

## 低功率射頻電機技術規範測試報告 (BT-LE)

報告編號:

RT191227E10-2

申請者

廣東長虹電子有限公司

產品名稱

Wifi/BT Module

型號

WB7638G-LT

製造廠商

廣東長虹電子有限公司

商標或廠牌

長虹/CHANGHONG

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 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新竹實驗室

日期 109 年 03 月 05 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     |
|---------------|-------------------|-----------------|
| RT191227E10-2 | Original release. | 109 年 03 月 05 日 |

# 證 明 書

產 品 名 稱：Wifi/BT Module  
商 標：長虹/CHANGHONG  
型 號：WB7638G-LT  
申 請 者：廣東長虹電子有限公司  
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 (型號：WB7638G-LT)，  
收件日期 108 年 12 月 27 日，於 109 年 02 月 13 日至 25 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：

黃心薇

黃 心 薇 / 專 員

， 日 期： 109 年 03 月 05 日

審 核 者：

陳瓊美

陳 瓊 美 / 經 理

， 日 期： 109 年 03 月 05 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：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：廣東長虹電子有限公司

製造廠商：廣東長虹電子有限公司

申請廠商地址：廣東省中山市南頭鎮興業北路 1 號

廠牌：長虹/CHANGHONG

產品名稱：Wifi/BT Module

型號：WB7638G-LT

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 (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     |

### 最大暴露允許值(Maximum Permissible Exposure, MPE)

| 項次 | 量測項目  | 規 範                   | 量測結果判定 |
|----|-------|-----------------------|--------|
| 1  | 電波暴露量 | 低功率射頻電機技術規範第 5.20.2 節 | (註)    |

註：電波暴露量值，請參照BV編號：RT191227E10。

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：  | Wifi/BT Module                           |
| 型號：    | WB7638G-LT                               |
| 額定電源：  | 3.3Vdc                                   |
| 調變方式：  | GFSK                                     |
| 調變技術：  | DTS                                      |
| 傳輸速率：  | Up to 2Mbps                              |
| 載波頻率：  | 2402MHz ~ 2480MHz                        |
| 頻道數：   | BT-LE: 40                                |
| 發射功率：  | BT-LE 1M: 8.81 dBm<br>BT-LE 2M: 8.84 dBm |
| 天線種類：  | 見註                                       |
| 電源線類別： | NA                                       |
| 信號線類別： | NA                                       |
| 配件：    | NA                                       |

註：

1. 此待測設備同時具有 WLAN 及 Bluetooth 技術，WLAN 及 Bluetooth 技術不會在同一時間發射。

| Radio 1     | Radio 2   |
|-------------|-----------|
| WLAN 2.4GHz | Bluetooth |

2. 此待測設備搭配測試的天線，其資料如下：

| Antenna No. | Chain No.   | Brand                                                    | Model        | Antenna Gain without cable loss (dBi) | Frequency range (MHz) | Antenna Type | Connector Type | Cable Length (mm) | cable loss (dB) |
|-------------|-------------|----------------------------------------------------------|--------------|---------------------------------------|-----------------------|--------------|----------------|-------------------|-----------------|
| 2.00003534  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM205 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 205               | 0.6             |
| 2.00003535  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM320 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 320               | 1               |
| 2.00003536  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM485 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 485               | 1.5             |
| 2.00003843  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM605 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 605               | 2.0             |
| 2.00003537  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM580 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 580               | 1.8             |
| 2.00003844  | WLAN 0/1+BT | SHENZHEN ZHONGTIAN XUN Communication Technology Co.,Ltd. | ADM695 G37C1 | 2.4                                   | 2400-2500             | PIFA Antenna | IPEX Terminal  | 695               | 2.2             |

上述天線中以 Antenna No.: 2.00003534 為代表測試。

3. 此待測設備天線，經評估三個正交軸方位評估測試擺設方式：X, Y, Z，其中以 Z 擺放擁有最大干擾值，故以此擺放方式進行最終量測，並將測試結果記錄。
4. 此報告中，場強輻射量測經過評估後以下列測試模式進行最終量測。

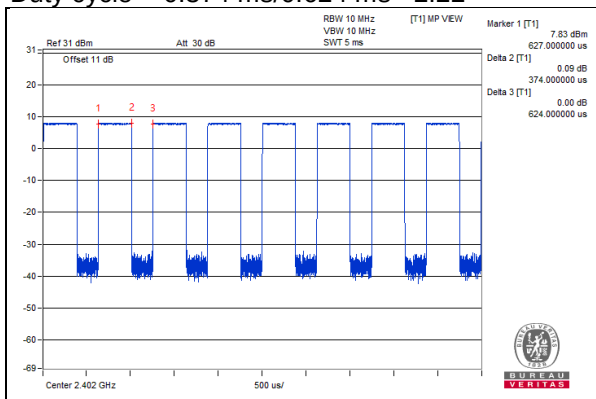
| 量測項目      | 發射                                                             | 接收   |
|-----------|----------------------------------------------------------------|------|
| 1GHz 以上量測 | <b>BT-LE 1M:</b> Ch 0, 19, 39<br><b>BT-LE 2M:</b> Ch 0, 19, 39 | Ch 0 |
| 其它不必要之訊號  | <b>BT-LE 2M:</b> Ch 0                                          | Ch 0 |

\*電源線傳導干擾量測經過評估後，以 BT-LE 2M: Ch 0 測試模式進行最終量測。

## 5. Duty cycle of test signal

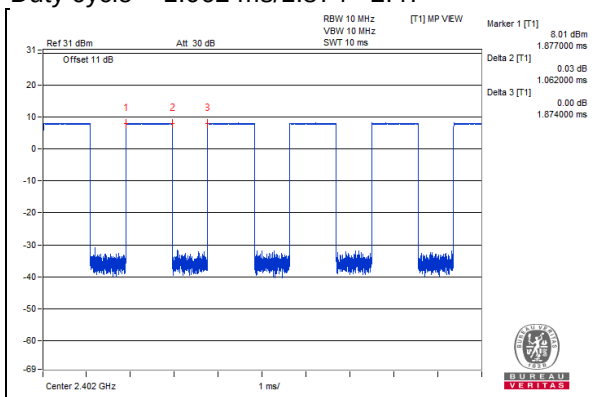
### BT-LE 1M

Duty cycle = 0.374 ms/0.624 ms = 2.22



### BT-LE 2M

Duty cycle = 1.062 ms/1.874 ms = 2.47



此裝置各頻道的中心頻率如下：

| 頻道 | 對應頻率<br>(MHz) | 頻道 | 對應頻率<br>(MHz) | 頻道 | 對應頻率<br>(MHz) | 頻道 | 對應頻率<br>(MHz) | 頻道 | 對應頻率<br>(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: 191227E10-1。

## 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。

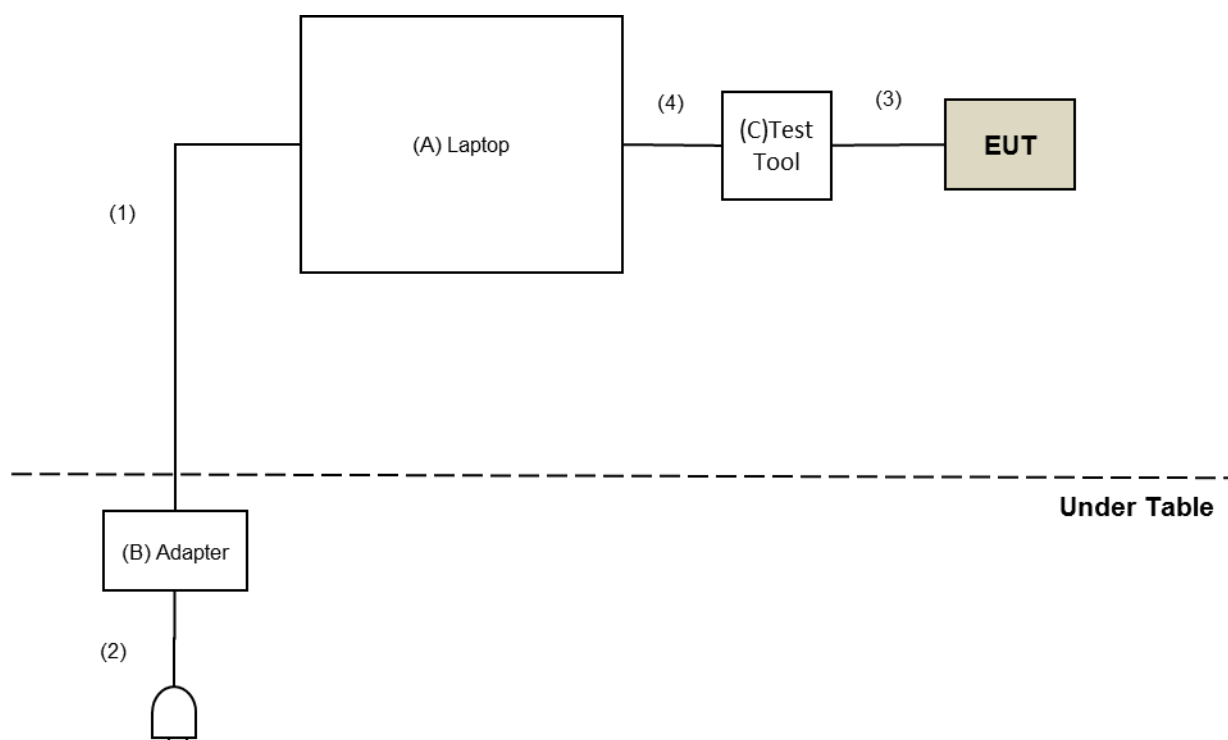
| ID | Product   | Brand | Model No.  | Serial No. | FCC ID  | Remarks            |
|----|-----------|-------|------------|------------|---------|--------------------|
| A. | Laptop    | Dell  | E5430      | HYV4VY1    | FCC DoC | Provided by Lab    |
| B. | Adapter   | Dell  | LA65NS2-01 | NA         | NA      | Provided by Lab    |
| C. | Test Tool | BVDG  | NA         | NA         | NA      | Supplied by client |

| ID | Descriptions  | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks                          |
|----|---------------|------|------------|--------------------|--------------|----------------------------------|
| 1. | DC Cable      | 1    | 1.8        | No                 | 0            | Provided by Lab                  |
| 2. | AC Cable      | 1    | 1.2        | No                 | 0            | Provided by Lab                  |
| 3. | Console Cable | 1    | 0.1        | No                 | 0            | Supplied by client(for RF Setup) |
| 4. | USB Cable     | 1    | 1.5        | Yes                | 0            | Provided by Lab                  |

