

ABSTRACT

The research aims to meet the needs of the Institute of Space and Aviation (LAPAN). Currently, Indonesia is working with Japan by building a new satellite, the LAPAN A-5, with a focus on detecting natural disasters in Indonesia. The agency needs an antenna that has a wide beamwidth and circular polarization.

The author created the Helix Antenna. Helix antenna is an antenna consisting of a wire that is wound around a support. The Helix antenna can produce a wide beamwidth, with a frequency of 2-5 GHz. But the author only made a simulation and the realization of the antenna was not by testing LAPAN.

The expected result of the study was to produce satellite antenna specifications for lapan A-5. The designed Helix antenna has a frequency of 2 – 2.22 GHz, is Circular polarized, produces Beamwidth <130 Degrees, and includes an S-Band frequency that can withstand all weathers.

With the Helix Antenna design, the author simulates the initial design to optimization and realizes the antenna. So that the author gets the results of the frequency of 2 -2.22 MHz, Return Loss (-12.6269, -12.8173, -12.0061), VSWR (1.598, 1.595, 1.674), Beamwidth 132.2 degrees and Circular Polarization. For realization on frekuensi 2 – 2.22 GHz Return Loss (-9.0002, -94232, -11.1034), VSWR (2.33, 2.13, 1.77) Beamwidth 130 degrees and Ellipse Polarization. Significant differences in simulation and realization because at the time of manufacture / realization and measurement of antennas the tools owned and used were limited.

Keywords : Helix Antenna, Space and Aviation Institute, Circular Polarization, S-Band, and Beamwidth.