國 立 交 通 大 學

電 信 工 程 學 系 碩 士 班

碩 士 論 文

以貫孔牆型共振腔設計帶通濾波器

A band-pass filter using via-hole-wall cavity

研 究 生：潘俊良

指導教授：黃瑞彬　博士

中 華 民 國 九 十 六 年 六 月

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中文摘要

在這篇論文中，此帶通濾波器是雙層結構，上層為輸入、輸出饋入，下層為共振腔，此外，分別在上下層間蝕刻一條隙縫，使信號可耦合至另一層，我們利用基板整合波導(SIW)的技術製造而成。此濾波器中心頻率可由共振腔的共振頻率計算，頻寬可由隙縫的長度來控制。我們經由 CST 模擬出帶通濾波器的穿透和反射係數，量測結果顯示與模擬結果相當一致。

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Abstract

In this thesis, we developed a band-pass filter using via-hole arrays cavity implemented on a 2-layered printed circuit board. The pass-band center frequency may be roughly estimated by the resonance frequency of the cavity. The bandwidth of the filter may be altered by changing the length of the coupling apertures. The scattering parameters, including the insertion and return losses were simulated by using CST microwave studio. The measured results show a good agreement with the simulation results.

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