

ABSTRACT

Synthetic Aperture Radar (SAR) is a radar system that functions as an image tool that can work in all weather and work on platforms that move along the radar's trajectory to enlarge the antenna aperture and get a good image resolution, and SAR can detect the earth's structural field, the state of the sea, and reconnaissance and targeting of information for military operations. Unmanned Aerial Vehicle (UAV) is one air vehicle to help SAR to be able to transmit electromagnetic waves at an altitude. Therefore, an antenna is realized that can be applied to the SAR radar system by working in the 5.8 GHz frequency band.

In this research, the circular polarized antenna designed and realized works in the 5.8 GHz frequency band (C-Band) with a bandwidth of 100 MHz. This antenna is made with the ring slot method to widen the desired bandwidth. Designing and simulating microstrip antennas is done by antenna designing software. The realization of the antenna uses FR-4 Epoxy as a substrate and copper as a groundplane and patch. The results of the design simulation are verified with the results of antenna measurements that have been realized.

The resulting antenna has a return loss value of -26.914 dB, VSWR 1.094, and the gain value has increased to 4.710 dBi. The antenna propagation movement in the electric field or (E-Field) shows the performance of circularly polarized antennas, and the dimensions of the results of the realization of 105.20mm × 114.70mm.

Keywords: Microstrip antenna, Ring Slot, SAR, UAV.