# FCC TEST REPORT

# (PART 27)

| | |
|---|---|
| Applicant: | Sonim Technologies, Inc. |
| Address: | 1825 S. Grant St., Suite 200., San Mateo, CA, 94402 |

| | |
|---|---|
| Manufacturer or Supplier | Sonim Technologies (Shenzhen) Limited |
| Address | 2nd Floor, No. 2 Building Phase B, Daqian Industrial park, Longchang Road, 67 District, Baoan, Shenzhen, P. R. China |
| Product | Mobile Phone |
| Brand Name | Sonim |
| Model Name | XP8800 |
| FCC ID | WYPPG4032 |
| Date of tests | Nov. 06, 2017 ~ Dec. 10, 2017 |

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 27, Subpart C, M** ☒ **ANSI/TIA/EIA-603-D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

| Prepared by Yuqiang Yin<br>Engineer / Mobile Department | Approved by Bill Yao<br>Manager / Mobile Department |
|---|---|
| Date: Dec. 25, 2017 | Date: Dec. 25, 2017 |

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

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# RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|---|---|---|
| RF170730W002-8 | Original release | Nov. 23, 2017 |
| RF171201W001-8 | Based on the original report RF170730W002-8 disable CDMA function. | Dec. 25, 2017 |

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 27 & Part 2 | | | |
|---|---|---|---|
| **STANDARD SECTION** | **TEST TYPE AND LIMIT** | **RESULT** | **REMARK** |
| 2.1046<br>27.50(h)(2) | Equivalent Isotropically Radiated Power | PASS | Meet the requirement of limit. |
| 2.1055<br>27.54 | Frequency Stability | PASS | Meet the requirement of limit. |
| 2.1049<br>27.53(m)(6) | Occupied Bandwidth | PASS | Meet the requirement of limit. |
| 27.50(d)(5) | Peak to average ratio | PASS | Meet the requirement of limit. |
| 2.1051<br>27.53(m)(4)(6) | Band Edge Measurements | PASS | Meet the requirement of limit. |
| 2.1051<br>27.53(m)(4)(6) | Conducted Spurious Emissions | PASS | Meet the requirement of limit. |
| 2.1053<br>27.53(m)(4)(6) | Radiated Spurious Emissions | PASS | Meet the requirement of limit.<br>Minimum passing margin is -4.38dB at 44.550MHz. |

## 1.1 MEASUREMENT UNCERTAINTY

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

| MEASUREMENT | FREQUENCY | UNCERTAINTY |
|---|---|---|
| Conducted emissions | 9kHz~30MHz | 2.66dB |
| Radiated emissions | 9KHz ~ 30MHz | 2.68dB |
| | 30MHz ~ 1GMHz | 3.26dB |
| | 1GHz ~ 18GHz | 4.48dB |
| | 18GHz ~ 40GHz | 4.12dB |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.2 TEST SITE AND INSTRUMENTS

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| MXE EMI Receiver | KEYSIGHT | N9038A-544 | MY54450026 | Mar. 01,17 | Feb. 28,18 |
| EXA Signal Analyzer | KEYSIGHT | N9010A-544 | MY54510332 | Mar. 01,17 | Feb. 28,18 |
| Bilog Antenna 1 | ETS-LINDGREN | 3143B | 00161964 | Nov. 26,16 | Nov. 25,18 |
| Bilog Antenna 2 | ETS-LINDGREN | 3143B | 00161965 | Nov. 26,16 | Nov. 25,18 |
| Horn Antenna 1 | ETS-LINDGREN | 3117 | 00168728 | Nov. 26,16 | Nov. 25,18 |
| Horn Antenna 2 | ETS-LINDGREN | 3117 | 00168692 | Nov. 26,16 | Nov. 25,18 |
| Loop antenna | Daze | ZN30900A | 0708 | Nov. 20,17 | Nov. 19,18 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K-SG/QMS-00361 | 15433 | Dec. 16,16 | Dec. 15,17 |
| Radio Communication Analyzer | ANRITSU | MT8820C | 6201465426 | Mar. 01,17 | Feb. 28,18 |
| Signal Pre-Amplifier | EMSI | EMC 9135 | 980249 | Jul. 24,17 | Jul. 23,18 |
| Signal Pre-Amplifier | EMSI | EMC 012645B | 980257 | Jul. 24,17 | Jul. 23,18 |
| Signal Pre-Amplifier | EMSI | EMC 184045B | 980259 | Jul. 24,17 | Jul. 23,18 |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 9m*6m*6m | Euroshieldpn-CT0001143-1216 | May 06,17 | May 05,18 |
| Test Software | E3 | V 9.160323 | N/A | N/A | N/A |
| Test Software | ADT | ADT_Radiated_V7.6.15.9.2 | N/A | N/A | N/A |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | Jul. 24,17 | Jul. 23,18 |
| Power Meter | Anritsu | ML2495A | 1506002 | Mar. 01,17 | Feb. 28,18 |
| Power Sensor | Anritsu | MA2411B | 1339352 | Mar. 01,17 | Feb. 28,18 |
| Humid & Temp Programmable Tester | Juyi | ITH-120-45-CP-AR | IAA1504-001 | Jul. 18,17 | Jul. 17,18 |
| MXG Analog Microvave Signal Generator | KEYSIGHT | N5183A | MY50143024 | Mar. 01,17 | Feb. 28,18 |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120.

# 2 GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

| | | |
|---|---|---|
| **PRODUCT** | Mobile Phone | |
| **MODEL NAME** | XP8800 | |
| **TYPE NUMBER** | PG4032/PG4033/PG4034/PG4035/PG4012/PG4041/PG4022 | |
| **POWER SUPPLY** | 5/9Vdc (adapter or host equipment)<br>3.85Vdc (Li-ion, battery) | |
| **MODULATION TECHNOLOGY** | **LTE Band 7** | QPSK, 16QAM, 64QAM |
| | **LTE Band 38** | QPSK, 16QAM, 64QAM |
| | **LTE Band 41** | QPSK, 16QAM, 64QAM |
| **FREQUENCY RANGE** | **LTE Band 7<br>Channel Bandwidth: 5MHz** | 2502.5MHz ~ 2567.5MHz |
| | **LTE Band 7<br>Channel Bandwidth: 10MHz** | 2505MHz ~ 2565MHz |
| | **LTE Band 7<br>Channel Bandwidth: 15MHz** | 2507.5MHz ~ 2562.5MHz |
| | **LTE Band 7<br>Channel Bandwidth: 20MHz** | 2510MHz ~ 2560MHz |
| | **LTE Band 38<br>Channel Bandwidth: 5MHz** | 2572.5MHz ~ 2617.5MHz |
| | **LTE Band 38<br>Channel Bandwidth: 10MHz** | 2575MHz ~ 2615MHz |
| | **LTE Band 38<br>Channel Bandwidth: 15MHz** | 2577.5MHz ~ 2612.5MHz |
| | **LTE Band 38<br>Channel Bandwidth: 20MHz** | 2580MHz ~ 2610MHz |
| | **LTE Band 41<br>Channel Bandwidth: 5MHz** | 2498.5MHz ~ 2687.5MHz |
| | **LTE Band 41<br>Channel Bandwidth: 10MHz** | 2501.0MHz ~ 2685.0MHz |
| | **LTE Band 41<br>Channel Bandwidth: 15MHz** | 2503.5MHz ~ 2682.5MHz |
| | **LTE Band 41<br>Channel Bandwidth: 20MHz** | 2506.0MHz ~ 2680.0MHz |
| **EMISSION DESIGNATOR** | **LTE Band 7<br>Channel Bandwidth: 5MHz** | QPSK: 4M49G7D |
| | | 16QAM: 4M47W7D |
| | | 64QAM: 4M49W7D |
| | **LTE Band 7<br>Channel Bandwidth: 10MHz** | QPSK: 8M95G7D |
| | | 16QAM: 8M95W7D |
| | | 64QAM: 8M95W7D |
| | **LTE Band 7<br>Channel Bandwidth: 15MHz** | QPSK: 13M4G7D |
| | | 16QAM: 13M4W7D |
| | | 64QAM: 13M4W7D |

| | | |
|---|---|---|
| EMISSION DESIGNATOR | LTE Band 7<br>Channel Bandwidth: 20MHz | QPSK: 18M0G7D |
| | | 16QAM: 17M9W7D |
| | | 64QAM: 17M9W7D |
| | LTE Band 38<br>Channel Bandwidth: 5MHz | QPSK: 4M48G7D |
| | | 16QAM: 4M48W7D |
| | | 64QAM: 4M49W7D |
| | LTE Band 38<br>Channel Bandwidth: 10MHz | QPSK: 8M94G7D |
| | | 16QAM: 8M94W7D |
| | | 64QAM: 8M95W7D |
| | LTE Band 38<br>Channel Bandwidth: 15MHz | QPSK: 13M4G7D |
| | | 16QAM: 13M4W7D |
| | | 64QAM: 13M4W7D |
| | LTE Band 38<br>Channel Bandwidth: 20MHz | QPSK: 17M9G7D |
| | | 16QAM: 17M9W7D |
| | | 64QAM: 17M9W7D |
| | LTE Band 41<br>Channel Bandwidth: 5MHz | QPSK: 4M48G7D |
| | | 16QAM: 4M48W7D |
| | | 64QAM: 4M49W7D |
| | LTE Band 41<br>Channel Bandwidth: 10MHz | QPSK: 8M93G7D |
| | | 16QAM: 8M94W7D |
| | | 64QAM: 8M94W7D |
| | LTE Band 41<br>Channel Bandwidth: 15MHz | QPSK: 13M4G7D |
| | | 16QAM: 13M4W7D |
| | | 64QAM: 13M4W7D |
| | LTE Band 41<br>Channel Bandwidth: 20MHz | QPSK: 17M9G7D |
| | | 16QAM: 17M9W7D |
| | | 64QAM: 17M9W7D |
| MAX. EIRP POWER | LTE Band 7<br>Channel Bandwidth: 5MHz | 373mW |
| | LTE Band 7<br>Channel Bandwidth: 10MHz | 403mW |
| | LTE Band 7<br>Channel Bandwidth: 15MHz | 423mW |
| | LTE Band 7<br>Channel Bandwidth: 20MHz | 355mW |
| | LTE Band 38<br>Channel Bandwidth: 5MHz | 222mW |
| | LTE Band 38<br>Channel Bandwidth: 10MHz | 236mW |
| | LTE Band 38<br>Channel Bandwidth: 15MHz | 237mW |
| | LTE Band 38<br>Channel Bandwidth: 20MHz | 209mW |

| | | |
|---|---|---|
| | **LTE Band 41<br>Channel Bandwidth: 5MHz** | 173mW |
| | **LTE Band 41<br>Channel Bandwidth: 10MHz** | 176mW |
| | **LTE Band 41<br>Channel Bandwidth: 15MHz** | 177mW |
| | **LTE Band 41<br>Channel Bandwidth: 20MHz** | 156mW |
| **ANTENNA TYPE** | Fixed Internal antenna | |
| **ANTENNA GAIN** | 0dBi gain for LTE Band 7<br>-1dBi gain for LTE Band 38/ LTE Band 41 | |
| **HW VERSION** | A | |
| **SW VERSION** | 8A.0.0-00-7.1.1-00.01.26 | |
| **I/O PORTS** | Refer to user's manual | |
| **DATA CABLE** | USB cable 1: With shield, detachable, 1.5meter<br>USB cable 2: non-shielded, detachable, 1.0meter | |

**NOTE**:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT was powered by the following adapter:

| **ADAPTER** | |
|---|---|
| **BRAND:** | Sonim |
| **MODEL:** | S42A02 |
| **INPUT:** | AC 100-240V, 500mA |
| **OUTPUT:** | DC 5V, 1500mA<br>DC 9V, 1500mA<br>DC 12V,1100mA |

3. The EUT matched the following USB cables:

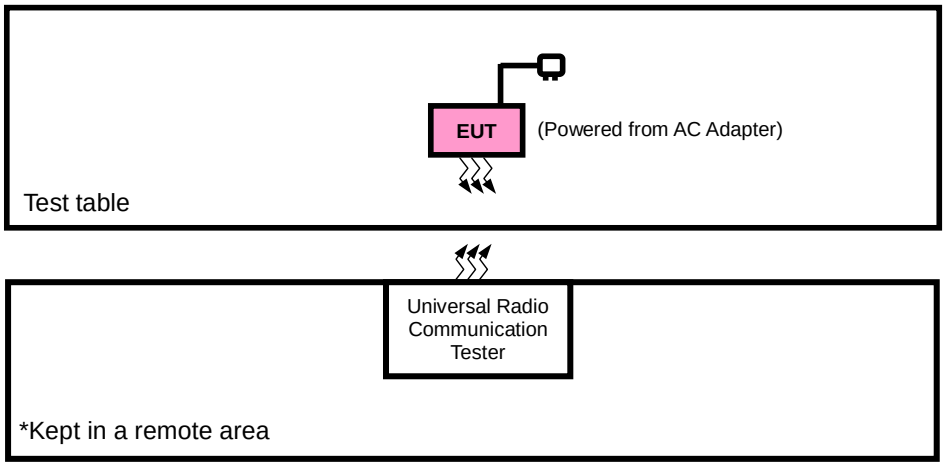
| **USB CABLE 1** | |
|---|---|
| **BRAND:** | N/A |
| **MODEL:** | N/A |
| **SIGNAL LINE:** | 1.5 METER |

| **USB CABLE 2** | |
|---|---|
| **BRAND:** | N/A |
| **MODEL:** | N/A |
| **SIGNAL LINE:** | 1.0 METER |

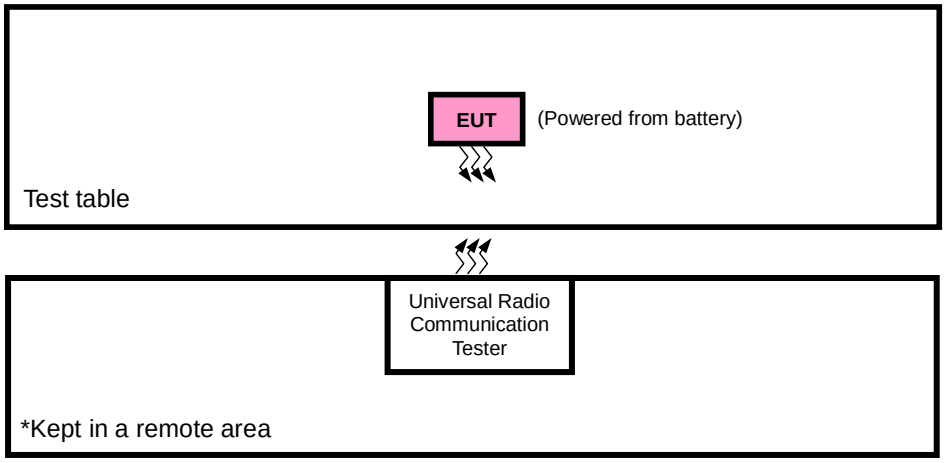
4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST




### FOR CONDUCTED & E.I.R.P TEST



## 2.3 DESCRIPTION OF SUPPORT UNITS

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

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | PC | HP | A6608CN | 3CR83825X3 | N/A |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | AC Line: Unshielded, Detachable 1.5m |

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

## 2.4 TEST ITEM AND TEST CONFIGURATION

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

| EUT CONFIGURE MODE | DESCRIPTION |
|---|---|
| **A** | **EUT + Adapter + USB Cable with LTE link** |
| B | EUT + Battery with **LTE link** |

## LTE BAND 7 MODE

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | CHANNEL BANDWIDTH | MODULATION | MODE |
|---|---|---|---|---|---|---|
| B | EIRP | 20775 to 21425 | 20775, 21100, 21425 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100, 21350 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | FREQUENCY STABILITY | 20775 to 21425 | 20775, 21425 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21400 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 20825 to 21375 | 20825, 21375 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21350 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| B | OCCUPIED BANDWIDTH | 20775 to 21425 | 20775, 21100, 21425 | 5MHz | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10MHz | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15MHz | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100, 21350 | 20MHz | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| B | PEAK TO AVERAGE RATIO | 20775 to 21425 | 20775, 21100, 21425 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100, 21350 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | BAND EDGE | 20775 to 21425 | 20775 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | | 21425 | 5MHz | QPSK | 1 RB / 24 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | | 21400 | 10MHz | QPSK | 1 RB / 49 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | 20825 to 21375 | 20825 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | | 21375 | 15MHz | QPSK | 1 RB / 74 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| | | | 21350 | 20MHz | QPSK | 1 RB / 99 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| B | CONDCUDETED EMISSION | 20775 to 21425 | 20775, 21100, 21425 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 20825 to 21375 | 20825, 21100, 21375 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 20850, 21100, 21350 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| A | RADIATED EMISSION | 20775 to 21425 | 21100 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20800 to 21400 | 20800, 21100, 21400 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 20825 to 21375 | 21100 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 20850 to 21350 | 21100 | 20MHz | QPSK | 1 RB / 0 RB Offset |

## LTE BAND 38 MODE

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | CHANNEL BANDWIDTH | MODULATION | MODE |
|---|---|---|---|---|---|---|
| B | EIRP | 37775 to 38225 | 37775, 38000, 38225 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38000, 38200 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 37825 to 38175 | 37825, 38000, 38175 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 37850 to38150 | 37850, 38000, 38150 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | FREQUENCY STABILITY | 37775 to 38225 | 37775, 38225 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38200 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 37825 to 38175 | 37825, 38175 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37850 to38150 | 37850, 38150 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| B | OCCUPIED BANDWIDTH | 37775 to 38225 | 37775, 38000, 38225 | 5MHz | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38000, 38200 | 10MHz | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 37825 to 38175 | 37825, 38000, 38175 | 15MHz | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 37850 to38150 | 37850, 38000, 38150 | 20MHz | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| B | PEAK TO AVERAGE RATIO | 37775 to 38225 | 37775, 38000, 38225 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38000, 38200 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 37825 to 38175 | 37825, 38000, 38175 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 37850 to38150 | 37850, 38000, 38150 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | BAND EDGE | 37775 to 38225 | 37775 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | | 38825 | 5MHz | QPSK | 1 RB / 24 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | | 38200 | 10MHz | QPSK | 1 RB / 49 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | 37825 to 38175 | 37825 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | | 38175 | 15MHz | QPSK | 1 RB / 74 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | 37850 to38150 | 37850 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| | | | 38150 | 20MHz | QPSK | 1 RB / 99 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| B | CONDCUDETED EMISSION | 37775 to 38225 | 37775, 38000, 38225 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38000, 38200 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 37825 to 38175 | 37825, 38000, 38175 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37850 to38150 | 37850, 38000, 38150 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| A | RADIATED EMISSION | 37775 to 38225 | 38000 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37800 to 38200 | 37800, 38000, 38200 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 37825 to 38175 | 38000 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 37850 to38150 | 38000 | 20MHz | QPSK | 1 RB / 0 RB Offset |

## LTE BAND 41 MODE

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | CHANNEL BANDWIDTH | MODULATION | MODE |
|---|---|---|---|---|---|---|
| B | EIRP | 39675 to 41565 | 39675, 40620, 41565 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | FREQUENCY STABILITY | 39675 to 41565 | 39675, 41565 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 41540 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 39725 to 41515 | 39725, 41515 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 41490 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| B | OCCUPIED BANDWIDTH | 39675 to 41565 | 39675, 40620, 41565 | 5MHz | QPSK, 16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10MHz | QPSK, 16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15MHz | QPSK, 16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20MHz | QPSK, 16QAM, 64QAM | 100 RB / 0 RB Offset |
| B | PEAK TO AVERAGE RATIO | 39675 to 41565 | 39675, 40620, 41565 | 5MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10MHz | QPSK, 16QAM, 64QAM | 1 RB / 0RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20MHz | QPSK, 16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | BAND EDGE | 39675 to 41565 | 39675 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | | 41565 | 5MHz | QPSK | 1 RB / 24 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | | 41540 | 10MHz | QPSK | 1 RB / 49 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | 39725 to 41515 | 39725 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | | 41515 | 15MHz | QPSK | 1 RB / 74 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| | | | 41490 | 20MHz | QPSK | 1 RB / 99 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| B | CONDCUDETED EMISSION | 39675 to 41565 | 39675, 40620, 41565 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 39725 to 41515 | 39725, 40620, 41515 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 39750, 40620, 41490 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| A | RADIATED EMISSION | 39675 to 41565 | 40620 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39700 to 41540 | 39700, 40620, 41540 | 10MHz | QPSK | 1 RB / 0RB Offset |
| | | 39725 to 41515 | 40620 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 39750 to 41490 | 40620 | 20MHz | QPSK | 1 RB / 0 RB Offset |

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

**TEST CONDITION:**

| TEST ITEM | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| EIRP | 24deg. C, 60%RH | 3.85Vdc from Battery | Simon Yang |
| FREQUENCY STABILITY | 24deg. C, 61%RH | DC 3.5V/3.85V/4.2V | Wenliang Wu |
| OCCUPIED BANDWIDTH | 24deg. C, 61%RH | 3.85Vdc from Battery | Wenliang Wu |
| PEAK TO AVERAGE RATIO | 24deg. C, 61%RH | 3.85Vdc from Battery | Wenliang Wu |
| BAND EDGE | 24deg. C, 61%RH | 3.85Vdc from Battery | Wenliang Wu |
| CONDCUDETED EMISSION | 24deg. C, 61%RH | 3.85Vdc from Battery | Wenliang Wu |
| RADIATED EMISSION | 24deg. C, 60%RH | DC 5/9V from adaptor | Simon Yang |

## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v03**

**ANSI/TIA/EIA-603-D**

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

**ANSI C63.26-2015**

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

# 3 TEST TYPES AND RESULTS

## 3.1 OUTPUT POWER MEASUREMENT

### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

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

### 3.1.2 TEST PROCEDURES

**EIRP MEASUREMENT:**

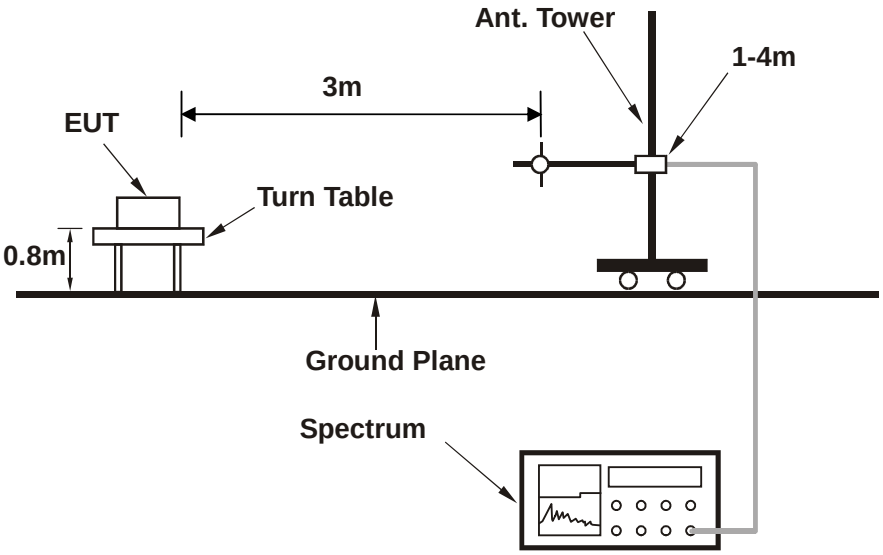
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step b. Record the power level of S.G.
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

**CONDUCTED POWER MEASUREMENT:**

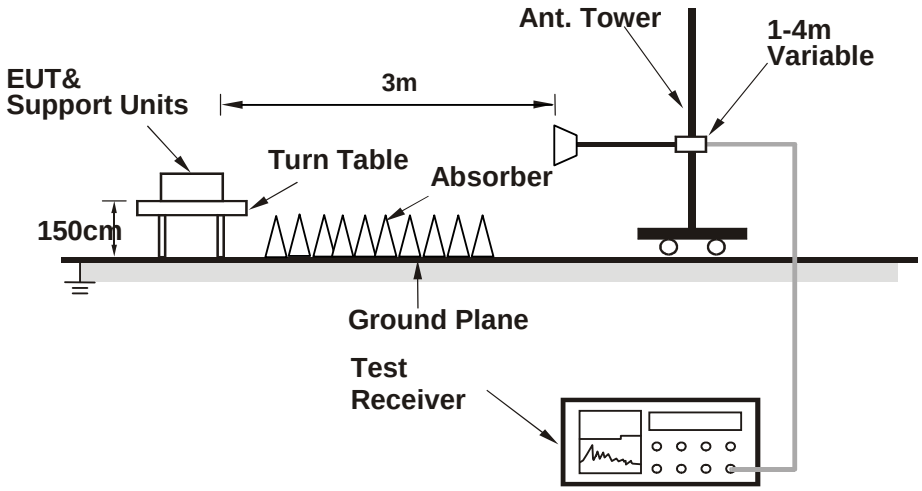
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

### 3.1.3 TEST SETUP

**ERP MEASUREMENT:**

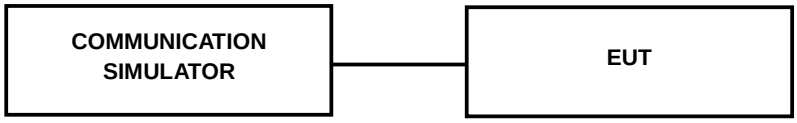



**EIRP MEASUREMENT:**




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

**CONDUCTED POWER MEASUREMENT:**




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

### 3.1.4 TEST RESULTS

**AVERAGE CONDUCTED OUTPUT POWER (dBm)**

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 20775 Frequency 2502.5 MHz | Mid CH 21100 Frequency 2535 MHz | High CH 21425 Frequency 2567.5 MHz | 3GPP MPR (dB) |
| 5MHz | QPSK | 1 | 0 | 22.39 | 22.48 | 22.51 | 0 |
| | | 1 | 12 | 22.33 | 22.42 | 22.45 | 0 |
| | | 1 | 24 | 22.22 | 22.31 | 22.34 | 0 |
| | | 12 | 0 | 21.51 | 21.60 | 21.63 | 1 |
| | | 12 | 6 | 21.47 | 21.56 | 21.59 | 1 |
| | | 12 | 13 | 21.42 | 21.51 | 21.54 | 1 |
| | | 25 | 0 | 21.50 | 21.59 | 21.62 | 1 |
| | 16QAM | 1 | 0 | 21.36 | 21.45 | 21.48 | 1 |
| | | 1 | 12 | 21.32 | 21.41 | 21.44 | 1 |
| | | 1 | 24 | 21.29 | 21.38 | 21.41 | 1 |
| | | 12 | 0 | 20.50 | 20.59 | 20.62 | 2 |
| | | 12 | 6 | 20.47 | 20.56 | 20.59 | 2 |
| | | 12 | 13 | 20.42 | 20.51 | 20.54 | 2 |
| | | 25 | 0 | 20.52 | 20.61 | 20.64 | 2 |
| | 64QAM | 1 | 0 | 20.37 | 20.46 | 20.49 | 2 |
| | | 1 | 12 | 20.34 | 20.43 | 20.46 | 2 |
| | | 1 | 24 | 20.30 | 20.39 | 20.42 | 2 |
| | | 12 | 0 | 19.42 | 19.51 | 19.54 | 3 |
| | | 12 | 6 | 19.37 | 19.46 | 19.49 | 3 |
| | | 12 | 13 | 19.34 | 19.43 | 19.46 | 3 |
| | | 25 | 0 | 19.54 | 19.63 | 19.66 | 3 |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 20800 Frequency 2505 MHz | Mid CH 21100 Frequency 2535 MHz | High CH 21400 Frequency 2565 MHz | 3GPP MPR (dB) |
| 10MHz | QPSK | 1 | 0 | 22.43 | 22.52 | 22.55 | 0 |
| | | 1 | 24 | 22.37 | 22.46 | 22.49 | 0 |
| | | 1 | 49 | 22.26 | 22.35 | 22.38 | 0 |
| | | 25 | 0 | 21.55 | 21.64 | 21.67 | 1 |
| | | 25 | 12 | 21.51 | 21.60 | 21.63 | 1 |
| | | 25 | 25 | 21.46 | 21.55 | 21.58 | 1 |
| | | 50 | 0 | 21.54 | 21.63 | 21.66 | 1 |
| | 16QAM | 1 | 0 | 21.40 | 21.49 | 21.52 | 1 |
| | | 1 | 24 | 21.36 | 21.45 | 21.48 | 1 |
| | | 1 | 49 | 21.33 | 21.42 | 21.45 | 1 |
| | | 25 | 0 | 20.54 | 20.63 | 20.66 | 2 |
| | | 25 | 12 | 20.51 | 20.60 | 20.63 | 2 |
| | | 25 | 25 | 20.46 | 20.55 | 20.58 | 2 |
| | | 50 | 0 | 20.56 | 20.65 | 20.68 | 2 |
| | 64QAM | 1 | 0 | 20.42 | 20.51 | 20.54 | 2 |
| | | 1 | 24 | 20.39 | 20.48 | 20.51 | 2 |
| | | 1 | 49 | 20.35 | 20.44 | 20.47 | 2 |
| | | 25 | 0 | 19.47 | 19.56 | 19.59 | 3 |
| | | 25 | 12 | 19.42 | 19.51 | 19.54 | 3 |
| | | 25 | 25 | 19.39 | 19.48 | 19.51 | 3 |
| | | 50 | 0 | 19.59 | 19.68 | 19.71 | 3 |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 20825 | Mid CH 21100 | High CH 21375 | 3GPP MPR (dB) |
| | | | | Frequency 2507.5 MHz | Frequency 2535 MHz | Frequency 2562.5 MHz | |
| 15MHz | QPSK | 1 | 0 | 22.49 | 22.58 | 22.61 | 0 |
| | | 1 | 37 | 22.43 | 22.52 | 22.55 | 0 |
| | | 1 | 74 | 22.32 | 22.41 | 22.44 | 0 |
| | | 36 | 0 | 21.61 | 21.70 | 21.73 | 1 |
| | | 36 | 19 | 21.57 | 21.66 | 21.69 | 1 |
| | | 36 | 39 | 21.52 | 21.61 | 21.64 | 1 |
| | | 75 | 0 | 21.60 | 21.69 | 21.72 | 1 |
| | 16QAM | 1 | 0 | 21.46 | 21.55 | 21.58 | 1 |
| | | 1 | 37 | 21.42 | 21.51 | 21.54 | 1 |
| | | 1 | 74 | 21.39 | 21.48 | 21.51 | 1 |
| | | 36 | 0 | 20.60 | 20.69 | 20.72 | 2 |
| | | 36 | 19 | 20.57 | 20.66 | 20.69 | 2 |
| | | 36 | 39 | 20.52 | 20.61 | 20.64 | 2 |
| | | 75 | 0 | 20.62 | 20.71 | 20.74 | 2 |
| | 64QAM | 1 | 0 | 20.47 | 20.56 | 20.59 | 2 |
| | | 1 | 37 | 20.44 | 20.53 | 20.56 | 2 |
| | | 1 | 74 | 20.40 | 20.49 | 20.52 | 2 |
| | | 36 | 0 | 19.52 | 19.61 | 19.64 | 3 |
| | | 36 | 19 | 19.47 | 19.56 | 19.59 | 3 |
| | | 36 | 39 | 19.44 | 19.53 | 19.56 | 3 |
| | | 75 | 0 | 19.64 | 19.73 | 19.76 | 3 |

