

ABSTRACT

In 2015, network operators in Indonesia started to roll out LTE-Advanced which supported Carrier Aggregation feature. The aim of Carrier Aggregation deployment is to increase user data rate by aggregate operator's bandwidth both intra-band or inter-band. Implementation of Carrier Aggregation is expected to increase the data rate by incorporating bandwidth users that operators on the same frequency band or different. But in LTE Release-10 Carrier Aggregation configuration is only found in two frequency bands. On the development of LTE Release 10, namely LTE Release 12, the 3GPP specify CA configuration with three different frequency bands so as to produce a higher data rate.

In this final task designing LTE Release 12 using Tri-Band Carrier Aggregation in band 1, band 3 and band 8. Band 3 has a bandwidth of 10 MHz, band 1 and 8 have bandwidth of 5 MHz. The design is done using two approaches, namely planning by coverage and planning by capacity. To obtain optimal scenario in applying the carrier aggregation, then do a comparison scenarios on secondary cell by changing the beam pattern on the primary and secondary cell. The comparison is using Carrier Aggregation scenario 1 and scenario 2.

Parameters used to analyze the number of sites, SINR, RSRP, connected user, throughput using software Atoll 3.2.1. For design without CA required site minimum 37 sites, with mean of RSRP -89,67 dBm, mean CINR 20,41 dB, user connected 83,8% and Throughput per user 7.896 Kbps. As for the design of LTE-Release 12 Scenario 1 it takes 20 sites to serve customer needs in the review area, with mean RSRP -93,09 dBm, mean CINR 16,46 dB, user connected 92,7% and RLC Throughput 12,465 Kbps. For the design of LTE-Release 12 Scenario 2 it takes 20 sites to serve customer needs in the review area, with mean RSRP -69,14 dBm, mean CINR 37,39 dB, user connected 99,1% and RLC Throughput 13.337 Kbps.

Keyword : Carrier Aggregation, Component Carrier, Tri-band Carrier Aggregation, RSRP, CINR, User Connected, Throughput