# FCC Test Report

# (PART 27)

**Report No.:** RF170502C07-9

**FCC ID:** NM8G011A

**Test Model:** G011A

**Received Date:** May 02, 2017

**Test Date:** May 25, 2017 ~ Jun. 30, 2017

**Issued Date:** Jul. 19, 2017

**Applicant:** HTC Corporation

**Address:** 1F, 6-3 Baoqiang Road, Xindian District, New Taipei City, Taiwan 231

**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 Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

**Test Location (2):** No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF170502C07-9 | Original Release | Jul. 19, 2017 |

## 1 Certificate of Conformity

**Product:** Smartphone

**Test Model:** G011A

**Sample Status:** Production Unit

**Applicant:** HTC Corporation

**Test Date:** May 25, 2017 ~ Jun. 30, 2017

**Standards:** FCC Part 27, Subpart C, M

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 EMC characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** Jul. 19, 2017

Ivonne Wu / Supervisor

**Approved by :** _____ , **Date:** Jul. 19, 2017

David Huang / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 27 & Part 2 | | | |
|---|---|---|---|
| **FCC Clause** | **Test Item** | **Result** | **Remarks** |
| 2.1046<br>27.50(h) | Equivalent Isotropic Radiated Power | Pass | Meet the requirement of limit. |
| 2.1055<br>27.54 | Frequency Stability | Pass | Meet the requirement of limit. |
| 2.1049 | Occupied Bandwidth | Pass | Meet the requirement of limit. |
| -- | Peak to Average Ratio | Pass | Meet the requirement of limit. |
| 2.1051<br>27.53(l) | Out of Band Emission Measurements | Pass | Meet the requirement of limit. |
| 2.1051<br>27.53(m) | Conducted Spurious Emissions | Pass | Meet the requirement of limit. |
| 2.1053<br>27.53(m) | Radiated Spurious Emissions | Pass | Meet the requirement of limit.<br>Minimum passing margin is -14.11 dB at 7518.00 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 | Expended Uncertainty (k=2) (±) |
|---|---|---|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz | 2.44 dB |
| Radiated Emissions up to 1 GHz | 30 MHz ~ 200 MHz | 2.0153 dB |
| | 200 MHz ~1000 MHz | 2.0224 dB |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz | 1.0121 dB |
| | 18 GHz ~ 40 GHz | 1.1508 dB |

## 2.2 Test Site and Instruments

| Description & Manaufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|---|---|---|---|
| Test Receiver<br>Agilent Technologies | N9010A | MY52220314 | Nov. 16, 2016 | Nov. 15, 2017 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSU43 | 101261 | Dec. 13, 2016 | Dec. 12, 2017 |
| BILOG Antenna<br>SCHWARZBECK | VULB9168 | 9168-472 | Dec. 16, 2016 | Dec. 15, 2017 |
| HORN Antenna<br>ETS-Lindgren | 3117 | 00143293 | Dec. 29, 2016 | Dec. 28, 2017 |
| Double Ridge Guide Horn Antenna EMCO | 3115 | 5619 | Dec. 27, 2016 | Dec. 26, 2017 |
| BILOG Antenna<br>SCHWARZBECK | VULB 9168 | 9168-153 | Dec. 13, 2016 | Dec. 12, 2017 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9170 | 9170-480 | Dec. 14, 2016 | Dec. 13, 2017 |
| Fixed Attenuator<br>Mini-Circuits | BW-N10W5+ | NA | Jul. 08, 2016 | Jul. 07, 2017 |
| MXG Vector signal generator<br>Agilent | N5182B | MY53050430 | Oct. 19, 2016 | Oct. 18, 2017 |
| Preamplifier<br>Agilent | 310N | 187226 | Jun. 24, 2016 | Jun. 23, 2017 |
| Preamplifier<br>Agilent | 310N | 187226 | Jun. 23, 2017 | Jun. 22, 2018 |
| Preamplifier<br>Agilent | 83017A | MY39501357 | Jun. 24, 2016 | Jun. 23, 2017 |
| Preamplifier<br>Agilent | 83017A | MY39501357 | Jun. 23, 2017 | Jun. 22, 2018 |
| Power Meter<br>Anritsu | ML2495A | 1232002 | Sep. 08, 2016 | Sep. 07, 2017 |
| Power Sensor<br>Anritsu | MA2411B | 1207325 | Sep. 08, 2016 | Sep. 07, 2017 |
| RF signal cable<br>ETS-LINDGREN | 5D-FB | Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400) | Jun. 24, 2016 | Jun. 23, 2017 |
| RF signal cable<br>ETS-LINDGREN | 5D-FB | Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400) | Jun. 23, 2017 | Jun. 22, 2018 |
| RF signal cable<br>ETS-LINDGREN | 8D-FB | Cable-CH1-02(RFC-SMS-100-SMS-24) | Jun. 24, 2016 | Jun. 23, 2017 |
| RF signal cable<br>ETS-LINDGREN | 8D-FB | Cable-CH1-02(RFC-SMS-100-SMS-24) | Jun. 23, 2017 | Jun. 22, 2018 |
| Software<br>BV ADT | E3<br>8.130425b | NA | NA | NA |
| Antenna Tower<br>MF | NA | NA | NA | NA |
| Turn Table<br>MF | NA | NA | NA | NA |
| Antenna Tower &Turn Table Controller<br>MF | MF-7802 | NA | NA | NA |

| | | | | |
|---|---|---|---|---|
| Antenna Tower &Turn Table Controller MF | MF-7802 | NA | NA | NA |
| Communications Tester-Wireless Agilent | 8960 Series 10 | MY53201073 | Jun. 28, 2017 | Jun. 27, 2019 |
| Radio Communication Analyzer Anritsu | MT8820C | 6201300640 | Aug. 10, 2015 | Aug. 09, 2017 |
| Temperature & Humidity Chamber | GTH-120-40-CP-A R | MAA1306-019 | Sep. 02, 2016 | Sep. 01, 2017 |
| DC Power Supply Topward | 33010D | 807748 | Oct. 25, 2016 | Oct. 24, 2018 |
| Digital Multimeter Fluke | 87-III | 73680266 | Nov. 10, 2016 | Nov. 09, 2017 |

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 HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The FCC Site Registration No. is 149147.
5. The IC Site Registration No. is IC7450I-1.

## 3 General Information

### 3.1 General Description of EUT

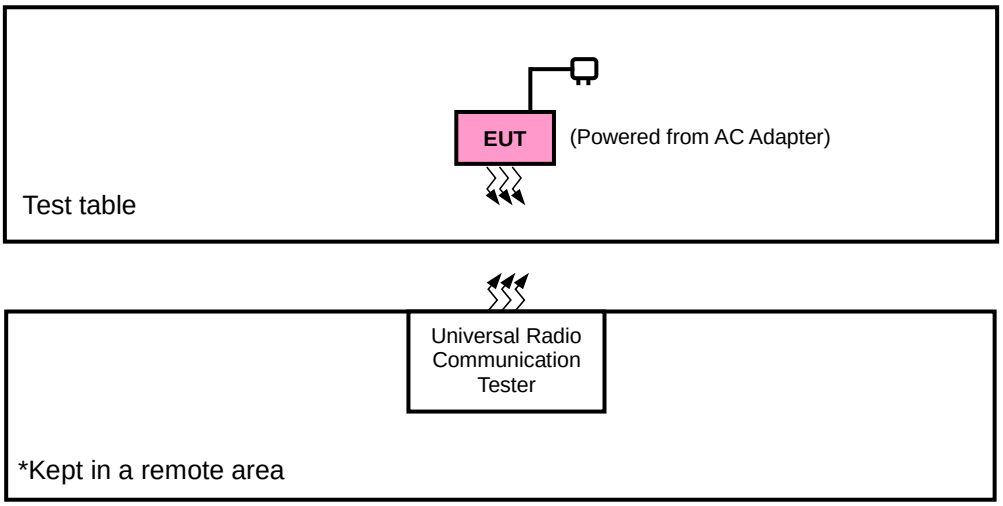
| | | |
|---|---|---|
| **Product** | Smartphone | |
| **Test Model** | G011A | |
| **Status of EUT** | Production Unit | |
| **Power Supply Rating** | 5.0 Vdc or 9.0 Vdc (adapter)<br>3.85 Vdc (Li-ion battery) | |
| **Modulation Type** | QPSK, 16QAM, 64QAM | |
| **Frequency Range** | LTE Band 7 (Channel Bandwidth: 5 MHz) | 2502.5 ~ 2567.5 MHz |
| | LTE Band 7 (Channel Bandwidth: 10 MHz) | 2505 ~ 2565 MHz |
| | LTE Band 7 (Channel Bandwidth: 15 MHz) | 2507.5 ~ 2562.5 MHz |
| | LTE Band 7 (Channel Bandwidth: 20 MHz) | 2510 ~ 2560 MHz |
| | LTE Band 41 (Channel Bandwidth: 5 MHz) | 2498.5 ~ 2687.5 MHz |
| | LTE Band 41 (Channel Bandwidth: 10 MHz) | 2501.0 ~ 2685.0 MHz |
| | LTE Band 41 (Channel Bandwidth: 15 MHz) | 2503.5 ~ 2682.5 MHz |
| | LTE Band 41 (Channel Bandwidth: 20 MHz) | 2506.0 ~ 2680.0 MHz |
| **Max. EIRP Power** | LTE Band 7 (Channel Bandwidth: 5 MHz) | 299.09 mW |
| | LTE Band 7 (Channel Bandwidth: 10 MHz) | 306.41 mW |
| | LTE Band 7 (Channel Bandwidth: 15 MHz) | 305.28 mW |
| | LTE Band 7 (Channel Bandwidth: 20 MHz) | 300.40 mW |
| | LTE Band 41 (Channel Bandwidth: 5 MHz) | 256.21 mW |
| | LTE Band 41 (Channel Bandwidth: 10 MHz) | 257.69 mW |
| | LTE Band 41 (Channel Bandwidth: 15 MHz) | 256.33 mW |
| | LTE Band 41 (Channel Bandwidth: 20 MHz) | 256.86 mW |
| **Emission Designator** | LTE Band 7 (Channel Bandwidth: 5 MHz) | 4M50W7D |
| | LTE Band 7 (Channel Bandwidth: 10 MHz) | 8M97W7D |
| | LTE Band 7 (Channel Bandwidth: 15 MHz) | 13M5G7D |
| | LTE Band 7 (Channel Bandwidth: 20 MHz) | 18M0W7D |
| | LTE Band 41 (Channel Bandwidth: 5 MHz) | 4M50W7D |
| | LTE Band 41 (Channel Bandwidth: 10 MHz) | 8M97W7D |
| | LTE Band 41 (Channel Bandwidth: 15 MHz) | 13M5G7D |
| | LTE Band 41 (Channel Bandwidth: 20 MHz) | 17M9W7D |
| **Antenna Type** | Fixed Internal Antenna | |
| **Accessory Device** | Refer to Note as below | |
| **Data Cable Supplied** | Refer to Note as below | |

Note:

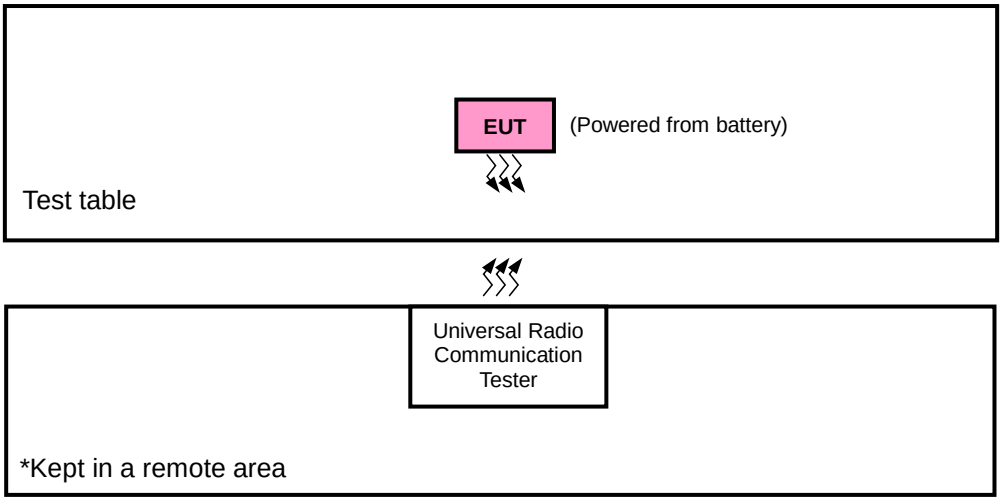
1. There're 2 configuraitons for the EUT listed as below.
   Main Sample: EUT + Battery 1
   2nd Sample: EUT + Battery 2
   ✧ Only the worst test data was presented in the report.
2. The EUT's accessories list refers to EMI report.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

## 3.2 Configuration of System under Test

**<Radiated Emission Test>**




**<E.I.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:

| EUT Configure Mode | Discription |
|---|---|
| A | Main Sample |
| B | 2nd Sample |

| Band | EIRP | Radiated Emission |
|---|---|---|
| LTE Band 7 | Z-plane | Y-axis |
| LTE Band 41 | X-plane | Z-axis |

**LTE Band 7**

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| A | EIRP | 20775 to 21425 | 20775, 21100, 21425 | 5 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100 21350 | 20 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| A | Frequency Stability | 20775 to 21425 | 20775, 21425 | 5 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21400 | 10 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21375 | 15 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21350 | 20 MHz | QPSK | 1 RB / 0 RB Offset |
| A | Occupied Bandwidth | 20775 to 21425 | 20775, 21100, 21425 | 5 MHz | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10 MHz | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15 MHz | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100 21350 | 20 MHz | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| A | Peak to Average Ratio | 20775 to 21425 | 20775, 21100, 21425 | 5 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100 21350 | 20 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| A | Out of Band Emission | 20775 to 21425 | 20775, 21425 | 5 MHz | QPSK, 16QAM | 25 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 20800 to 21400 | 20800, 21400 | 10 MHz | QPSK, 16QAM | 50 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 20825 to 21375 | 20825, 21375 | 15 MHz | QPSK, 16QAM | 75 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 20850 to 21350 | 20850, 21350 | 20 MHz | QPSK, 16QAM | 100 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| A | Conducted Emission | 20775 to 21425 | 20775, 21100, 21425 | 5 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100 21350 | 20 MHz | QPSK | 1 RB / 0 RB Offset |
| A | Radiated Emission | 20850 to 21350 | 20850, 21100 21350 | 20 MHz | QPSK | 1 RB / 0 RB Offset |

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

### LTE Band 41

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| A | EIRP | 39675 to 41565 | 39675, 40620, 41565 | 5 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | EIRP | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| A | Frequency Stability | 39675 to 41565 | 39675, 41565 | 5 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 41540 | 10 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 41515 | 15 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 41490 | 20 MHz | QPSK | 1 RB / 0 RB Offset |
| A | Occupied Bandwidth | 39675 to 41565 | 39675, 40620, 41565 | 5 MHz | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10 MHz | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15 MHz | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| A | Peak to Average Ratio | 39675 to 41565 | 39675, 40620, 41565 | 5 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| A | Out of Band Emission | 39675 to 41565 | 39675, 41565 | 5 MHz | QPSK, 16QAM | 25 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 39700 to 41540 | 39700, 41540 | 10 MHz | QPSK, 16QAM | 50 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 39725 to 41515 | 39725, 41515 | 15 MHz | QPSK, 16QAM | 75 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| | | 39750 to 41490 | 39750, 41490 | 20 MHz | QPSK, 16QAM | 100 RB / 0 RB Offset |
| | | | | | | 1 RB Offset |
| A | Conducted Emission | 39675 to 41565 | 39675, 40620, 41565 | 5 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15 MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK | 1 RB / 0 RB Offset |
| A, B | Radiated Emission | 39750 to 41490 | 39750, 40620, 41490 | 20 MHz | QPSK | 1 RB / 0 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 |
|---|---|---|---|
| EIRP | 25 deg. C, 65 % RH | 3.85 Vdc | Charles Hsiao |
| Frequency Stability | 25 deg. C, 65 % RH | 3.85 Vdc | Anson Lin |
| Occupied Bandwidth | 25 deg. C, 65 % RH | 3.85 Vdc | Anson Lin |
| Out of Band Emission | 25 deg. C, 65 % RH | 3.85 Vdc | Anson Lin |
| Peak to Average Ratio | 25 deg. C, 65 % RH | 3.85 Vdc | Anson Lin |
| Condcudeted Emission | 25 deg. C, 65 % RH | 3.85 Vdc | Anson Lin |
| Radiated Emission | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Charles Hsiao / Karl Lee |

### 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 27**
**KDB 971168 D01 Power Meas License Digital Systems v02r02**
**ANSI/TIA/EIA-603-D 2010**

**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

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

### 4.1.2 Test Procedures

**EIRP Measurement:**

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 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 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

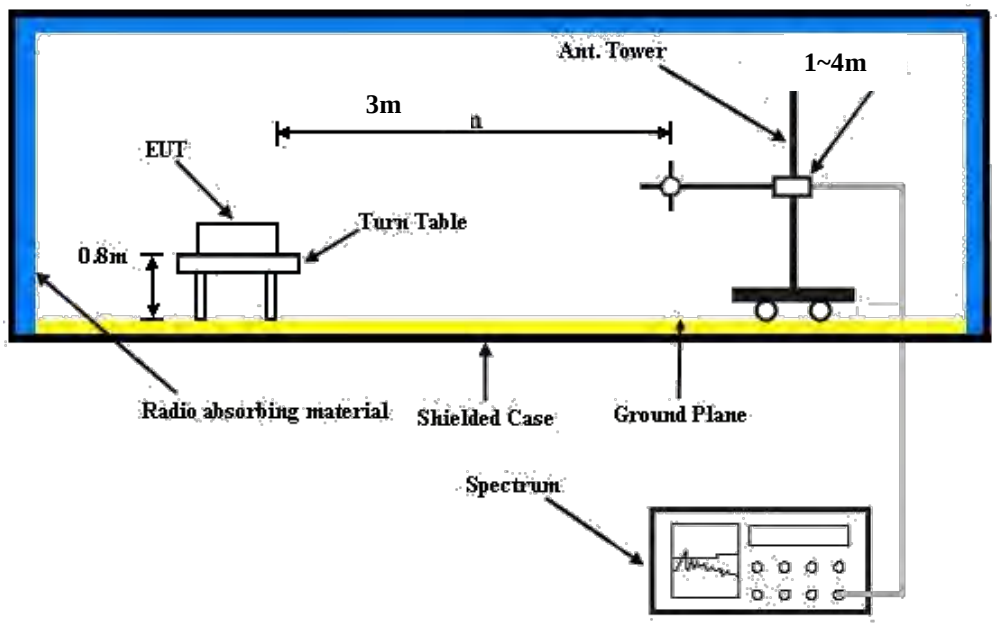
**Conducted Power Measurement:**

a. The EUT was set up for the maximum power with 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:**




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

**Conducted Power Measurement:**

### 4.1.4 Test Results

**Conducted Output Power (dBm)**

**LTE Band 7**

| BW (MHz) | RB Size | RB Offset | QPSK Low CH 20850 2510.0 MHz | QPSK Mid CH 21100 2535.0 MHz | QPSK High CH 21350 2560.0 MHz | QPSK 3GPP MPR (dB) | 16QAM Low CH 20850 2510.0 MHz | 16QAM Mid CH 21100 2535.0 MHz | 16QAM High CH 21350 2560.0 MHz | 16QAM 3GPP MPR (dB) | 64QAM Low CH 20850 2510.0 MHz | 64QAM Mid CH 21100 2535.0 MHz | 64QAM High CH 21350 2560.0 MHz | 64QAM 3GPP MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 1 | 0 | 23.22 | 23.66 | **23.74** | 0 | 22.23 | 22.71 | 22.79 | 1 | 21.27 | 21.75 | 21.83 | 2 |
| | 1 | 50 | 23.09 | 23.52 | 23.65 | 0 | 22.14 | 22.54 | 22.63 | 1 | 21.18 | 21.58 | 21.67 | 2 |
| | 1 | 99 | 22.97 | 23.47 | 23.57 | 0 | 21.99 | 22.49 | 22.59 | 1 | 21.03 | 21.53 | 21.63 | 2 |
| | 50 | 0 | 22.27 | 22.67 | 22.73 | 1 | 21.24 | 21.65 | 21.77 | 2 | 20.28 | 20.69 | 20.81 | 3 |
| | 50 | 25 | 22.20 | 22.62 | 22.70 | 1 | 21.13 | 21.59 | 21.69 | 2 | 20.17 | 20.63 | 20.73 | 3 |
| | 50 | 50 | 22.16 | 22.60 | 22.65 | 1 | 21.11 | 21.56 | 21.64 | 2 | 20.15 | 20.60 | 20.68 | 3 |
| | 100 | 0 | 22.21 | 22.65 | 22.71 | 1 | 21.26 | 21.62 | 21.71 | 2 | 20.30 | 20.66 | 20.75 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK Low CH 20825 2507.5 MHz | QPSK Mid CH 21100 2535.0 MHz | QPSK High CH 21375 2562.5 MHz | QPSK 3GPP MPR (dB) | 16QAM Low CH 20825 2507.5 MHz | 16QAM Mid CH 21100 2535.0 MHz | 16QAM High CH 21375 2562.5 MHz | 16QAM 3GPP MPR (dB) | 64QAM Low CH 20825 2507.5 MHz | 64QAM Mid CH 21100 2535.0 MHz | 64QAM High CH 21375 2562.5 MHz | 64QAM 3GPP MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 1 | 0 | 23.21 | 23.65 | 23.73 | 0 | 22.22 | 22.70 | 22.78 | 1 | 21.23 | 21.71 | 21.79 | 2 |
| | 1 | 37 | 23.08 | 23.51 | 23.64 | 0 | 22.13 | 22.53 | 22.62 | 1 | 21.14 | 21.54 | 21.63 | 2 |
| | 1 | 74 | 22.96 | 23.46 | 23.56 | 0 | 21.98 | 22.48 | 22.58 | 1 | 20.99 | 21.49 | 21.59 | 2 |
| | 36 | 0 | 22.26 | 22.66 | 22.72 | 1 | 21.23 | 21.64 | 21.76 | 2 | 20.24 | 20.65 | 20.77 | 3 |
| | 36 | 19 | 22.19 | 22.61 | 22.69 | 1 | 21.12 | 21.58 | 21.68 | 2 | 20.13 | 20.59 | 20.69 | 3 |
| | 36 | 39 | 22.15 | 22.59 | 22.64 | 1 | 21.10 | 21.55 | 21.63 | 2 | 20.11 | 20.56 | 20.64 | 3 |
| | 75 | 0 | 22.20 | 22.64 | 22.70 | 1 | 21.25 | 21.61 | 21.70 | 2 | 20.26 | 20.62 | 20.71 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK Low CH 20800 2505.0 MHz | QPSK Mid CH 21100 2535.0 MHz | QPSK High CH 21400 2565.0 MHz | QPSK 3GPP MPR (dB) | 16QAM Low CH 20800 2505.0 MHz | 16QAM Mid CH 21100 2535.0 MHz | 16QAM High CH 21400 2565.0 MHz | 16QAM 3GPP MPR (dB) | 64QAM Low CH 20800 2505.0 MHz | 64QAM Mid CH 21100 2535.0 MHz | 64QAM High CH 21400 2565.0 MHz | 64QAM 3GPP MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1 | 0 | 23.19 | 23.63 | 23.71 | 0 | 22.20 | 22.68 | 22.76 | 1 | 21.20 | 21.68 | 21.76 | 2 |
| | 1 | 24 | 23.06 | 23.49 | 23.62 | 0 | 22.11 | 22.51 | 22.60 | 1 | 21.11 | 21.51 | 21.60 | 2 |
| | 1 | 49 | 22.94 | 23.44 | 23.54 | 0 | 21.96 | 22.46 | 22.56 | 1 | 20.96 | 21.46 | 21.56 | 2 |
| | 25 | 0 | 22.24 | 22.64 | 22.70 | 1 | 21.21 | 21.62 | 21.74 | 2 | 20.21 | 20.62 | 20.74 | 3 |
| | 25 | 12 | 22.17 | 22.59 | 22.67 | 1 | 21.10 | 21.56 | 21.66 | 2 | 20.10 | 20.56 | 20.66 | 3 |
| | 25 | 25 | 22.13 | 22.57 | 22.62 | 1 | 21.08 | 21.53 | 21.61 | 2 | 20.08 | 20.53 | 20.61 | 3 |
| | 50 | 0 | 22.18 | 22.62 | 22.68 | 1 | 21.23 | 21.59 | 21.68 | 2 | 20.23 | 20.59 | 20.68 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK Low CH 20775 2502.5 MHz | QPSK Mid CH 21100 2535.0 MHz | QPSK High CH 21425 2567.5 MHz | QPSK 3GPP MPR (dB) | 16QAM Low CH 20775 2502.5 MHz | 16QAM Mid CH 21100 2535.0 MHz | 16QAM High CH 21425 2567.5 MHz | 16QAM 3GPP MPR (dB) | 64QAM Low CH 20775 2502.5 MHz | 64QAM Mid CH 21100 2535.0 MHz | 64QAM High CH 21425 2567.5 MHz | 64QAM 3GPP MPR (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 1 | 0 | 23.16 | 23.60 | 23.68 | 0 | 22.17 | 22.65 | 22.73 | 1 | 21.16 | 21.64 | 21.72 | 2 |
| | 1 | 12 | 23.03 | 23.46 | 23.59 | 0 | 22.08 | 22.48 | 22.57 | 1 | 21.07 | 21.47 | 21.56 | 2 |
| | 1 | 24 | 22.91 | 23.41 | 23.51 | 0 | 21.93 | 22.43 | 22.53 | 1 | 20.92 | 21.42 | 21.52 | 2 |
| | 12 | 0 | 22.21 | 22.61 | 22.67 | 1 | 21.18 | 21.59 | 21.71 | 2 | 20.17 | 20.58 | 20.70 | 3 |
| | 12 | 6 | 22.14 | 22.56 | 22.64 | 1 | 21.07 | 21.53 | 21.63 | 2 | 20.06 | 20.52 | 20.62 | 3 |
| | 12 | 13 | 22.10 | 22.54 | 22.59 | 1 | 21.05 | 21.50 | 21.58 | 2 | 20.04 | 20.49 | 20.57 | 3 |
| | 25 | 0 | 22.15 | 22.59 | 22.65 | 1 | 21.20 | 21.56 | 21.65 | 2 | 20.19 | 20.55 | 20.64 | 3 |

## LTE Band 41

| BW (MHz) | RB Size | RB Offset | QPSK | | | | 16QAM | | | | 64QAM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low Ch 39750 | Mid Ch 40620 | High Ch 41490 | 3GPP MPR (dB) | Low Ch 39750 | Mid Ch 40620 | High Ch 41490 | 3GPP MPR (dB) | Low Ch 39750 | Mid Ch 40620 | High Ch 41490 | 3GPP MPR (dB) |
| | | | 2506.0 MHz | 2593.0 MHz | 2680.0 MHz | | 2506.0 MHz | 2593.0 MHz | 2680.0 MHz | | 2506.0 MHz | 2593.0 MHz | 2680.0 MHz | |
| 20 | 1 | 0 | 27.09 | 27.02 | 26.69 | 0 | 26.14 | 26.07 | 25.73 | 1 | 25.06 | 24.99 | 24.65 | 2 |
| | 1 | 50 | 26.83 | 26.75 | 26.41 | 0 | 25.91 | 25.79 | 25.40 | 1 | 24.83 | 24.71 | 24.32 | 2 |
| | 1 | 99 | 26.71 | 26.65 | 26.28 | 0 | 25.79 | 25.68 | 25.31 | 1 | 24.71 | 24.60 | 24.23 | 2 |
| | 50 | 0 | 25.98 | 25.90 | 25.67 | 1 | 25.01 | 24.91 | 24.62 | 2 | 23.93 | 23.83 | 23.54 | 3 |
| | 50 | 25 | 25.89 | 25.85 | 25.53 | 1 | 24.91 | 24.84 | 24.48 | 2 | 23.83 | 23.76 | 23.40 | 3 |
| | 50 | 50 | 25.82 | 25.76 | 25.45 | 1 | 24.82 | 24.74 | 24.39 | 2 | 23.74 | 23.66 | 23.31 | 3 |
| | 100 | 0 | 25.93 | 25.82 | 25.51 | 1 | 24.88 | 24.81 | 24.48 | 2 | 23.80 | 23.73 | 23.40 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK | | | | 16QAM | | | | 64QAM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low Ch 39725 | Mid Ch 40620 | High Ch 41515 | 3GPP MPR (dB) | Low Ch 39725 | Mid Ch 40620 | High Ch 41515 | 3GPP MPR (dB) | Low Ch 39725 | Mid Ch 40620 | High Ch 41515 | 3GPP MPR (dB) |
| | | | 2503.5 MHz | 2593.0 MHz | 2682.5 MHz | | 2503.5 MHz | 2593.0 MHz | 2682.5 MHz | | 2503.5 MHz | 2593.0 MHz | 2682.5 MHz | |
| 15 | 1 | 0 | 27.04 | 26.97 | 26.61 | 0 | 26.09 | 26.02 | 25.67 | 1 | 24.99 | 24.92 | 24.58 | 2 |
| | 1 | 37 | 26.73 | 26.68 | 26.32 | 0 | 25.80 | 25.74 | 25.45 | 1 | 24.76 | 24.64 | 24.25 | 2 |
| | 1 | 74 | 26.63 | 26.56 | 26.17 | 0 | 25.68 | 25.62 | 25.29 | 1 | 24.64 | 24.53 | 24.16 | 2 |
| | 36 | 0 | 25.93 | 25.78 | 25.45 | 1 | 24.94 | 24.81 | 24.48 | 2 | 23.86 | 23.76 | 23.47 | 3 |
| | 36 | 19 | 25.78 | 25.73 | 25.34 | 1 | 24.85 | 24.75 | 24.37 | 2 | 23.76 | 23.69 | 23.33 | 3 |
| | 36 | 39 | 25.68 | 25.63 | 25.27 | 1 | 24.72 | 24.62 | 24.18 | 2 | 23.67 | 23.59 | 23.24 | 3 |
| | 75 | 0 | 25.76 | 25.70 | 25.41 | 1 | 24.79 | 24.70 | 24.41 | 2 | 23.73 | 23.66 | 23.33 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK | | | | 16QAM | | | | 64QAM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low Ch 39700 | Mid Ch 40620 | High Ch 41540 | 3GPP MPR (dB) | Low Ch 39700 | Mid Ch 40620 | High Ch 41540 | 3GPP MPR (dB) | Low Ch 39700 | Mid Ch 40620 | High Ch 41540 | 3GPP MPR (dB) |
| | | | 2501.0 MHz | 2593.0 MHz | 2685.0 MHz | | 2501.0 MHz | 2593.0 MHz | 2685.0 MHz | | 2501.0 MHz | 2593.0 MHz | 2685.0 MHz | |
| 10 | 1 | 0 | 26.99 | 26.92 | 26.56 | 0 | 26.04 | 25.97 | 25.61 | 1 | 24.93 | 24.86 | 24.52 | 2 |
| | 1 | 24 | 26.70 | 26.62 | 26.23 | 0 | 25.79 | 25.69 | 25.34 | 1 | 24.70 | 24.58 | 24.19 | 2 |
| | 1 | 49 | 26.58 | 26.52 | 26.10 | 0 | 25.63 | 25.54 | 25.13 | 1 | 24.58 | 24.47 | 24.10 | 2 |
| | 25 | 0 | 25.86 | 25.71 | 25.30 | 1 | 24.88 | 24.74 | 24.29 | 2 | 23.80 | 23.70 | 23.41 | 3 |
| | 25 | 12 | 25.73 | 25.65 | 25.28 | 1 | 24.74 | 24.65 | 24.26 | 2 | 23.70 | 23.63 | 23.27 | 3 |
| | 25 | 25 | 25.65 | 25.53 | 25.13 | 1 | 24.62 | 24.52 | 24.08 | 2 | 23.61 | 23.53 | 23.18 | 3 |
| | 50 | 0 | 25.70 | 25.59 | 25.27 | 1 | 24.68 | 24.62 | 24.21 | 2 | 23.67 | 23.60 | 23.27 | 3 |

| BW (MHz) | RB Size | RB Offset | QPSK | | | | 16QAM | | | | 64QAM | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low Ch 39675 | Mid Ch 40620 | High Ch 41565 | 3GPP MPR (dB) | Low Ch 39675 | Mid Ch 40620 | High Ch 41565 | 3GPP MPR (dB) | Low Ch 39675 | Mid Ch 40620 | High Ch 41565 | 3GPP MPR (dB) |
| | | | 2498.5 MHz | 2593.0 MHz | 2687.5 MHz | | 2498.5 MHz | 2593.0 MHz | 2687.5 MHz | | 2498.5 MHz | 2593.0 MHz | 2687.5 MHz | |
| 5 | 1 | 0 | 27.03 | 26.96 | 26.61 | 0 | 26.08 | 25.99 | 25.63 | 1 | 24.89 | 24.82 | 24.48 | 2 |
| | 1 | 12 | 26.80 | 26.67 | 26.29 | 0 | 25.75 | 25.69 | 25.41 | 1 | 24.66 | 24.54 | 24.15 | 2 |
| | 1 | 24 | 26.67 | 26.56 | 26.10 | 0 | 25.61 | 25.57 | 25.10 | 1 | 24.54 | 24.43 | 24.06 | 2 |
| | 12 | 0 | 25.77 | 25.67 | 25.28 | 1 | 24.86 | 24.71 | 24.23 | 2 | 23.76 | 23.66 | 23.37 | 3 |
| | 12 | 6 | 25.72 | 25.61 | 25.15 | 1 | 24.74 | 24.62 | 24.13 | 2 | 23.66 | 23.59 | 23.23 | 3 |
| | 12 | 13 | 25.61 | 25.46 | 25.01 | 1 | 24.57 | 24.49 | 23.97 | 2 | 23.57 | 23.49 | 23.14 | 3 |
| | 25 | 0 | 25.64 | 25.55 | 25.26 | 1 | 24.67 | 24.57 | 24.16 | 2 | 23.63 | 23.56 | 23.23 | 3 |

