ABSTRACT

Nano satellite is a type of satellite that has a mass of 1-10 kg and has a size based on the cubesat standardization. Currently, research on nano-satellite is mostly done by students because the manufacture of nano-satellite requires a lower cost than the cost of making a satellite larger than a nano-satellite. One of the applications is used as a receiver of Automatic Identification System (AIS) information which aims to expand the range of reception of the signal. An antenna is needed as an AIS signal receiver that works at the center frequency of 159 MHz and has a size that can meet the standards of cubesat.

The antenna that is applied as an AIS signal receiver is a monopole antenna that is added to the deploy system mechanism. The addition of the deploy system mechanism is applied because the monopole antenna has a length that exceeds the size of the 1U nano satellite with the mechanism of the deploy system so that the antenna can be stored on the 1U nano satellite structure and so that it can work properly. Then with the electrical system, the antenna deploy mechanism will stretch for 2 seconds after the RBF (Remove Before Flight) has been released. When the antenna is stretched, the current flowing in the electrical system will be stopped. In the electrical system, the deploy mechanism uses a MOSFET IRFZ24N transistor component along with supporting components and a heating wire in the form of a nichrome wire controlled on a microcontroller.

In this final project, the results of a monopole antenna receiving AIS signals on nano satellites work at a center frequency of 159 MHz, having a VSWR 2 with a bandwidth of 13.66 MHz in the frequency range 152.57 – 166.23 MHz, omnidirectional radiation pattern, linear polarization, and a gain of 2.5. dBi and successfully run the system deploy mechanism with a time of 2 seconds.

Keywords: Nano Satellite, AIS, Antenna Deploy Mechanism, Monopole.