ABSTRACT

In the current era, implementing the concept of the Internet of Things (IoT) requires reliable devices in terms of communication so that the sensing and actuating process can run well. However, until now there are still problems with the communication devices used, one of which is the lack of reliability of communication when two devices are separated at a long distance. The farther the distance between the client and the server, the greater the chance of delay and packet loss which makes the quality of the data sent less good. Currently, to overcome this problem, an additional hop is used as a signal amplifier. However, this is not the best solution considering that the costs will also increase. To overcome the obstacles regarding long-distance communication between these devices, a performance analysis was carried out at the gateway and the design of the communication module by applying LoRa technology for production monitoring of biogas. LoRa technology has a number of advantages, namely long-distance communication capabilities, immunity to interference and relatively cheap module prices so that IoT communication will be more effective and efficient.

Based on the measurement results obtained on the RSSI and SNR measurements, the best RSSI value was -38.37 dBm on SF8 with the Dragino Gateway and Cosmic End node devices. The best SNR result is 11.61 dB on SF9 with Gateway RAK831 and Cosmic End node and the distance that can be covered is 1385 meters using an external antenna.

Keyword *: LoRa,IoT*