Cl **00** *SC* **0** *P* **1** *L* **28** # 211

Maguire, Valerie — Siemon

Comment Type **E** *Comment Status* **D** *Definitions*

Both "twisted-pair" and "twisted pair" appear to be used interchangeably throughout the document. See page 1, line 28 and page 10, line 27 for an example.

SuggestedRemedy

Consider standardizing on one hyphenation format ("twisted-pair" is recommended).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Standardize on usage in clause 1.4:
Twisted pair (no hyphen) when used as a noun by itself
twisted-pair (hyphenated) when used as an adjective, for example "twisted-pair cable".
See 1.4.409 (twisted pair) vs. 1.4.410-1.4.413 in IEEE P802.3bx D3.2
(this is consistent with usage in clause 55)

Cl **1** *SC* **1.1.3.2** *P* *L* # 215

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *Architecture*

Need to edit description item (f) XGMII to allow 2.5G and 5G PHYs:
existing text is 10G-specific:
f) 10 Gigabit Media Independent Interface (XGMII). The XGMII is designed to connect a 10 Gb/s capable MAC to a 10 Gb/s PHY. While conformance with implementation of this interface is not necessary to ensure communication, it allows maximum flexibility in intermixing PHYs and DTEs at 10 Gb/s speeds. The XGMII is intended for use as a chip-to-chip interface. No mechanical connector is specified for use with the XGMII. The XGMII is optional.

SuggestedRemedy

Change text to:
f) 10 Gigabit Media Independent Interface (XGMII). The XGMII is designed to connect a 2.5 Gb/s, 5 Gb/s or 10 Gb/s capable MAC to a PHY of the same rate. While conformance with implementation of this interface is not necessary to ensure communication, it allows maximum flexibility in intermixing PHYs and DTEs at 2.5 Gb/s, 5 Gb/s and 10 Gb/s speeds. The XGMII is intended for use as a chip-to-chip interface. No mechanical connector is specified for use with the XGMII. The XGMII is optional.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.4** *P* **20** *L* **29** # 212

Maguire, Valerie — Siemon

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

While category 5e is referenced in 33.1.4.1 and 33.8.3.1 of the pending 802.3-2015 Standard, it is missing from the Definitions in clause 1.4 of the draft. In addition, the definition for category 6 in draft 802.3-2015 is problematic in that it is missing 1000BASE-T and PoE applications references and written in a way that seems to inappropriately include "additional requirements". (Note: a Maintence Request harmonized with this comment has been submitted, which attempts to correct this problem across all categories.)

SuggestedRemedy

Add:

Category 5e balanced cabling: Balanced 100 [ohms symbol] cables and associated connecting hardware whose transmission characteristics are specified up to 100 MHz per ISO/IEC 11801:1995 and ANSI/TIA-568-B.2-2001. (See IEEE Std 802.3, Clause 14, Clause 25, Clause 40, and Clause 33.)

Add using editorial marks to show changes to existing draft 802.3-2015 text):

Category 6 balanced cabling: Balanced 100 [ohms symbol] cables and associated connecting hardware whose transmission characteristics are specified up to 250 MHz per ISO/IEC 11801:2002 and ANSI/TIA-568-C.2-2009. (See IEEE Std 802.3, Clause 14, Clause 25, Clause 40, Clause 55, and Clause 33.)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113A** *SC* **113A.2** *P* **191** *L* **27** # 194

Moffitt, Bryan — CommScope

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

Clarity that the Annex 40B clamp can be used with Annex 113 instructions

SuggestedRemedy

change
"(Note – The larger inner diameter clamp is described here; see Annex 40B for the description of an alternate clamp for use with smaller diameter cable types)."
to
(Note – A larger inner diameter clamp is described here; see Annex 40B for the description of an alternate clamp to be used with this methodology on smaller diameter cable types).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.2** *P* **193** *L* **43** # 195

Moffitt, Bryan CommScope

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

This is not shown in the figure

SuggestedRemedy

replace:
"As shown in Figure 113A–2 the inner conductor on the bottom half of the clamp extends slightly (~0.1mm)above the dielectric to ensure there is good electrical connection"
With:
"The inner conductor on the bottom half of the clamp extends slightly (~0.1mm) above the dielectric to ensure there is good electrical connection"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.2** *P* **193** *L* **47** # 196

Moffitt, Bryan CommScope

Comment Type **E** *Comment Status* **D** *Clamp Test*

Electrical information should be placed where it is called out instead of a mechanical descriptive section.

SuggestedRemedy

move this sentence and table 113A-1 to page 194 line 22

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Follow BQ

Cl **113A** *SC* **113A.3** *P* **191** *L* **2** # 216

Zimmerman, George CME Consulting

Comment Type **E** *Comment Status* **D** *Clamp Test*

The use of 'shall' in an informative annex is not allowed. Should would be more appropriate (see 802.3bq d2p2 comment 176 from Curtis Donahue)

SuggestedRemedy

Editor to review clause 113A after edit and replace all shalls with 'should' or other language if appropriate. Align with BQ resolutions

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113A** *SC* **113A.3** *P* **194** *L* **13** # 217

Zimmerman, George CME Consulting

Comment Type **E** *Comment Status* **D** *Clamp Test*

Various typos in 113A.3 see 802.3bq d2p2 comments 222-224 by Alon Regev

SuggestedRemedy

Editor to review final editing of 113A.3 with 802.3bq d2p2 comments 222-224 to ensure typos mentioned are cleaned out.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113A** *SC* **113A.3** *P* **194** *L* **32** # 197

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

The clamp injects an electomagnetic (EM) interference wave on the cable. For the validation to be relevant or consistent to the test, the EM fields should encounter a similar termination/grounding structure for both the validation and the test.

SuggestedRemedy

change:
Breakout Fixture - A passive fixture with an MDI connector jack input and individual outputs for each of the 8 signal wires.
to:
Breakout Fixture - A passive fixture with an MDI connector jack input, a shield and grounding surface that is similar to the transmitter/reciever being tested and individual outputs for each of the 8 signal wires.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.3** *P* **194** *L* **39** # 198

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Balun spec should stay over 40 in the entire upper frequency range, like the other range.

SuggestedRemedy

change:
Common-Mode Rejection: > 50dB (1 MHz-1000 MHz), > 40dB at 2000 MHz
to:
Common-Mode Rejection: > 50dB (1 MHz-1000 MHz), > 40dB up to 2000 MHz

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **194** *L* **43** # 201

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Item e) is overly specified in the wrong direction. If this is to be a PHY test and not a cabling test, then it will work best without connectors in the link. Most plugs will only terminate on cordage which has a derating factor and cannot support link performance at the full link length. 4 pair 100 Ohms is also redundant since it is already specified.

SuggestedRemedy

replace:
Test cable: A 30m, 4-pair 100 ^ plug-terminated cable that meets PHY link segment specifications.
With a description like page 196 line 10:
Plug terminated cabling up to the maximum length that meets the specification for the PHY under test.

Another point to resolve (but spread through the text) is that the test cabling should be the exact same cabling used in the validation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **194** *L* **45** # 202

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Choke impedance cannot be specified exactly like this. All specifications should be changed to be as minimums.

SuggestedRemedy

change:
Chokes (5)
to:
Chokes (minimum 5)
Also change:
"Impedance: 175 ƒÇƒn@ 100 MHz, 275 ƒÇƒn@ 250 MHz, 375 ƒÇ @ 500 MHz, 400 ƒÇ @ 1000 MHz"
to:
"Minimum Impedance: 175 ƒÇƒn@ 100 MHz, 275 ƒÇƒn@ 250 MHz, 375 ƒÇ @ 500 MHz, 400 ƒÇ @ 1000 MHz"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **194** *L* **54** # 199

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Based on cohen_CMNR_Test_for_2.5G-5GBase-T_20150812.pdf and other adhoc submissions, generator specifications should be more detailed. This is a compact and direct addition that indicates the proper methodology but avoids complex specifications that may be difficult to agree on.

SuggestedRemedy

change:
Signal generator capable of providing a sine wave signal of 1 MHz to 2000 MHz
to:
Signal generator capable of providing a sine wave signal of 1 MHz to 2000 MHz, with adequate test power for adjustments, low harmonic distortion and including control and monitoring of power and frequency transitions.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output

Cl **113A** *SC* **113A.3** *P* **195** *L* **24** # 204

Moffitt, Bryan CommScope

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

redundant with page 194 line 54

SuggestedRemedy

delete:
The signal generator shall be capable of providing a sine wave signal of 1 MHz to 2000 MHz.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **27** # 205

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Several confusing words of this should be changed:
The remainder of the test is conducted without changing the signal generator power. The cable pairs not connected to the balun are terminated in a resistor network.

