ABSTRACT

In the GPS navigation system (Global Positioning System) to show coordinates at a point on the surface of the earth it takes 3-4 satellites. GPS emits signals continuously, but not all is used and wasted. GPS signal can be reused into new alternative energy with energy harvesting techniques that allow energy absorption from external sources such as RF waves (Radio Frequency). Harvesting energy consists of several sub-systems such as rectennas (rectifier antennas) antennas as the initial part of the system to capture GPS signals and then connected to the rectifier circuit to be converted into DC (Direct Current) which will be stored to the battery as a load.

In this final task, designed antennas have different patch shapes (square, circle, and triangle) to compare the parameters produced using the air gap method to obtain high antenna gain in order to obtain a larger DC output

Based on the measurement results, the designed antenna can work at 1.575 GHz GPS frequency by getting the lowest VSWR value of 1.1884 on the circle patch, the largest bandwidth width of 202 MHz on the square patch. Using the air gap method, the gain generated for each antenna is> 7dB for a 12mm gap height. In testing the rectenna with a 7-stage rectifier circuit, the largest indoor measurement voltage is 100.253 mV and the largest outdoor is 115.2 mV.

Keyword : Energy Harvesting, rectenna, air gap,