Cl **00** *SC* **0** *P* *L* # 116

Anslow, Pete — Ciena

Comment Type **TR** *Comment Status* **D** *25G*

The objectives of the P802.3bq project were changed by motion #32 of the Berlin plenary to include:
"Support a data rate of 25 Gb/s at the MAC/PLS Service Interface
Define a single 25 Gb/s PHY supporting operation on the link segment"

This draft does not include a PHY to satisfy these objectives

SuggestedRemedy

Either:
remove the objectives
or:
modify the project PAR and CSD responses to reflect the additional objectives and revise the draft to include a suitable PHY

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
PAR modifications were accidently omitted from motions at Berlin plenary - project CSD modifications were approved.
Move project PAR for WG approval and progress project documentation at earliest opportunity.

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **5** # 105

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Autoneg*

40GBASE-T fast retrain bit not defined in Auto-Negotiation page

SuggestedRemedy

See Lo_3bq_01_0515.pdf for alternate scheme and McClellan_3bq_01_0515.pdf for proposed text.
Recommend fast retrain and EEE bits to be exchanged in InfoField during training instead of during Auto-Negotiation

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to consider presentation consider along with comments 92 & 81

Cl **113** *SC* **113.6.1** *P* **168** *L* **37** # 417

Zimmerman, George — CME Consulting

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

autonegotiation doesn't determine whether the local PHY performs or supports a capability, it is either to ADVERTISE whether the local PHY performs or supports, or, alternatively whether the REMOTE PHY performs or supports, or, alternatively, whether the local PHY perfomrs these functions, not whether it supports them...

SuggestedRemedy

change "determine" to "advertise" in items c, d, and e.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Usage of 'support' is consistent with other clauses of IEEE Std. 802.3

Cl **28D** *SC* **28D.8** *P* **28** *L* **10** # 10

Hajduczenia, Marek — Bright House Networks

Comment Type **T** *Comment Status* **D** *Autoneg*

Newly added text in 28D.8 contains many statements about mandatory and required functions. It is not clear whether these are expected to be testable (and have PICS) or not.

SuggestedRemedy

Consider making statements about mandatory / required features into "shall" statements, if they are not covered elsewhere. Add PICS if new "shall" statements are added.
For example: "Auto-Negotiation is mandatory for 40GBASE-T" might be converted into "A 40GBASE-T PHY shall use Auto-Negotion per XXX", where XXX contains reference where Auto-Negotion is defined.

Proposed Response *Response Status* **W**

PROPOSED REJECT. New text is consistent with existing text for 10GBASE-T which states substantially the same mandatory and required functions, resulting in no confusion.

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **20** # 79

Kim, Yong
Broadcom

Comment Type **ER** *Comment Status* **D** *Autoneg*

Presumed 10G values, U20 LD PMA traning reset request, U19 Fast re-train ability, U18 PHY Short reach mode, and U17 loop timing ability, should add "10GBASE-T " in their Name (description) to be clearer to the readers that those bits are for 10GBASE-T, and not 40GBASE-T (and not 1000BASE-T, 100BASE-TX, etc). Note: Fast re-train for 40G needs to added (the ability being per-PHY ability), and separate comment is submited for that.

SuggestedRemedy

Add the word "10BASE-T" to U20, U19, U18, and U17 Names.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to discuss autonegotiation of features and whether bits are joint for 10G/40G or separate.

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **41** # 80

Kim, Yong
Broadcom

Comment Type **ER** *Comment Status* **D** *Autoneg*

U13 - Port Type bit (1 = Multiport device, 0 = single-port device) -- following all the references to 45.2.7.10.3 and 40.5.1.1 and few other references, there is no clarity on what Multiport device is when: Multiport device supports a two technology ability. 40.5.1.1 is clear in the context of 1000BASE-T and solely for 1000BASE-T. 10GBASE-T duplicates these bits and make no clarification on how definition changes (or NOT change) when mixed 1000BASE-T and 10GBASE-T are implemented in the device. Addition of 40GBASE-T to this mix without clarification would be confusing., i.e. if a device has two ports, one 1G/10GBASE-T and one 10G/40GBASE-T only port(for example), and the 10G/40GBASE-T negotiates at 40GBASE-T on one port, does it set multiport? Also the definition from the 1000BASE-T conveys "PREFERNECE" context, and that is not present in this section (unless you follow nested references). The intent is was to allow favoring multiport device to be MASTER, if so desired. So clarify that, no technical change, and move forward re-using this bit for 40G (or any other ability).

========== for easy reference, 40.5.1.1 copied here ======
(1000BASE-T) 40.5.1.1 table entry states:
Bit 9.10 is to be used to indicate the preference to operate as MASTER (multiport device) or as SLAVE (single-port device) if the MASTER-SLAVE Manual Configuration Enable bit, 9.12, is not set.
Usage of this bit is described in 40.5.2

1=Multiport device
0=single-port device"

SuggestedRemedy

Either a) delete "1= multiport device, and 0 = single-port device) and replace it with direct reference to 40.5.1.1 (and leave the 45.2.7.10.3 reference as is), OR,
b) copy the text from bit 9.10 of 40.5.1.1 for U13.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
A multiport device is still clearly a multiport device, whether the ports are the same type or different types. Practice of multiport 10GBASE-T/1000BASE-T devices has not caused confusion.

Existing text already clearly indicates the meaning that a multiport device has preference as a master, See pg 113.6.2 MASTER-SLAVE configuration resolution, "the prefererred relationship is for the multiport device to be the MASTER PHY and the single-port device to be the SLAVE."

Cl **113** *SC* **113.6.1** *P* **170** *L* **5** # 81

Kim, Yong — Broadcom

Comment Type **T** *Comment Status* **D** *Autoneg*

In anticipation of 25GBASE-T being added to .3bq project, and allocating two AN bits for 40GBASE-T not currently in D2.0 (fast retrain and repeat train - separate comments to D2.0) and respective AN bits for 25G (4), MC9 would be full (no spare bits). Consider taking a new message code and define AN bits that may be more friendly to modern higher speed PHY types, e.g. 10G/25G/40GBASE-T. Note: Not a part of this comment, but if the comment is accepted, then consider coordinating the effort with overlapping project 802.3bz anticipated PHY types of 2.5G and 5G that may serve 1G/2.5G/5G/10GBASE-T.

SuggestedRemedy

Define a new extended message code (other than MC9) that serves 40GBASE-T AN requirements, along with 10G, 1G, and anticipated 25GBASE-T inclusion.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Task force to consider proposal along with comments 92 & 105

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **5** # 83

Kim, Yong — Broadcom

Comment Type **TR** *Comment Status* **D** *Autoneg*

Fast re-train for 40GBASE-T needs to added (the ability being per-PHY ability).

SuggestedRemedy

Please do so (add a 40GBASE-T Fast re-train ability).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 79, Task Force to discuss autonegotiation of features and whether bits are joint for 10G/40G or separate.

Cl **28B** *SC* **28B.3** *P* **26** *L* **9** # 390

Remein, Duane — Huawei Technologies

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

Why are you not placing this at the end of the list so that the staff editor does not have to "renumber other bullets"?

SuggestedRemedy

Make the addition item "k)" and remove the instruction to renumber.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
List is the priority order of technologies, highest speeds go first.

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **6** # 92

McClellan, Brett — Marvell

Comment Type **TR** *Comment Status* **D** *Autoneg*

Advertisement of 40GBASE-T EEE should be moved from the xGBASE-T technology message extended next page exchange to an Infofield message exchange during link training.
See presentations: Lo_3bq_01_0515.pdf and McClellan_3bq_01_0515.pdf
EEE capability exchange is not necessary prior to the start of link training.
Similary 40G fast retrain capability should be part of an Infofield message exchange. By moving these capability exchanges to the Infofield we can free up enough bits in the xGBASE-T technology message to advertise 25G, 2.5G and 5G speeds. Without this change a new technology message will be required for 25G, 2.5G and 5G.

SuggestedRemedy

See presentations for text and figure changes: Lo_3bq_01_0515.pdf and McClellan_3bq_01_0515.pdf
text changes required are as follows:

page 48 line 42
change"Bit 7.32.3 is used to select whether or not Auto-Negotiation advertises the ability to support 40GBASE-T fast retrain."
to "Bit 7.32.3 is used to select whether or not the 40GBASE-T PHY advertises the ability to support 40GBASE-T fast retrain. Fast retrain ability is exchanged during link training. See 113.4.2.5.10."

page 51 line 9 Clause 45.2.7.13
change "113.6.1; U21" to "113.4.2.5.10; Infofield Octet 12 bit 7"

page 51 line 32 Clause 45.2.7.14
change "28.2.3.4.128; U3 / 113.6.1;U24" to "113.4.2.5.10; Infofield Octet 12 bit 7"
NOTE: 28.2.3.4.128 does not exist

page 71 line 26 Clause 113.1
change "Configurations wishing to disable fast retrain on the link may do so by advertising lack of support in Clause 28 AutoNegotiation,thus preventing the link partner from attempting fast retrain and potentially dropping the link."
to "Configurations wishing to disable fast retrain on the link may do so by advertising lack of support in register 7.32, thus preventing the link partner from attempting fast retrain and potentially dropping the link. See 45.2.7.10."

page 78 line 16 Clause 113.1.3.3
change "Support for the EEE capability is advertised during Auto-Negotiation."
to "Support for the EEE capability is advertised in the Infofield (Octect 12 bit 7) during the PMA_PBO_Exch state.

page 134 Clause 113.4.2.5
line 4
change "Reserved" to "Reserved / Ability"

line 26
change "LPI Disable Time" to "Reserved / Ability / LPI Disable Time"

page 137 line 20 Clause 113.4.2.5.10
change
"113.4.2.5.10 Reserved Field
All InfoField fields denoted Reserved in Figure 113–24, Figure 113–25, and Figure 113–26 are reserved for future use. This includes octets Oct11 and Oct12 when Coeff_exchange<2>=0, Oct9<3:2> when transition counter is announced and [Oct9<3:0>, Oct10<7:0>] when no transition is announced and no coefficients are
exchanged."
to
"113.4.2.5.10 Ability Field
Ability field (1 octet). Represented by the octet Oct12{EEE Ability<7>, THP Bypass Request<6>,Fast Retrain<5>, Reserved<4:0>}. Used to advertise the abilities of the PHY during the PMA_PBO_Exch state when Message<7:6> = 01.
For every other state, this octet is set to zero and ignored by the link partner. The Ability bits are defined as follows:
Oct12<4:0> = Reserved
Oct12<5> = Fast Retrain
0 = Fast Retrain not supported
1 = Fast Retrain supported
Oct12<6> = THP Bypass Request in PMA_Coeff_Exchstate
0 = Local device requests link partner not to bypass THP during fast retrain
1 = Local device requests link partner to bypass THP during fast retrain
Oct12<7> = EEE Ability
0 = EEE not supported
1 = EEE supported

113.4.2.5.11 Reserved
All InfoField fields denoted Reserved in Figure 113–24, Figure 113–25, and Figure 113–26 are reserved for future use. This includes octets Oct11 and Oct12 when Coeff_exchange<2>=0 and Message<7:6>~= 01, Oct9<3:2> when transition
counter is announced and [Oct9<3:0>, Oct10<7:0>] when no transition is announced and no coefficients are exchanged."

page 139 line 6 Clause 113.4.2.5.14
change "minwait_timer expires. In the PMA_PBO_Exch state,"
To "minwait_timer expires. In the PMA_PBO_Exch state while Infofield Message<7:6> = 01, the PHY advertises EEE and Fast Retrain capability in octet 12 of the Infofield. When both the local device and remote device advertise EEE capability then EEE is supported. When both the local device and remote device advertise Fast Retrain capability then Fast Retrain is supported. In the PMA_PBO_Exch state,"

page 141 line 5 Clause 113.4.2.5.15
change "After completing the link failure signal the PHY shall transition to the PMA_Coeff_Exch state, keep its THP turned on with its previously exchanged coefficients, and send PAM2 signaling within a time period equivalent to 9 LDPC frame periods."
to "After completing the link failure signal the PHY shall transition to the PMA_INIT_FR state followed immediately by the PMA_Coeff_Exch state. If the link partner requested THP bypass for fast retrain the PHY will bypass the THP (or set THP coefficients to zero). Otherwise the PHY will keep its THP turned on with its previously exchanged coefficients, and send PAM2 signaling within a time period equivalent to 9 LDPC frame periods."

