Effective 100 Gb/s IM/DD 850-nm Multi- and Single-Mode VCSEL Transmission Through OM4 MMF - DTU Orbit (27/10/2019)

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To cope with the ever increasing data traffic demands in modern data centers, new approaches and technologies must be explored. Short range optical data links play a key role in this scenario, enabling very high speed data rate links. Recently, great research efforts are being made to improve the performance of vertical-cavity surface-emitting lasers (VCSELs) based transmission links, which constitute a cost-effective solution desirable for massive deployments. In this paper, we experimentally demonstrate intensity-modulation direct-detection transmissions with a data rate of 107.5 Gb/s over 10 m of OM4 multimode fiber (MMF) using a multimode VCSEL at 850 nm, and up to 100 m of OM4 MMF using a single-mode VCSEL at 850 nm. Measured bit error rates were below 7% overhead forward error correction limit of 3.8e−03, thus, achieving an effective bit rate of 100.5 Gb/s. These successful transmissions were achieved by means of the multiband approach of carrierless amplitude phase modulation.