

## FCC Test Report (Part 24)

**Report No.:** RF180102C33C-21

**FCC ID:** PZWBHT1800QG

**Model:** BHT-1800QWBG-3

**Series Model:** BHT-1800QWBG-1, BHT-1800QWBG-2 (Refer to item 3.1 for the more details)

**Received Date:** Jan. 02, 2018

**Test Date:** Jul. 18 ~ Jul. 26, 2018

**Issued Date:** Aug. 06, 2018

**Applicant:** DENSO WAVE INCORPORATED

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

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**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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### Release Control Record

| Issue No.       | Description      | Date Issued   |
|-----------------|------------------|---------------|
| RF180102C33C-21 | Original release | Aug. 06, 2018 |

## 1 Certificate of Conformity

**Product:** Barcode Handy Terminal, 2D Code Handy Terminal

**Brand:** DENSO

**Model:** BHT-1800QWBG-3

**Series Model:** BHT-1800QWBG-1, BHT-1800QWBG-2 (Refer to item 3.1 for the more details)

**Sample Status:** Engineering sample

**Applicant:** DENSO WAVE INCORPORATED

**Test Date:** Jul. 18 ~ Jul. 26, 2018

**Standards:** FCC Part 24, Subpart E

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 :** Pettie Chen , **Date:** Aug. 06, 2018  
Pettie Chen / Senior Specialist

**Approved by :** Bruce Chen , **Date:** Aug. 06, 2018  
Bruce Chen / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 24 & Part 2 |                              |        |                                                                                   |
|----------------------------------------|------------------------------|--------|-----------------------------------------------------------------------------------|
| FCC Clause                             | Test Item                    | Result | Remarks                                                                           |
| 2.1046<br>24.232                       | Effective radiated power     | Pass   | Meet the requirement of limit.                                                    |
| 2.1046<br>24.232(d)                    | Peak To Average Ratio        | Pass   | Meet the requirement of limit.                                                    |
| 2.1047                                 | Modulation characteristics   | Pass   | Meet the requirement                                                              |
| 2.1055<br>24.235                       | Frequency Stability          | Pass   | Meet the requirement of limit.                                                    |
| 2.1049<br>24.238(b)                    | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                    |
| 24.238(b)                              | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                    |
| 2.1051<br>24.238                       | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                    |
| 2.1053<br>24.238                       | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -22.5dB at 746.83MHz. |

### 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) ( $\pm$ ) |
|--------------------------------|-----------------|--------------------------------------|
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz  | 3.59 dB                              |
|                                | 200MHz ~1000MHz | 3.60 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.                      | Cal. Date     | Cal. Due      |
|-----------------------------------------------|------------------------------------|---------------------------------|---------------|---------------|
| Test Receiver<br>KEYSIGHT                     | N9038A                             | MY55420137                      | Apr. 11, 2018 | Apr. 10, 2019 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ          | FSP40                              | 100269                          | May 29, 2018  | May 28, 2019  |
| BILOG Antenna<br>SCHWARZBECK                  | VULB9168                           | 9168-148                        | Dec. 11, 2017 | Dec. 10, 2018 |
| HORN Antenna<br>SCHWARZBECK                   | BBHA 9120 D                        | 9120D-1169                      | Dec. 12, 2017 | Dec. 11, 2018 |
| HORN Antenna<br>SCHWARZBECK                   | BBHA 9170                          | BBHA9170241                     | Dec. 01, 2017 | Nov. 30, 2018 |
| Loop Antenna<br>EMCI                          | EM-6879                            | 269                             | Aug. 11, 2017 | Aug. 10, 2018 |
| Preamplifier<br>Agilent<br>(Below 1GHz)       | 8447D                              | 2944A10638                      | Aug. 08, 2017 | Aug. 07, 2018 |
| Preamplifier<br>Agilent<br>(Above 1GHz)       | 8449B                              | 3008A01638                      | Feb. 22, 2018 | Feb. 21, 2019 |
| RF signal cable<br>HUBER+SUHNER&EMCI          | SUCOFLEX 104 &<br>EMC104-SM-SM8000 | CABLE-CH9-02<br>(248780+171006) | Jan. 15, 2018 | Jan. 14, 2019 |
| RF signal cable<br>HUBER+SUHNER               | SUCOFLEX 104                       | CABLE-CH9-(250795/4)            | Aug. 08, 2017 | Aug. 07, 2018 |
| RF signal cable<br>Woken                      | 8D-FB                              | Cable-CH9-01                    | Aug. 01, 2017 | Jul. 31, 2018 |
| 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            |
| Turn Table Controller<br>BV ADT               | SC100                              | SC93021702                      | NA            | NA            |
| Temperature And Humidity<br>Chamber<br>TERCHY | HRM-120RF                          | 931022                          | Nov. 20, 2017 | Nov. 19, 2018 |
| JFW 20dB attenuation                          | 50HF-020-SMA                       | NA                              | NA            | NA            |
| Radio Communication<br>Analyzer               | MT8821C                            | 6261786083                      | Dec. 21, 2017 | Dec. 20, 2018 |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 9.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is IC 7450F-9.

### 3 General Information

#### 3.1 General Description of EUT

|                     |                                                                                                     |                       |                     |
|---------------------|-----------------------------------------------------------------------------------------------------|-----------------------|---------------------|
| Product             | Barcode Handy Terminal, 2D Code Handy Terminal                                                      |                       |                     |
| Brand               | DENSO                                                                                               |                       |                     |
| Model               | BHT-1800QWBG-3                                                                                      |                       |                     |
| Series Model        | BHT-1800QWBG-1, BHT-1800QWBG-2                                                                      |                       |                     |
| Model Difference    | Refer to Note                                                                                       |                       |                     |
| Sample Status       | Engineering sample                                                                                  |                       |                     |
| Power Supply Rating | 3.85Vdc (battery)<br>12Vdc (Cradle)                                                                 |                       |                     |
| Modulation Type     | GSM/GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: BPSK, QPSK<br>HSDPA: BPSK<br>HSUPA: QPSK<br>LTE: QPSK, 16QAM |                       |                     |
| Operating Frequency | GSM/GPRS/ EDGE                                                                                      | 1850.2MHz ~ 1909.8MHz |                     |
|                     | WCDMA                                                                                               | 1852.4MHz ~ 1907.6MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 1.4MHz)                                                               | 1850.7MHz ~ 1909.3MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 3MHz)                                                                 | 1851.5MHz ~ 1908.5MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 5MHz)                                                                 | 1852.5MHz ~ 1907.5MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 10MHz)                                                                | 1855.0MHz ~ 1905.0MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 15MHz)                                                                | 1857.5MHz ~ 1902.5MHz |                     |
|                     | LTE Band 2 (Channel Bandwidth 20MHz)                                                                | 1860.0MHz ~ 1900.0MHz |                     |
| Max. EIRP Power     | GSM                                                                                                 | 1122.018mW (30.5dBm)  |                     |
|                     | GPRS                                                                                                | 1071.519mW (30.3dBm)  |                     |
|                     | WCDMA                                                                                               | 389.045mW (25.9dBm)   |                     |
|                     |                                                                                                     | QPSK                  | 16QAM               |
|                     | LTE Band 2 (Channel Bandwidth 1.4MHz)                                                               | 524.807mW (27.2dBm)   | 416.869mW (26.2dBm) |
|                     | LTE Band 2 (Channel Bandwidth 3MHz)                                                                 | 562.341mW (27.5dBm)   | 446.684mW (26.5dBm) |
|                     | LTE Band 2 (Channel Bandwidth 5MHz)                                                                 | 575.440mW (27.6dBm)   | 446.684mW (26.5dBm) |
|                     | LTE Band 2 (Channel Bandwidth 10MHz)                                                                | 575.440mW (27.6dBm)   | 457.088mW (26.6dBm) |
|                     | LTE Band 2 (Channel Bandwidth 15MHz)                                                                | 575.440mW (27.6dBm)   | 501.187mW (27.0dBm) |
|                     | LTE Band 2 (Channel Bandwidth 20MHz)                                                                | 549.541mW (27.4dBm)   | 436.516mW (26.4dBm) |

|                     |                                       |         |         |
|---------------------|---------------------------------------|---------|---------|
| Emission Designator | GSM                                   | 260KGXW |         |
|                     | GPRS                                  | 250KGXW |         |
|                     | EDGE                                  | 260KGXW |         |
|                     | WCDMA                                 | 4M16F9W |         |
|                     |                                       | QPSK    | 16QAM   |
|                     | LTE Band 2 (Channel Bandwidth 1.4MHz) | 1M09G7D | 1M09D7W |
|                     | LTE Band 2 (Channel Bandwidth 3MHz)   | 2M68G7D | 2M69D7W |
|                     | LTE Band 2 (Channel Bandwidth 5MHz)   | 4M48G7D | 4M48D7W |
|                     | LTE Band 2 (Channel Bandwidth 10MHz)  | 8M96G7D | 8M96D7W |
|                     | LTE Band 2 (Channel Bandwidth 15MHz)  | 13M4G7D | 13M4D7W |
|                     | LTE Band 2 (Channel Bandwidth 20MHz)  | 18M0G7D | 18M0D7W |
| Antenna Type        | Refer to Note as below                |         |         |
| Accessory Device    | Refer to Note as below                |         |         |
| Data Cable Supplied | Refer to Note as below                |         |         |

Note:

1. All models are listed as below.

| Model Name     | base module            | CPU     | Software | LCD | WLAN / WWAN / NFC |     |     |                  |            |     |
|----------------|------------------------|---------|----------|-----|-------------------|-----|-----|------------------|------------|-----|
|                |                        |         | OS       | 5"  | WLAN              | GPS | LTE | LTE Antenna type | Docomo IoT | NFC |
| BHT-1800QWBG-3 | 5inch WLAN/BT+LTE(USA) | MSM8909 | Android  | ○   | ○                 | ○   | ○   | USA              | ○          | ○   |
| BHT-1800QWBG-1 | 5inch WLAN/BT+LTE(USA) | MSM8909 | Android  | ○   | ○                 | ○   | ○   | USA              | ○          | ○   |
| BHT-1800QWBG-2 | 5inch WLAN/BT+LTE(USA) | MSM8909 | Android  | ○   | ○                 | ○   | ○   | USA              | ○          | ○   |

| Model Name     | Audio   |          |         |          |           | Sensor    | Charge          | Reading |               |                |
|----------------|---------|----------|---------|----------|-----------|-----------|-----------------|---------|---------------|----------------|
|                | speaker | Main MIC | Sub MIC | Receiver | Ear phone | IR Reader | wireless charge | 2D      | Camera (rear) | Camera (front) |
| BHT-1800QWBG-3 | ○       | ○        | ○       | ○        | ○         | ○         | ○               | ○       | ○             | ○              |
| BHT-1800QWBG-1 | ○       | ○        | ○       | ○        | ○         | ○         | ○               | ○       | ○             | ○              |
| BHT-1800QWBG-2 | ○       | ○        | ○       | ○        | ○         | ○         | ○               | ○       | ○             | ○              |

\*Model: BHT-1800QWBG-3 was chosen for the final tests.

\*NFC Limited module (include WPC) (Brand: DENSO, Model: DWI003, FCC ID: PZWDWI003) collocated in EUT (model: BHT-1800QWBG-3).

2. The EUT with follow antennas gain is listed as table below.

| Ant. No.    | Band                                         | Brand | Antenna Type | Antenna Gain | Connecter Type |
|-------------|----------------------------------------------|-------|--------------|--------------|----------------|
| 1 (Main_TX) | GSM/GPRS 1900/<br>WCDMA Band 2<br>LTE Band 2 | WHAYU | PIFA         | 1.61         | Metal shrapnel |
| 2 (Aux._RX) |                                              |       | PIFA         | 2.81         | Metal shrapnel |

3. The EUT consumes power from the following battery.

|                             |                            |
|-----------------------------|----------------------------|
| Battery (For BHT-1800 Used) |                            |
| Brand                       | DENSO                      |
| Model                       | BT-180LA                   |
| Rating                      | 2900mAh, 3.85Vdc, 11.165Wh |

4. The client provides the following cradles for tests. (Support unit only)

|                                               |                   |
|-----------------------------------------------|-------------------|
| LAN Cradle (For BHT-1800 Used) (Support unit) |                   |
| Brand                                         | DENSO             |
| Model                                         | CU-BL-18          |
| Output Power                                  | 12Vdc, 4.16A, 50W |

| USB Cradle (For BHT-1800 Used) (Support unit) |                   |
|-----------------------------------------------|-------------------|
| Brand                                         | DENSO             |
| Model                                         | CU-BU1-18         |
| Output Power                                  | 12Vdc, 4.16A, 50W |

| Adapter for cradle (Support unit) |                                                            |
|-----------------------------------|------------------------------------------------------------|
| Brand                             | FSP GROUP INC.                                             |
| Model                             | FSP050-DBAE1                                               |
| Input Power                       | 100-240Vac, 1.5A, 50/60Hz                                  |
| Output Power                      | 12Vdc, 4.16A, 50W                                          |
| Power Line                        | 1.2m non-shielded DC cable with 1 core attached on adapter |

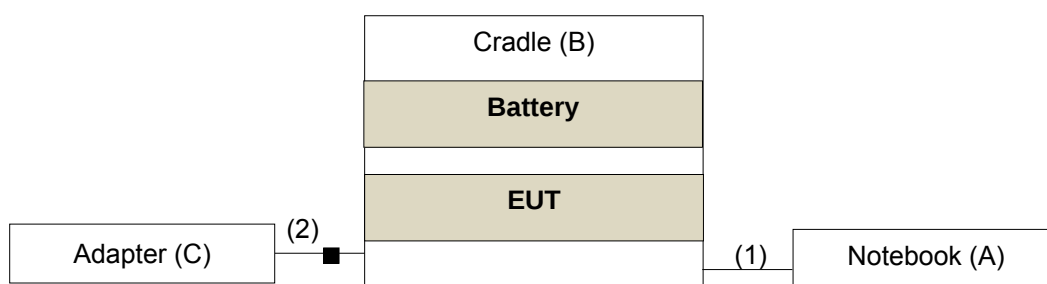
\*After pre-testing, USB cradle is the worst case for the final tests.

### 3.2 Configuration of System under Test

Radiated Spurious Emissions (Frequency range above 1GHz)



Radiated Spurious Emissions (Frequency range below 1GHz)



#### 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. | Notebook | DELL           | E5430        | 2RL3YW1    | FCC DoC Approved | -                        |
| B. | Cradle   | DENSO          | CU-BU1-18    | NA         | NA               | Provided by manufacturer |
| C. | Adapter  | FSP GROUP INC. | FSP050-DBAE1 | NA         | NA               | Provided by manufacturer |

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

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks                  |
|----|--------------|------|------------|--------------------|--------------|--------------------------|
| 1. | USB cable    | 1    | 0.5        | Y                  | 0            | -                        |
| 2. | DC cable     | 1    | 1.2        | N                  | 1            | Provided by manufacturer |

### 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 X-plane (Radiated Spurious Emissions (Frequency range above 1GHz)) & Z-plane (Radiated Spurious Emissions (Frequency range below 1GHz)). Following channel(s) was (were) selected for the final test as listed below:

#### GPRS Mode

| EUT Configure Mode | Test Item                    | Available Channel | Tested Channel                                       | Mode            |
|--------------------|------------------------------|-------------------|------------------------------------------------------|-----------------|
| -                  | EIRP                         | 512 to 810        | 512(1850.2MHz),<br>661(1880.0MHz),<br>810(1909.8MHz) | GSM, GPRS       |
| -                  | Modulation characteristics   | 512 to 810        | 661(1880.0MHz)                                       | GPRS, EDGE      |
| -                  | Frequency Stability          | 512 to 810        | 661(1880.0MHz)                                       | GPRS            |
| -                  | Occupied Bandwidth           | 512 to 810        | 512(1850.2MHz),<br>661(1880.0MHz),<br>810(1909.8MHz) | GSM, GPRS, EDGE |
| -                  | Band Edge                    | 512 to 810        | 512(1850.2MHz),<br>810(1909.8MHz)                    | GSM, GPRS, EDGE |
| -                  | Peak To Average Ratio        | 512 to 810        | 512(1850.2MHz),<br>661(1880.0MHz),<br>810(1909.8MHz) | GSM, GPRS, EDGE |
| -                  | Conducted Emission           | 512 to 810        | 512(1850.2MHz),<br>661(1880.0MHz),<br>810(1909.8MHz) | GSM, GPRS, EDGE |
| -                  | Radiated Emission Below 1GHz | 512 to 810        | 512(1850.2MHz)                                       | GSM, GPRS       |
| -                  | Radiated Emission Above 1GHz | 512 to 810        | 512(1850.2MHz),<br>661(1880.0MHz),<br>810(1909.8MHz) | GSM, GPRS       |

# WCDMA Mode

| EUT Configure Mode | Test Item                       | Available Channel | Tested Channel                                          | Mode  |
|--------------------|---------------------------------|-------------------|---------------------------------------------------------|-------|
| -                  | EIRP                            | 9262 to 9538      | 9262(1852.4MHz),<br>9400(1880.0MHz),<br>9538(1907.6MHz) | WCDMA |
| -                  | Modulation characteristics      | 9262 to 9538      | 9400(1880.0MHz)                                         | WCDMA |
| -                  | Frequency Stability             | 9262 to 9538      | 9400(1880.0MHz)                                         | WCDMA |
| -                  | Occupied Bandwidth              | 9262 to 9538      | 9262(1852.4MHz),<br>9400(1880.0MHz),<br>9538(1907.6MHz) | WCDMA |
| -                  | Band Edge                       | 9262 to 9538      | 9262(1852.4MHz),<br>9538(1907.6MHz)                     | WCDMA |
| -                  | Peak To Average Ratio           | 9262 to 9538      | 9262(1852.4MHz),<br>9400(1880.0MHz),<br>9538(1907.6MHz) | WCDMA |
| -                  | Conducted Emission              | 9262 to 9538      | 9262(1852.4MHz),<br>9400(1880.0MHz),<br>9538(1907.6MHz) | WCDMA |
| -                  | Radiated Emission<br>Below 1GHz | 9262 to 9538      | 9262(1852.4MHz)                                         | WCDMA |
| -                  | Radiated Emission<br>Above 1GHz | 9262 to 9538      | 9262(1852.4MHz),<br>9400(1880.0MHz),<br>9538(1907.6MHz) | WCDMA |

## LTE Band 2

| EUT Configure Mode | Test item                  | Available channel | Tested Channel                                                | Channel Bandwidth | Modulation   | Mode                                                              |
|--------------------|----------------------------|-------------------|---------------------------------------------------------------|-------------------|--------------|-------------------------------------------------------------------|
| -                  | EIRP                       | 18607 to 19193    | 18607(1850.70MHz),<br>18900(1880.00MHz),<br>19193(1909.30MHz) | 1.4MHz            | QPSK / 16QAM | 1 RB / 5 RB Offset                                                |
|                    |                            | 18615 to 19185    | 18615(1851.50MHz),<br>18900(1880.00MHz),<br>19185(1908.50MHz) | 3MHz              | QPSK / 16QAM | 1 RB / 14 RB Offset                                               |
|                    |                            | 18625 to 19175    | 18625(1852.50MHz),<br>18900(1880.00MHz),<br>19175(1907.50MHz) | 5MHz              | QPSK / 16QAM | 1 RB / 24 RB Offset                                               |
|                    |                            | 18650 to 19150    | 18650(1855.00MHz),<br>18900(1880.00MHz),<br>19150(1905.00MHz) | 10MHz             | QPSK / 16QAM | 1 RB / 49 RB Offset                                               |
|                    |                            | 18675 to 19125    | 18675(1857.50MHz),<br>18900(1880.00MHz),<br>19125(1902.50MHz) | 15MHz             | QPSK / 16QAM | 1 RB / 74 RB Offset                                               |
|                    |                            | 18700 to 19100    | 18700(1860.00MHz),<br>18900(1880.00MHz),<br>19100(1900.00MHz) | 20MHz             | QPSK / 16QAM | 1 RB / 99 RB Offset                                               |
| -                  | Modulation characteristics | 18700 to 19100    | 18900(1880.00MHz)                                             | 20MHz             | QPSK / 16QAM | 1 RB / 99 RB Offset                                               |
| -                  | Frequency Stability        | 18607 to 19193    | 18900(1880.00MHz)                                             | 1.4MHz            | QPSK         | 1 RB / 5 RB Offset                                                |
| -                  | Occupied Bandwidth         | 18607 to 19193    | 18607(1850.70MHz),<br>18900(1880.00MHz),<br>19193(1909.30MHz) | 1.4MHz            | QPSK / 16QAM | 1 RB / 5 RB Offset                                                |
|                    |                            | 18615 to 19185    | 18615(1851.50MHz),<br>18900(1880.00MHz),<br>19185(1908.50MHz) | 3MHz              | QPSK / 16QAM | 1 RB / 14 RB Offset                                               |
|                    |                            | 18625 to 19175    | 18625(1852.50MHz),<br>18900(1880.00MHz),<br>19175(1907.50MHz) | 5MHz              | QPSK / 16QAM | 1 RB / 24 RB Offset                                               |
|                    |                            | 18650 to 19150    | 18650(1855.00MHz),<br>18900(1880.00MHz),<br>19150(1905.00MHz) | 10MHz             | QPSK / 16QAM | 1 RB / 49 RB Offset                                               |
|                    |                            | 18675 to 19125    | 18675(1857.50MHz),<br>18900(1880.00MHz),<br>19125(1902.50MHz) | 15MHz             | QPSK / 16QAM | 1 RB / 74 RB Offset                                               |
|                    |                            | 18700 to 19100    | 18700(1860.00MHz),<br>18900(1880.00MHz),<br>19100(1900.00MHz) | 20MHz             | QPSK / 16QAM | 1 RB / 99 RB Offset                                               |
| -                  | Band Edge                  | 18607 to 19193    | 18607(1850.70MHz),<br>19193(1909.30MHz)                       | 1.4MHz            | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset    |
|                    |                            | 18615 to 19185    | 18615(1851.50MHz),<br>19185(1908.50MHz)                       | 3MHz              | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset  |
|                    |                            | 18625 to 19175    | 18625(1852.50MHz),<br>19175(1907.50MHz)                       | 5MHz              | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset  |
|                    |                            | 18650 to 19150    | 18650(1855.00MHz),<br>19150(1905.00MHz)                       | 10MHz             | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset  |
|                    |                            | 18675 to 19125    | 18675(1857.50MHz),<br>19125(1902.50MHz)                       | 15MHz             | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset  |
|                    |                            | 18700 to 19100    | 18700(1860.00MHz),<br>19100(1900.00MHz)                       | 20MHz             | QPSK         | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |

| EUT<br>Configure<br>Mode | Test item                       | Available channel | Tested Channel                                                | Channel<br>Bandwidth | Modulation   | Mode                |
|--------------------------|---------------------------------|-------------------|---------------------------------------------------------------|----------------------|--------------|---------------------|
| -                        | Peak to Average<br>Ratio        | 18607 to 19193    | 18607(1850.70MHz),<br>18900(1880.00MHz),<br>19193(1909.30MHz) | 1.4MHz               | QPSK / 16QAM | 1 RB / 5 RB Offset  |
|                          |                                 | 18615 to 19185    | 18615(1851.50MHz),<br>18900(1880.00MHz),<br>19185(1908.50MHz) | 3MHz                 | QPSK / 16QAM | 1 RB / 14 RB Offset |
|                          |                                 | 18625 to 19175    | 18625(1852.50MHz),<br>18900(1880.00MHz),<br>19175(1907.50MHz) | 5MHz                 | QPSK / 16QAM | 1 RB / 24 RB Offset |
|                          |                                 | 18650 to 19150    | 18650(1855.00MHz),<br>18900(1880.00MHz),<br>19150(1905.00MHz) | 10MHz                | QPSK / 16QAM | 1 RB / 49 RB Offset |
|                          |                                 | 18675 to 19125    | 18675(1857.50MHz),<br>18900(1880.00MHz),<br>19125(1902.50MHz) | 15MHz                | QPSK / 16QAM | 1 RB / 74 RB Offset |
|                          |                                 | 18700 to 19100    | 18700(1860.00MHz),<br>18900(1880.00MHz),<br>19100(1900.00MHz) | 20MHz                | QPSK / 16QAM | 1 RB / 99 RB Offset |
| -                        | Conducted<br>Emission           | 18607 to 19193    | 18607(1850.70MHz),<br>18900(1880.00MHz),<br>19193(1909.30MHz) | 1.4MHz               | QPSK         | 1 RB / 5 RB Offset  |
|                          |                                 | 18615 to 19185    | 18615(1851.50MHz),<br>18900(1880.00MHz),<br>19185(1908.50MHz) | 3MHz                 | QPSK         | 1 RB / 14 RB Offset |
|                          |                                 | 18625 to 19175    | 18625(1852.50MHz),<br>18900(1880.00MHz),<br>19175(1907.50MHz) | 5MHz                 | QPSK         | 1 RB / 24 RB Offset |
|                          |                                 | 18650 to 19150    | 18650(1855.00MHz),<br>18900(1880.00MHz),<br>19150(1905.00MHz) | 10MHz                | QPSK         | 1 RB / 49 RB Offset |
|                          |                                 | 18675 to 19125    | 18675(1857.50MHz),<br>18900(1880.00MHz),<br>19125(1902.50MHz) | 15MHz                | QPSK         | 1 RB / 74 RB Offset |
|                          |                                 | 18700 to 19100    | 18700(1860.00MHz),<br>18900(1880.00MHz),<br>19100(1900.00MHz) | 20MHz                | QPSK         | 1 RB / 99 RB Offset |
| -                        | Radiated Emission<br>Below 1GHz | 18607 to 19193    | 18607(1850.70MHz)                                             | 1.4MHz               | QPSK         | 1 RB / 5 RB Offset  |
|                          |                                 | 18615 to 19185    | 18615(1851.50MHz)                                             | 3MHz                 | QPSK         | 1 RB / 14 RB Offset |
|                          |                                 | 18625 to 19175    | 18625(1852.50MHz)                                             | 5MHz                 | QPSK         | 1 RB / 24 RB Offset |
|                          |                                 | 18650 to 19150    | 18650(1855.00MHz)                                             | 10MHz                | QPSK         | 1 RB / 49 RB Offset |
|                          |                                 | 18675 to 19125    | 18675(1857.50MHz)                                             | 15MHz                | QPSK         | 1 RB / 74 RB Offset |
|                          |                                 | 18700 to 19100    | 18700(1860.00MHz)                                             | 20MHz                | QPSK         | 1 RB / 99 RB Offset |
| -                        | Radiated Emission<br>Above 1GHz | 18607 to 19193    | 18607(1850.70MHz),<br>18900(1880.00MHz),<br>19193(1909.30MHz) | 1.4MHz               | QPSK         | 1 RB / 5 RB Offset  |
|                          |                                 | 18615 to 19185    | 18615(1851.50MHz),<br>18900(1880.00MHz),<br>19185(1908.50MHz) | 3MHz                 | QPSK         | 1 RB / 14 RB Offset |
|                          |                                 | 18625 to 19175    | 18625(1852.50MHz),<br>18900(1880.00MHz),<br>19175(1907.50MHz) | 5MHz                 | QPSK         | 1 RB / 24 RB Offset |
|                          |                                 | 18650 to 19150    | 18650(1855.00MHz),<br>18900(1880.00MHz),<br>19150(1905.00MHz) | 10MHz                | QPSK         | 1 RB / 49 RB Offset |
|                          |                                 | 18675 to 19125    | 18675(1857.50MHz),<br>18900(1880.00MHz),<br>19125(1902.50MHz) | 15MHz                | QPSK         | 1 RB / 74 RB Offset |
|                          |                                 | 18700 to 19100    | 18700(1860.00MHz),<br>18900(1880.00MHz),<br>19100(1900.00MHz) | 20MHz                | QPSK         | 1 RB / 99 RB Offset |

**Note:**

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber with 1.4MHz mode. Low channel on mode A was found to be the worst case and therefore had been chosen for all final tests.
2. The conducted output power for QPSK, 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM modes, the other test items were performed under QPSK mode only.

**Test Condition:**

| Test Item                  | Environmental Conditions           | Input Power (System) | Tested By          |
|----------------------------|------------------------------------|----------------------|--------------------|
| EIRP                       | 22deg. C, 66%RH                    | 120Vac, 60Hz         | Han Wu             |
| Modulation characteristics | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Frequency Stability        | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Occupied Bandwidth         | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Band Edge                  | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Peak To Average Ratio      | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Conducted Emission         | 24deg. C, 64%RH                    | 120Vac, 60Hz         | James Yang         |
| Radiated Emission          | 22deg. C, 66%RH<br>25deg. C, 65%RH | 120Vac, 60Hz         | Han Wu<br>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

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

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

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

**ANSI 63.26-2015**

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

## 4 Test Types and Results

### 4.1 Output Power Measurement

#### 4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 2 watts e.r.p.

#### 4.1.2 Test Procedures

##### EIRP / ERP Measurement:

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM/GPRS, 5MHz for WCDMA mode and 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) 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.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. 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 - 2.15dB.

Where:

$$\text{ERP/EIRP} = P_{\text{Meas}} + G_T - L_C$$

$P_{\text{Meas}}$  : Measure transmitter output power.

$G_T$  : Gain of the transmitting antenna.

$L_C$  : signal attenuation in the connecting cable between the transmitter and antenna.

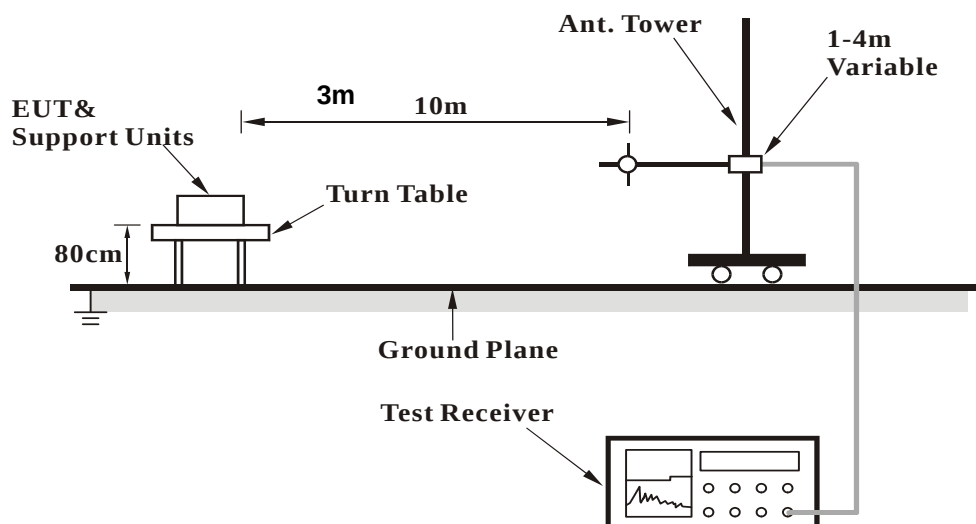
##### Conducted Power Measurement:

The EUT was set up for the maximum power with GPRS, WCDMA, 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.

