

低功率射頻電機技術規範測試報告

報告編號	RT191209C08-1
申請者	EVERINT Co., Ltd.
產品名稱	Bluetooth module
型號	BT-MSOIII
製造廠商	EVERINT Co., Ltd.
商標或廠牌	EVERINT
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 10 日修訂
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 109 年 01 月 17 日

報告簽署人簽章:

陳志偉



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證 明 書

發行日期：109 年 01 月 17 日

產 品 名 稱：Bluetooth module
商 標：EVERINT
型 號：BT-MSOIII
申 請 者：EVERINT Co., Ltd.
量 測 規 範：低功率射頻電機技術規範 LP0002 (修訂日期：107 年 1 月 10 日)
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：BT-MSOIII)，
收件日期 108 年 12 月 09 日，於 109 年 01 月 10 日至 109 年 01 月 17 日，已在本公司之標準測試
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：



陳佩珊 / 高級專員

， 日 期：

109 年 01 月 17 日

審 核 者：



陳志偉 / 高級專案工程師

， 日 期：

109 年 01 月 17 日

香港商立德國際商品試驗有限公司桃園分公司

實驗室地址：新北市林口區嘉寶里 14 鄰 47-2 號

此份報告不得摘錄複製，除全份
複製外，需經實驗室書面同意。



1 低功率射頻電機量測記錄表

申請廠商: EVERINT Co., Ltd.

製造廠商: EVERINT Co., Ltd.

申請廠商地址: 129, CHUNGJUSANDAN 1-RO, CHUNGJU-SI, CHUNGCHEONGBUK-DO, KOREA

廠牌: EVERINT

產品名稱: Bluetooth module

型號: BT-MSOIII

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 (修訂日期: 107 年 1 月 10 日)
ANSI C63.10-2013

Bluetooth LE 頻段概要

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

Note: 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

產品名稱：	Bluetooth module
型號：	BT-MSOIII
額定電源：	3.3Vdc
調變方式：	GFSK
傳輸速率：	1Mbps/2Mbps
載波頻率：	2402 ~ 2480MHz
頻道數：	40
發射功率：	BT LE 1Mbps: 6.67dBm BT LE 2Mbps: 6.65dBm
天線種類：	見註 1
電源線類別：	NA
信號線類別：	NA
配件：	NA

註 1: 此待測設備搭配測試的天線，其資料如下：

Antenna type	Brand	Part No.	Antenna Gain (dBi)	Antenna Connector
Chip Antenna	NKC	NKC-6	3.36	NA

註 2: 此報告中，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
場強輻射量測	1GHz 以上量測	BT LE 1Mbps: Ch 0, 19, 39 BT LE 2Mbps: Ch 0, 19, 39	BT LE 1Mbps: Ch 39 BT LE 2Mbps: Ch 39
	其它不必要之訊號	BT LE 1Mbps: Ch 39 BT LE 2Mbps: Ch 39	
電源線傳導干擾		BT LE 1Mbps: Ch 39 BT LE 2Mbps: Ch 39	

註 3: 此待測設備，經評估三個正交軸方位評估測試擺設方式：平躺、側放、垂直，以平躺為最大干擾值之位置，故以此最大干擾值之擺放方式進行最終量測，並將測試結果紀錄。

註 4: 待測設備使用以下配件。

*本案經申請者切結器材不提供隨貨配件，配件由實驗室提供併同檢驗。不提供隨貨配件之照片請參閱附件。(BV CPS 報告編號: 191209C08_SU)

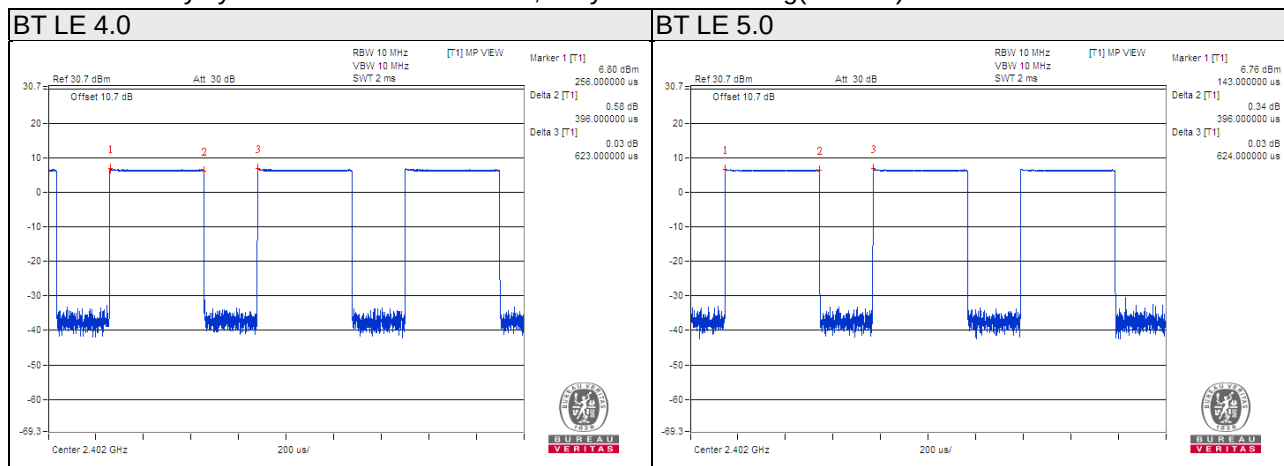
不隨貨配件				
配件	廠牌	型號	規格	備註
USB cable	KYOCERA	KYO6750USB	1.2m shielded without core	實驗室提供

註 5: Duty cycle of test signal.

Duty cycle of test signal is < 98%, duty factor is required.

BT LE 4.0: Duty cycle = $0.396/0.623 = 0.636$, Duty factor = $10 * \log(1/0.636) = 1.97$

BT LE 5.0: Duty cycle = $0.396/0.624 = 0.635$, Duty factor = $10 * \log(1/0.635) = 1.97$



此裝置各頻道的中心頻率如下：

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

詳細之規格請參考使用說明書，產品的照片請參照BV報告編號: 191209C08。

2.2 輔助測試之週邊設備描述

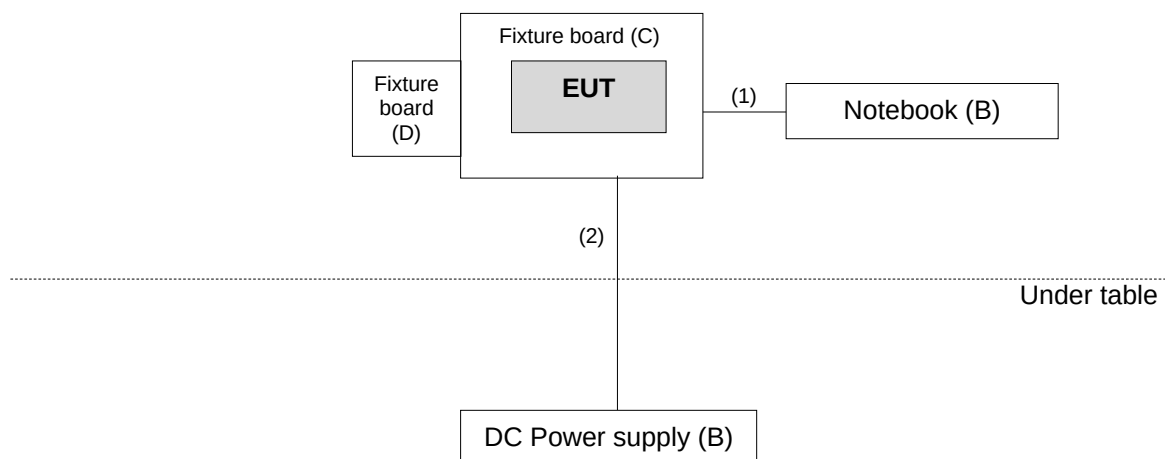
待測設備於受測時均接上其所屬的配件或一般用途之相關設備；下列輔助設備或配件測試中所使用的配備，以形成一個代表待測物實際運作的受測系統。

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	Inspiron 14R	8LRKKW1	FCC DoC Approved	-
B.	DC Power Supply	Topward	33010D	807748	NA	-
C.	Fixture board	BnCom	BT-MSOIII-SINGLE-JIG-REV1.0	NA	NA	Provided by client
D.	Fixture board	BnCom	USB-UART-REV1.0	NA	NA	Provided 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.	USB cable	1	1.2	Y	0	Provided by lab (Brand: KYOCERA, Model: KYO6750USB)
2.	Power cable	1	1.0	Y	0	-

2.3 測試架構圖



3 適用規範

3.1 規範要求和參考

(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) 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) 傳導輸出功率之要求

依據國家通訊傳播委員會低功率射頻電機技術規範 3.10.1.2 節之規定:

數位調變技術系統:1 W(含)以下。

(7) 功率頻譜密度之要求

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

(8) 電波暴露量之評估

依據國家通訊傳播委員會低功率射頻電機技術規範 5.20.2 節之規定,若受測物於正常操作模式下,其發射機距離人體 20 公分以上者,可測試最大暴露允許值(Maximum Permissible Exposure, MPE)以證明其符電波暴露量之要求。

限制值如下:

(1) 職業性/可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3 - 3.0	614	1.63	*100	6
3 - 30	1842/f	4.89/f	*900/f ²	6
30 - 300	61.4	0.163	1.0	6
300 - 1,500	---	---	f/300	6
1,500 - 100,000	---	---	5.0	6

註 1: 標記*表平面波等效功率密度。

註 2: f 表測試頻率,單位:百萬赫(MHz)。

(2) 一般人/不可控制之暴露

頻率範圍 (MHz)	電場強度 (V/m)	磁場強度 (A/m)	功率密度 (mW/cm ²)	平均時間 (minutes)
0.3 - 3.0	614	1.63	*100	30
3 - 30	1842/f	4.89/f	*180/f ²	30
30 - 300	27.5	0.073	1.0	30
300 - 1,500	---	---	f/1500	30
1,500 - 100,000	---	---	1.0	30

註 1: 標記*表平面波等效功率密度。

註 2: f 表測試頻率,單位:百萬赫(MHz)。

參考國際標準指南

KDB 558074

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。

Note: 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。

發射諧波：

Peak 為 RBW = 1 MHz, VBW = 3 MHz；

Average 為 RBW = 1 MHz, VBW = 3 kHz

接收諧波：

Below 1 GHz

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

Above 1 GHz:

Peak 為 RBW = 1 MHz, VBW = 3 MHz；Average 為 RBW = 1 MHz, VBW = 3 kHz

其它不必要之訊號

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

4.3 量測儀器

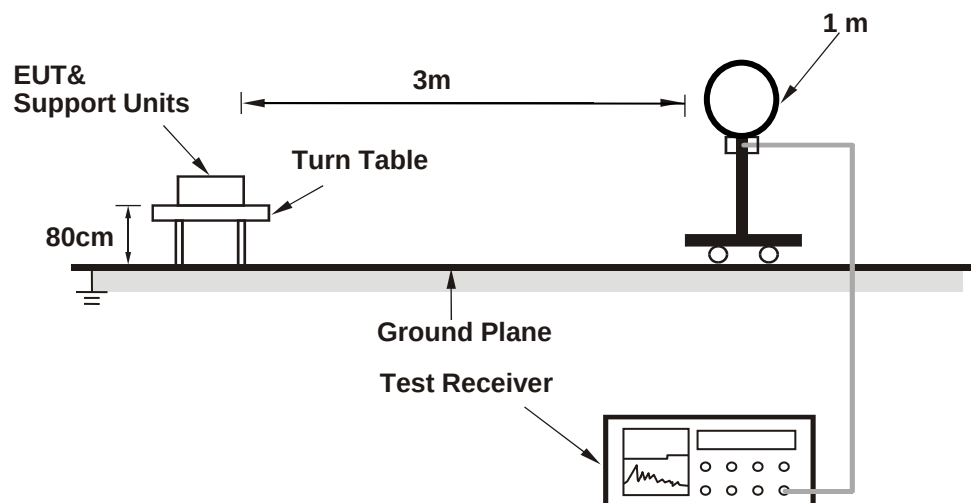
Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2019	Mar. 17, 2020
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator WORKEN	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Bluetooth Tester	CBT	100946	Aug. 09, 2018	Aug. 08, 2020
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
Power Meter Anritsu	ML2495A	1012010	Sep. 04, 2019	Sep. 03, 2020
Power Sensor Anritsu	MA2411B	1315050	Sep. 04, 2019	Sep. 03, 2020
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000 &3000	140811+170717	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(1 40807)	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. 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.

