

ABSTRACT

The phenomenon of non-linearity effect on optical fiber communication system (SKSO) greatly influences to network performance and technology including Dense Wavelength Division Multiplexing (DWDM) technology. This technology is a highly developed technology of fiber optic communication system (SKSO) so it has many advantages and advantages. But behind the advantages, there are drawbacks that affect the performance of these technologies including non-linear fiber optic effects of Three Wave Mixing (TWM) type.

In this final project, simulated Dense Wavelength Division Multiplexing (DWDM) system modeling in simulator software to know the effect of that produced by Three Wave Mixing (TWM) non-linearity effect on fiber optic communication system (SKSO) performance and there are three Test scenario on simulation. The first scenario, change the large variable bitrate value and link distance. In the second scenario, change the channel spacing variable. In the third scenario, change the transmitter power variable.

The result of the simulation that has been done can be said that the non-linear effect of Three Wave Mixing (TWM) has a negative impact on the performance of Dense Wavelength Division Multiplexing (DWDM) link, all Q-Factor values produced under system feasibility standard. At link with bitrate 10 Gbps got best value of Q-Factor equal to 6,1653525 and worst value equal to 1.0608313 but can be fixed to 1.6512025. At link with bitrate 40 Gbps got best value of Q-Factor equal to 4,0759025 and worst value equal to 0.3180738 but can be repaired to be 0.9686463. In the link with bitrate 100 Gbps got the best value of Q-Factor equal to 3,09007 and worst value equal to 1.6770563 but can be fixed to 1.76733375.

Keywords: *Dense Wavelength Division Multiplexing (DWDM), Three Wave Mixing (TWM), Q-Factor.*