Cl **FM** *SC* **FM** *P* **1** *L* **27** # 1

Hajduczenia, Marek — Bright House Networks

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

"Draft D2.0 is prepared for TF review." - not true

SuggestedRemedy

Change to "Draft D2.0 is prepared for Working Group recirculation ballot" in D2.1.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **26** # 2

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"The purpose of the amendment is to add new Physical Layer specifications for 1000 Mb/s operation." This is imprecise. Typically, we list here specific type of PMD/PHY being added.For example, 802.3bp uses the following text: "This amendment adds point-to-point 1 Gb/s Physical Layer (PHY) specifications and management parameters for operation on a single twisted-pair copper cable."

SuggestedRemedy

Please make the text concise and technically correct - you're not adding 1000Mb/s PHY operating over air or copper, for example

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **10** *L* **1** # 3

Hajduczenia, Marek — Bright House Networks

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

The description of 802.3 standard suite is not up-to-date. Please use the template available at: http://www.ieee802.org/3/tools/framemaker/P802_3xx_D0p1_version_2p5.zip.
Also, consider updating the list of amendments per comment i-55 in http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.3** *P* **19** *L* **15** # 4

Hajduczenia, Marek — Bright House Networks

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

Reference to CISPR is added in P802.3bp D3.1 and since you're trailing P802.3bp - you do not need to include it any more

SuggestedRemedy

Strike lines 15-19

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **21** # 5

Hajduczenia, Marek — Bright House Networks

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

Unnumbered definitions - all new definitions under 1.4 are numbered as 1.4.x - all other amendments provide specific location where the new term is expected to be added

SuggestedRemedy

please add missing numbers to individual new definitions

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **45** # 6

Hajduczenia, Marek — Bright House Networks

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

FEC is already included in IEEE Dictionary

SuggestedRemedy

http://ieeexplore.ieee.org/xpls/dictionary.jsp?stdDict=browse_keyword&pageNumber=1&def_term=FEC&def_id=&stdDictionary_tarid=&stdDictionary_tarn=null&stdDictionary_scn=Aerospace+Electronics&nav=
remove definition in line 45/46
there are individual locations where FEC is defined locally, as needed. It is dangerous to create now new definitons, affecting older clauses, without causing hertburn

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **43** # 7

Hajduczenia, Marek — Bright House Networks

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

CRC is already defined in 802.3:
http://ieeexplore.ieee.org/xpls/dictionary.jsp?stdDict=browse_keyword&pageNumber=1&def_term=CRC&def_id=&stdDictionary_tarid=&stdDictionary_tarn=null&stdDictionary_scn=Aerospace+Electronics&nav=

SuggestedRemedy

Remove definition - there are individual locations where CRC is defined locally, as needed. It is dangerous to create now new definitons, affecting older clauses, without causing hertburn

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **25** # 8

Hajduczenia, Marek — Bright House Networks

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

FEC is already part of abbreviations in 802.3

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **20** *L* **14** # 9

Hajduczenia, Marek — Bright House Networks

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

Imprecise editorial instruction

SuggestedRemedy

Change "Change the following definitions:" to "Change definition 1.4.401 as shown below:"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30** *P* **21** *L* **1** # 10

Hajduczenia, Marek — Bright House Networks

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

All objects being modified in Clause 30 are already modified by other projects. Please align editorial instructions to the ones used in P802.3bp D3.1, including list of projects changing these specific objects

SuggestedRemedy

This helps both the reader, as well satff editor folding in individual amendments into a single document.
See also comment i-162 in
http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **21** *L* **32** # 11

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

aMediaAvailable is beign modified by 802.3bp, but there is no reference to this fact in this text

SuggestedRemedy

Update editorial instruction to recognize changed done by 802.3bp and update sentence number - seems you're adding now sentence number 4

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **21** *L* **40** # 12

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"For 1000BASE-RHx," - term 1000BASE-RHx is not defined anywhere in the draft and used here for the very first time

SuggestedRemedy

Change all instances of "1000BASE-Hx" to "1000BASE-H" - I believe "H" type is a aggregate name to designate all PHYs you specify

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **21** *L* **40** # 13

Hajduczenia, Marek — Bright House Networks

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

When referencing subclauses, we do not use "Clause" and "subclause"

SuggestedRemedy

Strike two instances of "Clause" in line 40. Scrub the rest of the draft and remove other superfluous instances of the word "Clause"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **23** *L* **8** # 14

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Register 1.7 is being modified by multiple projects, including P802.3bp. Bits "1 1 1 1 0 1" were allocated to BASE-T1. You should at least show which bits you're removing from reserved pool and what the reserved pool will look like after the change.
Editorial instruction is not precise, listing "change “reserved” line(s) as appropriate for values defined by this and other approved amendments" - staff editor has to be able to put these together and not figure out what needs to be changed and how, when folding multiple amendments together

SuggestedRemedy

Update editorial instruction to recognize changed done by 802.3bp and other projects. Show changes to reserved space. Update editorial instruction to recognize changes by .3bw and .3bp, which are running ahead

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3** *P* **23** *L* **28** # 15

Hajduczenia, Marek — Bright House Networks

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

"Replace 3.420 through 3.1799 row with the following rows" - this is inclear - where are the strike-through and underline changes to reserved space you're modifying?

SuggestedRemedy

Please show changes to Table 45-119 reserved bit space in standard underline / cross-through format. Update editorial note to use the word "Change" instead of replace

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48** *P* **24** *L* **3** # 16

Hajduczenia, Marek — Bright House Networks

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

P802.3bp is already adding 45.2.3.51 through 45.2.3.57, so I assume you intended to start adding at 45.2.3.58?

SuggestedRemedy

Update subclause numbers and table numbers, accordingly, using 802.3bp numbers as the end of the range you should be adding after

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.1** *P* **24** *L* **47** # 17

Hajduczenia, Marek — Bright House Networks

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

Please implement comment #70 from http://www.ieee802.org/3/bp/comments/8023bp_D20_approved.pdf.

SuggestedRemedy

Change all instances of "This bit" to "Bit xxxx" citign specific explicit register number. This avoids concerns about what bit is used.
Also, where the word "it" is used at the beginning of the sentence in Clause 45, please also mention the bit reference explicitly - again, this avoids concerns with interpretation as to what bit is meant

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.3** *P* **25** *L* **3** # 18

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"This bit indicates the value of the TXO_MSGT bit in the last message read by the station management entity" - description in 3.500.14 states "This bit indicates the value of the TXO_MSGT bit in the last OAM message received by the remote 1000BASE-H PHY" - is there any specific difference between "Remote PHY" and "station management entity" in this case? Seems that it does not matter what reads data from the given register / bit

SuggestedRemedy

Based on the description, it is not clear what the difference between 3.500.13 and 3.500.14 really is - both point to TXO_MSGT bit in some last message (I assume - the last OAM message in both cases) but why there are two of them, is not clear.
Please clarify what the difference between these two bits is and why both are needed.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.4** *P* **25** *L* **8** # 19

Hajduczenia, Marek — Bright House Networks

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

"This bit is used for message identification" - the draft uses terms "OAM message" and "message" and it is not cleatr whether thety are the same or not

SuggestedRemedy

if they are the same, cosnider using "OAM message" consistently.
If they are not the same, what is the difference between "OAM message" and "message" - please clarify. A generic "message" is very overloaded in 802.3 and is hard to decode

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.2** *P* **24** *L* **53** # 20

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

The term "OAM" is already defined as Clause 57 OAM, which you do not use in this project.

SuggestedRemedy

Change all instances of "OAM" with "1000BASE-H OAM" to match definition of "1000BASE-T1 OAM" used right now in 802.3bp to distinguish OAM used there from any other OAM defined in other projects. Global change in the draft

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.5** *P* **25** *L* **16** # 21

Hajduczenia, Marek — Bright House Networks

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

The use of "will" in draft standard is limited to very few specific use cases. This is not one of them

SuggestedRemedy

Convert all instances of "will" in draft (excluding FM) to Simple Present Tense

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.5** *P* **25** *L* **17** # 22

Hajduczenia, Marek — Bright House Networks

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

Meaningless information: "These bits are not changed or interpreted by the local or remote PHY"

SuggestedRemedy

Change "These bits are not changed or interpreted by the local or remote PHY and together with the TXO_DATAx" to "Bits 3.500.11:0 together with registers 3.501 through 3.508 … "

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49** *P* **25** *L* **25** # 23

Hajduczenia, Marek — Bright House Networks

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

"These registers are used as part of an OAM channel between 1000BASE-H link partners .. ." - no they are not. They just store information send over OAM channel.

SuggestedRemedy

Change to read: "Registers 3.509 through 3.517 store information exchanged over the OAM channel between 1000BASE-H link partners … "

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49.1** *P* **25** *L* **16** # 24

Hajduczenia, Marek — Bright House Networks

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

"The bit is set to zero when the last register (3.517) containing the message is read after a read access to the first register (3.5.10) (see Figure 114–53)." - what does it really mean: "after a read access to the first register" - are you trying to account for the actual duration of the transmission of OAM message on OAM channel?

SuggestedRemedy

It seems that "The bit is set to zero when the last register (3.517) containing the OAM message is read." would be more than sufficient

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49.1** *P* **25** *L* **17** # 25

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"The 1000BASE-H PHY does not update the receive message registers with a new message until this bit is equal to zero." - seems like a race condition to me - first sentence in this para describes the condition when the bit is set to zero (all data is read from register) and here we state that data is not updated until bit is set to zero. If data is read at a slower rate than it is coming across OAM channel, it seems that data might be lost in the process.

SuggestedRemedy

Resolve the race condition per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49.2** *P* **25** *L* **21** # 26

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

What is a "toggle identifier"????

SuggestedRemedy

A quick search of Clause 45 in 802.3 does not come up with any references to this term. Please define what it is, or describe in other terms.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.50.2** *P* **27** *L* **21** # 27

Hajduczenia, Marek — Bright House Networks

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

"The loopback modes support a MAC transmitting to itself while exercising the selected portion of the
bidirectional link with a neighbor." - this is a functional description of the loopback test, which is supposed to be located where loopback tests are defined, and not in register definition.

SuggestedRemedy

Remove this text

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.50.2** *P* **27** *L* **23** # 28

Hajduczenia, Marek — Bright House Networks

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

"Loopback modes are only operative in normal operation" - likely, "Loopback modes are only available when 1000BASE-H PHY is in the normal operation mode" - the word "operative" does not exist in this meaning …

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.50.2** *P* **27** *L* **24** # 29

Hajduczenia, Marek — Bright House Networks

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

"The various 1000BASE-H loopback modes" - no need for "the"

SuggestedRemedy

Change to "Various 1000BASE-H loopback modes"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.50.3** *P* **27** *L* **31** # 30

Hajduczenia, Marek — Bright House Networks

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

Meaningless statement: "Default value of OAM enable can be 0 or 1 and it is up to implementer." - since it is either of the two values, it does not really matter, the other side cannot expect a specific value

SuggestedRemedy

Strike the statement - there is no default value
The same change in 45.2.3.50.4, line 39

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.1** *P* **28** *L* **44** # 31

Hajduczenia, Marek — Bright House Networks

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

"This bit indicates the value of … " - we typically state that "This bit reflects the value of …" meaning that the value of specific variable is recorded in the register

SuggestedRemedy

Apply the change in 45.2.3.51.1 and 45.2.3.51.2, 45.2.3.51.4, and 45.2.3.51.5, 45.2.3.51.6, and 45.2.3.51.7 - 45.2.3.51.3 is OK as is

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.10** *P* **29** *L* **44** # 32

Hajduczenia, Marek — Bright House Networks

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

Unnecessary information in Clause 45: "in normal mode, and if link is established it is transmitting complete
Transmit Blocks"

SuggestedRemedy

Remove this text in 45.2.3.51.10 and 45.2.3.51.11

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.12** *P* **30** *L* **4** # 33

Hajduczenia, Marek — Bright House Networks

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

We do not need to refer "implementation" in "this bit indicates the remote PHY implementation"

SuggestedRemedy

Strike the word "implementation" when referring to PHY in Clause 45- it does not really add any detail

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.12** *P* **30** *L* **5** # 34

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Amgibuous "it" - "When read as one, this bit indicates the remote PHY implementation is able to run the OAM protocol and it is enabled." - is it OAM protocol or remote PHY?????

SuggestedRemedy

Apply to 45.2.3.51.12 and 45.2.3.51.13

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.53.1** *P* **31** *L* **14** # 35

Hajduczenia, Marek — Bright House Networks

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

Unnecessary circular reference: "This register has the same fixed-point format as register 3.520.13:0 (see 45.2.3.52.1)"

SuggestedRemedy

Change to "See 114.3.8 for fixed-point format definition"
Change "The formal description for converting fixed point numbers to floating point and vice versa is in 114.3.8." to "See 114.3.8 for fixed-point format definition" in 45.2.3.52.1

Proposed Response *Response Status* **O**

Cl **45** *SC* **45** *P* **32** *L* **1** # 36

Hajduczenia, Marek — Bright House Networks

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

No PICS

SuggestedRemedy

Insert PICS

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **33** *L* **5** # 37

Hajduczenia, Marek — Bright House Networks

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

"Insert new rows below into Table 78-1 after 1000BASE-KX:" does not account for other amendments (802.3bw, 802.3bp, etc.) that are changing the same table

SuggestedRemedy

Update the editorial instructions accounting for other amendments in tow (802.3bw, 802.3bp, etc.)
The same applies to the editorial note in 78.2 and 78-5

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.2** *P* **33** *L* **25** # 38

Hajduczenia, Marek — Bright House Networks

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

Is there any reason why 1000BASE-RHA/B/C are listed eplicitly when the values are the same?