SuggestedRemedy

change to:
The remainder of the validation is conducted without changing the signal generator power. The breakout wires of pairs not connected to the balun are terminated in the resistors.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR Ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **29** # 206

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

there is no table identified:
The chokes are placed on the table, located next to each other and approximately 2.0 cm from the clamp.

(note this couples with the next comment)

SuggestedRemedy

The chokes are positioned over the ground plane from the clamp, located next to each other and approximately 2.0 cm from the clamp.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **3** # 203

Moffitt, Bryan CommScope

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

Item j) refers to nothing and appears to be an editing mistake

SuggestedRemedy

delete j)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **31** # 207

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

proper endpoint for each part of the cable span a(nd some clarity improvement):

The cable between the clamp and the breakout fixture should be positioned straight from the clamp to the breakout port and not contact the ground plane. Any plug shield contacts should mate with the breakout jack shield. The cable between the transmitter and the cable clamp should be installed...

SuggestedRemedy

Change to:
The cable between the chokes and the breakout fixture should be positioned straight from the chokes to the breakout port and not contact the ground plane. Any plug shield contacts should mate with the breakout jack shield. The cable between the link partner and the chokes should be installed...

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Endpoints in text are further positioned than suggested remedy, and suggested change would leave cable from clamp to chokes without definition.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **35** # 208

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

based on Pete Cibula submissions centering the cable in the clamp along with minor clarity fix.

SuggestedRemedy

(Note this relates to the previous comment) Change to:
The cable from the chokes to the breakout should be centered, straight and not in contact with the ground plane.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Discuss with CMRR ad hoc output
Proposed remedy does not center the cable relative to anything in particular.
BQ

Cl **113A** *SC* **113A.3** *P* **195** *L* **38** # 209

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

This is not generic enough:
The differential-mode and common-mode voltage outputs of the balun and breakout fixture should meet the limits shown in Table 113A–2 over the frequency range 1 MHz to 2000 MHz for each cable pair.

SuggestedRemedy

change to:
The differential-mode and common-mode voltage outputs of the balun and breakout fixture should meet the limits shown in Table 113A–2 over the frequency range being tested for each cable pair.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A** *SC* **113A.3** *P* **196** *L* **1** # 210

Moffitt, Bryan CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

This note and procedure may be useful in the lower frequency range, but becomes unworkable at the higher frequencies where trasnsmission reflections and the clamp loss are much more significant. New calibration procedures are proposed that should suplememnt it.

SuggestedRemedy

Presentation will be submitted

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Review with presentation
BQ

Cl **113A** *SC* **113A.3** *P* **205** *L* **35** # 128

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Specify the frequency point sweep set in the validation phase instead of during the test phase. The same set should be used during the test phase.

SuggestedRemedy

Proposed new text inserted after line 35:

The signal generator output frequency is swept incrementally over the specified test frequency range with a step size that should not exceed 1% of the preceding frequency. At each frequency point, the common-mode and differential-mode component power levels are measured at the balun interface and recorded for each of the four pairs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.3** *P* **206** *L* **6** # 129

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Add optional addtional validation steps that allow generation of reproducible target common-mode ingress levels in the test setup. Note these steps are optional and performed at the discretion of manufacturer.

SuggestedRemedy

Insert the following text after line 6 (Note 1):

To improve test reproducibility, the manufacturer may optionally perform the following additional steps to the above validation procedure. First, the manufacturer must defne specific target common-mode test level values and differential mode limit values at each frequency point. Upon completion of the four measurement sweeps, select the data from a single pair and compute the difference between the measured common-mode power level and the common-mode target test level at each frequency point. The computed difference values are stored as the signal generator output level correction factors that will be applied at each frequency point during the test procedure. At each frequency point, apply the correction factor to the signal generator output level used during the validation procedure. If the corrected level exceeds the maximum output level of the signal generator (e.g. +20 dBm), the correction factor should be limited such that the signal generator output remains at the maximum output level. Apply the correction factor to the measured differential components of all four pairs. The resulting corrected differential mode levels should meet the manufacturer's defined limits over the full test frequency sweep range for each cable pair.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.4** *P* **206** *L* **26** # 130

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Add a provision in the test procedure to allow for optional target common-mode ingress test levels.

SuggestedRemedy

Add the following text directly after the existing text on line 26:

Alternatively, the output power of the signal generator may be adjusted from the fixed calibration level with the optional frequency-dependent correction factor computed in 113A.3 and applied to the clamp input to reproduce the manufacturer's specified target common-mode ingress

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **113A.4** *P* **206** *L* **28** # 131

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Add text defining the set of frequency test points, the dwell time at each frequency, and the carrier envelope rise/fall transition at each frequency point in the equipment test procedure. Revised new text from an earlier comment.

SuggestedRemedy

Add the following text starting at line 28 after the last paragraph:

The signal generator output frequency is swept incrementally over the specified test frequency range with the same frequency point set used in the validation procedure. During the transition to the next frequency point, the signal generator output should be off or attenuated by at least 30 dB from its prescribed level. When the transition is complete, the carrier envelope shall rise to its prescribed output level in no less than 100 usec. Before the next frequency transition, the carrier enveloope should fall to at least 30 dB below its prescribed level in no less than 100 usec. The dwell time at each frequency should not be less than the time necessary for the EUT to be exercised and to respond, but should in no case be less than 0.5 seconds.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A** *SC* **133A.3** *P* **194** *L* **41** # 200

Moffitt, Bryan — CommScope

Comment Type **T** *Comment Status* **D** *Clamp Test*

Based on Cable_RF_ingress_measurement_in_an_anechoic_chamber.pdf and earlier adhoc submissions, other devices besides baluns can be used for similar results.

SuggestedRemedy

add note:
Other devices for detecting differential and common mode signals may be used, provided the performance is demonstrated to be equivalent or better.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add note: "Other devices for detecting differential and common mode signals may be used."
(in an informative section, provided might be interpreted as a normative requirement, and the reader using another device should understand the importance of assessing the performance)
BQ

Cl **125** *SC* **125.2.1** *P* **67** *L* **48** # 162

Lo, William — Marvell Semiconductor

Comment Type **ER** *Comment Status* **D** *EZ*

Reference to clause 44 is incorrect

SuggestedRemedy

Change Clause 44 to Clause 46

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **125** *SC* **125.2.4** *P* **68** *L* # 163

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Architecture*

Need a few additional subclauses to round out the section

SuggestedRemedy

125.2.4 Auto-Negotiation, type BASE-T
Auto-Negotiation (Clause 28) is used by 2.5GBASE-T and 5GBASE-T devices to detect the abilities (modes of operation) supported by the device at the other end of a link segment, determine common abilities, and configure for joint operation. Auto-Negotiation is performed upon link startup through the use of a special sequence of fast link pulses.

125.2.5 Management interface (MDIO/MDC)
The MDIO/MDC management interface (Clause 45)provides an interconnection between MDIO Manageable Devices (MMD) and Station Management (STA) entities

125.2.6 Management
Managed objects, attributes, and actions are defined for all 2.5 Gigabit and 5 Gigabit Ethernet components. These items are defined in Clause 30.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement proposed response with one change to show MDI/MDC is optional:
125.2.4 Auto-Negotiation, type BASE-T
Auto-Negotiation (Clause 28) is used by 2.5GBASE-T and 5GBASE-T devices to detect the abilities (modes of operation) supported by the device at the other end of a link segment, determine common abilities, and configure for joint operation. Auto-Negotiation is performed upon link startup through the use of a special sequence of fast link pulses.

125.2.5 Management interface (MDIO/MDC)
The >>optional<< MDIO/MDC management interface (Clause 45)provides an interconnection between MDIO Manageable Devices (MMD) and Station Management (STA) entities

125.2.6 Management
Managed objects, attributes, and actions are defined for all 2.5 Gigabit and 5 Gigabit Ethernet components. These items are defined in Clause 30.

Cl **125** *SC* **125.4** *P* **68** *L* **20** # 164

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Architecture*

Delay constraint is not needed here as it is described elsewhere.

