ABSTRACT

The sun is a huge energy source and will never run out. The sun produces electromagnetic wave as light, radio wave, heat and another electromagnetic radiation. In the populated area, the area large number of RF sources like broadcasting radio and TV stations, cellular BTS and wireless network. Its sources are possible to be harvested the energy.

Energy harvesting is the process where an energy which comes from external sources like solar or sun, heat, RF waves (radio frequency), and the other electromagnetic waves that radiating signal.

The using of reflector on antenna has the function to change the radiation pattern and the beamwidth of antenna so that it can increase the gain of antenna by itself. There are some of the most popular forms of reflector namely plane reflector, corner reflector, and curved reflector. In this study selected the corner reflector for electromagnetic energy harvesting system in frequency band 900MHz-2,4GHz. Selected the corner reflector because this reflector can adjust the energy towards ahead well and avoid the radiation to backward and side. In this final project, corner reflector has VSWR value at 0.9 GHz, 1.65 GHz, 1.8 GHz, 2.1 GHz and 2.4 GHz is 1.368, 1.093, 1.695, 1.497 and 1.697. For return loss value is -16.18 dB, -27.12 dB, -11.78 dB, -14.03 dB and -11.75 dB with gain is 4.11 dB, 7.29 dB, 4.45 dB, 9.09 dB and 7.22 dB. At the energy harvesting test, corner reflector produces the average voltage is 28.01 mV with 3-stage harvester circuit and 163.31 mV with 7-stage harvester circuit towards the sun.

Keywords: harvesting, corner reflector, gain, beamwidth