

低功率射頻電機技術規範測試報告

報告編號	RT170616C17A
申請者	Sennheiser electronic GmbH & Co. KG
產品名稱	In-Ear Wireless headphones
型號	CX 6.00BT
系列型號	M2 IEBT SW, CX SPORT
製造廠商	Sennheiser electronic GmbH & Co. KG / Germany
商標或廠牌	SENNHEISER
該產品樣品試驗 依據之試驗標準	國家通訊傳播委員會低功率射頻電機技術規範 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 03 月 06 日

報告簽署人簽章:

陳志偉



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報告發行紀錄

Issue No.	Description	Date Issued
RT170616C17A	Original release.	107 年 03 月 06 日

證 明 書

發行日期：107 年 03 月 06 日

產 品 名 稱：In-Ear Wireless headphones
商 標：SENNHEISER
型 號：CX 6.00BT
系 列 型 號：M2 IEBT SW, CX SPORT
申 請 者：Sennheiser electronic GmbH & Co. KG
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：CX 6.00BT)，收件日期 106 年 06 月 16 日，於 106 年 06 月 29 日至 106 年 07 月 04 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。

此案於 107 年 02 月 26 日重新開案做系列申請，此份測試報告為原報告 Report No: RT170616C17 之系列報告(原證書號碼: CCAI17LP1220T5 & CCAI17LP122AT7)，此次新增型號 CX SPORT (詳細差異請見差異說明書)，故補測場強輻射之量測 1G 以下及電源線傳導干擾於此報告中，補測日期為 107 年 03 月 05 日。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： 何依珉，日期： 107 年 03 月 06 日
何依珉 / 專員

審 核 者： 陳志偉，日期： 107 年 03 月 06 日
陳志偉 / 專案工程師

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: Sennheiser electronic GmbH & Co. KG

製造廠商: Sennheiser electronic GmbH & Co. KG / Germany

申請廠商地址: Am Labor 1 D-30900 Wedemark, Germany

廠牌: SENNHEISER

產品名稱: In-Ear Wireless headphones

型號: CX 6.00BT

系列型號: M2 IEBT SW, CX SPORT

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 (9kHz~40GHz)

量測規範: 低功率射頻電機技術規範 LP0002

ANSI C63.10-2013

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。

2 一般敘述

2.1 待測設備

產品名稱：	In-Ear Wireless headphones
型號：	CX 6.00BT
系列型號：	M2 IEBT SW, CX SPORT
額定電源：	3.7Vdc, 100mAh (internal battery) 5.0Vdc (from USB interface)
調變方式：	GFSK, $\pi/4$ -DQPSK
傳輸速率：	1Mbps (BDR) & 2Mbps (EDR)
載波頻率：	2402 ~ 2480MHz
頻道數：	79
發射功率：	8.76dBm
天線種類：	見註 2
電源線類別：	NA
信號線類別：	0.6m shielded USB cable for Model: CX 6.00BT & M2 IEBT SW 0.045m shielded USB cable for Model: CX SPORT
配件：	見註 3

註1: 待測設備所有型號列於下表。(新增的型號以粗體標示)

Brand	Model	Similarities	Differences
SENNHEISER	CX 6.00BT	Same PCBA, Same Li-Polymer battery	Different shape of earpieces used.
	M2 IEBT SW		Please refer to appendix A for details differences of CX SPORT.
	CX SPORT		

*主測型號為CX 6.00BT

註2: 待測設備搭配使用以下天線。

製造廠商	Model	Type	Connector	Gain (dBi)
AMOTECH	AMAN301512ST01	Chip	NA	-1.38

註3: 待測設備使用以下Internal Battery。

Internal Battery	
Brand	SENNHEISER
Model	AHB480832PLT
Rating	3.7Vdc, 100mAh

註4: 待測設備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
2402~2480MHz (Bluetooth EDR)		
場強輻射	1GHz 以上量測	GFSK: Ch 0, 39, 78 $\pi/4$ -DQPSK: Ch 0, 39, 78
	其它不必要之訊號	GFSK: Ch 78
電源線傳導干擾	GFSK: Ch 78	

註5: 此報告中傳輸模式, 皆以GFSK調變和 $\pi/4$ -DQPSK調變分別進行測試; 場強輻射之量測1G以下, 以GFSK調變技術具有較大干擾值, 故以此進行最終量測並記錄於報告中。

註6: Bluetooth EDR傳輸模式DH1、DH3及DH5皆經過預測試, 其中以DH5的傳輸模式具有較大干擾雜訊, 故僅以此傳輸模式進行最終量測。

註7: 待測設備的測試模式如下:

測試模式	描述
A	Model: CX 6.00BT + Notebook
B	Model: CX SPORT + Notebook

* 1GHz以下的場強輻射量測與電源線傳導干擾量測以上述兩種測試模式進行測試，1GHz以上的場強輻射量測與其餘測驗項目以測試模式A進行測試。

註8: 待測設備經評估三個正交軸方位評估測試擺設方式：平躺、側放、垂直，其中以平躺擺放擁有最大干擾值，故以此進行最終量測並記錄於報告中。

此裝置各頻道的中心頻率如下：

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)	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 CPS報告編號: 170616C17A。

2.2 輔助測試之週邊設備描述

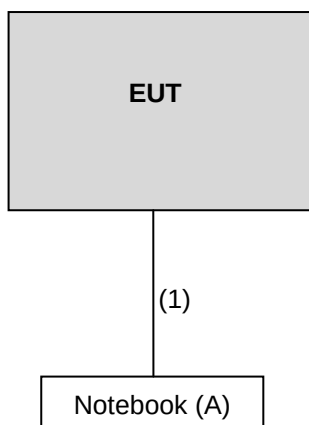
待測設備於受測時均接上其所屬的配件或一般用途之相關設備；下列輔助設備或配件測試中所使用的配備，以形成一個代表待測物實際運作的受測系統。

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	SONY	SVS151A12P	275548477000805	FCC DoC Approved	For Mode A
	Notebook	Lenovo	81A4	YD02TWF5	PPD-QCNFA435	For Mode B

Note: 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.	USB Cable	1	0.6	Y	0	Accessory of EUT for Mode A
	USB Cable	1	0.045	Y	0	Accessory of EUT for Mode B

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：

(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

測試日期: 106 年 06 月 29 日 ~ 106 年 07 月 01 日

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Mar. 27, 2017	Mar. 26, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	May. 11, 2017	May. 10, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Dec. 27, 2016	Dec. 26, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8449B	3008A01638	Feb. 22, 2017	Feb. 21, 2018
Preamplifier Agilent	8447D	2944A10638	Aug. 09, 2016	Aug. 08, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-02 (248780+MY13377)	Feb. 02, 2017	Feb. 01, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-03 (274092)	Aug. 09, 2016	Aug. 08, 2017
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 09, 2016	Aug. 08, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	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 Chamber 9.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 215374.
5. The IC Site Registration No. is IC 7450F-9.
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	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

測試日期: 107 年 03 月 05 日

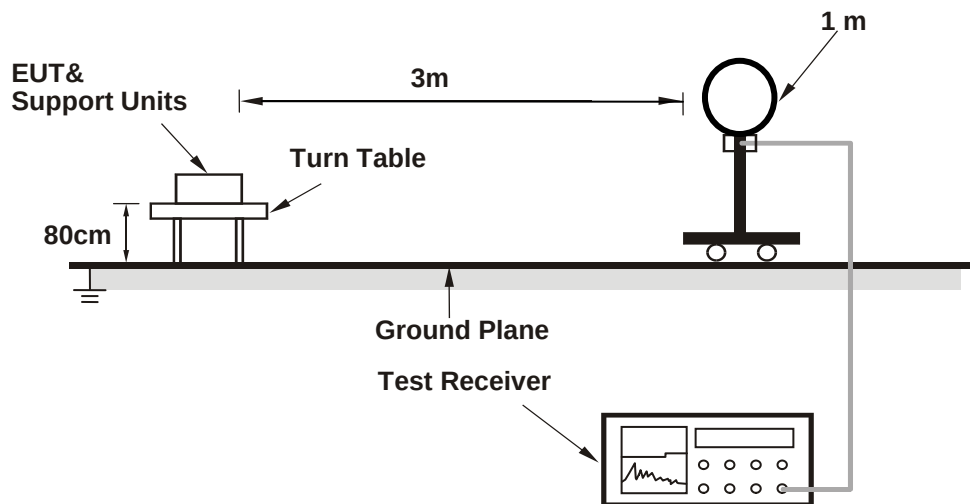
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Mar. 27, 2017	Mar. 26, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	May 11, 2017	May 10, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM80 00	CABLE-CH9-02 (248780+171006)	Jan. 15, 2018	Jan. 14, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(25079 5/4)	Aug. 08, 2017	Aug. 07, 2018
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 01, 2017	Jul. 31, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018

- 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 Chamber 9.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is IC 7450F-9.
5. 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.

