Cl **00** *SC* **0** *P* **1** *L* **1** # 1273

Hajduczenia, Marek Nokia Siemens Networ

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

List of editorial changes
- global comment: replace "-" in the PMD names with "\=" character in Frame
- 30.3.2.1.2, page 4, line 15: "10GBASE-RClause 49 or clause 92 10 Gb/s 64B/66B" - missing comma and Clause should be capitalized.
- 30.3.2.1.3, page 4, line 21 - same as above
- 30.4, page 4, line 39: "100, and" title has a comma before "and" - not needed
- 30.5.1.1.2, page 4, line 49 (more occurences are noted): "downstream/ " - missing space before "/" or no space needed afterwards. Align
- 45.2.3.29, page 7, line 26, "is an 8 bit value" - I think the "8 bit" should be with hyphen, since it is an adjective,
- 66.5, page 12, line 42, typos "10 Gp/s P2MP operaiont" -> "10 Gb/s P2MP operation"

SuggestedRemedy

List of suggested editorial changes in the Comment field

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **1** # 1298

Hajduczenia, Marek Nokia Siemens Networ

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

per 802.3ay, there are no more "state machines" but "state diagrams". Align all the clauses, especially Clause 92 and 93.

SuggestedRemedy

per 802.3ay, there are no more "state machines" but "state diagrams". Align all the clauses, especially Clause 92 and 93, replacing all occurences of the term "state machine" with "state diagram".

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **1** *L* **1** # 1277

Hajduczenia, Marek Nokia Siemens Networ

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

"IEEE 802.3av 10G-EPONTask Force" in the document header is missing a space between "EPON" and "Fask Force".

SuggestedRemedy

Add a missing space in the template.

Proposed Response *Response Status* **O**

Cl **00** *SC* **67.6.3** *P* **346** *L* **31** # 1242

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 5. Currently, Clause 67 talks about how to base the local_link_status parameter off of the registered variable. However, the reference only points to Clause 64. A similar reference should be made to Clause 93 for 10G-EPON links.

SuggestedRemedy

Modify sentence to read, "This is achieved by mapping the local_link_status parameter to variable 'registered' defined in 64.3.3.2 for 1000Mb/s P2MP links and 93.3.3.2 for 10Gb/s P2MP links as follows:"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.2** *P* **4** *L* **15** # 1456

Mandin, Jeff PMC Sierra

Comment Type **TR** *Comment Status* **X**

802.3av now defines new RS/PCS layers (rather than extensions to 10GBASE-R).

The PHYtype variable should reflect this.

SuggestedRemedy

Replace the existing text for 30.3.2.1.2 with the following text:

30.3.2.1.2 aPhyType

Add:

10/1GBASE-PR Clause 92 symmetric 10 Gb/s 64B/66B
10/1GBASE-PRX Subclause 92.2.1.1 asymmetric 10 Gb/s 64B/66B with 1Gb/s 8B/10B

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.2** *P* **4** *L* **16** # 1232

Lynskey, Eric Teknovus

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

It was previously decided that 10G-EPON is not an extension of 10GBASE-R but rather its own type. Same comment applies to 30.3.2.1.3.

SuggestedRemedy

Remove current changes from this line to revert back to original text. At the end of the list in 30.3.2.1.2, add a new entry: Clause 92 10 Gb/s 64B/66B and FEC.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.3** *P* **4** *L* **19** # 1457

Mandin, Jeff PMC Sierra

Comment Type **TR** *Comment Status* **X**

802.3av now defines new RS/PCS layers (rather than extensions to 10GBASE-R).

The PHYtypeList variable must reflect this.

SuggestedRemedy

Replace the existing text for 30.3.2.1.3 with the following text:

30.3.2.1.3 aPhyTypeList

Add:

10/1GBASE-PR Clause 92 symmetric 10 Gb/s 64B/66B
10/1GBASE-PRX Subclause 92.2.1.1 asymmetric 10 Gb/s 64B/66B with 1Gb/s 8B/10B

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.5.1.7** *P* **4** *L* **29** # 1233

Lynskey, Eric Teknovus

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

After looking at other counters in this section, I don't believe these changes are necessary. Subclause 30.3.3.3 holds a counter for MACControlFramesTransmitted, and the maximum increment rate is only specified for 10 Mb/s. If there was no need to specify the increment rates of this counter for 100 Mb/s, 1000 Mb/s or 10 Gb/s, then we probably don't need to do the same for the MPCP counters.

SuggestedRemedy

Remove 30.3.5.1.7.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.5.1.7** *P* **4** *L* **36** # 1234

Lynskey, Eric Teknovus

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

I believe these notes, although part of the presentation, were not intended to be placed into the draft.

SuggestedRemedy

Remove both notes.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.5.1.7** *P* **4** *L* **37** # 1231

Lynskey, Eric Teknovus

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

I'm not sure if this is an acceptable note for IEEE editorial staff. If we want to make changes to multiple counters, then the exact changes to each counter should be introduced in the draft. It is also easier if I don't have to go to another document to see which counters are changing.

SuggestedRemedy

Incorporate all changes to Clause 30 in the next draft. Show each counter that is being changed individually.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.5.1.7** *P* **4** *L* **37** # 1451

Mandin, Jeff PMC Sierra

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

Editorial note says: [note: the same change should be made in each counter from 30.3.5.1.7 to 30.3.5.1.23]

SuggestedRemedy

Make the changes indicated by the note.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.15** *P* **5** *L* **25** # 1235

Lynskey, Eric Teknovus

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

A comparison shows that this amendment is not based on IEEE P802.3 (IEEE 802.3ay) - Section 1 - Draft D2.2 (as found on the IEEE 802.3ay website). The text and changes provided in 30.5.1.1.15 and 30.5.1.1.15 (your typo not mine) of this draft do not match the text in 30.5.1.1.15 and 30.5.1.1.16 of D2.2 of 802.3ay.

SuggestedRemedy

Make the following changes and check the rest of the clause, too. Replace 30.5.1.1.15 and what should be 30.5.1.1.16 with, "For 1000BASE-PX, 10GBASE-R, 10GBASE-PR, and 10GBASE-PRX-U PHYs..." Remove the editors' notes.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.15** *P* **5** *L* **25** # 1449

Mandin, Jeff PMC Sierra

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

typo in PMD name

SuggestedRemedy

Change "10GBASE-PRX-U" to:

"10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2, and 10/1GBASE-PRX-U3".

Make same change on line 33.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **5** *L* **25** # 1352

Kramer, Glen Teknovus, Inc.

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

What do we call assymetric PHYs? Here we call them 10GBASE-PRX-U. Also repeated on line 33.

SuggestedRemedy

Change these two locations to 10/1GBASE-PRX, or do global replace to 10GBASE-PRX

Proposed Response *Response Status* **O**

Cl **45** *SC* *P* *L* # 1249

Lynskey, Eric Teknovus

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

The following registers need to be examined and updated if necessary:
45.2.3.2.2 PCS receive link status
45.2.3.4 PCS speed ability
45.2.3.6 10G PCS control 2 register
45.2.3.7 10G PCS status 2 register
45.2.3.11 10GBASE-R PCS and 10GBASE-T PCS status 1 register
45.2.3.12 10GBASE-R and 10GBASE-T status 2 register
45.2.3.13 10GBASE-R PCS test pattern seed A
45.2.3.14 10GBASE-R PCS test pattern seed B
42.2.3.15 10GBASE-R PCS test pattern control register
45.2.3.16 10GBASE-R PCS test pattern error counter register

SuggestedRemedy

No remedy listed, this comment serves as a note to commenter and editors that additional work is needed in this area.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1.4** *P* **18** *L* **25** # 1241

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4. It needs to be decided whether or not PMA loopback is supported for 10G-EPON. For the asymmetric case, loopback doesn't seem to make sense (there is no way to go from transmitting 8B/10B at 1.25GBd and convert it to 64B/66B at 10.3125GBd in the PMA). For the symmetric case, it possibly makes more sense, but should be left optional.

SuggestedRemedy

Change sentence to read, "The loopback function is mandatory for the 1000BASE-KX, 10GBASE-KR, and 10GBASE-X port type and optional for all other port types, except 2BASE-TL, 10PASS-TS, and 10/1GBASE-PRX, which do not support loopback.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.10** *P* **28** *L* **8** # 1245

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4, and applies to Table 45-11. It seems that all of the 10G-EPON PMA/PMD types should be added to the extended ability register. Unfortunately, there are not enough bits to add all of the types. There may be a couple of ways around this. One would be to steal one reserved bit from this register that will point the management agent to a special P2MP PMA/PMD Ability register. Another option would be to use 6 of the remaining reserved bits for 6 of our new PMA/PMD types, and to use the 7th reserved bit to point to the second extended ability register, to which we would add the remaining 6 types.

SuggestedRemedy

Steal one reserved bit from Table 45-11 that points to a P2MP PMA/PMD Ability register. Create said register in 1.12 and add all 12 types and supporting text. See 3av_0805_lynskey_3.pdf

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.4** *P* **20** *L* **1** # 1243

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4, and applies to Table 45-6. It is not quite clear to me how the PMA/PMD speed ability register should be set for the asymmetric case. Do you set both the 1000M and 10G capable bits? Do we add a new 10/1G capable bit? Do we need two bits, one for upstream and one for downstream?

SuggestedRemedy

Add new bit as follows:
Bit = 1.4.7
Name = 10/1G capable
Description: 1 = PMA/PMD is capable of operating at 10/1Gb/s, 0 = PMA/PMD is not capable of operating at 10/1Gb/s
R/W: RO

Insert new subclause above 45.2.1.4.1 as follows:
10/1G capable (1.4.7) When read as a one, bit 1.4.7 indicates that the PMA/PMD is able to operate at a data rate of 10/1Gb/s. When read as a zero, bit 1.4.7 indicates that the PMA/PMD is not able to operate at a data rate of 10/1Gb/s.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **21** *L* **16** # 1244

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4, and applies to Table 45-7. THe PMA/PMD control register needs to be updated for 10G-EPON. All of the specified bits are currently used up, so a new bit needs to be taken from the reserved section. It seems that we need to add one type for each PMA/PMD type that we are defining.

SuggestedRemedy

Steal bit 4 from the reserved section and add the new PMA/PMD types to the table. All of the other types will need to be updated to show the new bit.

4 3 2 1 0
1 0 0 0 0 10/1GBASE-PRX-D1
1 0 0 0 1 10/1GBASE-PRX-D2
1 0 0 1 0 10/1GBASE-PRX-D3
1 0 0 1 1 10GBASE-PR-D1
1 0 1 0 0 10GBASE-PR-D2
1 0 1 0 1 10GBASE-PR-D3
1 0 1 1 0 10/1GBASE-PRX-U1
1 0 1 1 1 10/1GBASE-PRX-U2
1 1 0 0 0 10/1GBASE-PRX-U3
1 1 0 0 1 10GBASE-PR-U1
1 1 0 1 0 10GBASE-PR-U3

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.84** *P* **75** *L* **1** # 1246

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4. There are a number of registers defined by Backplane Ethernet that are useful for FEC control and statistics. 10G-EPON should utilize similar registers. These registers are defined to cover 10GBASE-R FEC. Since it was recently decided that we are not an extension of 10GBASE-R, but rather our own PCS, I'm not sure if we can re-use the existing registers. One possibility would be to rename and reword the descriptions so that they would cover both 10GBASE-R and 10GBASE-PR. Another possibility would be to create new (but similar) registers only applicable for 10GBASE-PR. The second option is probably the cleanest way to move forward and also helps keep this PCS independent from the 10GBASE-R. Since the final text will look very similar to the existing text, and since the frame source is not presently available to the commenter, no source file has been created for this comment.

SuggestedRemedy

Option 1: Add new clauses for 10GBASE-PR FEC operation that are based on the 10GBASE-R FEC registers. The editors are given license to port the sections to 10GBASE-PR (updating references, replacing 10GBASE-R, etc.).

Option 2: Modify existing text to add 10GBASE-PR to everything.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.1** *P* **94** *L* **32** # 1248

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4, Table 45-83. We should probably add 10/1 as a speed of operation for the PCS, since we do define a new PRX PCS type.

SuggestedRemedy

To Table 45-83, add a new speed selection as shown:
x x 1 1 = Reserved
0 0 1 0 = 10/1Gb/s

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.1.2** *P* **95** *L* **3** # 1247

Lynskey, Eric Teknovus

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

The location refers to IEEE Draft P802.3/D2.2 - Section 4. We need to decide what to do about loopback in the PCS. In the asymmetric case, it makes no sense. In the symmetric case it makes more sense. Currently, the loopback bit applies to 10GBASE-T and 10GBASE-R. It is not clear to me whether we want to inherit this feature from Clause 49 or not.

SuggestedRemedy

Modify 45.2.3.1.2 to read: "When the 10GBASE-T, 10GBASE-R, or 10GBASE-PR mode of operation is selected for the PCS using the PCS type selection field (3.7.2:0), the PCS shall be placed in a loopback mode of operation when 3.0.14 is set to a one. When 3.0.14 is set to a one, the 10GBASE-R, 10GBASE-T, or 10GBASE-PR PCS shall accept data on the transmit path and return it on the receive path. THe specific behavior of the 10GBASE-R PCS during loopback is specified in 49.2. THe specific behavior for the 10GBASE-T PCS during loopback is specified in 55.3.6.3. The specific behavior for the 10GBASE-PR PCS during loopback is specified in 92.X.X. For all other port types, the PCS loopback functionality is not applicable and writes to this bit shall be ignored and reads from this bit shall return a value of zero."

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.29** *P* **7** *L* **30** # 1453

Mandin, Jeff PMC Sierra

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

Some text from 3av_0803_mandin_6.pdf was not applied to clause 45.

Also the two fields in the MDIO BER Monitor register should be displayed in table format as is done elsewhere in the clause.

SuggestedRemedy

Replace 45.2.3.29 with the text and table from 3av_0805_mandin_1.pdf

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **9** *L* **1** # 1272

Hajduczenia, Marek Nokia Siemens Networ

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

Comment against Clause 56 as included in 802.3ay D2.2.
OAM is defined already at the begining of the same Clause - no need to do it twice.

SuggestedRemedy

Replace "In addition to the management objects, attributes, and actions defined in Clause 30, EFM introduces Operations, Administration, and Maintenance (OAM) for subscriber access networks to Ethernet. OAM, as defined in Clause 57, includes a mechanism for communicating management information using OAM frames, as well as functions for performing low–level diagnostics on a per link basis in an Ethernet subscriber access network." with "In addition to the management objects, attributes, and actions defined in Clause 30, EFM introduces OAM for subscriber access networks to Ethernet. OAM, as defined in Clause 57, includes a mechanism for communicating management information using OAM frames, as well as functions for performing low–level diagnostics on a per link basis in an Ethernet subscriber access network."