SuggestedRemedy

Delete section 125.4

Proposed Response *Response Status* **W**

PROPOSED REJECT.
802.3 style has delay constraint summarized in the architecture clause for the speed as well.
See clauses 44 & 80.

Cl **126** *SC* *P* **108** *L* **45** # 224

Zimmerman, George — CME Consulting

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

it's should be its (802.3bq d2p2 comment 221 from Alon Regev)

SuggestedRemedy

see comment, align with bq

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.1.3** *P* **73** *L* **17** # 175

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **D** *EZ*

the boxes indicating EEE are supposed to be dashed lines, this also applies to Figure 126-4 on page 79

SuggestedRemedy

change boxes to dashed lines

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
(beat on frame)

Cl **126** *SC* **126.1.3.2** *P* **75** *L* **8** # 176

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **D** *EZ*

"The latter occurs when either one or both of the PHYs that share a link segment are not operating reliably."
This sentence is not entirely accurate and was incorrectly carried forward from Clause 40 into Clause 55.

SuggestedRemedy

delete the sentence

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Recommend commenter file maintenance request on clause 55 as well
BQ

Cl **126** *SC* **126.11** *P* **173** *L* **34** # 167

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Delay*

Change 2.5GBASE-T delay to 5.0us and 5GBASE-T delay to 2.85us

SuggestedRemedy

Change following sentence:
The sum of the transmit and receive data delays for an implementation of a 2.5GBASE-T or 5GBASE-T PHY shall not exceed 25600 BT.

To:
The sum of the transmit and receive data delays for an implementation of a 2.5GBASE-T PHY shall not exceed 12500 BT. The sum of the transmit and receive data delays for an implementation of a 5GBASE-T PHY shall not exceed 14250 BT.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Also make the change to the specification in clause 125.

Cl **126** *SC* **126.12** *P* **173** *L* **44** # 219

Zimmerman, George — CME Consulting

Comment Type **E** *Comment Status* **D** *PICS*

Several PICs are either missing or need updating - see 802.3bq comments 177, 178, 182, 183, and 185 by Curtis Donahue, for PICS issues:
INS (needs definition for ENV2, ENV4)
PME22 (LT is now mandatory, not an option)
add PICS for lpi_refresh_rx_timer, link_fail_sig_timer, and fr_maxwait_timer
text to match PICS PME15 for test mode 7 doesn't have a shall (P148 L39)
add PICS for mtc and stc

SuggestedRemedy

Align with BQ resolution of comments
Change text on page 148 L39 from "This mode reuses the 2.5GBASE-Tand 5GBASE-T scrambler and is defined in detail in 126.3.3."
to "This mode shall reuse the 2.5GBASE-T and 5GBASE-T scrambler and is defined in detail in 126.3.3."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.12.3** *P* **183** *L* **13** # 145

Klempa, Michael — UNH IOL

Comment Type **E** *Comment Status* **D** *PICS*

126.12.3 is titled Physical Coding Sublayer, but it only includes the Transmitter portion of the tests. Section 126.12.3.1 includes the PCS Recieve functions, so they should be differentiated.

SuggestedRemedy

Change the title of 126.12.3 to PCS Transmit functions, or change the structure of the numbering to accomodate the difference.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Retain 126.12.3 Physical Coding Sublayer, but it only contains the subheaders
Make insert new header
126.12.3.1 PCS Transmit functions
renumber other 126.12.3.x subclauses

Cl **126** *SC* **126.12.3** *P* **184** *L* **13** # 146

Klempa, Michael UNH IOL

Comment Type **E** *Comment Status* **D** *PICS*

126.12.3 is titled PCS Sublayer, however it only includes transmitter functions. 126.12.3.1 is specifically PCS Receiever functions, the sections should be defined to differentiate between the two.

SuggestedRemedy

Change section 126.12.3's title to PCS Transmit functions, or change the numbering structure to show the difference.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 145

Cl **126** *SC* **126.12.4** *P* *L* # 148

Klempa, Michael UNH IOL

Comment Type **E** *Comment Status* **D** *PICS*

lpi_refresh_rx_timer, link_fail_sig_timer, fr_maxwait_timer features (from section 126.4.5.2) are all missing from PICS.

SuggestedRemedy

Include these features with the corresponding values.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **126** *SC* **126.12.4** *P* *L* # 147

Klempa, Michael UNH IOL

Comment Type **E** *Comment Status* **D** *PICS*

mtc and stc in section 126.4.5.1 include shalls but are not in the required table.

SuggestedRemedy

Include the features mtc and stc with the corresponding values below (EEE:M):

mtc
mtc is the transition count for a MASTER PHY during normal training and fast retraining. mtc shall be equal to Sx2^8 for normal training and Sx2^5 for fast retrain.

stc
stc is the transition count for a SLAVE PHY during normal training and fast retraining. stc shall be equal to Sx2^5 for normal training and Sx2^4 for fast retrain.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **126** *SC* **126.12.5** *P* **188** *L* **1** # 149

Klempa, Michael UNH IOL

Comment Type **E** *Comment Status* **D** *PICS*

Management interface comes before PMA Electrical Specifications, however the PMA Electrical Specifications subcaluse is 5 and the Management interface sublcause is 6.

SuggestedRemedy

Swap the order of the tables of features to reflect the order of the subclases.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.2.4.5.15** *P* **131** *L* **40** # 225

Zimmerman, George CME Consulting

Comment Type **T** *Comment Status* **D** *EZ*

rem_rcvr status (line break) should be rem_rcvr_status (802.3bq d2p2 comment 227 from Alon Regev)

SuggestedRemedy

change rem_rcvr status to rem_rcvr_status (align with BQ)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3** *P* **87** *L* **18** # 218

Zimmerman, George CME Consulting

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

Minor clean up on figures brought from 10GBASE-T. See 802.3bq D2p2 ballot comments 157-163 by Stephen Trowbridge. (BQ)

SuggestedRemedy

Clean up figures aligned with BQ resolution of comments

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.2.2.15** *P* **95** *L* **28** # 178

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

there is no transcoder

SuggestedRemedy

delete "transcoder/"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.2.2.16** *P* **95** *L* **33** # 165

Lo, William Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

Cut and paste error from 802.bq. Does not apply to 802.3bz
There is no transcoding step aggregating 3208 bits.

SuggestedRemedy

Change:
frame tx_aggregated<3207:0> is scrambled to tx_scrambled<3207:0> with
to
frame is scrambled to with

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 179

Cl **126** *SC* **126.3.2.2.16** *P* **95** *L* **33** # 179

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

There is no transcoder, so this text was incorrectly carried over from 802.3bq.

SuggestedRemedy

replace "The payload of the PCS PHY frame tx_aggregated<3207:0> is scrambled to tx_scrambled<3207:0> with a self-synchronizing scrambler."
with "The payload of the PCS PHY frame is scrambled with a self-synchronizing scrambler."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.2.2.21** *P* **98** *L* **28** # 223

Zimmerman, George CME Consulting

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

"a analogous manner" should be "an analogous manner" (802.3bq d2p2 comment 220 from Alon Regev)

SuggestedRemedy

change "a analogous manner" to "an analogous manner" (align with bq)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.2.2.6** *P* **94** *L* **33** # 177

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *PCS*

"aUse of idle and LPI ordered sets per 48.2.4.2."
this note is incorrect. Ordered sets are not used for control codes and Clause 48 does not apply.

