

Approved Minutes
802.3av 10G EPON Task Force Meeting
Monterey, CA
Jan 15-16, 2006

Recorded by Robert Lingle, jr. (rlingle@ofsoptics.com)

Monday, 15 Jan 2007

Meeting was opened by Chair, G. Kramer, at 9:05 AM.
Introductions of attendees was completed.

Appointment of Editors – Chair wishes to appoint Duane Remein as Editor-in-Chief and Marek Hajduczenia as Assistant Editor

- Duane Remein approved by 35 votes
- Marek Hajduczenia approved by 34 votes

The count of the room at 9:15AM was 38

Motion #1

Move that the minutes for November meeting be approved.

1st M. Hajduczenia 2nd F. Chang

Approved by Voice Acclamation without opposition

G. Kramer reviewed the Task Force Website and IEEE Membership rules.

The IEEE Patent Policy and Inappropriate Topics Policy were read by Shane Eleniak

Chair reviewed changes to IEEE-SA Operations Manual on 5.3.3.1 Disclosure of affiliation and 5.3.3.2 False or misleading disclosure

Task Force timeline was reviewed by Chair.

Meeting agenda was reviewed by Chair. Noted that the agenda may be interrupted based on availability of 802.3 chair Bob Grow to resolve questions that have been raised about participation of the Chair in the FEC ad hoc.

Motion #2

Motion to approve P802.3av Task Force meeting agenda as proposed.

1st D. Remein 2nd S. Ten

Approved by Acclamation without opposition

The future meeting schedule was reviewed by G. Kramer.

Presentations

Coexistence between 10GEPON and 1GEPON (9:40 AM)

Tsutomu Tatsuta – This presentation reviewed options for wavelength allocation to achieve 1G/10G coexistence, including the impact specification of the blocking filter for the current deployed 1G/1G-ONU. Recommends further study of burst mode 1G/10G multi-rate receiver to allow 1310nm to be used for both 1G and 10G upstream transmission.

Duane Remein assumed role of Chair while G. Kramer made presentation.

10GEPON – 1GEPON Coexistence (9:55 AM)

G. Kramer – The presentation focused on the possibility of using 1310nm for both 1G and 10G upstream transmission, which is same as option #3 presented in Tatsuta-san's preceeding presentation. A primary question is how to avoid a layer violation while informing the TIA of the data rate for the next incoming burst.

Glen Kramer reassumed the Chair in time to declare a coffee break from 10:20 to 10:40AM

10 Gb/s EPON Coexistence Options (10:45 AM)

M. Hajduczenia – the presentation explored technologies and architectures for ONU wavelength filtering that would be necessary to support coexistence.

Bob Grow explained the new disclosure requirement and how the sign-in book has been modified to accommodate it.

Consideration for 10GEPON Coexistence (11:05 AM)

Kiyoshi Uematsu – the presentation addressed coexistence from the point of view of the migration process from existing 1G EPON service, contrasting the cases where upstream transmission coexistence is accomplished by TDM vs. WDM

Raman Crosstalk and Coexistence (11:25 AM)

Frank Effenberger – discussed co-existence from the perspective of the impact of Raman crosstalk from digital signals at various wavelengths onto the analog video signal at 1550nm.

11:45 AM to 1:30 PM Lunch break

Bob Grow addressed the group on resolving conflicts that arose on the reflector prior to this Interim with regard to the FEC ad hoc. In general, Bob encouraged people to seek to resolve differences offline between themselves first, then go to himself or David Law as a second step. The specific issues which arose on the reflector were discussed between the parties and the 802.3 chair during lunch, and it is believed that those specific issues will be resolved by renewed effort at communication between the parties involved.

IEE 802.3av 10GEPON PHY Summary (1:35 PM)

Haim Ben-Amram – the presentation aimed to synthesize the results of previous 802.3av presentations and straw polls in order to understand where consensus is emerging. A more narrow range of options for wavelength allocation and power budget were presented. Discussion centered around the cost of FEC vs. savings in optics enabled by FEC. Frank Effenberger stated that BPON and GPON standards specify link losses independent of wavelength

1.5mm DML at 10 Gb/s for links of 20km and beyond in SMF-28 (1:55 PM)

Thomas Schrans – the presentation makes the case that directly modulated lasers may be able to achieve 20km transmission in standard single mode fiber in the C-band. Discussion

occurred around how much such lasers practically differ from standard DMLs, as well as what was the role of cooling in achieving the results shown.

Duane Remein temporarily assumed the role of Chair.

Performance of Optically Amplified 10G Sources (2:26 PM)

Milind Gokhale – the presentation addressed the paradigm of EAM+SOA, DFB+SOA+EAM, and EAM + EDFA for achieving launch powers up to 17 dBm.

