2x2 MIMO-OFDM Gigabit fiber-wireless access system based on polarization division multiplexed WDM-PON - DTU Orbit (28/12/2018)

We propose a spectral efficient radio over wavelength division multiplexed passive optical network (WDM-PON) system by combining optical polarization division multiplexing (PDM) and wireless multiple input multiple output (MIMO) spatial multiplexing techniques. In our experiment, a training-based zero forcing (ZF) channel estimation algorithm is designed to compensate the polarization rotation and wireless multipath fading. A 797 Mb/s net data rate QPSK-OFDM signal with error free (<1 × 10-5) performance and a 1.59 Gb/s net data rate 16QAM-OFDM signal with BER performance of 1.2 × 10-2 are achieved after transmission of 22.8 km single mode fiber followed by 3 m and 1 m air distances, respectively.

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