

ABSTRACT

This research performs a comparative analysis of the Spreading Factor values for the LoRaWAN network planning. The area in this study is the city of Bandung, as one of the big cities in Indonesia with an area of up to 167.31 km². To realize a smart city, internet of things devices are needed, one of which is by using LoRaWAN network connectivity as a LoRa communication protocol that supports the use of IoT at a frequency of 920-923 MHz. LoRaWAN network planning uses coverage planning using Forsk Atoll 3.4.0 simulation software. The parameters used in this study are Spreading Factor (SF) 7 to 12, Bandwidth 125 kHz, Signal to Interference Noise Ratio (SINR), and Effective Signal Analysis. The simulation results for this plan show that SF 7 to SF 12 requires 6 to 13 gateways, where SF 7 is the largest number of gateways compared to other SFs. For signal strength performance (Effective Signal Analysis) SF 7 to SF 12 obtain signal strength with a value range of -68.32 dBm to -75.03 dBm, while for signal quality (SINR) obtain signal strength with a value range of 8.29 dBm to 10.87 dBm. The greater the Spreading Factor value, the fewer gateways needed.

Keywords : Spreading Factor, Gateway, LoRaWAN, Coverage