Cl **114**   *SC* **114.5.5.1**   *P* **98**   *L* **10**   # 1

Pérez-Aranda, Rubén   KDPOF

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

Specifications for positive and negative output droop are wrong because a bug in the simulation used to calculate them.

SuggestedRemedy

Replace with correct values:
DO+: min 0 dB, max 1.1 dB
DO-: min -0.9 dB, max 0 dB

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.2.1**   *P* **41**   *L* **1**   # 2

Gilarranz, Alejandra   KDPOF

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

Data sub-blocks can make reference to payload or header data sub-blocks.
Sentence "GMII data stream is mapped into the data sub-blocks..." should be replaced by "GMII data stream is mapped into the payload data sub-blocks..."

SuggestedRemedy

Replace sentence as suggested in comment.

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.2.3.4**   *P* **45**   *L* **42**   # 3

Gilarranz, Alejandra   KDPOF

Comment Type **E**   *Comment Status* **A**

Typing error.

SuggestedRemedy

Replace "ans" by "and".

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.5.1.3.2**   *P* **86**   *L* **40**   # 4

Gilarranz, Alejandra   KDPOF

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

Cross reference in PMD_TXPWR.request section to 114.8 makes reference to "Loopback modes".
Also in page 87, line 14.

SuggestedRemedy

Modify reference to point to 114.4.4 section.

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.3.48.6**   *P* **27**   *L* **23**   # 5

Gilarranz, Alejandra   KDPOF

Comment Type **E**   *Comment Status* **A**

Missing full stop at the end of the sentence.
Also in subclause 45.2.3.49, page 27, line 32.

SuggestedRemedy

Add full stop.

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.3.50.2**   *P* **29**   *L* **23**   # 6

Gilarranz, Alejandra   KDPOF

Comment Type **E**   *Comment Status* **A**

Missing parenthesis in "(no test mode is selected in 3.518.15:13."

SuggestedRemedy

Add parenthesis.

Response   *Response Status* **C**

ACCEPT.

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COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Comment ID

Comment ID **6**   Page 1 of 31
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Cl **45**   *SC* **45.2.3.51**   *P* **30**   *L* **22**   # 7

Gilarranz, Alejandra   KDPOF

Comment Type **E**   *Comment Status* **A**

In Table 45-164. Useless word "mode" in bit 3.519.6 description.
Also in page 30, line 23.

SuggestedRemedy

Replace "Tx PCS is currently transmitting LPI mode" by "Tx PCS is currently transmitting LPI".

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.2.1**   *P* **40**   *L* **53**   # 8

Gilarranz, Alejandra   KDPOF

Comment Type **E**   *Comment Status* **A**

Cross reference to 114.5 at the end of the sentence does not work properly.
The same comment applies for cross reference 114.2.3 in pag 64, lin 6.

SuggestedRemedy

Fix cross reference to transport to section 114.5 of the document.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P40, L53: cross reference should be 114.4
P64, L6: just replace plain text with cross reference

Cl **114**   *SC* **114.3.1**   *P* **65**   *L* **20**   # 9

Gilarranz, Alejandra   KDPOF

Comment Type **T**   *Comment Status* **A**

In Table 114-3, for field PHD.TX.NEXT.THP.SETID "Valid values" column, the text for value 0 "no request for changing the THP coefficients is performed" should be replaced by "no request for applying the THP coefficientes received in PHD field PHD.RX.REQ.THP.COEF*" (they can change or not).

SuggestedRemedy

Replace text as suggested in comment.

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.3.1**   *P* **66**   *L* **6**   # 10

Gilarranz, Alejandra   KDPOF

Comment Type **T**   *Comment Status* **A**

In Table 114-3, in PHD.RX.LINKMARGIN Description column the following idea is missing: "When the value is negative, this field reports the needed extra SNR with respect to min SNR to provide loc_rcvr_status OK."

SuggestedRemedy

Insert text with the idea suggested in comment.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add in the description field after first full stop:
"When the value is negative, this field reports the needed extra SNR with respect to minimum SNR to provide loc_rcvr_status = OK."

Change "min" to "minimum" in the current text.

Cl **114**   *SC* **114.2.4.4**   *P* **61**   *L* **31**   # 11

Gilarranz, Alejandra   KDPOF

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

In figure 114-31. "k0" variable is not defined.

SuggestedRemedy

Define or remove "k0" variable from figure 114-31.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "k0+1=9" with just "9".

Cl **114**   *SC* **114.5.4.2**   *P* **95**   *L* **3**   # 12

Gilarranz, Alejandra   KDPOF

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

Typing error. "Link segment type I" should be replaced by "Link segment type II".
Also in page 95, line 5.

SuggestedRemedy

Replace text as suggested in comment.

Response   *Response Status* **C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **12**   Page 2 of 31
10/11/2015 18:35:44

Cl **114**　　*SC* **114.5.4.3**　　　*P* **96**　　*L* **3**　　# 13
Gilarranz, Alejandra　　　　　KDPOF

Comment Type　**ER**　　*Comment Status*　**A**
Typing error. "Link segment type I" should be replaced by "Link segment type III".
Also in page 96, line 5.

SuggestedRemedy
Replace text as suggested in comment.

Response　　　　*Response Status*　**C**
ACCEPT.

Cl **45**　　*SC* **45.2.3.49.1**　　　*P* **28**　　*L* **15**　　# 14
Gilarranz, Alejandra　　　　　KDPOF

Comment Type　**T**　　*Comment Status*　**A**
According to control state diagram in figure 114-53, RXO_VAL bit is set to zero when the last register (3.517) containing the message is read, but only after a read of the first register (3.510).

SuggestedRemedy
Replace string:
"The bit is set to zero when the last register (3.517) containing the message is read."
with:
"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 (3.510)."

Response　　　　*Response Status*　**C**
ACCEPT IN PRINCIPLE.

Add cross reference to SD of Figure 114-53.

Cl **114**　　*SC* **114.5.3.1**　　　*P* **91**　　*L* **25**　　# 15
Gilarranz, Alejandra　　　　　KDPOF

Comment Type　**T**　　*Comment Status*　**A**
It is not mentioned in section text how to align PDB data when transitioning from Test Mode 1 to normal mode.

SuggestedRemedy
Add text to make clear how to align payload data when transitioning from Test Mode 1 to normal mode.

Response　　　　*Response Status*　**C**
ACCEPT IN PRINCIPLE.

See comment #122

Cl **114**　　*SC* **114.5.2.4.2**　　　*P* **91**　　*L* **9**　　# 16
Gilarranz, Alejandra　　　　　KDPOF

Comment Type　**TR**　　*Comment Status*　**A**
In figure 114-47, the transition conditions "aop_tp3<-35dBm" and "aop_tp3>-29dBm" does not match with section text. They have been interchanged.

SuggestedRemedy
Place the mentioned conditions in the correct transitions in figure 114-47.

Response　　　　*Response Status*　**C**
ACCEPT IN PRINCIPLE.

See comment #33

Cl **01**　　*SC* **1.4**　　　*P* **20**　　*L* **41**　　# 17
Tapia, Pablo　　　　　KDPOF

Comment Type　**E**　　*Comment Status*　**A**
"bose, ray-chaudhurim hocquenghem (BCH)"

SuggestedRemedy
Remove "m", add comma, and use upper-case for personal names:
Bose, Ray-Chaudhuri, Hocquenghem (BCH)

Response　　　　*Response Status*　**C**
ACCEPT.

Cl **45**　　*SC* **45.2.3.48.5**　　　*P* **27**　　*L* **18**　　# 18
Tapia, Pablo　　　　　KDPOF

Comment Type　**E**　　*Comment Status*　**A**
"together with the TXO_DATAx bits are the OAM message payload"
Change "are" to "form".

SuggestedRemedy
"together with the TXO_DATAx bits form the OAM message payload"

Response　　　　*Response Status*　**C**
ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **18**　　　Page 3 of 31
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Cl **45**	*SC* **45.2.3.49.3**	*P* **28**	*L* **26**	# 19

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

"and together with the RXO_DATAx bits are the received OAM message payload."
Change "are" to "form".

SuggestedRemedy

"and together with the RXO_DATAx bits form the received OAM message payload."

Response   *Response Status* **C**

ACCEPT.

Cl **45**	*SC* **45.2.3.50.2**	*P* **29**	*L* **23**	# 20

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

"(no test mode is selected in 3.518.15:13."
Closing parenthesis missing.

SuggestedRemedy

Change to:
"(no test mode is selected in 3.518.15:13)."

Response   *Response Status* **C**

ACCEPT.

Cl **45**	*SC* **45.2.3.50.3**	*P* **29**	*L* **30**	# 21

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

"Changes of OAM enable value"

SuggestedRemedy

"Changes in OAM enable value"

Response   *Response Status* **C**

ACCEPT.

Cl **45**	*SC* **45.2.3.50.4**	*P* **29**	*L* **38**	# 22

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

"Changes of EEE enable value"

SuggestedRemedy

"Changes in EEE enable value"

Response   *Response Status* **C**

ACCEPT.

Cl **114**	*SC* **114.2**	*P* **40**	*L* **18**	# 23

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

"which finally is decoded to produce the GMII receive data stream."
Change sentence order.

SuggestedRemedy

"which is finally decoded to produce the GMII receive data stream."

Response   *Response Status* **C**

ACCEPT.

Cl **114**	*SC* **114.2.3.4**	*P* **45**	*L* **41**	# 24

Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**

" mapped into 1792 PAM2 symbols ans scaled as follows"
TYPO, change ans by and.

SuggestedRemedy

" mapped into 1792 PAM2 symbols and scaled as follows"

Response   *Response Status* **C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **24**

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10/11/2015 18:35:44

Cl **114**　　*SC* **114.2.4.1.1**　　　　*P* **48**　　　*L* **4**　　　　# 25
Tapia, Pablo　　　　　　　　　　　KDPOF

Comment Type **T**　　　*Comment Status* **A**
"CTRL<1:0> (CB<6:7>): This field encodes the content of..."

SuggestedRemedy
Assuming there is no order reversing of bits, CTRL<1:0> shall be mapped to CB<7:6>.
Change to:
"CTRL<1:0> (CB<7:6>): This field encodes the content of..."

