

ABSTRACT

With the exponential growth of human needs for communication, modification of radio device has become very important to increase the effectivity and easiness to fulfill those needs. The development of Software Define Radio (SDR), and Cognitive Radio (CR) can be a good solution to keep the flexibility, power and cost efficiency stably, so all the needs of communication can be fulfilled. But, on their application, SDR and CR needs a really wide bandwidth that ofcourse can't longer possible to be afforded by a single conventional antenna. So, to balance those technologies, human starts to develop several kind of antenna that can fill those needs like wideband, multiband, multi antennas, and of course reconfigurable antenna.

In this final project, a reconfigurable antenna which can do a switch of 2 operating frequencies that are 1800 and 2400 MHz has been developed and researched. The main focus of this final project is to research of the implementation of a switch that is put on the designed antenna. The switching is manually done in each operating frequency, and the switch that will be implemented is a pin diode. Pin diode is a semiconductor component that operates as variable resistor in a microwave and radio frequency circuit. The main advatages of pin diode is its smaller size, and its fast switching speed available to make it good to be implemented in a high frequency designed microstrip antenna.

In the last process of the research, it is been concluded that the implementation of pin diode with right biasing can change antenna's operating frequency independently, which means that the switch doesn't change other parameters besides frequency like polarization and radiation patternd. In this final project, with a 12 V biasing given to pin diode, the switching process can change the operating frequency from 2400 MHz to 1800 MHz. The working parameter of the diode itself is measured by comparing several antennas like an antenna when the diode is given to antenna, antenna with no diodes and a diode that is equivalently changed by a mere patch. So, the loading system given by the diode itself to the antenna can be measured correctly.

Keyword: reconfigurable antenna, microstrip, patch, frequency