

## ABSTRACT

Radar (Radio Detection and Ranging) is a remote sensing system that is not affected by weather and time. Three-dimensional radar at this time began to be developed to detect objects at a distance, elevation and azimuth angles. With a turnover of polar radar that can detect more effective. An antenna that can support this radar device is a Vivaldi antenna.

Vivaldi antenna invented by Gibson in 1979<sup>[1]</sup>. The Vivaldi antenna is a special antenna of Tapered Slot Antenna (TSA) with exponential shape or commonly known as Exponentialy Tapered Slot Antenna (ETSA). This antenna has a wide beamwidth. So, it can work at any frequencies in the range 2 GHz to 20 GHz. The advantages of this antenna that has a wide bandwidth and a large gain.

In this thesis, it has been designed and simulated vivaldi antennas using software CST Microwave Suite 2014 and realized using FR4 material ( $\epsilon_r = 4.6$  and  $h = 1.6$  mm). This antenna works at the frequency of the S-band (2.9 GHz 3.1 GHz). These antennas are arranged as much 1x 8 to produce a  $VSWR \leq 2$ ,  $Gain \geq 8$  dBi with polaradiasi directional and linear polarization.

**Keyword** : Radar, S-band, ETSA, Vivaldi