**EIRP Power (dBm)**

**Mode A**

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 5 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| Z | 20775 | 2502.5 | -19.48 | 44.24 | 24.76 | 299.09 | H |
| | 21100 | 2535.0 | -19.54 | 44.20 | 24.66 | 292.21 | |
| | 21425 | 2567.5 | -20.06 | 44.80 | 24.74 | 297.92 | |
| | 20775 | 2502.5 | -23.48 | 44.19 | 20.71 | 117.79 | V |
| | 21100 | 2535.0 | -23.34 | 44.09 | 20.75 | 118.80 | |
| | 21425 | 2567.5 | -23.79 | 44.50 | 20.71 | 117.73 | |
| **Channel Bandwidth: 5 MHz / 16QAM** | | | | | | | |
| Z | 20775 | 2502.5 | -20.46 | 44.24 | 23.78 | 238.67 | H |
| | 21100 | 2535.0 | -20.48 | 44.20 | 23.72 | 235.34 | |
| | 21425 | 2567.5 | -21.09 | 44.80 | 23.71 | 235.02 | |
| | 20775 | 2502.5 | -24.51 | 44.19 | 19.68 | 92.92 | V |
| | 21100 | 2535.0 | -24.30 | 44.09 | 19.79 | 95.24 | |
| | 21425 | 2567.5 | -24.80 | 44.50 | 19.70 | 93.30 | |
| **Channel Bandwidth: 5 MHz / 64QAM** | | | | | | | |
| Z | 20775 | 2502.5 | -21.44 | 44.24 | 22.80 | 190.46 | H |
| | 21100 | 2535.0 | -21.49 | 44.20 | 22.71 | 186.51 | |
| | 21425 | 2567.5 | -22.13 | 44.80 | 22.67 | 184.97 | |
| | 20775 | 2502.5 | -25.59 | 44.19 | 18.60 | 72.46 | V |
| | 21100 | 2535.0 | -25.26 | 44.09 | 18.83 | 76.35 | |
| | 21425 | 2567.5 | -25.89 | 44.50 | 18.61 | 72.53 | |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 10 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| Z | 20800 | 2505.0 | -19.57 | 44.34 | 24.77 | 299.99 | H |
| | 21100 | 2535.0 | -19.43 | 44.20 | 24.77 | 299.71 | |
| | 21400 | 2565.0 | -19.86 | 44.72 | 24.86 | 306.41 | |
| | 20800 | 2505.0 | -23.57 | 44.23 | 20.66 | 116.31 | V |
| | 21100 | 2535.0 | -23.39 | 44.09 | 20.70 | 117.44 | |
| | 21400 | 2565.0 | -23.68 | 44.41 | 20.73 | 118.20 | |
| **Channel Bandwidth: 10 MHz / 16QAM** | | | | | | | |
| Z | 20800 | 2505.0 | -20.60 | 44.34 | 23.74 | 236.65 | H |
| | 21100 | 2535.0 | -20.51 | 44.20 | 23.69 | 233.72 | |
| | 21400 | 2565.0 | -21.00 | 44.72 | 23.72 | 235.67 | |
| | 20800 | 2505.0 | -24.44 | 44.23 | 19.79 | 95.19 | V |
| | 21100 | 2535.0 | -24.36 | 44.09 | 19.73 | 93.93 | |
| | 21400 | 2565.0 | -24.75 | 44.41 | 19.66 | 92.38 | |
| **Channel Bandwidth: 10 MHz / 64QAM** | | | | | | | |
| Z | 20800 | 2505.0 | -21.64 | 44.34 | 22.70 | 186.25 | H |
| | 21100 | 2535.0 | -21.60 | 44.20 | 22.60 | 181.84 | |
| | 21400 | 2565.0 | -22.03 | 44.72 | 22.69 | 185.91 | |
| | 20800 | 2505.0 | -25.43 | 44.23 | 18.80 | 75.79 | V |
| | 21100 | 2535.0 | -25.41 | 44.09 | 18.68 | 73.76 | |
| | 21400 | 2565.0 | -25.76 | 44.41 | 18.65 | 73.21 | |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 15 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| Z | 20825 | 2507.5 | -19.57 | 44.32 | 24.75 | 298.40 | H |
| | 21100 | 2535.0 | -19.35 | 44.20 | 24.85 | 305.28 | |
| | 21375 | 2562.5 | -20.11 | 44.85 | 24.74 | 297.71 | |
| | 20825 | 2507.5 | -23.29 | 43.99 | 20.70 | 117.54 | V |
| | 21100 | 2535.0 | -23.33 | 44.09 | 20.76 | 119.07 | |
| | 21375 | 2562.5 | -23.72 | 44.51 | 20.79 | 119.95 | |
| **Channel Bandwidth: 15 MHz / 16QAM** | | | | | | | |
| Z | 20825 | 2507.5 | -20.56 | 44.32 | 23.76 | 237.57 | H |
| | 21100 | 2535.0 | -20.42 | 44.20 | 23.78 | 238.62 | |
| | 21375 | 2562.5 | -21.18 | 44.85 | 23.67 | 232.70 | |
| | 20825 | 2507.5 | -24.22 | 43.99 | 19.77 | 94.89 | V |
| | 21100 | 2535.0 | -24.30 | 44.09 | 19.79 | 95.24 | |
| | 21375 | 2562.5 | -24.77 | 44.51 | 19.74 | 94.19 | |
| **Channel Bandwidth: 15 MHz / 64QAM** | | | | | | | |
| Z | 20825 | 2507.5 | -21.57 | 44.32 | 22.75 | 188.28 | H |
| | 21100 | 2535.0 | -21.46 | 44.20 | 22.74 | 187.80 | |
| | 21375 | 2562.5 | -22.12 | 44.85 | 22.73 | 187.41 | |
| | 20825 | 2507.5 | -25.26 | 43.99 | 18.73 | 74.68 | V |
| | 21100 | 2535.0 | -25.23 | 44.09 | 18.86 | 76.88 | |
| | 21375 | 2562.5 | -25.82 | 44.51 | 18.69 | 73.96 | |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 20 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| Z | 20850.0 | 2510.0 | -19.42 | 44.16 | 24.74 | 297.85 | H |
| | 21100.0 | 2535.0 | -19.48 | 44.20 | 24.72 | 296.28 | |
| | 21350.0 | 2560.0 | -20.03 | 44.81 | 24.78 | 300.40 | |
| | 20850.0 | 2510.0 | -24.07 | 44.78 | 20.71 | 117.76 | V |
| | 21100.0 | 2535.0 | -23.26 | 44.09 | 20.83 | 121.00 | |
| | 21350.0 | 2560.0 | -23.94 | 44.72 | 20.78 | 119.67 | |
| **Channel Bandwidth: 20 MHz / 16QAM** | | | | | | | |
| Z | 20850.0 | 2510.0 | -20.43 | 44.16 | 23.73 | 236.05 | H |
| | 21100.0 | 2535.0 | -20.48 | 44.20 | 23.72 | 235.34 | |
| | 21350.0 | 2560.0 | -20.99 | 44.81 | 23.82 | 240.82 | |
| | 20850.0 | 2510.0 | -25.02 | 44.78 | 19.76 | 94.62 | V |
| | 21100.0 | 2535.0 | -24.38 | 44.09 | 19.71 | 93.50 | |
| | 21350.0 | 2560.0 | -25.03 | 44.72 | 19.69 | 93.11 | |
| **Channel Bandwidth: 20 MHz / 64QAM** | | | | | | | |
| Z | 20850.0 | 2510.0 | -21.45 | 44.16 | 22.71 | 186.64 | H |
| | 21100.0 | 2535.0 | -21.53 | 44.20 | 22.67 | 184.71 | |
| | 21350.0 | 2560.0 | -21.97 | 44.81 | 22.84 | 192.18 | |
| | 20850.0 | 2510.0 | -26.06 | 44.78 | 18.72 | 74.47 | V |
| | 21100.0 | 2535.0 | -25.43 | 44.09 | 18.66 | 73.42 | |
| | 21350.0 | 2560.0 | -26.04 | 44.72 | 18.68 | 73.79 | |

| LTE Band 41 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 5 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| X | 39675 | 2498.5 | -20.15 | 44.24 | 24.09 | 256.21 | H |
| | 40620 | 2593.0 | -20.17 | 44.20 | 24.03 | 252.76 | |
| | 41565 | 2687.5 | -20.76 | 44.80 | 24.04 | 253.57 | |
| | 39675 | 2498.5 | -24.16 | 44.19 | 20.03 | 100.72 | V |
| | 40620 | 2593.0 | -24.03 | 44.09 | 20.06 | 101.34 | |
| | 41565 | 2687.5 | -24.41 | 44.50 | 20.09 | 102.07 | |
| **Channel Bandwidth: 5 MHz / 16QAM** | | | | | | | |
| X | 39675 | 2498.5 | -21.11 | 44.24 | 23.13 | 205.49 | H |
| | 40620 | 2593.0 | -21.18 | 44.20 | 23.02 | 200.31 | |
| | 41565 | 2687.5 | -21.70 | 44.80 | 23.10 | 204.22 | |
| | 39675 | 2498.5 | -25.13 | 44.19 | 19.06 | 80.56 | V |
| | 40620 | 2593.0 | -25.08 | 44.09 | 19.01 | 79.58 | |
| | 41565 | 2687.5 | -25.44 | 44.50 | 19.06 | 80.52 | |
| **Channel Bandwidth: 5 MHz / 64QAM** | | | | | | | |
| X | 39675 | 2498.5 | -22.15 | 44.24 | 22.09 | 161.73 | H |
| | 40620 | 2593.0 | -22.10 | 44.20 | 22.10 | 162.07 | |
| | 41565 | 2687.5 | -22.64 | 44.80 | 22.16 | 164.48 | |
| | 39675 | 2498.5 | -26.18 | 44.19 | 18.01 | 63.26 | V |
| | 40620 | 2593.0 | -26.05 | 44.09 | 18.04 | 63.65 | |
| | 41565 | 2687.5 | -26.41 | 44.50 | 18.09 | 64.40 | |

| LTE Band 41 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 10 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| X | 39700 | 2501.0 | -20.23 | 44.34 | 24.11 | 257.69 | H |
| | 40620 | 2593.0 | -20.17 | 44.20 | 24.03 | 252.76 | |
| | 41540 | 2685.0 | -20.71 | 44.72 | 24.01 | 251.94 | |
| | 39700 | 2501.0 | -24.20 | 44.23 | 20.03 | 100.60 | V |
| | 40620 | 2593.0 | -24.04 | 44.09 | 20.05 | 101.11 | |
| | 41540 | 2685.0 | -24.38 | 44.41 | 20.03 | 100.60 | |
| **Channel Bandwidth: 10 MHz / 16QAM** | | | | | | | |
| X | 39700 | 2501.0 | -21.33 | 44.34 | 23.01 | 200.03 | H |
| | 40620 | 2593.0 | -21.18 | 44.20 | 23.02 | 200.31 | |
| | 41540 | 2685.0 | -21.58 | 44.72 | 23.14 | 206.21 | |
| | 39700 | 2501.0 | -25.12 | 44.23 | 19.11 | 81.40 | V |
| | 40620 | 2593.0 | -25.03 | 44.09 | 19.06 | 80.50 | |
| | 41540 | 2685.0 | -25.38 | 44.41 | 19.03 | 79.91 | |
| **Channel Bandwidth: 10 MHz / 64QAM** | | | | | | | |
| X | 39700 | 2501.0 | -22.26 | 44.34 | 22.08 | 161.47 | H |
| | 40620 | 2593.0 | -22.18 | 44.20 | 22.02 | 159.11 | |
| | 41540 | 2685.0 | -22.59 | 44.72 | 22.13 | 163.42 | |
| | 39700 | 2501.0 | -26.10 | 44.23 | 18.13 | 64.95 | V |
| | 40620 | 2593.0 | -26.01 | 44.09 | 18.08 | 64.24 | |
| | 41540 | 2685.0 | -26.41 | 44.41 | 18.00 | 63.04 | |

| LTE Band 41 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 15 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| X | 39725 | 2503.5 | -20.23 | 44.32 | 24.09 | 256.33 | H |
| | 40620 | 2593.0 | -20.14 | 44.20 | 24.06 | 254.51 | |
| | 41515 | 2682.5 | -20.82 | 44.85 | 24.03 | 252.81 | |
| | 39725 | 2503.5 | -23.99 | 43.99 | 20.00 | 100.05 | V |
| | 40620 | 2593.0 | -24.01 | 44.09 | 20.08 | 101.81 | |
| | 41515 | 2682.5 | -24.48 | 44.51 | 20.03 | 100.69 | |
| **Channel Bandwidth: 15 MHz / 16QAM** | | | | | | | |
| X | 39725 | 2503.5 | -21.29 | 44.32 | 23.03 | 200.82 | H |
| | 40620 | 2593.0 | -21.20 | 44.20 | 23.00 | 199.39 | |
| | 41515 | 2682.5 | -21.76 | 44.85 | 23.09 | 203.61 | |
| | 39725 | 2503.5 | -24.90 | 43.99 | 19.09 | 81.13 | V |
| | 40620 | 2593.0 | -25.06 | 44.09 | 19.03 | 79.95 | |
| | 41515 | 2682.5 | -25.41 | 44.51 | 19.10 | 81.28 | |
| **Channel Bandwidth: 15 MHz / 64QAM** | | | | | | | |
| X | 39725 | 2503.5 | -22.26 | 44.32 | 22.06 | 160.62 | H |
| | 40620 | 2593.0 | -22.16 | 44.20 | 22.04 | 159.85 | |
| | 41515 | 2682.5 | -22.80 | 44.85 | 22.05 | 160.25 | |
| | 39725 | 2503.5 | -25.89 | 43.99 | 18.10 | 64.60 | V |
| | 40620 | 2593.0 | -26.04 | 44.09 | 18.05 | 63.80 | |
| | 41515 | 2682.5 | -26.42 | 44.51 | 18.09 | 64.42 | |

| LTE Band 41 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 20 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| X | 39750 | 2506.0 | -20.15 | 44.16 | 24.01 | 251.54 | H |
| | 40620 | 2593.0 | -20.13 | 44.20 | 24.07 | 255.09 | |
| | 41490 | 2680.0 | -20.71 | 44.81 | 24.10 | 256.86 | |
| | 39750 | 2506.0 | -24.73 | 44.78 | 20.05 | 101.16 | V |
| | 40620 | 2593.0 | -24.08 | 44.09 | 20.01 | 100.18 | |
| | 41490 | 2680.0 | -24.66 | 44.72 | 20.06 | 101.39 | |
| **Channel Bandwidth: 20 MHz / 16QAM** | | | | | | | |
| X | 39750 | 2506.0 | -21.11 | 44.16 | 23.05 | 201.84 | H |
| | 40620 | 2593.0 | -21.12 | 44.20 | 23.08 | 203.10 | |
| | 41490 | 2680.0 | -21.80 | 44.81 | 23.01 | 199.85 | |
| | 39750 | 2506.0 | -25.74 | 44.78 | 19.04 | 80.17 | V |
| | 40620 | 2593.0 | -25.02 | 44.09 | 19.07 | 80.69 | |
| | 41490 | 2680.0 | -25.69 | 44.72 | 19.03 | 79.98 | |
| **Channel Bandwidth: 20 MHz / 64QAM** | | | | | | | |
| X | 39750 | 2506.0 | -22.13 | 44.16 | 22.03 | 159.59 | H |
| | 40620 | 2593.0 | -22.16 | 44.20 | 22.04 | 159.85 | |
| | 41490 | 2680.0 | -22.74 | 44.81 | 22.07 | 160.95 | |
| | 39750 | 2506.0 | -26.75 | 44.78 | 18.03 | 63.53 | V |
| | 40620 | 2593.0 | -26.05 | 44.09 | 18.04 | 63.65 | |
| | 41490 | 2680.0 | -26.64 | 44.72 | 18.08 | 64.27 | |

**Mode B**

| LTE Band 41 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel Bandwidth: 20 MHz / QPSK** | | | | | | | |
| **Plane** | **Channel** | **Frequency (MHz)** | **LVL (dBm)** | **Correction Factor (dB)** | **EIRP (dBm)** | **EIRP (mW)** | **Polarization (H/V)** |
| X | 39750 | 2506.0 | -20.56 | 44.16 | 23.60 | 229.09 | H |
| | 40620 | 2593.0 | -20.75 | 44.20 | 23.45 | 221.16 | |
| | 41490 | 2680.0 | -20.99 | 44.81 | 23.82 | 240.82 | |
| | 39750 | 2506.0 | -25.12 | 44.78 | 19.66 | 92.47 | V |
| | 40620 | 2593.0 | -24.84 | 44.09 | 19.25 | 84.10 | |
| | 41490 | 2680.0 | -25.11 | 44.72 | 19.61 | 91.41 | |
| **Channel Bandwidth: 20 MHz / 16QAM** | | | | | | | |
| X | 39750 | 2506.0 | -21.86 | 44.16 | 22.30 | 169.82 | H |
| | 40620 | 2593.0 | -21.74 | 44.20 | 22.46 | 176.08 | |
| | 41490 | 2680.0 | -22.21 | 44.81 | 22.60 | 181.84 | |
| | 39750 | 2506.0 | -26.14 | 44.78 | 18.64 | 73.11 | V |
| | 40620 | 2593.0 | -25.87 | 44.09 | 18.22 | 66.34 | |
| | 41490 | 2680.0 | -26.25 | 44.72 | 18.47 | 70.31 | |
| **Channel Bandwidth: 20 MHz / 64QAM** | | | | | | | |
| X | 39750 | 2506.0 | -22.85 | 44.16 | 21.31 | 135.21 | H |
| | 40620 | 2593.0 | -22.76 | 44.20 | 21.44 | 139.22 | |
| | 41490 | 2680.0 | -23.16 | 44.81 | 21.65 | 146.12 | |
| | 39750 | 2506.0 | -27.16 | 44.78 | 17.62 | 57.81 | V |
| | 40620 | 2593.0 | -26.90 | 44.09 | 17.19 | 52.34 | |
| | 41490 | 2680.0 | -27.21 | 44.72 | 17.51 | 56.36 | |

## 4.2 Frequency Stability Measurement

### 4.2.1 Limits of Frequency Stabiliity Measurement

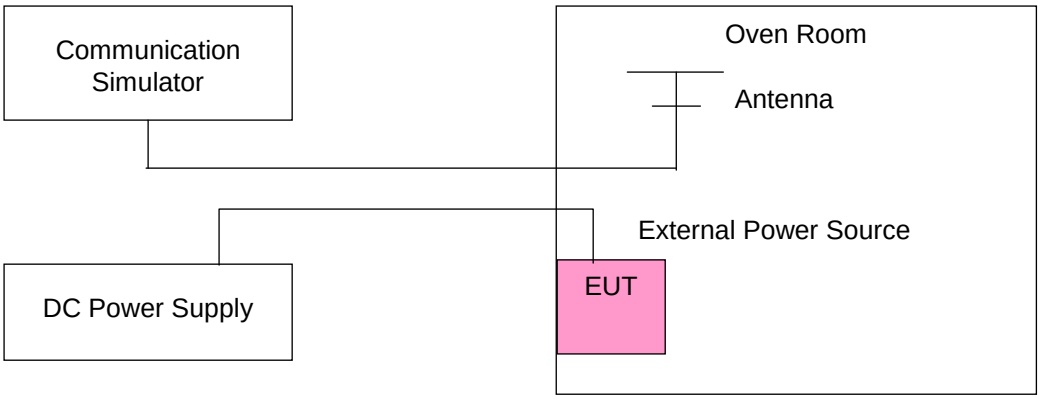
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 4.2.2 Test Procedure

a. 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.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ 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.

### 4.2.3 Test Setup



4.2.4 Test Results

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 5 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2502.500002 | 0.0008 | 2567.500002 | 0.0006 | 2.5 |
| 3.6 | 2502.500004 | 0.0015 | 2567.500003 | 0.0012 | 2.5 |
| 4.40 | 2502.500004 | 0.0014 | 2567.500003 | 0.0011 | 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. (℃) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 5 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2502.500004 | 0.0014 | 2567.500003 | 0.0010 | 2.5 |
| -20 | 2502.500003 | 0.0013 | 2567.500003 | 0.0011 | 2.5 |
| -10 | 2502.500003 | 0.0012 | 2567.500003 | 0.0013 | 2.5 |
| 0 | 2502.500003 | 0.0013 | 2567.500001 | 0.0005 | 2.5 |
| 10 | 2502.500003 | 0.0014 | 2567.500003 | 0.0012 | 2.5 |
| 20 | 2502.499996 | -0.0015 | 2567.499996 | -0.0016 | 2.5 |
| 30 | 2502.499997 | -0.0011 | 2567.499999 | -0.0005 | 2.5 |
| 40 | 2502.499998 | -0.0010 | 2567.499997 | -0.0014 | 2.5 |
| 50 | 2502.499999 | -0.0004 | 2567.499997 | -0.0012 | 2.5 |
| 55 | 2502.499997 | -0.0013 | 2567.499997 | -0.0014 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 10 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2505.000001 | 0.0006 | 2565.000001 | 0.0005 | 2.5 |
| 3.6 | 2505.000002 | 0.0009 | 2565.000003 | 0.0012 | 2.5 |
| 4.40 | 2505.000003 | 0.0010 | 2565.000003 | 0.0012 | 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. (℃) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 10 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2505.000003 | 0.0012 | 2565.000001 | 0.0005 | 2.5 |
| -20 | 2505.000002 | 0.0008 | 2565.000002 | 0.0007 | 2.5 |
| -10 | 2505.000004 | 0.0014 | 2565.000002 | 0.0006 | 2.5 |
| 0 | 2505.000001 | 0.0005 | 2565.000003 | 0.0010 | 2.5 |
| 10 | 2505.000001 | 0.0004 | 2565.000002 | 0.0008 | 2.5 |
| 20 | 2504.999997 | -0.0014 | 2564.999997 | -0.0012 | 2.5 |
| 30 | 2504.999998 | -0.0007 | 2564.999999 | -0.0004 | 2.5 |
| 40 | 2504.999997 | -0.0011 | 2564.999997 | -0.0014 | 2.5 |
| 50 | 2504.999999 | -0.0004 | 2564.999997 | -0.0014 | 2.5 |
| 55 | 2504.999996 | -0.0014 | 2564.999999 | -0.0004 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 15 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2507.500004 | 0.0015 | 2562.500001 | 0.0004 | 2.5 |
| 3.6 | 2507.500004 | 0.0015 | 2562.500001 | 0.0004 | 2.5 |
| 4.40 | 2507.500003 | 0.0012 | 2562.500003 | 0.0010 | 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. (℃) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 15 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2507.500003 | 0.0010 | 2562.500004 | 0.0014 | 2.5 |
| -20 | 2507.500001 | 0.0006 | 2562.500003 | 0.0013 | 2.5 |
| -10 | 2507.500002 | 0.0008 | 2562.500002 | 0.0008 | 2.5 |
| 0 | 2507.500002 | 0.0010 | 2562.500004 | 0.0015 | 2.5 |
| 10 | 2507.500001 | 0.0005 | 2562.500002 | 0.0008 | 2.5 |
| 20 | 2507.499998 | -0.0010 | 2562.499997 | -0.0013 | 2.5 |
| 30 | 2507.499999 | -0.0005 | 2562.499997 | -0.0011 | 2.5 |
| 40 | 2507.499997 | -0.0010 | 2562.499998 | -0.0010 | 2.5 |
| 50 | 2507.499999 | -0.0006 | 2562.499996 | -0.0015 | 2.5 |
| 55 | 2507.499997 | -0.0013 | 2562.499997 | -0.0011 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 20 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2510.000002 | 0.0009 | 2560.000002 | 0.0008 | 2.5 |
| 3.6 | 2510.000003 | 0.0012 | 2560.000001 | 0.0004 | 2.5 |
| 4.40 | 2510.000003 | 0.0012 | 2560.000003 | 0.0012 | 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. (℃) | LTE Band 7 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 20 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2510.000002 | 0.0008 | 2560.000003 | 0.0010 | 2.5 |
| -20 | 2510.000001 | 0.0005 | 2560.000003 | 0.0010 | 2.5 |
| -10 | 2510.000002 | 0.0007 | 2560.000004 | 0.0014 | 2.5 |
| 0 | 2510.000004 | 0.0015 | 2560.000004 | 0.0015 | 2.5 |
| 10 | 2510.000003 | 0.0013 | 2560.000004 | 0.0014 | 2.5 |
| 20 | 2509.999998 | -0.0006 | 2559.999997 | -0.0012 | 2.5 |
| 30 | 2509.999997 | -0.0014 | 2559.999999 | -0.0005 | 2.5 |
| 40 | 2509.999996 | -0.0014 | 2559.999997 | -0.0011 | 2.5 |
| 50 | 2509.999996 | -0.0015 | 2559.999999 | -0.0004 | 2.5 |
| 55 | 2509.999999 | -0.0004 | 2559.999998 | -0.0006 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 5 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2498.500001 | 0.0006 | 2687.500003 | 0.0012 | 2.5 |
| 3.6 | 2498.500004 | 0.0014 | 2687.500003 | 0.0010 | 2.5 |
| 4.40 | 2498.500002 | 0.0009 | 2687.500001 | 0.0004 | 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. (℃) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 5 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2498.500003 | 0.0013 | 2687.500002 | 0.0008 | 2.5 |
| -20 | 2498.500003 | 0.0012 | 2687.500002 | 0.0006 | 2.5 |
| -10 | 2498.500002 | 0.0009 | 2687.500001 | 0.0005 | 2.5 |
| 0 | 2498.500001 | 0.0005 | 2687.500002 | 0.0009 | 2.5 |
| 10 | 2498.500002 | 0.0006 | 2687.500003 | 0.0012 | 2.5 |
| 20 | 2498.499997 | -0.0012 | 2687.499999 | -0.0006 | 2.5 |
| 30 | 2498.499996 | -0.0015 | 2687.499997 | -0.0013 | 2.5 |
| 40 | 2498.499997 | -0.0012 | 2687.499999 | -0.0005 | 2.5 |
| 50 | 2498.499998 | -0.0009 | 2687.499997 | -0.0010 | 2.5 |
| 55 | 2498.499997 | -0.0012 | 2687.499999 | -0.0004 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 10 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2501.000004 | 0.0015 | 2685.000003 | 0.0010 | 2.5 |
| 3.6 | 2501.000003 | 0.0013 | 2685.000004 | 0.0015 | 2.5 |
| 4.40 | 2501.000004 | 0.0014 | 2685.000003 | 0.0012 | 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. (℃) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 10 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2501.000001 | 0.0005 | 2685.000004 | 0.0013 | 2.5 |
| -20 | 2501.000004 | 0.0014 | 2685.000004 | 0.0015 | 2.5 |
| -10 | 2501.000002 | 0.0009 | 2685.000002 | 0.0007 | 2.5 |
| 0 | 2501.000002 | 0.0008 | 2685.000003 | 0.0011 | 2.5 |
| 10 | 2501.000001 | 0.0004 | 2685.000003 | 0.0010 | 2.5 |
| 20 | 2500.999996 | -0.0014 | 2684.999997 | -0.0010 | 2.5 |
| 30 | 2500.999998 | -0.0010 | 2684.999999 | -0.0004 | 2.5 |
| 40 | 2500.999996 | -0.0016 | 2684.999998 | -0.0007 | 2.5 |
| 50 | 2500.999996 | -0.0015 | 2684.999996 | -0.0015 | 2.5 |
| 55 | 2500.999997 | -0.0010 | 2684.999996 | -0.0013 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 15 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2503.500004 | 0.0016 | 2682.500004 | 0.0015 | 2.5 |
| 3.6 | 2503.500001 | 0.0006 | 2682.500004 | 0.0015 | 2.5 |
| 4.40 | 2503.500002 | 0.0008 | 2682.500001 | 0.0004 | 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. (℃) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 15 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2503.500003 | 0.0010 | 2682.500001 | 0.0004 | 2.5 |
| -20 | 2503.500003 | 0.0012 | 2682.500002 | 0.0009 | 2.5 |
| -10 | 2503.500003 | 0.0014 | 2682.500003 | 0.0009 | 2.5 |
| 0 | 2503.500001 | 0.0004 | 2682.500001 | 0.0004 | 2.5 |
| 10 | 2503.500004 | 0.0015 | 2682.500003 | 0.0011 | 2.5 |
| 20 | 2503.499999 | -0.0005 | 2682.499997 | -0.0011 | 2.5 |
| 30 | 2503.499999 | -0.0006 | 2682.499998 | -0.0007 | 2.5 |
| 40 | 2503.499997 | -0.0013 | 2682.499997 | -0.0013 | 2.5 |
| 50 | 2503.499998 | -0.0008 | 2682.499998 | -0.0009 | 2.5 |
| 55 | 2503.499997 | -0.0012 | 2682.499998 | -0.0009 | 2.5 |

Frequency Error vs. Voltage

| Voltage (Volts) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 20 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| 3.85 | 2506.000002 | 0.0008 | 2680.000001 | 0.0004 | 2.5 |
| 3.6 | 2506.000003 | 0.0011 | 2680.000002 | 0.0007 | 2.5 |
| 4.40 | 2506.000002 | 0.0007 | 2680.000001 | 0.0004 | 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. (℃) | LTE Band 41 | | | | Limit (ppm) |
|---|---|---|---|---|---|
| | Channel Bandwidth: 20 MHz | | | | |
| | Low Channel | | High Channel | | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) | |
| -30 | 2506.000002 | 0.0007 | 2680.000002 | 0.0009 | 2.5 |
| -20 | 2506.000004 | 0.0015 | 2680.000002 | 0.0008 | 2.5 |
| -10 | 2506.000003 | 0.0010 | 2680.000003 | 0.0011 | 2.5 |
| 0 | 2506.000002 | 0.0009 | 2680.000002 | 0.0008 | 2.5 |
| 10 | 2506.000001 | 0.0005 | 2680.000004 | 0.0014 | 2.5 |
| 20 | 2505.999998 | -0.0008 | 2679.999999 | -0.0004 | 2.5 |
| 30 | 2505.999997 | -0.0011 | 2679.999998 | -0.0008 | 2.5 |
| 40 | 2505.999996 | -0.0014 | 2679.999999 | -0.0004 | 2.5 |
| 50 | 2505.999997 | -0.0011 | 2679.999999 | -0.0004 | 2.5 |
| 55 | 2505.999998 | -0.0009 | 2679.999998 | -0.0008 | 2.5 |

## 4.3 Occupied Bandwidth Measurement

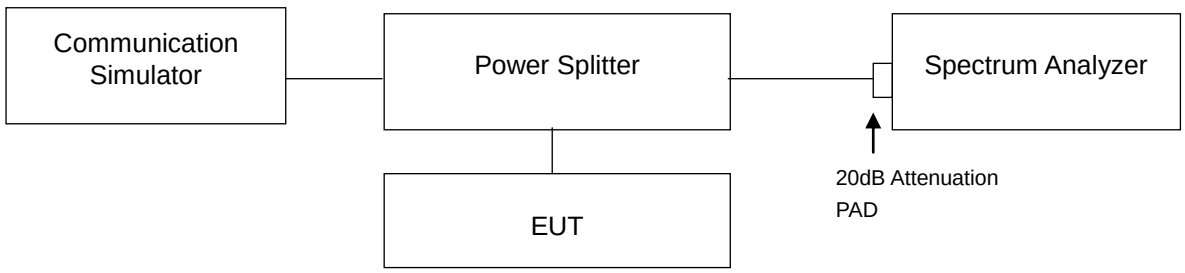
### 4.3.1 Limits of Occupied Bandwidth Measurement

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.

### 4.3.2 Test Procedure

a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 4.3.3 Test Setup

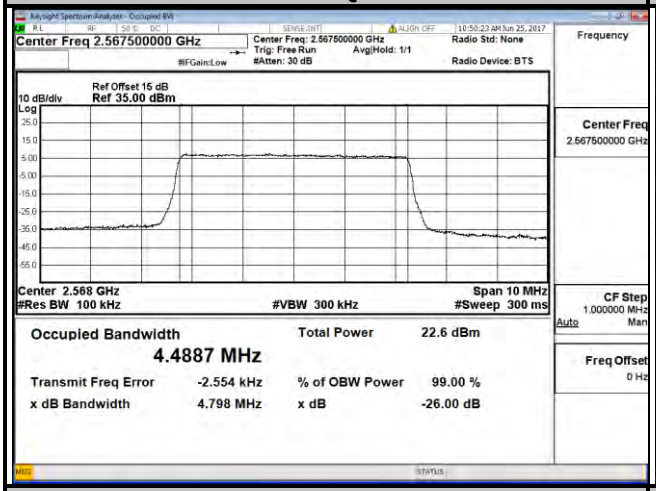


### 4.3.4 Test Result

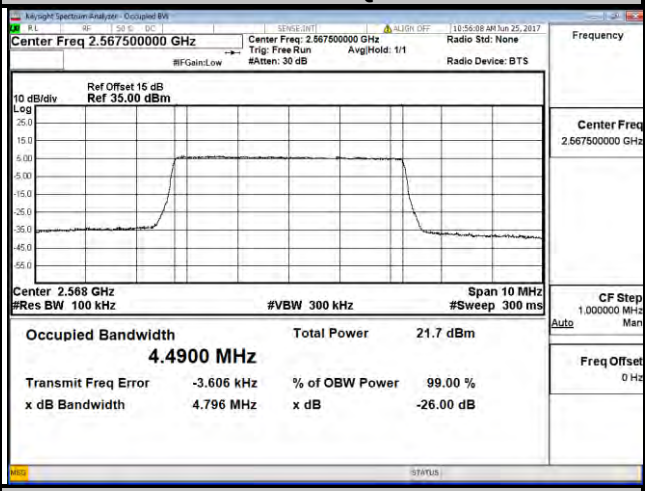
| LTE Band 7 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz | | | | | Channel Bandwidth: 10 MHz | | | | |
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 20775 | 2502.5 | 4.4828 | 4.4876 | 4.4952 | 20800 | 2505.0 | 8.9599 | 8.9568 | 8.9594 |
| 21100 | 2535.0 | 4.4868 | 4.4889 | 4.4942 | 21100 | 2535.0 | 8.9608 | 8.9685 | 8.9659 |
| 21425 | 2567.5 | 4.4887 | 4.4900 | 4.4960 | 21400 | 2565.0 | 8.9569 | 8.9632 | 8.9634 |

**Spectrum Plot of Worst Value**

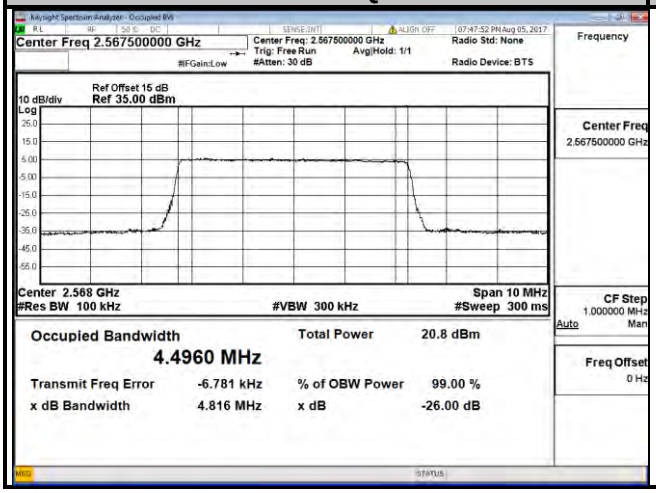
**5 MHz / QPSK**




**5 MHz / 16QAM**

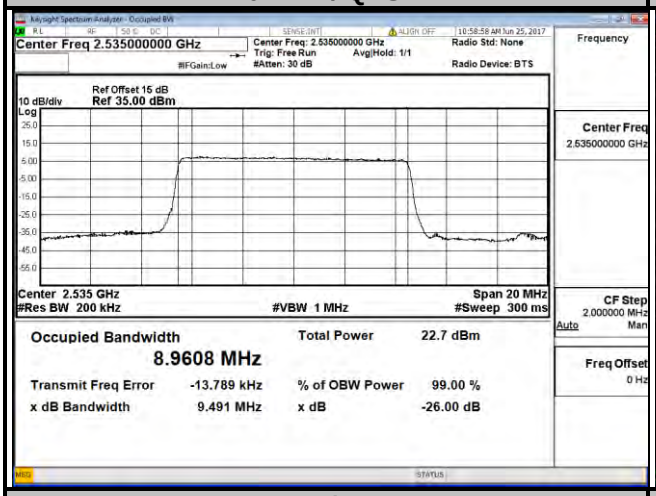



**5 MHz / 64QAM**

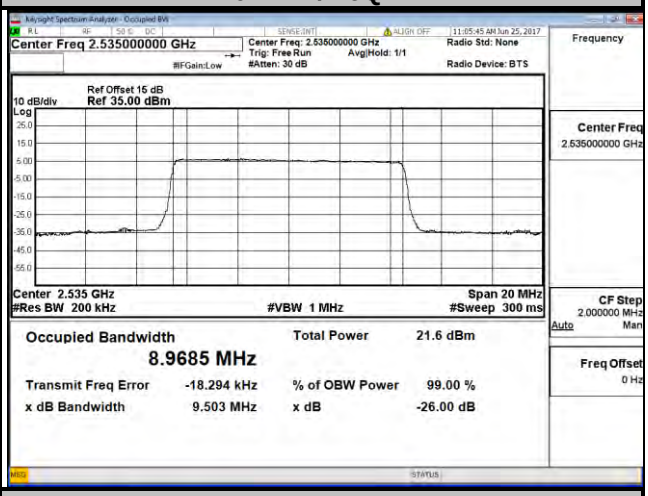


## Spectrum Plot of Worst Value

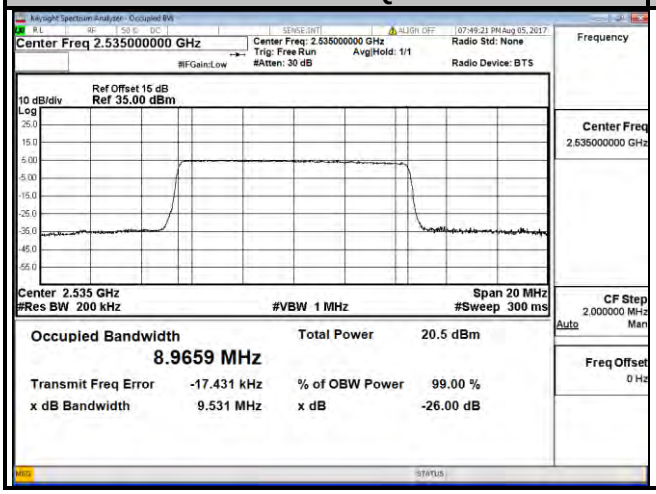
### 10 MHz / QPSK




### 10 MHz / 16QAM



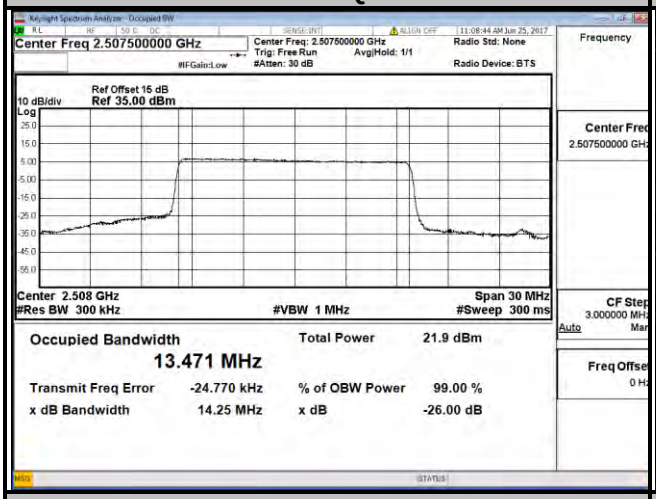

### 10 MHz / 64QAM



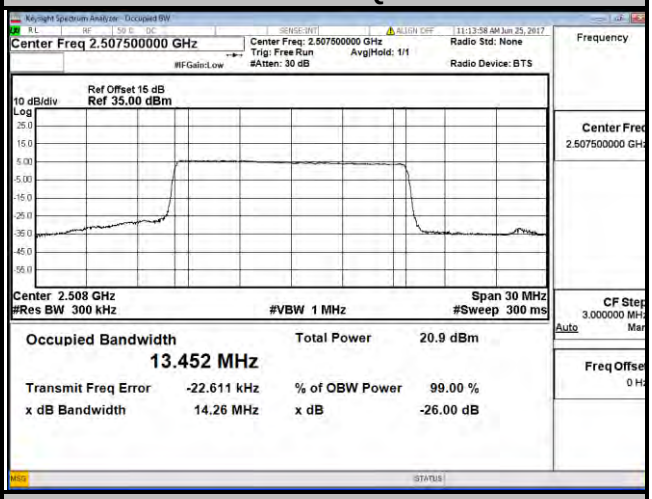
| LTE Band 7 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz | | | | | Channel Bandwidth: 20 MHz | | | | |
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 20825 | 2507.5 | 13.471 | 13.452 | 13.435 | 20850 | 2510.0 | 17.979 | 17.996 | 17.975 |
| 21100 | 2535.0 | 13.439 | 13.431 | 13.421 | 21100 | 2535.0 | 17.885 | 17.902 | 17.889 |
| 21375 | 2562.5 | 13.426 | 13.414 | 13.408 | 21350 | 2560.0 | 17.844 | 17.878 | 17.862 |

