



### TEST REPORT FCC Part 27

Report Reference No.....: HK1907111626-2E

FCC ID.....: ZNFX210LMW

Compiled by  
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Date of issue.....: July. 12,2019

Testing Laboratory Name .....: Shenzhen HUAKE Testing Technology Co., Ltd.  
Address.....: 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park,  
Heping Community, Fuhai Street, Bao' an District, Shenzhen,China

Applicant's name .....: LG Electronics USA, Inc.  
Address .....: 1000 Sylvan Ave., Englewood Cliffs, New Jersey 07632, United States

Test specification .....:  
Standard .....: FCC CFR Title 47 Part 2, Part 27  
TRF Originator.....: Shenzhen HUAKE Testing Technology Co., Ltd.

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Test item description .....: 4G Mobile phone  
Trade Mark .....: LG  
Manufacturer.....: OPTIEMUS ELECTRONICS LIMITED  
Model/Type reference.....: LM-X210LMW  
Listed Models .....: N/A  
Modulation Type .....: QPSK, 16QAM  
Rating .....: DC 3.85V From Battery  
Hardware version .....: V2.0  
Software version.....: V2.0  
Result.....: **PASS**

**TEST REPORT**

|                          |                        |               |
|--------------------------|------------------------|---------------|
| <b>Test Report No. :</b> | <b>HK1907111626-1E</b> | July. 12,2019 |
|                          |                        | Date of issue |

Equipment under Test : 4G Mobile phone

Model /Type : LM-X210LMW

Listed Models : N/A

**Applicant** : **LG Electronics USA, Inc.**

Address : 1000 Sylvan Ave., Englewood Cliffs, New Jersey 07632,  
United States

**Manufacturer** : OPTIEMUS ELECTRONICS LIMITED

Address : D-348, Sector-63, Noida, Uttar Pradesh, Pin Code-  
201307

|                     |             |
|---------------------|-------------|
| <b>Test Result:</b> | <b>PASS</b> |
|---------------------|-------------|

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



### Revision History

| Revision | Issue Date | Revisions     | Revised By |
|----------|------------|---------------|------------|
| V1.0     | 2019-07-12 | Initial Issue | James Zhou |
|          |            |               |            |
|          |            |               |            |



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# **1 TEST STANDARDS**

The tests were performed according to following standards:

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[FCC Part 27](#) : MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[ANSI C63.26-2015](#): IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[FCC KDB971168D01](#) Power Meas License Digital Systems



## 2 SUMMARY

### 2.1 General Remarks

|                                |   |               |
|--------------------------------|---|---------------|
| Date of receipt of test sample | : | Jun. 24, 2019 |
|                                |   |               |
| Testing commenced on           | : | Jun. 25, 2019 |
|                                |   |               |
| Testing concluded on           | : | July. 12,2019 |

### 2.2 Product Description

The **LG Electronics USA, Inc.**'s Model:LM-X210LMW or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

|                          |   |
|--------------------------|---|
| Name of EUT              | 4G Mobile phone                         |
| Model/Type reference:    | LM-X210LMW                              |
| List Model:              | /                                       |
| Power supply:            | DC 3.85V From Battery                   |
| Adapter Information      | N/A                                     |
| Modulation Type          | QPSK,16QAM                              |
| Antenna Type             | Internal Antenna                        |
| Antenna Gain             | 1.3dBi                                  |
| Operation Frequency Band | LTE Band 41                             |
| Operation frequency      | LTE Band 41: 2555~2655 MHz              |
| LTE Release              | R8                                      |
| Extreme temp. Tolerance  | -30°C to +50°C                          |
| Extreme vol. Limits      | 3.465VDC to 4.235VDC (nominal: 3.85VDC) |

### 2.3 Equipment under Test

#### Power supply system utilised

|                      |   |   |                                 |
|----------------------|---|---|---------------------------------|
| Power supply voltage | : | <input type="radio"/> 120V/ 60 Hz                                 | <input type="radio"/> 115V/60Hz |
|                      |   | <input type="radio"/> 12 V DC                                     | <input type="radio"/> 24 V DC   |
|                      |   | <input checked="" type="radio"/> Other (specified in blank below) |                                 |

DC 3.85V From Battery

### 2.4 Short description of the Equipment under Test (EUT)

#### 2.4.1 General Description

LM-X210LMW is subscriber equipment in the LTE system. LTE frequency band is band 41; The 4G Mobile phone implements such functions as RF signal receiving/transmitting, LTE protocol processing, voice, video MMS service, etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and SIM card interface.



## 2.5 Normal Accessory setting

Fully charged battery was used during the test.

## 2.6 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

|                       |             |                |   |
|-----------------------|-------------|----------------|---|
| <input type="radio"/> | Power Cable | Length (m) :   | / |
|                       |             | Shield :       | / |
|                       |             | Detachable :   | / |
| <input type="radio"/> | Multimeter  | Manufacturer : | / |
|                       |             | Model No. :    | / |

## 2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: ZNFX210LMW** filing to comply with FCC Part 27, Rules.

## 2.8 Modifications

No modifications were implemented to meet testing criteria.

## 2.9 General Test Conditions/Configurations

### 2.9.1 Test Environment

| Environment Parameter | Selected Values During Tests |         |
|-----------------------|------------------------------|---------|
| Relative Humidity     | Ambient                      |         |
| Temperature           | TN                           | Ambient |
| Voltage               | VL                           | 3.465V  |
|                       | VN                           | 3.85V   |
|                       | VH                           | 4.235V  |

NOTE: VL=lower extreme test voltage VN=nominal voltage  
VH=upper extreme test voltage TN=normal temperature



### **3 TEST ENVIRONMENT**

#### **3.1 Address of the test laboratory**

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address : 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

FCC designation number : CN1229

test firm registration number : 616276

#### **3.2 Test Description**

| <b>Test Item</b>                        | <b>FCCRuleNo.</b>          | <b>Verdict</b> |
|---|----------------------------|----------------|
| Effective(Isotropic)RadiatedOutputPower | Part 2.1046<br>27.50(h)(2) | Pass           |
| Peak-AverageRatio                       | Part 2.1046                | Pass           |
| ModulationCharacteristics               | §2.1047                    | N/A            |
| Bandwidth                               | Part 2.1049                | Pass           |
| BandEdgesCompliance                     | Part 2.1051<br>27.53(m)    | Pass           |
| SpuriousEmissionatAntennaTerminals      | Part 2.1051<br>27.53(m)    | Pass           |
| Field Strengthof Spurious Radiation     | Part 2.1053<br>27.53(m)    | Pass           |
| Frequency Stability                     | Part 2.1055<br>27.54       | Pass           |

NOTE 1:For the verdict, the"N/A"denotes"not applicable", the"N/T"denotes "nottested".

Remark:

1. The measurement uncertainty is not included in the test result.





### 3.3 Equipments Used during the Test

| Test Equipment                  | Manufacturer | Model No.            | Serial No. | Calibration Date | Calibration Due Date |
|---------------------------------|--------------|----------------------|------------|------------------|----------------------|
| LISN                            | R&S          | ENV216               | HKE-059    | 2018/12/27       | 2019/12/26           |
| LISN                            | R&S          | ENV216               | HKE-002    | 2018/12/27       | 2019/12/26           |
| Receiver                        | R&S          | ESCI 7               | HKE-010    | 2018/12/27       | 2019/12/26           |
| Spectrum analyzer               | R&S          | FSP40                | HKE-025    | 2018/12/27       | 2019/12/26           |
| Spectrum analyzer               | Agilent      | N9020A               | HKE-048    | 2018/12/27       | 2019/12/26           |
| RF automatic control unit       | Tonscend     | JS0806-1             | HKE-060    | 2018/12/27       | 2019/12/26           |
| Loop antenna                    | Schwarzbeck  | FMZB 1519 B          | HKE-014    | 2018/12/27       | 2019/12/26           |
| Bilog Broadband Antenna         | Schwarzbeck  | VULB9163             | HKE-012    | 2018/12/27       | 2019/12/26           |
| Horn antenna                    | Schwarzbeck  | 9120D                | HKE-013    | 2018/12/27       | 2019/12/26           |
| High gain antenna               | Schwarzbeck  | LB-180400KF          | HKE-054    | 2018/12/27       | 2019/12/26           |
| Preamplifier                    | EMCI         | EMC051845SE          | HKE-015    | 2018/12/27       | 2019/12/26           |
| Preamplifier                    | Agilent      | 83051A               | HKE-016    | 2018/12/27       | 2019/12/26           |
| Preamplifier                    | Schwarzbeck  | BBV 9743             | HKE-006    | 2018/12/27       | 2019/12/26           |
| Temperature and humidity meter  | Boyang       | HTC-1                | HKE-075    | 2018/12/27       | 2019/12/26           |
| High-low temperature chamber    | Guangke      | HT-80L               | HKE-118    | 2018/12/27       | 2019/12/26           |
| High pass filter unit           | Tonscend     | JS0806-F             | HKE-055    | 2018/12/27       | 2019/12/26           |
| RF Cable(below1GHz)             | Times        | 9kHz-1GHz            | HKE-117    | 2018/12/27       | 2019/12/26           |
| RF Cable(above 1GHz)            | Times        | 1-40G                | HKE-034    | 2018/12/27       | 2019/12/26           |
| Power meter                     | Agilent      | E4419B               | HKE-085    | 2018/12/27       | 2019/12/26           |
| Power Sensor                    | Agilent      | E9300A               | HKE-086    | 2018/12/27       | 2019/12/26           |
| Conducted test software         | Tonscend     | TS+ Rev 2.5.0.0      | HKE-081    | N/A              | N/A                  |
| Radiated test software          | Tonscend     | TS+ Rev 2.5.0.0      | HKE-082    | N/A              | N/A                  |
| RF test software                | Tonscend     | JS1120-B Version 2.6 | HKE-083    | N/A              | N/A                  |
| RF test software                | Tonscend     | JS1120-4             | HKE-113    | N/A              | N/A                  |
| RF test software                | Tonscend     | JS1120-3             | HKE-114    | N/A              | N/A                  |
| RF test software                | Tonscend     | JS1120-1             | HKE-115    | N/A              | N/A                  |
| Wireless Communication Test Set | R&S          | CMW500               | HKE-026    | 2018/12/27       | 2019/12/26           |
| Wireless Communication Test Set | R&S          | CMU200               | HKE-029    | 2018/12/27       | 2019/12/26           |



## **4 TEST CONDITIONS AND RESULTS**

### **4.1 Output Power**

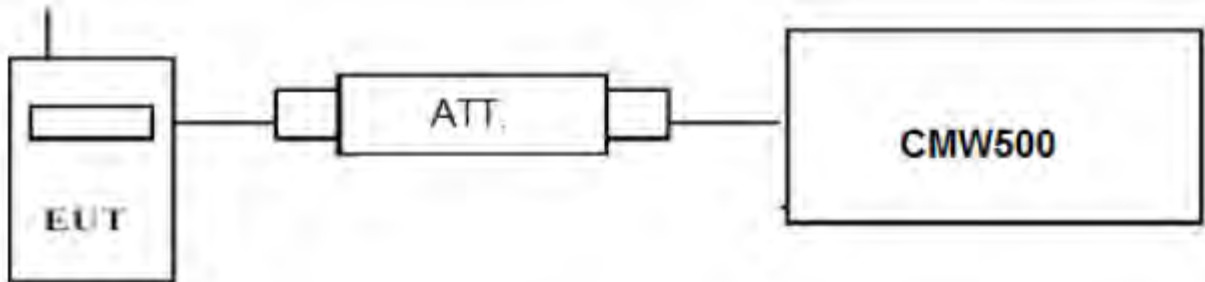
#### **4.1.1 Conducted Output Power**

##### **TEST APPLICABLE**

Part 27.50(h)(2), during the process of testing, the EUT was controlled via R&S Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. This result contains output power measurements for the EUT. In all cases, output power is within the specified limits.

##### **TEST CONFIGURATION**

Conducted Power Measurement:



##### **TEST PROCEDURE**

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

- a) Place the EUT on a bench and set it in transmitting mode.
- b) Connect a low loss RF cable from the antenna port to a CMW500 by an Att.
- c) EUT Communicate with CMW500 then selects a channel for testing.
- d) Add a correction factor to the display CMW500, and then test.

##### **TEST RESULTS**



|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

Remark:

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41;

| LTE Band 41          |                 |                |                           |       |
|----------------------|-----------------|----------------|---------------------------|-------|
| TX Channel Bandwidth | Frequency (MHz) | RB Size/Offset | Burst Average Power [dBm] |       |
|                      |                 |                | QPSK                      | 16QAM |
| 5 MHz                | 2557.5          | 1 RB low       | 23.81                     | 23.39 |
|                      |                 | 1 RB mid       | 23.87                     | 23.38 |
|                      |                 | 1 RB high      | 23.94                     | 23.40 |
|                      |                 | 50% RB low     | 23.36                     | 23.36 |
|                      |                 | 50% RB mid     | 23.42                     | 23.43 |
|                      |                 | 50% RB high    | 23.37                     | 23.43 |
|                      |                 | 100% RB        | 22.93                     | 21.95 |
|                      | 2600.0          | 1 RB low       | 23.53                     | 23.31 |
|                      |                 | 1 RB mid       | 23.58                     | 23.30 |
|                      |                 | 1 RB high      | 23.61                     | 23.35 |
|                      |                 | 50% RB low     | 23.30                     | 23.28 |
|                      |                 | 50% RB mid     | 23.29                     | 23.30 |
|                      |                 | 50% RB high    | 23.25                     | 23.26 |
|                      |                 | 100% RB        | 22.82                     | 22.05 |
|                      | 2652.5          | 1 RB low       | 23.42                     | 22.29 |
|                      |                 | 1 RB mid       | 23.43                     | 22.24 |
|                      |                 | 1 RB high      | 23.48                     | 22.17 |
|                      |                 | 50% RB low     | 22.24                     | 22.31 |
|                      |                 | 50% RB mid     | 22.18                     | 22.27 |
|                      |                 | 50% RB high    | 22.23                     | 22.23 |
|                      |                 | 100% RB        | 22.55                     | 21.76 |
| 10 MHz               | 2560.0          | 1 RB low       | 23.65                     | 22.52 |
|                      |                 | 1 RB mid       | 23.64                     | 22.50 |
|                      |                 | 1 RB high      | 23.74                     | 22.57 |
|                      |                 | 50% RB low     | 22.71                     | 22.71 |
|                      |                 | 50% RB mid     | 22.71                     | 22.71 |
|                      |                 | 50% RB high    | 22.77                     | 22.77 |
|                      |                 | 100% RB        | 22.73                     | 21.78 |
|                      | 2600.0          | 1 RB low       | 24.00                     | 23.06 |
|                      |                 | 1 RB mid       | 23.98                     | 23.19 |
|                      |                 | 1 RB high      | 23.96                     | 23.35 |
|                      |                 | 50% RB low     | 22.88                     | 22.88 |
|                      |                 | 50% RB mid     | 22.87                     | 22.87 |
|                      |                 | 50% RB high    | 22.79                     | 22.79 |
|                      |                 | 100% RB        | 22.76                     | 22.06 |
|                      | 2650.0          | 1 RB low       | 23.48                     | 22.70 |
|                      |                 | 1 RB mid       | 23.57                     | 22.62 |
|                      |                 | 1 RB high      | 23.52                     | 22.62 |
|                      |                 | 50% RB low     | 22.48                     | 22.49 |
|                      |                 | 50% RB mid     | 22.50                     | 22.50 |
|                      |                 | 50% RB high    | 22.41                     | 22.41 |
|                      |                 | 100% RB        | 22.40                     | 21.44 |
| 15 MHz               | 2562.5          | 1 RB low       | 23.84                     | 22.26 |
|                      |                 | 1 RB mid       | 23.79                     | 21.93 |
|                      |                 | 1 RB high      | 23.80                     | 21.94 |
|                      |                 | 50% RB low     | 22.30                     | 22.21 |
|                      |                 | 50% RB mid     | 21.88                     | 22.10 |



|             |        |             |          |       |       |
|-------------|--------|-------------|----------|-------|-------|
|             |        | 50% RB high | 21.94    | 21.91 |       |
|             |        | 100% RB     | 22.87    | 22.05 |       |
|             | 2600.0 | 1 RB low    | 23.89    | 22.25 |       |
|             |        | 1 RB mid    | 23.88    | 22.36 |       |
|             |        | 1 RB high   | 23.97    | 23.35 |       |
|             |        | 50% RB low  | 23.07    | 23.07 |       |
|             |        | 50% RB mid  | 23.19    | 23.19 |       |
|             |        | 50% RB high | 23.38    | 23.38 |       |
|             |        | 100% RB     | 22.81    | 21.97 |       |
|             | 2647.5 | 1 RB low    | 23.61    | 22.73 |       |
|             |        | 1 RB mid    | 23.63    | 22.64 |       |
|             |        | 1 RB high   | 23.47    | 22.56 |       |
|             |        | 50% RB low  | 22.77    | 22.79 |       |
|             |        | 50% RB mid  | 22.66    | 22.70 |       |
|             |        | 50% RB high | 22.58    | 22.56 |       |
|             |        | 100% RB     | 22.40    | 21.45 |       |
|             | 20 MHz | 2570.0      | 1 RB low | 24.13 | 23.71 |
|             |        |             | 1 RB mid | 24.18 | 23.62 |
| 1 RB high   |        |             | 24.01    | 23.64 |       |
| 50% RB low  |        |             | 22.98    | 22.11 |       |
| 50% RB mid  |        |             | 23.02    | 22.07 |       |
| 50% RB high |        |             | 22.89    | 21.99 |       |
| 100% RB     |        |             | 22.97    | 22.05 |       |
| 2600.0      |        | 1 RB low    | 23.84    | 23.54 |       |
|             |        | 1 RB mid    | 23.96    | 23.57 |       |
|             |        | 1 RB high   | 23.97    | 23.53 |       |
|             |        | 50% RB low  | 22.86    | 21.97 |       |
|             |        | 50% RB mid  | 22.85    | 21.96 |       |
|             |        | 50% RB high | 22.88    | 21.99 |       |
|             |        | 100% RB     | 22.87    | 21.86 |       |
| 2640.0      |        | 1 RB low    | 23.67    | 23.30 |       |
|             |        | 1 RB mid    | 23.51    | 23.28 |       |
|             |        | 1 RB high   | 23.52    | 23.29 |       |
|             |        | 50% RB low  | 22.66    | 21.91 |       |
|             |        | 50% RB mid  | 22.66    | 21.92 |       |
|             |        | 50% RB high | 22.65    | 21.81 |       |
|             |        | 100% RB     | 22.60    | 21.76 |       |

## 4.1.2. Radiated Output Power

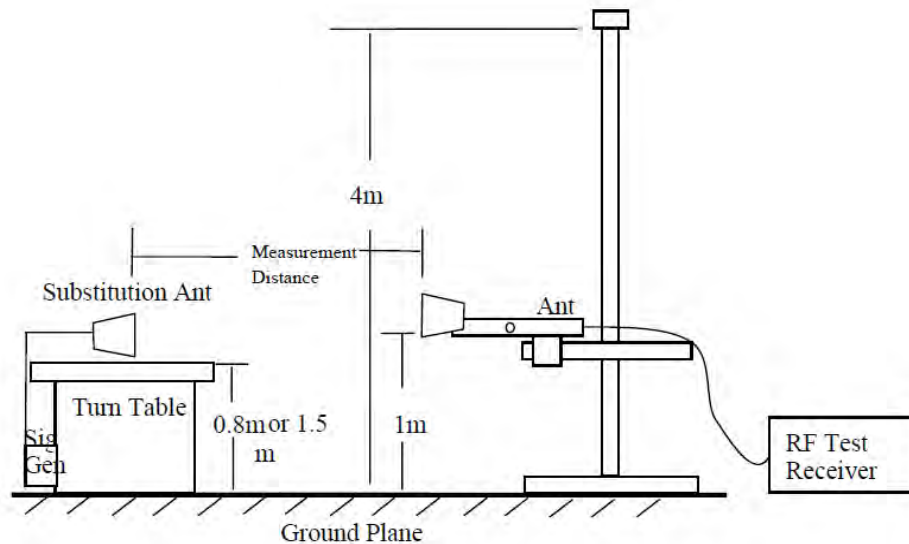
### LIMIT

This is the test for the maximum radiated power from the EUT.

