ABSTRACT

The ADS-B or Mode-S Receiver is a radarless flight surveillance system. A commercial aircraft that equipped with a transponder transmits flight data automatically. Flight data such as position and speed are obtained from the GNSS (Global Navigation Satellite System). Flight data that is transmitted by broadcast will be received and processed by the receiving station (ground station). The dependent terminology states that flight data is not initiated by a ground station (like a radar system), but by a commercial aircraft.

The ADS-B/MODE-S Receiver system also allows data communication between commercial aircraft. In the ADS-B / MODE-S Receiver system for the ground station section, it is a receiving system for data sent by the commercial aircraft at a frequency of 1090 MHz using an antenna as the receiving medium of the signal sent from the commercial aircraft.

Antenna is one of the devices that plays an important role for this ADS-B/MODE-S Receiver communication, signal reception is fulfilled, with the development of the antenna that leads to large gain and bandwidth. This antenna works at a frequency of 1090 MHz using FR4 substrate. The microstrip antenna will be simulated using the simulation software, which results will be realized in physical form. The measurement results on this microstrip antenna are expected to show that the antenna has a wide bandwidth and can work at a frequency of 1090 MHz with a VSWR value 1.202, and a gain 4.079 dB. The antenna that will be designed uses a dipole antenna development with a development using the planar printed method.

Keywords : Simulation Software, ADS-B/MODE-S Receiver, Microstrip Antenna, Commercial Aircraft.