

低功率射頻電機技術規範測試報告(BT-EDR)

報告編號:

RT180907E05

申請者

百滋國際股份有限公司

產品名稱

藍牙音箱

型號

STANMORE II BLUETOOTH

製造廠商

Zound Industries International AB

商標或廠牌

Marshall

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新竹實驗室

日期 107 年 10 月 24 日

報告簽署人簽章:

陳瓊美



目 錄

報告發行紀錄	4
1 低功率射頻電機量測記錄表	6
2 一般敘述	7
2.1 待測設備 (BT-EDR)	7
2.2 輔助測試之週邊設備描述	9
2.3 測試架構圖	10
3 適用規範	11
3.1 規範要求	11
3.2 限制使用之頻帶	13
4 帶外發射之量測	14
4.1 適用標準	14
4.2 量測方法	14
4.3 量測儀器	15
4.4 測試配置	16
4.5 場強度之計算	16
4.6 量測結果	17
4.6.1 發射諧波	17
4.6.2 接收諧波	29
4.6.3 其它不必要之訊號	35
4.7 量測結果判定	36
4.8 測試配置照片	36
5 電源線傳導干擾之量測	37
5.1 適用標準	37
5.2 量測方法	37
5.3 量測儀器	37
5.4 測試配置	38
5.5 干擾值之計算	38
5.6 量測結果	39
5.7 量測結果判定	40
5.8 配置照片	40
6 20 dB 頻寬之量測	41
6.1 適用標準	41
6.2 量測方法	41
6.3 量測儀器	41
6.4 測試配置	41
6.5 量測結果	42
6.6 量測結果判定	42
7 峰值傳導輸出功率之量測	43
7.1 適用標準	43
7.2 量測方法	43
7.3 量測儀器	43
7.4 測試配置	43
7.5 量測結果	44
7.6 量測結果判定	44
8 跳頻頻道數之量測	45

8.1	適用標準	45
8.2	量測方法	45
8.3	量測儀器	45
8.4	測試配置	45
8.5	量測結果	46
8.6	量測結果判定	46
9	跳頻頻道間隔之量測	47
9.1	適用標準	47
9.2	量測方法	47
9.3	量測儀器	47
9.4	測試配置	47
9.5	量測結果	48
9.6	量測結果判定	48
10	每一頻道停留時間之量測	49
10.1	適用標準	49
10.2	量測方法	49
10.3	量測儀器	49
10.4	測試配置	49
10.5	量測結果	50
10.6	量測結果判定	53
11	檢測實驗室基本資料	54

報告發行紀錄

Issue No.	Description	Date Issued
RT180907E05	Original release.	107 年 10 月 24 日

證 明 書

產 品 名 稱：藍牙音箱
商 標：*Marshall*
型 號：STANMORE II BLUETOOTH
申 請 者：百滋國際股份有限公司
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（型號：STANMORE II BLUETOOTH），收件日期 107 年 09 月 07 日，於 107 年 09 月 19 日至 10 月 01 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 ！

報告製作者： 吳 茲 臻 ， 日 期： 107 年 10 月 24 日
吳 茲 臻 / 專員

審 核 者： 陳 瓊 美 ， 日 期： 107 年 10 月 24 日
陳 瓊 美 / 經理

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：300 新竹市科學工業園區力行一路 1 號 E-2

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：百滋國際股份有限公司

製造廠商：Zound Industries International AB

申請廠商地址：105 臺北市松山區寶清街 17 號 5 樓之 1

廠牌：*Marshall*

產品名稱：藍牙音箱

型號：STANMORE II BLUETOOTH

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 新竹實驗室

量測單位地址：300 新竹市科學工業園區力行一路 1 號 E-2

量測單位認可編號：TAF 2022

量測規範：低功率射頻電機技術規範 LP0002
ANSI C63.10-2013

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	註一
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

註一：此頻寬測試值為跳頻頻道間隔之量測參考值。

2 一般敘述

2.1 待測設備 (BT-EDR)

產品名稱：	藍牙音箱
型號：	STANMORE II BLUETOOTH
額定電源：	100-240Vac, 50/60Hz
調變方式：	GFSK, $\pi/4$ -DQPSK, 8DPSK
傳輸速率：	Up to 3Mbps
載波頻率：	2402~2480MHz
頻道數：	79
發射功率：	6.76 dBm
天線種類：	見註
電源線類別：	Power cord x 1 (Unshielded, 1.8m)
信號線類別：	NA
配件：	NA

註

1. 此待測設備搭配測試的天線，其資料如下：

Brand	Model	Antenna Gain (dBi)	Frequency range (MHz)	Antenna Type	Connector Type	Cable Length
Walsin	RFPCA501019NNAB301	4.5	2400~2500	Monopole	Notch grafting	180mm

2. 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
Bluetooth EDR		
1GHz 以上量測	GFSK: Ch 0, 39, 78 8DPSK: Ch 0, 39, 78	Ch 0, 39, 78
其它不必要之訊號	GFSK: Ch39	Ch39

*電源線傳導干擾量測經過評估後，以 GFSK: Ch 39 測試模式進行最終量測。

此裝置各頻道的中心頻率如下：

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

詳細之規格請參考使用說明書，產品的照片請參照 BV 編號: 180907E05-1。

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。

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	iPod	Apple	MC749TA/A	CC4DN25WDFDM	NA	Provided by Lab
B.	DVD Palyer	Pioneer	DV-600AV-S	HCKD011979LS	FCC DoC	Provided by Lab

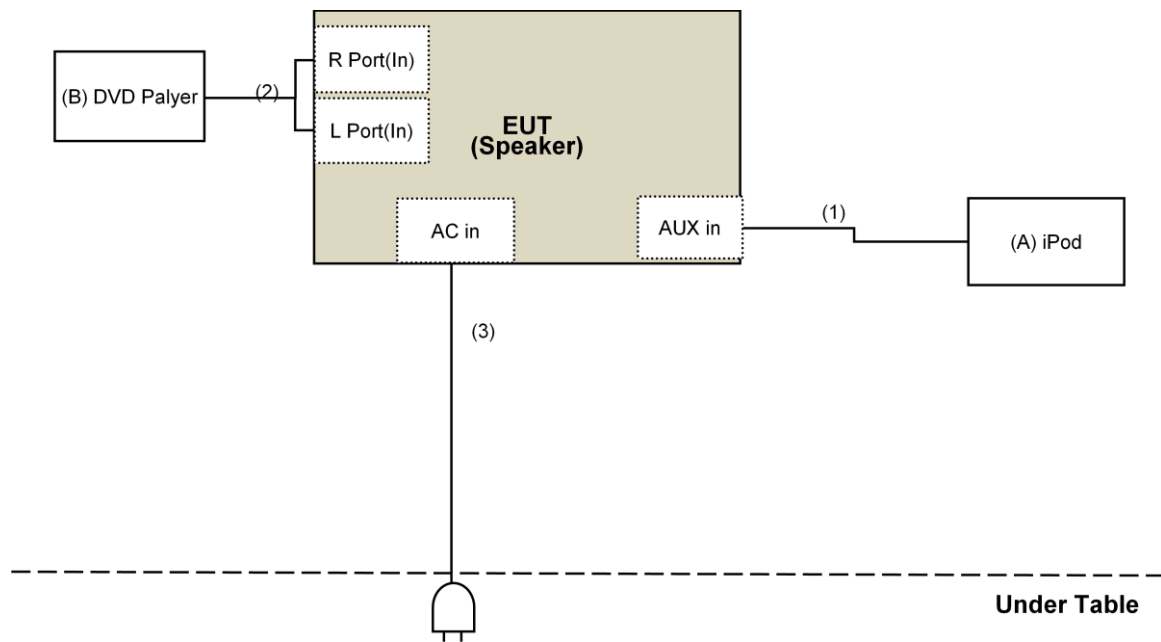
Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Audio Cable	1	1.5	Yes	0	Provided by Lab
2.	Audio Cable	1	1.5	Yes	0	Provided by Lab
3.	AC Cable	1	1.8	No	0	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

2.3 測試架構圖



3 適用規範

3.1 規範要求

(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(MHz)	電場強度(微伏特/公尺, uV/m)	測距(公尺)
0.009 - 0.490(含)	2,400/f(kHz)	300
0.490 (不含) - 1.705 (含)	24,000/f(kHz)	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 3.10.1.3 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。

(5) 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。

(6)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。

(7)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。

(8)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。

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	

4 帶外發射之量測

4.1 適用標準

請見本報告 3.1 節第(2)項的規定。

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。

備註：對於 1GHz 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

4.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna ^(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-4-1	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-2	Mar. 21, 2018	Mar. 20, 2019
RF Cable	8D	966-4-3	Mar. 21, 2018	Mar. 20, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-03	May 10, 2018	May 09, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150318	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150321	Jan. 29, 2018	Jan. 28, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160925	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

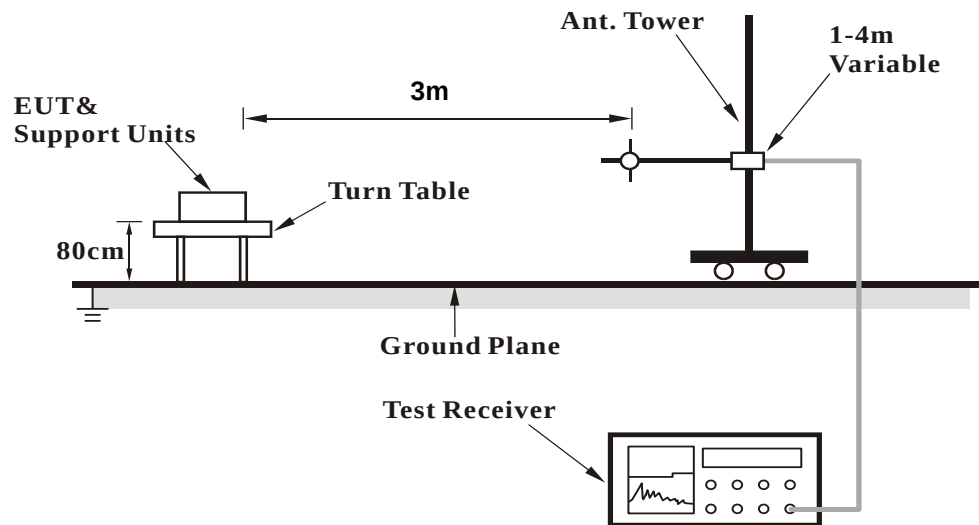
Note:

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
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.

