

ABSTRACT

The application of Long Term Evolution (LTE) networks in Indonesia is already distributed equally in each region, especially in Bandung City. LTE network has been widely used, and people have already begun to switch from 3G network into using LTE network. However, the application of LTE network is not yet optimal because LTE network is operated in 900 MHz frequency, which is also used by 2G network. The 900 MHz frequency is also being used by 2G network, and this has caused a limitation of bandwidth that can be use by LTE network, because of the frequency sharing. To resolve that problem, 3GPP released a technology that supports carrier aggregation (CA) method, that allow the usage of two different frequency bands.

In this experiment, a planning of LTE-Advanced network using inter-band CA in 1800 MHz and 2300 MHz frequency with 20 MHz of bandwidth each will be simulated. The planning is approached with two methods, coverage planning and capacity planning. The planning area is Bandung City with Telkomsel provider.

Parameters that was analysed in this experiment is: cell amount, throughput, Reference Signal Received Power (RSRP), Signal to Interference plus Noise Ratio (SINR), dan user connected. The plan needs 207 sites to cover the area and fulfill the needed capacity. From the simulation result using Atoll 3.3 is obtained the average RSRP is -74.5 dBm, SINR 15.12 dB, user throughput 91 Mbps, and user connected 99.6%. Based on the data obtained, the planning scenario has already passed the Key Performance Indicator (KPI) of LTE network.

Keywords: *LTE-Advanced, Carrier Aggregation, frequency band, LTE planning*