

## ABSTRACT

Drone or UAV (Unmanned Aerial Vehicle) is a flying machine with remote control that can be used to monitor or control the surroundings by taking pictures in the form of video. Video capture is sometimes carried out in wide and large area coverage, so a capable wireless technology is needed. Wireless Fidelity (WiFi) is a wireless network that can support the highest data traffic and allows various devices to connect to the internet. WiFi technology can be used to support the transmission of monitored data as well as to control drones. To be able to transmit monitoring data and control drones, a transmission device in the form of an antenna is needed. However, in general, the antennas used have large dimensions and still use single band antennas. So, in this final project, a dual band microstrip antenna will be designed and realized at a WiFi frequency of 2.4 GHz and 5.8 GHz for drone communication.

The antenna designed is a microstrip antenna with the basic method of rectangular patch antenna which was developed into an array arrangement with a parallel feed type that can work at two frequencies, namely at 2.4 GHz and 5.8 GHz. The substrate section uses FR4 material, while the patch and groundplane parts use copper material. The antenna realization stage begins with determining the specifications, then calculating the dimensions of the antenna, then performing an antenna simulation with software. After that, the realization and measurement are carried out.

After the simulation, the antenna parameter values obtained are return loss -15.718 dB and -17.34 dB, VSWR 1.4025 and 1.3144, bandwidth 52 MHz and 698.4 MHz, impedance 50  $\Omega$ , unidirectional radiation pattern, and linear polarization. Then when the measurements on the realized antenna are obtained, the return loss values are -10.159 dB and -14.131 dB, VSWR 1.9126 and 1.4929, bandwidth 48 MHz and 317 MHz, impedance 31.35  $\Omega$  and 35.03  $\Omega$ , unidirectional radiation pattern, and elliptical polarization.

**Keywords:** *Drone, WiFi, Antenna, Microstrip Antenna, Array, Dual Band*