page 168 line 39 Clause 113.6.1
delete items d) and e)
page 170 line 6 Clause 113.6.1.2
set U25 to "Reserved, transmit as 0" (was EEE ability)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider with Comments 105 & 81
Task Force to consider presentations

Cl **113** *SC* **113.6.1.3** *P* **171** *L* **15** # 96

McClellan, Brett Marvell

Comment Type **TR** *Comment Status* **D** *Autoneg*

Somehow this paragraph originally from Clause 40 lost some important information in the Clause 55 and 113 versions.
Original:
"40.5.1.3 Sending Next Pages
Implementers who do not wish to send additional Next Pages (i.e., Next Pages in addition to those required to perform PHY configuration as defined in this clause) can use Auto-Negotiation as defined in Clause 28 and the Next Pages defined in 40.5.1.2. Implementers who wish to send additional Next Pages are advised to consult Annex 40C."
Also note the change in "implementer" per Maintenance draft 2.1

SuggestedRemedy

change text from
"113.6.1.3 Sending Next Pages
Implementors who do not wish to send additional Next Pages (i.e., Next Pages in addition to those required to perform PHY configuration as defined in this clause) can use Auto-Negotiation as defined in Clause 28."
to
"113.6.1.3 Sending Next Pages
Implementers who do not wish to send additional Extended Next Pages (i.e., Extended Next Pages in addition to those required to perform PHY configuration as defined in this clause) can use Auto-Negotiation as defined in Clause 28. Implementers who wish to send additional Extended Next Pages may do so using the AN XNP transmit registers. See 45.2.7.8."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
In addition to suggested remedy, editor to scrub draft for instances of "implementor"

Cl **28C** *SC* **28C.11** *P* **27** *L* **21** # 454

Frazier, Howard — Broadcom Corporation

Comment Type **T** *Comment Status* **D** *Autoneg*

It appears that the 802.3bz 2.5G/5G project may also use XNP, so this text change should be coordinated with 802.3bz to avoid conflicting editing instructions.

SuggestedRemedy

Coordinate with 802.3bz on text for 28C.11.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Editor will keep track of changes in 802.3bz when any are adopted as text.

Cl **113** *SC* **113.5.4.6.2** *P* **163** *L* **25** # 304

Hidaka, Yasuo — Fujitsu Laboratories of

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

Return loss is not defined for f < 10.

SuggestedRemedy

Change "10 <= f <= 25" on line 25, page 163 with "1 <= f <= 25".

This is consistent with TR42.7-2015-04-04x, Draft 3.1, Table 53, page 52.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.5.4.6.1** *P* **163** *L* **15** # 303

Hidaka, Yasuo — Fujitsu Laboratories of

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

2dB on line 15, page 163 is inconsistent with 3dB defined in TR42.7-2015-04-04x, Draft 3.1, section 6.4.2, line 1444, page 53.

SuggestedRemedy

Change the line 15 as follows:

Calculations that result in insertion loss values less than 3 dB shall revert to a requirement of 3dB maximum.

This is consistent with TR42.7-2015-04-04x, Draft 3.1, Section 6.4.2, line 1444, page 53.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.5.4.6.1** *P* **163** *L* **13** # 302

Hidaka, Yasuo — Fujitsu Laboratories of

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

B has large discontinuity at f = 500.
Also, the definition of B for f > 500 is inconsistent with TR42.7-2015-04-04x.

SuggestedRemedy

Change "- 0.000605 x sqrt(f)" with "+ 0.000605 x f".

This is consistent with TR42.7-2015-04-04x, Draft 3.1, Table 96, page 79.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.5.4** *P* **160** *L* **49** # 425

Zimmerman, George — CME Consulting

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

113.7 does not specify patch cabling and interconnecting hardware. It specifies the link segment as a whole. Cabling specifications describe the patch cabling and interconnecting hardware. (same issue exists in clause 55)

SuggestedRemedy

Change "using patch cabling and interconnecting hardware that is within the limits specified in 113.7" to "through link segments that are within the limits specified in 113.7".
(consider maintenance request to clause 55 as well).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change: …..that is within the limits
specified in 113.7.
To:…….that are consistent with the limits
specified in 113.7.

Cl **113** *SC* **113.7.1** *P* **173** *L* **51** # 479

Thompson, Geoff — GraCaSI S.A.

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

The text is incorrect. What is required is not 4 cables of a single twisted pair each. that is implied from the text. What is required is cabling constructed with four pair balance twisted pair cable.

SuggestedRemedy

Change the text: "4 pairs of balanced cabling" to "4 pair balance cabling"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Text consistent with definition.

1.4.x 40GBASE-T: IEEE 802.3 Physical Layer specification for a 40 Gb/s LAN using four pairs of category
8, Class I, or Class II balanced copper cabling. (See IEEE Std 802.3, Clause 113.)

Cl **113** *SC* **113.1** *P* **71** *L* **13** # 478

Thompson, Geoff — GraCaSI S.A.

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

There is no category of cabling mentioned as being required, it would seem that the text should call out Category 8 cabling should be called out.

SuggestedRemedy

Change the text: "category" in this line to "Category 8".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 385 for a more complete remedy

Cl **113** *SC* **113.5.4.6.14** *P* **168** *L* **14** # 219

Shariff, Masood — CommScope

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

Equation 113-25 needs to be updated to match TIA-568-C.2-1 draft 3.1

SuggestedRemedy

Change equation 113-25 to

PSAACRF => 61-20log(f /100)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.4.5.11** *P* **166** *L* **36** # 218

Shariff, Masood — CommScope

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

Delay skew does not match Category 8 specs in draft 3.1

SuggestedRemedy

Change: shall not exceed 2.9 ns at all frequencies from 2 MHz to 2000 MHz. It is a further functional requirement that, once installed, the skew between any two of the four duplex channels due to environmental conditions shall not vary more than 3 ns within the above requirement.

To: shall not exceed 4.8 ns at all frequencies from 2 MHz to 2000 MHz. It is a further functional requirement that, once installed, the skew between any two of the four duplex channels due to environmental conditions shall not vary more than 0.5 ns within the above requirement.

The value 4.8 is calculated as follows: 13.5*5/30+2*1.25=4.8

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

To: shall not exceed 4.8 ns at all frequencies from 2 MHz to 2000 MHz. It is a further functional requirement that, once installed, the skew between any two of the four duplex channels due to environmental conditions shall not vary more than 0.5 ns within the above requirement.

Not necessary to add:
The value 4.8 is calculated as follows: 13.5*5/30+2*1.25=4.8

Cl **113** *SC* **113.5.4.6.1** *P* **163** *L* **12** # 301

Hidaka, Yasuo — Fujitsu Laboratories of

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

B is not defined for f less than 10 MHz.

SuggestedRemedy

Change "10 <= f <= 500" on line 12 with "1 <= f <= 500".

This is consistent with TR42.7-2015-04-04x, Draft 3.1, Table 96, page 79.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.7.1** *P* **174** *L* **3** # 480

Thompson, Geoff — GraCaSI S.A.

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

It says in this line that 40GBASE-T uses "star topology". That is untrue. It uses point-to-point topology as do ALL 802.3 devices which utilize "Link Segments".

SuggestedRemedy

Replace "star" with "point-to-point"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
I understand the line could be interpeted as commentor suggests but same terminology has been used to indicate that star topologies are used to connect point-to-point PHY entities (e.g., 10GBASE-T, 40GBASE-T).

55.7.1.
a) 10GBASE-T uses a star topology with Class E or Class F balanced cabling used to connect PHY entities.

For committee discussion

Cl **113** *SC* **113.5.4.6.9** *P* **166** *L* **18** # 440

Zimmerman, George — CME Consulting

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

Description of PSACRF in terms of pair-to-pair ELFEXT is redundant

SuggestedRemedy

Minimize redundancies in 113.5.4.6.x sections.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
(1)See comment#472 to correct 113-21
(response to remedy)PSACRF is limit (113-20) and 113-21 is calculation of impairmants to compare against the limit.
Response to add clarification and remove subclause 113.5.4.6.9 (which may be considered a redundancy)
(3-1)Delete subclause text "113.5.4.6.9 Multiple disturber power sum equal level far-end crosstalk (PS ACRF)"
(3-2)Move equation 113-21 before 113-20
(3-3)Move text "PS ACRF is determined by summing the power of the three individual pair-to-pair differential ACRF values over the frequency range 1 MHz to 2000 MHz as follows in Equation (113–21) after sentence "To ensure
the total FEXT coupled into a duplex channel is limited, multiple disturber ACRF is specified as the power
sum of the individual ACRF disturbers.

Cl **113** *SC* **113.1** *P* **71** *L* **13** # 86

Maguire, Valerie — Siemon

Comment Type **T** *Comment Status* **D** *Cablingrefs*

Standards names and the publication date are not needed in body text if the document is referenced in the Bibliography.

SuggestedRemedy

Delete, "-201x Addendum 1: Specification for 100ohm Category Cabling"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The cited references are not in the bibliography, referenced standards are usually normative references.
Existing 802.3 standard includes the names of similar normative references in body text.

Cl **01** *SC* **1.4** *P* **20** *L* **29** # 245

HESS, DAVE — CORD DATA

Comment Type **ER** *Comment Status* **X** *Cablingrefs*

Use correct references in definitions:
"category n" refers to a cabling component, whereas "class N" refers to the cabling.

SuggestedRemedy

change:
"1.4.x Category 8.2 balanced cabling: Balanced 100 Ù cables and associated connecting hardware whose transmission characteristics are specified up to 2,000 MHz ..."
to:
"1.4.x Category 8.2 balanced cabling components: Balanced 100 Ù cables and associated connecting hardware, used in Class II cabling, whose transmission characteristics are specified up to 2,000 MHz ..."

Proposed Response *Response Status* **W**

change:
"1.4.x Category 8.2 balanced cabling: Balanced 100 Ù cables and associated connecting hardware whose transmission characteristics are specified up to 2,000 MHz ..."
to:to:1.4.x Category 8.2 balanced cabling components: Balanced 100 Ω cables and associated connecting hardware used in ISO/IEC 11801-1 Edition 3 Class I cabling specified to 2,000 MHz.

Cl **113** *SC* **113.7** *P* **173** *L* **36** # 477

Thompson, Geoff GraCaSI S.A.

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

through line 45.
The third and fourth sentence of this paragraph are confusing and are an unnecessary addition to the standard global definition in clause 1.4.

SuggestedRemedy

Remove sentences 3 and 4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment#247

Cl **113** *SC* **113.7** *P* **173** *L* **44** # 87

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **D** *Cablingrefs*

A "casual" reference to the Standard title should not appear here.

SuggestedRemedy

Delete, "Category 8 Cabling".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Provide full name of referenced standard

Cl **113** *SC* **113.1** *P* **71** *L* **13** # 214

Shariff, Masood CommScope

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

Addendum 1 is already encoded into the number ANSI/TIA-568-C.2-1 where -1 means addendum 1. Adding addendum to this implies and addendum to this addendum. Also added Category 8 to the title

SuggestedRemedy

Change: Addendum 1: Specification for 100 ohm Category Cabling with appropriate augmentation as specified in 113.7.

To: Specification for 100 ohm Category 8 Cabling with appropriate augmentation as specified in 113.7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. See comment 123.