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **9** *L* **1** # 1287

Hajduczenia, Marek Nokia Siemens Networ

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

Subclause 56.1.3 requires extension since we added a completely new set of PMDs. List of changes:
1. minor editorials: aligned the acronyms, hyphens
2. added a block on the PMDs added in Clause 91
3. extended Table 56-1
4. Table 56-2 was divided into P2P and P2MP systems, since the data did not fit into a single table.
Insert the contents of 3av_0804_hajduczenia_1.pdf to Clause 56 in D1.3 before "56.2 State diagrams"

SuggestedRemedy

Insert the contents of 3av_0804_hajduczenia_1.pdf to Clause 56 in D1.3 before "56.2 State diagrams". List of changes available in the Comment field.

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **9** *L* **1** # 1288

Hajduczenia, Marek Nokia Siemens Networ

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

Subclause 56.1.2 requires extension since we added a completely new set of PMDs. List of changes:
1. minor editorials: aligned the acronyms, hyphens
2. added a summary of 10G-EPON in 56.1.2
3. extended MPCP description in 56.1.2.1
4. extended RS description in 56.1.2.2
Insert the contents of 3av_0804_hajduczenia_2.pdf to Clause 56 in D1.3 before "56.2 State diagrams"

SuggestedRemedy

Insert the contents of 3av_0804_hajduczenia_2.pdf to Clause 56 in D1.3 before "56.2 State diagrams". List of changes available in the Comment field.

Proposed Response *Response Status* **O**

Cl **56** *SC* **56** *P* **9** *L* **4** # 1289

Hajduczenia, Marek Nokia Siemens Networ

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

Subclause 56.1.1 requires extension since we added a completely new set of PMDs. List of changes:
1. minor editorials: aligned the acronyms, hyphens
2. separated a single figure for P2MP EPONs into 3 scenarios: 1 Gb/s symmetric, 10 Gb/s symmetric and 10/1 Gb/s asymmetric. Figures from Clause 91/92 were used.
3. Text "EFM is extended in Clause 91 and Clause 92 by the addition of 10G-EPON. 10G-EPON extends the original EFM EPON clause capability to include asymmetric PONS with 1000 Mb/s downstream and 10 Gb/s upstream and symmetric PONs with 10 Gb/s transport in both downstream and upstream directions. The
orginal 1000 Mb/s EPON is refered to as EPON whereas the 10 Gb/s asymmetrical and symmetrical PONs are refered to as 10G-EPON." is already included in the proposed resolution.
Replace the contents of 56.1 in D1.3 with the contents of 3av_0805_hajduczenia_3.pdf

SuggestedRemedy

Replace the contents of 56.1 in D1.3 with the contents of 3av_0805_hajduczenia_3.pdf. List of changes available in the Comment field.

Proposed Response *Response Status* **O**

Cl **56** *SC* **56.1** *P* **9** *L* **24** # 1353

Kramer, Glen Teknovus, Inc.

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

Direction/speed confusion:

"10G-EPON extends the original EFM EPON clause capability to include asymmetric PONS with 1000 Mb/s downstream and 10 Gb/s upstream..."

SuggestedRemedy

Should be 10Gb/s downstream and 1000Mb/s upstream.

Proposed Response *Response Status* **O**

Cl **56** *SC* **56.1** *P* **9** *L* **26** # 1354

Kramer, Glen Teknovus, Inc.

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

grammar

SuggestedRemedy

add comma before "whereas"

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.1** *P* **30** *L* **39** # 1514

Suzuki, Ken-Ichi NTT

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

TBD items of Table 91-10 should be determined.

SuggestedRemedy

(1)If this standardization allows us to use FP-LD's, RMS spectral widths should be calculated by using the equation in Sub-clause 60.7.2 and choosing proper parameters. In this case, Table 91-10 should be replaced by new Table 91-10 as shown on the slide 1 of 3av_0805_suzuki_1.pdf.
(2)If not so, RMS spectral width should be N/A, and Side Mode Suppression Ratio (min) should be added as a new description and the value and the unit should be 30 and dB for 10/1GBASE-PRX-U3 in Table 91-9. And Table 91-10 should be removed.

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.1** *P* **30** *L* **48** # 1512

Suzuki, Ken-Ichi NTT

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

The word "Sublause" must be typo in the foot note of Table 91-10.

SuggestedRemedy

"Sublause" should be replaced by "Subclause".

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.1** *P* **31** *L* **1** # 1513

Suzuki, Ken-Ichi NTT

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

Figure 91-6 should be updated because it is for PX20.

SuggestedRemedy

(1)If this standardization allows us to use FP-LD's, RMS spectral widths should be calculated by using the equation in Sub-clause 60.7.2 and choosing proper parameters. In this case, Figure 91-6 should be replaced by new Figure 91-6 as shown on the slide 2 of 3av_0805_suzuki_1.pdf.
(2)If not so, RMS spectral width should be N/A, and Side Mode Suppression Ratio (min) should be added as a new description and the value and the unit should be 30 and dB for 10/1GBASE-PRX-U3 in Table 91-9. And Figure 91-6 should be removed.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91** *P* **14** *L* **13** # 1504

Remein, Duane Alcatel-Lucent

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

Also applies to c93 pg 100 Line 9.
Draft revision history for Clause 91 table inconsisten with other clauses ("D1.3" vs "Draft 1.3" and "Apr xx, 2008" vs "May, 2008".
Note the precise date is always included in page headers so date is not ambigous.

SuggestedRemedy

Use perscribed format.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.1.5** *P* **16** *L* **15** # 1333

Lin, Rujian Shanghai Luster Terab

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

This subclause describes Figure 91-1 and Figure 91-2, it is better to move it between Table 91-1 and subclause 91.2, making Table 91-1 close to "91.1.4 Power Budgets" and subclause 91.1.5 close to Figure 91-1 and Figure 91-2.

SuggestedRemedy

Move subclause 91.1.5 to between Table 91-1 and subclause 91.2.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.1.5** *P* **16** *L* **21** # 1290

Hajduczenia, Marek Nokia Siemens Networ

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

Term "Downstream wavelength band width" and "Upstream wavelength band width" are incorrect.
Table 91-1 is affected.

SuggestedRemedy

Change "Downstream wavelength band width" to "Downstream channel bandwidth" and "Upstream wavelength band width" to "Upstream channel bandwidth"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.1.5** *P* **16** *L* **23** # 1315

Hirano, Kengo NEC Corporation

Comment Type **TR** *Comment Status* **X**

In Table 91-1/91-7/91-9, the wavelength band of PRX-U3 should be changed from the following reason.
- In FP-LD, it is difficult to guarantee 20km transmission completely, and DFB-LD is most suitable.20nm is sufficient for the wavelength range of DFB-LD.
- In consideration of cooperation with FSAN/ITU, the wavelength band should give compatibility.

Re-suggestion of comment #802.

SuggestedRemedy

Change Wavelength parameter in Table 91-1 from:
Nominal upstream wavelength : "1310nm" to "1270nm"
Upstream wavelength band width : "100nm" to "20nm"

Change Wavelength parameter in Table 91-7/91-9 from:
"1260 to 1360" to "1260 to 1280"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.10.1** *P* **40** *L* **22** # 1477

Remein, Duane Alcatel-Lucent

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

More Mailto links - @@52.10.1@@ and @@52.10.2@@
This appears to be a gloable problem with all c52 links (same problem in 91.10.3.

SuggestedRemedy

fix links

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.10.4** *P* **40** *L* **46** # 1478

Remein, Duane Alcatel-Lucent

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

Editors note #5 no longer needed.

SuggestedRemedy

remove note.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.11** *P* **40** *L* **49** # 1276

Hajduczenia, Marek Nokia Siemens Networ

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

Remove Editors' Comment #5 - it is not needed anymore.

SuggestedRemedy

Remove Editors' Comment #5 - it is not needed anymore.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.11** *P* **41** *L* **2** # 1472

Remein, Duane Alcatel-Lucent

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

missing hot link on "Figure 91–3", (also line 6 "Figure 91–3" and line 8 "Figure 91–3"

SuggestedRemedy

add link.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.11** *P* **41** *L* **2** # 1291

Hajduczenia, Marek Nokia Siemens Networ

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

Since we have two PMD block diagrams in Clause 91, it is worth indicating both of them in this place to avoid cofusion.

SuggestedRemedy

Replace all references to "Figure 91-3" with "Figure 91-3 (and Figure 91-4)"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.11.13** *P* **41** *L* **25** # 1356

Kramer, Glen Teknovus, Inc.

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

Duplicate table number (Table 91-14 already exists on page 37)

SuggestedRemedy

should be 91-19

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.11.3** *P* *L* **25** # 1350
Lin, Rujian Shanghai Luster Terab

Comment Type **E** *Comment Status* **X**
Table 91-14

SuggestedRemedy
Table 91-19

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12** *P* **42** *L* **20** # 1386
Kramer, Glen Teknovus, Inc.

Comment Type **ER** *Comment Status* **X**
PICS subclause should always start on a new page, so it can be reproduced without copying text of other subclauses.

SuggestedRemedy
Insert page break

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12** *P* **42** *L* **21** # 1479
Remein, Duane Alcatel-Lucent

Comment Type **ER** *Comment Status* **X**
PICS should start on new page.

SuggestedRemedy
force new page.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12.2.2** *P* **43** *L* **32** # 1292
Hajduczenia, Marek Nokia Siemens Networ

Comment Type **T** *Comment Status* **X**
Invalid reference to 802.3 standard

SuggestedRemedy
Change "Std 802.3–2005.)" to "Std 802.3–2008.)"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12.3** *P* **44** *L* **6** # 1293
Hajduczenia, Marek Nokia Siemens Networ

Comment Type **T** *Comment Status* **X**
HT and LT items are affected in PICS in 91.12.3.

SuggestedRemedy
In HT item introduce the following changes:
- Subclause: change @@TBD@@ to 91.10.3
- Value/Comment: change @@TBD@@ to -5 to 85 ºC
In LT item introduce the following changes:
- Subclause: change @@TBD@@ to 91.10.3
- Value/Comment: change @@TBD@@ to -40 to 60 ºC

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12.4.13** *P* **49** *L* **19** # 1294
Hajduczenia, Marek Nokia Siemens Networ

Comment Type **T** *Comment Status* **X**
Since we do not have specific definitions of the measurement conditions, this PICS table should be removed. If specific measurement conditions are specified, the table can be introduced again.

SuggestedRemedy
Remove 91.12.4.13 including the PICS table.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.12.4.15** *P* **50** *L* **18** # 1295
Hajduczenia, Marek Nokia Siemens Networ

Comment Type **T** *Comment Status* **X**
Invalid subcluase references in the PICS table.

SuggestedRemedy
Replace references to 91.9.xx with references to 91.10.xx, which contains the safety specifications.
Editorial note: make sure that the references are hyperlinked and nor hard-coded.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **16** *L* **4142** # 1334
Lin, Rujian Shanghai Luster Terab

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

but uses a burst mode in the receive direction(upstream). "On the other hand,

SuggestedRemedy

but in a burst mode in the receive direction(upstream). On the other hand,

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **16** *L* **4445** # 1335
Lin, Rujian Shanghai Luster Terab

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

ONU PMDs receive suffix "U" for upstream-facing PMD,

SuggestedRemedy

ONU PMDs have suffix "U" for upstream-facing PMD,

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **19** *L* **1920** # 1337
Lin, Rujian Shanghai Luster Terab

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

2) symmetric U-type PMDs(collectively referred to as 10GBASE-PR-U), transmitting at 10.3125 GBd continuous mode and receiving at 10.3125 burst mode

SuggestedRemedy

2) symmetric U-type PMDs(collectively referred to as 10GBASE-PR-U), transmitting at 10.3125 GBd burst mode and receiving at 10.3125 continuous mode

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **19** *L* **27** # 1274
Hajduczenia, Marek Nokia Siemens Networ

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

Add a cross-reference for extended readability once we already have a block of text on the wavelenegth allocation.

SuggestedRemedy

Change "operates over a single SMF." to "operates over a single SMF (see Subcluase 91.6.1)."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **19** *L* **6** # 1336
Lin, Rujian Shanghai Luster Terab

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

2) asymmetric D-type PMDs(collectively referred to as 10GBASE-PR-D),

SuggestedRemedy

2) symmetric D-type PMDs(collectively referred to as 10GBASE-PR-D),

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2** *P* **19** *L* **6** # 1505
Remein, Duane Alcatel-Lucent

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

PR PMDs are symmetric not asymmetric (cut & past error?)

SuggestedRemedy

Change:
"2) asymmetric D–type PMDs"
to:
"2) symmetric D–type PMDs"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2.1.2** *P* **20** *L* **1** # 1355

Kramer, Glen Teknovus, Inc.

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

Table caption is not correct "Asymmetric PR-type"

SuggestedRemedy

Change to "Symmetric PR-type"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.2.3.2.1.2** *P* **78** *L* **42** # 1317

Effenberger, Frank Huawei Technologies,

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

sh_valid[i] is not an array - i is meant to be as an argument

SuggestedRemedy

Remove the word "array" from the TYPE.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.3.1.1** *P* **20** *L* **41** # 1508

Ryan, Hirth Teknovus

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

PMD round-trip delay is TBD.

The maximum delay of
1000BasePX is 20ns = 2 TQ
10GBaseL is 512 bits = 4 TQ

I would recommend 8TQ to allow additional burst mode considerations.

SuggestedRemedy

TBD = 8

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.3.6** *P* **24** *L* **41** # 1316

Effenberger, Frank Huawei Technologies,

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

The PMD transmit enable function currently is intended to serve as a signal to activate the laser driver. During turn-on, it is important for some implementation to transmit actual data (1's and 0's), to permit the driver to adjust its parameters. However, during turn-off, it is not necessary. Also, it is advantageous to actively suppress transmissions during the turn-off period, because the sequence of all-zeroes provides a very clear and obvious signal to the Rx PMD and the Rx PCS that the burst has come to an end.

SuggestedRemedy

Add the following sentence to the end of the section:

"When the PMD_SIGNAL_request(tx_enable) is deasserted, the transmitter will mask all transmissions to the all-zero pattern."

In table 91.8, add a footnote to the "Toff (max)" item, to read: "

"a) During Toff, the transmitter should transmit all zeroes."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4** *P* **25** *L* **7** # 1476

Remein, Duane Alcatel-Lucent

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

Avoid lists.

SuggestedRemedy

Replace:
"PR10, PR20, PR30, PRX10, PRX20 and PRX30" and "PR10, PR20, PR30, PRX10, PRX20 or PRX30"
with:
"PR and PRX" and "PR or PRX" respectively.

Final paragraph to read:
"The operating ranges for PR and PRX power budget classes are defined in Table 91–1. A PR or PRX compliant transceiver operates ..."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4** *P* **25** *L* **9** # 1338
Lin, Rujian Shanghai Luster Terab

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

media types listed in Table 91-14, according to the specifications described in Subclause 91.11.
Since the insertion of Subclause 91.8, the above table number is incorrect and should be modified

SuggestedRemedy

media types listed in Table 91-19, according to the specifications described in Subclause 91.11.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **25** *L* **22** # 1469
Remein, Duane Alcatel-Lucent

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

There is a "mailto" link for 91.8.7
I don't think the subclause wants any mail

Also on line 14 missing "@@" around 58.7.6

SuggestedRemedy

fix the links.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **25** *L* **22** # 1339
Lin, Rujian Shanghai Luster Terab

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

Subclause @@91.8.7@@

SuggestedRemedy

Subclause @@91.9.7@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **25** *L* **43** # 1340
Lin, Rujian Shanghai Luster Terab

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

In Table 91-5

Launch OMA(min) 2.91(1.95) 6.91(4.91) 3.91(2.46) dBm(mW)

These numbers are inaccurate.

