ABSTRACT

Carrier aggregation (CA) is a 4th generation LTE - Advanced technology. The concept of carrier aggregation is the incorporation of several carrier signals into one user. In this study implemented carrier aggregation using the concept of inter-band with Atoll supporting software 3.3. where the carrier aggregation 1800 MHz is designed with a bandwidth of 15 MHz with a frequency of 2300 MHz with a bandwidth of 20 MHz in the city of Central Semarang. The design of carrier aggregation is done by referring to the existing 1800 MHz site and traffic data obtained from one operator in Indonesia. Measurement parameters analyzed include RSRP, CINR, and percentage of users connected based on simulation with Atoll software 3.3. For the LTE release 8 network design, obtained signal level ≥ 95 dBm of 74.63% with an average of -36.12 dBm, CINR level ≥ 5 dB at 92.16%, the average percentage of the user connected 97.16% and average throughput results from 1511 Mbps. Whereas in the LTE release 12 networks with carrier aggregation interband technique obtained signal level -95 dBm of 73.97% with an average of -33.81 dBm, CINR level ≥ 5 dB of 99.63%, the average percentage of users connected 99.69% and throughput 1939 Mbps. Based on the results of the analysis, it was found that the LTE release 12 networks with carrier aggregation interband technique was better and feasible to be applied to meet higher throughput in Central Semarang City.

Keywords: Carrier Aggregation, LTE-Advanced, Atoll, Spectrum.