Cl **00** *SC* **45** *P* *L* # 305

Dawe, Piers Avago Technologies

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

No registers? No management? You have to choose between Clause 22 or 45 for the registers; I would guess 45.

SuggestedRemedy

Create placeholder clauses 45 and 30.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Placeholder clauses will be created.

Cl **00** *SC* **56.1.2** *P* **2** *L* **35** # 299

Dawe, Piers Avago Technologies

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

As one would reasonably think of 10GEPON as Ethernet for subscriber access networks, like GEPON, some minor additions to Clause 56, Introduction to Ethernet for subscriber access networks, are needed.

SuggestedRemedy

Change to:
For P2MP optical fiber topologies, EFM supports a nominal bit rates of 1000 Mb/s and 10 Gb/s, shared amongst the population of Optical Network Units (ONUs) attached to the P2MP topology. The 1000 Mb/s P2MP PHYs use the 1000BASE-X Physical Coding Sublayer (PCS), the Physical Medium Attachment (PMA) sublayer defined in Clause 65, and an optional FEC function defined in Clause 65. The 1 Gb/s P2MP PHYs use the 10GBASE-R PCS and Physical Medium Attachment (PMA) sublayers and FEC function defined in Clause 92.
In 56.1.3, after 'as defined in Clause 60.', add 'Physical Layer signaling systems at 10 Gb/s and 1/10 Gb/s are defined in Clause 91 and Clause 92.'
Add rows to table 56-1 and 56-2 to refer to other tables for 10GEPON and 1/10GEPON (which may already exist in Clause 91). Update 56.1.5 to cover the new OLT and ONU types.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
In 56.1.2 Change
From:
"For P2MP optical fiber topologies, EFM supports a nominal bit rate of 1000 Mb/s, shared amongst the population of Optical Network Units (ONUs) attached to the P2MP topology. The P2MP PHYs use the 1000BASE-X Physical Coding Sublayer (PCS), the Physical Medium Attachment (PMA) sublayer defined in Clause 65, and an optional FEC function defined in Clause 65."
To:
"For P2MP optical fiber topologies, EFM supports a nominal bit rates of 1000 Mb/s and 10 Gb/s, shared amongst the population of Optical Network Units (ONUs) attached to the P2MP topology. The 1000 Mb/s P2MP PHYs use the 1000BASE-X Physical Coding Sublayer (PCS), the Physical Medium Attachment (PMA) sublayer defined in Clause 65, and an optional FEC function defined in Clause 65. The 10 Gb/s P2MP PHYs use the 10GBASE-R PCS and Physical Medium Attachment (PMA) sublayers and FEC function defined in Clause 92."

In 56.1.2.2 Change
From:
"The Clause 22 RS and MII, and Clause 35 RS and GMII, are both employed for the same purpose in EFM, that being the interconnection between the MAC sublayer and the PHY sublayers. Extensions to the Clause 35 RS for P2MP topologies are described in Clause 65. The combination of MPCP and the extension of the Reconciliation Sublayer (RS) for P2P Emulation allows an underlying P2MP network to appear as a collection of point-to-point links to the higher protocol layers (at and above the MAC Client). It achieves this by

prepending a Logical Link Identification (LLID) to the beginning of each data frame, replacing two octets of the preamble. This is described in Clause 65. EFM Copper links use the MII of Clause 22 operating at 100 Mb/s. This is described in 61.1.4.1.2."
To:
The Clause 22 RS and MII, Clause 35 RS and GMII, and Clause 46 RS and XGMII are all employed for the same purpose in EFM, that being the interconnection between the MAC sublayer and the PHY sublayers. Extensions to the Clause 35 RS for P2MP topologies are described in Clause 65. Extensions to the Clause 46 RS for P2MP topologies are described in Clause 92. The combination of MPCP and the extension of the Reconciliation Sublayer (RS) for P2P Emulation allows an underlying P2MP network to appear as a collection of point-to-point links to the higher protocol layers (at and above the MAC Client). It achieves this by prepending a Logical Link Identification (LLID) to the beginning of each data frame, replacing two octets of the preamble. This is described in Clause 65. EFM Copper links use the MII of Clause 22 operating at 100 Mb/s. This is described in 61.1.4.1.2.

In 56.1.3 Change
From:
"For P2MP topologies, EFM introduces a family of Physical Layer signaling systems which are derived from 1000BASE-X, but which include extensions to the RS, PCS and PMA, along with an optional forward error correction (FEC) capability, as defined in Clause 65. The family of P2MP Physical Layer signaling systems includes the combination of 1000BASE-PX10-D (Passive Optical Network Downstream 10 km), plus 1000BASE-PX10-U (PON Upstream 10 km), and the combination of 1000BASE-PX20-D (PON Downstream 20 km) plus 1000BASE-PX20-U (PON Upstream 20 km), as defined in Clause 60."
To:
"For P2MP topologies, EFM introduces a family of Physical Layer signaling systems which are derived from 1000BASE-X and 10GBASE-X, but which include extensions to the RS, PCS and PMA. An optional forward error correction (FEC) capability is defined in Clause 65 for the 1000BASE-X derivatives while a mandatory FEC is defined in Clause 92 for 10GBASE-X derivitives. The family of P2MP Physical Layer signaling systems addressing 1000BASE-X derivatives are defined in Clause 60. The family of P2MP Physical Layer signaling systems addressing 10GBASE-X derivatives are defined in Clause 91. For asymetric derivatives see Clause TBD."
Editors Note: this may be C91 or to be defined Annex.

Add rows to table 56-1 and 56-2 to refer to other tables for 10GEPON and 1/10GEPON (which may already exist in Clause 91).

In 56.1.5 Change
From:
"In contrast to previous editions of IEEE Std 802.3, in certain circumstances a DTE is allowed to transmit frames while not receiving a satisfactory signal. It is necessary for an EPON OLT to do this to bring a PON into operation (although it is highly inadvisable for an EPON ONU to transmit without receiving). Clause 66 describes optional modifications to the 100BASE-X PHY, 1000BASE-X PHY and 10GBASE RS so that a DTE may signal remote fault using OAMPDUs. When unidirectional operation is not enabled, the sublayers in Clause 66 are precisely the same as their equivalents in Clause 24, Clause 36, and Clause 46."

Cl **64** *SC* *P* *L* # 403

Mandin, Jeff PMC Sierra

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

The state diagrams in clause 64 become very complex when GEPON, 10GEPON, and coexistence cases are considered.

In addition to the examples discussed previously, the control multiplexers in figures 64-12 and 64-13 need to operate using different logic for 1G and 10G. In 1G the FEC_Overhead function is invoked to provide interframe delay, whereas in 10G the Carrier Sense signal is used.

Moreover, technical difficulties result from maintaining a unified OLT definition: The multipoint MAC control entity in figure 64-3 will not allow simultaneous transmissions on the 10G and 1G downstreams.

SuggestedRemedy

1. Create a new clause (based on current clause 64) to describe 10GEPON MAC Control.

- 10GEPON MAC control is a revision of Clause 64 which enables coexistence on the same PON with an OLT an ONUs that comply with the 1G definition.

- The 10G OLT and 1G OLT communicate at the level of the DBA and might happen to be implemented in the same physical device.

- Initially, the new clause should point back at clause 64 except for the sections that have already been modified. Next, the Registration and control multiplexer state diagrams would be updated for 10G.

2. Create an informational annex to describe coexistence of 1G and 10G on the same PON.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The proposed scope of changes is as follows:
1. fall back with clause 64 to the version from IEEE 802.3-2005.
2. create a new Annex 64.A (tentative name, needs approval from the TF), describing the extensions to the clause 64 MAC Control sublayer required for the operation of 10G EPONs, including among the other Discovery Information, adjustable laser on/off times etc.
3. MPCP issues resulting from the coexistence cases would be captured in a new informative annex, tentatively named Annex A, to contain the informative description of the operation of dual rate systems

Cl **64** *SC* **64.1.2** *P* **244** *L* **49** # 344

Lynskey, Eric Teknovus

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

Changes have been made to Clause 64 which are not reflected by change bars in the document that was reviewed. One example can be found in the last paragraph on page 244. References to the 10G broadcast MAC have been added but no change bars appear to let the reviewer know that this is new text. Another example is 64.3.2.3 on page 263. I have not done a thorough search of the Clause to see if this occurs in additional places. Draft 0.91 does show the change bars here, so something was lost in the conversion from 0.91 to 1.0.

SuggestedRemedy

When D1.1 is created, do a diff between D1.1 and the latest version of Clause 64.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The changes which are referred to as included in the D0.91 of the clause 64 - see 3av_0711_c64_d0_91_markup.pdf. D1.0 of the clause 64 is marked up against the latest available draft version i. e. D0.91, as discussed during the meeting.
The D1.1 with the markup against Clause 64 from 802.3-2005 will be created for illustrative purposes.

Cl **64** *SC* **64.1.2** *P* **244** *L* **51** # 345

Lynskey, Eric Teknovus

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

Method used to describe speed is inconsistent between clauses.

Clause 64 - 1 Gbit/s, 10 Gbit/s
Clause 91 and 92 - 1000 Mb/s, 10 Gb/s

SuggestedRemedy

In Clause 64, replace all occurrences of 1 Gbit/s with 1000 Mb/s. Replace all occurrences of 10 Gbit/s with 10 Gb/s.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment # 394.

Cl **64** *SC* **64.1.2** *P* **244** *L* **51** # 354

Lynskey, Eric Teknovus

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

The text seems to say that all 1Gb/s and 10Gb/s ONUs can be communicated to at once. It is not clear that one of these additional MACs is only for 1Gb/s ONUs and the other is only for 10Gb/s ONUs.

SuggestedRemedy

Reword sentence as follows, "One additional MAC is instantiated to communicate to all 1Gb/s ONUs and one additional MAC is instantiated to communicate to all 10Gb/s ONUs."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed to reword to "Two additional MACs are instantiated: one MAC instance to communicate to all 1 Gb/s downstream compliant ONUs and another MAC instance to communicate to 10 Gb/s downstream compliant ONUs."
See also comment # 77, # 15 and # 79.

Cl **64** *SC* **64.1.2** *P* **244** *L* **51** # 77

Marek, Hajduczenia Nokia Siemens Networ

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

This clause uses the term "Gbit/s" which is discouraged by the IEEE guidelines.

SuggestedRemedy

Replace all the terms "Gbit/s" with the "Gb/s" as appropriate for the IEEE 802.3 standard prepared for balloting.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Applicable to Clauses 64, 91 and 92.
See comment # 394.

Cl **64** *SC* **64.1.2** *P* **244** *L* **51** # 394

Mandin, Jeff PMC Sierra

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

802.3 convention is to use 'Gb/s' rather than 'Gbit/s'

SuggestedRemedy

Change every instance of 'Gbit/s' to 'Gb/s'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.1.2** *P* **245** *L* **2** # 346

Lynskey, Eric Teknovus

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

We should not be adding new text to Clause 64 unless it is necessary.

SuggestedRemedy

Remove the word "compliant" from the sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Remove the word "compliant" from the sentence.

Cl **64** *SC* **64.1.2** *P* **245** *L* **2** # 78

Marek, Hajduczenia Nokia Siemens Networ

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

Terms "Single Copy Broadcast" and "Single-Copy Broadcast" are used interchangeably in the Clause. The term is defined more than once in the text.

SuggestedRemedy

Adop only one spelling of the full acronym - suggected to accept "Single Copy Broadcast (SBC). Remove multiple definitions in the text of Clause 64. Add definition of the term SCB to Clause 1.5.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
The term "Single Copy Broadcast" will be used along with the respective acronym "SCB".
The SCB should be introduced to Clause 1.5.

Cl **64** *SC* **64.2.2.1** *P* **252** *L* **30** # 388

Kuroda, Yasuyuki O F Networks Co., Ltd.

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

In 1Gb/s, "16 bit times" is 16ns that is equal to 1 time_quantum. On the other hand, "16 bit times" in 10Gb/s is 1.6ns that is different from 1 time_quantum. It includes discrepancy.
While a time_quantum for 10Gb/s signal should be defined, we propose that it is the same as the one for 1Gb/s.
Since 1Gb/s signal co-exists with 10Gb/s signal in upstream, a common Timestamp for both 1Gb/s and 10Gb/s is required in order to avoid collision with each signal.

SuggestedRemedy

Delete "bit times".
The same correction should be done in the texts of guardThresholdONU (Cl. 64.2.2.1 Page:252 line:35)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Remove the reference to 16 bit times altogether i. e. (16 bit times).
The modified sentences will read as follows: "This constant holds the maximal amount of drift allowed for a timestamp received at the
OLT. This value is measured in units of time_quantum." and "This constant holds the maximal amount of drift allowed for a timestamp received at the ONU. This value is measured in units of time_quantum."

Cl **64** *SC* **64.2.2.1** *P* **252** *L* **50** # 387

Kuroda, Yasuyuki O F Networks Co., Ltd.

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

Since the EPD is a byte in 64B/66B coding, the size of "tailGuard" is 27 bytes.

SuggestedRemedy

"VLAUE" should be 27.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The Clause 64 needs to remain compliant with the 64B/66B and 8B/10B encoding - the value of the tailGuard must be defined in a channel encoding independent way since the MPCP sublayer is not aware of what channel rate is used and what channel encoding is used in the system. This topic needs to be analyzed by the TF in more detail.

Cl **64** *SC* **64.2.2.4** *P* **255** *L* **3** # 397

Mandin, Jeff PMC Sierra

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

ONU discovery logic requires that there be a 10G equivalent to the 1G FEC_Overhead() function.

Burst init overhead (ie. leading IDLEs) should be included, and the value should be rounded up to the size of a full FEC block.

SuggestedRemedy

Insert Function definition:

10G_PCS_Overhead(length)

This function calculates the size of additional overhead to be added by the PCS and FEC encoders while transmitting a frame of size length. Parameter length represents the size of an entire frame including preamble, SFD, DA, SA Length/Type, and FCS. If the frame does not occupy an entire FEC block, the function result rounds up to the size of a complete FEC block. As well, the burst preamble is included in the overhead.

As specified in 49.2.4, the 66bit encoder adds 2 control bits for every 8 octets of data. As specified in 92.2.3.2, the FEC encoder adds 264 bits of parity and related control for every 216 data octets. The function returns the value of FEC overhead in units of time quanta.

The following formula is used to calculate the overhead:

PCS_Overhead = Ceiling [[[[[Ceiling(length/216)] * 318] + preambleBits] / BitTimesPerTQ]]

where PreambleBits == 66 and BitTimesPerTQ == 165

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.2.3** *P* **262** *L* **19** # 15

Ossman, Valentin PMC-Sierra

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

There are mixed speed ONUs, for example 10Gbit/s downstream and 1Gbit/s upstream. The turrent text only refers in general to 10 or 1 Gbit/s ONUs while the distinction should be made on downstream speed only.

SuggestedRemedy

Add "downstream" twice in the sentence on line 19 of clause 64.3.2.3 to read like this:

"The SCB MAC instance associated with the LLID 7F-FF shall provide broadcast services for 1 Gbit/s downstream compliant ONUs, while SCB MAC instance associated with the LLID 7F-FE - for 10 Gbit/s downstream compliant ONUs."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The term "Gbit/s" will be replaced with "Gb/s" to remain compliant with the comment # 77.

Cl **64** *SC* **64.3.2.3** *P* **262** *L* **19** # 79

Marek, Hajduczenia Nokia Siemens Networ

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

"The SCB MAC instance associated with the LLID 7F-FF shall provide broadcast services for 1 Gbit/s compliant ONUs," ... what does it mean that the ONU is 1 Gb/s compliant? It is too generic in the case of asymmetric data rate ONUs. The same comment goes to the sentence "SCB MAC instance associated with the LLID 7F-FE - for 10 Gbit/s compliant ONUs."

SuggestedRemedy

Suggestion to change the first sentence to "The SCB MAC instance associated with the LLID 7F-FF shall provide broadcast services for 1 Gbit/s DS capable ONUs," and the second one to "SCB MAC instance associated with the LLID 7F-FE - for 10 Gbit/s DS capable ONUs."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
The term "Gbit/s" will be replaced with "Gb/s" to remain compliant with the comment # 77.

Cl **64** *SC* **64.3.2.4** *P* **262** *L* **38** # 389

Kuroda, Yasuyuki O F Networks Co., Ltd.

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

In 1Gb/s, "16 bit times" is 16ns that is equal to 1 time_quantum.
On the other hand, "16 bit times" in 10Gb/s is 1.6ns that is different from 1 time_quantum.
It includes discrepancy.
While a time_quantum for 10Gb/s signal should be defined,
we propose that it is the same as the one for 1Gb/s.
Since 1Gb/s signal co-exists with 10Gb/s signal in upstream,
a common Timestamp for both 1Gb/s and 10Gb/s is required in order to
avoid collision with each signal.

SuggestedRemedy

Replace "16 bit times" to "one time_quantum".
The same correction should be done in the following.
- Grant #n Length (Cl. 64.3.6.1 Page:288 line:12)
- Sync Time (Cl. 64.3.6.1 Page:288 line:26)
- Sync Time (Cl. 64.3.6.4 Page:294 line:12)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment # 388.

Cl **64** *SC* **64.3.3** *P* **264** *L* **1** # 111

Remein, Duane Alcatel-Lucent

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

Figure 64-15 is marked as being changes but there is no obvious change.
Figure 64-32 and surrounding text (Pg 287 & 288) appears to have changed substantially but is not marked as changed.
Numerous other changes appear to be improperly marked.

SuggestedRemedy

Issue Draft 1.1 with all changes marked as compared to c64 from 2005 version of the standard.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment # 344.

Cl **64** *SC* **64.3.3.6** *P* **272** *L* **45** # 87

Marek, Hajduczenia Nokia Siemens Networ

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

Error in the state machine for the Discovery Processing OLT Register State Diagram: "data_tx[88:96] < pending_grants" - it would suggest that pending_grants is 9 bits wide (88, 89, ... 96). It is defined as 8 bits wide.

