

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

Cl **FM** SC **FM** P10 L1 # 243  
 Carlson, Steve HSD/Marvell

Comment Type **ER** Comment Status **A** FM

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](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](http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf)

**SuggestedRemedy**

Per comment

Response Response Status **U**

ACCEPT IN PRINCIPLE.

See response to comment #3.

Cl **1** SC **1.4** P19 L21 # 245  
 Carlson, Steve HSD/Marvell

Comment Type **ER** Comment Status **A** Definitions

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

Response Response Status **U**

ACCEPT IN PRINCIPLE.

See response to comment #5.

Cl **1** SC **1.4** P19 L28 # 241  
 Thomson, Geoff GraCaSI S.A.

Comment Type **TR** Comment Status **R** BMP

Having 3 PMD types is addressing 3 instances of Broad Market Potential. This divides the market and is beyond what the group justified and was chartered to do.

**SuggestedRemedy**

Reduce to a single PMD type.

Response Response Status **U**

REJECT.

The attempt to define one port type with multiple link/channel types was rejected by 802.3 optics experts. They demanded multiple port types. The three major markets described in P802.3 project documents do not have the same requirements, and those project documents make it clear that different reaches were required for the requirements of the different markets.

The three port types (RHA, RHB, and RHC) use 1000BASE-H PCS and PMA sublayers and only differ on an small set of specifications of the PMD sublayer. Significant reuse of components between the three port types is expected and enhances Broad Market Potential.

Cl **30** SC **30** P21 L1 # 10  
 Hajduczenia, Marek Bright House Networks

Comment Type **ER** Comment Status **R** Ed Inst

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](http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf)

Response Response Status **U**

REJECT.

Recent refinements of 802.3 style for writing editing instructions only cite the amendments necessary to unambiguously define the Insert point. Change instructions only cite amendments that are the basis for the text below the instruction.

The editing instructions are consistent with the new guidelines.

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

Cl 30 SC 30 P21 L1 # 246  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status R Ed Inst

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](http://www.ieee802.org/3/bp/comments/8023bp_D30_approved.pdf)

Response Response Status U

REJECT.

See response to comment #10

Cl 45 SC 45 P32 L1 # 254  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A Big Ticket PICS 45

Clause is missing PICS

## SuggestedRemedy

Insert PICS

Response Response Status U

ACCEPT IN PRINCIPLE.

Same response as #36.

Cl 45 SC 45.2.1.6 P23 L8 # 14  
 Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A Ed Inst

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

Response Response Status U

ACCEPT IN PRINCIPLE.

Conditionally add Editor's note that reserved rows will be addressed when the order of amendment approval is known as an editorial action.

If another amendment makes rows individually defined as Reserved as has been commented on their draft, this will become a simple change instruction.

Cl 45 SC 45.2.3 P23 L28 # 248  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A Ed Inst

"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."

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #15.

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 45 SC 45.2.3.48 P23 L36 # 258  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A EZ

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

Response Response Status U

ACCEPT.

CI 45 SC 45.2.3.48 P24 L3 # 249  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status R EZ

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.

Response Response Status U

REJECT.

P802.3bv's defined registers 3.500 through 3.522 sequentially belong between 45.2.3.47 and 45.3.48. If current new numbering conventions hold, the register descriptions will be 45.2.3.47a through 45.2.3.47g.

See #114 for acceptance of the new lettering convention for inserts.

This comment conflicts with commenter's #258.

CI 45 SC 45.2.3.48 P24 L3 # 16  
 Hajduczenia, Marek Bright House Networks

Comment Type ER Comment Status R EZ

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

Response Response Status U

REJECT.

P802.3bv's defined registers 3.500 through 3.522 sequentially belong between 45.2.3.47 and 45.3.48. If current new numbering conventions hold, the register descriptions will be 45.2.3.47a through 45.2.3.47g.

See #114 for acceptance of the new lettering convention for inserts.

CI 45 SC 45.2.3.48.1 P24 L47 # 250  
 Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A EZ

As part of a general style clean-up, please implement comment #70 from [http://www.ieee802.org/3/bp/comments/8023bp\\_D20\\_approved.pdf](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

Response Response Status U

ACCEPT.

