

## ABSTRACT

*DWDM system has characteristic that able to shortening space between waves therefor its bandwidth become larger and suitable for long range communication system. However DWDM network has some disadvantage, which is dispersion. DCF become the best solution to overcome dispersion problem because negative dispersion value that it has which able to decrease positive dispersion value to become zero. Design is done by using throughput as 40Gbps on 16 channel which has variant space 25,50,100, and 200Ghz between channel. Range total of this design is 1050Km also using EDFA. Scenarios used is done by power variant on transmitter which its value is 0,2,4,6, and 8 dBm on 100Ghz channel space using scheme which is Symmetrical Compensation Type-A dan Symmetrical Compensation Type-B. Based on research which has been done BER on scheme type 8 is smaller, while scheme type A has bigger Q-factor. In scheme type a channel 1 has jitter value 0,0264 ns, distortion value 21.368,110  $\mu$ , and SNR 6,4 dB, channel 11 has jitter value 0,04272 ns, distortion value 14.485,683  $\mu$  and SNR value 2,982 dB. In scheme type B channel 1 has jitter value 0,0312 ns distortion value 30.000  $\mu$ , and SNR 6,699 dB. channel 11 has jitter value 0,0456 ns, distortion value 14.910  $\mu$ , SNR 2,962 dB. The result acquired by comparing jitter value, distortion and SNR is scheme type b has bigger value than scheme type A.*

*Keywords : DWDM, DCF, Q-factor, BER, Eye Diagram.*