

ABSTRACT

Cubesat is a satellite whose mission is to receive ADS-B and LoRa signals. At the moment, the development of antennas for cubesat is based on only one system. So, we need an antenna that can be used on both systems. The antenna needed to have a wide bandwidth to meet the specifications of the two systems so that it can be used as an antenna for receiving ADS-B signals and LoRa signals.

This final project is designing a wide bandwidth microstrip antenna with a size of 2U which meet LoRa and ADS-B specifications to be applied to a cubesat. In this final project a Slot Ring method with Partial Ground Plane and Multilayer Substrate is used to obtain an antenna with a wide bandwidth. The antenna designed use a working frequency of 1018 MHz with a bandwidth of 167 MHz. The designed antenna has an omnidirectional radiation pattern and circular polarization.

Based on the simulation, the microstrip antenna uses a multilayer substrate, ring slot, partial groundplane, truncatted method. The obtained a bandwidth is 168.38 MHz for the simulation and for the realized measurement obtained a bandwidth of 372 MHz. Then the simulation gain is 2.1 dBi and the realized gain is 2.23 dBi. VSWR 1.2 for simulation and 1.49 for realization with omnidirectional radiation pattern. The results of the design show that the antenna is in accordance with the criteria for wideband antennas and has met the antenna specifications for nano satellites.

Keywords: Ring Slot and Partial Groundplane, Microstrip Antenna, Cubesat.