

Minutes – 10G EPON Task Force Interim Meeting, Knoxville, TN

Sep 18-19, 2006

Recorded by Duane Remein (duane.remein@alcatel.com)

Monday, 18 Sep 2006

For attendee list please refer to

http://www.ieee802.org/3/av/public/2006_09/3av_0609_attendance.pdf

9:00 AM Glen Kramer called the meeting to order, noting that this was the first meeting as a Task Force.

Duane Remein volunteered to serve as Recording Secretary.

Introductions by attendees

Motion #1

Made by Howard Frasier, Seconded by Glen Hirth,
Approve the meeting minutes from the San Diego meeting.
The motion was carrier by voice without opposition

Bob Grow took a vote to confirm Glen Kramer as chair. This vote was passed unanimously.

Glen reviewed the Task Force web site and IEE Membership rules. The IEEE Patent Policy was read by Roger Merel at 9:15 AM.

Task Force timeline was reviewed by Glen. Projected completion is projected in the March 2009 timeframe.

Meeting schedule was reviewed.

Motion #2

Made by Jeff Mandin, Seconded by Ryan Hirth,
“Motion to approve the proposed agenda.”
The motion was carrier by voice without opposition

Future Meeting schedule was reviewed

Nov 12-17, 2006	Hyatt Regency Dallas, TX USA
Mar 11-16, 2007	Caribe Royale, Orlando Florida USA
Jul 15-20, 2007	Hyatt Regency San Francisco, CA USA
Nov 11-16, 2007	Hyatt Regency Atlanta, GA USA
Mar 16-21, 2008	Hyatt Regency New Orleans, Louisiana USA
Jul 13-18, 2008	Hyatt Regency Denver at the Colorado Convention Center, Denver, Colorado USA
Nov. 9-14, 2008	Hyatt Regency Dallas, TX USA

Presentations

10GEPON Co-Existence Alternatives (9:30 AM)

Haim Ben-Amram – This presentation examined co-existence for existing, 1/10G EPON and 10/10 GEPON. Discussion ensued regarding the additional attenuation needed for an external filter required to allow additional wavelengths for WDM downstream wavelength plans. It was believed the attenuation is closer to 1 dB rather than the 0.3 dB quoted. It was also questioned if all three ONT types need to co-exist on a single PON.

Glen described and distributed the attendance books

Coexistence between 10GEPON and 1GEPON (10:00 AM)

Daniel Fonseca & Marek Hajduczenia – suggested that phase modulation be considered for 10G signals.

10:30 AM took morning break.

Issues for wavelength Allocation (10:50 AM)

Shinji Tsuji – This presentation examined optical filter and optical interference issues assuming the ONT used a wavelength greater than 1560 nm. It was noted in discussion following this presentation that to achieve co-existence we must know detailed information on optical characteristics of deployed networks. Glen called for interested parties to prepare material addressing this concern.

Possible Approach to Select a Wavelength Plan (11:20 AM)

Keiji Tanaka and Yukio Horiuchi – the presentation suggested an approach for evaluating various wavelength plans for 10G EPON. It was pointed out that we need to clearly define the intended application and limits of the intended applications. This might be achieved via a survey of providers deploying EPON systems.

Enhanced FEC (1:37 PM)

Ryan Hirth – this presentation provided an overview of various FEC coding concerns. It was noted that other coding schemes may yield better results.

FEC Gain Requirement for 10GEPON Downstream (1:50 PM)

Mitsunobu Kimura – this presentation examine FEC gain needed based on existing optical components. A presentation on trade-offs between power output and component cost was requested (dB vs Relative cost).

FEC Considerations for 10Gbps EPON System (2:15 PM)

Hiroataka WADA, Seigo Takahashi, Naoto Saeki – this presentation investigated several areas that need to be considered when choosing FEC including, redundancy and coding gain. A number of low overhead (~7%) low latency codings were examined.