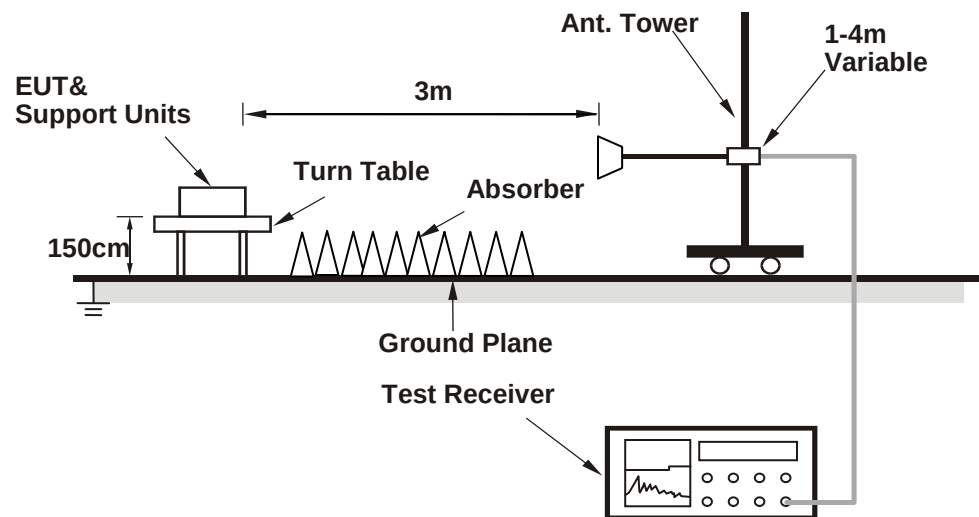
Measurement	Value
Radiated emissions (30MHz-1GHz)	5.33 dB
Radiated emissions (1GHz ~6GHz)	5.10 dB
Radiated emissions (6GHz ~18GHz)	4.85 dB
Radiated emissions (18GHz ~40GHz)	5.24 dB

4.4 測試配置

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



4.5 場強度之計算

場強度之計算公式如下：

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

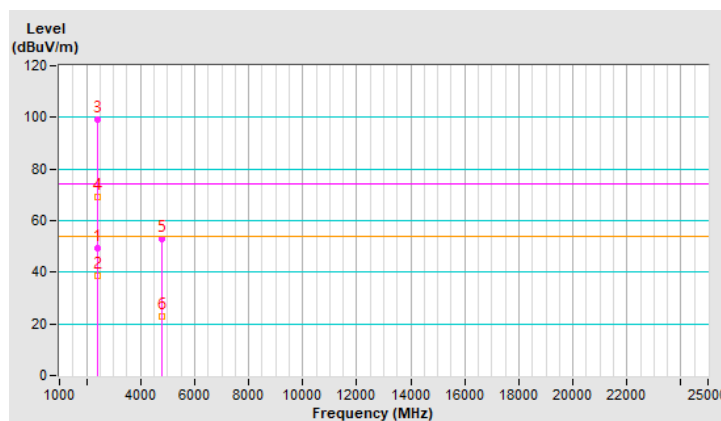
操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 0 : 2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	49.5 PK	74.0	-24.5	1.45 H	240	45.5	4.0
2	2390.00	38.7 AV	54.0	-15.3	1.45 H	240	34.7	4.0
3	*2402.00	99.1 PK			1.45 H	240	95.1	4.0
4	*2402.00	69.0 AV			1.45 H	240	65.0	4.0
5	4804.00	53.0 PK	74.0	-21.0	1.74 H	226	43.6	9.4
6	4804.00	22.9 AV	54.0	-31.1	1.74 H	226	13.5	9.4
7	#7206.00	-	-	-	-	-	-	-
8	#9608.00	-	-	-	-	-	-	-
9	12010.00	-	-	-	-	-	-	-
10	#14412.00	-	-	-	-	-	-	-
11	#16814.00	-	-	-	-	-	-	-
12	19216.00	-	-	-	-	-	-	-
13	#21618.00	-	-	-	-	-	-	-
14	#24020.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on $0.625 * 5$ per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1$ dB
8. The average value of fundamental and harmonic frequency is: Average = Peak value + $20 \log(\text{Duty cycle})$
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

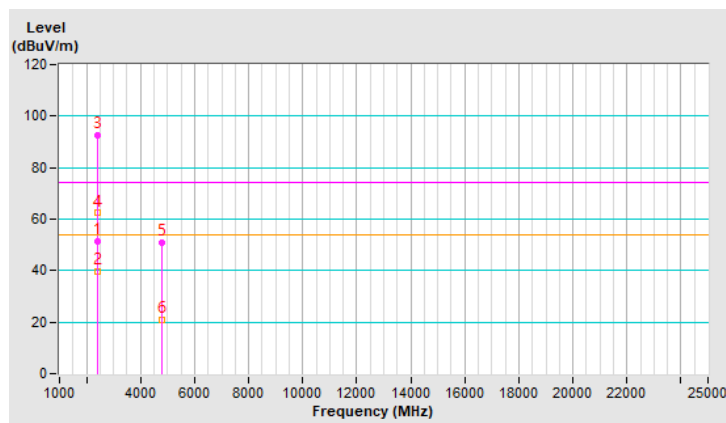


操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	51.3 PK	74.0	-22.7	1.62 V	241	47.3	4.0
2	2390.00	39.7 AV	54.0	-14.3	1.62 V	241	35.7	4.0
3	*2402.00	92.4 PK			1.62 V	241	88.4	4.0
4	*2402.00	62.3 AV			1.62 V	241	58.3	4.0
5	4804.00	51.1 PK	74.0	-22.9	1.58 V	210	41.7	9.4
6	4804.00	21.0 AV	54.0	-33.0	1.58 V	210	11.6	9.4
7	#7206.00	-	-	-	-	-	-	-
8	#9608.00	-	-	-	-	-	-	-
9	12010.00	-	-	-	-	-	-	-
10	#14412.00	-	-	-	-	-	-	-
11	#16814.00	-	-	-	-	-	-	-
12	19216.00	-	-	-	-	-	-	-
13	#21618.00	-	-	-	-	-	-	-
14	#24020.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

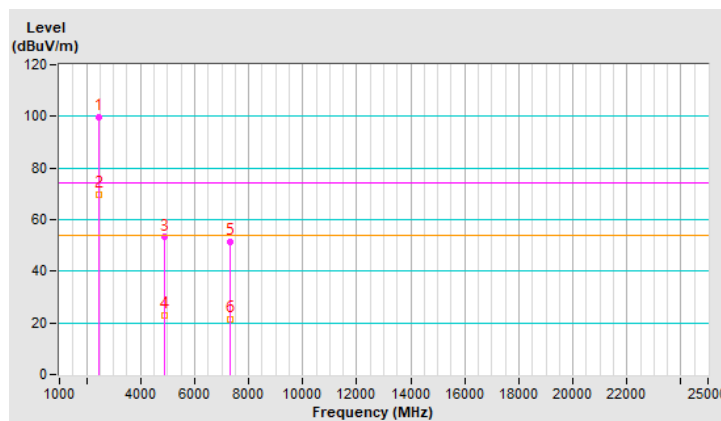


操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	99.7 PK			1.49 H	239	95.9	3.8
2	*2441.00	69.6 AV			1.49 H	239	65.8	3.8
3	4882.00	53.2 PK	74.0	-20.8	1.71 H	249	43.6	9.6
4	4882.00	23.1 AV	54.0	-30.9	1.71 H	249	13.5	9.6
5	7323.00	51.4 PK	74.0	-22.6	1.47 H	157	35.4	16.0
6	7323.00	21.3 AV	54.0	-32.7	1.47 H	157	5.3	16.0
7	#9764.00	-	-	-	-	-	-	-
8	12205.00	-	-	-	-	-	-	-
9	#14646.00	-	-	-	-	-	-	-
10	#17087.00	-	-	-	-	-	-	-
11	19528.00	-	-	-	-	-	-	-
12	#21969.00	-	-	-	-	-	-	-
13	#24410.00	-	-	-	-	-	-	-

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency (主頻).
- " # ": The radiated frequency is out of the restricted band.
- The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
- " - ": The emission levels were too low to be detected.
- The blank is not available, the limit of fundamental frequency was restricted at the output power.

