

雙頻濾波器之設計~利用貫孔牆類波導結構

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本論文提出一個具轉角設計的雙頻濾波器。由於這個轉角的設計，發現在不影響濾波器的雙頻通帶響應下，其高頻諧波響應有將-30dB 的抑制,且我們可調整共振腔的長度來控制第二個頻道的頻率。同時，可藉由改變共振腔來得到想要的頻寬。為了證明所提出濾波器有以上的特性，我們實作四個有不同共振腔長度的濾波器，由量測的結果說明，這種有轉角的雙頻濾波器，其高頻諧波平均可以抑制在-25dB 以下。

A dual-bandpass filter using via-hole-wall waveguide

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In this thesis, we proposed a planar dual-bandpass filter with bend design. With this bend structure, the higher harmonics response of the proposed dual-bandpass filter can have a suppression of nearly -30dB; meanwhile, the first and the second pass-band specifications remain unchanged. Besides, we found that the second pass-band frequency is tunable by adjusting the length of each cavity. In order to demonstrate the proposed filter performance, four filters with different cavity length were implemented on a low-loss dielectric substrate. In addition to changing the length of each cavity, we changed the aperture length to observe the variation of pass-band bandwidth. From the simulated and measured results, the proposed filter obtains more than -25 dB suppression in average. The measurement shows a very good agreement with simulation.

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Contents

Chinese Abstract

English Abstract

Acknowledgements

Contents

List of Figures

Chapter I Introduction 1

**Chapter II Structure configuration and fabrication
process 3**

Chapter III The numerical and experimental results 6

Chapter IV Conclusion 36

Bibliography 38



List of Figures

Figure 1. Structure configuration of via-holes array waveguide	3
Figure 2. Structure configuration for the dual-bandpass in this thesis	5
Figure 3. Configuration of the filter which the input/output substrate integrated waveguide is directly connected with the cavities	6
Figure 4. Configuration of the filter which the input/output substrate integrated waveguide is turned 90 degree and connected with the cavities	8
Figure 5. Simulated results by comparing the two filters with different the input/output design structures	9
Figure 6. (a) Simulated electric field strength (E_z) distribution over each cavity at 9.1GHz and 10.2GH	10
Figure 6. (b) Simulated electric field strength (E_z) distribution over each cavity at 9.1GHz and 10.2GHz	11
Figure 6. (c) Simulated electric field strength (E_z) distribution over each cavity at 12.4GHz and 14.7GHz	12
Figure 6. (d) Simulated electric field strength (E_z) distribution over each cavity at 12.4GHz and 14.7GHz	13
Figure 7. The photograph of the implemented dual-bandpass filter	15
Figure 8. Simulated and measured results of the dual-bandpass filter	18
Figure 9. Measured results of the dual-bandpass SIW filter	19
Figure 10. Simulated and measured results of the second dual-bandpass filter	21
Figure 11. Measured results of the dual-bandpass filter	22
Figure 12. Simulated and measured results of the second dual-bandpass filter	25
Figure 13. Measured results of the dual-bandpass filter	26
Figure 14. Simulated and measured results of the second dual-bandpass filter	29

Figure 15. Measured results of the dual-bandpass filter	30
Figure 16. Simulated and measured results of the four dual-bandpass SIW filters with controllable the second pass-band	33
Figure 17. Simulated results of the five dual-bandpasds SIW filters with controllable the second pass-band	34
Figure 18. Measured results of the dual-bandpass SIW filters with varied width of aperture (w_a)	36