SuggestedRemedy

Change to "data_tx[88:95] < pending_grants".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.6.1** *P* **288** *L* **19** # 402

Mandin, Jeff PMC Sierra

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

Labels in "Discovery Information Field" could be more informative

SuggestedRemedy

In bullet e) [line 19] and in Table 64-1

* Change each instance of "OLT is 10G/1G capable" to "OLT supports both 10G and 1G upstreams"

* Change each instance of "OLT is opening 1G discovery window" to "OLT can receive at 1 Gb/s in this window".

* Change each instance of "OLT is opening 10G discovery window" to "OLT can receive at 10 Gb/s in this window"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "OLT is 10G/1G capable" to "OLT supports both 10 Gb/s and 1Gb/s in the US".
Change "OLT is not 10G/1G capable" to "OLT does not support both 10 Gb/s and 1Gb/s in the US".
Change "OLT is opening 1G discovery window" to "OLT can receive 1 Gb/s data in this window."
Change "OLT is opening 10G discovery window" to "OLT can receive 10 Gb/s data in this window."
Change "OLT is not opening 1G discovery window" to "OLT cannot receive 1 Gb/s data in this window."
Change "OLT is not opening 10G discovery window" to "OLT cannot receive 10 Gb/s data in this window."

Cl **64** *SC* **64.3.6.1** *P* **288** *L* **31** # 116

Remein, Duane Alcatel-Lucent

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

The word "optional" appears to be struck from the sentence "The size of this field depends on the used Grant #n Length/Start Time entry-pairs as well as the presence of the optional Discovery Information field."
The presents of the Discovery Information field is indeed optional as existing PMDs will not have this field explicitly defined (true default values align with proper definition of the field but that's just good engineering).

SuggestedRemedy

Include the word "optional" in the referenced sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The Discovery Information field is not optional in the 10G EPONs but mandatory. Otherwise the MPCP sublayer in the OLT will not be able to recognize the proper data rate of the upstream transmission from the given ONU LLID / MAC. The size of the Pad/Reserved field depends on the presence of the Discovery Information field, though it is imprecise to say that the field is optional. The current wording i.e. "This field is mandatory for 10G Discovery GATE MPCP DU while it is not present in 1G Discovery GATE MPCPDU." reflects correctly the fact that the field may not be present.
Proposal to change the sentence "The size of this field depends on the used Grant #n Length/Start Time entry-pairs as well as the presence of the optional Discovery Information field." to "The size of this field depends on the used Grant #n Length/Start Time entry-pairs as well as the optional presence of the Discovery Information field."

Cl **64** *SC* **64.3.6.1** *P* **288** *L* **7** # 347

Lynskey, Eric Teknovus

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

Figure 64-33 should be changed so that only a single frame is shown with all fields. Similar to the Sync Time field, the Discovery Information field is only transmitted in Discovery GATE messages. There is no need to show a separate figure for this. Now, what may be of value is showing a complete 1 Gb/s GATE and a separate but complete 10 Gb/s GATE message.

SuggestedRemedy

Option 1: Remove Figure 64-33(b) and add Discovery Information to (a).
Option 2: Update Figure 64-33(b) so that it shows a generic Discovery GATE. This can be done by fixing the Grant Start time (4), Grant length (2), and Sync Time(2) to the correct values and by showing that the Discovery Information (0/1) field may or may not be present.
Option 3: Show complete and separate 1 Gb/s and 10 Gb/s GATE frames.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Figure 64-35 is probably referred to - see 3av_c64_d1_0_markup.pdf. Option 3 seems like most logical and will be implemented in the draft D1.1.

Cl **64** *SC* **64.3.6.1** *P* **289** *L* # 348

Lynskey, Eric Teknovus

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

There is a duplication of text between the description and Table 64-2.

SuggestedRemedy

Replace bullet "e" with the following, "Discovery Information. This is an 8 bit flag register present in 10 Gb/s capable devices. Table 64-2 presents the internal structure of the Discovery Information flag field."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.6.1** *P* **289** *L* **23** # 355

Lynskey, Eric Teknovus

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

Like the Sync Time field, the Discovery Information field is only present when the gate is a discovery gate.

SuggestedRemedy

Copy the last sentence of bullet "f" to the end of bullet "e". "This field is present only when the gate is a discovery gate, as signaled by the Discovery flag and is not present otherwise."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.6.1** *P* **289** *L* **30** # 349

Lynskey, Eric Teknovus

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

The changes to bullet item "g" are not necessary and make the text more confusing. Stating the minimum and maximum values of Pad/Reserved for all possible types of GATE frames is sufficient. As written, this text is also inconsistent with Figure 64-33(b), which shows fields with variable lengths.

SuggestedRemedy

Remove changes to bullet "g".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #116

Cl **64** *SC* **64.3.6.1** *P* **290** *L* **10** # 356

Lynskey, Eric Teknovus

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

It is not clear what bit 0 is used for in Table 64-2. A 10G OLT can be capable of 1G upstream, 10G upstream, or both 1G and 10G upstream. These three modes of operation need two bits to be fully described.

SuggestedRemedy

Rename bit 0 to "OLT receiver is capable of 1Gb/s".
Insert new bit 1 to be "OLT receiver is capable of 10Gb/s".
Shift existing bits 1 and 2 to 2 and 3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.6.3** *P* **292** *L* # 86

Marek, Hajduczenia Nokia Siemens Networ

Comment Type **TR** *Comment Status* **D** *144*

This particular Clause as well as Clause 64.3.6.4 need to be updated to reflect baseline proposal 30 as defined at http://www.ieee802.org/3/av/public/baseline.html. Currently Clause 64 does not include the adjustable Laser on/off times.

SuggestedRemedy

Add 2 new points in Clause 64.3.6.3 before the existing point e) (tentative names e-1, e-2) with the following text: "Laser On Time. This field is 1 byte long and carries the Laser On Time characteristic for the given ONU transmitter. The value is expressed inthe units of TQ." and "Laser Off Time. This field is 1 byte long and carries the Laser Off Time characteristic for the given ONU transmitter. The value is expressed in the units of TQ."

Add 2 new points in Clause 64.3.6.4 before the existing point g) (tentative names g-1, g-2) with the following text: "Echoed Laser On Time. This field is 1 byte long and carries the Laser On Time characteristic for the given ONU transmitter. The value is expressed inthe units of TQ. The value is delivered to the ONU for confirmation purposes only and its utilization is not prescribed in this specification." and "Echoed Laser Off Time. This field is 1 byte long and carries the Laser Off Time characteristic for the given ONU transmitter. The value is expressed in the units of TQ. The value is delivered to the ONU for confirmation purposes only and its utilization is not prescribed in this specification."

Update Figure 64-34 and Figure 64-35 to include information on the Laser On Time / Laser Off Time and Echoed Laser On Time / Echoed Laser Off Time fields, respectively (each 1 byte long). Update the size of the Pad fields for both Figure 64-34 and Figure 64-35 to 36 / 35 and 32 respectively.

Update the Pad field description in Clause 64.3.6.3 to "Pad/Reserved. This is an empty field that is transmitted as zeros, and ignored on reception when constructing a complying MPCP protocol implementation. The size of the Pad/Reserved field depends on the presence of the Discovery Information flag field - it is equal to 36 when the said field is absent and 35 when present."

Update the state machines for Discovery Processing in the ONU on:

Figure 64-23:
Box: REGISTER_REQUEST:
data_tx[0:15] < REGISTER_REQ
data_tx[48:55] < status
data_tx[56:63] < pendingGrants
data_tx[64:71] < laserOnTime
data_tx[72:79] < laserOffTime

Figure 64-20
Box SIGNAL
flags < data_rx[48:55]
pending_grants < data_rx[56:63]

laserOnTime < data_tx[64:71]
laserOffTime < data_tx[72:79]
status < incoming

Figure 64-21
Box REGISTER
data_tx[48:63] < LLID
data_tx[64:71] < status
data_tx[72:87] < syncTime
data_tx[88:95] < pending_grants (corrected version is already included, see my common number 15)
data_tx[96:103] < laserOnTime
data_tx[104:111] < laserOffTime

Add definitions of the variables in the Clause 64.3.3.2:

laserOnTime, type 32 bit unsigned, This variable holds the time required to turn on the ONU PMD. It counts in time_quanta units the time period required for turning on the PMD, as specified in 60.7.13.1. VALUE: 00-00-00-20 (512 ns) - default

laserOffTime, type 32 bit unsigned, This variable holds the time required to turn off the ONU PMD. It counts in time_quanta units the time period required for turning on the PMD, as specified in 60.7.13.1. VALUE: 00-00-00-20 (512 ns) - default

remove entries for the constants laserOnTime and laserOffTime in Clause 64.3.5.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align the changes resulting from the proposed changes with the other comments submitted against clause 64.

Cl **64** *SC* **64.3.6.3** *P* **292** *L* **32** # 100

Remein, Duane Alcatel-Lucent

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

Discovery Information is optional (marked deleted) in sentence "The size of the Pad/Reserved field depends on the presence of the optional Discovery Information flag field - it is equal to 38 when the said field is absent and 37 when present."

SuggestedRemedy

Include the word "optional" in the referenced sentence.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See proposed resolution to the comment # 349.

Cl **64** *SC* **64.3.6.3** *P* **292** *L* **37** # 91

Ryan, Hirth Teknovus

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

MH: Table 64-5 is affected
An ONU may be 10G only upstream capable, 1G only upstream capable, or 10G or 1G upstream capable. The Flag Field should include 2 bits to describe the upstream capablility: One for 10G upstream capable, and one for 1G upstream capable.

SuggestedRemedy

add bit "ONU is 10G upstream capable" and "ONU is 1G upstream capable". remove "ONU is 10G/1G upstream capable"

Proposed Response *Response Status* **W**

See comment # 357.

Cl **64** *SC* **64.3.6.3** *P* **293** *L* **41** # 357

Lynskey, Eric Teknovus

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

It is not clear what bit 0 is used for in Table 64-6. A 10G ONU can be capable of 1G upstream, 10G upstream, or both 1G and 10G upstream. These three modes of operation need two bits to be fully described.

SuggestedRemedy

Rename bit 0 to "ONU transmitter is capable of 1Gb/s".
Insert new bit 1 to be "ONU transmitter is capable of 10Gb/s".
Shift existing bits 1 and 2 to 2 and 3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **64** *SC* **64.3.6.3** *P* **294** *L* **5** # 337

Lynskey, Eric Teknovus

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

Spilt Figure 64-35 into a 1 Gb/s REGISTER_REQ and a 10 Gb/s REGISTER_REQ instead of a general one and one with Discovery Information field. This will also make things easier if other changes are needed.

SuggestedRemedy

Have separate 1Gb/s and 10 Gb/s figures.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Figure 64-33 is probably meant (see 3av_c64_d1_0.pdf).

Cl **91** *SC* **91** *P* **121** *L* **11** # 270

Dawe, Piers Avago Technologies

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

Draft says 'All insertions to the original text of the clause are marked with change bars and presented in underlined blue colour.'

SuggestedRemedy

Insertions/deletions to previous draft of the clause should be presented in underlined blue or cross-through red. Insertions/deletions to base document, if not new for this draft, should be underlined or cross-through black.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Cl **91** *SC* **91** *P* **121** *L* **2** # 267

Dawe, Piers Avago Technologies

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

802.3 uses b/s not bps

SuggestedRemedy

Global search for bps and replace with b/s

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91** *P* **121** *L* **6** # 268

Dawe, Piers Avago Technologies

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

amendment/corrigendum

SuggestedRemedy

amendment

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91** *P* **121** *L* **7** # 269

Dawe, Piers Avago Technologies

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

802.3-2005

SuggestedRemedy

802.3-200x (should become 2008 later). If 802.3ay has changed Clause 64, keep in step.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Until the 802.3ay is in ballot phase, the 2005 version is the last valid release of the 802.3 and represents the base for Clause 64. Changes to Clause 64 introduced by the 802.3ay project will be introduced once the 802.3-2008 is released.

Cl **91** *SC* **91.1** *P* **121** *L* **34** # 117

Kramer, Glen Teknovus, Inc.

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

Do not use gratuitous acronyms

SuggestedRemedy

Throughout the clause relpace
PBC = power budget class
DS = downstream
US = upstream

Remove editorial note #1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Editorial note #1 is to be removed.
Acronym definitions are to be moved to Clause 1.5. Downstream / Upstream will be used instead of DS / US. PBC is proposed to be maintained to reduce the number of repetitions in certain clauses.

Cl **91** *SC* **91.1** *P* **121** *L* **34** # 121

Kramer, Glen Teknovus, Inc.

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

Introduction text introduces many concepts out of order, e.g., Asymmetric and symmetric PMD definitions are given after they are used. Repeated definitions for U- and D- suffix. Introductions of power budgets and PMDs are all mixed together.

SuggestedRemedy

Replace text in sections 91.1 and 91.3 with sections 91.1 and 91.2 in the attached document 3av_0801_kramer_1.pdf.

Relocate sections 91.1.4 and 91.1.5 in C91 D1.0 under the section 91.3 PMD Functional Specifications (see outline shown in 3av_0801_kramer_1.pdf).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Some of the text might need rewording subject to TF's approval.

Cl **91** *SC* **91.1** *P* **121** *L* **35** # 266

Dawe, Piers Avago Technologies

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

PBC names PR10, PR20 and PR30 / PRX10, PRX20 and PRX30 could be shorter. The power budget class can be the same whatever the signaling rate. See other comments.

SuggestedRemedy

P1, P2 and P3 ?

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See motion #5 from the November 2007 meeting.

Cl **91** *SC* **91.1** *P* **121** *L* **38** # 73

Marek, Hajduczenia Nokia Siemens Networ

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

Based on the stipulations of the IEEE 206.1-2004 maintaned by SCC14, 10 Gbps should not be used in the IEEE standards ready for the sponsoer ballot stage. 10 Gb/s should be used instead

SuggestedRemedy

Replace all "10 Gbps" with "10 Gbit/s" in clauses 64, 91 and 92.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Applicable to Clauses 64, 91 and 92.

Cl **91** *SC* **91.1** *P* **121** *L* **42** # 271

Dawe, Piers Avago Technologies

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

New abbreviations (actually, DS has been used occasionally already)

SuggestedRemedy

Don't put them here, put them in your Clause 1 draft (there'll be more). Explain that US and DS mean directions of transmission, not positions. Do you want to add PBC?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 117.

Cl **91** *SC* **91.1** *P* **121** *L* **44** # 273

Dawe, Piers Avago Technologies

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

Trying to introduce confusing terminology

SuggestedRemedy

In an Ethernet PON, a single downstream (D) or 'OLT' PMD broadcasts in the downstream direction (DS) to multiple upstream (U) or 'ONU' PMDs and, in the upstream direction (US), receives bursts from each 'U' PMD over a single branched topology, single-mode fiber network.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment # 121.

Cl **91** *SC* **91.1** *P* **121** *L* **46** # 272

Dawe, Piers Avago Technologies

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

New train of thought

SuggestedRemedy

Start a new paragraph with 'This clause specifies'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment # 121.

Cl **91** *SC* **91.1** *P* **121** *L* **48** # 300

Dawe, Piers Avago Technologies

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

Using / in a name is probably a bad idea, unless you really do mean dual mode like 10/100 Ethernet for twisted pair - and this draft doesn't.

SuggestedRemedy

Could use underscore instead. (Could we be more creative to make the names shorter e.g. 11GBASE....?)

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Underscore can be discussed by the TF. We have motions #5 and #6 approved by the TF - see the document at http://www.ieee802.org/3/av/public/2007_11/3av_0711_minutes_unapproved.pdf for details. The idea of 11GBASE was discussed and rejected since the resulting link operates at 10G DS and 1G US and not 11G in the same direction(s), what would be suggested by the name. 10/1GBASE was found to be more informative.

Cl **91** *SC* **91.1** *P* **121** *L* **48** # 274

Dawe, Piers Avago Technologies

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

If these names are too long, the 'BASE' is not accurate anyway. It doesn't mean baseband (for an optical link), but does signify Ethernet.

SuggestedRemedy

Could replace 'BASE' by 'E'. E.g. 10GE-PR-U1

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #300.

Cl **91** *SC* **91.1** *P* **122** *L* **1** # 301

Dawe, Piers Avago Technologies

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

PBCs are not just mappings, they define the optical distribution network in three grades

SuggestedRemedy

This clause specifies the following PMDs:
...
(including MDI), and three PBCs of the single-mode fiber medium.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Changes need to be aligned with the changes resulting from comment #121.

Cl **91** *SC* **91.1** *P* **122** *L* **1** # 164

Lin, Rujian Shanghai Luster Terab

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

A 10GBASE-PR-UxDx PMD, 10GBASE-PR-DxUx PMD.

SuggestedRemedy

Proposed Response *Response Status* **W**

See comment #304.

Cl **91** *SC* **91.1** *P* **122** *L* **1** # 304

Dawe, Piers Avago Technologies

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

10GBASE-PR-Ux: I think this is the only paragraph where this syntax is used. As we use X for something else, 10GBASE-PR-U would be better, more like what has been done in previous clauses.

SuggestedRemedy

Or can '10GBASE-PR-Ux PMD, 10GBASE-PR-Dx PMD, 10/1GBASE-PRX-Dx PMD or 10/1GBASE-PRX-Ux PMD' be condensed to '10GBASE-PR or 10/1GBASE-PRX PMD'?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The "10GBASE-PR-Ux PMD, 10GBASE-PR-Dx PMD, 10/1GBASE-PRX-Dx PMD or 10/1GBASE-PRX-Ux PMD" will be condensated to "10GBASE-PR or 10/1GBASE-PRX PMD". To be aligned with the comment #121.