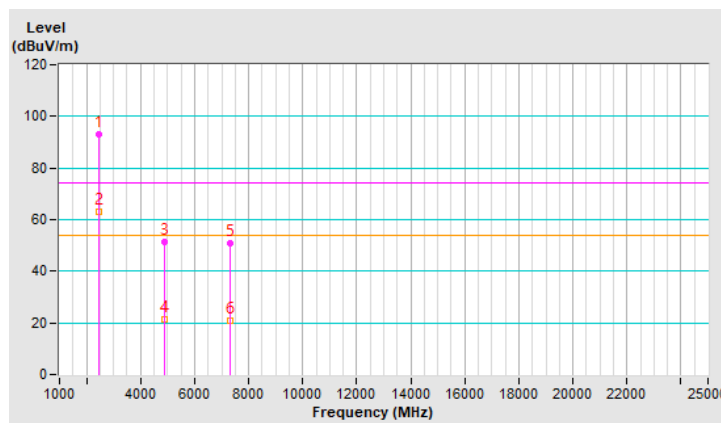


操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	93.3 PK			1.68 V	250	89.5	3.8
2	*2441.00	63.2 AV			1.68 V	250	59.4	3.8
3	4882.00	51.6 PK	74.0	-22.4	1.58 V	203	42.0	9.6
4	4882.00	21.5 AV	54.0	-32.5	1.58 V	203	11.9	9.6
5	7323.00	50.9 PK	74.0	-23.1	1.61 V	277	34.9	16.0
6	7323.00	20.8 AV	54.0	-33.2	1.61 V	277	4.8	16.0
7	#9764.00	-	-	-	-	-	-	-
8	12205.00	-	-	-	-	-	-	-
9	#14646.00	-	-	-	-	-	-	-
10	#17087.00	-	-	-	-	-	-	-
11	19528.00	-	-	-	-	-	-	-
12	#21969.00	-	-	-	-	-	-	-
13	#24410.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

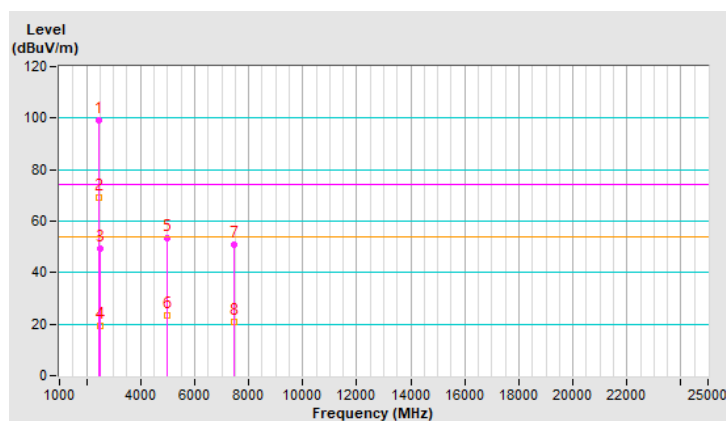


操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	99.4 PK			1.54 H	243	95.7	3.7
2	*2480.00	69.3 AV			1.54 H	243	65.6	3.7
3	2483.50	49.5 PK	74.0	-24.5	1.54 H	243	45.8	3.7
4	2483.50	19.4 AV	54.0	-34.6	1.54 H	243	15.7	3.7
5	4960.00	53.4 PK	74.0	-20.6	1.71 H	230	43.6	9.8
6	4960.00	23.3 AV	54.0	-30.7	1.71 H	230	13.5	9.8
7	7440.00	50.9 PK	74.0	-23.1	1.45 H	149	34.7	16.2
8	7440.00	20.8 AV	54.0	-33.2	1.45 H	149	4.6	16.2
9	#9920.00	-	-	-	-	-	-	-
10	12400.00	-	-	-	-	-	-	-
11	#14880.00	-	-	-	-	-	-	-
12	#17360.00	-	-	-	-	-	-	-
13	19840.00	-	-	-	-	-	-	-
14	22320.00	-	-	-	-	-	-	-
15	#24800.00	-	-	-	-	-	-	-

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency (主頻).
- " # ": The radiated frequency is out of the restricted band.
- The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
- " - ": The emission levels were too low to be detected.
- The blank is not available, the limit of fundamental frequency was restricted at the output power.

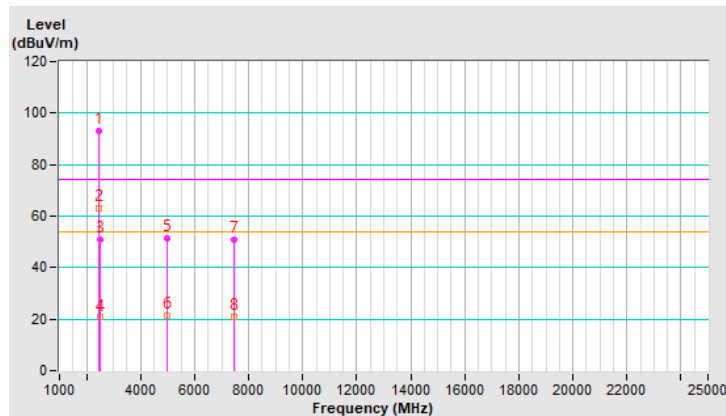


操作模式：	發射	調變技術：	BT_GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	93.2 PK			1.69 V	247	89.5	3.7
2	*2480.00	63.1 AV			1.69 V	247	59.4	3.7
3	2483.50	50.7 PK	74.0	-23.3	1.69 V	247	47.0	3.7
4	2483.50	20.6 AV	54.0	-33.4	1.69 V	247	16.9	3.7
5	4960.00	51.5 PK	74.0	-22.5	1.57 V	210	41.7	9.8
6	4960.00	21.4 AV	54.0	-32.6	1.57 V	210	11.6	9.8
7	7440.00	51.0 PK	74.0	-23.0	1.65 V	277	34.8	16.2
8	7440.00	20.9 AV	54.0	-33.1	1.65 V	277	4.7	16.2
9	#9920.00	-	-	-	-	-	-	-
10	12400.00	-	-	-	-	-	-	-
11	#14880.00	-	-	-	-	-	-	-
12	#17360.00	-	-	-	-	-	-	-
13	19840.00	-	-	-	-	-	-	-
14	22320.00	-	-	-	-	-	-	-
15	#24800.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.



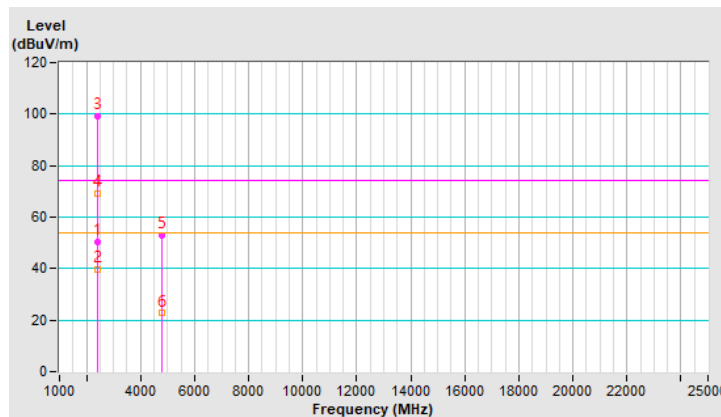
BT_8DPSK

操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 0 : 2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	50.4 PK	74.0	-23.6	1.50 H	242	46.4	4.0
2	2390.00	39.5 AV	54.0	-14.5	1.50 H	242	35.5	4.0
3	*2402.00	99.3 PK			1.50 H	242	95.3	4.0
4	*2402.00	69.2 AV			1.50 H	242	65.2	4.0
5	4804.00	52.8 PK	74.0	-21.2	1.71 H	246	43.4	9.4
6	4804.00	22.7 AV	54.0	-31.3	1.71 H	246	13.3	9.4
7	#7206.00	-	-	-	-	-	-	-
8	#9608.00	-	-	-	-	-	-	-
9	12010.00	-	-	-	-	-	-	-
10	#14412.00	-	-	-	-	-	-	-
11	#16814.00	-	-	-	-	-	-	-
12	19216.00	-	-	-	-	-	-	-
13	#21618.00	-	-	-	-	-	-	-
14	#24020.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

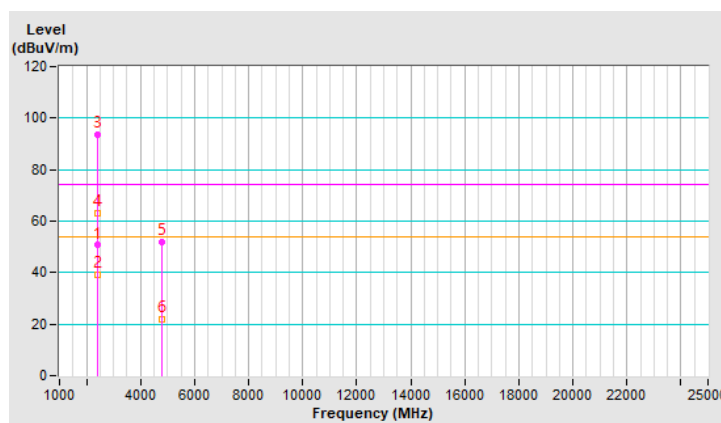


操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	50.6 PK	74.0	-23.4	1.71 V	249	46.6	4.0
2	2390.00	39.2 AV	54.0	-14.8	1.71 V	249	35.2	4.0
3	*2402.00	93.4 PK			1.71 V	249	89.4	4.0
4	*2402.00	63.3 AV			1.71 V	249	59.3	4.0
5	4804.00	51.8 PK	74.0	-22.2	1.57 V	187	42.4	9.4
6	4804.00	21.7 AV	54.0	-32.3	1.57 V	187	12.3	9.4
7	#7206.00	-	-	-	-	-	-	-
8	#9608.00	-	-	-	-	-	-	-
9	12010.00	-	-	-	-	-	-	-
10	#14412.00	-	-	-	-	-	-	-
11	#16814.00	-	-	-	-	-	-	-
12	19216.00	-	-	-	-	-	-	-
13	#21618.00	-	-	-	-	-	-	-
14	#24020.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