SuggestedRemedy

Change to:

Launch OMA(min) 2.92(1.96) 6.92(4.92) 3.92(2.47) dBm(mW)

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **26** *L* **39** # 1341
Lin, Rujian Shanghai Luster Terab

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

@@91.8.10@@

SuggestedRemedy

@@91.9.10@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **26** *L* **41** # 1342
Lin, Rujian Shanghai Luster Terab

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

@@91.8.11@@

SuggestedRemedy

@@91.9.11@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.1** *P* **26** *L* **431** # 1351

Lin, Rujian Shanghai Luster Terab

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

illustrated in Figure 91-5 for a compliant transmitter. Note that the OMAmin and AVEmin are calculated for the ER=9dB. The transmitter specifications are further relaxed by allowing lower ER=6dB while maintaining the OAMmin and AVEmin constant. Shaded area indicates compliant part.
Question are:
1) Term "AVEmin" seems undefined; 2) Figure 91-5 is incorrect; 3) There is no shaded area in Figure 91-5.

SuggestedRemedy

Change the text above into "illustrated in Figure 91-5 for a compliant transmitter. Note that the OMAmin and AVPmin are calculated for ER=9dB. The transmitter specifications are further relaxed by allowing lower ER=6dB while maintaining the OAMmin and AVPmin constant, where AVPmin represents the Average launch power (min) as in Table 91-5. Shaded area in Figure 91-5 indicates the compliant part".
Figure 91-5 is changed as following:

Referring to Subcause 58.7.6:

Calculation results in the Table following:

OMA(dBm)	0	1.92	2.92	3.92	6.92
AVP(dBm)(ER=infinity)	-3.01	-1.09	-0.09	0.91	3.91
(ER=9dB)	-1.92	0	1	2	5
(ER=6dB)	-0.79	1.13	2.13	3.13	6.13

Hence, Figure91-5 is incorrect. The correct figure should be as attached.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.2** *P* **27** *L* **26** # 1509

Ryan, Hirth Teknovus

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

Stressed eye jitter is TBD.

0.3 UIp-p is typically used.

SuggestedRemedy

all 3 TBDs = 0.3

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.2** *P* **28** *L* **13** # 1462

Hamano, Hiroshi Fujitsu Labs.

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

Damage threshold value for 10/1GBASE-PRX-D3 still remains TBD.
2-types of 1G upstream receiver should be considered in 10GE-PON specifications;
in the asymmetric system current GE-PON receiver will be simply used, while in 10G/1G co-existence system a dual-rate receiver will be used in OLT.
PRX-D3 damage threshold (max) value should be assigned as 'Overload + 1dB' for both cases.
In the co-existence case, damage threshold values for 10/1GBASE-PRX-D1 and PRX-D2 should be the same as those for 10GBASE-PR-D1 and PR-D2 in Table 91-6, and it should be notified, in contrast to those in the asymmetry case.

SuggestedRemedy

Damage threshold value for 10/1GBASE-PRX-D3 in Table 91-7 should be '-8.38 dBm'.
A footnote should be added to Table 91-7, as follows;
'Damage threshold (max) for 10/1GBASE-PRX-D1 and PRX-D2, when used in 10G/1G upstream co-existence system, shall comply with those for 10GBASE-PR-D1 and PR-D2, specified in Table 91-6; 0 dBm and -5 dBm, respectively.'

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.4.2** *P* **28** *L* **26** # 1510

Ryan, Hirth Teknovus

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

Stressed eye jitter is TBD

SuggestedRemedy

TBD to 0.3

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5** *P* **29** *L* **9** # 1343

Lin, Rujian Shanghai Luster Terab

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

Table 91-14

SuggestedRemedy

Table 91-19

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **29** *L* **25** # 1344

Lin, Rujian Shanghai Luster Terab

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

@@91.8.7@@

SuggestedRemedy

@@91.9.7@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **29** *L* **42** # 1511

Ryan, Hirth Teknovus

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

Transmitter eye mask is TBD.

I propose matching downstream 10G eye mask.

SuggestedRemedy

both TBDs = {0.25, 0.40, 0.45, 0.25, 0.28, 0.40}

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **29** *L* **45** # 1319

Effenberger, Frank Huawei Technologies,

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

The concept of soft start has a problem, in that existing 1G ONUs will not implement it. Since backwards compatibility is important, this fact makes the use of soft start impossible, unfortunately.

SuggestedRemedy

Remove the lines: "Ton (min)" and "Toff (min)" from table 91-8

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **29** *L* **51** # 1465

Hamano, Hiroshi Fujitsu Labs.

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

If a smaller-TDP transmitter is applied, launch OMA (min) and average launch power (min) can be relaxed. 802.3ae specifications have such a concept in 'launch OMA minus TDP' spec. descriptions. See 3av_0805_hamano_2.pdf.
Re-definition of the current description in the spec. table is not desirable at the moment, but a tiny footnote can be added to the table, to implement the power relaxation option with transmitter choice.

SuggestedRemedy

Footnote for TDP in the Table 91-8 should be added as follows;
'The transmitter launch OMA (min) and average launch power (min) are further relaxed by choosing lower TDP down to 1.5 dB, while maintaining the same decrease for launch OMA (min), average launch power (min), and TDP'.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **30** *L* **21** # 1506

Ryan, Hirth Teknovus

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

Transmit eye mask is TBD

I proposed using the 1000BasePX10/20 eye mask.

SuggestedRemedy

TBD = {0.22, 0.375, 0.20, 0.20, 0.30}

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **30** *L* **3** # 1463

Hamano, Hiroshi Fujitsu Labs.

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

9 dB extinction ratio validity explanation in the footnote is wrong for upstream TXs.
Figure 91-5 indication is also strange.

SuggestedRemedy

'ER = 9 dB' should be changed as 'ER = 6 dB'.
A new figure should be added to show the detail explanation, which was once proposed by Dr. Effenberger in 3av_0801_effenberger_5.pdf.
See Supplement 3av_0805_hamano_1.pdf.
Explanation should also be added to the Figure as follows;
'The relationship between OMA, extinction ratio and average power is described in Subclause 58.7.6 and illustrated in Figure 91-xx for a compliant transmitter. Note that the OMAmin and AVEmin are calculated for the ER = 6 dB. The transmitter average launch power specifications are further relaxed by choosing higher ER up to 9 dB while maintaining the OMAmin constant. Shaded area indicates compliant part.'

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.1** *P* **30** *L* **32** # 1464

Hamano, Hiroshi Fujitsu Labs.

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

9 dB extinction ratio validity explanation in the footnote is wrong for upstream TXs.
Figure 91-5 indication is also strange.
6 dB extinction ratio for PX10 and PX20 is specified in 802.3ah, and further relaxation seems not necessary for 1G TXs.

SuggestedRemedy

'ER = 9dB' should be changed as 'ER = 6dB'.
'(see Figure 91-5 for details)' should be deleted.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2** *P* **31** *L* **29** # 1345

Lin, Rujian Shanghai Luster Terab

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

@@91.8.10@@

SuggestedRemedy

@@91.9.10@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2** *P* **31** *L* **30** # 1346

Lin, Rujian Shanghai Luster Terab

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

@@91.8.11@@

SuggestedRemedy

@@91.9.11@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6** *P* **33** *L* **32** # 1318

Effenberger, Frank Huawei Technologies,

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

In table 91-12, footnote (e), there is a discussion of FEC gain. This is confusing, since FEC gain was not defined, nor does it need to be defined.

Same comment for table 91-13 (page 34, line 25), footnote (e)

SuggestedRemedy

Change footnotes to read:
e) The available power budget assumes a BER from the PMD of 1e-3. The required MAC-interface BER of 1e-12 is achieved by the FEC function of the PCS.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6** *P* **33** *L* **40** # 1347

Lin, Rujian Shanghai Luster Terab

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

@@91.8.2@@

SuggestedRemedy

@@91.9.2@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6** *P* **34** *L* **33** # 1348
Lin, Rujian Shanghai Luster Terab

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

@@91.8.2@@

SuggestedRemedy

@@91.9.2@@

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6.1** *P* **34** *L* **53** # 1491
Remein, Duane Alcatel-Lucent

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

Figure 91–7—Wavelength allocation plan for EPON and 10G–EPON. implies EPON optical band stops at 1280 nm

SuggestedRemedy

Show PX PRX optical band extends to 1260 nm as per spec.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6.1.1** *P* **35** *L* **15** # 1492
Remein, Duane Alcatel-Lucent

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

91.6.1.2 Upstream wavelength allocation
States "The 1 Gb/s upstream transmission uses the 1270 – 1360 nm wavelength", which is incrrect.

SuggestedRemedy

Change
"1270"
to
"1260"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7** *P* **35** *L* **41** # 1493
Remein, Duane Alcatel-Lucent

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

The statment is incorrect "However, the additional 1:2 optical splitter presented in Figure 91–8(a) will reduce the sensitivity of the following photodetectors by introducing additional loss and lowering the power of the optical signal.". The received sensativity is not reducet the signal strength is reduced.

SuggestedRemedy

Change the statment to "However, the additional 1:2 optical splitter presented in Figure 91–8(a) will reduce the overall sensitivity of the system by introducing additional loss and lowering the power of the optical signal."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7** *P* **35** *L* **43** # 1349
Lin, Rujian Shanghai Luster Terab

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

PX10/PRX10/PR10 type PMDs

SuggestedRemedy

PX10/PR10/PRX10 type PMDs

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7** *P* **353** *L* **33** # 1470
Remein, Duane Alcatel-Lucent

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

Clarification;
The statment "the PMD has a single input optical channel of 1260 – 1360 nm, and two outputs: 1 Gb/s and 10 Gb/s" is slightly confusing.

SuggestedRemedy

Change to
"the PMD has a single input optical channel of 1260 – 1360 nm, and two coorisponding derived electrical outputs: 1 Gb/s and 10 Gb/s"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.9** *P* **39** *L* **52** # 1275

Hajduczenia, Marek Nokia Siemens Networ

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

Remove Editors' Comment #4 - it is not needed anymore.

SuggestedRemedy

Remove Editors' Comment #4 - it is not needed anymore.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.9.2** *P* **40** *L* **10** # 1471

Remein, Duane Alcatel-Lucent

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

The statement "All the transmitter types specified in Clause 91 produce less than 1 dB of optical path penalty over the PON plant." is incorrect. transmitters to not "produce" opticla path penalties.

SuggestedRemedy

Change to:
"All the transmitter types specified in Clause 91 incurr less than 1 dB of optical path penalty over the PON plant"

Proposed Response *Response Status* **O**

Cl **91** *SC* **Table 91-8** *P* **29** *L* **45** # 1460

Takeshi, Nagahori NEC

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

Specifying Ton(min) and Toff(min) affects the cost of a fiber optic transmitter used in an ONU, because of complicated control against non-linear I-L transient characteristics of an LD. From the view point of an OLT receiver, no advantage is observed by specifying Ton(min) and Toff(min). It is a basic design principle of analog IC that a burst mode TIA can operate with an input optical envelope of Ton=0ns and Toff=0ns without any saturation (saturation of bipolar transistors or charge-up) of circuitry.

SuggestedRemedy

Remove Ton(min) and Toff(min) from Table 91-8.

Proposed Response *Response Status* **O**

Cl **91A** *SC* **3.2 ff** *P* **46** *L* **33** # 1332

Farmer, Jim Wave7 Optics

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

Eliminate 1260 - 1280 nm upstream band for 10.3125 GBd upstream. According to my expert, it is dangerous because single mode fiber becomes overmoded under about 1260 nm, and a second propagation mode can traverse the fiber at a second velocity. Besides, as the cited subclause says, the OLT must use TDMA to separate 1.25 GBd upstream from 10.3125 GBd upstream. It is true that using the second wavelength band offers some opportunity for optimizing the design of the OLT receiver, but other architectures to do the same thing without needing to separate wavelengths are shown in Figure 91A-5.

SuggestedRemedy

Remove references to the 1260 - 1280 nm upstream band and allow the 10.3125 GBd upstream OLTs use the same waveength range as is used by the 1.25 GBd OLTs.

Proposed Response *Response Status* **O**

Cl **91A** *SC* **5** *P* **48** *L* **51** # 1331

Farmer, Jim Wave7 Optics

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

"Figure 91A–4(a)–(c)" should read "Figure 91A–5(a)–(c)."

SuggestedRemedy

Correct figure number

Proposed Response *Response Status* **O**

Cl **92** *SC* **92** *P* *L* # 1302

Hajduczenia, Marek Nokia Siemens Networ

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

"The ONU burst transmission begins with a synchronization pattern 0x55 (binary 0101...)," - we did agree that we would use the term "transmission bit sequence" in the next release of the draft. Additionally, this line was different in D1.2 - see page 68, line 18 in D1.2. Why was it changed back to "binary 0101"??

SuggestedRemedy

Change "binary 0101..." to "transmission bit sequence 1010 ..." to keep it consistent throughout the whole clause.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92** *P* **51** *L* **1** # 1301

Hajduczenia, Marek Nokia Siemens Networ

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

It was agreed at the last meeting that clause 92 is not extension of clause 56 RS, PCS and PMA but rather a new type itself.
Text "Extensions of the Reconciliation Sublayer (RS) and Physical Coding Sublayer (PCS) / Physical Media Attachment (PMA) for 10GBASE-PR-D1, 10GBASE-PR-D2, 10GBASE-PR-D3, 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2, 10/1GBASE-PRX-D3, 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2, 10/1GBASE-PRX-U3 for multipoint links and forward error correction" is misleading.

SuggestedRemedy

Replace "Extensions of the Reconciliation Sublayer (RS) and Physical Coding Sublayer (PCS) / Physical Media Attachment (PMA) for 10GBASE-PR-D1, 10GBASE-PR-D2, 10GBASE-PR-D3, 10/1GBASE-PRX-D1, 10/1GBASE-PRX-D2, 10/1GBASE-PRX-D3, 10GBASE-PR-U1, 10GBASE-PR-U3, 10/1GBASE-PRX-U1, 10/1GBASE-PRX-U2, 10/1GBASE-PRX-U3 for multipoint links and forward error correction" with "Reconciliation Sublayer (RS), Physical Coding Sublayer (PCS), and Physical Media Attachment (PMA) for point–to–point media, types 10GBASE–PR and 10/1GBASE–PRX"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92** *P* **51** *L* **2** # 1357

Kramer, Glen Teknovus, Inc.

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

typos

SuggestedRemedy

1) "point-to-point" should be "point-to-multipoint"
2) "meadia" - "media"
3) don't break 10GBASE-PR across multiple lines

Proposed Response *Response Status* **O**

Cl **92** *SC* **92** *P* **51** *L* **32** # 1358

Kramer, Glen Teknovus, Inc.

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

grammar

SuggestedRemedy

"connects" should be "connect"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1** *P* **51** *L* **37** # 1363

Kramer, Glen Teknovus, Inc.

