Reach Objectives for 850 nm Links

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Reach 30 m

- A must hit target backed by broad end-user support and proven technical feasibility

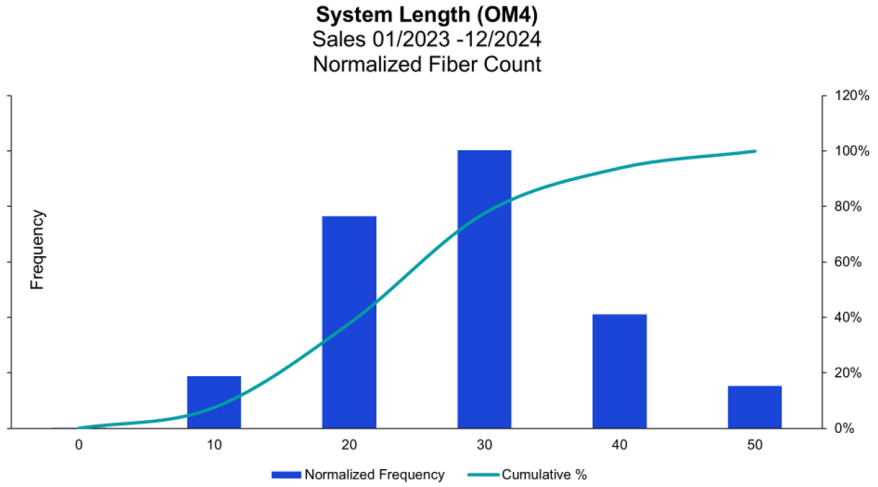
- Multiple demonstrations indicate this can be realized on OM4 MMF
  CFI_200GMMF_R4_250717
  bernier_200gmmf_adhoc_01a_250904

- OM4 fiber -3 dBe bandwidth exceeds 60 GHz for RMS spectral width below 0.6 nm

Reach 50 m

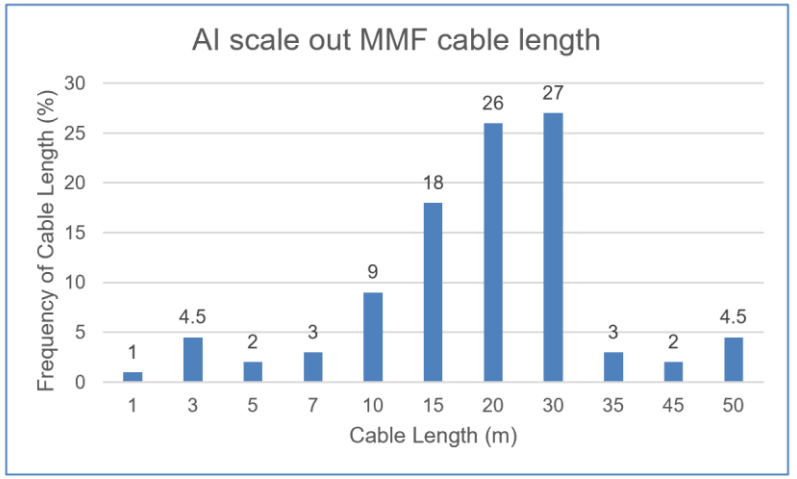
- Interest in 50 m reach expressed by nearly all system vendors and end users at the CFI

- Distributions of link lengths show interconnects beyond 30 m that can be served by multimode links
  CFI_200GMMF_R4_250717



- 30m OM4 reach covers 78% of data center links
- 50m OM4 reach covers 100% of data center links
- Average OM4: ~28m

Vince Ferretti and Angela Lambert, Corning



- AI scale out, xPU to switch, MMF cable length
- 90.5% ≤ 30 m
- 100% ≤ 50 m
- Chart data represents many thousands of MMF links
- Timeframe: 2024
- OM3/OM4 (predominantly OM4)

Howard Trieu and Mabud Choudhury, Lightera

Reach 50 m (2)

- Approach to 50 m reach: Combine a higher EMB MMF with some restriction on source RMS spectral width
  This was outlined in murty_200gmmf_adhoc_01a_250904

- Will including the 50 m objective cause a delay?
  - A fiber other than OM3/OM4/OM5 requires standardization in IEC
  - The higher EMB MMF being pursued is a higher-grade fiber, not a new fiber, and should face an easier path to standardization
  - The 802.3 project pursued by this Study Group is expected to take about 2 years to complete
    Recent projects of similar scope: 802.3db 32 months
    802.3cu 25 months
  - Fiber standardization in IEC is feasible within the time frame of this project

  ➢ Specifications for 50 m reach can be written on the same timeline as 30 m reach

Recommended Objectives

Define a physical layer specification that supports 200 Gb/s operation:

- over 1 pair of MMF with lengths up to at least 30 m
- over 1 pair of MMF with lengths up to at least 50 m

Define a physical layer specification that supports 400 Gb/s operation:

- over 2 pairs of MMF with lengths up to at least 30 m
- over 2 pairs of MMF with lengths up to at least 50 m

Define a physical layer specification that supports 800 Gb/s operation:

- over 4 pairs of MMF with lengths up to at least 30 m
- over 4 pairs of MMF with lengths up to at least 50 m

Define a physical layer specification that supports 1.6 Tb/s operation:

- over 8 pairs of MMF with lengths up to at least 30 m
- over 8 pairs of MMF with lengths up to at least 50 m