### TEST CONFIGURATION

Radiated Power Measurement:

remark : 0.8m for below 1GHz, 1.5m for above 1GHz



### TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

- a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c. The output of the test antenna shall be connected to the measuring receiver.
- d. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. Test site anechoic chamber refer to ANSI C63.4.

**TEST RESULTS**

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

**Radiated Measurement:**

Remark:

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.
2.  $EIRP = P_s(dBm) - P_{cl}(dB) + G_a(dBi)$
3. We measured both Horizontal and Vertical direction, recorded worst case direction.

**LTE Band 41 Channel Bandwidth 5MHz\_QPSK\_1RB#0**

| Frequency (MHz) | $P_s$ (dBm) | $P_{cl}$ (dB) | $G_a$ Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|---------------|------------------------|--------------------------|-------------|-------------|--------------|
| 2557.5          | 7.47        | 3.41          | 15.12                  | 19.18                    | 33.01       | 13.83       | V            |
| 2600.0          | 7.8         | 3.49          | 15.12                  | 19.43                    | 33.01       | 13.58       | V            |
| 2652.5          | 7.17        | 3.55          | 15.12                  | 18.74                    | 33.01       | 14.27       | V            |

**LTE Band 41 Channel Bandwidth 10MHz\_QPSK\_1RB#0**

| Frequency (MHz) | $P_s$ (dBm) | $P_{cl}$ (dB) | $G_a$ Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|---------------|------------------------|--------------------------|-------------|-------------|--------------|
| 2560.0          | 7.69        | 3.41          | 15.12                  | 19.4                     | 33.01       | 13.61       | V            |
| 2600.0          | 7.88        | 3.49          | 15.12                  | 19.51                    | 33.01       | 13.5        | V            |
| 2650.0          | 7.48        | 3.55          | 15.12                  | 19.05                    | 33.01       | 13.96       | V            |

**LTE Band 41 Channel Bandwidth 15MHz\_QPSK\_1RB#0**

| Frequency (MHz) | $P_s$ (dBm) | $P_{cl}$ (dB) | $G_a$ Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|---------------|------------------------|--------------------------|-------------|-------------|--------------|
| 2562.5          | 7.65        | 3.41          | 15.12                  | 19.36                    | 33.01       | 13.65       | V            |
| 2600.0          | 7.76        | 3.49          | 15.12                  | 19.39                    | 33.01       | 13.62       | V            |
| 2647.5          | 7.28        | 3.55          | 15.12                  | 18.85                    | 33.01       | 14.16       | V            |

**LTE Band 41 Channel Bandwidth 20MHz\_QPSK\_1RB#0**

| Frequency (MHz) | $P_s$ (dBm) | $P_{cl}$ (dB) | $G_a$ Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|---------------|------------------------|--------------------------|-------------|-------------|--------------|
| 2570.0          | 7.49        | 3.41          | 15.12                  | 19.2                     | 33.01       | 13.81       | V            |
| 2600.0          | 7.87        | 3.49          | 15.12                  | 19.5                     | 33.01       | 13.51       | V            |
| 2640.0          | 7.34        | 3.55          | 15.12                  | 18.91                    | 33.01       | 14.1        | V            |

**LTE Band 41 Channel Bandwidth 5MHz 16QAM 1RB#0**

| Frequency (MHz) | P <sub>s</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------------------|----------------------|---------------------------------|--------------------------|-------------|-------------|--------------|
| 2557.5          | 7.66                 | 3.41                 | 15.12                           | 19.37                    | 33.01       | 13.64       | V            |
| 2600.0          | 7.92                 | 3.49                 | 15.12                           | 19.55                    | 33.01       | 13.46       | V            |
| 2652.5          | 7.35                 | 3.55                 | 15.12                           | 18.92                    | 33.01       | 14.09       | V            |

**LTE Band 41 Channel Bandwidth 10MHz 16QAM 1RB#0**

| Frequency (MHz) | P <sub>s</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------------------|----------------------|---------------------------------|--------------------------|-------------|-------------|--------------|
| 2560.0          | 7.74                 | 3.41                 | 15.12                           | 19.45                    | 33.01       | 13.56       | V            |
| 2600.0          | 7.55                 | 3.49                 | 15.12                           | 19.18                    | 33.01       | 13.83       | V            |
| 2650.0          | 7.48                 | 3.55                 | 15.12                           | 19.05                    | 33.01       | 13.96       | V            |

**LTE Band 41 Channel Bandwidth 15MHz 16QAM 1RB#0**

| Frequency (MHz) | P <sub>s</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------------------|----------------------|---------------------------------|--------------------------|-------------|-------------|--------------|
| 2562.5          | 7.76                 | 3.41                 | 15.12                           | 19.47                    | 33.01       | 13.54       | V            |
| 2600.0          | 7.61                 | 3.49                 | 15.12                           | 19.24                    | 33.01       | 13.77       | V            |
| 2647.5          | 7.48                 | 3.55                 | 15.12                           | 19.05                    | 33.01       | 13.96       | V            |

**LTE Band 41 Channel Bandwidth 20MHz 16QAM 1RB#0**

| Frequency (MHz) | P <sub>s</sub> (dBm) | P <sub>cl</sub> (dB) | G <sub>a</sub> Antenna Gain(dB) | Burst Average EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------------------|----------------------|---------------------------------|--------------------------|-------------|-------------|--------------|
| 2570.0          | 7.71                 | 3.41                 | 15.12                           | 19.42                    | 33.01       | 13.59       | V            |
| 2600.0          | 7.76                 | 3.49                 | 15.12                           | 19.39                    | 33.01       | 13.62       | V            |
| 2640.0          | 7.34                 | 3.55                 | 15.12                           | 18.91                    | 33.01       | 14.1        | V            |

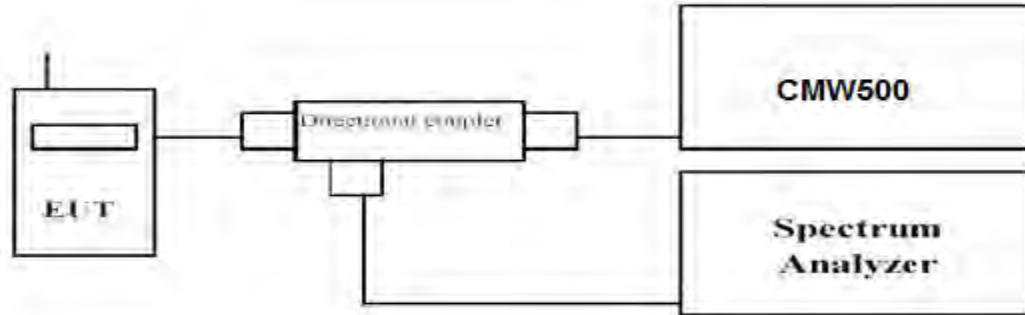


## 4.2 Peak-to-Average Ratio (PAR)

### LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

### TEST CONFIGURATION



### TEST PROCEDURE

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
  - 1). for continuous transmissions, set to 1 ms,
  - 2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

### TEST RESULTS

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

Remark:

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

| LTE Band 41          |                 |                |          |       |
|----------------------|-----------------|----------------|----------|-------|
| TX Channel Bandwidth | Frequency (MHz) | RB Size/Offset | PAPR(dB) |       |
|                      |                 |                | QPSK     | 16QAM |
| 5 MHz                | 2557.5          | 1RB#0          | 6.33     | 7.10  |
|                      | 2600.0          |                | 6.45     | 6.34  |
|                      | 2652.5          |                | 5.29     | 5.98  |
| 10 MHz               | 2560.0          | 1RB#0          | 6.52     | 7.13  |
|                      | 2600.0          |                | 6.54     | 6.87  |
|                      | 2650.0          |                | 5.72     | 6.90  |
| 15 MHz               | 2562.5          | 1RB#0          | 6.65     | 7.61  |
|                      | 2600.0          |                | 6.42     | 7.30  |
|                      | 2647.5          |                | 5.90     | 7.04  |
| 20 MHz               | 2570.0          | 1RB#0          | 6.12     | 6.62  |
|                      | 2600.0          |                | 5.63     | 6.29  |
|                      | 2640.0          |                | 6.03     | 6.25  |



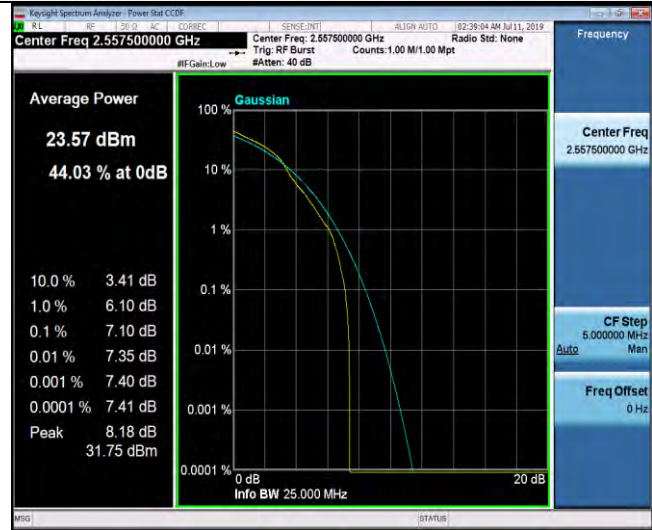
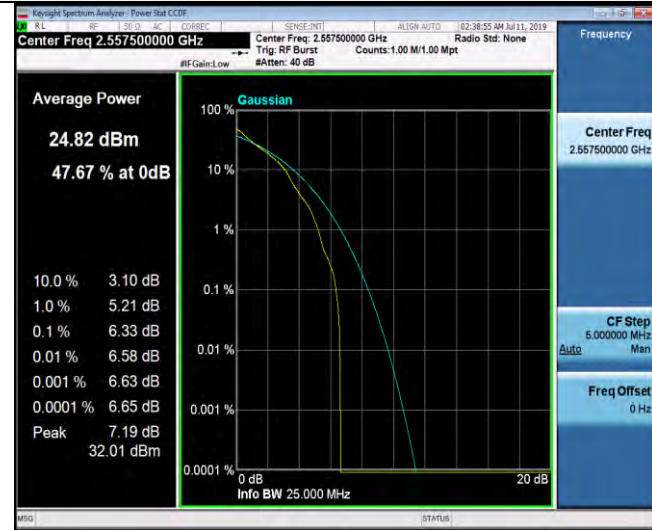


LTE Band 41-5MHz Channel Bandwidth PAPR

QPSK

16QAM

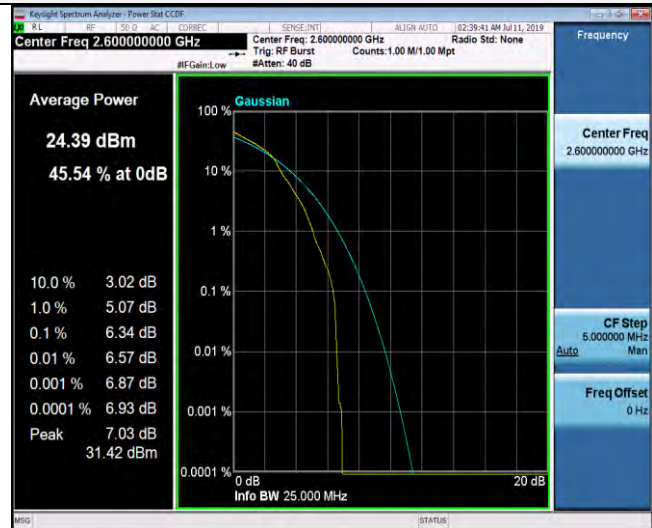
Low Channel



1RB#0

1RB#0

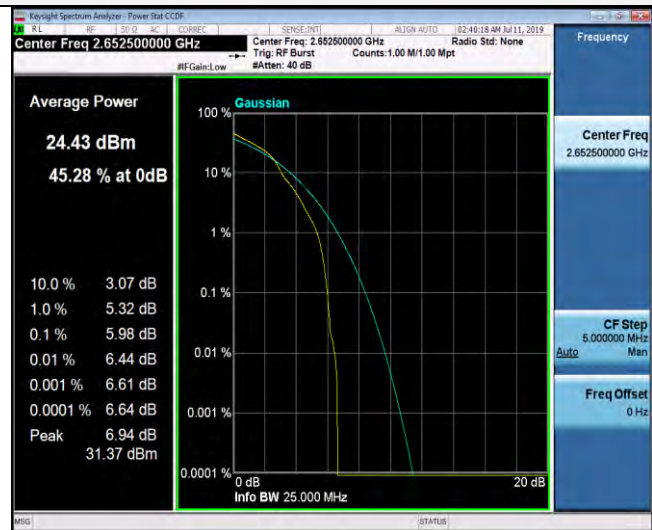
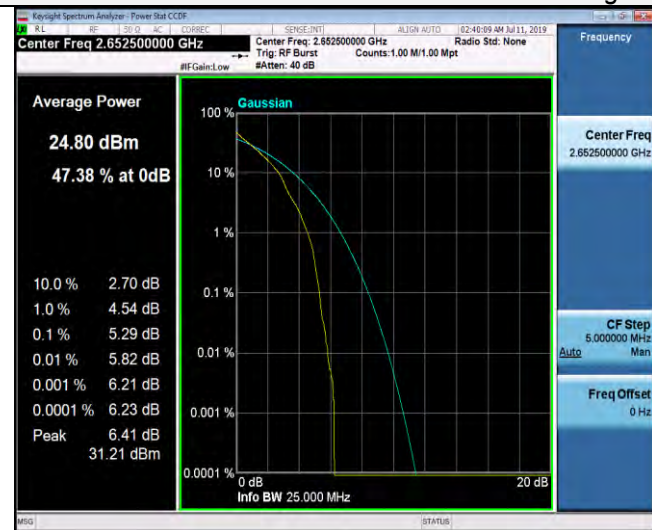
Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0



