*Cl* **00** *SC* **0** *P* *L* # 825
Mandin, Jeff PMC Sierra

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

There should be test vectors for the RS(255, 223) code

*SuggestedRemedy*

Incorporate 3av_0308_mandin_4.pdf as an informative annex.

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Incorporate 3av_0308_mandin_3.pdf as Annex 92A.

*Cl* **00** *SC* **0** *P* **1** *L* **1** # 918
Lynskey, Eric Teknovus

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

The headers and line numbers for the different clauses are not consistent. Clause 92 has a different header than Clauses 91 and 93. Similarly, Clause 92 uses a different line numbering scheme than the other two clauses (alternating left and right side instead of always on the right side).

*SuggestedRemedy*

Suggest that the Editors agree upon a single consistent header and line numbering scheme to be used on all documents. Or, merge everything into a single document. This may make life easier in the future for changes that need to be applied to the whole document.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Details to be determined.

Also see 698, 677, 792, 918,

*Cl* **00** *SC* **0** *P* **1** *L* **1** # 789
Remein, Duane Alcatel-Lucent

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

Open c56. "Introduction to Ethernet for subscriber access networks" for changes.

*SuggestedRemedy*

Add change clause for c56

*Response* *Response Status* **C**

ACCEPT.
Also see 971

*Cl* **00** *SC* **0** *P* **1** *L* **54** # 922
Lynskey, Eric Teknovus

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

Copyright year may need to be updated.

*SuggestedRemedy*

Replace Copyright year with 2008.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **00** *SC* **1.4** *P* **11** *L* **16** # 671
Hajduczenia, Marek Nokia Siemens Networ

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

The use of terms "point to multipoint" and "point-to-multipoint" is inconsistent throughout the 802.3-2005 and in changes to Clause 1.
Other lines affected: clause 1, subclause 1.4, page 11, line 22.

*SuggestedRemedy*

Suggest to select one form of the term ("point-to-multipoint" is advised), update line 16 and 22 as well as perform a global search for all clauses in 802.3-2005.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Was Clause 01, change to 00 due to scope.
Replace point to multipoint with Point-to-multipoint in all open clauses.

Remainder of 802.3-2005 is out of scope.

*Cl* **00** *SC* **56.1.2** *P* **2** *L* **35** # 971

Lynskey, Eric Teknovus

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

Response to comment 299 against D1.0 not present in current draft.

*SuggestedRemedy*

Implement accepted response to comment 299 as written in 3av_0801_comments_d1_0_accepted.pdf.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 789

In case where we need to refer to 10 Gb/s EPON technology in general we shall use names as presented in 3av_0803_lamb_1.pdf slide 5 (i.e. "EPON" and "10G-EPON"). Specifically in c 56.1 add an introductory paragraph introducing these naming conventions.

Yes 23
No 0
Abstain 0

*Cl* **00** *SC* **92** *P* **300** *L* **5** # 677

Hajduczenia, Marek Nokia Siemens Networ

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

Align all the clauses in the 802.3av to use the same format of the editorial notes. Copy paste the initial section from Clause 91.

*SuggestedRemedy*

Align all the clauses in the 802.3av to use the same format of the editorial notes. Copy paste the initial section from Clause 91.
Align the master pages for all clauses in 802.3av.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Was against clause 92, moved to clause "00"
Clauses will be aligned wrt style of Editors Note and lead-in material.

Also see 698, 677, 792, 918,

*Cl* **01** *SC* **01** *P* **11** *L* **1** # 778

Remein, Duane Alcatel-Lucent

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

"1. Management Data Input/Output (MDIO) Interface" is incorrect.

*SuggestedRemedy*

Change to:
"1. Introduction"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **01** *SC* **1** *P* **10** *L* **1** # 698

Hajduczenia, Marek Nokia Siemens Networ

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

Aling the format of the Clause 1 with 802.3-2005 (and 802.3ay)

*SuggestedRemedy*

Align the format of Clause 1 as presented in 3av_0803_hajduczenia_1.pdf (see also the 3av_0803_hajduczenia_1.fm for source file).

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Editors need to agree on formats. We should use one foramt for changed clauses and another for new clauses.

Also see 698, 677, 792, 918,

*Cl* **01** *SC* **1.4** *P* **11** *L* **12** # 746

Hajduczenia, Marek Nokia Siemens Networ

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

Missing resolution of the comment #307, which reads "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.)"

*SuggestedRemedy*

Insert a new entry in Clause 1.4 in draft D1.1:
"Replace definition 1.4.93 to read as follows:
channel insertion loss: As used in IEEE 802.3–2005 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, splices and optional power splitter / combiner (for details, see Clause 91.8.1)."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **30** *SC* **30** *P* **31** *L* **1** # 775

Remein, Duane Alcatel-Lucent

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

"30. Management Data Input/Output (MDIO) Interface" is incorrect.

*SuggestedRemedy*

Change to:
"30. Management"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **30** *SC* **30.6** *P* **31** *L* **18** # 995

Lin, Rujian Shanghai Luster Terab

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

Management for link Auto-Negotiation

*SuggestedRemedy*

Management for Link Auto-Negotiation

*Response* *Response Status* **C**

ACCEPT.

*Cl* **64** *SC* *P* *L* # 818

Mandin, Jeff PMC Sierra

*Comment Type* **T** *Comment Status* **R**

Placeholder for changes in clause 64 structure:

So far there are two proposals as outlined in
http://www.ieee802.org/3/10GEPON_study/email/msg00935.html

*SuggestedRemedy*

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

See comment #1045.

*Cl* **64** *SC* *P* *L* # 10403

Mandin, Jeff PMC Sierra

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

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.

*Response* *Response Status* **W**

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 clause (tentative number 93) based on the existing document 3av_c64_1_0.pdf
3. create an ad hoc chartered with the creation of a prototype of solution #2 as presented in 3av_0801_kramer_5.pdf, slide 3. Ad hoc participants: Marek, Jeff, Glen, Eric.

*Cl* **64** *SC* **64.3.6.1** *P* **288** *L* **7** # 10347

Lynskey, Eric Teknovus

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

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.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Clause 93 will include a 10 Gb/s GATE MPCPDU only (with Discovery Information field) - Option 1. Figure 64-32 is probably referred to - see 3av_c64_d1_0_markup.pdf.

*Cl* **64** *SC* **64.3.6.3** *P* **293** *L* **41** # 10357

Lynskey, Eric Teknovus

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

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.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Commenter refers to Table 64-5.
For resolution, see comment #91.

*Cl* **91** *SC* **91** *P* **3** *L* **16** # 699

Hajduczenia, Marek Nokia Siemens Networ

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

Introduce a version tracking box as proposed in 3av_0803_hajduczenia_1.pdf (see also the 3av_0803_hajduczenia_1.fm for source file).

*SuggestedRemedy*

Introduce a version tracking box as proposed in 3av_0803_hajduczenia_1.pdf (see also the 3av_0803_hajduczenia_1.fm for source file).

*Response* *Response Status* **C**

REJECT.
The embedded frames are difficult to maintain technically the draft. There is no need for them anyway.

*Cl* **91** *SC* **91** *P* **3** *L* **6** # 793

Remein, Duane Alcatel-Lucent

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

Also applies to c93 and Annex 91A

Lead-in Editors Note
Align with 802.3ah drafts

*SuggestedRemedy*

Change from:
"NOTE-The editing instructions contained in this amendment define how to merge the material contained therein into the existing base standard and its amendments to form the comprehensive standard.
The editing instructions are shown in bold italic. Four editing instructions are used: change, delete, insert, and replace. Change is used to make corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed by using strikethrough (to remove old material) and underscore (to add new material). Delete removes existing material. Insert adds new material without disturbing the existing material. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction. Replace is used to make changes in figures or equations by removing the existing figure or equation and replacing it with a new one. Editorial notes will not be carried over into future editions because the changes will be incorporated into the base standard."
To:
"Editors Notes are marked in red italics and are to be removed prior to final publication.
"

Include any clause specific remarks such as explaination of color usage etc. here.

"
Revision History:
Draft 1.0 November 2007 Preliminary draft for IEEE802.3av Task Force Review.
Draft 1.1 February 2008 Draft for IEEE802.3av Task Force Review incorporating comments received at November 2007 meeting in Portland OR."
Continue updating Revision History as needed.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See comment # 699 for the resolution on the box tracking.

*Cl* **91** *SC* **91** *P* **3** *L* **6** # 779

Remein, Duane Alcatel-Lucent

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

"NOTE-The editing instructions ..." is inappropriate for a new clause.

*SuggestedRemedy*

Remove note

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1** *P* **121** *L* **48** # 10300

Dawe, Piers Avago Technologies

*Comment Type* **T** *Comment Status* **R**

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....?)

*Response* *Response Status* **C**

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* **122** *L* **38** # 10182

Lin, Rujian Shanghai Luster Terab

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

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.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Adopt the text in the editorial note. Replace reference to 91.8.4 with reference to 60.8.4.
Accept the proposed response
Yes: _14_
No: __6_
Abstain: _10_
Motion fails

Straw poll:
_16_ 1) I prefer to keep reference to 60.8.4
_11_ 2) I prefer to remove mention of the temperature ranges from Clause 91
__0_ 3) I prefer to define new temperature ranges (different than 60.8.4)

Accept the proposed response (vote taken on 18.03.2008)
Yes: _26_
No: _0_
Abstain: _7__
Motion passes

*Cl* **91** *SC* **91.1** *P* **123** *L* **18** # 10410

Chang, Frank Vitesse

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

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.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See comment #10182 and #801

*Cl* **91** *SC* **91.1.1** *P* **3** *L* **20** # 700

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision.

*SuggestedRemedy*

Change "operating at 10.3125 GBd line rate in either only one or both directions" to "operating at the line rate of 10.3125 GBd in either downstream or in both downstream and upstream directions."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.2** *P* **3** *L* **49** # 701

Hajduczenia, Marek Nokia Siemens Networ

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

"single single-mode fiber" looks weird. Why not use the SMF acronym which is commonly accepted ?

*SuggestedRemedy*

Change "single-mode fiber" to "SMF". Global search and replace in Clause 91.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.2** *P* **3** *L* **49** # 643

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "single SMF" to "a single SMF". Global search and replace

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.2** *P* **3** *L* **53** # 710

Hajduczenia, Marek Nokia Siemens Networ

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

The splitting ratios as per our PAR are defined as "at least 1:16 and at least 1:32"

*SuggestedRemedy*

Change "split ratios of 1:16 and 1:32," to "split ratios of at least 1:16 and at least 1:32,"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.3** *P* **4** *L* # 672

Hajduczenia, Marek Nokia Siemens Networ

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

Table 91-1 does not include information on the size of the downstream and upstream transmission window size i.e. in the downstream, 20 nm for PR(X)10 and PR(X)20 and 6 nm for downstream in PR(X)30.

*SuggestedRemedy*

Insert a new row in Table 91-1 with the following contents:

Place under the row "Nominal downstream wavelength"
Description = Downtream wavelength band width
PRX10 = 20
PR10 = 20
PRX20 = 20
PR20 = 20
PRX30 = 6
PR30 = 6
Units = nm

Place under the row "Nominal upstream wavelength"
Description = Upstream wavelength band width
PRX10 = 100
PR10 = 20
PRX20 = 100
PR20 = 20
PRX30 = 100
PR30 = 20
Units = nm

*Response* *Response Status* **C**

ACCEPT.
Changed from "ER" to "TR"

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **12** # 705

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **E** *Comment Status* **D** *Deferred to Tokyo*

Language revision

*SuggestedRemedy*

Change "Each power budget class is represented by PRX-type power budget and PR-type power budget." to "Each power budget class comprises a PRX-type power budget and a PR-type power budget."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **25** # 707

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "asymmetric low power budget, compatible with PX10 power budget defined in Clause 60;" to "asymmetric, low power budget, compatible with PX10 power budget defined in Clause 60;". This way it will be compliant with the remaining descriptions in lines 26 - 30.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **32** # 706

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "shows primary attributes of all power budget types defined in Clause 91." to "shows the primary attributes of all power budget types defined in Clause 91."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **5** # 702

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision
Lines 5-6 are affected.

*SuggestedRemedy*

Change "Low power budget class supports P2MP media with split ratio of 1:16 and distance of at least 10 km (channel insertion loss <= 20 dB)" to "Low power budget class supports P2MP media channel insertion loss <= 20 dB, e.g. a PON with the split ratio of at least 1:16 and the distance of at least 10 km"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Low power budget class supports P2MP media with split ratio of 1:16 and distance of at least 10 km (channel insertion loss <= 20 dB)" to "Low power budget class supports P2MP media channel insertion loss of <= 20 dB, e.g. a PON with the split ratio of at least 1:16 and the distance of at least 10 km"

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **7** # 703

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision
Lines 7-8 are affected.

*SuggestedRemedy*

Change "Medium power budget class supports P2MP media with split ratio of 1:16 and distance of at least 20 km or split ratio of 1:32 and distance of at least 20 km (channel insertion loss <= 24 dB)" to "Medium power budget class supports P2MP media channel insertion loss <= 24 dB, e.g. a PON with the split ratio of at least 1:16 and the distance of at least 20 km or a PON with the split ratio of 1:32 and the distance of at least 10 km"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Medium power budget class supports P2MP media with split ratio of 1:16 and distance of at least 20 km or split ratio of 1:32 and distance of at least 20 km (channel insertion loss <= 24 dB)" to "Medium power budget class supports P2MP media channel insertion loss of <= 24 dB, e.g. a PON with the split ratio of at least 1:16 and the distance of at least 20 km or a PON with the split ratio of at least 1:32 and the distance of at least 10 km"

*Cl* **91** *SC* **91.1.3** *P* **4** *L* **9** # 704

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision
Lines 9-10 are affected.

*SuggestedRemedy*

Change "High power budget class supports P2MP media with split ratio of 1:32 and distance of at least 20 km (channel insertion loss <= 29 dB)" to "High power budget class supports P2MP media channel insertion loss <= 29 dB, e.g. a PON with the split ratio of at least 1:32 and the distance of at least 20 km"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "High power budget class supports P2MP media with split ratio of 1:32 and distance of at least 20 km (channel insertion loss <= 29 dB)" to "High power budget class supports P2MP media channel insertion loss of <= 29 dB, e.g. a PON with the split ratio of at least 1:32 and the distance of at least 20 km"

*Cl* **91** *SC* **91.1.4** *P* **5** *L* **13** # 673

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "depicts" to "depict". There are two Figures in there ...

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.10** *P* **23** *L* **33** # 726

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 91-6 is very similar to 91-3 and there is no need for both of them in the same document. Merge 91-6 and 91-3. See 3av_0803_hajduczenia_2.pdf for the proposed Figure 91-3 (3av_0803_hajduczenia_2.fm for source file).

*SuggestedRemedy*

Merge 91-6 and 91-3. See 3av_0803_hajduczenia_2.pdf for the proposed Figure 91-3 (3av_0803_hajduczenia_2.fm for source file).
Replace all references to Figure 91-6 with a reference to Figure 91-3.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove the reference to the split ratio from Figure 91-3 in 3av_0803_hajduczenia_2.pdf.
Add the unterminated split to Figure 91-3 in 3av_0803_hajduczenia_2.pdf.

*Cl* **91** *SC* **91.10.3** *P* **24** *L* **28** # 727

Hajduczenia, Marek Nokia Siemens Networ

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

Table 91-14 is affected.
The table contains the values for 1310 and 1550 nm attenuation figures. It would be reasonable to add 1270, 1577 and 1590 nm values as well, since the system is transmitting in those windows.

*SuggestedRemedy*

Change Table 91.14 as presented in 3av_0803_hajduczenia_3.pdf (for source, see 3av_0803_hajduczenia_3.fm)

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.10.3** *P* **24** *L* **50** # 728

Hajduczenia, Marek Nokia Siemens Networ

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

The text in this block is not compliant with the current channel link model assumptions for 10G EPON systems.

*SuggestedRemedy*

Change the lines 50-54 on page 24 and lines 1-3 on page 25 to the following text:
"The channel insertion loss was calculated under the assumption of 14.5 loss for a 1:16 splitter / 18.1 dB loss for a 1:32 splitter (G.671 am 1). Unitary fibre attenuation for particular transmission wavelength is provided in Table 91-14. The number of splices / connectors is not predefined - the number of individual fiber sections between the OLT MID and the ONU MID is not defined as long as the resulting channel insertion loss is within the limits specified in Table 91-1. Other fibre arrangements i.e. increasing the split ratio while decreasing the fibre length or vice versa are supported as long as the limits for the channel insertion loss specified in Table 91-1 are observed."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"The channel insertion loss was calculated under the assumption of 14.5 dB loss for a 1:16 splitter / 18.1 dB loss for a 1:32 splitter (G.671 am 1). Unitary fiber attenuation for particular transmission wavelength is provided in Table 91-14. The number of splices / connectors is not predefined - the number of individual fiber sections between the OLT MID and the ONU MID is not defined. The only requirement is that the resulting channel insertion loss is within the limits specified in Table 91-1. Other fiber arrangements (i.e. increasing the split ratio while decreasing the fiber length or vice versa) are supported as long as the limits for the channel insertion loss specified in Table 91-1 are observed."

*Cl* **91** *SC* **91.11** *P* **25** *L* **22** # 729

Hajduczenia, Marek Nokia Siemens Networ

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

Remove Editors Note #7 and insert the proposed structure of PICS.

*SuggestedRemedy*

See 3av_0803_hajduczenia_4.pdf (for source, see 3av_0803_hajduczenia_4.fm) for the proposed structure of the PICs.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.2** *P* **5** *L* **22** # 794

Remein, Duane Alcatel-Lucent

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

The use of the term asymmetric in the statement "The asymmetry of the P2MP topology results in the EPON PMDs being inherently asymmetric. For example, ..." is confusing.

*SuggestedRemedy*

Replace the phrase
"The asymmetry of the P2MP topology results in the EPON PMDs being inherently asymmetric."
with
"The asymmetry nature of the P2MP topology results in the EPON PMDs that significantly differ between OLT and ONU."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "The asymmetry of the P2MP topology results in the EPON PMDs being inherently asymmetric." to "The characteristics of the P2MP topology result in significantly different ONU and OLT PMDs."

*Cl* **91** *SC* **91.2** *P* **5** *L* **23** # 709

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "in continuous mode" to "in a continuous mode". Change "uses burst mode" to "uses a burst mode"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.2** *P* **5** *L* **24** # 708

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "The ONU PMD, on the contrary, receives data in a continuous mode, but transmits in burst mode." to "On the other hand, the ONU PMD receives data in a continuous mode, but transmits in a burst mode."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.2** *P* **5** *L* **30** # 642

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **E** *Comment Status* **D** *Deferred to Tokyo*

Language revision

*SuggestedRemedy*

Change "from each of U-type PMDs" to "from all U-type PMDs"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **91** *SC* **91.2** *P* **5** *L* **32** # 839

Ryan, Hirth Teknovus

*Comment Type* **E** *Comment Status* **D** *Deferred to Tokyo*

"Clause 91 defines several D-type and several U-type PMDs."The word "several" is vague and unnecessary.

*SuggestedRemedy*

"Clause 91 defines D-type and U-type PMDs."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT.

*Cl* **91** *SC* **91.2** *P* **7** *L* **33** # 968

Lynskey, Eric Teknovus

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

There seems to be a lot of repeated text here.

*SuggestedRemedy*

Replace with the following:

The following OLT PMDs (D-type) are defined in this section:

Those that transmit at 10.3125 GBd continuous mode and receive at 1.25 GBd burst mode:
1) 10/1 GBASE-PRX-D1
2) 10/1 GBASE-PRX-D2
3) 10/1 GBASE-PRX-D3

Those that transmit at 10.3125 GBd continuous mode and receive at 10.3125 GBd burst mode:
1) 10GBASE-PR-D1
2) 10GBASE-PR-D2
3) 10GBASE-PR-D3

The following ONU PMDs (U-type) are defined in this section:

Those that transmit at 1.25 GBd burst mode and receive at 10.3125 GBd continuous mode:
1) 10/1GBASE-PRX-U1
2) 10/1GBASE-PRX-U2
3) 10/1GBASE-PRX-U3

Those that transmit at 10.3125 GBd burst mode and recieve at 10.3125 GBd continuous mode:
1) 10GBASE-PR-U1
2) 10GBASE-PR-U3

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Suggestion to change the proposed text to :
"The following OLT PMDs (D-type) are defined in this section:
1) transmitting at 10.3125 GBd continuous mode and receiveing at 1.25 GBd burst mode:
a) 10/1 GBASE-PRX-D1
b) 10/1 GBASE-PRX-D2
c) 10/1 GBASE-PRX-D3
2) transmitting at 10.3125 GBd continuous mode and receiveing at 10.3125 GBd burst mode:
a) 10GBASE-PR-D1
b) 10GBASE-PR-D2
c) 10GBASE-PR-D3

The following ONU PMDs (U-type) are defined in this section:
1) transmitting at 1.25 GBd burst mode and receiveing at 10.3125 GBd continuous mode:
a) 10/1GBASE-PRX-U1

b) 10/1GBASE-PRX-U2
c) 10/1GBASE-PRX-U3
2) transmitting at 10.3125 GBd burst mode and recieveing at 10.3125 GBd continuous mode:
a) 10GBASE-PR-U1
b) 10GBASE-PR-U3"

---

*Cl* **91** *SC* **91.2.1** *P* **8** *L* **21** # 644

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision.

