

## FCC Test Report (Part 90)

**Report No.:** RFBEKK-WTW-P20080111-4

**FCC ID:** 2AARN-DLWPH-8M

**Test Model:** DLWPH-8M

**Series Model:** DLWPH-8M-RW

**Received Date:** Aug. 06, 2020

**Test Date:** Sep. 03, 2020 ~ Oct. 14, 2020

**Issued Date:** Oct. 21, 2020

**Applicant:** PHIHONG TECHNOLOGY CO. LTD.

**Address:** No.568, Fu Xing 3rd Rd., Guishan, Tao Yuan Hsien, 333 Taiwan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, Taiwan

**FCC Registration /  
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.

## Table of Contents

|                                                                   |           |
|-------------------------------------------------------------------|-----------|
| <b>Release Control Record .....</b>                               | <b>4</b>  |
| <b>1 Certificate of Conformity .....</b>                          | <b>5</b>  |
| <b>2 Summary of Test Results .....</b>                            | <b>6</b>  |
| 2.1 Measurement Uncertainty .....                                 | 6         |
| 2.2 Test Site and Instruments .....                               | 7         |
| <b>3 General Information .....</b>                                | <b>9</b>  |
| 3.1 General Description of EUT .....                              | 9         |
| 3.2 Configuration of System under Test .....                      | 10        |
| 3.2.1 Description of Support Units .....                          | 10        |
| 3.3 Test Mode Applicability and Tested Channel Detail .....       | 11        |
| 3.4 EUT Operating Conditions .....                                | 12        |
| 3.5 General Description of Applied Standards and References ..... | 12        |
| <b>4 Test Types and Results .....</b>                             | <b>13</b> |
| 4.1 Output Power Measurement .....                                | 13        |
| 4.1.1 Limits of Output Power Measurement .....                    | 13        |
| 4.1.2 Test Procedures .....                                       | 13        |
| 4.1.3 Test Setup .....                                            | 13        |
| 4.1.4 Test Results .....                                          | 14        |
| 4.2 Modulation Characteristics Measurement .....                  | 16        |
| 4.2.1 Limits of Modulation Characteristics .....                  | 16        |
| 4.2.2 Test Procedure .....                                        | 16        |
| 4.2.3 Test Setup .....                                            | 16        |
| 4.2.4 Test Results .....                                          | 16        |
| 4.3 Frequency Stability Measurement .....                         | 17        |
| 4.3.1 Limits of Frequency Stability Measurement .....             | 17        |
| 4.3.2 Test Procedure .....                                        | 17        |
| 4.3.3 Test Setup .....                                            | 17        |
| 4.3.4 Test Results .....                                          | 18        |
| 4.4 Occupied Bandwidth Measurement .....                          | 20        |
| 4.4.1 Limits of Occupied Bandwidth Measurement .....              | 20        |
| 4.4.2 Test Procedure .....                                        | 20        |
| 4.4.3 Test Setup .....                                            | 20        |
| 4.4.4 Test Result .....                                           | 21        |
| 4.5 Emission Mask Measurement .....                               | 23        |
| 4.5.1 Limits of Emission Mask Measurement .....                   | 23        |
| 4.5.2 Test Setup .....                                            | 23        |
| 4.5.3 Test Procedures .....                                       | 23        |
| 4.5.4 Test Results .....                                          | 24        |
| 4.6 Band Edge Measurement .....                                   | 25        |
| 4.6.1 Limits of Band Edge Measurement .....                       | 25        |
| 4.6.2 Test Setup .....                                            | 25        |
| 4.6.3 Test Procedures .....                                       | 25        |
| 4.6.4 Test Results .....                                          | 26        |
| 4.7 Conducted Spurious Emissions .....                            | 28        |
| 4.7.1 Limits of Conducted Spurious Emissions Measurement .....    | 28        |
| 4.7.2 Test Setup .....                                            | 28        |
| 4.7.3 Test Procedure .....                                        | 28        |
| 4.7.4 Test Results .....                                          | 29        |
| 4.8 Radiated Emission Measurement .....                           | 33        |
| 4.8.1 Limits of Radiated Emission Measurement .....               | 33        |
| 4.8.2 Test Procedure .....                                        | 33        |
| 4.8.3 Deviation from Test Standard .....                          | 33        |
| 4.8.4 Test Setup .....                                            | 34        |

|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| 4.8.5 Test Results .....                                        | 35        |
| <b>5 Pictures of Test Arrangements .....</b>                    | <b>39</b> |
| <b>Appendix – Information of the Testing Laboratories .....</b> | <b>40</b> |

### Release Control Record

| Issue No.              | Description      | Date Issued   |
|------------------------|------------------|---------------|
| RFBEKK-WTW-P20080111-4 | Original Release | Oct. 21, 2020 |

## 1 Certificate of Conformity

**Product:** EV charging system module 4G with WI-FI

**Brand:** Phihong Technology Co., Ltd.

**Test Model:** DLWPH-8M

**Series Model:** DLWPH-8M-RW

**Sample Status:** Engineering Sample

**Applicant:** PHIHONG TECHNOLOGY CO. LTD.

**Test Date:** Sep. 03, 2020 ~ Oct. 14, 2020

**Standards:** FCC Part 90, Subpart I, R

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Lena Wang, **Date:** Oct. 21, 2020  
Lena Wang / Specialist

**Approved by :** Dylan Chiou, **Date:** Oct. 21, 2020  
Dylan Chiou / Senior Project Engineer

## 2 Summary of Test Results

LTE Band 14

| Applied Standard: FCC Part 90 & Part 2 |                              |        |                                                                                      |
|----------------------------------------|------------------------------|--------|--------------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                    | Result | Remarks                                                                              |
| 2.1046<br>90.542 (a)                   | Effective Radiated Power     | Pass   | Meet the requirement of limit.                                                       |
| 2.1047                                 | Modulation Characteristics   | Pass   | Meet the requirement.                                                                |
| 2.1055<br>90.539 (e)                   | Frequency Stability          | Pass   | Meet the requirement of limit.                                                       |
| 2.1049                                 | Occupied Bandwidth (*)       | Pass   | Meet the requirement of limit.                                                       |
| 90.210 (n) & (b)                       | Emission Masks               | Pass   | Meet the requirement of limit.                                                       |
| 2.1051<br>90.543 (e) (2) & (3)         | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                       |
| 2.1051<br>90.543 (c) & (f)             | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                       |
| 2.1053<br>90.543 (c) & (f)             | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -7.10 dB at 1581.00 MHz. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement                    | Frequency        | Expanded Uncertainty (k=2) (±) |
|--------------------------------|------------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz     | 3.04 dB                        |
|                                | 30MHz ~ 200MHz   | 3.86 dB                        |
|                                | 200MHz ~ 1000MHz | 3.87 dB                        |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz     | 2.29 dB                        |
|                                | 18GHz ~ 40GHz    | 2.29 dB                        |

## 2.2 Test Site and Instruments

| Description & Manufacturer                 | Model No.                              | Serial No.                      | Date of Calibration            | Due Date of Calibration        |
|--------------------------------------------|----------------------------------------|---------------------------------|--------------------------------|--------------------------------|
| Test Receiver<br>KEYSIGHT                  | N9038A                                 | MY55420137                      | Apr. 16, 2020                  | Apr. 15, 2021                  |
| Spectrum Analyzer<br>ROHDE & SCHWARZ       | FSP40                                  | 100039                          | Jun. 12, 2020                  | Jun. 11, 2021                  |
| Spectrum Analyzer<br>KEYSIGHT              | N9030B                                 | MY57140953                      | Jul. 02, 2020                  | Jul. 01, 2021                  |
| MXG Vector signal generator<br>Agilent     | N5182B                                 | MY53050162                      | Jan. 14, 2020                  | Jan. 13, 2021                  |
| BILOG Antenna<br>SCHWARZBECK               | VULB9168                               | 9168-472                        | Nov. 08, 2019                  | Nov. 07, 2020                  |
| BILOG Antenna<br>SCHWARZBECK               | VULB9168                               | 9168-160                        | Nov. 07, 2019                  | Nov. 06, 2020                  |
| HORN Antenna<br>SCHWARZBECK                | BBHA 9120 D                            | 9120D-1169                      | Nov. 24, 2019                  | Nov. 23, 2020                  |
| HORN Antenna<br>SCHWARZBECK                | BBHA 9170                              | BBHA9170241                     | Nov. 24, 2019                  | Nov. 23, 2020                  |
| Loop Antenna<br>EMCI                       | EM-6879                                | 269                             | Sep. 18, 2019<br>Sep. 17, 2020 | Sep. 17, 2020<br>Sep. 16, 2021 |
| Preamplifier<br>Agilent<br>(Below 1GHz)    | 8447D                                  | 2944A10638                      | Jun. 08, 2020                  | Jun. 07, 2021                  |
| Preamplifier<br>Agilent<br>(Above 1GHz)    | 8449B                                  | 3008A02367                      | Feb. 18, 2020                  | Feb. 17, 2021                  |
| RF signal cable<br>HUBER+SUHNER&EMCI       | SUCOFLEX 104 &<br>EMC104-SM-<br>SM8000 | CABLE-CH9-02<br>(248780+171006) | Jan. 18, 2020                  | Jan. 17, 2021                  |
| RF signal cable<br>HUBER+SUHNER            | SUCOFLEX 104                           | CABLE-CH9-<br>(250795/4)        | Jan. 18, 2020                  | Jan. 17, 2021                  |
| RF signal cable<br>Woken                   | 8D-FB                                  | Cable-CH9-01                    | Jun. 08, 2020                  | Jun. 07, 2021                  |
| Software<br>BV ADT                         | ADT_Radiated_<br>V7.6.15.9.5           | NA                              | NA                             | NA                             |
| Antenna Tower<br>EMCO                      | 2070/2080                              | 512.835.4684                    | NA                             | NA                             |
| Turn Table<br>EMCO                         | 2087-2.03                              | NA                              | NA                             | NA                             |
| Antenna Tower & Turn<br>BV ADT             | AT100                                  | AT93021705                      | NA                             | NA                             |
| Turn Table<br>BV ADT                       | TT100                                  | TT93021705                      | NA                             | NA                             |
| Turn Table Controller<br>BV ADT            | SC100                                  | SC93021705                      | NA                             | NA                             |
| Boresight Antenna Fixture                  | FBA-01                                 | FBA-SIP01                       | NA                             | NA                             |
| JFW 20dB attenuation                       | 50HF-020-SMA                           | NA                              | NA                             | NA                             |
| True RMS Clamp Meter<br>Fluke              | 325                                    | 31130711WS                      | Jun. 06, 2020                  | Jun. 05, 2021                  |
| Radio Communication<br>Analyzer<br>Anritsu | MT8820C                                | 6201300640                      | Jul. 01, 2019                  | Jun. 30, 2021                  |

|                                         |                  |             |               |               |
|-----------------------------------------|------------------|-------------|---------------|---------------|
| Radio Communication Analyzer<br>Anritsu | MT8821C          | 6201462755  | Feb. 13, 2020 | Feb. 12, 2021 |
| Temperature & Humidity Chamber          | GTH-120-40-CP-AR | MAA1306-019 | Sep. 18, 2019 | Sep. 17, 2020 |
|                                         |                  |             | Sep. 09, 2020 | Sep. 08, 2021 |
| DC Power Supply<br>Topward              | 33010D           | 807748      | NA            | NA            |

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Chamber 9.

