

ABSTRACT

Remote sensing technology has many benefits. This technology is commonly found on satellites by using the camera as a sensor to capture the image of the earth's surface. But it has disadvantage, it is unable to capture image of areas that covered by cloud or in the night condition. Synthetic Aperture Radar (SAR) can solved these problems, by using antennas as sensors and work by using radar principles. Circularly Polarized Synthetic Aperture Radar (CP-SAR) is a development of SAR technology by using circular polarization antenna. It can minimize the change of wave characteristics emitted caused Faraday rotation effect on the ionosphere layer. So it can improve the quality of image. In the development of CP-SAR as a satellite payload, then the design of CP-SAR onboard UAV is used as ground testing.

In this research, microstrip antenna array with the center frequency of 1.27 GHz and RHCP polarization (Right Hand Circular Polarized) toward the axis feed is designed. Proximity coupled feed as a feeding technique , using DGS (Defected Ground Structure) techniques to generate circular polarization, and to increase gain using array antenna and parasitic technique.

The design process is simulated using antenna simulator software and realization using FR-4 substrate material which value of relative permittivity is about 4.6 and the thickness is about 1.6 mm. Microstrip array antenna with 8x2 element that produce gain 6.208 dBic, axial ratio 2.56, VSWR 1.232, return loss -19.638, Unidirectional radiation pattern and bandwidth 71.88 MHz. The dimension of the antenna is 76 cm x 21.5 cm x 3.5 cm and the weight is 2.5 kg.

Keywords: *Microstrip Array Antenna, Proximity Coupled, DGS, Parasitic, RHCP, CP-SAR onboard UAV*