ABSTRACT

The Government of Indonesia through the Ministry of Communications and Information Technology (Kemenkominfo) has officially opened its high-speed internet access service is often called 4G Long Term Evolution or commonly abbreviated LTE on 1800 MHz spectrum. Commercialization of 4G LTE on 1800 MHz frequency has done will certainly have an impact on the availability of spectrum in the future. Therefore, it is necessary LTE Advanced technology that is able to combine some of the frequency spectrum. One solution to solve the problem is with in Unlicensed Spectrum LTE (LTE-U) by the method of Carrier Aggregation (CA).

In this final project design of LTE-U is made with two scenarios, the supplemental downlink and carrier aggregation. Designing LTE-U is performed using a frequency bandwidth of 20 MHz in the 1800 MHz licensed (primary cell) and 5 MHz in the 2.4 GHz unlicensed frequency. This design is done with a case study in Central Jakarta using Telkomsel as the operator. This design is done by the method of planning by capacity and planning by coverage.

In this Final Project found that the most suitable method to be applied in Central Jakarta is the method of carrier aggregation by capacity planning with the number of eNodeB 36 site. In the simulation, this method has an average signal level of -75.36 dBm, the average CINR at 13.39 dB level, the percentage of users connected 89.4%, and the average throughput amounted to 5570.69 Mbps.

Keyword: LTE-U, WiFi, 1800 MHz, 2.4 GHz, 5 GHz, Dimensioning