### 3 General Information

#### 3.1 General Description of EUT

|                     |                                         |                        |                        |
|---------------------|-----------------------------------------|------------------------|------------------------|
| Product             | EV charging system module 4G with WI-FI |                        |                        |
| Brand               | Phihong Technology Co., Ltd.            |                        |                        |
| Test Model          | DLWPH-8M                                |                        |                        |
| Series Model        | DLWPH-8M-RW                             |                        |                        |
| Model Difference    | Refer to Note as below                  |                        |                        |
| Sample Status       | Engineering Sample                      |                        |                        |
| Power Supply Rating | 10Vdc~35Vdc (for DC power supply)       |                        |                        |
| Modulation Type     | QPSK, 16QAM                             |                        |                        |
| Operating Frequency | LTE Band 14 (Channel Bandwidth 5MHz)    | 790.5MHz ~ 795.5MHz    |                        |
|                     | LTE Band 14 (Channel Bandwidth 10MHz)   | 793MHz                 |                        |
| Max. ERP Power      |                                         | QPSK                   | 16QAM                  |
|                     | LTE Band 14 (Channel Bandwidth 5MHz)    | 72.946mW<br>(18.63dBm) | 53.580mW<br>(17.29dBm) |
|                     | LTE Band 14 (Channel Bandwidth 10MHz)   | 68.391mW<br>(18.35dBm) | 60.395mW<br>(17.81dBm) |
| Emission Designator |                                         | QPSK                   | 16QAM                  |
|                     | LTE Band 14 (Channel Bandwidth 5MHz)    | 4M49G7D                | 4M49D7W                |
|                     | LTE Band 14 (Channel Bandwidth 10MHz)   | 8M94G7D                | 8M94D7W                |
| Antenna Type        | Refer to Note as below                  |                        |                        |
| Antenna Connector   | Refer to Note as below                  |                        |                        |
| Accessory Device    | NA                                      |                        |                        |
| Cable Supplied      | NA                                      |                        |                        |

Note:

1. All models are listed as below.

| Brand                        | Model       | Difference of WLAN Antenna type |
|------------------------------|-------------|---------------------------------|
| Phihong Technology Co., Ltd. | DLWPH-8M    | internal antenna                |
|                              | DLWPH-8M-RW | external antenna                |

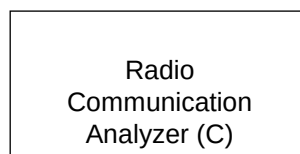
2. The following antennas were provided to the EUT.

| Brand  | Model          | Antenna Gain(dBi) | Antenna Type | Connector Type |
|--------|----------------|-------------------|--------------|----------------|
| Gortec | DR0727-4201BSM | -3.11             | PCB          | SMA Male       |

### 3.2 Configuration of System under Test



Remote site



#### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| ID | Product                      | Brand   | Model No.      | Serial No. | FCC ID | Remarks            |
|----|------------------------------|---------|----------------|------------|--------|--------------------|
| A. | DC Power Supply              | Topward | 33010D         | 807748     | NA     | -                  |
| B. | Ext. Antenna                 | Gortec  | DR0727-4201BSM | NA         | NA     | Provided by client |
| C. | Radio Communication Analyzer | Anritsu | MT8821C        | 6201462755 | NA     | -                  |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|----|--------------|------|------------|--------------------|--------------|---------|
| 1. | Power cable  | 1    | 1          | -                  | 0            | -       |

### 3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Z-plane. Following channel(s) was (were) selected for the final test as listed below.

#### LTE Band 14

| EUT Configure Mode | Test item                    | Available channel | Tested channel                                          | Channel Bandwidth | Modulation   | Mode                                                           |
|--------------------|------------------------------|-------------------|---------------------------------------------------------|-------------------|--------------|----------------------------------------------------------------|
| -                  | ERP                          | 23305 to 23355    | 23305(790.5MHz),<br>23330(793.0MHz),<br>23355(795.5MHz) | 5MHz              | QPSK / 16QAM | 1 RB / 12 RB Offset                                            |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK / 16QAM | 1 RB / 0 RB Offset                                             |
| -                  | Modulation Characteristics   | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK / 16QAM | 50RB / 0RB Offset                                              |
| -                  | Frequency Stability          | 23305 to 23355    | 23305(790.5MHz),<br>23355(795.5MHz)                     | 5MHz              | QPSK         | 25RB / 0RB Offset                                              |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK         | 50RB / 0RB Offset                                              |
| -                  | Occupied Bandwidth           | 23305 to 23355    | 23305(790.5MHz),<br>23330(793.0MHz),<br>23355(795.5MHz) | 5MHz              | QPSK / 16QAM | 25RB / 0RB Offset                                              |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK / 16QAM | 50RB / 0RB Offset                                              |
| -                  | Emission Mask                | 23305 to 23355    | 23305(790.5MHz),<br>23330(793.0MHz),<br>23355(795.5MHz) | 5MHz              | QPSK         | 25RB / 0RB Offset                                              |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK         | 50RB / 0RB Offset                                              |
| -                  | Band Edge                    | 23305 to 23355    | 23305(790.5MHz),<br>23355(795.5MHz)                     | 5MHz              | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25RB / 0RB Offset |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50RB / 0RB Offset |
| -                  | Conducted Emission           | 23305 to 23355    | 23305(790.5MHz),<br>23330(793.0MHz),<br>23355(795.5MHz) | 5MHz              | QPSK         | 1 RB / 12 RB Offset                                            |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK         | 1 RB / 0 RB Offset                                             |
| -                  | Radiated Emission below 1GHz | 23305 to 23355    | 23305(790.5MHz)                                         | 5MHz              | QPSK         | 1 RB / 12 RB Offset                                            |
| -                  | Radiated Emission above 1GHz | 23305 to 23355    | 23305(790.5MHz),<br>23330(793.0MHz),<br>23355(795.5MHz) | 5MHz              | QPSK         | 1 RB / 12 RB Offset                                            |
|                    |                              | 23330             | 23330(793.0MHz)                                         | 10MHz             | QPSK         | 1 RB / 0 RB Offset                                             |

#### Note:

1. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only ERP, Modulation characteristics and occupied bandwidth items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.
2. For radiated emission below 1GHz, select the worst radiated emission (above 1GHz) channel for final testing.
3. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.

**Test Condition:**

| Test Item                  | Environmental Conditions           | Input Power  | Tested By            |
|----------------------------|------------------------------------|--------------|----------------------|
| ERP                        | 25deg. C, 70%RH                    | 120Vac, 60Hz | Tank Wu              |
| Modulation characteristics | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Frequency Stability        | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Occupied Bandwidth         | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Emission Mask              | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Band Edge                  | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Conducted Emission         | 24deg. C, 64%RH                    | 120Vac, 60Hz | Tank Wu              |
| Radiated Emission          | 23deg. C, 66%RH<br>23deg. C, 67%RH | 120Vac, 60Hz | Noah Chang, Greg Lin |

**3.4 EUT Operating Conditions**

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

**3.5 General Description of Applied Standards and References**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**Test Standard:**

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 90**

**ANSI 63.26-2015**

All test items have been performed and recorded as per the above standards.

**References Test Guidance:**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**KDB 971168 D02 Misc Rev Approv License Devices v02r01**

**ANSI/TIA/EIA-603-E 2016**

All test items have been performed as a reference to the above KDB test guidance.

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

LTE Band 14:

Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

#### 4.1.2 Test Procedures

##### Conducted Power Measurement:

The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

$$\text{ERP or EIRP} = \text{PMeas} + \text{GT}$$

Where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively  
(expressed in the same units as PMeas, e.g., dBm or dBW)

PMeas measured transmitter output power or PSD, in dBm or dBW

GT gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

#### 4.1.3 Test Setup

##### Conducted Power Measurement:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.4 Test Results

##### Conducted Output Power (dBm)

| LTE Band 14 |           |                 |    |       |       |       |
|-------------|-----------|-----------------|----|-------|-------|-------|
| BW          | MCS Index | Channel         |    | 23305 | 23330 | 23355 |
|             |           | Frequency (MHz) |    | 790.5 | 793   | 795.5 |
| 5M          | QPSK      | 1               | 0  | 23.48 | 23.74 | 23.77 |
|             |           | 1               | 12 | 23.69 | 23.89 | 23.66 |
|             |           | 1               | 24 | 23.53 | 23.59 | 23.82 |
|             |           | 12              | 0  | 22.94 | 22.75 | 22.79 |
|             |           | 12              | 6  | 22.99 | 22.85 | 22.88 |
|             |           | 12              | 13 | 22.77 | 22.84 | 22.78 |
|             |           | 25              | 0  | 22.85 | 22.86 | 22.90 |
|             | 16QAM     | 1               | 0  | 22.55 | 22.37 | 22.51 |
|             |           | 1               | 12 | 22.51 | 22.18 | 22.38 |
|             |           | 1               | 24 | 22.45 | 22.24 | 22.48 |
|             |           | 12              | 0  | 21.71 | 21.64 | 21.93 |
|             |           | 12              | 6  | 21.76 | 21.72 | 21.93 |
|             |           | 12              | 13 | 21.75 | 21.61 | 21.83 |
|             |           | 25              | 0  | 21.85 | 21.75 | 21.89 |

| LTE Band 14 |           |                 |    |       |
|-------------|-----------|-----------------|----|-------|
| BW          | MCS Index | Channel         |    | 23330 |
|             |           | Frequency (MHz) |    | 793   |
| 10M         | QPSK      | 1               | 0  | 23.61 |
|             |           | 1               | 24 | 23.58 |
|             |           | 1               | 49 | 23.53 |
|             |           | 25              | 0  | 22.89 |
|             |           | 25              | 12 | 22.86 |
|             |           | 25              | 25 | 22.74 |
|             |           | 50              | 0  | 22.78 |
|             | 16QAM     | 1               | 0  | 22.95 |
|             |           | 1               | 24 | 23.07 |
|             |           | 1               | 49 | 22.74 |
|             |           | 25              | 0  | 21.87 |
|             |           | 25              | 12 | 21.83 |
|             |           | 25              | 25 | 21.68 |
|             |           | 50              | 0  | 21.79 |

