

Robust 9-QAM digital recovery for spectrum shaped coherent QPSK signal - DTU Orbit (09/11/2017)

Robust 9-QAM digital recovery for spectrum shaped coherent QPSK signal

We propose 9-ary quadrature amplitude modulation (9-QAM) data recovery for polarization multiplexing-quadrature phase shift keying (PM-QPSK) signal in presence of strong filtering to approach Nyquist bandwidth. The decision-directed least radius distance (DD-LRD) algorithm for blind equalization is used for 9-QAM recovery and intersymbol interference (ISI) compression. It shows the robustness under strong filtering to recover 9-QAM signal rather than QPSK. We demonstrate 112 Gb/s spectrum shaped PM-QPSK signal by wavelength selective switch (WSS) in a 25-GHz channel spacing Nyquist wavelength division multiplexing (NWDM). The final equalized signal is detected by maximum likelihood sequence decision (MLSD) for data bit-error-ratio (BER) measurement. Optical signal-to-noise ratio (OSNR) tolerance is improved by 0.5 dB at a BER of 1×10^{-3} compared to constant modulus algorithm (CMA) plus post-filter algorithm.

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