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

reconciliation is now extended not only for P2P emulation, but also for MAC deferral.

SuggestedRemedy

Remove "for point-to-point emulation" from title.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.1** *P* **52** *L* **13** # 1359

Kramer, Glen Teknovus, Inc.

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

This refers to Figures 91-1 and 91-2:

Since on the protocol stack, we are not showing clause 65 PMA and PCS anymore, it is redundant to say in each shaded box "(Clause 92)"

SuggestedRemedy

Remove "(Clause 92)"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2** *P* **54** *L* **1** # 1360

Kramer, Glen Teknovus, Inc.

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

The title "Multi-speed Media Independent Interface" is too broad and ambiguous: What speeds? How many?

SuggestedRemedy

Suggest calling this section
"Dual-speed Media Independent Interface"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2** *P* **54** *L* **32** # 1467

Lin, Rujian Shanghai Luster Terab

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

while the receive path uses GMII signals

SuggestedRemedy

while the receive path uses XGMII signals

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2** *P* **54** *L* **6** # 1466

Lin, Rujian Shanghai Luster Terab

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

to support transmission and reception of different speeds.

SuggestedRemedy

to support transmission and reception at different speeds.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2.3** *P* **55** *L* **47** # 1361

Kramer, Glen Teknovus, Inc.

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

Typos in figure 91-4 title and number.

SuggestedRemedy

1) Figure 91-4 should be numbered 92-4.
2) PCA in the title should be PCS
3) Reference to this figure on page 54, line 43 should be updated ton 92-4.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2.3** *P* **55** *L* **48** # 1468

Lin, Rujian Shanghai Luster Terab

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

Figure 91-4

SuggestedRemedy

Eigure 92-4

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.2.4** *P* **56** *L* **3** # 1362

Kramer, Glen Teknovus, Inc.

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

Tables 92-1 and 92-2 anchored on wrong page

SuggestedRemedy

Anchor tables 92-1 and 92-2 on page 56 just before section 92.1.3.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.3.2** *P* **56** *L* **37** # 1507

Ryan, Hirth Teknovus

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

The current reference does not constrain delay variation.

Text from section 65.3.3 should be replace reference to clause 93.

SuggestedRemedy

"The MPCP relies on strict timing based on the distribution of timestamps. The actual delay is implementation dependent but an implementation shall maintain a combined delay variation through RS, PCS, and PMA sublayers of no more than 1 TQ so as to comply with this mechanism."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.4.1.1** *P* *L* # 1495

Remein, Duane Alcatel-Lucent

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

92.1.4.1.1 Function
This subclause, placed here due to comment 1153 from Eric,seems out of place to the editor.

SuggestedRemedy

Move this to subclause 92.4.1.5 below

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6** *P* **56** *L* # 1458

Khermosh, Lior PMC-SIERRA

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

currently as the draft is defined there is a potential condition that even though we do a compensation of the delay there can be the case that the PCS will not be ready for the next packet. This case happens when exactly the packet should be transmitted and the PCS transmits parity bytes of IPGs (this can happen if there is gaps between the packets which is above the minimal IPG). This will add a 2TQs jitter in the timestamp. The timestamp is added to the packet but the MAC will not start transmitting due to the feedback from the PCS (using PLS_CARRIER.indication(CARRIER_STATUS)) which delays the MAC. This feedback should be removed and the PCS should hold an elastic jitter FIFO to compensate with a maximal delay width and make it a fixed delay. Please note that both FEC_overhead_tx and FEC_pverhead_delay will compensate for that and should be accurate.

SuggestedRemedy

Remove the carrier sense feedback from the PCS. Work in open loop. The MPCP has a prediction of the overhead added to the packet and should delay the MAC accordingly. The PCS should have an elastic FIFO to make the delay in the PCS fixed. Add a text to describe the FIFO and the work.
Basically the FIFO read pointer is set to a fixed threshold of the maximal delay and the FIFO is filled in the MAC rate. When there is a gap the depth of the FIFO changes and filled afterwards. As the read threshold remains the same and read in the PCS output rate, it keeps the data going out in constant gaps, hence keeping the delay fixed.
The FIFO should be described in the regular format of state machines in the spec.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.3** *P* **58** *L* **7** # 1399

Kramer, Glen Teknovus, Inc.

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

Typo

SuggestedRemedy

"TTo" = "To"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.4** *P* **58** *L* **14** # 1364
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
definitions of ++ and -- operations nood to be more precise.

SuggestedRemedy
Insert "by 1" after "incremented"
Insert "by 1" after "decremented"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.4** *P* **58** *L* **15** # 1407
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
Notation "-=" is used in state machine in 92-16.

SuggestedRemedy
Add this sentence to 92.1.6.1.4: "The notation -= after a counter indicates that the counter value is to be decremented by the value that follows the -= sign."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.5** *P* **58** *L* **18** # 1365
Kramer, Glen Teknovus, Inc.

Comment Type **E** *Comment Status* **X**
Variables/counters/functions should be listed in alphabetical order

SuggestedRemedy
Reorder

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.5** *P* **58** *L* **28** # 1367
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
block_size is a constant

SuggestedRemedy
1) replace "variable" with "constant"
2) Change title of this section to "Variables, Constants, and Functions"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.1.5** *P* **58** *L* **44** # 1368
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
There already exists function in C49 called T_TYPE() that operates over 72-bit vectors. There also exists R_TYPE() that operates over 66-bit blocks.

Calling a function that operates over 36-bit columns also T_Type() is confusing.

SuggestedRemedy
Rename T_Type() to C_TYPE() (for column type). Make necessary changes to state machine in 92-5.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.2.2** *P* **60** *L* **13** # 1369
Kramer, Glen Teknovus, Inc.

Comment Type **E** *Comment Status* **X**
Incomplete/inconsistent titles

"Transmit" should be "RS Transmit function"

For examples, see 51.3.1, 52.4.2, etc.

SuggestedRemedy
1) Change "92.1.6.2.2 Transmit" to "92.1.6.2.2 RS Transmit function"
2) Change "92.1.6.2.3 Receive function" to "92.1.6.2.2 RS Receive function"
3) Change "92.2.2 10GBASE-PR Transmitter Functions" to "92.2.2 PCS Transmit function"
4) Change "92.2.3 10GBASE-PR Receiver Functions" to "92.2.3 PCS Receive function"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1.6.2.3.2** *P* **61** *L* **4** # 1370
Kramer, Glen Teknovus, Inc.

Comment Type **E** *Comment Status* **X**
missing comma after OLT
extra period at the end

SuggestedRemedy
fix per above

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.16.1.5** *P* **58** *L* **40** # 1366
Kramer, Glen Teknovus, Inc.

Comment Type **E** *Comment Status* **X**
erroneous text added

SuggestedRemedy
remove all text following "otherwise"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.1.1** *P* **62** *L* **18** # 1373
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
Refer to Figures 92-6 and 92-7

Redundant labels and Missing PCS labels

SuggestedRemedy
remove labels at the sides on the shaded boxes (it is clear from titles).
add "PCS" in the center of the shaded boxes.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.1.1** *P* **62** *L* **18** # 1372
Kramer, Glen Teknovus, Inc.

Comment Type **E** *Comment Status* **X**
Refer to Figures 92-6 and 92-7

Do we capitalize sublayers (like "RECONCILIATION SUBLAYER") or not (like "PMA sublayer"). Pick one approach and apply it consistently.

Also see in Fig 92-8 "IDLE DELETION" vs. "IDLE Insertion"

SuggestedRemedy
I think most layering diagrams use all caps, so these figures should too.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.1.1** *P* **62** *L* **8** # 1371
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
No such PCS as 1000BASE-PR

SuggestedRemedy
1000BASE-PR should be 1000BASE-PX

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.1.2.** *P* **63** *L* **37** # 1374
Kramer, Glen Teknovus, Inc.

Comment Type **T** *Comment Status* **X**
Comment 1194 against D1.2 was not implemented properly.

SuggestedRemedy
Add "path" at the end of the titles for Figures 92-8 and 92-9

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2** *P* *L* # 1489

Remein, Duane Alcatel-Lucent

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

92.2.2 10GBASE-PR Transmitter Functions
Subclause needs introductory text.

SuggestedRemedy

This subclause defines the transmit direction physical coding sublayers for 10GBASE-PR and 10/1GBASE-PRX. In the OLT the PCS operates at a 10 Gb/s rate in a continuous mode. In the ONU the PCS may operate at a 10 Gb/s rate, as specified herein (10GBASE-PR), or at a 1 Gb/s rate, complient with Clause 65 (10/1GBASE-PRX). For both 10GBASE-PR and 10/1GBASE-PRX, the ONU PCS always operates in a burst mode. When operating at the 10 Gb/s rate, the PCS includes a mandatory FEC encoder. The transmit direction PCS is illustrated for the OLT in Figure 92-8 and for the ONU in Figure 92-9.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1** *P* **63** *L* **46** # 1375

Kramer, Glen Teknovus, Inc.

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

1) Text in 92.2.2.1 is not clear and is incorrect in several respects.
2) There is no point to call the similar process differently in OLT and ONU. Suggest to call it IDLE Deletion in both places, even though in ONU it has an additional functionality to alight start of frame.

SuggestedRemedy

Use the following text instead of the first paragraph in 92.2.1:

The IDLE Deletion process is responsible for deleting excess IDLE characters to allow the parity data be inserted without increasing the PMD line rate. This process deletes 4 72-bit vectors containing IDLE characters per every 31 72-bit vectors received from the XGMII, always ensuring that the minimum IPG has been preseved between two adjacent frames.

In addition, at the ONU, the IDLE Deletion process aligns the start of first frame in a burst, such that if the start control code is in lane 0 of column 1, the burst will be shifted to align the start to lane 0 of
column 0. If this alignment is not done, the ONU's transmission period may extend by a full FEC codeword, causing interference with transmissions by other ONUs.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1** *P* **64** *L* **37** # 1376

Kramer, Glen Teknovus, Inc.

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

Unnecessary levels of hierarchy make reading difficult

SuggestedRemedy

1) Remove title "92.2.2.1.1 Constants,Variables,Functions,Counters and State machine"
2) Delete the sentence "The State machine describing the Alignment and IDLE deletion block of the 10GBASE-PR PCS transmitter, including the associated definitions of variables, constants, and functions is shown in Figure 92–10." as it is a repetion of what was said in the previous paragraph.
3) Concatenate text starting with "Should there be a discrepancy..." with the previous paragraph.
4) Move titles 92.2.2.1.1.1 through 92.2.2.1.1.5 one level up (i.e., they will become 92.2.2.1.1 through 92.2.2.1.5)

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1.2** *P* *L* # 1497

Remein, Duane Alcatel-Lucent

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

ts_raw not defined (rx_raw defined)

SuggestedRemedy

Add definition in 92.2.2.1.1.2 "Variables":
"tx_raw_in<71:0>
Vector transmitted from the output of the 64B/66B decoder containing two successive XGMII transfers. TXC<0> through TXC<3> for the first transfer are placed in tx_raw<0> through tx_raw<3>, respectively. TXC<0> through TXC<3> for the second transfer are placed in tx_raw<4> through tx_raw<7>, respectively. TXD<0> through TXD<31> for the first transfer are placed in tx_raw<8> through tx_raw<39>, respectively. TXD<0> through TXD<31> for the second transfer are placed in tx_raw<40> through tx_raw<71>, respectively.

tx_raw_out<71:0>
Vector sent from the output of the IDLE deletion function containing two successive XGMII transfers. TXC<0> through TXC<3> for the first transfer are placed in tx_raw<0> through tx_raw<3>, respectively. TXC<0> through TXC<3> for the second transfer are placed in tx_raw<4> through tx_raw<7>, respectively. TXD<0> through TXD<31> for the first transfer are placed in tx_raw<8> through tx_raw<39>, respectively. TXD<0> through TXD<31> for the second transfer are placed in tx_raw<40> through tx_raw<71>, respectively.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1.2** *P* **65** *L* **13** # 1377

Kramer, Glen Teknovus, Inc.

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

Variable name is misstyped

SuggestedRemedy

Should be HalfShift (S- capital)

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1.4** *P* *L* # 1496

Remein, Duane Alcatel-Lucent

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

DelCount not defined

SuggestedRemedy

Insert below "IdleCount":
"DelCount
TYPE: 16-bit unsigned
Counts the number of vectors that need to be deleted."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1.5** *P* **67** *L* **1** # 1379

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

refer to Figure 92-10

1) Transition to state DELETE_IDLE should be have "IdleCount >= MinIpg" (note >= instead of >). This is because, MinIPG of idles already accounted for in previous transfers, so this one can be deleted. Correspondingly, in transition from CLASSIFY_VECTOR state to SEND_IDLE, 3rd term should be (IdleCount < MinIPG).

2) In state SEND_VECTOR, it is confusing to send vector out first, but check the VectorCount without accounting for the just sent vector.

3) Notation (Wn = C) is not how vectors were traditionally checked. Usually function T_TYPE() is used. It is not good to introduce variety of approaches to do the same thing.

4) Per 49.2.13.2.2, tx_raw<71:0> consists of concatenation of TXD<31:0>|TXD<31:0>|TXC<3:0>|TXC<3:0>. tx_raw vector cannot be split into two columns as tx_raw<71:36> and tx_raw<35:0> as shown in CLASSIFY_VECTOR state. tx_raw should be redefined in this clause.

5) It should be noted that all the changes between ONU state machine and the OLT state machine can be confined to one state. This will significantly simplify understanding of the state machines.

SuggestedRemedy

Use ONU Idle deletion state macine as presented in 3av_0805_kramer_2.pdf (page 2). Use associated variables, and counters as presented in 3av_0805_kramer_2.pdf (pages 3,4)

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.1.1.5** *P* **68** *L* **1** # 1378

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

Refer to Figure 92-11:

1) In transition from CLASSIFY_VECTOR state to SEND_IDLE, 3rd term should be (IdleCount < MinIPG). Also, in the same transition, a term (DelCount = 0) should is needed (This term is present in ONU FSM).

2) Transition to state DELETE_IDLE should be have "IdleCount >= MinIpg" (note >= instead of >). This is because, MinIPG of idles already accounted for in previous transfers, so this one can be deleted.

3) In state SEND_VECTOR, it is confusing to send vector out first, but check the VectorCount without accounting for the just sent vector.

4) No need to keep half vectors around since we are not doing start-of-frame alignment at the OLT. Using full vectors will allow using the T_TYPE() function that is already specified in subclause 49.2.13.2.3.

SuggestedRemedy

1)Use the modified state machine as submitted in 3av_0805_kramer_2.pdf (page 1)
2) Since we always describe OLT functions first, place OLT IDle Deletion state machine before ONU Idle deletion state machine.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.4.1** *P* **66** *L* **33** # 1400

Kramer, Glen Teknovus, Inc.

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

Typo 10GBASE-RS

SuggestedRemedy

Change to 10GBASE-PR

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.4.1** *P* **66** *L* **35** # 1380

Kramer, Glen Teknovus, Inc.

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

"The code is systematic..." is repeated in two sentences in a row.

