ABSTRACT

Optical fiber is a transmission medium that has a large bandwidth capacity. This capacity is greater than the capacity of copper wires and radio. In the copper access network is considered to have limitations in that huge bandwidth capacity with high speed making it difficult to meet the needs of the service, which is not only a voice but data and video. To overcome these problems to increase the quality of network transmission speed, so do the modernization of the telephone network.

The final task discusses the planning of access networks Fiber To The Home (FTTH) technology using Gigabit Passive Optical Network (GPON) technology produces a larger bandwidth capacity, faster access, and applications support triple play services. FTTH network design chosen location is in the Cavalry Battalion 9 / Cobra. In this scheme used two scenarios, namely design scenario 1 and scenario 2, then selected the best design results. Before the design will be made forecasting demand for the next five years so that we will get bandwidth capacity. Once the design is complete, the calculation of the parameters of the feasibility and performance of this design system. These parameters are Link Power Budget and Rise Time Budget for the feasibility of the system. The parameter values calculated manually.

Results of this final task are the bandwidth capacity that will be provided is 531,0539 Mbps. From the results of downlink power link budget calculations for Scenario 1 is 20,8415 dB with P_{RX} value of -22, 164375 dBm and the uplink attenuation value most valuable 21,164375 dB with P_{RX} value of -22,164375 dBm. As for the second scenario design values obtained valuable link downlink power budget 19,7924144 dB with P_{RX} value of -20,7924144 dBm and the uplink attenuation value most valuable 19,890518 dB with P_{RX} value of -20,890518 dBm. From the results of both of these calculations is still above the standard specified by ITU-T and PT. Telkom, which amounted to -28 dBm. For the rise time budget NRZ Encoding of data speeds for the downlink is 0.2814 ns and 0.5627 ns for the uplink in scenario 1 tsystem values obatined at 0,2509 ns . While in scenario 2 tsystem values obtained at 0,4821 ns. So that the eligibility calculation system for rise time budget downlink and uplink direction on the design of the two scenarios still meet the rise time budget with NRZ coding.

Keywords: FTTH, GPON, Power Link Budget, Rise Time Budget, Batalyon Kavalery 9 / Cobra