Response　　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.2.4.1.1**　　　　*P* **48**　　　*L* **26**　　　# 26
Tapia, Pablo　　　　　　　　　　　KDPOF

Comment Type **ER**　　*Comment Status* **A**
"Finally, the first CB is always shifted to the beginning of the PDB.CTRL."

SuggestedRemedy
It might be confusing. Replace by:
"Finally, the bytes within the PDB.CTRL are reordered as follows:
1) The first received CB from the GMII is transmitted in first place,
2) followed by all the data bytes that were received before the first CB (if any),
3) followed by all the bytes that were received after the first CB."

Response　　　　　　*Response Status* **C**
ACCEPT.

Also move Figure 114-15 to be near to first reference in text.

Cl **114**　　*SC* **114.2.4.1.1**　　　　*P* **49**　　　*L* **51**　　　# 27
Tapia, Pablo　　　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
"The offset to the start of the first PDB in Transmit Block j+1 DELTA(j+1) can be calculated from the offset calculated for Transmit Block j DELTA(j) by using the following equation"

SuggestedRemedy
Redundant "calculated". Replace by:

"The offset to the start of the first PDB in Transmit Block j+1 DELTA(j+1) can be calculated from the offset of Transmit Block j DELTA(j) by using the following equation"

Response　　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.2.4.3.3**　　　　*P* **56**　　　*L* **45**　　　# 28
Tapia, Pablo　　　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
"The processing for the I and Q components are not equal."

SuggestedRemedy
"The processing for the I and Q components is not equal."

Response　　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.2.4.3.3**　　　　*P* **56**　　　*L* **47**　　　# 29
Tapia, Pablo　　　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
"which sets 1 or -1 at the input to the last adder..."

SuggestedRemedy
"which sets 1 or -1 at the input of the last adder..."

Response　　　　　　*Response Status* **C**
ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **29**

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Cl **114**　　*SC* **114.3.2.3**　　　　*P* **69**　　　*L* **41**　　　# 30
Tapia, Pablo　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

"the PHY receiver begins link establishment with recovering clock from the received signal."
Change "with" to "by".

SuggestedRemedy

"the PHY receiver begins link establishment by recovering the clock from the received signal."

Response　　　　　　　*Response Status* **C**

ACCEPT.

Cl **114**　　*SC* **114.4.5**　　　　　*P* **85**　　　*L* **14**　　　# 31
Tapia, Pablo　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

Equation 114-24 mixes variable names with constants. This might be confusing.

SuggestedRemedy

Follow the style chosen for equations 114-22 and 114-23, where the equation is expressed first with variable names, and then substituting them with their values.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify beginning of eq 114-22 eliminating "(us)":
"Tq = …"
Modify eq 114-23 in the same way.

Replace from P85 L8 as folows:

"Additional LPI timing parameters for 1000BASE-H are specified in Table 78–4.
The following equation specifies how Tw and the other parameters are calculated.

$Tw = Tq + Tr + WCPDBOFST/SE/Fs = 23.52 + 1.30 + 64/3.1883/325 = 24.88$ us (114-24)

Tw is the time needed to transmit a payload data sub-block plus a pilot or physical header sub-block plus the needed time to transmit the worst-case offset WCPDBOFST of a PDB relative to the first bit of a payload data sub-block (see 114.2.4.1.1). SE is the spectral efficienty of the PAM16 coding (see 114.2.4.3)."

Cl **114**　　*SC* **114.5.2.4**　　　　*P* **90**　　　*L* **28**　　　# 32
Tapia, Pablo　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

Dot missing at the end of line:
"State variables are defined in 114.5.2.4.1"

SuggestedRemedy

"State variables are defined in 114.5.2.4.1."

Response　　　　　　　*Response Status* **C**

ACCEPT.

Cl **114**　　*SC* **114.5.2.4.2**　　　*P* **91**　　　*L* **9**　　　# 33
Tapia, Pablo　　　　　　　　KDPOF

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

In figure 114-47 the average optical power thresholds are interchanged.

SuggestedRemedy

When passing from PMDDET_FAIL to PMDDET_OK the aop_tp3 shall be higher than -29dBm, and analogously, when passing from PMDDET_OK to PMDDET_FAIL, the aop_tp3 shall be smaller than -35 dBm.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Exchange right and left transition legends.

Cl **114**　　*SC* **114.5.3.1**　　　　*P* **91**　　　*L* **31**　　　# 34
Tapia, Pablo　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

"On reception, after MLCC decoding and binary descrambler, a zero data sequence is expected with no errors."

SuggestedRemedy

"In absence of errors, a zero data sequence is expected after the binary descrambler in the receiver."

Response　　　　　　　*Response Status* **C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **34**

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Cl **114** *SC* **114.5.3.4** *P* **92** *L* **18** # 35
Tapia, Pablo KDPOF

Comment Type **E** *Comment Status* **A**

"For test mode 4 definition, let be q1 the sub-sequence composed by ..."
Change sentence order.

SuggestedRemedy

"For test mode 4 definition, let q1 be the sub-sequence composed by ..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"For test mode 4 definition, let q1 be the sub-sequence composed of ..."

Review grammar: there are some "by" in the paragraph that should be "of".

Cl **99** *SC* *P* **14** *L* **15** # 36
Tapia, Pablo KDPOF

Comment Type **E** *Comment Status* **A**

"...and 1000BASE-RHC37"
Remove "37" at the end of the sentence.

SuggestedRemedy

"...and 1000BASE-RHC"

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* *P* **17** *L* **1** # 37
Tapia, Pablo KDPOF

Comment Type **E** *Comment Status* **A**

"...and 1000BASE-RHC114"
Remove "114" at the end of the sentence.

SuggestedRemedy

"...and 1000BASE-RHC"

Response *Response Status* **C**

ACCEPT.

Cl **114** *SC* **114.5.6.5** *P* **101** *L* **31** # 38
Tapia, Pablo KDPOF

Comment Type **E** *Comment Status* **A**

Remove "at" in:
"P1 is measured at 15 ns after the rise-edge crossing of transmit signal with the average
optical power level."

SuggestedRemedy

"P1 is measured 15 ns after the rise-edge crossing of transmit signal with the average
optical power level."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"P1 is specified 15 ns after the rising-edge crossing of the transmit signal with the average
optical power level. Similarly, P0 is specified 15 ns after the falling-edge AOP crossing."

Cl **114** *SC* **114.5.6.6** *P* **101** *L* **51** # 39
Tapia, Pablo KDPOF

Comment Type **E** *Comment Status* **A**

"Pmax and Pmin are the maximum and minimum values that take the optical power signal
at TP2,"
change sentence order.

SuggestedRemedy

"Pmax and Pmin are the maximum and minimum values that the optical power signal take
at TP2,"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"Pmax and Pmin are the maximum and minimum values of optical power signal at TP2,"

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general *Comment ID* **39** Page 7 of 31
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn 10/11/2015 18:35:44
SORT ORDER: Comment ID

Cl **114**　　*SC* **114.5.6.7**　　　　*P* **102**　　*L* **9**　　　# 40

Tapia, Pablo　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

Redundant measure -> measurements.
"To measure ERmax, P1 and P0, measurements are taken where the envelope of the signal is minimum."

SuggestedRemedy

"To estimate ERmax, P1 and P0, measurements are taken where the envelope of the signal is minimum."

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

From P102 L9 to the end of paragraph replace with:
"ERmax is calculated based on P1 and P0 values where the envelope of the signal is minimum. P1 is specified 15 ns after the rising-edge crossing AOP and P0 15 ns after the next falling-edge AOP crossing. Similarly, ERmin is calculated based on P1 and P0 where the signal envelope is maximum."

Cl **114**　　*SC* **114.5.6.7**　　　　*P* **102**　　*L* **10**　　　# 41

Tapia, Pablo　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

Remove "at" in:
"P1 is measured at 15 ns after rise-edge AOP crossing and P0 at 15 ns after fall-edge AOP crossing"

SuggestedRemedy

"P1 is measured 15 ns after rise-edge AOP crossing and P0 15 ns after fall-edge AOP crossing"

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #40.

Cl **114**　　*SC* **114.5.6.8**　　　　*P* **102**　　*L* **32**　　　# 42

Tapia, Pablo　　　　　　　　　KDPOF

Comment Type **T**　　　*Comment Status* **A**

"The apparatus must have sufficient linearity so does not introduce any appreciable distortion in the measurement."
Vague specification for apparatus distortion.

SuggestedRemedy

Quantify distortion specification.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

The implementation has to fit the TX distortion specifications. Therefore, it is up to the implementer the correct selection of the apparatus to carry out the measurement.
In case of the apparatus introduces significant distortion to the measurement, this will be captured by the processing script doing the task of implementing a transmitter that meet the disortion specifications harder.

Editor action: eliminate "The apparatus must have sufficient linearity so does not introduce any appreciable distortion in the measurement."

Cl **114**　　*SC* **114.7.3**　　　　*P* **106**　　*L* **3**　　　# 43

Tapia, Pablo　　　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**

Table 114-12:
It would be easier to understand if the order of columns in the table were:
TXO_REQ -> TXO_MSGT -> TXO_PHYT -> TXO_MERT
following the chronological sequence of the OAM transmission protocol.

SuggestedRemedy

Change order of columns in table as suggested.

Response　　　　　　　*Response Status* **C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **43**

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Cl **114**   *SC* **114.7.4.1**   *P* **106**   *L* **54**   # 44
Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**
"either local or remote PHY do not have OAM ability or it is disabled"

SuggestedRemedy
"either local or remote PHY does not have OAM ability or it is disabled"

Response   *Response Status* **C**
ACCEPT.

Cl **114**   *SC* **114.7.4.3**   *P* **109**   *L* **43**   # 45
Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**
"Moreover, bits PHD.OAM.MERT and PHD.OAM.PHYT is also set to zero."

SuggestedRemedy
"Moreover, bits PHD.OAM.MERT and PHD.OAM.PHYT are also set to zero."

Response   *Response Status* **C**
ACCEPT.

Cl **114**   *SC* **114.7.4.3**   *P* **109**   *L* **46**   # 46
Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **A**
"Once the transmission and reception of PHD blocks is reliable"

SuggestedRemedy
"Once the transmission and reception of PHD blocks are reliable"

Response   *Response Status* **C**
ACCEPT.