SuggestedRemedy

Consider merging three rows into a single one with "1000BASE-H" designator
The same applies to 78.5, Table 78-4

Proposed Response *Response Status* **O**

Cl **114** *SC* **114** *P* **35** *L* **6** # 39

Hajduczenia, Marek — Bright House Networks

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

Missing serial comma in "1000BASE-RHA, 1000BASE-RHB and 1000BASE-RHC"

SuggestedRemedy

Change to "1000BASE-RHA, 1000BASE-RHB, and 1000BASE-RHC"
Scrub the remainder of the draft for missing serial commas. A quick search shows at least 25 instances where changes are needed

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.1** *P* **35** *L* **19** # 40

Hajduczenia, Marek — Bright House Networks

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

Some of the "features" are really just marketing, given that there is no other PoF PHY to compare to

SuggestedRemedy

Strike items d), e), f), and g) - these have nothing to do with the PHY itself, but more with system level features, which we really do not describe in the standard.
Revise b) to read: "full duplex operation"
Review c) to read: "support for BER of 10-12 or better" - I believe you do not need BER of 10-12 at PHY layer to operate correctly, which is what you're implying right now
Review h) to read: "operation in automotive, industrial, and home network anvironments - current text is just unneccesssarily vagie and open ended

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.2** *P* **35** *L* **38** # 41

Hajduczenia, Marek — Bright House Networks

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

"Mathematical expressions in this clause include symbols and delimiters as specified in ISO 80000-2." - that is the first. All other clauses manage to get along with standard 802.3 coventions. Which specific expressions or symbols require reference to ISO???

SuggestedRemedy

Consider removing this reference, unless it is explicitly clear which expressions, symbols, and delimiters require this reference. If really needed, this ISO standard will also need to be included in references, where it is currently missing.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **14** # 42
Hajduczenia, Marek Bright House Networks

Comment Type **TR** *Comment Status* **X**

Missing PCS in Figure 114-1 ???

SuggestedRemedy

We have PMA, PMD, but PCS seems to be missing - if it is not defined, the box should be gone … Seems that it is needed though, given text on page 36, line 44

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.5** *P* **36** *L* **28** # 43
Hajduczenia, Marek Bright House Networks

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

"1000BASE-RHx PHY types support full-duplex operation only" - there are only 7 instances of "full-duplex" in base standard, and hundreds of "full duplex"

SuggestedRemedy

Change all "full-duplex" instances to "full duplex"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.5** *P* **36** *L* **51** # 44
Hajduczenia, Marek Bright House Networks

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

"the GMII data stream contained in the block" - I assume this "block" is the "Transmit Block"?

SuggestedRemedy

Change "block" to "Transmit Block" when referring to it. Also, given the number of times "Transmit Block" is used, consider adding an acronym for it

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **37** *L* **52** # 45
Hajduczenia, Marek Bright House Networks

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

"The PCS transmit functions include several steps." - I see just one PCS Transmit Function in Figure 114-3

SuggestedRemedy

Change to "The PCS transmit function includes several steps."
Similarly, on page 38, line 7: "The PCS receive functions comprise" to "The PCS receive function comprises"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **37** *L* **53** # 46
Hajduczenia, Marek Bright House Networks

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

Unnecessary qualification in "encoded into 65-bit length blocks called physical data blocks"

SuggestedRemedy

Change to "encoded into 65-bit blocks called physical data blocks" - there is just one instance anyway

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **37** *L* **53** # 47
Hajduczenia, Marek Bright House Networks

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

"and then scrambled" - it is not clear what is scrambled. From the context, it seems that it is GMII data, which I do not think is the intent.

SuggestedRemedy

Change "encoded into 65-bit length blocks called physical data blocks (PDB) and then scrambled" to "encoded into 65-bit length blocks (physical data blocks, PDB), which are then scrambled"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **1** # 48
Hajduczenia, Marek Bright House Networks

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

"make the transmit signal independent of GMII data content." - that is not the purpose of encoding and scrambling

SuggestedRemedy

Strike the statement - it is technically incorrect and unnecessary

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **1** # 49
Hajduczenia, Marek Bright House Networks

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

Avoid the use of vague terms: "After that, the information is encoded" - what information do you mean in this statement?

SuggestedRemedy

Change to "After that, the scrambled data is encoded" - the description should be sufficiently clear to allow a reader draw a functional block matching what is included in the draft

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **2** # 50
Hajduczenia, Marek Bright House Networks

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

Compound adjectives are hyphenated

SuggestedRemedy

Change "block oriented encoder" to "block-oriented encoder" - the second instance in the draft is spelled correctly

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **3** # 51
Hajduczenia, Marek Bright House Networks

Comment Type **TR** *Comment Status* **X**

Again, unclear order of events: PAM16 symbols are created using MLCC encoder. Then they are scrambled. And then we have some MLCC codewords introduced out of the blue, resulting in Transmit Blocks, and then some symbols introduced without clarity of what they are again. Very confusing

SuggestedRemedy

Change
"The resultant PAM16 symbols are further scrambled. The MLCC codewords are time division multiplexed with control information using various sub-blocks that compose Transmit Blocks. The symbols are transmitted at a nominal rate of 325 MHz."
to
"The resultant PAM16 symbols are scrambled and then time division multiplexed with control information using various sub-blocks to create Transmit Blocks. The Transmit Blocks are transmitted at a nominal rate of 325 MHz."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **15** # 52
Hajduczenia, Marek Bright House Networks

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

"information for 1000BASE-H" - I assume it is 1000BASE-H PHY?

SuggestedRemedy

Change to "information for the 1000BASE-H PHY."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **22** # 53
Hajduczenia, Marek Bright House Networks

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

Unnecessary brackets: "(The top part of the figure provides detail on the beginning of a Transmit Block and the bottom part of the figure the end of a Transmit Block.)"

SuggestedRemedy

Remove () around the sentence

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **51** # 54
Hajduczenia, Marek Bright House Networks

Comment Type **TR** *Comment Status* **X**

Unclear relationship between syb-blocks and symbols: "Each pilot and header sub-block is composed of 160 symbols." - what are these "symbols" ?

SuggestedRemedy

Define or provide reference where they are defined
Note that on page 39, line 3, they are called "data symbols" ??? - "This gives a total of 221 312 payload data symbols."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **6** # 55
Hajduczenia, Marek Bright House Networks

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

We do have proper symbol for "microsecond"

SuggestedRemedy

Replace the word with proper symbol

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **38** *L* **45** # 56
Hajduczenia, Marek Bright House Networks

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

"The S1 signal within the sub-block shall be generated as follows." - is the intent to make the whole paragraph normative, or just some part of it?

SuggestedRemedy

Clarify what the scope of "shall" statement is - it is not clear where the requirement ends
The same observation for page 40, line 51 and multiple subclauses afterwards, where the scope of the "shall" statement is really not clear

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **38** *L* **49** # 57
Hajduczenia, Marek Bright House Networks

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

Since P2D block is used here for the very first time: "See 114.2.4.3.6 for the definition of the B2D block.", the definition should be located here, not elsewhere

SuggestedRemedy

Move definition of B2D block to 114.2.2.1

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **39** *L* **52** # 58
Hajduczenia, Marek Bright House Networks

Comment Type **TR** *Comment Status* **X**

Substantial over-specification and implementation-specific details that are not needed for the standard

SuggestedRemedy

Change "The MLS generator is made from a linear feedback shift register (LFSR) of 25-bits (see Figure 114–7)." to "The MLS generator shall produce the same result as the shift register implementation shown in Figure 114–7. The shit register shall be initialzied with the value of 0x0172 DB9D for each Transmit Block, where the leftmost digit corresponds to the initial value of register element r[0]."
Update Figure 114-7 to show the output from the MLS generator
Remove text on page 40, lines 23 - 43, including unnecessary Matlab code.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **40** *L* **44** # 59
Hajduczenia, Marek Bright House Networks

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

Unclear purpose of this statement and relationships between individual data units: "As shown at the bottom of Figure 114–4, the pilot S1 has a prefix and postfix. These are 16-symbol long
sequences of zeros. With the S1 being 128 symbols, the total S1 pilot sub-block length is 160 symbols."

SuggestedRemedy

Consider striking this text - no matter how many times I read it and look at Figure 114-4, the relationship between individual data units is not clear to me.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.2** *P* **40** *L* **50** # 60

Hajduczenia, Marek — Bright House Networks

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

Acronym exists: "alternating with Physical Header Subframe sub-blocks"

SuggestedRemedy

Change "alternating with Physical Header Subframe sub-blocks" to "alternating with PHS sub-blocks"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.2** *P* **40** *L* **53** # 61

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

More unnecessary units of data: chunks: "1 664 symbols are divided into 13 chunks each of 128 symbols" - it is becoming at this point to follow all units of data that are being used in tthis draft

SuggestedRemedy

There are several instances of "chunk" in the draft - do we really need to introduce another data unit into the already complex mixture of data units? Consider removing them altogether in three locations - they do not seem to add anything into the description anyway.
It also seems that a "chunk" does not have any specific definition in terms of number of bits. It is used as "GMII chunk", "block chunk" etc. ... very confusing

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.2** *P* **41** *L* **24** # 62

Hajduczenia, Marek — Bright House Networks

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

Unnecessary spacing in hex definitions in Table 114-1

SuggestedRemedy

For example: "0x0 94 52 86" is hard to read, given the number of spaces in the number representation. Consider either adding "-" instead of spaces, or grouping all hex characters together
Global comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.3** *P* **41** *L* **45** # 63

Hajduczenia, Marek — Bright House Networks

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

Unnecessarily wordy description: "by a CRC code of 16 bits (CRC16)"

SuggestedRemedy

Change to "by a 16-bit CRC code (CRC16)"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.3** *P* **41** *L* **51** # 64

Hajduczenia, Marek — Bright House Networks

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

Simpler description

SuggestedRemedy

Change "the PHS0 through PHS13 sub-blocks" to "PHS0 through PHS13" - definitions of PHS are already clear

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.3.1** *P* **42** *L* **13** # 65

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Unnecessary details for CRC16 definition

SuggestedRemedy

Insert new text under 114.2.3.1 as follows: "The Physical Header CRC16 generator shall produce the same result as the shift register implementation shown in Figure 114–10. The shit register shall be initialized with the value of 0x00 for each PHD."
Strike text page 42, lines 15-21

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.3.2** *P* **42** *L* **36** # 66

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Unnecessary details for PH implementtion

SuggestedRemedy

Change text in 114.2.3.2 to read: "The 720 bits from the CRC16 encoder shall be scrambled prior to transmission using the Physical Header binary scrambler. The Physical Header binary scrambler shall produce the same result as the shift register implementation shown in Figure 114–11. The shit register shall be initialized with the value of 0x068D332 for each Transmit Block, where the leftmost digit corresponds to the initial value of register element r[0]."
Update PICS as needed.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **35** # 67

Hajduczenia, Marek — Bright House Networks

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

Incorrect multiplication symbol.

SuggestedRemedy

Is dot and should be x (see symbols in Frame template) - multiple instances

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **38** # 68

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"Only full duplex operation is supported by the 64B/65B encoding." - what does it really mean? An encoder sees data in and sends data out. It is not associated with decoder in anyway - these are independent function

SuggestedRemedy

Stike or explain why this is needed at all

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **35** # 69

Hajduczenia, Marek — Bright House Networks

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

Mbps, Mb/s, Mbit/s --- we typically use Mb/s, this draft uses three different designations for the very same thing

SuggestedRemedy

Unitify the units of transmission in the whole document.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **37** # 70

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

What is the purpose of statement: "This encoding supports end-to-end transmission of Ethernet frames contained in the GMII data stream by preserving delimitation of those frames as well as other GMII control information." - no other existign PHY speaks to that, and it is not clear what the purpose is to begin with - we build a L2/L1 PHY that has an Ethernet MAC, ergo MACs talk Ethernet frames to each other. Nothing less, nothing more

SuggestedRemedy

Strike this statement - it btrings more questions than answers

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **44** *L* **43** # 71

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Unnecessary description of GMII - Clause 35 is very complete as is, and does not require summary here.

SuggestedRemedy

Strike text in lines 43-47 on page 44.
On the first following use of the word "GMII" add the following statement "(see Clause 35)" with proper markup - that is all we really need as far as GMII description is concerned
Remove "TXD <7:0>, TX_EN and TX_ER, compose each GMII transmit path sample." as well ...

