ABSTRACT

Copper access network is considered to not being able to accomodate a large bandwidth capacity and high speed internet connection, so as to improve the quality of the services the optical fiber transmission is used as a medium. Cluster Cempaka as public housing with modern concept is chosen for research in this final project.

Calculation is performed to parameters of feasibility and reability of the FTTH system that is implemented in Clusters Cempaka. Link Power Budget and Rise Time Budget for the feasibility of the system. Values of these parameters are calculated manually and compared with the results of using OptiSystem software. Besides, other parameter is the Bit Error Rate (BER) for the reability of the system. BER value is obtained by making simulation design of networks on OptiSystem.

On demand forecasting calculations required bandwidth of 6352 Mbps, the forecast will be met 83 months after the network is implemented. The results of the design of downstream Link Power Budget is -18.17 dBm and -6.25 dBm on upstream. These values are said to be feasible due to the values are above the receiver sensitivity that is -29 dBm. On the calculation of Rise Time Budget, the result of system time is 0.26756 ns, encoding on the downstream are met using NRZ, whereas in upstream encoding are met using both RZ or NRZ. The result of BER calculation is 0 both on downstream and upstream, the results are far under 10^{-9} *so that is still very good.*

Key Word: ***FTTH, GPON, Link Power Budget, Rise Time Budget, Bit Error Rate, OptiSystem***