Cl **114**   *SC* **114.8**   *P* **110**   *L* **53**   # 47
Tapia, Pablo   KDPOF

Comment Type **E**   *Comment Status* **R**
"Loopback modes support a MAC transmit-to-self that includes a selected portion of the
bidirectional 1000BASE-H link."

SuggestedRemedy
"Loopback modes support a MAC transmit-to-itself that includes a selected portion of the
bidirectional 1000BASE-H link."

Response   *Response Status* **C**
REJECT.

Transmit-to-self is a commonly used term.

Cl **114**   *SC* **114.11**   *P* **113**   *L* **12**   # 48
Tapia, Pablo   KDPOF

Comment Type **T**   *Comment Status* **R**
The Delay constraint is specified as the sum of Tx and Rx delays. This makes hard to
determine if a given Tx (or Rx) implementation is compliant with the specification, because
although it honors the delay constraint with a complementary Rx (or Tx) implementation it
might violate the constraint with different Rx (or Tx) implementations.

SuggestedRemedy
Specify a delay constraint for Tx and a delay constraint for Rx.

Response   *Response Status* **C**
REJECT.

The Pause protocol is concerned with round trip delay so the protocol uses 2X the
maximum delay constraint. Therefore, if two different implementations meet the delay
constraint, but have different allocation of delay between TX and RX it doesn't matter to the
protocol. If, TX1+RX1< delay_constraint and TX2+RX2 < delay_constraint, then
TX1+RX2+TX2+RX1 < 2*delay_constraint. The pause protocol does not require a
specification of TX1+RX2 delay.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **48**   Page 9 of 31
10/11/2015 18:35:44

Cl **45**　　*SC* **45.2.3.48**　　　*P* **26**　　*L* **17**　　# 49
Carlos, Sánchez de La Lama　　　KDPOF

Comment Type　**T**　　*Comment Status*　**A**

In Table 45-161, bit 3.500.15 is R/W, but meaning is given only for write in the "1" value case.

SuggestedRemedy

Change description to:
0 = OAM transmit registers available for a new message
1 = Transmission of OAM message pending; write as "1" to request transmission

Response　　　　　*Response Status*　**C**

ACCEPT.

Cl **45**　　*SC* **45.2.3.54**　　　*P* **33**　　*L* **18**　　# 50
Carlos, Sánchez de La Lama　　　KDPOF

Comment Type　**E**　　*Comment Status*　**A**

No need to include legend for R/W as there are no R/W bits Table 45-167.

SuggestedRemedy

Remove R/W legend.

Response　　　　　*Response Status*　**C**

ACCEPT.

Cl **114**　　*SC* **114.2.4.3.3**　　*P* **55**　　*L* **44**　　# 51
Carlos, Sánchez de La Lama　　　KDPOF

Comment Type　**E**　　*Comment Status*　**A**

Confusing redaction: "The reset state of the counter is zero at the beginning of each codeword encoding. Since the counter is reset for each set of kQAM bits, it always starts at zero for each new codeword entering the mapper."

If the reset state is zero at the beggining of each codeword encoding, no need to clarify further.

SuggestedRemedy

Change those sentences to: "The reset state of the counter is zero. Since the counter is reset for each set of kQAM bits, it always starts at zero for each new codeword entering the mapper."

In any case, style should be consitent with page 56, line 39, so if changed here should be changed there as well.

Response　　　　　*Response Status*　**C**

ACCEPT.

Replace on both with proposed text, P55 L44 and P56 L39.

Cl **114**　　*SC* **114.3.4.2**　　　*P* **78**　　*L* **16**　　# 52
Mendo, Carmen　　　　KDPOF

Comment Type　**T**　　*Comment Status*　**A**

Should mention what happens in LPI mode.
From 114.4.2 it seems that during LPI the link margin info can be still updated using only the refresh periods: is this correct? Does the spec need to justify that this is sufficient for a good estimate?

SuggestedRemedy

Specify PHY quality assessment in LPI operation.

Response　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

It is correct that the PHY quality can be still updated in LPI by using the signal received during the refresh periods. The draft does not justify. The work presented in the task force is the justificatication behind the specification.

Add after equation 114-21:
"In LPI mode of operation, the PHY may use the reception of S2 pilot sub-blocks contained in the refresh periods to estimate the noise variance at the PAM16 decoder decision points and to update link margin and the state variable loc_rcvr_status."

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **52**　　　Page 10 of 31
10/11/2015 18:35:44

Cl **114**　　*SC* **114.7.4.2**　　　*P* **109**　　　*L* **17**　　　# 53
Mendo, Carmen　　　　　　　KDPOF

Comment Type **T**　　　*Comment Status* **A**
In Figure 114-52, conditions for transitions from state OAMTX_PHYT_WAIT are not exact.

SuggestedRemedy
No misinterpretation seems possible, but it would be more clear if:
- transition from OAMTX_PHYT_WAIT to OAMTX_NEWMSG_WAIT was labeled
"new_rxphd_event=TRUE * hdr_crc16_status=OK * rxphd_phyt = txphd_msgt"
- transition from OAMTX_PHYT_WAIT to itself was labeled "new_rxphd_event=TRUE *
hdr_crc16_status=OK * rxphd_phyt != txphd_msgt"

Response　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.8**　　　*P* **111**　　　*L* **10**　　　# 54
Mendo, Carmen　　　　　　　KDPOF

Comment Type **T**　　　*Comment Status* **A**
Clarify what happens on the TX paths in "PCS GMII level loopback" and "PCS PMD
interface level loopback"?

SuggestedRemedy
Is this up to the implementer? It is specified for the line loopback...

Response　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

P111, L6, add after full stop:
"Operations of PCS, PMA and PMD sublayers are not specified in this loopback mode."

P111, L9, replace with:
"… completely exercising the PCS and PMA as in normal operation, although the PCS
receiver ignores signals from the PMD receive function. PMD operation is not specified in
this loopback mode."

Cl **114**　　*SC* **114.3.1**　　　*P* **64**　　　*L* **32**　　　# 55
Mendo, Carmen　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
Typo: ".. for transmit and received OAM ..".

SuggestedRemedy
For consistency, should read: ".. for transmit and receive OAM ..".
Also on line 37 should read: ".. transmit and receive PHD ..".

Response　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.3.2.1**　　　*P* **67**　　　*L* **9**　　　# 56
Mendo, Carmen　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
Expression: ".. not correct determined by CRC16 ..".

SuggestedRemedy
Suggest: ".. not correct according to CRC16 ..".

Response　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

Insert "as", i.e., "not correct as determined"

Cl **114**　　*SC* **114.3.2.3**　　　*P* **70**　　　*L* **36**　　　# 57
Mendo, Carmen　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
Text format: avoid odd hyphenation of variables.

SuggestedRemedy
Should keep variable names in one line.
Also on p.71, l.42.

Response　　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.5.1.5.1**　　　*P* **87**　　　*L* **38**　　　# 58
Mendo, Carmen　　　　　　　KDPOF

Comment Type **E**　　　*Comment Status* **A**
Typo: ".. then the PHY indicate link_status=FAIL."

SuggestedRemedy
Should read: "indicates" or "shall indicate".

Response　　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

Replace with "… then the PHY indicates link_status = FAIL."

"shall" is reserved for PICS items.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **58**　　　Page 11 of 31
10/11/2015 18:35:44

Cl **45**   *SC* **45.2.3.50.2**   *P* **29**   *L* **23**   # 59
Mendo, Carmen   KDPOF

Comment Type **E**   *Comment Status* **A**
    Typo: Missing close-parentheses at the end of the line.

SuggestedRemedy
    Close paranthesis.

Response   *Response Status* **C**
    ACCEPT.

Cl **45**   *SC* **45.2.3.51.3**   *P* **30**   *L* **54**   # 60
Mendo, Carmen   KDPOF

Comment Type **T**   *Comment Status* **A**
    No mention to the bit being LL.

SuggestedRemedy
    Detail the LL behavior, eg: This bit has latching-low behavior. After it is read, it is updated
    to the current value of the link_status variable.

Response   *Response Status* **C**
    ACCEPT IN PRINCIPLE.

    Replace with:
    "This bit reflects the value of the state variable link_status as determined by the link status
    monitor state diagrams (see 114.3.2.1). This bit has latching-low behavior."

Cl **114**   *SC* **114.2.4.3.1**   *P* **53**   *L* **42**   # 61
Mendo, Carmen   KDPOF

Comment Type **E**   *Comment Status* **A**
    Typo: ".. to a MLCC codeword ..".

SuggestedRemedy
    Should read: ".. to an MLCC codeword .." (consistent with other occurrences and more
    usual).

Response   *Response Status* **C**
    ACCEPT.

Cl **114**   *SC* **114.2.4.4**   *P* **62**   *L* **1**   # 62
Mendo, Carmen   KDPOF

Comment Type **T**   *Comment Status* **A**
    The interpretation of the formulas to get to the final expression and range for y (output to
    THP) is confusing.

SuggestedRemedy
    Should clarify the interpretation / handling of intermediate step u, either in Figure 114-32 or
    in the text.

Response   *Response Status* **C**
    ACCEPT IN PRINCIPLE.

    Replace P61 L48 with:
    "The second part, illustrated in Figure 114–32, uses the signals v and s to scramble the
    PAM16 symbols, x, according to the following set of equations. The scrambled sequence is
    denoted with y. The scrambling process operates at symbol rate, so that a new sample of
    v, s and y is generated per input sample x.

    $u = v + s*x$
    $y = mod(u + 16, 32) - 16$"

    Also modify Figure 114-32 to
    + Eliminate equation
    + Add variable x at the input

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Comment ID* **62**   Page 12 of 31
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   10/11/2015 18:35:44
SORT ORDER: Comment ID

Cl **114**   *SC* **5.4**   *P*   *L*   # 63
Stassar, Peter   Huawei Technologies

Comment Type **E**   *Comment Status* **A**

Link segment is a "classical" term. Need to correlate it to the recently (in optical clauses) introduced term "channel". Perhaps it should be done as in Clauses 87 and 88, where it is stated "The fiber optic cabling model (channel) defined here is the same as a simplex fiber optic link segment. The term channel is used here for consistency with generic cabling standards."

