

## ***ABSTRACT***

Anthurium Regency Housing is a new residence that does not yet have network infrastructure. In designing the FTTH network in Anthurium Regency housing use 10-Gigabit Passive Optical Network (XGPON) technology to provide good internet access service performance for each residential area. This final project will calculate the feasibility and performance parameters of the FTTH design system in Anthurium Regency housing. Link power budget calculation is done to determine the feasibility of the system in designing FTTH networks. The results of this calculation are compared with the results of simulations using Optisystem software. In addition to the power budget link parameters, there are parameters such as Bit Error Rate (BER) and Q Factor for system performance. The theoretical calculation of the link power budget is -20.7 dBm and can be said to be good because the power sensitivity value does not reach -28 dBm. For the overall simulation results, the link power budget value obtained is -23,361 dBm. The simulation results can also be said to be good because the power sensitivity value does not reach -28 dBm. The BER results on the Optisystem are  $1.90105 \cdot 10^{-64}$  and have met the specified optical fiber standards of  $10^{-9}$ . The Q Factor result on Optisystem is 16,9081 and can be said to be good because the minimum size of Q Factor on a good optical fiber is 6.

*Keywords — FTTH, XGPON, Link Power Budget, Bit Error Rate, Q Factor, Optisystem*