

ABSTRACT

Karawaci Region, Tangerang regency is one area that is the main attraction for investors engaged in property . The fact that the community is demanding a dwelling has an access network is not only a home phone but also multimedia services and internet facilities . Society expects a good service accompanied by such a good network that can support all of their needs such as the need for triple play services . To answer the needs of the ITU - T set up a fiber optic access network configuration known as Fiber To The Home (FTTH) technology Gigabit Passive Optical Network (GPON) . Configuring GPON FTTH technology allowing the withdrawal of an optical fiber to the customer so that the quality of service more secure .

In this thesis analyzed the tech GPON FTTH network planning in housing Central Karawaci. This discussion is to review the feasibility of an optical link design mengenai link from Optical Line Terminal (OLT) closest to the customer side by surveying the distance, determine the number of components such as GPON Optical Distribution Cabinet (ODC), Optical Distribution Point (ODP) and other equipment. Laying of each component is a concern in the design. In addition it is the determination of the value of link power budget that depends on loss of each device used, and also analyzes the rise time budget. The design also pay attention to the type of device used in designing the network so it can be determined the number of devices used. Designing method for FTTH GPON technology is based on the number of home passed within the housing. The FTTH network design using AutoCAD software. Network design simulation using the software Optiswave Optisystem. Optisystem Optiswave also comes with the calculation of Bit Error Rate (BER).

Results from this research is Power Link Budget obtain attenuation values for Downstream configuration at the farthest distance of 20.33847 dB with Prx value of -23.3388 dBm . On the upstream attenuation value of 5.93362 dB with Prx for -11.43362 dBm . Downstream configuration values for Rise Time Budget will be met when using NRZ coding but for Upstream can use either NRZ or RZ . This is because. Dispersion worth 0.2502 ns . Based on the simulation results in the network design software Opti System to see the value of BER , the transmission quality is good design . BER values obtained in the simulation is 2.8×10^{-18} for Downstream and near zero (0) for the Upstream . The ideal value for bit error rate in optical fiber transmission is 10^{-9} .Demand will be fullfiled in the 17th month from the implementation. The cost required to perform this design is Rp . 137 724 000 or One Hundred Thirty Seven Million Seven Hundred Twenty Four Thousand Rupiah.

Keywords : GPON, *Bit Error Rate*, *Power Link Budget*, *Rise Time Budget*, FTTH.