

ABSTRACT

LTE network service users are currently increasing. This causes a high density of traffic load at a site. Based on Telkomsel operator data, there are four sites in Cingcin Soreang Village that have a high percentage of PRB. Two of these sites have a PRB percentage above 90%. This causes the LTE network performance in the area was not optimal. This is proven by conducting a Drive Test in Cingcin Soreang Village by taking into account network parameters such as RSRP, SINR, and Throughput. Results for RSRP and SINR parameter values have met Telkomsel operator standards, while for Throughput parameter values do not meet Telkomsel operator standards. The solution to this problem is to do LTE Advanced network planning that supports carrier aggregation features. This feature allows the use of more than one working frequency simultaneously, thus providing increased user capacity and throughput with the use of more efficient spectrum.

In this Final Project, LTE Advanced network planning is carried out using the tri-band carrier aggregation method, which is at a frequency of 900MHz, 1800MHz, and 2300MHz. The simulation is done using Atoll software. The parameters measured and analyzed in this LTE Advanced network planning include: Reference Signal Received Power (RSRP), Signal to Interference Noise Ratio (SINR), and Throughput. The number of sites used for LTE Advanced network planning is one site, namely the CINGCINKOLOT site according to capacity planning calculations. From Atoll software simulations, for scenario planning without carrier aggregation method, the mean RSRP is -91,65 dBm, the mean SINR is 16,34 dB, and the mean peak RLC channel throughput is 108,68 Mbps. Meanwhile, the results of scenario planning using the tri-band carrier aggregation method obtained mean RSRP of -83,87 dBm, mean SINR of 17,01 dB, and mean peak RLC channel throughput of 219,9 Mbps.

Keywords: LTE, LTE Advanced, tri-band carrier aggregation, RSRP, SINR, Throughput.