Approved Minutes

IEEE P802.3cu 100 Gb/s and 400 Gb/s over SMF at 100 Gb/s per Wavelength Task Force

Interim Meeting

May 23-24, 2019

Salt Lake City, UT

Prepared by Kenneth Jackson, Tom Issenhuth and Mark Nowell

Table of Contents

IEEE P802.3cu 100 Gb/s and 400 Gb/s over SMF at 100 Gb/s per Wavelength Task Force – May 23-24, 2019

Prepared by Kenneth Jackson, Tom Issenhuth and Mark Nowell

Meeting convened at 8:00am
Mr. Law welcomed attendees.
David Law appointed Kenneth Jackson as the recording secretary for the IEEE P802.3cu 100 Gb/s and 400 Gb/s over SMF at 100 Gb/s per Wavelength Task Force
As announced at the March 2019 Plenary meeting, David Law intends to confirm Mark Nowell as the Chair of the IEEE P802.3cd Ethernet Task Force.

Motion #1: Move to confirm Mark Nowell as the IEEE P802.3cu 100 Gb/s and 400 Gb/s Operation over Single-Mode Fiber at 100 Gb/s per Wavelength Task Force Chair
.

- Moved by: Jeff Maki
- Second by: Vince Ferretti
- Y: 17 N: 0 A: 0
- Motion passes

Introductions were made.
Chair reviewed agenda in
http://www.ieee802.org/3/cu/public/May19/agenda_3cu_01a_0519.pdf
Motion #2: Move to approve the agenda:

- Moved by: Brian Welch
- Second by: Stephen Trowbridge
- Passed by voice without opposition

Minutes were posted shortly after the March 2019 Study Group meeting. Chair asked if there were any comments on the posted minutes. No one responded.

Motion #3:
Move to approve March 2019 plenary meeting minutes:

- Moved by: Pete Anslow
- Seconded by: Brian Welch

- Passed by voice without opposition

Chair reviewed Task Force Organization
Chair reminded participants to observe meeting decorum.
Chair reviewed the reflector and web information.
Chair reviewed the ground rules for the meeting.
Photography and recording are not permitted.
Chair reviewed the attendance procedures.
Chair reminded participants to sign into the IEEE Attendance Tool and to sign the book.
Chair reviewed the IEEE structure.
Chair reviewed the Bylaws and Rules slides in -
http://www.ieee802.org/3/cu/public/May19/agenda_3cu_01a_0519.pdf
Chair read the Guidelines for IEEE-SA Working Group meetings and Patent Policy.
Chair requested a call for patents. None were raised.
Chair reviewed participation in IEEE 802 Meetings.
Chair reviewed the IEEE 802.3 Standards Process---Task Force phase.
No liaisons or communications
Chair mentioned the possibility of Ad Hocs.
Task Force documentation, PAR CSD & objectives
Draft timeline presented and discussed (2 options presented---no adoption) *(Change "Sponsor complete" to "Standards Association" name for the block)*
Chair reviewed Goals for This Meeting

- Review technical contributions
- Adopt any baselines where consensus exists
- Depending on progress, initiate working document for task force review

Chair reviewed meeting logistics and meeting schedule for the day.
http://www.ieee802.org/3/cu/public/May19/agenda_3cu_01_0519.pdf

Chair noted that due to the upcoming Memorial Day weekend, many participants have travel plans for earlier on Friday and that he's anticipating a marked drop off in attendance in the TF for Friday. He has therefore crafted the agenda in such a way that it might be possible to get the TF work done today. Goal is to move quickly through the non-controversial topics to provide maximum discussion time on the key controversial topic.

Chair noted that there is an IEEE 802.3 Working Group meeting on Thursday evening.

Future Meetings:

- July 2019 Plenary
    - Week of July 15, 2019 – Vienna, Austria
- September 2019 Interim
    - Week of September 9, 2019 – Indianapolis, IN USA
- November 2019 Plenary
    - Week of November 11, 2019 – Waikoloa Village, HI USA

Anyone interested in hosting a meeting should contact the Chair or Steve Carlson.