**Spectrum Plot of Worst Value**

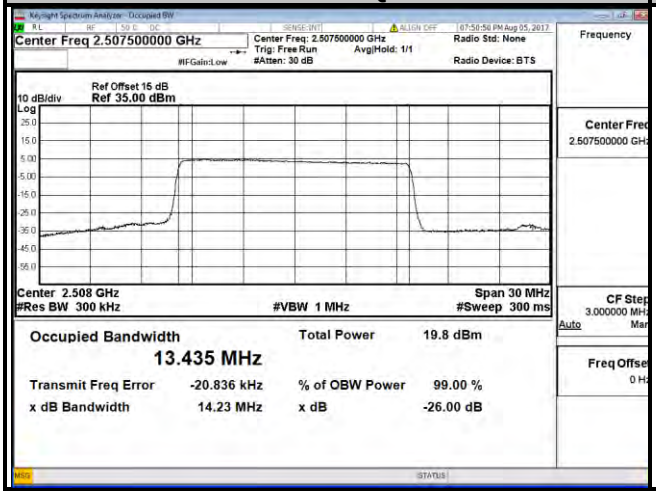
**15 MHz / QPSK**




**15 MHz / 16QAM**

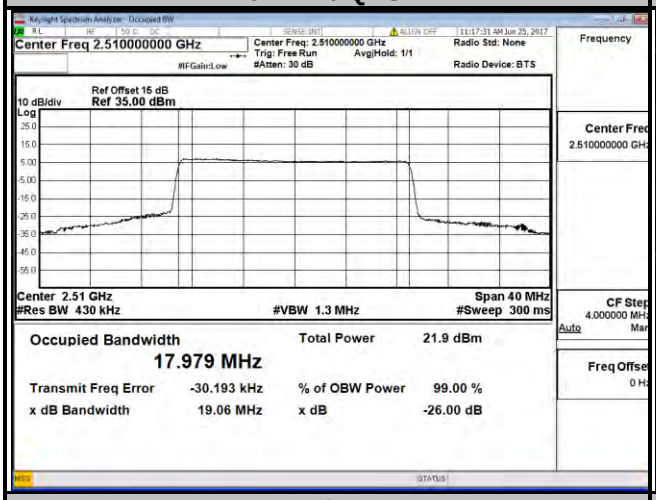



**15 MHz / 64QAM**

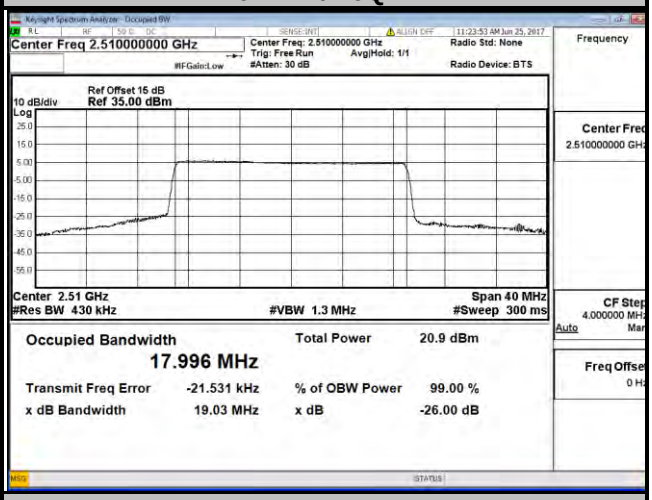


## Spectrum Plot of Worst Value

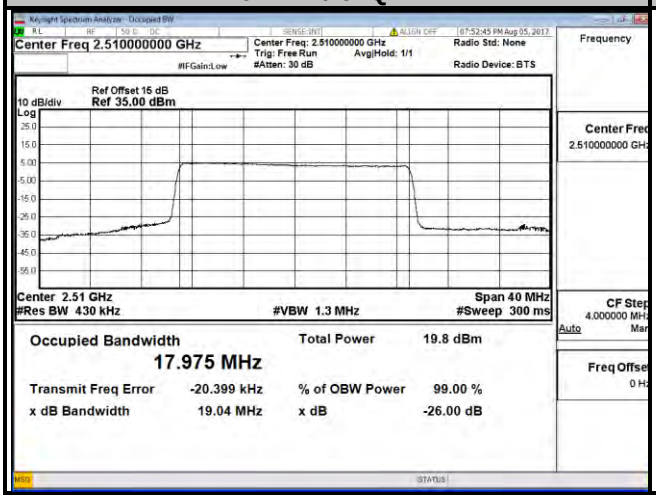
### 20 MHz / QPSK




### 20 MHz / 16QAM



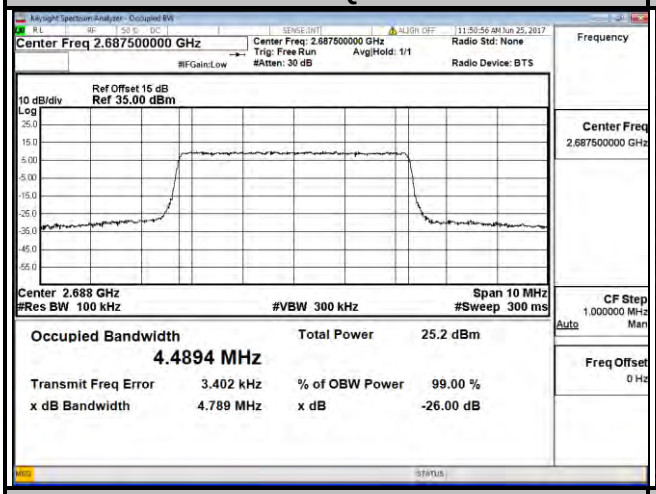

### 20 MHz / 64QAM



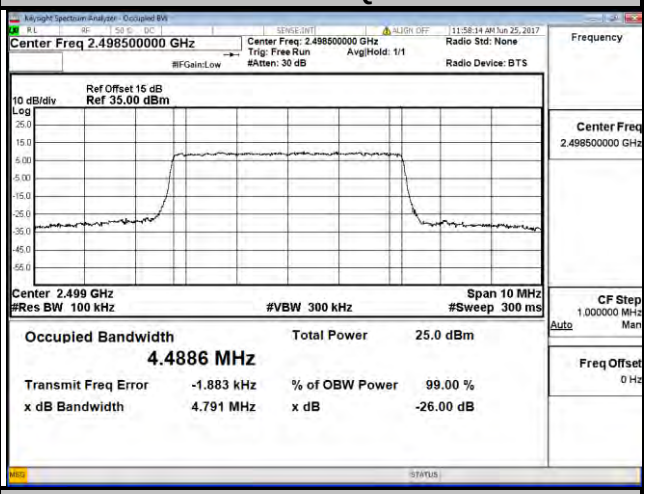
| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz | | | | | Channel Bandwidth: 10 MHz | | | | |
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 39675 | 2498.5 | 4.4875 | 4.4886 | 4.4996 | 39700 | 2501.0 | 8.9559 | 8.9636 | 8.9589 |
| 40620 | 2593.0 | 4.4864 | 4.4876 | 4.4956 | 40620 | 2593.0 | 8.9520 | 8.9670 | 8.9594 |
| 41565 | 2687.5 | 4.4894 | 4.4878 | 4.4956 | 41540 | 2685.0 | 8.9520 | 8.9603 | 8.9605 |

**Spectrum Plot of Worst Value**

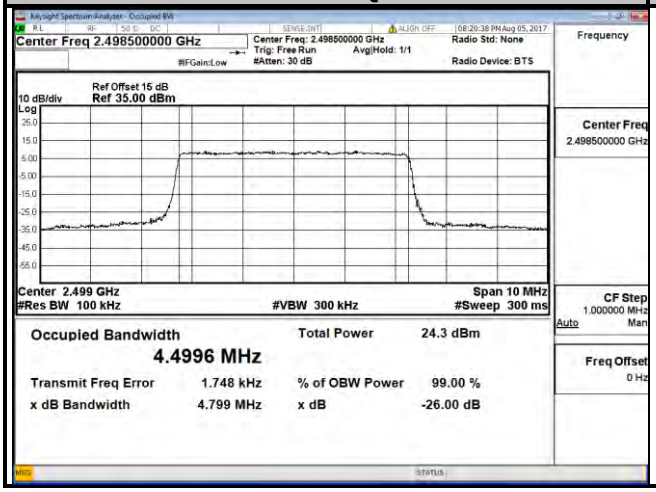
**5 MHz / QPSK**




**5 MHz / 16QAM**

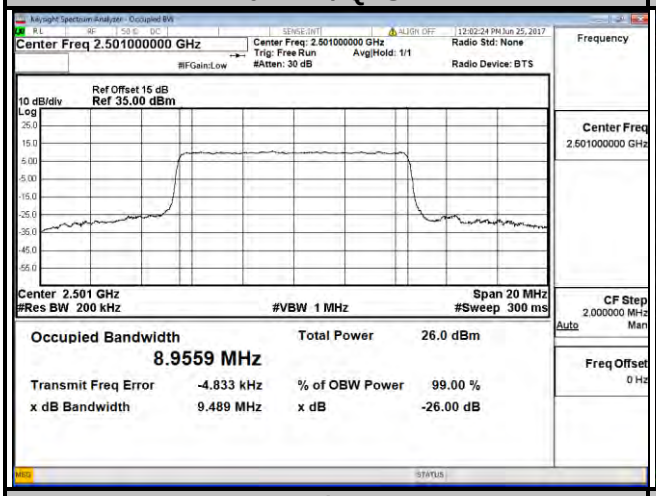



**5 MHz / 64QAM**

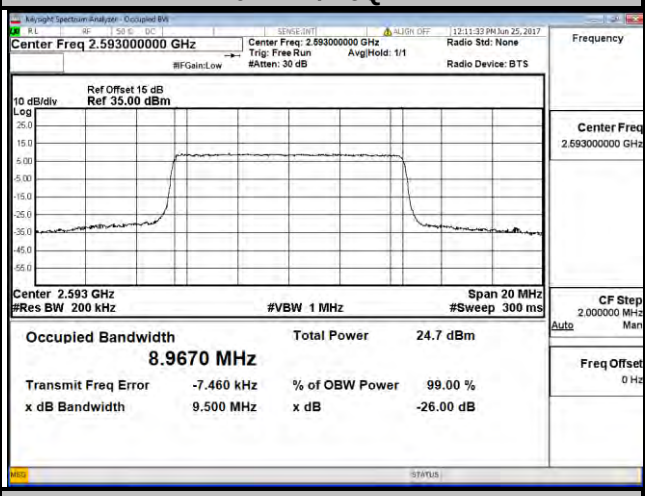


## Spectrum Plot of Worst Value

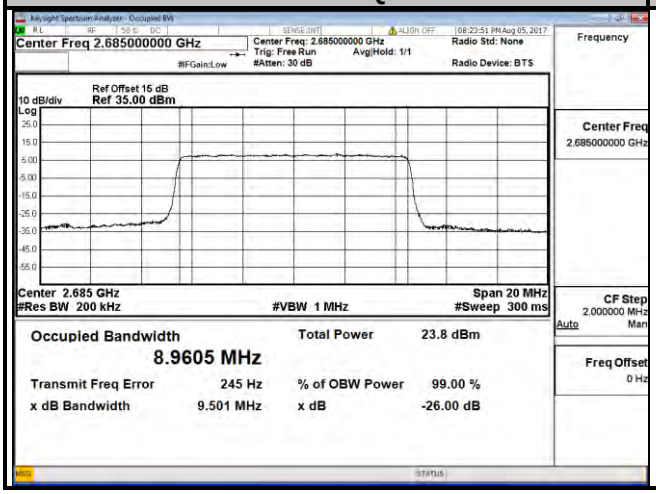
### 10 MHz / QPSK




### 10 MHz / 16QAM



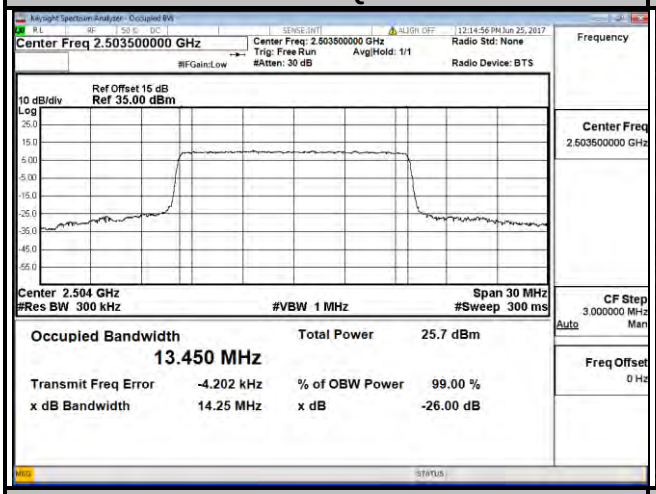

### 10 MHz / 64QAM



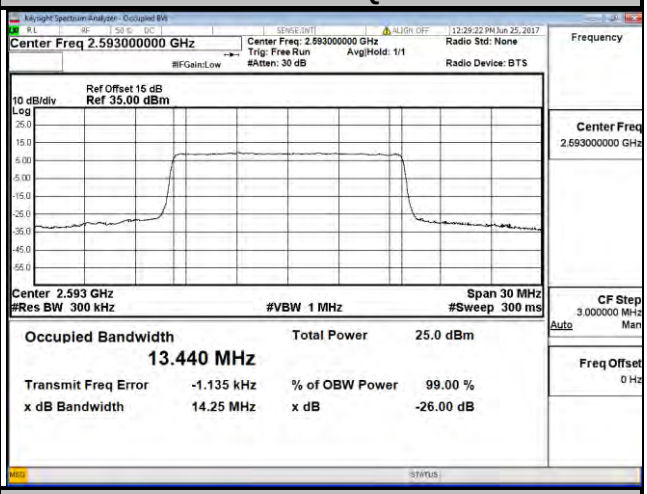
| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz | | | | | Channel Bandwidth: 20 MHz | | | | |
| Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | | Channel | Frequency (MHz) | 99 % Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 39725 | 2503.5 | 13.450 | 13.434 | 13.436 | 39750 | 2506.0 | 17.911 | 17.908 | 17.908 |
| 40620 | 2593.0 | 13.447 | 13.440 | 13.439 | 40620 | 2593.0 | 17.909 | 17.909 | 17.923 |
| 41515 | 2682.5 | 13.440 | 13.431 | 13.426 | 41490 | 2680.0 | 17.870 | 17.861 | 17.872 |

**Spectrum Plot of Worst Value**

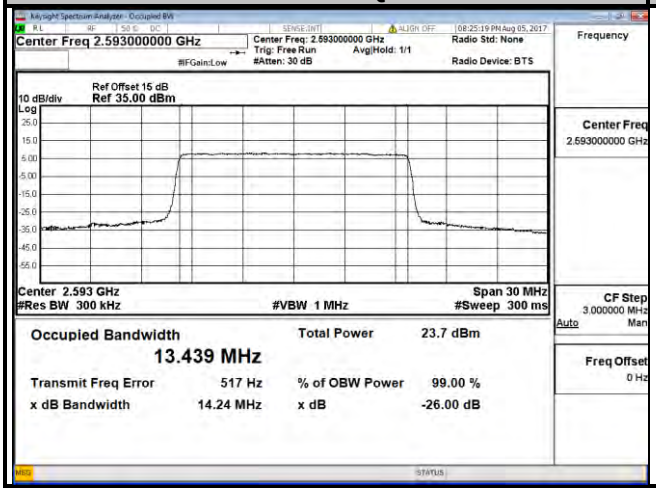
**15 MHz / QPSK**




**15 MHz / 16QAM**

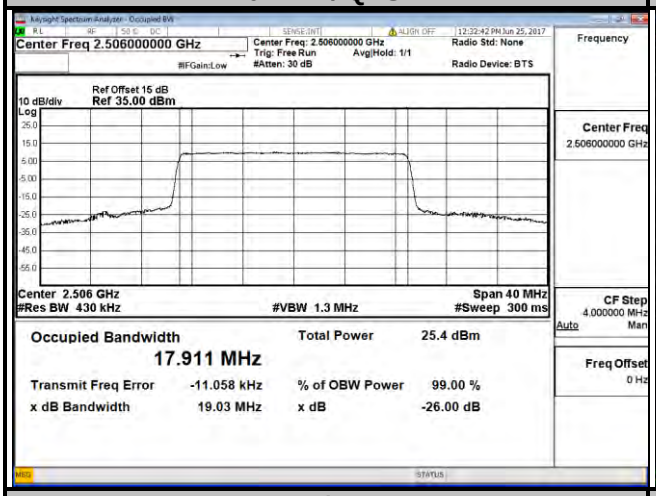



**15 MHz / 64QAM**

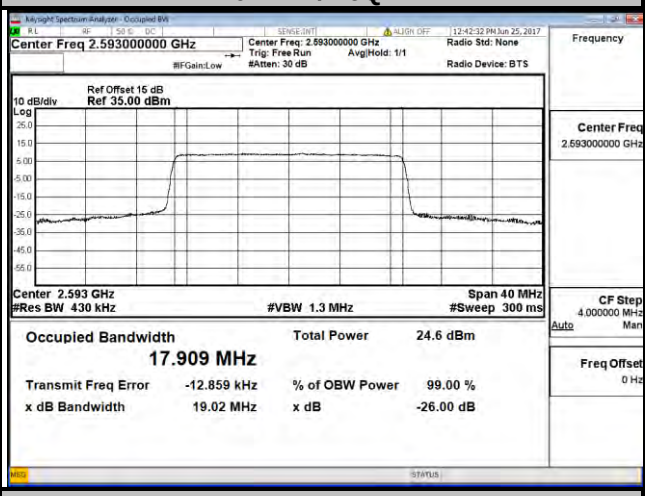


## Spectrum Plot of Worst Value

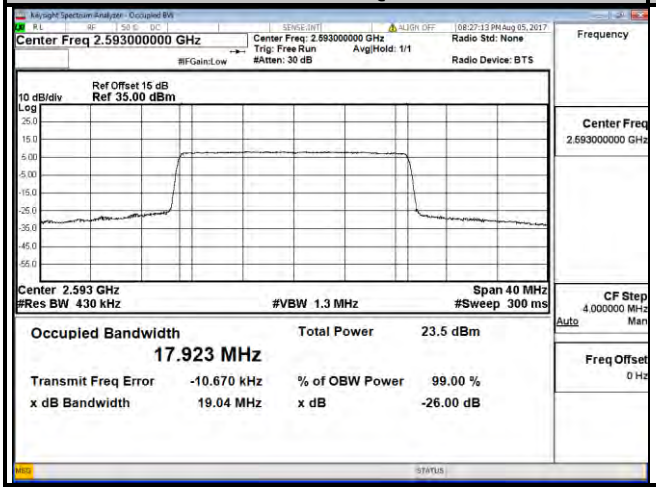
### 20 MHz / QPSK




### 20 MHz / 16QAM




### 20 MHz / 64QAM

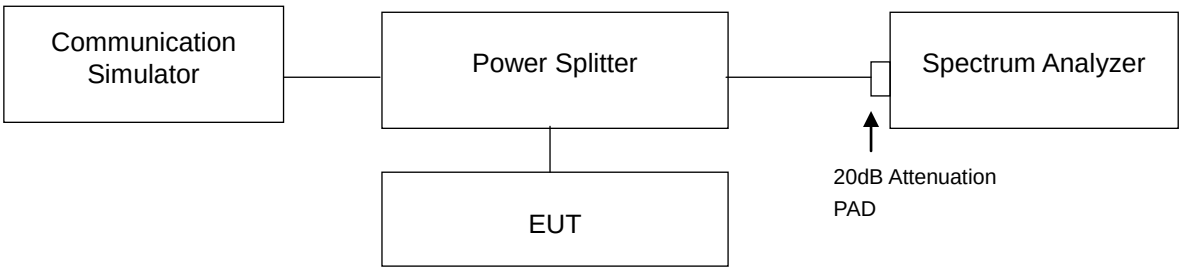


## 4.4 Out of Band Emission Measurement

### 4.4.1 Limits of Out of Band Emission Measurement

According to FCC 27.53(l)(4) specified that power of any emission outside of the channel edge must be attenuated below the transmitting power (P) by a factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed.

### 4.4.2 Test Setup




### 4.4.3 Test Procedures

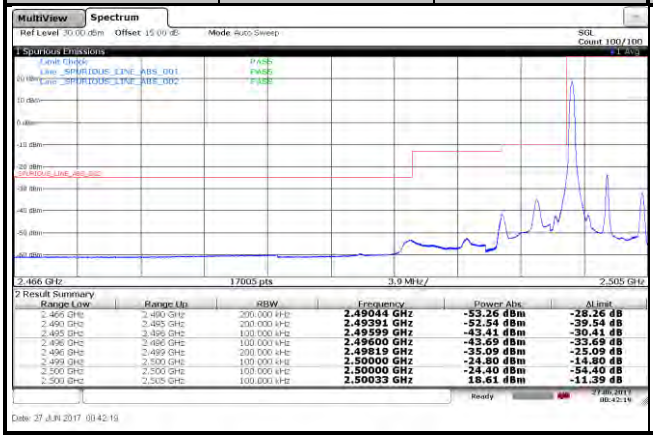
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).

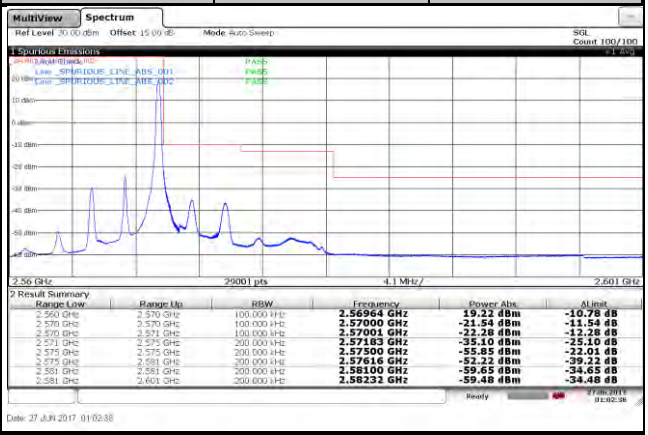
b. The out of band emission measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

c. Record the max trace plot into the test report.

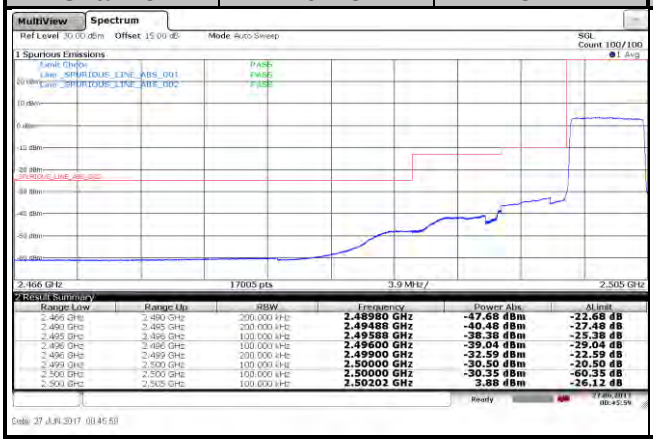
### 4.4.4 Test Results

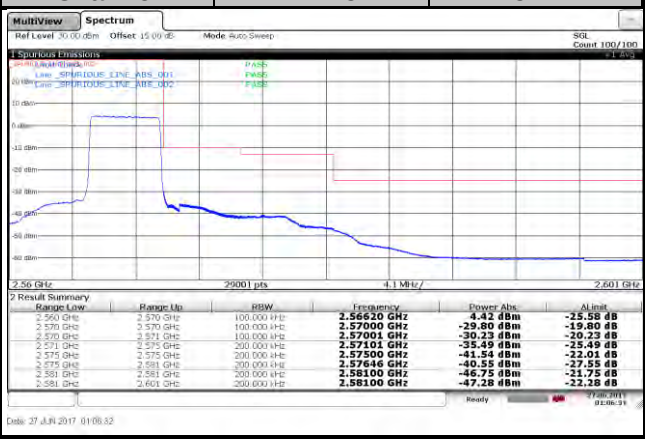
| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20775 | 1 RB | Channel | 21425 | 1 RB |



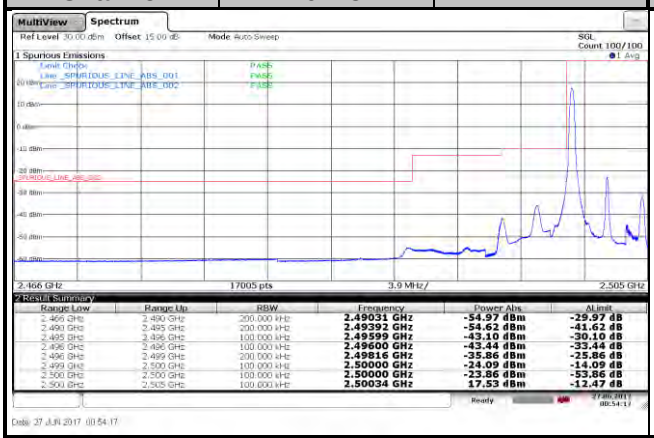




| Channel | 20775 | 25 RB | Channel | 21425 | 25 RB |
|---|---|---|---|---|---|



| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20775 | 1 RB | Channel | 21425 | 1 RB |

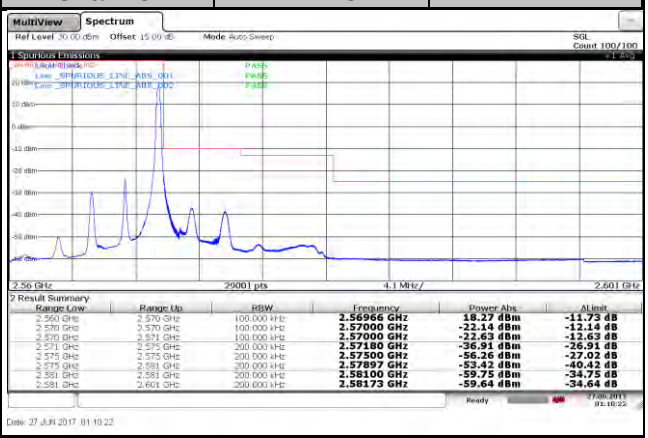



2 Result Summary

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 2.466 GHz | 2.490 GHz | 200.000 kHz | **2.49031 GHz** | **-54.97 dBm** | **-29.97 dB** |
| 2.490 GHz | 2.495 GHz | 200.000 kHz | **2.49392 GHz** | **-54.62 dBm** | **-41.62 dB** |
| 2.495 GHz | 2.496 GHz | 100.000 kHz | **2.49599 GHz** | **-43.10 dBm** | **-30.10 dB** |
| 2.496 GHz | 2.496 GHz | 100.000 kHz | **2.49600 GHz** | **-43.44 dBm** | **-33.44 dB** |
| 2.496 GHz | 2.499 GHz | 200.000 kHz | **2.49816 GHz** | **-35.86 dBm** | **-25.86 dB** |
| 2.499 GHz | 2.500 GHz | 100.000 kHz | **2.50000 GHz** | **-24.09 dBm** | **-14.09 dB** |
| 2.500 GHz | 2.500 GHz | 100.000 kHz | **2.50000 GHz** | **-23.86 dBm** | **-53.86 dB** |
| 2.500 GHz | 2.505 GHz | 100.000 kHz | **2.50034 GHz** | **17.53 dBm** | **-12.47 dB** |

Ready

Date: 27.JUN.2017 00:54:17



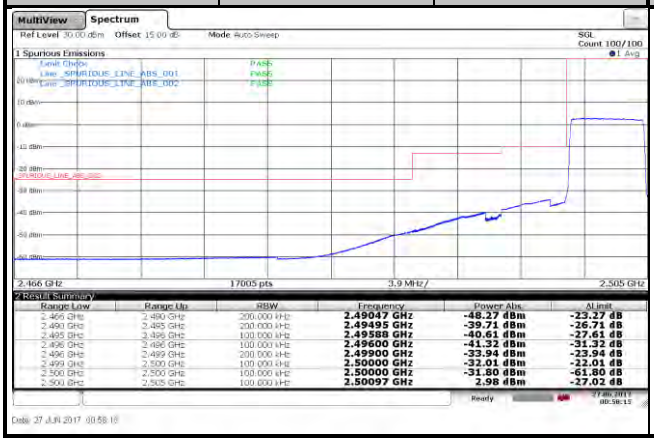

2 Result Summary

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 2.560 GHz | 2.570 GHz | 100.000 kHz | **2.56966 GHz** | **18.27 dBm** | **-11.73 dB** |
| 2.570 GHz | 2.570 GHz | 100.000 kHz | **2.57000 GHz** | **-22.14 dBm** | **-12.14 dB** |
| 2.570 GHz | 2.571 GHz | 100.000 kHz | **2.57000 GHz** | **-22.63 dBm** | **-12.63 dB** |
| 2.571 GHz | 2.575 GHz | 200.000 kHz | **2.57180 GHz** | **-36.91 dBm** | **-26.91 dB** |
| 2.575 GHz | 2.575 GHz | 200.000 kHz | **2.57500 GHz** | **-56.26 dBm** | **-27.02 dB** |
| 2.575 GHz | 2.581 GHz | 200.000 kHz | **2.57897 GHz** | **-53.42 dBm** | **-40.42 dB** |
| 2.581 GHz | 2.581 GHz | 200.000 kHz | **2.58100 GHz** | **-59.75 dBm** | **-34.75 dB** |
| 2.581 GHz | 2.601 GHz | 200.000 kHz | **2.58173 GHz** | **-59.64 dBm** | **-34.64 dB** |

Ready

Date: 27.JUN.2017 01:10:22

| Channel | 20775 | 25 RB | Channel | 21425 | 25 RB |
|---|---|---|---|---|---|

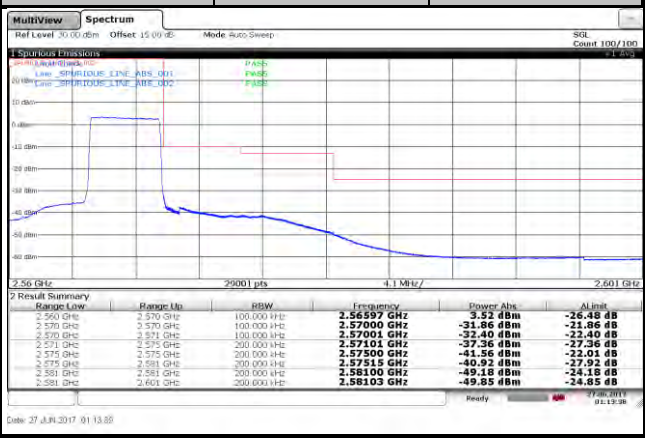



2 Result Summary

| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 2.466 GHz | 2.490 GHz | 200.000 kHz | **2.49047 GHz** | **-48.27 dBm** | **-23.27 dB** |
| 2.490 GHz | 2.495 GHz | 200.000 kHz | **2.49495 GHz** | **-39.71 dBm** | **-26.71 dB** |
| 2.495 GHz | 2.496 GHz | 100.000 kHz | **2.49588 GHz** | **-40.61 dBm** | **-27.61 dB** |
| 2.496 GHz | 2.496 GHz | 100.000 kHz | **2.49600 GHz** | **-41.32 dBm** | **-31.32 dB** |
| 2.496 GHz | 2.499 GHz | 200.000 kHz | **2.49900 GHz** | **-33.94 dBm** | **-23.94 dB** |
| 2.499 GHz | 2.500 GHz | 100.000 kHz | **2.50000 GHz** | **-32.01 dBm** | **-22.01 dB** |
| 2.500 GHz | 2.500 GHz | 100.000 kHz | **2.50000 GHz** | **-31.80 dBm** | **-61.80 dB** |
| 2.500 GHz | 2.505 GHz | 100.000 kHz | **2.50097 GHz** | **2.98 dBm** | **-27.02 dB** |

Ready

Date: 27.JUN.2017 00:58:18

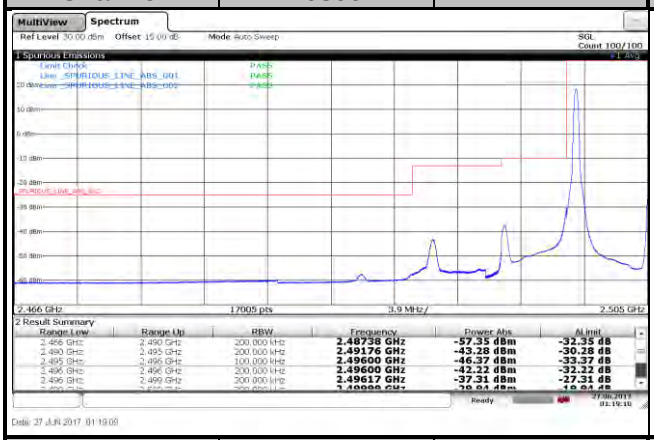
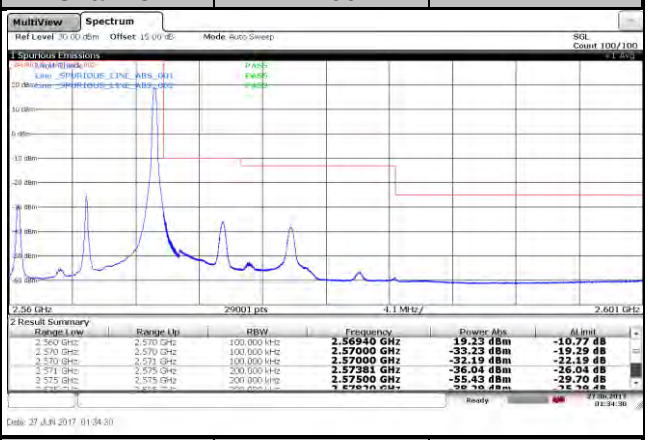
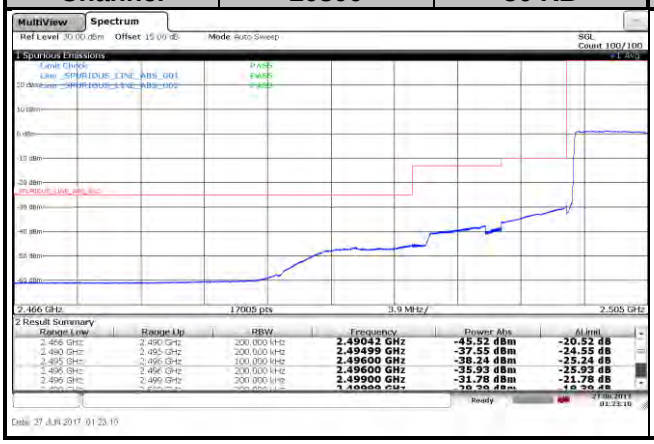
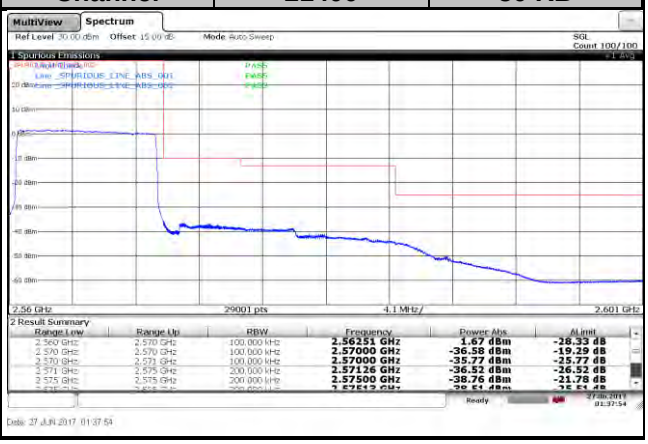