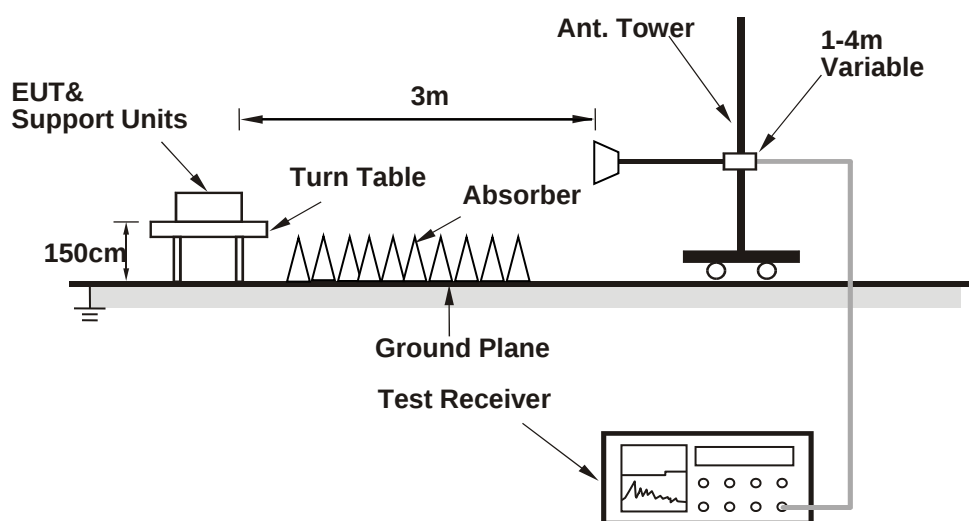
#### 4.1.3 Test Setup

EIRP / ERP Measurement:

**For Radiated Emission below or equal 1GHz**



**For Radiated Emission above 1GHz**



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

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)

| Band                 | GPRS1900 |       |        |
|----------------------|----------|-------|--------|
| Channel              | 512      | 661   | 810    |
| Frequency (MHz)      | 1850.2   | 1880  | 1909.8 |
| GSM 1Tx Slot         | 30.15    | 30.22 | 30.18  |
| GPRS 1Tx Slot        | 30.15    | 30.22 | 30.18  |
| GPRS 2Tx Slot        | 30.13    | 30.18 | 30.14  |
| GPRS 3Tx Slot        | 29.53    | 29.58 | 29.54  |
| GPRS 4Tx Slot        | 28.48    | 28.53 | 28.49  |
| EDGE 1Tx Slot (MCS9) | 27.48    | 27.43 | 27.44  |
| EDGE 2Tx Slot (MCS9) | 25.82    | 25.87 | 25.83  |
| EDGE 3Tx Slot (MCS9) | 25.27    | 25.32 | 25.28  |
| EDGE 4Tx Slot (MCS9) | 24.21    | 24.26 | 24.22  |

| Band               | WCDMA Band II |       |        |
|--------------------|---------------|-------|--------|
| TX Channel         | 9262          | 9400  | 9538   |
| Rx Channel         | 9662          | 9800  | 9938   |
| Frequency (MHz)    | 1852.4        | 1880  | 1907.6 |
| RMC 12.2K          | 24.63         | 24.48 | 24.49  |
| HSDPA Subtest-1    | 23.82         | 23.57 | 23.68  |
| HSDPA Subtest-2    | 23.76         | 23.51 | 23.62  |
| HSDPA Subtest-3    | 23.41         | 23.16 | 23.27  |
| HSDPA Subtest-4    | 23.36         | 23.11 | 23.22  |
| DC-HSDPA Subtest-1 | 23.69         | 23.44 | 23.55  |
| DC-HSDPA Subtest-2 | 23.67         | 23.42 | 23.53  |
| DC-HSDPA Subtest-3 | 23.34         | 23.09 | 23.20  |
| DC-HSDPA Subtest-4 | 23.28         | 23.03 | 23.14  |
| HSUPA Subtest-1    | 23.73         | 23.48 | 23.59  |
| HSUPA Subtest-2    | 22.70         | 22.45 | 22.56  |
| HSUPA Subtest-3    | 22.62         | 22.37 | 22.48  |
| HSUPA Subtest-4    | 22.98         | 22.91 | 22.95  |
| HSUPA Subtest-5    | 23.81         | 23.56 | 23.67  |

Conducted Output Power (dBm)

| LTE Band 2 |           |                 |           |       |       |       |
|------------|-----------|-----------------|-----------|-------|-------|-------|
| BW         | MCS Index | RB Size         | RB Offset | Low   | Mid   | High  |
|            |           | Channel         |           | 18700 | 18900 | 19100 |
|            |           | Frequency (MHz) |           | 1860  | 1880  | 1900  |
| 20M        | QPSK      | 1               | 0         | 23.58 | 23.69 | 23.61 |
|            |           | 1               | 50        | 23.20 | 23.31 | 23.23 |
|            |           | 1               | 99        | 23.13 | 23.24 | 23.16 |
|            |           | 50              | 0         | 22.56 | 22.67 | 22.59 |
|            |           | 50              | 25        | 22.45 | 22.56 | 22.48 |
|            |           | 50              | 50        | 22.42 | 22.53 | 22.45 |
|            |           | 100             | 0         | 22.57 | 22.68 | 22.60 |
|            | 16QAM     | 1               | 0         | 22.53 | 22.59 | 22.56 |
|            |           | 1               | 50        | 22.10 | 22.28 | 22.16 |
|            |           | 1               | 99        | 22.03 | 22.22 | 22.15 |
|            |           | 50              | 0         | 21.49 | 21.59 | 21.54 |
|            |           | 50              | 25        | 21.35 | 21.54 | 21.38 |
|            |           | 50              | 50        | 21.42 | 21.49 | 21.43 |
|            |           | 100             | 0         | 21.51 | 21.65 | 21.53 |

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18675  | 18900 | 19125  |
|            |           | Frequency (MHz) |           | 1857.5 | 1880  | 1902.5 |
| 15M        | QPSK      | 1               | 0         | 23.48  | 23.67 | 23.58  |
|            |           | 1               | 37        | 23.12  | 23.23 | 23.21  |
|            |           | 1               | 74        | 23.03  | 23.21 | 23.09  |
|            |           | 36              | 0         | 22.47  | 22.57 | 22.49  |
|            |           | 36              | 19        | 22.36  | 22.54 | 22.45  |
|            |           | 36              | 39        | 22.34  | 22.49 | 22.35  |
|            |           | 75              | 0         | 22.56  | 22.64 | 22.50  |
|            | 16QAM     | 1               | 0         | 22.46  | 22.62 | 22.51  |
|            |           | 1               | 37        | 22.10  | 22.28 | 22.18  |
|            |           | 1               | 74        | 22.04  | 22.20 | 22.16  |
|            |           | 36              | 0         | 21.45  | 21.59 | 21.55  |
|            |           | 36              | 19        | 21.36  | 21.46 | 21.42  |
|            |           | 36              | 39        | 21.28  | 21.46 | 21.28  |
|            |           | 75              | 0         | 21.39  | 21.59 | 21.54  |

| LTE Band 2 |           |                 |           |       |       |       |
|------------|-----------|-----------------|-----------|-------|-------|-------|
| BW         | MCS Index | RB Size         | RB Offset | Low   | Mid   | High  |
|            |           | Channel         |           | 18650 | 18900 | 19150 |
|            |           | Frequency (MHz) |           | 1855  | 1880  | 1905  |
| 10M        | QPSK      | 1               | 0         | 22.65 | 22.68 | 22.61 |
|            |           | 1               | 24        | 22.64 | 22.67 | 22.60 |
|            |           | 1               | 49        | 22.58 | 22.61 | 22.54 |
|            |           | 25              | 0         | 21.70 | 21.73 | 21.66 |
|            |           | 25              | 12        | 21.68 | 21.71 | 21.64 |
|            |           | 25              | 25        | 21.58 | 21.61 | 21.54 |
|            |           | 50              | 0         | 21.60 | 21.63 | 21.56 |
|            | 16QAM     | 1               | 0         | 22.35 | 22.45 | 22.46 |
|            |           | 1               | 24        | 22.07 | 22.07 | 22.05 |
|            |           | 1               | 49        | 22.00 | 21.97 | 21.95 |
|            |           | 25              | 0         | 21.37 | 21.46 | 21.41 |
|            |           | 25              | 12        | 21.31 | 21.38 | 21.29 |
|            |           | 25              | 25        | 21.18 | 21.37 | 21.17 |
|            |           | 50              | 0         | 21.36 | 21.49 | 21.39 |

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18625  | 18900 | 19175  |
|            |           | Frequency (MHz) |           | 1852.5 | 1880  | 1907.5 |
| 5M         | QPSK      | 1               | 0         | 23.48  | 23.61 | 22.53  |
|            |           | 1               | 12        | 23.08  | 23.18 | 22.50  |
|            |           | 1               | 24        | 22.98  | 23.12 | 22.42  |
|            |           | 12              | 0         | 22.44  | 22.64 | 21.53  |
|            |           | 12              | 6         | 22.41  | 22.34 | 21.58  |
|            |           | 12              | 13        | 22.21  | 22.40 | 21.50  |
|            |           | 25              | 0         | 22.42  | 22.57 | 21.41  |
|            | 16QAM     | 1               | 0         | 22.40  | 22.47 | 22.34  |
|            |           | 1               | 12        | 21.98  | 22.02 | 22.08  |
|            |           | 1               | 24        | 21.92  | 22.17 | 22.03  |
|            |           | 12              | 0         | 21.35  | 21.40 | 21.40  |
|            |           | 12              | 6         | 21.32  | 21.38 | 21.25  |
|            |           | 12              | 13        | 21.41  | 21.38 | 21.28  |
|            |           | 25              | 0         | 21.39  | 21.56 | 21.54  |

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18615  | 18900 | 19185  |
|            |           | Frequency (MHz) |           | 1851.5 | 1880  | 1908.5 |
| 3M         | QPSK      | 1               | 0         | 23.56  | 23.54 | 23.45  |
|            |           | 1               | 7         | 23.00  | 23.07 | 23.12  |
|            |           | 1               | 14        | 23.04  | 23.21 | 22.97  |
|            |           | 8               | 0         | 22.51  | 22.56 | 22.47  |
|            |           | 8               | 3         | 22.37  | 22.41 | 22.40  |
|            |           | 8               | 7         | 22.26  | 22.40 | 22.38  |
|            |           | 15              | 0         | 22.48  | 22.46 | 22.43  |
|            | 16QAM     | 1               | 0         | 22.36  | 22.56 | 22.35  |
|            |           | 1               | 7         | 21.94  | 22.15 | 22.20  |
|            |           | 1               | 14        | 21.98  | 22.08 | 21.88  |
|            |           | 8               | 0         | 21.35  | 21.52 | 21.39  |
|            |           | 8               | 3         | 21.41  | 21.31 | 21.38  |
|            |           | 8               | 7         | 21.24  | 21.44 | 21.39  |
|            |           | 15              | 0         | 21.42  | 21.54 | 21.46  |

| LTE Band 2 |           |                 |           |        |       |        |
|------------|-----------|-----------------|-----------|--------|-------|--------|
| BW         | MCS Index | RB Size         | RB Offset | Low    | Mid   | High   |
|            |           | Channel         |           | 18607  | 18900 | 19193  |
|            |           | Frequency (MHz) |           | 1850.7 | 1880  | 1909.3 |
| 1.4M       | QPSK      | 1               | 0         | 23.52  | 23.50 | 23.45  |
|            |           | 1               | 2         | 23.12  | 23.14 | 23.09  |
|            |           | 1               | 5         | 23.02  | 23.13 | 23.06  |
|            |           | 3               | 0         | 23.39  | 23.57 | 23.52  |
|            |           | 3               | 1         | 23.27  | 23.47 | 23.30  |
|            |           | 3               | 3         | 23.37  | 23.33 | 23.26  |
|            |           | 6               | 0         | 22.40  | 22.51 | 22.43  |
|            | 16QAM     | 1               | 0         | 22.41  | 22.44 | 22.34  |
|            |           | 1               | 2         | 22.11  | 22.12 | 21.90  |
|            |           | 1               | 5         | 21.96  | 22.10 | 22.05  |
|            |           | 3               | 0         | 22.40  | 22.48 | 22.48  |
|            |           | 3               | 1         | 22.25  | 22.36 | 22.30  |
|            |           | 3               | 3         | 22.19  | 22.40 | 22.36  |
|            |           | 6               | 0         | 21.37  | 21.65 | 21.35  |

EIRP Power (dBm)  
GSM Mode

MODE

TX channel 512

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   | 1850.20     | -9.8          | 30.4                  | 0.1                    | 30.5       | 33.0        | -2.5        |

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   | 1850.20     | -19.3         | 21.1                  | 0.1                    | 21.2       | 33.0        | -11.8       |

|                                                     |             |                |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 661 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -10.9          | 29.6                  | 0.0                    | 29.6       | 33.0        | -3.4        |
| 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                                                   | 1880.00     | -19.2          | 21.4                  | 0.0                    | 21.4       | 33.0        | -11.6       |

|                                                     |             |                |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 810 |                       |                        |            |             |             |
| 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                                                   | 1909.80     | -12.0          | 28.6                  | -0.1                   | 28.5       | 33.0        | -4.5        |
| 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                                                   | 1909.80     | -21.2          | 19.6                  | -0.1                   | 19.5       | 33.0        | -13.5       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

# GPRS Mode

|                                                     |             |                |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 512 |                       |                        |            |             |             |
| 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                                                   | 1850.20     | -10.0          | 30.2                  | 0.1                    | 30.3       | 33.0        | -2.7        |
| 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                                                   | 1850.20     | -19.7          | 20.7                  | 0.1                    | 20.8       | 33.0        | -12.2       |

|                                                     |             |                |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 661 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -11.2          | 29.3                  | 0.0                    | 29.3       | 33.0        | -3.7        |
| 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                                                   | 1880.00     | -19.9          | 20.7                  | 0.0                    | 20.7       | 33.0        | -12.3       |

|                                                     |             |                |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 810 |                       |                        |            |             |             |
| 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                                                   | 1909.80     | -12.2          | 28.4                  | -0.1                   | 28.3       | 33.0        | -4.7        |
| 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                                                   | 1909.80     | -21.9          | 18.9                  | -0.1                   | 18.8       | 33.0        | -14.2       |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

# WCDMA Mode

|                                                     |             |                 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|-----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 9262 |                       |                        |            |             |             |
| 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                                                   | 1852.40     | -16.9           | 23.3                  | 0.1                    | 23.4       | 33.0        | -9.6        |
| 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                                                   | 1852.40     | -14.6           | 25.8                  | 0.1                    | 25.9       | 33.0        | -7.1        |

|                                                     |             |                 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|-----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 9400 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -17.3           | 23.2                  | 0.0                    | 23.2       | 33.0        | -9.8        |
| 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                                                   | 1880.00     | -15.0           | 25.6                  | 0.0                    | 25.6       | 33.0        | -7.4        |

|                                                     |             |                 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|-----------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 9538 |                       |                        |            |             |             |
| 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                                                   | 1907.60     | -17.2           | 23.5                  | -0.1                   | 23.4       | 33.0        | -9.6        |
| 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                                                   | 1907.60     | -15.3           | 25.5                  | -0.1                   | 25.4       | 33.0        | -7.6        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

# Modulation Type: QPSK

LTE Band 2, Channel Bandwidth: 1.4MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18607 |                       |                        |            |             |             |
| 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                                                   | 1850.70     | -13.7            | 26.5                  | 0.1                    | 26.6       | 33.0        | -6.4        |
| 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                                                   | 1850.70     | -15.9            | 24.5                  | 0.1                    | 24.6       | 33.0        | -8.4        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.4            | 27.1                  | 0.0                    | 27.1       | 33.0        | -5.9        |
| 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                                                   | 1880.00     | -15.7            | 24.9                  | 0.0                    | 24.9       | 33.0        | -8.1        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19193 |                       |                        |            |             |             |
| 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                                                   | 1909.30     | -13.4            | 27.3                  | -0.1                   | 27.2       | 33.0        | -5.8        |
| 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                                                   | 1909.30     | -15.7            | 25.1                  | -0.1                   | 25.0       | 33.0        | -8.0        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 3MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18615 |                       |                        |            |             |             |
| 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                                                   | 1851.50     | -13.8            | 26.4                  | 0.1                    | 26.5       | 33.0        | -6.5        |
| 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                                                   | 1851.50     | -16.1            | 24.3                  | 0.1                    | 24.4       | 33.0        | -8.6        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.2            | 27.3                  | 0.0                    | 27.3       | 33.0        | -5.7        |
| 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                                                   | 1880.00     | -15.5            | 25.1                  | 0.0                    | 25.1       | 33.0        | -7.9        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19185 |                       |                        |            |             |             |
| 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                                                   | 1908.50     | -13.1            | 27.6                  | -0.1                   | 27.5       | 33.0        | -5.5        |
| 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                                                   | 1908.50     | -15.4            | 25.4                  | -0.1                   | 25.3       | 33.0        | -7.7        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 5MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18625 |                       |                        |            |             |             |
| 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                                                   | 1852.50     | -13.6            | 26.6                  | 0.1                    | 26.7       | 33.0        | -6.3        |
| 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                                                   | 1852.50     | -15.9            | 24.5                  | 0.1                    | 24.6       | 33.0        | -8.4        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.2            | 27.3                  | 0.0                    | 27.3       | 33.0        | -5.7        |
| 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                                                   | 1880.00     | -15.6            | 25.0                  | 0.0                    | 25.0       | 33.0        | -8.0        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19175 |                       |                        |            |             |             |
| 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                                                   | 1907.50     | -13.0            | 27.7                  | -0.1                   | 27.6       | 33.0        | -5.4        |
| 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                                                   | 1907.50     | -15.3            | 25.5                  | -0.1                   | 25.4       | 33.0        | -7.6        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 10MHz

| MODE                                                |             | TX channel 18650 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| 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                                                   | 1855.00     | -13.6            | 26.7                  | 0.0                    | 26.7       | 33.0        | -6.3        |
| 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                                                   | 1855.00     | -15.9            | 24.6                  | 0.0                    | 24.6       | 33.0        | -8.4        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.1            | 27.4                  | 0.0                    | 27.4       | 33.0        | -5.6        |
| 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                                                   | 1880.00     | -15.3            | 25.3                  | 0.0                    | 25.3       | 33.0        | -7.7        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19150 |                       |                        |            |             |             |
| 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                                                   | 1905.00     | -13.0            | 27.7                  | -0.1                   | 27.6       | 33.0        | -5.4        |
| 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                                                   | 1905.00     | -15.3            | 25.5                  | -0.1                   | 25.4       | 33.0        | -7.6        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 15MHz

| MODE                                                |             | TX channel 18675 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| 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                                                   | 1857.50     | -13.7            | 26.6                  | 0.0                    | 26.6       | 33.0        | -6.4        |
| 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                                                   | 1857.50     | -16.0            | 24.5                  | 0.0                    | 24.5       | 33.0        | -8.5        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.0            | 27.5                  | 0.0                    | 27.5       | 33.0        | -5.5        |
| 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                                                   | 1880.00     | -15.3            | 25.3                  | 0.0                    | 25.3       | 33.0        | -7.7        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19125 |                       |                        |            |             |             |
| 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                                                   | 1902.50     | -13.0            | 27.7                  | -0.1                   | 27.6       | 33.0        | -5.4        |
| 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                                                   | 1902.50     | -15.2            | 25.6                  | -0.1                   | 25.5       | 33.0        | -7.5        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 20MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18700 |                       |                        |            |             |             |
| 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                                                   | 1860.00     | -13.8            | 26.5                  | 0.0                    | 26.5       | 33.0        | -6.5        |
| 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                                                   | 1860.00     | -16.1            | 24.4                  | 0.0                    | 24.4       | 33.0        | -8.6        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.5            | 27.0                  | 0.0                    | 27.0       | 33.0        | -6.0        |
| 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                                                   | 1880.00     | -15.7            | 24.9                  | 0.0                    | 24.9       | 33.0        | -8.1        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19100 |                       |                        |            |             |             |
| 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                                                   | 1900.00     | -13.2            | 27.5                  | -0.1                   | 27.4       | 33.0        | -5.6        |
| 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                                                   | 1900.00     | -15.4            | 25.4                  | -0.1                   | 25.3       | 33.0        | -7.7        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

# Modulation Type: 16QAM

LTE Band 2, Channel Bandwidth: 1.4MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18607 |                       |                        |            |             |             |
| 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                                                   | 1850.70     | -14.7            | 25.5                  | 0.1                    | 25.6       | 33.0        | -7.4        |
| 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                                                   | 1850.70     | -16.5            | 23.9                  | 0.1                    | 24.0       | 33.0        | -9.0        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -14.4            | 26.1                  | 0.0                    | 26.1       | 33.0        | -6.9        |
| 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                                                   | 1880.00     | -16.7            | 23.9                  | 0.0                    | 23.9       | 33.0        | -9.1        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19193 |                       |                        |            |             |             |
| 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                                                   | 1909.30     | -14.4            | 26.3                  | -0.1                   | 26.2       | 33.0        | -6.8        |
| 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                                                   | 1909.30     | -16.7            | 24.1                  | -0.1                   | 24.0       | 33.0        | -9.0        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 3MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18615 |                       |                        |            |             |             |
| 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                                                   | 1851.50     | -14.3            | 25.9                  | 0.1                    | 26.0       | 33.0        | -7.0        |
| 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                                                   | 1851.50     | -17.1            | 23.3                  | 0.1                    | 23.4       | 33.0        | -9.6        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -14.3            | 26.2                  | 0.0                    | 26.2       | 33.0        | -6.8        |
| 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                                                   | 1880.00     | -16.6            | 24.0                  | 0.0                    | 24.0       | 33.0        | -9.0        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19185 |                       |                        |            |             |             |
| 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                                                   | 1908.50     | -14.1            | 26.6                  | -0.1                   | 26.5       | 33.0        | -6.5        |
| 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                                                   | 1908.50     | -16.4            | 24.4                  | -0.1                   | 24.3       | 33.0        | -8.7        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 5MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18625 |                       |                        |            |             |             |
| 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                                                   | 1852.50     | -14.5            | 25.7                  | 0.1                    | 25.8       | 33.0        | -7.2        |
| 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                                                   | 1852.50     | -16.9            | 23.5                  | 0.1                    | 23.6       | 33.0        | -9.4        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -14.2            | 26.3                  | 0.0                    | 26.3       | 33.0        | -6.7        |
| 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                                                   | 1880.00     | -16.6            | 24.0                  | 0.0                    | 24.0       | 33.0        | -9.0        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19175 |                       |                        |            |             |             |
| 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                                                   | 1907.50     | -14.1            | 26.6                  | -0.1                   | 26.5       | 33.0        | -6.5        |
| 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                                                   | 1907.50     | -16.4            | 24.4                  | -0.1                   | 24.3       | 33.0        | -8.7        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 10MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18650 |                       |                        |            |             |             |
| 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                                                   | 1855.00     | -14.7            | 25.6                  | 0.0                    | 25.6       | 33.0        | -7.4        |
| 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                                                   | 1855.00     | -16.8            | 23.7                  | 0.0                    | 23.7       | 33.0        | -9.3        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -14.1            | 26.4                  | 0.0                    | 26.4       | 33.0        | -6.6        |
| 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                                                   | 1880.00     | -16.2            | 24.4                  | 0.0                    | 24.4       | 33.0        | -8.6        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19150 |                       |                        |            |             |             |
| 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                                                   | 1905.00     | -14.0            | 26.7                  | -0.1                   | 26.6       | 33.0        | -6.4        |
| 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                                                   | 1905.00     | -16.3            | 24.5                  | -0.1                   | 24.4       | 33.0        | -8.6        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 15MHz

| MODE                                                |             | TX channel 18675 |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| 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                                                   | 1857.50     | -14.7            | 25.6                  | 0.0                    | 25.6       | 33.0        | -7.4        |
| 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                                                   | 1857.50     | -17.0            | 23.5                  | 0.0                    | 23.5       | 33.0        | -9.5        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -13.5            | 27.0                  | 0.0                    | 27.0       | 33.0        | -6.0        |
| 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                                                   | 1880.00     | -16.3            | 24.3                  | 0.0                    | 24.3       | 33.0        | -8.7        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19125 |                       |                        |            |             |             |
| 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                                                   | 1902.50     | -13.9            | 26.8                  | -0.1                   | 26.7       | 33.0        | -6.3        |
| 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                                                   | 1902.50     | -16.2            | 24.6                  | -0.1                   | 24.5       | 33.0        | -8.5        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 2, Channel Bandwidth: 20MHz

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18700 |                       |                        |            |             |             |
| 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                                                   | 1860.00     | -14.9            | 25.4                  | 0.0                    | 25.4       | 33.0        | -7.6        |
| 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                                                   | 1860.00     | -17.1            | 23.4                  | 0.0                    | 23.4       | 33.0        | -9.6        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 18900 |                       |                        |            |             |             |
| 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                                                   | 1880.00     | -14.3            | 26.2                  | 0.0                    | 26.2       | 33.0        | -6.8        |
| 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                                                   | 1880.00     | -16.7            | 23.9                  | 0.0                    | 23.9       | 33.0        | -9.1        |

|                                                     |             |                  |                       |                        |            |             |             |
|-----------------------------------------------------|-------------|------------------|-----------------------|------------------------|------------|-------------|-------------|
| MODE                                                |             | TX channel 19100 |                       |                        |            |             |             |
| 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                                                   | 1900.00     | -14.2            | 26.5                  | -0.1                   | 26.4       | 33.0        | -6.6        |
| 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                                                   | 1900.00     | -16.4            | 24.4                  | -0.1                   | 24.3       | 33.0        | -8.7        |

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

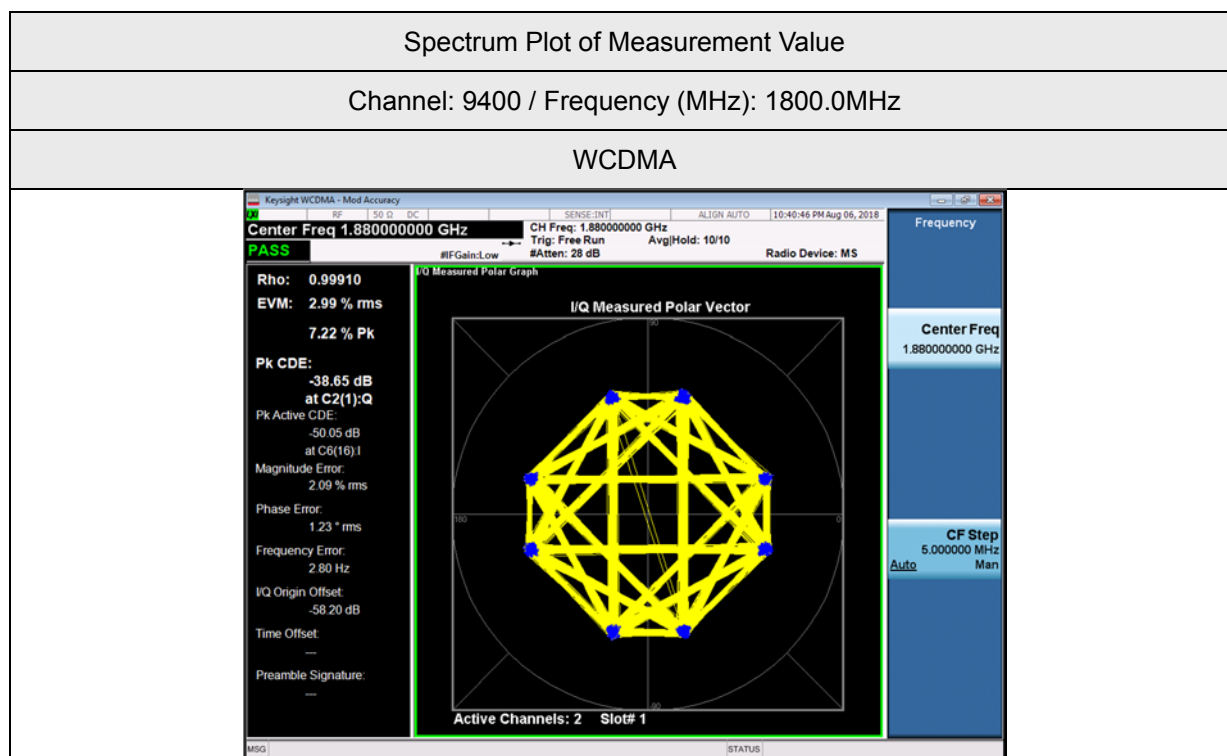
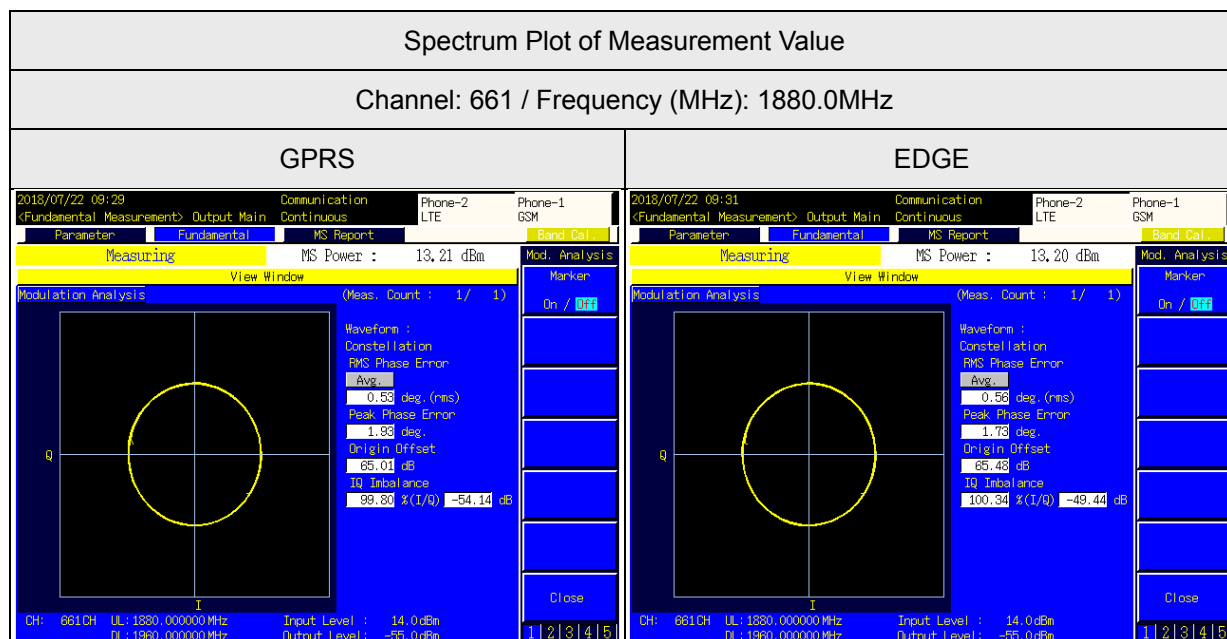
### 4.2.2 Test Procedure

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



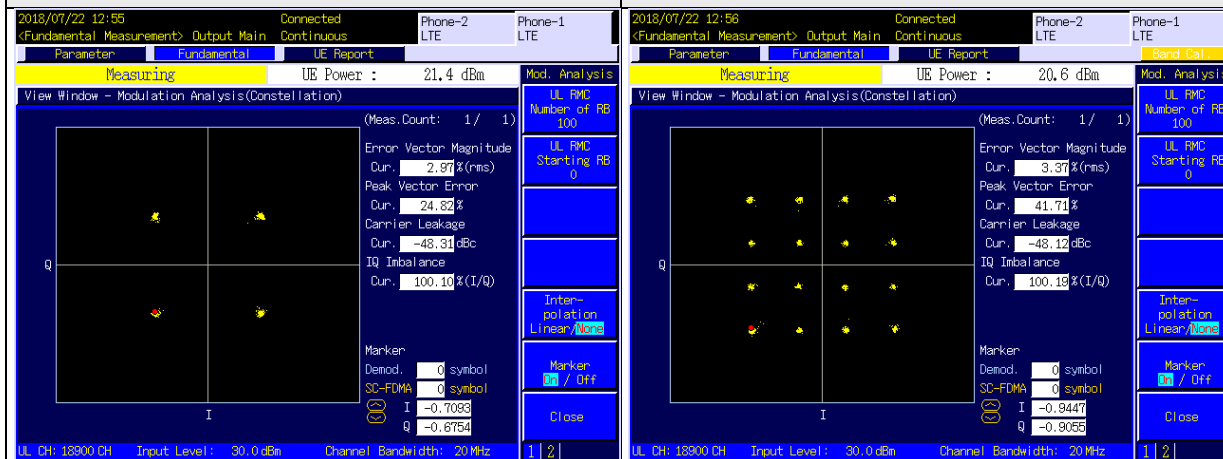
## LTE Band 2

### Spectrum Plot of Measurement Value

Channel: 18900 / Frequency (MHz): 1880.0MHz

Channel Bandwidth: 20MHz / QPSK

Channel Bandwidth: 20MHz / 16QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

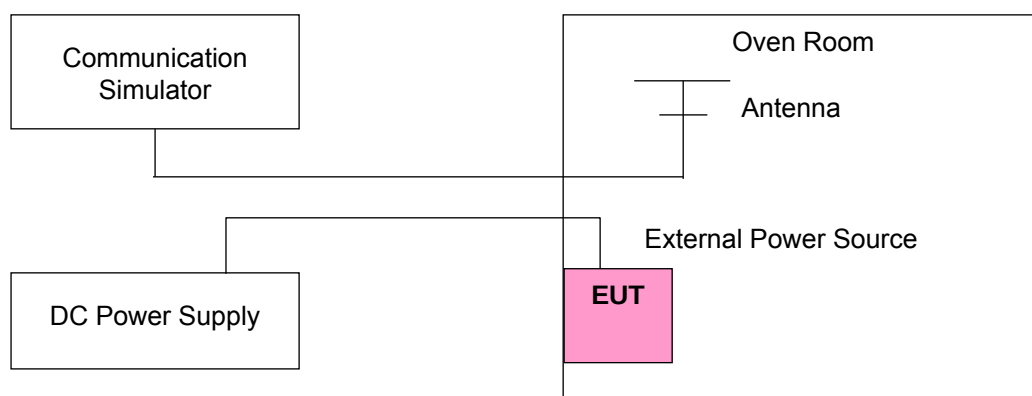
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

#### 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 (Volts) | Frequency Error (ppm) |         |            | Limit (ppm) |
|-----------------|-----------------------|---------|------------|-------------|
|                 | GPRS                  | WCDMA   | LTE Band 2 |             |
| 4.3             | 0.04521               | 0.03675 | 0.09102    | 2.5         |
| 3.8             | 0.01042               | 0.08156 | 0.02749    | 2.5         |
| 3.4             | 0.07762               | 0.06588 | 0.07739    | 2.5         |

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.3Vdc.

