ABSTRACT

Many of us around Radio Frequency (RF) transmitters that emit radiation, with the amount of RF signals emitted, can be reused into electrical energy by energy harvesting electromagnetic waves.

In this final project, energy harvesting electromagnetic waves using a rectenna device are proposed. However, the output of this rectenna is low. To increase the output voltage need a voltage doubler circuit on the rectifier. The receiving antenna used is a microstrip antenna with truncated patch that works at a frequency of 2.45 GHz.

Simulation results at 2.45 GHz frequency obtained VSWR of 1.02 and measurements of 1.36. The antenna has elliptical polarization and the antenna gain is 3.08 dBi on the measurement. Cutting off the patch can reduce the axial ratio. The value of the output voltage on the rectenna is 1,302 V at a distance of 10 cm. The farther the distance of the rectenna from the source, the smaller the output voltage. The biggest measurement of rectenna at 0° is due to the antenna having unidirectional polaradiation.

Keywords: Rectenna, rectifier, microstrip antenna, voltage multiplier, voltage.