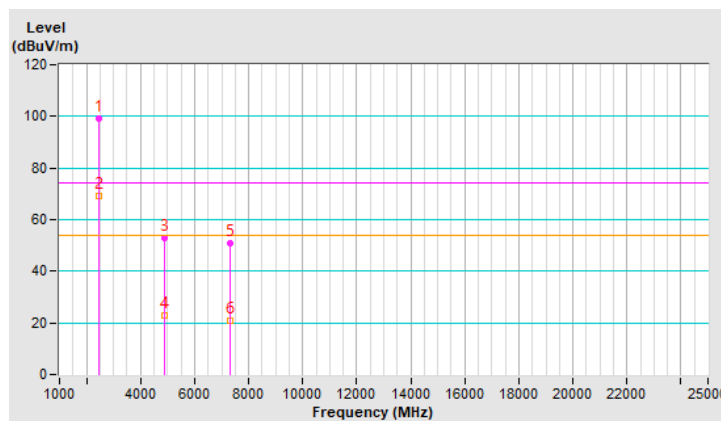


操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	99.1 PK			1.57 H	231	95.3	3.8
2	*2441.00	69.0 AV			1.57 H	231	65.2	3.8
3	4882.00	53.0 PK	74.0	-21.0	1.69 H	254	43.4	9.6
4	4882.00	22.9 AV	54.0	-31.1	1.69 H	254	13.3	9.6
5	7323.00	50.8 PK	74.0	-23.2	1.47 H	148	34.8	16.0
6	7323.00	20.7 AV	54.0	-33.3	1.47 H	148	4.7	16.0
7	#9764.00	-	-	-	-	-	-	-
8	12205.00	-	-	-	-	-	-	-
9	#14646.00	-	-	-	-	-	-	-
10	#17087.00	-	-	-	-	-	-	-
11	19528.00	-	-	-	-	-	-	-
12	#21969.00	-	-	-	-	-	-	-
13	#24410.00	-	-	-	-	-	-	-

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " * ": Fundamental frequency (主頻).
- " # ": The radiated frequency is out of the restricted band.
- The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
- " - ": The emission levels were too low to be detected.
- The blank is not available, the limit of fundamental frequency was restricted at the output power.

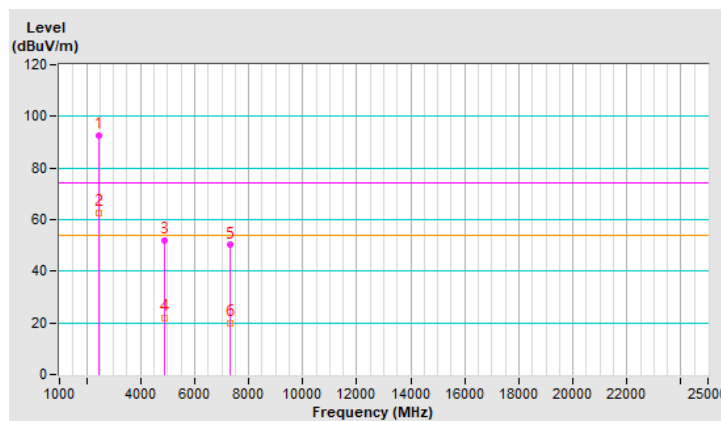


操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22℃	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	92.6 PK			1.69 V	260	88.8	3.8
2	*2441.00	62.5 AV			1.69 V	260	58.7	3.8
3	4882.00	51.9 PK	74.0	-22.1	1.56 V	210	42.3	9.6
4	4882.00	21.8 AV	54.0	-32.2	1.56 V	210	12.2	9.6
5	7323.00	50.1 PK	74.0	-23.9	1.59 V	280	34.1	16.0
6	7323.00	20.0 AV	54.0	-34.0	1.59 V	280	4.0	16.0
7	#9764.00	-	-	-	-	-	-	-
8	12205.00	-	-	-	-	-	-	-
9	#14646.00	-	-	-	-	-	-	-
10	#17087.00	-	-	-	-	-	-	-
11	19528.00	-	-	-	-	-	-	-
12	#21969.00	-	-	-	-	-	-	-
13	#24410.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

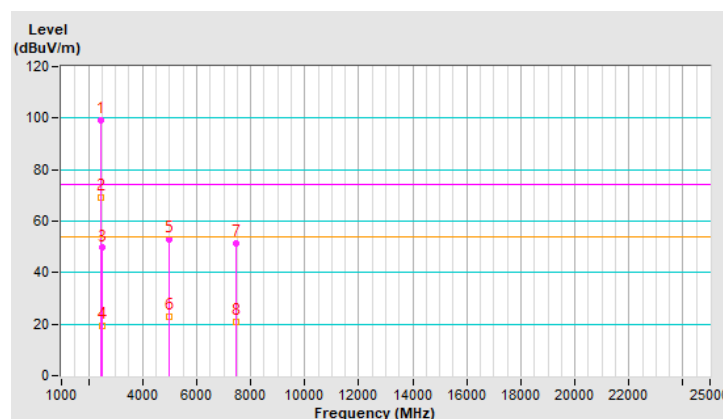


操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	99.3 PK			1.49 H	227	95.6	3.7
2	*2480.00	69.2 AV			1.49 H	227	65.5	3.7
3	2483.50	49.6 PK	74.0	-24.4	1.49 H	227	45.9	3.7
4	2483.50	19.5 AV	54.0	-34.5	1.49 H	227	15.8	3.7
5	4960.00	53.1 PK	74.0	-20.9	1.64 H	243	43.3	9.8
6	4960.00	23.0 AV	54.0	-31.0	1.64 H	243	13.2	9.8
7	7440.00	51.2 PK	74.0	-22.8	1.47 H	142	35.0	16.2
8	7440.00	21.1 AV	54.0	-32.9	1.47 H	142	4.9	16.2
9	#9920.00	-	-	-	-	-	-	-
10	12400.00	-	-	-	-	-	-	-
11	#14880.00	-	-	-	-	-	-	-
12	#17360.00	-	-	-	-	-	-	-
13	19840.00	-	-	-	-	-	-	-
14	22320.00	-	-	-	-	-	-	-
15	#24800.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.

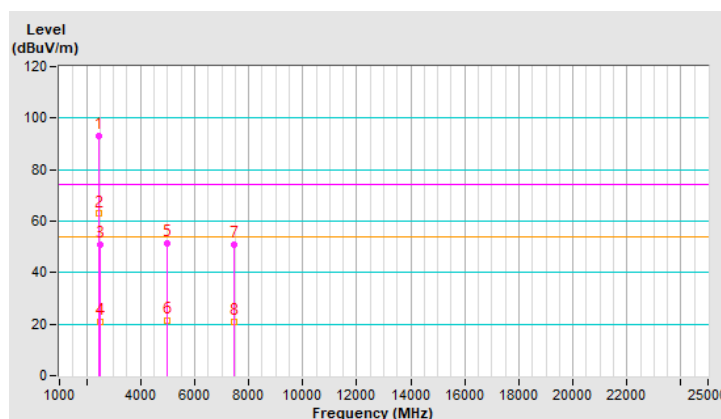


操作模式：	發射	調變技術：	BT_8DPSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	92.9 PK			1.67 V	255	89.2	3.7
2	*2480.00	62.8 AV			1.67 V	255	59.1	3.7
3	2483.50	50.9 PK	74.0	-23.1	1.67 V	255	47.2	3.7
4	2483.50	20.8 AV	54.0	-33.2	1.67 V	255	17.1	3.7
5	4960.00	51.6 PK	74.0	-22.4	1.54 V	206	41.8	9.8
6	4960.00	21.5 AV	54.0	-32.5	1.54 V	206	11.7	9.8
7	7440.00	50.9 PK	74.0	-23.1	1.54 V	273	34.7	16.2
8	7440.00	20.8 AV	54.0	-33.2	1.54 V	273	4.6	16.2
9	#9920.00	-	-	-	-	-	-	-
10	12400.00	-	-	-	-	-	-	-
11	#14880.00	-	-	-	-	-	-	-
12	#17360.00	-	-	-	-	-	-	-
13	19840.00	-	-	-	-	-	-	-
14	22320.00	-	-	-	-	-	-	-
15	#24800.00	-	-	-	-	-	-	-

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625 * 5 per 296.25 ms per channel. Therefore, the duty cycle correlation factor be equal to: $20\log(3.125 / 100) = -30.1 \text{ dB}$
8. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle)
9. " - ": The emission levels were too low to be detected.
10. The blank is not available, the limit of fundamental frequency was restricted at the output power.



