

ABSTRACT

Cubesat satellite is satellite with dimensions of 10 cm × 10 cm × 10 cm for 1U size. Cubesat is made with various missions and goals, one of them is earth exploration. Earth exploration aims to monitor and understand the state of the earth such as monitoring atmospheric depletion, tropospheric pollution, monitoring sea ice and others. The use of C-band because it is more resistant to bad weather, making it suitable for use in tropical countries with high rainfall. While for the X-Band it can provide a wide enough bandwidth, so as to facilitate the speed of sending high data. frequency selection is based on ITU region 3 frequency allocation, where the frequency is 5.4 GHz and 8.1 GHz frequency is the frequency allocated for earth exploration.

In this research will be designed a dual-band microstrip antenna that is linearly polarized with a working frequency of 5.4 GHz (C-Band) and 8.1 GHz (X-Band). The use of dual-band will increase data transmission, save space and manufacturing costs and be flexible for use in various satellite communication applications. This microstrip antenna is rectangular in shape with a slot so that the patch splits into an outer patch to radiate at 5.4 GHz frequency and an inner patch to radiate 8.1 GHz. The feeding technique uses proximity coupled, with Rogers Duroid RT 5880 as substrate material.

The expected result of this research is the antenna with a size of 30mm × 30mm so it is flexible to be used on CubeSat which has small dimensions. At a frequency of 5.4 GHz, it has a bandwidth of ≥ 110 GHz with a return loss of ≤ -10 dB and a gain of $\geq 4,027$ dBi. At a frequency of 8.1 GHz has a bandwidth ≥ 150 GHz with a return loss ≤ -10 dB and a gain ≥ 4.75 dBi.

Keyword: Microstrip Antenna, Dual-band , Cubesat