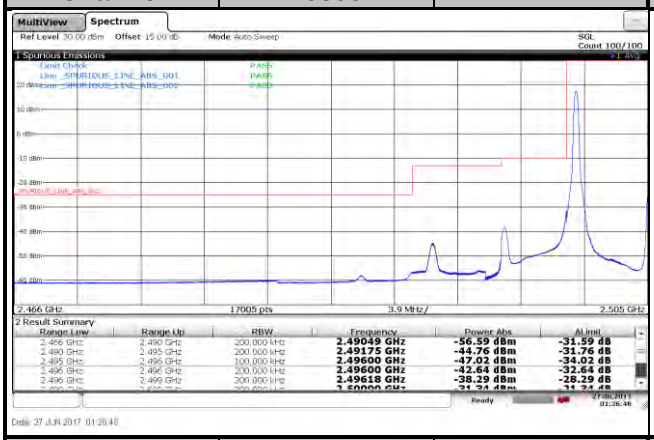
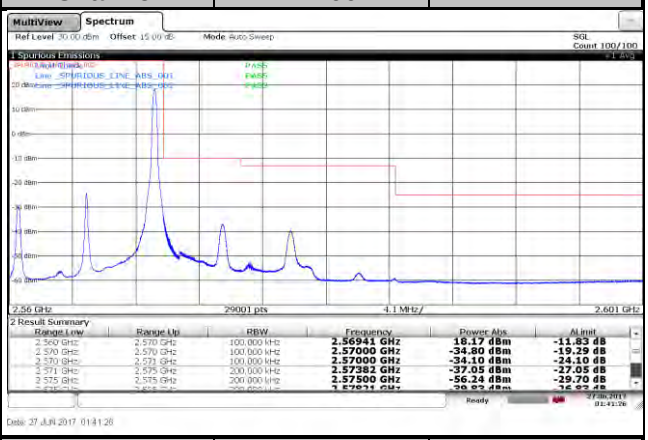
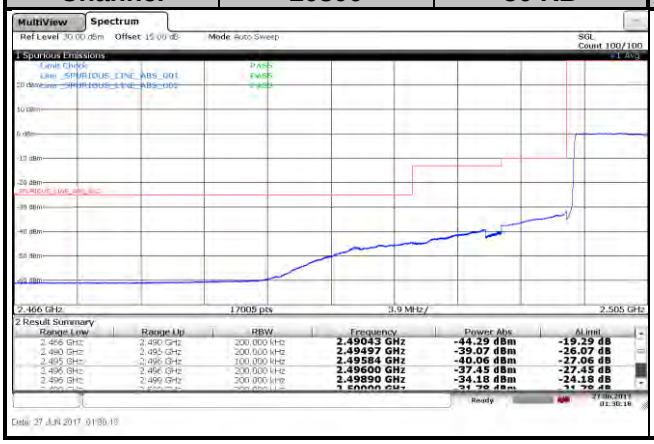
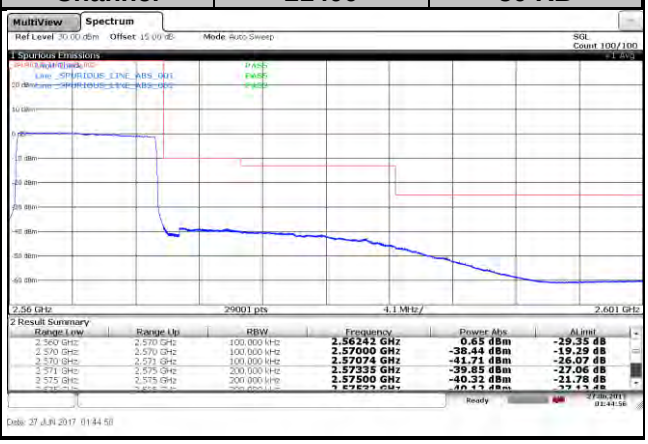

2 Result Summary

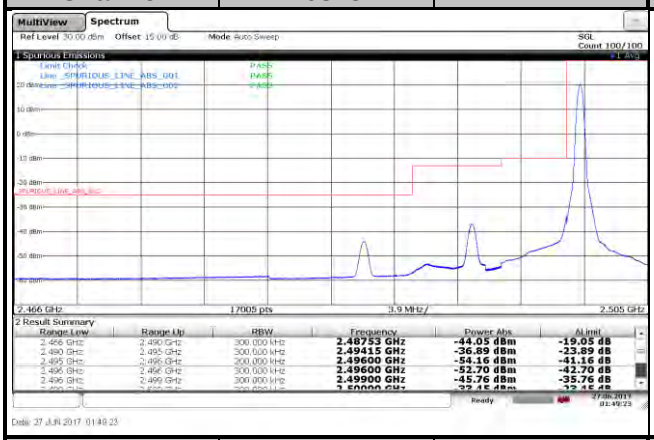
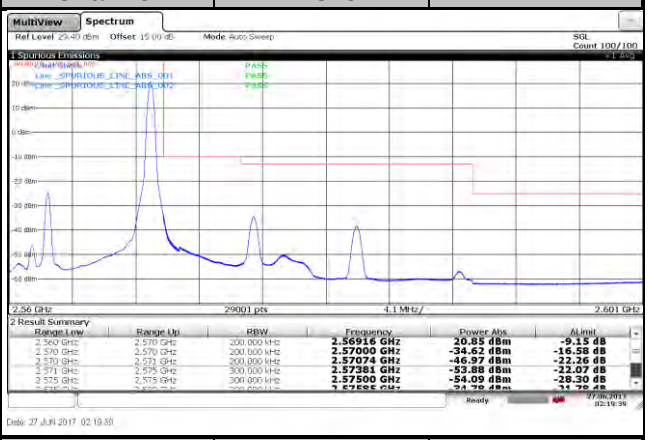
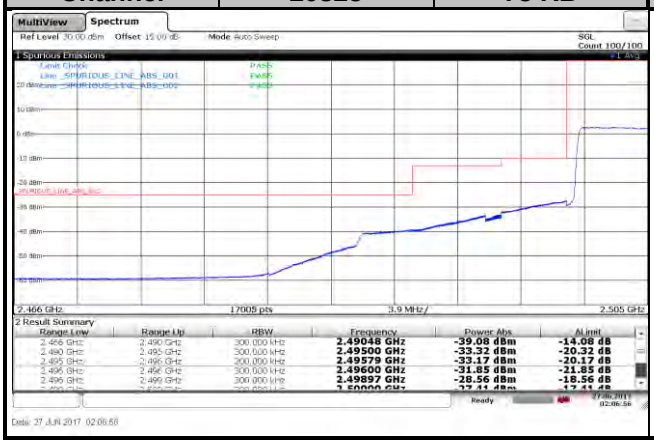
| Range Low | Range Up | RBW | Frequency | Power Abs | ΔLimit |
|---|---|---|---|---|---|
| 2.560 GHz | 2.570 GHz | 100.000 kHz | **2.56597 GHz** | **3.52 dBm** | **-26.48 dB** |
| 2.570 GHz | 2.570 GHz | 100.000 kHz | **2.57000 GHz** | **-31.86 dBm** | **-21.86 dB** |
| 2.570 GHz | 2.571 GHz | 100.000 kHz | **2.57001 GHz** | **-32.40 dBm** | **-22.40 dB** |
| 2.571 GHz | 2.575 GHz | 200.000 kHz | **2.57101 GHz** | **-37.36 dBm** | **-27.36 dB** |
| 2.575 GHz | 2.575 GHz | 200.000 kHz | **2.57500 GHz** | **-41.56 dBm** | **-22.01 dB** |
| 2.575 GHz | 2.581 GHz | 200.000 kHz | **2.57515 GHz** | **-40.92 dBm** | **-27.92 dB** |
| 2.581 GHz | 2.581 GHz | 200.000 kHz | **2.58100 GHz** | **-49.18 dBm** | **-24.18 dB** |
| 2.581 GHz | 2.601 GHz | 200.000 kHz | **2.58103 GHz** | **-49.85 dBm** | **-24.85 dB** |

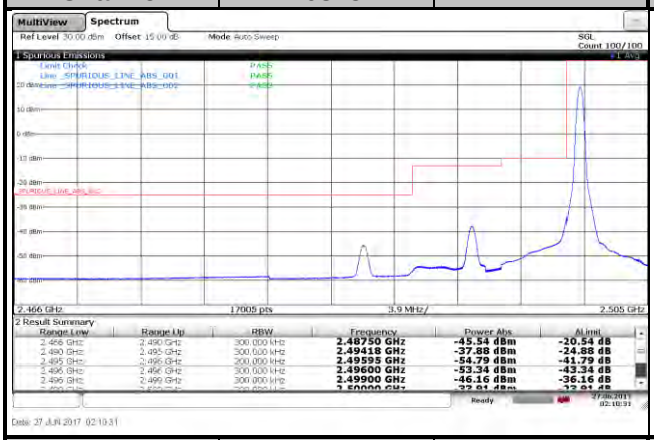
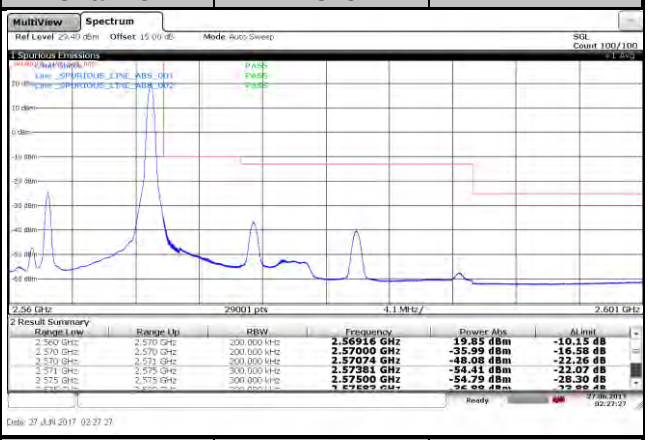
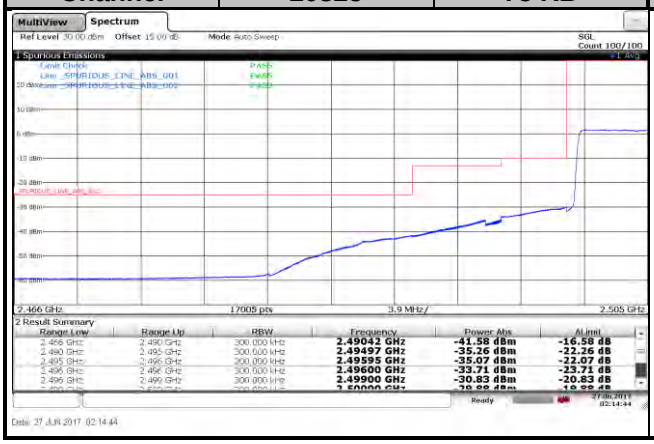
Ready

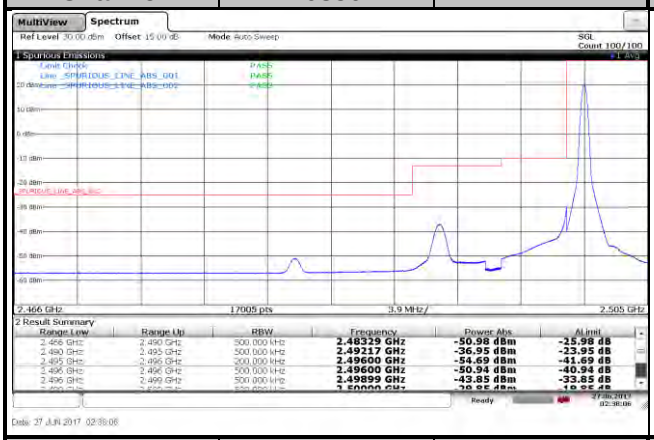
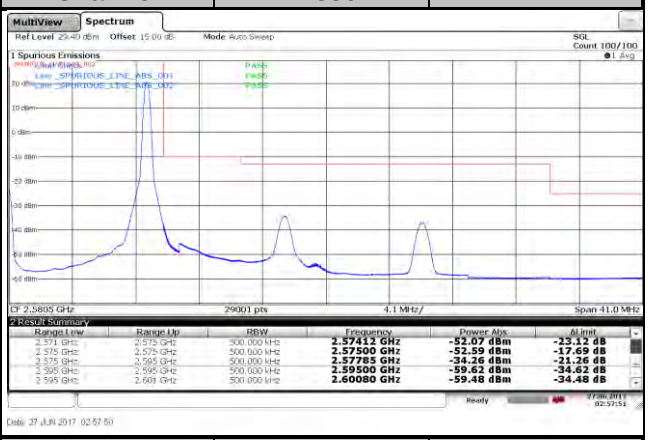
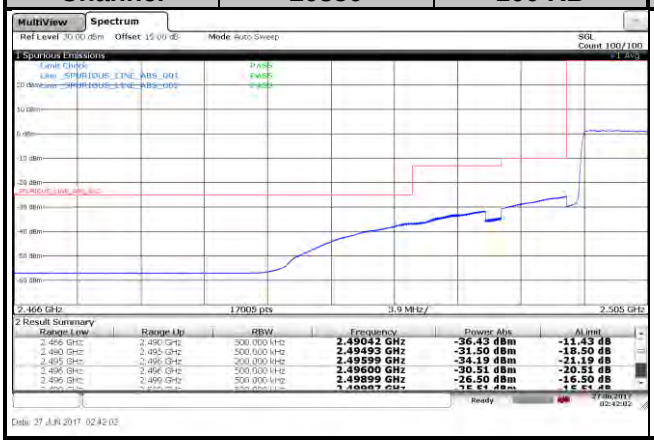
Date: 27.JUN.2017 01:13:38

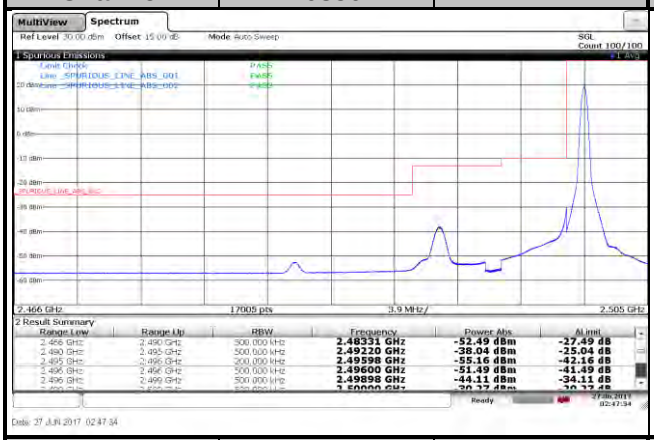
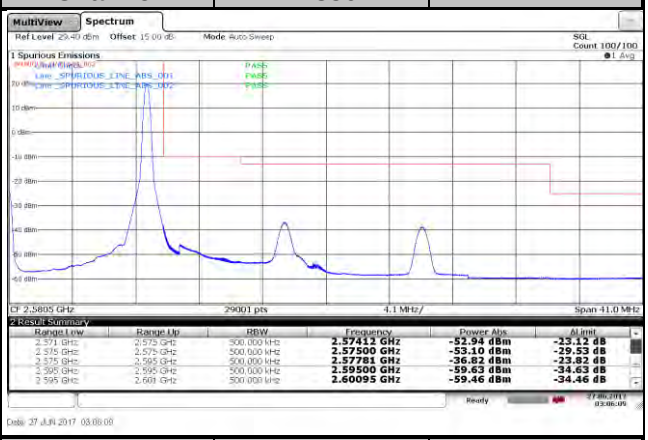
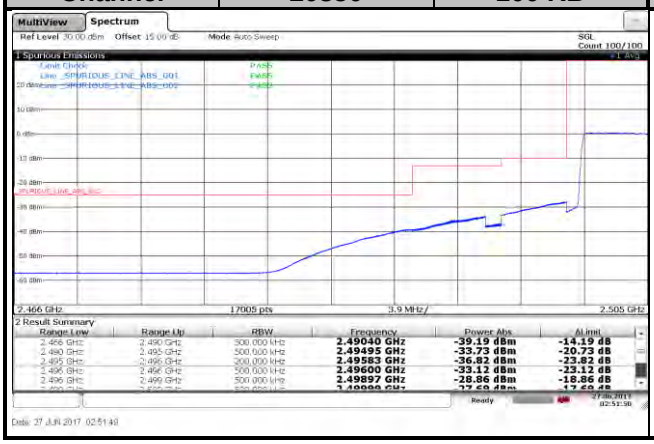
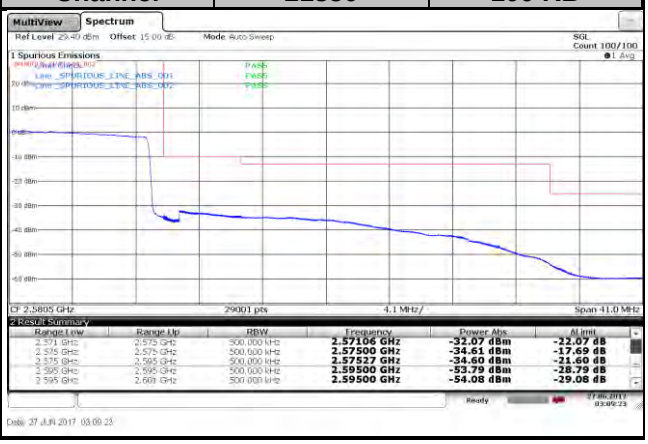
| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20800 | 1 RB | Channel | 21400 | 1 RB |
|  | | |  | | |
| Channel | 20800 | 50 RB | Channel | 21400 | 50 RB |
|  | | |  | | |

| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20800 | 1 RB | Channel | 21400 | 1 RB |
|  | | |  | | |
| Channel | 20800 | 50 RB | Channel | 21400 | 50 RB |
|  | | |  | | |

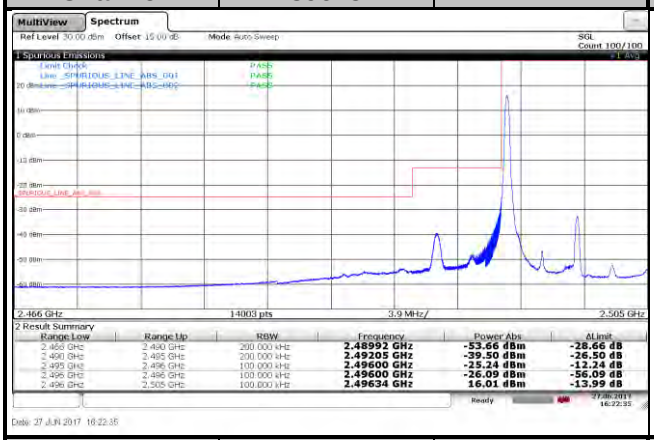
| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20825 | 1 RB | Channel | 21375 | 1 RB |
|  | | |  | | |
| Channel | 20825 | 75 RB | Channel | 21375 | 75 RB |
|  | | | | | |

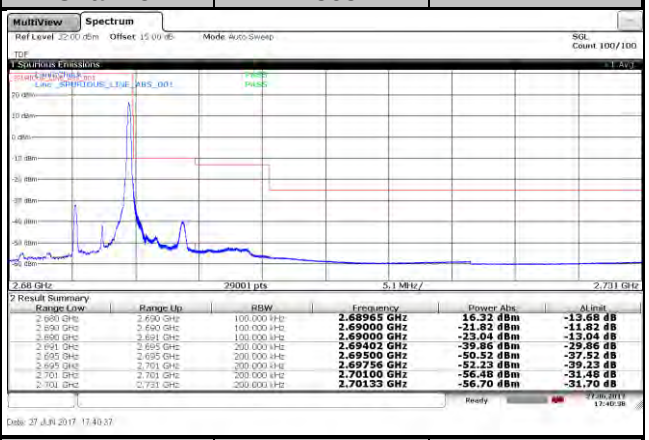
| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20825 | 1 RB | Channel | 21375 | 1 RB |
|  | | |  | | |
| Channel | 20825 | 75 RB | Channel | 21375 | 75 RB |
|  | | | | | |

| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20850 | 1 RB | Channel | 21350 | 1 RB |
|  | | |  | | |
| Channel | 20850 | 100 RB | Channel | 21350 | 100 RB |
|  | | | | | |

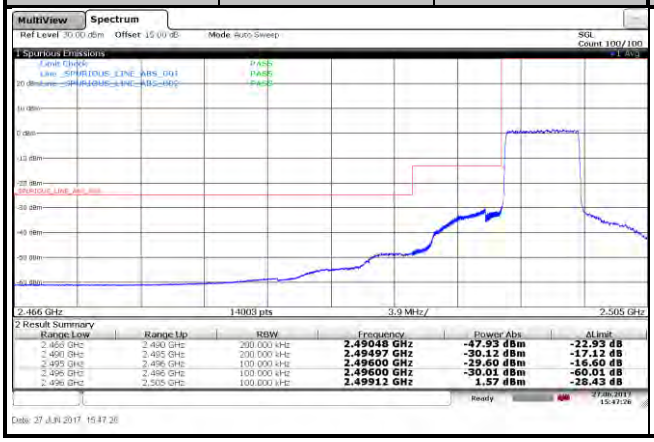
| LTE Band 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 20850 | 1 RB | Channel | 21350 | 1 RB |
|  | | |  | | |
| Channel | 20850 | 100 RB | Channel | 21350 | 100 RB |
|  | | |  | | |

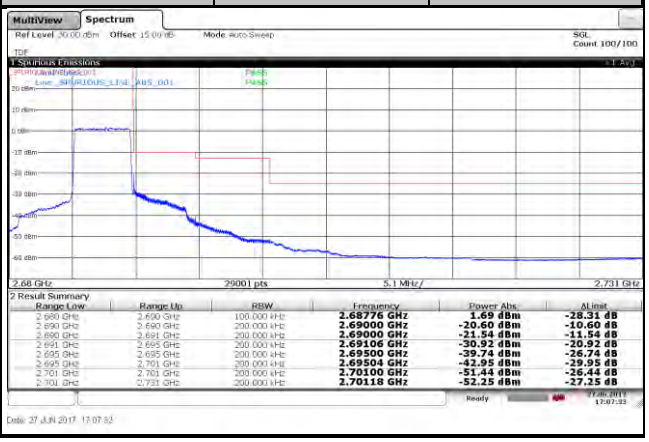
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39675 | 1 RB | Channel | 41565 | 1 RB |



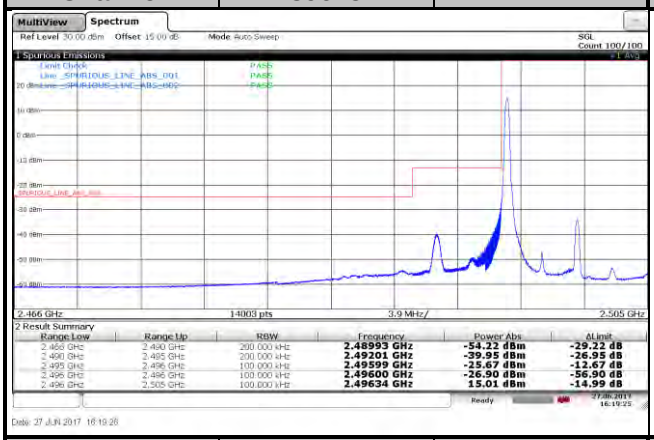



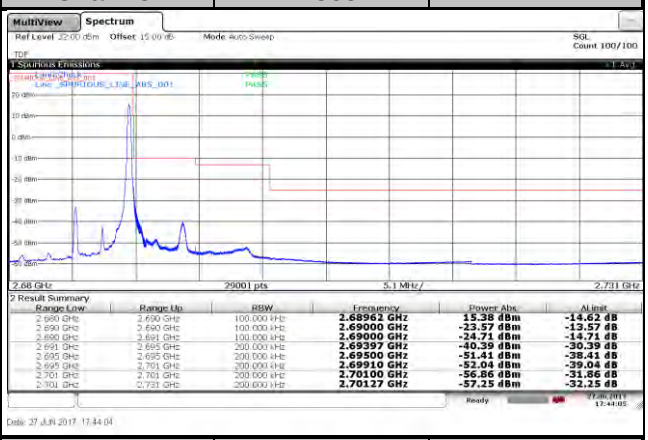

| Channel | 39675 | 25 RB | Channel | 41565 | 25 RB |
|---|---|---|---|---|---|



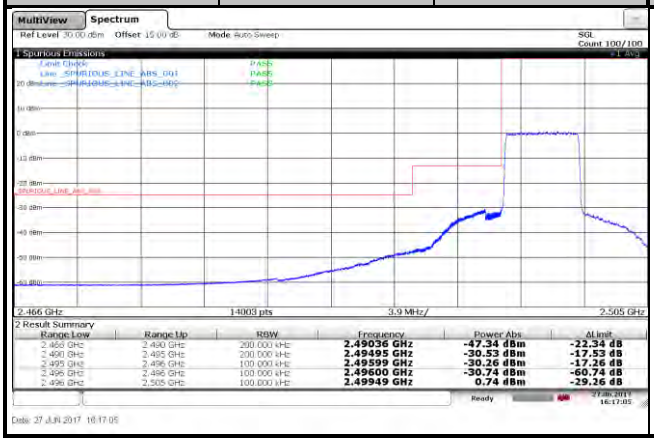



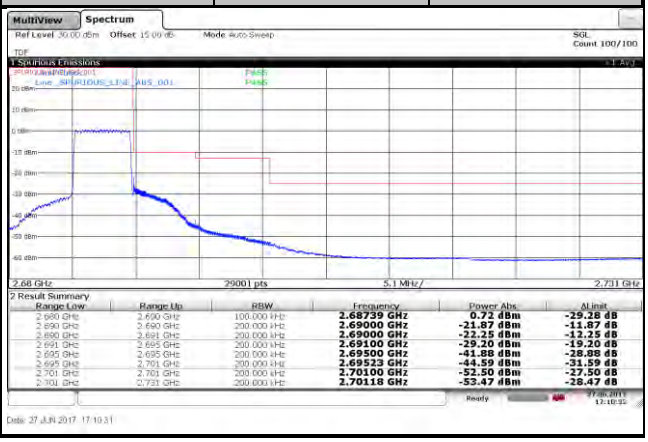
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39675 | 1 RB | Channel | 41565 | 1 RB |



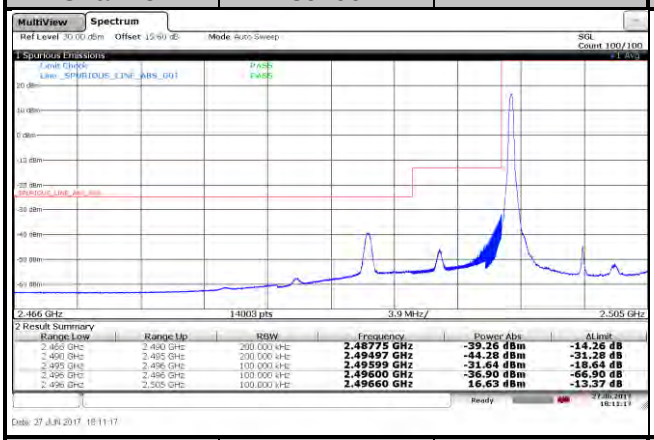



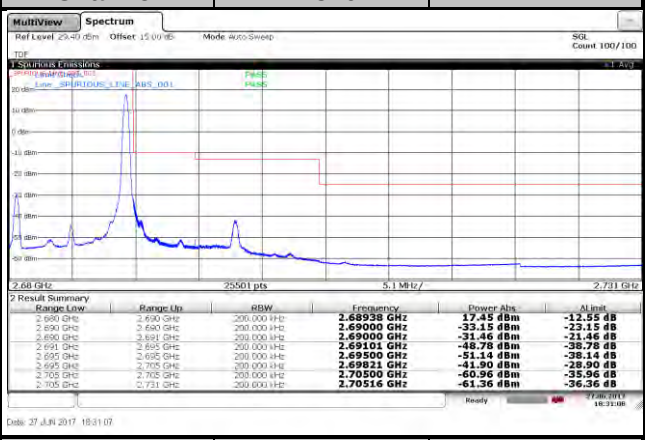

| Channel | 39675 | 25 RB | Channel | 41565 | 25 RB |
|---|---|---|---|---|---|



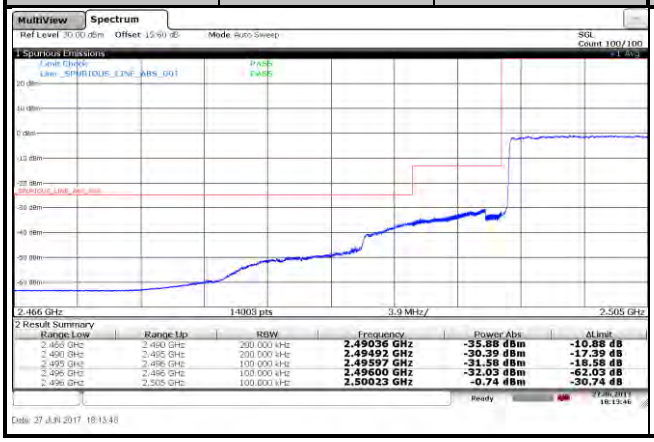



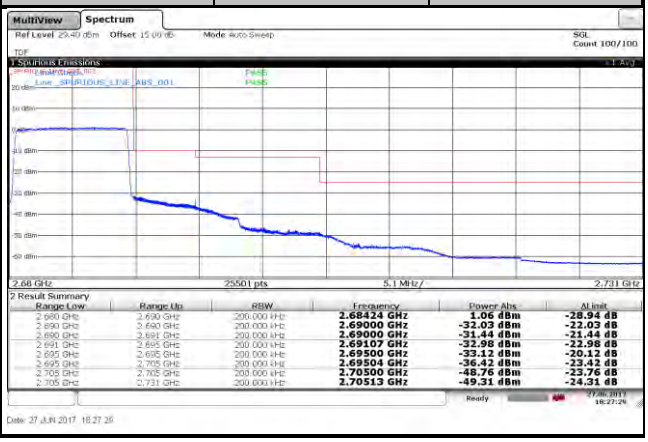
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39700 | 1 RB | Channel | 41540 | 1 RB |



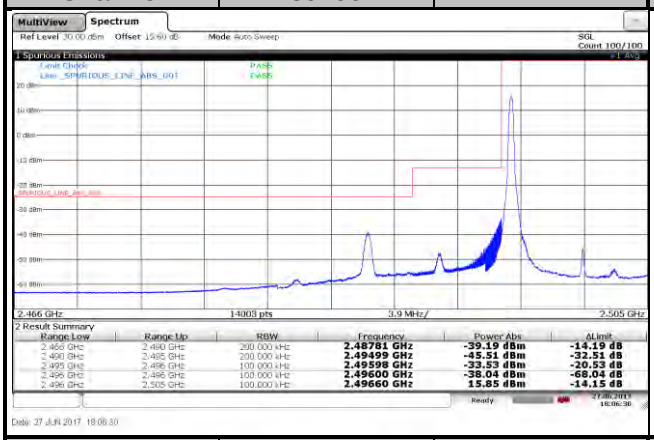



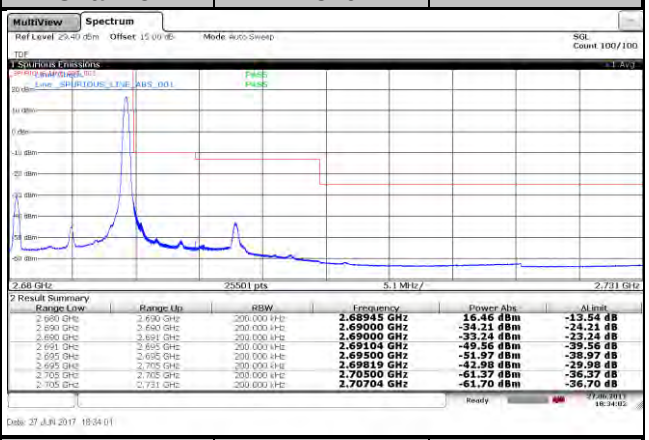

| Channel | 39700 | 50 RB | Channel | 41540 | 50 RB |
|---|---|---|---|---|---|



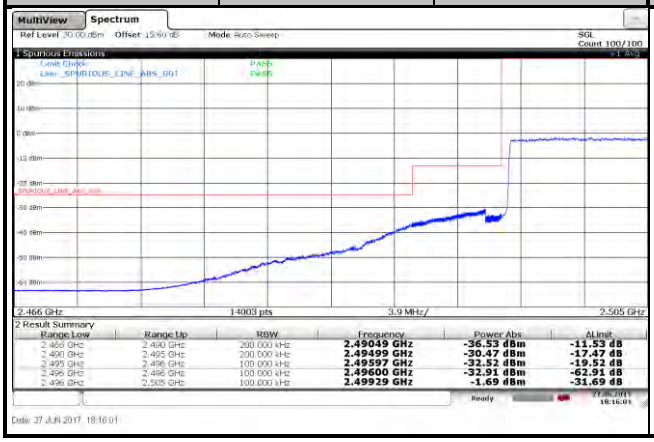



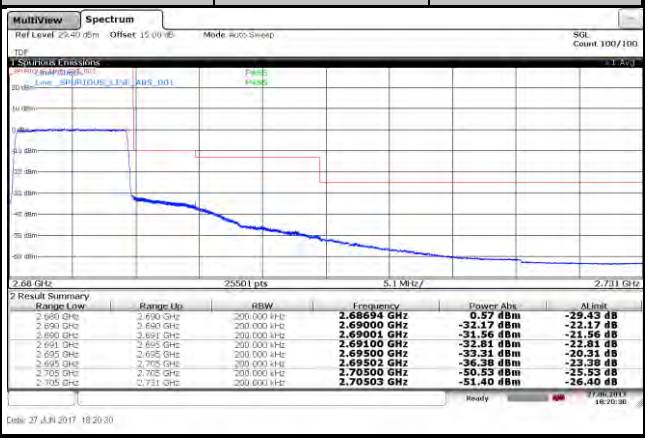
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39700 | 1 RB | Channel | 41540 | 1 RB |



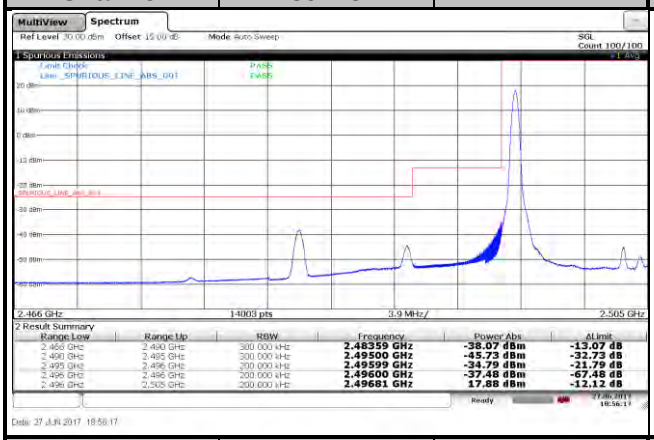



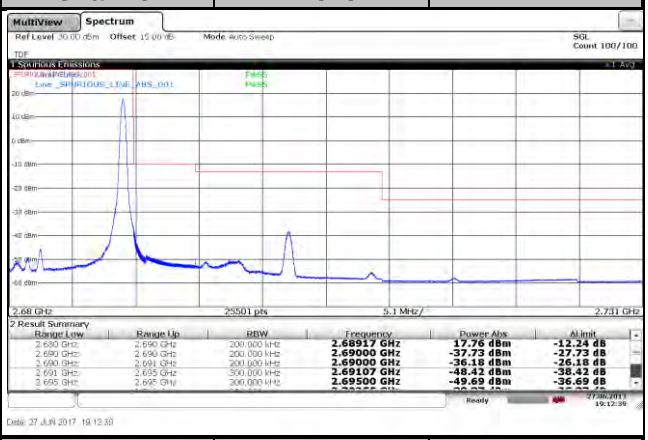

| Channel | 39700 | 50 RB | Channel | 41540 | 50 RB |
|---|---|---|---|---|---|



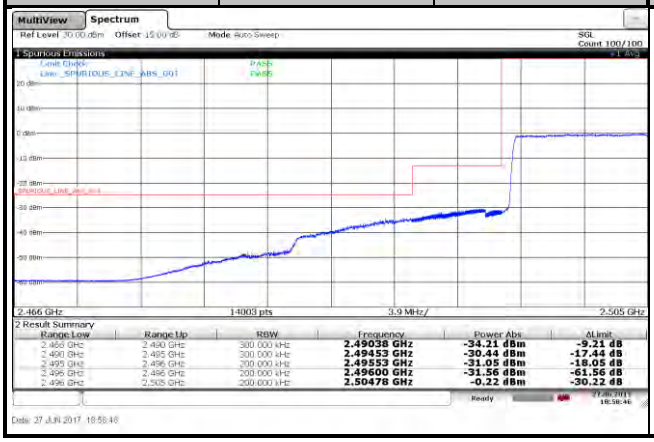



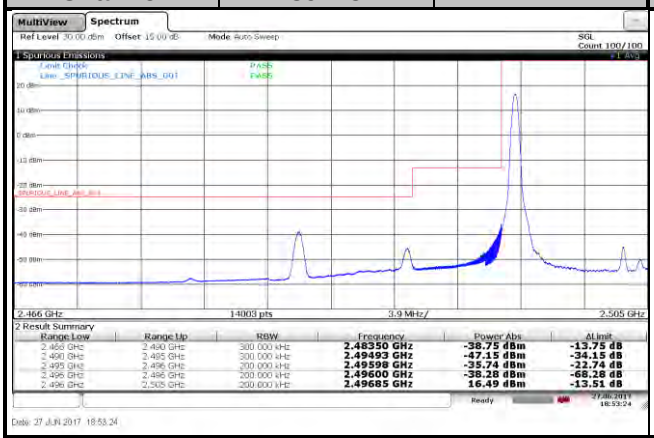
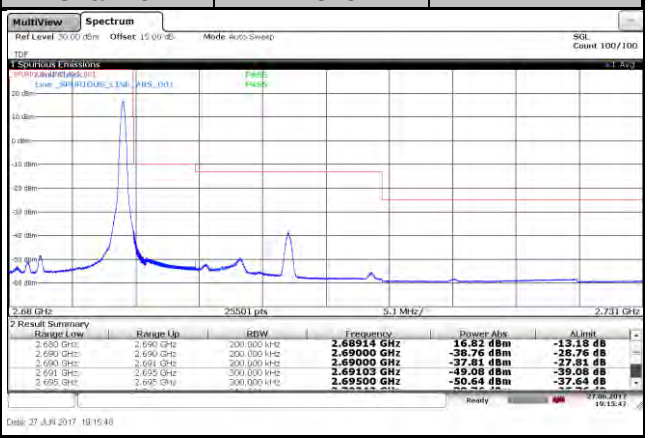
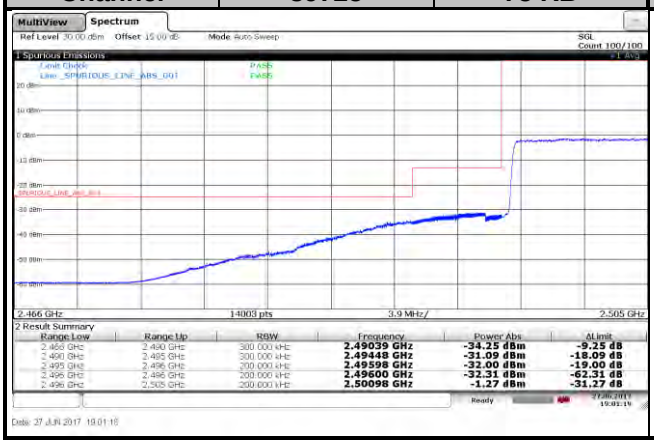
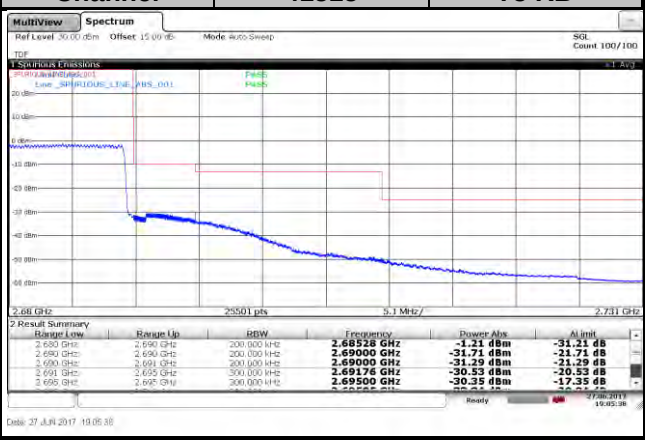
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39725 | 1 RB | Channel | 41515 | 1 RB |