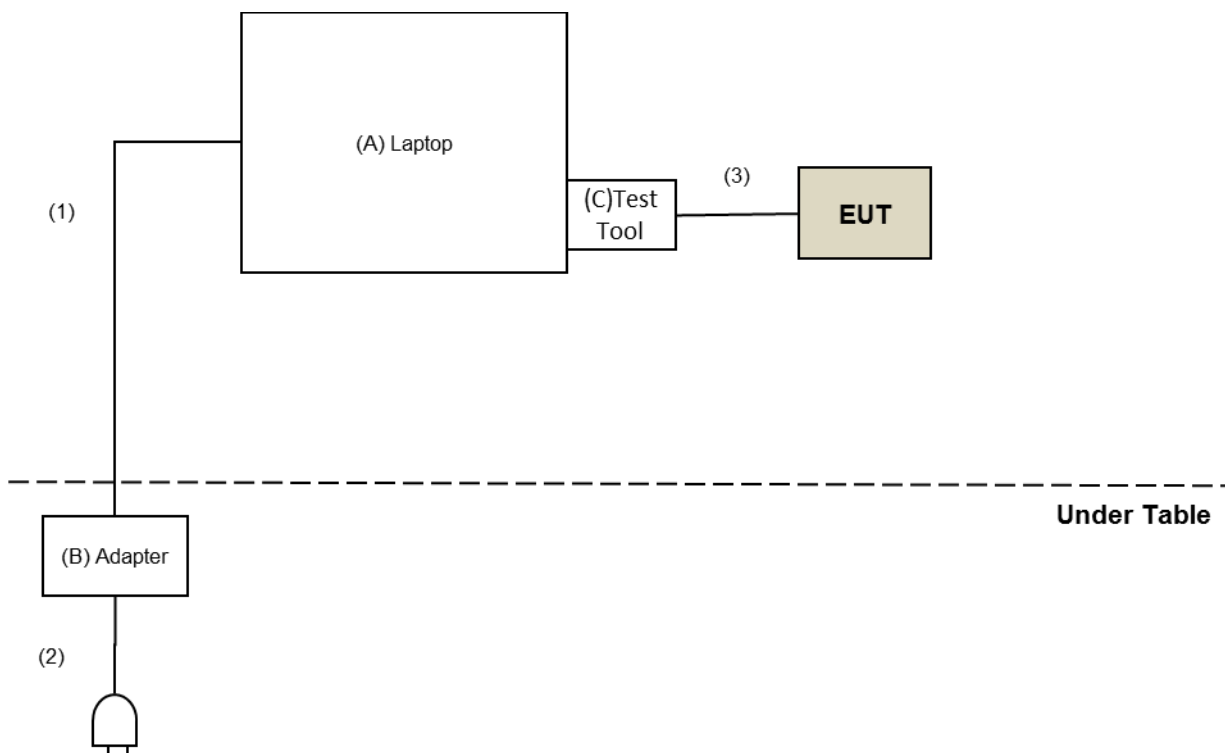
**NOTE:** 本案經申請者切結器材不提供隨貨配件，配件由實驗室(或申請者)提供併同檢驗。

## 2.3 測試架構圖

For Conducted Emission:



For Radiated Emission:



### 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)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。

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。

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

| 名稱 (製造者)                                            | 型 號                  | 序 號         | 校正日期          | 校正有效日期        |
|-----------------------------------------------------|----------------------|-------------|---------------|---------------|
| Test Receiver<br>Agilent                            | N9038A               | MY51210202  | Dec. 13, 2019 | Dec. 12, 2020 |
| Pre-Amplifier<br>EMCI                               | EMC001340            | 980142      | May 30, 2019  | May 29, 2020  |
| Loop Antenna<br>Electro-Metrics                     | EM-6879              | 269         | Sep. 16, 2019 | Sep. 15, 2020 |
| RF Cable                                            | NA                   | LOOPCAB-001 | Jan. 08, 2020 | Jan. 07, 2021 |
| RF Cable                                            | NA                   | LOOPCAB-002 | Jan. 08, 2020 | Jan. 07, 2021 |
| Pre-Amplifier<br>Mini-Circuits                      | ZFL-1000VH2B         | AMP-ZFL-01  | Oct. 23, 2019 | Oct. 22, 2020 |
| Trilog Broadband Antenna<br>SCHWARZBECK             | VULB 9168            | 9168-406    | Nov. 11, 2019 | Nov. 10, 2020 |
| RF Cable                                            | 8D                   | 966-4-1     | Mar. 19, 2019 | Mar. 18, 2020 |
| RF Cable                                            | 8D                   | 966-4-2     | Mar. 19, 2019 | Mar. 18, 2020 |
| RF Cable                                            | 8D                   | 966-4-3     | Mar. 19, 2019 | Mar. 18, 2020 |
| Fixed attenuator<br>Mini-Circuits                   | UNAT-5+              | PAD-3m-4-01 | Sep. 26, 2019 | Sep. 25, 2020 |
| Horn_Antenna<br>SCHWARZBECK                         | BBHA 9120D           | 9120D-783   | Nov. 24, 2019 | Nov. 23, 2020 |
| Pre-Amplifier<br>EMCI                               | EMC12630SE           | 980385      | Aug. 15, 2019 | Aug. 14, 2020 |
| RF Cable                                            | EMC104-SM-SM-1200    | 160923      | Jan. 15, 2020 | Jan. 14, 2021 |
| RF Cable                                            | 104 RF cable         | 131215      | Jan. 09, 2020 | Jan. 08, 2021 |
| RF Cable                                            | EMC104-SM-SM-6000    | 180418      | May 03, 2019  | May 02, 2020  |
| Pre-Amplifier<br>EMCI                               | EMC184045SE          | 980387      | Jan. 15, 2020 | Jan. 14, 2021 |
| Horn_Antenna<br>SCHWARZBECK                         | BBHA 9170            | BBHA9170519 | Nov. 24, 2019 | Nov. 23, 2020 |
| RF Cable                                            | EMC102-KM-KM-1200    | 160924      | Jan. 15, 2020 | Jan. 14, 2021 |
| RF Cable                                            | EMC102-KM-KM-4500    | 181205      | Aug. 26, 2019 | Aug. 25, 2020 |
| Software                                            | ADT_Radiated_V8.7.08 | NA          | NA            | NA            |
| Boresight Antenna Tower &<br>Turn Table<br>Max-Full | MF-7802BS            | MF780208530 | NA            | NA            |

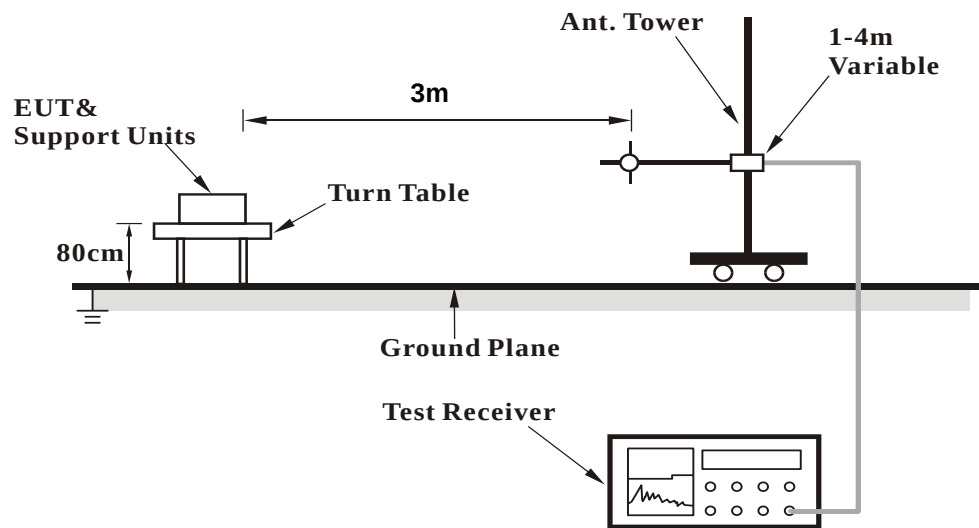
#### Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 4.
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.

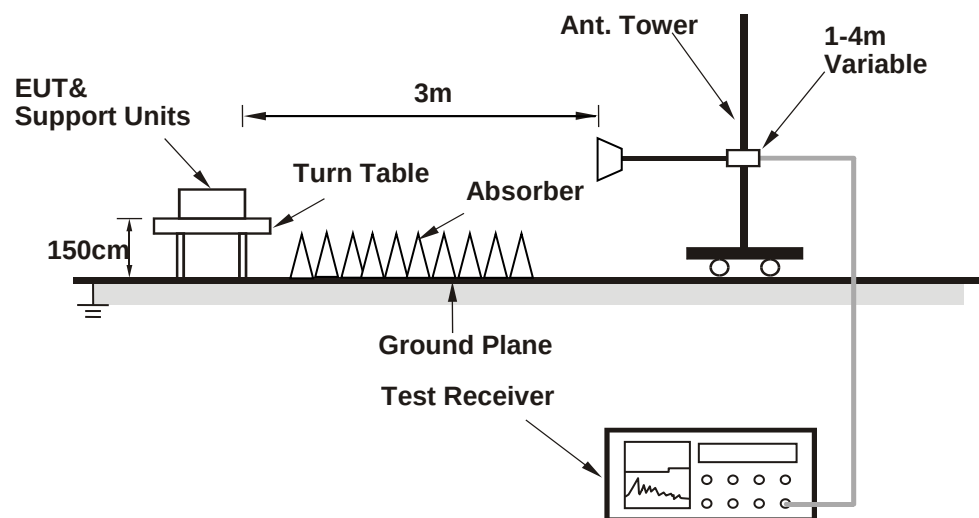
| Measurement        | Frequency     | Uncertainty |
|--------------------|---------------|-------------|
| Radiated emissions | 9kHz ~ 30MHz  | 3.0 dB      |
|                    | 30MHz ~ 1GHz  | 4.9 dB      |
|                    | 1GHz ~6GHz    | 5.1 dB      |
|                    | 6GHz ~ 18GHz  | 4.9 dB      |
|                    | 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

##### 4.6.1 發射諧波

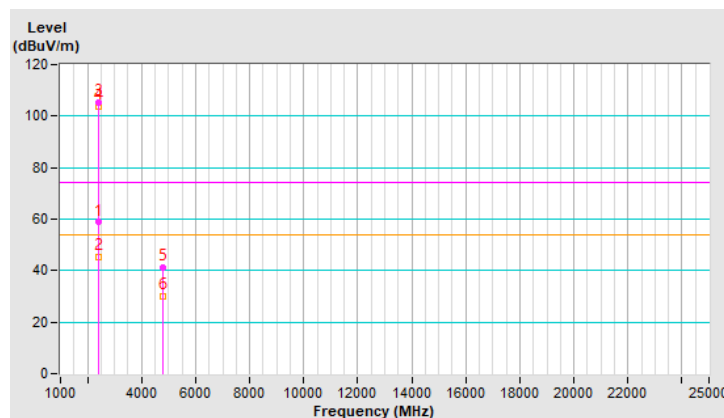
##### BT-LE 1M

|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 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<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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     | 58.8 PK                 | 74.0           | -15.2       | 1.10 H             | 95                   | 60.5             | -1.7                     |
| 2                                                   | 2390.00     | 45.1 AV                 | 54.0           | -8.9        | 1.10 H             | 95                   | 46.8             | -1.7                     |
| 3                                                   | *2402.00    | 105.4 PK                |                |             | 1.10 H             | 95                   | 107.2            | -1.8                     |
| 4                                                   | *2402.00    | 103.9 AV                |                |             | 1.10 H             | 95                   | 105.7            | -1.8                     |
| 5                                                   | 4804.00     | 41.4 PK                 | 74.0           | -32.6       | 1.58 H             | 8                    | 39.1             | 2.3                      |
| 6                                                   | 4804.00     | 30.1 AV                 | 54.0           | -23.9       | 1.58 H             | 8                    | 27.8             | 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.