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **44** *L* **49** # 72

Hajduczenia, Marek — Bright House Networks

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

A rather peculiar wording: "eight consecutive 10-bit samples of GMII signals"

SuggestedRemedy

Change "eight consecutive 10-bit samples of GMII signals (a GMII chunk) are compressed to eight octets, which are" to a more common wording we use: "eight consecutive GMII transfers (a GMII chunk) are combined and then"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **44** *L* **50** # 73

Hajduczenia, Marek — Bright House Networks

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

Unnecessary enw terminology: GMII chunk

SuggestedRemedy

Replace with "aggregated GMII transfers", which is what you're referring to anyway

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **1** # 74

Hajduczenia, Marek — Bright House Networks

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

Unnecessary wordiness for text in lines 1 - 10. Tables are much simpler to interpret and provide a solid reference point for an implementer

SuggestedRemedy

Please convert this text into Table 114-XXX, showing TX_EN, TX_ER, TXD value combinations and resulting PDB formats. Change the text at the bottom of page 44: "Two different types of PDBs,
PDB.DATA and PDB.CTRL, are generated by the 64B/65B encoding block." to "Two different types of PDBs, PDB.DATA and PDB.CTRL, shall be generated from GMII data per Table 114-XXX."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **30** # 75

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Figure 114-14 is very confusing - a Type bit is shown to have the same size (length???) as 1 octet field shown below.

SuggestedRemedy

Change the size of Type bit field to a single bit in position b0 (this is the first bit beign transmitted). Also, consider showing the PDB.DATA in a horizontal format, fimilar to Figure 97–5 in P802.3bp, where consecutive transfers from GMII and addition of control bits is clearlt demonstrated in a sequential fashion (top of the figure). Such Figure is currently missing in the draft and it is very illustrative, collecting a lot of information in a single location, creating a reference point for any reader.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **12** # 76

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

At this level, speaking of Ethernet frames is confusing - data comes across GMII and all information on what is Ethernet frame and what is not it kind of lost. It is data, and more precisely - GMII transfers

SuggestedRemedy

Change "It consists of 65 bits, namely, 8 data octets from an Ethernet packet (D0 through D7) encoded in TXD<7:0> preceded by the Type bit that is set to 0." to "The PDB.DATA consists of 65 bits, comprising the Type bit (with the value of 0) followed by 8 consecutive GMII data transfers (TXD<7:0>).
Strike: "first, followed by the 8 data octets in the same order as they were received from the GMII (D0 to D7)" - this is repetetive

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **39** # 77

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Description of generating PDB.CTRL is very hard to follow as described right now.

SuggestedRemedy

Change text on page 45, startign from line 39, as follows: "A PDB.CTRL shall be generated as follows:
- a GMII transfer with TX_EN = 1 and TX_ER = 0 is added to PDB.CTRL without any changes;
- a GMII transfer with (>>insert condition here<<) is modified as follows and then added to PDB.CTRL:
  * two control bits (CTRL<7:6>) encoding control data from GMII transfer per Table 114-2 are inserted
  * three offet bits (CTRL<5:3>) encoding ... (>> current text is not clear what this is and what is encodes<<)
  * three length bits (CTR<2:0>) encoding ... (>> current text is not clear what this is and what is encodes<<)
"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **52** # 78

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Text in lines 52-53 (some fields may not exist if their size is zero) does not match text in lines 42-50 (all fields are fixes length)

SuggestedRemedy

Rationalize the text in lines 52-53 with text in lines 42-50 - either fields are variable size (and then text in lines 42-50 is wrong) or fields are of fixed size (and then text in lines 52-53) is wrong

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **46** *L* **32** # 79

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

"Finally, the octets within the PDB.CTRL are reordered as follows:" - the following instructions are very hard to follow without an accompanying figure to demonstrate what octets are moved around and where.
Also, references to chunks and samples are also confusing - this is a digital signal, there are no samples in here !!!1

SuggestedRemedy

Please add a figure showing reordering of octets at this stage of the process.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **46** *L* **40** # 80

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Ambiguous statement with no clear purpose: "Because the minimum length of an Ethernet packet is longer than 7 octets, all the GMII control samples
(GCTRLs) in a chunk of a correct packet must be contiguous. Consequently, all the CBs beyond the first
will also be contiguous within the PDB.CTRL." - not sure what the intention in here really is.

SuggestedRemedy

Text is informative right now. Strike text in lines 39-46 - it does not seem to have any formal requirements right now and it is just confusing in discussing "non-contiguous GMII control samples" without explaining what these are …

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **47** *L* **25** # 81

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

Figure 115-16 has an example of time travel, where GCTRL0 field is transmitted before it arrives in CTRL0 block. To be technically correct, the bottom part of the figure should be moved to the right side, in such a way that at best data arriving from GMII is transmitted immediately, and never before it arrives on GMII.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **20** # 82

Hajduczenia, Marek — Bright House Networks

Comment Type **TR** *Comment Status* **X**

The code itself cannto be really normative, given that it forces the use of a commercial tool (Matlab) in this case. The code can be informative only, but the process of encoding data from GMII should be described in a state diagram instead, following our normal 802.3 methodology.

SuggestedRemedy

If the process is already described in an SD, please make the SD normative and make code informative only

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **21** # 83

Hajduczenia, Marek — Bright House Networks

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

Matlab is a trademarked name:
http://www.mathworks.com/company/aboutus/policies_statements/trademarks.html and should be listed as follows. Furthermore, it is not clear what the actual policy is on forcing implementers of the standard to comply with Matlab code implementation - at best, we should be using a pseudocode with the same result, that can be then implemented in any formal language of choice

SuggestedRemedy

My personal preference would be to remove all Matlab code, or convert it into a pseudocode instead.
If Matlab is to stay, it needs to be trademarked, and staff editor needs to be consulted on the use of trademarked names and scripts

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.3** *P* **69** *L* **27** # 84

Hajduczenia, Marek — Bright House Networks

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

Per editorial conventions, state can be only entered from the top, not from the side (PMARX_TIMING_COARSE > PMARX_TIMING_FINE) or the bottom (>

SuggestedRemedy

Update all SDs in the draft - there are multiple instances of these issues

Proposed Response *Response Status* **O**

Cl **114** *SC* *P* **16** *L* **32** # 85

Hayashi, Takehiro — HAT Lab., Inc.

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

Page: 16 92 101 122 123
Line: 32 23 15, 17, 36, 41, 45 10 36

wrong term "mode power distribution"

SuggestedRemedy

modal power distribution

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **42** # 86

Kolesar, Paul — CommScope

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

The extinction ratio is bounded both at minimum and maximum levels that are within a 2 dB range. This seems rather challenging to meet in manufacturing and over service life. It also is unusual to limit maximum ER.

SuggestedRemedy

Consider eliminating the maximum ER specification.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **50** # 87

Kolesar, Paul — CommScope

Comment Type **TR** *Comment Status* **X**

The current text states:
"Any fiber optic channel including inline connections meets the transfer function specification of each type."
This cannot be a generally true statement, because not every channel that can be deployed may be compliant to the transfer functions. Even if the channel reach is within the definitions of this clause, and the media is compliant to IEC 60793-2-40 sub-category A4a.2, inline connections will change the mode power distribution and therefore can affect the transfer function.

SuggestedRemedy

Change the sentence in question to state a reqirement as follows:
"Any fiber optic channel including inline connections shall meet the transfer function specification of each type."
Also define or provide a reference as to how to test the transfer fnction in the field.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.6** *P* **105** *L* **9** # 88

Kolesar, Paul — CommScope

Comment Type **TR** *Comment Status* **X**

The channel attenuation is sensitive to the test wavelength and to the test launch condition. Yet there is no specification as to how to make this measurement in the field.

SuggestedRemedy

Define or provide a reference for the measurement of channel loss in the field.

Proposed Response *Response Status* **O**

Cl **TOC** *SC* *P* **16** *L* **50** # 89

Pimpinella, Rick — Panduit Corp.

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

114.11.1 through 114.11.5 are missing spaces between the section number and text.

SuggestedRemedy

Add spaces

Proposed Response *Response Status* **O**

Cl **TOC** *SC* *P* **17** *L* **6** # 90

Pimpinella, Rick — Panduit Corp.

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

114.13.1 through 114.11.15 are missing spaces between the section number and text.

SuggestedRemedy

Add spaces

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **1** # 91

Pimpinella, Rick — Panduit Corp.

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

Figure 114.1
PCS is not shown in the figure or list of abbreviations below the figure

SuggestedRemedy

Add ?PCS? to figure and abbreviations.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **39** *L* **12** # 92

Pimpinella, Rick — Panduit Corp.

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

The Payload data path has a typo in the abbreviation for the Gigbit Media Independent Interface. The abbreviation has one too many I?s(i.e., shown as GMIII).

SuggestedRemedy

Change GMIII to GMII

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.1** *P* **35** *L* **30** # 93

Szczepanek, Andre — Inphi

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

starting a final list item with "and" is poor english.
Perhaps this is a typo and the "and" should have been "an" ?

SuggestedRemedy

Either remove "and" or replace it with "an".

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.3** *P* **61** *L* **46** # 94

Szczepanek, Andre — Inphi

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

"PMD is signals"

SuggestedRemedy

"PMD are signals"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **7** # 95

Szczepanek, Andre — Inphi

Comment Type **TR** *Comment Status* **X**

One paragraph is insufficient to define the PCS receive datapath.
20 pages are spent describing evry stage of the transmit datapath.

What is the required response of the receive datapath to invalid receive data, at various stages of the datapath ?.
How are invalid 64b65 coded blocks recognized and signalled to the GMII ?.

SuggestedRemedy

Provide a definition of the PCS receive datapath and it's response to invalid receive datastreams.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **40** # 96

Ghiasi, Ali — Ghiasi Quantum LLC

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

In 802.3bm and bs extensively investigated PAM16 and PAM12 the conclusion was that due to finite return loss not technically feasible

SuggestedRemedy

Either need to show with 14 dB RL PAM16 modulation is technically feasible, improve RL, or change modulation to lower order PAM

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **93** *L* **12** # 97

Ghiasi, Ali — Ghiasi Quantum LLC

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

In 802.3bm and bs extensively investigated PAM16 and PAM12 the conclusion was that due to RIN not technically feasible

SuggestedRemedy

Either need to show with -137 dB RIN PAM16 modulation is technically feasible, improve RIN, or change modulation to lower order PAM

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **5** # 98

McDermott, Thomas — Fujitsu

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

Symbol transmission rate should be in symbols/sec, not Hertz.

SuggestedRemedy

Change 325 MHz to 325 megasymbols per second.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **39** *L* **6** # 99

McDermott, Thomas Fujitsu

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

Symbol transmission rate should be in symbols/sec, not Hertz.

SuggestedRemedy

Change 325 MHz to 325 MSymbol/s

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.2** *P* **93** *L* **43** # 100

McDermott, Thomas Fujitsu

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

Symbol transmission rate should be in symbols/sec, not Hertz.

SuggestedRemedy

Change MHz to MSymbol/s

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.6** *P* **72** *L* **43** # 101

McDermott, Thomas Fujitsu

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

The methods to determine the channel response variation and estimate THP coefficients needed is implementation dependent.

Does this introduce vendor interoperablity issues, or does it impact only the receiver? The setup should be plug and play between different vendors.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.3** *P* **93** *L* **51** # 102

McDermott, Thomas Fujitsu

Comment Type **TR** *Comment Status* **X**

The text specifies that the receiver shall meet the error rate using the methodology specified in 114.6.4. That paragraph specifies terminology and characterization of transmit parameters. 114.6.4 does not specify a test methodology.

The link parameters provide 0.0 dB of link margin in some cases. There is no description that assures that a worst case link is used to test the receiver.

SuggestedRemedy

New text is needed describing the test steps that are to be used to verify that the receiver meets the BER requirements over the worst case set of link parameters. This should include description of the test setup to create a worst case link (attenuation, transfer response, etc.). If such a link setup cannot be validated as worst case, the test procedure should indicate the receive margin available at nominal test limits.

Proposed Response *Response Status* **O**

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

Anslow, Pete Ciena

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

In the headers, "IEEE 802.3bv Gigabit ..." should be "IEEE P802.3bv Gigabit ..."

SuggestedRemedy

Change "IEEE 802.3bv Gigabit ..." to "IEEE P802.3bv Gigabit ..." in all headers (both odd and even pages) in all files.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **27** # 104

Anslow, Pete Ciena

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

"Draft D2.0 is prepared for TF review." should be "Draft D2.0 is prepared for Working Group ballot.

SuggestedRemedy

Change to "Draft D2.1 is prepared for Working Group ballot recirculation."

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **9** *L* **16** # 105

Anslow, Pete Ciena

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

Introduction text does not match the latest version in the 802.3 template.

SuggestedRemedy

At the end of the second paragraph add: "A full duplex MAC protocol was added in 1997. "
In the fourth paragraph, change "is comprised of" to "is composed of"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.3** *P* **19** *L* **16** # 106

Anslow, Pete Ciena

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

P802.3bp D3.1 (ahead of P802.3bv in the queue) has removed the edition and date from the CISPR 25 reference (and the text inserted by P802.3bw is "IEC CISPR 25 Edition 3.0 2008-03:"

SuggestedRemedy

Remove this reference from the draft

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **40** # 107

Anslow, Pete Ciena

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

The definition for "Bose, Ray-Chaudhuri, Hocquenghem (BCH)" is not an adequate definition for this class of FEC codes. To be an adequate definition, it would need to be much more detailed and this is not needed here.
Adding BCH to the abbreviations list ids enough.

SuggestedRemedy

Remove the definition for "Bose, Ray-Chaudhuri, Hocquenghem (BCH)"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **43** # 108

Anslow, Pete Ciena

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

The terms CRC, FEC, and PAM are already very heavily used in 802.3-2015.
"CRC" occurs 163 times, "FEC" 2162 times, and "PAM" 341 times.
All three are already in the abbreviations list.
Creating new definitions such as this may well have unintended consequences.

