ABSTRACT

Fiber optic is one kind of wireline technology which is able to send information with a high bit rate with a broad bandwith. In order to achieve a high bit rate, it requires a multiplexing technology. OTDM (Optical Time Division Multiplexing) is one of the multiplexing technology, which the function is to divide the data into the time slot with a single wavelength, and is channeled through a fiber optic.

The system is designed by using Distributed Feedback (DFB) Laser as the source of ray with the addition of FEC (Forward Error Correction) to detect and to correct error. Reed Solomon Codes is one of the FEC method that is available currently. The modulation used in this system is RZ-DPSK. In this final project, the analysis is done by compare the output which use Reed Solomon Codes and without using Reed-Solomon Codes.

Analysis results prove that the Reed-Solomon codes can correct errors that occurs as a result of dispersion, noise and attenuation that rise during the process of transmission. Performance improvement provided by the Reed Solomon Codes is 3 dB. With performance improvement of 3 dB, the distance of a link that can be taken to a bit rate of 2.5Gbps using line coding RZ is 18.4 km and 44.4 km when using line coding NRZ.

Key Word : Fiber Optic, Multiplexing, OTDM, Time slot, Reed Solomon Codes, RZ-DPSK.