

低功率射頻電機測試報告

報告編號:

RT180717C21

申請者

香港商富思股份有限公司台灣分公司

產品名稱

Smart Watch/智慧型手錶

型號

DW9F2

製造廠商

Fossil Group, Inc.

商標或廠牌

FOSSIL

該產品樣品試驗

國家通訊傳播委員會低功率射頻電機技術規範

依據之試驗標準

107 年 1 月修訂

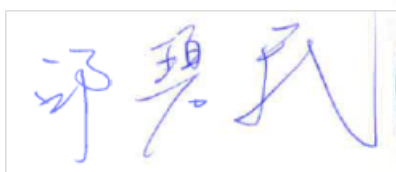
試驗結果

合格

香港商立德國際商品試驗有限公司桃園分公司 林口實驗室

日期 107 年 08 月 30 日

報告簽署人簽章:



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報告發行紀錄

Issue No.	Description	Date Issued
RT180717C21	Original release	107 年 08 月 30 日

證 明 書

發行日期：107 年 08 月 30 日

產 品 名 稱：Smart Watch/智慧型手錶
商 標：FOSSIL
型 號：DW9F2
申 請 者：香港商富思股份有限公司台灣分公司
量 測 規 範：低功率射頻電機技術規範 LP0002
ANSI C63.10-2013

香港商立德國際商品試驗有限公司桃園分公司在此證明上述待測設備樣品一組(型號：DW9F2)，收件日期 107 年 07 月 17 日，於 107 年 07 月 21 日至 107 年 08 月 21 日，已在本公司的標準測試場地完成量測。報告中所描述之測試結果和待測設備的架構組合，均根據樣品實際的量測情況作詳實的記錄。

立德桃園分公司依“低功率射頻電機技術規範”、“低功率電波輻射性電機管理辦法”及“電信管制射頻器材審驗辦法”製作測試結果報告。

特 此 證 明 ！

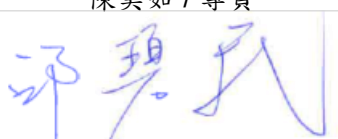
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陳美如 / 專員

， 日 期： 107 年 08 月 30 日

審 核 者：



邱碧民 / 專案工程師

， 日 期： 107 年 08 月 30 日

香港商立德國際商品試驗有限公司桃園分公司

實驗室地址：新北市林口區嘉寶里 14 鄰 47-2 號

此份報告不得摘錄複製，除全份複製外，需經實驗室書面同意。



1 低功率射頻電機量測記錄表

申請廠商：香港商富思股份有限公司台灣分公司

製造廠商：Fossil Group, Inc.

申請廠商地址：106 台北市大安區忠孝東路 4 段 219 號 5 樓

產品名稱：Smart Watch/智慧型手錶

廠牌：FOSSIL

型號：DW9F2

量測單位名稱：香港商立德國際商品試驗有限公司桃園分公司

林口實驗室華亞檢測部

量測單位地址：桃園市龜山區文化里華亞二路 19 號

量測單位認可編號：TAF 2021 (9 kHz ~ 40 GHz)

量測規範：低功率射頻電機技術規範 LP0002

ANSI C63.10-2013

KDB 558074

WLAN 2.4 GHz 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5 節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
3	6 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	合格
4	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2 節	合格
5	功率頻譜密度	低功率射頻電機技術規範 3.10.1.6 節	合格

Bluetooth EDR 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
3	20 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	Note
4	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2 節	合格
5	跳頻頻道數之量測	低功率射頻電機技術規範 3.10.1.6 節	合格
6	跳頻頻道間隔之量測	低功率射頻電機技術規範 3.10.1.6 節	合格
7	每一頻道停留時間之量測	低功率射頻電機技術規範 3.10.1.6 節	合格

Note：此頻寬測試值為跳頻頻道間隔之量測參考值。

Bluetooth LE 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5 節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
3	6 dB 頻寬	低功率射頻電機技術規範 3.10.1.6 節	合格
4	峰值傳導輸出功率	低功率射頻電機技術規範 3.10.1.2 節	合格
5	功率頻譜密度	低功率射頻電機技術規範 3.10.1.6 節	合格

NFC 頻段概要

項次	量測項目	規 範	量測結果判定
1	主波發射	低功率射頻電機技術規範 3.2.1.1 節	合格
1	不必要之發射	低功率射頻電機技術規範 2.8 節, 3.2.1.2 節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
3	天線之要求	低功率射頻電機技術規範 2.2 節	合格
4	頻率容許差度	低功率射頻電機技術規範 3.2.1.3 節	合格

2 一般敘述

2.1 待測設備

產品名稱：	Smart Watch/智慧型手錶	
型號：	DW9F2	
額定電源：	5.0 Vdc (Host equipment or Charging Dock or Adapter) 3.85 Vdc (Battery)	
調變方式：	Wireless LAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	Bluetooth EDR	GFSK, $\pi/4$ -DQPSK, 8DPSK
	Bluetooth LE 4.2	GFSK
	NFC	ASK
傳輸速率：	Wireless LAN	802.11b: 11.0/ 5.5/ 2.0/ 1.0 Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 72.2 Mbps
	Bluetooth EDR	1/ 2/ 3 Mbps
	Bluetooth LE 4.2	1 Mbps
載波頻率：	Wireless LAN	2412 ~ 2472 MHz
	Bluetooth EDR	2402 ~ 2480 MHz
	Bluetooth LE 4.2	2402 ~ 2480 MHz
	NFC	13.56 MHz
頻道數：	Wireless LAN	802.11b, 802.11g, 802.11n (HT20): 13
	Bluetooth EDR	79
	Bluetooth LE 4.2	40
	NFC	1
發射功率：	Wireless LAN	802.11b: 18.89 dBm 802.11g: 19.57 dBm 802.11n (HT20): 19.71 dBm
	Bluetooth EDR	11.26 dBm
	Bluetooth LE 4.2	1.98 dBm
發射功率 (電場強度)：	NFC	60.78 dBuV/m (於 3 公尺距離) (QP)
天線種類：	見註 2	
電源線類別：	N/A	
信號線類別：	見註 3	
配件：	見註 3	

註：

1. 此待測物之技術的種類為1Tx / 1Rx之組合。

Modulation Mode	Tx Function
802.11b	1TX
802.11g	1TX
802.11n (HT20)	1TX

2. 此待測設備搭配測試的天線，其資料如下：

	頻帶 (MHz)	天線型式	天線型號	商標	接頭型式	增益 (dBi)
WLAN	2412 ~ 2472	Loop	N/A	N/A	N/A	-8.26
Bluetooth	2402 ~ 2480				N/A	-8.26
NFC	13.56	Loop	N/A	N/A	N/A	-

3. 此待測設備搭配使用之配件請參閱產品照編號: 180717C21

4. 此報告中，場強輻射量測經過評估後以下列測試模式進行最終量測。

量測項目	發射	接收
2412 ~ 2472 MHz		
1 GHz 以上量測	802.11b: Ch 1, 6, 11, 12, 13 802.11g: Ch 1, 6, 11, 12, 13 802.11n (HT20): Ch 1, 6, 11, 12, 13	802.11n (HT20): Ch 13
其它不必要之訊號	802.11n (HT20): Ch 13	802.11n (HT20): Ch 13
2402 ~ 2480 MHz (Bluetooth EDR)		
1 GHz 以上量測	GFSK: Ch 0, 39, 78 8DPSK: Ch 0, 39, 78	GFSK: Ch 0
其它不必要之訊號	GFSK: Ch 0	GFSK: Ch 0
2402 ~ 2480 MHz (Bluetooth LE 4.2)		
1 GHz 以上量測	Ch 0, 19, 39	Ch 0
其它不必要之訊號	Ch 0	Ch 0
NFC		
主波發射之量測	Ch 1	Ch 1
不必要發射之量測	Ch 1	Ch 1

5. 此報告中傳輸模式，場強輻射量測及電源線傳導干擾量測之外的測試項目，以DSSS調變技術和OFDM調變技術分別進行測試並記錄最終量測結果於報告中。

6. Bluetooth EDR傳輸模式GFSK、 $\pi/4$ -DQPSK及8DPSK皆經過預測試，其中以8DPSK的傳輸模式具有較大干擾雜訊，因此僅以此傳輸模式進行最終量測。

7. Bluetooth LE傳輸模式，場強輻射量測及電源線傳導干擾量測之外的測試項目，以GFSK調變技術進行測試並記錄最終量測結果於報告中。

8. 此報告中，測試模式評估如下

(1) 電源線傳導干擾量測經預掃後以模式4具有較大干擾值，故以其模式進行最終測試。

(2) 場強輻射量測以模式1~4評估完整測試。

模式	測試狀態
1	BT + USB Cable (with charging dock) + Adapter
2	BT LE + USB Cable (with charging dock) + Adapter
3	WLAN (2.4G) + USB Cable (with charging dock) + Adapter
4	NFC + USB Cable (with charging dock) + Adapter

9. 此待測設備，經評估三個正交軸方位評估測試擺設方式：平躺、垂直、側放，其各擺放最大干擾值之位置如下表，故以此擺放方式進行最終量測，並將測試結果紀錄。

	WLAN 2.4 GHz	Bluetooth EDR	Bluetooth LE	NFC
擺放方式	側放	垂直	垂直	垂直

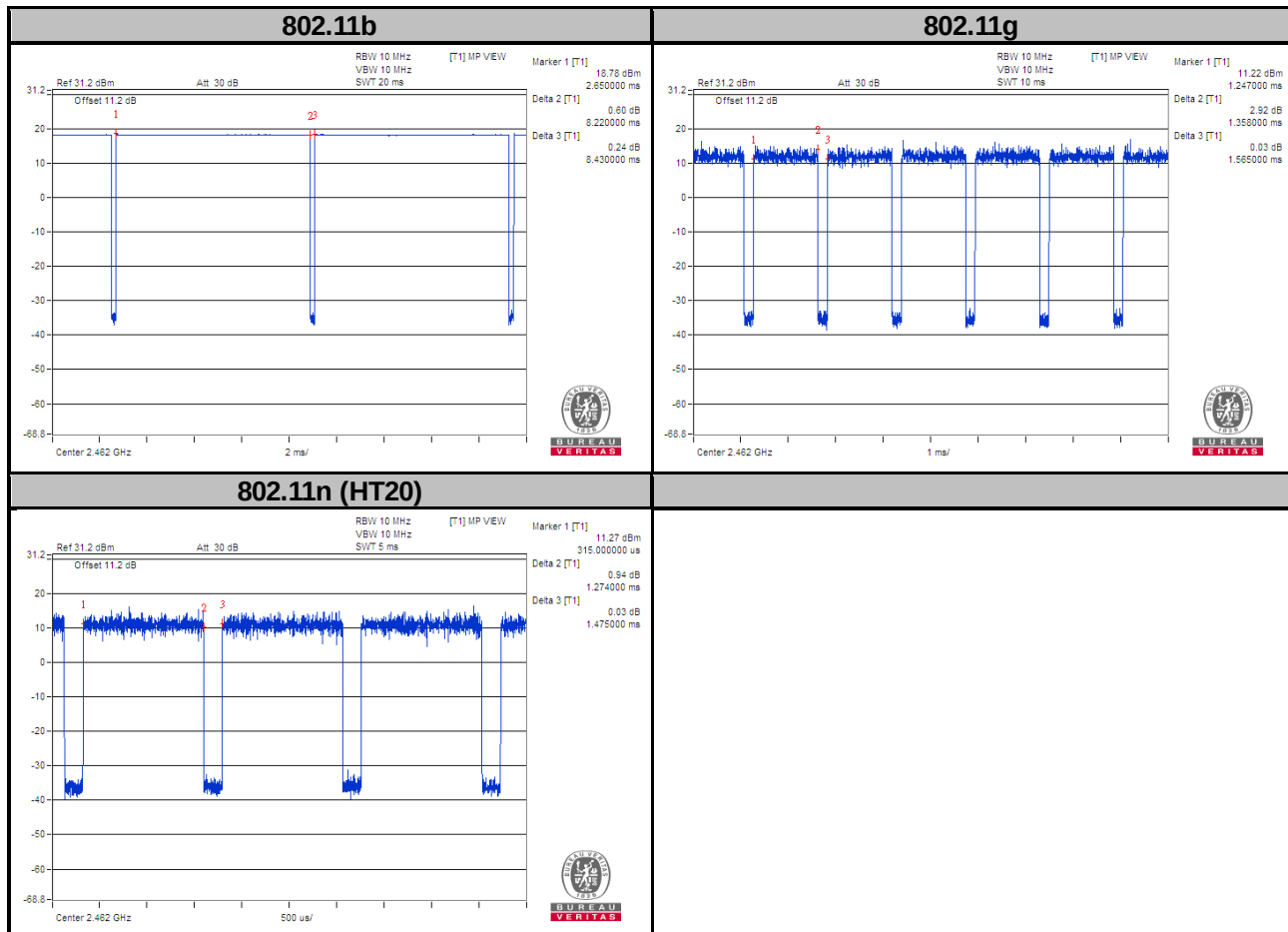
10. Duty cycle of test signal.

2.4 GHz 频段

802.11b: Duty cycle = $8.220/8.430 = 0.975$, Duty factor = $10 * \log(1/0.975) = 0.11$

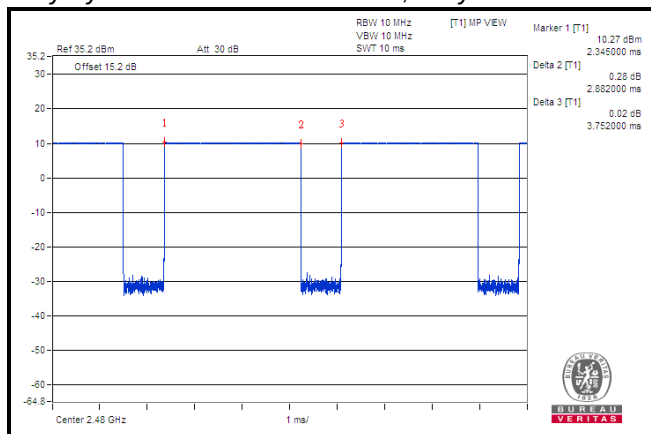
802.11g: Duty cycle = $1.358/1.565 = 0.868$, Duty factor = $10 * \log(1/0.868) = 0.62$

802.11n (HT20): Duty cycle = $1.274/1.475 = 0.864$, Duty factor = $10 * \log(1/0.864) = 0.64$



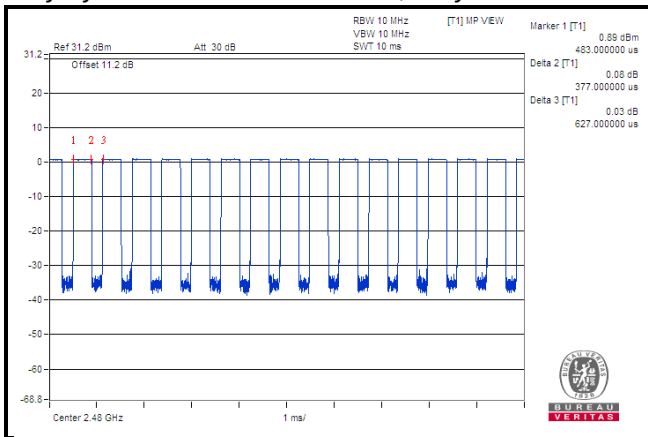
BT EDR 频段

Duty cycle = $2.882/3.752 = 0.768$, Duty factor = $10 * \log(1/0.768) = 1.15$



BT LE 频段

Duty cycle = $0.377/0.627 = 0.601$, Duty factor = $10 * \log(1/0.601) = 2.21$



此裝置各頻道的中心頻率如下：

2.4 GHz 頻段：

802.11b, 802.11g, 802.11n (HT20):

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
01	2412	08	2447
02	2417	09	2452
03	2422	10	2457
04	2427	11	2462
05	2432	12	2467
06	2437	13	2472
07	2442		

Bluetooth EDR 頻段：

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
0	2402	17	2419	34	2436	51	2453	68	2470
1	2403	18	2420	35	2437	52	2454	69	2471
2	2404	19	2421	36	2438	53	2455	70	2472
3	2405	20	2422	37	2439	54	2456	71	2473
4	2406	21	2423	38	2440	55	2457	72	2474
5	2407	22	2424	39	2441	56	2458	73	2475
6	2408	23	2425	40	2442	57	2459	74	2476
7	2409	24	2426	41	2443	58	2460	75	2477
8	2410	25	2427	42	2444	59	2461	76	2478
9	2411	26	2428	43	2445	60	2462	77	2479
10	2412	27	2429	44	2446	61	2463	78	2480
11	2413	28	2430	45	2447	62	2464		
12	2414	29	2431	46	2448	63	2465		
13	2415	30	2432	47	2449	64	2466		
14	2416	31	2433	48	2450	65	2467		
15	2417	32	2434	49	2451	66	2468		
16	2418	33	2435	50	2452	67	2469		

Bluetooth LE 頻段：

頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)	頻道	對應頻率 (MHz)
0	2402	8	2418	16	2434	24	2450	32	2466
1	2404	9	2420	17	2436	25	2452	33	2468
2	2406	10	2422	18	2438	26	2454	34	2470
3	2408	11	2424	19	2440	27	2456	35	2472
4	2410	12	2426	20	2442	28	2458	36	2474
5	2412	13	2428	21	2444	29	2460	37	2476
6	2414	14	2430	22	2446	30	2462	38	2478
7	2416	15	2432	23	2448	31	2464	39	2480

NFC 頻段：

頻道	對應頻率 (MHz)
1	13.56

詳細之規格請參考使用說明書。

2.2 輔助測試之週邊設備描述

待測設備於受測時均接上其所屬的配件或一般用途之相關設備；下列輔助設備或配件測試中所使用的配備，以形成一個代表待測物實際運作的受測系統。

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Adapter	HTC	TC U250	N/A	N/A

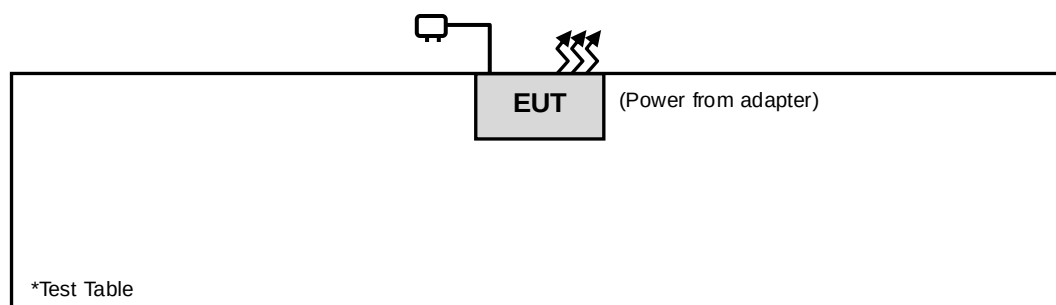
No.	Signal Cable Description Of The Above Support Units
1.	1m shielded cable

Note:

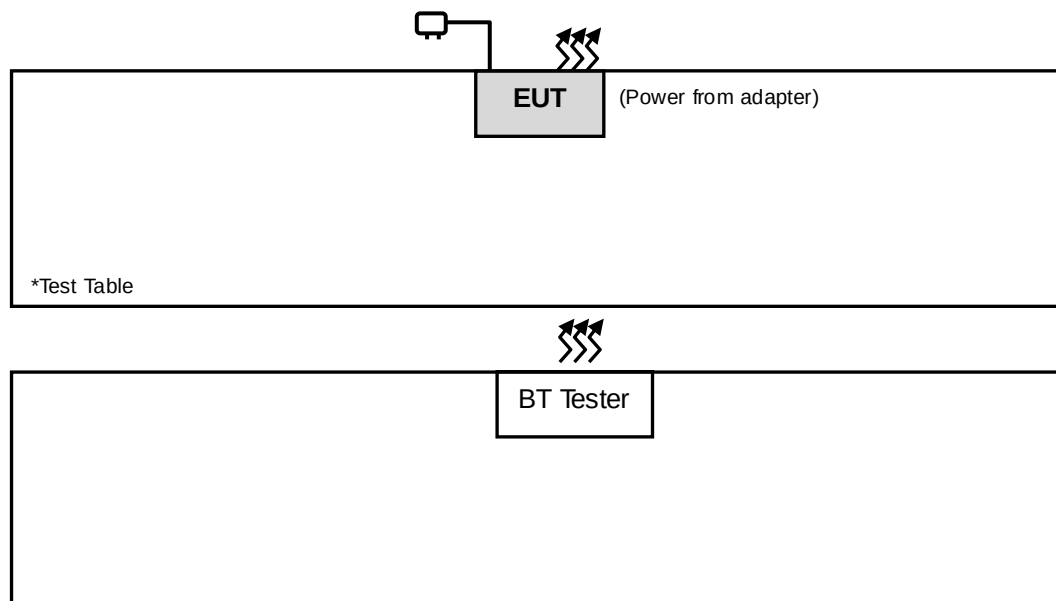
- All power cords of the above support units are non-shielded (1.8m).

2.3 測試架構圖

<WLAN & Bluetooth LE & NFC>



<Bluetooth EDR>



3 適用規範

3.1 規範要求

► Bluetooth LE 頻段部分：

(1) 傳導之規定

依據國家通訊傳播委員會低功率射頻電機技術規範之 2.3 節，電源傳導干擾之限制要求如下：

頻率 (MHz)	傳導限制值 (dBuV)	
	準峰值 (Quasi-peak)	平均值 (Average)
0.15-0.5	66-56 (註)	56-46 (註)
0.5-5	56	46
5-30	60	50

(註)：隨頻率之對數遞減。

(2) 帶外發射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.5 節之要求，操作頻帶範圍外之任意 100 kHz 內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 kHz 內的射頻功率，其衰減值限制如下：(1) 輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減 20 dB，可使用射頻傳導或輻射方式測量。(2) 輸出功率以 3.10.1.2(1)(C)之最大傳導輸出功率測量方式者，至少須衰減 30 dB。此外，落於 2.7 禁用頻段之輻射發射，應符合 2.8 之規定。

頻率 (兆赫)	電場強度 (微伏/公尺)	測距 (公尺)
0.009 - 0.490 (含)	2,400/頻率 (千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率 (千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含) - 216 (含)	150	3
216 (不含) - 960 (含)	200	3
960 (不含) 以上	500	3

(3) 天線之規定

天線規格不受第 2.2 節規定之限制。

(4) 天線增益之要求

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1 節 (3) 之規定如下：

- (A) 進行固定式點對點操作時，其發射天線之方向性增益超過 6 dBi，每超過 3 dBi，最大傳導輸出功率限制值應降低 1 dB。
- (B) 天線以多向波束發射方式 (含同時發射或循序發射) 將訊號導向多個接收機或接收機群組時，應符合下列規定：
- (a) 非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合 3.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過 6 dBi，每超過 3 dBi，總和傳導輸出功率限制值應降低 1 dB。方向性增益值應計算如下：
- (i) 方向性增益值 = $10\log(\text{天線陣列之單元數目}) + \text{各單元中最高之方向性增益值}$ 。
- (ii) 天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於 (i) 計算數值。
- (b) 同時發射多向波束於相同或不同頻道者，其每一波束功率應符合 (a) 之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合 (a) 之限制值。同時發射的所有波束總和傳導輸出功率不大於 (a) 總和傳導輸出功率限制值加 8 dB。方向性增益值計算同 (a)。

(c) 發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

除(A)及(B)外，使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率限制值。

(5) 6 dB 頻寬之要求

對使用數位調變技術(digital modulation techniques)系統之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，6 dB 頻寬至少應有 500 kHz。

(6) 峰值傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節之規定：

數位調變技術系統：1 W(含)以下。

(7) 功率頻譜密度之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，在使用頻率範圍之任一 3 kHz 頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於 8 毫分貝(dBm)，且應依 3.10.1.3 之方式降低功率頻譜密度限制值。

►WLAN 頻段部分：

(8) 傳導之規定

依據國家通訊傳播委員會低功率射頻電機技術規範之 2.3 節，電源傳導干擾之限制要求如下：

頻率 (MHz)	傳導限制值 (dBuV)	
	準峰值 (Quasi-peak)	平均值 (Average)
0.15-0.5	66-56 (註)	56-46 (註)
0.5-5	56	46
5-30	60	50

(註)：隨頻率之對數遞減。

(9) 帶外發射之規定

(1) 操作於 2.4000~2.4835 GHz band:

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.5 節之要求，操作頻帶範圍外之任意 100 kHz 內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 kHz 內的射頻功率，其衰減值限制如下：(1) 輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減 20 dB，可使用射頻傳導或輻射方式測量。(2) 輸出功率以 3.10.1.2(1)(C)之最大傳導輸出功率測量方式者，至少須衰減 30 dB。

(2) 操作於 5.15~5.35 GHz 及 5.470~5.725 GHz 頻段：

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.1 節之要求，帶外發射之有效等向輻射功率 (EIRP) $\leq$ -27 dBm/MHz。

(3) 操作於 5.725~5.850 GHz 頻段：

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.4.2 節之要求，所有頻帶邊緣向外 5 MHz 內頻率之發射，有效等向輻射功率 (EIRP) $\leq$ 27 dBm/MHz~-15.6 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣向外 5 MHz~25 MHz，有效等向輻射功率 35 (EIRP) $\leq$ 15.6 dBm/MHz~-10 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 25 MHz~75 MHz，有效等向輻射功率 (EIRP) $\leq$ 10 dBm/MHz~-27 dBm/MHz (以線性法計算對應之限制值)；所有頻帶邊緣外 $\geq$ 75 MHz 的頻率之發射，有效等向輻射功率 (EIRP) $\leq$ -27 dBm/MHz；有關遮罩限制值詳圖 1。

在 5.725~5.850 GHz 頻段操作且天線增益大於 10 dBi 之設備於 106 年 3 月 2 日前得適用 3.10.1.5 帶外發射限制；在 5.725~5.850 GHz 頻段操作且天線增益小於等於 10 dBi 之設備於 107 年 3 月 2 日前得適用 3.10.1.5 帶外發射限制規定。

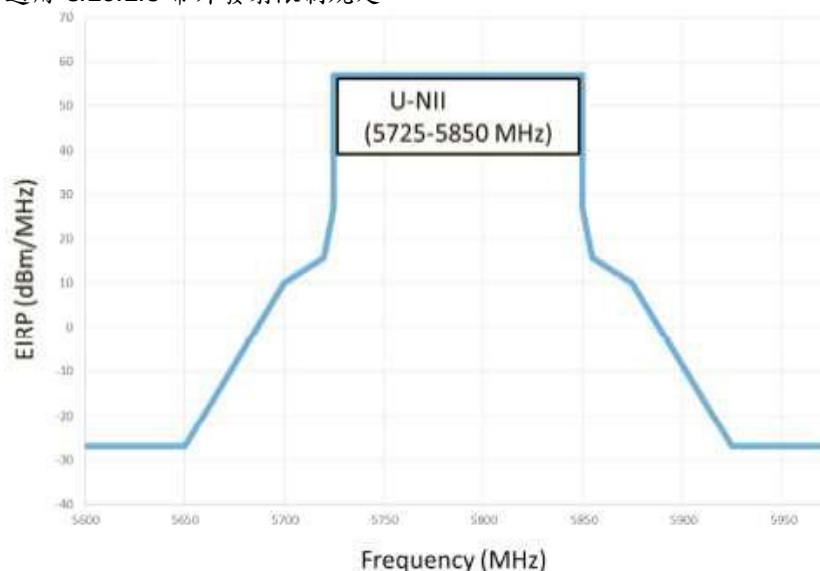


圖 1

在 1 GHz 以下不必要之發射，應符合 2.8 之規定。此外，落於 2.7 禁用頻段之輻射發射，應符合 2.8 之規定。

頻率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490 (含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

(10) 天線之規定

天線規格不受第 2.2 節規定之限制。

(11) 天線增益之要求

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.3 節及 4.7.3 節之規定如下：

(1) 操作於 2.400~2.4835 GHz 頻段：

- (A) 進行固定式點對點操作時，其發射天線之方向性增益超過 6 dBi，每超過 3 dBi，最大傳導輸出功率限制值應降低 1 dB。
- (B) 天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：
 - (a) 非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合 3.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過 6 dBi，每超過 3 dBi，總和傳導輸出功率限制值應降低 1 dB。方向性增益值應計算如下：
 - (i) 方向性增益值 = $10\log(\text{天線陣列之單元數目}) + \text{各單元中最高之方向性增益值}$ 。
 - (ii) 天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。
 - (b) 同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a) 總和傳導輸出功率限制值加 8 dB。方向性增益值計算同(a)。
 - (c) 發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

除(A)及(B)外，使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率限制值。

(2) 操作於 5.15~5.25 GHz 頻段：

- (A) 供戶外操作使用：使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。在水平面仰角超過 30 度時，其最大 EIRP 應小於或等於 21 dBm。
- (B) 供室內操作使用：使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。
- (C) 供固定式點對點操作使用：使用超過 23 dBi 方向增益之指向性天線時，應依超過 23 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。固定式點對點操作，不包括點對多點系統、全方向性應用及多台共站發射機傳送相同資訊。
- (D) 供用戶端裝置(Client Device)操作使用：使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

(3) 操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段：

使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

(4) 操作於 5.725~5.850 GHz 頻段：

- (A) 供固定式點對點操作時，使用方向增益超過 6 dBi 之發射天線，可不需對應減少發射器之傳導輸出功率限制值。
- (B) 除(A)外，使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率及最大功率頻譜密度。

(12) 6 dB 頻寬之要求

(1) 操作於 2.400~2.4835 GHz 頻段：

對使用數位調變技術(digital modulation techniques)系統之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，6 dB 頻寬至少應有 500 kHz。

(2) 操作於 5.725~5.850 GHz 頻段：

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.5 節之規定，其 6 dB 頻寬至少應有 500 kHz。

(13) 傳導輸出功率之要求

(1) 操作於 2.4000~2.4835 GHz band:

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節之規定：

數位調變技術系統：1 W(含)以下。

(2) 操作於 5.15~5.25 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.1 節之要求:

(A) 供戶外操作使用/供室內操作使用/供固定式點對點操作使用：最大傳導輸出功率應小於或等於 1 W。

(B) 供用戶端裝置(Client Device)操作使用：最大傳導輸出功率應小於或等於 250 mW。

(3) 操作於 5.25~5.35 GHz 及 5.470~5.725 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.2 節之規定，最大傳導輸出功率應小於或等於 250 mW 或 11 dBm+10log B (B 是 26 dB 發射頻寬，單位 MHz)之較小者。

(4) 操作於 5.725~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.3 節之規定，最大傳導輸出功率應小於或等於 1 W。

(14) 功率頻譜密度之要求

(1) 操作於 2.4000~2.4835 GHz band:

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，在使用頻率範圍之任一 3 kHz 頻寬內，由發射機傳導至天線之功率頻譜密度在任意傳輸期間內，皆小於或等於 8 毫分貝(dBm)，且應依 3.10.1.3 之方式降低功率頻譜密度限制值。

(2) 操作於 5.15~5.25 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.1 節之要求:

(A) 供戶外操作使用/供室內操作使用/供固定式點對點操作使用：在任何 1 MHz 頻帶中最大功率頻譜密度應小於或等於 17 dBm。

(B) 供用戶端裝置(Client Device)操作使用：在任何 1 MHz 頻帶中最大功率頻譜密度應小於或等於 11 dBm。

(3) 操作於 5.25~5.35 GHz 及 5.470~5.725 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.2 節之規定，最大功率頻譜密度在任何 1 MHz 頻帶中應小於或等於 11 dBm。

(4) 操作於 5.725 GHz~5.850 GHz 頻段:

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.3.3 節之規定，在任何 500 kHz 頻帶中最大功率頻譜密度應小於或等於 30 dBm。

(15) 發射功率控制(TPC)及動態頻率選擇(DFS)之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.1 及 4.7.7.2 節之規定。

發射功率控制(TPC):操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段的設備，應具備發射功率控制功能。

設備必須至少具有 6 dB 低於平均 EIRP 30 dBm 的能力。EIRP 低於 500 mW 之系統不須具備 TPC 功能。

動態頻率選擇(DFS)：操作於 5.25~5.35 GHz 與 5.470~5.725 GHz 頻段之設備應具備動態頻率選擇雷達偵測功能並啟動之，以完整偵測使用頻帶內之雷達訊號，避免與雷達系統同頻道操作。相關規定如下：

(1) 最低動態頻率選擇的偵測門檻

- (A) 最大 EIRP 為 200 mW~1 W 之設備，其最低動態頻率選擇的偵測門檻值為-64 dBm。
- (B) 最大 EIRP 低於 200 mW，且功率頻譜密度小於 10 dBm/MHz 之設備，其最低動態頻率選擇的偵測門檻值為-62 dBm。
- (C) 最大 EIRP 低於 200 mW，且功率頻譜密度大於或等於 10 dBm/MHz 之設備，其最低動態頻率選擇的偵測門檻值為-64 dBm。
- (D) 此偵測門檻值為 1 微秒內之平均接收功率，並以 0 dBi 天線為參考基準。頻道初始設定得由系統隨機選取或使用者手動選取。

(2) 操作模式：動態頻率選擇之規定適用於以下之操作模式：

- (A) 頻道可用性檢查時間之規定，適用於主控運作模式。
- (B) 頻道移動時間之規定，適用於主控及受控運作模式。

(3) 頻道可用性檢查時間：設備必須檢查其可在某一頻道上起始傳送之前是否有雷達系統已經操作在該頻道上，以及何時其必須移動到另一新的頻道，在 60 秒內若沒有偵測到功率位準大過上述之干擾門檻值的雷達訊號時，設備才可開始使用該頻道。

(4) 頻道移動時間：在偵測到雷達的存在後，所有在該操作頻道上的所有傳輸須在 10 秒內停止，在偵測到雷達訊號後，該期間內的傳輸應維持最多 200 毫秒的正常通訊。另外，間歇性的管理與控制訊號可在剩餘的時間中傳送，以便撤離該操作頻道。

(5) 不可佔用期間：某一頻道已被頻道可用性檢查或"服務中"監視顯示含有雷達系統，至少須有 30 分鐘的不可佔用期間。不可佔用期間起始於偵測到雷達系統的當時。

(16) 無線資訊傳輸設備必須擁有安全功能之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.3 節之規定，無線資訊傳輸設備必須擁有安全功能，以保護未經授權之一方更改軟體。製造商應提出符合本節規定之相關證明文件或符合性聲明。

(17) 依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.4 節之規定，製造商必須在操作於 U-NII 頻段上之數位調變系統中提供安全功能，使第三方團體無法重寫程式，使其操作於非經認證之設定。該軟體必須避免發射機操作於非經認證之頻率、輸出功率、調變形式或其他射頻參數。製造商可使用私有網路，只有經授權的用戶能下載軟體、進行軟體式電子簽章或硬體式的韌體更新，新的軟體可以被合法的載入到設備中，同時又能符合上述事項，並於應用程式中描述設備授權的方法。

(18) 依據國家通訊傳播委員會低功率射頻電機技術規範 4.7.7.5 節之規定，製造商必須確保 DFS 功能無法被無線資訊傳輸設備之操作者取消。

► Bluetooth EDR 頻段部分：

(19) 傳導之規定

依據國家通訊傳播委員會低功率射頻電機技術規範之 2.3 節，電源傳導干擾之限制要求如下：

頻率(MHz)	傳導限制值 (dBuV)	
	準峰值(Quasi-peak)	平均值(Average)
0.15-0.5	66-56 (註)	56-46 (註)
0.5-5	56	46
5-30	60	50

(註)：隨頻率之對數遞減。

(20) 帶外發射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.5 節之要求，操作頻帶範圍外之任意 100 kHz 內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 kHz 內的射頻功率，其衰減值限制如下：(1) 輸出功率以附件二之峰值輸出功率方式測量者，至少須衰減 20 dB，可使用射頻傳導或輻射方式測量。(2) 輸出功率以 3.10.1.2(1)(C)之最大傳導輸出功率測量方式者，至少須衰減 30 dB。此外，落於 2.7 禁用頻段之輻射發射，應符合 2.8 之規定。

頻率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490 (含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

(21) 天線之規定

天線規格不受第 2.2 節規定之限制。

(22) 天線增益之要求

低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.3 節之規定如下：

(A) 進行固定式點對點操作時，其發射天線之方向性增益超過 6 dBi，每超過 3 dBi，最大傳導輸出功率限制值應降低 1 dB。

(B) 天線以多向波束發射方式(含同時發射或循序發射)將訊號導向多個接收機或接收機群組時，應符合下列規定：

(a) 非同時發射多向波束者，所有載波或頻道傳輸至所有天線陣列或陣列群之總和傳導輸出功率應符合 3.10.1.2 之功率限制值。如天線/天線陣列群之方向性增益超過 6 dBi，每超過 3 dBi，總和傳導輸出功率限制值應降低 1 dB。方向性增益值應計算如下：

(i) 方向性增益值 = $10\log(\text{天線陣列之單元數目}) + \text{各單元中最高之方向性增益值}$ 。

(ii) 天線陣列間之遮蔽效應或波束干涉損失能充分佐證時，方向性增益得低於(i)計算數值。

(b) 同時發射多向波束於相同或不同頻道者，其每一波束功率應符合(a)之功率限制值。如發射波束有重疊現象，功率應降低，以確保總和傳導輸出功率符合(a)之限制值。同時發射的所有波束總和傳導輸出功率不大於(a)總和傳導輸出功率限制值加 8 dB。方向性增益值計算同(a)。

(c) 發射機之天線具備單向波束功能者，應符合(1)(A)及(3)後段之規定。

除(A)及(B)外，使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率限制值。

(23) 峰值傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節之規定：

操作於 2400 MHz~2483.5 MHz 者

(a) 至少使用 75 個跳頻頻道之跳頻系統：1 W(含)以下。

(b) 除(a)外，依 3.10.1.6 (1)(A)(a)之跳頻系統：0.125 W(含)以下。

(c) 數位調變技術系統：1 W(含)以下。

除使用附件二之峰值輸出功率測量方式外，並得使用以最大傳導輸出功率(Maximum Conducted Output Power)作為測量方式。

(24) 跳頻頻道數之量測

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，操作於 2400-2483.5 MHz 之展頻跳頻系統，須使用至少 15 個無重疊的頻道。應使用智慧型跳頻技術，以避免占用於特定跳頻頻道。

(25) 跳頻頻道間隔之量測

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，跳頻系統之載波頻率頻道間隔應大於或等於 25 kHz 或跳頻頻道之 20 dB 頻寬，兩者取較寬者。但操作頻率為 2400 MHz~2483.5 MHz 頻段且輸出功率應小於或等於 125 mW 跳頻系統，其載波頻率頻道間隔不得小於 25 kHz 或跳頻頻道 20 dB 頻寬之三分之二，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。系統接收機應具有與發射機跳躍頻道頻寬相匹配之輸入頻寬，且應隨所發射之訊號同步偏移接收頻率。

(26) 每一頻道停留時間之量測

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之規定，操作於 2400 MHz~2483.5 MHz 之展頻跳頻系統，須使用至少 15 個無重疊的頻道，在 0.4 秒乘以跳頻頻道數之週期內，任一頻率占用之平均時間應小於或等於 0.4 秒。應使用智慧型跳頻技術，以避免占用於特定跳頻頻道。

► NFC 頻段部分：

(27) 傳導之規定

依據國家通訊傳播委員會低功率射頻電機技術規範之 2.3 節，電源傳導干擾之限制要求如下：

頻率(MHz)	傳導限制值 (dBuV)	
	準峰值(Quasi-peak)	平均值(Average)
0.15-0.5	66-56 (註)	56-46 (註)
0.5-5	56	46
5-30	60	50

(註)：隨頻率之對數遞減。

(28) 主波發射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.2.1.1 節之要求，距器材 30 公尺處之主波電場強度應小於或等於 15848 uV/m。

(29) 不必要之發射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.2.1.2 節之要求，應符合第 2.8 節之規定：

頻率(兆赫)	電場強度(微伏/公尺)	測距(公尺)
0.009 - 0.490 (含)	2,400/頻率(千赫)	300
0.490 (不含) - 1.705 (含)	24,000/頻率(千赫)	30
1.705 (不含) - 30 (不含)	30	30
30 (含) - 88 (含)	100	3
88 (不含) - 216 (含)	150	3
216 (不含) - 960 (含)	200	3
960 (不含)以上	500	3

(30) 頻率容許差度之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 3.2.1.3 節之要求，應維持在主波頻率之 $\pm 0.01\%$ 以內。在正常供應電壓下，溫度在攝氏零下二十度至攝氏五十度間變化；及在攝氏二十度下，供應電壓在額定值之 $\pm 15\%$ 內變化時。以電池作業者，應以新電池測試，須符合第 5.18 節之規定。

(31) 天線之規定

低功率射頻電機之發射機或收發信機所使用之天線，除本規範章節中另有規定外，應為全固定、半固定式或以獨特之耦合(unique coupling)方式連接機體。製造者可設計供使用者因損壞而替換之天線，但不得設計或使用原認證以外之天線或可供引接各類電纜之標準天線插座或電氣連接頭，如：BNC、F type、N type、M type、UG type、RCA、SMA、SMB...等及其他各類工業或通訊標準接頭。

3.2 限制使用之頻帶

除本規範另有規定外，任何低功率射頻電機之主波皆不得使用下表所列各頻段之頻率；低功率射頻電機落於下表所列頻段之混附發射，其電場強度必須符合 2.8 之限制規定。

頻率(兆赫)	頻率(兆赫)	頻率(兆赫)
0.090~0.110	240.00~285.00	3332.0~3339.0
0.490~0.510	322.00~335.40	3345.8~3358.0
2.172~2.198	399.90~410.00	3500.0~4400.0
3.013~3.033	485.00~510.00	4500.0~5250.0
4.115~4.198	608.00~614.00	5350.0~5460.0
5.670~5.690	703.00~748.00	7250.0~7750.0
6.200~6.300	758.00~803.00	8025.0~8500.0
8.230~8.400	825.00~915.00	9000.0~9200.0
12.265~12.600	930.00~1240.0	9300.0~9500.0
13.340~13.430	1300.0~1427.0	10600~12700
14.965~15.020	1435.0~1626.5	13250~13400
16.700~16.755	1660.0~1785.0	14470~14500
19.965~20.020	1805.0~1880.0	15350~16200
25.500~25.700	1885.0~1900.0	17700~21400
37.475~38.275	1905.0~1985.0	22010~23120
73.500~75.400	2010.0~2025.0	23600~24000
108.00~138.00	2110.0~2170.0	31200~31800
149.90~150.05	2200.0~2300.0	36430~36500
156.70~156.90	2310.0~2390.0	38600 以上
162.01~167.17	2483.5~2900.0	
167.72~173.20	3260.0~3267.0	

2.4 GHz 頻段測試紀錄結果

4 帶外發射之量測

4.1 適用標準

請見本報告 3.1 節第(9)的規定。

4.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average

802.11b 為 RBW = 1 MHz, VBW = 300 Hz

802.11g 為 RBW = 1 MHz, VBW = 1 kHz

802.11n (HT20) 為 RBW = 1 MHz, VBW = 1 kHz

接收諧波：

Below 1 GHz

Peak 為 RBW = 120 kHz, VBW = 300 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

Above 1 GHz:

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 10 Hz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

4.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-S MS-100-SMS-120+RF C-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 30, 2018
Bluetooth Tester	CBT	100980	Jul. 28, 2017	Jul. 27, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000 (140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

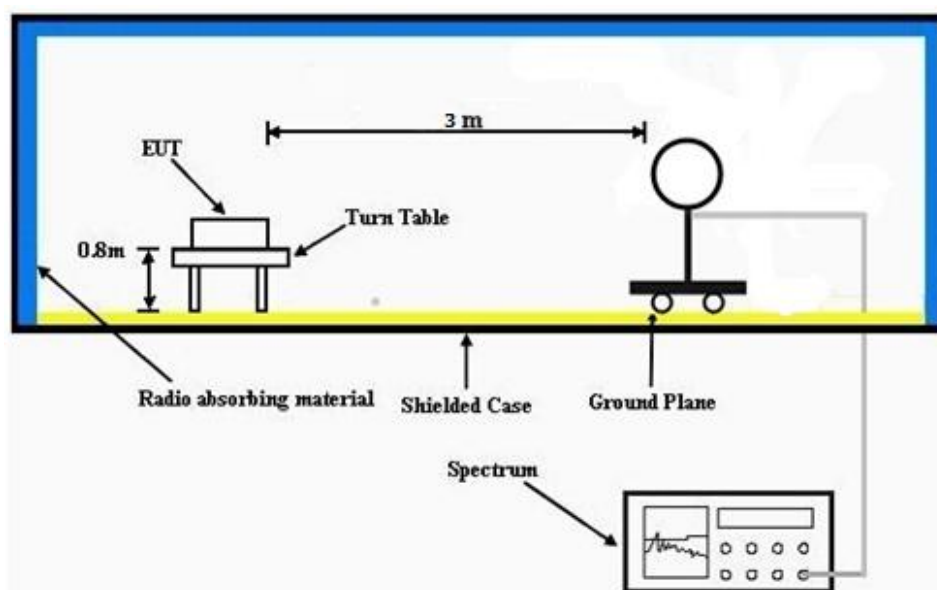
NOTE:

1. The calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC7450F-10.
6. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

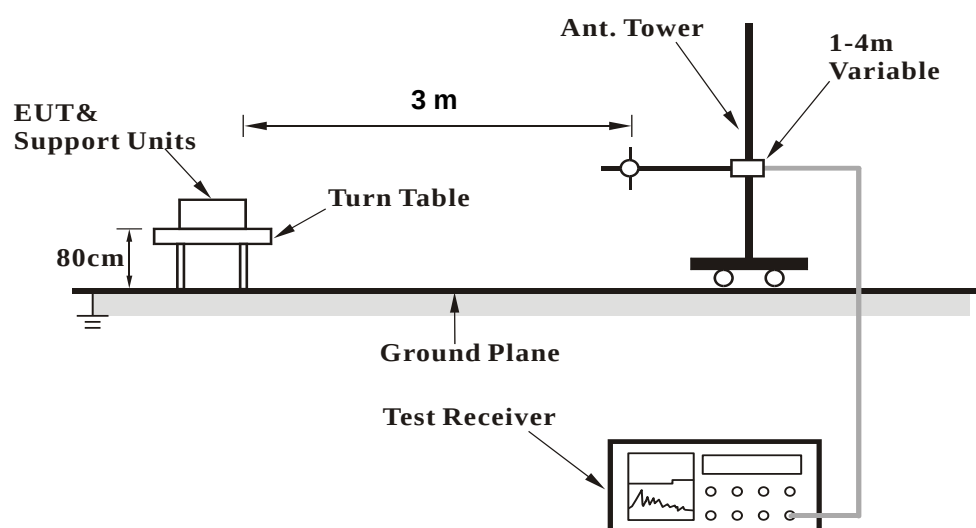
Measurement	Frequency	Uncertainty
Radiated emissions	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

4.4 測試配置

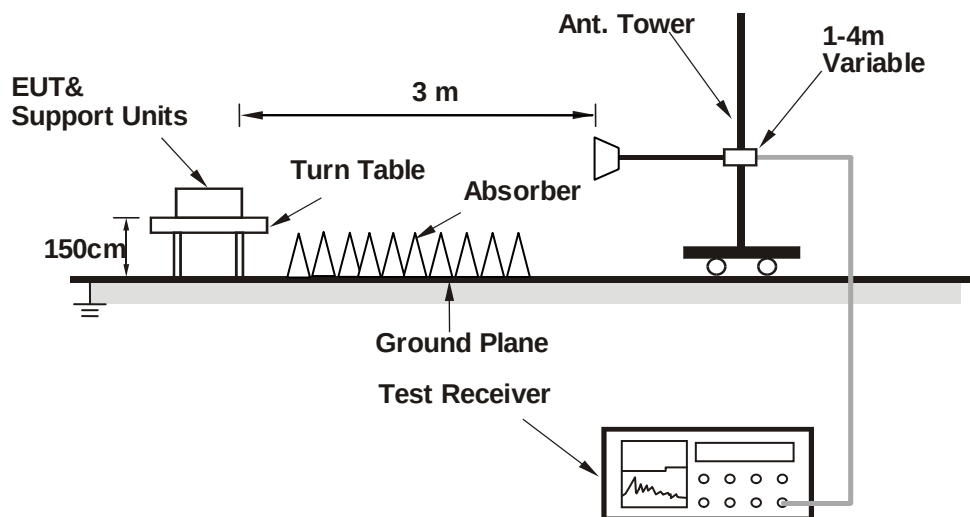
<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range below 1 GHz>



<Frequency Range above 1 GHz>



4.5 場強度之計算

場強之計算公式如下：

結果值 Emission level (dBuV/m) = 機器讀值 Raw Value (dBuV) + 校正因子 Correction Factor (dB/m)

餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m) - 限制值 Limit value (dBuV/m)

量測結果請見下頁。

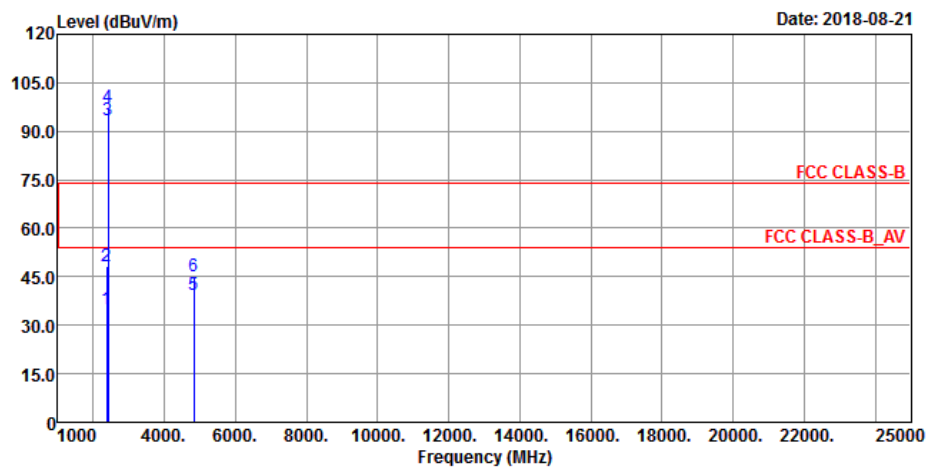
4.6 量測結果

4.6.1 發射諧波

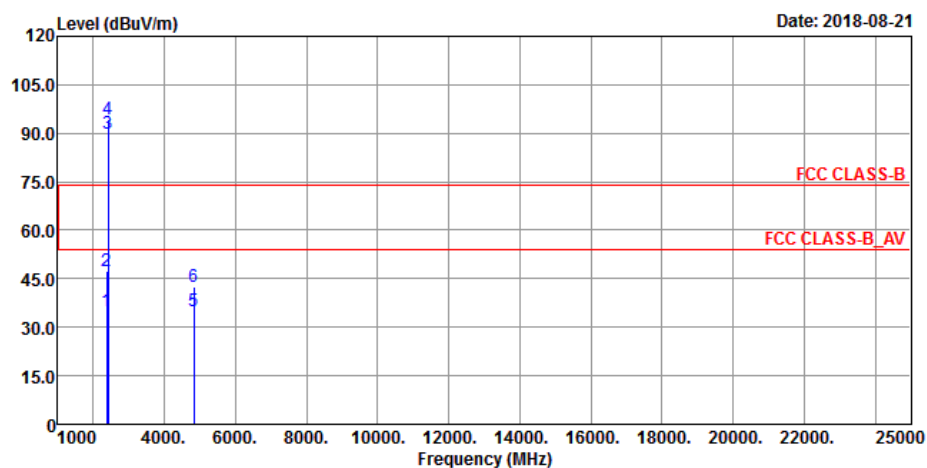
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



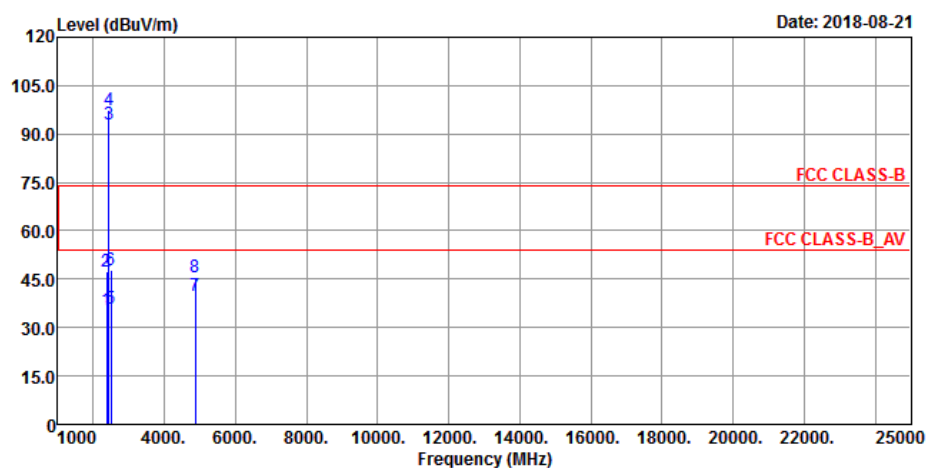
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2381.66	35.19	41.26	54	-18.81	27.08	4.35	37.5	159	233	Average
2381.66	48.06	54.13	74	-25.94	27.08	4.35	37.5	159	233	Peak
2412	93.28	99.19			27.23	4.38	37.52	159	233	Average
2412	97.28	103.19			27.23	4.38	37.52	159	233	Peak
4824	39.27	54.89	54	-14.73	31.17	6.1	52.89	122	311	Average
4824	45.13	60.75	74	-28.87	31.17	6.1	52.89	122	311	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2371.8	35.18	41.17	54	-18.82	27.16	4.35	37.5	161	170	Average
2371.8	47.26	69.71	74	-26.74	27.08	4.34	53.87	161	170	Peak
2412	90.08	95.99			27.23	4.38	37.52	161	170	Average
2412	94.24	100.15			27.23	4.38	37.52	161	170	Peak
4824	35.16	50.78	54	-18.84	31.17	6.1	52.89	138	79	Average
4824	42.31	57.93	74	-31.69	31.17	6.1	52.89	138	79	Peak

Remarks:

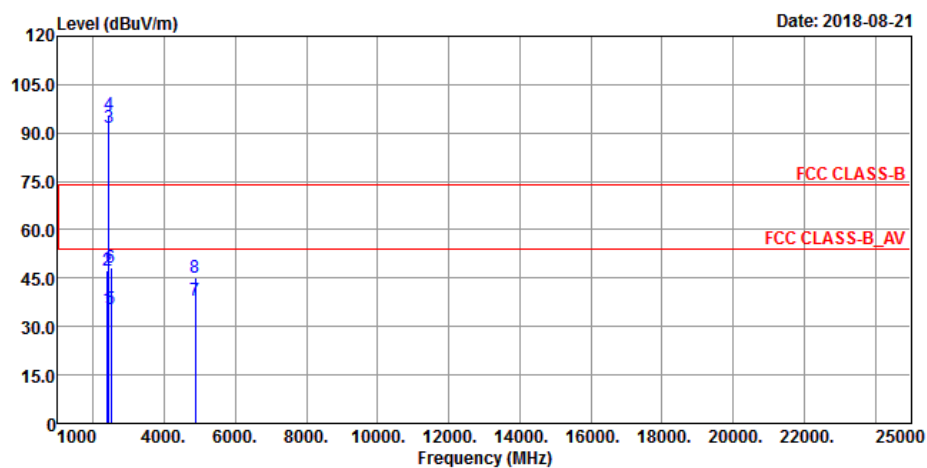
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2380.01	35.33	41.4	54	-18.67	27.08	4.35	37.5	176	126	Average
2380.01	47.31	53.38	74	-26.69	27.08	4.35	37.5	176	126	Peak
2437	92.93	98.61			27.38	4.4	37.46	176	126	Average
2437	97.3	102.98			27.38	4.4	37.46	176	126	Peak
2494.86	35.68	40.89	54	-18.32	27.61	4.43	37.25	176	126	Average
2494.86	47.83	53.04	74	-26.17	27.61	4.43	37.25	176	126	Peak
4874	39.98	55.44	54	-14.02	31.25	6.15	52.86	161	227	Average
4874	45.43	60.89	74	-28.57	31.25	6.15	52.86	161	227	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

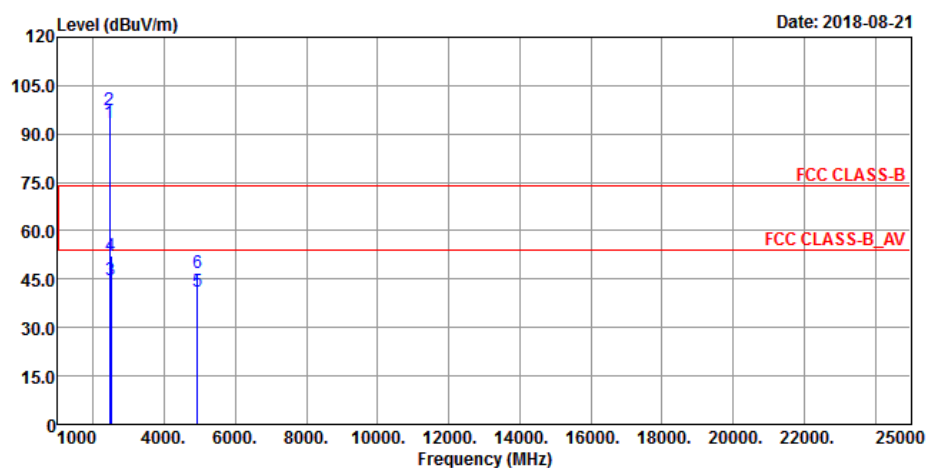
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.66	35.3	41.37	54	-18.7	27.08	4.35	37.5	142	241	Average
2387.66	47.17	53.24	74	-26.83	27.08	4.35	37.5	142	241	Peak
2437	91.83	97.51			27.38	4.4	37.46	142	241	Average
2437	95.72	101.4			27.38	4.4	37.46	142	241	Peak
2493.04	35.49	40.77	54	-18.51	27.61	4.43	37.32	142	241	Average
2493.04	48.4	53.68	74	-25.6	27.61	4.43	37.32	142	241	Peak
4874	38.26	53.01	54	-15.74	31.25	6.86	52.86	164	55	Average
4874	45.09	59.84	74	-28.91	31.25	6.86	52.86	164	55	Peak

Remarks:

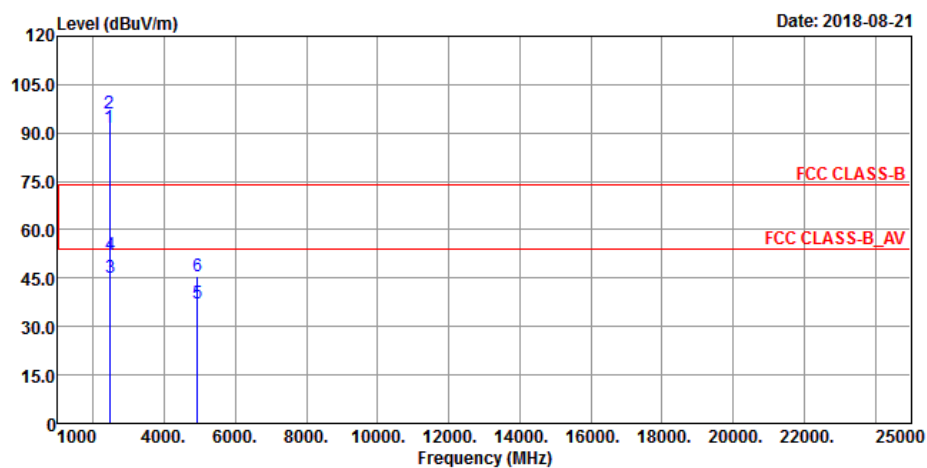
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



