不對稱雙頻帶高溫超導濾波器之製作與微波特性研究

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摘 要

本研究主要探討，雙頻帶高溫超導濾波器(Dual-Band High Temperature Superconductor Filters)之製作與特性，以合成技術來設計對稱與非對稱雙頻帶帶通濾波器應用於無線區域網路(WLAN) IEEE 802.11b/g(2.4 GHz ~ 2.48 GHz)通訊使用之頻段。我們以RF濺鍍技術在鋁酸鑭 (LaAlO3) 基座上成長雙面高溫超導釔鋇銅氧(YBa2Cu3O7)薄膜製作超導濾波器和金屬封裝量測。模擬出結果對稱雙頻帶帶通濾波器雙頻帶在中心頻率 2.45 和 2.49 GHz； 插入損耗分別為 0.18 和 0.17 dB ；頻寬分別 11 MHz和 24 MHz 。非對稱雙頻帶帶通濾波器模擬雙頻帶中心頻率在 2.45 和 2.48 GHz； 插入損耗分別為 0.3 和 0.29 dB；頻寬分別為 20 MHz 和 23 MHz。然而變溫量測的頻率響應，可用二流體模型來解釋,頻率隨這溫度轉移循著穿隧深度而變化。

關鍵詞 : 釔鋇銅氧、對稱、非對稱雙頻帶濾波器、高溫超導濾波器

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