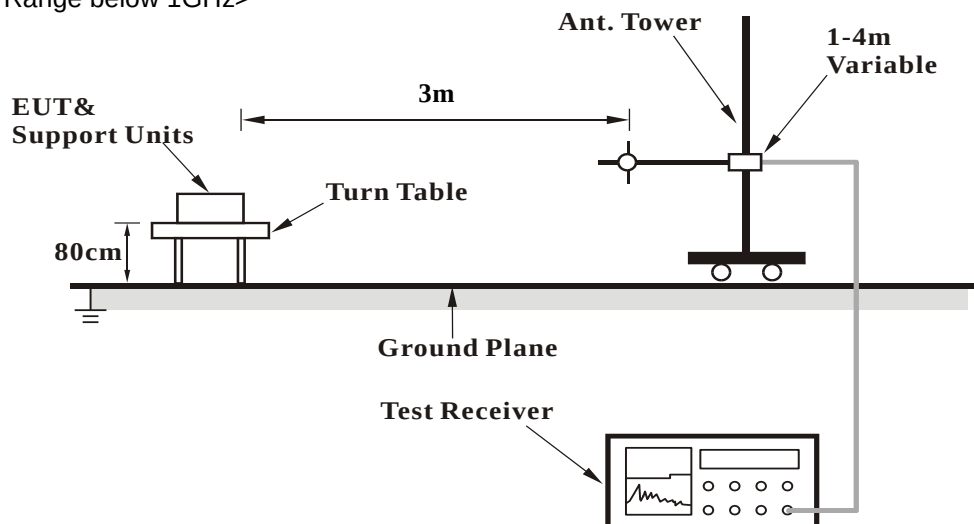
Measurement	Frequency	Uncertainty
Radiated emissions	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

4.4 測試配置

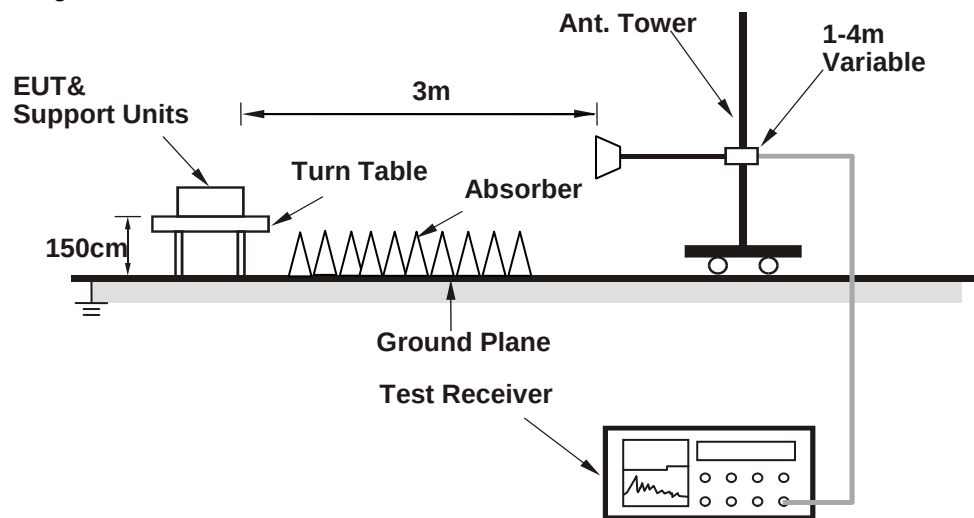
<Frequency Range below 30MHz>



<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

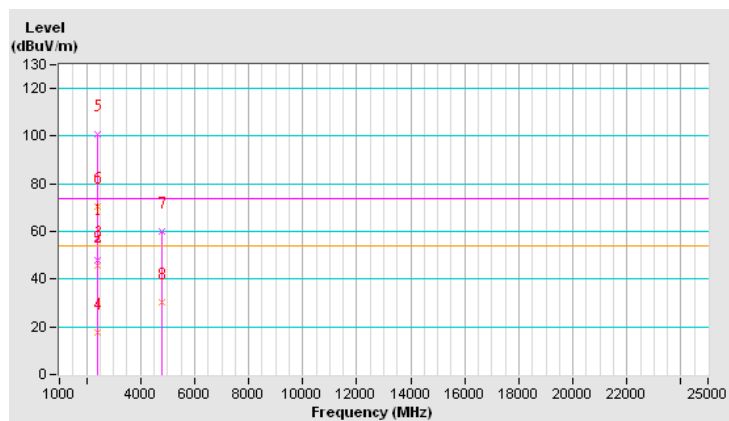
GFSK

操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	57.4 PK	74.0	-16.6	1.72 H	235	24.5	32.9
2	2390.00	45.7 AV	54.0	-8.3	1.72 H	235	12.8	32.9
3	#2400.00	47.8 PK	80.8	-33.0	1.70 H	213	49.3	-1.5
4	#2400.00	17.7 AV	50.7	-33.0	1.70 H	213	19.2	-1.5
5	*2402.00	100.8 PK			1.66 H	228	67.9	32.9
6	*2402.00	70.7 AV			1.66 H	228	37.8	32.9
7	4804.00	60.2 PK	74.0	-13.8	1.36 H	177	53.5	6.7
8	4804.00	30.1 AV	54.0	-23.9	1.36 H	177	23.4	6.7
	7206.00	-	-	-	-	-	-	-
	9608.00	-	-	-	-	-	-	-
	12010.00	-	-	-	-	-	-	-
	14412.00	-	-	-	-	-	-	-
	16814.00	-	-	-	-	-	-	-
	19216.00	-	-	-	-	-	-	-
	21618.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1 \text{ dB}$
10. Average value = peak reading + $20\log(\text{duty cycle})$

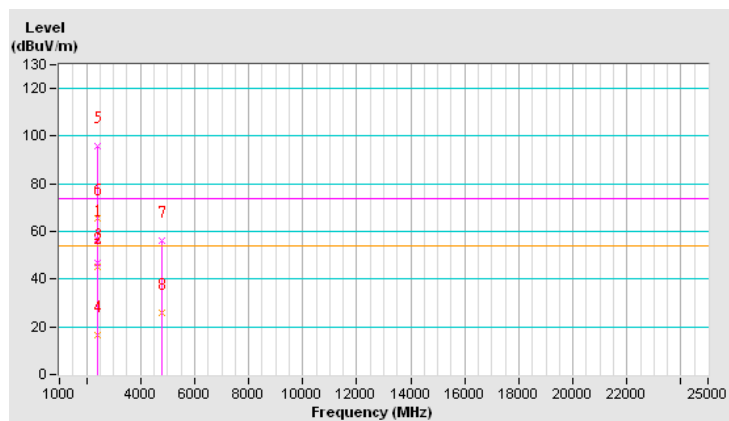


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	56.8 PK	74.0	-17.2	1.08 V	89	23.9	32.9
2	2390.00	45.4 AV	54.0	-8.6	1.08 V	89	12.5	32.9
3	#2400.00	46.8 PK	75.8	-29.0	1.12 V	71	48.3	-1.5
4	#2400.00	16.7 AV	45.7	-29.0	1.12 V	71	18.2	-1.5
5	*2402.00	95.8 PK			1.02 V	84	62.9	32.9
6	*2402.00	65.7 AV			1.02 V	84	32.8	32.9
7	4804.00	56.1 PK	74.0	-17.9	1.83 V	231	49.4	6.7
8	4804.00	26.0 AV	54.0	-28.0	1.83 V	231	19.3	6.7
	7206.00	-	-	-	-	-	-	-
	9608.00	-	-	-	-	-	-	-
	12010.00	-	-	-	-	-	-	-
	14412.00	-	-	-	-	-	-	-
	16814.00	-	-	-	-	-	-	-
	19216.00	-	-	-	-	-	-	-
	21618.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “ * ”: Fundamental Frequency (主頻)
5. “ - ”: The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “ # ”: The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1 \text{ dB}$
10. Average value = peak reading + 20log(duty cycle)

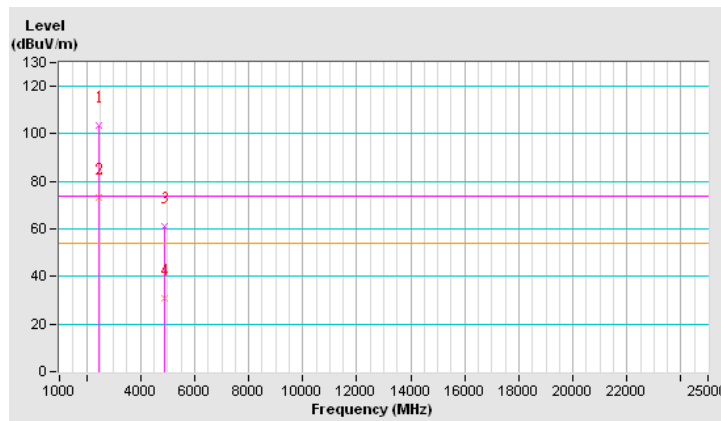


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25℃	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	103.3 PK			1.98 H	140	70.2	33.1
2	*2441.00	73.2 AV			1.98 H	140	40.1	33.1
3	4882.00	61.0 PK	74.0	-13.0	2.23 H	176	54.2	6.8
4	4882.00	30.9 AV	54.0	-23.1	2.23 H	176	24.1	6.8
	7323.00	-	-	-	-	-	-	-
	9764.00	-	-	-	-	-	-	-
	12205.00	-	-	-	-	-	-	-
	14646.00	-	-	-	-	-	-	-
	17087.00	-	-	-	-	-	-	-
	19528.00	-	-	-	-	-	-	-
	21969.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