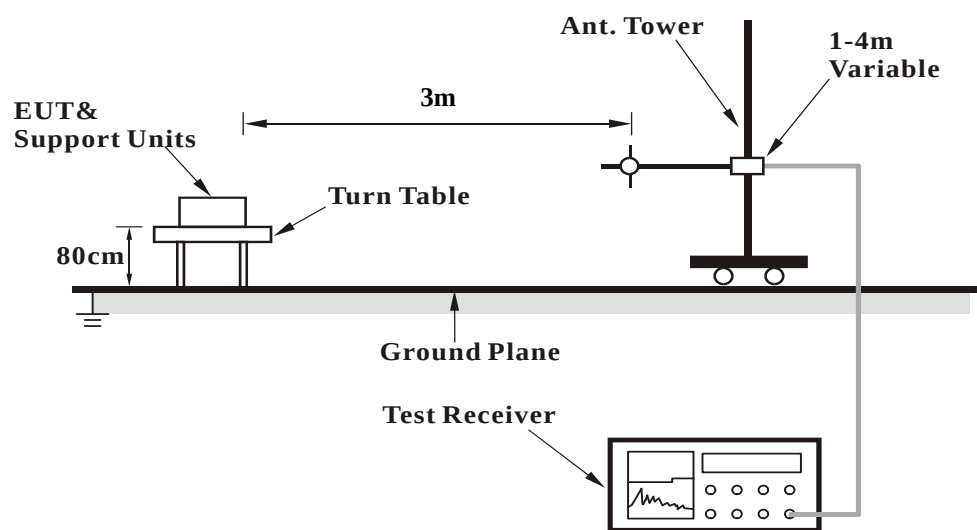
Measurement	Frequency	Uncertainty
Radiated emissions	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	2.93 dB
	200MHz ~ 1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

4.4 測試配置

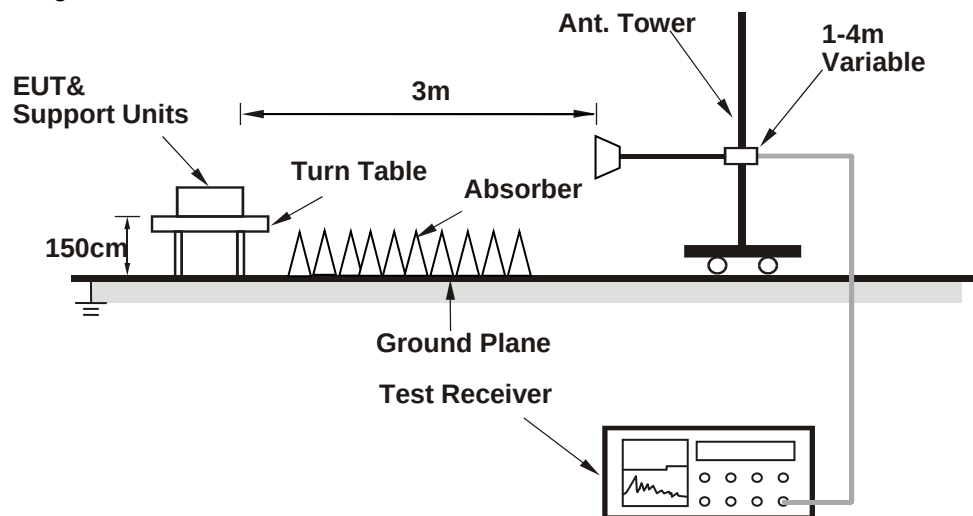
<Frequency Range below 30MHz>



<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。

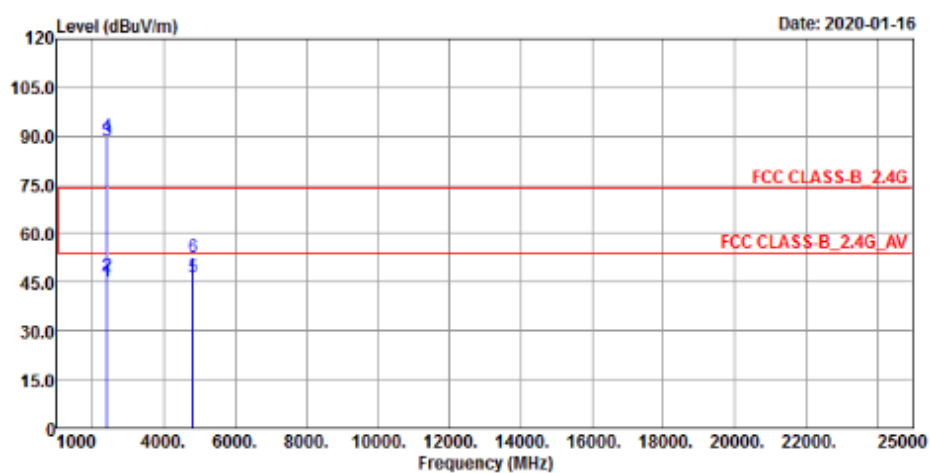
4.6 量測結果

4.6.1 發射諧波

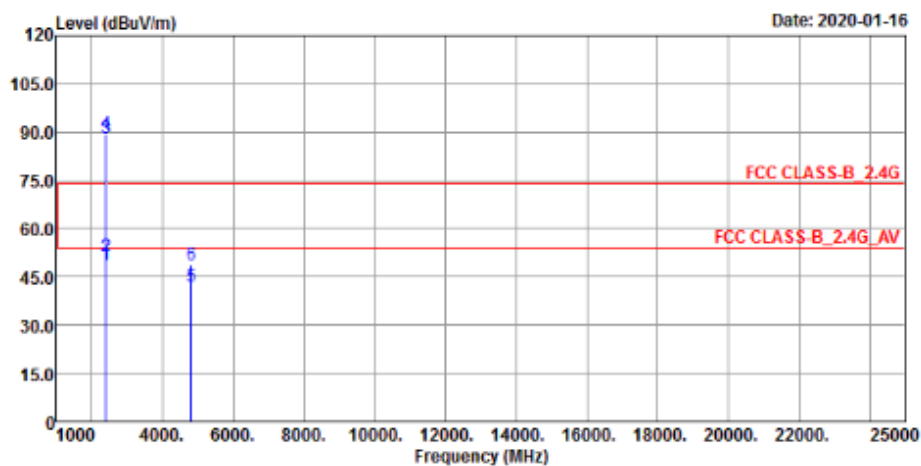
<LE 1Mbps>

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

Horizontal



Vertical



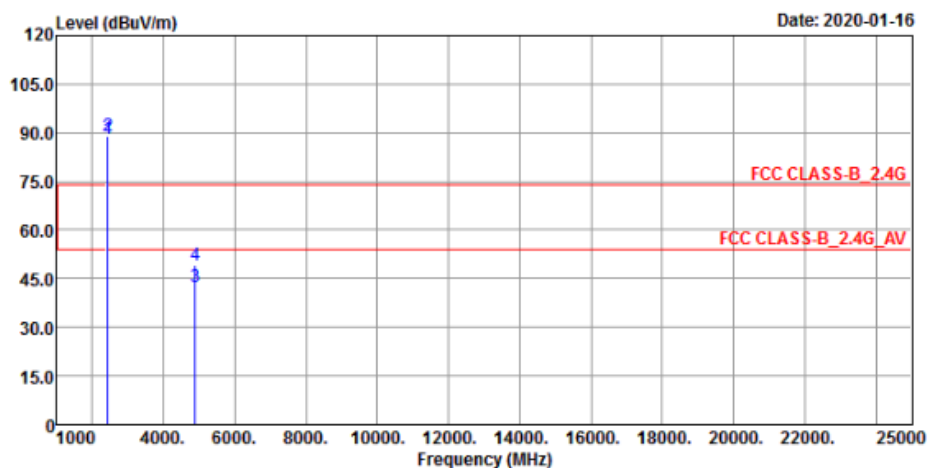
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	45.36	13.37	31.99	54	-8.64	207	53	Average
2390	47.11	52.64	-5.53	74	-26.89	207	53	Peak
2402	88.52	94.09	-5.57			207	53	Average
2402	89.72	95.29	-5.57			207	53	Peak
4804	46.53	61.55	-15.02	54	-7.47	114	126	Average
4804	52.63	67.65	-15.02	74	-21.37	114	126	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	48.78	16.79	31.99	54	-5.22	100	201	Average
2390	51.2	56.73	-5.53	74	-22.8	100	201	Peak
2402	88.1	93.67	-5.57			100	201	Average
2402	89.46	95.03	-5.57			100	201	Peak
4804	42.14	57.16	-15.02	54	-11.86	177	196	Average
4804	48.87	63.89	-15.02	74	-25.13	177	196	Peak

Remarks:

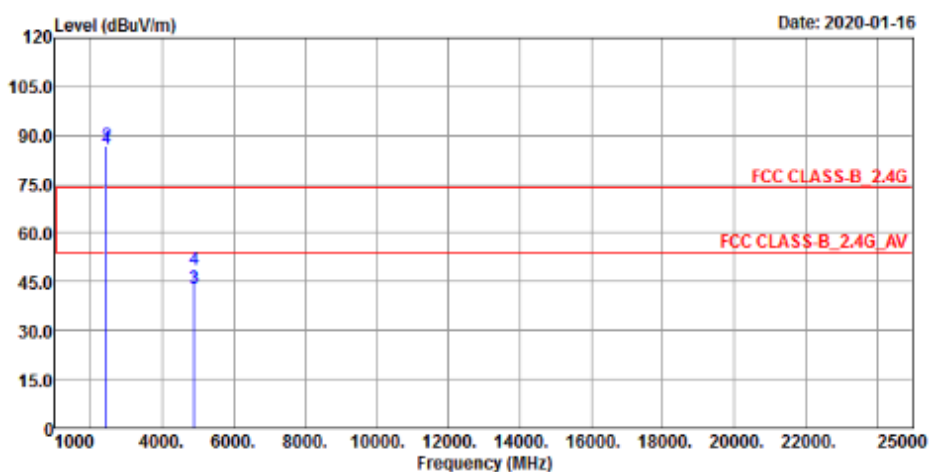
1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2402 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



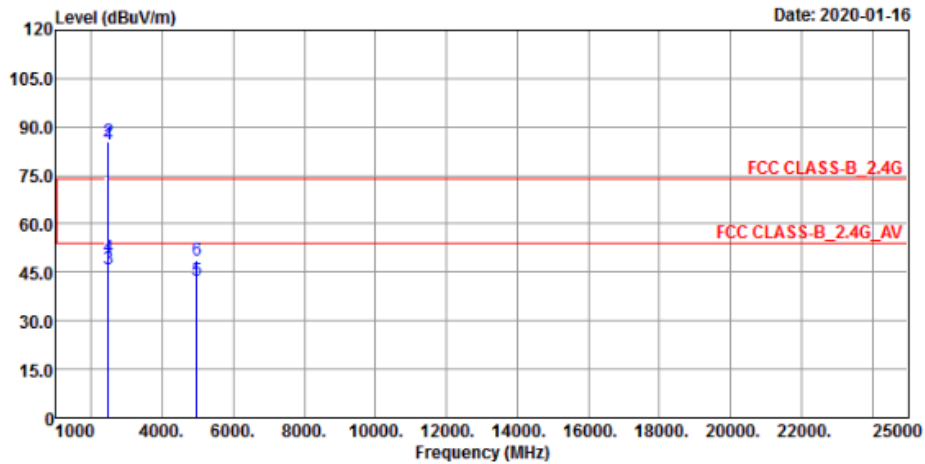
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	87.9	92.88	-4.98			144	103	Average
2440	89.13	94.11	-4.98			144	103	Peak
4880	42.33	57.24	-14.91	54	-11.67	116	121	Average
4880	49.16	64.07	-14.91	74	-24.84	116	121	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	85.77	91.24	-5.47			147	204	Average
2440	86.98	92.45	-5.47			147	204	Peak
4880	42.93	57.84	-14.91	54	-11.07	174	201	Average
4880	48.62	63.53	-14.91	74	-25.38	174	201	Peak