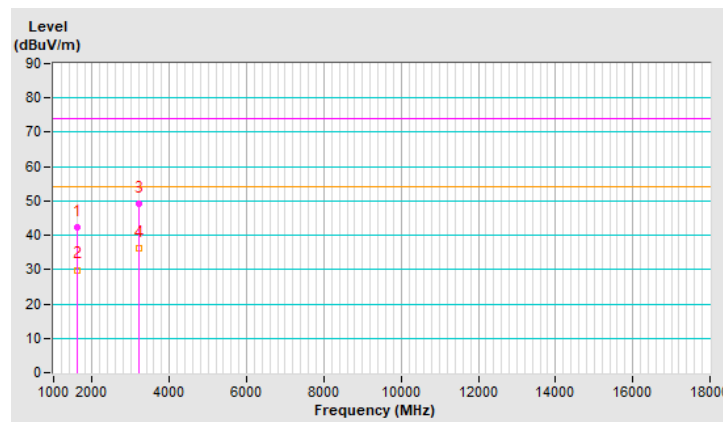
4.6.2 接收諧波

操作模式：	接收		
基本波頻率：	CH 0 : 2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1601.33	42.3 PK	74.0	-31.7	1.65 H	295	41.5	0.8
2	1601.33	29.9 AV	54.0	-24.1	1.65 H	295	29.1	0.8
3	3202.67	49.1 PK	74.0	-24.9	1.96 H	301	43.5	5.6
4	3202.67	36.3 AV	54.0	-17.7	1.96 H	301	30.7	5.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

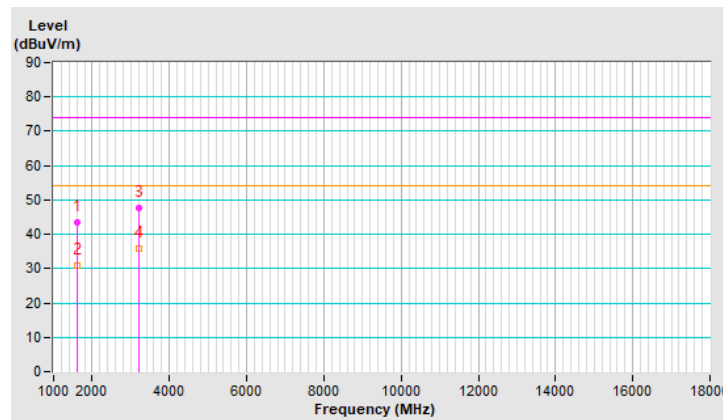


操作模式：	接收		
基本波頻率：	CH 0 : 2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1601.33	43.3 PK	74.0	-30.7	1.51 V	296	42.5	0.8
2	1601.33	30.8 AV	54.0	-23.2	1.51 V	296	30.0	0.8
3	3202.67	47.8 PK	74.0	-26.2	1.18 V	168	42.2	5.6
4	3202.67	35.7 AV	54.0	-18.3	1.18 V	168	30.1	5.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

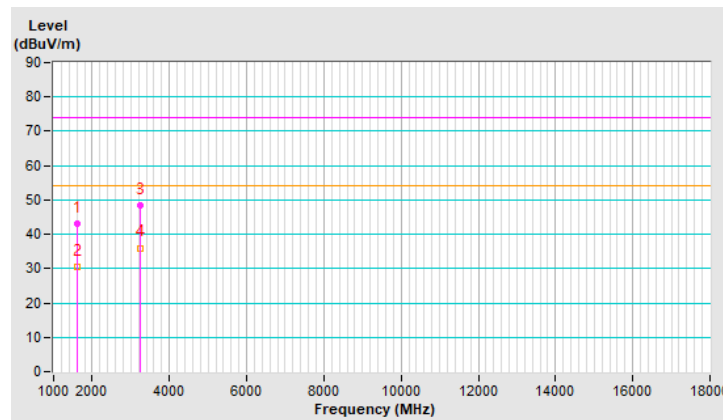


操作模式：	接收		
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1627.33	43.1 PK	74.0	-30.9	1.65 H	274	42.3	0.8
2	1627.33	30.4 AV	54.0	-23.6	1.65 H	274	29.6	0.8
3	3254.67	48.3 PK	74.0	-25.7	2.02 H	313	42.9	5.4
4	3254.67	36.0 AV	54.0	-18.0	2.02 H	313	30.6	5.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

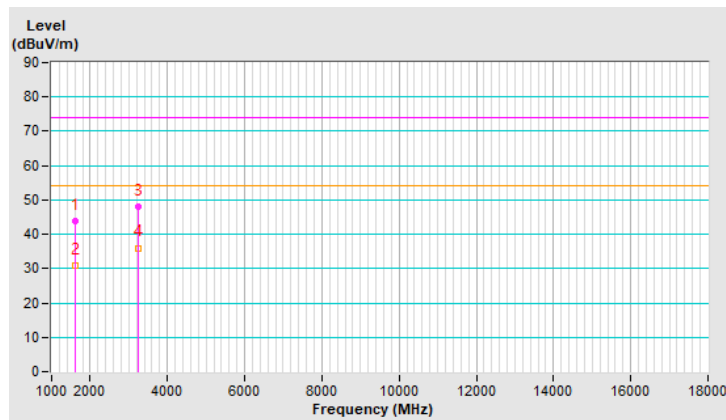


操作模式：	接收		
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1627.33	43.7 PK	74.0	-30.3	1.58 V	298	42.9	0.8
2	1627.33	31.0 AV	54.0	-23.0	1.58 V	298	30.2	0.8
3	3254.67	47.9 PK	74.0	-26.1	1.22 V	181	42.5	5.4
4	3254.67	36.0 AV	54.0	-18.0	1.22 V	181	30.6	5.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

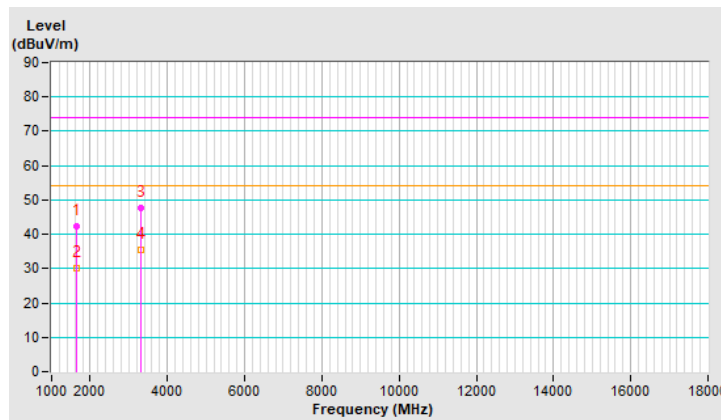


操作模式：	接收		
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1653.33	42.3 PK	74.0	-31.7	1.69 H	289	41.5	0.8
2	1653.33	30.1 AV	54.0	-23.9	1.69 H	289	29.3	0.8
3	3306.67	47.8 PK	74.0	-26.2	1.99 H	314	42.3	5.5
4	3306.67	35.4 AV	54.0	-18.6	1.99 H	314	29.9	5.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

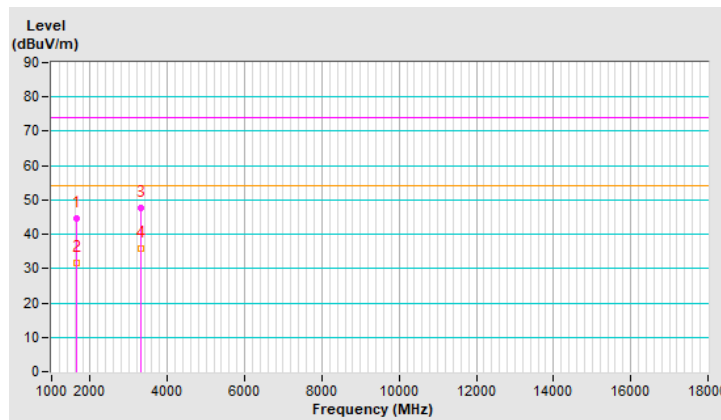


操作模式：	接收		
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3MHz
量測場地溫度：	22°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	1653.33	44.5 PK	74.0	-29.5	1.57 V	280	43.7	0.8
2	1653.33	31.6 AV	54.0	-22.4	1.57 V	280	30.8	0.8
3	3306.67	47.7 PK	74.0	-26.3	1.23 V	190	42.2	5.5
4	3306.67	35.7 AV	54.0	-18.3	1.23 V	190	30.2	5.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



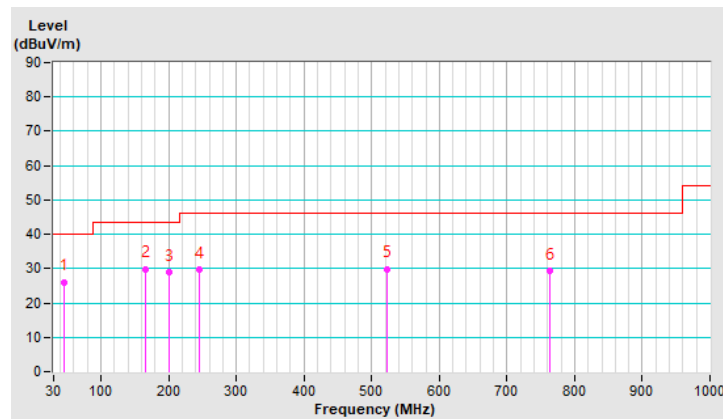
4.6.3 其它不必要之訊號

操作模式：	發射接收	調變技術：	BT_GFSK
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	21°C	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	44.68	26.1 QP	40.0	-13.9	1.65 H	142	39.0	-12.9
2	165.68	29.9 QP	43.5	-13.6	1.45 H	100	42.9	-13.0
3	200.65	29.1 QP	43.5	-14.4	1.42 H	136	45.3	-16.2
4	245.85	29.6 QP	46.0	-16.4	3.11 H	201	43.8	-14.2
5	521.84	29.9 QP	46.0	-16.1	1.42 H	145	36.9	-7.0
6	763.85	29.4 QP	46.0	-16.6	1.21 H	345	31.8	-2.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz.