SuggestedRemedy

Remove the definitions for "CRC", "FEC", and "PAM"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **23** # 109

Anslow, Pete Ciena

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

The editing instructions for new definitions in 1.4 should state where to place them (as per the 802.3 template).

SuggestedRemedy

For each definition, add an editing instruction (definitions proposed to be removed omitted) as:
Insert 1.4.22a after 1.4.22 "1000BASE-CX" as follows:
Text of 1.4.22a 1000BASE-H
Insert 1.4.26a to 1.4.26c after 1.4.26 "1000BASE-PX" as follows:
Text of 1.4.22a 1000BASE-RHA
Text of 1.4.22a 1000BASE-RHB
Text of 1.4.22a 1000BASE-RHC
Insert 1.4.277b after 1.4.277a "MultiGBASE-T" (as inserted by IEEE Std 802.3bq-201x) as follows:
Text of 1.4.277b multi-level coset code (MLCC)
Insert 1.4.326a to 1.4.326c after 1.4.326 "Physical Coding Sublayer (PCS)" as follows:
Text of 1.4.22a physical data block (PDB)
Text of 1.4.22a physical header data (PHD)
Text of 1.4.22a physical header subframe (PHS)

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **20** *L* **17** # 110

Anslow, Pete Ciena

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

"Clause 55" is a cross-reference in the base standard, so should be in Forest green

SuggestedRemedy

Apply the character tag "External" to "Clause 55"

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **24** # 111

Anslow, Pete Ciena

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

"FEC" is already in the abbreviations list

SuggestedRemedy

Remove "FEC" from 1.5

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **30** # 112

Anslow, Pete Ciena

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

POF is expanded twice with different spellings of fiber.
IEEE only uses the spelling "fibre" when quoting the title of a document.

SuggestedRemedy

Remove the second expansion

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **23** *L* **19** # 113

Anslow, Pete Ciena

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

The order of sub-rows in 1.7.5:0 is from 0 0 0 0 0 0 at the bottom to 1 1 1 1 1 1 at the top.
This is opposite to the order shown in the .3bv draft

SuggestedRemedy

Change the order to:
1 1 0 1 1 0 = 1000BASE-RHC PMA/PMD
1 1 0 1 0 1 = 1000BASE-RHB PMA/PMD
1 1 0 1 0 0 = 1000BASE-RHA PMA/PMD

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48** *P* **23** *L* **36** # 114

Anslow, Pete Ciena

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

45.2.3.48 is already present in the base standard (TimeSync PCS capability (Register 3.1800))

SuggestedRemedy

Re-number 45.2.3.48 to 45.2.3.54 to be 45.2.3.47a to 45.2.3.47g

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.7.1** *P* **76** *L* **34** # 115

Anslow, Pete Ciena

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

In "BCH Frame Error Rate (BFER) is less than 8.8·10-11":
"Frame Error Rate" should not be capitalised (IEEE does not capitalise the expanded versions of abbreviations)
"Error Rate" should be "error ratio" as this is not errors per unit time
The symbol used for multiply between 8 and 1 should not be a dot (see IEEE style manual 15.3)

SuggestedRemedy

Change to "BCH frame error ratio (BFER) is less than 8.8x10-11"
where "x" is Ctrl-q 0 in Framemaker
Also fix the "." on:
Page 44, line 35
Page 53, line 11
Page 54, line 4
Page 62, line 9, line 14
Page 95, line 2, line 48 (2 instances), line 49 (2 instances), line 50 (4 instances)
Page 122, line 31
and any others I missed.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.8** *P* **97** *L* **19** # 116

Anslow, Pete Ciena

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

This says "with the minimum sampling rate of 3.25 Gs/s (10 times the transmit symbol rate of 325 Ms/s)."
However, if the captured block is not with this sampling rate, the script does not work correctly.
Changing the row in the script: "[HD2 HD3 RPD] = txdist(xcap, 10);" to:
"% set the over sampling ratio (min 10)
osr = 10;
[HD2 HD3 RPD] = txdist(xcap,osr);"

would make it easier for users to understand how to change this value.

SuggestedRemedy

Change the row in the script:
"[HD2 HD3 RPD] = txdist(xcap, 10);"
to:
" % set the over sampling ratio (min 10)
osr = 10;
[HD2 HD3 RPD] = txdist(xcap,osr);"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.8** *P* **97** *L* **19** # 117

Anslow, Pete Ciena

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

Numbers followed by units should be separated by a non-breaking space (Ctrl space) so that it does not split across two lines.

SuggestedRemedy

Put a non-breaking space between 3.25 and Gs/s
Check for any other occurrences in the draft.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.8** *P* **97** *L* **3** # 118

Anslow, Pete — Ciena

Comment Type **TR** *Comment Status* **X**

The multi-vendor interoperability of this PYH is critically dependent on the ability of the specification to define a suitable quality for the worst case transmitter. It is very difficult without a physical implementation to assess whether the transmitter distortion measurement defined here does this adequately.
I can't find any presentations on the P802.3bv web pages that show any correlation between the performance of transmitters in actual links and the transmitter distortion measurement defined here.
While there is no rule that requires this to be done, it has been seen as a requirement in other projects before new specification methods have been accepted. See for instance, http://www.ieee802.org/3/bm/public/nov14/petrilla_01b_1114_optx.pdf#page=8 which has plots of receiver sensitivity vs the newly proposed TDEC transmitter quality metric.

SuggestedRemedy

Please provide some measurement results showing the correlation between link performance and the transmitter distortion measurements that show that HD2 of -21 dB, HD3 of -27 dB and RPD of -40 dB are attainable using transmitters that work in conformant links and that transmitters with HD2 of worse than -21 dB or HD3 of worse than -27 dB or RPD of worse than -40 dB do not work in conformant links.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.11.4** *P* *L* **30** # 119

YUKI, HAYATO — AutoNetworks Technol

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

IEC number should be added, because CISPR 25 does not describe the RF immunity.
(Ex.) . . . according to IEC 11452/CISPR 25 test method for radio frequency (RF) immunity and RF emissions.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **39** *L* **46** # 120

Dudek, Mike — QLogic

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

There isn't a pseudo-random sequence with 128 bits (they are all odd numbers), and the one generated by this 25 bit shift register is much longer (2^25-1).

SuggestedRemedy

Change "a pseudo-random sequence of length" to "part of a pseudo-random sequence with length". On line 48 change "pseudo-random sequence" to "sequence which is part of a pseudo-random sequence"

Make similar changes on page 40 line 52 for pilot S2.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.2.4.2** *P* **91** *L* **27** # 121

Dudek, Mike — QLogic

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

The hysterisis here defined implies that the optical power has to be measured perfectly. This is unlikely.

SuggestedRemedy

Provide an adequate guard band between the values in Table 114-5 and the values in the text such that there is enough "uncertain range" to allow for reasonablely expected measurement accuracy. eg. replace "When signal detect is not inhibited (sd_inh = FALSE) receive optical power at the MDI needs to be higher than a threshold of -29 dBm to indicate signal_detect = OK (PMDDET_OK state). Once in this state, receive optical power at the MDI has to decrease below -35 dBm to cause transition to thePMDDET_FAIL state." with When signal detect is not inhibited (sd_inh = FALSE) receive optical power at the MDI needs to be higher than a threshold of -31 dBm to indicate signal_detect = OK (PMDDET_OK state). Once in this state, receive optical power at the MDI has to decrease below -33 dBm to cause transition to thePMDDET_FAIL state." This allows the receive power monitor to have +/-1dB accuracy and still leaves 2dB of hysterisis.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **42** # 122

Dudek, Mike QLogic

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

Extinction ratio measurements are difficult to make accurately at high values. A range between 11 and 13dB is likely to be difficult to achieve, and overshoot and droop may affect this measurement.

SuggestedRemedy

Consider whether such a tight range is required.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.4** *P* **95** *L* **53** # 123

Dudek, Mike QLogic

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

Requiring the meaurement of P0 and P1 to be a single time with +/-1ns inaccuracy in time could lead to inconsistent results if there is any droop, overshoot, or ringing.

SuggestedRemedy

Consider changing to "P1 is measured as the average power measured over a 2ns window centered 15ns after the rising-edge."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.7** *P* **96** *L* **46** # 124

Dudek, Mike QLogic

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

"along the transmit signal" is not precise enough. It needs to be over some time interval relative to the crossing.

SuggestedRemedy

Maybe say "are measured along the transmit signal from 15ns after the rising or falling edges to 15ns before the next rising or falling edge.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.3** *P* **94** *L* **49** # 125

Dudek, Mike QLogic

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

The Tx is only required to be tolerant of a 14dB optical return loss but there is no specification for the receiver optical return loss.

SuggestedRemedy

Add a receiver return loss specification to table 114-8. Suggested value 14dB.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.3** *P* **93** *L* **53** # 126

Dudek, Mike QLogic

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

The requirements for the Rx might be mis-understood to not require the receiver to meet the requirements with a worst case transmitter with all parameters simultaneously at the worst condition with a fiber with the the worst dispersion. Also the sentence says that all the different receivers (RHA, RHB and RHC) have to operate with the 3 different type cables which may not be what is intended. Also it says that an RHC receiver has to give the required error rate with -18.5dB AOP when faced with the dispersion given by a Type III cable.

SuggestedRemedy

Clarify what is intend.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48** *P* **23** *L* **53** # 127

Marris, Arthur Cadence Design Syste

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

I thought in Clause 45 the policy is not to renumber suclauses but use letter suffeces

SuggestedRemedy

Change 45.2.3.48 to 45.2.3.47a, 45.2.3.49 to 45.2.3.47b, etc

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **27** # 128
Grow, Robert RMG Consulting

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

Somehow in handing drafts back and forth, the edits to this paragraph got lost

SuggestedRemedy

For D2.1, change TF review to Working Group recirculation ballot

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **7** *L* **15** # 129
Grow, Robert RMG Consulting

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

Now that the WG ballot group is known, we can add the list

SuggestedRemedy

Add list of WG members forming the P802.3bv ballot group.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **10** *L* **18** # 130
Grow, Robert RMG Consulting

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

Because the WG Chair has determined approval order for various amendments, we should update this list earlier than the promised Sponsor ballot.

SuggestedRemedy

Update editor's note. In text: 802.3bw is Amendment 1, 802.3by is Amendment 2, 802.3bq is Amendment 3, 802.3bp is Amendment 4. 802.3bn and 802.3br are in Sponsor ballot and may get amendment numbers assigned via SB comments from the WG Chair. 802.3bu is ahead of us (in WG R1), and 802.3bz in parallel with us. Make unassigned documents <tbd> for the amendment number. While updating order, also check document descriptions.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.91** *P* **20** *L* **15** # 131
Grow, Robert RMG Consulting

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

The definition needs to be changed to include our 64B/65B.

SuggestedRemedy

With change marking: A set of block oriented encodings where 64-bit blocks are prepended with a single bit to indicate whether the block contains only data or a mix of data (possibly none) and control information. (See IEEE Std 802.3, Clause 55, Clause 114.)

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **21** # 132
Grow, Robert RMG Consulting

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

Abbreviations is an alphanumeric list.

SuggestedRemedy

Change alphabetical to alphanumeric

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **23** *L* **10** # 133
Grow, Robert RMG Consulting

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

Comments on earlier drafts have recommended that all reserved code points in this bit range be individuallly labeled as reserved rather than our practice of specifying blocks with x in bit positions to reduce the number of lines used for reserved code points.

SuggestedRemedy

Update the editorial instruction as events dictate.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **21** *L* **23** # 134
Grow, Robert RMG Consulting

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

Wrong insert point. List organization seems to be grouped by PCS type but not consistently alphabetical PCS order (T following X), so could be either before 1000BASE-T or as first 1000BASE enumeration.

SuggestedRemedy

Insert the following enumerations after 100BASE-T1 (as modified by P802.3bw) in APPROPRIATE SYNTAX:

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 135
Grow, Robert RMG Consulting

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

A review of 802.3 words and compound words and other corrections of inconsistent spelling/hypenation implemented in the latest revision indicate we can improve consistent usage.

SuggestedRemedy

inline should be in-line
set-up should be setup
Energy Efficient Ethernet should be Energy-Efficient Ethernet
multi-mode should be multimode
steady state should be steady-state
low pass should be low-pass

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **24** # 136
Lusted, Kent Intel

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

The abbreviation "FEC" already exists in the base standard 802.3-2015

SuggestedRemedy

remove entry

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* *L* # 137
Lusted, Kent Intel

Comment Type **TR** *Comment Status* **X**

Figure 114-1 has an empty box between the GMII reference and the PMA box of the PHY.

SuggestedRemedy

remove box or put something in it

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.1** *P* **35** *L* **18** # 138
Lusted, Kent Intel

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

Some of the listed features are subjective and un-quantifiable. specifically, items d-h.

SuggestedRemedy

remove items d-h from the list.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.13.15** *P* **126** *L* **11** # 139
Lusted, Kent Intel

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

typo in E8 for "hazzard"

SuggestedRemedy

change to "hazard"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3** *P* **50** *L* **21** # 140
Booth, Bradley Microsoft

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

Figure 114-19 is a bit difficult to read.

SuggestedRemedy

Make the figure a bit larger by shifting the level 2 path down to create greater separation between level 1 and level 2.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.2** *P* **52** *L* **17** # 141
Booth, Bradley Microsoft

Comment Type **E** *Comment Status* **X**
Missing a colon at the end of the sentence.

