

低功率射頻電機技術規範測試報告(BT-LE)

報告編號.

RT170513E01F-2

申請者

Lantronix, Inc.

產品名稱

xPico 200 Series Wi-Fi IoT Gateway

型號

xPico 250

系列型號

xPico 270

製造廠商

Lantronix, Inc.

商標或廠牌

Lantronix

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 108 年 06 月 14 日

報告簽署人簽章:

陳瓊美



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報告發行紀錄

Issue No.	Description	Date Issued
RT170513E01F-2	Original release.	108 年 06 月 14 日

證 明 書

產 品 名 稱：xPico 200 Series Wi-Fi IoT Gateway
商 標：Lantronix
型 號：xPico 250
系 列 型 號：xPico 270
申 請 者：Lantronix, Inc.
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：xPico 270)，收件日期 108 年 04 月 15 日，於 108 年 06 月 03 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： 108 年 06 月 14 日
吳 茲 臻 / 專員

審 核 者： 陳 瓊 美 ， 日 期： 108 年 06 月 14 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: Lantronix, Inc.

製造廠商: Lantronix, Inc.

申請廠商地址: 7535 Irvine Center Drive, Suite 100 Irvine, California 92618

廠牌: Lantronix

產品名稱: xPico 200 Series Wi-Fi IoT Gateway

型號: xPico 250

系列型號: xPico 270

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
KDB 558074

Bluetooth LE 頻段概要

項次	量測項目	規 範	量測結果判定
1	帶外發射	低功率射頻電機技術規範 3.10.1.5 節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3 節	合格
3	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

備註: 量測結果之判定不考慮量測不確定度的貢獻

2 一般敘述

2.1 待測設備 (BT-LE)

產品名稱：	xPico 200 Series Wi-Fi IoT Gateway
型號：	xPico 250
系列型號：	xPico 270
額定電源：	3.3Vdc from host equipment
調變方式：	GFSK
傳輸速率：	Up to 1Mbps
載波頻率：	2402MHz ~ 2480MHz
頻道數：	40
發射功率：	5.36 dBm
天線種類：	見註
電源線類別：	NA
信號線類別：	NA
配件：	NA

註

1. 此報告為報告 RT170513E01C-2 之系列報告，本次報告 RT170513E01F-2 其差異詳列如下：

◆ Add new model.

Original				
Product	Brand	Model	Difference	Antenna
xPico 200 Series Wi-Fi IoT Gateway module	Lantronix	xPico 250	SKU A: SIP with two UFL connectors Wi-Fi Chip and Bluetooth chip	Dipole Antenna (long) Dipole Antenna (short) PCB Antenna
Newly				
Product	Brand	Model	Difference	Antenna
xPico 200 Series Wi-Fi IoT Gateway module	Lantronix	xPico 270	SIP with two UFL connectors Wi-Fi Chip and Bluetooth chip uses a TCXO in place of the crystal that runs the Wi-Fi radio and add ac mode	Dipole Antenna (long) Dipole Antenna (short) PCB Antenna

From the above models, model: **xPico 270** was selected as representative model for the test and its data was recorded in this report.

- 此待測設備對於上述之變更，僅有電源線傳導干擾，帶外發射及峰值傳導輸出功率需進行檢測，並將其量測值記錄於報告中。
- 此待測設備同時具有 Bluetooth 及 WLAN 技術。
- 同時發射條件如下：

Condition	Technology	
1	WLAN (2.4GHz)	Bluetooth
2	WLAN (5GHz)	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

5. 此待測設備搭配測試的天線，其資料如下：

Ant Set.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type	*Cable Length	*Cable Loss(dB)	excluding cable loss Antenna Gain(dBi)
1	Taoglas	GW.71.5153	2.8	2.4~2.4835	Dipole	R-SMA	45mm	1	3.8
			3.8	5.15~5.85				1.7	5.5
	Taoglas	GW.71.5153	2.8	2.4~2.4835			45mm	1	3.8
			3.8	5.15~5.85				1.7	5.5
2	NA	WSS002	1	2.4~2.4835	Dipole	R-SMA	45mm	1	2
			0.3	5.15~5.85				1.7	2
	NA	WSS002	1	2.4~2.5			45mm	1	2
			0.3	5.15~5.25				1.7	2
3	ethertronics	1000668	2.5	2.4~2.4835	PCB	i-pex(MHF)	50mm	NA	NA
			5	5.15~5.85					
	ethertronics	1000668	2.5	2.4~2.4835					
			5	5.15~5.85					

Note: From the above antennas, Ant Set 1, 3 were selected as representative antenna for the test.

6. 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
1GHz 以上量測	Ch 0, 19, 39
其它不必要之訊號	Ch 19

*電源線傳導干擾量測經過評估後，以Ch 19測試模式進行最終量測。

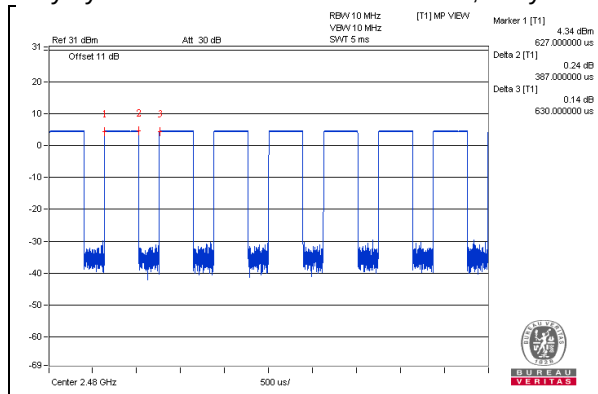
7. 此待測設備的測試模式如下：

場強輻射	
測試模式	描述
一	EUT+ Antenna set 1
二	EUT+ Antenna set 3
電源線傳導干擾	
測試模式	描述
一	EUT+ Antenna set 3

8. 在原始報告中，此待測設備之天線(PCB)於場強輻射量測經評估三個正交軸方位評估測試擺設方式：平躺、直立、側放，以平躺擁有最大干擾值，故以上述擺放方式進行最終量測，並將測試結果紀錄。

9. Duty cycle of test signal

Duty cycle = 0.387 ms/0.63 ms = 0.614, Duty factor = $10 * \log(1/0.614) = 2.12$



此裝置各頻道的中心頻率如下：

40 channels are provided for BT-LE mode:

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

詳細之規格請參考使用說明書，產品的照片請參照 BV 編號: 190415E09-1。

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。

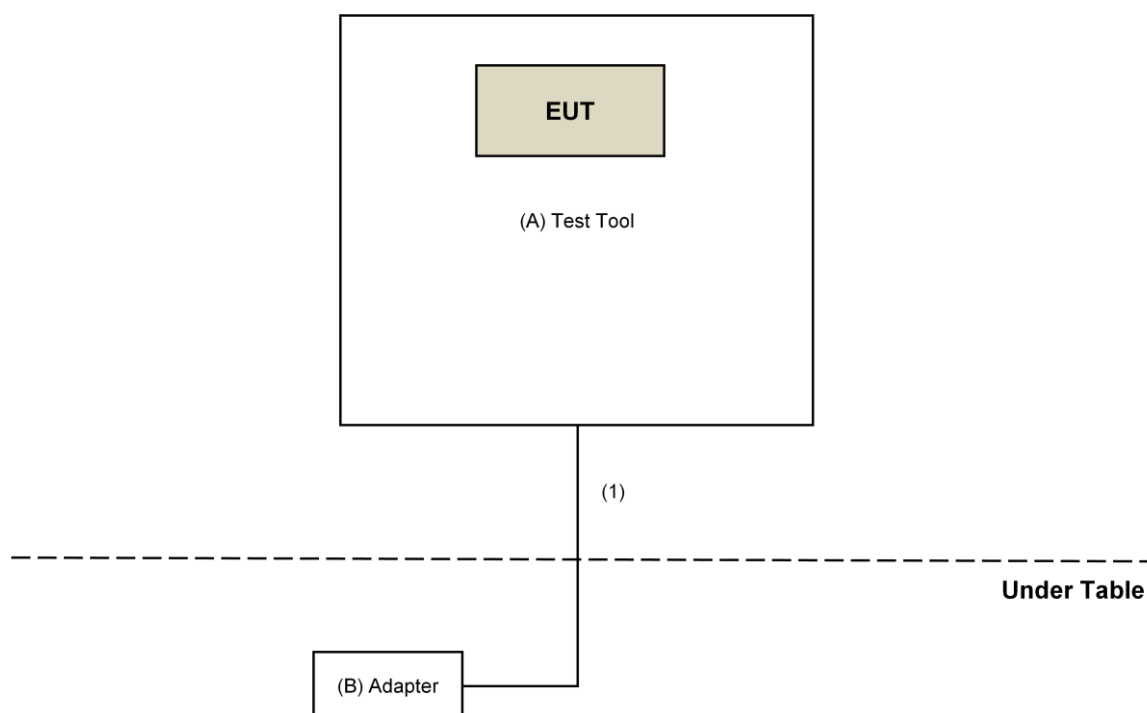
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Test Tool	Lantronix	NA	NA	NA	Supplied by client
B.	Adapter	TOP	W050010GPX1 L1	NA	NA	Supplied by client

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.	DC Cable	1	1.8	No	0	Supplied by client

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。

電場強度(微伏特/公尺, uV/m)	測距(公尺)	頻率(MHz)
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) 6dB 頻寬之要求

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

(6)峰值輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節之規定：

數位調變技術系統：1 W(含)以下。

(7)功率頻譜密度之要求

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

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 Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	Apr. 30, 2019	Apr. 29, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-3-1	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-2	Mar. 18, 2019	Mar. 17, 2020
RF Cable	8D	966-3-3	Mar. 18, 2019	Mar. 17, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-1200	160922	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC104-SM-SM-2000	180601	June 12, 2018	June 11, 2019
RF Cable	EMC104-SM-SM-6000	180602	June 12, 2018	June 11, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA

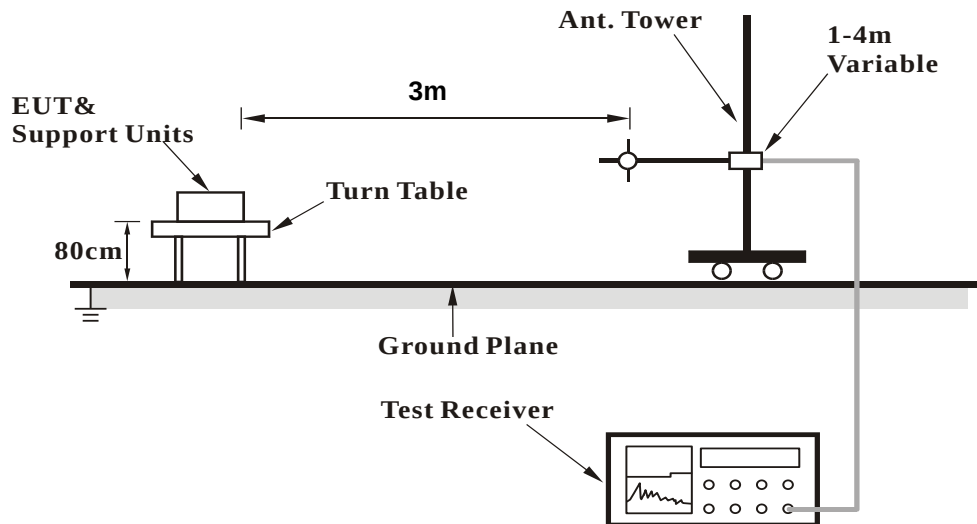
Note:

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 966 Chamber No. 3.
3. Loop antenna was used for all emissions below 30 MHz.
4. 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.