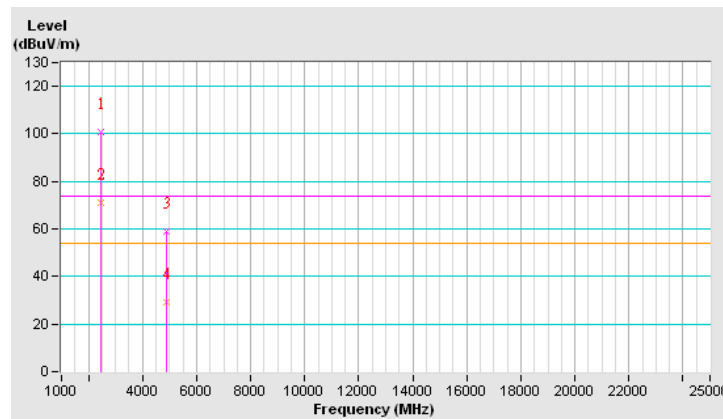


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25℃	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	100.9 PK			1.49 V	96	67.8	33.1
2	*2441.00	70.8 AV			1.49 V	96	37.7	33.1
3	4882.00	59.1 PK	74.0	-14.9	2.52 V	165	52.3	6.8
4	4882.00	29.0 AV	54.0	-25.0	2.52 V	165	22.2	6.8
	7323.00	-	-	-	-	-	-	-
	9764.00	-	-	-	-	-	-	-
	12205.00	-	-	-	-	-	-	-
	14646.00	-	-	-	-	-	-	-
	17087.00	-	-	-	-	-	-	-
	19528.00	-	-	-	-	-	-	-
	21969.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

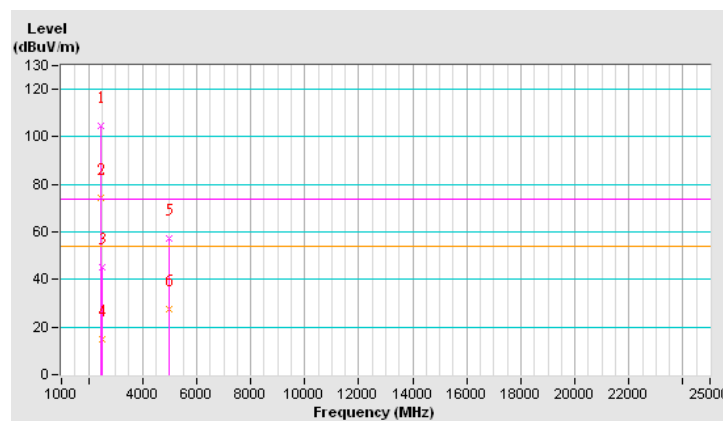


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25℃	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	104.4 PK			2.96 H	252	71.1	33.3
2	*2480.00	74.3 AV			2.96 H	252	41.0	33.3
3	2483.50	45.0 PK	74.0	-29.0	3.02 H	258	46.1	-1.1
4	2483.50	14.9 AV	54.0	-39.1	3.02 H	258	16.0	-1.1
5	4960.00	57.5 PK	74.0	-16.5	2.70 H	194	50.5	7.0
6	4960.00	27.4 AV	54.0	-26.6	2.70 H	194	20.4	7.0
	7440.00	-	-	-	-	-	-	-
	9920.00	-	-	-	-	-	-	-
	12400.00	-	-	-	-	-	-	-
	14880.00	-	-	-	-	-	-	-
	17360.00	-	-	-	-	-	-	-
	19840.00	-	-	-	-	-	-	-
	22320.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

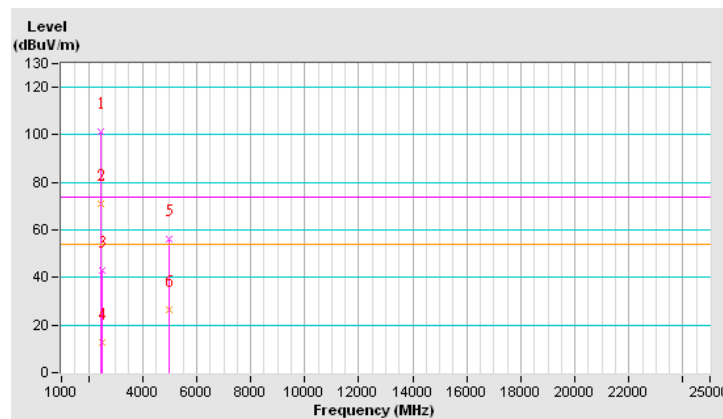


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25℃	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	101.4 PK			1.62 V	131	68.1	33.3
2	*2480.00	71.3 AV			1.62 V	131	38.0	33.3
3	2483.50	42.9 PK	74.0	-31.1	1.66 V	140	44.0	-1.1
4	2483.50	12.8 AV	54.0	-41.2	1.66 V	140	13.9	-1.1
5	4960.00	56.3 PK	74.0	-17.7	2.41 V	165	49.3	7.0
6	4960.00	26.2 AV	54.0	-27.8	2.41 V	165	19.2	7.0
	7440.00	-	-	-	-	-	-	-
	9920.00	-	-	-	-	-	-	-
	12400.00	-	-	-	-	-	-	-
	14880.00	-	-	-	-	-	-	-
	17360.00	-	-	-	-	-	-	-
	19840.00	-	-	-	-	-	-	-
	22320.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$



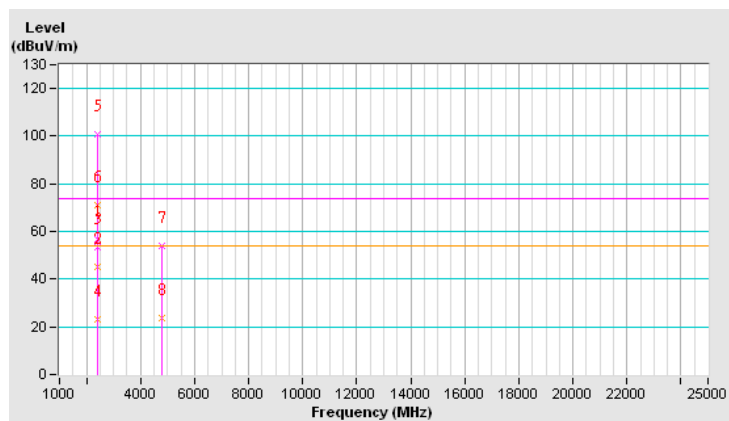
$\pi/4$ -DQPSK

操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	57.0 PK	74.0	-17.0	1.65 H	189	24.1	32.9
2	2390.00	45.1 AV	54.0	-8.9	1.65 H	189	12.2	32.9
3	#2400.00	53.2 PK	81.0	-27.8	1.54 H	195	54.7	-1.5
4	#2400.00	23.1 AV	50.9	-27.8	1.54 H	195	24.6	-1.5
5	*2402.00	101.0 PK			1.62 H	182	68.1	32.9
6	*2402.00	70.9 AV			1.62 H	182	38.0	32.9
7	4804.00	54.0 PK	74.0	-20.0	2.31 H	30	47.3	6.7
8	4804.00	23.9 AV	54.0	-30.1	2.31 H	30	17.2	6.7
	7206.00	-	-	-	-	-	-	-
	9608.00	-	-	-	-	-	-	-
	12010.00	-	-	-	-	-	-	-
	14412.00	-	-	-	-	-	-	-
	16814.00	-	-	-	-	-	-	-
	19216.00	-	-	-	-	-	-	-
	21618.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

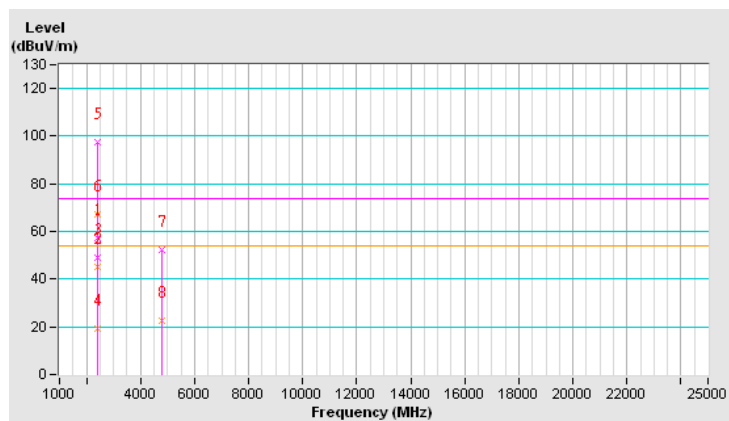


操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	57.1 PK	74.0	-16.9	1.04 V	42	24.2	32.9
2	2390.00	45.4 AV	54.0	-8.6	1.04 V	42	12.5	32.9
3	#2400.00	49.2 PK	77.3	-28.1	1.10 V	63	50.7	-1.5
4	#2400.00	19.1 AV	47.2	-28.1	1.10 V	63	20.6	-1.5
5	*2402.00	97.3 PK			1.07 V	58	64.4	32.9
6	*2402.00	67.2 AV			1.07 V	58	34.3	32.9
7	4804.00	52.5 PK	74.0	-21.5	1.60 V	122	45.8	6.7
8	4804.00	22.4 AV	54.0	-31.6	1.60 V	122	15.7	6.7
	7206.00	-	-	-	-	-	-	-
	9608.00	-	-	-	-	-	-	-
	12010.00	-	-	-	-	-	-	-
	14412.00	-	-	-	-	-	-	-
	16814.00	-	-	-	-	-	-	-
	19216.00	-	-	-	-	-	-	-
	21618.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “ * ”: Fundamental Frequency (主頻)
5. “ - ”: The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “ # ”: The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

