

Design and Analysis of Site Source for Radiated Emission Test

李至凡、林漢年

E-mail: 9509725@mail.dyu.edu.tw

ABSTRACT

Electromagnetic interferences (EMI) has becomes a major concern of our daily life due to the increasing application of digital electronic devices. The monitoring of EMI has therefore emerged as a major issue. Radiation emission test must be performed under specialized conditions for EMI measurements. Requirements for test site must be flat, free of overhead wires, away from reflecting structures, and the usage of good quality coaxial cables is recommended. Therefore, the accuracy of test site is very important. The standard EMI radiation sources maybe generated from three different sources, namely, the adjustable signal generator, statistical white noise generator, and the harmonic generator. In this thesis, we used the harmonic generator as the source. The oscillator sources used a crystal oscillator together with designed RC charge-discharge circuit integrate into Schmitt-Trigger Inverter SN74ACT14 to generate the fast transition speed of trapezoidal waveforms. The oscillator sources are combined amplifier model MMG3002NT1 manufactured by FREESCALE SEMICONDUCTOR Inc. to amplifying the amplitude of the harmonics. A spiral antenna was implemented as the radiating structure for the signal source and the measurement was performed in the frequency range 30 MHz to 1 GHz. For application of the standard site sources for the monitor of daily test site radiation emission, repeated tests were carried out to check the frequency and power stability of the standard site sources.

Keywords : Standard Site Source ; Radiation Emission ; Harmonic generator

Table of Contents

目錄 封面內頁 簽名頁 授權書	iii	中文摘要	
. iv 英文摘要		v 誌謝	
. vi 目錄		vii 圖目錄	
. ix 表目錄			
. xii 第一章 緒論 1.1 前言	1	1.2 研究動機與目的	1
. 1.3 論文大綱	3	第二章 諧波型標準雜訊源訊號原理及介紹	
2.1 週期訊號	4	2.2 數位週期波形的頻譜	10
第三章 振盪電路與線性放大器 3.1 振盪電路	17	3.1.1 石英振盪器	17
. 17 3.1.2 施密特振盪電路	19	3.1.3 頻譜分析與模擬	19
. 26 3.2 寬頻線性放大器	29	3.2.1 放大器的S參數	29
. 29 3.2.2 放大器的線性特性	31	3.3 標準雜訊源	31
. 32 第四章 螺旋天線 4.1 天線設計	38	4.2 螺旋天線模擬與實測比較	38
. 39 第五章 實驗結果與數據分析 5.1 實驗說明	41	5.2 實驗	
結果分析	46	第六章 結論	47
文獻	48	附錄	
. 51 圖目錄 圖1.1 測試場地示意圖	2	圖1.2 輻射發射測試中誤差的來源	
. 3 圖2.1 線性系統方塊圖	5	圖2.2 週期性方波	
. 6 圖2.3 週期性梯形脈波	10	圖2.4 函數的頻譜邊	
界圖	12	圖2.5 梯形脈波的單邊頻譜邊界圖	13
圖2.6		Bode圖 (a) 線性線段特性的Bode圖 (b) 頻譜邊界對梯形脈波的應用圖	14
圖2.7 梯形脈波的工作週期在		頻譜邊界上的關係圖	16
圖3.1 20MHz石英振盪器波形	18	圖3.2 32MHz石英	
振盪器波形	18	圖3.3 (a)施密特振盪電路 (b)非零電位磁滯曲線 (c)輸入與輸出訊號工作曲線	
圖	19	圖3.4 (a)20MHz施密特振盪模擬電路 (b)模擬波形圖 (c)改變C1為82pF的實際波形	22
.	22	圖3.5 (a)32MHz施密特振盪模擬電路 (b)模擬波形圖 (c)改變C1為51pF的實際波形	23
.	23	圖3.6 (a) 20MHz施密特振盪匹配電路示意圖 (b)阻抗匹配與阻抗不匹配之波形比較圖	24
圖3.7 (a)		32MHz施密特振盪匹配電路示意圖 (b)阻抗匹配與阻抗不匹配之波形比較圖	25
圖3.8 OSC20頻譜圖	27	圖3.9 OSC32頻譜圖	27
.	27	圖3.10 SI20頻譜圖	
.	28	圖3.11 SI32頻譜圖	28
.	28	圖3.12 放	

大器匹配電路示意圖	30	圖3.13 MMG3002NT1之S參數量測圖(a) (b)	31	圖3.14
MMG3002NT1之1dB增益壓縮點量測圖	32	圖3.15 OSC20 AMP (a)電路圖 (b)示波器波形 (c)平均頻譜	33	圖3.16 OSC32 AMP (a)電路圖 (b)示波器波形 (c)平均頻譜
.	34	圖3.17 SI20 AMP (a)電路圖 (b)示波器波形 (c)平均頻譜	35	圖3.18 SI32 AMP (a)電路圖 (b)示波器波形 (c)平均頻譜
圖3.18 SI32 AMP (a)電路圖 (b)示波器波形 (c)平均頻譜	36	圖4.1 螺旋天線(a)俯視圖 (b)側面圖	39	圖4.2 螺旋天線之Return Loss
圖4.1 螺旋天線(a)俯視圖 (b)側面圖	39	圖4.3 螺旋天線之駐波比 (a)0~1.5GHz (b) 0.4~1.5GHz	40	圖5.1 OSC20AMP水平測試
圖4.2 螺旋天線之Return Loss	40	圖5.2 OSC20AMP垂直測試	42	圖5.3 OSC32AMP水平測試
圖4.3 螺旋天線之駐波比 (a)0~1.5GHz (b) 0.4~1.5GHz	40	圖5.4 OSC32AMP垂直測試	43	圖5.5 SI20AMP水平測試
圖5.1 OSC20AMP水平測試	42	圖5.6 SI20AMP垂直測試	44	圖5.7 SI32AMP水平測試
圖5.2 OSC20AMP垂直測試	42	圖5.8 SI32AMP垂直測試	45	表目錄 表3.1 振盪頻率之特性參數
圖5.3 OSC32AMP水平測試	43	. . . . .	26	表A.1 OSC20AMP(30MHz~500MHz)水平測試值
圖5.4 OSC32AMP垂直測試	43	. . . . .	51	表A.2 OSC20AMP(500MHz~1GHz)水平測試值
圖5.5 SI20AMP水平測試	44	. . . . .	52	表B.1 OSC20AMP(30MHz~500MHz)垂直測試值
圖5.6 SI20AMP垂直測試	44	. . . . .	53	表B.2 OSC20AMP(500MHz~1GHz)垂直測試值
圖5.7 SI32AMP水平測試	44	. . . . .	54	表C OSC32AMP(30MHz~1GHz)水平測試值
圖5.8 SI32AMP垂直測試	45	. . . . .	55	表D OSC32AMP(30MHz~1GHz)垂直測試值
表目錄 表3.1 振盪頻率之特性參數	26	. . . . .	56	表E.1 SI20AMP(30MHz~500MHz)水平測試值
.	26	. . . . .	57	表E.2 SI20AMP(500MHz~1GHz)水平測試值
.	26	. . . . .	58	表F.1 SI20AMP(30MHz~500MHz)垂直測試值
.	26	59	表F.2 SI20AMP(500MHz~1GHz)垂直測試值
.	26	60	表G SI32AMP(30MHz~1GHz)水平測試值
.	26	61	表H SI32AMP(30MHz~1GHz)垂直測試值
.	26	62	

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