

## ABSTRACT

*Fiber Optic access network is one of the transmission media that has a greater bandwidth capacity compared to the previous copper network bandwidth capacity. The FTTH network has a higher speed so that it is considered capable of meeting the needs of telecommunications services today.*

*FTTH access network is designed using Gigabit Passive Optical Network (GPON) technology. GPON technology can produce greater bandwidth capacity, faster access, and support for triple-play services. The design of the FTTH network was chosen as the housing location of Royal Kopo Bandung. The FTTH network design is done in three stages, namely designing the Opticsystem application, designing on Google Earth and designing on AutoCAD. After the design is complete, the calculation of the feasibility and performance parameters of the design system will be calculated. These parameters are the Power Link Budget, Rise Time Budget, and Bit Error Rate.*

*The results of this final project, designed and realized Fiber Optic access networks that use GPON technology. Through this research, a Power Link Budget value of  $< -28$  dBm, Bit Error Rate of  $\leq 1 \times 10^{-9}$ , Q-Factor of  $\geq 6$ , and Rise Time Budget of 0.2508 ns (downlink) and value of 0.2500 ns (Uplink ). This value is a standard determined by ITU-T and PT. Telkom.*

*Keywords: FTTH, GPON, Power Link Budget, Rise Time Budget, Bit Error Rate.*