

February 22, 2018 NGMMF Study Group Ad Hoc Teleconference Meeting Notes

Group Name: IEEE 802.3 Next-generation 200 Gb/s and 400 Gb/s MMF PHYs Study Group Ad Hoc

Date/Location: Thursday, February 22, 2018. Teleconference

Chair: Robert Lingle, Jr., Chair NGMMF SG

Recording Secretary: Mabud Choudhury

Meeting Participants:

	Name	Employer	Affiliation
1	Adrian Young	Leviton Mfg.	Leviton Mfg.
2	Bruce Chow	Corning Inc	Corning Inc
3	Dale Murray	LightCounting	LightCounting
4	David Piehler	Dell EMC	Dell EMC
5	Derek Cassidy	ICRG	IET
6	Gary Nicholl	Cisco	Cisco
7	Jeff Maki	Juniper	Juniper
8	John Abbott	Corning Inc	Corning Inc
9	John Kamino	OFS	OFS
10	Jonathan Ingham	Foxconn Interconnect Technology	Foxconn Interconnect Technology
11	Jonathan King	Finisar	Finisar
12	Mabud Choudhury	OFS	OFS
13	Mike Dudek	Cavium	Cavium
14	Paul Neveux	Superior Essex	Superior Essex
15	Paul Kolesar	CommScope	CommScope
16	Paul Vanderlaan	Berk-Tek	Berk-Tek
17	Petar Pepeljugoski	IBM	IBM
18	Peter Pondillo	Corning Inc	Corning Inc
19	Raed Samamra	Prysmian	Prysmian
20	Rakesh Sambaraju	Berk-Tek	Berk-Tek
21	Rick Pimpinella	Panduit Corp.	Panduit Corp.
22	Robert Lingle, Jr.	OFS	OFS
23	Scott Sommers	Molex	Molex
24	Steve Swanson	Corning Inc	Corning Inc
25	Sunny Xu	CommScope	CommScope
26	Tom Mitcheltree	US Conec	UC Conec
27	Vittal Balasubramanian	Innovium	Innovium

27 attendees participated in the February 22, 2018 call. If you participated in the meeting but are not listed or if you attended and company employer/affiliation is incorrect, please email Mabud Choudhury, mchoudhury@ofsoptics.com with a correction.

Call to order/Meeting Start Time: 11:03 am Eastern Standard Time (US)

Chair's remarks:

- Reminder for participants to record their attendance along with employer/affiliation to Mabud Choudhury at mchoudhury@ofsoptics.com
- Reviewed Agenda, Slide 3 of:
http://www.ieee802.org/3/NGMMF/public/adhoc/lingle_NGMMF_adhoc_01a_022218.pdf
- Participation in IEEE 802 Meetings and Guidelines for IEEE-SA Meetings, including Patent Policy, reviewed (Slides 4 & 5 of link above). No one indicated being unfamiliar with these policy slides.

Approval of minutes of previous meeting: minutes of February 08, 2018 NGMMF Ad Hoc teleconference meeting were posted prior to meeting, and were approved.

Approval of agenda: Agenda was approved.

Technical & Logistics Topics:

1. Schedule in Rosemont, Robert Lingle, Jr., Chair SG:

- Slide 6 of
http://www.ieee802.org/3/NGMMF/public/adhoc/lingle_NGMMF_adhoc_01a_022218.pdf
covered with logistics of schedule in Rosemont.
- Will know more about specifics on NGMMF SG schedule as it relates to 802.3cd Task Force meeting schedule by next week. NGMMF SG will start Tuesday, March 6, 2018 afternoon once 802.3cd TF meeting ends.
- Robert Lingle, Jr. will attend 802.11 meeting on Monday, March 5, 2018 for their comments on PAR.
- PAR and CSD comments from EC will be submitted by end of Tuesday, March 6, 2018
- Resolution of comments to PAR and CSD by SG will happen Tuesday evening and Wednesday morning.
- Response to PAR and CSD comments by end of Wednesday, March 7, 2018.

