

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 when humans shouldn't intervene directly, such as monitoring the situation after a natural disaster that breaks communication lines, and so on. Telkom University also has an unmanned vehicle controlled by the Flysky module which can cover a maximum distance of 200m. However, on the controller side of the vehicle, it does not have a video communication system to support remote communication with the vehicle. So, it is necessary to create a new communication system with a high gain-based antenna which is expected to be able to support long-distance communication on the vehicle.

This final project makes an unmanned vehicle communication system (UGV) from the receiving side with a high gain antenna of ≥ 8 dBi, so that a more effective and efficient remote-control system can be obtained. This vehicle will later have control and monitoring that will be used for situations that are risky and impossible for humans to directly reach such as natural disasters that cut off communication lines and can also make observations of a place because this vehicle is supported by remote video monitoring.

This communication system is later expected to be able to receive video without sound that has been sent from an unmanned vehicle at a great distance, by utilizing a high gain antenna so that control and monitoring systems can be carried out periodically. The antenna will later act as a substitute for the existing antenna on the receiver module which resonates at the 5.8 GHz frequency of the ISM band frequency to send soundless video data with a long range.

The results of testing the antenna using the Network Analyzer with a frequency of 5.8GHz obtained parameter values, namely Return Loss of -30.462dBm, VSWR of 1.0715, and Bandwidth (MHZ) of 875. In addition, the 2.4GHz frequency obtained parameter values of -12.274 Return Loss dBm, VSWR of 1.6322, and Bandwidth (MHZ) of 105.

The antenna that has been tested with the Network Analyzer is then carried out with several measurements, and the following is the measurement result using the Yagi Microstrip antenna with a frequency of 5.8GHz, namely the farthest distance in the semi-line of sight condition of 563 m and the beamwidth measurement of this communication system is worth 166.58° .

Keywords: *high gain antenna, receiver, communication system, ISM Band.*