Remarks:

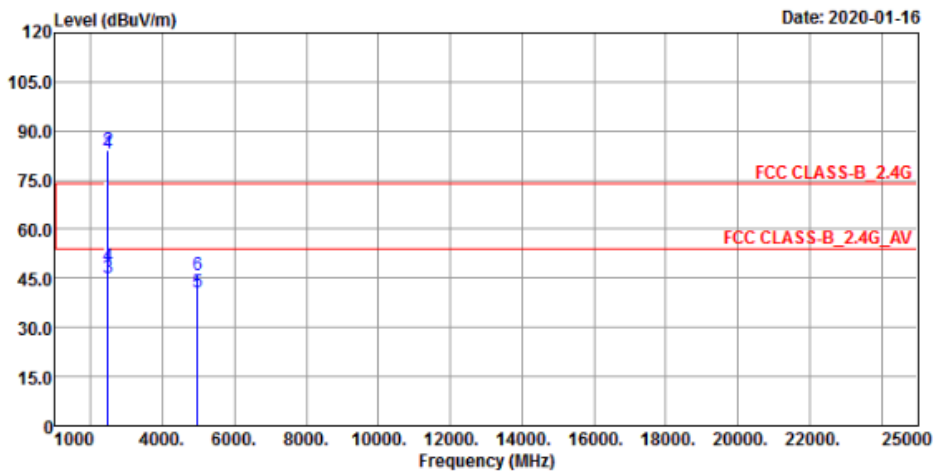
1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2440 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	84.36	89.61	-5.25			131	131	Average
2480	85.62	90.87	-5.25			131	131	Peak
2483.5	46.17	14.09	32.08	54	-7.83	131	131	Average
2483.5	49.38	54.62	-5.24	74	-24.62	131	131	Peak
4960	42.61	57.47	-14.86	54	-11.39	183	192	Average
4960	48.66	63.52	-14.86	74	-25.34	183	192	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	83.06	88.31	-5.25			139	204	Average
2480	84.27	89.52	-5.25			139	204	Peak
2483.5	45.15	13.07	32.08	54	-8.85	139	204	Average
2483.5	48.66	53.9	-5.24	74	-25.34	139	204	Peak
4960	40.56	55.42	-14.86	54	-13.44	129	108	Average
4960	46.16	61.02	-14.86	74	-27.84	129	108	Peak

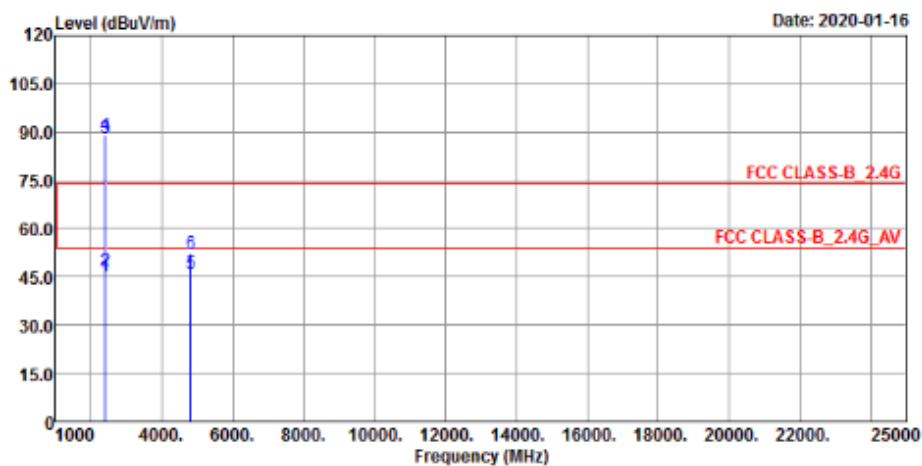
Remarks:

1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2480 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

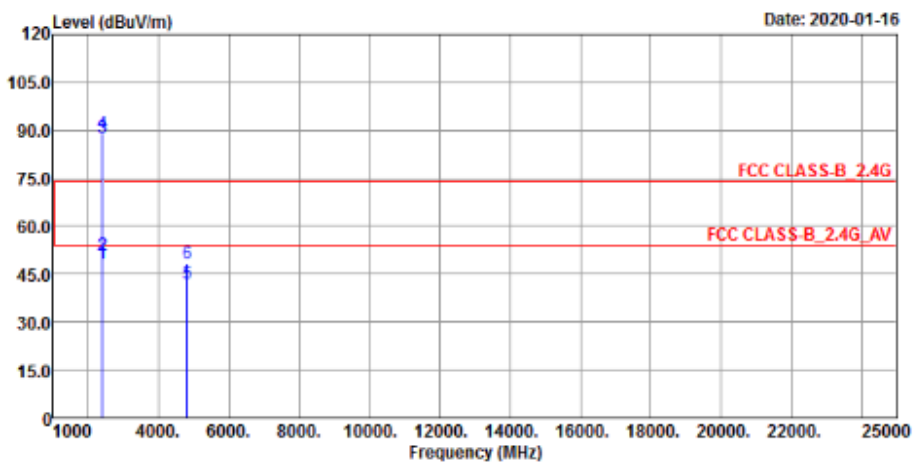
<LE 2Mbps>

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

Horizontal



Vertical



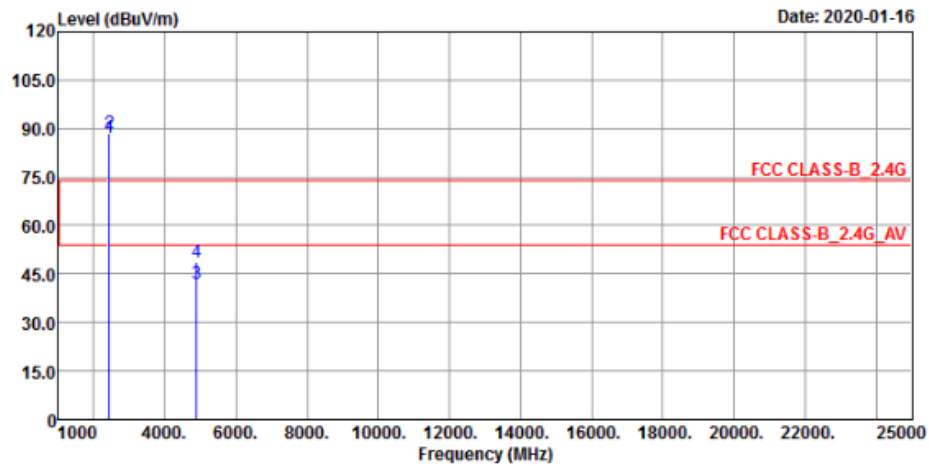
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	45.1	13.11	31.99	54	-8.9	201	66	Average
2390	46.83	52.36	-5.53	74	-27.17	201	66	Peak
2402	88.05	93.62	-5.57			201	66	Average
2402	89.16	94.73	-5.57			201	66	Peak
4804	46	61.02	-15.02	54	-8	110	129	Average
4804	52.3	67.32	-15.02	74	-21.7	110	129	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	48.34	16.35	31.99	54	-5.66	100	198	Average
2390	50.91	56.44	-5.53	74	-23.09	100	198	Peak
2402	87.67	93.24	-5.57			100	198	Average
2402	89.1	94.67	-5.57			100	198	Peak
4804	41.86	56.88	-15.02	54	-12.14	171	204	Average
4804	48.29	63.31	-15.02	74	-25.71	171	204	Peak

Remarks:

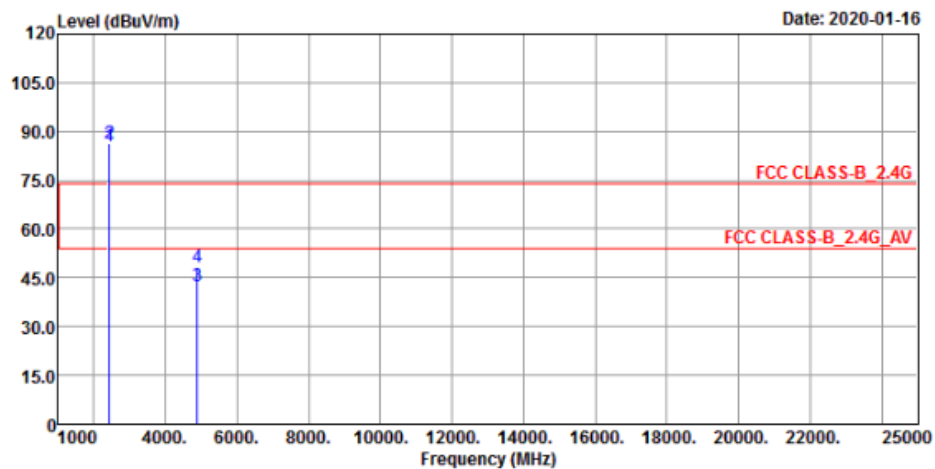
1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2402 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



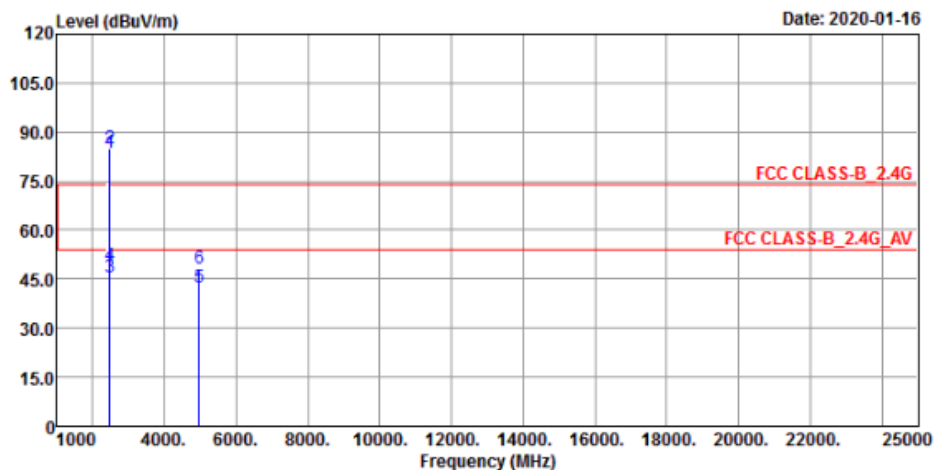
Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	87.45	92.43	-4.98	-----	-----	141	109	Average
2440	88.65	93.63	-4.98	-----	-----	141	109	Peak
4880	42.13	57.04	-14.91	54	-11.87	111	126	Average
4880	48.82	63.73	-14.91	74	-25.18	111	126	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2440	85.32	90.79	-5.47			149	211	Average
2440	86.57	92.04	-5.47			149	211	Peak
4880	42.52	57.43	-14.91	54	-11.48	181	193	Average
4880	48.21	63.12	-14.91	74	-25.79	181	193	Peak

Remarks:

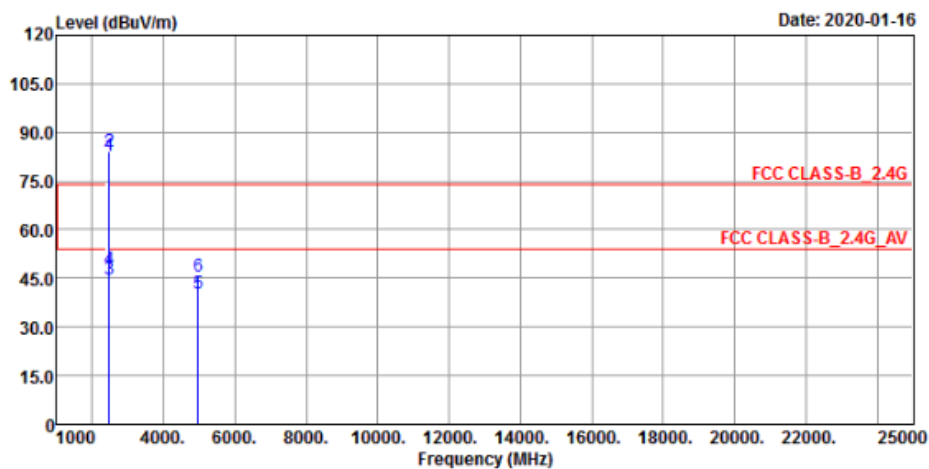
1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2440 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

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

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	83.87	89.12	-5.25			129	136	Average
2480	85.07	90.32	-5.25			129	136	Peak
2483.5	45.71	13.63	32.08	54	-8.29	129	136	Average
2483.5	48.98	54.22	-5.24	74	-25.02	129	136	Peak
4960	42.31	57.17	-14.86	54	-11.69	188	190	Average
4960	48.35	63.21	-14.86	74	-25.65	188	190	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2480	82.82	88.07	-5.25			132	196	Average
2480	84	89.25	-5.25			132	196	Peak
2483.5	44.79	12.71	32.08	54	-9.21	132	196	Average
2483.5	47.95	53.19	-5.24	74	-26.05	132	196	Peak
4960	40.27	55.13	-14.86	54	-13.73	121	119	Average
4960	45.66	60.52	-14.86	74	-28.34	121	119	Peak

Remarks:

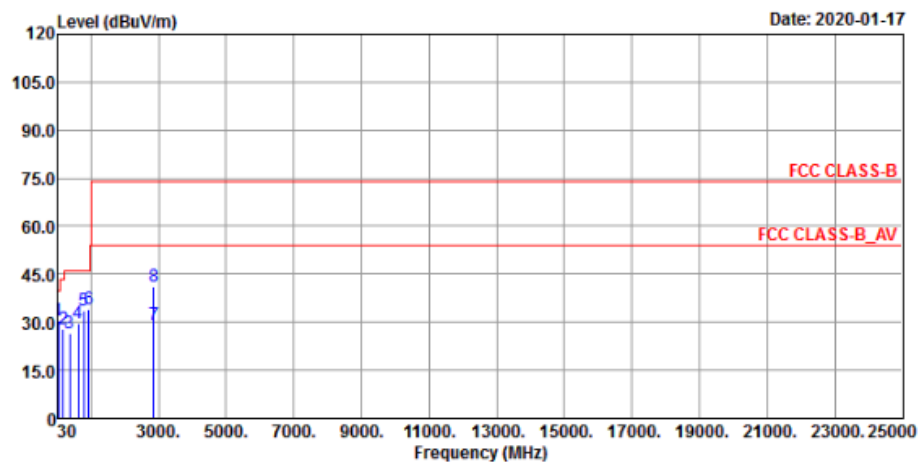
1. Emission Level = Read Level + Factor
Margin Value = Emission Level – Limit value
2. 2480 MHz: Fundamental Frequency.
3. The other emission levels were very low against the limit.

4.6.2 接收諧波

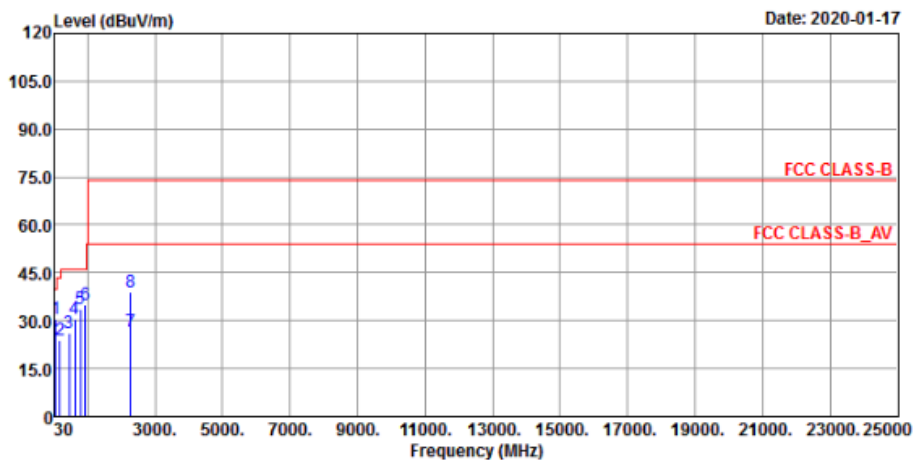
<LE 1Mbps>

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
36.79	30.72	43.26	-12.54	40	-9.28	103	301	Peak
184.23	27.82	41.75	-13.93	43.5	-15.68	133	169	Peak
371.44	26.5	35.46	-8.96	46	-19.5	164	297	Peak
615.88	29.67	31.85	-2.18	46	-16.33	113	218	Peak
796.3	33.69	32.1	1.59	46	-12.31	248	156	Peak
932.1	34.16	30.73	3.43	46	-11.84	146	24	Peak
2853.164	29.02	48.23	-19.21	54	-24.98	169	234	Average
2853.164	41.18	60.39	-19.21	74	-32.82	169	234	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
52.31	30.51	42.33	-11.82	40	-9.49	191	25	Peak
192.96	24.11	38.96	-14.85	43.5	-19.39	114	193	Peak
450.98	26.03	32.45	-6.42	46	-19.97	105	199	Peak
618.79	30.44	32.54	-2.1	46	-15.56	134	347	Peak
786.6	33.7	32.16	1.54	46	-12.3	207	172	Peak
926.28	35.16	31.79	3.37	46	-10.84	195	335	Peak
2267.135	26.36	46.57	-20.21	54	-27.64	112	167	Average
2267.135	39.1	59.31	-20.21	74	-34.9	112	167	Peak

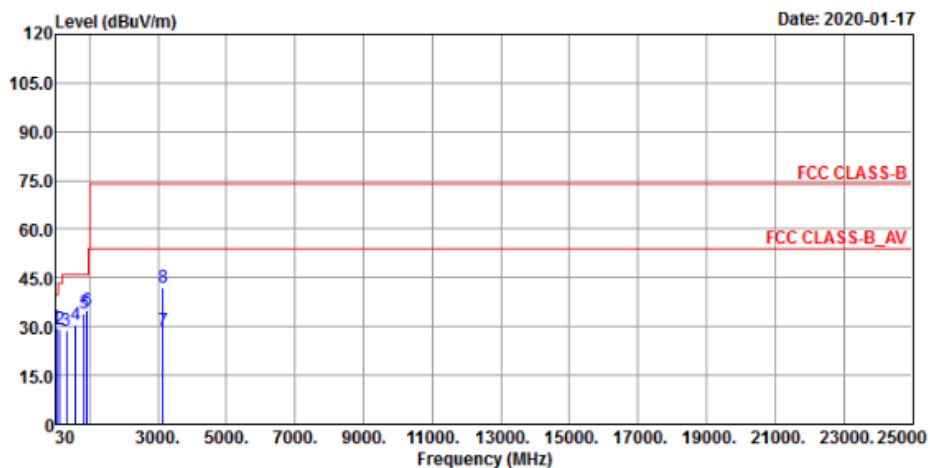
Remarks:

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

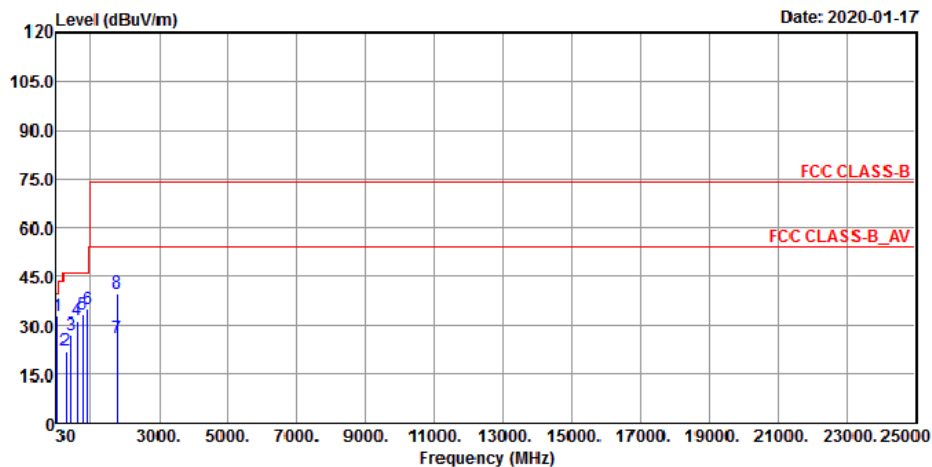
<LE 2Mbps>

EUT Test Condition		Measurement Detail	
Channel	Channel 0	Frequency Range	30 MHz ~ 25 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Above 1 GHz: Peak (PK) & Average (AV) Below 1 GHz: Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
44.55	29.74	41.61	-11.87	40	-10.26	107	124	Peak
144.46	29.01	40.85	-11.84	43.5	-14.49	146	269	Peak
331.67	28.62	38.61	-9.99	46	-17.38	165	188	Peak
597.45	30.42	33.22	-2.8	46	-15.58	111	137	Peak
847.71	34.21	31.79	2.42	46	-11.79	103	220	Peak
931.13	35.04	31.61	3.43	46	-10.96	231	215	Peak
3156.234	28.66	47.3	-18.64	54	-25.34	103	167	Average
3156.234	42.01	60.65	-18.64	74	-31.99	103	167	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
48.43	32.96	44.67	-11.71	40	-7.04	164	266	Peak
285.11	22.02	33.58	-11.56	46	-23.98	173	59	Peak
425.76	27.09	34.35	-7.26	46	-18.91	156	82	Peak
625.58	31.53	33.41	-1.88	46	-14.47	199	209	Peak
780.78	33.37	31.86	1.51	46	-12.63	136	191	Peak
935.01	35.05	31.62	3.43	46	-10.95	213	304	Peak
1783.354	26.34	50.13	-23.79	54	-27.66	164	208	Average
1783.354	40.03	63.82	-23.79	74	-33.97	164	208	Peak

Remarks:

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

4.6.3 其它不必要之訊號

9 kHz ~ 30 MHz Data:

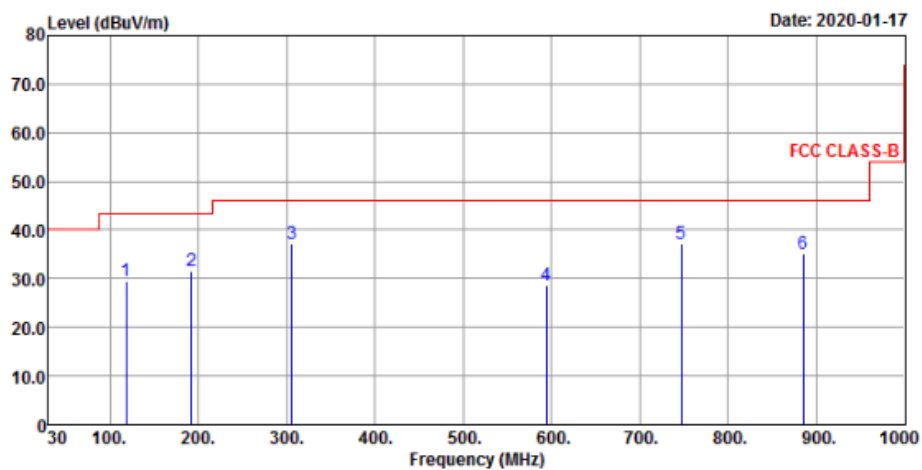
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Data:

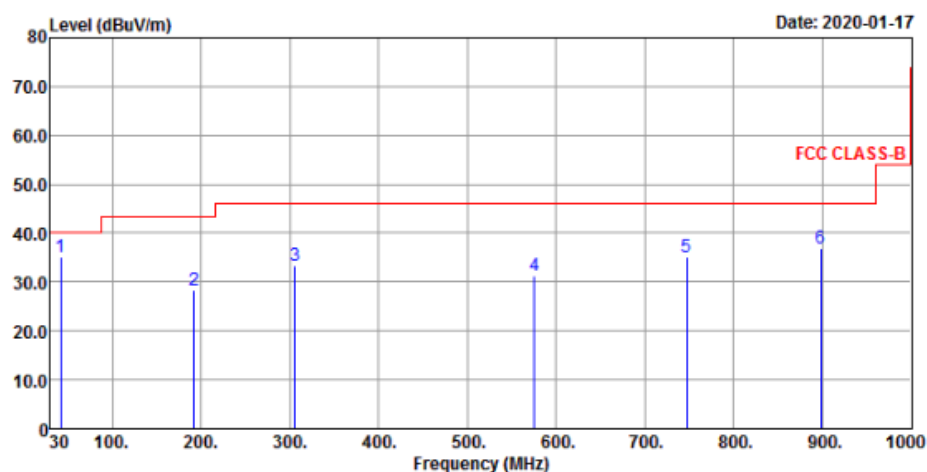
<LE 1Mbps>

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
118.27	29.42	43.37	-13.95	43.5	-14.08	171	110	Peak
191.99	31.66	46.38	-14.72	43.5	-11.84	153	338	Peak
305.48	37.27	48.24	-10.97	46	-8.73	105	304	Peak
594.54	28.65	31.53	-2.88	46	-17.35	112	269	Peak
746.83	37.16	36.21	0.95	46	-8.84	184	254	Peak
885.54	35.16	32.41	2.75	46	-10.84	223	159	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
41.64	35.05	47.09	-12.04	40	-4.95	194	104	Peak
191.99	28.2	42.92	-14.72	43.5	-15.3	166	263	Peak
305.48	33.32	44.29	-10.97	46	-12.68	132	188	Peak
575.14	31.38	34.95	-3.57	46	-14.62	156	306	Peak
746.83	35.01	34.06	0.95	46	-10.99	121	157	Peak
898.15	37.04	34.09	2.95	46	-8.96	181	75	Peak

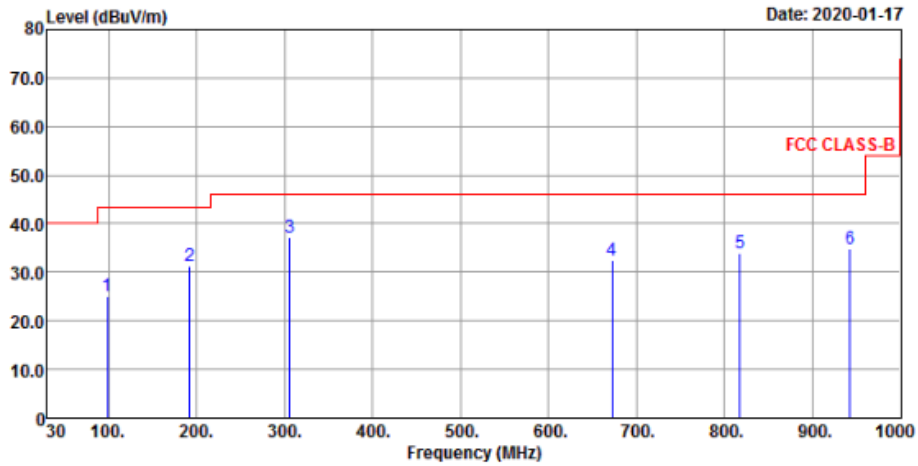
Remarks:

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

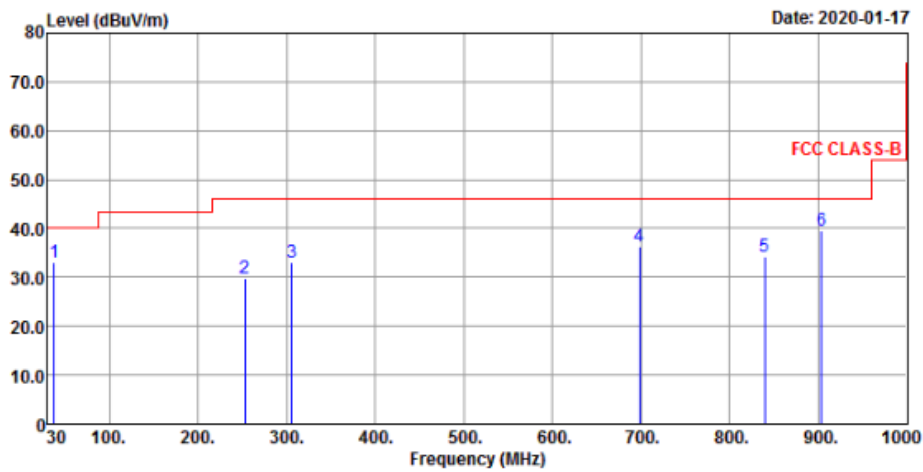
<LE 2Mbps>

EUT Test Condition		Measurement Detail	
Channel	Channel 39	Frequency Range	30 MHz ~ 1 GHz
Input Power	110 Vac, 60 Hz	Detector Function	Peak (PK) or Quasi-Peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Tim Chen

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
98.87	25.18	41.4	-16.22	43.5	-18.32	164	79	Peak
191.99	31.35	46.07	-14.72	43.5	-12.15	184	179	Peak
305.48	37.16	48.13	-10.97	46	-8.84	127	326	Peak
672.14	32.42	33.67	-1.25	46	-13.58	194	333	Peak
817.64	34	31.89	2.11	46	-12	112	192	Peak
942.77	34.78	31.21	3.57	46	-11.22	189	152	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
37.76	32.97	45.24	-12.27	40	-7.03	196	116	Peak
253.1	29.87	42.8	-12.93	46	-16.13	127	226	Peak
305.48	32.93	43.9	-10.97	46	-13.07	132	221	Peak
698.33	36.41	37.08	-0.67	46	-9.59	139	298	Peak
839.95	34.18	31.79	2.39	46	-11.82	108	329	Peak
903.97	39.64	36.57	3.07	46	-6.36	141	241	Peak

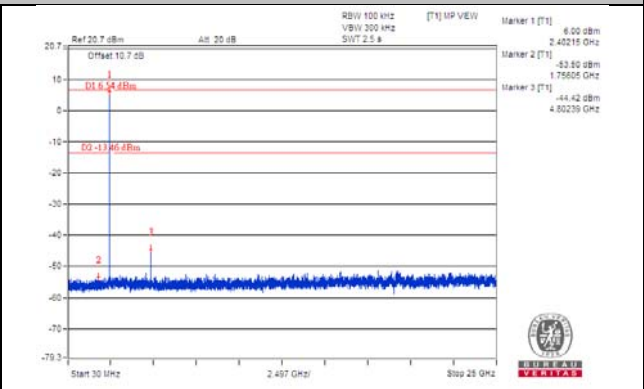
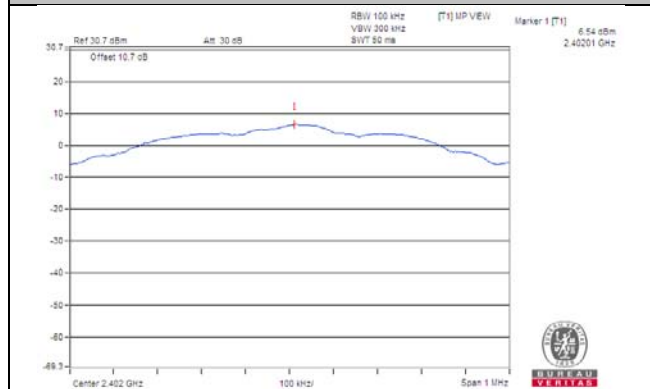
Remarks:

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

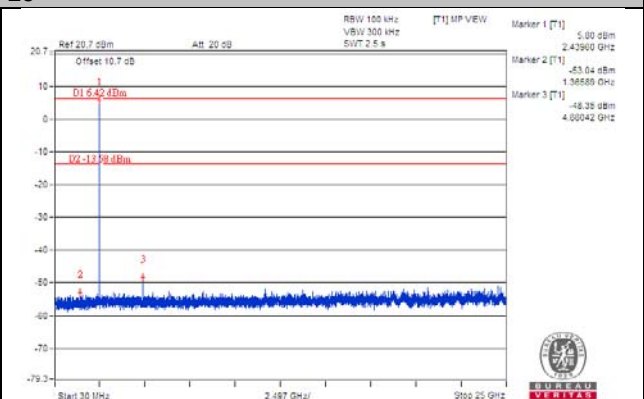
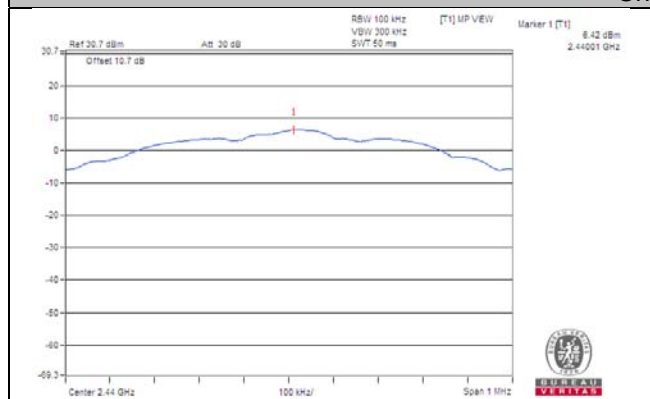
4.7 帶外發射之量測 (傳導)

<LE 1Mbps>

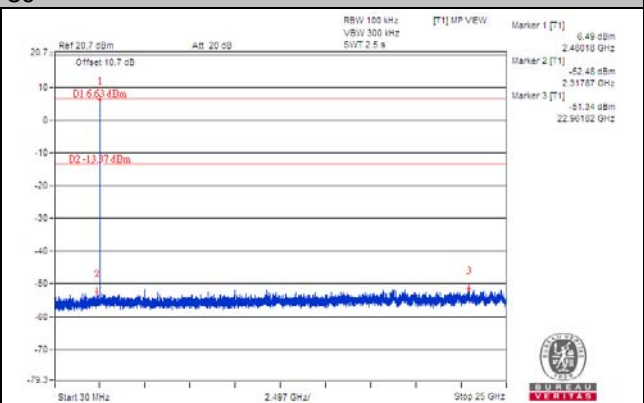
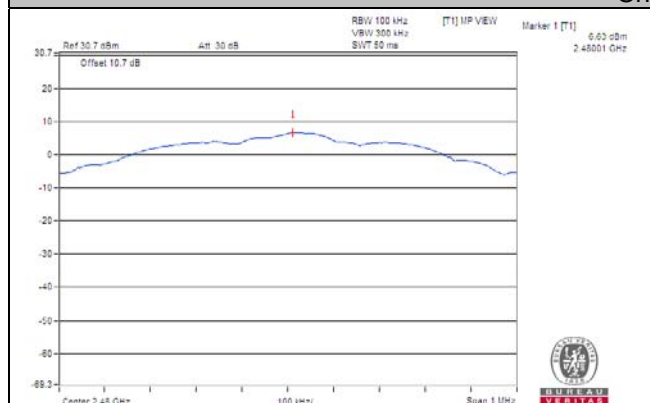
Ch 0



