

## ABSTRACT

Radar is an electronic device that serves to detect and provide information where an object, in the radar communication block, especially on the receiver required a filter that serves to pass the signal at a particular frequency band. Filter designed in this final project are formed from the parallel edge-couple and half-wavelength resonator filter resonators by reversing the tip of the resonator to the "U" shape. The "U" shape of this resonator is called hairpin resonator.

The design of BPF filter using hairpin method works on X-Band frequency (9770 MHz) based on microstrip for weather radar. This filter must have a sharp slope accuracy and has a 2 MHz bandwidth with an insertion loss value close to  $\geq -3$  dB and a return loss value of  $\leq -15$  dB. The design of this filter will be simulated using software, with Rogers Duroid RT5880 substrate material having a dielectric constant of 2.2.

The measurement results show that the filter works on the 9500-9780 MHz frequency generated using the Rogers Duroid RT5880 material with return loss value is about -13 dB and the insertion loss -2 dB. The results obtained do not meet the expected specifications.

**Keywords** : Weather Radar, Filter, Band Pass Filter, Hairpin Resonator, Roger Duroid 5880