Editorial Update: See http://www.ieee802.org/3/cu/public/May19/nicholl_3cu_01_0519.pdf

- Gary Nichol (Chief Editor)
- David Lewis (Editor for optical clauses)
- Mark Kimber (Advisor and reviewer for optical clauses)

Presentation #1: "PMD Naming Proposal", K.P. Jackson (Sumitomo)
See http://www.ieee802.org/3/cu/public/May19/jackson_3cu_01a_0519.pdf

- Proposed usage of:
    - 100GBASE-FR
    - 100GBASE-LR
    - 400GBASE-FR4
    - 400GBASE-LR4
- Discussion on use or not of the "1" to indicate single wavelength.
- Comment made that consistency between the 2km and 10km nomenclature would be preferred
- Recommendation to hold a straw poll later to determine preference for 100GBASE-LR1 versus 100GBASE-LR

Presentation #2: "Physical Layer clauses associated with the new 100Gb/s & 400Gb/s PMDs", K.P.Jackson (Sumitomo)
See http://www.ieee802.org/3/cu/public/May19/jackson_3cu_02_0519.pdf

- Propose motion later to adopt the elements in this presentation.

Presentation #3: "Past Performance is not indicative of Future Results", John D'Ambrosia (FutureWei) (presented by Pete Anslow (Ciena))
See http://www.ieee802.org/3/cu/public/May19/dambrosia_3cu_01_0519.pdf

- Presented a perspective on historical and future market demand
- Questions of clarification asked and answered

Presentation #4: "100GBASE-FR Baseline Proposal", Brian Welch (Cisco)

See http://www.ieee802.org/3/cu/public/May19/welch_3cu_01a_0519.pdf

- Presented 100GBASE-FR baseline proposal
- Questions of clarification asked and answered

Chair noted that there was a late contribution from Chris Cole that has been posted. He requested if there was any opposition to hearing the presentations. No opposition voiced. We will figure out where to add the presentation into our agenda as we progress.

Presentation #5: "400GBASE-FR4 baseline proposal", David Lewis (Lumentum)
See http://www.ieee802.org/3/cu/public/May19/lewis_3cu_01a_0519.pdf

- Presented 400GBASE-FR4 baseline proposal
- Questions of clarification asked and answered

Straw Poll #1:

I prefer to use the following nomenclature for the two single-wavelength PMDs:

A. 100GBASE-FR and 100GBASE-LR
B. 100GBASE-FR1 and 100GBASE-LR1

Results: A) 19 B) 11

Motion #4:
Move to adopt the following nomenclature:

100GBASE-FR	Single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km
100GBASE-LR	Single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 10 km
400GBASE-FR4	Four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km
400GBASE-LR4	Four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km

- Moved by: Kenneth Jackson
- Seconded by: Brian Welch
- Technical (>= 75%)
- Y: 28 N: 2 Abstain: 4
- Motion Passes

Motion #5:

Move to adopt the sublayers associated with the proposed new PHYs per jackson_3cu_02_0519.pdf in slide 6:

- Moved by: Kenneth Jackson
- Seconded by: Gary Nicholl
- Technical (>= 75%)
- Y: 31 N: 0 Abstain: 2
- Motion Passes

Break

Motion #6:
Move to adopt a baseline for the "single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km" objective based on the proposal in welch_3cu_01a_0519.pdf

- Moved by: Brian Welch
- Seconded by: Frank Chang
- Technical (>= 75%)
- Y: 32 N: 0 Abstain: 1
- Motion Passes

Motion #7:
Move to adopt a baseline for the "four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km" objective based on the proposal in lewis_3cu_01a_0519.pdf

- Moved by: Dave Lewis
- Seconded by: Brian Welch
- Technical (>= 75%)
- Y: 30 N: 0 Abstain: 1
- Motion Passes