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 45 SC 45.2.3.48.3 P25 L3 # 18  
Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A OAM

"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.

Response Response Status U

ACCEPT IN PRINCIPLE.

Answer to technical question:

The difference between the two bits is stated. TXO\_MSGT is a toggle bit (a one bit sequence number) of a message. As described in the referenced 114.8.2 the MSGT bit is toggled to a new value, some time later, the related message is transmitted, the message is received and validated at the receiver, and at some later time, the message is read by the management entity.

When message is received and validated at the receiver, it causes the receiving link partner PHY to acknowledge message reception by the PHY via the TXO\_PHYT bit to the transmitting station. As indicated in state diagram of Figure 114-53, this acknowledge indicates the OAM message has been received and copied to the OAM RX registers and it is ready to be read by the management entity. As specified in state diagram, the receiving link partner PHY cannot copy the received message and then acknowledge via PHYT flag if there is a previous message that has not been read by the management entity.

When message is read by the management entity, it causes the receiving link partner PHY to acknowledge message reception by the management entity via the TXO\_MERT bit to the transmitting station.

Editor's actions:

Move sentence of Pg 25 line 11 to Pg 24 line 50 as second paragraph of TXO\_REQ description.

CI 45 SC 45.2.3.49.2 P25 L21 # 265  
Carlson, Steve HSD/Marvell

Comment Type TR Comment Status A OAM

"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.

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #26.

CI 78 SC 78.1.4 P33 L5 # 255  
Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A Ed Inst

"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

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #37.

# IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

Cl 114 SC 114 P35 L9 # 201  
Zimmerman, George CME Consulting

Comment Type ER Comment Status A Big Ticket PCS TX

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.

Response Response Status U

ACCEPT IN PRINCIPLE.

Editor will attempt to accommodate removing descriptions of method rather than specification of output.

See responses to comments #191, #196, for example.

Cl 114 SC 114.1.2 P35 L38 # 257  
Carlson, Steve HSD/Marvell

Comment Type ER Comment Status A EZ

"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.

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #41.

Cl 114 SC 114.1.2 P35 L38 # 41  
Hajduczenia, Marek Bright House Networks

Comment Type ER Comment Status A EZ

"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 conventions. 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.

Response Response Status U

ACCEPT IN PRINCIPLE.

This is an editorial error. All the expressions or symbols, and delimiters per ISO 80000-2 were eliminated from D1p3 to D1p4. However, editors forgot to strike this sentence although the reference to 80000-2 was already eliminated.

Cl 114 SC 114.1.4 P36 L14 # 267  
Carlson, Steve HSD/Marvell

Comment Type TR Comment Status A Fig 114-1

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.

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #42

Cl 114 SC 114.2 P38 L2 # 222  
Ran, Adeo INTEL

Comment Type TR Comment Status A PCS TX Intro

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

## SuggestedRemedy

Correct or clarify as necessary

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comment #45.

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 114 SC 114.2.1 P38 L19 # 224  
 Ran, Adee INTEL  
 Comment Type **TR** Comment Status **A** PCS TX Intro  
 Are all these symbols PAM16?  
 SuggestedRemedy  
 Assuming they are, either use "PAM16 symbols" consistently or make it clear earlier that "symbols" always means PAM16.  
 Response Response Status **U**  
 ACCEPT IN PRINCIPLE.  
 See response to comments #45 and #54.