*SuggestedRemedy*

Change "located at each end of the physical media" to "located at the ends of the physical media"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **91** *SC* **91.2.1.1** *P* **8** *L* **24** # 674

Hajduczenia, Marek Nokia Siemens Networ

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

Inconsistent designation of the data rates. All 1 Gb/s PMDs are referred to as 1000 Mb/s.

*SuggestedRemedy*

Change "1 Gb/s" to "1000 Mb/s". Global search and replace in Clause 91.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
After discussion with D. Law, there is no strict requirement for 1 Gb/s / 1000 Mb/s naming resolution. It is proposed to align all the new clauses i.e. 91, 92 (93) and use the term 1 Gb/s consistently.

---

*Cl* **91** *SC* **91.2.1.1** *P* **8** *L* **26** # 780

Remein, Duane Alcatel-Lucent

*Comment Type* **E** *Comment Status* **D** *Deferred to Tokyo*

Clarification: add phrase "the complementary".

Also in 91.2.1.2

*SuggestedRemedy*

Replace
"The asymmetric power budgets are created by combining asymmetric ONU PMDs (...) with asymmetric OLT PMDs (...) as presented in Table 91-2"
with
"The asymmetric power budgets are created by combining asymmetric ONU PMDs (...) with the complementary asymmetric OLT PMDs (...) as presented in Table 91-2"

And Replace
"The symmetric power budgets are created by combining symmetric ONU PMDs (...) with symmetric OLT PMDs (...) as presented in Table 91-3."
with
"The symmetric power budgets are created by combining symmetric ONU PMDs (...) with the complementary symmetric OLT PMDs (...) as presented in Table 91-3."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Was Proposed Accept
Changed to AIP - chage to
"Table 91-2 illustrates recommended parings of asymmetric ONU PMDs (.) with asymmetric OLT PMDs (.) to achieve the power budgets as shown in Table 91-1."
and
"Table 91-3 illustrates recommended parings of symmetric ONU PMDs (.) with symmetric OLT PMDs (.) to achieve the required power budgets as shown in Table 91-1."

---

*Cl* **91** *SC* **91.3.1** *P* **9** *L* **13** # 781

Remein, Duane Alcatel-Lucent

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

Typo

*SuggestedRemedy*

replace:
"... services provided by the all the PMDs defined ..."
with
"... services provided by the PMDs defined ..."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.1.1** *P* **9** *L* **25** # 969

Lynskey, Eric Teknovus

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

How do we want to handle references to Clause 64? For now, it probably makes sense to move them over to Clause 93.

*SuggestedRemedy*

Update references to Clause 93.3.2.4 and 93.2.2.1.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.1.1** *P* **9** *L* **35** # 645

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "of overall system" to the "of the overall system"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.1.2** *P* **8** *L* **48** # 646

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision
Also affected: subclause 91.3.1.4, page 10, line 18

*SuggestedRemedy*

Change "Upon receipt of this primitive" to "Upon the receipt of this primitive". Global search and replace

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.1.2** *P* **9** *L* **40** # 795

Remein, Duane Alcatel-Lucent

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

PMD_UNITDATA.request also applies to c 65 PMA
same for PMD_UNITDATA.indication
(line 51)

*SuggestedRemedy*

Change from
"This primitive defines the transfer of a serial data stream from the Clause 92 PMA to the PMD."
To
"This primitive defines the transfer of a serial data stream from the Clause 65 or Clause 92 PMA to the PMD."

And change from
"This primitive defines the transfer of data from the PMD to the Clause 92 PMA."
To
"This primitive defines the transfer of data from the PMD to the Clause 65 or Clause 92 PMA."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.1.2** *P* **9** *L* **45** # 791

Remein, Duane Alcatel-Lucent

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

Lists that are not explicitly required should be avoided as they detrace from the readability of the spec.
(example see 91 pg 9 line 45 "at a nominal signaling speed of 10.3125 GBd in the case of 10GBASE-PR-D1, 10GBASE-PR-D2, 10GBASE-PR-D3, 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2 and 10/1GBASE-PRX-D3 PMDs or 1.25 GBd in the case of 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3 PMDs.")

*SuggestedRemedy*

Remove as meny lists as posible using generic references such as "asymmetric ONU PMDs, asymmetric OLT PMDs, symmetric ONU PMDs and symmetric OLT PMDs", which are defined in c91.2.1.1 and c91.2.1.2.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
The referred clauses defined symmetric and asymmetric power budgets and not PMDs.
The terms "asymmetric ONU PMDs, asymmetric OLT PMDs, symmetric ONU PMDs, symmetric OLT PMDs" will be included in the clause 91.2, line 18 in the following form:
"In the remainder of Clause 91, the following terms will be used to avoid renumeration of individual PMDs:
- asymmetric ONU PMDs, including 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2 and 10/1GBASE-PRX-U3
- symmetric ONU PMDs, including 10GBASE-PR-U1 and 10GBASE-PR-U3
- asymmetric OLT PMDs, including 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2 and 10/1GBASE-PRX-D3
- symmetric OLT PMDs, including 10GBASE-PR-D1, 10GBASE-PR-D2 and 10GBASE-PR-D3"

*Cl* **91** *SC* **91.3.1.4** *P* **10** *L* **11** # 782

Remein, Duane Alcatel-Lucent

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

Meaning of red text "92.3.1.1" not specified.

*SuggestedRemedy*

Editors to agree on how to annotate cross-references which will need updating in future drafts.
Suggest use something like "@@92.3.1.1" with leadin editros note explaining meaning of "@@"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Clause references requiring update are marked @@NUMBER@@.

*Cl* **91** *SC* **91.3.1.4** *P* **10** *L* **12** # 997

Lin, Rujian Shanghai Luster Terab

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

92.3.1.1 for cause 92 PCS.

*SuggestedRemedy*

Cause 92.2.3.5 for cause 92 PCS.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"clause" is probably meant instead of "cause"

*Cl* **91** *SC* **91.3.2** *P* **10** *L* **37** # 796

Remein, Duane Alcatel-Lucent

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

Suggested text

*SuggestedRemedy*

The PMD sublayer is defined at the four reference points shown in Figure 91-3 where the first digit represents the downstream direction and the second the upstream. Two points, TP2 and TP3, are compliance points. TP1 and TP4 are reference points for use by implementors. The optical transmit signal is defined at the output end of a patch cord (TP2), between 2 m and 5 m in length, of a fiber type consistent with the link type connected to the transmitter. Unless specified otherwise, all transmitter measurements and tests defined in 91.8 are made at TP2. The optical receive signal is defined at the output of the fiber optic cabling (TP3) connected to the receiver. Unless specified otherwise, all receiver measurements and tests defined in 91.8 are made at TP3.
The electrical specifications of the PMD service interface (TP1 and TP4) are not system compliance points (these are not readily testable in a system implementation). It is expected that in many implementations, TP1 and TP4 will be common between Clause 91 PMDs.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.3** *P* **10** *L* **42** # 783

Remein, Duane Alcatel-Lucent

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

Ambigous statememt "The higher optical power level shall correspond to tx_bit = ONE." in this context.

*SuggestedRemedy*

Move statement to the next paragraph so the section reads:
"The PMD Transmit function shall convey the bits requested by the PMD service interface message
PMD_UNITDATA.request(tx_bit) to the MDI according to the optical specifications in Clause 91.
In the upstream direction, the flow of bits is interrupted according to PMD_SIGNAL.request(tx_enable). This implies three optical levels, 1, 0, and dark, the latter corresponding to the transmitter being in the OFF state. The higher optical power level shall correspond to tx_bit = ONE."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.4** *P* **11** *L* **115** # 1046

Pathak, Vijay Kawasaki Microelectro

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

Both Downstream and Upstream test points are marked TP1-TP4

*SuggestedRemedy*

Upstream test points should be labeled TP5-TP8 to distinguish them from down stream TP1-TP4

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.3.5.1** *P* **11** *L* **30** # 970

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **A** *PMD signalling*

1000BASE-X is more of a PCS term and not representative of a specific PMD signaling. Similarly on line 42.

*SuggestedRemedy*

Replace with 10GBASE-PR on line 30. Replace with 1000BASE-PX on line 42.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace 1000BASE-X with 1000BASE-PX. Replace 10GBASE-R with 10GBASE-PR.

*Cl* **91** *SC* **91.3.5.1** *P* **11** *L* **34** # 647

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision
Also affected: subclause 91.3.5.2, page 11, line 42

*SuggestedRemedy*

Change "an indicator of optical signal presence" to "an indicator of the presence of the optical signal". Global search and replace.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.3.5.1** *P* **11** *L* **37** # 797

Remein, Duane Alcatel-Lucent

*Comment Type* **T** *Comment Status* **A** *PMD signalling*

Copy past errors?
Also line 49 & 52
Also pg 12 line 20

or undefined terms "10GBASE-PR" and "1000BASE-X"

*SuggestedRemedy*

Line 337 change
"... whether a compliant 10GBASE-R signal is being received."
to
"... whether a compliant 10GBASE-PR or 10/1GBASE-PRX signal is being received

Line 49 change
"... whether a compliant 1000BASE-X signal is being ..."
To
"... whether a compliant 10/1GBASE-PRX signal is being ..."

Pg 12 line 20
change "10GBASE-R" to "10GBASE-PR" (2 places)
change "1000BASE-X" tp "10/1GBASE-PRX"

Line 52 change
"10GBASE-R and 1000BASE-X Signal detect functions"
to
"10GBASE-PR and 10/1GBASE-PRX Signal detect functions"

*Response* *Response Status* **C**

ACCEPT.
See comment #970

*Cl* **91** *SC* **91.3.5.2** *P* **11** *L* **44** # 998
Lin, Rujian Shanghai Luster Terab

*Comment Type* **E** *Comment Status* **A**
PMA layer.

*SuggestedRemedy*
PMA sub-layer.

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

*Cl* **91** *SC* **91.3.5.3** *P* **12** *L* **1** # 648
Hajduczenia, Marek Nokia Siemens Networ

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

*SuggestedRemedy*
Change "10GBASE-PR and 10/1GBASE-PRX type" to "Clause 91"

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

*Cl* **91** *SC* **91.3.6** *P* **15** *L* **25** # 840
Ryan, Hirth Teknovus

*Comment Type* **E** *Comment Status* **R**
"Treceiver_settling" should be "Transceiver_settling" to be consistent with footnote d.

*SuggestedRemedy*
Change text in table 91-6 and 91-7.

*Response* *Response Status* **C**
REJECT.
"Treceiver_settling" is a correct term, though the "receiver_settling" should be in the subscript.

*Cl* **91** *SC* **91.4** *P* **13** *L* **13** # 999
Lin, Rujian Shanghai Luster Terab

*Comment Type* **E** *Comment Status* **A**
91.10.

*SuggestedRemedy*
Cause 91.10.

*Response* *Response Status* **C**
ACCEPT IN PRINCIPLE.
"Clause" is probably meant instead of "cause"

*Cl* **91** *SC* **91.4** *P* **13** *L* **18** # 996
Lin, Rujian Shanghai Luster Terab

*Comment Type* **E** *Comment Status* **A**
58.76.

*SuggestedRemedy*
Cause 58.76.

*Response* *Response Status* **C**
ACCEPT IN PRINCIPLE.
"Clause" is probably meant instead of "cause"

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **21** # 694
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A**
The OLT transmitters are not characterized using the RMS spectral width anymore. The SMSR was introduced in this place.

*SuggestedRemedy*
Replace the ", spectral width," with "side mode suppresion ratio"

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

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **41** # 719
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A**
Table 91-5 is affected.
Footnote (a) does not make any sense. There is no RMS spectral width defined for PR and PRX type OLT transmitters. The same holds true for Table 91.8 and PR type ONU transmitters.

*SuggestedRemedy*
Remove footnote (a) in Table 91-5 and (b) in Table 91-8.

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

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **44** # 713

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **A** *PMD parameters*

The min average launch power is calculated for the ER = 9 dB and not 6 dB. It is not clear from the table. The same is true for the parameter "Launch OMA (min)"
Tables affected:
Table 91-5, page 13
Table 91-8, page 17
Table 91-9, page 18

*SuggestedRemedy*

Add a footnote to the parameter "Average launch power (min)" and "Launch OMA (min)" with the following contents "x) Minimum average launch power and minimum launch OMA are valid for ER = 9 dB (see Figure 91-4 for details)."
Tables affected:
Table 91-5, page 13
Table 91-8, page 17
Table 91-9, page 18
Use the same footnote for both parameters.
Update the channel link model accordingly

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **46** # 1021

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-5, 'Average launch power of OFF transmitter (max)' numbers should be defined. It seems logical for 10G systems to take the same numbers of 802.3ah GE-PONs, at least for upstream, because of the co-existence case.
It should be noticed that TX-enable/disable control signal from the upper layer is definitely necessary to achieve such a TX power-down scheme of both upstream and downstream, and with that control, 10G TXs can also shut the output powers down to the similar level of 1Gs.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-39 dBm' for PR-D1, PR-D2, and PR-D3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **50** # 1051

Pathak, Vijay Kawasaki Microelectro

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

Transmitter Eye mask definition {X1,X2,Y1,Y2,Y3} was left TBD
MH: Table 91-5 is affected

*SuggestedRemedy*

Follow the spec defined in 10G-BASE-R Table 52-7---10G BASE-S Transmit characteristics. Transmitter Eye mask Definition {X1,X2,X3,Y1,Y2,Y3}= {0.25,0.40,0.45,0.25,0.28,0.40}. Parameter X3 should be added to the specifications

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **52** # 1024

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-5, 'Optical return loss tolerance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '15 dB' for PR-D1, PR-D2, and PR-D3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.1** *P* **13** *L* **54** # 1027

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-5, 'Transmitter reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-10 dB' for PR-D1, PR-D2, and PR-D3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.1** *P* **14** *L* **12** # 990

Lynskey, Eric Teknovus

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

Typo in footnote B after Table 91-5. Also on page 18 line 4 following Table 91-8.

*SuggestedRemedy*

Replace with "longitudinal".

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.1** *P* **14** *L* **15** # 722

Hajduczenia, Marek Nokia Siemens Networ

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

Remove the Editors Note #2 and replace it with the description of Figure 91-4 as pproposed in the Suggested Remedy field.

*SuggestedRemedy*

Suggested text to replace Editors Note #2:
"The relationship between OMA, extinction ratio and average power is described in 58.7.6 and illustrated in Figure 91-4 for a compliant transmitter. Note that the OMAmin and AVEmin are calculated for the ER = 9 dB. The transmitter specifications are further relaxed by allowing lower ER = 6 dB while maintaining the OMAmin and AVEmin intact."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"The relationship between OMA, extinction ratio and average power is described in 58.7.6 and illustrated in Figure 91-4 for a compliant transmitter. Note that the OMAmin and AVEmin are calculated for the ER = 9 dB. The transmitter specifications are further relaxed by allowing lower ER = 6 dB while maintaining the OMAmin and AVEmin constant."
(min) are to be subscripted in the target text in the draft.

*Cl* **91** *SC* **91.4.1** *P* **14** *L* **40** # 784

Remein, Duane Alcatel-Lucent

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

Figure 91-4
No indication of what the shaded are means.

*SuggestedRemedy*

Add note to Figure:
"Shaded area indicates compliant part."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add the suggested text to the text proposed in comment #722

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **1** # 1040

Effenberger, Frank Huawei Technologies,

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

In tables 91-6 and 91-7, the value of Treceiver_settling (max) is "TDB".
We propose to set the maximum to be the value from 1G EPON, and then allow the OLT to set the actually achieved value via the sync_time parameter.

*SuggestedRemedy*

In table 91-6 and 91-7, put 400ns in each of the Treceiver_settling cells.

Modify the notes that correspond to the settling time to read:
Transceiver_settling is informative, and is intended as a loose upper bound. Optics with better performance is an implementation choice, with the OLT able to dictate its capabilities and requirements to the ONUs via the SYNCTIME parameter.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the text of the note as follows:"Treceiver_settling represents an upper bound. Optics with better performance may be used in compliant implementations, since the OLT notifies the ONUs on its requirements in terms of the Treceiver_settling time via the SYNCTIME parameter (see Section 64.3.3.2)."
(receiver_settling) must be kept in subscript in the draft text.
In table 91-6 and 91-7, put 500ns in each of the Treceiver_settling cells.

I approve the response to comment #1040
Yes: _11_
No: _7_
Abstain: _14_
Response fails

Version 2
Change the text of the note as follows:"Treceiver_settling represents an upper bound. Optics with better performance may be used in compliant implementations, since the OLT notifies the ONUs on its requirements in terms of the Treceiver_settling time via the SYNCTIME parameter (see Section 64.3.3.2)."
(receiver_settling) must be kept in subscript in the draft text.
In table 91-6 and 91-7, keep "Treceiver_settling (max)" parameter as TBD.

I approve the response to comment #1040 (version 2)
Yes: _17_
No: _5_
Abstain: _10_
Response passes

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **11** # 6

Hajduczenia, Marek Nokia Siemens Networ

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

Comment submitted from the floor by Frank Effenberger.
The 10GBASE-PR-D2 PMD power budget is no corrected in Table 91-6. Correct the individual parameters as provided in the Suggested Remedy box.

*SuggestedRemedy*

Fix the parameters as follows:
Average receive power (max) > -6
Receiver sensitivity (max) > -28
Receiver sensitivity OMA (max) > -27.22 (1.90)
Stressed receive sensitivity (max) > -25
Stressed receive sensitivity OMA (max) > -24.22 (3.79)

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **13** # 1016

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-6, 'Damage threshold (max)' numbers should be defined.
For 10GE-PON, it seems difficult to guarantee the TX-RX direct connection without damage,
because of higher TX launch power compared to 1G systems,
to compensate the relatively low sensitivity of 10G RX and
to achieve the crucial PR30 power budget or to utilize pin-RX,
and also of relatively low durability of 10G components.
Even for 1G upstream in the co-existence case, GE-PON and 10GE-PON,
10G RX is supposed to be utilized for 1G/10G dual-mode RX,
and the Damage threshold specs. should follow those of 10G RXs.
It is not desirable to leave the specs. unrealistic numbers like +6 to +10 dBm, and
it seems important to warn users properly that TX-RX direct connection will make damage.

*SuggestedRemedy*

RX overload or 'Average receive power (max)' plus 1dB can be a good candidate,
such as, '0 dBm' for PR-D1, and '-5 dBm' for PR-D2, PR-D3.
Notification, like 'ONU-OLT direct connection will make damage', is also desirable.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add footnote to parameter "Damage threshold (max)" saying "Direct ONU-OLT connection may result in damage of the receiver".
Accept the values for the "Damage threshold (max)" as proposed in the suggested remedy i.e. '0 dBm' for PR-D1, and '-5 dBm' for PR-D2, PR-D3.

---

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **17** # 1018

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-6, 'Signal detect threshold (min)' numbers should be defined.
If 'Average launch power of OFF transmitter (max)' numbers of 802.3ah GE-PON systems can be applied to those of 10Gs, 'Signal detect threshold (min)' numbers of 1Gs and 10Gs can also be the same.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-45 dBm' for PR-D1, PR-D2, and PR-D3.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **19** # 1030

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-6, 'Receiver reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-12 dB' for PR-D1, PR-D2, and PR-D3.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **25** # 675

Hajduczenia, Marek Nokia Siemens Networ

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

Footnote (d) contains a spelling mistake. Is "Transceiver_settling is informative" and should be "Treceiver_settling is informative".
Other tables affected:
Table 91-7, page 16, line 25 (footnote (c))
Table 91-11, page 20, line 13 (footnote (d))

*SuggestedRemedy*

Change "Transceiver_settling is informative" to "Treceiver_settling is informative".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Transceiver_settling" to "Treceiver_settling". Global search and replace.

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **25** # 1000

Lin, Rujian Shanghai Luster Terab

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

Treceiver_settling(max)

*SuggestedRemedy*

Transceiver_settling(max)

*Response* *Response Status* **C**

REJECT.
See comment #840 and #675.

*Cl* **91** *SC* **91.4.2** *P* **15** *L* **30** # 1047

Pathak, Vijay Kawasaki Microelectro

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

OLT PMD Receive Characteristics (10G) : Sinusoidal jitetr limits for stressed receiver conformance test ( min,max) are left TBD
MH: Table 91-6 is affected

*SuggestedRemedy*

Max=0.15 UI , Min =0.05 UI

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.4.2** *P* **16** *L* **17** # 1019

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-7, 'Signal detect threshold (min)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-45 dBm' for PRX-D3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.2** *P* **16** *L* **19** # 1031

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-7, 'Receiver reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-12 dB' for PRX-D3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.4.2** *P* **16** *L* **25** # 1001

Lin, Rujian Shanghai Luster Terab

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

Treceiver_settling(max)

*SuggestedRemedy*

Transceiver_settling(max)

*Response* *Response Status* **C**

REJECT.
See comment #840 and #675

*Cl* **91** *SC* **91.4.2** *P* **16** *L* **30** # 1048

Pathak, Vijay Kawasaki Microelectro

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

OLT PMD Receive Characteristics (1G) : Sinusoidal jitter limits for stressed receiver conformance (min,max) was left TBD
MH: Table 91-7 is affected

*SuggestedRemedy*

Max =0.15 UI, Min =0.05 UI

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.5** *P* **17** *L* **15** # 723

Hajduczenia, Marek Nokia Siemens Networ

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

The note "The specifications for OMA have been derived from extinction ratio and average launch power (minimum) or receiver sensitivity (maximum). The calculation is defined in 58.7.6" is not precise any more. The OMA specifications are derived for ER = 9 dB and not the ER provided in the table (6dB). The text must be modified.
Other occurences of the same text:
Clause 91.4, page 13, line 17

*SuggestedRemedy*

Change the text of the note as follows: "The specifications for OMA have been derived from extinction ratio of 9 dB and average launch power (minimum) or receiver sensitivity (maximum). The calculation is defined in 58.7.6"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **134** *L* **19** # 10335

Dawe, Piers Avago Technologies

*Comment Type* **TR** *Comment Status* **R** *ER for upstream*

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.