##### Frequency Error vs. Temperature.

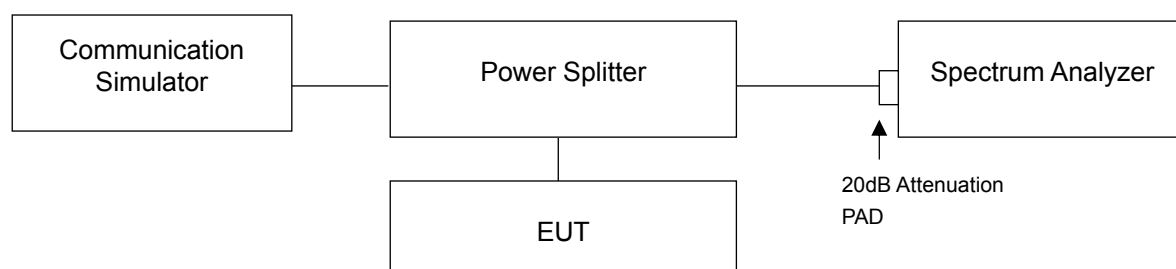
| Temp. (°C) | Frequency Error (ppm) |         |            | Limit (ppm) |
|------------|-----------------------|---------|------------|-------------|
|            | GPRS                  | WCDMA   | LTE Band 2 |             |
| 50         | 0.07062               | 0.00878 | 0.11938    | 2.5         |
| 40         | 0.10864               | 0.06089 | 0.11405    | 2.5         |
| 30         | 0.02791               | 0.01381 | 0.10676    | 2.5         |
| 20         | 0.04430               | 0.05554 | 0.04559    | 2.5         |
| 10         | 0.05271               | 0.06878 | 0.02946    | 2.5         |
| 0          | 0.11709               | 0.05597 | 0.09229    | 2.5         |
| -10        | 0.02801               | 0.04581 | 0.07306    | 2.5         |
| -20        | 0.00677               | 0.01075 | 0.07306    | 2.5         |
| -30        | 0.05355               | 0.01286 | 0.00184    | 2.5         |

## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.4.2 Test Setup



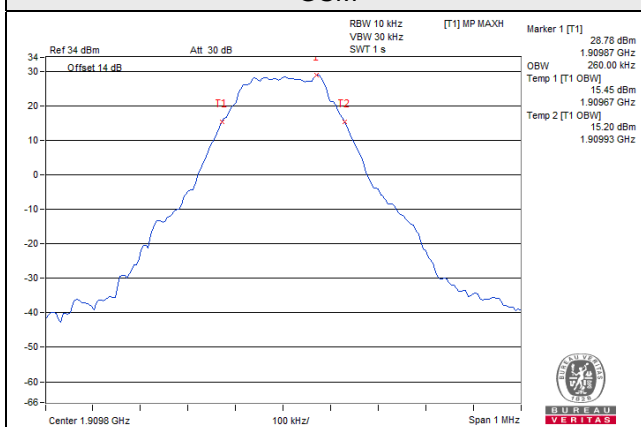
#### 4.4.3 Test Result

##### Occupied Bandwidth

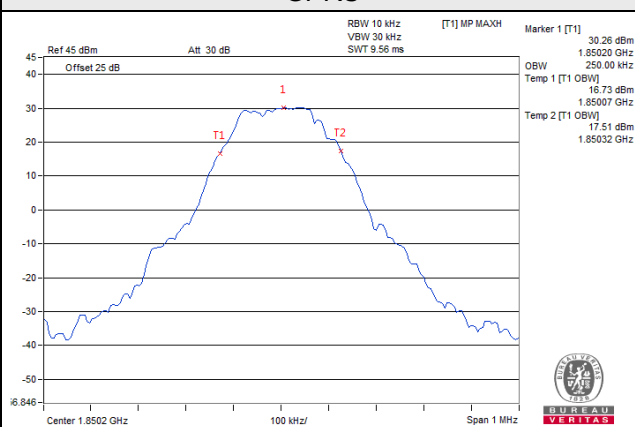
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (kHz) |      |      |
|---------|-----------------|------------------------------|------|------|
|         |                 | GSM                          | GPRS | EDGE |
| 512     | 1850.2          | 250                          | 250  | 260  |
| 661     | 1880.0          | 250                          | 250  | 250  |
| 810     | 1909.8          | 260                          | 250  | 260  |

#### Spectrum Plot of Worst Value

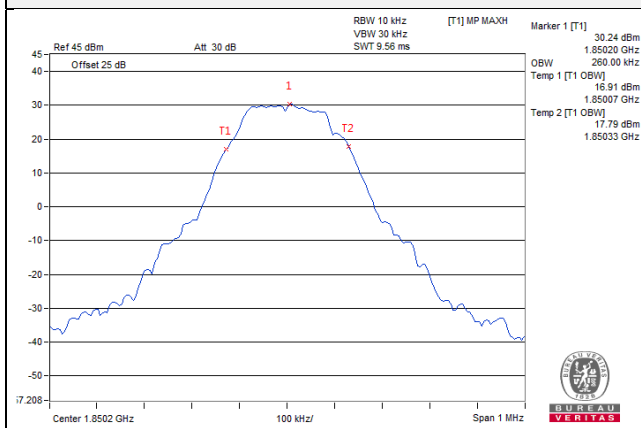
##### GSM



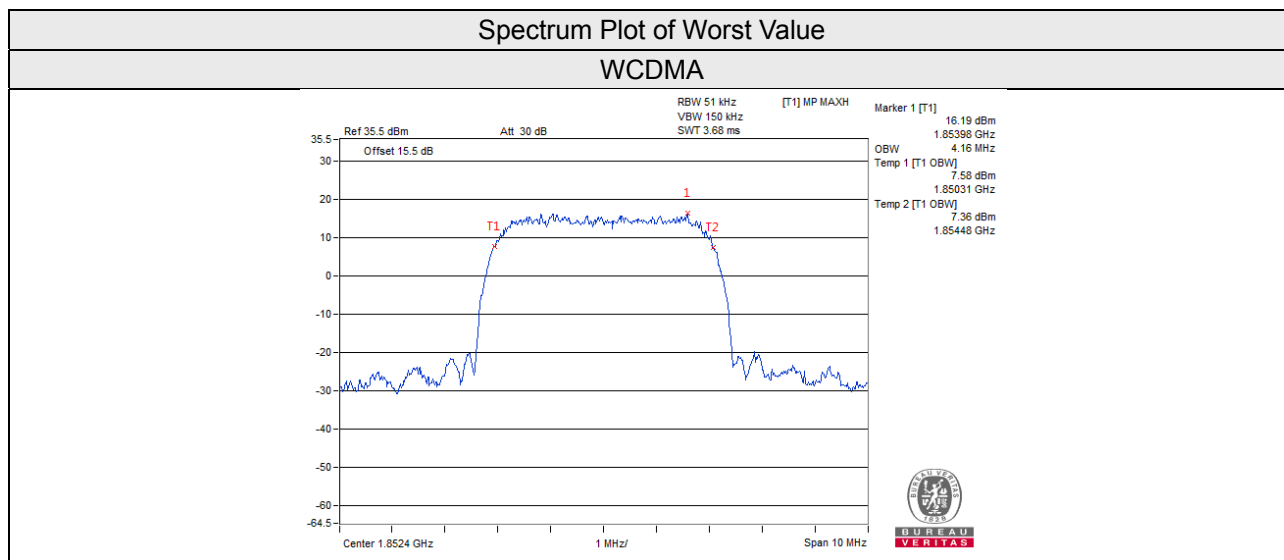
##### GPRS



##### EDGE



| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |
|---------|-----------------|------------------------------|
|         |                 | WCDMA                        |
| 9262    | 1852.4          | 4.16                         |
| 9400    | 1880.0          | 4.16                         |
| 9538    | 1907.6          | 4.16                         |



| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                              |       |
|--------------------------------------|-----------------|------------------------------|-------|
| Channel                              | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                      |                 | QPSK                         | 16QAM |
| 18607                                | 1850.7          | 1.09                         | 1.09  |
| 18900                                | 1880.0          | 1.09                         | 1.09  |
| 19193                                | 1909.3          | 1.09                         | 1.09  |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                              |       |
|------------------------------------|-----------------|------------------------------|-------|
| Channel                            | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                    |                 | QPSK                         | 16QAM |
| 18615                              | 1851.5          | 2.68                         | 2.69  |
| 18900                              | 1880.0          | 2.68                         | 2.69  |
| 19185                              | 1908.5          | 2.68                         | 2.68  |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                              |       |
|------------------------------------|-----------------|------------------------------|-------|
| Channel                            | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                    |                 | QPSK                         | 16QAM |
| 18625                              | 1852.5          | 4.48                         | 4.48  |
| 18900                              | 1880.0          | 4.48                         | 4.48  |
| 19175                              | 1907.5          | 4.48                         | 4.48  |

| LTE Band 2, Channel Bandwidth 10MHz |                 |                              |       |
|-------------------------------------|-----------------|------------------------------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                     |                 | QPSK                         | 16QAM |
| 18650                               | 1855.0          | 8.93                         | 8.93  |
| 18900                               | 1880.0          | 8.96                         | 8.90  |
| 19150                               | 1905.0          | 8.93                         | 8.96  |

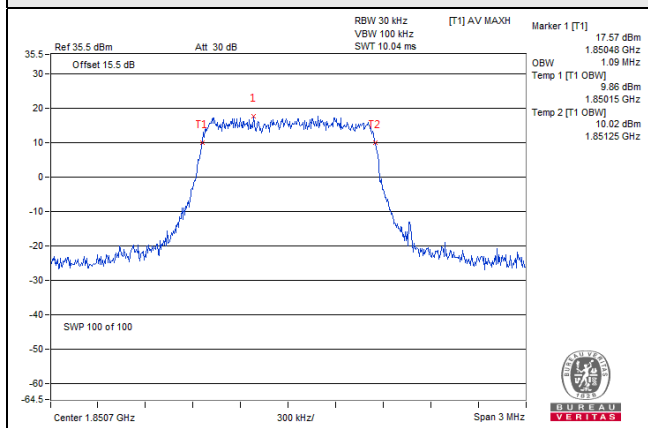
| LTE Band 2, Channel Bandwidth 15MHz |                 |                              |       |
|-------------------------------------|-----------------|------------------------------|-------|
| Channel                             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|                                     |                 | QPSK                         | 16QAM |
| 18675                               | 1857.5          | 13.40                        | 13.40 |
| 18900                               | 1880.0          | 13.40                        | 13.43 |
| 19125                               | 1902.5          | 13.40                        | 13.43 |

## LTE Band 2, Channel Bandwidth 20MHz

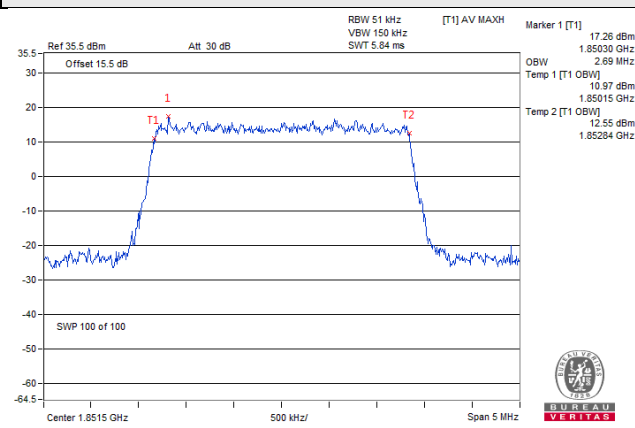
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |       |
|---------|-----------------|------------------------------|-------|
|         |                 | QPSK                         | 16QAM |
| 18700   | 1860.0          | 18.00                        | 17.93 |
| 18900   | 1880.0          | 17.93                        | 18.00 |
| 19100   | 1900.0          | 18.00                        | 17.93 |

## Spectrum Plot of Worst Value

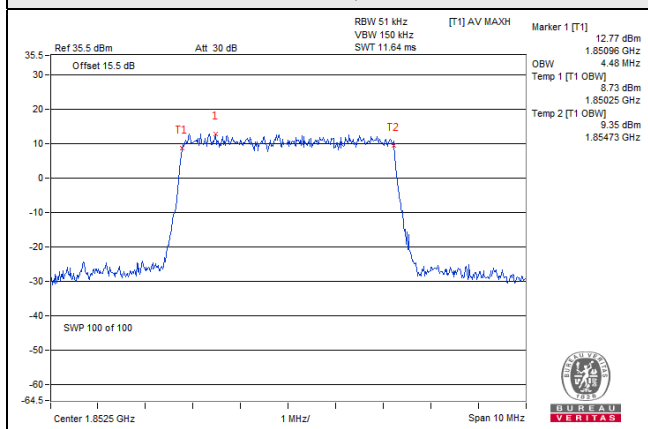
### 1.4MHz / QPSK



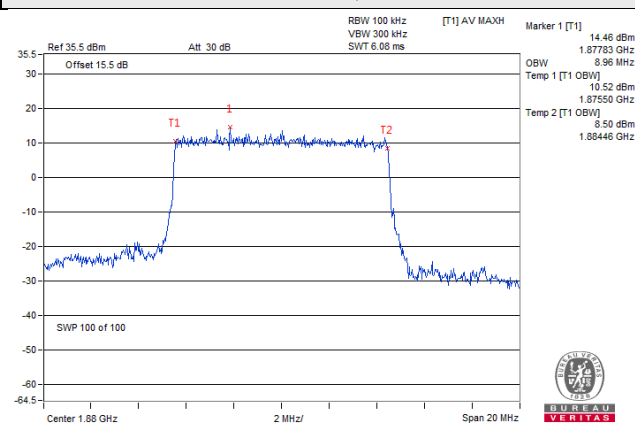
### 3MHz / 16QAM



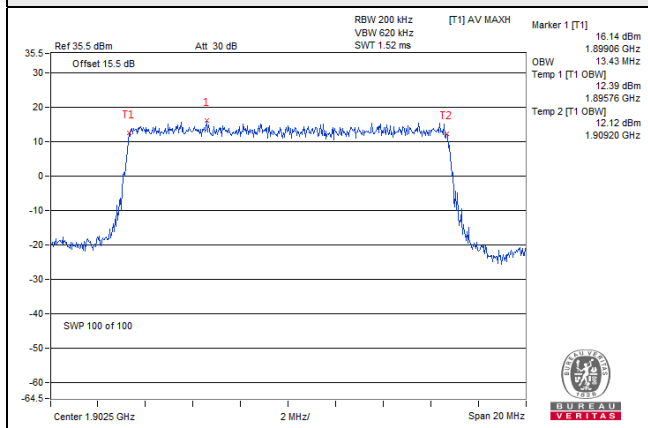
### 5MHz / QPSK



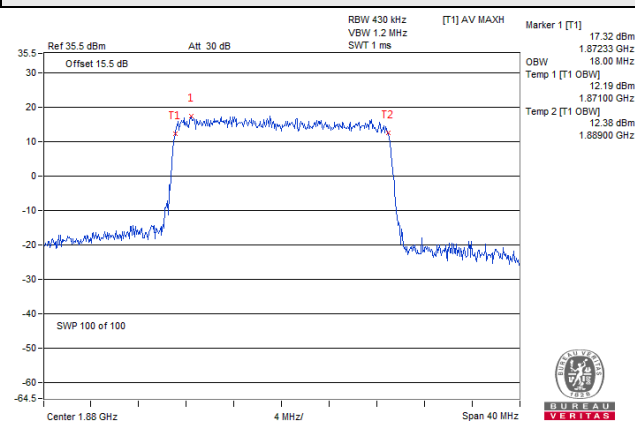
### 10MHz / QPSK



### 15MHz / 16QAM



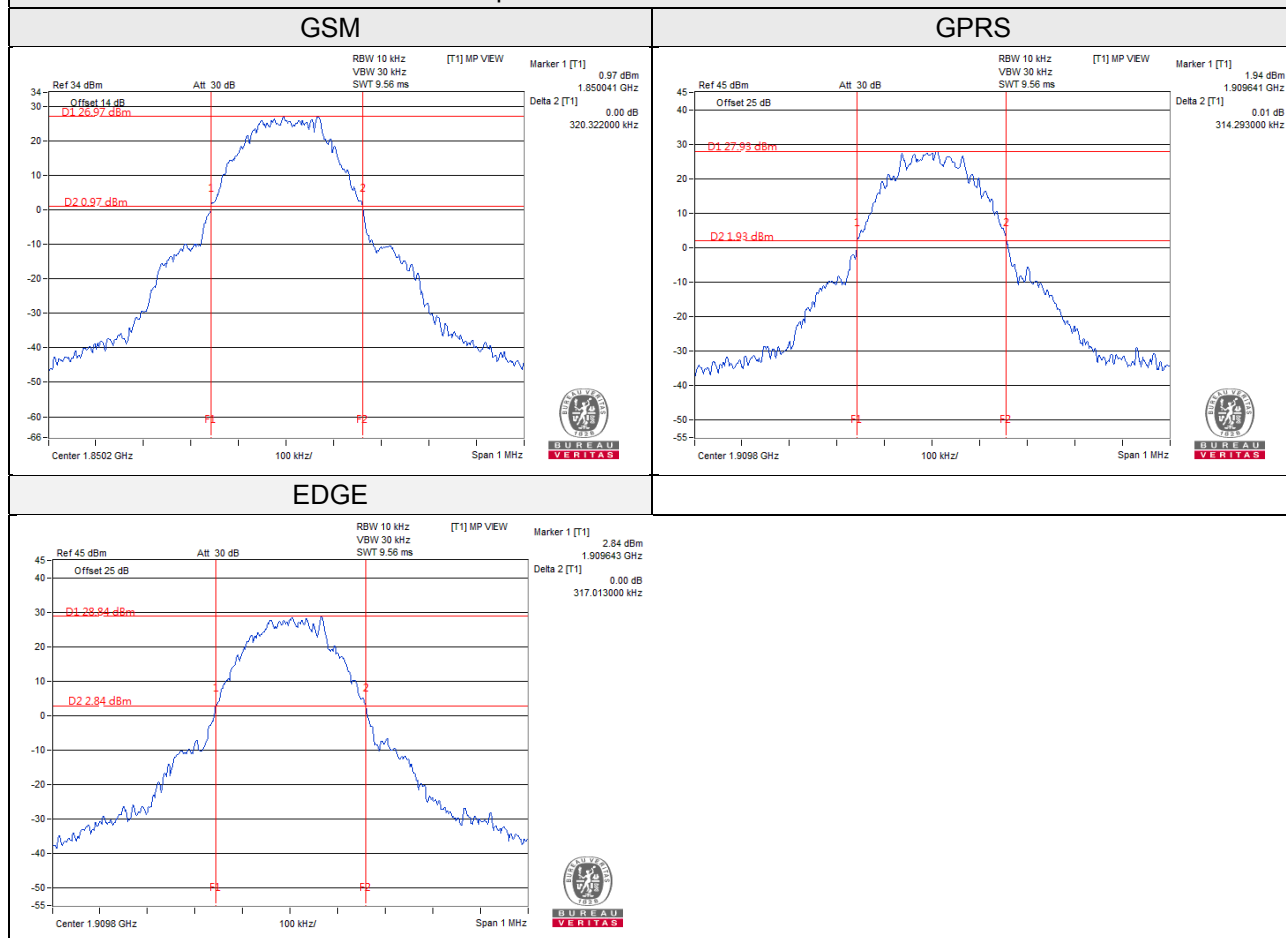
### 20MHz / 16QAM



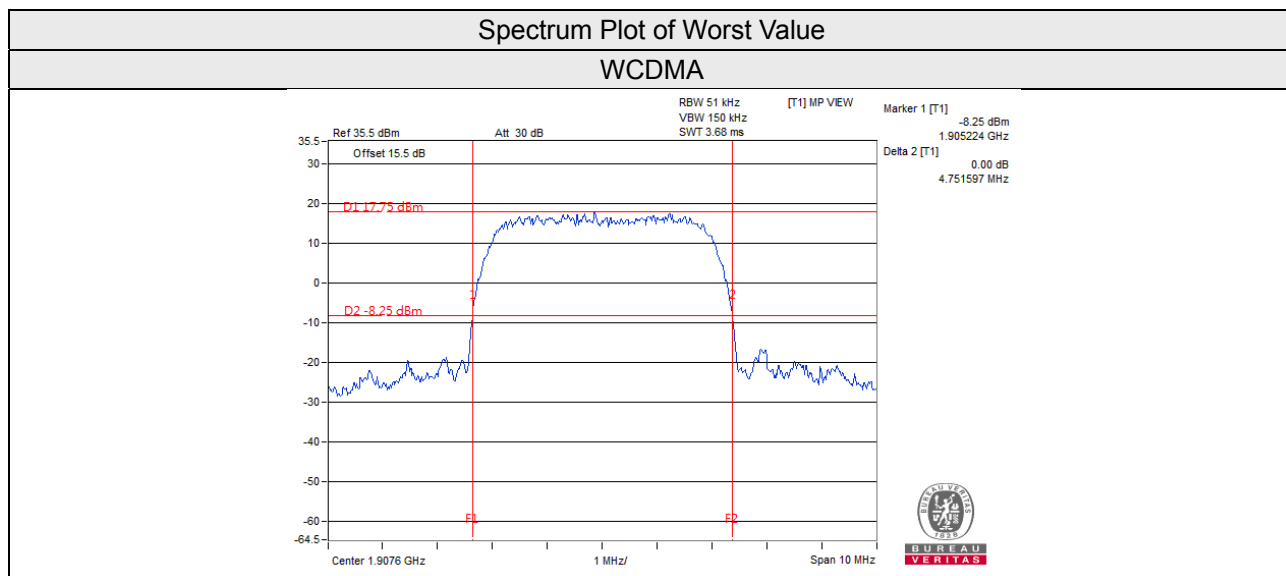
## 26dB Bandwidth

| Channel | Frequency (MHz) | 26dBc Bandwidth (kHz) |         |         |
|---------|-----------------|-----------------------|---------|---------|
|         |                 | GSM                   | GPRS    | EDGE    |
| 512     | 1850.2          | 320.322               | 312.239 | 311.484 |
| 661     | 1880.0          | 306.531               | 311.791 | 314.172 |
| 810     | 1909.8          | 310.227               | 314.293 | 317.013 |

### Spectrum Plot of Worst Value



| Channel | Frequency (MHz) | 26dBc Bandwidth (MHz) |
|---------|-----------------|-----------------------|
|         |                 | WCDMA                 |
| 9262    | 1852.4          | 4.735                 |
| 9400    | 1880.0          | 4.736                 |
| 9538    | 1907.6          | 4.752                 |



| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                      |       |
|--------------------------------------|-----------------|----------------------|-------|
| Channel                              | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                      |                 | QPSK                 | 16QAM |
| 18607                                | 1850.7          | 1.291                | 1.260 |
| 18900                                | 1880.0          | 1.281                | 1.285 |
| 19193                                | 1909.3          | 1.292                | 1.304 |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                      |       |
|------------------------------------|-----------------|----------------------|-------|
| Channel                            | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                    |                 | QPSK                 | 16QAM |
| 18615                              | 1851.5          | 2.943                | 2.973 |
| 18900                              | 1880.0          | 2.976                | 2.961 |
| 19185                              | 1908.5          | 2.953                | 2.969 |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                      |       |
|------------------------------------|-----------------|----------------------|-------|
| Channel                            | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                    |                 | QPSK                 | 16QAM |
| 18625                              | 1852.5          | 4.917                | 4.942 |
| 18900                              | 1880.0          | 4.956                | 4.937 |
| 19175                              | 1907.5          | 4.916                | 4.935 |

| LTE Band 2, Channel Bandwidth 10MHz |                 |                      |       |
|-------------------------------------|-----------------|----------------------|-------|
| Channel                             | Frequency (MHz) | 26dB Bandwidth (MHz) |       |
|                                     |                 | QPSK                 | 16QAM |
| 18650                               | 1855.0          | 9.751                | 9.742 |
| 18900                               | 1880.0          | 9.673                | 9.733 |
| 19150                               | 1905.0          | 9.700                | 9.718 |

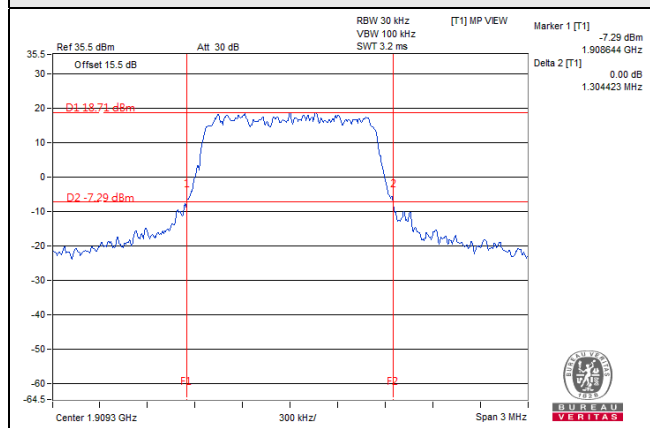
| LTE Band 2, Channel Bandwidth 15MHz |                 |                      |        |
|-------------------------------------|-----------------|----------------------|--------|
| Channel                             | Frequency (MHz) | 26dB Bandwidth (MHz) |        |
|                                     |                 | QPSK                 | 16QAM  |
| 18675                               | 1857.5          | 14.517               | 14.579 |
| 18900                               | 1880.0          | 14.599               | 14.646 |
| 19125                               | 1902.5          | 14.627               | 14.674 |

## LTE Band 2, Channel Bandwidth 20MHz

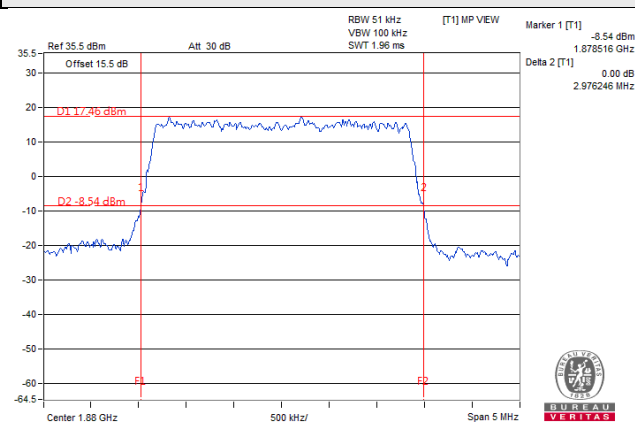
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |        |
|---------|-----------------|----------------------|--------|
|         |                 | QPSK                 | 16QAM  |
| 18700   | 1860.0          | 19.489               | 19.550 |
| 18900   | 1880.0          | 19.539               | 19.479 |
| 19100   | 1900.0          | 19.607               | 19.581 |