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change heading 114.5.4 "Link segment characteristics" to
"Characteristics of the fiber optic cabling (channel)"

P93, L25 to 26, change:
"The PMD subject to this clause is for a plastic optical fiber cable with a multimode optical fiber IEC 60793-2-40 sub-category A4a.2. The cable is duplex."
to:
"The fiber optic cable requirements are satisfied by cables containing IEC 60793-2-40 sub-category A4a.2 multimode plastic optical fibers. A link uses two fibers, one for each direction (see 114.1.5). The fiber optic cabling model (channel) defined here is the same as a simplex fiber optic link segment. The term channel is used here for consistency with generic cabling standards."

Replace all "link segment" occurrences with "fiber optic channel" in C/114.

Cl **114**   *SC* **5.4.3**   *P*   *L*   # 64
Stassar, Peter   Huawei Technologies

Comment Type **E**   *Comment Status* **A**
Same as comment to Clause 114.5.4.1

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

See comment #69

Cl **114**   *SC* **5.4**   *P*   *L*   # 65
Stassar, Peter   Huawei Technologies

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

The sentences "The PMD subject to this clause is for a plastic optical fiber cable with a multimode optical fiber IEC 60793-2-40 sub-category A4a.2. The cable is duplex." should be phrased differently.
Need to be changed to (or similar):
"The fiber optic cable requirements are satisfied by cables containing IEC 60793-2-40 sub-category A4a.2 (multimode plastic optical fiber). A connection is established by two fibers, one for each direction.". Please check 88.11.1 as a reference.

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

See comment #63

Cl **114**   *SC* **5.5.3**   *P*   *L*   # 66
Stassar, Peter   Huawei Technologies

Comment Type **ER**   *Comment Status* **A**
"Under these conditions, a 1000BASE-RHx PHY shall be able to provide a BER less than 10-12", remove the words "be able to".

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

Cl **114**   *SC* **5.6.7**   *P*   *L*   # 67
Stassar, Peter   Huawei Technologies

Comment Type **ER**   *Comment Status* **A**
Modify "Based on the above definitions, the positive and negative output droops" to "Based on the above definitions, the positive output droop DO+ and the negative output droop DO-"

SuggestedRemedy

Response   *Response Status* **C**
ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **67**   Page 13 of 31
10/11/2015 18:35:44

Cl **114**   *SC* **5.2.2**   *P*   *L*   # 68
Stassar, Peter   Huawei Technologies

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

"Assuming that implementation of Equation (114-25) ideally linear"
This part of the sentence should be removed.
The definition of ER is independent of whether the transmitter is assumed linear or not and the AOP is a measured value, not a calculated value. If the transmitter is not sufficiently linear then the calculated AOP is different from the measured AOP. Therefore ER and AOP are determined by measurement and not by formulas 114-26 and 114-27

SuggestedRemedy

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Fully agree. Equations 114-26 and 114-27 were provided for the case of linear transfer function. Finally, this paragraph is producing confusion.

Edition actions:
Delete P89, lines 21 to 33.

P101, L25 to 27, change:
"ER shall be calculated from the measurements of the maximum optical power (P1) and the minimum optical power (P0) as defined in 114.5.2.2, where P1 and P0 are measured in mW."
to:
"ER shall be calculated from the measurements of the maximum optical power (P1) and the minimum optical power (P0) per equation 114-xx, where P1 and P0 are measured in mW.

ER = 10*log10(P1/P0)   (114-xx)"

Cl **114**   *SC* **5.4.1**   *P*   *L*   # 69
Stassar, Peter   Huawei Technologies

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

This intent of this clause is not clear. The figure clearly isn't "insertion loss", but probably intended to be "link segment transfer characteristics". What is the source of this information? How is it established that individual links meet this requirement? By specification or measurement? Is this frequency response not launch dependent? Measurement would be required to be much better than 1/100 of a dB at 8 MHz.

SuggestedRemedy

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Information is obtained by experimental measurements using several samples of a transmitter that meets the MPD specs, several samples of each link segment type, high speed low noise opto-electrical converter and VNA with averaging enabled. The throw calibration is carried out with just 30 centimeters of POF to eliminate the response of optoelectronics. The IL upper bound limits in the draft corresponds to an envelope of the worst case obtained responses. Additional measurements are being carried out by different individuals participating in the TF for refining the values.

Actions:
- See perezaranda_3bv_4_1115 for specification refinement.
- Change term "insertion loss upper bound limit"
to
lower bound transfer function, and it explains frequency dependent propagation of the light through the fiber that is caused by the modal and chromatic dispersion of the fiber.
Modify text, figure, tables accordingly.

Cl **114**   *SC* **5.4.2**   *P*   *L*   # 70
Stassar, Peter   Huawei Technologies

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

Same as to Clause 114.5.4.1

SuggestedRemedy

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See comment #69.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **70**

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Cl **114**　　*SC* **5.5.1**　　　　*P*　　　*L*　　　# 71
Stassar, Peter　　　　　　　Huawei Technologies

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

"A 1000BASE-RHx transmitter shall meet the specifications at TP2 defined in Table 114-8 and the mode power distribution (MPD) shall be higher than the lower bound limit defined in Table 114-9 per measurement techniques defined in 114.5.6. Specification for transmit MPD is illustrated in Figure 114-51." Are the specified launching conditions indeed 1m after the transmitter?
It is not possible to judge the completeness of this specification before the information indicated in the editor's note in Clause 114.5.6.8 has become available.

SuggestedRemedy

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Yes, MPD is specified in TP2, 1m after transmiter.

See perezaranda_3bv_3_1115.m for the code that compute HD2, HD3 and RPD, intended to be included in 802.3bv D1.4.

Editor actions:
- Include in the 114.5.6.8 the code of perezaranda_3bv_3_1115.m and delete editor's note.
- In Table 114-8, replace the TBDs as:
　Max HD2 = -21 dB
　Max HD3 = -27 dB
　Max RPD = -40 dB

Cl **114**　　*SC* **5.5.3**　　　　*P*　　　*L*　　　# 72
Stassar, Peter　　　　　　　Huawei Technologies

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

It is not clear/evident why the average optical power for reliable link establishment for receiver RHC is -17dBm for segment type II and -18.5dBm for segment type III. Is this a result of link segments with different bandwidth? One would expect that a more narrow type III would give a value higher than for type II and not lower

SuggestedRemedy

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Yes, it is because link segments with different bandwidths.

The confusion is produced by an editorial error already reported in comment #79. The frequency responses for type I and type III are swapped (tables and figures).

Cl **114**　　*SC* **114.5.5**　　　　*P* **97**　　*L* **6**　　# 73
Takahashi, Satoshi　　　　　　　POF promotion

Comment Type　**E**　　*Comment Status*　**A**

"Receptical" is not generally used for this meaning.

SuggestedRemedy

Change "receptical" to "receptacle"

Response　　　　　　*Response Status*　**C**

ACCEPT.

Cl **114**　　*SC* **114.5.5**　　　　*P* **97**　　*L* **11**　　# 74
Takahashi, Satoshi　　　　　　　POF promotion

Comment Type　**E**　　*Comment Status*　**A**

"Receptical" is not generally used for this meaning.

SuggestedRemedy

Change "receptical" to "receptacle"

Response　　　　　　*Response Status*　**C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **74**　　　　　Page 15 of 31
10/11/2015 18:35:45

Cl **114**　　*SC* **114.12.1**　　*P* **114**　　*L* **13**　　# 75
Takahashi, Satoshi　　　　　POF promotion

Comment Type **E**　　*Comment Status* **R**
"Clause 21" is written in green.

SuggestedRemedy
Write it in black. Same for line 44.

Response　　　　*Response Status* **C**
REJECT.

Green is for external reference

Cl **114**　　*SC* **114.5.5**　　*P* **97**　　*L* **3**　　# 76
Takahashi, Satoshi　　　　　POF promotion

Comment Type **E**　　*Comment Status* **A**
"Receptical" is not generally used for this meaning.

SuggestedRemedy
Change "receptical" to "receptacle"

Response　　　　*Response Status* **C**
ACCEPT.

Cl **114**　　*SC* **114.5.5.1**　　*P* **97**　　*L* **22**　　# 77
Takahashi, Satoshi　　　　　POF promotion

Comment Type **T**　　*Comment Status* **R**
Temperature shall be specified because center wavelength depends on the ambient temperature.

SuggestedRemedy
"... the specifications at TP2 defined in Table 114-8 for all the temperature range defined in Table 114-14 and ..."

Response　　　　*Response Status* **C**
REJECT.

It is up to the implementer to declare that an specific 1000BASE-RH implementation is compliant with one of the three temperature classes. For example, an implementer can produce a 1000BASE-RHC implementation fulfilling the TP2 specs and being compliant with temperature class "Extended I". Other implementation can be Extended A class compliant.

Cl **114**　　*SC* **114.5.5.1**　　*P* **99**　　*L*　　# 78
Takahashi, Satoshi　　　　　POF promotion

Comment Type **T**　　*Comment Status* **A**
Angle interval in Table 114-9 seems to be too narrow.

SuggestedRemedy
Set coarse angle interval, e.g. 5 degree.

Response　　　　*Response Status* **C**
ACCEPT IN PRINCIPLE.

If 5 degrees is used and lower bound is to be defined as a piecewise function, the specification becomes more restrictive in the range of 0 to 10 degrees, and less restrictive between 25 and 35 degrees.
Due to the morphology of EAF, uniform steps in the angle axis seem not to be the more suitable option.

See perezaranda_3bv_5_1115.pdf for specification refinement.

Cl **114**　　*SC* **114.5.4.1**　　*P* **94**　　*L*　　# 79
Takahashi, Satoshi　　　　　POF promotion

Comment Type **TR**　　*Comment Status* **A**
Figure 114-48 and table 114-5 must be for segment type III (15m), Figure 114-50 and table 114-7 are for segment type I (50m).

SuggestedRemedy
Swap Figure 114-48 with 114-50.
Swap table 114-5 with 114-7.

Response　　　　*Response Status* **C**
ACCEPT.

Cl **00**　　*SC* **0**　　*P*　　*L*　　# 80
Grow, Robert　　　　　RMG Consulting

Comment Type **E**　　*Comment Status* **A**
P802.3 has been approved.

SuggestedRemedy
If IEEE Std 802.3-2015 is published before the next draft, update instances of 802.3-201x and 802.3-20xx with 802.3-2015. (Probably just headers and frontmatter.)