Cl **113** *SC* **113.7** *P* **173** *L* **42** # 88

Maguire, Valerie Siemon

Comment Type **T** *Comment Status* **D** *Cablingrefs*

Refering to the ISO/IEC/TR 11801-9901 guidelines is problematic in that the channel performance information in this document is only described to 1.6GHz and, thus, is incompatible with the link segment characteristics defined in 113.7. ISO/IEC/TR 11801-9901 guildeines are anticipated to be rolled into ISO/IEC 11801-1 Edition 3 and will be correctly referenced to 2GHz.

SuggestedRemedy

Replace, "ISO/IEC/TR 11801-9901: Information technology - Generic cabling for customer premises - Part 9901: Guidance for balanced cabling in support of at least 40 Gbit/s data transmission," with "ISO/IEC 11801-1 Edition 3".

And, delete Editor's note on lines 46 and 47.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment#230 for consistency of ISO/IEC updates.

Cl **01** *SC* **1.3** *P* **20** *L* **8** # 228

Booth, Brad Microsoft

Comment Type **TR** *Comment Status* **D** *Cablingrefs*

Reference to ANSI specification is incorrect. This draft specification must reference an existing specification or draft specification, not a pending specification.

SuggestedRemedy

Provide the correct reference.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 230

Cl **01** *SC* **1.4** *P* **20** *L* **20** # 230

Booth, Brad Microsoft

Comment Type **TR** *Comment Status* **D** *Cablingrefs*

Both Category 8.1 and 8.2 definitions have an editor's note stating that these definitions are forward-looking. There should not be any forward-looking definitions in the draft. The draft must only reference existing information in standards or draft standards.

SuggestedRemedy

Correct these definitions to eliminate any requirement for the editor's note.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Reference draft specifications (ISO/IEC 11801-1 Edition 3, and ANSI/TIA 568C.2-1 (Category 8)) expected to finalize prior to publication.

Cl **113** *SC* **113.7.3.2** *P* **180** *L* **45** # 243

HESS, DAVE CORD DATA

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Some uses of "ISO" should be "ISO/IEC"

SuggestedRemedy

Replace "ISO" with "ISO/IEC"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Resolve with comment#230 for consistency.

Cl **01** *SC* **1.3** *P* **20** *L* **10** # 452

Frazier, Howard Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Cablingrefs*

The base standard lists ISO/IEC 11801:2002 Amendment 1:2008 and Amendment 2:2010, but this draft lists ISO/IEC 11801-1 Edition 3. Is the latest an Amendment or an Edition?

SuggestedRemedy

Check and correct if necessary.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Edition 3 is an EDITION. It is the draft revision to ISO/IEC 11081:2002 that is in process reported in several liaison reports.
Resolve with comment#230

Cl **113** *SC* **113.7.2** *P* **174** *L* **19** # 89

Maguire, Valerie Siemon

Comment Type **TR** *Comment Status* **D** *Cablingrefs*

The layout of Table 113-22 is not harmonized with the layout of Table 55-17. As a result, users familiar with the 10GBASE-T table may look at the 40GBASE-T table and mistakeningly believe that only one grade of cabling supports 40GBASE-T. Eliminate this potential for confusion by revising the table to show separate rows for "Class I / Category 8" and "Class II". In addition, the cabling references in column 3 should be updated to align with the name of the reference Standard.

SuggestedRemedy

Column 1:
Cabling
Class I / Category 8
Class II

Column 2:
Supported link segment distances
30 m
30 m

Column 3:
Cabling references
ISO/IEC 11801-1 Edition 3 / ANSI/TIA-568-C.2-1-201x
ISO/IEC 11801-1 Edition 3

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
No requirement to harmonize table layouts.
Table 113–22 Cabling types and distances content agreed to after much debate in previous draft review.

Cl **01** *SC* **1.4** *P* **20** *L* **29** # 476

Thompson, Geoff GraCaSI S.A.

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

This entire paragraph is a duplicate of the text above and is unnecessary

SuggestedRemedy

Remove paragraph and associated editor's note.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment#245

Cl **01** *SC* **1.4** *P* **20** *L* **20** # 475

Thompson, Geoff GraCaSI S.A.

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

The text: "Category 8.1" is incorrect

SuggestedRemedy

Replace "Category 8.1" with "Category 8"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment#244

Cl **01** *SC* **1.4** *P* **20** *L* **20** # 244

HESS, DAVE CORD DATA

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Use correct references in definitions:
"Category n" refers to a cabling component, whereas "Class N" refers to the cabling.

SuggestedRemedy

change:
"1.4.x Category 8.1 balanced cabling: Balanced 100 Ù cables and associated connecting hardware whose transmission characteristics are specified up to 2,000 MHz ..."
to:
"1.4.x Category 8.1 balanced cabling components: Balanced 100 Ù cables and associated connecting hardware, used in Class I cabling, whose transmission characteristics are specified up to 2,000 MHz ..."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. change:
"1.4.x Category 8.1 balanced cabling: Balanced 100 Ù cables and associated connecting hardware whose transmission characteristics are specified up to 2,000 MHz ..."
to:1.4.x Category 8.1 balanced cabling components: Balanced 100 Ω cables and associated connecting hardware used in ISO/IEC 11801-1 Edition 3 Class I cabling specified to 2,000 MHz.

Cl **01** *SC* **1.4.x** *P* **20** *L* **26** # 78

Mark, Laubach Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Lines 26 and 34. These EN's aren't clear to me. Do they relate to the EN on Page 173 Line 46 about a future ISO/IEC document revision? Is this a warning that these definitions are going to be updated in the future or that they will become representative of TIA and ISO documents after some future date or documentation release? Will these EN's be removed prior to publication?

SuggestedRemedy

Consider removal or update with "(to be removed prior to publication)" and fix clarity/purpose issues.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comments 407, 230

Cl **01** *SC* **1.3** *P* **20** *L* **7** # 371

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Should not reference draft documents

SuggestedRemedy

Add editors note that these two references will be updated before the end of sponsor ballot when the specifications are released.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 230

Cl **113** *SC* **113.7** *P* **173** *L* **41** # 247

HESS, DAVE CORD DATA

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Update ISO/IEC standard.

SuggestedRemedy

change:
"ISO/IEC/TR 11801-9901: Information technology - Generic cabling for customer premises - Part 9901: Guidance for balanced cabling in support of at least 40
Gbit/s data transmission,"
to:
"ISO/IEC 11801-1 Edition 3: Information technology - Generic cabling for customer premises - Part 1: General requirements,"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment#230 for consistency of ISO/IEC updates.

Cl **113** *SC* **113.5.4.3** *P* **161** *L* **22** # 246

HESS, DAVE CORD DATA

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Include all cabling standards designations

SuggestedRemedy

change:
"Category 8 channel"
to:
"ISO/IEC Class I / ISO/IEC Class II / TIA Category 8 channel"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete Category 8 so that it reads "a plug-terminated channel that meets the requirements of 113.7"

Cl **01** *SC* **1.3** *P* **20** *L* **11** # 229

Booth, Brad Microsoft

Comment Type **T** *Comment Status* **D** *Cablingrefs*

Reference to ISO/IEC specification is incorrect. This draft specification must reference an existing specification or draft specification, not a pending specification.

SuggestedRemedy

Provide the correct reference.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 230

Cl **113** *SC* **113.7** *P* **173** *L* **47** # 91

Mark, Laubach Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Cablingrefs*

The Editors note mentions "pending". This raises the question to me of: do we need to pause on 802.3bq until ISO/IEC publication or can we proceed, and if so how far? What is the technical dependency of Table 113-22 with respect to the planned date of the publication of the ISO/IEC document?

SuggestedRemedy

Please give some reviewers some guidance and update the editors note.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comment 230

Cl **01** *SC* **1.4** *P* **20** *L* **20** # 341

Lusted, Kent Intel

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

The difference between the definition of Categyory 8.1 balanced cabling and Category 8.2 balanced cabling isn't obvious to the casual reader. It looks to me to be the same definition two times.

SuggestedRemedy

Consider adding some text to each that helps the reader understand the difference between the two cablings.

Proposed Response *Response Status* **W**

PROPOSED REJECT. Although the differences may be straighforward to state they may not help the casual reader better understand unless supplemented with text of tutorial nature more appropriate for an Annex.

Cl **113** *SC* **113.7.3.1.1** *P* **180** *L* **1** # 423

Zimmerman, George CME Consulting

Comment Type **T** *Comment Status* **D** *Cablingrefs*

Annex 55B does not provide information on the PSANEXT calculation.

SuggestedRemedy

Delete "Annex 55B provides additional information on identifying the number of adjacent link segments to consider in the PSANEXT calculation."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change: "Annex 55B provides additional information on identifying the number of adjacent link segments to consider in the PSANEXT calculation."

To: Annex 55B provides additional information on alien crosstalk mitigation enabling reduction of the number of adjacent link segments to consider in the PSANEXT calculation.

Cl **113** *SC* **113.5.4.3** *P* **161** *L* **22** # 85

Maguire, Valerie Siemon

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

"Category" is usually not capitalized when used mid-sentence.

SuggestedRemedy

Replace "Category" with "category"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve with comment#246.

Cl **113** *SC* **113.7.4** *P* **181** *L* **32** # 413

Zimmerman, George — CME Consulting

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

Use of the ambiguous term "channel"

SuggestedRemedy

Change "on the same channel." to "on the same balanced twisted pair."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "on the same channel." to "on the same link segment".

Cl **113** *SC* **113.5.4.6.14** *P* **168** *L* **1** # 240

HESS, DAVE — CORD DATA

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Some uses of "ISO" should be "ISO/IEC"

SuggestedRemedy

Replace "ISO" with "ISO/IEC"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Editor to check all other instances and apply remedy consistently.

Cl **113** *SC* **113.1** *P* **71** *L* **13** # 385

Remein, Duane — Huawei Technologies

Comment Type **ER** *Comment Status* **D** *Cablingrefs*

Is some augmentation specified in 113 not "appropriate"?

SuggestedRemedy

Remove "appropriate"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Change: 40GBASE-T signaling requires
four pairs of balanced cabling, as specified in ISO/IEC 11801-1 Edition 3 and ANSI/TIA-568-C.2-1-201x
Addendum 1: Specification for 100ohm Category Cabling with appropriate augmentation as specified in
113.7.
To: 40GBASE-T signaling requires
four pairs of balanced cabling, as specified in ISO/IEC 11801-1 Edition 3 and ANSI/TIA-568-C.2-1-201x Addendum 1: Specification for 100 ohm Category 8 Cabling.
See comment 123 for use of capital omega in place of "ohm" in Category 8 title.

Cl **78** *SC* **78.1.3.3.1** *P* **57** *L* **48** # 56

McDermott, Thomas — Fujitsu

Comment Type **ER** *Comment Status* **D** *EEE*

This wording is confusing, it is difficult to determine which modes are optional and required for the various different interface types and speeds.

SuggestedRemedy

Recommended text: For Base-T PHYs with an operating speed of 10Gb/s or less that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake...

Then insert: For Base-T PHYs with an operating speed of 40Gb/s or greater that implement the optional EEE capability, LPI deep sleep is optional and fast wake is mandatory ... or whatever was intended.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
No BASE-T PHYs currently support fast wake. Intent was 40GBASE-T is exempted from that requirement in 78.1.3.3.1

Change page 57, line 48: from:
"Except for BASE-T<For> PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake."

To:
"Except for BASE-T PHYs, for PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake."

Insert "Except for 40GBASE-T", on page 58, line 4 so it reads: "Except for 40GBASE-T, fast wake support is mandatory for PHYs with an operating speed of 40Gb/s or greater that implement EEE."

See comments 78, 486

Cl **113** *SC* **113.3.6.4** *P* **123** *L* **27** # 460

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *EEE*

In Figure 113-17 there is a entry tag "E" into the state TX_E, but I can't find an exit tag "E" in either part a or part b of the state diagram. (I note that there is an "E" exit tag in part b of the receive diagram.)

SuggestedRemedy

Remove the tag "E" from the entry conditions to the state TX_E in Figure 113-17.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Commenter may wish to pursue comment as maintenance to Clause 55. This appears to have been introduced in 802.3az-2010, and gone unnoticed until now.

