

## ABSTRACT

*Radar is a technology that has wide benefits. Benefits of radar is not limited to military and non-military applications. One of the function of radar that can be used for remote sensing purposes. One technology that utilizes the concept of radar for remote sensing is Synthetic Aperture Radar (SAR). SAR can observe the surface of the earth without being affected by sunlight. SAR will illuminate the observed area with electromagnetic waves and then process the reflected wave (echo) from the target or the area into an image.*

*Multiple Input Multiple Output (MIMO) is system that uses more than one antenna on both transmitter and receiver sides. MIMO utilizes multipath fading that occur in the propagation medium for a particular purpose. This becomes an opportunity in the development of radar technology to utilize the MIMO system. Radar that uses the MIMO concept can improve performance in terms of presentation of better resolution compared to conventional radar. The MIMO system requires at least two independent antennas or has a high isolation between antennas.*

*In this final project, MIMO antenna microstrip antenna has been designed with proximity coupled type. The slot technique on the patch has succeeded in forming a circular polarization. From the measurement of impedance bandwidth of 60 MHz for antenna 1, 35.5% smaller than simulation result and 65 MHz for antenna 2, smaller 35.6% from the simulation result. Meanwhile the axial ratio bandwidth of the measurement result is 28 MHz for antenna 1, 4% larger than the simulation result and 18.5 MHz for antenna 2, 27% lower than the simulation result. The distance between groundplane gives S21 and S12 values respectively -27,86 dB and -27,886 dB*

**Kata Kunci** : *Microstrip antenna, MIMO-RADAR, Synthetic Aperture Radar (SAR), Spacing  $\lambda/2$ , circular polarized*