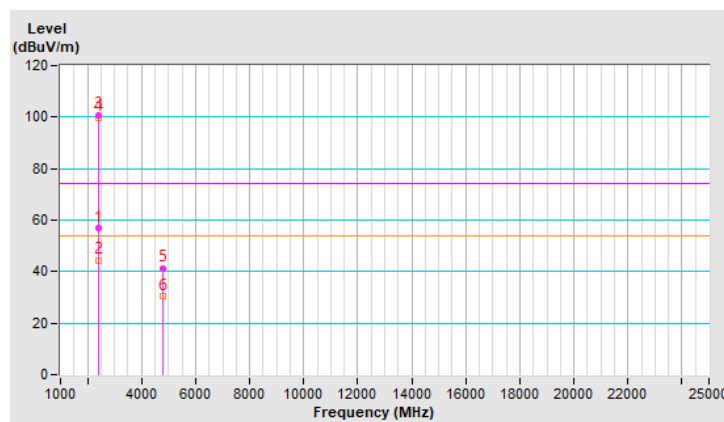


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 0：2402 MHz  | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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     | 56.7 PK                 | 74.0           | -17.3       | 1.21 V             | 188                  | 58.4             | -1.7                     |
| 2                                                 | 2390.00     | 44.4 AV                 | 54.0           | -9.6        | 1.21 V             | 188                  | 46.1             | -1.7                     |
| 3                                                 | *2402.00    | 100.8 PK                |                |             | 1.21 V             | 188                  | 102.6            | -1.8                     |
| 4                                                 | *2402.00    | 99.7 AV                 |                |             | 1.21 V             | 188                  | 101.5            | -1.8                     |
| 5                                                 | 4804.00     | 41.2 PK                 | 74.0           | -32.8       | 1.94 V             | 96                   | 38.9             | 2.3                      |
| 6                                                 | 4804.00     | 30.3 AV                 | 54.0           | -23.7       | 1.94 V             | 96                   | 28.0             | 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.

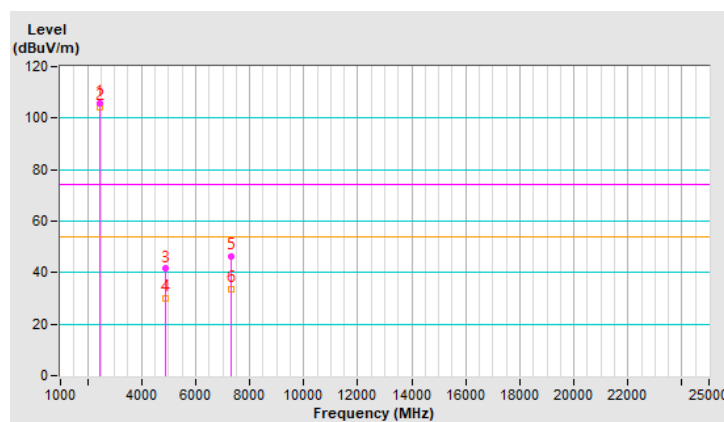


|         |                  |         |                                                |
|---------|------------------|---------|------------------------------------------------|
| 操作模式：   | 發射               | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 19 : 2440 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C             | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日   | 測試者：    | 柯其宗                                            |

| 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    | 105.8 PK                |                |             | 1.09 H             | 93                   | 107.5            | -1.7                     |
| 2                                                   | *2440.00    | 104.2 AV                |                |             | 1.09 H             | 93                   | 105.9            | -1.7                     |
| 3                                                   | 4880.00     | 41.5 PK                 | 74.0           | -32.5       | 1.61 H             | 2                    | 39.3             | 2.2                      |
| 4                                                   | 4880.00     | 30.2 AV                 | 54.0           | -23.8       | 1.61 H             | 2                    | 28.0             | 2.2                      |
| 5                                                   | 7320.00     | 46.5 PK                 | 74.0           | -27.5       | 1.34 H             | 119                  | 37.4             | 9.1                      |
| 6                                                   | 7320.00     | 33.5 AV                 | 54.0           | -20.5       | 1.34 H             | 119                  | 24.4             | 9.1                      |
| 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.

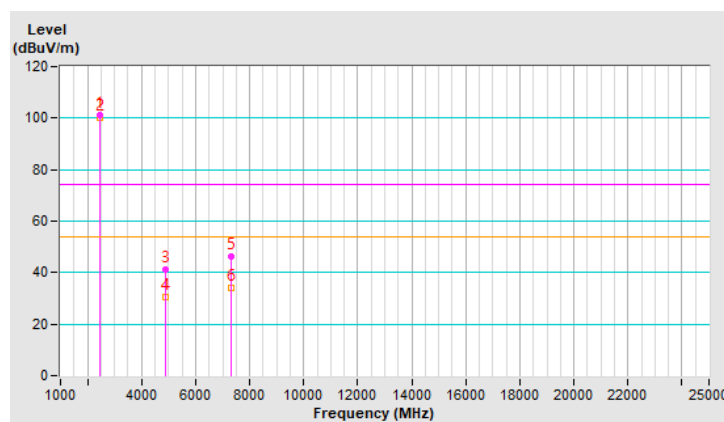


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 19：2440 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 101.4 PK                |                |             | 1.22 V             | 208                  | 103.1            | -1.7                     |
| 2                                                 | *2440.00    | 100.1 AV                |                |             | 1.22 V             | 208                  | 101.8            | -1.7                     |
| 3                                                 | 4880.00     | 41.1 PK                 | 74.0           | -32.9       | 1.92 V             | 107                  | 38.9             | 2.2                      |
| 4                                                 | 4880.00     | 30.5 AV                 | 54.0           | -23.5       | 1.92 V             | 107                  | 28.3             | 2.2                      |
| 5                                                 | 7320.00     | 46.4 PK                 | 74.0           | -27.6       | 1.56 V             | 116                  | 37.3             | 9.1                      |
| 6                                                 | 7320.00     | 33.9 AV                 | 54.0           | -20.1       | 1.56 V             | 116                  | 24.8             | 9.1                      |
| 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.

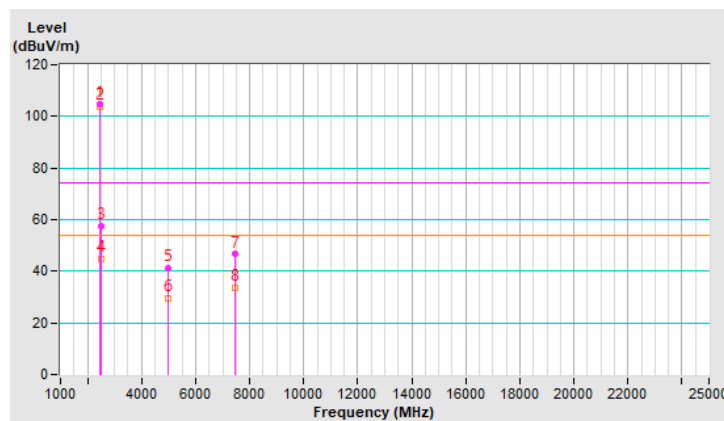


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 39：2480 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 104.7 PK                |                |             | 1.07 H             | 106                  | 106.4            | -1.7                     |
| 2                                                   | *2480.00    | 103.6 AV                |                |             | 1.07 H             | 106                  | 105.3            | -1.7                     |
| 3                                                   | 2483.50     | 57.7 PK                 | 74.0           | -16.3       | 1.07 H             | 106                  | 59.4             | -1.7                     |
| 4                                                   | 2483.50     | 44.6 AV                 | 54.0           | -9.4        | 1.07 H             | 106                  | 46.3             | -1.7                     |
| 5                                                   | 4960.00     | 41.2 PK                 | 74.0           | -32.8       | 1.63 H             | 10                   | 38.7             | 2.5                      |
| 6                                                   | 4960.00     | 29.6 AV                 | 54.0           | -24.4       | 1.63 H             | 10                   | 27.1             | 2.5                      |
| 7                                                   | 7440.00     | 46.6 PK                 | 74.0           | -27.4       | 1.39 H             | 115                  | 37.1             | 9.5                      |
| 8                                                   | 7440.00     | 33.4 AV                 | 54.0           | -20.6       | 1.39 H             | 115                  | 23.9             | 9.5                      |
| 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.

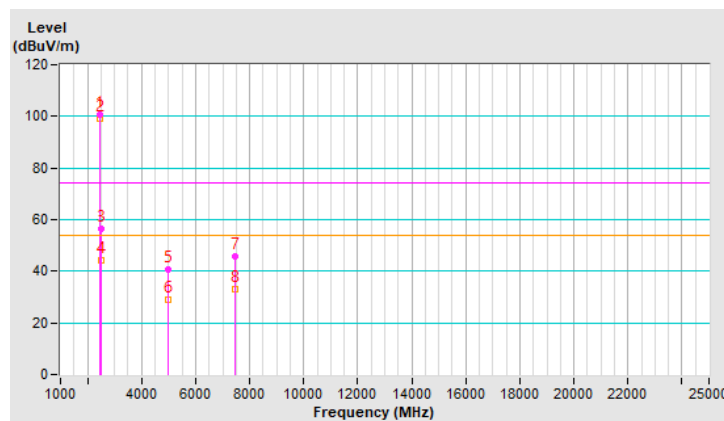


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 39：2480 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 100.8 PK                |                |             | 1.11 V             | 250                  | 102.5            | -1.7                     |
| 2                                                 | *2480.00    | 99.3 AV                 |                |             | 1.11 V             | 250                  | 101.0            | -1.7                     |
| 3                                                 | 2483.50     | 56.6 PK                 | 74.0           | -17.4       | 1.11 V             | 250                  | 58.3             | -1.7                     |
| 4                                                 | 2483.50     | 44.1 AV                 | 54.0           | -9.9        | 1.11 V             | 250                  | 45.8             | -1.7                     |
| 5                                                 | 4960.00     | 40.7 PK                 | 74.0           | -33.3       | 1.95 V             | 122                  | 38.2             | 2.5                      |
| 6                                                 | 4960.00     | 29.2 AV                 | 54.0           | -24.8       | 1.95 V             | 122                  | 26.7             | 2.5                      |
| 7                                                 | 7440.00     | 45.8 PK                 | 74.0           | -28.2       | 1.51 V             | 112                  | 36.3             | 9.5                      |
| 8                                                 | 7440.00     | 33.1 AV                 | 54.0           | -20.9       | 1.51 V             | 112                  | 23.6             | 9.5                      |
| 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.



