

ABSTRACT

Ultra Wideband (UWB) is a wireless technology that has very wide bandwidth for close communication. One of international standard for antenna performance with wide bandwidth is determined by Europe Telecom Standards Institute (ETSI). This institution stipulates that UWB antennas have a minimum bandwidth of 20% of the center frequency. UWB technology is one of the promising solutions for high-speed wireless communication over short distances, therefore research on UWB has received great attention from academics and industry to produce an antenna that has a wide bandwidth with a small size.

In this Final Project a microstrip antenna has been designed with the DGS method that has been optimized to meet the wide bandwidth requirements to be used in the application. The simulated microstrip antenna with DGS method can work in the frequency range of 0.52342 GHz to 1.8212 GHz at 0.6 GHz with a return loss value of -17.799 dB and VSWR value of 1.29778, which has a linear polarization and unidirectional radiation pattern and has a gain of 2.14 dB. The measurement results in the Antenna and Wireless Communication Laboratory, Faculty of Applied Sciences obtained data that can work in the frequency range 448.005 MHz to 1.992 GHz at 0.6 GHz with a return loss value of -16.452 dB and a VSWR value of 1.3543, which has unidirectional radiation pattern and elliptical polarization and have a gain of 1.91 dB. The microstrip antenna can also produce an average power of 0.121 volts which is obtained from the harvesting process when the antenna captures information signals from the 0.6 GHz frequency which is converted into electrical energy.

Keywords: *Microstrip antenna, Ultra Wideband, Harvester Energy, VSWR, DGS*