藉由插入頻率選擇面來抑制螺旋電感所產生的假性輻射

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摘 要

在本論文中，吾人提出一個在平面螺旋電感中插入帶拒(band-stop)頻率選擇面(FSS, frequency selective surface)的方法，去抑制平面螺旋電感的假性輻射(spurious emissions)。假性輻射尤其在螺旋電感擁有寬的阻抗匹配頻帶時顯得特別嚴重，插入螺旋電感中的FSS被設計用來大幅縮小螺旋電感的阻抗匹配頻帶並抑制假性輻射，而不犧牲電感原先的電氣特性(electrical performance)，像是自共振頻率(self resonant frequency)、串聯電感值(series inductance)、品質因數(Q factor)。 內文同時提出一種新形狀元件所構成的帶拒FSS。將其與典型元件構成的帶拒FSS作性能比較，典型帶拒FSS抑制spurious emissions的能力已相當不錯，而新型FSS不但具有更卓越抑制spurious emissions的性能，且對螺旋電感原來的電氣特性沒有任何負面影響。綜合實驗結果發現，新型FSS在未來研究上，還有改進電感品質因數的發展潛力。

關鍵詞 : 平面螺旋電感 ; 頻率選擇面 ; 假性輻射 ; 帶拒結構

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