

## ABSTRACT

In this modern time, surely this prestigious apartment need communication, information, and entertainment facilities with high performance. To fulfill those needs, a reliable network for best performance is required. The best network available today which can ensure the best qualities and performance is Fiber To The Home (FTTH) Network. FTTH (Fiber To The Home) is one of the network infrastructure will be developed in all regions in Indonesia. FTTH (Fiber To The Home) technology will be integrated with Gigabit Passive Optical Network (GPON). Bandung Technoplex Living is a apartment, located in Jln. Telekomunikasi, Ters. Buah Batu, Bandung.

In this final project, conducted the FTTH access network design by software using the technology of Gigabit Passive Optical Network (GPON) for Tower A Apartmen Bandung Technoplex Living. The design begins with making the initial path, then the determination of the device, specifications, layout and volume used. Then to feasibility analysis system with parameter Link Power Budget (LPB) and Rise Time Budget (RTB), while for system performance parameters analyzed using Signal to Noise Ratio (SNR) and Bit Error Rate (BER).

Results of analysis for ONT farthest distance, downlink value of each parameter generating value power received  $P_r = -23.456$  dBm, rise time of a total of 0.2615 ns using NRZ coding, while the uplink each parameter produce  $P_r$  or power received value of -24.0775 dBm, the total rise time of 0.2508 ns using NRZ or RZ coding. These results demonstrate the feasibility of a link meets the ITU-T standard that is at the limit of power received or  $P_r$  [-28; -8] DBm, and the value BER also meet standards for maximum optical link 10-6. Feasibility is also shown on the downlink simulation results with power received or  $P_r$  of -20.674 and BER Analysis 0, as well as on the uplink, with power received or  $P_r$  of -21.295 and BER Analysis 0.

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