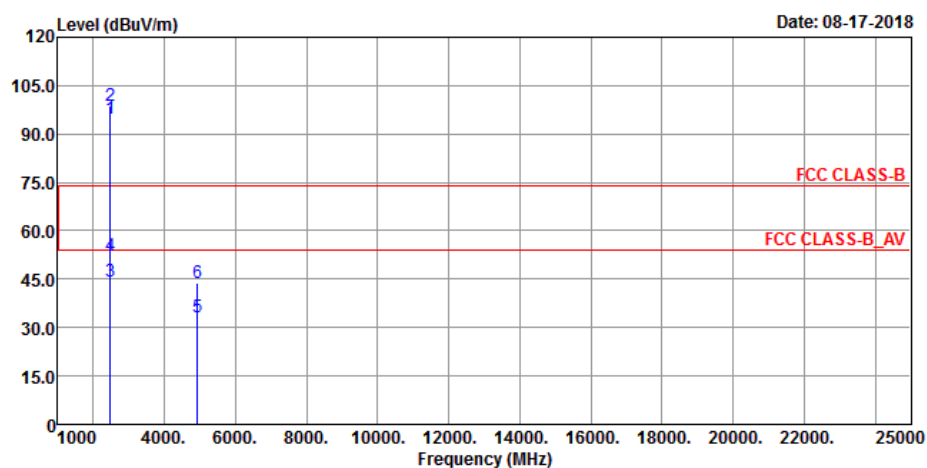
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	93.37	98.89			27.46	4.41	37.39	149	195	Average
2462	97.23	102.75			27.46	4.41	37.39	149	195	Peak
2488.69	44.7	50.06	54	-9.3	27.53	4.43	37.32	149	195	Average
2488.69	52.39	57.75	74	-21.61	27.53	4.43	37.32	149	195	Peak
4924	41.03	55.69	54	-12.97	31.34	6.89	52.89	147	113	Average
4924	46.82	61.48	74	-27.18	31.34	6.89	52.89	147	113	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	91.72	97.24			27.46	4.41	37.39	137	12	Average
2462	95.88	101.4			27.46	4.41	37.39	137	12	Peak
2483.66	45.19	50.47	54	-8.81	27.61	4.43	37.32	137	12	Average
2483.66	52.38	57.74	74	-21.62	27.53	4.43	37.32	137	12	Peak
4924	36.98	51.64	54	-17.02	31.34	6.89	52.89	113	164	Average
4924	45.51	60.17	74	-28.49	31.34	6.89	52.89	113	164	Peak

Remarks:

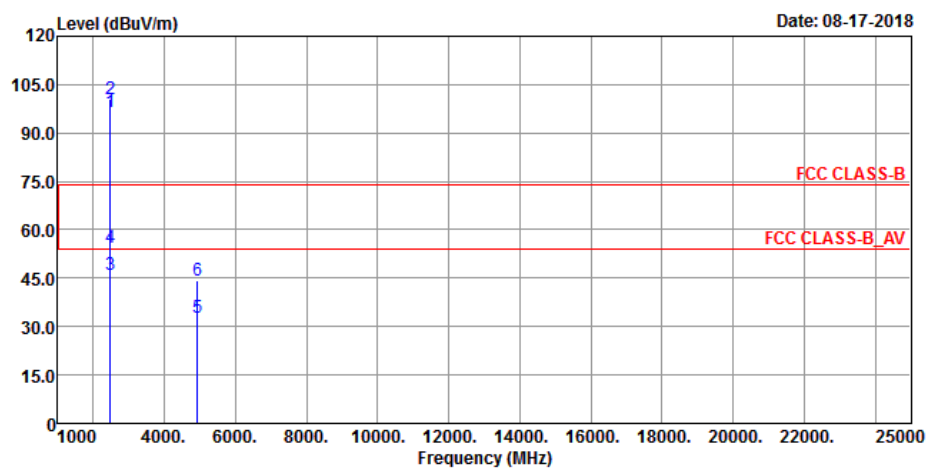
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



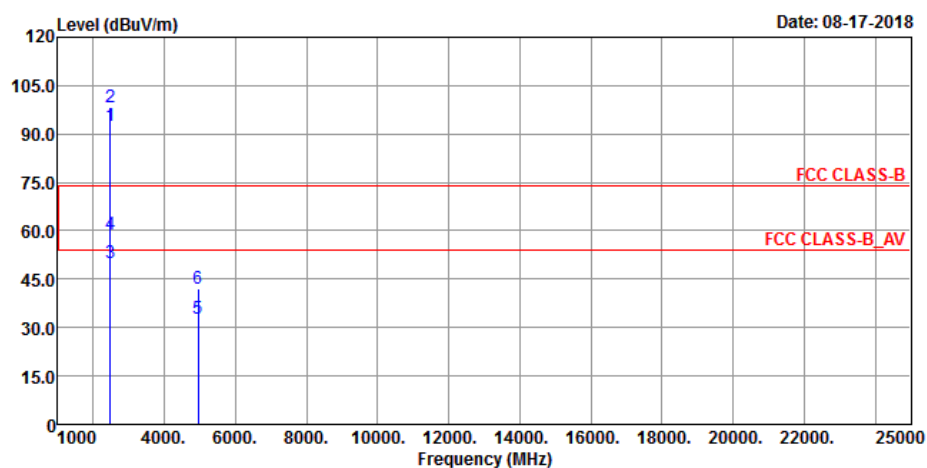
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	94.67	100.11			27.46	4.42	37.32	146	165	Average
2467	98.71	104.15			27.46	4.42	37.32	146	165	Peak
2483.52	44.14	49.5	54	-9.86	27.53	4.43	37.32	146	165	Average
2483.52	52.22	57.58	74	-21.78	27.53	4.43	37.32	146	165	Peak
4934	33.18	47.84	54	-20.82	31.34	6.89	52.89	118	162	Average
4934	43.91	58.57	74	-30.09	31.34	6.89	52.89	118	162	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	96.55	101.99			27.46	4.42	37.32	132	183	Average
2467	100.6	106.04			27.46	4.42	37.32	132	183	Peak
2483.52	45.87	51.23	54	-8.13	27.53	4.43	37.32	132	183	Average
2483.52	54.41	59.77	74	-19.59	27.53	4.43	37.32	132	183	Peak
4934	32.9	47.56	54	-21.1	31.34	6.89	52.89	122	251	Average
4934	44.36	59.02	74	-29.64	31.34	6.89	52.89	122	251	Peak

Remarks:

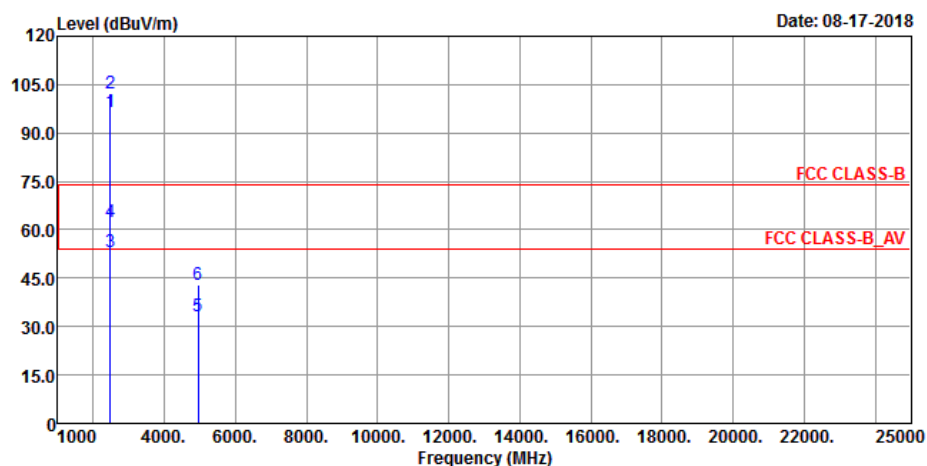
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2467 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	92.65	98.02			27.53	4.42	37.32	143	152	Average
2472	98.43	103.8			27.53	4.42	37.32	143	152	Peak
2483.52	49.89	55.25	54	-4.11	27.53	4.43	37.32	143	152	Average
2483.52	58.79	64.15	74	-15.21	27.53	4.43	37.32	143	152	Peak
4944	32.83	47.49	54	-21.17	31.37	6.89	52.92	141	203	Average
4944	42.06	56.72	74	-31.94	31.37	6.89	52.92	141	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	96.48	101.85			27.53	4.42	37.32	117	170	Average
2472	102.41	107.78			27.53	4.42	37.32	117	170	Peak
2483.52	53.16	58.52	54	-0.84	27.53	4.43	37.32	117	170	Average
2483.52	62.43	67.79	74	-11.57	27.53	4.43	37.32	117	170	Peak
4944	33.06	47.72	54	-20.94	31.37	6.89	52.92	152	216	Average
4944	43.05	57.71	74	-30.95	31.37	6.89	52.92	152	216	Peak

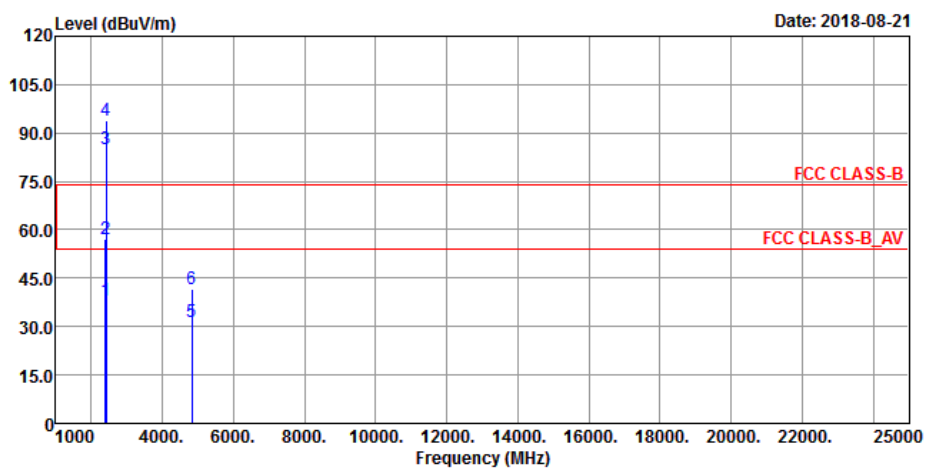
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2472 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

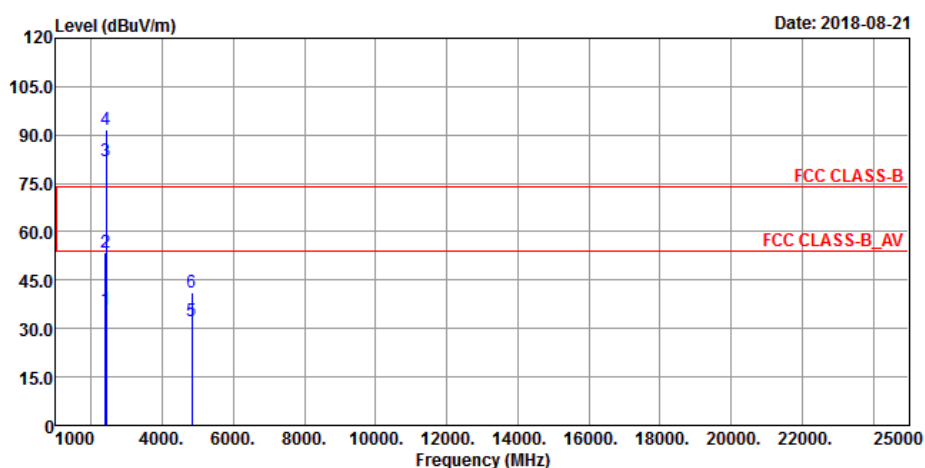
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



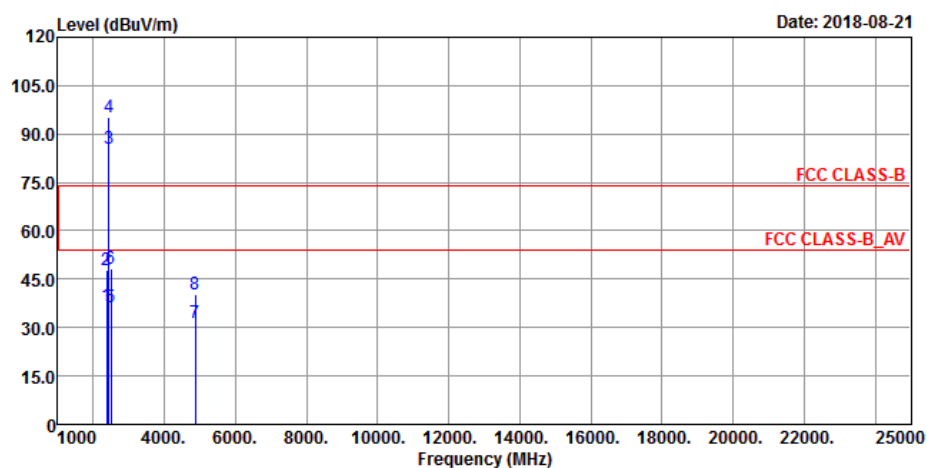
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	37.86	43.86	54	-16.14	27.16	4.36	37.52	152	210	Average
2389.94	57.15	63.15	74	-16.85	27.16	4.36	37.52	152	210	Peak
2412	84.82	90.73			27.23	4.38	37.52	152	210	Average
2412	94	99.91			27.23	4.38	37.52	152	210	Peak
4824	31.47	46.38	54	-22.53	31.17	6.81	52.89	149	122	Average
4824	41.64	56.55	74	-32.36	31.17	6.81	52.89	149	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	35.98	41.98	54	-18.02	27.16	4.36	37.52	170	167	Average
2389.94	53.71	59.71	74	-20.29	27.16	4.36	37.52	170	167	Peak
2412	81.78	87.69			27.23	4.38	37.52	170	167	Average
2412	91.67	97.58			27.23	4.38	37.52	170	167	Peak
4824	32.12	47.03	54	-21.88	31.17	6.81	52.89	114	250	Average
4824	41.28	56.19	74	-32.72	31.17	6.81	52.89	114	250	Peak

Remarks:

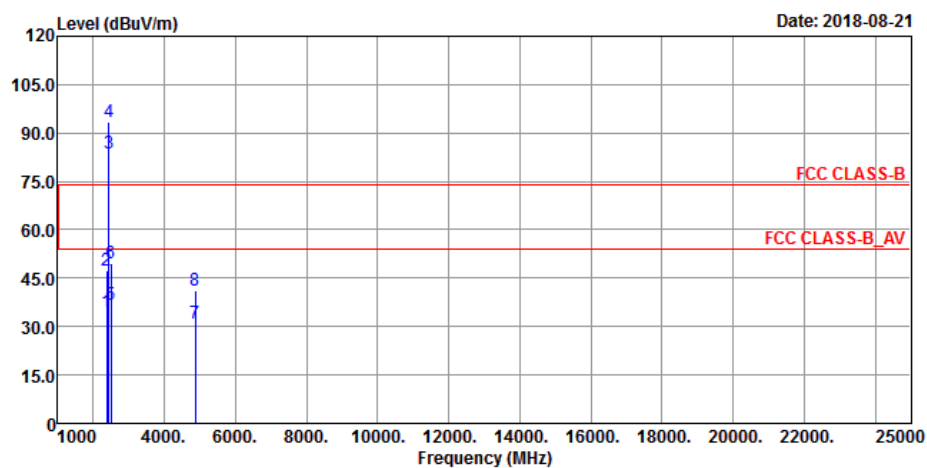
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



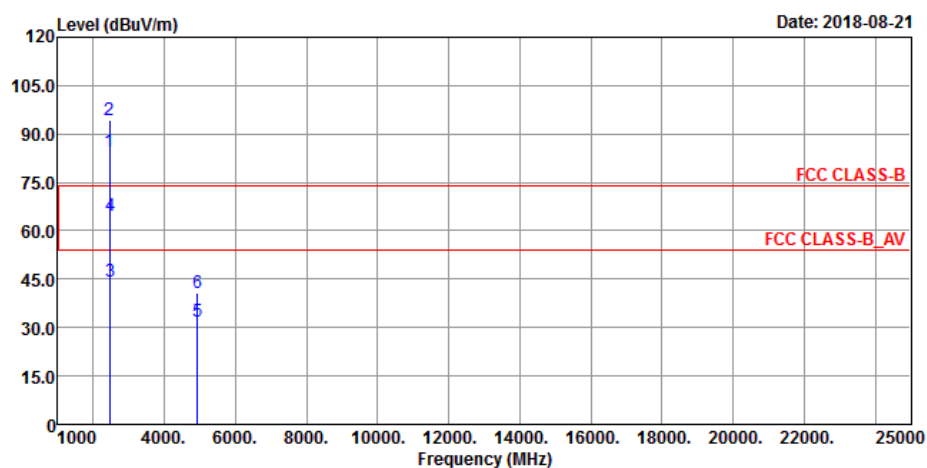
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2371.08	36.58	42.65	54	-17.42	27.08	4.35	37.5	157	193	Average
2371.08	47.79	53.86	74	-26.21	27.08	4.35	37.5	157	193	Peak
2437	85.49	91.17			27.38	4.4	37.46	157	193	Average
2437	95.25	100.93			27.38	4.4	37.46	157	193	Peak
2485.33	36.22	41.5	54	-17.78	27.61	4.43	37.32	157	193	Average
2485.33	48.33	53.61	74	-25.67	27.61	4.43	37.32	157	193	Peak
4874	31.33	46.79	54	-22.67	31.25	6.15	52.86	108	49	Average
4874	40.38	55.84	74	-33.62	31.25	6.15	52.86	108	49	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.51	34.71	40.78	54	-19.29	27.08	4.35	37.5	156	10	Average
2376.51	47.28	53.35	74	-26.72	27.08	4.35	37.5	156	10	Peak
2437	83.64	89.32			27.38	4.4	37.46	156	10	Average
2437	93.47	99.15			27.38	4.4	37.46	156	10	Peak
2492.13	36.59	41.87	54	-17.41	27.61	4.43	37.32	156	10	Average
2492.13	49.79	55.07	74	-24.21	27.61	4.43	37.32	156	10	Peak
4874	31.03	46.49	54	-22.97	31.25	6.15	52.86	141	214	Average
4874	41.07	56.53	74	-32.93	31.25	6.15	52.86	141	214	Peak

Remarks:

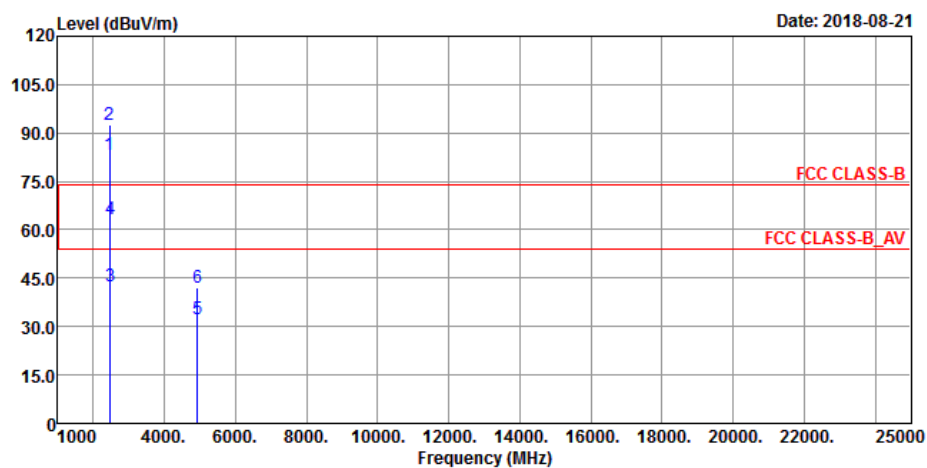
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



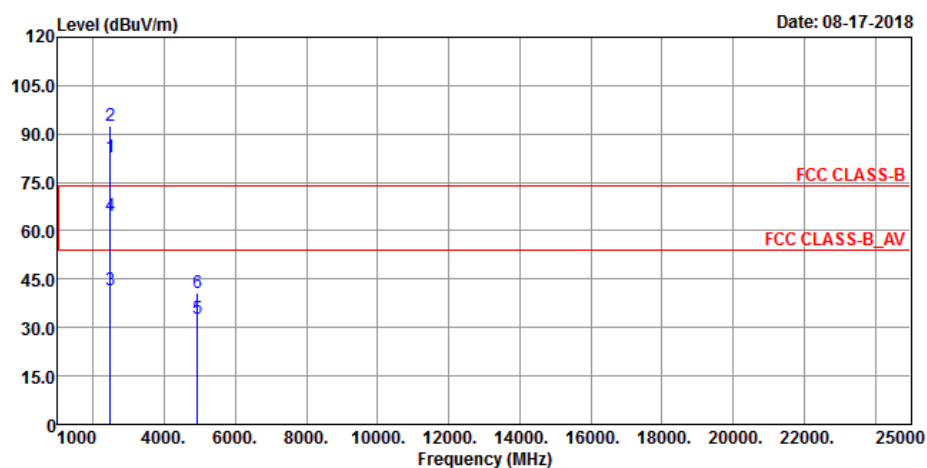
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	84.72	90.24			27.46	4.41	37.39	129	198	Average
2462	94.33	99.85			27.46	4.41	37.39	129	198	Peak
2483.52	44.36	49.72	54	-9.64	27.53	4.43	37.32	129	198	Average
2483.52	64.58	69.94	74	-9.42	27.53	4.43	37.32	129	198	Peak
4924	31.8	47.16	54	-22.2	31.34	6.19	52.89	184	339	Average
4924	40.91	56.27	74	-33.09	31.34	6.19	52.89	184	339	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	83.36	88.88			27.46	4.41	37.39	150	241	Average
2462	92.39	97.91			27.46	4.41	37.39	150	241	Peak
2483.77	42.39	47.75	54	-11.61	27.53	4.43	37.32	150	241	Average
2483.77	63.17	68.53	74	-10.83	27.53	4.43	37.32	150	241	Peak
4924	32.43	47.09	54	-21.57	31.34	6.89	52.89	171	155	Average
4924	42.16	56.82	74	-31.84	31.34	6.89	52.89	171	155	Peak

Remarks:

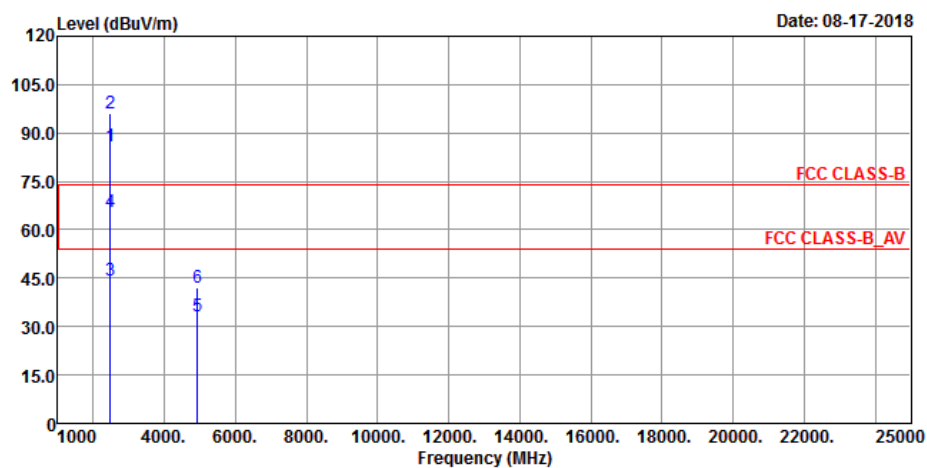
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



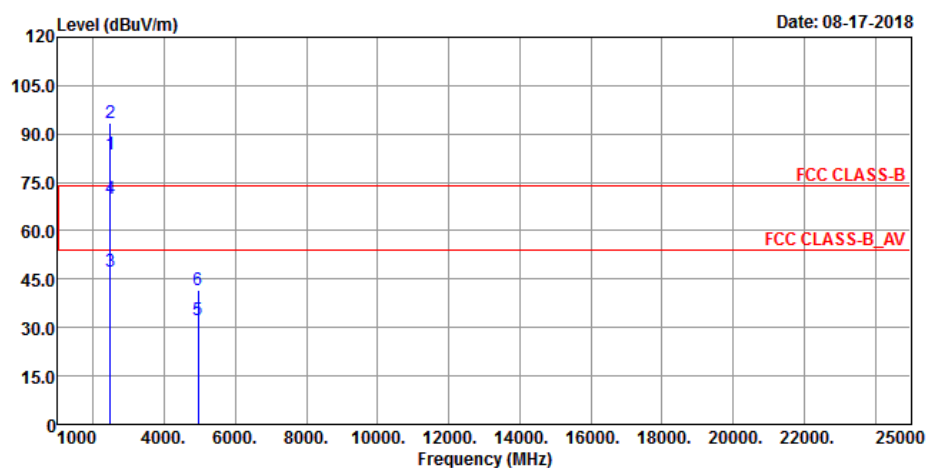
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	82.97	88.41			27.46	4.42	37.32	160	152	Average
2467	92.74	98.18			27.46	4.42	37.32	160	152	Peak
2483.52	41.71	47.07	54	-12.29	27.53	4.43	37.32	160	152	Average
2483.52	64.46	69.82	74	-9.54	27.53	4.43	37.32	160	152	Peak
4934	32.93	47.59	54	-21.07	31.34	6.89	52.89	156	233	Average
4934	40.94	55.6	74	-33.06	31.34	6.89	52.89	156	233	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	86.07	91.51			27.46	4.42	37.32	118	157	Average
2467	95.97	101.41			27.46	4.42	37.32	118	157	Peak
2483.52	44.38	49.74	54	-9.62	27.53	4.43	37.32	118	157	Average
2483.52	65.5	70.86	74	-8.5	27.53	4.43	37.32	118	157	Peak
4934	33.08	47.74	54	-20.92	31.34	6.89	52.89	138	301	Average
4934	42.23	56.89	74	-31.77	31.34	6.89	52.89	138	301	Peak

Remarks:

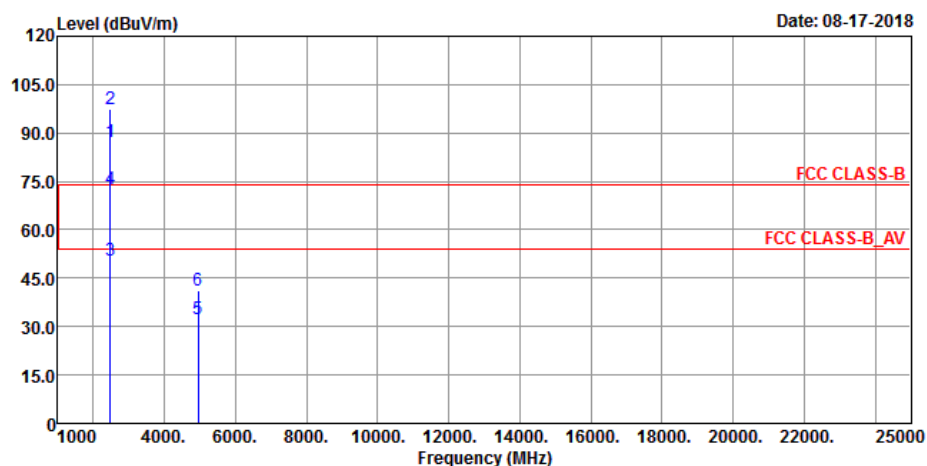
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2467 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	83.62	88.99			27.53	4.42	37.32	159	151	Average
2472	93.26	98.63			27.53	4.42	37.32	159	151	Peak
2483.52	47.32	52.68	54	-6.68	27.53	4.43	37.32	159	151	Average
2483.52	69.9	75.26	74	-4.1	27.53	4.43	37.32	159	151	Peak
4944	32.32	47.68	54	-21.68	31.37	6.19	52.92	151	183	Average
4944	41.62	56.98	74	-32.38	31.37	6.19	52.92	151	183	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	87.4	92.77			27.53	4.42	37.32	117	168	Average
2472	97.31	102.68			27.53	4.42	37.32	117	168	Peak
2483.56	50.31	55.67	54	-3.69	27.53	4.43	37.32	117	168	Average
2483.56	72.67	78.03	74	-1.33	27.53	4.43	37.32	117	168	Peak
4944	32.35	47.71	54	-21.65	31.37	6.19	52.92	134	201	Average
4944	41.21	56.57	74	-32.79	31.37	6.19	52.92	134	201	Peak

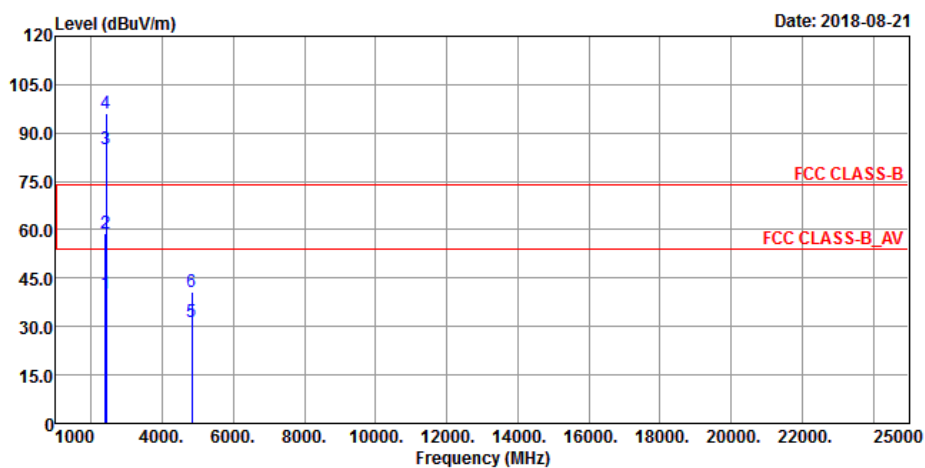
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2472 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