LTE Band 41-10MHz Channel BandwidthPAPR

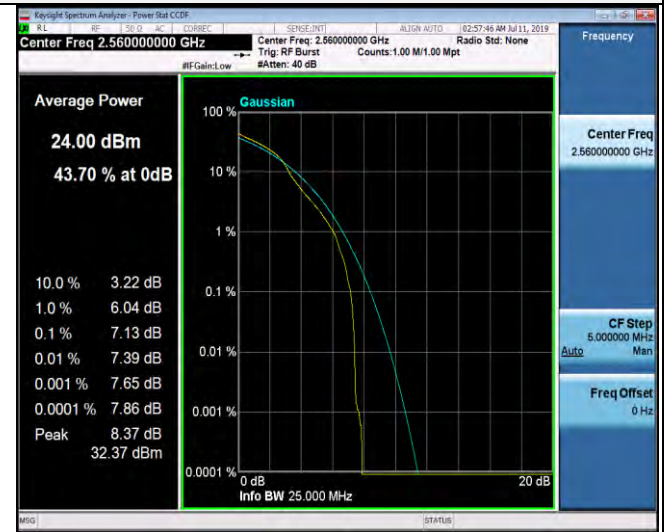
QPSK

16QAM

Low Channel



1RB#0

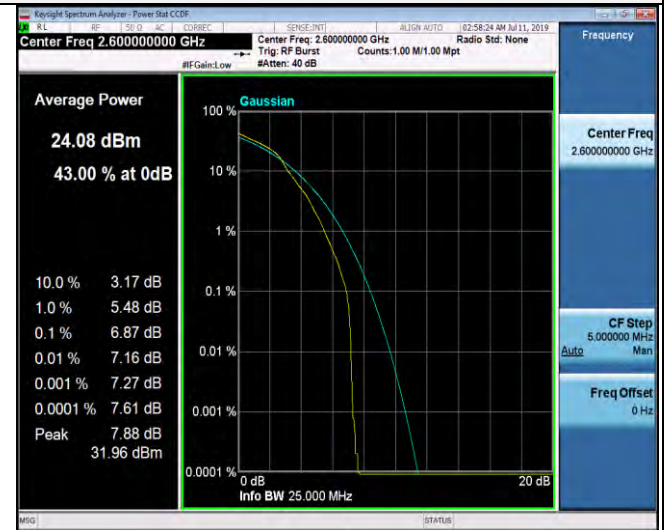


1RB#0

Middle Channel

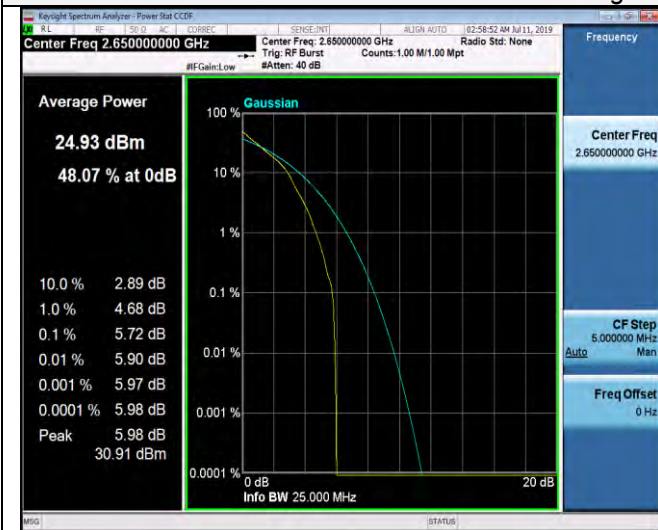


1RB#0

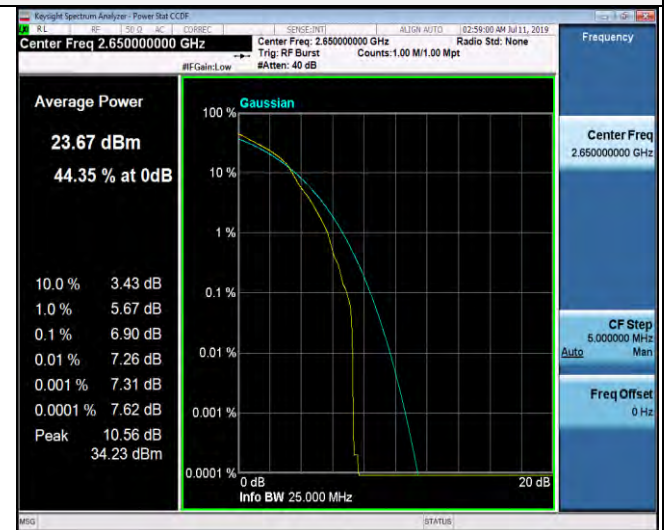


1RB#0

High Channel



1RB#0



1RB#0

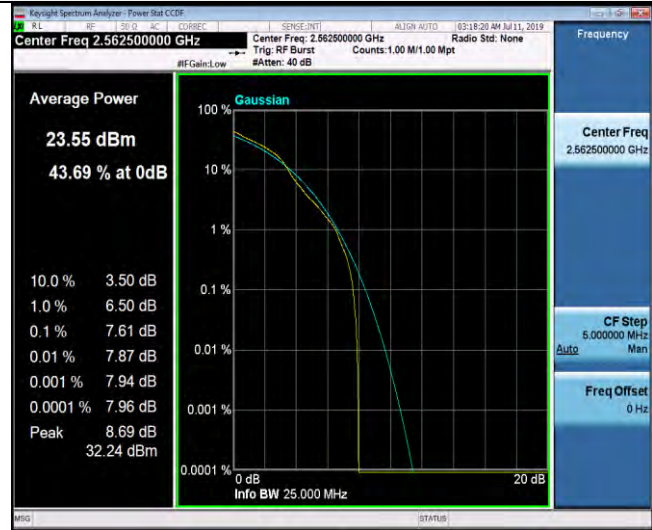
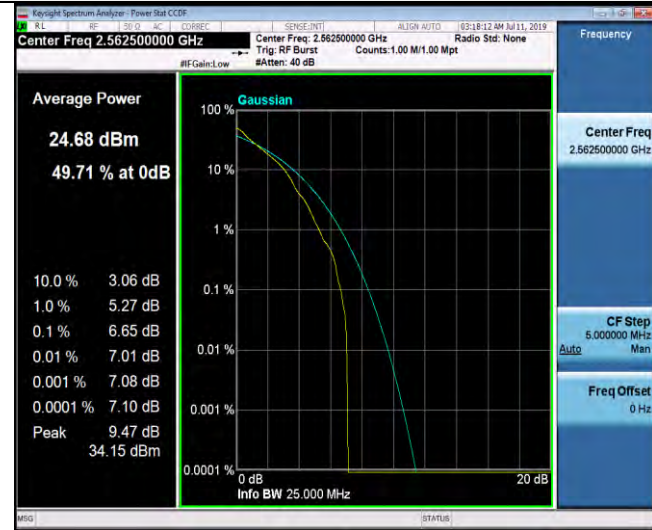


LTE Band 41– 15 MHz Channel BandwidthPAPR

QPSK

16QAM

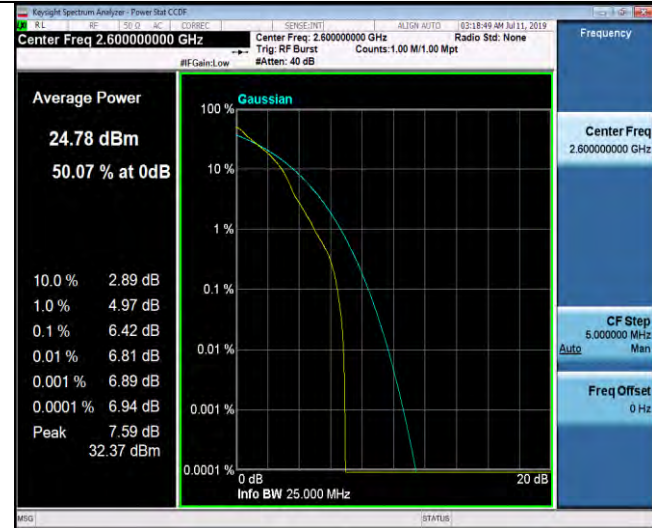
Low Channel



1RB#0

1RB#0

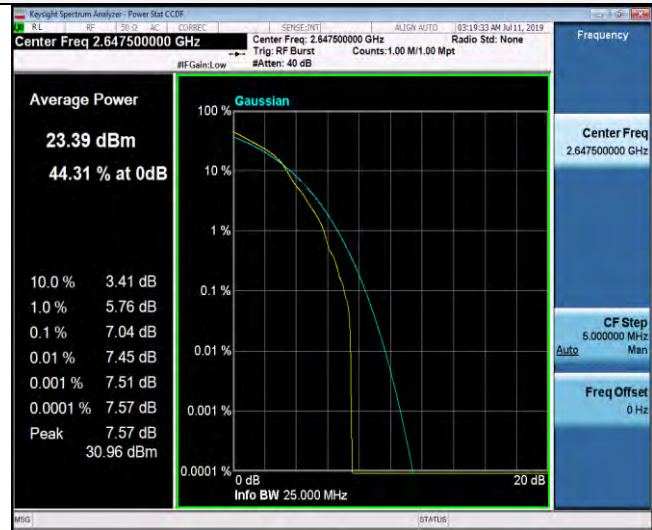
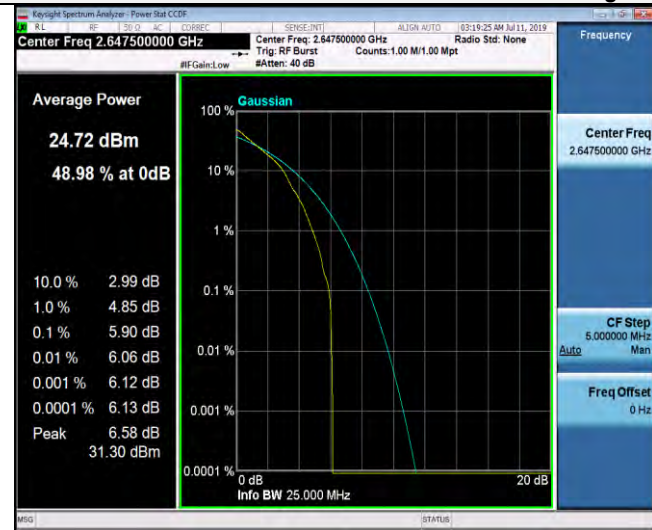
Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0

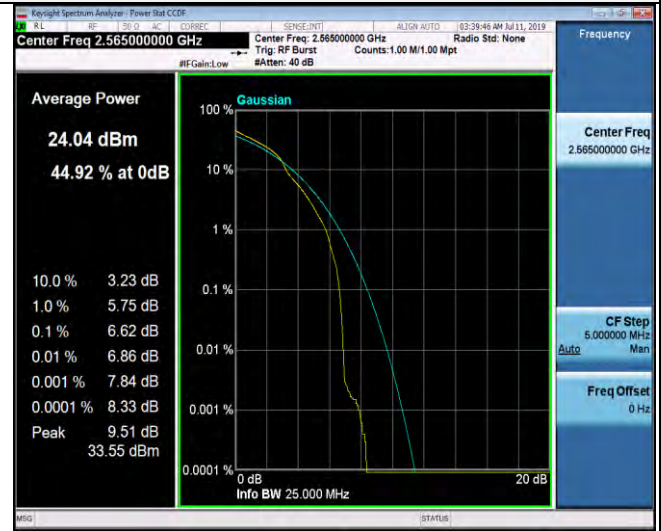


LTE Band 41-20MHz Channel Bandwidth PAPP

QPSK

16QAM

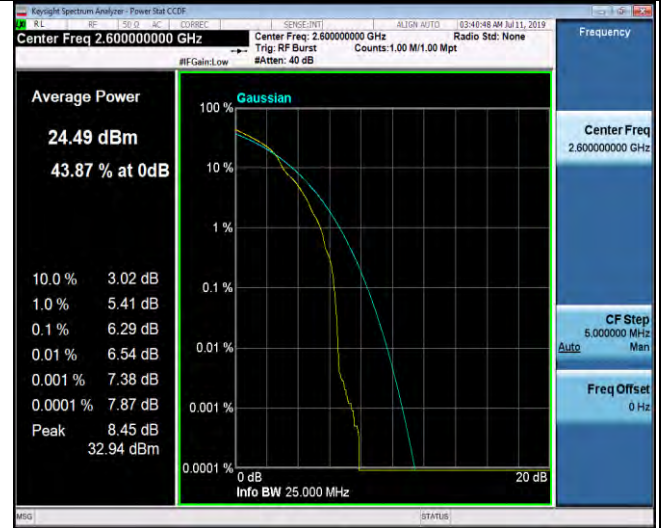
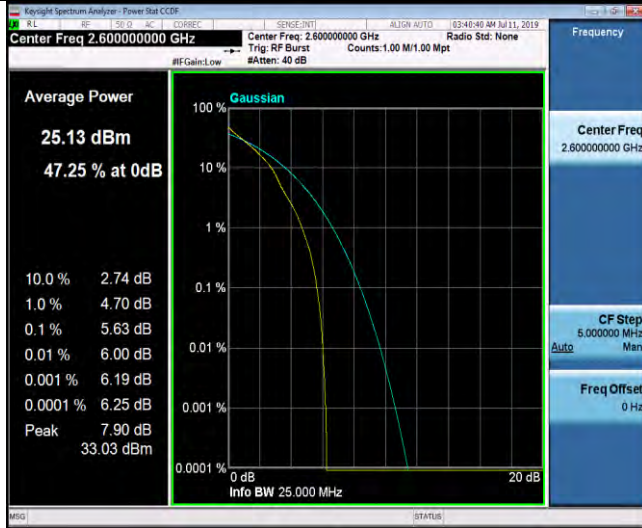
Low Channel



1RB#0

1RB#0

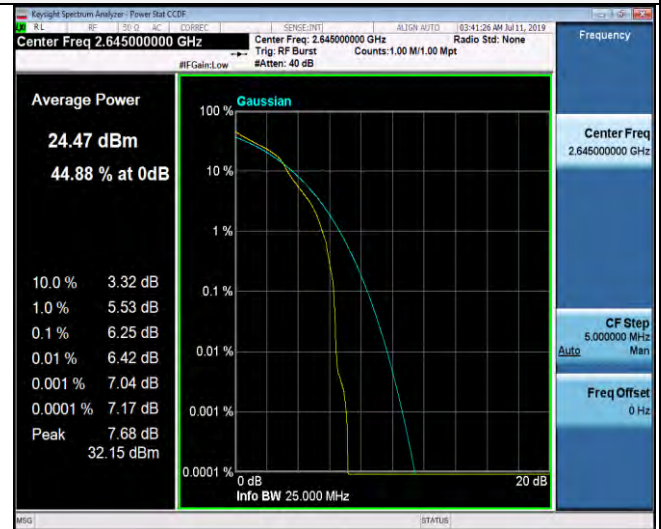
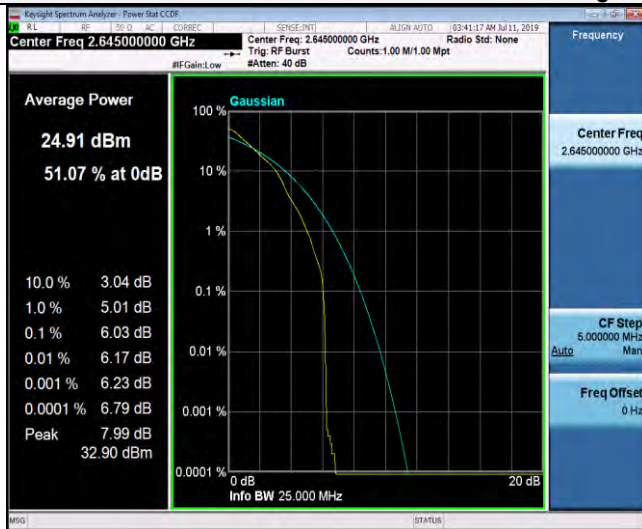
Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0

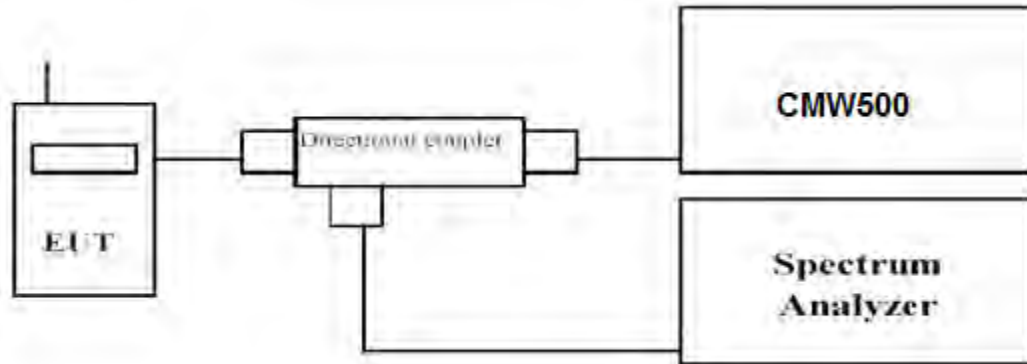


### 4.3 Occupied Bandwidth and Emission Bandwidth

**LIMIT**

N/A

**TEST CONFIGURATION**



**TEST PROCEDURE**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded. Set RBW was set to about 1% of emission BW, VBW ≥ 3 times RBW. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

**TEST RESULTS**

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

| LTE Band 41          |                |                 |                              |        |                                 |       |
|----------------------|----------------|-----------------|------------------------------|--------|---------------------------------|-------|
| TX Channel Bandwidth | RB Size/Offset | Frequency (MHz) | 99% Occupied bandwidth (MHz) |        | -26dBc Emission bandwidth (MHz) |       |
|                      |                |                 | QPSK                         | 16QAM  | QPSK                            | 16QAM |
| 5 MHz                | 25RB#0         | 2557.5          | 4.4929                       | 4.4954 | 4.874                           | 4.854 |
|                      |                | 2600.0          | 4.5057                       | 4.4871 | 4.817                           | 4.845 |
|                      |                | 2652.5          | 4.4954                       | 4.4916 | 4.904                           | 4.839 |
| 10 MHz               | 50RB#0         | 2560.0          | 8.9846                       | 8.9770 | 9.517                           | 9.558 |
|                      |                | 2600.0          | 8.9823                       | 8.9690 | 9.522                           | 9.545 |
|                      |                | 2650.0          | 8.9681                       | 8.9762 | 9.532                           | 9.581 |
| 15 MHz               | 75RB#0         | 2562.5          | 13.424                       | 13.447 | 14.23                           | 14.29 |
|                      |                | 2600.0          | 13.468                       | 13.477 | 14.25                           | 14.31 |
|                      |                | 2647.5          | 13.469                       | 13.443 | 14.28                           | 14.26 |
| 20 MHz               | 100RB#0        | 2570.0          | 17.956                       | 17.952 | 18.99                           | 18.96 |
|                      |                | 2600.0          | 17.982                       | 17.965 | 18.96                           | 18.99 |
|                      |                | 2640.0          | 17.950                       | 17.932 | 18.96                           | 19.04 |

