ABSTRACT

Distance optical communication leads to reduced power received at the receiver side, it is caused by the dispersion and attenuation others. Therefore, to optimize the received power at the receiver side to use an amplifier to be on the receiving the transmitted signal can be received well.

In this paper, we will do modeling and simulation using the DWDM link Optisystem 7.0 software, and then will be three existing schemes on erbium doped fiber amplifier (EDFA) without using Dispersion Compensation Fiber. Three schemes EDFA ie, booster amplifiers, In-line amplifier and pre-amplifier. EDFA been in this final project for EDFA can amplify optical signals without converting it into an electrical signal first. In this final project, the optical fiber length will be set every 2 Km. The length of the link used is 72 Km, 142 Km and 396 Km, bitrate used is 10 Gbps and 40 Gbps, modulation format used is NRZ and RZ. Furthermore, the results of the simulation will be the value of the Q factor and BER respectively EDFA scheme, so we get the best value of the three schemes EDFA used.

From the analysis conducted, the amplifier (EDFA) has a correlation to the performance of DWDM systems, where available schemes booster of the best among the three schemes EDFA that is because the scheme booster Q factor is worth the maximum is equal to 7.70079 and BER are worth at least the minimum that is equal 5.58823×10^{-15} that occurs when the condition of the link 72 Km length, bitrate and 10 Gbps RZ line coding.

Keyword: DWDM, EDFA, Q factor, BER