

ABSTRACT

Synthetic Aperture Radar (SAR) is one form of development of radar technology that is used to make two or three-dimensional images of an object. SAR uses a sensor consisting of a wave-polarized antenna that is emitted circularly or can be called a Circular Polarized Synthetic Aperture Radar (CP-SAR). CP-SAR can minimize the compilation phase shift through the ionosphere, thereby increasing the quality of the image image produced. The CP-SAR system will be used on the JX-1 Unmanned Aerial Vehicle (UAV) as a land test.

In this study a helix antenna was designed for CP-SAR onboard UAV by using axial mode to produce unidirectional radiation pattern, the Right Hand Circular Polarized polarized Circular Right Hand (RHCP) on the axis of the union. The rationing technique used is pheriperal technique. For impedance matching techniques, use $\frac{1}{4}$ winding. Design and simulation process using antenna simulator software. The evaluation process uses copper cables with conductivity values of 5.7×10^7 mho / m. and has a thickness of 4 mm. The helix mode antenna produces 9.61 dB axial gain, 1.03 dB axial ratio, 1.46 VSWR, -14.97 dB return loss, unidirectional radiation pattern and 568 MHz bandwidth. 4 turns designed with a total antenna length of 29 cm and weighing 1.5 kg.

Keywords: *Helix Antenna, Circular Polarization, CP-SAR, RHCP*