

ABSTRACT

Long Range Access (LoRa) is a technology that enables low-power remote data transmission with radio frequencies in the 433 MHz, 868 MHz, or 915 MHz bands. This technology is used in IoT (Internet of Things) networks, remote monitoring, and CSS (Chirp Spread Spectrum) modulation technology. In its implementation, most LoRa moduls use a monopole antenna consisting of one straight conductor bar for data transmission because it is not too large for IoT devices. This modul will be integrated with an unmanned vehicle as a transmitter in the communication system used. This vehicle will serve as an aid in events that cannot involve humans directly. Therefore, the antenna used in the communication system will be changed to an aesthetic antenna so that it is not easily recognised and to beautify the unmanned vehicle.

This final project implements the aesthetic Tel-U antenna logo on the communication system of unmanned vehicles, especially the transmitter. In this system, the antenna is designed using a microstrip antenna, so that it can be integrated into an unmanned vehicle as an accessory. The designed antenna will be used to replace the existing antenna on the LoRa modul that works at a frequency of 433 MHz. The antenna design uses the Defected Ground Structure (DGS) technique to miniaturise the antenna dimensions by utilising a new shape on the groundplane.

Testing is only limited to proving the presence of a signal when the antenna sends data through XCOM software. Due to the application needed in the data transmission process is not available. The Tel-U logo antenna produces the desired parameter values in the simulation VSWR value of 1.12, return loss of -24.69 dB and gain of 1.474 dBi. And the results of measurement parameters with VSWR value of 1.12, return loss of -24.83 dB.

Keywords: *LoRa, Aesthetic Antenna, Telkom University, Communication System.*