SuggestedRemedy

Delete this note

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.4.1** *P* **102** *L* **9** # 180

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

Figure 126-11 is missing these symbols: n, Sa_n, Sb_n, Sc_n, Sd_n, TA_n, TB_n, TC_n, TD_n
refer to Figure 55-13 for comparison

SuggestedRemedy

add these symbols back in the figure

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Also missing in 802.3bq (both clause 55 and 113)
BQ

Cl **126** *SC* **126.3.5.3** *P* **105** *L* **33** # 166

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *EZ*

Need to zero out info field

SuggestedRemedy

Change:
as is shown in Figure 126–11
to:
as is shown in Figure 126–11 with the exception that the InfoField consists of a sequence of 128 zeros.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
(track resolution of same comment in 802.3bq)

Cl **126** *SC* **126.3.6.2.2** *P* **108** *L* **16** # 226

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *EZ*

"!tx _refresh_active" should be "!tx_refresh_active" (802.3bq d2p2 comment 226)

SuggestedRemedy

change to !tx_refresh_active (remove space between tx and underscore)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.6.2.2** *P* **108** *L* **31** # 181

McClellan, Brett — Marvell

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

fr_sigtype and definition has extra indentation

SuggestedRemedy

change to match indendation of the other variables.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.3.6.2.5** *P* **110** *L* **54** # 182

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **D** *PCS*

timer should be longer for 2.5G

SuggestedRemedy

change "nominally 125xS" to "nominally 125/S"
also on page 112 line 34

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete "(nominally 125□S µs for 2.5GBASE-T and 5GBASE-T)"
(this was supposed to have been deleted in d0p1)

Cl **126** *SC* **126.3.6.4** *P* **118** *L* **33** # 183

McClellan, Brett — Marvell

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

Figure 126-18 has several line breaks with hyphens in the middle of variables and may confuse the reader. The line breaks do not occur in Figure 55-20.

SuggestedRemedy

eliminate the line breaks.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.4.2.5.10** *P* **128** *L* **34** # 184

McClellan, Brett — Marvell

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

missing space

SuggestedRemedy

change "PMA_Coeff_Exchstate" to "PMA_Coeff_Exch state"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.4.2.5.11** *P* **128** *L* **46** # 185

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

text uses~= to indicate 'not equal to'. Is this defined in 802.3?

SuggestedRemedy

change '~=' to 'not equal to'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to '~=' to ' is not equal to '
BQ

Cl **126** *SC* **126.4.6.3** *P* **144** *L* **20** # 227

Zimmerman, George CME Consulting

Comment Type **T** *Comment Status* **D** *EZ*

maxwait_time_done should be maxwait_timer_done (802.3bq d2p2 comment 228 by Alon Regev)
start_link_fail_sig_timer should be start link_fail_sig_timer (126.4.6.5) (bq comment 229)
PMA_CONFIG.indicate should be PMA_CONFIG.indication (2 instances) (bq comment 230)

SuggestedRemedy

see comment, align with bq resolutions

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.5** *P* **146** *L* # 135

farjad, ramin Aquantia

Comment Type **T** *Comment Status* **D** *PMA*

These are fairly tough ESD spec to meet, much toucher than the cable discharge/CDE requirement that OEMs test for Enterprise environmet. From the literature, the IEC 60950 was only required for outside installation, and thus they require especial type of surge protection added to MDI ports on the board, but such requirement must not be a general requirement for all BASE-T, especially if targeted for enterprise.
We want to consider defining the isolation requirement differently for outside versus inside installations

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Commenter offers insufficient remedy. This specification has been constant for BASE-T PHYs since at least 1000BASE-T.

Cl **126** *SC* **126.5** *P* **151** *L* # 136

farjad, ramin Aquantia

Comment Type **T** *Comment Status* **D** *PMA*

The spec for Master Tx jitter is the same as 10GE, i.e. 5.5ps at output of the Tx. we should consider scaling the TX jitter with symbol rate, so the spec (5.5psec at 10G) will be 11 psec jitter for 5G and 22psec jitter for 2.5G."

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with presentation

Cl **126** *SC* **126.5** *P* **153** *L* # 133

farjad, ramin Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

we should consider specifying the test procedure with further details here to avoid confusion of what the realistic way to test is. Some test procedures ramp the freq from 80M-2000MHz fairly fast and expect to see a robust link (with preferably no error), while in a real life scenario we do not have such freq ramp. I think we need to specify the test such that they assert one EM freq at a time with some minimal time in between, in order of a second or so

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider with CMRR ad hoc output

Cl **126** *SC* **126.5.2** *P* **149** *L* **36** # 228

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *PMA*

For transmit distortion test mode 4, figure 126-33, the test does not have the remote signal present which pushes the signal into non-linearity. In order to test non linearity, an external tone needs to be injected into local transmitter, representing maximum level of remote PHY signal. See clause 40 for similar test set up.
(802.3bq d2p2 comment 234 from Ahmad Chini)

SuggestedRemedy

See comment, align with bq

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This was considered during 10GBASE-T. Stressing the transmitter with a remote signal to simulate a short line is unnecessary because of the use of power back off.
Use of minimal power back off on 2.5GBASE-T may change this - discuss - does not need alignment with BQ resolution, or even between 2.5G and 5GBASE-T.

Cl **126** *SC* **126.5.4.3** *P* **153** *L* **29** # 125

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Change test parameters to values specific for 2.5G/5G.

SuggestedRemedy

Change "2000 MHz" to "1000 MHz". Change "30 meter" to "100 meter".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Consider with CMRR ad hoc output

Cl **126** *SC* **126.5.4.3** *P* **153** *L* **32** # 126

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Change test parameters to values specific for 2.5G/5G.

SuggestedRemedy

Change "2000 MHz" to "1000 MHz".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Consider with CMRR ad hoc output

Cl **126** *SC* **126.5.4.3** *P* **153** *L* **33** # 127

Cohen, Larry — Aquantia

Comment Type **T** *Comment Status* **D** *Clamp Test*

Measuring power applied to the clamp opposite clamp port may result in significant measurement error.

SuggestedRemedy

Modify text to clarify that the power applied to the input of the clamp must be controlled. The means of measurement are up to the manufacturer or test operator.

Existing text:
signal power measured at the output of the clamp does not exceed 6dBm

Proposed new text:
signal power applied to the input of the clamp does not exceed 6dBm

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider with CMRR ad hoc output

Cl **126** *SC* **126.6.1.2 2** *P* **156** *L* **32** # 188

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **D** *Training*

missing reference to subclause for 40GBASE-T LD PMA training reset request

SuggestedRemedy

change "Defined in" to "45.2.7.10.4f"
copy subclause 45.2.7.10.4b from 802.3bq D2.2 to new subclause 45.2.7.10.4f in 802.3bz.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add editor's note stating 40G information will be deleted if BZ precedes BQ into working group ballot, add external reference to 45.2.7.10.4b

Cl **126** *SC* **126.6.2** *P* **159** *L* **36** # 189

McClellan, Brett — Marvell

Comment Type **T** *Comment Status* **D** *EZ*

Register 7.33 is not called the "2.5GBASE-T status register or the 5GBASE-T status register"

SuggestedRemedy

change "2.5GBASE-T status register or the 5GBASE-T status register" to "MultiGBASE-T AN status register"
also applies to line 43

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7** *P* **160** *L* **5** # 190

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

effective data rate per lane is 625 Mb/s for 2.5GBASE-T and 1250 for 5GBASE-T

SuggestedRemedy

change "626" to "625" and "1626" to "1250"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7** *P* **160** *L* **8** # 213

Maguire, Valerie Siemon

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

It is unclear what "compatible" means in the sentence, "All implementations of the balanced cabling link segment specification shall be compatible at the MDI." When would an implementation not be compatible? Is this a physical or electrical requirement? Or, both?

SuggestedRemedy

Delete, "All implementations of the balanced cabling link segment specification shall be compatible at the MDI."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Understanding of this statement has been clear in other 802.3 clauses, meaning is physical and electrical sufficient to meet the link segment criterion.
Change "All implementations of the balanced cabling link segment specification shall be compatible at the MDI."
to "All implementations of the balanced cabling link segment specification shall be mechanically and electrically compatible at the MDI."
Add, "Note - electrical compatibility is defined by meeting the link segment transmission characteristics in 126.7".

Cl **126** *SC* **126.7,2** *P* **161** *L* **18** # 214

Maguire, Valerie Siemon

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

The sentence on lines 18 - 20 appears to be a run-on sentence and is not clear to read. The TIA reference is missing. Missing "Class" before the second occurance of Class D.

SuggestedRemedy

Replace the sentence on lines 18 - 20 with,

"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. 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 x (TBD) and TIA TSB-5021.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.2** *P* **160** *L* **1** # 191

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

missing 5GBASE-T

SuggestedRemedy

change "Table 126-19 lists the supported cabling types and distances."
to "Table 126-19 lists the 5GBASE-T supported cabling types and distances."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.2.1** *P* **161** *L* **48** # 229

Zimmerman, George CME Consulting

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

Calculating insertion loss vs. length by equation is no longer needed, and TBD equation is not defined.