## Spectrum Plot of Worst Value

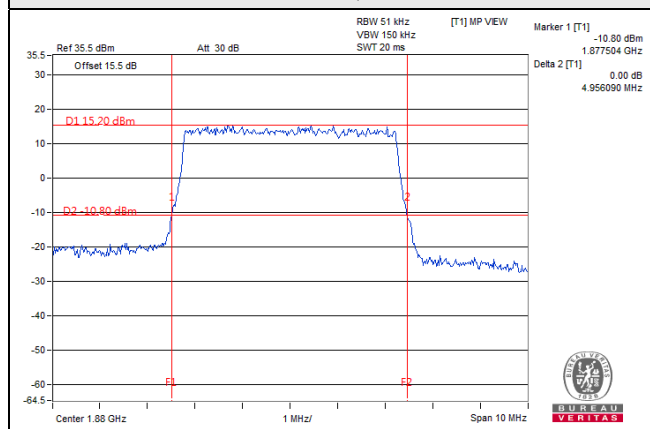
### 1.4MHz / 16QAM



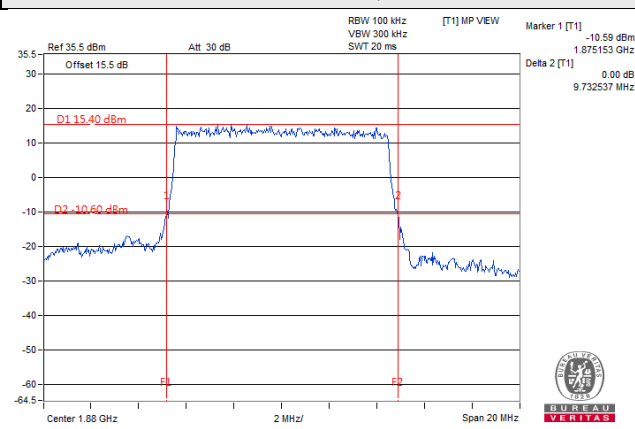
### 3MHz / QPSK



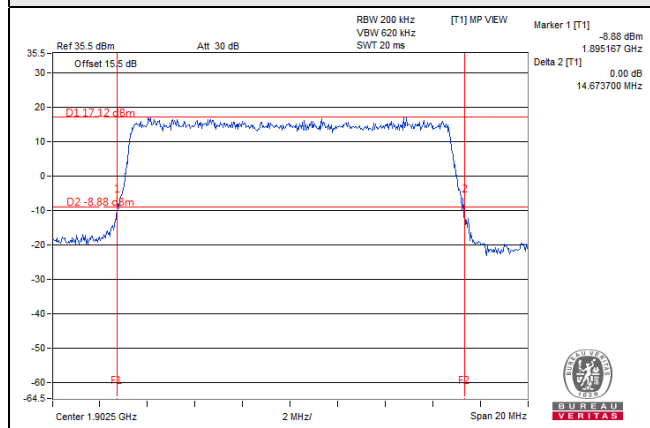
### 5MHz / QPSK



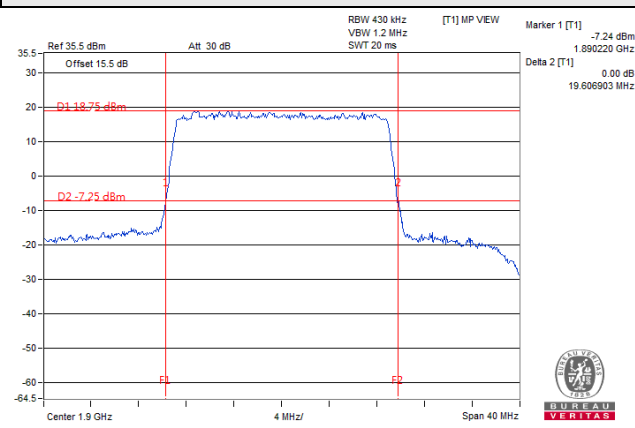
### 10MHz / 16QAM



### 15MHz / 16QAM



### 20MHz / QPSK

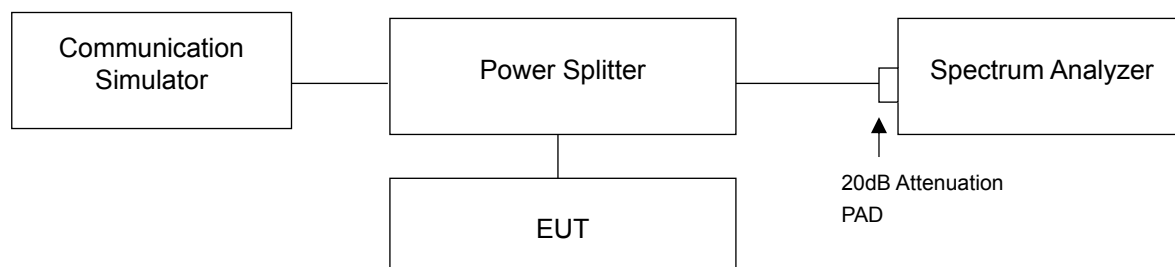


## 4.5 Band Edge Measurement

### 4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

### 4.5.2 Test Setup

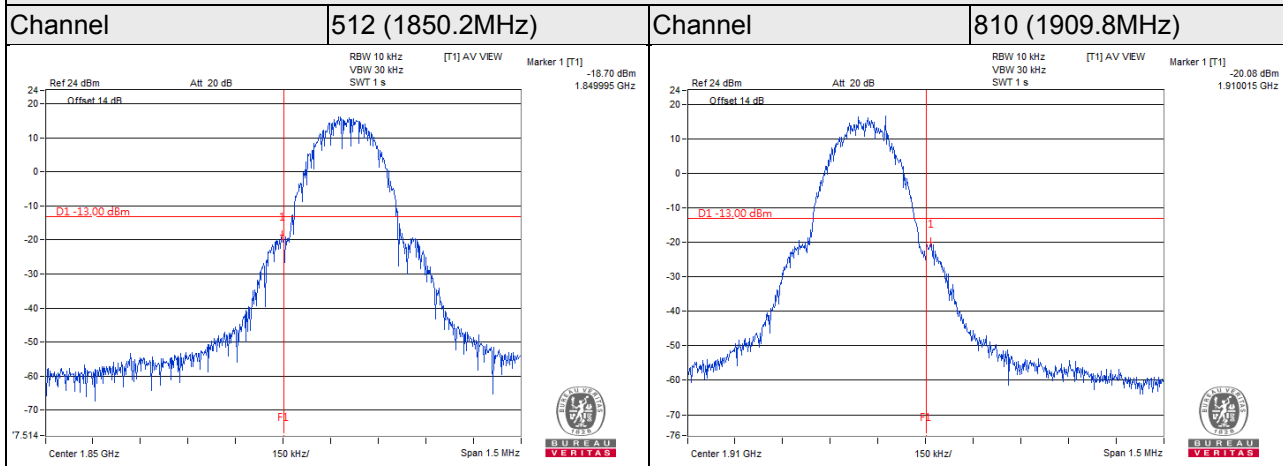


### 4.5.3 Test Procedures

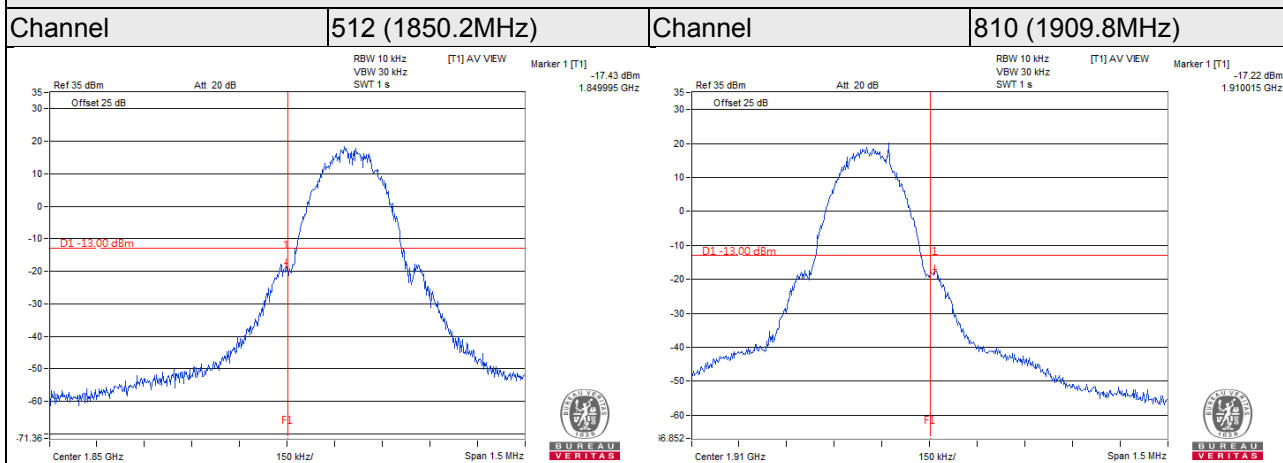
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 10kHz and VB of the spectrum is 30kHz (GSM / GPRS / EDGE).
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (WCDMA).
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 1.4MHz).
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (LTE Channel Bandwidth 3MHz and 5MHz).
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 620kHz (LTE Channel Bandwidth 15MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 430kHz and VB of the spectrum is 1200kHz (LTE Channel Bandwidth 20MHz).
- Record the max trace plot into the test report.

## 4.5.4 Test Results

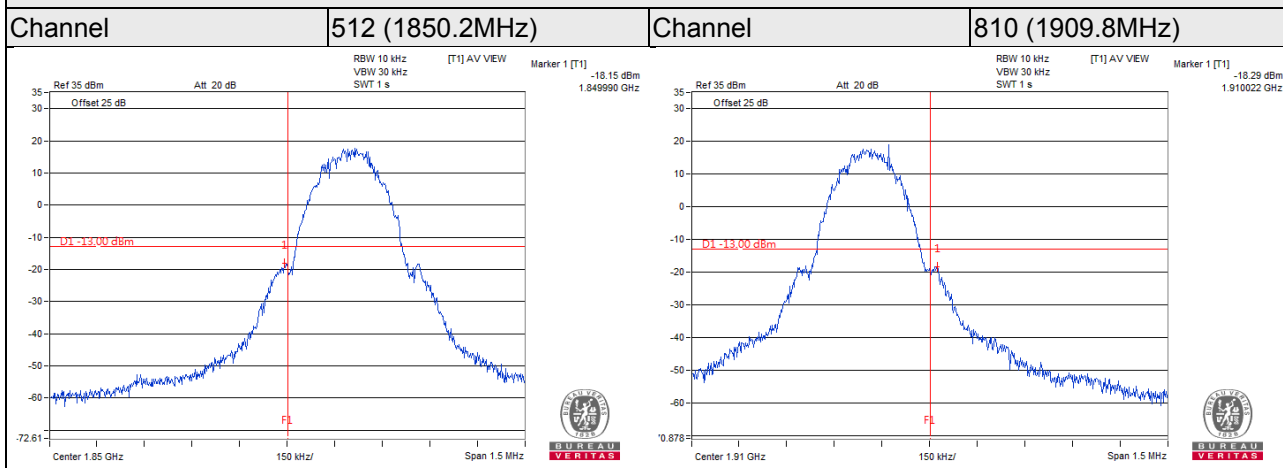
### GSM



### GPRS



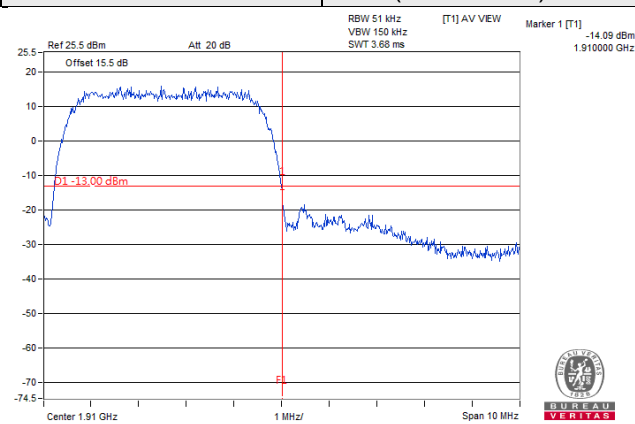
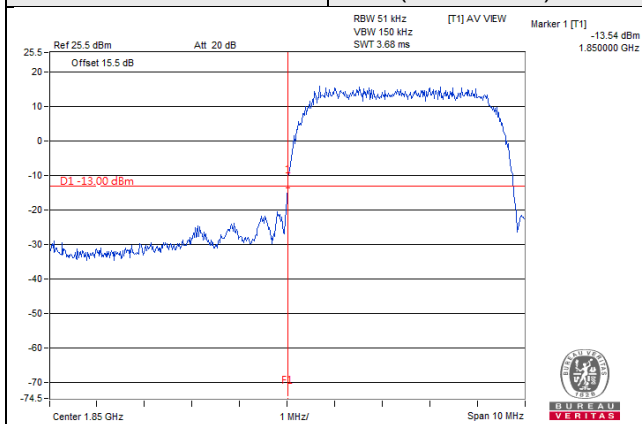
### EDGE



# WCDMA

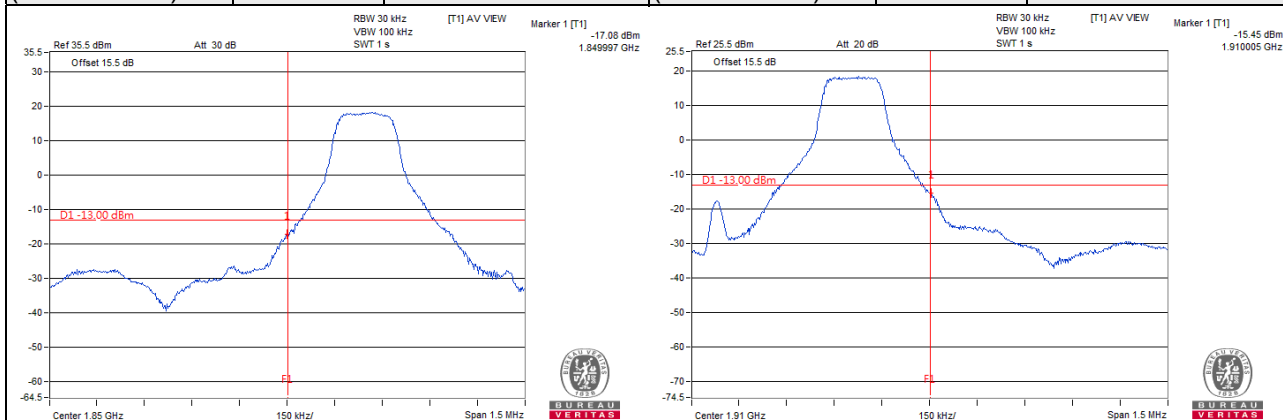
Channel 9262 (1852.4MHz)

Channel 9538 (1907.6MHz)

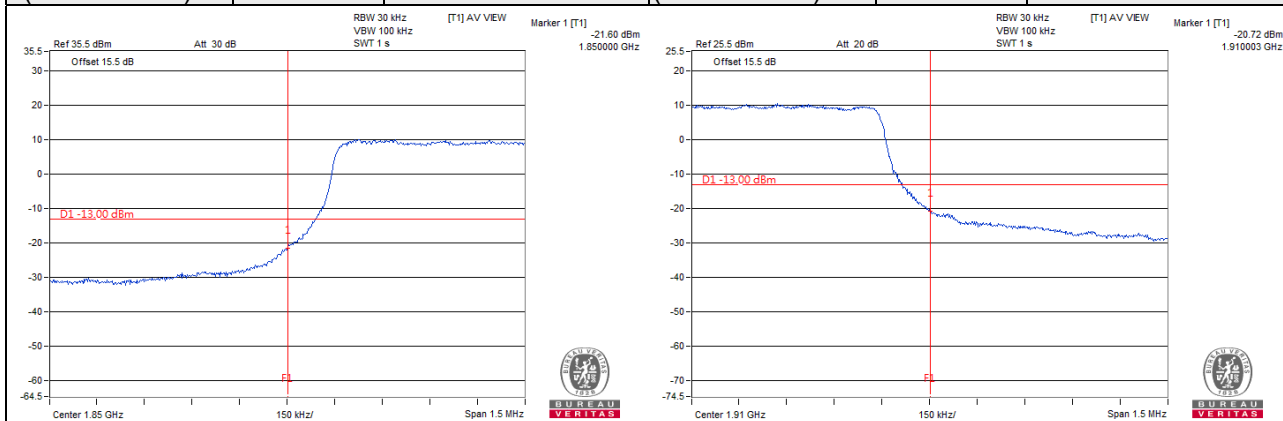


# LTE Band 2, Channel Bandwidth 1.4MHz

|                               |      |                    |                               |      |                    |
|-------------------------------|------|--------------------|-------------------------------|------|--------------------|
| Channel 18607<br>(1850.70MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19193<br>(1909.30MHz) | QPSK | 1 RB / 5 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|--------------------|

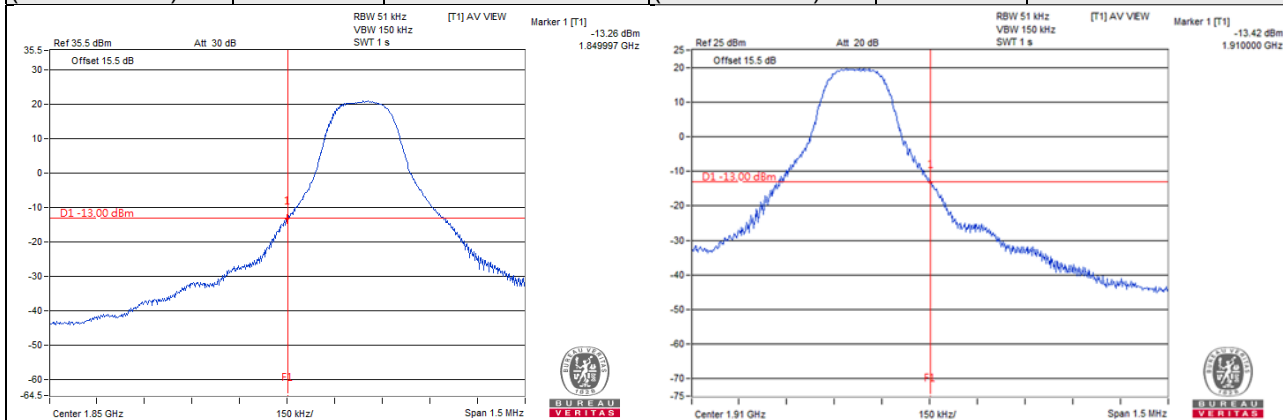


|                               |      |                    |                               |      |                    |
|-------------------------------|------|--------------------|-------------------------------|------|--------------------|
| Channel 18607<br>(1850.70MHz) | QPSK | 6 RB / 0 RB Offset | Channel 19193<br>(1909.30MHz) | QPSK | 6 RB / 0 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|--------------------|

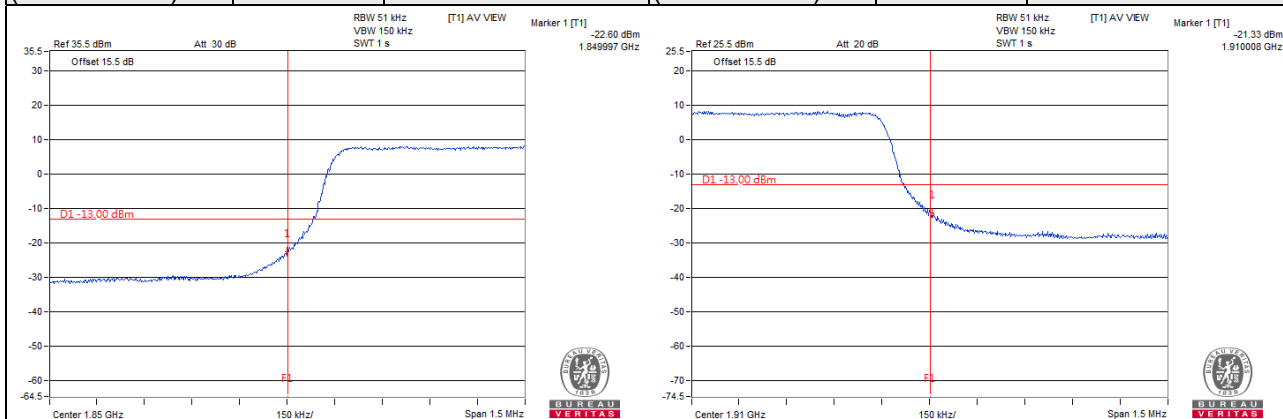


# LTE Band 2, Channel Bandwidth 3MHz

|                               |      |                    |                               |      |                     |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|
| Channel 18615<br>(1851.50MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19185<br>(1908.50MHz) | QPSK | 1 RB / 14 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|

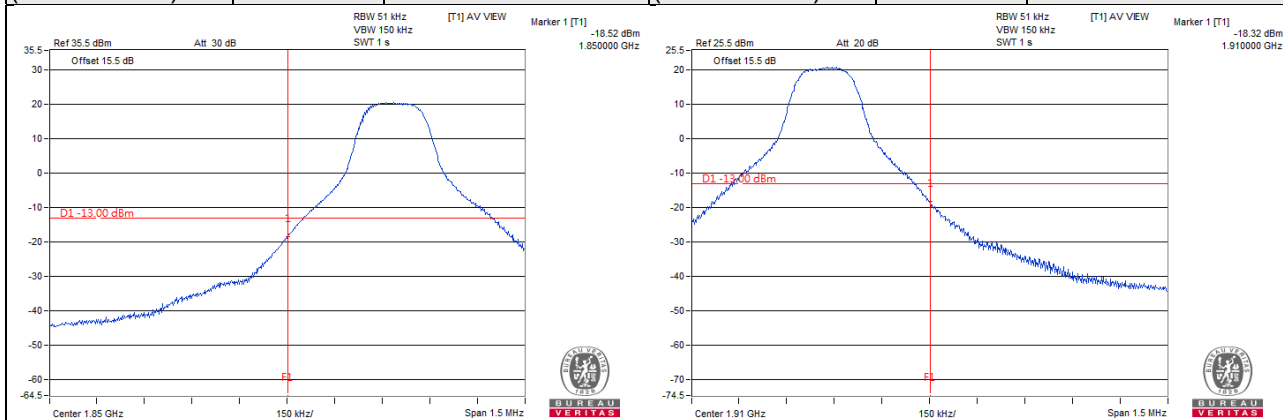


|                               |      |                     |                               |      |                     |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|
| Channel 18615<br>(1851.50MHz) | QPSK | 15 RB / 0 RB Offset | Channel 19185<br>(1908.50MHz) | QPSK | 15 RB / 0 RB Offset |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|

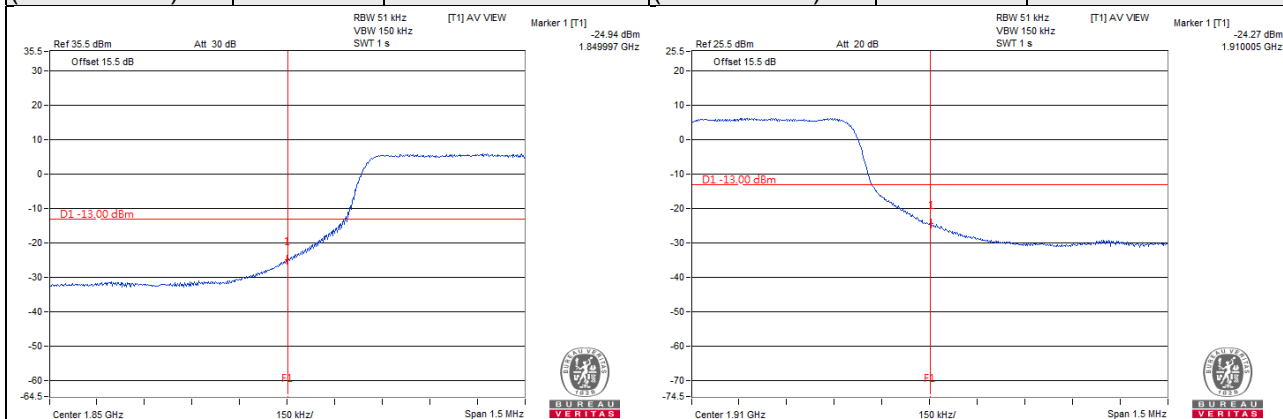


# LTE Band 2, Channel Bandwidth 5MHz

| Channel 18625<br>(1852.50MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19175<br>(1907.50MHz) | QPSK | 1 RB / 24 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|

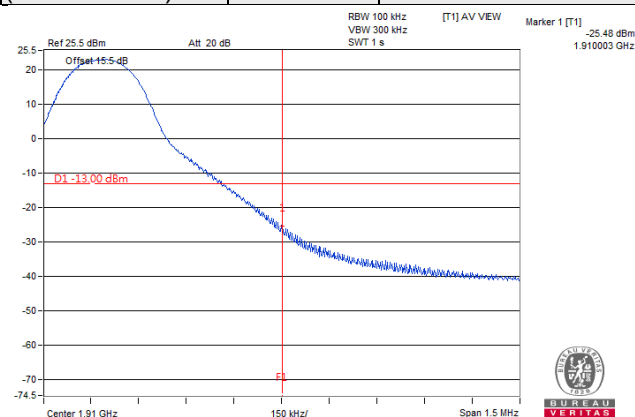
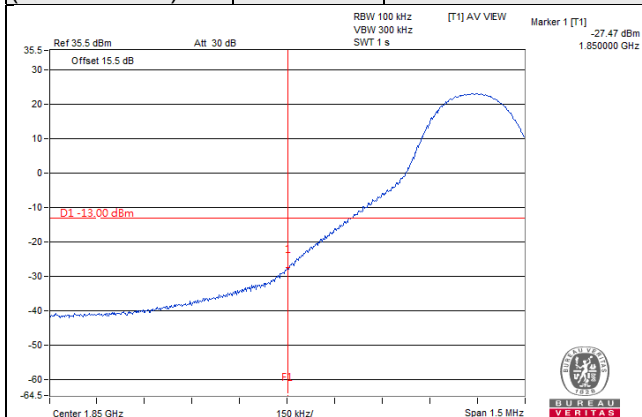


| Channel 18625<br>(1852.50MHz) | QPSK | 25 RB / 0 RB Offset | Channel 19175<br>(1907.50MHz) | QPSK | 25 RB / 0 RB Offset |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|

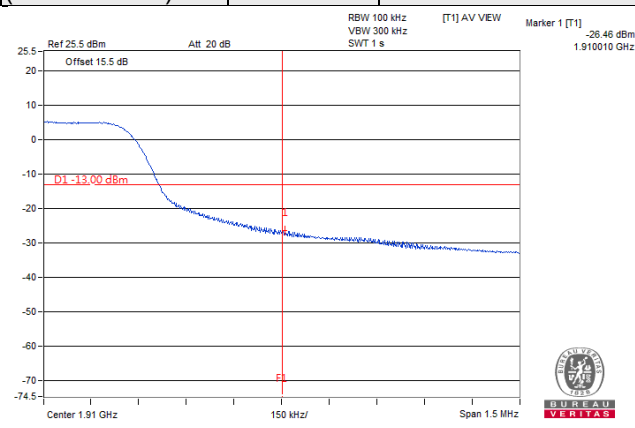
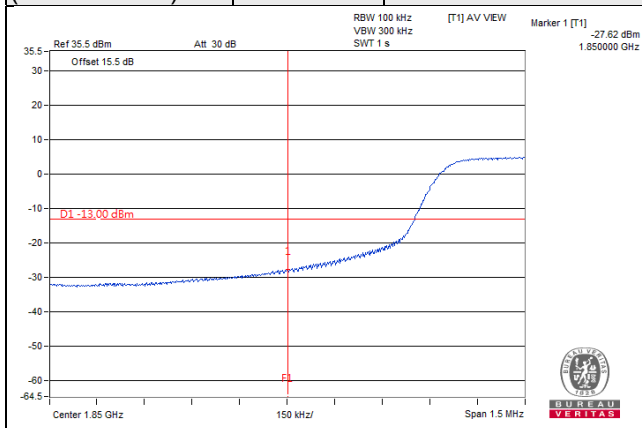


# LTE Band 2, Channel Bandwidth 10MHz

| Channel 18650<br>(1855.00MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19150<br>(1905.00MHz) | QPSK | 1 RB / 49 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|

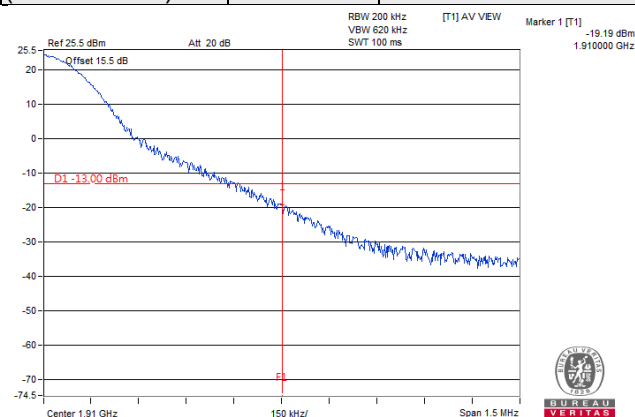
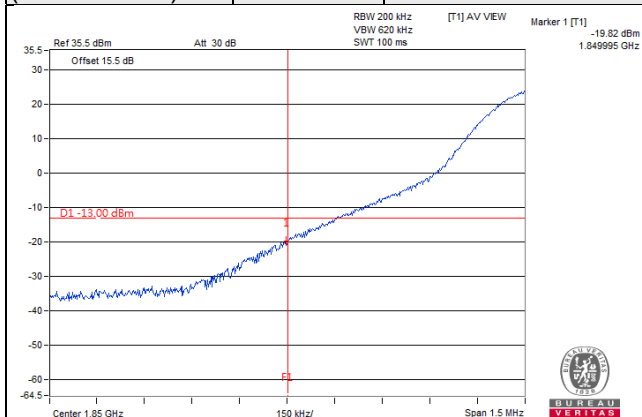


| Channel 18650<br>(1855.00MHz) | QPSK | 50 RB / 0 RB Offset | Channel 19150<br>(1905.00MHz) | QPSK | 50 RB / 0 RB Offset |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|

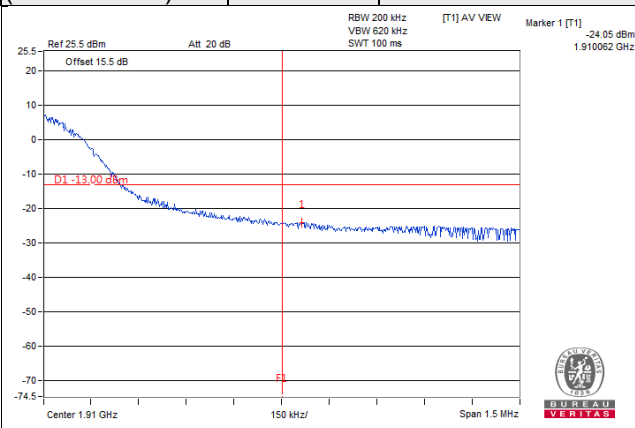
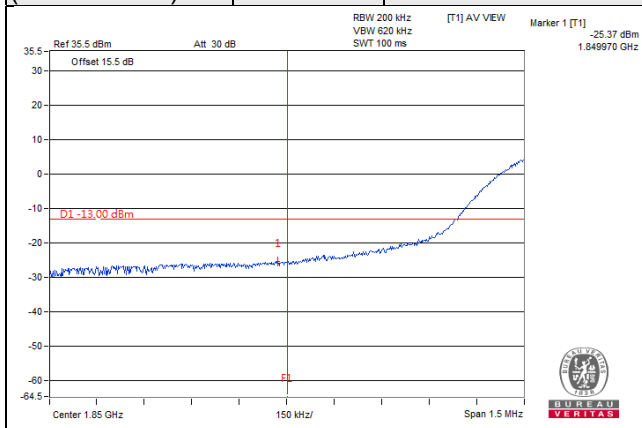


# LTE Band 2, Channel Bandwidth 15MHz

|                               |      |                    |                               |      |                     |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|
| Channel 18675<br>(1857.50MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19125<br>(1902.50MHz) | QPSK | 1 RB / 74 RB Offset |
|-------------------------------|------|--------------------|-------------------------------|------|---------------------|

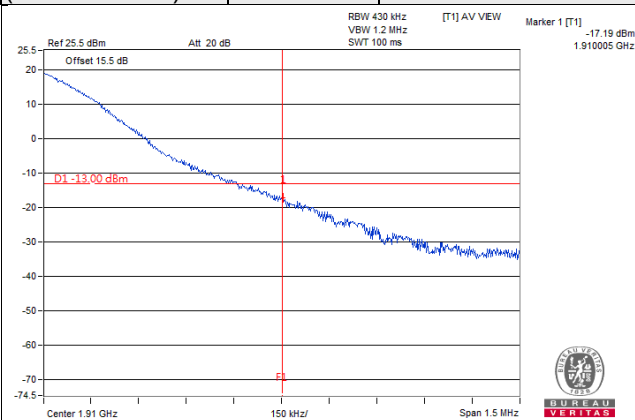
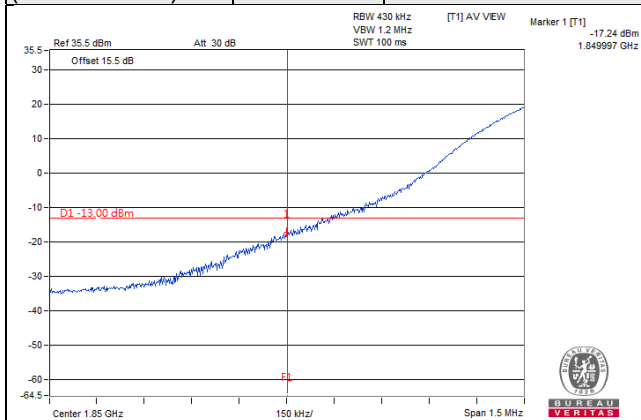


|                               |      |                     |                               |      |                     |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|
| Channel 18675<br>(1857.50MHz) | QPSK | 75 RB / 0 RB Offset | Channel 19125<br>(1902.50MHz) | QPSK | 75 RB / 0 RB Offset |
|-------------------------------|------|---------------------|-------------------------------|------|---------------------|

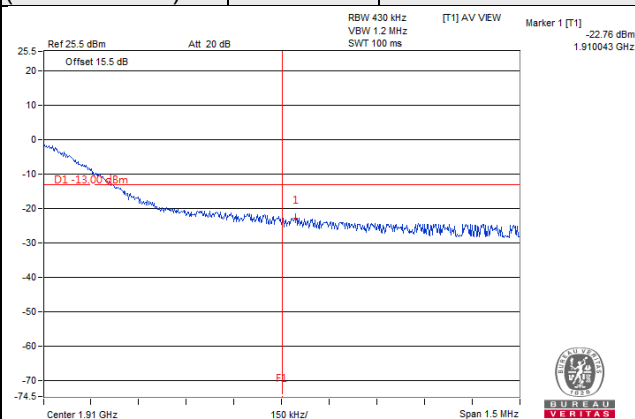
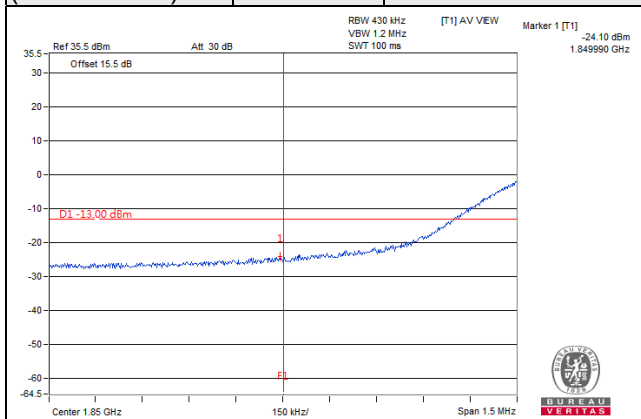


# LTE Band 2, Channel Bandwidth 20MHz

| Channel 18700<br>(1860.00MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19100<br>(1900.00 MHz) | QPSK | 1 RB / 99 RB Offset |
|-------------------------------|------|--------------------|--------------------------------|------|---------------------|
|-------------------------------|------|--------------------|--------------------------------|------|---------------------|



| Channel 18700<br>(1860.00MHz) | QPSK | 100 RB / 0 RB Offset | Channel 19100<br>(1900.00 MHz) | QPSK | 100 RB / 0 RB Offset |
|-------------------------------|------|----------------------|--------------------------------|------|----------------------|
|-------------------------------|------|----------------------|--------------------------------|------|----------------------|

