

ABSTRACT

Nowadays, The development of the Optical Fiber Communication Systems (SKSO in Indonesian) continued to progress from year to year. Dense Wavelength Division Multiplexing (DWDM) is one of technology of optical fiber communication systems which grows so fast. DWDM also has several advantages over previous technology. Besides the advantages of DWDM, there are deficiencies which greatly affect the performance of these technologies such as non-linearity effects Four Wave Mixing(FWM).

In this Final Assignment, there is a modeling of DWDM link was made from OptiSystem Software that use to determine the effect of the FWM. And there are also 3 simulation scenario. In first scenario, the variables input that are changed is the bitrate links and link distance. The second scenario, the variable that is changed is channel spacing. In third scenario, the variable that is changed is the transmitter power.

The results of the simulation that the non-linear effect of Four Wave Mixing made very bad impact on the performance of DWDM links, because all the Q - Factor of all the simulation has a value less than 6. In addition to the simulation results obtained with a bitrate of 10 Gbps, The best performance has Q - factor = 5.3466725, and the worst performance has Q - factor = 1.61111125, but can be repaired so that the Q - Factor increased to 2.50623. In simulations with a bitrate of 40 Gbps, the best performance has a Q - Factor = 2.96011, and the worst performance has Q - factor = 1.8404325, but can be repaired so that the Q - Factor increased to 3.748735. And on simulations with a bitrate of 100 Gbps, the best performance has a Q - factor = 2.9551125, and the worst performance has Q - factor = 2.196375, but it could be improved so that the Q - Factor increased to 2.7596375.

Key Word: Dense Wavelength Division Multiplexing, Four Wave Mixing, Q - Factor.