*Response* *Response Status* **W**

REJECT.

While keeping the minimum OMA and minimum average power unchanged, I prefer the minimum upstream ER to be:
1) 6 dB _20_
2) 4 dB _10_

I prefer to:
1) relax upstream Tx specification by relaxing minimum ER _11_
2) relax upstream Tx specification by relaxing minimum average power _19_
3) not relax upstream Tx specification _8_

I prefer to relax upstream Tx specification by relaxing both the minimum ER and minimum average power:
1) Yes: _10_
2) No: _11_

Resolve comment #335 by relaxing the minimum average power:
1) Yes: _11_
2) No: _5_
3) Abstain: _8_
(technical >=75%) Fails

Added on 18.03.2008

Straw poll: upstream ER should be:
a) 6.0 dBm: _16_
b) 4.5 dBm: _6_

Vote: upstream ER should be 6 dB
a) Yes: _18_
b) No: _6_
c) Abstain: _10_
Response accepted (>=75%)

*Cl* **91** *SC* **91.5.1** *P* **135** *L* **27** # 10190

Lin, Rujian Shanghai Luster Terab

*Comment Type* **T** *Comment Status* **A** *Temperature ranges*

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 úñ
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.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See comment #417.

*Cl* **91** *SC* **91.5.1** *P* **139** *L* # 10418

Chang, Frank Vitesse

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

B++ 29dB??

*SuggestedRemedy*

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

*Response* *Response Status* **W**

ACCEPT.
See comment #417.
Commenter refers to 3av_c91_1_0_markup.pdf, Table 91û17.
The launch power will be calculated using the approved version of the channel link model (v2.1).

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **20** # 720

Hajduczenia, Marek Nokia Siemens Networ

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

The ONU transmitters have either RMS or SMSR defined. Need to align the text with the contents of the tables.

*SuggestedRemedy*

Change "operating wavelength, spectral width," to "operating wavelength, spectral width (for PRX type PMDs) or side mode suppresion ratio (for PR type PMDs),"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "operating wavelength, spectral width," to "operating wavelength, spectral width (for PRX U-type PMDs) or side mode suppresion ratio (for PR type U-type PMDs),"

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **21** # 7

Hajduczenia, Marek Nokia Siemens Networ

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

Comment submitted from the floor by Frank Effenberger.
The text says "The signaling speed, operating wavelength, spectral width, average launch power" even though the OLT PMDs do not have the RMS specified.

*SuggestedRemedy*

Change "The signaling speed, operating wavelength, spectral width, average launch power" to "The signaling speed, operating wavelength, single side suppression ratio, average launch power"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #720 for the resolution.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **26** # 695

Hajduczenia, Marek Nokia Siemens Networ

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

Table 91-8 is affected. Table 91-9 is affected.
The row "Nominal transmitter type" was removed from Table 91-5. Align with the changes

*SuggestedRemedy*

Remove the row "Nominal transmitter type" in Table 91-8. Add "While it is not required, it is expected that PMD transmitters of Clause 91 will use lasers, and amongst them, 10G transmitters and transmitters in the 1574-1600 nm range will use single longitudinal mode lasers." before the table 91-8.
Remove the row "Nominal transmitter type" in Table 91-9. Add "While it is not required, it is expected that PMD transmitters of Clause 91 will use lasers, and amongst them, 1.25 GBd transmitters and transmitters in the 1260-1360 nm range will use single longitudinal mode lasers." before the table 91-9.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove the row "Nominal transmitter type" in Table 91-8 and 91-9.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **40** # 1022

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-8, 'Average launch power of OFF transmitter (max)' numbers should be defined.
See my comment SC 91.4.1 P 13 L 46.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-45 dBm' for PR-U1, and PR-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **41** # 831

TSUJI, SHINJI SUMITMO ELECTRIC

*Comment Type* **T** *Comment Status* **R** *ER for upstream*

This comment is concerned with Extinction ratio (min) in Table 91-8.
Relaxed extinction ratio is commonly found in 10GBASE PMD and does not extend receive dynamic range even for the burst receiver which has peak/bottom detector. The value of 4.5dB is just 1dB difference in average_power-OMA relationship from 6dB ER.

*SuggestedRemedy*

4.5dB Extincion ratio (min) for both 10GBASE-PR-U1 and 10GBASE-PR-U3 in Table 91-8.

*Response* *Response Status* **C**

REJECT.
See comment #10335.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **46** # 1041

Effenberger, Frank Huawei Technologies,

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

At 10G, our power budget is very challenging, and the detector circuits are difficult. As a result, the possibility of dynamic overload is raised. To avoid this, we think that controlling the turn-on and turn-off time of the transmitter could be beneficial for those OLT Rx types that are susceptible to such problems.

*SuggestedRemedy*

Add two rows to table 91-8:

| Description | 10GBASE-PR-U1 | 10GBASE-PR-U3 | Unit |
|---|---|---|---|
| Ton (min) | 0 or 18 | 0 or 18 (a) | ns |
| Toff (min) | 0 or 18 | 0 or 18 (a) | ns |

Add a note at the bottom of the table:
(a) Minimum Ton and Toff is selectable by the OLT during discovery using the SLOWSTART parameter.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Instead of specifying a slow start for the PCS, we specify Ton (min) and Ton (max) (same as current Ton) and Toff (min) and Toff (max) (same as current Toff).
Values for Ton (min) and Toff (min) are TBD.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **49** # 1025

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-8, 'Optical return loss tolerance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '15 dB' for PR-U1, and PR-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **17** *L* **50** # 1028

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-8, 'Transmitter reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-10 dB' for PR-U1, and PR-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **15** # 802

Remein, Duane Alcatel-Lucent

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

Table 91-1 suggests but does not elaborate on the two wavelength bands for Upstream (nominally 1270 for 10G and 1310 for 1G). Table 91-8 is consistent with the modified plan, but Table 91-9 is not, even for the PRX-U3 entry.
Furthermore there should be some consideration in the text of the isolation gap of the two windows (1270 and future adjacent). Some guidance should be given so as to have the lasers and filters optimized if vendors are going to support this feature.
js

*SuggestedRemedy*

Change Wavelength parameter in Table 91-9 from:
"1260 to 1360"
to"
"1260 to 1280"
Add a guard band parameter with a value of 1280-1290 nm

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #672 for the changes in Table 91-1.
The wavelength band for PRX-U3 PMD remains unchanged i.e. remains at 1260 - 1360 nm.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **20** # 1023

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-9, 'Average launch power of OFF transmitter (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-45 dBm' for PRX-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **29** # 1026

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-9, 'Optical return loss tolerance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '15 dB' for PRX-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **3** # 991

Lynskey, Eric Teknovus

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

Does it still make sense to maintain footnote B for Table 91-8 when we removed the specification for RMS spectral width? Also applies to Table 91-5.

*SuggestedRemedy*

Remove footnote b from Table 91-8 and 91-5.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **31** # 1029

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-9, 'Transmitter reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-10 dB' for PRX-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.1** *P* **18** *L* **40** # 676

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "Table 60-7and" to "Table 60-7 and" (space was missing)

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.2** *P* **19** *L* **48** # 1017

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-11, 'Damage threshold (max)' numbers should be defined.
See my comment SC 91.4.2 P 15 L 13.

*SuggestedRemedy*

RX overload or 'Average receive power (max)' plus 1dB can be a good candidate, such as, '0 dBm' for PR-U1, and '-9 dBm' for PR-U3.
Notification, like 'OLT-ONU direct connection will make damage', is also desirable.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #1016 for the text of the footnote.
The values for 'Damage threshold (max)' for PR-U1 and PR-U3 are TBD.

*Cl* **91** *SC* **91.5.2** *P* **19** *L* **53** # 1020

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-11, 'Signal detect threshold (min)' numbers should be defined.
See my comment SC 91.4.2 P 15 L 17.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined, such as, '-44 dBm' for PR-U1, and PR-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.5.2** *P* **20** *L* **13** # 1002

Lin, Rujian Shanghai Luster Terab

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

Treceiver_settling(max)

*SuggestedRemedy*

Transceiver_settling(max)

*Response* *Response Status* **C**

REJECT.
See comment #840 and #675

*Cl* **91** *SC* **91.5.2** *P* **20** *L* **14** # 1049

Pathak, Vijay Kawasaki Microelectro

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

ONU PMD receive characteristics : Stressed eye jitter :TBD
MH: Table 91-11 is affected

*SuggestedRemedy*

Follow the spec defined in 10G-BASE-R 'Table 52-9--10G BASE-S receive characteristics'

Modify parameter to Stressed Eye Jitter (min) = 0.3 UI

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.5.2** *P* **20** *L* **1617** # 1052

Pathak, Vijay Kawasaki Microelectro

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

Jitter corner frequency for a sinusoidal jitter
MH: Table 91-11 is affected

*SuggestedRemedy*

This seems to be a typo . It should be 4 MHz. It aws agreed in January meeting

*Response* *Response Status* **W**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.5.2** *P* **20** *L* **18** # 1053

Pathak, Vijay Kawasaki Microelectro

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

ONU PMD Receive characteristics : Sinusoidal jitter limits for stressed receiver conformance test( min,max) :TBD
MH: Table 91-11 is affected

*SuggestedRemedy*

It should be Max=0.15 UI, Min= 0.05 UI

*Response* *Response Status* **C**

ACCEPT.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91** *SC* **91.5.2** *P* **20** *L* **7** # 1032

Hamano, Hiroshi Fujitsu Labs.

*Comment Type* **T** *Comment Status* **A** *PMD parameters*

In Table 91-11, 'Receiver reflectance (max)' numbers should be defined.

*SuggestedRemedy*

The same numbers of 802.3ah should be defined,
such as, '-12 dB' for PR-U1, and PR-U3.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.6** *P* **142** *L* # 10406

Chang, Frank Vitesse

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

Is the link closed with allocation for penalties?

*SuggestedRemedy*

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

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
At the moment, the link is closed with allocation for penalties. The feedback from the jitter ad-hoc is expected at the March meeting, when the appropriate allocation for jitter can be added.

See comment #1058 for resolution of Jitter Budget.

*Cl* **91** *SC* **91.6** *P* **21** *L* **24** # 711

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **A** *Fibre parameters*

Table 91-12 provides the nominal measurement wavelengths for the fiber as 1550 nm, yet the transmission is performed at 1590 or 1577 nm in the downstream. In the upstream, transmission is carried out at 1270 nm, while the nominal measurement is done at 1310 nm. These values are not aligned.

*SuggestedRemedy*

Change the "measurement wavelength for fiber" to the following values:
1270 for PR10 US
1590 for PR10 DS
1270 for PR20 US
1590 for PR20 DS
1270 for PR30 US
1577 for PR30 DS

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.6** *P* **21** *L* **39** # 724

Hajduczenia, Marek Nokia Siemens Networ

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

The comment says "Further details are given in 91.8.2.". There is no 91.8.2.

*SuggestedRemedy*

Create a stub for subclause 91.8.2 entitled "Allocation for penalties in 10G EPON PMDs" with the following text "The Clause 91 receivers are required to tolerate a path penalty not exceeding 1 dB to account for total degradations due to reflections, intersymbol interference, mode partition noise, laser chirp and detuning of the central wavelength. All the transmitter types specified in Clause 91 produce less than 1 dB of optical path penalty over the PON plant. An increase in the optical path penalty is acceptable, provided that any increase in optical path penalty over 1 dB is compensated by an increase of the minimum transmitted launch power, or an increase of the minimum receiver sensitivity."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.6** *P* **22** *L* **17** # 8

Hajduczenia, Marek Nokia Siemens Networ

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

Comment submitted from the floor
Table 91-8 indicates the TDP penalty allocation as 3 dB, yet Table 91-13 lists the allocation for penalites as 1 dB.

*SuggestedRemedy*

Change the allocation for penalties for PRX10, PRX20 and PRX30 from 1 dB to 3 dB.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the allocation for penalties in Table 91-13 for PRX10, PRX20 and PRX30 from 1 dB to 3 dB.

*Cl* **91** *SC* **91.6** *P* **22** *L* **9** # 712

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **A** *Fibre parameters*

Table 91-13 provides the nominal measurement wavelengths for the fiber as 1550 nm, yet the transmission is performed at 1590 or 1577 nm in the downstream.

*SuggestedRemedy*

Change the "measurement wavelength for fiber" to the following values:
1590 for PRX10 DS
1590 for PRX20 DS
1577 for PRX30 DS

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.6.3** *P* **21** *L* **24** # 800

Remein, Duane Alcatel-Lucent

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

Table 91-5 specifies D/S penalties of 1.5dB for all (10G) cases. However, summary table 91-12 specifies 1dB for all cases.
js

*SuggestedRemedy*

Change Table 91-12 from 1 db to 1.5 db.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.7** *P* **22** *L* **37** # 1050

Pathak, Vijay Kawasaki Microelectro

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

Jitter at TP1-4 for PR10,PR20,PR30,PRX10,PRX20,PRX30 (informative)

*SuggestedRemedy*

Should be defined for TP1-TP8 . To be filled in once agreed upon by the group

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the title "Jitter at TP1-4 for PR10,PR20,PR30,PRX10,PRX20,PRX30 (informative)" to "Jitter at TP1-TP8 for PR10, PR20, PR30, PRX10, PRX20, PRX30 (informative)"
Exact text to be inserted in the clause pending.

*Cl* **91** *SC* **91.7** *P* **22** *L* **40** # 1058

Pathak, Vijay Kawasaki Microelectro

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

This space is left blank

*SuggestedRemedy*

The entries in Table 91-aa ,91-bb represent high frequency jitter above 4 MHz and those in Table 91-cc relate to jitter frequencies above 637 kHz. All values are informative. For 10GBASE-PR10, PR20, PR30 upstream jitter budget, the jitter transfer function is defined by Equation 91-dd and the gain curve values are listed in Table 91-dd. For 10GBASE -PRX10, PRX20, PRX30 corresponding values are shown in Equation 91-ee and Table 91-ee

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Enter as an Editors Note tables 91-aa ,91-bb (high frequency jitter above 4 MHz) and table 91-cc (jitter frequencies above 637 kHz). Include Equation 91-dd (10GBASE-PR10, PR20, PR30 jitter transfer function) and gain curve values listed in Table 91-dd. For 10GBASE -PRX10, PRX20, PRX30 include corresponding Equation 91-ee and values in Table 91-ee.
All tables are shown in 3av_0803_pathak_3.pdf and 3av_0803_pathak_4.pdf.

*Cl* **91** *SC* **91.8.1** *P* **22** *L* **48** # 714

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **A** *Fibre parameters*

The text says "Insertion loss for SMF fiber optic cabling (channel) is defined at 1310 or 1550 nm". However, the transmission windows for the 10G PMDs are set at 1580 - 1600 (1590 centre) and 1574 - 1580 (1576 centre) in the downstream and 1260 - 1280 (1270 centre) and 1260 - 1360 (1310 centre) in the upstream. This means that the fibre attenuation should be measured at 1270, 1310, 1590 and 1576 nm. G.650.1 does not specify the measurement wavelengths, thus we should strive to provide precise values rather than measure at 1550 and use the fibre at 1590.

*SuggestedRemedy*

Change "is defined at 1310 or 1550 nm" to "is defined at 1270, 1310, 1577 or 1590 nm, depending on the particular PMD."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.8.1** *P* **22** *L* **49** # 721

Hajduczenia, Marek Nokia Siemens Networ

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

Missing ITU-T/IEC reference

*SuggestedRemedy*

ITU-T G.650 or IEC 60793-1.
Select the more appropriate one. G.650.1 is suggested.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.9.2** *P* **23** *L* **11** # 696

Hajduczenia, Marek Nokia Siemens Networ

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

The note in red does not make sense.

*SuggestedRemedy*

Remote the note in red.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **91** *SC* **91.9.3** *P* **23** *L* **14** # 801

Remein, Duane Alcatel-Lucent

*Comment Type* **TR** *Comment Status* **A** *Temperature ranges*

Add two temperature ranges to this sub-clause similar to that in c60.8.4.

*SuggestedRemedy*

Add text:
"Reference Annex 67A for additional environmental information.
Two optional temperature ranges are defined in Table 60-13. Implementations shall be declared as compliant over one or both complete ranges, or not so declared (compliant over parts of these ranges or another temperature range)."

*Response* *Response Status* **C**

ACCEPT.
See comment #10182, #10410

*Cl* **91** *SC* **91.9.4** *P* **23** *L* **24** # 725

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **R** *PMD labelling*

Remove Editors Note #6. Extend the text of the subclause as follows

*SuggestedRemedy*

Extend "The 10GBASE-PR and 10/1GBASE-PRX labeling recommendations and requirements are as defined in 52.12." to "The 10GBASE-PR and 10/1GBASE-PRX labeling recommendations and requirements are as defined in 52.12, e.g. 10/1GBASE-PRX-D1 for the OLT PMD supporting the channel insertion loss <= 20 dB."
Remove Editors Note #6.

*Response* *Response Status* **C**

REJECT.

*Cl* **91** *SC* **91.9.4** *P* **23** *L* **24** # 790

Remein, Duane Alcatel-Lucent

*Comment Type* **TR** *Comment Status* **A** *PMD labelling*

Provide list of Port Types

*SuggestedRemedy*

Add text:
"Defined port types are: 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2, 10/1GBASE-PRX-D3, 10GBASE-PR-D1, 10GBASE-PR-D2, 10GBASE-PR-D3, 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2, 10/1GBASE-PRX-U3, 10GBASE-PR-U1 and 10GBASE-PR-U3."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "ER" to "TR"
For consistency reasons, these should not be referred to as ports but rather as PMDs. We avoid the term "port" in clause 91.

*Cl* **91** *SC* **Figure 91-xx** *P* *L* # 1055

Pathak, Vijay Kawasaki Microelectro

*Comment Type* **T** *Comment Status* **R** *Deferred*

Jitter gain curve values for 10GBASE-PRX10,PRX20,PRX30

DS 10G > US 1G

Jitter transfer curves not defined

*SuggestedRemedy*

Assuming "jitter transfer' corner frequency 2X of receiver corner frequency, jitter gain curve should have Fc=1.274 MHz , P=0.3 dB and 20dB/decade roll off

Formula for calculation of jitter transfer should be
Jitter transfer = 20 log [Jitter on upstream signal(UI)/(Jitter on downstream signal (UI) * 8.25)]

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Clause 91.7 is affected (page 22)

See comment #1054

*Cl* **91** *SC* **Figure 91-xx** *P* *L* # 1054

Pathak, Vijay Kawasaki Microelectro

*Comment Type* **T** *Comment Status* **R**

Jitter gain curve values for 10G BASE -PR10,PR20 and PR30

DS 10G > US 10G jitter transfer

Not defined

*SuggestedRemedy*

Assuming "jitter transfer' corner frequency 2X of receiver corner frequency, jitter gain curve should have Fc=8 MHz , P=0.3 dB and 20dB/decade roll off

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Reference fo Figure 91-xx is inclear. Lack of page and line number.
Clarify with the commenter.
See 3av_0801_remein_4.pdf for rules related with the Clause / Subclause / Figure reference in comments.

*Cl* **91A** *SC* **91A** *P* **27** *L* **1** # 955

Lynskey, Eric Teknovus

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

Annex 91A is empty and could use some text. I'd like to thank everyone that helped put this together, including Glen Kramer, Frank Effenberger, and Quanbo Zhao.

*SuggestedRemedy*

Add the material in 3av_0703_lynskey_3.pdf to Annex 91A.

*Response* *Response Status* **C**

ACCEPT.
Referenced file is 3av_0803_lynskey_3.pdf

*Cl* **92** *SC* **52.2.3** *P* **309** *L* **51** # 679

Hajduczenia, Marek Nokia Siemens Networ

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

The comment refers to clause 92 !!!
Line 51 contains errored subclause number.

*SuggestedRemedy*

Correct to 92.2.3 (probably ?)
Use the automatic numbering instead of hand-assigned numbers.

*Response* *Response Status* **W**

ACCEPT.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **59.2.3** *P* **309** *L* **51** # 942

Lynskey, Eric Teknovus

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

A clause 59 heading? Also on page 317 line 7.

*SuggestedRemedy*

Covert headings to Clause 92.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **59.2.4** *P* **317** *L* **7** # 697

Hajduczenia, Marek Nokia Siemens Networ

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

The comment refers to clause 92 !!!
Line 7 contains errored subclause number.

*SuggestedRemedy*

Correct to 92.2.4 (probably ?)
Use the automatic numbering instead of hand-assigned numbers.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92** *P* **300** *L* **1** # 664

Hajduczenia, Marek Nokia Siemens Networ

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

Language consistency ...
Throughout this clause, the text uses "IDLE code characters", idle code characters", "idle characters" etc. They all mean the same. Align the spelling of this term

*SuggestedRemedy*

Throughout this clause, the text uses "IDLE code characters", idle code characters", "idle characters" etc. They all mean the same. Align the spelling of this term, do the global search and replace with the target spelling selected.
Personal suggestion: use "IDLE control character". Seems most appropriate.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92** *P* **300** *L* **18** # 925

Lynskey, Eric Teknovus

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

References to Clause 64 instead of Clause 93.