SuggestedRemedy

Delete sentence "For the purpose of calculating the link segment insertion loss for cabling less than 100 m the cable insertion loss is assumed to scale linearly with length as defined in Equation (TBD)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.2.4.5** *P* **165** *L* **54** # 220

Zimmerman, George — CME Consulting

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

Measurement floor specification is missing. (802.3bq d2p2 comment 196 Bryan Moffitt)

SuggestedRemedy

add: Calculations that result in MDACRF loss values greater than 62 dB shall revert to a requirement of 62 dB minimum. (not necessary to align with 802.3bq resolution)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.3** *P* **166** *L* **44** # 121

Brillhart, Theodore — Fluke Networks

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

802.3 users need guidance on how to select 'disturbing' link segments.
(Supported by SalzAxT_zimmerman_3bzah_01a_0815.pdf.) All subsiquent references to Annex 55B fail in this regard. See editors note to this affect on p.167.

SuggestedRemedy

Insert the following parragraph:

TIA standard 568-C.2:2014, annex C, section 2.6, provides additional information on identifying the number and kind of adjacent link segments to utilize in the PSANEXT and PSAFEXT calculations, under laboratory conditions.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with comment 132 and Salz presentations

Cl **126** *SC* **126.7.3.1** *P* **166** *L* **46** # 132

DiMinico, Christopher — MC Communications

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

126.7.3.1 Signal-to-alien crosstalk noise criteria is incomplete.

SuggestedRemedy

Complete Signal-to-alien crosstalk noise criteria.

See diminico_3bz_01_0915.pdf

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with presentation

Cl **126** *SC* **126.7.3.1** *P* **167** *L* **36** # 123

Brillhart, Theodore — Fluke Networks

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

Annex 55B does not deliver on the promised information. (See editor's note, same page, line 32.)
External standards reference has been provided under seperate comment to fullfil this need.

SuggestedRemedy

Delete entire sentence referencing Annex 55B.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.3.1.1** *P* **168** *L* **8** # 124

Brillhart, Theodore — Fluke Networks

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

Annex 55B does not deliver on the promised information. (See editor's note, page 167, line 32.)
External standards reference has been provided under seperate comment to fullfil this need.

SuggestedRemedy

Delete entire sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.3.1.2** *P* **168** *L* **15** # 122

Brillhart, Theodore — Fluke Networks

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

Given the recently accepted use of Salz SNR as the basis of link segment requirements for alien crosstalk, it is more appropriate to utilize a simpler PSAFEXT calculation, and remove the PSAACRF description. Insertion loss compensation for AFEXT is accounted for in the disturber PSD portion the Salz calculations. (Double check this?)

SuggestedRemedy

Replace all of 126.7.3.1.2 with the following:

Multiple disturber alien FEXT loss is specified as the power sum of the individual alien FEXT disturbers.

PS AFEXT loss is determined by summing the power of the individual pair-to-pair differential alien FEXT loss values over the frequency range 1 MHz to 250 MHz as follows in Equation (126–28):

<insert equation 126-27 renumbered and modified to express PSAFEXT as a function of frequency just as in PSANEXT>

where

AF(f)i,j,N is the magnitude in dB of the alien FEXT loss at frequency f of the individual pair combination i(1 to 4) of the disturbing link j(1 to m) for each disturbed pair N.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **126** *SC* **126.7.4** *P* **169** *L* **4** # 221

Zimmerman, George — CME Consulting

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

doubled over the description (802.3bq d2p2 comment 211 from bryan moffitt)

SuggestedRemedy

Change "and the noise coupled between the link segments referred to as alien crosstalk noise. The remaining noise sources, which are secondary sources, are discussed in the following" to "but other sources can also be significant."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Correct or delete 126.7.4, as per other comments (see comment 120)

Cl **126** *SC* **126.7.4** *P* **169** *L* **42** # 230

Zimmerman, George — CME Consulting

Comment Type **ER** *Comment Status* **D** *Cabling*

the required signal to noise ratio isn't calculated with a background noise level, leading to an unnecessary and erroneous TBD value to be filled in.
"A background noise limit of TBD dBm/Hz was assumed for determining the minimum signal-to-noise ratio."
The preceding sentence ("The background noise for 2.5/5GBASE-T is expected not to exceed –TBD dBm/Hz.") is intended to be informative, but really has no place in this standard and creates another TBD.
In fact, the entire section, intended to simplify the complex, often makes the complex wrong, and contains no information needed for specifications - consider deleting 126.7.4 in its entirety.

SuggestedRemedy

Delete the sentence beginning "A background noise limit..." indicated.
Consider deleting the preceding one as well, and possibly this entire mis-informative and not quite accurate section.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 120

Cl **126** *SC* **126.7.4** *P* **169** *L* **42** # 192

McClellan, Brett — Marvell

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

this line should be item 'g' in the itemized list.

SuggestedRemedy

include this line as item 'g' in the itemized list.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 120

Cl **126** *SC* **126.7.4** *P* **169** *L* **42** # 140

Jones, Peter Cisco

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

126.7.4 Noise environment

in clause 55, the following text was g), any reason to move it out of the list.

The background noise for 2.5/5GBASE-T is expected not to exceed –TBD dBm/Hz. A background noise

SuggestedRemedy

Add back into list if appropriate.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 120

Cl **126** *SC* **126.7.4** *P* **169** *L* **8** # 120

Brillhart, Theodore Fluke Networks

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

This subclause lacks a clear and logical narrative. Suggest to reorganize the existing information to achieve readability.

SuggestedRemedy

Replace lines 8 through 40 with the following:

The 2.5/5GBASE-T noise environment consists of noise from many sources. The primary noise sources that impact the objective BER are the crosstalk and echo interference of a link segment, which are reduced to a small residual noise.
a) Echo from the local transmitter on the same duplex channel (cable pair). Echo is caused by the hybrid function used to achieve simultaneous bi-directional transmission of data and by impedance mismatches in the link segment. It is impractical to achieve the objective BER without using echo cancellation. Since the symbols transmitted by the local disturbing transmitter are available to the cancellation processor, echo interference can be reduced to a small residual noise using echo cancellation methods.
b) Near-end crosstalk (NEXT) interference from the local transmitters on the duplex channels (cable pairs) of the link segment. Each receiver experiences NEXT interference from three adjacent transmitters. NEXT cancellers are used to reduce the interference from each of the three disturbing transmitters to a small residual noise. NEXT cancellation is possible since the symbols transmitted by the three disturbing local transmitters are available to the cancellation processor.
c) Far-end crosstalk (FEXT) noise at a receiver is from three disturbing transmitters at the far end of the duplex channel (cable pairs) of the link segment. FEXT noise can be reduced through cross coupled equalizers although the symbols from the remote transmitters are not immediately available.

Noise coupled between the link segments is another primary noise source that impacts the objective BER, but is not effectively reduced in the 2.5/5GBASE-T system. It is referred to as alien crosstalk noise.
d) Noise coupled between the disturbed duplex channel in a link segment and the disturbing duplex channels in other link segments is referred to as alien crosstalk noise. Since the transmitted symbols from the alien crosstalk noise sources are not available to the cancellation processor (they are in another cable), it is very difficult to cancel the alien crosstalk noise. To ensure robust operation the alien crosstalk noise limit is specified in 126.7.3.

The remaining secondary noise sources, are discussed in the following.
e) Intersymbol interference (ISI). ISI is the extraneous energy from one signaling symbol that interferes with the reception of another symbol on the same balanced twisted pair. 2.5/5GBASE-T supports the use of Tomlinson-Harashima Precoding as a mechanism to reduce the effects of ISI.
f) Noise from non-idealities in the duplex channel, transmitters, and receivers; for example, DAC/ADC non-linearity, electrical noise (shot and thermal), and non-linear channel characteristics. 2.5/5GBASE-T limits the effects of some of these non-idealities by a variety of PMA electrical specifications.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete the subclause. It is informative, and attempts to rewrite it simply introduce errors. The intent is, in fact, design-specific, as tradeoffs may make one or another source of noise or distortion more important in the final error budget.

