

ABSTRACT

ADS-B is a non-radar flight monitoring system. An aircraft equipped with a transponder automatically sends flight data. Flight data such as position and speed are obtained from the GNSS (Global Navigation Satellite System) navigation satellite system. Flight data transmitted on this broadcast will be received and processed by the receiving station (ground station). Dependent terminology states that flight data is not initiated by a ground station (as befits a radar system), but by aircraft.

The ADS-B system also allows data communication between aircraft. In the ADS-B system for the ground station section is a receiver system of data sent by the aircraft at a frequency of 1090 MHz using the antenna as a media receiver of the signal sent from the plane.

Antenna is one of the devices that play an important role for ADS-B communication, signal reception is fulfilled, with the development of antennas that lead to large gain and bandwidth. This antenna works at a frequency of 1090 MHz using FR4 substrate. Microstrip antenna will be simulated using CST Suite Studio software, the results of which will be realized into physical form.

Based on the simulation on CST Studio Suite at a frequency of 1090 MHz, the return loss value is -36.639 dB, VSWR is 1.029, bandwidth is 151.7 MHz and gain is 4.64 dBi with omnidirectional radiation pattern and vertical linear polarization. Meanwhile, in the measurement, the return loss value is -27.89 dB, VSWR is 1.089, bandwidth is 191.75 MHz and gain is 4.18 dBi with omnidirectional radiation pattern and elliptical polarization.

keywords: CST Suite Studio software, ADS-B, Microstrip Antenna, Aircraft.