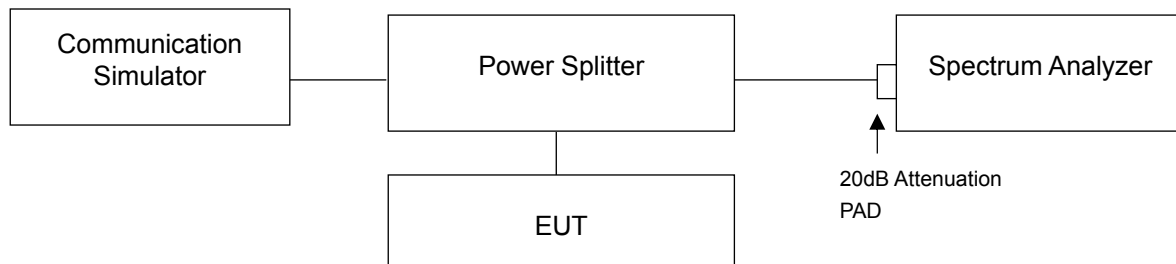


## 4.6 Peak to Average Ratio

### 4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

### 4.6.2 Test Setup



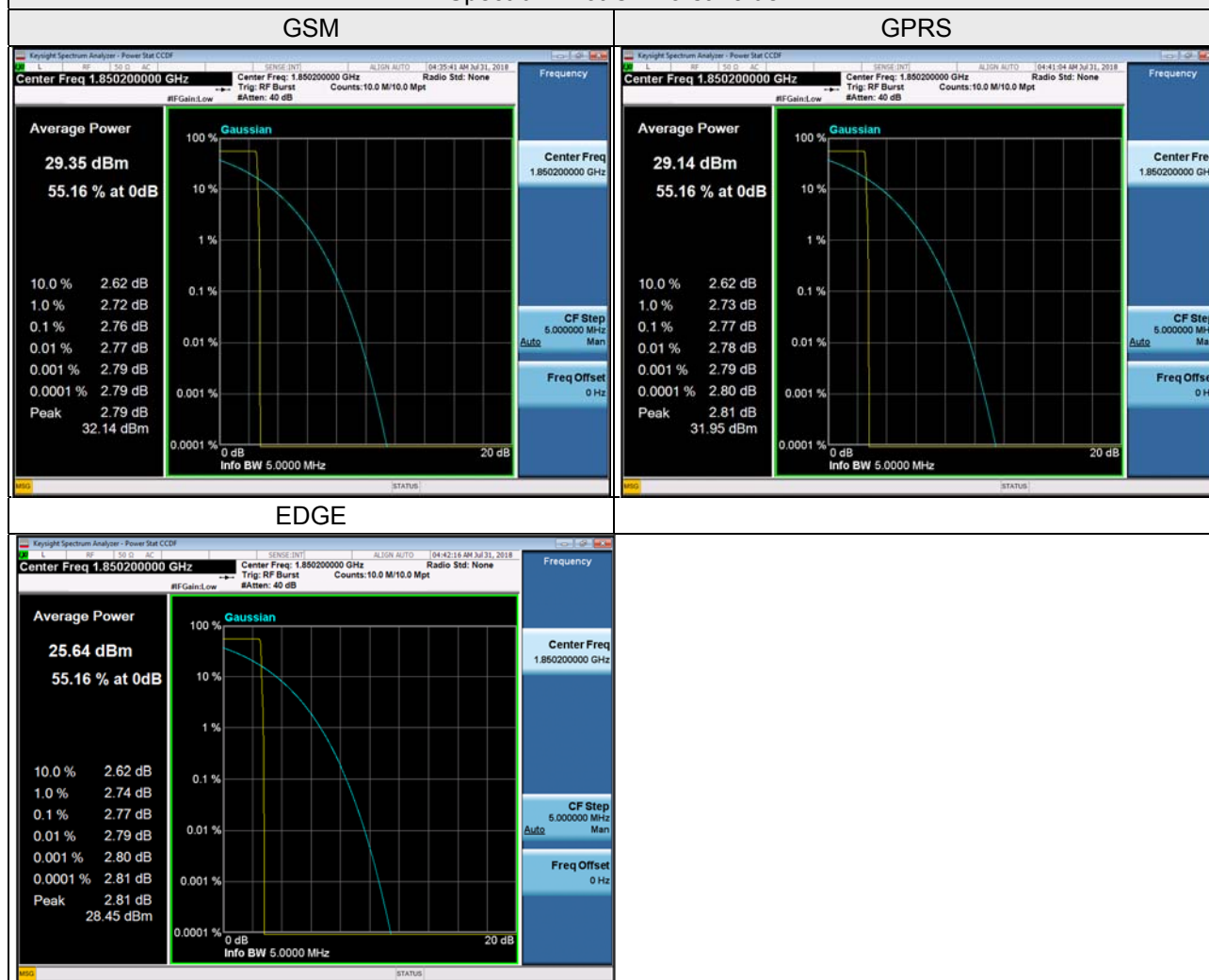
### 4.6.3 Test Procedures

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

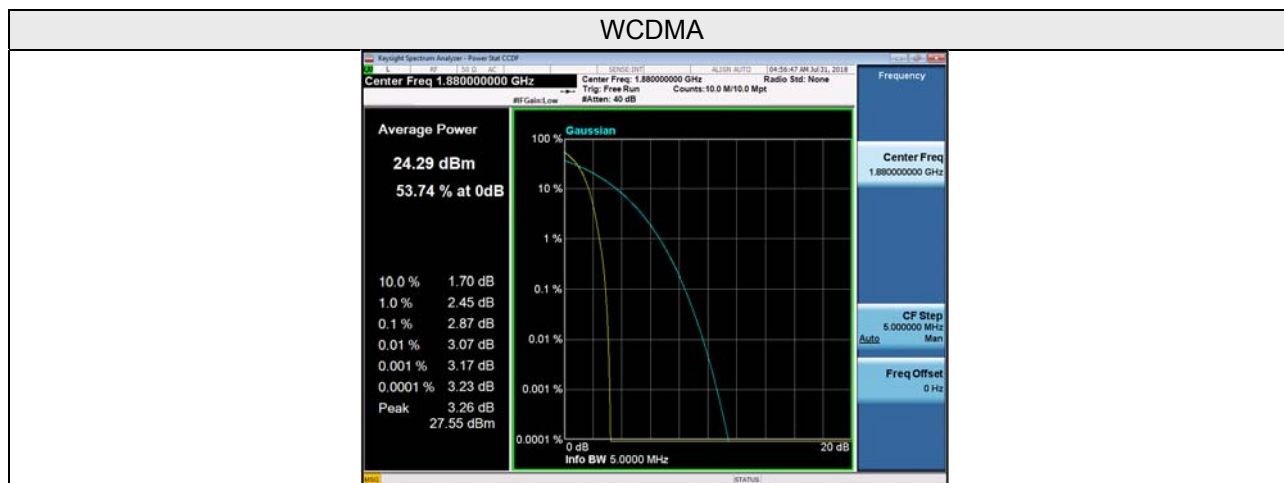
#### 4.6.4 Test Results

| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |      |      |
|---------|-----------------|----------------------------|------|------|
|         |                 | GSM                        | GPRS | EDGE |
| 512     | 1850.2          | 2.76                       | 2.77 | 2.77 |
| 661     | 1880.0          | 2.75                       | 2.76 | 2.76 |
| 810     | 1909.8          | 2.75                       | 2.75 | 2.76 |

#### Spectrum Plot Of Worst Value



| Channel | Frequency (MHz) | Peak To Average Ratio (dB) |
|---------|-----------------|----------------------------|
|         |                 | WCDMA                      |
| 9262    | 1852.4          | 2.86                       |
| 9400    | 1880.0          | 2.87                       |
| 9538    | 1907.6          | 2.73                       |



| LTE Band 2, Channel Bandwidth 1.4MHz |                 |                            |       |
|--------------------------------------|-----------------|----------------------------|-------|
| Channel                              | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                      |                 | QPSK                       | 16QAM |
| 18607                                | 1850.7          | 4.97                       | 5.01  |
| 18900                                | 1880.0          | 5.03                       | 5.03  |
| 19193                                | 1909.3          | 4.59                       | 4.59  |

| LTE Band 2, Channel Bandwidth 3MHz |                 |                            |       |
|------------------------------------|-----------------|----------------------------|-------|
| Channel                            | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                    |                 | QPSK                       | 16QAM |
| 18615                              | 1851.5          | 5.16                       | 5.11  |
| 18900                              | 1880.0          | 5.11                       | 5.09  |
| 19185                              | 1908.5          | 4.88                       | 4.78  |

| LTE Band 2, Channel Bandwidth 5MHz |                 |                            |       |
|------------------------------------|-----------------|----------------------------|-------|
| Channel                            | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                    |                 | QPSK                       | 16QAM |
| 18625                              | 1852.5          | 5.11                       | 5.11  |
| 18900                              | 1880.0          | 5.07                       | 5.07  |
| 19175                              | 1907.5          | 4.85                       | 4.86  |

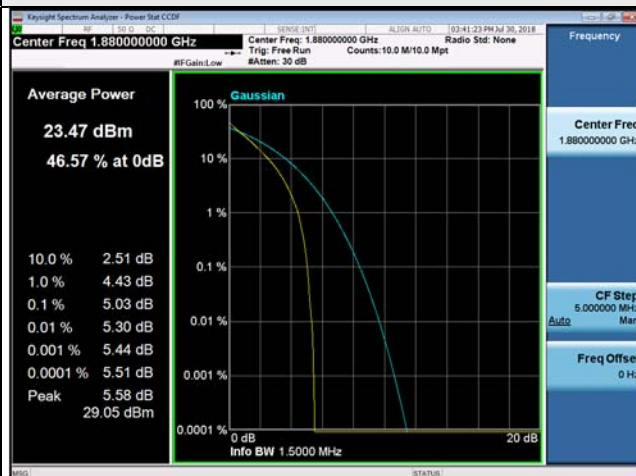
| LTE Band 2, Channel Bandwidth 10MHz |                 |                            |       |
|-------------------------------------|-----------------|----------------------------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                     |                 | QPSK                       | 16QAM |
| 18650                               | 1855.0          | 4.92                       | 4.92  |
| 18900                               | 1880.0          | 4.80                       | 4.82  |
| 19150                               | 1905.0          | 4.63                       | 4.63  |

| LTE Band 2, Channel Bandwidth 15MHz |                 |                            |       |
|-------------------------------------|-----------------|----------------------------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                     |                 | QPSK                       | 16QAM |
| 18675                               | 1857.5          | 5.05                       | 5.01  |
| 18900                               | 1880.0          | 5.02                       | 5.03  |
| 19125                               | 1902.5          | 4.98                       | 4.95  |

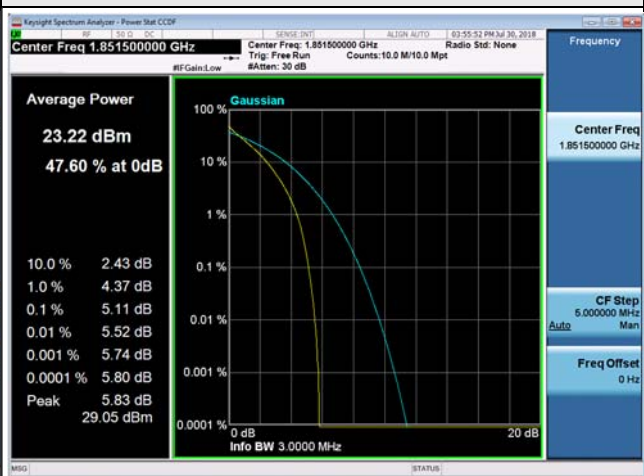
| LTE Band 2, Channel Bandwidth 20MHz |                 |                            |       |
|-------------------------------------|-----------------|----------------------------|-------|
| Channel                             | Frequency (MHz) | Peak To Average Ratio (dB) |       |
|                                     |                 | QPSK                       | 16QAM |
| 18700                               | 1860.0          | 4.88                       | 4.89  |
| 18900                               | 1880.0          | 4.94                       | 4.94  |
| 19100                               | 1900.0          | 4.92                       | 4.90  |

## Spectrum Plot Of Worst Value

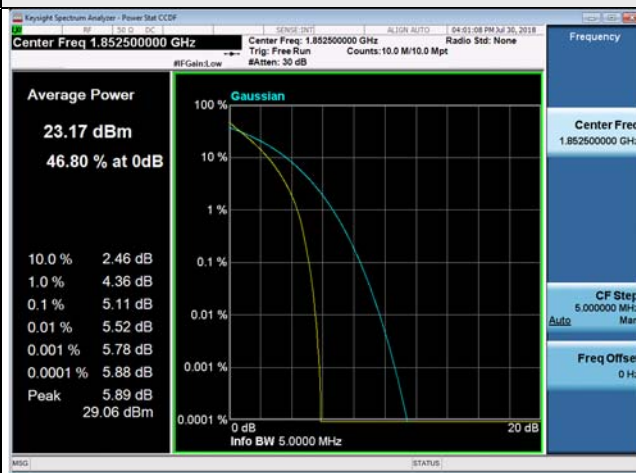
**1.4MHz / 16QAM**



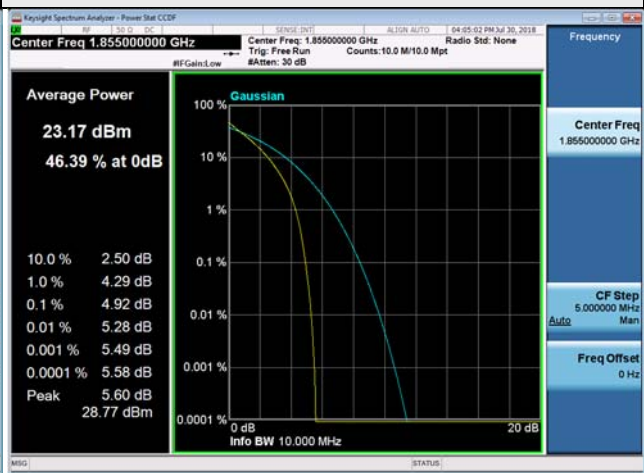
**3MHz / 16QAM**



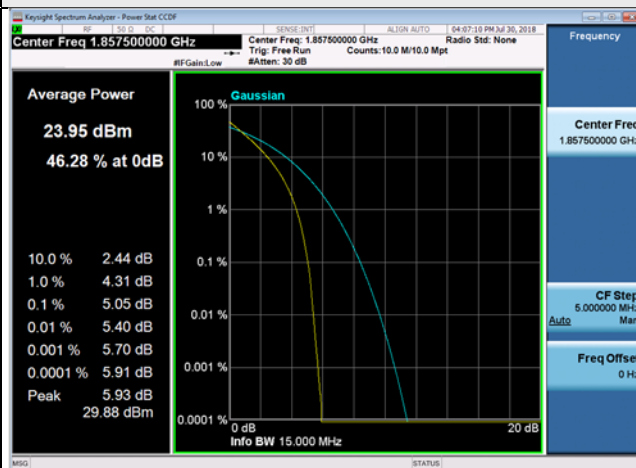
**5MHz / 16QAM**



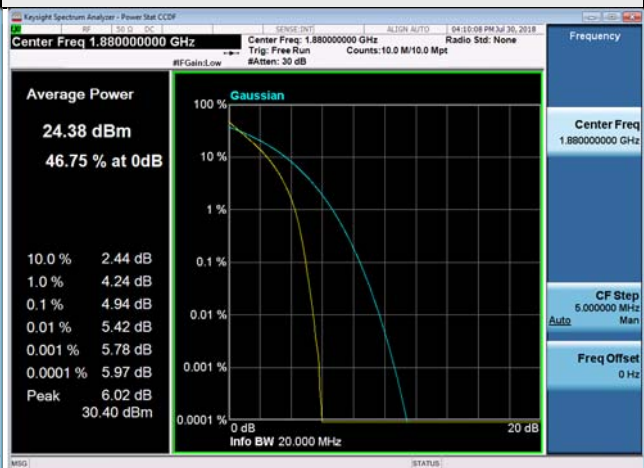
**10MHz / 16QAM**



**15MHz / QPSK**



**20MHz / QPSK**

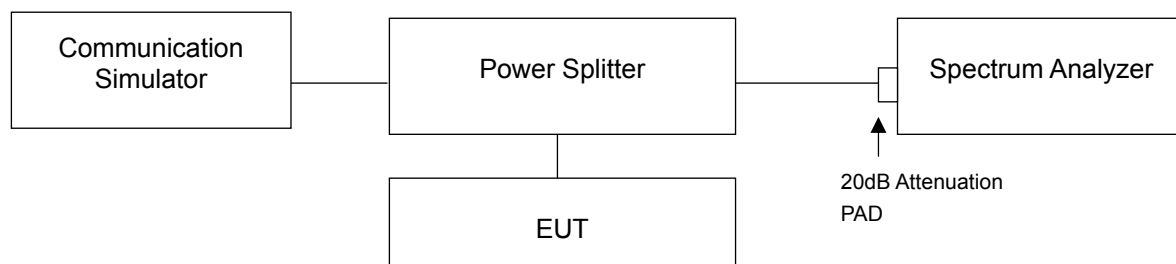


## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

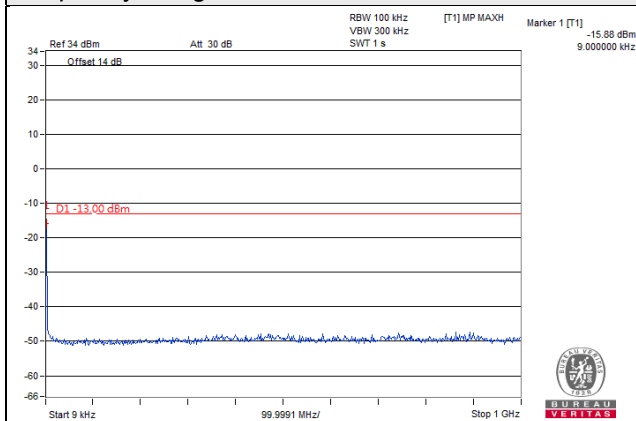
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 1GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz is used for conducted emission measurement.
- Measuring frequency range is from 1GHz to 26.5GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

## 4.7.4 Test Results

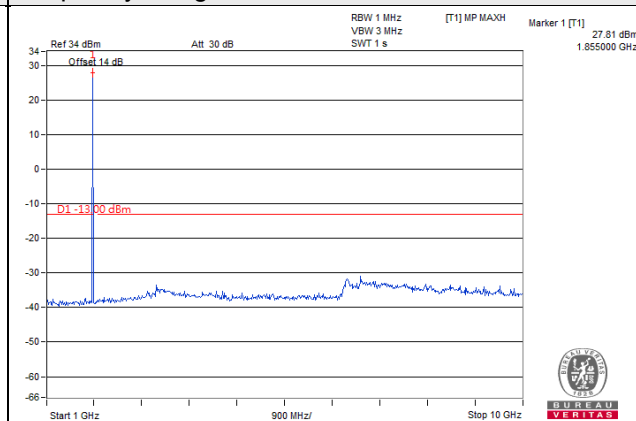
### GSM

Channel 512 (1850.2MHz)

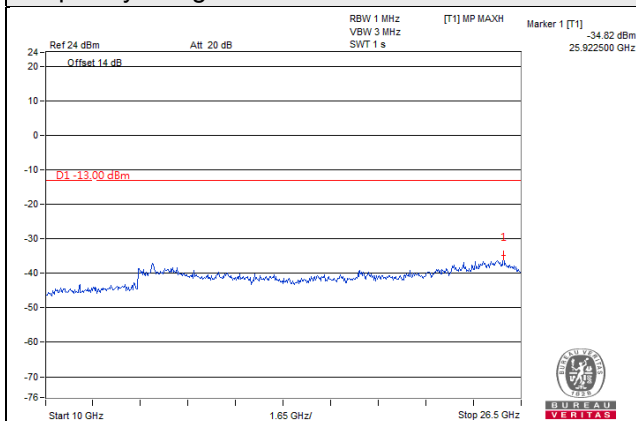
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz

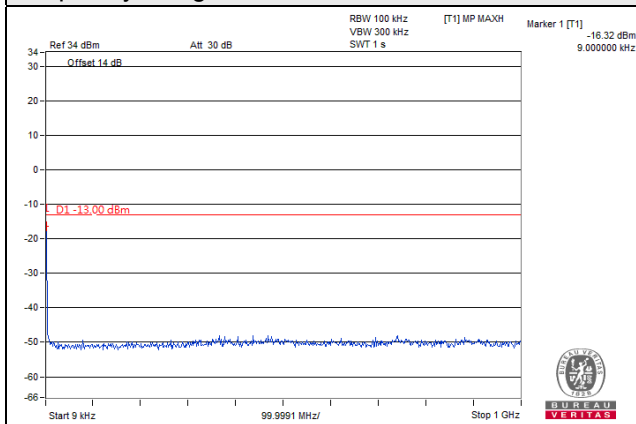


Note: For 9kHz, the signal is from spectrum analyzer.

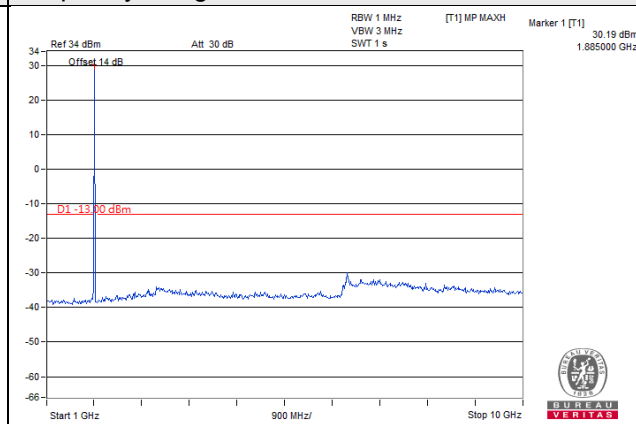
# GSM

Channel 661 (1880.0MHz)

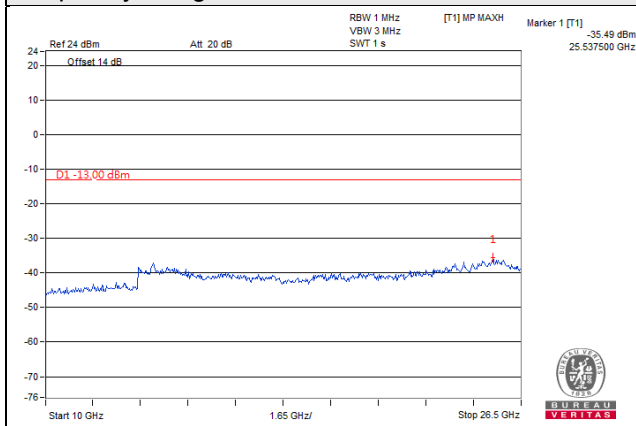
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz

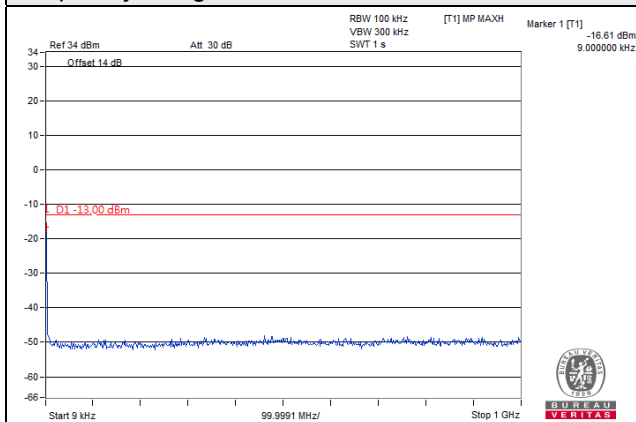


Note: For 9kHz, the signal is from spectrum analyzer.

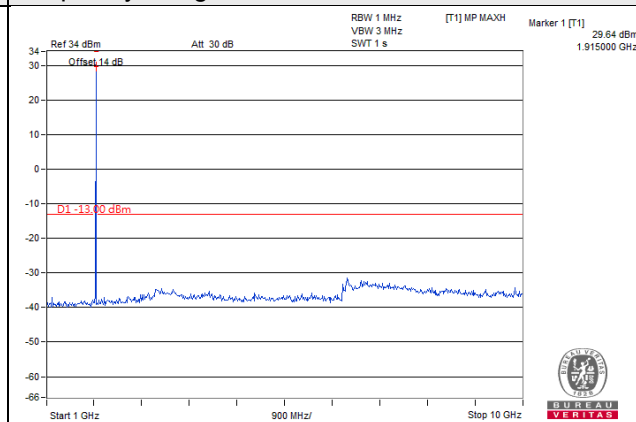
# GSM

Channel 810 (1909.8MHz)

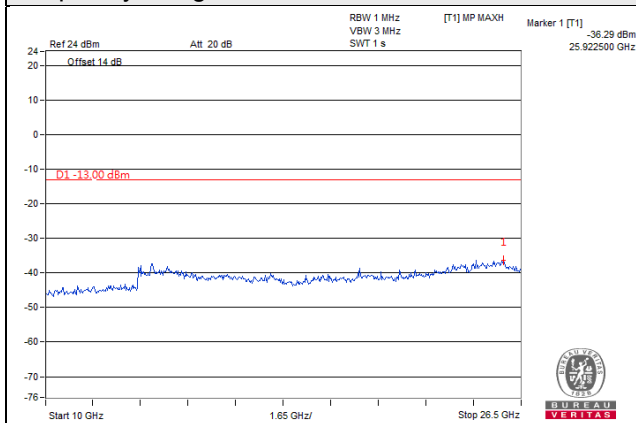
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



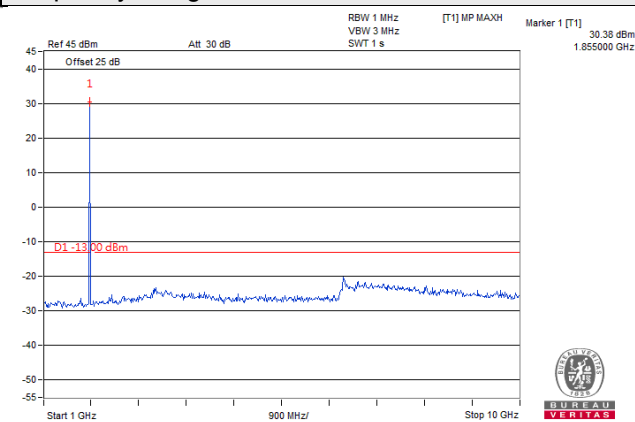
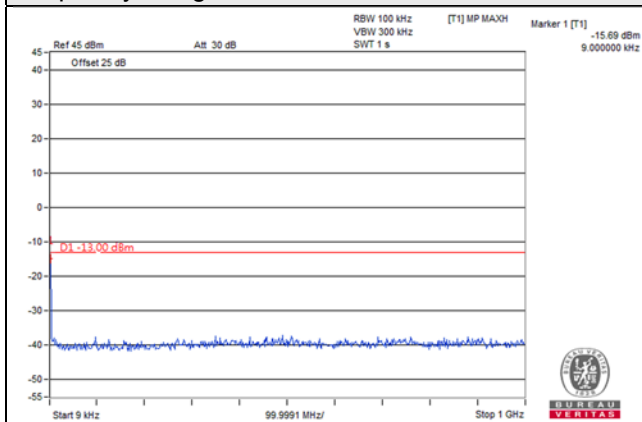
Note: For 9kHz, the signal is from spectrum analyzer.

# GPRS

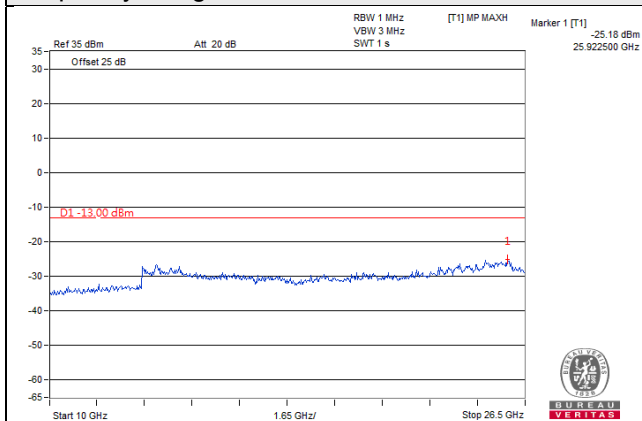
Channel 512 (1850.2MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



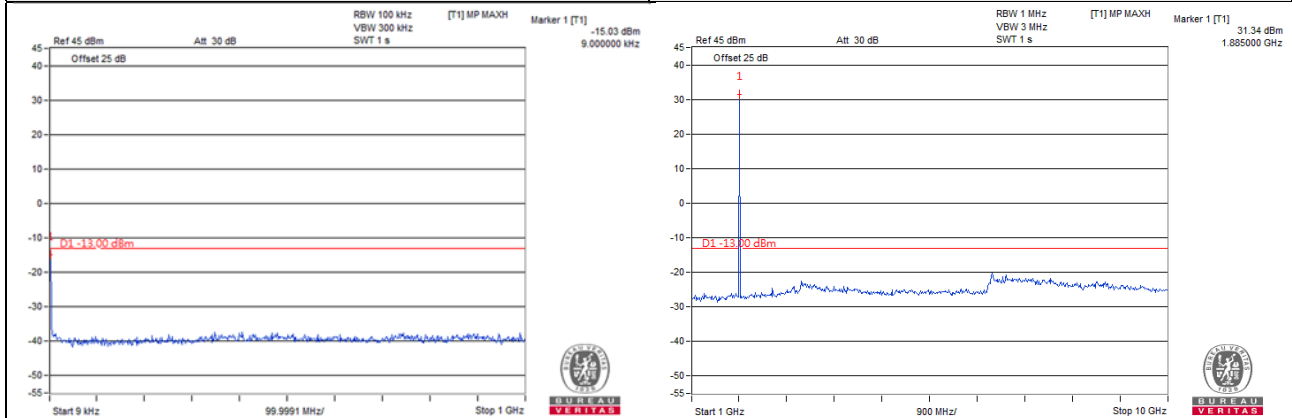
Note: For 9kHz, the signal is from spectrum analyzer.

# GPRS

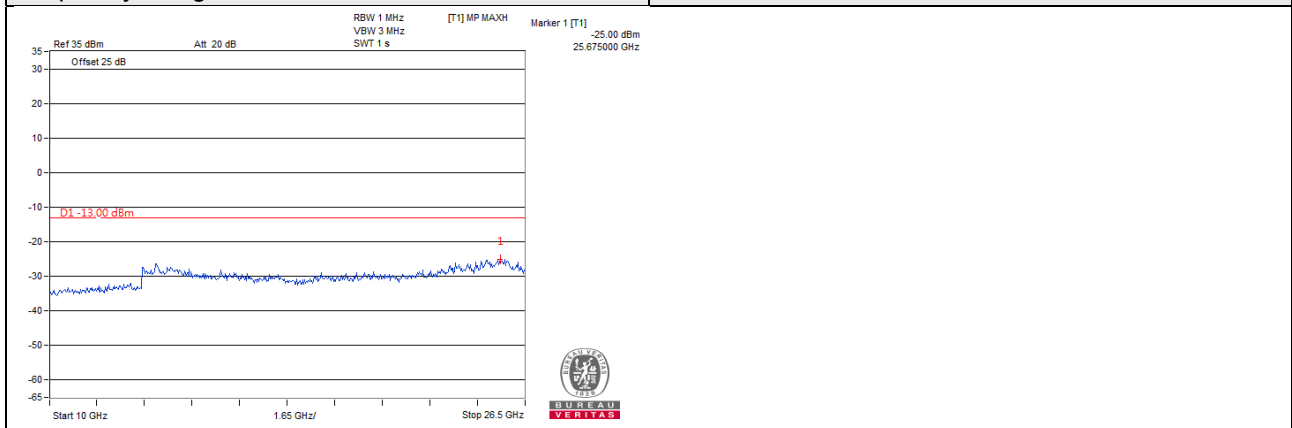
Channel 661 (1880.0MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



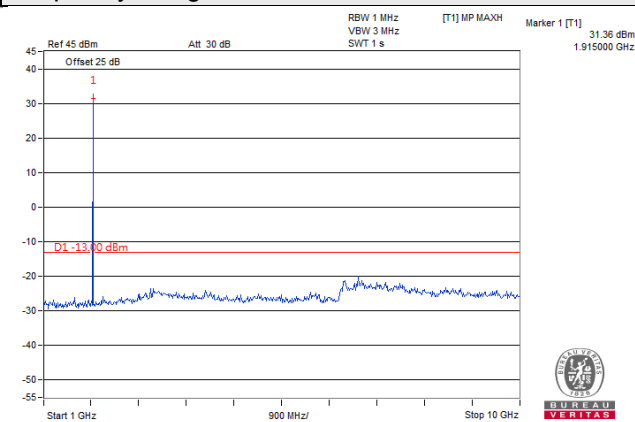
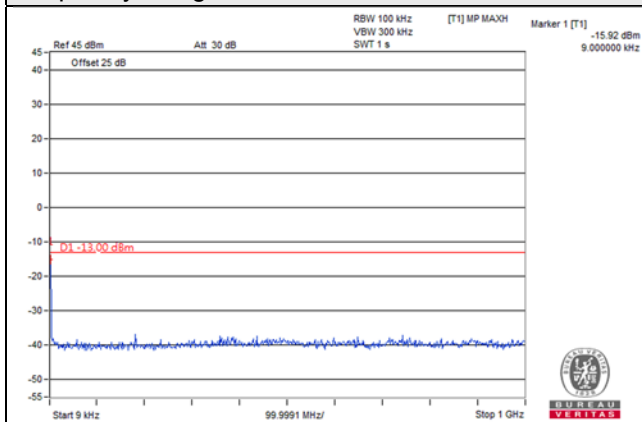
Note: For 9kHz, the signal is from spectrum analyzer.