# ERP Power (dBm)

| LTE Band 14 |           |                 |    |       |       |       |
|-------------|-----------|-----------------|----|-------|-------|-------|
| BW          | MCS Index | Channel         |    | 23305 | 23330 | 23355 |
|             |           | Frequency (MHz) |    | 790.5 | 793   | 795.5 |
| 5M          | QPSK      | 1               | 0  | 18.22 | 18.48 | 18.51 |
|             |           | 1               | 12 | 18.43 | 18.63 | 18.40 |
|             |           | 1               | 24 | 18.27 | 18.33 | 18.56 |
|             |           | 12              | 0  | 17.68 | 17.49 | 17.53 |
|             |           | 12              | 6  | 17.73 | 17.59 | 17.62 |
|             |           | 12              | 13 | 17.51 | 17.58 | 17.52 |
|             |           | 25              | 0  | 17.59 | 17.60 | 17.64 |
|             | 16QAM     | 1               | 0  | 17.29 | 17.11 | 17.25 |
|             |           | 1               | 12 | 17.25 | 16.92 | 17.12 |
|             |           | 1               | 24 | 17.19 | 16.98 | 17.22 |
|             |           | 12              | 0  | 16.45 | 16.38 | 16.67 |
|             |           | 12              | 6  | 16.50 | 16.46 | 16.67 |
|             |           | 12              | 13 | 16.49 | 16.35 | 16.57 |
|             |           | 25              | 0  | 16.59 | 16.49 | 16.63 |

| LTE Band 14 |           |                 |    |       |
|-------------|-----------|-----------------|----|-------|
| BW          | MCS Index | Channel         |    | 23330 |
|             |           | Frequency (MHz) |    | 793   |
| 10M         | QPSK      | 1               | 0  | 18.35 |
|             |           | 1               | 24 | 18.32 |
|             |           | 1               | 49 | 18.27 |
|             |           | 25              | 0  | 17.63 |
|             |           | 25              | 12 | 17.60 |
|             |           | 25              | 25 | 17.48 |
|             |           | 50              | 0  | 17.52 |
|             | 16QAM     | 1               | 0  | 17.69 |
|             |           | 1               | 24 | 17.81 |
|             |           | 1               | 49 | 17.48 |
|             |           | 25              | 0  | 16.61 |
|             |           | 25              | 12 | 16.57 |
|             |           | 25              | 25 | 16.42 |
|             |           | 50              | 0  | 16.53 |

\*ERP = Conducted + antenna gain (-3.11dBi)-2.15

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

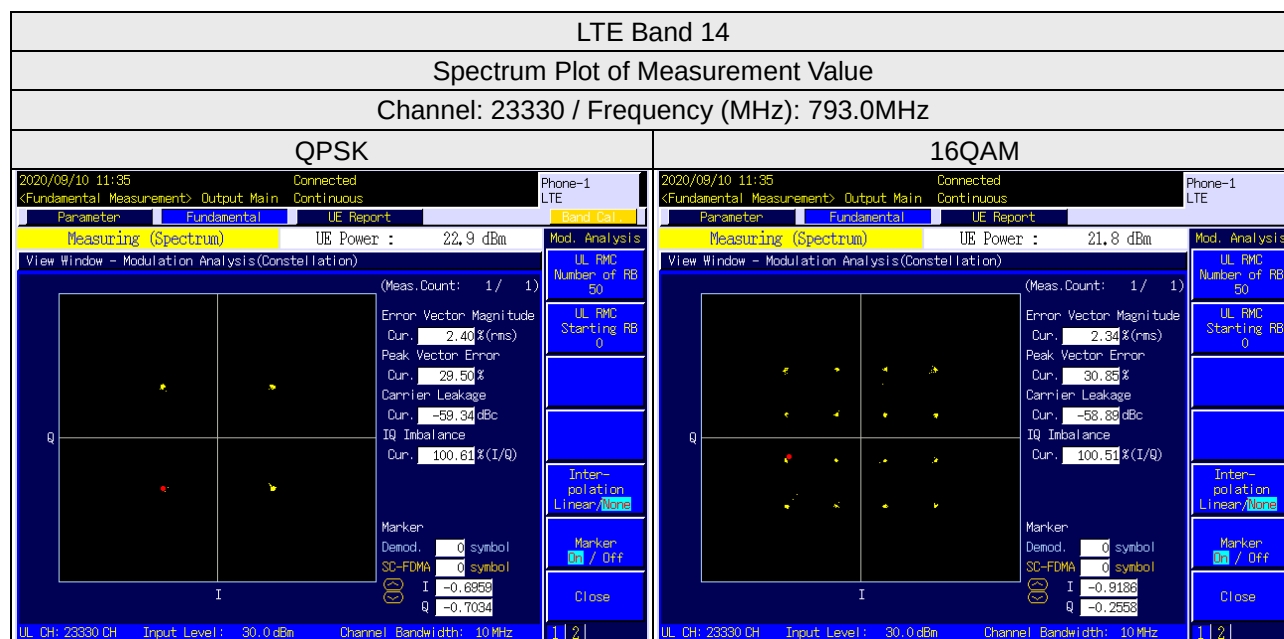
### 4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



### 4.2.4 Test Results



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

LTE Band 14:

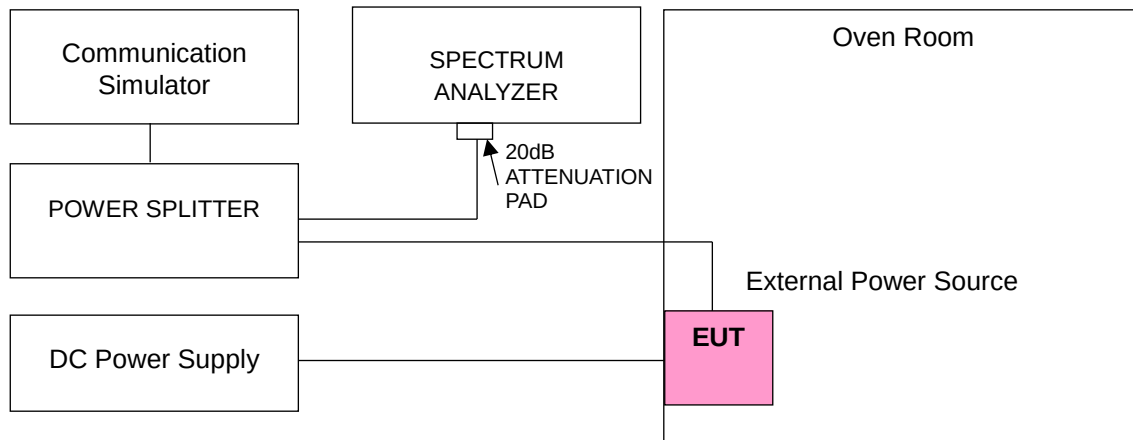
The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

#### 4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 14             |                       |                 |                       |
|--------------------|-------------------------|-----------------------|-----------------|-----------------------|
|                    | Channel Bandwidth: 5MHz |                       |                 |                       |
|                    | Low Channel             |                       | High Channel    |                       |
|                    | Frequency (MHz)         | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 12                 | 790.500001              | 0.002                 | 795.500003      | 0.004                 |
| 10                 | 790.500001              | 0.002                 | 795.500001      | 0.002                 |
| 35                 | 790.500002              | 0.002                 | 795.500002      | 0.002                 |

Note: The applicant defined the normal working voltage is from 10Vdc to 35Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 14              |                       |                 |                       |
|------------|--------------------------|-----------------------|-----------------|-----------------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |
|            | Low Channel              |                       | High Channel    |                       |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -40        | 790.500001               | 0.002                 | 795.500003      | 0.004                 |
| -30        | 790.500001               | 0.002                 | 795.500002      | 0.003                 |
| -20        | 790.500002               | 0.003                 | 795.500002      | 0.003                 |
| -10        | 790.500004               | 0.005                 | 795.500002      | 0.002                 |
| 0          | 790.500004               | 0.005                 | 795.500003      | 0.003                 |
| 10         | 790.500001               | 0.001                 | 795.500003      | 0.004                 |
| 20         | 790.499999               | -0.001                | 795.499998      | -0.003                |
| 30         | 790.499996               | -0.005                | 795.499997      | -0.003                |
| 40         | 790.499997               | -0.004                | 795.499998      | -0.003                |
| 50         | 790.499996               | -0.005                | 795.499997      | -0.003                |
| 60         | 790.499997               | -0.004                | 795.499998      | -0.003                |
| 70         | 790.499996               | -0.005                | 795.499998      | -0.003                |
| 80         | 790.499997               | -0.004                | 795.499998      | -0.003                |
| 85         | 790.499998               | -0.002                | 795.499998      | -0.002                |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 14               |                       |
|--------------------|---------------------------|-----------------------|
|                    | Channel Bandwidth: 10 MHz |                       |
|                    | Frequency (MHz)           | Frequency Error (ppm) |
| 12                 | 793.000004                | 0.005                 |
| 10                 | 793.000004                | 0.005                 |
| 35                 | 793.000003                | 0.004                 |