CI 114 SC 114.2.2.1 P39 L45 # 191  
 Zimmerman, George CME Consulting  
 Comment Type **TR** Comment Status **A** Big Ticket PCS TX  
 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  $1+x^{22}+x^{25}$ ." 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.  
 Response Response Status **U**  
 ACCEPT IN PRINCIPLE.  
 PICS item delimits the bounds of the requirement. See also the comment #194.  
 Change pg 39, lines 45 - 50 to:  
 "A pilot S1 sub-block is transmitted at the beginning of each Transmit Block as shown in Figure 114-4. The S1 generator shall produce an S1 sub-block using a maximum length sequence (MLS) generator from which the first 128-bit binary sequence bits are then mapped into PAM2 symbols so that bits with value 0 are mapped to {-1} and bits with value 1 mapped to {+1}. The resulting 128-symbol long sequence is prefixed and postfixed by a sequence of 16 zero {0} symbols, thus obtaining the 160 symbol length for S1 sub-block."  
 Delete pg 40, lines 45, 46.  
 Detailed description of LFSR and MATLAB code are going to remain in the text. It is important to note that initialization value and how the LFSR start generating the sequence have to be clearly defined. Other clauses uses self-synchronized scramblers, where these topics are not relevant for interoperability.  
 The same applies to S2 sub-blocks generation and the binary and symbol scramblers. Please, note that these circuits initialize the LFSR register to specific values several times per Transmit Block (S2), or once (S1, scramblers).  
 See comment #196 for additional changes to 114.2.2.  
 Pg 40, line 50/51, change:  
 "The pilot S2 sub-blocks of a Transmit Block shall be generated as follows."  
 to:  
 "The S2 generator shall produce S2 sub-blocks using a sequence of 1664 PAM8 symbols."

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<b>Cl 114</b>	<b>SC 114.2.2.1</b>	<b>P39</b>	<b>L45</b>	<b># 56</b>
Hajduczenia, Marek		Bright House Networks		
<b>Comment Type</b>	<b>ER</b>	<b>Comment Status</b>	<b>A</b>	<b>Big Ticket PCS TX</b>
"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?				
<i>SuggestedRemedy</i>				
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				
<b>Response</b>	<b>Response Status U</b>			
ACCEPT IN PRINCIPLE.				
Clarity of the bound is provided in the PICS item. It is the subclause.				
See response to comment #191.				

<b>Cl 114</b>	<b>SC 114.2.2.1</b>	<b>P39</b>	<b>L52</b>	<b># 58</b>
Hajduczenia, Marek		Bright House Networks		
<b>Comment Type</b>	<b>TR</b>	<b>Comment Status</b>	<b>A</b>	<b>Big Ticket PCS TX</b>
Substantial over-specification and implementation-specific details that are not needed for the standard				
<i>SuggestedRemedy</i>				
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 shift register shall be initialized 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.				
<b>Response</b>	<b>Response Status U</b>			
ACCEPT IN PRINCIPLE.				
Change "The MLS generator is made from a linear feedback shift register (LFSR) of 25-bits (see Figure 114-7)." to "The MLS generator produces the same result as the shift register implementation shown in Figure 114-7.". (with no addition shall, that it is not necessary).				
Figure 114-7 shows the output, rename MLS Generator output.				
Rest of text remains as is, because many parts of it, including MATLAB code, were demanded by others during TF review. In addition, it is consistent and fill some gaps that could leave ambiguities with just only the figure. See also response to comment #191.				
There is no implementation-specific details, only the needed details to specify the functionality. Typically, this kind of circuits are implemented with parallel architectures that compute N output bits per N input bits, so the needed clock frequency is reduced (this specially applies to the payload data binary scrambler that has to cope with greater than 1Gbps data-rate). Therefore, the description is far to be considered implementation-oriented.				

# IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 114 SC 114.2.2.1 P40 L28 # 228  
Ran, Adee INTEL

Comment Type TR Comment Status A Big Ticket PCS TX

"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)..

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comments #191 and #196.

CI 114 SC 114.2.2.2 P40 L53 # 61  
Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A Big Ticket 64B/65B

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 this 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

Response Response Status U

ACCEPT IN PRINCIPLE.

Change "chunk" to "piece" in:

- pg 40, line 53
- pg 41, line 1
- pg 41, line 50 (also check here the text font of the para, it seems not to be times-roman)
- pg 41, line 51

The removal of "chunk" in S2 and PHS descriptions is not a particularly difficult problem, but removing GMII chunk would be a larger problem as it recurs frequently and the term GMII chunk is much better than "8 consecutive GMII transfers". The TF would appreciate any suggestion of better term than GMII chunk.

Change "chunk" to "piece" in pg 60, line 11.



