IEEE P802.3db Short Reach Fiber Closing Report

Robert Lingle Jr

OFS

Plenary Teleconference

November 19, 2020

IEEE P802.3db Short Reach Fiber
Project information

Task Force Organization

Robert Lingle, Jr., Task Force Chair

Mabud Choudhury, Task Force Secretary

Ramana Murty, Editor

Earl Parsons, Editor

Task force web and reflector information

Reflector information: http://ieee802.org/3/db/reflector.html

Home page: http://ieee802.org/3/db/index.html

PAR: http://ieee802.org/3/db/P802d3db_PAR.pdf

CSD: https://mentor.ieee.org/802-ec/dcn/20/ec-20-0097-01-ACSD-p802-3db.pdf

Objectives: http://ieee802.org/3/db/P802d3db_Objectives_Approved_May_2020.pdf

Timeline: https://www.ieee802.org/3/db/P802d3db_Timeline_Approved_November_2020.pdf

IEEE P802.3db Short Reach Fiber
Activities this week

- TF met in two-hour slots on 11/10 and 11/12
- Attendance was 66 on 11/10 and 87 on 11/12, per Webex
- Editors were appointed by chair
- 11/10 meeting was devoted to extensive discussion whether 100m reach objectives should be added to 3db, w/ two short summary contributions to focus discussion
- Straw polls and motions regarding objectives and timeline at 11/12 meeting
- Timeline was adopted by TF
  https://www.ieee802.org/3/db/P802d3db_Timeline_Approved_November_2020.pdf
- Motion passed to add 100m objectives for 100 Gb/s, 200 Gb/s, and 400 Gb/s over 1, 2, and 4 pairs of MMF, respectively
  https://www.ieee802.org/3/db/public/November20/motions_straw_polls_3db_01a_1120.pdf

IEEE P802.3db Short Reach Fiber Task Force Approved Objectives

1. Support a MAC data rate of 100 Gb/s, 200 Gb/s and 400 Gb/s
2. Support full-duplex operation only
3. Preserve the Ethernet frame format utilizing the Ethernet MAC
4. Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
5. Provide appropriate support for OTN
6. Support a BER of better than or equal to 10^-12 at the MAC/PLS service interface (or the frame loss ratio equivalent) for 100 Gb/s operation
7. Support a BER of better than or equal to 10^-13 at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s and 400 Gb/s operation

Original 3db objectives approved at May 2020 WG Interim

IEEE P802.3db Short Reach Fiber Task Force Approved Objectives

8. Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 50 m
9. Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 50 m
10. Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 50 m

Original 3db objectives approved at May 2020 WG Interim

.3db Motion #3

Move to adopt the following objectives:

- Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100 m

- And request the 802.3 Working Group to approve these objectives for IEEE P802.3db Task Force
- M: Earl Parsons
- S: Jose Castro

Motion from 11/12/2020 Plenary teleconference
motions_straw_polls_3db_01a_1120.pdf

Technical : >= 75%. IEEE 802.3 WG voters only (for Telephonic Plenary).

Y: 37 N: 11 A: 5

Motion Passes

Why did TF vote to add objectives?

- Original objectives approved by SG on 1/20, then by WG on 5/20, for a "VCSEL-limited" reach at 50m on OM4 MMF, aimed at lower relative cost for Fiber to the Server application
- New Technical Feasibility data brought into TF 6/20 demonstrated "fiber-limited" reach at 100m on OM4 MMF. ingham_3db_adhoc_01a_062520.pdf murty_3db_adhoc_01a_100120.pdf ghiasi_3db_adhoc_01a_091720.pdf
- Recent presentations to the TF have re-iterated market need for:
  - The most cost-effective, highest yield PMD for early adopters, and validated the original 50m reach objective over OM4, for Fiber-to-the-Device in hyperscale datacenters

    shen_3db_01a_110520.pdf (expert affiliated with Google)
  - Several other key applications, including big cloud datacenters in China & traditional enterprise datacenters with large installed bases of MMF cable, still require/benefit from the traditional 100m reach over OM4 that has applied to SR/SR4 PMDs for the past ten years

    xie_3db_01_110520.pdf (expert affiliated with Alibaba)
- Are a 50 & 100m PMD sufficiently distinct? The two proposed PMDs would operate in regimes with different technical limitations. murty_3db_01a_1120.pdf The relaxed specs for the 50m objective will promote max number of suppliers for early adopter applications, expanding BMP and EF.
- In discussion, commenters agreed that 100m is an important reach in the market for MMF, but some worried that inclusion in IEEE P802.3db would delay the standard, and some worried that more experience was needed with 100G devices to write the lowest cost specs for 100m parts.

WG Motion #_

Move that the IEEE 802.3 Working Group approve the following IEEE P802.3db objectives:

- Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100 m

M: Earl Parsons
S: Ramana Murty
Y: N: A: (Technical ≥75%)

IEEE P802.3db Short Reach Fiber
Future Work

Biweekly Telecons Thursdays, Noon Eastern time

- Next meetings 12/3 and 12/17
- Webex Info is available on the IEEE 802.3 meeting calendar https://www.ieee802.org/3/calendar.html
- Calendar invitations are sent to the Reflector as changes occur
- Email rlingle@ofsoptics.com for calendar invitations

Hear baseline proposals for 50m and 100m objectives in December

Adopt baselines & write Draft 0.1

Questions?

Thank you!