Page 300 line 18
Page 303 line 3
Page 303 line 8
Page 303 line 34
Page 314 line 5
Page 314 line 18
Page 314 line 19

*SuggestedRemedy*

Replace all references to Clause 64 with a reference to Clause 93.

*Response* *Response Status* **C**

ACCEPT.
Changed to "T" to bring a concern before the TF. It appears that we will be duplicating much of c64 in c93.

---

*Cl* **92** *SC* **92** *P* **300** *L* **5** # 792

Remein, Duane Alcatel-Lucent

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

Lead-in Editors Note
Align with 802.3ah drafts

*SuggestedRemedy*

Change from:
"Changes from Clause 92 D1.0 have been marked with change bars.
In general (except this note) Editors Notes are marked in red italics.
This has been adapted from 3av_0707_c92_d0_9_1
10 GEPON Clauses shall use Editorial Mark-up conventions used in 803.3ah in FUTURE drafts
Double question marks is used to denote missing content (as in "TYPE: ??", the final text will be updated in a later edition."
To:
"Editors Notes are marked in red italics and are to be removed prior to final publication.

Double question marks is used to denote missing content (as in "TYPE: ??", the final text will be updated in a later edition.

Revision History:
Draft 1.0 November 2007 Preliminary draft for IEEE802.3av Task Force Review.
Draft 1.1 February 2008 Draft for IEEE802.3av Task Force Review incorporating comments received at November 2007 meeting in Portland OR."
Continue updating Revision History as needed.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 698, 677, 792, 918

---

*Cl* **92** *SC* **92.1.1** *P* **300** *L* **26** # 732

Hajduczenia, Marek Nokia Siemens Networ

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

There are two Figure i.e. 91-1 and 91-2 and only one is referenced.

*SuggestedRemedy*

Change "Sublayer. Figure 92–1 shows the relationship" to "Sublayer. Figure 92–1 and Figure 92-2 show the relationship"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.1** *P* **301** *L* **1** # 678

Hajduczenia, Marek Nokia Siemens Networ

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

Applicable to Figure 92-1 and 92-2.
The text in the hatched fields is not readable.
Clause 92 does not specify PMD and MDI as indicated in the figures.

*SuggestedRemedy*

Place a white rectangle under the text as e.g. in Figure 91-1. See 3av_0803_hajduczenia_5.pdf (3av_0803_hajduczenia_5.fm for source files) for the proposed resolution.

*Response* *Response Status* **W**

ACCEPT.

*Cl* **92** *SC* **92.1.1.1** *P* **303** *L* **20** # 650

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "In the receive direction, these MODE and LLID values, embedded within the preamble, identify" to "In the receive direction, the MODE and LLID values embedded within the preamble identify"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.1.1** *P* **303** *L* **3** # 649

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "A successful registration process, described in 64.3.3, results in the assignment of values to the MODE and LLID variables associated with a MAC. This may be one of many MACs in an Optical Line Terminal (OLT) or a single MAC in an Optical Network Unit (ONU)." to "A successful registration process, described in 64.3.3, results in the assignment of values to the MODE and LLID variables associated with a MAC - one of many MACs in an Optical Line Terminal (OLT) or a single MAC in an Optical Network Unit (ONU).".

*Response* *Response Status* **C**

REJECT.
This is purely a question of style.

*Cl* **92** *SC* **92.1.1.1** *P* **303** *L* **8** # 927

Lynskey, Eric Teknovus

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

These two paragraphs seem confusing, and it isn't clear whether it should be pointing to Clause 64 or to Clause 93.

*SuggestedRemedy*

Replace the two paragraphs from lines 8 - 14 with the following:

As described in 93.1.2, multiple MACs within an OLT are bound to a single XGMII, or to an XGMII transmit path and a GMII receive path. At the ONU, MACs are either bound to an XGMII or to an XGMII receive path and a GMII transmit path. Correspondingly, only one PLS_DATA.request primitive is active at any time.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
As described in @@93.1.2 or ref c64@@, multiple MACs within an OLT are bound to a single XGMII, or to an XGMII transmit path and a GMII receive path. At the ONU, MACs are either bound to an XGMII or to an XGMII receive path and a GMII transmit path. Correspondingly, only one PLS_DATA.request primitive is active at any time.

*Cl* **92** *SC* **92.1.1.2** *P* **303** *L* **27** # 785

Remein, Duane Alcatel-Lucent

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

Wording

*SuggestedRemedy*

Change from:
"is primarily intended as a chip-to-chip but may also be used"
To
"is primarily intended to be chip-to-chip but may also be used

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.1.2** *P* **303** *L* **29** # 926

Lynskey, Eric Teknovus

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

GEPON is a new acronym, so it should be spelled out if we intend to use it. Do we want to use 10G EPON, 10 GEPON, 10 Gb/s EPON, or something else? The group should decide on a consistent name. I have made this technical so that it is brought in front of the Task Force.

*SuggestedRemedy*

Spell out GEPON (Gigabit Ethernet Passive Optical Network) the first time it is used and/or choose a different name. 10 Gb/s EPON is probably the best choice.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Use "10GBASE-PR and 10GBASE-PRX PHY types"

---

*Cl* **92** *SC* **92.1.2.2** *P* **303** *L* **44** # 651

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "In Clause 46 the PLS_CARRIER.indication" to "In Clause 46, the PLS_CARRIER.indication"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.1.2.2** *P* **303** *L* **47** # 652

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "For 10 GEPON the CRS signal" to "For 10 GEPON, the CRS signal"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.1.2.2.2** *P* **304** *L* **1** # 929

Lynskey, Eric Teknovus

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

There is no CRS signal on the XGMII interface, so we need to properly describe how the PLS_CARRIER.indication primitive is generated. What we want to say is that the CARRIER_STATUS parameter is controlled by the CRS Generation state diagram.

*SuggestedRemedy*

Replace 92.1.2.2.2 and 92.1.2.2.3 with the following:

92.1.2.2.2 Semantics of the service primitive

PLS_CARRIER.indication(CARRIER_STATUS)

The CARRIER_STATUS parameter can take one of two values: CARRIER_ON or CARRIER_OFF. CARRIER_STATUS assumes the value CARRIER_ON at the beginning of every frame and assumes the value of CARRIER_OFF after frame transmission is complete and enough time has elapsed to allow for the insertion of FEC parity. Figure 92-3 controls the updating of the CARRIER_STATUS parameter.

92.1.2.2.3 When generated
The PLS_CARRIER.indication service primitive is generated by the Reconciliation sublayer whenever the CARRIER_STATUS parameter changes from CARRIER_ON to CARRIER_OFF or vice versa.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace 92.1.2.2.2 and 92.1.2.2.3 with the following:

92.1.2.2.2 Semantics of the service primitive

PLS_CARRIER.indication(CARRIER_STATUS)

The CARRIER_STATUS parameter can take one of two values: CARRIER_ON or CARRIER_OFF. CARRIER_STATUS assumes the value CARRIER_ON at the beginning of every frame and assumes the value of CARRIER_OFF after frame transmission is complete and enough time has elapsed to allow for the insertion of FEC parity. The state machine depicted in Figure 92-3 controls the updating of the CARRIER_STATUS parameter.

92.1.2.2.3 When generated
The PLS_CARRIER.indication service primitive is generated by the Reconciliation sublayer whenever the CARRIER_STATUS parameter changes from CARRIER_ON to CARRIER_OFF or vice versa.

*Cl* **92** *SC* **92.1.2.2.2** *P* **304** *L* **2** # 928

Lynskey, Eric Teknovus

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

Should be CARRIER_STATUS.

*SuggestedRemedy*

Replace CARRIER_SENSE with CARRIER_STATUS.

*Response* *Response Status* **C**

ACCEPT.
Also see comment 798

*Cl* **92** *SC* **92.1.2.2.2** *P* **304** *L* **3** # 798

Remein, Duane Alcatel-Lucent

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

Typo

also line 15

*SuggestedRemedy*

Change "PLS_CARRIER.indication (CARRIER_SENSE)"
to: "PLS_CARRIER.indication (CARRIER_STATUS)"

line 15 Change: "CRS = carrier sense signal"
to: "CRS = carrier status signal"

*Response* *Response Status* **C**

ACCEPT.
Also see comment 928

*Cl* **92** *SC* **92.1.2.2.3** *P* **304** *L* **11** # 836

Ryan, Hirth Teknovus

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

Carrier sense is asserted when a packet is transmitted and extended by the amount of time that is required to insert parity for FEC, not just for the time the parity is inserted.

*SuggestedRemedy*

The PLS_CARRIER.indication service primitive is generated by the Reconciliation sublayer whenever the PCS layer is transmitting a packet and is extended by the amount of time that is required to insert parity information for FEC overhead.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.2.2.4** *P* **304** *L* **14** # 730

Hajduczenia, Marek Nokia Siemens Networ

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

Variable and counter definitions are incomplete.

*SuggestedRemedy*

Align the format definition with clause 64/93.

Use the following variable and counter definitions:

Create a subsection Variables and insert the following definition

CRS
This variable identifies whether the carrier_sense signal is present or not. If set to true, the carrier_sense
signal is said to be present.
TYPE: boolean

new_col
This variable identifies whether a new column of data is available for transmission or nor. It set to true, a
new column of data is pending transmission.
TYPE: boolean

byte_cnt
This variable holds the number of transmitted bytes. This value includes the data and idle bytes.
TYPE: 8 bit unsigned

parity_cnt
This variable holds the number of parity bytes which need to be inserted by the PCS sublayer.
TYPE: 8 bit unsigned

col
This variable represents a 0–based bit array corresponding to the column of data pending transmission.
TYPE: bit array

Create a subsection Constants and insert the following definition

block_size
This variable holds the number of bytes comprising a single FEC block.
TYPE: 8 bit unsigned
VALUE: 255 (0xFF)

parity_ratio
This variable holds the number of parity bytes which need to be inserted every FEC block.
TYPE: 8 bit unsigned
VALUE: 32 (0x20)

Create a subsection Functions and insert the following definition

T_Type()
This function is used to determine what type of column is pending transmission (S, C)

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Use solution in 941

*Cl* **92** *SC* **92.1.2.2.4** *P* **304** *L* **22** # 941

Lynskey, Eric Teknovus

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

The variables and counters could use some more detail, and the fixed values can now be added. Also, perhaps it makes sense to have the counters operate in units of columns instead of units of bytes. This comment is also related to 3av_0803_lynskey_1.pdf.

*SuggestedRemedy*

92.1.2.2.4 Conventions

The notation used in the state diagram follows the conventions of 21.5. The notation ++ after a counter indicates it is to be incremented. The notation -- after a counter indicates it is to be decremented. The notation += after a counter indicates it is to sum itself with the following value.

Unless otherwise stated within the state diagram, it advances between states at TX_CLK rate (on both the rising and falling clock transitions).

92.1.2.2.5 Functions, variables, and counters

CRS
Alias for CARRIER_STATUS in PLS_CARRIER.indication primitive.
Values: CARRIER_ON; Frame transmission is deferred.
CARRIER_OFF; Frame transmission is allowed.

tx_cnt
A count of the number of columns transmitted. This counter increments at TX_CLK rate (on both the rising and falling clock transitions) unless reset.

parity_cnt
A count of the number of parity bytes (in units of columns) to be inserted by the PCS.

block_size
The size, in columns, of an FEC codeword.
Value: 54

parity_ratio
The number of parity bytes (in units of columns) to be inserted for every FEC codeword.
Value: 8

T_Type()
A function that determines what type of column is to be transmitted.
Values:
C; The column contains one of the following:
a) four valid control characters other than /Q/, /S/, /T/ and /E/;
b) one valid sequence ordered_set.
S; The column contains an /S/ in lane 0, and all characters following the /S/ are data characters.
T; The column contains a /T/ in one of its lanes, all characters before the /T/ are data characters, and all characters following the /T/ are valid control characters other than /O/,

/S/, and /T/.
D; The column contains four data characters.
E; The column does not meet the criteria for any other value.

col
This variable contains the contents of the current column.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 730
It is unclear to the editor precisely where these changes are to be inserted. 92.1.2.2.4 Variables and counters
currently exists at line 14.

Replace Figure 92-3 with the figure in 3av_0803_lynskey_6.pdf (3av_0803_lynskey_6.fm contains source).

---

*Cl* **92** *SC* **92.1.2.2.5** *P* **305** *L* **1** # 930

Lynskey, Eric Teknovus

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

Figure 92-3 contains a number of traditional style violations. In addition, the state diagram should be updated to count columns instead of bytes.

*SuggestedRemedy*

Replace Figure 92-3 with the figure shown in 3av_0803_lynskey_1.pdf.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See solution in 941

If the author has framemaker source file please forward to the Editor.

---

*Cl* **92** *SC* **92.1.2.2.5** *P* **305** *L* **15** # 715

Hajduczenia, Marek Nokia Siemens Networ

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

Closing bracket missing in the this line (?)

*SuggestedRemedy*

Insert the missing closing bracket in the box UPDATE.
Probably "If (byte_cnt >= block_size)"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Figure is being replaced, See 941

---

*Cl* **92** *SC* **92.1.2.3.2.1** *P* **306** *L* **1** # 919

Lynskey, Eric Teknovus

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

Per comment 399 against D1.0, this subclause should be deleted.

*SuggestedRemedy*

Delete subclause.

*Response* *Response Status* **C**

ACCEPT.

3/11/08 - change to Proposed Accept (see Erics Rebuttal below).

Comment 399 was against
"92.1.2.3.2 Transmit
The transmit function is as described in 65.1.3.2 except as noted below"

rather than
"92.1.2.3.2.1 CRC-8
The CRC8 field is as described in 65.1.3.2.3.
92.1.2.3.3 Receive function
The receive function is described in 65.1.3.3 except as noted below."

Rebuttal from Erik (added 3/11/2008)
Based off of the response to comment 399 from D1.0, I think subclause 92.1.2.3.2.1 should have been deleted. This subclause was actually 92.1.2.3.2.3 in D1.0. There were two parts to the final response of comment 399. The second part of the response to comment 399 is, “Delete 92.1.2.3.2.1, 92.1.2.3.2.2, 92.1.2.3.2.3.” For D1.1, 92.1.2.3.2.1 and 92.1.2.3.2.2 were deleted. It looks like 92.1.2.3.2.3 was renumbered 92.1.2.3.2.1 and left in the document. The intent behind the comment was that the entire Transmit subclause 92.1.2.3.2 is identical, and so there is no need to list any of the 92.1.2.3.2.x subclauses.

*Cl* **92** *SC* **92.1.2.3.3.1** *P* **305** *L* **11** # 921

Lynskey, Eric Teknovus

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

It is unnecessary to say that if using a GMII that the behavior is defined in 65.1.3.3.1, since this is already covered by subclause 92.1.2.3.3. Only additional behavior or behavior that overrides the orignial behavior needs to be specified here. I suggest indicating the full XGMII behavior here to make it very clear how the SLD should be parsed and what to do if it is not found.

*SuggestedRemedy*

Replace all text in this subclause with the following, "Recall that the 10Gb/s RS transmit function must maintain an alignment for its start control character to lane 0. The SLD is transmitted as the third octet and therefore is aligned to lane 2 in the same column containing the start control character. This is the only possibility considered when parsing the incoming octet stream for the SLD. If the SLD field is not found then the packet shall be discarded. If the packet is transferred, the SLD shall be replaced with a normal preamble octet and the one or two octets preceding the SLD and the two octets following the SLD are passed without modification."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace all text in this subclause with the following, "The 10 Gb/s RS transmit function must maintain an alignment for its start control character to lane 0. The SLD is transmitted as the third octet and therefore is aligned to lane 2 in the same column containing the start control character. This is the only possibility considered when parsing the incoming octet stream for the SLD. If the SLD field is not found then the packet shall be discarded. If the packet is transferred, the SLD shall be replaced with a normal preamble octet and the two octets preceding the SLD and the one octet following the SLD are passed without modification. See Figure 92-xx." (cross refence to correct figure)

Add Figure as in 3av_0803_kramer_1.pdf

Add to 92.1.2.3.3.2 "If the packet is transferred, the one octet preceding the LLID is passed without modification. See Figure 92-xx." (cross refence to correct figure)

*Cl* **92** *SC* **92.1.2.3.3.1** *P* **306** *L* **11** # 653

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "When using a GMII interface the" to "When using a GMII interface, the"

*Response* *Response Status* **C**

REJECT.
See 921

*Cl* **92** *SC* **92.1.2.3.3.1** *P* **306** *L* **13** # 809

Daido, Fumio Sumitomo Electric Ind

*Comment Type* **T** *Comment Status* **A** *Lane 2*

The SLD is always received in lane 2 of the XGMII.

*SuggestedRemedy*

Replace "in lane 3" with "in lane 2".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 921

*Cl* **92** *SC* **92.1.2.3.3.1** *P* **306** *L* **14** # 841

Ryan, Hirth Teknovus

*Comment Type* **T** *Comment Status* **A** *Lane 2*

The SLD is the 3 byte of the preamble and would thus appear in lane 2 of the XGMII interface.

*SuggestedRemedy*

change "lane 3" to "lane 2"

*Response* *Response Status* **C**

ACCEPT.
See 921

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **11** # 920

Lynskey, Eric Teknovus

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

Using IEEE Std. 802.3-2005 as the original reference, the correct subclause is 65.1.3.3.1 SLD. Subclause 65.1.3.3.2 is for the LLID.

*SuggestedRemedy*

Verify that the base document hasn't changed and update reference to 65.1.3.3.1.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **17** # 731

Hajduczenia, Marek Nokia Siemens Networ

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

Remove the editorial comment.

*SuggestedRemedy*

Replace the editorial comment with the following text "This section supersedes the stipulations of subclause 65.1.3.3.2."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **20** # 654

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "These values are acted upon differently for OLTs and ONUs." to "OLTs and ONUs act upon these values in a different manner."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **26** # 655

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change
"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." to
"If the received logical_link_id value matches 0x7FFF or 0x7FFE and there is an enabled MAC with the logical_link_id variable assigned the same value, then the comparison is considered a match to that MAC."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"… with the same value, then the comparison …"

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **29** # 656

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change
"If the received logical_link_id value is any value other than 0x7FFF or 0x7FFE and an enabled MAC exists with a mode variable with a value of 0 and a logical_link_id variable with a value matching the received logical_link_id value then the comparison is considered a match to that MAC" to
"If the received logical_link_id has the value different than 0x7FFF and 0x7FFE and there is an enabled MAC with the mode variable set to 0 and the logical_link_id variable matching the value of the received logical_link_id, then the comparison is considered a match to that MAC."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change to:
"If the received logical_link_id has a value other than 0x7FFF or 0x7FFE and an enabled MAC exists with a mode variable with a value of 0 and a logical_link_id variable matching the received logical_link_id value, then the comparison is considered a match to that MAC"

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **34** # 657

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change
"If the received mode bit is 0 and the received logical_link_id value matches the logical_link_id variable then the comparison is considered a match" to
"If the received mode bit is equal to 0 and the value of the received logical_link_id variable matches the value of the logical_link_id variable, then the comparison is considered a match."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change to
“If the received mode bit is equal to 0 and the received logical_link_id value matches the logical_link_id variable, then the comparison is considered a match.”

*Cl* **92** *SC* **92.1.2.3.3.2** *P* **306** *L* **36** # 658

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change
"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, then the comparison is considered a match" to
"If the received mode bit is equal to 1 and the value of the received logical_link_id variable does not match the value of the logical_link_id variable, or the value of the received logical_link_id variable is equal to 0x7FFE, then the comparison is considered a match"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"If the received mode bit is equal to 1 and the received logical_link_id value does not match the logical_link_id variable, or the received logical_link_id matches 0x7FFE, then the comparison is considered a match"

---

*Cl* **92** *SC* **92.1.2.3.3.3** *P* **306** *L* **47** # 810

Mandin, Jeff PMC Sierra

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

*SuggestedRemedy*

Change:

The receive CRC-8 is treated as described in 65.1.3.3.3.

to:

The CRC-8 field is as described in 65.1.3.3.3.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.2** *P* **307** *L* **1** # 813

Mandin, Jeff PMC Sierra

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

This subclause replaces (rather than extends) the 10GBASE-R lock state machine. Proposed BER Monitor is another instance of functionality replacement.

Are these actually extensions to 10GBASE-R? Or this really a new PCS (as in 802.3an) ?

*SuggestedRemedy*

Consider whether it's in fact correct to title this section "extensions" of the clause 49 PCS

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from"E" to "T".

Change Clause title to:
Reconciliation Sublayer (RS), Physical Coding Sublayer (PCS), and Physical Media Attachment (PMA) for point-to-multipoint media, types 10GBASE-PR and 10/1GBASE-PRX"

Change Figure 92-2 to show PRX PCS interfacing with both XGMII and GMII.

Change subclause title to:
"Physical Coding Sublayer (PCS) for 64B/66B and FEC for 10 GEPON."

---

*Cl* **92** *SC* **92.2** *P* **307** *L* **11** # 716

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **A** *Deferred, naming*

What is the 10GBASE-PX PCS ?
Also affected clause 92.2.2, page 309, line 47

*SuggestedRemedy*

Define which PCS is meant - there is no 10GBASE-PX PCS defined in any of the clauses.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove sentence.

*Cl* **92** *SC* **92.2.1** *P* **308** *L* **13** # 819

Mandin, Jeff PMC Sierra

*Comment Type* **T** *Comment Status* **A** *IDLE INSERTION block*

The "IDLE insertion" functional block is missing from figure 92-4 and 92-5

*SuggestedRemedy*

Add a functional block labelled "IDLE Insertion" at the top of ONU PCS (between decode and XGMII) in figures 92-4 and 92-5.