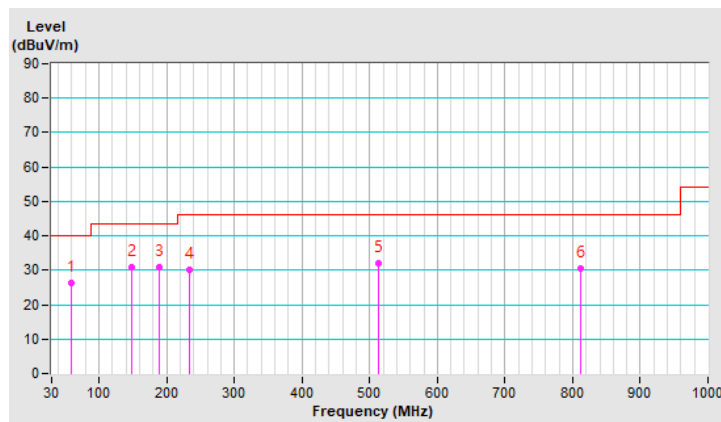


操作模式：	發射接收	調變技術：	BT_GFSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	21℃	量測場地濕度：	66%RH
測試日期：	107 年 9 月 19 日	測試者：	鄭樹營

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.65	26.4 QP	40.0	-13.6	1.10 V	99	39.6	-13.2
2	147.88	30.9 QP	43.5	-12.6	1.72 V	165	43.6	-12.7
3	189.65	30.8 QP	43.5	-12.7	1.45 V	65	46.5	-15.7
4	234.65	30.0 QP	46.0	-16.0	1.65 V	14	45.0	-15.0
5	512.88	32.1 QP	46.0	-13.9	1.45 V	100	39.3	-7.2
6	812.65	30.6 QP	46.0	-15.4	1.65 V	57	32.7	-2.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz.



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。

4.8 測試配置照片

產品的測試配置照片請參照 Test Setup Photo.

5 電源線傳導干擾之量測

5.1 適用標準

請見本報告 3.1 節第 1 項的規定。

5.2 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 0.15MHz 至 30MHz 之間之電源線傳導放射強度。

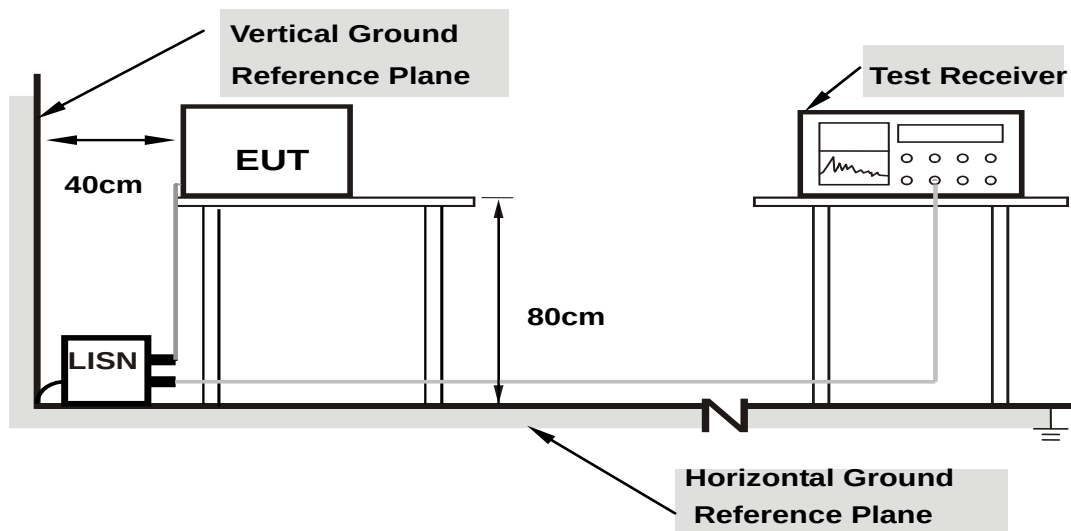
5.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 2017	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 04, 2018	June 03, 2019
50 ohms Terminator	N/A	EMC-04	Nov. 01, 2017	Oct. 31, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 16, 2018	Mar. 15, 2019
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. The measurement uncertainty is 2.98 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.

5.4 測試配置



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

5.5 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

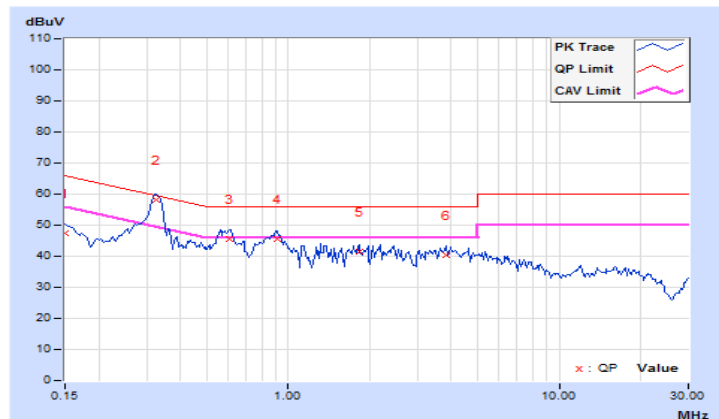
5.6 量測結果

操作模式	發射/ 接收	測試日期	107 年 09 月 20 日
基本波頻率	CH 39: 2441MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	75%RH
測試者	何欣儒		

		6 dB Bandwidth: 9kHz				PHASE: LINE (L)			
輻射頻率	校正因子	儀器讀值		結果值		限制值		餘裕度	
[MHz]	[dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		[dB]	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.15000	10.03	37.49	20.61	47.52	30.64	66.00	56.00	-18.48	-25.36
0.32578	10.09	48.11	37.27	58.20	47.36	59.56	49.56	-1.36	-2.20
0.60313	10.12	35.45	21.98	45.57	32.10	56.00	46.00	-10.43	-13.90
0.91563	10.14	35.45	21.45	45.59	31.59	56.00	46.00	-10.41	-14.41
1.83203	10.18	31.13	20.62	41.31	30.80	56.00	46.00	-14.69	-15.20
3.81641	10.26	30.13	18.94	40.39	29.20	56.00	46.00	-15.61	-16.80

NOTE:

- 1.Q.P. and AV. are abbreviations of quasi-peak and average individually.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.Margin value = Emission level - Limit value
- 4.Correction factor = Insertion loss + Cable loss
- 5.Emission Level = Correction Factor + Reading Value.

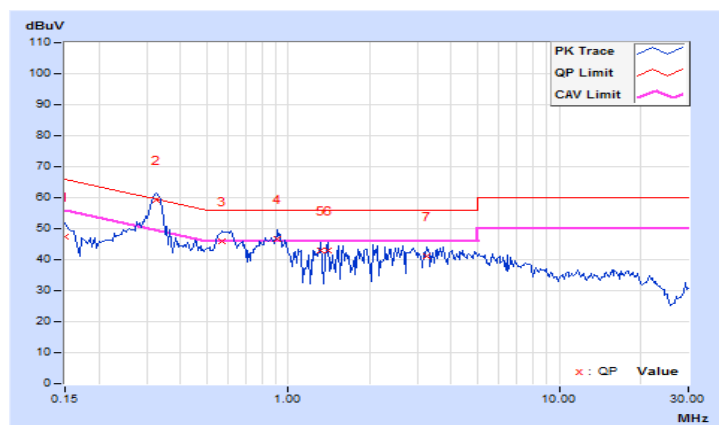


操作模式	發射/ 接收	測試日期	107 年 09 月 20 日
基本波頻率	CH 39: 2441MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	75%RH
測試者	何欣儒		

		6 dB Bandwidth: 9kHz				PHASE: NEUTRAL (N)			
輻射頻率	校正因子	儀器讀值		結果值		限制值		餘裕度	
[MHz]	[dB]	[dB (uV)]		[dB (uV)]		[dB (uV)]		[dB]	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.15000	9.94	37.59	21.29	47.53	31.23	66.00	56.00	-18.47	-24.77
0.32578	9.99	49.43	38.63	59.42	48.62	59.56	49.56	-0.14	-0.94
0.57188	10.01	36.05	26.07	46.06	36.08	56.00	46.00	-9.94	-9.92
0.91563	10.03	36.49	22.66	46.52	32.69	56.00	46.00	-9.48	-13.31
1.32031	10.04	32.98	21.05	43.02	31.09	56.00	46.00	-12.98	-14.91
1.39844	10.05	32.83	21.28	42.88	31.33	56.00	46.00	-13.12	-14.67
3.26172	10.11	31.14	21.70	41.25	31.81	56.00	46.00	-14.75	-14.19

NOTE:

- 1.Q.P. and AV. are abbreviations of quasi-peak and average individually.
- 2.The emission levels of other frequencies were very low against the limit.
- 3.Margin value = Emission level - Limit value
- 4.Correction factor = Insertion loss + Cable loss
- 5.Emission Level = Correction Factor + Reading Value.



