

## ABSTRACT

Public needs access service that is quickly growing. This is due to the rapid technological developments. To get a quick access service, will require access media that has an enough large bandwidth in order to be able to quickly access needs are met. Optical fiber transmission medium is one which has a large bandwidth and can overcome bandwidth problems experienced. Optics-based systems can deliver a variety of digital information, such as voice, video, data, and so more effectively.

Pesona Ciganitri, located at Ciganitri, Bojongsoang, South Bandung, is minimalist and modern residential which has a cluster concept with green and lush environment. PT.Telkom Bandung has an initiative to provide Fiber To The Home (FTTH) using technology Gigabit Passive Optical Network (GPON) to all existing and new residential dwelling located in Bandung in order to give a good performance in the services provided by PT. Telkom. Pesona Ciganitri is one of the new homestay were still under construction and will be designed FTTH.

To determine the feasibility and design of performance FTTH, in this final project, calculation of the parameters of feasibility and performance that want to implement at Pesona Ciganitri Residence. These parameters are Link Power Budget and Rise Time Budget for the feasibility of the system and BER for permormance system that simulated the OptySystem. From the calculations manually link power budget, the total attenuation produced at 23,80195 dB for downstream and for upstream at 8,69495 dB. Based on the total value of the received power attenuation values obtained by -20,802 dBm for downstream and for upstream at -5,6949 dBm. This values is still above the minimum power limit at the receiver in PT.Telkom is -23 dBm As for the value obtained Rise Time Budget is well worth because  $t_{\text{system}}$  worth 0.25 ns for downstream and 0,25 for upstream smaller than the time limit for each encoding. For system performance parameters are generated from the simulation BER OptiSystem, BER values obtained at  $2,6294 \times 10^{-35}$  for downstream and upstream at 0. It can be concluded that both values meet the specified minimum value for optic BER is  $10^{-9}$ .

**Keywords: FTTH, Link Power Budget, Rise Time Budget, Bit Error Rate (BER), Opti System**