

## FCC Test Report

### (PART 90)

**Report No.:** RF180920C22-12

**FCC ID:** A4RG020C

**Model Name:** G020C

**Received Date:** Sep. 21, 2018

**Test Date:** Oct. 06, 2018 ~ Oct. 24, 2018

**Issued Date:** Dec. 27, 2018

**Applicant:** Google LLC

**Address:** 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

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

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

**Test Location (1):** No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City  
33383, Taiwan (R.O.C)

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



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### Release Control Record

| Issue No.      | Description      | Date Issued   |
|----------------|------------------|---------------|
| RF180920C22-12 | Original Release | Dec. 27, 2018 |

## 1 Certificate of Conformity

**Product:** Smartphone

**Model Name:** G020C

**Sample Status:** Identical Prototype

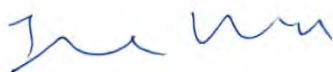
**Applicant:** Google LLC

**Test Date:** Oct. 06, 2018 ~ Oct. 24, 2018

**Standards:** FCC Part 90, Subpart I, S, R  
FCC Part 2

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 :**



**Date:**

Dec. 27, 2018

Ivonne Wu / Supervisor

**Approved by :**



**Date:**

Dec. 27, 2018

Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 90 & Part 2 (CDMA) |                              |        |                                                                                     |
|-----------------------------------------------|------------------------------|--------|-------------------------------------------------------------------------------------|
| FCC Clause                                    | Test Item                    | Result | Remarks                                                                             |
| 2.1046<br>90.635 (b)                          | Effective Radiated Power     | Pass   | Meet the requirement of limit.                                                      |
| 2.1047                                        | Modulation Characteristics   | Pass   | Meet the requirement.                                                               |
| 2.1055<br>90.213                              | Frequency Stability          | Pass   | Meet the requirement of limit.                                                      |
| 2.1049<br>90.209                              | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                      |
| 2.1051<br>90.210                              | Emission Masks               | Pass   | Meet the requirement of limit.                                                      |
| 2.1051<br>90.691                              | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                      |
| 2.1053<br>90.691                              | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -24.58 dB at 38.73 MHz. |

| Applied Standard: FCC Part 90 & Part 2 (LTE 14) |                              |        |                                                                                       |
|-------------------------------------------------|------------------------------|--------|---------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                               |
| 2.1046<br>90.542 (a)(7)                         | Effective Radiated Power     | Pass   | Meet the requirement of limit.                                                        |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                                 |
| 2.1055<br>90.539 (e)                            | Frequency Stability          | Pass   | Meet the requirement of limit.                                                        |
| 2.1049                                          | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                        |
| 90.210 (n)                                      | Emission Masks               | Pass   | Meet the requirement of limit.                                                        |
| 2.1053<br>90.543 (e)(2)(3)                      | Band Edge Measurements       | Pass   | Meet the requirement of limit.                                                        |
| 2.1051<br>90.543 (e)(3)                         | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                        |
| 2.1053<br>90.543 (e)(f)                         | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -18.44 dB at 1586.00 MHz. |

| Applied Standard: FCC Part 90 & Part 2 (LTE 26) |                              |        |                                                                                     |
|-------------------------------------------------|------------------------------|--------|-------------------------------------------------------------------------------------|
| FCC Clause                                      | Test Item                    | Result | Remarks                                                                             |
| 2.1046<br>90.635 (b)                            | Effective Radiated Power     | Pass   | Meet the requirement of limit.                                                      |
| 2.1047                                          | Modulation Characteristics   | Pass   | Meet the requirement.                                                               |
| 2.1055<br>90.213                                | Frequency Stability          | Pass   | Meet the requirement of limit.                                                      |
| 2.1049<br>90.209                                | Occupied Bandwidth           | Pass   | Meet the requirement of limit.                                                      |
| 2.1051<br>90.210                                | Emission Masks               | Pass   | Meet the requirement of limit.                                                      |
| 2.1051<br>90.691                                | Conducted Spurious Emissions | Pass   | Meet the requirement of limit.                                                      |
| 2.1053<br>90.691                                | Radiated Spurious Emissions  | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -35.10 dB at 44.55 MHz. |

## 2.1 Measurement Uncertainty

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

| Measurement                    | Frequency          | Expanded Uncertainty (k=2) (±) |
|--------------------------------|--------------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 30 MHz ~ 200 MHz   | 2.93 dB                        |
|                                | 200 MHz ~ 1000 MHz | 2.95 dB                        |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz     | 2.26 dB                        |
|                                | 18 GHz ~ 40 GHz    | 1.94 dB                        |

## 2.2 Test Site and Instruments

| Description & Manufacturer                     | Model No.                  | Serial No.                    | Date of Calibration            | Due Date of Calibration        |
|------------------------------------------------|----------------------------|-------------------------------|--------------------------------|--------------------------------|
| Test Receiver<br>Agilent                       | N9038A                     | MY51210203                    | Mar. 16, 2018                  | Mar. 15, 2019                  |
| Spectrum Analyzer<br>Keysight                  | N9010A                     | MY56070348                    | Sep. 06, 2018                  | Sep. 05, 2019                  |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSU43                      | 101261                        | Jan. 11, 2018                  | Jan. 10, 2019                  |
| Spectrum Analyzer<br>ROHDE & SCHWARZ           | FSW26                      | 102023                        | Oct. 12, 2017<br>Oct. 11, 2018 | Oct. 11, 2018<br>Oct. 10, 2019 |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9120D                 | 9120D-969                     | Dec. 12, 2017                  | Dec. 11, 2018                  |
| HORN Antenna<br>SCHWARZBECK                    | BBHA 9170                  | 148                           | Dec. 13, 2017                  | Dec. 12, 2017                  |
| BILOG Antenna<br>SCHWARZBECK                   | VULB 9168                  | 9168-472                      | Dec. 06, 2017                  | Dec. 05, 2018                  |
| Fixed Attenuator<br>Mini-Circuits              | MDCS18N-10                 | MDCS18N-10-01                 | Apr. 16, 2018                  | Apr. 15, 2019                  |
| MXG Vector signal<br>generator<br>Agilent      | N5182B                     | MY53052658                    | May 24, 2018                   | May 23, 2019                   |
| Preamplifier<br>EMCI                           | EMC 184045                 | 980116                        | Oct. 12, 2018                  | Oct. 11, 2019                  |
| Preamplifier<br>EMCI                           | EMC 012645                 | 980115                        | Oct. 12, 2018                  | Oct. 11, 2019                  |
| Preamplifier<br>EMCI                           | EMC 330H                   | 980112                        | Oct. 12, 2018                  | Oct. 11, 2019                  |
| RF Coaxial Cable<br>HUBER+SUHNNER              | EMC104-SM-SM-800<br>0&3000 | 140811+170717                 | Oct. 12, 2018                  | Oct. 11, 2019                  |
| RF Coaxial Cable<br>HUBER+SUHNNER              | SUCOFLEX 104               | EMC104-SM-SM-1<br>000(140807) | Oct. 12, 2018                  | Oct. 11, 2019                  |
| RF Coaxial Cable<br>WOKEN                      | 8D-FB                      | Cable-Ch10-01                 | Oct. 12, 2018                  | Oct. 11, 2019                  |
| Boresight Antenna Fixture                      | FBA-01                     | FBA-SIP01                     | NA                             | NA                             |
| Software<br>BV ADT                             | E3<br>6.120103             | NA                            | NA                             | NA                             |
| Antenna Tower<br>MF                            | MFA-440H                   | NA                            | NA                             | NA                             |
| Turn Table<br>MF                               | MFT-201SS                  | NA                            | NA                             | NA                             |
| Antenna Tower & Turn<br>Table Controller<br>MF | MF-7802                    | NA                            | NA                             | NA                             |
| Universal Radio<br>Communication Tester<br>R&S | CMU200                     | 123112                        | Dec. 28, 2017                  | Dec. 27, 2018                  |
| Radio Communication<br>Analyzer<br>Anritsu     | MT8820C                    | 6201300640                    | Aug. 16, 2017                  | Aug. 15, 2019                  |
| Temperature & Humidity<br>Chamber              | GTH-120-40-CP-AR           | MAA1306-019                   | Sep. 05, 2018                  | Sep. 04, 2019                  |
| DC Power Supply<br>Topward                     | 33010D                     | 807748                        | NA                             | NA                             |

- Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450F-10.

### 3 General Information

#### 3.1 General Description of EUT

|                            |                                                                                     |                    |
|----------------------------|-------------------------------------------------------------------------------------|--------------------|
| <b>Product</b>             | Smartphone                                                                          |                    |
| <b>Model Name</b>          | G020C                                                                               |                    |
| <b>Status of EUT</b>       | Identical Prototype                                                                 |                    |
| <b>Power Supply Rating</b> | 3.85 Vdc (Li-ion battery)<br>5.0 Vdc or 9 Vdc (adapter)<br>5.0 Vdc (host equipment) |                    |
| <b>Modulation Type</b>     | CDMA                                                                                | QPSK, OQPSK, HPSK  |
|                            | LTE                                                                                 | QPSK, 16QAM, 64QAM |
| <b>Frequency Range</b>     | CDMA BC10                                                                           | 817.9 ~ 823.1 MHz  |
|                            | LTE Band 14 (Channel Bandwidth: 5 MHz)                                              | 790.5 ~ 795.5 MHz  |
|                            | LTE Band 14 (Channel Bandwidth: 10 MHz)                                             | 793 MHz            |
|                            | LTE Band 26 (Channel Bandwidth: 1.4 MHz)                                            | 814.7 ~ 823.3 MHz  |
|                            | LTE Band 26 (Channel Bandwidth: 3 MHz)                                              | 815.5 ~ 822.5 MHz  |
|                            | LTE Band 26 (Channel Bandwidth: 5 MHz)                                              | 816.5 ~ 821.5 MHz  |
|                            | LTE Band 26 (Channel Bandwidth: 10 MHz)                                             | 819 MHz            |
| <b>Emission Designator</b> | CDMA BC10                                                                           | 1M28F9W            |
|                            | LTE Band 14 (Channel Bandwidth: 5 MHz)                                              | 4M50W7D            |
|                            | LTE Band 14 (Channel Bandwidth: 10 MHz)                                             | 8M97W7D            |
|                            | LTE Band 26 (Channel Bandwidth: 1.4 MHz)                                            | 1M09W7D            |
|                            | LTE Band 26 (Channel Bandwidth: 3 MHz)                                              | 2M70G7D            |
|                            | LTE Band 26 (Channel Bandwidth: 5 MHz)                                              | 4M50W7D            |
|                            | LTE Band 26 (Channel Bandwidth: 10 MHz)                                             | 8M97W7D            |
| <b>Max. ERP Power</b>      | CDMA BC10                                                                           | 71.78 mW           |
|                            | LTE Band 14 (Channel Bandwidth: 5 MHz)                                              | 67.45 mW           |
|                            | LTE Band 14 (Channel Bandwidth: 10 MHz)                                             | 71.12 mW           |
|                            | LTE Band 26 (Channel Bandwidth: 1.4 MHz)                                            | 63.39 mW           |
|                            | LTE Band 26 (Channel Bandwidth: 3 MHz)                                              | 66.99 mW           |
|                            | LTE Band 26 (Channel Bandwidth: 5 MHz)                                              | 71.12 mW           |
|                            | LTE Band 26 (Channel Bandwidth: 10 MHz)                                             | 74.99 mW           |
| <b>Antenna Type</b>        | PIFA Antenna                                                                        |                    |
| <b>Antenna Gain</b>        | CDMA BC10                                                                           | -5 dBi gain        |
|                            | LTE Band 14                                                                         | -5 dBi gain        |
|                            | LTE Band 26                                                                         | -4.7 dBi gain      |
| <b>Accessory Device</b>    | Refer to Note as below                                                              |                    |
| <b>Data Cable Supplied</b> | Refer to Note as below                                                              |                    |

Note:

1. There're 2 configurations for the EUT listed as below.

Main Sample: EUT + Battery 1

2<sup>nd</sup> Sample: EUT + Battery 2

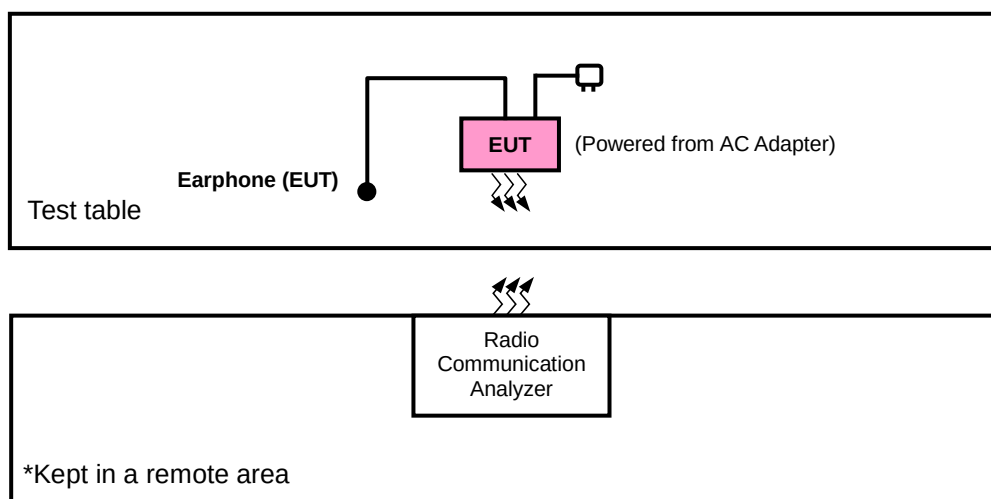
✧ After pre-tested with the EUT, only the worst configuration (main sample) was chosen for the final test.

2. The EUT's accessories list refers to Ext. Pho.

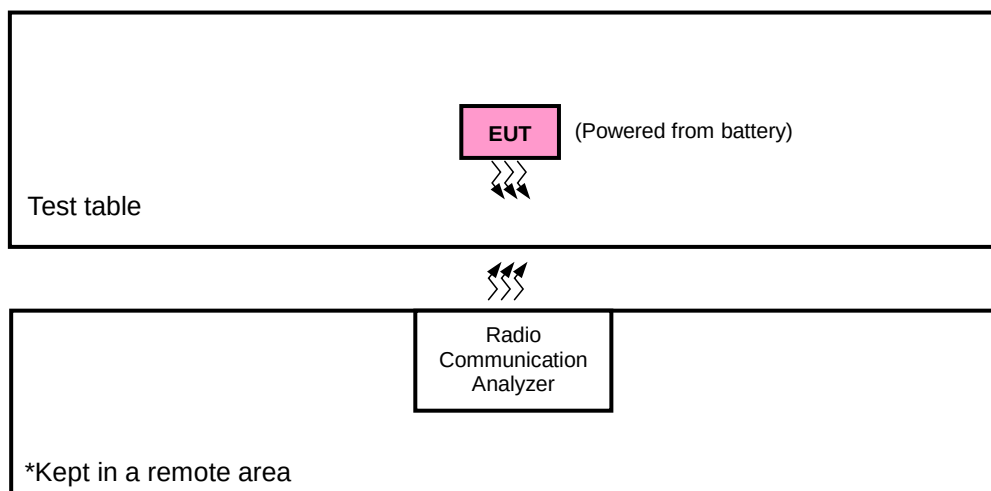
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Configuration of System under Test

#### <Radiated Emission Test>



#### <E.R.P. Test>



#### 3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

### 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 as the table below. Following channel(s) was (were) selected for the final test as listed below:

| Band        | ERP     | Radiated Emission |
|-------------|---------|-------------------|
| CDMA        | Y-plane | X-axis            |
| LTE Band 14 | Y-plane | X-axis            |
| LTE Band 26 | Y-plane | X-axis            |

#### CDMA

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel | Mode  |
|--------------------|----------------------------|-------------------|----------------|-------|
| -                  | ERP                        | 476 to 684        | 476, 580, 684  | 1xRTT |
| -                  | Modulation Characteristics | 476 to 684        | 580            | 1xRTT |
| -                  | Frequency Stability        | 476 to 684        | 476, 684       | 1xRTT |
| -                  | Occupied Bandwidth         | 476 to 684        | 476, 580, 684  | 1xRTT |
| -                  | Emission Mask              | 476 to 684        | 476, 580, 684  | 1xRTT |
| -                  | Conducted Emission         | 476 to 684        | 476, 580, 684  | 1xRTT |
| -                  | Radiated Emission          | 476 to 684        | 476, 580, 684  | 1xRTT |

## LTE Band 14

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel      | Channel Bandwidth | Modulation         | Mode                |
|--------------------|----------------------------|-------------------|---------------------|-------------------|--------------------|---------------------|
| -                  | ERP                        | 23305 to 23355    | 23305, 23330, 23355 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 12 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 24 RB Offset |
| -                  | Modulation Characteristics | 23305 to 23355    | 23330               | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| -                  | Frequency Stability        | 23305 to 23355    | 23305, 23355        | 5 MHz             | QPSK               | 1 RB / 0 RB Offset  |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK               | 1 RB / 0 RB Offset  |
| -                  | Occupied Bandwidth         | 23305 to 23355    | 23305, 23330, 23355 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| -                  | Emission Mask              | 23305 to 23355    | 23305, 23330, 23355 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| -                  | Band Edge                  | 23305 to 23355    | 23305, 23355        | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset  |
|                    |                            |                   |                     |                   |                    | 25 RB / 0 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset  |
|                    |                            |                   |                     |                   |                    | 50 RB / 0 RB Offset |
| -                  | Conducted Emission         | 23305 to 23355    | 23305, 23330, 23355 | 5 MHz             | QPSK               | 1 RB / 12 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK               | 1 RB / 24 RB Offset |
| -                  | Radiated Emission          | 23305 to 23355    | 23305, 23330, 23355 | 5 MHz             | QPSK               | 1 RB / 12 RB Offset |
|                    |                            | 23330             | 23330               | 10 MHz            | QPSK               | 1 RB / 24 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

## LTE Band 26

| EUT Configure Mode | Test Item                  | Available Channel | Tested Channel      | Channel Bandwidth | Modulation         | Mode                |
|--------------------|----------------------------|-------------------|---------------------|-------------------|--------------------|---------------------|
| -                  | ERP                        | 26697 to 26783    | 26697, 26740, 26783 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 1 RB / 5 RB Offset  |
|                    |                            | 26705 to 26775    | 26705, 26740, 26775 | 3 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 14 RB Offset |
|                    |                            | 26715 to 26765    | 26715, 26740, 26765 | 5 MHz             | QPSK, 16QAM, 64QAM | 1 RB / 24 RB Offset |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK, 16QAM, 64QAM | 1 RB / 49 RB Offset |
| -                  | Modulation Characteristics | 26715 to 26765    | 26740               | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| -                  | Frequency Stability        | 26697 to 26783    | 26697, 26783        | 1.4 MHz           | QPSK               | 1 RB / 0 RB Offset  |
|                    |                            | 26705 to 26775    | 26705, 26775        | 3 MHz             | QPSK               | 1 RB / 0 RB Offset  |
|                    |                            | 26715 to 26765    | 26715, 26765        | 5 MHz             | QPSK               | 1 RB / 0 RB Offset  |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK               | 1 RB / 0 RB Offset  |
| -                  | Occupied Bandwidth         | 26697 to 26783    | 26697, 26740, 26783 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 6 RB / 0 RB Offset  |
|                    |                            | 26705 to 26775    | 26705, 26740, 26775 | 3 MHz             | QPSK, 16QAM, 64QAM | 15 RB / 0 RB Offset |
|                    |                            | 26715 to 26765    | 26715, 26740, 26765 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| -                  | Emission Mask              | 26697 to 26783    | 26697, 26740, 26783 | 1.4 MHz           | QPSK, 16QAM, 64QAM | 6 RB / 0 RB Offset  |
|                    |                            | 26705 to 26775    | 26705, 26740, 26775 | 3 MHz             | QPSK, 16QAM, 64QAM | 15 RB / 0 RB Offset |
|                    |                            | 26715 to 26765    | 26715, 26740, 26765 | 5 MHz             | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| -                  | Conducted Emission         | 26697 to 26783    | 26697, 26740, 26783 | 1.4 MHz           | QPSK               | 1 RB / 5 RB Offset  |
|                    |                            | 26705 to 26775    | 26705, 26740, 26775 | 3 MHz             | QPSK               | 1 RB / 14 RB Offset |
|                    |                            | 26715 to 26765    | 26715, 26740, 26765 | 5 MHz             | QPSK               | 1 RB / 24 RB Offset |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK               | 1 RB / 49 RB Offset |
| -                  | Radiated Emission          | 26697 to 26783    | 26697, 26740, 26783 | 1.4 MHz           | QPSK               | 1 RB / 5 RB Offset  |
|                    |                            | 26715 to 26765    | 26715, 26740, 26765 | 5 MHz             | QPSK               | 1 RB / 24 RB Offset |
|                    |                            | 26740             | 26740               | 10 MHz            | QPSK               | 1 RB / 49 RB Offset |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

### Test Condition:

| Test Item             | Environmental Conditions | Input Power    | Tested By  |
|-----------------------|--------------------------|----------------|------------|
| ERP                   | 25 deg. C, 65 % RH       | 3.85 Vdc       | Thomas Wei |
| Frequency Stability   | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Occupied Bandwidth    | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Peak to Average Ratio | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Emission Mask         | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Band Edge             | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Conducted Emission    | 25 deg. C, 65 % RH       | 3.85 Vdc       | Wayne Lin  |
| Radiated Emission     | 25 deg. C, 65 % RH       | 120 Vac, 60 Hz | Thomas Wei |

### **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 90**

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

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

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

**ANSI 63.26-2015**

**Note:** 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

##### LTE Band 14

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

##### CDMA / LTE Band 26

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

#### 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 5 MHz for CDMA and 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m 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.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ . E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dB}$ .

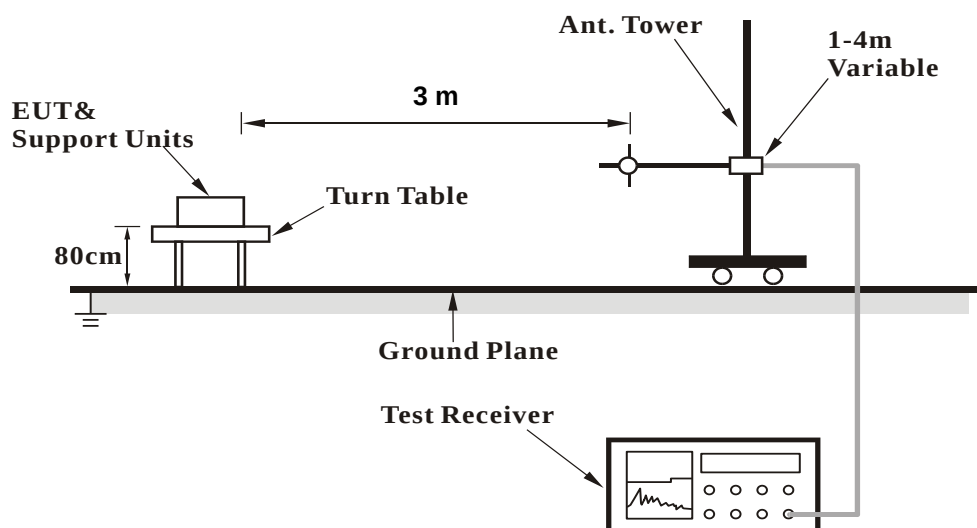
##### **Conducted Power Measurement:**

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

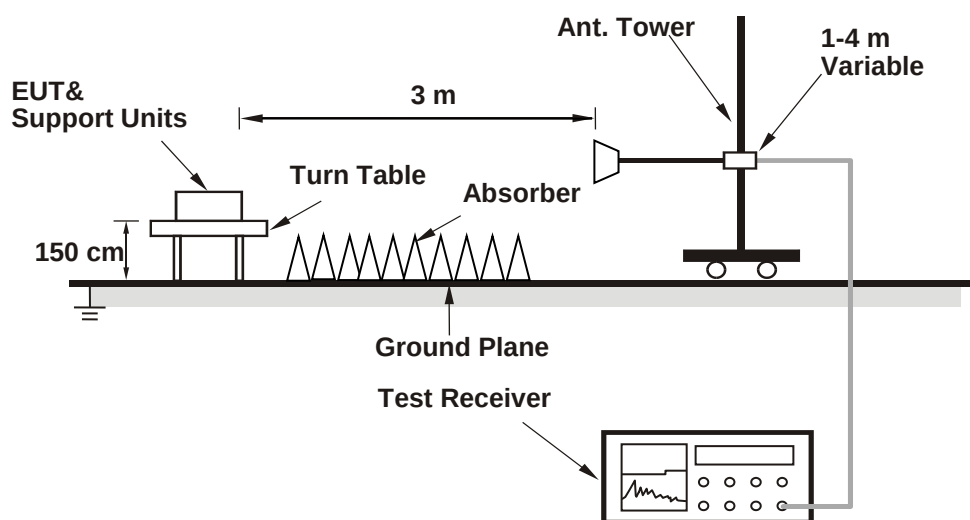
#### 4.1.3 Test Setup

##### EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

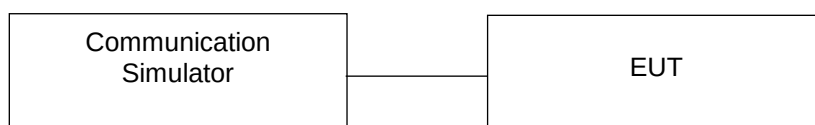


<Radiated Emission above 1 GHz>



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

##### Conducted Power Measurement:



#### 4.1.4 Test Results

The worst configuration mode is presented in the report as below. Please refer to SAR test report for more detail test mode.

| Band |      | TX Antenna | WLAN Function | Body-Worn/Hotspot |
|------|------|------------|---------------|-------------------|
| CDMA | BC10 | Ant 0      | WLAN-Off      | Body-Worn/Hotspot |
| LTE  | B14  | Ant 0      | WLAN-Off      | Body-Worn/Hotspot |
|      | B26  | Ant 0      | WLAN-Off      | Body-Worn/Hotspot |

#### Conducted Output Power (dBm)

| Band              | CDMA BC10           |       |       |
|-------------------|---------------------|-------|-------|
| Mode              | Body-Worn / Hotspot |       |       |
| Tx Antenna        | Ant-0               |       |       |
| Channel           | 476                 | 580   | 684   |
| Frequency (MHz)   | 817.9               | 820.5 | 823.1 |
| RC1+SO55          | 24.33               | 24.49 | 24.37 |
| RC3+SO55          | 24.35               | 24.51 | 24.39 |
| RC3+SO32(+ F-SCH) | 24.32               | 24.48 | 24.36 |
| RC3+SO32(+SCH)    | 24.30               | 24.46 | 24.34 |
| RTAP 153.6        | 24.00               | 24.16 | 24.04 |
| RETAP 4096        | 23.98               | 24.14 | 24.02 |

| LTE Band 14         |           |                 |           |       |       |   |               |    |           |                 |           |       |       |       |               |
|---------------------|-----------|-----------------|-----------|-------|-------|---|---------------|----|-----------|-----------------|-----------|-------|-------|-------|---------------|
| Body-Worn / Hotspot |           |                 |           |       |       |   |               |    |           |                 |           |       |       |       |               |
| Ant-0               |           |                 |           |       |       |   |               |    |           |                 |           |       |       |       |               |
| BW                  | MCS Index | RB Size         | RB Offset |       | Mid   |   | 3GPP MPR (dB) | BW | MCS Index | RB Size         | RB Offset | Low   | Mid   | High  | 3GPP MPR (dB) |
|                     |           | Channel         |           |       | 23330 |   |               |    |           | Channel         |           | 23305 | 23330 | 23355 |               |
|                     |           | Frequency (MHz) |           |       | 793   |   |               |    |           | Frequency (MHz) |           | 790.5 | 793   | 795.5 |               |
| 10M                 | QPSK      | 1               | 0         |       | 24.47 |   | 0             | 5M | QPSK      | 1               | 0         | 24.30 | 24.38 | 24.34 | 0             |
|                     |           | 1               | 24        |       | 24.49 |   | 0             |    |           | 1               | 12        | 24.32 | 24.40 | 24.36 | 0             |
|                     |           | 1               | 49        |       | 24.41 |   | 0             |    |           | 1               | 24        | 24.24 | 24.32 | 24.28 | 0             |
|                     |           | 25              | 0         |       | 23.49 |   | 1             |    |           | 12              | 0         | 23.32 | 23.40 | 23.36 | 1             |
|                     |           | 25              | 12        |       | 23.44 |   | 1             |    |           | 12              | 6         | 23.27 | 23.35 | 23.31 | 1             |
|                     |           | 25              | 25        |       | 23.41 |   | 1             |    |           | 12              | 13        | 23.24 | 23.32 | 23.28 | 1             |
|                     |           | 50              | 0         |       | 23.48 |   | 1             |    |           | 25              | 0         | 23.31 | 23.39 | 23.35 | 1             |
|                     | 16QAM     | 1               | 0         |       | 23.46 |   | 1             |    | 16QAM     | 1               | 0         | 23.29 | 23.37 | 23.33 | 1             |
|                     |           | 1               | 24        |       | 23.48 |   | 1             |    |           | 1               | 12        | 23.31 | 23.39 | 23.35 | 1             |
|                     |           | 1               | 49        |       | 23.40 |   | 1             |    |           | 1               | 24        | 23.23 | 23.31 | 23.27 | 1             |
|                     |           | 25              | 0         |       | 22.48 |   | 2             |    |           | 12              | 0         | 22.31 | 22.39 | 22.35 | 2             |
|                     |           | 25              | 12        |       | 22.43 |   | 2             |    |           | 12              | 6         | 22.26 | 22.34 | 22.30 | 2             |
|                     |           | 25              | 25        |       | 22.40 |   | 2             |    |           | 12              | 13        | 22.23 | 22.31 | 22.27 | 2             |
|                     | 64QAM     | 50              | 0         |       | 22.47 |   | 2             |    | 64QAM     | 25              | 0         | 22.30 | 22.38 | 22.34 | 2             |
|                     |           | 1               | 0         |       | 22.43 |   | 2             |    |           | 1               | 0         | 22.26 | 22.34 | 22.30 | 2             |
|                     |           | 1               | 24        |       | 22.45 |   | 2             |    |           | 1               | 12        | 22.28 | 22.36 | 22.32 | 2             |
|                     |           | 1               | 49        |       | 22.37 |   | 2             |    |           | 1               | 24        | 22.20 | 22.28 | 22.24 | 2             |
|                     |           | 25              | 0         |       | 21.45 |   | 3             |    |           | 12              | 0         | 21.28 | 21.36 | 21.32 | 3             |
|                     |           | 25              | 12        |       | 21.40 |   | 3             |    |           | 12              | 6         | 21.23 | 21.31 | 21.27 | 3             |
|                     |           | 25              | 25        |       | 21.37 |   | 3             |    |           | 12              | 13        | 21.20 | 21.28 | 21.24 | 3             |
|                     | 50        | 0               |           | 21.44 |       | 3 | 25            |    | 0         | 21.27           | 21.35     | 21.31 | 3     |       |               |

