

Abstract

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An Enhanced WDM Optical Communication System Using a Cascaded Fiber Bragg Grating

In this paper, a cascaded fiber Bragg grating (FBG) system is proposed to reduce the dispersion in the optical signal in single mode optical fibers. This consequently enhances the system performance, which is evaluated by the bit error rate (BER) and quality factor (Q-factor). The proposed model consists of four uniform cascaded FBGs connected at the transmitter to get narrow linewidth, ??, of the optical signal, which is a major cause of the delay. The Optisystem7 is used to simulate the proposed model in a WDM system with and without the model for distance 200 km. The system parameters are investigated showing an enhanced performance with 12%, including eye diagram, Q-factor and BER. A 10^{-6} – 10^{-10} BER is achieved with a quality factor in the range 7–14, including the effects of fiber length, input power and FBG length.