Presentation #6 : "Further Technical study for 400GE with 4*100G PAM4", Yu Xu (Huawei)
See **http://www.ieee802.org/3/cu/public/May19/yu_3cu_01a_0519.pdf**

- Presented by Xinuan Wang
- Presented technical study around dispersion penalty for 10km transmission
- Questions of clarification asked and answered

Presentation #7 : "Dispersion Penalty Measurement using a Silicon Photonics Transmitter", Scott Schube (Intel)
See **http://www.ieee802.org/3/cu/public/May19/schube_3cu_01_0519.pdf**

- Presented experimental results of 10km transmission using a SiPhotonics transmitter
- Questions of clarification asked and answered

Presentation #8 : “P802.3cu DGD penalty”, Pete Anslow (Ciena)
See http://www.ieee802.org/3/cu/public/May19/anslow_3cu_01_0519.pdf

- Presented proposal on how to accommodate fiber PMD in 10 km link budgets
- Proposed a penalty based on 5ps DGD_max
- Questions of clarification asked and answered

Presentation #9 : “TDECQ and dispersion penalty for 100GBASE-LR4”, Pete Anslow (Ciena)
See http://www.ieee802.org/3/cu/public/May19/anslow_3cu_02a_0519.pdf

- Reviewed summary of published experimental data
- Questions of clarification asked and answered

*Announcement to move to the *.3ck room at 1:15pm*

Lunch Break

Tom Issenhuth takes over as Recording Secretary due to Kenneth Jackson having to leave early.

Presentation #10 : “Minimum Transmitter OMA Launch Window”, Ali Ghiasi (Ghiasi Quantum LLC)
See http://www.ieee802.org/3/cu/public/May19/ghiasi_3cu_01a_0519.pdf

- Some clarifying questions

Presentation #11 : “Two SMF Spec Limit Types for 802.3 PMDs Proposal”, Chris Cole (Finisar)
See http://www.ieee802.org/3/cu/public/May19/cole_3cu_01a_0519.pdf

- Proposed considering defining fiber types that better align to the use cases and to not burden the specifications with legacy worst case fiber specs that may not be present in the majority of use cases
- Concerns raised on impact of not referencing international standards
- Questions of clarification asked and answered

Presentation #12 : “What’s so special about 10km?”, Chris Cole (Finisar)
See http://www.ieee802.org/3/cu/public/May19/cole_3cu_02b_0519.pdf

- Presented some history of use cases and reach
- Questions of clarification asked and answered

Presentation #13 : “100GBASE-LR Baseline Proposal”, Brian Welch (Cisco)
See http://www.ieee802.org/3/cu/public/May19/welch_3cu_02b_0519.pdf

- Presented baseline proposal for 100GBASE-LR

- Question on inclusion of DGD penalty. Chair indicated that he was planning to handle that in the motion stage and even though it would result in a link budget that needed to be modified, the starting numbers would be sufficient for baseline and the TF would do its work to address

Presentation #14 : "400GBASE-LR4 baseline proposal", Peter Stassar (Huawei)
See http://www.ieee802.org/3/cu/public/May19/stassar_3cu_01a_0519.pdf

- Presented 400GBASE-LR4 baseline proposal
- No questions asked

Chair indicated that it appears we are on track to have ample time for discussion to determine if we have consensus on the 400G-LR4 topic. So, at this current time it looks like we might be able to adjourn by end of day

Break

Presentation #15 : "400GBASE-LR4 baseline proposal", David Lewis (Lumentum)
See http://www.ieee802.org/3/cu/public/May19/lewis_3cu_02a_0519.pdf

- Presented 400GBASE-LR4 baseline proposal
- Questions of clarification asked and answered

Motion #8:

Move to adopt a baseline for the "single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 10 km" objective based on the proposal in welch_3cu_02b_0519.pdf with the inclusion of additional penalty due to 5 ps DGD_max as outlined in anslow_3cu_01_0519.pdf

Moved by: Brian Welch
Seconded by: Frank Chang
Technical (>= 75%)
Y: 37 N: 0 Abstain: 4
Motion Passes