SuggestedRemedy

remove the first sentence.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.4.1** *P* **69** *L* **6** # 1296

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 92-12 is affected. This Figure shows the Bit ordering in FEC codeword generation, where the initial padding equal to 29 bits should occupy bytes 222, 221, 220 and 5 bits of byte 219. D218 should be therefore D218.

SuggestedRemedy

Replace Figure 92-12 with Figure 92-12 included in 3av_0805_hajduczenia_4.pdf
Fixes:
1. fixed the incocorrect D218 -> D219
2. added indication of the bit number in the XGMII data vector

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.4.2** *P* **70** *L* **20** # 1228

Geng, Dongyu Huawei Technologies

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

The rectangle for sync header <0> at the left end is inserted wrongly here, it should not be in this figure but should be inserted in figure 92-17 - PCS Receive bit ordering (line 19, page 77).

SuggestedRemedy

Remove the rectangle for sync header <0> in figure 92-13 - PCS Transmit bit ordering, and insert it in figure 92-17(line 19, page 77).

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.4.3** *P* **71** *L* **6** # 1398

Kramer, Glen Teknovus, Inc.

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

hyphenation

SuggestedRemedy

Insert hyphen in "66 bit"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **71** *L* **23** # 1381

Kramer, Glen Teknovus, Inc.

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

AGC = automatic gain control
"Adjust its AGC" is incorrect.

SuggestedRemedy

Either say "adjust its gain" or "perform AGC"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **71** *L* **24** # 1382

Kramer, Glen Teknovus, Inc.

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

Not clear what is refered to "Start of Data"

SuggestedRemedy

Replace as "... identify the Start of Data." with "... identify the beginning of FEC-protected portion of the ONU transmission."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **72** *L* **16** # 1383

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

Figure 92-15 was butchered in two important points:

1) Payload of expanded FEC codewordes should have 27 boxes, not 32
2) In the original picture, the expanded FEC codewords were different to show that parity can go in the middle of MAC frame.

SuggestedRemedy

Corrected pdf and FM versions are submitted. See 3av_0805_kramer_4.pdf.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **72** *L* **42** # 1461

Takeshi, Nagahori NEC

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

Using 0x55.. Sync Pattern reduces receiver sensitivity/timing margin just after Sync Pattern. This is due to the response of analog peak-detector used in TIA-AGC or LIM and to the difference in group delay velocity for 1010 and random patterns at transmitter, optical fiber, receiver amplifier, and CDR.
The suggestion is to minimize the above "burst penalty" in receiver sensitivity/timing margin by using Sync Pattern that includes 010, 101, and CID with its length of several bits. In order to maintain performance on FEC codeword synchronization with the proposed Sync Pattern, Delimiter should also be changed. Refer to attached supplement.

SuggestedRemedy

1)Change Sync Pattern to "4 BE 06 95 AF 41 E5 6B 50 (Hex)" in page 72 line 42, Figure 92-15, and Figure 92-16.
2)Change Delimiter in subclause 92.2.2.5.1.1 to one of the bellow:
4 EF 10 28 CC D9 87 AD A6 (Hex)
4 BE 65 23 E4 A0 9F 8A 39 (Hex)
4 AE 8C 0A EB BC 0F 5C 26 (Hex).

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **72** *L* **42** # 1237

Lynskey, Eric Teknovus

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

How does an editorial comment override an approved technical comment? Acceptance of the deferred editorial comment 110667 has altered the result of technical comment 1037 from the Orlando meeting.

SuggestedRemedy

Replace with 1010.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5** *P* **72** *L* **46** # 1401

Kramer, Glen Teknovus, Inc.

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

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.

Using "IDLE control character" is an incorrect here

SuggestedRemedy

Use:

The BURST_DELIMITER is followed by one two 66-bit blocks containing IDLE codes. The first 66-bit block is used to synchronize the descrambler and a second 66-bit block is needed to provide IPG at the OLT. These two 66-bit IDLE blocks are part of the first FEC codeword.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5.1** *P* **73** *L* **3** # 1384

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

1) This paragraph is duplicated in 92.2.2.5.1.6
2) Statement "Variables in a state machine with default values evaluate to the variable default in each state where the variable value is not explicitly set" is not correct.
3) Data detector now not only controls laser, but inserts parity. There should be a different data detector for the OLT.

SuggestedRemedy

1) Change "pertanent" to "pertinent"
2) Delete "Variables in a state machine with default values evaluate to the variable default in each state where the variable value is not explicitly set"
3) Delete sentense "The ONU shall implement the Data Detector as depicted in Figure 92–16, including compliance with the associated state variables as specified in this subclause."

in section 92.2.2.5.1.6
1) delete all text
2) paste ""The ONU shall implement the Data Detector as depicted in Figure 92–16. The OLT shall implement the Data Detector as depicted in Figure 92–17."
3) Add data detector for the OLT, as shown in 3av_0805_kramer_5.pdf.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5.1.3** *P* **73** *L* **33** # 1402

Kramer, Glen Teknovus, Inc.

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

Typo

SuggestedRemedy

"RecevieNextBlock()" = "ReceiveNextBlock()"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5.1.5** *P* **74** *L* **15** # 1403

Kramer, Glen Teknovus, Inc.

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

Grammar

SuggestedRemedy

replace "The similar..." with "This counter is similar..."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5.1.6** *P* **75** *L* **1** # 1385

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

refer to Figure 92-16:

1) Missing one more line "TransmitBlock(0x555...)" in state Transmit_Burst_Preamble
2) Missing transition label from state "Off" to "laser_is_Off"
3) This is Data Detector, not Data Decoder
4) Need to disambiguate FIFO used here from the FIFO used in Idle Insertion state machine

SuggestedRemedy

1) Add line "TransmitBlock(0x555...)" in state Transmit_Burst_Preamble (should be 4 such lines)
2) Add "UCT" as the transition label from state "Off" to "laser_is_Off"
3) Change caption to "ONU Data Detector tate machine"
4) Rename FIFO to FIFO_DD (FIFO for Data detector). Rename FIFO to FIFO_II (for FIFO for Idle Insertion in Figs 92-20 and 92-21.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.5.1.6** *P* **75** *L* **1** # 1404

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

refer to Figure 92-16:

1. block labeled 'Init' has typo: 'UprotectedBlockCount'
2. should magic number '27' be replaced with a named constant?
3. in some places expressions compare constants that are decimal (27) or binary (10), but there is no way to tell what the intended radix is other than by context.
4. typo on exit from state Transmit_Burst_Preamble': 'SynBlockCount' should be 'SyncBlockCount'

SuggestedRemedy

1) use "UnprotectedBlockCount"

2) Define constants FEC_DSize = 27 and FEC_PSize = 4. In state machines and in text replace occurences of FecRatio and of 27 with FEC_DSize. replace occurences of "4" as related to Parity size with FEC_PSize.

3) represent bunary numbers is apostrofies, i.e., '10'.
4) Use 'SyncBlockCount'

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.6** *P* *L* # 1503

Remein, Duane Alcatel-Lucent

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

Figure 92-16 ONU data decoder state diagram
Title is misleading

SuggestedRemedy

Change to:
"ONU data detector state diagram"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.2.6** *P* **75** *L* **53** # 1297

Hajduczenia, Marek Nokia Siemens Networ

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

I think Figure 92–16 does not represent the ONU data decoder but rather ONU data detector. Additionally, as per 802.3ay, there are no "state machines" but "state diagrams". Change "Figure 92–16—ONU data decoder State machine" to "Figure 92–16—ONU data detector state diagram".

SuggestedRemedy

Change "Figure 92–16—ONU data decoder State machine" to "Figure 92–16—ONU data detector state diagram".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3** *P* *L* # 1490

Remein, Duane Alcatel-Lucent

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

92.2.3 10GBASE-PR Receiver Functions
Needs introductory text.

SuggestedRemedy

This subclause defines the receive direction physical coding sublayers for 10GBASE-PR and 10/1GBASE-PRX. In the ONU the PCS operates at a 10 Gb/s rate in a continuous mode. In the OLT the PCS may operate at a 10 Gb/s rate, as specified herein (10GBASE-PR), or at a 1 Gb/s rate, complient with Clause 65 (10/1GBASE-PRX). For both 10GBASE-PR and 10/1GBASE-PRX, the OLT PCS always operates in a burst mode. When operating at the 10 Gb/s rate, the PCS includes a mandatory FEC encoder. The receive direction PCS is illustrated for the ONU in Figure 92-8 and for the OLT in Figure 92-9.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.1** *P* **73** *L* **6** # 121210

Mandin, Jeff PMC Sierra

Comment Type **TR** *Comment Status* **D** *Deferred to Munich*

There is currently no description of how the OLT PCS detects the end of the 10G burst.

SuggestedRemedy

1. There must be a synchronization FSM for the OLT receiver - presumably based on the downstream version (with incorporation of the correlator search)

2. There must also be a process (integrated or separate from the OLT synchronization FSM) for detection of orderly end-of-burst. Explanatory slides and evaluation of alternatives for end-of-burst detection is found in 3av_0804_mandin_2.pdf

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The Task Force believe this is a good idea that needs further investigation. The idea of a End of Burst delimiter should be persued.

Cl **92** *SC* **92.2.3.1** *P* **76** *L* **1** # 1330

Effenberger, Frank Huawei Technologies,

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

This section is entitled "Synchronizer", but it really describes the "Downstream synchronizer". We need a new section that talks about the upstream synchronizer.

SuggestedRemedy

Change heading of 92.2.3.1 to "Downstream synchronizer".

Add a new section 92.2.3.1a "Upstream synchronizer".

The codeword synchronization function receives data via 16-bit PMA_UNITDATA.request primitive.

The upstream 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–X). It obtains lock to the
31*66-bit blocks in the bit stream by looking for the burst delimiter. Lock is obtained as specified in the codeword lock state machine shown in Figure 92–X.

When in codeword lock, the state machine accumulates the appropriate contents of the 31 blocks that constitute a codeword in an input buffer. When the codeword is complete, the FEC decoder is triggered, and the input buffer is freed for the next codeword.

When in codeword lock, the state machine looks for the end of tbe burst. When this is observed, then the state machine deasserts codeword lock. The state machine then goes back to searching for the burst delimiter.

Figure 92-x can be found on page 5 of 3av_0805_effenberger_1.pdf.

Add the BD_valid and EOB_valid variables as described in the same file.
Add the SLIP_One_Bit function as described in the same file.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.1** *P* **76** *L* **8** # 1387

Kramer, Glen Teknovus, Inc.

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

Reference to Figure 92-18 is incorrect.

SuggestedRemedy

It should be 92-17

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* *L* # 1486
Remein, Duane Alcatel-Lucent

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

92.2.3.2 FEC Decoder
User option to indicate uncorrectable FEC block does not appear in any State machine.

SuggestedRemedy

need input from Task Force

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* *L* # 1485
Remein, Duane Alcatel-Lucent

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

92.2.3.2 FEC Decode
Reference to Figure 92-15 appears to be incorrect.

SuggestedRemedy

Need correct figure reference (may need new figure from task force).

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* *L* # 1484
Remein, Duane Alcatel-Lucent

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

92.2.3.2 FEC Decode
variable decode_success never set TRUE

SuggestedRemedy

Need input from TF.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **76** *L* **30** # 1299
Hajduczenia, Marek Nokia Siemens Networ

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

The text "The handling of data leaving the FEC decoder and going to the descrambler is specified in the FEC-decoder state machine shown in Figure 92–16" points to the Figure 92-16 for FEC decoder operation, yet 92-16 presents the ONU data detector operation (Figure is mislabelled)

SuggestedRemedy

I am unable to locate the FEC decoder state diagram. If such is non-existent, Figure 92.17 is the closest to the operation of the FEC decoder I identified so far. The "The handling of data leaving the FEC decoder and going to the descrambler is specified in the FEC-decoder state machine shown in Figure 92–16" can be changed to "The handling of data leaving the FEC decoder and going to the descrambler is depicted in the diagram in Figure 92-17."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **76** *L* **31** # 1320
Effenberger, Frank Huawei Technologies,

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

Figure reference should be 92-19, and NOT 92-16!

SuggestedRemedy

Change figure reference to 91-19. This resolves the editors note 92-6.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **76** *L* **31** # 1405
Kramer, Glen Teknovus, Inc.

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

reference to Figure 92-16 is wrong.

SuggestedRemedy

refer to Figure 92-19.
Change figure title to "FEC Decoder state machine"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **76** *L* **45** # 1321

Effenberger, Frank Huawei Technologies,

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

Editors note 92-7 complains that decode_success is set to false, but never set to true, as if this is an error. It is not. The decode_succes variable is a boolean indication that acts as a signal out of the FEC decoder. It is described in section 92.2.3.2.1.2. The setting of this variable to false in the state machine is just the initialization of the variable upon asynchronous restart.

SuggestedRemedy

Remove editors note

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **76** *L* **50** # 1406

Kramer, Glen Teknovus, Inc.

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

grammar

SuggestedRemedy

Insert 'an' and 'the' as shown: 'to indicate *an* uncorrectable FEC block (...) to *the* PCS layer.'

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **78** *L* **1** # 1322

Effenberger, Frank Huawei Technologies,

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

Editors note 92-8 mentions that the uncorrectable FEC marking option is not included - this is a good observation. Remedy is proposed below:

SuggestedRemedy

Add a new variable to section 92.2.3.2.1.2:

mark_uncorrectable
Boolean control variable that is set to true if the uncorrectable errors are to be marked.
TYPE: boolean

Modify Read_outbuffer[i] to read:

```
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]
 }
 if (!decode_success AND mark_uncorrectable) {
  rx_coded_corrected<0>=rx_coded_corrected<1>
 } else {
  rx_coded_corrected<0>=!rx_coded_corrected<1>
 }
 BlockToDescrambler()
}
```

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2** *P* **83** *L* **1** # 1389

Kramer, Glen Teknovus, Inc.

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

Broken flow of material in sections 92.2.3.1 and 92.2.3.2:
Synchronizer is described insection 92.2.3.1, but its state machine and variables are placed in FEC Decoder section.

SuggestedRemedy

1) Move state machine in Figure 92-18 and associated variables to section 92.2.3.1

2) Keep state machine in Figure 92-19 and associated variables in section 92.2.3.2.

3) If 92-19 shares variables with 92-18, in 92.2.3.2 refer to variables definitions in 92.2.3.1.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1** *P* **78** *L* **6** # 1388

Kramer, Glen Teknovus, Inc.

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

No need to keep superfluous levels of hierarchy.

SuggestedRemedy

1) Remove header "92.2.3.2.1 Constants, variables, functions, counters, Messages and state machines"
2) Bring sections 92.2.3.2.1.1 through 92.2.3.2.1.6 one level up (i.e. to 92.2.3.2.1 through 92.2.3.2.6)

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.2** *P* *L* # 1487

Remein, Duane Alcatel-Lucent

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

92.2.3.2.1.2 Variables
decode_done does not appear to get set anywhere

SuggestedRemedy

need input from Task Force

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.2** *P* **78** *L* **48** # 1323

Effenberger, Frank Huawei Technologies,

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

Editors note 92-9 - Decode done is an indication - it is set by the underlying function of the FEC decoder.