Cl **91** *SC* **91.1** *P* **122** *L* **18** # 165

Lin, Rujian Shanghai Luster Terab

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

as a PMD transmitting and receiving at the same data rate

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Unclear comment and lack of suggested remedy.

Cl **91** *SC* **91.1** *P* **122** *L* **19** # 303

Dawe, Piers Avago Technologies

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

Not data rate

SuggestedRemedy

signalling (preferred) or signaling rate (twice in this sentence). 'data streams' can become 'bit streams'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **91** *SC* **91.1** *P* **122** *L* **20** # 166

Lin, Rujian Shanghai Luster Terab

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

as a PMD transmitting and receiving at different data rates

SuggestedRemedy

Proposed Response *Response Status* **W**

See comment #165.

Cl **91** *SC* **91.1** *P* **122** *L* **23** # 276

Dawe, Piers Avago Technologies

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

This could be made easier to read, from:
Typically, in DS, 10GBASE-PR-D3 and 10/1GBASE-PRX-D3 PMDs use the 1574 - 1580 nm band, while 10GBASE-PR-D1, 10GBASE-PR-D2, 10/1GBASE-PRX-D1 and 10/1GBASE-PRX-D2 PMDs use the 1580 - 1600 nm band to transmit data. In US, 10GBASE-PR-U1 and 10GBASE-PR-U3 PMDs use the 1260 - 1280 nm band, while 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3 PMDs use the 1260 - 1360 nm band to transmit data.
to:

SuggestedRemedy

Typically, in DS, 10GBASE-PR-D3 and 10/1GBASE-PRX-D3 PMDs (D3 PMDs) use the 1574 - 1580 nm band, while D1 and D2 PMDs use the 1580 - 1600 nm band to transmit data. In US, 10GBASE-PR PMDs use the 1260 - 1280 nm band, while 10/1GBASE-PRX PMDs use the 1260 - 1360 nm band to transmit data.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Text subject to alignment with comment #121.

Cl **91** *SC* **91.1** *P* **122** *L* **23** # 101

Remein, Duane Alcatel-Lucent

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

Use of the abreviation "DS" degrades readability in the phrase Typically, in DS, 10GBASE-PR-D3 and 10/1GBASE-PRX-D3 PMDs use

SuggestedRemedy

Replace DS with the words "down stream" and add the word "direction" so the phrase becomes "Typically, in the down stream direction, 10GBASE-PR-D3 and 10/1GBASE-PRX-D3 PMDs use ..."

Globally apply to document

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
"Downstream" is defined in Clause 1.4 and not "Down stream". Align with comment #276 and #121.

Cl **91** *SC* **91.1** *P* **122** *L* **3** # 275

Dawe, Piers Avago Technologies

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

10/1GBASE-PR PMA

SuggestedRemedy

10GBASE-PR or 10/1GBASE-PRX PMA ?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the text "10GBASE-PR-Ux PMD, 10GBASE-PR-Dx PMD, 10/1GBASE-PRX-Dx PMD or 10/1GBASE-PRX-Ux PMD is connected to the appropriate 10/1GBASE-PR PMA of Clause 92, and to the medium through the MDI." to "10GBASE-PR-D, 10GBASE-PR-U and 10/1GBASE-PRX-D PMDs are connected to the appropriate Clause 92 PMA while 10/1GBASE-PR-U PMD is connected to appropriate Clause 65 PMA, and to the medium through the MDI."

Cl **91** *SC* **91.1** *P* **122** *L* **33** # 167

Lin, Rujian Shanghai Luster Terab

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

which transmit in thesethis directions and receive in the opposite directions.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Line 53 is probably referenced .
Suggest to change "The suffixes D and U indicate the PMDs at each end of a link which transmit in these directions and receive in the opposite directions." to "The suffixes D and U indicate the PMDs at each end of a link and the direction to which they transmit i.e. a D PMD transmits towards the ONUs and the U PMD transmits towards the OLT.".

Cl **91** *SC* **91.1** *P* **122** *L* **34** # 306

Dawe, Piers Avago Technologies

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

Draft says: 'The splitting ratio or reach length is increased in symmetric 10 Gbps / asymmetric 10 / 1 Gbps capable PONs thanks to application of FEC enabled link.' Unless FEC is optional, or absent in e.g. PBC PR10 or PRX10, increased as compared with what? What is the status of FEC on the 1G side?

SuggestedRemedy

You might want to add an FEC row to tables 91-1 and 91-2. Rewrite this sentence: here's just a suggestion 'Forward error correction (FEC) is used the situations specified in Table ... to obtain a low error rate at the PHY service interface in spite of a high splitting ratio or reach. FEC for 10GBASE-PR and 10/1GBASE-PRX is defined in 92.2 and 65.2. FEC is used in 10GBASE-PR-2 and 10GBASE-PR-3 links and is optional for 10GBASE-PR-1 links. ... FEC is optional for the 1 Gb/s side
(or whatever is decided)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The power budgets are designed with the FEC as mandatory for the 10G links, while the 1G links will operate with the optional FEC. This complicates the description of the FEC impact on the individual link budgets.
Suggestion to remove the original sentence altogether. It was a carry one from clause 60 and seems to have no meaning in clause 91.

Cl **91** *SC* **91.1** *P* **122** *L* **35** # 168

Lin, Rujian Shanghai Luster Terab

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

10/1 Gbps capable PONs

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
No suggested remedy.

Cl **91** *SC* **91.1** *P* **122** *L* **38** # 182

Lin, Rujian Shanghai Luster Terab

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

Two optional temperature ranges are defined, see 91.8.4 for further details.
Implementations may be declared as compliant over one or both complete ranges.

SuggestedRemedy

Add temperature statement.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Requires further discussion by TF. For now, it is proposed to leave out the temperature statement out of the D1.1 of clause 91.

Cl **91** *SC* **91.1** *P* **122** *L* **48** # 307

Dawe, Piers Avago Technologies

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

Note 6 says: Verify what is meant by the 'Maximum channel insertion loss' row in the Table 91-1 - only ChIL with no penalties, ChIL with penalties or total power budget. This is confusing in IEEE 802.3ah.'
I'm not confused about this. See '1.4.95 channel insertion loss: As used in IEEE 802.3 Clause 38 for fiber optic links, the static loss of a link between a transmitter and receiver. It includes the loss of the fiber, connectors, and splices.'
Insertion loss of the Fiber optic cabling (Channel) is the ratio of the light that would come out of the ODN including patchcords at one MDI to the light injected at another MDI, using normal loss test set methods at the usual measurement wavelengths (1310 or 1550 nm). As Clause 60 says, 'the channel insertion loss includes the loss for connectors, splices and other passive components such as splitters'. Penalties such as transmitter penalty or dispersion penalties, are not loss, although they are part of the 'budget' the 802.3 way.

SuggestedRemedy

Remove the note. Create a new 91.8 'Definitions of optical parameters and measurement methods', and a sub-subclause 'Insertion loss', contents 'Insertion loss for SMF Fiber optic cabling (Channel) is defined at 1310 or 1550 nm. A suitable test method is described in .... [provide ITU-T or IEC reference].'
Start a 1.4.n section of the draft. Modify 1.4.95 channel insertion loss: As used in IEEE 802.3 Clause 38, Clause 52, Clause 53, Clause 58, Clause 59, Clause 60, Clause 68 and Clause 91 for fiber optic links, the loss of light through a link between a transmitter and receiver. It includes the loss of the fiber, connectors, and splices. (See IEEE Std 802.3, Clause 91.8.n.)
Other clauses from 9 onwards use the term; do they mean the same?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Remove "Editors Note #6" and align the proposed text of the subclause 91.8 with comment #121.

Cl **91** *SC* **91.1** *P* **122** *L* **7** # 302

Dawe, Piers Avago Technologies

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

Draft says: NOTE-PMDs defined in this Clause support the coexistence with Clause 60 PMDs as described in detail in informative Annex A1. I'm surprised that there isn't a coexistence objective. I think that clearly and normatively defining what coexistence is supported/unadvisable/beyond the scope... between GEPON and 10GEPON is a required piece of 802.3av. If you want to make further material about coexistence with ITU PON or video overlay, informative, that's more justifiable.

SuggestedRemedy

Create a coexistence table. Later as the Clause 30 management attributes and clause 45 registers are worked out, the draft will have to be much more clear about static and dynamic dual-speed capabilities.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The coexistence cannot be taken care of with a simple table as suggested, since not only the PMD is affected by the coexistence. Upper layers i.e. MPCP is also affected. It is proposed to create a separate informative clause - see comment #403, where both PMD and MPCP coexistence would be described. Coexistence is not normative as per set of TF objectives.

Cl **91** *SC* **91.1** *P* **122** *L* **7** # 277

Dawe, Piers Avago Technologies

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

It might be Clause 91, but not 'this Clause'

SuggestedRemedy

this clause. Global search and replace.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1** *P* **123** *L* **10** # 280

Dawe, Piers Avago Technologies

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

'Number of fibers' doesn't seem right for a PON: there isn't just one fibre

SuggestedRemedy

Number of fibers at a MDI?

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Between the OLT Tx and ONU Rx there is always only one fibre path, even though physically the PON plant features a splitter which can fan out 2+ fibres from a single trunk fibre. From the point of view of the ONU/OLT transceivers, there is always only one fibre, unlike in P2PE where the same wavelengths are used to Rx and Tx thus requiring two separate fibers.

Cl **91** *SC* **91.1** *P* **123** *L* **14** # 65

Marek, Hajduczenia Nokia Siemens Networ

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

10GBASE-PR-U3/D3 is stated as working with the minimum range of 0.5 m to at least 20 km. This was not voted on - the U3/D3 PMDs should operate with the 29 dB ChIL, whereas the nominal reach for this power class is not defined.
The same comment applies to line 37 on the same page.

SuggestedRemedy

Remove the reference to the minimum range for the PR30 PBC and state only the minimum range of 0.5 m. The same remedy is suggested for line 37.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The minimum operating range should be equal for all PMDs i.e. 0.5 m, while the maximum operating distance for the U3/D3 PMDs is open for discussion. It is suggested to leave the maximum operating range equal to (??) and subject to discussion by the TF.

Cl **91** *SC* **91.1** *P* **123** *L* **14** # 66

Marek, Hajduczenia Nokia Siemens Networ

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

What does the "minimum range" mean? There is no clear definition of this term?

SuggestedRemedy

Define the term "minimum range" below Table 91-1 and Table 91-2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The proposed definition of the term "minimum range" is as follows: "The minimum range defines the minimum and maximum nominal link distance supported by the given PMD. The actual operating range may exceed the quoted minimum range providing that sub-nominal split ratio is used and/or PMDs capable of supporting larger power budget are used."

Cl **91** *SC* **91.1** *P* **123** *L* **16** # 330

Dawe, Piers Avago Technologies

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

If all the channel insertion loss will be splitting loss, the losses at 1270 and 1590/1577 nm will be much the same as each other (does connector loss depend on wavelength?). But if a significant part of the insertion loss will be distance-based fibre attenuation, the loss at 1590/1577 nm will be less than at 1270 nm. GEPON has a 0.5 dB difference.

SuggestedRemedy

Is the same appropriate here?

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The calculated difference between the 1270 nm and 1590/1577 nm window loss is around 0.3 dB for 20 km link. The values included in the Tables 91-1 and 91-2 are consistent with the maximum channel insertion loss for either DS or US, whichever is greater (typically, the 1270 nm is greater and limits the system reach). In such a case, the DS will be overprovisioned by the said 0.3 dB.

Cl **91** *SC* **91.1** *P* **123** *L* **16** # 309

Dawe, Piers Avago Technologies

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

A link consisting of 10GBASE-PR-U1 and 10GBASE-PR-D2 would be PR20, max/min loss 24/10 dB, not 5/20 as shown? I think insertion loss classes map 1:1 to the PBCs but not to the PMDs.

SuggestedRemedy

Remove the range and loss rows from table 91-1 and 91-2 and move them to 91-4 and 91-5. You might then want to present 91.3 before these tables. Add rows for these tables for which PBCs these PMDs can be used with: more than one option sometimes depending on PMD at the other end.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Requires global alignment with comment #84 and #121.

Cl **91** *SC* **91.1** *P* **123** *L* **18** # 410

Chang, Frank Vitesse

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

The temperature ranges should be pointed out in the Overview, which is critical in making sure the task force is defining the worst-case specs with the consideration of specific environment conditions.

SuggestedRemedy

Add what is similar to 60.1, referring to 60.8.4 for further details. The Task force take action to define the case temperature classes similar to Table 60-13.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align with the comment #121.
Reference to 60.8.4 might not be necessarily true to 10G equipment. The TF needs to decide whether similar or different temperature ranges are applicable to 10G equipment.

Cl **91** *SC* **91.1** *P* **123** *L* **20** # 113

Remein, Duane Alcatel-Lucent

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

Table 91-1 note b is incorrect. If FEC is already accounted for then minimum range will not be increased by "extended" FEC.

Same comment on table 91-2.

SuggestedRemedy

Remove pharse "The upper bound on minimum range may be increased by application on extended FEC." from note b.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Also see comments 4, 76, and 308

Cl **91** *SC* **91.1** *P* **123** *L* **21** # 4

Lynskey, Eric Teknovus

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

In Table 91-1 and Table 91-2 footnote B, it mentions that two types of FEC are supported. The Task Force has not made this decision, and as of now, only a single FEC, RS(255, 223), has been voted on.

SuggestedRemedy

Remove the second sentence of footnote B for both tables.

Response *Response Status* **C**

ACCEPT.
Also see comments 76, 113 and 308

Cl **91** *SC* **91.1** *P* **123** *L* **21** # 308

Dawe, Piers Avago Technologies

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

'The upper bound on minimum range may be increased by application on extended FEC.': What 'extended FEC.'

SuggestedRemedy

Unless a stronger FEC variant appears in the draft, delete the sentence.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Also see comments 4, 76, and 113.

Cl **91** *SC* **91.1** *P* **123** *L* **22** # 76

Marek, Hajduczenia Nokia Siemens Networ

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

"The quoted minimum range values already account for FEC gain. The upper bound on minimum range may be increased by application on extended FEC." - extended FEC is already used in the form of the RS(255,233,8). The statement is inconsistent with the baseline nr. 29 on http://www.ieee802.org/3/av/public/baseline.html.

SuggestedRemedy

Remove sentence number 2 i.e. "The upper bound on minimum range may be increased by application on extended FEC" leaving the whole block in the following form "The quoted minimum range values already account for FEC gain."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Also see comments 4, 113 and 308

Cl **91** *SC* **91.1** *P* **123** *L* **39** # 183

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-2 is affected
TBD 29
TBD 15

SuggestedRemedy

Define the Maximum channel insertion loss and Minimum channel insertion loss.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Subject to approval by the TF.

Cl **91** *SC* **91.1** *P* **123** *L* **5** # 84

Marek, Hajduczenia Nokia Siemens Networ

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

Table 91-1 includes 10GBASE-PR-U1 with the ChIl min = 5 and ChIL max = 20 while it is supposed to work with PR10 and PR20 budgets with ChIL min 5 and 10 and ChIL max 20 and 24 respectively. That is not currently reflected in the Table 91-1.

SuggestedRemedy

Copy the 10GBASE-PR-U1 column to the right of the 10GBASE-PR-D1 column and use the appropriate min and max ChIL values i.e. 24 and 10 dB.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1** *P* **123** *L* **5** # 118

Kramer, Glen Teknovus, Inc.

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

Tables 91-1 and 91-2 are confusing. It does not make sense to talk about distance or channel insertion loss for a single PMD. These tables should describe power budget classes, not PMDs.

SuggestedRemedy

Modify the tables as shown in the attached document 3av_0801_kramer_1.pdf.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
To be aligned with the remaining comments for clause 91.

Cl **91** *SC* **91.1** *P* **123** *L* **6** # 278

Dawe, Piers Avago Technologies

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

Cramped table

SuggestedRemedy

Select table, size column widths to contents, with maximum (432?). Also Tables 91-3, 91-12.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1** *P* **123** *L* **6** # 359

Suzuki, Ken-Ichi NTT

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

10GBASE-PR-U1 can be also used for PR20.

SuggestedRemedy

Add the description of "10GBASE-PR-U1" to the left of "10GBASE-PR-D2" on Table 91-1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Aling with the comment #84

Cl **91** *SC* **91.1** *P* **124** *L* # 407

Chang, Frank Vitesse

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

In Table 91-2, 91-4 for co-existence cases with 1G PX10, PX20, the losses are indicated as the same for different wavelengths, this is different from what is already specified by 802.3ah.

SuggestedRemedy

Suggest to follow 802.3ah definition (where the loss for 1590nm or 1577nm should be even slightly smaller than 1490nm).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Table 91-2 contains the definitions of the 10G EPON channels, thus do not need to remain consistent with the Clause 60 specs. The values included in the said table are compliant with the US channel ChIL in table 60-1 for both US and DS.
Table 91-4 contains the definitions of the 10/1G EPON channels. The US channels are consistent with the min/max ChIL values from Table 60-1.
See also comment #330.

Cl **91** *SC* **91.1.1** *P* **123** *L* **50** # 279

Dawe, Piers Avago Technologies

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

The following are the objectives of PR10, PR20, PR30, PRX10, PRX20 and PRX30:

SuggestedRemedy

The following are the objectives of this clause: ?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Aling with comment #121.

Cl **91** *SC* **91.1.2** *P* **124** *L* **18** # 281

Dawe, Piers Avago Technologies

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

hashed

SuggestedRemedy

hatched

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.2** *P* **124** *L* **19** # 174

Lin, Rujian Shanghai Luster Terab

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

Figure 91-1 depicts the relationships of the PMD (shown hashed) with other sublayers and the ISO/IEC Open System Interconnection (OSI) reference model. The OLT has two interfaces between the sublayers of RS and PCS-XGMII and GMII along with the respective stacks and indication of appropriate clauses where the given entities are defined. Two types of ONU are depicted i.e. symmetric 10/10G ONU and asymmetric 10/1G ONU.
Optional sublayers of the stack required to assure coexistence with Clause 60 PMDs are presented in the figure in an informative way, refer to Annex A1 for detailed description of the coexistence options.