Straw Poll #2:

I support the following baseline for the "four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km" objective based on the proposal in:

A) LWDM(800 GHz) (per stassar_3cu_01_0519.pdf)
B) CWDM (per lewis_3cu_02a_0519.pdf)

C) Need more information

Results: A) 6 B) 20 C) 16

Straw Poll #3:
I would oppose supporting the following baseline at this meeting for the “four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km” objective based on the proposal in:

A) LWDM(800 GHz) (per stassar_3cu_01_0519.pdf)
B) CWDM (per lewis_3cu_02a_0519.pdf)

Chicago rules

Results: A) 21 B) 15

Attendance Straw Poll
Vienna - ~50
Indianapolis - ~50

Motion #9:
Move to adjourn the meeting

- Moved by: Dave Ofelt
- Second by: Ali Ghiasi

Passed by voice without opposition

Meeting Adjourned at 5pm

Attendees

P802.3cu Task Force				**23-May-19**
Last Name	**First Name**	**Employer**	**Affiliation**	**Thursday**

Anslow	Pete	Ciena Corporation	Ciena Corporation	x
Braun	Ralf-Peter	Deutsche Telekom	Deutsche Telekom	x
Brown	Matt	MACOM	MACOM	x
Chang	Frank	Source Photonics	Source Photonics	x
Chen	C. C. David	Applied Optoelectronics	Applied Optoelectronics	x
Coffey	Joseph	Commscope	Commscope	x
Cole	Chris	Finisar	Finisar	x
Dudek	Mike	Marvell Technologies	Marvell Technologies	x
Ferretti	Vince	Corning	Corning	x
Ghiasi	Ali	Ghiasi Quantum	Ghiasi Quantum	x
Gilp	James	General Atomics Aeronautical Systems Inc	General Atomics Aeronautical Systems Inc	x
Gong	Zhigang	O-net	O-net	x
Gustlin	Mark	Cisco	Cisco	x
Healey	Adam	Broadcom Inc.	Broadcom Inc.	x
Isono	Hideki	Fujitsu Optical Components	Fujitsu Optical Components	x
Issenhuth	Tom	Huawei	Huawei	x
Jackson	Ken	Sumitomo	Sumitomo	x
Kareti	Upen Reddy	Cisco	Cisco	x
Kim	Inho	Marvell Semiconductor	Marvell Semiconductor	x
Kimber	Mark	Semtech	Semtech	x
Kolesar	Paul	CommScope	CommScope	x
Law	David	HPE	HPE	x
LeCheminant	Greg	Keysight Technologies	Keysight Technologies	x

Lewis	Dave	Lumentum	Lumentum	x
Lusted	Kent	Intel	Intel	x
Maki	Jeffery	Juniper Networks	Juniper Networks	x
Malicoat	David	Senko/Aquantia	Senko/Aquantia	x
Marris	Arthur	Cadence	Cadence	x
Muller	Shimon	Axalume	Axalume	x
Nicholl	Gary	Cisco	Cisco	x
Nicholl	Shawn	Xilinx	Xilinx	x
Nowell	Mark	Cisco	Cisco	x
Pham	Phong	US Conec	US Conec	x
Piehler	David	Dell EMC	Dell EMC	x
Pozzebon	Dino	microsemi	microsemi	x
Radhamohan	Rajesh	MaxLinear	MaxLinear	x
Sambaraju	Rakesh	Nexans	Nexans	x
Stassar	Peter	Huawei	Huawei	x
Swanson	Steve	Corning	Corning	x
Takahara	Tomoo	Fujitsu	Fujitsu	x
Terada	Masaru	OFS	OFS	x
Trowbridge	Steve	Nokia	Nokia	x
Ulrichs	Ed	Source Photonics	Source Photonics	x
Wang	Weyl	Accelink	Accelink	x
Welch	Brian	Cisco	Cisco	x
Yamamoto	Shuto	NTT	NTT	x
Zivny	Pavel	Tektronix	Tektronix	x