

## 低功率射頻電機測試報告

報告編號:

RT190705C26

申請者

LG Electronics Inc.

產品名稱

Active Electrostatic Stylus

型號

KT-APW1

製造廠商

LG Electronics Inc.

商標或廠牌

LG

該產品樣品試驗

國家通訊傳播委員會低功率射頻電機技術規範

依據之試驗標準

107 年 1 月修訂

試驗結果

合格

香港商立德國際商品試驗有限公司桃園分公司 林口實驗室

日期 108 年 11 月 05 日

報告簽署人簽章:



## 目 錄

|                                   |    |
|-----------------------------------|----|
| 報告發行紀錄 .....                      | 3  |
| 證 明 書 .....                       | 4  |
| 1 低功率射頻電機量測記錄表 .....              | 5  |
| 2 一般敘述 .....                      | 6  |
| 2.1 待測設備 .....                    | 6  |
| 2.2 輔助測試之週邊設備描述 .....             | 7  |
| 2.3 測試架構圖 .....                   | 7  |
| 3 適用規範 .....                      | 8  |
| 3.1 規範要求 .....                    | 8  |
| 3.2 限制使用之頻帶 .....                 | 9  |
| 電磁場感應迴路 (111.04 kHz) 測試紀錄結果 ..... | 10 |
| 4 主波發射之量測 .....                   | 10 |
| 4.1 適用標準 .....                    | 10 |
| 4.2 量測方法 .....                    | 10 |
| 4.3 量測儀器 .....                    | 11 |
| 4.4 測試配置 .....                    | 12 |
| 4.5 場強度之計算 .....                  | 12 |
| 4.6 量測結果 .....                    | 13 |
| 5 場強輻射及開放頻帶邊緣之量測 .....            | 16 |
| 5.1 適用標準 .....                    | 16 |
| 5.2 量測方法 .....                    | 16 |
| 5.3 量測儀器 .....                    | 16 |
| 5.4 測試配置 .....                    | 17 |
| 5.5 場強度之計算 .....                  | 17 |
| 5.6 量測結果 .....                    | 18 |
| 5.6.1 發射諧波 .....                  | 18 |
| 5.6.2 接收諧波 .....                  | 21 |
| 5.6.3 其它不必要之訊號 .....              | 24 |
| 5.7 量測結果判定 .....                  | 27 |
| 6 天線之要求 .....                     | 28 |
| 6.1 適用標準 .....                    | 28 |
| 6.2 天線規格 .....                    | 28 |
| 6.3 結果判定 .....                    | 28 |
| 7 電源線傳導干擾之量測 .....                | 29 |
| 7.1 適用標準 .....                    | 29 |
| 7.2 量測方法 .....                    | 29 |
| 7.3 量測儀器 .....                    | 29 |
| 7.4 測試配置 .....                    | 30 |
| 7.5 干擾值之計算 .....                  | 30 |
| 7.6 量測結果 .....                    | 31 |
| 7.7 量測結果判定 .....                  | 32 |
| 8 待測物照片 .....                     | 33 |
| 9 檢測實驗室基本資料 .....                 | 34 |

報告發行紀錄

| Issue No.   | Description      | Date Issued     |
|-------------|------------------|-----------------|
| RT190705C26 | Original release | 108 年 11 月 05 日 |

# 證 明 書

發行日期：108 年 11 月 05 日

產 品 名 稱：Active Electrostatic Stylus

商 標：LG

型 號：KT-APW1

申 請 者：LG Electronics Inc.

量 測 規 範：低功率射頻電機技術規範 LP0002 修訂日期：107 年 1 月 10 日  
ANSI C63.10-2013

香港商立德國際商品試驗有限公司桃園分公司在此證明上述待測設備樣品一組(型號：KT-APW1)，收件日期 108 年 07 月 05 日，於 108 年 10 月 23 日至 108 年 11 月 05 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：



陳美如 / 專員

， 日 期：

108 年 11 月 05 日

審 核 者：



邱碧民 / 專案工程師

， 日 期：

108 年 11 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：新北市林口區嘉寶里 14 鄰 47-2 號

此份報告不得摘錄複製，除全份複製外，需經實驗室書面同意。



## 1 低功率射頻電機量測記錄表

申請廠商: LG Electronics Inc.

製造廠商: LG Electronics Inc.

申請廠商地址: 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

產品名稱: Active Electrostatic Stylus

廠牌: LG

型號: KT-APW1

量測單位名稱: 香港商立德國際商品試驗有限公司桃園分公司

林口實驗室華亞檢測部

量測單位地址: 桃園市龜山區文化里華亞二路 19 號

量測單位認可編號: TAF 2021 (9 kHz ~ 40 GHz)

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

### 電磁場感應迴路(111.04 kHz)概要

| 項次 | 量測項目    | 規 範               | 量測結果判定 |
|----|---------|-------------------|--------|
| 1  | 場強輻射    | 低功率射頻電機技術規範 2.8 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  | 天線之要求   | 低功率射頻電機技術規範 2.2 節 | 合格     |

## 2 一般敘述

### 2.1 待測設備

|                 |                             |                              |  |
|-----------------|-----------------------------|------------------------------|--|
| 產品名稱：           | Active Electrostatic Stylus |                              |  |
| 型號：             | KT-APW1                     |                              |  |
| 額定電源：           | 1.5 Vdc (Battery)           |                              |  |
| 載波頻率：           | 電磁場感應迴路                     | 111.04 kHz                   |  |
| 發射功率<br>(電場強度)： | 電磁場感應迴路                     | 75.41 dBuV/m (於 3 公尺距離) (AV) |  |
| 天線種類：           | 見註 1                        |                              |  |
| 電源線類別：          | N/A                         |                              |  |
| 信號線類別：          | N/A                         |                              |  |
| 配件：             | N/A                         |                              |  |

註：

1. 此待測設備搭配測試的天線，其資料如下：

|             | 頻帶 (MHz)   | 天線型式                             | 天線型號 | 商標  | 接頭型式 | 增益 (dBi) |
|-------------|------------|----------------------------------|------|-----|------|----------|
| 電磁場感應<br>迴路 | 111.04 kHz | Fixed type<br>(Integral Antenna) | N/A  | N/A | N/A  | -        |

2. 此報告中，測試模式評估如下

| 模式 | 測試狀態                                 |
|----|--------------------------------------|
| 1  | Touch Pen + Console Cable + Notebook |

詳細之規格請參考使用說明書。

## 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。

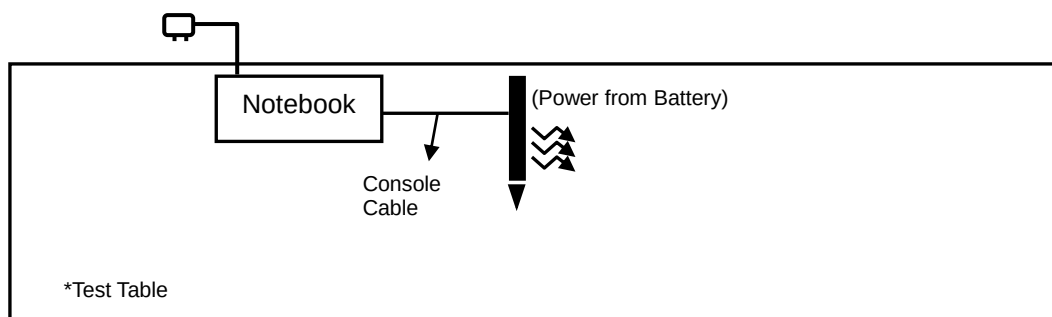
| No. | Product  | Brand | Model No.    | Serial No. | FCC ID |
|-----|----------|-------|--------------|------------|--------|
| 1   | Notebook | DELL  | Inspiron 14R | 8LRKKW1    | N/A    |

| No. | Signal Cable Description Of The Above Support Units |
|-----|-----------------------------------------------------|
| 1   | N/A                                                 |

NOTE:

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

## 2.3 測試架構圖



### 3 適用規範

#### 3.1 規範要求

► 電磁場感應迴路(111.04 kHz)頻段部分：

##### (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) 輻射之規定

依據國家通訊傳播委員會低功率射頻電機技術規範 2.11 節之要求：

低功率射頻電機之收、發信機為成套銷售者，收、發信機應一併送審或提供經型式認證合格之對應收、發信機之送審資料；收信機之輻射電場強度不得超過 2.8 節之發射規定，且不得調節第 2.7 節所列之頻率。國家通訊傳播委員會低功率射頻電機技術規範 2.8 節之要求，除低功率射頻電機規範各章節另有放寬規定者外，其電場強度不得超過下表之限制，且其不必要之發射皆不得大於主波發射強度。各頻段重疊處，以較嚴格之限制值為準。

| 頻率(兆赫)                 | 電場強度(微伏/公尺)   | 測距(公尺) |
|------------------------|---------------|--------|
| 0.009 - 0.490 (含)      | 2,400/頻率(千赫)  | 300    |
| 0.490 (不含) - 1.705 (含) | 24,000/頻率(千赫) | 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      |

國家通訊傳播委員會低功率射頻電機技術規範 2.9 節之要求，上表規定之電場強度，發射頻率在 9-90 千赫(kHz)、110-490 千赫(kHz)以及 1000 兆赫(MHz)以上者，其量測應以平均值檢波器為基準，且應符合第 5.15.2 節之規定；其他發射頻率，應以國際無線電干擾特別委員會(International Special Committee on Radio Interference, CISPR)準峰值(quasi-peak)檢波器測量；非以上表所指定之距離測量時，應符合第 5.5 節之規定，輻射發射之量測頻率範圍應符合第 5.14 節之規定。

##### (3) 天線之規定

低功率射頻電機之發射機或收發信機所使用之天線，除本規範章節中另有規定外，應為全固定、半固定式或以獨特之耦合(unique coupling)方式連接機體。製造者可設計供使用者因損壞而替換之天線，但不得設計或使用原認證以外之天線或可供引接各類電纜之標準天線插座或電氣連接頭，如：BNC、F type、N type、M type、UG type、RCA、SMA、SMB...等及其他各類工業或通訊標準接頭。

### 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 |               |

## 電磁場感應迴路 (111.04 kHz) 測試紀錄結果

### 4 主波發射之量測

#### 4.1 適用標準

請見本報告 3.1 節第(2)項規定。

#### 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，另外接收天線分別置於 Parallel、Perpendicular、Ground-parallel 極化各執行測試一次，以紀錄最大場強值。

#### Measurement Instrument Setting

The following table is the setting of receiver

| Frequency Range   | Setting                                        |
|-------------------|------------------------------------------------|
| 9 kHz ~ 150 kHz   | Peak、Quasi-Peak、Average: RBW = 200 Hz          |
| 150 kHz ~ 30 MHz  | Peak、Quasi-Peak、Average: RBW = 9 kHz           |
| 30 MHz ~ 1000 MHz | Peak: RBW = 120 kHz; Quasi-Peak: RBW = 120 kHz |

#### 4.3 量測儀器

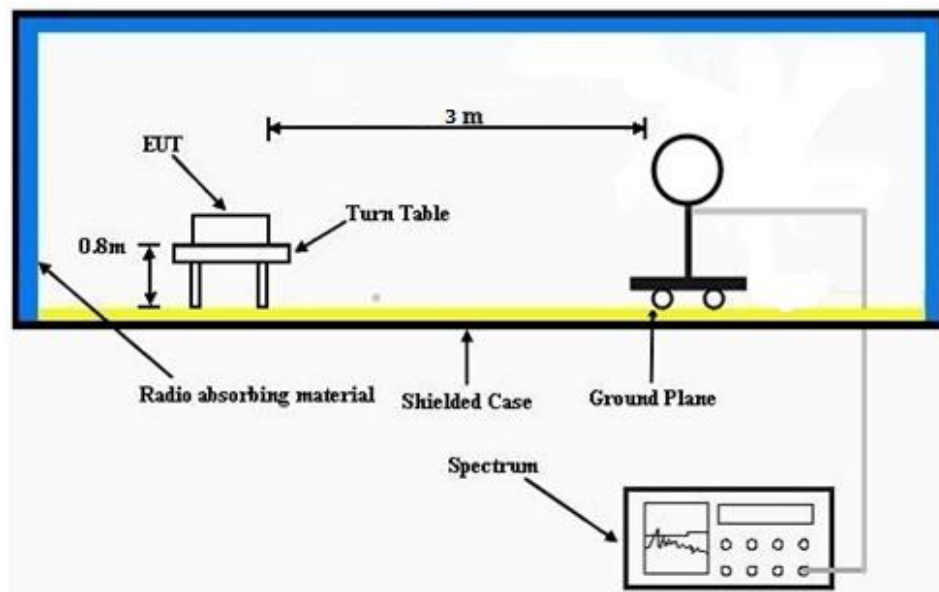
| Description & Manufacturer                     | Model No.      | Serial No.    | Date Of Calibration | Due Date Of Calibration |
|------------------------------------------------|----------------|---------------|---------------------|-------------------------|
| Test Receiver<br>Agilent                       | N9038A         | MY51210203    | Mar. 18, 2019       | Mar. 17, 2020           |
| Spectrum Analyzer<br>Agilent                   | N9010A         | MY52220314    | Dec. 13, 2018       | Dec. 12, 2019           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43          | 101261        | Apr. 15, 2019       | Apr. 14, 2020           |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168      | 9168-472      | Nov. 23, 2018       | Nov. 22, 2019           |
| Loop Antenna                                   | EM-6879        | 269           | Sep. 16, 2019       | Sep. 15, 2020           |
| Preamplifier<br>EMCI                           | EMC001340      | 980201        | Oct. 14, 2019       | Oct. 13, 2020           |
| Preamplifier<br>EMCI                           | EMC 330H       | 980112        | Oct. 08, 2019       | Oct. 07, 2020           |
| RF Coaxial Cable<br>Worken                     | 8D-FB          | Cable-Ch10-01 | Oct. 08, 2019       | Oct. 07, 2020           |
| Software<br>BV ADT                             | E3<br>6.120103 | NA            | NA                  | NA                      |
| Antenna Tower<br>MF                            | MFA-440H       | NA            | NA                  | NA                      |
| Turn Table<br>MF                               | MFT-201SS      | NA            | NA                  | NA                      |
| Antenna Tower & Turn Table<br>Controller<br>MF | MF-7802        | NA            | NA                  | NA                      |

#### NOTE:

- The calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
- The test was performed in HwaYa Chamber 10.
- The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
- The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
- 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 | 9 kHz ~ 30 MHz     | 3.04 dB     |
|                    | 30 MHz ~ 200 MHz   | 2.93 dB     |
|                    | 200 MHz ~ 1000 MHz | 2.95 dB     |
|                    | 1 GHz ~ 18 GHz     | 2.26 dB     |
|                    | 18 GHz ~ 40 GHz    | 1.94 dB     |

#### 4.4 測試配置



#### 4.5 場強度之計算

場強之計算公式如下：

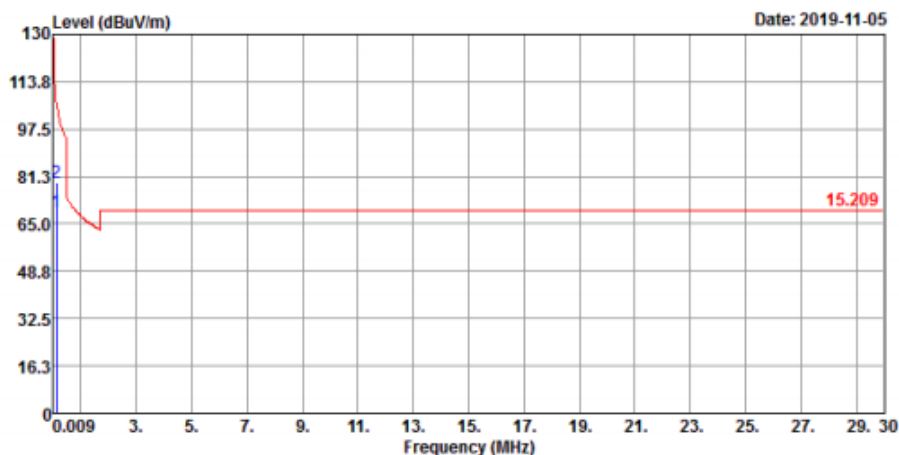
結果值 Emission level (dBuV/m) = 機器讀值 Raw Value (dBuV) + 校正因子 Correction Factor (dB/m)