# GPRS

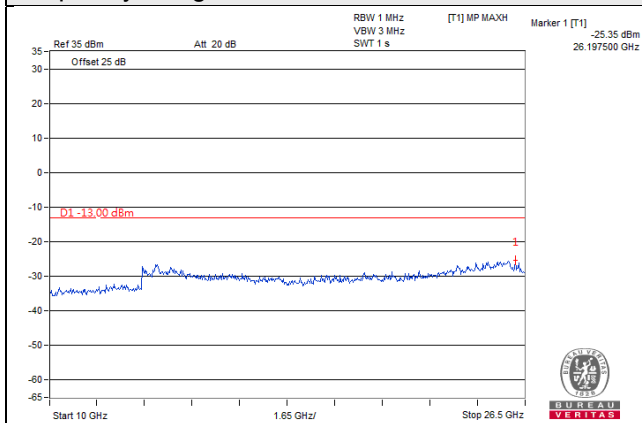
Channel 810 (1909.8MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



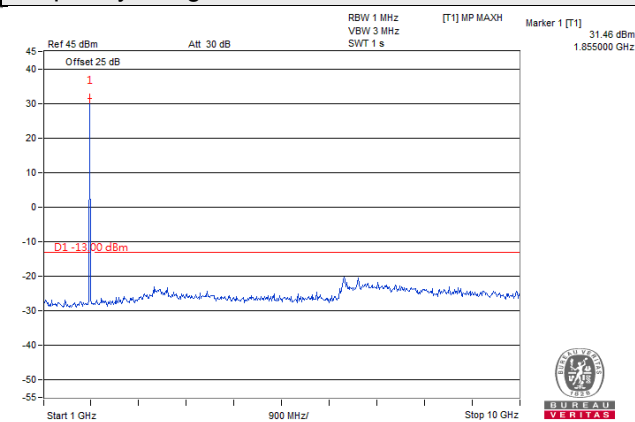
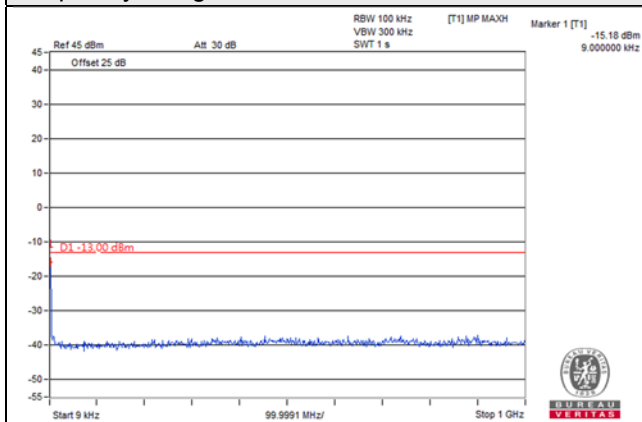
Note: For 9kHz, the signal is from spectrum analyzer.

# EDGE

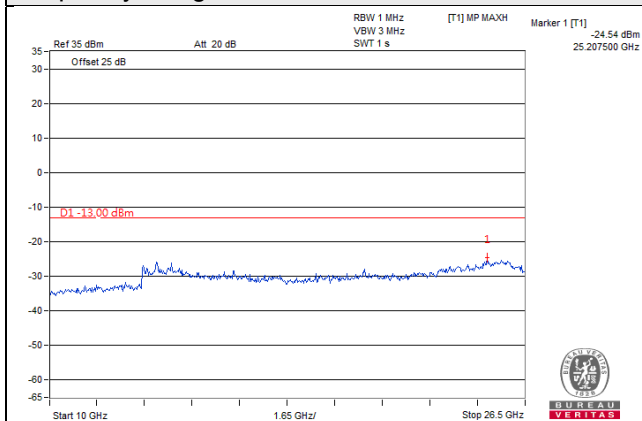
Channel 512 (1850.2MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



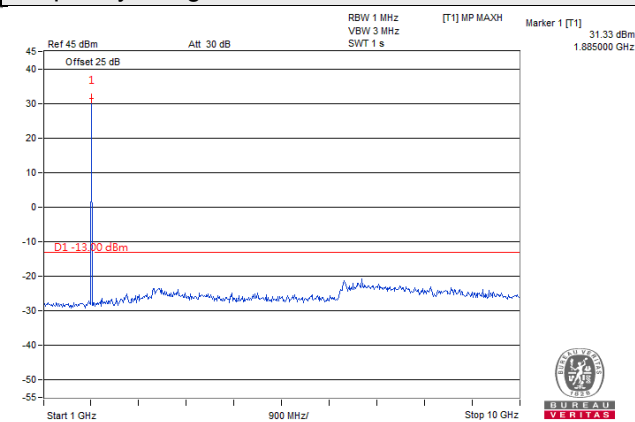
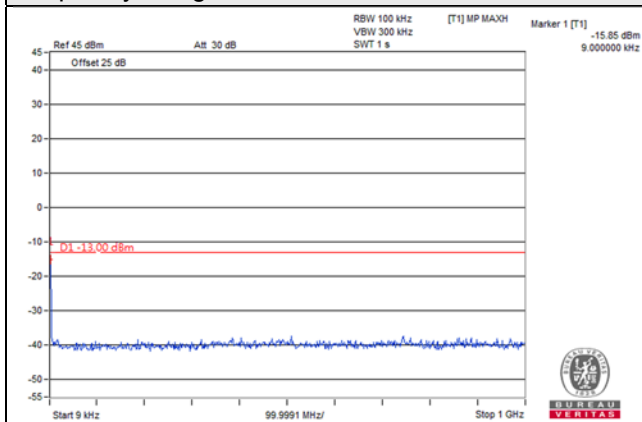
Note: For 9kHz, the signal is from spectrum analyzer.

# EDGE

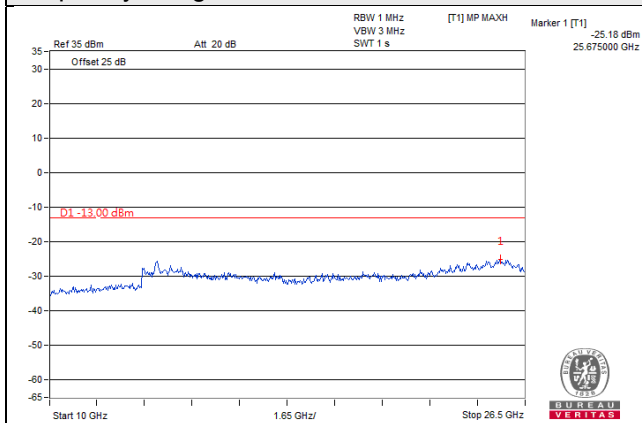
Channel 661 (1880.0MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



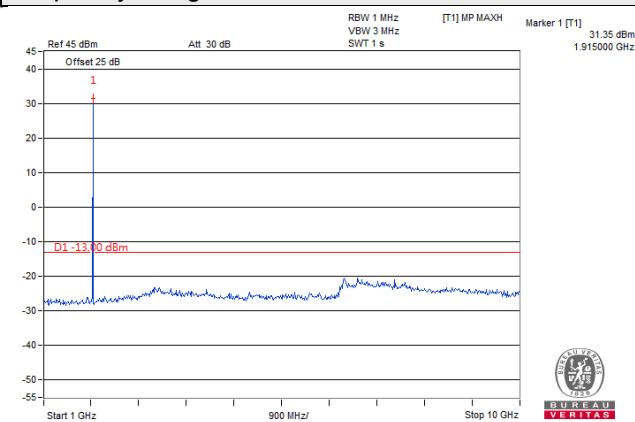
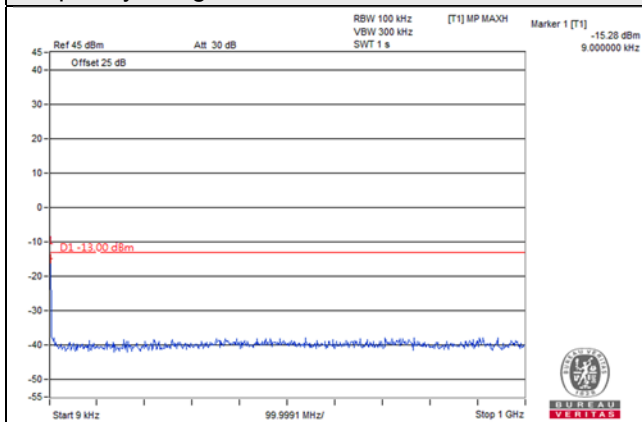
Note: For 9kHz, the signal is from spectrum analyzer.

# EDGE

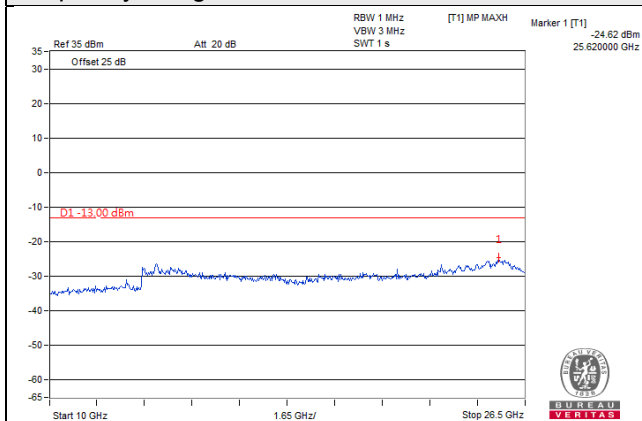
Channel 810 (1909.8MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



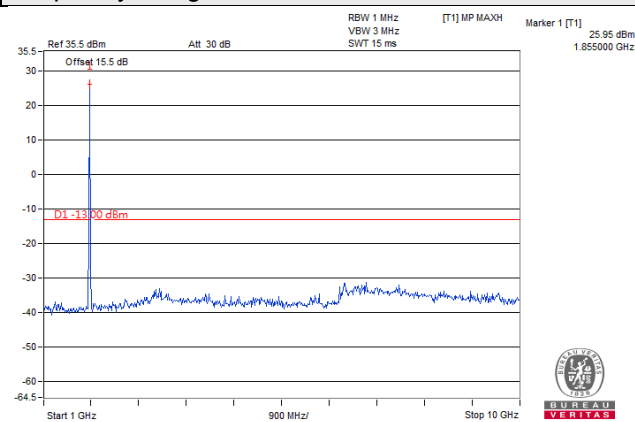
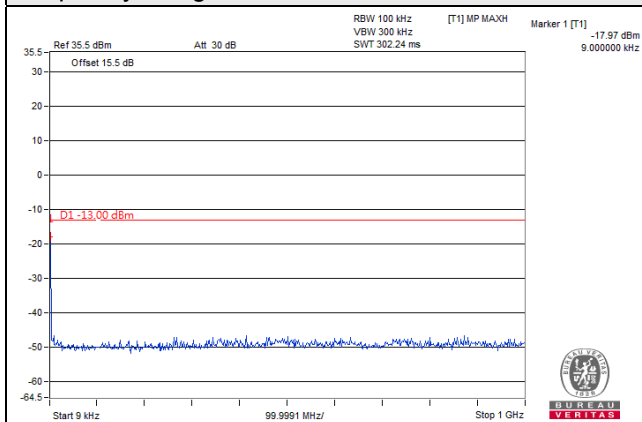
Note: For 9kHz, the signal is from spectrum analyzer.

# WCDMA

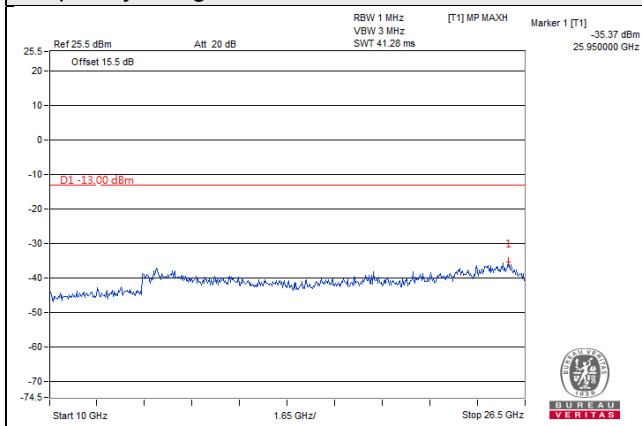
Channel 9262 (1852.4MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



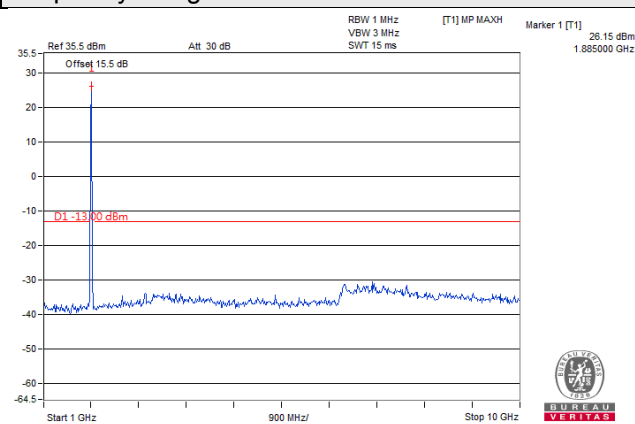
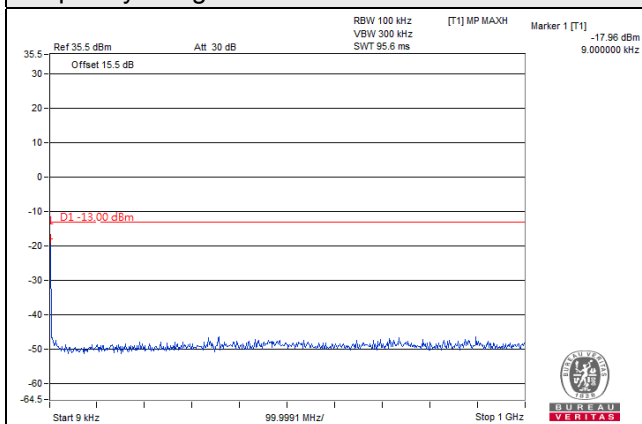
Note: For 9kHz, the signal is from spectrum analyzer.

# WCDMA

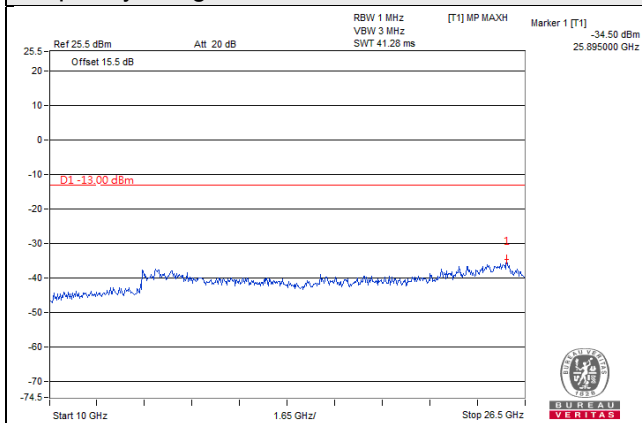
Channel 9400 (1880.0MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



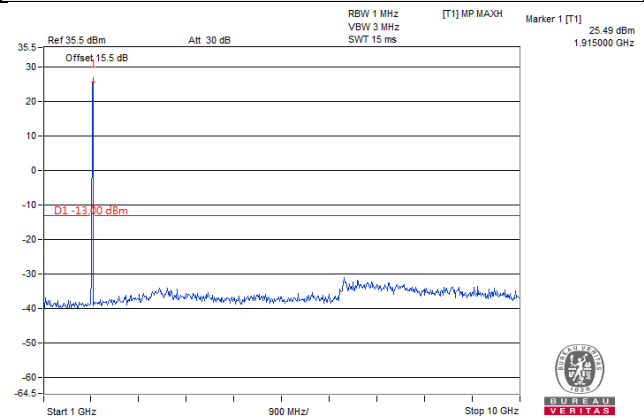
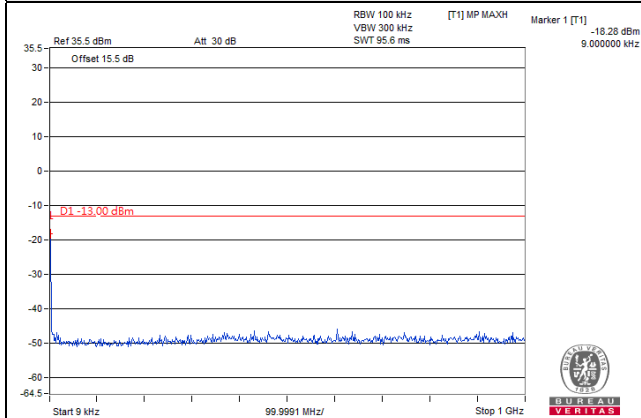
Note: For 9kHz, the signal is from spectrum analyzer.

# WCDMA

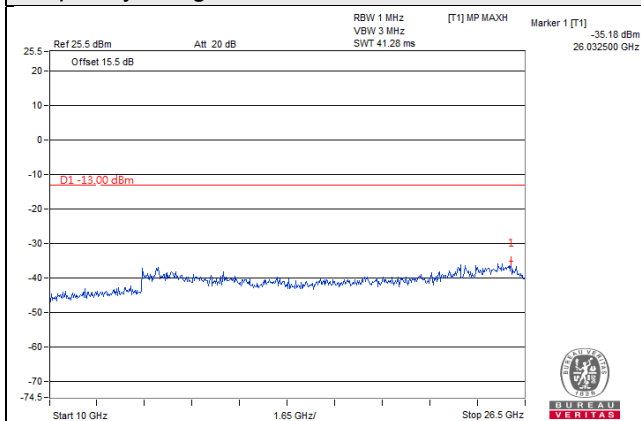
Channel 9538 (1907.6MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



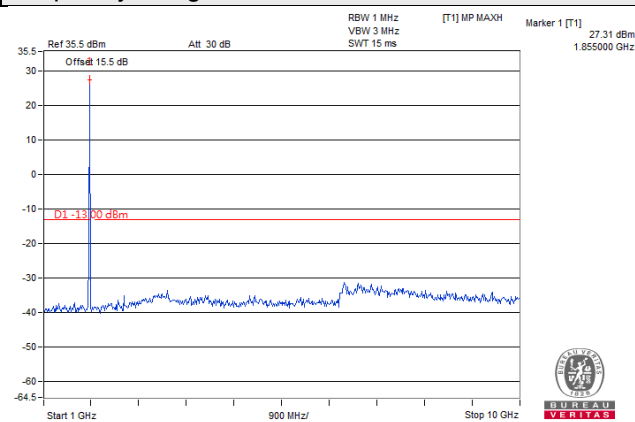
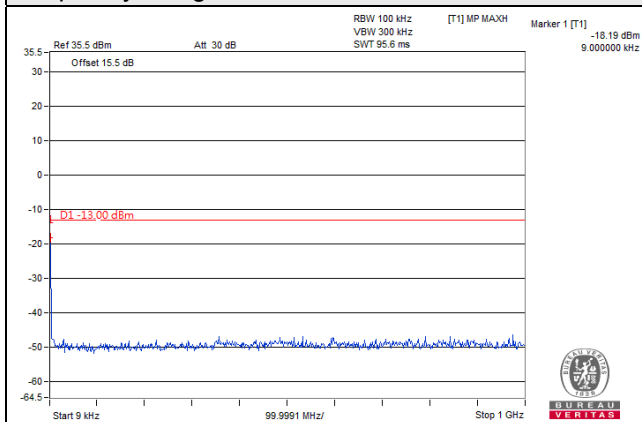
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 1.4MHz

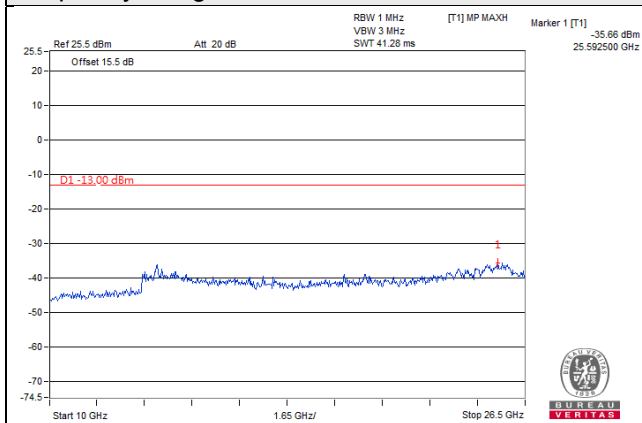
Channel 18607 (1850.70MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



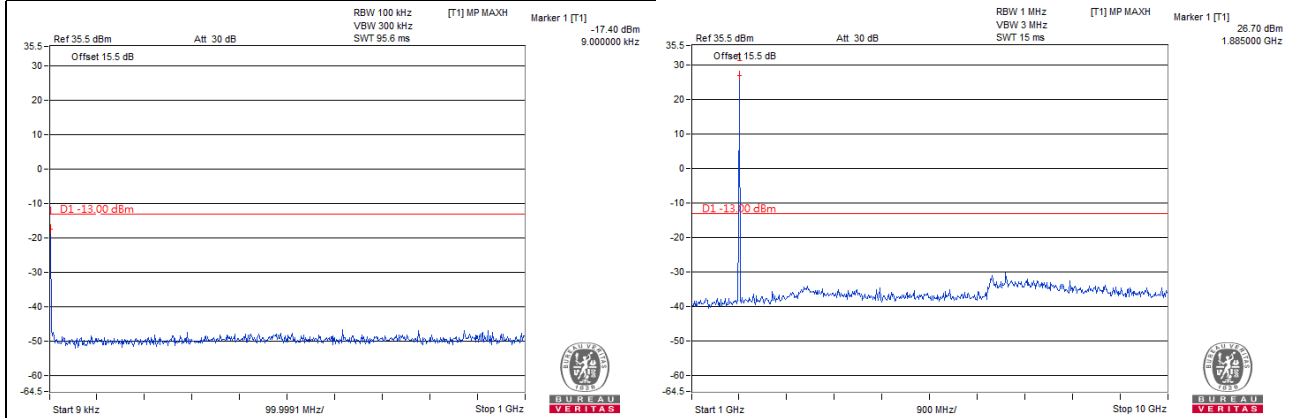
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 1.4MHz

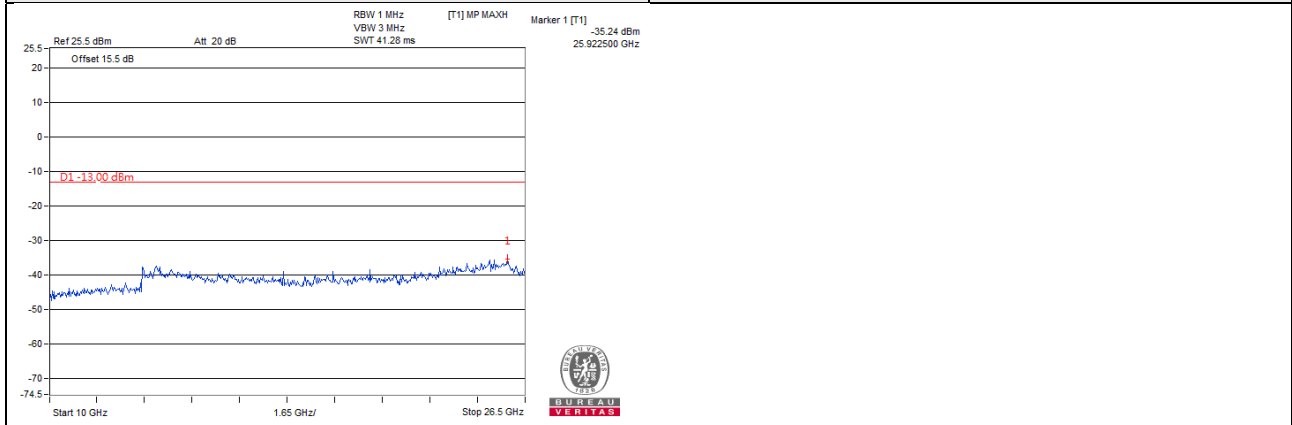
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



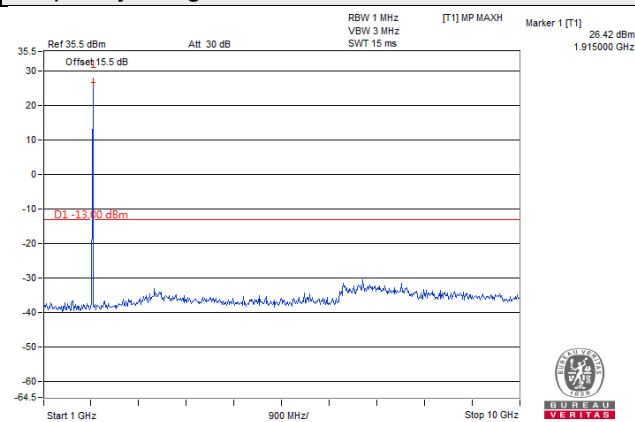
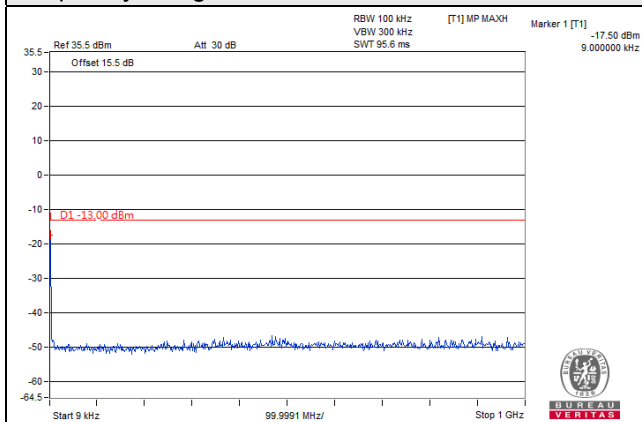
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 1.4MHz

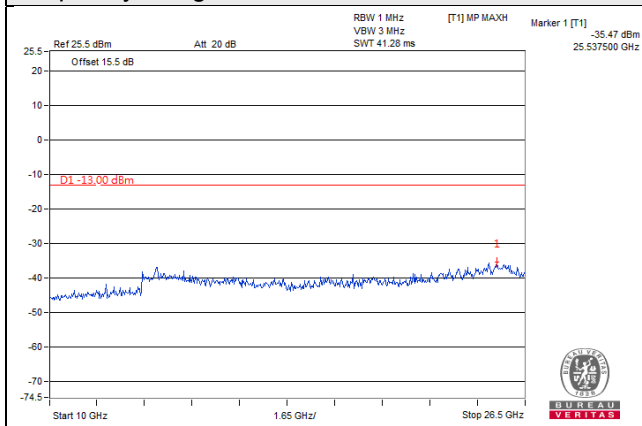
Channel 19193 (1909.30MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



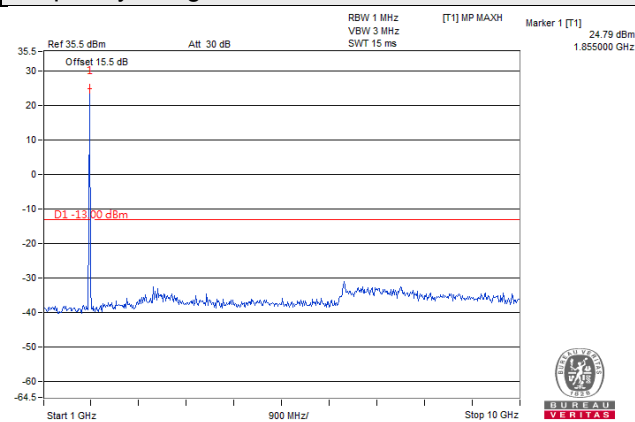
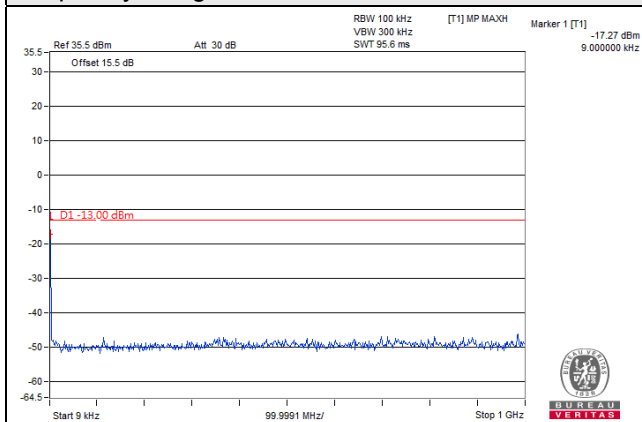
Note: For 9kHz, the signal is from spectrum analyzer.