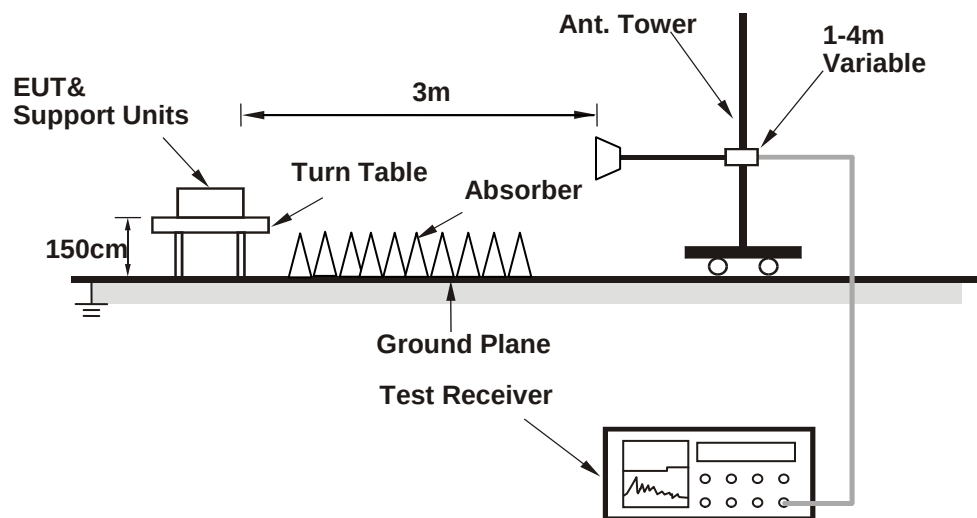
Measurement	Value
Radiated emissions (30MHz-1GHz)	5.1 dB
Radiated emissions (1GHz ~6GHz)	5.1 dB
Radiated emissions (6GHz ~18GHz)	5.0 dB
Radiated emissions (18GHz ~40GHz)	5.2 dB

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 (模式一)

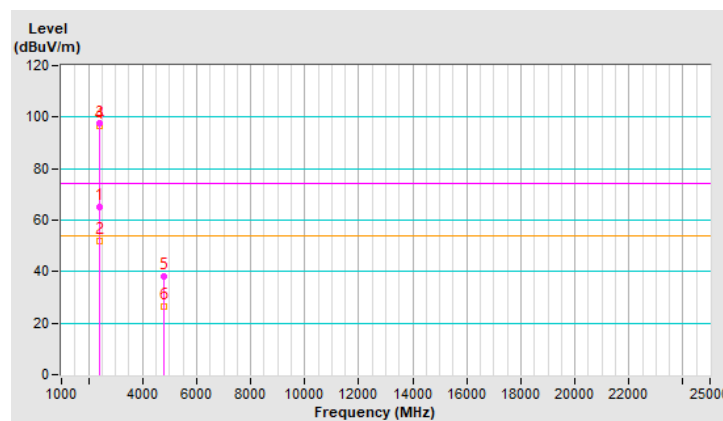
4.6.1 發射諧波

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=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 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	65.1 PK	74.0	-8.9	1.00 H	337	67.1	-2.0
2	2390.00	51.9 AV	54.0	-2.1	1.00 H	337	53.9	-2.0
3	*2402.00	97.4 PK			1.00 H	337	99.4	-2.0
4	*2402.00	96.7 AV			1.00 H	337	98.7	-2.0
5	4804.00	38.3 PK	74.0	-35.7	1.52 H	191	36.0	2.3
6	4804.00	26.3 AV	54.0	-27.7	1.52 H	191	24.0	2.3
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

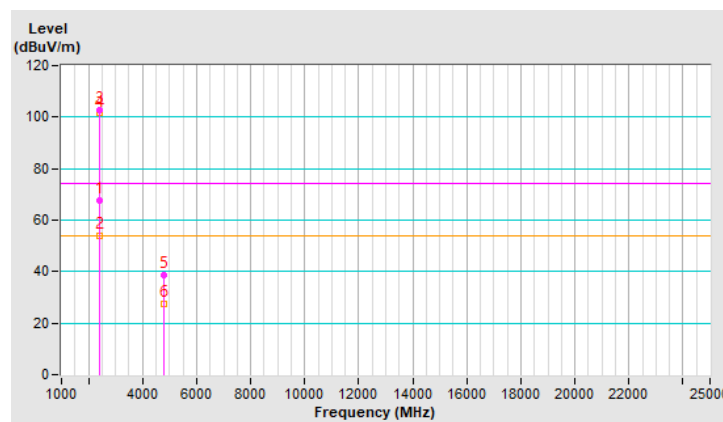


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	67.8 PK	74.0	-6.2	1.01 V	266	69.8	-2.0
2	2390.00	53.8 AV	54.0	-0.2	1.01 V	266	55.8	-2.0
3	*2402.00	102.6 PK			1.01 V	266	104.6	-2.0
4	*2402.00	101.5 AV			1.01 V	266	103.5	-2.0
5	4804.00	38.6 PK	74.0	-35.4	3.61 V	173	36.3	2.3
6	4804.00	27.3 AV	54.0	-26.7	3.61 V	173	25.0	2.3
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

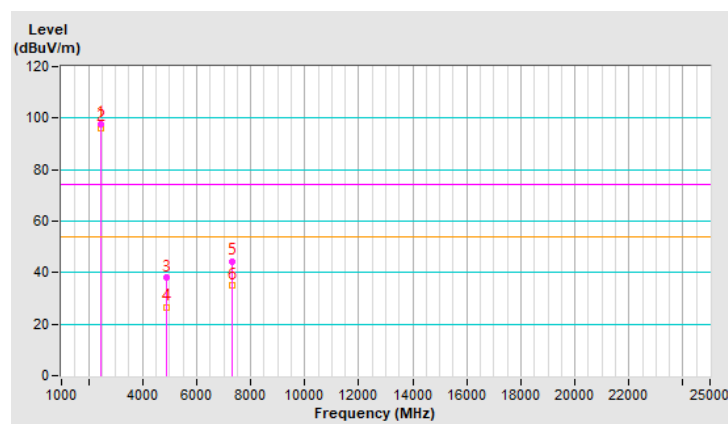


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	*2440.00	97.5 PK			1.03 H	352	99.6	-2.1
2	*2440.00	96.3 AV			1.03 H	352	98.4	-2.1
3	4880.00	37.9 PK	74.0	-36.1	1.42 H	194	35.6	2.3
4	4880.00	26.6 AV	54.0	-27.4	1.42 H	194	24.3	2.3
5	7320.00	44.2 PK	74.0	-29.8	1.47 H	262	36.0	8.2
6	7320.00	34.9 AV	54.0	-19.1	1.47 H	262	26.7	8.2
7	#9760.00	-	-	-	-	-	-	-
8	12200.00	-	-	-	-	-	-	-
9	#14640.00	-	-	-	-	-	-	-
10	#17080.00	-	-	-	-	-	-	-
11	19520.00	-	-	-	-	-	-	-
12	#21960.00	-	-	-	-	-	-	-
13	#24400.00	-	-	-	-	-	-	-

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)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " * ": Fundamental frequency (主頻).
- " # ": The radiated frequency is out of the restricted band.
- " - ": 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.