5.7 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。

5.8 配置照片

請參照 Test Setup Photos

6 20 dB 頻寬之量測

6.1 適用標準

請見本報告 3.1 節第(7)項的規定。

6.2 量測方法

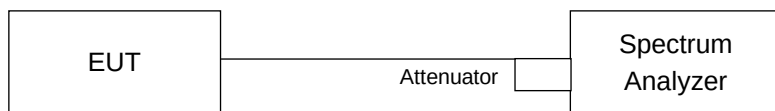
- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減 20dB 的最大頻率範圍。

6.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019

NOTE: 1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

6.4 測試配置



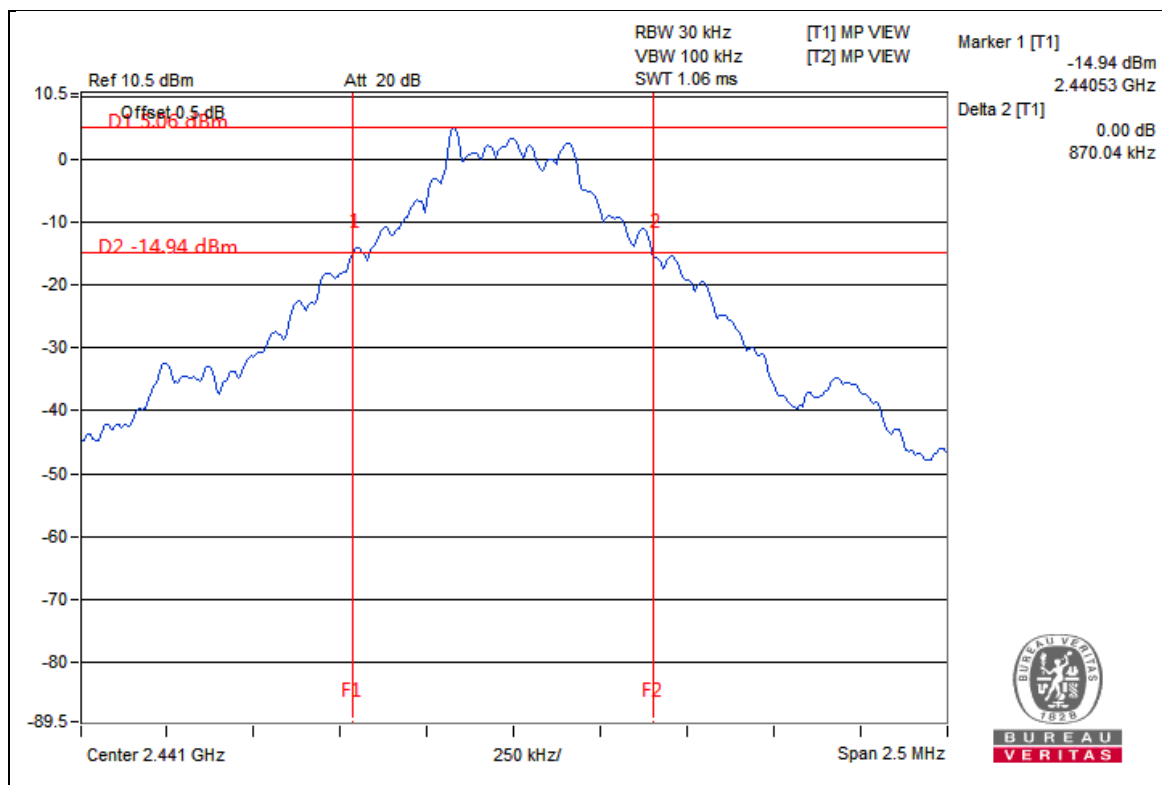
6.5 量測結果

操作模式	發射	測試日期	107 年 10 月 01 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	陳高逸		

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)		>= 25kHz
		GFSK	8DPSK	
0	2402	0.94	1.26	YES
39	2441	0.87	1.26	YES
78	2480	0.95	1.27	YES

註：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。

**此測試圖僅放測試結果最差的頻道。



6.6 量測結果判定

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

7 峰值傳導輸出功率之量測

7.1 適用標準

請見本報告 3.1 節第(5)項的規定。

7.2 量測方法

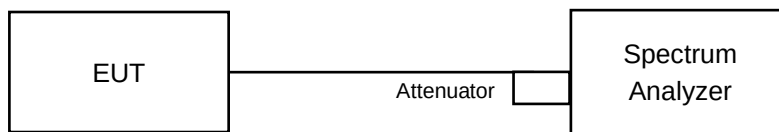
- a) 將待測物輸出經由衰減器接到頻譜分析儀上。
- b) 設定待測物處於連續發射狀態。
- c) 計算其峰值傳導輸出功率。

7.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019

NOTE: 1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

7.4 測試配置

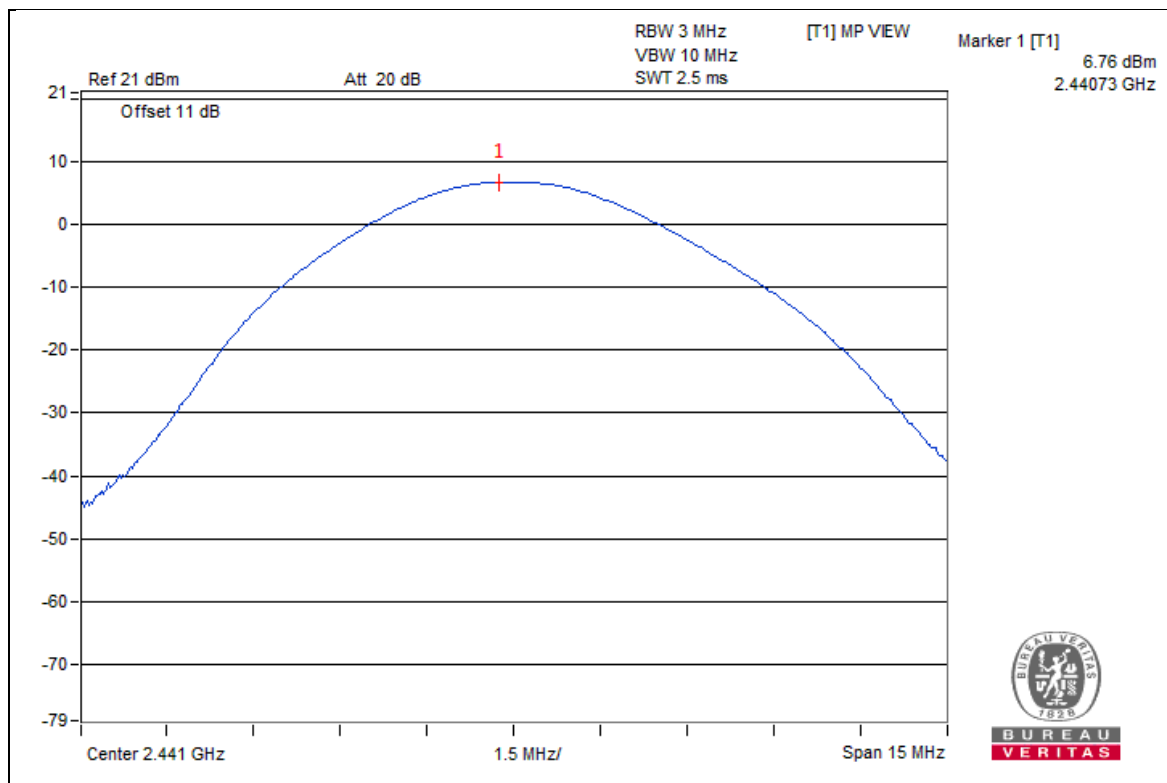


7.5 量測結果

操作模式	發射	測試日期	107 年 10 月 01 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	陳高逸		

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)	Pass/Fail
		GFSK	8DPSK		
0	2402	5.01	3.15	21	Pass
39	2441	6.76	3.70	21	Pass
78	2480	4.87	3.34	21	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。

8 跳頻頻道數之量測

8.1 適用標準

請見本報告 3.1 節第(6)項的規定。

8.2 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。

8.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019

NOTE:

- The test was performed in Oven room 2.
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

8.4 測試配置



8.5 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。



8.6 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。

9 跳頻頻道間隔之量測

9.1 適用標準

請見本報告 3.1 節第(7)項規定。

9.2 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=100 kHz，量測相鄰兩個頻道間的間隔。

9.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019

NOTE:

- The test was performed in Oven room 2.
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

