

## ABSTRACT

The increasing of data services needs for mobile subscribers, should be balanced by a technology which can provides the growing of traffic occurs. The technology that can provides the demand is LTE (Long Term Evolution) technology. LTE has a data transfer rate up to 100 Mbps on the downlink and 50 Mbps on the uplink. This final project uses the 2.3 GHz frequency band with 2350 MHz as a center frequency, which is a frequency band for LTE and has been determined by 3GPP. In order to work optimally, it needs a device that can pass the required frequency which is called band pass filter.

Band pass filters must have a sharp accuracy rate of slope and has 100 MHz of bandwidth. The band pass filter is designed using the hairpin line method with open stub and FR4 for the substrate.

In designing this band pass filter, it uses hairpin line method with a Chebyshev 0.1 dB ripple frequency response. The center frequency of 2.350 GHz shows -5.27 dB of insertion loss and -11.56 dB of return loss. This filter has 130 MHz of bandwidth and 1.718 of VSWR.

**Keywords:** *LTE, filter, bandpass, hairpin line, open stub, Chebyshev*