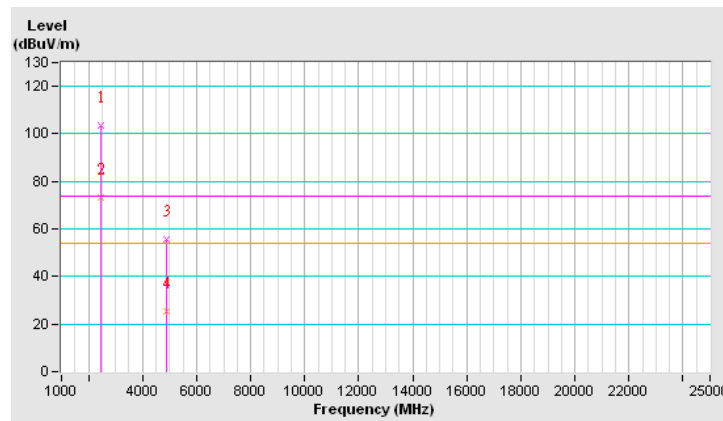


操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	103.4 PK			1.74 H	182	70.3	33.1
2	*2441.00	73.3 AV			1.74 H	182	40.2	33.1
3	4882.00	55.7 PK	74.0	-18.3	3.09 H	29	48.9	6.8
4	4882.00	25.6 AV	54.0	-28.4	3.09 H	29	18.8	6.8
	7323.00	-	-	-	-	-	-	-
	9764.00	-	-	-	-	-	-	-
	12205.00	-	-	-	-	-	-	-
	14646.00	-	-	-	-	-	-	-
	17087.00	-	-	-	-	-	-	-
	19528.00	-	-	-	-	-	-	-
	21969.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

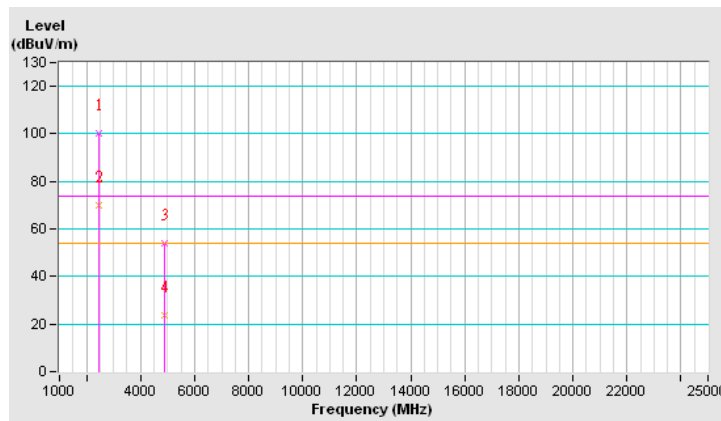


操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 39 : 2441 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	100.0 PK			1.02 V	64	66.9	33.1
2	*2441.00	69.9 AV			1.02 V	64	36.8	33.1
3	4882.00	53.9 PK	74.0	-20.1	1.55 V	120	47.1	6.8
4	4882.00	23.8 AV	54.0	-30.2	1.55 V	120	17.0	6.8
	7323.00	-	-	-	-	-	-	-
	9764.00	-	-	-	-	-	-	-
	12205.00	-	-	-	-	-	-	-
	14646.00	-	-	-	-	-	-	-
	17087.00	-	-	-	-	-	-	-
	19528.00	-	-	-	-	-	-	-
	21969.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*”: Fundamental Frequency (主頻)
5. “-”: The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#”: The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

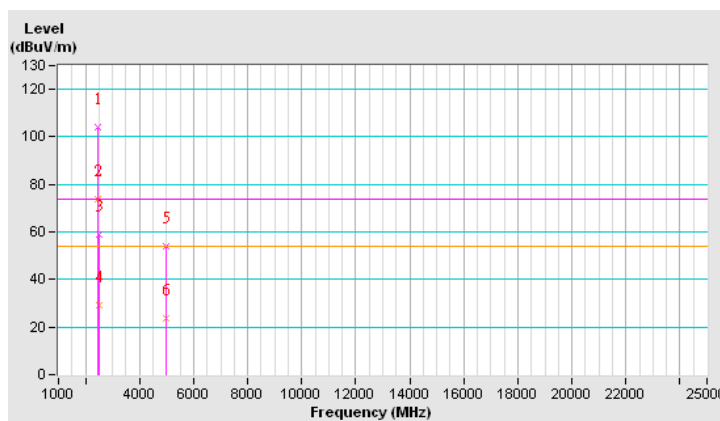


操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	104.1 PK			1.87 H	178	70.8	33.3
2	*2480.00	74.0 AV			1.87 H	178	40.7	33.3
3	2483.50	59.2 PK	74.0	-14.8	1.74 H	191	60.3	-1.1
4	2483.50	29.1 AV	54.0	-24.9	1.74 H	191	30.2	-1.1
5	4960.00	53.8 PK	74.0	-20.2	2.41 H	32	46.8	7.0
6	4960.00	23.7 AV	54.0	-30.3	2.41 H	32	16.7	7.0
	7440.00	-	-	-	-	-	-	-
	9920.00	-	-	-	-	-	-	-
	12400.00	-	-	-	-	-	-	-
	14880.00	-	-	-	-	-	-	-
	17360.00	-	-	-	-	-	-	-
	19840.00	-	-	-	-	-	-	-
	22320.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “*” : Fundamental Frequency (主頻)
5. “-” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “#” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$

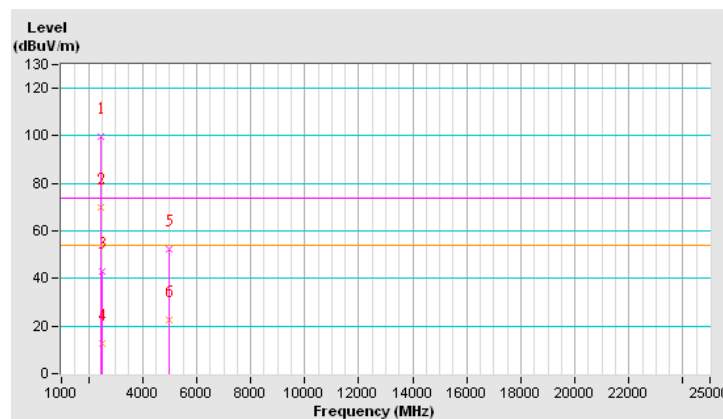


操作模式：	發射	調變技術：	$\pi/4$ -DQPSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 07 月 01 日	測試者：	楊淳凱

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	99.8 PK			1.17 V	60	66.5	33.3
2	*2480.00	69.7 AV			1.17 V	60	36.4	33.3
3	2483.50	42.7 PK	74.0	-31.3	1.09 V	77	43.8	-1.1
4	2483.50	12.6 AV	54.0	-41.4	1.09 V	77	13.7	-1.1
5	4960.00	52.5 PK	74.0	-21.5	1.50 V	123	45.5	7.0
6	4960.00	22.4 AV	54.0	-31.6	1.50 V	123	15.4	7.0
	7440.00	-	-	-	-	-	-	-
	9920.00	-	-	-	-	-	-	-
	12400.00	-	-	-	-	-	-	-
	14880.00	-	-	-	-	-	-	-
	17360.00	-	-	-	-	-	-	-
	19840.00	-	-	-	-	-	-	-
	22320.00	-	-	-	-	-	-	-
	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. Margin value = Emission Level – Limit value
4. “ * ” : Fundamental Frequency (主頻)
5. “ - ” : The emission levels were too low to be detected.
6. The other emission levels were very low against the limit.
7. “ # ” : The radiated frequency is out of the restricted band.
8. The blank is not available, the limit of fundamental frequency was restricted at the peak output power (see LP0002 3.10.1.2)
9. 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 correction factor be equal to: $20\log(3.125/100) = -30.1$ dB
10. Average value = peak reading + $20\log(\text{duty cycle})$



4.6.2 接收諧波

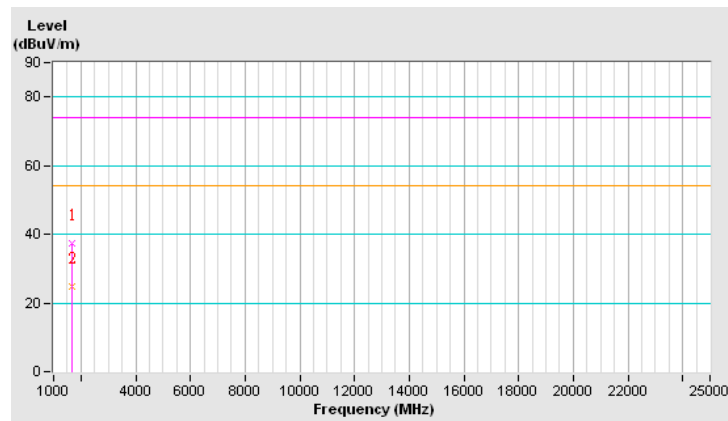
GFSK

操作模式：	接收	調變技術：	GFSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 06 月 29 日	測試者：	楊淳凱

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	1653.00	37.3 PK	74.0	-36.7	1.35 H	86	42.2	-4.9
2	1653.00	24.7 AV	54.0	-29.3	1.35 H	86	29.6	-4.9

