ABSTRACT

The development of Dense Wavelength Division Multiplexing (DWDM) in the Optical Fiber Communication Systems (SKSO in Indonesian) also contribute the high quality of service. However, DWDM technology also has the possibility of quality degradation. There are deficiencies which greatly affect the performance of these technologies such as non-linearity effects Cross Phase Modulation (XPM).

In this Final Assigment, there is a modeling of DWDM link using OptiSystem 7.0 Software that use to determine the effect of the XPM using non compensation scheme (without compensation) and using three schemes of Chromatic Dispersion Compensation. In non compensation scheme (without compensation) is not used compensators optical fiber, while for all Chromatic Dispersion Compensation that consisting of pre compensation, post compensation and symetric compensation used compensators optical fiber.

The results of the simulation prove that XPM occured, it can be defined by value of Q Factor and Bit Error rate (BER), also can be define by opened eye diagram. In the non compensation scheme obtained optimum Q Factor on 2.5 and 4 km BER with these value, and minimum BER 1 (50, 100, 150, 250, 800, 1000 km) also smaller eye opening on eye diagram as arise the length of this link. Where the pre compensation, post compensation and symetric compensation scheme obtained the best Q Factor worth 26.797, 22.534, dan 28.445 at 10 km. From those three schemes of Chromatic Dispersion Compensation above could reduce fiber non linear effects. Within the main key is by using DCF that has negative dispersion value, then creates delay among the closely DWDM channel and absolutely could obtain ISI in the lowest level.

Key Word: DWDM, XPM, Chromatic Dispersion Compensation, BER, Q Factor, eye diagram.