| LTE Band 26         |           |                 |           |       |       |       |               |               |           |                 |                 |           |       |       |               |               |
|---------------------|-----------|-----------------|-----------|-------|-------|-------|---------------|---------------|-----------|-----------------|-----------------|-----------|-------|-------|---------------|---------------|
| Body-Worn / Hotspot |           |                 |           |       |       |       |               |               |           |                 |                 |           |       |       |               |               |
| Ant-0               |           |                 |           |       |       |       |               |               |           |                 |                 |           |       |       |               |               |
| BW                  | MCS Index | RB Size         | RB Offset |       |       | Mid   |               | 3GPP MPR (dB) | BW        | MCS Index       | RB Size         | RB Offset | Low   | Mid   | High          | 3GPP MPR (dB) |
|                     |           | Channel         |           |       |       | 26740 |               |               |           |                 | Channel         |           | 26715 | 26740 | 26765         |               |
|                     |           | Frequency (MHz) |           |       |       | 819.0 |               |               |           |                 | Frequency (MHz) |           | 816.5 | 819.0 | 821.5         |               |
| 10M                 | QPSK      | 1               | 0         |       |       | 23.94 |               | 0             | 5M        | QPSK            | 1               | 0         | 23.81 | 23.93 | 24.17         | 0             |
|                     |           | 1               | 24        |       |       | 23.98 |               | 0             |           |                 | 1               | 12        | 23.85 | 23.96 | 24.19         | 0             |
|                     |           | 1               | 49        |       |       | 24.20 |               | 0             |           |                 | 1               | 24        | 24.07 | 24.17 | 24.28         | 0             |
|                     |           | 25              | 0         |       |       | 23.05 |               | 1             |           |                 | 12              | 0         | 22.92 | 23.04 | 23.13         | 1             |
|                     |           | 25              | 12        |       |       | 23.09 |               | 1             |           |                 | 12              | 6         | 22.96 | 23.07 | 23.17         | 1             |
|                     |           | 25              | 25        |       |       | 23.24 |               | 1             |           |                 | 12              | 13        | 23.11 | 23.21 | 23.32         | 1             |
|                     |           | 50              | 0         |       |       | 23.14 |               | 1             |           |                 | 25              | 0         | 23.01 | 23.13 | 23.22         | 1             |
|                     | 16QAM     | 1               | 0         |       |       | 22.86 |               | 1             |           | 16QAM           | 1               | 0         | 22.73 | 22.85 | 22.94         | 1             |
|                     |           | 1               | 24        |       |       | 22.90 |               | 1             |           |                 | 1               | 12        | 22.77 | 22.88 | 22.98         | 1             |
|                     |           | 1               | 49        |       |       | 23.12 |               | 1             |           |                 | 1               | 24        | 22.99 | 23.09 | 23.20         | 1             |
|                     |           | 25              | 0         |       |       | 21.97 |               | 2             |           |                 | 12              | 0         | 21.84 | 21.96 | 22.05         | 2             |
|                     |           | 25              | 12        |       |       | 22.01 |               | 2             |           |                 | 12              | 6         | 21.88 | 21.99 | 22.09         | 2             |
|                     |           | 25              | 25        |       |       | 22.16 |               | 2             |           |                 | 12              | 13        | 22.03 | 22.13 | 22.24         | 2             |
|                     | 50        | 0               |           |       | 22.06 |       | 2             | 25            |           | 0               | 21.93           | 22.05     | 22.14 | 2     |               |               |
|                     | 64QAM     | 1               | 0         |       |       | 21.84 |               | 2             |           | 64QAM           | 1               | 0         | 21.71 | 21.83 | 21.92         | 2             |
|                     |           | 1               | 24        |       |       | 21.88 |               | 2             |           |                 | 1               | 12        | 21.75 | 21.86 | 21.96         | 2             |
|                     |           | 1               | 49        |       |       | 22.10 |               | 2             |           |                 | 1               | 24        | 21.97 | 22.07 | 22.18         | 2             |
|                     |           | 25              | 0         |       |       | 20.95 |               | 3             |           |                 | 12              | 0         | 20.82 | 20.94 | 21.03         | 3             |
|                     |           | 25              | 12        |       |       | 20.99 |               | 3             |           |                 | 12              | 6         | 20.86 | 20.97 | 21.07         | 3             |
|                     |           | 25              | 25        |       |       | 21.14 |               | 3             |           |                 | 12              | 13        | 21.01 | 21.11 | 21.22         | 3             |
|                     | 50        | 0               |           |       | 21.04 |       | 3             | 25            |           | 0               | 20.91           | 21.03     | 21.12 | 3     |               |               |
| BW                  | MCS Index | RB Size         | RB Offset | Low   | Mid   | High  | 3GPP MPR (dB) | BW            | MCS Index | RB Size         | RB Offset       | Low       | Mid   | High  | 3GPP MPR (dB) |               |
|                     |           | Channel         |           | 26705 | 26740 | 26775 |               |               |           | Channel         |                 | 26697     | 26740 | 26783 |               |               |
|                     |           | Frequency (MHz) |           | 815.5 | 819.0 | 822.5 |               |               |           | Frequency (MHz) |                 | 814.7     | 819.0 | 823.3 |               |               |
| 3M                  | QPSK      | 1               | 0         | 23.84 | 23.87 | 24.04 | 0             | 1.4M          | QPSK      | 1               | 0               | 23.88     | 23.93 | 24.02 | 0             |               |
|                     |           | 1               | 7         | 23.88 | 23.89 | 24.17 | 0             |               |           | 1               | 2               | 23.92     | 23.86 | 24.19 | 0             |               |
|                     |           | 1               | 14        | 24.10 | 24.17 | 24.20 | 0             |               |           | 1               | 5               | 24.14     | 24.14 | 24.19 | 0             |               |
|                     |           | 8               | 0         | 22.95 | 22.97 | 23.08 | 1             |               |           | 3               | 0               | 23.77     | 24.02 | 24.09 | 0             |               |
|                     |           | 8               | 3         | 22.99 | 23.00 | 23.15 | 1             |               |           | 3               | 1               | 23.81     | 24.09 | 24.14 | 0             |               |
|                     |           | 8               | 7         | 23.14 | 23.11 | 23.30 | 1             |               |           | 3               | 3               | 23.96     | 24.10 | 24.27 | 0             |               |
|                     |           | 15              | 0         | 23.04 | 23.12 | 23.11 | 1             |               |           | 6               | 0               | 23.08     | 23.09 | 23.22 | 1             |               |
|                     | 16QAM     | 1               | 0         | 22.76 | 22.84 | 22.87 | 1             |               | 16QAM     | 1               | 0               | 22.80     | 22.82 | 22.94 | 1             |               |
|                     |           | 1               | 7         | 22.80 | 22.82 | 22.85 | 1             |               |           | 1               | 2               | 22.84     | 22.75 | 22.90 | 1             |               |
|                     |           | 1               | 14        | 23.02 | 23.10 | 23.17 | 1             |               |           | 1               | 5               | 23.06     | 23.03 | 23.09 | 1             |               |
|                     |           | 8               | 0         | 21.87 | 21.82 | 22.05 | 2             |               |           | 3               | 0               | 22.73     | 22.88 | 23.01 | 1             |               |
|                     |           | 8               | 3         | 21.91 | 21.96 | 22.01 | 2             |               |           | 3               | 1               | 22.77     | 22.94 | 22.99 | 1             |               |
|                     |           | 8               | 7         | 22.06 | 22.13 | 22.11 | 2             |               |           | 3               | 3               | 22.92     | 23.06 | 23.09 | 1             |               |
|                     | 15        | 0               | 21.96     | 21.95 | 21.99 | 2     | 6             |               | 0         | 22.00           | 22.02           | 22.12     | 2     |       |               |               |
|                     | 64QAM     | 1               | 0         | 21.74 | 21.70 | 21.77 | 2             |               | 64QAM     | 1               | 0               | 21.78     | 21.83 | 21.79 | 2             |               |
|                     |           | 1               | 7         | 21.78 | 21.83 | 21.90 | 2             |               |           | 1               | 2               | 21.82     | 21.83 | 21.87 | 2             |               |
|                     |           | 1               | 14        | 22.00 | 21.97 | 22.03 | 2             |               |           | 1               | 5               | 22.04     | 22.04 | 22.10 | 2             |               |
|                     |           | 8               | 0         | 20.85 | 20.83 | 20.92 | 3             |               |           | 3               | 0               | 21.71     | 21.89 | 21.89 | 2             |               |
|                     |           | 8               | 3         | 20.89 | 20.98 | 20.98 | 3             |               |           | 3               | 1               | 21.75     | 21.97 | 21.98 | 2             |               |
|                     |           | 8               | 7         | 21.04 | 21.08 | 21.11 | 3             |               |           | 3               | 3               | 21.90     | 22.11 | 22.12 | 2             |               |
|                     |           | 15              | 0         | 20.94 | 20.98 | 21.07 | 3             |               |           | 6               | 0               | 20.98     | 21.04 | 20.99 | 3             |               |

# ERP Power (dBm)

| CDMA  |         |                 |               |                        |           |          |                    |
|-------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Plane | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y     | 476     | 817.9           | -10.65        | 31.208                 | 18.41     | 69.34    | H                  |
|       | 580     | 820.5           | -10.59        | 31.3                   | 18.56     | 71.78    |                    |
|       | 684     | 823.1           | -10.78        | 31.222                 | 18.29     | 67.45    |                    |
|       | 476     | 817.9           | -17.87        | 31.504                 | 11.48     | 14.06    | V                  |
|       | 580     | 820.5           | -17.28        | 31.117                 | 11.69     | 14.76    |                    |
|       | 684     | 823.1           | -18.52        | 31.922                 | 11.25     | 13.34    |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 14                      |         |                 |               |                        |           |          |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                | 23305   | 790.5           | -11.88        | 32.24                  | 18.21     | 66.22    | H                  |
|                                  | 23330   | 793.0           | -11.73        | 32.17                  | 18.29     | 67.45    |                    |
|                                  | 23355   | 795.5           | -11.81        | 32.11                  | 18.15     | 65.31    |                    |
|                                  | 23305   | 790.5           | -19.95        | 32.43                  | 10.33     | 10.79    | V                  |
|                                  | 23330   | 793.0           | -19.88        | 32.42                  | 10.39     | 10.94    |                    |
|                                  | 23355   | 795.5           | -20.02        | 32.46                  | 10.29     | 10.69    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                | 23305   | 790.5           | -12.87        | 32.24                  | 17.22     | 52.72    | H                  |
|                                  | 23330   | 793.0           | -12.72        | 32.17                  | 17.30     | 53.70    |                    |
|                                  | 23355   | 795.5           | -12.80        | 32.11                  | 17.16     | 52.00    |                    |
|                                  | 23305   | 790.5           | -20.94        | 32.43                  | 9.34      | 8.59     | V                  |
|                                  | 23330   | 793.0           | -20.87        | 32.42                  | 9.40      | 8.71     |                    |
|                                  | 23355   | 795.5           | -21.01        | 32.46                  | 9.30      | 8.51     |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                | 23305   | 790.5           | -13.85        | 32.24                  | 16.24     | 42.07    | H                  |
|                                  | 23330   | 793.0           | -13.70        | 32.17                  | 16.32     | 42.85    |                    |
|                                  | 23355   | 795.5           | -13.78        | 32.11                  | 16.18     | 41.50    |                    |
|                                  | 23305   | 790.5           | -21.92        | 32.43                  | 8.36      | 6.85     | V                  |
|                                  | 23330   | 793.0           | -21.85        | 32.42                  | 8.42      | 6.95     |                    |
|                                  | 23355   | 795.5           | -21.99        | 32.46                  | 8.32      | 6.79     |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 14                       |         |                 |               |                        |           |          |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                 | 23330   | 793.0           | -11.50        | 32.17                  | 18.52     | 71.12    | H                  |
|                                   | 23330   | 793.0           | -19.65        | 32.42                  | 10.62     | 11.53    | V                  |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                 | 23330   | 793.0           | -12.51        | 32.17                  | 17.51     | 56.36    | H                  |
|                                   | 23330   | 793.0           | -20.66        | 32.42                  | 9.61      | 9.14     | V                  |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                 | 23330   | 793.0           | -13.53        | 32.17                  | 16.49     | 44.57    | H                  |
|                                   | 23330   | 793.0           | -21.68        | 32.42                  | 8.59      | 7.23     | V                  |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 26                        |         |                 |               |                        |           |          |                    |
|------------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 1.4 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                              | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                  | 26697   | 814.7           | -11.90        | 32.01                  | 17.96     | 62.52    | H                  |
|                                    | 26740   | 819.0           | -11.94        | 32.11                  | 18.02     | 63.39    |                    |
|                                    | 26783   | 823.3           | -12.18        | 32.32                  | 17.99     | 62.95    |                    |
|                                    | 26697   | 814.7           | -18.51        | 32.54                  | 11.88     | 15.42    | V                  |
|                                    | 26740   | 819.0           | -18.37        | 32.51                  | 11.99     | 15.81    |                    |
|                                    | 26783   | 823.3           | -18.44        | 32.51                  | 11.92     | 15.56    |                    |
| Channel Bandwidth: 1.4 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                  | 26697   | 814.7           | -12.90        | 32.01                  | 16.96     | 49.66    | H                  |
|                                    | 26740   | 819.0           | -12.94        | 32.11                  | 17.02     | 50.35    |                    |
|                                    | 26783   | 823.3           | -13.18        | 32.32                  | 16.99     | 50.00    |                    |
|                                    | 26697   | 814.7           | -19.51        | 32.54                  | 10.88     | 12.25    | V                  |
|                                    | 26740   | 819.0           | -19.37        | 32.51                  | 10.99     | 12.56    |                    |
|                                    | 26783   | 823.3           | -19.44        | 32.51                  | 10.92     | 12.36    |                    |
| Channel Bandwidth: 1.4 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                  | 26697   | 814.7           | -13.91        | 32.01                  | 15.95     | 39.36    | H                  |
|                                    | 26740   | 819.0           | -13.95        | 32.11                  | 16.01     | 39.90    |                    |
|                                    | 26783   | 823.3           | -14.19        | 32.32                  | 15.98     | 39.63    |                    |
|                                    | 26697   | 814.7           | -20.52        | 32.54                  | 9.87      | 9.71     | V                  |
|                                    | 26740   | 819.0           | -20.38        | 32.51                  | 9.98      | 9.95     |                    |
|                                    | 26783   | 823.3           | -20.45        | 32.51                  | 9.91      | 9.79     |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 26                      |         |                 |               |                        |           |          |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 3 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                | 26705   | 815.5           | -11.67        | 32.02                  | 18.20     | 66.07    | H                  |
|                                  | 26740   | 819.0           | -11.70        | 32.11                  | 18.26     | 66.99    |                    |
|                                  | 26775   | 822.5           | -11.80        | 32.18                  | 18.23     | 66.53    |                    |
|                                  | 26705   | 815.5           | -18.23        | 32.5                   | 12.12     | 16.29    | V                  |
|                                  | 26740   | 819.0           | -18.13        | 32.51                  | 12.23     | 16.71    |                    |
|                                  | 26775   | 822.5           | -18.16        | 32.47                  | 12.16     | 16.44    |                    |
| Channel Bandwidth: 3 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                | 26705   | 815.5           | -12.66        | 32.02                  | 17.21     | 52.60    | H                  |
|                                  | 26740   | 819.0           | -12.69        | 32.11                  | 17.27     | 53.33    |                    |
|                                  | 26775   | 822.5           | -12.79        | 32.18                  | 17.24     | 52.97    |                    |
|                                  | 26705   | 815.5           | -19.22        | 32.5                   | 11.13     | 12.97    | V                  |
|                                  | 26740   | 819.0           | -19.12        | 32.51                  | 11.24     | 13.30    |                    |
|                                  | 26775   | 822.5           | -19.15        | 32.47                  | 11.17     | 13.09    |                    |
| Channel Bandwidth: 3 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                | 26705   | 815.5           | -13.66        | 32.02                  | 16.21     | 41.78    | H                  |
|                                  | 26740   | 819.0           | -13.69        | 32.11                  | 16.27     | 42.36    |                    |
|                                  | 26775   | 822.5           | -13.79        | 32.18                  | 16.24     | 42.07    |                    |
|                                  | 26705   | 815.5           | -20.22        | 32.5                   | 10.13     | 10.30    | V                  |
|                                  | 26740   | 819.0           | -20.12        | 32.51                  | 10.24     | 10.57    |                    |
|                                  | 26775   | 822.5           | -20.15        | 32.47                  | 10.17     | 10.40    |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 26                      |         |                 |               |                        |           |          |                    |
|----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 5 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                            | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                | 26715   | 816.5           | -11.43        | 32.04                  | 18.46     | 70.15    | H                  |
|                                  | 26740   | 819.0           | -11.44        | 32.11                  | 18.52     | 71.12    |                    |
|                                  | 26765   | 821.5           | -11.15        | 31.79                  | 18.49     | 70.63    |                    |
|                                  | 26715   | 816.5           | -17.99        | 32.52                  | 12.38     | 17.30    | V                  |
|                                  | 26740   | 819.0           | -17.87        | 32.51                  | 12.49     | 17.74    |                    |
|                                  | 26765   | 821.5           | -17.60        | 32.17                  | 12.42     | 17.46    |                    |
| Channel Bandwidth: 5 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                | 26715   | 816.5           | -12.42        | 32.04                  | 17.47     | 55.85    | H                  |
|                                  | 26740   | 819.0           | -12.43        | 32.11                  | 17.53     | 56.62    |                    |
|                                  | 26765   | 821.5           | -12.14        | 31.79                  | 17.50     | 56.23    |                    |
|                                  | 26715   | 816.5           | -18.98        | 32.52                  | 11.39     | 13.77    | V                  |
|                                  | 26740   | 819.0           | -18.86        | 32.51                  | 11.50     | 14.13    |                    |
|                                  | 26765   | 821.5           | -18.59        | 32.17                  | 11.43     | 13.90    |                    |
| Channel Bandwidth: 5 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                | 26715   | 816.5           | -13.43        | 32.04                  | 16.46     | 44.26    | H                  |
|                                  | 26740   | 819.0           | -13.44        | 32.11                  | 16.52     | 44.87    |                    |
|                                  | 26765   | 821.5           | -13.15        | 31.79                  | 16.49     | 44.57    |                    |
|                                  | 26715   | 816.5           | -19.99        | 32.52                  | 10.38     | 10.91    | V                  |
|                                  | 26740   | 819.0           | -19.87        | 32.51                  | 10.49     | 11.19    |                    |
|                                  | 26765   | 821.5           | -19.60        | 32.17                  | 10.42     | 11.02    |                    |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

| LTE Band 26                       |         |                 |               |                        |           |          |                    |
|-----------------------------------|---------|-----------------|---------------|------------------------|-----------|----------|--------------------|
| Channel Bandwidth: 10 MHz / QPSK  |         |                 |               |                        |           |          |                    |
| Plane                             | Channel | Frequency (MHz) | Reading (dBm) | Correction Factor (dB) | ERP (dBm) | ERP (mW) | Polarization (H/V) |
| Y                                 | 26740   | 819.0           | -11.21        | 32.11                  | 18.75     | 74.99    | H                  |
|                                   | 26740   | 819.0           | -17.64        | 32.51                  | 12.72     | 18.71    | V                  |
| Channel Bandwidth: 10 MHz / 16QAM |         |                 |               |                        |           |          |                    |
| Y                                 | 26740   | 819.0           | -12.22        | 32.11                  | 17.74     | 59.43    | H                  |
|                                   | 26740   | 819.0           | -18.65        | 32.51                  | 11.71     | 14.83    | V                  |
| Channel Bandwidth: 10 MHz / 64QAM |         |                 |               |                        |           |          |                    |
| Y                                 | 26740   | 819.0           | -13.21        | 32.11                  | 16.75     | 47.32    | H                  |
|                                   | 26740   | 819.0           | -19.64        | 32.51                  | 10.72     | 11.80    | V                  |

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

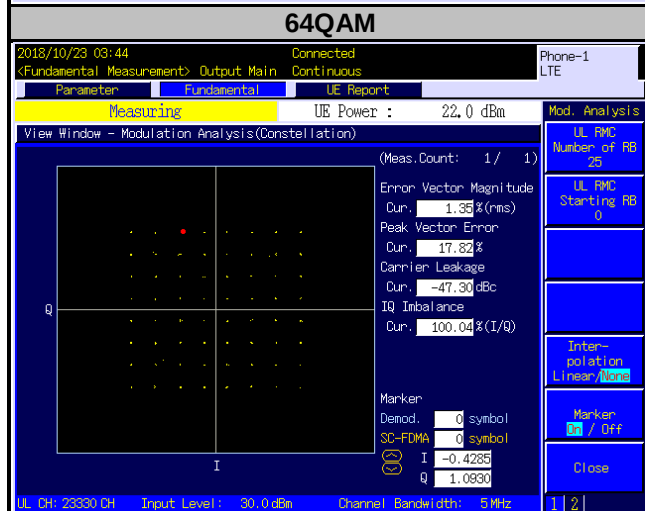
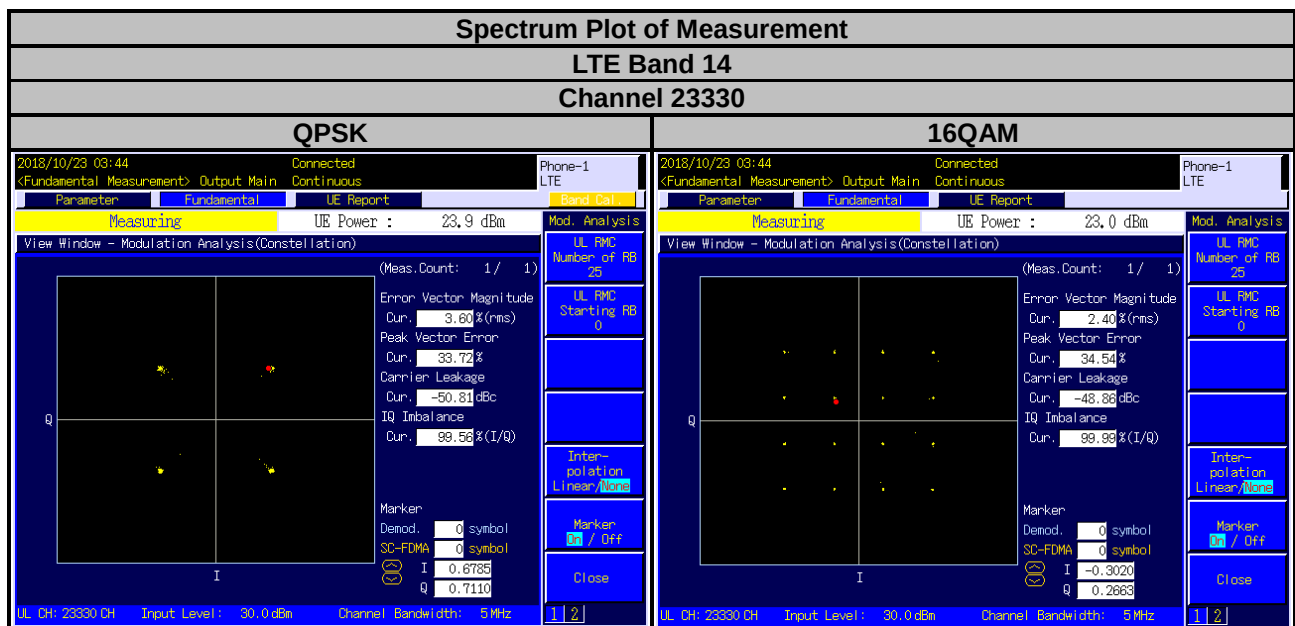
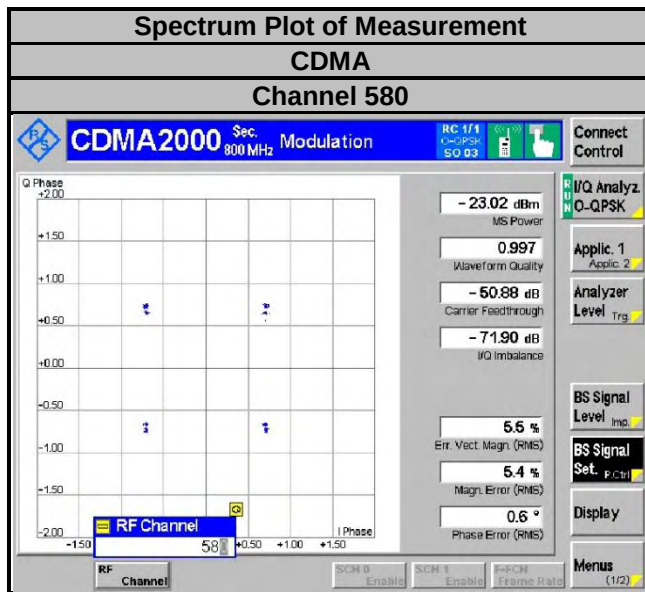
### 4.2.2 Test Setup



### 4.2.3 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.

#### 4.2.4 Test Results

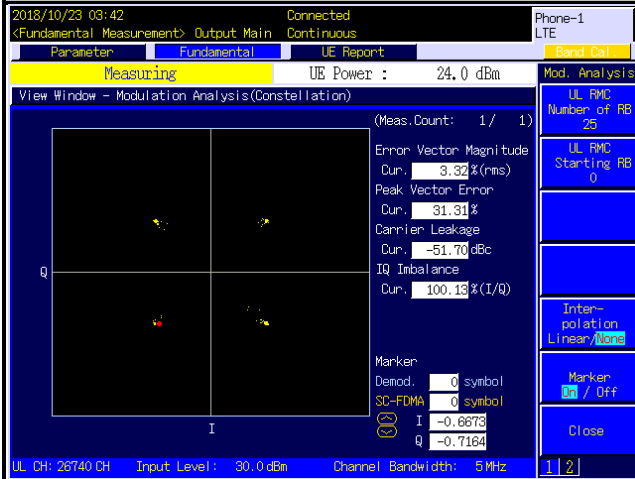


## Spectrum Plot of Measurement

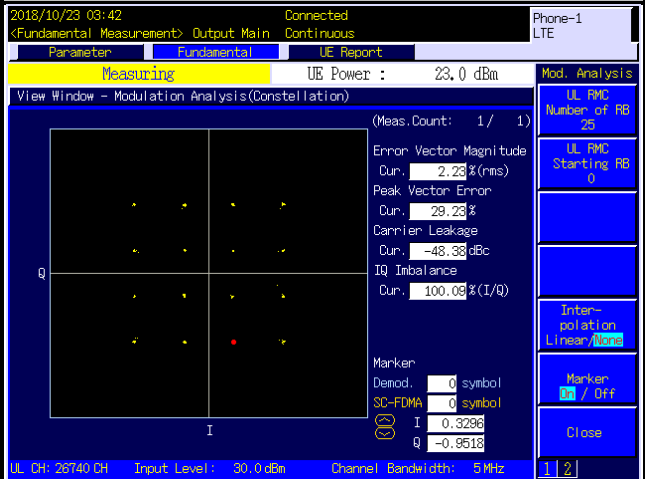
LTE Band 26

Channel 26740

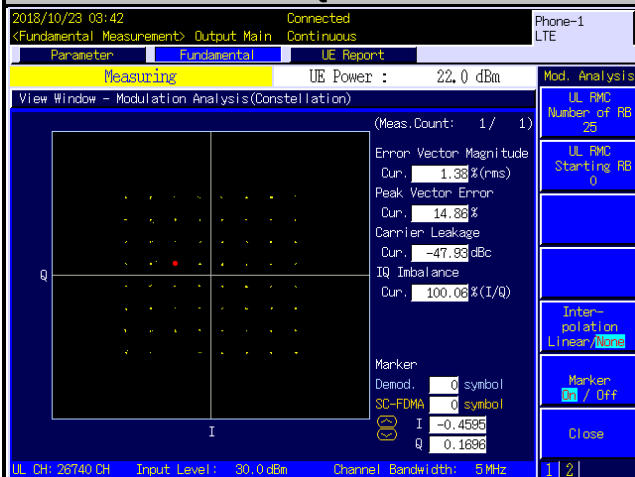
**QPSK**



**16QAM**



**64QAM**



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

##### LTE Band 14

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

##### CDMA / LTE Band 26

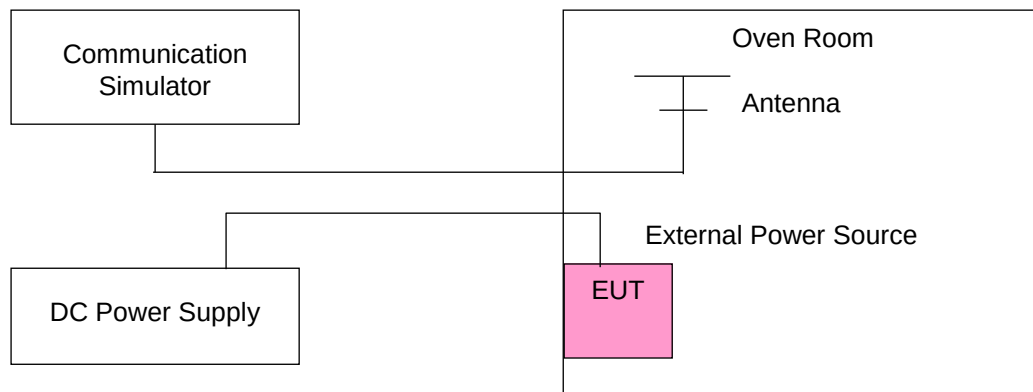
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

#### 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  $\pm 0.5$  °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

| Voltage<br>(Volts) | CDMA            |                       |                 |                       | Limit (ppm) |
|--------------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Low Channel     |                       | High Channel    |                       |             |
|                    | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.85               | 817.900002      | 0.003                 | 823.100003      | 0.003                 | 2.5         |
| 3.6                | 817.900001      | 0.002                 | 823.100003      | 0.003                 | 2.5         |
| 4.4                | 817.900002      | 0.002                 | 823.100001      | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

##### Frequency Error vs. Temperature

| Temp. (°C) | CDMA            |                       |                 |                       | Limit (ppm) |
|------------|-----------------|-----------------------|-----------------|-----------------------|-------------|
|            | Low Channel     |                       | High Channel    |                       |             |
|            | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 817.900003      | 0.003                 | 823.100003      | 0.004                 | 2.5         |
| -20        | 817.900002      | 0.002                 | 823.100004      | 0.005                 | 2.5         |
| -10        | 817.900004      | 0.005                 | 823.100003      | 0.003                 | 2.5         |
| 0          | 817.900001      | 0.001                 | 823.100004      | 0.004                 | 2.5         |
| 10         | 817.900004      | 0.004                 | 823.100002      | 0.002                 | 2.5         |
| 20         | 817.899999      | -0.001                | 823.099997      | -0.004                | 2.5         |
| 30         | 817.899998      | -0.002                | 823.099997      | -0.004                | 2.5         |
| 40         | 817.899997      | -0.003                | 823.099997      | -0.003                | 2.5         |
| 50         | 817.899997      | -0.004                | 823.099997      | -0.004                | 2.5         |
| 55         | 817.899996      | -0.005                | 823.099999      | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 14              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.85               | 790.500004               | 0.005                 | 795.500000      | 0.002                 | 2.5         |
| 3.6                | 790.500003               | 0.004                 | 795.500000      | 0.003                 | 2.5         |
| 4.4                | 790.500003               | 0.004                 | 795.500000      | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 14              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 790.500002               | 0.002                 | 795.500000      | 0.005                 | 2.5         |
| -20        | 790.500002               | 0.003                 | 795.500000      | 0.004                 | 2.5         |
| -10        | 790.500003               | 0.004                 | 795.500000      | 0.002                 | 2.5         |
| 0          | 790.500003               | 0.004                 | 795.500000      | 0.004                 | 2.5         |
| 10         | 790.500002               | 0.003                 | 795.500000      | 0.001                 | 2.5         |
| 20         | 790.499998               | -0.003                | 795.500000      | -0.004                | 2.5         |
| 30         | 790.499997               | -0.004                | 795.500000      | -0.002                | 2.5         |
| 40         | 790.499998               | -0.002                | 795.500000      | -0.001                | 2.5         |
| 50         | 790.499998               | -0.003                | 795.500000      | -0.002                | 2.5         |
| 55         | 790.499999               | -0.001                | 795.500000      | -0.004                | 2.5         |

#### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 14               |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) |             |
| 3.85               | 793.000001                | 0.002                 | 2.5         |
| 3.6                | 793.000002                | 0.002                 | 2.5         |
| 4.4                | 793.000002                | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

#### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 14               |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) |             |
| -30        | 793.000003                | 0.003                 | 2.5         |
| -20        | 793.000004                | 0.005                 | 2.5         |
| -10        | 793.000003                | 0.003                 | 2.5         |
| 0          | 793.000003                | 0.004                 | 2.5         |
| 10         | 793.000003                | 0.003                 | 2.5         |
| 20         | 792.999998                | -0.002                | 2.5         |
| 30         | 792.999998                | -0.002                | 2.5         |
| 40         | 792.999998                | -0.002                | 2.5         |
| 50         | 792.999999                | -0.002                | 2.5         |
| 55         | 792.999999                | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 26                |                       |                 |                       | Limit (ppm) |
|--------------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|                    | Low Channel                |                       | High Channel    |                       |             |
|                    | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.85               | 814.700003                 | 0.003                 | 823.300000      | 0.003                 | 2.5         |
| 3.6                | 814.700003                 | 0.003                 | 823.300000      | 0.004                 | 2.5         |
| 4.4                | 814.700001                 | 0.001                 | 823.300000      | 0.005                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 26                |                       |                 |                       | Limit (ppm) |
|------------|----------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 1.4 MHz |                       |                 |                       |             |
|            | Low Channel                |                       | High Channel    |                       |             |
|            | Frequency (MHz)            | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 814.700003                 | 0.004                 | 823.300000      | 0.002                 | 2.5         |
| -20        | 814.700003                 | 0.003                 | 823.300000      | 0.001                 | 2.5         |
| -10        | 814.700004                 | 0.005                 | 823.300000      | 0.004                 | 2.5         |
| 0          | 814.700001                 | 0.001                 | 823.300000      | 0.004                 | 2.5         |
| 10         | 814.700002                 | 0.003                 | 823.300000      | 0.003                 | 2.5         |
| 20         | 814.699999                 | -0.001                | 823.300000      | -0.003                | 2.5         |
| 30         | 814.699998                 | -0.003                | 823.300000      | -0.003                | 2.5         |
| 40         | 814.699997                 | -0.004                | 823.300000      | -0.003                | 2.5         |
| 50         | 814.699998                 | -0.002                | 823.300000      | -0.002                | 2.5         |
| 55         | 814.699998                 | -0.003                | 823.300000      | -0.002                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 26              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.85               | 815.500002               | 0.002                 | 822.500000      | 0.004                 | 2.5         |
| 3.6                | 815.500002               | 0.003                 | 822.500000      | 0.005                 | 2.5         |
| 4.4                | 815.500003               | 0.004                 | 822.500000      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 26              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 3 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 815.500001               | 0.001                 | 822.500000      | 0.004                 | 2.5         |
| -20        | 815.500004               | 0.005                 | 822.500000      | 0.002                 | 2.5         |
| -10        | 815.500002               | 0.002                 | 822.500000      | 0.002                 | 2.5         |
| 0          | 815.500003               | 0.004                 | 822.500000      | 0.004                 | 2.5         |
| 10         | 815.500004               | 0.004                 | 822.500000      | 0.003                 | 2.5         |
| 20         | 815.499998               | -0.003                | 822.500000      | -0.004                | 2.5         |
| 30         | 815.499996               | -0.005                | 822.500000      | -0.003                | 2.5         |
| 40         | 815.499999               | -0.002                | 822.500000      | -0.002                | 2.5         |
| 50         | 815.499998               | -0.003                | 822.500000      | -0.002                | 2.5         |
| 55         | 815.499998               | -0.003                | 822.500000      | -0.005                | 2.5         |

### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 26              |                       |                 |                       | Limit (ppm) |
|--------------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|                    | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|                    | Low Channel              |                       | High Channel    |                       |             |
|                    | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| 3.85               | 816.500003               | 0.003                 | 821.500000      | 0.003                 | 2.5         |
| 3.6                | 816.500002               | 0.003                 | 821.500000      | 0.003                 | 2.5         |
| 4.4                | 816.500004               | 0.005                 | 821.500000      | 0.004                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 26              |                       |                 |                       | Limit (ppm) |
|------------|--------------------------|-----------------------|-----------------|-----------------------|-------------|
|            | Channel Bandwidth: 5 MHz |                       |                 |                       |             |
|            | Low Channel              |                       | High Channel    |                       |             |
|            | Frequency (MHz)          | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |             |
| -30        | 816.500004               | 0.005                 | 821.500000      | 0.004                 | 2.5         |
| -20        | 816.500002               | 0.002                 | 821.500000      | 0.002                 | 2.5         |
| -10        | 816.500003               | 0.003                 | 821.500000      | 0.002                 | 2.5         |
| 0          | 816.500001               | 0.001                 | 821.500000      | 0.004                 | 2.5         |
| 10         | 816.500002               | 0.003                 | 821.500000      | 0.003                 | 2.5         |
| 20         | 816.499996               | -0.005                | 821.500000      | -0.002                | 2.5         |
| 30         | 816.499998               | -0.002                | 821.500000      | -0.003                | 2.5         |
| 40         | 816.499999               | -0.001                | 821.500000      | -0.003                | 2.5         |
| 50         | 816.499999               | -0.002                | 821.500000      | -0.005                | 2.5         |
| 55         | 816.499997               | -0.003                | 821.500000      | -0.002                | 2.5         |

#### Frequency Error vs. Voltage

| Voltage<br>(Volts) | LTE Band 26               |                       | Limit (ppm) |
|--------------------|---------------------------|-----------------------|-------------|
|                    | Channel Bandwidth: 10 MHz |                       |             |
|                    | Frequency (MHz)           | Frequency Error (ppm) |             |
| 3.85               | 819.000002                | 0.003                 | 2.5         |
| 3.6                | 819.000001                | 0.001                 | 2.5         |
| 4.4                | 819.000002                | 0.002                 | 2.5         |

**Note:** The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

#### Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 26               |                       | Limit (ppm) |
|------------|---------------------------|-----------------------|-------------|
|            | Channel Bandwidth: 10 MHz |                       |             |
|            | Frequency (MHz)           | Frequency Error (ppm) |             |
| -30        | 819.000003                | 0.003                 | 2.5         |
| -20        | 819.000002                | 0.003                 | 2.5         |
| -10        | 819.000002                | 0.003                 | 2.5         |
| 0          | 819.000002                | 0.002                 | 2.5         |
| 10         | 819.000002                | 0.002                 | 2.5         |
| 20         | 818.999997                | -0.004                | 2.5         |
| 30         | 818.999997                | -0.003                | 2.5         |
| 40         | 818.999997                | -0.003                | 2.5         |
| 50         | 818.999998                | -0.003                | 2.5         |
| 55         | 818.999997                | -0.003                | 2.5         |

## 4.4 Occupied Bandwidth Measurement

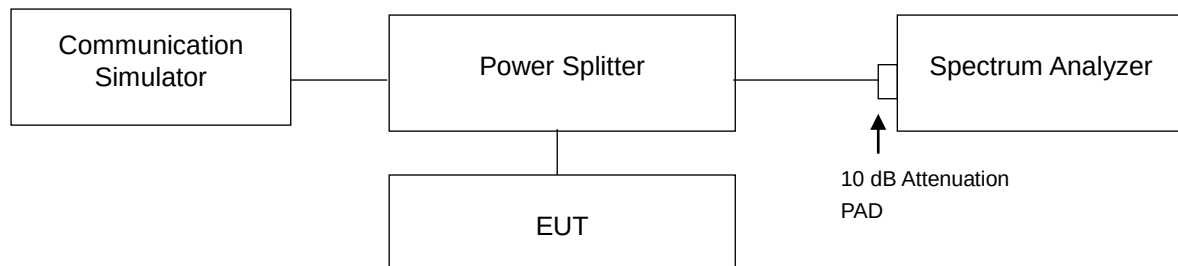
### 4.4.1 Limits of Occupied Bandwidth Measurement

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

### 4.4.2 Test Procedure

The 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.

