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.

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