

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

Webex Meeting
May 7, 2020
Prepared by Mabud Choudhury

Group Name: IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group

Date/Location: Thursday, May 7, 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 (39 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 12:04 PM Eastern Daylight Time (EDT/ UTC -4), Thursday, May 7, 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.

Chair's Agenda & Presentation:

Title: "Agenda, Study Group Status and Work"

Presenter: Robert Lingle, Jr. (OFS)

[linge_100GSR_adhoc_01_050720.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 Study Group without opposition. **Approved Agenda:**

- Meeting Attendance and Webex
- Approve Agenda
- Approve March 26th and April 9th ad hoc meeting minutes
- 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
- May 13th and May 20th 100GSR SG telephonic interims
- Future Meetings
- Presentations
 - "Exploring the Feasibility of Longer Reach" Vipul Bhatt, (II-VI), Jose Castro,(Panduit), Lance Thompson, (II-VI)
 - "Proposals for two PMDs for 100G lambda" Jose Castro (Panduit), Rick Pimpinella (Panduit)
- Straw Polls

Chair asked if there were any modifications, additions, deletions, or corrections to previously posted March 26 and April 9 ad hoc meeting minutes. There were none

Chair moved to **approve meeting minutes**, previously posted, for March 26, 2020 and for April 9, 2020 IEEE 100GSR Study Group Ad Hoc Webex meetings:

- [unapproved minutes 100GSR adhoc 01 032620.pdf](#)
- [unapproved minutes 100GSR adhoc 01 040920.pdf](#)

Minutes were approved by Study Group without opposition.

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

12:12 pm: Chair inquired if there were new participants who were unfamiliar with IEEE SA meeting policies and guidelines. No one indicated that they were unfamiliar with guidelines/policies

Chair briefly reviewed the **Guidelines for IEEE SA Meetings**, which includes IEEE patent policy for pre-PAR projects, slide 7 of [lingle 100GSR adhoc 01 050720.pdf](#)

IEEE SA Copyright Policy: Mr. Lingle provided overview of slides 9-10 of [lingle 100GSR adhoc 01 050720.pdf](#) entitled "IEEE SA Copyright Policy"

IEEE SA Participation Policy: Mr. Lingle showed the participation policy slides 11-13 of [lingle 100GSR adhoc 01 050720.pdf](#) .

Chair provided overview of Study Group phase.

Mr. Lingle provided links for Draft PAR, CSD and Objectives.

- [PAR](#)
- [Criteria for Standards Development](#)
- [Objectives](#)

Chair reviewed the SG approved Objectives. He then covered possibilities for handling proposals for alternate objectives.

Mr. Lingle indicated that the draft PAR for 802.3db seems sufficiently broad to allow future flexibility on MMF objectives.

Chair indicated that IEEE P802.3at adopted several "Research" objectives <http://ieee802.org/3/at/objectives.html> – example of Research objectives as a possible option for additional objectives for 100GSR SG or P802.3db Task Force.

The Chair then reviewed information for the **SG Interim Teleconferences on May 13 and May 20, 2020 meeting:**

- The IEEE 802.3 100G Short Reach SG will hold its first Interim Teleconference meeting on **May 13, 2020 at 10am US Eastern Time for up to 2 hours**. At this meeting, we will be able to vote on motions and conduct the full business of the SG.

The goal will be to vote on motions for additional objectives plus potential changes to the previously adopted PAR/CSD responses.

If any comments from the EC on the pre-submitted PAR & CSD responses have been received, we could begin comment resolution on those. The deadline for receiving comments is 14 May AOE.

- The IEEE 802.3 100G Short Reach SG will hold its second Interim Teleconference meeting on **May 20, 2020 at 10am US Eastern Time for up to 2 hours**. At this meeting, we will be able to vote on motions and conduct the full business of the SG.

Primary goal is to review comments from the EC against our pre-submitted PAR & CSD responses out of the January Interim. The deadline for receiving comments is 14 May AOE. The WG needs to approve at meeting the following day.

Additionally, conduct any other business of the SG that needs to be completed before the 802.3 WG teleconference interim meeting on 5/21

Mr. Lingle then provided registration process and information for the interim meetings:

- Registration Requirement: Because a roll call vote is required if a motion is not approved by unanimous consent, registration is required for this meeting.
- 13 May Registration Process:

Click on the following link [13 May 100GSR SG telephonic interim registration email](#)

Or send 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.

Deadline: Tuesday, May 12, 2020 at 10am US Eastern Daylight Time (EDT/UTC -4), 24 hours before meeting

- 20 May Registration Process:

Click on the following link [20 May 100GSR SG telephonic interim registration email](#)

Or send an email to rlingle@ofsoptics.com and mchoudhury@ofsoptics.com with the subject "20 May 2020 100GSR Study Group Telephonic Interim Registration."

Please provide your name, employer, and affiliation in the email.

Deadline: Tuesday, May 19, 2020 at 10am US Eastern Daylight Time (EDT/UTC -4), 24 hours before meeting

Please register for both interims as soon as you know you will be attending interim(s)

Chair then provided the Webex information for both 13 May and 20 May SG telephonic interims.