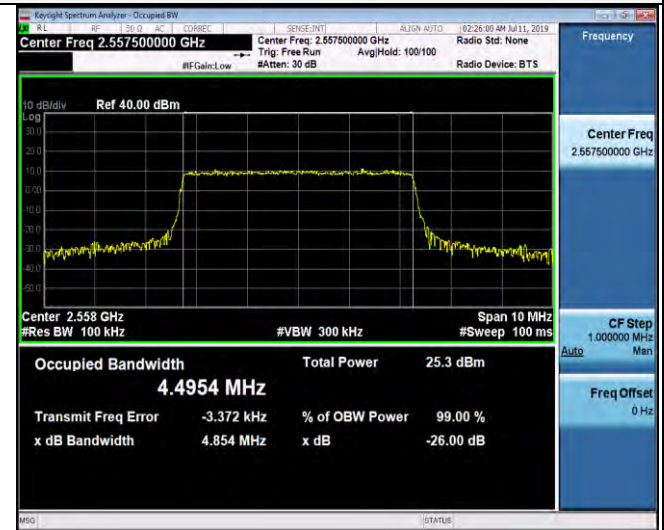
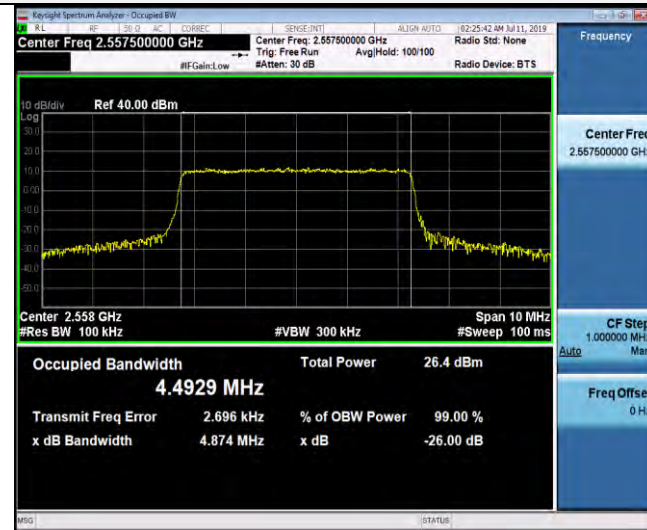


LTE Band 41-5MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

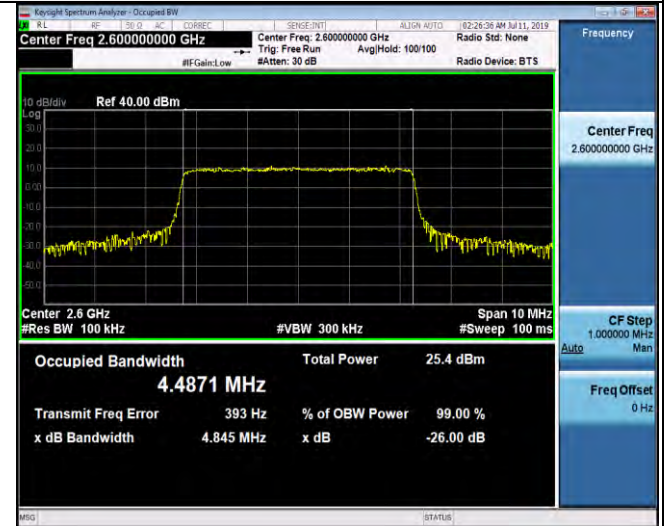
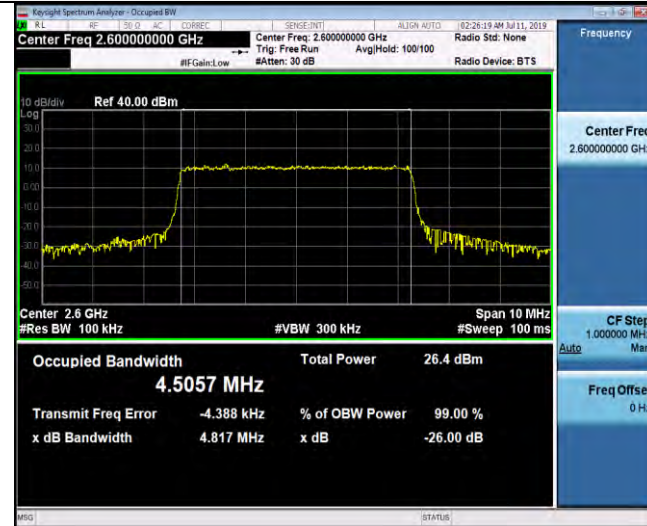
Low Channel



25RB#0

25RB#0

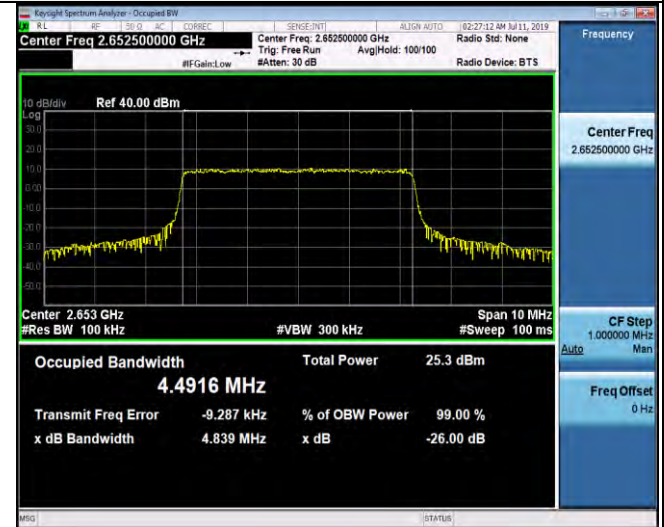
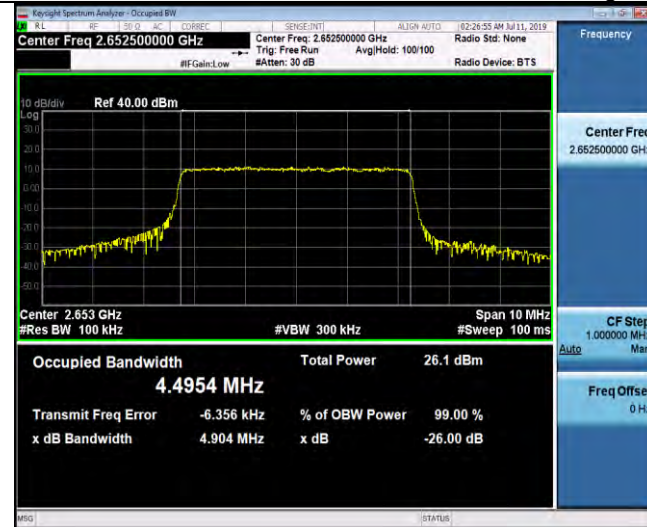
Middle Channel



25RB#0

25RB#0

High Channel



25RB#0

25RB#0

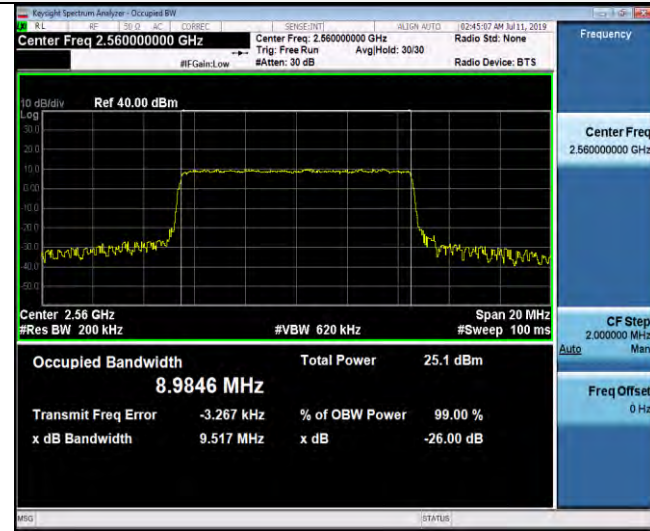


LTE Band 41-10MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

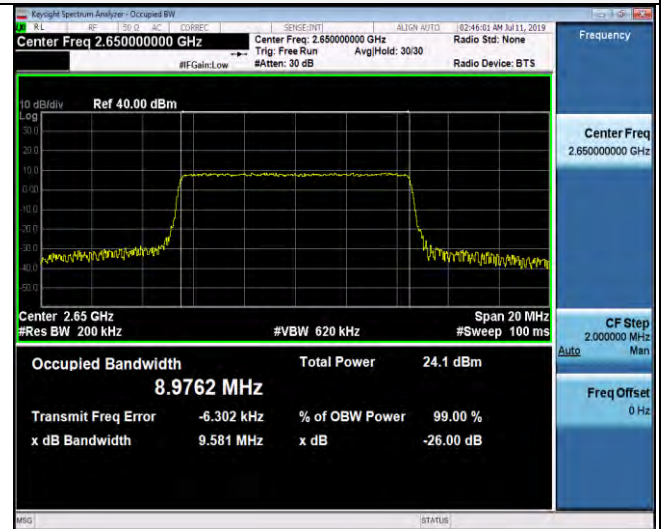
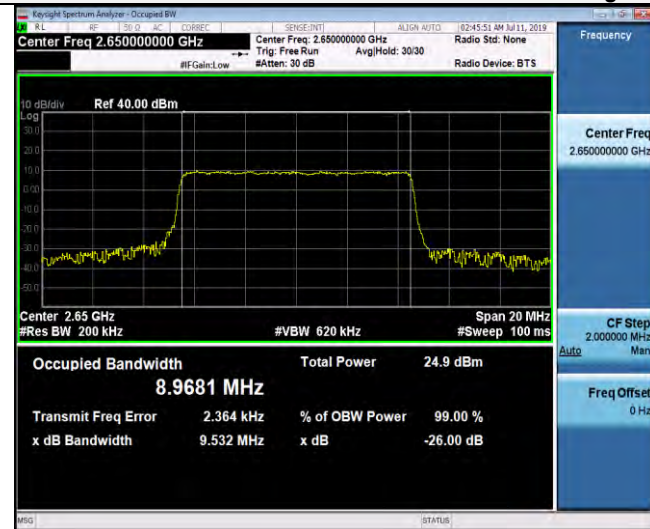
Low Channel



Middle Channel



High Channel



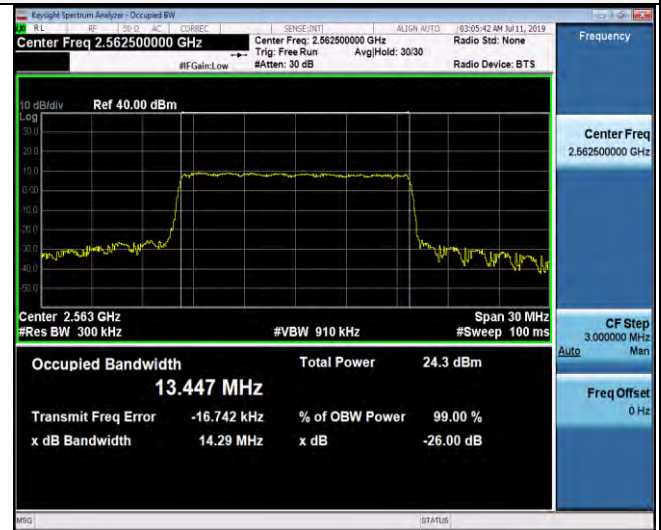
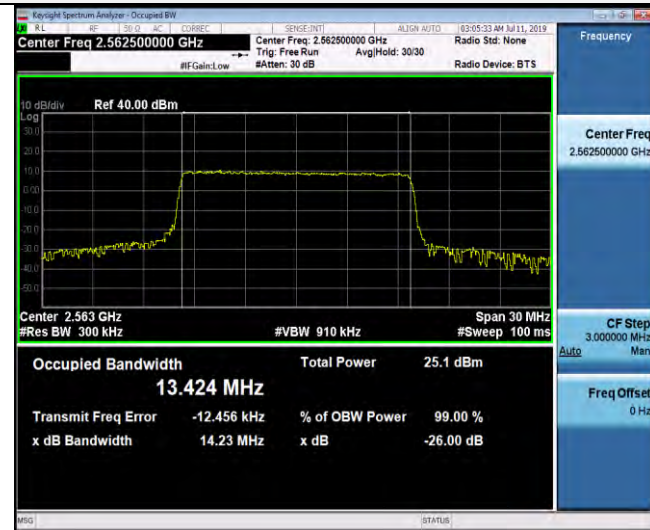


LTE Band 41-15MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

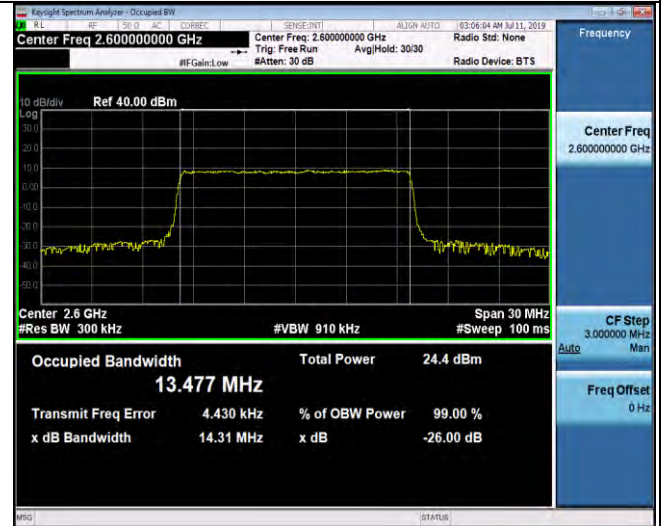
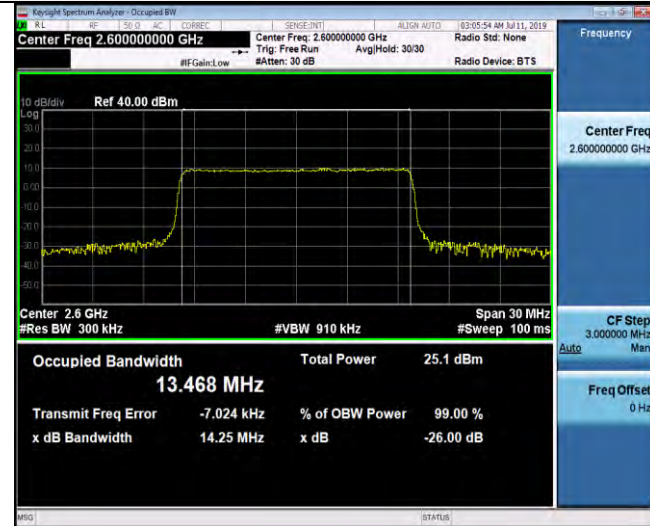
Low Channel



75RB#0

75RB#0

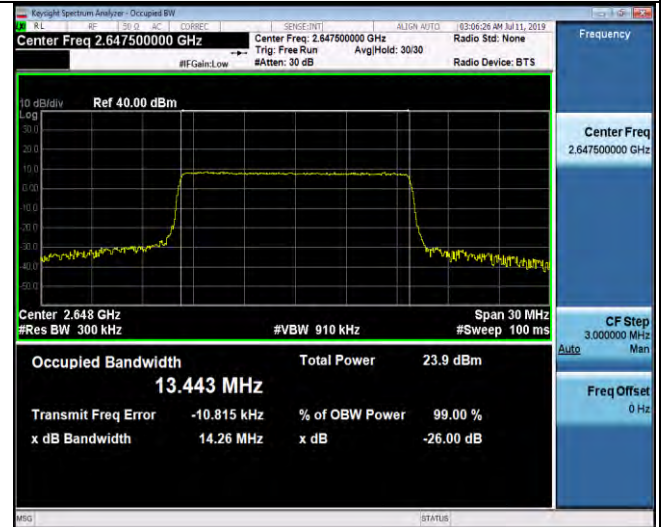
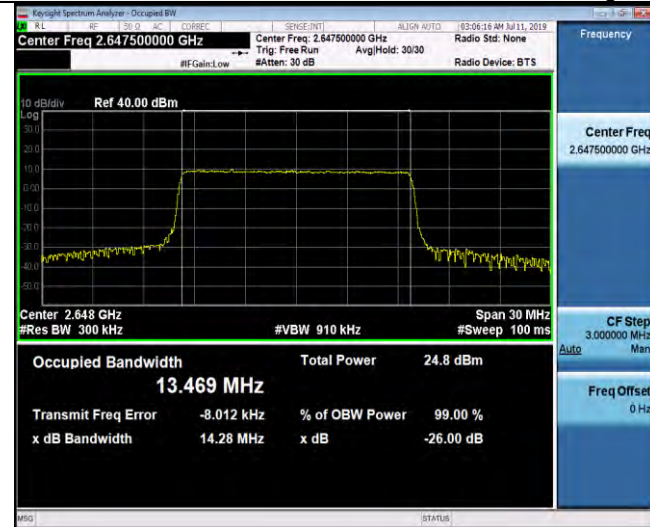
Middle Channel