# LTE Band 2, Channel Bandwidth 3MHz

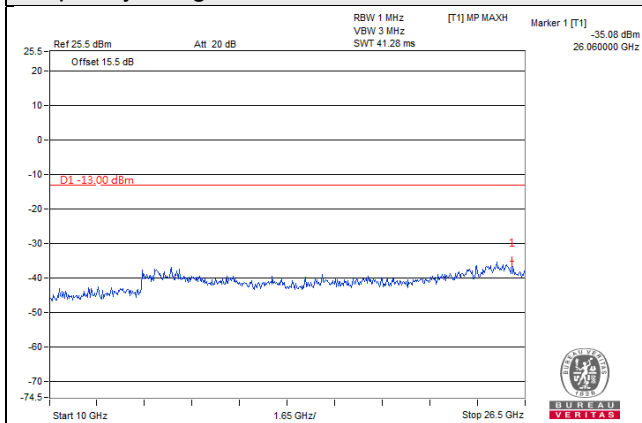
Channel 18615 (1851.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



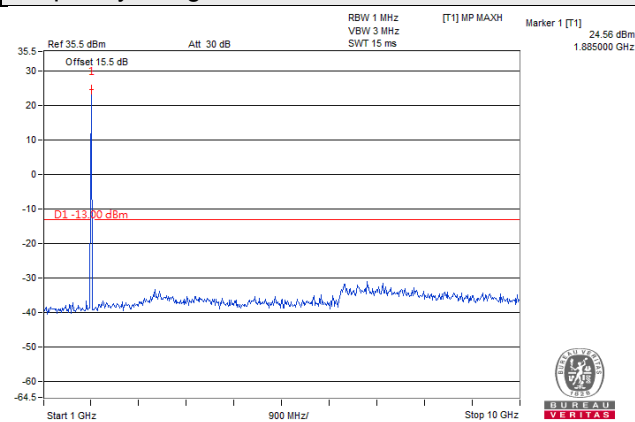
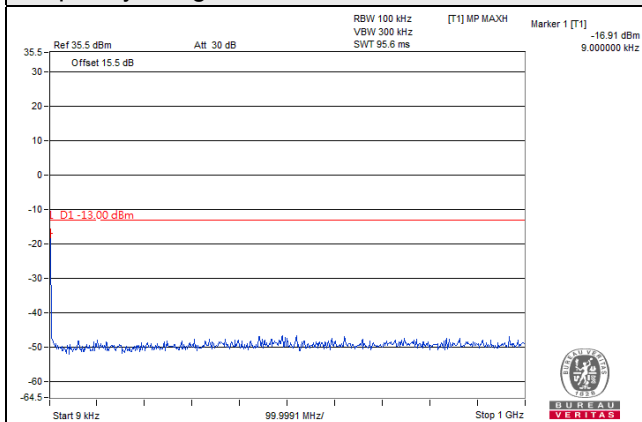
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 3MHz

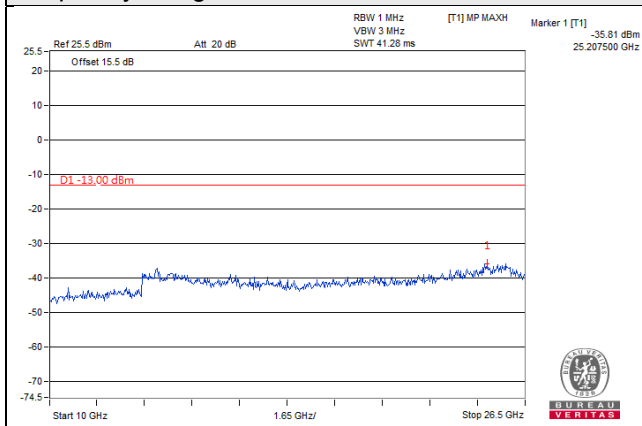
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



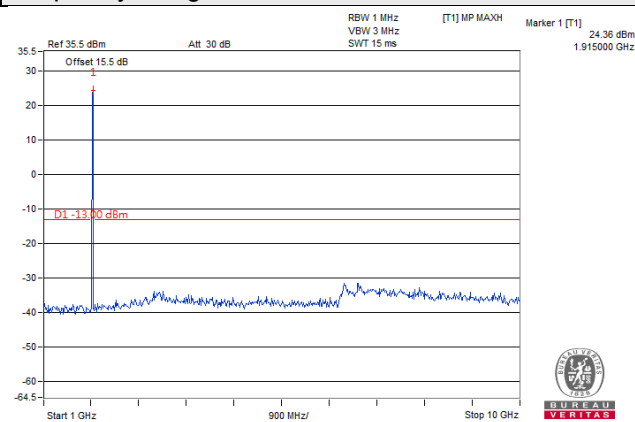
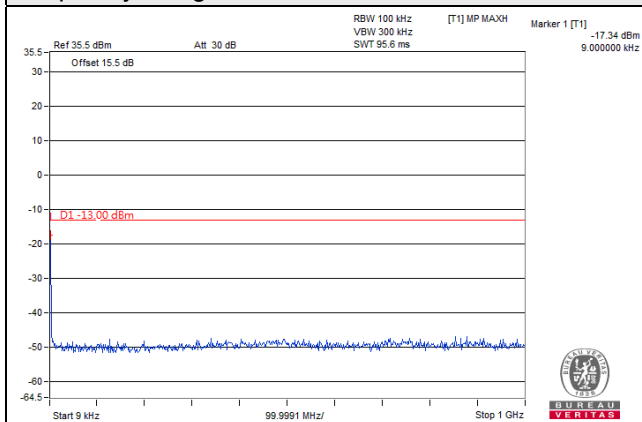
Note: For 9kHz, the signal is from spectrum analyzer.

# LTE Band 2, Channel Bandwidth 3MHz

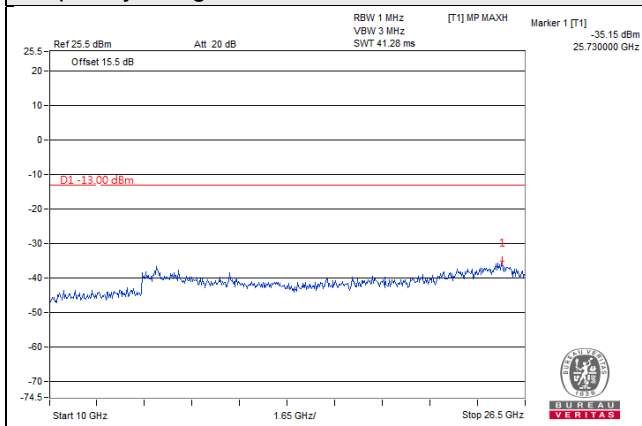
Channel 19185 (1908.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



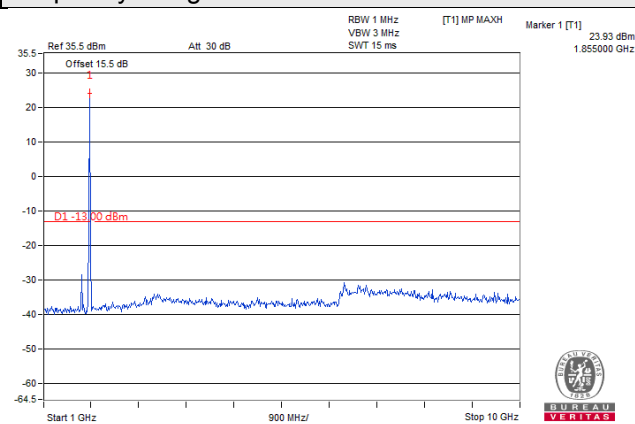
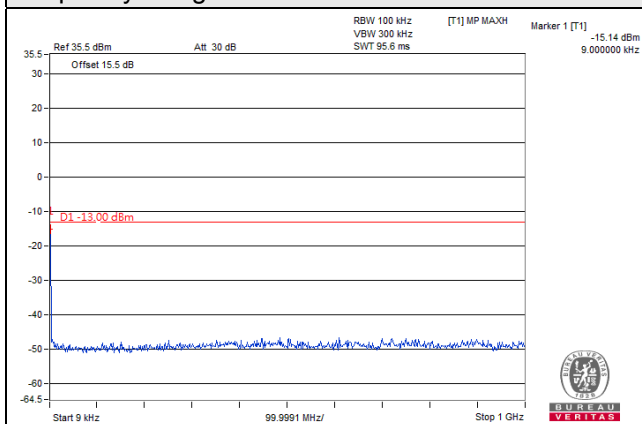
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 5MHz

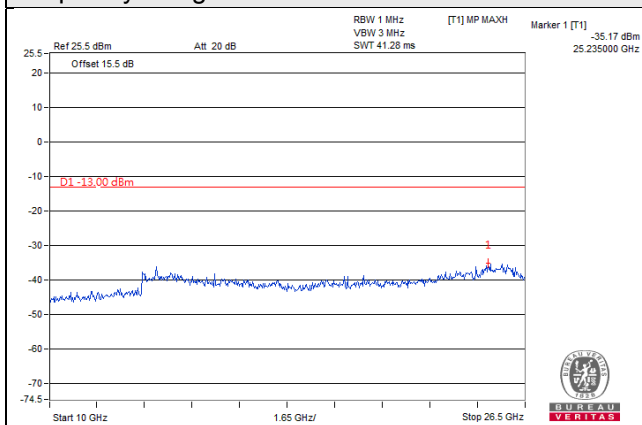
Channel 18625 (1852.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



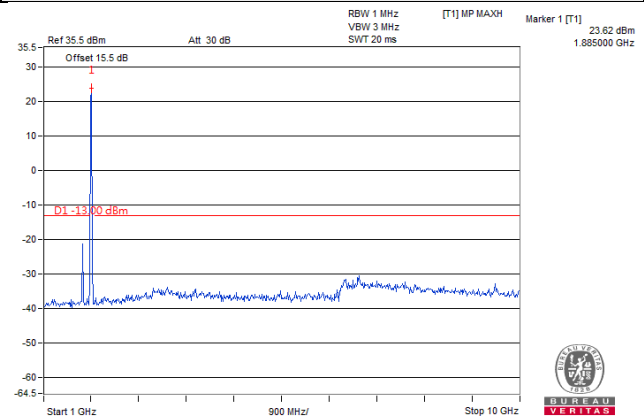
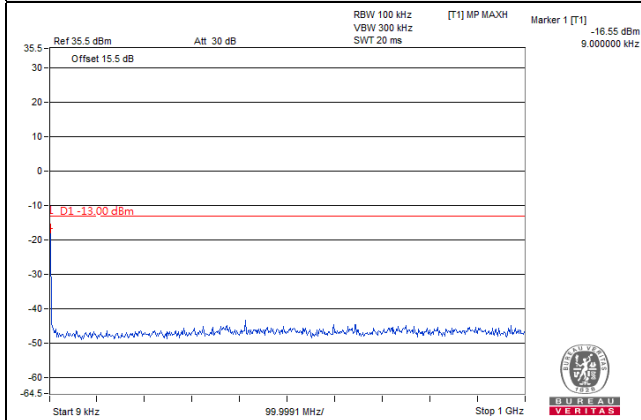
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 5MHz

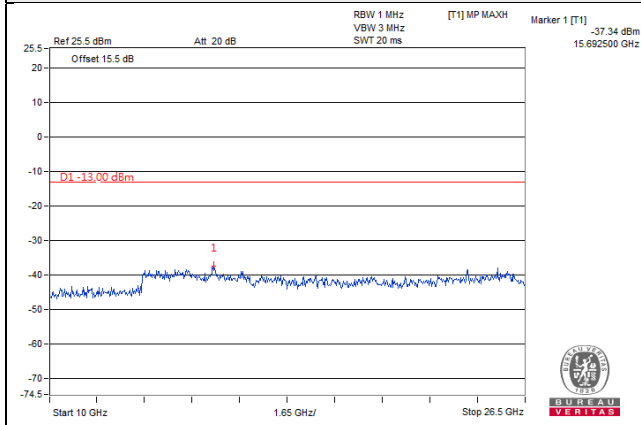
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



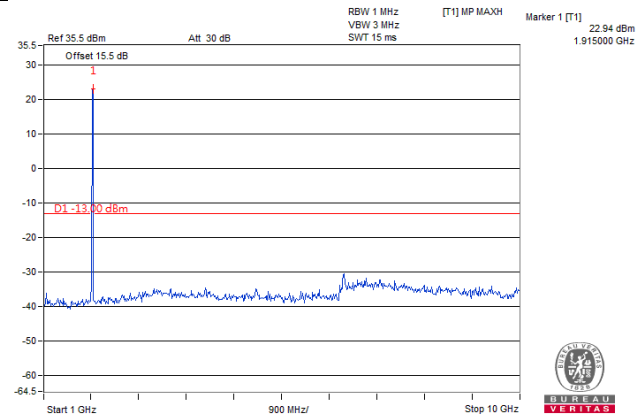
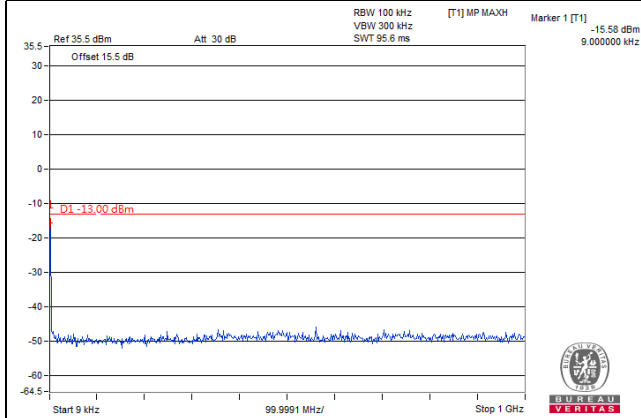
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 5MHz

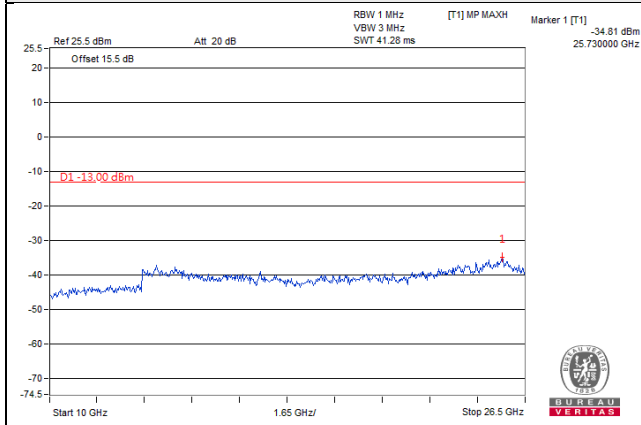
Channel 19175 (1907.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



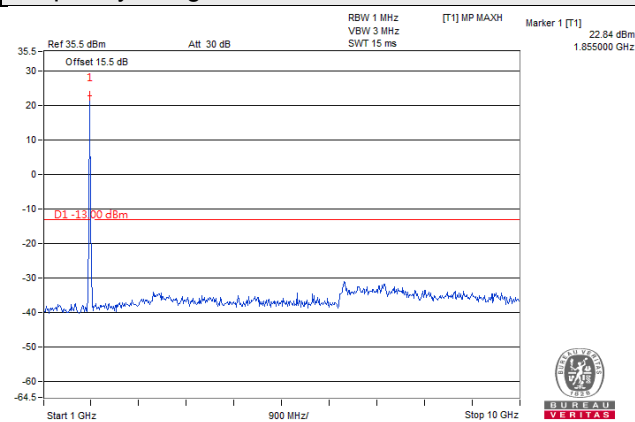
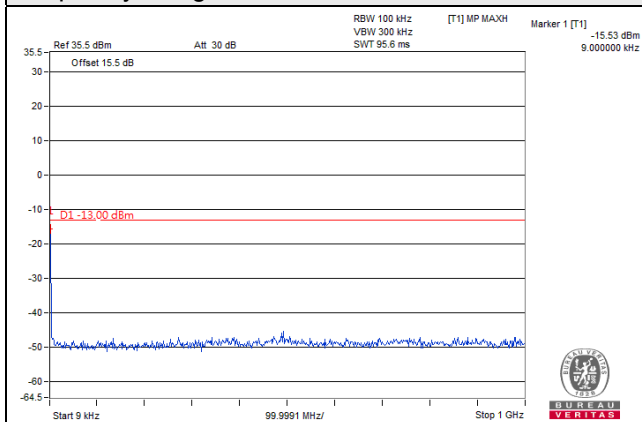
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 10MHz

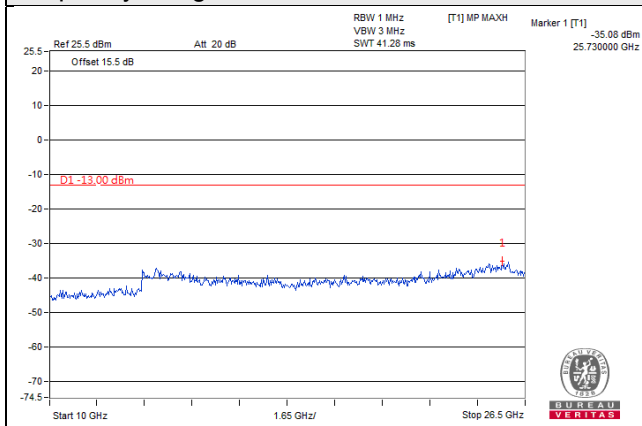
Channel 18650 (1855.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



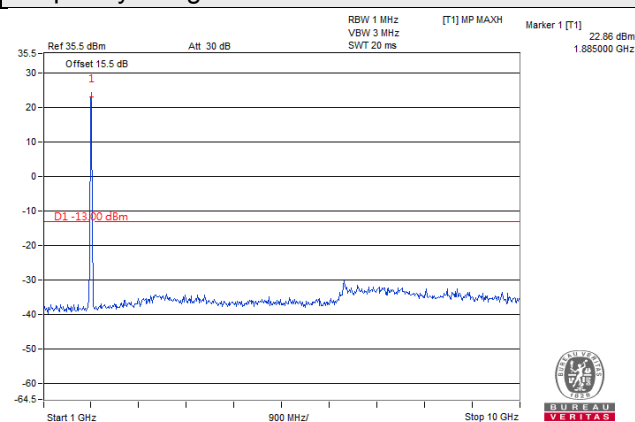
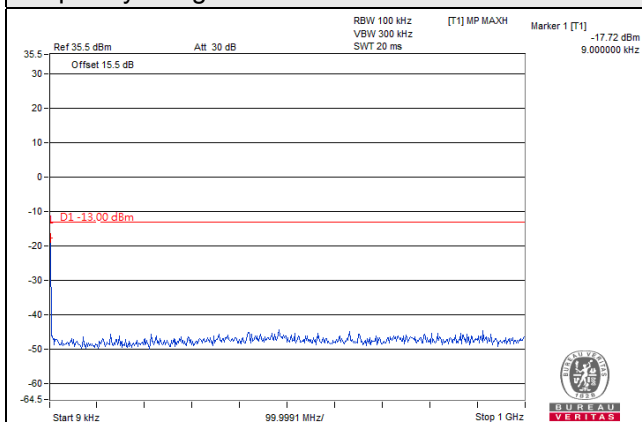
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 10MHz

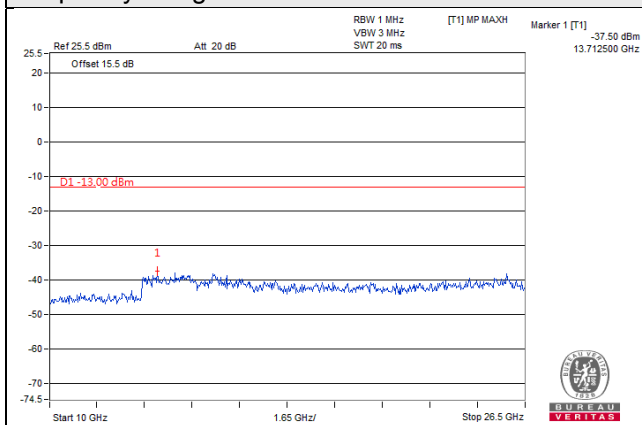
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



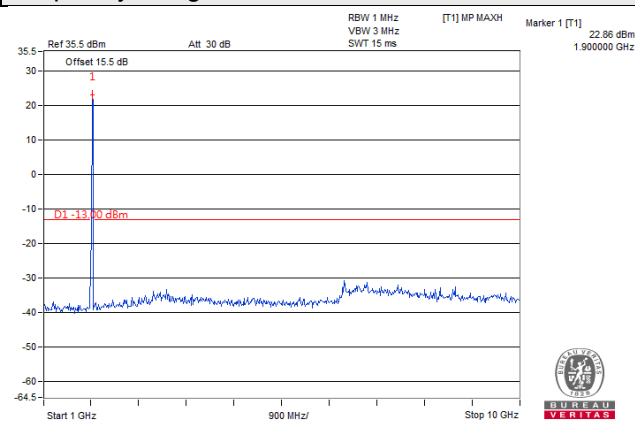
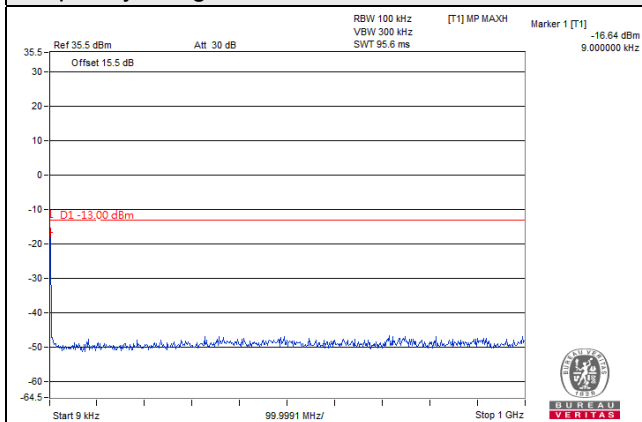
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 10MHz

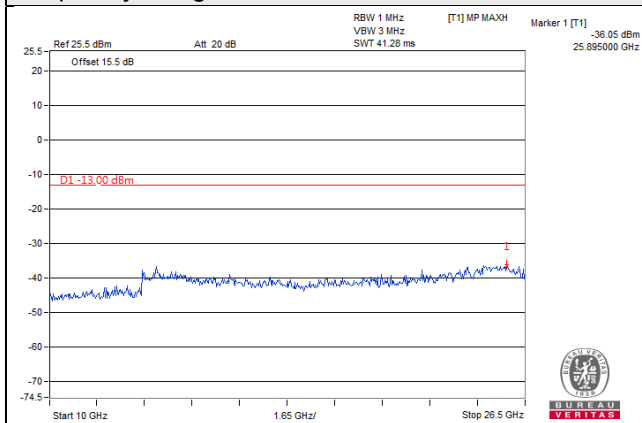
Channel 19150 (1905.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



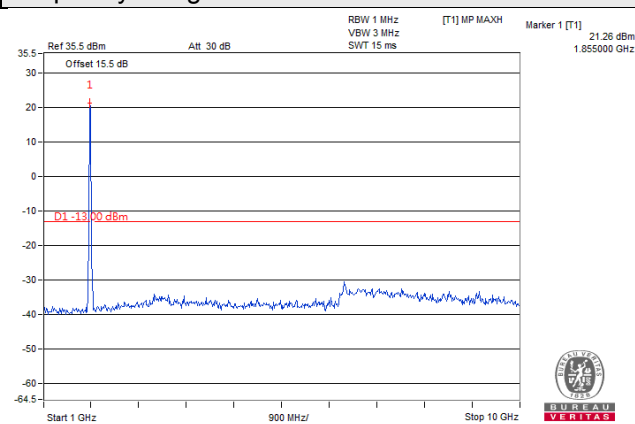
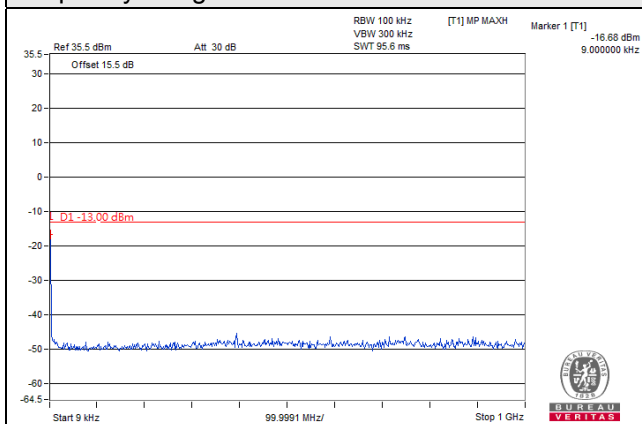
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 15MHz

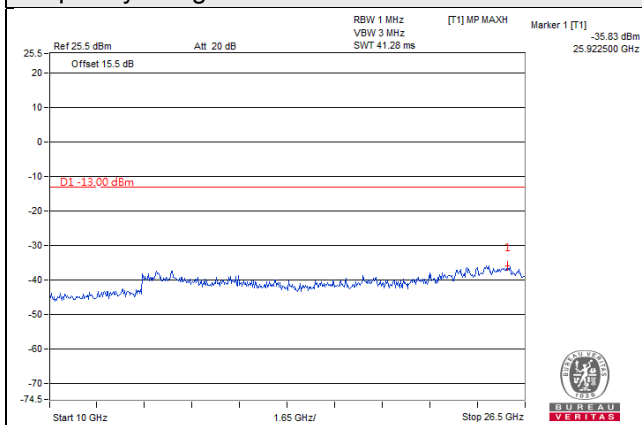
Channel 18675 (1857.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



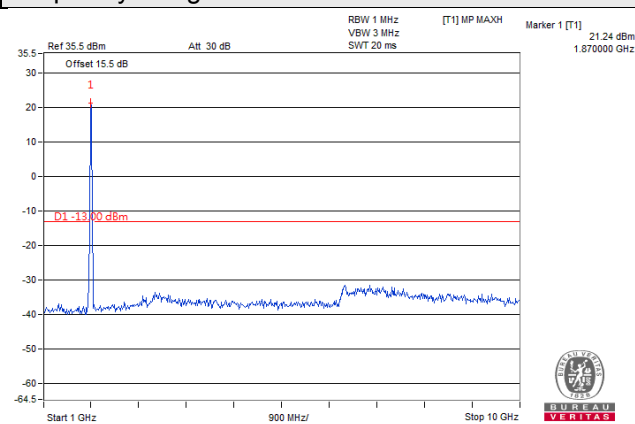
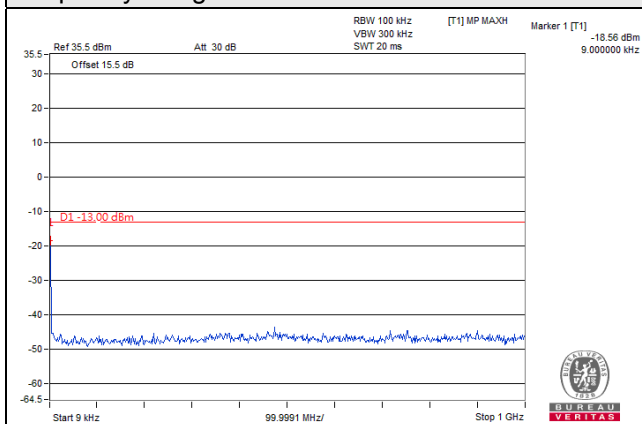
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 15MHz

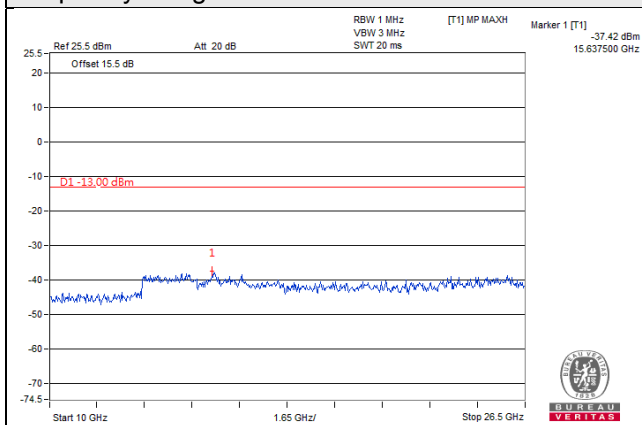
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



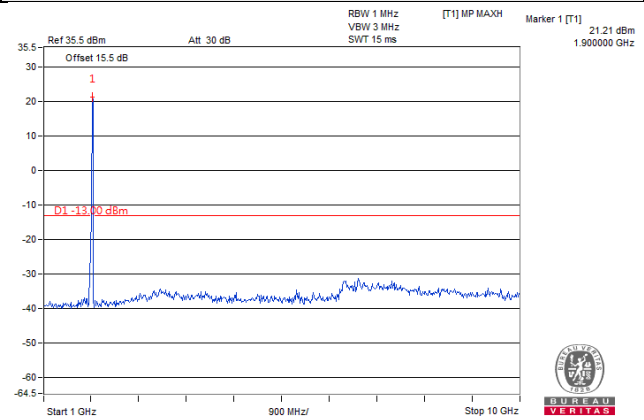
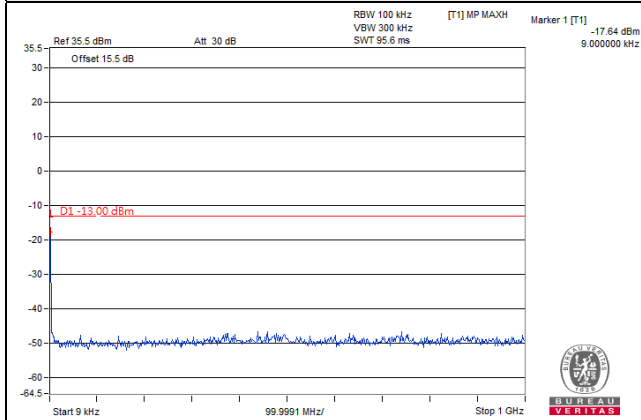
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 15MHz

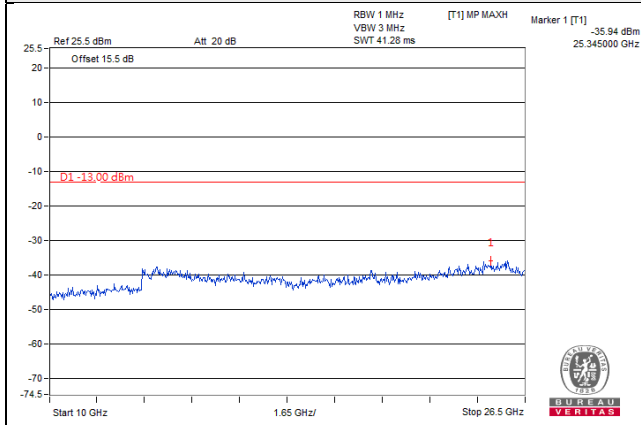
Channel 19125 (1902.50MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



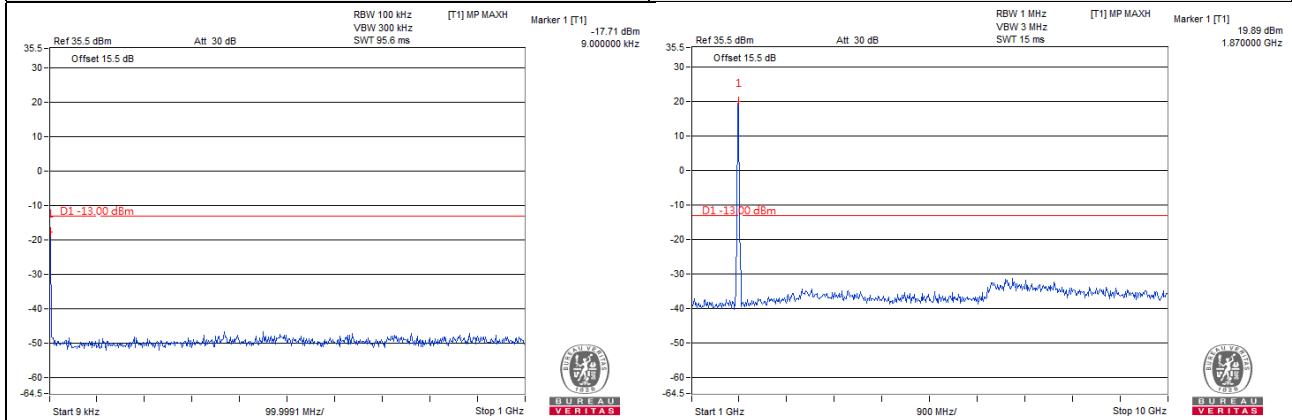
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 20MHz

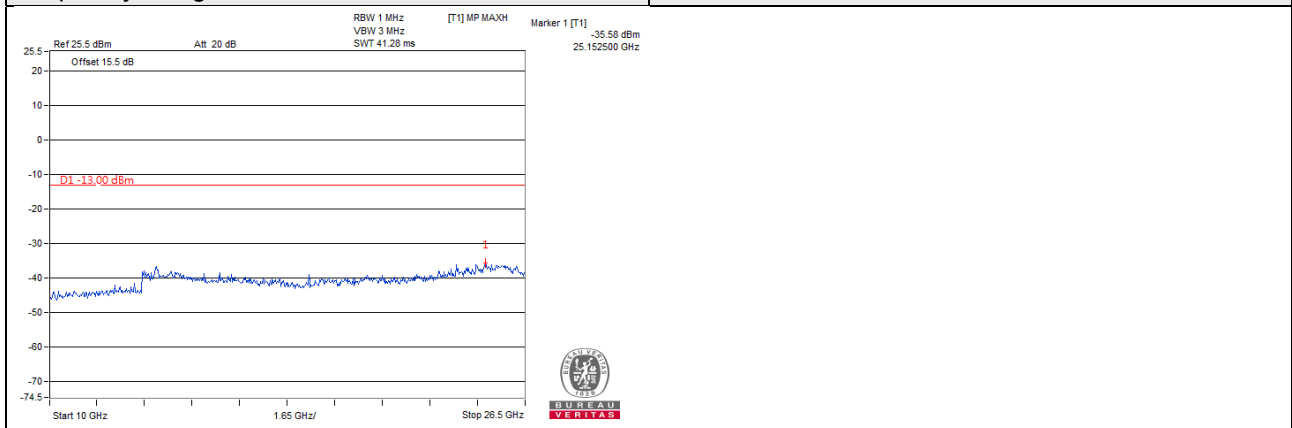
Channel 18700 (1860.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



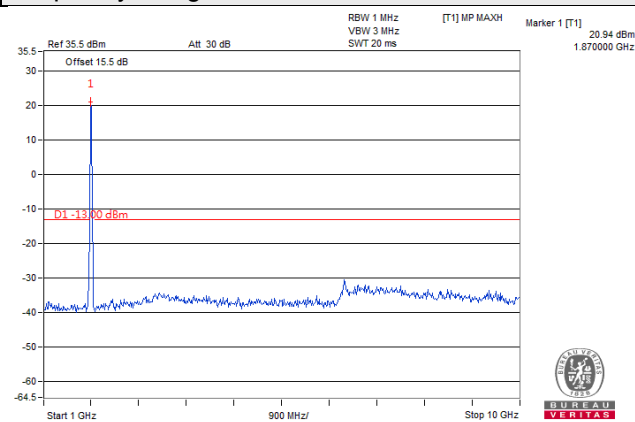
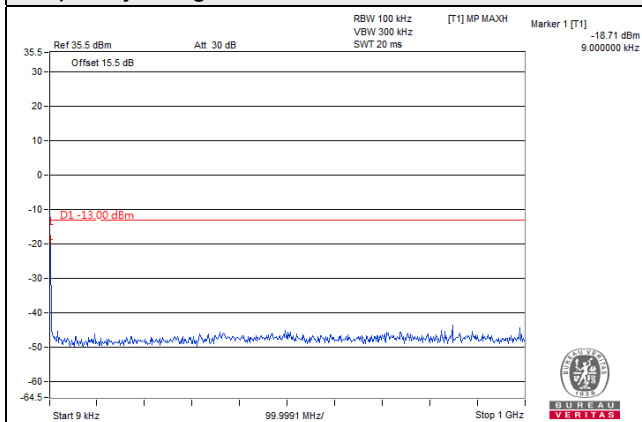
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 20MHz

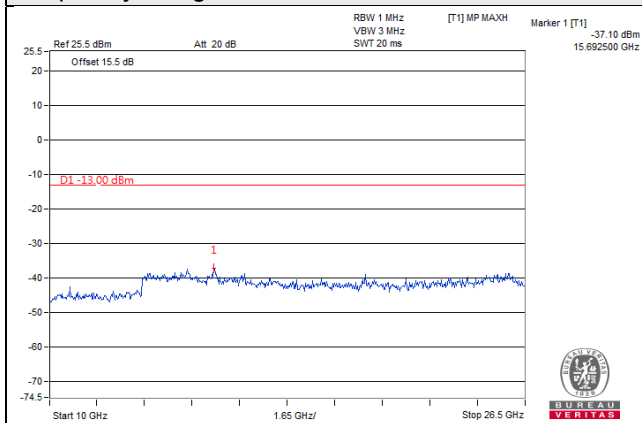
Channel 18900 (1880.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



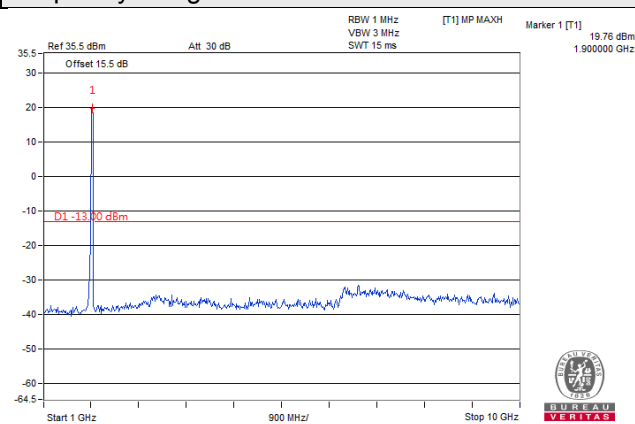
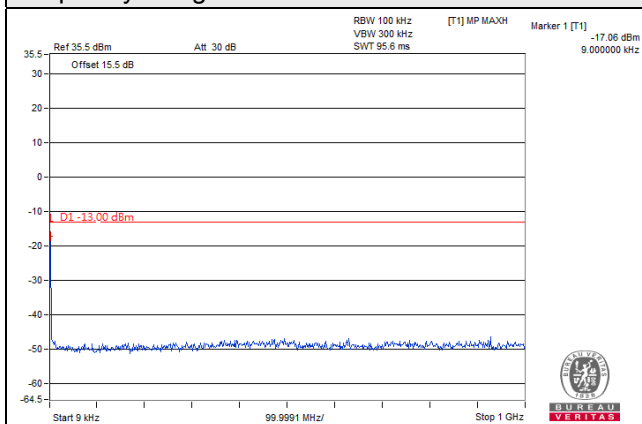
Note: For 9kHz, the signal is from spectrum analyzer.