SuggestedRemedy

No problem, remove note.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.2** *P* **78** *L* **48** # 1324

Effenberger, Frank Huawei Technologies,

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

editors note 92-10 - The variable referenced in "Append_inbuffer" should be this one. So I recommend changing all to "inbuffer".

Also note that this resolves editors note 92-13 in part.
The other part of 92-13 (rx_coded is not defined) is not true, since it is defined in clause 49, and we inherit that definition.

SuggestedRemedy

Modify the variable "input_buffer[]" to read "inbuffer[]"

Modify the function "Append_inbuffer()" to read:

```
Append_inbuffer()
{
  BlockFromGearbox()
  if(rx_coded<0> <> rx_coded<1>) {
    inbuffer[input_buffer_location]=rx_coded<1>
    inbuffer_location++
  }
  for(i=2, i<66, i++) {
    inbuffer[input_buffer_location]=rx_coded<i>
    inbuffer_location++
  }
}
```

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.2** *P* **79** *L* **10** # 1325
Effenberger, Frank Huawei Technologies,

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

Editors note 92-11: Test_sh is defined in clause 49, and we inherit that definition. :-)

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.3** *P* *L* # 1488
Remein, Duane Alcatel-Lucent

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

92.2.3.2.1.3 Functions
rx_coded is not defined.
cword_done is not defined.

SuggestedRemedy

need input from Task Force

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.3** *P* **79** *L* **31** # 1326
Effenberger, Frank Huawei Technologies,

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

Editors note 92-12 complains that sh_cnt was not defined. True enough.

SuggestedRemedy

Add following variable definition:

sh_cnt
Counter that tracks the location in the 62 block FEC codeword pattern. TYPE: integer

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.3** *P* **80** *L* **36** # 1327
Effenberger, Frank Huawei Technologies,

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

Editors note 92-15 - The line "int offset = 29+i*65" is meant to be read as a line of C code. In other words, it defines a local variable "offset" to be type "int(teger)", and initializes it to the value 29+i*65. Is that not clear?

Indeed, outbuffer[] is not defined in the draft - I thought I did that? Anyway, it's added below.

SuggestedRemedy

Add the following to the variables section:

outbuffer[]
An array of 2040 bits.

In the function "Read_outbuffer()", change the reference to "out_buffer" to "outbuffer".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.4** *P* **81** *L* **20** # 1390
Kramer, Glen Teknovus, Inc.

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

All counters in this section are missplaced. They belong to Idle Insertion function, not to FEC Decoder.

Also messages in 92.2.3.2.1.5 belong to Idle Insertion function.

SuggestedRemedy

1) Merge content of subclause 92.2.3.2.1.4 into 92.2.3.5.1.2
2) Place the entire section 92.2.3.2.1.5 after 92.2.3.5.1.3

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.2.1.6** *P* **83** *L* **1** # 1328

Effenberger, Frank Huawei Technologies,

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

Figure 92-18 shows the approved state machine. Our previously presented analysis shows that this state machine takes on average 14 us to lock. This time is spent looking at every possible alignment in a codeword (31*66). We have found that by adding one extra state to the machine, which tries to match to the parity header pattern, we can reduce the average time to lock to be only 1.5 us.

SuggestedRemedy

Replace fig. 92-18 with the "New State Machine" figure from page 3 of 3av_0805_effenberger_1.pdf.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.5** *P* **82** *L* **46** # 1391

Kramer, Glen Teknovus, Inc.

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

Description of Idle Insertion function can be improved.
Reference to 92-15 is incorrect.
See remedy.

SuggestedRemedy

The receiving PCS must insert the IDLE control characters that need to take the place of the removed FEC parity bytes. The Idle Insertion function is implemeted as two asynchronous processes: input process and the output process. The input process (see Figure 92–15) receives 72-bit vectors from 64B/66B decoder and writes them into Idle Insertion FIFO (called FIFO_II). The output process (see Figure 92–21) reads 72-bit vectors from the FIFO and transferes them to XGMII. The input process operates at a slower rate than the normal XGMII rate due to the fact that the FEC parity blocks are removed by the FEC decoder and not put through the descrambler and 64B/66B decoder. The output process operates at the nominal XGMII rate. To match the input and output rates, the output process sometimes inserts additional 72-bit vectors containing IDLE codes. The additional blocks are not necessarily inserted in the same locations where parity blocks have been removed.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.5.1.1** *P* **85** *L* **1** # 1329

Effenberger, Frank Huawei Technologies,

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

output_buffer[] definition is in the wrong place

SuggestedRemedy

Remove this definition, as I replaced it with the correctly spelled version in the right place in subsection 92.2.3.2.1.1.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.2** *P* *L* # 1499

Remein, Duane Alcatel-Lucent

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

2.2.3.6.2 Variables
output_buffer[] does not appear to get used anywhere, should this be out_buffer[] instead?

SuggestedRemedy

Replace with "out_buffer[]"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.2** *P* *L* # 1498

Remein, Duane Alcatel-Lucent

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

2.2.3.6.2 Variables
input_buffer[] does not appear to get used anywhere, should this be inbuffer[] instead?

SuggestedRemedy

Replace with "in_buffer[]"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.3** *P* *L* # 1500

Remein, Duane Alcatel-Lucent

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

Errors in function Read_outbuffer(i)
init offset should include underscore(?), never defined.
rx_coded_corrected never defined

SuggestedRemedy

Add code line "// offset - local variable "
Change ""init offset" to "offset"
Add Definition:
"rx_coded_corrected<0..65>
65 bite buffer used to store corrected 65-bit block of data from FEC decoder."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.8** *P* *L* # 1482

Remein, Duane Alcatel-Lucent

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

92.2.3.6.8 State Diagrams
Figure 92-20 PCS Write to queue
Function FIFO.Append never defined (note already have a FIFO[N] defined in ReceiveNextBlock)

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.8** *P* *L* # 1502

Remein, Duane Alcatel-Lucent

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

92.2.3.6.8 State Diagrams
Figure 92-22 BER Monitore State Diagram (ONU only)
signal(?) reset not defined (also in Fig 92-18 Codeword lock state machine)
signal(?)r_test_mode note defined
signal(?)block_lock not defined
variable hi_ber is not defined
variable ber_cnt is not defined
variable ber_test_sh is not defined

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.8** *P* *L* # 1501

Remein, Duane Alcatel-Lucent

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

92.2.3.6.8 State Diagrams
Figure 92-21 PCS read from queue/Insert IDLE
Function FIFO.Fill never defined (note already have a FIFO[N] defined in ReceiveNextBlock)
Function FIFO.Remove never defined
Function FIFO.PeakHead never defined

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.3.6.8** *P* *L* # 1483

Remein, Duane Alcatel-Lucent

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

92.2.3.6.8 State Diagrams
Figure 92-18 Codeword lock state machine
variable test_sh is never defined
counter sh_cnt is never defined
counter sh_invalid_cnt is never defined
slip_done is never defined, only set to FASLE
function SLIP is never defined.
reset never defined
signal_OK never defined

SuggestedRemedy

Original author to provide definitions.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.4** *P* **85** *L* **37** # 1454

Mandin, Jeff PMC Sierra

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

Subclause mistitled/numbered

SuggestedRemedy

Change 92.2.4 "PCS Management" to 92.2.3.6 "BER Monitor"

Also, move figure 92-21 (IDLE insertion) into section 92.2.3.5

Also delete empty subclause 92.2.4.1

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.4.1** *P* **69** *L* **6** # 1227

Geng, Dongyu Huawei Technologies

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

I believe we have wrong numbering D218. It should be D219 instead.

SuggestedRemedy

Change "D218" to "D219".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.4.1.1.1** *P* **86** *L* **51** # 1455

Mandin, Jeff PMC Sierra

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

Missing register identifier

SuggestedRemedy

Change "tbd" to 3.74.

Make same change on page 87 line 3.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.4.1.1.3** *P* **87** *L* **15** # 1450

Mandin, Jeff PMC Sierra

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

BER Monitor is ONU-only and this should be stated directly.

SuggestedRemedy

Change "The BER Monitor state machine which is used only in the ONU, is shown in Figure 92-2" to:

"The BER Monitor state machine is present only in the ONU. It is shown in Figure 92-2".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.4.1.1.3** *P* **88** *L* **42** # 1452

Mandin, Jeff PMC Sierra

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

Variables that are "missing" are actually inherited from clause 49

SuggestedRemedy

Since clause 92 is no longer an extension of clause 49, the text in clause 49 that describes the variables mentioned in the editor's note on page 88 should be copied into clause 92.

The same thing is true of the downstream sync fsm which is missing variables.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.2.5** *P* **72** *L* **42** # 1229

Geng, Dongyu Huawei Technologies

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

For synchronization pattern 0x55, its binary format should be 1010...,(see line 18, page 68, in draft 1.2).

SuggestedRemedy

Change "The ONU burst transmission begins with a synchronization pattern 0x55 (binary 0101...)" to "The ONU burst transmission begins with a synchronization pattern 0x55 (binary 1010...)".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.3** *P* **89** *L* **1** # 1393

Kramer, Glen Teknovus, Inc.

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

PMA subclause is empty (action item taken in Tokyo)

SuggestedRemedy

Use text proposed in 3av_0805_kramer_1.pdf

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.3.5.1** *P* **84** *L* **33** # 1392

Kramer, Glen Teknovus, Inc.

Comment Type **TR** *Comment Status* **X**

There are several issues with Idle Insertion state machines (refer to Figs 92-20 and 92_21)

1) Need to disambiguate the FIFO used here from the FIFO used in Data Datector.
2) In 92-20, FrameReadyCount and FrameReadyCnt used.
3) Missing parenthesis in "FIFO.PeakHead()" in 92-21
4) No notation defined to explain how PrevVector or NextVector should be compared to IDLEs. The convention in Clause 49 is to use function T_TYPE().

SuggestedRemedy

1) rename FIFO to FIFO_II, to disambiguate from FIFO (FIFO_DD) used in data Detector.

2) in 92-20, remove variables PrevVector and NextVector. A conventional approach using T_TYPE() would be better and would simplify state machine. See 3av_0805_kramer_3.pdf page 1 for modified state machine.

3) change caption of 92-20 to "PCS Idle Insertion, input process state machine"

4) in 92-21, also use T_TYPE() convention, as shown in 3av_0805_kramer_3.pdf, page 2.

5) change caption of 92-21 to "PCS Idle Insertion, output process state machine"

6) Use variable, function, and message definitions as shown on pages 3 and 4 of 3av_0805_kramer_3.pdf

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.4** *P* **90** *L* **1** # 1300

Hajduczenia, Marek Nokia Siemens Networ

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

As assigned during the meeting in April in Tokyo, I contribute PICS for Clause 92. Special thanks to Eric for the Perl script.

SuggestedRemedy

Replace subclause 94.4 in D1.3 with the contents of 3av_0805_hajduczenia_5.pdf.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.4** *P* **90** *L* **1** # 1394

Kramer, Glen Teknovus, Inc.

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

Empty page left after the 92.4 title.

SuggestedRemedy

Move 92.4.1 to start on page 90

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A** *P* **94** *L* **38** # 1417

Hirth, Ryan Teknovus

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

Notation '66b' should be avoided

SuggestedRemedy

Globally replace '66b' with '66-bit' throughout the clause, except where used as '64B/66B' or vice versa.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.1** *P* **94** *L* **34** # 1419

Hirth, Ryan Teknovus

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

Incorrect reference to Clause 92.2.3.4 '66B/64B Decode', intended reference should regard the FEC frame format.

Similar problem in Clause 92A.8, page 98, line 33.

SuggestedRemedy

Correct reference may be section 92.2.2.4.3 titled 'FEC Transmission Block Formating'.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.2** *P* **94** *L* **38** # 1415

Hirth, Ryan Teknovus

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

'66b' should be '66B', the formatting for various encodings always uses the uppercase version of the base.

SuggestedRemedy

Throughout the clause this formatting error is repeated. Change all occurrences of '64b' to '64B', and '66b' to '66B'.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.2** *P* **94** *L* **45** # 1416

Hirth, Ryan Teknovus

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

Inconsistent formatting, change '64 bit' to '64-bit'.

SuggestedRemedy

Change all occurrences of '64 bit' or '64bit' to '64-bit' within the clause.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.2** *P* **95** *L* **19** # 1420

Hirth, Ryan Teknovus

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

The 28th 'Sync' cell (row 7, column 4) of the table should be blank.

SuggestedRemedy

Delete '10' from this cell.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.4** *P* **96** *L* **27** # 1421
Hirth, Ryan Teknovus

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

Reference is made to the incorrect figure '92-8'.

The problem also occurs in Clause 92A.5, page 97, line 11 and line 13.

Also Clause 92A.6, page 98, line 1.
Also Clause 92A.7, page 98, line 20.

SuggestedRemedy

replace in all three locations 'figure 92-8' with 'Figures 92-12 and 92-13'

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.5** *P* **97** *L* **13** # 1418
Hirth, Ryan Teknovus

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

Reference is made to 'table tbd-2'.

Also, Clause 92A.6, page 98, line 1 refers to 'table tbd-3'

Also, Clause 92A.8, page 98, line 31 refers to 'table tbd.1'

SuggestedRemedy

'table tbd-2' appears to be the table on page 97, lines 17-48.

'table tbd-3' appears to be the table on page 98, lines 5-11.

'table tbd.1' appears to be the table on page 95, lines 1-20.

All tables in this clause need titles.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93** *P* **100** *L* **1** # 1257
Lynskey, Eric Teknovus

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

We already have a clause titled "Multipoint MAC Control". There should be something in the title of the clause that tells the reader why they should be reading it. We have gone back and forth and ultimately decided that we cannot remove all speed knowledge from the clause. We should be upfront with the reader and state in the title that this clause specifically refers to Multipoint MAC Control for 10Gb/s systems.

SuggestedRemedy

Change clause title to "Multipoint MAC Control for 10Gb/s operation". Also, modify the first sentence to read, "This clause deals with the mechanism and control protocols required in order to reconcile the 10Gb/s P2MP topology into the Ethernet framework."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **101** *L* **40** # 1278
Hajduczenia, Marek Nokia Siemens Networ

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

Incorrect references pointing to clauses 65 and 60. Since there are plenty of them, I will list them in here:
93.1, page 101, line 40 - Since we are in Clause 93, it would be more natural to have reference to 92.
93.1, page 101, line 44 - there is reference to Clause 60 PMDs, while Clause 93 MPCP is supposed to work with Clause 91 PMDs.
93.1.2, page 102, line 38 - reference to clause 65.1.3.3.
93.2.1, page 106, line 6 - reference to clause 65.1
93.3.2.2, page 121, line 8 - reference to clause 65.1.3.3.2
93.3.3.2, page 126, line 25 - reference to clause 60.7.13.2

SuggestedRemedy

Suggested remedies are provided in the same order and for the same locations as the comments in the comment field:
- Change "(see LLID in Sublause 65.1.3.3.2" to "(see LLID in Sublause @@92.1.6.2.3.2@@".
- Change "Physical Layer devices defined in Clause 60" to "Physical Layer devices defined in Clause 91".
- Change "65.1.3.3" to "92.1.6.2.3"
- change "65.1" to "92.1"
- change "65.1.3.3.2" to "92.1.6.2.3.2"
- change "60.7.13.2" to "@@60.7.13.2@@", reference to be updated once this subsection is added to Clause 91.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **101** *L* **41** # 1473
Remein, Duane Alcatel-Lucent

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

Typo "Sublause 65.1.3.3.2"
also numerous "sublause" references without "@@"

SuggestedRemedy

Replace all "sublause" with "Subclause", use @@ delmiters for all subclause references.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **101** *L* **41** # 1250
Lynskey, Eric Teknovus

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

Invalid reference.