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

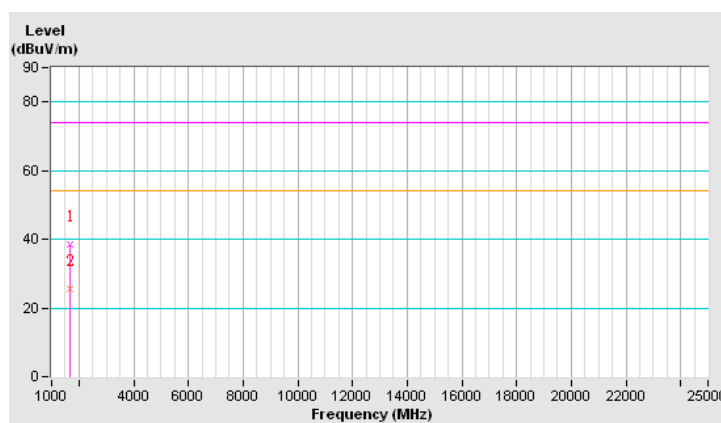


操作模式：	接收	調變技術：	GFSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=10Hz
量測場地溫度：	25℃	量測場地濕度：	70%RH
測試日期：	106 年 06 月 29 日	測試者：	楊淳凱

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	1653.00	38.6 PK	74.0	-35.4	1.74 V	285	43.5	-4.9
2	1653.00	25.5 AV	54.0	-28.5	1.74 V	285	30.4	-4.9

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

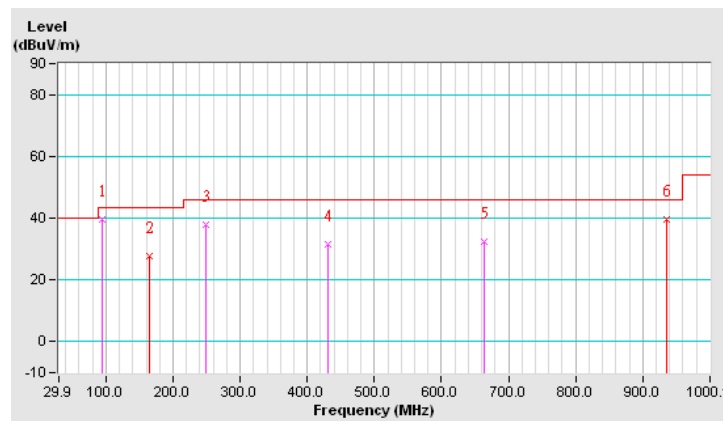
GFSK

操作模式：	發射/接收	調變技術：	GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(QP) RB=VB=120kHz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 06 月 29 日	測試者：	楊淳凱
測試模式：	A		

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	93.93	39.7 QP	43.5	-3.8	2.00 H	181	58.9	-19.2
2	165.73	27.6 QP	43.5	-15.9	2.00 H	316	41.6	-14.0
3	249.17	37.8 QP	46.0	-8.2	1.50 H	13	52.0	-14.2
4	431.56	31.7 QP	46.0	-14.3	2.00 H	70	41.2	-9.5
5	664.41	32.3 QP	46.0	-13.7	1.24 H	145	37.4	-5.1
6	936.07	39.4 QP	46.0	-6.6	1.25 H	197	39.7	-0.3

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.

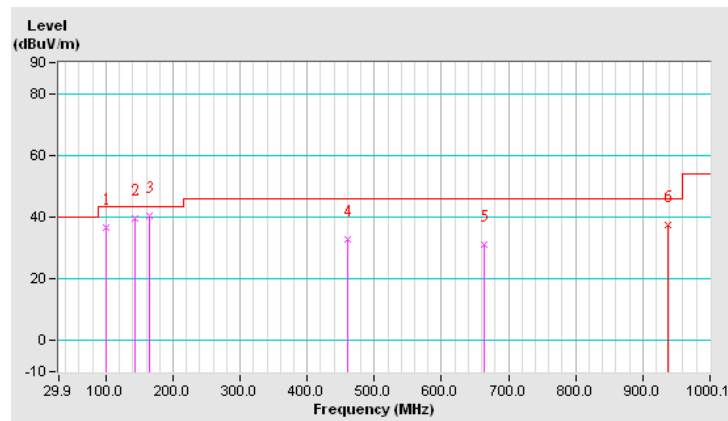


操作模式：	發射/接收	調變技術：	GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(QP) RB=VB=120kHz
量測場地溫度：	25°C	量測場地濕度：	70%RH
測試日期：	106 年 06 月 29 日	測試者：	楊淳凱
測試模式：	A		

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	99.75	36.7 QP	43.5	-6.8	1.24 V	239	55.2	-18.5
2	142.44	39.7 QP	43.5	-3.8	1.00 V	88	53.7	-14.0
3	165.73	40.5 QP	43.5	-3.0	1.00 V	96	54.5	-14.0
4	460.67	32.9 QP	46.0	-13.1	2.00 V	64	42.2	-9.3
5	664.41	31.0 QP	46.0	-15.0	1.00 V	184	36.1	-5.1
6	938.01	37.3 QP	46.0	-8.7	1.00 V	317	37.5	-0.2

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.

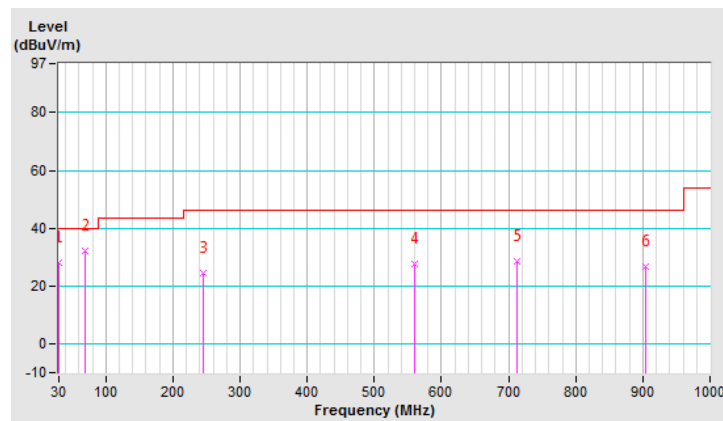


操作模式：	發射/接收	調變技術：	GFSK
基本波頻率：	CH 78 : 2480 MHz	測試儀器：	(QP) RB=VB=120kHz
量測場地溫度：	23°C	量測場地濕度：	66%RH
測試日期：	107 年 03 月 05 日	測試者：	林聖博
測試模式：	B		

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	30.97	28.1 QP	40.0	-11.9	1.00 H	195	43.6	-15.5
2	69.77	32.2 QP	40.0	-7.8	1.50 H	267	47.5	-15.3
3	244.37	24.4 QP	46.0	-21.6	1.00 H	82	38.8	-14.4
4	559.62	27.8 QP	46.0	-18.2	1.25 H	301	36.4	-8.6
5	712.88	28.7 QP	46.0	-17.3	1.00 H	166	34.6	-5.9
6	903.97	26.8 QP	46.0	-19.2	1.50 H	46	29.7	-2.9

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.

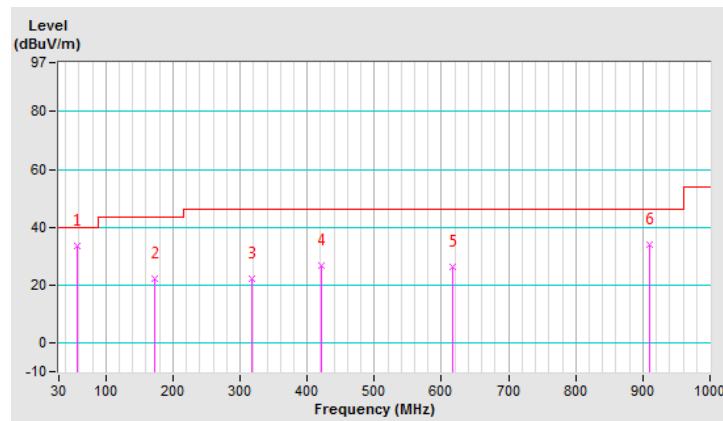


操作模式：	發射/接收	調變技術：	GFSK
基本波頻率：	CH 78：2480 MHz	測試儀器：	(QP) RB=VB=120kHz
量測場地溫度：	23°C	量測場地濕度：	66%RH
測試日期：	107 年 03 月 05 日	測試者：	林聖博
測試模式：	B		

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	57.16	33.5 QP	40.0	-6.5	1.50 V	289	47.3	-13.8
2	173.56	22.0 QP	43.5	-21.5	1.00 V	324	36.2	-14.2
3	318.09	22.2 QP	46.0	-23.8	1.25 V	152	34.2	-12.0
4	421.88	26.8 QP	46.0	-19.2	1.25 V	27	37.5	-10.7
5	615.88	26.4 QP	46.0	-19.6	1.00 V	133	33.6	-7.2
6	910.76	34.0 QP	46.0	-12.0	1.50 V	315	36.7	-2.7

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 配置照片

請參閱附件(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

測試日期：106 年 07 月 04 日

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 28, 2016	Jul. 27, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

