ABSTRACT

Energy is a thing that can't be separated from human life and every day the energy is decreasing, so it needs an alternative energy to resolve the problem. This final project will focus on harvesting energy to generate some electrical energy. To convert electromagnetic waves into DC current, if requires a device called Rectifier Antenna (Rectenna). The energy harvested in this final project comes from an analogue television transmitter source in Ultra High Frequency (UHF).

In doing harvesting energy, it requires a device called antenna and one of them is microstrip antenna. In this final project, a microstrip antenna is made with Defected Ground Structure (DGS) which works on UHF frequency. However, microstrip antenna has the weakness that is low gain and to overcome this weakness an angle reflector is made. The function of the angle reflector to allow the radiation pattern of the antenna to be reinforced forward so that the pattern will be directed and make the gain value increases.

In the final project realized a DGS microstrip antenna has been conducted with angle reflector which works on frequency on 437 MHz - 2.072 GHz. It is proven that, by using an angular reflecor the radiation pattern of DGS microstrip antenna can be directed and obtained the gain value. Which reaches 7.94 dBi. In the energy harvesting test on UHF frequency obtained an average voltage of 59.61 mV with a 3-stage harvesting circuit and an average voltage of 231.73 mV with a 7-stage harvesting circuit.

Keywords: Energy Harvesting, Microstrip, Defected Ground Structure, Corner Reflector.