9.4 測試配置



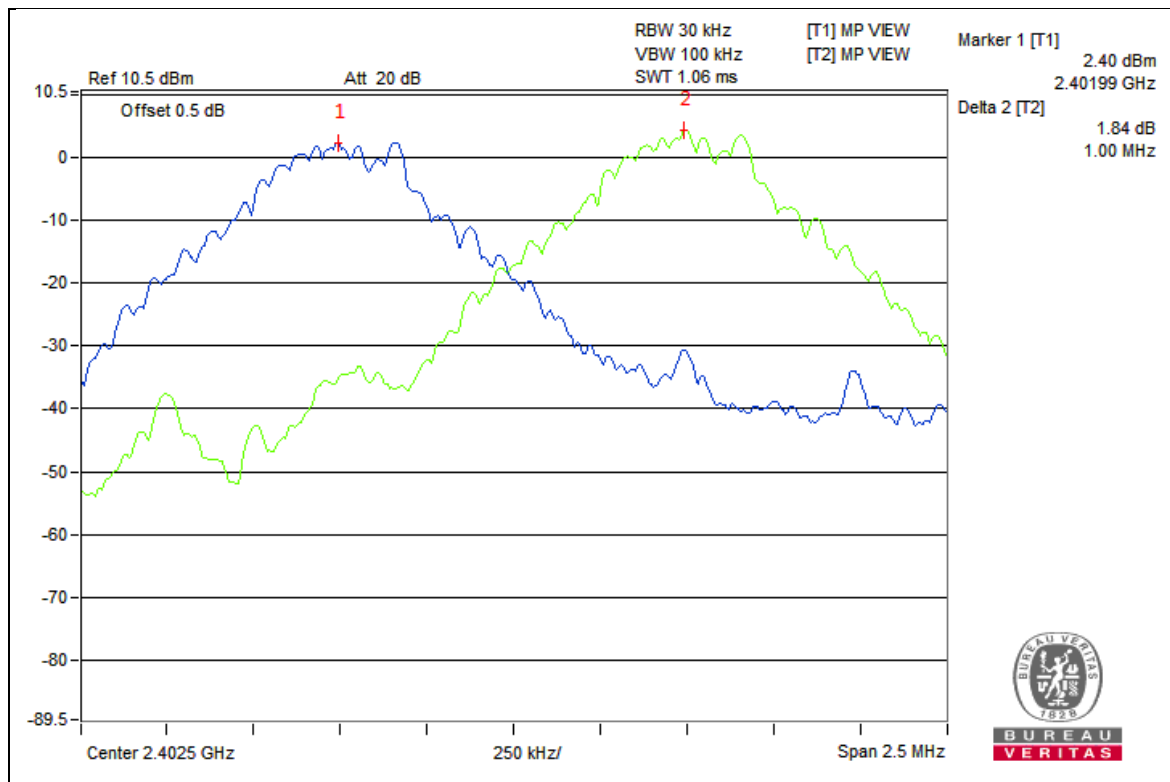
9.5 量測結果

操 作 模 式	發射	測 試 日 期	107 年 10 月 01 日
量 測 場 地 溫 度	25°C	量 測 場 地 濕 度	60%
測 試 者	陳高逸		

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)		20dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass / Fail
		GFSK	8DPSK	GFSK	8DPSK	GFSK	8DPSK	
0	2402	1.00	1.01	0.94	1.26	0.63	0.84	Pass
39	2441	1.01	1.00	0.87	1.26	0.58	0.84	Pass
78	2480	1.00	1.00	0.95	1.27	0.64	0.85	Pass

Note: 本項測試的 limit 為至少為三分之二 20dB 頻寬。

**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，符合低功率射頻電機技術規範之要求。

10 每一頻道停留時間之量測

10.1 適用標準

請見本報告 3.1 節第(8)項的規定。

10.2 量測方法

- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 DH1: RBW= 100kHz, VBW=100kHz。 DH3 and DH5: RBW= 100kHz, VBW=300kHz, 量測在不同傳輸模式下的頻道停留時間。

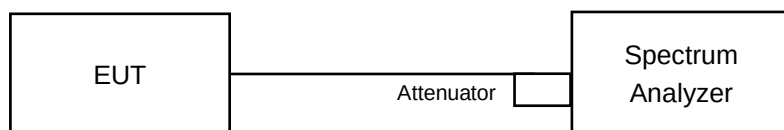
10.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019

NOTE:

- The test was performed in Oven room 2.
- The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

10.4 測試配置



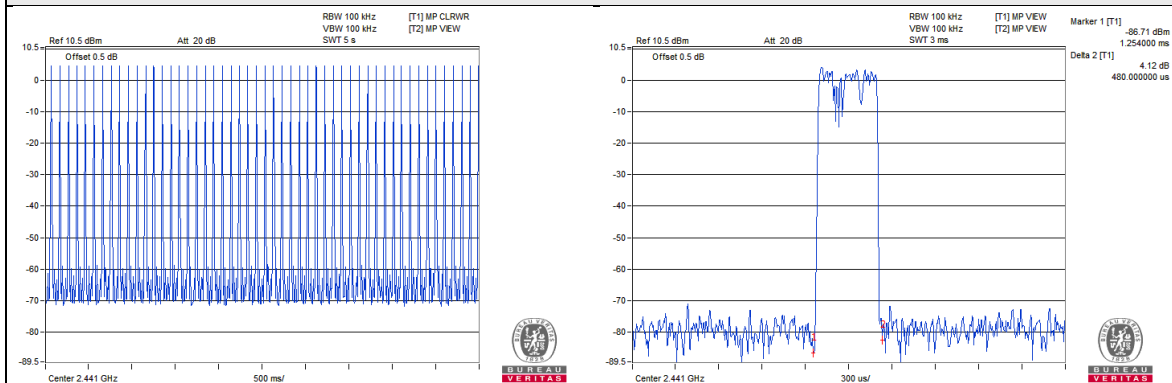
10.5 量測結果

調變方式: GFSK

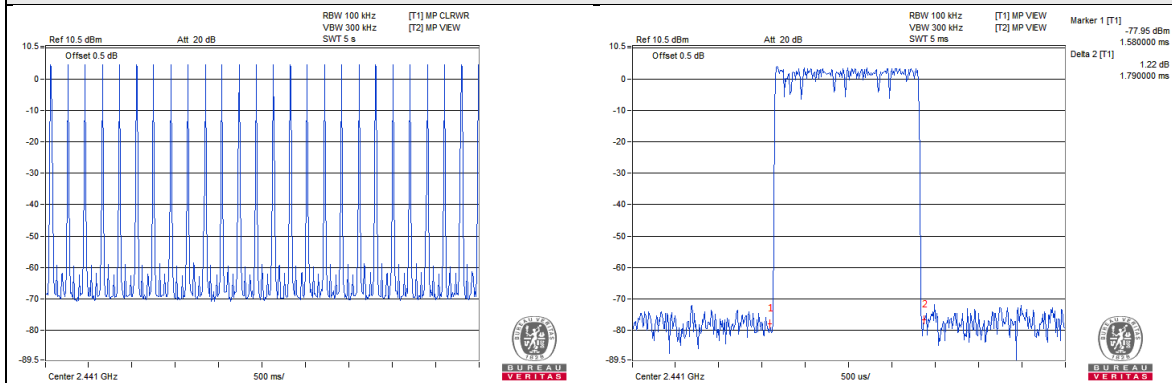
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) * 6.32 = 316 times	0.48	151.68	400
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.79	282.82	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	2.976	319.74	400

註：因為 Bluetooth 每秒跳 1600 次，會平均落在每個頻道，所以僅測試 Ch39 作為代表。
其掃描圖請參閱次頁

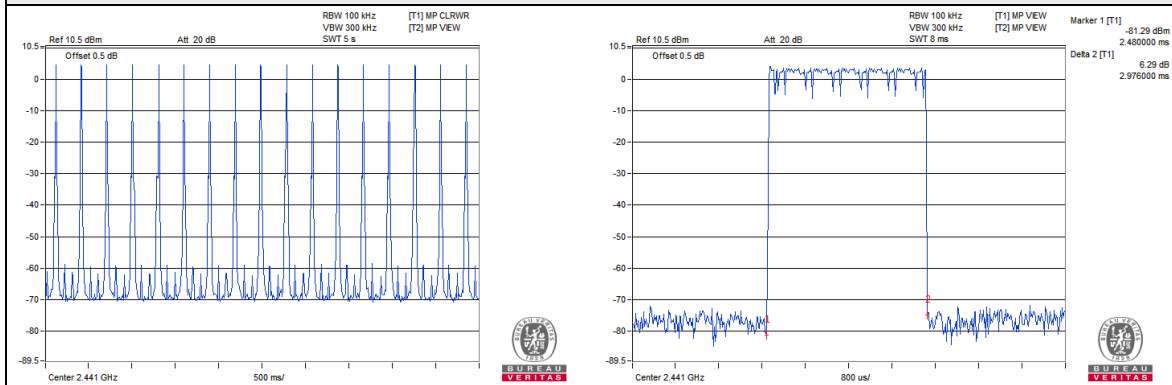
DH1



DH3



DH5



調變方式: 8DPSK

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
3DH1	51 (times / 5 sec) * 6.32 = 322.32 times	0.474	152.78	400
3DH3	25 (times / 5 sec) * 6.32 = 158 times	1.74	274.92	400
3DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.008	323.18	400

註：因為 Bluetooth 每秒跳 1600 次，會平均落在每個頻道，所以僅測試 Ch39 作為代表。
其掃描圖請參閱次頁



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 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: 886-3-6668565

Fax: 886-3-6668323

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

您也可以在我们的网站內找到各實驗室的地圖。

---END---