

## ABSTRACT

The developing of technology especially in transmission has bring people to find communication network system with optic fiber. The need of high speed and long distance transmission is increasing. Because of that the writer try to analyze optimum design system who fulfill that needed, which is optic fiber communication system using Quadrature Phase Shift Keying (QPSK) modulation format combine with Sub Carrier Multiplexing (SCM). This multiplexing technique offers many benefit, such as has bigger capacity in same bandwidth, the component effective cost, and high modulation service.

In this assignment is doing numeric analysis based on graph from simulation result using Matlab 7.0.1 program. The analysis is based on Bit Error Rate (BER) parameter and output supply system. Next, compare with the system that has made before, which used two channels.

The analysis result shows that the system that has made before is better than the system that made in this assignment. The parameter is based on BER and output supply. BER value in this assignment is  $\pm \pm 3.59 \times 10^{-15}$  for channel 1,  $\pm 3.02 \times 10^{-14}$  for channel 2, and  $\pm 6.613 \times 10^{-13}$  for channel 3.