ABSTRACT

Unmannamed Aerial Vihicle or UAV is a pilotless aircraft that is usually found in the field of surveillance and reconnaissance on military missions. Radio Detection and Ranging (RADAR) is a system for remote controlling with the ability to operate in all weather and even at night. By transmitting electromagnetic waves, RADAR is able to find out the target distance. The use of UAV compared to conventional aircraft is increasing due to several factors, one of which is reducing the risk of losing human lives, especially for risky operations such as during war.

In this research, a rectangular patch microstrip array antenna for the SAR on the C-band frequency was realized. The use of high frequencies will gain the maximum image results. Microstrip antennas were designed using antenna designer software. The antenna substrate material used was Roger Duroid RT / 5880, the patch material and groundplane used were copper. The shape of the antenna patch in this study is truncuted rectangular. With this shape, the antenna is expected to produce circular polarization.

Microstip antenna realization result in this research works at the frequency of 5.8 GHz. For the parameter results, VSWR value of 1.2 has return loss of -20 dB, bandwidth of 300Mhz, gain of 7.6 dBi, and unidirectional radiation pattern. For the antenna dimensions, the realization results is 5.6 cm × 4.5 cm × 0.164 cm.

Keywords: *UAV, SAR, Rectangular microstrip antenna, RADAR, array antenna*