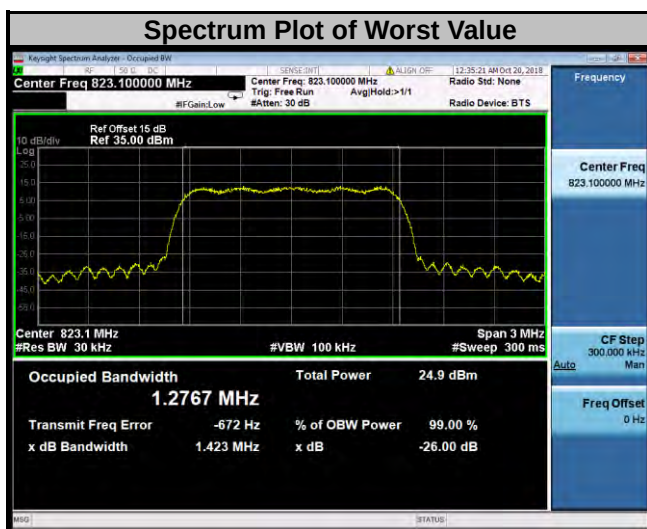
### 4.4.3 Test Setup



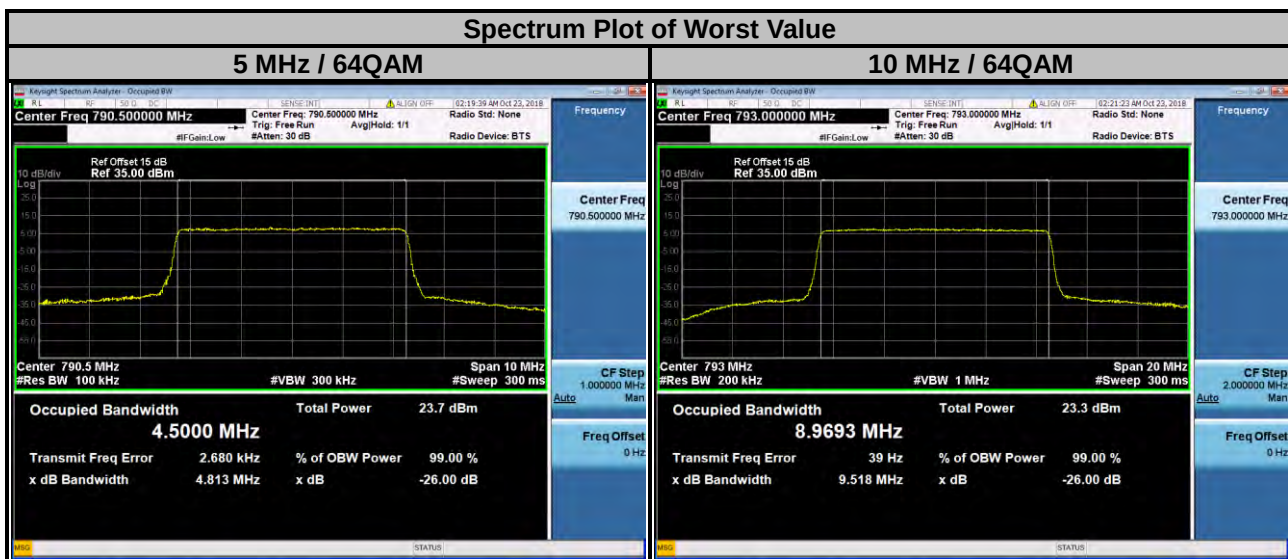
#### 4.4.4 Test Results

##### <99 % Occupied Bandwidth>

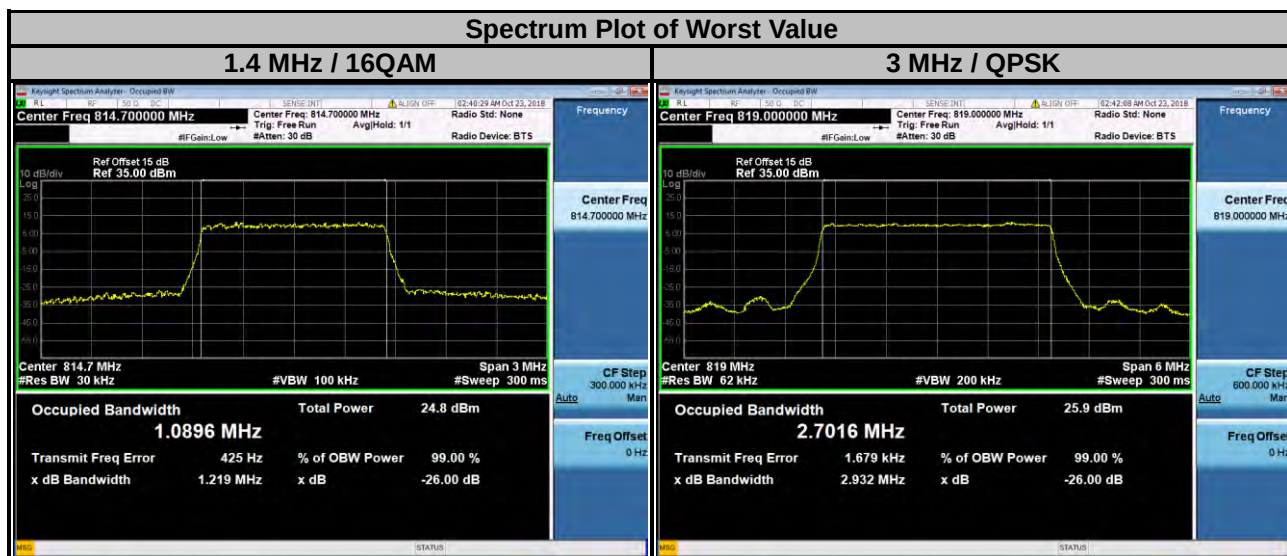
| CDMA    |                 |                               |
|---------|-----------------|-------------------------------|
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |
| 476     | 817.9           | 1.2741                        |
| 580     | 820.5           | 1.2740                        |
| 684     | 823.1           | 1.2767                        |



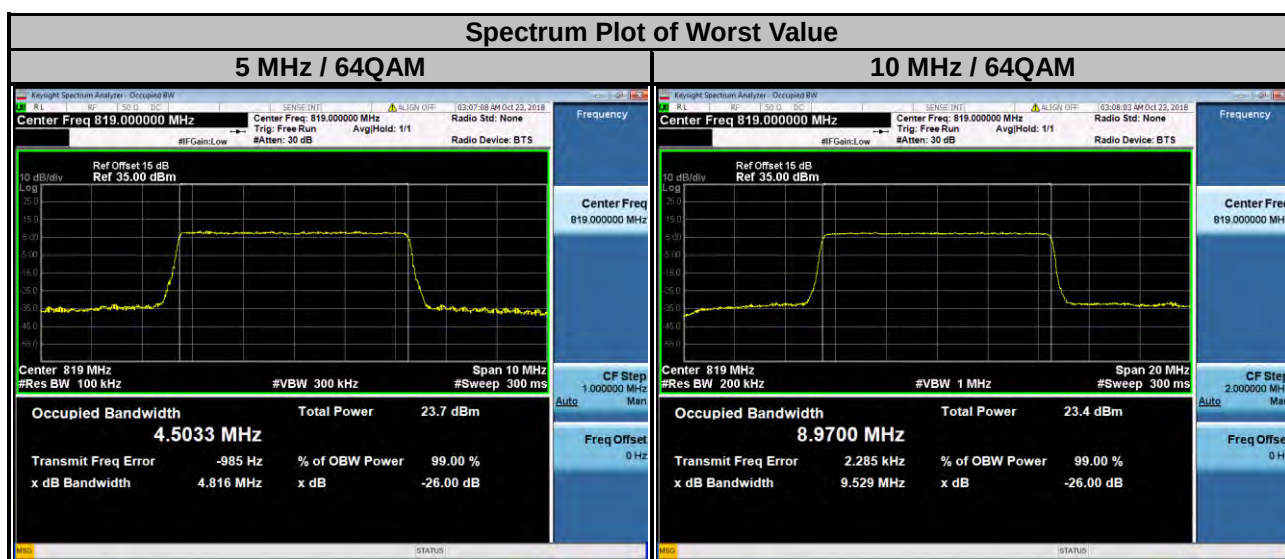
| LTE Band 14              |                 |                               |        |        |                           |                 |                               |        |
|--------------------------|-----------------|-------------------------------|--------|--------|---------------------------|-----------------|-------------------------------|--------|
| Channel Bandwidth: 5 MHz |                 |                               |        |        | Channel Bandwidth: 10 MHz |                 |                               |        |
| Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |
|                          |                 | QPSK                          | 16QAM  | 64QAM  |                           |                 | QPSK                          | 16QAM  |
| 23305                    | 790.5           | 4.4894                        | 4.4947 | 4.5000 | 23330                     | 793.0           | 8.9636                        | 8.9625 |
| 23330                    | 793.0           | 4.4894                        | 4.4944 | 4.4993 |                           |                 |                               |        |
| 23355                    | 795.5           | 4.4929                        | 4.4946 | 4.5047 |                           |                 |                               |        |
|                          |                 |                               |        |        |                           |                 | 8.9693                        |        |



| LTE Band 26                |                 |                               |        |        |                          |                 |                               |        |        |
|----------------------------|-----------------|-------------------------------|--------|--------|--------------------------|-----------------|-------------------------------|--------|--------|
| Channel Bandwidth: 1.4 MHz |                 |                               |        |        | Channel Bandwidth: 3 MHz |                 |                               |        |        |
| Channel                    | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        |
|                            |                 | QPSK                          | 16QAM  | 64QAM  |                          |                 | QPSK                          | 16QAM  | 64QAM  |
| 26697                      | 814.7           | 1.0863                        | 1.0896 | 1.0882 | 26705                    | 815.5           | 2.6987                        | 2.6965 | 2.6964 |
| 26740                      | 819.0           | 1.0852                        | 1.0888 | 1.0880 | 26740                    | 819.0           | 2.7016                        | 2.6981 | 2.6980 |
| 26783                      | 823.3           | 1.0842                        | 1.0886 | 1.0879 | 26775                    | 822.5           | 2.6993                        | 2.6973 | 2.6988 |

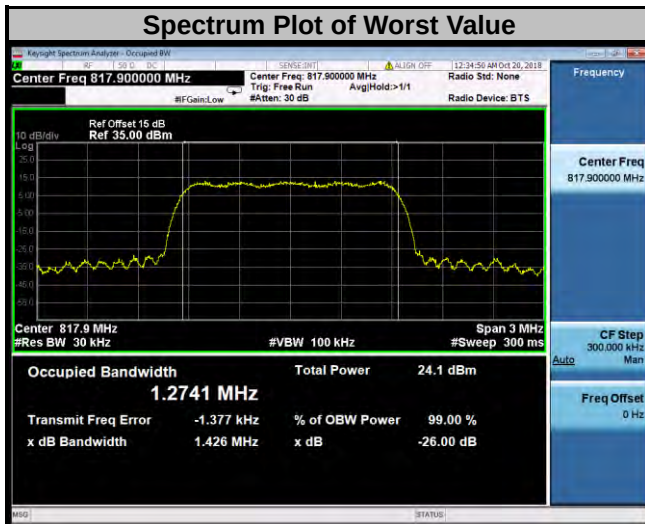


| LTE Band 26              |                 |                               |        |        |                           |                 |                               |               |
|--------------------------|-----------------|-------------------------------|--------|--------|---------------------------|-----------------|-------------------------------|---------------|
| Channel Bandwidth: 5 MHz |                 |                               |        |        | Channel Bandwidth: 10 MHz |                 |                               |               |
| Channel                  | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |        |        | Channel                   | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) |               |
|                          |                 | QPSK                          | 16QAM  | 64QAM  |                           |                 | QPSK                          | 16QAM 64QAM   |
| 26715                    | 816.5           | 4.4884                        | 4.4914 | 4.4995 | 26740                     | 819.0           | 8.9668                        | 8.9700 8.9700 |
| 26740                    | 819.0           | 4.4903                        | 4.4934 | 4.5033 |                           |                 |                               |               |
| 26765                    | 821.5           | 4.4912                        | 4.4922 | 4.5012 |                           |                 |                               |               |

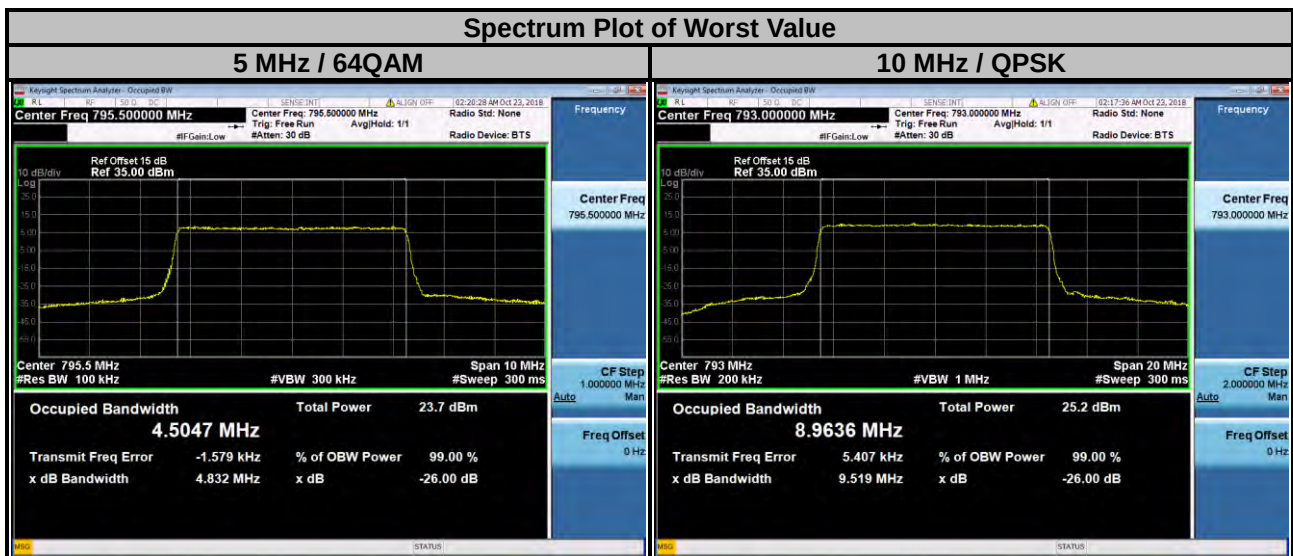


### <26 dB Bandwidth>

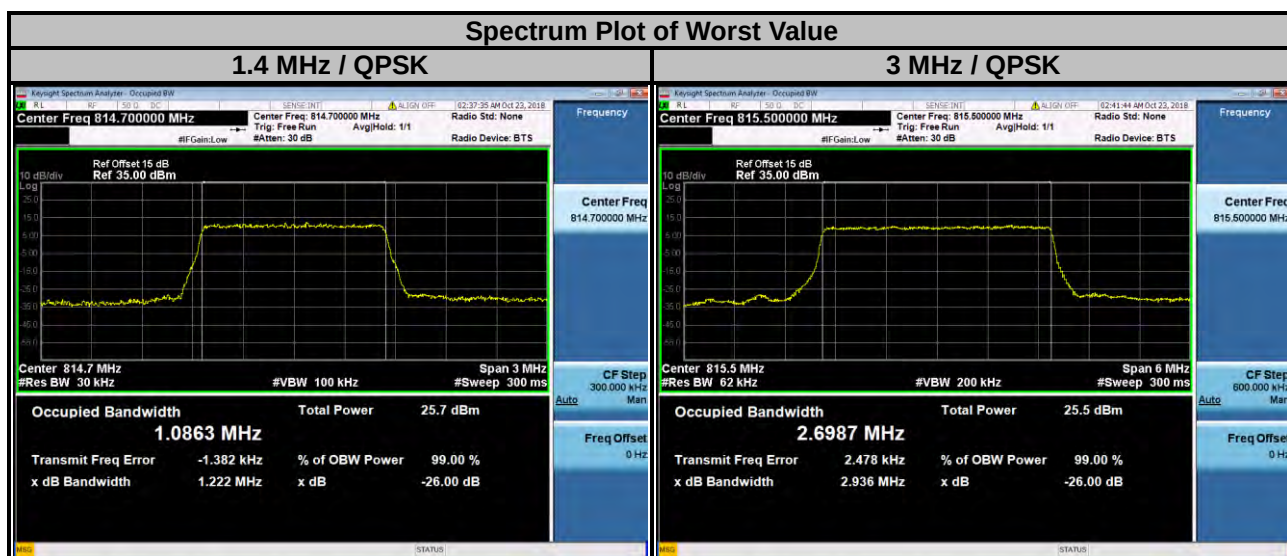
| CDMA    |                 |                       |
|---------|-----------------|-----------------------|
| Channel | Frequency (MHz) | 26 dB Bandwidth (MHz) |
| 476     | 817.9           | 1.426                 |
| 580     | 820.5           | 1.422                 |
| 684     | 823.1           | 1.423                 |



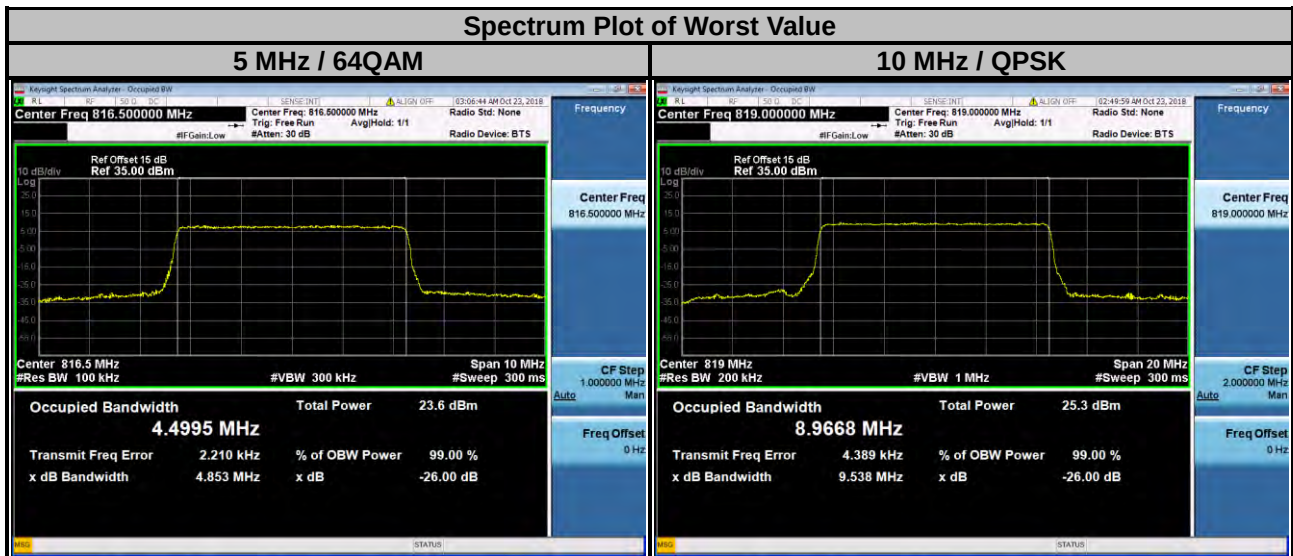
| LTE Band 14              |                 |                       |       |       |                           |                 |                       |       |
|--------------------------|-----------------|-----------------------|-------|-------|---------------------------|-----------------|-----------------------|-------|
| Channel Bandwidth: 5 MHz |                 |                       |       |       | Channel Bandwidth: 10 MHz |                 |                       |       |
| Channel                  | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |       | Channel                   | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |
|                          |                 | QPSK                  | 16QAM | 64QAM |                           |                 | QPSK                  | 16QAM |
| 23305                    | 790.5           | 4.823                 | 4.815 | 4.813 | 23330                     | 793.0           | 9.519                 | 9.509 |
| 23330                    | 793.0           | 4.815                 | 4.802 | 4.831 |                           |                 |                       |       |
| 23355                    | 795.5           | 4.821                 | 4.810 | 4.832 |                           |                 |                       |       |
|                          |                 |                       |       |       |                           |                 |                       | 9.518 |



| LTE Band 26                |                 |                       |       |       |                          |                 |                       |       |       |
|----------------------------|-----------------|-----------------------|-------|-------|--------------------------|-----------------|-----------------------|-------|-------|
| Channel Bandwidth: 1.4 MHz |                 |                       |       |       | Channel Bandwidth: 3 MHz |                 |                       |       |       |
| Channel                    | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |       | Channel                  | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |       |
|                            |                 | QPSK                  | 16QAM | 64QAM |                          |                 | QPSK                  | 16QAM | 64QAM |
| 26697                      | 814.7           | 1.222                 | 1.219 | 1.215 | 26705                    | 815.5           | 2.936                 | 2.927 | 2.901 |
| 26740                      | 819.0           | 1.222                 | 1.212 | 1.209 | 26740                    | 819.0           | 2.932                 | 2.928 | 2.902 |
| 26783                      | 823.3           | 1.218                 | 1.215 | 1.217 | 26775                    | 822.5           | 2.934                 | 2.926 | 2.903 |



| LTE Band 26              |                 |                       |       |       |                           |                 |                       |       |       |
|--------------------------|-----------------|-----------------------|-------|-------|---------------------------|-----------------|-----------------------|-------|-------|
| Channel Bandwidth: 5 MHz |                 |                       |       |       | Channel Bandwidth: 10 MHz |                 |                       |       |       |
| Channel                  | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |       | Channel                   | Frequency (MHz) | 26 dB Bandwidth (MHz) |       |       |
|                          |                 | QPSK                  | 16QAM | 64QAM |                           |                 | QPSK                  | 16QAM | 64QAM |
| 26715                    | 816.5           | 4.829                 | 4.801 | 4.853 | 26740                     | 819.0           | 9.538                 | 9.514 | 9.529 |
| 26740                    | 819.0           | 4.827                 | 4.814 | 4.816 |                           |                 |                       |       |       |
| 26765                    | 821.5           | 4.813                 | 4.800 | 4.829 |                           |                 |                       |       |       |



## 4.5 Emission Mask Measurement

### 4.5.1 Limits of Emission Mask Measurement

#### LTE Band 14

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

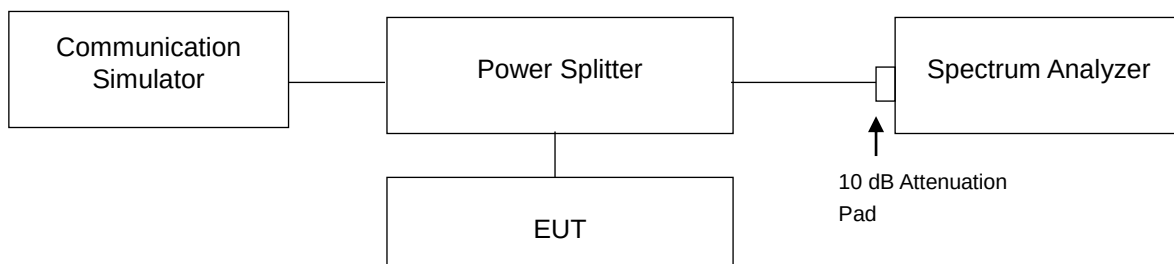
#### CDMA / LTE Band 26

According to FCC part 90.691 shall be tested the emission mask. For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f/6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

For §90.691(a), RBW=300 Hz for offset less than 37.5 kHz from channel edge and RBW=100 kHz for offsets greater than 37.5 kHz is allowed.

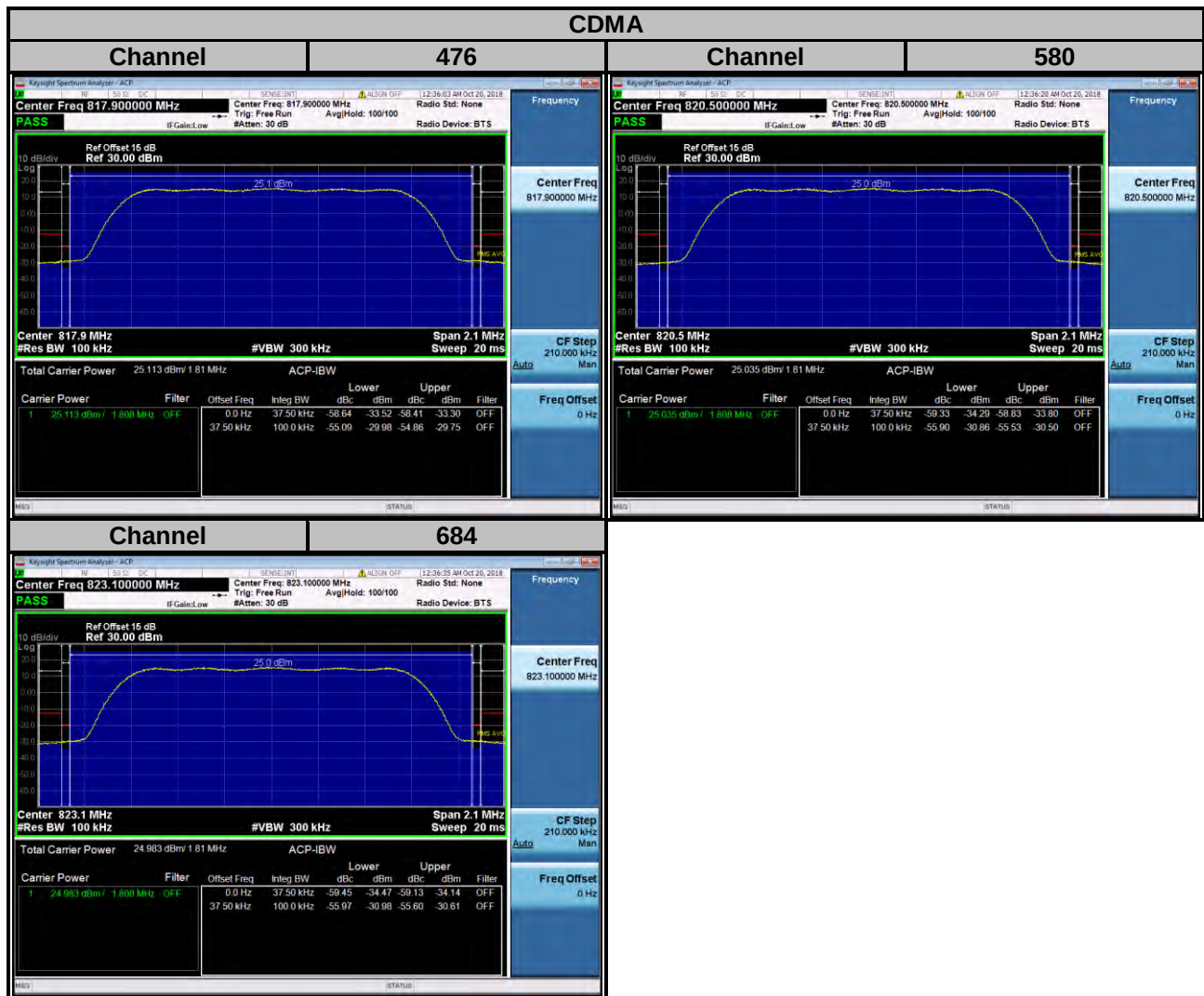
### 4.5.2 Test Setup



### 4.5.3 Test Procedures

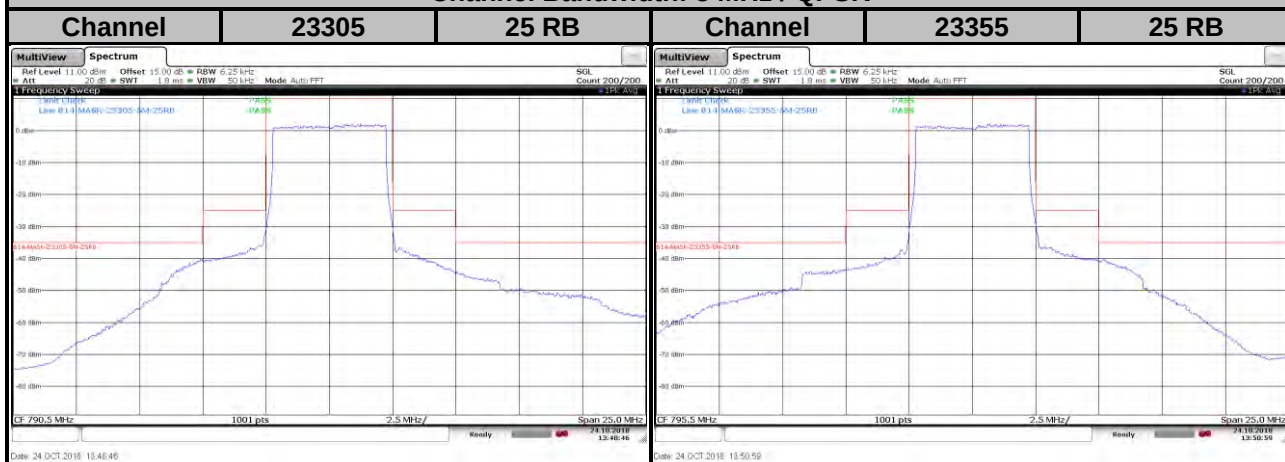
- a. The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- b. Record the test plot.

