ABSTRACT

Precocity of electromagnetic technology in several recent years thinks out a new method at exploration of geophysics, that is Ground Penetrating Radar (GPR). Ground Penetrating Radar (GPR) is a method of geophysics by using electromagnetic techniques that are designed to detect the buried object in subsurface or underground and evaluate the depth of the objects. GPR can also be used to know the conditions and characteristics of subsurface without drilling or excavation.

Pulse generator is an important component to produce the appropriate pulse for GPR. GPR system consists of transmitter and receiver. Transmitter is antenna which is connected to pulse generator. Receiver is antenna which connected to LNA and ADC, and then connected to processing unit and display.

Signal of GPR is generated with synchronization of sinusoidal generator's output by square pulse generator's output using timing switched method. Then, the writer will do pulse postprocessing using band pass filter and amplifier. Output pulse generator produces pulse monocycle at frequency (200 ± 15) MHz, pulse width (5 ± 1)ns, PRI 67,2 ns, and PRF 14,88 MHz. It produces a stable enough pulse monocycle although there are some ripples that is caused square pulse generator is not yet stable, distortion is caused inter connection block, and using single layer PCB. Nevertheless, pulse generator can use in GPR because it has waveform appropriate for GPR specification.

Keyword : Ground Penetrating Radar (GPR), pulse generator, monocycle