**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 x  $10^{-10}$  and On the

backbone side with value BER is  $2,641 \times 10^{-12}$ .

Keywords: Backhaul, LTE, GPON, Optical Communication System

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