

ABSTRACT

This project introduces a microstrip fifth-generation (5G) low-frequency band of 2.45–2.52 GHz using a parallel-coupled line (PCL) Bandpass filter and multilayer (ML) hairpin Bandpass filter. The targeted four-pole resonator has a centre frequency of 2.45 GHz with a bandwidth of 130MHz. The hairpin-line offers compact filter design structures.

A comparative analysis between the simulated insertion loss and the reflection coefficient of substrates RO3003 and FR4 was performed to validate the efficiency of the proposed filter design. Simulation of PCL and ML filter is accomplished using Computer Simulation Technology (CST) software.

The PCL Bandpass filter was experimentally validated between simulation results and measured results were achieved demonstrating a well-measured reflection coefficient. The simulated results obtained by the hair pin ML band pass filter show that the circuit performs well in terms of Scattering(S) parameters and the filter size is significantly reduced.