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

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz            |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                           |

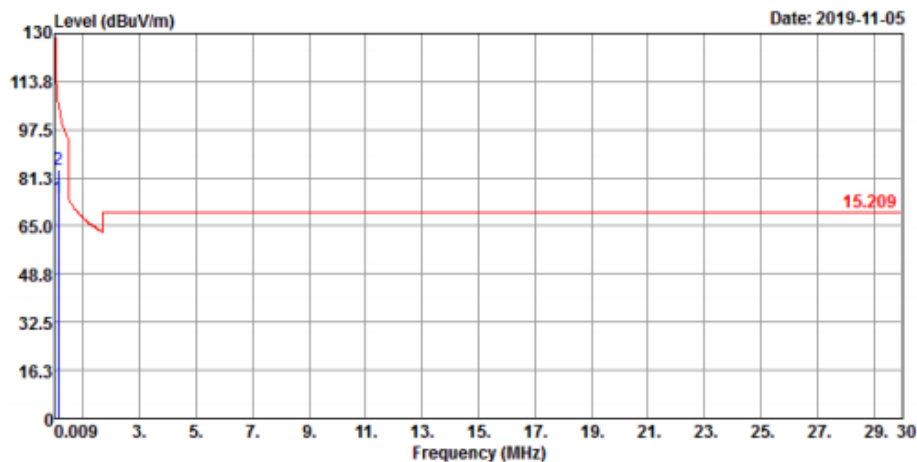


| Antenna Polarity & Test Distance: Loop Antenna Parallel at 3 m |                         |                   |               |                |             |                     |                      |         |
|----------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.11104                                                        | 69.18                   | 50.16             | 19.02         | 106.69         | -37.51      | 100                 | 135                  | Average |
| 0.11104                                                        | 79.05                   | 60.03             | 19.02         | 106.69         | -27.64      | 100                 | 135                  | Peak    |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
 Perpendicular: loop antenna 與 EUT 垂直  
 Ground-parallel: loop antenna 與地面平行
- 主頻發射場強遠低於背景訊號

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz            |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                           |

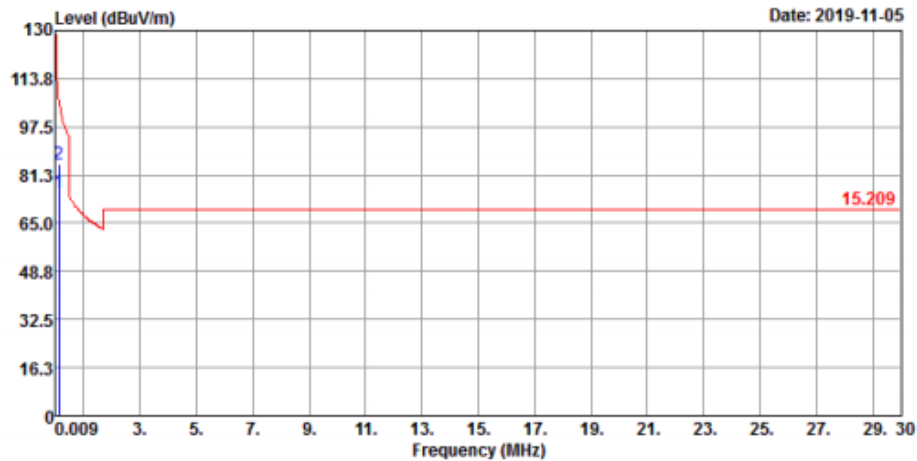


| Antenna Polarity & Test Distance: Loop Antenna Perpendicular at 3 m |                         |                   |               |                |             |                     |                      |         |
|---------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.11104                                                             | 74.39                   | 55.37             | 19.02         | 106.69         | -32.3       | 100                 | 108                  | Average |
| 0.11104                                                             | 83.92                   | 64.9              | 19.02         | 106.69         | -22.77      | 100                 | 108                  | Peak    |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
Perpendicular: loop antenna 與 EUT 垂直  
Ground-parallel: loop antenna 與地面平行
- 主頻發射場強遠低於背景訊號

| EUT Test Condition       |                    | Measurement Detail |                           |
|--------------------------|--------------------|--------------------|---------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz            |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                           |



| Antenna Polarity & Test Distance: Loop Antenna Ground-parallel at 3 m |                         |                   |               |                |             |                     |                      |         |
|-----------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                       | Emission Level (dBUV/m) | Read Level (dBUV) | Factor (dB/m) | Limit (dBUV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.11104                                                               | 75.41                   | 56.39             | 19.02         | 106.69         | -31.28      | 100                 | 236                  | Average |
| 0.11104                                                               | 84.83                   | 65.81             | 19.02         | 106.69         | -21.86      | 100                 | 236                  | Peak    |

Note:

- Emission level (dBUV/m) = Read Level (dBUV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
 Perpendicular: loop antenna 與 EUT 垂直  
 Ground-parallel: loop antenna 與地面平行
- 主頻發射場強遠低於背景訊號

## 5 場強輻射及開放頻帶邊緣之量測

### 5.1 適用標準

請見本報告 3.1 節第(2)項規定。

### 5.2 量測方法

9 kHz ~ 30 MHz 量測：

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，另外接收天線分別置於 Parallel、Perpendicular、Ground-parallel 極化各執行測試一次，以紀錄最大場強值。

30 MHz ~ 1 GHz 量測：

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。

#### Measurement Instrument Setting

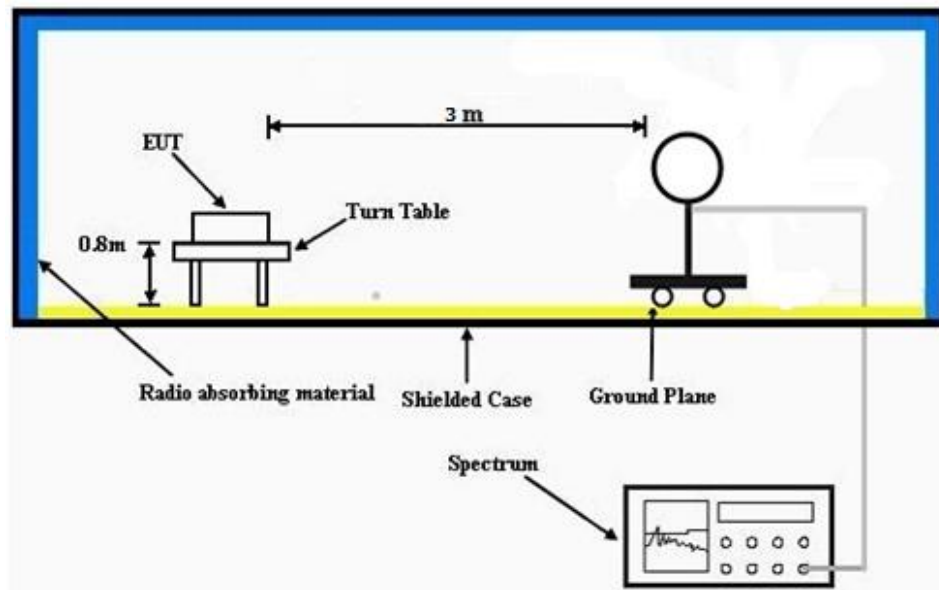
The following table is the setting of receiver

| Frequency Range   | Setting                                        |
|-------------------|------------------------------------------------|
| 9 kHz ~ 150 kHz   | Peak、Quasi-Peak、Average: RBW = 200 Hz          |
| 150 kHz ~ 30 MHz  | Peak、Quasi-Peak、Average: RBW = 9 kHz           |
| 30 MHz ~ 1000 MHz | Peak: RBW = 120 kHz; Quasi-Peak: RBW = 120 kHz |

