

## **ABSTRACT**

*The development of Information and Communication Technology is increasing along with the increasing years, so the need for internet consumption will also increase. At this time there are still many hotels or apartments that have not implemented the FTTB (Fiber To The Buildings) internet network, one of which is the Grand Surya Kediri Hotel.*

*The design of this FTTB network will later use GPON (Gigabyte Pass4e Optical Network) technology, which is one of the fiber optic-based broadband access network technologies by providing 1.244 Gbps Upstream bandwidth services and 2.488 Gbps Downstream bandwidth. In the design of the FTTB network in the Grand Surya Kediri Hotel this time, it will be focused from the Basement to the Rooftop Building.*

*To determine the performance of this FTTB system, it will be carried out in the calculation of parameters including Rise time budget and Link Power Budget, where the results of the calculation of the Power Link Budget value are 18.915125 dBm for the measured attenuation value Upstream and 18.12 dB for Downstream. And there is another for Rise Time Budget Downstream worth 0.12145709 ns and worth 0.3081964004 ns for Upstream the last is the BER value In the measurement results the BER value is measured:  $5.30231 \times 10^{-16}$ , for the eligibility standards of PT. Telkom & ITU-T:  $1 \times 10^{-9}$*

*The equipment needed to be used is 1 OLT (Optical Line Termination), 2 ODP (Optical Distribution Points), 1 ODC (Optical Distribution Cabinet), 10 ONT (Optical Network Terminal).*

***Keywords: FTTB Network, Fiber Optic, Internet, GPON, Grand Surya Kediri Hotel.***