#### 4.5.4 Test Results

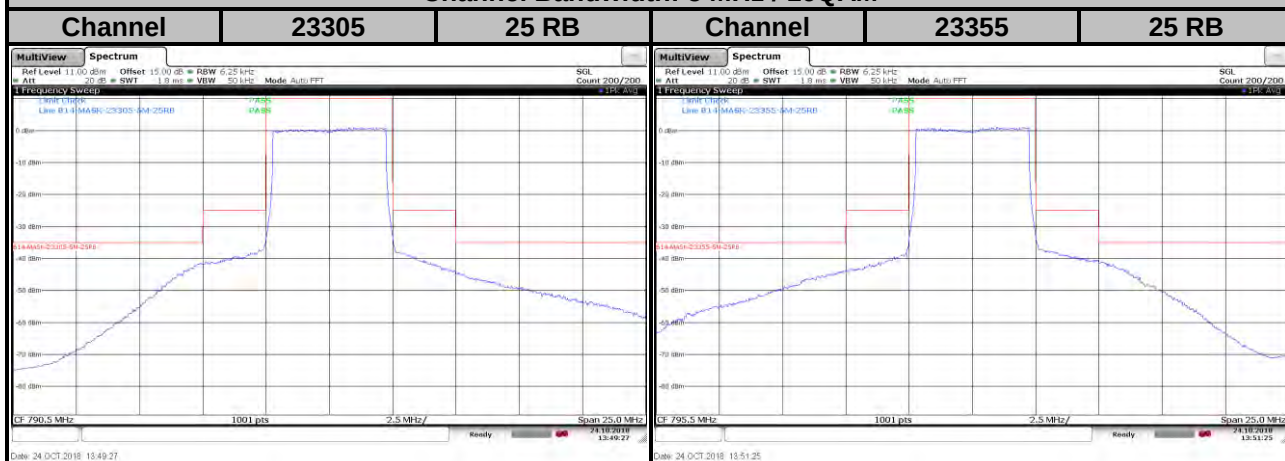


### LTE Band 14

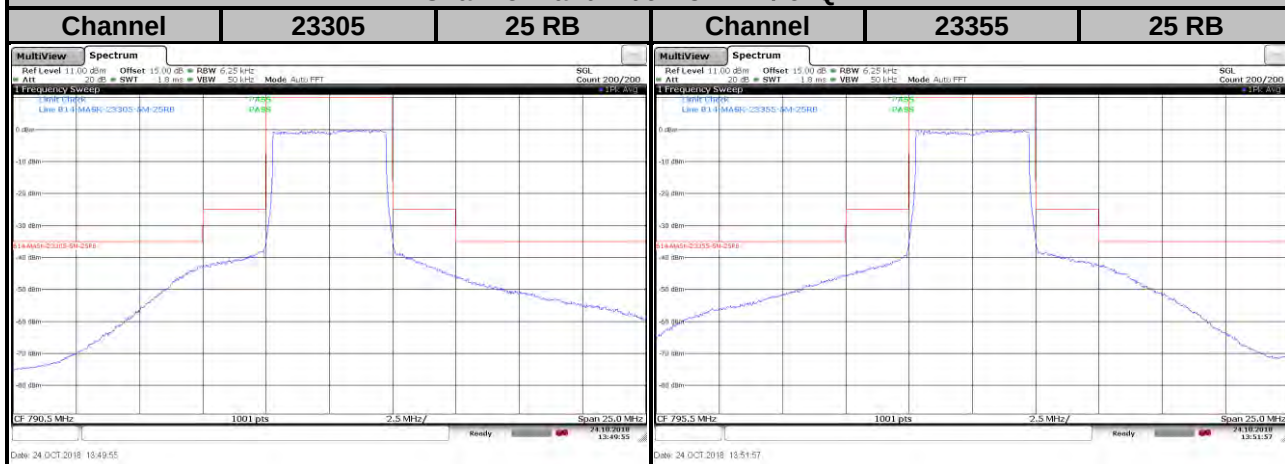
Channel Bandwidth: 5 MHz / QPSK



Channel Bandwidth: 5 MHz / 16QAM



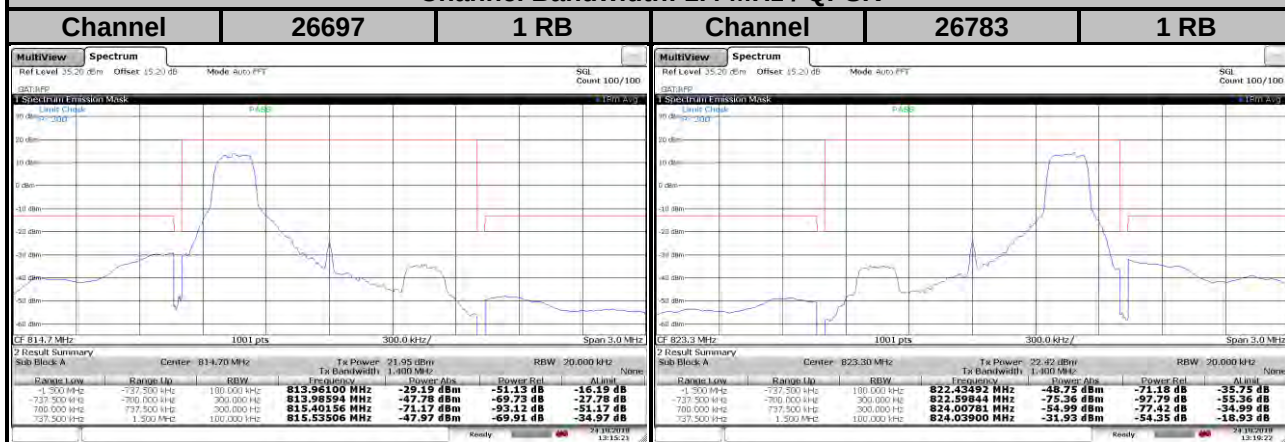
Channel Bandwidth: 5 MHz / 64QAM

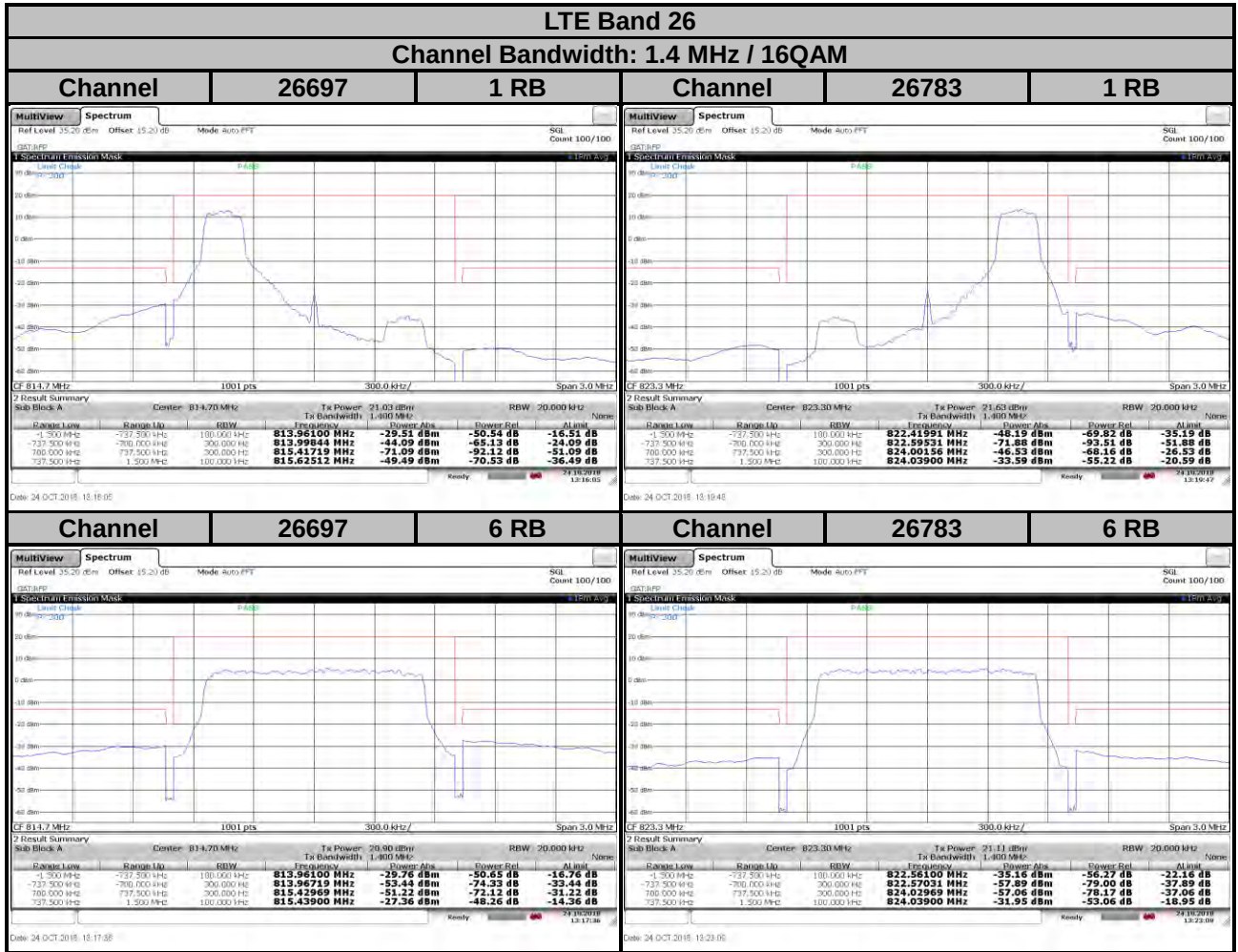


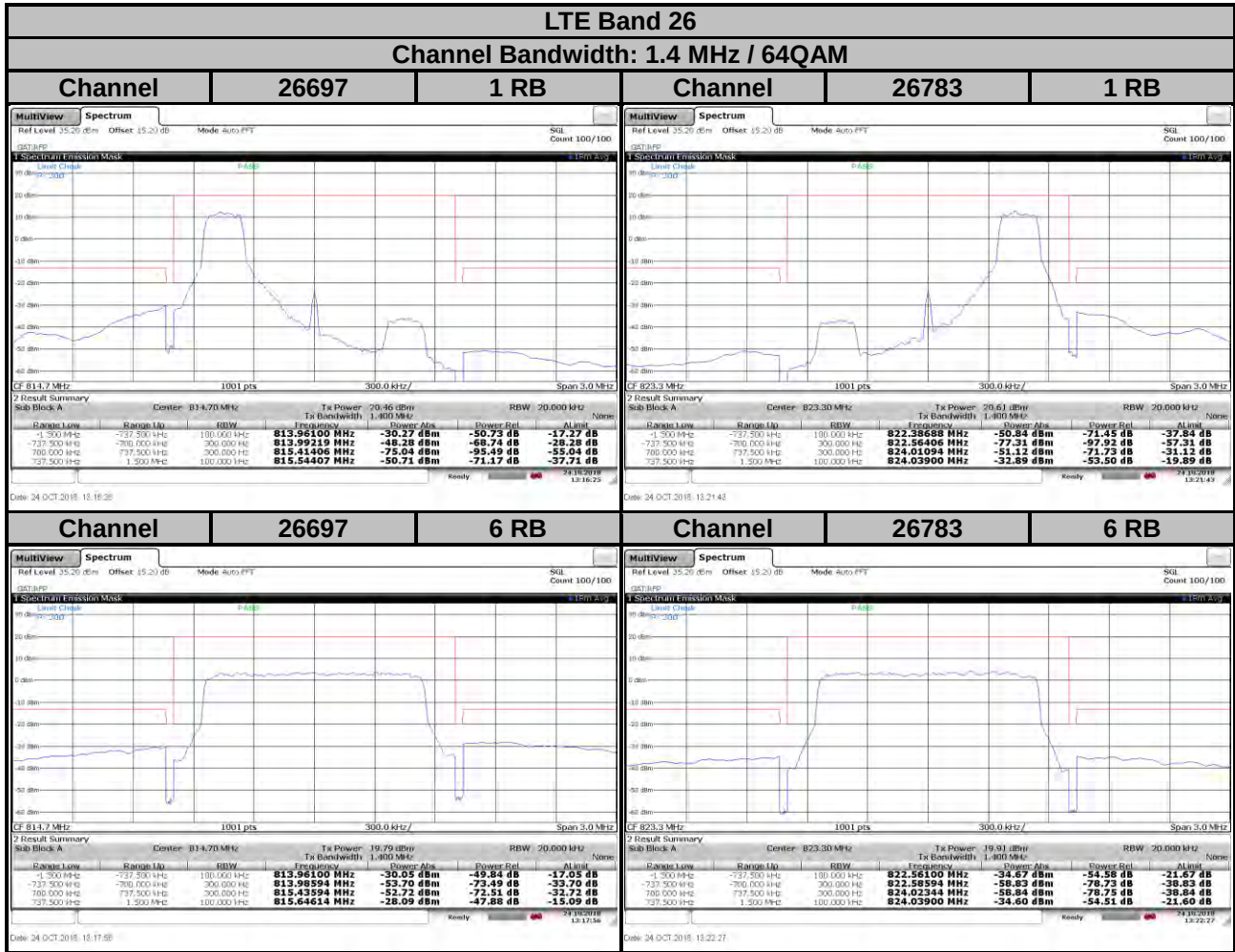


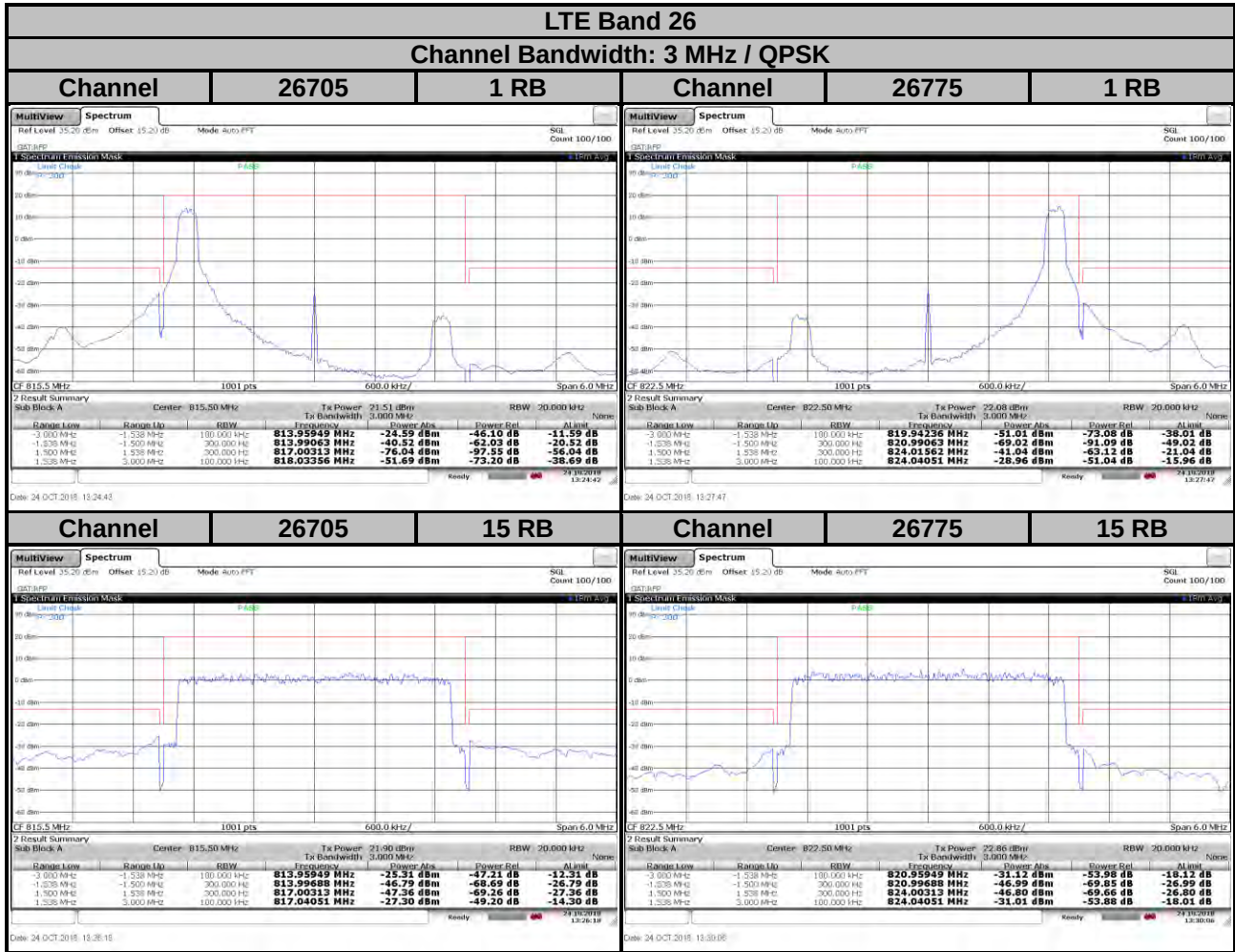
## LTE Band 26

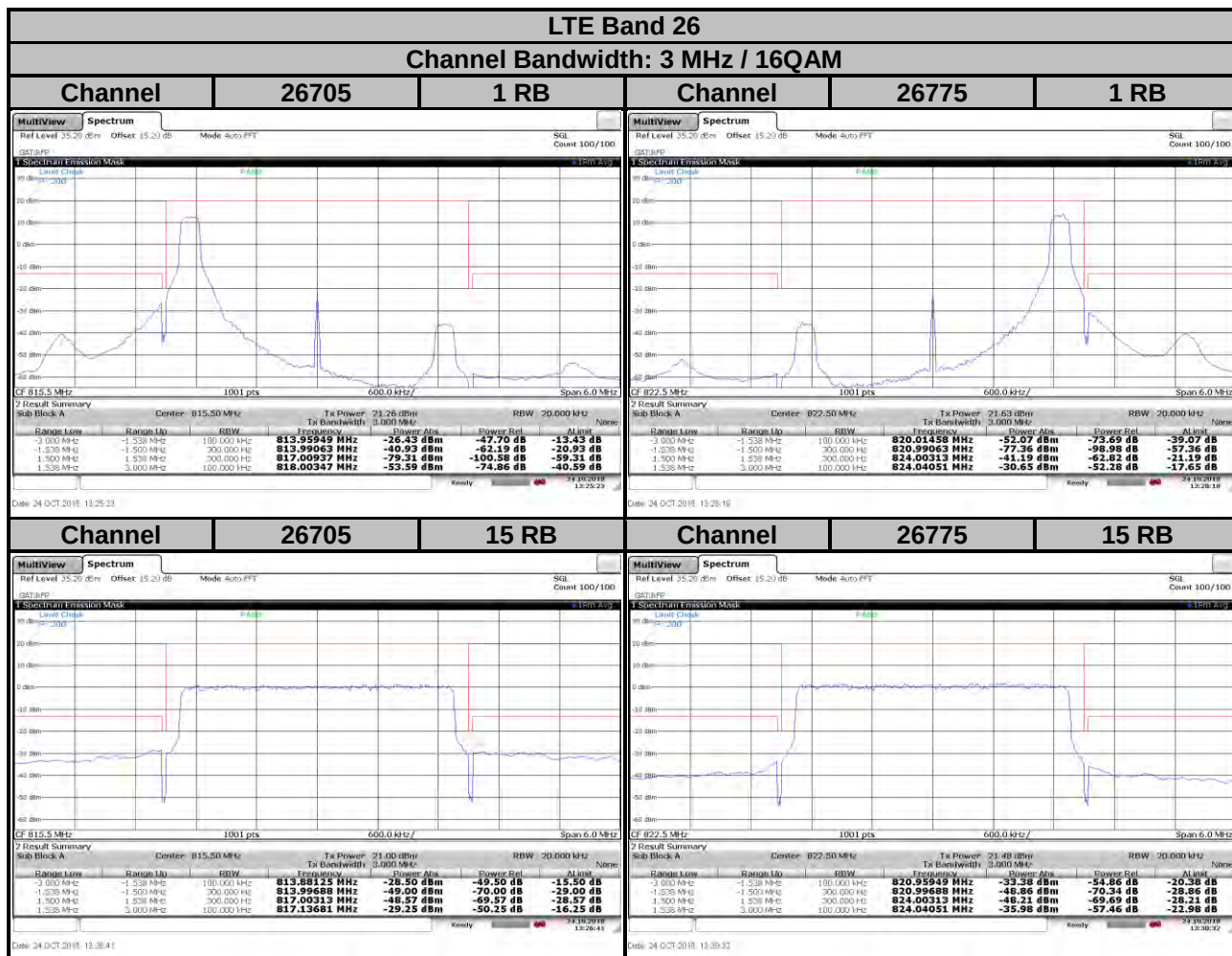
**Channel Bandwidth: 1.4 MHz / QPSK**

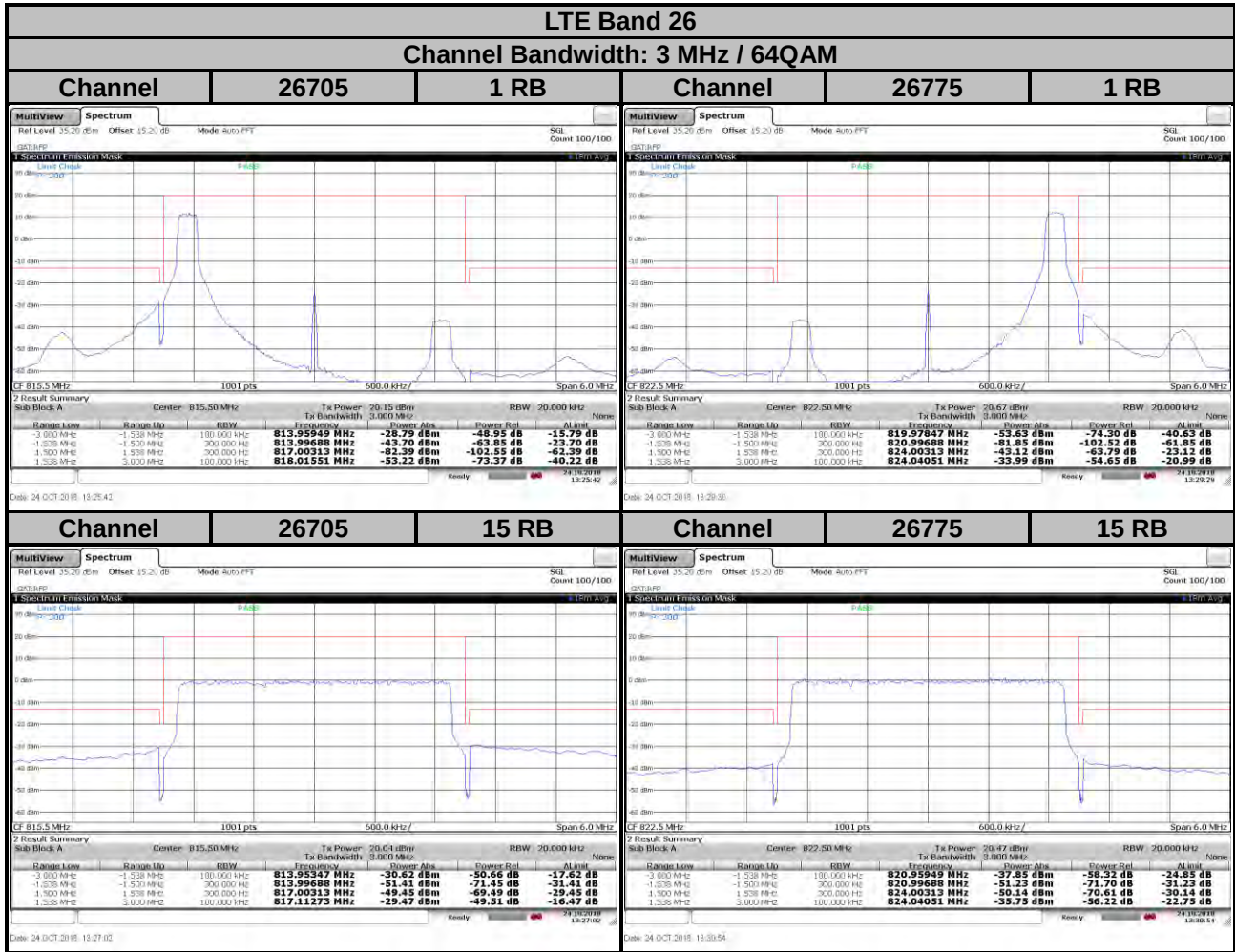






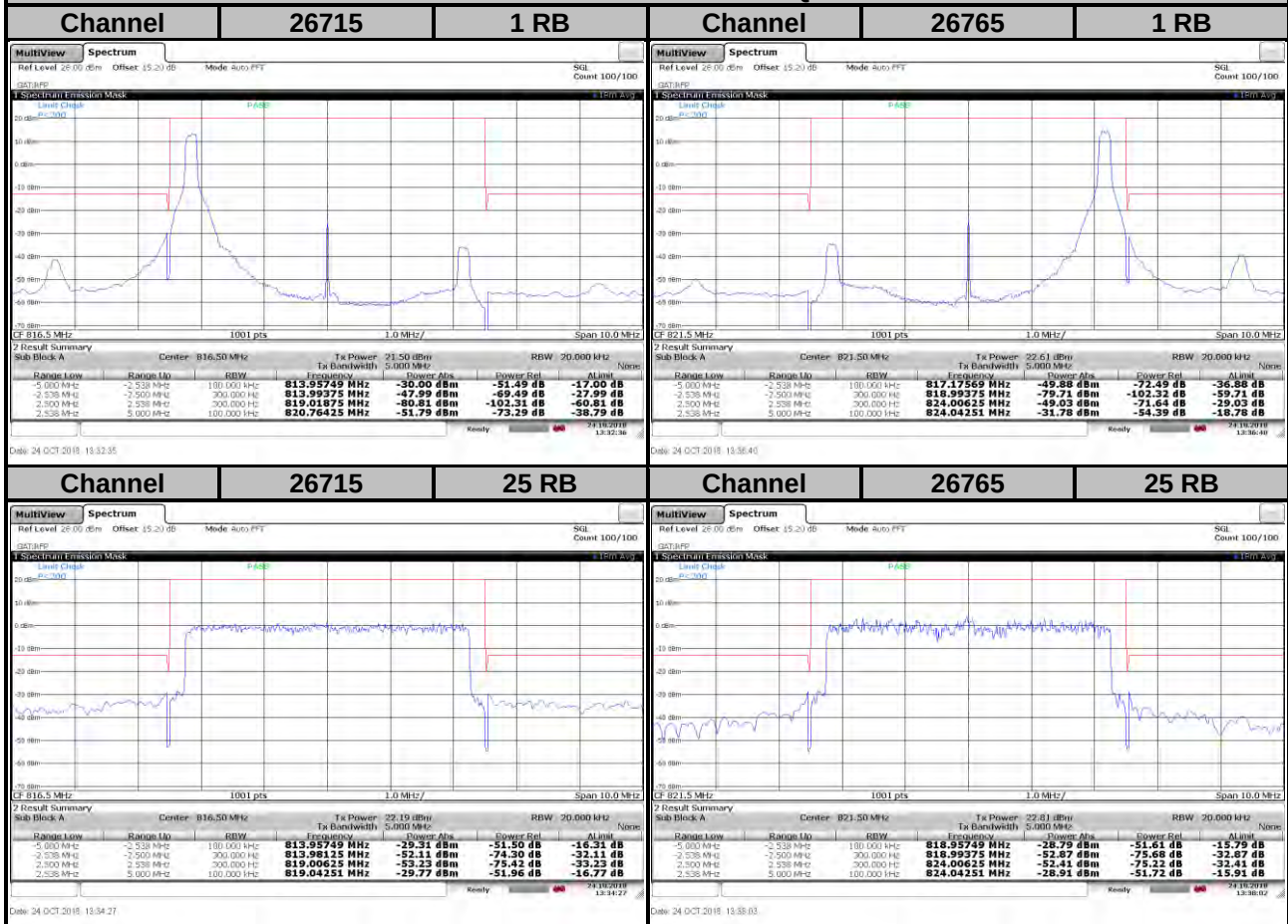


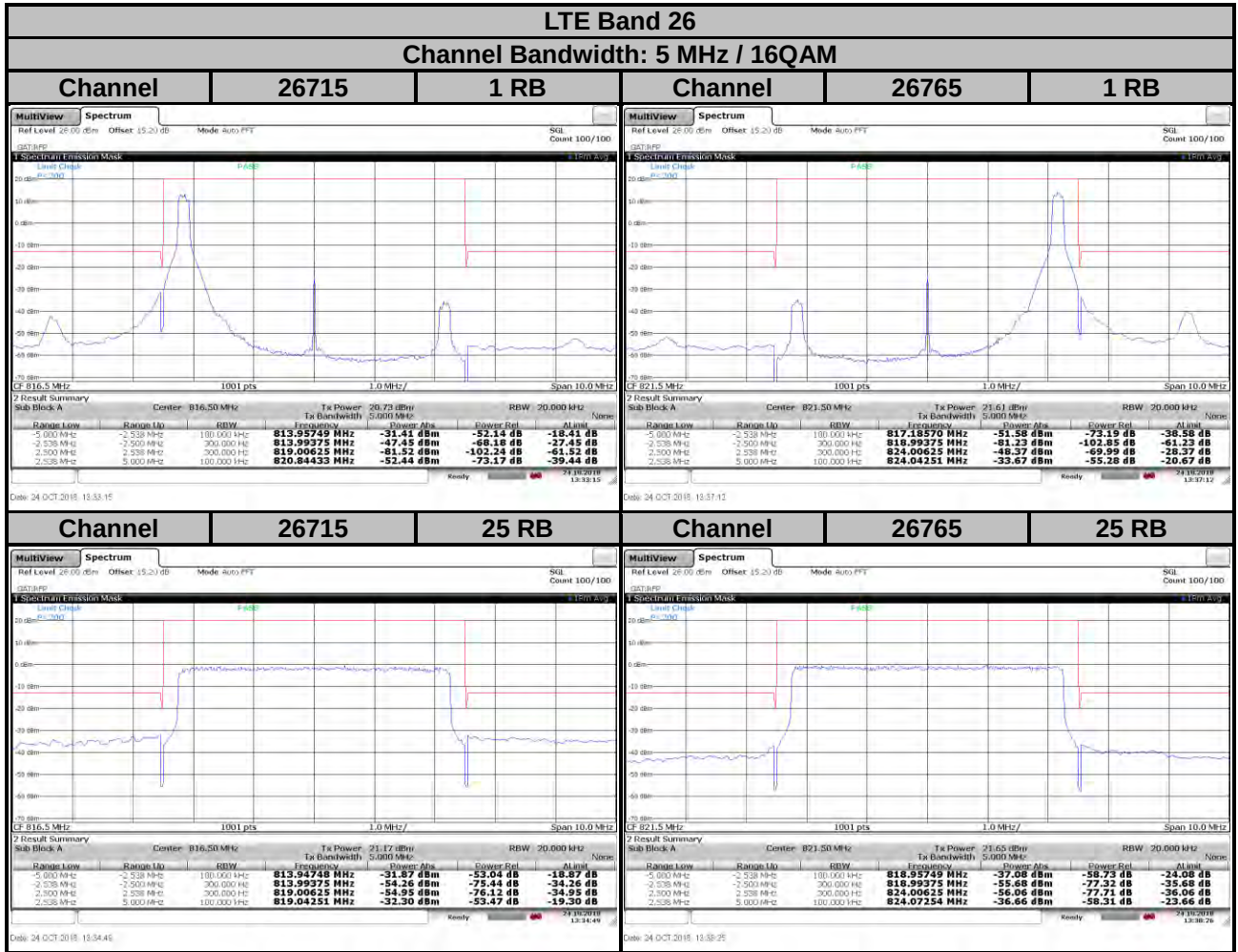




## LTE Band 26

### Channel Bandwidth: 5 MHz / QPSK

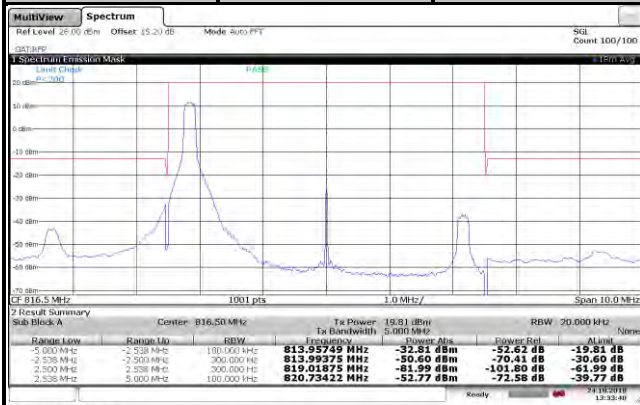




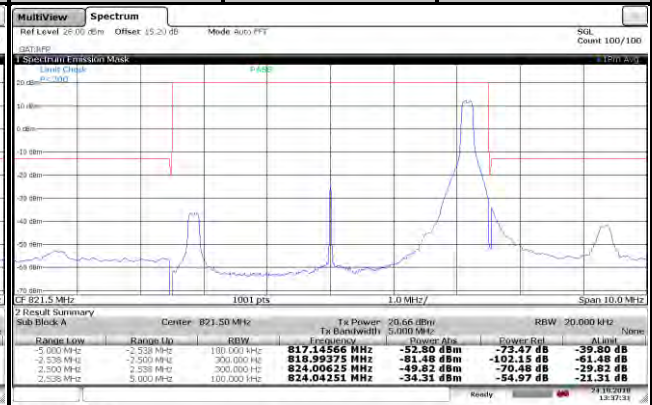
## LTE Band 26

Channel Bandwidth: 5 MHz / 64QAM

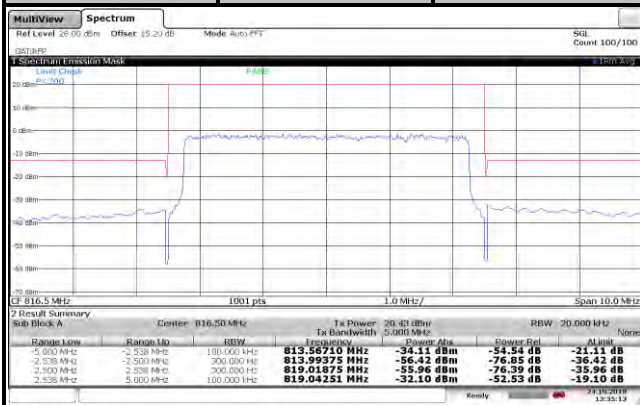
Channel 26715 1 RB



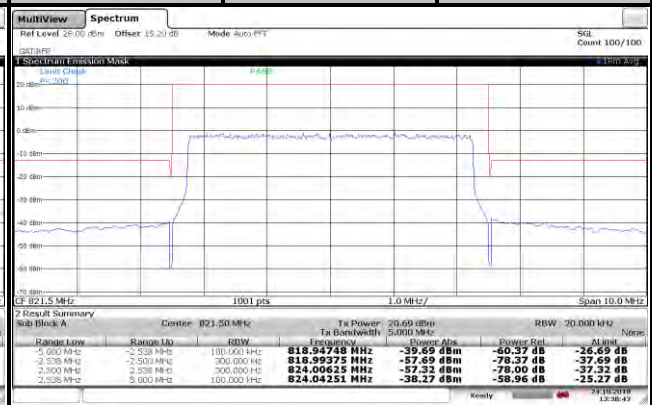
Channel 26765 1 RB



Channel 26715 25 RB



Channel 26765 25 RB



## LTE Band 26

Channel Bandwidth: 10 MHz / QPSK

Channel

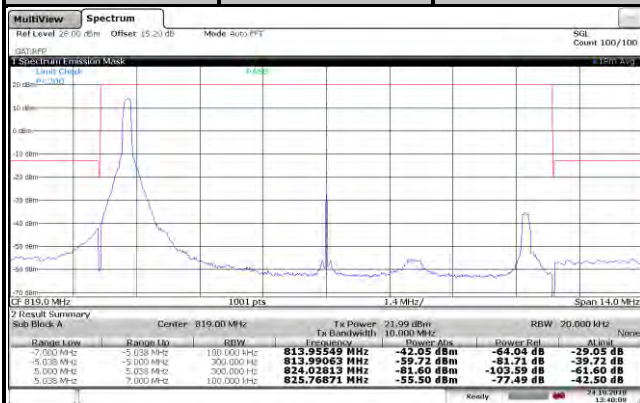
26740

1 RB

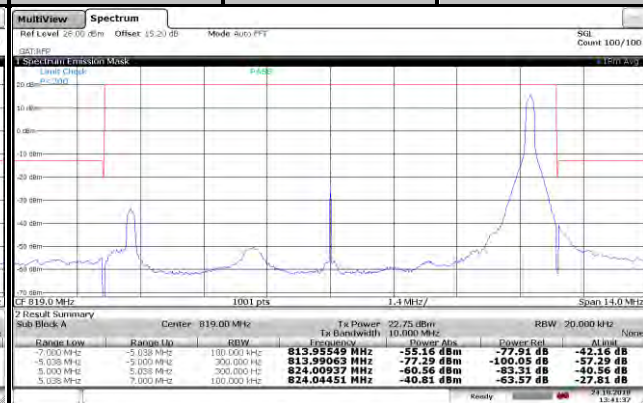
Channel

26740

1 RB



Date 24 OCT 2018 15:40:06

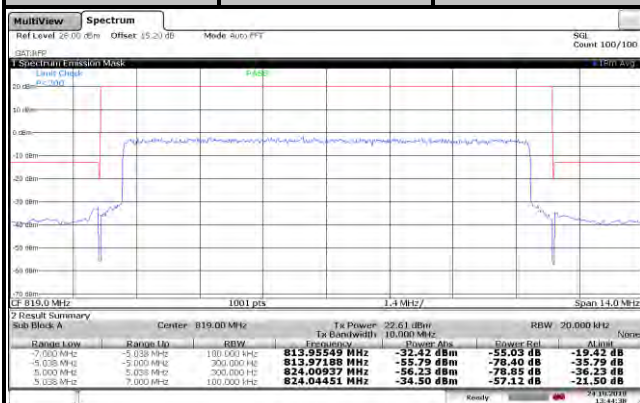


Date 24 OCT 2018 15:41:37

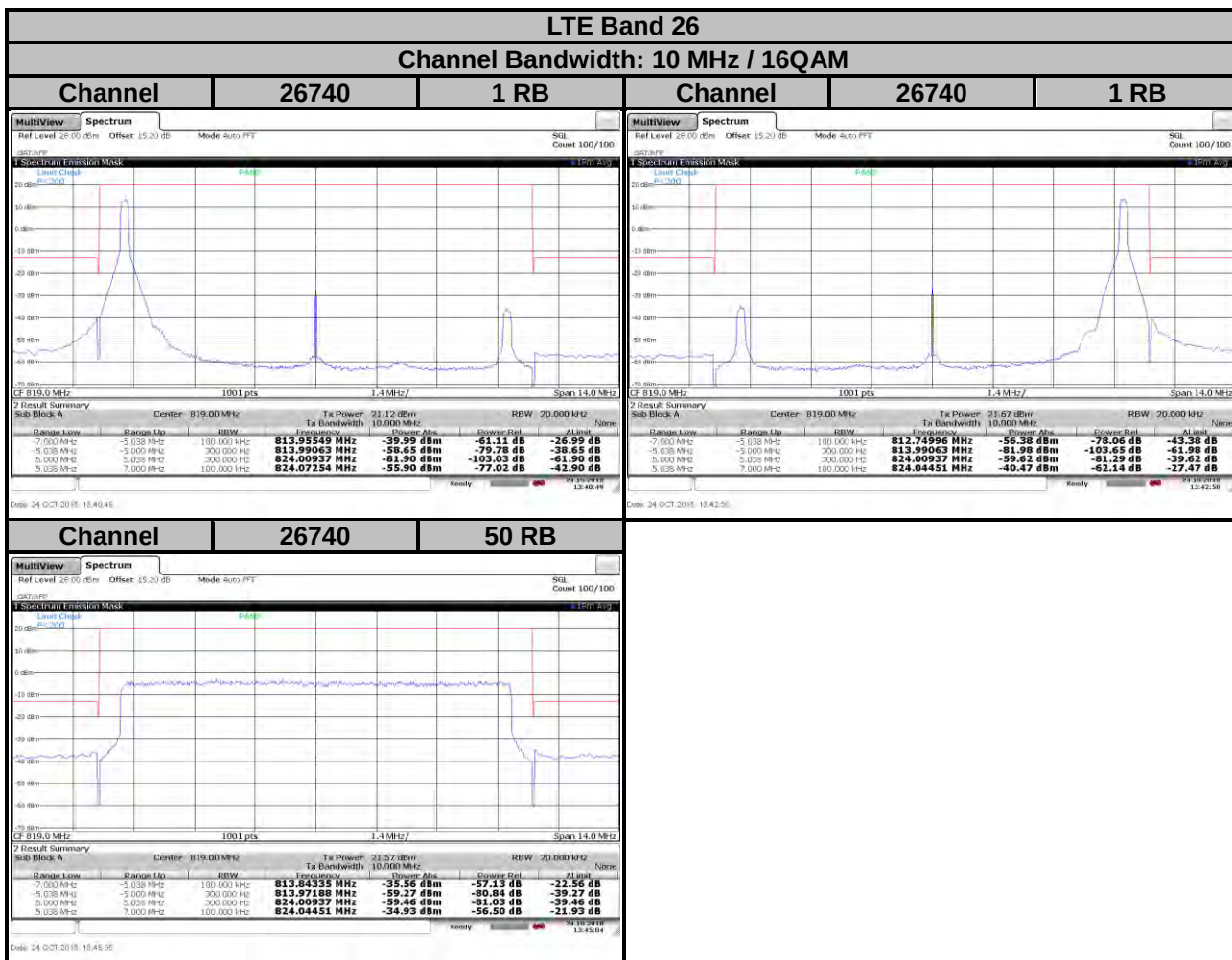
Channel

26740

50 RB



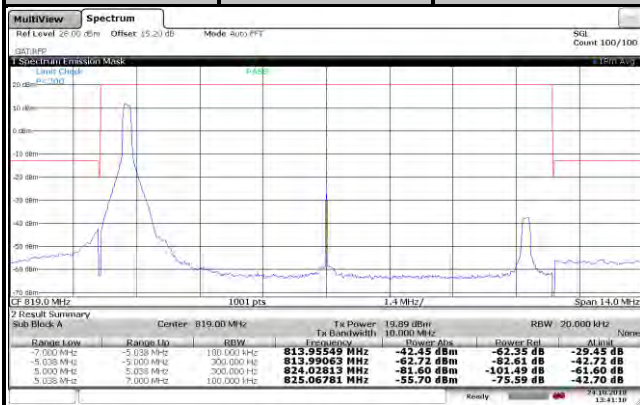
Date 24 OCT 2018 15:44:38



## LTE Band 26

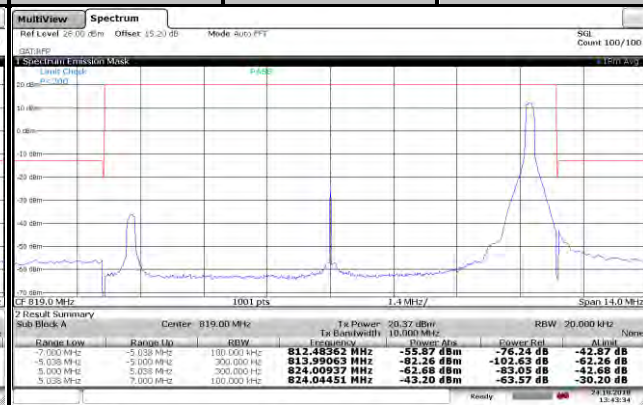
Channel Bandwidth: 10 MHz / 64QAM

Channel 26740 1 RB



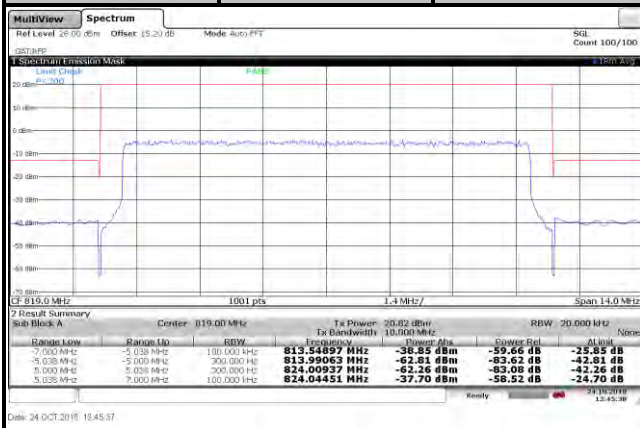
Date 24 OCT 2018 15:41:10

Channel 26740 1 RB



Date 24 OCT 2018 15:42:34

Channel 26740 1 RB



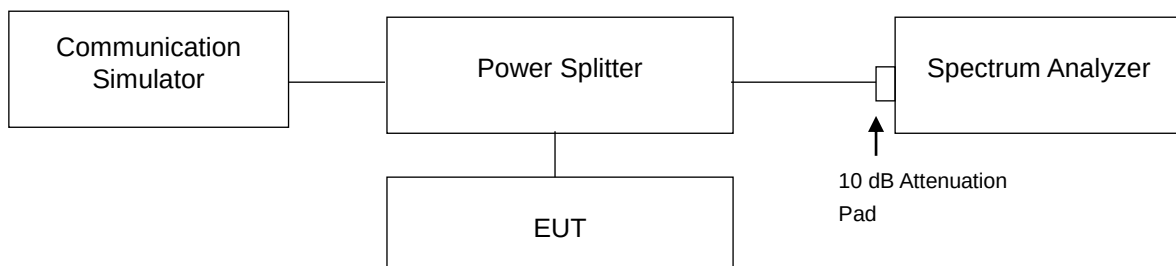
Date 24 OCT 2018 15:45:37

## 4.6 Band Edge Measurement

### 4.6.1 Limits of Band Edge Measurement

- (1) On all frequencies between 769 - 775 MHz and 799 - 805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769 - 775 MHz and 799 - 805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775 - 788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log (P)$ .