Cl **113** *SC* **113.3.7.2** *P* **126** *L* **40** # 368

Remein, Duane — Huawei Technologies

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

Figure 113-20, Figure 113–21, Figure 113–33 have no dashed line while Figure 113-18 does. All are only for EEE. Presentation should be consistent

SuggestedRemedy

Add a dashed box to Figure 113-20, Figure 113–21, & Figure 113–33

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. Figurs are identical to that in clause 55 - commenter may wish to file maintenance or comments on revision currently in process

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Cl **113** *SC* **113.1.3** *P* **73** *L* **19** # 277

Hidaka, Yasuo — Fujitsu Laboratories of

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

"to signal an end to the LPI mode" seems wrong.

SuggestedRemedy

Change "to signal an end to the LPI mode" on line 19 with "to signal an end of the LPI mode".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Text is clear as is and is consistent with 802.3

Cl **113** *SC* **113.1.3** *P* **75** *L* **24** # 363

Remein, Duane — Huawei Technologies

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

What is the meaning of the dotted boxes in Figure 113-3?
Same issue with Figure 113-4 pg 82, Figure 113–5 pg 89

SuggestedRemedy

Explain what these boxes mean or remove.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Note 2 explains these are only used if EEE or fast retrain options are enabled.
Insert text at end of Note 2:
"These are indicated by dotted boxes".

Cl **78** *SC* **78.1** *P* **57** *L* **48** # 486

Brown, Matt — APM

Comment Type **ER** *Comment Status* **D** *EEE*

Missing a comma. Also, "for" should not be delete without altering the rest of the sentence.

SuggestedRemedy

Change:
Except for BASE-T<For> PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake.

To:
"Except for BASE-T PHYs, for PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake."

Or alternately #1:
For PHYs with an operating speed of 40 Gb/s or greater, with the exception of the 40GBASE-T PHY, that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake.

Or alternately #2:
For BASE-R PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
(see comments 56, 397)

LATE COMMENT - TASK FORCE TO VOTE ON CONSIDERING

Cl **113** *SC* **113.3.2.3** *P* **108** *L* **37** # 295

Hidaka, Yasuo Fujitsu Laboratories of

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

7 LDPC frames is not consistent with 6 LDPC frames on line 51, page 106.
lpi_tx_sleep_timer also has duration of 6 LDPC frame periods.

SuggestedRemedy

Change "7 LDPC frames" with "6 LDPC frames" on line 37, page 108.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
SLEEP was changed to 6 LDPC frame periods in adoption of graba_3bq_01_0714.pdf

Cl **78** *SC* **78.1.3.3.1** *P* **57** *L* **48** # 397

Remein, Duane Huawei Technologies

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

This wording seems excessively broad and may lead to problems in the future:
"Except for BASE-T PHYs with an operating speed of 40 Gb/s ..."

SuggestedRemedy

Change to:
"Except for 40GBASE-T, PHYs with an operating speed of 40 Gb/s ..."
(don't forget to include the stricken "For")

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. (see comment 56)

Cl **78** *SC* **78.1.3.3.1** *P* **57** *L* **48** # 326

Hidaka, Yasuo Fujitsu Laboratories of

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

The distinction of optional or mandatory support for deep sleep and fast weke is very confusing and not clear.

For instance, for the first sentence, changing "For PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability" with "Except for BASE-T PHYs with an operating speed of 40 Gb/s or greater that implement EEE capability" may be wrong, because the qualifier is changed in a wrong way.

SuggestedRemedy

Change the first sentence of the paragraph starting on line 48, page 57 as follows:

Except for BASE-T PHYs, PHYs with an operating speed of 40Gb/s or greater that implement the optional EEE capability may support two modes of LPI operation: deep sleep and fast wake.

Add two columns to Table 78-1 to indicate whether the deep sleep support and the fast wake support are mandatory or optional for each PHY or interface type.

Unfortunately, I am not familiar enough with EEE to give specific changes to Table 78-1, but I believe it helps to make it clear.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. See comments 56 & 397

Since this is the only exception to the deep sleep rule, a table would be redundant and not add value to the existing content. Further, all EEE is optional so there are no mandatory capabilities, a table with optional and mandatory capabilities if an optional capability were implemented would likely add confusion.

Cl **113** *SC* **113.4.2.5** *P* **134** *L* **26** # 106

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *EEE*

Figure 113-26 LPI Disable Time
There is no text to describe this variable.
Page 115 line 2 references this but does not contain sufficient details.
There should at least be some description specifying the PCS behavior when host concurrently exits and re-enters LPI while the LPI disable mechanism is active

SuggestedRemedy

Propose deletion of this feature as detailed behavior is not specified.
1) Change LPI Disable Time in Figure 113-26 back to reserved
2) Delete "with the exception that the InfoField consists
of a sequence of 128 zeros except when the PHY wishes to signal the link partner to leave LPI mode. " in line 33-34 page 114.
3) Delete lines 1, 2, 3 page 115.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to discuss whether to define variable and any other text necessary to fully implement change, or delete feature, which is new to 40GBASE-T.

Cl **00** *SC* **0** *P* **3** *L* **1** # 114

Anslow, Pete — Ciena

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

As correctly indicated on Page 1, this will be an amendment to IEEE Std 802.3-201x (the outcome of the 802.3bx revision) rather than IEEE Std 802.3-2012.
The headers in the draft incorrectly say "Draft Amendment to IEEE Std 802.3-2012"

Also, the header for the frontmatter is missing the "P" from "P802.3bq"

SuggestedRemedy

Change all of the headers to say "Draft Amendment to IEEE Std 802.3-201x"
Change the frontmatter headers from:
"IEEE 802.3bq 40GBASE-T Task Force" to:
"IEEE P802.3bq 40GBASE-T Task Force".

This can be done by changing the odd and even page headers in the Clause 1 file to say "201x", then with that file open, in the left hand pane highlight all of the other files in the book and use File, Import, Formats, Deselect All, Page layouts, Import.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **00** *SC* **0** *P* *L* # 117

Anslow, Pete — Ciena

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

All ocurrences of "ordered_set" have been changed to "ordered set" in 802.3bx draft D3.0

SuggestedRemedy

Change all instances of "ordered_set" to "ordered set" throughout the draft.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **Annex** *SC* **28D.8** *P* **28** *L* **10** # 112

Cibula, Peter — Intel Corporation

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

Punctuation - The title of the subclause is missing a space.

SuggestedRemedy

Change "28D.8Extensions required for Clause 113(40GBASE-T)" to "28D.8 Extensions required for Clause 113(40GBASE-T)", inserting a space between "28D.8" and "Extensions"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **32** # 118

Anslow, Pete — Ciena

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

The copyright year should be "2015" not "201x", "2014", or "2012" as it is in the various parts of the draft.

SuggestedRemedy

Change the variable "copyright_year" to "2015" in one of the Framemaker files, then with that file open, in the left hand pane highlight all of the other files in the book and use File, Import, Formats, Deselect All, Variable definitions, Import.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. Dup of comment 388

Cl **28** *SC* **28.3.1** *P* **23** *L* **6** # 257

Grow, Robert — RMG Consulting

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

What is appropriate. Looking at P802.3/D3.0, this list of variables appears to be random. I expect alphanumerical order would be appropriate, and will submit a comment against P802.3/D4.0 to make this section alphanumerical ordered. Also, format does not match base document.

SuggestedRemedy

Change editing instruction to be Insert the following in the first variable list in alphanumerical order. Additionally, it appears that the semicolon should be followed by a tab rather than a space (please use same format as is used in the base, the list is also slightly indented on the left).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment 409.
Insert in order consistent with revision draft
Format same as base on indentation

Cl **Annex** *SC* *P* **25** *L* **1** # 260

Grow, Robert — RMG Consulting

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

There does not appear to be any modifications to this Annex.

SuggestedRemedy

Remove Annex 28A from the FrameMaker book.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. (dup of comments 5, 138, 375, 248, 263)

Cl **45** *SC* **45.2.3.14** *P* **46** *L* **25** # 24

Hajduczenia, Marek — Bright House Networks

Comment Type **T** *Comment Status* **D** *Format*

In Table 45-129, there are multiple instances of "10GBASE-T or 40GBASE-T ". Following other changes in Clause 45, text "10GBASE-T or 40GBASE-T " should be "10/40GBASE-T" since the statements are applicable to 10GBASE-T and 40GBASE-T alike

SuggestedRemedy

Change "10GBASE-T or 40GBASE-T " to "10G/40GBASE-T in Table 45-129. Consider applying similar changes in other locations in Clause 45, where similar text exists.

Proposed Response *Response Status* **W**

PROPOSED REJECT. See comment 17

Cl **113** *SC* **113.1.1** *P* **71** *L* **31** # 457

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Format*

We seem to have a new convention in the 802.3 WG of not including the project objectives in the amendment, so this subclause must be deleted.

SuggestedRemedy

Delete 113.1.1 Objectives.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **28D** *SC* **28D.9** *P* **28** *L* **10** # 455

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Format*

The practice that was introduced by 100BASE-T2 of providing a long list of extensions for each new BASE-T PHY is getting out of hand, and will become worse with the future additions of 25G, 2.5G and 5G. Many of the extensions apply to all of the BASE-T PHYs introduced starting with 100BASE-T2. Rather than instantiating a new long list of extensions for 40GBASE-T, it would be better to present this information in tabular form.

SuggestedRemedy

Replace 28D.4, 28D.5, 28D.6 and 28D.8 with a new subclause 28D.4 that presents all of the extensions for BASE-T PHYs in a table that is easily extensible to include future BASE-T PHYs.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Text is consistent with existing base standard style and practices. Practice describes what capabilities the new PHY requires for those unfamiliar with older PHYs, which is useful.
Commentor fails to provide replacement text.

Cl **01** *SC* **1.4** *P* **20** *L* **21** # 1

Hajduczenia, Marek — Bright House Networks

Comment Type **T** *Comment Status* **D** *Format*

It is not clear why we say "2,000 MHz" and not rather "2 GHz"

SuggestedRemedy

Change "2,000 MHz" to "2 GHz" in line 21 and 30 in definition of Category 8.1 and Category 8.2. There is no reason to spell out MHz when the number in GHz is much more readable.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
2000 MHz is used for consistency with the cabling specifications
Remove comma and write as 2 000 MHz per IEEE style guide.
See comment 120

Cl **113** *SC* **113.4.6.1** *P* **149** *L* **50** # 443

Frazier, Howard — Broadcom Corporation

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

In Figure 113-29, the state diagram has instances where a space is missing between an operator and operand.

SuggestedRemedy

Look for "minwait_timer_done*" and change to "minwait_timer_done *".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **00** *SC* *P* *L* # 482

Brown, Matt — APM

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

For Figure 113-1, use similar format/syntax for similar figures for other 25G, 40G, and 100G PHYs. As an example, see 802.3bx D2.1 Figure 80-1.

SuggestedRemedy

For XLGMII use superscript "1".
Replace note "*XLGMII" with "NOTE 1--XLGMII is optional". Alternately, this is the only PHY that states this in this particular diagram. Consider removing this note.
Change "FORTY GIGABIT" to "40 GIGABIT"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

LATE COMMENT - TASK FORCE TO VOTE ON CONSIDERING

Figure to be cleaned up to align with style of both 25G/40G/100G and 10GBASE-T PHYs.
Delete note "XLGMII is optional" with
Change FORTY GIGABIT to 40 GIGABIT

Cl **113** *SC* **113** *P* **94** *L* **1** # 125

Anslow, Pete — Ciena

Comment Type **ER** *Comment Status* **D** *Format*

While many figures in Clause 113 appear to be editable, so are not. This makes life very difficult for the editors of the revision project when figures need to be changed.
The IEEE style guide recommends a minimum font size in figures of 8pt. Some figures in Clause 113 have text with a much smaller size than this that is very difficult to read.