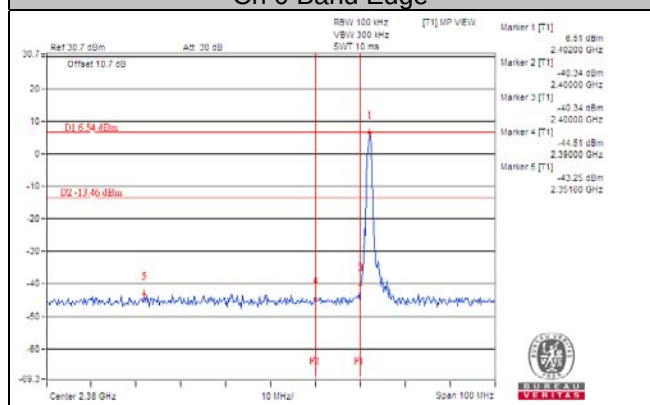
Ch 19



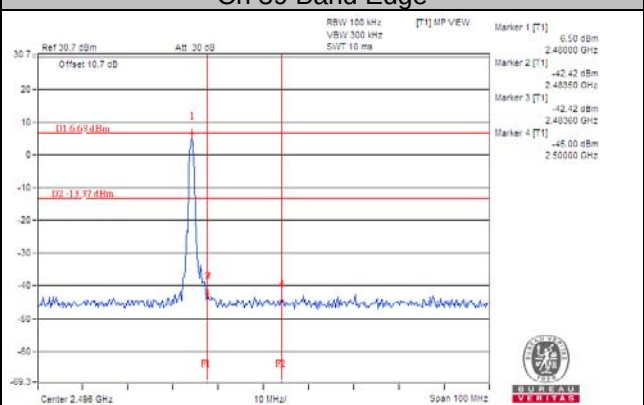
Ch 39



Ch 0 Band Edge

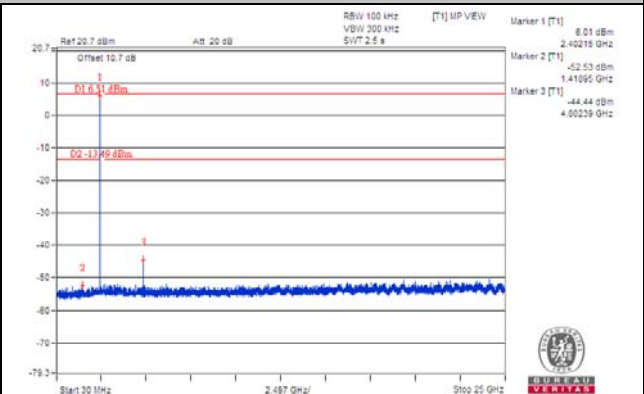
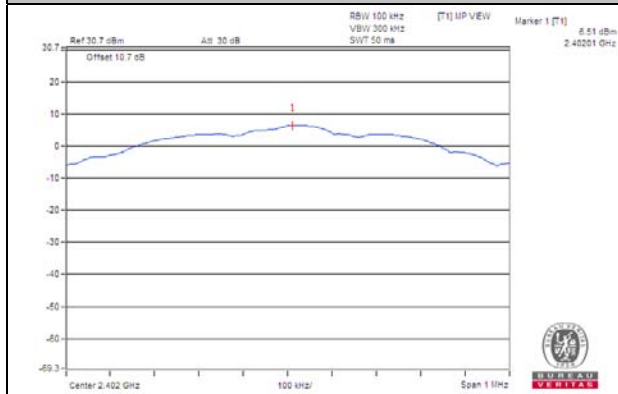


Ch 39 Band Edge

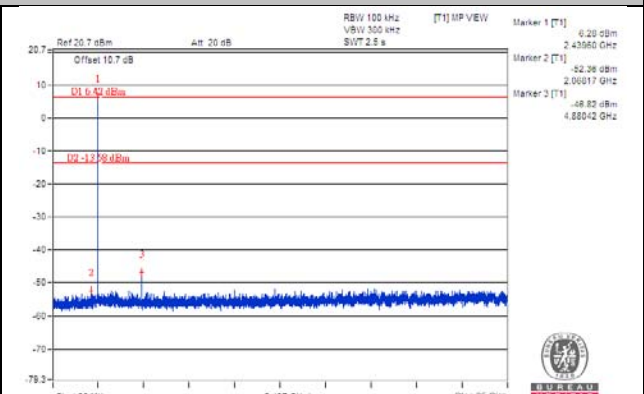
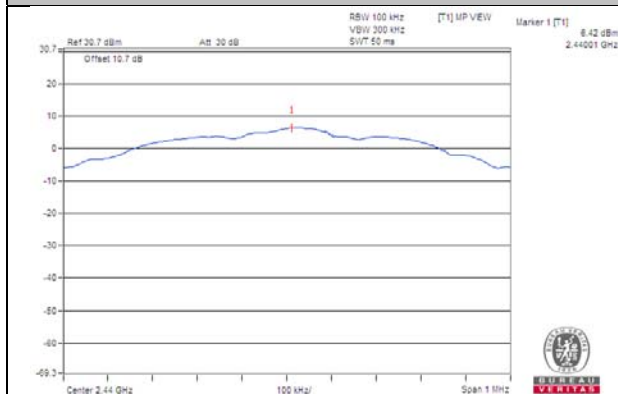


<LE 2Mbps>

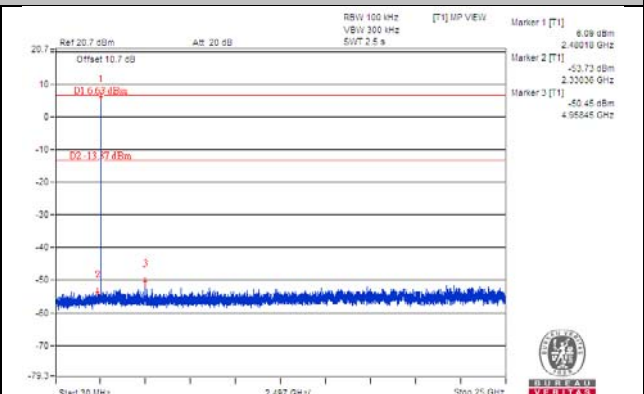
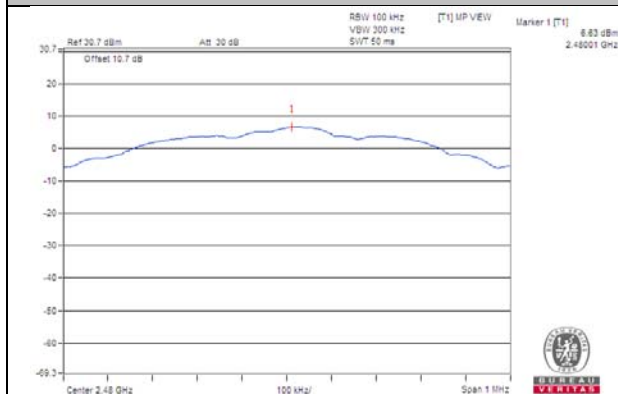
Ch 0



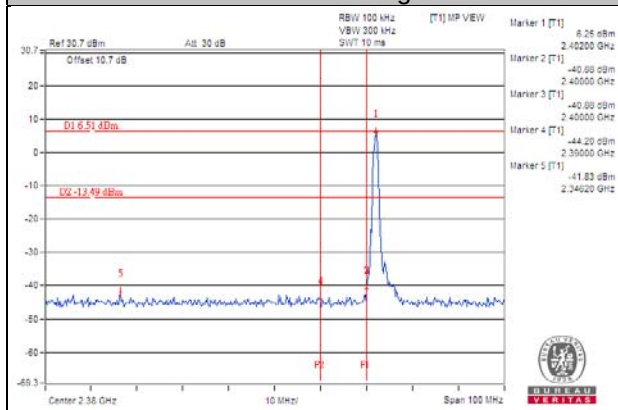
Ch 19



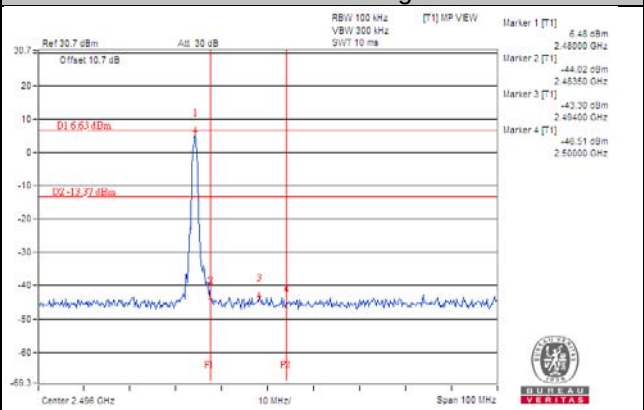
Ch 39



Ch 0 Band Edge



Ch 39 Band Edge



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

請參閱附件（測試設置照片）。

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

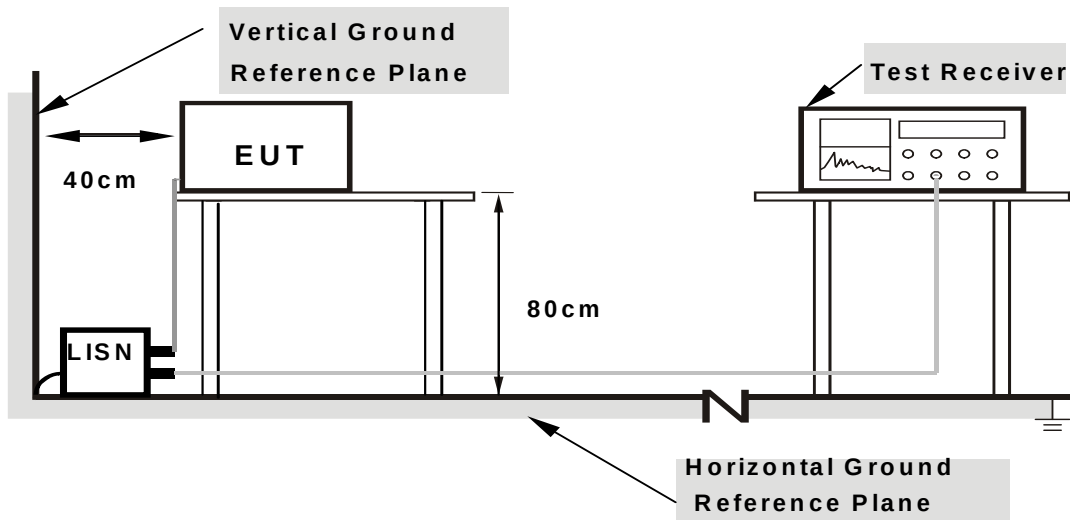
將待測物置於0.8米高的非金屬桌面，使其操作在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由0.15MHz至30MHz之間之電源線傳導放射強度。

5.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Feb. 14, 2019	Feb. 13, 2020
RF signal cable Woken	5D-FB	Cable-cond2-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 30, 2019	Jan. 29, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 13, 2019	Aug. 12, 2020
Software ADT	BV ADT_Conf_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 2.
 3. The VCCI Site Registration No. is C-12047.
 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 cm 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

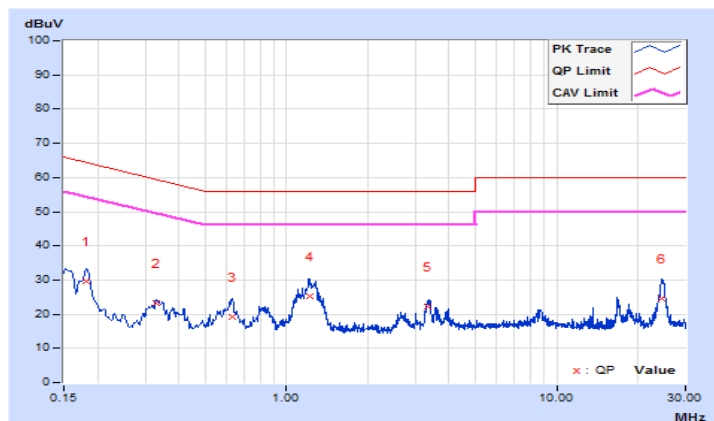
<LE 1Mbps>

操作模式	發射/接收	測試日期	109 年 01 月 15 日
基本波頻率	CH 39 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	65%RH
測試者	Jisyong Wang		

		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.
0.18150	10.12	19.56	15.48	29.68	25.60	64.42	54.42	-34.74	-28.82
0.32775	10.15	13.00	11.34	23.15	21.49	59.51	49.51	-36.36	-28.02
0.62687	10.18	9.07	7.03	19.25	17.21	56.00	46.00	-36.75	-28.79
1.21425	10.23	15.00	13.13	25.23	23.36	56.00	46.00	-30.77	-22.64
3.31350	10.32	12.03	10.69	22.35	21.01	56.00	46.00	-33.65	-24.99
24.53325	10.52	13.95	8.07	24.47	18.59	60.00	50.00	-35.53	-31.41

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.