75RB#0

75RB#0

High Channel



75RB#0

75RB#0



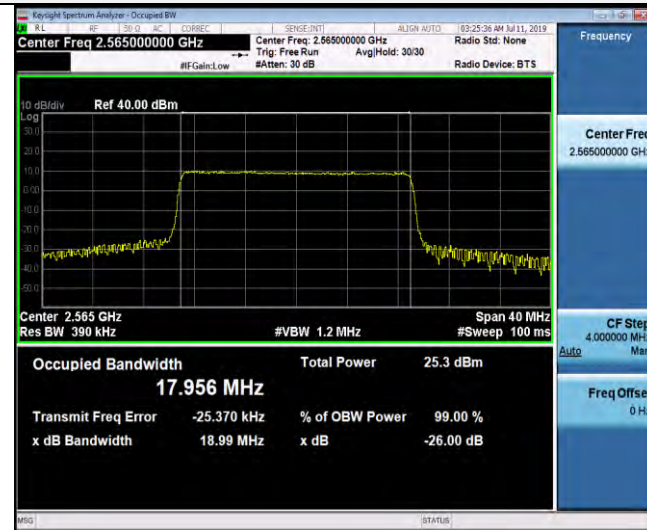


LTE Band 41-20MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

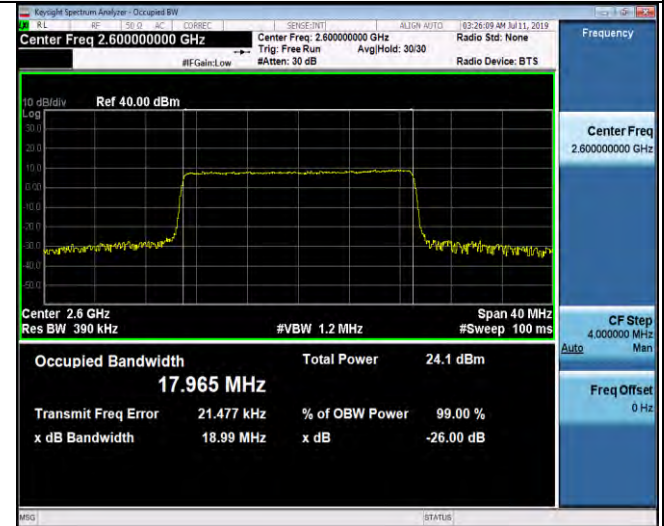
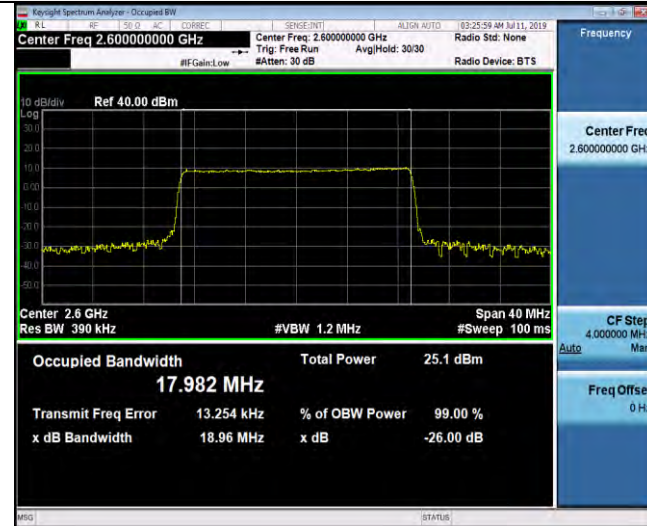
Low Channel



100RB#0

100RB#0

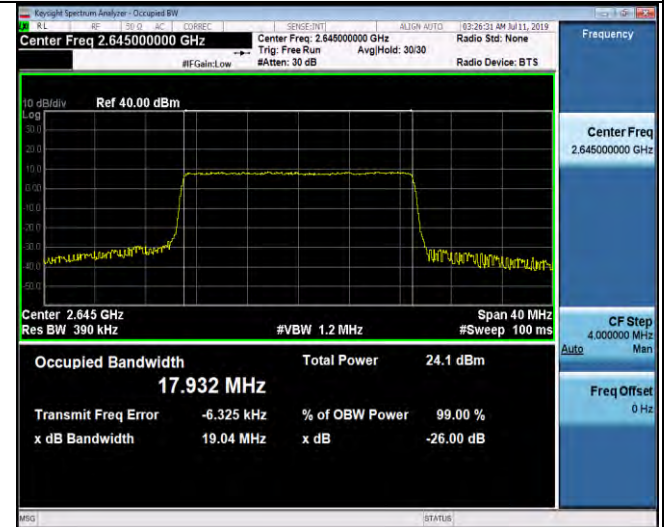
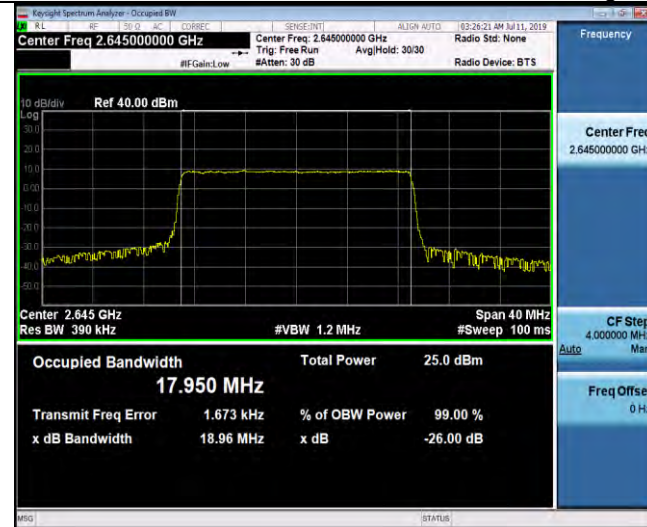
Middle Channel



100RB#0

100RB#0

High Channel



100RB#0

100RB#0

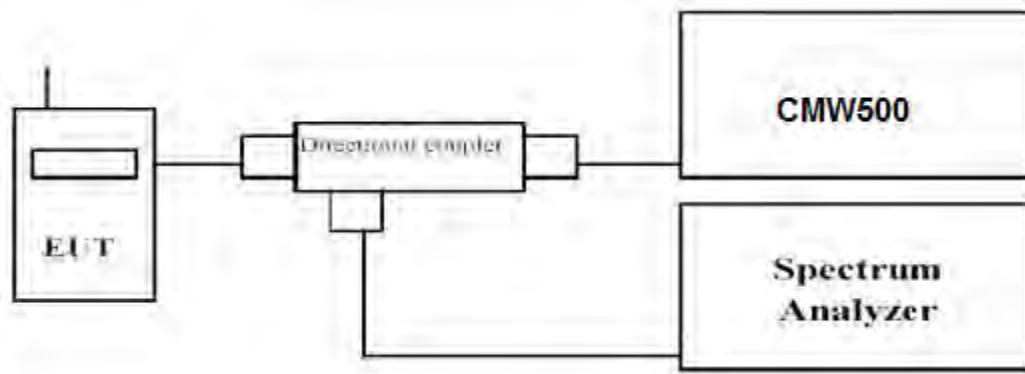


## 4.4 Band Edge compliance

### LIMIT

the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $40 + 10 \log P$  dB ( $-10$  dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge,  $43 + 10 \log P$  dB ( $-13$  dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge, and  $55 + 10 \log P$  dB ( $-25$  dBm, 3 nW) on all frequencies more than 20 MHz from the channel edge, where X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

### TEST CONFIGURATION



### TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum
6. Set RBW = 100 kHz, VBW=300 kHz, Span=50MHz Peak Detector.

### TEST RESULTS

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July. 11, 2019 |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

#### Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

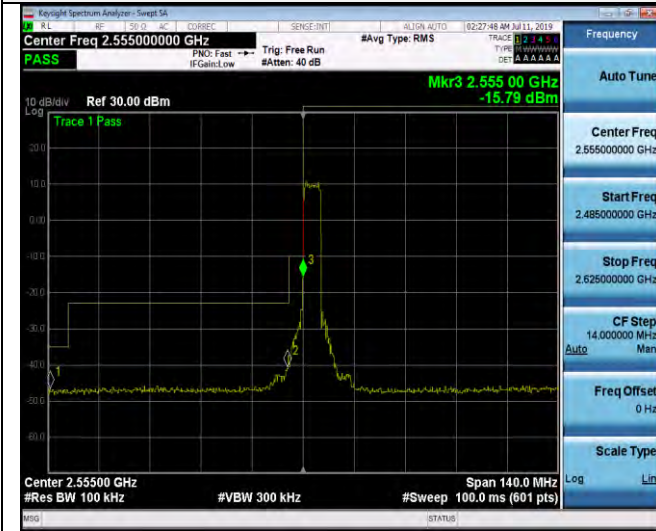


LTE Band 41-5MHz Channel Bandwidth Band Edge Compliance

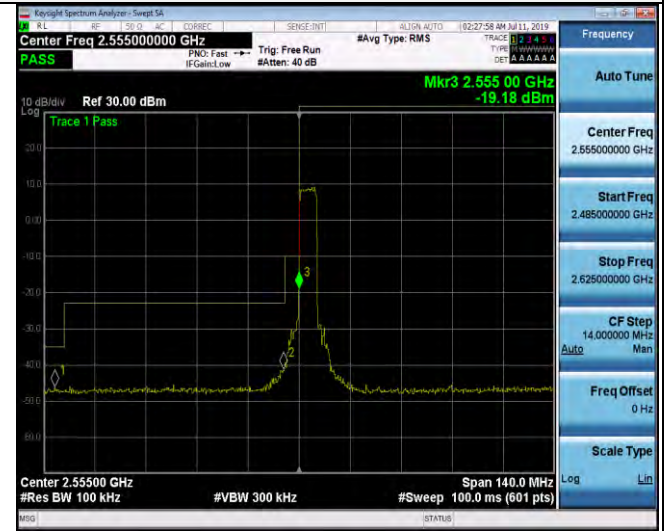
QPSK

16QAM

Low Channel

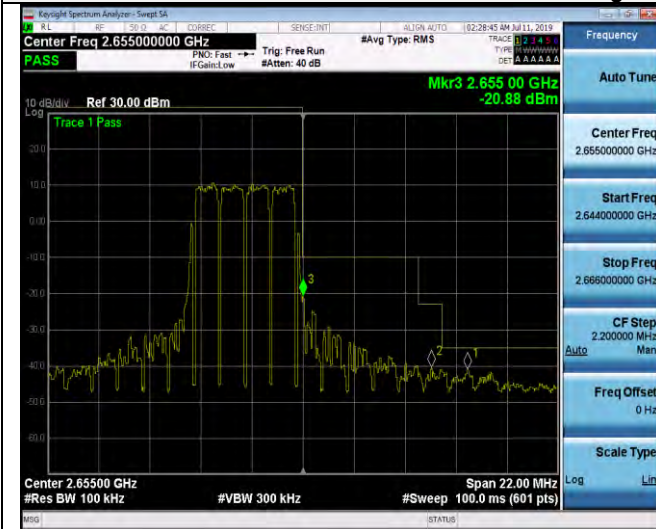


25RB#0



25RB#0

High Channel



25RB#0



25RB#0

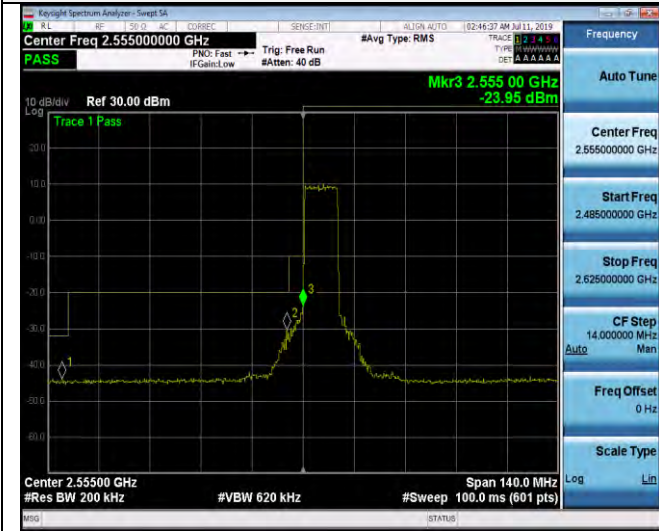


LTE Band 41 – 10 MHz Channel Bandwidth Band Edge Compliance

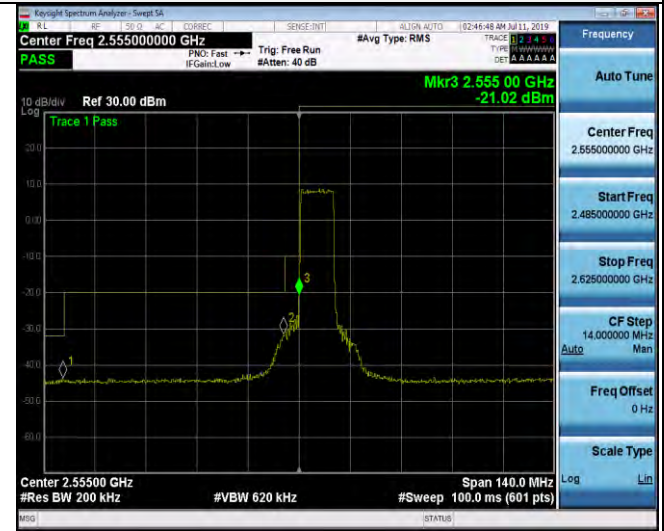
QPSK

16QAM

Low Channel

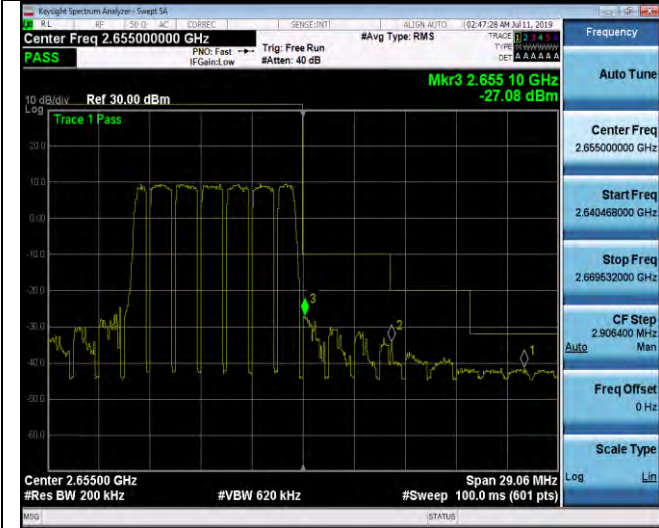


50RB#0



50RB#0

High Channel



50RB#0



50RB#0

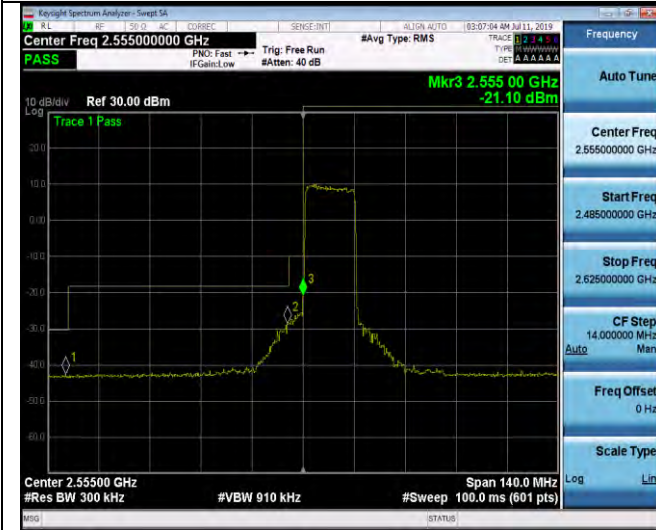


LTE Band 41-15MHz Channel Bandwidth Band Edge Compliance

QPSK

16QAM

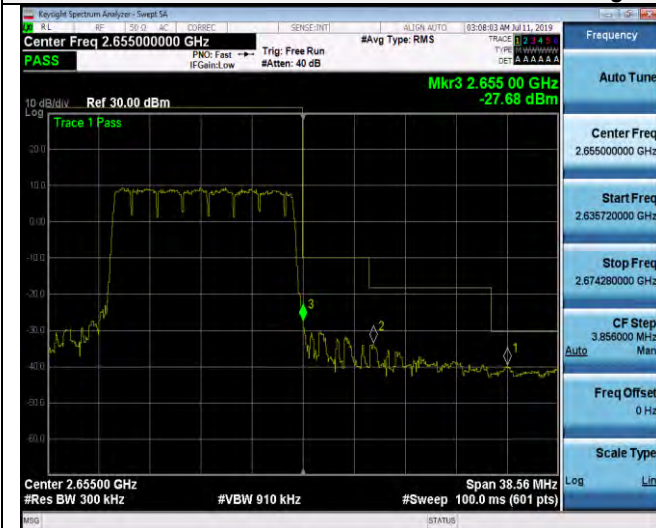
Low Channel



75RB#0

75RB#0

High Channel



75RB#0

75RB#0



LTE Band 41-20MHz Channel Bandwidth Band Edge Compliance

QPSK

16QAM

Low Channel



100RB#0

100RB#0

High Channel



100RB#0

100RB#0

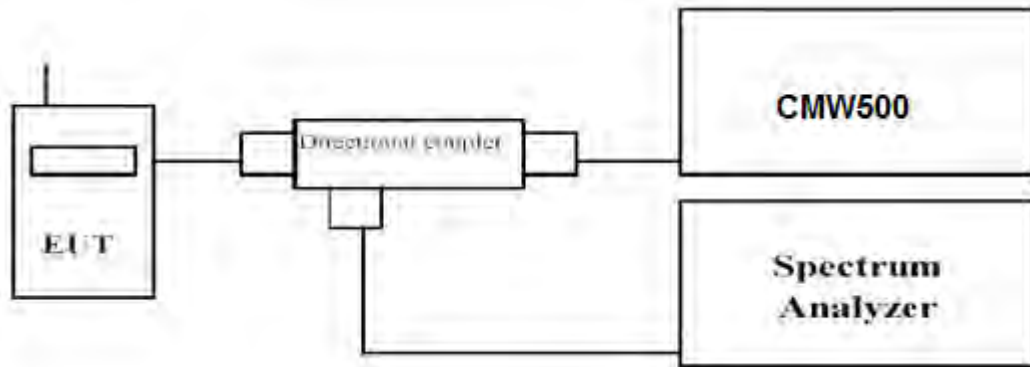


## 4.5 Spurious Emission on Antenna Port

### LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $40 + 10 \log P$  dB (-10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge,  $43 + 10 \log P$  dB (-13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge, and  $55 + 10 \log P$  dB (-25 dBm, 3 nW) on all frequencies more than 20 MHz from the channel edge, where X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

### TEST CONFIGURATION



### TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Coupler.
- EUT Communicate with CMW500, then select a channel for testing.
- Add a correction factor to the display of spectrum, and then test.
- The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to 10<sup>th</sup> harmonic.
- Please refer to following tables for test antenna conducted emissions.

| Working Frequency | Sub range (GHz) | RBW   | VBW   | Sweep time (s) |
|-------------------|-----------------|-------|-------|----------------|
| LTE Band 41       | 0.03~26.5       | 1 MHz | 3 MHz | Auto           |

