Unapproved Minutes

IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group Ad Hoc Meeting

WebEx Meeting
April 23, 2020
Prepared by Mabud Choudhury

Group Name: IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group
Date/Location: Thursday, April 23, 2020. WebEx meeting.
Chair: Robert Lingle, Jr, affiliated with OFS
Recording Secretary: Mabud Choudhury, affiliated with OFS
Meeting Participants: Attendance is listed in Appendix A (44 attendees)

Call to order:
IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs (100GSR) Study Group (SG) Ad Hoc WebEx meeting was convened at 12:01 PM Eastern Daylight Time (EDT/ UTC -4), Thursday, April 23, 2020 by Robert Lingle, Jr., 100GSR SG Chair.

Mr. Lingle welcomed attendees. He requested that each attendee indicate their name and employer/affiliation in an e-mail to the ad hoc recording secretary: Mabud Choudhury (mchoudhury@ofsoptics.com) for the meeting minutes.

Presentation #1:
Title: "Agenda, Study Group Status and Work"
Presenter: Robert Lingle, Jr. (OFS)
lingle_100GSR_adhoc_01_042320.pdf

Mr. Lingle then proceeded with reviewing the **Agenda** and asked if there any modifications, additions or deletions? There were none.
The agenda was approved by the ad hoc. Approved Agenda:

- Meeting Attendance and Webex
- Approve Agenda
- 100GSR Study Group ad hoc communications
- IEEE Patent Policy reminder: https://mentor.ieee.org/myproject/Public/mytools/mob/preparslides.pdf
- IEEE SA Copyright Policy reminder: https://standards.ieee.org/ipr/index.html
- IEEE Participation Requirements reminder: https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/Participant-BehaviorIndividual-Method.pdf
- SG Status
- 13 May 100GSR SG telephonic interim
    - Goals, logistics, registration, call for contributions
- Presentations
    - "Technical feasibility of 100 Gb/s over >100m MMF using VCSELs with reduced spectral width" Nikolay Ledentsov (VI Systems GmbH)
    - "In-row server applications" James Young (CommScope)
- Future Meetings

Chair showed the links to the IEEE 100GSR Study Group page, ad hoc page and the email reflector.

Chair inquired if there were new participants who were unfamiliar with IEEE SA meeting policies and guidelines. There were new participants who requested review of all policies and guidelines slides. Chair reviewed the **Guidelines for IEEE SA Meetings**, which includes IEEE patent policy for pre-PAR projects.

IEEE SA Copyright Policy: Mr. Lingle provided overview of slides 8-9 of lingle_100GSR_adhoc_01_042320.pdf entitled "IEEE SA Copyright Policy"

IEEE SA Participation Policy: Mr. Lingle showed the participation policy slides 10-12 of lingle_100GSR_adhoc_01_042320.pdf .

The Chair provided links for Draft PAR, CSD and Objectives.

- PAR
- Criteria for Standards Development
- Objectives

Chair reviewed the SG approved Objectives.

The Chair then reviewed information for the **SG Interim Teleconference on May 13, 2020 meeting**:

- Details:
  - May 13, 2020 at 10am US Eastern Time for up to 3 hours, Webex meeting
  - Will be able to vote on motions and conduct the full business of the SG
  - Registration: Please register at least 24 hours prior to the call – before 10am EDT/UTC -4, May 12. You can do this by clicking on the following link 13 May 100GSR SG telephonic interim registration email or sending an email to rlingle@ofsoptics.com and mchoudhury@ofsoptics.com with the subject "13 May 2020 100GSR Study Group Telephonic Interim Registration." Please provide your name, employer, and affiliation in the email.
- Goal:
  - Vote on motions for additional objectives plus potential changes to the previously adopted PAR/CSD responses
  - We need to forward our final PAR, CSD responses to the EC going into the July Plenary

Request for reflector email from Chair for telephonic interim registration.

Future meetings:

- Ad Hoc Meetings:
  - May 7, 2020, 12 noon – 2 pm EDT/UTC -4
  - Ad Hoc Call Schedule & Info: http://www.ieee802.org/3/100GSR/public/adhoc/
- Interim Teleconference:
  - May 13, 2020, 10 am – 1 pm EDT/UTC -4
- Face to face meetings:
  - May 2020 face to face 802.3 Interim meeting: CANCELLED
  - July 2020 face to face 802 Plenary meeting: CANCELLED
  - The cancelled face to face meetings may be replaced by virtual meetings as appropriate
    - Chair anticipates that the IEEE 802 EC will enact temporary rules to allow the business of July plenary to proceed

Chair reviewed call for contributions for May 13th SG Interim Teleconference meeting:

- Deadlines/Topics
  - The presenter shall request time by MONDAY, MAY 4th, 2020 11:59pm (AoE). Requests shall be submitted by sending an email to the Chair, rlingle@ofsoptics.com
  - The presenter shall submit a PDF, soft-copy version of the presentation, by e-mailing it to the Chair, rlingle@ofsoptics.com . This shall be done by FRIDAY, MAY 8th, 2020 11:59pm (AoE) for publication to the IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group webpage.
  - Presentations directly related to PAR, CSD and Objectives are encouraged. Contributions on other topics will only be considered after all other agenda items are completed.
- Procedure for Presenters: http://www.ieee802.org/3/100GSR/public/presentproc.html

Chair noted that due to limited time (meeting may be shortened to 2 hours) and the need to take roll call votes, it may not be practical to also have contributions.