SuggestedRemedy

Insert a description on Figure 91-1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **91** *SC* **91.1.2** *P* **125** *L* # 72

Marek, Hajduczenia Nokia Siemens Networ

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

Figure 91-1 does not represent correctly the relationship of the Clause 91 PMD to the OSI reference model. In the case of symmetric data rate PMDs, there is only XGMII interface between the RS and the PMD, in the case of the asymmetric data rate PMDs, the clause 91 PMD is connected to Clause 92 RS via XGMII and GMII in the appropriate directions i.e. in the OLT, the Tx direction is serviced by the XGMII, the Rx direction is serviced by the GMII.

SuggestedRemedy

Suggest to redesign Figure 91-1 to represent the symmetric 10 Gbps EPONs, with the XGMII interface only between the clause 92 RS and the PMD. Suggest to copy Figure 91-1 creating Figure 91-2 and represent the asymmetric data rate EPON, where the OLT has the RS connected to the PMD via XGMII in the TX and GMII in the Rx direction, while in the ONU - the RS will be connected to the PMD via XGMII in the Rx direction and via GMII in the Tx direction. The coexisting situation will not be covered in the Clause 91.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The proposed solution will be included in D1.1.

Cl **91** *SC* **91.1.2** *P* **125** *L* **12** # 287
Dawe, Piers Avago Technologies

Comment Type **E** *Comment Status* **D**
Shading doesn't work well after pdf and printer translation

SuggestedRemedy
Can you hatch in the other direction?

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.
Sure can.

Cl **91** *SC* **91.1.2** *P* **125** *L* **19** # 310
Dawe, Piers Avago Technologies

Comment Type **T** *Comment Status* **D**
Fibre does not go past the MDI: this isn't classic Ethernet on coax. Compare Fig 60-1.

SuggestedRemedy
Make the fibres go to the two MDIs not past them

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.1.2** *P* **125** *L* **2** # 285
Dawe, Piers Avago Technologies

Comment Type **E** *Comment Status* **D**
Shouldn't write WORDS in CAPITALS: only abbreviations and such

SuggestedRemedy
Change the words to lower case, with leading capital where needed

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.1.2** *P* **125** *L* **2** # 286
Dawe, Piers Avago Technologies

Comment Type **E** *Comment Status* **D**
Font too small: 7 point

SuggestedRemedy
Change to 8 point. There'll be room when it isn't all in capitals.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Need to examine whether the captions in lower case will fit in the available fields.

Cl **91** *SC* **91.1.2** *P* **125** *L* **31** # 288
Dawe, Piers Avago Technologies

Comment Type **E** *Comment Status* **D**
'PON Medium': not a non-ordinary-English term

SuggestedRemedy
PON medium

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.
Typo.

Cl **91** *SC* **91.1.2** *P* **125** *L* **31** # 311
Dawe, Piers Avago Technologies

Comment Type **T** *Comment Status* **D**
'PON Medium' appears to include the ONU

SuggestedRemedy
Shorten the bracket to span the Optical distributor combiner(s)

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Remodel the figure and the PON medium should be indicated only by an arrow rather than brackets.

Cl **91** *SC* **91.1.4** *P* **124** *L* **42** # 169
Lin, Rujian Shanghai Luster Terab

Comment Type **E** *Comment Status* **D**
The following specifies the services provided by the all the PMDs defined in this Clause.

SuggestedRemedy

Proposed Response *Response Status* **W**
PROPOSED REJECT.
Lack of suggested remedy. Contact the author for clarification.

Cl **91** *SC* **91.1.4** *P* **124** *L* **42** # 282

Dawe, Piers Avago Technologies

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

by the all the PMDs

SuggestedRemedy

by the PMDs

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.4** *P* **124** *L* **45** # 283

Dawe, Piers Avago Technologies

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

This can be simplified (as can 91.1.5.n):
The PMD Service Interface supports the exchange of a continuous stream of bits, representing either 64B/66B (the transmit and receive paths in the 10GBASE-PR-D and 10GBASE-PR-U type PMDs, receive path in 10/1GBASE-PRX-D type PMDs) or 8B/10B (transmit path in 10/1GBASE-PRX-U type PMDs) code-groups encoded, scrambled and serialized in Clause 92 PMA, between the Clause 92 PMA and PMD entities.

SuggestedRemedy

The PMD Service Interface supports the exchange of a continuous stream of bits, representing either 64B/66B blocks (the transmit and receive paths in 10GBASE-PR PMDs, transmit path in 10/1GBASE-PRX-D PMDs) or 8B/10B (transmit path in 10/1GBASE-PRX-U PMDs, receive path in 10/1GBASE-PRX-D PMDs) code-groups encoded, scrambled and serialized in a?the? Clause 92 PMA, between the PMA and PMD entities.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposal to reword to "The PMD Service Interface supports the exchange of a continuous stream of bits, representing either 64B/66B blocks (the transmit and receive paths in 10GBASE-PR PMDs, transmit path in 10/1GBASE-PRX-D PMDs) or 8B/10B blocks (transmit path in 10/1GBASE-PRX-U PMDs, receive path in 10/1GBASE-PRX-D PMDs) encoded, scrambled and serialized in the Clause 92 PMA, between the PMA and PMD entities.".

Cl **91** *SC* **91.1.4** *P* **124** *L* **45** # 102

Remein, Duane Alcatel-Lucent

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

The sentance "The PMD Service Interface supports the exchange of a continuous stream of bits, representing either 64B/66B (...) or 8B/10B (...) code-groups encoded, scrambled and serialized in Clause 92 PMA, between the Clause 92 PMA and PMD entities." makes it sound like C92 deals with either 64B/66B or 8B/10B when in fact it only deals with 64B/66B.

SuggestedRemedy

Change to read: "The PMD Service Interface supports the exchange of a continuous stream of bits, representing either 64B/66B encoding (...) as described in Clause 92 PMA entities or 8B/10B encoding(...) as described in Clause 65 PMA entities."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align with comment #283.

Cl **91** *SC* **91.1.4** *P* **124** *L* **45** # 175

Lin, Rujian Shanghai Luster Terab

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

SuggestedRemedy

Agree on the insertion from Line 45 to Line 49 on Page 124 in Draft 1.0

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.4** *P* **124** *L* **49** # 284

Dawe, Piers Avago Technologies

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

a compatibile PMA - spelling. Match or change 'The' PMD at the beginning of the sentence?

SuggestedRemedy

the PMA? the specified PMA?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Proposed "received from the compatibile PMA".

Cl **91** *SC* **91.1.4** *P* **124** *L* **49** # 12

Jiang, Jessica Salira

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

Typo error: "compatibile" should be "compatible"

SuggestedRemedy

"compatibile" should be "compatible"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.4** *P* **125** *L* **1** # 119

Kramer, Glen Teknovus, Inc.

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

Figure 91-1 is unclear as to whether PRX type PMDs use only GMII or GMII and XGMII together.

SuggestedRemedy

Replicate figure 91-1 for PR and PRX types separately. Show XGMII and GMII for PRX and only XGMII for PR. Call the shaded box "PMD, PRX type (Clause 91)" in one figure and "PMD, PR type (Clause 91)" in another figure.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.5** *P* **126** *L* **9** # 289

Dawe, Piers Avago Technologies

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

Are delay constraints and the primitives are not related, so should they be grouped together? Clause 52 and 60 are different

SuggestedRemedy

?

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Cl **91** *SC* **91.1.5** *P* **126** *L* **9** # 312

Dawe, Piers Avago Technologies

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

It doesn't belong here, but remember FEC delay (see e.g. 74.6). If delay is done by reference to 36.5, I wouldn't call a PON 'half duplex or 'full duplex' so some clarification would be needed.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Cl **91** *SC* **91.1.5.1** *P* **126** *L* **21** # 176

Lin, Rujian Shanghai Luster Terab

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

SuggestedRemedy

Agree on the insertion from Line 21 to Line 25 on page 126 in Draft 1.0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.1.5.2** *P* **126** *L* **36** # 177

Lin, Rujian Shanghai Luster Terab

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

SuggestedRemedy

Agree on the insertion from Line 36 to Line 40 on page 126 in Draft 1.0

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.2.1** *P* **127** *L* **24** # 178

Lin, Rujian Shanghai Luster Terab

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

The PMD block diagram is absent.

SuggestedRemedy

Add Figure 91-2 PMD block diagram.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Subject to agreement on the specific PMD block diagram to be used after either 1G or 10GE channels.

Cl **91** *SC* **91.2.1** *P* **127** *L* **25** # 313

Dawe, Piers Avago Technologies

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

re which figure, 52-2 or 60-2. What do you mean, 'and meeting the ITU-T specifications.'?

SuggestedRemedy

Figure 60-2 looks suitable. Can you show the extent of the ODN on it, or on the equivalent of Figure 60-10, Fiber optic cable model?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The comment on "and meeting the ITU-T specifications" is a left-over which was supposed to be deleted (and never was aparently). PMD block diagram definition from Clause 60 can be adopted to Clause 91 in a straighforward manner.

Cl **91** *SC* **91.2.1** *P* **130** *L* **1** # 411

Chang, Frank Vitesse

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

Editor notes #16 indicate two options for PMD block diagrams.

SuggestedRemedy

Suggest to follow Clause 60 particularly for P2MP case, where Figure 91-3 (which is crossed out) must be modified.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Clause 60 contains the PMD block diagram for the P2MP case, so it does not require modifications.
Editorial note #16 to be removed.

Cl **91** *SC* **91.2.4.1** *P* **127** *L* **45** # 314

Dawe, Piers Avago Technologies

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

Can we make this less confusing: 'ONU PMD signal detect (downstream)'?

SuggestedRemedy

U (ONU) PMD signal detect of DS signal? Similarly for 91.2.4.2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The names were adopted following the naming nomenclature after Clause 60.

Cl **91** *SC* **91.2.4.1** *P* **127** *L* **52** # 315

Dawe, Piers Avago Technologies

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

Simplify: no receiver is required to verify whether a compliant 10GBASE-R signal is being received.

SuggestedRemedy

Change 'The 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3 PMD receiver is not required to verify whether a compliant 10GBASE-R signal is being received.' to 'The PMD receiver is not required to verify whether a compliant 10GBASE-R signal is being received.'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.2.4.2** *P* **128** *L* **9** # 316

Dawe, Piers Avago Technologies

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

Simplifying

SuggestedRemedy

Change 'The 10GBASE-PR-D1, 10GBASE-PR-D2, 10GBASE-PR-D3 PMD receiver is not required to verify whether a compliant 10GBASE-R signal is being received. Similarly, the 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2 and 10/1GBASE-PRX-D3 PMD receiver is not required to verify whether a compliant 1000BASE-X signal is being received.'
to
'The 10GBASE-PR-D PMD receiver is not required to verify whether a compliant 10GBASE-R signal is being received. Similarly, the 10/1GBASE-PRX-D PMD receiver is not required to verify whether a compliant 1000BASE-X signal is being received.'

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.2.4.3** *P* **128** *L* **20** # 290

Dawe, Piers Avago Technologies

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

'Receive conditions for PR and PRX PMD types'

SuggestedRemedy

Just 'Receive conditions' will do: PR and PRX PMD types are all that there could be in this clause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.2.5** *P* **128** *L* **41** # 291

Dawe, Piers Avago Technologies

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

the three ONU PMDs

SuggestedRemedy

the five ONU PMDs? the five -U (ONU) PMD types?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "PMD_SIGNAL.request(tx_enable) is defined for the three ONU PMDs." to "PMD_SIGNAL.request(tx_enable) is defined for all ONU PMDs defined in Clause 91.".

Cl **91** *SC* **91.3** *P* **128** *L* **44** # 120

Kramer, Glen Teknovus, Inc.

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

Section 91.3 is out of place. It should be part of Introduction, not be stack between two sections describing PMD specification.

Section 91.3 explains how we combine PMDs to satisfy our objectives of having 3 power budget classes. This section should follow immediately after the Goals and Objectives section.

SuggestedRemedy

Use the following outline for the clause 91:

91.1 Overview
91.1.1. Terminology and conventions
91.1.2. Goals and objectives
91.1.3. Power Budget Classes
91.1.4. Positioning of PMD sublayer within the IEEE 802.3 architecture
91.2 PMD Types
91.2.1. Mapping of PMDs to Power Budgets
91.3 PMD functional specifications
91.4 PMD to MDI Optical Specifications ... (OLT PMDs)
91.5 PMD to MDI Optical Specifications ... (ONU PMDs)
....

Move section 91.1.4 Physical Medium Dependent (PMD) sublayer service interface to be the first subsection under PMD functional specifications. Refer to attached file 3av_0801_kramer_1.pdf for proposed section introduction corresponding to the above outline.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Align with comment #121.

Cl **91** *SC* **91.3** *P* **129** *L* **1** # 317

Dawe, Piers Avago Technologies

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

In my mind, there are three loss classes (not 6) - for the ODN: and PMDs which may be used on them according to these tables. The loss classes are the same for 1/10G as for 10G (and compatible(?), and very nearly the same, for Clause 60 GEPON).

SuggestedRemedy

Change '91.3.1 Symmetric, 10 Gbps PBCs (PR type)
The symmetric data rate PBCs comprise two symmetric data rate PMDs, i.e. 10GBASE-PR-D1, 10GBASE-PR-D2 or 10GBASE-PR-D3 on the OLT side and 10GBASE-PR-U1 or 10GBASE-PR-U3 on the ONU side. There is a strict mapping between the said PMDs and the individual PBCs, as presented in
Table 91-4.'
to
'91.3.1 Power budget classes for symmetric and asymmetric PMDs
There are three PBCs. The PMDs to be used with each PBC are shown in Table 91-4 and Table 91-5.' Note that there is no 10GBASE-PR-U2 PMD type.'
Delete the title and text of 91.3.2.
And see other comments.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
There are 3 loss classes and each loss class is associated with 2 PMDs - a symmetric one and an asymmetric one. The loss classes are compatible with the ones defined in clause 60 for 1G EPON.
Aling the PBC - PMD mapping with comment #121.

Cl **91** *SC* **91.3** *P* **129** *L* **16** # 326

Dawe, Piers Avago Technologies

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

One of the nice innovations in Clause 68 is 68.5.2 Characteristics of signal within, and at the receiving end of, a compliant 10GBASE-LRM
channel. 10GEPON will need such a table; network maintenance will require it.

SuggestedRemedy

Add extra rows to Tables 91-4 and 91-5, Highest power in OMA max, Lowest power in OMA min, Highest average power max, Lowest average power. For each, there are two numbers: the highest/lowest anywhere in the link, and the highest/lowest at the receiving MDI. Populate table from numbers in the other tables. This may be something a determined reader could puzzle out for himself, but with so many variants, it will be worthwhile to tabulate it!

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **129** *L* **39** # 179

Lin, Rujian Shanghai Luster Terab

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

SuggestedRemedy

Agree on the insertion fron Line 39 to Line 42 on Page 129 in Draft 1.0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **129** *L* **45** # 292

Dawe, Piers Avago Technologies

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

Editors Note 15

SuggestedRemedy

The blue text makes sense to me.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment # 179

Cl **91** *SC* **91.4** *P* **129** *L* **49** # 293

Dawe, Piers Avago Technologies

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

Transceivers don't support media. It's the other way round; media are at the bottom of the layer stack. And there are only two types shown for any PMD (B1.1 and B1.3 SMF)

SuggestedRemedy

Change 'transceiver supports all media types' to 'transceiver operates over the media types'. Same in 91.5.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **130** *L* **26** # 194

Effenberger, Frank Huawei Technologies,

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

RMS spectral width does not make much sense for single moded lasers. I appreciate that we will keep it for the 1G upstream link, but for 10G it makes no sense.
Found on p130, line 26 and on p134, line 14.
(Tables 91-6 through 91-9; 91-12; 91-14 and 91-15)

SuggestedRemedy

Propose that RMS spectral width is removed from tables 91-6 and 91-12.
Delete tables 91-7,8,9,14,15.
Add the following items to tables 91-6 and 91-12:

Side Mode Suppression Ratio (min) [Note} 30 dB (for all cases)

Add Note: Transmitter is a single logitudinal mode device. Chirp is allowed such that the total optical path penalty does not exceed that found in table 91-18.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
1G links will maintain the RMS parameters for the sake of backward compatibility with the existing hardware.
10G links will use SMSR parameter instead as proposed in the Suggested Remedy.
Unclear reference to Table 91-18.

Cl **91** *SC* **91.4** *P* **130** *L* **42** # 391

Hiroshi, Hamano Fujitsu Labs. Ltd.

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

In Table 91-6, Transmitter and dispersion penalty (TDP) values still remain TBD.

SuggestedRemedy

I propose 1.5dB as baseline TDP values for the PR and PRX type OLT PMD transmit classes, following the presentation 3av_0711_hamano_1.pdf.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **134** *L* **19** # 413

Chang, Frank Vitesse

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

Donot think RMS spectral width (max) is a good parameter.

SuggestedRemedy

Suggest to change to SMSR (min) = 30dB as EML is assumed.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **135** *L* # 415

Chang, Frank Vitesse

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

Table 91-10, -11, -12, not needed for DFB type lasers.

SuggestedRemedy

Take out Table 91-10, -11, -12.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4** *P* **137** *L* **17** # 417

Chang, Frank Vitesse

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

Do we want to specify RX sens (max) as -27.6dBm OMA for B++ 29dB??

SuggestedRemedy

Change.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **12** # 170

Lin, Rujian Shanghai Luster Terab

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

fanally 10GBASE-PR-D3 and 10/1GBASE-PRX-D43 share the same transmit parameters.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **20** # 318

Dawe, Piers Avago Technologies

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

I don't like the 'Nominal transmitter type' table entry. It's not required so why is it here?

