

ABSTRACT

Nowadays, the development of technology in Indonesia, especially in the telecommunications field growing more rapidly. It also can not be separated from devices that support the establishment of communication with the well and smoothly. Filter is a transmission device that has a function to skip certain frequencies to pass the desired frequency (passband) and dampen unwanted frequencies (the stopband). In this final project will be designed and realized a Bandpass filter using square ring resonator based microstrip for FM-CW radar coastal surveillance. Radar uses a Bandpass filter that works at a frequency X-band, X-band frequencies which itself is at 8GHz range - 12 GHz. Based filter used microstrip given the high operating frequency.

To obtain these results, this filter should have a level of accuracy that the sharp slope and has a *bandwidth* of 60 MHz. In designing bandpass filters using square ring resonator and simulation Ansoft HFSS 15.0. Material used in this filter is Duroid RT 5880.

In this final project has been created Bandpass filter that work at frequency 9.37-9.43 GHz and 9.4 GHz center frequency. *Bandwidth* of this filter is 63 MHz. *Return loss* value is -10.977 dB and *insertion loss* value is -3.917 dB.

Keywords: Filter, Bandpass Filter, X-Band frequency, FM-CW radar, coastal surveillance, square ring resonator.