Abstract
In this paper, close and open loop hexagonal resonator filter, multiplexer of high selectively and compact size are presented. The tri-band multiplexer topology is based on the hexagonal close loop resonators of different size which capacitive coupled from a single input. The filter and multiplexer have been designed on substrate dielectric constant $\varepsilon_r = 10.2$ and thickness = 0.635 mm. The hexagonal multiplexer offers the tri-band of bandwidth 60MHz with centre frequencies $f_1=4.45GHz$ and $f_2=5.3GHz$, and 85MHz at $f_3=5.85GHz$. The new filter offers the rejection around better than 35 dB. In tri-band multiplexer, the rejection has been observed better in first band in comparison the third band. The open loop hexagonal for multiband rejection is also studied. The close and open loop hexagonal multiplexer structure have been simulated using IE3D software and HFSS. This close loop tri-band hexagonal multiplexer and open loop band rejection are compact in size and useful for communication system.

Reference

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**Index Terms**

Computer Science \hspace{1cm} Wireless

**Key words**

Close loop Hexagonal resonator
Open loop hexagonal resonator

Band pass filter
multiplexer
microstrip line
capacitive coupling