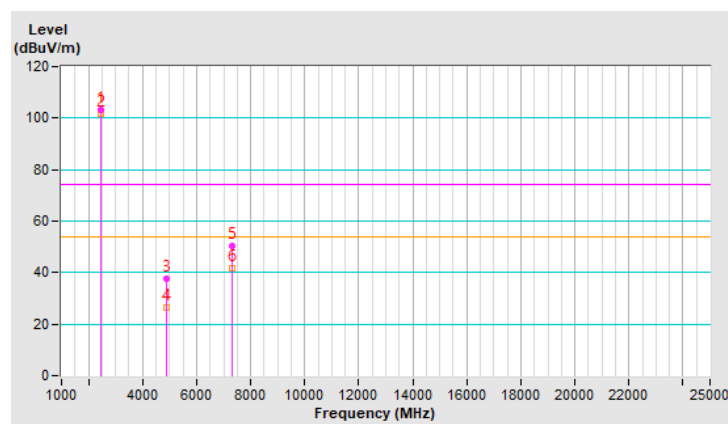


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	*2440.00	103.3 PK			1.05 V	291	105.4	-2.1
2	*2440.00	101.6 AV			1.05 V	291	103.7	-2.1
3	4880.00	37.6 PK	74.0	-36.4	3.62 V	206	35.3	2.3
4	4880.00	26.3 AV	54.0	-27.7	3.62 V	206	24.0	2.3
5	7320.00	50.3 PK	74.0	-23.7	3.50 V	183	42.1	8.2
6	7320.00	41.6 AV	54.0	-12.4	3.50 V	183	33.4	8.2
7	#9760.00	-	-	-	-	-	-	-
8	12200.00	-	-	-	-	-	-	-
9	#14640.00	-	-	-	-	-	-	-
10	#17080.00	-	-	-	-	-	-	-
11	19520.00	-	-	-	-	-	-	-
12	#21960.00	-	-	-	-	-	-	-
13	#24400.00	-	-	-	-	-	-	-

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. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.



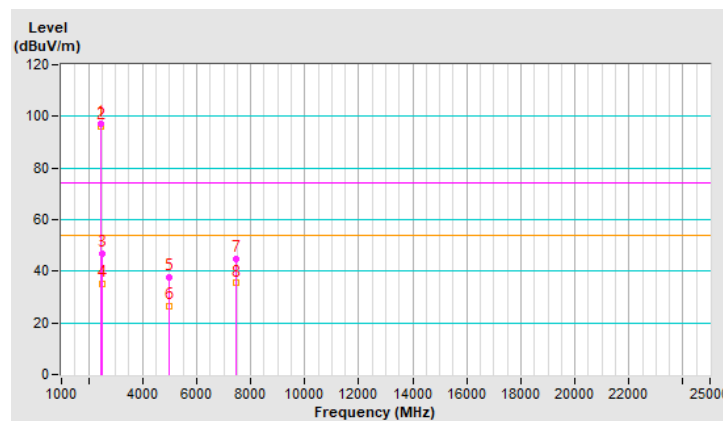
操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108年6月3日	測試者：	鄭樹營

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	97.2 PK			1.07 H	347	99.4	-2.2
2	*2480.00	96.2 AV			1.07 H	347	98.4	-2.2
3	2483.50	46.9 PK	74.0	-27.1	1.07 H	347	49.1	-2.2
4	2483.50	35.1 AV	54.0	-18.9	1.07 H	347	37.3	-2.2
5	4960.00	37.6 PK	74.0	-36.4	1.48 H	186	35.1	2.5
6	4960.00	26.6 AV	54.0	-27.4	1.48 H	186	24.1	2.5
7	7440.00	44.7 PK	74.0	-29.3	1.50 H	257	36.3	8.4
8	7440.00	35.4 AV	54.0	-18.6	1.50 H	257	27.0	8.4
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)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " * ": Fundamental frequency (主頻).
- " # ": The radiated frequency is out of the restricted band.
- " - ": 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.

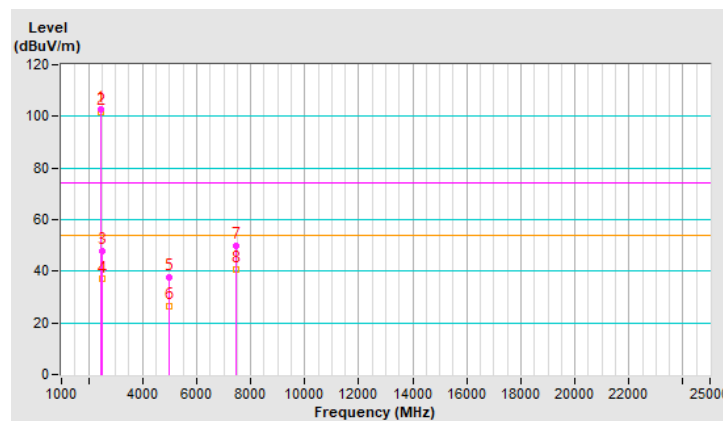


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108年6月3日	測試者：	鄭樹營

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	102.6 PK			1.09 V	296	104.8	-2.2
2	*2480.00	101.9 AV			1.09 V	296	104.1	-2.2
3	2483.50	47.8 PK	74.0	-26.2	1.09 V	296	50.0	-2.2
4	2483.50	36.9 AV	54.0	-17.1	1.09 V	296	39.1	-2.2
5	4960.00	37.7 PK	74.0	-36.3	3.80 V	168	35.2	2.5
6	4960.00	26.3 AV	54.0	-27.7	3.80 V	168	23.8	2.5
7	7440.00	50.0 PK	74.0	-24.0	3.58 V	200	41.6	8.4
8	7440.00	40.8 AV	54.0	-13.2	3.58 V	200	32.4	8.4
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.