Note: The applicant defined the normal working voltage is from 10Vdc to 35Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 14               |                       |
|------------|---------------------------|-----------------------|
|            | Channel Bandwidth: 10 MHz |                       |
|            | Frequency (MHz)           | Frequency Error (ppm) |
| -40        | 793.000002                | 0.003                 |
| -30        | 793.000004                | 0.005                 |
| -20        | 793.000002                | 0.002                 |
| -10        | 793.000003                | 0.004                 |
| 0          | 793.000002                | 0.003                 |
| 10         | 793.000003                | 0.003                 |
| 20         | 792.999999                | -0.002                |
| 30         | 792.999998                | -0.002                |
| 40         | 792.999999                | -0.002                |
| 50         | 792.999999                | -0.002                |
| 60         | 792.999999                | -0.002                |
| 70         | 792.999998                | -0.002                |
| 80         | 792.999997                | -0.004                |
| 85         | 792.999998                | -0.003                |

#### 4.4 Occupied Bandwidth Measurement

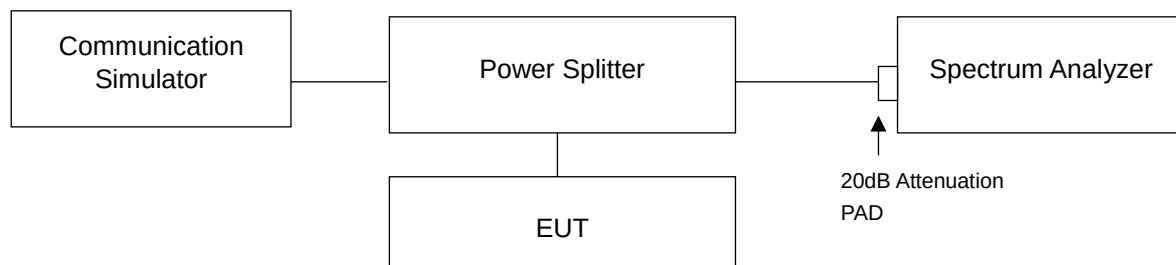
##### 4.4.1 Limits of Occupied Bandwidth Measurement

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

##### 4.4.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 5MHz), RBW = 200kHz and VBW = 1MHz (Channel Bandwidth: 10MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

##### 4.4.3 Test Setup

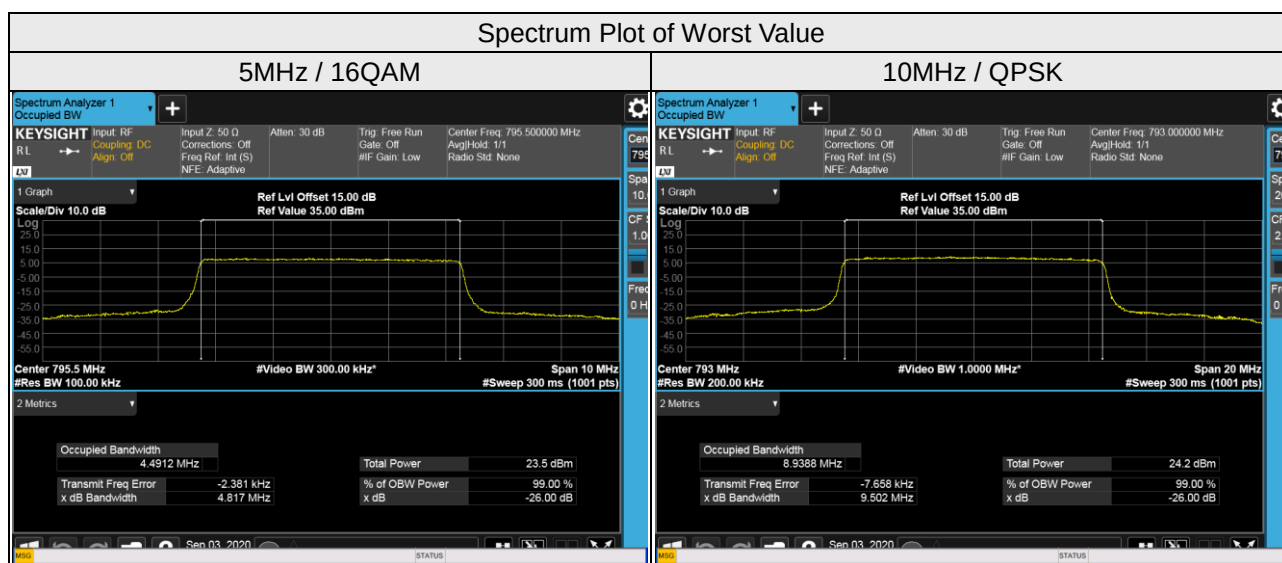


#### 4.4.4 Test Result

##### Occupied Bandwidth

| LTE Band 14, Channel Bandwidth 5MHz |                 |                              |       |
|-------------------------------------|-----------------|------------------------------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                     |                 | QPSK                         | 16QAM |
| 23305                               | 790.5           | 4.49                         | 4.49  |
| 23330                               | 793             | 4.48                         | 4.49  |
| 23355                               | 795.5           | 4.49                         | 4.49  |

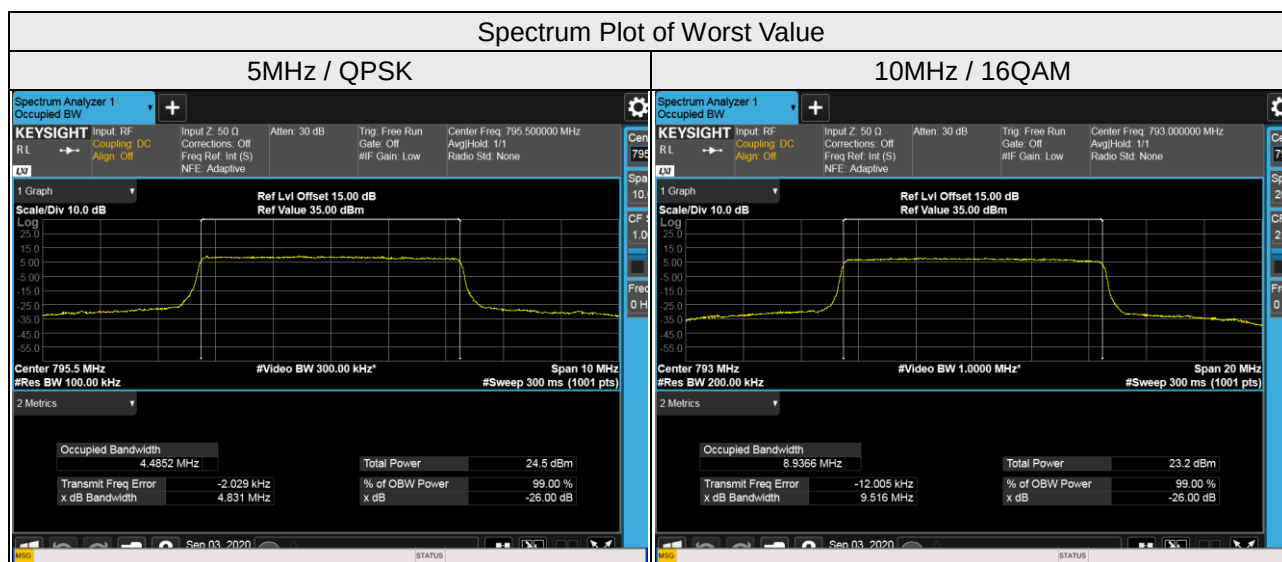
| LTE Band 14, Channel Bandwidth 10MHz |                 |                              |       |
|--------------------------------------|-----------------|------------------------------|-------|
| Channel                              | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                      |                 | QPSK                         | 16QAM |
| 23330                                | 793             | 8.94                         | 8.94  |



## 26dB Bandwidth

| LTE Band 14, Channel Bandwidth 5MHz |                 |                      |       |
|-------------------------------------|-----------------|----------------------|-------|
| Channel                             | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                     |                 | QPSK                 | 16QAM |
| 23305                               | 790.5           | 4.82                 | 4.80  |
| 23330                               | 793             | 4.80                 | 4.81  |
| 23355                               | 795.5           | 4.83                 | 4.82  |

| LTE Band 14, Channel Bandwidth 10MHz |                 |                      |       |
|--------------------------------------|-----------------|----------------------|-------|
| Channel                              | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                      |                 | QPSK                 | 16QAM |
| 23330                                | 793             | 9.50                 | 9.52  |



## 4.5 Emission Mask Measurement

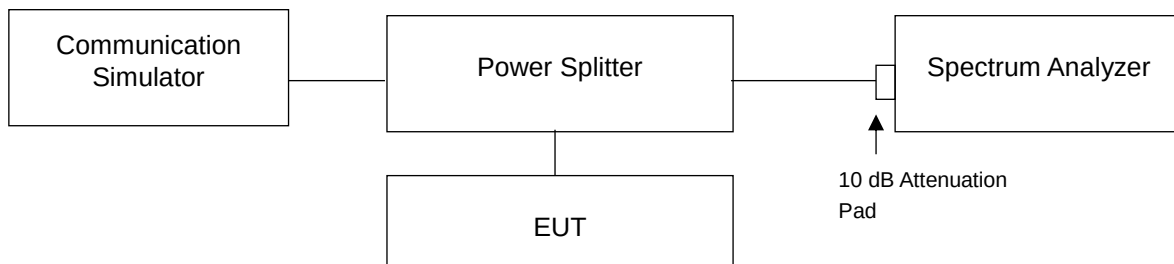
### 4.5.1 Limits of Emission Mask Measurement

LTE Band 14:

According to FCC part 90.210 (b) shall be tested the emission mask. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
- (2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
- (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least  $43 + 10 \log (P)$  dB.

