

ABSTRACT

Clauster Widya chandra is a mention of the area in the South Jakarta area which includes parts of the region, mampang, Kuningan and Kebayoran Baru. from the results of the 5G network drive test obtained in the area had a poor and uneven radio frequency (RF) parameter value for Telkomsel operators. in this study, the coverage and capacity planning of the 5G NR network was carried out. This planning uses a frequency of 2.3 GHz using atoll 3.4 software for simulation. The purpose of this design is to determine the maximum pathloss value allowed. (MAPL), Synchronization Reference Signal Received Power (SS-RSRP), signal quality or signal-to- interference-plus-noise ratio (SS-SINR) and data rate or throughput. This research uses 2 scenarios, namely scenario 1 Uplink and scenario 2 Downlink on Line of Sight (LOS) and non line-of-sight (NLOS) schemes using the urban Macro (Uma) propagation model standardized from 3GPP 38.901. Coverage planning results for uplink get the number of sites of 19 gNodeB Downlink of 2 gNodeB, then a capacity plan of 10 gNodeB for Uplink RSRP 0.4 km² has a good RSRP value of -75 dBm, date rate value of 2.2 km² using speeds exceeding 50 Mbps, SINR value with a range of > 10. for RSRP -110 to -75 dBm, SINR value of 5 to 37 dB, and throughput of 50 Mbps covering an area of 6 km².

Keywords: Coverage, Capacity, 5G network planning, 2.3 GHz frequency, Uma, LOS, N-LOS, SS-RSRP, SS-SINR