ABSTRACT

Currently, 4G LTE is the cellular communication technology used by society to access internet network services. However, 4G LTE technology only provides data rates up to 500Mbps in uplink and 1000Mbps in downlink. It is different with 5G technology which can support data rates up to 10Gbps in uplink and 20Gbps in downlink. In this research, there are planning and simulations of 5G network using the inter-band carrier aggregation method. Where the planning uses n40 2300 MHz band with 40 MHz bandwidth as PCell and n78 3500 MHz band with 100MHz bandwidth as SCell. The planning area is Agung Podomoro Land Tower Central Park, Jakarta Barat with Urban macro (UMa) propagation model. The simulation results show that there is an increase in the average value for each comparison parameters after the application of inter-band carrier aggregation, where the SS-RSRP increased by 0.05% with a value of -82.02dBm, the SS-SINR increased by 0.77% with a value of 15.71dB, and data rate increased significantly by 241.33% with a value of 803.66Mbps. This result shows that the application of carrier aggregation method improve the quality and capacity of the network, especially the data rates due to the aggregation of component carriers which can maximize the use of bandwidth and the resource blocks.

Keywords: 5G, *bandwidth, carrier aggregation, SS-RSRP, SS-SINR, data rate*