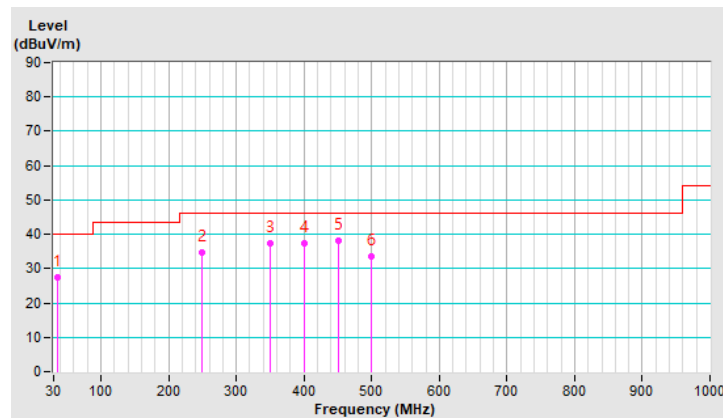
4.6.2 其它不必要之訊號

操作模式：	發射接收	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 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	35.78	27.4 QP	40.0	-12.6	1.54 H	209	41.9	-14.5
2	249.81	34.6 QP	46.0	-11.4	1.43 H	267	48.0	-13.4
3	350.44	37.3 QP	46.0	-8.7	1.67 H	257	47.6	-10.3
4	400.44	37.5 QP	46.0	-8.5	1.75 H	295	46.8	-9.3
5	450.45	38.1 QP	46.0	-7.9	1.41 H	84	46.2	-8.1
6	499.58	33.4 QP	46.0	-12.6	1.44 H	296	39.9	-6.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



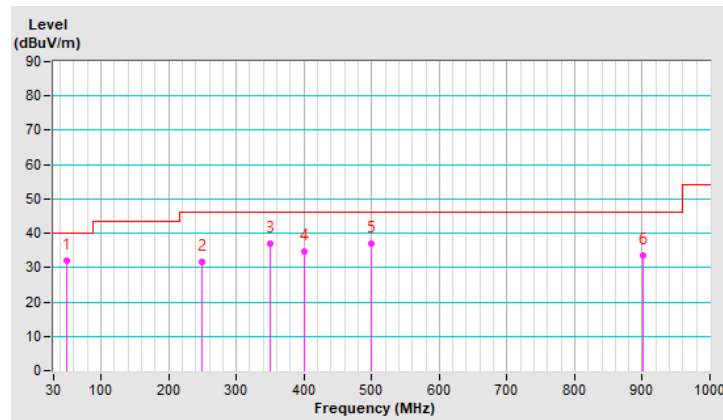
操作模式：	發射接收	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	49.70	32.0 QP	40.0	-8.0	1.59 V	180	45.6	-13.6
2	250.09	31.5 QP	46.0	-14.5	1.44 V	208	44.9	-13.4
3	349.74	37.1 QP	46.0	-8.9	1.35 V	209	47.6	-10.5
4	400.28	34.8 QP	46.0	-11.2	1.11 V	128	44.1	-9.3
5	500.02	36.9 QP	46.0	-9.1	1.42 V	209	43.4	-6.5
6	901.45	33.7 QP	46.0	-12.3	1.51 V	176	33.1	0.6

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.7 量測結果 (模式二)

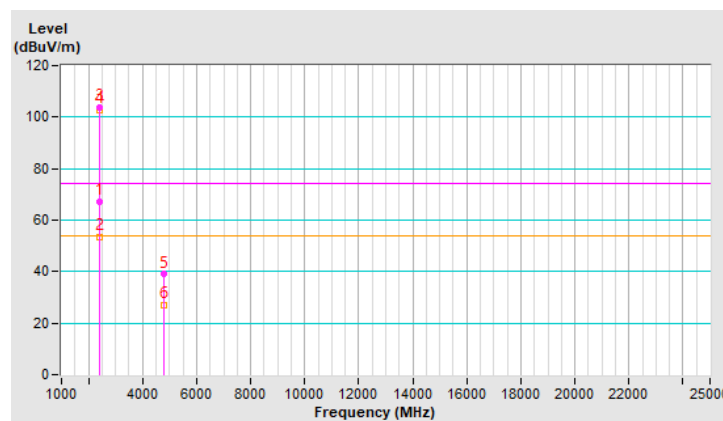
4.7.1 發射諧波

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=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 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	67.2 PK	74.0	-6.8	1.06 H	318	69.2	-2.0
2	2390.00	53.6 AV	54.0	-0.4	1.06 H	318	55.6	-2.0
3	*2402.00	103.7 PK			1.06 H	318	105.7	-2.0
4	*2402.00	102.6 AV			1.06 H	318	104.6	-2.0
5	4804.00	38.9 PK	74.0	-35.1	1.50 H	208	36.6	2.3
6	4804.00	27.0 AV	54.0	-27.0	1.50 H	208	24.7	2.3
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

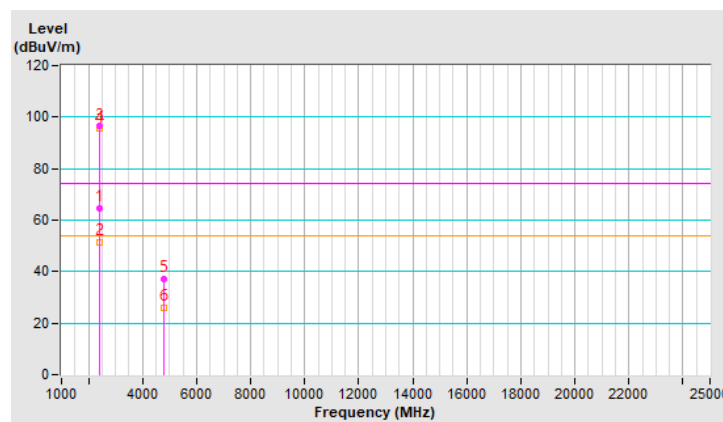


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 0：2402 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	64.6 PK	74.0	-9.4	1.03 V	286	66.6	-2.0
2	2390.00	51.4 AV	54.0	-2.6	1.03 V	286	53.4	-2.0
3	*2402.00	96.4 PK			1.03 V	286	98.4	-2.0
4	*2402.00	95.4 AV			1.03 V	286	97.4	-2.0
5	4804.00	37.1 PK	74.0	-36.9	3.71 V	190	34.8	2.3
6	4804.00	26.1 AV	54.0	-27.9	3.71 V	190	23.8	2.3
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

