

ABSTRACT

The fiber optic network construction project, namely the palapa ring, has been completed. However, the internet network is still not maximally accessible in remote areas, so a backhaul network is needed as a connecting medium between the eNodeB and its base station controller through transmission media that supports the performance of LTE technology using optical fiber.

This final project is to design by determining the area for designing the backhaul eNodeB on the LTE network based on geographical location to take into account the required user traffic and to determine the design of the fiber optic and microwave backhaul link as well as the topology or configuration of the eNodeB network system designed in Sungai Subdistrict. Durian Kotabaru, South Kalimantan. This backhaul design uses SDH technology with STM-4 level and for access using 2.5 Ghz GPON.

The results of the calculations in this design have been able to support communication services in Sungai Durian Kotabaru District, South Kalimantan. This design is fulfilled with the lowest parameter BER on the downstream is $5,722 \times 10^{-9}$. Meanwhile, the lowest parameter BER on the upstream is $7,675 \times 10^{-10}$ and On the backbone side with value BER is $2,641 \times 10^{-12}$.

Keywords : Backhaul, LTE, GPON, Optical Communication System