

ABSTRACT

Nano satellite is small-sized satellite (< 10 kg) that works at the frequency 2,4-2,45 GHz with an altitude of about 700 km. The satellite will transmit information signal to the ground station receiver nano satellite. Long distance of transmissions and the amount of disturbance in the environment of space cause the transmitted information signal has a very weak power. Therefore, after the information signal is received and amplified by the receiver antenna requiring a low noise amplifier (LNA) so the level of power transmitted is appreciable by suppressing generated noise so that it can be processed by the next stage.

In this final assignment, LNA is designed and realized that can work at the frequency 2.425 GHz with specifications gain ≥ 15 dB and noise figure ≤ 2 dB. The LNA is design by using microstrip line in which active component consisting of e-pHEMT transistor types namely ATF 55143. From the simulation using ADS software, this transistor generated maximum gain is approximately 21 dB and the minimum noise figure around 0.5 dB so that the design of LNA using single stage amplifier with bilateral design.

Performance test of the low noise amplifier has been conducted by comparing the result from the measurement and the design specification. From the measurement it's known that the realization of LNA at frequency 2.425 GHz has gain of 15.63 dB and the noise figure according to calculation measurement is 3.02 dB.

Key words : LNA, Gain, Noise Figure