Future meetings:

- Interim Teleconference Meetings:
 - May 13, 2020, 10 am – 12 noon EDT/UTC -4
 - May 20, 2020, 10 am – 12 noon EDT/UTC -4
- May 2020 face to face 802.3 Interim meeting: **CANCELLED** due to COVID-19 pandemic
- July 2020 face to face 802 Plenary meeting: **CANCELLED** due to COVID-19 pandemic
- 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

Contribution #1:**Title:** “Exploring the Feasibility of Longer Reach, An Overview of Tradeoffs”**Presenter:** Vipul Bhatt, (II-VI)[bhatt_100GSR_adhoc_01a_050720.pdf](#)

- Presentation provided strawman link budget as well as the results of a modeling exercise based on a comprehensive set of link impairments and parameters
 - To support a reach greater than 50 meters, Equalization and RIN are big levers worth exercising
 - Improvements in VCSEL bandwidth and spectral width help, but with diminishing marginal benefits
 - Penalties for 30 meters on OM3 and 50 meters on OM4 are comparable
 - Must add margin, and we must support target specs with measurements
 - Supporting a reach greater than ~70 meters will require improvement in component specs beyond what was presented
 - Tradeoffs are key.
- Extensive technical discussion followed
- Topics discussed included:
 - The number of taps: 5 to 9 taps – challenges; greater than 9 taps. DFE vs. FFE. Tx FIR. More complex equalization. Defining reference receiver. Nonlinear vs. linear model. Limits of model. RIN. Spectral width. Reflection ISI. Commercial product margins – IEEE requirements and commercial margins. Temperature, lifetimes, high yield, current density. Some penalties are not equalizable.
- Clarifying questions asked and answered
- Author welcomed feedback from the group.
- There was a request to update slide 5 of presentation to include Nonlinearity and Reflection ISI – both as further study items – as eye closure factors. Authors updated the presentation (the link provided above).

Contribution #2:**Title:** “Proposals for two PMDs for 100G lambda”**Presenter:** Jose Castro (Panduit)[young_100GSR_adhoc_01_042320.pdf](#)

- Presented:
 - MMF-VCSEL channel requirements for two PMD options: Switch-to-Switch and Switch-to-Server – to best address market needs
 - switch-to-server 30m
 - Option 1, current option, 30m using OM3 (50m using OM4)
 - Option 2 provide relaxed VCSEL tolerances:
 - $\leq 20\text{m}$ OM3, (aligned to lowest cost considerations)
 - $\leq 30\text{m}$ using OM4 –
 - switch-to-switch interconnections for $\geq 80\text{m}$
 - RIN is a critical parameter based on model
 - Based on link model simulations
- Technical discussion followed.
- Topics discussed included:
 - Fiber model and worst-case launch conditions, pre-cursor and post-cursor. Data centers getting smaller. Brownfield vs. greenfield applications. Value proposition of 100 m reach for MMF. Relative cost difference for PMD options. Need to replace AOC. Value

proposition for switch-server applications based on flattening network, not just cost. Technical challenges for >80 m reach. Having a common set of assumptions across multiple link model presentations.

- Author welcomed feedback from the group
- Clarifying questions asked and answered
- Presentation was updated (above link) to correct links to other presentations – those urls were updated.

The Study Group Ad Hoc meeting was adjourned at 2:07 PM EDT/ UTC -4, Thursday, May 7, 2020.

Next Meeting:

Scheduled 100GSR SG interim Webex meeting for Wednesday, May 13, 2020 at 10:00 AM – 12:00 noon EDT/UTC -4.

Appendix A: Attendees at the IEEE 802.3 100 Gb/s Wavelength Short Reach PHYs Study Group WebEx Ad Hoc Meeting, 7 May 2020.

39 individuals attended on Thursday, 7 May 2020, 12:04 PM – 2:07 PM EDT/UTC -4

	Last Name	First Name	Employer	Affiliations
1	Abbott	John	Corning Incorporated	Corning Incorporated
2	Akbaba	Enis	Maxim Integrated	Maxim Integrated
3	Bhatt	Vipul	II-VI	II-VI
4	Bruckman	Leon	Huawei	Huawei
5	Castro	Jose	Panduit	Panduit
6	Chang	Frank	Source Photonics	Source Photonics
7	Chen	Chan Chih (David)	AOI	AOI
8	Chorchos	Lukasz	VI Systems GmbH	VI Systems GmbH
9	Choudhury	Mabud	OFS	OFS
10	Dawe	Piers	Mellanox	Mellanox
11	Dudek	Mike	Marvell	Marvell
12	Ghiasi	Ali	Ghiasi Quantum	Ghiasi Quantum
13	He	Xiang	Huawei	Huawei
14	Ingham	Jonathan	Broadcom	Broadcom
15	Jackson	Ken	Sumitomo Electric	Sumitomo Electric
16	Kamino	John	OFS	OFS
17	LeCheminant	Greg	Keysight Technologies	Keysight Technologies
18	Ledentsov	Nikolay N.	VI Systems GmbH	VI Systems GmbH
19	Lewis	David	Lumentum	Lumentum
20	Lingle, Jr	Robert	OFS	OFS
21	Lusted	Kent	Intel	Intel
22	Lyubomirsky	Ilya	Inphi	Inphi
23	Malicoat	David	Malicoat Networking Solutions	Senko Advanced Components

24	Marques	Flávio	Furukawa Electric LatAm S.A.	Furukawa Electric LatAm S.A.
25	Murray	Dale	LightCounting	LightCounting
26	Murty	Ramana	Broadcom	Broadcom
27	Nerring	Ray	Cisco	Cisco
28	Parsons	Earl	CommScope	CommScope
29	Pimpinella	Rick	Panduit	Panduit
30	Shubochkin	Roman	OFS	OFS
31	Sorbara	Massimo	GlobalFoundries	GlobalFoundries
32	Stassar	Peter	Huawei Technologies	Huawei Technologies
33	Sun	Yi	OFS	OFS
34	Swanson	Steve	Corning Incorporated	Corning Incorporated
35	Ulrichs	Ed	Source Photonics	Source Photonics
36	Vanderlaan	Paul	UL	UL
37	Wang	Ruoxu	Huawei	Huawei
38	Young	Dianna	Corning	Corning
39	Young	James	CommScope	CommScope