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CI 114 SC 114.2.3.1 P42 L13 # 65  
Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A Big Ticket PCS TX

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 shift register shall be initialized with the value of 0x00 for each PHD."  
Strike text page 42, lines 15-21

Response Response Status U

ACCEPT IN PRINCIPLE.

During TF review, the consensus was that the distillation here of the more verbose description in Clause 55 was the proper amount of reduction of description. Further reduction as the commenter recommends is believed likely to reduce consensus.

Change the second sentence as suggested.

Change the reset value of 0 to 0x0000 as suggested.

CI 114 SC 114.2.4.1.1 P44 L43 # 71  
Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status R Big Ticket 64B/65B

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 ...

Response Response Status U

REJECT.

There are no normative descriptions in the text requested to be deleted. It is not uncommon to include minimal description of functions spread over many pages of another clause. This paragraph provides appropriate and minimal context to understand the signal names used in this clause that by reference are normatively described in Clause 35.

CI 114 SC 114.2.4.1.1 P45 L12 # 76  
Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A Big Ticket 64B/65B

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 repetitive

Response Response Status U

ACCEPT IN PRINCIPLE.

Text speaks about Ethernet packets, but not Ethernet frames, which is equivalent to normal data transmission in the GMII. By definition of PDB.DATA, that is technically correct. However, it is true that is more precise using the term GMII transfers.

The recommended deletion of line 13 text is not acceptable. PDB.CTRL octets are not always transmitted in the order received from the GMII, for example, a control octet may be moved before received data octets. So, it is appropriate to state the octet order of a PDB.DATA is not changed. Also see comment #74 for addition of Table 114-1a.

Change the paragraph to read:

"The format of a PDB.DATA is shown in Figure 114-14. It consists of 65 bits, the first bit being the Type bit (with a value of 0) followed by 8 consecutive GMII data transfers (normal data transmission as shown in Table 114-1a). The 8 data octets are transmitted in the same order as they were received from the GMII. Bits in an octet are transmitted from least to most significant bit."

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Cl 114 SC 114.2.4.1.1 P45 L44 # 192  
Zimmerman, George CME Consulting

Comment Type **TR** Comment Status **R** Big Ticket 64B/65B

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 defining 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.

Response Response Status **U**

REJECT.

64B/65B encodes 8 data octets or control characters from GMII in a 65B(bits) block, in the same sense of Clause 97 80B/81B encoder, that encodes 10 data octets of control characters into an 81B block.

Similar examples are C/49 64B/66B encoder, C/36 8B/10B, etc.

See comment #131 for 64B/65B definition.

The requirement with "shall" is in 114.2.4.1.2, that provides formal definition of 64B/65B encoding. See response to comment #82.

Cl 114 SC 114.2.4.1.1 P46 L40 # 80  
Hajduczenia, Marek Bright House Networks

Comment Type **TR** Comment Status **R** Big Ticket 64B/65B

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 ...

Response Response Status **U**

REJECT.

The sentence is a simple reminder of pages of Clause 35 specification, and possible sequences of GMII transfers. None of the defined sequences in a GMII data stream allow GCTRL, data, GCTRL except for transmit error propagation (e.g., IPG, some preamble, transmit error propagation, more preamble) can occur within 8 GMII transfers.

The next paragraph describes what is done in the encoding for this case of an incorrect/errored packet. The same applies if an implementer uses transmit error propagation for a transmit abort (IPG, some preamble, transmit error propagation, IPG). Though transmit abort is not defined in Clause 35 it would be the natural GMII sequence for what is counted in management as a runt packet.

Neither is a "correct" frame.

# IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 114 SC 114.2.4.1.2 P48 L20 # 268  
 Carlson, Steve HSD/Marvell

Comment Type TR Comment Status A Matlab

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

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comments #82 and #83.

CI 114 SC 114.2.4.1.2 P48 L20 # 193  
 Zimmerman, George CME Consulting

Comment Type TR Comment Status A Matlab

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.

Response Response Status U

ACCEPT IN PRINCIPLE.

See response to comments #82 and #83.