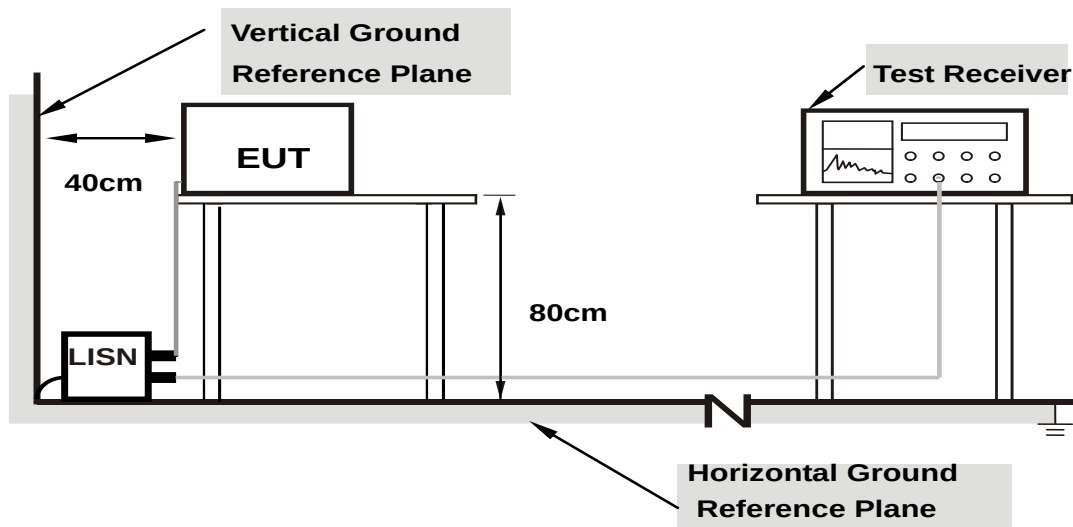
Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.
 4. The measurement uncertainty is 2.94 dB, which is calculated as 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.

測試日期: 107 年 03 月 05 日

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
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 ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 06, 2018	Mar. 05, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	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 2.94 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.

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

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

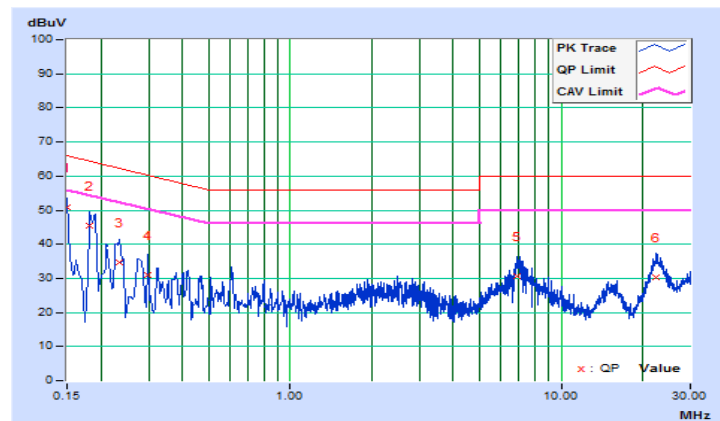
GFSK

操作模式	發射/接收	測試日期	106 年 07 月 04 日
基本波頻率	CH 78 : 2480 MHz	量測場地溫度	16°C
調變技術	GFSK	量測場地濕度	70%RH
測試者	徐偉哲	測試模式	A

		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	10.34	40.34	18.52	50.68	28.86	66.00	56.00	-15.32	-27.14
0.18200	10.36	35.18	13.40	45.54	23.76	64.39	54.39	-18.85	-30.63
0.23412	10.38	24.23	5.02	34.61	15.40	62.30	52.30	-27.69	-36.90
0.29800	10.38	20.52	6.70	30.90	17.08	60.30	50.30	-29.40	-33.22
6.89400	10.70	19.94	9.53	30.64	20.23	60.00	50.00	-29.36	-29.77
22.49800	11.43	18.89	11.74	30.32	23.17	60.00	50.00	-29.68	-26.83

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.

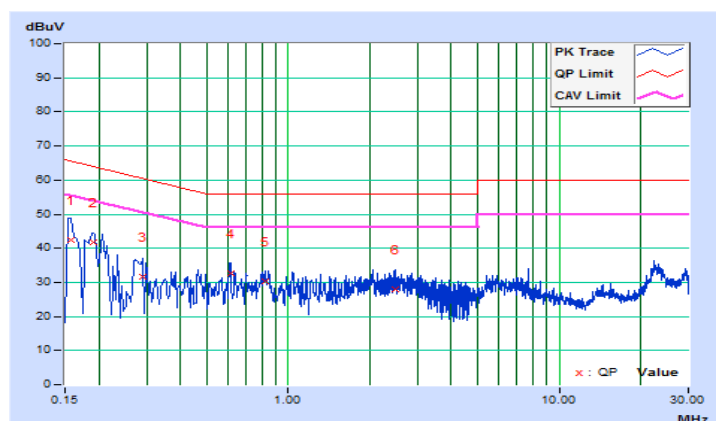


操作模式	發射/接收	測試日期	106 年 07 月 04 日
基本波頻率	CH 78 : 2480 MHz	量測場地溫度	16°C
調變技術	GFSK	量測場地濕度	70%RH
測試者	徐偉哲	測試模式	A

		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.
0.15800	10.11	32.44	11.22	42.55	21.33	65.57	55.57	-23.02	-34.24
0.19013	10.13	31.56	14.30	41.69	24.43	64.03	54.03	-22.34	-29.60
0.29000	10.15	21.56	6.52	31.71	16.67	60.52	50.52	-28.81	-33.85
0.61400	10.16	22.53	9.24	32.69	19.40	56.00	46.00	-23.31	-26.60
0.81800	10.17	20.30	9.19	30.47	19.36	56.00	46.00	-25.53	-26.64
2.48105	10.26	17.81	10.58	28.07	20.84	56.00	46.00	-27.93	-25.16

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.

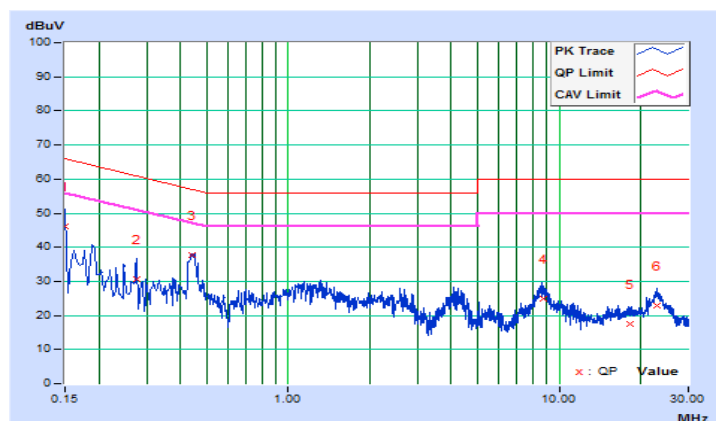


操作模式	發射/接收	測試日期	107 年 03 月 05 日
基本波頻率	CH 78 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	75%RH
測試者	楊德彥	測試模式	B

		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	10.45	35.68	19.68	46.13	30.13	66.00	56.00	-19.87	-25.87
0.27480	10.46	20.26	11.05	30.72	21.51	60.97	50.97	-30.25	-29.46
0.43924	10.49	27.16	19.62	37.65	30.11	57.08	47.08	-19.43	-16.97
8.71693	10.83	14.23	8.45	25.06	19.28	60.00	50.00	-34.94	-30.72
18.22202	11.30	6.35	1.53	17.65	12.83	60.00	50.00	-42.35	-37.17
22.85146	11.50	11.53	6.55	23.03	18.05	60.00	50.00	-36.97	-31.95

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.

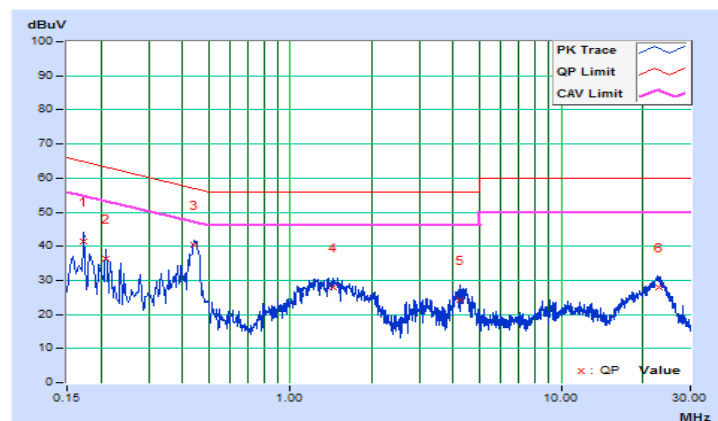


操作模式	發射/接收	測試日期	107 年 03 月 05 日
基本波頻率	CH 78 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	75%RH
測試者	楊德彥	測試模式	B

		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.
0.17147	10.21	31.14	16.10	41.35	26.31	64.89	54.89	-23.54	-28.58
0.20783	10.22	26.04	10.71	36.26	20.93	63.29	53.29	-27.03	-32.36
0.43924	10.25	30.02	22.64	40.27	32.89	57.08	47.08	-16.81	-14.19
1.43386	10.27	17.61	10.93	27.88	21.20	56.00	46.00	-28.12	-24.80
4.21640	10.41	13.99	5.83	24.40	16.24	56.00	46.00	-31.60	-29.76
22.83973	11.12	16.74	11.53	27.86	22.65	60.00	50.00	-32.14	-27.35

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

請參閱附件(Test Setup Photo)。

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

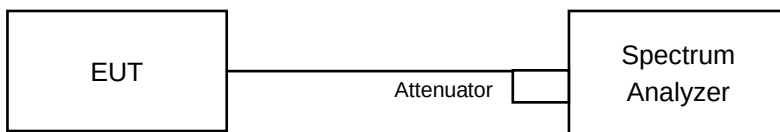
- a) 將待測物輸出經由衰減器接到頻譜分析儀上。
- b) 設定待測物處於連續發射狀態。
- c) 計算由最大輸出功率峰值減20dB的最大頻率範圍。

6.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer R&S	FSP40	100269	May. 11, 2017	May. 10, 2018

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 measurement uncertainty is 207Hz, 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.

