

ABSTRACT

What is currently being researched by scientists is to create an energy source that is environmentally friendly and efficient to meet energy needs. This is done so that the availability of energy can be met without ignoring the conditions of the surrounding environment. One that is currently being widely studied is about Energy Harvesting. With the need for more environmentally friendly energy sources, one way to try is to create several energy harvesting devices.

This study designed and realized an RF energy harvesting (EH) system using a rectifier antenna (rectenna) at the working frequency of 470-770 MHz. In the process of designing and manufacturing rectenna is simulated using software to determine the performance and DC voltage generated from the rectifier and determine the performance of the antenna. The rectifier circuit used in this rectenna is a Double diode rectifier (Voltage Doubler) using a Schottky Diode type HSMS-2820. Whereas the antenna designed is a tapered slot type microstrip antenna and can operate on working frequency 470-770 MHz.

The results obtained from this study are the realization of rectenna when the generated 620 MHz DC voltage frequency is 1,396 V with an efficiency of 48.72%. Whereas in the realization of rectenna when the frequency of 770 MHz the generated DC voltage is 2.578 V with an efficiency of 97.30%.

Keywords : Antena vivaldi, conversion efficiency, DTV, diode Schottky, energy harvesting, rectifier, rectenna, voltage doubler.