# BT\_LE-2M

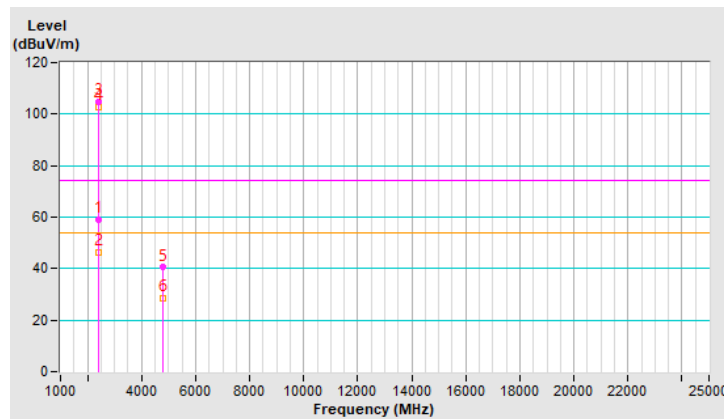
|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 0：2402 MHz  | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

## ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| NO. | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | 2390.00        | 59.0 PK                       | 74.0              | -15.0          | 1.13 H                   | 95                         | 60.7                   | -1.7                           |
| 2   | 2390.00        | 46.3 AV                       | 54.0              | -7.7           | 1.13 H                   | 95                         | 48.0                   | -1.7                           |
| 3   | *2402.00       | 105.0 PK                      |                   |                | 1.13 H                   | 95                         | 106.8                  | -1.8                           |
| 4   | *2402.00       | 102.8 AV                      |                   |                | 1.13 H                   | 95                         | 104.6                  | -1.8                           |
| 5   | 4804.00        | 40.5 PK                       | 74.0              | -33.5          | 1.57 H                   | 7                          | 38.2                   | 2.3                            |
| 6   | 4804.00        | 28.7 AV                       | 54.0              | -25.3          | 1.57 H                   | 7                          | 26.4                   | 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.

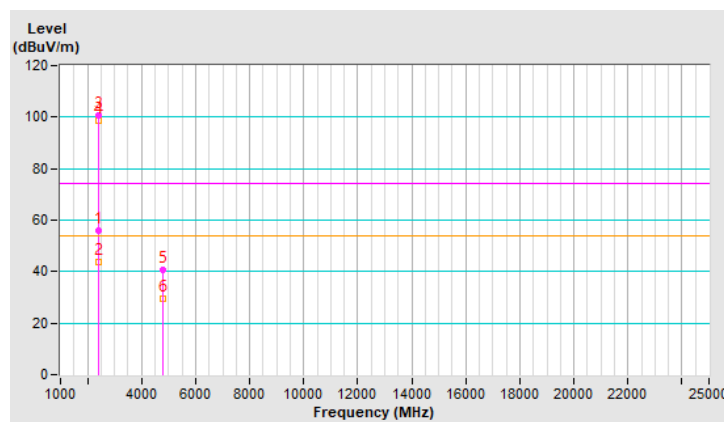


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 0：2402 MHz  | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                               | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                 | 2390.00        | 55.9 PK                       | 74.0              | -18.1          | 1.24 V                   | 195                        | 57.6                   | -1.7                           |
| 2                                                 | 2390.00        | 43.6 AV                       | 54.0              | -10.4          | 1.24 V                   | 195                        | 45.3                   | -1.7                           |
| 3                                                 | *2402.00       | 100.8 PK                      |                   |                | 1.24 V                   | 195                        | 102.6                  | -1.8                           |
| 4                                                 | *2402.00       | 98.5 AV                       |                   |                | 1.24 V                   | 195                        | 100.3                  | -1.8                           |
| 5                                                 | 4804.00        | 40.9 PK                       | 74.0              | -33.1          | 1.95 V                   | 122                        | 38.6                   | 2.3                            |
| 6                                                 | 4804.00        | 29.6 AV                       | 54.0              | -24.4          | 1.95 V                   | 122                        | 27.3                   | 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.

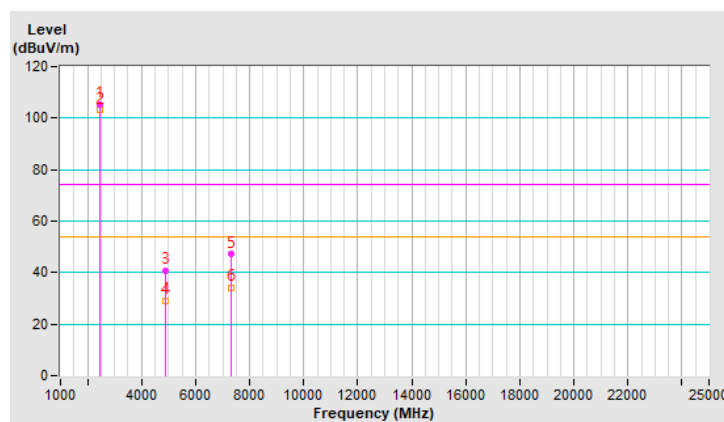


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 19：2440 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 105.1 PK                |                |             | 1.19 H             | 100                  | 106.8            | -1.7                     |
| 2                                                   | *2440.00    | 103.0 AV                |                |             | 1.19 H             | 100                  | 104.7            | -1.7                     |
| 3                                                   | 4880.00     | 40.6 PK                 | 74.0           | -33.4       | 1.58 H             | 352                  | 38.4             | 2.2                      |
| 4                                                   | 4880.00     | 29.0 AV                 | 54.0           | -25.0       | 1.58 H             | 352                  | 26.8             | 2.2                      |
| 5                                                   | 7320.00     | 47.1 PK                 | 74.0           | -26.9       | 1.41 H             | 117                  | 38.0             | 9.1                      |
| 6                                                   | 7320.00     | 33.9 AV                 | 54.0           | -20.1       | 1.41 H             | 117                  | 24.8             | 9.1                      |
| 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.

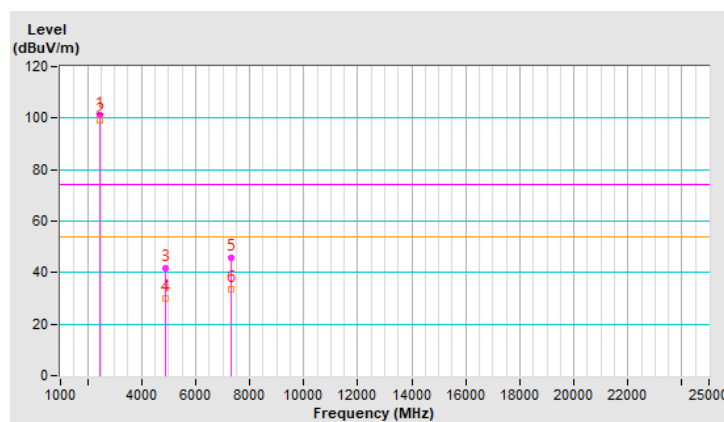


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 19：2440 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 101.1 PK                |                |             | 1.15 V             | 199                  | 102.8            | -1.7                     |
| 2                                                 | *2440.00    | 98.9 AV                 |                |             | 1.15 V             | 199                  | 100.6            | -1.7                     |
| 3                                                 | 4880.00     | 41.8 PK                 | 74.0           | -32.2       | 2.00 V             | 131                  | 39.6             | 2.2                      |
| 4                                                 | 4880.00     | 30.2 AV                 | 54.0           | -23.8       | 2.00 V             | 131                  | 28.0             | 2.2                      |
| 5                                                 | 7320.00     | 45.8 PK                 | 74.0           | -28.2       | 1.56 V             | 101                  | 36.7             | 9.1                      |
| 6                                                 | 7320.00     | 33.6 AV                 | 54.0           | -20.4       | 1.56 V             | 101                  | 24.5             | 9.1                      |
| 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.

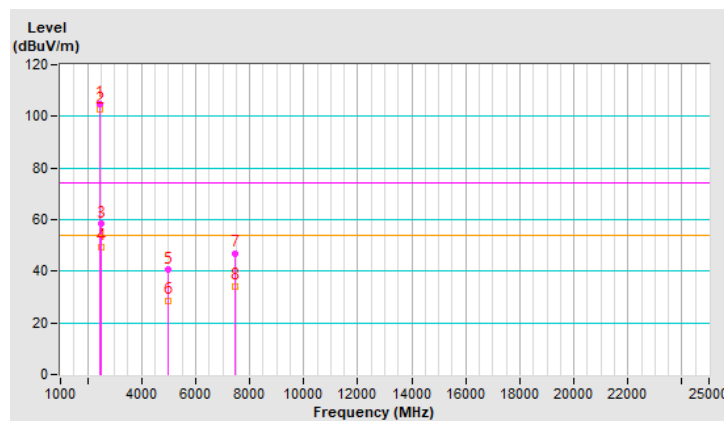


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 39：2480 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 104.6 PK                |                |             | 1.10 H             | 107                  | 106.3            | -1.7                     |
| 2                                                   | *2480.00    | 102.5 AV                |                |             | 1.10 H             | 107                  | 104.2            | -1.7                     |
| 3                                                   | 2483.50     | 58.3 PK                 | 74.0           | -15.7       | 1.10 H             | 107                  | 60.0             | -1.7                     |
| 4                                                   | 2483.50     | 49.3 AV                 | 54.0           | -4.7        | 1.10 H             | 107                  | 51.0             | -1.7                     |
| 5                                                   | 4960.00     | 40.5 PK                 | 74.0           | -33.5       | 1.57 H             | 13                   | 38.0             | 2.5                      |
| 6                                                   | 4960.00     | 28.7 AV                 | 54.0           | -25.3       | 1.57 H             | 13                   | 26.2             | 2.5                      |
| 7                                                   | 7440.00     | 46.9 PK                 | 74.0           | -27.1       | 1.32 H             | 131                  | 37.4             | 9.5                      |
| 8                                                   | 7440.00     | 33.9 AV                 | 54.0           | -20.1       | 1.32 H             | 131                  | 24.4             | 9.5                      |
| 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.

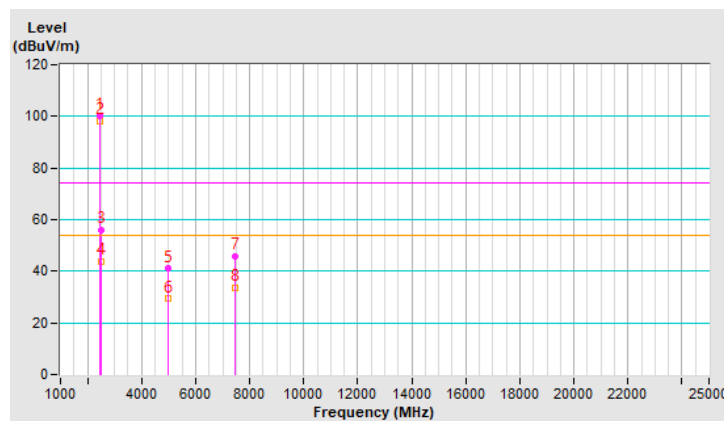


|         |                |         |                                                |
|---------|----------------|---------|------------------------------------------------|
| 操作模式：   | 發射             | 調變技術：   | GFSK                                           |
| 基本波頻率：  | CH 39：2480 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=1kHz |
| 量測場地溫度： | 25°C           | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日 | 測試者：    | 柯其宗                                            |

| 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    | 100.3 PK                |                |             | 1.19 V             | 204                  | 102.0            | -1.7                     |
| 2                                                 | *2480.00    | 98.1 AV                 |                |             | 1.19 V             | 204                  | 99.8             | -1.7                     |
| 3                                                 | 2483.50     | 56.1 PK                 | 74.0           | -17.9       | 1.19 V             | 204                  | 57.8             | -1.7                     |
| 4                                                 | 2483.50     | 43.8 AV                 | 54.0           | -10.2       | 1.19 V             | 204                  | 45.5             | -1.7                     |
| 5                                                 | 4960.00     | 41.0 PK                 | 74.0           | -33.0       | 1.89 V             | 138                  | 38.5             | 2.5                      |
| 6                                                 | 4960.00     | 29.3 AV                 | 54.0           | -24.7       | 1.89 V             | 138                  | 26.8             | 2.5                      |
| 7                                                 | 7440.00     | 45.9 PK                 | 74.0           | -28.1       | 1.56 V             | 123                  | 36.4             | 9.5                      |
| 8                                                 | 7440.00     | 33.5 AV                 | 54.0           | -20.5       | 1.56 V             | 123                  | 24.0             | 9.5                      |
| 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.