6.4 測試配置



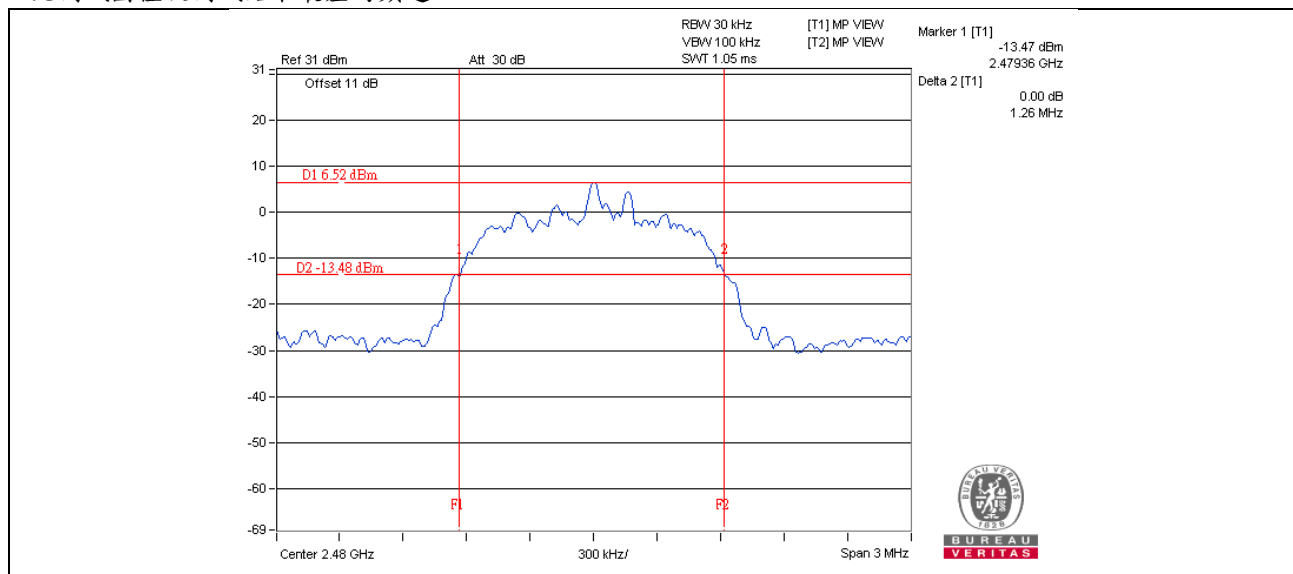
6.5 量測結果

操作模式	發射	測試日期	106 年 06 月 30 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	吳佳衡		

Channel	Channel Frequency (MHz)	20 dB Bandwidth (MHz)		>= 25kHz
		GFSK	$\pi/4$ -DQPSK	
0	2402	0.96	1.25	Yes
39	2441	0.95	1.26	Yes
78	2480	0.95	1.26	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

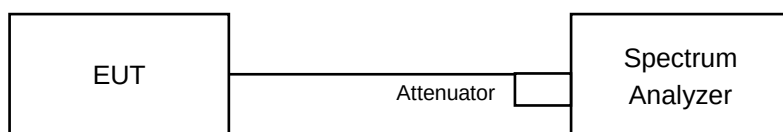
- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算其峰值傳導輸出功率。

7.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer R&S	FSP40	100269	May. 11, 2017	May. 10, 2018

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 measurement uncertainty is 207Hz, 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

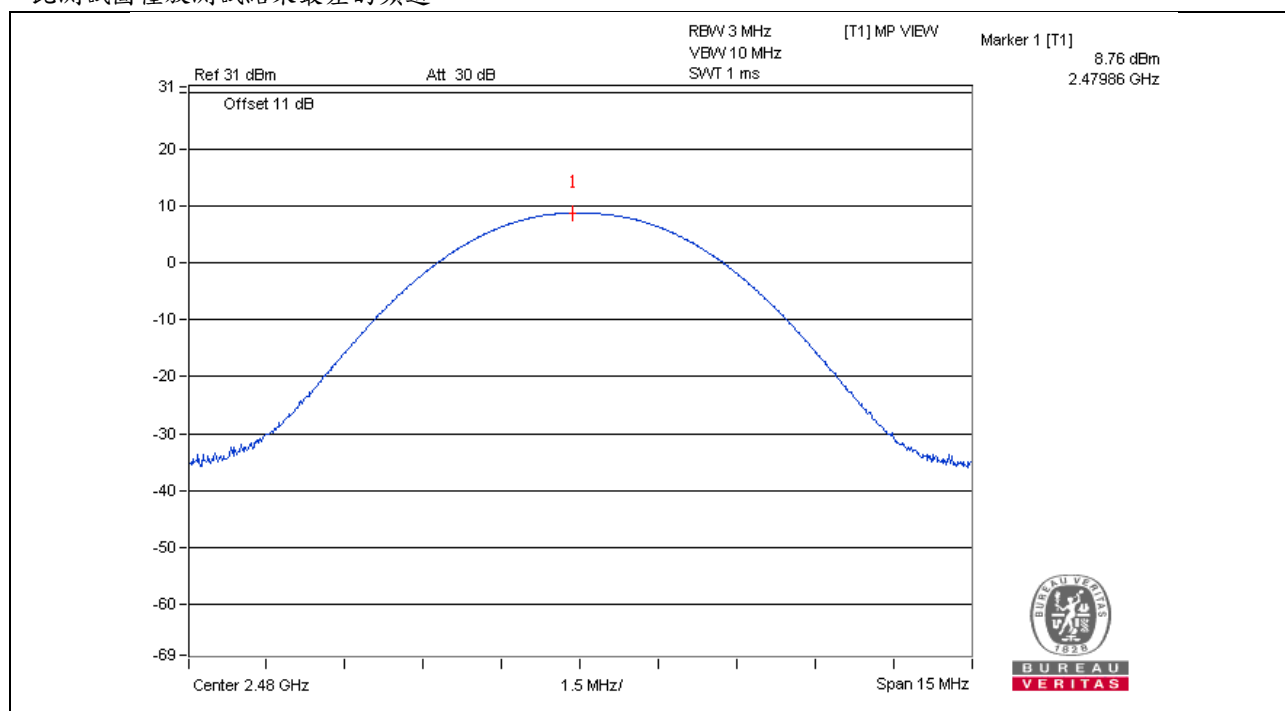


7.5 量測結果

操作模式	發射	測試日期	106 年 06 月 30 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	吳佳衡		

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)	Pass / Fail
		GFSK	$\pi/4$ -DQPSK		
0	2402	6.46	4.81	21	Pass
39	2441	8.31	7.36	21	Pass
78	2480	8.76	7.84	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

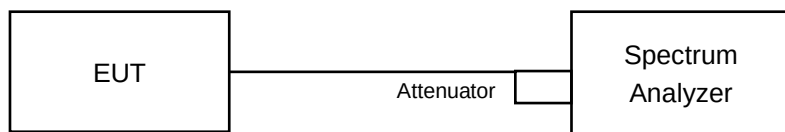
- 將待測物輸出接到頻譜分析儀上。
- 設定待測物處於正常傳輸跳頻模式下。
- 設定 RBW= 100kHz，VBW=300kHz，量測跳頻頻道數。

8.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer R&S	FSP40	100269	May. 11, 2017	May. 10, 2018