*Response* *Response Status* **C**

ACCEPT.
Also see 931

*Cl* **92** *SC* **92.2.1** *P* **308** *L* **13** # 931

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **A** *IDLE INSERTION block*

In Figure 92-4 and in Figure 92-5 there needs to be an IDLE INSERTION block on the receive PCS.

*SuggestedRemedy*

Add IDLE INSERTION block above the 64/66b DECODE blocks in both figures.

*Response* *Response Status* **C**

ACCEPT.
Also see 819

*Cl* **92** *SC* **92.2.2.1** *P* **307** *L* **22** # 10353

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **A** *House-keeping*

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".

*Response* *Response Status* **C**

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 92û5).
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 92û5).
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* **92.2.2.2.2** *P* **314** *L* **8** # 945

Lynskey, Eric Teknovus

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

There are a number of unused variables listed here that appear to be carried over from Clause 65 and previous presentations.

*SuggestedRemedy*

Remove variables and definitions for DelayBound, dtx_code-group, laser_control, tx_code-group, and Wp.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove variable and definitions as suggested.
See "laser_control" pg 312 line 42.
Change to
"laser control"

---

*Cl* **92** *SC* **92.2.2.4.5** *P* **318** *L* **54** # 1014

Lin, Rujian Shanghai Luster Terab

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

Figure 92-9

*SuggestedRemedy*

Figure 92-10

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

---

*Cl* **92** *SC* **92.2.3.1** *P* **310** *L* **3** # 786

Remein, Duane Alcatel-Lucent

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

Typo

*SuggestedRemedy*

Replace "tx_raw,71:0>"
with "tx_raw<71:0>"

*Response* *Response Status* **C**

ACCEPT.
Also see 949 & 680

---

*Cl* **92** *SC* **92.2.3.1** *P* **310** *L* **3** # 680

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change the text "The ALIGNMENT / IDLE DELETION block receives tx_raw,71:0> data from the XGMII interface. If the start control code is in lane 4 the burst will be shifted to align the start to lane 0. If the minimum IPG has been transmitted after a frame and 14 tx_raw<71:0> transfers have occurred without deleting IDLE then 2 IDLE vectors shall be deleted for every 28 vectors transmitted." to "The ALIGNMENT / IDLE DELETION block receives tx_raw<71:0> data vector from the XGMII interface. If the start control code is in lane 4, the burst will be shifted to align the start to lane 0. If the minimum IPG has been transmitted after a frame and 14 tx_raw<71:0> transfers have occurred without deleting IDLE, then 2 IDLE characters shall be deleted for every 28 characters transmitted."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 949 & 786
Change to:
"The ALIGNMENT / IDLE DELETION block receives tx_raw<71:0> data from the XGMII interface. If the start control code is in lane 4, the burst will be shifted to align the start to lane 0. If the minimum IPG has been transmitted after a frame and 14 tx_raw<71:0> transfers have occurred without deleting IDLE, then 2 IDLE characters shall be deleted for every 28 characters transmitted."

Revised Change:
"The ALIGNMENT / IDLE DELETION block receives tx_raw<71:0> data vectors from the XGMII interface. If the start control code is in lane 4, the burst will be shifted to align the start to lane 0. If the minimum IPG has been transmitted after a frame, then 4 IDLE vectors shall be deleted for every 27 vectors transmitted."

---

*Cl* **92** *SC* **92.2.3.1** *P* **310** *L* **3** # 949

Lynskey, Eric Teknovus

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

Missing "<", instead there is a ",".

*SuggestedRemedy*

Change to tx_raw<71:0>.

*Response* *Response Status* **C**

ACCEPT.
Also see 680 & 786

*Cl* **92** *SC* **92.2.3.2** *P* **310** *L* **7** # 733

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A** *Deferred, naming*

Missing contents of the Subclause 92.2.3.2

*SuggestedRemedy*

Since 64B/66B encoding is not changed from 10GBASE-R, we can reference clause 49.2.4.
Insert text as follows: "The 64B/66B encoding process is carried out as specified in Subclause 49.2.4."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 787

*Cl* **92** *SC* **92.2.3.2** *P* **310** *L* **8** # 787

Remein, Duane Alcatel-Lucent

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

Cross References.

*SuggestedRemedy*

Add cross references as follows:
Under 92.2.3.2 64B/66B Encode
"See subclause 49.2.4 64B/66B transmission code"

Under 92.2.3.3 Scrambler
"See subclause 49.2.6 Scrambler."

Under 92.2.3.6 Gearbox (pg 313)
"See subclause 49.2.7 Gearbox."

*Response* *Response Status* **C**

ACCEPT.
Also see 733

*Cl* **92** *SC* **92.2.3.2.1** *P* **315** *L* **11** # 10342

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **A** *House-keeping*

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.

*Response* *Response Status* **C**

ACCEPT.
Also see Figure 92-10

*Cl* **92** *SC* **92.2.3.3** *P* **310** *L* **12** # 734

Hajduczenia, Marek Nokia Siemens Networ

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

The Subclause 92.2.3.3 body is missing

*SuggestedRemedy*

Since the 10GEPONs will use the 10GBASE-R PCS (with modifications), the scrambler remains the same as defined in subclause 49.2.6.
Insert a text in the body of subclause 92.2.3.3 as follows:
"Clause 92 PCS sublayer will use the Scrambler function as defined in Subclause 49.2.6".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
see 787

*Cl* **92** *SC* **92.2.3.4** *P* **310** *L* **18** # 717

Hajduczenia, Marek Nokia Siemens Networ

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

What is a 10GBASE-RS link ?
The same comment is applicable to subclause 92.2.3.4.1, page 310, line 22.
The same comment is applicable to subclause 92.2.3.4.3, page 310, line 50.

*SuggestedRemedy*

Change the sentence to "Clause 92 PCS shall use the Reed-Solomon FEC code (255, 223).".
In subclause 92.2.3.4.1, page 310, line 22, change the text "The FEC code used for 10GBASE-RS links is a linear cyclic block code" to "Clause 92 PCS uses the linear cyclic block FEC code"
In subclause 92.2.3.4.1, page 310, line 22, change the text "bytes in the 10GBASE-RS PCS transmitter is" to "bytes in the Clause 92 PCS FEC encoder is"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 926, 805, 935

*Cl* **92** *SC* **92.2.3.4** *P* **310** *L* **18** # 805

Daido, Fumio Sumitomo Electric Ind

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

The 10GBASE-RS links don't exist in the standard.

"Other lines affected:
Sub-Clause 92.2.3.4.1, Page 310, line 22,
Sub-Clause 92.2.3.4.1, Page 310, line 50;"

*SuggestedRemedy*

Remove "for 10GBASE-RS links" for line 18 and 22.
Remove "10GBASE-RS" for line50.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 926, 805, 935
Solution in 971

*Cl* **92** *SC* **92.2.3.4** *P* **312** *L* **22** # 938

Lynskey, Eric Teknovus

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

Incorrect Figure number.

*SuggestedRemedy*

Change to Figure 92-7 and update subsequent figure numbers.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.4.1** *P* **310** *L* **34** # 808

Daido, Fumio Sumitomo Electric Ind

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

The generating polynomial G(x) should be used in a equation.

*SuggestedRemedy*

Replace "F(x) x L(x)" with "G(x) x L(x)" which is same as the equation in 65.2.3.1.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "F(x) x L(x)" with "G(x) x L(x)"

Also in line 45 delete word "octet" in second sentence.

*Cl* **92** *SC* **92.2.3.4.1** *P* **310** *L* **38** # 806

Daido, Fumio Sumitomo Electric Ind

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

The suffix of X parameter should be superscript.

"Other line affected:
Sub-Clause 92.2.3.4.1, Page 310, line 40;"

*SuggestedRemedy*

change the subscript of X32 in line 38 and X31 in line 40 to the superscript.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.1** *P* **310** *L* **45** # 807

Daido, Fumio Sumitomo Electric Ind

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

The word "octet" is redundant.

*SuggestedRemedy*

Remove "octet" following d0.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.1** *P* **310** *L* **46** # 776

Remein, Duane Alcatel-Lucent

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

Clarification

*SuggestedRemedy*

Change: "in accordance with the conventions of 3.1.1."
To: "in accordance with the conventions of subclause 3.1.1."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **50** # 935

Lynskey, Eric Teknovus

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

Typo with 10GBASE-RS on lines 18, 22, and 50.

*SuggestedRemedy*

Replace with 10GBASE-PR.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 926, 805, 935

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **51** # 1033

Effenberger, Frank Huawei Technologies,

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

The first bit of each block is never explained why it is a redundant sync bit of the 66b word.

*SuggestedRemedy*

Change (ie. The redundant sync bit of the 66b word) to (ie. The redundant sync bit of the 66b word (the first bit is guaranteed to be the complement of the second bit).

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #933

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **53** # 811

Mandin, Jeff PMC Sierra

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

RS param is wrong

*SuggestedRemedy*

Change 233 to 223

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **53** # 934

Lynskey, Eric Teknovus

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

Should be 223 instead of 233 in the sentence containing "...27 blocks form the 233 byte data..."

*SuggestedRemedy*

Replace 233 with 223.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **54** # 933

Lynskey, Eric Teknovus

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

The terminology is confusing when going back and forth between blocks, codewords, and symbols.

*SuggestedRemedy*

Replace 92.2.3.4.2 with the following:

Padding of FEC codewords and appending FEC parity bytes in the 10GBASE-PR PCS transmitter is illustrated in Figure 92-6. The 64B/66B encoder and scrambler produce 66-bit blocks. The FEC encoder accumulates 27 of these 66-bit blocks to form the basis of an FEC codeword, removing the first bit of each block (ie. the redundant sync bit of the 66-bit word).

The FEC encoder then prepends 29 "0" padding bits to the 27 65-bit blocks to form the 223 byte data portion of an FEC codeword. This data is then FEC-encoded, resulting in the 32-byte parity portion of the FEC codeword. The 223-byte data portion and 32-byte parity portion combine to form the 255-byte Reed-Solomon codeword.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see #1033
Padding of FEC codewords and appending FEC parity bytes in the 10GBASE-PR PCS transmitter is illustrated in Figure 92-6. The 64B/66B encoder and scrambler produce 66-bit blocks. The FEC encoder accumulates 27 of these 66-bit blocks to form the basis of an FEC codeword, removing the redundant first bit (i.e. header bit <0>) of each block (the first bit is guaranteed to be the complement of the second bit).

The FEC encoder then prepends 29 "0" padding bits to the 27 65-bit blocks to form the 223 byte payload portion of an FEC codeword. This data is then FEC-encoded, resulting in the 32-byte parity portion of the FEC codeword. The 223-byte payload portion and 32-byte parity portion combine to form the 255-byte Reed-Solomon codeword. The padding is used to generate the FEC codeword but is not transmitted.

*Cl* **92** *SC* **92.2.3.4.2** *P* **310** *L* **54** # 1003

Lin, Rujian Shanghai Luster Terab

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

form the 233 byte data

*SuggestedRemedy*

to form the 233 byte data

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **1** # 1034

Effenberger, Frank Huawei Technologies,

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

The data is then FEC-encoded, which results in an additional 4 parity symbols for eech block - completing the 255-byte Reed-Solomon codeword.

Comment:
The above sequence is wrong. According to the first sentence of the paragraph, each block means a 66-bit block. 4 parity symbols means 32 bits.

*SuggestedRemedy*

Replace the sentence above with:

The data is then FEC-encoded, which results in an additional 4 64b blocks for each 27 66b blocks - completing the 255-byte Reed-Solomon codeword.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #933

---

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **2** # 837

Ryan, Hirth Teknovus

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

eech

*SuggestedRemedy*

each

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **2** # 659

Hajduczenia, Marek Nokia Siemens Networ

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

Typo "eech"

*SuggestedRemedy*

Change to "each"

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **2** # 1004

Lin, Rujian Shanghai Luster Terab

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

eech

*SuggestedRemedy*

each

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **2** # 932

Lynskey, Eric Teknovus

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

eech

*SuggestedRemedy*

Replace with "each".

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **23** # 842

Ryan, Hirth Teknovus

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

The format of Figure 92-6 should align to the format of figure 49-5. Bits should be described at 0:65. Bytes should be described as S0 to S7 as in figure 49-5. Figure 92-6 also does not show the 8-bit RS code word alignment.

*SuggestedRemedy*

Include a modified version of Figure 49-5 showing the multiplexing of the Parity and Sync headers. Make a separate drawing that explicitly shows the FEC codeword. This figure must include the zero padding, packet data, and 8-bit Reed Solomon bit alignments.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.

Straw Poll
Investigate if each octet in the FEC input buffer should be bit-reversed before RS encoding.
Yes: 2
No (accept 3av_0803_hirth_2.pdf as is): 10
Don't Care: 13

Replace Figure 92-6 with that in 3av_0803_effenberger_3.pdf

Add Figure 92-yy in 3av_0803_hirth_2.pdf titled "Bit ordering in FEC codeword generation"

Reference Figure 92-yy from note on page 310 line 45

For: 15
Against: 0
Abstain: 16
Motion passes

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **24** # 660

Hajduczenia, Marek Nokia Siemens Networ

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

Missing space

*SuggestedRemedy*

Change "4parity blocks)" to "4 parity blocks)

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **32** # 936

Lynskey, Eric Teknovus

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

Incorrect Figure reference.

*SuggestedRemedy*

Change reference to Figure 92-6.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.4.2** *P* **311** *L* **7** # 951

Lynskey, Eric Teknovus

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

N can be replaced with 27.

*SuggestedRemedy*

Replace with 27 blocks.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Figure change in comment 842

*Cl* **92** *SC* **92.2.3.4.3** *P* **311** *L* **32** # 683

Hajduczenia, Marek Nokia Siemens Networ

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

Incorrect figure reference - pointing to 92-10 and 92-01 present the code-word lock state machine

*SuggestedRemedy*

Correct the figure reference in line 32. It cannot be 92-10. Figure should be capitalized.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.4.3** *P* **311** *L* **33** # 937

Lynskey, Eric Teknovus

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

Should be 66-bit.

*SuggestedRemedy*

Replace 66bit with 66-bit in three places in this subclause.

*Response* *Response Status* **C**

ACCEPT.

---

*Cl* **92** *SC* **92.2.3.4.3** *P* **311** *L* **33** # 661

Hajduczenia, Marek Nokia Siemens Networ

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

Space missing in "66bit"

*SuggestedRemedy*

Change "66bit" to "66 bit". Global search and replace.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 937, 661, 691
(changed to T to bring to TF)
Change "66bit " to "66-bit "
Global search and replace.

---

*Cl* **92** *SC* **92.2.3.4.3** *P* **311** *L* **36** # 735

Hajduczenia, Marek Nokia Siemens Networ

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

The FEC encoded bit stream is transmitted to teh gear box before relaying to the PMA and then PMD ...

*SuggestedRemedy*

Change "transmitted to the PON" to "relayed to the gearbox and them to the PMA and finally transmitted over PON medium."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 820

---

*Cl* **92** *SC* **92.2.3.4.3** *P* **311** *L* **36** # 820

Mandin, Jeff PMC Sierra

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

The PCS is actually transmitting to the PMA, not the PON.

*SuggestedRemedy*

Replace "transmitted to the PON" with "transmitted to the PMA"

*Response* *Response Status* **C**

ACCEPT.
See 735

---

*Cl* **92** *SC* **92.2.3.5** *P* **311** *L* **22** # 682

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 92-1 is not numbered correctly. I believe it should be 92-7 ?

*SuggestedRemedy*

Correct the number of the Figure to 92-7. Renumber the remaining figures.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

---

*Cl* **92** *SC* **92.2.3.5** *P* **311** *L* **40** # 681

Hajduczenia, Marek Nokia Siemens Networ

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

Avoid the use of possesive forms in technical texts

*SuggestedRemedy*

Change "the ONUs' lasers" to "the lasers in ONUs"

*Response* *Response Status* **W**

ACCEPT.
Apparently this is a recent development (See 65.2.2 Burst-mode operation) :-)

*Cl* **92** *SC* **92.2.3.5** *P* **311** *L* **41** # 736
Hajduczenia, Marek Nokia Siemens Networ

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

US? Like in USA ? Or upstream ?

*SuggestedRemedy*

Change "the US PCS" to "the ONU PCS "

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.5** *P* **311** *L* **46** # 737
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **R**

The length of the Data Detector is said to be fixed at some value. How is that compliant with the adjustable laser on/off times from our baseline proposals?

*SuggestedRemedy*

Change the sentence "The length of the FIFO buffer shall be chosen such that the delay introduced by the buffer together with any delay introduced by the PMA sublayer is long enough to turn the laser on and to allow a laser synchronization pattern, Burst Delimiter pattern and a predefined number of IDLE characters to be transmitted." to "The length of the FIFO buffer shall be adjustable in such a way that the resulting delay introduced by the buffer together with any delay introduced by the PMA sublayer is long enough to turn the laser on and to allow a laser synchronization pattern, Burst Delimiter pattern and a predefined number of IDLE characters to be transmitted."

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

The sentence does not say that the buffer is of a fixed length, only that is it sufficient to allow for laser on, synch and other misc delays in the PMA. If one of there components is variable then it follows that the buffer must be of variable length.
I suggest we work out the details of how to specify the variable length parameters (i.e. variable & state machines etc.)

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **1** # 812
Mandin, Jeff PMC Sierra

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

Figure 92-1 appears in between 92-6 and 92-7

*SuggestedRemedy*

Renumber the figures

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **23** # 1005
Lin, Rujian Shanghai Luster Terab

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

Figure 92-1

*SuggestedRemedy*

Figure 92-7

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **26** # 956
Lynskey, Eric Teknovus

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

Per comment 352 against D1.0, a reference to Figure 92-8 was to be added here.

*SuggestedRemedy*

If the reference is still wanted, add it.

*Response* *Response Status* **C**

ACCEPT.
Still 92-8 in D1.1

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **26** # 663

Hajduczenia, Marek Nokia Siemens Networ

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

Language revisions

*SuggestedRemedy*

Change "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 the burst transmitter may occasionally be required to transmit and extra 4 bytes of data, causing the data burst to extend into the next grant. To ensure the start of a burst aligns to lane 0 of the XGMII the PCS is extended to allow removal of leading IDLE control codes." 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. Otherwise, the burst may potentially contain extra 4 bytes of data, causing it to extend beyond the allocated end of the slot. To ensure that the start of a burst is aligned, to lane 0 of the XGMII the PCS is extended to allow removal of the leading idle control charecters."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"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. Otherwise, the burst may occasionally be required to transmit and extra 4 bytes of data, causing the burst to extend into the next gate period. To ensure the start of a burst aligns to lane 0 of the XGMII, the PCS is extended to allow removal of leading IDLE control codes."

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **27** # 662

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "burst efficient the start" to "burst efficient, the start"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 663

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **33** # 665

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "When the first code-group that is not idle" to "When the first, non-IDLE code group"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **35** # 684

Hajduczenia, Marek Nokia Siemens Networ

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

Incorrect Figure reference. Figure 92-6 is referenced. Probably 92-7 is meant on page 312 ?

*SuggestedRemedy*

Correct the reference to point to Figure on page 312.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **35** # 1006

Lin, Rujian Shanghai Luster Terab

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

(see Figure 92-6)

*SuggestedRemedy*

(see Figure 92-7)

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.5** *P* **312** *L* **42** # 666

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "relationship of" to "relationship between"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **10** # 939

Lynskey, Eric Teknovus

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

Is Figure 92-7, SOD is not defined. This should be the BURST_DELIMITER.

*SuggestedRemedy*

Replace SOD with BURST_DELIMITER.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "E" to "T"
Perform global search and replace of SOD with BURST_DELIMITER.

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **10** # 815

Mandin, Jeff PMC Sierra

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

Depiction of IDLEs in figure 92-7 is misleading

*SuggestedRemedy*

In figure 92-7, show 4 IDLEs in each "IDLE block" rather than a single /I/.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "ER" to "TR".
Replace two occurrances of "/I/" with "8 x /I/" Figure 92-7.
Also see 835

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **11** # 835

Ryan, Hirth Teknovus

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

The vertical bar above the SOD and /I/ blocks implies alignment with the vertical bar at the end of the Sync Time above it. This is not clear if the /I/, /I/ characters are part of the Sync Time.

*SuggestedRemedy*

Move the vertical bar above SOD and /I/ to after the second /I/ character.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
In Figure 92-7 the offending arrow should be moved to point to the referenced vertical bar before the "/I/".

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **11** # 834

Ryan, Hirth Teknovus

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

0x5555.. is transmitted in the Laser ON time.

*SuggestedRemedy*

Change the shading of the 0x555 region to include the laser on region.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **11** # 838

Ryan, Hirth Teknovus

*Comment Type* **T** *Comment Status* **D** *Deferred to Tokyo*

"FEC Codewords with Parity" would better be described as "802.3 frame with FEC parity codewords".

*SuggestedRemedy*

change text to:"802.3 frame with FEC parity codewords"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Changed from "E" to "T"
In Figure 92-7
Change
"802.3 frame"
to
"802.3 frame with FEC parity"

Change
"FEC Codewords with Parity"
to
"802.3 frame with FEC parity"

Glen to provide updated figure.

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **15** # 1007

Lin, Rujian Shanghai Luster Terab

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

Figure 92-7

*SuggestedRemedy*

Figure 92-8

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **18** # 1037

Effenberger, Frank Huawei Technologies,

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

The draft reads:
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.