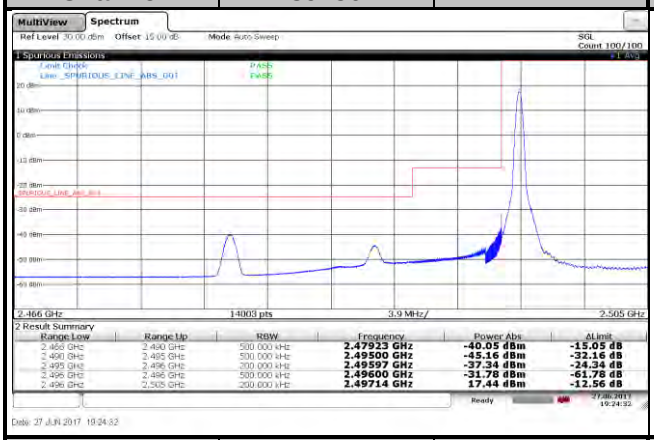



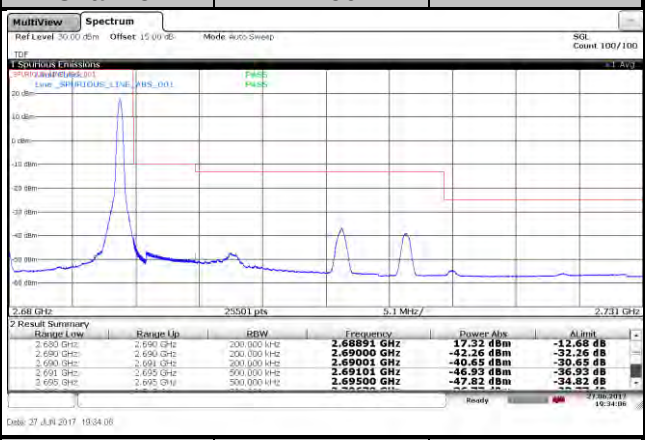

| Channel | 39725 | 75 RB | Channel | 41515 | 75 RB |
|---|---|---|---|---|---|



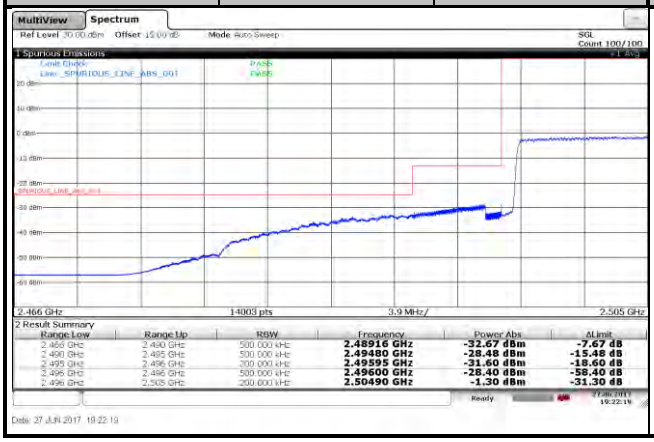
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39725 | 1 RB | Channel | 41515 | 1 RB |
|  | | |  | | |
| Channel | 39725 | 75 RB | Channel | 41515 | 75 RB |
|  | | |  | | |

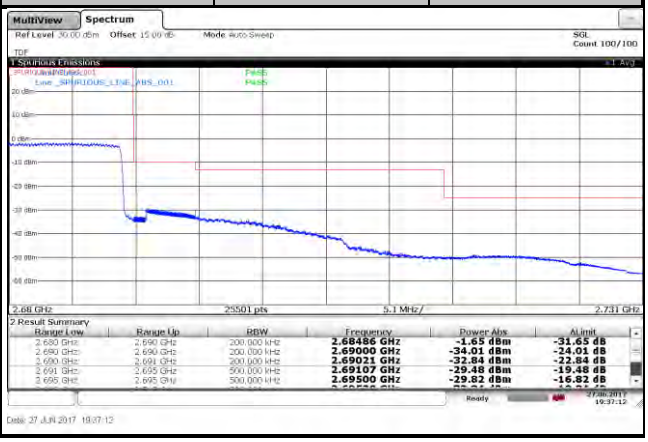
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20 MHz / QPSK | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39750 | 1 RB | Channel | 41490 | 1 RB |

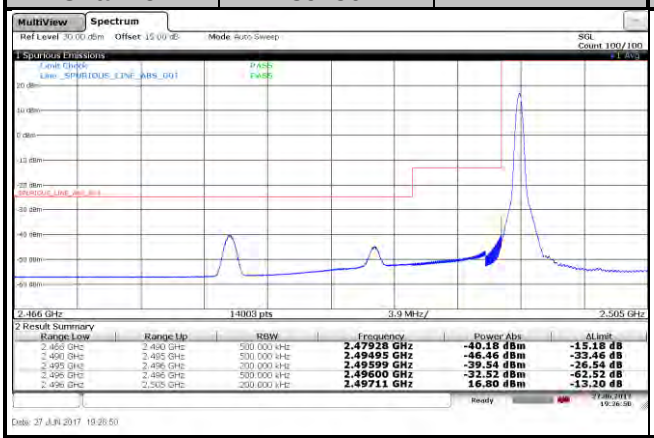
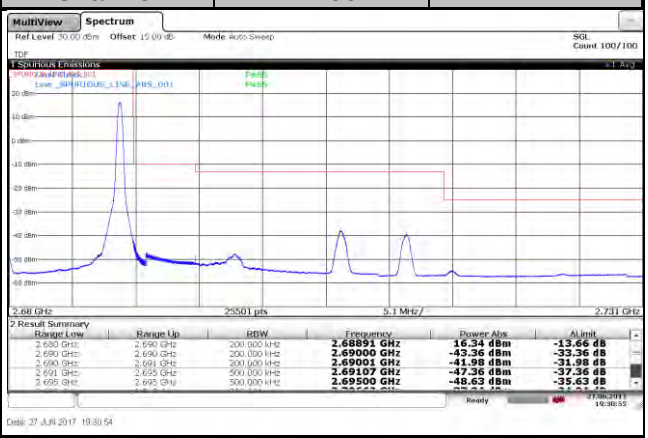
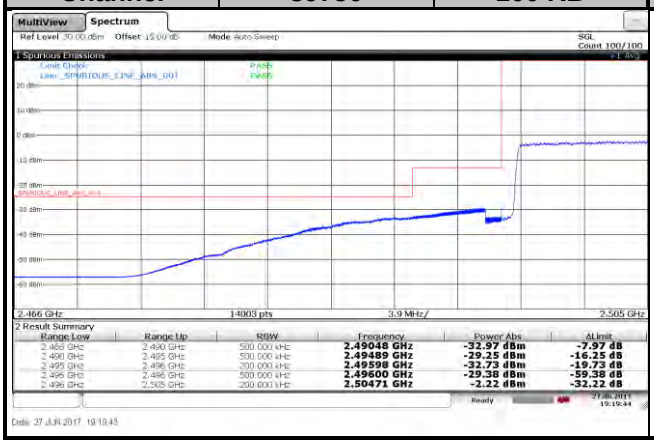
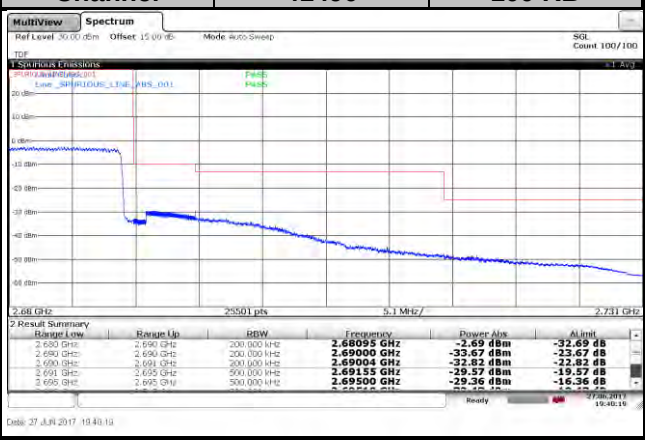



| Channel | 39750 | 100 RB | Channel | 41490 | 100 RB |
|---|---|---|---|---|---|



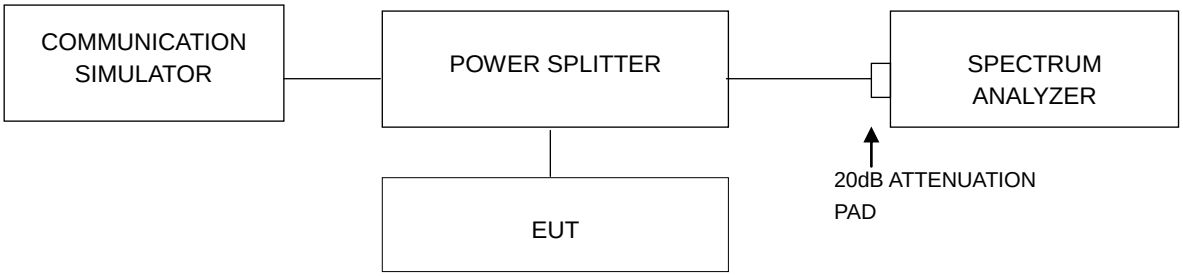
| LTE Band 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20 MHz / 16QAM | | | | | |
| <Out of Band Emission> | | | | | |
| Channel | 39750 | 1 RB | Channel | 41490 | 1 RB |
|  | | |  | | |
| Channel | 39750 | 100 RB | Channel | 41490 | 100 RB |
|  | | |  | | |

## 4.5 Peak to Average Ratio

### 4.5.1 Limits of Peak to Average Ratio Measurement

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

### 4.5.2 Test Setup




### 4.5.3 Test Procedures

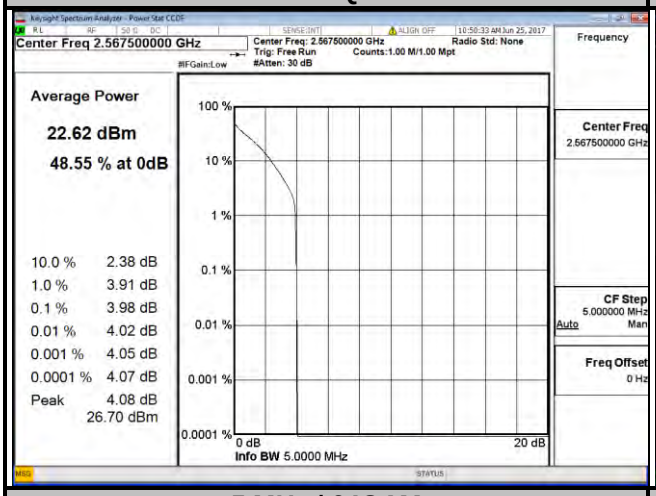
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.5.4 Test Results

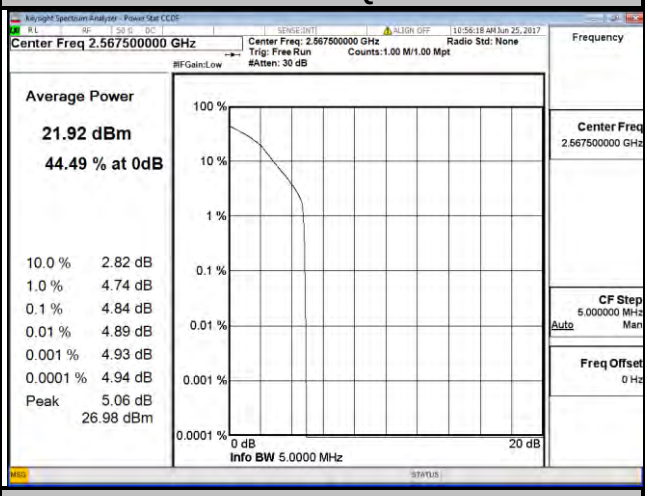
| LTE Band 7 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz | | | | | Channel Bandwidth: 10 MHz | | | | |
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | | Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 20775 | 2502.5 | 3.45 | 4.38 | 5.55 | 20800 | 2505.0 | 4.53 | 4.16 | 5.41 |
| 21100 | 2535.0 | 3.59 | 4.43 | 5.57 | 21100 | 2535.0 | 3.84 | 4.71 | 5.85 |
| 21425 | 2567.5 | 3.98 | 4.84 | 5.93 | 21400 | 2565.0 | 4.45 | 4.10 | 5.12 |

**Spectrum Plot of Worst Value**

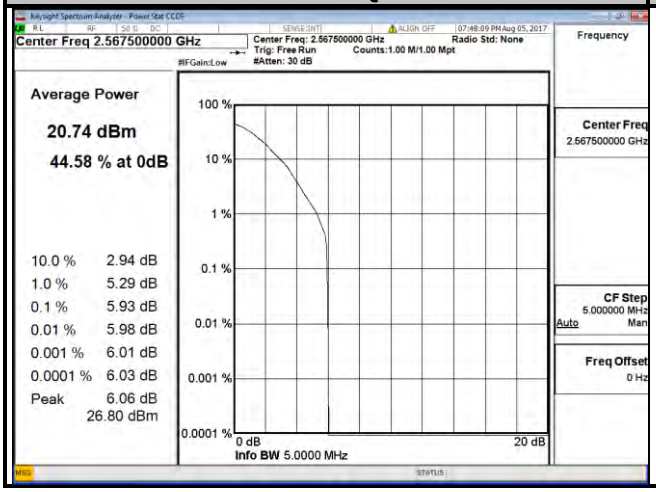
**5 MHz / QPSK**




**5 MHz / 16QAM**

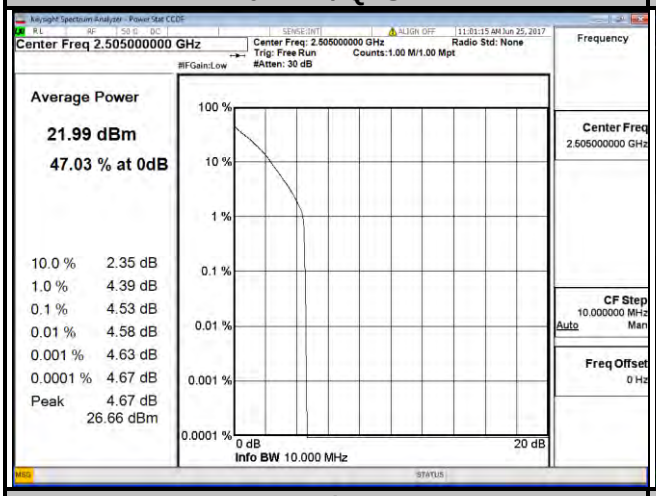



**5 MHz / 64QAM**

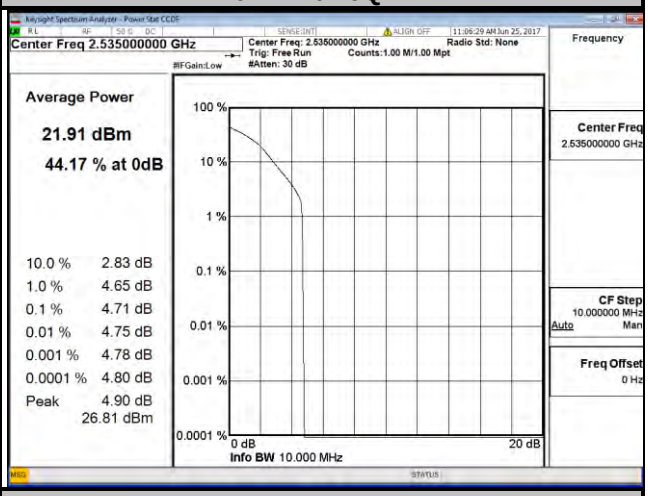


## Spectrum Plot of Worst Value

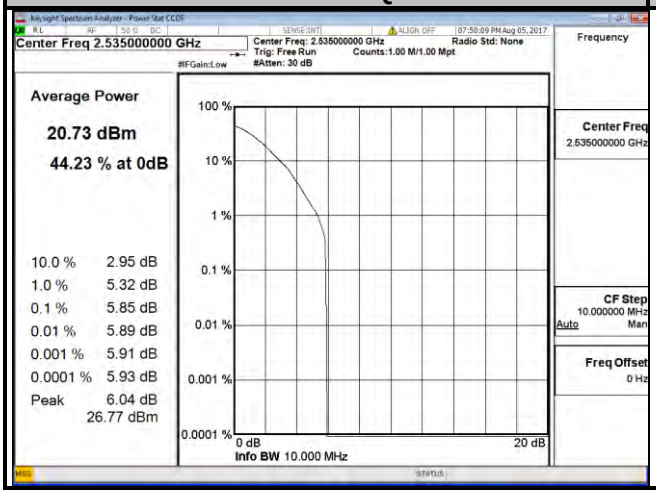
### 10 MHz / QPSK




### 10 MHz / 16QAM



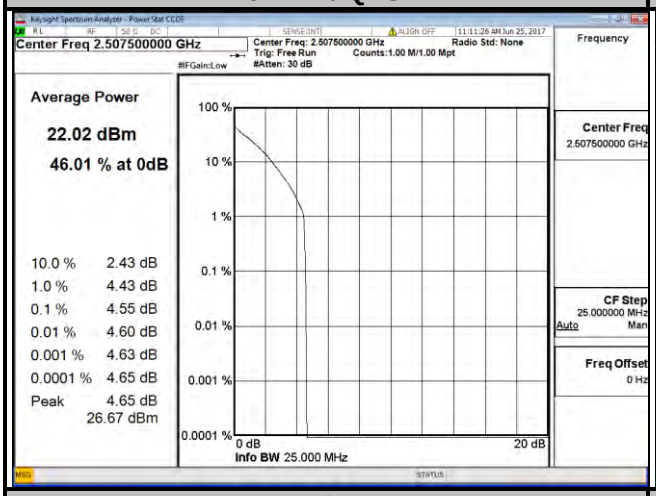

### 10 MHz / 64QAM



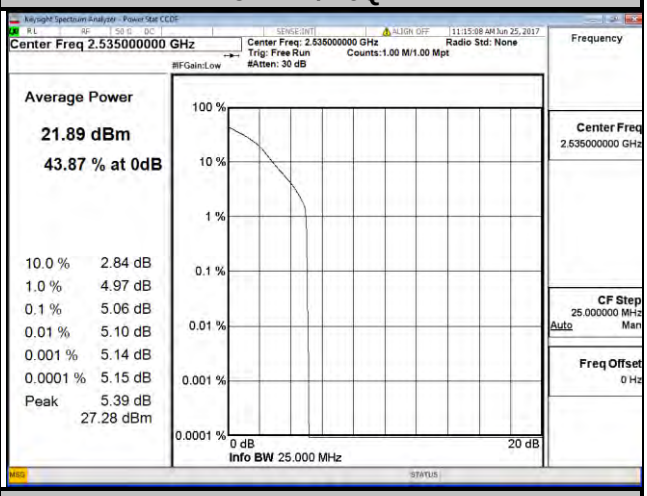
| LTE Band 7 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz | | | | | Channel Bandwidth: 20 MHz | | | | |
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | | Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 20825 | 2507.5 | 4.55 | 4.13 | 5.40 | 20850 | 2510.0 | 4.57 | 5.22 | 5.22 |
| 21100 | 2535.0 | 4.17 | 5.06 | 6.04 | 21100 | 2535.0 | 4.34 | 5.06 | 6.08 |
| 21375 | 2562.5 | 3.99 | 5.00 | 5.64 | 21350 | 2560.0 | 3.81 | 4.59 | 5.68 |

**Spectrum Plot of Worst Value**

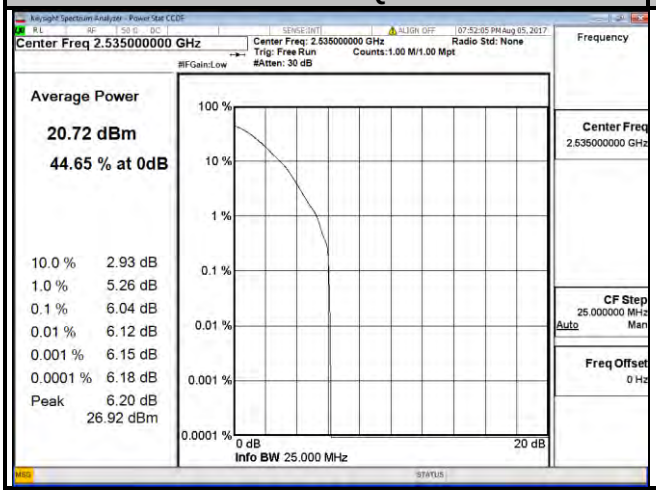
**15 MHz / QPSK**




**15 MHz / 16QAM**

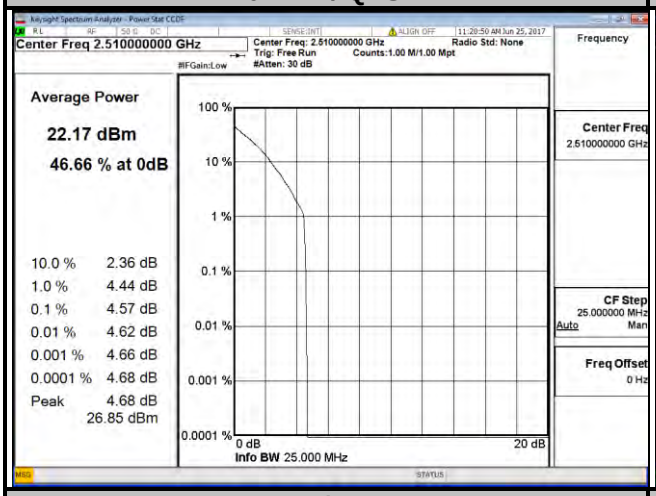



**15 MHz / 64QAM**

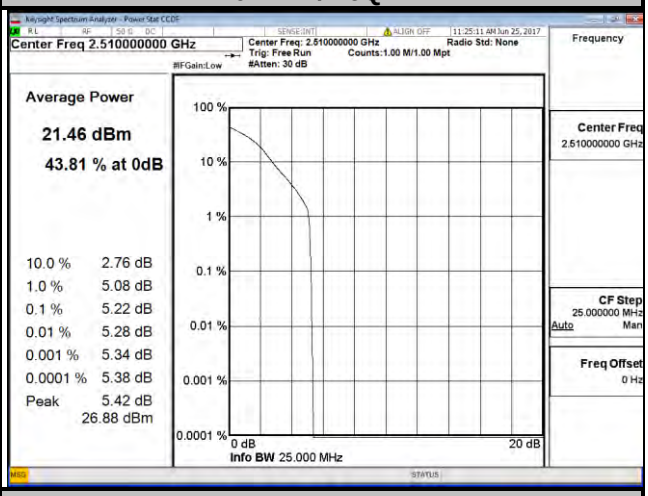


## Spectrum Plot of Worst Value

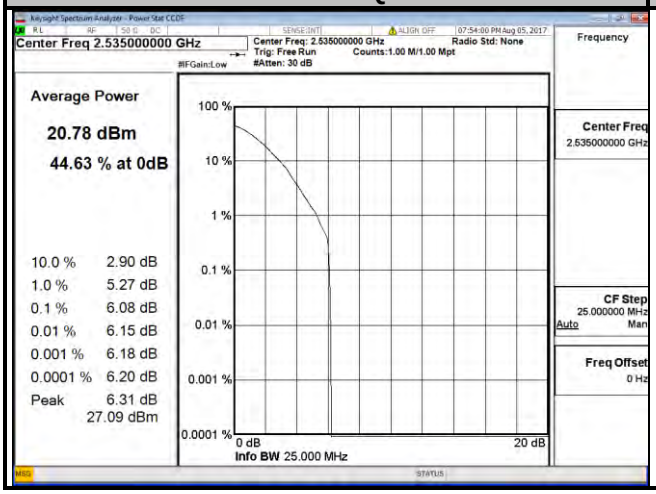
### 20 MHz / QPSK




### 20 MHz / 16QAM



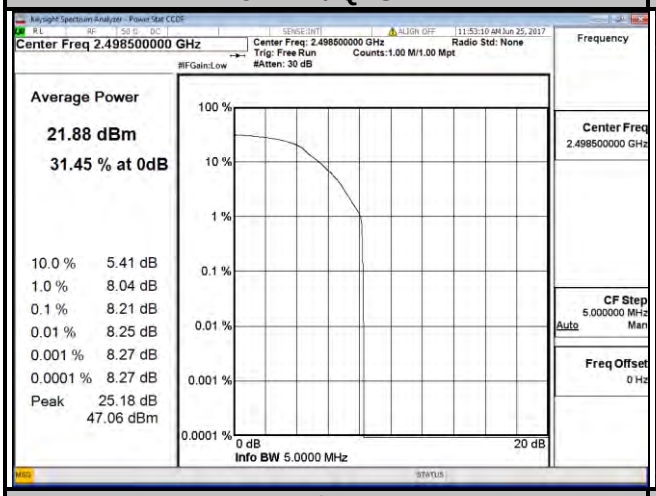

### 20 MHz / 64QAM



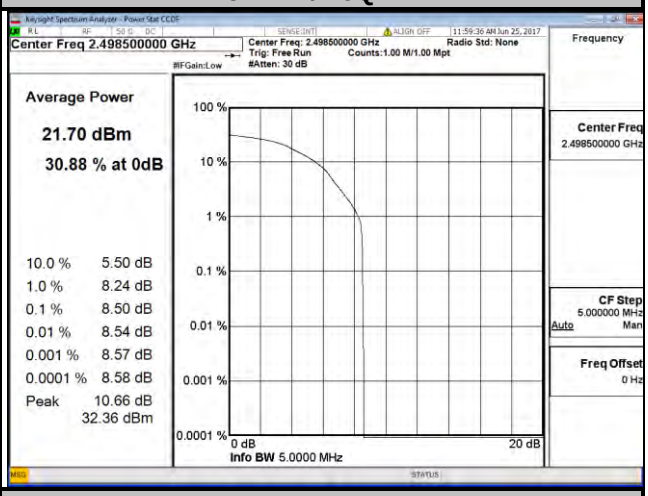
| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 5 MHz | | | | | Channel Bandwidth: 10 MHz | | | | |
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | | Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 39675 | 2498.5 | 8.21 | 8.50 | 9.41 | 39700 | 2501.0 | 8.20 | 8.52 | 9.97 |
| 40620 | 2593.0 | 7.29 | 8.46 | 9.47 | 40620 | 2593.0 | 8.29 | 8.23 | 9.28 |
| 41565 | 2687.5 | 7.38 | 8.05 | 9.35 | 41540 | 2685.0 | 6.88 | 8.36 | 9.17 |

**Spectrum Plot of Worst Value**

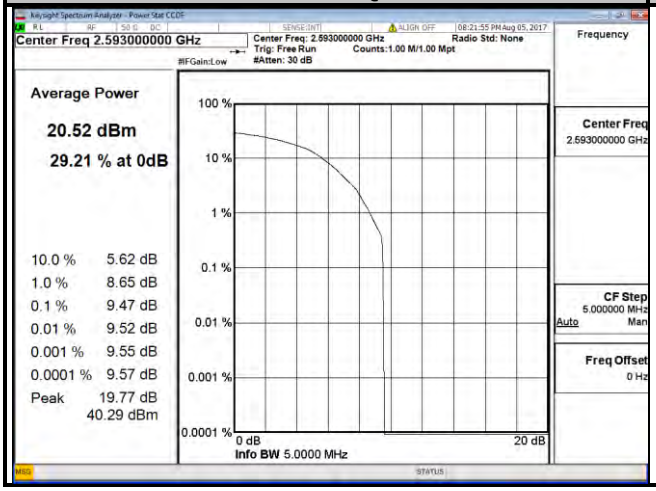
**5 MHz / QPSK**




**5 MHz / 16QAM**

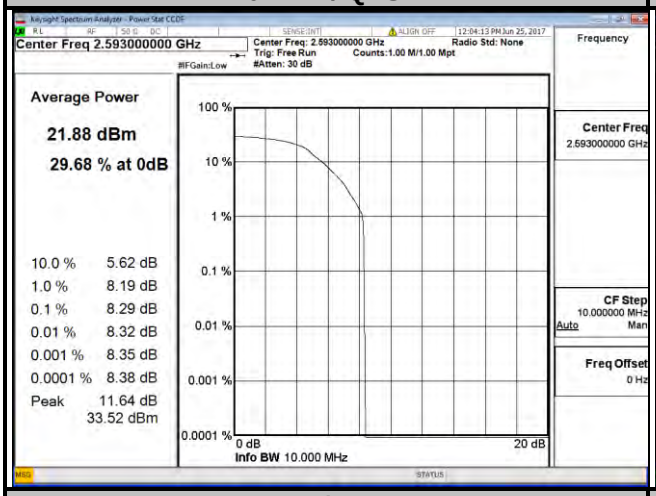



**5 MHz / 64QAM**

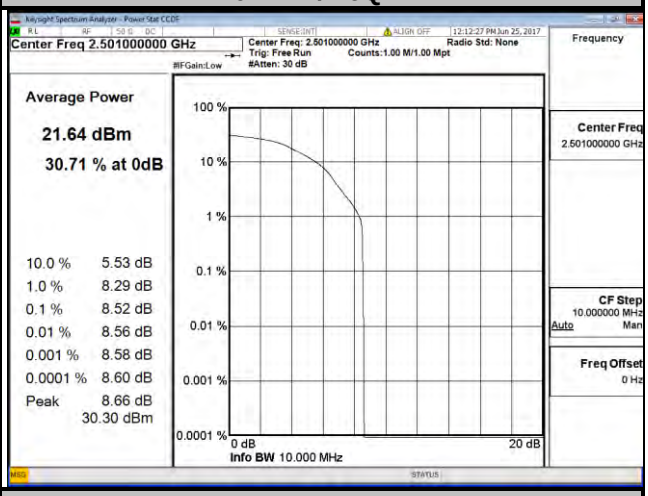


## Spectrum Plot of Worst Value

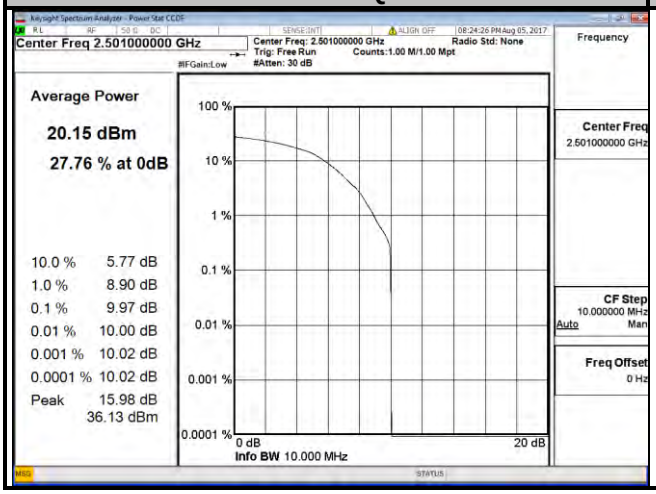
### 10 MHz / QPSK




### 10 MHz / 16QAM



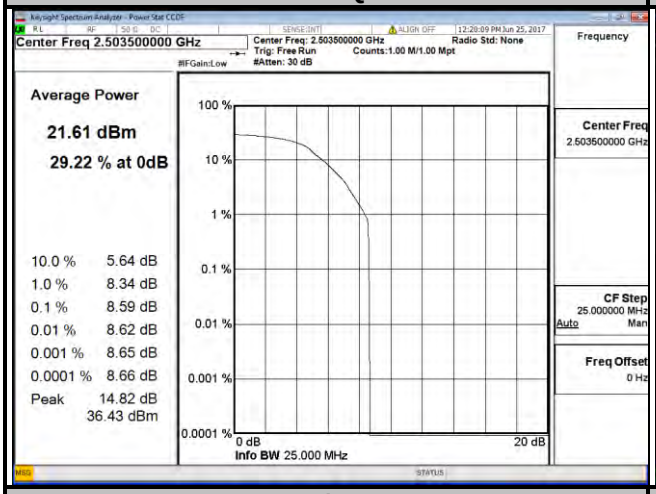

### 10 MHz / 64QAM



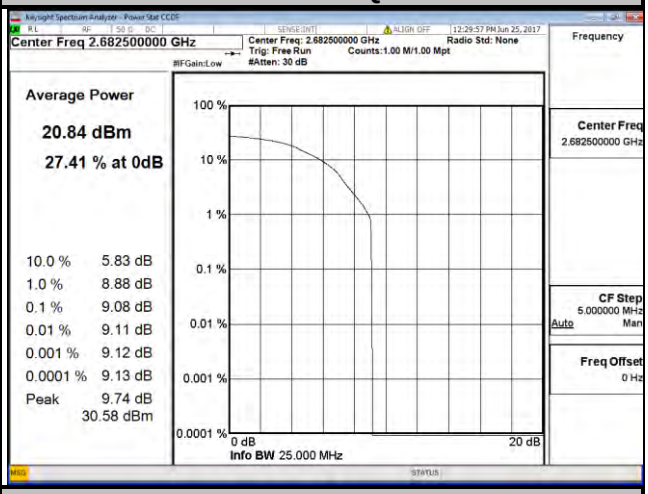
| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Channel Bandwidth: 15 MHz | | | | | Channel Bandwidth: 20 MHz | | | | |
| Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | | Channel | Frequency (MHz) | Peak to Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM | | | QPSK | 16QAM | 64QAM |
| 39725 | 2503.5 | 8.59 | 7.57 | 11.40 | 39750 | 2506.0 | 6.90 | 8.53 | 9.45 |
| 40620 | 2593.0 | 7.20 | 8.03 | 9.72 | 40620 | 2593.0 | 7.25 | 8.80 | 9.82 |
| 41515 | 2682.5 | 7.12 | 9.08 | 9.56 | 41490 | 2680.0 | 8.82 | 8.28 | 9.41 |

**Spectrum Plot of Worst Value**

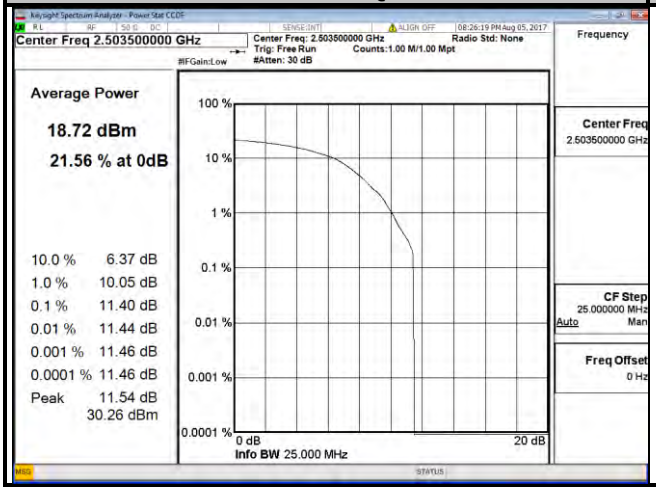
**15 MHz / QPSK**




**15 MHz / 16QAM**

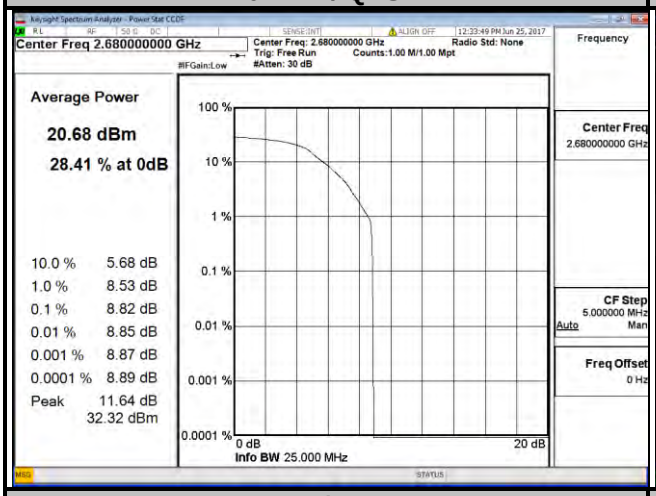



**15 MHz / 64QAM**

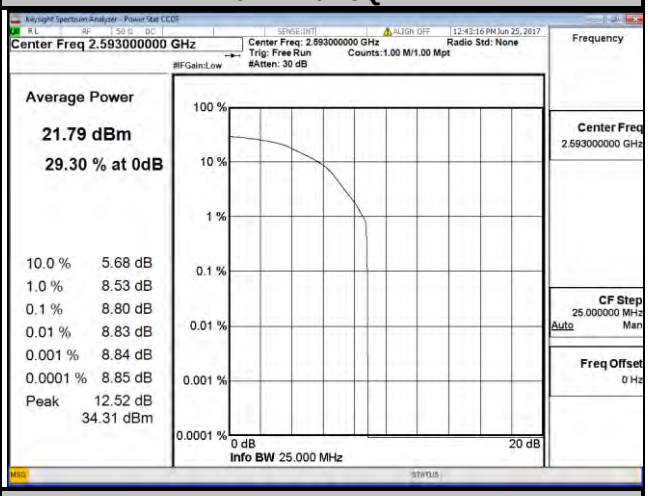


## Spectrum Plot of Worst Value

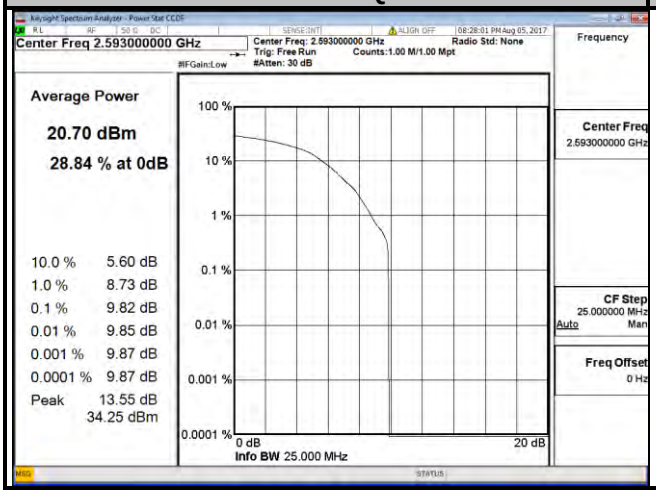
### 20 MHz / QPSK




### 20 MHz / 16QAM




### 20 MHz / 64QAM

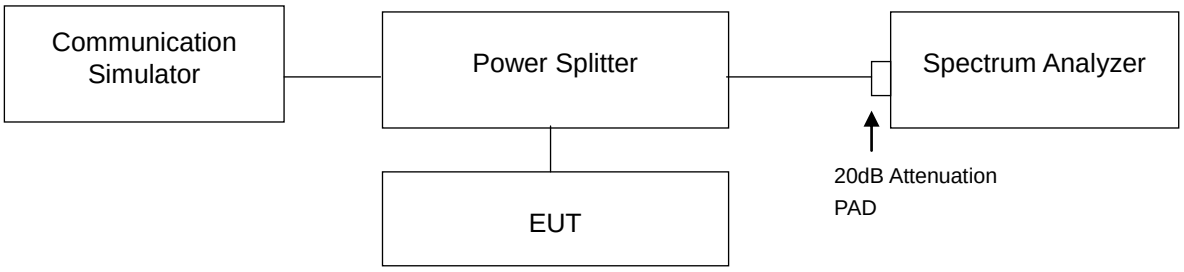


## 4.6 Conducted Spurious Emissions

### 4.6.1 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 55 +10 log10(P) dB. The limit of emission is equal to -25 dBm.

