

ABSTRACT

Dispersion is one of the problems that exists in long distance Dense Wavelength Division Multiplexing (DWDM) optical fiber communications. Dispersion can cause several problems such as signal and information buildup. One of the most effective ways to compensate for dispersion is to use Dispersion Compensating Fiber (DCF). Apart from that, in fiber optic communications, the use of bit rate can also affect how quickly the information will be conveyed. This research aims to compare the performance of system designs with variations in the placement of DCF schemes with variations in bit rate on an 8 channel DWDM network with a distance of 150 km, with the parameters observed being BER and Q-Factor. Based on this research, the best BER and Q-Factor value results were obtained in the Pre-Compensation scheme with a BER value 0 at a bit rate 2.5 Gbps, and 8.13×10^{-270} at a bit rate of 5 Gbps, and a Q-Factor value of 53.46 at a bit rate of 2.5 Gbps. From the simulation carried out, the Pre and Post-Compensation scheme uses a bit rate of 2.5 Gbps, the BER value is only 0 on each channel, this indicates that no errors occur when using that bit rate. Therefore, the use of the Pre-Compensation scheme in this research has the best results.

Keywords : DCF, DWDM, bit rate, BER, Q-Factor