

ABSTRACT

Automatic Dependent Surveillance Broadcast is an air surveillance system that is used to determine aircraft position, aircraft code, altitude, and other data. ADS-B periodically transmits information and other data to other aircraft, to satellites, and to ground stations. The ADS-B system is located on aircraft operating using satellites [6]. ADS-B has 2 types, namely ADS-B in and ADS-B out.

This ADS-B system also allows data communication between aircraft. In the ADS-B system for the groundstation section, it is a receiving system for data sent by aircraft at a frequency of 1090 MHz using an antenna as a medium for receiving signals sent from the aircraft.

Antenna is one of the devices that plays an important role for ADS-B communication, signal reception is fulfilled, with the development of the antenna leading to large gain and bandwidth. This antenna works at a frequency of 1090 MHz using an FR-4 (Epoxy) substrate. The microstrip series feed 2 patch antenna is simulated using simulation software whose results will be realized in physical form, the antenna shape is designed using the MIMO 1×2 method, with a distance that can be far apart, thus expanding the capture distance of ADS-B. The antenna is integrated with a 2 way power combiner to increase the gain value. The specifications specified for this antenna are that it can work at a frequency of 1090 MHz with a VSWR value of 2, a minimum gain of 4 dBi, a bandwidth of 20 MHz, an omnidirectional radiation pattern, linear polarization, and an impedance of 50 . The results of the antenna realization obtained VSWR parameters of 1.32, Gain 4.40 dBi, Bandwidth 16 MHz, Omnidirectional Radiation Pattern, Elliptical Polarization, and Impedance of 42.04 . Judging from the overall parameters, the realized antenna still does not meet the desired specifications for the ADS-B receiving antenna at the Ground Station because there are still parameters that are not on target.

Key words: *ADS-B, Microstrip Antenna, Series Feed 2 patch, MIMO, Power Combiner.*