

Meeting Minutes

Group: IEEE P802.3ca 100G-EPON Task Force

Event: Plenary meeting

Date: From: 3/14/2017 **To:** 3/16/2017

Location: Vancouver, BC, Canada

Opening

3/14/2017 8:28AM The meeting was called to order by the Chair. Duane Remein volunteered to serve as recording secretary. The Chair held Introductions and gave the opening report.

Motion #1

Approve the agenda for Task Force meeting to be held March 14-16, 2017 in Vancouver, BC located in file http://www.ieee802.org/3/ca/public/meeting_archive/2017/03/agenda_3ca_1_0317.pdf

Moved: Marek Hajduczenia

Second: Duane Remein

Procedural (>50%)

Motion Passed by voice without opposition

Motion #2

Approve the Minutes for Task Force meeting held January 2016, in Huntington Beach CA located in file http://www.ieee802.org/3/ca/public/meeting_archive/2017/01/minutes_unapproved_3ca_0117.pdf

Moved: Duane Remein

Second: Glen Kramer

Procedural (>50%)

Motion Passed by voice without opposition

The chair reviewed IEEE process, rules, and the IEEE patent policy.

3/14/2016 8:43:00 AM The chair made a call for patents, no response was made.

The Chair reviewed the IEEE Participation guidelines and process. The Task Force (TF) reviewed a liaison received from ITU-T Study Group 15 in response to a communication sent to them by the TF. It was generally agreed that no response to this was needed. Future meeting polls were taken.

Motion #3

Move to reconsider motion #2

Moved: Glen Kramer

Second: Duane Remein

Procedural (>50%)

Motion Passed by voice without opposition

The Great Compromise for WDM and TDM Coexistence in 100G EPON (IEEE 802.3ca)

Michael Emmendorfer

Arris

This presentation discussed what is similar to the idea expressed in harstead_3ca_1_0317. Suggested a variation on optical wavelength plans A and B where 25G ONU operates at 1270 +- 10 nm or ~1291 per market dictates.

emmendorfer_3ca_1b_0317.pdf

3/14/2017 12:20:00 PM

Lunch, reconvened at 2:00 PM

Compromise TDM / WDM co-existence wavelength plan

Ed Harstead

Nokia

This presentation suggested a variation on optical wavelength plan B where 25G ONU operates at 1270 or 1290 per market dictates.

harstead_3ca_1_0317.pdf

Upstream wavelength plan comparison

Ed Harstead

Nokia

This presentation provided a comparison of upstream wavelength plans being considered.

harstead_3ca_2_0317.pdf

Wavelength Plan for PON Convergence

Eugene Dai

Cox Communications

This presentation argued that convergence should only include the wavelength plan (i.e., common optics) and not include MAC layer.

dai_3ca_2_0317.pdf

Unified Wavelength Grid in 100G-EPON

Xiang Liu

Huawei Technologies

This presentation suggested benefits of using a unified wavelength grid of 800 GHz, 1 THz or 1.2THz in which both upstream and downstream share the same grid.

liuxiang_3ca_2_0317.pdf

Experimental results of SOA pre-amplification for 25G-EPON

Xingang Huang

ZTE Corporation

This presentation summarized experimental results of laser/SOA/PD using EML, DML, PIN and APD.

yang_3ca_1_0317.pdf

SOA as Pre-amplifier for DML transmitter in 100G EPON

Dekun Liu

Huawei Technologies

This presentation summarizes experimental results of an SOA pre-amplifier combined with a DML.

liudekun_3ca_1_0317.pdf

PHY Parameters Model Analysis

Dezhi Zhang

China Telecom

This presentation suggested that the full PMD component requirements need to be understood before selecting a wavelength plan.

zhangdezhi_3ca_2_0317.pdf

100G-EPON power budget proposal

Yong Guo

ZTE Corporation

This presentation covered a power budget analysis associated with ZTE proposed wavelength plan in guo_3ca_1_0317.pdf. An SOA is required in both upstream and downstream for 25G OLT. For 100G system an SOA boost amp is required on each downstream wavelength as well as a common upstream preamp for wavelengths 1, 2, and 3 at the OLT.
guo_3ca_2_0317.pdf

Straw-man power budget proposals for PMD tables

John Johnson

Broadcom

This presentation gave a first pass power budget analysis for 25/50/100G PONs for both upstream and downstream directions with gaps exposed.
johnson_3ca_1_0317.pdf

PMD Tables for Draft Consideration

Mark Laubach

Broadcom

This presentation provided straw-man PMD tables for the draft.
laubach_3ca_4_0317.pdf

3/14/2017 6:25:00 PM Recessed**3/15/2017 8:30 AM** Reconvened**100G EPON Power Budget Analysis**

Dekun Liu

Huawei Technologies

This presentation provided an analysis of the 100G-EPON optical power budget and concluded that an optical amp will be needed in the downstream with current RS FEC for 25G but an optical post amp will be needed for 100G. In the upstream we will need both a new higher performance FEC and optical preamp.
liudekun_3ca_4_0317.pdf

