ABSTRACT

Today's internet access networks have switched from copper cables to fiber optics, this is because fiber optics have better services and the construction of fiber optic distribution networks to homes is more efficient, which is better known as Fiber To The Home (FTHH). Using technology Gigabyte Passive Optical Network (GPON). This Final Project selected several clusters housing in Bandar Lampung for FTTH network planning and analysis.

The methods chosen in this research are: survey, design, simulation, and analysis. Then research the results by analyzing the power link budget, rise time budget, and bit error rate. This analysis uses software Optiwave Optisystem to get calculations, and Mapping cluster housing in Bandar Lampung using software Google Earth Pro and use the device that is OLT, FDT, FAT and ONT.

The results of the simulation calculation link power budget, which is the total attenuation generated for the farthest distance to get a receiving power value of -17.28 dBm for the downstream link and -17.44 for the upstream link, then for the closest distance of -16.76 dBm for the downstream link and -16.80 dBm for the upstream link. The calculation results are still below the standard determined by ITU-T G.984 followed by ICON+, which is -28 dBm. For the value of the rise time budget the dowstream link gets a time limit value of equal to $2,8 \times 10^{-10}$ for NRZ coding. From the results of these calculations obtained for the farthest and closest distance tsystem $2,5171 \times 10^{-10}$ and $2,5008 \times 10^{-10}$ for the downstream link. As for the value of the rise time budget the upstream link gets a timeout value equal to $5,6 \times 10^{-10}$ for NRZ encoding. From the results of these calculations obtained for the far and closest distances tsystem $2,5002 \times 10^{-10}$ and $2,5000 \times 10^{-10}$. The RTB result is of good value because it is smaller than the time limit of each NRZ encoding. For the bit error rate, the value generated from the simulation of the farthest distance is $1,15146 \times 10^{-22}$ on the downstream link and $8,41144 \times 10^{-23}$ on the upstream link, while the value generated for the simulation of the closest distance is 61534×10^{-27} on the downstream link, and $1,89007 \times 10^{-28}$ on the upstream link. The BER values in both designs meet the minimum BER standard for optics, which is 1×10^{-9}. All of these values meet the eligibility standards of ITU-T G.984.

Key Words : FTTH, Link budget, BER, Rise time budget, GPON, Stroomnet, Bandar Lampung, ICON+.