SuggestedRemedy
Change to read "... as follows:"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.3** *P* **53** *L* **31** # 142
Booth, Bradley Microsoft

Comment Type **E** *Comment Status* **X**
Missing a colon at the end of the sentence.

SuggestedRemedy
Change to read "... to each component is as follows:"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.7** *P* **55** *L* **49** # 143
Booth, Bradley Microsoft

Comment Type **E** *Comment Status* **X**
Missing colons on page 55 line 49, page 56 line 2 and page 56 line 15.

SuggestedRemedy
Change to read "... as:"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.9** *P* **57** *L* **40** # 144
Booth, Bradley Microsoft

Comment Type **E** *Comment Status* **X**
Missing colon at end of sentence.

SuggestedRemedy
Change to read "... is given by:"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.3.1** *P* **61** *L* **52** # 145
Booth, Bradley Microsoft

Comment Type **E** *Comment Status* **X**
Period at end of sentence should be a colon.

SuggestedRemedy
Fix.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.3** *P* **36** *L* **14** # 146
Booth, Bradley Microsoft

Comment Type **ER** *Comment Status* **X**
Figure 114-1 is missing PCS in the figure and in the abbreviation list.

SuggestedRemedy
Insert PCS in the figure and the abbreviation list.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.2** *P* **68** *L* **3** # 147
Booth, Bradley Microsoft

Comment Type **ER** *Comment Status* **X**
The state machine in Figure 114-34 doesn't follow typical 802.3 conventions.

SuggestedRemedy
Move the "pma_reset = ON..." arrow from the side of the box to the top.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.3** *P* **69** *L* **1** # 148

Booth, Bradley — Microsoft

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

State machine diagram doesn't follow typical 802.3 conventions.

SuggestedRemedy

Move PMARX_DISABLE to be at the top of the state diagram followed by PMARX_TIMING_COARSE and PMARX_TIMING_FINE. Have the open arrow into PMARX_DISABLE at the top.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.8** *P* **78** *L* **30** # 149

Booth, Bradley — Microsoft

Comment Type **TR** *Comment Status* **X**

State diagram shouldn't have a loop back to itself. The state should only be exited if the exit conditions have been met.

SuggestedRemedy

Remove the loop back arrows on PMAMON_SYNCH and PMAMON_UPDATE.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **20** # 150

Hidaka, Yasuo — Fujitsu Laboratories of

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

In Figure 114-1, the abbreviation is missing before "= PHYSICAL CODING SUBLAYER".

SuggestedRemedy

Prepend "PCS" in front of "= PHYSICAL CODING SUBLAYER".

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **14** # 151

Hidaka, Yasuo — Fujitsu Laboratories of

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

In Figure 114-1, there is a blank sub-layer above PMA.
A blank is not appropriate.
It seems PCS.

SuggestedRemedy

Label the blank sub-layer as "PCS".
Or, identify it as an appropriate sub-layer(s).

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 152

Schicketanz, Dieter — Reutlingen University

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

Whyle the PHY part looks OK, the Channel part needs reworking because it contains missunderstandings and probably errors

SuggestedRemedy

First rename channel to link like in other IEEE standards. If channel is kept to compare to cabling standards define it like done there.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 153

Schicketanz, Dieter — Reutlingen University

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

Have you thought to reduce the 50m to allow for a second connector? Eg: 30m + 2 inline connections?

SuggestedRemedy

50 m with one inline connector is nearly useless for the home market. Either you have no conector to connect eqiupmment afterwards or you precable a home (bigger market) but then you need to inline connections. No one likes unused cables hanging out of the wall.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **43** # 154

Schicketanz, Dieter — Reutlingen University

Comment Type **TR** *Comment Status* **X**

Channel Type III is for automotive

SuggestedRemedy

I doubt that the fiber type specified in line 28 can be used in that envinronment. Be specific in the reference.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **26** # 155

Schicketanz, Dieter — Reutlingen University

Comment Type **TR** *Comment Status* **X**

The channels are specifically defined without connector, but in line 50 it says it meets with connections and in line 53 it says number of connections is not normative.

SuggestedRemedy

How will a user built a working system with this statements? This clause needs considerable rework to become useful . Remedy: In the channel definition include the connections (in dB) and delete lines 50 to 54.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **26** # 156

Schicketanz, Dieter — Reutlingen University

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

Measurement references missing for the channel

SuggestedRemedy

Are there external references like in clause 114.6.4.11? Please add.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6** *P* *L* # 157

Stassar, Peter — Huawei Technologies

Comment Type **TR** *Comment Status* **X**

Responding to rejection of comment #37 to draft D1.4, repeating "I haven't seen any presentation from the Task Force meetings, with some form of evidence, that a set of devices, when meeting these requirements, a will operate satisfactorily in the field on a standard version of POF, and that, when they fail these requirements, they do not operate in the field."
I remain therefore unconvinced that this Optical specification is sufficiently complete and therefore have the opinion that the Task Force has not completed its work. It should be emphasized that home applications, really will need plug-and-play devices.

SuggestedRemedy

Provide evidence that the specification is adequate for usage in home applications

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.8** *P* *L* # 158

Stassar, Peter — Huawei Technologies

Comment Type **TR** *Comment Status* **X**

It's totally unclear whether the script contained in this clause is appropriate to distinguish good from bad transmitters in a way that transmitters, when meeting these requirements, will operate satisfactorily in the field, and that, when they fail these requirements, they do not meet performance requirements in the field.

SuggestedRemedy

Provide evidence that the transmitter specification/script is adequate

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* *L* # 159

Stassar, Peter Huawei Technologies

Comment Type **TR** *Comment Status* **X**

The justification for the rejection of comment #37 to draft D1.4, where it was stated "there are providers in the market that produce very low cost and very poor quality POF that in spite of being A4a.2 compliant it does not fit the 802.3bv freq response and attenuation specs. In order to filling this gap, 802.3bv specifies bounds on the response and attenuation." implies that additional requirements beyond a certain length of a specific type of POF seem necessary. Clause 114.6.5 contains requirements for transfer characteristics which seem to indicate more specific requirements than compliance to A4a.2. It needs to be made clear roughly how many of the "standard" POF fibers do not comply to these additional requirements in order to investigate in how far "broad market potential" is satisfied.

SuggestedRemedy

Make clear how in applications in the home users can use standard POF

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **33** *L* **10** # 160

Pérez-Aranda, Rubén KDPOF

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

Tables 78-1, 78-2 and 78-4 distinguish among 1000BASE-RHA, RHB and RHC PHY types, specifying same EEE parameters for the three types. According to 114, the three types share the same specifications of PCS, PMA and PMD and differences among them are related to AOP at TP2 and TP3 and fiber optic channel type for which are addressed. LPI timing does not depend on that.

SuggestedRemedy

Use only one row for specification in three tables. PHY type should be 1000BASE-RHx

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **33** *L* **47** # 161

Pérez-Aranda, Rubén KDPOF

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

Refinement of Tw_sys_tx, Tw_phy and Tphy_shrink_tx parameters is necesary. The minimum wake time is computed as: the time needed to transmit a payload data sub-block, plus a pilot or physical header sub-block, plus the maximum PDB offset, plus at least one idle byte insertion before the first Ethernet packet data byte (this is because GMII specification), plus GMII TX jitter (+/- GMII clock cycles equivalent ot worst case 32 bit times) = 24.91631 us.
The previous result has to be compensated with maximum transmit symbol clock deviation: x (1 + 250e-6). This gives a result of 24.9226 us.
Accuracy of 10's of ns is not needed for these LPI timing parameters, so accuracy can be relaxed.

SuggestedRemedy

Replace 24.88 with 25.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **2** # 162

Pérez-Aranda, Rubén KDPOF

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

In Figure 114-1 PCS definition is not provided.

SuggestedRemedy

Add PCS = PHYSICAL CODING SUBLAYER on top of PMA defintion.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.6** *P* **37** *L* **36** # 163

Pérez-Aranda, Rubén KDPOF

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

Figure 114-3.
PMD service primitive PMD_RXDETECT.indication has not been included in the list of primitives (right of figure).

SuggestedRemedy

Add line between PMD and PMA (arrow with direction from PMD to PMA) with PMD_RXDETECT.indication text

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.52.1** *P* **30** *L* **41** # 164

Pérez-Aranda, Rubén KDPOF

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

Link margin in clauses 45 registers and 114 PHD fields is defined with precision that exceeds practical implementations and it is not needed for correct operation of the link. For example, PHD.RX.LINKMARGIN is defined to be fixed-point formatted (14,6), which means 5 bits + 1 of sign for the integer part and 8 bits precision for the fractional part. This means that we can report a log2(link_margin) with an error of 0.0020 between -32 and 32. This is translated to a link margin in dB with 0.0060 dB error (0.012 dB resolution) and a range from -96.3 and 96.3 dB. It may mean that the implementation has to guarantee this resolution in the measurement, which is not realistic!.

SuggestedRemedy

Modify link margin format in PHD field and MDIO registers to be 5 fractional bits + 2 bits integer part + 1 bit for the sign: format (8,3) with +/- 0.05 dB error (0.1 dB precision) for link margin and a range of approx -12 to 12 dB.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **23** *L* **19** # 165

Pérez-Aranda, Rubén KDPOF

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

Code defintions for PMA/PMD type selection are provided, but not any kind of ability advertisement.
The type of SI-POF for which the PHY layer of Clause 114 is defined is able to operate at entire visible spectrum, with much smaller insertion loss for green/blue than for red light. This, together with the fast advance of GaN based LEDs (same of lighting LEDs with increasing market today), allows to foresee that different light sources might be used with the same PCS and PMA defined in Clause 114 in the near future, being necessary a new PMD similar to RHx but with different parameter values according to those new light sources (e.g. 1000BASE-GHx for green?).
Some way of scalability in the advertisement and configuration should be provided at the MDIO registers level.
Same approach of BASE-T1 seems to be necessary for scalabilty and to be consistent.

SuggestedRemedy

- Replace 1000BASE-RHA, RHB and RHC type codes with only one: 110100 = BASE-H PMA/PMD. Add foot note as: "If BASE-H PMA/PMD is selected, register 1.2400 is used to differentiate which BASE-H PMA/PMD is selected".
- New entry in regiter 1.11 is necessary to advertise the ability. I propose using the bit 1.11.12 (need coordination with other projects), with name "BASE-H exteded abilities", and description "1 = PMA/PMD has BASE-H exteded abilities listed in register 1.19. 0 = PMA/PMD does not have BASE-H extended abilities", "RO".
- New PMA/PMD register 1.19 (need coordination with other projects), with name "BASE-H PMA/PMD extended ability", the content of this register being:
  1.19.0: name "1000BASE-RHA ability", description "1 = PMA/PMD is able to perform 1000BASE-RHA. 0 = PMA/PMD is not able to perform 1000BASE-RHA", "RO",
  1.19.1: name "1000BASE-RHB ability", description "1 = PMA/PMD is able to perform 1000BASE-RHB. 0 = PMA/PMD is not able to perform 1000BASE-RHB", "RO",
  1.19.2: name "1000BASE-RHC ability", description "1 = PMA/PMD is able to perform 1000BASE-RHC. 0 = PMA/PMD is not able to perform 1000BASE-RHC", "RO",
  1.19.15:4: name "Reserved", description, "Value always 0", "RO".
- New PMA/PMD register 1.2400 (suggested address that needs coordination with other projects), name "BASE-H PMA/PMD control register", content being
  1.2400.3:0, name "Type selection", description "0 0 0 0 = 1000BASE-RHA, 0 0 0 1 = 1000BASE-RHB, 0 0 1 0 = 1000BASE-RHC, 0 0 1 1 = Reserved, 0 1 x x = Reserved, 1 x x x = Reserved", "R/W",
  1.2400.15:4, name "Reserved", description "Value always 0", "RO"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.3** *P* **29** *L* **2** # 166

Pérez-Aranda, Rubén KDPOF

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

Some STA implementations may expect to read the link status of the PHY in 1.1.2 or 3.1.2. The bit 3.519.13 should be a copy of 1.1.2 and 3.1.2. Beause the bit 3.519.13 is latching-low behaviour, reading any of the copies reset the latch.

SuggestedRemedy

Add text per comment.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.8** *P* **29** *L* **26** # 167

Pérez-Aranda, Rubén KDPOF

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

Some STA implementations may expect to read LPI status from register 3.1.
The bits Tx Assert LPI received (3.519.8), RX Assert LPI generated (3.519.7), Tx LPI indication (3.519.6) and Rx PLI indication (3.519.5) should be a copy of the bits 3.1.11:8, respectively.

SuggestedRemedy

Add text in the description for each bit per comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.10** *P* **113** *L* **14** # 168

Pérez-Aranda, Rubén KDPOF

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

In Table 114-14, add a mapping of signal_detect variable to bit 1.10.0. signal_detect = OK is mapped to 1.10.0 = 1, and signal_detect = FAIL to 1.10.0 = 0.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.5** *P* **25** *L* **16** # 169

Pérez-Aranda, Rubén KDPOF

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

The register field TXO_TYPE (3.500.11:0) does not really contain any type identification of the OAM message. As stated in lines 17 and 18, these bits are not changed or interpreted by the local or remote PHY and together with the TXO_DATAx bits form the OAM message payload. There is no reason to assign the name of TYPE to this field.

