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.

Combline filter ussully based on microwave frequency, such as between 300 Mhz – 300 Ghz. In this final project will design and implementation combline bandpassfilter for transmitter TV Digital channel 44 UHF where use receiving and prosessing signals from satellite in frequency 654 - 658 MHz. Transmission canal type used in realization filter here use band pass combline, 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 658 MHz with *insertion loss* = 1.799 dB(max ≈ 3.340 dB), *bandwidth* 3dB = 27 MHz, VSWR = 1.450 for input and output 1.339, *return loss* input 14.260 dB and 16.953 dB for output, terminal impedance input = 34.371 + j5.372 Ω and output : 53.278 – j14.606 Ω, the change of respon phase with frequency is constant.

Keyword : **BPF,** *combline, Butterworth, slabline*, *channel* **44, UHF**