CI 114 SC 114.2.4.1.2 P48 L20 # 82  
 Hajduczenia, Marek Bright House Networks

Comment Type TR Comment Status A Matlab

The code itself cannot 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

Response Response Status U

ACCEPT IN PRINCIPLE.

This is not the first time MATLAB has been used in IEEE Std 802.3 for specification of normative requirements. There is a normative reference for MATLAB in IEEE Std 802.3 (see P8023\_D3p2\_SECTION1, pg 68, line 43 and footnote 17).

Modify introductory text to the code to make it clear that MATLAB is not required, only consistent output as produced by the MATLAB code.

Change Pg 48, line 21:

"The 64B/65B encoder implementation shall be consistent with the following formal MATLAB definition."

to

"The 64B/65B encoder implementation shall produce output consistent with the following MATLAB (see 1.3) code (add footnote)."

Footnote to read: "Copyright release for MATLAB code: Users of this standard may freely copy or reproduce the MATLAB code in this subclause so it can be used for its intended purpose."

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

Cl 114 SC 114.2.4.1.2 P48 L21 # 83  
Hajduczenia, Marek Bright House Networks

Comment Type ER Comment Status R Matlab

Matlab is a trademarked name:  
[http://www.mathworks.com/company/aboutus/policies\\_statements/trademarks.html](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

Response Response Status U

REJECT.

See also response to comment #82.

Matlab code is to stay. Pseudocode should be based on a well-defined language (syntax, data types, etc). To be the use of pseudocode (no trademarked) feasible, the syntax and then the complete language definition needs to be public and at least an implementation of the golden interpreter be accessible under FRAND terms to all the implementers, to ensure all of them can produce interoperable implementations.

Matlab language / syntax can be used by any implementer. Use of Matlab language does not force to use MathWorks software.

Cl 114 SC 114.2.4.3.1 P51 L7 # 194  
Zimmerman, George CME Consulting

Comment Type TR Comment Status A Big Ticket PCS TX

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.

Response Response Status U

ACCEPT IN PRINCIPLE.

The PICS item clarifies the bounds of the requirement.

In general, it was decided by the TF to use a single "shall" per block, so that PICS generation and verification are simplified, because testing more detailed shalls is impractical.

Editor will attempt to accommodate removing descriptions of method rather than specification of output. The shall statement will cover a list of items clearly specifying the operations needed to generate the demultiplexion output from the input bits.

In this context "group" and "level" can be considered synonymous. "level" is commonly used in multi-level coding literature, so it can be considered valid.

## IEEE P802.3bv D2.0 Gigabit Ethernet Over Plastic Optical Fiber Initial Working Group ballot comments

CI 114 SC 114.2.4.3.2 P52 L12 # 195  
Zimmerman, George CME Consulting

Comment Type TR Comment Status A Big Ticket PCS TX

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.

Response Response Status U

ACCEPT IN PRINCIPLE.

Change pg 52, line 12:

"The BCH encoder in Figure 114–21 shall generate information bits as follows."

to:

"The BCH encoder shall encode the information bits consistent with Figure 114-21."

Change pg 52, line 16:

"The transmitted codeword C(x) can then be formed by combining M(x) and S(x) as follows"

to:

"The transmitted codeword C(x) is formed by combining M(x) and S(x) as follows:"

See also comment #194.

CI 114 SC 114.3.5.2 P68 L1 # 269  
Carlson, Steve HSD/Marvell

Comment Type TR Comment Status A SD

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.

Response Response Status U

ACCEPT.

CI 114 SC 114.6 P L # 157  
Stassar, Peter Huawei Technologies

Comment Type TR Comment Status A Big Ticket PMD

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, 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

Response Response Status U

ACCEPT IN PRINCIPLE.

It is important to note that in the CSD documents we reference existing implementation of the VDE specifications. Though we have made a number of different choices from that VDE draft, both, VDE and 3bv, are based on PAM16 plus THP and the same type of photonics. During SG, the technical feasibility was demonstrated by theoretical analysis that supported the baseline specification, and by real experiments using VDE based existing implementations. Following presentations show VDE based devices operating satisfactorily in the field on a standard version of POF (A4a.2).

