ABSTRACT

The geographical condition of Indonesia, which is flanked by two continents and two oceans, makes Indonesia a country that often experiences disasters. Utilizing the Internet of Things (IoT) for disaster collaboration using Long Range (LoRa) technology can be a breakthrough in supporting disaster management. LoRa technology has a long-distance communication area. However, LoRa requires an additional amplifier to strengthen the signal beam with a broader scope, namely a repeater. LoRa requires an additional booster to make the beam signal stronger with a broader area, the booster tool is a repeater. The repeater works to receive signals and send back the received signal after strengthening. The use of repeaters is beneficial to reach a broader beam coverage. This research is divided into two: the first to take the LoRa end device signal from the device spectrum analyzer and the second to simulate the generation of the carrier signal and the information signal using Matlab software. The results of this study concluded that the signal quality of LoRa devices is influenced by topography, wave propagation, and weather conditions. Based on the LoRa final device test, it shows that the SNR parameter has a signal quality that is included in the "Good" category with an average SNR value of 9.29 dB, and the RSSI parameter is included in the "Very Good" category with an average RSSI value of -50.24 dBm so that delivery of information data can arrive.

Keywords: *LoRa, Signal Noise to Ratio (SNR), Received Signal Strength Indicator (RSSI), repeater, propagation*