Cl **126** *SC* **126.8.2.2** *P* **171** *L* **22** # 134

farjad, ramin Aquantia

Comment Type **T** *Comment Status* **D** *MDI*

Equation 126-34. The equation has a typo, which leads to a discontinuity at 40MHz. A version of equation I see from literature has the following form:
48dB 1MHz<freq<30MHz
44dB-15log(freq/50) 30M<freq<400MHz

In any case, for a low cost magnetic solution, the magnetic vendors have requested at NBASE-T to relax this spec for 2.5G magnetics to
35dB 1MHz<freq<30MHz
35dB-15log(freq/30) 30M<freq<125MHz
Which is 13dB more relaxed compared to what we currently have (which I believe came from 10G). This is also worse than such spec in 1000BASE-T
We have not been able to quantify the effect/degradation as a result of this 13dB, as we have not had samples with such bad impedance imbalance.
Need to find out how the original spec was driven that asked for 48dB, and the extent of effect on link performance if relaxed.
I assume at the minimum we may want to have different spec for 2.5G and 5G. Probably using sth like the following for 5G:
42dB 1MHz<freq<30MHz
42dB-15log(freq/30) 30M<freq<250MHz

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace with form in Clause 55, frequency adjusted for 2.5GBASE-T & 5GBASE-T:

48dB 1MHz<freq<30MHz
44dB-15log(freq/50) 30M<freq< 200xS MHz

Cl **126** *SC* **126.8.2.2** *P* **171** *L* **37** # 222

Zimmerman, George CME Consulting

Comment Type **T** *Comment Status* **D** *MDI*

Cabling standards are specifying 50 ohm common mode (802.3bq d2p2 comment 213 from Bryan Moffitt)

SuggestedRemedy

Change to 50. (align with 802.3bq resolution)

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The balance is specified with PHY connected to the MDI as in normal operation which can be different than connecting hardware specified in cabling standards. Alignment with cabling standards is not sufficient informaiton to make suggested change. For committee discussion (ALIGN WITH BQ RESOLUTION)

Cl **28** *SC* **28.3.2** *P* **23** *L* # 168

Lo, William Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *MultiG*

link_fail_inhibit_timer test needs to reflect 2.5G and 5G speeds

SuggestedRemedy

Look at 802.3-2012_SECTION2.pdf page 315 or
P8023_D3p2_SECTION2.pdf page 309 line 17
The link_fail_inhibit_timer paragraph change:
"for devices operating at 10 Gb/s." to
"for devices operating above 1 Gb/s."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace "for devices operating at 10 Gb/s." to "for devices in the MultiGBASE-T PHY set."

Cl **28D** *SC* **28D.9** *P* **189** *L* **20** # 193

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *EZ*

parameters are also exchanged during link training in the Infofield.

SuggestedRemedy

add "and information provided by theexchange of Infofields during link training."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.2.1** *P* **25** *L* **10** # 234

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *EZ*

Rather than just listing a cross-reference to the subclause where the register can be found to support this attribute, suggest that the behaviour be updated to follow the more usual format (see subclause 30.5.1.1.22 'aSNROpMarginChnlD' for an example). (802.3bq d2p2 comment 169 by David Law)

SuggestedRemedy

Editor to review clause 30 editing instructions for format and change as appropriate. (align with BQ)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.2.5** *P* **25** *L* # 169

Lo, William — Marvell Semiconductor

Comment Type **E** *Comment Status* **D** *Architecture*

802.3-2012_SECTION2.pdf page 368 table 30-1e or
P8023_D3p2_SECTION2.pdf page 361 line 20
has 10GBASE-T listed as one of the MAU. Does this need to be changed?

SuggestedRemedy

Not sure what to do here. Just pointing this out to the group.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
This seems correct. Consider with Baines presentation.

Cl **30** *SC* **30.3.2.1.2** *P* **25** *L* **12** # 231

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *EZ*

Remove unchanged legacy text and reformat clause 30 edits per 802.3bq ballot comment 164 from David Law

SuggestedRemedy

See 802.3bq D2p2 response to comment 164

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.3.2.1.2** *P* **25** *L* **39** # 143

Jones, Peter — Cisco

Comment Type **TR** *Comment Status* **D** *Management*

in the definition for aPhyType it lists
2.5GBASE-T Clause 126 2.5 Gb/s PAM16
5GBASE-T Clause 126 5 Gb/s PAM16

I don't understand why we don't have a problem here because according to the "BEHAVIOUR DEFINED " text, it says "The enumeration of the type is such that the value matches the clause number of this International Standard that specifies the particular PHY", In the case of 3bz, clause 126 defines both PHY types and so they would have teh same value enum. How was this resolved for other multi PHY clauses (like 49, 76, 82).

SuggestedRemedy

Something needs to get fixed. The current behaviour described in the "BEHAVIOUR DEFINED AS:" seems to not support any clause that defines multiple PYHs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Request passed to maintenance since the multi-phy per clause issue already exists. Align with any changes coming from maintenance recommendation.
Remove all but list entry additions per comment 231

Cl **30** *SC* **30.3.2.1.2** *P* **25** *L* **9** # 233

Zimmerman, George — CME Consulting

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

The editing instruction should appear under the subclause heading of the subclause they apply to, not above (see pdf page 57 and 58 of 2014 IEEE-SA Standards Style Manual). This seems to have been followed throughout the draft, except in the case of the Clause 30 changes and some Clause 45 chnages.
(802.3bq D2p2 comment 168 by David Law)

SuggestedRemedy

Ensure editing instruction are under the subclause heading of the subclause they apply to.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **30** *SC* **30.5.1.1.19** *P* **26** *L* **46** # 171

Lo, William — Marvell Semiconductor

Comment Type **ER** *Comment Status* **D** *Management*

Is there a reason why 10G/40G is deleted?
Should we make it MultiGBASE-T?

SuggestedRemedy

Use MultiGBASE-T
Applies to sections
30.5.1.1.19
30.5.1.1.20
30.5.1.1.21
30.5.1.1.22
30.5.1.1.24
30.5.1.1.25

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
We chose to make the description of these registers generic, per their name at the last meeting, as they are optional and only applied to specific PHYs.

However, Table 30-1e, changing the package to the "MultiGBASE-T Operating Margin Package (conditional)" is omitted from the bz draft. Copy it from 802.3bq D2p2.

Cl **30** *SC* **30.5.1.1.19** *P* **26** *L* **53** # 144

Jones, Peter — Cisco

Comment Type **TR** *Comment Status* **D** *Management*

in 30.5.1.1.19 aSNROpMarginChnlA. The current text says
"BEHAVIOUR DEFINED AS: The current SNR operating margin measured at the slicer input for channel A for the 10G or 40GBASE-T PMA."

Should this now say for the MultiGBASE-T PMAs? Is it safe to just remove "10G or 40G" or would that affect 10M/100M/1000M?
Same Q for (at least)
aSNROpMarginChnlB,
aSNROpMarginChnlC, aSNROpMarginChnlD,
aLDFastRetrainCount,
aLPFastRetrainCount

SuggestedRemedy

Fix the text for this (and similar attributes) to address the correct set of PMAs.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 171

Cl **30** *SC* **30.5.1.1.2** *P* **26** *L* # 170

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Management*

802.3-2012_SECTION2.pdf page 439 or
P8023_D3p2_SECTION2.pdf page 431 line 14
Need to list 2.5GBASE-T and 5GBASE-T

SuggestedRemedy

Add 2.5GBASE-T and 5GBASE-T to the list to clause 30.5.1.1.2 aMAUType

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **30** *SC* **30.5.1.1.2** *P* **26** *L* **43** # 232

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *Management*

An entry in "APPROPRIATE SYNTAX" list for subclause 30.5.1.1.2 'aMAUType' should be added for 2.5GBASE-T and 5GBASE-T. (see BQ d2p2 comment 166 by David Law)

SuggestedRemedy

Insert the following change for subclause 30.5.1.1.2:
30.5.1.1.2 aMAUType
Insert the following new entry in "APPROPRIATE SYNTAX" (as modified by IEEE Std 802.3bw-201X, IEEE Std 802.3by-201X and TBD) after last entry:

Editor's Note (to be removed prior to publication): The editing instruction need to be updated once the publication order of the various amendments becomes settled.

2.5GBASE-T Four-pair twisted-pair balanced copper cabling PHY as specified in Clause 126
5GBASE-T Four-pair twisted-pair balanced copper cabling PHY as specified in Clause 126

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **2.1.65** *P* **38** *L* **10** # 137

Feyh, German — Broadcom Corporation

Comment Type **T** *Comment Status* **D** *Management*

It is unclear, which register to use to determine the speed of the test mode.