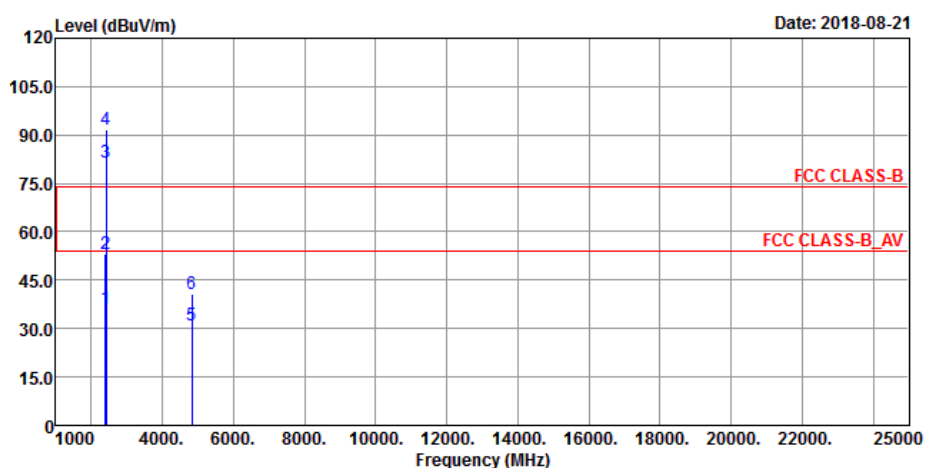
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



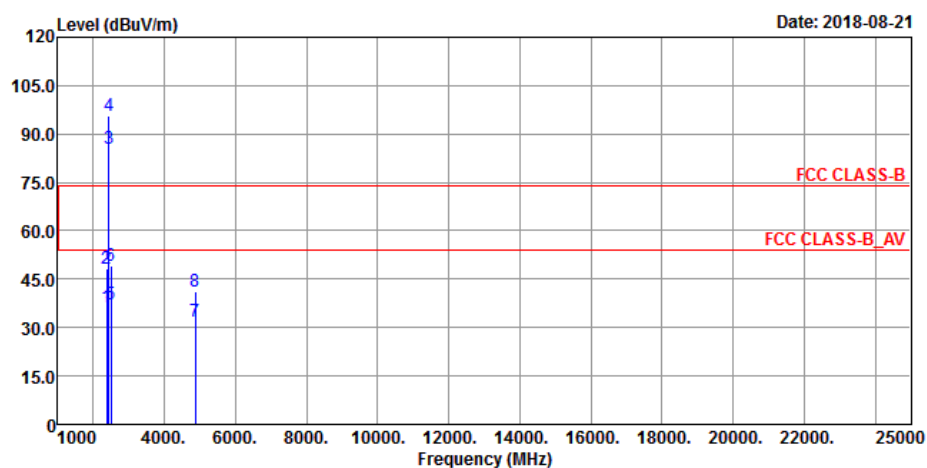
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	40.37	46.37	54	-13.63	27.16	4.36	37.52	179	233	Average
2389.94	58.76	64.76	74	-15.24	27.16	4.36	37.52	179	233	Peak
2412	85.18	91.09			27.23	4.38	37.52	179	233	Average
2412	96.28	102.19			27.23	4.38	37.52	179	233	Peak
4824	31.49	47.11	54	-22.51	31.17	6.1	52.89	124	211	Average
4824	40.69	56.31	74	-33.31	31.17	6.1	52.89	124	211	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2389.94	36.52	42.52	54	-17.48	27.16	4.36	37.52	184	293	Average
2389.94	53.09	59.09	74	-20.91	27.16	4.36	37.52	184	293	Peak
2412	81.61	87.52			27.23	4.38	37.52	184	293	Average
2412	91.57	97.48			27.23	4.38	37.52	184	293	Peak
4824	31	46.62	54	-23	31.17	6.1	52.89	117	305	Average
4824	40.79	56.41	74	-33.21	31.17	6.1	52.89	117	305	Peak

Remarks:

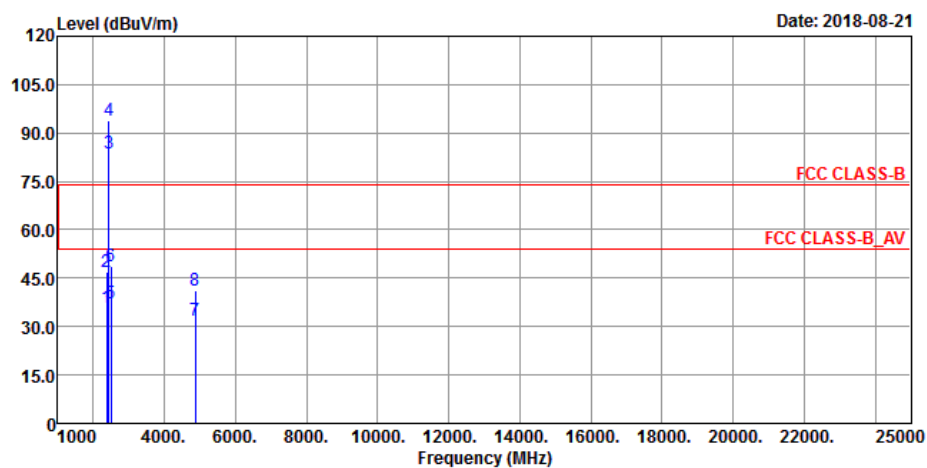
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2412 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2371.66	36.49	42.56	54	-17.51	27.08	4.35	37.5	206	191	Average
2371.66	48.37	54.44	74	-25.63	27.08	4.35	37.5	206	191	Peak
2437	85.64	91.32			27.38	4.4	37.46	206	191	Average
2437	95.5	101.18			27.38	4.4	37.46	206	191	Peak
2486.44	37.01	42.29	54	-16.99	27.61	4.43	37.32	206	191	Average
2486.44	49.03	54.31	74	-24.97	27.61	4.43	37.32	206	191	Peak
4874	32.04	47.5	54	-21.96	31.25	6.15	52.86	170	206	Average
4874	41.25	56.71	74	-32.75	31.25	6.15	52.86	170	206	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

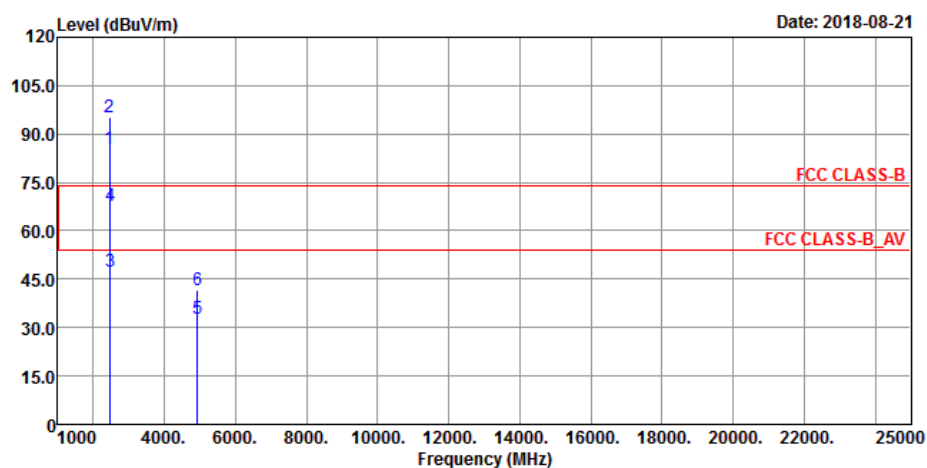
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2381.56	35.71	41.78	54	-18.29	27.08	4.35	37.5	161	357	Average
2381.56	47.06	53.13	74	-26.94	27.08	4.35	37.5	161	357	Peak
2437	83.85	89.53			27.38	4.4	37.46	161	357	Average
2437	93.95	99.63			27.38	4.4	37.46	161	357	Peak
2494.17	37.21	42.49	54	-16.79	27.61	4.43	37.32	161	357	Average
2494.17	48.58	53.86	74	-25.42	27.61	4.43	37.32	161	357	Peak
4874	31.77	47.23	54	-22.23	31.25	6.15	52.86	122	183	Average
4874	41.01	56.47	74	-32.99	31.25	6.15	52.86	122	183	Peak

Remarks:

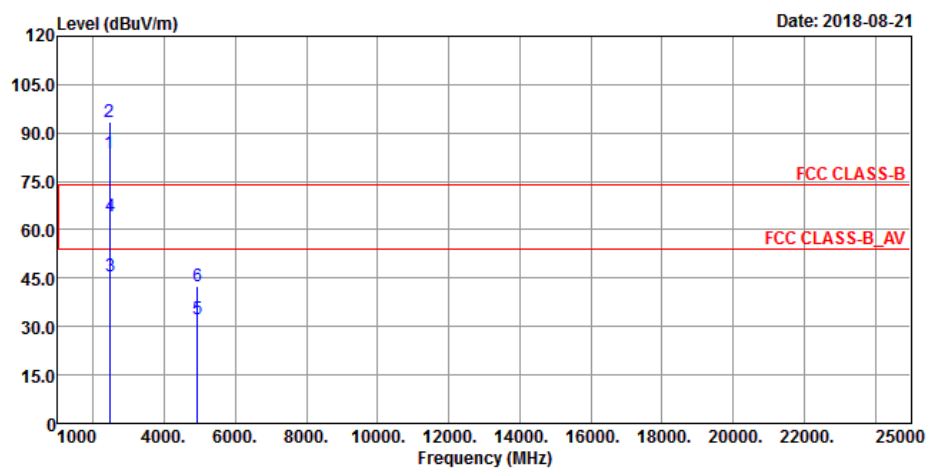
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2437 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



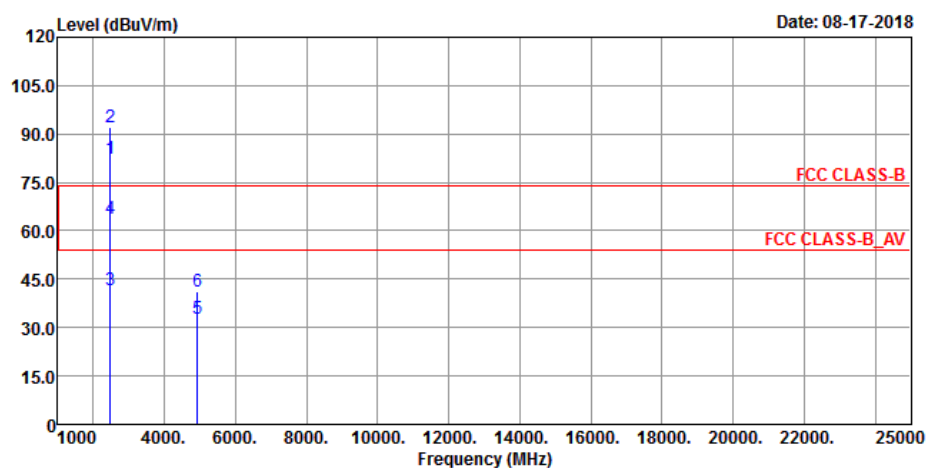
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	85.37	90.89			27.46	4.41	37.39	157	213	Average
2462	95.17	100.69			27.46	4.41	37.39	157	213	Peak
2483.52	47.26	52.62	54	-6.74	27.53	4.43	37.32	157	213	Average
2483.52	67.61	72.97	74	-6.39	27.53	4.43	37.32	157	213	Peak
4924	32.63	47.29	54	-21.37	31.34	6.89	52.89	107	134	Average
4924	41.77	56.43	74	-32.23	31.34	6.89	52.89	107	134	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	83.62	89.14			27.46	4.41	37.39	145	193	Average
2462	93.65	99.17			27.46	4.41	37.39	145	193	Peak
2483.52	45.63	50.99	54	-8.37	27.53	4.43	37.32	145	193	Average
2483.52	64.33	69.69	74	-9.67	27.53	4.43	37.32	145	193	Peak
4924	32.18	46.84	54	-21.82	31.34	6.89	52.89	162	139	Average
4924	42.56	57.22	74	-31.44	31.34	6.89	52.89	162	139	Peak

Remarks:

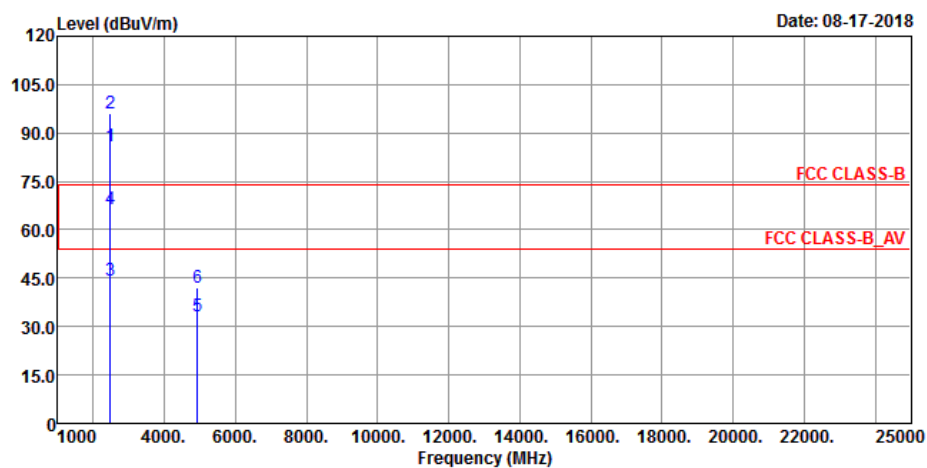
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2462 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



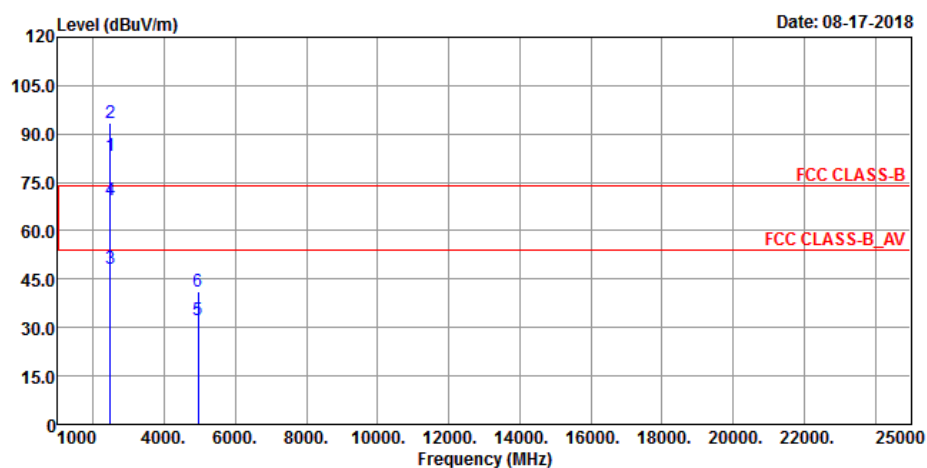
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	82.46	87.9			27.46	4.42	37.32	161	147	Average
2467	92.24	97.68			27.46	4.42	37.32	161	147	Peak
2483.6	41.76	47.12	54	-12.24	27.53	4.43	37.32	161	147	Average
2483.6	63.7	69.06	74	-10.3	27.53	4.43	37.32	161	147	Peak
4934	32.86	47.52	54	-21.14	31.34	6.89	52.89	162	64	Average
4934	41.32	55.98	74	-32.68	31.34	6.89	52.89	162	64	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	86.06	91.5			27.46	4.42	37.32	116	169	Average
2467	95.92	101.36			27.46	4.42	37.32	116	169	Peak
2483.52	44.48	49.84	54	-9.52	27.53	4.43	37.32	116	169	Average
2483.52	66.44	71.8	74	-7.56	27.53	4.43	37.32	116	169	Peak
4934	33.38	48.04	54	-20.62	31.34	6.89	52.89	129	254	Average
4934	42.23	56.89	74	-31.77	31.34	6.89	52.89	129	254	Peak

Remarks:

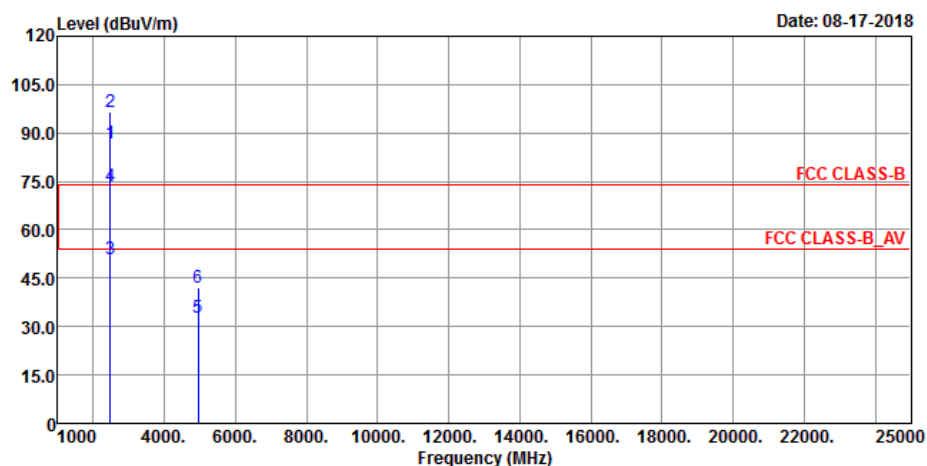
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2467 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	83.46	88.83			27.53	4.42	37.32	162	148	Average
2472	93.26	98.63			27.53	4.42	37.32	162	148	Peak
2483.52	48.18	53.54	54	-5.82	27.53	4.43	37.32	162	148	Average
2483.52	69.53	74.89	74	-4.47	27.53	4.43	37.32	162	148	Peak
4944	32.26	47.62	54	-21.74	31.37	6.19	52.92	163	201	Average
4944	41.22	56.58	74	-32.78	31.37	6.19	52.92	163	201	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	86.82	92.19			27.53	4.42	37.32	118	174	Average
2472	96.54	101.91			27.53	4.42	37.32	118	174	Peak
2483.52	50.9	56.26	54	-3.1	27.53	4.43	37.32	118	174	Average
2483.52	73.51	78.87	74	-0.49	27.53	4.43	37.32	118	174	Peak
4944	32.56	47.92	54	-21.44	31.37	6.19	52.92	177	139	Average
4944	42.06	57.42	74	-31.94	31.37	6.19	52.92	177	139	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2472 MHz: Fundamental Frequency.
- The other emission levels were very low against the limit.

Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.81	28.18	45.21	40	-11.82	13.6	0.51	31.14	306	229	Peak
357.86	30.11	45.8	46	-15.89	14.33	1.92	31.94	251	177	Peak
545.07	30.51	41.32	46	-15.49	18.35	2.68	31.84	231	114	Peak
714.82	36.07	43.36	46	-9.93	21.03	3.38	31.7	159	207	Peak
782.23	42.31	48.55	46	-3.69	21.67	3.54	31.45	140	88	Peak
867.22	43.58	48.28	46	-2.42	23.3	3.98	31.98	114	339	Peak
3265	30.88	50.68	74	-43.12	28.61	5.62	54.03	176	229	Average
3265	41.16	60.96	74	-32.84	28.61	5.62	54.03	176	229	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
32.91	28.21	46.37	40	-11.79	12.47	0.46	31.09	135	311	Peak
463.59	27.52	40.53	46	-18.48	16.6	2.34	31.95	159	288	Peak
597.45	30.97	40.76	46	-15.03	19.54	2.89	32.22	182	233	Peak
658.56	31.67	40.18	46	-14.33	20.31	3.14	31.96	202	188	Peak
792.42	36.48	42.13	46	-9.52	22.12	3.64	31.41	258	249	Peak
959.26	39.19	43	46	-6.81	23.84	4.27	31.92	289	59	Peak
2640	30.19	51.28	54	-23.81	27.82	5.09	54	137	232	Average
2640	39.38	60.47	74	-34.62	27.82	5.09	54	137	232	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

4.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

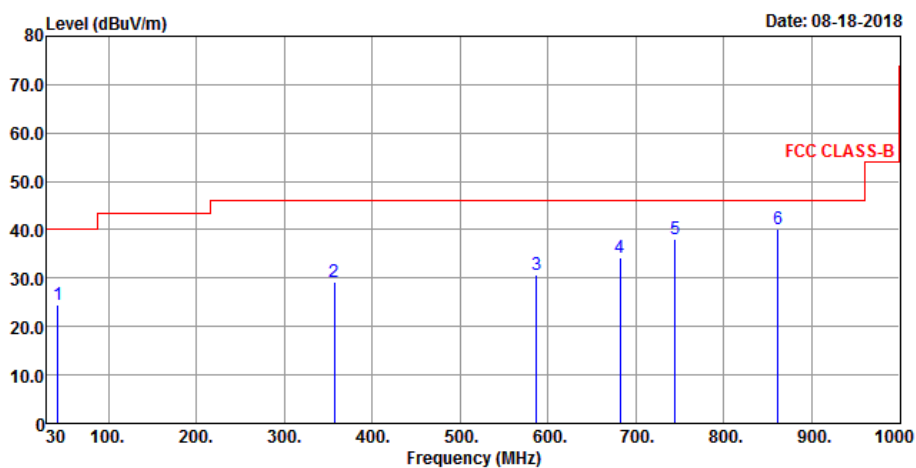
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

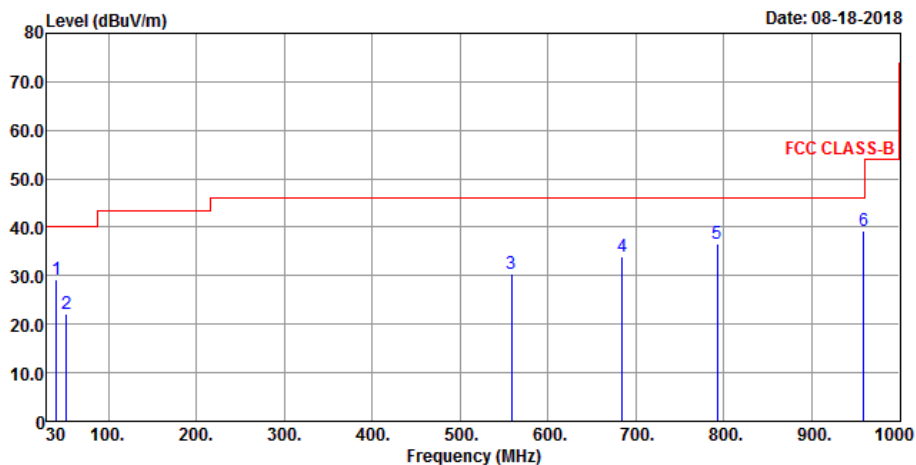
802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.61	24.42	41.42	40	-15.58	13.58	0.5	31.08	134	333	Peak
356.89	29.32	45.03	46	-16.68	14.31	1.91	31.93	159	288	Peak
586.78	30.81	40.8	46	-15.19	19.3	2.84	32.13	188	212	Peak
681.84	34.2	42.21	46	-11.8	20.6	3.23	31.84	233	166	Peak
744.89	38.21	44.66	46	-7.79	21.45	3.49	31.39	257	119	Peak
861.29	40.06	45.07	46	-5.94	23.01	3.89	31.91	277	66	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.67	29.27	46.25	40	-10.73	13.55	0.49	31.02	288	155	Peak
52.31	22.07	40.09	40	-17.93	12.76	0.54	31.32	255	173	Peak
558.65	30.35	41.01	46	-15.65	18.66	2.73	32.05	166	67	Peak
684.75	33.89	41.86	46	-12.11	20.63	3.24	31.84	249	115	Peak
792.42	36.48	42.13	46	-9.52	22.12	3.64	31.41	201	188	Peak
959.26	39.19	43	46	-6.81	23.84	4.27	31.92	236	88	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

4.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

5 6 dB 頻寬之要求

5.1 適用標準

請見本報告 3.1 節第(12)項的規定。

5.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算最大輸出功率峰值減 6 dB 的最大頻率範圍。

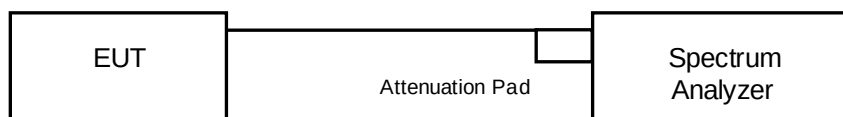
5.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

5.4 測試配置



5.5 量測結果

操作模式	發射	測試日期	107 年 08 月 21 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	9.06	0.5	Pass
6	2437	8.09	0.5	Pass
11	2462	8.10	0.5	Pass
12	2467	8.10	0.5	Pass
13	2472	8.09	0.5	Pass

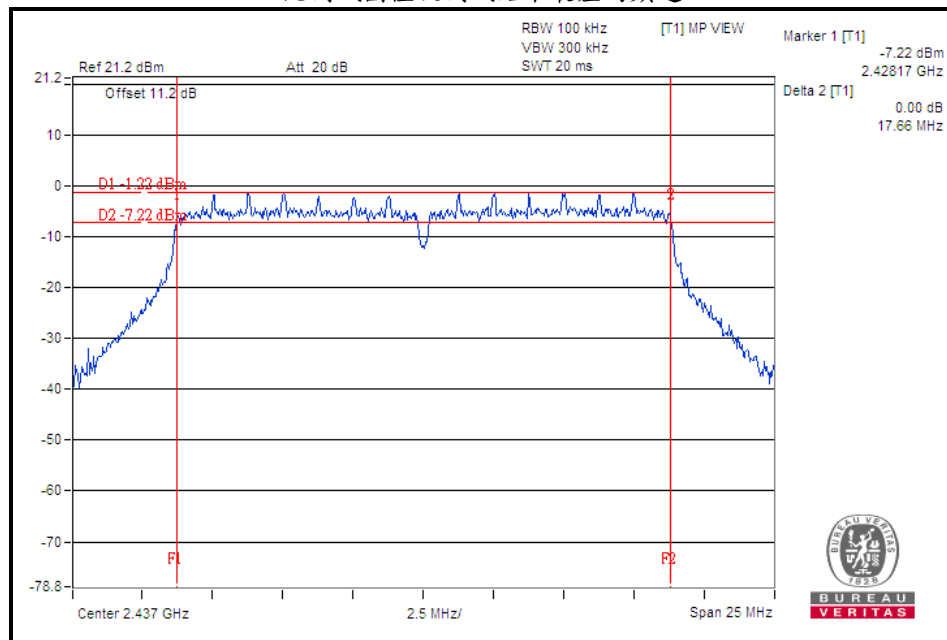
802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.40	0.5	Pass
6	2437	16.41	0.5	Pass
11	2462	16.41	0.5	Pass
12	2467	16.40	0.5	Pass
13	2472	16.40	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.63	0.5	Pass
6	2437	17.66	0.5	Pass
11	2462	17.65	0.5	Pass
12	2467	17.64	0.5	Pass
13	2472	17.63	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



5.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

6 峰值傳導輸出功率之量測

6.1 適用標準

請見本報告 3.1 節第(11)及(13)項的規定。

6.2 量測方法

- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態。
- 計算其輸出功率峰值。

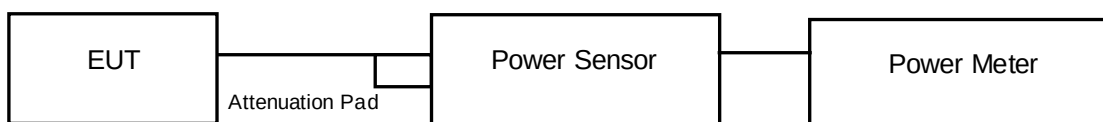
6.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 1017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 1017	Dec. 06, 2018

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 1.393 dB, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.
- Measurement Bandwidth of ML2495A is 65 MHz greater than 6 dB bandwidth of emission.