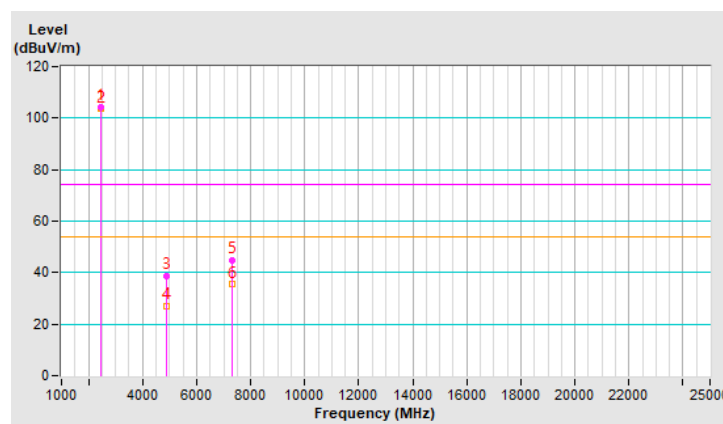


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	*2440.00	104.4 PK			1.07 H	331	106.5	-2.1
2	*2440.00	103.5 AV			1.07 H	331	105.6	-2.1
3	4880.00	38.6 PK	74.0	-35.4	1.56 H	193	36.3	2.3
4	4880.00	27.0 AV	54.0	-27.0	1.56 H	193	24.7	2.3
5	7320.00	44.7 PK	74.0	-29.3	1.47 H	252	36.5	8.2
6	7320.00	35.4 AV	54.0	-18.6	1.47 H	252	27.2	8.2
7	#9760.00	-	-	-	-	-	-	-
8	12200.00	-	-	-	-	-	-	-
9	#14640.00	-	-	-	-	-	-	-
10	#17080.00	-	-	-	-	-	-	-
11	19520.00	-	-	-	-	-	-	-
12	#21960.00	-	-	-	-	-	-	-
13	#24400.00	-	-	-	-	-	-	-

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. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

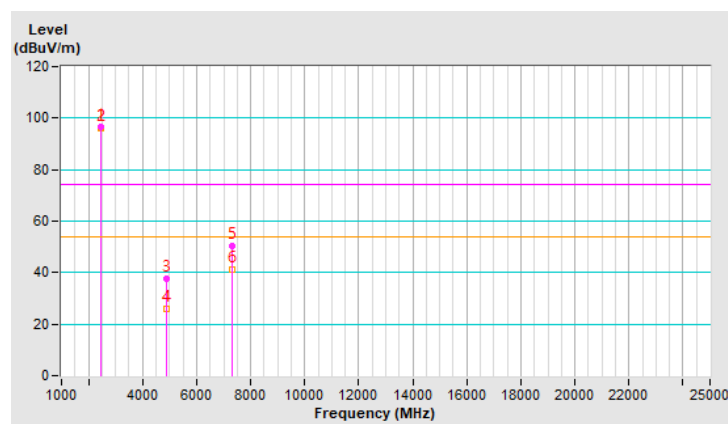


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	*2440.00	96.8 PK			1.00 V	299	98.9	-2.1
2	*2440.00	96.1 AV			1.00 V	299	98.2	-2.1
3	4880.00	37.5 PK	74.0	-36.5	3.67 V	201	35.2	2.3
4	4880.00	26.1 AV	54.0	-27.9	3.67 V	201	23.8	2.3
5	7320.00	50.4 PK	74.0	-23.6	3.52 V	179	42.2	8.2
6	7320.00	41.2 AV	54.0	-12.8	3.52 V	179	33.0	8.2
7	#9760.00	-	-	-	-	-	-	-
8	12200.00	-	-	-	-	-	-	-
9	#14640.00	-	-	-	-	-	-	-
10	#17080.00	-	-	-	-	-	-	-
11	19520.00	-	-	-	-	-	-	-
12	#21960.00	-	-	-	-	-	-	-
13	#24400.00	-	-	-	-	-	-	-

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. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

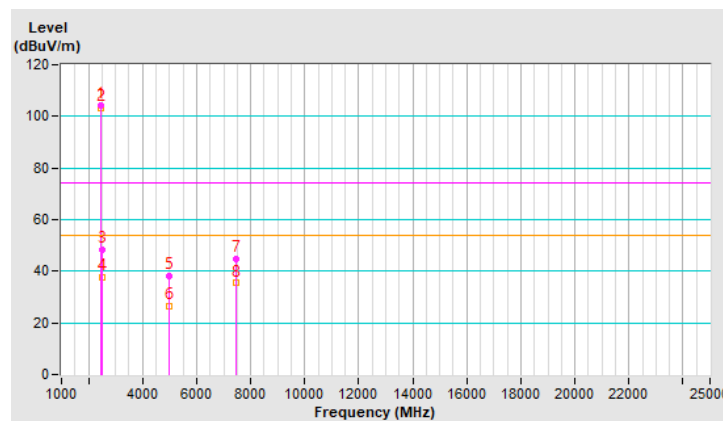


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108年6月3日	測試者：	鄭樹營

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	104.3 PK			1.03 H	360	106.5	-2.2
2	*2480.00	103.3 AV			1.03 H	360	105.5	-2.2
3	2483.50	48.5 PK	74.0	-25.5	1.03 H	360	50.7	-2.2
4	2483.50	37.5 AV	54.0	-16.5	1.03 H	360	39.7	-2.2
5	4960.00	38.0 PK	74.0	-36.0	1.52 H	205	35.5	2.5
6	4960.00	26.4 AV	54.0	-27.6	1.52 H	205	23.9	2.5
7	7440.00	44.8 PK	74.0	-29.2	1.42 H	251	36.4	8.4
8	7440.00	35.4 AV	54.0	-18.6	1.42 H	251	27.0	8.4
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.