2. Request for planned contributions for March Plenary:

- **Action Item:** A request was made to SG Chair for planned contributions for March Plenary in meeting minutes.
- Response:
 - 2 presentations on BMP of 200 Gb/s over 1-pair MMF
 - 2-3 presentations related to TF of 200 Gb/s over 1-pair MMF (some authors may combine material)
 - 3 presentations related to the two 400 Gb/s objectives adopted in Geneva: use-cases, BMP, and DI
 - 1 presentation on 50 Gb/s PAM link modeling

3. Draft: In Support of BMP, DI for both 4-pair and 8-pair MMF objectives at 400G – Robert Lingle, Jr.:

- http://www.ieee802.org/3/NGMMF/public/adhoc/lingle_NGMMF_adhoc_02_022218.pdf
- In support of SG consensus for both 4-pair & 8-pair solutions for 400 Gb/s Ethernet over MMF
- Contribution showed BMP for both 4-pair & 8-pair solutions for 400 Gb/s Ethernet over MMF and that DI is maintained:

- 4-pair objective supports a 4-pair infrastructure and 10 years of experience designing DCs around the quad paradigm. Installed base migration from 100G-SR4 to 400G-SR4.2. Lower relative cost for long 400G SW-SW links; better cable density.
- An 8-pair objective supports the flexibility enabled by new octal paradigm. Provides 400G SW-SW links plus maximum breakout flexibility.
- Voice of customer: 2 large cloud data center companies have made contributions indicating their need and support for 400 Gb/s over 4 pairs MMF and 400 Gb/s over 8 pairs MMF, respectively. Both are distinct and have high value.
- Both the quad paradigm and form factor and new octal paradigm and form factors were reviewed and discussed.
- Discussion on review of past 802.3 projects that show that it is valid to consider breakout applications when assessing BMP.
- The benefits of and IEEE 802.3 standard as opposed to an MSA for 400G-SR8 were discussed.
- Discussed precedent in 802.3 for having two parallel solutions for a SW-SW MAC rate.
- Discussion about focus on 400 Gb/s objectives for this Ad Hoc meeting as opposed to reviewing 200 Gb/s contributions.

4. Potential BMP and DI updates to CSD Responses – Mabud Choudhury:

- http://www.ieee802.org/3/NGMMF/public/adhoc/choudhury_NGMMF_adhoc_01_022218.pdf
- Discussion of possible changes to BMP & DI in CSD Responses that we could propose when we respond to comments in Rosemont.
- **Outcome:** consensus potential wording changes to BMP & DI (if needed in response to comments from EC):
 - For BMP:
 - Change (existing SG approved wording from Geneva):
 - “Implementations could be developed to support breakout topologies.”
 - To
 - “Implementations could be developed to support breakout topologies over both 4 and 8 pairs of MMF.”
 - For DI:
 - Change (existing SG approved wording from Geneva):
 - The proposed amendment will be the first IEEE 802.3 standard defining operation at 400 Gb/s over fewer than 16 pairs of multimode fiber physical media.
 - Strong desire to use 8 pairs for new 400 Gb/s topologies and supporting breakout capability.
 - Need to support 400 Gb/s Ethernet over existing parallel MMF deployments.
 - To:
 - There are no existing standards, or projects developing standards, addressing the specification of 400 Gb/s over 4 pairs of multimode fiber, supporting existing parallel multimode fiber topologies and installed base deployments.
 - There are no existing standards, or projects developing standards, addressing the specification of 400 Gb/s over 8 pairs of multimode fiber, offering maximum flexibility for breakout topologies.

Meeting closed: 1:07 pm Eastern Standard Time.

Next Meeting: IEEE 802.3 Plenary, NGMMF Study Group Meeting, Tuesday, March 06, 2018 and Wednesday, March 07, 2018, Rosemont, IL, US.