ABSTRACT

Microsatellite, a small micro which has dimensions 45 × 45 × 27 cm with cubesat form and it has mass of about 57 kg [2] also has a specific function . In this case, the purpose of the microsatellite research that is being conducted by ITT SAT , is for data communication . The first mission of microsatellite was as RSPL (Remote Sensing Payload) but, In 2nd ITT SAT is planned using the SAR system (Synthetic Apperture Radar) , which is a remote sensing technology that uses radar imaging [B1] . One of the important components in satellite communications is the antenna subsystem . Designed antenna is part of a micro satellite space segment of the function to send the payload data signal sensing results SAR (Synthetic Apperture Radar) to ground stations . The ability to overcome the effects of Faraday rotation due to the rotation of ions in the atmosphere are needed by the S - band transmitter antenna so that the antenna should be circularly polarized

Microstrip antenna has a gain , bandwidth , and low efficiency . Thus, to overcome these weaknesses , in this thesis designed a microstrip antenna using a front-end stacking parasitic substrate to increase the gain of the antenna [1] . The distance between the front-parasitic patch is optimized to maximize the electromagnetic clutch and the main lobe of the antenna. This study also proposes the addition of end - parasitic [1] , the distance between the ground and the end - parasitic optimized to minimize the back lobe of the antenna causes the antenna gain increases . Microstrip antenna was designed with the help of the software -based assistive Finite Integration Technique using epoxy FR - 4 substrate with a value of $\varepsilon_r = 4.4$

In this thesis, the antenna is designed produces circular polarization (AR < 3dB) with unidirectional radiation pattern . The antenna works on the S - band frequency of 2.325 to 2.375 GHz with VSWR ≤ 1.5 and ≥ 7 dBic gain can be realized by stacking front-end antenna parasitic dimension 103 × 104 mm . As for the VSWR bandwidth obtained for ≈ 128 MHz bandwidth and axial ratio obtained ≈ 60 MHz . Then the working bandwidth or effective when bandwidth at the antenna VSWR ≤ 1.5 with AR < 3dB is around ≈ 60 MHz

Keywords **:** *microsatelite*, Synthetic Apperture Radar (*SAR*, microstrip antenna, *front end parasitic*