SuggestedRemedy

Delete this row and its note from each table. Earlier in the clause, add a sentence such as 'While it is not required, it is expected that PMD transmitters of this clause will use lasers, and amongst them, 10G transmitters and transmitters in the 1574-1600 nm range will use single longitudinal mode lasers.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Needs further discussion.

Cl **91** *SC* **91.4.1** *P* **130** *L* **23** # 9

Jiang, Jessica Salira

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

In table 91-6, the unit for signaling speed (range) use "GBd" instead of "Gb/s" or "Gbps". Typically, baud rate is for parallel data which consists more than one value, for serial data, suggest to use bit rate "b/s" or "bps".

There are more than one place use "GBd". The change should be apllied to all.

SuggestedRemedy

Change "GBd" to "Gbps" or "Gb/s"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The definition and use of baud and bit per second is specified in IEEE Std 260.1-2004 'IEEE Standard Letter Symbols for Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units)'. This is maintained by Standards Coordinating Committee on Quantities, Units, and Letter Symbols (SCC14). The use of this is enforced by having SCC14 as a mandatory coordination at the sponsor ballot stage.

Cl **91** *SC* **91.4.1** *P* **130** *L* **31** # 334

Dawe, Piers Avago Technologies

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

An extinction ratio spec of 9 dB minimum seems unnecessary and constraining to innovation. I thought the 9 dB was only a number to be used in calculation. I've made this comment a TR because it may take more than one ballot cycle to get to a complete set of spec numbers for these tables.

SuggestedRemedy

Unless there is a demonstrated reason for such a high extinction ratio, change the limit to something more moderate, e.g. 6 dB if there is no hope of using direct modulation (lower if there is). Remember, you don't have to have the OMA spec and the average power spec intercept at the extinction ratio spec.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **33** # 85

Marek, Hajduczenia Nokia Siemens Networ

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

The OMA mW values are not calculated correctly e.g. is: 2.91 dBm = 1.54 mW.
Applicable to all OMA mW values in:
Table 91-6, Table 91-12 i.e. Launch OMA (min),
Table 91-10, Table 91-17i.e. Stressed receive sensitivity OMA (max)

SuggestedRemedy

Convert the OMA dBm values into OMA mW values using the formula: 10^(dBm/10). Multiply by 1000 if to be expressed in uW.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
All values in Clause 91 expressed in OMA mW/uW need to be recalculated against the dBm value.

Cl **91** *SC* **91.4.1** *P* **130** *L* **33** # 362

Suzuki, Ken-Ichi NTT

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

Values of Launch OMA (min) (dBm) are not coincident with those of Launch OMA (min) (mW)

SuggestedRemedy

Check and correct the equation on the spread sheet.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **33** # 323
Dawe, Piers Avago Technologies

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

Specs to 1/100 dBm; that's 0.23%. Not a realistic accuracy

SuggestedRemedy

Round them off to 1/10 dB. Round the mW to similar precision. All tables.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **37** # 319
Dawe, Piers Avago Technologies

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

Ton, Toff not of interest for OLT transmitters

SuggestedRemedy

Delete the rows, here and in Table 91-12 and Table 91-13.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **39** # 322
Dawe, Piers Avago Technologies

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

Optical return loss tolerance should be the same as the subscript in RINxOMA

SuggestedRemedy

e.g. if you mean 15, enter 15 three times. If not decided, change RIN15OMA to RINxOMA.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Change RIN15OMA to RINxOMA.

Cl **91** *SC* **91.4.1** *P* **130** *L* **40** # 320
Dawe, Piers Avago Technologies

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

Optical return loss of ODN: ODN is not part of the transmitter. (I wonder how it got there in Clause 60.)

SuggestedRemedy

Delete this row, here and in Table 91-12 and Table 91-13. There's another table for the ODN.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **42** # 188
Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-6 is affected
Set Transmitter and dispersion penalty(max) to be 1.5dB

SuggestedRemedy

In measurement on TDP, it is important, but difficult to define an ideal transmitter which in theoretic concept is a transmitter with perfect driving waveform, perfect laser response, no optical delay, minimum line-width, no chirp and minimum relative intensity noise, because TDP = Receiver sensitivity in the case of test Tx with the worst fiber link £¤
Receiver sensitivity in the case of ideal Tx with pure attenuation (without fiber chromatic dispersion, PMD and optical reflection)
So I think that in the Draft we need to set up a definition on ideal Tx for TDP test.
For the TDP values I think that the data proposed by Dr. Hiroshi Hamano- 1.5dB for 1574-1580nm downstream and 3.0dB for 1260-1360nm upstream- is reasonable and a good start point for further investigation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #391.

Cl **91** *SC* **91.4.1** *P* **130** *L* **44** # 321

Dawe, Piers Avago Technologies

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

Decision timing offset for transmitter and dispersion penalty (min): as these are the continuous-mode transmitters, can use the value in 52.9.10.4. Also, it shouldn't be a minimum; it's what the test equipment is set AT, not below or above.

SuggestedRemedy

+/-0.05 UI. Delete '(min)'. In Table 91-12 it should be a little higher. In Table 91-13 it might be same as 1000BASE-PX10-U (+/-0.125 UI if that does not cost too much performance).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **47** # 110

Remein, Duane Alcatel-Lucent

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

Note b of table 91-6 "centre" should be "center".
In general spelling follows american standard.

SuggestedRemedy

Change to "center"
Change spell check dictionary to American English

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **130** *L* **49** # 294

Dawe, Piers Avago Technologies

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

10GBASE-PR-D1 / 10/1GBASE-PRX-D1

SuggestedRemedy

This is another reason not to use / in these type names.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Such combinations can be replaced i.e. "10GBASE-PR-D1 / 10/1GBASE-PRX-D1" can become "10GBASE-PR-D1 and 10/1GBASE-PRX-D1".

Cl **91** *SC* **91.4.1** *P* **130** *L* **9** # 331

Dawe, Piers Avago Technologies

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

Reference to section that's gone AWOL.

SuggestedRemedy

Create a new 91.8 'Definitions of optical parameters and measurement methods' (much better title and concept that 'Optical measurement requirements' because optical measurement is not required, although performance is). Contents can mainly refer to 58.7.n and occasionally to 68.6 or 52.9.n.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **131** *L* **13** # 184

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-7, 91-8, 91-9 are affected
This limits for the 10GBASE-PR10-U-D transmitter are illustrated in Figure 91-3.

SuggestedRemedy

Add Figure 91-3 10GBASE-PR-D transmitter spectral limits on page 131 in Draft 1.0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Figures will be added on the need-to basis, in alignment with the comment #194.

Cl **91** *SC* **91.4.1** *P* **131** *L* **4** # 295

Dawe, Piers Avago Technologies

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

Because all these wavelengths are 274 to 300 nm from the furthest zero dispersion wavelength (i.e. see similar chromatic dispersion) , there is little point in having the spectral width depend on wavelength.

SuggestedRemedy

Get rid of the three tables and most of the text. Add two rows to Table 91-6. 'The equation used to calculate these values is detailed in 91.8.2.' can become a footnote. Provide a 91.8.2 or refer to 60.7.2 or equation (60-3).
This remedy does NOT necessarily apply to the U transmitters.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #194.

Cl **91** *SC* **91.4.1** *P* **131** *L* **4** # 103

Remein, Duane Alcatel-Lucent

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

Combine Tables 91-7, 91-8 and 91-9 (increased readability)

SuggestedRemedy

Combine Tables 91-7, 91-8 and 91-9

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #194.

Cl **91** *SC* **91.4.1** *P* **132** *L* **22** # 363

Suzuki, Ken-Ichi NTT

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

Values of Stressed receive sensitivity OMA (max) (dBm) are not coincident with those of Stressed receive sensitivity OMA (max) (uW)

SuggestedRemedy

Check and correct the equation on the spread sheet.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.1** *P* **134** *L* **3** # 382

Toshiaki, Mukojima Oki Electric Industry C

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

Change spelling of "10G/1GBASE-PRX-D4" to "10G/1GBASE-PRX-D3"

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.2** *P* **131** *L* **47** # 324

Dawe, Piers Avago Technologies

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

As 10GEPON is going further and faster than GEPON, dispersion penalty is a serious issue. Stressed receive performance should not be optional here. But in return, to keep the burden of testing and reporting down, unstressed sensitivity can become optional.

SuggestedRemedy

Change 'overload, sensitivity, reflectivity' to 'overload, stressed sensitivity, reflectivity.'
Change 'Its stressed receive characteristics should' to 'Its (unstressed) sensitivity should'.
Same for 91.5.2 type PR.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.2** *P* **131** *L* **48** # 171

Lin, Rujian Shanghai Luster Terab

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

per measurement techniques described in 91.8.11. Either

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #391.

Cl **91** *SC* **91.4.2** *P* **132** *L* **10** # 390

Tsuji, Shinji Sumitomo Electric

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

Table 91-10.
Receiver sensitivity is defined at the BER of 10^-3 in the baseline reference presentation.

SuggestedRemedy

Please modify 10^-12 to 10^-3.
The same modification should be done at Table 91-17 page 136 line 48.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.2** *P* **132** *L* **10** # 104

Remein, Duane Alcatel-Lucent

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

It seems odd the 10-12 BER spec is entered once for each column whereas other common specifications are discretely spelled out. Recommend consistency by entering 10-12 for each column.

Also applies to Table 91-17 c91 subc91.5.1 pg 136 line 37.

SuggestedRemedy

enter 10-12 in separate cell for each column

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Value 10^-3 should be used as per comment #390.

Cl **91** *SC* **91.4.2** *P* **132** *L* **13** # 325

Dawe, Piers Avago Technologies

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

Damage threshold for 10GBASE-PR-D3 should be Tx max for 10GBASE-PR-U3 + 1. For the others, it could be the same, or Tx max for 10GBASE-PR-U1 + 1 (i.e. +5 dBm).

SuggestedRemedy

That's +10 dBm for 10GBASE-PR-D3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Needs further discussion.

Cl **91** *SC* **91.4.2** *P* **132** *L* **23** # 327

Dawe, Piers Avago Technologies

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

VECP and stressed eye jitter are set points that the stressed receiver conformance test should be set AT, not above or below

SuggestedRemedy

Delete '(min)' for these two, all receiver tables.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.4.2** *P* **132** *L* **28** # 329

Dawe, Piers Avago Technologies

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

Jitter corner frequency

SuggestedRemedy

Probably 4 MHz for 10GBASE-PR-U (continuous mode: same as Clause 52), in the range 4-8 MHz TBD for 10GBASE-PR-U, 637 kHz for 10/1GBASE-PRX-D3 (like Clause 60 - maybe could be increased a little).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Needs further discussion. The values defined need to be also aligned with the jitter specifications produced by the respective ad-hoc.

Cl **91** *SC* **91.4.2** *P* **132** *L* **34** # 328

Dawe, Piers Avago Technologies

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

Consistency with current Clause 60. See
http://ieee802.org/3/maint/requests/maint_1171.pdf

SuggestedRemedy

Note that following a maintenance request, note c has disappeared from Tables 60-5 and 60-8.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Aligment with the new release of the 802.3 will be carried out once the 802.3ay project is closed.

Cl **91** *SC* **91.4.2** *P* **136** *L* **21** # 416

Chang, Frank Vitesse

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

I donot think Stressed Rx Sens (AOP or OMA) is properly used in the table.

SuggestedRemedy

1) Suggest to put Stressed Rx sens in AOP and OMA into TBD, while move the corrected numbers to the rows for receiver sens.
2) In footnote, change stress receiver sens as optional or to be defined later once the stress test method is defined.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
AOP = ?
Stressed Rx Sensitivity values will be moved to a corrected row. Stressed sensitivity should be normative following 10GE specs.

Cl **91** *SC* **91.5** *P* **132** *L* **41** # 180
Lin, Rujian Shanghai Luster Terab

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

SuggestedRemedy
Agree on the insertion from Line 41 to Line 44 on Page 132 in Draft 1.0

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.5** *P* **134** *L* **21** # 361
Suzuki, Ken-Ichi NTT

Comment Type **E** *Comment Status* **D**
"Unit" of "Launch OMA (min)", dBm(wW), must be a typo.

SuggestedRemedy
Replace "dBm(wW)" by "dBm(mW)".

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.5** *P* **134** *L* **3** # 360
Suzuki, Ken-Ichi NTT

Comment Type **E** *Comment Status* **D**
"Uescription" must be a typographical error.

SuggestedRemedy
Replace "Uescription" by "Description".

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.5** *P* **134** *L* **30** # 392
Hiroshi, Hamano Fujitsu Labs. Ltd.

Comment Type **T** *Comment Status* **D**
In Table 91-12, Transmitter and dispersion penalty (TDP) values still remain TBD.

SuggestedRemedy
I propose 3.0dB as baseline TDP values for the PR type ONU PMD transmit classes, following the presentation 3av_0711_hamano_1.pdf.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Needs further discussion.

Cl **91** *SC* **91.5.1** *P* **133** *L* **42** # 74
Marek, Hajduczenia Nokia Siemens Networ

Comment Type **ER** *Comment Status* **D**
Reference to the non-existing PMD i.e. 10GBASE-PR-U2 is made - see http://www.ieee802.org/3/av/public/baseline.html and http://www.ieee802.org/3/av/public/2007_11/3av_0711_effenberger_1.pdf.

SuggestedRemedy
Remove all the references to the 10GBASE-PR-U2 from the text.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **91** *SC* **91.5.1** *P* **133** *L* **44** # 296
Dawe, Piers Avago Technologies

Comment Type **E** *Comment Status* **D**
Table 91-12 for PR type OLT PMDs

SuggestedRemedy
Table 91-12 for PR type ONU PMDs? And p134 line 1.

Proposed Response *Response Status* **W**
PROPOSED REJECT.
Unclear. Contact the author for further clarification on the contents of the comment and suggested remedy. Clause 91.4 defines the OLT PMDs (Rx and Tx) whil ethe 91.5 defines the ONU PMDs (Rx and Tx). This approach is different than the one taken in clause 60. See also comment #307.

Cl **91** *SC* **91.5.1** *P* **134** *L* **19** # 335
Dawe, Piers Avago Technologies

Comment Type **TR** *Comment Status* **D**
An extinction ratio spec of 6 dB minimum seems too constraining for 10G, 1310 nm band. I thought the 6 dB was only a number to be used in calculation. I've made this comment a TR because it may take more than one ballot cycle to get to a complete set of spec numbers for these tables.

SuggestedRemedy
Unless there is a demonstrated reason for such a high extinction ratio, change the limit to something more moderate, e.g. 3.5 or 4 dB. Remember, you don't have to have the OMA spec and the average power spec intercept at the extinction ratio spec.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Technically, it should provide for less expensive laser sources for the ONUs. The change from the 6 to 5/4.5 dB ER for US PMDs needs further discussion.

Cl **91** *SC* **91.5.1** *P* **134** *L* **21** # 364

Suzuki, Ken-Ichi NTT

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

Values of Launch OMA (min) (dBm) are not coincident with those of Launch OMA (min) (mW)

SuggestedRemedy

Check and correct the equation on the spread sheet.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.5.1** *P* **134** *L* **24** # 114

Remein, Duane Alcatel-Lucent

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

My understanding is that MAC timing requirements were to remain unchanged. Given that Toff (max) is an integral part of MAC timing this parameter should be 512 ns (same as c60 upstream PMDs).

SuggestedRemedy

Set Toff in Table 91-12 to 512 (ns) for both 10GBASE-PR-U1 and 10GBASE-PR-U3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Align with the motion #10 from November 2007.

Cl **91** *SC* **91.5.1** *P* **134** *L* **30** # 189

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-12 is affected
Set Transmitter and dispersion penalty(max) to be 3.0dB

SuggestedRemedy

In measurement on TDP, it is important, but difficult to define an ideal transmitter which in theoretic concept is a transmitter with perfect driving waveform, perfect laser response, no optical delay, minimum line-width, no chirp and minimum relative intensity noise, because TDP = Receiver sensitivity in the case of test Tx with the worst fiber link £¤
Receiver sensitivity in the case of ideal Tx with pure attenuation (without fiber chromatic dispersion, PMD and optical reflection)
So I think that in the Draft we need to set up a definition on ideal Tx for TDP test.
For the TDP values I think that the data proposed by Dr. Hiroshi Hamano- 1.5dB for 1574-1580nm downstream and 3.0dB for 1260-1360nm upstream- is reasonable and a good start point for further investigation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #392.

Cl **91** *SC* **91.5.1** *P* **135** *L* **22** # 115

Remein, Duane Alcatel-Lucent

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

My understanding is that MAC timing requirements were to remain unchanged. Given that Toff (max) is an integral part of MAC timing this parameter should be 512 ns (same as c60 upstream PMDs).

SuggestedRemedy

Set Toff in Table 91-13 to 512 (ns) for both 10/1GBASE-PRX-U3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #114.

Cl **91** *SC* **91.5.1** *P* **135** *L* **27** # 190

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-13 is affected
Set Transmitter and dispersion penalty(max) to be 3.0dB

SuggestedRemedy

In measurement on TDP, it is important, but difficult to define an ideal transmitter which in theoretic concept is a transmitter with perfect driving waveform, perfect laser response, no optical delay, minimum line-width, no chirp and minimum relative intensity noise, because TDP = Receiver sensitivity in the case of test Tx with the worst fiber link £¤
Receiver sensitivity in the case of ideal Tx with pure attenuation (without fiber chromatic dispersion, PMD and optical reflection)
So I think that in the Draft we need to set up a definition on ideal Tx for TDP test.
For the TDP values I think that the data proposed by Dr. Hiroshi Hamano- 1.5dB for 1574-1580nm downstream and 3.0dB for 1260-1360nm upstream- is reasonable and a good start point for further investigation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #392.