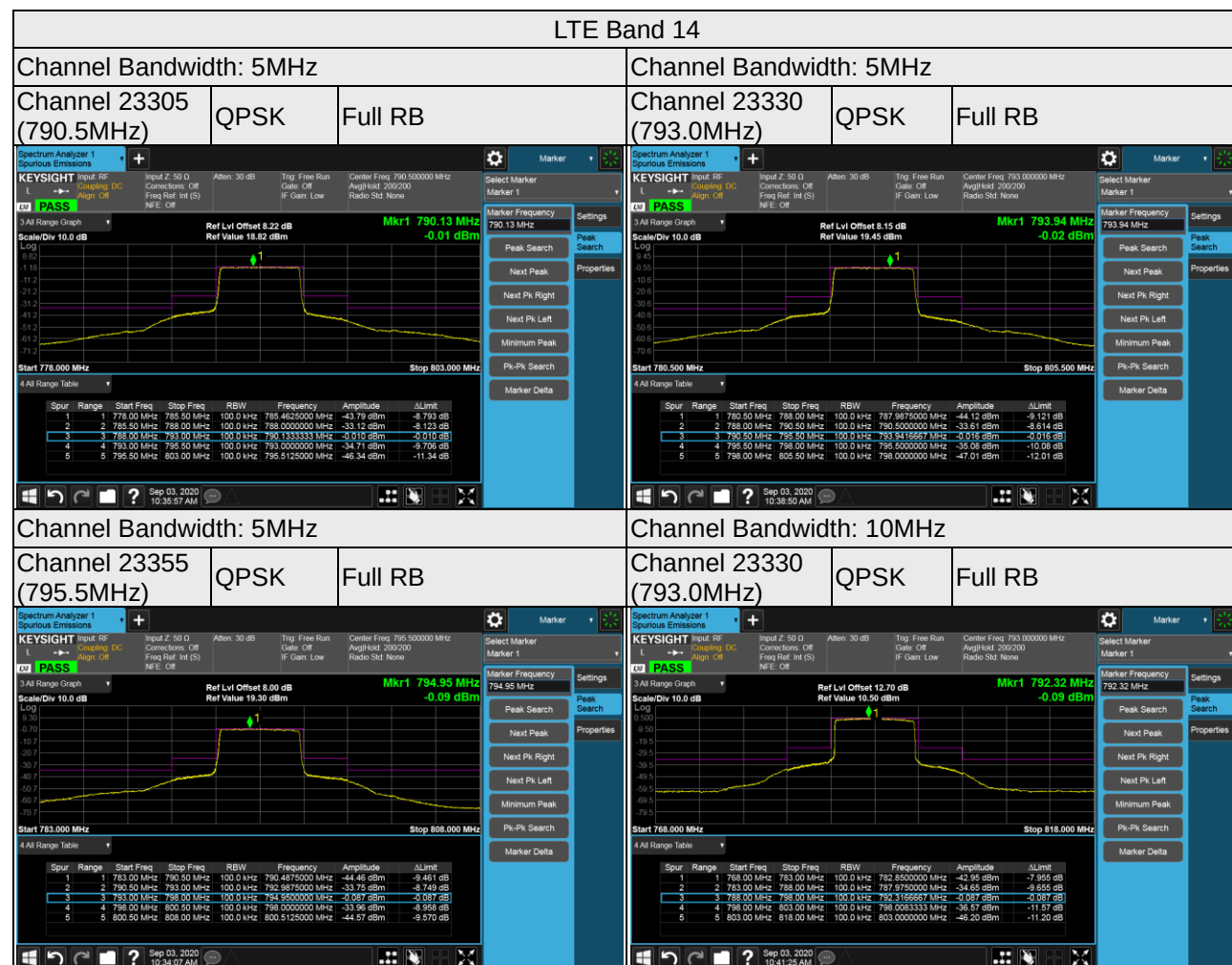
### 4.5.2 Test Setup



### 4.5.3 Test Procedures

- a. The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- b. Record the test plot.

## 4.5.4 Test Results

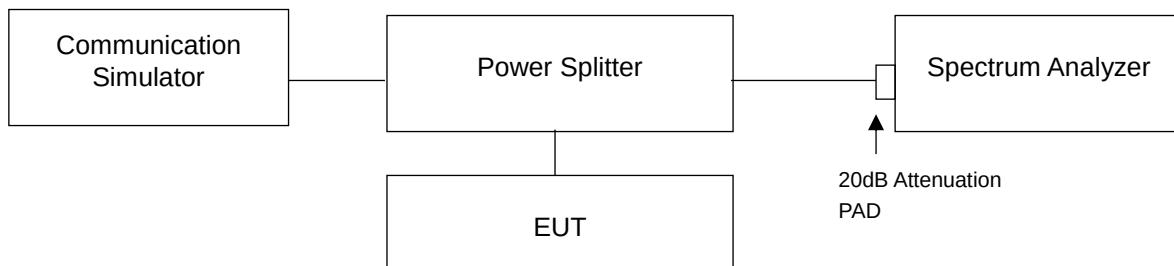


## 4.6 Band Edge Measurement

### 4.6.1 Limits of Band Edge Measurement

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.
- (2) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log (P)$  dB.

