ABSTRACT

The city of Yogyakarta is one of the developing cities because of its tourism, economy and education as well as the dense population level which has resulted in the city of Yogyakarta being one of the cities that needs the development of a 5G network. 5G technology is a technology that delivers all applications into one device and interconnects with telecommunication networks. This study designed a 5G network based on region using the 3.5GHz frequency for the Yogyakarta City area with an area of 32.5 Km2. The simulation was carried out using Atoll 3.4 software. This plan uses the Urban Macro (UMa) propagation model Outdoor to Outdoor scheme with scenarios (uplink, downlink) and Outdoor to Indoor with schemes (uplink, downlink) in Non Line Of Sight (NLOS) conditions. This study aims to determine the number of sites based on the value of the link budget. Parameter observations were made using SS-SINR and SS-RSRP. In the NLOS condition, the highest value is shown in scenario 1 O2O Uplink with an average value of -87.8 dBm and the lowest value is indicated in scenario 3 O2O downlink with an average value of -110.24 dBm. The highest SS-SINR value in the NLOS condition is in scenario 4 O2I downlink with an average value of 14.71 dB and the lowest value is in scenario 1 O2O uplink with an average value of 9.93 dB.

***Keywords**: 5G coverage planning, Non Line Of Sight, SS-SINR, SS-RSRP, Urban Macro*