

Abstract

The development of telecommunications technology so rapidly and varied with the characteristics that have a high speed and multimedia services. This of course led to various forms of new technology standards and increasingly advanced. To support these technologies, will not escape from a device called a filter. In a communication system, the filter is a transmission device which has a function to pass a particular frequency by passing the desired frequencies (passband) and reduce undesired frequencies (stopband). In the high-frequency communication systems is microwaves, filters can be realized by using a combline filter.

Comblines filters are usually used at microwave frequencies, is at frequencies between 300 MHz - 300 GHz. In this Final Project aims to design and realize combline bandpass filter for transmitter-LTE, has a center frequency of 2596 MHz. Filters are made in the form combline bandpass filter using a cylindrical rod-shaped resonator (slabline) made of brass and air as a dielectric. Form of damping characteristics of the filter is designed based on mathematical approach butterworth prototype.

Filter measurements performed with the network analyzer using the method of insertion loss, measurement was carried out to obtain information about the performance and characteristics of the prototypes design. The results of measurements of the characteristics of this filter is the center frequency of 2594,5 MHz with insertion loss = 1.796 dB, 3 dB bandwidth = 219 MHz, 50 dB bandwidth = 1351,39 MHz, the input VSWR = 1.572 and 1.529 for the output, the input return loss at 13.176 dB and 13.603 dB for the output, the input terminal impedance = $36,466 + j13,729 \Omega$ and output: $33,737 + j6,779 \Omega$, the resulting linear phase response.

Keyword : **BPF, combline, butterworth, slabline, LTE**