

ABSTRACT

Energy harvesting is the process by which energy is derived from external sources such as solar or sun, heat, radio frequency (RF), and other electromagnetic waves that emit a signal. One of the devices that can be used to harvest energy is in the form of a rectifier that is integrated with the antenna. Antennas are used as catcher of free space electromagnetic waves, whereas wave rectifier or converter is used as the AC electrical signal which has been received by an antenna into an electrical signal DC.

In this final project designed voltage multiplier rectifier circuit that is used to convert the RF energy with UHF TV frequency is 470-806 MHz and converts it into DC power, which can be used to produce alternative energy from resources that have not been utilized. This research is focused in the design, fabrication, and measurement rectifier circuit as a candidate to be integrated further into the rectenna system.

From the results of tests and measurements obtained indicates that the rectifier circuit could change AC signal is received at the source into electrical voltage DC. In testing the rectifier circuit, the circuit is able to issue a DC voltage of 0.4 V at the power level of -30 dbm, 0.493 at -20 dbm power level, and 1.2 V to the power level of 0 dbm. While the data obtained in the measurement of the largest output voltage from rectifier using an antenna Quad type reaching 2,777 V when measured at a distance of 500 m from relay station.

Keywords: Energy Harvesting, Rectifier, Voltage multiplier