SuggestedRemedy

Make all of the figures in Clause 113 (with the exception of figures illustrating equations such as Figure 113-38) editable in FrameMaker. This includes Figures 113-8, 113-10, and 113-14. Increase the font size of text in figures that is smaller than 8 pt.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to review figures for font sizes smaller than 8 pt. Editor to redraw figures as updated making them editable in FrameMaker.

Cl **113** *SC* **113.3.7.2** *P* **124** *L* **20** # 399

Remein, Duane — Huawei Technologies

Comment Type **T** *Comment Status* **D** *Format*

Exit condition from TX_L, T_TYPE(tx_raw) = (C + D + E + S + T) is different from the exit state tx_lpi_active. These lines should not be connected.

SuggestedRemedy

Redraw loop tx_lpi_active line so it does not connect to the exit transition from TX_L

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **00** *SC* **0** *P* **18** *L* **27** # 255

Grow, Robert — RMG Consulting

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

Something crept into the definitions here, a space is needed between the number and title.

SuggestedRemedy

Fix FrameMaker definitions.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to fix spacing in table of contents. Dup of 451

Cl **113** *SC* **113.4.6.1** *P* **149** *L* **37** # 442

Frazier, Howard — Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Format*

In Figure 113-29, all arcs must enter the top of the state and exit from the bottom of the state, but this was not done for the state PMA_INIT_FR.

SuggestedRemedy

Change the arcs so that they enter the top and exit from the bottom of the state PMA_INIT_FR.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Figure is identical to that in clause 55, as well as similar in style to many updated at the same time in 802.3az (Clause 78) - commenter may wish to file maintenance or comments on revision currently in process

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Cl **113** *SC* **113.4.6.1** *P* **149** *L* **8** # 441

Frazier, Howard — Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Format*

In Figure 113-29, the entry tag "I" should not appear on the arc going from the PCS_Data state to the INIT_MAXWAIT_TIMER state but must instead have it's own arc that goes directly into the top of the INIT_MAXWAIT_TIMER state. I realize that this is a crowded diagram.

SuggestedRemedy

Give the entry tag "I" its own arc into INIT_MAXWAIT_TIMER.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Figure is identical to Figure in Clause 55, and in the revision draft, without comment, commenter may wish to address with comments on revision or maintenance.

Cl **30** *SC* **30.2.5** *P* **29** *L* **7** # 372

Remein, Duane — Huawei Technologies

Comment Type **ER** *Comment Status* **D** *Format*

While the Edition Instruction indicate there are changes in the COLUMN HEADER (which should be marked) of Table 30-1e there are none apparent.
Also the Table has some Bold borders which are not in the original Table and should be removed.

SuggestedRemedy

Change the Editing Instruction to more accurately describe the change or remove the Editing Instruction and Table 30-1e.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change editing instruction to read "Change column header of '10GBASE-T Operating Margin Package…' to read '10G/40GBASE-T Operating Margin Package…' as shown "
Check borders and align with current table in revision draft

Cl **78** *SC* **78.5** *P* **59** *L* **3** # 44

Hajduczenia, Marek — Bright House Networks

Comment Type **T** *Comment Status* **D** *Format*

"10GBASE-T PHY and 40GBASE-T PHY" - in other locations, we used "10G/40GBASE-T PHYs"

SuggestedRemedy

Change "10GBASE-T PHY and 40GBASE-T PHY" to "10G/40GBASE-T PHYs" and then modify verbs to match accordingly.

Proposed Response *Response Status* **W**

PROPOSED REJECT. See comment 17

Cl **113** *SC* **113.3.6.4** *P* **125** *L* **34** # 461

Frazier, Howard — Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Format*

In Figure 113-19, two of the arcs exiting from the RX_E state are missing a space in "C+". In fact, this whole state diagram has several instances where a space is missing between an operator and operand. Look for "C+" and "T*".

SuggestedRemedy

Look for "C+" and "T*" and change to "C +" and "T *".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Figure is identical to that in clause 55 - commenter may wish to file maintenance or comments on revision currently in process

Cl **113** *SC* **113.3.6.4** *P* **125** *L* **1** # 462

Frazier, Howard — Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Format*

My sympathies to the editor who drew the state diagrams. I know it isn't easy. I observe that the state diagrams look somewhat crowded, with transition conditions overlapping arcs. I think that the diagrams would benefit from being expanded in both dimensions to reduce crowding.

SuggestedRemedy

Expand state diagrams in both dimensions to reduce crowding.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
State diagrams are consistent with style and density of 802.3 standard in other clauses. These particular state diagrams are identical to those in clause 55, and are less crowded than others in IEEE Std. 802.3

Cl **45** *SC* **45.2.1.66** *P* **41** *L* **34** # 17

Hajduczenia, Marek — Bright House Networks

Comment Type **T** *Comment Status* **D** *Format*

Is there any reason for separating 10GBASE-T and 40GBASE-T when in other locations we used "10G/40GBASE-T" to designate them together?

SuggestedRemedy

Change "10GBASE-T and 40GBASE-T PMAs" to "10G/40GBASE-T PMAs"
Similar change on page 41, line 43; page 41, line 52; page 42, line 6
Similarly, "10GBASE-T or 40GBASE-T" should be changed to "10G/40GBASE-T" on page 42, line 31, line 39,

There are also similar instances in 45.2.3.13.4, 45.2.3.13.5, 45.2.3.14 and following subclauses where entries for 40GBASE-T were added.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Rule is that when text refers to a jointly used control or status bit or register (or other joint functional unit) 10G/40G (or xG) is used. When PMAs are referred to, they are specific and distinct, for example, a 10GBASE-T PHY may or may not have a 40GBASE-T functionality - there is no such thing as a single PMA capable of 10G & 40G operation defined in 802.3 (although devices may be built that implement both 10G and 40G PMAs)

Cl **113** *SC* **113.4.2.5.13** *P* **138** *L* **1** # 463

Frazier, Howard — Broadcom Corporation

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

In Figure 113-18 there are several polylines that have an arrowhead in between the begining and the end of the polyline, because they were drawn as a series of individual line segments.

SuggestedRemedy

Remove the extraneous arrowheads by either changing the end style or redrawing as polylines.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor believe that commenter means Figure 113-28, based on page and description.

Cl **113** *SC* **113.1.1** *P* **71** *L* **31** # 2

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **D** *Format*

Objectives should not be listed anymore.

SuggestedRemedy

Remove 113.1.1 altogether - objectives are recored in project documentation and do not matter for definition of PHY.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. See comment 457

Cl **113** *SC* **113.1.1** *P* **71** *L* **31** # 124

Anslow, Pete — Ciena

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

Recent amendments to 802.3 (802.3bj, 802.3bm, 802.3bw, 802.3by) have not included the project objectives in the draft and have removed some that were already there.
See 69.1.2 and 80.1.2 in IEEE Std 802.3bj-2014.
See 96.1.1 in the compare version of P802.3bw D1.4.

SuggestedRemedy

Remove 113.1.1 entirely.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. See comment 457

Cl **80** *SC* **80.1** *P* **61** *L* **20** # 234

Booth, Brad — Microsoft

Comment Type **T** *Comment Status* **D** *Format*

Figure 80-1 should be cleaned up to improve readability. Plus, a few corrections are required.

SuggestedRemedy

Remove note 2 from the AN in the 40GBASE-T PHY (AN is mandatory). Remove the brackets on the right side of both the 40GBASE-R and 40GBASE-T stack, and create separation between bracket and 100GBASE-R stack to help indicate that PHY applies to all the sublayers between the xMII and the MDI. Remove the XLGMII label and arrow from the 40GBASE-R, and add arrow from XLGMII label for 40GBASE-T to point to the 40GBASE-R.

Make similar fixes to Figure 81-1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **01** *SC* **1.5** *P* **20** *L* **41** # 419

Zimmerman, George — CME Consulting

Comment Type **ER** *Comment Status* **D** *Format*

Abbreviation text is a placeholder. Abbreviations missing.

SuggestedRemedy

Insert : "Editors Note (to be removed prior to publication): Abbreviations clause here is a placeholder for abbreviations new to this amendment to be added to IEEE Std. 802.3 - Commenters should comment on and flag new abbreviations to be added"

Replace "ABBR" abbreviation entry with:
"xGBASE-T BASE-T Ethernet PCS/PMA/PMDs with 1000Mbps or greater speed"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 332

Cl **113** *SC* **113.8.1** *P* **182** *L* **3** # 404

Belopolsky, Yakov — Bel Stewart

Comment Type **TR** *Comment Status* **D** *MDI*

40GBASE-T is intended to operate over the cabling that meets the requirements of the ISO/IEC 111801 standard that includes Class I and Class II channels and in fact recognizes that components of categories 6a and 7a or better can support such transmission.
The IEC 60603-7-81 is not published, very limited technical data is available for such connectors Connectors with mechanical interface specified in the IEC61076-3-110 have a better balance (no-split pair issues) and support more robust channel transmission performance. Numerous presentations were given to IEEE illustrating the superior transmission performance. The reliance on the only one connector type will result in the limited deployment of the 40GBASE-T technology
Figures 113-40 & 113-41: The informational figures 113-40 and 113-41 are misleading.

SuggestedRemedy

Remove pictures 113-40 and 113-41
Line 6 remove the sentence starting with "These connectors are depicted…."

Line 4 add "Eight -pin connectors meeting the requirements of IEC 61076-3-110 (published) shall be used as an alternative mechanical interface to the balanced cabling"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See draft liaison from IEC on 60603-7-81 status. Additionally see Task Force Review comments on D1.2.

Cl **113** *SC* **113.8.2.2** *P* **184** *L* # 465

Lackner, Hans — QoSCom GmbH

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

As some values of the channels specified can only be made if shields are used, the MDI connection has to be also a shielded design. When using shields the symmetry mechanisms are different. The values in Formula 113-57 are too high.

SuggestedRemedy

Change in Formula 113-57
48 to 40 and
44 to 35,7
Add to editors note in line 33 that lines 38-54 will be removed prior to publication.

Proposed Response *Response Status* **W**

PROPOSED REJECT. Equation number stated is not valid. Assuming 113-46, the commentor has not provided sufficient information in comment to support suggest remedy to change draft.

Cl **113** *SC* **113.8.2.2** *P* **183** *L* **27** # 345

Lusted, Kent — Intel

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

An illustration of the Insertion Loss limit given in EQ 113-46 improves readability.

SuggestedRemedy

Add graphic.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
EQ 113-46 is 113.8.2.2 MDI impedance balance. Commentor please check comment.

Cl **113** *SC* **113.8.1** *P* **183** *L* **3** # 466

Lackner, Hans — QoSCom GmbH

Comment Type **TR** *Comment Status* **D** *MDI*

IEC 60603-7-51/81 is not suitable for all applications. It should be possible to use as alternative connector IEC 61076-3-110 or 60603-7-82.

SuggestedRemedy

If backward compatibility offered with IEC 60603-7-81 is not required, the interface specified in IEC 61076-3-110 or 60603-7-82 may be used.

Proposed Response *Response Status* **W**

PROPOSED REJECT. IEC 60603-7-51/81 shall be used. 113.8.1 MDI connectors
Eight-pin connectors meeting the requirements of IEC 60603-7-51 (published) with the improved
characteristics and frequency extensions specified in IEC 60603-7-81 shall be used as the mechanical
interface to the balanced cabling. The plug connector shall be used on the balanced cabling and the jack on
the PHY.

Cl **113** *SC* **113.8.1** *P* **182** *L* **9** # 55

McDermott, Thomas — Fujitsu

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

At this point in time, it appears that all Cat 8 cables are shielded cable. Figures 133-40 and 113-41, and table 113- 23 do not indicate any shield connection point(s).

SuggestedRemedy

Revised both figures and the table to indicate shield connection point(s).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to check figures 133-40 and 113-41 figures for consistency with IEC 60603-7-51 and IEC 60603-7-81 and revise if figures illustrate shield connection points; if shield not indicated, will add a note indicating shielding requirements.