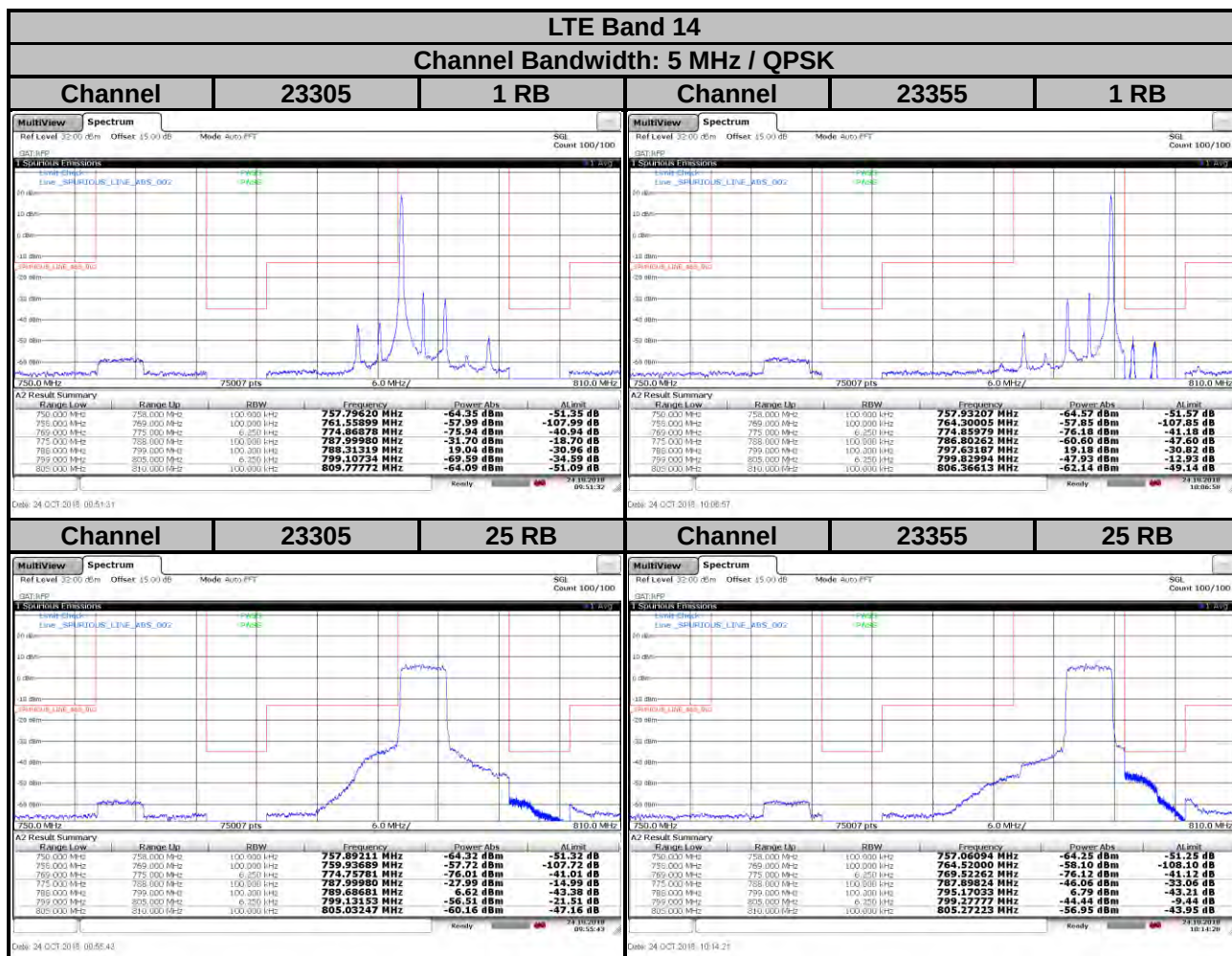
### 4.6.2 Test Setup

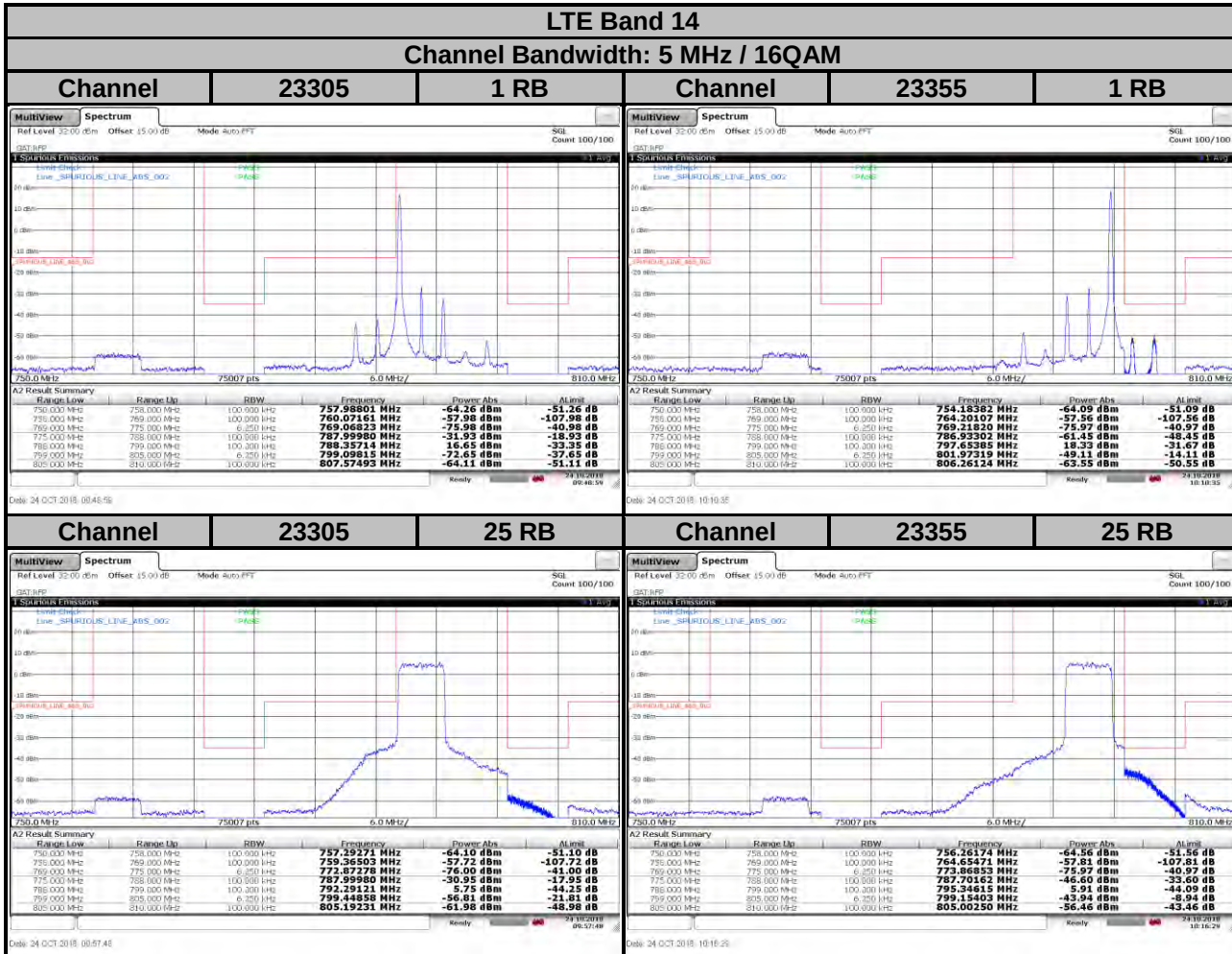


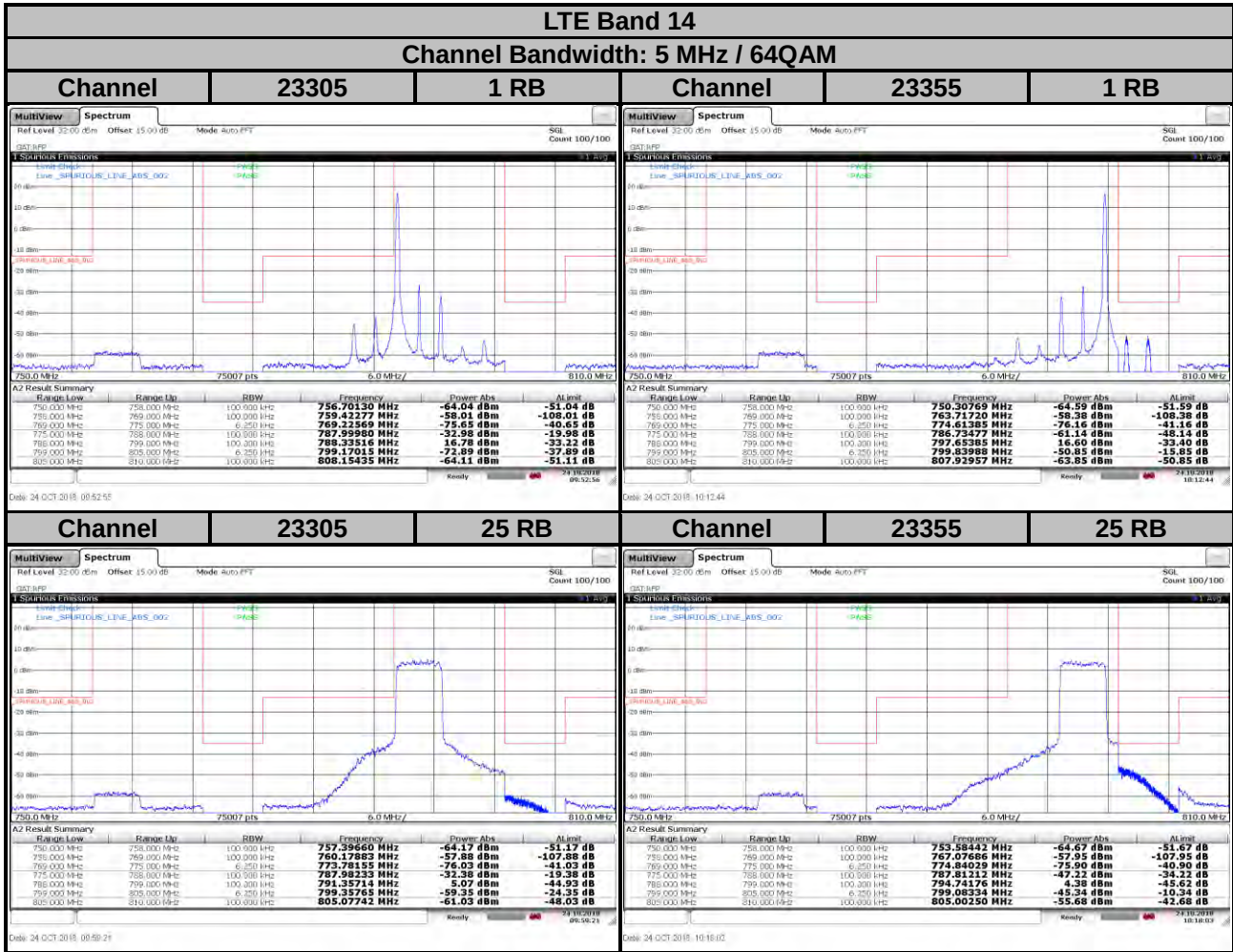
### 4.6.3 Test Procedures

- a. All measurements were done at low and high operational frequency range.
- b. The band edge measurement used the power splitter via EUT RF power connector between signal generator and spectrum analyzer. This splitter loss, attenuator loss and cable loss are the worst loss 15 dB in the transmitted path track.
- c. Record the max. trace plot into the test report.

#### 4.6.4 Test Results





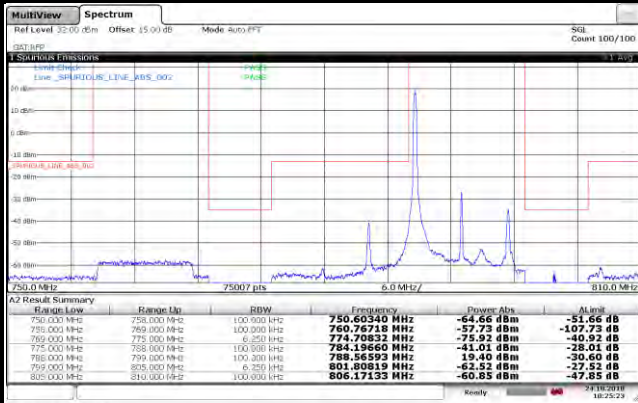


## LTE Band 14

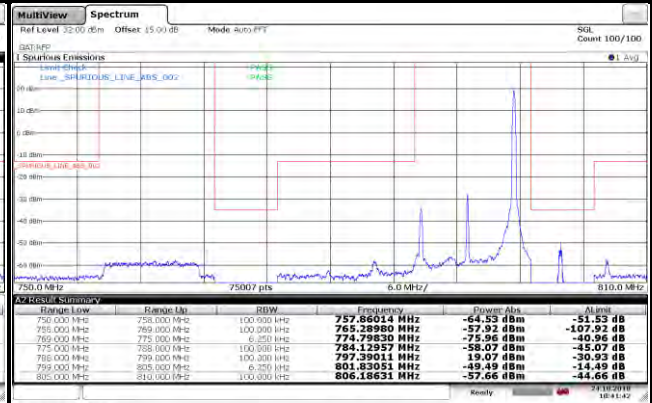
Channel Bandwidth: 10 MHz / QPSK

Channel 23330 1 RB

Channel 23330 1 RB

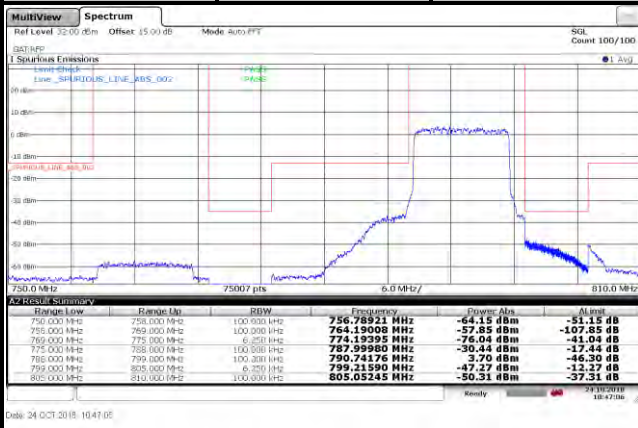


Date: 24 OCT 2018, 10:25:22



Date: 24 OCT 2018, 10:41:42

Channel 23330 50 RB

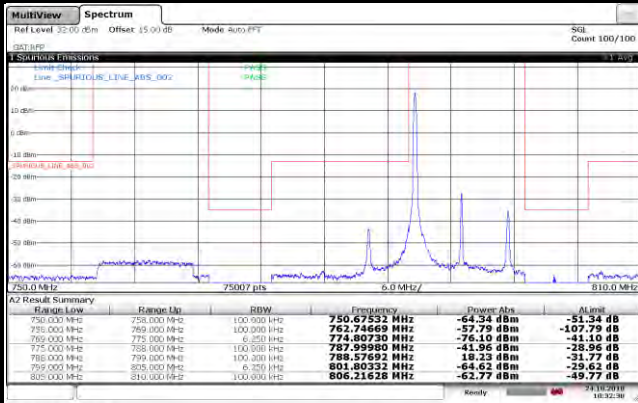


Date: 24 OCT 2018, 10:47:06

## LTE Band 14

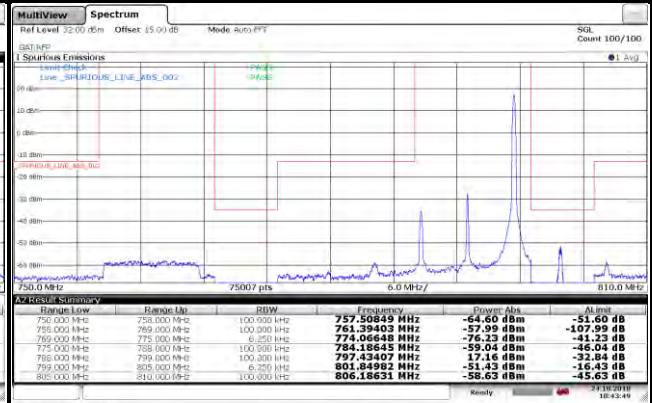
Channel Bandwidth: 10 MHz / 16QAM

Channel 23330 1 RB



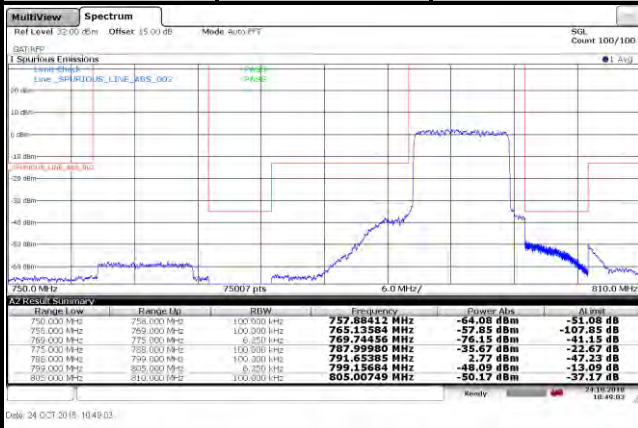
Date 24 OCT 2018 10:32:25

Channel 23330 1 RB



Date 24 OCT 2018 10:41:46

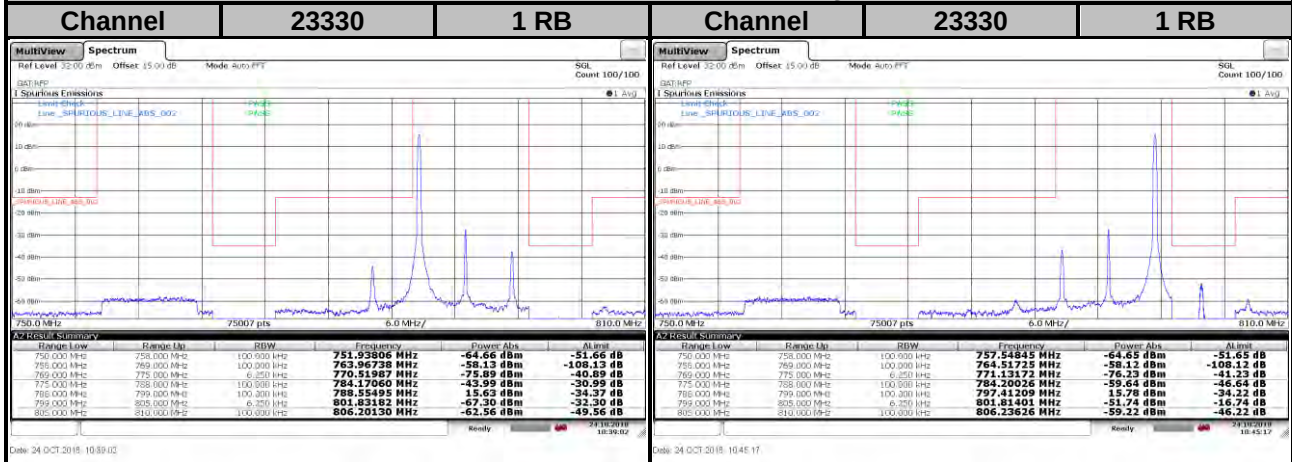
Channel 23330 50 RB



Date 24 OCT 2018 10:40:03

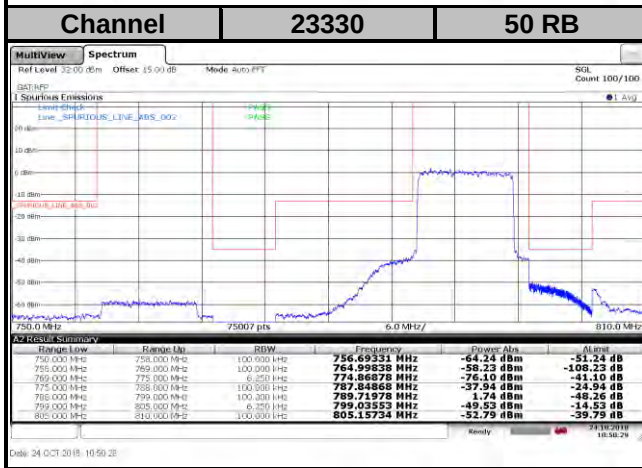
## LTE Band 14

Channel Bandwidth: 10 MHz / 64QAM



Date: 24 OCT 2018, 10:59:02

Date: 24 OCT 2018, 10:45:17



Date: 24 OCT 2018, 10:59:03

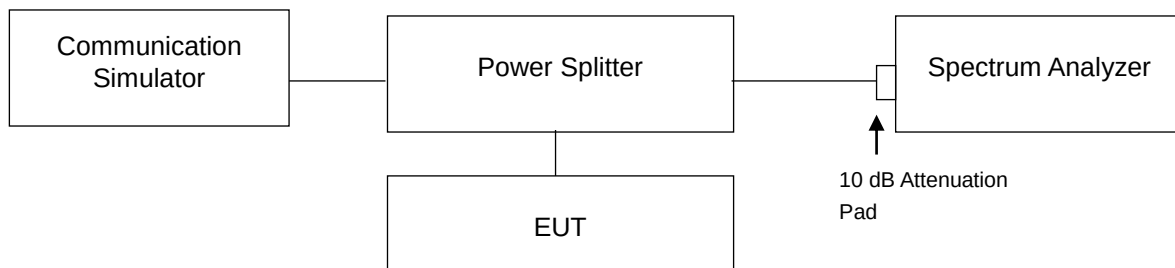
## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

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

On all frequencies between 769 – 775 MHz and 799 – 805 MHz, by a factor not less than  $65 + 10 \log(P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.