Response　　　　*Response Status* **C**
ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **80**

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Cl **01**   *SC* **1.4**   *P* **20**   *L* **40**   # 81
Grow, Robert   RMG Consulting

Comment Type **E**   *Comment Status* **A**
Looks like we failed to include definitions of our port types.

SuggestedRemedy
Add:
1.4.x 1000BASE-H: An IEEE 802.3 physical coding sublayer for 1000 Mb/s serial operation. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHA: IEEE 802.3 PMD specifications for 1000 Mb/s serial transmission using red wavelength with optical budget tailored for home and other consumer application requirements. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHB: IEEE 802.3 PMD specifications for 1000 Mb/s serial transmission using red wavelength with optical budget tailored for industrial application requirements. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHC: IEEE 802.3 PMD specifications for 1000 Mb/s serial transmission using red wavelength with optical budget tailored for automotive application requirements. (See IEEE Std 802.3, Clause 114.)

Response   *Response Status* **C**
ACCEPT IN PRINCIPLE.

"serial" term does not seem to have meaning in this Physical Layer.
1000BASE-H also includes PMA sublayer.

Add:
1.4.x 1000BASE-H: IEEE 802.3 PCS and PMA sublayers for 1000 Mb/s Ethernet using duplex plastic optical fiber cabling. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHA: IEEE 802.3 PMD specifications for 1000 Mb/s Ethernet using duplex plastic optical fiber cabling and red wavelength with optical budget tailored for home and other consumer application requirements. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHB: IEEE 802.3 PMD specifications for 1000 Mb/s Ethernet using duplex plastic optical fiber cabling and red wavelength with optical budget tailored for industrial application requirements. (See IEEE Std 802.3, Clause 114.)

1.4.x 1000BASE-RHC: IEEE 802.3 PMD specifications for 1000 Mb/s Ethernet using duplex plastic optical fiber cabling and red wavelength with optical budget tailored for automotive application requirements. (See IEEE Std 802.3, Clause 114.)

Cl **01**   *SC* **1.3**   *P* **19**   *L* **18**   # 82
Grow, Robert   RMG Consulting

Comment Type **E**   *Comment Status* **A**
P802.3bw has been approved by the SASB.

SuggestedRemedy
Update editing instruction and delete from list references included in IEEE Std 802.3bw-201x. The following differences should be retained and changes coordinated with P802.3bp:
IEC CISPR 25:2009 (bw has an older reference)
IEC 62215-3 (not included in bw)

Response   *Response Status* **C**
ACCEPT.

Cl **01**   *SC* **1.4**   *P* **21**   *L* **23**   # 83
Grow, Robert   RMG Consulting

Comment Type **T**   *Comment Status* **R**
I note that IEEE Std 802.3bw includes a number of changes to add they PHY type to appropriate definitions, but we haven't

SuggestedRemedy
Add test for to describe 1000BASE-RH PHY types to:
1.4.193 End-of-Stream Delimiter (ESD):
1.4.326 Physical Coding Sublayer (PCS):
1.4.327 Physical Layer entity (PHY):
1.4.328 Physical Medium Attachment (PMA) sublayer:
1.4.353 receiver training:
1.4.390 Start-of-Stream Delimiter (SSD):
1.4.393 symbol:
1.4.394 symbol period:
1.4.395 symbol rate (SR):

Response   *Response Status* **C**
REJECT.

Task force asks to the commentter to submit a Maintenance Request to eliminate these lists and make the definitions generic.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **83**   Page 17 of 31
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Cl **30** *SC* **30.5.1.1.2** *P* **23** *L* **29** # 84
Grow, Robert   RMG Consulting

Comment Type **TR** *Comment Status* **A**
With the addition of multiple PHY types, we need to update some of the clause 30 attributes and clause 45 specifications.

SuggestedRemedy
Page 23, line 29, replace with
1000BASE-RHA Plastic optical fiber PHY as specified in Clause 114.
1000BASE-RHB Plastic optical fiber PHY as specified in Clause 114.
1000BASE-RHC Plastic optical fiber PHY as specified in Clause 114.

Page 23, line 39, should be "for a 1000BASE-RHx PHY,".

Page 25, line 19, need three listings.

Response *Response Status* **C**
ACCEPT.

Cl **114** *SC* **114.1.3** *P* **37** *L* **51** # 85
Dawe, Piers   Mellanox

Comment Type **T** *Comment Status* **A**
As this PHY doesn't do CSMA/CD, only full duplex, but does have an EEE option,

SuggestedRemedy
Should this refer to Annex 4A rather than Clause 4?

Response *Response Status* **C**
ACCEPT.

As stated in Annex 4A: "This annex stands alone and does not rely on information within Clause 4 to be implemented."

Editor action: replace text of 114.1.3 with:
"The relationship between a 1000BASE-H PHY, the ISO Open Systems Interconnection (OSI) Reference Model, and the IEEE 802.3 Ethernet Model is shown in Figure 114–1. The physical layer connects one Annex 4A Media Access Control (MAC) to the medium. This clause specifies the Physical Coding Sublayer (PCS), Physical Medium Attachment (PMA) and Physical Medium Dependent (PMD) components of the physical layer device (PHY)."

In Figure 114-1, replace "CSMA/CD" with "Ethernet". Change title of figure 114-1 to:
"Relationship of 1000BASE-RHx PHY to the ISO/IEC OSI reference model and the IEEE 802.3 Ethernet Model"

Cl **114** *SC* **114.1.3** *P* **38** *L* **3** # 86
Dawe, Piers   Mellanox

Comment Type **T** *Comment Status* **A**
Obsolete label.

SuggestedRemedy
Change LAN CSMA/CD LAYERS to ETHERNET LAYERS
Scrub the draft for any other obsolete features.

Response *Response Status* **C**
ACCEPT.

See comment #85

Cl **114** *SC* **114.5.6.8** *P* **102** *L* **42** # 87
Dawe, Piers   Mellanox

Comment Type **T** *Comment Status* **R**
When you have the captured waveform you can find AOP, rise and fall time, ER and transmitter overshoot from it and avoid several separate measurements with very untypical patterns.

SuggestedRemedy
Explain how to use this measurement to find AOP, rise and fall time, ER and transmitter overshoot. Make test mode 3 optional.

Response *Response Status* **C**
REJECT.

It is true that test mode 6 would allow the measurement of many properties of the transmit signal like the ones commented.

However, test mode 3 allows a more direct measurement of ER, rise and fall times, and overshoot using a simpler laboratory setup and the specification is clearer. The implementation of test mode 3 is very simple, therefore the impact on the silicon complexity is negligible.

It is up to the implementer using the test mode 6 and develop a more complex Matlab script to extract in a shot all the measurements.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **87**

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Cl **01**   *SC* **1.4**   *P* **21**   *L* **1**   # **88**

Dawe, Piers   Mellanox

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

This "definition" of optical modulation amplitude is incorrect (read any of the clauses that use OMA), there is already a definition for OMA at 1.4.303, and this draft does not use the term anyway.

SuggestedRemedy

Delete it.

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.5.6.1**   *P* **100**   *L* **42**   # **89**

Dawe, Piers   Mellanox

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

This isn't a test spec - understanding that, we don't write "X shall be measured" any more (last done in Clause 72) because there is no requirement to measure - just to comply with the spec for X (802.3 used to have a test spec but it was withdrawn - customers and suppliers can negotiate test strategies outside of 802.3 if they wish).
See e.g.
58.7.2 Wavelength and spectral width measurements
The wavelength and spectral width (RMS) shall meet specifications according to TIA-455-127-A, under modulated conditions using a valid 100BASE-X signal.
or
95.8.2 Center wavelength and spectral width
The center wavelength and RMS spectral width of each optical lane shall be within the range given in Table 95–6 if measured per TIA/EIA-455-127-A or IEC 61280-1-3. The lane under test is modulated using one of the test patterns specified in Table 95–10.

SuggestedRemedy

Revise all five "shall be measured" so that the requirement applies to the thing to be measured, not to the action of measuring or testing.
Similarly for "shall be tested" in 114.10.4.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Modify text as indicated. PICS accordingly.

P100, L42:
"The center wavelength shall meet the specifications according to IEC 61280-1-3, under normal (non-test) mode conditions using a valid 1000BASE-H transmit signal as specified in 114.2.5.1. […]"

P100, L49:
"The spectral width (RMS) shall meet the specifications according to IEC 61280-1-3, using same test conditions as for center wavelength measurement (see 114.5.6.1)."

P101, L3:
"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."

P101, L12:
"The transmit rise and fall time shall meet the specifications according to the following measurements procedure. […]"

P101, L25:
"The Extinction Ratio (ER) shall meet the specifications according to the following measurements procedure. ER is obtained by measurement in the time domain. ER is calculated from the measurements of the maximum optical power (P1) and the minimum

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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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **89**   Page 19 of 31
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optical power (P0) as defined in 114.5.2.2, where P1 and P0 are measured in mW. […]"

P101, L38:
"The transmit overshoot shall meet the specifications according to the following measurements procedure. […]"

P102, L3:
"The transmitter output droop shall meet the specifications according to the following measurements procedure. The transmitter output droop is specified in terms of extinction ratio. Output droop is calculated relative to ER, therefore measurement defined in 114.5.6.5 has to be previously carried out to serve as reference. Let denote this reference extinction ratio as ER0."

P102, L28:
"These three parameters shall meet the specifications according to the following procedure. […]"

P112, L39:
"A 1000BASE-RHx PHY shall meet the EMC requirements according to IEC CISPR 25 test methods defined to measure the PHY's EMC performance in terms of RF immunity and RF emissions."

Cl **114**   *SC* **114.5.5.3**   *P* **99**   *L* **21**   # **90**
Dawe, Piers   Mellanox

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

This still needs a more specific receiver performance spec - just saying it should work with compliant transmitter and link segment is too open to interpretation. Especially as the link segment seems to exclude losses from inline connections, and the effect of reflections is not clear.

SuggestedRemedy

Add stressed sensitivity specs and define an example way for testing performance at full stress. E.g. use POF of the length needed to create the minimum bandwidth from minimally compliant (slow) Tx and link segment, adjust test Tx power to receive power after minimum product Tx power and maximum link segment and connection losses. Use e.g. sinusoidal interferer at test Tx to emulate effect of reflections if necessary. Use jitter source at test Tx if necessary.

Response   *Response Status*   **C**

REJECT.