APD based 25/100G PON module solution

Dong Pan

SiFotonics Technologies

This presentation provided experimental results of 25G Ge/Si APD indicating feasibility of 25G (with DML or EML) and 100G (with DFB + MZM) EPON optical budget.
pan_3ca_1_0317.pdf

FEC code for 25/50/100G EPON

Dora van Veen

Nokia Bell Labs

This presentation provided some general information on commonly used FEC codes illustrating that gain may be less than expected. An RS(1023, 847) or RS(2047, 1739) FEC code was proposed.
vanveen_3ca_1a_0317.pdf

20 Gb/s Aggregate Throughput

Mark Laubach

Broadcom

This presentation took a closer look at the idea of supporting two 10Gbps Ethernet links using a single 25G-EPON link.
laubach_3ca_1_0317.pdf

More on Folded BCH FEC

Mark Laubach

Broadcom

This presentation provided additional details on the Folded BCH FEC first introduced in the last meeting.
laubach_3ca_2_0317.pdf

GLID as Envelope ID

Duane Remein

Huawei Technologies

Proposal to use GLID as an Envelope ID and include current EPON preamble replacement mechanism to identify targeted MAC.

remein_3ca_3_0317.pdf

3/15/2017 12:15:00 PM

Lunch, reconvened at 1:40 PM

GLID as Envelope ID - a Deeper Look

Glen Kramer

Broadcom

This presentation was a rebuttal to remein_3ca_3a_0317.pdf

kramer_3ca_3_0317.pdf

Dimensioning of Reassembly Buffers at the OLT

Glen Kramer

Broadcom

This presentation proposed to steal 1-bit from grant length in GATE to use for fragmentation flag.

kramer_3ca_1_0317.pdf

Reassembly Buffer and Working Mechanism

Jun Shan Wey

ZTE Corporation

This presentation also suggested use of GLID as Envelope ID with a slight difference in that an envelope could be identified by a ULID also.

zhangweiliang_3ca_1b_0317.pdf

Reassembly Buffer and Working Mechanism - a Deeper Look

Glen Kramer

Broadcom

This presentation was a rebuttal to zhangweiliang_3ca_1b_0317.pdf

kramer_3ca_4_0317.pdf

PON for Network Aggregation & Transport - 100G EPON Network Backhaul Applications and impacts on the choice of wavelength plan

Eugene Dai

Cox Communications

This presentation argued that major application for 100G-EPON is in edge aggregation.

dai_3ca_1_0317.pdf

Low Latency Services and Requirements for 100G EPON

Jun Shan Wey

ZTE Corporation

This presentation review of delay and capacity needed for highly mobile dreams and Virtual non-Reality.

wey_3ca_1_0317.pdf

Accurate Synchronization in 100G-EPON

Xiang Liu

Huawei Technologies

This presentation explored the impact of wavelength skew on system synchronization.

liuxiang_3ca_1_0317.pdf

100G NGEAPON PCS and PMA

Mark Laubach

Broadcom

This presentation introduced 25G AUI (CI 109B P802.3by) as a potential chip to module interface.

laubach_3ca_3_0317.pdf

3/15/2017 6:05:00 PM Recessed

3/16/2017 8:30:00 AM Reconvened

802.3 draft overview and commenting guidelines

Marek Hajduczenia

Charter Communications

Provided an extensive IEEE process overview

hajduczenia_3ca_1_0317.pdf

Motions & Straw-polls

StrawPoll #1

Would you accept to have the 802.3ca specification define 1 of the 4 upstream lambdas to be placed somewhere in the 1260nm to 1280nm region?

Yes: 15

No: 8

Abstain: 7

StrawPoll #2

Would you accept to have the 802.3ca specification define TDM coexistence with 10G-EPON as an optional configuration for ONUs that occupy the 1260nm to 1280nm region?

Yes: 6

No: 10

Abstain: 11

StrawPoll #3

Which of the following upstream wavelength plan (categories) could you live with? (Choose as many as you wish):

1. Pure WDM co-existence plans, as described in harstead_3ca_3_0317, slide 2
2. Initial WDM co-existence plan that postpones TDM co-existence, as described in harstead_3ca_3_0317, slide 3
3. Pure TDM co-existence plans, as described in harstead_3ca_3_031, slide 4
4. Compromise plans: optionally support both WDM and TDM co-existence, as described in harstead_3ca_3_0317, slide 5

1: 20

2: 18

3: 12

4: 8

StrawPoll #4

Which of the following upstream wavelength plan (categories) could you live with?
(Choose which you like BEST, vote once):

1. Pure WDM co-existence plans, as described in harstead_3ca_3_0317, slide 2
2. Initial WDM co-existence plan that postpones TDM co-existence, as described in harstead_3ca_3_0317, slide 3
3. Pure TDM co-existence plans, as described in harstead_3ca_3_031, slide 4
4. Compromise plans: optionally support both WDM and TDM co-existence, as described in harstead_3ca_3_0317, slide 5

1: 7
2: 5
3: 4
4: 3
Abstain: 8

StrawPoll #5

Given all past contributions I would choose:

1. WDM coexistence with all four 25G US external to 1260-80nm
2. TDM coexistence
3. Don't Care
4. Don't know

1: 12
2: 9
3: 1
4: 6

Motion #5

Move to adopt the PMD content in laubach_3ca_4a_0317.pdf into the P802.3ca draft. Editor to change footnote values to "TBD".

