ABSTRACT

Unmanned Ground Vehicle (UGV) is a vehicle that operates on land and does not need a human operator in it. This vehicle is used when conditions are risky, impossible, or inappropriate for humans to intervene directly, such as monitoring the situation after a natural disaster that cuts off communication lines, scouting enemies during a conflict, and so on. This unmanned vehicle will send information about the state of the observed area to the control station. Sending this information is very important so that the process of rescuing and monitoring locations after a disaster or war becomes efficient and effective. Therefore this unmanned vehicle is also required to monitor the location as a whole, this results in the UGV having to be able to record and transmit video from the area and to support this monitoring an adequate communication system is needed. Unfortunately, the things mentioned earlier have not been applied to Telkom University's unmanned vehicles so that these vehicles can only be controlled at close range without being able to monitor the surrounding area. Therefore a new communication system is needed to replace the previous one so that the UGV can send a video and be controlled remotely.

This final project implements the Tel-U Antenna in an unmanned vehicle communication system, specifically the antenna-based aesthetic transmitter section as a communication system for monitoring disaster areas at long distances at Telkom University's UGV. This communication system will be equipped with a camera connected to a transmission module to convert the captured video into a signal that is forwarded to a power divider to split the signal into four outputs. Finally, the signal will be forwarded to an antenna that has been designed. The antenna designed for this system uses a microstrip antenna so that it can be integrated into unmanned vehicle parts and can be used as an accessory. The antenna will act as a substitute for the existing antenna on the unmanned vehicle (UGV) which resonates at the 5.8 GHz frequency of the ISM band frequency with the aim of sending a video data with a long range.

The results of testing the communication system using 4 Tel-U antennas can transmit a video without sound with a transmission distance of 563 m, with the desired parameter values, such as a gain value of 2.971, a VSWR of 1.29, and a return loss of -18 dBm.

Keywords: *Unmanned Vehicle, Aesthetic Antenna, Telkom University, Communication System, ISM.*