Text from P99, L52 to P100, L7 includes the specification of stressed sensitivity; that is the case of min value of AOP in TP3.
Worst case channel frequency response of POF is provided in 114.5.4 for the different link segment types. As stated in 114.5.4, the inline connections do not modify the frequency repsonse of link segment. Regarding to the transmitter, 114.5.5.1 specifies worst-case. Based on those specifications (114.5.4 and 114.5.5.1), a worst case TX and channel are defined and it is up to the implementer the development of a receiver able to meet the specificaitons of 115.5.5.3.

Cl **114**   *SC* **114.5.4**   *P* **93**   *L* **40**   # **91**
Dawe, Piers   Mellanox

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

I don't think defining link segment attenuation without the insertion loss produced by inline connections is workable.

SuggestedRemedy

Either define link segment attenuation in the usual way, including inline connections, or forbid inline connections. If you allow them, you probably want some maximum loss for all the inline connections in a link segment, because if the connection loss is very high, the mode profile is probably not what you want.

Response   *Response Status*   **C**

REJECT.

As stated in P93, L45, "Any link segment including inline connections meets the frequency response requirement defined for each type.". This implies either the mode power distribution is preserved or high modes are relatively more attenuated in the inline connection.

Maximum attenuation permitted to a link segment including inline connections is AOPmin(TP2) - AOPmin(TP3), which is already provided.

Maximum attenuation of link segment without inline connection is specified in the draft because, together with the DC normalized frequency response, is the specification of the fiber optic channel.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **91**   Page 20 of 31
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Cl **114**   *SC* **114.10.4**   *P* **112**   *L* **38**   # 92
Dawe, Piers   Mellanox

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

"shall ..., or as agreed to between the customer and the supplier" is unacceptable, because this is a standard, not a procurement spec. There is no concept of customer or supplier, and no-one has the authority to vary the spec.
Many other clauses say e.g.
95.9.5 Electromagnetic emission
A system integrating a 100GBASE-SR4 PMD shall comply with applicable local and national codes for the limitation of electromagnetic interference.
Another automotive-oriented clause says:
96.9.2.2 Electromagnetic Compatibility
A system integrating the 100BASE-T1 PHY shall comply with all applicable local and national codes. In addition, the system may need to comply with more stringent requirements as agreed upon between customer and supplier, for the limitation of electromagnetic interference.
But this seems confused: the first sentence is wider than the subject of the subclause.

SuggestedRemedy

Change to:
A system integrating the 1000BASE-RHx PHY shall comply with all applicable local and national codes for the limitation of electromagnetic interference. In addition, the system may need to comply with more stringent requirements as agreed upon between customer and supplier.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

We will use same text that commenter agrees is acceptable for 802.3bp.

Cl **114**   *SC* **114.5.6.9**   *P* **103**   *L* **10**   # 93
Dawe, Piers   Mellanox

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

Need to define the jitter corner frequency: what jitter frequency is low enough that the receiver is expected to track it? See any recent optical clause, e.g. 95.8.8.3 J2 and J4 Jitter, "J4 Jitter is defined using a clock recovery unit as in 95.8.7" which refers indirectly to 86.8.3.2:
A clock recovery unit (CRU) is used to trigger the oscilloscope for mask measurements, as shown in Figure 52–9. It has a high-frequency corner bandwidth of 4 MHz and a slope of –20 dB/decade. The CRU tracks acceptable levels of low-frequency jitter and wander.

SuggestedRemedy

Add a similar clock recovery unit, or if a description with a common reference clock is preferred, state what low frequencies should be filtered out of the measurement.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P103, L3 to 15, replace with:
"The transmitter timing jitter shall meet the specifications according to the following measurement procedure.

The PHY is configured in test mode 2. Tests are done using an optical to electrical converter connected to TP2 and a general-purpose oscilloscope with capture capability.

The RMS (Root Mean Square) jitter of the crossing events of the PMD transmit signal with the average optical power is measured relative to the corresponding edges of an unjittered clock reference with a frequency of 162.5 MHz (one half the symbol rate) .

Jitter is measured over an interval of 2 ms ± 10%. The measurement device has to provide a high-frequency low-pass corner of at least 32.5 MHz with slope of -20 dB/decade and a low-frequency high-pass corner of maximum 1 kHz with slope of 20dB/decade. Un-jittered reference is a constant clock frequency extracted from each record of captured output on TP2. The un-jittered reference is based on linear regression of frequency and phase that produces minimum Time Interval Error."

Replace in Table 114-8 max value for Timing jitter with 10 ps. That is a typo from early versions of draft.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **93**

Cl **114**   *SC* **114.5.5.4**   *P***100**   *L***11**   # 94
Dawe, Piers   Mellanox

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

This heading says "Worst-case 1000BASE-RHx link power budget and penalties" but unlike nearly all other power budgets in optical clauses - it's just an optical loss budget, does not include any penalties such as ISI from link segment bandwidth, RIN, reflections. See 89.6.4 Comparison of power budget methodology - that clause includes some penalties in its power budget.
A power budget can be written for an equalising system too.

SuggestedRemedy

Either declare what the penalties are (you know the worst bandwidth, precoding method, FEC code and so on), or change the name to e.g. "optical loss budget".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change heading to "Worst-case 1000BASE-RHx link power budget (informative)"

Cl **114**   *SC* **114.10.1**   *P***111**   *L***52**   # 95
Dawe, Piers   Mellanox

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

Temperature isn't an interoperability issue and is usually not specified by 802.3 but by other specs: e.g.
95.9.6 Temperature, humidity, and handling
The optical link is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, and physical handling (such as shock and vibration). Specific requirements and values for these parameters are considered to be beyond the scope of this standard.

SuggestedRemedy

Change:
1000BASE-RHx implementations shall be declared as compliant over one of three complete ranges as specified in Table 114–14.
to:
The optical link is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, and physical handling appropriate to the intended environment (e.g., automotive, industrial or home networking). A 1000BASE-RHx implementation may be declared as compliant over one of the three complete ranges specified in Table 114–14.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is true that temperaure is not an interoperability issue. The intention of this sub-clause was the indication (labelling) of the temperature range where an implementation is compliant with the 1000BASE-RHx specifications.

Change:
"1000BASE-RHx implementations shall be declared as compliant over one of three complete ranges as specified in Table 114–14."
to:
"The optical link is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, and physical handling appropriate to the intended environment (e.g., automotive, industrial or home networking). A compliant 1000BASE-RHx PHY implementation shall clearly indicate the operating temperature range of Table 114-14 over which their compliance is ensured."

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **95**

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Cl **01**   *SC* **1.4**   *P* **20**   *L* **40**   # 96

Dawe, Piers   Mellanox

Comment Type **E**   *Comment Status* **A**

These are people's names. One seems to have an extra letter. Inconsistent punctuation.

SuggestedRemedy

Change bose, ray-chaudhurim hocquenghem to:
Bose, Ray-Chaudhuri, Hocquenghem

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.10.3**   *P* **112**   *L* **19**   # 97

Dawe, Piers   Mellanox

Comment Type **E**   *Comment Status* **R**

"Environmental safety" - what's that?

SuggestedRemedy

Change to "Environment".

Response   *Response Status* **C**

REJECT.

It seems that "Environmental safety" is the correct term, because both 1000BASE-T1 and 100BASE-T1 use it and 100BASE-T1 was approved in sponsor ballot one week ago.

Cl **114**   *SC* **114.1.2**   *P* **37**   *L* **46**   # 98

Dawe, Piers   Mellanox

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

I do not want to pay CHF158 for ISO 80000-2 just so the clause can use gimmicky, unnecessary notation that I don't want to read. It doesn't work - when the reader reads the gimmick he sees a typo, doesn't know that ISO 80000-2 explains it.

SuggestedRemedy

Delete reference to ISO 80000-2 here and in 1.3. Don't use arcane notation.
Instead of [a, b), just write a <= x < b.
Define roundup and rounddown rather than using graphics that aren't even characters that I could select and search for.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete reference to ISO 80000-2 in P37,L46 and in 1.3.

In all the text, replace rounding down operator by "floor($\cdot$)" and replace rounding up operator by "ceil($\cdot$)". Also in equations and figures.

Change P50, L22, to:
"and floor(a) denotes the greatest integer less than or equal to the real number a."

Change P56, L1, to:
"where ceil(a) denotes the least integer greater than or equal to the real number a. Both binary substreams …"

P62, L31, change:
"The THP processed symbols, which are uniformly distributed in the region [-16, 16), are power scaled prior to transmission."
to:
"The THP processed symbols, which can take any value in the interval $-16 <= y(m) < 16$, are power scaled prior to transmission."

Eliminate from Figure 114-33 "[-16, 16)" and "[-1, 1)". Add "$-16 <= y(m) < 16$".

P74, L28 and L33, and P75, L2 and L11, change:
"real numbers that take values in the interval [-2, 2)"
to:
"real numbers that take values such that $-2 <= XXX < 2$" (replace XXX with the corresponding variable name)

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **98**   Page 23 of 31
10/11/2015 18:35:45

Cl **114**   *SC* **114.1.6**   *P* **39**   *L* **19**   # 99

Dawe, Piers   Mellanox

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

Gratuitous capitals. Text in figures, like anywhere else except layer diagrams, should be in normal mixed upper and lower case. This is a block diagram not a layer diagram.

SuggestedRemedy

Change PCS TRANSMIT, PMD TRANSMIT, PMD RECEIVE, PHY CONTROL, LINK MONITOR, PHD MONITOR, ADAPTIVE EQ ESTIMATOR, ADAPTIVE THP PROTOCOL, CLOCK RECOVERY, PHY QUALITY MONITOR, PCS RECEIVE, EQUALIZER to PCS transmit, PMD transmit, PMD receive, PHY control, Link monitor, PHD monitor, Adaptive equalization estimator, Adaptive THP protocol, Clock recovery, PHY quality monitor, PCS receive, Equalizer.

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.1.3**   *P* **37**   *L* **50**   # 100

Dawe, Piers   Mellanox

Comment Type **T**   *Comment Status* **A**

Obsolete terminology: the phrase "IEEE 802.3 CSMA/CD LAN Model" hasn't been used since Clause 40.

SuggestedRemedy

Update text and title of Figure 114-1 to match recent clauses.

Response   *Response Status* **C**

ACCEPT.