### 4.6.2 Test Setup

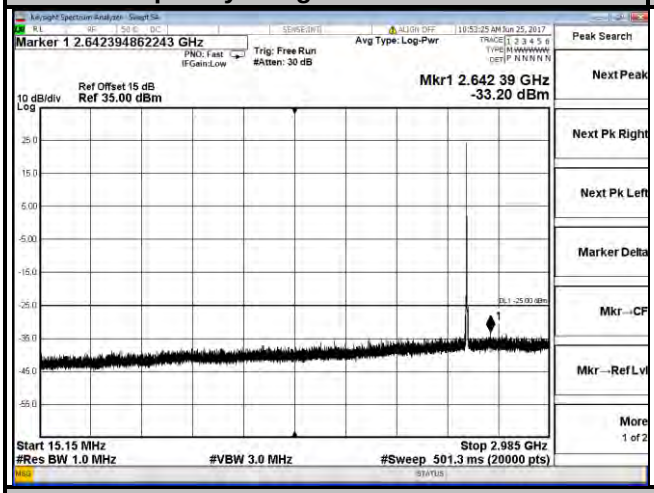
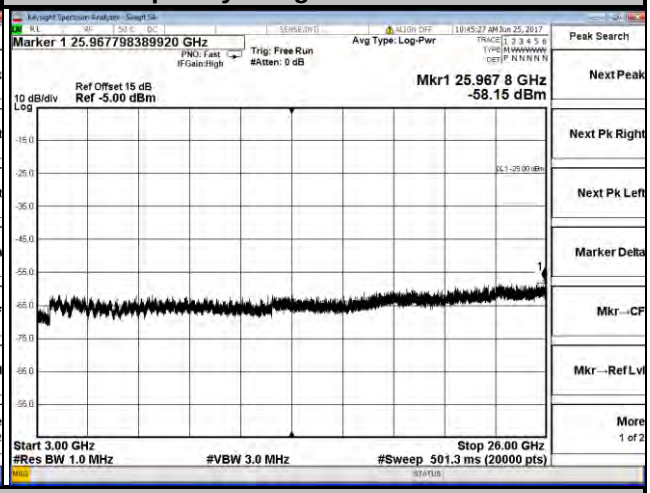
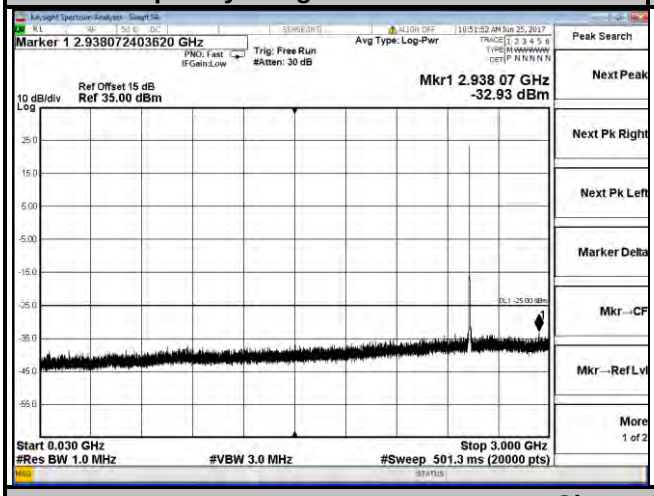
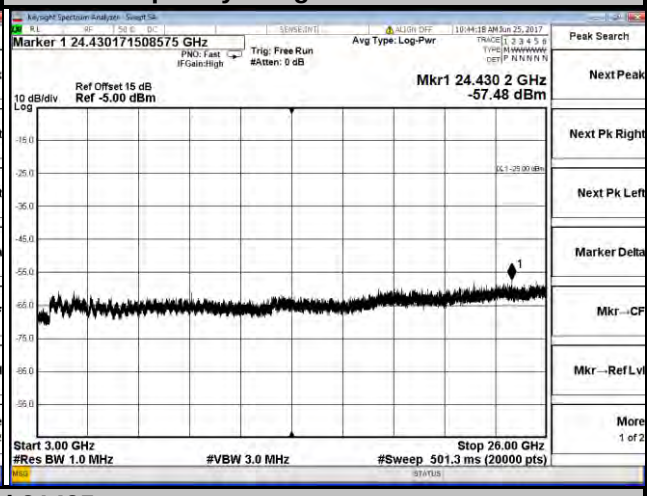
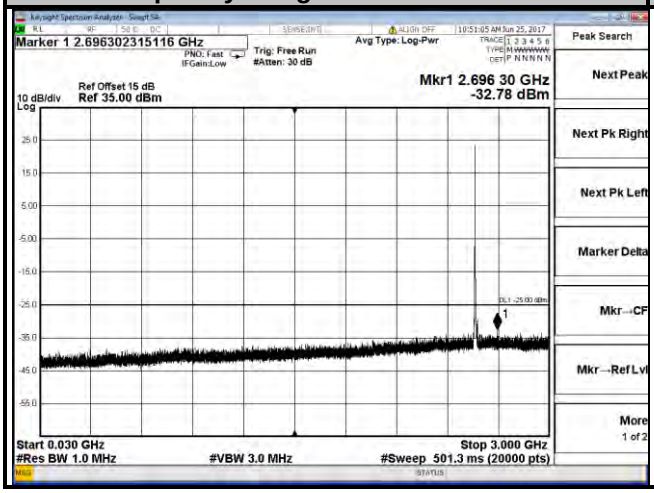
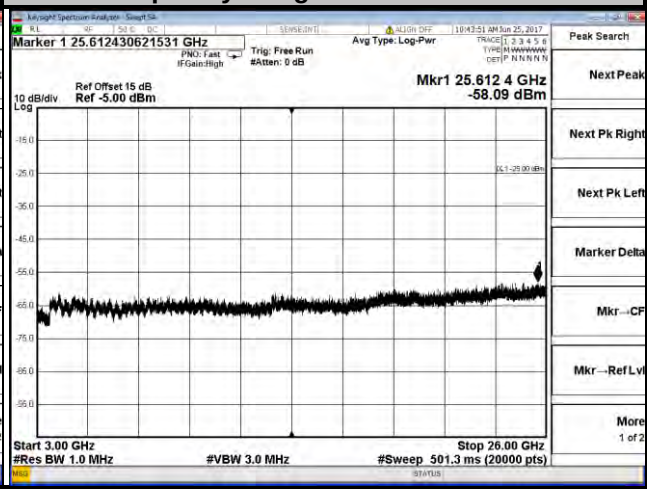



### 4.6.3 Test Procedure

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.

b. Measuring frequency range is from 30 MHz to 26 GHz for LTE Band 7 and from 30 MHz to 27 GHz for LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

4.6.4 Test Results

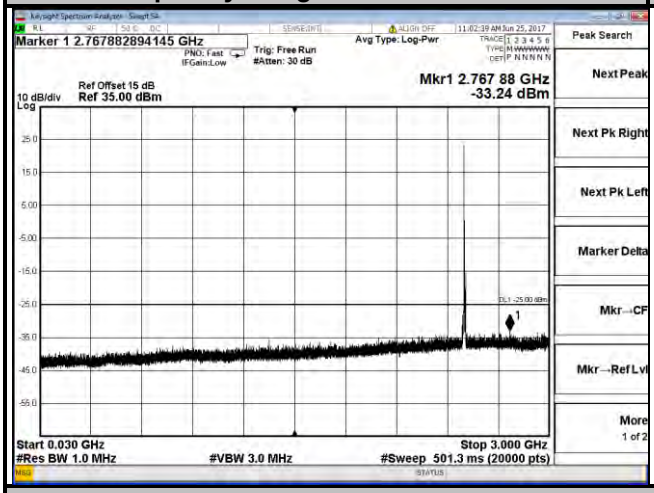
| LTE Band 7 | |
|---|---|
| Channel Bandwidth: 5 MHz | |
| Channel 20775 | |
| Frequency Range : 30 MHz ~ 3 GHz | Frequency Range : 3 GHz ~ 26 GHz |
|  |  |
| Channel 21100 | |
| Frequency Range : 30 MHz ~ 3 GHz | Frequency Range : 3 GHz ~ 26 GHz |
|  |  |
| Channel 21425 | |
| Frequency Range : 30 MHz ~ 3 GHz | Frequency Range : 3 GHz ~ 26 GHz |
|  |  |

