ABSTRACT

With the rapid development of technology, it has a big impact on the communication system. One of these technological developments is the Internet of Things (IoT) technology. IoT technology requires a communication system that can connect sensor nodes with users. One of these communication systems is a LoRa-based communication system. Because the sensor node is small, a small antenna is needed as one of the supporting tools for the communication system.

This study proposes an antenna which is a rectangular microstrip antenna with a rectangular slit on the ground plane in order to get the results of an antenna with small dimensions and has a large coverage benefit by using FR-4 material with a thickness of 3.2 mm and a feedline microstrip technique. . The microstrip antenna acts as a transmitting antenna with several predetermined specifications and frequencies. The working frequency range used is 920 – 923 MHz with the desired antenna characteristics, namely the VSWR value ≤ 2 with a return loss $\leq$ -10 dB, a bandwidth of 20 MHz, and a gain ≥ 2

The results of the antenna design with rectangular slots are proven to be able to reduce the patch antenna dimensions by 25.69%. The results of the antenna design performance obtained a VSWR value of 1,057, a return loss of -31,038 dB with a bandwidth of 34.96 MHz, a gain of 2,550 with the resulting radiation pattern being bidirectional. Meanwhile, when measuring the value of VSWR 1.67 with a wide bandwidth of 32.25 MHz, VSWR 1.67 and obtaining a gain value of 2.051 dB with a bidirectional radiation pattern.

Keywords *: Microstrip Antenna, Rectangular Slot, DGS, LoRa*