[http://www.ieee802.org/3/GEPOFSG/public/July\\_2014/Luecke\\_GEPOF\\_02\\_0714.pdf](http://www.ieee802.org/3/GEPOFSG/public/July_2014/Luecke_GEPOF_02_0714.pdf)

[http://www.ieee802.org/3/GEPOFSG/public/July\\_2014/Faller\\_GEPOF\\_02a\\_0714.pdf](http://www.ieee802.org/3/GEPOFSG/public/July_2014/Faller_GEPOF_02a_0714.pdf)

[http://www.ieee802.org/3/GEPOFSG/public/Sep\\_2014/Lichtenegger\\_GEPOF\\_0914.pdf](http://www.ieee802.org/3/GEPOFSG/public/Sep_2014/Lichtenegger_GEPOF_0914.pdf)

[http://www.ieee802.org/3/GEPOFSG/public/Sep\\_2014/perezaranda\\_GEPOF\\_01\\_0914.pdf](http://www.ieee802.org/3/GEPOFSG/public/Sep_2014/perezaranda_GEPOF_01_0914.pdf)

[http://www.ieee802.org/3/GEPOFSG/public/Sep\\_2014/perezaranda\\_GEPOF\\_03\\_0914.m4v](http://www.ieee802.org/3/GEPOFSG/public/Sep_2014/perezaranda_GEPOF_03_0914.m4v)

[http://www.ieee802.org/3/GEPOFSG/public/Sep\\_2014/perezaranda\\_GEPOF\\_02\\_0914.m4v](http://www.ieee802.org/3/GEPOFSG/public/Sep_2014/perezaranda_GEPOF_02_0914.m4v)

It is also important to note that many of the bounds specified for the parameters of the transmitter and the receiver are based on very worst-case simulations (1000BASE-RHx implementations are not available yet):

- worst case channel response compliant with transfer function lower bound limits
- worst TP2 launching condition compliant with EAF lower bound limits
- min. ER, min rise/fall time, largest harmonic distortion HD2 and HD3, max RIN, max jitter, etc.

- the receiver is modeled based on circuit level simulations with worst case technology process corner (slow) and highest temperature.

The simulation models correlate very well with VDE implementation.

Being said that, the main objective of the TF has been to generate an specification able to guarantee the satisfactory operation of any two compliant devices in the field. However, there can be scenarios in the field where a device that is non-compliant in some set of parameters is able to operate with a compliant device satisfactory with very good

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

CI 114

SC 114.6

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performance. This situation can be possible because the compliant device integrates typical components that have not moved to worst-case, for example, or because temperature is below the maximum.

<b>Cl 114</b>	<b>SC 114.6.3.3</b>	<b>P93</b>	<b>L51</b>	<b># 102</b>
McDermott, Thomas		Fujitsu		

<b>Comment Type</b>	<b>TR</b>	<b>Comment Status</b>	<b>R</b>	<b>Big Ticket PMD</b>
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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.

## Suggested Remedy

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.

<b>Response</b>	<b>Response Status</b>	<b>U</b>
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REJECT.

Pg. 93, line 47, exactly state:

"A 1000BASE-RHx receiver shall meet the specifications at TP3 defined in Table 114–8 per measurement techniques defined in 114.6.4."

Table 114-8 specifies: AOP (max and min) and wavelength range.

Measurement methods for AOP and center wavelength measurement are defined for TP2 and TP3.

Pg 95, line 7, states:

"114.6.4 Optical measurement requirements

All the optical measurements of the transmitter shall be made at TP2 (at the end of a 1m length of POF cable consistent with the link type). The optical measurements for the receiver shall be done at TP3."

Pg 95, line 28, states AOP measurement for both:

"114.6.4.3 Average Optical Power (AOP) measurement

The AOP shall meet the specifications at TP2 and TP3 measured with a large area photo-detector able to couple all the output optical power from the optical fiber."

New text asked by the suggested remedy, is already in the draft.