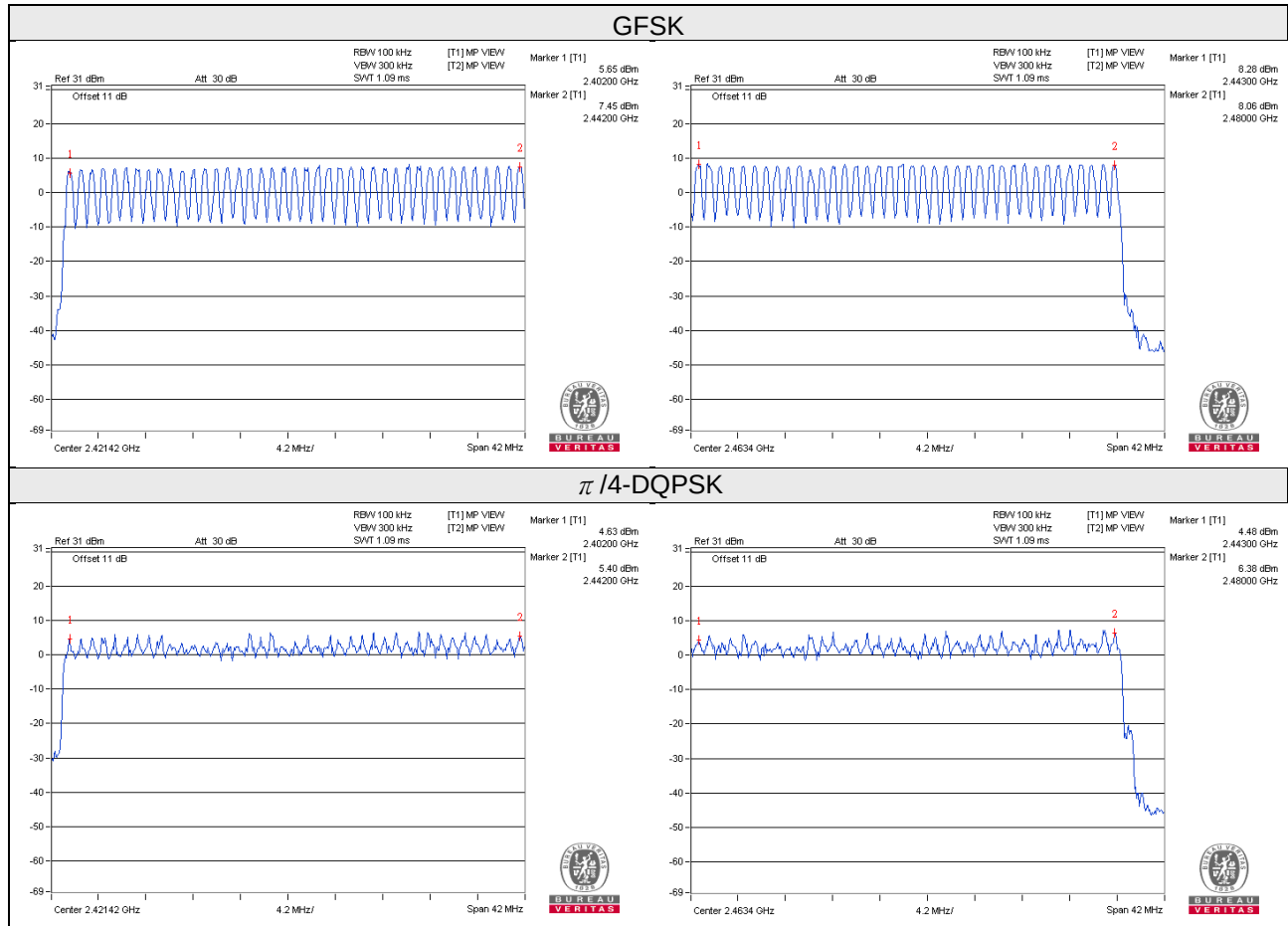
Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The measurement uncertainty is 207Hz, which is calculated as per the document ETSI TR 100 028. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

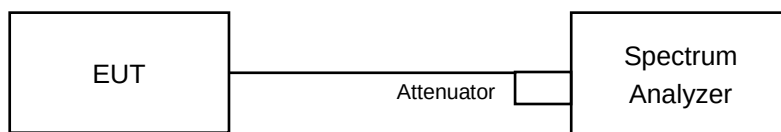
- a) 將待測物輸出接到頻譜分析儀上。
- b) 設定待測物處於連續發射狀態。
- c) 設定 RBW= 30kHz, VBW=300kHz，量測相鄰兩個頻道間的時間。

9.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer R&S	FSP40	100269	May. 11, 2017	May. 10, 2018

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 measurement uncertainty is 207Hz, 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



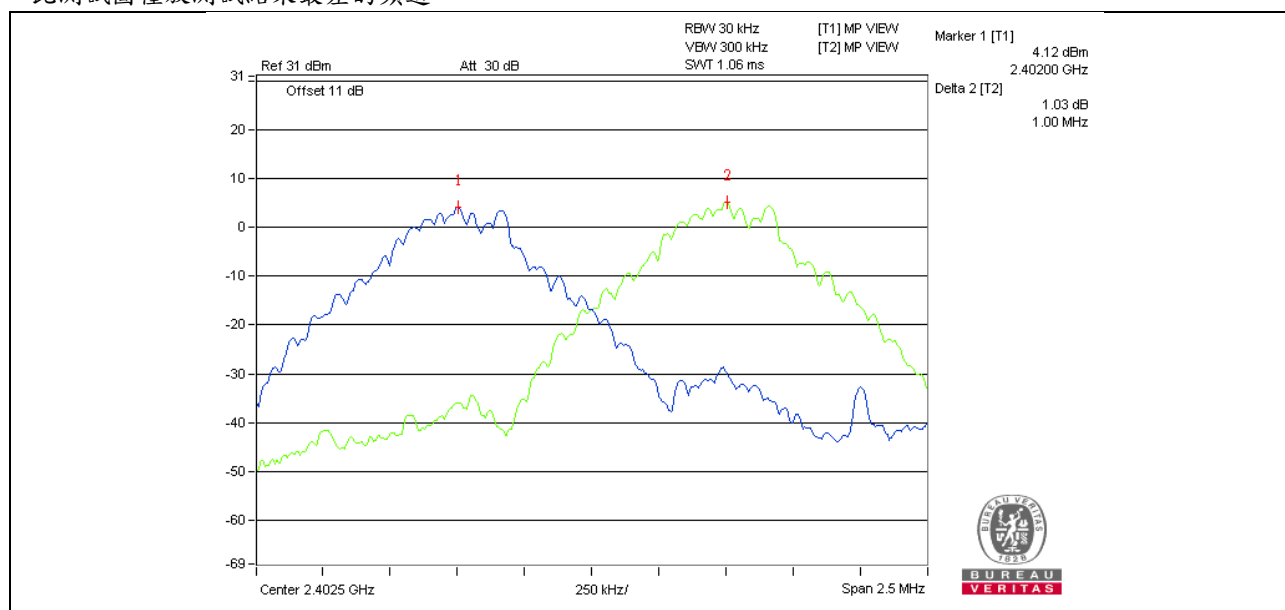
9.5 量測結果

操作模式	發射	測試日期	106 年 06 月 15 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	蔡仲陽		

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)		20dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass / Fail
		GFSK	$\pi/4$ -DQPSK	GFSK	$\pi/4$ -DQPSK	GFSK	$\pi/4$ -DQPSK	
0	2402	1.00	1.00	0.96	1.25	0.64	0.84	Pass
39	2441	1.00	1.00	0.95	1.26	0.64	0.84	Pass
78	2480	1.00	1.00	0.95	1.26	0.64	0.84	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 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.	Cal. Date	Cal. Due
Spectrum Analyzer R&S	FSP40	100269	May. 11, 2017	May. 10, 2018

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 measurement uncertainty is 207Hz, 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

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 = 316.00 times	0.450	142.20	400
DH3	27 (times / 5 sec) * 6.32 = 158.00 times	1.79	282.82	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.01	323.39	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。其掃描圖如下所示。



$\pi/4$ -DQPSK

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	51 (times / 5 sec) * 6.32 = 322.32 times	0.48	154.71	400
DH3	25 (times / 5 sec) * 6.32 = 158.00 times	1.75	276.50	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.03	325.54	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。其掃描圖如下所示。



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 / Telecom 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

您也可以在我们的網站內找到各實驗室的地圖。

---END---

Appendix A- Declaration of Identity

See attachment next page

Declaration of Identity

rev. 3.0

Name of manufacturer: **Sennheiser electronic GmbH & Co.KG**
Address: **Am Labor 1 D-30900 Wedemark, Germany**

Declares that the following equipment is technically identical

Product description: **In-Ear Wireless headphones**

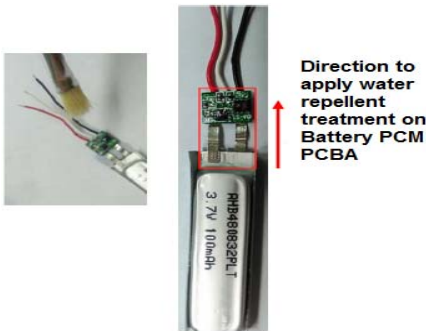
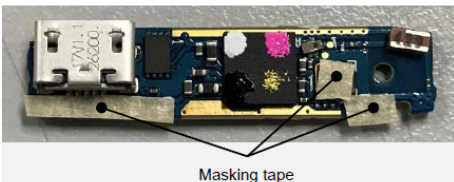
Model No. (s): **CX SPORT, CX 6.00BT**

Brand Name: **SENNHEISER**

Similarities	Differences	Remarks
Same electronic parts/PCBA same Li-Polymer Battery	- Changes in some parts colour (see comparison in next page) - Adding new ear fin parts. (for CX SPORT - see comparison in next page)	
	- Additional water-proofing treatment on PCBA by nano-coating and applying repellent on soldering points (for CX SPORT- refer to next page for details) - Battery PCM treated with water repellent solution (for CX SPORT- refer to next page for details)	

Declaration of Identity

rev 3.0

Key Differences	CX SPORT	CX 6.00BT
Changes in some parts colour Adding ear fins for CX SPORT		
Battery Waterproof treatment	 Direction to apply water repellent treatment on Battery PCM PCBA	None
Main PCBA and Soldering PCB – Waterproof treatment	Soldering PCB  SR side Apply waterproof protection on cables soldering area Main PCBA  Masking tape Apply waterproof solution by nano-coating process	None
USB cable (Accessory)	Shorter USB cable	
Hardware version	Rename from ver. 2.0 to ver. 4.0 for Mass Production lot.	
Software version	Rename from ver. 0.3.0 to ver. 1.0.0 for Mass Production lot.	

Declaration of Identity

rev 3.0

Date: **March 8, 2018**

Sennheiser electronic GmbH & Co.KG

Company: **Am Labor 1 D-30900 Wedemark, Germany**

Chua Lian Soon

Name: **Regulatory Compliance Officer**

Signature: