

ABSTRACT

LTE Advanced technology was created because of the drive needs to increase the value of throughput on the user side, which is a limitation of LTE performances currently. This issue can be overcome by using one of the features of LTE Advanced technology the Carrier Aggregation (CA) method, which can increase transmission bandwidth capacity by combining two or more Component Carrier (CC), refers to the 3rd Generation Partnership Project (3GPP). There are two main scenarios in CA, namely Intra-Band and Inter-Band.

This Final Project aims to analyze the impact of the use of CA's both Intra-Band and Inter-Band and also to find the best scenario for new network planning in the city of West Jakarta. Approach to coverage and capacity planning as well as scenario configuration is done by using ≥ 2 CC on the X frequency which is 1800 MHz and Y frequency which is 2100 MHz and also the CC's bandwidth configuration limitation with a maximum value of 20 MHz.

The results of network planning using Atoll 3.3.0 software shows the value of RSRP, CINR, throughput and user connected. The best results obtained from capacity planning approach where the average percentage of user connected from all scenarios is 99,3%, in particular, is the Inter-Band CA on both frequencies. Planning results at 1800 MHz frequency has a RSRP value of -105,4 dBm, a CINR value of 7,24 dB and a throughput value of 26,93 Mbps as well as proving an increase from Non-CA to CA throughput percentage of 7,49%. While Planning results at 2100 MHz frequency has a RSRP value of -107,68 dBm, a CINR value of 3,12 dB and a throughput value of 29,65 Mbps as well as proving an increase from Non-CA to CA throughput percentage of 9,9%. These results have met KPI standard, which mean this plan can be considered feasible.

Key Words: *Carrier Aggregation, LTE Advanced, Intra-Band, Inter-Band*