### 4.6.2 Test Setup

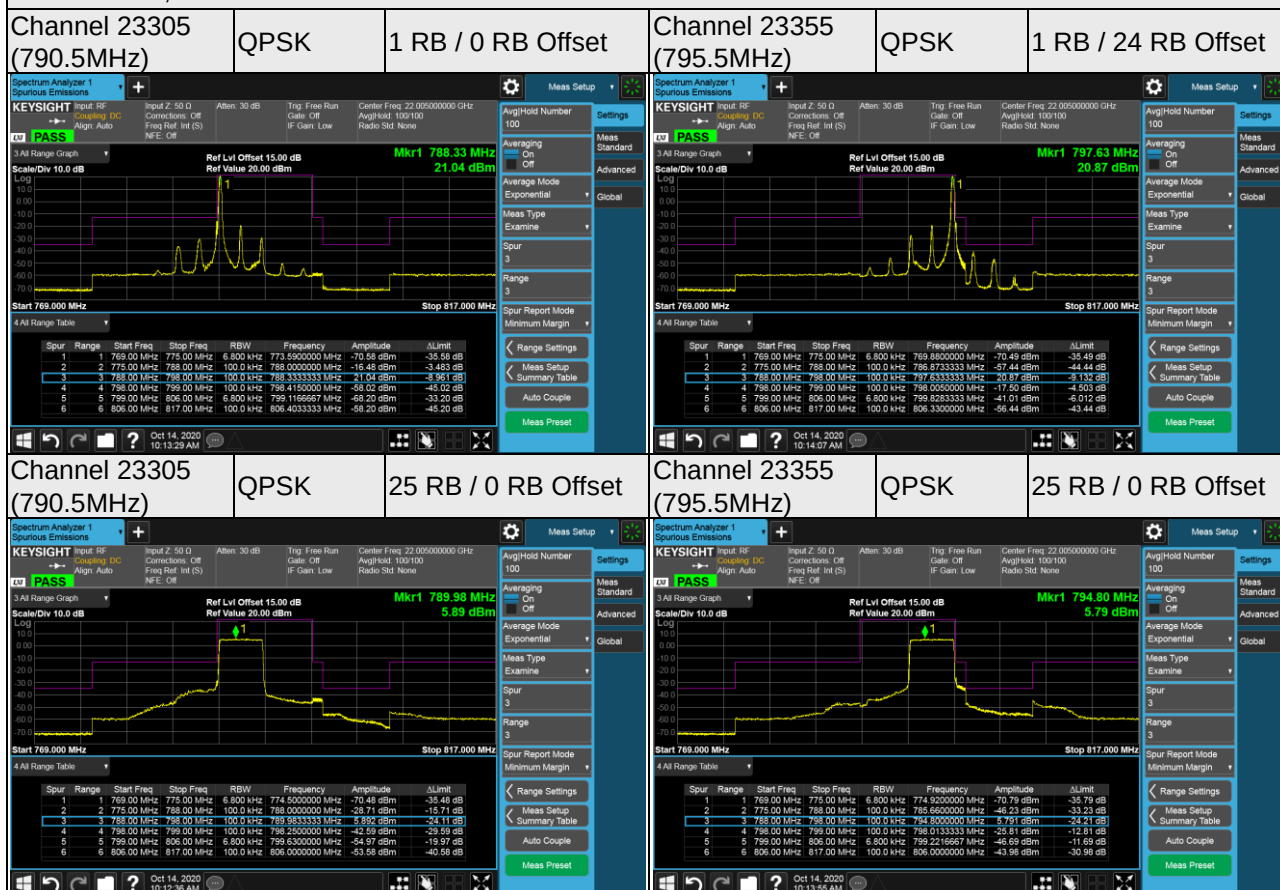


### 4.6.3 Test Procedures

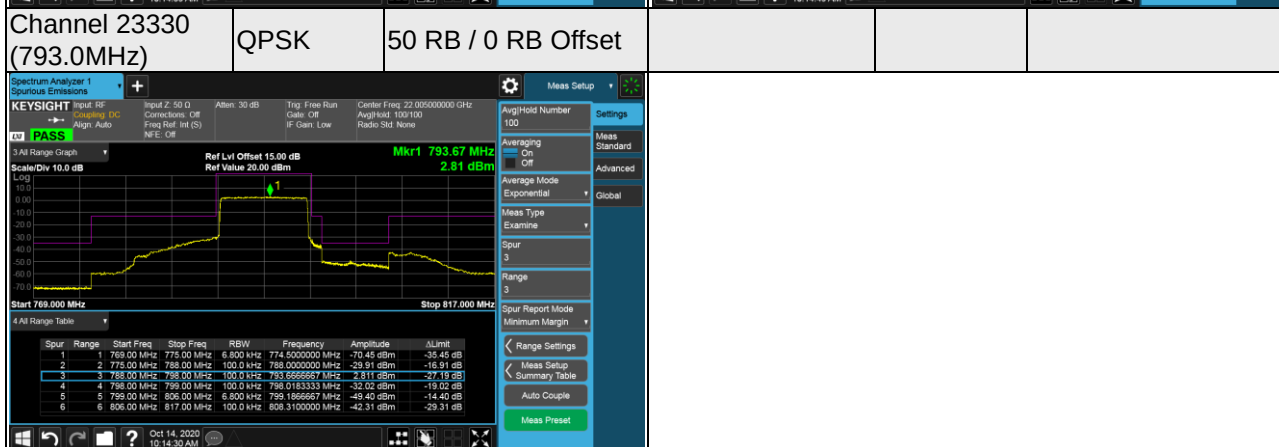
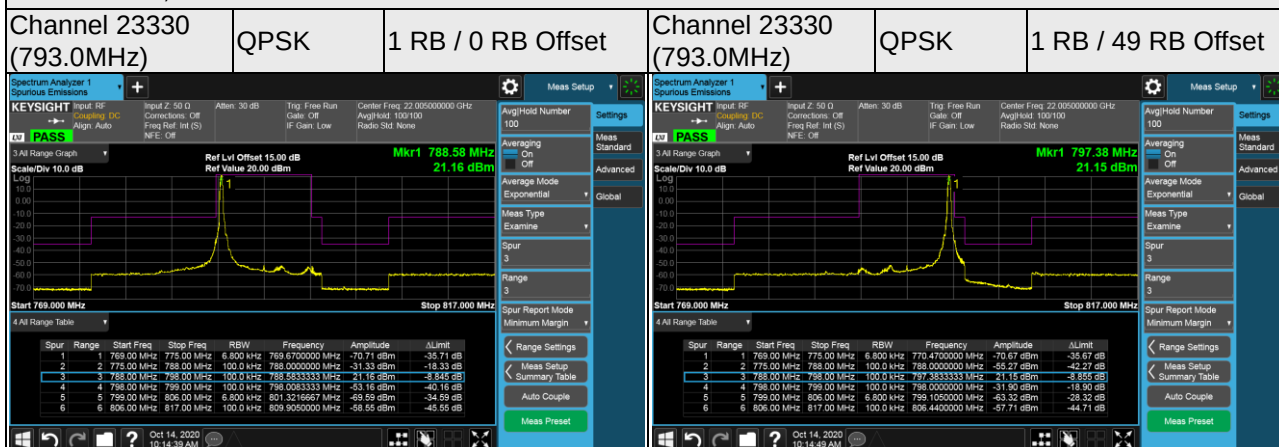
- a. All measurements were done at low and high operational frequency range.
- b. The band edge measurement used the power splitter via EUT RF power connector between signal generator and spectrum analyzer. This splitter loss, attenuator loss and cable loss are the worst loss 21 dB in the transmitted path track. Measurement method refers to FCC part 90.543 (e).
- c. Record the max trace plot into the test report.

## 4.6.4 Test Results

### LTE Band 14, Channel Bandwidth 5MHz



# LTE Band 14, Channel Bandwidth 10MHz



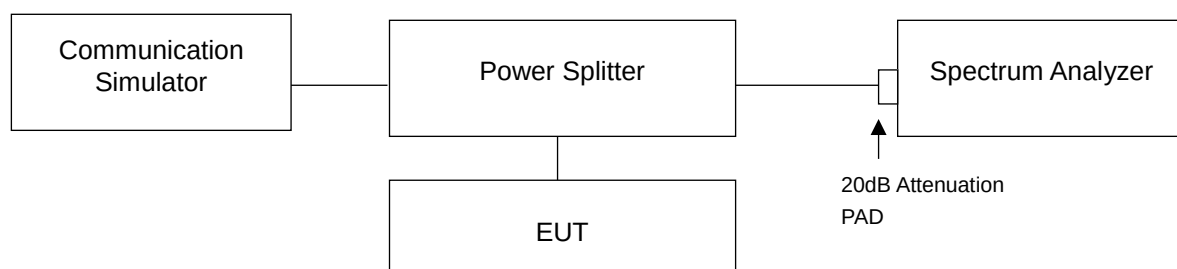
## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB. The limit of emission equal to  $-13\text{dBm}$ .

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to  $-70\text{ dBW/MHz}$ . The limit of emissions is equal to  $-40\text{ dBm}$ .

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

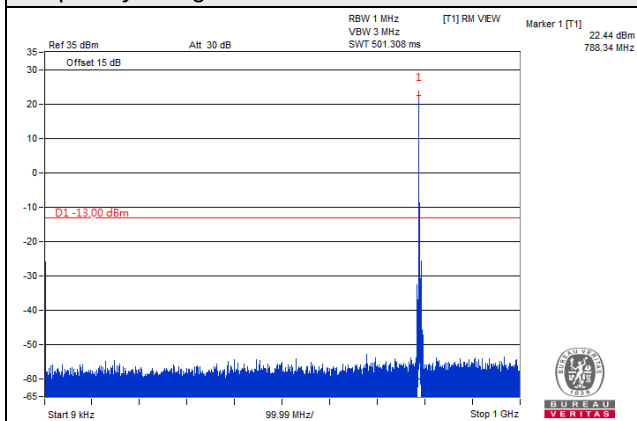
- The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Agilent Spectrum Analyzer.
- The conducted spurious emission used the power splitter via EUT RF power connector between signal generator and spectrum analyzer.
- When the spectrum scanned from 9 kHz to 8GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.

#### 4.7.4 Test Results

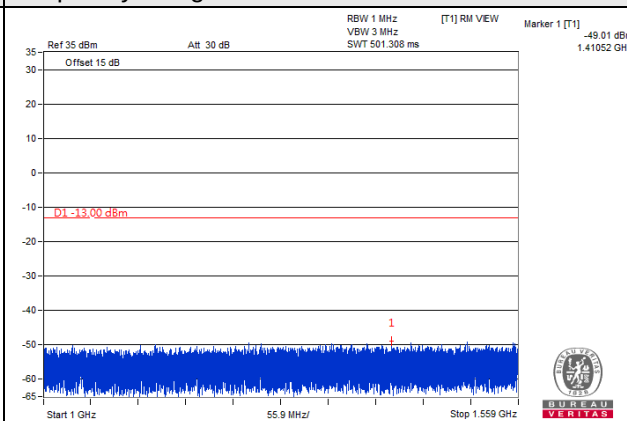
LTE Band 14, Channel Band width: 5MHz

Channel 23305 (790.5MHz)

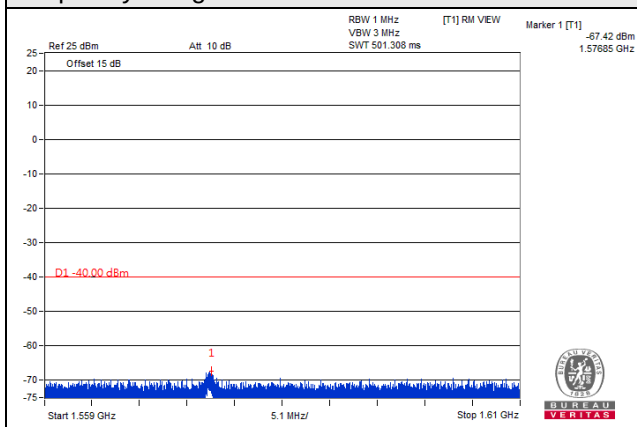
Frequency Range : 9kHz~1GHz



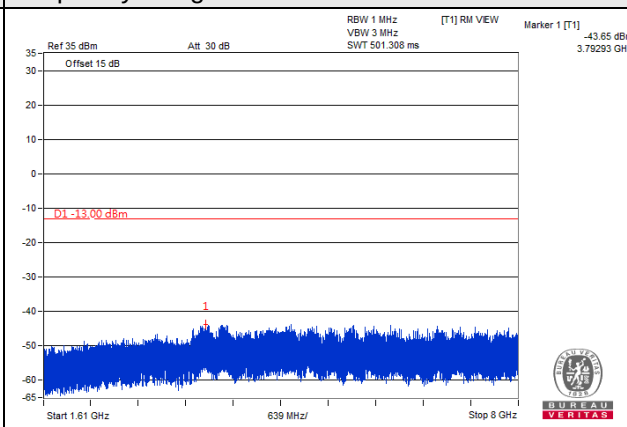
Frequency Range : 1GHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



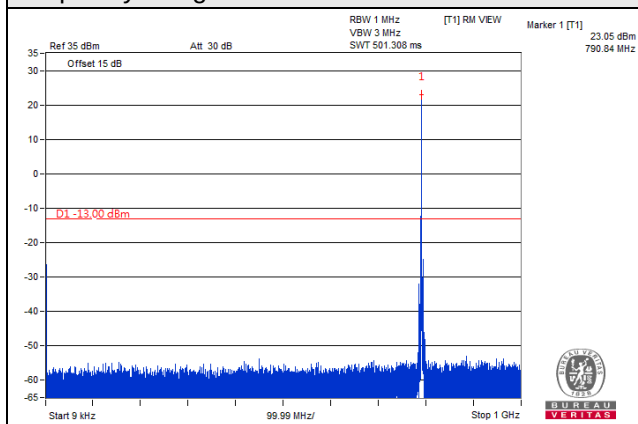
Frequency Range : 1.61GHz~8GHz



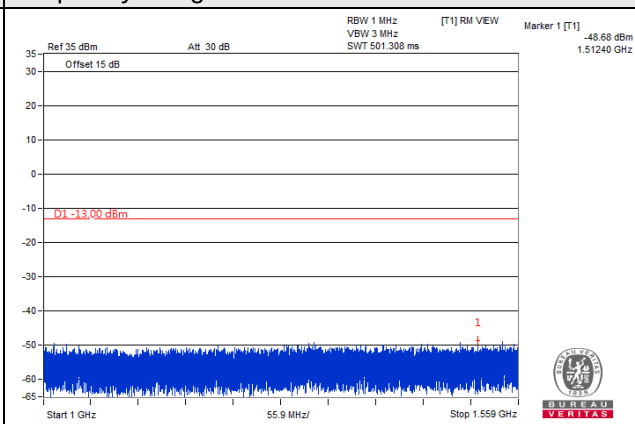
LTE Band 14, Channel Band width: 5MHz

Channel 23330 (793.0MHz)