6.4 測試配置



6.5 量測結果

操作模式	發射	測試日期	107 年 08 月 21 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	72.611	18.61	30	Pass
6	2437	77.446	18.89	30	Pass
11	2462	68.234	18.34	30	Pass
12	2467	71.614	18.55	30	Pass
13	2472	70.958	18.51	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	90.573	19.57	30	Pass
6	2437	84.723	19.28	30	Pass
11	2462	86.497	19.37	30	Pass
12	2467	87.297	19.41	30	Pass
13	2472	86.497	19.37	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	87.297	19.41	30	Pass
6	2437	83.946	19.24	30	Pass
11	2462	93.541	19.71	30	Pass
12	2467	89.125	19.50	30	Pass
13	2472	87.902	19.44	30	Pass

6.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

7 功率頻譜密度之量測

7.1 適用標準

請見本報告 3.1 節第(14)項的規定。

7.2 量測方法

- 將待測物之天線埠經由適當之衰減直接連至測試儀器。
- 設定解析頻寬為 3 kHz，視訊頻寬為 10 kHz，掃描時間為 auto
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。

7.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

7.4 測試配置



7.5 量測結果

操作模式	發射	測試日期	107 年 08 月 21 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-7.45	8	Pass
6	2437	-7.24	8	Pass
11	2462	-8.08	8	Pass
12	2467	-7.37	8	Pass
13	2472	-7.10	8	Pass

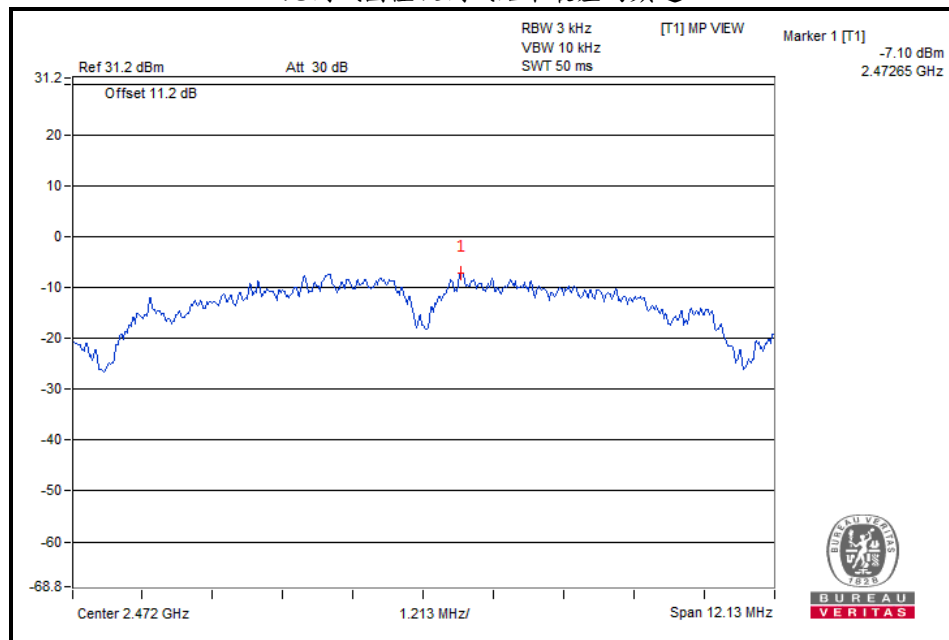
802.11g

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-16.05	8	Pass
6	2437	-15.53	8	Pass
11	2462	-15.40	8	Pass
12	2467	-15.50	8	Pass
13	2472	-15.43	8	Pass

802.11n (HT20)

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-15.64	8	Pass
6	2437	-16.42	8	Pass
11	2462	-16.65	8	Pass
12	2467	-16.35	8	Pass
13	2472	-15.82	8	Pass

**此測試圖僅放測試結果最差的頻道。



7.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

BLUETOOTH EDR 頻段測試紀錄結果

8 帶外發射之量測

8.1 適用標準

請見本報告 3.1 節第(20)項的規定。

8.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面。

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average 為 RBW = 1 MHz, VBW = 1 kHz

接收諧波：

Below 1 GHz

Peak 為 RBW = 120 kHz, VBW = 300 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

Above 1 GHz:

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 10 Hz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

8.3 量測儀器

同 4.3 節

8.4 測試配置

同 4.4 節

8.5 場強度之計算

同 4.5 節

量測結果請見下頁。

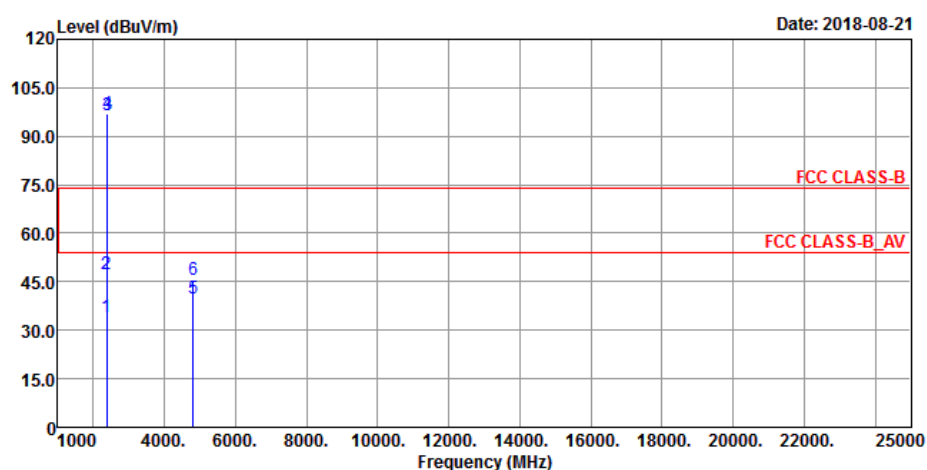
8.6 量測結果

8.6.1 發射諧波

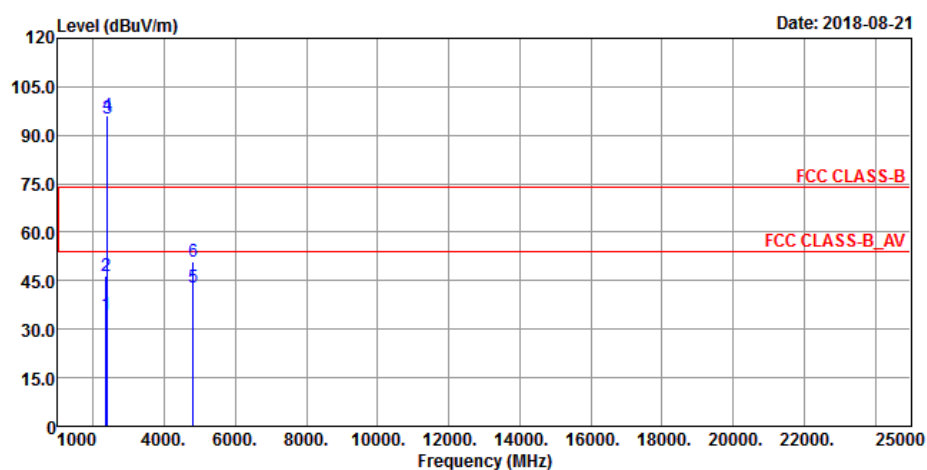
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



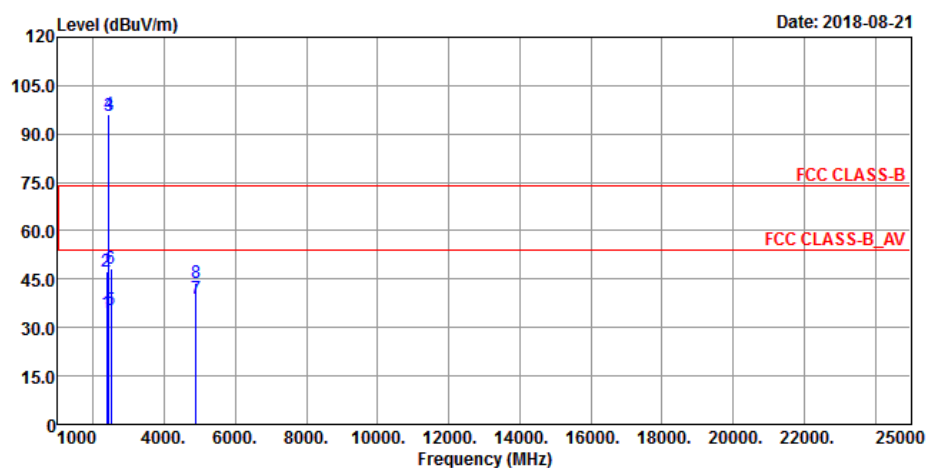
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2381.55	34.29	40.27	54	-19.71	27.16	4.36	37.5	178	192	Average
2381.55	47.36	53.34	74	-26.64	27.16	4.36	37.5	178	192	Peak
2402	96.44	102.43			27.16	4.37	37.52	178	192	Average
2402	96.84	102.83			27.16	4.37	37.52	178	192	Peak
4804	39.97	54.94	54	-14.03	31.14	6.79	52.9	156	103	Average
4804	45.39	60.36	74	-28.61	31.14	6.79	52.9	156	103	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2359.88	34.41	40.39	54	-19.59	27.16	4.36	37.5	132	233	Average
2359.88	46.52	52.5	74	-27.48	27.16	4.36	37.5	132	233	Peak
2402	95.33	101.32			27.16	4.37	37.52	132	233	Average
2402	95.94	101.93			27.16	4.37	37.52	132	233	Peak
4804	42.76	57.73	54	-11.24	31.14	6.79	52.9	161	149	Average
4804	50.91	65.88	74	-23.09	31.14	6.79	52.9	161	149	Peak

Remarks:

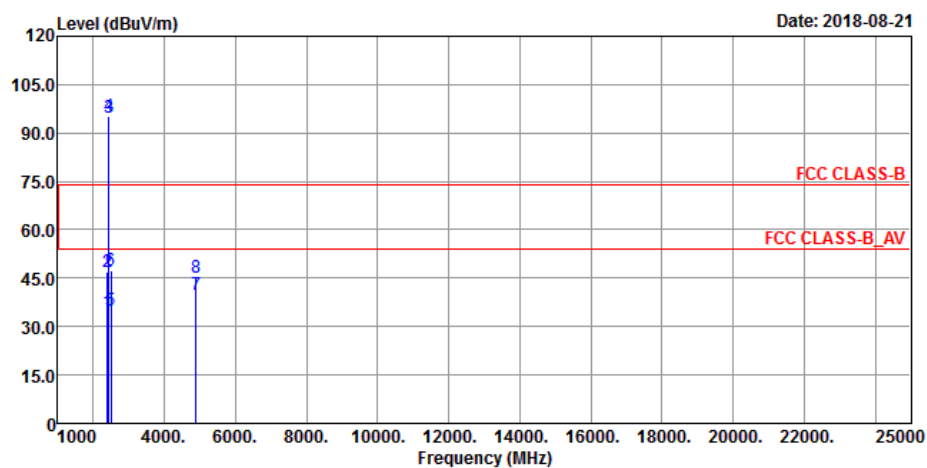
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2402 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376	34.58	40.65	54	-19.42	27.08	4.35	37.5	170	242	Average
2376	47.52	53.59	74	-26.48	27.08	4.35	37.5	170	242	Peak
2441	95.82	101.43			27.38	4.4	37.39	170	242	Average
2441	96.25	101.86			27.38	4.4	37.39	170	242	Peak
2488.5	35.51	40.71	54	-18.49	27.61	4.44	37.25	170	242	Average
2488.5	48.32	53.52	74	-25.68	27.61	4.44	37.25	170	242	Peak
4882	38.9	54.35	54	-15.1	31.25	6.16	52.86	148	69	Average
4882	43.91	59.37	74	-30.09	31.25	6.15	52.86	148	69	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

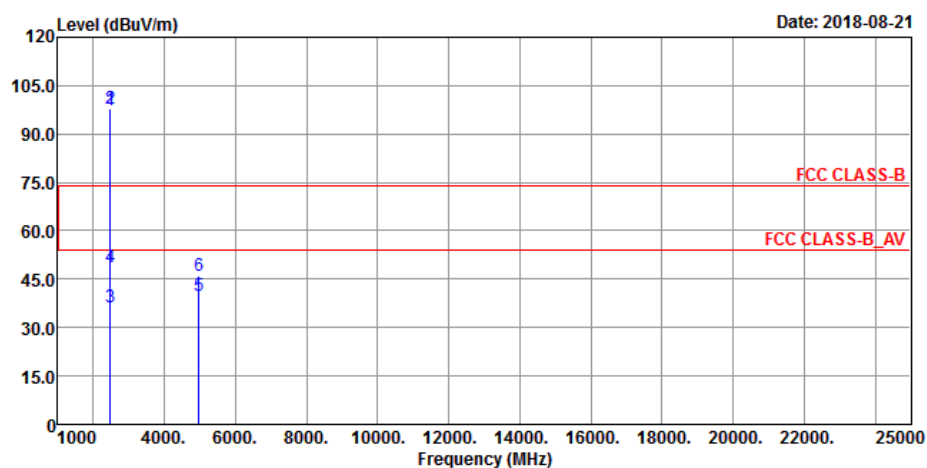
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2386.9	34.44	40.51	54	-19.56	27.08	4.35	37.5	134	198	Average
2386.9	46.73	52.8	74	-27.27	27.08	4.35	37.5	134	198	Peak
2441	94.72	100.33			27.38	4.4	37.39	134	198	Average
2441	95.03	100.64			27.38	4.4	37.39	134	198	Peak
2498.12	35.19	40.39	54	-18.81	27.61	4.44	37.25	134	198	Average
2498.12	47.57	52.77	74	-26.43	27.61	4.44	37.25	134	198	Peak
4882	39.74	55.19	54	-14.26	31.25	6.16	52.86	163	166	Average
4882	45.04	60.49	74	-28.96	31.25	6.16	52.86	163	166	Peak

Remarks:

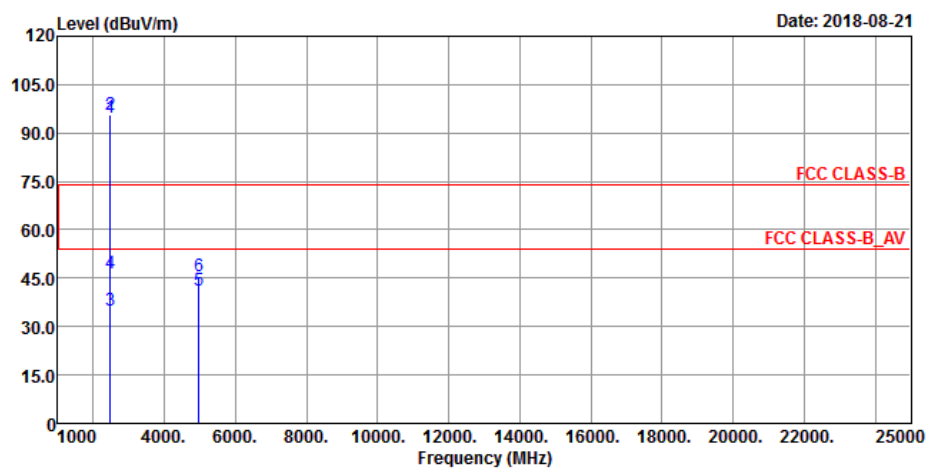
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2441 MHz: Fundamental Frequency
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	97.48	102.84			27.53	4.43	37.32	168	241	Average
2480	97.97	103.33			27.53	4.43	37.32	168	241	Peak
2483.52	36.45	41.81	54	-17.55	27.53	4.43	37.32	168	241	Average
2483.52	48.74	54.1	74	-25.26	27.53	4.43	37.32	168	241	Peak
4960	39.85	55.17	54	-14.15	31.4	6.2	52.92	153	220	Average
4960	46.17	61.49	74	-27.83	31.4	6.2	52.92	153	220	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	94.85	100.21			27.53	4.43	37.32	138	233	Average
2480	95.59	100.95			27.53	4.43	37.32	138	233	Peak
2483.92	35.18	40.54	54	-18.82	27.53	4.43	37.32	138	233	Average
2483.92	46.33	51.69	74	-27.67	27.53	4.43	37.32	138	233	Peak
4960	41.23	56.55	54	-12.77	31.4	6.2	52.92	142	194	Average
4960	45.76	61.08	74	-28.24	31.4	6.2	52.92	142	194	Peak

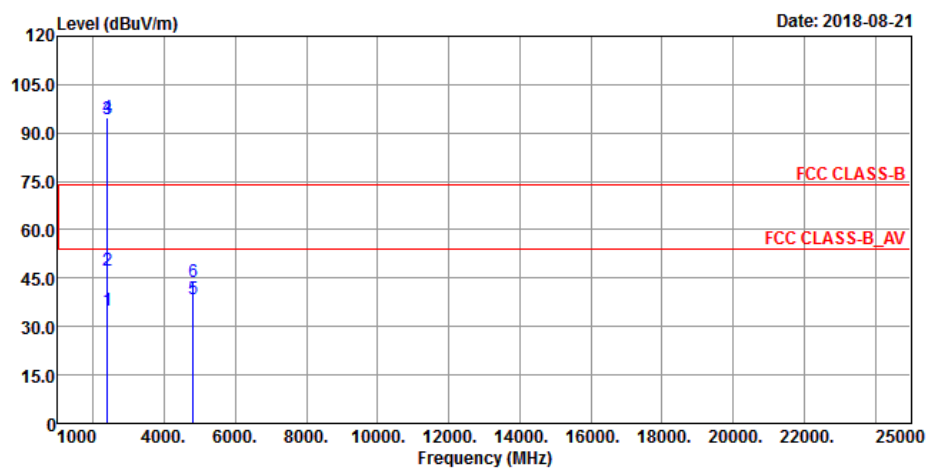
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2480 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

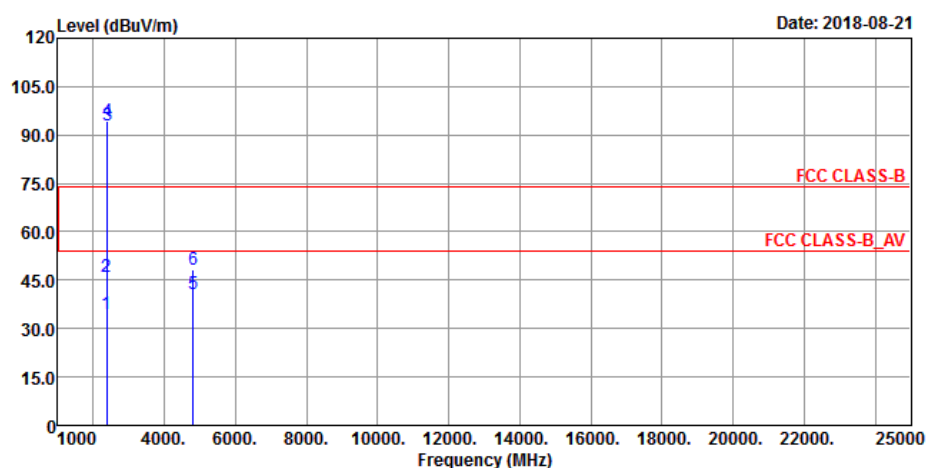
8DPSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



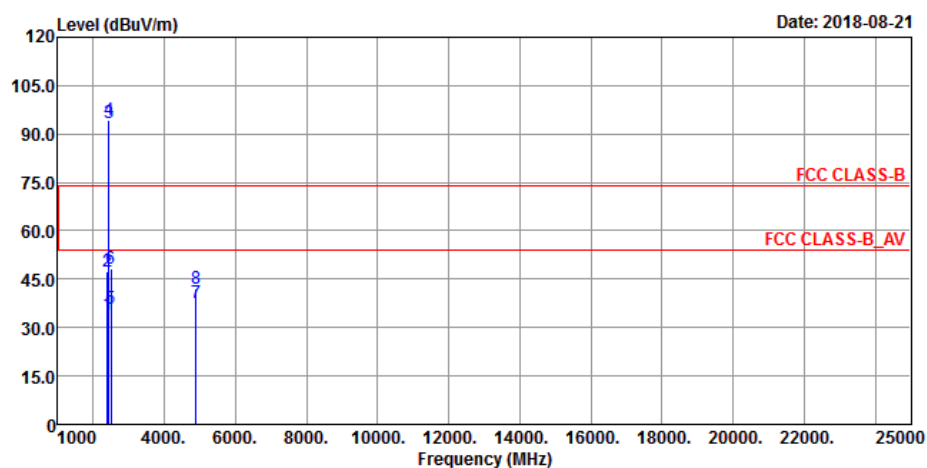
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2387.33	34.79	40.77	54	-19.21	27.16	4.36	37.5	189	211	Average
2387.33	47.55	69.42	74	-26.45	27.16	4.84	53.87	189	211	Peak
2402	94.28	100.27			27.16	4.37	37.52	189	211	Average
2402	94.71	100.7			27.16	4.37	37.52	189	211	Peak
4804	38.66	53.63	54	-15.34	31.14	6.79	52.9	126	203	Average
4804	43.89	58.86	74	-30.11	31.14	6.79	52.9	126	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBUV/m)	Read Level (dBUV)	Limit (dBUV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2379.46	34.53	40.51	54	-19.47	27.16	4.36	37.5	147	213	Average
2379.46	46.23	52.21	74	-27.77	27.16	4.36	37.5	147	213	Peak
2402	93.19	99.18			27.16	4.37	37.52	147	213	Average
2402	94.48	100.47			27.16	4.37	37.52	147	213	Peak
4804	40.89	55.86	54	-13.11	31.14	6.79	52.9	179	66	Average
4804	48.12	63.09	74	-25.88	31.14	6.79	52.9	179	66	Peak

Remarks:

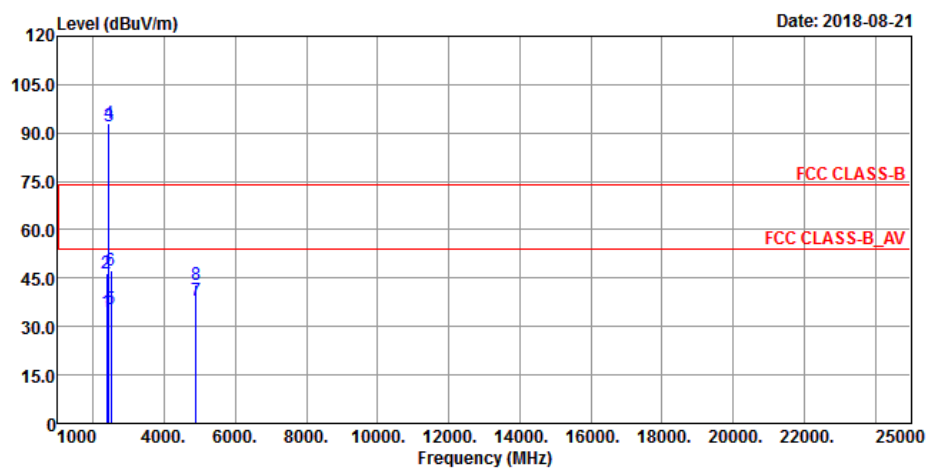
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2402 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2384.22	34.17	40.24	54	-19.83	27.08	4.35	37.5	157	206	Average
2384.22	47.26	53.33	74	-26.74	27.08	4.35	37.5	157	206	Peak
2441	93.51	99.12			27.38	4.4	37.39	157	206	Average
2441	94.4	100.01			27.38	4.4	37.39	157	206	Peak
2492.13	35.71	40.91	54	-18.29	27.61	4.44	37.25	157	206	Average
2492.13	48.06	53.26	74	-25.94	27.61	4.44	37.25	157	206	Peak
4882	37.66	53.11	54	-16.34	31.25	6.16	52.86	127	239	Average
4882	41.88	57.34	74	-32.12	31.25	6.15	52.86	127	239	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

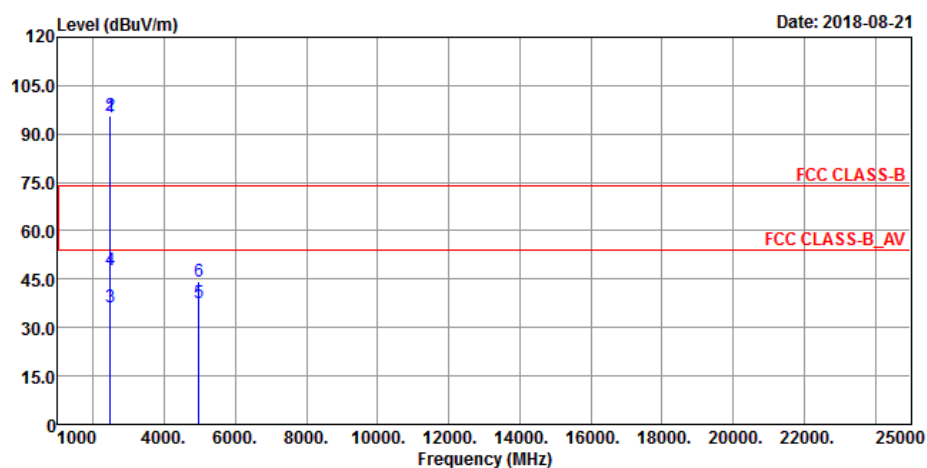
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2368.12	34.69	40.76	54	-19.31	27.08	4.35	37.5	152	211	Average
2368.12	46.38	52.45	74	-27.62	27.08	4.35	37.5	152	211	Peak
2441	92.32	97.93			27.38	4.4	37.39	152	211	Average
2441	93.18	98.79			27.38	4.4	37.39	152	211	Peak
2486.5	35.4	40.6	54	-18.6	27.61	4.44	37.25	152	211	Average
2486.5	47.19	52.39	74	-26.81	27.61	4.44	37.25	152	211	Peak
4882	37.92	53.37	54	-16.08	31.25	6.16	52.86	191	87	Average
4882	42.74	58.19	74	-31.26	31.25	6.16	52.86	191	87	Peak

Remarks:

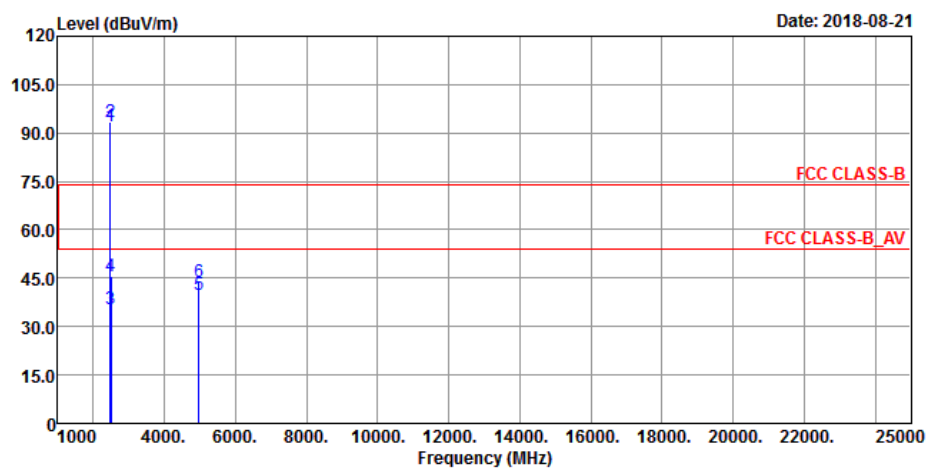
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2441 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 78	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	95.28	100.64			27.53	4.43	37.32	145	272	Average
2480	95.67	101.03			27.53	4.43	37.32	145	272	Peak
2483.97	36.29	41.65	54	-17.71	27.53	4.43	37.32	145	272	Average
2483.97	47.95	53.31	74	-26.05	27.53	4.43	37.32	145	272	Peak
4960	37.45	52.77	54	-16.55	31.4	6.2	52.92	136	155	Average
4960	44.27	59.59	74	-29.73	31.4	6.2	52.92	136	155	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	92.13	97.49			27.53	4.43	37.32	153	201	Average
2480	93.35	98.71			27.53	4.43	37.32	153	201	Peak
2485.77	35.59	40.95	54	-18.41	27.53	4.43	37.32	153	201	Average
2485.77	45.66	51.02	74	-28.34	27.53	4.43	37.32	153	201	Peak
4960	39.83	55.15	54	-14.17	31.4	6.2	52.92	182	216	Average
4960	43.81	59.13	74	-30.19	31.4	6.2	52.92	182	216	Peak

Remarks:

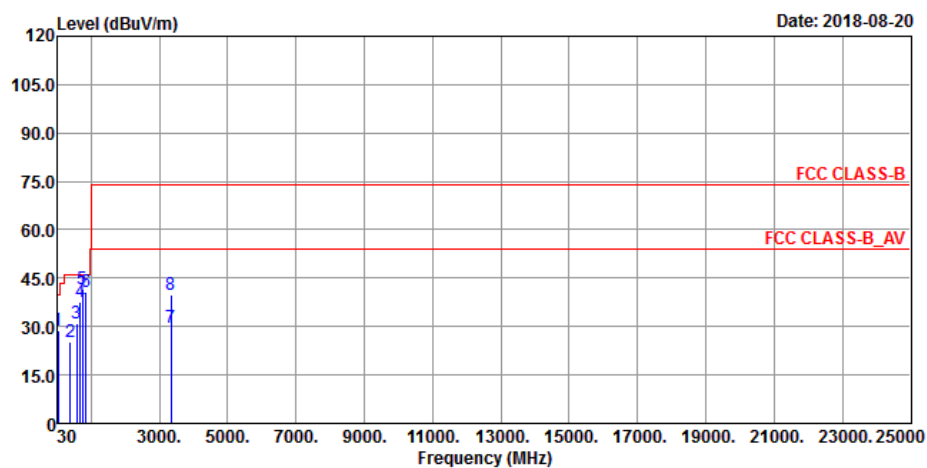
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2480 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

8.6.2 接收諧波

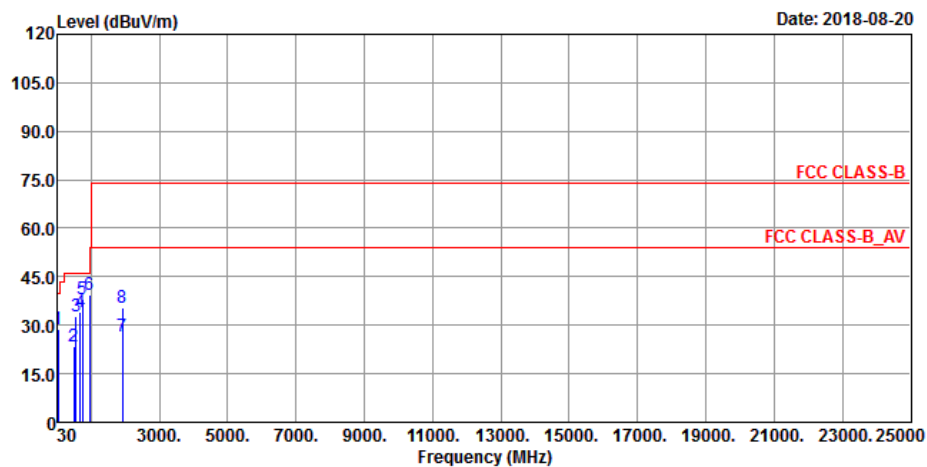
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
46.58	28.99	46.02	40	-11.01	13.6	0.51	31.14	140	200	Peak
392.78	25.26	40.1	46	-20.74	15.17	2.06	32.07	151	266	Peak
579.99	30.9	41.05	46	-15.1	19.15	2.82	32.12	289	315	Peak
680.87	37.46	45.49	46	-8.54	20.59	3.22	31.84	163	117	Peak
757.5	41.52	47.77	46	-4.48	21.63	3.53	31.41	122	78	Peak
859.35	40.56	45.58	46	-5.44	22.99	3.89	31.9	194	310	Peak
3335	29.75	49.51	54	-24.25	28.66	5.67	54.09	150	298	Average
3335	39.76	59.52	74	-34.24	28.66	5.67	54.09	150	298	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
30.97	28.95	47.48	40	-11.05	12.14	0.45	31.12	159	66	Peak
502.39	23.28	34.99	46	-22.72	17.37	2.53	31.61	184	94	Peak
551.86	32.6	43.37	46	-13.4	18.5	2.7	31.97	197	143	Peak
686.69	34.1	42.03	46	-11.9	20.66	3.25	31.84	227	188	Peak
756.53	38.07	44.33	46	-7.93	21.61	3.53	31.4	259	235	Peak
952.47	39.2	43.01	46	-6.8	23.8	4.24	31.85	277	345	Peak
1920	26.5	50.67	54	-27.5	25.41	4.35	53.93	168	231	Average
1920	35.57	59.74	74	-38.43	25.41	4.35	53.93	168	231	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