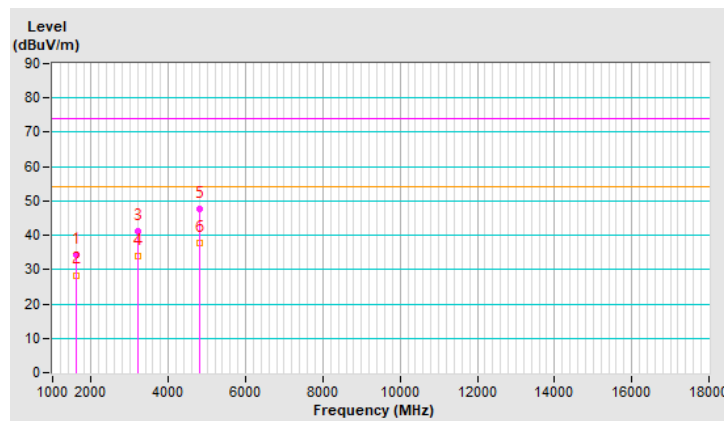
## 4.6.2 接收諧波

|         |                 |         |                                                |
|---------|-----------------|---------|------------------------------------------------|
| 操作模式：   | 接收              |         |                                                |
| 基本波頻率：  | CH 0 : 2402 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3MHz |
| 量測場地溫度： | 25°C            | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日  | 測試者：    | 柯其宗                                            |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 1601.33     | 34.3 PK                 | 74.0           | -39.7       | 1.96 H             | 230                  | 39.3             | -5.0                     |
| 2                                                   | 1601.33     | 28.4 AV                 | 54.0           | -25.6       | 1.96 H             | 230                  | 33.4             | -5.0                     |
| 3                                                   | 3202.67     | 41.0 PK                 | 74.0           | -33.0       | 2.48 H             | 161                  | 41.7             | -0.7                     |
| 4                                                   | 3202.67     | 33.8 AV                 | 54.0           | -20.2       | 2.48 H             | 161                  | 34.5             | -0.7                     |
| 5                                                   | 4804.00     | 47.8 PK                 | 74.0           | -26.2       | 2.06 H             | 117                  | 45.5             | 2.3                      |
| 6                                                   | 4804.00     | 37.9 AV                 | 54.0           | -16.1       | 2.06 H             | 117                  | 35.6             | 2.3                      |

## 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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

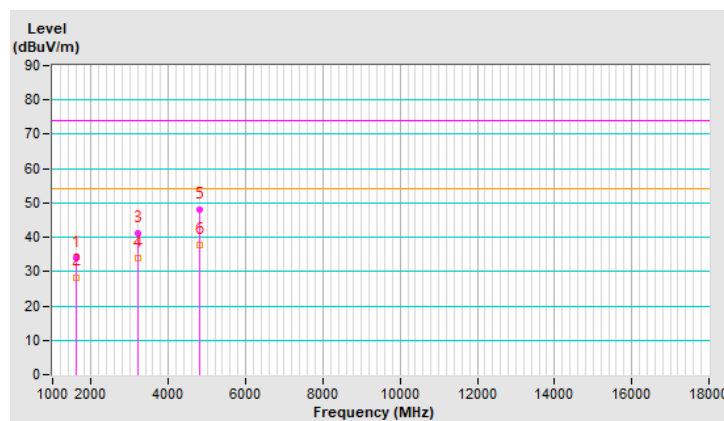


|         |                 |         |                                                |
|---------|-----------------|---------|------------------------------------------------|
| 操作模式：   | 接收              |         |                                                |
| 基本波頻率：  | CH 0 : 2402 MHz | 測試儀器：   | (PK) RB=1MHz, VB=3MHz<br>(AV) RB=1MHz, VB=3MHz |
| 量測場地溫度： | 25°C            | 量測場地濕度： | 75%RH                                          |
| 測試日期：   | 109 年 2 月 13 日  | 測試者：    | 柯其宗                                            |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|---------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                               | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                 | 1601.33     | 34.0 PK                 | 74.0           | -40.0       | 1.25 V             | 244                  | 39.0             | -5.0                     |
| 2                                                 | 1601.33     | 28.4 AV                 | 54.0           | -25.6       | 1.25 V             | 244                  | 33.4             | -5.0                     |
| 3                                                 | 3202.67     | 41.2 PK                 | 74.0           | -32.8       | 1.21 V             | 149                  | 41.9             | -0.7                     |
| 4                                                 | 3202.67     | 33.9 AV                 | 54.0           | -20.1       | 1.21 V             | 149                  | 34.6             | -0.7                     |
| 5                                                 | 4804.00     | 48.0 PK                 | 74.0           | -26.0       | 2.50 V             | 175                  | 45.7             | 2.3                      |
| 6                                                 | 4804.00     | 37.8 AV                 | 54.0           | -16.2       | 2.50 V             | 175                  | 35.5             | 2.3                      |

**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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



## 4.6.3 其它不必要之訊號

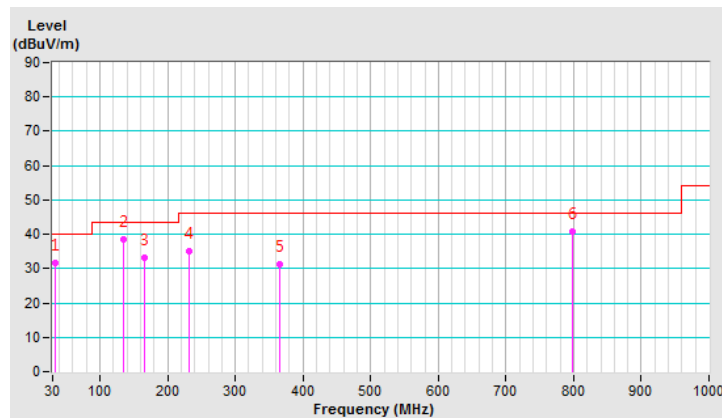
## BT\_LE-2M

|         |                |         |                |
|---------|----------------|---------|----------------|
| 操作模式：   | 發射接收           | 調變技術：   | GFSK           |
| 基本波頻率：  | CH 0：2402 MHz  | 測試儀器：   | (QP) RB=120kHz |
| 量測場地溫度： | 23°C           | 量測場地濕度： | 65%RH          |
| 測試日期：   | 109 年 2 月 14 日 | 測試者：    | 楊立豪            |

| 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                                                   | 33.02       | 31.7 QP                 | 40.0           | -8.3        | 1.00 H             | 97                   | 40.6             | -8.9                     |
| 2                                                   | 135.03      | 38.4 QP                 | 43.5           | -5.1        | 2.00 H             | 35                   | 47.0             | -8.6                     |
| 3                                                   | 165.79      | 33.1 QP                 | 43.5           | -10.4       | 1.00 H             | 337                  | 41.0             | -7.9                     |
| 4                                                   | 232.53      | 35.2 QP                 | 46.0           | -10.8       | 2.00 H             | 203                  | 45.1             | -9.9                     |
| 5                                                   | 365.07      | 31.4 QP                 | 46.0           | -14.6       | 1.00 H             | 254                  | 36.6             | -5.2                     |
| 6                                                   | 798.08      | 40.9 QP                 | 46.0           | -5.1        | 1.00 H             | 334                  | 36.3             | 4.6                      |

## 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.



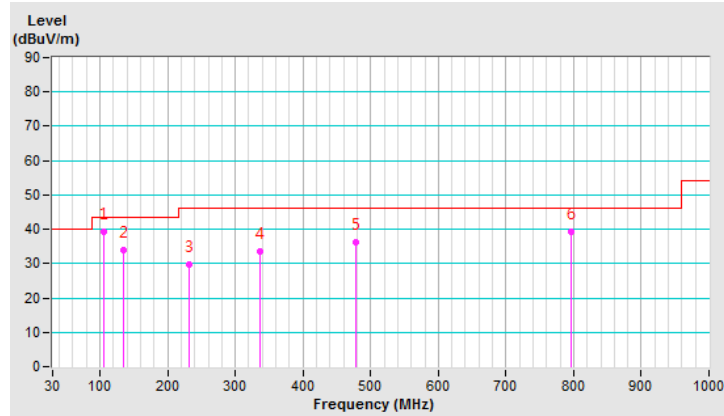
|         |                |         |                |
|---------|----------------|---------|----------------|
| 操作模式：   | 發射接收           | 調變技術：   | GFSK           |
| 基本波頻率：  | CH 0：2402 MHz  | 測試儀器：   | (QP) RB=120kHz |
| 量測場地溫度： | 23°C           | 量測場地濕度： | 65%RH          |
| 測試日期：   | 109 年 2 月 14 日 | 測試者：    | 楊立豪            |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| NO. | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | 105.48         | 39.1 QP                       | 43.5              | -4.4           | 2.00 V                   | 189                        | 50.3                   | -11.2                          |
| 2   | 134.55         | 34.0 QP                       | 43.5              | -9.5           | 1.50 V                   | 213                        | 42.6                   | -8.6                           |
| 3   | 232.43         | 29.6 QP                       | 46.0              | -16.4          | 1.00 V                   | 182                        | 39.5                   | -9.9                           |
| 4   | 335.63         | 33.4 QP                       | 46.0              | -12.6          | 1.50 V                   | 286                        | 39.3                   | -5.9                           |
| 5   | 477.62         | 36.3 QP                       | 46.0              | -9.7           | 1.00 V                   | 202                        | 38.4                   | -2.1                           |
| 6   | 796.75         | 39.3 QP                       | 46.0              | -6.7           | 2.00 V                   | 154                        | 34.7                   | 4.6                            |

