

ABSTRACT

Radar is a tool that serves to detect objects that are inside it certain range. One type of radar that known is continuous wave radar. Continuous wave radar (continuous wave radar) is a radar with a system that using continuous wave radio energy with a stable frequency, which is transmitted and then received back from the reflected object. The detected object is an object that is detected using the Doppler effect, causing the received signal to have a different frequency than the transmission signal, it possible to be detected by filtering the transmitted frequency. One of the components that make up a radar transmitter is a filter. Filter functions to select the frequency of certain signals that want to be passed or muted.

In this final project, band-pass filter (BPF) simulation was designed using a comblin method. The comblin filter is a filter consisting of several Transverse Electromagnetic (TEM) transmission lines connected at one end and a capacitor attached together with the ground at the end. The comblin filter is arranged in the form of microstrips with dielectric material FR-4 Epoxy ($\epsilon_r = 4.4$). The filter has 5 main resonator channels located in the middle and 2 tapping resonators on the left and right side. The filter works on the S-Band frequency with a center frequency of 3 GHz with a bandwidth of 300 MHz.

The design of the BPF filter is carried out using software based on the filter specifications that have been determined and the results are in accordance with the specifications. The result of this final project is that the filter successfully passes the signal at the desired frequency of 3 GHz with a bandwidth of 300 MHz, insertion loss -2.9538 dB, return loss -22.7660 dB and VSWR value 1.1569.

Keyword : BandPass Filter, TEM, Comblin, VSWR