# Minutes

# 802.3av 10G EPON Task Force Plenary Meeting

# Dallas, TX

Nov 13-16, 2006
Recorded by Duane Remein (duane.remein@alcatel.com)

## Tuesday, 14 Nov 2006

Meeting was opened by G. Kramer at 9:00 AM.
Introductions of attendees was held

### Motion #1

Move that the minutes for September meeting be approved.
1st S. Eleniak 2nd R. Lingle
Approved by Voice Acclamation

G. Kramer reviewed the Task Force WEB site and IEEE Membership rules.
The IEEE Patent Policy was read at 9:10 AM.
Task Force timeline was reviewed by G. Kramer.
Meeting agenda was reviewed by G. Kramer. There was some discussion on the proposed agenda due to conflicts with other task force meetings.

### Motion #2

Motion to approve P802.3av Task Force meeting agenda as proposed.
1st F. Effenberger 2nd D. Langstrom
Y: 25 N: 2 A: 3

The future meeting schedule was reviewed by G. Kramer.

## *Presentations*

### Laser Safety Standards (9:35 AM)

Paul Kolesar – This presentation provided an overview various Laser safety standards. IEC 60825 Part 1/2, FDA/CDRH Title 21, CFR 1040 and ANSI Z136 were covered. Classes of most interest for 10G EPON would be Class 1 or Class 1M. Class 1M allows 20 dBm more output power for wavelengths of interest.

### **Electronic Dispersion Compensation for 10G EPON** (9:50 AM)

Piers Dawe – The presentation gave a short review of EDC including basic principles, strengths, weaknesses, appropriate/inappropriate uses, etc.

### **Discussion on Customer Survey from IEEE** (10:50 AM)

M. Lindsay (IEEE legal counsel) addressed the group on legal aspects of discussion of product cost/price etc. and general IEEE legal concerns about customer surveys. Ensuing discussion focused on what could and could not be asked.

### **Technical Feasibility of EDFA Based Network Architecture for 10GEPON** (11:25 AM)

Pierre Doussiere (presented by Wenbin Jiang) – the presentation proposed to use EDFA technology in a Rx boost configuration at both ONT and OLT.

### **Semiconductor Optical Amplifiers for Passive Optical Networks** (11:35 AM)

Leo Spiekman – This presentation gave a short tutorial on SOA technology.

12:15 – 1:45 Lunch break

### **Raman Crosstalk from Longer Wavelength to Shorter Wavelength** (1:50 PM)

Shinji Tsuji - This presentation was based on results of investigations of Raman crosstalk between various wavelength signals of interest to 10G EPON.

### **Considerations for Tx Launch Power and Rx Sensitivity** (2:05 PM)

Frank Chang – The presentation provided summary of currently available optical transmitters and PIN receivers and some observed historical trends.

### **Report on the High Slit Ratio Ad Hoc Activities** (3:15 PM)

Marek Hajduczenia – The presentation outlined general information on Ad Hoc activities. The task was split into four sub tasks; Channel Insertion Loss, Non-linear Effects, Component Overview, and Power Margins.

### **Task 1: Channel Insertion Loss for 1x64 and 1x128 Split** (3:20 PM)

Marek Hajduczenia - The presentation summarized results of a survey of various available splitters loss characteristics and extrapolate this information for 64 and 128 way splitters.

### **Task 4: Optical Budget Power Margins in 10GEPON Systems** (3:35 PM)

Keiji Tanaka – The presentation provided a summary of optical budget penalties for 10 Gb EPON systems.

## Task 2: Non-linear Effects in PON Fibre Channel (3:47 PM)

Sergey Ten – The presentation discussed various aspects of Stimulated Brillouin Scattering, Self-Phase Modulation and Stimulated Raman Scattering as they relate to 10 Gb EPON.

## Task 3: Overview of TX/RX Technology for High Split EPON (4:10 PM)

Dong-Soo Lee – The presentation provided specifications of available optical components applicable to 10 Gb EPON.

## Closing Remarks and Recommendations [of High Split Ad Hoc] (4:22 PM)

Marek Hajduczenia – A summary and recommendation of four previous presentations. Recommendation is that higher splits (64 and 128) are not economical/feasible at this time. The Ad Hoc has completed its study of high split ratio 10G EPON.