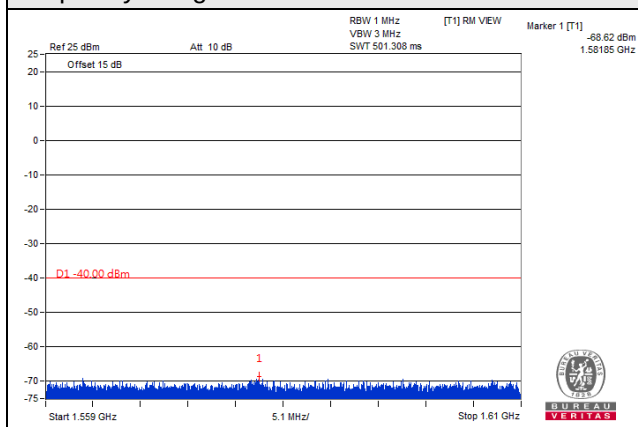
Frequency Range : 9kHz~1GHz



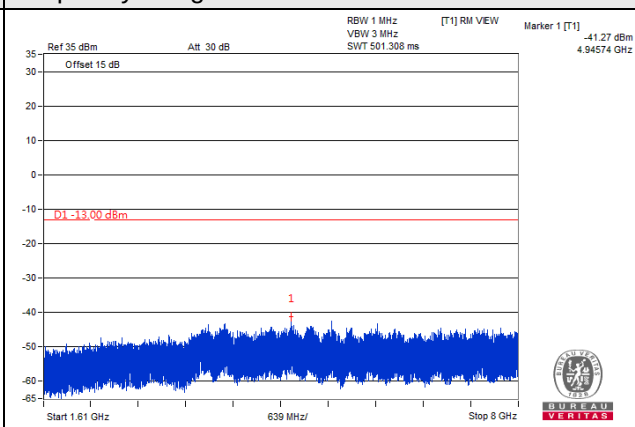
Frequency Range : 1GHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



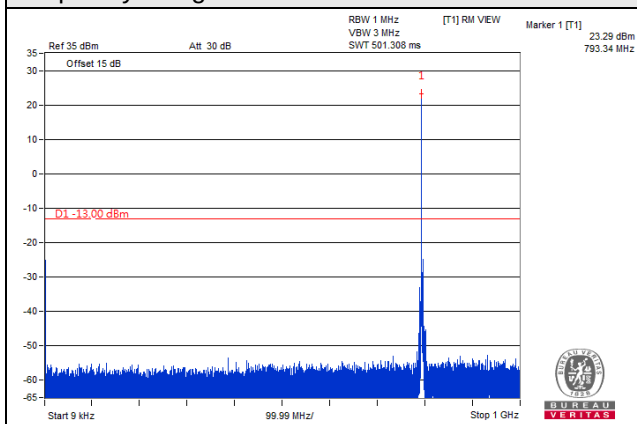
Frequency Range : 1.61GHz~8GHz



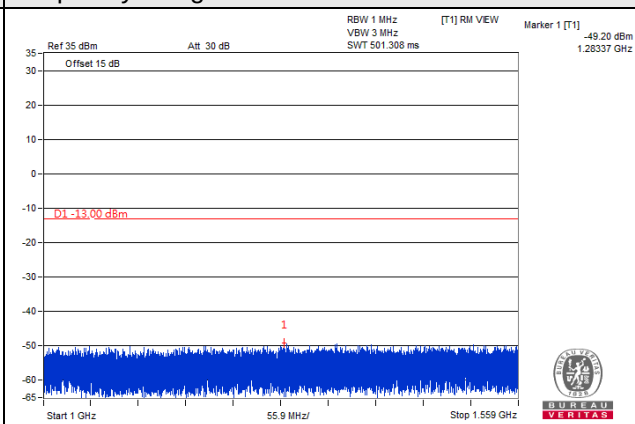
LTE Band 14, Channel Band width: 5MHz

Channel 23355 (795.5MHz)

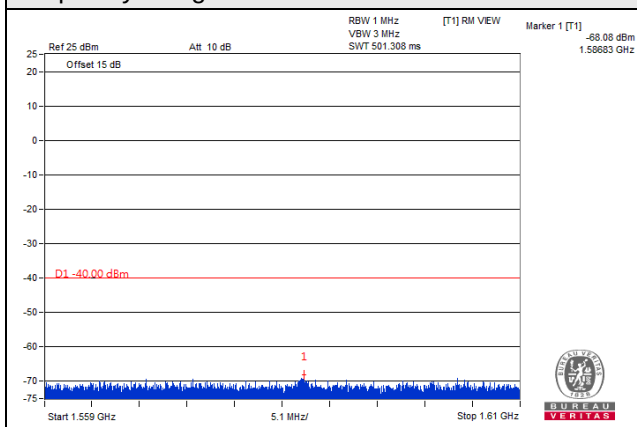
Frequency Range : 9kHz~1GHz



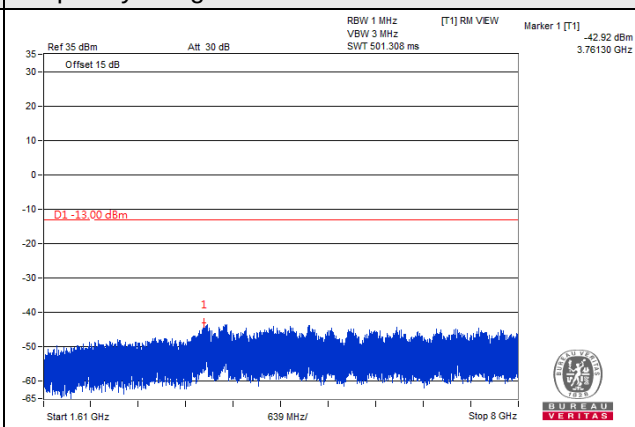
Frequency Range : 1GHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



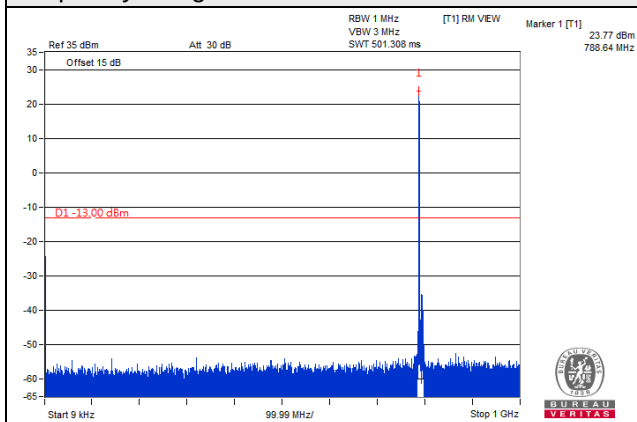
Frequency Range : 1.61GHz~8GHz



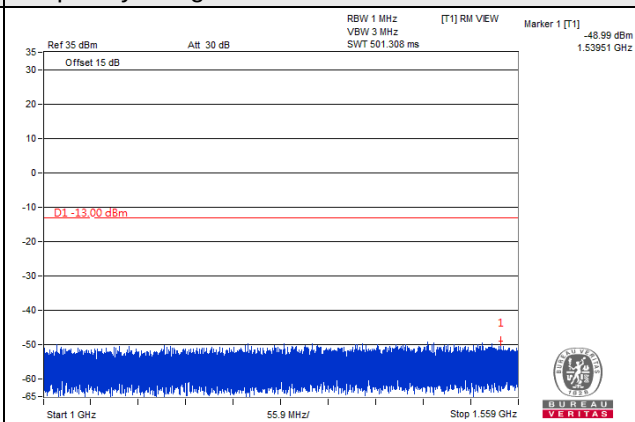
LTE Band 14, Channel Band width: 10MHz

Channel 23330 (793.0MHz)

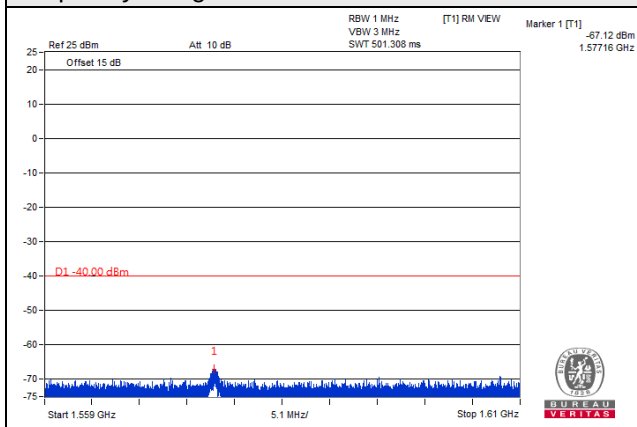
Frequency Range : 9kHz~1GHz



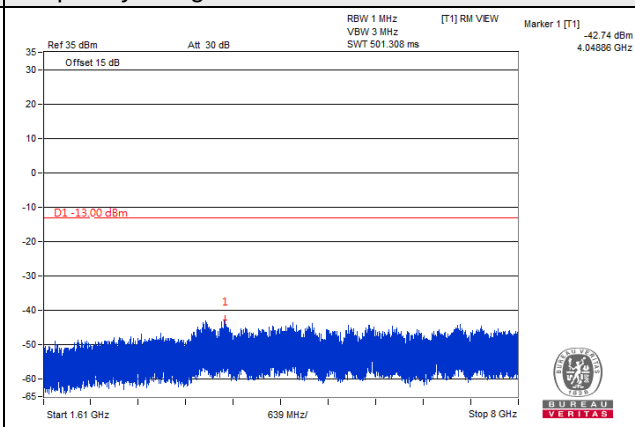
Frequency Range : 1GHz~1.559GHz



Frequency Range : 1.559GHz~1.61GHz



Frequency Range : 1.61GHz~8GHz



## **4.8 Radiated Emission Measurement**

### **4.8.1 Limits of Radiated Emission Measurement**

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB. The limit of emission equal to  $-13\text{dBm}$ .

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to  $-70\text{ dBW/MHz}$ . The limit of emissions is equal to  $-40\text{ dBm}$ .