See comment #85

Cl **114**   *SC* **114.5.3**   *P* **90**   *L* **53**   # 101

Dawe, Piers   Mellanox

Comment Type **T**   *Comment Status* **A**

Some of the test mode patterns are quite complicated and would not be generated by a PMD. Also, the test modes may be controlled by the 1000BASE-H *PCS* control register. Other recent PHYs have the pattern generators in the PMA, but this PMA doesn't seem to do that sort of thing.

SuggestedRemedy

Move the test modes subclauses to the PCS section.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The test modes were included in PMD subclause because specially test modes 2 to 6 are defined to validate a PMD implementation according to the specifications.

However test mode 1 involves also PCS and PMA, since it requires to establish the bidirectional link to run. Because of that, it seems more convenient to move test modes sub-clause just after EEE to become a new 114.5 instead of including them within PCS.

Cl **114**   *SC* **114.5.4**   *P* **93**   *L* **23**   # 102

Dawe, Piers   Mellanox

Comment Type **T**   *Comment Status* **A**

There are normative PMD requirements before and after this subclause, which is confusing for the user when considering compliance.

SuggestedRemedy

Move the "Link segment characteristics" subclause to later, e.g. just before the MDI section as in other optical clauses.

Response   *Response Status* **C**

ACCEPT.

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **102**   Page 24 of 31
10/11/2015 18:35:45

Cl **114**   *SC* **114.3**   *P* **64**   *L* **1**   *#* 103

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

Figure 114-3 shows a block called "PMA" but the PMD service interface connects directly to the PCS, and the "PMA" block is connected to the PCS, OAM and EEE blocks and nothing else. So it's not really a PMA.

SuggestedRemedy

Rearrange the subclause headings so that the PCS control and monitor functions are in the PCS. Suggest the THP function and its control could be in the PMA. Also, clock recovery is typically in the PMA.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Because THP only affects to the payload data path, but not to PHS and pilots, for sake of simplicity in the description it was more natural for the editors to include the THP function within PCS. However, because THP function depends on the medium response it seems more convenient to be in PMA.

However, PHY control, monitoring, etc. are typically included in the PMA.

Edition actions:
+ Move THP function to the beginning of PMA, declared as part of the PMA transmit function. THP function will be transparent to symbols belonging to PHS and pilots and only operative for payload in normal operation. THP will be transparent always in LPI.
+ After that, add an small sub-clause for PMA receive, including clock recovery, equalization.
+ Change in THP protocol the references to PCS receiver doing equalization functions to PMA receiver.
+ Change in PMD service primitives the references to PCS by PMA.
+ Move 114.2.5 Interface to the PMD from PCS to PMA.
+ Modify Figure 114-3 to be the PMA between PCS and PMD, including THP in PMA TX and Clock recovery and Eq in PMA RX.

Rearrange PICS accordingly.

Cl **114**   *SC* **114.3.3**   *P* **74**   *L* **6**   *#* 104

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

"This estimation ... is to be performed continuously in order to track the channel response variations." Needs more specification: how fast does it have to track, how deep could the variations be that it must track, how could this be tested?

SuggestedRemedy

Specify how fast it has to track, how deep the variations could be that it must track, and how this could be tested.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Any PHY (copper, optics, etc) has to deal with channel variations, specially caused by temperature variations. However it is something that is implementation dependent (e.g. LMS's mu for a DFE adaptation in a 1000BASE-T). 1000BASE-RH transmits linear modulations with THP over a POF channel using a light emitter. The launching power from light emitter (typically an LED) depends a lot with temperature (already studied in the TF, almost 6 dB between -40 and 105ºC). The optical receiver may implement a linear TIA circuit, which includes AGC to deal with the dynamic range before and after the link is established. This AGC may be implemented by transimpedance control, which modifies the channel response (implementation dependent). The transmit block structure (pilot S2 and period of that) allow for an adaptation faster than that needed due to temperature variation.

Edition action. Replace from P74, L5 to L6 with:
"This estimation may be based on received S2 pilots. The state diagrams defined to control THP coefficients allow for dynamic adaptation of the coefficients before and after the link is established. The PHY receiver may dynamically determine variations in the channel response and request the partner use of a new set of THP coefficients. The methods to determine the channel response variation and estimate THP coefficients are implementation dependent."

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 Z/withdrawn
SORT ORDER: Comment ID

Comment ID **104**   Page 25 of 31
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Cl **114**   *SC* **114.5.2.2**   *P* **89**   *L* **7**   # 105

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

It seems "affine" just means linear, here, but there is no need for such obfuscation.

SuggestedRemedy

Delete "affine".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In mathematics affine function != linear function.

Anyway, deleting "affine" does not affect to the content of text, so it should be deleted to avoid confusion.

Cl **114**   *SC* **114.5.1.2.3**   *P* **86**   *L* **17**   # 106

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

"The effect of receipt of this primitive is unspecified" - is, or should be - false. Standards where the client is out of the standard say this, but here there is no excuse. This PMD has only one possible client, which seems to be the PCS.

SuggestedRemedy

Change to "The effect of receipt of this primitive by the client (the PCS) is specified in 114.x.y."
Similarly for 114.5.1.5.3.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

It was inherited from D1.2 where PMD was in a separate clause.

See comment #103: proposed to change the PMD client to PMA, including in PMA TX the THP function, and in PMA RX the clock recovery and equalization.

Editor actions:
P 86, L 19, change to:
Upon receipt of this primitive the PMA performs clock recovery for correct time sampling of received symbols and adaptive channel equalization. (add cross reference to new PMA receive subclause)

P 87, L 46, change to:
Upon PMD_RXDETECT.indication(OK) is generated the PMD receive function is able to respond to PMD_RXPWR.request primitive that requests to PMD receive function to respond or not to the MDI signals. PMD_RXDETECT.indication(OK) also indicates to PMA receive function that optical signal is received from MDI and link may be established with a link partner. PMD_RXDETECT.indication(OK) may be used to wake up from deep sleep a system that integrates a 1000BASE-RHx PHY.

Upon PMD_RXDETECT.indication(FAIL) is generated the PMD receive function does not respond to the received MDI signals. PMD_RXDETECT.indication(FAIL) also indicates to PMA receive function that optical signal is not received so link establishment cannot be initiated. PMD_RXDETECT.indication(FAIL) may be used to transient to deep sleep a system that integrates a 1000BASE-RHx PHY.

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Cl **114**   *SC* **114.2.3.4**   *P* **45**   *L* **51**   # 107

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

What does "free counter" mean? The term doesn't appear anywhere in 802.3-2015. It looks like this function divides the clock by two.

SuggestedRemedy

Use whatever the usual term in 802.3 is. Also in Figure 114-12.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P 45, L51, change:
"A 1-bit free counter that is clocked at the …"
to:
"A counter that counts from 0 to 1 with rollover and that is clocked at the …"

P46, L2, change:
"The 1-bit free counter is initialized to 0 …"
to:
"The counter is initialized to 0 …"

Figure 114-12, change "Free counter" to "Counter"

P 55, L42 and P 56, L 38, change:
"… the demultiplexer is controlled by the LSB of a free counter that counts from 0 to kQAM-1 and is clocked at the same rate of the input signal, …"
to:
"… the demultiplexer is controlled by the LSB of a counter that counts from 0 to kQAM-1 with rollover and that is clocked at the same rate of the input signal, …"

P 60, L44, change:
"A 1-bit free counter clocked at the 1D symbol rate …"
to:
"A counter that counts from 0 to 1 with rollover and that is clocked at the 1D symbol rate …"

P 60, L51, change:
"The 1-bit free counter used to control the multiplexer is reset with value 0 …"
to:
"The counter used to control the multiplexer is initialized with value 0 …"

Cl **114**   *SC* **114.2.4.3**   *P* **52**   *L* **19**   # 108

Dawe, Piers   Mellanox

Comment Type   **T**   *Comment Status* **A**

Z2 and RZ2 lattices?

SuggestedRemedy

If this is relevant, use more accessible terminology, and/or explain it. If it isn't relevant, remove the jargon.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P52, L19, change:
"… a Multilevel Coset Coding (MLCC) of two levels based on Z2 and RZ2 lattices is used to adjust accurately the spectral efficiency with low complexity binary component codes."
to:
"… a Multilevel Coset Coding (MLCC) of two levels based on two-dimensional constellations is used to transmit the information with high spectral efficiency."

P52, L29, change:
"Bits in the second level are mapped onto symbols of a QAM8 constellation over an RZ2 lattice."
to:
"Bits in the second level are mapped onto symbols of a rotated QAM8 constellation."

P52, L31 to 36, change:
"After the above described mapping, each of the two levels produces the same number of symbols per two dimensions per codeword. The lattice transformations are defined to implement the coset partitioning. After the addition following the first-stage lattice transformations, the symbols are contained in Z2. Furthermore, a second-stage lattice transformation results in a final zero-mean two-dimensional (2D) square constellation over RZ2 lattice. Finally, in-phase and quadrature components of 2D symbols are multiplexed in time to generate PAM16 symbols."
to:
"After the above described mapping, each of the two levels produces the same number of symbols per two dimensions per codeword. Symbols from each level are processed by a first lattice transformation and then added to carry out the coset partitioning. The output of adder is further processed by a second lattice transformation that produces symbols onto a rotated QAM128 constellation. Finally, in-phase and quadrature components of 2D symbols are multiplexed in time to generate PAM16 symbols."

Figure 114-19, replace "QAM8 RZ2 lattice Mapper" with "QAM8 Mapper", and "RZ2 to PAM multiplexer" to "QAM to PAM multiplexer"

P55,L15, change:
"… 1482 bits are directly mapped into a QAM8 RZ2 lattice …"
to
"… 1482 bits are directly mapped into a rotated QAM8 …"

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Comment ID* **108**   Page 27 of 31
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SORT ORDER: Comment ID

P56, L12, change:
"Figure 114–23 illustrates the details of the QAM8 over RZ2 lattice mapper."
to
"Figure 114–23 illustrates the details of the rotated QAM8 mapper."

P59, L23, eliminate "over Z2".

P59, L49, change:
"The 2D symbols from the lattice adder shall be further transformed in order to obtain a final zero-mean two-dimensional square constellation over RZ2 as follows."
to:
"The 2D symbols from the lattice adder shall be further transformed in order to obtain a final rotated QAM128 constellation as follows."

