

## **ABSTRACT**

Technological development is one of the factors that can affect the progress of telecommunication infrastructure development. Currently there are many problems that occur in cellular communication, including the uneven distribution of LTE networks in certain areas in Indonesia, especially in the Barru district area caused by an inadequate number of eNodeBs so it is necessary to design a network based on coverage and capacity. There are several signal crisis points with unreachable conditions, which are population areas. This is our concern for the village, with this communication channel it will make it easier for local residents to communicate. In this Final Project, LTE and Fiber Optic Network Design is carried out in Kamiri Village, Barru Regency.

The design was carried out starting from collecting population data by conducting a survey to Kamiri Village. Then a drive test was carried out using NEMO Handy to obtain parameter data, namely RSRP, SINR, and Throughput in Kamiri Village, Barru Regency. After obtaining the parameter data, a design is carried out on the LTE network on the ATOLL application to obtain parameter values for SINR, RSRP, and Throughput. The design of the backhaul network on Optisystem is carried out as a support system for designing LTE networks.

The RSRP parameter results obtained show good signal strength with an average of -91.91 dBm. The throughput parameter results show a very good quality of data transmission with an average of 50 Mbps. The SINR parameter results show good signal quality with an average of 13.24 dB. The results of fiber optic backhaul testing using the Optisystem application also showed good results. Each eNodeB has Q-factor and BER values that meet the standards, as well as power according to needs. Thus, the design of the LTE network and fiber optic backhaul has been successful in accordance with the expected parameters.

**Keywords :** Fiber Optic, Network LTE, RSRP, SINR, Throughput