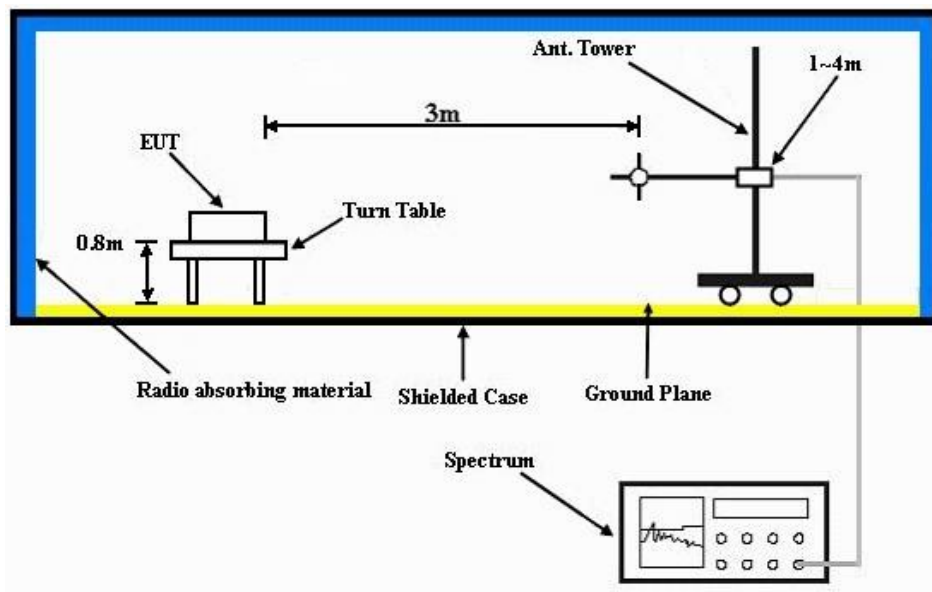
### 5.3 量測儀器

同 4.3 節

## 5.4 測試配置



9 kHz ~ 30 MHz



30 MHz ~ 1 GHz

## 5.5 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)

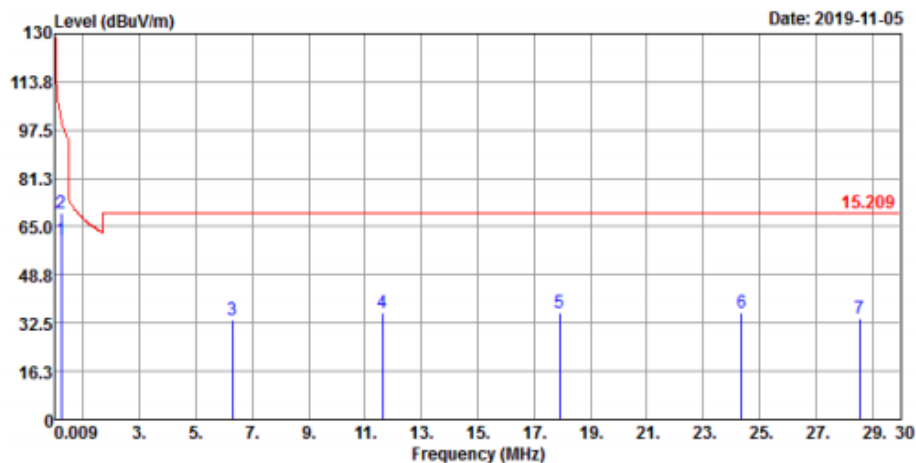
餘裕度 Margin(dB) = 結果值 Emission level (dBuV/m) - 限制值 Limit value (dBuV/m)

量測結果請見下頁。

## 5.6 量測結果

### 5.6.1 發射諧波

| EUT Test Condition       |                    | Measurement Detail |                                              |
|--------------------------|--------------------|--------------------|----------------------------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz                               |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Quasi-Peak (QP)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                                              |

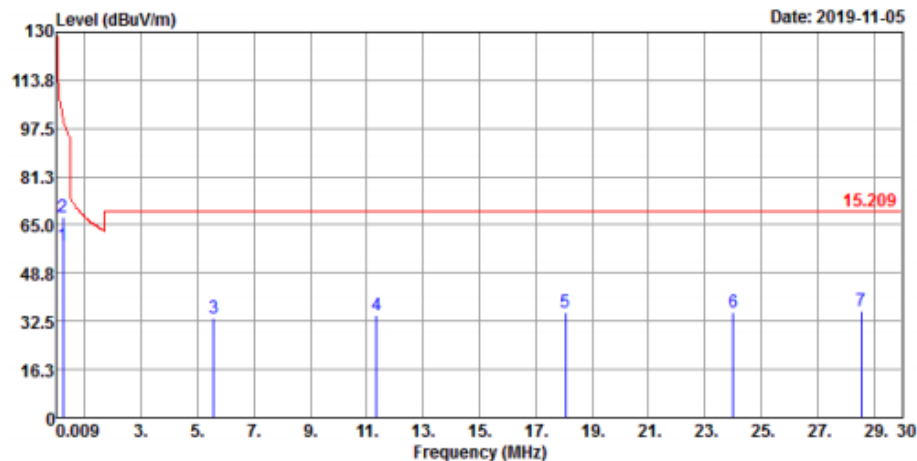


| Antenna Polarity & Test Distance: Loop Antenna Parallel at 3 m |                         |                   |               |                |             |                     |                      |         |
|----------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.22208                                                        | 60.42                   | 40.88             | 19.54         | 100.67         | -40.25      | 100                 | 104                  | Average |
| 0.22208                                                        | 69.77                   | 50.23             | 19.54         | 100.67         | -30.9       | 100                 | 104                  | Peak    |
| 6.307                                                          | 33.68                   | 13.06             | 20.62         | 69.54          | -35.86      | 100                 | 63                   | QP      |
| 11.616                                                         | 35.85                   | 14.09             | 21.76         | 69.54          | -33.69      | 100                 | 309                  | QP      |
| 17.914                                                         | 35.81                   | 13.79             | 22.02         | 69.54          | -33.73      | 100                 | 189                  | QP      |
| 24.362                                                         | 35.85                   | 13.72             | 22.13         | 69.54          | -33.69      | 100                 | 283                  | QP      |
| 28.56                                                          | 34.21                   | 12.04             | 22.17         | 69.54          | -35.33      | 100                 | 166                  | QP      |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
 Perpendicular: loop antenna 與 EUT 垂直  
 Ground-parallel: loop antenna 與地面平行

| EUT Test Condition       |                    | Measurement Detail |                                              |
|--------------------------|--------------------|--------------------|----------------------------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz                               |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Quasi-Peak (QP)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                                              |

