

## **ABSTRACT**

*the long-distance communication system is one way to meet the needs of internet services that are important for mankind in this day and age. The services needed are not only audio but video and data with high bandwidth. Long Term Evolution technology is a high-speed wireless data transmission technology standard for communication based on the development of GSMEDGE and UMTS HSPA technologies. Equitable distribution of the 4G/LTE network is needed for areas that have the potential to become large tourist centers such as the natural tourism, culinary and educational institutions and government offices in the Ciwidey sub-district.*

*Last mile network design with desktop study method using Optical Network Unit on EnodeB and Optical Network Terminal for educational and government agencies using GPON technology by ITU-T G.984 standard which is capable of sending data up to 2.488 Gbps for downstream and 1.244 Gbps for upstream.*

*The simulation results in this design can support internet services in the Ciwidey sub-district, with a downstream link access eNodeB bit error rate of  $1,90 \times 10^{-10}$  while the upstream link access eNodeB with a bit error rate of  $1,95 \times 10^{-13}$ . Downstream link ONT access for the worst grade to schools with bit error rate  $9,81 \times 10^{-9}$  while upstream link ONT access schools with bit error rate  $1,08 \times 10^{-9}$ .*

*Keywords : Long Term Evolution, GPON, Bit Error Rate*