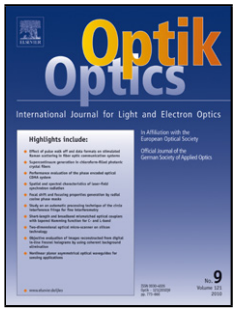

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Authors: Sanjay Kumar Sahu, Sudhakar Sahu, G. Palai

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Experimentally validated of Defected Microstrip Structure to realize band stop filter based on capacitively loaded loop resonators

Sanjay Kumar Sahu[1], Sudhakar Sahu[2], G.Palai[1]
1. Gandhi Institute for Technological Advancement (GITA) - Bhubaneswar, INDIA
2. KIIT University Bhubaneswar

* Corresponding author:
Phone no: +91 9439045946, email: gpalai28@gmail.com

ABSTRACT:

A metamaterial (MTM) based filter with multiple band rejection characteristics is presented in this paper. By etching out two U shaped slots of different length from signal line, band notch characteristics at 5.8 GHz and 8.4 GHz are obtained. However by incorporating a pair of capacitive loaded loop (CLL) on either side of signal line, two more notches are obtained at 3.4 GHz and 6.9 GHz to avoid possible interference with few existing licence band. The prototype of the proposed micro strip band rejected filter is fabricated on RT-Duroid substrate of relative permittivity 2.2 and height of 0.787 mm. The electromagnetic full wave simulation results agree well with the measured result to validate the proposed idea. Simple design, compact size, good linearity and easy integration with other circuit like filtering antenna could be an attractive option in wireless environment.

Key words: *CLL;MTM;BandStop Filter*

1. INTRODUCTION

RF/MW filter plays a vital role in modern wireless communication system, mostly for mobile application [1]. To suppress unwanted signals, reject spurious responses, dropping higher order harmonics and reducing nonlinearity, the requirement of band stop filter with narrow stop band and high data transmission rate is quite indispensable. Nonetheless, day by day large no of wireless networking technology are emerging out and need to be accommodated within limited spectrum. To envisage the same, several techniques have been deployed nowadays. Defected ground structure (DGS) probably the most familiar technique used by many researchers. Similar to DGS, defected micro strip structure (DMS) [2-4] also be potentially used by simply removing slits of different shape from the signal strip. Though both techniques assume similar approach and need approximately same design effort, but DMS provides fare results than DGS. The advantageous part in DMS [5-6] over DGS is that in former case the amount of cross talk and ground noise is significantly reduced. Many papers have already been published by using this technique where extensive uses of English alphabets M, W, T, C patterns are found.