SuggestedRemedy

For sake of clarity, replace TYPE with DATA0, in 1000BASE-H OAM transmit and receive registers. Modify consistently the name of the of PHD field in 114.3.4 and descriptions in 114.8.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.6** *P* **25** *L* **21** # 170

Pérez-Aranda, Rubén KDPOF

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

OAM channel is specified in 114.8 as a pipe for message exchange between two STAs attached to the partners of a GEPOF link.
OAM channel is a requirement from the automotive OEMs. Therefore, it is likely that other standardization bodies want to specify some format of the OAM messages in the definition of e.g. protocols of management between ECUs in a car.
Said that, I think leaving the OAM message totally unspecified is wrong and 802.3bv should specify a format that might be used as a framework to define different message formats / protocols in an interoperable maner. OUI/CID can be used to create a context dependent identier (CDI), in a similar way the vendor specific MMDs are identified in Clause 45.

SuggestedRemedy

In page 25, line 23, add description as:
The bit TXO_DATA0[11] shall be used to indicate if OAM message is used in an engineered network or not.
TXO_DATA0[11] = 1 indicates engineered network. In that case, the content TXO_DATA0[10:0] and TXO_DATA1 to 8 is vendor specific.
TXO_DATA0[11] = 0 indicates that TXO_DATA0[10:0] and TXO_DATA1[15:0] is a 27-bit value, which may constitute a unique identifier for a particular type of vendor-specific protocol. The identifier shall be composed of the of the Organizationally Unique Identifier (OUI) or Company ID (CID) assigned to the protocol manufacturer by the IEEE, plus a 3-bit protocol number. The format of the unique protocol identifier shall be TXO_DATA0[10:0] = OUI[23:13], DATA1[15:3] = OUI[12:0], DATA1[2:0] = protocol number. The content of TXO_DATA2 to TXO_DATA8 is vendor specific.

This change does not affect to state diagrams specified in 114.8, because PHY does not care about the content of the message payload.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **40** *L* **30** # 171

Remein, Duane Huawei Technologies

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

MATLAB is a registered trademark and should be so noted

SuggestedRemedy

Add trandmark symbol and footnote indicating it is a trademark per Mathworks requirements

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **23** *L* **11** # 172

Remein, Duane Huawei Technologies

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

Should list known/expected amandments rather than stating "other approved amendments"

SuggestedRemedy

Enumber list of known project changing this table.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **40** *L* **31** # 173

Laubach, Mark Broadcom

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

First use of MATLAB must properly indicated it is a trademark. Insert "T" or appropriate symbol and a footnote if needed.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **40** *L* **34** # 174

Laubach, Mark Broadcom

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

A pseudo-code paragraph style has been adopted by 802.3, but is not yet in the template; i.e. P802.3bn is using it. Obtain the template update and apply to all pseudo-code examplesuses in this draft. Same for other places: e.g., Page 48, Line 22, etc.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4** *P* **44** *L* **20** # 175

Laubach, Mark Broadcom

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

Figure 114–13. Make the retangular boxes larger to prevent character overlap with the box lines. Similar overlaps in figures 114-19, 114-21

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **17** # 176

Laubach, Mark Broadcom

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

Numerous places in this figure where the horizontal or vertical lines overlap with the cooresponding vertical or horizontal lines respectively. Need to resize/reposition to make the edge of the lines not overlap. Similar overlaps in Figure 114-20.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **47** *L* **23** # 177

Laubach, Mark Broadcom

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

Top of text too near or overlapping with horiztonal line in Figure 114–16. Need to increase separation between the of the objects to prevent text/line overlap.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **20** # 178

Laubach, Mark Broadcom

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

Putting the "shall" as well as "formal" here implies a requirement that implementers are required to purchase MATLAB in order to check consistency to compliant with the PICS. I don't think this purchasing is required in order to implement a compliant 64B/65B line encoder. Some other projects that use 64B/65B encoding did not require this; e.g.55.3.2.2.3, 74.7.4.3, 101.3.2.2, etc.

SuggestedRemedy

Reword or re-implement to remove the requirement to purchase MATLAB.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.2.2** *P* **53** *L* **26** # 179

Laubach, Mark Broadcom

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

Arrow runs to inside of box, rather than up to the edge of the box. Same with Figure 114–23.

SuggestedRemedy

Fix alignment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.2.2** *P* **53** *L* **36** # 180

Laubach, Mark Broadcom

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

The "a" in ceil(a) is a variable and should be italicized. Note there appear to be numerous use of variables that are not italicized. These need to be all fixed.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.1** *P* **65** *L* **5** # 181

Laubach, Mark — Broadcom

Comment Type **TR** *Comment Status* **X**

link_control has the same global characteristic as pma_reset, but is missing the statement "All state diagrams respond to the open-ended…"

SuggestedRemedy

Add a similar "All state diagrams… " statement.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.2** *P* **68** *L* **3** # 182

Laubach, Mark — Broadcom

Comment Type **TR** *Comment Status* **X**

Figure 114-34, state entry for PMATX_DISABLE_TX is "pma_reset = ON + link_control ≠ ENABLE", but state exit is only "link_control = ENABLE". This is not sufficiently specific and ambiguous as pma_reset = ON retains this state regardless of value of link_control. The exit criteria for SDs in this draft must include an exit condition that is the AND of any variables listed in the OR entry transition. In this case change to "pma_reset = OFF * link_control = ENABLE". The necessary value of your "global" variables must also be listed as part of the exit criteria if they are listed as OR'd entry criteria.

SuggestedRemedy

As per comment, and do for all state diagrams (numerous) that have this exit ambiguity.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **93** *L* **23** # 183

Laubach, Mark — Broadcom

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

Table 114–7, there is a double vertical line between columns 1st "EAF" and 2nd "Angle()". Make it as single vertical line. There is a thick vertical line between columns 2nd "EAF" and 3rd "Angle()". Make both a double line for consistency.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.5** *P* **96** *L* **12** # 184

Laubach, Mark — Broadcom

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

In the matlab code, there is a multiplication sign. Here and one other place, there is no mult sign. Suggest adding the 'x' mult symbol for consistency

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **1** # 185

Zimmerman, George — CME Consulting

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

Draft is for initial working group, text says for task force review

SuggestedRemedy

change "TF review" to "Working Group ballot recirculation" (assuming that this change is forward looking)

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.3** *P* **19** *L* **15** # 186

Zimmerman, George — CME Consulting

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

Editing instruction improperly references IEEE Std 802.3bw, leaves status of 802.3bp conditional, 802.3bp already has reference in d3p1.

SuggestedRemedy

Delete editing instruction and additional reference

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **23** # 187

Zimmerman, George CME Consulting

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

Amendment needs to specify where these references go and new reference numbers. 'Alphanumerical' isn't sufficient direction, especially since definitions are in various places

SuggestedRemedy

Change editing instruction to insert the following new definition after 1000BASE-CX, and number 1000BASE-H as 1.4.22a. Similarly, editor to look up appropriate places and numbering for other insertions, write individual (or if consecutive, group) editing instructions and number accordingly

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **40** # 188

Zimmerman, George CME Consulting

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

It is not necessary to define general and well known technical terms, which have been used elsewhere in IEEE standards, unless a special distinction is being made: BCH, (codes - if included, the definition should be BCH codes, the "codes" is left out - you aren't defining their names), CRC, FEC, MLCC, and PAM

SuggestedRemedy

Delete definitions for BCH, CRC, FEC, MLCC, and PAM

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **14** # 189

Zimmerman, George CME Consulting

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

PCS is missing from figure sublayers and definition is missing "PCS"

SuggestedRemedy

Add PCS sublayer into figure, and "PCS" next to "= PHYSICAL CODING SUBLAYER"

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **39** *L* **11** # 190

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

Figure 114-5 mixes sublayers, doesn't show separate PCS, includes PMA within what appears to be PCS.

SuggestedRemedy

Adjust figure to show clear definition of sublayers. Possible outcomes - put a dashed box around encoding/scrambler/PAM16/Symbol Scrambler blocks, and somehow deal with the fact that there is first the PMA and then the multiplexer (is this part of the PMA - if so, extend the block) Alternatively, remove the "PMA" block and market the entire data path "PCS/PMA".

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **39** *L* **45** # 191

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

Mixed requirement and informative text makes it nearly impossible to tell what is the requirement and what is descriptive informative language. "shall be generated as follows:" really only works when there is a clearly enumerated list of step by step requirements. Generation of a sequence would ordinarily be a small set of equations. The requirement can't be HOW the thing is generated, but WHAT the sequence must be.

SuggestedRemedy

Rewrite the requirement to clearly state the requirement. Sorry, its such a mess I can't do it for you in a comment, but suggest that you start with something like "the S1 sequence shall be a sequence of 128 pseudo-random binary numbers, resulting from a linear feedback shift register with generator polynomial 1+x22+x25." You don't need to write a tutorial on how to make LFSRs, and nomenclature should be consistent with the many existing LFSRs in 802.3. See clauses 40, 55, or many others for examples on how to do this compactly. Further, delete the MATLAB, or show why it is necessary. It leaves the reader searching for something nonobvious.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **45** *L* **44** # 192

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

Numerous problems with this subclause. It seems to describe a 10B to 65B transcoder using tutorial text, in an unclear fashion (is 'chunk' a technical definition now?), and with no requirements (shall statements). Follow model for definiing a transcoder common in IEEE Std 802.3 (see e.g., 802.3bj-2014 for good examples of transcoder definition) The encoding is simply 65B, not 64B/65B. 802.3 uses other encodings defined as 64B/65B, and, if this is the same, just reference it, but if it is different, call it something else. The only requirement is in the next section, and even that is unclear, covered in another comment.

SuggestedRemedy

Fix name to describe whether this is 64B/65B encoding as in other clauses, or something new. Rewrite tutorial text as a requirement ("The 10-bit GMII words shall be transcoded to 65B blocks constructed as follows:"), then clarify the transcoder as an enumerated process, similar to other 802.3 clauses.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **20** # 193

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

unclear requirement - "shall be consistent" - consistency is a vague and general term, I suspect you mean "shall produce the same sequence as". If the previous comment on 114.2.4.1.2 is accepted, this section becomes informative and can be deleted or moved to an informative annex.

SuggestedRemedy

If the comment on 114.2.4.1.1 is accepted, delete subclause 114.2.4.1.2. Otherwise rewrite requirement to be "shall produce the same sequence as the following MATLAB code", and demote the preceding subclause to be after the code and marked informative.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.1** *P* **51** *L* **7** # 194

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

There are several problems with this subclause. First and foremost, the only requirement is that the bits are split into 2 levels. Actually it should say two groups. The rest is descriptive, but not a requirement. Other 802.3 clauses do similar mappings, but none are written some confusing and obscure. The resulting MLCC encoding and constellation is similar to that used in Clause 55 (with a different FEC). It should be possible to describe the encoding requirements, one by one in direct equation form.

SuggestedRemedy

Identify and clarify the requirements for the bit ordering and encoding.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.2** *P* **52** *L* **12** # 195

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

Multiple problems. First, the requirement: the BCH encoder shall generate information bits? This is the only requirement, but it is not clear where it starts and ends. There is the language 'can be formed' These clearly can't be the same usage of information bits in the previous subclause, because those were INPUT to the BCH encoder. I suspect you are referring to parity bits, or maybe the whole codeword. Describing block FEC generation is done throughout 802.3, please look at and learn from the existing models.

SuggestedRemedy

Identify and clarify the requirements. Follow 802.3 style for binary block FEC encodings, in terms of equations, or a list of steps, with named variables along the way for clarity if needed. No need for a tutorial.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.3** *P* **53** *L* **45** # 196

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

This comment speaks to multiple problems with the gray mapper. The overall description of the Gray mapping is unnecessarily complex, containing extra levels of hierarchy and indirection. Where a simple table would do, combinatorial logic is used. there appear to be unnecessary elements in teh diagram (multiplication and addition are well defined - why do you need a 'binary-to-decimal converter'. Like other clauses, the only requirement is "as follows". With the requirement written this way, it doesn't specify the output, but rather the method.

SuggestedRemedy

Rewrite as requirements which specify the input-output relation rather than following a method. Collapse the description to one level of hierarchy, defining the mapping as an input output relation or compact series of equations. Delete the binary-to-decimal converter or explain why it is necessary. Fully specify the gray mapping used (there can be more than one). Define the grouping of bits rather than an arbitrary rate, abstract k-bit serial-to-parallel converter.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.7** *P* **55** *L* **39** # 197

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

The only requirement is that the bits be processed by a lattice transformation. They could be thrown away after that. Also, requirements should specify the I/O relation, not the method.

SuggestedRemedy

Rewrite to specify I/O relation desired.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.9** *P* **57** *L* **30** # 198

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

The requirement is again an "as follows", not clear where it begins and ends. Here, though, there actually appears to almost be a reasonable substitute for how to specify - see remedy.