Presentation #2:
Title: "Technical feasibility of 100 Gb/s over >100m MMF using VCSELs with reduced spectral width"
Presenter: Nikolay Ledentsov (VI Systems GmbH)
ledentsov_100GSR_adhoc_01a_042320.pdf

- Presentation provided technical feasibility of 100 Gb/s over >100 m MMF using SM VCSELs/VCSELs with reduced spectral width
- Proposed:
  - Objective of 100G data transmission over at least 100m of MMF using 850nm VCSEL with a reduced spectral width
  - Decide on the maximum OM4 and OM5 MMF transmission distance in Task Force
- Extensive technical discussion followed
- Topics discussed included:
  - Concern about worst case coupling loss with SM VCSEL
  - Measurement at 860 nm for 850 nm
  - Objective should state reach, but not say "narrow spectral width" – item for TF
  - Approach valid for both NRZ and PAM4
  - Slide 9 "Molin et al ECOC 2013" reference needs to be checked
  - Slide 6, 100Gb/s over 30m OM3 MM 850nm VCSEL, All eyes are error-free at BER $<10^{-12}$ makes lighter FEC interesting possibility
  - Caution about 100 m reach: must balance technical and economic feasibilities and meet all IEEE parameters – transceiver specs/receiver specs/link budget - within project timeframe. Lab results vs. meeting IEEE requirements
- Clarifying questions asked and answered
- Author welcomed feedback from the group.

Presentation #3:
Title: "In-row server applications"
Presenter: James Young (CommScope)
young_100GSR_adhoc_01_042320.pdf

- Presented:
  - End User distance requirements for in-row MOR (T1) to servers - 30m minimum (no end user feedback for <30m)
  - Longer distances would support additional applications
  - Several trends combine to favor longer reach for server-attachment ≥ 50 m
    - High radix switching replacing TOR switches - lower capex, opex and latency
  - OSA reference: technically feasible objectives for 100GbE at 70m simulated
- Technical discussion followed.
- Topics discussed included:
  - Enterprise DC rows are 30 m
  - Flattening network is key economic driver – not competing with copper
  - Request for contributions/participation from end-users. Two experts affiliated with Microsoft attended first part of the meeting, however, unfortunately, they had to drop off prior to this presentation.
- Author welcomed feedback from the group
- Clarifying questions asked and answered

Chair encouraged continued discussion on objectives on reflector.

The Study Group Ad Hoc meeting was adjourned at 2:02 PM EDT/ UTC -4, Thursday, April 23, 2020.

Next Meeting:
Scheduled (pending contributions) 100GSR SG ad hoc Webex meeting for Thursday, May 7, 2020 at 12:00 noon – 2 pm EDT/UTC -4.

Appendix A: Attendees at the IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group WebEx Ad Hoc Meeting, 23 April 2020.
44 individuals attended on Thursday, 23 April 2020, 12:01 PM – 2:02 PM EDT/UTC -4

	Last Name	First Name	Employer	Affiliations
1	Abbott	John	Corning	Corning
2	Akbaba	Enis	Maxim Integrated	Maxim Integrated
3	Alli	Pavan	Microsoft	Microsoft
4	Baca	Rich	Microsoft	Microsoft
5	Bhatt	Vipul	II-VI	II-VI
6	Bruckman	Leon	Huawei	Huawei
7	Castro	Jose	Panduit	Panduit
8	Chang	Frank	Source Photonics	Source Photonics
9	Chen	Chan Chih (David)	AOI	AOI
10	Chorchos	Lukasz	VI Systems GmbH	VI Systems GmbH

11	Choudhury	Mabud	OFS	OFS
12	Dawe	Piers	Mellanox	Mellanox
13	Dudek	Mike	Marvell	Marvell
14	Ghiasi	Ali	Ghiasi Quantum	Ghiasi Quantum
15	He	Xiang	Huawei	Huawei
16	Hoser	Mirko	II-VI	II-VI
17	Hu	Kangmin	Broadcom	Broadcom
18	Ingham	Jonathan	Broadcom	Broadcom
19	Jackson	Ken	Sumitomo Electric	Sumitomo Electric
20	Kamino	John	OFS	OFS
21	LeCheminant	Greg	Keysight Technologies	Keysight Technologies
22	Ledentsov	Nikolay N.	VI Systems GmbH	VI Systems GmbH
23	Lewis	David	Lumentum	Lumentum
24	Lingle, Jr	Robert	OFS	OFS
25	Lusted	Kent	Intel	Intel
26	Maki	Jeffrey	Juniper Networks	Juniper Networks
27	Malicoat	David	Malicoat Networking Solutions	Senko Advanced Components
28	Marques	Flávio	Furukawa Electric LatAm S.A.	Furukawa Electric LatAm S.A.
29	Murray	Dale	LightCounting	LightCounting
30	Murty	Ramana	Broadcom	Broadcom
31	Nerring	Ray	Cisco	Cisco
32	Nicholl	Gary	Cisco	Cisco
33	Parsons	Earl	CommScope	CommScope
34	Piehler	David	Dell Technologies	Dell Technologies
35	Pimpinella	Rick	Panduit	Panduit
36	Shubochkin	Roman	OFS	OFS
37	Sorbara	Massimo	GlobalFoundries	GlobalFoundries
38	Stassar	Peter	Huawei Technologies	Huawei Technologies
39	Sun	Yi	OFS	OFS
40	Swanson	Steve	Corning Incorporated	Corning Incorporated
41	Thompson	Lance	II-VI	II-VI
42	Wang	Ruoxo	Huawei	Huawei
43	Young	Dianna	Corning	Corning
44	Young	James	CommScope	CommScope