

# IEEE 802.3 NGMMF Study Group Teleconference

Robert Lingle Jr., Chair

IEEE 802.3 Next-gen 200G & 400G PHYs over fewer MMF Pairs Study Group

Employer & Affiliation: OFS

February 08, 2018

# WebEx & Call-in Information

Join meeting in my WebEx Personal Room

[https://themeetingson.webex.com/join/webex\\_2220505](https://themeetingson.webex.com/join/webex_2220505) | 717 453 872

Join by phone

1-8007682983 Conference dial-in number

access code: 798 501 5

[Show global numbers](#)

[Can't join the meeting?](#)

# Agenda

- Please record attendance with employer & affiliation to Mabud mchoudhury@ofsoptics.com
- IEEE 802 Participation, Pre-PAR Patent Policy
- Approve agenda & January Ad Hoc call minutes
- Review motions passed in Geneva & work remaining for March Plenary
- Discussion of BMP & DI for 400 Gb/s objectives over 4 & 8 pairs MMF
  - “Impact of switch radix on server cabling,” discussion starter, Rick Pimpinella
- Discussion of BMP for a 200 Gb/s objective over 1 pair
  - “Broad market potential for 200Gb/s over 1-pair MM fiber - draft” Flavio Marques, Furukawa Electric LatAm SA

# Participation in IEEE 802 Meetings

**Participation in any IEEE 802 meeting (Sponsor, Sponsor subgroup, Working Group, Working Group subgroup, etc.) is on an individual basis**

- **Participants in the IEEE standards development individual process shall act based on their qualifications and experience. ([https://standards.ieee.org/develop/policies/bylaws/sb\\_bylaws.pdf](https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf) section 5.2.1)**
- **IEEE 802 Working Group membership is by individual; “Working Group members shall participate in the consensus process in a manner consistent with their professional expert opinion as individuals, and not as organizational representatives”. (subclause 4.2.1 “Establishment”, of the IEEE 802 LMSC Working Group Policies and Procedures)**
- **Participants have an obligation to act and vote as an individual and not under the direction of any other individual or group. A Participant’s obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.**
- **Participants shall not direct the actions or votes of any other member of an IEEE 802 Working Group or retaliate against any other member for their actions or votes within IEEE 802 Working Group meetings, see [https://standards.ieee.org/develop/policies/bylaws/sb\\_bylaws.pdf](https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf) section 5.2.1.3 and the IEEE 802 LMSC Working Group Policies and Procedures, subclause 3.4.1 “Chair”, list item x.**

**By participating in IEEE 802 meetings, you accept these requirements. If you do not agree to these policies then you shall not participate.**

(Latest revision of IEEE 802 LMSC Working Group Policies and Procedures: <http://www.ieee802.org/devdocs.shtml>)

# Guidelines for IEEE-SA Meetings

- All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
- Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
- Don't discuss specific license rates, terms, or conditions.
  - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
    - Technical considerations remain primary focus
- Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.
- Don't discuss the status or substance of ongoing or threatened litigation.
- Don't be silent if inappropriate topics are discussed... do formally object.

-----  
If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy” for more details.

This slide set is available  
at <https://development.standards.ieee.org/myproject/Public/mytools/mob/preparslides.ppt>

# Objectives adopted in Geneva

[http://ieee802.org/3/NGMMF/public/Adopted\\_Objectives\\_NGMMF\\_0123jan18.pdf](http://ieee802.org/3/NGMMF/public/Adopted_Objectives_NGMMF_0123jan18.pdf)

- Specific objectives adopted
  - Define a physical layer specification that supports 400 Gb/s operation over 8 pairs of MMF with lengths up to at least 100m
  - Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100m
- Objective that failed
  - Define a physical layer specification that supports 200 Gb/s operation over 1 pair of OM4 MMF with lengths up to at least 100m

# We need to support our CSD Responses

- <https://mentor.ieee.org/802-ec/dcn/18/ec-18-0018-01-00EC-ieee-p802-3cm-draft-csd.pdf>

## Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

Substantially different from other IEEE 802.3 specifications / solutions.

- 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.

# Contributions are needed in Rosemont to support the 400G objective over 8 pairs

- It may be argued at the WG level that we have not justified proposing PMDs which operate over both 4 and 8 fiber pairs.
- Our CSD responses speak of “new 400G topologies” and the need for breakout. These should be fleshed out.
- A connector type will be needed which has not been used previously in an Ethernet MDI.
- Contributions with multiple authors and many supporters would be helpful.



# Reconsider a 200G objective over 1 pair MMF

- Several have stated an intention to bring new information on BMP for a 200G objective over 1 pair MMF.
- Questions were raised in Geneva about the number of companies that can produce four wavelengths of VCSEL.
- Questions were raised about degree to which TF has been demonstrated.
- Further contributions are encouraged.