ABSTRACT

Ground Penetrating Radar (GPR) are radar which have function to detect object burried at ground. On development, GPR have variety of application, like detection of broken structure inside wall until pipe detection on ground. For pipe detection, is needed good resolution in order to distinguish between pipe with other object around them. Then needed antenna which have wide bandwidth to accomodate that. Also needed unidirectional radiation pattern for antena , so radar can work optimally.

In this research design an antenna vivaldi type. Antenna vivaldi have profit is can work well on Ultra Wide-Band(UWB). UWB have characteristic which have narrow pulse will produce good resolution. Adding a circular load on vivaldi arm will increase antena bandwidth. And for antenna feed will use microstrip line technique.

The Antenna design start with software simulation, then fabrication, with using FR-4 as substrate material which have dielectric constant 4,4 and thickness 1,6mm. Then design result have return loss value below -10 dB and VSWR value below 2 with 8.038 dBi gain value, and for fabrication result have return loss value below -10 dB and VSWR value below 2 with 3 GHz bandwidth and 6,384 dBi gain value*. Then antenna designed meet the requied specification.*

Keyword : GPR, Vivaldi antenna, Resolution, Ultra Wide-Band