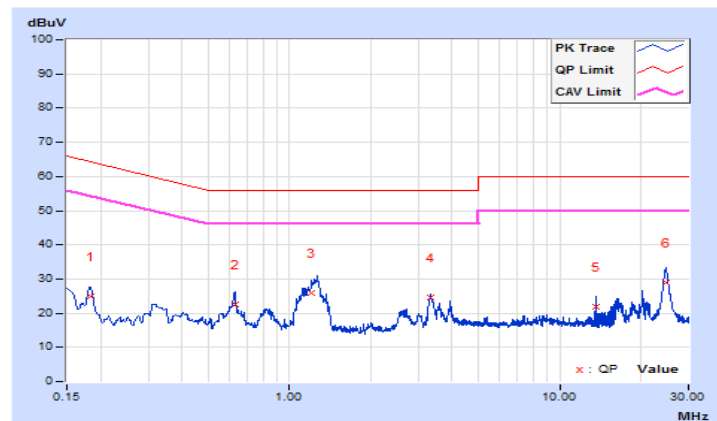


操作模式	發射/接收	測試日期	109 年 01 月 15 日
基本波頻率	CH 39 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	65%RH
測試者	Jisyong Wang		

		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.
0.18268	10.17	14.72	11.33	24.89	21.50	64.36	54.36	-39.47	-32.86
0.62687	10.24	12.47	10.79	22.71	21.03	56.00	46.00	-33.29	-24.97
1.20975	10.29	15.51	11.79	25.80	22.08	56.00	46.00	-30.20	-23.92
3.33150	10.39	14.19	12.05	24.58	22.44	56.00	46.00	-31.42	-23.56
13.56000	10.62	11.19	10.67	21.81	21.29	60.00	50.00	-38.19	-28.71
24.65475	10.66	18.17	10.18	28.83	20.84	60.00	50.00	-31.17	-29.16

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.



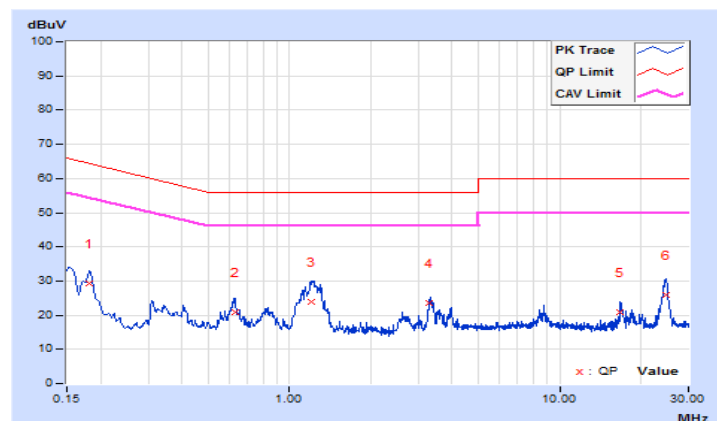
<LE 2Mbps>

操作模式	發射/接收	測試日期	109 年 01 月 15 日
基本波頻率	CH 39 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	65%RH
測試者	Jisyong Wang		

輻射頻率 [MHz]	校正因子 [dB]	6 dB Bandwidth: 9kHz				PHASE: LINE (L)			
		儀器讀值		結果值		限制值		餘裕度	
		[dB (uV)]		[dB (uV)]		[dB (uV)]		[dB]	
		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.18150	10.12	19.15	15.11	29.27	25.23	64.42	54.42	-35.15	-29.19
0.62925	10.18	10.85	9.12	21.03	19.30	56.00	46.00	-34.97	-26.70
1.19850	10.23	13.60	11.47	23.83	21.70	56.00	46.00	-32.17	-24.30
3.30817	10.32	13.24	10.83	23.56	21.15	56.00	46.00	-32.44	-24.85
16.77750	10.56	10.30	8.99	20.86	19.55	60.00	50.00	-39.14	-30.45
24.71550	10.52	15.57	8.32	26.09	18.84	60.00	50.00	-33.91	-31.16

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.

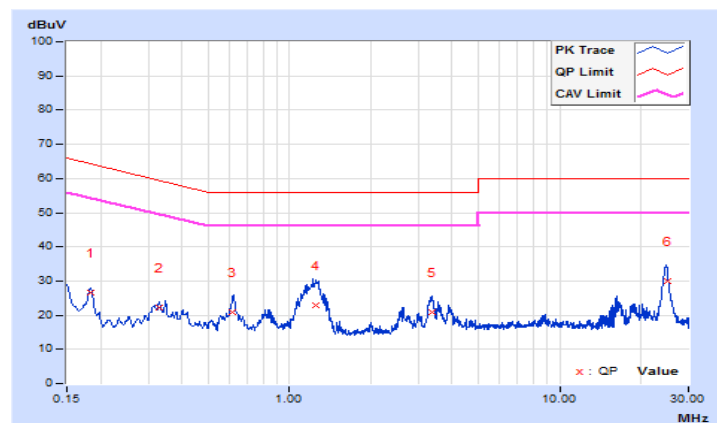


操作模式	發射/接收	測試日期	109 年 01 月 15 日
基本波頻率	CH 39 : 2480 MHz	量測場地溫度	25°C
調變技術	GFSK	量測場地濕度	65%RH
測試者	Jisyong Wang		

		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.
0.18268	10.17	16.56	15.19	26.73	25.36	64.36	54.36	-37.63	-29.00
0.33000	10.21	12.18	10.11	22.39	20.32	59.45	49.45	-37.06	-29.13
0.61702	10.24	10.80	8.39	21.04	18.63	56.00	46.00	-34.96	-27.37
1.24800	10.29	12.77	10.35	23.06	20.64	56.00	46.00	-32.94	-25.36
3.36750	10.39	10.56	8.82	20.95	19.21	56.00	46.00	-35.05	-26.79
24.96075	10.65	19.42	12.33	30.07	22.98	60.00	50.00	-29.93	-27.02

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（測試設置照片）。

6 發射(6 dB)頻寬之要求

6.1 適用標準

請見本報告3.1節第5項的規定。

6.2 量測方法

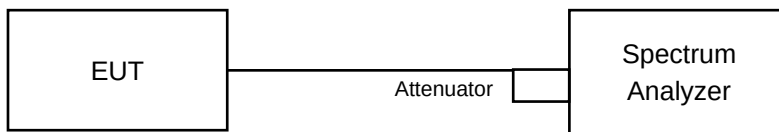
- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算由最大輸出功率峰值減6dB的最大頻率範圍。

6.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
SPECTRUM ANALYZER R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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



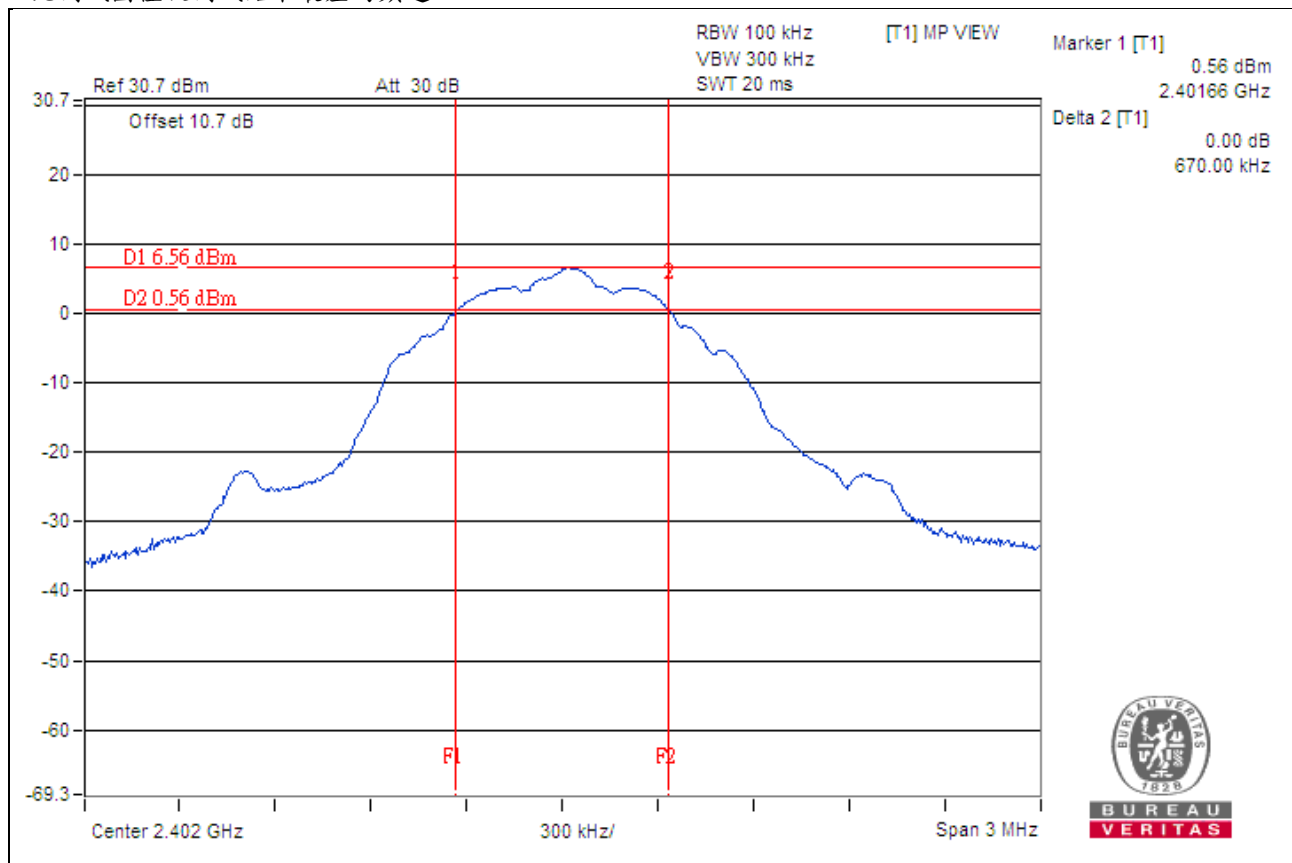
6.5 量測結果

操作模式	發射	測試日期	109 年 01 月 10 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	Wayne Lin		

LE 1Mbps:

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

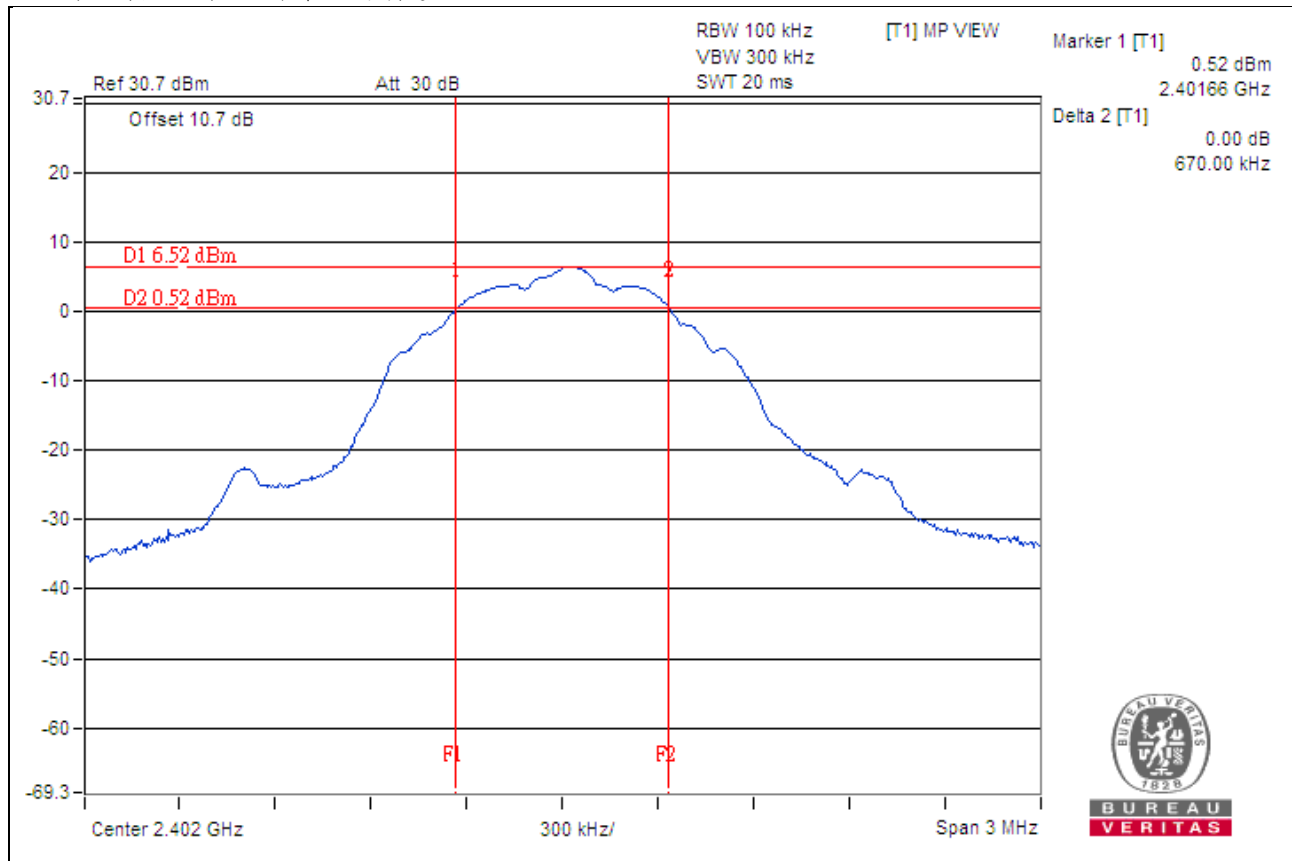
**此測試圖僅放測試結果最差的頻道。



LE 2Mbps:

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

**此測試圖僅放測試結果最差的頻道。



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 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6項的規定。

7.2 量測方法

- 將待測物輸出經由衰減器接到Power Meter上。
- 設定待測物處於連續發射狀態。

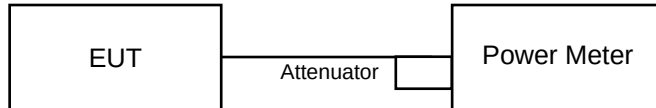
7.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55210005	Jul. 15, 2019	Jul. 14, 2020

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

- The measurement uncertainty is 1.393dB, 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	109 年 01 月 10 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	Wayne Lin		

LE 1Mbps:

For Peak Power

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	4.581	6.61	30.00	Pass
19	2440	4.446	6.48	30.00	Pass
39	2480	4.645	6.67	30.00	Pass

For Average Power

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.207	6.24
19	2440	4.055	6.08
39	2480	4.246	6.28

LE 2Mbps:

For Peak Power

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	2402	4.571	6.60	30.00	Pass
19	2440	4.436	6.47	30.00	Pass
39	2480	4.624	6.65	30.00	Pass

For Average Power

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	4.198	6.23
19	2440	4.036	6.06
39	2480	4.227	6.26

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 功率頻譜密度之量測

8.1 適用標準

請見本報告3.1節第7項的規定。

8.2 量測方法

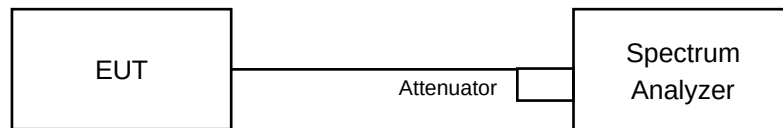
- 將待測物之天線埠經由適當之衰減直接連至測試儀器。
- 設定解析頻寬為3kHz，視訊頻寬為10kHz，掃描時間為auto。
- 掃描頻寬設於足夠觀察發射機所產生的主頻信號，並找到最大的峰值準位。
- 校正後的值，其峰值位準必須不大於+8dBm。

8.3 量測儀器

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
SPECTRUM ANALYZER R&S	FSU43	101261	Apr. 15, 2019	Apr. 14, 2020

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



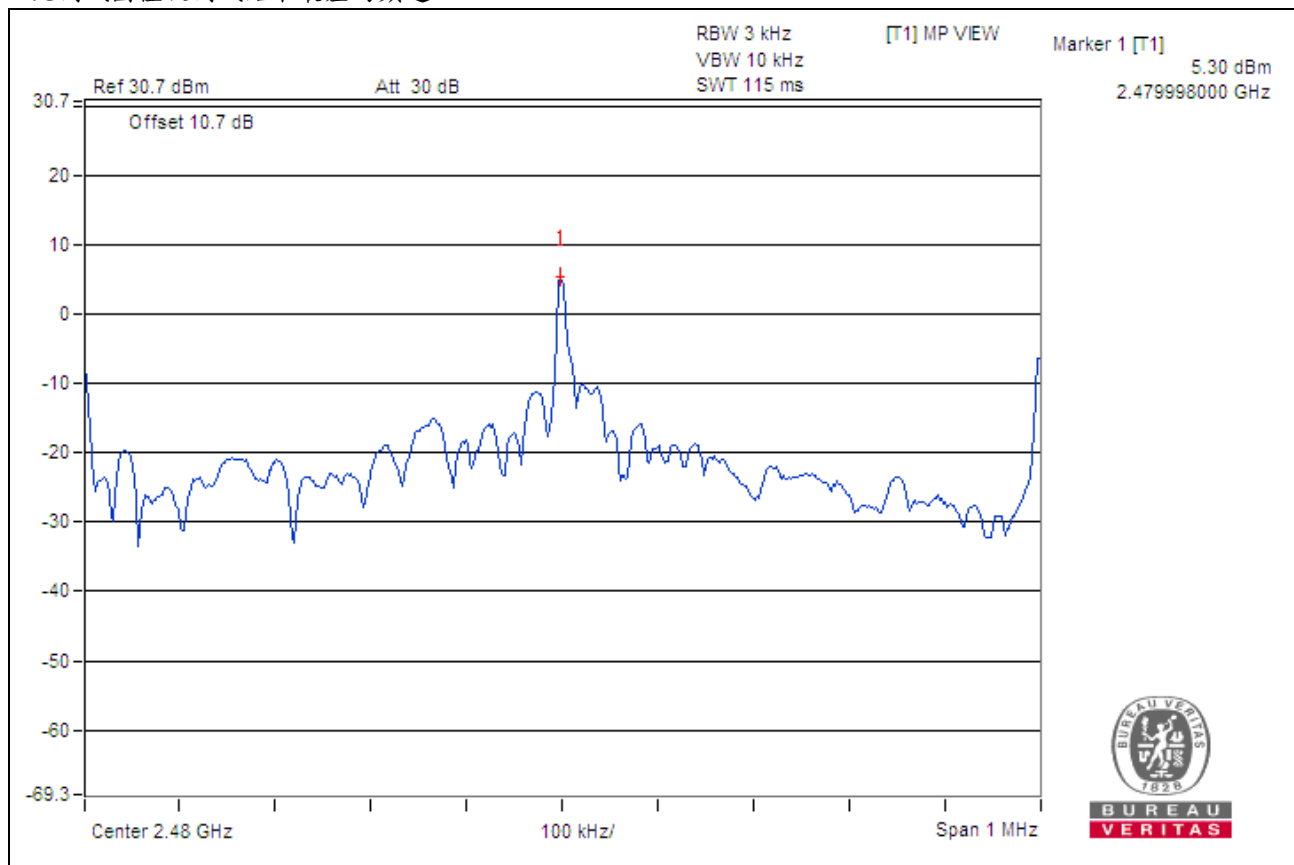
8.5 量測結果

操作模式	發射	測試日期	109 年 01 月 10 日
量測場地溫度	25°C	量測場地濕度	60%RH
測試者	Wayne Lin		

LE 1Mbps:

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	2402	5.22	8	Pass
19	2440	5.06	8	Pass
39	2480	5.30	8	Pass

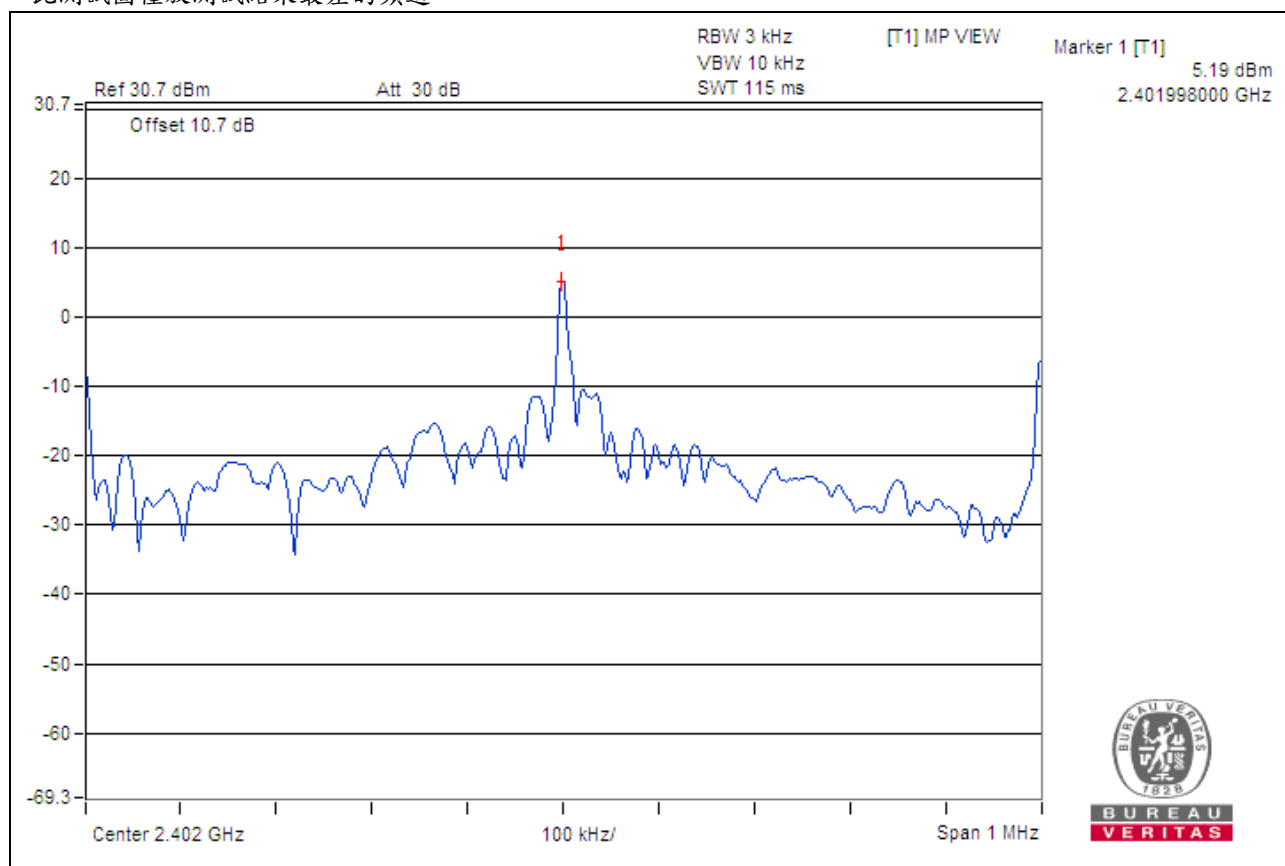
**此測試圖僅放測試結果最差的頻道。



LE 2Mbps:

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
0	2402	5.19	8	Pass
19	2440	5.07	8	Pass
39	2480	5.15	8	Pass

**此測試圖僅放測試結果最差的頻道。



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 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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