

ABSTRACT

Filter is a transmitting device that has a function to filter out certain frequencies to pass the desired frequency and reduce unwanted frequencies. Frequency that is passed on this device tailored to the type of filter used with different characteristics.

In this final task discussed about the design and realization of microwave filter that works on frequencies from 1.52542 to 1.62542 GHz. Filter which is realized in the form of hairpin bandpassfilter tapped the transmission line using the U-shaped resonator which in the end given tapping. Filter made from microstrip which consists of copper as a conductor and ground plane, and ROGER 4003c serves as a dielectric. Damping characteristics of shape filters are designed based on mathematical approach Chebychev. The design is done by determining the filter order, calculate the dimensions of the filter and perform simulations using Ansoft HFSS v. 10. After the simulation results in accordance with desired specifications then performed realization.

The measurement filter is done by using a network analyzer to obtain the parameters of the performance and characteristics of the prototype is made. Parameters that have been tested from the prototype BPF include frequency response, bandwidth, standing wave ratio, insertion loss, return loss, phase change, and terminal impedance. The measurement of the characteristics of BPF are: center frequency 1.57542 GHz with a bandwidth of 80 MHz, 4.052 dB insertion loss, VSWR 1.498 (input) and 1.355 (output), 14.072 dB return loss (input) and 16.492 dB (output), changes phase of constant frequency, and impedance terminals $37.430 - j12.367 \Omega$ (input) and $42.429 - j11.733 \Omega$ (output).

Key Words : BPF, *Hairpin*, *Chebychev*