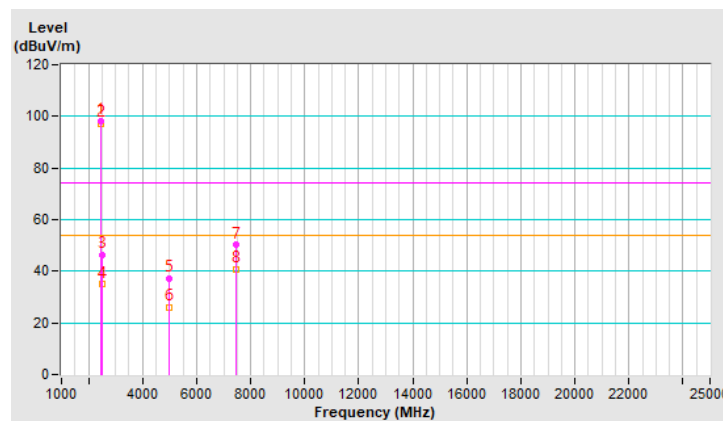


操作模式：	發射	調變技術：	GFSK
基本波頻率：	CH 39：2480 MHz	測試儀器：	(PK) RB=1MHz, VB=3MHz (AV) RB=1MHz, VB=3kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	98.2 PK			1.02 V	304	100.4	-2.2
2	*2480.00	97.1 AV			1.02 V	304	99.3	-2.2
3	2483.50	46.5 PK	74.0	-27.5	1.02 V	304	48.7	-2.2
4	2483.50	34.9 AV	54.0	-19.1	1.02 V	304	37.1	-2.2
5	4960.00	37.3 PK	74.0	-36.7	3.74 V	200	34.8	2.5
6	4960.00	25.9 AV	54.0	-28.1	3.74 V	200	23.4	2.5
7	7440.00	50.1 PK	74.0	-23.9	3.51 V	194	41.7	8.4
8	7440.00	40.8 AV	54.0	-13.2	3.51 V	194	32.4	8.4
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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency (主頻).
6. " # ": The radiated frequency is out of the restricted band.
7. " - ": The emission levels were too low to be detected.
8. The blank is not available, the limit of fundamental frequency was restricted at the output power.



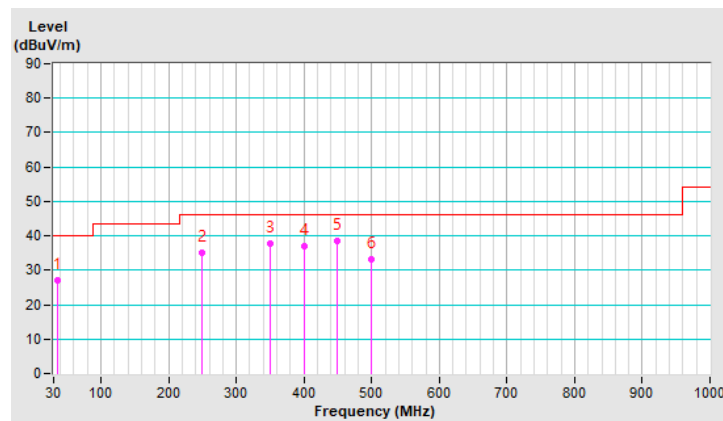
4.7.2 其它不必要之訊號

操作模式：	發射接收	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	25℃	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 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	36.02	27.2 QP	40.0	-12.8	1.55 H	219	41.6	-14.4
2	249.84	34.9 QP	46.0	-11.1	1.43 H	279	48.3	-13.4
3	350.16	37.6 QP	46.0	-8.4	1.65 H	251	48.0	-10.4
4	400.17	37.1 QP	46.0	-8.9	1.71 H	294	46.4	-9.3
5	449.94	38.4 QP	46.0	-7.6	1.47 H	72	46.5	-8.1
6	499.85	33.3 QP	46.0	-12.7	1.48 H	311	39.8	-6.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



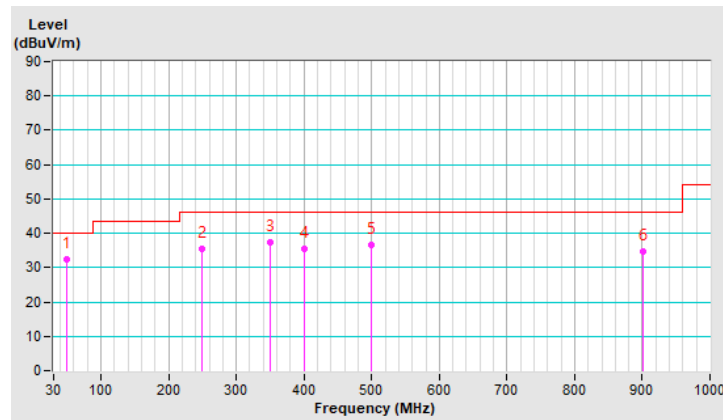
操作模式：	發射接收	調變技術：	GFSK
基本波頻率：	CH 19：2440 MHz	測試儀器：	(QP) RB=120kHz
量測場地溫度：	25°C	量測場地濕度：	65%RH
測試日期：	108 年 6 月 3 日	測試者：	鄭樹營

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	50.23	32.5 QP	40.0	-7.5	1.56 V	170	46.0	-13.5
2	249.98	35.4 QP	46.0	-10.6	1.46 V	210	48.8	-13.4
3	350.50	37.2 QP	46.0	-8.8	1.33 V	228	47.5	-10.3
4	399.98	35.6 QP	46.0	-10.4	1.07 V	139	44.9	-9.3
5	499.75	36.6 QP	46.0	-9.4	1.35 V	201	43.1	-6.5
6	901.63	34.7 QP	46.0	-11.3	1.49 V	180	34.0	0.7

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.8 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。

