

## ABSTRACT

Filter is a device that can perform signal transmission with a certain frequency and other frequency damping. Filters are a very important block in a radio communication system, because the filter filters and makes the desired signal (passband) and reduces unwanted signal (stopband). In a system of radio transmitter or receiver, from the baseband to RF section, the filter will always be met.

In this final project will be designed with a Band Pass Filter (BPF) Chebyshev at a frequency of 2110 MHz - 2170 MHz that are realized by microstrip line, which is a channel which consists of the groundplane, the substrate with certain characteristics, and the strip conductor. Type of substrate used is Duroid 5880 with Roger dielectric constant ( $\epsilon_r$ ) = 2.20, substrate thickness  $t = 0.035$  mm, and loss tangent 0.0009.

BPF measurement is done by using the Network Analyzer, so as to obtain the characteristics of the filter that has been created are, frequency 2110 MHz – 2170 MHz with 60 MHz bandwidth, insertion loss of 0,3 dB, return loss more than 14 dB, Standing Wave Ratio (SWR) less than 1,2, ripple less than 0,2 dB, loss for stopband frequency of 40 dB, and terminal impedance 50 Ohms. The results from measuring the desired parameters are: band frequency 2087,6235 MHz – 2166,8 MHz with 79,1765 MHz bandwidth, insertion loss of 4.3104 dB, 31,114 dB return loss, Standing Wave Ratio (SWR) 1.1002,  $1,0927 \text{ dB} \leq \text{ripple} \leq 2,2719 \text{ dB}$ , loss for stopband frequency are 30,366 dB for  $f_{\text{low}} = 2048,0352 \text{ MHz}$  and 34,495 dB for  $f_{\text{high}} = 2206,3882 \text{ MHz}$ , and terminal impedance  $54,104 + j 1,4090 \text{ Ohms}$ .

Keywords : BPF Chebyshev, Microstrip, Parallel Coupled