

ABSTRACT

Currently, Indonesia in collaboration with Japan is building a new satellite, namely LAPAN A5 which focuses on detecting natural disasters in Indonesia. For this reason, it requires a satellite antenna with special specifications to achieve the goal of LAPAN A5, which is to cover the entire territory of Indonesia. In this research, we will design a square patch microstrip antenna. However, the polarization of the microstrip antenna generally has linear polarization. In addition, the microstrip antenna does not produce a wide beamwidth.

Given the problems above, modifying the square patch microstrip antenna is necessary. To change the linear polarization to circular polarization can be by cutting the ends of the square microstrip antenna and using the S-band frequency. In the design of this microstrip antenna, additional metallic ring components are needed to increase the beamwidth.

The results of this final project resulted in a microstrip antenna designed for the needs of LAPAN A5 that was in accordance with the specifications and worked at a frequency of 2.2 GHz. In the radiation parameters, *unidirectional* radiation patterns and *circular* polarization were obtained with an axial ratio value in the simulation of 1.07 and at a measurement of 2.23. The truncated technique on the antenna has been shown to be able to turn polarization into circular. After the addition of the wall to the antenna simulation, it produced a wide beamwidth of 181.1 when *the wall* angle was 20°. Changes in the angle of the *wall* affect the gain and *beamwidth* values.