SuggestedRemedy

The following sentence should be added after page 38 line 10 "management intervention.":

The speed of the test mode is selected by the 45.2.1.1 PMA/PMD control 1 register (Register 1.0).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **2.3.1.2** *P* **40** *L* **42** # 138

Feyh, German — Broadcom Corporation

Comment Type **T** *Comment Status* **D** *Management*

It is unclear, which register to use to determine the speed of the loop back.

SuggestedRemedy

On page 40 line 42 after "receive path." add the sentence:

The speed of the loopback is selected by the 45.2.3.1 PCS control 1 (Register 3.0).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.1** *P* **31** *L* # 172

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *EZ*

802.3-2012_SECTION4.pdf page 43 or
P8023_D3p2_SECTION4.pdf page 44 line 16
Need to change
Implementations that operate at speeds of 10 Gb/s and above.
to
Implementations that operate at speeds of 2.5 Gb/s and above.

SuggestedRemedy

See above

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1** *P* **32** *L* **15** # 141

Jones, Peter — Cisco

Comment Type **ER** *Comment Status* **D** *Management*

in 45.2.1 PMA/PMD registers - Table 45–3—PMA/PMD registers, For registers 1.133 to 1.144, why did we just remove the "10GBASE-T" instead of changing to "MultiGBASE-T". What does this say about the relevance to other PHY types and speeds.

SuggestedRemedy

Fix the text for this (and similar attributes) to address the correct set of PMAs/PMDs.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment 173

Cl **45** *SC* **45.2.1** *P* **32** *L* **15** # 173

Lo, William — Marvell Semiconductor

Comment Type **E** *Comment Status* **D** *Management*

Table 45-3
Propose that we don't delete 10GBASE-T label but rename to MultiGBASE-T label

SuggestedRemedy

See above
Also impacts titles of
45.2.1.66
45.2.1.67
45.2.1.68
45.2.1.69
45.2.1.70
45.2.1.71
45.2.1.72
45.2.1.73
45.2.1.74
45.2.1.75
45.2.1.76
45.2.1.77

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This change to Table 45-3 was done to align with the existing titles of 45.2.1.66 - 45.2.1.77 which do not have the '10GBASE-T' label at all, and allow for potential use by future PHYs, with minimal changes. (this has already made it through BQ working group ballot)

Cl **45** *SC* **45.2.1** *P* **32** *L* **2** # 236

Zimmerman, George — CME Consulting

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

in editorial instructions, "through" is misspelled as "though" (802.3bq d2p2 comment 219 by Alon Regev)

SuggestedRemedy

Change "1.145 though 1.146" to "1.145 through 1.146" (align with bq)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.10** *P* **36** *L* **13** # 150

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

Need to add text to the new 1.11.14 bit

SuggestedRemedy

45.2.1.10.1a 2.5G/5G extended abilities (1.11.14)
When read as a one, bit 1.11.14 indicates that the PMA/PMD has 2.5G/5G extended abilities listed in register 1.21. When read as a zero, bit 1.11.14 indicates that the PMA/PMD does not have 2.5G/5G extended abilities.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.14e** *P* **36** *L* **16** # 139

Jones, Peter — Cisco

Comment Type **E** *Comment Status* **D** *Format*

45.2.1.14e 2.5/5G PMA/PMD extended ability register (Register 1.21)

Please check subclause numbering. I don;t understand why "45.2.1.14e" comes right after "45.2.1.12.15 ", what about 45.2.1.13?

SuggestedRemedy

reveiw numbering, fix if required,

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to review numbering, being careful to check alignment with 802.3by D1p1, 802.3bs , and other drafts in process.

Cl **45** *SC* **45.2.1.4** *P* **33** *L* **28** # 142

Jones, Peter — Cisco

Comment Type **T** *Comment Status* **D** *EZ*

Looking at 45.2.1.4 PMA/PMD speed ability (Register 1.4) Table 45–6—PMA/PMD speed ability register bit definitions as amended by 802.3bx, it looks like each new speed needs a subclause, e.g.

45.2.1.4.1 100G capable (1.4.9)
When read as a one, bit 1.4.9 indicates that the PMA/PMD is able to operate at a data rate of 100 Gb/s.
When read as a zero, bit 1.4.9 indicates that the PMA/PMD is not able to operate at a data rate of 100 Gb/s.

SuggestedRemedy

Add 45.2.1.4.x clauses that read like
45.2.1.4.n 2.5G capable (1.4.13)
When read as a one, bit 1.4.13 indicates that the PMA/PMD is able to operate at a data rate of 2.5 Gb/s.
When read as a zero, bit 1.4.13 indicates that the PMA/PMD is not able to operate at a data rate of 2.5 Gb/s.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
(see 174)

Cl **45** *SC* **45.2.1.4.1a** *P* **33** *L* **39** # 174

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

Need to add text to the new 1.4.14 and 1.4.13 bits

SuggestedRemedy

45.2.1.4.1a 5G capable (1.4.14)
When read as a one, bit 1.4.14 indicates that the PMA/PMD is able to operate at a data rate of 5 Gb/s. When read as a zero, bit 1.4.14 indicates that the PMA/PMD is not able to operate at a data rate of 5 Gb/s.

45.2.1.4.1b 2.5G capable (1.4.13)
When read as a one, bit 1.4.13 indicates that the PMA/PMD is able to operate at a data rate of 2.5 Gb/s. When read as a zero, bit 1.4.13 indicates that the PMA/PMD is not able to operate at a data rate of 2.5 Gb/s.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.6** *P* **33** *L* **54** # 235

Zimmerman, George — CME Consulting

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

note for Table 45-7 needs to stay with table.

SuggestedRemedy

change frame properties to keep table and note together on same page.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.74** *P* **38** *L* # 151

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *Management*

45.2.1.74
45.2.1.75
45.2.1.76
45.2.1.77
These sections refers to section 55.4.3.1 and 55.4.6.1.
However the numbers in these sections do no exactly match those in 126.4.6.1

SuggestedRemedy

Do we need to add text to differentiate between 2.5/5G vs 10G?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add text of 45.2.1.74 - 45.2.1.77 into amendment and cross references to clause 126.
Editor to pass as comment over to 802.3bq
BQ

Cl **45** *SC* **45.2.1.78** *P* **39** *L* **4** # 152

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Management*

P8023_D3p2_SECTION4.pdf page 114 line 22
mentions 1.25ns resolution and 2.5 ns accuracy.
This presumes 1.25ns symbol time in 10GBASE-T.
Need to adjust this for 2.5ns and 5ns for 5GBASE-T and 2.5GBASE-T respectively

SuggestedRemedy

Add text to differentiate
1.25 ns resolution 2.5ns accuracy for 10GBASE-T
2.5 ns resolution 5.0ns accuracy for 5GBASE-T
5.0 ns resolution 10 ns accuracy for 2.5GBASE-T

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See resolution of comment 125 in 802.3bq D2p2
Make change scalable with symbol period:
Add edit to change text of 45.2.1.78 as follows:
From: It is reported with 1.25 ns resolution to an accuracy of 2.5 ns.
To: It is reported with resolution equal to one symbol period (see 55.1.3 and 113.1.2) of the PHY (e.g. 1.25ns for 10GBASE-T) to an accuracy of two symbol periods (e.g., 2.5ns for 10GBASE-T).
From: If the delay exceed the maximum amount that can be represented by the range (–80 ns to +78.75 ns), the field displays the maximum respective value.
To: If the delay exceeds the maximum amount that can be represented by the range (-64 symbols to +63 symbols), the field displays the maximum respective value
BQ

Cl **45** *SC* **45.2.7.10.4d** *P* **49** *L* **41** # 153

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

The link to 113.4.2.5.10 is incorrect
The same problem also occurs in line 48

SuggestedRemedy

The link should be change to to 126.4.2.5.10 in both instances

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.11.7d** *P* **51** *L* **24** # 154

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *EZ*

Add a clarifying sentence since fast retrain ability is not advertised during auto-neg.
Also applies to 45.2.7.11.7e

SuggestedRemedy

Add following to both places at end of both paragraphs.

This bit is valid only after link is established.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **45** *SC* **45.2.7.14a** *P* **53** *L* **5** # 155

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

The paragraph in line 5 to 7 should be deleted for 2 reasons

1) It should not be 2.5G and 5G specific since bits 2 to 15 can be used for EEE abilities for other PHYs in the future.