Cl **113** *SC* **113.8.2.2** *P* **183** *L* **49** # 110

Cibula, Peter — Intel Corporation

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

Subclause 113.8.2.2 makes reference to two different transmitter states when describing the impedance balance requirement and the descriptive test method. Lines 31 and 32 state "Test-mode 5 may be used to generate an appropriate transmitter output.", while Lines 49 and 50 state "… but with the transmitter output disabled." The phrase in Lines 49 and 50 appears to be in error and is inconsistent with other text.

SuggestedRemedy

As indicated in the recommended text on Page 12 of cibula_3bq_02_0115.pdf, change the text in Lines 49 and 50 from "During the test the PHY is connected to the MDI as in normal operation, but with the transmitter output disabled." to "During the test the PHY is connected to the MDI as in normal operation."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.8.2.1** *P* **183** *L* **12** # 344

Lusted, Kent — Intel

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

An illustration of the RL limit given in EQ 113-45 improves readability.

SuggestedRemedy

Add graphic.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.11** *P* **185** *L* **46** # 237

Brown, Thomas — Vitesse Semiconductor

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

The sum of transmit and receive delays .... shall not exceed 25 600 BT.

The number of BT's of delay should be specified as one number.

SuggestedRemedy

Correct the sum of transmit and receive delays by specifying one number of BT.

Proposed Response *Response Status* **W**

PROPOSED REJECT. Practice is consistent with 10GBASE-T Phys and allows for implementation flexibility.

Cl **45** *SC* **45.2.7.11.7** *P* **50** *L* **4** # 421

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *MGMT*

Incorrect bit referenced in paragraph

SuggestedRemedy

Change 7.33.11 to 7.33.8

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.62.1** *P* **40** *L* **17** # 313

Hidaka, Yasuo — Fujitsu Laboratories of

Comment Type **T** *Comment Status* **D** *MGMT*

The definition of a new field of 1.129.1 is confused and mixed with the definition of an existing field of 1.129.0.

The same problem in Table 45-54.

SuggestedRemedy

Change 45.2.1.62.1 as follows:

45.2.1.62.1 40GBASE-T LP information valid (1.129.1)

When read as a one, bit 1.129.1 indicates that the startup protocol defined in 113.4.2.5 has been completed, and that the contents of bits 1.130.11:0, 1.131.15:10, 1.145.14:8, 1.146.14:8, and 1.146.6:0, which are established during the startup protocol, are valid. When read as a zero, bit 1.129.1 indicates that the startup process has not been completed, and that the contents of these bits that are established during the startup protocol are invalid. A 40GBASE-T PMA shall return a value of zero in bit 1.129.1 if PMA link_status=FAIL.

45.2.1.62.2 10GBASE-T LP information valid (1.129.0)
When read as a one, bit 1.129.0 indicates that the startup protocol defined in 55.4.2.5 has been completed, and that the contents of bits 1.130.11:0, 1.131.15:10, 1.145.14:8, 1.146.14:8, and 1.146.6:0, which are established during the startup protocol, are valid. When read as a zero, bit 1.129.0 indicates that the startup process has not been completed, and that the contents of these bits that are established during the startup protocol are invalid. A 10GBASE-T PMA shall return a value of zero in bit 1.129.0 if PMA link_status=FAIL.

Change Table 45-54 as follows:

Bit(s)	Name	Description
1.129.15:2	Reserved	(same as before)
1.129.1	40GBASE-T LP information valid	(same as 1.129.0)
1.129.0	10GBASE-T LP information valid	(same as before)

Proposed Response *Response Status* **W**

PROPOSED REJECT. There is only one link partner at a time so the functionality of LP information valid is combined into one bit for 10G & 40GBASE-T (see comment 316)

Cl **113** *SC* **113.6** *P* **168** *L* **20** # 401

Remein, Duane — Huawei Technologies

Comment Type **TR** *Comment Status* **D** *MGMT*

This para make is sound like Cl 45 and MDIO are required for 40G. However Cl 45 is optional for all subsequent clauses.

See related comment against Cl 28D.8 pg 28 ln 12

SuggestedRemedy

Create a cross reference table (for example see 82.3.1 PMD MDIO function mapping Table 82-10 and elsewhere in Section 6 of the Std that lists required variables and their corresponding MDIO registers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Statement is clear that the functions MAY BE provided by Cl 45, language and definitions are consistent with existing language in Clause 55.

Cl **45** *SC* **45.2.3.13** *P* **44** *L* **46** # 22

Hajduczenia, Marek — Bright House Networks

Comment Type **ER** *Comment Status* **D** *MGMT*

Some of the marked change make little sense: "BASE-R, and 10GBASE-T, or 40GBASE-T", or "when the BASE-R PCS or the 10GBASE-T or the 40GBASE-T PCS "

SuggestedRemedy

Change "when the BASE-R PCS or the 10GBASE-T or the 40GBASE-T PCS " to read "when the BASE-R PCS, 10GBASE-T, or the 40GBASE-T PCS " - use proper markup
Change "BASE-R, 10GBASE-T, or 40GBASE-T" - use proper markup

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.6.1.1** *P* **168** *L* **43** # 402

Remein, Duane — Huawei Technologies

Comment Type **TR** *Comment Status* **D** *MGMT*

This statement requires Cl 45 which is optional for all Eth.
"A 40GBASE-T PHY shall use the management register definitions and values specified in Table 113–19."

SuggestedRemedy

See comment against Cl 113.6 pg 168 ln 20.

Scrub the draft for any statements that require Cl 45 and reword to require variables rather than Cl 45 registers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The statement is consistent with Clause 55. The statement refers to the definitions and values, not the implementation of the registers.

Cl **28D** *SC* **28D.8** *P* **28** *L* **12** # 400

Remein, Duane — Huawei Technologies

Comment Type **TR** *Comment Status* **D** *MGMT*

This statement implies Cl 45 (which is optional in it's entirety) is required:
"requires additional MDIO registers"
This also applies to other instances in the draft (such as 113.6.1.1 pg 168 ln 43 which also implies Cl 45 registers are required).

SuggestedRemedy

Create a cross reference table (for example see 82.3.1 PMD MDIO function mapping Table 82-10 and elsewhere in Section 6 of the Std that lists required variables and their corresponding MDIO registers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Text is consistent with existing Annex 28D text in 28D.6 and 28D.7

Cl **45** *SC* **45.2.1.64.1** *P* **41** *L* **13** # 316

Hidaka, Yasuo — Fujitsu Laboratories of

Comment Type **T** *Comment Status* **D** *MGMT*

Only existing LP information valid bit 1.129.0 is referred.

SuggestedRemedy

Change "If LP information valid bit, 1.129.0, is set to one" with
"If either 10GBASE-T LP information valid bit, 1.129.0, or 40GBASE-T LP information valid bit, 1.129.1, is set to one".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Since there can only be one LP at a time, there is only one LP information valid bit. (see comment 313)

Cl **113** *SC* **113.1.3.1** *P* **76** *L* **27** # 459

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *PCS*

In this paragraph we find a repetition of the text that appeared in footnote 5 on page 72. The last sentence of this paragraph is tutorial in nature and does not belong in the standard.

SuggestedRemedy

Delete the sentence: "The resulting
checkerboard constellation is based on a lattice called RZ2 in the literature (see Forney [B31])."

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Sentence is consistent with other text in IEEE Std. 802.3, through multiple revisions.
This information was added to IEEE Std. 802.3 by IEEE Std. 802.3an-2006 for clarity the nature of the DSQ128 constellation (vs., for example, the PAM16 modulation), and is relevant to Clause 113 as well.

Cl **113** *SC* **113.1.3** *P* **72** *L* **52** # 458

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *PCS*

Half of footnote 5 is useful infornation that should be moved into the body of the subclause, and the other half is tutorial information that should not be included in the standard.

SuggestedRemedy

Move the sentence "5The DSQ128 symbols are obtained by concatenating two time-adjacent 1D PAM16 symbols and retaining among the 256 possible
Cartesian product combinations, 128 maximally spaced 2D symbols." into the body of the subclause immediately after "(double square 128).". Delete the remainder of the footnote.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Footnote is consistent with other text in IEEE Std. 802.3 through multiple revision cycles, and provides useful information, suitable for a footnote. This information was added to IEEE Std. 802.3 by IEEE Std. 802.3an-2006 for clarity the nature of the DSQ128 constellation, and is relevant to Clause 113 as well.

Cl **81** *SC* **81.1** *P* **65** *L* **33** # 338

Hidaka, Yasuo — Fujitsu Laboratories of

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

Definition of RS-LDPC is missing.

SuggestedRemedy

Add definition of RS-LDPC as follows:

RS-LDPC = REED-SOLOMON LOW-DENSITY PARITY CHECK

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 332, removing RS-LDPC as an abbreviation from the text and using existing RS-FEC and LDPC abbreviations.

Cl **113** *SC* **113.3.2.3** *P* **108** *L* **8** # 293

Hidaka, Yasuo Fujitsu Laboratories of

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

The statement "One XLGMII data transfer is decoded from each block." does not describe the PCS receive function well.

SuggestedRemedy

Change the statement "One XLGMII data transfer is decoded from each block." with the following:

50 XLGMII data transfers are decoded from one RS-LDPC frame.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.3.2.2.15** *P* **98** *L* **26** # 283

Hidaka, Yasuo Fujitsu Laboratories of

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

The ratio of transfer rates should be "25:128".

SuggestedRemedy

Change "25:64" on line 26, page 98 with "25:128".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.3.2.2.23** *P* **106** *L* **31** # 439

Zimmerman, George CME Consulting

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

References to LDPC framer blocks of purely 65B blocks should now be mixed 512B and 65B blocks.

SuggestedRemedy

Rename 65B-LDPC framer to block-LDPC framer in 113.3.2.2.23 title & paragraph
Change: "betewen the 65-bit width of the 65B blocks and the 4D-PAM16" to "between the mixed 513B and 65B blocks and the 4D-PAM16" (line 31)
Change "entirely of 64B/65B LDPC-encoded LP_IDLE" to "entirely of RS-LDPC encoded LP_IDLE" (line 50, cl. 113.3.2.2.24)
Change "64B/65B encoding technique" to "mixed 512B/513B 64B/65B RS-LDPC encoding used in normal data mode"(p. 130, line 52, cl. 113.4.2.2.1)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Rename 65B-LDPC framer to block-LDPC framer in 113.3.2.2.23 title & paragraph
Change: "betewen the 65-bit width of the 65B blocks and the 4D-PAM16" to "between the mixed 513B and 65B blocks and the 4D-PAM16" (line 31)
Change "entirely of 64B/65B LDPC-encoded LP_IDLE" to "entirely of RS-FEC and LDPC encoded LP_IDLE" (line 50, cl. 113.3.2.2.24)
Change "64B/65B encoding technique" to "mixed 512B/513B 64B/65B RS-FEC and LDPC encoding used in normal data mode"(p. 130, line 52, cl. 113.4.2.2.1)

(see comment 332)

Cl **113** *SC* **113.3.6.2.1** *P* **115** *L* **24** # 422

Zimmerman, George CME Consulting

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

blocks don't go to LDPC encoder anymore, now they go to the transcoder and framer first

SuggestedRemedy

Change "to the LDPC encoder" to "to the 512B/513B transcoder and block-LDPC framer" (or 65B-LDPC framer if previous comment on 113.3.2.2.23 is not accepted) - in 4 places, EBLOCK_T, LBLOCK_T, LPBLOCK_T, IBLOCK_T

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **80** *SC* **80.1.3** *P* **61** *L* **37** # 332

Hidaka, Yasuo — Fujitsu Laboratories of

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

A new abbreviation for "RS-LDPC" is not defined.