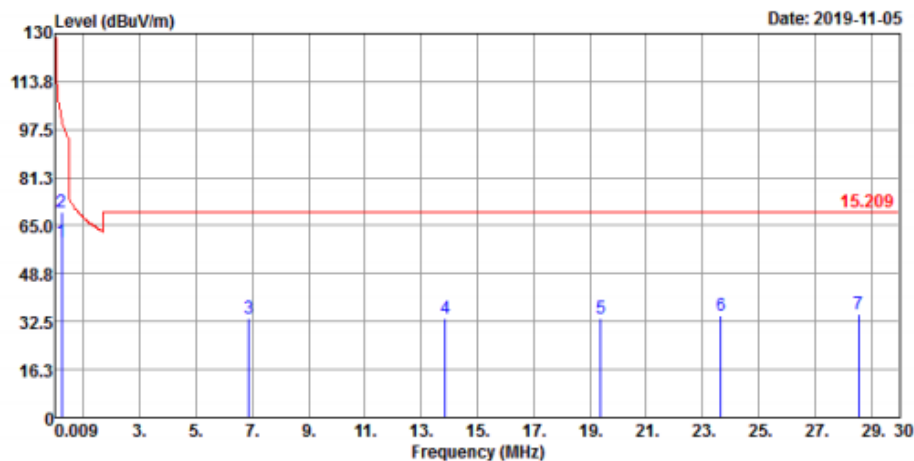


| Antenna Polarity & Test Distance: Loop Antenna Perpendicular at 3 m |                         |                   |               |                |             |                     |                      |         |
|---------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.22208                                                             | 57.91                   | 38.37             | 19.54         | 100.67         | -42.76      | 100                 | 165                  | Average |
| 0.22208                                                             | 67.7                    | 48.16             | 19.54         | 100.67         | -32.97      | 100                 | 165                  | Peak    |
| 5.557                                                               | 33.62                   | 13.29             | 20.33         | 69.54          | -35.92      | 100                 | 223                  | QP      |
| 11.346                                                              | 34.77                   | 13.02             | 21.75         | 69.54          | -34.77      | 100                 | 334                  | QP      |
| 18.064                                                              | 35.61                   | 13.58             | 22.03         | 69.54          | -33.93      | 100                 | 95                   | QP      |
| 24.002                                                              | 35.34                   | 13.21             | 22.13         | 69.54          | -34.2       | 100                 | 181                  | QP      |
| 28.56                                                               | 35.79                   | 13.62             | 22.17         | 69.54          | -33.75      | 100                 | 23                   | QP      |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
Perpendicular: loop antenna 與 EUT 垂直  
Ground-parallel: loop antenna 與地面平行

| EUT Test Condition       |                    | Measurement Detail |                                              |
|--------------------------|--------------------|--------------------|----------------------------------------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz                               |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Peak (PK)<br>Quasi-Peak (QP)<br>Average (AV) |
| Tested By                | Tim Chen           |                    |                                              |



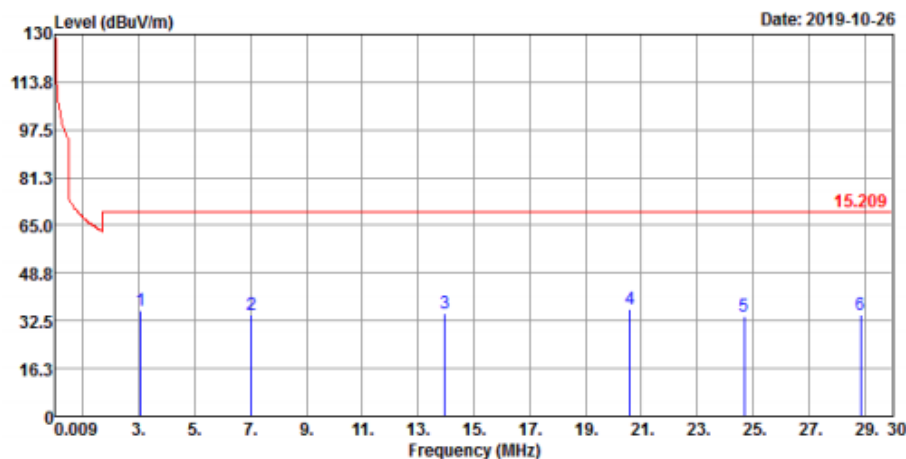
| Antenna Polarity & Test Distance: Loop Antenna Ground-parallel at 3 m |                         |                   |               |                |             |                     |                      |         |
|-----------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz)                                                       | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark  |
| 0.22208                                                               | 59.55                   | 40.01             | 19.54         | 100.67         | -41.12      | 100                 | 102                  | Average |
| 0.22208                                                               | 69.42                   | 49.88             | 19.54         | 100.67         | -31.25      | 100                 | 102                  | Peak    |
| 6.877                                                                 | 33.72                   | 12.9              | 20.82         | 69.54          | -35.82      | 100                 | 311                  | QP      |
| 13.865                                                                | 33.38                   | 11.51             | 21.87         | 69.54          | -36.16      | 100                 | 59                   | QP      |
| 19.383                                                                | 33.35                   | 11.28             | 22.07         | 69.54          | -36.19      | 100                 | 176                  | QP      |
| 23.672                                                                | 34.67                   | 12.54             | 22.13         | 69.54          | -34.87      | 100                 | 253                  | QP      |
| 28.56                                                                 | 34.85                   | 12.68             | 22.17         | 69.54          | -34.69      | 100                 | 166                  | QP      |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
Perpendicular: loop antenna 與 EUT 垂直  
Ground-parallel: loop antenna 與地面平行

## 5.6.2 接收諧波

| EUT Test Condition       |                    | Measurement Detail |                 |
|--------------------------|--------------------|--------------------|-----------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz  |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Quasi-Peak (QP) |
| Tested By                | Tim Chen           |                    |                 |

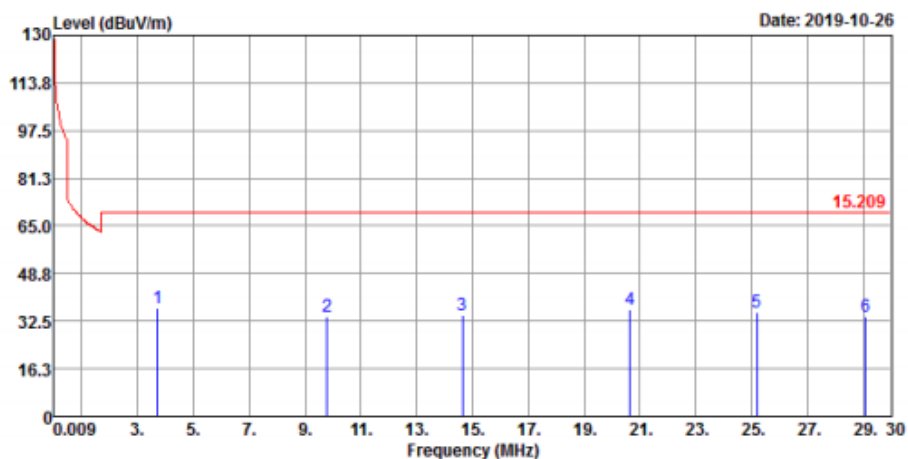


| Antenna Polarity & Test Distance: Loop Antenna Parallel at 3 m |                         |                   |               |                |             |                     |                      |        |
|----------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| Frequency (MHz)                                                | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 3.068                                                          | 36.09                   | 16.15             | 19.94         | 69.54          | -33.45      | 100                 | 136                  | QP     |
| 7.027                                                          | 34.45                   | 13.58             | 20.87         | 69.54          | -35.09      | 100                 | 115                  | QP     |
| 13.955                                                         | 35.04                   | 13.17             | 21.87         | 69.54          | -34.5       | 100                 | 79                   | QP     |
| 20.583                                                         | 36.33                   | 14.23             | 22.1          | 69.54          | -33.21      | 100                 | 249                  | QP     |
| 24.692                                                         | 34.23                   | 12.09             | 22.14         | 69.54          | -35.31      | 100                 | 123                  | QP     |
| 28.86                                                          | 34.51                   | 12.34             | 22.17         | 69.54          | -35.03      | 100                 | 185                  | QP     |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
 Perpendicular: loop antenna 與 EUT 垂直  
 Ground-parallel: loop antenna 與地面平行

| EUT Test Condition       |                    | Measurement Detail |                 |
|--------------------------|--------------------|--------------------|-----------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz  |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Quasi-Peak (QP) |
| Tested By                | Tim Chen           |                    |                 |

