ABSTRACT

The importance of studying climate and weather in Indonesia using weather monitoring instruments with wide area coverage is indispensable. The most effective weather monitoring instrument for a wide range of areas is using radar. Weather radar is a radar that can detect rain drops with very small diameter size. Weather radar is also able to monitor the movement of rain and clouds.

One of the obstacles faced in the radar system is a signal that has a low bounce power so that the quality of acceptance becomes less good. To overcome these obstacles*, it takes a power amplifier on the receiving system that is Low Noise Amplifier (LNA) which is placed after the receiving antenna on the receiver side. Here the received signals along with* its noises *with a very weak level can be strengthened to the level where the signal can be processed to obtain transmitted information. Some of the main considerations in LNA design include stability (K), gain, noise figure, DC bias, and Voltage Standing Wave Ratio (VSWR).*

In this Final Project is designed and realized LNA that can work on the frequency 5.470 - 5.725 GHz. The transistor used in this Final Project is BFP740 ESD. Design and simulation are done by Agilent's Advanced Design System (ADS) 2015 software. The simulation results of LNA at 5.6 GHz show 15.851 dB gain and 2.028 dB noise figure, while input VSWR and output VSWR are 1,021 and 1,075. The result of measurement of LNA without casing at 5.6 GHz frequency produce gain of -4.71 dB, noise figure 21.409 dB, VSWR input 2.015 and VSWR output 2,431. The result of measurement of LNA with casing at 5.6 GHz frequency yielded gain of -4.31 dB, noise figure 20.385 dB, VSWR input 1,278 and VSWR output 1,364. This result does not meet the desired LNA specification, because there are some unsuitable parameters.

Keywords: *Weather Radar,* LNA, *gain, noise figure,* VSWR.