PATCH ANTENNA FOR RF ENERGY HARVESTING SYSTEM AT GSM-1800 USING METAMATERIAL

Prepared by: Ng Chun Hau

ABSTRACT

Antenna is a device that can used to transmit and receive information through the free space and it play an important role in our daily life. The aim of this project is to design, simulate and produce a prototype model of a patch antenna for RF energy harvesting system at downlink radio frequency of range of GSM-1800. The patch antenna designed in this project is stepped patch antenna with partial ground plane to enhance the impedance bandwidth of antenna. Other than that, a metamaterial substrate and patch antenna will separated at a distance of 40mm ($\lambda/4$) to enhance the performance of antenna. Metamaterial is a artificial material with negative permeability and permittivity so it also called DNG material which in the form of split rings resonators and strip wires. It can used to enhance the gain, directivity, bandwidth and return loss.This report describes the information of patch antenna, metamaterial and the effect of the structure of antenna and metamaterial. Furthermore, the simulation process in CST, fabricated and testing will also discussed in this report. Finally, there is some suggestion for patch antenna and metamaterial to enhance the performance of it.