ABSTRACT

LTE (Long Term Evolution) is 4G technology which is the celullar communication standard evolution that determined by 3GPP (Third Generation Partnership Project) Release 8. It can provides an IP-based wireless access broadband service. LTE is able to provides data transfer upto 100 Mbps for downlink and 50 Mbps for uplink. There are several frequency of LTE in Indonesia, B5 FDD LTE 850 MHz, B8 FDD LTE 900 MHz, B3 FDD LTE 1800 MHz, dan B40 TDD LTE 2300 MHz.

In this thesis, the Bandpass Filter (BPF) is designed and realized to pass the downlink frequency in band 3 (1805-1880MHz) for LTE. This filter is realized by using hairpin method. Hairpin is made from coupled edge filter resonator which rotates the resonator edge point to form "U" letter. This method can reduce the length and increasing the aspect ratio of microstrip, as the comparison with couple edge configuration.

The design of BPF filter is done by using numerical simulation software for electromagnetic, and the realization measurement is done by using Network Analyzer. The designed BPF Filter is in the microstrip form by using rogers duroid material 5880iz (εr =2,0). There are several value obtained from the realization measurement, they are -14.34 dB of return loss, -1.23 dB of insertion loss, 60 MHz bandwidth in the frequency of 1800 MHz.

Keywords : Band Pass Filter (BPF), Hairpin, LTE.