

ABSTRACT

At present there has been a lot of research on environmentally friendly and efficient technology. One of these technologies is the utilization of existing energy such as light, air, thermal or heat and electromagnetic waves. This technology is called energy harvesting. Electromagnetic waves contained in the free air can be utilized by turning it into other energy, one of which is electrical energy. Utilization by converting electromagnetic waves into new sources of energy or energy, an antenna is needed to receive electromagnetic waves and rectifiers as rectifiers. The technology is called Rectenna (Rectifier Antenna) function to convert electromagnetic waves into a source of DC current.

With Rectenna, electromagnetic wave radiation from cell phone Base Transceiver Stations (BTS) can be utilized to become a new power source in the form of voltage for other devices. In this final project, the process of designing and realization of Rectenna is carried out. The antenna that is realized is a microstrip single patch antenna. This antenna is intended to absorb transmit waves at a certain frequency range at 900 MHz. The purpose of this frequency selection is to process it into new energy, while the current needs are far greater so that they often use higher frequencies. At this frequency VSWR simulation is obtained at 1,05 and measurement at 1,07. Antennas have linear and gain radiation patterns. The rectifier used in this study is a rectifier that uses a BAT17-04 Schottky diode that works in the UHF frequency (300 MHz - 3000 MHz) and is assembled using a doubler stage. The output from rectenna is 30mV at a distance of more than 100m from the BTS and 176mV at a distance of about 20m from the BTS.

Keywords: energy harvesting, electromagnetic waves, rectenna, microstrip, rectifier, diode.