**REMARKS:**

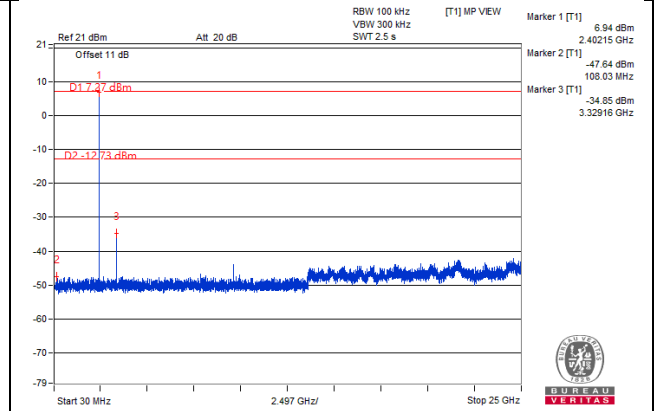
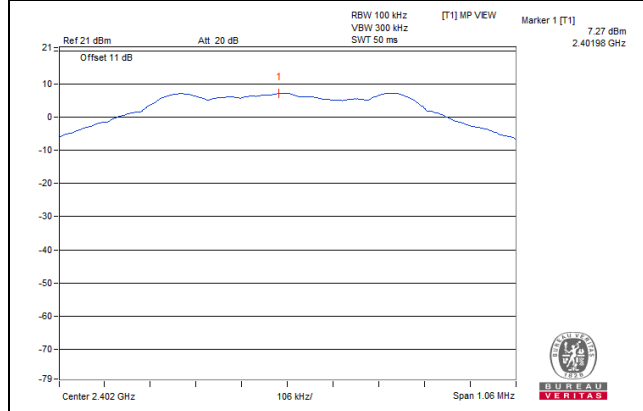
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.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



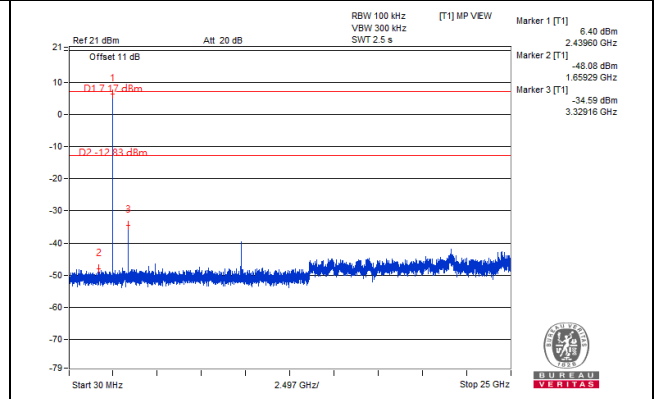
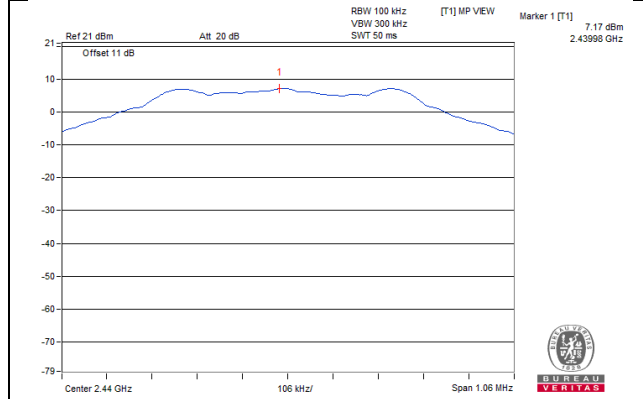
## 4.7 帶外發射之量測 (傳導)

### BT-LE 1M

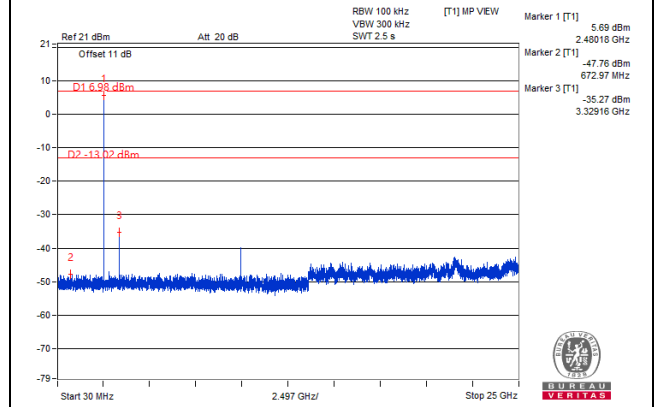
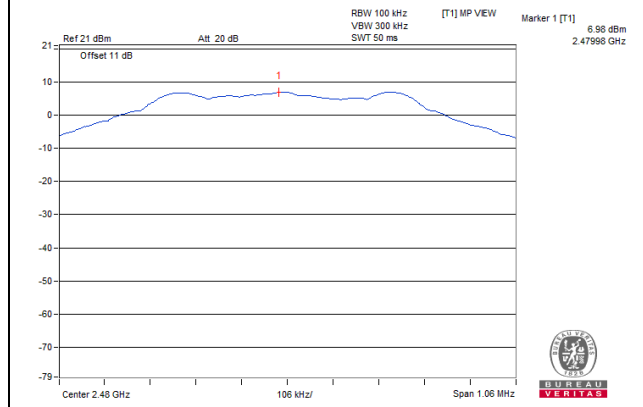
#### CH 0



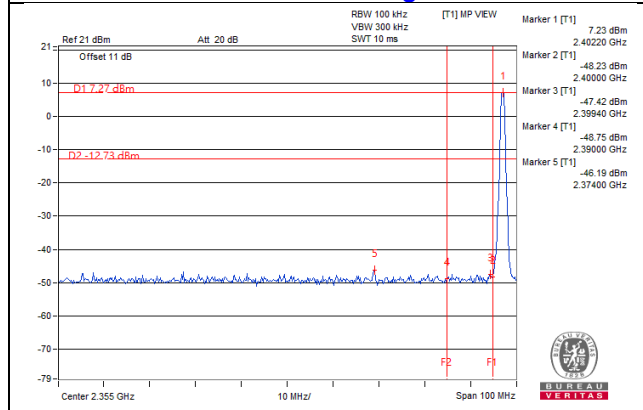
#### CH 19



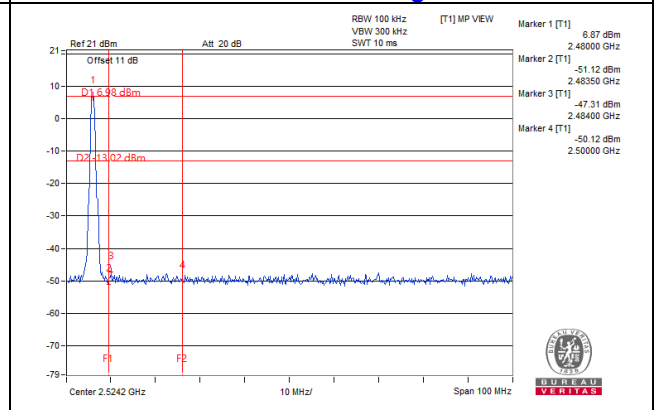
#### CH 39



#### CH 0 Band edge

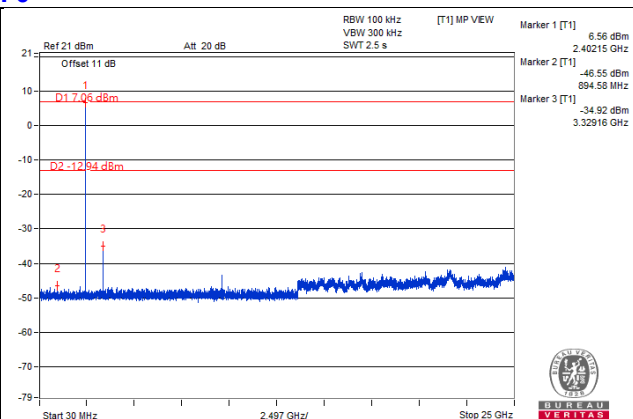
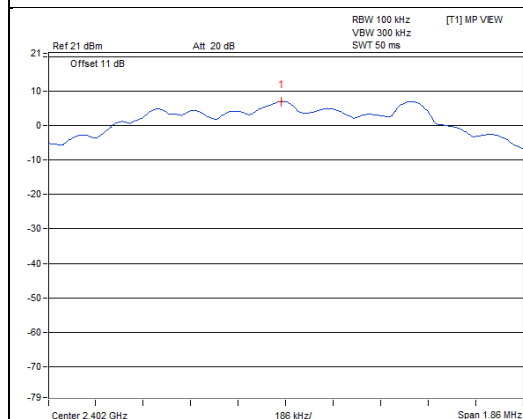


#### CH 39 Band edge

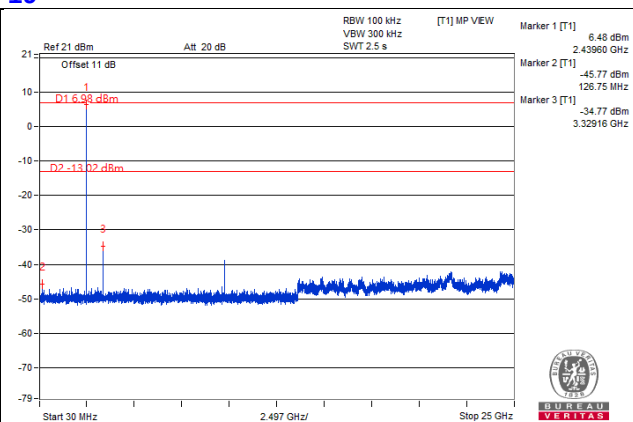
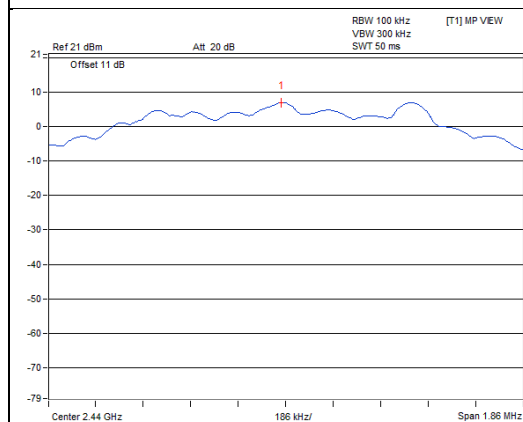


# BT-LE 2M

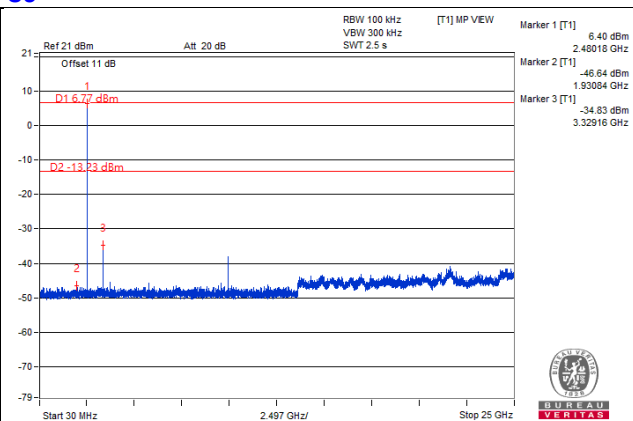
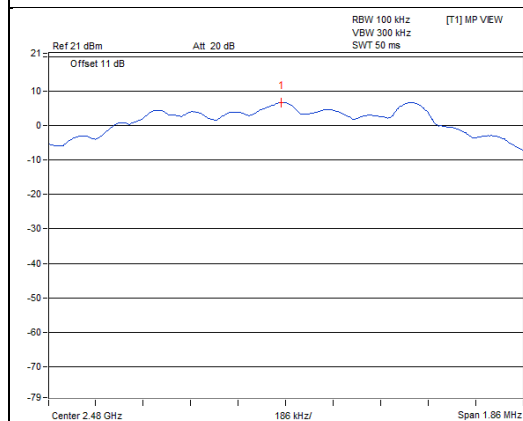
## CH 0