SuggestedRemedy

Add a definition of "RS-LDPC" as follows"

RS-LDPC = REED-SOLOMON LOW-DENSITY PARITY CHECK

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Use existing 802.3 defined abbreviations, RS-FEC and LDPC, as follows:

Change RS-LDPC PCS in Figures 80-1 and 81-1 to "40GBASE-T PCS"

In 113.3.2.2 (p. 80, line 44) change "mixed 513B-65B-RS-LDPC encoding" to "mixed 513B-65B-RS-FEC-LDPC encoding"

In Figure 113-7 (p. 93) change "RS-LDPC received frame" to "Received frame" and change "RS-LDPC decoded frame" to "FEC-decoded frame" (since LDPC and RS-FEC are already called out in the figure)

Insert in 80.1.4 after line 49, "40GBASE-T uses a combination of Reed-Solomon-FEC (RS-FEC) and low density parity check (LDPC) FECs in its physical coding sublayer that is mapped to a 128 double-square (DSQ128) constellation for transmission on 4-pair, twisted-pair copper cabling."

See comments 200 and 439

Cl **113** *SC* **113.3.2.2.5** *P* **95** *L* **7** # 77

Mark, Laubach — Broadcom Corporation

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

Regarding "Editor's Note (to be removed prior to publication): Figure 113–9 shows the full set of 32 bit block alignments n the anticipation of updating the document to include a 25Gbps rate which may be 32 bit aligned.". First "n" should be "in". Second, is there any technical impact on this specification if Figure 113-9 is left as is and then remove this EN?

SuggestedRemedy

Remove EN if possible.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Fix 'n' to "in".
Purpose of note is to avoid comments deleting extra block alignments until 25GBASE-T PAR is resolved. EN to be removed at that time.

Cl **113** *SC* **1.2** *P* **72** *L* **10** # 57

McDermott, Thomas — Fujitsu

Comment Type **ER** *Comment Status* **D** *PCS*

Figure 113-1 does not show the RS-LPDC FEC PCS sublayer, as shown in figure 81-1 for 40GBASE-T.

SuggestedRemedy

Revise figure 113-1 to include RS LDPC FEC PCS sublayer.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Revise Figure 113-1 to show 40GBASE-T PCS
See comment 332

Cl **113** *SC* **3** *P* **99** *L* # 403

Wang, Zhongfeng — Broadcom Corp.

Comment Type **TR** *Comment Status* **D** *PCS*

Table 113-2
title: Trancoded bocks including control blocks (without leading 0).

Given the trancoding operation shown in Table 113-2, we always move control blocks to the top and dmove ata blocks to the bottom. Since data blocks in original 512B block can be in any row, this operation will involve muxing logic for all 64 bits for every data and control block, which casue extra hardware. In addition, at the receiver side, we need wait until entire 513B data is received before finishing reverse trancoding.

SuggestedRemedy

1) We only need swap location of first byte for each data or control block.
This leads to much reduced muxing logic.
2) We transmit the first bytes of each data and control block immediately after leading 0. Then we transmit the rest 7 bytes for each data and control block. This will save signiifcant processing latency at receiver side.

The aboves changes fully maintain data mapping of original trancoding operation for each data byte. Only data reordering is involved. So there is no performance hurt.

Please see wang's contributions for detailed description.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to consider presentation on alternative transcoding

Cl **113** *SC* **113.3.2.2.15** *P* **98** *L* **24** # 282

Hidaka, Yasuo — Fujitsu Laboratories of

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

The second and third statements "A single XLGMII data transfers is encoded into each block. It takes 256 PMA_UNITDATA transfers to send an LDPC frame of data." in the paragraph do not describe the transmit process well.

SuggestedRemedy

Change the second and third statements of the paragraph with the following:

50 XLGMII data transfers are encoded into an RS-LDPC frame.
It takes 256 PMA_UNITDATA transfers to send an RS-LDPC frame of data.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to read, "50 XLGMII data transfers are encoded into an LDPC frame.
It takes 256 PMA_UNITDATA transfers to send an LDPC frame of data."

(note the term LPDC frame is used throughout both Clause 55 and draft clause 113 to represent the framing structure including the uncoded or RS-FEC coded bits)

Cl **113** *SC* **113.5** *P* **154** *L* **33** # 299

Hidaka, Yasuo — Fujitsu Laboratories of

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

The statement "Common-mode tests use the common-mode return point as a reference." on line 33, page 154 is out of context and not clear.

There is not definition of the common-mode return point.
There is no nearby descriptions about common-mode tests.

It should be moved to an appropriate location with a referenct to the defnition of the common-mode return point, or removed.

SuggestedRemedy

Remove the statement of "Common-mode tests use the common-mode return point as a reference" on line 33, page 154.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editor to search for any tests left hanging and reinsert statement there if needed.

Cl **113** *SC* **113.5.4.3** *P* **161** *L* **32** # 445

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *PMA*

If the editor's note is correct, then this draft was not ready for WG ballot.

SuggestedRemedy

If the editor's note is incorrect, then remove it. If the editor's note is correct, then "confirm the source-adjustment criteria, measurement points, and levels used with the clamp methodology in this subclause" and restart the WG ballot.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Remove editor's note.

Cl **113** *SC* **113.5.3.2** *P* **158** *L* **47** # 444

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *PMA*

If the editor's note is correct, then this draft was not ready for WG ballot.

SuggestedRemedy

If the note is false, then remove it. If it is true, then fix the SFDR and restart the WG ballot.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 424

Cl **113** *SC* **113.5.3.2** *P* **158** *L* **47** # 424

Zimmerman, George — CME Consulting

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

Equation 113-9, needs to be frequency scaled to get the same SNR due to transmitter nonlinear distortion as 10GBASE-T, as flagged by editors note. Editor's note has served its purpose.

SuggestedRemedy

In Equation 113-9: change f/25 to f/100
Delete editors note, lines 47-50

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.4.5.1** *P* **145** *L* **30** # 464

Dai, Shaoan — Marvell

Comment Type **TR** *Comment Status* **D** *PMA*

Missing a definition for pma_reset which appears in Fig 113-29.

SuggestedRemedy

Insert the following definition:
"pma_reset
Allows reset of the PHY Control and Link Monitor state diagrams.
Values: ON or OFF"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Correction was made during 802.3bx WG balloting to Clause 55.

Cl **113** *SC* **113.5.4.6** *P* **162** *L* **42** # 97

McClellan, Brett — Marvell

Comment Type **TR** *Comment Status* **D** *Shortreach*

Subclause 113.5.4.6 Direct attach cable assembly and subclauses 113.5.4.6.1 through 113.5.4.6.14 specify a link segment, not receiver electrical specifications. The appropriate locations for this section is under Subclause 113.7 Link segment characteristics.

SuggestedRemedy

Move Subclauses 113.5.4.6 through 113.5.4.6.14 into 113.7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Move to 113.7 and relable as 'short reach/direct attach link segment specifications'. Check all references to 113.5.4.6 to refer to new subclause under 113.7. Check all references to short reach test mode.

Cl **113** *SC* **113.5.4.5** *P* **162** *L* **37** # 446

Frazier, Howard — Broadcom Corporation

Comment Type **ER** *Comment Status* **D** *Shortreach*

Subject/verb agreement problem in the sentence: "The short reach link segment meeting the transmission requirements in 113.5.4.6 are specified to support up
to 5 meters."

SuggestedRemedy

Delete this sentence, and add change the text of 113.5.4.6 to read:
"The short reach cable assembly contains balanced twisted-pair terminated in a connector at each end for use as a short reach link segment of up to 5 meters in length between MDIs."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Implement with comment#97

Cl **113** *SC* **113.5.4.5** *P* **162** *L* **33** # 426

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *Shortreach*

"both short reach test channels" - there is only one, and it is specified in 113.5.4.6

SuggestedRemedy

Change "through both short reach test channels" with "through a (short reach) link segment meeting the requirements specified in 113.5.4.6".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Remove "both", and align text with other comments on this same text. (see comments 97 & 446)

Cl **113** *SC* **113.5.4.5** *P* **162** *L* **40** # 427

Zimmerman, George — CME Consulting

Comment Type **T** *Comment Status* **D** *Shortreach*

Register 1.131 (Phy Short reach mode) is misnamed, and also needs 40G inserted in clause 45 definition (45.2.1.64.2)

SuggestedRemedy

Change "PHY short reach register setting" to "PHY short reach mode register setting".
Insert text to Clause 45.2.1.64.2, after "The short reach mode of the 10GBASE-T PHY provides a means for operation on a cable plant that has
parametric performance equivalent to 30 m of Class F and Class EA cabling as defined in 55.5.4.5.":
"The short reach mode of the 40GBASE-T PHY provides a means for operation on a link segment that has
parametric performance equivalent to a 5m direct attach cable assembly specified in 113.5.4.6."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. See comment 97

Cl **113** *SC* **113.5.4.6** *P* **162** *L* **43** # 447

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Shortreach*

Use of the term "direct attach cable assembly" will cause confusion in the industry. The industry generally regards a DAC cable as being constructed of two twin-axial cables, not a short segment of 4 twisted pair.

SuggestedRemedy

Change the subclause heading to be "Short reach cable assembly" and change the text of the subclause to read:
"The short reach cable assembly contains balanced twisted-pair terminated in a connector at each end for use as a short reach link segment of up to 5 meters in length between MDIs."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Text of subclause to be implemented with comment#97.

Direct attach terminology for committee discussion. Please note;
Direct attach usage consistent with definitions in
specifications for 100 Ω Category 8 Cabling (TR42.7-2015-04-04x-Category-8_d3.1_Copyright.pdf) direct attach: A reduced channel definition that includes plug connectors at the beginning and end of the channel and does not contain connecting hardware within the channel.

Cl **113** *SC* **113.5.4.6** *P* **162** *L* **43** # 448

Frazier, Howard — Broadcom Corporation

Comment Type **TR** *Comment Status* **D** *Shortreach*

The description of the short reach cable assembly should not be a subclause of the receiver electrical specifications. Instead, it should be a subclause of 113.7 Link segment characteristics.

SuggestedRemedy

Move all of 113.5.4.6 and its subclauses under 113.7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 97

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **20** # 107

Lo, William — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *Training*

40GBASE-T specifies option to reset training PRBS. However it is not clear such bit is defined in table 113-20

SuggestedRemedy

Option 1:
In bit U20 rename "LD PMA training reset request" to
"40/10GBASE-T LD PMA training reset request"
The rationale of sharing the same bit for both speeds is that any implementation that prefers one way for one speed will most likely prefer the same way for the other speed. There is no need to specify a separate bit for 10G and 40G.

Option 2:
Remove the option to reset PMA training PRBS every frame in 40GBASE-T

Commenter is ok if either option 1 or 2 adopted.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to discuss with 93 & 84

Cl **55** *SC* **55** *P* **55** *L* **1** # 103

McClellan, Brett — Marvell

Comment Type **TR** *Comment Status* **D** *Training*

In November the Maintenance task force considered a maintenance request to remove the 10GBASE-T periodic training. The task force forwarded the request to the 802.3bq task force for consideration.

http://www.ieee802.org/3/maint/requests/maint_1266.pdf
http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1266

SuggestedRemedy

Implement the changes to Clauses 45 and 55 as detailed in
http://www.ieee802.org/3/maint/requests/maint_1266.pdf as part of 802.3bq.
In addition, in 55.4.2.5.15 Fast retrain function
delete text "The training sequence without periodic re-initialization described in 55.3.4 shall be used during fast retraining, with the scramblers free-running from PCS Reset. If scrambler re-initialization is used for normal training, it shall be disabled and the scramblers shall begin free-running when the PHY Control state diagram enters the PCS_Test state and the variable fr_active is FALSE."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Task Force to consider maintenance request

Cl **113** *SC* **113.4.2.5.15** *P* **141** *L* **5** # 94

McClellan, Brett Marvell

Comment Type **TR** *Comment Status* **D** *Training*

The current text for fast retrain has the THP enabled during the PMA_Coeff_Exch state. During normal link training, the THP is bypassed in PMA_Coeff_Exch state enabling the receiver to determine the optimal DFE/THP for the link conditions. Allowing the local device to request the link partner to bypass the THP during fast retrain in the PMA_Coeff_Exch state will enable the receiver to determine the optimal DFE/THP for the link conditions.

