

## ABSTRACT

Filter is a transmission means that has function to pass certain frequency with release wanted frequency (pass band) and damp unwanted frequency. Passed frequency in this means must suitable with filter type that used with different characteristic.

Comblin filter usually based on microwave frequency, such as between 300 Mhz – 300 Ghz. In this final project will design and implementation comblin bandpassfilter for receiver GPS where use receiving and processing signals from satellite in frequency centre 1575.42 MHz. Transmission canal type used in realization filter here use band pass comblin, it is a transmission line using resonator that has a slabline form that made of brass and air as dielectric. The characteristic of filter attenuation has been design based on Butterworth. To determinate the self capacitance and coupling capacitance of the filter, the equations from G.L. Matthaei are applied, where as the dimensional design of filter is based on study of B.F. Nicholson.

Filter measuring done with Network Analyzer to get information about performance and prototype characteristic that made. Parameter that analyzed from BPF prototype such as: frequency response, bandwidth, insertion loss, standing wave ratio, the change of phase and terminal impedance.

The measure result from filter characteristic is: center frequency 1.575 MHz with *insertion loss* = 0.964 dB( max  $\approx$  3.340 dB), *bandwidth* 3dB = 140 MHz, VSWR = 2.180 for input and output 1.829, *return loss* input 8.792 dB and 10.677 dB for output, terminal impedance input =  $24.877 + j4.448 \Omega$  and output :  $90.954 - j4.362 \Omega$ . 2,35 GHz, the change of respon phase with frequency is constant.

Keyword : **BPF, comblin, Butterworth, slabline, GPS.**