ABSTRACT

This study aims to implement the ADS-B (Automatic Surveillance Based on Broadcasting) receiver system and S-band transmitter on nanosatellites. ADS-B is an automated aircraft surveillance technology that transmits flight information such as aircraft position, speed, and identity. The ADS-B receiver system is designed to receive ADS-B signals from aircraft as an air traffic monitoring system.

This research also covers the use of S-band transmitters in nanosatellites. The S-band transmitter is used to transmit the ADS-B data received from the aircraft to the ground control station. The implementation process includes selecting the appropriate components and hardware, and proper system design and integration. The design method used in this study includes modeling and testing. The tests that will be carried out in the operation of the ADS-B receiver system and S-Band transmitter are expected to be successfully implemented on nanosatellites.

This research should contribute to the development of nano-satellite technology that can be used for efficient and effective air surveillance. The aim of the ADS-B receiver and S-band transmitter system on nanosatellites is to improve flight safety and provide more accurate information for air traffic control. Based on the tests that have been carried out, Comparison of the ADS-B & S-Band testing that are integrated with amplifiers have farther receive & send distances compared to ADS-B & S-Band boards that are not integrated with amplifiers. Based on testing, the receiving distance of the ADS-B board which is integrated with the amplifier is 123.20 km. While the ADS - B board which is not integrated with the amplifier is obtained as far as 71.59 km. And for an integrated S-Band board with an amplifier, the module can communicate as far as 273.70 m. Meanwhile, the S-Band board which is not integrated with the amplifier can only communicate as far as 120.21 m.

Keywords : ADS-B, S-Band, Nanosatellite