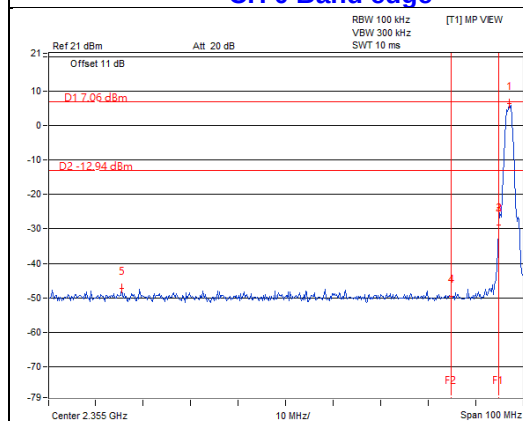
## CH 19



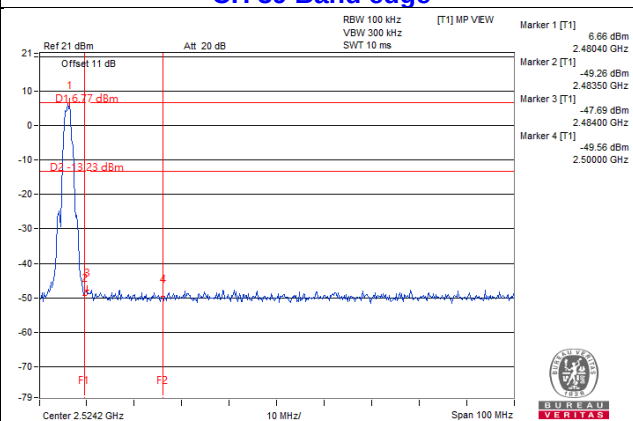
## CH 39



## 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。

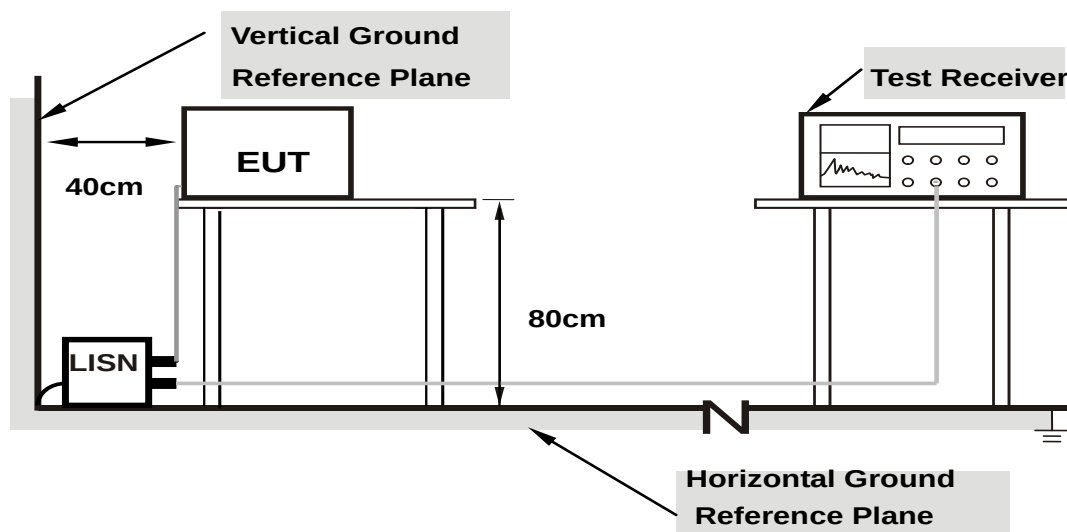
### 5.3 量測儀器

| DESCRIPTION & MANUFACTURER                                         | MODEL NO.               | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------------------------------------|-------------------------|------------|-----------------|------------------|
| Test Receiver<br>R&S                                               | ESCS 30                 | 847124/029 | Oct. 23, 2019   | Oct. 22, 2020    |
| Line-Impedance<br>Stabilization Network (for<br>EUT)<br>R&S        | ESH3-Z5                 | 848773/004 | Oct. 23, 2019   | Oct. 22, 2020    |
| Line-Impedance<br>Stabilization Network<br>(for Peripheral)<br>R&S | ESH3-Z5                 | 835239/001 | Mar. 17, 2019   | Mar. 16, 2020    |
| 50 ohms Terminator                                                 | 50                      | 3          | Oct. 23, 2019   | Oct. 22, 2020    |
| RF Cable                                                           | 5D-FB                   | COCCAB-001 | Sep. 27, 2019   | Sep. 26, 2020    |
| Fixed attenuator<br>EMCI                                           | STI02-2200-10           | 003        | Mar. 14, 2019   | Mar. 13, 2020    |
| Software<br>BVADT                                                  | BVADT_Cond_<br>V7.3.7.4 | NA         | NA              | NA               |

#### Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. The measurement uncertainty is 1.8 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

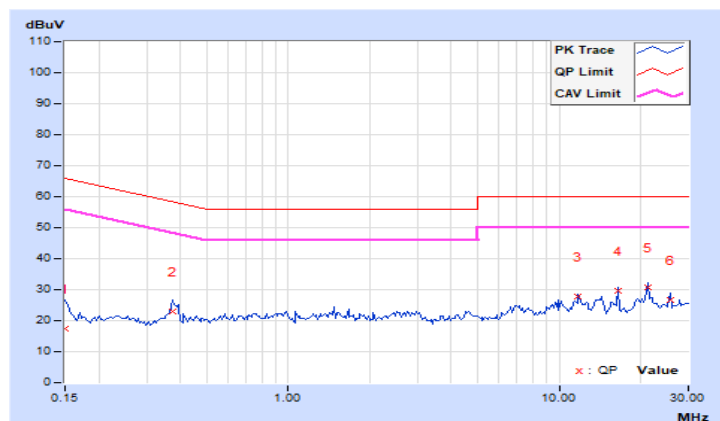
## 5.6 量測結果

|       |                 |        |                 |
|-------|-----------------|--------|-----------------|
| 操作模式  | 發射/接收           | 測試日期   | 109 年 02 月 25 日 |
| 基本波頻率 | CH 0 : 2402 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   | 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  | 9.97  | 7.26                 | 0.24  | 17.23     | 10.21 | 66.00           | 56.00 | -48.77 | -45.79 |
| 0.37266  | 9.98  | 12.82                | 11.66 | 22.80     | 21.64 | 58.44           | 48.44 | -35.64 | -26.80 |
| 11.75781 | 10.58 | 17.12                | 13.98 | 27.70     | 24.56 | 60.00           | 50.00 | -32.30 | -25.44 |
| 16.46484 | 10.85 | 18.69                | 18.18 | 29.54     | 29.03 | 60.00           | 50.00 | -30.46 | -20.97 |
| 21.16797 | 11.08 | 19.78                | 17.91 | 30.86     | 28.99 | 60.00           | 50.00 | -29.14 | -21.01 |
| 25.87500 | 11.21 | 15.61                | 15.24 | 26.82     | 26.45 | 60.00           | 50.00 | -33.18 | -23.55 |

### 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

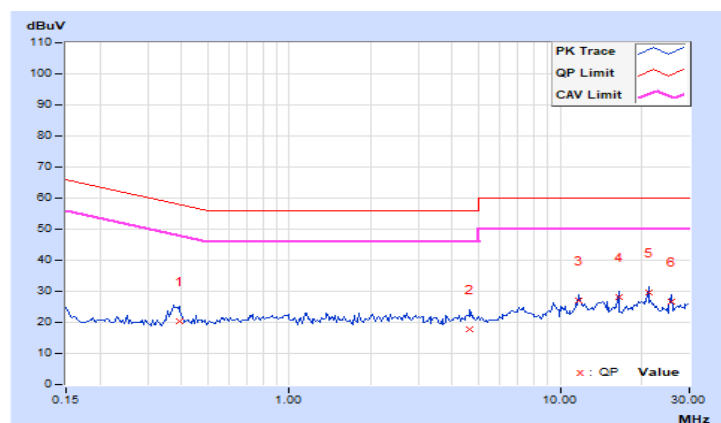


|       |                 |        |                 |
|-------|-----------------|--------|-----------------|
| 操作模式  | 發射/接收           | 測試日期   | 109 年 02 月 25 日 |
| 基本波頻率 | CH 0 : 2402 MHz | 量測場地溫度 | 25°C            |
| 調變技術  | GFSK            | 量測場地濕度 | 65%RH           |
| 測試者   | 何欣儒             |        |                 |

|          |       | 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.    |
| 0.39219  | 9.98  | 10.45                | 9.22  | 20.43     | 19.20 | 58.02              | 48.02 | -37.59 | -28.82 |
| 4.65625  | 10.17 | 7.71                 | -1.72 | 17.88     | 8.45  | 56.00              | 46.00 | -38.12 | -37.55 |
| 11.76172 | 10.46 | 16.50                | 13.72 | 26.96     | 24.18 | 60.00              | 50.00 | -33.04 | -25.82 |
| 16.46484 | 10.66 | 17.56                | 17.31 | 28.22     | 27.97 | 60.00              | 50.00 | -31.78 | -22.03 |
| 21.16797 | 10.82 | 18.93                | 17.02 | 29.75     | 27.84 | 60.00              | 50.00 | -30.25 | -22.16 |
| 25.87109 | 10.90 | 15.61                | 15.28 | 26.51     | 26.18 | 60.00              | 50.00 | -33.49 | -23.82 |

#### 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 配置照片

請參照 Test Setup Photos

## 6 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

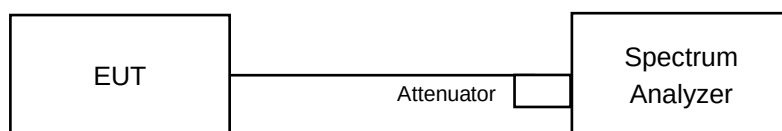
- 將待測物輸出經由衰減器接到頻譜分析儀上。
- 設定待測物處於連續發射狀態。
- 計算最大輸出功率峰值減 6dB 的最大頻率範圍。

### 6.3 量測儀器

| DESCRIPTION & MANUFACTURER     | MODEL NO.  | SERIAL NO.    | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------|------------|---------------|-----------------|------------------|
| Spectrum Analyzer R&S          | FSV40      | 100964        | June 04, 2019   | June 03, 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   | 109 年 02 月 24 日 |
| 量測場地溫度 | 25°C | 量測場地濕度 | 60%RH           |
| 測試者    | 陳高逸  |        |                 |

