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

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.

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

Cl **114**   *SC* **114.2.2.1**   *P* **39**   *L* **52**   # 58

Hajduczenia, Marek   Bright House Networks

Comment Type **TR**   *Comment Status* **A**   *Big Ticket PCS TX*

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 shift 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.

Response   *Response Status* **U**

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 funcionality. 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 desciption is far to be considered implementation-oriented.

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

Cl **114**
SC **114.2.2.1**

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Cl **114**   *SC* **114.2.3.1**   *P* **42**   *L* **13**   # **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 concensus.

Change the second sentence as suggested.

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

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

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **114**   Page 2 of 6
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **114.2.4.1.1**   28/07/2016 13:13:16
SORT ORDER: Clause, Subclause, page, line

Cl **114**	*SC* **114.2.4.1.2**	*P* **48**	*L* **20**	# 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."

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

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

Cl **114**
SC **114.2.4.1.2**

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Cl **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, 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

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/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/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_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

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.

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

Stassar, Peter   Huawei Technologies

Comment Type **TR**   *Comment Status* **A**   *Big Ticket PMD*

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

Response   *Response Status* **U**

ACCEPT IN PRINCIPLE.

Please, see response to comment #118.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **114**   Page 4 of 6
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **114.6.4.8**   28/07/2016 13:13:16
SORT ORDER: Clause, Subclause, page, line

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

Anslow, Pete   Ciena

Comment Type **TR**   *Comment Status* **A**   *Big Ticket PMD*

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 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.

Response   *Response Status* **U**

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 105ºC.

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.

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

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).

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

Cl **114**
SC **114.6.5**

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Cl **114**   *SC* **114.6.5**   *P* **101**   *L* **29**   # 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.

Cl **114**   *SC* **114.7**   *P* **105**   *L* **16**   # 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.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **114**   Page 6 of 6
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *SC* **114.7**   28/07/2016 13:13:16
SORT ORDER: Clause, Subclause, page, line

Cl **00**　　*SC* **0**　　　　*P*　　　*L*　　# 45

Thompson, Geoff　　　　GraCaSI S.A.

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

RE: Further response to comment D2.0 #239. Without a cited standard for how to parse the link budget for facilities installation and qualify installed facilities fiber you cannot achieve a consumer commodity standard.

SuggestedRemedy

See D2.0 comment 239

Response　　　　　*Response Status* **U**

REJECT.

The draft provides the pointers to the standards requested by the commenter.

In 114.7.4 is stated:
"The fiber optic channel shall meet the insertion loss specification per measurement according to ISO/IEC 14763-3, under spectral distribution and launch modal power distribution at TP2 specified per EAF lower bound limits in 114.6.3.1."

In 114.7.5 is stated:
"The fiber optic channel shall meet the transfer function specification per measurement according to IEC 60793-1-41, under spectral distribution and launch modal power distribution at TP2 specified per EAF lower bound limits in 114.6.3.1."

In 114.6.4.11 is stated:
"The modal power distribution (MPD) at TP2 shall meet the specifications of 114.6.3.1 using an encircled angular flux (EAF) measurement method based on two-dimensional far field pattern data captured at TP2, which conforms to IEC 61300-3-53, defined for step-index multimode fibers."

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

Thompson, Geoff　　　　GraCaSI S.A.

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

RE: Response to comment D2.0 #239. Response is unsatisfactory, untrue and non-responsive. Without a cited specification for either a standard connector or a standard procedure for cutting a fiber and testing the termination this proposed standard doesn't have a prayer in the consumer commodity market and therfore FAILS the Broad Market Potential criterium.

SuggestedRemedy

See D2.0 comment 239

Response　　　　　*Response Status* **U**

ACCEPT IN PRINCIPLE.

For automotive applications (RHC), the specification of the MDI connector is expected to be developed in other standardization body. ISO/TC 22/SC 32/WG10 has the mission of producing the specification of a MDI connector for GEPOF, among others specifications for automotive use of 1000BASE-RHC PHYs, like intermediate connectors, cable, harness, environmental tests, etc.

For industrial automation applications (RHB), many MDI connectors are already standardized for cables IEC 60794-2-41 (buffered A4 fibers): SMA, ST, FC, SC, SC-RJ, Versatile Link, SMI, etc. Selection of the connector depends on the specific application, and it is outside the objectives of this standard to point a default connector.

For home-network applications (RHA) there is not standardized MDI connectors in ISO, IEC, etc, therefore no pointer can be provided. However, the extended practice from many years in POF consumer grade products is that plug-less terminated IEC 60794-2-41 POF cables are connected to the PMD through a receptacle in the MDI.
The minimum set of specifications for interoperability has been identified by the P802.3bv MDI ad-hoc group.

Replace the MDI subclause with the text in RHA_MDI_proposal_8023bv_240516.pdf.

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

Cl **00**
SC **0**

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