Cl **91** *SC* **91.5.1** *P* **135** *L* **34** # 297

Dawe, Piers Avago Technologies

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

for 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-U1 and 10/1GBASE-PRX-U3 PMDs are shown, respectively, in Table 91-14, Table 91-15, Table 91-16, Table 91-18 and Table 91-19.

SuggestedRemedy

for 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3 PMDs are shown, respectively, in Table 91-14, Table 91-15, Table 60-4, Table 60-7 and Table 91-16.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
RMS for 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3 PMDs needs to reference respectively tables Table 60-4, Table 60-7 and Table 91-16. 10GBASE-PR-U1, 10GBASE-PR-U3 PMDs will not use the RMS at all (most likely) - see comment #194.

Cl **91** *SC* **91.5.1** *P* **135** *L* **39** # 105

Remein, Duane Alcatel-Lucent

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

Recommend combining Tables 91-14, 91-15 and 91-16 (readability).

SuggestedRemedy

Combine Tables 91-14, 91-15 and 91-16.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment #194. Tables 91-14 and 91-15 are planned for removal altogether. Table 91-16 will remain in place and define the PRX-U3 RMS.

Cl **91** *SC* **91.5.1** *P* **135** *L* **48** # 172

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-14 is affected
These limits for 10GBASE-PR10-U transmitter are illustrated in Figure 91-34.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Lack of suggested remedy. Contact the author for clarification.

Cl **91** *SC* **91.5.1** *P* **136** *L* **10** # 181

Lin, Rujian Shanghai Luster Terab

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

MH: Table 91-15, 91-16 are affected
These limits for 10GBASE-PR10-U transmitter are illustrated in Figure 91-34.

SuggestedRemedy

Add Figure 91-4 10GBASE-PR-U transmitter spectral limits on Page 136.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Figures will be added on the need-to basis, in alignment with the comment #194.

Cl **91** *SC* **91.5.1** *P* **137** *L* **13** # 365

Suzuki, Ken-Ichi NTT

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

Values of Stressed receive sensitivity OMA (max) (dBm) are not coincident with those of Stressed receive sensitivity OMA (max) (uW)

SuggestedRemedy

Check and correct the equation on the spread sheet.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.5.1** *P* **137** *L* **47** # 383

Toshiaki, Mukojima Oki Electric Industry C

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

Delete unmapped PR PMD class name "10GBASE-PR-U2"

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
See comment # 74.

Cl **91** *SC* **91.5.1** *P* **138** *L* **47** # 405

Chang, Frank Vitesse

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

Same as comment #5.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Unable to track back which is comment #5.

Cl **91** *SC* **91.5.1** *P* **139** *L* # 418

Chang, Frank Vitesse

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

B++ 29dB??

SuggestedRemedy

Suggest add ER=6dB and calculate launching power accordingly.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
U3 PBC will have the ChIL of 29 dB as defined in the objective of the TF. ER of 6 dB is proposed as unnecessarily too high in comment #335, which proposes ER of 5 or even 4.5 dB as more reasonable.

Cl **91** *SC* **91.5.1** *P* **140** *L* # 412

Chang, Frank Vitesse

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

same as comment #7.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #405.

Cl **91** *SC* **91.5.2** *P* **136** *L* **34** # 173

Lin, Rujian Shanghai Luster Terab

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

91.8.11. Either

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
I assume that the line "91.8.11 Either the damage threshold" is to be changed to "91.8.11. Either the damage threshold".

Cl **91** *SC* **91.5.2** *P* **136** *L* **36** # 75

Marek, Hajduczenia Nokia Siemens Networ

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

Table 91-17 contains reference to the 10GBASE-PR-U2 PMD, which does not exist since the PR10 and PR20 ONU PMDs are to identical.

SuggestedRemedy

Table 91-17 needs to be separated into the symmetric PMD and asymmetric PMD definitions i.e. Table 91-17 would contain the specifications for the 10GBASE-PR-U1 and 10GBASE-PR-U3, while the new Table 91-18 would contain the specifications for the 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3. If in the course of the further development, 10/1GBASE-PRX-U1 and 10/1GBASE-PRX-U2 is foudn to share the same parameters, the Table 91-17 and Table 91-18 could be merked again.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Suggested to remove the reference to the 10GBASE-PR-U2 only and leave a single Table 91-17 in the current form (i.e. PR and PRX type PMDs together).

Cl **91** *SC* **91.5.2** *P* **137** *L* **1** # 298

Dawe, Piers Avago Technologies

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

Run-on part of table split over a page break should be titled Table n-n ... (continued)

SuggestedRemedy

Assuming the editor used the current template - get the template keeper to fix it.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.5.2** *P* **140** *L* **47** # 381

Toshiaki, Mukojima Oki Electric Industry C

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

Delete unmapped PR PMD class name "10GBASE-PR-U2"

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.5.2** *P* **141** *L* # 408

Chang, Frank Vitesse

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

same as comment #8

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #405.

Cl **91** *SC* **91.6** *P* **138** *L* **21** # 336

Dawe, Piers Avago Technologies

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

The allocations for penalties are too small. Remember, in 802.3 it's all penalties including those in the transmitter - not just path penalty/dispersion penalty. I've made this comment a TR because it may take more than one ballot cycle to get to a complete set of spec numbers for these tables.

SuggestedRemedy

Assuming channel insertion loss (max) is as intended, increase the allocations for penalties and increase the available power budget in step. Here and DS allocations in Table 19.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Precise values of the allocation for penalties subject to discussion and approval by the TF.

Cl **91** *SC* **91.6** *P* **138** *L* **36** # 67

Marek, Hajduczenia Nokia Siemens Networ

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

Table 91-19 indicates significant differences for Channel insertion loss (min) and Allocation for penalties for the DS and US channels. The 1 Gbps specs should be aligned with the new power budget specifications to remain comparable with the 10 Gbps channel specs.

SuggestedRemedy

Align the channel link model for 1 Gbps and 10 Gbps links by e.g. recalculating the 1 Gbps channel models in the new link model spreadsheet. Then use the penalty and channel insertion values which are required to make the system work.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
1 Gbps link should be engineered using the same system specifications and models as the other PX10 and PX20 systems.

Cl **91** *SC* **91.6** *P* **138** *L* **5** # 106

Remein, Duane Alcatel-Lucent

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

Table 91-18; Nominal distance is a misleading term to the casual user.

This comment also applies to Table 91-19

SuggestedRemedy

Add a note the "Nominal distance refers to the expected maximum distance a PMD will be capable of achieving in a typical ODN, numerous ODN implementation practices may result is longer or shorter distances being actually achievable in a users' network."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The exact wording of the note need further discussion.

Cl **91** *SC* **91.6** *P* **141** *L* # 419

Chang, Frank Vitesse

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

Nowhere indicate assumptions on optical loss and attn. calculated in spreadsheet.

SuggestedRemedy

Suggest to add optical loss and attn. table with assumptions of the number of connectors.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The 1G EPON standard does not define the number of fibre connectors to be used in the PON plant. It is inadvisable to define such a parameter in 10G EPON specs. We have the ChIL which includes all the loss for the passive PON plant and it is up to the system implementer to chose how to use the allocated dBs. It can be conceived to add an informative clause on the channel model assumptions to facilitate any future development of the PON (and other) 802.3 standards, though I would advise against introducing ITU-T like PON plant parameters like the number of connectors etc.

Cl **91** *SC* **91.6** *P* **142** *L* # 409

Chang, Frank Vitesse

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

Same as comment #2.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED REJECT.
See comment #405

Cl **91** *SC* **91.6** *P* **142** *L* # 406

Chang, Frank Vitesse

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

Is the link closed with allocation for penalties?

SuggestedRemedy

Add DS/US jitter budget table and revisit the allocation for penalties.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Indeed it is at the moment. The feedback from the jitter ad-hoc is expected at the January meeting, when the appropriate allocation for jitter can be added.

Cl **91** *SC* **91.8** *P* **139** *L* **22** # 332

Dawe, Piers Avago Technologies

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

For this 'Environmental, safety, and labeling' section you might start by copying 68.7 (except the NOTE) - it's short and simple.

SuggestedRemedy

For this section you might start by copying 68.7 (except the NOTE) - it's short and simple. Then you can choose to say 'as defined in 52.10.1' or 'as defined in 60.8.1' and so on - the differences are not great.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **91** *SC* **91.9** *P* **134** *L* # 414

Chang, Frank Vitesse

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

Table 91-9, 9-13 Wavelength (range) not appropriate.
MH: Page 135 is also affected

SuggestedRemedy

Change Wavelength (range) to Center wavelength (range), typically for DFB type lasers.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
1G EPON specifications included the wavelength range definition and IMHO we should stick with it.

Cl **91** *SC* **91.9** *P* **139** *L* **26** # 333

Dawe, Piers Avago Technologies

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

For this 'Characteristics of the fiber optic cabling' section

SuggestedRemedy

Copy or reference 60.9 or its sections?

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Referencing would be preferable to copying if the text is directly applicable.

Cl **92** *SC* **92** *P* **299** *L* **1** # 338

Lynskey, Eric Teknovus

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

The headings on even and odd pages are not consistent. On all odd pages, the header uses "EEE" instead of IEEE. On all even pages, the header uses Draft 0.91 instead of 1.0.

SuggestedRemedy

Replace "EEE" with "IEEE". Modify headings so that both even and odd pages use the same header information and are updated appropriately for the next draft number.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1** *P* **299** *L* **1** # 1

Lynskey, Eric Teknovus

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

Every line of text does not have a line number. In addition, each page has two lines marked as line number 24.

SuggestedRemedy

Fix line numbering to match that of Clause 64 and 91.

Response *Response Status* **C**

ACCEPT.

Cl **92** *SC* **92.1.1** *P* **299** *L* **12** # 68

Marek, Hajduczenia Nokia Siemens Networ

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

The initial description of the system should be more specific i.e. "This subclause extends Clause 46 to enable multiple data link layers to interface with a single physical layer. This subclause also extends Clause 65 to enable asymmetrical data links which transmit at one rate and receive at a different rate." needs changes

SuggestedRemedy

Change to ""This subclause extends Clause 46 to enable multiple data link layers to interface with a single physical layer and Clause 65 to enable asymmetrical data links, transmitting at one data rate (e.g. 10 Gb/s) and receive in another data rate (e.g. 1 Gb/s)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.1** *P* **300** *L* **1** # 80

Marek, Hajduczenia Nokia Siemens Networ

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

Figure 92-1 is not correct - in the case of symmetric data rate PMD, only XGMII will be available, in the case of asymmetric data rate PMD, the XGMII and GMII will be used in only one transmission direction e.g. GMII for Tx and XGMII for Rx or vice versa.

SuggestedRemedy

Correct the figure to reflect the connection between the PMD and the RS. It is suggested to split the figure into 2 and depict the symmetric and asymmetric data rate PMD connection separately.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Shall use Figure 91-1.

Cl **92** *SC* **92.1.1.1** *P* **300** *L* **18** # 400

Mandin, Jeff PMC Sierra

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

Description of transmit direction behaviour of an asymmetric RS is unclear.

SuggestedRemedy

Modify as lines 18-?? as follows:

As described in 64.1.2, multiple MACs within an OLT are bound to a single GMII, while at the ONU a single MAC is bound to the GMII. The multipoint control protocol (MPCP) ensures that only one MAC is transmitting at any one time. Correspondingly, only one PLS_DATA.request primitive is active at any time.

For 10G links, the mechanism is extended to allow the MAC to be bound to a single XGMII, or to a GMII transmit path and an XGMII receive path (in the case of an asymmetric ONU), or to an XGMII transmit path and a GMII receive path (in the case of an asymmetric OLT).

In the transmit direction, the RS maps the active PLS_DATA.request to either the GMII signals (TXD<7:0>, TX_EN, TX_ER, and GTX_CLK) or the XGMII signals (TXD<31:0>, TXC<3:0>, and TX_CLK) according to the MAC instance generating the request. The RS replaces octets of preamble with the values of the transmitting MAC's MODE and LLID variables.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
From:
"As described in 64.1.2, multiple MACs within an OLT are bound to a single GMII, while at the ONU a single MAC is bound to the GMII. The multipoint control protocol (MPCP) ensures that only one MAC is transmitting at any one time. This is extended to allow the MAC to be bound to a single XGMII, or to a GMII transmit path and an XGMII receive path (in the case of an asymmetric ONU), or to an XGMII transmit path and a GMII receive path (in the case of an asymmetric OLT). Only one PLS_DATA.request primitive is active at any time. The active PLS_DATA.request is mapped to either the GMII signals (TXD<7:0>, TX_EN, TX_ER, and GTX_CLK) or the XGMII signals (TXD<31:0>, TXC<3:0>, and TX_CLK). The RS replaces octets of preamble with the values of the transmitting MAC's MODE and LLID variables."

To:
"As described in 64.1.2, multiple MACs within an OLT are bound to a single GMII, while at the ONU a single MAC is bound to the GMII. The multipoint control protocol (MPCP) ensures that only one MAC is transmitting at any one time. Correspondingly, only one PLS_DATA.request primitive is active at any time.

For 10G links, the mechanism is extended to allow the MAC to be bound to a single XGMII, or to a GMII transmit path and an XGMII receive path (in the case of an asymmetric ONU), or to an XGMII transmit path and a GMII receive path (in the case of an asymmetric OLT).

In the transmit direction, the RS maps the active PLS_DATA.request to either the GMII signals (TXD<7:0>, TX_EN, TX_ER, and GTX_CLK) or the XGMII signals (TXD<31:0>, TXC<3:0>, and TX_CLK) according to the MAC instance generating the request. The RS replaces octets of preamble with the values of the transmitting MAC's MODE and LLID variables."

Also see presentation 3av_0801_remein_2.pdf

Cl **92** *SC* **92.1.1.3** *P* **301** *L* **1** # 396

Mandin, Jeff PMC Sierra

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

The "Rate of operation" subclause does not belong here.

The parallel subclause of clause 46 pertains to the rate of the XGMII and is still applicable to 10GEPON.

SuggestedRemedy

1. Delete 92.1.1.3 (line rates are specified in the appropriate PMD clauses)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.2.2** *P* **301** *L* **11** # 398

Mandin, Jeff PMC Sierra

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

Carrier Sense backoff is used in both directions not just downstream

SuggestedRemedy

Delete "in the downstream direction" so that the text reads:

For 10 GEPON the CRS signal is used to
defer the MAC to allow the PCS to insert FEC parity bytes.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
From:
"… For 10 GEPON the CRS signal is used to defer the MAC in the downstream direction to allow the PCS to insert FEC parity bytes."

To:
"… For 10 GEPON the CRS signal is used to defer the MAC to allow the PCS to insert FEC parity bytes.

Cl **92** *SC* **92.1.2.2** *P* **301** *L* **8** # 368
Suzuki, Ken-Ichi NTT

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

"Mapping of" of Sub-clause title "Mapping of PLS_CARRIER.indication in XGMII Structure" may be written in a different font.

SuggestedRemedy

Check the font style. If so, rewrite "UnprotectedBlockCount -= 28" in the same font.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Change
From: Times New Roman
To: Arial

(good catch :-)

Cl **92** *SC* **92.1.2.2** *P* **301** *L* **9** # 369
Suzuki, Ken-Ichi NTT

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

"The XGMII Structure" may be a typo.

SuggestedRemedy

Recommend you replace "Structure" by "structure".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.2.2** *P* **304** *L* **2** # 370
Suzuki, Ken-Ichi NTT

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

"0x7FFE or 0xFFE a" may be a type.

SuggestedRemedy

Replace ""0x7FFE or 0xFFE a" by ""0x7FFF or 0xFFE"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 81

Cl **92** *SC* **92.1.2.2.5** *P* **302** *L* **8** # 339
Lynskey, Eric Teknovus

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

In Figure 92-2, the acronym UTC is incorrect, and should be replaced with UCT.

SuggestedRemedy

Replace UTC with UCT on lines 8 (leaving INIT state), and twice on line 22 (leaving Clear CRS state and Set CRS state).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.2.3.2** *P* **303** *L* **2** # 399
Mandin, Jeff PMC Sierra

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

No need to discuss 66b code position in 10G RS transmit text.

Just point back to the EPON text.

In 1G this discussion was needed because 8b/10b code caused variable preamble length.

SuggestedRemedy

1. Delete "except as noted below" from 92.1.2.3.2

2. Delete 92.1.2.3.2.1, 92.1.2.3.2.2, 92.1.2.3.2.3

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete 92.1.2.3.2.2, 92.1.2.3.2.3

Also see Comment 2 and 350.

Cl **92** *SC* **92.1.2.3.2.1** *P* **303** *L* **6** # 340
Lynskey, Eric Teknovus

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

SGMII is not a valid interface.

SuggestedRemedy

Replace SGMII with XGMII.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.2.3.2.1** *P* **303** *L* **6** # 350

Lynskey, Eric Teknovus

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

A compliant 10G reconciliation sublayer will always align the Start control character to lane 0. This does not depend on whether or not deficit idle count is supported. Also, the third byte of preamble will be in lane 2 and not lane 3.

The extra text in this subclause seems overly confusing and is not necessary. The first sentence of the subclause is all that is needed, and this is already captured in Clause 65. Like we are doing with some of the other fields, we should just reference Clause 65 here.

SuggestedRemedy

Option 1: Remove all text from this subclause and insert the following sentence, "The SLD field is as described in 65.1.3.2.1".

Option 2: Replace third paragraph in this subclause with the following: "When using the XGMII, the Start control character replaces the first preamble octet and is always aligned to lane 0. Therefore, the SLD will appear in lane 2 of the same column containing the Start control character."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
From:
"When using the XGMII the /S/ code-group normally is transmitted in Lane 0 and thus SLD will appear in Lane 3. Alternatively, if the SGMII implementation supports the Deficit Idle Count as described in 46.3.1.4 the /S/ code-group may be transmitted in lanes 1, 2, or 3 (see 46.3.1.4)."