## LTE Band 7

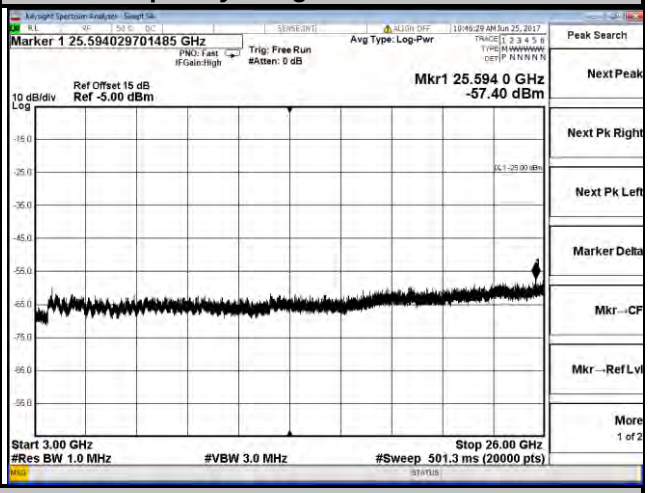
### Channel Bandwidth: 10 MHz

### Channel 20800

**Frequency Range : 30 MHz ~ 3 GHz**

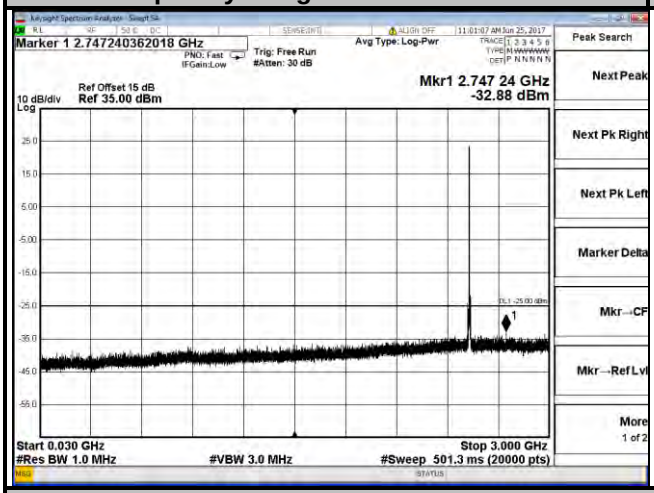



**Frequency Range : 3 GHz ~ 26 GHz**

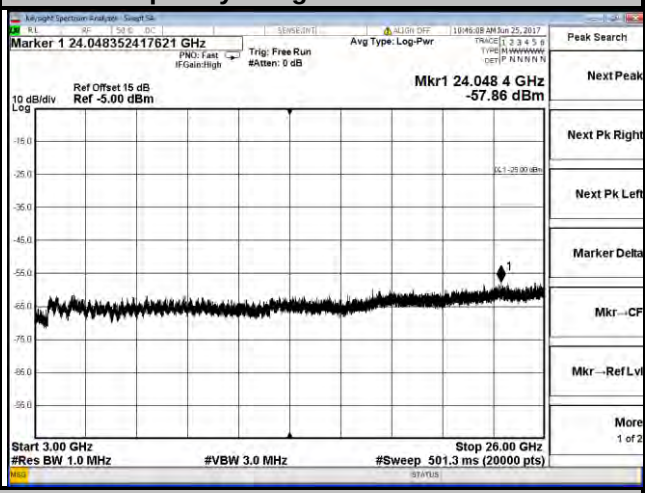



### Channel 21100

**Frequency Range : 30 MHz ~ 3 GHz**

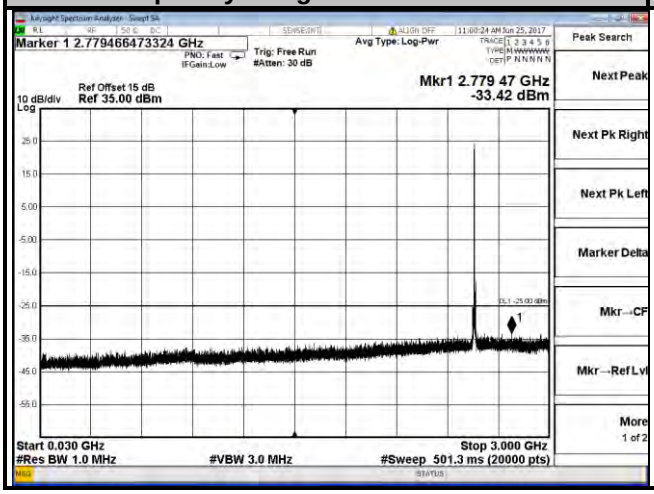



**Frequency Range : 3 GHz ~ 26 GHz**

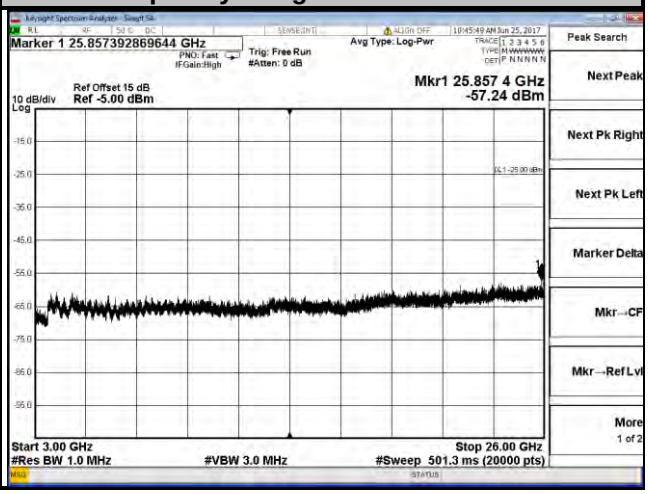



### Channel 21400

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 26 GHz**

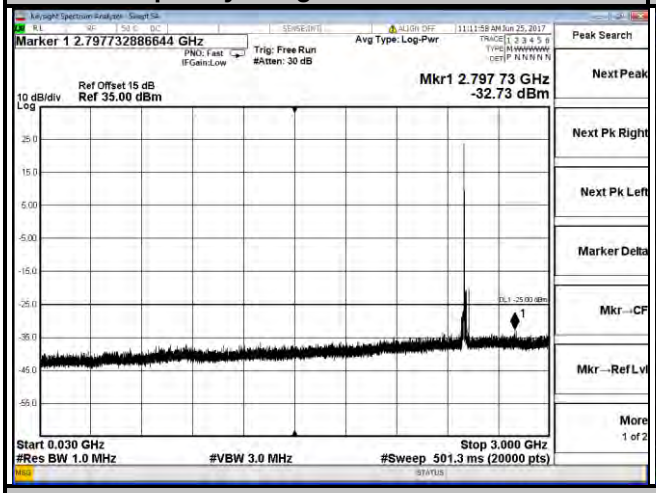


## LTE Band 7

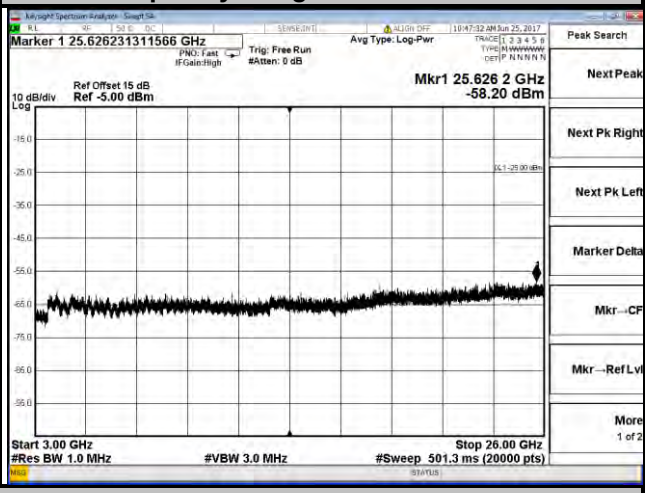
### Channel Bandwidth: 15 MHz

### Channel 20825

**Frequency Range : 30 MHz ~ 3 GHz**

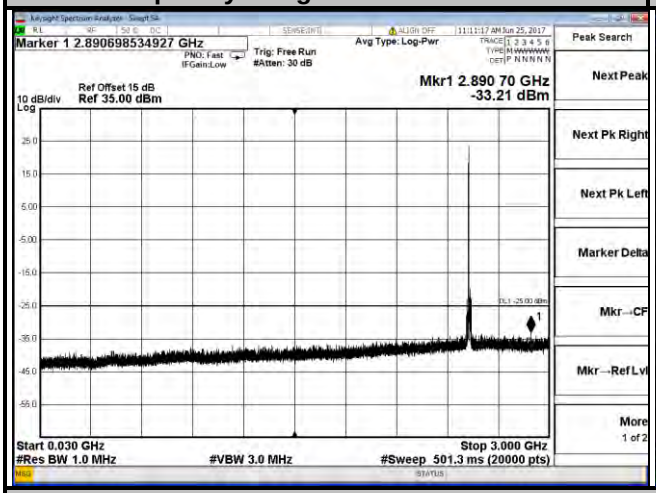



**Frequency Range : 3 GHz ~ 26 GHz**

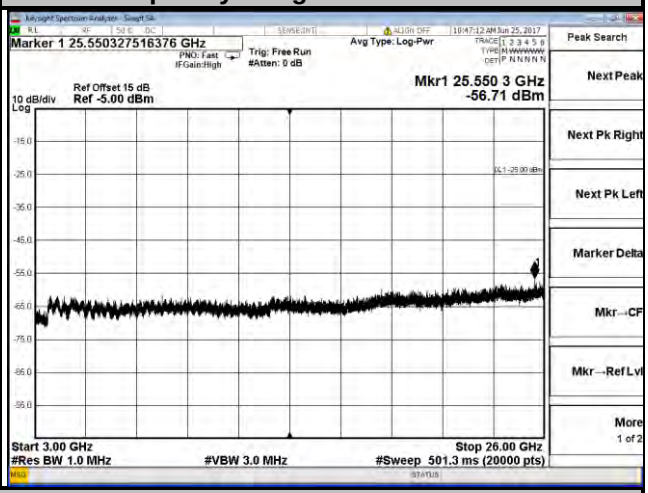



### Channel 21100

**Frequency Range : 30 MHz ~ 3 GHz**

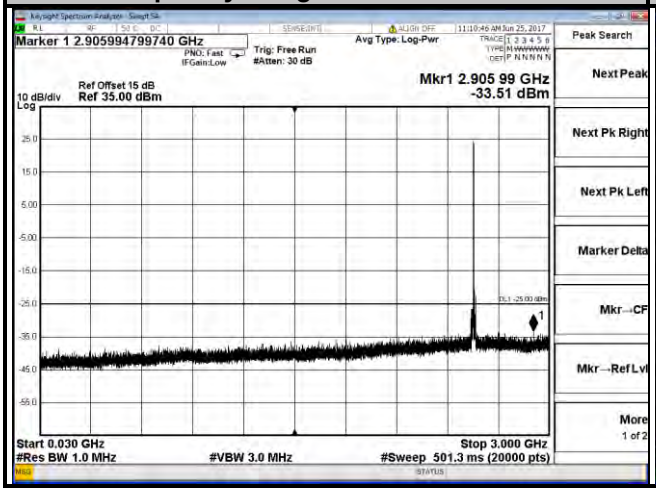



**Frequency Range : 3 GHz ~ 26 GHz**

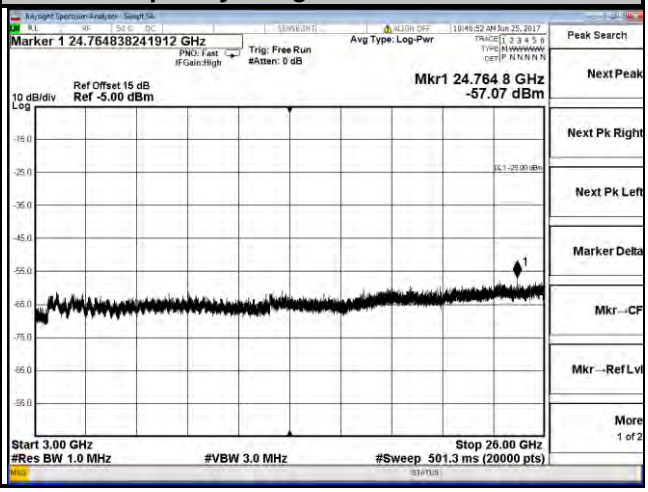



### Channel 21375

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 26 GHz**

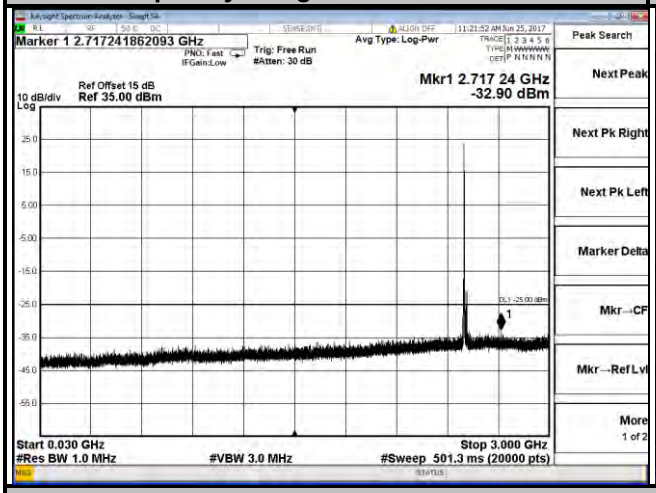


## LTE Band 7

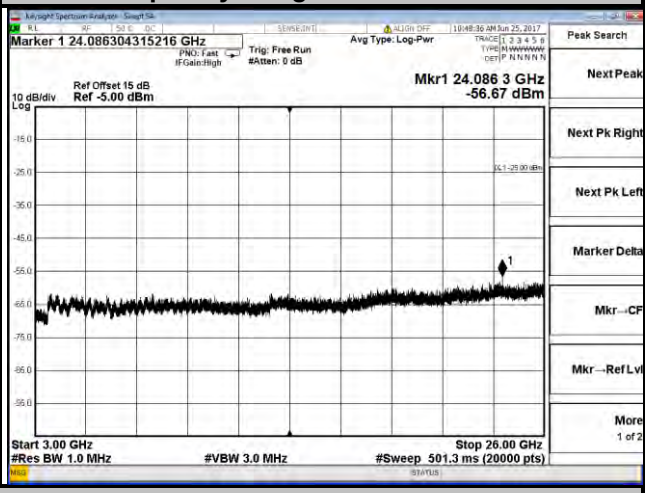
### Channel Bandwidth: 20 MHz

### Channel 20850

**Frequency Range : 30 MHz ~ 3 GHz**

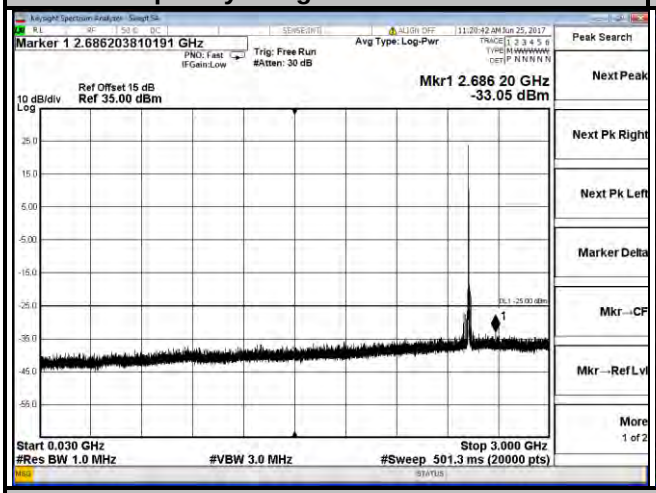



**Frequency Range : 3 GHz ~ 26 GHz**

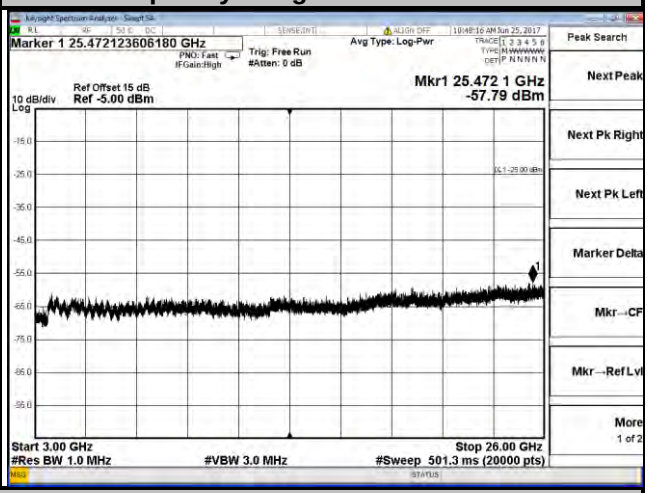



### Channel 21100

**Frequency Range : 30 MHz ~ 3 GHz**

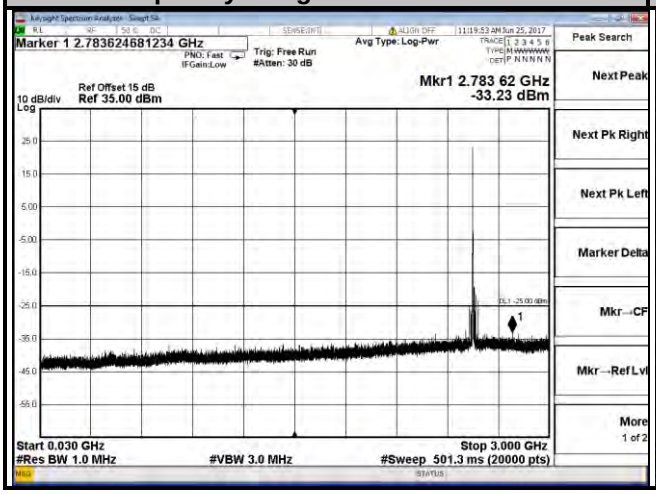



**Frequency Range : 3 GHz ~ 26 GHz**

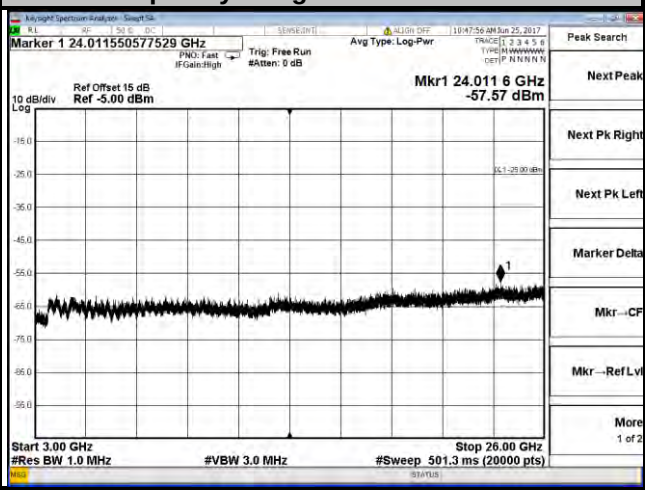



### Channel 21350

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 26 GHz**

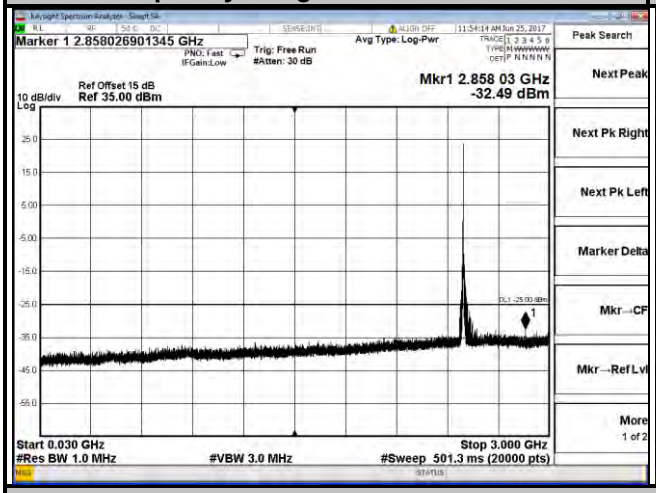


## LTE Band 41

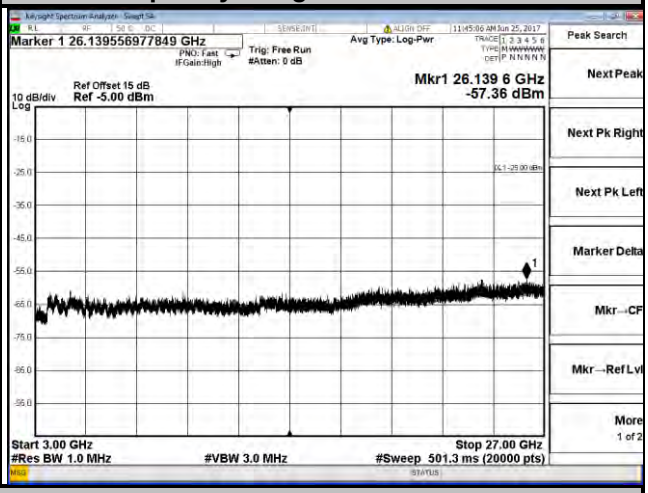
### Channel Bandwidth: 5 MHz

### Channel 39675

**Frequency Range : 30 MHz ~ 3 GHz**

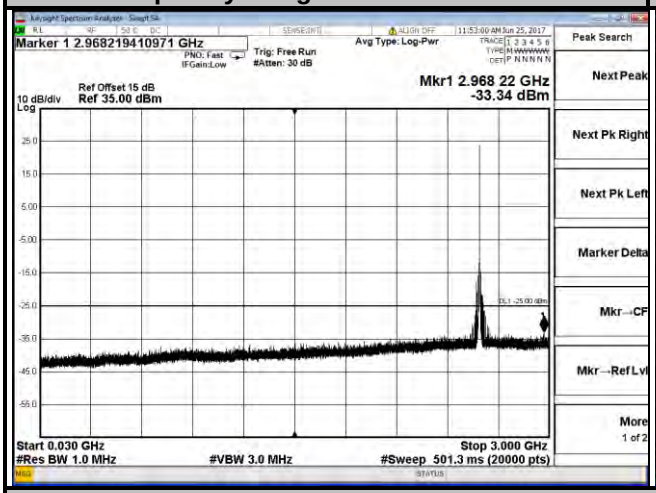



**Frequency Range : 3 GHz ~ 27 GHz**

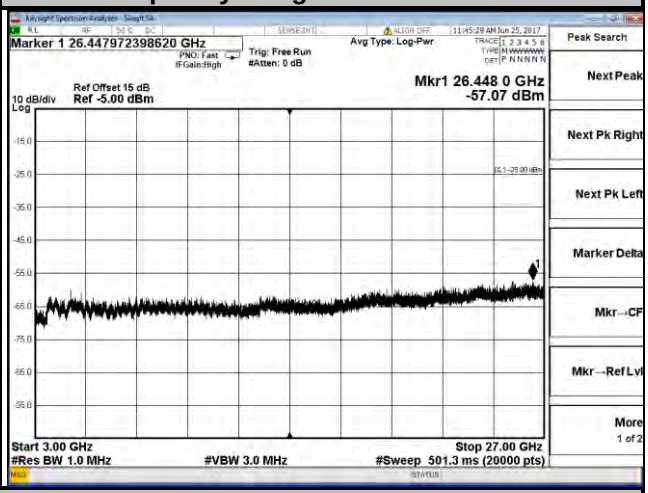



### Channel 40620

**Frequency Range : 30 MHz ~ 3 GHz**

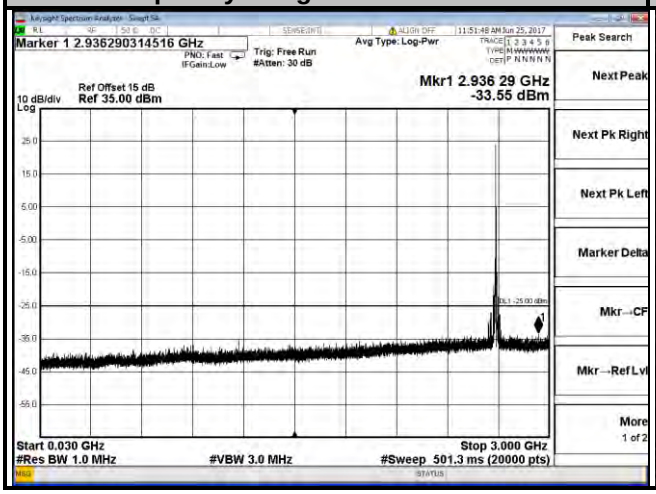



**Frequency Range : 3 GHz ~ 27 GHz**

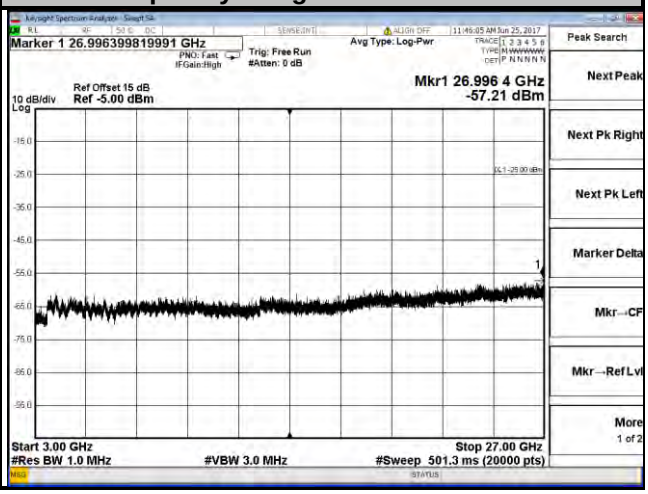



### Channel 41565

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 27 GHz**

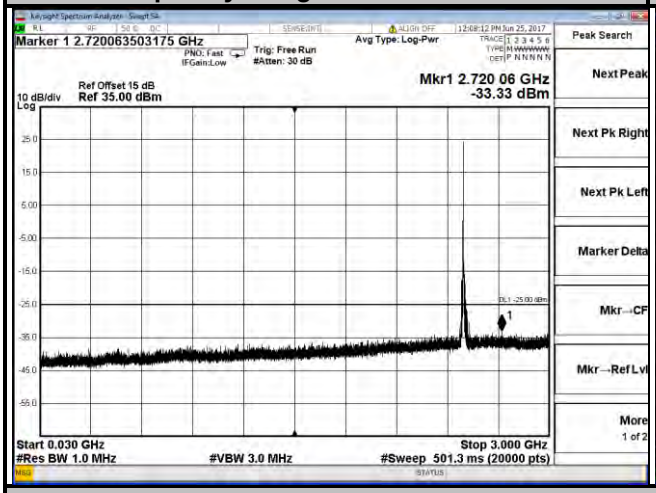


## LTE Band 41

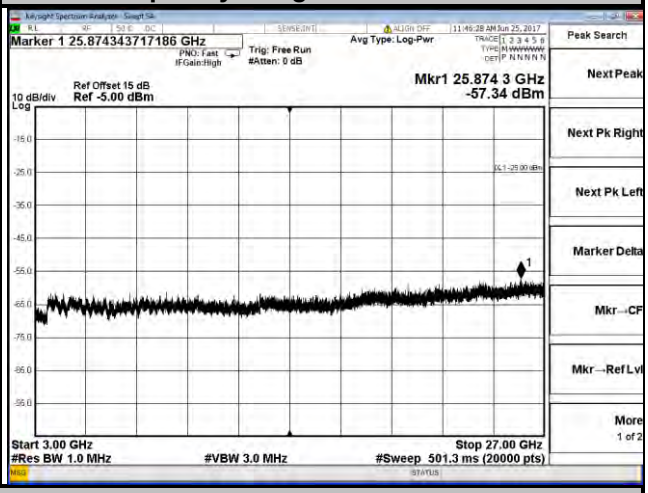
### Channel Bandwidth: 10 MHz

### Channel 39700

**Frequency Range : 30 MHz ~ 3 GHz**

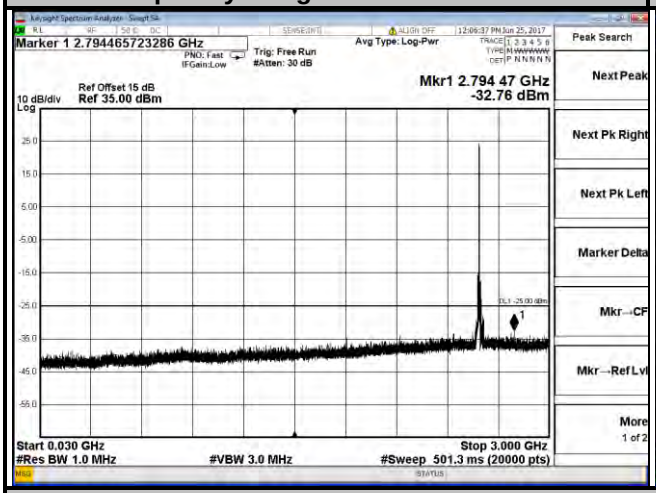



**Frequency Range : 3 GHz ~ 27 GHz**

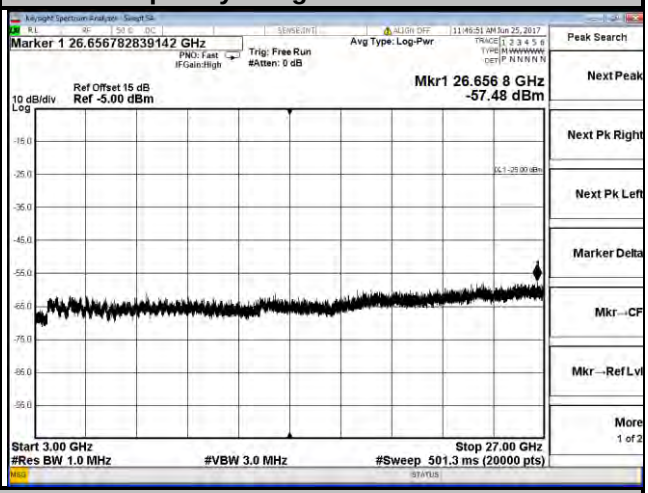



### Channel 40620

**Frequency Range : 30 MHz ~ 3 GHz**

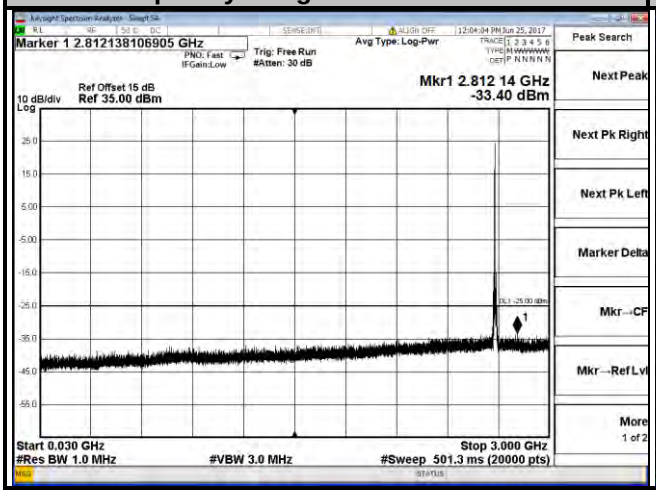



**Frequency Range : 3 GHz ~ 27 GHz**

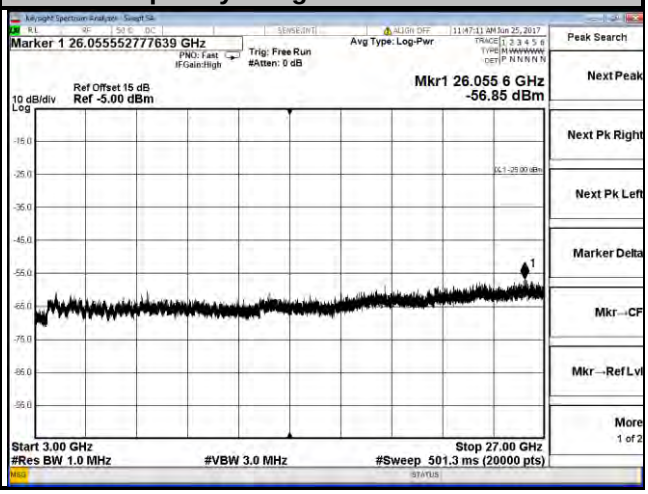



### Channel 41540

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 27 GHz**

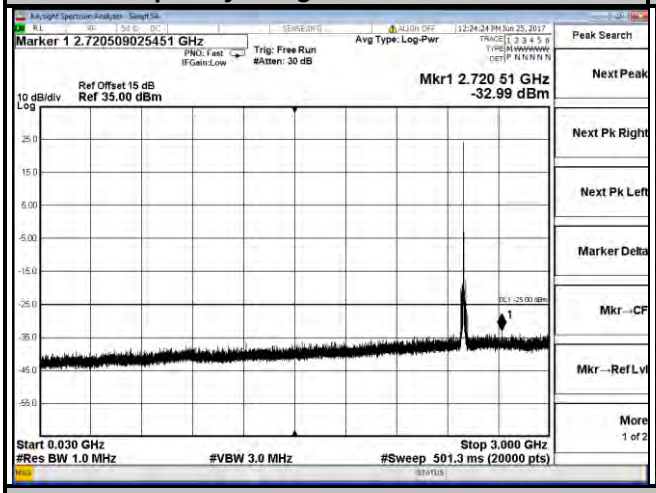


## LTE Band 41

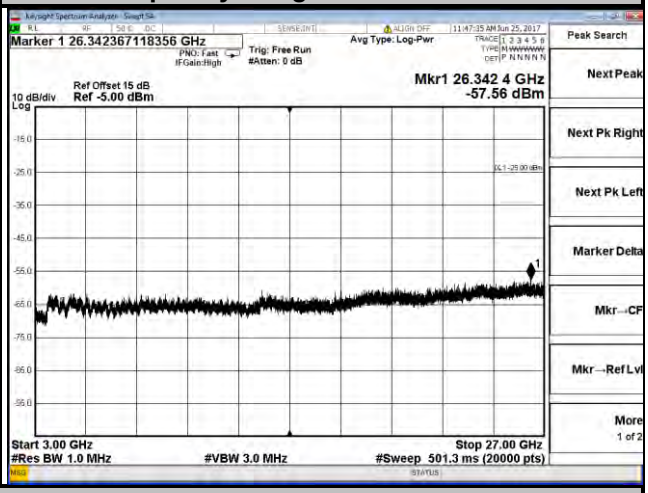
### Channel Bandwidth: 15 MHz

### Channel 39725

**Frequency Range : 30 MHz ~ 3 GHz**

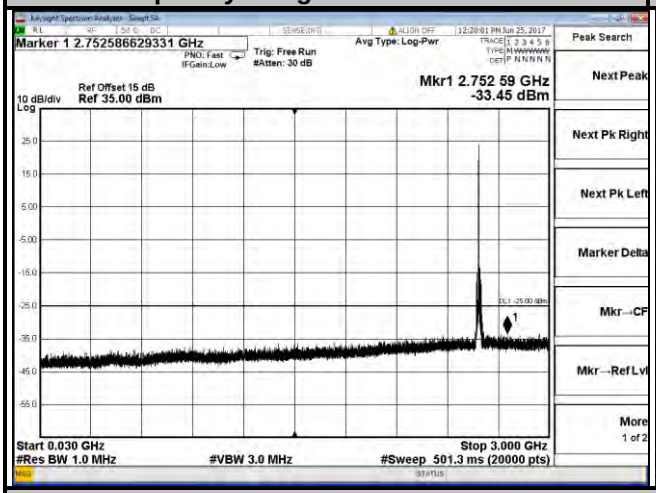



**Frequency Range : 3 GHz ~ 27 GHz**

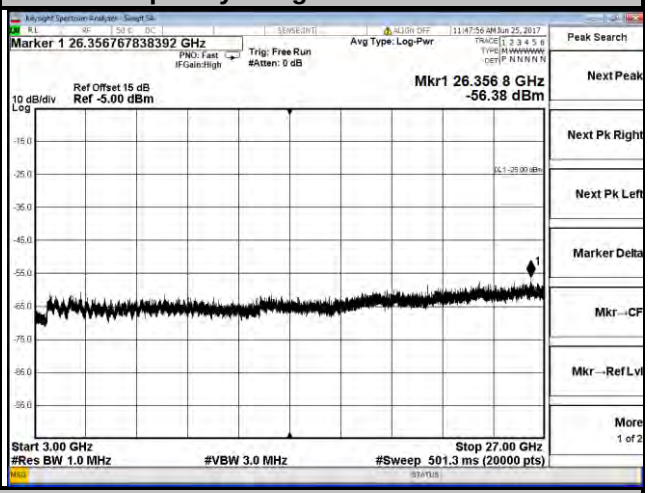



### Channel 40620

**Frequency Range : 30 MHz ~ 3 GHz**

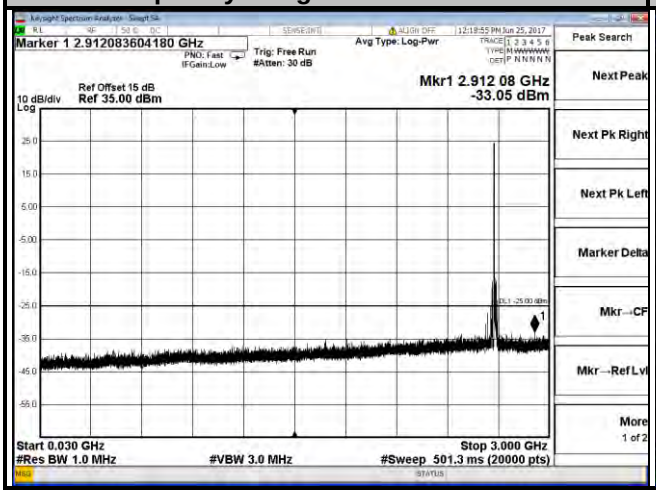



**Frequency Range : 3 GHz ~ 27 GHz**

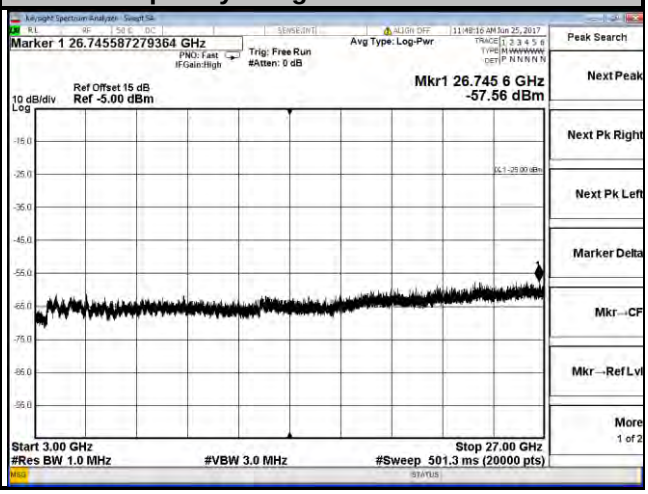



### Channel 41515

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 27 GHz**

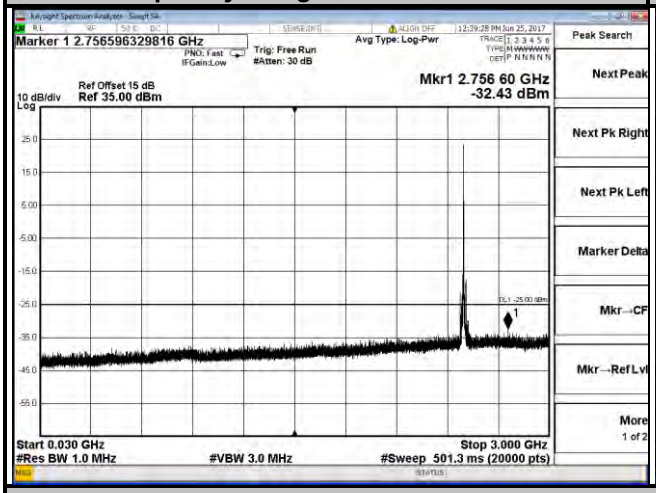


## LTE Band 41

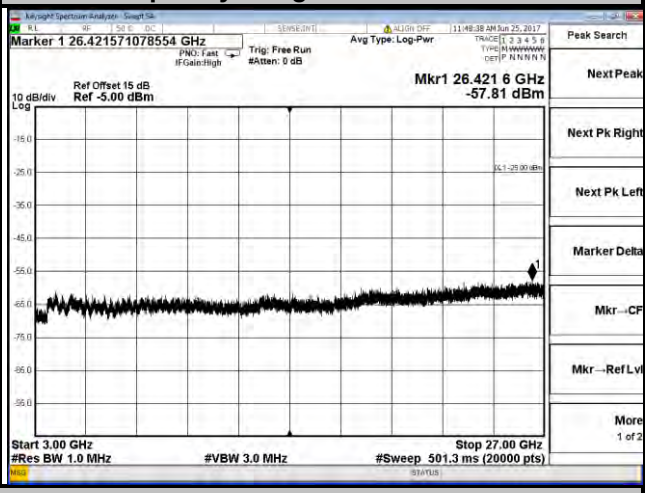
### Channel Bandwidth: 20 MHz

### Channel 39750

**Frequency Range : 30 MHz ~ 3 GHz**

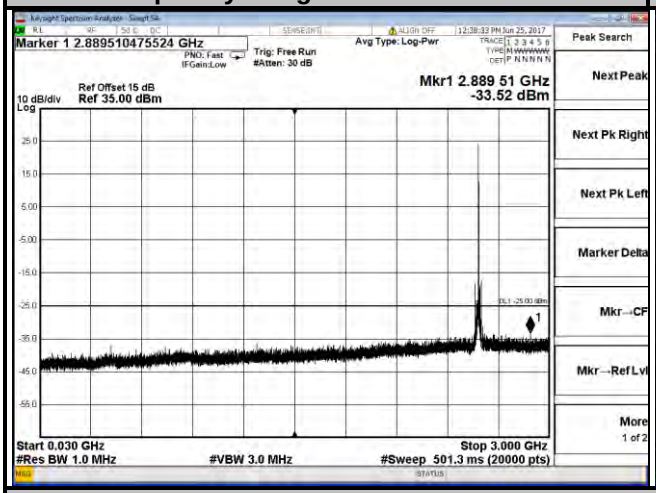



**Frequency Range : 3 GHz ~ 27 GHz**

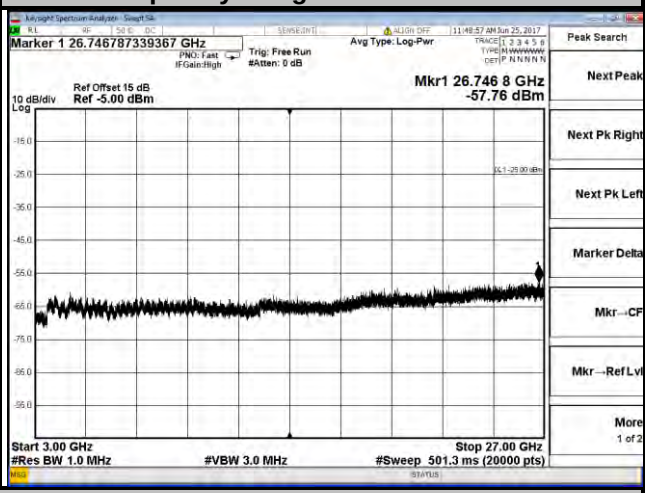



### Channel 40620

**Frequency Range : 30 MHz ~ 3 GHz**

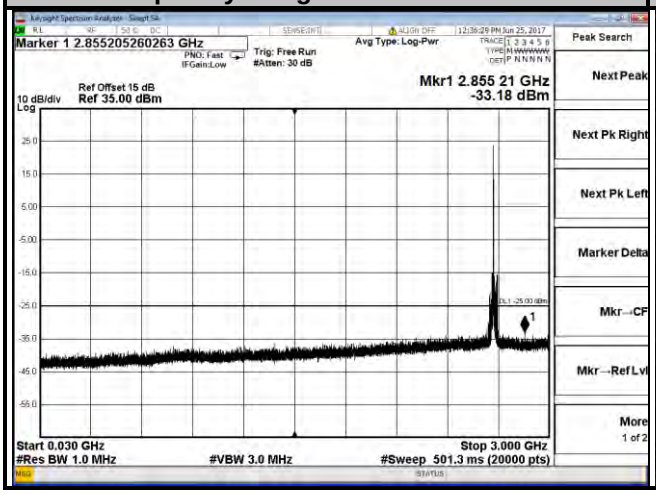



**Frequency Range : 3 GHz ~ 27 GHz**

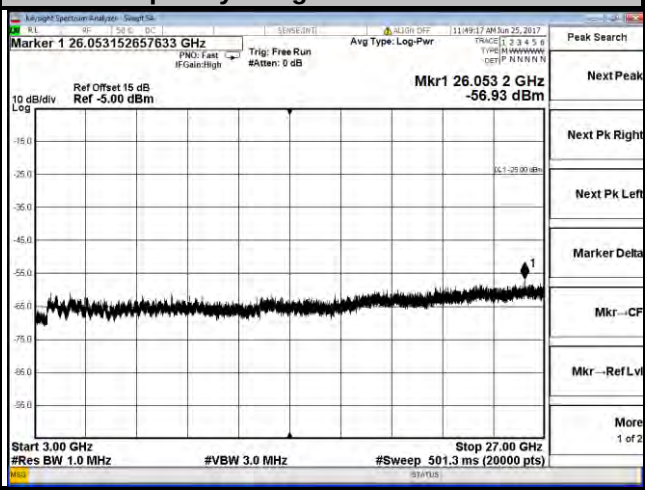



### Channel 41490

**Frequency Range : 30 MHz ~ 3 GHz**




**Frequency Range : 3 GHz ~ 27 GHz**



## 4.7 Radiated Emission Measurement

### 4.7.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25 dBm.

### 4.7.2 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 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

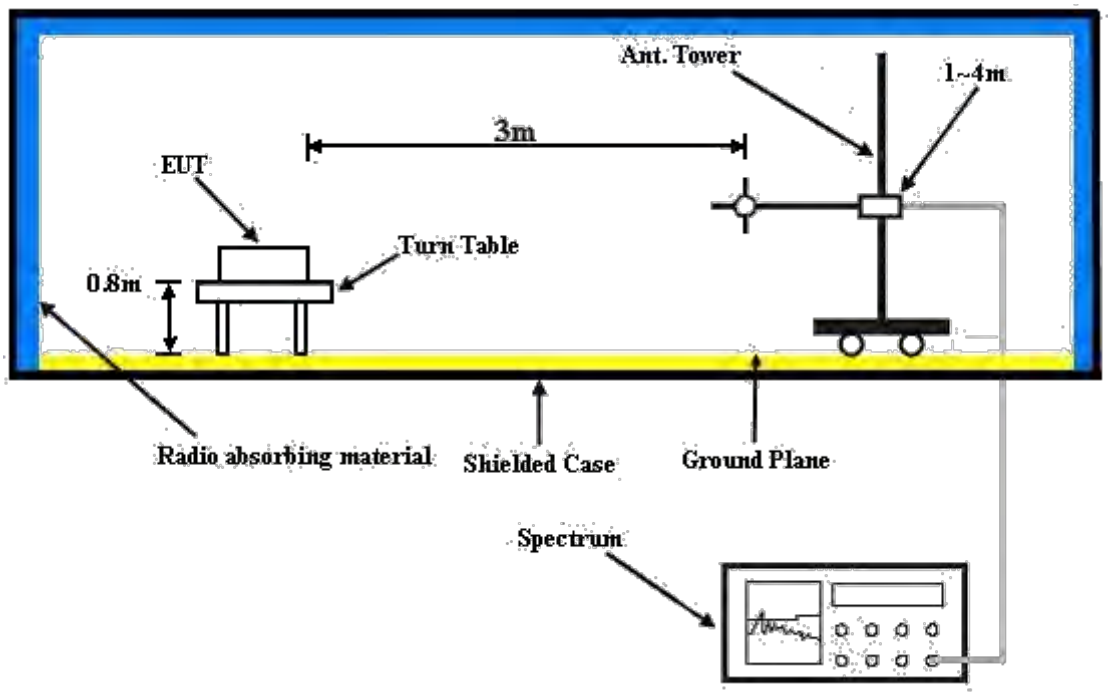
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15 dBi.

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

### 4.7.3 Deviation from Test Standard

No deviation.

### 4.7.4 Test Setup




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

4.7.5 Test Results

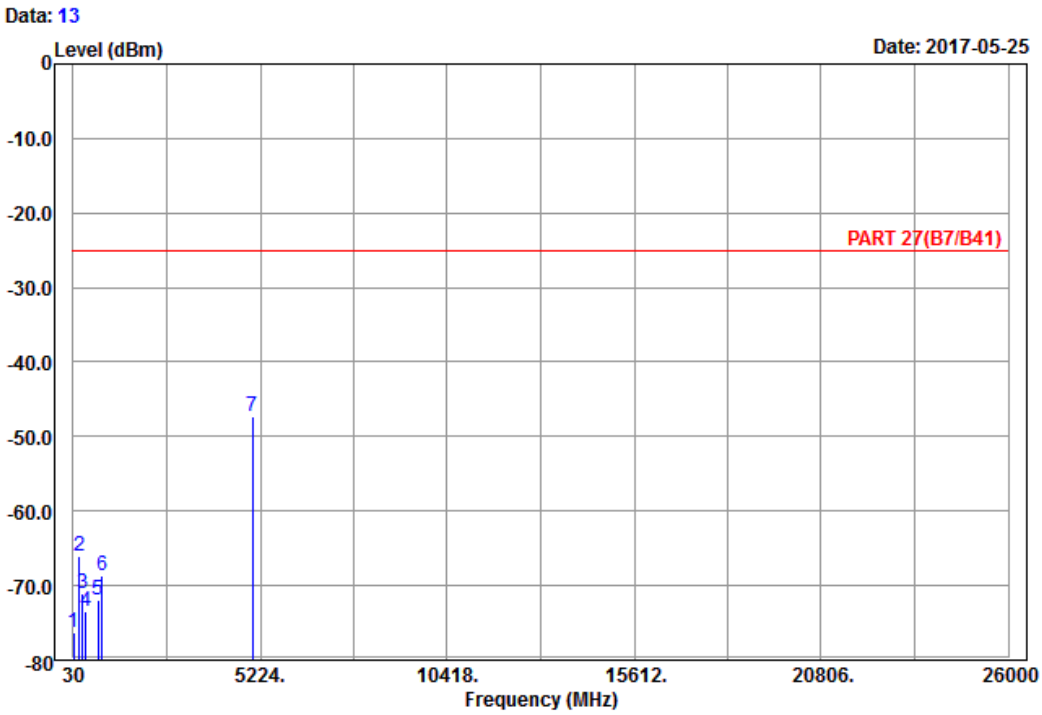
**Mode A**

**LTE Band 7**

**Channel Bandwidth: 20 MHz / QPSK**

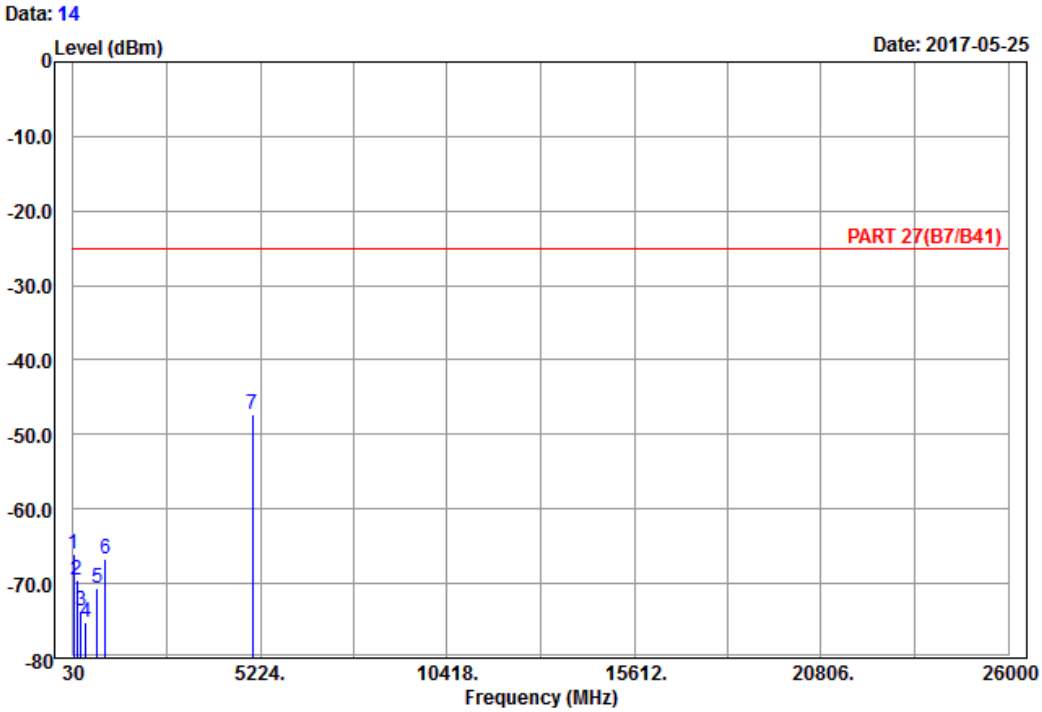
**Low Channel**

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_CH20850
Tested by: Charles Hsiao

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 50.79 | -76.24 | -62.19 | -25.00 | -51.24 | -14.05 | Peak |
| 2 | 203.07 | -66.03 | -59.89 | -25.00 | -41.03 | -6.14 | Peak |
| 3 | 292.98 | -71.16 | -65.26 | -25.00 | -46.16 | -5.90 | Peak |
| 4 | 384.70 | -73.53 | -70.01 | -25.00 | -48.53 | -3.52 | Peak |
| 5 | 713.70 | -71.91 | -71.28 | -25.00 | -46.91 | -0.63 | Peak |
| 6 | 825.70 | -68.63 | -70.35 | -25.00 | -43.63 | 1.72 | Peak |
| 7 pp | 5020.00 | -47.20 | -66.28 | -25.00 | -22.20 | 19.08 | Peak |

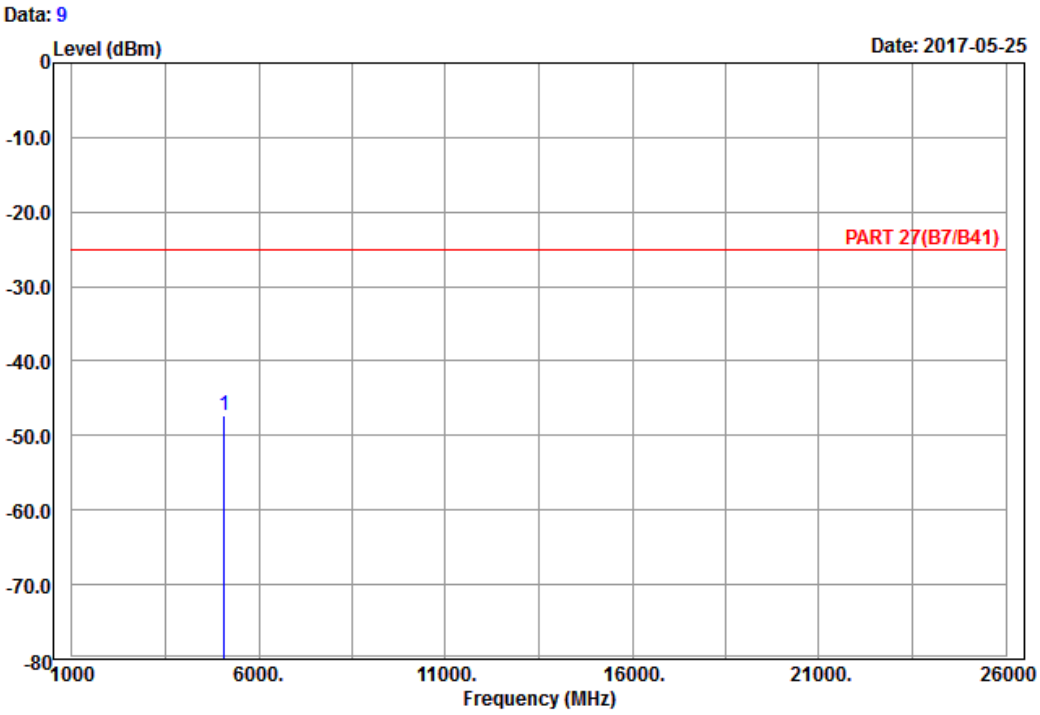



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_CH20850
Tested by: Charles Hsiao

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 41.61 | -66.13 | -55.73 | -25.00 | -41.13 | -10.40 | Peak |
| 2 | 124.50 | -69.53 | -61.52 | -25.00 | -44.53 | -8.01 | Peak |
| 3 | 237.36 | -73.75 | -68.07 | -25.00 | -48.75 | -5.68 | Peak |
| 4 | 371.40 | -75.11 | -70.87 | -25.00 | -50.11 | -4.24 | Peak |
| 5 | 685.70 | -70.70 | -70.39 | -25.00 | -45.70 | -0.31 | Peak |
| 6 | 928.60 | -66.67 | -70.82 | -25.00 | -41.67 | 4.15 | Peak |
| 7 pp | 5020.00 | -47.24 | -66.32 | -25.00 | -22.24 | 19.08 | Peak |

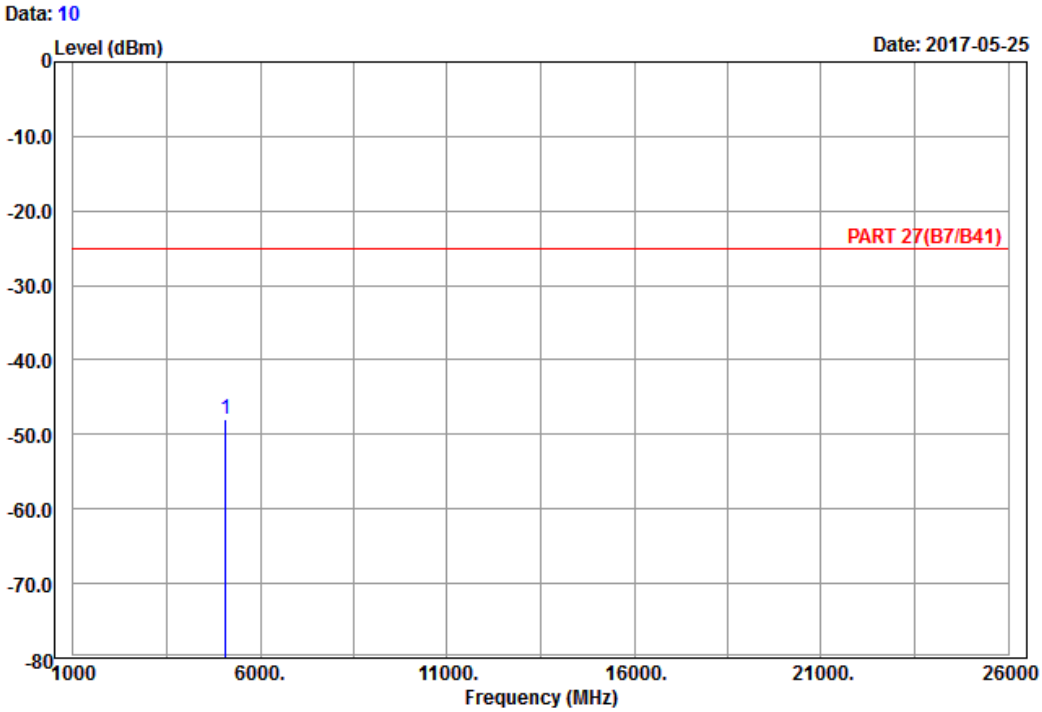
## Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_CH21100
Tested by: Charles Hsiao

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5070.00 | -47.31 | -66.70 | -25.00 | -22.31 | 19.39 | Peak |

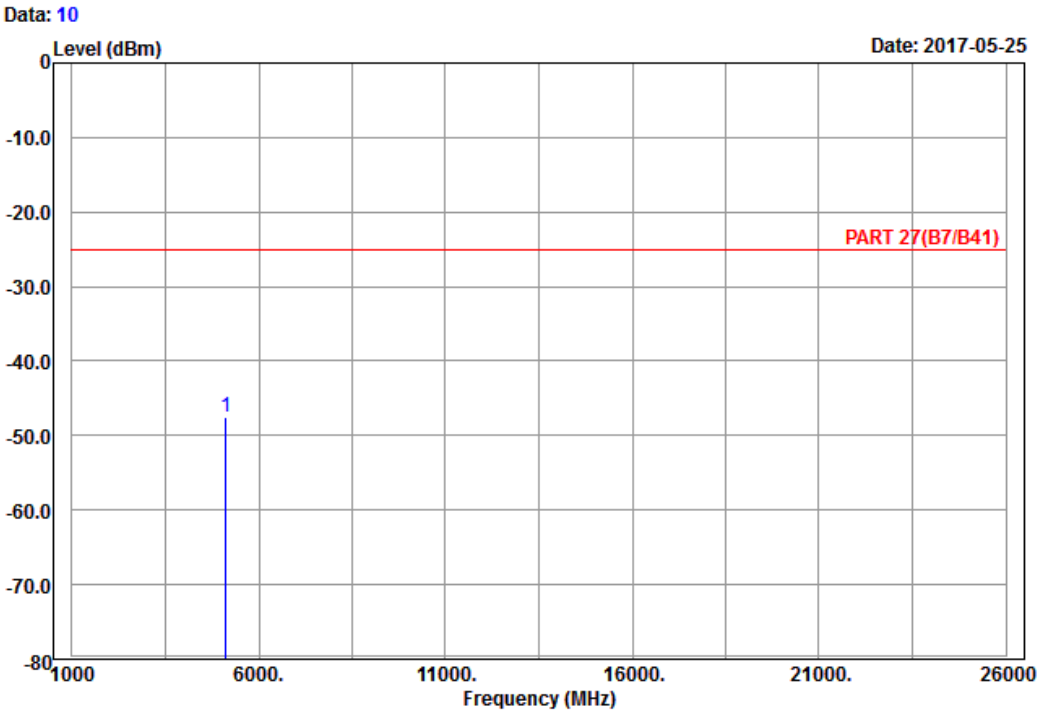



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_CH21100
Tested by: Charles Hsiao

