

# Abstract

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## **Novel Microstrip Filter Structures Using Reconfigurable Defective Digital Ground Plane**

In this study, a new compact microstrip bandpass filter having an adjustable characteristic (bandwidth, insertion loss, and return loss) has been proposed and presented. The proposed filter has been analyzed, investigated and optimized using the microwave CST\_Studio simulator for different reconfigurable defective digital ground structures (DDGS). The presented bandpass filter is mounted on a standard lossy FR4-substrate. The filter patch has an adjustable center resonance frequency within the band from 3.0 GHz up to 6.0 GHz. Simulation results show that using the proposed concept of DDGS, the filter operating band, insertion loss, and return loss can be tuned to the desired values. The presented study added a new, simple and practical approach for microwave filter design.