

ABSTRACT

GPON (*Gigabit-capable Passive Optical Network*) as one of broadband technology access that could gives solution for future network access (*next generation network*). GPON Technology use an optical fiber as the transporting media for client. This Technology has been developed on many regions in Indonesia, like Telanaipura Jambi. In this final project, an analysis on optical network FTTC that using GPON will be demonstrated. This network existed and fully operated on early 2012 as the effect of network migration on 2011 gradually.

Based on calculation of link power budget, the biggest dumping calculated with the farthest distance is 8.73825 km of 11.95 dB for the downlink and 12.56 dB for the uplink. The overall of both link are still fall below the standard of GPON ITU-T G.984 which is 28 dB. Based on the produced total rise time 0.2908 ns. Total rise time is still fall below the value of T-System which is 0.2917 ns. On the uplink with 1.2 Gbps bit rate , MSAN's farthest location produced total rise time 0.2514 ns. Total rise time is still fall below the value of T-System which is 0.5833 ns, therefore the system could still meet the rise time budget with NRZ's coding.

Based on the calculation of transmission quality, the *Signal to Noise Ratio* (S/N) resulting 30.48242121 dB and then the *Bit Error Rate* (BER) resulting $5.16492917 \times 10^{-63}$. In the other hand the availability value gained is 99.9668 %, this value were almost reach the best availability value which is 99.999 %.

Kata Kunci : FTTC, GPON, *Power Link Budget*, *Rise Time Budget*,
Bit Error Rate, *Availability*