

## 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.

In this final project is designed and built Band Pass Filter (BPF) in frequency between 5,725 – 5,875 GHz. Transmission canal type used in realization BPF here use band pass hairpin, it is a microstrip transmission line is fitted with a diagonal cross-shaped arrangement of microstrip resonators. The characteristic of filter attenuation has been design based on Chebychev.

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 5,8 GHz with *insertion loss* = 4,963 dB, *bandwidth* 3dB = 137,5 MHz, bandwidth 50dB = 759,375 MHz, VSWR = 1.472 for input and output 1.468, *return loss* input 14,382 dB and 14.147 dB for output, terminal impedance input =  $38,618 + j13,093 \Omega$  and output =  $36,462 + j20,530 \Omega$ , the change of respon phase with frequency is constant.

Keywords : **BPF, Chebychev, Hairpin, Mikrostrip**