To:
"When using the XGMII, the Start control character replaces the first preamble octet and is always aligned to lane 0. Therefore, the SLD will appear in lane 2 of the same column containing the Start control character."

Cl **92** *SC* **92.1.2.3.2.1** *P* **303** *L* **6** # 2

Lynskey, Eric Teknovus

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

The /S/ code-group may only be transmitted in lane 0.

SuggestedRemedy

Replace paragraph with the following. "When using the XGMII, the Start control character will be transmitted in lane 0, and thus the SLD will appear in lane 3 in the same column that contains the start control character."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
Also see Comment 399

Cl **92** *SC* **92.1.2.3.3.1** *P* **303** *L* **14** # 401

Mandin, Jeff PMC Sierra

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

No need to discuss 66b code position in 10G RS receive text.

In 1G this discussion was needed because the amount of preamble received actually varies when the 8b/10b code is employed.

LLID text is needed however as it is different from GEPON.

SuggestedRemedy

Delete 92.1.2.3.3.1 ("SLD" subclause)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See Comment 3.

Cl **92** *SC* **92.1.2.3.3.1** *P* **303** *L* **16** # 3

Lynskey, Eric Teknovus

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

The SLD should only be received in lane 3 of the same column that contains the start control character.

SuggestedRemedy

Replace paragraph with, "When using the XGMII, the start control character will be received in lane 0, and the SLD will be received in lane 3 of the same column that contains the start control character."

Response *Response Status* **C**

ACCEPT.

Cl **92** *SC* **92.1.2.3.3.2** *P* **303** *L* **22** # 81

Marek, Hajduczenia Nokia Siemens Networ

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

"If the received logical_link_id value matches 0x7FFF or 0x7FFE and an enabled MAC exists with a logical_link_id variable with the same value then the comparison is considered a match to that MAC." - hexadecimal numbers are represented in the xx-xx-...-xx format.

SuggestedRemedy

replace all 0x7FFF with 07-FF and 0x7FFE with 7F-FE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.1.2.3.3.2** *P* **304** *L* **1** # 393

Mandin, Jeff PMC Sierra

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

Duplicate text

SuggestedRemedy

Modify text:

b) If the received mode bit is 1 and the received logical_link_id value does not match the logical_link_id variable, or the received logical_link_id matches 0x7FFE or 0x7FFE a, then the comparison is considered a match.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Text does not appear to be duplicate nor in error.

Cl **92** *SC* **92.2.1** *P* **304** *L* **10** # 395

Mandin, Jeff PMC Sierra

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

Incorrect clause reference

SuggestedRemedy

Change text to say: "This subclause extends the physical coding sublayer described in Clause 49"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.1** *P* **304** *L* **12** # 351

Lynskey, Eric Teknovus

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

Auto-Negotiation, as defined in Clause 37, is only applicable for devices with a Clause 36 PCS. There is currently no Auto-Negotiation defined for 10 Gb/s devices using a fiber network. Since this subclause is dealing with extensions of the Clause 49 PCS, there is no need to mention Auto-Negotiation.

SuggestedRemedy

Remove the two sentences referring to Auto-Negotiation.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
While this may be obvious to those familiar with 10G clauses it may be less familiar to PON experts. What harm is done in keeping this clarification?

Cl **92** *SC* **92.2.1** *P* **304** *L* **13** # 358

Lynskey, Eric Teknovus

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

The sentence prohibiting the use of a XAUI interface within the ONU seems overly forceful and inappropriate. The combination of XGXS and XAUI layers are meant to be transparent to the rest of the stack. It is not a good idea to specifically prohibit this optional, and highly used, interface.

The original motion for this came about because there was some concern that errors occurring on the XAUI interface could mistakenly cause the ONU laser to turn on out of its slot. In practical implementations, this will not be an issue.

SuggestedRemedy

Remove this sentence.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Geneva Motion 5
802.3av shall not support a physical XAUI interface between PHY and MAC in the ONU.
1st: Jeff Mandin
2nd: Bidyut Parruck
For: 16
Against: 1
Abstain: 13
Motion Passes

Cl **92** *SC* **92.2.1** *P* **304** *L* **24** # 371

Suzuki, Ken-Ichi NTT

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

"GMII/XGMII" is not coincident with the abbreviation for "GIGABIT MEDIA INDEPENDENT INTEFASES" and I do not think Figure 92.3 needs the description of GMII.

SuggestedRemedy

Replace "GMII/XGMII == GIGABIT MEDIA INDEPENDENT INTEFASES" by "XGMII = GIGABIT MEDIA INDEPENDENT INTEFASES"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Figure will be replaced with one similar to Figure 91-1.

Cl **92** *SC* **92.2.1** *P* **305** *L* **8** # 341

Lynskey, Eric Teknovus

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

Typo.

SuggestedRemedy

Replace "ts-raw" with "tx_raw".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.2** *P* **305** *L* **5** # 352

Lynskey, Eric Teknovus

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

The start of frame is always aligned to Lane 0 of the XGMII interface. There are two possible locations for a start of frame when talking about the 64-bit blocks used in Clause 49. The proposal is to align to the first of these locations.

SuggestedRemedy

Replace first sentence of this paragraph with, "Two consecutive XGMII transfers provide eight characters that are encoded into one 66-bit transmission block. To increase burst efficiency the start of a burst is aligned to the first of these two transfers."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
(Also see 3av_0801_remein_2.pdf)
Change
From:
"To increase burst efficiency it is desirable to align the start of a burst to Lane 0 of the XGMII interface. If this is not done ..."

To:
"Two consecutive XGMII transfers provide eight characters that are encoded into one 66-bit transmission block. To increase burst efficiency the start of a burst is aligned to the first of these two transfers. If this is not done ..."

Cl **92** *SC* **92.2.2.1** *P* **306** *L* **14** # 69

Marek, Hajduczenia Nokia Siemens Networ

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

In the Figure 92-4, there is a spelling mistake in one of the blocks i.e. "SYNCRONIZER". The same holds true for Figure 92-5.

SuggestedRemedy

Replace with the "SYNCHRONIZER"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.2.1** *P* **307** *L* **22** # 353

Lynskey, Eric Teknovus

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

There is no such thing as an /I/ ordered_set in the Clause 49 PCS. Another thing to think about is whether we need to have idle here or if other control codes, such as sequence ordered sets, can also be used.

SuggestedRemedy

Replace /I/ ordered_sets with "idle control characters".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
(Also see 3av_0801_remein_2.pdf)
Change
From:
"Upon initialization, the FIFO buffer is filled with /I/ ordered_sets and the laser is turned off. When the first code-group that is not /I/ arrives at the buffer, the Data Detector sets the PMD_SIGNAL.request(tx_enable) primitive to the value ON, instructing the PMD sublayer to start the process of turning the laser on (see Figure 92–5).
When the buffer empties of data (i.e., contains only /I/ ordered_sets), the Data Detector sets the PMD_SIGNAL.request(tx_enable) primitive to the value OFF, instructing the PMD sublayer to start the process of turning the laser off. Between packets, /I/ or /R/ ordered_sets will arrive at the buffer. If the number of these /I/ or /R/ ordered_sets is insufficient to fill the buffer then the laser is not turned off."

To:
"Upon initialization, the FIFO buffer is filled with idle control characters and the laser is turned off. When the first code-group that is not idle arrives at the buffer, the Data Detector sets the PMD_SIGNAL.request(tx_enable) primitive to the value ON, instructing the PMD sublayer to start the process of turning the laser on (see Figure 92–5).
When the buffer empties of data (i.e., contains only idle control characters), the Data Detector sets the PMD_SIGNAL.request(tx_enable) primitive to the value OFF, instructing the PMD sublayer to start the process of turning the laser off. Between packets, idle control characters will arrive at the buffer. If the number of these idle control characters is insufficient to fill the buffer then the laser is not turned off."

Cl **92** *SC* **92.2.2.1** *P* **307** *L* **24** # 112

Remein, Duane Alcatel-Lucent

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

Figiure regerences appear to be out of sequence (1 off) example: "... to start the process of turning the laser on (see
Figure 92-5)". should be Figure 92-6.

SuggestedRemedy

Correct references.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.2.1** *P* **308** *L* **3** # 8

Effenberger, Frank Huawei Technologies,

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

The paragraph mentions the synchronization pattern as "1010..." and the SOD as a "Barker link sequence." The former is inaccurate in comparison with the baseline (which used 0101...), and the later is non-specific, since we definitely need to specify the SOD.

SuggestedRemedy

We recommend changing the synchronization pattern to "0101...".

Also, we recommend specifying the SOD to be the pattern "0x 1 16A2 DC69
F0CD EE40" This pattern, which is different from the example given in the baseline, has a hamming distance of 32 from all shifts of itself and the synchronization pattern 0101..., which seems to be the best possible distance for a 66 bit pattern. It has a max run length of 6, and is has a balance of 32/34 bits of 1/0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
(Also see 3av_0801_remein_2.pdf)
Change
From:
"The ONU burst transmission begins with a synchronization patter (binary 1010…) which facilitates receiver clock recovery and gain control at the OLT. To facilitate byte level synchronization the ONU transmits a 66 bit Start of Data (SOD) delimiter composed of a Barker link sequence (see Figure 92–7). When received at the OLT the delimiter allows byte alignment of the incoming data stream, even in the presence of bit errors. The SOD is followed by @tbd (two)@ IDLE blocks which are used to synchronize the SCRAMBLER at the OLT.

To:
"The ONU burst transmission begins with a synchronization pattern 0x55.. (binary 0101…) which facilitates receiver clock recovery and gain control at the OLT. To facilitate FEC codeword synchronization the ONU transmits a 66-bit BURST_DELIMITER (see Figure 92–7). When received at the OLT the delimiter allows FEC codeword alignment of the incoming data stream, even in the presence of bit errors. The BURST_DELIMITER is followed by one IDLE block which is used to synchronize the descrambler and one IDLE block to provide IPG at the OLT. These two IDLE blocks are part of the FEC codeword."

Cl **92** *SC* **92.2.2.1** *P* **308** *L* **3** # 372

Suzuki, Ken-Ichi NTT

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

"patter" must be a typo.

SuggestedRemedy

Replace "patter" by "pattern".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.2.1** *P* **308** *L* **5** # 70

Marek, Hajduczenia Nokia Siemens Networ

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

"The SOD is followed by @tbd (two)@ IDLE blocks which are used to synchronize the SCRAMBLER at the OLT."

SuggestedRemedy

Replace with "The SOD is followed by two IDLE blocks which are used to synchronize the SCRAMBLER at the OLT."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The "two" was at the time an approximation, if indeed two is correct then accept.

Cl **92** *SC* **92.2.2.1** *P* **308** *L* **7** # 343

Lynskey, Eric Teknovus

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

Figure 92-6 has been copied from Clause 65 but is not correct for 10G FEC operation.

SuggestedRemedy

Replace figure.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
New figure to be presented (3av_0801_remein_1.pdf) during Task Force meeting in Portland.

Cl **92** *SC* **92.2.2.1** *P* **309** *L* **15** # 82

Marek, Hajduczenia Nokia Siemens Networ

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

"Required number of sync blocks per burst. The value of this constant is derived from Sync-Time parameter passed from the OLT to ONUs.64.3.3.2" - incomplete. Additonally, 64.3.3.2 defines syncTime and not Sync-Time variable.

SuggestedRemedy

Change to something like this "Required number of sync blocks per burst. The value of this constant is derived from syncTime parameter passed from the OLT to ONUs. See 64.3.3.2 for details."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
(Also see 3av_0801_remein_2.pdf)
Change
From:
"Required number of sync blocks per burst. The value of this constant is derived from SyncTime parameter passed from the OLT to ONUs.64.3.3.2"
To:
"Required number of sync blocks per burst. The value of this constant is derived from syncTime parameter passed from the OLT to ONUs. See 64.3.3.2 for details."

Cl **92** *SC* **92.2.2.2.1** *P* **305** *L* **8** # 107

Remein, Duane Alcatel-Lucent

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

Typo "ts-raw,71:0>"

SuggestedRemedy

Replace with "ts-raw<71:0>"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Replace with ts_raw<71:0>
see comment 341

Cl **92** *SC* **92.2.2.2.1** *P* **309** *L* **13** # 7

Effenberger, Frank Huawei Technologies,

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

The constant "BURST_DELIMITER" is defined, but this is substantially the same as the "Start of Data" concept. Also, the definition is incomplete.

SuggestedRemedy

We should change all occurences of "BURST_DELIMITER" to "SOD", or alternatively we change "SOD" to "BURST_DELIMITER". One way or the other, I don't care.

Change definition to read:
BURST_DELIMITER
TYPE: 66 bit unsigned
A 66-bit value used to find the beginning of the first FEC codeword in the upstream burst
Default: 0x 1 16A2 DC69 F0CD EE40

Response *Response Status* **C**

ACCEPT.
Will Globaly replace "SOD" with "BURST_DELIMITER"

Change definition to read:
BURST_DELIMITER
TYPE: 66 bit unsigned
A 66-bit value used to find the beginning of the first FEC codeword in the upstream burst
Default: 0x 1 16A2 DC69 F0CD EE40

Cl **92** *SC* **92.2.2.2.1** *P* **309** *L* **6** # 64

Marek, Hajduczenia Nokia Siemens Networ

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

The Constants and Variables are typically started with lower case ...

SuggestedRemedy

Align with the capitalization in Caluse 65, 64 and others.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Clause 65 uses All CAPS, Capatilized and lower-case variaables. Examples:
65.2.2.2.1 Variables
BEGIN
DelayBound
dtx_code-group

Cl **92** *SC* **92.2.2.2.3** *P* **310** *L* **24** # 83

Marek, Hajduczenia Nokia Siemens Networ

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

"IsIdle(tx_code-group) This function is used to determine whether tx_code-group is a code-group in /I/, the IDLE ordered_set, or /C/, the Configuration ordered_set. This function returns true if tx_code-group is /K28.5/ or any code-group that follows a /K28.5/ or any two consecutive /D/ code-groups
that follow /K28.5/D21.5/ or /K28.5/D2.2/. Otherwise, the IsIdle function returns false." - this definition needs to be different for 64B/66B code since the IDLE code group is encoded in a different way.

SuggestedRemedy

Aling with the 64B/66B code words definition for IDLE character, as defined in Table 49-1-Control codes. Observe that this function will work on the 64B/66B code words in the case of 10G transmision and 8B/10B code words in the case of 1G transmission. This needs to be reflected properly in the function definition.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
This function definition is a carry over from c65 and is not used in c92. The definition will be removed.
Also true for; FIFO.RemoveHead, FIFO.Append, PUDR and IdleLength. Tjhese will be removed also.

Cl **92** *SC* **92.2.2.2.3** *P* **311** *L* **6** # 71

Marek, Hajduczenia Nokia Siemens Networ

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

Pseudo-code placement is not typical in the standard. What is the purpose of this code in this location?

SuggestedRemedy

Either keep it and format it accordingly, and refer to it in the text or replace with the text description. A flow chart could also be used to express the same processing step.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The pseudo code refered to is taken directly from the variable definition in 0703_kramer_1.pdf. See motion 7 from Geneva 2007 meeting:
"To accept as a baseline for FEC framing the presentations 0701_effenberger_1.pdf, 0703_kramer_1.pdf and 0705_lynskey_1.pdf."
passed
17 for
4 against
1st Frank Effenberger
2nd Erik Lynskey

Cl **92** *SC* **92.2.2.2.6** *P* **312** *L* **16** # 94

Daido, Fumio Sumitomo Electric Ind

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

The mathematical formula in the Delete IDLE state is wrong.

SuggestedRemedy

Please change "VectorCount = FecRatio" to "VectorCount = VectorCount - FecRatio" or "VectorCount -= FecRatio".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change
From:
"VectorCount = FecRatio"

To:
"VectorCount -= FecRatio"

Cl **92** *SC* **92.2.2.3** *P* **315** *L* **17** # 193

Effenberger, Frank Huawei Technologies,

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

A description of the "Synchronizer function" is needed.

SuggestedRemedy

I offer the following text as a building block, however, I leave it to the editors to determine how to splice this into the chapter, because the current outline structure is completely baffling to me. I suggest that it needs a thorough re-structure, maybe on the next go around, once we have all the parts.

The general approach taken here is to reuse the material from clause 49.2.9 and 49.2.13 as much as possible, with the minimum of additions. I have left the original section numbering intact, so the reader can see its source.

Subject to task-force motions, I assume that we are using RS(255,223) code, and so we are synchronizing to codewords that are 31 blocks long, and contain 4 blocks of parity. Also, we are using a parity block sync header pattern of 00, 11, 11, 00. This provides maximum Hamming distance, which is important for making this framing scheme provide lower false locking probability.

Add the following text where appropriate:
49.2.9 Codeword Synchronization
When the receive channel is operating in normal mode, the codeword synchronization function receives data via 16-bit PMA_UNITDATA.request primitive. It shall form a bit stream from the primitives by concatenating requests with the bits of each primitive in order from rx_data-group<0> to rx_data-group<15> (see Figure 49-6). It obtains lock to the 31*66-bit blocks in the bit stream using the sync headers and outputs 66-bit blocks, with the codeword structure being indicated by a locally generated sync header pattern. Lock is obtained as specified in the codeword lock state machine shown in Figure 92-X.

The incoming sync header pattern is 27 conventional (clause 49) sync headers (01 or 10), and then 00, 11, 11, and 00. The state machine performs a search for this pattern, and when it finds a perfect match of two full codewords (62 blocks), it then asserts codeword lock.

When codeword lock is true, the decoder guarantees that the sync header of the last block in the codeword will be "11", and that no other sync header will have this pattern, even in the face of errors. This is achieved by forcing the first 27 sync headers to be conventional headers, and forcing the last four headers to be 00, 00, 00, and 11. This locally forced pattern then allows the subsequent FEC decoder logic to find the last block in the codeword with a trivial match of the sync header to 11.