Pg 93, line 51, really says:

"A 1000BASE-RHx PHY shall be able to establish a reliable link per specification of 114.3.7.1 throughout the average optical power (AOP) range between the minimum and maximum limit defined in Table 114–8, for signals received at the MDI that were transmitted from a remote transmitter within the specifications of 114.6.3.1 and have passed through a fiber optic channel specified in 114.6.5. Under these conditions, a 1000BASE-RHx PHY shall provide a BER less than 10<sup>-12</sup> operating in test

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mode 1 (see 114.5.1) and a frame error ratio less than  $1.1 \cdot 10^{-10}$  for continuous transmission of 64-octet Ethernet frames transmitted with minimum IPG at GMII interface operating in normal (non-test) mode. These specifications apply to a complete 1000BASE-RHx full duplex link composed by two interconnected partners with their respective PCS, PMA and PMD sublayers."

Said that, transmitter is specified, channel is defined, minimum AOP at receiver is specified for link establishment, and criteria for that defined. So, the implementer can setup the test. Link budget and link margin are mathematical derivations and informative.

As said in Pg 104, line 50:

"The worst-case link power budget and unallocated link margin for a 1000BASE-RHx PHY defined in Table 114-12 are derived from the transmitter and the receiver optical specifications as well as fiber optic channel specifications of 114.6.3.1, 114.6.3.3 and 114.6.5, respectively."

<b>Cl 114</b>	<b>SC 114.6.4.8</b>	<b>P</b>	<b>L</b>	<b># 158</b>
Stassar, Peter		Huawei Technologies		

<b>Comment Type</b>	<b>TR</b>	<b>Comment Status</b>	<b>A</b>	<b>Big Ticket PMD</b>
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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

<b>Response</b>	<b>Response Status</b>	<b>U</b>
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ACCEPT IN PRINCIPLE.

Please, see response to comment #118.

<b>Cl 114</b>	<b>SC 114.6.4.8</b>	<b>P97</b>	<b>L3</b>	<b># 118</b>
Anslo, Pete		Ciena		

<b>Comment Type</b>	<b>TR</b>	<b>Comment Status</b>	<b>A</b>	<b>Big Ticket PMD</b>
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The multi-vendor interoperability of this PHY 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](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.

<b>Response</b>	<b>Response Status</b>	<b>U</b>
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ACCEPT IN PRINCIPLE.

See perezaranda\_3bv\_3\_0316.

As stated in this presentation (slides 14 - 16), TX non-linear distortion will affect to receiver sensitivity. However, it will be possible to find an implementation in the field that meets TP3 AOP specs connected to a transmitter with worse TP2 HD (I mean, no compliant TX). There are some margins agreed among the implementers, specially because 1000BASE-RH has to operate in a car during >10 years between -40 and 105°C.

Editor to modify Table 114-6 and subclause 114.6.4.8 according to the refinement of the transmitter distortion measurement of slides 7 through 9 of perezaranda\_3bv\_3\_0316.

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Cl 114 SC 114.6.5 P L # 159  
Stassar, Peter Huawei Technologies

Comment Type TR Comment Status A Big Ticket PMD

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

Response Response Status U

ACCEPT IN PRINCIPLE.

It is not appropriate to include in the standard anything about how many fibers meet the specs if that was what the commenter meant in the Suggested Remedy. If only a response about broad market potential is requested, the following is provided.

Please, see:

[http://www.ieee802.org/3/bv/public/Jan\\_2016/takahashi\\_3bv\\_03a\\_0116.pdf](http://www.ieee802.org/3/bv/public/Jan_2016/takahashi_3bv_03a_0116.pdf)

In this presentation, transfer functions measurements are reported for part numbers selected from the most commonly used IEC 60793-2-40 sub-category A4a.2 POF for communications. Members of the TF indicated that actual market percentage is larger than 98%. Therefore, we can say that more than 98% of the A4a.2 POF market is fiber that meets the tightened additional specifications of P802.3bv.

As it was done in 1000BASE-T (40.7.1) for Class D cables, 802.3bv is specifying additional requirements compatible with A4a.2 fibers (transfer functions, insertion loss).

Cl 114 SC 114.6.5 P101 L26 # 155  
Schicketanz, Dieter Reutlingen University

Comment Type TR Comment Status R Channel

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.

Response Response Status U

REJECT.

