

ABSTRACT

Radio Detection and Ranging (RADAR) is a system for the detection of radio waves that are useful for detecting, measuring distance and mapping such as aircraft, military, weather, oceans, forests, vacant land, and others. Radio waves emitted and reflected from a particular object will be caught by radar. The reflected signal can be analyzed the results of its location. One type of radar is Phased Array L-Band SAR (PALSAR). This Radar is a conventional Radar to create high-resolution imagery. Aperture antenna engineered by moving the antenna on the object of observation. The movement of the antenna can be made as if the antenna has an aperture similar sized antenna and capable of producing high-quality images. By using PALSAR, allowing the antenna to move without mechanics, in which the antenna does not change its direction but the radiation pattern can be directed as needed. The used method is by controlling the phase current supply in the antenna.

Phased Array Antenna is an antenna that is composed of several pieces of antenna elements where there is a phase change by changing the current supply in the antenna so that the radiation pattern could change its phase. Antennas designed and simulated with the help of software that features microstrip antenna design and realized by using materials such as FR-4 Epoxy which value of relative permittivity is about 4.6 and substrate's thickness is about 1.6 mm. Antenna works at the frequency of the L-Band (1.27 GHz) which produce BW 28 MHz, linear polarization and unidirectional radiation pattern and capable of shifting the phase with the variation of a particular angle. Thus the antenna can work well with the specifications of PALSAR that needed.

Keywords: Phased Array Antenna, Phase Shifter, Power Divider, L-Band SAR