

ABSTRACT

The increasing people needs for Internet, multimedia access and cable telephone communication, so we need a revolution in telecommunication technology. A technology to be the solution and can complete all the needs in the world of telecommunications is a technology of Fiber to the Home (FTTH). FTTH technology that use an optical fiber as a transmission media that is able to transmit data with a large bandwidth. PT.Telkom as a telecommunications service provider recommend access network Fiber To The Home to using Gigabit Passive Optical Network (GPON) technology to complete the needs of the service. GPON is one of the high-speed access technology which has the advantage of multiple services, and the availability of large bandwidth that support to triple play applications (voice, data, and video).

This final project is to design the access network Fiber To The Home (FTTH) using Gigabit Passive Optical Network (GPON) technology in Sukasari Indah Residence Baleendah. In doing design, made the determination device specifications, layout, and number of devices to be used. And to determine the feasibility of the system, will be calculated on the parameters of feasibility and performance of the system. Those parameters are Power Link Budget and Rise Time Budget for the feasibility of the system. The parameters manually counted and compared with the results of the simulation design using software Opti System which will also feature parameter Bit Error Rate (BER) for system performance.

The result of manual power link budget calculation is the total attenuation generated for the downstream link in the farthest ONT is 22,5172 dB and for upstream link is 7,7359 dB. The results of these calculations are still above the standards determined by ITU-T and PT. Telkom, which is equal to -28 dBm. For the calculation of rise time budget obtained t_{system} link downstream value of 0.26011 ns and upstream link t_{system} value of 0.26011 ns. So the system feasibility calculation for the rise time budget on the downstream and upstream links in both design scenarios meets the feasibility with NRZ coding.

Keyword : FTTH, GPON, Power Link Budget, Rise Time Budget, BER