ABSTRACT

5G is a cellular technology that provides services to users freely moving within an area (cell). This requires telecommunications service providers to know where the user is to provide optimal service. One solution is to use Twitter traffic maps data so that it can map the user's whereabouts. In this research, the planning of a 5G NR network in the Borobudur Temple area, covering an area of 35.2 km2, with carrier aggregation at 26 GHz and 700 MHz frequencies, uses Twitter traffic maps as a reference for gNodeB placement. Eight scenarios are used for Uplink and Downlink conditions; outdoor to outdoor and outdoor to indoor, and line of sight (LOS). The propagation model used is urban micro (UMi) and rural macro (RMa) to obtain SS-RSRP, SS-SINR, Maximum Data Rate, and Average Data Rate parameters. The simulation results using Twitter traffic maps require less gNodeB than without Twitter traffic maps. It can be seen in the O2O Uplink scenario without Twitter traffic maps which requires 1108 gNodeB, while using Twitter traffic maps only requires 36 gNodeB. Of all SS-RSRP parameter scenarios observed, the DL O2O scenario without Twitter traffic maps has the highest Average value, namely -57.619 dBm. For the SS-SINR parameter, the O2O Uplink scenario without Twitter traffic maps has the highest Average value, namely 28,963 dB. The Maximum Data Rate parameter for the O2O Downlink traffic maps twitter scenario has the highest peak Data Rate, namely 5869,144 Mbps, and the highest Average, which is 464,329 Mbps. The Average Data Rate parameter for the O2O Downlink scenario using Twitter traffic maps has a peak Data Rate of 5664,789 Mbps, and the highest Average is 612,865 Mbps.

Keywords: 5G NR, Twitter maps Traffic, 700 MHz, 26 Ghz, Carrier Aggregation