OUR Comments:
The synchronization pattern 0x55 is interpreted as 1010… ended with a 0 in Clause4 (4.2.5? p71), which is different to our current binary form 0101… ended with a 1.

*SuggestedRemedy*

Suggested Remedy
Change (binary 0101…) to (binary 1010).

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "(binary 0101…)" to "(transmission bit sequence 1010...)"

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **18** # 667

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **E** *Comment Status* **D** *Deferred to Tokyo*

Language revision

*SuggestedRemedy*

Change "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." 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 long BURST_DELIMITER pattern (see Figure 92–7). When received at the OLT, the BURST_DELIMITER pattern allows for FEC codeword alignment for the incoming data stream, even in the presence of bit errors. The BURST_DELIMITER pattern is followed by one IDLE control character, which is used to synchronize the descrambler and another IDLE control character to provide IPG at the OLT. These two IDLE control characters constitute part of the FEC codeword."
Additional comments: What is the purpose of the second IDLE character - it is not mentioned. BURST_DELIMITER pattern is not depicted anywhere in Figure 92-7 - I know it is SOD but it is not visible anywhere ...

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change 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 BURST_DELIMITER allows for FEC codeword alignment on the incoming data stream, even in the presence of bit errors. The BURST_DELIMITER is followed by one IDLE control character which is used to synchronize the descrambler and a second IDLE control character to provide IPG at the OLT. These two IDLE control characters are part of the FEC codeword."

*Cl* **92** *SC* **92.2.3.5** *P* **313** *L* **20** # 1008

Lin, Rujian Shanghai Luster Terab

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

(see Figure 92-7)

*SuggestedRemedy*

(see Figure 92-8)

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.6** *P* **313** *L* **25** # 940

Lynskey, Eric Teknovus

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

This appears to be an empty subclause that is not necessary.

*SuggestedRemedy*

Remove 92.2.3.6.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add cross reference to subclause 49.2.7 (Gearbox)

*Cl* **92** *SC* **92.2.3.6** *P* **313** *L* **25** # 738

Hajduczenia, Marek Nokia Siemens Networ

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

The Subclause 92.2.3.6 body is missing

*SuggestedRemedy*

Since the 10GEPONs will use the 10GBASE-R PCS (with modifications), the gearbox remains the same as defined in subclause 49.2.7.
Insert a text in the body of subclause 92.2.3.7 as follows:
"Clause 92 PCS sublayer will use the Gearbox as defined in Subclause 49.2.7".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 940

*Cl* **92** *SC* **92.2.3.7** *P* **313** *L* **38** # 687

Hajduczenia, Marek Nokia Siemens Networ

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

Remove the default value. Variables, constants and cunters which do not need the default values should not have this entry at all.

*SuggestedRemedy*

Remove the default value. Variables, constants and cunters which do not need the default values should not have this entry at all.

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Changed from ER to TR to ensure Task Force review.

Please provide specific list of which instances should be removed and which should be defined.

*Cl* **92** *SC* **92.2.3.7** *P* **313** *L* **38** # 814

Mandin, Jeff PMC Sierra

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

This section is "constants", so there are no "default values"

*SuggestedRemedy*

Remove each "default value" field and just state the value.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "Default:"
with "Value:"

*Cl* **92** *SC* **92.2.3.7.1** *P* **313** *L* **38** # 668

Hajduczenia, Marek Nokia Siemens Networ

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

The format of Constant definitions.
Other clauses affected: Clause 92.2.3.7.2 (Variables), 92.2.3.7.5 (Counters)

*SuggestedRemedy*

Align with the Clause 64 format i.e.
Name
Definition
Type
Value

*Response* *Response Status* **C**

REJECT.
Follows c65 conventions.
Editors may need to agree on a common format.

*Cl* **92** *SC* **92.2.3.7.1** *P* **313** *L* **47** # 943

Lynskey, Eric Teknovus

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

The value for LsrOffBound should be defined and the LsrOffBound should be defined as a variable and not a constant. Possibly due to a cut and paste error, the value changed from "tbd" in D1.0 to "tbdBURST_DELIMITER" in D1.1.

*SuggestedRemedy*

Move LsrOffBound from 92.2.3.7.1 Constants to 92.2.3.7.2 Variables.

LsrOffBound
Type: 16-bit unsigned
DEFAULT VALUE: TBD
This represents the delay sufficient to initiate the laser and to stabilize the receiver at the OLT. The default value of LsrOffBound is based on default values of laserOnTime (93.3.5.1) and SyncTime (93.3.3.2). This variable is only used by the ONU.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.7.1** *P* **313** *L* **49** # 739

Hajduczenia, Marek Nokia Siemens Networ

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

Type missing for MinIpg

*SuggestedRemedy*

Suggested to change it to 8 bit-unsigned. The value is small enough to be stored in a 8 bit wide unsigned integer.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.3.7.1** *P* **314** *L* **1** # 1038

Effenberger, Frank Huawei Technologies,

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

The text current reads:
Default: ??
SYNC_LENGTH
TYPE: ??
Required number of sync blocks per burst. The value of this constant is derived from Sync-Time parameter passed from the OLT to ONUs. See 64.3.3.2 for details.
Default: 0x 1 16A2 DC69 F0CD EE40

Our Comments
The Default value of line 1 (the burst delimiter) is written in line 6. (for the SYNC_LENGTH) Nevertheless, since the synchronization pattern 0x55 shall be 1010…, the corresponding 66 bit BURST_DELIMITER shall be the complement of what is in Draft 1.1 so that the BURST_DELIMITER could provide a large MinHD=32 for burst synchronization.

*SuggestedRemedy*

Change the Default: to
Default: 0x 4 97 BA C4 69 F0 4C 88 FD (Binary: 10 11101001 01011101 00100011 10010110 00001111 00110010 00010001 10111111)
The least significant bit of binary bits and field (8 bits per field) positions is on the left. Hexadecimal numbers are shown in a normal hexadecimal form and two hexadecimal numbers represent one corresponding field. For example, the field "0x BA" (shown in Table 3) is sent as 01011101, representing 11th to 18th bits of the 66 bits SOD delimiter 1. The LSB for each field is placed in the lowest number position of the field and is the first transmitted bit of the field. It is noted that a hexadecimal number represents 4 binary bits, except the first hexadecimal number or the leading number, which represents 2 MSBs of corresponding four binary bit representation. For example, the binary representation of "0x 4" is "0010" and the first hexadecimal number "0x 4" represents 10.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Default: 0x 4 97 BA C4 69 F0 4C 88 FD (transmission bit sequence: 10 11101001 01011101 00100011 10010110 00001111 00110010 00010001 10111111)

*Cl* **92** *SC* **92.2.3.7.1** *P* **314** *L* **1** # 718

Hajduczenia, Marek Nokia Siemens Networ

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

Missing default value for BURST_DELIMITER

*SuggestedRemedy*

Suggestion to use the BURST_DELIMITER of 0x041BDB2B3D5A7C8F0 as defined in 3av_0711_leung_1.pdf. This delimiter has the shortest run lenght from all the found delimiters.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 1038 [BURST_DELIMITER]

*Cl* **92** *SC* **92.2.3.7.1** *P* **314** *L* **5** # 740

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **R**

Default value for the SYNC_LENGTH seems very large

*SuggestedRemedy*

provide the proper value of the SYNC_LENGTH. This one seems incorrect (too large)

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

See 944

*Cl* **92** *SC* **92.2.3.7.2** *P* **314** *L* **16** # 685

Hajduczenia, Marek Nokia Siemens Networ

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

Representation of the hexadecimal numbers: 00-6A, is not correct. Align with 1.2.5 Hexadecimal notation

*SuggestedRemedy*

Correct the representation of all the hexadecimal numbers in Clause 92 to Clause 1.2.5 Hexadecimal notation.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Will correct pg 314 line 16 and elsewhere when noticed.

*Cl* **92** *SC* **92.2.3.7.2** *P* **314** *L* **20** # 799
Remein, Duane Alcatel-Lucent

*Comment Type* **T** *Comment Status* **A**
dtx_code-group obsolete in this clause (carried over from c64)

Also line 33: tx_code-group

*SuggestedRemedy*
Remove paragraphs

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

*Cl* **92** *SC* **92.2.3.7.2** *P* **314** *L* **32** # 788
Remein, Duane Alcatel-Lucent

*Comment Type* **E** *Comment Status* **A**
Excess white space

*SuggestedRemedy*
Remove excess white space from "TYPE: boolean."

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

*Cl* **92** *SC* **92.2.3.7.2** *P* **314** *L* **49** # 741
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A**
Lack of type and default value for the IdleBlockCount

*SuggestedRemedy*
Suggestion to use "16-bit unsigned" as the TYPE.
Remove the default value. Variables which do not need the default values should not have this entry at all.

*Response* *Response Status* **C**
ACCEPT IN PRINCIPLE.
Set Type to "16-bit unsigned"
set Default to "na"

*Cl* **92** *SC* **92.2.3.7.2** *P* **314** *L* **52** # 686
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **ER** *Comment Status* **A**
The syn header 10 is a binary representation. Lack of indication suggests decimal notation ...

*SuggestedRemedy*
Change "header 10" to "header 10 (binary)"

*Response* *Response Status* **U**
ACCEPT.

*Cl* **92** *SC* **92.2.3.7.2** *P* **315** *L* **1** # 742
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A**
Missing type for ProtectedBlockCount variable

*SuggestedRemedy*
Suggested to change to "8-bit unsigned". 8 bit variable is sufficient to store the value of 28 maximum.

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

*Cl* **92** *SC* **92.2.3.7.2** *P* **315** *L* **15** # 669
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **E** *Comment Status* **A**
Remove editorial note

*SuggestedRemedy*
Editorial note is not needed anymore. Remove it.

*Response* *Response Status* **C**
ACCEPT.
Note will be removed if all "??" are resolved.

*Cl* **92** *SC* **92.2.3.7.2** *P* **315** *L* **6** # 743
Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **T** *Comment Status* **A**
Missing type for UnprotectedBlockCount variable

*SuggestedRemedy*
Suggested to change to "8-bit unsigned".

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

*Cl* **92** *SC* **92.2.3.7.4** *P* **315** *L* **42** # 1009

Lin, Rujian Shanghai Luster Terab

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

(see Figure 92-9)

*SuggestedRemedy*

(see Figure 92-10)

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.7.6** *P* **316** *L* **3** # 1010

Lin, Rujian Shanghai Luster Terab

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

Figure 92-8

*SuggestedRemedy*

Figure 92-9

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.7.6** *P* **316** *L* **5** # 950

Lynskey, Eric Teknovus

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

Figure 92-8 contains a number of traditional style violations.

*SuggestedRemedy*

Update Figure 92-8 as shown in 3av_0803_lynskey_2.pdf

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 3av_0803_lynskey_7.pdf

*Cl* **92** *SC* **92.2.3.7.6** *P* **316** *L* **54** # 1011

Lin, Rujian Shanghai Luster Terab

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

Figure 92-8

*SuggestedRemedy*

Figure 92-9

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.7.6** *P* **316** *L* **6** # 688

Hajduczenia, Marek Nokia Siemens Networ

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

Boxes "INIT" and "RECEIVE AND CLASSIFY VECTOR" are broken. Text is shifted upwards.

*SuggestedRemedy*

See 3av_0803_hajduczenia_6.pdf (source in 3av_0803_hajduczenia_6.fm) for suggested remedy. Do not use ARIAL font in the state machine boxes !!

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See 950

*Cl* **92** *SC* **92.2.3.7.6** *P* **317** *L* **1** # 1012

Lin, Rujian Shanghai Luster Terab

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

in Figure 92-9

*SuggestedRemedy*

in Figure 92-10

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.3.7.6** *P* **317** *L* **4** # 689

Hajduczenia, Marek Nokia Siemens Networ

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

Remove the editors note. Frame is sometimes problematic when it comes to figure placement.

*SuggestedRemedy*

See the solution proposed in 3av_0803_hajduczenia_7.pdf (source is 3av_0803_hajduczenia_7.fm). Do not use ARIAL fonts in boxes of the state machines.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
The suggested remedy is not particularly helpful. The editor understands what should be done (hence the note) but does not understand why frame is not allowing the figure to be relocated. Please see me during the meeting.

---

*Cl* **92** *SC* **92.2.3.8.1** *P* **314** *L* **6** # 944

Lynskey, Eric Teknovus

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

That's a lot of sync blocks we need to send. The default value probably belongs with the BURST_DELIMITER constant.

*SuggestedRemedy*

Move the default value of SYNC_LENGTH to the default value of BURST_DELIMITER. Make the default value of SYNC_LENGTH TBD until another value is proposed.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 1038 [BURST_DELIMITER]

---

*Cl* **92** *SC* **92.2.4** *P* **317** *L* **41** # 994

Kozaki, Seiji Mitsubishi Electric

*Comment Type* **T** *Comment Status* **D** *Deferred to Tokyo*

The function replacing uncorrectable blocks with /E/ blocks should not be mandatory. The reason is as follow. In case that there are 2 or 3 Mac frames in the uncorrectable block and the errors are concentrated at only one frame, the other frame(s) might be forward correctly.

*SuggestedRemedy*

Change the sentence of "The data blocks of the frame must then be replaced by /E/ blocks before being passed to the PCS." into "The data blocks of the frame might then be replaced by /E/ blocks before being passed to the PCS. The replacing function is optional"

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Also see 994, 1036, 1032, 1039 & 832 [FEC Decode]

Comment deferred pending additional quantifiable input from Author and Task Force on impact of this change (both pro and con).

---

*Cl* **92** *SC* **92.2.4** *P* **317** *L* **42** # 821

Mandin, Jeff PMC Sierra

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

1. Current there is no text about the BER monitor process

2. Previously there has been agreement that BER monitoring should use a particular threshold of uncorrectable-FEC-frame errors as the trigger for the hi_ber flag (ie. we should use frame errors rather than raw BER as the measure of link quality).

3. An optimal way to do this is to utilize the existing 10GBASE-R BER monitor - in conjunction with the mechanism which writes an illegal value into the sync headers contained in a bad FEC block before passing them up from the descrambler.

4. Since we are interested in bad FEC frames, we need to use a different counter value than 10GBASE-R (since two bad FEC frames in 125 us should not trigger hi-ber). The appropriate threshold may vary according to deployment - so a variable is used rather than a constant. Consequently, we should reproduce the state diagram with the inclusion of the new variable.

*SuggestedRemedy*

Insert new paragraph after 92.2.4.2:

"92.2.4.3 BER Monitor Process

The BER monitor process is part of the 10GBASE-R PCS and is described in 49.2.13. The process monitors the signal quality and asserts hi_ber if excessive errors are detected in the sync header fields of the 66b blocks.

In a 10GBASE-PR and 10/1GBASE-PRX PCS, BER Monitor operates on the corrected sync headers as output by the FEC decoder. These sync headers will be in error only if the FEC decoder was unable to correct a received FEC codeword, in which case all 27 66b blocks in the codeword will an carry invalid sync header values (ie. 00).

In 10GBASE-PR and 10/1GBASE-PRX, the number of sync header errors which triggers a hi_ber event is variable - with a default value of 432 (ie. 16 uncorrectable FEC codewords within a 125 us period).

92.2.4.1.1 Constants

92.2.4.1.2 Variables

ber_test_sh: Boolean variable that is set true when a new sync header is available for testing and false when BER_TEST_SH state is entered. A new sync header is available for testing when the FEC decoder provides a series of corrected 66b blocks.

hi_ber: Boolean variable which is asserted true when the ber_cnt exceeds ber_threshold

ber_threshold: parameter that stipulates the number of invalid sync headers to be received in 125 us in order for hi_ber status to be triggered. Default value: 432 (ie. 16 uncorrectable FEC codewords)

ber_cnt: Count of the number of invalid sync headers (up to a maximum of ber_threshold) within the current 125 us period.

sh_valid: Boolean indication that is set true if received block rx_coded has valid sync header bits. That is, sh_valid is asserted if rx_coded<0> != rx_coded<1> and de-asserted otherwise.

test_sh: Boolean variable that is set true when a new sync header is available for testing and false when TEST_SH state is entered. A new sync header is available for testing when the FEC decoder provides a series of corrected 66b blocks.

Insert figure from 3av_0803_mandin_3.jpg

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 3av_0803_mandin_6.pdf for revised text and state diagram

Task force vote:
For: 11
Against: 0
Abstain: 16
Pass

---

*Cl* **92** *SC* **92.2.4** *P* **321** *L* # 993

Kozaki, Seiji Mitsubishi Electric

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

In Figure92-10, additional conditions for sh_cnt and sh_invalid_cnt are needed. Especially, it is necessary to clarify the function of Force(sh_cnt) and condition of sh_valid.

*SuggestedRemedy*

(1) Add new constant parameters "d_sh_cnt" and "p_sh_cnt".
d_sh_cnt : count number of sh at data block
default value = 27
p_sh_cnt : count number of sh at parity block
default value = 4
(2) Add new variable parameter "st_data"
st_data : present state of checking data block(s)
default value = 1
(3) Add note for Force()
Force(sh_cnt) returns true if sh_cnt%31 < 28, false if sh_cnt%31 > 27
(4) Add following formula in the VALID_SH box and INVALID_SH box, at the end.
st_data <= Force(sh_cnt)
(5) Change the conditions under the TEST_SH box as follow.
"sh_valid[sh_cnt]" to "sh_valid[sh_cnt]*st_data = 1"
"!sh_valid[sh_cnt]" to "sh_valid[sh_cnt]*st_data = 0"
(* means Exclusive-or operation)

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See resolution in 823.

---

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **10** # 823

Mandin, Jeff PMC Sierra

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

The logical interface between the synchronizer and FEC decoder is simpler and more intuitive if the synchronizer presents an entire codeword's worth of 66b blocks to the decoder.

This is consistent with the approach taken in figure 49-6

*SuggestedRemedy*

1. Modify 92.2.4.1 so that it reads thus:

"The codeword synchronization function receives data via 16-bit PMA_UNITDATA.request primitive.

The synchronizer 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 92-##). It obtains lock to the 31*66-bit blocks in the bit stream using the sync headers and passes up a sequence of 31 66-bit blocks to the FEC decoder . Lock is obtained as specified in the codeword lock state machine shown in Figure 92-##.

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 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.

2. Delete all but the first sentence of 92.2.4.6.3

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
For resolution use Figures and text from 3av_0803_effenberger_4.pdf and 3av_0803_effenberger_5.pdf with editorial license to adopt to IEEE style guidelines.

See 993, 823, 833, 670, 1035 [Synchronizer]

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **13** # 987

Lynskey, Eric Teknovus

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

Missing reference to figure on lines 13 and 17. Also on page 320 line 13.

*SuggestedRemedy*

Figure 92-10.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **17** # 690

Hajduczenia, Marek Nokia Siemens Networ

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

Reference missing in the text

*SuggestedRemedy*

Change "Figure 92-##" to "Figure 92-10" (most likely). Use uniform designators of the missing value e.g. "?TBD?" or alike.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See 987
See 3av_0803_remein_2.pdf

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **19** # 670

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision

*SuggestedRemedy*

Change "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." to "The incoming sync header pattern comprises 27 conventional (Clause 49) sync headers (binary 01 or binary 10), and then binary 00, binary 11, binary 11, and finally binary 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 the codeword lock.
When codeword lock is true, the decoder guarantees that the sync header of the last block in the codeword will be equal to the binary 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 be equal to conventional headers, and forcing the last four headers to be binary 00, binary 00, binary 00, and finally binary 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 binary 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."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See resolution in 823.

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **19** # 833

Ryan, Hirth Teknovus

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

The parity sync header in line 18/19 of 00,11,11,00 does not match the sync header in line 24-26 of 00,00,00,11.

*SuggestedRemedy*

Change lines 24-26 to 00,11,11,00.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See resolution in 823.

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **24** # 1013

Lin, Rujian Shanghai Luster Terab

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

even in the face of errors

*SuggestedRemedy*

even in the case of errors

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 3av_0803_remein_2.pdf

*Cl* **92** *SC* **92.2.4.1** *P* **317** *L* **30** # 1035

Effenberger, Frank Huawei Technologies,

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

An analysis of the state machine as given in this section is attached (and will be presented if there is suitable interest). The current parameter settings seem satisfactory.

However, there is one small problem. Assume that the receiver is operating normally in the locked state. Then, for some reason the receiver slips one full block. The number of errors that will occur in a 62 block cycle is only 8, which is below the threshold for unlock. So, a receiver that manages to get itself into this falsely locked state will stay there forever.

Therefore, we recommend that an additional reset mechanism is added, that uses the FEC decoder's "Persistent decode failure" signal to force an unlock event. Said signal will be defined in comment on section 92.2.4.2.

*SuggestedRemedy*

At last paragraph in section 92.2.4.1, add the following sentence:
"In addition, if the Persistent decode failure signal becomes set, then codeword lock is deasserted (this check insures that certain false-lock cases are not persistent.)"

Modify figure 92-10 to change the condition on the transition between "INVALID_SH" and "SLIP" to read: "sh_invalid_cnt=16 + !cword_lock + persist_dec_fail"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See resolution in 823.

*Cl* **92** *SC* **92.2.4.2** *P* **317** *L* **35** # 691

Hajduczenia, Marek Nokia Siemens Networ

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

Inconsistency in the naming ... "66b block" while in other places "66 bit blocks" are used.

