

ABSTRACT

Filter is a telecommunications component to limit the desired frequency for the signal transmitted or received. Filter are designed to be used on the satellite *receiver*, after the *receiver antenna* section and before entering the next state or LNA (low noise amplifier).

This study did design the filter using *coupled line band pass filter*. *Coupled line Band Pass Filter* is a filter design method that is most popular and can be applied to several applications of microwave communication systems due to its design technique is simple. Adjacent resonators are positioned parallel to each other along the other half of the resonator. Parallel resonator arrangement is excellent for designing a filter with smaller dimensions than other filter design methods used in the filter material is FR4 that has a dielectric constant of 4.3.

In this thesis designed and realized *bandpass filter* with 40 MHz bandwidth restrictions. With a center frequency at a frequency of 2.425 GHz, 20 MHz to the low frequency and high frequency 20 MHz heading. The filter has characteristics that must be fulfilled, such as the *loss* of no more than 3 dB (half power). So that the incoming signal on the satellite signal receiver is required based on the bandwidth required. In the simulation results obtained in accordance with the specification of return *loss* of -13 dB and insertion *loss* value of -2.88 dB. The measurement results of the filter has a bandwidth that is realized according to specification. Value of -11.42 dB return *loss* and insertion *loss* value of -3.14 dB.

Keywords: *Couple Line, Band Pass Filter, Nano Satellite, S-Band*