SuggestedRemedy

Replace with 92.1.6.2.3.2.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **101** *L* **45** # 1251
Lynskey, Eric Teknovus

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

Invalid reference.

SuggestedRemedy

Replace with Clause 91.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **99** *L* **16** # 1475
Remein, Duane Alcatel-Lucent

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

Need introductory text to clarify that c93 only applies to 10G-EPON and not 1G EPON.

SuggestedRemedy

placeholder comment, defer to Denver, don't have suggested text just yet

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.1** *P* **101** *L* **52** # 1259
Lynskey, Eric Teknovus

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

Do we really feel that all of these objectives should be met for 10G-EPON, or should we rely on our experience from EPON and realize that some of these goals are unimportant and should be removed.

SuggestedRemedy

Remove or reaffirm goals and objectives.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **102** *L* **11** # 1279
Hajduczenia, Marek Nokia Siemens Networ

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

Change "point-to-multipoint" to "P2MP". In line 28 on the same page, change "Point-to-point" to "P2P". These terms are defined in Clause 56 and should be used consistently.
Term "point-to-point" also appears in the following locations:
page 106, line 5
Term "point-to-multipoint" also appears in the following locations:
page 120, line 21

SuggestedRemedy

Change "point-to-multipoint" to "P2MP". In line 28 on the same page, change "Point-to-point" to "P2P". These terms are defined in Clause 56 and should be used consistently.
Replace the remaining instances of "point-to-point" with "P2P".
Replace the remaining instances of "point-to-multipoint" with "P2MP".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **102** *L* **30** # 1307

Hajduczenia, Marek Nokia Siemens Networ

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

The term "10 Gb/s downstream ONUs" does not seem to be precise enough. Additionally, in line 32, it is mentioned that "a single copy of a frame that is received by all ONUs." - seems that also 1G ONUs will receive this information as well. This is not true due to WDM multiplexing.

SuggestedRemedy

Change "10 Gb/s downstream ONUs" to "ONUs capable of receiving 10 Gb/s downstream signal".
Change "a single copy of a frame that is received by all ONUs." to ""a single copy of a frame that is received by all ONUs capable of receiving 10 Gb/s downstream signal."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **102** *L* **37** # 1252

Lynskey, Eric Teknovus

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

Invalid reference.

SuggestedRemedy

Replace with 92.1.6.2.3.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **103** *L* **1** # 1395

Kramer, Glen Teknovus, Inc.

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

Figure 93-2 has non-uniform line thickness

SuggestedRemedy

Make line thickness uniform for all boxes and identical to other layering diagrams

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **103** *L* **1** # 1308

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 93-2 is not correct. 10G-EPON does not use GMII in the way depicted in the said figure.

SuggestedRemedy

Replace Figure 93-2 with the contents of 3av_0805_hajduczenia_9.pdf. Two figures are proposed, representing the symmetric and asymmetric 10G-EPON options.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **103** *L* **14** # 1260

Lynskey, Eric Teknovus

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

This coment applies to Figure 93-2. This figure only shows a GMII, and no XGMII is included.

SuggestedRemedy

Make figure consistent to that in Clause 91 and Clause 92.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.2** *P* **103** *L* **2** # 1494

Remein, Duane Alcatel-Lucent

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

Figure 93–2—Relationship of Multipoint MAC Control and the OSI protocol stack should be replaced with ones similar to 91-1 & 91-2.

SuggestedRemedy

Replace figure with appropriate modifications.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1.3** *P* **104** *L* **7** # 1261

Lynskey, Eric Teknovus

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

Interfaces shown in diagram are inconsistent with those in Clause 64 and do not reflect the new interfaces specified in 802.3as-2006 and 802.3/D2.2 Section 5. Although this comment only mentions this specific figure, there are a large number of other changes that will need to be made at some point in time in order to make the draft consistent with 802.3. These changes include figures, state diagrams, and text.

SuggestedRemedy

Update diagram.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.1** *P* **106** *L* **7** # 1254

Lynskey, Eric Teknovus

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

Invalid reference.

SuggestedRemedy

Replace with 92.1.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.1.1** *P* **107** *L* **12** # 1480

Remein, Duane Alcatel-Lucent

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

"RTT" not defined

SuggestedRemedy

Define this abreviation before using.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **24** # 1262

Lynskey, Eric Teknovus

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

The defaultOverhead constant is no longer needed, since FEC is mandatory. If it were needed, it would also have to be updated for 10G, as the current value of 6 time_quanta (120 bytes) is not correct.

SuggestedRemedy

Remove the defaultOverhead constant from this subclause. Also, remove references to this constant in Figure 93-12 (page 118 line 43) and in Figure 93-13 (page 119 line 44).

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **24** # 1481

Remein, Duane Alcatel-Lucent

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

Incorrect paragraph styles used for constants variables etc.

SuggestedRemedy

use paragraph style VariableList from most recent Style Guide.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **25** # 1280

Hajduczenia, Marek Nokia Siemens Networ

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

Aling the spelling of time quaonta. Sometimes it is used as "time quanta", other times as "time_quanta".
Another example in:
93.2.2.2, page 111, line 16
93.2.2.3, page 111, line 46
93.2.2.3, page 112, line 17
93.2.2.3, page 112, line 30
93.3.3, page 122, line 19
93.3.3.2, page 125, line 47
93.3.3.2, page 126, line 3
93.3.3.2, page 126, line 22
93.3.5.1, page 138, line 27

SuggestedRemedy

Replace "This overhead is measured in units of time quanta" with "This value is measured in units of time_quantum". Search globally for occurences of "time quanta" and examine whether similar replacement is not necessary.
In 93.2.2.2, page 111, line 16, replace "counts in time_quanta" with "counts in units of time_quantum".
In 93.2.2.3, page 111, line 46, as well as 93.2.2.3, page 112, line 17/30 replace "represented in units of time_quanta" to "represented in units of time_quantum".
In 93.3.3, page 122, line 19, change "in the units of time_quanta" to "in units of time_quantum" to align with the rest of the section.
In 93.3.3.2, page 125, line 47, change "counts in time_quanta units" to "counts in units of time_quantum"
In 93.3.3.2, page 126, line 3, change "counts in time_quanta units" to "counts in units of time_quantum"
In 93.3.3.2, page 126, line 22, change "counts time_quanta units" to "counts the number of units of time_quantum"
In 93.3.5.1, page 138, line 27, change "in units of time_quanta" to "in units of time_quantum"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **29** # 1281

Hajduczenia, Marek Nokia Siemens Networ

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

The word "maximal" is kind of weird. It should be "maximum".

SuggestedRemedy

Replace all the occurences of "maximal" with "maximum.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **44** # 1255

Lynskey, Eric Teknovus

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

sie

SuggestedRemedy

Replace with "size".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.1** *P* **110** *L* **44** # 1474

Remein, Duane Alcatel-Lucent

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

Someone borrowed a "z" in "the sie of last"

SuggestedRemedy

but the "Z" back to read "the size of last"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.2** *P* **111** *L* **18** # 1263

Lynskey, Eric Teknovus

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

Invalid reference to Clause 65. Unfortunately, the necessary text does not currently exist in Clause 92. The new location will be 92.3.1.2, but it doesn't make sense for a requirement to point to an empty section of text, and this comment is not offering any text to fill that location. It also does not make sense to let the old/wrong reference remain.

SuggestedRemedy

Update the reference to 92.3.1.2 (or correct location) if and only if text is provided for that section. Since we don't want to add a TBD to the draft, I would suggest removing the sentence if the text is not provided by another comment.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.3** *P* **111** *L* **39** # 1309

Hajduczenia, Marek Nokia Siemens Networ

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

Variable "fecEnabled" should not be present in C93, since FEC is always on.

SuggestedRemedy

Remove "fecEnabled" variable from the list in 93.2.2.3.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.3** *P* **111** *L* **41** # 1265

Lynskey, Eric Teknovus

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

Since FEC is mandatory, there is no need for the fecEnabled variable, as it would always return TRUE.

SuggestedRemedy

Remove the fecEnabled variable and update the necessary state diagrams: Figure 93-12 (page 118 line 41), Figure 93-13 (page 119 line 30 and 41), page 139 line 25, Figure 93-29 (page 144 line 17).

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.3** *P* **112** *L* **3** # 1310

Hajduczenia, Marek Nokia Siemens Networ

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

The text reads "The value of nextTxTime includes packet transmission time, tailGuard defined in Subclause 93.2.2.1, and FEC parity data overhead, if FEC is enabled". 10G-EPON has the FEC always on.

SuggestedRemedy

Strike out the words", if FEC is enabled".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.3** *P* **112** *L* **5** # 1264

Lynskey, Eric Teknovus

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

FEC is mandatory, so the nextTxTime variable will always include the FEC parity data overhead.

SuggestedRemedy

Remove the part of the sentence reading "if FEC is enabled".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.4** *P* **104** *L* **35** # 121173

Lynskey, Eric Teknovus

Comment Type **T** *Comment Status* **D** *Deferred to Munich*

FEC Overhead function is incorrect. As it is currently written, the overhead will accumulate between frames. If there is a large gap between two frames, then the localTime - prevTime value will be large. There is no need to take this amount of time into consideration when calculating the overhead. See 3av_0804_lynskey_3.pdf.

SuggestedRemedy

Adopt FEC_Overhead function as described on slide 8 of 3av_0804_lynskey_3.pdf.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

@@Two proposals will be discussed in Munich i.e. cummulative overhead (Lior) and per frame overhead (Eric).@@

Place an editors' note to the draft D1.3 with the indication that the FEC_Overhead is broken and needs fixing before moving to the WG ballot.

Cl **93** *SC* **93.2.2.4** *P* **113** *L* **18** # 1236
Lynskey, Eric Teknovus

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

Function is not used.

SuggestedRemedy

Remove function.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.4** *P* **113** *L* **18** # 1303
Hajduczenia, Marek Nokia Siemens Networ

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

Function 10G_PCS_Overhead is not used anywehere in Clause 93 state machines. As such, it is redundant and can be removed.

SuggestedRemedy

Remove function 10G_PCS_Overhead.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.4** *P* **113** *L* **19** # 1266
Lynskey, Eric Teknovus

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

The 10G_PCS_Overhead function is not used anyplace.

SuggestedRemedy

Remove function.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.4** *P* **114** *L* **1** # 1239
Lynskey, Eric Teknovus

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

FEC_Overhead function is incorrect.

SuggestedRemedy

Replace function and variables with the new function defined in 3av_0805_lynskey_1.pdf.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.4** *P* **124** *L* **119** # 1459
Khermosh, Lior PMC-SIERRA

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

As I have promised in the IEEE meeting, I have put in another look at the FEC_overhead function to try to suggest a coherent behavior. These are my conclusions. Appreciate comments.

A bit of a history.
The FEC_overhead function is a legacy heritage from 802.3ah clause 64. The function appears in 3 places with 2 use cases.
Basically the function calculates the additional overhead that should be added to a packet due to the FEC. In the 802.3ah frame based FEC, this is a value per packet which depends only on the packet length.

1) OLT transmit state machine:
The overhead is used to add a delay after the packet, to stall the MPCP layer (which also inserts timestamp) to match the MAC transmission.

2) ONU transmit state machine.
The overhead appears in 2 places:
A) The overhead is used to check if the packet fits inside the remaining time for grant transmission.
B) The overhead is used to add a delay after the packet, to stall the MPCP layer (which also inserts timestamp) to match the MAC transmission.

3) Gate processing ONU activation state diagram
The overhead is used to reduce the window for the random delay.

Use in 802.3av
Currently the function was exported to the 802.3av, as is, in all state machines, just the formula was changed a bit.
However when checking, it seems that a different adaptation is needed due to the fact that the FEC is now stream based and not packet based.
Looks like it would be more convenient to divide the overhead into 2 functions for each use case in the state diagrams.
One function (FEC_Overhead_tx) to check if the packet fits the grant and the other (FEC_Overhead_delay) calculating the delay for the MAC.
(Basically the discovery calculation should use the first function however we can simply put in there a fixed value of single CW, as all values there are fixed and known (frame size is 64bytes) and have the random in CW granularity).

The FEC_Overhead_tx takes all worse case rounding scenarios. It includes rounding up of the current packet size into the nearest FEC codeword. (This what would happen if it is the last frame in the grant)

The FEC_Overhead_delay reflects the estimated delay required after a packet due to insertion of FEC overhead. So the average value for IPG (ie. 12) is used, and the packet size (plus the "balance" remaining from the previous packet) should be rounded down to

the nearest FEC block. If the FEC block is not full then the there is no delay added.

The FEC overhead is a function of packet length, IPG and (localTime-beginTime). (localTime-beginTime) defines the position of the packet in the FEC codeword's chain.
At the OLT - beginTime is the OLT init time.
At the ONU - beginTime is the start of the Fec codewords in the grant (start_time+laser_on+syn_time)

Inaccuracies:
There is an inherent inaccuracy in both functions since the MPCP layer works in TQs and not bytes.

Another inaccuracy is involving the IPG which should be added in the overhead. IPG changes in 10G between 9-15bytes due to the DIC functionality.
The state machines of the MPCP coordinates between the MAC and MAC control which are not aware of the DIC so we could have fixed IPG to 12bytes. However the function really should be aware of the line transmission so DIC should be accounted.
FEC_Overhead_tx can must ensure that the packet can be transmitted. So it either takes worse case for the IPG (15 bytes) or holds a DIC function like the RS and monitor the real IPG.

FEC_Overhead_delay can use the average of 12 bytes and MAC would be aligned. The data on the line will jitter in 3bytes (added to the RTT jitter).

SuggestedRemedy

FEC_Overhead_tx(length)
This function calculates the size of additional overhead, to be added by the FEC encoder, while encoding a frame of size length, using worst-case assumptions about FEC parity requirements for the frame. The function is used to check if the packet fits the grant.