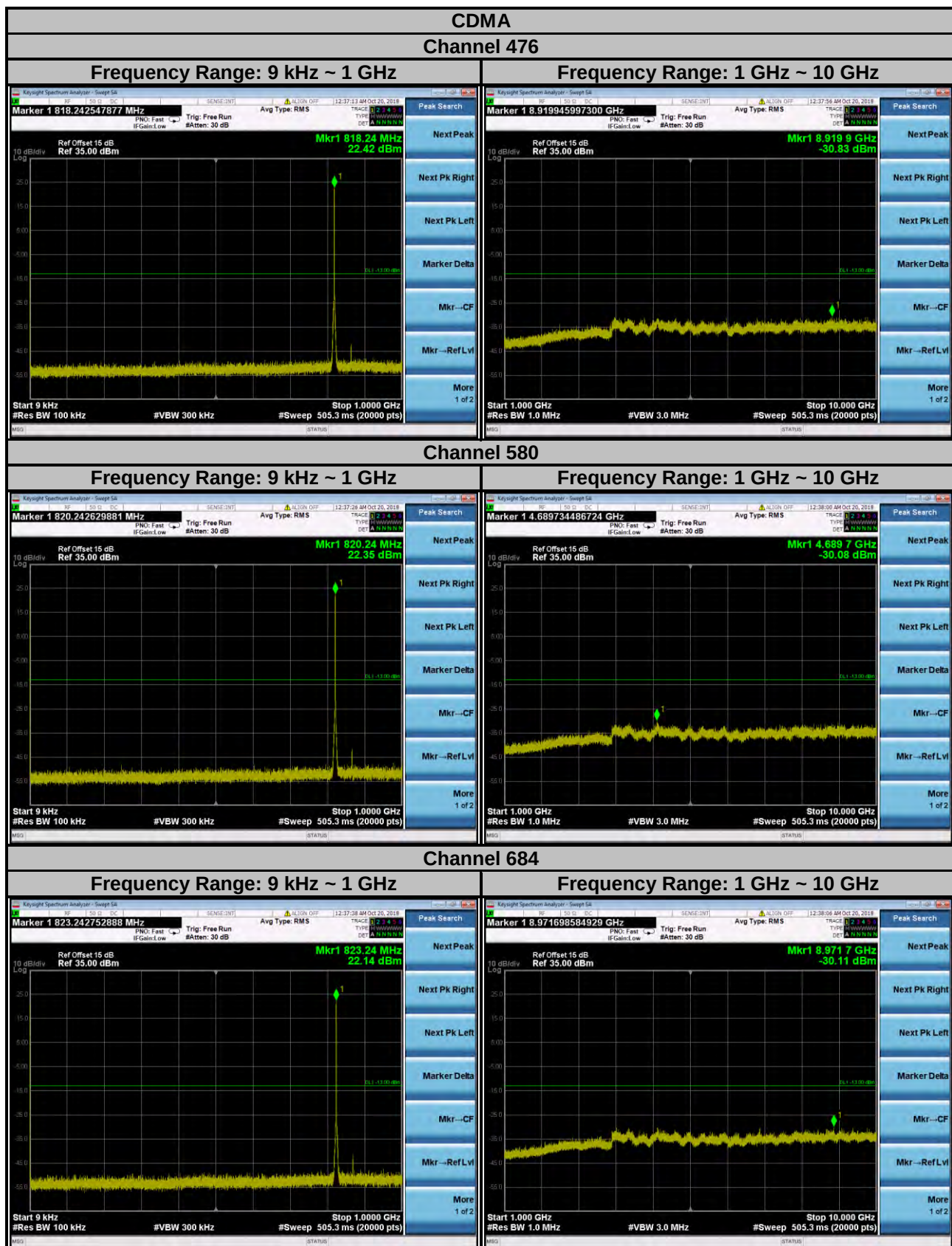
### 4.7.2 Test Setup



### 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 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz are used for conducted emission measurement.
- Measuring frequency range is from 1 GHz to 10 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz are used for conducted emission measurement.

#### 4.7.4 Test Results



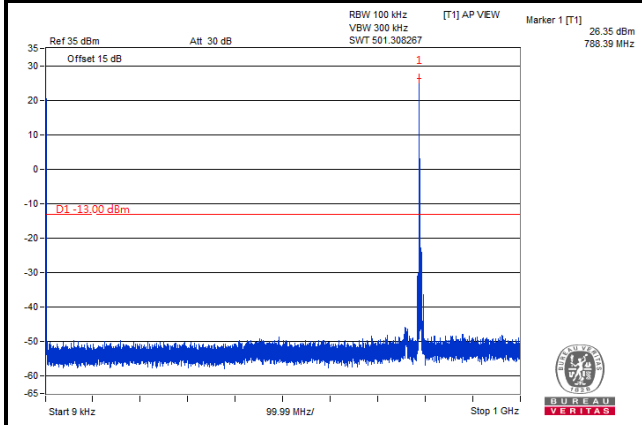
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

### LTE Band 14

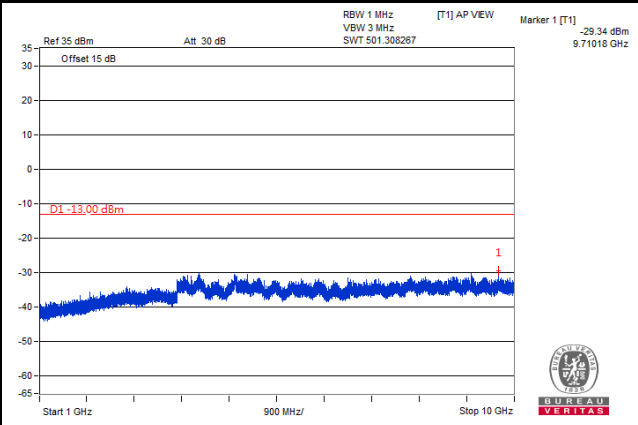
Channel Bandwidth: 5 MHz

Channel 23305

Frequency Range: 9 kHz ~ 1 GHz

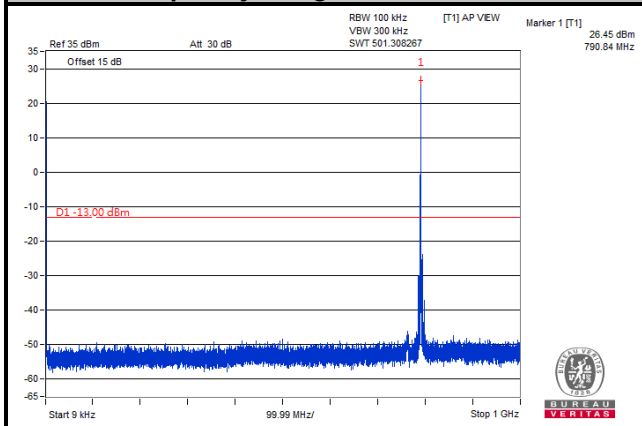


Frequency Range: 1 GHz ~ 10 GHz

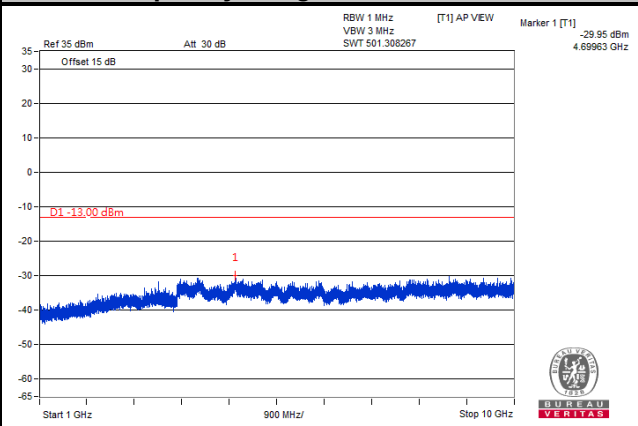


Channel 23330

Frequency Range: 9 kHz ~ 1 GHz

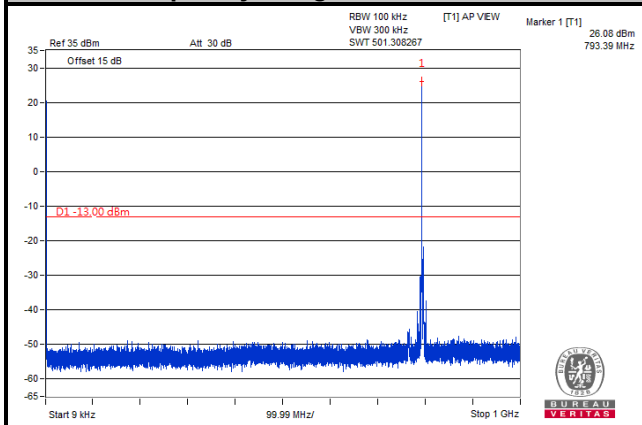


Frequency Range: 1 GHz ~ 10 GHz

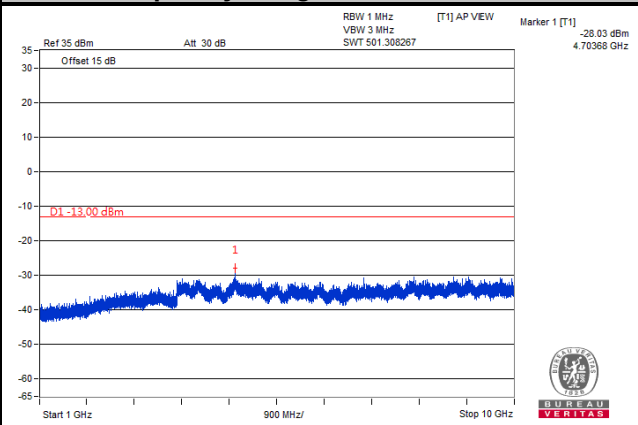


Channel 23355

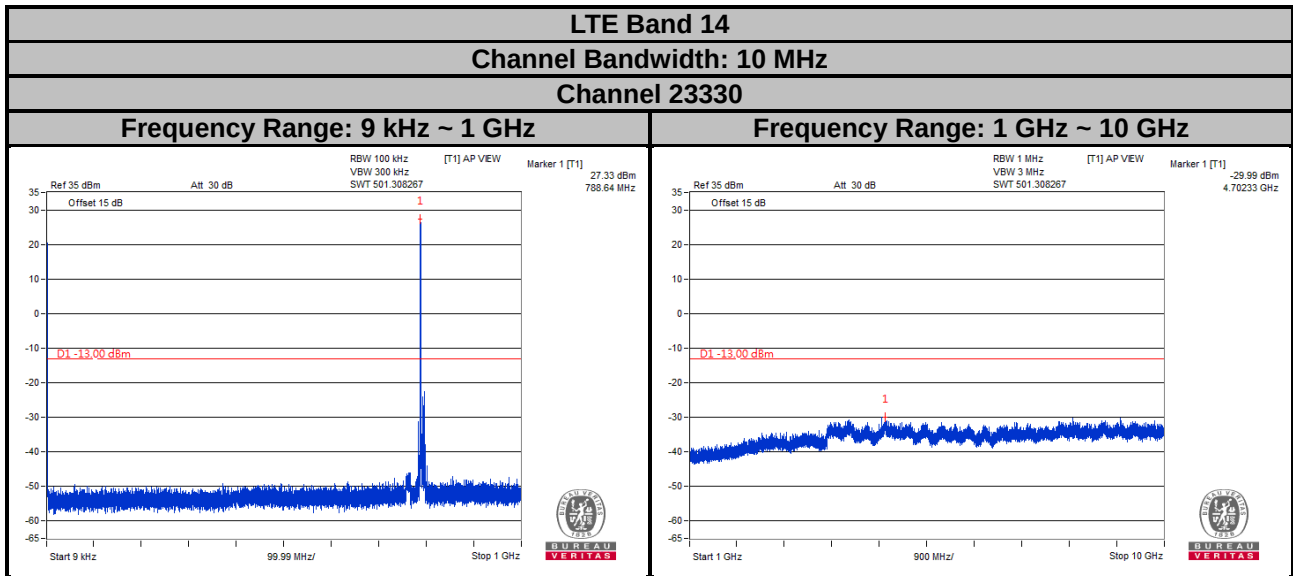
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



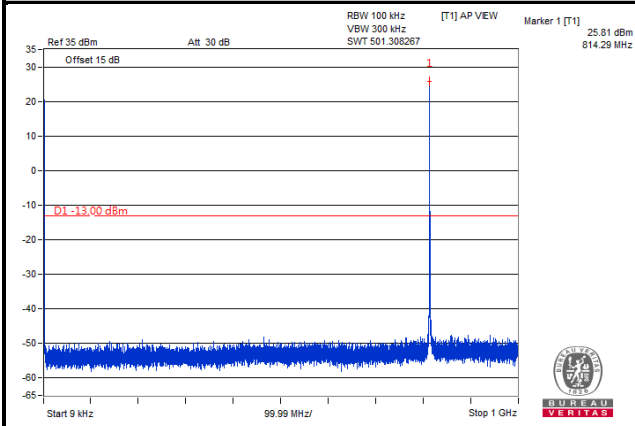
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## LTE Band 26

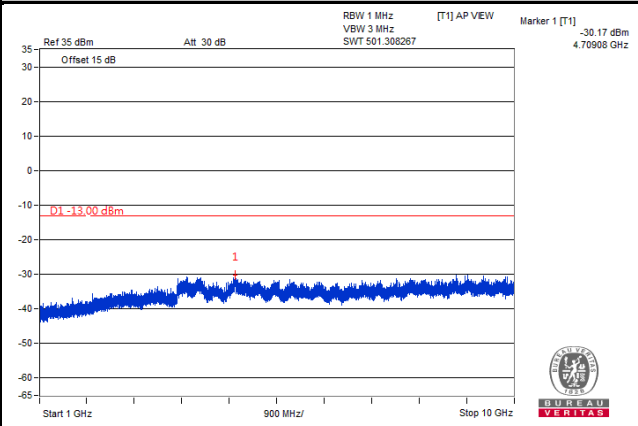
Channel Bandwidth: 1.4 MHz

Channel 26697

Frequency Range: 9 kHz ~ 1 GHz

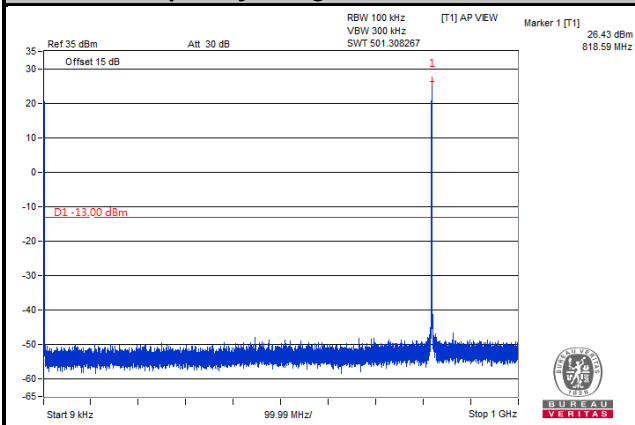


Frequency Range: 1 GHz ~ 10 GHz

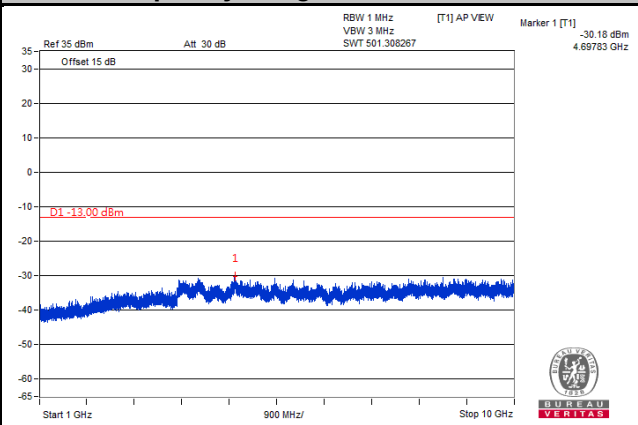


Channel 26740

Frequency Range: 9 kHz ~ 1 GHz

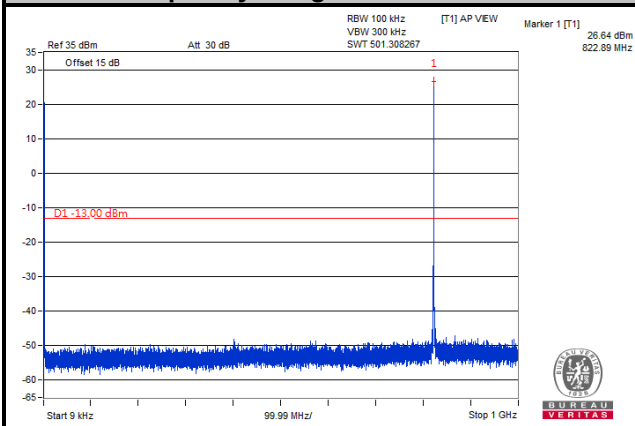


Frequency Range: 1 GHz ~ 10 GHz

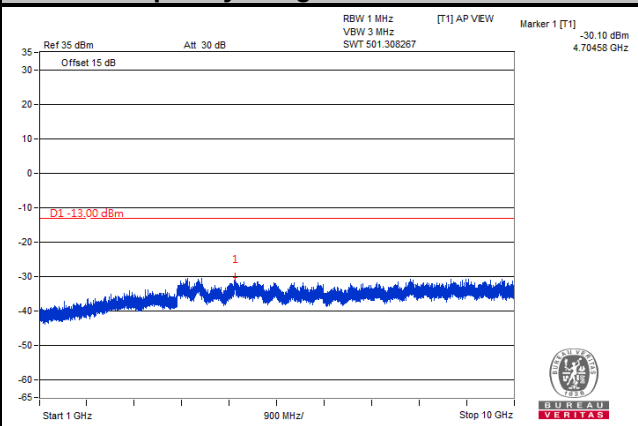


Channel 26783

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



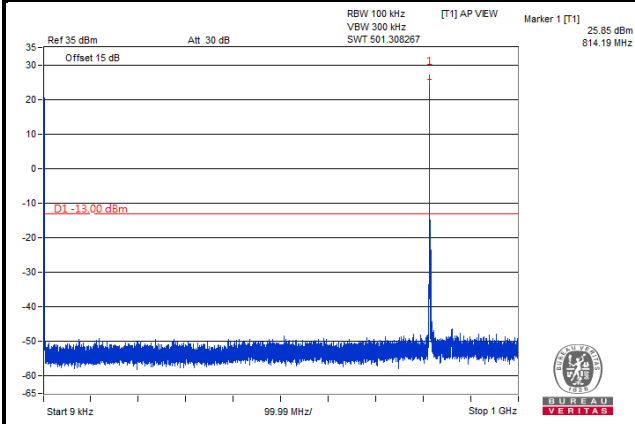
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## LTE Band 26

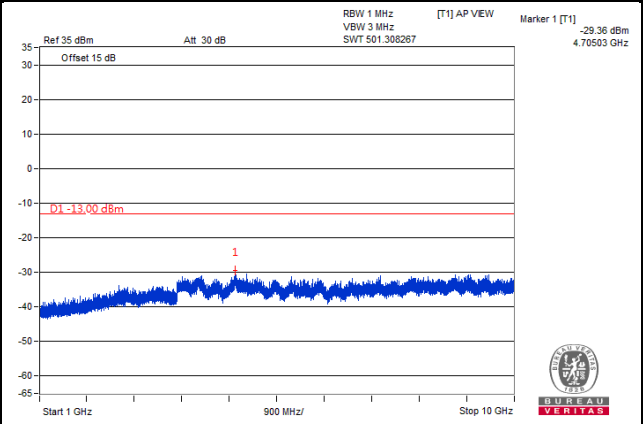
Channel Bandwidth: 3 MHz

Channel 26705

Frequency Range: 9 kHz ~ 1 GHz

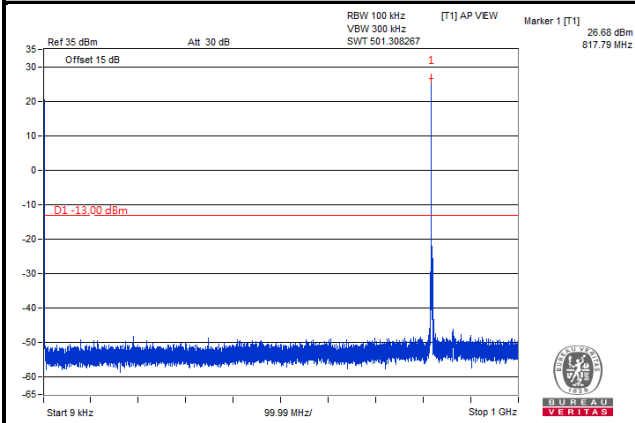


Frequency Range: 1 GHz ~ 10 GHz

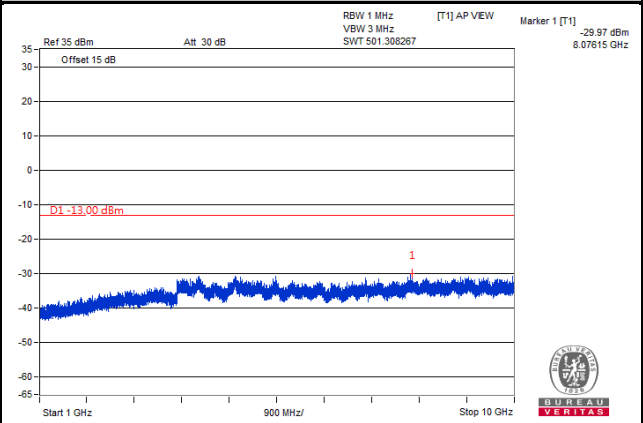


Channel 26740

Frequency Range: 9 kHz ~ 1 GHz

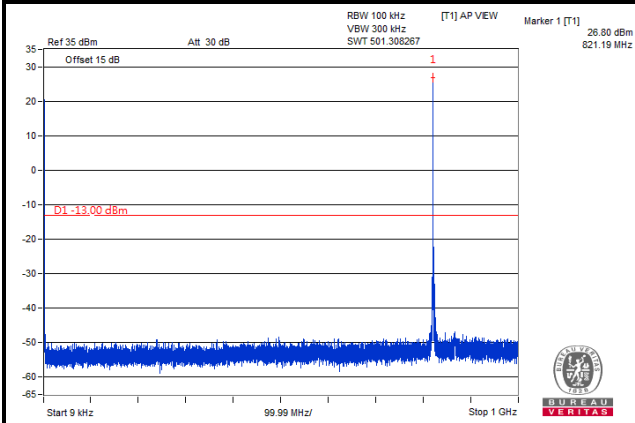


Frequency Range: 1 GHz ~ 10 GHz

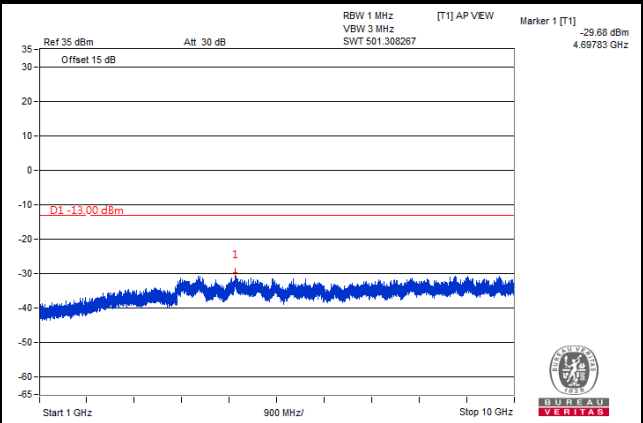


Channel 26775

Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



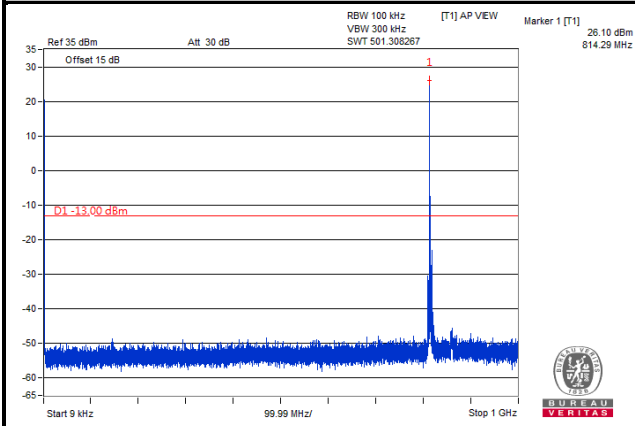
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## LTE Band 26

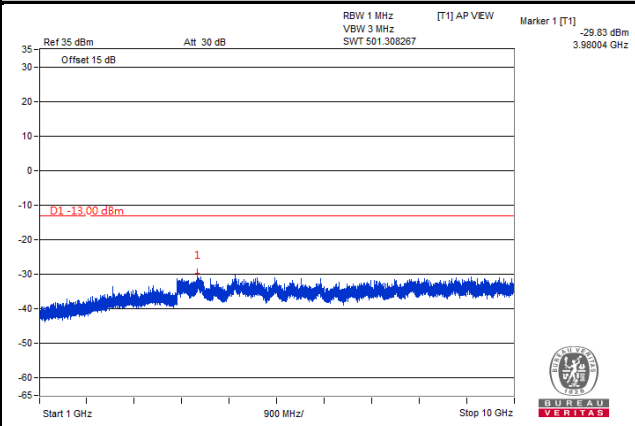
Channel Bandwidth: 5 MHz

Channel 26715

Frequency Range: 9 kHz ~ 1 GHz

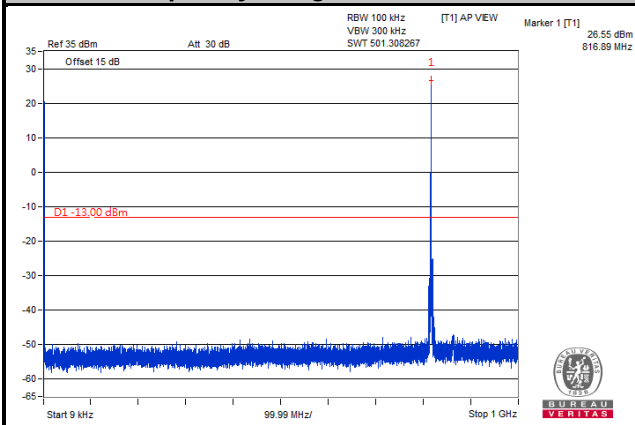


Frequency Range: 1 GHz ~ 10 GHz

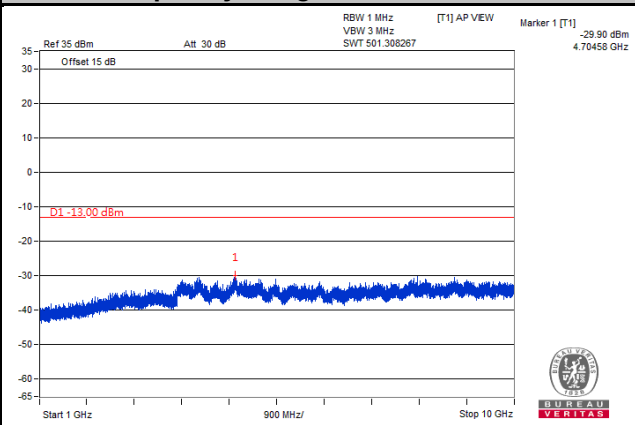


Channel 26740

Frequency Range: 9 kHz ~ 1 GHz

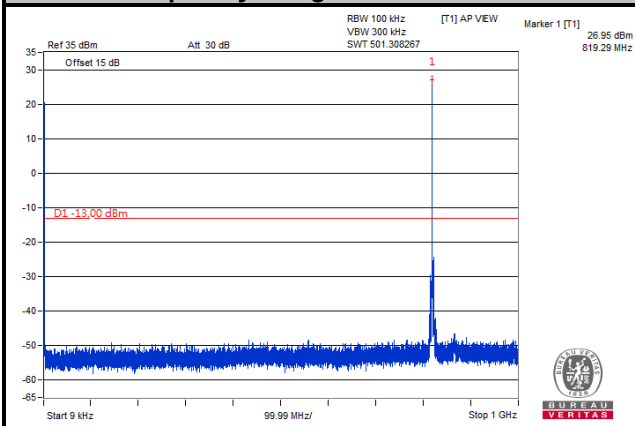


Frequency Range: 1 GHz ~ 10 GHz

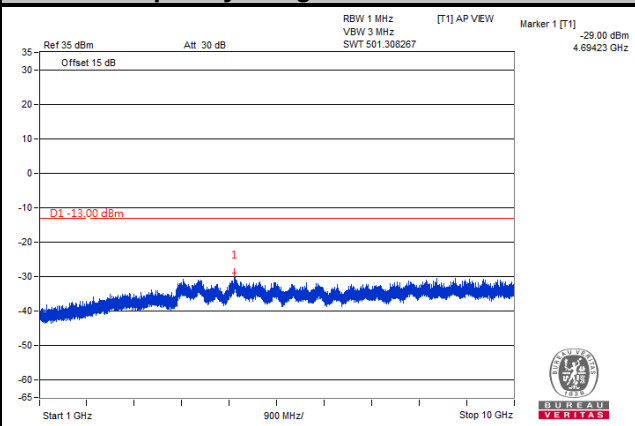


Channel 26765

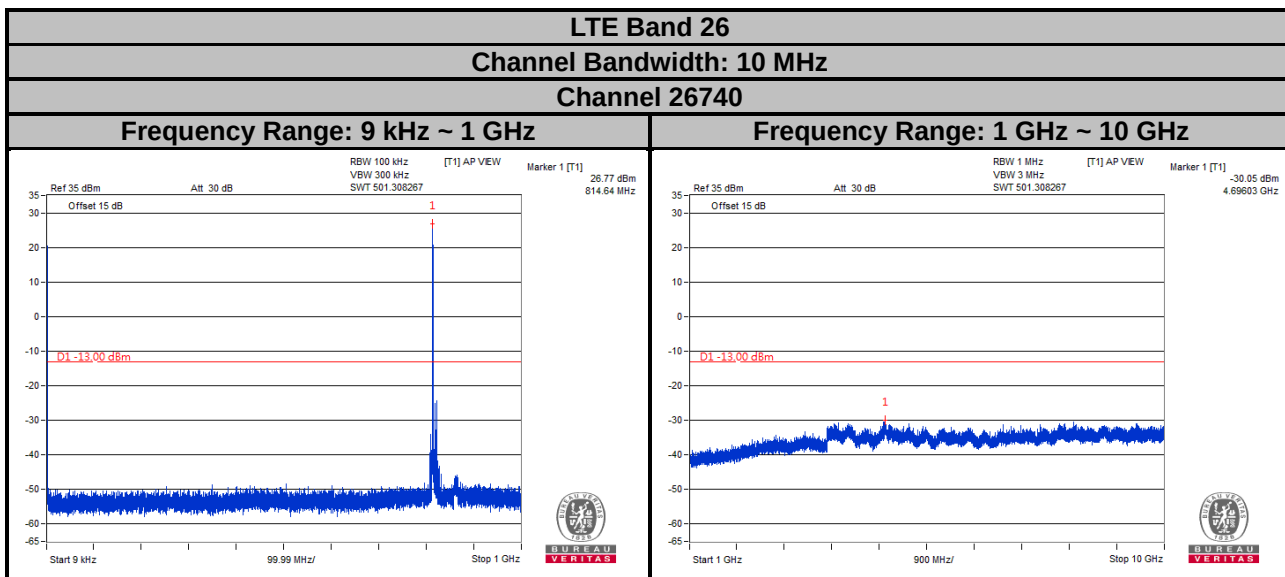
Frequency Range: 9 kHz ~ 1 GHz



Frequency Range: 1 GHz ~ 10 GHz



Note: The signal over the limit in 9 kHz is from spectrum analyzer.