### TEST RESULTS

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

#### Remark:

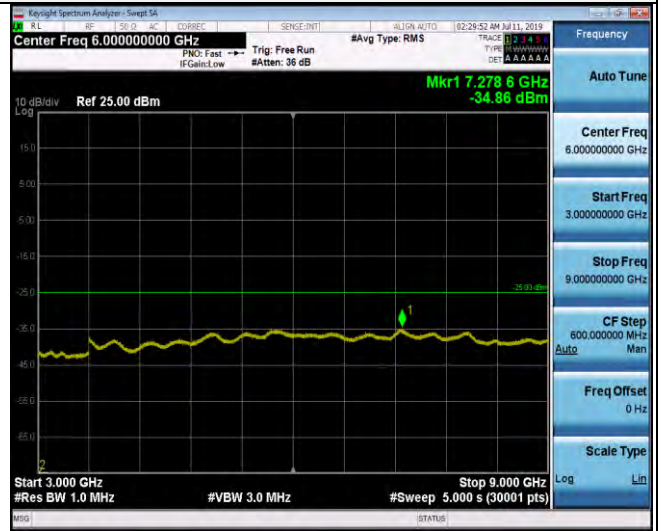
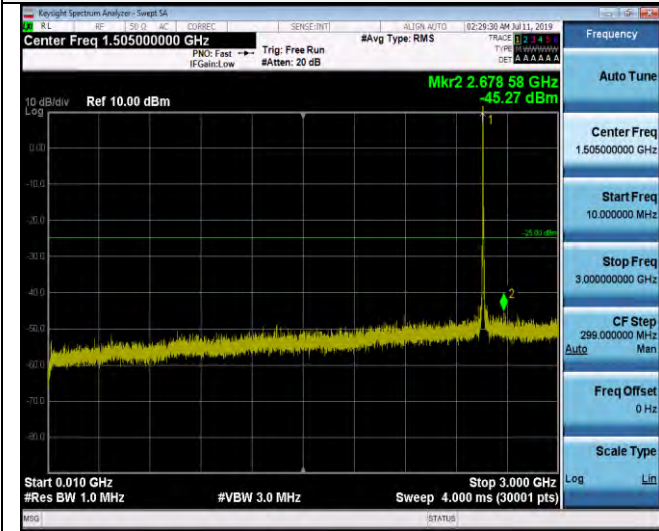
- We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case at the QPSK Mode for each Channel Bandwidth of LTE Band 41



### LTE Band 41-5 MHz Channel Bandwidth

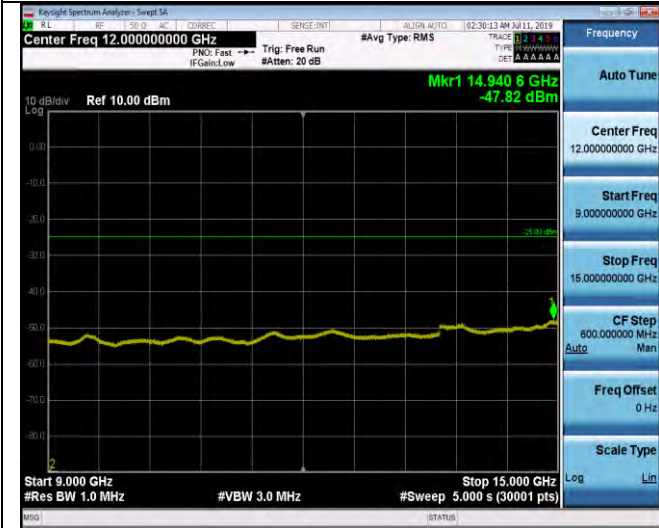
#### Low Channel

#### QPSK



#### 10MHz~3GHz

#### 3GHz ~9GHz



#### 9 GHz ~15 GHz

#### 15 GHz ~26.5GHz

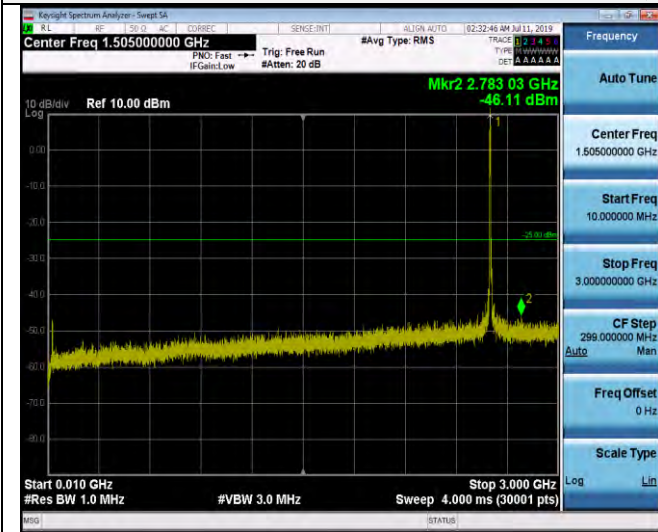




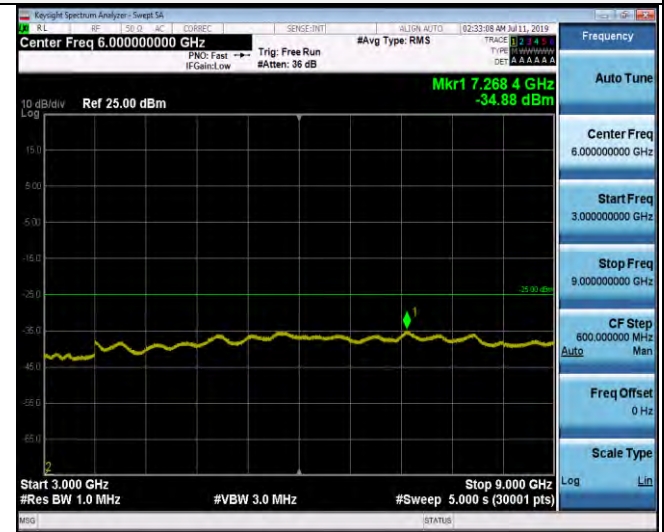
LTE Band 41-5 MHz Channel Bandwidth

Middle Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



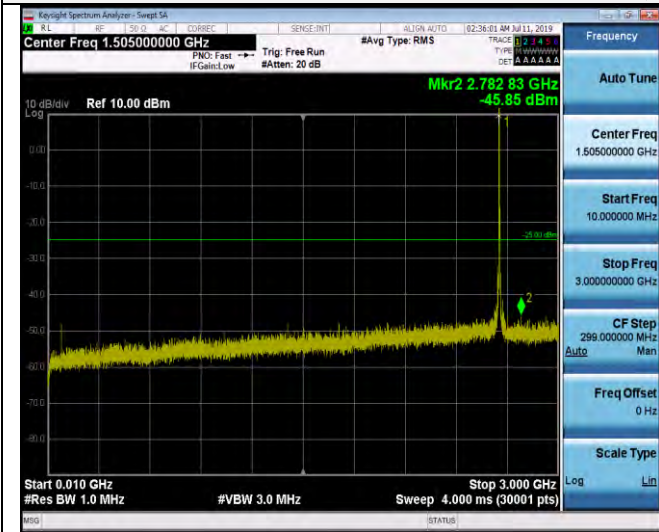
15 GHz~26.5GHz



LTE Band 41-5 MHz Channel Bandwidth

High Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



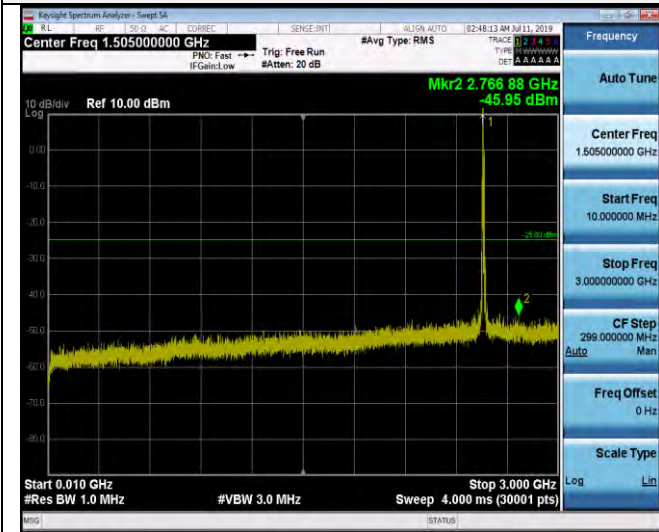
15 GHz~26.5GHz



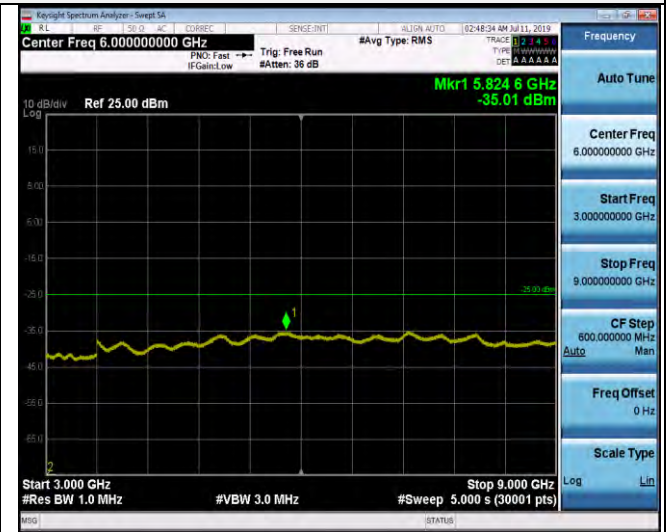
LTE Band 41-10 MHz Channel Bandwidth

Low Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



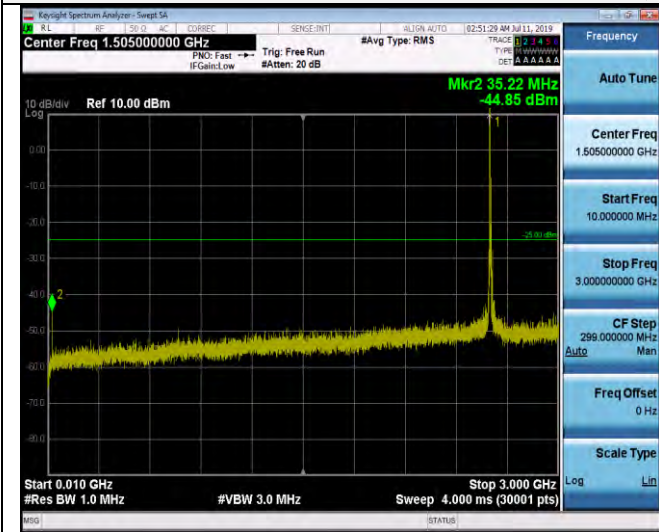
15 GHz~26.5GHz



LTE Band 41-10 MHz Channel Bandwidth

Middle Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



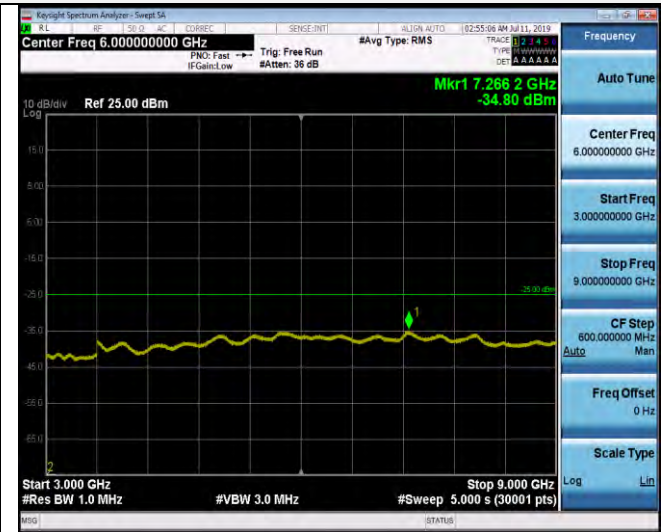
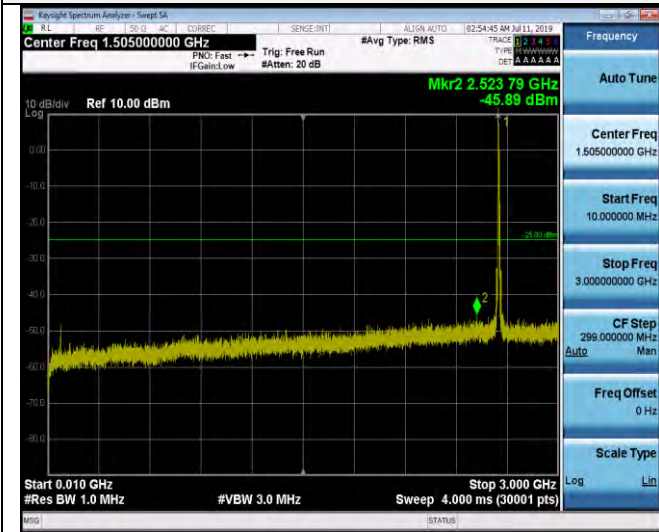
15 GHz~26.5GHz



