

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 modelling of DWDM link was made from software that use the determine the effect of the FWM. And there are also two simulation scenario. In first scenario, the variable input that are changed is the bitrate links and link distance. The second scenario, the variable that is changed is the transmitter power.

A 10 Gbps bitrate with a distance of 200 km has the best performance with q-Factor 3. A 40 Gbps bitrate with a distance of 100 km has a Q-factor performance of 3,224. Bitrate of 100 Gbps that the best performance at a distance of 100 km. The effect of transmitter power on 10 Gbps bitrate has the best performance in the previous scenario that the best performance on a link with 0 dBm transmitter power with q-factor power of 3.37157. Effect of transmitter power at 40 Gbps bitrate, Changes in transmitter power on the link that experiences the best performance in the previous scenario that the best performance on the link with transmitter power is 0 dBm with a q-factor power of 4.0113. The effect of transmitter power on 100 Gbps bitrate, the best performance in the previous scenario that the best performance on the link with transmitter power is -2.9 dBm with q-factor power of 2.43272.

.Keyword: Dense Wavelength Division Multiplexing, Four Wave Mixing, Bit Error Rate, Q-factor