See responses to comments #87, #88 and #102.

Cl 114 SC 114.6.5 P101 L29 # 240  
Thomson, Geoff GraCaSI S.A.

Comment Type TR Comment Status R Channel

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".

Response Response Status U

REJECT.

IEEE 802.3 optics experts demanded during TF review same terminology used in other optical PMDs.

See response to comment #238.



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**Cl 114**    **SC 114.6.5**    **P101**    **L30**    # **209**  
 Zimmerman, George    CME Consulting

**Comment Type**    **ER**    **Comment Status**    **R**    **Channel**

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.

**Response**    **Response Status**    **U**

REJECT.

See responses to comments #238, #240.  
 The same terminology is used in other 802.3 optical PHYs clauses.

**Cl 114**    **SC 114.6.5**    **P101**    **L43**    # **154**  
 Schicketanz, Dieter    Reutlingen University

**Comment Type**    **TR**    **Comment Status**    **R**    **Channel**

Channel Type III is for automotive

**SuggestedRemedy**

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

**Response**    **Response Status**    **U**

REJECT.

No additional reference is required.  
 According to IEC 60793-2-40, Table 1, applications of sub-category A4a are:  
 "Digital audio interface, automobile, industrial and sensor & data transmission".

A4a.2 fibers are used in automobile from > 10 years in infotainment systems (MOST) up to ambient temperature of 85°C, with demonstrated reliability and quality. See presentations in 802.3bv project site about developed A4a.2 fibers to operate up to +105 °C. Ageing is reported.

**Cl 114**    **SC 114.6.5**    **P101**    **L50**    # **87**  
 Kolesar, Paul    CommScope

**Comment Type**    **TR**    **Comment Status**    **A**    **Channel**

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 requirement 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 function in the field.

**Response**    **Response Status**    **U**

ACCEPT IN PRINCIPLE.

The experience of TF members (>10 years of MOST deployment in automotive industry) is that inline connections for specified POF cabling produce higher insertion loss for higher modes than for lower modes. Therefore, the transfer function is slightly improved per inline connection although the AOP at TP3 is reduced. Because of that, it was natural to think as a general statement.

However, it may not be necessary true in general terms.

Change text as suggested and update PICS items accordingly.

See comment #88 for measurement methodology of transfer function in the field.

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CI	SC	P	L	#
114	114.6.6	P105	L9	88

Kolesar, Paul      CommScope

**Comment Type**    **TR**      **Comment Status**    **A**      **Channel**

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.

**Response**      **Response Status**    **U**

ACCEPT IN PRINCIPLE.

The channel attenuation is sensitive to the test wavelength and to the test launch condition. That is true.

Improve text of Pg 101, line 34, as: "Fiber optic channel type I includes up to at least 50 m length. The fiber optic channel type I meets a maximum insertion loss of 9.5 dB without inline connections and the transfer function specification of 114.6.5.1 under spectral distribution and launching mode power distribution at TP2 specified per EAF lower bound limits in 114.6.3.1."

Modify items b and c of the same list accordingly for consistency.

The insertion loss, the transfer function specifications, TP EAF and pointer to IEC 60793-2-40 sub-category A4a.2, all together define the minimum set of specifications to produce SI-POF cabling for GEPOF link operation.

Measurement methodology of SI-POF channel in the field is out of the scope of this standard. Characteristics of cable have to be guaranteed by the specification of the cable.

CI	SC	P	L	#
114	114.7	P105	L16	239

Thomson, Geoff      GraCaSI S.A.

**Comment Type**    **TR**      **Comment Status**    **R**      **Channel**

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.

**Response**      **Response Status**    **U**

REJECT.

Connector is not specified because it is not needed for interoperability. Specifications are independent of connector.

The optical transmit signal is defined at the output end of 1 meter of plastic optical fiber consistent with the link type connected to the MDI (TP2). The optical receive signals are specified and measured at the output of the fiber optic cabling (TP3) which in a link is connected to the receiver.

Connectors are likely to be standardized in other standardization bodies (ISO, IEC) as in many other cases.

The TF is willing to consider specific proposals regarding to the topic raised by the comment.