ABSTRACT

In the fast growth era of information and communication technology, demand of communication service with more complex and sophisticated kind and level of service is growing. In order to fulfill those demands, high reliability and high capacity communication system are needed. Optical fiber communication system is a communication system was applied to solve the problem.

Optical communication system is a system using light waves as a carrier signal from transmitter to receiver. Therefore, a component is needed to change information signal into light waves form so it can be transmitted to receiver. This component is called optical modulator. One kind of the optical modulator is Mach Zehnder modulator.

In this Final project, a simulator of Mach Zehnder modulator was made where it used video signal as a information signal. Information signal that formed a video signal is changed into binary form (bits). Furthermore, information signal is modulated using *BPSK* (*Binary Phase Shift Keying*) dan *QPSK* (*Quadrature Phase Shift Keying*) modulation. This signal become a modulated signal of Mach Zehnder modulator. Then, this signal is carried on continous wave as a *carrier* signal. The simulation uses Matlab 2009.

From this modulation process is known that the intensity of light in the output Mach-Zehnder Modulator is changing following the change of modulating signal. The output intensity of Mach Zehnder modulator using BPSK signal as a modulating signal with Laser output power 1 mW is 0 until 0,99 mW. Whereas, for QPSK signal as a modulating signal, the output intensity of modulator is 0 until 0,98 mW and for NRZ unipolar signal, the output intensity of modulator is 0 until 0,997 mW.

Keyword: Mach-Zehnder, interference, electro-optic, BPSK, QPSK