## Future Meeting Straw Polls and Motions (5:00 PM)

### Straw Poll A

Regarding IEEE 802.3av Interim meeting in Monterey, California on January 16-19, 2007:

| | |
|---|---|
| I will definitely attend | 9 |
| I will likely attend | 26 |
| I will likely not attend | 2 |
| I will definitely not attend | 0 |
| Total in room | 41 |

### Motion #3

The IEEE 802.3av Task Force approves and welcomes Interim meeting to be held in Monterey, California on January 16-19, 2007.

1st F. Chang 2nd F. Effenberger

Y: 32 N: 0 A: 5

### Straw Poll B

Regarding IEEE 802.3av Interim meeting in Geneva, Switzerland on May 28-31, 2007:

4 I will definitely attend
30 I will likely attend
5 I will likely not attend
0 I will definitely not attend

### Motion #4

The IEEE 802.3 a Task Force approves and welcomes Interim meeting to be held in Geneva, Switzerland on May 28-31, 2007

1st M. Hajduczenia 2nd H. Frazier

Y: 38 N: 0 A: 3

### Straw Poll C

Regarding IEEE 802.3av Interim meeting in South Korea in September, 2007:
6 I will definitely attend
23 I will likely attend
10 I will likely not attend
1 I will definitely not attend

### Motion #5

The IEEE 802.3av Task Force approves and welcomes Interim meeting to be held in South Korea on September, 2007
1st F. Chang 2nd B. Yeong Yoon
Y: 32 N: 3 A: 6

At 5:30 PM the meeting was adjourned until Wed. Nov. 15 at 9:00 AM.

## Wed, 15 Nov 2006

Meeting was called to order at 9:00 AM.
It was agreed to move the presentation entitled "10Gbps Burst Mode Clock and Data Recovery" from Thursday to Wed.

### How to Control IFG (9:05 AM)

Eric Lynskey – This presentation summarized some existing methods and issues used to slow MAC transmission and proposed a method for 10 Gb EPON.

### Shortened FEC Frames for 10GEPON: Is there any Advantage? (9:35 AM)

G. Kramer – This presentation explored advantages/disadvantages of using shortened FEC Frames in 10 Gb EPON for 3 methods of shortening FEC Frames.

### Scrambling in 10G Ethernet and Applicability to 10G EPON (10:15 AM)

Jeff Mandin – This presentation covered potential issues with scrambling and summarized three potential scrambling methods.

### 10Gbps Burst Mode Clock and Data Recovery (11:10 AM)

YuMin Lin – This presentation showed technical feasibility of performing burst mode clock and data recovery using multi-phase clocks for 10 Gb EPON.

## **Customer Survey** (11:35 AM)

A short discussion was held about the concerns regarding the Customer Survey. The intent of the afternoon session will be identification of features and/or functions that we have little knowledge of (i.e. what are the missing pieces of info for 10 Gb EPON). It was suggested that we don't do a questionnaire but individually present and discuss the features needed as a group of individuals rather than as representatives of specific companies and/or customers.

Adjourned for lunch at 11:45 AM.
Reconvened at 1:30 PM

S. Eleniak began a followup discussion on the customer survey by outlining the original intent of Section 1 of the survey, which was to get a feel of the existing deployment models (split, optical budget reach etc.).
The following straw polls were taken:

### Straw Poll D

1) Assumption: Upstream Max Channel Insertion Loss for 10G/1G (asymmetric mode) is a superset of the existing standard.
Y: 15 N: 6 A: 11 (33 people in room)

### Straw Poll E

2) What Maximum Channel Insertion Loss?

| | | |
|---|---|---|
| PX10: 20dB | Y: 9 | |
| PX20: 24dB | Y: 9 | |
| Class B+: 28dB | Y: 12 | |
| Class B++: 28dB | Y: 18 | |

### Straw Poll F

3) What Wavelength plan?

| | | |
|---|---|---|
| Upstream 10G: | (33 people in room) | |
| 1310 nm | Y: 30 | N: 1 |
| 1490 nm | Y: 0 | N: 24 |
| 1550 nm | Y: 2 | N: 25 |
| 1530-40 nm | Y: 17 | N: 2 |
| 1560 nm and above: | Y: 18 | N: 7 |
| | | |
| Downstream | (29 people in room) | |
| 1310 nm | Y: 0 | N: 26 |
| 1490 nm | Y: 10 | N: 12 |
| 1550 nm | Y: 8 | N: 16 |
| 1530-40 nm | Y: 15 | N: 6 |
| 1560 nm and above | Y: 21 | N: 2 |

It was agreed that taking a customer survey would not be done.

