

ABSTRACT

Filter is an important component for microwave systems, one of the example is the radar system. In the radar system, the filter located in the block system for attenuates the undesired signals at the certain range of frequency and passes the desired signals at the certain range of frequency. Design of filter depends on working frequencies and the location where the filter will be used.

This final project designs microstrip bandpass filter that works at X-Band frequency, with an example application on the weather radar so the filter has to be design in small dimensions but with a great performance. The filter will be designed using three type of resonators based on square shape including square ring, square open loop, and meander. The substrate material used in this final project is RT Duroid 5880LZ with the value of dielectriect constant is 2 and substrate thickness is 1,27 mm.

Based on the simulations, the values of return loss from square loop filter is -14,1524 dB, square open loop filter is -13,679 dB, and meander filter is -21,139 dB. The values of insertion loss from square loop filter is -2,2875 dB, square open loop filter is -2,44 dB dB, and meander filter is -1,386 dB. The values of bandwidth from square loop filter is 299 MHz, square open loop filter is 301 MHz, and meander filter is 300 MHz. All of the filters has center frequency at 9 GHz.

Keywords : *bandpass filter, microstrip, square loop resonator, square open loop, meander.*