2) EEE ability in 2.5G and 5GBASE=T are exchanged during training and not with next pages.

SuggestedRemedy

Delete paragraph in line 5 to 7 and replace with the following:

EEE advertisement 2 register is a continuation of EEE advertisement 1 register.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.7.14a.1** *P* **53** *L* **33** # 156

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *EEE*

Wording is awkward and we should say something about bit being exchanged during training instead of next pages

SuggestedRemedy

Delete current paragraph and replace with:

Bit 7.62.1 is used to select whether or not the 5GBASE-T PHY advertises the ability to support EEE. EEE ability is exchanged during link training, see 126.4.2.5.10. If bit 7.62.1 is set to one, the PHY shall advertise EEE ability. If bit 7.62.1 is set to zero, the PHY shall not advertise EEE ability.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The admittedly awkward, but compact text is parallel to other BASE-T PHYs for EEE advertisement. Suggested text suggests advertisement of the optional EEE capability regardless of PHY support. Additionally, there is no need to explain here when EEE ability is exchanged, only the use of the bit is needed.

Cl **45** *SC* **45.2.7.14a.1** *P* **53** *L* **38** # 157

Lo, William — Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *Management*

Wording is awkward and we should say something about bit being exchanged during training instead of next pages

SuggestedRemedy

Delete current paragraph and replace with:

Bit 7.62.0 is used to select whether or not the 2.5GBASE-T PHY advertises the ability to support EEE. EEE ability is exchanged during link training, see 126.4.2.5.10. If bit 7.62.0 is set to one, the PHY shall advertise EEE ability. If bit 7.62.0 is set to zero, the PHY shall not advertise EEE ability.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The admittedly awkward, but compact text is parallel to other BASE-T PHYs for EEE advertisement. Suggested text suggests advertisement of the optional EEE capability regardless of PHY support. Additionally, there is no need to explain here when EEE ability is exchanged, only the use of the bit is needed.

Cl **45** *SC* **45.2.7.14b** *P* **53** *L* **46** # 158

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Management*

The paragraph needs to change since EEE ability in 2.5G and 5GBASE=T are exchanged during training and not with next pages.

SuggestedRemedy

Delete the following:
When the AN process has been completed, this register shall reflect the contents of the link partner's EEE advertisement 2 register. The assignment of bits in the EEE link partner ability 2 register and the correspondence with the bits in the Next Page messages are shown in Table 45–211b.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "When the AN process has been completed" to "When the AN and training processes have been completed".

Cl **45** *SC* **45.2.7.x** *P* **47** *L* # 159

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Management*

The THP Bypass Request in PMA_Coeff_Exchstate bit is defined in 126.4.2.5.10 but there are no registers defined to exchange this.

Some of the suggested remedy but not all is also commented in 802.3bq as it applies to 40GBASE-T as well.

SuggestedRemedy

Page 47 lines 38, 39, Table 45-200
Change "MultiGBASE-T AN control" to "MultiGBASE-T AN control 1"
Change "MultiGBASE-T AN status" to "MultiGBASE-T AN status 1"
Add 7.64, MultiGBASE-T AN control 2, subclause 45.2.7.14c
Add 7.65, MultiGBASE-T AN status 2, subclause 45.2.7.14d

Also apply the heading changes above to 45.2.7.10 and 45.2.7.11 and the table headings in the section

Add section
45.2.7.14c MultiGBASE-T AN control 2 (Register 7.64)
Register 7.64 is a continuation of register 7.32.

Add a table
7.64.3 2.5GBASE-T THP Bypass Request
0 = Local device requests link partner not to reset THP during fast retrain
1 = Local device requests link partner to initially reset THP during fast retrain
R/W
7.64.2 5GBASE-T THP Bypass Request
0 = Local device requests link partner not to reset THP during fast retrain
1 = Local device requests link partner to initially reset THP during fast retrain
R/W

Add a section
45.2.7.14c.1 2.5GBASE-T THP Bypass Request
Bit 7.64.3 is valid only if 7.32.7 is set to one advertising fast retrain ability, and is used to request the link partner whether to initially reset the THP during fast retrain. THP Bypass Request is exchanged during link training, see 126.4.2.5.10. If bit 7.64.3 is set to zero the local device requests link partner not to reset THP during fast retrain. If bit 7.64.3 is set to one the local device requests link partner to initially reset THP during fast retrain.

Add a section
45.2.7.14c.2 5GBASE-T THP Bypass Request
Bit 7.64.2 is valid only if 7.32.8 is set to one advertising fast retrain ability, and is used to request the link partner whether to initially reset the THP during fast retrain. THP Bypass Request is exchanged during link training, see 126.4.2.5.10. If bit 7.64.2 is set to zero the local

device requests link partner not to reset THP during fast retrain. If bit 7.64.2 is set to one the local device requests link partner to initially reset THP during fast retrain.

Add section
45.2.7.14d MultiGBASE-T AN control 2 (Register 7.65)
Register 7.65 is a continuation of register 7.33.

Add a table
7.65.3 2.5GBASE-T Link Partner THP Bypass Request
0 = Link partner requests local device not to reset THP during fast retrain
1 = Link Partner requests local device to initially reset THP during fast retrain
RO
7.65.2 5GBASE-T Link Partner THP Bypass Request
0 = Link partner requests local device not to reset THP during fast retrain
1 = Link Partner requests local device to initially reset THP during fast retrain
RO

Add a section
45.2.7.14d.1 2.5GBASE-T Link Partner THP Bypass Request
Bit 7.65.3 is valid only if 7.33.5 is set to one indicating that the link partner has fast retrain ability.
When read as a zero, the link partner requests local device not to reset THP during fast retrain.
When read as a one, the link Partner requests local device to initially reset THP during fast retrain.

Add a section
45.2.7.14d.2 5GBASE-T Link Partner THP Bypass Request
Bit 7.65.2 is valid only if 7.33.6 is set to one indicating that the link partner has fast retrain ability.
When read as a zero, the link partner requests local device not to reset THP during fast retrain.
When read as a one, the link Partner requests local device to initially reset THP during fast retrain.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to use text as basis, and allocate bits in alignment with 802.3bq draft

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Cl **46** *SC* **1** *P* **59** *L* # 160
Lo, William Marvell Semiconductor

Comment Type **T** *Comment Status* **D** *Architecture*

P8023_D3p2_SECTION4.pdf page 305 line 46 needs to include 2.5G and 5G.

SuggestedRemedy

Change lines 46 to 49 to the following:

The RS adapts the bit serial protocols of the MAC to the parallel encodings of 2.5 Gb/s, 5 Gb/s, and 10 Gb/s PHYs. Though the XGMII is an optional interface, it is used extensively in this standard as a basis for specification. The
2.5 Gb/s, 5 Gb/s, and 10 Gb/s Physical Coding Sublayer (PCS) is specified to the XGMII, so if not implemented, a conforming implementation shall behave functionally as if the RS and XGMII were implemented.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.1** *P* **59** *L* **11** # 186
McClellan, Brett Marvell

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

missing space

SuggestedRemedy

change "to10 Gb/s" to "to 10 Gb/s"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **46** *SC* **46.1.3** *P* **59** *L* **30** # 187
McClellan, Brett Marvell

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

inconsisten use of comma with 'and'

SuggestedRemedy

change "10 Gb/s, 5 Gb/s and 2.5 Gb/s"
to "10 Gb/s, 5 Gb/s, and 2.5 Gb/s"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to check and align with IEEE style guide (use comma)

Cl **78** *SC* **78.3** *P* **63** *L* # 161

Lo, William
Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EZ*

P8023_D3p2_SECTION6.pdf page 40 line starting in line 26 makes a blanket statement about EEE capabilities being exchanged during Auto-Negotiation.
This is not true for 2.5/5/40GBASE-T

The suggested remedy does not include the 40GBASE-T text.

SuggestedRemedy

Change line 26 from
The EEE capability shall be advertised....
to
With the exception of 2.5GBASE-T and 5GBASE-T the EEE capability shall be advertised....

Add to the end of the first paragraph:
The EEE capability for 2.5GBASE-T and 5GBASE-T shall be advertised during link training according to clause 126.4.2.5.10.

Add to the end of the second paragraph:
The same applies to 2.5GBASE-T and 5GBASE-T except the EEE capabilities are exchanged and resolved during link training instead of during Auto-Negotiation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Include 40GBASE-T text as well
BQ