### Topics to be covered in next meeting:

TDM Co-existence
Bring ITU reasoning for 28 dB
Firm proposals on Channel Loss/Wavelength Plan

A new Ad Hoc is being formed to address the PMD Spread sheet revisions. Marek Hajduczenia agreed to chair the Ad Hoc.

### Motion #6

Move we view 2 remaining presentations today.
1st Lowell Lamb 2nd F. Chang
Passed without objections.

### Asymmetric Media Independent Interface (4:00 PM)

Eric Lynskey – This presentation supported an earlier presentation that the necessary elements of an asymmetric RS to PCS interface. The conclusion was that the pertinent clauses should be directly referenced with exceptions noted as opposed to copying existing clauses.

### Example of Economical Comparison of 10G Devices (4:20 PM)

Mitsunobu Kimura – This presentation provided a short summary of transmitter and receiver optical components comparing output power/sensitivity and relative cost.

At 4:35 PM the meeting was adjourned until Thurs. Nov. 16 at 9:00 AM.

## Thurs. 15 Nov. 2006

Meeting was called to order at 9:05 AM.

Additional straw polls were taken on the number of Power Budgets to be specified.

### Straw Poll G

2b) How many 10 Gb Optical Power Budgets should we standardize on (Compatibility with PX10 and PX20 is assumed to be a requirement)?

| | | |
|---|---|---|
| One (for example 28dB for 10G/10G, 10G/1G): | Y: | 1 |
| Two (for example 20dB and 24dB for 10G/10G, 10G/1G): | Y: | 0 |

Three (for example 20, 24dB and 28dB for 10G/10G and 20 and 24dB 10G/1G): Y: 24

No Opinion: 3

Total in room 28

## Straw Poll H

2c) Which 3 Maximum Channel Insertion Loss do you prefer?

~20dB, ~24dB, ~28 dB (i.e. PX10, PX20, B+): Y: 6

~20dB, ~24dB, ~29 dB (i.e. PX10, PX20, B++): Y: 13

~20dB, ~24dB, ~30 dB (i.e. PX10, PX20, C): Y: 2

No Opinion: Y: 7

Total in room: 29

## Straw Poll I

4) Do you prefer Simultaneous Operation?

| | | | | |
|---|---|---|---|---|
| Dual Rate PON: 1G/1G & 10G/1G: | Y: | 14 | N: | 0 |
| Dual Rate PON: 1G/1G & 10G/10G: | Y: | 13 | N: | 5 |
| Single Rate PON (1G/1G): 1G/1G & 10G/1G Dual Speed ONUs: | Y: | 7 | N: | 0 |
| Single Rate PON (1G/1G): 1G/1G & 10G/10G Dual Speed ONUs: | Y: | 3 | N: | 0 |
| Needs further study: | Y: | 20 | N: | 0 |

Total in room 27

G. Kramer presented a revised procedure for presenters at 11:23 AM. Deadline for presentations is the Monday of the week preceding the meeting (for example if a meeting starts on Wed. presentations are due the Monday of the preceding week). Presentations must be in pdf format. Naming convention should be followed (3av_yymm_lastname_n.pdf where yymm = year/month and n is an integer identifier for multiple presentations from a single author). Only non-essential changes are allowed to be made after the submission deadline. Post deadline requests may be allowed based on available time and must be distributed to the group 24 hours before the presentation (exceptions can be made at the discretion of the Chair).

### Straw Poll J

A straw poll regarding the January meeting schedule was taken
Prefer Tue/Wed 22
Prefer Thurs/Fri 6

## Motion #7

Motion that the meeting be adjourned
1st J. Mandin 2nd D. Remein
Passed by voice without opposition

The meeting was adjourned at 11:45 PM.