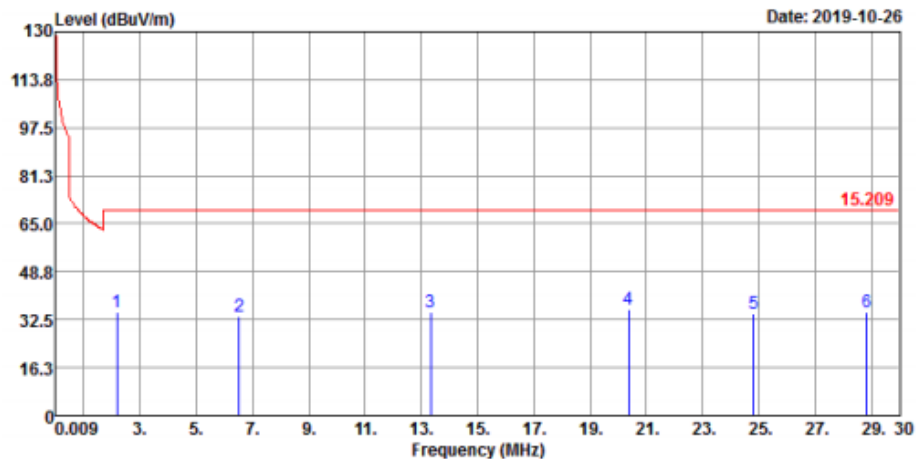


| Antenna Polarity & Test Distance: Loop Antenna Perpendicular at 3 m |                         |                   |               |                |             |                     |                      |        |
|---------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| Frequency (MHz)                                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 3.698                                                               | 36.78                   | 16.78             | 20            | 69.54          | -32.76      | 100                 | 106                  | QP     |
| 9.786                                                               | 33.94                   | 12.32             | 21.62         | 69.54          | -35.6       | 100                 | 277                  | QP     |
| 14.645                                                              | 34.34                   | 12.44             | 21.9          | 69.54          | -35.2       | 100                 | 172                  | QP     |
| 20.643                                                              | 36.47                   | 14.37             | 22.1          | 69.54          | -33.07      | 100                 | 191                  | QP     |
| 25.201                                                              | 35.31                   | 13.17             | 22.14         | 69.54          | -34.23      | 100                 | 65                   | QP     |
| 29.1                                                                | 34.24                   | 12.07             | 22.17         | 69.54          | -35.3       | 100                 | 146                  | QP     |

Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
Perpendicular: loop antenna 與 EUT 垂直  
Ground-parallel: loop antenna 與地面平行

| EUT Test Condition       |                    | Measurement Detail |                 |
|--------------------------|--------------------|--------------------|-----------------|
| Input Power              | 110 Vac, 60 Hz     | Frequency Range    | 0.009 ~ 30 MHz  |
| Environmental Conditions | 25 deg. C, 65 % RH | Detector Function  | Quasi-Peak (QP) |
| Tested By                | Tim Chen           |                    |                 |



| Antenna Polarity & Test Distance: Loop Antenna Ground-parallel at 3 m |                         |                   |               |                |             |                     |                      |        |
|-----------------------------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| Frequency (MHz)                                                       | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2.168                                                                 | 35.25                   | 15.35             | 19.9          | 69.54          | -34.29      | 100                 | 173                  | QP     |
| 6.517                                                                 | 33.81                   | 13.12             | 20.69         | 69.54          | -35.73      | 100                 | 67                   | QP     |
| 13.325                                                                | 34.92                   | 13.08             | 21.84         | 69.54          | -34.62      | 100                 | 200                  | QP     |
| 20.373                                                                | 35.82                   | 13.73             | 22.09         | 69.54          | -33.72      | 100                 | 105                  | QP     |
| 24.812                                                                | 34.38                   | 12.24             | 22.14         | 69.54          | -35.16      | 100                 | 139                  | QP     |
| 28.83                                                                 | 34.95                   | 12.78             | 22.17         | 69.54          | -34.59      | 100                 | 112                  | QP     |

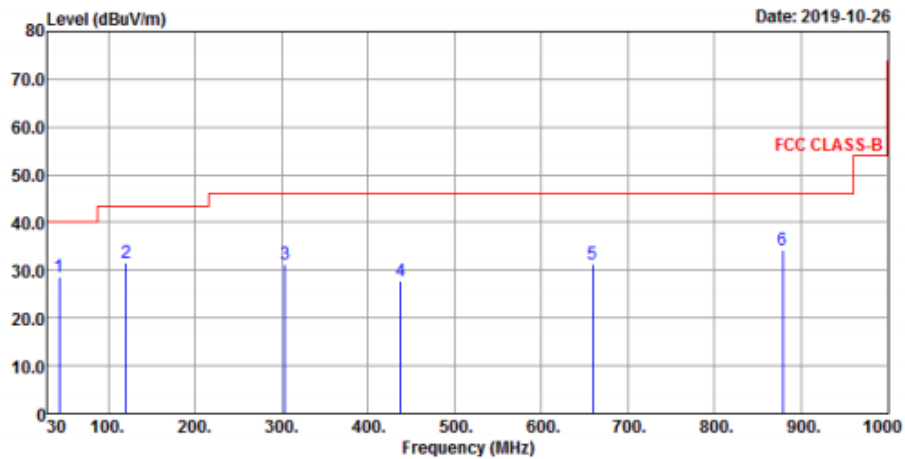
Note:

- Emission level (dBuV/m) = Read Level (dBuV) + Factor (dB/m)
- The other emission levels were very low against the limit.
- Margin value = Emission level - Limit value
- 當測試距離較規定距離為近時，測試結果應以插補係數換算至規定距離之值  
 $0.009 - 0.49 \text{ MHz: Limit @ 3 m} = \text{Limit @ 300 m} + 40\log(300 / 3) = \text{Limit @ 300 m} + 80$   
 $0.49 - 1.705 \text{ MHz: Limit @ 3 m} = \text{Limit @ 30 m} + 40\log(30 / 3) = \text{Limit @ 30 m} + 40$
- Parallel: loop antenna 面向 EUT  
 Perpendicular: loop antenna 與 EUT 垂直  
 Ground-parallel: loop antenna 與地面平行