This function is calculated at the beginning of the packet.
Parameter length represents the size of an entire frame including preamble, SFD, DA, SA, Length/Type, and FCS.
As described in Clause @@92.2.3@@, FEC encoder adds 32 parity octets for each block of 216 data or control octets.
The following formula is used to calculate the overhead:

Parameters:
IPG [bytes] - IPG =15
payloadBalance [bytes]
FEC_Overhead_tx [TQs]
length [bytes] - the length of a packet, not including IPG
beginTime [TQs]
localTime [TQs]

Initial conditions
OLT:
beginTime = start_of_time
payloadBalance =0

For the ONU the initial conditions are set at beginning of a grant:
beginTime = start_of grant_time + laser_on + sync_time
payloadBalance =0

The value for each packet:
payloadBalance = ((localTime – beginTime)*20)%248 + length + IPG
FEC_overhead_tx = round_up(((32+ 216) *round_up(payloadBalance / 216) - payloadBalance)/20)

FEC_Overhead_delay(length)
This function calculates the size of additional overhead to be added by the FEC encoder while encoding a frame of size length as the last frame in the grant.
The function provides the additional delay before the next packet to fit to the gap the FEC encoder needs for the parity bytes
This function is calculated at the beginning of the packet.
Parameter length represents the size of an entire frame including preamble, SFD, DA, SA, Length/Type, and FCS.
As described in Clause @@92.2.3@@, FEC encoder adds 32 parity octets for each block of 216 data or control octets.
The following formula is used to calculate the overhead:

Parameters:
IPG [bytes] - IPG =12
payloadBalance [bytes]
FEC_Overhead_tx [TQs]
length [bytes] - the length of a packet, not including IPG
beginTime [TQs]
localTime [TQs]

Initial conditions
OLT:
beginTime = start_of_time
payloadBalance =0

For the ONU the initial conditions are set at beginning of a grant:
beginTime = start_of grant_time + laser_on + sync_time
payloadBalance =0

The value for each packet:
payloadBalance = ((localTime – beginTime)*20)%248 + length + IPG
FEC_overhead_delay = round_up(32/20*round_down(payloadBalance / 216))

NOTE–The notation round_up(x) represents a ceiling function, which returns the value of its argument x rounded up to the nearest integer. The notation round_down(x) represents a

flooring function, which returns the value of its argument x rounded down to the nearest integer. The notation a%b represents a modulo division of two numbers a and b.

Also change in Figure 93-12 on page 118 at the "start packet initiate timer" state on line 42 the FEC_overhead to FEC_overhead_delay

Also change in Figure 93-13 on page 119 at the "check Size" state on line 31 the FEC_overhead to FEC_overhead_tx

Also change in Figure 93-13 on page 119 at the "start packet initiate timer" state on line 43 the FEC_overhead to FEC_overhead_delay

Also in Figure 93-13:

* Add the following text at the beginning of the "Transmit Frame" State on line 36 (ie. before the invocation of "TransmitFrame"):

"packet_initiate_delay = FEC_Overhead_Delay(length+tailGuard)"

* delete the first four lines from the "start packet initiate timer" state on line 43 (so that the only text remaining is "[start packet_initiate_timer, packet_initiate_delay]"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.5** *P* **114** *L* **50** # 1267

Lynskey, Eric Teknovus

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

Since FEC is always enabled, the packet_initiate_timer will always accommodate the FEC parity.

SuggestedRemedy

Remove the part of the sentence reading, "when FEC is enabled".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.5** *P* **114** *L* **50** # 1311

Hajduczenia, Marek Nokia Siemens Networ

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

The text reads "In addition, when FEC is enabled, this timer increases interframe spacing just enough to accommodate the extra parity data to be added by the FEC encoder". 10G-EPON have FEC mandatory.

SuggestedRemedy

Strike out ", when FEC is enabled,"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.7** *P* **118** *L* **39** # 1312

Hajduczenia, Marek Nokia Siemens Networ

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

State "START PACKET INITIATE TIMER" is affected.
Since FEC is always on, the condition statement does not make sense

SuggestedRemedy

Strike out lines
"if (fecEnabled)"
"else"
"packet_initiate_timer = defaultOverhead"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2.2.7** *P* **119** *L* **29** # 1313

Hajduczenia, Marek Nokia Siemens Networ

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

State "CHECK SIZE" is affected
State "START PACKET INITIATE TIMER" is affected.
FEC is always ON.

SuggestedRemedy

Strike out the line in "CHECK SIZE" state - "if (fecEnabled)"
Strike out lines in "START PACKET INITIATE TIMER" state
"if (fecEnabled)"
"else"
"packet_initiate_timer = defaultOverhead"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3** *P* **120** *L* **7** # 1284

Hajduczenia, Marek Nokia Siemens Networ

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

The term "message" should not be used in Clause 93 without specifying what kind of message it is. Since we have a coined term for that i.e. MPCPDU, we should perhaps use it consistently in the Clause.
Several occurences should be aligned, as indicated in the Suggested Remedy.

SuggestedRemedy

93.3, page 120, line 7 - change "report message" to "REPORT MPCPDU"
93.3, page 120, line 9 - change "gate message" to "GATE MPCPDU"
93.3.2.4, page 121, line 38 - change "gate message" to "GATE MPCPDU"
93.3.3, page 122, line 31 - change "GATE message" to "GATE MPCPDU"
93.3.3, page 122, line 38 - change "REGISTER message" to "REGISTER MPCPDU"
93.3.3, page 122, line 39 - change "REGISTER_REQ message" to "REGISTER_REQ MPCPDU"
93.3.4.1, page 134, line 36 - change "MPCPDU messages" to "MPCPDUs"
93.3.4.1, page 134, line 42 - change "REPORT messages" to "REPORT MPCPDUs"
93.3.4.4, page 135, line 21 - change "REPORT message" to "REPORT MPCPDU"
93.3.5, page 137, line 35 - change "GATE message" to "GATE MPCPDU"
93.3.5, page 137, line 37 - change "GATE message" to "GATE MPCPDU"
93.3.5, page 137, line 45 - change "GATE messages" to "GATE MPCPDUs"
93.3.5, page 137, line 47 - change "gate messages" to "GATE MPCPDUs"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.2.2** *P* **121** *L* **8** # 1268

Lynskey, Eric Teknovus

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

Invalid reference to Clause 65.

SuggestedRemedy

Replace with 92.1.6.2.3.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.2.3** *P* **121** *L* **27** # 1256

Lynskey, Eric Teknovus

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

10Gb/s EPON

SuggestedRemedy

Replace with 10G-EPON.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.2.4** *P* **121** *L* **39** # 1282

Hajduczenia, Marek Nokia Siemens Networ

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

The statament "The unit of time_quantum is defined as 16 ns" is redundant.

SuggestedRemedy

Change "The ONU shall process all messages in less than this period. The OLT shall not issue more than one message every 1024 time_quanta to a single ONU. The unit of time_quantum is defined as 16 ns." to "The ONU shall process all messages in less than this period. The OLT shall not issue more than one message every 1024 time_quanta to a single ONU (see Subclause @@93.2.2.1@@ for definition of time_quantum)."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.2.4** *P* **121** *L* **39** # 1269

Lynskey, Eric Teknovus

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

We should not be writing definitions of time_quantum in multiple locations. If we want to specify a value here, we should make a cross reference back to the original definition of time_quantum.

SuggestedRemedy

Option 1: Remove sentence "The unit of time_quantum is defined as 16ns."
Option 2: Replace sentence with "The unit of time_quantum is defined in 93.2.2.1."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.3** *P* **122** *L* **18** # 1271

Lynskey, Eric Teknovus

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

The "shall" statement referring to the ONU notifying the OLT of the laser on and off times seems to be out of place. The ONU should be required to fill in all of the fields of all MPCP frames the correct way. If it isn't, then let's fix that problem first. Requirements on these messages should be placed in the subclause that contains the actual message and not in this mostly descriptive text.

SuggestedRemedy

Reword sentence as follows, "... the registering ONU notifies the OLT of the laser on / off times..."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.3** *P* **122** *L* **6** # 1270

Lynskey, Eric Teknovus

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

The "shall" statement referring to the ONU waiting a random amount of time before transmitting a REGISTER_REQ seems to be redundant. I believe the draft already has a requirement that the appropriate state diagram be implemented and followed by the ONU. This state diagram contains a number of requirements, and I do not think it is necessary to specifically duplicate this requirement in the text. As it is, the state diagram takes precedence over the text.

SuggestedRemedy

Reword the sentence as follows, "Each ONU waits a random amount of time..."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.3** *P* **122** *L* **7** # 1283

Hajduczenia, Marek Nokia Siemens Networ

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

Term "discovery time window" seems overspecified. "discovery window" seems sufficient. The same is true for "discovery time period" in line 8 on the same page.

SuggestedRemedy

Change "discovery time window" to "discovery window"
Change "discovery time period" to "discovery window"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.3** *P* **124** *L* **1** # 1314

Hajduczenia, Marek Nokia Siemens Networ

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

Figure 93-15, 93-16 and 93-17 is affected.
In Figure 93-15, MA_CONTROL.request(DA, REGISTER, LLID, status, pending_grants) is missing laserOnTime and laserOffTime parameters
In Figure 93-16, MA_CONTROL.request(DA, REGISTER, LLID, status, pending_grants) is missing laserOnTime and laserOffTime parameters
In Figure 93-17, MA_CONTROL.request(DA, REGISTER_REQ, status) is missing laserOnTime, laserOffTime, discoveryInformation parameters
Definitions in 93.3.3.5 also need alignment

SuggestedRemedy

Replace Figure 93-15, 93-16 and 93-17 with Figures presented in 3av_0805_hajduczenia_10.pdf. Changes are marked in red.
Definitions in 93.3.3.5 also need alignment as presented in 3av_0805_hajduczenia_ 10.pdf.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.3.2** *P* **126** *L* **25** # 1258

Lynskey, Eric Teknovus

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

Invalid reference to Clause 60. The referenced section in Clause 60 talks specifically about 1G upstream requirements, including 8B/10B patterns. It does not apply to 10G systems. Unfortunately, the necessary text does not seem to exist in Clause 91.

SuggestedRemedy

Create a new subclause in 91 that can be referenced to.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.5.1** *P* **139** *L* **9** # 1285

Hajduczenia, Marek Nokia Siemens Networ

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

In currentGrant variable, the structure description is malformed

SuggestedRemedy

Move the line "structure {" to the next line and align with the remainder of the body of the definition.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.5.2** *P* **139** *L* **36** # 1304

Hajduczenia, Marek Nokia Siemens Networ

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

Either I am reading it wrong or in the maxDelay variable it is indicated that the discovery process begins with the REGISTER MPCPDU transmitted from the ONU. This is incorrect. REGISTER_REQ MPCPDU is transmitted.

SuggestedRemedy

Change both occurences of REGISTER in maxDelay variable to REGISTER_REQ. 802.3ay D2.2 should also be scrutinized - see page 284, line 16. We can open Clause 64 in 802.3-2008 once it is approved and have it corrected.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.5.2** *P* **139** *L* **36** # 1238

Lynskey, Eric Teknovus

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

Referring to the definition of the maxDelay variable, the ONU sends REGISTER_REQ messages, not REGISTER messages. In two places, this should be fixed. This error also exists in Clause 64.

SuggestedRemedy

In both instances, replace REGISTER with REGISTER_REQ.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.5.2** *P* **42** *L* **5** # 110977

Lynskey, Eric Teknovus

Comment Type **T** *Comment Status* **D** *Deferred to Munich*

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* **93.3.5.6** *P* **135** *L* **18** # 121149

Lynskey, Eric Teknovus

Comment Type **T** *Comment Status* **D** *Deferred to Munich*

This comment is against Figure 93-29. If the new FEC_Overhead equation and values of discoveryGrantLength are adopted, then FEC_Overhead(discoveryGrantLength * tqSize) will return a value of 0. There is no reason to keep this around if the state diagram is only for 10G. The value of maxDelay will be the same whether or not FEC is enabled.

SuggestedRemedy

In RANDOM_WAIT state of Figure 93-29, remove the if(fecEnabled = true) clause.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

@@Resolve together with #1173@@

Cl **93** *SC* **93.3.5.6** *P* **142** *L* **3** # 1286

Hajduczenia, Marek Nokia Siemens Networ

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

Errored references to Figure 93-26 and 93-27.

SuggestedRemedy

Change reference to 93-26 in line 3 to 93-27 and reference to 93-27 in line 4 to 93-28

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.5.6** *P* **143** *L* **47** # 1306

Hajduczenia, Marek Nokia Siemens Networ

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

Per discussion at the last meeting (in April 2008), it was identified that under certain conditions, the incoming discovery GATE grant may be not addressed to the given ON (e.g. wrong data rate) while it is still inserted into the queue and the ONU will act upon it (even though it is not supposed to). It is necessary to modify Figure 93-28 as proposed in 3av_0805_hajduczenia_6.pdf

SuggestedRemedy

Replace Figure 93-28 with 3av_0805_hajduczenia_6.pdf.
See also the discussion on the changes to the Gate processing at the ONU included in 3av_0805_hajduczenia_7.pdf.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.6.2** *P* **139** *L* **19** # 121175

Lynskey, Eric Teknovus

Comment Type **TR** *Comment Status* **D** *Deferred to Munich*

Issues arise when using the existing REPORT format for 10G upstream. In particular, when multiple priorities or queue sets are present, there is no good mechanism to aggregate requested bandwidth. Each priority needs to calculate its own overhead, and you end up with a lot of wasted bandwidth. A new mechanism for reporting is proposed. See 3av_0804_lynskey_2.pdf for details.

SuggestedRemedy

Add new REPORT message as shown on slides 9 and 10 of 3av_0804_lynskey_2.pdf.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
@@Form an adhoc, which will provide input for Editors to modify the draft accordingly@@

Cl **93** *SC* **93.3.6.2** *P* **149** *L* **8** # 1305

Hajduczenia, Marek Nokia Siemens Networ

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

"The reported length shall be adjusted to account for the necessary inter–frame spacing and FEC parity data overhead, if FEC is enabled." - we have only mandatory FEC as per our baslines. This means that the FEC overhead does not need to be reported to the OLT, which will have to figure out the amount of tim e to allocate to the given ONU.

SuggestedRemedy

Change "The reported length shall be adjusted to account for the necessary inter–frame spacing and FEC parity data overhead, if FEC is enabled." to "The reported length shall be adjusted to account for the inter-frame spacing required for FEC encoding as described in Clause 92."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.3.6.2** *P* **149** *L* **8** # 1240

Lynskey, Eric Teknovus

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

The stream based FEC chosen, along with its constant overhead and mandatory implementation, makes it unnecessary for the ONU to include FEC overhead in its report requests. It also becomes more complicated for the OLT to determine how much time to grant the ONU when the overhead is included. Additional information is provided in 3av_0805_lynskey_2.pdf.

SuggestedRemedy

Replace sentence with, "The reported length shall be adjusted to account for the necessary inter-frame spacing."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.4.1** *P* **155** *L* **48** # 1396

Kramer, Glen Teknovus, Inc.

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

We have not expicitly defined OLT DBA Agent anywhere in the document

SuggestedRemedy

It is better to say "MAC Control Client" instead of "OLT DBA Agent"

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.4.2** *P* **157** *L* **29** # 1397

Kramer, Glen Teknovus, Inc.

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

Footnote after the table 93-9 is irrelevant.

SuggestedRemedy

delete the footnote

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **vi** *L* **10** # 1230

Lynskey, Eric Teknovus

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

Spelling error in Adam's name.

SuggestedRemedy

Change Healy to Healey.

Proposed Response *Response Status* **O**

Cl **99** *SC* **99** *P* **iii** *L* **8** # 1253

Lynskey, Eric Teknovus

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

Note says that front matter is numbered using arabic numbers, but actual numbering is lower case Roman numbers.

SuggestedRemedy

Fix page numbering.

Proposed Response *Response Status* **O**