

## ABSTRACT

Weather radar is very important used to detect the intensity of rainfall and bad weather, so that humans can anticipate the occurrence of disaster. Weather radar can operate in various band frequencies. In these frequencies there is usually device noise and interference. To be able to overcome device noise and interference that can interfere with the signal at that frequency requires a filter, so that the weather radar system can work well. Because the filter function is able to pass signals at a particular frequency band and dampen signals outside of these frequencies.

In this final project has been realized band pass filter that works at 5.6 GHz frequency. This filter uses a C-band radar that operates at a 4-8 cm wavelength and a 4-8 GHz frequency. The band pass filter made this has a frequency range 5470-5725 MHz with a middle frequency of 5.6 GHz. The workmanship uses Hairpin-Line method, using Roger RO4350B substrate, simulated using ADS software and designed with microstrip based using Duroid PCB (Printed Circuit Board).

The result of the simulation of ADS is, get return loss value of -33,3 dB, insertion loss value equal to -1,9 dB and bandwidth 255 MHz. While the results on the measurement, in the value of return loss of -16.4 dB, insertion loss value of -2.4 dB and 375 MHz bandwidth. After the given casing results return loss value of -17.5 dB, insertion loss value of -2.6 dB and bandwidth 215 MHz. So from the results obtained in accordance with the specified specifications.

Keywords: *Weather Radar, Band Pass Filter, Frequency, Hairpin, ADS Software, Microstrip.*