When in codeword lock, the state machine continues to check for sync header validity. If 16 or more sync headers in a codeword pair (62 blocks) are invalid, then the state machine deasserts codeword lock.

Add the following text where appropriate:

49.2.13 Detailed functions and state diagrams
49.2.13.1 State diagram conventions
The body of this subclause is comprised of state diagrams, including the associated definitions of variables, constants, and functions. Should there be a discrepancy between a state diagram and descriptive text, the state diagram prevails.
The notation used in the state diagrams follows the conventions of 21.5. State diagram timers follow the conventions of 14.2.3.2. The notation ++ after a counter or integer variable indicates that its value is to be incremented.
49.2.13.2 State variables
49.2.13.2.1 Constants
All the relevant constants defined in 49.2.13.2.1 are inherited. In addition, the following items are defined.
SH_CW_PATTERN[0..30]
31 element array of codeword sync header bit counts, where each element is set to the value 1 except for:
SH_CW_PATTERN[27]=0
SH_CW_PATTERN[28]=2
SH_CW_PATTERN[29]=2
SH_CW_PATTERN[30]=0

49.2.13.2.2 Variables
All the relevant variables defined in 49.2.13.2.2 are inherited. In addition, the following items are defined.
sh_valid[i]
Boolean indication that is set true if received block rx_coded has valid sync header bits for the supposed current position in the FEC codeword. That is,
sh_valid[i] is asserted if (rx_coded<0> + rx_coded<1>) == SH_CW_PATTERN[i mod 31] and de-asserted otherwise.
cword_lock
□Boolean variable that is set true when receiver acquires codeword delineation.

49.2.13.2.3 Functions
All the relevant functions defined in 49.2.13.2.3 are inherited. In addition, the following items are defined.
Force(i)
Forces the sync header to the state that preserves FEC frame lock. Note that for parity blocks, the pattern is known a priori. For payload blocks, the first bit is forced to be the complement of the second bit. While this may duplicate a bit error, it will not propagate, as the FEC decoder discards the first bit before decoding.
Force(i)
{
□If (cword_lock == true)
If (i>26)
□□□If (i==30)
□□□□rx_coded<0>=1
□□□□rx_coded<1>=1
□□□else
□□□□rx_coded<0>=0
□□□□rx_coded<1>=0
□□else
□□□rx_coded<0>=!rx_coded<1>
}

49.2.13.2.4 Counters
All the relevant counters defined in 49.2.13.2.4 are inherited.

49.2.13.2.5 Timers
No timers are needed.

49.2.13.3 State diagrams
The Lock state machine shown in Figure 92-X determines when the PCS has obtained lock to the received data stream. The BER is determined by the FEC decoder function, and so a separate state machine is not required.

Add the figure, as provided in attachment...

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Subclause 92.2 to be reorganized per the outline below. Text similar to that in the suggested Remedy to be included in next draft. Details to be provided in a presentation 3av_0801_remein_2.pdf at the TF at Portland.
See comment 193 and 404.

92.2 Extensions of the physical coding sublayer for data detection & forward error correction..
92.2.1 Overview
92.2.2 1000BASE-PR Transmitters
92.2.2.1 Alignment and Idle Deletion
92.2.2.2 64/66b Encoding
92.2.2.3 Scrambler
92.2.2.4 FEC Encoding
92.2.2.4.1 FEC Algorithm (RS((255, 223))
92.2.2.4.2 Parity Calculation
92.2.2.4.3 FEC Transmission Block Formating
92.2.2.5 Data Detector and Burst Mode Considerations (ONU only)
92.2.2.6 Gearbox
92.2.2.7 Detailed functions and state diagrams
92.2.2.7.1 Constants
92.2.2.7.2 Variables
92.2.2.7.3 Functions
92.2.2.7.4 Messages
92.2.2.7.5 Counters
92.2.2.7.6 State Diagrams
92.2.3 1000BASE-PR Receivers
92.2.3.1 Synchronizer
92.2.3.2 FEC Decoder
92.2.3.3 Descrambler

92.2.3.4 66/64b Decode
92.2.3.5 Idle Insertion
92.2.3.6 Detailed functions and state diagrams
92.2.3.6.1 Constants
92.2.3.6.2 Variables
92.2.3.6.3 Functions
92.2.3.6.4 Messages
92.2.3.6.5 Counters
92.2.3.6.6 State Diagrams

Cl **92** *SC* **92.2.3** *P* **313** *L* **7** # 11

Jiang, Jessica Salira

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

In Edit comments, 10GBASE-RR should be 10GBASE-PR

SuggestedRemedy

"10GBASE-RR" should be "10GBASE-PR"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.3.1** *P* **313** *L* **10** # 98

FENG, Dongning Huawei Technologies

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

Since RS(255,223) is selected as a baseline proposal, a more detail description should be defined.

SuggestedRemedy

The FEC code used is a linear cyclic block code - the Reed-Solomon code (255, 223, 16) over the Galois Field of GF(28) - a non-binary code operating on 8-bit symbols. The code encodes 223 information symbols and adds 32 parity symbols. The code is systematic-meaning that the information symbols are not disturbed in any way in the encoder and the parity symbols are added separately to each block.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See Comment 95

Cl **92** *SC* **92.2.3.1** *P* **313** *L* **9** # 95

Daido, Fumio Sumitomo Electric Ind

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

I would like to provide general description of RS(255,223).

SuggestedRemedy

The following paragraph is a general description of RS(255,223). Please replace 92.2.3.1 with this. But it is difficult to describe the mathematical expression in plain text, so I will attach the PDF format file which includes this description.

92.2.3.1 FEC code
The FEC code used is a linear cyclic block code - the Reed-Solomon code (255, 223) over the Galois Field of GF(28) - a non-binary code operating on 8-bit symbols. The code encodes 223 information symbols and adds 32 parity symbols. The code is systematic-meaning that the information symbols are not disturbed in any way in the encoder and the parity symbols are added separately to each block.
The code is the systematic form of the RS code based on the generating polynomial
G(x)=PI(x-alpha i) (i=0,1,2,...,30, 31)
where alpha is equal to 0x02 and is a root of the binary primitive polynomial
x8+x4+x3+x2+1.
A codeword of the systematic code is presented by D(x) + P(x) = G(x) * L(x) where:
D(x) is the data vector - D(x)=D222X254 + ... + D0X32. D222 is the first data octet and D0 is the last.
P(x) is the parity vector - P(x)=P31X31 + ... + P0. P31 is the first parity octet and P0 is the last.
A data octet (d7, d6, ..., d1, d0) is identified with the element: d7* + d6* + ... d1* + d0 in GF(28), the finite field with 28 elements. The code has a correction capability of up to sixteen symbols.
For the (255,223) Reed-Solomon code, the symbol size equals one octet. d0 is identified as the LSB and d7 is identified as the MSB bit in accordance with the conventions of 3.1.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 98 - note changed suggested remedy from "RS(255,223)" to "RS(255,223,16)"
See 3av_0801_daido_1.pdf??
Change
From:
"The FEC code used is a linear cyclic block code - the Reed-Solomon code (255, 223, 8)"

To:
"The FEC code used is a linear cyclic block code - the Reed-Solomon code (255, 223, 16) over the Galois Field of GF(28) - a non-binary code operating on 8-bit symbols. The code encodes 223 information symbols and adds 32 parity symbols. The code is systematic-meaning that the information symbols are not disturbed in any way in the encoder and the parity symbols are added separately to each block.
The code is the systematic form of the RS code based on the generating polynomial

G(x)=PI(x-alpha i) (i=0,1,2,…,30, 31)
where alpha is equal to 0x02 and is a root of the binary primitive polynomial x8+x4+x3+x2+1.
A codeword of the systematic code is presented by D(x) + P(x) = G(x) * L(x) where:
D(x) is the data vector - D(x)=D222X254 + … + D0X32. D222 is the first data octet and D0 is the last.
P(x) is the parity vector - P(x)=P31X31 + … + P0. P31 is the first parity octet and P0 is the last.
A data octet (d7, d6, …, d1, d0) is identified with the element: d7* + d6* + … d1* + d0 in GF(28), the finite field with 28 elements. The code has a correction capability of up to sixteen symbols.
For the (255,223) Reed-Solomon code, the symbol size equals one octet. D0 is identified as the LSB and d7 is identified as the MSB bit in accordance with the conventions of 3.1.1."

Cl **92** *SC* **92.2.3.2.1** *P* **313** *L* **13** # 99

FENG, Dongning Huawei Technologies

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

Since RS(255,223) is selected as a baseline proposal, a more detail description under this section should be defined.

SuggestedRemedy

Padding of FEC codewords and appending of FEC parity bytes is illustrated in Figure 92-10. Ethernet packets are received from the PCS scrambler in blocks of 66 bits. The data is partitioned into 27 blocks. Each partition of 27 blocks is then encoded using the RS(255,223) FEC encoder, which results in an additional 4 parity symbols for each block. The block, minus any padding, plus the associated 4 parity symbols form the @tbd@ byte FEC codeword. The additional 4 parity blocks, which are generated from this encoding process for each block, are gathered and added at the end of FEC code word to be transmitted. Note that parity is not calculated over the first bit of each 66 bit from the scramble as this bit is redundant. However this first bit is always transmitted over the link.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Suggested Remedy appears to be a copy of the existing text.
Discuss in TF Meeting

Cl **92** *SC* **92.2.3.2.1** *P* **313** *L* **14** # 404

Mandin, Jeff PMC Sierra

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

Descriptive text related to figure 92-10 is somewhat unclear and lacks some details.

To describe the FEC frame, you really have to describe transmitter behaviour. And if you describe the FEC transmitter then the FEC receiver should be described also.

SuggestedRemedy

1. Delete the current 92.2.3.2.2

2. Modify text to read as follows:

92.2.3.2.1 Calculation of Parity Octets by Transmitter

Padding of FEC codewords and appending of FEC parity bytes is illustrated in Figure 92–10. Ethernet packets are received from the PCS scrambler in blocks of 66 bits. The FEC encoder accumulates 27 66b blocks and removes the first bit of each block (ie. the redundant sync bit). The FEC encoder then prepends 29 '0' bits (called PAD) to the 27 65 bit blocks form the data portion of a FEC codeword. The data is FEC-encoded, which results in an additional 4 parity symbols for each block - completing the 255-byte Reed-Solomon codeword.

92.2.3.2.2 FEC Frame for Transmission

As shown in figure 92-10, after the Reed-Solomon codeword has been computed, the FEC encoder constructs the transmittable FEC frame with the original sequence of 27 66bit blocks (including the redundant sync bit and not including the pad bits). The FEC encoder then prepends a 2bit sync header (described below) to each of the parity octets, and then finally places the four 66bit parity blocks following the 27 66bit data blocks.

The total length of the FEC Frame is thus 2046 bits. The FEC encoder only transmits full 2046-bit frames to the gearbox.

92.2.3.2.3 Parity Block Sync Header

Format of sync header of parity blocks is TBD.

92.2.3.2.3 Processing of the FEC Frame upon Reception

The FEC decoder employs the RS(255,223) algorithm to correct of confirm correctness of the 27 66b blocks contained in the frame. The decoder then forwards the 66bit data blocks to the descrambler and discards the parity blocks

If the FEC decoder determines that the frame is not correctable (due to an excess of

symbols containing errors), the data blocks are nevertheless passed to the descrambler to maintain descrambling synchronization. The data blocks of the frame must then be replaced by /E/ blocks before being passed to the PCS.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Subclause 92.2 to be reorganized per the outline below. Text similar to that in the Suggested Remedy to be included in next draft. Details to be provided in a presentation 3av_0801_remein_2.pdf at the TF at Portland.
See comment 193 and 404.

92.2 Extensions of the physical coding sublayer for data detection & forward error correction..
92.2.1 Overview
92.2.2 1000BASE-PR Transmitters
92.2.2.1 Alignment and Idle Deletion
92.2.2.2 64/66b Encoding
92.2.2.3 Scrambler
92.2.2.4 FEC Encoding
92.2.2.4.1 FEC Algorithm (RS((255, 223))
92.2.2.4.2 Parity Calculation
92.2.2.4.3 FEC Transmission Block Formating
92.2.2.5 Data Detector and Burst Mode Considerations (ONU only)
92.2.2.6 Gearbox
92.2.2.7 Detailed functions and state diagrams
92.2.2.7.1 Constants
92.2.2.7.2 Variables
92.2.2.7.3 Functions
92.2.2.7.4 Messages
92.2.2.7.5 Counters
92.2.2.7.6 State Diagrams
92.2.3 1000BASE-PR Receivers
92.2.3.1 Synchronizer
92.2.3.2 FEC Decoder
92.2.3.3 Descrambler
92.2.3.4 66/64b Decode
92.2.3.5 Idle Insertion
92.2.3.6 Detailed functions and state diagrams
92.2.3.6.1 Constants
92.2.3.6.2 Variables
92.2.3.6.3 Functions
92.2.3.6.4 Messages
92.2.3.6.5 Counters
92.2.3.6.6 State Diagrams

Cl **92** *SC* **92.2.3.2.1** *P* **313** *L* **17** # 373

Suzuki, Ken-Ichi NTT

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

At the beginning of a sentence, "note" should be replaced by "Note".

SuggestedRemedy

Replace "note" by "Note".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.3.2.1** *P* **315** *L* # 10

Jiang, Jessica Salira

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

Figure 92-10 is not the same as baseline file -- 3av_0705_effenberger_4.pdf. It is missing two bits between the last blocks and FEC parity.

SuggestedRemedy

Make the correction based on baseline file

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **92.2.3.2.1** *P* **315** *L* **11** # 342

Lynskey, Eric Teknovus

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

Now that we have agreed on the FEC code, we can replace N and M with appropriate constants.

SuggestedRemedy

Replace N with 27 and replace M with 4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
I'm assuming these are correct (verify with Task Force)
Was E changed to T by Editor.

Cl **92** *SC* **92.2.3.2.2** *P* **315** *L* **15** # 379
Suzuki, Ken-Ichi NTT

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

"font" of " to the font of the payload" must be a typo.

SuggestedRemedy

Replace "font" by "front".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Figure 92-1** *P* **300** *L* **12** # 367
Suzuki, Ken-Ichi NTT

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

In Figure 92-1, "GMIII" must be a typo.

SuggestedRemedy

Replace "GMIII" by "GMII".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Figure 92-9** *P* **314** *L* **10** # 374
Suzuki, Ken-Ichi NTT

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

In Figure 92-9, "UnprotectedBlockCount -= 28" inside the block of "Laser_Is_Off" may be written in a different font.

SuggestedRemedy

Check the font style. If so, rewrite "UnprotectedBlockCount -= 28" in the same font.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Font is Times New Roman
Change to Arial

(good catch)

Cl **92** *SC* **Figure 92-9** *P* **314** *L* **114** # 376
Suzuki, Ken-Ichi NTT

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

In Figure 92-9,"ProtectedBlockCount -= 0" inside the right block of "Transmit_Burst_Preamble" may be written in a different font.

SuggestedRemedy

Check the font style. If so, rewrite "ProtectedBlockCount -= 28" in the same font.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See comment 375
In left block titled "Transmit_Burst_Preamble" the term "UnprotectedBlockCount -= 28" was in Times New Roman and will be changed to Arial.
If in right block titled "Transmit_Burst_Preamble" the term "ProtectedBlockCount = 0" was in Times New Roman and will be changed to Arial.

Cl **92** *SC* **Figure 92-9** *P* **314** *L* **14** # 377
Suzuki, Ken-Ichi NTT

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

In Figure 92-9, "PMD_SIGNAL.Request" is different from the definition of Sub-clause 92.2.2.2.4.

SuggestedRemedy

Replace "PMD_SIGNAL.Request" bye ""PMD_SIGNAL.request" defined on the line 13 of page 311.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Figure 92-9** *P* **314** *L* **21** # 378
Suzuki, Ken-Ichi NTT

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

In Figure 92-9, "PMD_SIGNAL.Request" is different from the definition of Sub-clause 92.2.2.2.4.

SuggestedRemedy

Replace "PMD_SIGNAL.Request" bye ""PMD_SIGNAL.request" defined on the line 13 of page 311.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Figure 92-9** *P* **314** *L* **21** # 375
Suzuki, Ken-Ichi NTT

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

In Figure 92-9,"UnprotectedBlockCount -= 28" inside the left side block of "Transmit_Burst_Preamble" may be written in a different font.

SuggestedRemedy

Check the font style. If so, rewrite "UnprotectedBlockCount -= 28" in the same font.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
See Comment 376

Cl **92** *SC* **general** *P* *L* # 109
Remein, Duane Alcatel-Lucent

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

No explaination of use of "??" symbols as in pg 309 line 11 "TYPE: ??"

SuggestedRemedy

add editors note at the front of the document "Editors Note: double question marks is used to denote missing content (as in "TYPE: ??", the final text will be updated in a later edition."

add similare note for other instances of "??"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **general** *P* **308** *L* # 108
Remein, Duane Alcatel-Lucent

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

No explaination of use of "@" symbols as in pg line 5 "@tbd (two)@"

SuggestedRemedy

add editors note "Editors Note: the text "@tbd (two)@" is temporary, the final text will be updated in a later edition."

add similare note for other instances of "@ text @"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Header** *P* **even** *L* # 366
Suzuki, Ken-Ichi NTT

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

In header of even pages, The header caption still show the old draft version.

SuggestedRemedy

Correct the draft version.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **92** *SC* **Header** *P* **odd** *L* # 380
Suzuki, Ken-Ichi NTT

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

In header of odd pages, "I" is missing on the header caption.

SuggestedRemedy

Add "I" ahead of the header caption "EEE Draft P802.3avTM/D1.0"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.