

ABSTRACT

Filter is a device used to passing the frequency region by passing the desired frequency (pass band) and remove the unwanted frequencies (stop band). Frequency will be passed according to the type of filter with different characteristics. While, VSAT is a satellite signal receiving station with the receiver antenna dish-shaped with a diameter of less than three meters, which use the C-band satellite that has a downlink frequency range 3.7 GHz to 4.2 GHz and uplink frequency of 5.925 GHz to 6.425 GHz. This 500MHz band width will be divided into several regions with a smaller width (± 40 MHz) that called a transponder. Therefore, in this final project aims to design and realize a filter that works in the frequency range of VSAT uplink, 5925MHz - 6425MHz.

Type of filter that has been designed and realized is the band pass filter using microstrip with mathematical approaches Chebyshev and methods Interdigital, and filter manufacturing is done by photoetching. Before the photoetching process, filter design is done by the counting process to obtain ideal dimensions of the filter. After performing simulations using Ansoft HFSS software 10, then the filter is designed in hardware. The next step was measured using a Network Analyzer to test the process on the filter to be able to pass the desired frequency. The last step was analyzed the result to compare the results of measurements with the initial specifications.

The results of measurements of the characteristics of the BPF center frequency is 6061.25 MHz with a bandwidth of 310 MHz. Insertion loss of center frequency at 5.563dB, $VSWR > 1.3$ in operating frequency range. Thus, the results obtained do not meet design specifications. This is caused by several factors, there are the value of ϵ_r is not curtained before, connectors soldering are untidy and too thick, and has not find the proper grounding for this BPF Interdigital.

Keyword: Band pass Filter, Microstrip, Interdigital, Standing Wave Ratio, Network Analyzer