電磁干擾開放測試場之接地效應分析

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摘 要

本論文將針對電磁干擾開放測試場(Open Area Test Site for EMI)的接地平面所造成的電磁效應進行分析，由於直接影響電磁干擾開放測試場之場地衰減特性的因素就是金屬接地平面之面積與邊緣繞射效應，經由接地平面所產生的電磁波反射與繞射等效應影響場地衰減量甚鉅，因此本論文將針對接地平面的各種佈置方式進行數值分析及比較。在頻率範圍介於30MHz至200MHz與頻率範圍介於200MHz至1GHz時，吾人將分別使用時域有限差分法(FDTD；Finite-Difference Time-Domain)為基礎之數值模型及應用高頻分析方法(High Frequency Technique)分析金屬接地平面之面積尺寸與邊緣繞射效應的關係，以及對某些頻段所做之補償措施鋪設方式與邊緣繞射效應的關係，如接地平面邊緣所加之網狀金屬，其傾斜角度對場地衰減量的影響。 藉由數值模擬之分析探討接地平面的電磁效應對開放測試場之場地衰減量影響，並以此方法評估及改善電磁干擾開放測試場之正規化衰減量是否能符合ANSI C63.4-1992、CISPR 16-1及CNS 13306-1等電磁相容性檢測標準規範之要求。

關鍵詞 : 電磁干擾 ; 開放式EMI測試場 ; 正規化衰減量 ; 邊緣繞射 ; 時域有限差分法 ; 高頻分析方法

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