| LTE Band 7 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 20850 Frequency 2510 MHz | Mid CH 21100 Frequency 2535 MHz | High CH 21350 Frequency 2560 MHz | 3GPP MPR (dB) |
| 20MHz | QPSK | 1 | 0 | 22.52 | 22.61 | **22.64** | 0 |
| | | 1 | 50 | 22.46 | 22.55 | 22.58 | 0 |
| | | 1 | 99 | 22.35 | 22.44 | 22.47 | 0 |
| | | 50 | 0 | 21.64 | 21.73 | 21.76 | 1 |
| | | 50 | 25 | 21.60 | 21.69 | 21.72 | 1 |
| | | 50 | 50 | 21.55 | 21.64 | 21.67 | 1 |
| | | 100 | 0 | 21.63 | 21.72 | 21.75 | 1 |
| | 16QAM | 1 | 0 | 21.49 | 21.58 | 21.61 | 1 |
| | | 1 | 50 | 21.45 | 21.54 | 21.57 | 1 |
| | | 1 | 99 | 21.42 | 21.51 | 21.54 | 1 |
| | | 50 | 0 | 20.63 | 20.72 | 20.75 | 2 |
| | | 50 | 25 | 20.60 | 20.69 | 20.72 | 2 |
| | | 50 | 50 | 20.55 | 20.64 | 20.67 | 2 |
| | | 100 | 0 | 20.65 | 20.74 | 20.77 | 2 |
| | 64QAM | 1 | 0 | 20.52 | 20.61 | 20.64 | 2 |
| | | 1 | 50 | 20.49 | 20.58 | 20.61 | 2 |
| | | 1 | 99 | 20.45 | 20.54 | 20.57 | 2 |
| | | 50 | 0 | 19.57 | 19.66 | 19.69 | 3 |
| | | 50 | 25 | 19.52 | 19.61 | 19.64 | 3 |
| | | 50 | 50 | 19.49 | 19.58 | 19.61 | 3 |
| | | 100 | 0 | 19.69 | 19.78 | 19.81 | 3 |

| LTE Band 38 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 37775 Frequency 2572.5 MHz | Mid CH 38000 Frequency 2595 MHz | High CH 38225 Frequency 2617.5MHz | 3GPP MPR (dB) |
| 5MHz | QPSK | 1 | 0 | 22.62 | 22.79 | 22.83 | 0 |
| | | 1 | 12 | 22.55 | 22.72 | 22.76 | 0 |
| | | 1 | 24 | 22.50 | 22.67 | 22.71 | 0 |
| | | 12 | 0 | 21.72 | 21.89 | 21.93 | 1 |
| | | 12 | 6 | 21.70 | 21.87 | 21.91 | 1 |
| | | 12 | 13 | 21.67 | 21.84 | 21.88 | 1 |
| | | 25 | 0 | 21.72 | 21.89 | 21.93 | 1 |
| | 16QAM | 1 | 0 | 21.67 | 21.84 | 21.88 | 1 |
| | | 1 | 12 | 21.62 | 21.79 | 21.83 | 1 |
| | | 1 | 24 | 21.55 | 21.72 | 21.76 | 1 |
| | | 12 | 0 | 20.77 | 20.94 | 20.98 | 2 |
| | | 12 | 6 | 20.82 | 20.99 | 21.03 | 2 |
| | | 12 | 13 | 20.74 | 20.91 | 20.95 | 2 |
| | | 25 | 0 | 20.44 | 20.61 | 20.65 | 2 |
| | 64QAM | 1 | 0 | 20.56 | 20.73 | 20.77 | 2 |
| | | 1 | 12 | 20.51 | 20.68 | 20.72 | 2 |
| | | 1 | 24 | 20.46 | 20.63 | 20.67 | 2 |
| | | 12 | 0 | 19.75 | 19.92 | 19.96 | 3 |
| | | 12 | 6 | 19.73 | 19.90 | 19.94 | 3 |
| | | 12 | 13 | 19.69 | 19.86 | 19.90 | 3 |
| | | 25 | 0 | 19.73 | 19.90 | 19.94 | 3 |

| LTE Band 38 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 37800 Frequency 2575 MHz | Mid CH 38000 Frequency 2595 MHz | High CH 38200 Frequency 2615 MHz | 3GPP MPR (dB) |
| 10MHz | QPSK | 1 | 0 | 22.66 | 22.83 | 22.87 | 0 |
| | | 1 | 24 | 22.59 | 22.76 | 22.80 | 0 |
| | | 1 | 49 | 22.54 | 22.71 | 22.75 | 0 |
| | | 25 | 0 | 21.76 | 21.93 | 21.97 | 1 |
| | | 25 | 12 | 21.74 | 21.91 | 21.95 | 1 |
| | | 25 | 25 | 21.71 | 21.88 | 21.92 | 1 |
| | | 50 | 0 | 21.76 | 21.93 | 21.97 | 1 |
| | 16QAM | 1 | 0 | 21.71 | 21.88 | 21.92 | 1 |
| | | 1 | 24 | 21.66 | 21.83 | 21.87 | 1 |
| | | 1 | 49 | 21.59 | 21.76 | 21.80 | 1 |
| | | 25 | 0 | 20.81 | 20.98 | 21.02 | 2 |
| | | 25 | 12 | 20.86 | 21.03 | 21.07 | 2 |
| | | 25 | 25 | 20.78 | 20.95 | 20.99 | 2 |
| | | 50 | 0 | 20.48 | 20.65 | 20.69 | 2 |
| | 64QAM | 1 | 0 | 20.61 | 20.78 | 20.82 | 2 |
| | | 1 | 24 | 20.56 | 20.73 | 20.77 | 2 |
| | | 1 | 49 | 20.51 | 20.68 | 20.72 | 2 |
| | | 25 | 0 | 19.80 | 19.97 | 20.01 | 3 |
| | | 25 | 12 | 19.78 | 19.95 | 19.99 | 3 |
| | | 25 | 25 | 19.74 | 19.91 | 19.95 | 3 |
| | | 50 | 0 | 19.78 | 19.95 | 19.99 | 3 |

| LTE Band 38 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 37825 | Mid CH 38000 | High CH 38175 | 3GPP MPR (dB) |
| | | | | Frequency 2577.5 MHz | Frequency 2595 MHz | Frequency 2612.5MHz | |
| 15MHz | QPSK | 1 | 0 | 22.69 | 22.86 | 22.90 | 0 |
| | | 1 | 37 | 22.62 | 22.79 | 22.83 | 0 |
| | | 1 | 74 | 22.57 | 22.74 | 22.78 | 0 |
| | | 36 | 0 | 21.79 | 21.96 | 22.00 | 1 |
| | | 36 | 19 | 21.77 | 21.94 | 21.98 | 1 |
| | | 36 | 39 | 21.74 | 21.91 | 21.95 | 1 |
| | | 75 | 0 | 21.79 | 21.96 | 22.00 | 1 |
| | 16QAM | 1 | 0 | 21.74 | 21.91 | 21.95 | 1 |
| | | 1 | 37 | 21.69 | 21.86 | 21.90 | 1 |
| | | 1 | 74 | 21.62 | 21.79 | 21.83 | 1 |
| | | 36 | 0 | 20.84 | 21.01 | 21.05 | 2 |
| | | 36 | 19 | 20.89 | 21.06 | 21.10 | 2 |
| | | 36 | 39 | 20.81 | 20.98 | 21.02 | 2 |
| | | 75 | 0 | 20.51 | 20.68 | 20.72 | 2 |
| | 64QAM | 1 | 0 | 20.66 | 20.83 | 20.87 | 2 |
| | | 1 | 37 | 20.61 | 20.78 | 20.82 | 2 |
| | | 1 | 74 | 20.56 | 20.73 | 20.77 | 2 |
| | | 36 | 0 | 19.85 | 20.02 | 20.06 | 3 |
| | | 36 | 19 | 19.83 | 20.00 | 20.04 | 3 |
| | | 36 | 39 | 19.79 | 19.96 | 20.00 | 3 |
| | | 75 | 0 | 19.83 | 20.00 | 20.04 | 3 |

| LTE Band 38 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH 37850 Frequency 2580 MHz | Mid CH 38000 Frequency 2595 MHz | High CH 38150 Frequency 2610 MHz | 3GPP MPR (dB) |
| 20MHz | QPSK | 1 | 0 | 22.76 | 22.93 | **22.97** | 0 |
| | | 1 | 50 | 22.69 | 22.86 | 22.90 | 0 |
| | | 1 | 99 | 22.64 | 22.81 | 22.85 | 0 |
| | | 50 | 0 | 21.86 | 22.03 | 22.07 | 1 |
| | | 50 | 25 | 21.84 | 22.01 | 22.05 | 1 |
| | | 50 | 50 | 21.81 | 21.98 | 22.02 | 1 |
| | | 100 | 0 | 21.86 | 22.03 | 22.07 | 1 |
| | 16QAM | 1 | 0 | 21.81 | 21.98 | 22.02 | 1 |
| | | 1 | 50 | 21.76 | 21.93 | 21.97 | 1 |
| | | 1 | 99 | 21.69 | 21.86 | 21.90 | 1 |
| | | 50 | 0 | 20.91 | 21.08 | 21.12 | 2 |
| | | 50 | 25 | 20.96 | 21.13 | 21.17 | 2 |
| | | 50 | 50 | 20.88 | 21.05 | 21.09 | 2 |
| | | 100 | 0 | 20.58 | 20.75 | 20.79 | 2 |
| | 64QAM | 1 | 0 | 20.71 | 20.88 | 20.92 | 2 |
| | | 1 | 50 | 20.66 | 20.83 | 20.87 | 2 |
| | | 1 | 99 | 20.61 | 20.78 | 20.82 | 2 |
| | | 50 | 0 | 19.90 | 20.07 | 20.11 | 3 |
| | | 50 | 25 | 19.88 | 20.05 | 20.09 | 3 |
| | | 50 | 50 | 19.84 | 20.01 | 20.05 | 3 |
| | | 100 | 0 | 19.88 | 20.05 | 20.09 | 3 |

| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH (39675) Frequency (2498.5)MHz | Low CH (40148) Frequency (2545.8)MHz | Mid CH (40620) Frequency (2593)MHz | High CH (41093) Frequency (2640.3)MHz | High CH (41565) Frequency (2687.5)MHz | 3GPP MPR (dB) |
| 5MHz | QPSK | 1 | 0 | 23.51 | 23.52 | 23.83 | 23.77 | 23.93 | 0 |
| | | 1 | 12 | 23.46 | 23.47 | 23.78 | 23.72 | 23.88 | 0 |
| | | 1 | 24 | 23.41 | 23.42 | 23.73 | 23.67 | 23.83 | 0 |
| | | 12 | 0 | 22.78 | 22.79 | 23.10 | 23.04 | 23.20 | 1 |
| | | 12 | 6 | 22.75 | 22.76 | 23.07 | 23.01 | 23.17 | 1 |
| | | 12 | 13 | 22.72 | 22.73 | 23.04 | 22.98 | 23.14 | 1 |
| | | 25 | 0 | 22.75 | 22.76 | 23.07 | 23.01 | 23.17 | 1 |
| | 16QAM | 1 | 0 | 22.40 | 22.41 | 22.72 | 22.66 | 22.82 | 1 |
| | | 1 | 12 | 22.39 | 22.40 | 22.71 | 22.65 | 22.81 | 1 |
| | | 1 | 24 | 22.35 | 22.36 | 22.67 | 22.61 | 22.77 | 1 |
| | | 12 | 0 | 21.78 | 21.79 | 22.10 | 22.04 | 22.20 | 2 |
| | | 12 | 6 | 21.75 | 21.76 | 22.07 | 22.01 | 22.17 | 2 |
| | | 12 | 13 | 21.70 | 21.71 | 22.02 | 21.96 | 22.12 | 2 |
| | | 25 | 0 | 21.72 | 21.73 | 22.04 | 21.98 | 22.14 | 2 |
| | 64QAM | 1 | 0 | 21.35 | 21.36 | 21.67 | 21.61 | 21.77 | 2 |
| | | 1 | 12 | 21.32 | 21.33 | 21.64 | 21.58 | 21.74 | 2 |
| | | 1 | 24 | 21.29 | 21.30 | 21.61 | 21.55 | 21.71 | 2 |
| | | 12 | 0 | 20.39 | 20.40 | 20.71 | 20.65 | 20.81 | 3 |
| | | 12 | 6 | 20.35 | 20.36 | 20.67 | 20.61 | 20.77 | 3 |
| | | 12 | 13 | 20.29 | 20.30 | 20.61 | 20.55 | 20.71 | 3 |
| | | 25 | 0 | 20.28 | 20.29 | 20.60 | 20.54 | 20.70 | 3 |

| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH (39700) Frequency (2501)MHz | Low CH (40160) Frequency (2547)MHz | Mid CH (40620) Frequency (2593)MHz | High CH (41080) Frequency (2639)MHz | High CH (41540) Frequency (2685)MHz | 3GPP MPR (dB) |
| 10MHz | QPSK | 1 | 0 | 23.54 | 23.55 | 23.86 | 23.80 | 23.96 | 0 |
| | | 1 | 24 | 23.49 | 23.50 | 23.81 | 23.75 | 23.91 | 0 |
| | | 1 | 49 | 23.44 | 23.45 | 23.76 | 23.70 | 23.86 | 0 |
| | | 25 | 0 | 22.81 | 22.82 | 23.13 | 23.07 | 23.23 | 1 |
| | | 25 | 12 | 22.78 | 22.79 | 23.10 | 23.04 | 23.20 | 1 |
| | | 25 | 25 | 22.75 | 22.76 | 23.07 | 23.01 | 23.17 | 1 |
| | | 50 | 0 | 22.78 | 22.79 | 23.10 | 23.04 | 23.20 | 1 |
| | 16QAM | 1 | 0 | 22.43 | 22.44 | 22.75 | 22.69 | 22.85 | 1 |
| | | 1 | 24 | 22.42 | 22.43 | 22.74 | 22.68 | 22.84 | 1 |
| | | 1 | 49 | 22.38 | 22.39 | 22.70 | 22.64 | 22.80 | 1 |
| | | 25 | 0 | 21.81 | 21.82 | 22.13 | 22.07 | 22.23 | 2 |
| | | 25 | 12 | 21.78 | 21.79 | 22.10 | 22.04 | 22.20 | 2 |
| | | 25 | 25 | 21.73 | 21.74 | 22.05 | 21.99 | 22.15 | 2 |
| | | 50 | 0 | 21.75 | 21.76 | 22.07 | 22.01 | 22.17 | 2 |
| | 64QAM | 1 | 0 | 21.40 | 21.41 | 21.72 | 21.66 | 21.82 | 2 |
| | | 1 | 24 | 21.37 | 21.38 | 21.69 | 21.63 | 21.79 | 2 |
| | | 1 | 49 | 21.34 | 21.35 | 21.66 | 21.60 | 21.76 | 2 |
| | | 25 | 0 | 20.44 | 20.45 | 20.76 | 20.70 | 20.86 | 3 |
| | | 25 | 12 | 20.40 | 20.41 | 20.72 | 20.66 | 20.82 | 3 |
| | | 25 | 25 | 20.34 | 20.35 | 20.66 | 20.60 | 20.76 | 3 |
| | | 50 | 0 | 20.33 | 20.34 | 20.65 | 20.59 | 20.75 | 3 |

| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH (39725) Frequency (2503.5)MHz | Low CH (40173) Frequency (2548.3)MHz | Mid CH (40620) Frequency (2593)MHz | High CH (41068) Frequency (2637.8)MHz | High CH (41515) Frequency (2682.5)MHz | 3GPP MPR (dB) |
| 15MHz | QPSK | 1 | 0 | 23.58 | 23.59 | 23.90 | 23.84 | 24.00 | 0 |
| | | 1 | 37 | 23.53 | 23.54 | 23.85 | 23.79 | 23.95 | 0 |
| | | 1 | 74 | 23.48 | 23.49 | 23.80 | 23.74 | 23.90 | 0 |
| | | 36 | 0 | 22.85 | 22.86 | 23.17 | 23.11 | 23.27 | 1 |
| | | 36 | 19 | 22.82 | 22.83 | 23.14 | 23.08 | 23.24 | 1 |
| | | 36 | 39 | 22.79 | 22.80 | 23.11 | 23.05 | 23.21 | 1 |
| | | 75 | 0 | 22.82 | 22.83 | 23.14 | 23.08 | 23.24 | 1 |
| | 16QAM | 1 | 0 | 22.47 | 22.48 | 22.79 | 22.73 | 22.89 | 1 |
| | | 1 | 37 | 22.46 | 22.47 | 22.78 | 22.72 | 22.88 | 1 |
| | | 1 | 74 | 22.42 | 22.43 | 22.74 | 22.68 | 22.84 | 1 |
| | | 36 | 0 | 21.85 | 21.86 | 22.17 | 22.11 | 22.27 | 2 |
| | | 36 | 19 | 21.82 | 21.83 | 22.14 | 22.08 | 22.24 | 2 |
| | | 36 | 39 | 21.77 | 21.78 | 22.09 | 22.03 | 22.19 | 2 |
| | | 75 | 0 | 21.79 | 21.80 | 22.11 | 22.05 | 22.21 | 2 |
| | 64QAM | 1 | 0 | 21.45 | 21.46 | 21.77 | 21.71 | 21.87 | 2 |
| | | 1 | 37 | 21.42 | 21.43 | 21.74 | 21.68 | 21.84 | 2 |
| | | 1 | 74 | 21.39 | 21.40 | 21.71 | 21.65 | 21.81 | 2 |
| | | 36 | 0 | 20.49 | 20.50 | 20.81 | 20.75 | 20.91 | 3 |
| | | 36 | 19 | 20.45 | 20.46 | 20.77 | 20.71 | 20.87 | 3 |
| | | 36 | 39 | 20.39 | 20.40 | 20.71 | 20.65 | 20.81 | 3 |
| | | 75 | 0 | 20.38 | 20.39 | 20.70 | 20.64 | 20.80 | 3 |

| LTE Band 41 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BW | Modulation | RB Size | RB Offset | Low CH (39750) Frequency (2506)MHz | Low CH (40185) Frequency (2549.5)MHz | Mid CH (40620) Frequency (2593)MHz | High CH (41055) Frequency (2636.5)MHz | High CH (41490) Frequency (2680)MHz | 3GPP MPR (dB) |
| 20MHz | QPSK | 1 | 0 | 23.64 | 23.65 | 23.96 | 23.90 | **24.06** | 0 |
| | | 1 | 50 | 23.59 | 23.60 | 23.91 | 23.85 | 24.01 | 0 |
| | | 1 | 99 | 23.54 | 23.55 | 23.86 | 23.80 | 23.96 | 0 |
| | | 50 | 0 | 22.91 | 22.92 | 23.23 | 23.17 | 23.33 | 1 |
| | | 50 | 25 | 22.88 | 22.89 | 23.20 | 23.14 | 23.30 | 1 |
| | | 50 | 50 | 22.85 | 22.86 | 23.17 | 23.11 | 23.27 | 1 |
| | | 100 | 0 | 22.88 | 22.89 | 23.20 | 23.14 | 23.30 | 1 |
| | 16QAM | 1 | 0 | 22.53 | 22.54 | 22.85 | 22.79 | 22.95 | 1 |
| | | 1 | 50 | 22.52 | 22.53 | 22.84 | 22.78 | 22.94 | 1 |
| | | 1 | 99 | 22.48 | 22.49 | 22.80 | 22.74 | 22.90 | 1 |
| | | 50 | 0 | 21.91 | 21.92 | 22.23 | 22.17 | 22.33 | 2 |
| | | 50 | 25 | 21.88 | 21.89 | 22.20 | 22.14 | 22.30 | 2 |
| | | 50 | 50 | 21.83 | 21.84 | 22.15 | 22.09 | 22.25 | 2 |
| | | 100 | 0 | 21.85 | 21.86 | 22.17 | 22.11 | 22.27 | 2 |
| | 64QAM | 1 | 0 | 21.50 | 21.51 | 21.82 | 21.76 | 21.92 | 2 |
| | | 1 | 50 | 21.47 | 21.48 | 21.79 | 21.73 | 21.89 | 2 |
| | | 1 | 99 | 21.44 | 21.45 | 21.76 | 21.70 | 21.86 | 2 |
| | | 50 | 0 | 20.54 | 20.55 | 20.86 | 20.80 | 20.96 | 3 |
| | | 50 | 25 | 20.50 | 20.51 | 20.82 | 20.76 | 20.92 | 3 |
| | | 50 | 50 | 20.44 | 20.45 | 20.76 | 20.70 | 20.86 | 3 |
| | | 100 | 0 | 20.43 | 20.44 | 20.75 | 20.69 | 20.85 | 3 |

## EIRP

### LTE BAND 7

### CHANNEL BANDWIDTH: 5MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20775 | 2502.5 | -21.33 | 45.65 | 24.32 | 270.27 | H | 2 |
| 21100 | 2535.0 | -21.99 | 46.04 | 24.05 | 253.80 | H | 2 |
| 21425 | 2567.5 | -22.17 | 45.87 | 23.70 | 234.21 | H | 2 |
| 20775 | 2502.5 | -21.31 | 47.03 | 25.72 | **373.08** | V | 2 |
| 21100 | 2535.0 | -21.67 | 46.57 | 24.90 | 309.03 | V | 2 |
| 21425 | 2567.5 | -22.03 | 46.98 | 24.95 | 312.61 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20775 | 2502.5 | -22.16 | 45.65 | 23.49 | 223.25 | H | 2 |
| 21100 | 2535.0 | -23.01 | 46.04 | 23.03 | 200.68 | H | 2 |
| 21425 | 2567.5 | -23.27 | 45.87 | 22.60 | 181.80 | H | 2 |
| 20775 | 2502.5 | -22.14 | 47.03 | 24.89 | 308.18 | V | 2 |
| 21100 | 2535.0 | -22.69 | 46.57 | 23.88 | 244.34 | V | 2 |
| 21425 | 2567.5 | -23.13 | 46.98 | 23.85 | 242.66 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20775 | 2502.5 | -23.03 | 45.65 | 22.62 | 182.73 | H | 2 |
| 21100 | 2535.0 | -23.51 | 46.04 | 22.53 | 178.85 | H | 2 |
| 21425 | 2567.5 | -22.90 | 45.87 | 22.97 | 197.97 | H | 2 |
| 20775 | 2502.5 | -23.91 | 47.03 | 23.12 | 205.02 | V | 2 |
| 21100 | 2535.0 | -23.76 | 46.57 | 22.81 | 190.99 | V | 2 |
| 21425 | 2567.5 | -23.34 | 46.98 | 23.64 | 231.21 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20800 | 2505.0 | -21.14 | 45.65 | 24.51 | 282.42 | H | 2 |
| 21100 | 2535.0 | -21.93 | 46.04 | 24.11 | 257.34 | H | 2 |
| 21400 | 2565.0 | -22.04 | 46.07 | 24.03 | 252.64 | H | 2 |
| 20800 | 2505.0 | -21.12 | 47.18 | 26.06 | **403.27** | V | 2 |
| 21100 | 2535.0 | -21.61 | 46.57 | 24.96 | 313.33 | V | 2 |
| 21400 | 2565.0 | -21.90 | 47.06 | 25.16 | 328.40 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20800 | 2505.0 | -22.29 | 45.65 | 23.36 | 216.72 | H | 2 |
| 21100 | 2535.0 | -23.03 | 46.04 | 23.01 | 199.76 | H | 2 |
| 21400 | 2565.0 | -23.20 | 46.07 | 22.87 | 193.42 | H | 2 |
| 20800 | 2505.0 | -22.27 | 47.18 | 24.91 | 309.46 | V | 2 |
| 21100 | 2535.0 | -22.71 | 46.57 | 23.86 | 243.22 | V | 2 |
| 21400 | 2565.0 | -23.06 | 47.06 | 24.00 | 251.42 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20800 | 2505.0 | -22.84 | 45.65 | 22.81 | 190.94 | H | 2 |
| 21100 | 2535.0 | -23.45 | 46.04 | 22.59 | 181.34 | H | 2 |
| 21400 | 2565.0 | -22.77 | 46.07 | 23.30 | 213.55 | H | 2 |
| 20800 | 2505.0 | -23.72 | 47.18 | 23.46 | 221.62 | V | 2 |
| 21100 | 2535.0 | -23.70 | 46.57 | 22.87 | 193.64 | V | 2 |
| 21400 | 2565.0 | -23.21 | 47.06 | 23.85 | 242.88 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20825 | 2507.5 | -21.15 | 45.63 | 24.48 | 280.74 | H | 2 |
| 21100 | 2535.0 | -22.00 | 46.04 | 24.04 | 253.22 | H | 2 |
| 21375 | 2562.5 | -22.11 | 45.94 | 23.83 | 241.43 | H | 2 |
| 20825 | 2507.5 | -21.13 | 47.39 | 26.26 | **422.57** | V | 2 |
| 21100 | 2535.0 | -21.68 | 46.57 | 24.89 | 308.32 | V | 2 |
| 21375 | 2562.5 | -21.97 | 47.00 | 25.03 | 318.35 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20825 | 2507.5 | -22.01 | 45.63 | 23.62 | 230.30 | H | 2 |
| 21100 | 2535.0 | -22.87 | 46.04 | 23.17 | 207.25 | H | 2 |
| 21375 | 2562.5 | -22.96 | 45.94 | 22.98 | 198.52 | H | 2 |
| 20825 | 2507.5 | -21.99 | 47.39 | 25.40 | 346.66 | V | 2 |
| 21100 | 2535.0 | -22.55 | 46.57 | 24.02 | 252.35 | V | 2 |
| 21375 | 2562.5 | -22.82 | 47.00 | 24.18 | 261.76 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20825 | 2507.5 | -22.85 | 45.63 | 22.78 | 189.80 | H | 2 |
| 21100 | 2535.0 | -23.52 | 46.04 | 22.52 | 178.44 | H | 2 |
| 21375 | 2562.5 | -22.84 | 45.94 | 23.10 | 204.08 | H | 2 |
| 20825 | 2507.5 | -23.73 | 47.39 | 23.66 | 232.22 | V | 2 |
| 21100 | 2535.0 | -23.77 | 46.57 | 22.80 | 190.55 | V | 2 |
| 21375 | 2562.5 | -23.28 | 47.00 | 23.72 | 235.45 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20850 | 2510.0 | -21.73 | 45.80 | 24.07 | 255.21 | H | 2 |
| 21100 | 2535.0 | -22.45 | 46.04 | 23.59 | 228.30 | H | 2 |
| 21350 | 2560.0 | -22.69 | 45.83 | 23.14 | 206.21 | H | 2 |
| 20850 | 2510.0 | -21.71 | 47.21 | 25.50 | **354.81** | V | 2 |
| 21100 | 2535.0 | -22.13 | 46.57 | 24.44 | 277.72 | V | 2 |
| 21350 | 2560.0 | -22.55 | 47.07 | 24.52 | 283.07 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20850 | 2510.0 | -22.66 | 45.80 | 23.14 | 206.02 | H | 2 |
| 21100 | 2535.0 | -23.52 | 46.04 | 22.52 | 178.44 | H | 2 |
| 21350 | 2560.0 | -23.52 | 45.83 | 22.31 | 170.33 | H | 2 |
| 20850 | 2510.0 | -22.64 | 47.21 | 24.57 | 286.42 | V | 2 |
| 21100 | 2535.0 | -23.20 | 46.57 | 23.37 | 217.07 | V | 2 |
| 21350 | 2560.0 | -23.38 | 47.07 | 23.69 | 233.83 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 20850 | 2510.0 | -23.43 | 45.80 | 22.37 | 172.54 | H | 2 |
| 21100 | 2535.0 | -23.97 | 46.04 | 22.07 | 160.88 | H | 2 |
| 21350 | 2560.0 | -23.42 | 45.83 | 22.41 | 174.30 | H | 2 |
| 20850 | 2510.0 | -24.31 | 47.21 | 22.90 | 194.98 | V | 2 |
| 21100 | 2535.0 | -24.22 | 46.57 | 22.35 | 171.63 | V | 2 |
| 21350 | 2560.0 | -23.86 | 47.07 | 23.21 | 209.36 | V | 2 |

**REMARKS:** 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

## LTE BAND 38

### CHANNEL BANDWIDTH: 5MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37775 | 2572.5 | -22.88 | 45.91 | 23.03 | 200.91 | H | 2 |
| 38000 | 2595.0 | -23.39 | 46.04 | 22.65 | 184.08 | H | 2 |
| 38225 | 2617.5 | -23.58 | 46.23 | 22.65 | 184.08 | H | 2 |
| 37775 | 2572.5 | -23.46 | 46.92 | 23.46 | **221.82** | V | 2 |
| 38000 | 2595.0 | -23.75 | 47.10 | 23.35 | 216.27 | V | 2 |
| 38225 | 2617.5 | -24.11 | 47.26 | 23.15 | 206.54 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37775 | 2572.5 | -23.71 | 45.91 | 22.20 | 165.96 | H | 2 |
| 38000 | 2595.0 | -24.41 | 46.04 | 21.63 | 145.55 | H | 2 |
| 38225 | 2617.5 | -24.68 | 46.23 | 21.55 | 142.89 | H | 2 |
| 37775 | 2572.5 | -24.29 | 46.92 | 22.63 | 183.23 | V | 2 |
| 38000 | 2595.0 | -24.77 | 47.10 | 22.33 | 171.00 | V | 2 |
| 38225 | 2617.5 | -25.21 | 47.26 | 22.05 | 160.32 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37775 | 2572.5 | -24.56 | 45.91 | 21.35 | 136.46 | H | 2 |
| 38000 | 2595.0 | -25.22 | 46.04 | 20.82 | 120.78 | H | 2 |
| 38225 | 2617.5 | -25.13 | 46.23 | 21.10 | 128.82 | H | 2 |
| 37775 | 2572.5 | -25.19 | 46.92 | 21.73 | 148.94 | V | 2 |
| 38000 | 2595.0 | -25.33 | 47.10 | 21.77 | 150.31 | V | 2 |
| 38225 | 2617.5 | -25.35 | 47.26 | 21.91 | 155.24 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37800 | 2575.0 | -22.69 | 45.96 | 23.27 | 212.32 | H | 2 |
| 38000 | 2595.0 | -23.33 | 46.04 | 22.71 | 186.64 | H | 2 |
| 38200 | 2615.0 | -23.45 | 46.18 | 22.73 | 187.50 | H | 2 |
| 37800 | 2575.0 | -23.27 | 46.99 | 23.72 | **235.50** | V | 2 |
| 38000 | 2595.0 | -23.69 | 47.10 | 23.41 | 219.28 | V | 2 |
| 38200 | 2615.0 | -23.98 | 47.21 | 23.23 | 210.38 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37800 | 2575.0 | -23.84 | 45.96 | 22.12 | 162.93 | H | 2 |
| 38000 | 2595.0 | -24.43 | 46.04 | 21.61 | 144.88 | H | 2 |
| 38200 | 2615.0 | -24.61 | 46.18 | 21.57 | 143.55 | H | 2 |
| 37800 | 2575.0 | -24.42 | 46.99 | 22.57 | 180.72 | V | 2 |
| 38000 | 2595.0 | -24.79 | 47.10 | 22.31 | 170.22 | V | 2 |
| 38200 | 2615.0 | -25.14 | 47.21 | 22.07 | 161.06 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37800 | 2575.0 | -24.37 | 45.96 | 21.59 | 144.21 | H | 2 |
| 38000 | 2595.0 | -25.16 | 46.04 | 20.88 | 122.46 | H | 2 |
| 38200 | 2615.0 | -25.00 | 46.18 | 21.18 | 131.22 | H | 2 |
| 37800 | 2575.0 | -25.00 | 46.99 | 21.99 | 158.12 | V | 2 |
| 38000 | 2595.0 | -25.27 | 47.10 | 21.83 | 152.41 | V | 2 |
| 38200 | 2615.0 | -25.22 | 47.21 | 21.99 | 158.12 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37825 | 2577.5 | -22.70 | 46.01 | 23.31 | 214.29 | H | 2 |
| 38000 | 2595.0 | -23.40 | 46.04 | 22.64 | 183.65 | H | 2 |
| 38175 | 2612.5 | -23.52 | 46.14 | 22.62 | 182.81 | H | 2 |
| 37825 | 2577.5 | -23.28 | 47.03 | 23.75 | **237.14** | V | 2 |
| 38000 | 2595.0 | -23.76 | 47.10 | 23.34 | 215.77 | V | 2 |
| 38175 | 2612.5 | -24.05 | 47.17 | 23.12 | 205.12 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37825 | 2577.5 | -23.56 | 46.01 | 22.45 | 175.79 | H | 2 |
| 38000 | 2595.0 | -24.27 | 46.04 | 21.77 | 150.31 | H | 2 |
| 38175 | 2612.5 | -24.37 | 46.14 | 21.77 | 150.31 | H | 2 |
| 37825 | 2577.5 | -24.14 | 47.03 | 22.89 | 194.54 | V | 2 |
| 38000 | 2595.0 | -24.63 | 47.10 | 22.47 | 176.60 | V | 2 |
| 38175 | 2612.5 | -24.90 | 47.17 | 22.27 | 168.66 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37825 | 2577.5 | -24.38 | 46.01 | 21.63 | 145.55 | H | 2 |
| 38000 | 2595.0 | -25.23 | 46.04 | 20.81 | 120.50 | H | 2 |
| 38175 | 2612.5 | -25.07 | 46.14 | 21.07 | 127.94 | H | 2 |
| 37825 | 2577.5 | -25.01 | 47.03 | 22.02 | 159.22 | V | 2 |
| 38000 | 2595.0 | -25.34 | 47.10 | 21.76 | 149.97 | V | 2 |
| 38175 | 2612.5 | -25.29 | 47.17 | 21.88 | 154.17 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37850 | 2580.0 | -23.28 | 46.05 | 22.77 | 189.23 | H | 2 |
| 38000 | 2595.0 | -23.85 | 46.04 | 22.19 | 165.58 | H | 2 |
| 38150 | 2610.0 | -24.10 | 46.11 | 22.01 | 158.85 | H | 2 |
| 37850 | 2580.0 | -23.86 | 47.07 | 23.21 | **209.41** | V | 2 |
| 38000 | 2595.0 | -24.21 | 47.10 | 22.89 | 194.54 | V | 2 |
| 38150 | 2610.0 | -24.63 | 47.13 | 22.50 | 177.83 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37850 | 2580.0 | -24.21 | 46.05 | 21.84 | 152.76 | H | 2 |
| 38000 | 2595.0 | -24.92 | 46.04 | 21.12 | 129.42 | H | 2 |
| 38150 | 2610.0 | -24.93 | 46.11 | 21.18 | 131.22 | H | 2 |
| 37850 | 2580.0 | -24.79 | 47.07 | 22.28 | 169.04 | V | 2 |
| 38000 | 2595.0 | -25.28 | 47.10 | 21.82 | 152.05 | V | 2 |
| 38150 | 2610.0 | -25.46 | 47.13 | 21.67 | 146.89 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 37850 | 2580.0 | -24.96 | 46.05 | 21.09 | 128.53 | H | 2 |
| 38000 | 2595.0 | -25.68 | 46.04 | 20.36 | 108.64 | H | 2 |
| 38150 | 2610.0 | -25.65 | 46.11 | 20.46 | 111.17 | H | 2 |
| 37850 | 2580.0 | -25.59 | 47.07 | 21.48 | 140.60 | V | 2 |
| 38000 | 2595.0 | -25.79 | 47.10 | 21.31 | 135.21 | V | 2 |
| 38150 | 2610.0 | -25.87 | 47.13 | 21.26 | 133.66 | V | 2 |

**REMARKS:** 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

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### CHANNEL BANDWIDTH: 5MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39675 | 2498.5 | -23.45 | 45.69 | 22.24 | 167.49 | H | 2 |
| 40620 | 2593.0 | -23.68 | 46.07 | 22.39 | **173.38** | H | 2 |
| 41565 | 2687.5 | -24.26 | 46.49 | 22.23 | 167.11 | H | 2 |
| 39675 | 2498.5 | -25.50 | 46.76 | 21.26 | 133.66 | V | 2 |
| 40620 | 2593.0 | -25.32 | 47.13 | 21.81 | 151.71 | V | 2 |
| 41565 | 2687.5 | -25.43 | 47.60 | 22.17 | 164.82 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39675 | 2498.5 | -24.28 | 45.69 | 21.41 | 138.36 | H | 2 |
| 40620 | 2593.0 | -24.70 | 46.07 | 21.37 | 137.09 | H | 2 |
| 41565 | 2687.5 | -25.36 | 46.49 | 21.13 | 129.72 | H | 2 |
| 39675 | 2498.5 | -26.33 | 46.76 | 20.43 | 110.41 | V | 2 |
| 40620 | 2593.0 | -26.34 | 47.13 | 20.79 | 119.95 | V | 2 |
| 41565 | 2687.5 | -26.53 | 47.60 | 21.07 | 127.94 | V | 2 |

### CHANNEL BANDWIDTH: 5MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39675 | 2498.5 | -24.98 | 45.69 | 20.71 | 117.76 | H | 2 |
| 40620 | 2593.0 | -25.20 | 46.07 | 20.87 | 122.18 | H | 2 |
| 41565 | 2687.5 | -25.41 | 46.49 | 21.08 | 128.23 | H | 2 |
| 39675 | 2498.5 | -27.01 | 46.76 | 19.75 | 94.41 | V | 2 |
| 40620 | 2593.0 | -26.53 | 47.13 | 20.60 | 114.82 | V | 2 |
| 41565 | 2687.5 | -26.85 | 47.60 | 20.75 | 118.85 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39700 | 2501.0 | -23.26 | 45.71 | 22.45 | **175.79** | H | 2 |
| 40620 | 2593.0 | -23.62 | 46.07 | 22.45 | 175.79 | H | 2 |
| 41540 | 2685.0 | -24.13 | 46.42 | 22.29 | 169.43 | H | 2 |
| 39700 | 2501.0 | -25.31 | 46.78 | 21.47 | 140.28 | V | 2 |
| 40620 | 2593.0 | -25.26 | 47.13 | 21.87 | 153.82 | V | 2 |
| 41540 | 2685.0 | -25.30 | 47.56 | 22.26 | 168.27 | V | 2 |

### CHANNEL BANDWIDTH: 10Mz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39700 | 2501.0 | -24.41 | 45.71 | 21.30 | 134.90 | H | 2 |
| 40620 | 2593.0 | -24.72 | 46.07 | 21.35 | 136.46 | H | 2 |
| 41540 | 2685.0 | -25.29 | 46.42 | 21.13 | 129.72 | H | 2 |
| 39700 | 2501.0 | -26.46 | 46.78 | 20.32 | 107.65 | V | 2 |
| 40620 | 2593.0 | -26.36 | 47.13 | 20.77 | 119.40 | V | 2 |
| 41540 | 2685.0 | -26.46 | 47.56 | 21.10 | 128.82 | V | 2 |

### CHANNEL BANDWIDTH: 10MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39700 | 2501.0 | -24.79 | 45.71 | 20.92 | 123.59 | H | 2 |
| 40620 | 2593.0 | -25.14 | 46.07 | 20.93 | 123.88 | H | 2 |
| 41540 | 2685.0 | -25.28 | 46.42 | 21.14 | 130.02 | H | 2 |
| 39700 | 2501.0 | -26.82 | 46.78 | 19.96 | 99.08 | V | 2 |
| 40620 | 2593.0 | -26.47 | 47.13 | 20.66 | 116.41 | V | 2 |
| 41540 | 2685.0 | -26.72 | 47.56 | 20.84 | 121.34 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39725 | 2503.5 | -23.27 | 45.74 | 22.47 | **176.60** | H | 2 |
| 40620 | 2593.0 | -23.69 | 46.07 | 22.38 | 172.98 | H | 2 |
| 41515 | 2682.5 | -24.20 | 46.39 | 22.19 | 165.58 | H | 2 |
| 39725 | 2503.5 | -25.32 | 46.78 | 21.46 | 139.96 | V | 2 |
| 40620 | 2593.0 | -25.33 | 47.13 | 21.80 | 151.36 | V | 2 |
| 41515 | 2682.5 | -25.37 | 47.41 | 22.04 | 159.96 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39725 | 2503.5 | -24.13 | 45.74 | 21.61 | 144.88 | H | 2 |
| 40620 | 2593.0 | -24.56 | 46.07 | 21.51 | 141.58 | H | 2 |
| 41515 | 2682.5 | -25.05 | 46.39 | 21.34 | 136.14 | H | 2 |
| 39725 | 2503.5 | -26.18 | 46.78 | 20.60 | 114.82 | V | 2 |
| 40620 | 2593.0 | -26.20 | 47.13 | 20.93 | 123.88 | V | 2 |
| 41515 | 2682.5 | -26.22 | 47.41 | 21.19 | 131.52 | V | 2 |

### CHANNEL BANDWIDTH: 15MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39725 | 2503.5 | -24.80 | 45.74 | 20.94 | 124.17 | H | 2 |
| 40620 | 2593.0 | -25.21 | 46.07 | 20.86 | 121.90 | H | 2 |
| 41515 | 2682.5 | -25.35 | 46.39 | 21.04 | 127.06 | H | 2 |
| 39725 | 2503.5 | -26.83 | 46.78 | 19.95 | 98.86 | V | 2 |
| 40620 | 2593.0 | -26.54 | 47.13 | 20.59 | 114.55 | V | 2 |
| 41515 | 2682.5 | -26.79 | 47.41 | 20.62 | 115.35 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz QPSK

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39750 | 2506.0 | -23.85 | 45.76 | 21.91 | 155.24 | H | 2 |
| 40620 | 2593.0 | -24.14 | 46.07 | 21.93 | **155.96** | H | 2 |
| 41490 | 2680.0 | -24.78 | 46.36 | 21.58 | 143.88 | H | 2 |
| 39750 | 2506.0 | -25.90 | 46.80 | 20.90 | 123.03 | V | 2 |
| 40620 | 2593.0 | -25.78 | 47.13 | 21.35 | 136.46 | V | 2 |
| 41490 | 2680.0 | -25.95 | 47.39 | 21.44 | 139.32 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 16QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39750 | 2506.0 | -24.78 | 45.76 | 20.98 | 125.31 | H | 2 |
| 40620 | 2593.0 | -25.21 | 46.07 | 20.86 | 121.90 | H | 2 |
| 41490 | 2680.0 | -25.61 | 46.36 | 20.75 | 118.85 | H | 2 |
| 39750 | 2506.0 | -26.83 | 46.80 | 19.97 | 99.31 | V | 2 |
| 40620 | 2593.0 | -26.85 | 47.13 | 20.28 | 106.66 | V | 2 |
| 41490 | 2680.0 | -26.78 | 47.39 | 20.61 | 115.08 | V | 2 |

### CHANNEL BANDWIDTH: 20MHz 64QAM

| Channel | Frequency (MHz) | SPA LVL (dBm) | Correction Factor(dB) | EIRP(dBm) | EIRP(mW) | Polarization (H/V) | Limit (W) |
|---|---|---|---|---|---|---|---|
| 39750 | 2506.0 | -25.38 | 45.76 | 20.38 | 109.14 | H | 2 |
| 40620 | 2593.0 | -25.66 | 46.07 | 20.41 | 109.90 | H | 2 |
| 41490 | 2680.0 | -25.93 | 46.36 | 20.43 | 110.41 | H | 2 |
| 39750 | 2506.0 | -27.41 | 46.80 | 19.39 | 86.90 | V | 2 |
| 40620 | 2593.0 | -26.99 | 47.13 | 20.14 | 103.28 | V | 2 |
| 41490 | 2680.0 | -27.37 | 47.39 | 20.02 | 100.46 | V | 2 |

**REMARKS:** 1. EIRP Output Power (dBm) = SPA LVL (dBm) + Correction Factor (dB).
2. Correction factor (dB) = Free Space Loss + Antenna Factor + Cable Loss

## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

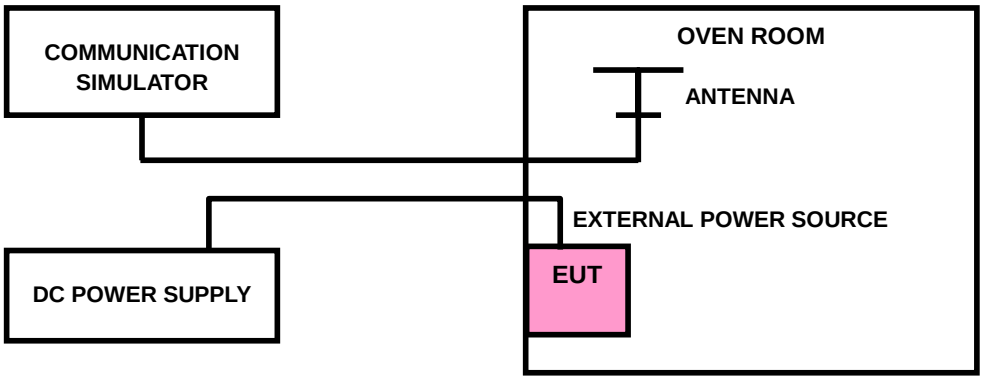
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 3.2.2 TEST PROCEDURE

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

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

### 3.2.3 TEST SETUP



## 3.2.4 TEST RESULTS

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**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0005 | 0.0005 | 2.5 |
| 3.5 | -0.0007 | -0.0006 | 2.5 |
| 4.2 | 0.0005 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0037 | -0.0038 | 2.5 |
| -20 | -0.0033 | -0.0033 | 2.5 |
| -10 | -0.0029 | -0.0029 | 2.5 |
| 0 | -0.0026 | -0.0026 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0018 | -0.0018 | 2.5 |
| 30 | -0.0013 | -0.0013 | 2.5 |
| 40 | -0.0007 | -0.0008 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0006 | 2.5 |
| 3.5 | -0.0006 | -0.0007 | 2.5 |
| 4.2 | 0.0007 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0039 | -0.0040 | 2.5 |
| -20 | -0.0035 | -0.0035 | 2.5 |
| -10 | -0.0027 | -0.0027 | 2.5 |
| 0 | -0.0021 | -0.0021 | 2.5 |
| 10 | -0.0018 | -0.0018 | 2.5 |
| 20 | -0.0015 | -0.0015 | 2.5 |
| 30 | -0.0009 | -0.0009 | 2.5 |
| 40 | -0.0007 | -0.0007 | 2.5 |
| 50 | -0.0003 | -0.0003 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0005 | 2.5 |
| 3.5 | -0.0007 | -0.0006 | 2.5 |
| 4.2 | 0.0005 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0041 | -0.0041 | 2.5 |
| -20 | -0.0038 | -0.0039 | 2.5 |
| -10 | -0.0030 | -0.0030 | 2.5 |
| 0 | -0.0026 | -0.0027 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0009 | -0.0009 | 2.5 |
| 40 | -0.0005 | -0.0005 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0005 | 0.0006 | 2.5 |
| 3.5 | -0.0005 | -0.0007 | 2.5 |
| 4.2 | 0.0004 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0041 | -0.0041 | 2.5 |
| -20 | -0.0039 | -0.0040 | 2.5 |
| -10 | -0.0034 | -0.0035 | 2.5 |
| 0 | -0.0030 | -0.0030 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0018 | -0.0018 | 2.5 |
| 30 | -0.0013 | -0.0014 | 2.5 |
| 40 | -0.0009 | -0.0009 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

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### FREQUENCY ERROR VS. VOLTAGE

| VOLTAGE (Volts) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0005 | 0.0005 | 2.5 |
| 3.5 | -0.0007 | -0.0006 | 2.5 |
| 4.2 | 0.0005 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

### FREQUENCY ERROR vs. TEMPERATURE.

| TEMP. (℃) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0038 | -0.0038 | 2.5 |
| -20 | -0.0033 | -0.0033 | 2.5 |
| -10 | -0.0030 | -0.0030 | 2.5 |
| 0 | -0.0025 | -0.0025 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0018 | -0.0016 | 2.5 |
| 30 | -0.0013 | -0.0013 | 2.5 |
| 40 | -0.0007 | -0.0007 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0007 | 2.5 |
| 3.5 | -0.0006 | -0.0007 | 2.5 |
| 4.2 | 0.0006 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0040 | -0.0040 | 2.5 |
| -20 | -0.0034 | -0.0034 | 2.5 |
| -10 | -0.0026 | -0.0027 | 2.5 |
| 0 | -0.0022 | -0.0022 | 2.5 |
| 10 | -0.0018 | -0.0018 | 2.5 |
| 20 | -0.0014 | -0.0014 | 2.5 |
| 30 | -0.0009 | -0.0009 | 2.5 |
| 40 | -0.0007 | -0.0007 | 2.5 |
| 50 | -0.0004 | -0.0004 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0006 | 2.5 |
| 3.5 | -0.0007 | -0.0006 | 2.5 |
| 4.2 | 0.0005 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0041 | -0.0041 | 2.5 |
| -20 | -0.0037 | -0.0037 | 2.5 |
| -10 | -0.0030 | -0.0030 | 2.5 |
| 0 | -0.0025 | -0.0026 | 2.5 |
| 10 | -0.0021 | -0.0022 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0011 | -0.0011 | 2.5 |
| 40 | -0.0006 | -0.0006 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0005 | 0.0006 | 2.5 |
| 3.5 | -0.0005 | -0.0007 | 2.5 |
| 4.2 | 0.0004 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0042 | -0.0042 | 2.5 |
| -20 | -0.0039 | -0.0040 | 2.5 |
| -10 | -0.0034 | -0.0034 | 2.5 |
| 0 | -0.0030 | -0.0031 | 2.5 |
| 10 | -0.0022 | -0.0022 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0014 | -0.0014 | 2.5 |
| 40 | -0.0009 | -0.0009 | 2.5 |
| 50 | -0.0004 | -0.0004 | 2.5 |

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### FREQUENCY ERROR VS. VOLTAGE

| VOLTAGE (Volts) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0005 | 0.0005 | 2.5 |
| 3.5 | -0.0007 | -0.0006 | 2.5 |
| 4.2 | 0.0006 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

### FREQUENCY ERROR vs. TEMPERATURE.

| TEMP. (℃) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0038 | -0.0038 | 2.5 |
| -20 | -0.0033 | -0.0034 | 2.5 |
| -10 | -0.0029 | -0.0029 | 2.5 |
| 0 | -0.0026 | -0.0027 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0013 | -0.0013 | 2.5 |
| 40 | -0.0007 | -0.0007 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0006 | 2.5 |
| 3.5 | -0.0006 | -0.0007 | 2.5 |
| 4.2 | 0.0006 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0040 | -0.0040 | 2.5 |
| -20 | -0.0035 | -0.0036 | 2.5 |
| -10 | -0.0026 | -0.0026 | 2.5 |
| 0 | -0.0022 | -0.0022 | 2.5 |
| 10 | -0.0018 | -0.0018 | 2.5 |
| 20 | -0.0014 | -0.0014 | 2.5 |
| 30 | -0.0009 | -0.0009 | 2.5 |
| 40 | -0.0007 | -0.0007 | 2.5 |
| 50 | -0.0004 | -0.0004 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0005 | 2.5 |
| 3.5 | -0.0006 | -0.0006 | 2.5 |
| 4.2 | 0.0005 | 0.0004 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0041 | -0.0041 | 2.5 |
| -20 | -0.0037 | -0.0038 | 2.5 |
| -10 | -0.0030 | -0.0030 | 2.5 |
| 0 | -0.0027 | -0.0027 | 2.5 |
| 10 | -0.0021 | -0.0021 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0009 | -0.0009 | 2.5 |
| 40 | -0.0006 | -0.0006 | 2.5 |
| 50 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| 3.85 | 0.0006 | 0.0005 | 2.5 |
| 3.5 | -0.0005 | -0.0006 | 2.5 |
| 4.2 | 0.0004 | 0.0005 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from 3.5Vdc to 4.2Vdc.

**FREQUENCY ERROR vs. TEMPERATURE.**

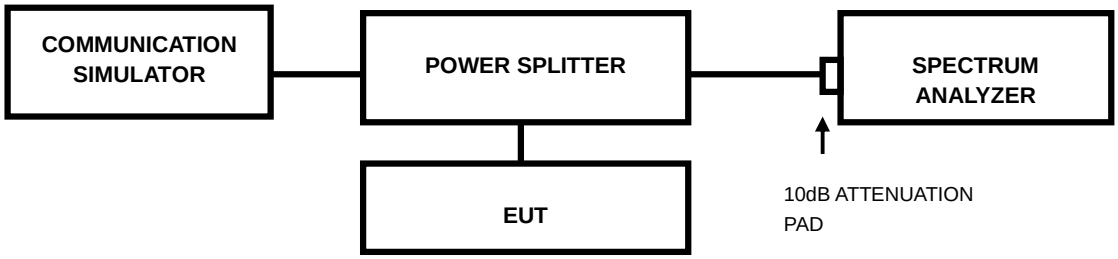
| TEMP. (℃) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -30 | -0.0041 | -0.0041 | 2.5 |
| -20 | -0.0040 | -0.0040 | 2.5 |
| -10 | -0.0035 | -0.0036 | 2.5 |
| 0 | -0.0030 | -0.0030 | 2.5 |
| 10 | -0.0022 | -0.0022 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0013 | -0.0014 | 2.5 |
| 40 | -0.0009 | -0.0009 | 2.5 |
| 50 | -0.0003 | -0.0003 | 2.5 |

## 3.3 OCCUPIED BANDWIDTH MEASUREMENT

### 3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

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

### 3.3.2 TEST SETUP




### 3.3.3 TEST PROCEDURES

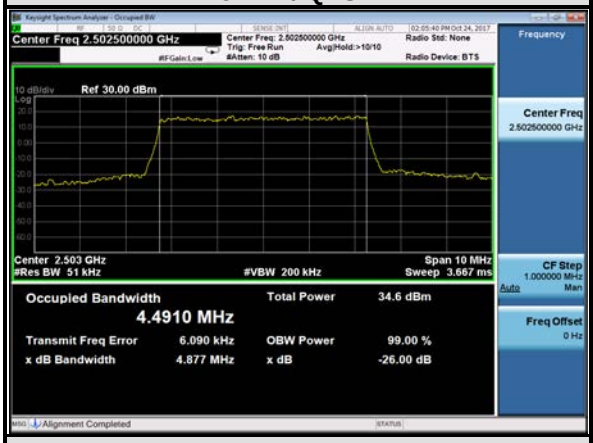
a. The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
b. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

## 3.3.4 TEST RESULTS

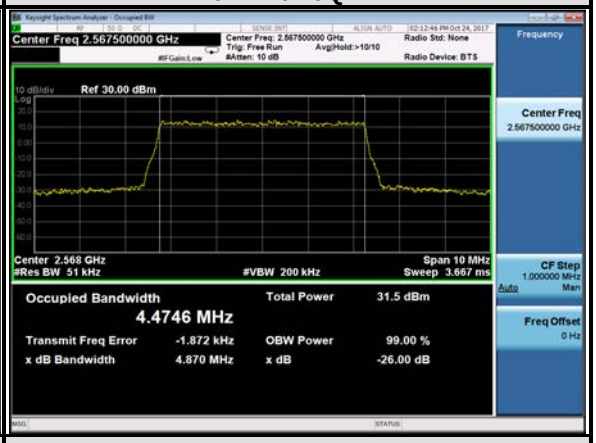
| LTE BAND 7 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 5MHz | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 20775 | 2502.5 | 4.49 | 4.47 | 4.49 |
| 21100 | 2535 | 4.48 | 4.47 | 4.49 |
| 21425 | 2567.5 | 4.48 | 4.47 | 4.47 |

**SPECTRUM PLOT OF WORST VALUE**

**5MHz / QPSK**




**5MHz / 16QAM**

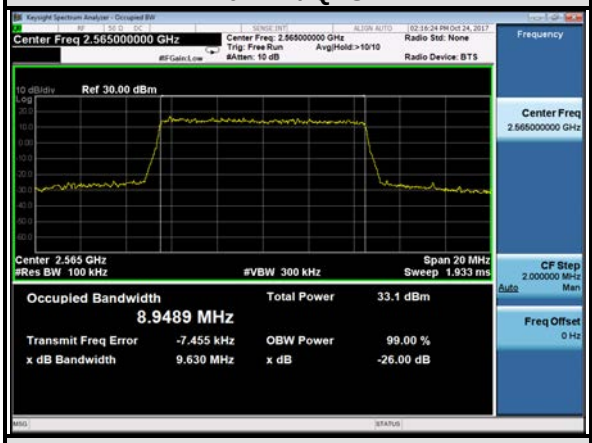



**5MHz / 64QAM**

| LTE BAND 7 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 10MHz | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 20800 | 2505 | 8.94 | 8.92 | 8.93 |
| 21100 | 2535 | 8.94 | 8.95 | 8.94 |
| 21400 | 2565 | 8.95 | 8.94 | 8.95 |

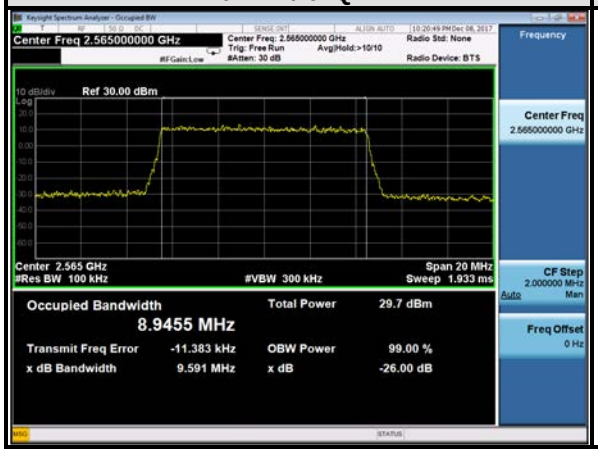
**SPECTRUM PLOT OF WORST VALUE**

**10MHz / QPSK**




**10MHz / 16QAM**

**10MHz / 64QAM**



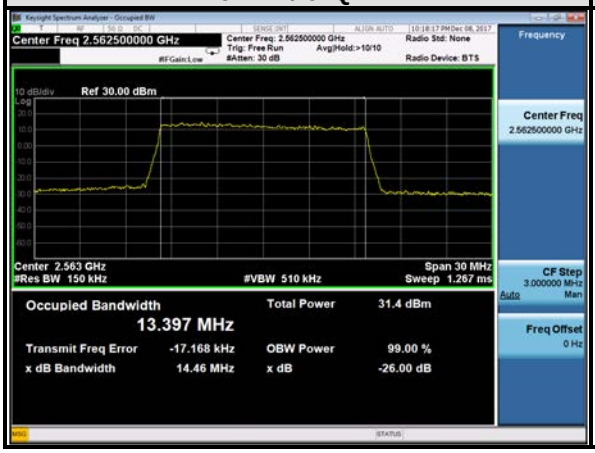
| LTE BAND 7 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 15MHz | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 20825 | 2507.5 | 13.39 | 13.36 | 13.35 |
| 21100 | 2535 | 13.42 | 13.41 | 13.38 |
| 21375 | 2562.5 | 13.41 | 13.39 | 13.40 |

**SPECTRUM PLOT OF WORST VALUE**

**15MHz / QPSK**

**15MHz / 16QAM**

**15MHz / 64QAM**



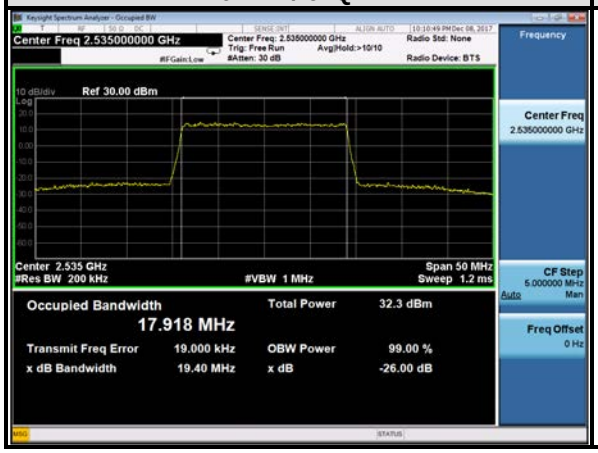
| LTE BAND 7 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 20MHz | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 20850 | 2510 | 17.87 | 17.81 | 17.81 |
| 21100 | 2535 | 17.96 | 17.86 | 17.92 |
| 21350 | 2560 | 17.91 | 17.83 | 17.86 |

**SPECTRUM PLOT OF WORST VALUE**

**20MHz / QPSK**

**20MHz / 16QAM**

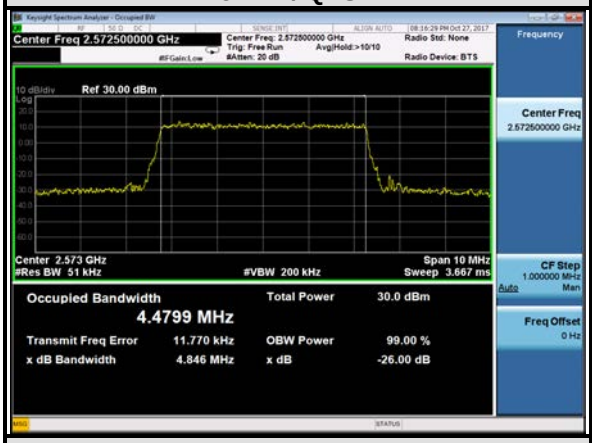
**20MHz / 64QAM**



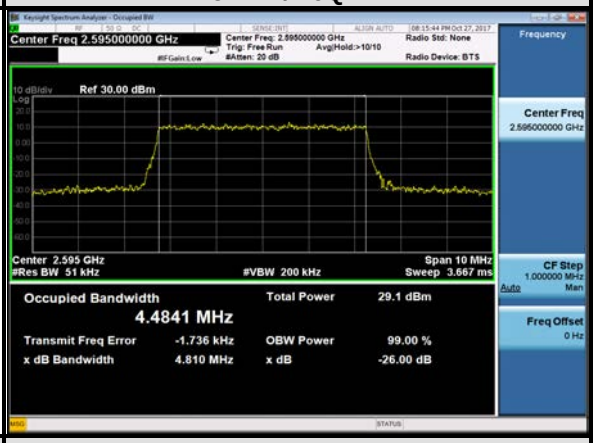
| LTE BAND 38 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 5MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 37775 | 2572.5 | 4.48 | 4.48 | 4.48 |
| 38000 | 2595 | 4.47 | 4.48 | 4.48 |
| 38225 | 2617.5 | 4.47 | 4.48 | 4.49 |

**SPECTRUM PLOT OF WORST VALUE**

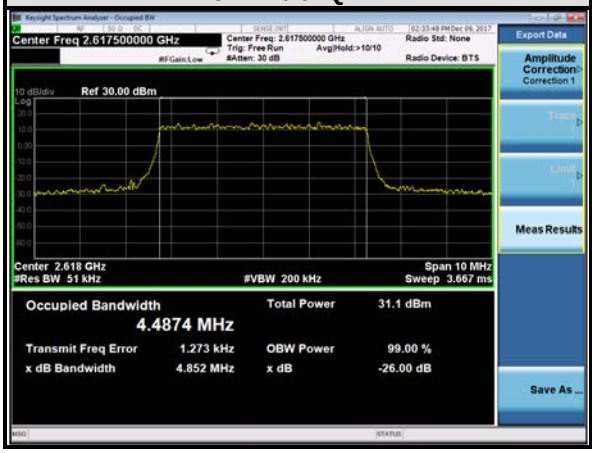
**5MHz / QPSK**




**5MHz / 16QAM**



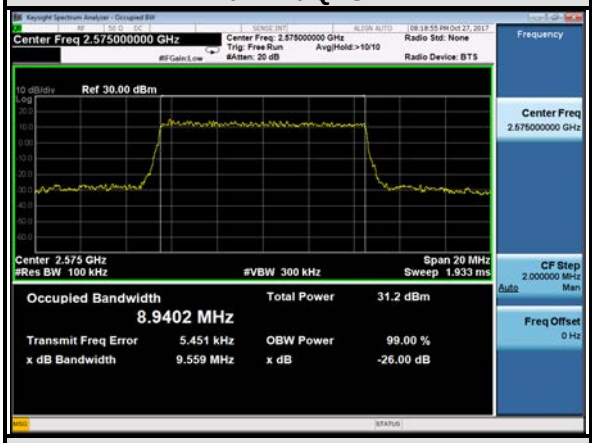

**5MHz / 64QAM**



| LTE BAND 38 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 10MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 37800 | 2575 | 8.94 | 8.92 | 8.95 |
| 38000 | 2595 | 8.91 | 8.93 | 8.94 |
| 38200 | 2615 | 8.93 | 8.94 | 8.94 |

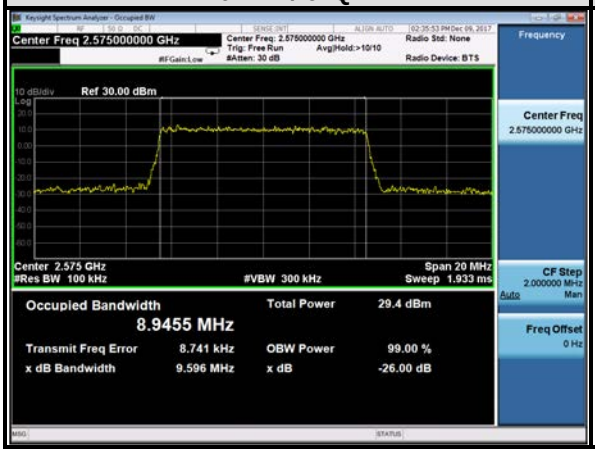
**SPECTRUM PLOT OF WORST VALUE**

**10MHz / QPSK**




**10MHz / 16QAM**

**10MHz / 64QAM**



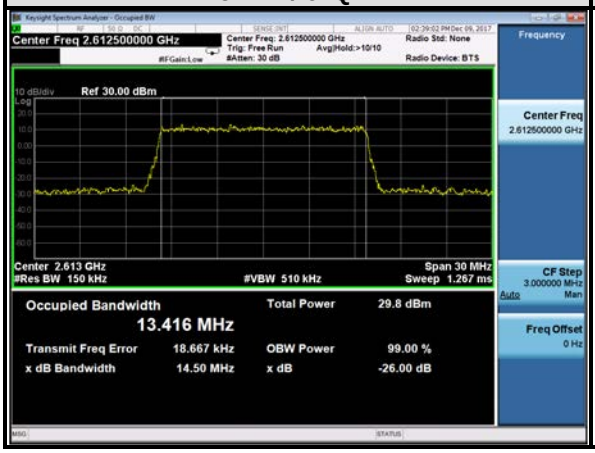
| LTE BAND 38 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 15MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 37825 | 2577.5 | 13.42 | 13.40 | 13.39 |
| 38000 | 2595 | 13.37 | 13.42 | 13.39 |
| 38175 | 2612.5 | 13.37 | 13.40 | 13.42 |

**SPECTRUM PLOT OF WORST VALUE**

**15MHz / QPSK**

**15MHz / 16QAM**

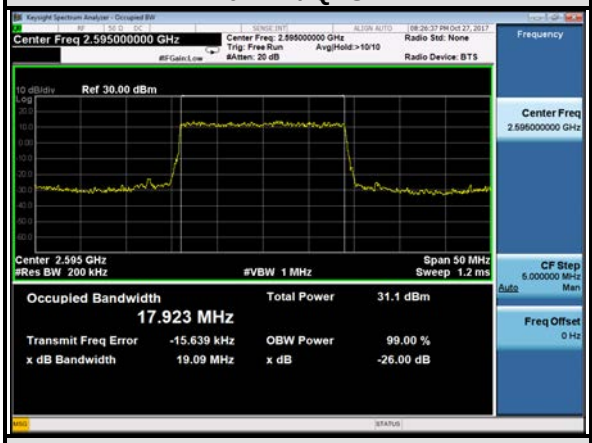
**15MHz / 64QAM**



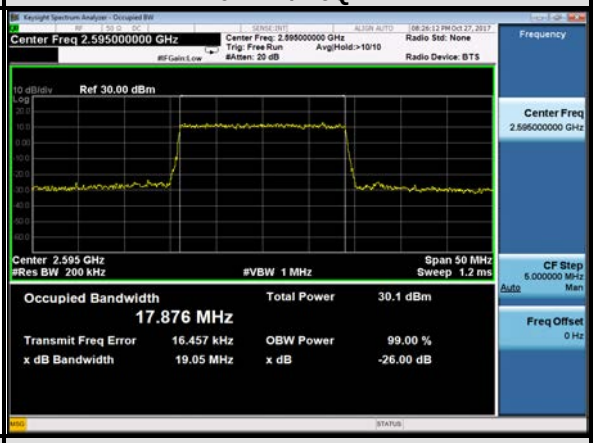
| LTE BAND 38 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 20MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 37850 | 2580 | 17.90 | 17.87 | 17.85 |
| 38000 | 2595 | 17.92 | 17.88 | 17.88 |
| 38150 | 2610 | 17.88 | 17.84 | 17.93 |

**SPECTRUM PLOT OF WORST VALUE**

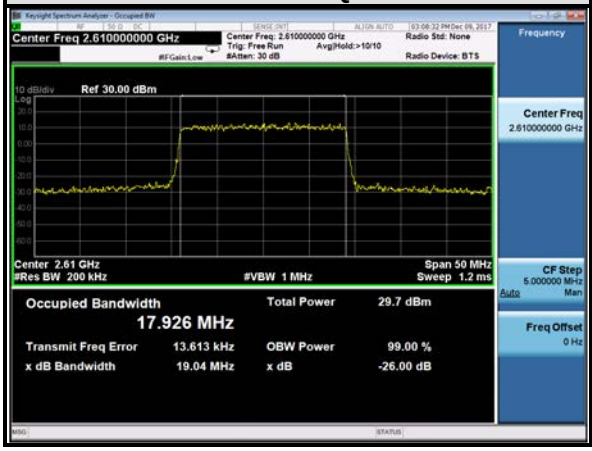
**20MHz / QPSK**




**20MHz / 16QAM**



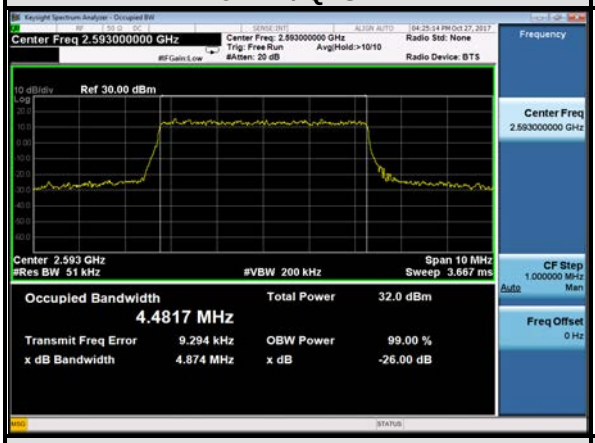

**20MHz / 64QAM**



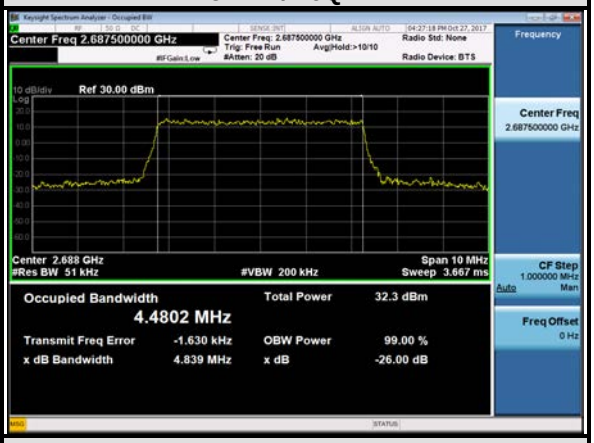
| LTE BAND 41 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 5MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 39675 | 2498.5 | 4.48 | 4.48 | 4.48 |
| 40620 | 2593.0 | 4.48 | 4.47 | 4.49 |
| 41565 | 2687.5 | 4.48 | 4.48 | 4.48 |

**SPECTRUM PLOT OF WORST VALUE**

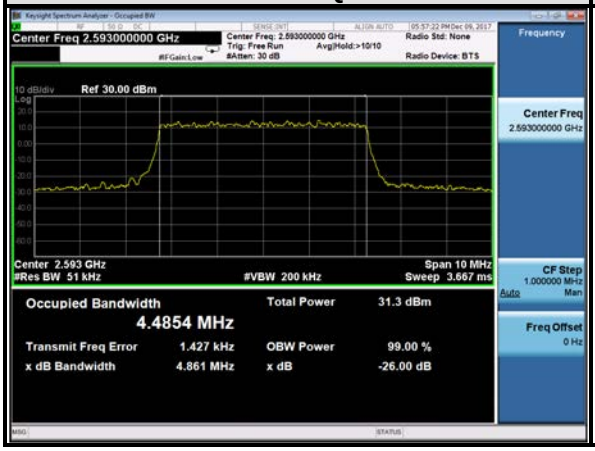
**5MHz / QPSK**




**5MHz / 16QAM**



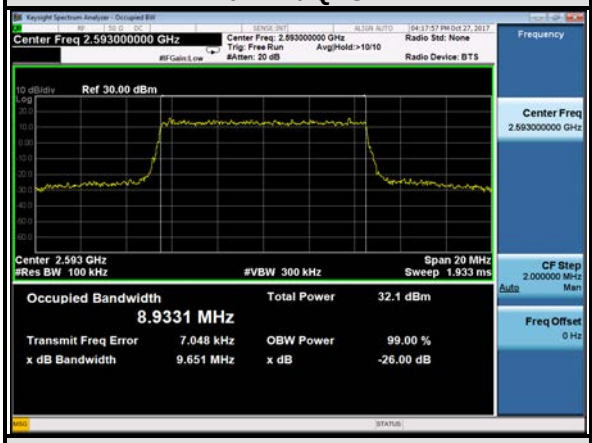

**5MHz / 64QAM**



| LTE BAND 41 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 10MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 39700 | 2501.0 | 8.92 | 8.94 | 8.93 |
| 40620 | 2593.0 | 8.93 | 8.94 | 8.94 |
| 41540 | 2685.0 | 8.93 | 8.93 | 8.93 |

**SPECTRUM PLOT OF WORST VALUE**

**10MHz / QPSK**




**10MHz / 16QAM**

**10MHz / 64QAM**

| LTE BAND 41 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 15MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 39725 | 2503.5 | 13.35 | 13.37 | 13.38 |
| 40620 | 2593.0 | 13.41 | 13.40 | 13.39 |
| 41515 | 2682.5 | 13.36 | 13.38 | 13.38 |

**SPECTRUM PLOT OF WORST VALUE**

**15MHz / QPSK**

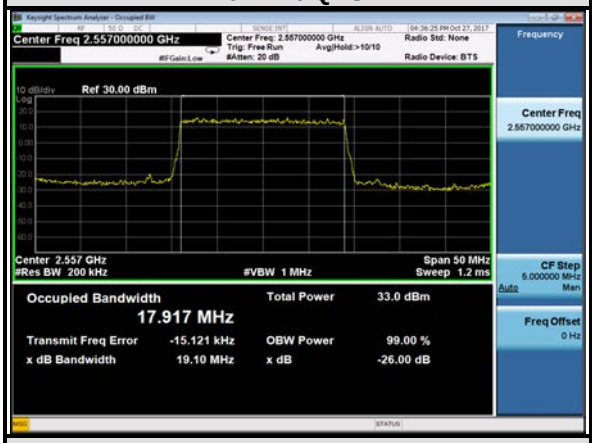
**15MHz / 16QAM**

**15MHz / 64QAM**

| LTE BAND 41 | | | | |
|---|---|---|---|---|
| CHANNEL BANDWIDTH: 20MHZ | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 39750 | 2506.0 | 17.88 | 17.81 | 17.86 |
| 40620 | 2593.0 | 17.92 | 17.90 | 17.89 |
| 41490 | 2680.0 | 17.90 | 17.81 | 17.84 |

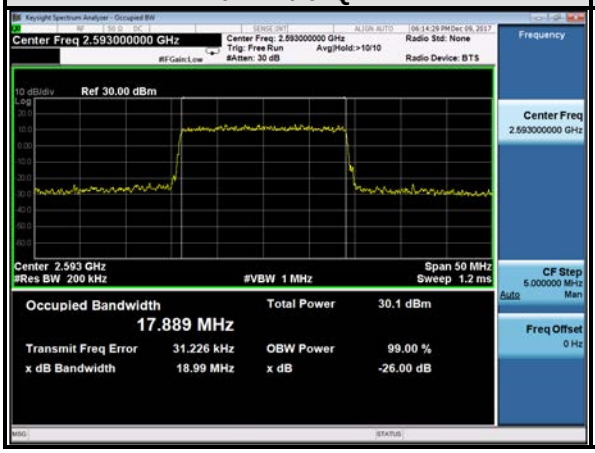
**SPECTRUM PLOT OF WORST VALUE**

**20MHz / QPSK**




**20MHz / 16QAM**

**20MHz / 64QAM**

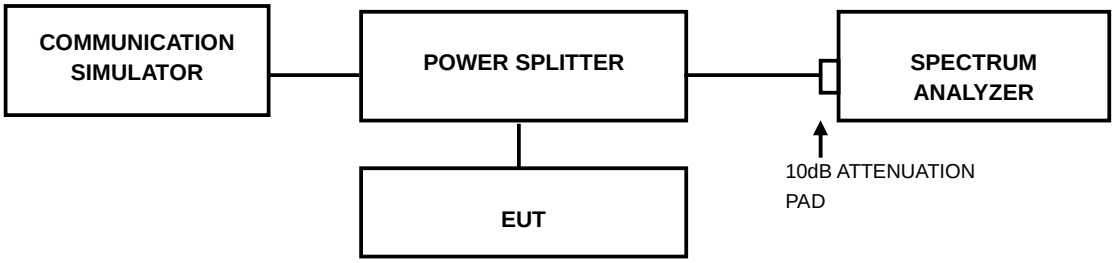


## 3.4 PEAK TO AVERAGE RATIO

### 3.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

### 3.4.2 TEST SETUP




### 3.4.3 TEST PROCEDURES

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

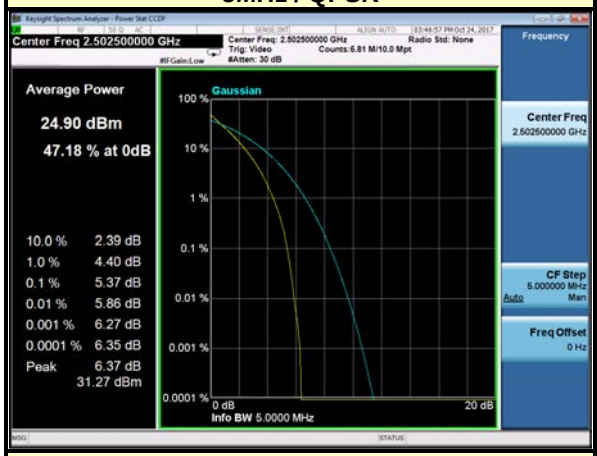
## 3.4.4 TEST RESULTS

### LTE BAND 7

| CHANNEL BANDWIDTH: 5MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20775 | 2502.5 | 5.37 | 6.14 | 6.47 |
| 21100 | 2535 | 5.35 | 6.14 | 6.41 |
| 21425 | 2567.5 | 5.33 | 6.10 | 6.39 |

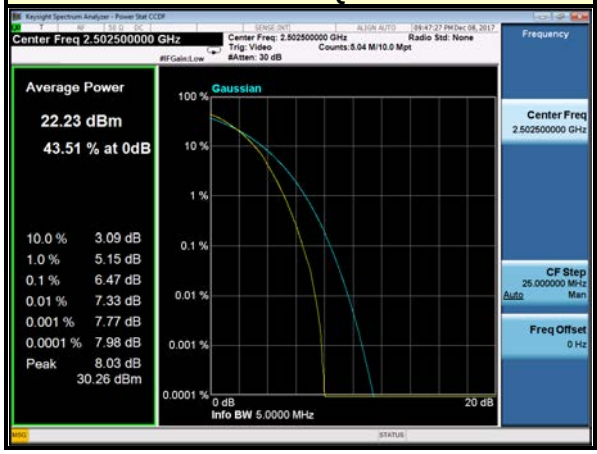
**SPECTRUM PLOT OF WORST VALUE**

**5MHz / QPSK**




**5MHz / 16QAM**

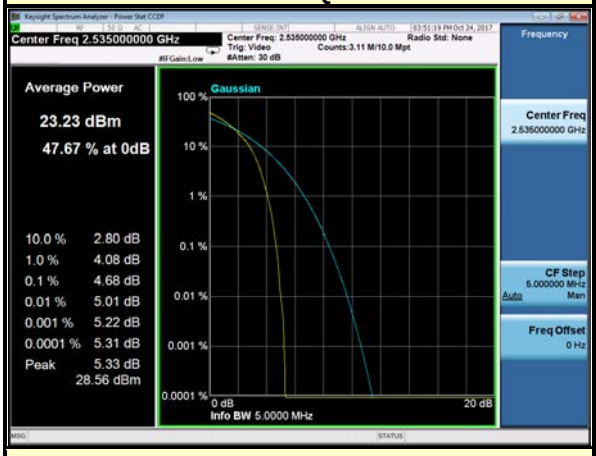
**5MHz / 64QAM**



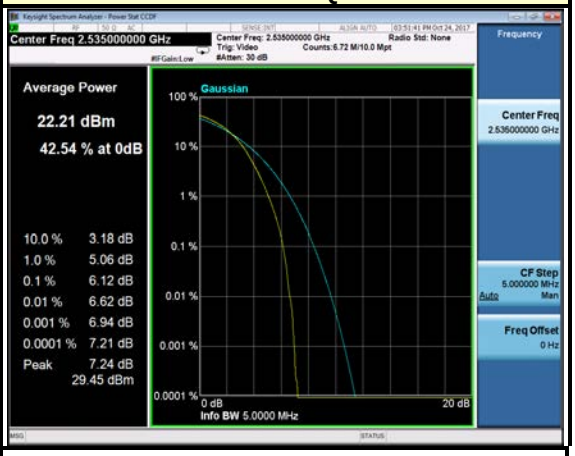
| CHANNEL BANDWIDTH: 10MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20800 | 2505 | 4.64 | 6.05 | 6.36 |
| 21100 | 2535 | 4.68 | 6.12 | 6.55 |
| 21400 | 2565 | 4.65 | 6.03 | 6.29 |

**SPECTRUM PLOT OF WORST VALUE**

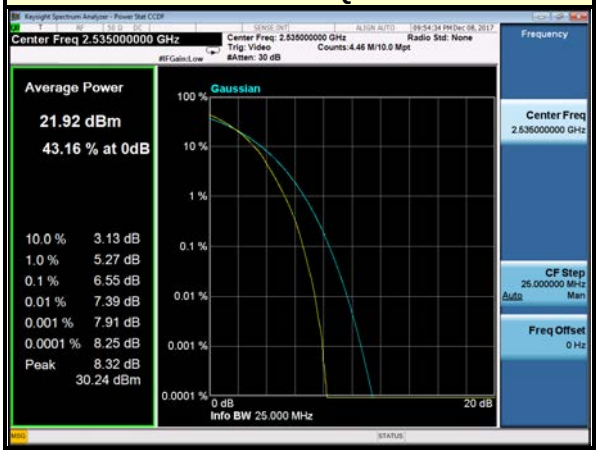
**10MHz / QPSK**




**10MHz / 16QAM**



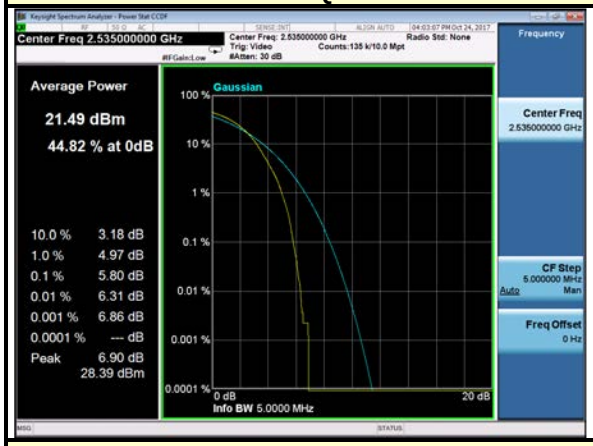

**10MHz / 64QAM**



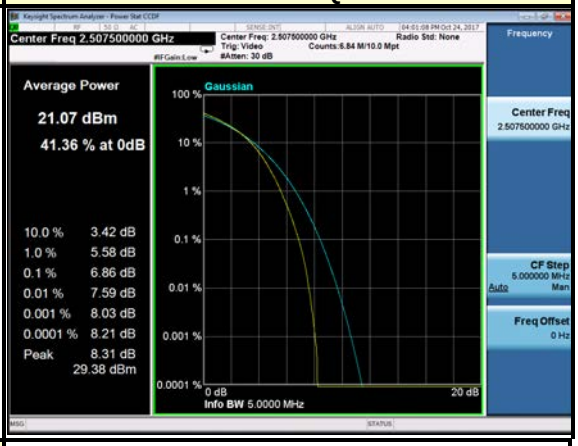
| CHANNEL BANDWIDTH: 15MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20825 | 2507.5 | 5.75 | 6.86 | 6.41 |
| 21100 | 2535 | 5.80 | 6.85 | 6.62 |
| 21375 | 2562.5 | 5.75 | 6.80 | 6.38 |

**SPECTRUM PLOT OF WORST VALUE**

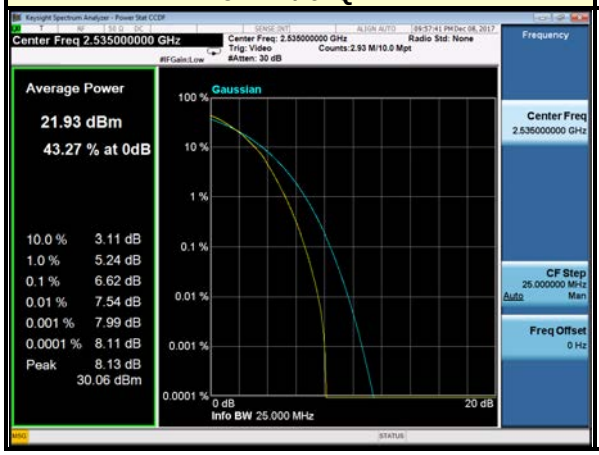
**15MHz / QPSK**




**15MHz / 16QAM**




**15MHz / 64QAM**

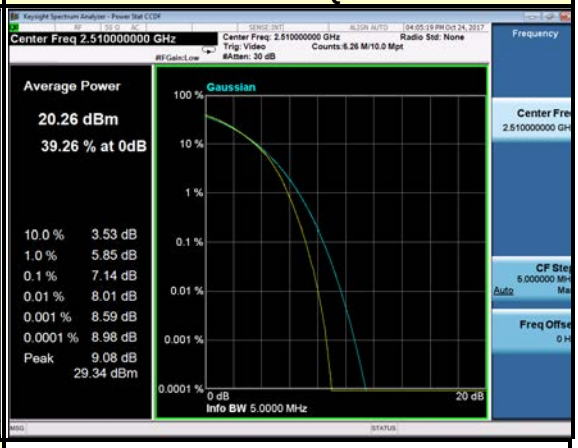


| CHANNEL BANDWIDTH: 20MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 20850 | 2510 | 6.49 | 7.14 | 6.35 |
| 21100 | 2535 | 6.48 | 7.10 | 6.62 |
| 21350 | 2560 | 6.46 | 7.10 | 6.40 |

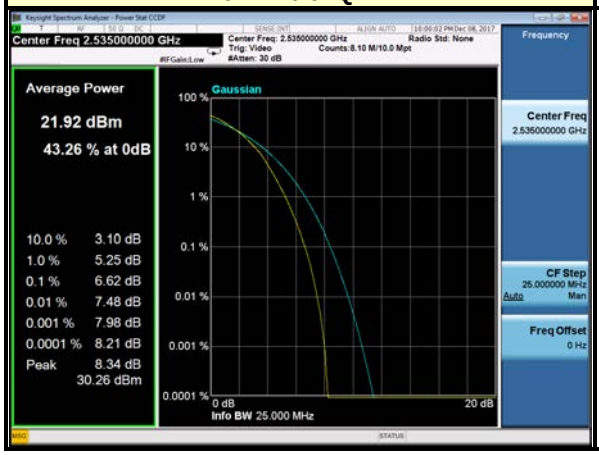
**SPECTRUM PLOT OF WORST VALUE**

**20MHz / QPSK**

**20MHz / 16QAM**




**20MHz / 64QAM**

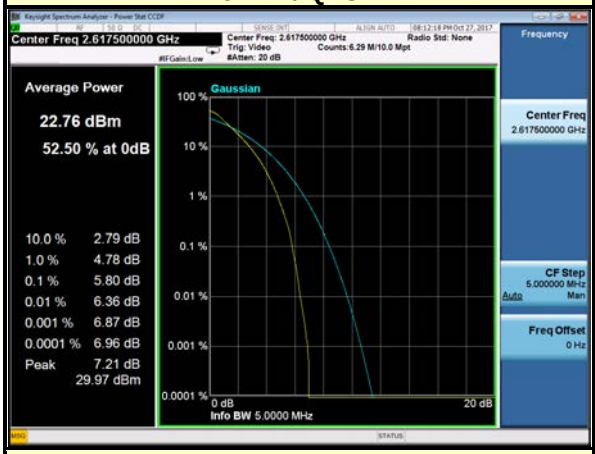


## LTE BAND 38

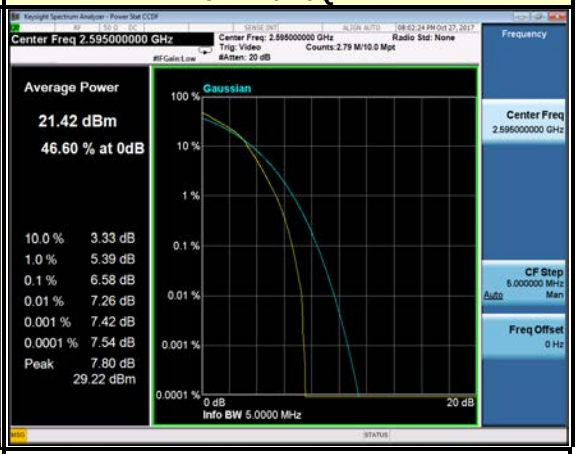
| CHANNEL BANDWIDTH: 5MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 37775 | 2572.5 | 5.69 | 6.43 | 6.81 |
| 38000 | 2595 | 5.79 | 6.58 | 6.70 |
| 38225 | 2617.5 | 5.80 | 6.34 | 6.71 |

**SPECTRUM PLOT OF WORST VALUE**

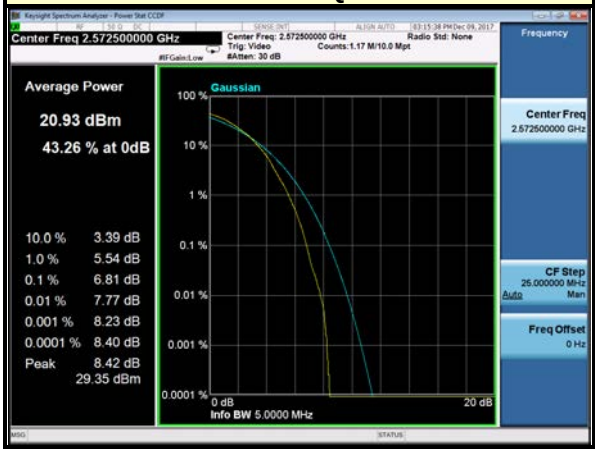
**5MHz / QPSK**




**5MHz / 16QAM**



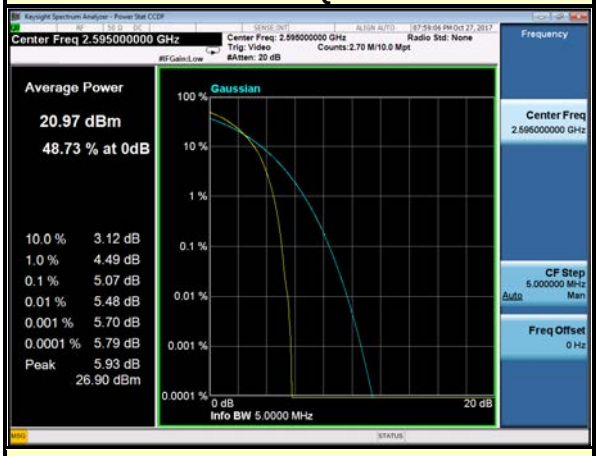

**5MHz / 64QAM**



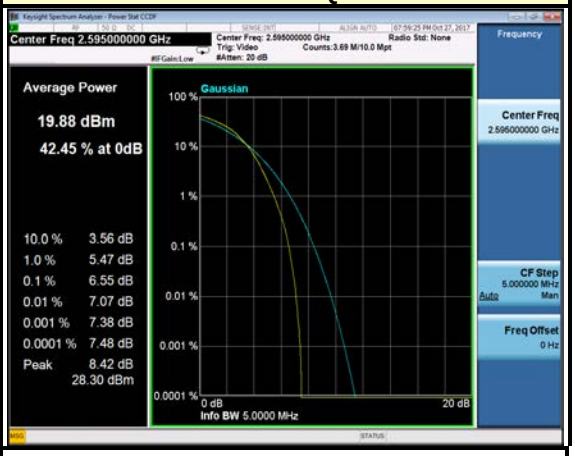
| CHANNEL BANDWIDTH: 10MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 37800 | 2575 | 5.05 | 6.42 | 6.74 |
| 38000 | 2595 | 5.07 | 6.55 | 6.87 |
| 38200 | 2615 | 5.00 | 6.24 | 6.74 |

**SPECTRUM PLOT OF WORST VALUE**

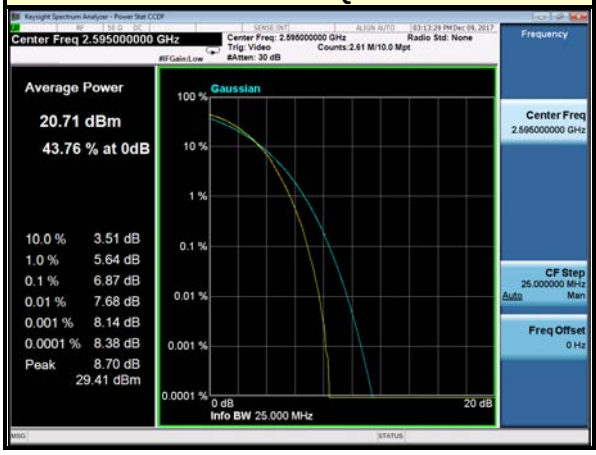
**10MHz / QPSK**




**10MHz / 16QAM**



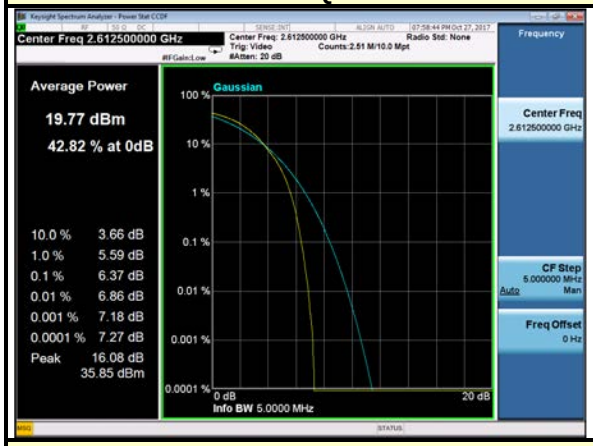

**10MHz / 64QAM**



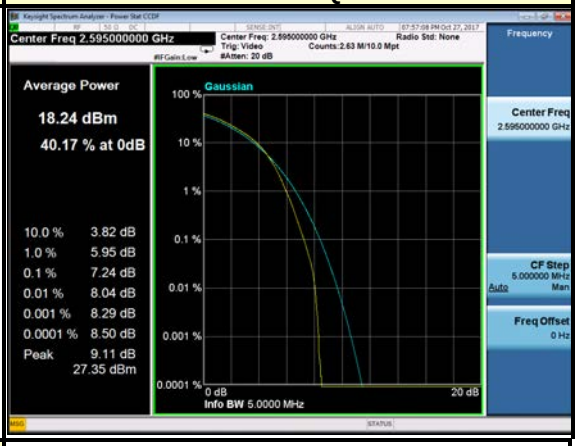
| CHANNEL BANDWIDTH: 15MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 37825 | 2577.5 | 5.86 | 7.06 | 6.79 |
| 38000 | 2595 | 6.19 | 7.24 | 6.81 |
| 38175 | 2612.5 | 6.37 | 7.13 | 6.54 |

**SPECTRUM PLOT OF WORST VALUE**

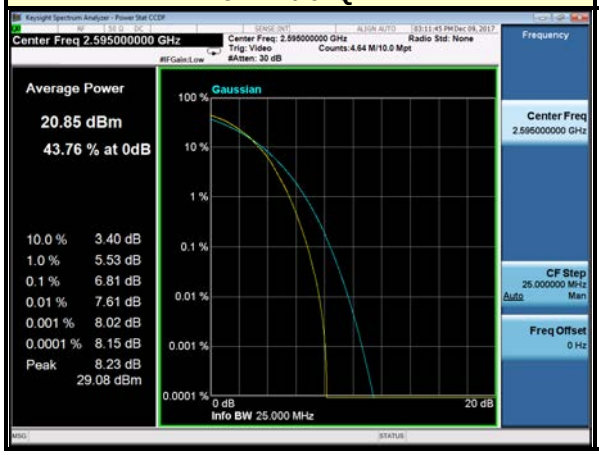
**15MHz / QPSK**




**15MHz / 16QAM**



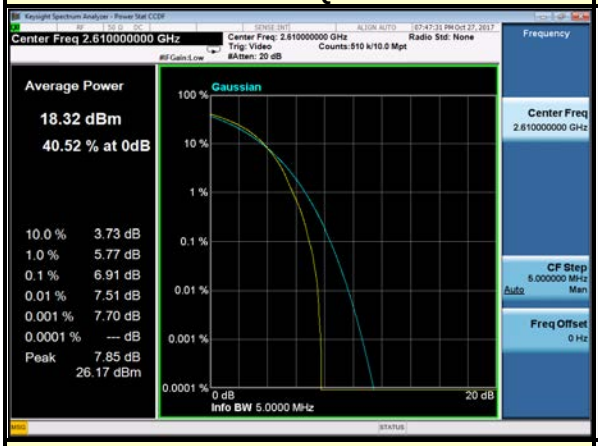

**15MHz / 64QAM**



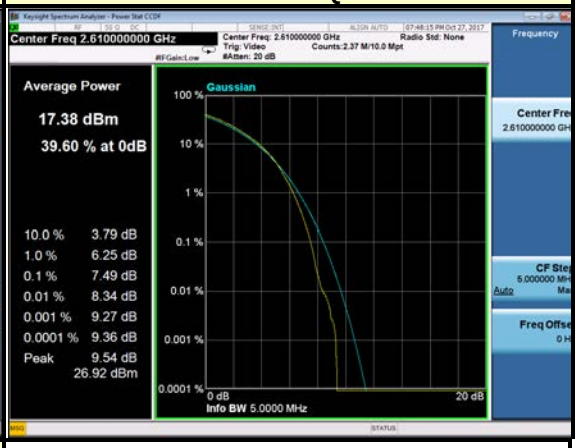
| CHANNEL BANDWIDTH: 20MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 37850 | 2580 | 6.81 | 7.46 | 6.82 |
| 38000 | 2595 | 6.86 | 7.42 | 6.80 |
| 38150 | 2610 | 6.91 | 7.49 | 6.75 |

**SPECTRUM PLOT OF WORST VALUE**

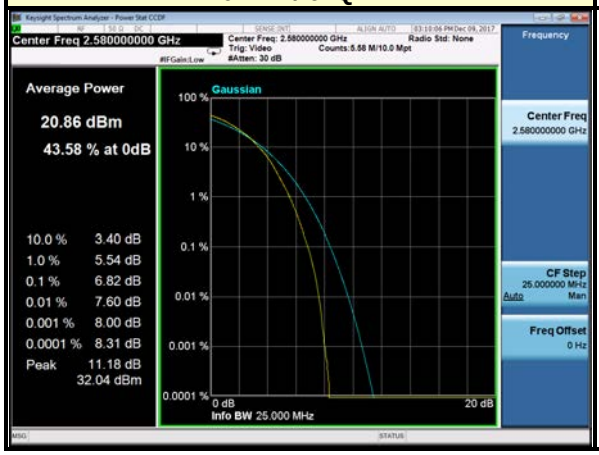
**20MHz / QPSK**




**20MHz / 16QAM**




**20MHz / 64QAM**

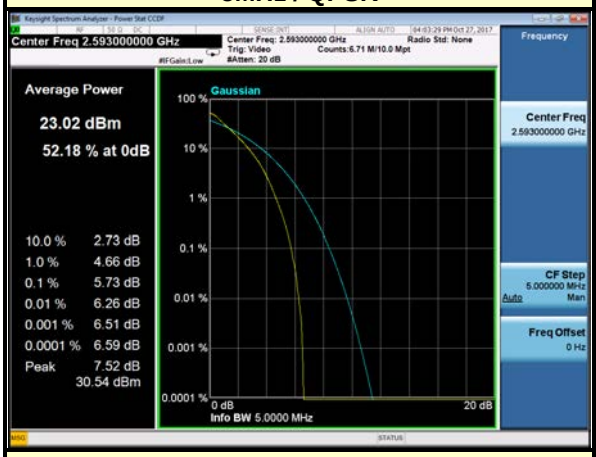


## LTE BAND 41

| CHANNEL BANDWIDTH: 5MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 39675 | 2498.5 | 5.69 | 6.40 | 6.87 |
| 40620 | 2593.0 | 5.73 | 6.43 | 6.70 |
| 41565 | 2687.5 | 5.58 | 6.36 | 6.91 |

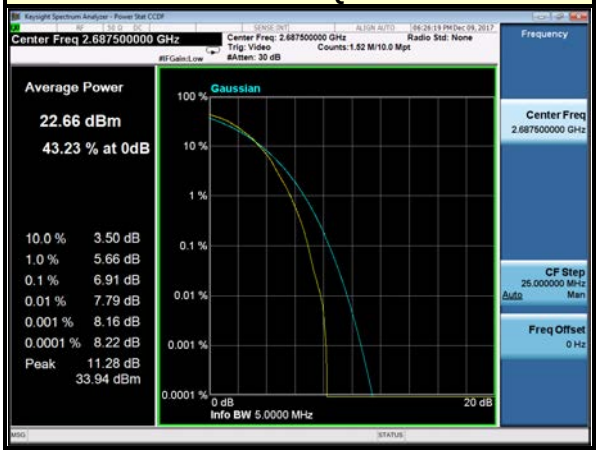
**SPECTRUM PLOT OF WORST VALUE**

**5MHz / QPSK**




**5MHz / 16QAM**

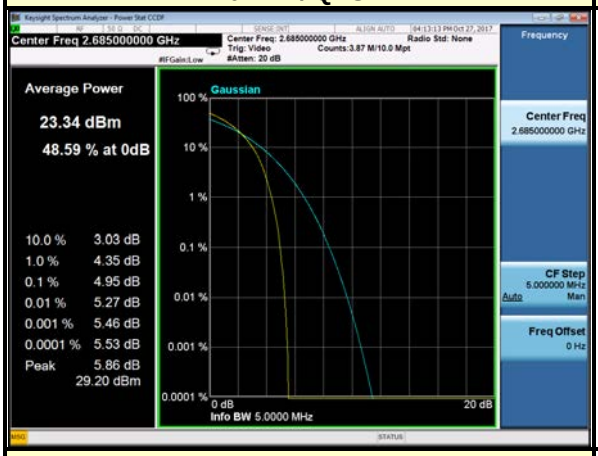
**5MHz / 64QAM**



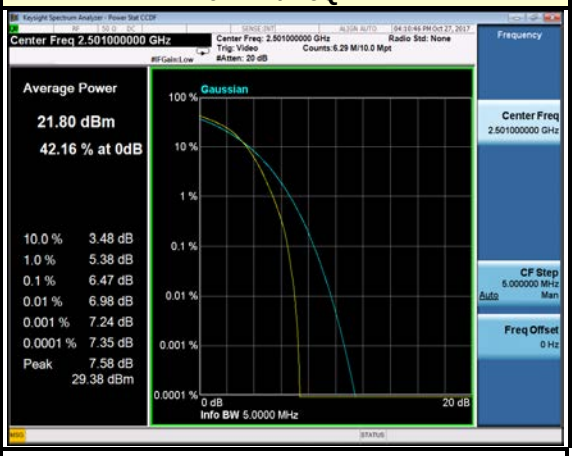
| CHANNEL BANDWIDTH: 10MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 39700 | 2501.0 | 4.94 | 6.47 | 6.66 |
| 40620 | 2593.0 | 4.92 | 6.34 | 6.64 |
| 41540 | 2685.0 | 4.95 | 6.38 | 6.25 |

**SPECTRUM PLOT OF WORST VALUE**

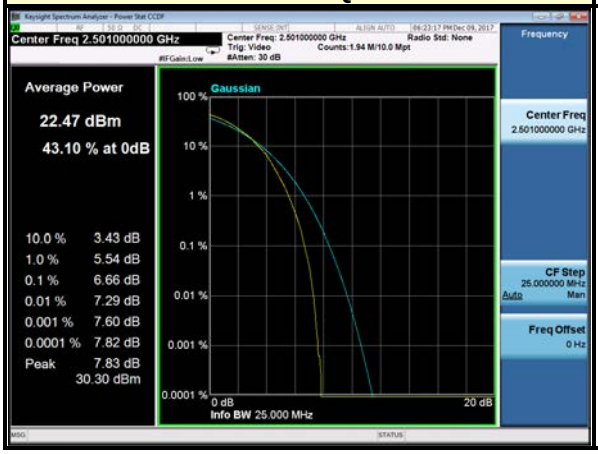
**10MHz / QPSK**




**10MHz / 16QAM**



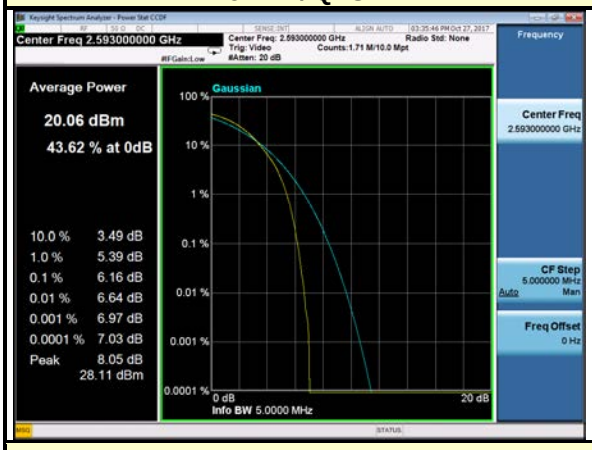

**10MHz / 64QAM**



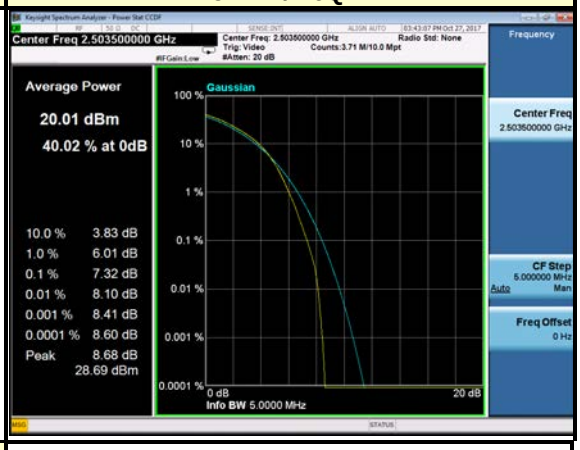
| CHANNEL BANDWIDTH: 15MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 39725 | 2503.5 | 6.07 | 7.32 | 6.92 |
| 40620 | 2593.0 | 6.16 | 7.10 | 6.29 |
| 41515 | 2682.5 | 6.11 | 7.14 | 6.68 |

**SPECTRUM PLOT OF WORST VALUE**

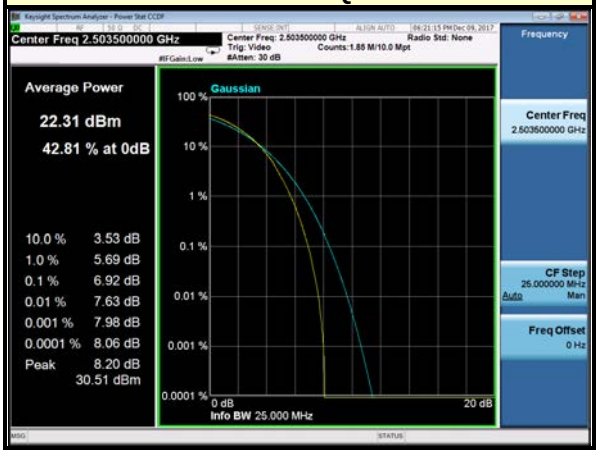
**15MHz / QPSK**




**15MHz / 16QAM**



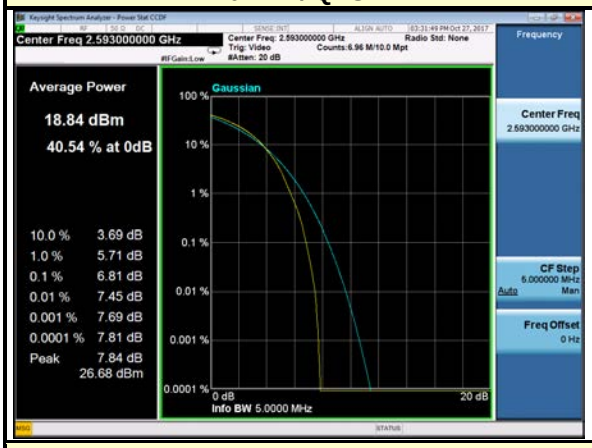

**15MHz / 64QAM**



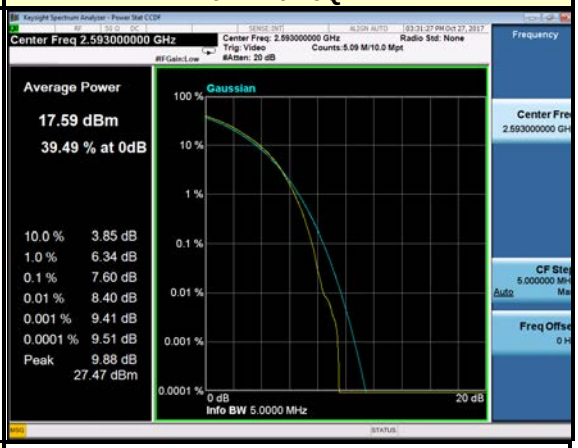
| CHANNEL BANDWIDTH: 20MHz | | | | |
|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | PEAK TO AVERAGE RATIO (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 39725 | 2503.5 | 6.07 | 7.32 | 6.76 |
| 40620 | 2593.0 | 6.16 | 7.10 | 6.47 |
| 41515 | 2682.5 | 6.11 | 7.14 | 6.73 |

**SPECTRUM PLOT OF WORST VALUE**

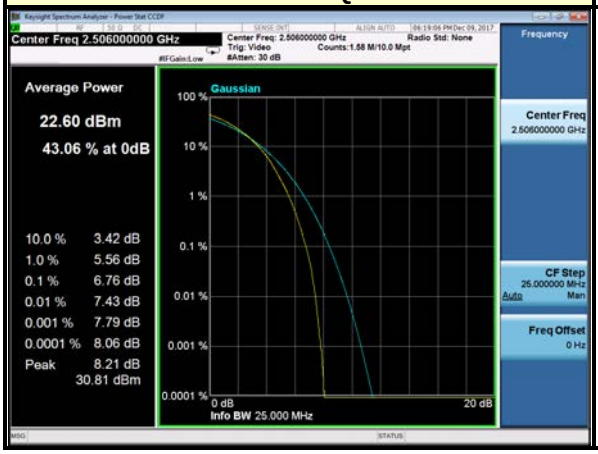
**20MHz / QPSK**




**20MHz / 16QAM**




**20MHz / 64QAM**

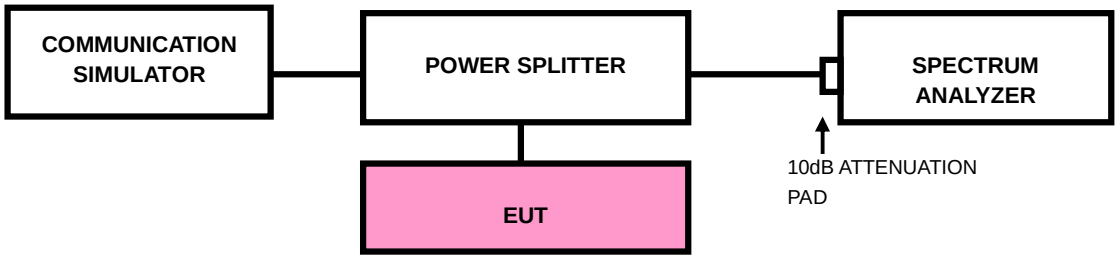


## 3.5 BAND EDGE MEASUREMENT

### 3.5.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(m)(4) specified that For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

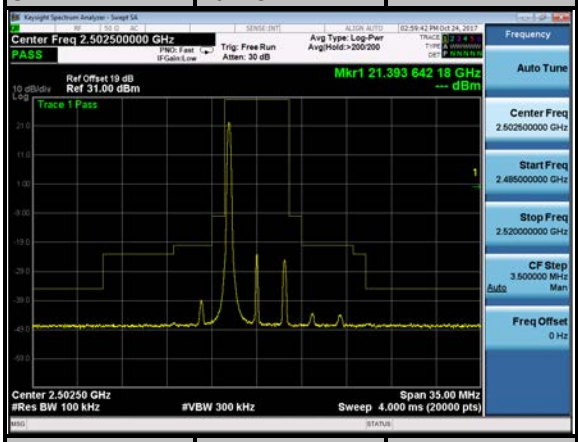
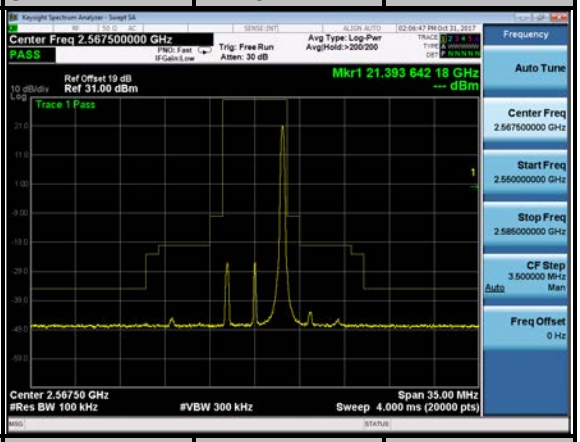
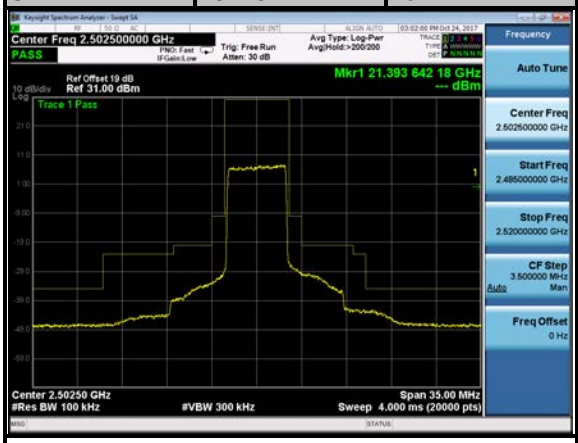
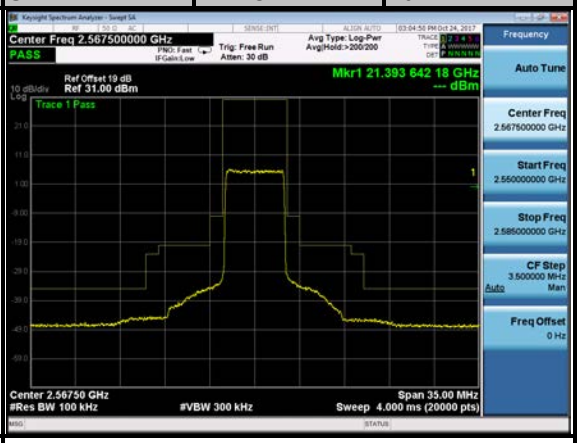
### 3.5.2 TEST SETUP

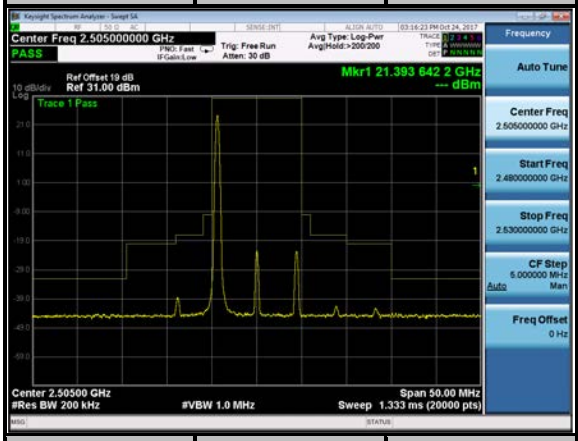
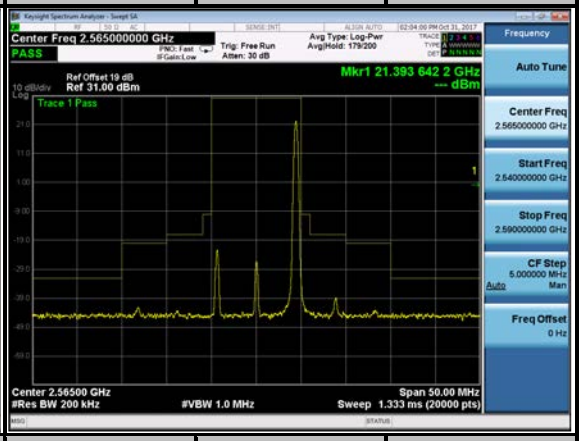
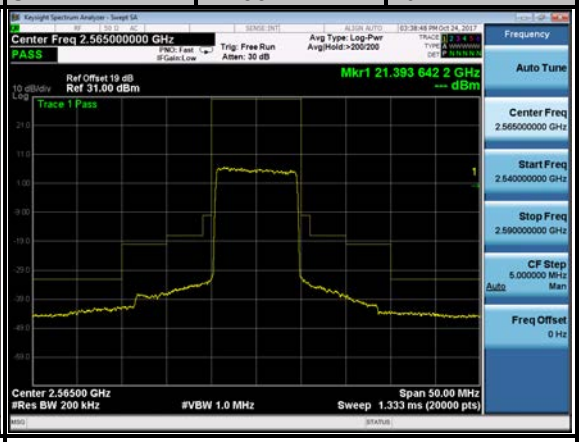


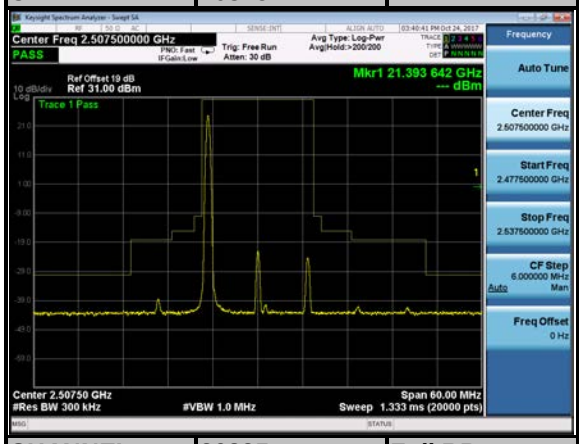
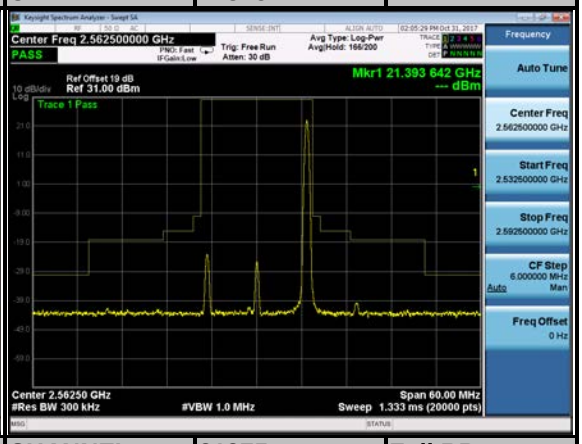
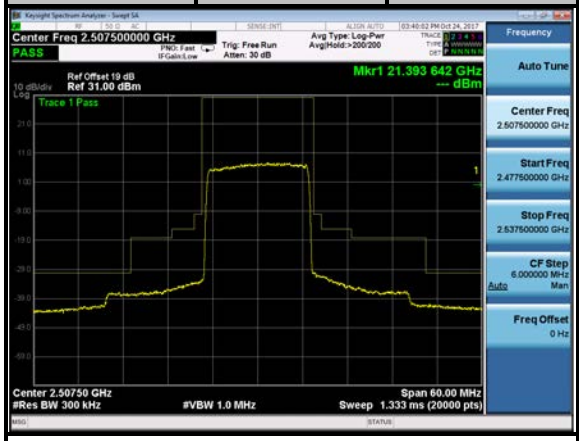
### 3.5.3 TEST PROCEDURES

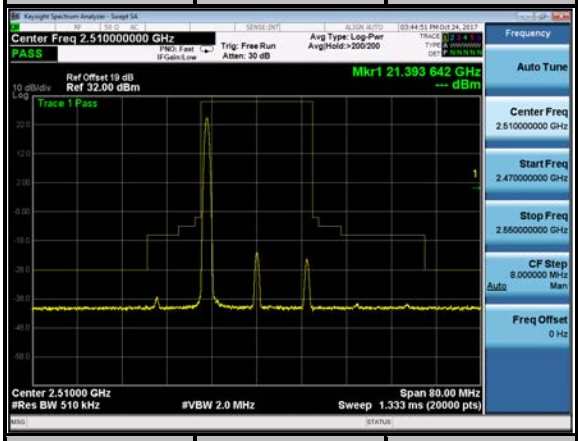
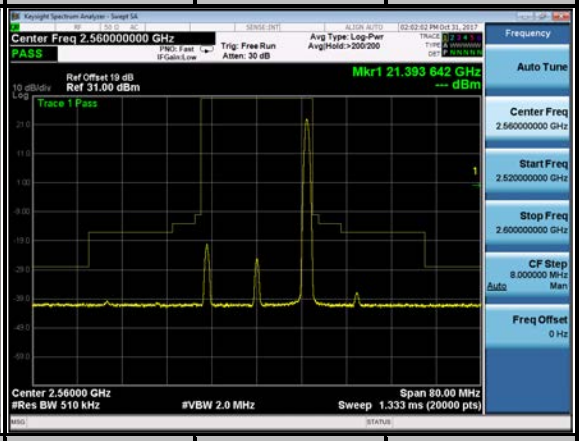
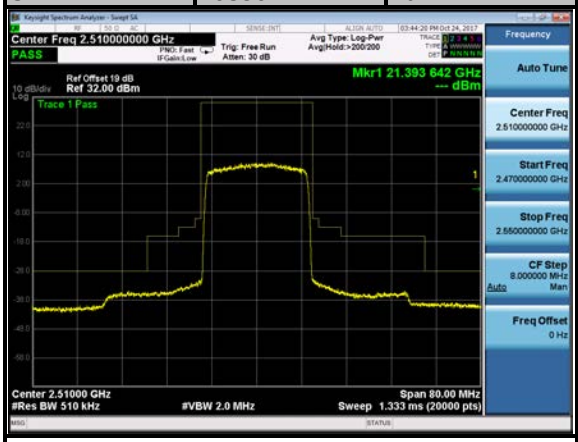
a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
c. The center frequency of spectrum is the band edge frequency and span is 35MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (Channel bandwidth 5MHz).
d. The center frequency of spectrum is the band edge frequency and span is 50MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz (Channel bandwidth 10MHz).
e. The center frequency of spectrum is the band edge frequency and span is 60MHz. RBW of the spectrum is 300kHz and VBW of the spectrum is 1MHz (Channel bandwidth 15MHz).
f. The center frequency of spectrum is the band edge frequency and span is 80MHz. RBW of the spectrum is 500kHz and VBW of the spectrum is 2MHz (Channel bandwidth 20MHz).
g. Record the max trace plot into the test report.

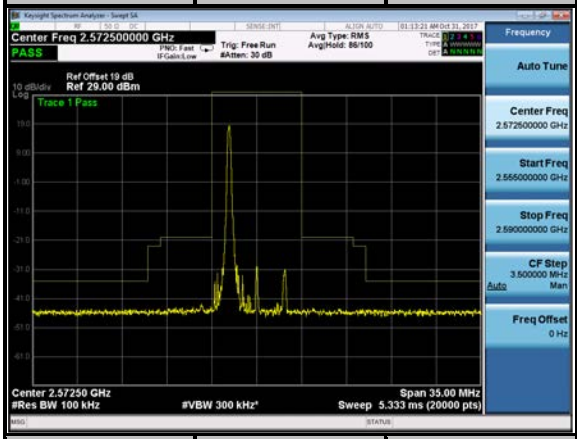
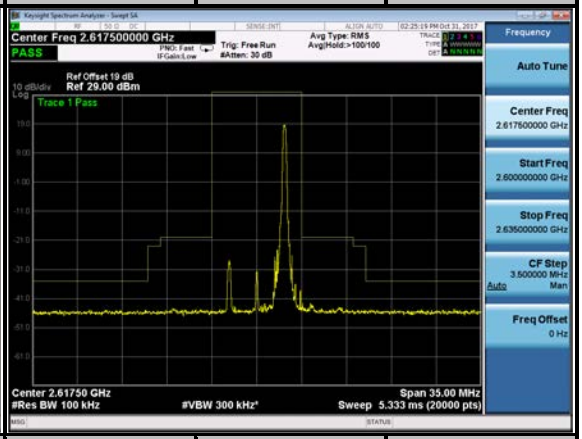
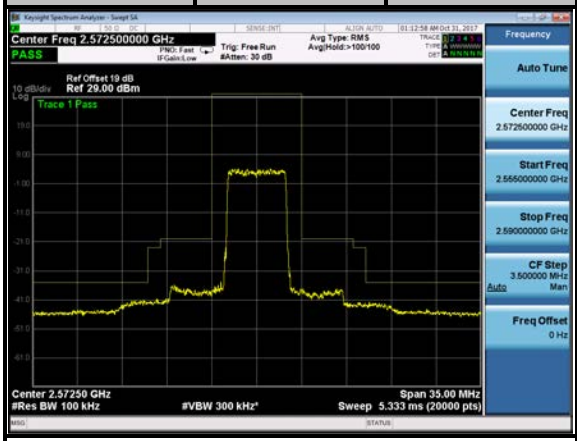
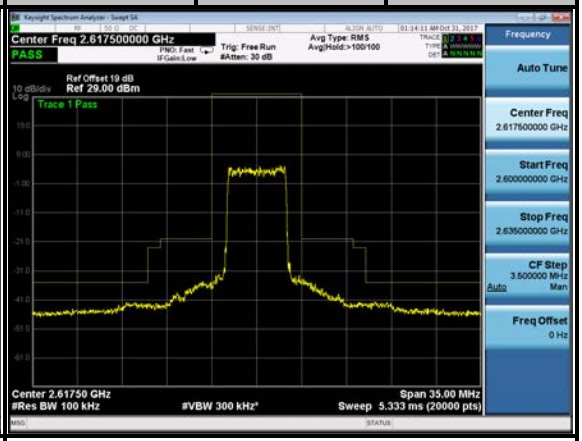
## 3.5.4 TEST RESULTS

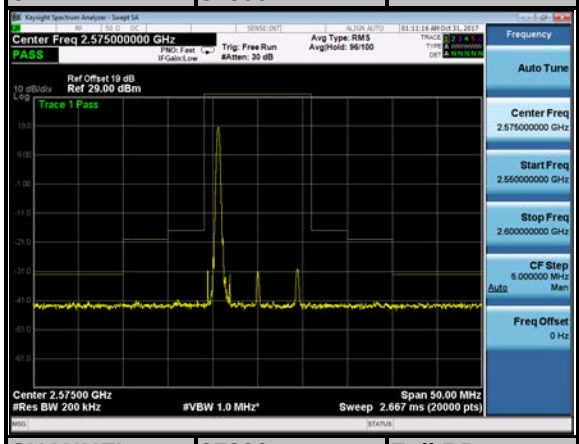
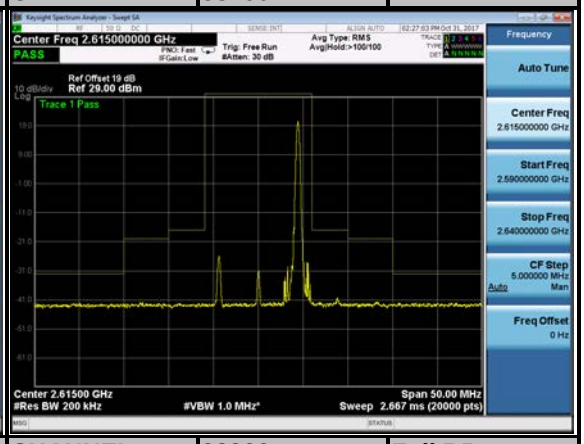
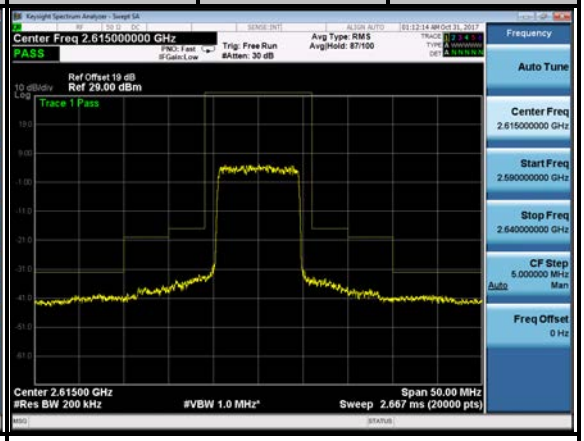
| LTE BAND 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5MHz / QPSK | | | | | |
| CHANNEL | 20775 | 1 RB | CHANNEL | 21425 | 1 RB |
|  | | |  | | |
| CHANNEL | 20775 | Full RB | CHANNEL | 21425 | Full RB |
|  | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

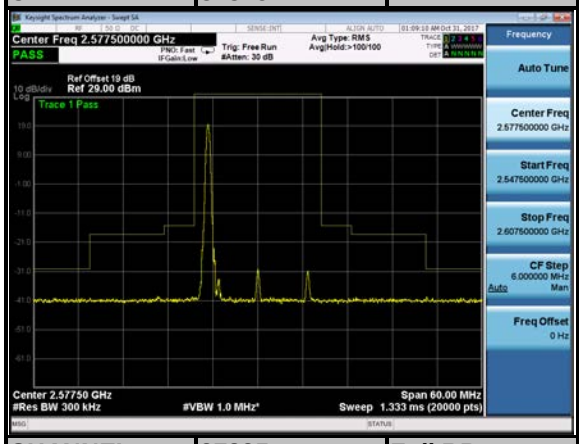
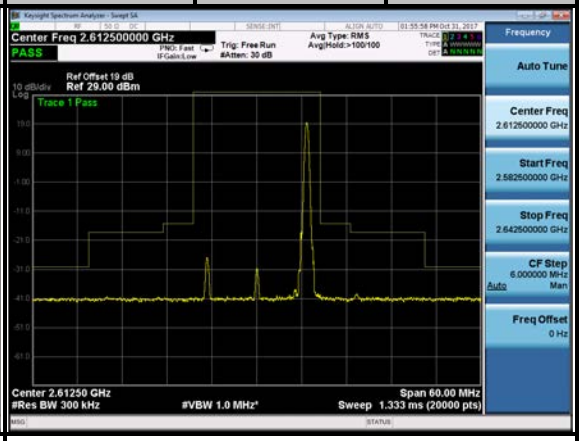
| LTE BAND 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10MHz / QPSK | | | | | |
| CHANNEL | 20800 | 1 RB | CHANNEL | 21400 | 1 RB |
|  | | |  | | |
| CHANNEL | 20800 | Full RB | CHANNEL | 21400 | Full RB |
| | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

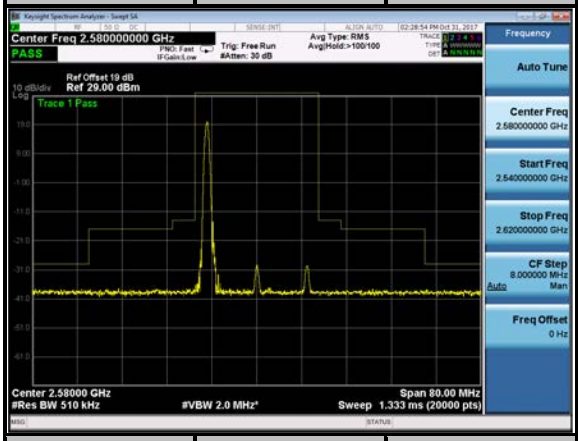
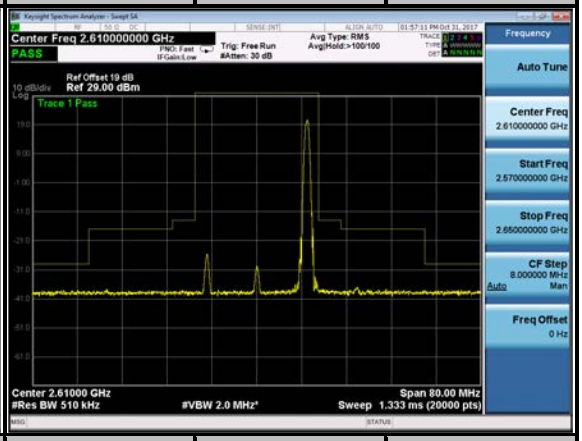
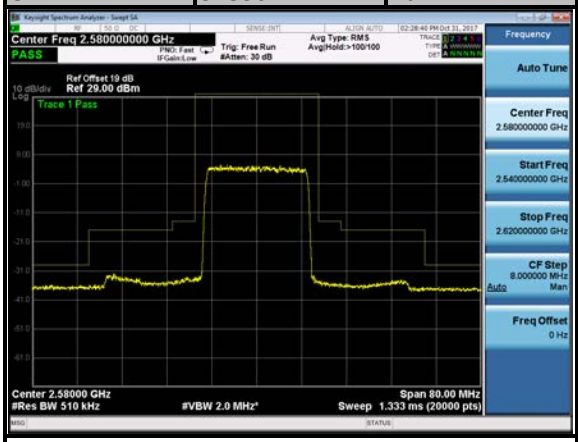
| LTE BAND 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15MHz / QPSK | | | | | |
| CHANNEL | 20825 | 1 RB | CHANNEL | 21375 | 1 RB |
|  | | |  | | |
| CHANNEL | 20825 | Full RB | CHANNEL | 21375 | Full RB |
|  | | | | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

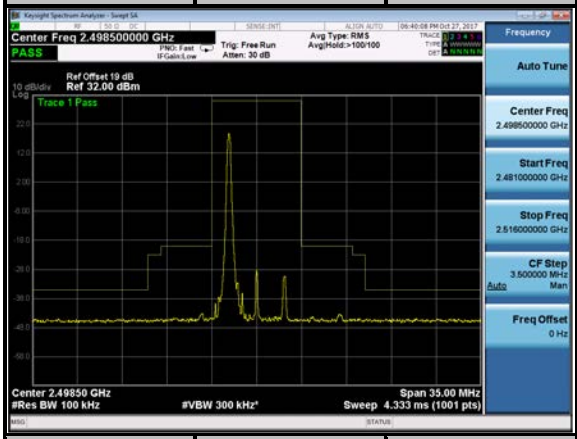
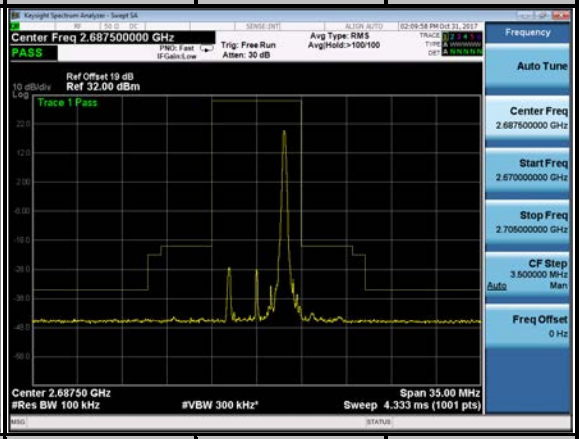
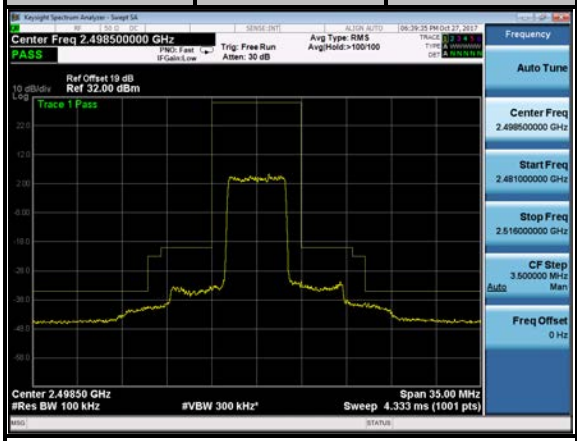
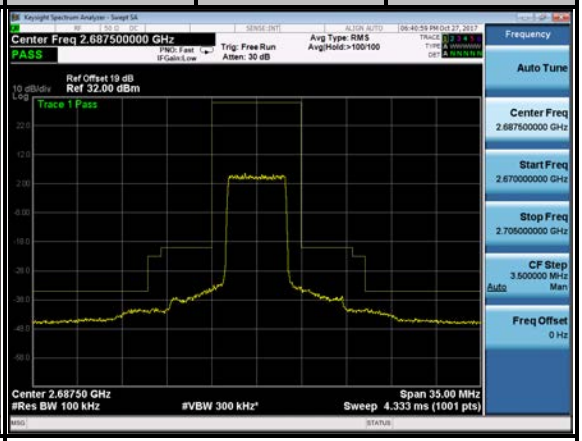
| LTE BAND 7 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20MHz / QPSK | | | | | |
| CHANNEL | 20850 | 1 RB | CHANNEL | 21350 | 1 RB |
|  | | |  | | |
| CHANNEL | 20850 | Full RB | CHANNEL | 21350 | Full RB |
|  | | | | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

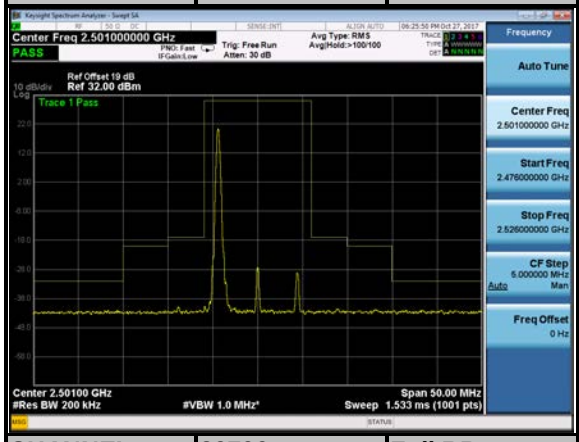
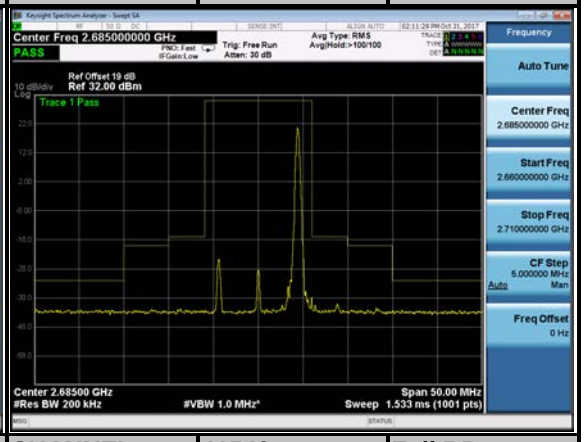
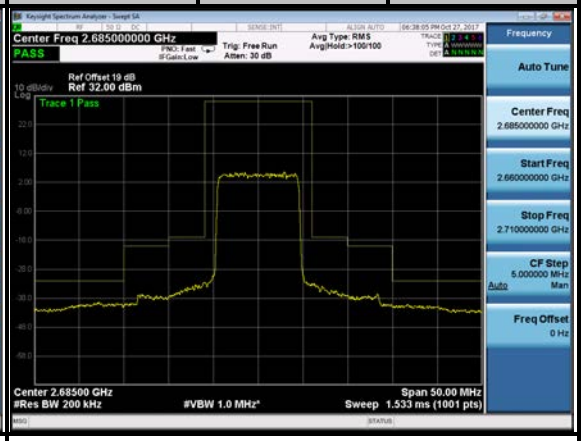
| LTE BAND 38 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5MHz / QPSK | | | | | |
| CHANNEL | 37775 | 1 RB | CHANNEL | 38225 | 1 RB |
|  | | |  | | |
| CHANNEL | 37775 | Full RB | CHANNEL | 38225 | Full RB |
|  | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

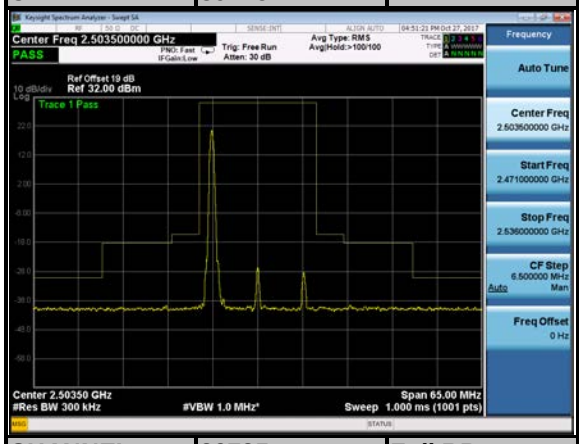
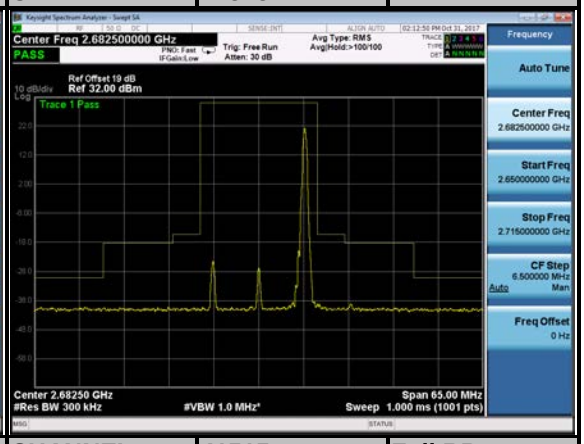
| LTE BAND 38 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10MHz / QPSK | | | | | |
| CHANNEL | 37800 | 1 RB | CHANNEL | 38200 | 1 RB |
|  | | |  | | |
| CHANNEL | 37800 | Full RB | CHANNEL | 38200 | Full RB |
| | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

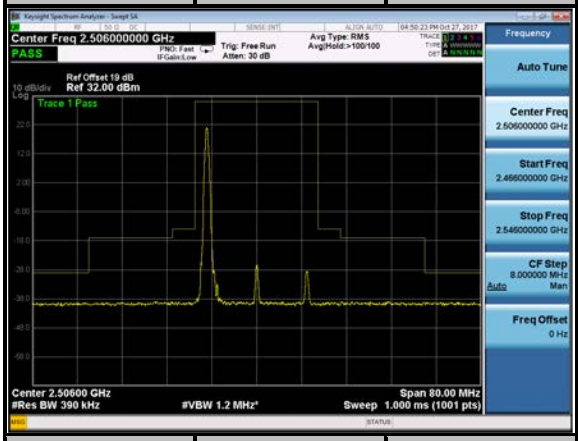
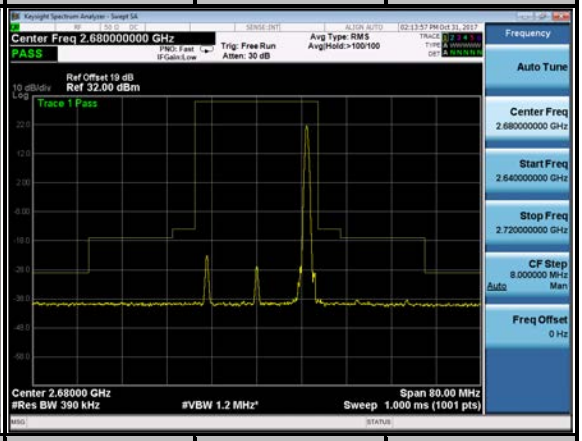
| LTE BAND 38 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15MHz / QPSK | | | | | |
| CHANNEL | 37825 | 1 RB | CHANNEL | 38175 | 1 RB |
|  | | | | | |
| CHANNEL | 37825 | Full RB | CHANNEL | 38175 | Full RB |
| | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

| LTE BAND 38 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20MHz / QPSK | | | | | |
| CHANNEL | 37850 | 1 RB | CHANNEL | 38150 | 1 RB |
|  | | |  | | |
| CHANNEL | 37850 | Full RB | CHANNEL | 38150 | Full RB |
|  | | | | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

| LTE BAND 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 5MHz / QPSK | | | | | |
| CHANNEL | 39675 | 1 RB | CHANNEL | 41565 | 1 RB |
|  | | |  | | |
| CHANNEL | 39675 | Full RB | CHANNEL | 41565 | Full RB |
|  | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

| LTE BAND 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 10MHz / QPSK | | | | | |
| CHANNEL | 39700 | 1 RB | CHANNEL | 41540 | 1 RB |
|  | | |  | | |
| CHANNEL | 39700 | Full RB | CHANNEL | 41540 | Full RB |
| | | |  | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

| LTE BAND 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 15MHz / QPSK | | | | | |
| CHANNEL | 39725 | 1 RB | CHANNEL | 41515 | 1 RB |
|  | | |  | | |
| CHANNEL | 39725 | Full RB | CHANNEL | 41515 | Full RB |
| | | | | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

| LTE BAND 41 | | | | | |
|---|---|---|---|---|---|
| Channel Bandwidth: 20MHz / QPSK | | | | | |
| CHANNEL | 39750 | 1 RB | CHANNEL | 41490 | 1 RB |
|  | | |  | | |
| CHANNEL | 39750 | Full RB | CHANNEL | 41490 | Full RB |
| | | | | | |
| **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | | **Note:** Limit has been adjusted by 10*log(RBW) to reflect a 1MHz measurement bandwidth. | | |

## 3.6 CONDUCTED SPURIOUS EMISSIONS

### 3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

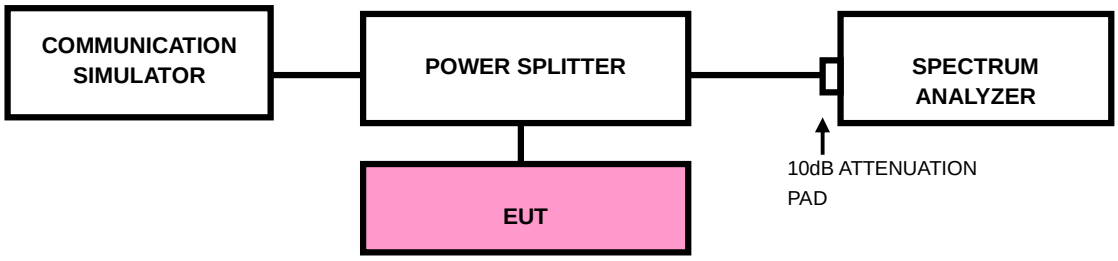
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 55 +10 log10(P) dB. The limit of emission is equal to -25dBm.

### 3.6.2 TEST PROCEDURE

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

b. Measuring frequency range is from 30MHz~27GHz for LTE Band 7/ LTE Band 38/LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

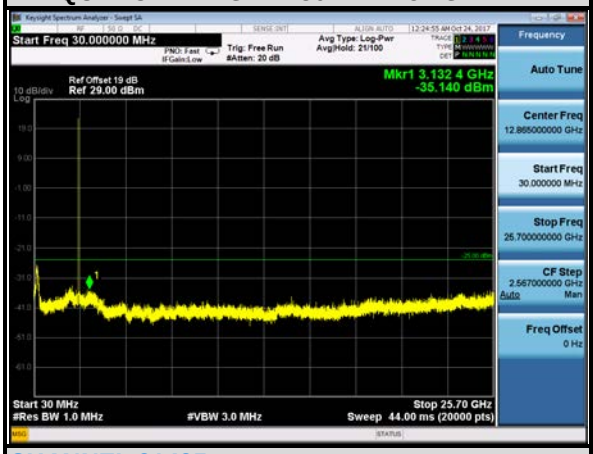
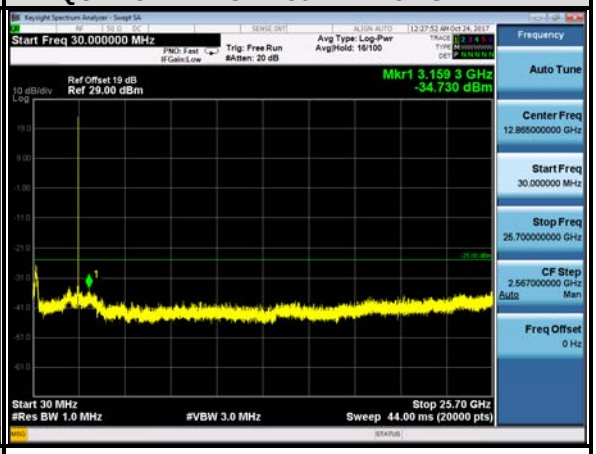
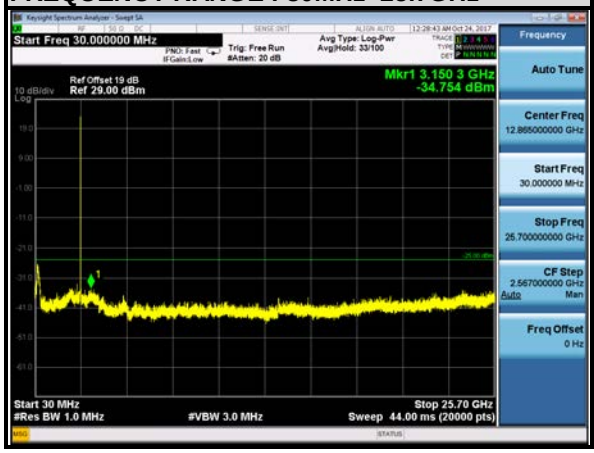
### 3.6.3 TEST SETUP

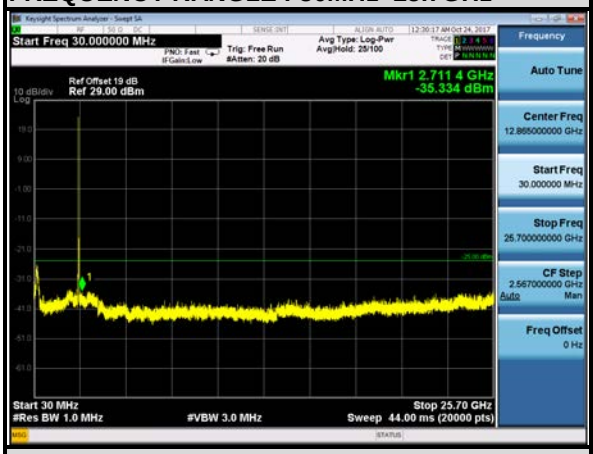
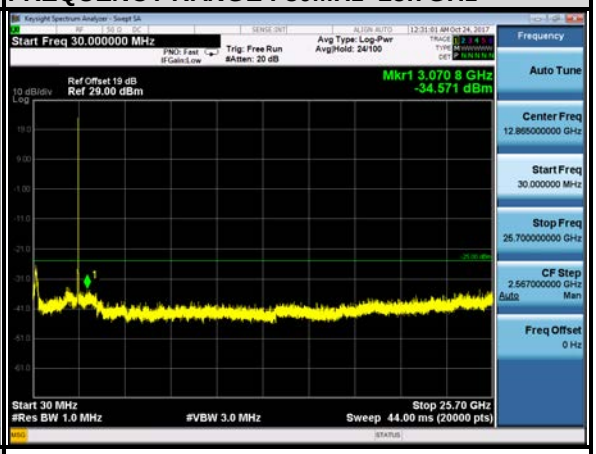
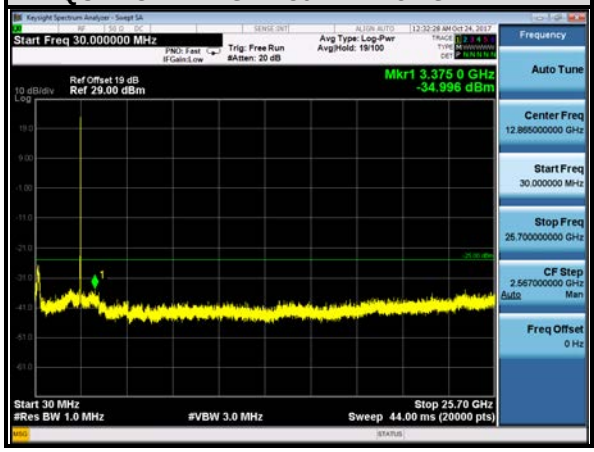


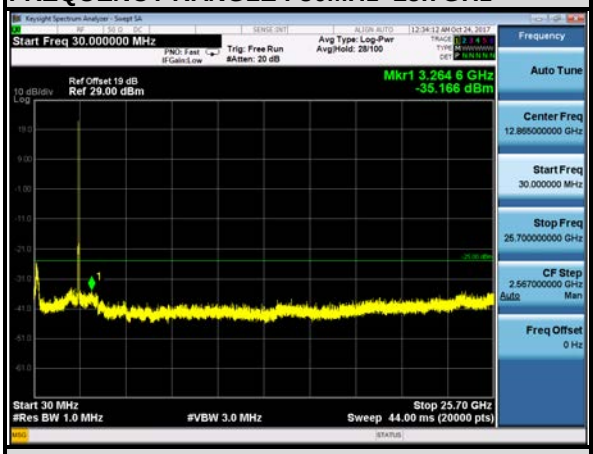
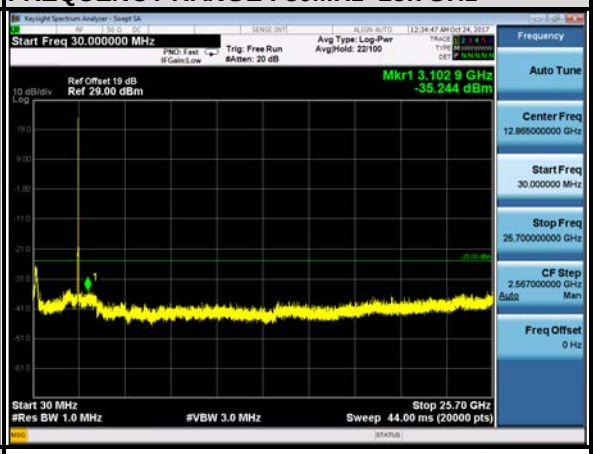
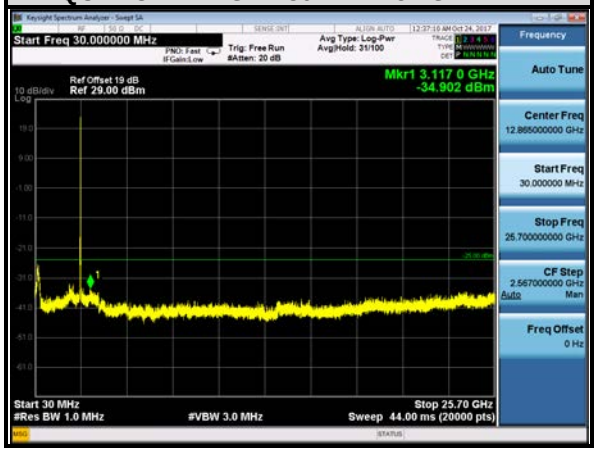
## 3.6.4 TEST RESULTS

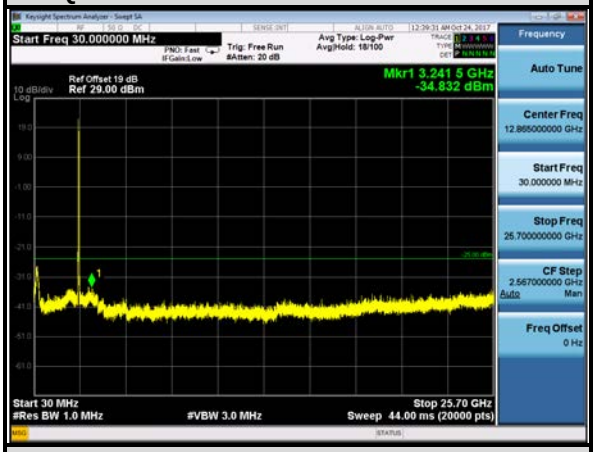
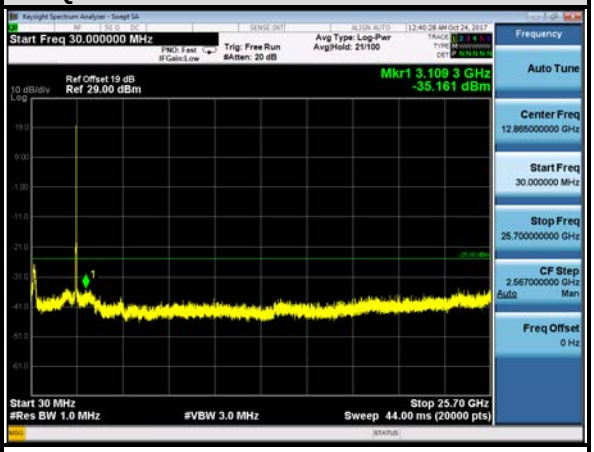
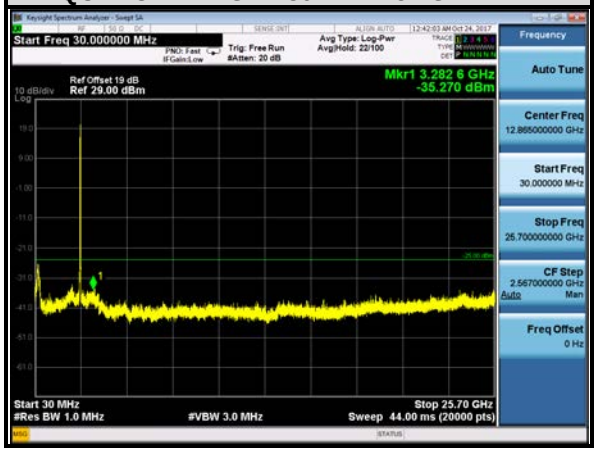
### LTE BAND 7

**5MHz / QPSK**

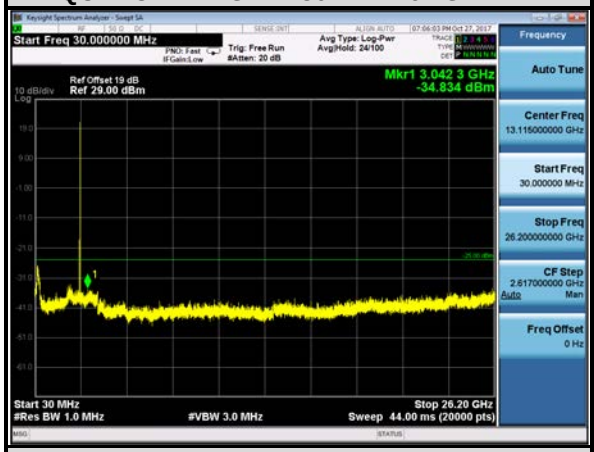
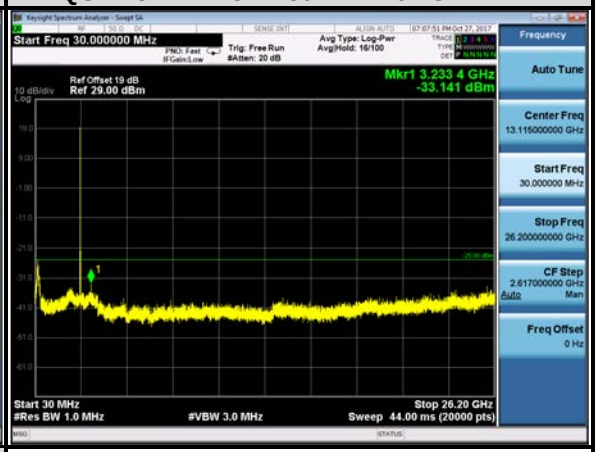
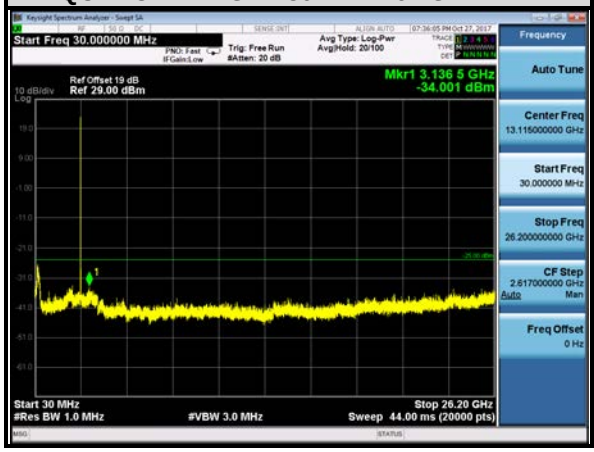
| CHANNEL 20775 | CHANNEL 21100 |
|---|---|
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  |  |
| CHANNEL 21425 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

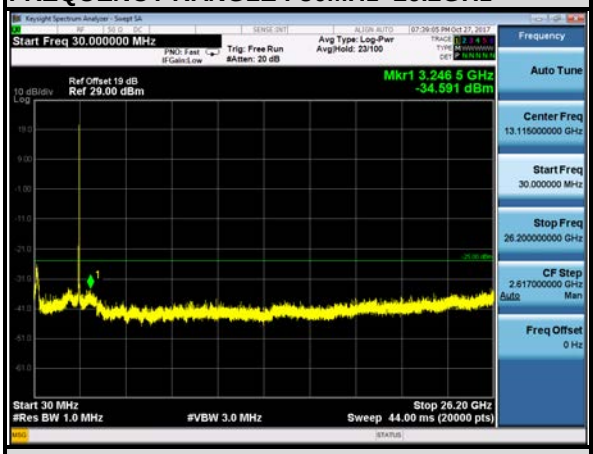
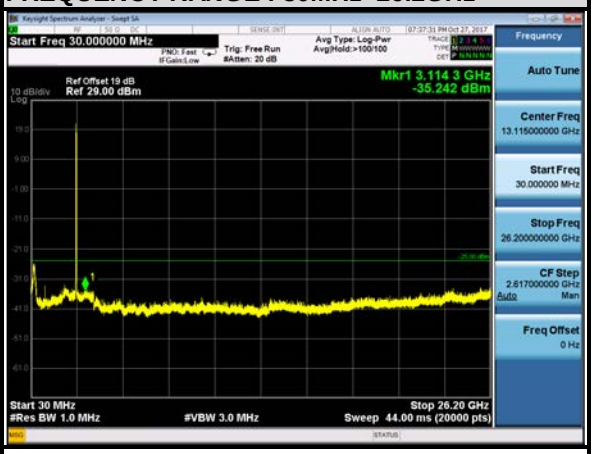
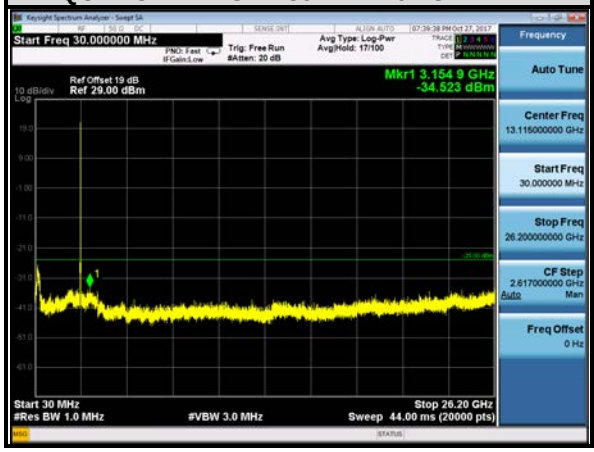
| 10MHz / QPSK | |
|---|---|
| CHANNEL 20800 | CHANNEL 21100 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  |  |
| CHANNEL 21400 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

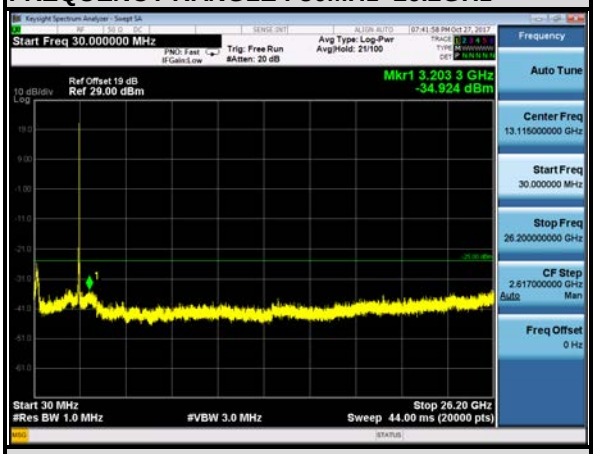
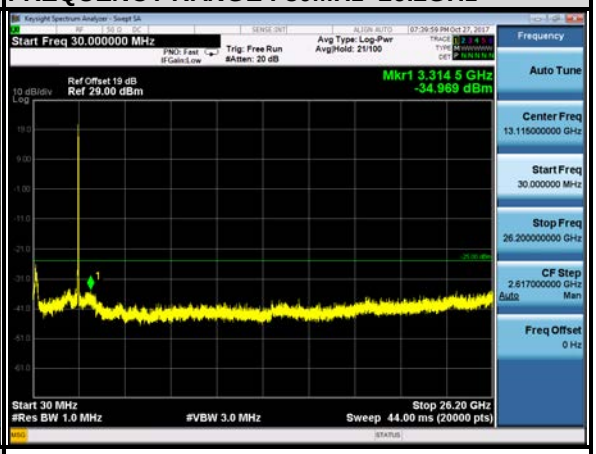
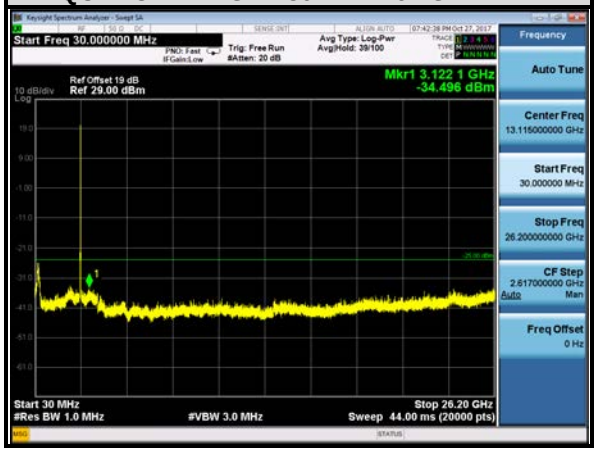
| 15MHz / QPSK | |
|---|---|
| CHANNEL 20825 | CHANNEL 21100 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  |  |
| CHANNEL 21375 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

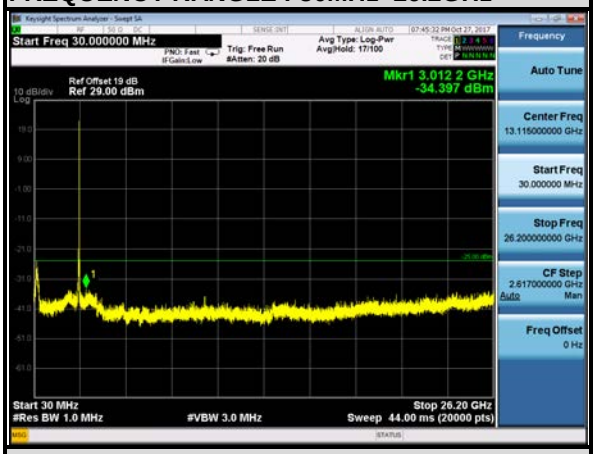
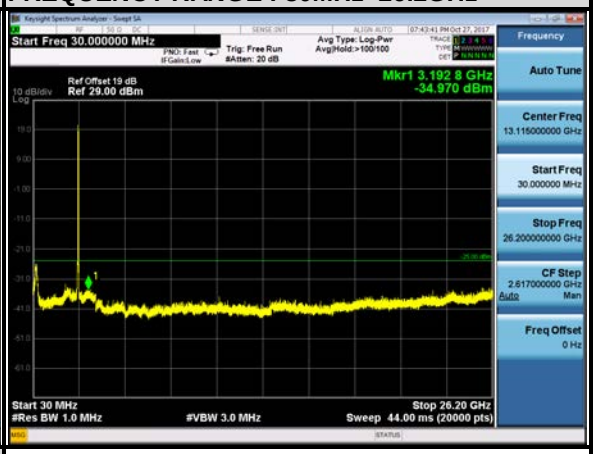
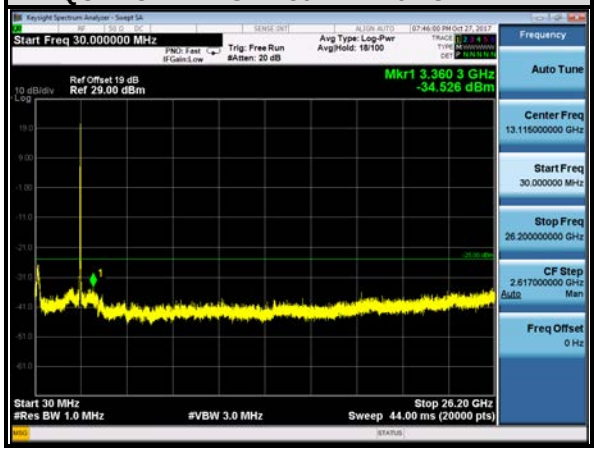
| 20MHz / QPSK | |
|---|---|
| CHANNEL 20850 | CHANNEL 21100 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  |  |
| CHANNEL 21350 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

## LTE BAND 38

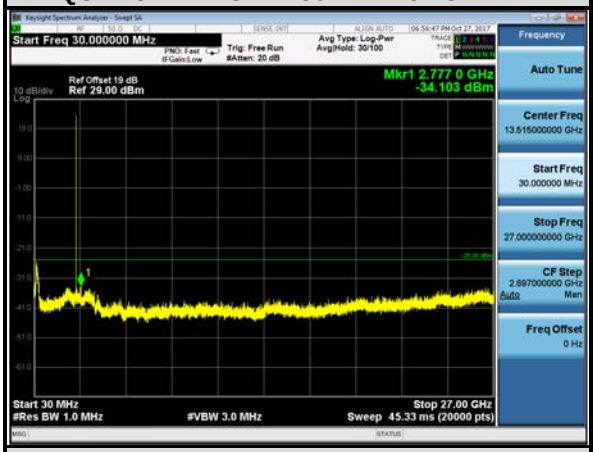
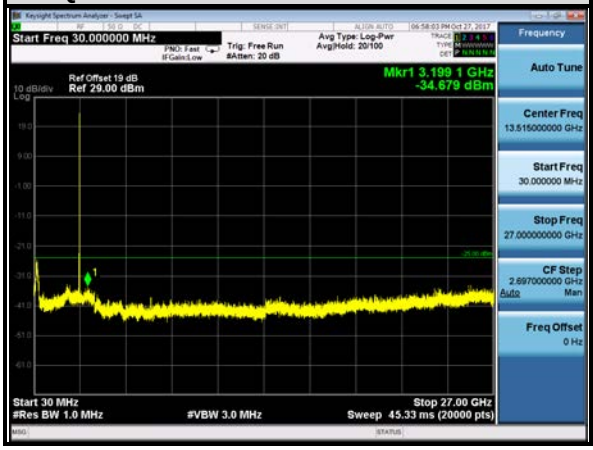
| 5MHz / QPSK | |
|---|---|
| CHANNEL 37775 | CHANNEL 38000 |
| FREQUENCY RANG2E : 30MHz~26.2GHz | FREQUENCY RANGE : 30MHz~26.2GHz |
|  |  |
| CHANNEL 38225 | |
| FREQUENCY RANGE : 30MHz~26.2GHz | |
|  | |

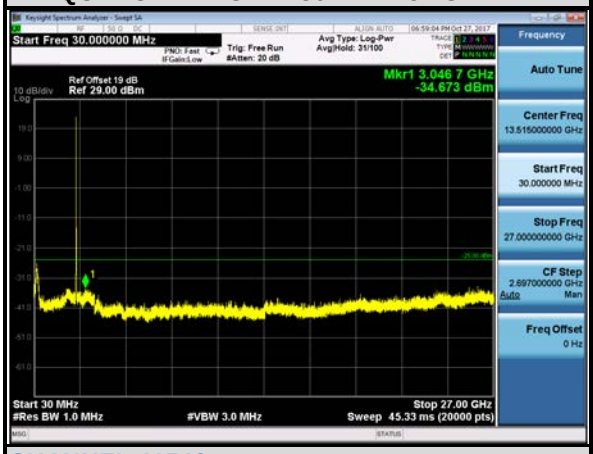
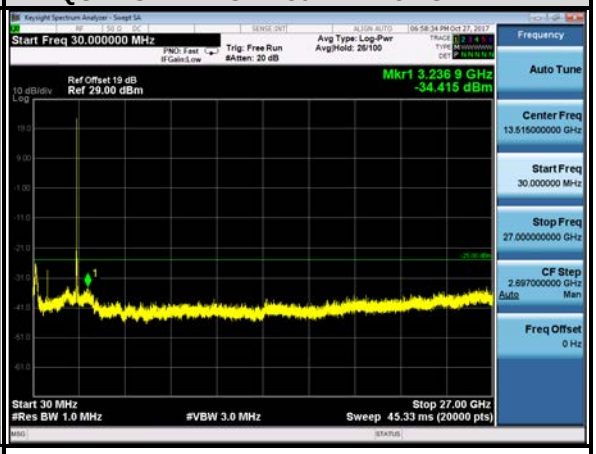
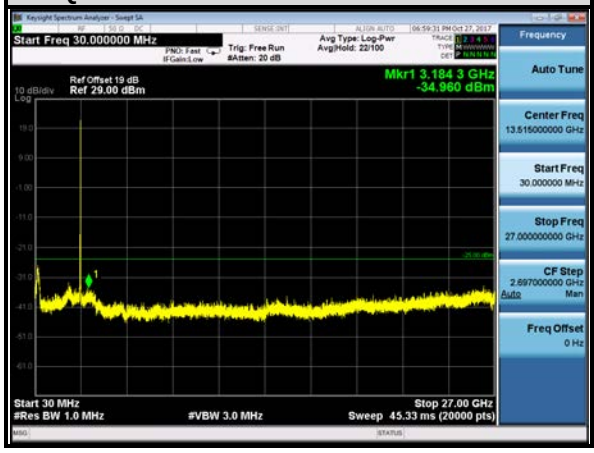
| 10MHz / QPSK | |
|---|---|
| CHANNEL 37800 | CHANNEL 38000 |
| FREQUENCY RANG2E : 30MHz~26.2GHz | FREQUENCY RANGE : 30MHz~26.2GHz |
|  |  |
| CHANNEL 38200 | |
| FREQUENCY RANGE : 30MHz~26.2GHz | |
|  | |

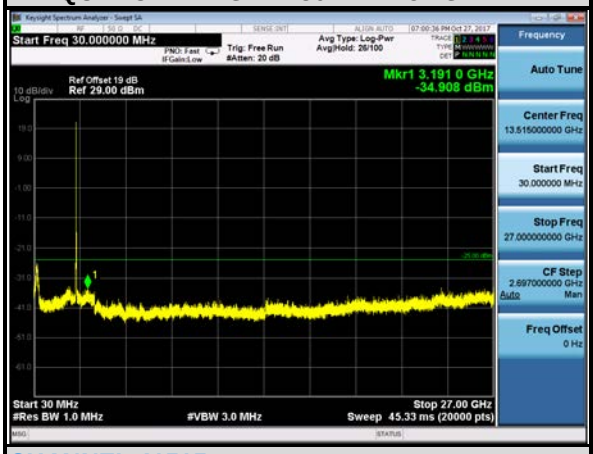
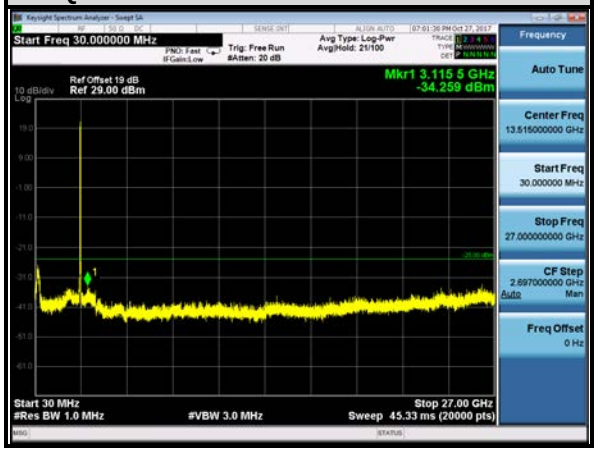
| 15MHz / QPSK | |
|---|---|
| CHANNEL 37825 | CHANNEL 38000 |
| FREQUENCY RANG2E : 30MHz~26.2GHz | FREQUENCY RANGE : 30MHz~26.2GHz |
|  |  |
| CHANNEL 38175 | |
| FREQUENCY RANGE : 30MHz~26.2GHz | |
|  | |

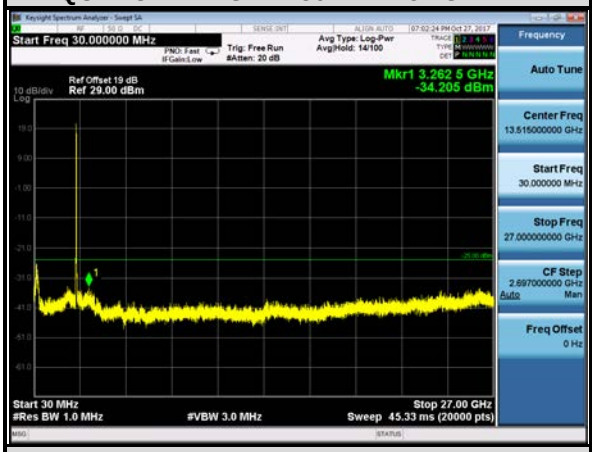
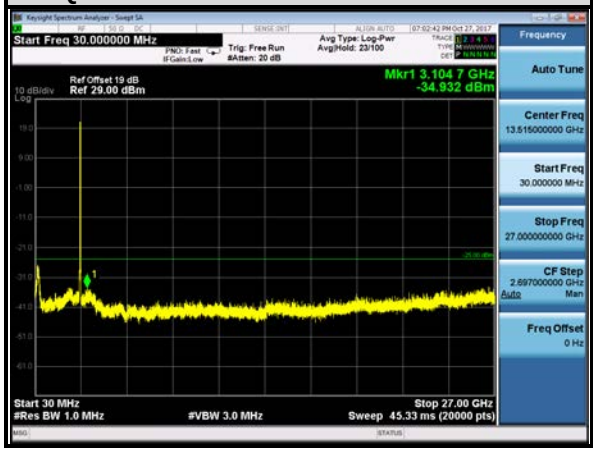
| 20MHz / QPSK | |
|---|---|
| CHANNEL 37850 | CHANNEL 38000 |
| FREQUENCY RANG2E : 30MHz~26.2GHz | FREQUENCY RANGE : 30MHz~26.2GHz |
|  |  |
| CHANNEL 38150 | |
| FREQUENCY RANGE : 30MHz~26.2GHz | |
|  | |

## LTE BAND 41

| 5MHz / QPSK | |
|---|---|
| CHANNEL 39675 | CHANNEL 40620 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  | |
| CHANNEL 41565 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

| 10MHz / QPSK | |
|---|---|
| CHANNEL 39700 | CHANNEL 40620 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  |  |
| CHANNEL 41540 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

| 15MHz / QPSK | |
|---|---|
| CHANNEL 39725 | CHANNEL 40620 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  | |
| CHANNEL 41515 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

| 20MHz / QPSK | |
|---|---|
| CHANNEL 39750 | CHANNEL 40620 |
| FREQUENCY RANG2E : 30MHz~25.7GHz | FREQUENCY RANGE : 30MHz~25.7GHz |
|  | |
| CHANNEL 41490 | |
| FREQUENCY RANGE : 30MHz~25.7GHz | |
|  | |

