

Abstract

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Performance enhancement and optimization of FWM based optical delay line at 40-Gbps bit rate

In this study, an all-optical tunable time delay in optical fiber using wavelength conversion stage and dispersion stage is designed, simulated, evaluated and optimized. A noticeable optical tunable time delay is achieved at 40-Gbps bit rate system. An optimization process is carried out targeting a remarkable system performance based on bit error rate (BER) and Eye diagram analysis. This design successfully achieves 740-ps tunable optical time delay with pulse width (PW) of 2.5-ps at 40-Gbps delay system and a maximum relative delay (MRD) of 296. This system represents a step towards an integrated optical buffer to be used in communication systems.