

ABSTRACT

Kulon Progo Regency is one of the sub-urban areas with topographical contours. With the presence of mountainous areas with heavy terrain and lowlands. The district has a growing agricultural area with an area of 586.3 km², thus requiring efficient and reliable telecommunications infrastructure to support growth and development towards smart cities. LoRa (Long Range) technology at a frequency of 923 MHz has the potential to be the right solution for IoT connectivity in the region because of its ability to reach long distances with low power consumption. This research aims to conduct LoRa Network Coverage Planning at 923 MHz Frequency in Kulon Progo Regency to support the development of sub-urban areas and towards smart cities. In this research, Long Range (LoRa) network planning is carried out based on coverage planning with 2 stages of the method carried out, namely stage 1 with the calculation of the link budget and stage 2 with simulation using Atoll 3.4.0 software. The parameters used in this research are Bandwidth 125 kHz, Spreading factor 7 to 12, Received Signal Strength Indicator (RSSI) and Signal to Noise Ratio (SNR). The results obtained based on the simulations that have been carried out are SF 7 obtaining 17 gateways while SF 12 obtaining 8 gateways based on the calculations carried out, with this it can be concluded that the number of gateways will be less if the SF used is getting bigger. For signal quality in the RSSI parameter in the value range of -73.34 to -78.05 dBm, while the SNR parameter is in the value range of 12.69 to 13.37 dB.

Keywords: *coverage planning, gateway, long range, smart city*