ABSTRACT

LoRa (Long Range) network is a network supporting the development of low-power Internet of Things (IoT) which has a very wide communication area of up to 15 km and depends on the density of end devices in the area. The process of sending data on LoRa is started from the end device that sends data through the gateway, after that it is then sent to the server.

In this Research LoRa network planning is carried out in the City of Surabaya for the next few years which are still not served by the LoRa network. Network planning begins with learning a LoRa planning concept from the paper, determining some parameters for calculation, to applying to the simulation. The process of sending data can be said to be smooth when with a bandwidth of 125 kHz, the spreading factor 7 and the coding rate of 4/5 SNR results obtained are more than -7.5 dB and RSSI more than -120 dBm.

Based on calculations on network planning that have been done, the results obtained are 20 LoRa gateway sites needed to be able to serve LoRa networks in Surabaya City with a total of 12% users of the total number of customers. The network planning simulation results are with a bandwidth of 125 kHz and in SF 7 CR 4/5, the average value of the signal level generated is -93.93 dBm, SNR of -7,77 dB, RSSI of -124,058 dBm radius of 2,642 km, can be said to produce a good signal, so it can be concluded that the LoRa network planning on capacity planning can be fulfilled if implemented in the city of Surabaya in 2025.

Keyword: LoRa, end device, coverage planning, capacity planning, RSSI, SNR.