10Gb/s EPON FEC [part 1] (2:30 PM)

Frank Chang, Frank Effenberger, Ryan Hirth, Paul Kolesar, Jeff Mandin, Roger Merel, Petre Popescu – This joint presentation addressed basic FEC issues such as coding gain and latency.

Break 2:50 – 3:15 PM

Additional FEC Considerations for Symmetric 10GEPON (3:30 PM)

Fumio Daido – presented simulation results for a number of FEC algorithms.

Add Hoc activities

Glen Kramer presented 2 motions passed in the July meeting in San Diego;

Investigate high split ratio (64 and 128) PONS (headed by Marek Hajduczenia).

Wavelength Co-Existence (Headed by Roger Merel).

The chair performed the following straw polls:

Straw Poll: “I will participate in wavelength selection ad hoc”

Yes: 3

Straw Poll: “I will participate in power budget ad hoc”

Yes: 1

Straw Poll: “I will participate in both ad hocs”

Yes: 23

Based on poll results, it was decided to form a single ad hoc to focus on both above issues.

Suggested Questions for Operator survey:

Distance?
Split Ratios?
Power Budgets?
Preferences for Co-Existence
Installed optics topology
 Discrete or integrated overlay (OLT or ONU)
Overlay characteristics
Deployment of blocking filters OK?

Coexistence Options: Ryan Hirth presented a chart showing possible co-existence wavelength options (combinations of EPON, 1G/10G EPON, 10/10 GEAPON and RF Overlay).

4:45 PM – recessed until 9:00 AM Sept 19, 2006

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Presentations

Framing and Integration for Stream-based FEC (9:05 AM)

Jeff Mandin – This presentation covered some framing issues as related to FEC and to general PON framing. Some discussion ensued concerning upstream time quanta. There was also discussion about the need to implement shortened final FEC blocks and the proposed burst synchronization scheme.

Attendance books were distributed

FEC line rate (9:50 AM)

Ryan Hirth – This presentation proposed to decrease throughput rather than increase clock rate to accommodate FEC overhead.

10Gb/s EPON FEC [part 2] (10:05 AM)

Frank Chang, Frank Effenberger, Ryan Hirth, Paul Kolesar, Jeff Mandin, Roger Merel, Petre Popescu – Part 2 of this joint presentation addressed issues and trade-offs that need to be considered for optimizing FEC and framing.

10:30 AM took break.

MPCP Timing and 64b/66b Line Coding (11:00 AM)

Glen Kramer – This presentation focused on interaction of MPCP and lower layers with special focus on time quanta and laser control. The conclusion of the presenter was that minimal changes to data detector controlling laser on/off are required, but no changes to time quanta value are needed.

Long reach 10GEPON PHY (≥ 20 km) (11:20 AM)

Marek Hajduczenia and Daniel Fonseca – This presentation discussed use of CML (Chirp-managed directly modulated laser) for use in upstream direction. Discussion noted the proprietary nature and relative high cost of the technology.

Various approaches to 10GEPON PHY: issues and tradeoffs (12:00 noon)

Marek Hajduczenia and Sílvia Pato – The presentation covered simulation results of upstream systems using DFB Lasers, EA-DFB lasers, SOAs and APDs. Discussions

pointed out that some assumptions input to the simulation were not realistic. The author offered to provide additional simulations for the next meeting based on real world input from the group.

12:20 PM broke for lunch until 2:00 PM

10Gb/s EDC SMF (2:05 PM)

Frank Chang – This presentation provides a summary of Electron Dispersion Control as discussed in OIF in March of 2006. Most of the discussion was directed to understanding how the technology may be used in the PON environment. Application to 10 G DS appears straight forward whereas application to US needs further study.

2:55 PM Task force recessed until 4:30 PM to allow ad hoc activities to proceed.

Motion #3

Made by Jeff Mandin, Seconded by Marek Hajduczenia

“Motion to adjourn”

The motion was carrier by voice without opposition