SuggestedRemedy

change "After completing the link failure signal the PHY shall transition to the PMA_Coeff_Exch state, keep its THP turned on with its previously exchanged coefficients, and send PAM2 signaling within a time period equivalent to 9 LDPC
frame periods."
to "After completing the link failure signal the PHY shall transition to the PMA_Coeff_Exch state. If the link partner requested THP bypass during fast retrain the PHY will bypass the THP (or set THP coefficients to zero) during the PMA_Coeff_Exchstate state. Otherwise the PHY will keep its THP turned on with its previously exchanged coefficients, and send PAM2 signaling within a time period equivalent to 9 LDPC frame periods."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **113** *SC* **113.3.4** *P* **110** *L* **12** # 93

McClellan, Brett Marvell

Comment Type **TR** *Comment Status* **D** *Training*

The optional periodic training sequence in this text is identical to the 10GBASE-T periodic training that was added to Clause 55 based on a vendor proposal:
http://www.ieee802.org/3/an/public/nov04/ungerboeck_1_1104.pdf slide 23
However, the same vendor recently reported that the periodic training sequence is not used by any 10GBASE-T device and is not suitable for adapting equalizer and canceller coefficients.
http://www.ieee802.org/3/bq/public/jul14/souvignier_3bq_01_0714.pdf slide 3
If requested by the link partner a local device is required to transmit the periodic training sequence resulting in poor adaptation of echo and NEXT cancellers at the local device.
Further, 10GBASE-T and 40GBASE-T share one advertisement bit for the periodic training request from the link partner. Since 10GBASE-T PHY's cannot work with the periodic training, a 10G/40G capable PHY will never advertise the periodic training.

SuggestedRemedy

Eliminate the optional periodic training sequence.

113.3.4 PMA training side-stream scrambler polynomials
remove text:
"Moreover during Auto-Negotiation each transceiver may request the remote transceiver to reinitialize the values of its scrambler state after every 16384 symbol periods, to generate a periodically repeating pattern with repetition period 16384. The initial 33-bit values of the scrambler state shall be generated by combining 0x39A422 for the 22 MSBs and random value SB10-SB0 from Table 113-20 generated by the local device for the 11 LSBs as shown in Figure 113-14."
Figure 113-14
remove text from "n mod 16384 = 0" through "else:"
113.3.5.3 Refresh period signaling
delete the text:
"The training sequence without periodic reinitialization described in 113.3.4 shall be used during the LPI mode, with the scramblers free-running starting in the state PMA_PBO_Exch. If scrambler reinitialization is used for normal training, it shall be disabled and the scramblers shall begin free-running when the PHY Control state diagram is in the state PMA_PBO_Exch and the receiver detects a valid requested transmitter PBO setting (Oct 7 Valid<7> equal to 1)."

113.4.2.5.15 page 141 line 15
change "The training sequence without periodic re-initialization described in 113.3.4 shall be used
during fast retraining, with the scramblers free-running from PCS Reset. If scrambler re-initialization is used for normal training, it shall be disabled and the scramblers shall begin free-running when the PHY Control state diagram enters the PCS_Test state and the variable fr_active is FALSE."
to "The training sequence in 113.3.4 shall be used during fast retraining, with the scramblers free-running from PCS Reset."

113.6.1 Support for Auto-Negotiation

page 168 line 38 delete item c)

Table 113-20 in row U20 change text from "LD PMA training reset request"
to either "10GBASE-T LD PMA training reset request" or "This bit is not defined for 10GBASE-T but reserved for future use." depending on resolution to comment on 10GBASE-T periodic training.
113.12.3 Physical Coding Sublayer (PCS)
delete the line items:
PCT19 PMA training scrambler reset
PCT31 Disable scrambler reinitialization
under "PCT30 LPI scrambler" delete the text:
"The training sequence without periodic re-initialization described in 113.3.5 shall be used"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider with maintenance request in comment 103
Consider with comments 84 & 107

Cl **113** *SC* **113.6.1.2** *P* **170** *L* **5** # 84

Kim, Yong
Broadcom

Comment Type **TR** *Comment Status* **D** *Training*

"repeat training" capability as presented in
http://www.ieee802.org/3/bq/public/jul14/souvignier_3bq_01_0714.pdf
was adopted by a motion (in minuites) in
http://www.ieee802.org/3/bq/public/jul14/unconfirmed_minutes_3bq_0714.pdf

So unless there were a committee action to reverse this requirement (the commenter is not aware of such) and in which case, this comment is to be withdrawn by the commenter, this ability needs to be defined.

SuggestedRemedy

Please do so (add a 40GBASE-T repeat-train ability).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Comment was implemented to the extent described in July minutes - motion was not to adopt repeat training capability, but to modify the strawman in the text. This was later updated during Task Force Review, and the same commenter concurred PTS was broken and a supported text changes. See comment 156 on D1.1.1:
http://www.ieee802.org/3/bq/comments/p802.3bq_d1.1.1_approved_responses_CommentID.pdf
Task Force to consider with comments 93 & 107

Cl **45** *SC* **45.2.1.62** *P* **40** *L* **11** # 102

McClellan, Brett
Marvell

Comment Type **T** *Comment Status* **D** *xGBASE-T*

Clause 45 registers and bits should be renamed from '10G/40GBASE-T' to 'xGBASE-T' for simplification and in anticipation of supporting 25G, 2.5G and 5G which will use the same registers. NOTE: Annex 28C has already been modified to use xGBASE-T. See page 27 line 16 Clause 55 was also changed, see page 55.

SuggestedRemedy

Replace '10G/40GBASE-T' with 'xGBASE-T' in register and register bit names.
Replace only in register names and bit names but not in descriptions that include a listing of speeds.
e.g. do not replace on page 46 line 40.
Example locations: 45.2.1.62 page 40 lines 11, 13, 23, 28, 41, 45, 49, 51

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment 6 for definition of xGBASE-T

Cl **28C** *SC* **28C** *P* **27** *L* **11** # 6

Hajduczenia, Marek
Bright House Networks

Comment Type **T** *Comment Status* **D** *xGBASE-T*

It is not clear xGBASE-T is and where it is defined. There are two ways it seems to be defined "multigigabit", "multiple Gigabit", and "xGBASE-T" - which one is to be used?

SuggestedRemedy

If we want to use "xGBASE-T" in the document, it should be defined in Clause 1 as follows:
"xGBASE-T: designates jointly 1000BASE-T, 10GBASE-T, and 40GBASE-T"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
add new definition to 1.4 defining xGBASE-T as "BASE-T Ethernet PCS/PMA/PMDs at speeds in excess of 1000Mbps, including 10GBASE-T (Clause 55), and 40GBASE-T (Clause 113)"

Change references to xGBASE-T Technology Message Code to be "xGBASE-T and 1000BASE-T Technology Message Code"

Cl **113** *SC* **113.6.2** *P* **171** *L* **38** # 273

Hidaka, Yasuo — Fujitsu Laboratories of

Comment Type **T** *Comment Status* **D** *xGBASE-T*

I do not agree to use abbreviation of xGBASE-T, because there are many xGBASE-T to be defined in near future, and it is not clear which xGBASE-T will be included.

I think it is safe to consider for each description for each technology rather than just using abbreviation.

If we are motivated to use an abbrevation to represent some common abstraction, we should give a clear definition of the abstraction rather than just using abbreviation.

SuggestedRemedy

Change "xGBASE-T" on line 13 thru 15 with "40GBASE-T/10GBASE-T/1000BASE-T".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 6

Cl **28C** *SC* **28C.11** *P* **27** *L* **1116** # 82

Kim, Yong — Broadcom

Comment Type **TR** *Comment Status* **D** *xGBASE-T*

Change to make MC9 to be a generic does not work (i.e. change to xGBASE-T) from 10GBASE-T and 1000GBASE-T), because it implies that all future xxBASE-T would use this. Secondary part of this comment is 1000BASE-T is not noted anywhere as 1GBASE-T, requiring careful changes everywhere apppropriate to indicate 1000BASE-T == 1GBASE-T.

SuggestedRemedy

Just revise to reflect what is actually being done.
Change to:
Line 11 - 40GBASE-T/10GBASE-T/1000BASE-T
Line 16 - 40GBASE-T, 10GBASE-T, and 1000BASE-T.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
xGBASE-T to be specifically defined term
Generic reference to MC9 to be 1000BASE-T and xGBASE-T
See comment 6

Cl **28C** *SC* **28C.11** *P* **27** *L* **11** # 309

Hidaka, Yasuo — Fujitsu Laboratories of

Comment Type **T** *Comment Status* **D** *xGBASE-T*

I do not agree to use abbreviation of xGBASE-T, because there are many xGBASE-T to be defined in near future, and it is not clear which xGBASE-T will be included.

I think it is safe to consider for each description for each technology rather than just using abbreviation.

If we are motivated to use an abbrevation to represent some common abstraction, we should give a clear definition of the abstraction rather than just using abbreviation.

SuggestedRemedy

Change "xGBASE-T" on line 11, page 27 with "40GBASE-T/10GBASE-T/1000BASE-T".

Change "xGBASE-T" on line 16, page 27 with "40GBASE-T, 10GBASE-T and 1000BASE-T".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 6

Cl **55** *SC* **55.6.2** *P* **55** *L* **13** # 324

Hidaka, Yasuo — Fujitsu Laboratories of

Comment Type **T** *Comment Status* **D** *xGBASE-T*

I do not agree to use abbreviation of xGBASE-T, because there are many xGBASE-T to be defined in near future, and it is not clear which xGBASE-T will be included.

I think it is safe to consider for each description for each technology rather than just using abbreviation.

If we are motivated to use an abbrevation to represent some common abstraction, we should give a clear definition of the abstraction rather than just using abbreviation.

SuggestedRemedy

Change "xGBASE-T" on line 13 thru 15 with "40GBASE-T/10GBASE-T/1000BASE-T".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Definition of xGBASE-T added to the definitions section, to include 40GBASE-T and 10GBASE-T. References on lines 13 thru 15 changed to "1000BASE-T and xGBASE-T".

See comments 6, 82, 95, 92, 102, 273, 309, 324

Cl **113** *SC* **113.6.1.2** *P* **169** *L* **24** # 95

McClellan, Brett Marvell

Comment Type **T** *Comment Status* **D** *xGBASE-T*

"10GBASE-T and 1000BASE-T formatted Extended Next Page" should be "xGBASE-T technology message Extended Next Page" so that it matches the change made in 28C.11 similary page 169 line 27
"40GBASE-T message page exchange" should be "xGBASE-T technology message Extended Next Page exchange"

SuggestedRemedy

page 169 line 24 change "10GBASE-T and 1000BASE-T formatted Extended Next Page" to "xGBASE-T technology message Extended Next Page"
line 27 change "40GBASE-T message page exchange" to "xGBASE-T technology message Extended Next Page exchange"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to "xGBASE-T and 1000BASE-T technology message Extended Next page" since new definition does not include 1000BASE-T (see comment 6)

Cl **30** *SC* **Table 30-1e** *P* **29** *L* **13** # 249

Grow, Robert RMG Consulting

Comment Type **ER** *Comment Status* **D** *xGBASE-T*

Insert has caused a text wrap that is not shown. Also a problem for second and third pages of table.
There are other locations where adding speeds to the name may become a problem like in the PICS where non-breaking spaces have not been used resulting in a name split with only a single letter in the last line. For example 10G/25G/40G, increases row height would eliminate even more data rows below
the headings. The quick solution of increasing row height to allow all text to show in one line is probably not the best for long term purposes.

SuggestedRemedy

Perhaps something like xG (as used in other locations) might be better than a list of speeds. This will require a search and selective replace of 10G/40G.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Use newly defined term xGBASE-T for header
See comment 6 for definition of xGBASE-T.
Editor to review tables for spacing and row height issues.