8.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

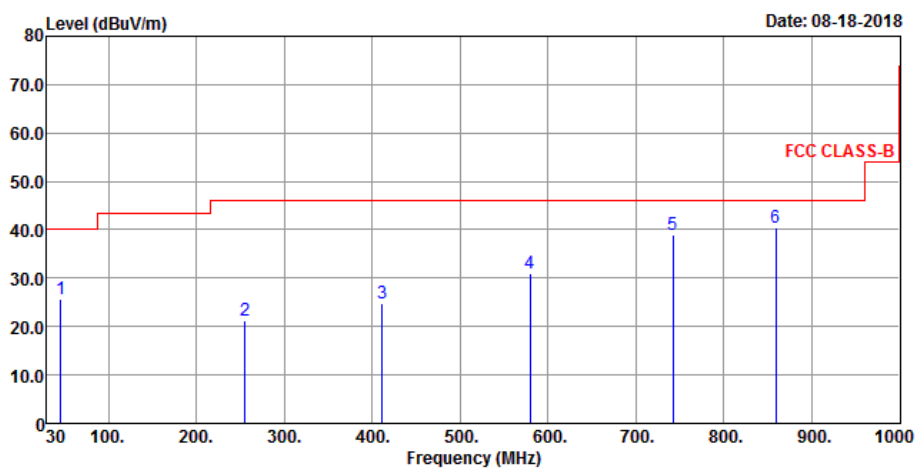
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

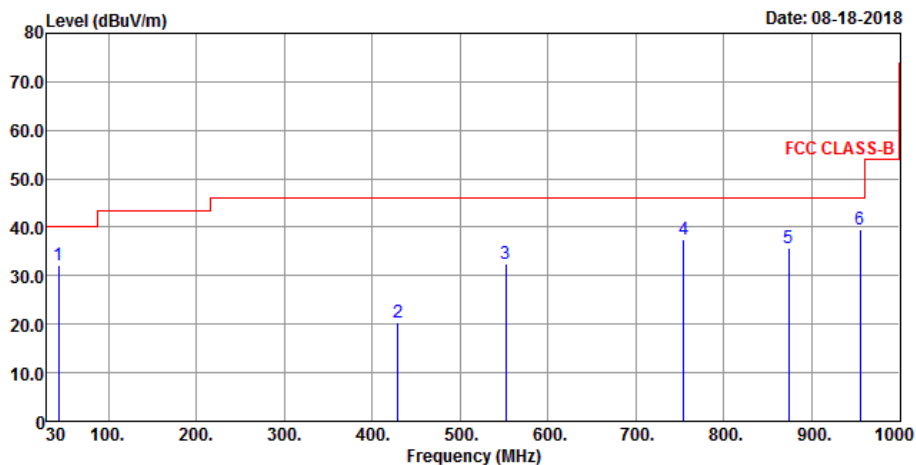
GFSK

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quask-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
45.52	25.65	42.8	40	-14.35	13.5	0.51	31.16	200	201	Peak
255.04	21.17	39.97	46	-24.83	11.62	1.48	31.9	159	66	Peak
411.21	24.79	39.11	46	-21.21	15.56	2.12	32	137	319	Peak
579.99	30.9	41.05	46	-15.1	19.15	2.82	32.12	269	114	Peak
741.98	39.01	45.56	46	-6.99	21.41	3.48	31.44	284	305	Peak
859.35	40.56	45.58	46	-5.44	22.99	3.89	31.9	185	191	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	32.06	49.08	40	-7.94	13.59	0.5	31.11	126	37	Peak
429.64	20.4	34.29	46	-25.6	15.93	2.19	32.01	155	109	Peak
551.86	32.6	43.37	46	-13.4	18.5	2.7	31.97	188	114	Peak
754.59	37.35	43.6	46	-8.65	21.59	3.53	31.37	244	191	Peak
873.9	35.63	40.51	46	-10.37	23.17	3.95	32	249	188	Peak
955.38	39.65	43.46	46	-6.35	23.82	4.25	31.88	277	311	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

8.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

9 20 dB 頻寬之要求

9.1 適用標準

請見本報告 3.1 節第(25)項的規定。

9.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減 20 dB 的最大頻率範圍。

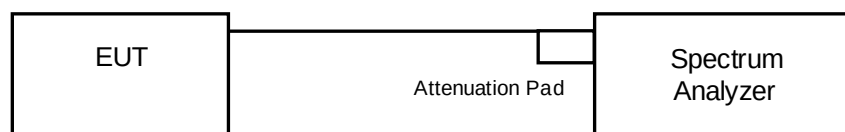
9.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

9.4 測試配置



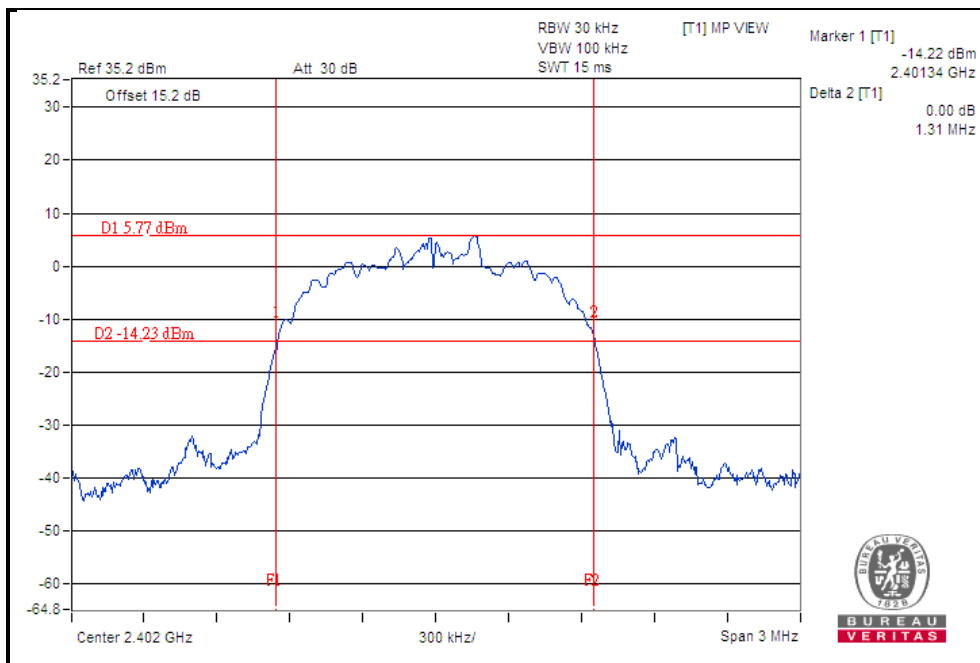
9.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊祥		

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)		>= 25 kHz
		GFSK	8DPSK	
0	2402	0.98	1.31	Yes
39	2441	0.99	1.31	Yes
78	2480	0.99	1.31	Yes

註：對操作於 2400~2483.5 MHz 頻段的跳頻系統技術之低功率發射機，依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.6 節之(1)(A)條規定，跳頻系統之載波頻率頻道間隔應至少 25 千赫(kHz)或跳頻頻道之 20 dB 頻寬之三分之二，兩者取較寬者。依據上述條文之規定，對操作於 2400~2483.5 MHz 頻段的跳頻產品之頻寬乃為該產品載波頻率頻道間隔的判定限制之一。

**此測試圖僅放測試結果最差的頻道。



9.6 量測結果判定

依據測試數據結果，三分之二 20 dB 頻寬值乃為此產品之載波頻率頻道間隔的判定限制值。

10 峰值傳導輸出功率之量測

10.1 適用標準

請見本報告 3.1 節第(23)項的規定。

10.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 量測待測物輸出功率峰值。

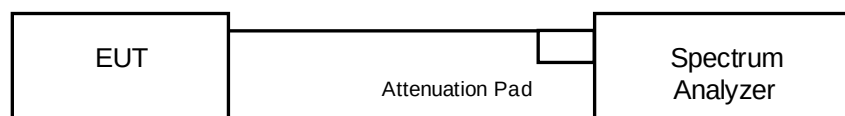
10.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

10.4 測試配置

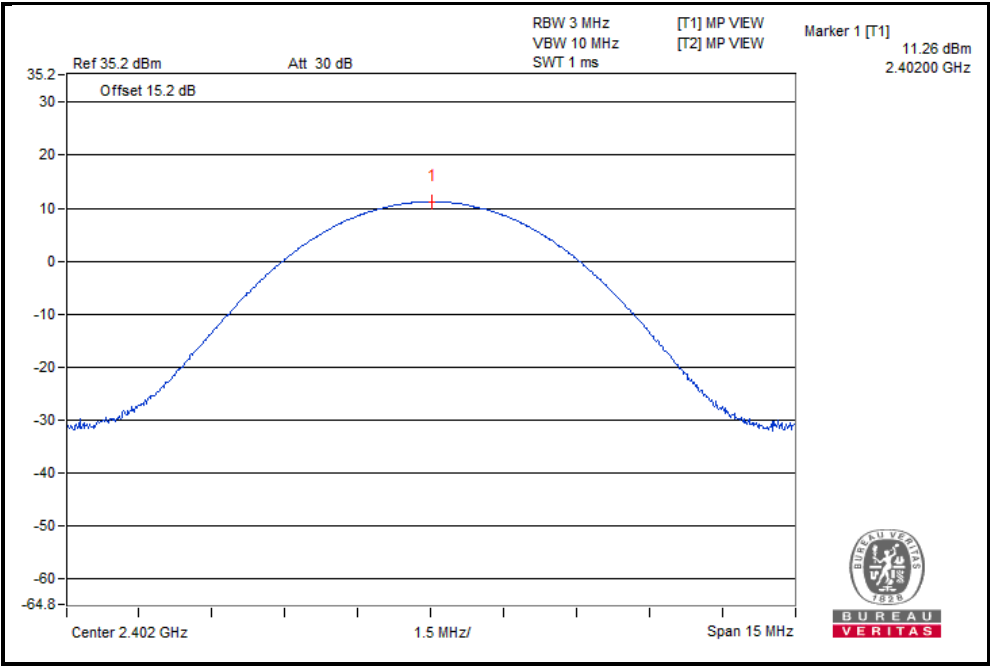


10.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)	Pass / Fail
		GFSK	8DPSK		
0	2402	10.95	11.26	30	Pass
39	2441	10.61	10.94	30	Pass
78	2480	10.15	10.50	30	Pass

**此測試圖僅放測試結果最差的頻道。



10.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

11 跳頻頻道數之量測

11.1 適用標準

請見本報告 3.1 節第(24)項的規定。

11.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 RBW = 100 kHz，VBW = 300 kHz，量測跳頻頻道數。

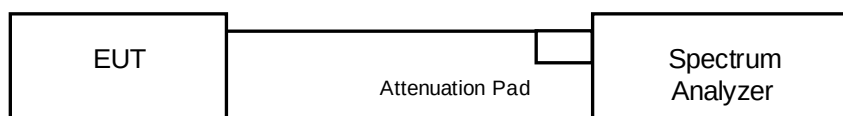
11.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

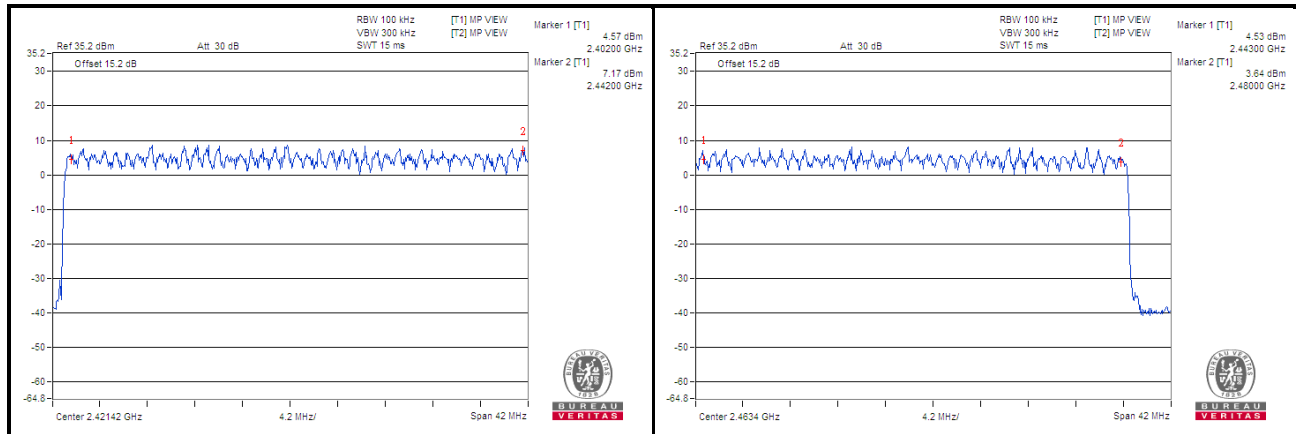
11.4 測試配置



11.5 量測結果

其掃描圖請參閱下圖。跳頻頻道數共有 79 個，符合至少 15 個的規定。

GFSK



11.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

12 跳頻頻道間隔之量測

12.1 適用標準

請見本報告 3.1 節第(24)項規定。

12.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 設定 RBW = 30 kHz，VBW = 300 kHz，量測相鄰兩個頻道間的間隔。

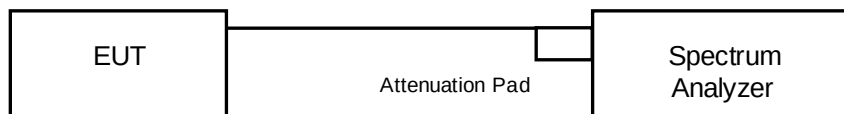
12.3 量測場強輻射之儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

12.4 測試配置



12.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

GFSK

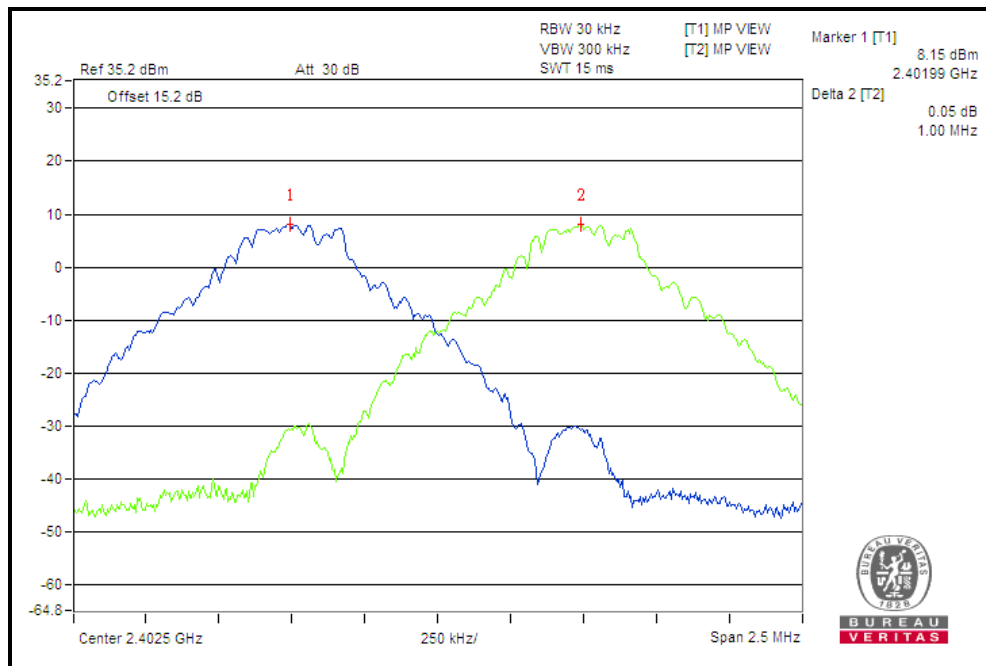
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	0.98	0.66	Pass
39	2441	1.00	0.99	0.66	Pass
78	2480	1.00	0.99	0.66	Pass

8DPSK

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.00	1.31	0.88	Pass
39	2441	1.00	1.31	0.88	Pass
78	2480	1.00	1.31	0.88	Pass

本項測試的 limit 為至少為三分之二 20 dB 頻寬。

**此測試圖僅放測試結果最差的頻道。



12.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

13 每一頻道停留時間之量測

13.1 適用標準

請見本報告 3.1 節第(26)項的規定。

13.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 RBW = 100 kHz，VBW = 300 kHz，量測在不同傳輸模式下的頻道停留時間。

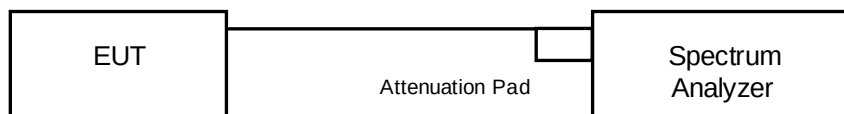
13.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

13.4 測試配置



13.5 量測結果

GFSK

Mode	Number of transmission in a 31.6 (79 Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (sec)
DH1	51 (times / 5 sec) * 6.32 = 322.32 times	0.45	145	0.4
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.7	268.6	0.4
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	2.98	320.2	0.4

註:因為 Bluetooth 每秒跳 1600 次, 會平均落在每個頻道, 所以僅測試 Ch 39 作為代表。
其掃描圖請參閱下方



8DPSK

Mode	Number of transmission in a 31.6 (79 Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (sec)
3DH1	50 (times / 5 sec) * 6.32 = 316 times	0.456	144.1	0.4
3DH3	26 (times / 5 sec) * 6.32 = 164.32 times	1.7	279.3	0.4
3DH5	18 (times / 5 sec) * 6.32 = 113.76 times	3	341.3	0.4

註:因為 Bluetooth 每秒跳 1600 次，會平均落在每個頻道，所以僅測試 Ch 39 作為代表。

其掃描圖請參閱下方



13.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

BLUETOOTH LE 頻段測試紀錄結果

14 帶外發射之量測

14.1 適用標準

請見本報告 3.1 節第(2)項的規定。

14.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

Note: 對於 1 GHz 以上場強輻射的測試，待測物則置於 1.5 米高的非金屬桌面。

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average 為 RBW = 1 MHz, VBW = 3 kHz

接收諧波：

Below 1 GHz

Peak 為 RBW = 120 kHz, VBW = 300 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

Above 1 GHz:

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 10 Hz

其它不必要之訊號

Peak 為 RBW = 120 kHz, VBW = 360 kHz；Quasi-Peak 為 RBW = 120 kHz, VBW = 120 kHz

14.3 量測儀器

同 4.3 節

14.4 測試配置

同 4.4 節

14.5 場強度之計算

同 4.5 節

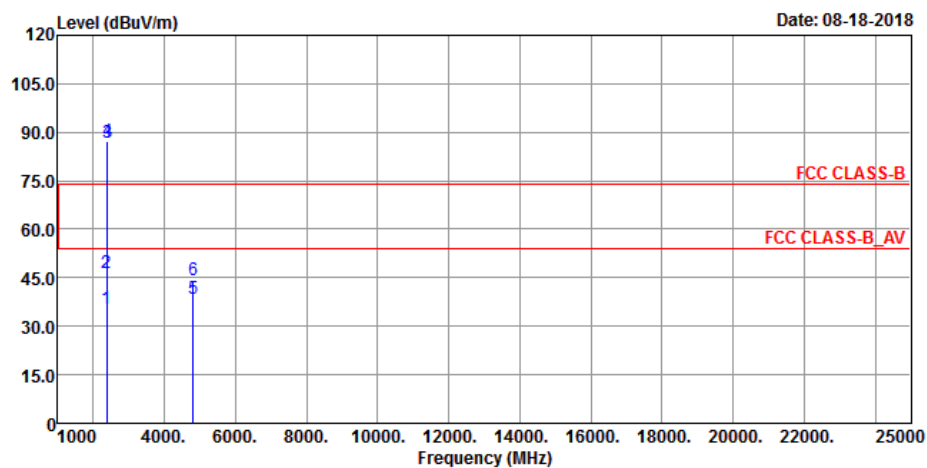
量測結果請見下頁。

14.6 量測結果

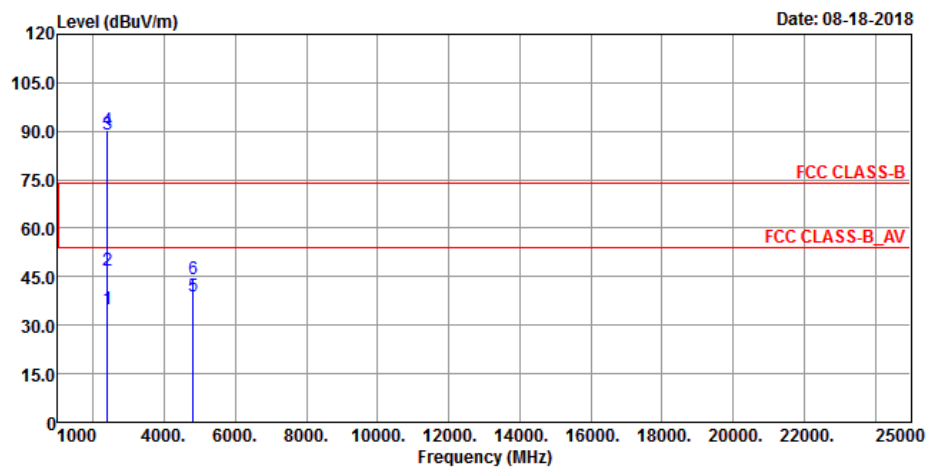
14.6.1 發射諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



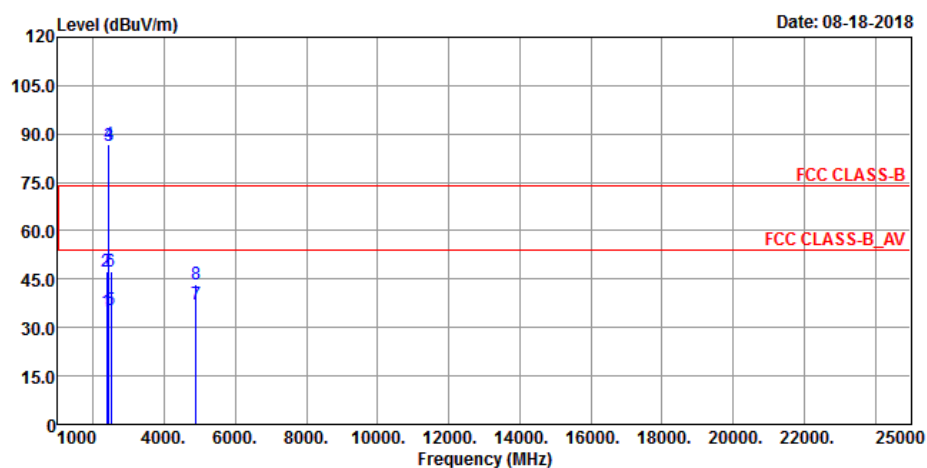
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.49	35.5	41.48	54	-18.5	27.16	4.36	37.5	172	258	Average
2376.49	46.37	52.35	74	-27.63	27.16	4.36	37.5	172	258	Peak
2402	86.65	92.64			27.16	4.37	37.52	172	258	Average
2402	87.31	93.3			27.16	4.37	37.52	172	258	Peak
4804	38.35	54.04	54	-15.65	31.14	6.07	52.9	152	169	Average
4804	44.35	60.04	74	-29.65	31.14	6.07	52.9	152	169	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2388.03	35.11	41.18	54	-18.89	27.08	4.35	37.5	181	210	Average
2388.03	47.14	53.21	74	-26.86	27.08	4.35	37.5	181	210	Peak
2402	89.18	95.17			27.16	4.37	37.52	181	210	Average
2402	90.28	96.27			27.16	4.37	37.52	181	210	Peak
4804	38.84	54.53	54	-15.16	31.14	6.07	52.9	168	71	Average
4804	44.08	59.77	74	-29.92	31.14	6.07	52.9	168	71	Peak

Remarks:

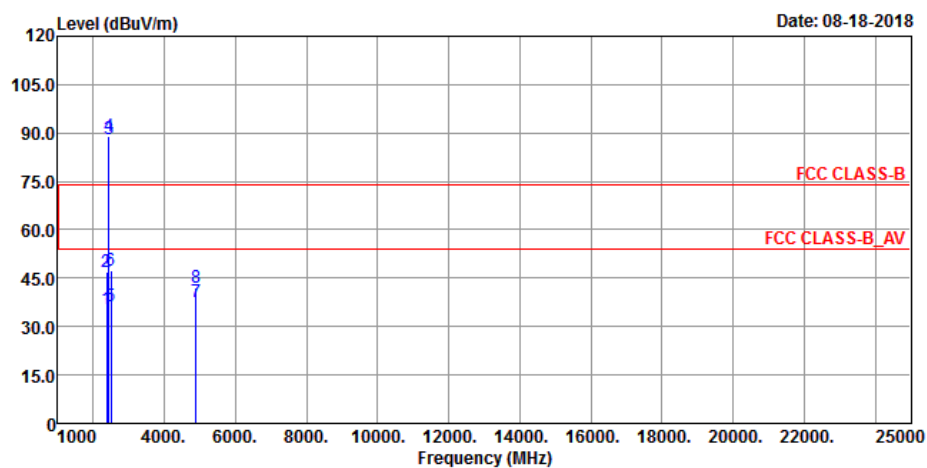
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2402 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 19	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2376.55	35.14	41.21	54	-18.86	27.08	4.35	37.5	192	241	Average
2376.55	47.28	53.35	74	-26.72	27.08	4.35	37.5	192	241	Peak
2440	86.22	91.9			27.38	4.4	37.46	192	241	Average
2440	86.63	92.31			27.38	4.4	37.46	192	241	Peak
2486.38	35.42	40.7	54	-18.58	27.61	4.43	37.32	192	241	Average
2486.38	47.31	52.59	74	-26.69	27.61	4.43	37.32	192	241	Peak
4880	37.37	52.82	54	-16.63	31.25	6.16	52.86	155	147	Average
4880	43.27	58.73	74	-30.73	31.25	6.15	52.86	155	147	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

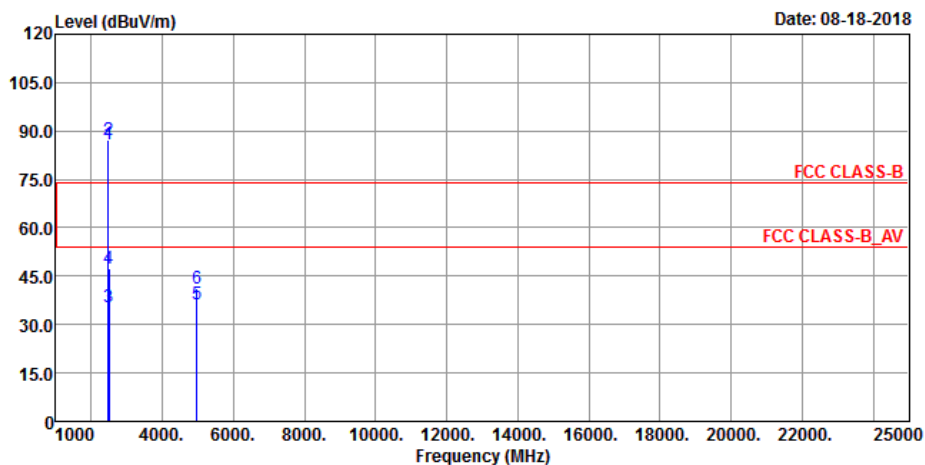
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2381	35.49	41.56	54	-18.51	27.08	4.35	37.5	167	175	Average
2381	46.88	52.95	74	-27.12	27.08	4.35	37.5	167	175	Peak
2440	88.24	93.92			27.38	4.4	37.46	167	175	Average
2440	89.07	94.75			27.38	4.4	37.46	167	175	Peak
2496.56	36.22	41.42	54	-17.78	27.61	4.44	37.25	167	175	Average
2496.56	47.39	52.59	74	-26.61	27.61	4.44	37.25	167	175	Peak
4880	37.42	52.87	54	-16.58	31.25	6.16	52.86	133	322	Average
4880	41.99	57.44	74	-32.01	31.25	6.16	52.86	133	322	Peak

Remarks:

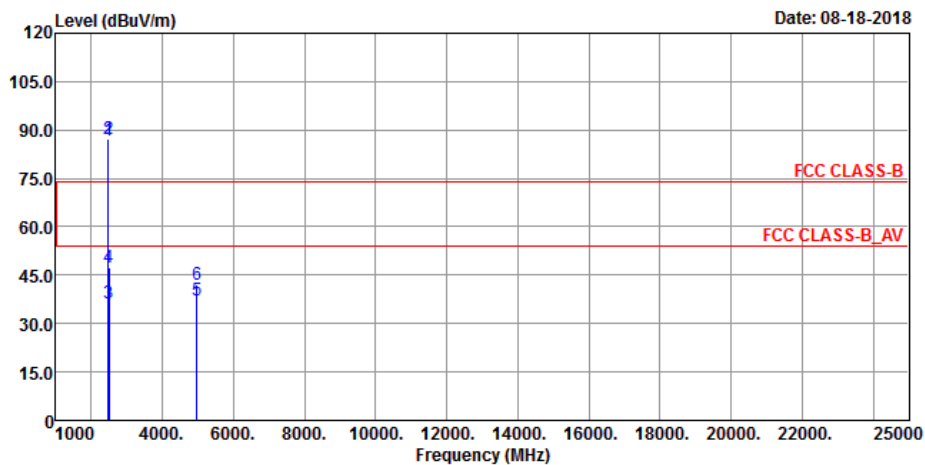
1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. 2440 MHz: Fundamental Frequency
3. The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	1 GHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	86.03	91.39			27.53	4.43	37.32	175	192	Average
2480	87.13	92.49			27.53	4.43	37.32	175	195	Peak
2488.69	35.27	40.48	54	-18.73	27.61	4.43	37.25	175	192	Average
2488.69	47.23	52.44	74	-26.77	27.61	4.43	37.25	175	192	Peak
4960	36.25	51.57	54	-17.75	31.4	6.2	52.92	104	324	Average
4960	41.32	56.64	74	-32.68	31.4	6.2	52.92	104	324	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	86.78	92.14			27.53	4.43	37.32	143	306	Average
2480	87.45	92.81			27.53	4.43	37.32	143	306	Peak
2491.22	36.18	41.54	54	-17.82	27.53	4.43	37.32	143	306	Average
2491.22	47.55	52.91	74	-26.45	27.53	4.43	37.32	143	306	Peak
4960	37.29	52.61	54	-16.71	31.4	6.2	52.92	135	81	Average
4960	42.15	57.47	74	-31.85	31.4	6.2	52.92	135	81	Peak

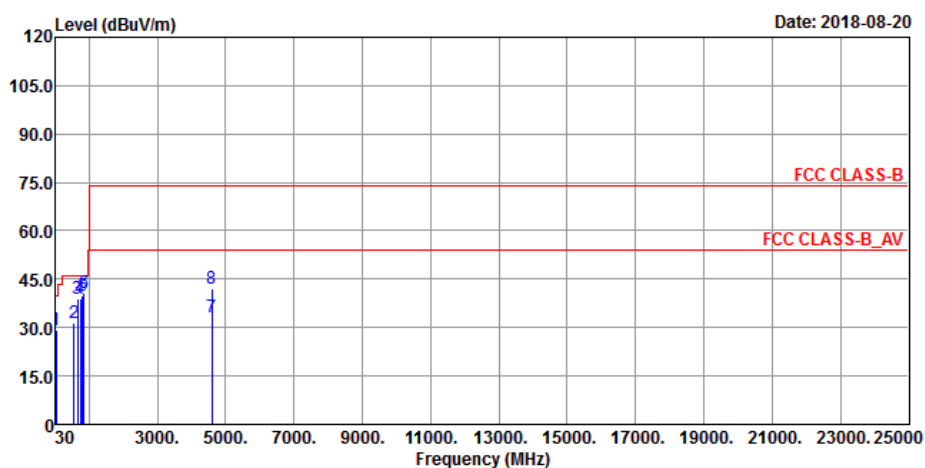
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- 2480 MHz: Fundamental Frequency
- The other emission levels were very low against the limit.