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5070.00 | -48.01 | -67.40 | -25.00 | -23.01 | 19.39 | Peak |

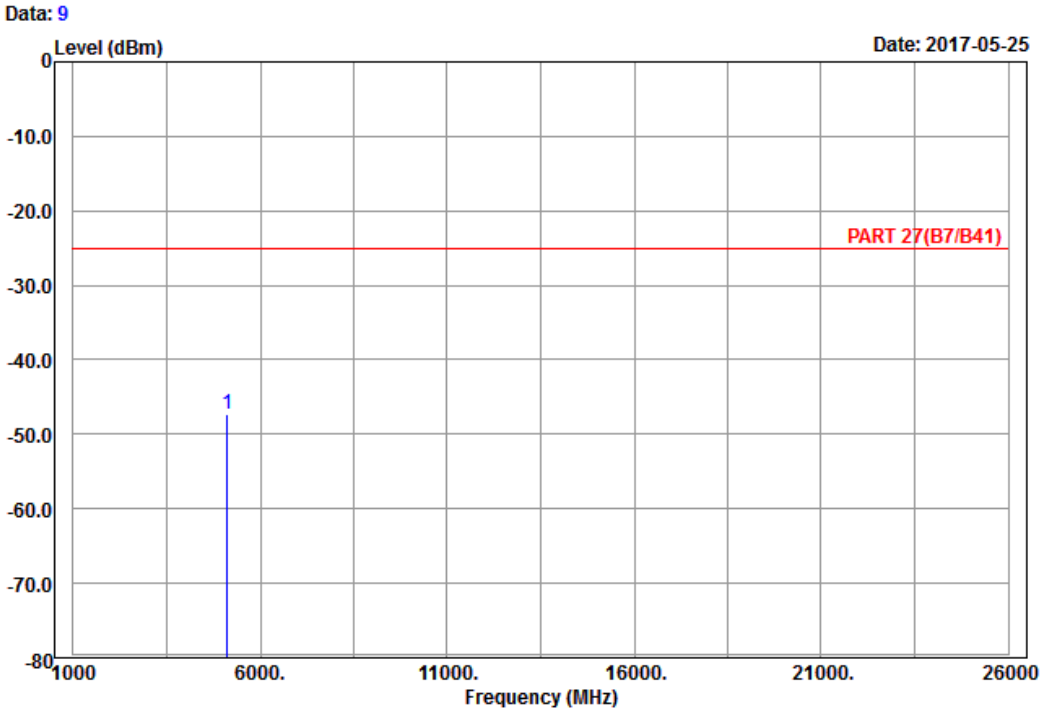
## High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 7_Link_CH21350
Tested by: Charles Hsiao

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5120.00 | -47.53 | -67.24 | -25.00 | -22.53 | 19.71 | Peak |




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 7_Link_CH21350
Tested by: Charles Hsiao

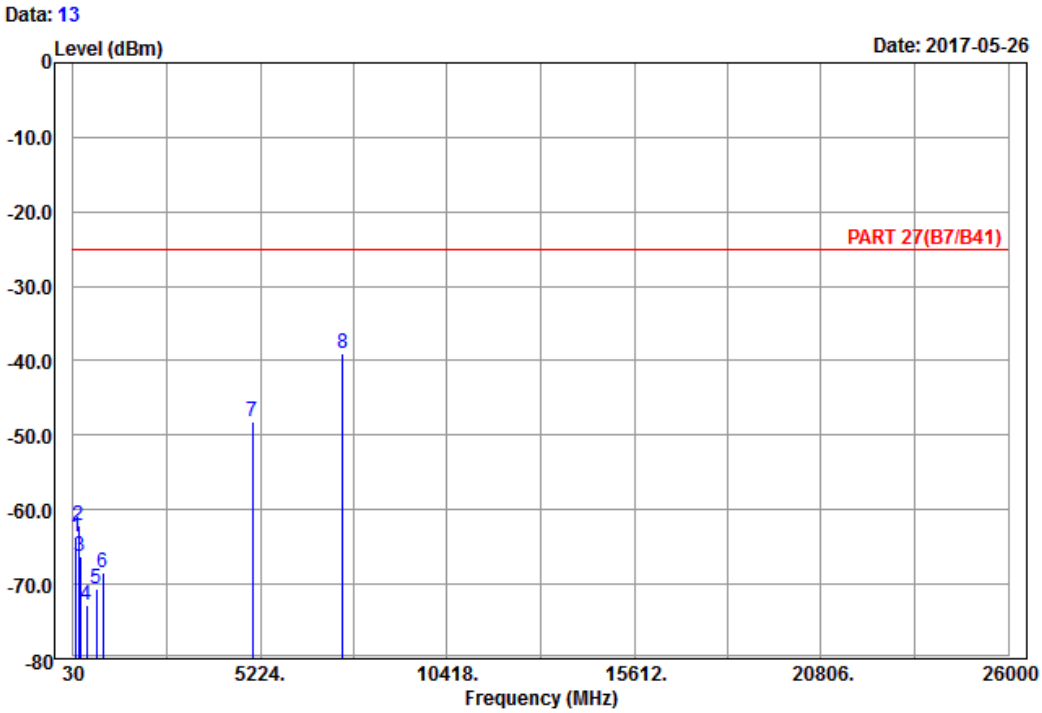
| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5120.00 | -47.38 | -67.09 | -25.00 | -22.38 | 19.71 | Peak |

**LTE Band 41**

**Channel Bandwidth: 20 MHz / QPSK**

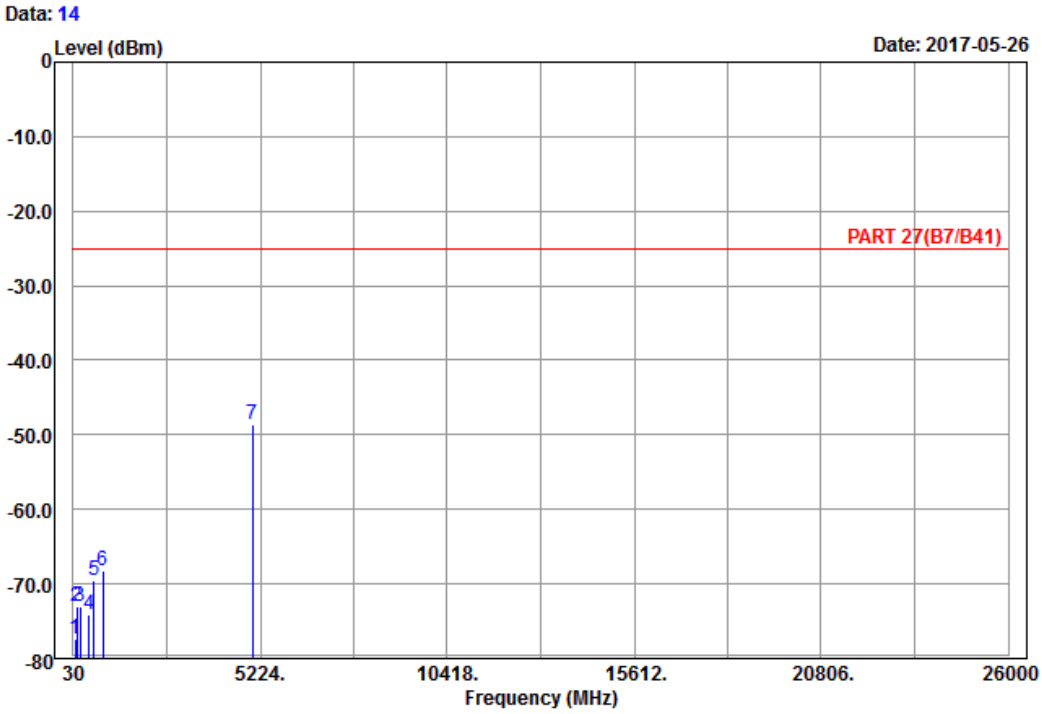
**Low Channel**

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 115.86 | -63.71 | -55.20 | -25.00 | -38.71 | -8.51 | Peak |
| 2 | 185.25 | -62.10 | -56.45 | -25.00 | -37.10 | -5.65 | Peak |
| 3 | 211.17 | -66.31 | -60.28 | -25.00 | -41.31 | -6.03 | Peak |
| 4 | 405.00 | -72.82 | -69.95 | -25.00 | -47.82 | -2.87 | Peak |
| 5 | 666.10 | -70.69 | -70.48 | -25.00 | -45.69 | -0.21 | Peak |
| 6 | 860.70 | -68.54 | -70.29 | -25.00 | -43.54 | 1.75 | Peak |
| 7 | 5012.00 | -48.21 | -67.29 | -25.00 | -23.21 | 19.08 | Peak |
| 8 pp | 7518.00 | -39.11 | -61.79 | -25.00 | -14.11 | 22.68 | Peak |

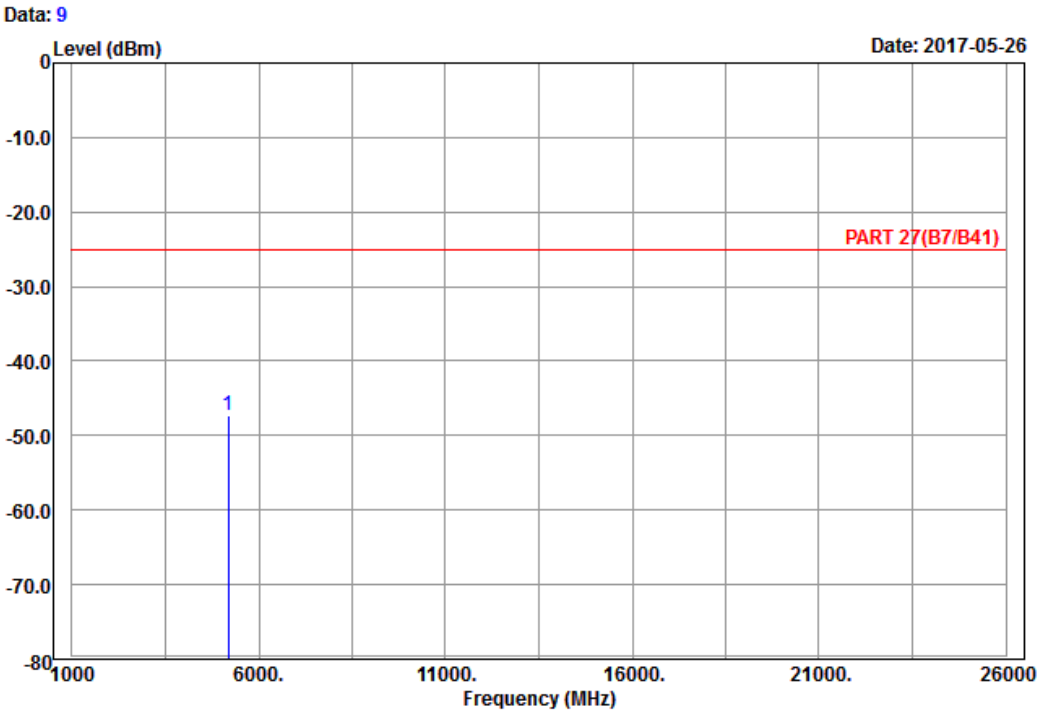



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 76.44 | -77.41 | -65.31 | -25.00 | -52.41 | -12.10 | Peak |
| 2 | 138.00 | -73.04 | -65.36 | -25.00 | -48.04 | -7.68 | Peak |
| 3 | 231.96 | -73.00 | -67.25 | -25.00 | -48.00 | -5.75 | Peak |
| 4 | 463.10 | -74.18 | -69.97 | -25.00 | -49.18 | -4.21 | Peak |
| 5 | 615.00 | -69.52 | -69.78 | -25.00 | -44.52 | 0.26 | Peak |
| 6 | 859.30 | -68.28 | -70.00 | -25.00 | -43.28 | 1.72 | Peak |
| 7 pp | 5012.00 | -48.51 | -67.59 | -25.00 | -23.51 | 19.08 | Peak |

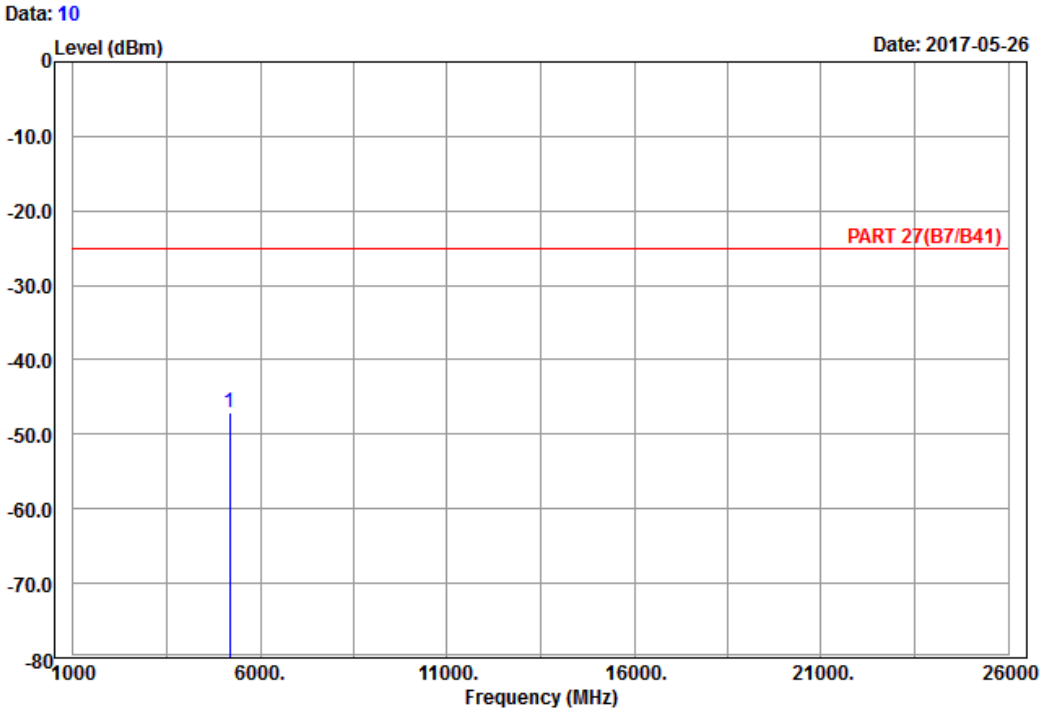
## Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5186.00 | -47.21 | -67.33 | -25.00 | -22.21 | 20.12 | Peak |

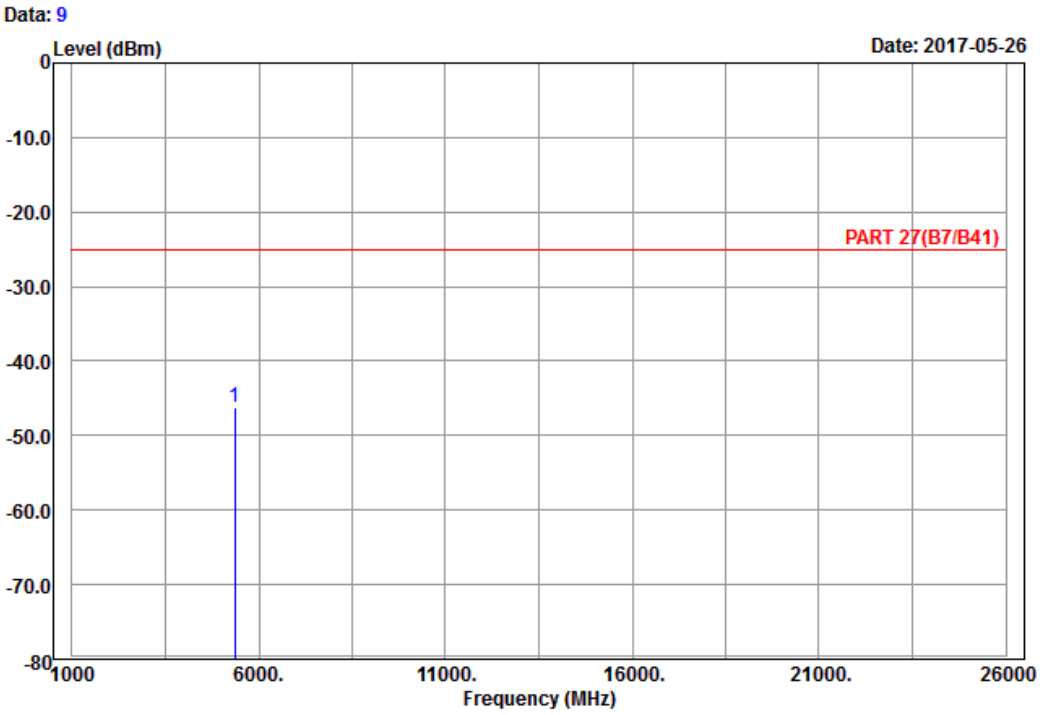



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5186.00 | -47.01 | -67.13 | -25.00 | -22.01 | 20.12 | Peak |

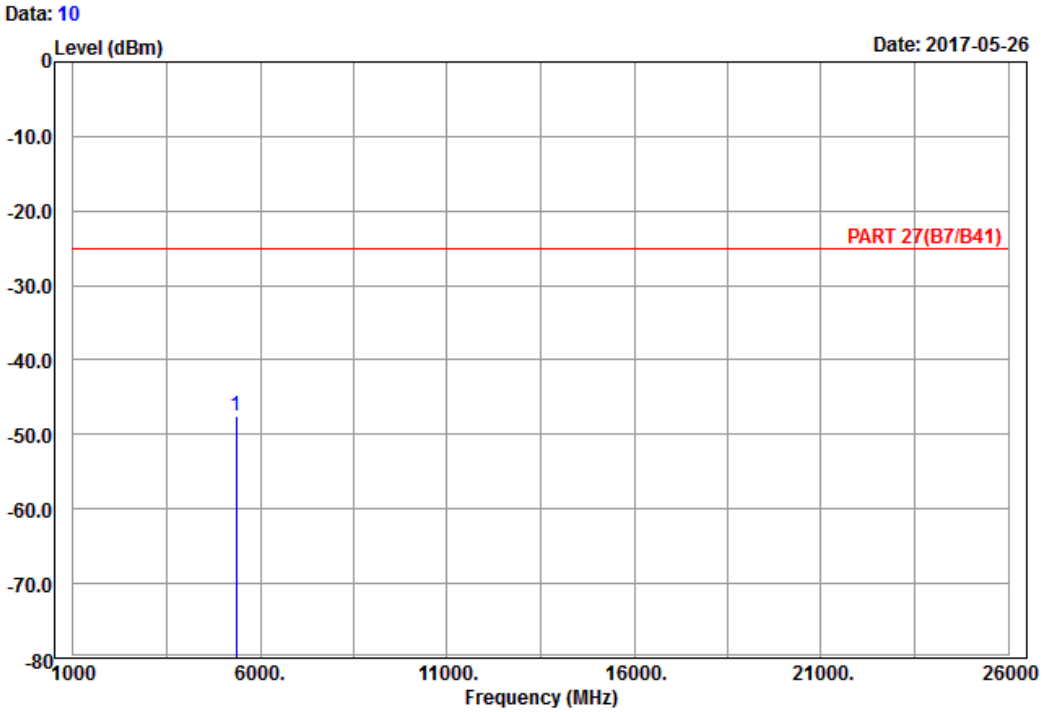
## High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH41490
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5360.00 | -46.25 | -66.55 | -25.00 | -21.25 | 20.30 | Peak |

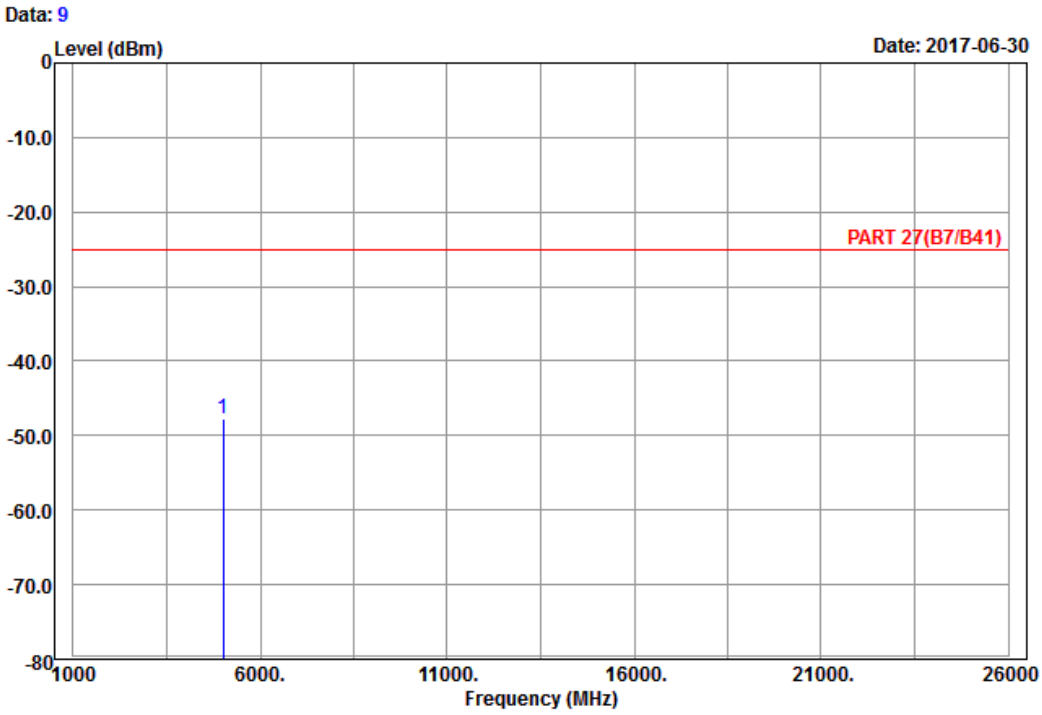



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH41490
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5360.00 | -47.53 | -67.83 | -25.00 | -22.53 | 20.30 | Peak |

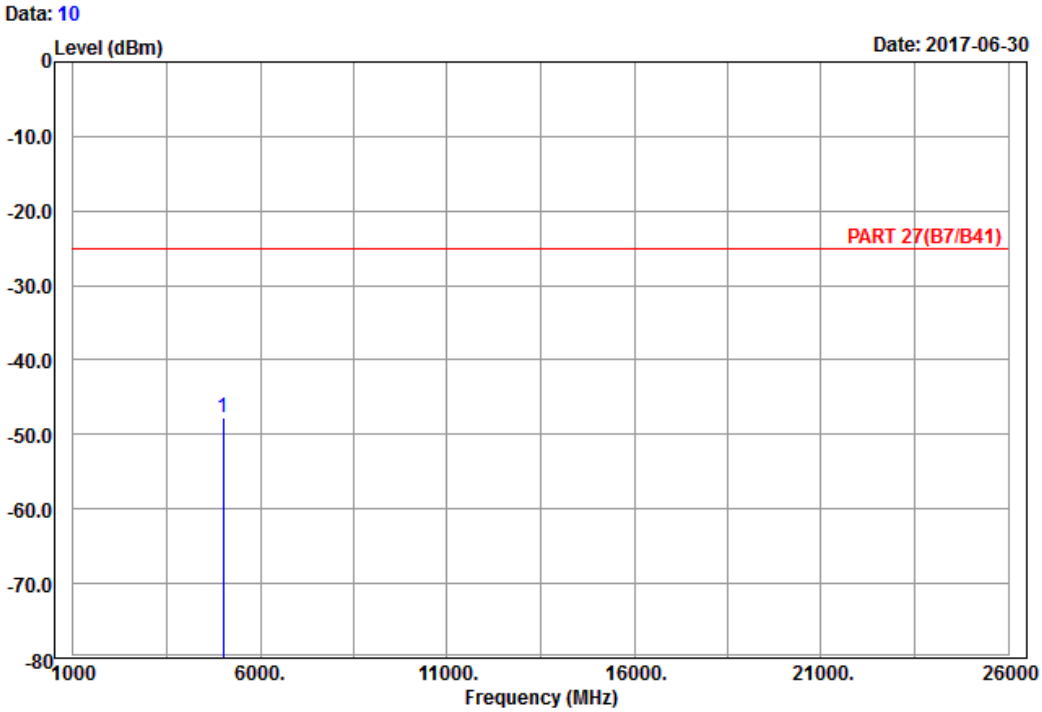
**Mode B**
**LTE Band 41**
**Channel Bandwidth: 20 MHz / QPSK**
**Low Channel**

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5012.00 | -47.82 | -66.90 | -25.00 | -22.82 | 19.08 | Peak |

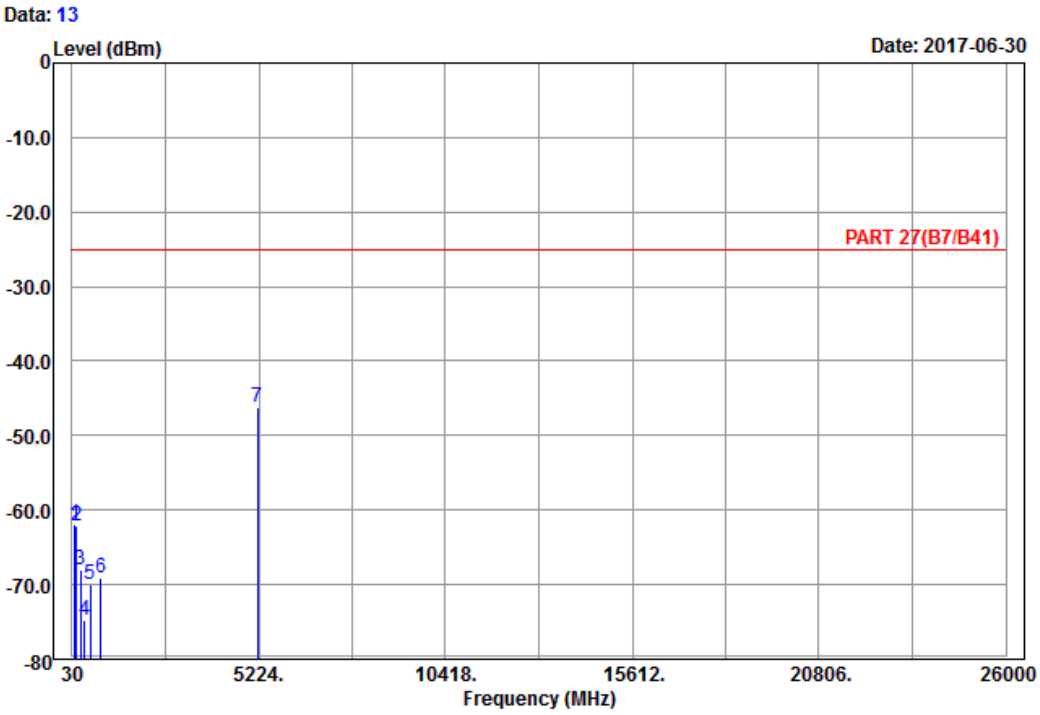



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5012.00 | -47.69 | -66.77 | -25.00 | -22.69 | 19.08 | Peak |

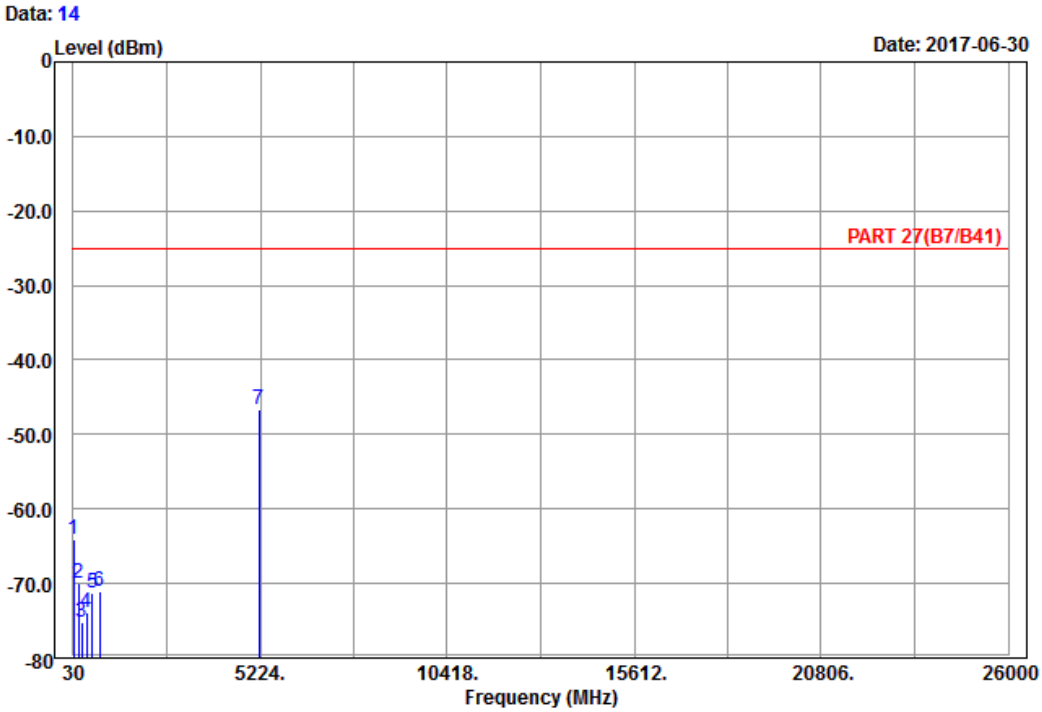
## Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 108.30 | -61.82 | -52.75 | -25.00 | -36.82 | -9.07 | Peak |
| 2 | 156.36 | -62.13 | -54.35 | -25.00 | -37.13 | -7.78 | Peak |
| 3 | 273.81 | -67.99 | -62.27 | -25.00 | -42.99 | -5.72 | Peak |
| 4 | 375.60 | -74.85 | -70.82 | -25.00 | -49.85 | -4.03 | Peak |
| 5 | 544.30 | -70.06 | -67.97 | -25.00 | -45.06 | -2.09 | Peak |
| 6 | 822.20 | -69.15 | -70.91 | -25.00 | -44.15 | 1.76 | Peak |
| 7 pp | 5186.00 | -46.11 | -66.23 | -25.00 | -21.11 | 20.12 | Peak |

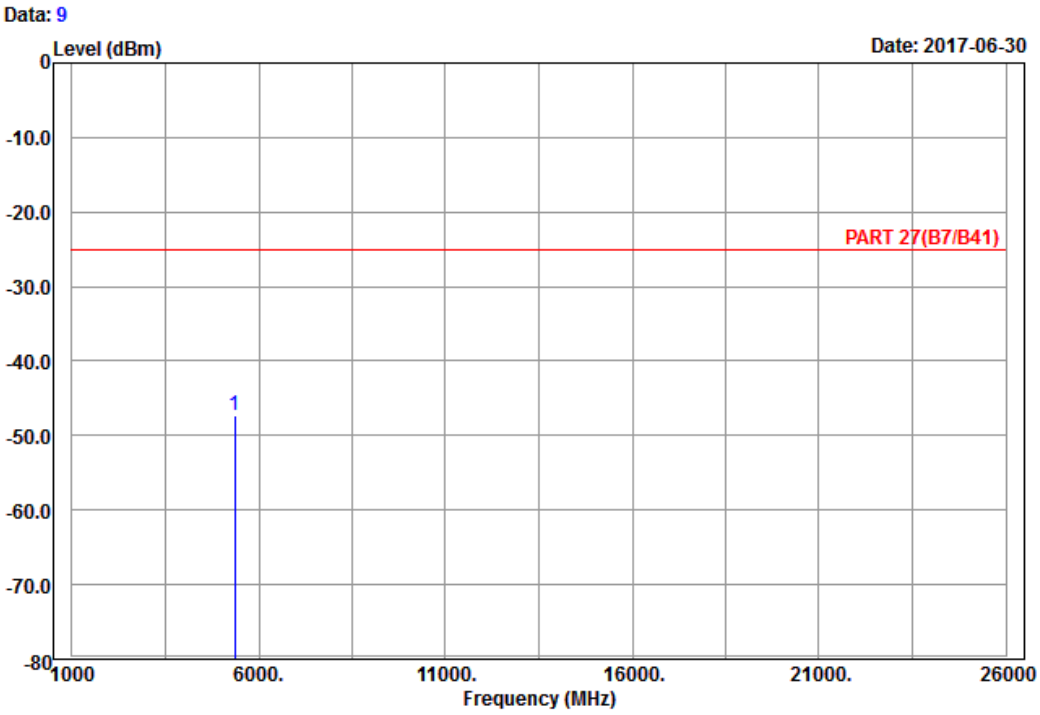



Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH40620
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 | 45.39 | -64.01 | -51.53 | -25.00 | -39.01 | -12.48 | Peak |
| 2 | 181.47 | -69.95 | -64.36 | -25.00 | -44.95 | -5.59 | Peak |
| 3 | 275.43 | -75.20 | -69.46 | -25.00 | -50.20 | -5.74 | Peak |
| 4 | 404.30 | -73.82 | -70.97 | -25.00 | -48.82 | -2.85 | Peak |
| 5 | 558.30 | -71.35 | -70.05 | -25.00 | -46.35 | -1.30 | Peak |
| 6 | 765.50 | -70.98 | -70.69 | -25.00 | -45.98 | -0.29 | Peak |
| 7 pp | 5186.00 | -46.66 | -66.78 | -25.00 | -21.66 | 20.12 | Peak |

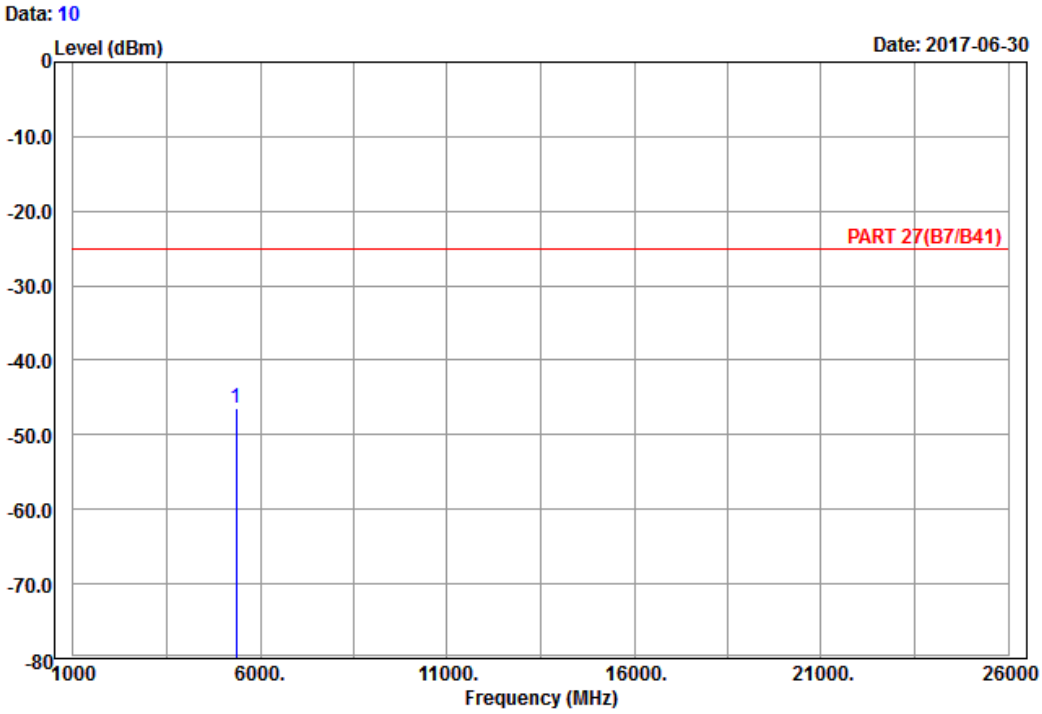
## High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




Site : 966 chamber 1
Condition: PART 27(B7/B41) Horizontal
Remark : LTE_Band 41_Link_CH41490
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5360.00 | -47.21 | -67.51 | -25.00 | -22.21 | 20.30 | Peak |




Site : 966 chamber 1
Condition: PART 27(B7/B41) Vertical
Remark : LTE_Band 41_Link_CH41490
Tested by: Karl Lee

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark |
|---|---|---|---|---|---|---|---|
| | MHz | dBm | dBm | dBm | dB | dB | |
| 1 pp | 5360.00 | -46.44 | -66.74 | -25.00 | -21.44 | 20.30 | 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 accredited and approved according to ISO/IEC 17025.

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


**Linko EMC/RF Lab**
Tel: 886-2-26052180
Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**
Tel: 886-3-6668565
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**Email:** service.adt@tw.bureauveritas.com
**Web Site:** www.bureauveritas-adt.com


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

**--- END ---**