Moved: Mark Laubach

Second: Marek Hajduczenia

For: 24

Against: 0

Abstain: 1

Technical ($\geq 75\%$)

Motion Passed

Motion #6

Accept modified GATE message format per slide #8 in kramer_3ca_1_0317.pdf.

Moved: Glen Kramer

Second: Duane Remein

For: 20

Against: 1

Abstain: 7

Technical ($\geq 75\%$)

Motion Passed

Motion #7

Accept the figure of illustrating GLID grant scheduling as shown in zhangweiliang_3ca_2_0317.

Moved: Guo Yong

Second: Glen Kramer

For: 27

Against: 0

Abstain: 0

Technical ($\geq 75\%$)

Motion Passed

StrawPoll #6

Do you agree to re-visit the motion "All 25G ONUs and 25G OLTs shall use the same wavelength pair" to allow more than one wavelength option for 25G ONUs?

Agree: 4

Disagree: 12

No opinion: 9

StrawPoll #7

Do you agree that detailed and accurate feasibility study on system architectures, wavelength plans, and relevant PHY parameters is recommended by May 2017 meeting for the wavelength selection, in order to ensure the support of PR30 for both legacy 10G-EPON ONU and any new 100G-EPON ONU.

Agree: 26

Disagree: 1

No Opinion: 0

Motion #8

Charge the Editor to generate Draft 0.3.

Moved: Marek Hajduczenia

Second: Duane Remein

Technical ($\geq 75\%$)

Motion Passed by voice without opposition

Presentations (Cont)

Channel (Wavelength) Control Protocol

Glen Kramer

Broadcom

This presentation proposed a method to turn channels on/off independently (US/DS) without packet loss.

kramer_3ca_2_0317.pdf

Motion #9

Move to adjourn.

Moved: Duane Remein

Second: Mark Laubach

Procedural (>50%)

Motion Passed by voice without opposition

3/17/17 12:12 PM

Meeting was Adjourned

Attendance

Family Name	Given Name	Affiliation	March		
			14	15	16
Brown	Alan	Adtran	x	x	x
Chang	Ayla	Huawei	x		
Colella	Barry	Source Photonics		x	x
Dai	Eugene	Cox Communication	x	x	
Effenberger	Frank	Huawei	x	x	x
Emmendorfer	Michael	Arris	x	x	x
Gong	Zhigang	O-Net	x		
Guo	Yong	ZTE Corp	x	x	x
Hajduczenia	Marek	Charter	x	x	x
Harstead	Ed	Nokia	x	x	x
Huang	Xingang	ZTE Corp	x	x	x
Ishibe	Kazuhiko	Anritsu			x
Jackson	Kenneth	Sumitomo			x
Johnson	John	Broadcom LTD.	x	x	x
Knittle	Curtis	CableLabs	x	x	x
Kramer	Glen	Broadcom LTD.	x	x	x
Laubach	Mark	Broadcom LTD.	x	x	x
LeCheminant	Grey	Keysight Tech	x		
Lee	Hanhyub	ETRI	x	x	x
Liu	Dekun	Huawei	x	x	x
Liu	Xiang	Huawei	x	x	x
Migueluez	Phil	Comcast	x	x	x
Noll	Kevin	Tibit Communication	x	x	x
Pan	Dong	SiFotonics Technologies	x	x	x
Peng	Wanquan	Huawei	x	x	x
Peters	Michael	Sumitomo	x	x	x
Powell	Bill	Nokia	x	x	x
Remein	Duane	Huawei	x	x	x
Srivastavi	Atul	NEL-America	x		
Surre	Frederic	City, Uni of London	x	x	x
Suzuki	Ken-Ichi	NTT	x	x	
Suzuki	Naoki	Mitsubishi Electric	x		
Umeda	Daisuke	Sumitomo	x	x	x
Umnov	Alexander	Corning	x	x	x
van Veen	Dora	Nokia, Bell Labs	x	x	x
Walter	Edward	AT&T	x	x	x
Wey	Jun Shan	ZTE Corp	x	x	x
Yu	Xu	Huawei			x
Zhang	Huanlin	Applied Opto Electronics Inc	x	x	x
Zhang	James	China Telecom	x	x	x