### **4.8.2 Test Procedure**

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

**NOTE:**

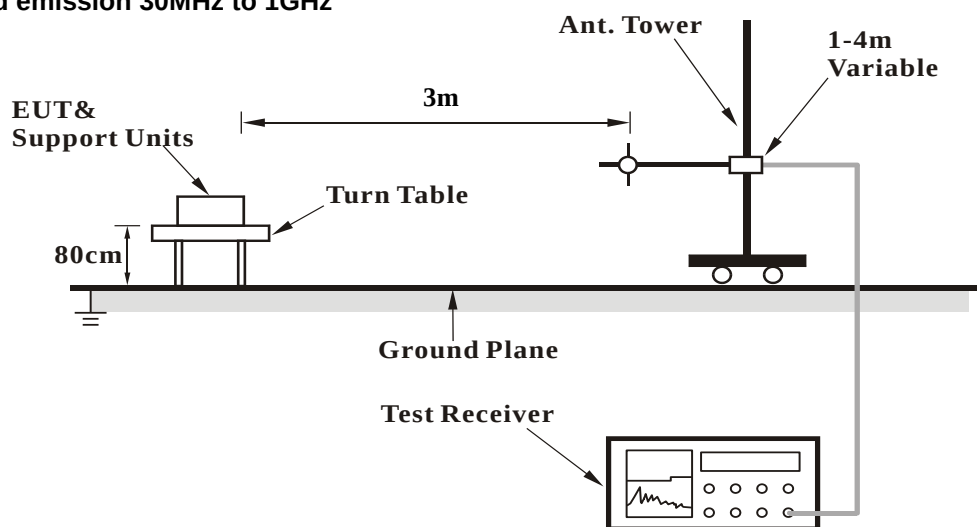
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:  
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

### **4.8.3 Deviation from Test Standard**

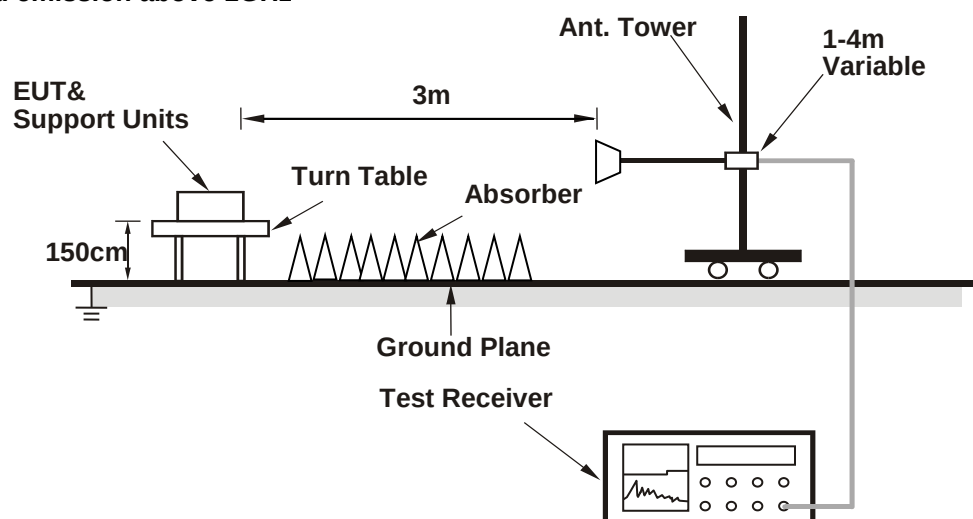
No deviation.

#### 4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

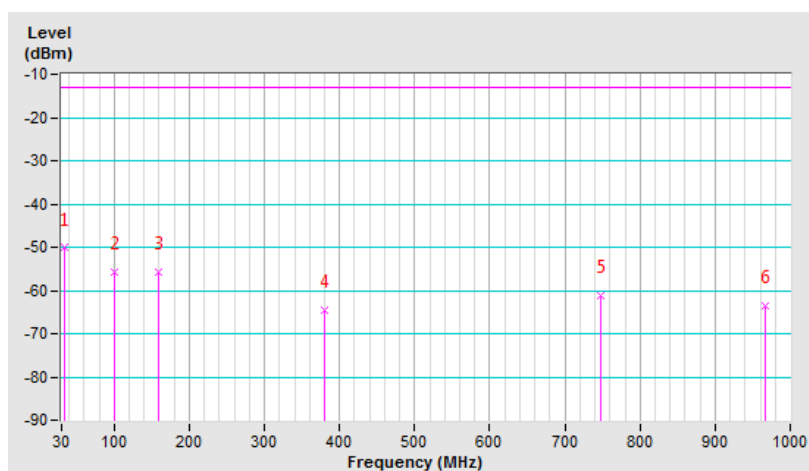
#### 4.8.5 Test Results

Below 1GHz

LTE Band 14, Channel Bandwidth: 5MHz

|                          |                                |                 |                |
|--------------------------|--------------------------------|-----------------|----------------|
| Mode                     | TX channel 23305<br>(790.5MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 70%RH                | Input Power     | 120Vac, 60Hz   |
| Tested By                | Noah Chang                     |                 |                |

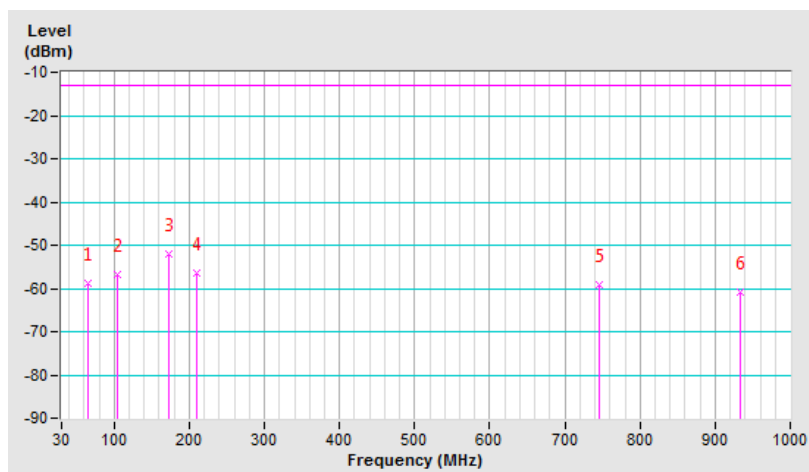
| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |           |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 33.88       | -50.90        | -38.50                | -11.70                 | -50.20    | -13.00      | -37.20      |
| 2                                                   | 99.84       | -46.20        | -56.80                | 0.90                   | -55.90    | -13.00      | -42.90      |
| 3                                                   | 159.98      | -48.30        | -56.20                | 0.40                   | -55.80    | -13.00      | -42.80      |
| 4                                                   | 379.20      | -61.50        | -70.00                | 5.30                   | -64.70    | -13.00      | -51.70      |
| 5                                                   | 747.80      | -62.60        | -65.80                | 4.70                   | -61.10    | -13.00      | -48.10      |
| 6                                                   | 967.02      | -68.70        | -67.30                | 3.90                   | -63.40    | -13.00      | -50.40      |



|                          |                                |                 |                |
|--------------------------|--------------------------------|-----------------|----------------|
| Mode                     | TX channel 23305<br>(790.5MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 70%RH                | Input Power     | 120Vac, 60Hz   |
| Tested By                | Noah Chang                     |                 |                |

Antenna Polarity & Test Distance: Vertical at 3 M

| No. | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | ERP (dBm) | Limit (dBm) | Margin (dB) |
|-----|-------------|---------------|-----------------------|------------------------|-----------|-------------|-------------|
| 1   | 64.92       | -49.80        | -52.60                | -6.30                  | -58.90    | -13.00      | -45.90      |
| 2   | 103.72      | -49.00        | -57.60                | 0.70                   | -56.90    | -13.00      | -43.90      |
| 3   | 173.56      | -49.60        | -54.00                | 2.10                   | -51.90    | -13.00      | -38.90      |
| 4   | 210.42      | -52.80        | -61.70                | 5.40                   | -56.30    | -13.00      | -43.30      |
| 5   | 745.86      | -62.70        | -63.90                | 4.70                   | -59.20    | -13.00      | -46.20      |
| 6   | 934.04      | -67.30        | -64.70                | 3.90                   | -60.80    | -13.00      | -47.80      |



Above 1GHz

LTE Band 14, Channel Bandwidth: 5MHz

|                          |                                |                 |              |
|--------------------------|--------------------------------|-----------------|--------------|
| Mode                     | TX channel 23305<br>(790.5MHz) | Frequency Range | 1 ~ 10GHz    |
| Environmental Conditions | 22deg. C, 68%RH                | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                       |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1581.00     | -60.00        | -50.00                | 1.20                   | -48.80     | -40.00      | -8.80       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1581.00     | -57.50        | -48.30                | 1.20                   | -47.10     | -40.00      | -7.10       |

|                          |                                |                 |              |
|--------------------------|--------------------------------|-----------------|--------------|
| Mode                     | TX channel 23330<br>(793.0MHz) | Frequency Range | 1 ~ 10GHz    |
| Environmental Conditions | 22deg. C, 68%RH                | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                       |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1586.00     | -60.10        | -50.00                | 1.10                   | -48.90     | -40.00      | -8.90       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1586.00     | -57.60        | -48.30                | 1.10                   | -47.20     | -40.00      | -7.20       |

|                          |                                |                 |              |
|--------------------------|--------------------------------|-----------------|--------------|
| Mode                     | TX channel 23355<br>(795.5MHz) | Frequency Range | 1 ~ 10GHz    |
| Environmental Conditions | 22deg. C, 68%RH                | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                       |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1591.00     | -60.20        | -50.10                | 1.10                   | -49.00     | -40.00      | -9.00       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1591.00     | -57.90        | -48.60                | 1.10                   | -47.50     | -40.00      | -7.50       |

LTE Band 14, Channel Bandwidth: 10MHz

|                          |                                |                 |              |
|--------------------------|--------------------------------|-----------------|--------------|
| Mode                     | TX channel 23330<br>(793.0MHz) | Frequency Range | 1 ~ 10GHz    |
| Environmental Conditions | 22deg. C, 68%RH                | Input Power     | 120Vac, 60Hz |
| Tested By                | Greg Lin                       |                 |              |

| Antenna Polarity & Test Distance: Horizontal at 3 M |             |               |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|---------------|-----------------------|------------------------|------------|-------------|-------------|
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1586.00     | -59.90        | -49.80                | 1.10                   | -48.70     | -40.00      | -8.70       |
| Antenna Polarity & Test Distance: Vertical at 3 M   |             |               |                       |                        |            |             |             |
| No.                                                 | Freq. (MHz) | Reading (dBm) | S.G Power Value (dBm) | Correction Factor (dB) | EIRP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 1586.00     | -57.70        | -48.40                | 1.10                   | -47.30     | -40.00      | -7.30       |

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

### Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

### Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

### Hwa Ya EMC/RF/Safety Lab

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)

The address and road map of all our labs can be found in our web site also.

--- END ---