ABSTRACT

High speed and large capacity in the transmit data is crucial in the process of data transmission. To meet these demands, the optical fiber of choice because it has many advantages. But in its application, optical fiber has many deficiencies that need a good transmission method, which can transmit information with a large capacity, secure against interference errors, and can provide better service.

In this final, calculation of LPB (Link Power Budget) and RTB (Rise Time Budget) to ensure proper link designed. Then it is simulated using the system between FEC (Forward Error Correction (Convolutional Codes)) and that without the addition of FEC to obtain graphics output in the form of BER that can be achieved by the large value of Eb/No required. To obtain performance system designed. To ensure that the encoding and decoding techniques used convolutional Codes is true, then the simulation is validated convolutional Codes. In addition, also performed simulations to check kamampuan of the techniques used convolutional Codes (code rate 1/2 and constraint length 5) in the correct data errors that occur due to the transmission process.

The results of this final are : fiber optic transmission system designed is feasible with the intensity of the Mach Zehnder modulator output signal of the FEC is added or not is the same that is equal to 9.26584 dBm, penambahahan system without FEC and with the RZ-DPSK modulation requires the value Eb/No of 13 dB to achieve BER 10^{-9}, with the addition of convolutional Codes system with code rate 1/2 and constraint length 5 can provide better system performance when compared with the system without the addition of FEC is equal to 3.51 dB to achieve the highest BER 10^{-9}, and FEC technique that is used capable of correcting errors that occur in the data if there is a maximum of 2 bits is wrong.

Keywords : BER, Eb/No, RZ-DPSK, FEC, Convolutional Codes