Note: The signal over the limit in 9 kHz is from spectrum analyzer.

## 4.8 Radiated Emission Measurement

### 4.8.1 Limits of Radiated Emission Measurement

- (1) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB. The limit of emission is equal to -13 dBm.
- (2) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

### 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 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m 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.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$ .
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,  $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dB}$ .

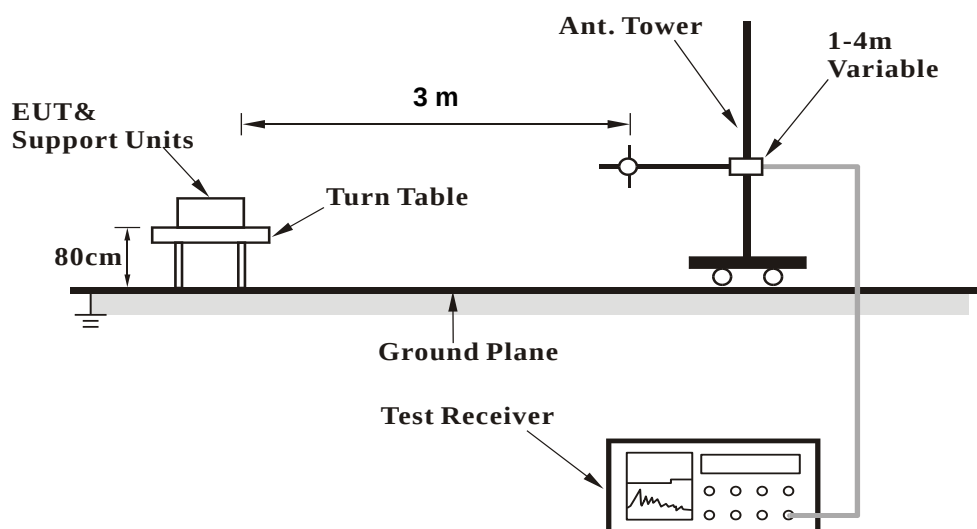
**Note:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

### 4.8.3 Deviation from Test Standard

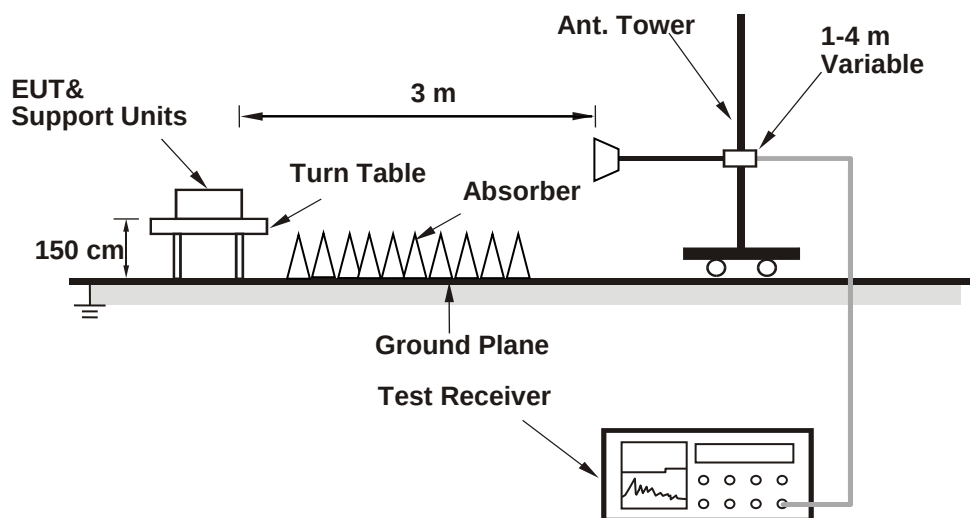
No deviation.

#### 4.8.4 Test Setup

##### <Radiated Emission below or equal 1 GHz>



##### <Radiated Emission above 1 GHz>



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

#### 4.8.5 Test Results

CDMA:

Low Channel

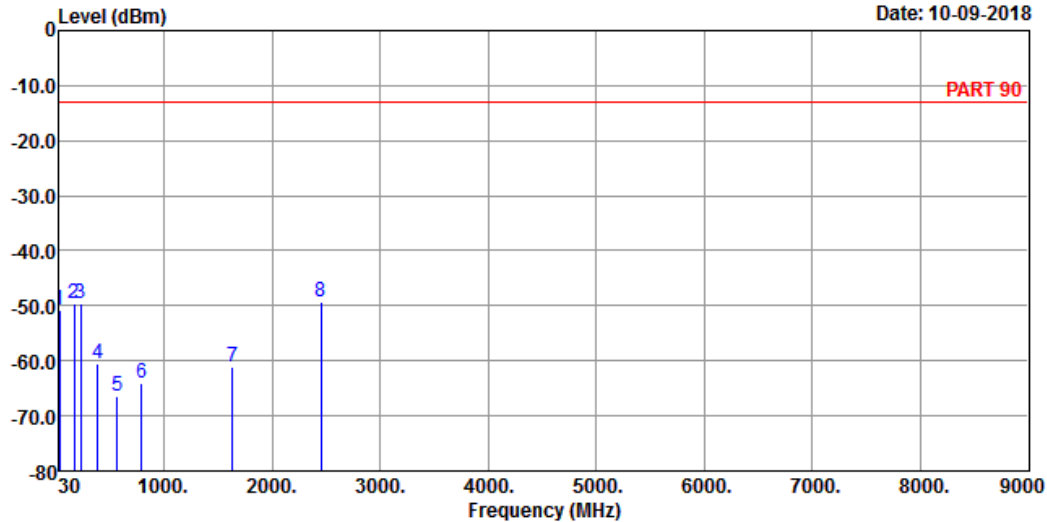


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 HORIZONTAL

Remark : CDMA BC10 Link\_L-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 30.00   | -50.72 | -51.10     | -13.00     | -37.72     | 0.38   | Peak   |
| 2    | 170.65  | -49.71 | -44.01     | -13.00     | -36.71     | -5.70  | Peak   |
| 3    | 227.88  | -49.55 | -42.66     | -13.00     | -36.55     | -6.89  | Peak   |
| 4    | 387.93  | -60.56 | -54.54     | -13.00     | -47.56     | -6.02  | Peak   |
| 5    | 563.50  | -66.30 | -64.02     | -13.00     | -53.30     | -2.28  | Peak   |
| 6    | 792.42  | -63.92 | -64.68     | -13.00     | -50.92     | 0.76   | Peak   |
| 7    | 1635.80 | -61.23 | -46.44     | -13.00     | -48.23     | -14.79 | Peak   |
| 8 pp | 2453.70 | -49.26 | -38.82     | -13.00     | -36.26     | -10.44 | Peak   |

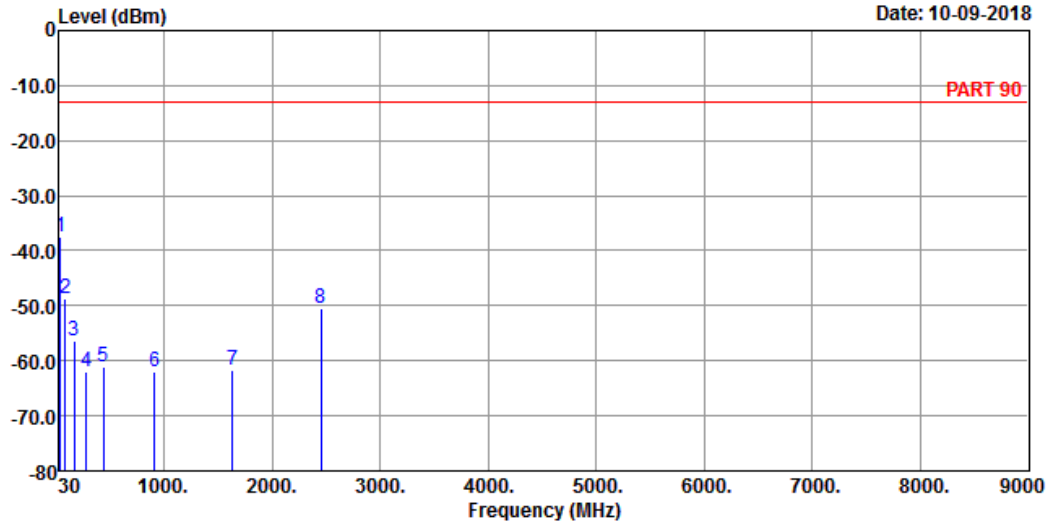


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remark : CDMA BC10 Link\_L-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 38.73   | -37.58 | -37.68     | -13.00     | -24.58     | 0.10   | Peak   |
| 2    | 86.26   | -48.79 | -37.77     | -13.00     | -35.79     | -11.02 | Peak   |
| 3    | 170.65  | -56.36 | -50.66     | -13.00     | -43.36     | -5.70  | Peak   |
| 4    | 278.32  | -61.99 | -55.42     | -13.00     | -48.99     | -6.57  | Peak   |
| 5    | 440.31  | -61.18 | -55.55     | -13.00     | -48.18     | -5.63  | Peak   |
| 6    | 910.76  | -61.93 | -62.77     | -13.00     | -48.93     | 0.84   | Peak   |
| 7    | 1635.80 | -61.69 | -46.90     | -13.00     | -48.69     | -14.79 | Peak   |
| 8    | 2453.70 | -50.52 | -40.08     | -13.00     | -37.52     | -10.44 | Peak   |

# Middle Channel

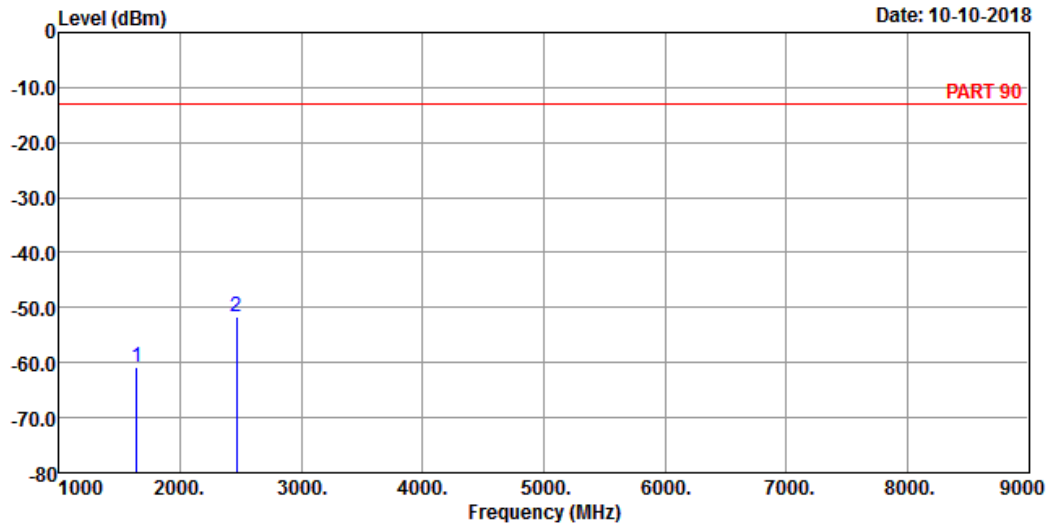


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1

Date: 10-10-2018



Site : 966 Chamber 5

Condition: PART 90 HORIZONTAL

Remark : CDMA BC10 Link\_M-CH

Tested by: Thomas Wei

|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1641.00 | -60.72 | -45.99 | -13.00 | -47.72 | -14.73 | Peak   |
| 2 pp | 2461.50 | -51.65 | -41.21 | -13.00 | -38.65 | -10.44 | Peak   |

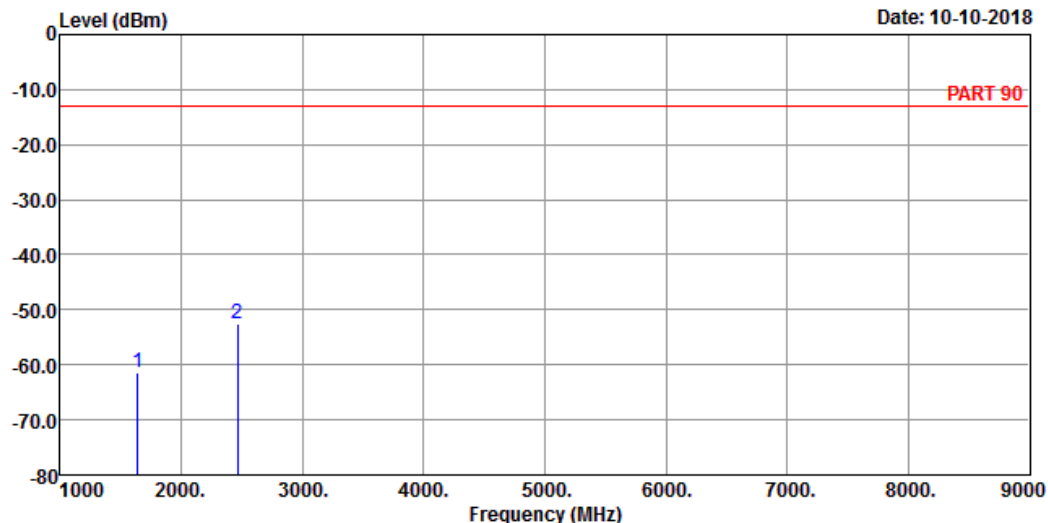


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-10-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remark : CDMA BC10 Link\_M-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 1641.00 | -61.43 | -46.70     | -13.00     | -48.43     | -14.73 | Peak   |
| 2 pp | 2461.50 | -52.50 | -42.06     | -13.00     | -39.50     | -10.44 | Peak   |

# High Channel

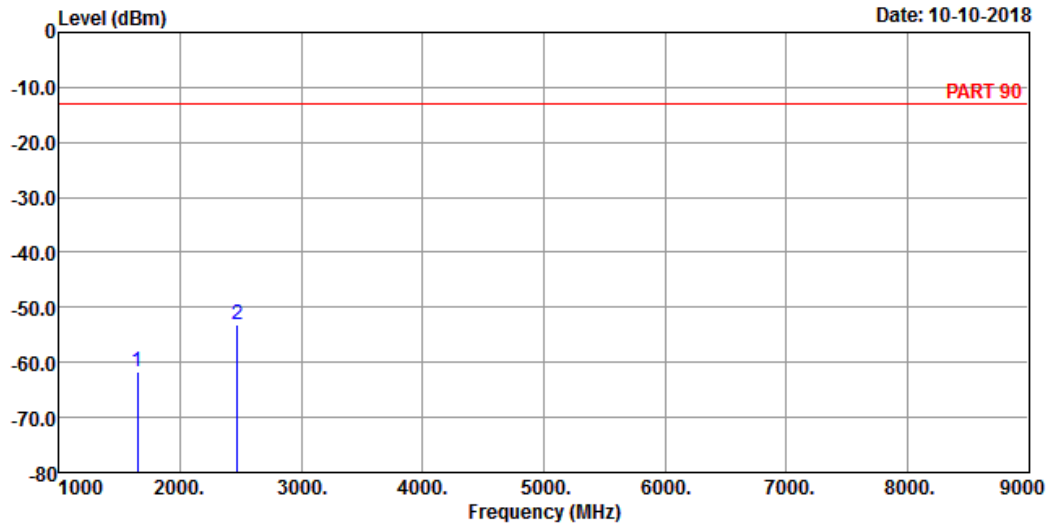


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1

Date: 10-10-2018



Site : 966 Chamber 5

Condition: PART 90 HORIZONTAL

Remark : CDMA BC10 Link\_H-CH

Tested by: Thomas Wei

|      |         |        | Read   | Limit  | Over   |        |        |
|------|---------|--------|--------|--------|--------|--------|--------|
|      | Freq    | Level  | Level  | Line   | Limit  | Factor | Remark |
|      | MHz     | dBm    | dBm    | dBm    | dB     | dB     |        |
| 1    | 1646.20 | -61.58 | -46.85 | -13.00 | -48.58 | -14.73 | Peak   |
| 2 pp | 2469.30 | -53.07 | -42.63 | -13.00 | -40.07 | -10.44 | Peak   |

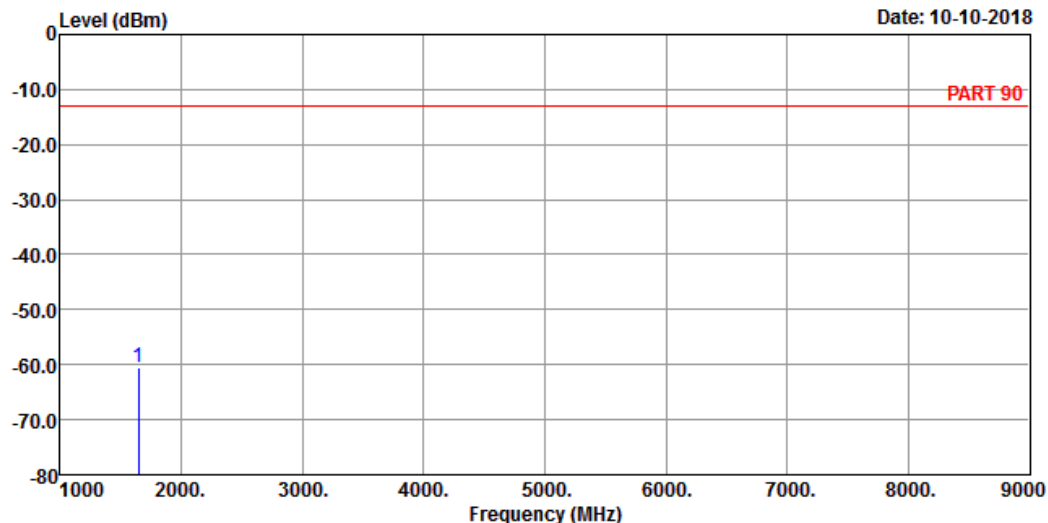


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-10-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remark : CDMA BC10 Link\_H-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1646.20 -60.46 -45.73 -13.00 -47.46 -14.73 Peak

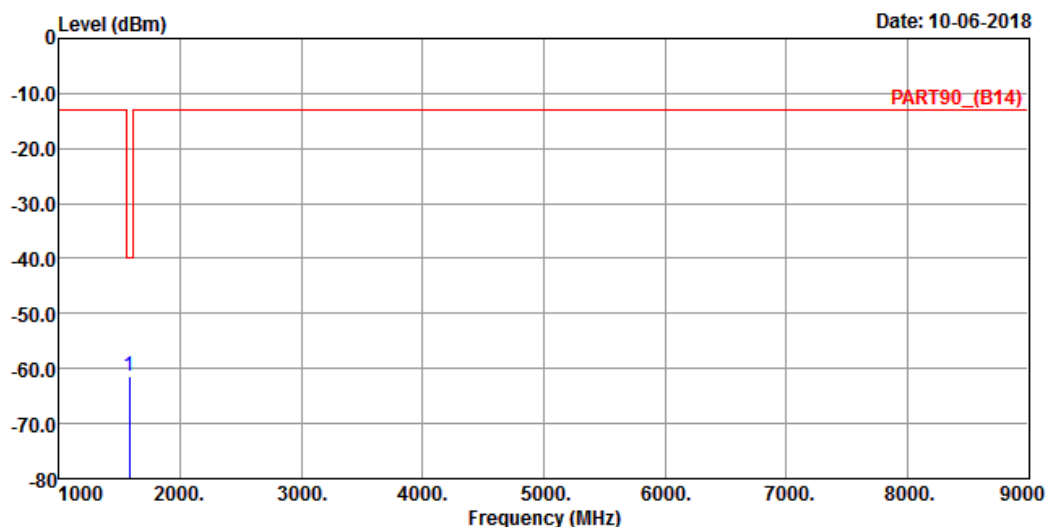
LTE Band 14  
Channel Bandwidth: 5 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART90\_(B14) HORIZONTAL  
Remak : LTE Band 14 QPSK\_5M Link\_L-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1581.00 -61.34 -47.96 -40.00 -21.34 -13.38 Peak

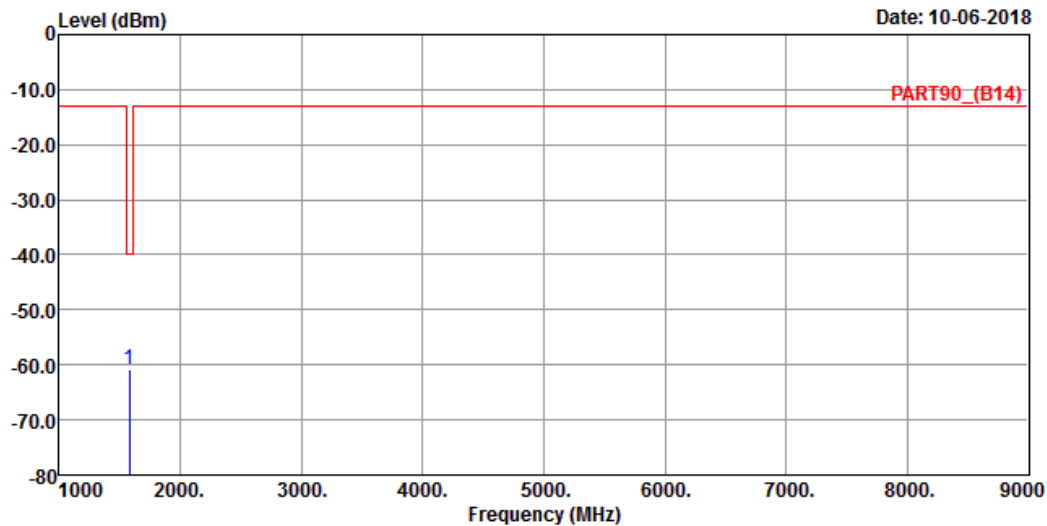


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART90\_(B14) VERTICAL

Remak : LTE Band 14 QPSK\_5M Link\_L-CH

Tested by: Thomas Wei

|      |       |       | Read | Limit | Over   |        |  |
|------|-------|-------|------|-------|--------|--------|--|
| Freq | Level | Level | Line | Limit | Factor | Remark |  |
| MHz  | dBm   | dBm   | dBm  | dB    | dB     |        |  |

1 pp 1581.00 -60.84 -47.46 -40.00 -20.84 -13.38 Peak

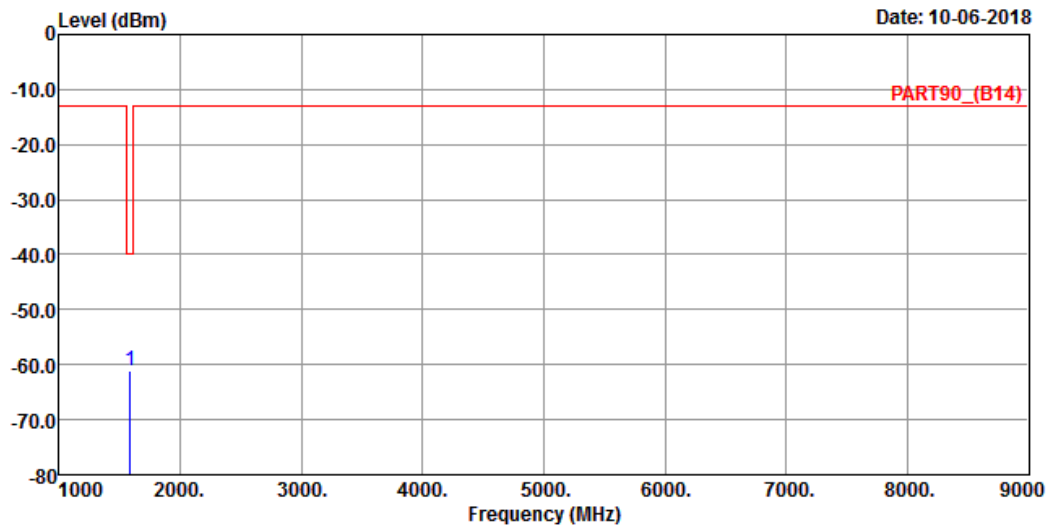
# Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART90\_(B14) HORIZONTAL  
Remak : LTE Band 14 QPSK\_5M Link\_M-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1586.00 -61.21 -47.82 -40.00 -21.21 -13.39 Peak

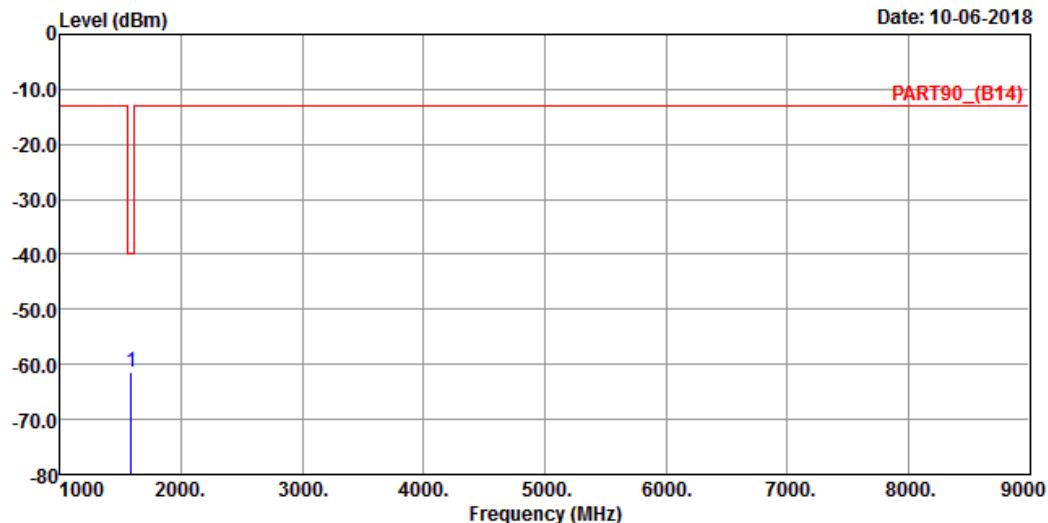


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART90\_(B14) VERTICAL

Remak : LTE Band 14 QPSK\_5M Link\_M-CH

Tested by: Thomas Wei

|      |       |       | Read | Limit | Over   |        |  |
|------|-------|-------|------|-------|--------|--------|--|
| Freq | Level | Level | Line | Limit | Factor | Remark |  |
| MHz  | dBm   | dBm   | dBm  | dB    | dB     |        |  |

1 pp 1586.00 -61.27 -47.88 -40.00 -21.27 -13.39 Peak

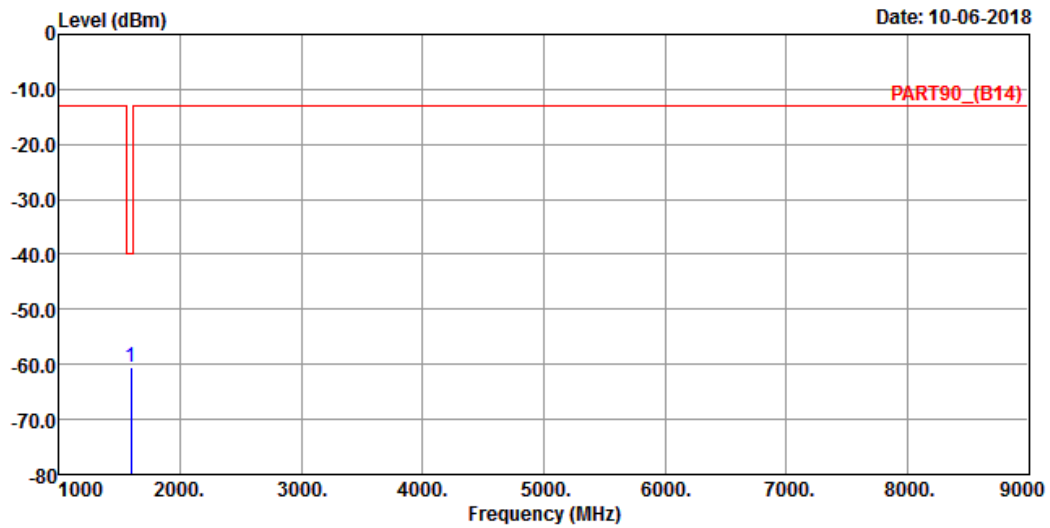
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART90\_(B14) HORIZONTAL  
Remak : LTE Band 14 QPSK\_5M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1591.00 -60.55 -47.14 -40.00 -20.55 -13.41 Peak

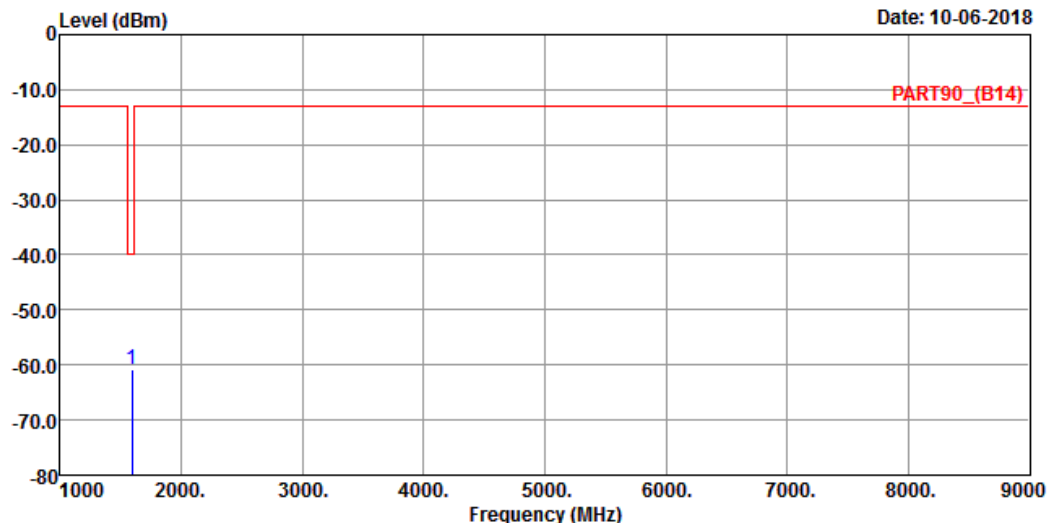


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART90\_(B14) VERTICAL

Remak : LTE Band 14 QPSK\_5M Link\_H-CH

Tested by: Thomas Wei

|      |       |       | Read | Limit | Over   |        |  |
|------|-------|-------|------|-------|--------|--------|--|
| Freq | Level | Level | Line | Limit | Factor | Remark |  |
| MHz  | dBm   | dBm   | dBm  | dB    | dB     |        |  |

1 pp 1591.00 -60.79 -47.38 -40.00 -20.79 -13.41 Peak

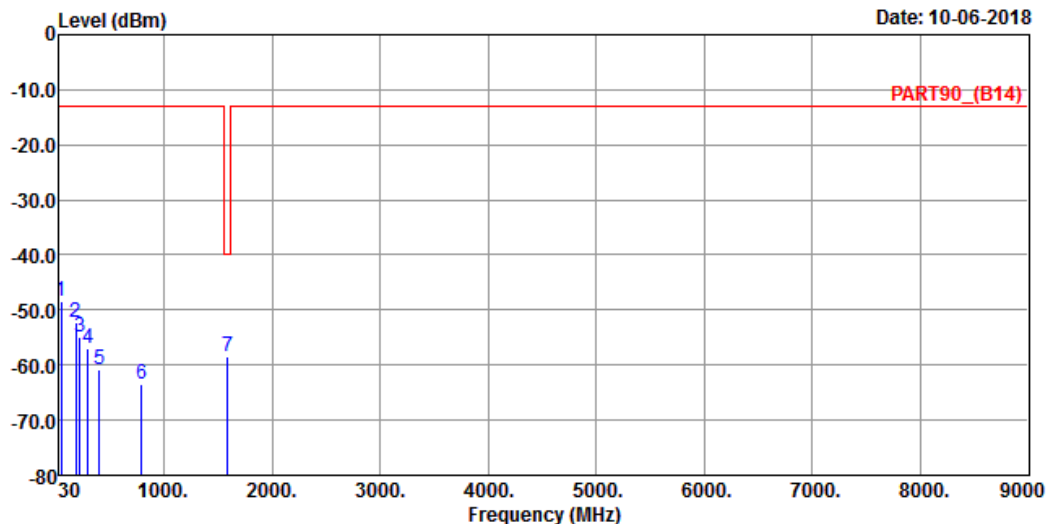
Channel Bandwidth: 10 MHz / QPSK  
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART90\_(B14) HORIZONTAL  
Remak : LTE Band 14 QPSK\_10M Link\_M-CH  
Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 43.58   | -48.31 | -46.84     | -13.00     | -35.31     | -1.47  | Peak   |
| 2    | 179.38  | -52.16 | -44.93     | -13.00     | -39.16     | -7.23  | Peak   |
| 3    | 221.09  | -54.77 | -47.61     | -13.00     | -41.77     | -7.16  | Peak   |
| 4    | 291.90  | -56.90 | -50.05     | -13.00     | -43.90     | -6.85  | Peak   |
| 5    | 399.57  | -60.74 | -54.79     | -13.00     | -47.74     | -5.95  | Peak   |
| 6    | 787.57  | -63.59 | -64.36     | -13.00     | -50.59     | 0.77   | Peak   |
| 7 pp | 1586.00 | -58.44 | -45.05     | -40.00     | -18.44     | -13.39 | Peak   |