4.9 配置照片

請參照 Test Setup Photos

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。

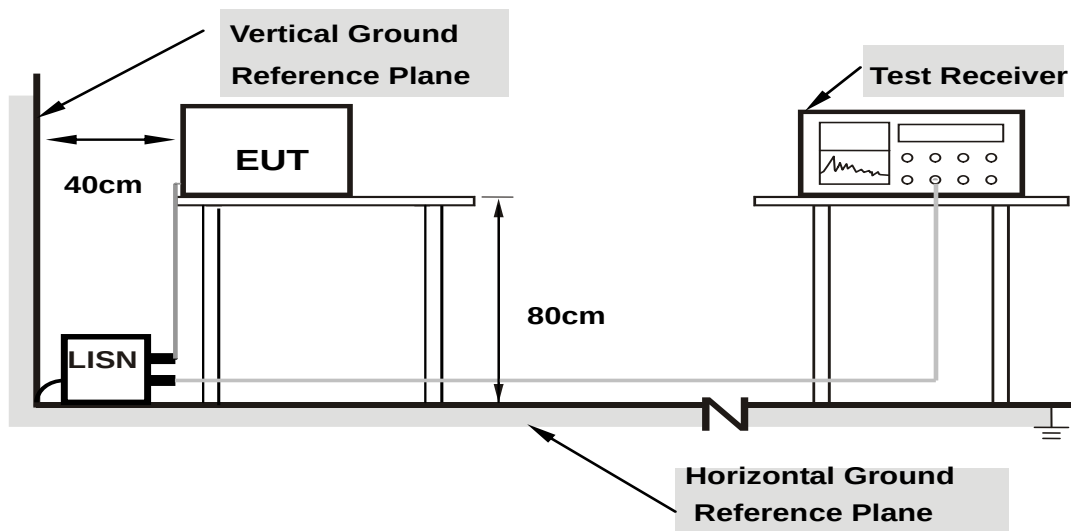
5.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
Software BVADT	BVADT_Conf_ 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 Shielded Room No. 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

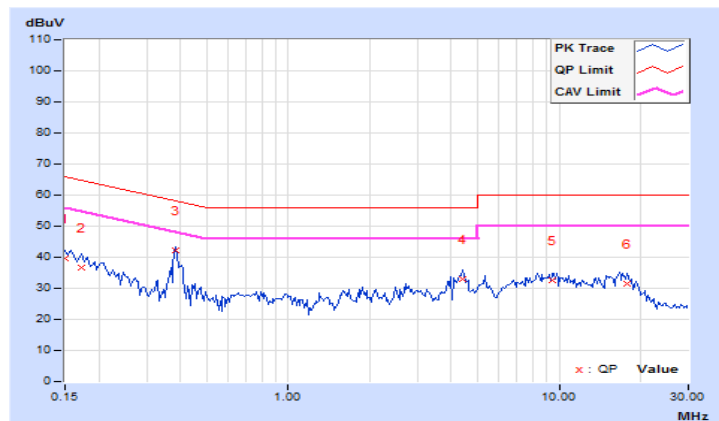
5.6 量測結果

操作模式	發射/ 接收	測試日期	108 年 06 月 03 日
基本波頻率：	CH 19 : 2440 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	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	29.59	14.20	39.62	24.23	66.00	56.00	-26.38	-31.77
0.17344	10.04	26.72	14.02	36.76	24.06	64.79	54.79	-28.03	-30.73
0.38438	10.08	32.05	31.13	42.13	41.21	58.18	48.18	-16.05	-6.97
4.41797	10.35	22.55	13.13	32.90	23.48	56.00	46.00	-23.10	-22.52
9.46875	10.67	21.90	11.96	32.57	22.63	60.00	50.00	-27.43	-27.37
17.85547	11.22	20.20	10.91	31.42	22.13	60.00	50.00	-28.58	-27.87

Remarks:

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

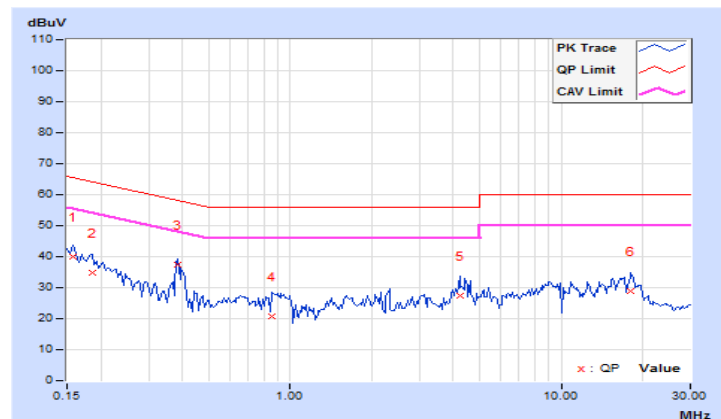


操作模式	發射/ 接收	測試日期	108 年 06 月 03 日
基本波頻率：	CH 19 : 2440 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	75%RH
測試者	何欣儒		

		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.
0.15781	9.94	30.24	15.32	40.18	25.26	65.58	55.58	-25.40	-30.32
0.18516	9.95	24.79	10.93	34.74	20.88	64.25	54.25	-29.51	-33.37
0.38438	9.98	27.56	19.39	37.54	29.37	58.18	48.18	-20.64	-18.81
0.85313	10.00	10.85	1.13	20.85	11.13	56.00	46.00	-35.15	-34.87
4.21484	10.18	17.19	7.90	27.37	18.08	56.00	46.00	-28.63	-27.92
18.14844	11.03	17.84	7.11	28.87	18.14	60.00	50.00	-31.13	-31.86

Remarks:

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 測試配置照片

產品的測試配置照片請參照 Test Setup Photo.

6 峰值傳導輸出功率之量測

6.1 適用標準

請見本報告 3.1 節第(6)項的規定。

6.2 量測方法

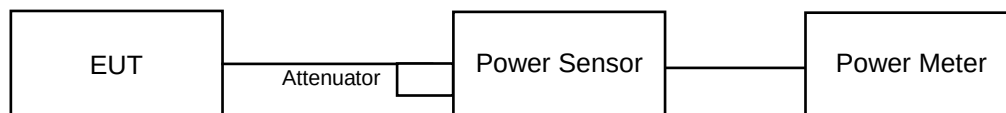
- 將待測物輸出經由衰減器接到功率計上。
- 設定待測物處於連續發射狀態。
- 計算其輸出功率峰值。

6.3 量測儀器

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020

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	108 年 06 月 03 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	鄭樹營		

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	3.112	4.93	30	Pass
19	2440	3.436	5.36	30	Pass
39	2480	3.281	5.16	30	Pass

6.6 量測結果判定

依據測試數據結果，符合低功率射頻電機技術規範之要求。

7 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

您也可以在我们的網站內找到各實驗室的地圖。

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