ABSTRACT

Frequency is one of limited natural resources and it is regulated by government. In Telecommunication section, frequency is obviously used in LTE technology. Filter is used to avoid interference among frequency by selecting frequencies's band which are going to be used in corresponding technology. Filter is used to pass signal on particular band and stop signals on other bands.

The designed filter is Band Pass Filter with bandwidth 22.5 MHz (1857.5 MHz -1880 MHz). This filter is designed using square open loop ring resonator method and coupled line coupling on feedline. The aim of feedline type selection is for producing shard and steep slope on filter'response. Ground structure which is used is Defected Ground Structure (DGS). DGS has been proven in improving insertion loss's value.

Material which is used for realizing the filter is Roger Duroid 5880 with permitifitas relatif 2.2 and width of dielectric 0.5. Dimension of filter is 4.012 cm x 2.32 cm ($0.197\lambda_g$x $0.341\lambda_g$). Measurement result for insertion loss at resonance frequency (1868.75 MHz) is -4.299dB, return loss -15.884dB and VSWR 1.388. Measurement result for lower cutoff frequency is insertion loss -4.994 dB, return loss -11.644 dB, and VSWR 1.724. Measurement result for upper cutoff frequency (1880 MHz) is return loss -10.168 dB, insertion loss -4.660 dB and VSWR 1.901.

Keywords : Square open-loop ring resonator, DGS, dan Coupled line coupling.