

ABSTRACT

Automatic Dependent Surveillance Broadcast is an aerospace system that has been widely used in every flight, both national and international, the ADS-B system is usually located on an aircraft where the system provides data relating to the flight of the aircraft itself. ADS-B has 2 types, namely ADS-B in and ADS-B out. The two systems have different functions. The ADS-B function is to receive information between aircraft and send information to the ground station or ATC (Air Traffic Control) at the airport. ADS-B out serves to provide route information, the arrival of each aircraft, and provide aircraft identity information, altitude, speed, and position of the aircraft.

In this final project, we will design an antenna using FR-4 substrate material with a thickness of 1.6 mm and a dielectric of 4.3, then on the patch, transmission line, and groundplane using cooper material with a thickness of 0.035 mm, the shape of this microstrip antenna has a circular patch with a circular patch method. proximity coupled supply and will be in 2x2 MIMO with graded impedance fed with array feed. The antenna will be analyzed starting from single patch to MIMO 2x2 4 patches on each antenna.

The results that have been obtained from all the calculations that have been simulated are that the return loss value is -26.61 dB at S1.1 and -34.38 dB at S2.1, then the VSWR value is 1.09, the bandwidth is 57.5 MHz, and the gain is 1.09. a value of 5.928 dBi which is very suitable for outdoor antennas, and for the polarization form of this antenna it is in the form of linear polarization, while the radiation pattern produces a unidirectional radiation pattern in its direction, because the antennas are arranged horizontally equal.

Keywords : ADS-B, ATC, Microstrip Antenna, MIMO, Proximity coupled, Antenna, Array