

## **ABSTRACT**

*Radar is a device that in principle uses electromagnetic waves. Radar works to observe and map an object. Radar works by processing an electromagnetic waves that have been reflected by the observed object. In its application, radar has several types, and it have different function and usage. Radar needs wide bandwidth for gaining high resolution image. Radar's resolution is ability for the radar to dividing adjacent objects. So, the higher the radar's resolution, the more accurate the image displayed.*

*In this final project, rectangular microstrip antenna will be simulated , with 3,2 GHz frequency and 100 MHz bandwidth. And then, on the ground plane surface will be added CSRR (Complementary Split Ring Resonator) metamaterial cell. Then the simulation result of conventional antenna and metamaterial antenna will be compared. The parameters that getting compared are bandwidth, gain, and antenna dimension.*

*The addition of CSRR metamaterial cell on the antenna ground plane surface are proven can be affect the antenna's bandwidth, gain and dimension. After adding the CSRR metamaterial cell, the antenna bandwidth is increased by 75,4 MHz. The antenna gain is decreased by 0,81 dB. And the antenna dimension is decreased by  $\pm 17\%$  from its former size.*

*Keywords : RADAR, Antenna, Metamaterial*