

ABSTRACT

Automatic Dependent Surveillance-Broadcast (ADS-B) is a new technology in aircraft observation that uses a global positioning system (GPS) to track the position, speed, wind direction, and altitude of aircraft. There are currently two types of ADS-B: ground-based and space-based. Space-based ADS-B is intended to supplement ground-based ADS-B, which is thought to be less capable of covering multiple flight zone areas. This study aims to compare the results of application simulations and the results of field measurements. The results of the ADSB simulation return loss -21.13 dB, VSWR 1.2181, gain 0.5 dBi, and axial ratio 3.06. In the simulation of the S-Band antenna, the return loss is -15.35 dB, VSWR is 3.89, the gain is 3.88 dBi, and the axial ratio is 9.7 dB. The measurement results get the ADS-B antenna return loss -19.376 dB, VSWR 1.25, gain 2.67 dBi, and axial ratio 1.341 dB. On the measurement of the S-Band antenna, the return loss is -15.36 dB, VSWR is 1.35, the gain is 0.62 dBi and the axial ratio is 1.33 dB. In the simulation and measurement of the ADS-B antenna, the resulting value is close. In the simulation and measurement of the S-Band antenna, there is a difference in the measurement frequency of 300 MHz to 2700 MHz, whereas in the simulation it is 2400 MHz. The factor that influences the difference in results is that the material used is not the same as the material used in the simulation.

Keywords: ADS-B, S-Band, Microstrip Antenna, CubeSat