LTE Band 2, Channel Bandwidth 20MHz

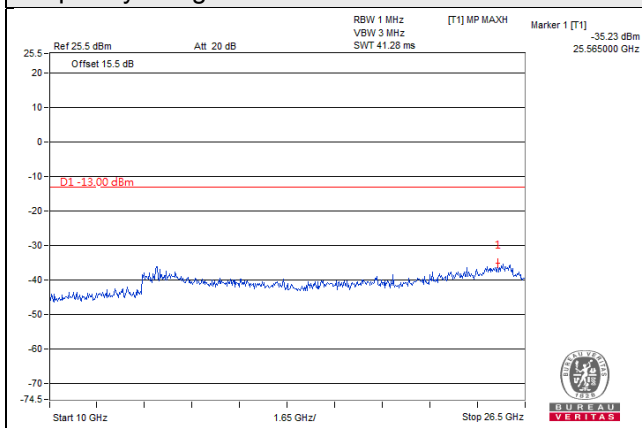
Channel 19100 (1900.00MHz)

Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz



Note: For 9kHz, the signal is from spectrum analyzer.

## **4.8 Radiated Emission Measurement**

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

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to  $-13\text{dBm}$ .

### **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 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. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $\text{E.R.P power} = \text{E.I.R.P power} - 2.15\text{dBi}$ .

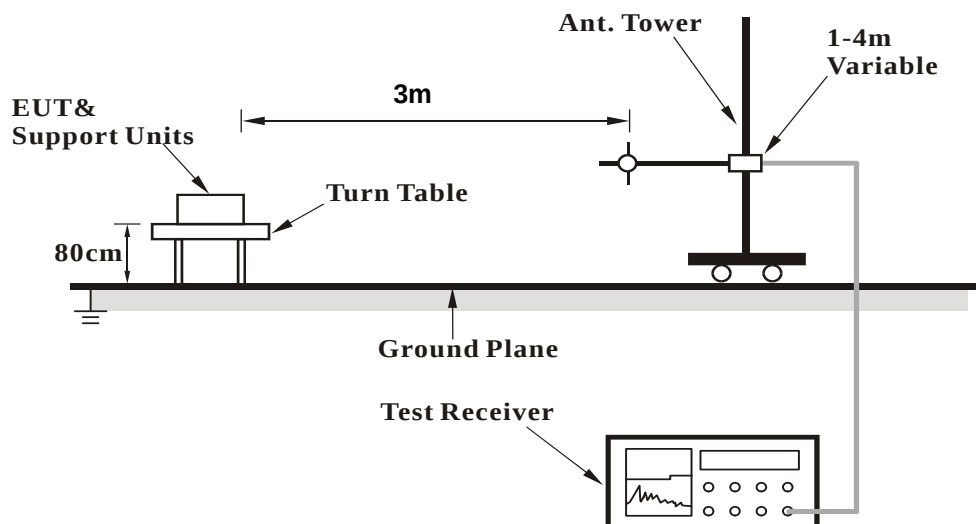
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

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

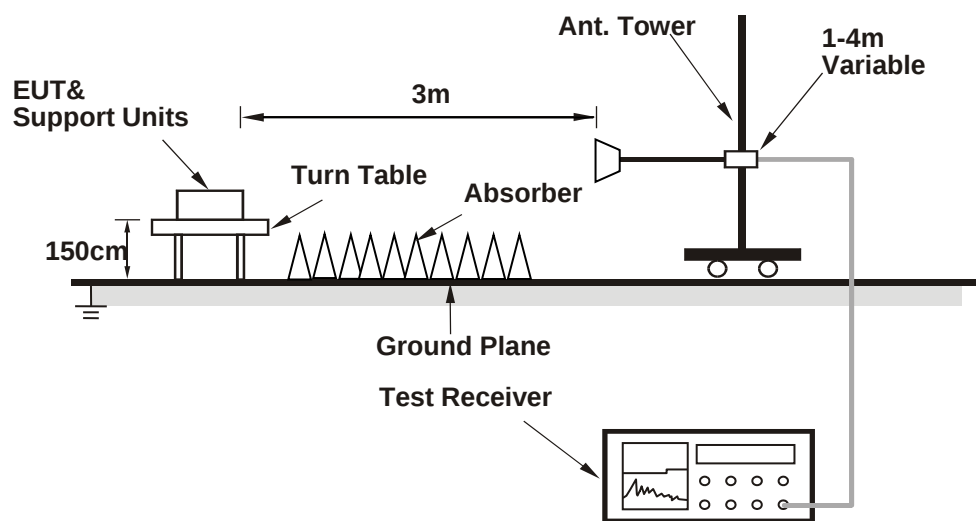
No deviation.

#### 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

GSM Mode

|                          |                               |                 |                |
|--------------------------|-------------------------------|-----------------|----------------|
| Mode                     | TX channel 512<br>(1850.2MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 37.76       | -60.5         | -42.5                 | -14.7                  | -57.2      | -13.0       | -44.2       |
| 2                                                   | 85.29       | -66.6         | -73.3                 | 0.3                    | -73.0      | -13.0       | -60.0       |
| 3                                                   | 153.19      | -69.9         | -71.2                 | -2.9                   | -74.1      | -13.0       | -61.1       |
| 4                                                   | 417.03      | -67.6         | -71.1                 | 3.4                    | -67.7      | -13.0       | -54.7       |
| 5                                                   | 717.73      | -64.5         | -64.8                 | 3.5                    | -61.3      | -13.0       | -48.3       |
| 6                                                   | 780.78      | -67.6         | -66.5                 | 4.0                    | -62.5      | -13.0       | -49.5       |
| 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                                                   | 59.10       | -60.6         | -63.6                 | -3.8                   | -67.4      | -13.0       | -54.4       |
| 2                                                   | 194.90      | -64.0         | -62.5                 | -2.6                   | -65.1      | -13.0       | -52.1       |
| 3                                                   | 334.58      | -65.8         | -70.4                 | 4.0                    | -66.4      | -13.0       | -53.4       |
| 4                                                   | 766.23      | -67.0         | -63.9                 | 3.9                    | -60.0      | -13.0       | -47.0       |
| 5                                                   | 872.93      | -67.5         | -63.5                 | 3.5                    | -60.0      | -13.0       | -47.0       |
| 6                                                   | 981.57      | -68.2         | -62.3                 | 3.5                    | -58.8      | -13.0       | -45.8       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# GPRS Mode

|                          |                               |                 |                |
|--------------------------|-------------------------------|-----------------|----------------|
| Mode                     | TX channel 512<br>(1850.2MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 33.88       | -50.4         | -30.4                 | -17.1                  | -47.5      | -13.0       | -34.5       |
| 2                                                   | 82.38       | -61.8         | -67.6                 | 0.4                    | -67.2      | -13.0       | -54.2       |
| 3                                                   | 297.72      | -68.0         | -69.0                 | -1.7                   | -70.7      | -13.0       | -57.7       |
| 4                                                   | 587.75      | -67.5         | -70.1                 | 3.8                    | -66.3      | -13.0       | -53.3       |
| 5                                                   | 732.28      | -51.9         | -51.5                 | 3.6                    | -47.9      | -13.0       | -34.9       |
| 6                                                   | 902.03      | -64.1         | -60.0                 | 3.5                    | -56.5      | -13.0       | -43.5       |
| 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                                                   | 39.70       | -44.9         | -40.8                 | -13.7                  | -54.5      | -13.0       | -41.5       |
| 2                                                   | 134.76      | -53.7         | -54.1                 | -3.2                   | -57.3      | -13.0       | -44.3       |
| 3                                                   | 278.32      | -69.8         | -64.9                 | -1.6                   | -66.5      | -13.0       | -53.5       |
| 4                                                   | 646.92      | -68.4         | -66.5                 | 3.7                    | -62.8      | -13.0       | -49.8       |
| 5                                                   | 747.80      | -48.5         | -45.3                 | 3.7                    | -41.6      | -13.0       | -28.6       |
| 6                                                   | 902.03      | -63.3         | -58.5                 | 3.5                    | -55.0      | -13.0       | -42.0       |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# WCDMA Mode

|                          |                                |                 |                |
|--------------------------|--------------------------------|-----------------|----------------|
| Mode                     | TX channel 9262<br>(1852.4MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 30.00       | -46.9         | -23.5                 | -19.4                  | -42.9      | -13.0       | -29.9       |
| 2                                                   | 147.37      | -69.3         | -71.2                 | -2.9                   | -74.1      | -13.0       | -61.1       |
| 3                                                   | 392.78      | -68.3         | -72.1                 | 3.3                    | -68.8      | -13.0       | -55.8       |
| 4                                                   | 545.07      | -67.8         | -71.2                 | 3.9                    | -67.3      | -13.0       | -54.3       |
| 5                                                   | 746.83      | -41.2         | -40.9                 | 3.7                    | -37.2      | -13.0       | -24.2       |
| 6                                                   | 925.31      | -68.5         | -64.0                 | 3.7                    | -60.3      | -13.0       | -47.3       |
| 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                                                   | 30.97       | -44.5         | -35.9                 | -18.8                  | -54.7      | -13.0       | -41.7       |
| 2                                                   | 90.14       | -52.9         | -59.0                 | -0.2                   | -59.2      | -13.0       | -46.2       |
| 3                                                   | 189.08      | -53.0         | -52.4                 | -2.8                   | -55.2      | -13.0       | -42.2       |
| 4                                                   | 632.37      | -67.8         | -66.5                 | 3.6                    | -62.9      | -13.0       | -49.9       |
| 5                                                   | 734.22      | -48.5         | -45.5                 | 3.7                    | -41.8      | -13.0       | -28.8       |
| 6                                                   | 894.27      | -62.6         | -57.8                 | 3.5                    | -54.3      | -13.0       | -41.3       |

## Remarks:

- Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
- Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 1.4MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18607<br>(1850.70MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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   | 30.00       | -52.9         | -29.5                 | -19.4                  | -48.9      | -13.0       | -35.9       |
| 2   | 149.31      | -53.6         | -55.4                 | -3.0                   | -58.4      | -13.0       | -45.4       |
| 3   | 541.19      | -68.8         | -72.3                 | 3.9                    | -68.4      | -13.0       | -55.4       |
| 4   | 713.85      | -57.7         | -57.9                 | 3.5                    | -54.4      | -13.0       | -41.4       |
| 5   | 746.83      | -41.5         | -41.2                 | 3.7                    | -37.5      | -13.0       | -24.5       |
| 6   | 902.03      | -64.2         | -60.1                 | 3.5                    | -56.6      | -13.0       | -43.6       |

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   | 30.97         | -42.4         | -33.8                 | -18.8                  | -52.6        | -13.0        | -39.6        |
| 2   | 123.12        | -53.5         | -56.8                 | -3.1                   | -59.9        | -13.0        | -46.9        |
| 3   | 230.79        | -44.5         | -46.0                 | -1.7                   | -47.7        | -13.0        | -34.7        |
| 4   | 729.37        | -42.4         | -39.6                 | 3.6                    | -36.0        | -13.0        | -23.0        |
| 5   | <b>746.83</b> | <b>-42.5</b>  | <b>-39.2</b>          | <b>3.7</b>             | <b>-35.5</b> | <b>-13.0</b> | <b>-22.5</b> |
| 6   | 940.83        | -66.2         | -60.9                 | 3.8                    | -57.1        | -13.0        | -44.1        |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 3MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18615<br>(1851.50MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 32.91       | -51.1         | -30.3                 | -17.7                  | -48.0     | -13.0       | -35.0       |
| 2                                                   | 83.35       | -66.8         | -73.0                 | 0.5                    | -72.5     | -13.0       | -59.5       |
| 3                                                   | 435.46      | -68.2         | -72.1                 | 3.6                    | -68.5     | -13.0       | -55.5       |
| 4                                                   | 720.64      | -62.6         | -62.9                 | 3.6                    | -59.3     | -13.0       | -46.3       |
| 5                                                   | 746.83      | -42.6         | -42.3                 | 3.7                    | -38.6     | -13.0       | -25.6       |
| 6                                                   | 996.12      | -68.3         | -62.7                 | 3.3                    | -59.4     | -13.0       | -46.4       |
| 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                                                   | 34.85       | -37.9         | -31.6                 | -16.5                  | -48.1     | -13.0       | -35.1       |
| 2                                                   | 137.67      | -40.8         | -40.8                 | -3.2                   | -44.0     | -13.0       | -31.0       |
| 3                                                   | 223.03      | -52.0         | -54.2                 | -2.0                   | -56.2     | -13.0       | -43.2       |
| 4                                                   | 729.37      | -46.2         | -43.4                 | 3.6                    | -39.8     | -13.0       | -26.8       |
| 5                                                   | 836.07      | -60.8         | -57.3                 | 3.8                    | -53.5     | -13.0       | -40.5       |
| 6                                                   | 886.51      | -50.5         | -46.0                 | 3.4                    | -42.6     | -13.0       | -29.6       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 5MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18625<br>(1852.50MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.00       | -51.2         | -27.8                 | -19.4                  | -47.2     | -13.0       | -34.2       |
| 2                                                   | 305.48      | -68.7         | -76.9                 | 3.8                    | -73.1     | -13.0       | -60.1       |
| 3                                                   | 400.54      | -67.9         | -72.0                 | 3.3                    | -68.7     | -13.0       | -55.7       |
| 4                                                   | 729.37      | -45.8         | -45.7                 | 3.6                    | -42.1     | -13.0       | -29.1       |
| 5                                                   | 870.99      | -67.5         | -63.6                 | 3.4                    | -60.2     | -13.0       | -47.2       |
| 6                                                   | 978.66      | -68.4         | -63.1                 | 3.5                    | -59.6     | -13.0       | -46.6       |
| 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                                                   | 30.97       | -43.0         | -34.4                 | -18.8                  | -53.2     | -13.0       | -40.2       |
| 2                                                   | 76.56       | -54.2         | -60.2                 | 0.3                    | -59.9     | -13.0       | -46.9       |
| 3                                                   | 177.44      | -55.9         | -56.6                 | -3.0                   | -59.6     | -13.0       | -46.6       |
| 4                                                   | 300.63      | -60.5         | -63.7                 | 3.4                    | -60.3     | -13.0       | -47.3       |
| 5                                                   | 745.86      | -47.6         | -44.4                 | 3.8                    | -40.6     | -13.0       | -27.6       |
| 6                                                   | 893.30      | -52.6         | -47.8                 | 3.5                    | -44.3     | -13.0       | -31.3       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 10MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18650<br>(1855.00MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.00       | -45.8         | -22.4                 | -19.4                  | -41.8     | -13.0       | -28.8       |
| 2                                                   | 152.22      | -69.8         | -71.2                 | -2.8                   | -74.0     | -13.0       | -61.0       |
| 3                                                   | 424.79      | -67.6         | -71.4                 | 3.5                    | -67.9     | -13.0       | -54.9       |
| 4                                                   | 620.73      | -68.7         | -70.4                 | 3.7                    | -66.7     | -13.0       | -53.7       |
| 5                                                   | 746.83      | -50.0         | -49.7                 | 3.7                    | -46.0     | -13.0       | -33.0       |
| 6                                                   | 946.65      | -68.3         | -63.8                 | 3.8                    | -60.0     | -13.0       | -47.0       |
| 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                                                   | 55.22       | -58.6         | -60.1                 | -5.4                   | -65.5     | -13.0       | -52.5       |
| 2                                                   | 200.72      | -55.6         | -54.5                 | -2.3                   | -56.8     | -13.0       | -43.8       |
| 3                                                   | 247.28      | -50.1         | -49.4                 | -1.5                   | -50.9     | -13.0       | -37.9       |
| 4                                                   | 714.82      | -63.0         | -60.5                 | 3.5                    | -57.0     | -13.0       | -44.0       |
| 5                                                   | 742.95      | -43.3         | -40.0                 | 3.6                    | -36.4     | -13.0       | -23.4       |
| 6                                                   | 944.71      | -66.3         | -60.8                 | 3.7                    | -57.1     | -13.0       | -44.1       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 15MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18675<br>(1857.50MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 30.97       | -52.1         | -29.6                 | -18.8                  | -48.4     | -13.0       | -35.4       |
| 2                                                   | 153.19      | -69.7         | -71.0                 | -2.9                   | -73.9     | -13.0       | -60.9       |
| 3                                                   | 447.10      | -67.9         | -71.3                 | 3.4                    | -67.9     | -13.0       | -54.9       |
| 4                                                   | 639.16      | -68.4         | -69.9                 | 3.6                    | -66.3     | -13.0       | -53.3       |
| 5                                                   | 739.07      | -55.6         | -55.2                 | 3.7                    | -51.5     | -13.0       | -38.5       |
| 6                                                   | 906.88      | -57.5         | -53.6                 | 3.6                    | -50.0     | -13.0       | -37.0       |
| 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                                                   | 30.97       | -43.0         | -34.4                 | -18.8                  | -53.2     | -13.0       | -40.2       |
| 2                                                   | 84.32       | -59.9         | -65.3                 | 0.4                    | -64.9     | -13.0       | -51.9       |
| 3                                                   | 280.26      | -69.9         | -65.1                 | -1.6                   | -66.7     | -13.0       | -53.7       |
| 4                                                   | 650.80      | -67.4         | -65.5                 | 3.6                    | -61.9     | -13.0       | -48.9       |
| 5                                                   | 836.07      | -56.2         | -52.7                 | 3.8                    | -48.9     | -13.0       | -35.9       |
| 6                                                   | 985.45      | -68.3         | -62.4                 | 3.5                    | -58.9     | -13.0       | -45.9       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 20MHz

|                          |                                  |                 |                |
|--------------------------|----------------------------------|-----------------|----------------|
| Mode                     | TX channel 18700<br>(1860.00MHz) | Frequency Range | Below 1000 MHz |
| Environmental Conditions | 25deg. C, 65%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) | ERP (dBm) | Limit (dBm) | Margin (dB) |
| 1                                                   | 32.91       | -55.1         | -34.3                 | -17.7                  | -52.0     | -13.0       | -39.0       |
| 2                                                   | 153.19      | -69.7         | -71.0                 | -2.9                   | -73.9     | -13.0       | -60.9       |
| 3                                                   | 295.78      | -69.3         | -70.4                 | -1.8                   | -72.2     | -13.0       | -59.2       |
| 4                                                   | 577.08      | -67.8         | -70.5                 | 3.7                    | -66.8     | -13.0       | -53.8       |
| 5                                                   | 729.37      | -56.0         | -55.9                 | 3.6                    | -52.3     | -13.0       | -39.3       |
| 6                                                   | 909.79      | -54.7         | -50.7                 | 3.5                    | -47.2     | -13.0       | -34.2       |
| 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                                                   | 32.91       | -43.1         | -36.0                 | -17.7                  | -53.7     | -13.0       | -40.7       |
| 2                                                   | 74.62       | -49.1         | -54.8                 | 0.1                    | -54.7     | -13.0       | -41.7       |
| 3                                                   | 260.86      | -68.5         | -66.0                 | -1.5                   | -67.5     | -13.0       | -54.5       |
| 4                                                   | 729.37      | -49.4         | -46.6                 | 3.6                    | -43.0     | -13.0       | -30.0       |
| 5                                                   | 746.83      | -50.7         | -47.4                 | 3.7                    | -43.7     | -13.0       | -30.7       |
| 6                                                   | 935.01      | -68.1         | -62.9                 | 3.7                    | -59.2     | -13.0       | -46.2       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Above 1GHz  
GSM Mode

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 512<br>(1850.2MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3700.40     | -59.3         | -50.8                 | 1.4                    | -49.4      | -13.0       | -36.4       |
| 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                                                   | 3700.40     | -59.6         | -51.4                 | 1.4                    | -50.0      | -13.0       | -37.0       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 661<br>(1880.0MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3760.00     | -58.8         | -50.3                 | 1.3                    | -49.0      | -13.0       | -36.0       |
| 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                                                   | 3760.00     | -60.1         | -51.8                 | 1.3                    | -50.5      | -13.0       | -37.5       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 810<br>(1909.8MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3819.60     | -58.9         | -50.6                 | 1.4                    | -49.2      | -13.0       | -36.2       |
| 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                                                   | 3819.60     | -59.5         | -51.3                 | 1.4                    | -49.9      | -13.0       | -36.9       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# GPRS Mode

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 512<br>(1850.2MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3700.40     | -59.6         | -51.1                 | 1.4                    | -49.7      | -13.0       | -36.7       |
| 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                                                   | 3700.40     | -59.7         | -51.5                 | 1.4                    | -50.1      | -13.0       | -37.1       |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 661<br>(1880.0MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3760.00     | -59.2         | -50.7                 | 1.3                    | -49.4      | -13.0       | -36.4       |
| 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                                                   | 3760.00     | -60.5         | -52.2                 | 1.3                    | -50.9      | -13.0       | -37.9       |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                               |                 |               |
|--------------------------|-------------------------------|-----------------|---------------|
| Mode                     | TX channel 810<br>(1909.8MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH               | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                        |                 |               |

| 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                                                   | 3819.60     | -59.6         | -51.3                 | 1.4                    | -49.9      | -13.0       | -36.9       |
| 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                                                   | 3819.60     | -59.7         | -51.5                 | 1.4                    | -50.1      | -13.0       | -37.1       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

# WCDMA Mode

|                          |                                |                 |               |
|--------------------------|--------------------------------|-----------------|---------------|
| Mode                     | TX channel 9262<br>(1852.4MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH                | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                         |                 |               |

| 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                                                   | 3704.80     | -61.4         | -52.9                 | 1.4                    | -51.5      | -13.0       | -38.5       |
| 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                                                   | 3704.80     | -59.5         | -51.3                 | 1.4                    | -49.9      | -13.0       | -36.9       |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                |                 |               |
|--------------------------|--------------------------------|-----------------|---------------|
| Mode                     | TX channel 9400<br>(1880.0MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH                | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                         |                 |               |

| 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                                                   | 3760.00     | -60.6         | -52.1                 | 1.3                    | -50.8      | -13.0       | -37.8       |
| 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                                                   | 3760.00     | -59.6         | -51.3                 | 1.3                    | -50.0      | -13.0       | -37.0       |

## Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                |                 |               |
|--------------------------|--------------------------------|-----------------|---------------|
| Mode                     | TX channel 9538<br>(1907.6MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%RH                | Input Power     | 120Vac, 60Hz  |
| Tested By                | Han Wu                         |                 |               |

| 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                                                   | 3815.20     | -60.9         | -52.6                 | 1.4                    | -51.2      | -13.0       | -38.2       |
| 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                                                   | 3815.20     | -59.6         | -51.4                 | 1.4                    | -50.0      | -13.0       | -37.0       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 1.4MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18607<br>(1850.70MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3701.40     | -55.6         | -47.1                 | 1.4                    | -45.7      | -13.0       | -32.7       |
| 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                                                   | 3701.40     | -56.3         | -48.1                 | 1.4                    | -46.7      | -13.0       | -33.7       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.4         | -46.9                 | 1.3                    | -45.6      | -13.0       | -32.6       |
| 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                                                   | 3760.00     | -56.2         | -47.9                 | 1.3                    | -46.6      | -13.0       | -33.6       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19193<br>(1909.30MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3818.60     | -55.3         | -47.0                 | 1.4                    | -45.6      | -13.0       | -32.6       |
| 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                                                   | 3818.60     | -56.2         | -48.0                 | 1.4                    | -46.6      | -13.0       | -33.6       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 3MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18615<br>(1851.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3703.00     | -55.4         | -46.9                 | 1.4                    | -45.5      | -13.0       | -32.5       |
| 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                                                   | 3703.00     | -56.1         | -47.9                 | 1.4                    | -46.5      | -13.0       | -33.5       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.3         | -46.8                 | 1.3                    | -45.5      | -13.0       | -32.5       |
| 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                                                   | 3760.00     | -56.1         | -47.8                 | 1.3                    | -46.5      | -13.0       | -33.5       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19185<br>(1908.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3817.00     | -55.5         | -47.2                 | 1.4                    | -45.8      | -13.0       | -32.8       |
| 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                                                   | 3817.00     | -56.4         | -48.2                 | 1.4                    | -46.8      | -13.0       | -33.8       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 5MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18625<br>(1852.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3705.00     | -55.6         | -47.1                 | 1.4                    | -45.7      | -13.0       | -32.7       |
| 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                                                   | 3705.00     | -56.3         | -48.1                 | 1.4                    | -46.7      | -13.0       | -33.7       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.5         | -47.0                 | 1.3                    | -45.7      | -13.0       | -32.7       |
| 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                                                   | 3760.00     | -56.4         | -48.1                 | 1.3                    | -46.8      | -13.0       | -33.8       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19175<br>(1907.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3815.00     | -55.7         | -47.4                 | 1.4                    | -46.0      | -13.0       | -33.0       |
| 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                                                   | 3815.00     | -56.6         | -48.4                 | 1.4                    | -47.0      | -13.0       | -34.0       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 10MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18650<br>(1855.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3710.00     | -55.1         | -46.6                 | 1.4                    | -45.2      | -13.0       | -32.2       |
| 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                                                   | 3710.00     | -55.8         | -47.6                 | 1.4                    | -46.2      | -13.0       | -33.2       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.4         | -46.9                 | 1.3                    | -45.6      | -13.0       | -32.6       |
| 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                                                   | 3760.00     | -56.5         | -48.2                 | 1.3                    | -46.9      | -13.0       | -33.9       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19150<br>(1905.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3810.00     | -55.0         | -46.6                 | 1.3                    | -45.3      | -13.0       | -32.3       |
| 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                                                   | 3810.00     | -55.9         | -47.6                 | 1.3                    | -46.3      | -13.0       | -33.3       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 15MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18675<br>(1857.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3715.00     | -55.7         | -47.2                 | 1.4                    | -45.8      | -13.0       | -32.8       |
| 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                                                   | 3715.00     | -56.5         | -48.3                 | 1.4                    | -46.9      | -13.0       | -33.9       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.1         | -46.6                 | 1.3                    | -45.3      | -13.0       | -32.3       |
| 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                                                   | 3760.00     | -55.9         | -47.6                 | 1.3                    | -46.3      | -13.0       | -33.3       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19125<br>(1902.50MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3805.00     | -54.8         | -46.4                 | 1.3                    | -45.1      | -13.0       | -32.1       |
| 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                                                   | 3805.00     | -55.6         | -47.4                 | 1.3                    | -46.1      | -13.0       | -33.1       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 2, Channel Bandwidth: 20MHz

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18700<br>(1860.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3720.00     | -55.3         | -46.8                 | 1.4                    | -45.4      | -13.0       | -32.4       |
| 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                                                   | 3720.00     | -56.0         | -47.8                 | 1.4                    | -46.4      | -13.0       | -33.4       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 18900<br>(1880.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3760.00     | -55.0         | -46.5                 | 1.3                    | -45.2      | -13.0       | -32.2       |
| 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                                                   | 3760.00     | -55.8         | -47.5                 | 1.3                    | -46.2      | -13.0       | -33.2       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

|                          |                                  |                 |               |
|--------------------------|----------------------------------|-----------------|---------------|
| Mode                     | TX channel 19100<br>(1900.00MHz) | Frequency Range | Above 1000MHz |
| Environmental Conditions | 25deg. C, 65%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                                                   | 3800.00     | -55.1         | -46.7                 | 1.3                    | -45.4      | -13.0       | -32.4       |
| 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                                                   | 3800.00     | -55.9         | -47.7                 | 1.3                    | -46.4      | -13.0       | -33.4       |

Remarks:

1. Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

## 5 Pictures of Test Arrangements

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

## Appendix – Information on 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.

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

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