P60, L42 heading, P60, L44 and title of Figure 114-30, change:
"RZ2 to PAM multiplexer"
to:
"QAM to PAM multiplexer"

Cl **01**   *SC* **1.4**   *P* **21**   *L* **21**   # 109

Ortiz Rojo, David   KDPOF

Comment Type   **E**   *Comment Status* **A**

It seems that OMA is not used in the current version of the document.

SuggestedRemedy

Remove definition from the document.

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.3.50.4**   *P* **29**   *L* **36**   # 110

Ortiz Rojo, David   KDPOF

Comment Type   **E**   *Comment Status* **A**

Reference to section 114.8 is incorrect. Wrong reference also appears in 45.2.3.51 sections 9 through 11 on the same page.

SuggestedRemedy

Change it to 114.4

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P29, L36: replace 114.8 with 114.4
P31, L26: eliminate reference to 114.8 (no sense)
P31, L33: eliminate reference to 114.8 (no sense)
P31, L40: eliminate reference to 114.8 (no sense)
P31, L47: eliminate reference to 114.8 (no sense)
P32, L16: replace 114.8 with 114.4
P66, L17, column description: replace 114.8 with 114.4
P86, L40: replace 114.8 with 114.4.
P87, L14: replace 114.8 with 114.4.
P88, L14: replace 114.8 with 114.4.
P101, L29: replace 114.8 with 114.5.3 (Test modes)

Cl **45**   *SC* **45.2.3.51.8**   *P* **31**   *L* **26**   # 111

Ortiz Rojo, David   KDPOF

Comment Type   **E**   *Comment Status* **A**

Reference to section 114.8 is incorrect. Wrong reference also appears in 45.2.3.51 sections 9 through 11 on the same page. It also appears on page 32, section 45.2.3.51.15, line 16.

SuggestedRemedy

Change it to 114.4

Response   *Response Status* **C**

ACCEPT.

See comment #110

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 Z/withdrawn
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Cl **45**   *SC* **45.2.3.51.9**   *P* **31**   *L* **28**   # 112

Ortiz Rojo, David   KDPOF

Comment Type **E**   *Comment Status* **A**

Meaning of the bit is not fully clear, and the functionality is sometimes 'repeated or generated' or 'received or generated'.

SuggestedRemedy

Section 114.4 already gives the details of when LPI is generated on the GMII. For simplicity and simmetry with 45.2.3.51.8 it would be best to replace "received or generated"/"repeated or generated" by generated.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

P31, L30: replace "repeated or generated" with "generated"
P31, L32: replace "repeated or generated" with "generated"

Cl **114**   *SC* **114.1.5**   *P* **38**   *L* **51**   # 113

Ortiz Rojo, David   KDPOF

Comment Type **E**   *Comment Status* **A**

"GMII data streams" should be singular, like in title of 114.2.4.1

SuggestedRemedy

Replace by "GMII data stream".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change P38, L51 to:
"The 1000BASE-H PCS encapsulates and decapsulates the transmit and receive GMII data streams using a series of fixed length Transmit Blocks."

Cl **114**   *SC* **114.2.1**   *P* **40**   *L* **53**   # 114

Ortiz Rojo, David   KDPOF

Comment Type **E**   *Comment Status* **A**

Link to section 114.5. is broken.

SuggestedRemedy

Fix link and change to section 114.4

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.3.1**   *P* **64**   *L* **29**   # 115

Ortiz Rojo, David   KDPOF

Comment Type **E**   *Comment Status* **A**

"to advertise Energy-Efficient Ethernet (EEE) is supported by the implementation and enabled ..." could be rephrased by "to advertise that Energy-Efficient Ethernet (EEE) is supported by the implementation and that it is enabled..."

SuggestedRemedy

Per comment

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.7.1**   *P* **104**   *L* **36**   # 116

Ortiz Rojo, David   KDPOF

Comment Type **E**   *Comment Status* **A**

verb "perform" should be plural.

SuggestedRemedy

Replace "perform" by "performs".

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.3.2.3**   *P* **70**   *L* **40**   # 117

Ortiz Rojo, David   KDPOF

Comment Type **T**   *Comment Status* **A**

The sentence is describing functionality that is implemented in another state diagram. Detailed description should be given only in the relevant state diagram and only the state variable should be refered.

SuggestedRemedy

Change "When both link partners signal reliable payload data reception by asserting OK in the PHD.RX.LINKSTATUS field, the bidirectional link is established (link_status = OK) ..." by "Once bidirectional link is established (link_status = OK) ..."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace with:
"Once a bidirectional link is established (link_status = OK), the 64B/65B PCS decoder begins to map the received PDBs . . ."

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
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SORT ORDER: Comment ID

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Cl **114**   *SC* **114.7.2**   *P* **105**   *L* **8**   # 118
Ortiz Rojo, David   KDPOF

Comment Type **T**   *Comment Status* **A**

It is not clear which bits this paragraph is referring to.

SuggestedRemedy

To solve the issue, the following sentence could be added to the beginning of the paragraph: "The status of the three possible outstanding OAM messages can be decoded from the values of the control bits of register 3.500. The table ..."

Response   *Response Status* **C**

ACCEPT.

Cl **114**   *SC* **114.2.2.1**   *P* **42**   *L* **41**   # 119
Ortiz Rojo, David   KDPOF

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

The matlab initialization of the MLS generator does not match with the description in the text above.

SuggestedRemedy

In the matlab description change the line: "r=[r zeros(1,25-length(r))];" with "r=[zeros(1,25-length(r)) r];"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also replace line 40 to only use standard Matlab (no additional toolbox)

P42, L40 to 41:
r = double(dec2bin(hex2dec(seed))) - 48;
r = [zeros(1, 25-length(r)) r];

Cl **114**   *SC* **114.3.1**   *P* **64**   *L* **45**   # 120
Ortiz Rojo, David   KDPOF

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

For proper operation of the receiver, it is neccessary that the REMPHD fields are available before the end of the transmit block that carries the PHD (in general the transmitter anounces in a given PHD information relative to the next transmit block, for example, which THP coefficient set is going to be applied). This requirement is missing in this paragraph.

SuggestedRemedy

Add a sentence indicating the requirement. For example the following sentence could be added: "The value of the REMPHD fields must be available before the end of the transmit block that carries them, so decoding and validation of the complete PHS must be completed between the end of the reception of PHS13 and the end of the transmit block."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add:
"The value of the REMPHD fields is assumed to be available to the state diagrams before the end of the received Transmit Block that carries them. Therefore, decoding and validation of the complete PHS must be completed between the end of the reception of PHS13 and the end of the received Transmit Block."

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
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SORT ORDER: Comment ID

Comment ID **120**

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Cl **114**   *SC* **114.3.2.4**   *P* **71**   *L* **1**   # 121

Ortiz Rojo, David   KDPOF

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

Current description of the PMA phy quality monitor SD and and link monitor SD do not guarantee that both link partners transition their link_status variables to link_status=OK simultaneously.

For example, when the local PHY loc_rcv_status variable went OK many transmit blocks before, the remote PHY will have already assigned its rem_rcv_status variable to OK many transmit blocks before. In this scenario, when the remote PHY receives a new_varn_est_event with a noise variance that is below the threshold, it will transition its internal loc_rcv_status variable to OK inmediately, and will transition to the link_status=OK inmediately. However the local phy have to wait to receive a frame with the REMPHD.RX.LINKSTATUS=OK, something, which implies that it will transition to the link_status=OK with a minimum delay of about one transmit block.

However the link_status should transition to the OK value simultaneously in both link partners to ensure that both of them enable the GMII interface simultaneously, and also to guarantee a correct operation of EEE functionality.

SuggestedRemedy

To solve this issue the following changes must be introduced:
Modify the link monitor state diagram of figure 114-36 to ensure that the transition from LINK_DOWN to LINK_UP when rem_rcv_status goes to OK is delayed until a new_rxblock_event is received.
Modify the phy quality monitor diagram of figure 114-42 to ensure that there is a delay of two 'new_txblock_event' between the assignment of LOCPHD.RX.LINKSTATUS<=OK and the assignmet of loc_rcv_status<=OK. This delay is only neccesary when the previous values of the variables is NOT_OK.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also modify descriptive text for both the Link monitor and the PHY quality monitor.

See "perezaranda_3bv_1_1115.pdf" for new link monitor state diagram according to the suggested remedy.

See "perezaranda_3bv_2_1115.pdf" for new PHY quality monitor state diagram according to the suggested remedy.

Cl **114**   *SC* **114.5.3.1**   *P* **91**   *L* **41**   # 122

Ortiz Rojo, David   KDPOF

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

The description of test mode 1 in this paragraph suggests that test mode 1 may be entered dynamically. However a dynamic implementation of test mode 1, in which the mode can be entered and exited dynamically adds an uneeded extra complexity and cost to the implemenation. Moreover this dynamic functionality is not needed, as this is a test mode intended to be used in a controlled environment (as is also the case of the other test modes). Appart from this the requirement to clear the counter on any change of the link_status variable inhibits the capability of monitorning the errors that might happen around the link transitions in a debug environment, but does not add any value for a normal BER test, as the error counter can be cleared right after link establishment by simply reading the clause 45 register that holds the counter value.

SuggestedRemedy

Change lines from 41 to 50 to indicate that the operation in test mode 1 is static, that is, the transmitter only changes the operating mode from test mode 1 to normal mode after a resynchronization. Also remove requirement for counter clearing on changes of link_status variable.

To do this the lines 41 to 50 might be replaced by the following:
"The PCS shall announce to the link partner this test mode in the transmitted PHD using the field PHD.TX.NEXT.MODE (see 114.3.1). The operating mode of the transmitter encoded in the field PHD.TX.NEXT.MODE is selected at PMA reset, and does not change value unless a PMA reset takes place. The receiver must reconfigure to support the indicated operating mode, for normal operation (64B/65B decoder connected to the binary descrambler), or for BER test (counter connected to the binary descrambler)."

Line 52 to P92, line 2, eliminate from first stop.

In Pg. 33, change from line 23 to 25 "These bits are reset to all zeros …"
to
"These bits are reset to all zeros when the counter is read. The counter is held at all ones in the case of overflow."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept suggested remedy, but in line 41, replace "shall announce" with "announces"

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