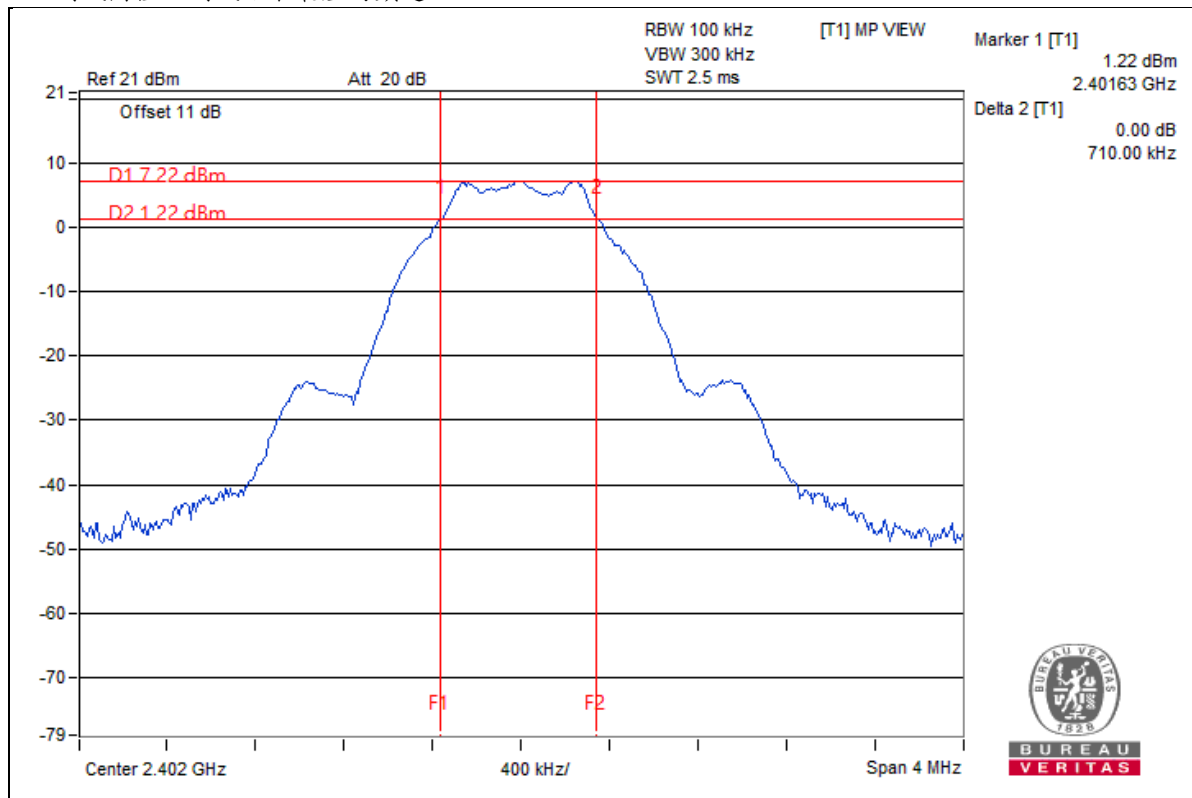
### BT-LE 1M

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) | Pass / Fail |
|---------|-----------------|---------------------|---------------------|-------------|
| 0       | 2402            | 0.71                | 0.5                 | Pass        |
| 19      | 2440            | 0.71                | 0.5                 | Pass        |
| 39      | 2480            | 0.71                | 0.5                 | Pass        |

### BT-LE 2M

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) | Pass / Fail |
|---------|-----------------|---------------------|---------------------|-------------|
| 0       | 2402            | 1.24                | 0.5                 | Pass        |
| 19      | 2440            | 1.24                | 0.5                 | Pass        |
| 39      | 2480            | 1.24                | 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。

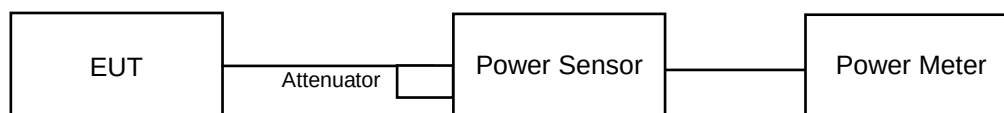
### 7.3 量測儀器

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

**NOTE:**

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

### 7.4 測試配置



## 7.5 量測結果

|        |      |        |                 |
|--------|------|--------|-----------------|
| 操作模式   | 發射   | 測試日期   | 109 年 02 月 24 日 |
| 量測場地溫度 | 25°C | 量測場地濕度 | 60%RH           |
| 測試者    | 陳高逸  |        |                 |

### FOR PEAK POWER

#### BT-LE 1M

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass/Fail |
|---------|-----------------|-----------------|------------------|-------------|-----------|
| 0       | 2402            | 7.603           | 8.81             | 30          | Pass      |
| 19      | 2440            | 7.551           | 8.78             | 30          | Pass      |
| 39      | 2480            | 7.178           | 8.56             | 30          | Pass      |

#### BT-LE 2M

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass/Fail |
|---------|-----------------|-----------------|------------------|-------------|-----------|
| 0       | 2402            | 7.656           | 8.84             | 30          | Pass      |
| 19      | 2440            | 7.516           | 8.76             | 30          | Pass      |
| 39      | 2480            | 7.096           | 8.51             | 30          | Pass      |

### FOR AVERAGE POWER

#### BT-LE 1M

| Channel | Frequency (MHz) | Average Power (mW) | Average Power (dBm) |
|---------|-----------------|--------------------|---------------------|
| 0       | 2402            | 6.918              | 8.40                |
| 19      | 2440            | 6.823              | 8.34                |
| 39      | 2480            | 6.457              | 8.10                |

#### BT-LE 2M

| Channel | Frequency (MHz) | Average Power (mW) | Average Power (dBm) |
|---------|-----------------|--------------------|---------------------|
| 0       | 2402            | 6.887              | 8.38                |
| 19      | 2440            | 6.792              | 8.32                |
| 39      | 2480            | 6.442              | 8.09                |

## 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

- 將待測物之天線埠連接至測試儀器。
- 設定解析頻寬為 3 kHz，視訊頻寬為 10kHz，掃描時間設為自動，直至掃描信號穩定。
- 使用峰值功能鍵,並找到最大的峰值準位。

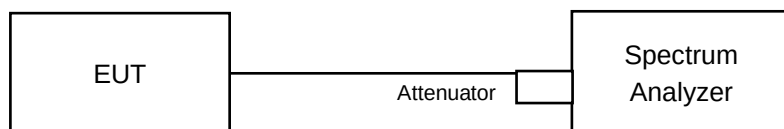
### 8.3 量測儀器

| DESCRIPTION & MANUFACTURER        | MODEL NO.  | SERIAL NO.    | CALIBRATED DATE | CALIBRATED UNTIL |
|-----------------------------------|------------|---------------|-----------------|------------------|
| Spectrum Analyzer<br>R&S          | FSV40      | 100964        | June 04, 2019   | June 03, 2020    |
| Fixed Attenuator<br>Mini-Circuits | MDCS18N-10 | MDCS18N-10-01 | Apr. 15, 2019   | Apr. 14, 2020    |

**NOTE:**

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

### 8.4 測試配置



## 8.5 量測結果

|        |      |        |                 |
|--------|------|--------|-----------------|
| 操作模式   | 發射   | 測試日期   | 109 年 02 月 24 日 |
| 量測場地溫度 | 25°C | 量測場地濕度 | 60%RH           |
| 測試者    | 陳高逸  |        |                 |

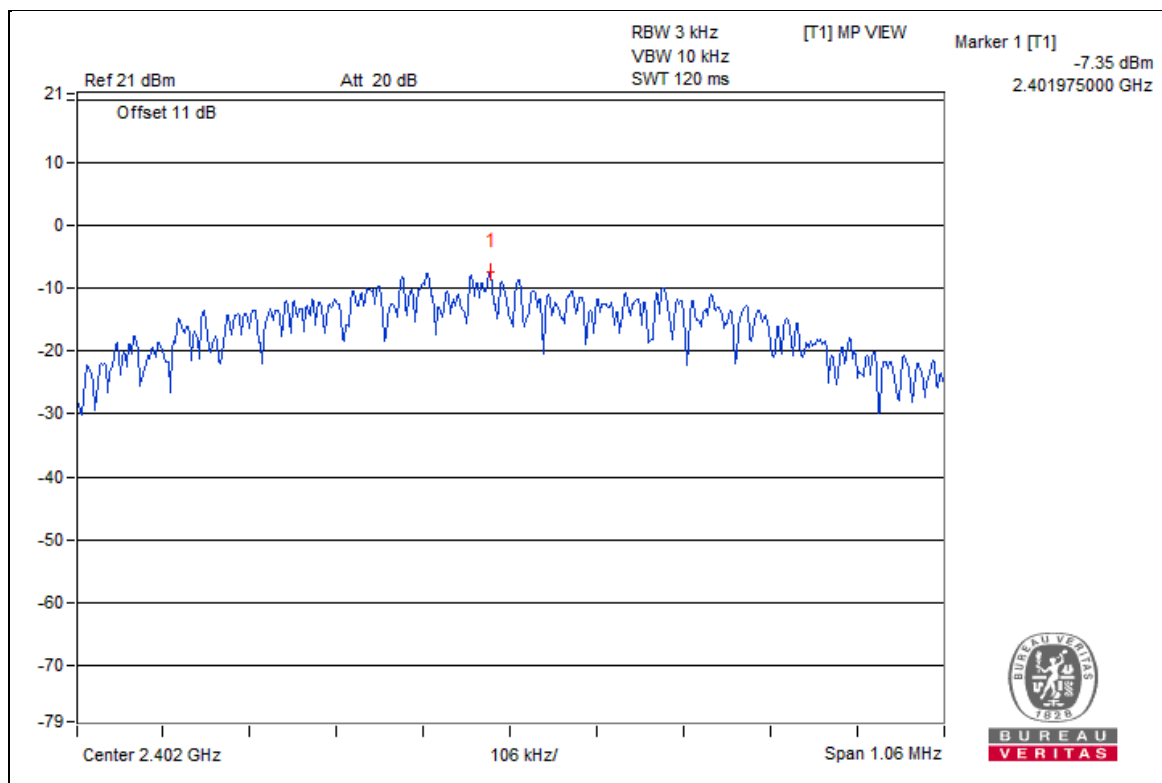
### BT-LE 1M

| Channel | Freq. (MHz) | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Pass /Fail |
|---------|-------------|----------------|------------------|------------|
| 0       | 2402        | -7.35          | 8                | Pass       |
| 19      | 2440        | -7.40          | 8                | Pass       |
| 39      | 2480        | -7.61          | 8                | Pass       |

### BT-LE 2M

| Channel | Freq. (MHz) | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Pass /Fail |
|---------|-------------|----------------|------------------|------------|
| 0       | 2402        | -11.20         | 8                | Pass       |
| 19      | 2440        | -11.30         | 8                | Pass       |
| 39      | 2480        | -11.51         | 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](mailto:service.adt@tw.bureauveritas.com)

Web Site: [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

您也可以我們的網站內找到各實驗室的地圖。

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