

ABSTRACT

The development of telecommunication technology for wireless communication both voice and data is growth very rapidly over the last two decades. This could potentially lead to lack of sources in a particular spectrum frequency. However there are fact that show the existence of gaps in occupancy frequency, Where some spectrum usage sometimes wasted. One of the problem in wireless communication is the availability of frequency spectrum. As more and more devices go wireless, future technologies will face spectral crowding, and coexistence of wireless devices will be a major issue. Ultrawide bandwidth offers attractive solutions for many wireless communication areas. With its wide bandwidth, UWB has a potential to offer a capacity much higher than the current narrowband systems for short-range applications and also to overcome the interference from the narrowband system.

In this undergraduate thesis the antenna that has a very wide operating bandwidth can overcome the the usage of the spectrum without interfering the narrowband system, higher capacity of users so that can be suitable for wireless communication system nowadays. The technique that used to obtain a wide bandwidth is by forming the antenna groundplane into trapezoidal-cut with rectangular patch for the antenna.

Designing of a microstrip antenna with trapezoidal-cut groundplane antenna that works and reviewed in the frequency range 1-12 GHz is simulated using a software to investigate and obtain an antenna design that meets the proposed specifications and is followed by the realization of the bowtie antenna structure. The antenna is realized with the FR-4 substrate with dielectric constant 4.3 and thickness of substrate is 1.6 mm. The antenna simulation shows that the antenna works at frequency 8.53 - 12 GHz with bandwidth value is 3.41 GHz, VSWR value obtained is 1.13 at frequency 10.163 GHz. In the realization of the antenna measurements were obtained bandwidth of 3.11 GHz with frequency range 8.4 - 11.51 GHz, VSWR value obtained is 1.50 at frequency 10.163 GHz. From the antenna design and realization results show that the antenna has fulfil the antenna characteristic for ultrawideband characteristic.

Keywords: VSWR , Ultra Wide Band , Frequency Bandwidth