

ABSTRACT

Radar is an electromagnetic system for detection object from reflected wave (echo). An object can be an aircraft, ship, spatial object, vehicle, human, or any natural conditions. CW (Continuous Wave) radar will be using for this final project. CW radar is a radar system that transmit electromagnetic wave continuously with low power consume (less than 1 W). Speed Gun is one of the most example that use CW radar system. Police usually uses this Speed Gun in highway.

Speed Gun radar is a radar that can observe velocity from an object. Object in this Final Project is a car. This radar uses Doppler Effect theory for measuring velocity. Velocity can be detected by Doppler Frequency. Firstly, transmitter sends electromagnetic wave to a car. This car will be reflecting the wave to all direction. A little reflected called echo will be sent back to receiver antenna. Then, the echo is processed by Digital Signal Processing (DSP) block for detecting Doppler Frequency and measuring velocity. Last is processing the signal for displaying all the information from the echo in LCD.

In this Final Project is using simulation based Software Defined Radio (SDR) with GNU-Radio and the implementation based microwave sensor SEN0192. Simulation process will test the ideal condition from car velocity. Microwave sensor SEN0192 has 10.525 GHz transmit frequency, 2-16 metres maximum range, 5.4 KHz bandwidth, and 19.95 mW transmit power. Comparing the simulation and implementation will get the accuracy of measuring car velocity until 99.8 for simulation and 99.6 % for implementation %.

Keywords : CW Radar, Speed Radar, Doppler Effect, Digital Signal Processing, GNU-Radio, Microwave sensor SEN0192