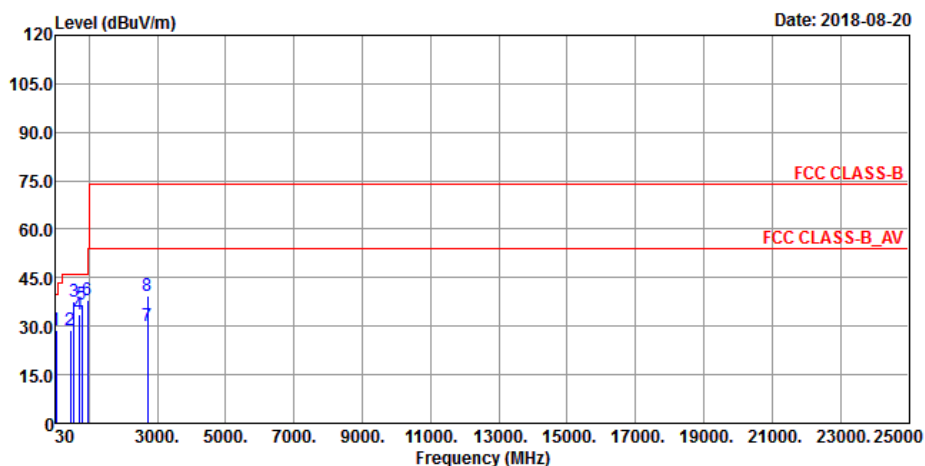
14.6.2接收諧波

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
42.58	29.05	46.08	40	-10.95	13.6	0.51	31.14	134	258	Peak
551.86	31.31	42.08	46	-14.69	18.5	2.7	31.97	169	233	Peak
674.08	38.86	46.98	46	-7.14	20.5	3.2	31.82	187	26	Peak
747.8	39.03	45.38	46	-6.97	21.49	3.5	31.34	199	318	Peak
805.03	39.79	45.25	46	-6.21	22.29	3.69	31.44	255	62	Peak
846.74	40.81	46	46	-5.19	22.83	3.83	31.85	279	345	Peak
4600	33.28	49.38	54	-20.72	30.79	6.63	53.52	126	201	Average
4600	42.08	58.18	74	-31.92	30.79	6.63	53.52	126	201	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
40.67	28.98	45.96	40	-11.02	13.55	0.49	31.02	143	88	Peak
460.68	28.68	41.8	46	-17.32	16.54	2.32	31.98	177	209	Peak
552.5	37.8	48.57	46	-8.2	18.5	2.7	31.97	169	58	Peak
711.91	33.54	40.92	46	-12.46	20.98	3.36	31.72	203	81	Peak
797.27	36.76	42.33	46	-9.24	22.19	3.66	31.42	256	218	Peak
954.41	38.27	42.08	46	-7.73	23.81	4.25	31.87	241	185	Peak
2705	30.32	51.3	54	-23.68	27.93	5.14	54.05	183	224	Average
2705	39.21	60.19	74	-34.79	27.93	5.14	54.05	183	224	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

14.6.3 其它不必要之訊號

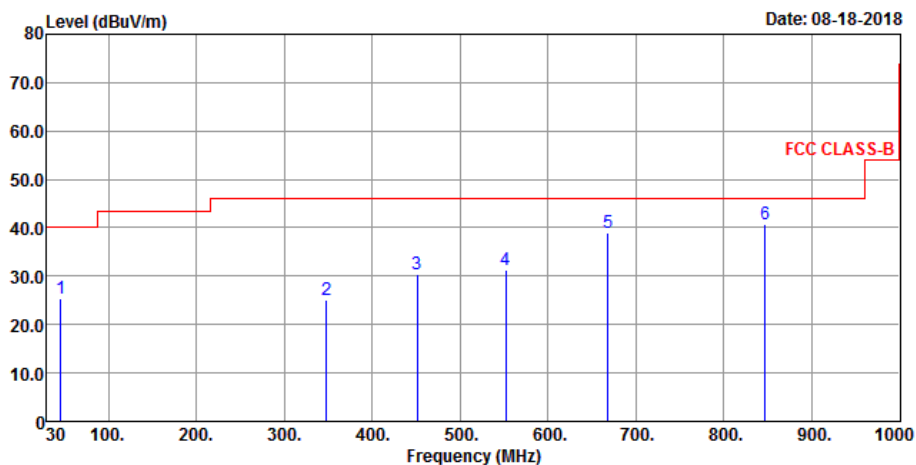
9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

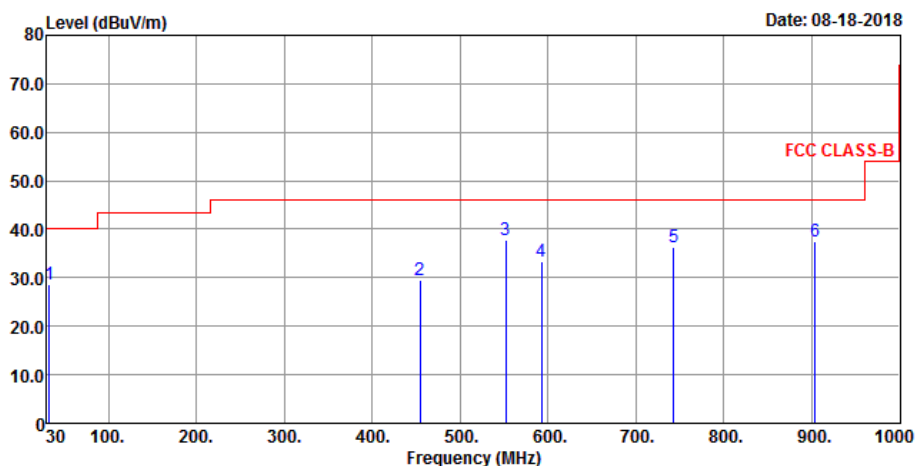
30 MHz ~ 1 GHz Data:

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Thomas Wei

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
45.52	25.35	42.5	40	-14.65	13.5	0.51	31.16	319	233	Peak
348.16	25.03	40.9	46	-20.97	14.1	1.87	31.84	255	322	Peak
450.98	30.32	43.66	46	-15.68	16.35	2.29	31.98	238	158	Peak
551.86	31.31	42.08	46	-14.69	18.5	2.7	31.97	206	199	Peak
668.26	38.92	47.16	46	-7.08	20.43	3.17	31.84	155	31	Peak
846.74	40.81	46	46	-5.19	22.83	3.83	31.85	122	147	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
32.91	28.65	46.81	40	-11.35	12.47	0.46	31.09	136	258	Peak
454.86	29.38	42.64	46	-16.62	16.43	2.3	31.99	189	233	Peak
552.37	37.8	48.57	46	-8.2	18.5	2.7	31.97	235	46	Peak
592.6	33.32	43.19	46	-12.68	19.43	2.87	32.17	287	315	Peak
742.95	36.33	42.86	46	-9.67	21.42	3.48	31.43	227	196	Peak
903.97	37.35	41.8	46	-8.65	23.53	4.05	32.03	203	247	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

14.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

15 6 dB 頻寬之要求

15.1 適用標準

請見本報告 3.1 節第(5)項的規定。

15.2 量測方法

- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減 6 dB 的最大頻率範圍。

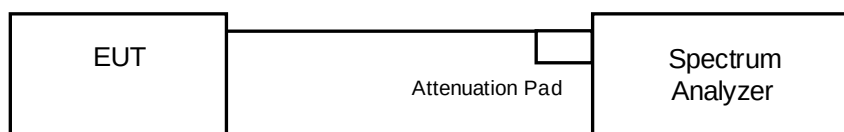
15.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

15.4 測試配置

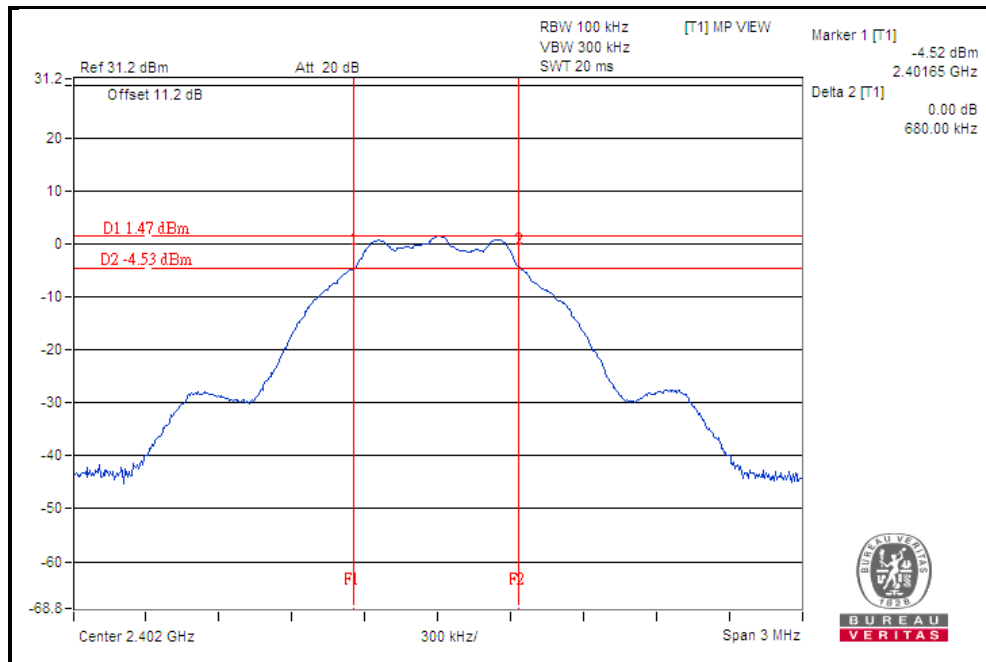


15.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.68	0.5	Pass
19	2440	0.68	0.5	Pass
39	2480	0.67	0.5	Pass

**此測試圖僅放測試結果最差的頻道。



15.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

16 峰值傳導輸出功率之量測

16.1 適用標準

請見本報告 3.1 節第(4)及(6)項的規定。

16.2 量測方法

- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態。
- 計算其輸出功率峰值。

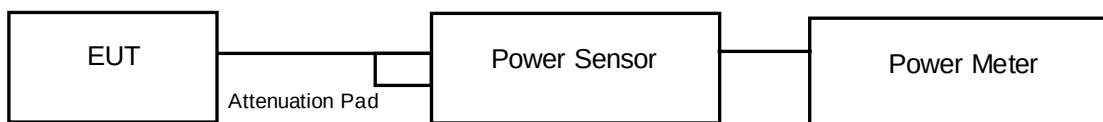
16.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 1.393 dB, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.
- Measurement Bandwidth of ML2495A is 65 MHz greater than 6 dB bandwidth of emission.

16.4 測試配置



16.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	1.578	1.98	30	Pass
19	2440	1.445	1.60	30	Pass
39	2480	1.361	1.34	30	Pass

16.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

17 功率頻譜密度之量測

17.1 適用標準

請見本報告 3.1 節第(7)項的規定。

17.2 量測方法

- 將待測物之天線埠經由適當之衰減直接連至測試儀器。
- 設定解析頻寬為 3 kHz，視訊頻寬為 10 kHz，掃描時間為 auto。
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。
- 其峰值位準必須不大於+8 dBm。

17.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

17.4 測試配置

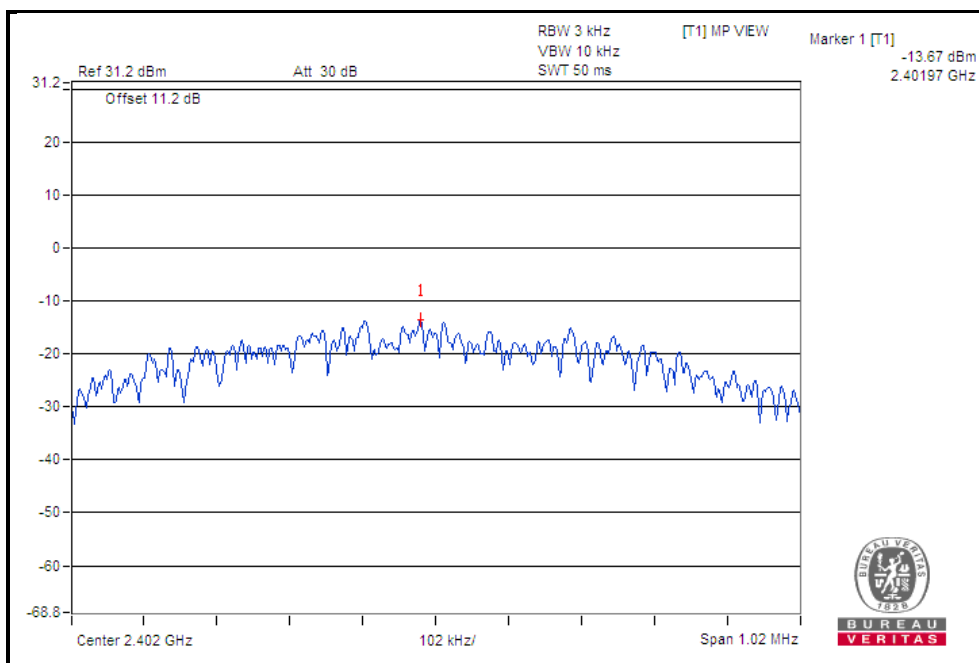


17.5 量測結果

操作模式	發射	測試日期	107 年 08 月 17 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	吳俊樺		

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	2402	-13.67	8	Pass
19	2440	-13.93	8	Pass
39	2480	-14.34	8	Pass

**此測試圖僅放測試結果最差的頻道。



17.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

NFC 頻段測試紀錄結果

18 主波發射之量測

18.1 適用標準

請見本報告 3.1 節第(28)項規定。

18.2 量測方法

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線分別置於 OPEN、CLOSE、GROUND-PARALLEL 極化各執行測試一次，以紀錄最大場強值。

Measurement Instrument Setting

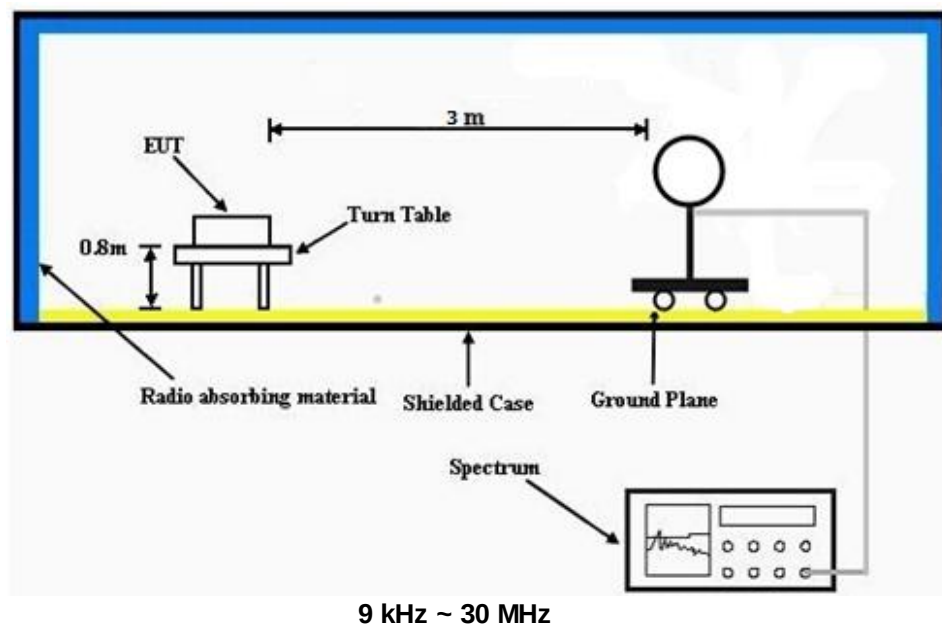
The following table is the setting of receiver

Frequency Range	Setting
9 kHz ~ 150 kHz	Quasi-Peak: RBW = 200 Hz
150 kHz ~ 30 MHz	Quasi-Peak: RBW = 9 kHz
30 MHz ~ 1000 MHz	Peak: RBW = 120 kHz; Quasi-Peak: RBW = 120 kHz

18.3 量測儀器

同 4.3 節

18.4 測試配置



18.5 場強度之計算

場強之計算公式如下：

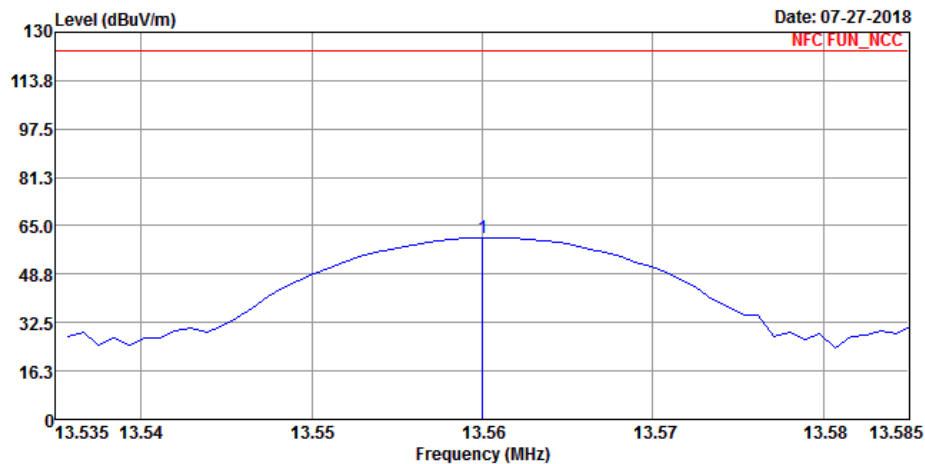
結果值 Emission level (dBuV/m)=機器讀值 Raw Value (dBuV) +校正因子 Correction Factor (dB/m)

餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m)-限制值 Limit value (dBuV/m)

量測結果請見下頁。

18.6 量測結果

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Frequency Range	13.553 ~ 13.567 MHz
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Quasi-Peak (QP)
Tested By	Jisyong Wang		



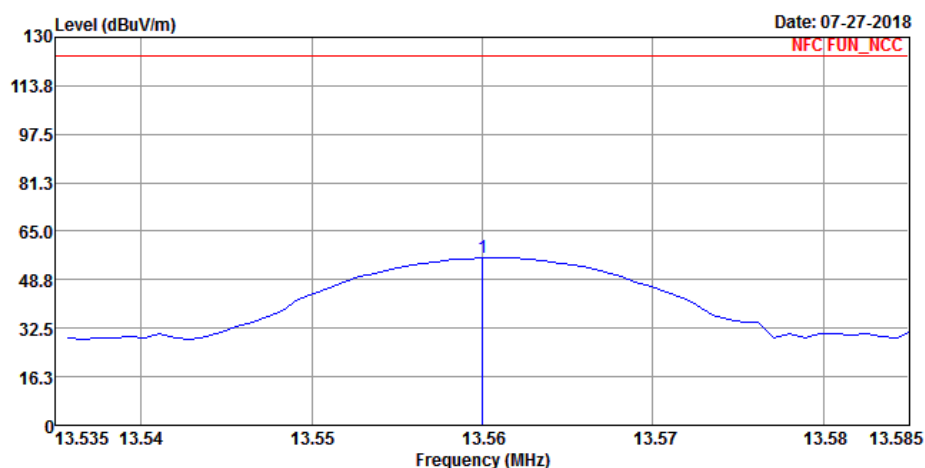
Antenna Polarity & Test Distance: Loop Antenna Open at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
13.56	60.78	64.16	124	-63.22	37.67	0.31	41.36	100	360	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamp Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值

$$\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40 \log(30 / 3) = \text{Limit @ 30 m} + 40$$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Frequency Range	13.553 ~ 13.567 MHz
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Quasi-Peak (QP)
Tested By	Jisyoung Wang		



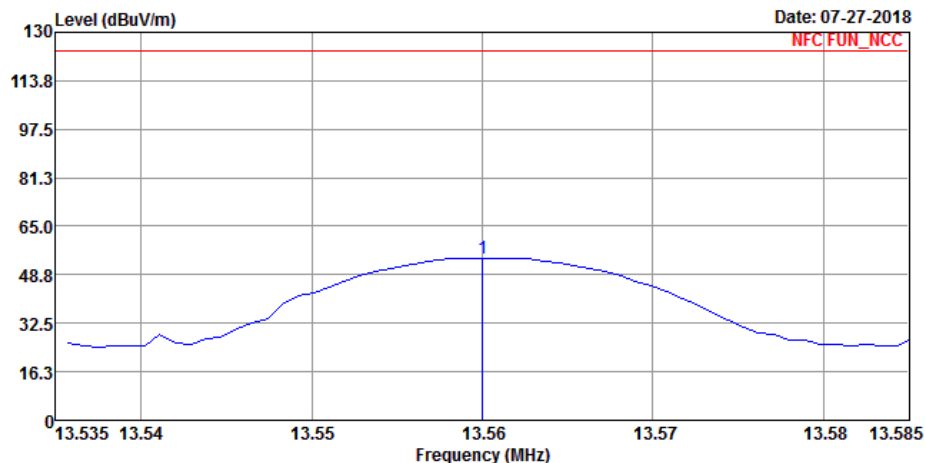
Antenna Polarity & Test Distance: Loop Antenna Close at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
13.56	55.91	59.29	124	-68.09	37.67	0.31	41.36	100	0	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamp Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值

$$\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Frequency Range	13.553 ~ 13.567 MHz
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Quasi-Peak (QP)
Tested By	Jisyoung Wang		



Antenna Polarity & Test Distance: Loop Antenna Ground-Parallel at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
13.56	54.32	57.7	124	-69.68	37.67	0.31	41.36	100	360	QP

Note:

1. Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value
5. 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
6. Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

18.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

19 不必要之發射量測

19.1 適用標準

請見本報告 3.1 節第(29)項規定。

19.2 量測方法

9 kHz ~ 30 MHz 量測：

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線分別置於 OPEN、CLOSE、GROUND-PARALLEL 極化各執行測試一次，以紀錄最大場強值。

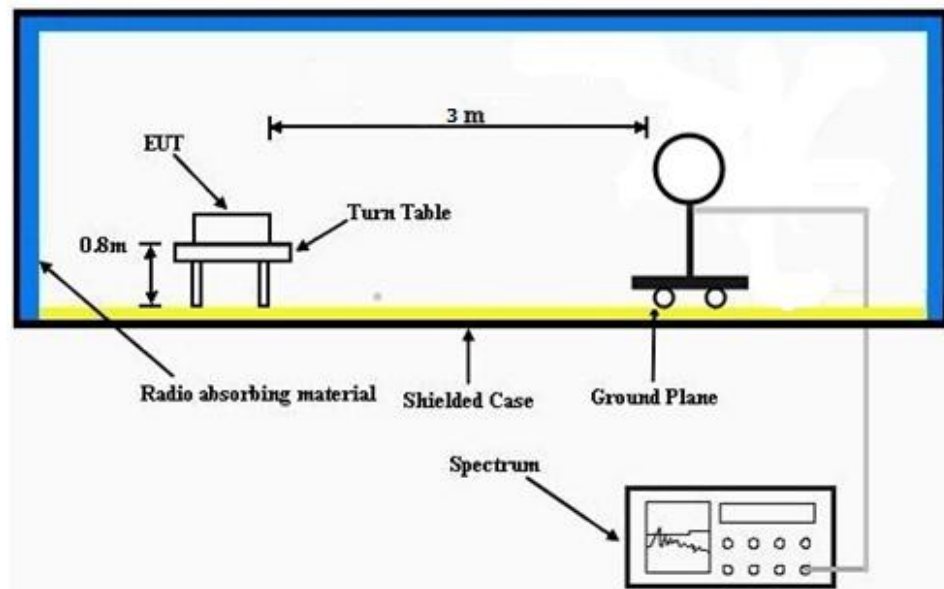
30 MHz ~ 1 GHz 量測：

在電波暗室，將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態。接收天線置於 3 米距離。桌面要 360 度旋轉，另外接收天線從離地 1 米至 4 米升降變化，以找出最大的輻射電場強度，接收天線分別置於水平、垂直極化各執行測試一次。

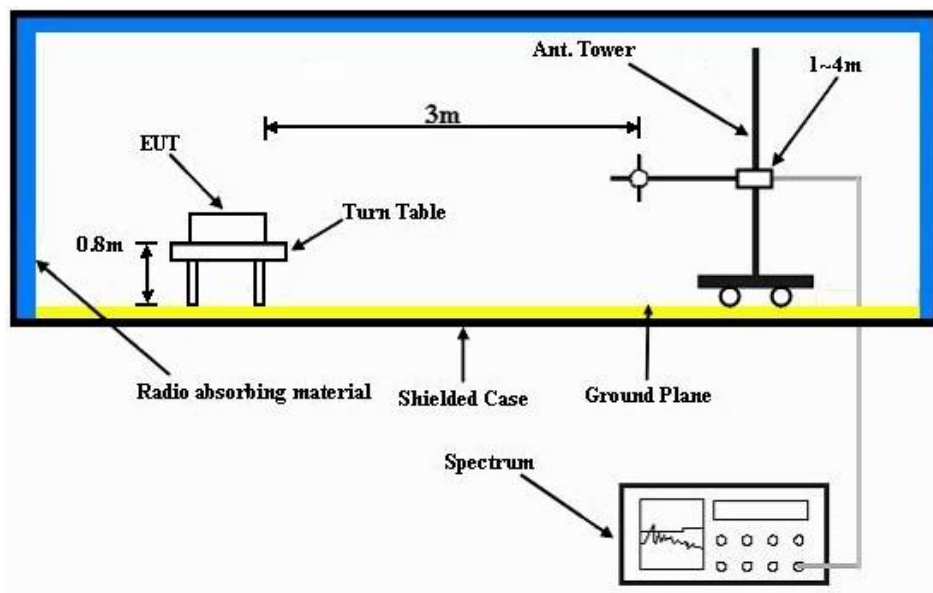
19.3 量測儀器

同 4.3 節

19.4 測試配置



9 kHz ~ 30 MHz



30 MHz ~ 1 GHz

19.5 場強度之計算

場強之計算公式如下：

結果值 Emission level (dBuV/m) = 機器讀值 Raw Value (dBuV) + 校正因子 Correction Factor (dB/m)