LTE Band 41-10 MHz Channel Bandwidth

High Channel

QPSK



10MHz~3GHz

3GHz~9GHz



9 GHz ~15 GHz

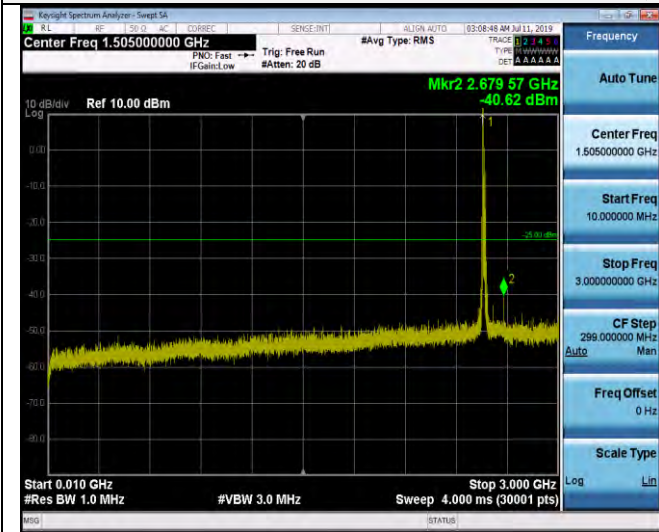
15 GHz ~26.5GHz



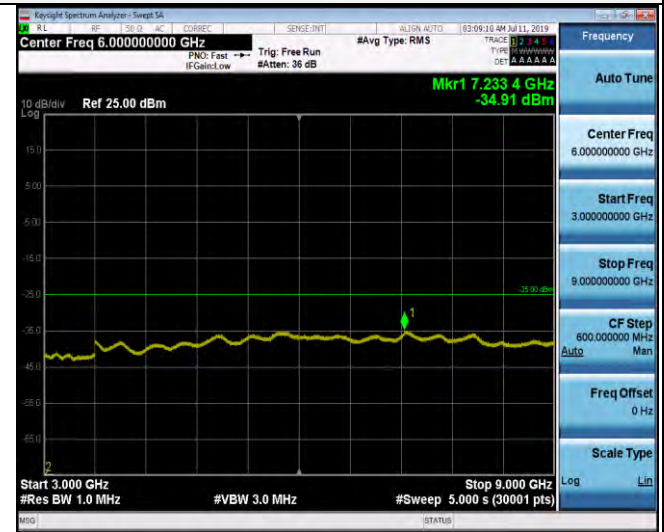
LTE Band 41-15 MHz Channel Bandwidth

Low Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



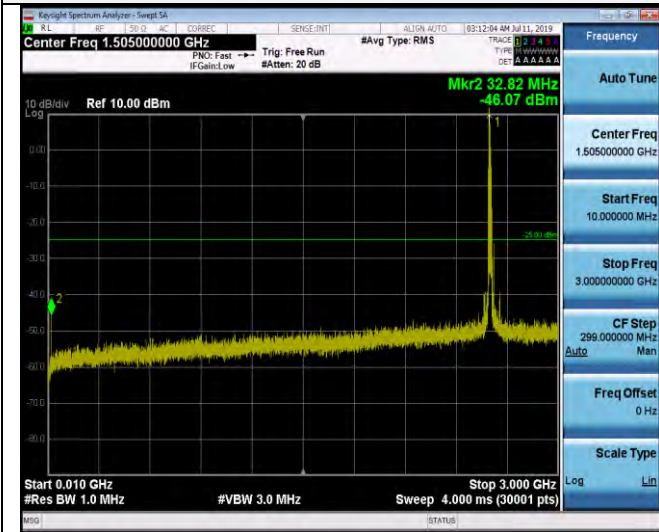
15 GHz~26.5GHz



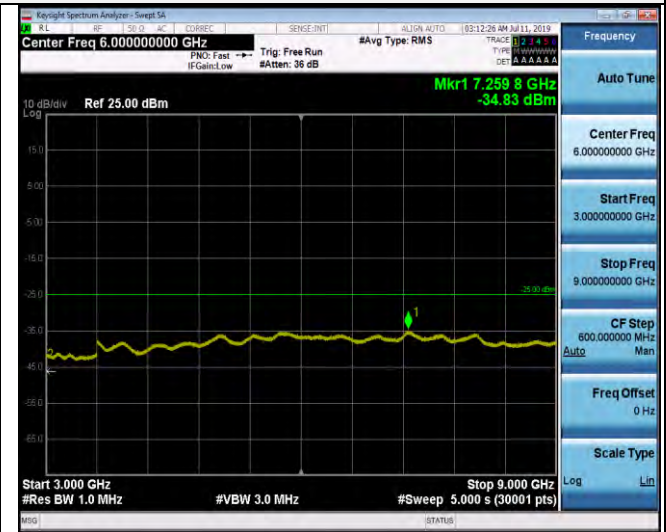
LTE Band 41-15 MHz Channel Bandwidth

Middle Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



15 GHz~26.5GHz



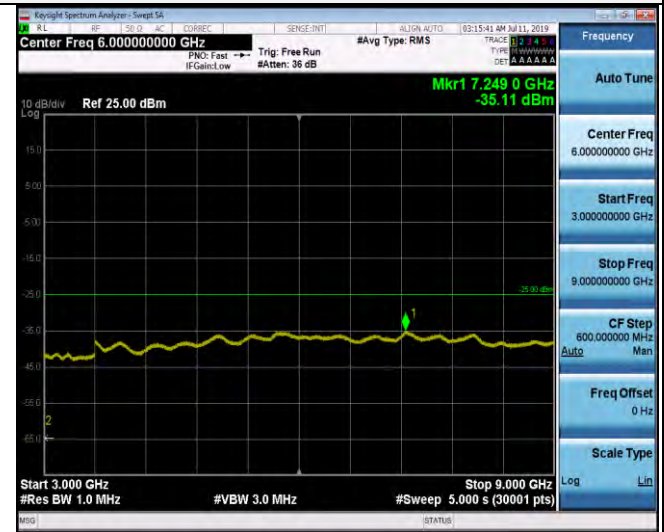
LTE Band 41-15 MHz Channel Bandwidth

High Channel

QPSK



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~26.5GHz

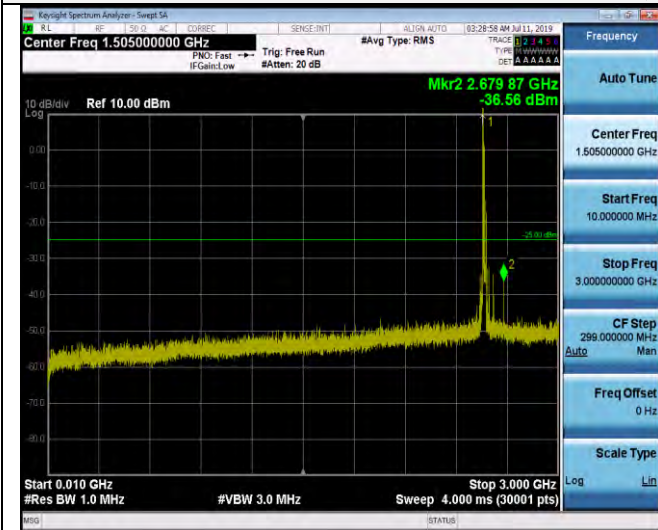




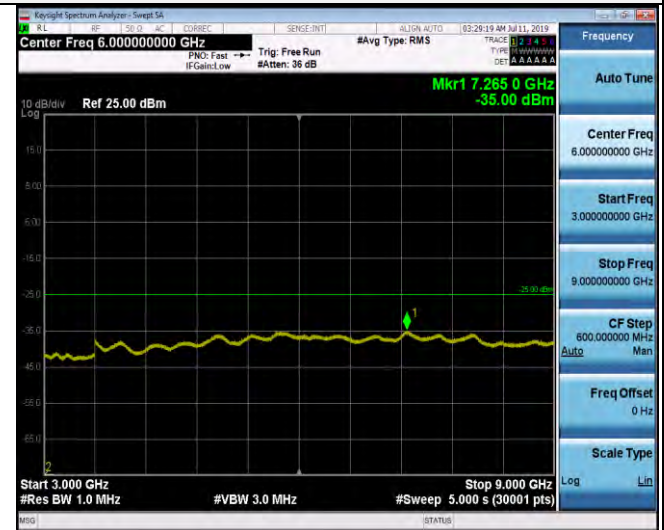
LTE Band 41-20 MHz Channel Bandwidth

Low Channel

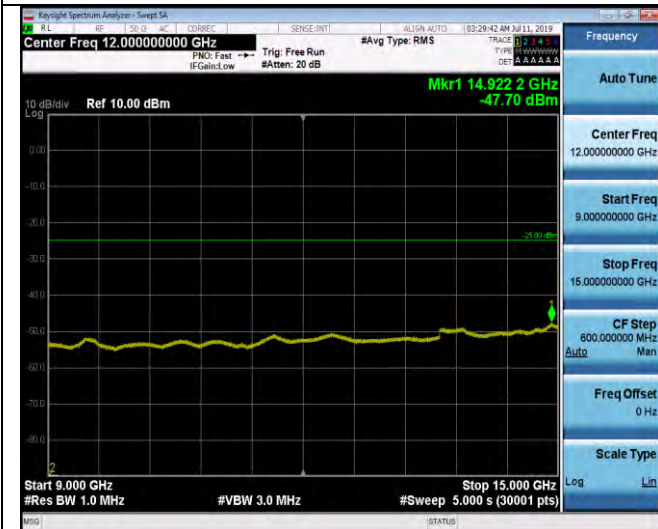
QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



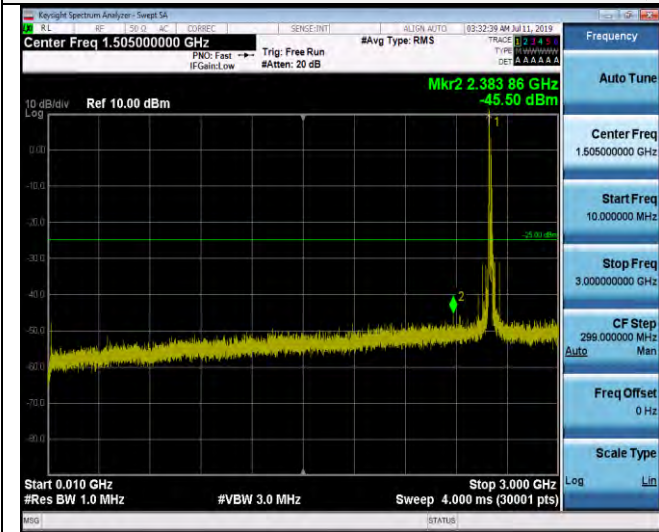
15 GHz~26.5GHz



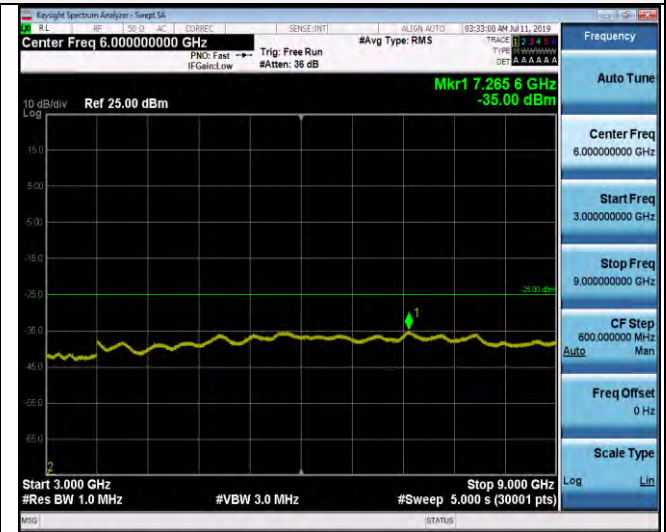
LTE Band 41-20 MHz Channel Bandwidth

Middle Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



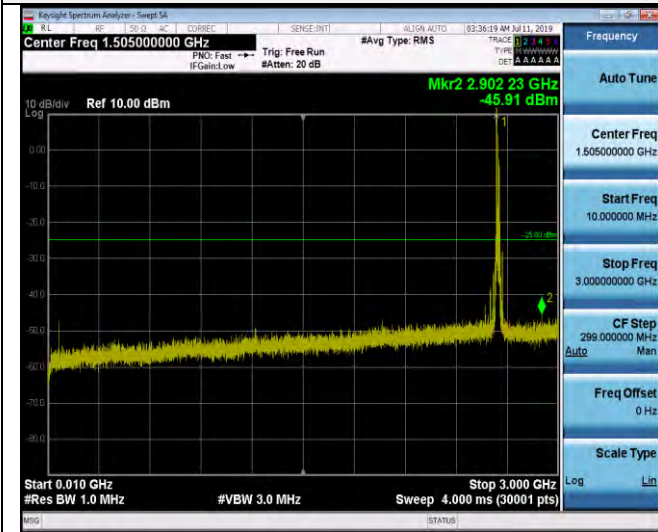
15 GHz~26.5GHz



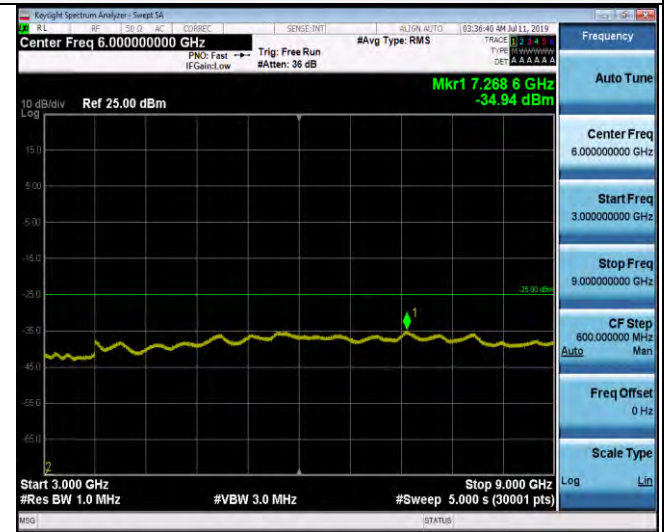
LTE Band 41-20 MHz Channel Bandwidth

High Channel

QPSK



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



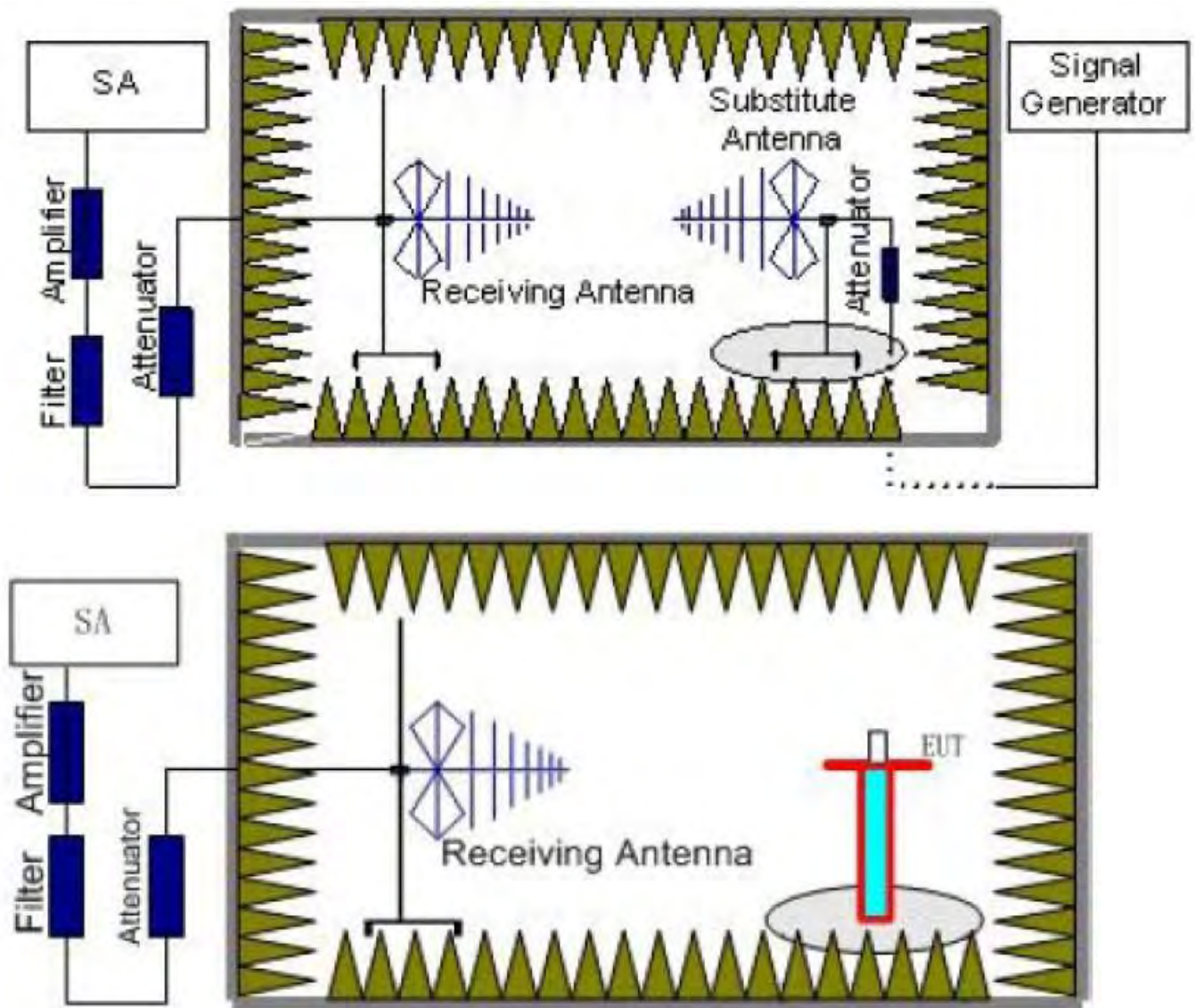
15 GHz~26.5GHz

## 4.6 Radiated Spurious Emission

### TEST APPLICABLE

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $40 + 10 \log P$  dB ( $-10$  dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge,  $43 + 10 \log P$  dB ( $-13$  dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge, and  $55 + 10 \log P$  dB ( $-25$  dBm, 3 nW) on all frequencies more than 20 MHz from the channel edge, where X MHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

### TEST CONFIGURATION



### TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

- The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- The output of the test antenna shall be connected to the measuring receiver.
- The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.



- e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. Test site anechoic chamber refer to ANSI C63.4:2014.

| Frequency   | Channel | Frequency Range | Verdict |
|-------------|---------|-----------------|---------|
| LTE Band 41 | Low     | 30MHz -26.5GHz  | PASS    |
|             | Middle  | 30MHz -26.5GHz  | PASS    |
|             | High    | 30MHz -26.5GHz  | PASS    |

**Radiated Measurement:**

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

**Remark:**

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.
2.  $EIRP = P_s(dBm) - P_{cl}(dB) + G_a(dBi)$
3. Not recorded other points means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4.  $Margin = Limit - EIRP$

**LTE Band 41 Channel Bandwidth 5MHz QPSK 1RB#0**

| Frequency (MHz) | P <sub>s</sub> (dBm) | P <sub>cl</sub> (dB) | Distance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5115.0          | -42.01               | 4.39                 | 3.00     | 12.34                           | -34.06          | -25.00      | 9.06        | H            |
| 7672.5          | -51.44               | 5.31                 | 3.00     | 13.52                           | -43.23          | -25.00      | 18.23       | H            |
| 5115.0          | -43.53               | 4.39                 | 3.00     | 12.34                           | -35.58          | -25.00      | 10.58       | V            |
| 7672.5          | -54.01               | 5.31                 | 3.00     | 13.52                           | -45.8           | -25.00      | 20.8        | V            |

**LTE Band 41 Channel Bandwidth 5MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -42.16   | 4.41                 | 3.00     | 12.34                           | -34.23          | -25.00      | 9.23        | H            |
| 7800.0          | -49.77   | 5.38                 | 3.00     | 13.58                           | -41.57          | -25.00      | 16.57       | H            |
| 5200.0          | -44.68   | 4.41                 | 3.00     | 12.34                           | -36.75          | -25.00      | 11.75       | V            |
| 7800.0          | -51.75   | 5.38                 | 3.00     | 13.58                           | -43.55          | -25.00      | 18.55       | V            |

**LTE Band 41 Channel Bandwidth 5MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5305.0          | -45.6    | 4.45                 | 3.00     | 12.45                           | -37.6           | -25.00      | 12.6        | H            |
| 7957.5          | -49.46   | 5.47                 | 3.00     | 13.66                           | -41.27          | -25.00      | 16.27       | H            |
| 5305.0          | -43.44   | 4.45                 | 3.00     | 12.45                           | -35.44          | -25.00      | 10.44       | V            |
| 7957.5          | -52.11   | 5.48                 | 3.00     | 13.66                           | -43.93          | -25.00      | 18.93       | V            |

**LTE Band 41 Channel Bandwidth 10MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5120.0          | -42.02   | 4.39                 | 3.00     | 12.34                           | -34.07          | -25.00      | 9.07        | H            |
| 7680.0          | -51.68   | 5.31                 | 3.00     | 13.52                           | -43.47          | -25.00      | 18.47       | H            |
| 5120.0          | -43.91   | 4.39                 | 3.00     | 12.34                           | -35.96          | -25.00      | 10.96       | V            |
| 7680.0          | -54.26   | 5.31                 | 3.00     | 13.52                           | -46.05          | -25.00      | 21.05       | V            |

**LTE Band 41 Channel Bandwidth 10MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -41.53   | 4.41                 | 3.00     | 12.34                           | -33.6           | -25.00      | 8.6         | H            |
| 7800.0          | -49.35   | 5.38                 | 3.00     | 13.58                           | -41.15          | -25.00      | 16.15       | H            |
| 5200.0          | -43.87   | 4.41                 | 3.00     | 12.34                           | -35.94          | -25.00      | 10.94       | V            |
| 7800.0          | -51.42   | 5.38                 | 3.00     | 13.58                           | -43.22          | -25.00      | 18.22       | V            |

**LTE Band 41 Channel Bandwidth 10MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5300.0          | -45.75   | 4.45                 | 3.00     | 12.45                           | -37.75          | -25.00      | 12.75       | H            |
| 7950.0          | -48.99   | 5.47                 | 3.00     | 13.66                           | -40.8           | -25.00      | 15.8        | H            |
| 5300.0          | -43.86   | 4.45                 | 3.00     | 12.45                           | -35.86          | -25.00      | 10.86       | V            |
| 7950.0          | -52.16   | 5.48                 | 3.00     | 13.66                           | -43.98          | -25.00      | 18.98       | V            |

**LTE Band 41 Channel Bandwidth 15MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5125.0          | -41.82   | 4.39                 | 3.00     | 12.34                           | -33.87          | -25.00      | 8.87        | H            |
| 7687.5          | -51.11   | 5.31                 | 3.00     | 13.52                           | -42.9           | -25.00      | 17.9        | H            |
| 5125.0          | -43.68   | 4.39                 | 3.00     | 12.34                           | -35.73          | -25.00      | 10.73       | V            |
| 7687.5          | -53.26   | 5.31                 | 3.00     | 13.52                           | -45.05          | -25.00      | 20.05       | V            |