SuggestedRemedy

Change "shall be further transformed … as follows" to "shall be further transformed… according to equation 114-15." on line 45 (after the equation), spell out what all the variables in equation 114-15 are, rather than leaving it to descriptive text below.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.2** *P* **68** *L* **1** # 199

Zimmerman, George CME Consulting

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

Figure 114-34 - style is for entry and exit to states to be at the top and bottom, respectively, not the side

SuggestedRemedy

Redraw with pma_reset entry to PMATX_DISABLE_TX on the top

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.3** *P* **69** *L* **1** # 200

Zimmerman, George CME Consulting

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

Figure 114-35 - style is for entry and exit to states to be at the top and bottom, respectively, not the side. This comment applies to ALL state diagrams except for 114-38 and 114-39

SuggestedRemedy

Redraw state diagram with entries on top and exits on the bottom of states

Proposed Response *Response Status* **O**

Cl **114** *SC* **114** *P* **35** *L* **9** # 201

Zimmerman, George CME Consulting

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

General - most of the requirements in Clause 114 are written poorly - see previous comments. They are 'the xyz shall be constructed as follows." followed by paragraphs of descriptive or tutorial text describing a method rather than an output.

SuggestedRemedy

Editor to go through all of Clause 114,specifying all requirements as input/output or measurable relations. Tutorial text to be deleted or incorporated to the specification as appropriate.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.8.1** *P* **79** *L* **42** # 202

Zimmerman, George CME Consulting

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

There is no need to define fixed and floating point, much less with matlab in this standard, same comment applies to 114.3.8.2

SuggestedRemedy

Define the format where the format is used, succinctly, as in other clauses.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3** *P* **91** *L* **51** # 203

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

The specifications aren't referred to as RHA, RHB and RHC - those are the PHY types you have specified. Are you saying now that actually it is a single PCS, single PMA and a choice of 3 PMDs? If so, then write it that way.

SuggestedRemedy

Clarify. If it is the PMDs, include a table showing the uses of each of the 3 PMDs and making the relationship of the 3 PHY types clear.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3** *P* **92** *L* **1** # 204

Zimmerman, George CME Consulting

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

The description of the applications for the PHY types is burred this deep into the document. It would make much more sense up front.

SuggestedRemedy

Move the description of the application sfor the 3 PHY types to the overview section.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **36** # 205

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

According to Table 114-6, the 3 PHY types only differ by their minimum AOP level. If true, simplify Table 114-6 to just the MDI characteristic, and add a table showing just the how RHA, RHB, and RHC differ in AOP.

SuggestedRemedy

See comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.3** *P* **93** *L* **39** # 206

Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

According to Table 114-8 there are only 2 discernable Receivers - Type I/2 and Type 3, which differ by 1.5dB sensitivity.

SuggestedRemedy

Either - justify how the 3 receivers differ, OR, collapse the table to 2 types.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **30** # 207
Zimmerman, George CME Consulting

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

Several problems in this section - first, the link segment specification shouldn't be part of the PMD section - break it out as its own 114.x level.

SuggestedRemedy

See comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **30** # 208
Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

Is 'type I, type II, type III' a receiver designation or is it a link segment designation

SuggestedRemedy

Clarify. Use a different designation for receiver classes than for link segment classes

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **30** # 209
Zimmerman, George CME Consulting

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

Everywhere else in 802.3 where there are generic cabling standards we don't use the term channel. No need to do it here - it is a link segment.

SuggestedRemedy

Use standard terminology, or explain the difference you mean by channel.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **30** # 210
Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

After reading through this, I can't find anything mapping the transmit PMDs and receiver specs to the link segment types. I thought this would be where it would be.

SuggestedRemedy

Include a table showing how the various transmitter types, receiver types and link segment types relate, including, which are permissible combinations and which are not.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.9** *P* **112** *L* **27** # 211
Zimmerman, George CME Consulting

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

Usually loopback modes are included in the discussion of the part of the PHY that is being looped back. Break this up and put it in the appropriate part, and show on the block diagrams where the loopbacks occur.

SuggestedRemedy

See comment

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.10** *P* **113** *L* **26** # 212
Zimmerman, George CME Consulting

Comment Type **TR** *Comment Status* **X**

This sentence reads like the registers are always present, whereas earlier it stated MDIO was optional. If MDIO is not present, what capability needs to be provided by some other means.

SuggestedRemedy

See comment - clarify

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **43** # 213

Ran, Adee INTEL

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

CRC, FEC, and PAM are already defined as abbreviations in 802.3 subclause 1.5. Adding them again as definitions does not provide more clarity and might collide with the existing entries in the standards dictionary.

SuggestedRemedy

Delete the definitions of CRC, FEC, and PAM.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **48** # 214

Ran, Adee INTEL

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

Definition of MLCC is specific to clause 114, but does not refer to it.

SuggestedRemedy

Add (IEEE Std 802.3, Clause 114).

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **25** *L* **16** # 215

Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

Comment is about standards language. The style manual says
"...the use of the word must is deprecated and shall not be used when stating mandatory requirements; must is used only to describe unavoidable situations"
and
"The word may is used to indicate a course of action permissible within the limits of the standard (may
equals is permitted to)"
And also deprecates usage of the word "will" and says "will is only used in statements of fact".

The word "must" appears in clause 114 five times, and does not refer to unavoidable situations - these seem to be normative requirements.

The word "will" appears in many places in this draft not as a statement of fact.

The word "may" is used in several places in a way that does not seem to be an option - sometimes they indicate a possible situation or a recommendation. Examples are 114.1.3, 114.3.2, 114.3.7.3, 114.6.1.5.1, 144.6.4.8.

In addition, in 114.6.4.10 there's a "may not" that does not meet the style manual's directions, and is ambiguous in English (could be interpreted as either optional or prohibitive).

A significant effort was done in 802.3bx to clean the standard with respect to these words. It would be helpful for the next revision if this amendment adheres with the manual.

SuggestedRemedy

Across the draft, change "must" and "will" to "shall" or rephrase as necessary.

Also, check usage of the word "may" (in the listed locations and elsewhere) and rephrase (e.g. using "can", "should", "might not") if necessary.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49** *P* **25** *L* **42** # 216

Ran, Adee INTEL

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

"No new message" is confusing - since when? As explained in 45.2.3.49.1, RXO_VAL is set to zero after a message is fully read. This should be clarified in this table.

SuggestedRemedy

Change "No new message" to "No new message arrived since last message was read".

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.50.2** *P* **27** *L* **21** # 217

Ran, Adee INTEL

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

The first sentence of this subclause is confusing. What is the "selected portion of the bidirectional link"? it seems like an attempt to bundle together things that are very different from each other.

GMII and PMD loopback modes do not need a link with a "neighbor" (undefined term; should be "partner"), in fact there may be no fiber or partner at all. In line loopback the phrase "a MAC transmitting to itself" is irrelevant since the local MAC does not transmit to itself, and the link partner may be just a pattern generator without a MAC.

SuggestedRemedy

Change the first sentence to something less confusing. Suggested text: "These bits are used to select one of the loopback modes defined in 114.9".

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **30** *L* **44** # 218

Ran, Adee INTEL

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

114.3.8 describes the encoding and decoding of fixed point numbers, and has nothing to do with floating point (floating point is defined in IEEE Std 754). The fact that Matlab is used for the description does not make it floating point.

SuggestedRemedy

Change "The formal description for converting fixed point numbers to floating point and vice versa is in 114.3.8" to "Encoding and decoding of fixed-point is defined in 114.3.8".

Apply similar changes for other registers that use fixed-point encoding.

Change subclause headings and content in 114.3.8 to eliminate the term "floating point" and define the process as encoding and decoding of fixed-point numbers.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **35** *L* **50** # 219

Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

The specifications refer to GMII so it is not optional. It may not be physically instantiated or available but it is part of the architecture (as seen in Figure 114-1).

SuggestedRemedy

Change "using the optional GMII. An implementation may use the GMII as a logical interface" to "using GMII as a logical interface. Physical instantiation of the GMII is optional".

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1** *P* **35** *L* **16** # 220

Ran, Adee INTEL

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

It is customary in recent clauses to include a reference table for associated clauses. See Table 72-1 as an example. This could be a good place to state optionality of EEE and GMII.

SuggestedRemedy

Add a table "Physical Layer clauses associated with 1000BASE-H" with content based on Table 72-1.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **19** *L* **28** # 221
Ran, Adee INTEL

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

What does 1000BASE-H stand for? PCS and PMA without PMDs? It seems that this is a term for a family of Physical Layer Devices (compare to 1.4.51 100GBASE-R).
Why do the PMD types include "R" (such as 1000BASE-RHA) when the family term is 1000BASE-H? This is somewhat confusing.

SuggestedRemedy

Change 1000BASE-H to be defined as a family of Physical Layer devices.

Consider removing the "R" in the PMD types.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **2** # 222
Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

The text refers to PAM16 symbols, then MLCC codewords, then PAM16 codewords. That seems incorrect or is confusing.

SuggestedRemedy

Correct or clarify as necessary

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **4** # 223
Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

Unit for symbol rate is Baud, not Hertz.

Also, later the units Msymbols/s appear.

SuggestedRemedy

Change "325 MHz" to "325 MBd" everywhere. Change "Msymbols/s" similarly.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **19** # 224
Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

Are all these symbols PAM16?

SuggestedRemedy

Assumign they are, either use "PAM16 symbols" consistently or make it clear earlier that "symbols" always means PAM16.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **21** # 225
Ran, Adee INTEL

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

"header data sub-blocks"
Doesn't PHS stand for "physical header subframe"? Or is it "pilot and header subblock" which appears below figure 114-4?

SuggestedRemedy

Clarify (prior to figure 114-4) what PHS stands for in the context of this figure. If there are multiple terms with this acronym then consider renaming them to avoid confusion.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **39** *L* **2** # 226
Ran, Adee INTEL

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

Definition of CW_i appears after the figure in which it appears.

A previous sentence includes "(CW)" but CW never appears without an index.

SuggestedRemedy

Move the figure so that it appears after this paragraph so all necessary terms will have been defined.

Delete "(CW)" in P38 L53.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **39** *L* **36** # 227
Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

Curly quotes should not be used in Matlab code.

This code seems do be redundant since the functionality is clearly defined by Figure 114-7. The code is confusing since it is not clear that the seed argument should be a string. It would be easier to provide the 128-bit result as a 16-character hexadecimal value.

SuggestedRemedy

Change curly quotes to straight quotes.

Consider deleting the code and providing the resulting hexadecimal value.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.1** *P* **39** *L* **28** # 228
Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

"first symbol" - and then "rest of the S1 pilot bits" ... should that be "first bit"?

Also "(128 symbols)" in line 31. And later "16-symbol long sequences of zeros". This is all really confusing on first read.

I realize that there is a 1:1 correspondence but PAM2 and bits are not the same. It would be clearer to define the LFSR output as a bit sequence and then convert it to PAM2 as a whole.

SuggestedRemedy

Change "symbol" to "bit" and "symbols" to "bits". Add a clear conversion equation from bits to PAM2 symbols (or better, to PAM16 symbols)..

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **48** *L* **4** # 229
Ran, Adee INTEL

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

In equations, variables should be in italic font and functions should be in Roman. Variables (like j) should also be italicized in the body text. (see Style Manual, 15.3 Presentation of equations).

SuggestedRemedy

In all equations change functions mod, floor to Roman. Change j to italic in the text.

Review other equations and expressions in this draft for possible similar changes.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.1** *P* **48** *L* **10** # 230
Ran, Adee INTEL

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

The modulo function is used previously in the standard (e.g. clause 55), it is well-known and does not seem to need a definition.

SuggestedRemedy

Delete equation 114-3.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.5** *P* **20** *L* **24** # 231
Ran, Adee INTEL

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

The abbreviation FEC is already defined in the base document.

SuggestedRemedy

Delete the inserted abbreviation.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **31** # 232

Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

In Matlab "!" (the exclamation mark) is not a negation operator - this character is undefined and causes a syntax error. Tilde should be used instead, also in the "not equal" operator.

SuggestedRemedy

Change all "!" to tilde signs in all Matlab code in this draft - logical negation and inequality operators.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.3.7** *P* **56** *L* **6** # 233

Ran, Adee INTEL

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

"rem" seems identical to "mod" which was used in equation 114-2.

SuggestedRemedy

Consider using "mod" consistently.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.8** *P* **77** *L* **53** # 234

Ran, Adee INTEL

Comment Type **TR** *Comment Status* **X**

"(m-n) bits are used to represent the decimal part"?

This seems to be the fractional part.

SuggestedRemedy

change "decimal" to "fractional".

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4.x** *P* **20** *L* **11** # 235

Trowbridge, Steve Alcatel-Lucent

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

Lots of precediing projects have used PAM modulation, and none have felt compelled to define "pulse amplitude modulation" as a term. PAM is defined as an acronym.

SuggestedRemedy

Delete the definition of pulse amplitude modulation

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.53.2.1.8** *P* **29** *L* **26** # 236

Trowbridge, Steve Alcatel-Lucent

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

Not clear why a whole lot of new EEE control and status need to be defined and why the existing bits used for other PHY types (e.g., PCS status register 1) couldn't have been reused for the corresponding functions

SuggestedRemedy

Use the same PCS status and control register bits as are used for other PHY types rather than allocating new bits. In particular, PCS status 1 register, EEE control and capability register, EEE advertisement register

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **34** # 237

Thomson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **X**

Having 3 “channel” types is addressing 3 instances of BMP. This is beyond what the group justified and was chartered to do.

SuggestedRemedy

Reduce to a single “channel” type.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **29** # 238

Thomson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **X**

The text “The fiber optic cabling model (channel) defined here is the same as a simplex fiber optic link segment” is incorrect. It is a duplex link segment.