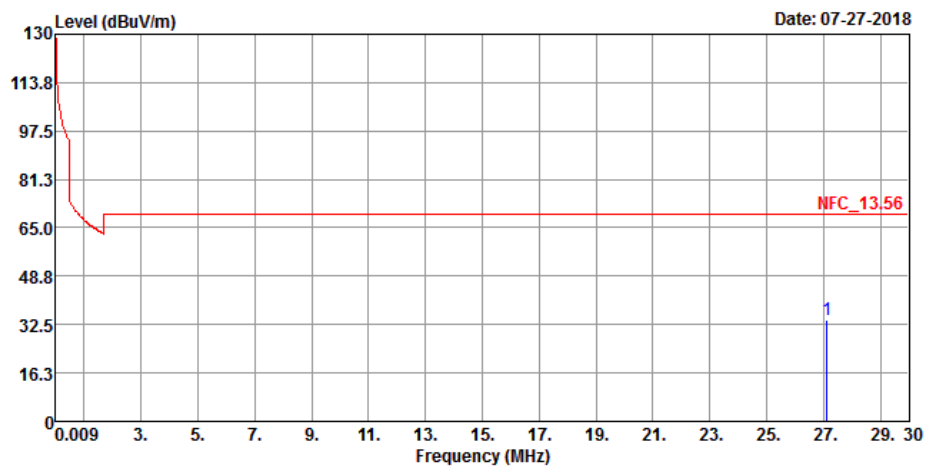
餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m) - 限制值 Limit value (dBuV/m)

量測結果請見下頁。

19.6 量測結果

<Below 30 MHz>

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Transmitter
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyong Wang		

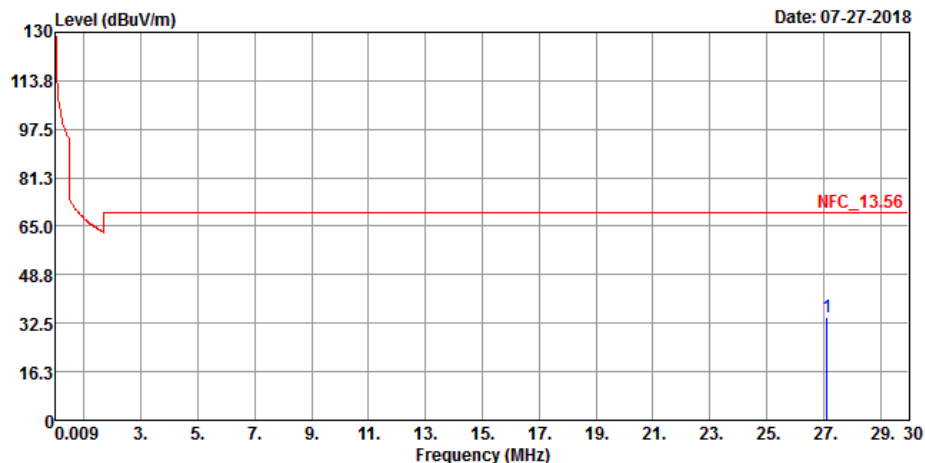


Antenna Polarity & Test Distance: Loop Antenna Open at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.12	33.85	39.25	69.54	-35.69	35.55	0.38	41.33	100	0	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamplifier Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Transmitter
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyoung Wang		

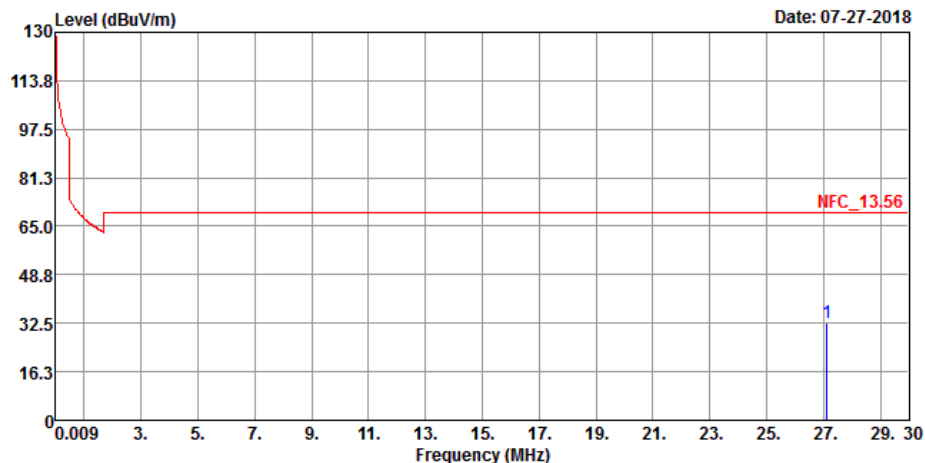


Antenna Polarity & Test Distance: Loop Antenna Close at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.12	34.65	40.05	69.54	-34.89	35.55	0.38	41.33	100	360	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamp Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Transmitter
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyoung Wang		

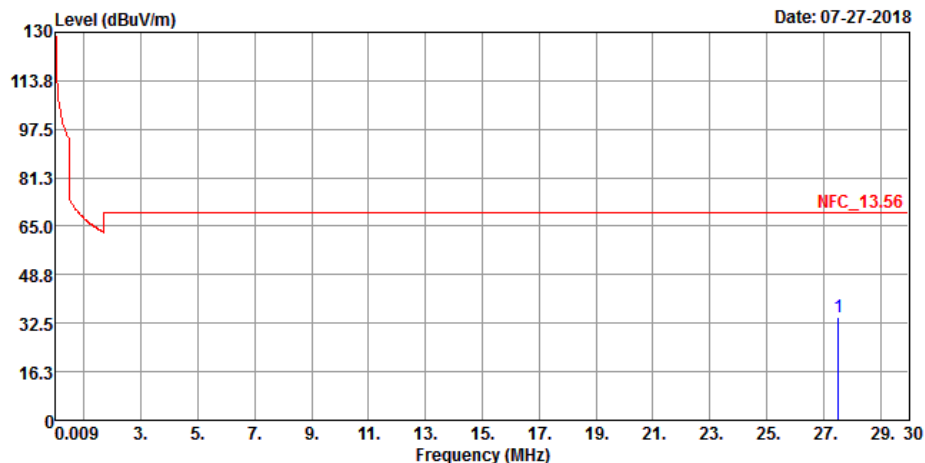


Antenna Polarity & Test Distance: Loop Antenna Ground-Parallel at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.12	32.65	38.05	69.54	-36.89	35.55	0.38	41.33	100	0	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamplifier Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Receiver
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyong Wang		

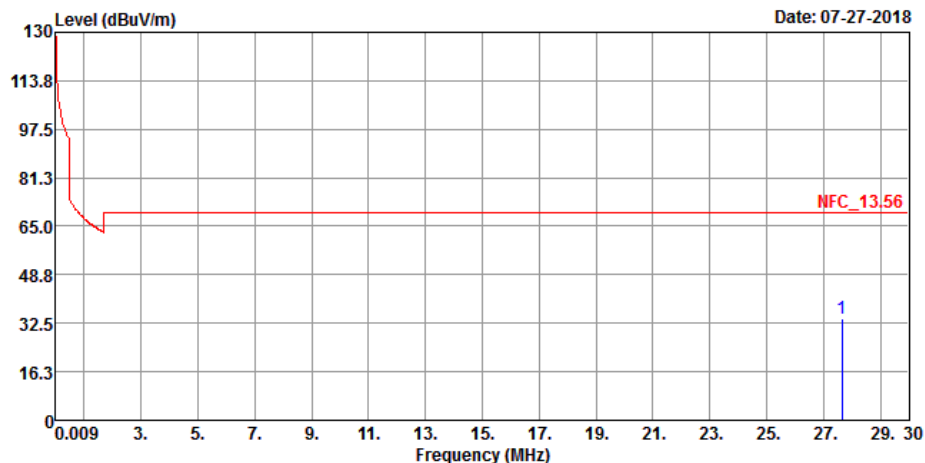


Antenna Polarity & Test Distance: Loop Antenna Open at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.52	34.69	39.89	69.54	-34.85	35.75	0.38	41.33	100	0	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamp Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Receiver
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyoung Wang		

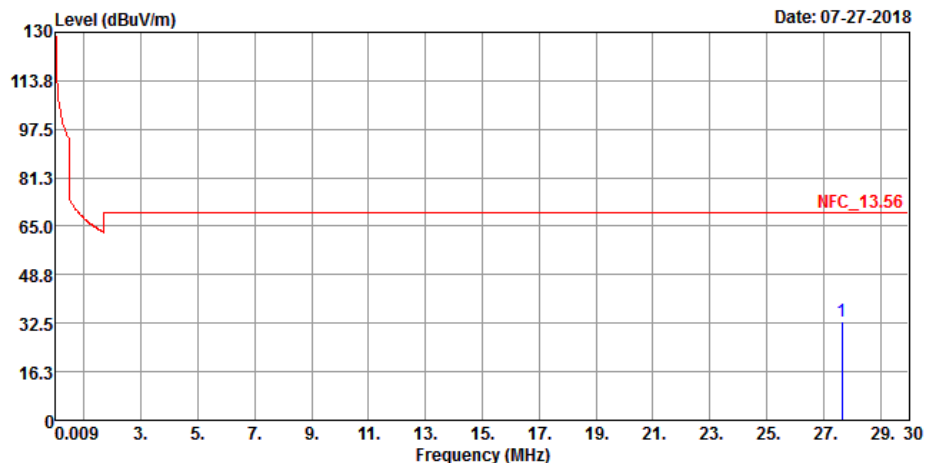


Antenna Polarity & Test Distance: Loop Antenna Close at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.65	33.95	38.95	69.54	-35.59	35.95	0.38	41.33	100	360	QP

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamplifier Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
 Close: loop antenna 與 EUT 垂直
 Ground-parallel: loop antenna 與地面平行

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Receiver
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Average (AV) Quasi-Peak (QP)
Tested By	Jisyoung Wang		



Antenna Polarity & Test Distance: Loop Antenna Ground-Parallel at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
27.65	33.02	38.02	69.54	-36.52	35.95	0.38	41.33	100	0	QP

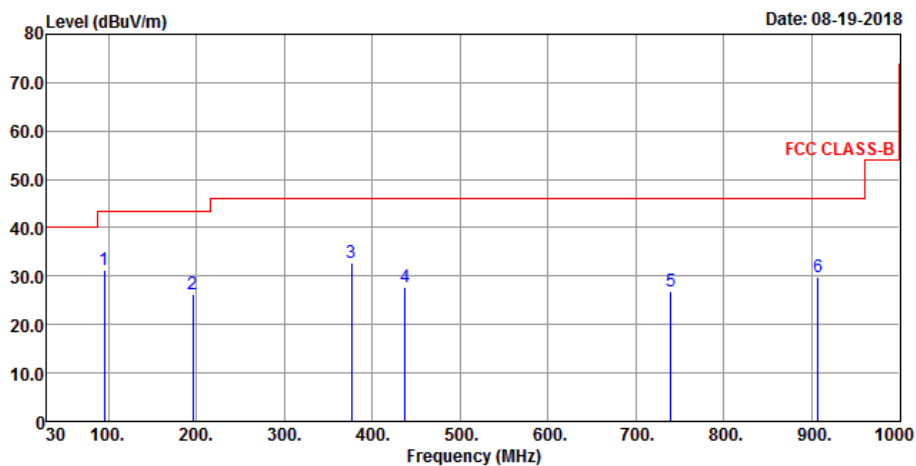
Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Correction Factor (dB/m)
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Preamp Factor (dB)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值
 $\text{Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$
 $\text{Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Open: loop antenna 面向 EUT
Close: loop antenna 與 EUT 垂直
Ground-parallel: loop antenna 與地面平行

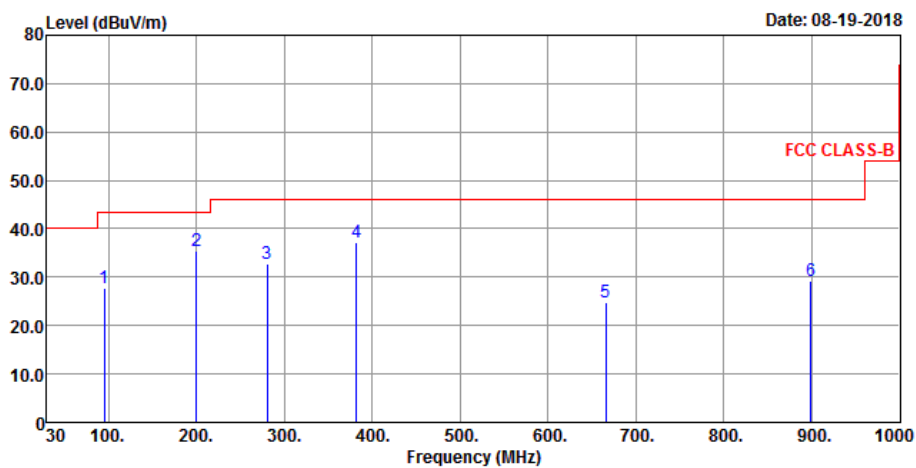
<Above 30 MHz>

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Transmitter
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Peak (PK) Quasi-Peak (QP)
Tested By	Jisyoung Wang		

Horizontal



Vertical



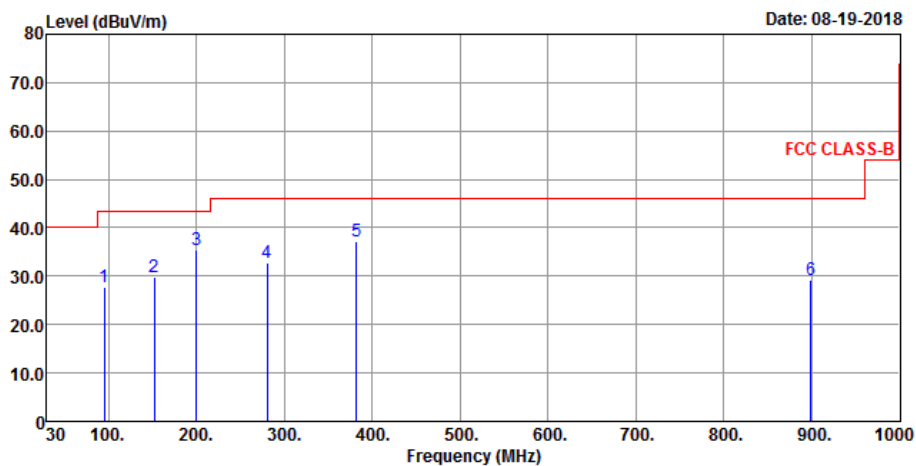
Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
94.99	31.36	53.91	43.5	-12.14	8.68	0.73	31.96	152	111	Peak
195.87	26.4	47.28	43.5	-17.1	9.64	1.21	31.73	152	265	Peak
376.29	32.64	47.82	46	-13.36	14.77	1.99	31.94	152	231	Peak
437.4	27.8	41.5	46	-18.2	16.08	2.22	32	185	254	Peak
740.04	26.83	33.46	46	-19.17	21.38	3.47	31.48	111	152	Peak
906.88	29.83	34.26	46	-16.17	23.55	4.06	32.04	132	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
94.99	27.74	50.29	43.5	-15.76	8.68	0.73	31.96	111	185	Peak
199.75	35.53	56.71	43.5	-7.97	9.36	1.23	31.77	196	285	Peak
280.26	32.66	50.53	46	-13.34	12.37	1.58	31.82	147	152	Peak
382.11	37.07	52.12	46	-8.93	14.91	2.01	31.97	132	152	Peak
665.35	24.93	33.24	46	-21.07	20.4	3.16	31.87	165	251	Peak
899.12	29.37	33.85	46	-16.63	23.5	4.03	32.01	121	102	Peak

Remarks:

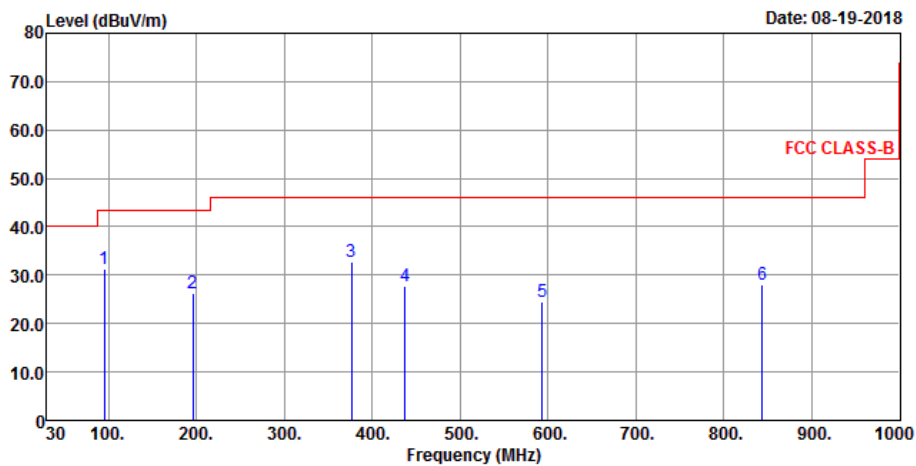
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

EUT Test Condition		Measurement Detail	
Input Power	110 Vac, 60 Hz	Operating Method	Receiver
Environmental Conditions	25 deg. C, 65 % RH	Detector Function	Peak (PK) Quasi-Peak (QP)
Tested By	Jisyoung Wang		

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
94.99	27.74	50.29	43.5	-15.76	8.68	0.73	31.96	125	141	Peak
152.22	29.93	47.89	43.5	-13.57	12.71	0.99	31.66	256	251	Peak
199.75	35.53	56.71	43.5	-7.97	9.36	1.23	31.77	132	251	Peak
280.26	32.66	50.53	46	-13.34	12.37	1.58	31.82	185	147	Peak
382.11	37.07	52.12	46	-8.93	14.91	2.01	31.97	252	111	Peak
899.12	29.37	33.85	46	-16.63	23.5	4.03	32.01	165	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
94.99	31.36	53.91	43.5	-12.14	8.68	0.73	31.96	152	214	Peak
195.87	26.4	47.28	43.5	-17.1	9.64	1.21	31.73	132	251	Peak
376.29	32.64	47.82	46	-13.36	14.77	1.99	31.94	111	165	Peak
437.4	27.8	41.5	46	-18.2	16.08	2.22	32	185	251	Peak
593.57	24.57	34.42	46	-21.43	19.46	2.87	32.18	132	251	Peak
843.83	28.18	33.4	46	-17.82	22.79	3.82	31.83	111	162	Peak

Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin Value = Emission Level – Limit value
- The other emission levels were very low against the limit.

19.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

20 天線之要求

20.1 適用標準

請見本報告 3.1 節第(31)項的規定。

20.2 天線規格

此待測物使用 Loop 天線，無使用天線接頭。

20.3 結果判定

符合低功率射頻電機技術規範之要求。

21 頻率容許差度之量測

21.1 適用標準

請見本報告 3.1 節第(30)項的規定。

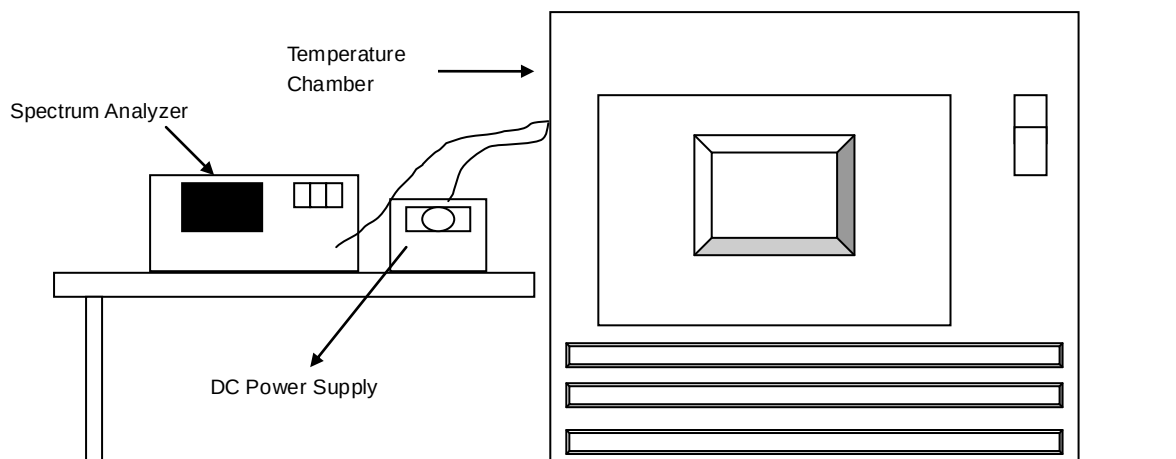
21.2 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Spectrum Analyzer R&S	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Temperature & Humidity Chamber	GTH-120-40-C P-AR	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
Power Supply Anritsu	2303	1341402	Nov. 01, 2017	Oct. 31, 2018

Note:

- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The measurement uncertainty is 207 Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

21.3 測試配置



21.4 量測結果

操作模式	發射	測試日期	107 年 07 月 27 日
量測場地溫度	25 °C	量測場地濕度	60 % RH
測試者	林冠澤		

AFC Frequency Error vs. Temperature Limit : ± 0.01 %									
Temp. (°C)	Power Supply (Vdc)	0 minute		2 minute		5 minute		10 minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	3.8	13.559959	-0.00030	13.559953	-0.00035	13.559961	-0.00029	13.559943	-0.00042
40	3.8	13.56002	0.00015	13.560038	0.00028	13.560042	0.00031	13.560025	0.00018
30	3.8	13.560063	0.00046	13.560069	0.00051	13.560062	0.00046	13.560058	0.00043
20	3.8	13.560056	0.00041	13.560076	0.00056	13.560066	0.00049	13.560075	0.00055
10	3.8	13.560005	0.00004	13.560006	0.00004	13.559987	-0.00010	13.559988	-0.00009
0	3.8	13.559961	-0.00029	13.559933	-0.00049	13.559947	-0.00039	13.559943	-0.00042
-10	3.8	13.559949	-0.00038	13.559948	-0.00038	13.559946	-0.00040	13.559943	-0.00042
-20	3.8	13.559948	-0.00038	13.559969	-0.00023	13.559958	-0.00031	13.559947	-0.00039
-30	3.8	13.559997	-0.00002	13.560023	0.00017	13.559998	-0.00001	13.56001	0.00007

AFC Frequency Error vs. Voltage Limit : ± 0.01 %									
Temp. (°C)	Power Supply (Vdc)	0 minute		2 minute		5 minute		10 minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	4.3	13.560056	0.00041	13.560075	0.00055	13.560065	0.00048	13.560072	0.00053
	3.8	13.560056	0.00041	13.560076	0.00056	13.560066	0.00049	13.560075	0.00055
	3.45	13.560055	0.00041	13.560073	0.00054	13.560065	0.00048	13.560073	0.00054

註 1：此待測物電源輸入使用 Dummy Battery 進行測試

註 2：此電壓為客戶宣告

21.5 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

22 電源線傳導干擾之量測

22.1 適用標準

請見本報告 3.1 節第(1)項的規定。

22.2 量測方法

將待測物置於 0.8 米高的非金屬桌面，使其操作在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15 MHz 至 30 MHz 之間之電源線傳導放射強度。

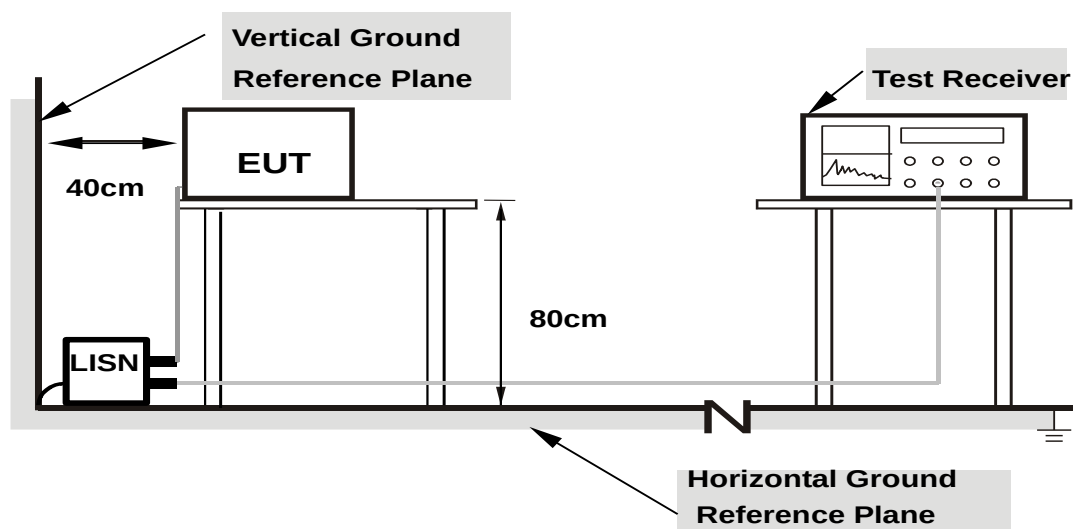
22.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2017	Sep. 04, 2018
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Conc_ V7.3.7.4	NA	NA	NA

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.
4. The measurement uncertainty is 2.44 dB, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

22.4 測試配置



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

22.5 干擾值之計算

餘裕度 Margin(dB)= 結果值 Emission level (dBuV)-限制值 Limit value (dBuV)

電源傳導干擾電壓之計算公式如下

結果值 Emission level (dBuV)=校正因子 Correction Factor (dB)+儀器讀值 Reading value (dBuV)

其中校正因子 Correction Factor (dB)為：

饋線損失+電源阻抗模擬網路損失

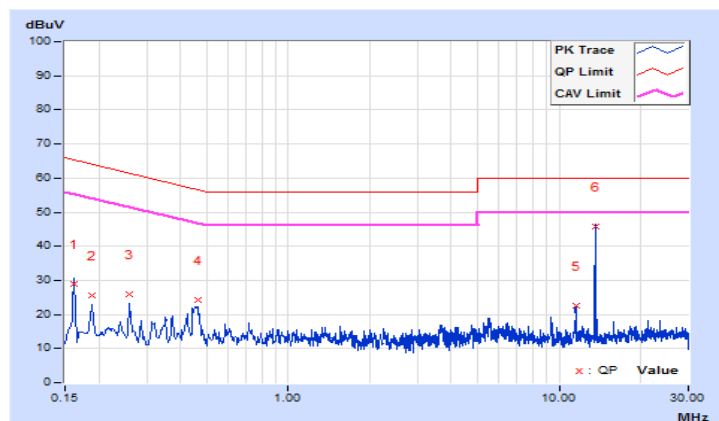
22.6 量測結果

量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 65%RH
測試者	王紀雄	測試日期	2018/8/19

量測電源端點：火線 (L1)										
No	頻率 (MHz)	修正 因子 (dB)	量測讀值 (dBuV)		干擾值 (dBuV)		限制值 (dBuV)		餘裕 (dB)	
			準峰值	平均值	準峰值	平均值	準峰值	平均值	準峰值	平均值
1	0.16173	9.67	19.14	0.29	28.81	9.96	65.37	55.37	-36.56	-45.41
2	0.18903	9.67	15.82	0.89	25.49	10.56	64.08	54.08	-38.59	-43.52
3	0.25932	9.67	16.30	1.85	25.97	11.52	61.45	51.45	-35.48	-39.93
4	0.46179	9.67	14.58	0.17	24.25	9.84	56.66	46.66	-32.41	-36.82
5	11.53201	9.88	12.77	0.75	22.65	10.63	60.00	50.00	-37.35	-39.37
6	13.56130	9.90	35.94	20.28	45.84	30.18	60.00	50.00	-14.16	-19.82

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)

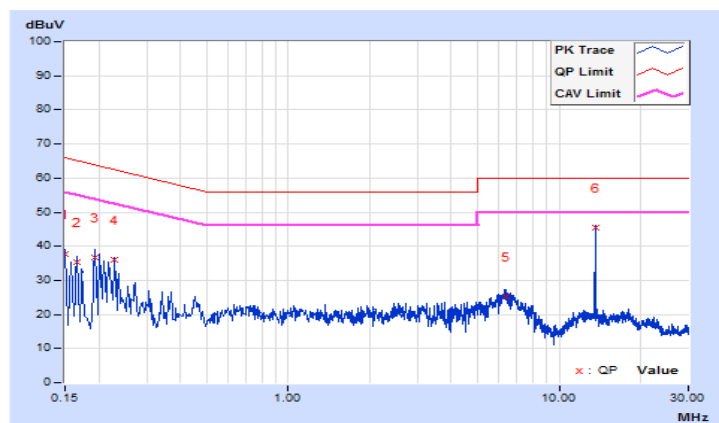


量測頻率範圍	150kHz ~ 30MHz	檢測器與頻寬	準峰值 (QP) / 平均值 (AV), 9kHz
量測電壓值	110Vac, 60Hz	量測場地溫濕度	25°C, 65%RH
測試者	王紀雄	測試日期	2018/8/19

量測電源端點：中性線 (N)										
No	頻率 (MHz)	修正因子 (dB)	量測讀值 (dBuV)		干擾值 (dBuV)		限制值 (dBuV)		餘裕 (dB)	
			準峰值	平均值	準峰值	平均值	準峰值	平均值	準峰值	平均值
1	0.15000	9.68	28.05	6.50	37.73	16.18	66.00	56.00	-28.27	-39.82
2	0.16564	9.68	25.52	4.92	35.20	14.60	65.18	55.18	-29.98	-40.58
3	0.19305	9.68	26.92	3.23	36.60	12.91	63.90	53.90	-27.30	-40.99
4	0.22820	9.68	26.41	2.29	36.09	11.97	62.51	52.51	-26.42	-40.54
5	6.38254	9.81	15.30	2.24	25.11	12.05	60.00	50.00	-34.89	-37.95
6	13.56130	9.94	35.66	20.01	45.60	29.95	60.00	50.00	-14.40	-20.05

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)



22.7 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

23 待測物照片

請參照 BV CPS 報告編號：180717C21

24 檢測實驗室基本資料

立德國際商品試驗有限公司桃園分公司提供產業界最佳的檢測以及諮詢服務。
本公司為 ISO/IEC 17025 認可實驗室。

如您有任何問題或建議，請與下列實驗室聯絡：

林口 EMC / RF 實驗室：

Tel: 886-2-26052180

Fax: 886-2-26051924

新竹 EMC / RF 及通訊實驗室：

Tel: 886-3-5935343

Fax: 886-3-5935342

華亞 EMC / RF / Safety 實驗室：

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

您也可以在我們的網站內找到各實驗室的地圖。

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