*SuggestedRemedy*

Align "66b" to "66 bit". Global search and replace.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
See 937, 661, 691

*Cl* **92** *SC* **92.2.4.2** *P* **317** *L* **35** # 1036

Effenberger, Frank Huawei Technologies,

*Comment Type* **T** *Comment Status* **A** *FEC Decode*

The description of the FEC decoder needs moree full development, in terms of defining how the 66b blocks that are received are ordered into the 255 byte "full codeword", and then how the resulting corrected codeword is divided back into 66b blocks to be sent to the idle-insertion logic.

In addition, the handling of the decoding failure signal from the decoder must be described, including the "Persistent decode failure" signal, which is used in the codeword locking state machine.

*SuggestedRemedy*

Insert the following text at the end of first paragraph in section 92.2.4.2:
"The exact handling of data through the FEC decoder is specified in the FEC-decoder state machine shown in Figure 92-X. It should be noted that there are two separate threads of execution in this state machine, to reflect the fact that the FEC decoding process takes considerable time.

When the synchronizer is in the unlocked state, the FEC decoder is inactive. When the synchronizer is in the locked state, the 66 bit blocks that are arriving from the synchronizer are added to a buffer that accumulates only the bits that are considered by the FEC algorithm (see figure 92-6). The FEC algorithm then processes the buffer. The algorithm produces two outputs: the Decode_success signal and (if successful) the corrected buffer. The data portion of the buffer is then read out to the descrambler logic in 66 bit blocks, as normal. Note that the rate of 66 bit transfers is lower then normal here. This is corrected in the idle insertion step.

If the Decode_success is false, then a counter is incremented. It there are three decoding failures in a row, then the Persist_dec_fail signal is asserted. This signal will then reset the synchronizer."

Add the following variables to section 92.2.3.6.2
decode_success
Boolean indication that is set true if the codeword was successfully decoded by the FEC algorithm, and false otherwise.

decode_failures
Counter that holds the number of consecutive decoding failures.

persist_dec_fail
Boolean indication that is set when three consecutive decoding failures have occured.

decode_done
Boolean indication that is transiently set when the FEC decoder algorithm has completed its processing and the corrected data is present in the output buffer.

input_buffer[]
An array of 2040 bits.

input_buffer_location
An integer that points to the next appending location in the input buffer.

output_buffer[]
An array of 2040 bits.

Add the following functions to section 92.2.3.6.3
Flush_inbuffer()
Flushes the input buffer of the FEC decoding algorithm block.

```
Flush_inbuffer()
 {
   for(i=0, i<2040, i++) {
     inbuffer[i]=0
   }
   input_buffer_location = 29
 }
```

Append_inbuffer()
Appends the newly arrived 66b bit block into the input buffer of the FEC decoding algorithm, taking care to only insert the bits to be protected, and discarding the unwanted bits.

```
Append_inbuffer()
 {
   BlockFromSynchronizer()

   if(rx_coded<0> <> rx_coded<1>) {
     inbuffer[input_buffer_location]=rx_coded<1>
     input_buffer_location++
   }
   for(i=2, i<66, i++) {
     inbuffer[input_buffer_location]=rx_coded<i>
     input_buffer_location++
   }
   if(rx_coded<0>=1 and rx_coded<1>=1) {
    cword_done=true
   }
 }
```

Decode()
Triggers the FEC decoding algorithm to accept the contents of the input buffer, and do its decoding work. Note that this function is not blocking, and returns immediately. It is assumed that the FEC decoding algorithm copies the input buffer contents into its own internal memory, so that the input buffer is released to accept the next codeword.

Read_outbuffer(i)
Passes output buffer contents to the descrambler, with the appropriate format.

```
Read_outbuffer[i]
 {
```

```
  int offset = 29+i*65
  for(j=0, j<65, j++) {
    rx_coded_corrected<j+1> = out_buffer[j+offset]
  }
  rx_coded_corrected<0>=!rx_coded_corrected<1>
  BlockToDescrambler()
}
```

BlockFromSyncronizer
Function that accepts the next rx_coded<0..65> block of data from the synchronizer. It does not return until the transfer is completed.

BlockToDescrambler
Function that sends the next rx_coded_corrected<0..65> block to the scrambler. It does not return until the transfer is completed.

Add the attached figure to section 92.2.3.7.6.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See resolution in 823.

---

*Cl* **92** *SC* **92.2.4.2** *P* **317** *L* **36** # 832

Ryan, Hirth Teknovus

*Comment Type* **T** *Comment Status* **A** *FEC Decode*

The FEC decoder is also responsible for correcting bit 65 of the 66-bit code word. If bit 65 == bit 64 in the payload blocks, the bit 65 shall be inverted.

*SuggestedRemedy*

add text after line 36. "The FEC decoder is also responsible for correcting bit 65 of the 66-bit code word. If bit 65 == bit 64 in the payload blocks, the bit 65 shall be inverted."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Also see 994, 1036, 1032, 1039 & 832 [FEC Decode]
"The FEC decoder is also responsible for setting bit <0> of sync header to the inverse of bit <1> of sync header."

---

*Cl* **92** *SC* **92.2.4.2** *P* **317** *L* **38** # 1039

Effenberger, Frank Huawei Technologies,

*Comment Type* **T** *Comment Status* **D** *Deferred to Tokyo*

The text currently reads
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.

Our Comments:
46.3.3.1 Response to error indications by the XGMII If, during frame reception (i.e., when DATA_VALID_STATUS = DATA_VALID), a control character other than a Terminate control character is signaled on a received lane, the RS shall ensure that the MAC will detect a FrameCheckError in that frame. This requirement may be met by incorporating a function in the RS that produces a received frame data sequence delivered to the MAC sublayer that is guaranteed to not yield a valid CRC result, as specified by the frame check sequence algorithm (see 3.2.8). This data sequence may be produced by substituting data delivered to the MAC. The RS generates eight PLS_DATA.indication primitive for each Error control character received within a frame, and may generate eight PLS_DATA.indication primitives to ensure FrameCheckError when a control character other than Terminate causes the end of the frame.

Clause 46.3.3.1 states that errors should be guaranteed not to pass the CRC in MAC. Instead of doing nothing when the FEC decoder has signaled a decode failure. It should report this so that error will not be able to pass to the MAC.

*SuggestedRemedy*

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 FEC decoder module shall set the sync header of every block within the uncorrectable codeword to be 11.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Also see 994, 1036, 1032, 1039 & 832 [FEC Decode]
Impact to state diagram(s)?

*Cl* **92** *SC* **92.2.4.2** *P* **317** *L* **40** # 822

Mandin, Jeff PMC Sierra

*Comment Type* **T** *Comment Status* **D** *Deferred to Tokyo*

The FEC decoder should replace received sync headers with invalid values when it needs to trigger reception of an error code (rather than replacing the data directly).

*SuggestedRemedy*

Change:

"The data blocks of the frame must then be replaced by /E/ blocks before being passed to the PCS."

to:

"The sync headers of the data blocks carried in the frame are then be replaced with the invalid '00' value before being passed to the PCS."

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Also see 994, 1036, 1032, 1039 & 832 [FEC Decode]

*Cl* **92** *SC* **92.2.4.3** *P* **317** *L* **42** # 777

Remein, Duane Alcatel-Lucent

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

More cross references.

*SuggestedRemedy*

Add the following cross references
92.2.4.3 Descrambler
"See 49.2.10 Descrambler."

92.2.4.4 66B/64B Decode
"See 49.2.11 Receive process."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.3** *P* **317** *L* **43** # 744

Hajduczenia, Marek Nokia Siemens Networ

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

The Subclause 92.2.4.3 body is missing

*SuggestedRemedy*

Since the 10GEPONs will use the 10GBASE-R PCS (with modifications), the descrambler remains the same as defined in subclause 49.2.10.
Insert a text in the body of subclause 92.2.4.3 as follows:
"Clause 92 PCS sublayer will use the Descrambler function as defined in Subclause 49.2.10".

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 777

*Cl* **92** *SC* **92.2.4.4** *P* **317** *L* **47** # 745

Hajduczenia, Marek Nokia Siemens Networ

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

The Subclause 92.2.4.4 body is missing

*SuggestedRemedy*

Since 64B/66B decoding is not changed from 10GBASE-R, we can reference clause 49.2.4.
Insert text as follows: "The 64B/66B decoding process is carried out as specified in Subclause 49.2.4."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 777

*Cl* **92** *SC* **92.2.4.5** *P* **317** *L* **51** # 992

Lynskey, Eric Teknovus

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

There is currently no mechanism defined for the receiving PCS to insert the IDLE codes that need to take the place of the removed FEC parity bytes. A state diagram and supporting text for variables is provided. Some text describing the state diagram may also be wanted.

Two state machines are provided. The first state machine writes 72-bit vectors into a FIFO, and the second reads them out. On the write side, the rate is slower than the normal XGMII rate. This is due to the fact that the FEC parity blocks are being removed and not put through the decoder and descrambler. On the read side, the rate is the normal XGMII rate. The read side must sometimes insert extra idles that replace the parity octets (although not necessarily in the same location as the parity bytes).

*SuggestedRemedy*

Add figure in 3av_lynskey_0803_4.pdf.

Add to 92.2.3.4.7 Messages

DECODER_UNITDATA.indicate(rx_raw_in<71:0>)
A signal sent by the PCS Receive process conveying the next code-group received and decoded.

DUDI
Alias for DECODER_UNITDATA.indicate(rx_raw_in<71:0>).

Add to 92.2.3.7.2 Variables

NextVector
TYPE: 72-bit binary
Holds contents of current rx_raw_in<71:0> vector.

PrevVector
TYPE: 72-bit binary
Holds contents of previous rx_raw_in<71:0> vector.

rx_raw_in<71:0>
Vector received from the output of the 64B/66B decoder containing two successive XGMII transfers. RXC<0> through RXC<3> for the first transfer are placed in rx_raw<0> through rx_raw<3>, respectively. RXC<0> through RXC<3> for the second transfer are placed in rx_raw<4> through rx_raw<7>, respectively. RXD<0> through RXD<31> for the first transfer are placed in rx_raw<8> through rx_raw<39>, respectively. RXD<0> through RXD<31> for the second transfer are placed in rx_raw<40> through rx_raw<71>, respectively.

rx_raw_out<71:0>
Vector received from the output of the IDLE insertion function containing two successive XGMII transfers. RXC<0> through RXC<3> for the first transfer are placed in rx_raw<0> through rx_raw<3>, respectively. RXC<0> through RXC<3> for the second transfer are placed in rx_raw<4> through rx_raw<7>, respectively. RXD<0> through RXD<31> for the first transfer are placed in rx_raw<8> through rx_raw<39>, respectively. RXD<0> through RXD<31> for the second transfer are placed in rx_raw<40> through rx_raw<71>, respectively.

Add to 93.2.3.7.5 Counters

ExcessIdleCount
TYPE: 16-bit signed
Counts the number of 72-bit idle vectors that need to be inserted by the receiving PCS to take the place of removed FEC parity vectors.

FrameReadyCount
TYPE: 16-bit unsigned
Counts the number of frames that are waiting in the receive FIFO.

RxVectorCount
TYPE: 16-bit unsigned
Counts the number of of 72-bit vectors removed from the receive FIFO.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.5** *P* **318** *L* **1** # 952

Lynskey, Eric Teknovus

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

Editorial fixes for Figure 92-9.

*SuggestedRemedy*

In INIT state, replace "UpprotectedBlockCount" with "UnprotectedBlockCount".

Rename second TRANSMIT_BURST_PREAMBLE state to FEC_IS_ON on line 15 (as shown in 3av_0703_kramer_1.pdf). Also in this state, on line 32, replace "SuncHeader" with "SyncHeader". On line 31, replace "IDLMs" with "IDLES".

In first TRANSMIT_BURST_PREAMBLE state, change comment on line 45 from "IDLMs" to "IDLEs". Also in this state, on line 46, change "SuncHeader" to "SyncHeader".

Also, throughout the figure, update with IEEE style.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.5** *P* **318** *L* **1** # 953

Lynskey, Eric Teknovus

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

Technical fixes for Figure 92-9. The figure needs to be updated to use the 27 data plus 4 parity blocks for the FEC.

*SuggestedRemedy*

Change the value of 28 to 27 in the following states: LASER_IS_OFF, TRANSMIT_BURST_PREAMBLE(1), and TRANSMIT_BURST_PREAMBLE(2).

In the LASER_IS_OFF state, add an occurrence of TransmitBlock(0x555...) so that there are 4 calls to this function every time the UnprotectedBlockCount is greater than or equal to 27.

In the first TRANSMIT_BURST_PREAMBLE state, add an occurrence of TransmitBlock(0x555...) so that there are 4 calls to this function every time the UnprotectedBlockCount is greater than or equal to 27.

In the second TRANSMIT_BURST_PREAMBLE state, remove the TransmitBlock(0x555...) call and add two more TransmitBlock calls to transmit the other two parity blocks: TransmitBlock(PARITY[2]) and TransmitBlock(PARITY[3]). On the exit condition from this state, replace N with LsrOffBound.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.5** *P* **318** *L* **27** # 986

Lynskey, Eric Teknovus

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

PMD_SIGNAL.request can take on values of ON and OFF.

*SuggestedRemedy*

In TURN_LASER_ON state on line 27 change to ON. In TURN_LASER_OFF state on line 41 change to OFF.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.6.1** *P* **319** *L* **12** # 692

Hajduczenia, Marek Nokia Siemens Networ

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

Language revision + alignment of the definition of variables, contants etc. to the common format.
Subclauses 92.2.4.6.1, 92.2.4.6.2 and 92.2.4.6.3 are affected.

*SuggestedRemedy*

See 3av_0803_hajduczenia_8.pdf for the proposed modifications to subclauses 92.2.4.6.1, 92.2.4.6.2 and 92.2.4.6.3. 3av_0803_hajduczenia_8.fm contains the source files.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
To 92.2.4.6.1 Constants add:
"TYPE: array of 8-bit unsigned"

92.2.4.6.2 Variables
Under sh_valid[i] add:
"TYPE: boolean array"
Under cword_lock add:
"TYPE: boolean"

92.2.4.6.3 Functions
At the end of the 1st paragraph add:
"The Force(i) operation is presented below:"
Indent the first paragraph

*Cl* **92** *SC* **92.2.4.6.3** *P* **320** *L* **1** # 948

Lynskey, Eric Teknovus

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

The closing parenthesis should be kept with the function. The function also appears to be written in a different font. Also, use consistent array indexing brackets. In 92.2.4.6.1 it uses array[xx]. Here, it uses array<xx>.

*SuggestedRemedy*

Rewrite the function with the normal font and keep the definition on one page.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
The editors will discuss the preferred method of formating with IEEE editorial staff and make appropriate changes.

*Cl* **92** *SC* **92.2.4.6.6** *P* **320** *L* **13** # 693

Hajduczenia, Marek Nokia Siemens Networ

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

Reference missing in the text

*SuggestedRemedy*

Change "Figure 92-##" to "Figure 92-10" (most likely). Use uniform designators of the missing value e.g. "?TBD?" or alike.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.
Figure reference will be updated.

*Cl* **92** *SC* **92.2.4.6.6** *P* **320** *L* **13** # 954

Lynskey, Eric Teknovus

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

Figure reference is incorrect.

*SuggestedRemedy*

Update to Figure 92-10 (or correct Figure number).

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.4.6.6** *P* **321** *L* **1** # 946

Lynskey, Eric Teknovus

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

Figure 92-10 should use the assignment operator instead of "==".

*SuggestedRemedy*

Replace "==" with the assignment operator as shown in Table 21-1.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
C92 State machines are to be updated per c21 style.

*Cl* **92** *SC* **92.2.4.6.6** *P* **321** *L* **36** # 947

Lynskey, Eric Teknovus

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

The SLIP state is missing the call to the SLIP function.

*SuggestedRemedy*

Add SLIP function call to the SLIP state as shown in 3av_0801_effenberger_4.pdf.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.2.4.6.6** *P* **321** *L* **40** # 1015

Lin, Rujian Shanghai Luster Terab

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

Figure 92-10

*SuggestedRemedy*

Figure 92-11

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct paragraph and figure numbering in Frame.
679, 697, 1014, 938, 936, 683, 682, 812, 1005, 684, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 954, 1015
[numbering]

*Cl* **92** *SC* **92.2.5** *P* **322** *L* **1** # 817

Mandin, Jeff PMC Sierra

*Comment Type* **T** *Comment Status* **A** *New PCS Name*

Base Text for PCS management

*SuggestedRemedy*

Incorporate 3av_0803_mandin_2.pdf

*Response* *Response Status* **C**

ACCEPT.

*Cl* **92** *SC* **92.3.5** *P* **313** *L* **24** # 826

Mandin, Jeff PMC Sierra

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

BURST_DELIMITER is not defined.

Way back when ( http://www.ieee802.org/3/10GEPON_study/email/msg00270.html ) the number preferred was binary 11 followed by 0xb56d244aaec44e35

*SuggestedRemedy*

1. Append new subclause 92.3.5.1 at the end of 92.3.5

"92.3.5.1 BURST_DELIMITER

The BURST_DELIMITER is the 66bit sequence shown here:

1 1 b5 6d 24 4a ae c4 4e 35

2 leading bits octets: 0 1 2 3 4 5 6 7

The transmission is from left to right. The first bit out on the wire is the leading '1' bit at the far left."

2. Modify 92.3.3.8.1 thus:

"BURST_DELIMITER
TYPE: 66 bit unsigned
A 66-bit value used to find the beginning of the first FEC codeword in the upstream burst. The value is depicted in 92.3.5.1.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 1038 [BURST_DELIMITER]

*Cl* **92** *SC* **92.4.2.1** *P* **317** *L* **26** # 988

Lynskey, Eric Teknovus

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

Extra line in middle of sentence.

*SuggestedRemedy*

Remove.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Will attempt to beat Frame into submission.

*Cl* **92** *SC* **92.4.2.1** *P* **317** *L* **9** # 989

Lynskey, Eric Teknovus

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

Probably not a good idea to be using binary and decimal notation in the same subclause like this.

*SuggestedRemedy*

Quotes are used in some places for the sync bits. Possibly use quotes throughout.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to Proposed Accept in Principle
(see rebuttal below).
See 3av_0803_remein_2.pdf

It is unclear to the editor what "like this" refers to precisely.

Rebuttal from Eric (Added 3/11)
This comment contains a typo and was meant to refer to line 19 instead of line 9. In this paragraph, and the paragraphs that follow, decimal and binary are used in a number of ways. In the paragraph on lines 22-28, it uses quotations around one instance of the sync headers and no quotations around the other instances.

Decimal: 27, 49, 62, 27, 16, 62.

Binary: 01, 10, 00, 11, 11, 00, “11”, 00, 11, 11.

*Cl* **93** *SC* **93** *P* **53** *L* **1** # 1045

Hajduczenia, Marek Nokia Siemens Networ

*Comment Type* **TR** *Comment Status* **R** *Clause 64, option 2*

Clause 93 and Clause 64 contain a lot of repetetive material and can be condensed into a single clause with 2 annexes, as described in detail in the Suggested Remedy.

*SuggestedRemedy*

Remove Clause 93.
Replace Clause 64 with the contents of 3av_0803_hajduczenia_12.pdf, 3av_0803_hajduczenia_13.pdf and 3av_0803_hajduczenia_14.pdf (source in 3av_0803_hajduczenia_12.fm, 3av_0803_hajduczenia_13.fm, 3av_0803_hajduczenia_14.fm). List of general changes:
- clause 64 was cleaned from all data rate dependent definitions (any values in ns were converted into time_quanta units)
- definitions of the MPCPDUs were extended with the optional fields (GATE, REGISTER_REQ and REGISTER MPCPDUs) - the extended fields will be tranmitted as zeros in the case of 1 G EPONs
- extended the Discovery Process description and figure 64-14 to reflect the necessary changes in the Discovery Process, due to the existence of optional fields
- extended the state machines in the Discovery Processing section, including parsing for new optional fields
- added a new function GetLaserTime, which is defined in Clause 64 and specified in Annex 64A for 1G and Annex 64B for 10G EPONs
- created Annex 64A and Annex 64B for 1 and 10G EPONs, respectively, both are normative and contain definitions for individual elements of the MPCP framework different between 1G and 10G EPONs.

*Response* *Response Status* **C**

REJECT.
Clause 64 option #2 will be developed in parallel by the ad-hoc and presented at the next meeting.

*Cl* **93** *SC* **93.1.2** *P* **5** *L* **30** # 961

Lynskey, Eric Teknovus

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

Since this clause is completely independent of clause 64, there is no need to talk about the 1000 Mb/s SCB MAC. This is fully defined in Clause 64, and we only need to talk about the 10 Gb/s SCB MAC here.

*SuggestedRemedy*

Revert back to unchanged Clause 64 text.

"In the downstream direction, the PON is a broadcast medium. In order to make use of this capability for forwarding broadcast frames from the OLT to multiple recipients without multiple duplication for each ONU, the single-copy broadcast (SCB) support is introduced.

The OLT has at least one MAC associated with every ONU. In addition one more MAC at the OLT is marked as the SCB MAC. The SCB MAC handles all downstream broadcast traffic, but is never used in the upstream direction for client traffic, except for client registration. Optional higher layers may be implemented to perform selective broadcast of frames. Such layers may require additional MACs (multicast MACs) to be instantiated in the OLT for some or all ONUs increasing the total number of MACs beyond the number of ONUs + 1.

When connecting the SCB MAC to an 802.1D bridge port it is possible that loops may be formed due to the broadcast nature. Thus it is recommended that this MAC not be connected to an 802.1D bridge port.

SCB channel configuration as well as filtering and marking of frames for support of SCB is defined in 92.1.2.3.3.2.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.1.3** *P* **7** *L* **7** # 960

Lynskey, Eric Teknovus

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

Figure 93-3 contains references to clause 64.