SuggestedRemedy

Fix

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.7** *P* **105** *L* **16** # 239

Thomson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **X**

There is no MDI connector specified.

SuggestedRemedy

A default MDI connector should be specified for those cases where a connector is used. It should be polarized to enforce the cross-over requirement in the cabling.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.5** *P* **101** *L* **29** # 240

Thomson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **X**

The use of the term “channel” is not consistent with cabling standards. The cabling standards “channel” is NOT an equipment to equipment connection as it does not include equipment connectors.

SuggestedRemedy

Use the 802.3 term that was invented for this use, i.e. “link segment”.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **28** # 241

Thomson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **X**

Having 3 PMD types is addressing 3 instances of BMP. This divides the market and is beyond what the group justified and was chartered to do.

SuggestedRemedy

Reduce to a single PMD type.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **27** # 242

Carlson, Steve HSD/Marvell

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

The statement "Draft D2.0 is prepared for TF review" is not correct.

SuggestedRemedy

Change to "Draft D2.1 is prepared for Working Group recirculation ballot" in D2.1.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **10** *L* **1** # 243

Carlson, Steve HSD/Marvell

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

The description of the 802.3 standard suite is not up-to-date. Please use the template available at: http://www.ieee802.org/3/tools/framemaker/P802_3xx_D0p1_version_2p5.zip. Update the list of amendments per comment i-55 in http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.3** *P* **19** *L* **15** # 244
Carlson, Steve HSD/Marvell

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

The reference to CISPR was added in P802.3bp D3.1 and is not necessary to include in P802.3bv.

SuggestedRemedy

Strike lines 15-19

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **21** # 245
Carlson, Steve HSD/Marvell

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

Unnumbered definitions - all new definitions under 1.4 are numbered as 1.4.x. Please provide specific locations where the new term is expected to be added, as is done in other amendments.

SuggestedRemedy

Please add the missing numbers to individual new definitions

Proposed Response *Response Status* **O**

Cl **30** *SC* **30** *P* **21** *L* **1** # 246
Carlson, Steve HSD/Marvell

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

All objects being modified in Clause 30 are also modified by other projects. Please align editorial instructions to the ones used in P802.3bp D3.1, including the list of projects changing these specific objects

SuggestedRemedy

This helps the reader, as well as the staff editors in combining individual amendments in the base standard.
See also comment i-162 in
http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **21** *L* **40** # 247
Carlson, Steve HSD/Marvell

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

When referencing subclauses, we do not use "Clause" and "subclause"

SuggestedRemedy

Strike two instances of "Clause" in line 40. Scrub the rest of the draft and remove other superfluous instances of the word "Clause"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3** *P* **23** *L* **28** # 248
Carlson, Steve HSD/Marvell

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

"Replace 3.420 through 3.1799 row with the following rows" is not clear. Where are the strike-through and underline changes to the reserved space being modified?

SuggestedRemedy

Please show all changes to Table 45-119 reserved bit space in the standard underline / cross-through format. Update the editorial note to use the word "Change" instead of "Replace."

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48** *P* **24** *L* **3** # 249
Carlson, Steve HSD/Marvell

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

P802.3bp has added 45.2.3.51 through 45.2.3.57.

SuggestedRemedy

Update the subclause numbers and table numbers accordingly, using 802.3bp numbers as the end of the range. Add P802.3bv registers after this range.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.1** *P* **24** *L* **47** # 250

Carlson, Steve HSD/Marvell

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

As part of a general style clean-up, please implement comment #70 from http://www.ieee802.org/3/bp/comments/8023bp_D20_approved.pdf.

SuggestedRemedy

Change all instances of "This bit" to "Bit xxxx" with a precise and unambiguous cite of the register number to avoid any possible confusion as to which bit is meant.
Also, where the word "it" is used at the beginning of the sentence in Clause 45, please also mention the bit reference explicitly - again, this avoids concerns with interpretation as to what bit is meant

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48.5** *P* **25** *L* **16** # 251

Carlson, Steve HSD/Marvell

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

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

SuggestedRemedy

Convert all instances of "will" in the draft (excluding FM) to Simple Present Tense

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.51.1** *P* **28** *L* **44** # 252

Carlson, Steve HSD/Marvell

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

"This bit indicates the value of … " -in 802.3 the word "reflects" is used e.g. "This bit reflects the value of …" meaning that the value of the specified variable is recorded in the register

SuggestedRemedy

Change in 45.2.3.51.1 and 45.2.3.51.2, 45.2.3.51.4, and 45.2.3.51.5, 45.2.3.51.6, and 45.2.3.51.7

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.53.1** *P* **31** *L* **14** # 253

Carlson, Steve HSD/Marvell

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

Loop infinite---see infinite loop: "This register has the same fixed-point format as register 3.520.13:0 (see 45.2.3.52.1)"

SuggestedRemedy

Change to "See 114.3.8 for fixed-point format definition"
Change "The formal description for converting fixed point numbers to floating point and vice versa is in 114.3.8." to "See 114.3.8 for fixed-point format definition" in 45.2.3.52.1

Proposed Response *Response Status* **O**

Cl **45** *SC* **45** *P* **32** *L* **1** # 254

Carlson, Steve HSD/Marvell

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

Clause is missing PICS

SuggestedRemedy

Insert PICS

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **33** *L* **5** # 255

Carlson, Steve HSD/Marvell

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

"Insert new rows below into Table 78-1 after 1000BASE-KX:" does not account for other amendments (802.3bw, 802.3bp, etc.) that are changing the same table

SuggestedRemedy

Update the editorial instructions accounting for other amendments in (802.3bw, 802.3bp, etc.)
Also applies to the editorial note in 78.2 and 78-5

Proposed Response *Response Status* **O**

Cl **114** *SC* **114** *P* **35** *L* **6** # 256
Carlson, Steve HSD/Marvell

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

Missing serial comma in "1000BASE-RHA, 1000BASE-RHB and 1000BASE-RHC"

SuggestedRemedy

Change to "1000BASE-RHA, 1000BASE-RHB, and 1000BASE-RHC" Search the draft for missing serial commas and fix.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.2** *P* **35** *L* **38** # 257
Carlson, Steve HSD/Marvell

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

"Mathematical expressions in this clause include symbols and delimiters as specified in ISO 80000-2." Which specific expressions or symbols require reference to ISO? The base standard does not require references to ISO.

SuggestedRemedy

Consider removing this reference, unless it is explicitly clear which expressions, symbols, and delimiters require this reference. If this ISO standard is actually needed, it will need to be included in references.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.48** *P* **23** *L* **36** # 258
Carlson, Steve HSD/Marvell

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

45.2.3.48 exists in the base standard (Clause 90 TimeSync PCS capability (Register 3.1800))

SuggestedRemedy

Re-number 45.2.3.48 to 45.2.3.54 to be 45.2.3.47a to 45.2.3.47g

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **19** *L* **43** # 259
Carlson, Steve HSD/Marvell

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

The terms CRC, FEC, and PAM are used in many places in 802.3-2015.All three are already in the abbreviations list and creating unnecessary definitions is confusing and potentially harmful.

SuggestedRemedy

Remove the definitions for "CRC", "FEC", and "PAM"

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 260
Carlson, Steve HSD/Marvell

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

Recent amendments have been trying to clean up inconsistent hyphenation to match the current revision. See Maytum comments to P802.3bp D3.0. Suggest searching the draft for these---here's what I found.

SuggestedRemedy

inline change to in-line
set-up change to setup
Energy Efficient Ethernet change to Energy-Efficient Ethernet
multi-mode change to multimode
steady state change to steady-state
low pass change to low-pass

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.1** *P* **38** *L* **6** # 261
Carlson, Steve HSD/Marvell

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

Please use the standard symbol for "microsecond."

SuggestedRemedy

Replace the word "microsecond" with the symbol.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **35** # 262
Carlson, Steve HSD/Marvell

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

The multiplication symbol used here is incorrect.

SuggestedRemedy

There are multiple instances of the use of a "dot" which should be "x" (see symbols in Frame template). Please fix.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1** *P* **44** *L* **35** # 263
Carlson, Steve HSD/Marvell

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

The draft uses Mbps, Mb/s, Mbit/s, apparently interchangeably. 802.3 practice is to use Mb/s.

SuggestedRemedy

Please scrub the draft and use only Mb/s

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.2.2** *P* **40** *L* **53** # 264
Carlson, Steve HSD/Marvell

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

The term "chunk" is used in several places in the draft, but is not defined. Is it really necessary to define yet another term, and a rather informal one at that, for some amount of data?

SuggestedRemedy

If "chunk" has a specific definition, please provide it. Otherwise, please use "word", "octet" or "bits" per 802.3 practice.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.49.2** *P* **25** *L* **21** # 265
Carlson, Steve HSD/Marvell

Comment Type **TR** *Comment Status* **X**

"This bit contains the toggle identifier of the received message. It toggles with every new received message." What is a "toggle identifier?"

SuggestedRemedy

A search of Clause 45 in 802.3-2015 has no reference to this term. Please define what it is, or describe in other terms.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.1** *P* **35** *L* **19** # 266
Carlson, Steve HSD/Marvell

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

There is no other PHY clause that has a "features" list. This seems more like marketing material, some of it directed at the system-level.

SuggestedRemedy

Strike 114.1.1

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.1.4** *P* **36** *L* **14** # 267
Carlson, Steve HSD/Marvell

Comment Type **TR** *Comment Status* **X**

The PCS in Figure 114-1 seems to be missing. There is a box, but it's empty.

SuggestedRemedy

Assuming that this PHY has a PCS, please add it to the figure.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2.4.1.2** *P* **48** *L* **20** # 268

Carlson, Steve HSD/Marvell

Comment Type **TR** *Comment Status* **X**

Matlab code is used here to provide normative behavior. I do not believe this is allowed in 802.3. The code itself cannot be normative, as it forces the use of a commercial tool (Matlab) in this case. The code can be informative only. Matlab code is typically used in test procedures to allow for a uniform test setup. The process of encoding data from the GMII should be described in a state diagram instead, following our normal 802.3 methodology.

SuggestedRemedy

If the process is already described in an state diagram, please make the state diagram normative and make code informative only

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.3.5.2** *P* **67** *L* **1** # 269

Carlson, Steve HSD/Marvell

Comment Type **TR** *Comment Status* **X**

The state machine has an entry on the side (pma_reset = ON +link_control ≠ ENABLE). It should be on the top per editorial convention. This problem is also present in a number of other state machines.

SuggestedRemedy

Please follow the editorial guidelines for state machines and scrub the draft for these problems.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3** *P* **92** *L* **2** # 270

Goetzfried, Volker Broadcom Limited

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

Abbreviation SI-POF undefined

SuggestedRemedy

Define SI-POF in clause 1.5 (Abbreviations):
SI-POF Step Index Plastic Optical Fiber

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3** *P* **92** *L* **12** # 271

Goetzfried, Volker Broadcom Limited

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

The Kojiri criteria is not explained or defined.

SuggestedRemedy

Add to clause 1.4:
1.4.x Kojiri Criteria: A rule for the mechanical design of receptacles and mated plugs with the usage of fibers to be scoop-proof.

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **40** # 272

Goetzfried, Volker Broadcom Limited

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

Optical return loss tolerance is not defined appropriately.

SuggestedRemedy

Add a note below table 114-6
"This value is derived from Fresnel reflections appearing at the interface from air to the fiber core (PMMA). Additional reflections may occur due to the usage of a pictail in a mated plug."

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.4.8** *P* **97** *L* **9** # 273

Goetzfried, Volker Broadcom Limited

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

Residual peak distortion (RPD) is not defined or explained. An explanation or short definition would help to clarify the purpose of this parameter in the PMD section.

SuggestedRemedy

Add a definition or explanation of RPD

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.2** *P* **93** *L* **41** # 274

Goetzfried, Volker — Broadcom Limited

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

To be consistent with the existing IEEE 802.3 standard the term 'Transmitter Clock Frequency' should be replaced by 'Transmit Clock Frequency'

SuggestedRemedy

Replace Transmitter by Transmit

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.2** *P* **93** *L* **43** # 275

Goetzfried, Volker — Broadcom Limited

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

The clock frequency tolerance of +/- 0.025% (250 ppm) is higher than the usually specified 100 ppm. This might create a conflict in terms of interoperability with other PHY's.

SuggestedRemedy

Give an additional explanation for the higher tolerance

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **92** *L* **42** # 276

Goetzfried, Volker — Broadcom Limited

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

Transmitter is over-defined with ER having a maximum value. To guarantee enough linearity of the Tx it is sufficient to define HD2 and HD3 derived from Volterra series (shown in 114.6.4.8). Even "clipping" can be captured with those parameters.

SuggestedRemedy

Remove maximum value of ER

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.6.3.1** *P* **93** *L* **13** # 277

Goetzfried, Volker — Broadcom Limited

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

A relative intensity noise (RIN) maximum of -137 dB/Hz cannot be fulfilled. This value should be increased with a tradeoff to sensitivity.

SuggestedRemedy

Increase maximum value of RIN to -134 dB/Hz

Proposed Response *Response Status* **O**

Cl **114** *SC* **114.2** *P* **38** *L* **5** # 278

Ewen, John — GlobalFoundries

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

Incorrect units?

SuggestedRemedy

The symbols are transmitted at a nominal rate of 325 Mbaud.

Proposed Response *Response Status* **O**