

ABSTRACT

The nanosatellite is a type of satellite that has a mass ranging from 1-10 kg with a size that refers to cubesat standardization. Laboratory of Nano Satellite, Telkom University is currently developing research on nanosatellite with a size based on the standardization of cubesat 3U or $10\text{ cm} \times 10\text{ cm} \times 30\text{ cm}$ with the mission Automatic Dependent Surveillance-Broadcast (ADS-B) and Remote Sensing. The nano satellites use 3 frequency bands, namely 0,437 GHz, 1,09 GHz, 2,4 GHz, respectively used for Telemetry, Tracking and Command (TTC), ADS-B, and Remote Sensing. Therefore we need an antenna that can work on these 3 frequency bands.

The antenna designed is a multiband microstrip antenna using meander line miniaturization techniques. The multiband antenna was chosen to minimize the use of many ports and because of the small size of the nano satellite, the use of a multiband antenna can save space on nano satellite. The miniaturization technique is used at a frequency of 0,437 GHz which works at low frequencies so that it has relatively large dimensions for nano-satellite. Therefore, the meander line miniaturization technique is applied to reduce the dimensions of the antenna.

In this research, obtained a multiband antenna that can work at 3 different frequencies. At a frequency of 0,437 GHz it has a return loss of -17,611 dB, VSWR 1,3 with 5,9 MHz bandwidth, and linear polarization. At a frequency of 1,09 GHz it has a return loss of -16,611 dB, VSWR 1,3 with 7,1 MHz bandwidth, and circular polarization with an axial ratio of 2,2 dB. At a frequency of 2,4 GHz it has a return loss of -28,221 dB, VSWR 1,08 with 54,5 MHz bandwidth, and linear polarization.

Keywords : *Microstrip, Multiband, Meander Line, TTC, AD-B, Remote Sensing*