*SuggestedRemedy*

Replace all clause 64 references with clause 93 references.

*Response* *Response Status* **C**

ACCEPT.
See comment #924

*Cl* **93** *SC* **93.1.3** *P* **7** *L* **7** # 923

Lynskey, Eric Teknovus

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

By the time we get to working group ballot, IEEE 802.3Rev will be very near completion if not fully completed. A number of changes were made to Clause 64, and therefore Clause 93, which will need to be updated. For example, look at Figure 64-3 / Figure 93-3. It may be a good idea to get started on getting the latest changes implemented now instead of later.

*SuggestedRemedy*

Update Clause 93 so that it is consistent with the Clause 64 that will be approved in IEEE 802.3Rev.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.1.3** *P* **7** *L* **7** # 924

Lynskey, Eric Teknovus

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

Figure 93-3 contains references to Clause 64.

*SuggestedRemedy*

Replace the Clause 64 references with the relevant Clause 93 references. A quick look shows that you should be able to replace the 64 with 93 in all cases.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.2.2.1** *P* **14** *L* **10** # 966

Lynskey, Eric Teknovus

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

tqSize is incorrect for 10G operation. Of course, the ONU needs to know what speed it is running at in order to use the correct value. For a 1G upstream ONU, it needs to use a value of 2, and for a 10G upstream ONU, it needs to use a value of 20. Currently there is no good way to maintain separate variables for the symmetric and asymmetric ONU.

*SuggestedRemedy*

Replace value with 20.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.2.2.4** *P* **16** *L* **3** # 963

Lynskey, Eric Teknovus

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

The equation for 10G_PCS_Overhead is incorrect. Just as the EPON FEC_Overhead function did not take 8B/10B overhead into account, this function does not need to look at 64B/66B overhead. We only need to look at the overhead that the MAC sees, and this is in terms of regular data bytes.

Each block of 216 data bytes requires 32 bytes of parity to be added. Since the MPCP layer knows about and keeps track of the timestamp, this can be equated to delaying 4 time quanta for every 27 time quanta.

*SuggestedRemedy*

Replace function with the following:

FEC_Overhead(length)
This function calculates the size of additional overhead to be added by the FEC encoder while encoding a frame of size length. Parameter length represents the size of an entire frame including preamble, SFD, DA, SA, Length/Type, and FCS. As specified in 92.2.3.4 the FEC encoder adds 32 parity octets for each block of 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:
... see 3av_lynskey_0308_5.pdf

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.2.3** *P* **24** *L* **20** # 984

Lynskey, Eric Teknovus

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

A common method of showing the LLID should be used throughout. This comment also applies to 93.3.3.6 page 32 line 26.

*SuggestedRemedy*

Change 7F-FF to 0x7FFF, and 7F-FE to 0x7FFE.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.2.3** *P* **24** *L* **31** # 962

Lynskey, Eric Teknovus

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

Incorrect reference. Also on 93.2.2.4 page 16 line 10.

*SuggestedRemedy*

On page 24 line 31, change 92.1.3.3.2 to 92.1.2.3.3.2. On page 16 line 10, change ?92.2.3.2? to 92.2.3.4.

If possible, also try to synchronize the different files so that cross references will update automatically if they change.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Cross referencing will be aligned between 64 and 93. Cross referencing with 92 will be tentative until clause 92 stabilizes in terms of its structure.

*Cl* **93** *SC* **93.3.3** *P* **25** *L* **8** # 982

Lynskey, Eric Teknovus

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

The textual description of the discovery process should be expanded to include the new features.

*SuggestedRemedy*

Replace sentence starting at end of line 7 with, "Included in the REGISTER_REQ message is the ONU's MAC address, number of maximum pending grants, laser on time, and laser off time."

Replace sentence starting at end of line 13 with, "Also, the OLT echoes the number of pending grants, laser on time, and laser off time."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3** *P* **26** *L* **1** # 983

Lynskey, Eric Teknovus

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

Figure 93-14 does not include the new fields (discovery information, laser on and laser off) that have been added to the discovery process.

*SuggestedRemedy*

Add the new fields to the figure.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #1044.

*Cl* **93** *SC* **93.3.3** *P* **75** *L* # 827

Oota, Noriyuki NTT

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

Fig93-14 Discovery Handshake Message Exchange has no description of Discovery InformationÂCLaser On Time and Laser Off Time.

*SuggestedRemedy*

Change the discovery GATE description to "GATE1{DA = MAC Control, SA = OLT MAC address, content = Grant + Discovery Information + Sync Time}."

Change the REGISTER_REQ description to "REGISTER_REQ1{DA = MAC Control, SA = ONU MAC address, content = Pending grants + Discovery Information + Laser On Time + Laser Off Time}."

Change the REGISTER description to "REGISTER1{DA = ONU MAC address, SA = OLT MAC address, content = LLID + Sync Time + echo of pending grants + echo of Laser On Time + echo of Laser Off Time}."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "E" to "T"
See comment #1044.

*Cl* **93** *SC* **93.3.3** *P* **75** *L* **1** # 1044

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 93-14 does not reflect the extended information carried in the GATE, REGISTER_REQ and REGISTER MPCPDUs.

*SuggestedRemedy*

A modified (updated figure) is included in 3av_0803_hajduczenia_10.pdf (see also the 3av_0803_hajduczenia_10.fm for source file).
Update the description of the Discovery Process contained in 93.3.3 as included in 3av_0803_hajduczenia_11.pdf (see also the 3av_0803_hajduczenia_11.fm for source file).

*Response* *Response Status* **C**

ACCEPT.
Replace Figure 93-14 with the Figure included in 3av_0803_hajduczenia_10.pdf.
Replace the description of the Discovery Process as included in the 3av_0803_hajduczenia_11.pdf.

*Cl* **93** *SC* **93.3.3** *P* **76** *L* **3** # 1043

Hajduczenia, Marek Nokia Siemens Networ

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

Primitive MA_CONTROL.request(DA,REGISTER,LLID,status) does not contain pending_grants, yet in 93.3.3.5 the same primitive is defined as MA_CONTROL.request(DA, REGISTER, LLID, status, pending_grants). Lack of consistency

*SuggestedRemedy*

Change the primitive MA_CONTROL.request(DA,REGISTER,LLID,status) on page 76 to MA_CONTROL.request(DA,REGISTER,LLID,status, pending_grants). Interfaces affected: Discovery Processing (Broadcast and Unicast instances for OLT).

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.2** *P* **29** *L* **26** # 981

Lynskey, Eric Teknovus

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

During syncTime for 10Gb/s symmetric ONUs, more than just IDLE is transmitted. How do we go about specifying different behavior for the different ONUs?

*SuggestedRemedy*

Replace the last sentence sentence with the following: "During the synchronization time a 1000 Mb/s ONU transmits only IDLE patterns, and 10 Gb/s ONU sends a synchronization pattern of 0x55 (binary 0101...) followed by a burst delimiter and idle blocks as defined in 92.2.3.5."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace the last sentence sentence with the following: "During the synchronization time an asymmetric 10/1 Gb/s ONU transmits only IDLE patterns, and a symmetric 10 Gb/s ONU sends a synchronization pattern of 0x55 (transmission bit sequence 1010 ...) followed by a burst delimiter and idle blocks as defined in 92.2.3.5."

*Cl* **93** *SC* **93.3.3.2** *P* **77** *L* **47** # 804

Kuroda, Yasuyuki O F Networks Co., Ltd.

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

The "laserOffTime" and "laserOnTime" are not a constant but a variable.

*SuggestedRemedy*

Replace the word of "constant" with "variable".
"This constant holds the time required ---"
=>"This variable holds the time required ---"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
They also need to be moved to the block named "Variables"

*Cl* **93** *SC* **93.3.3.2** *P* **77** *L* **49** # 829

Oota, Noriyuki NTT

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

Defined type of laserOffTime does not match assignment in Figure 93-20 Discovery Processing OLT Register State Diagram. The variable laserOffTime is defined as 32 bit unsigned type. But Figure 93-20: "data_tx[104:111] <= laserOffTime" indicates assignment as 8 bit width. And, laserOnTime is also.

*SuggestedRemedy*

Change definition of type of laserOffTime and laserOnTime to 8 bit unsigned.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.5** *P* **29** *L* **52** # 980

Lynskey, Eric Teknovus

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

Add discoveryInformation to the MA_CONTROL.request message.

*SuggestedRemedy*

Modify to "MA_CONTROL.request(DA, GATE, discovery, start, length, discovery_length, sync_time, discoveryInformation)"

Add "discoveryInformation: speed(s) the OLT is capable of receiving and speed(s) at which the discovery window will open for."

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.5** *P* **30** *L* **37** # 976

Lynskey, Eric Teknovus

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

The MA_CONTROL.indication needs to have the discovery information and laserOn and laserOff parameters added to it.

*SuggestedRemedy*

Change to MA_CONTROL.indication(REGISTER_REQ, status, flags, pending_grants, RTT, discoveryInformation, laserOnTime, laserOffTime). Add parameters as follows:

discoveryInformation: This parameter holds the contents of the discovery information field in the REGISTER_REQ message. This parameter holds a valid value only when the primitive is generated by the Discovery process in the OLT.

laserOnTime: This parameter holds the contents of the laserOn field in the REGISTER_REQ message. This parameter holds a valid value only when the primitive is generated by the Discovery process in the OLT.

laserOffTime: This parameter holds the contents of the laserOff field in the REGISTER_REQ message. This parameter holds a valid value only when the primitive is generated by the Discovery process in the OLT.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.5** *P* **33** *L* **20** # 979

Lynskey, Eric Teknovus

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

Figure 93-18 needs to have the discovery information field added to it.

*SuggestedRemedy*

Add data_tx[120:135] = discoveryInformation to the SEND_DISCOVERY_WINDOW state. Add discoveryInformation to the MACR call leading into this state.

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.5** *P* **36** *L* **24** # 978

Lynskey, Eric Teknovus

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

The laser on/off fields are missing from the parsing of the REGISTER message in Figure 93-22. That being said, we don't currently parse the echoed pending grants value either.

*SuggestedRemedy*

In the REGISTER_PENDING state, parse the laser on and off values:
laserOn = data_rx[96:103]
laserOff = data_rx[104:111]

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.6** *P* **34** *L* **19** # 975

Lynskey, Eric Teknovus

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

The discovery information field is missing from the construction of the REGISTER_REQ message in figure 93-19.

*SuggestedRemedy*

Change data_tx parsing as follows:
discoveryInformation = data_tx[64:79]
laserOnTime = data_tx[80:87]
laserOffTime = data_tx[88:95]

Also change MACI as follows:
MACI(REGISTER_REQ, status, flags, pending_grants, RTT, discoveryInformation, laserOnTime, laserOffTime)

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.3.6** *P* **36** *L* **16** # 974

Lynskey, Eric Teknovus

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

The discovery information field is missing from the construction of the REGISTER_REQ message in figure 93-22.

*SuggestedRemedy*

Change data_tx packing as follows:
data_tx[64:79] = discoveryInformation
data_tx[80:87] = laserOnTime
data_tx[88:95] = laserOffTime

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.5.2** *P* **42** *L* **5** # 977

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **D** *Deferred to Tokyo*

When going through the state machine in figure 93-29, the currentGrant.discovery subfield is examined. What sets this subfield? If it is tied directly to the discovery flag, then something needs to be added that also ties this to the discovery information field found in the discovery GATE. Otherwise, an unregistered ONU could falsely believe it is in a discovery window by setting the insideDiscoveryWindow variable to TRUE during a window it has no chance of registering in.

In Figure 93-22, the ONU enters the REGISTERING state and waits for a window after it has received a MA_CONTROL.request message. This message does not contain the laserOn, laserOff, pendingGrants, and discoveryInformation parameters, as these are added in later. However, once the ONU enters the REGISTER_REQUEST state, it will transmit a frame.

If, instead, the currentGrant.discovery parameter is somehow set by a combination of looking at the received discovery flag and the received discovery information, then there should not be any problems. The ONU will look at the different parameters and determine whether or not to set this and attempt a registration.

*SuggestedRemedy*

If the currentGrant.discovery parameter is somehow set by a combination of looking at the received discovery flag and the received discovery information, then there should not be any problems and no remedy is suggested. If this is not the case, then it needs to be fixed so that the ONU evaluates the discovery information and the discovery flag. I'm not sure of the best way to do this.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The State PARSE_GATE will have to examine the incoming GATE and if it happens to be a discovery GATE, the discovery parameter will be set to TRUE only if the GATE is indeed Discovery and the ONU may answer in the given Discovery Window.
Change
if( discovery = true )
syncTime ? data_rx[104:119]
to
if( discovery = true)
 if (confirmDiscovery(data_rx[120:135]) = true)
  syncTime ? data_rx[104:119]
 else
  discovery = false
  syncTime ? 0
Add definiton of the "confirmDiscovery" function as follows:
"confirmDiscovery(data)
This functon is used to check whether the current Discovery Window is open for the given ONU (TRUE) or not (FALSE). For 1000 Mb/s ONUs, this function always returns TRUE. For 10 Gb/s ONUs, this function operates as follows: @@TBD@@."

*Cl* **93** *SC* **93.3.6** *P* **48** *L* **16** # 985

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **R**

16 bit transmissions is a carry over from Clause 64.

*SuggestedRemedy*

Either replace with "160 bit transmissions" or replace the two sentences with "This field is 32 bits long and increments every 16 ns. The timestamp counts time in 1 time_quantum granularity."

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

*Cl* **93** *SC* **93.3.6** *P* **48** *L* **16** # 964

Lynskey, Eric Teknovus

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

For 10G operation a time_quantum is no longer 16 bit transmissions.

*SuggestedRemedy*

Replace with: Timestamp. The timestamp field conveys the content of the localTime register at the time of transmission of the MPCPDUs. This field is 32 bits long and counts time in 1 time_quantum granularity.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Timestamp. The timestamp field conveys the content of the localTime register at the time of transmission of the MPCPDUs. This field is 32 bits long and counts time in units of time_quanta.

*Cl* **93** *SC* **93.3.6.1** *P* **49** *L* **10** # 957

Lynskey, Eric Teknovus

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

Figure 93-31 does not show the discovery information field.

*SuggestedRemedy*

Add discovery information field.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
A regular GATE MPCPDU does not carry Discovery Information field.
Put 2 figures:
1. normal GATE MPCPDU with the grants only (no sync time)
2. discovery GATE MPCPDU with the sync time and the discovery information field - there is only 1 grant included in this GATE MPCPDU

*Cl* **93** *SC* **93.3.6.1** *P* **50** *L* **22** # 965

Lynskey, Eric Teknovus

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

Instead of idle, the ONU sends a repeating 0x5555... pattern, burst delimiter, and some idle codes during the sync time (see figure 92-7).

This comment also applies to page 56 line 14. Identical text should be used in both locations.

*SuggestedRemedy*

Replace sentence with the following: "During the synchronization time the ONU shall send a synchronization pattern of 0x55 (binary 0101...) followed by a burst delimiter and idle blocks as defined in 92.2.3.5."

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
"During the synchronization time the ONU shall send a synchronization pattern of 0x55 (transmission bit sequence 1010 ...) followed by a burst delimiter and idle blocks as defined in 92.2.3.5."

*Cl* **93** *SC* **93.3.6.1** *P* **50** *L* **36** # 972

Lynskey, Eric Teknovus

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

Table 93-1 can be rearranged so that the default values of all zero imply the opening of a legacy 1G discovery window. This would make the parsing of this discovery gate the same no matter what ONU is used.

*SuggestedRemedy*

Change bits 0 and 4 in the following manner:

Bit 0 - OLT is not 1G upstream capable
Values:
0 - OLT does support 1000 Mb/s reception.
1 - OLT does not support 1000 Mb/s reception.

Bit 4 - OLT is not opening 1G discovery window
Values:
0 - OLT can receive 1000 Mb/s data in this window.
1 - OLT cannot receive 1000 Mb/s data in this window.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change bits 0 and 4 in the following manner:

Bit 0 - OLT is not 1G upstream capable
Values:
0 - OLT supports 1 Gb/s reception.
1 - OLT does not support 1 Gb/s reception.

Bit 4 - OLT is not opening 1G discovery window
Values:
0 - OLT can receive 1 Gb/s data in this window.
1 - OLT cannot receive 1 Gb/s data in this window

*Cl* **93** *SC* **93.3.6.1** *P* **50** *L* **38** # 958

Lynskey, Eric Teknovus

*Comment Type* **T** *Comment Status* **R**

Table 93-1 should be written from the point of view of the OLT. For bits 0 and 1, talk about reception and not transmission.

*SuggestedRemedy*

0 - OLT does not support 1000 Mb/s reception.
1 - OLT supports 1000 Mb/s reception.

0 - OLT does not support 10 Gb/s reception.
1 - OLT supports 10 Gb/s reception.

*Response* *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

*Cl* **93** *SC* **93.3.6.1** *P* **98** *L* # 830

Oota, Noriyuki NTT

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

GATE MPCPDU in Figure 93-31 has no field of Discovery Information.

*SuggestedRemedy*

Insert Discovery Information field between Grant #4 Length field and Sync Time field.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
For resolution, see comment #957

*Cl* **93** *SC* **93.3.6.1** *P* **98** *L* **1** # 803

Kuroda, Yasuyuki O F Networks Co., Ltd.

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

The Discovery Information field is missed in Figure 93-31.

*SuggestedRemedy*

Add the Discovery Information field to Figure 93-31.
"---, Grant #4 Length, Sync Time, Pad/Reserved, FCS"
=>"---, Grant #4 Length, Sync Time, Discovery Information, Pad/Reserved, FCS"

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
For resolution, see comment #957

*Cl* **93** *SC* **93.3.6.1** *P* **98** *L* **10** # 816

Mandin, Jeff PMC Sierra

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

Missing Field

*SuggestedRemedy*

Add the Discovery Information field to GATE MPCPDU illustration in figure 93-31

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
For resolution, see comment #957

*Cl* **93** *SC* **93.3.6.1** *P* **99** *L* # 828

Oota, Noriyuki NTT

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

There is no description table about the number of grants/Flags field.

*SuggestedRemedy*

Add the description table about the number of grants/Flags field.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "E" to "T"
For resolution, see comment #957

*Cl* **93** *SC* **93.3.6.1** *P* **99** *L* **18** # 1042

Hajduczenia, Marek Nokia Siemens Networ

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

Discovery Information field seems to be misplaced.

*SuggestedRemedy*

Move the Discovery Information field to behind the Sync Time field. Otherwise it seems that the Discovery Field preceeds the Syn Time field which is not true.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Changed from "ER" to ""TR"
For resolution, see comment #957

*Cl* **93** *SC* **93.3.6.1** *P* **99** *L* **35** # 824

Mandin, Jeff PMC Sierra

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

We've been maintaining backward-compatibility in MPCP PDU definitions - ie. the PDU definitions must be such that a 1G format PDU is legal and correctly interpreted according to the 10G definitions.

Consequently the "OLT is 1G upstream capable" bit of Discovery Info must use the value '0' to indicate 1G capability (not 1).

Same thing for the "opening 1G discovery window" bit.

*SuggestedRemedy*

1. Modify the "Values" field of the bit 0 entry in Table 93-1 so that it appears thus:

0 - OLT supports 1000 Mb/s transmission in the upstream direction
1 - OLT does not support 1000 Mb/s transmission in the upstream direction

2. Modify the "Values" field of the bit 4 entry in Table 93-1 so that it appears thus:

0 - OLT can receive 1000 Mb/s data in this window
1 - OLT cannot receive 1000 Mb/s data in this window

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
For resolution, see comment #972.

*Cl* **93** *SC* **93.3.6.3** *P* **54** *L* **1** # 959

Lynskey, Eric Teknovus

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

Extra period in front of REGISTER_REQ in subclause heading.

*SuggestedRemedy*

Replace ".REGISTER_REQ" with "REGISTER_REQ"

*Response* *Response Status* **C**

ACCEPT.

*Cl* **93** *SC* **93.3.6.3** *P* **54** *L* **32** # 973

Lynskey, Eric Teknovus

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

Table 93-5 can be rearranged so that the default values of all zero imply the register request of a legacy 1G ONU. This would make the parsing of this message the same no matter what ONU or OLT is used.

*SuggestedRemedy*

Change bits 0 and 4 in the following manner:

Bit 0 - ONU is not 1G upstream capable
Values:
0 - ONU transmitter is capable of 1000 Mb/s.
1 - ONU transmitter is not capable of 1000 Mb/s.

Bit 4 - 1G registration attempt
Values:
0 - 1G registration is attempted.
1 - 1G registration is not attempted.

*Response* *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change bits 0 and 4 in the following manner:

Bit 0 - ONU is not 1G upstream capable
Values:
0 - ONU transmitter is capable of 1 Gb/s.
1 - ONU transmitter is not capable of 1 Gb/s.

Bit 4 - 1G registration attempt
Values:
0 - 1G registration is attempted.
1 - 1G registration is not attempted.

*Cl* **93** *SC* **93.3.6.4** *P* **56** *L* **4** # 967

Lynskey, Eric Teknovus

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

Make the definitions of Echoed Laser On Time and Laser Off time consistent with previous values. Also, in there is a typo of "inthe" in the next to last sentence of bullets g and h.

*SuggestedRemedy*

Replace the first sentence of bullets g and h with, "This is an unsigned 8 bit value signifying the Laser On(Off) Time for the given ONU transmitter." Replace "inthe" with "in" in the next to last sentence of these bullets.

*Response* *Response Status* **C**

ACCEPT.