Coffee Break 2:45-3:15 PM

SBS degradation of 10Gbps digital signal in EPON: Experiment and Model (3:17 PM)

Sergey Ten – measured and modeled penalties for 10G digital signals due to SBS in the absence of dithering at the transmitter.

Channel link model for 10GEPON – Ad hoc activity report (3:42 PM)

Mark Hajduczenia – addresses chartered task to: update the existing Excel spreadsheet to reflect the 10G transmission channel impairments, include splitter loss in overall channel loss, account for downstream video overlay @ 1550nm, and account for SBS and SRS impairments.

Tsutomu Tatsuta – discussed a table of possible impairments from video signal onto the digital signal, giving some preliminary opinion of which might be important.

Sergey Ten – discussed implementation of a zero-order Raman induced penalty

Recessed for the day at 4:56PM.

Tuesday, 16 Jan 2006

Meeting was called to order at 9:00 AM by Glen Kramer, Chair.

There were no objections to allowing a walk-on presentation by Jeff Mandin on FEC Ad hoc activities. Duane Remein assumed the chair for the following three presentations on FEC.

Update on FEC Framing Ad Hoc Activities (9:04 AM)

Jeff Mandin – presentation

FEC Synchronization and Framing (9:12 AM)

Frank Effenberger – This presentation discussed a proposal for synchronization and how to implement the needed special patterns. Extensive discussion followed on multiple aspects of the presentation.

Coffee Break at 10:20-10:40AM

FEC Synchronization and Framing (10:38 AM)

J. Mandin – presentation covered a proposal for burst synchronization

Straw Poll A

“Upstream burst should have a sync preamble 0x5555... Followed by a BurstDelimiter of size to be determined later”

Yes:	13
No:	0
No Opinion:	30
Total in room:	43

Glen Kramer re-assumed the Chair at 11:40AM

An FEC ad hoc will convene from 12:30 to 1:30 to discuss technical matters raised during the morning session and report back to group.

Break for Lunch at 11:40

FEC ad hoc met from 12:30 PM to 1:40 PM

Reconvene at 1:50 PM

Overview of possible Straw Polls related to Link Model and Budget (1:50PM)

Marek Hajduczenia – detailed discussion on how the group should address impairments from analog video overlay and non-linearity in general

Straw Poll B – Nonlinear Models

Add to channel linke model ad hoc charter a requirement to analyze non-linear impairments from/to additional services/channels. The document should be separate from the Link Model Spreadsheet.

Yes:	30
No:	0
No opinion:	0

Chair recommended Marek Hajduczenia, and the Link Model ad hoc to place nonlinear calculations related to impairments to/from out-of-scope services/channels in a separate spreadsheet, with only essential results to be incorporated into the 10GEPON link model.

Review of Lunch time FEC Framing Ad Hoc Meeting (2:50 PM)

Glen Kramer – results from straw polls taken during the ad hoc were presented to the task force.

Straw Poll C – Necessity of FEC

Should FEC be:

- Optional to implement: 0
- Mandatory to use (always on): 22
- Mandatory to implement; optional to use: 1
- Too early to decide: 14

- No opinion: 0

Count of the room: 38

Recess for Break at 3:45 PM

Task Force resumed business at 4:10PM

Straw Poll D – Impact of FEC on MAC rate

If FEC is implemented:

- MAC rate should remain 10Gb/s, PMA/PMD rate should increase: 1
- MAC rate should decrease, PMA/PMD rate should remain 10.3125 Gb/s: 18
- I will study more: 1
- Too early to decide: 9
- No opinion: 1

Count of the room: 36

Howard Frazier encouraged socializing this question at the 802.3 level, to determine if this approach is controversial.

Topics to be covered in next meeting:

Progress against the Task Force Timeline was discussed. Chair is concerned that too many presentations are being made suggesting “further study,” without driving towards conclusions.

Additional discussion of how the 802.3av Task Force should go in the direction of analyzing or specifying how 10GEPON will impact analog video overlay, which is not part of 802.3 standards and has multiple implementations for overlay with EFM. The earlier direction of the Chair was affirmed.

Chair announced formation of ad hoc to study the possibility of a multi-rate PMD, where OLT can receive both 1G bursts and 10G bursts. Frank Effenberger will lead this effort.

Chair strongly request proposals for technical and economic feasibility for Rx, Tx for 20, 24, and 29 dB power budgets. Robert Lingle, Jr. was appointed to form the High Power Budget ad hoc to work to bring specific proposals to the next meeting.

Moved to Adjourn at 5 PM

1st: Duane Remein, 2nd: Sergey Ten