications with the upper frequency extended to 250 MHz and appropriate adjustments for length when applicable as specified in ISO/IEC TR 11801-9904 and TIA TSB-5021.

Cl **126.5** *SC* **126.5.4.3** *P* **151** *L* **17** # 187

moffitt, bryan — commscope

Comment Type **T** *Comment Status* **D** *EMI Test*

The sentence "All components in the test remain over the ground reference plane." is not true and should be deleted or modified to match the test in the Annex.

SuggestedRemedy

Delete or could be corrected, such as:
Components that are exposed to the induced fields remain over a ground reference plane.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "All components in the test remain over the ground reference plane." to
"All components that are exposed to the induced fields should remain over a ground reference plane."

Cl **126.5** *SC* **126.5.4.3** *P* **151** *L* **17** # 184

moffitt, bryan — commscope

Comment Type **E** *Comment Status* **D** *EMI Test*

the requirement in 126.7 is for a link segment, but this refers to a "channel" instaed of link segment.

SuggestedRemedy

change to link segment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126.5** *SC* **126.5.4.3** *P* **151** *L* **20** # 188

moffitt, bryan — commscope

Comment Type **T** *Comment Status* **D** *EMI Test*

6dBm should be verified against more recent ad-hoc test data

SuggestedRemedy

review test results and change if necessary

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task force to discuss.

Cl **126.5** *SC* **126.5.4.3** *P* **151** *L* **30** # 189

moffitt, bryan commscope

Comment Type **T** *Comment Status* **D** *EMI Test*

This note has created several ambiguous issues:
The 10% refers to a calibration procedure of the Annex (113A.3) that is not carried into the actual Annex test (113A.4) where it only says "impairment as specified". It is also clearly identified in the annex as optional. While there are a number of issues on the annex that this brings up and will need to be resolved, there is no good reason to drag it into the main document.

SuggestedRemedy

It should be recognized that 10% in any interpretation is a small deviation by conventional EMC methods and since it was not clearly defined, delete the note.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This note was added specifically to resolve ambiguities brought by previous commenters.

Cl **126.7** *SC* **126.7.2** *P* **158** *L* **26** # 190

moffitt, bryan commscope

Comment Type **T** *Comment Status* **D** *Cabling*

insufficient criteria:
that meets the transmission parameters of this subclause provides a reliable medium

SuggestedRemedy

move up to 126.7 or change to "that meets the transmission parameters of subclauses 126.7.2 and 126.7.3 provides a reliable medium"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "that meets the transmission parameters of this subclause provides a reliable medium" to
….."that meets the transmission parameters of this subclause and 126.7.3 Coupling parameters between link segments"…..

Cl **126.7** *SC* **126.7.3.1** *P* *L* # 185

moffitt, bryan commscope

Comment Type **E** *Comment Status* **D** *Cabling*

computing the 10GBASE-T or 5GBASE-T power back off is a PHY operation. This is just an estimation for cable assessment. Also missing 2.5G.

SuggestedRemedy

change to:
estimating the 10GBASE-T, 5GBASE-T or 2.5GBASE-T power back off

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Unclear which statement the commenter is referring to, but assuming it is the note on P164 L32, "Neglecting the higher frequencies has no appreciable effect in computing the 10GBASE-T or 5GBASE-T power back off." (because that one doesn't have 2.5G):

replace "computing" with "estimating the minimum required"

2.5G is left out on purpose, because its entire frequency span is in the range discussed.

Cl **126.7** *SC* **126.7.3.1** *P* **164** *L* **39** # 186

moffitt, bryan commscope

Comment Type **E** *Comment Status* **D** *Cabling*

index K seems to be implied as refering to the rate since both should be calculated instead of for each pair. All pairs would be the same.

SuggestedRemedy

Understand calculation, but not sure if the step requires a fix

Proposed Response *Response Status* **W**

PROPOSED REJECT.
K refers to the disturbed link segment. See immediately preceding line of text.