

ABSTRACT

Microstrip antenna is one of device that is capable of supporting wireless communication which currently developed rapidly. Microstrip antenna needed at this moment must having some reliability and able to work on dual frequency in one device. This research has been done on the design, simulation, and the realization of the antenna by modifying the shape of the letter G monopole antennas that will produce dual frequency applicable on WLAN. According to IEEE 802.11 WIFI frequencies work on frequency 2.4 GHz and 5.5 GHz.

The Compact G-shaped antennas using a method of modified monopole antenna with a size that has been calculated, resulting letter G shaped patch which produces a dual frequency. In this final project designed and realized an antenna that can work on the dual frequency in 2.4 GHz and 5.5 GHz. Antenna using microstrip supply linefeed and analysis is done with CST Studio Suite with a target specification of the desired results in the form of Return loss $< -10\text{db}$, VSWR < 2 , 150 MHz bandwidth, gain $> 3\text{ dBi}$, unidirectional radiation pattern and linear polarization. The materials used for the substrate is FR-4 with relative permittivity 4.4 and thickness of 1.6 mm.

The results of the design that has been done shows that the antenna can work on the Central frequency of 2.4 GHz and 5.5 GHz which produce VSWR 1.451 for 2.4 GHz frequency and VSWR 1.243 to 5.5 GHz, the polarization ellipse, 3.578 dB gain for 2.4 GHz and 5,458 dB for 5.5 GHz, unidirectional radiation pattern, return loss are -14,785 dB for 2.4 GHz and 19.272-dB for 5.5 GHz, effective bandwidth 266.4 MHz for 2.4 GHz and 771.8 MHz for 5.5 GHz and 39.98 ohm impedance for 2.4 GHz and 49.90 for 5.5 GHz.

Keywords: *antenna, monopole, WIFI, return loss, radiation pattern of the antenna, gain*