

# A Microwave Dual-band Bandpass filter for L Band Application

Abhinav Vishwakarma<sup>1</sup> G. S. Tripathi<sup>2</sup>

<sup>1,2</sup>Department of Electronics & Communication Engineering

<sup>1,2</sup>Madan Mohan Malaviya University of Technology Gorakhpur Uttar Pradesh 273010 India

**Abstract**— In the Bandpass filter two open stepped impedance resonator is introduced with help of dual-band bandpass filter. The proposed filter having an extra added two open T stubbed impedance resonator in outside the substrate and the filter design is designed for input output transmission lines where structure is totally coupled. Through this theoretical analysis and full wave simulation, we proceed SLR is ready to have the beneficial that odd mode resonant frequency and perhaps even mode are fixed. Dual-band bandpass filter is a simulated design of microwave dual-band bandpass filter is operating at its centre frequencies (1.3, 1.95) GHz which make this filter liable candidate of dual-band bandpass filter. The two pass band return loss 31 and 26 dB is first and second band pass filter A s-parameter result proposed filter has been simulated correctly which shows remarkable characteristics of microwave dual-band bandpass filter using SISRs. The dual-band bandpass filter is design for L band application. The insertion loss less than -5dB db. The ROGER RO3006 substrate by dielectric constant 6.15 thickness 1.27 mm in the prepared filter structure which based at SISR the dual band filter.

**Key words:** Dual Bandpass Filter, Dual T-Shaped Multimode Resonator, Coupling Model, Geometrical and Physical Parameters

## I. INTRODUCTION

This bandpass filter is of two path network, which recommended the disapproval frequency component from input port to output port. One or more desire frequencies is refer like bandpass filter. A bandpass filter part for wireless message. A microwave filter are mostly desire in latest dual-band pass filter wireless communication system. Now many type of method is being report the designated [1-5] dual-band filter (BPF). A[1] multilayer freely controlled dual-band bandpass filter (BPF). To decrease circuit size two T-shaped multimode resonator has been to design dual-band bandpass filter. By using stub loaded resonator a dual band gives control by a central loaded open stubs. By using stubs impedance resonators (SIRs) by many resonant mode dual band filter are mostly design This is the time of modern wireless communication several application are used of dual band Bandpass filter and dual-band Bandpass filter. The number of configuration and methodologies has been performed to realize this filter in the past with two separate pass band. Complexity in design, large, high insertion loss are the filter have number of disadvantages. On the other hand, it covers large circuit area. In the recent years to make dual band BPF the stepped impedance resonators are commonly used. In the structure design of SIR tunable resonance frequency by just adjusting the parameter band pass filter. To make and realize the technique of dual-band operation. The central frequency of these two band are controlled simultaneously. The two feed lines is used impedance transformer. On the other this progress approach gives large size and complexity to design.

This prepared paper the micro strip dual-band bandpass filter is design and two cascade stepped impedance resonators and add extra two open T stub outside the design. A device or machine to the simulated result of Dual-band Bandpass filter is operating frequencies 1.3GHz as well as 1.95GHz. The dual-band bandpass filter is design for L band application. The L band are used to radio spectrum 1 to 2 GHz. It is used to telecommunication or wireless communication.

## II. SPECIFIC DESIGN OF PROPOSED FILTER

The prepared filter structure is used HFSS simulation tools. A propose filter is the two open stub resonators to composed with two loaded stub resonators .All length of each resonators is around to wavelength  $[(\lambda_g)/2]$ . Figure 1 the physical layout of dual band pass filter use to uniform microstrip line.

The prepared filter structure is based on SISR a dual-band filter has been design on a substrate with a ROGER RO3006 dielectric constant 6.15 thickness 1.27mm. This prepared paper the micro strip dual-band bandpass filter is design and two cascade stepped impedance resonators and add extra two open T stub outside the design. A device or machine to the simulated result of Dual-band Bandpass filter is operating frequencies at 1.3 GHz and as well as 1.95GHz. The two pass band return loss 31 and 26dB. The dual-band bandpass filter is design for L band application.

The parameter design of proposed filter are follows

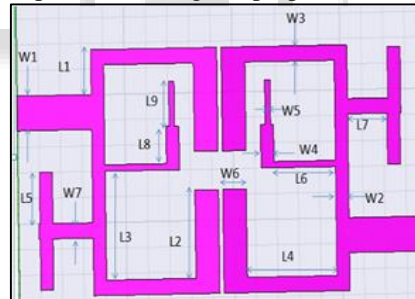


Fig. 1: Dual- band bandpass filter layout

L1	3.5	L9	3.5
L2	6.9	W1	2.7
L3	7.8	W2	1.2
L4	10.5	W3	1.2
L5	4	W4	1.2
L6	6.9	W5	0.5
L7	5	W6	2.2
L8	2.9	W7	1.2

Table 1: Layout dimension in mm

P Parameter	Value
V	
Centre Frequency f1	1.3 GHz
Centre Frequency f2	1.95 GHz
Return Loss S11	31 dB
Return Loss S11	26 dB
Insertion Loss S21	-5 dB

Table 2. Dual-band bandpass filter specification design

### III. DUAL-BAND BANDPASS FILTER SIMULATION RESULTS

The simulated result figure 2 the dual band band pass filter proposed paper .Dual-band bandpass filter paper operates frequencies are 1.3 GHz as well as 1.95 GHz in the simulated machine or device. The return loss in more than -10db. The two pass band return loss 31 and 26 dB is first and second band pass filter. The proposed filter insertion loss is  $-0.15$ dB. The ROGER RO 3006 substrate by dielectric constant 6.5 thickness 1.27 mm in the prepared filter structure which based at SISR the dual band filter. The insertion loss less than  $-5$  dB .In this proposed paper a Bandpass filter for dual-band Bandpass filter is introduce with the help of open stepped impedance resonator. The dual-band bandpass filter is design for L band application. The L band are used to radio spectrum 1 to 2 GHz and satellite, mobile services, telecommunication application for L band.

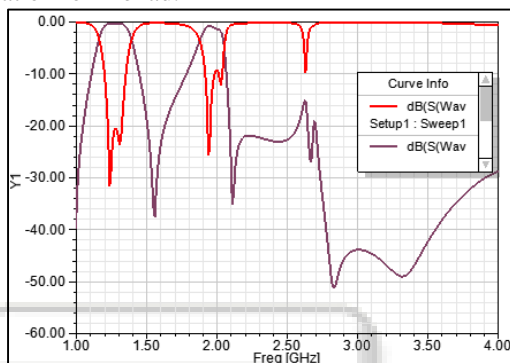


Fig. 2: S11, S21 Dual-band bandpass filter simulated result

### IV. CONCLUSION

The prepared paper a dual-band Bandpass filter SIRs is propose has dual- band performance 1.3GHz and 1.95GHz. The insertion loss less than  $-5$ dB. In this proposed paper a Bandpass filter for dual-band Bandpass filter is introduce with the help of open stepped impedance resonator. The return loss in more than  $-10$ db. The two pass band return loss 31 and 26 dB is first and second band pass filter. The proposed filter insertion loss is  $-0.15$ dB. The dual-band bandpass filter is design for L band application. The L band are used to radio spectrum 1 to 2 GHz. It is used to wireless communication.

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