

## ABSTRACT

In this final project author made a design and realization of circular patch microstrip antenna in the Ku-band frequency band as the manufacture of VSAT (Very Small Aperature Terminal). Application of the Ku-band for satellite communication system was developed because with this frequency broadband applications could be better used. Generally, VSAT is a terminal at the ground station which is shaped like a dish and directed toward satellite. The satellite serves as a successor to the signal sent to another point on the earth. Microstrip antenna which is designed and realized in this final project is an important part in receiving signals from satellites but this antenna has several weakness which has a small bandwidth. To cover these shortcomings the antenna is modified to get the best result.

Author describes the design and the realization of antenna that is able to support the application of VSAT antennas. This antenna is designed using microstrip antenna because microstrip antenna has smaller form, lighter, simpler and cheaper than other types of antennas. For the simulation and to obtain the required parameters used software Ansoft HFSS 10. According to the criteria, the simulation results then implemented using Rogers 4003C PCB material. The process begins by calculating the dimensions of the antenna using the existing formula. Then the dimension of the calculation will be used in the simulation process.

Optimization the dimensions of the antenna is used as a way to get optimum results in the simulation. Then the optimum dimensions are used in the process of fabrication. The final results for prototype antenna have the characteristics that work at 13.02 GHz frequency with a bandwidth of 655 MHz at  $VSWR \leq 1.5$  , and has a gain equal to 3.8305 dBi and has an unidirectional radiation pattern..

**Keywords: microstrip antenna, circular, Ku-Band,**