**LTE Band 41 Channel Bandwidth 15MHz QPSK 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -42.27   | 4.41                 | 3.00     | 12.34                           | -34.34          | -25.00      | 9.34        | H            |
| 7800.0          | -50.04   | 5.38                 | 3.00     | 13.58                           | -41.84          | -25.00      | 16.84       | H            |
| 5200.0          | -44.32   | 4.41                 | 3.00     | 12.34                           | -36.39          | -25.00      | 11.39       | V            |
| 7800.0          | -50.93   | 5.38                 | 3.00     | 13.58                           | -42.73          | -25.00      | 17.73       | V            |

**LTE Band 41 Channel Bandwidth 15MHz\_QPSK\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5295.0          | -45.02   | 4.45                 | 3.00     | 12.45                           | -37.02          | -25.00      | 12.02       | H            |
| 7942.5          | -49.11   | 5.47                 | 3.00     | 13.66                           | -40.92          | -25.00      | 15.92       | H            |
| 5295.0          | -43.56   | 4.45                 | 3.00     | 12.45                           | -35.56          | -25.00      | 10.56       | V            |
| 7942.5          | -51.75   | 5.48                 | 3.00     | 13.66                           | -43.57          | -25.00      | 18.57       | V            |

**LTE Band 41 Channel Bandwidth 20MHz\_QPSK\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5140.0          | -41.98   | 4.39                 | 3.00     | 12.34                           | -34.03          | -25.00      | 9.03        | H            |
| 7710.0          | -51.84   | 5.31                 | 3.00     | 13.52                           | -43.63          | -25.00      | 18.63       | H            |
| 5140.0          | -43.98   | 4.39                 | 3.00     | 12.34                           | -36.03          | -25.00      | 11.03       | V            |
| 7710.0          | -54.02   | 5.31                 | 3.00     | 13.52                           | -45.81          | -25.00      | 20.81       | V            |

**LTE Band 41 Channel Bandwidth 20MHz\_QPSK\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -42.27   | 4.41                 | 3.00     | 12.34                           | -34.34          | -25.00      | 9.34        | H            |
| 7800.0          | -49.9    | 5.38                 | 3.00     | 13.58                           | -41.7           | -25.00      | 16.7        | H            |
| 5200.0          | -44.26   | 4.41                 | 3.00     | 12.34                           | -36.33          | -25.00      | 11.33       | V            |
| 7800.0          | -51.45   | 5.38                 | 3.00     | 13.58                           | -43.25          | -25.00      | 18.25       | V            |

**LTE Band 41 Channel Bandwidth 20MHz\_QPSK\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5280.0          | -45.05   | 4.45                 | 3.00     | 12.45                           | -37.05          | -25.00      | 12.05       | H            |
| 7920.0          | -48.98   | 5.47                 | 3.00     | 13.66                           | -40.79          | -25.00      | 15.79       | H            |
| 5280.0          | -43.64   | 4.45                 | 3.00     | 12.45                           | -35.64          | -25.00      | 10.64       | V            |
| 7920.0          | -51.62   | 5.48                 | 3.00     | 13.66                           | -43.44          | -25.00      | 18.44       | V            |

**LTE Band 41 Channel Bandwidth 5MHz\_16QAM\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5115.0          | -41.93   | 4.39                 | 3.00     | 12.34                           | -33.98          | -25.00      | 8.98        | H            |
| 7672.5          | -51.04   | 5.31                 | 3.00     | 13.52                           | -42.83          | -25.00      | 17.83       | H            |
| 5115.0          | -43.53   | 4.39                 | 3.00     | 12.34                           | -35.58          | -25.00      | 10.58       | V            |
| 7672.5          | -53.65   | 5.31                 | 3.00     | 13.52                           | -45.44          | -25.00      | 20.44       | V            |

**LTE Band 41 Channel Bandwidth 5MHz\_16QAM\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -41.82   | 4.41                 | 3.00     | 12.34                           | -33.89          | -25.00      | 8.89        | H            |
| 7800.0          | -49.58   | 5.38                 | 3.00     | 13.58                           | -41.38          | -25.00      | 16.38       | H            |
| 5200.0          | -44.51   | 4.41                 | 3.00     | 12.34                           | -36.58          | -25.00      | 11.58       | V            |
| 7800.0          | -51.55   | 5.38                 | 3.00     | 13.58                           | -43.35          | -25.00      | 18.35       | V            |

**LTE Band 41 Channel Bandwidth 5MHz\_16QAM\_1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5305.0          | -45.52   | 4.45                 | 3.00     | 12.45                           | -37.52          | -25.00      | 12.52       | H            |
| 7957.5          | -49.71   | 5.47                 | 3.00     | 13.66                           | -41.52          | -25.00      | 16.52       | H            |
| 5305.0          | -43.87   | 4.45                 | 3.00     | 12.45                           | -35.87          | -25.00      | 10.87       | V            |
| 7957.5          | -51.94   | 5.48                 | 3.00     | 13.66                           | -43.76          | -25.00      | 18.76       | V            |

**LTE Band 41 Channel Bandwidth 10MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5120.0          | -41.95   | 4.39                 | 3.00     | 12.34                           | -34             | -25.00      | 9           | H            |
| 7680.0          | -51.83   | 5.31                 | 3.00     | 13.52                           | -43.62          | -25.00      | 18.62       | H            |
| 5120.0          | -43.84   | 4.39                 | 3.00     | 12.34                           | -35.89          | -25.00      | 10.89       | V            |
| 7680.0          | -53.75   | 5.31                 | 3.00     | 13.52                           | -45.54          | -25.00      | 20.54       | V            |

**LTE Band 41 Channel Bandwidth 10MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -42.09   | 4.41                 | 3.00     | 12.34                           | -34.16          | -25.00      | 9.16        | H            |
| 7800.0          | -49.42   | 5.38                 | 3.00     | 13.58                           | -41.22          | -25.00      | 16.22       | H            |
| 5200.0          | -44.28   | 4.41                 | 3.00     | 12.34                           | -36.35          | -25.00      | 11.35       | V            |
| 7800.0          | -50.98   | 5.38                 | 3.00     | 13.58                           | -42.78          | -25.00      | 17.78       | V            |

**LTE Band 41 Channel Bandwidth 10MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5300.0          | -45.5    | 4.45                 | 3.00     | 12.45                           | -37.5           | -25.00      | 12.5        | H            |
| 7950.0          | -49.85   | 5.47                 | 3.00     | 13.66                           | -41.66          | -25.00      | 16.66       | H            |
| 5300.0          | -43.74   | 4.45                 | 3.00     | 12.45                           | -35.74          | -25.00      | 10.74       | V            |
| 7950.0          | -51.57   | 5.48                 | 3.00     | 13.66                           | -43.39          | -25.00      | 18.39       | V            |

**LTE Band 41 Channel Bandwidth 15MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5125.0          | -42.19   | 4.39                 | 3.00     | 12.34                           | -34.24          | -25.00      | 9.24        | H            |
| 7687.5          | -51.89   | 5.31                 | 3.00     | 13.52                           | -43.68          | -25.00      | 18.68       | H            |
| 5125.0          | -43.8    | 4.39                 | 3.00     | 12.34                           | -35.85          | -25.00      | 10.85       | V            |
| 7687.5          | -54.1    | 5.31                 | 3.00     | 13.52                           | -45.89          | -25.00      | 20.89       | V            |

**LTE Band 41 Channel Bandwidth 15MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -42.27   | 4.41                 | 3.00     | 12.34                           | -34.34          | -25.00      | 9.34        | H            |
| 7800.0          | -50.14   | 5.38                 | 3.00     | 13.58                           | -41.94          | -25.00      | 16.94       | H            |
| 5200.0          | -44.47   | 4.41                 | 3.00     | 12.34                           | -36.54          | -25.00      | 11.54       | V            |
| 7800.0          | -50.99   | 5.38                 | 3.00     | 13.58                           | -42.79          | -25.00      | 17.79       | V            |

**LTE Band 41 Channel Bandwidth 15MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5295.0          | -44.9    | 4.45                 | 3.00     | 12.45                           | -36.9           | -25.00      | 11.9        | H            |
| 7942.5          | -49.48   | 5.47                 | 3.00     | 13.66                           | -41.29          | -25.00      | 16.29       | H            |
| 5295.0          | -43.94   | 4.45                 | 3.00     | 12.45                           | -35.94          | -25.00      | 10.94       | V            |
| 7942.5          | -51.91   | 5.48                 | 3.00     | 13.66                           | -43.73          | -25.00      | 18.73       | V            |

**LTE Band 41 Channel Bandwidth 20MHz 16QAM 1RB#0**

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5140.0          | -41.66   | 4.39                 | 3.00     | 12.34                           | -33.71          | -25.00      | 8.71        | H            |
| 7710.0          | -51.74   | 5.31                 | 3.00     | 13.52                           | -43.53          | -25.00      | 18.53       | H            |
| 5140.0          | -43.62   | 4.39                 | 3.00     | 12.34                           | -35.67          | -25.00      | 10.67       | V            |
| 7710.0          | -54.03   | 5.31                 | 3.00     | 13.52                           | -45.82          | -25.00      | 20.82       | V            |



*LTE Band 41 Channel Bandwidth 20MHz 16QAM 1RB#0*

| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5200.0          | -41.96   | 4.41                 | 3.00     | 12.34                           | -34.03          | -25.00      | 9.03        | H            |
| 7800.0          | -49.33   | 5.38                 | 3.00     | 13.58                           | -41.13          | -25.00      | 16.13       | H            |
| 5200.0          | -44.6    | 4.41                 | 3.00     | 12.34                           | -36.67          | -25.00      | 11.67       | V            |
| 7800.0          | -51.02   | 5.38                 | 3.00     | 13.58                           | -42.82          | -25.00      | 17.82       | V            |

*LTE Band 41 Channel Bandwidth 20MHz 16QAM 1RB#0*

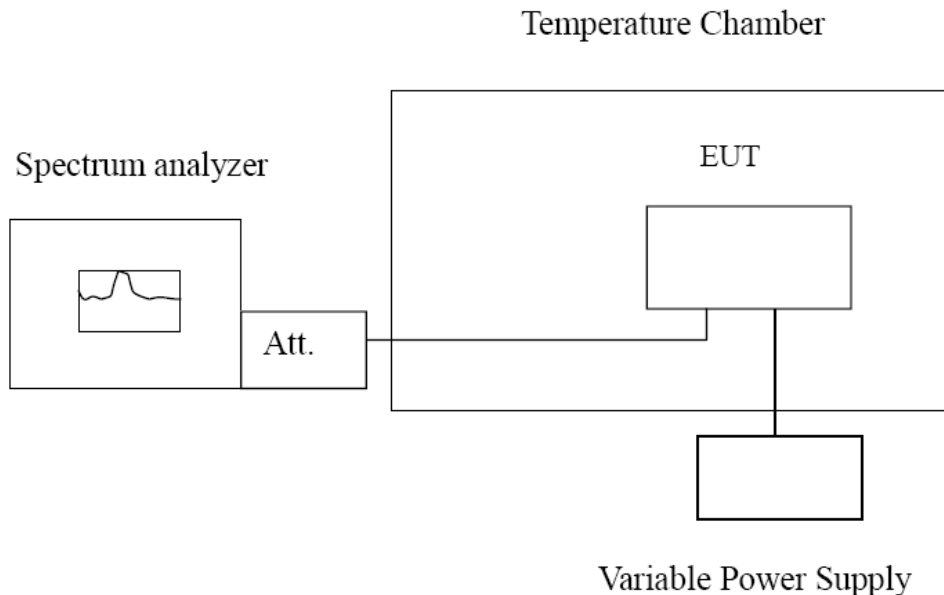
| Frequency (MHz) | Ps (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|----------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5280.0          | -45.15   | 4.45                 | 3.00     | 12.45                           | -37.15          | -25.00      | 12.15       | H            |
| 7920.0          | -49.73   | 5.47                 | 3.00     | 13.66                           | -41.54          | -25.00      | 16.54       | H            |
| 5280.0          | -43.94   | 4.45                 | 3.00     | 12.45                           | -35.94          | -25.00      | 10.94       | V            |
| 7920.0          | -51.83   | 5.48                 | 3.00     | 13.66                           | -43.65          | -25.00      | 18.65       | V            |

## 4.7 Frequency Stability

### LIMIT

According to §2.1055 requirement, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation and should not exceed 2.5ppm.

### TEST CONFIGURATION



### TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

#### **Frequency Stability Under Temperature Variations:**

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 41, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

#### **Frequency Stability Under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

**TEST RESULTS**

|                 |                         |              |                |
|-----------------|-------------------------|--------------|----------------|
| EUT:            | 4G Mobile phone         | Test Date:   | July 11, 2019  |
| Temperature:    | 25°C                    | Tested by:   | Gary Qian      |
| Humidity:       | 55 % RH                 | Test Voltage | Normal Voltage |
| Operation Mode: | Normal Voltage- Tx Mode |              |                |

*Remark:*

1. We tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case.

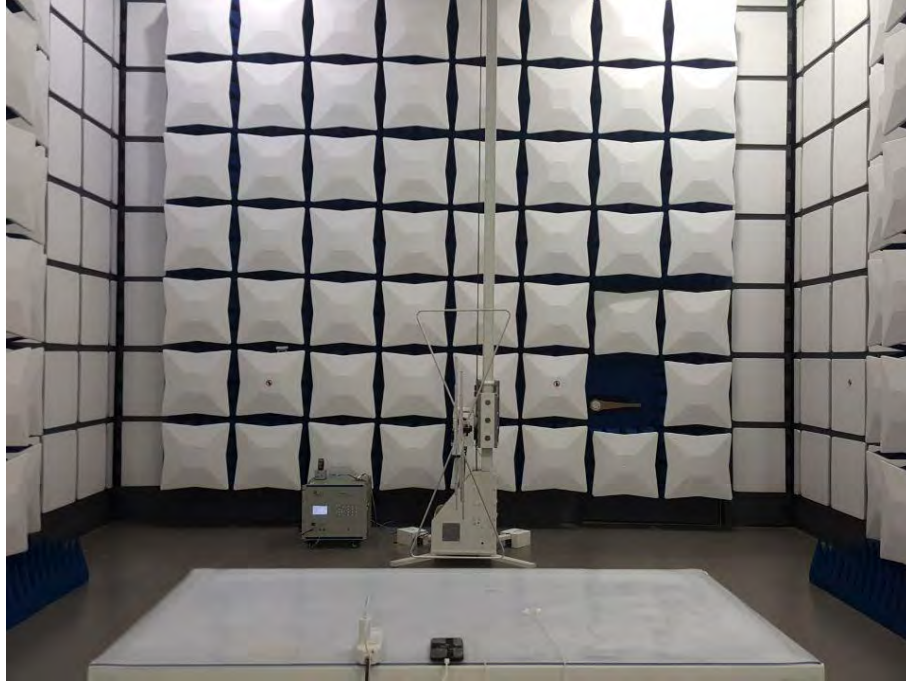
LTE Band 41\_5MHz bandwidth\_QPSK\_1RB#0 (worst case of all bandwidths)

| <b>LTE Band 41</b> |                  |                     |                      |             |         |
|--------------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power           | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 3.40               | 20               | 28                  | -0.006134            | 2.50        | PASS    |
| 3.70               | 20               | 32                  | -0.006412            | 2.50        | PASS    |
| 4.20               | 20               | 18                  | -0.006816            | 2.50        | PASS    |
| 3.70               | -30              | 27                  | -0.005726            | 2.50        | PASS    |
| 3.70               | -20              | 19                  | 0.013318             | 2.50        | PASS    |
| 3.70               | -10              | 15                  | -0.013524            | 2.50        | PASS    |
| 3.70               | 0                | 32                  | -0.005652            | 2.50        | PASS    |
| 3.70               | 10               | 19                  | 0.011701             | 2.50        | PASS    |
| 3.70               | 20               | 25                  | -0.014541            | 2.50        | PASS    |
| 3.70               | 30               | 29                  | -0.013084            | 2.50        | PASS    |
| 3.70               | 40               | 15                  | -0.006623            | 2.50        | PASS    |
| 3.70               | 50               | 21                  | -0.006367            | 2.50        | PASS    |

LTE Band 41\_5MHz bandwidth\_16QAM\_1RB#0 (worst case of all bandwidths)

| <b>LTE Band 41</b> |                  |                     |                      |             |         |
|--------------------|------------------|---------------------|----------------------|-------------|---------|
| DC Power           | Temperature (°C) | Frequency error(Hz) | Frequency error(ppm) | Limit (ppm) | Verdict |
| 3.40               | 20               | 34                  | -0.006748            | 2.50        | PASS    |
| 3.70               | 20               | 42                  | 0.009158             | 2.50        | PASS    |
| 4.20               | 20               | 57                  | 0.005364             | 2.50        | PASS    |
| 3.70               | -30              | 62                  | 0.005924             | 2.50        | PASS    |
| 3.70               | -20              | 32                  | 0.010887             | 2.50        | PASS    |
| 3.70               | -10              | 41                  | 0.007008             | 2.50        | PASS    |
| 3.70               | 0                | 32                  | -0.005887            | 2.50        | PASS    |
| 3.70               | 10               | 27                  | 0.011289             | 2.50        | PASS    |
| 3.70               | 20               | 23                  | -0.006738            | 2.50        | PASS    |
| 3.70               | 30               | 32                  | -0.005935            | 2.50        | PASS    |
| 3.70               | 40               | 23                  | 0.007421             | 2.50        | PASS    |
| 3.70               | 50               | 17                  | 0.006037             | 2.50        | PASS    |

## 5 Test Setup Photos of the EUT





## **6 External and Internal Photos of the EUT**

Reference to the report : ANNEX A of external photos and ANNEX B of internal photos

**\*\*\*\*\*End of Report\*\*\*\*\***