ABSTRACT

Mobile Internet usage continues to increase with an average age of productive spending 3 hours per day via a mobile device. The number of activities in the room, the more the number of smartphones and traffic which means a big spike in mobile subscriptions. Along with the increasing data traffic is very large and the limited spectrum available for wireless service providers to respond by making adjustments to the LTE technology. With the presence of LTE-AP supported spectrum unlicensed operator Telkomsel can enjoy the spectrum unlicensed to increase capacity and throughput.

In this final project LTE-Advanced Pro network planning using Licensed Assisted Access method by combining 20 MHz spectrum unlicensed in band 36 (5180 MHz) and sprectrum licensed 20 MHz in band 3 (1800 MHz). To see the improved performance of Licensed Assisted Access usage, LTE Network planning is done using 20 MHz bandwidth in band 3 (1800 MHz). In conducting LTE-AP network planning, analysis and simulation using U-Net software V500.

The simulation result for LTE network planning got the average value of RSRP ≥ -77.71 dBm, SINR ≥ 11.88 dB, Throughput ≥ 37,079 Mbps and User connected = 98.00%, while LTE-AP got the average RSRP ≥ -73.51 dBm, SINR nilai 17.02 dB, Throughput ≥ 49.739 Mbps and User connected = 100.00%. Based on the standard key performance indicators (KPI) Telkomsel operators, From the simulation results using U-Net v500 software LTE and LTE-AP network planning reached the standard of KPI that average throughput reaches ≥12 Mbps and user connected ≥ 90%. Based on the simulation results of LTE and LTE-AP network planning, LTE-AP network planning is better to be implemented in bandung city, because it can be a solution to the limitations of the operator spectrum and the network performance is very good in terms of coverage and capacity.

Keyword : LTE-Advanced Pro, LTE_ Licensed Assisted Access, Reference Signal Received Power.