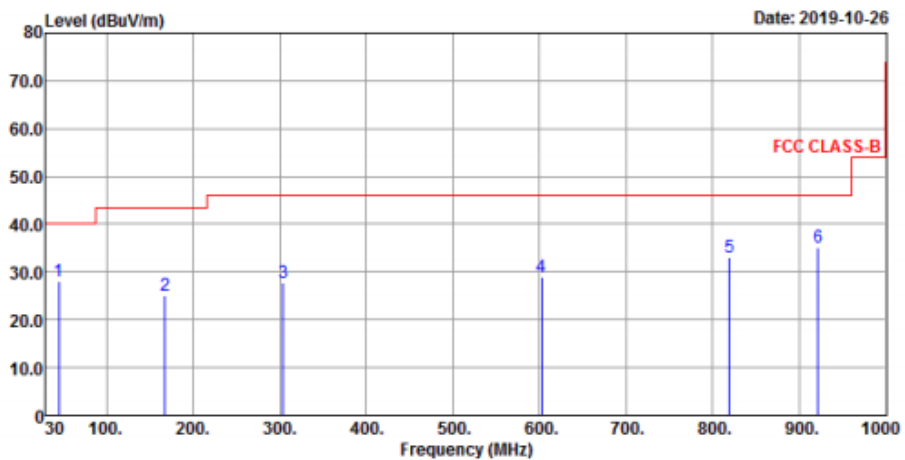
### 5.6.3 其它不必要之訊號

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

#### Horizontal



#### Vertical



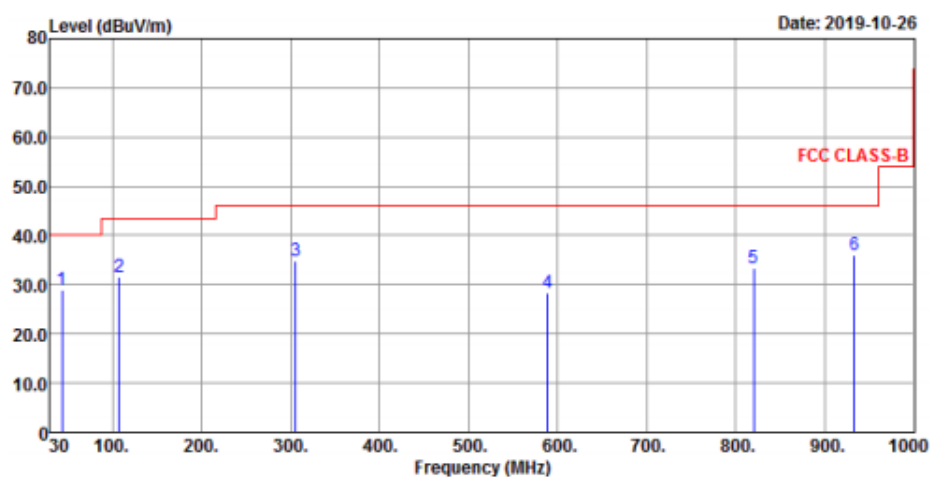
| Antenna Polarity & Test Distance: Horizontal at 3 m |                         |                   |               |                |             |                     |                      |        |
|-----------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| Frequency (MHz)                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 43.58                                               | 28.65                   | 40.51             | -11.86        | 40             | -11.35      | 169                 | 238                  | Peak   |
| 120.21                                              | 31.6                    | 45.27             | -13.67        | 43.5           | -11.9       | 146                 | 18                   | Peak   |
| 304.51                                              | 31.31                   | 42.3              | -10.99        | 46             | -14.69      | 268                 | 222                  | Peak   |
| 437.4                                               | 27.85                   | 34.68             | -6.83         | 46             | -18.15      | 227                 | 327                  | Peak   |
| 659.53                                              | 31.18                   | 32.62             | -1.44         | 46             | -14.82      | 163                 | 56                   | Peak   |
| 878.75                                              | 34.35                   | 31.68             | 2.67          | 46             | -11.65      | 124                 | 116                  | Peak   |
| Antenna Polarity & Test Distance: Vertical at 3 m   |                         |                   |               |                |             |                     |                      |        |
| Frequency (MHz)                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 44.55                                               | 27.93                   | 39.8              | -11.87        | 40             | -12.07      | 216                 | 109                  | Peak   |
| 167.74                                              | 25.08                   | 37.6              | -12.52        | 43.5           | -18.42      | 112                 | 98                   | Peak   |
| 304.51                                              | 27.88                   | 38.87             | -10.99        | 46             | -18.12      | 175                 | 309                  | Peak   |
| 602.3                                               | 29.07                   | 31.66             | -2.59         | 46             | -16.93      | 266                 | 172                  | Peak   |
| 819.58                                              | 33.11                   | 30.96             | 2.15          | 46             | -12.89      | 125                 | 58                   | Peak   |
| 921.43                                              | 35.01                   | 31.68             | 3.33          | 46             | -10.99      | 227                 | 280                  | Peak   |

Remarks:

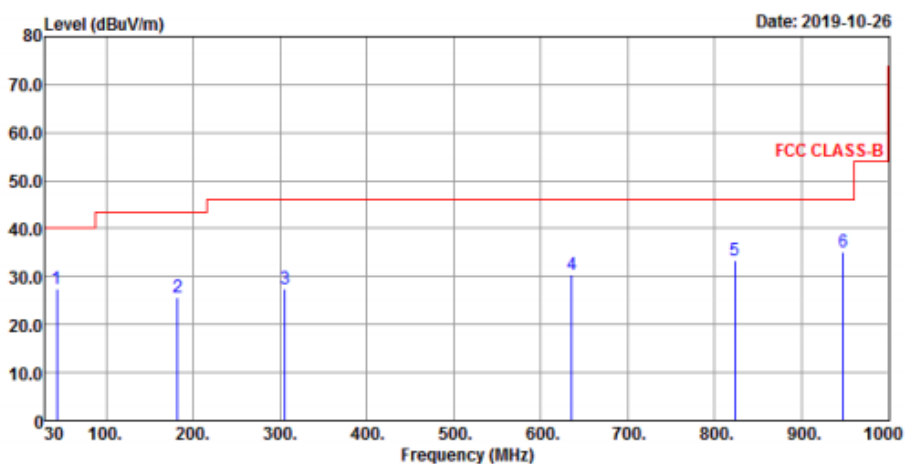
1. Emission Level = Read Level + Factor  
Margin Value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

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

## Horizontal



## Vertical



| Antenna Polarity & Test Distance: Horizontal at 3 m |                         |                   |               |                |             |                     |                      |        |
|-----------------------------------------------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| Frequency (MHz)                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 43.58                                               | 28.97                   | 40.83             | -11.86        | 40             | -11.03      | 123                 | 150                  | Peak   |
| 107.6                                               | 31.47                   | 46.3              | -14.83        | 43.5           | -12.03      | 129                 | 162                  | Peak   |
| 305.48                                              | 34.83                   | 45.79             | -10.96        | 46             | -11.17      | 141                 | 302                  | Peak   |
| 588.72                                              | 28.41                   | 31.31             | -2.9          | 46             | -17.59      | 190                 | 208                  | Peak   |
| 820.55                                              | 33.42                   | 31.27             | 2.15          | 46             | -12.58      | 236                 | 82                   | Peak   |
| 933.07                                              | 36                      | 32.4              | 3.6           | 46             | -10         | 101                 | 207                  | Peak   |
| Antenna Polarity & Test Distance: Vertical at 3 m   |                         |                   |               |                |             |                     |                      |        |
| Frequency (MHz)                                     | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 43.58                                               | 27.37                   | 39.23             | -11.86        | 40             | -12.63      | 131                 | 64                   | Peak   |
| 182.29                                              | 25.81                   | 39.51             | -13.7         | 43.5           | -17.69      | 149                 | 240                  | Peak   |
| 305.48                                              | 27.31                   | 38.27             | -10.96        | 46             | -18.69      | 111                 | 134                  | Peak   |
| 635.28                                              | 30.28                   | 32.03             | -1.75         | 46             | -15.72      | 131                 | 142                  | Peak   |
| 823.46                                              | 33.32                   | 31.14             | 2.18          | 46             | -12.68      | 162                 | 174                  | Peak   |
| 947.62                                              | 35.23                   | 31.58             | 3.65          | 46             | -10.77      | 227                 | 156                  | Peak   |

Remarks:

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

## 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。

## **6 天線之要求**

### **6.1 適用標準**

請見本報告 3.1 節第(3)項的規定。

### **6.2 天線規格**

此待測物使用 Fixed type (Integral Antenna)天線，無使用天線接頭。

### **6.3 結果判定**

符合低功率射頻電機技術規範之要求。

## 7 電源線傳導干擾之量測

### 7.1 適用標準

請見本報告 3.1 節第(1)項的規定。

### 7.2 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 0.15 MHz 至 30 MHz 之間之電源線傳導放射強度。

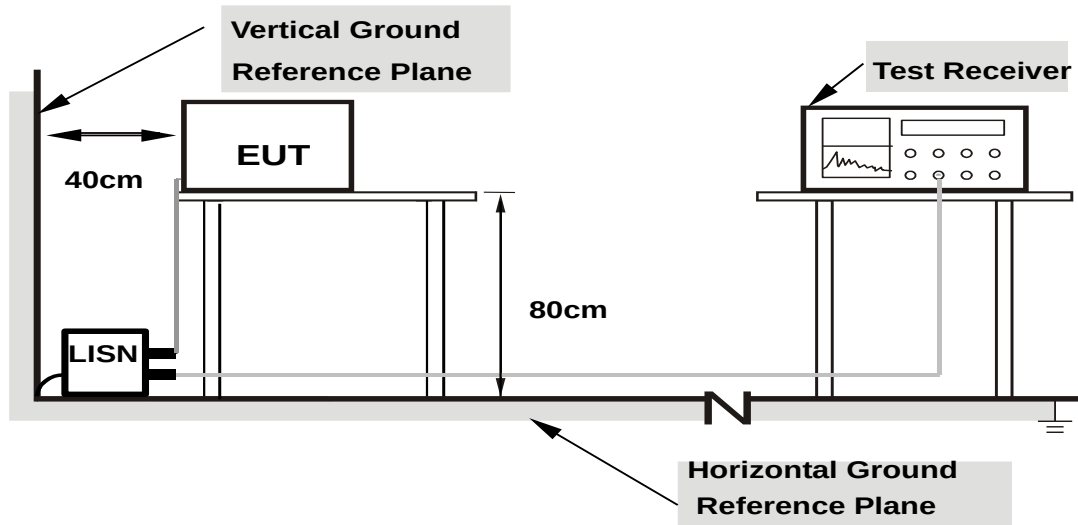
### 7.3 量測儀器

| Description & Manufacturer               | Model No.                | Serial No.     | Date Of Calibration | Due Date Of Calibration |
|------------------------------------------|--------------------------|----------------|---------------------|-------------------------|
| Test Receiver<br>ROHDE & SCHWARZ         | ESR3                     | 102412         | Feb. 14, 2019       | Feb. 13, 2020           |
| RF signal cable (with 10dB PAD)<br>Woken | 5D-FB                    | Cable-cond2-01 | Sep. 05, 2019       | Sep. 04, 2020           |
| LISN<br>ROHDE & SCHWARZ<br>(EUT)         | ESH2-Z5                  | 100100         | Jan. 30, 2019       | Jan. 29, 2020           |
| LISN<br>ROHDE & SCHWARZ<br>(Peripheral)  | ESH3-Z5                  | 100312         | Aug. 13, 2019       | Aug. 12, 2020           |
| Software<br>ADT                          | BV ADT_Cond_<br>V7.3.7.4 | NA             | NA                  | NA                      |

#### NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-12047.
4. The measurement uncertainty is 2.94 dB, which is calculated as per the document CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

## 7.4 測試配置



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

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

## 7.5 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

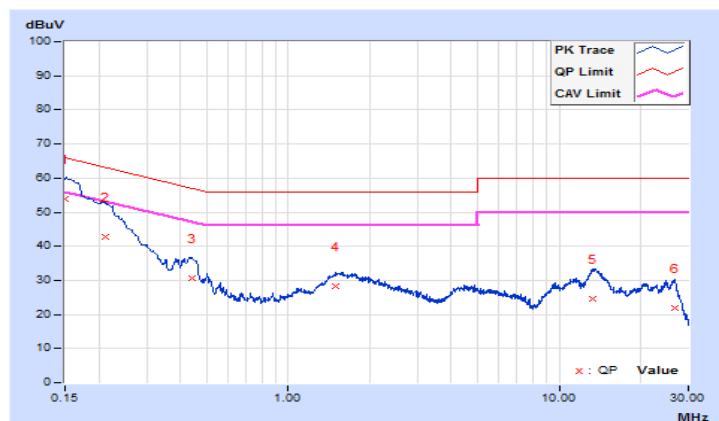
## 7.6 量測結果

|        |                |         |                              |
|--------|----------------|---------|------------------------------|
| 量測頻率範圍 | 150kHz ~ 30MHz | 檢測器與頻寬  | 準峰值 (QP) /<br>平均值 (AV), 9kHz |
| 量測電壓值  | 110Vac, 60Hz   | 量測場地溫濕度 | 23°C, 68%RH                  |
| 測試者    | Tim Chen       | 測試日期    | 2019/10/26                   |

| 量測電源端點：火線 (L1) |             |                  |                |       |               |       |               |       |            |        |
|----------------|-------------|------------------|----------------|-------|---------------|-------|---------------|-------|------------|--------|
| No             | 頻率<br>(MHz) | 修正<br>因子<br>(dB) | 量測讀值<br>(dBuV) |       | 干擾值<br>(dBuV) |       | 限制值<br>(dBuV) |       | 餘裕<br>(dB) |        |
|                |             |                  | 準峰值            | 平均值   | 準峰值           | 平均值   | 準峰值           | 平均值   | 準峰值        | 平均值    |
| 1              | 0.15001     | 10.11            | 43.75          | 19.49 | 53.86         | 29.60 | 66.00         | 56.00 | -12.14     | -26.40 |
| 2              | 0.21075     | 10.12            | 32.62          | 13.21 | 42.74         | 23.33 | 63.18         | 53.18 | -20.44     | -29.85 |
| 3              | 0.44240     | 10.16            | 20.40          | 7.33  | 30.56         | 17.49 | 57.02         | 47.02 | -26.46     | -29.53 |
| 4              | 1.50450     | 10.24            | 17.99          | 10.83 | 28.23         | 21.07 | 56.00         | 46.00 | -27.77     | -24.93 |
| 5              | 13.25625    | 10.49            | 14.01          | 7.86  | 24.50         | 18.35 | 60.00         | 50.00 | -35.50     | -31.65 |
| 6              | 26.63025    | 10.47            | 11.47          | 6.54  | 21.94         | 17.01 | 60.00         | 50.00 | -38.06     | -32.99 |

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)

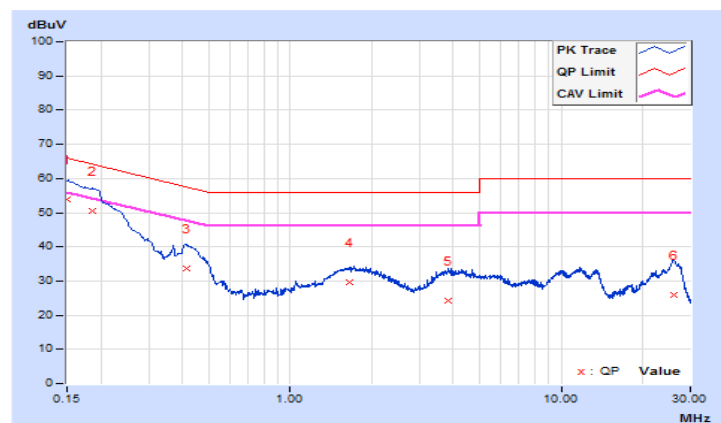


|        |                |         |                           |
|--------|----------------|---------|---------------------------|
| 量測頻率範圍 | 150kHz ~ 30MHz | 檢測器與頻寬  | 準峰值 (QP) / 平均值 (AV), 9kHz |
| 量測電壓值  | 110Vac, 60Hz   | 量測場地溫濕度 | 23°C, 68%RH               |
| 測試者    | Tim Chen       | 測試日期    | 2019/10/26                |

| 量測電源端點：中性線 (N) |          |           |             |       |            |       |            |       |         |        |
|----------------|----------|-----------|-------------|-------|------------|-------|------------|-------|---------|--------|
| No             | 頻率 (MHz) | 修正因子 (dB) | 量測讀值 (dBuV) |       | 干擾值 (dBuV) |       | 限制值 (dBuV) |       | 餘裕 (dB) |        |
|                |          |           | 準峰值         | 平均值   | 準峰值        | 平均值   | 準峰值        | 平均值   | 準峰值     | 平均值    |
| 1              | 0.15001  | 10.16     | 43.81       | 20.03 | 53.97      | 30.19 | 66.00      | 56.00 | -12.03  | -25.81 |
| 2              | 0.18559  | 10.17     | 40.36       | 24.73 | 50.53      | 34.90 | 64.23      | 54.23 | -13.70  | -19.33 |
| 3              | 0.41524  | 10.22     | 23.49       | 13.67 | 33.71      | 23.89 | 57.54      | 47.54 | -23.83  | -23.65 |
| 4              | 1.65975  | 10.31     | 19.44       | 10.98 | 29.75      | 21.29 | 56.00      | 46.00 | -26.25  | -24.71 |
| 5              | 3.81075  | 10.41     | 13.70       | 8.54  | 24.11      | 18.95 | 56.00      | 46.00 | -31.89  | -27.05 |
| 6              | 25.94175 | 10.62     | 15.26       | 10.16 | 25.88      | 20.78 | 60.00      | 50.00 | -34.12  | -29.22 |

附註：

1. 其它頻率的干擾值對限制值而言非常低，所以未記錄。
2. 餘裕值(dB) = 干擾值(dBuV) - 限制值(dBuV)
3. 干擾值(dBuV) = 修正因子(dB) + 量測讀值(dBuV)



## 7.7 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。

## 8 待測物照片

請參照 BV CPS 報告編號：190705C26

## 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)

您也可以在我們的網站內找到各實驗室的地圖。

---END---