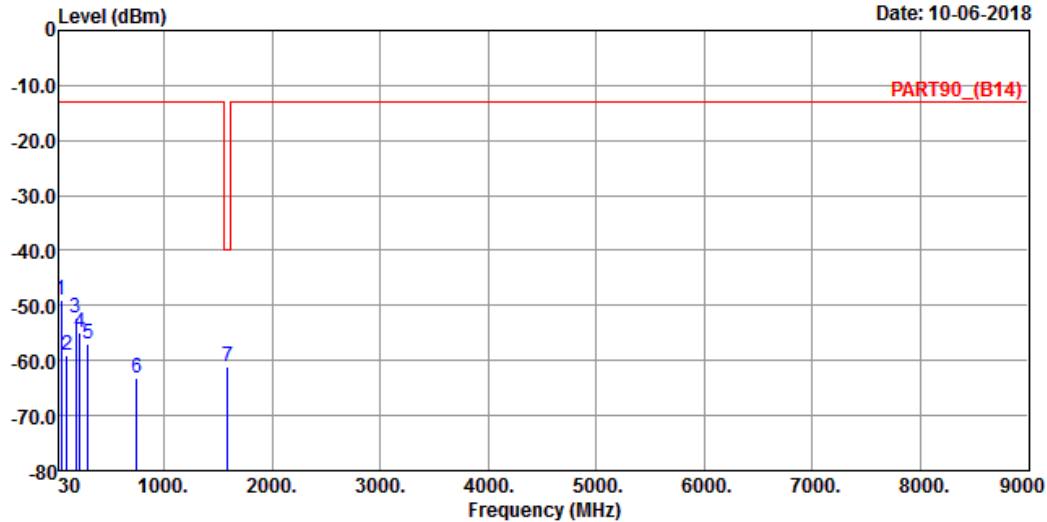


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART90\_(B14) VERTICAL

Remak : LTE Band 14 QPSK\_10M Link\_M-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1    | 44.55   | -48.96 | -46.97     | -13.00     | -35.96     | -1.99  | Peak   |
| 2    | 98.87   | -59.12 | -48.50     | -13.00     | -46.12     | -10.62 | Peak   |
| 3    | 179.38  | -52.16 | -44.93     | -13.00     | -39.16     | -7.23  | Peak   |
| 4    | 221.09  | -54.77 | -47.61     | -13.00     | -41.77     | -7.16  | Peak   |
| 5    | 291.90  | -56.90 | -50.05     | -13.00     | -43.90     | -6.85  | Peak   |
| 6    | 746.83  | -63.27 | -64.09     | -13.00     | -50.27     | 0.82   | Peak   |
| 7 pp | 1586.00 | -61.21 | -47.82     | -40.00     | -21.21     | -13.39 | Peak   |

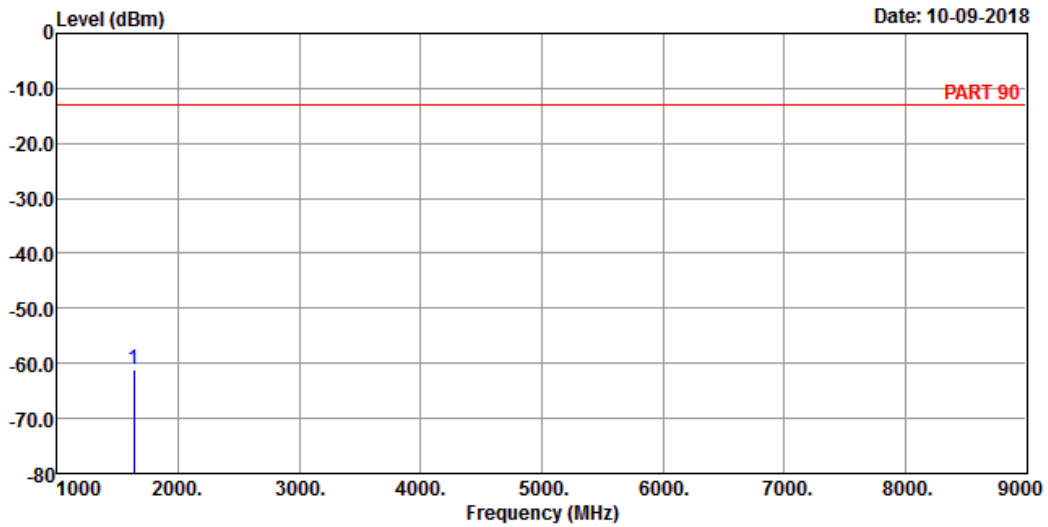
LTE Band 26  
Channel Bandwidth: 1.4 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART 90 HORIZONTAL  
Remak : LTE Band 26 QPSK\_1.4M Link\_L-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1629.40 -60.98 -46.19 -13.00 -47.98 -14.79 Peak

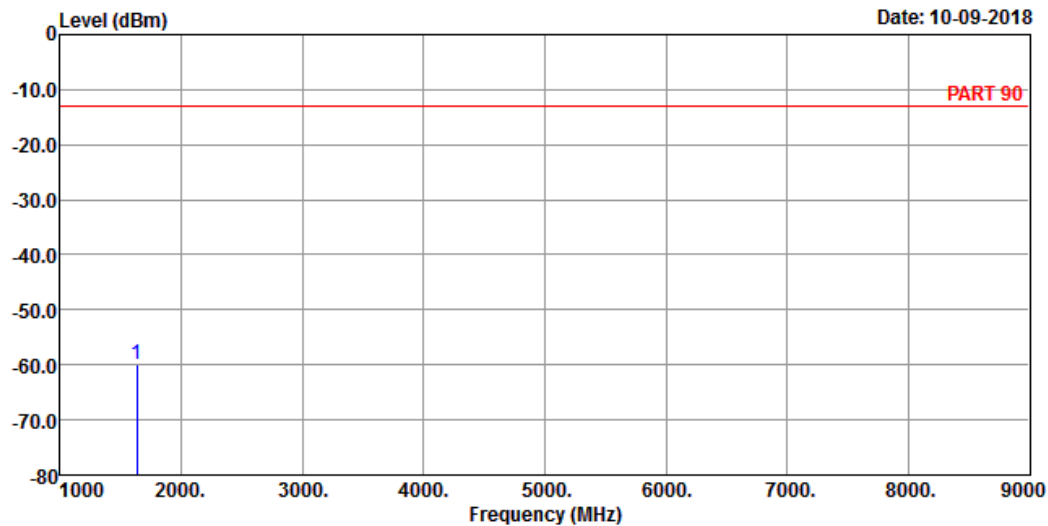


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_1.4M Link\_L-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1629.40 -59.88 -45.09 -13.00 -46.88 -14.79 Peak

# Middle Channel

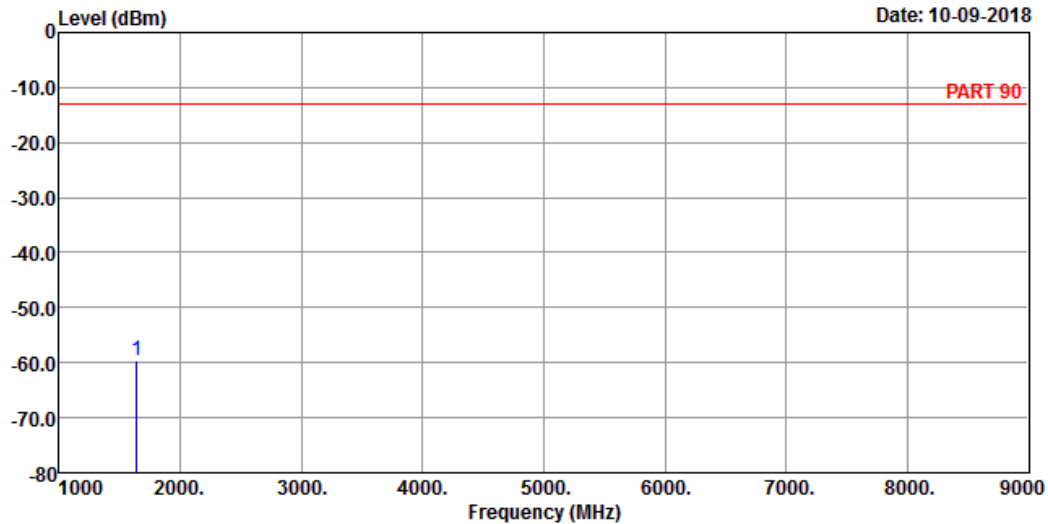


Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 HORIZONTAL

Remak : LTE Band 26 QPSK\_1.4M Link\_M-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1638.00 -59.57 -44.78 -13.00 -46.57 -14.79 Peak

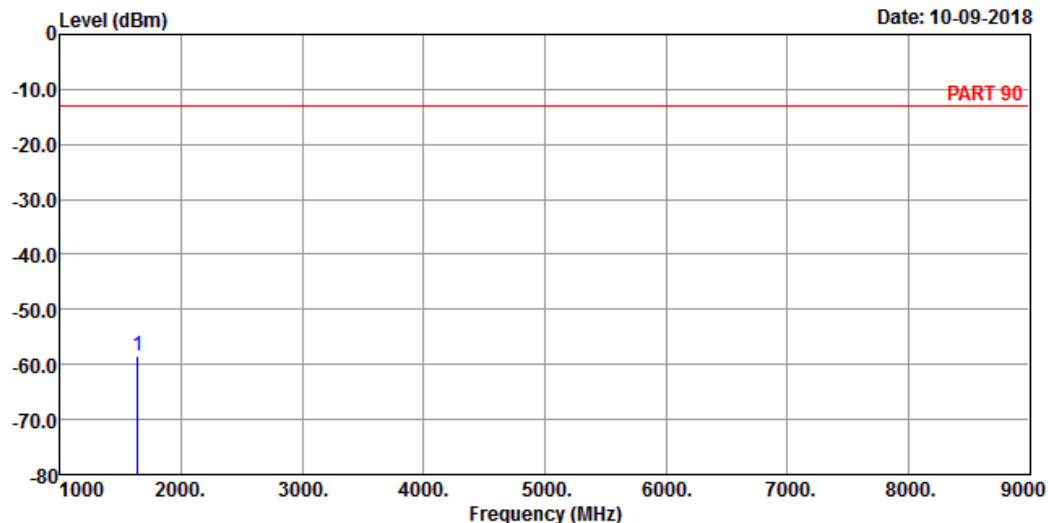


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_1.4M Link\_M-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1638.00 -58.39 -43.60 -13.00 -45.39 -14.79 Peak

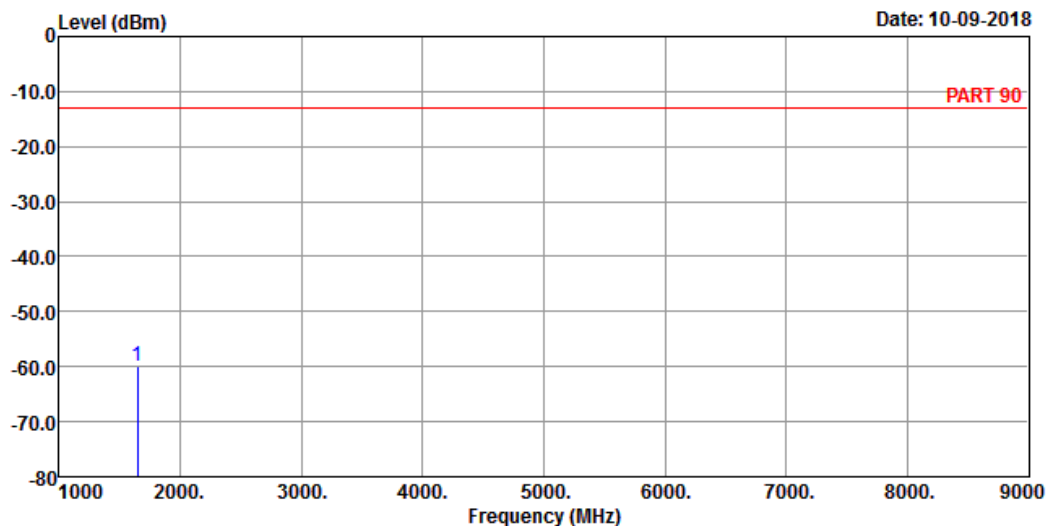
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART 90 HORIZONTAL  
Remak : LTE Band 26 QPSK\_1.4M Link\_H-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1646.60 -59.87 -45.14 -13.00 -46.87 -14.73 Peak

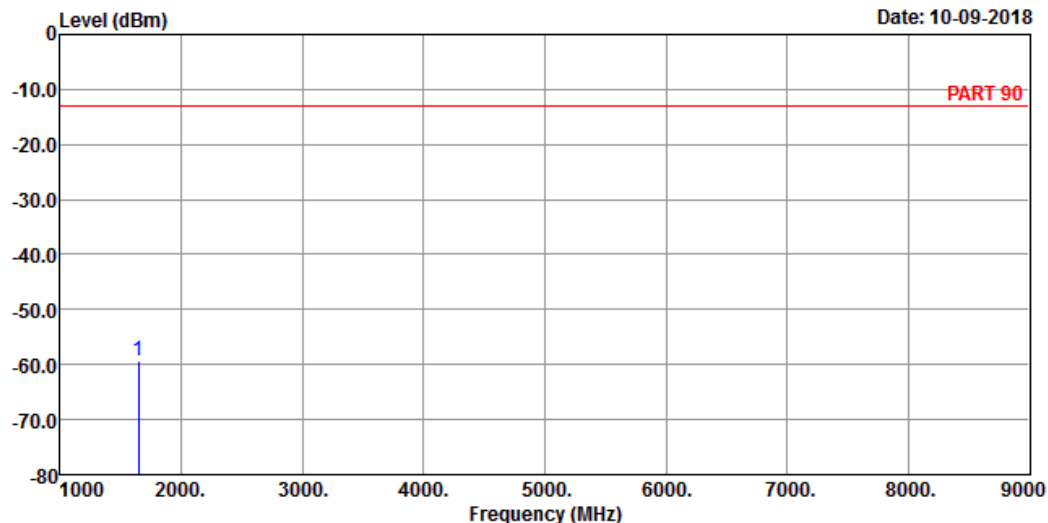


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-09-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_1.4M Link\_H-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1646.60 -59.28 -44.55 -13.00 -46.28 -14.73 Peak

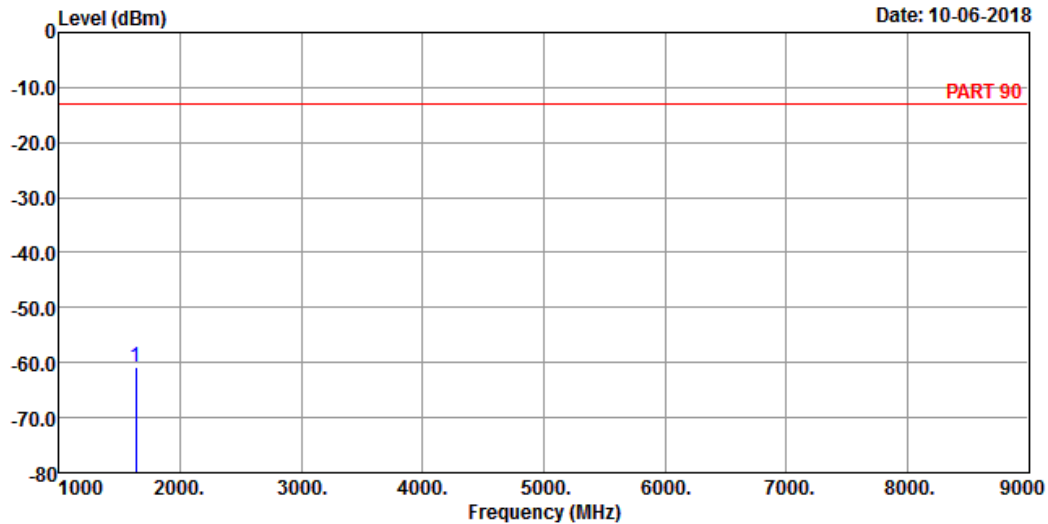
Channel Bandwidth: 5 MHz / QPSK  
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART 90 HORIZONTAL  
Remak : LTE Band 26 QPSK\_5M Link\_L-CH  
Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1633.00 -60.76 -45.97 -13.00 -47.76 -14.79 Peak

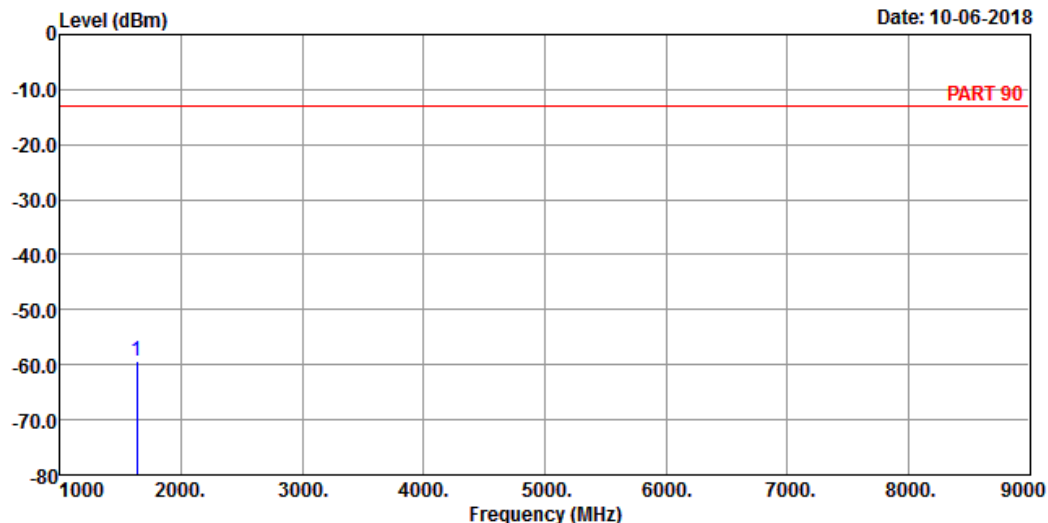


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_5M Link\_L-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1633.00 -59.41 -44.62 -13.00 -46.41 -14.79 Peak

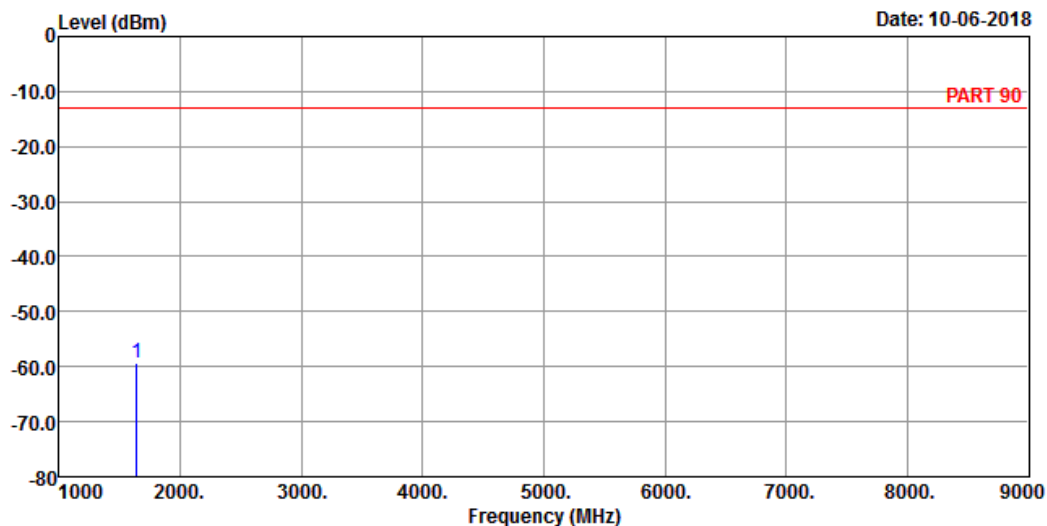
# Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
Condition: PART 90 HORIZONTAL  
Remak : LTE Band 26 QPSK\_5M Link\_M-CH  
Tested by: Thomas Wei

| Freq | Level | Read  | Limit | Over  |        | Remark |
|------|-------|-------|-------|-------|--------|--------|
|      |       | Level | Line  | Limit | Factor |        |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1638.00 -59.30 -44.51 -13.00 -46.30 -14.79 Peak

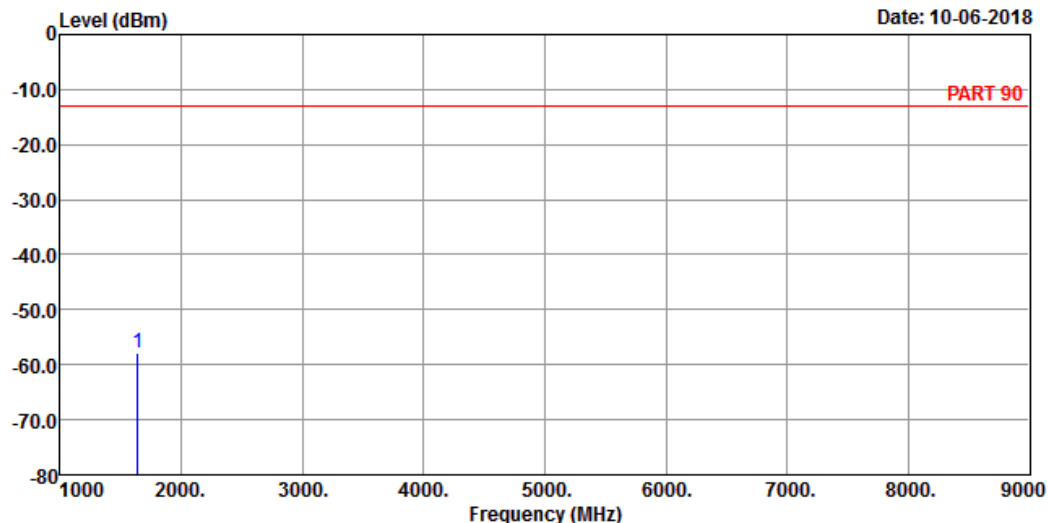


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_5M Link\_M-CH

Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1638.00 -57.84 -43.05 -13.00 -44.84 -14.79 Peak

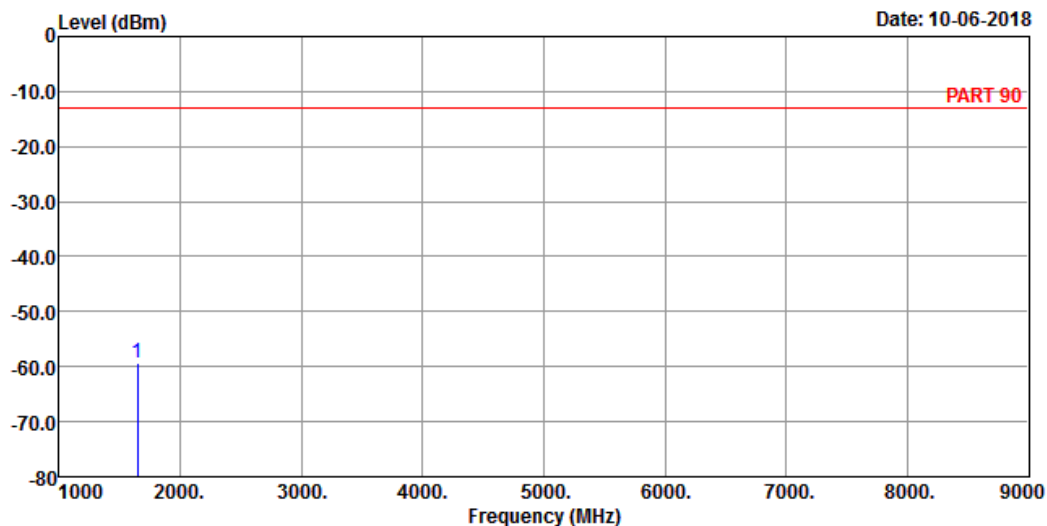
# High Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5  
 Condition: PART 90 HORIZONTAL  
 Remak : LTE Band 26 QPSK\_5M Link\_H-CH  
 Tested by: Thomas Wei

|      |       | Read  | Limit | Over  |        |        |
|------|-------|-------|-------|-------|--------|--------|
| Freq | Level | Level | Line  | Limit | Factor | Remark |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1643.00 -59.41 -44.68 -13.00 -46.41 -14.73 Peak

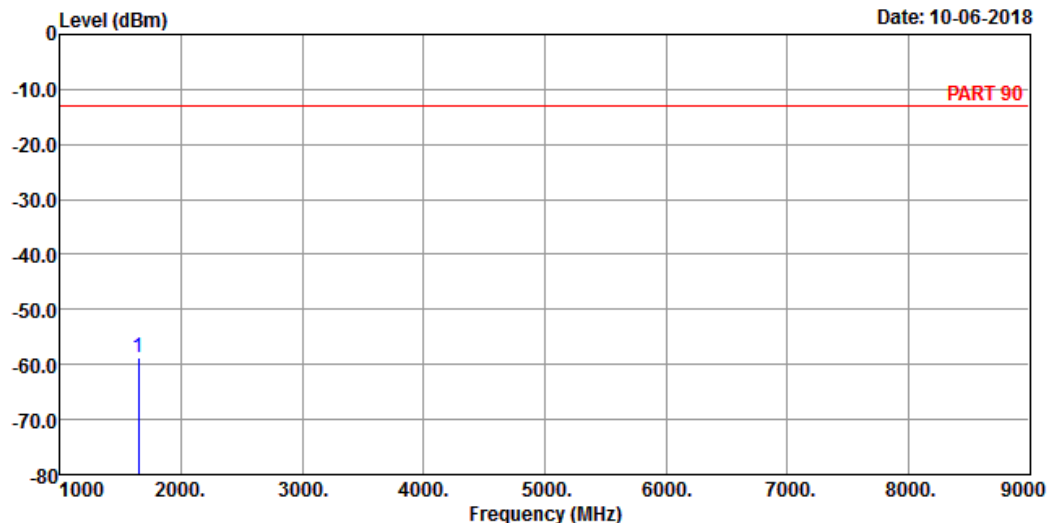


# Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_5M Link\_H-CH

Tested by: Thomas Wei

| Freq | Level | Read  | Limit | Over  |        | Remark |
|------|-------|-------|-------|-------|--------|--------|
|      |       | Level | Line  | Limit | Factor |        |
| MHz  | dBm   | dBm   | dBm   | dB    | dB     |        |

1 pp 1643.00 -58.65 -43.92 -13.00 -45.65 -14.73 Peak

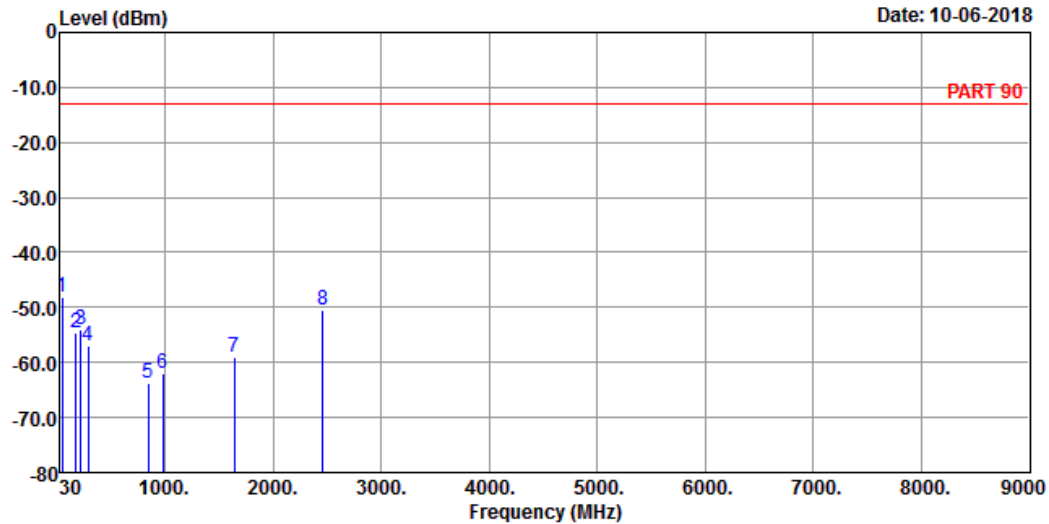
Channel Bandwidth: 10 MHz / QPSK  
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5  
Condition: PART 90 HORIZONTAL  
Remak : LTE Band 26 QPSK\_10M Link\_M-CH  
Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 44.55   | -48.10 | -46.11     | -13.00     | -35.10     | -1.99  | Peak   |
| 2    | 177.44  | -54.68 | -47.79     | -13.00     | -41.68     | -6.89  | Peak   |
| 3    | 218.18  | -53.97 | -46.69     | -13.00     | -40.97     | -7.28  | Peak   |
| 4    | 287.05  | -56.90 | -50.15     | -13.00     | -43.90     | -6.75  | Peak   |
| 5    | 845.77  | -63.66 | -63.99     | -13.00     | -50.66     | 0.33   | Peak   |
| 6    | 977.69  | -62.13 | -64.92     | -13.00     | -49.13     | 2.79   | Peak   |
| 7    | 1638.00 | -58.94 | -44.15     | -13.00     | -45.94     | -14.79 | Peak   |
| 8    | 2457.00 | -50.50 | -40.06     | -13.00     | -37.50     | -10.44 | Peak   |

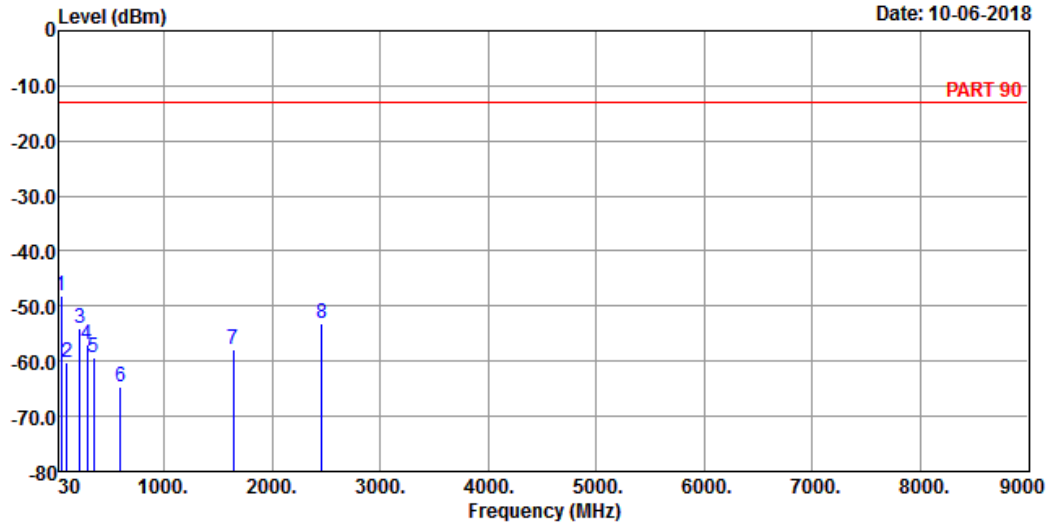


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-06-2018



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK\_10M Link\_M-CH

Tested by: Thomas Wei

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark |
|------|---------|--------|------------|------------|------------|--------|--------|
|      | MHz     | dBm    | dBm        | dBm        | dB         | dB     |        |
| 1 pp | 44.55   | -48.10 | -46.11     | -13.00     | -35.10     | -1.99  | Peak   |
| 2    | 98.87   | -60.14 | -49.52     | -13.00     | -47.14     | -10.62 | Peak   |
| 3    | 218.18  | -53.97 | -46.69     | -13.00     | -40.97     | -7.28  | Peak   |
| 4    | 287.05  | -56.90 | -50.15     | -13.00     | -43.90     | -6.75  | Peak   |
| 5    | 345.25  | -59.27 | -52.96     | -13.00     | -46.27     | -6.31  | Peak   |
| 6    | 598.42  | -64.69 | -63.86     | -13.00     | -51.69     | -0.83  | Peak   |
| 7    | 1638.00 | -57.88 | -43.09     | -13.00     | -44.88     | -14.79 | Peak   |
| 8    | 2457.00 | -53.08 | -42.64     | -13.00     | -40.08     | -10.44 | Peak   |

## 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 according to ISO/IEC 17025.

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

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

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Tel: 886-3-3183232

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

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

--- END ---