ABSTRACT

The G Island Reclamation Jakarta area has been inaugurated as a new residence. On Pulau G Reclamation, the need for high-speed data services is still not maximal. Internet services can only be enjoyed from the northern end of Pantai Indah Kapuk to the crossing bridge to Pulau G Reclamation. The rest on Pulau G Reclamation cannot enjoy data communication services properly.

The design of LTE using microwave link backhaul is carried out to support Long Term Evolution (LTE) data access services at the location of Pulau G (Golf) Reclamation. At the beginning of the planning is to calculate coverage and capacity for LTE networks with the target parameters Received Signal Receiver Power (RSRP) ≥-90 dBm, Signal to Noise Ratio (SINR) ≥7dB and throughput ≥12 Mbps. Furthermore, microwave link backhaul planning with working frequency based on backhaul link distance, and equipment selection based on throughput needs in Pulau G (Golf) Reclamation. This plan has the desired target with the achievement of Line of Sight (LoS), availability> 99.9%, and the receiving power level value> -79 dBm.

Based on LTE calculations, the required capacity and coverage includes one cell of G Island (Golf) Reclamation. With this, the average result for SINR parameter is 13.79 dB, RSRP is -68.92 dBm and throughput is 33.33 Mbps. For planning the backhaul link of Pulau G (Golf) for reclamation, the throughput required is 33.33 Mbps, the device used is the Ericsson ML 23E ST 17E1 microwave radio model with a minimum radio capacity of 34.54 Mbps, an antenna gain of 44.3 dBi with a diameter 1.2 m antenna, where the backhaul link distance of 2.48 km uses a working frequency of 23 GHz. Based on the microwave link backhaul simulation, the acceptance level value is -28.84 dBmn and the LoS achievement is fulfilled with a fading margin value of 50.16 dBm, so the availability is 99.99%.

Keywords : *Microwave Backhaul*, LTE, *Coverage Capacity*, *Capacity Planning*, RSRP, SINR, *Throughput*