## 3.7 RADIATED EMISSION MEASUREMENT

### 3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

### 3.7.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G.
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

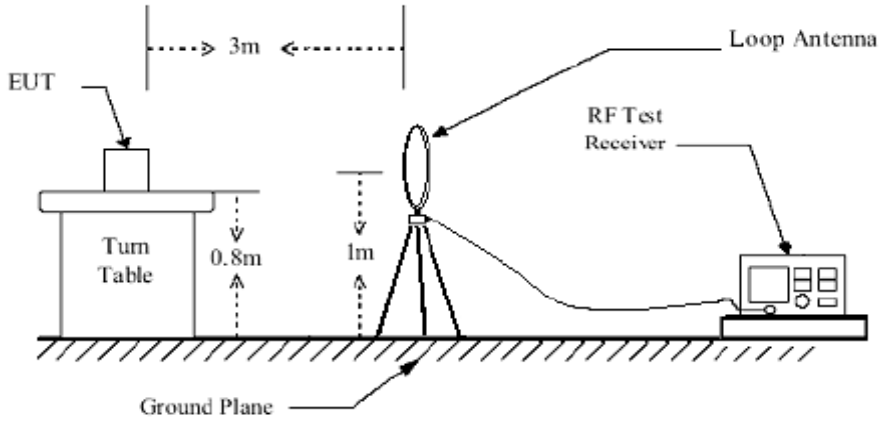
**NOTE:** The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

### 3.7.3 DEVIATION FROM TEST STANDARD

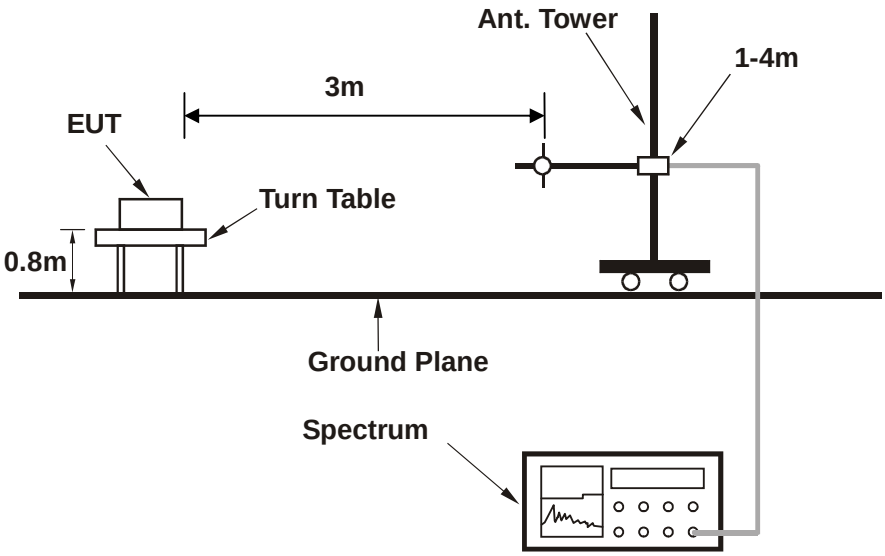
No deviation

## 3.7.4 TEST SETUP

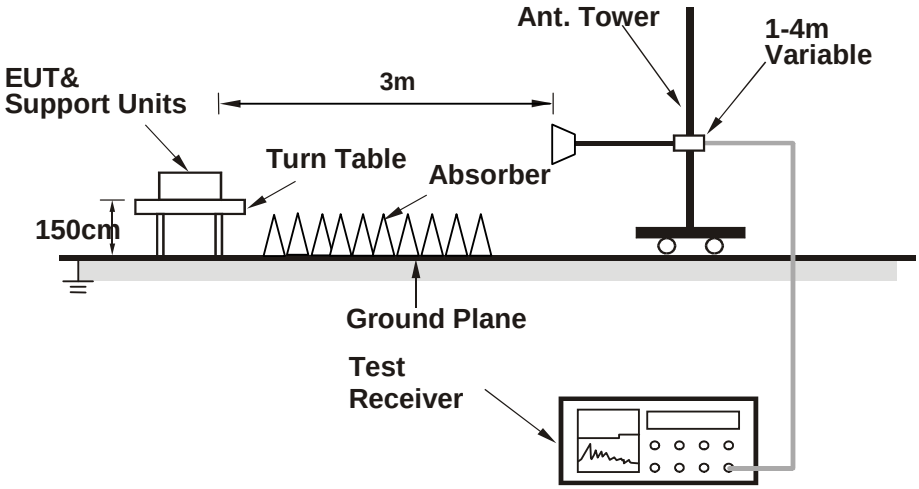
**<Below 30MHz>**




**< Frequency Range 30MHz~1GHz >**



**< Frequency Range above 1GHz >**




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

## 3.7.5 TEST RESULTS

**BELOW 1GHz WORST-CASE DATA**

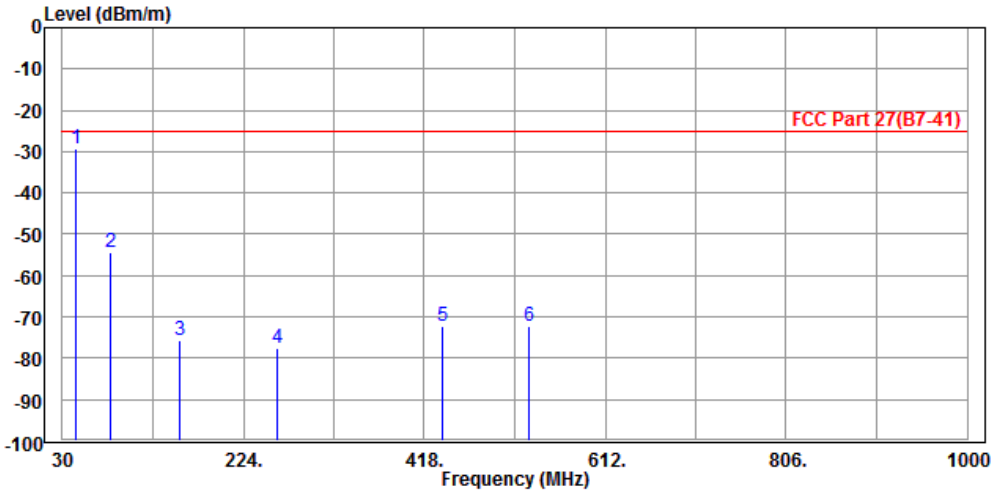
**9 KHz – 30 KHz data:** the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

**30 MHz – 1GHz data:**

**LTE Band 41:**

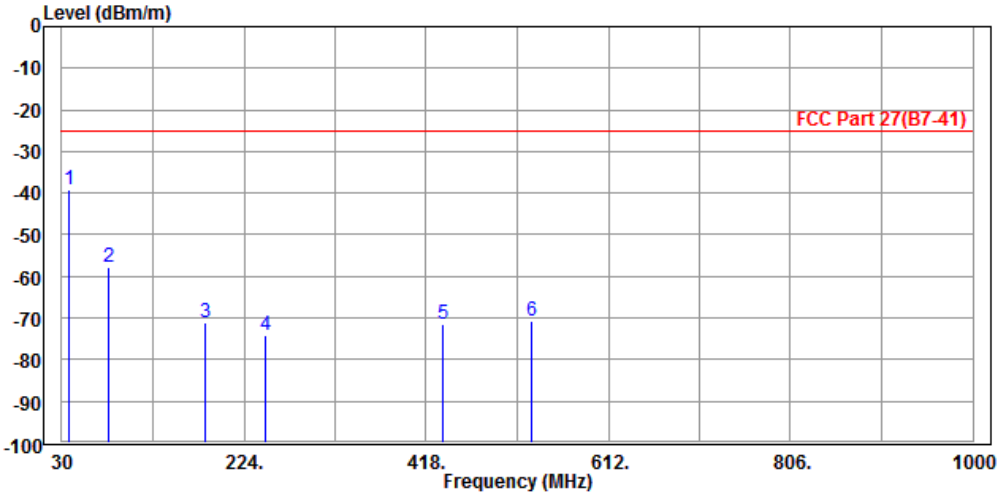
| | | | |
|---|---|---|---|
| **MODE** | TX channel 40620 | **FREQUENCY RANGE** | Below 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 56%RH | **INPUT POWER** | DC 5/9V from adapter |
| **TESTED BY** | Simon Yang | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 PP | 44.550 | -29.38 | -37.48 | -25.00 | -4.38 | 8.10 | Peak | Horizontal |
| 2 | 81.410 | -54.49 | -46.65 | -25.00 | -29.49 | -7.84 | Peak | Horizontal |
| 3 | 155.130 | -75.53 | -56.74 | -25.00 | -50.53 | -18.79 | Peak | Horizontal |
| 4 | 260.860 | -77.72 | -61.98 | -25.00 | -52.72 | -15.74 | Peak | Horizontal |
| 5 | 437.400 | -72.25 | -61.82 | -25.00 | -47.25 | -10.43 | Peak | Horizontal |
| 6 | 530.520 | -72.33 | -62.46 | -25.00 | -47.33 | -9.87 | Peak | Horizontal |



| MODE | TX channel 40620 | FREQUENCY RANGE | Below 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | PP | 37.760 | -39.03 | -37.73 | -25.00 | -14.03 | -1.30 | Peak | Vertical |
| 2 | | 79.470 | -57.63 | -47.10 | -25.00 | -32.63 | -10.53 | Peak | Vertical |
| 3 | | 182.290 | -71.16 | -58.28 | -25.00 | -46.16 | -12.88 | Peak | Vertical |
| 4 | | 247.280 | -74.17 | -62.70 | -25.00 | -49.17 | -11.47 | Peak | Vertical |
| 5 | | 435.460 | -71.63 | -62.00 | -25.00 | -46.63 | -9.63 | Peak | Vertical |
| 6 | | 530.520 | -70.67 | -63.40 | -25.00 | -45.67 | -7.27 | Peak | Vertical |



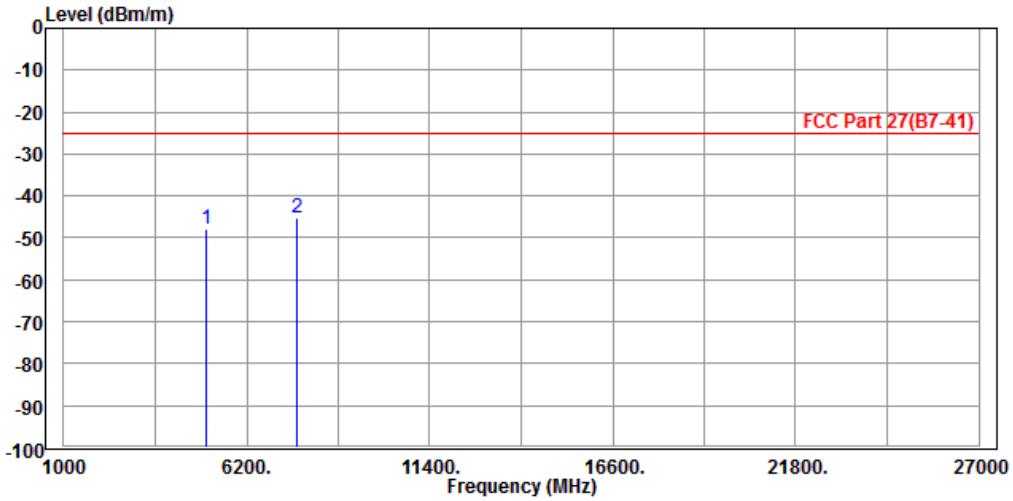
## ABOVE 1GHz

**Note:** For higher frequency, the emission is too low to be detected.

### LTE Band 7
### CHANNEL BANDWIDTH: 5MHz / QPSK

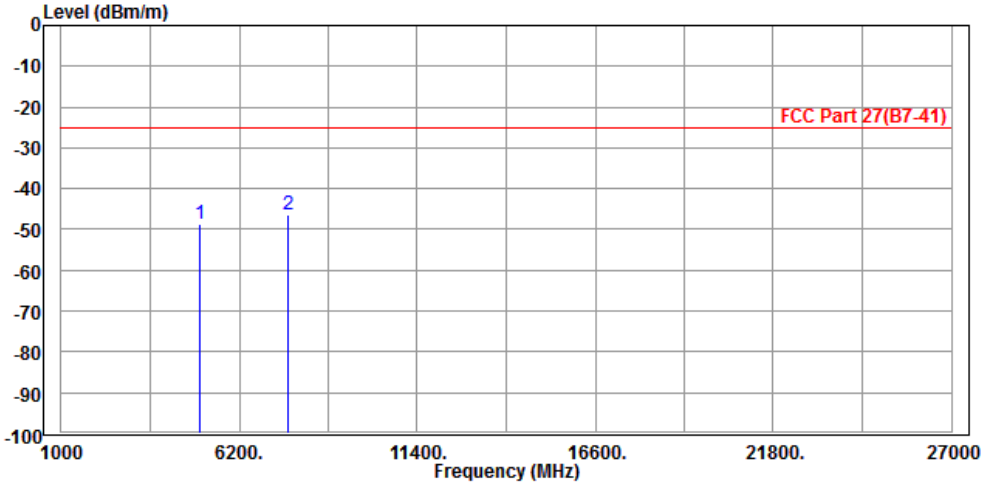
| | | | |
|---|---|---|---|
| **MODE** | TX channel 21100 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 56%RH | **INPUT POWER** | DC 5/9V from adapter |
| **TESTED BY** | Simon Yang | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5056.000 | -47.85 | -56.29 | -25.00 | -22.85 | 8.44 | Peak | Horizontal |
| 2 PP | 7605.000 | -45.43 | -58.91 | -25.00 | -20.43 | 13.48 | Peak | Horizontal |



| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -48.66 | -56.65 | -25.00 | -23.66 | 7.99 | Peak | Vertical |
| 2 | PP | 7605.000 | -46.48 | -59.47 | -25.00 | -21.48 | 12.99 | Peak | Vertical |

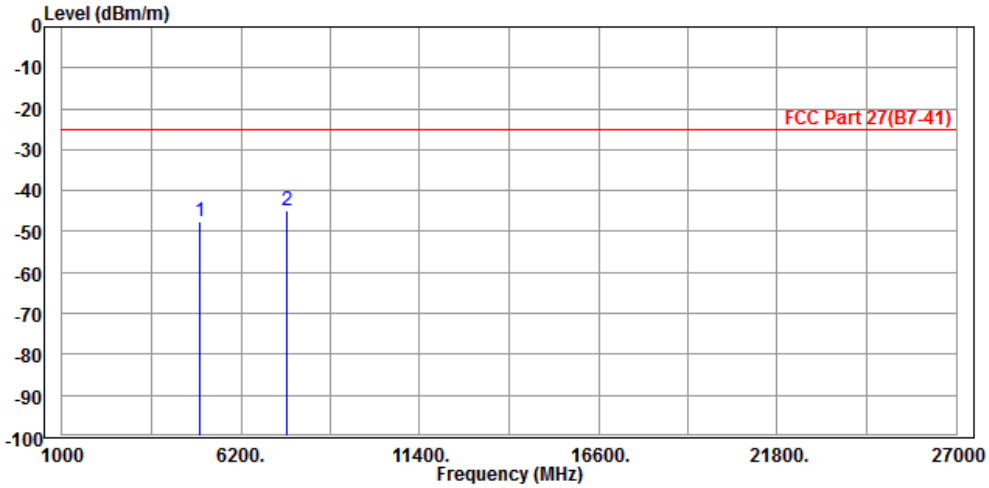


## CHANNEL BANDWIDTH: 10MHz / QPSK

### CH 20800

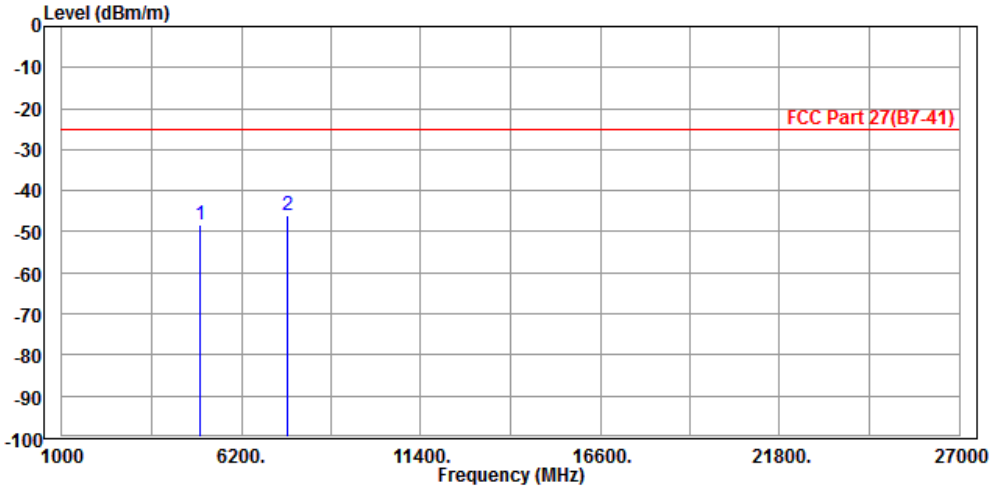
| MODE | TX channel 20800 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5004.000 | -47.53 | -55.91 | -25.00 | -22.53 | 8.38 | Peak | Horizontal |
| 2 | PP | 7526.000 | -44.74 | -58.11 | -25.00 | -19.74 | 13.37 | Peak | Horizontal |



| MODE | TX channel 20800 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

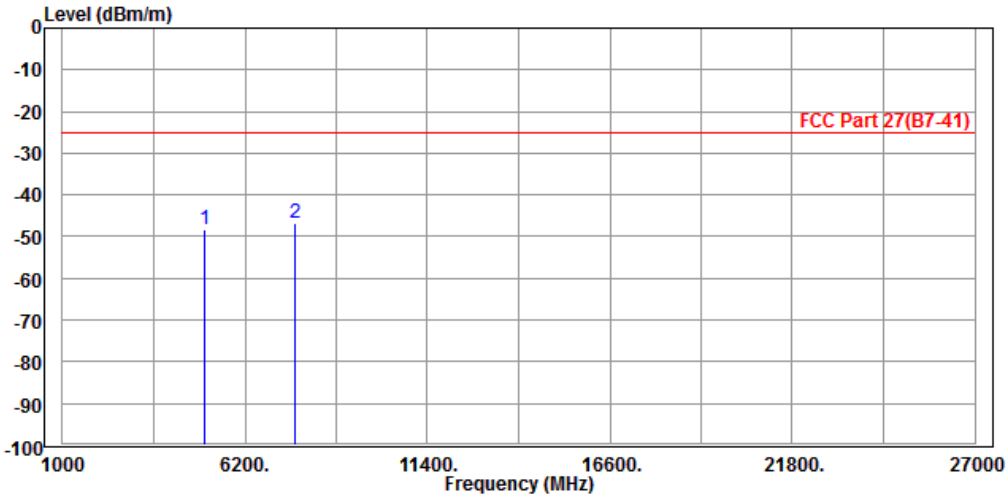
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5004.000 | -48.16 | -56.15 | -25.00 | -23.16 | 7.99 | Peak | Vertical |
| 2 | PP | 7515.000 | -45.99 | -58.82 | -25.00 | -20.99 | 12.83 | Peak | Vertical |



## CH 21100

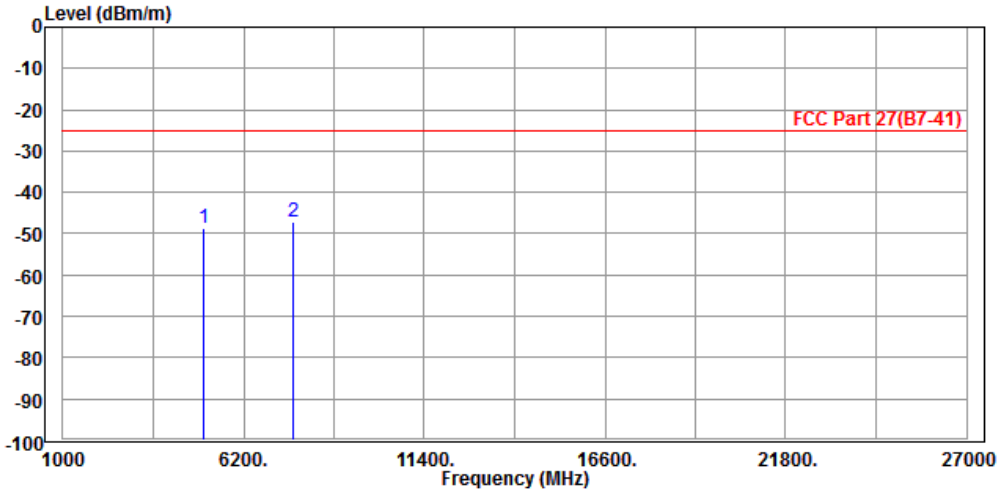
| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -48.10 | -56.54 | -25.00 | -23.10 | 8.44 | Peak | Horizontal |
| 2 | PP | 7605.000 | -46.74 | -60.22 | -25.00 | -21.74 | 13.48 | Peak | Horizontal |



| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

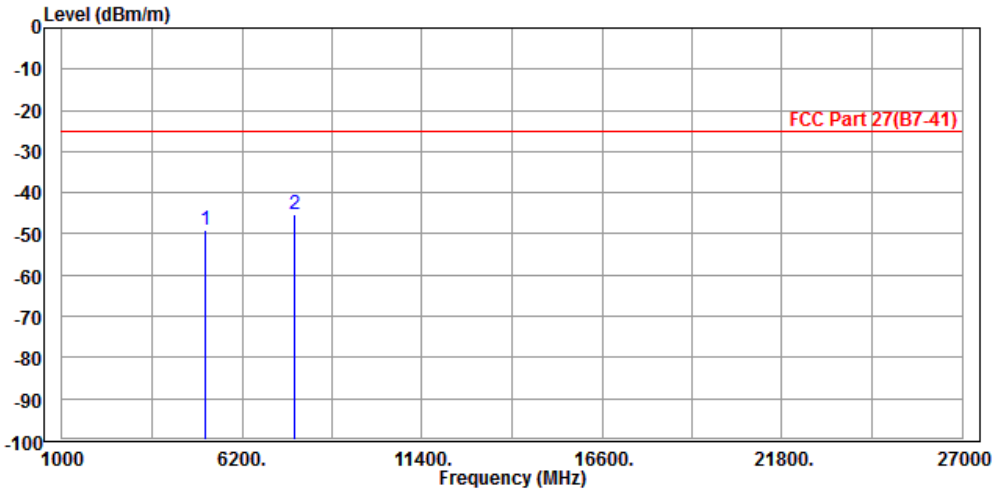
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -48.70 | -56.69 | -25.00 | -23.70 | 7.99 | Peak | Vertical |
| 2 | PP | 7605.000 | -47.12 | -60.11 | -25.00 | -22.12 | 12.99 | Peak | Vertical |



## CH 21400

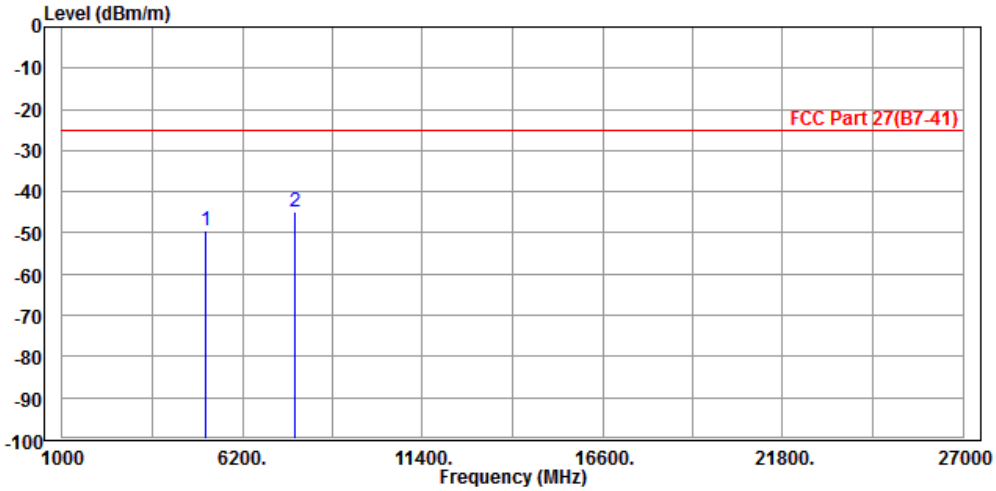
| MODE | TX channel 21400 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5134.000 | -48.94 | -57.47 | -25.00 | -23.94 | 8.53 | Peak | Horizontal |
| 2 | PP | 7695.000 | -45.10 | -58.71 | -25.00 | -20.10 | 13.61 | Peak | Horizontal |



| MODE | TX channel 21400 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

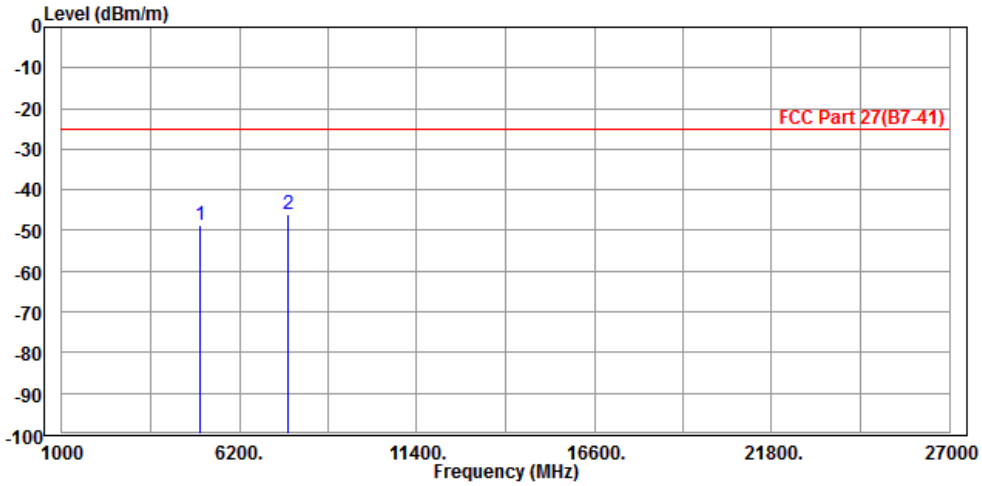
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5134.000 | -49.58 | -57.57 | -25.00 | -24.58 | 7.99 | Peak | Vertical |
| 2 | PP | 7695.000 | -44.83 | -57.98 | -25.00 | -19.83 | 13.15 | Peak | Vertical |



## CHANNEL BANDWIDTH: 15MHz / QPSK

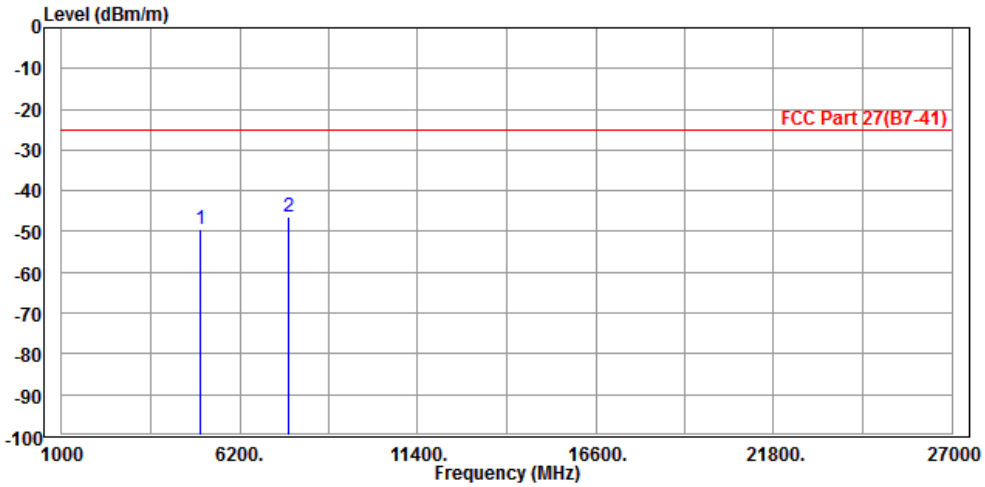
| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5056.000 | -48.61 | -57.05 | -25.00 | -23.61 | 8.44 | Peak | Horizontal |
| 2 PP | 7605.000 | -45.95 | -59.43 | -25.00 | -20.95 | 13.48 | Peak | Horizontal |



| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

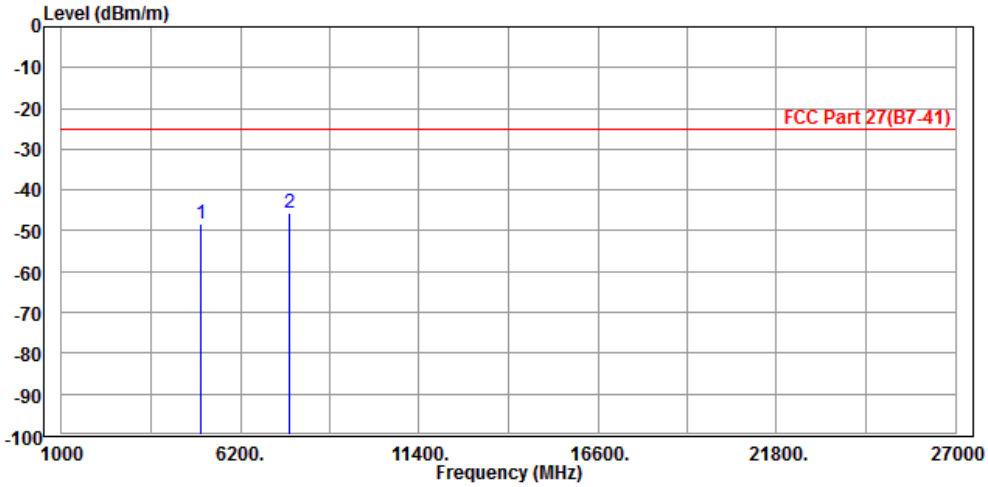
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -49.24 | -57.23 | -25.00 | -24.24 | 7.99 | Peak | Vertical |
| 2 | PP | 7605.000 | -46.40 | -59.39 | -25.00 | -21.40 | 12.99 | Peak | Vertical |



## CHANNEL BANDWIDTH: 20MHz / QPSK

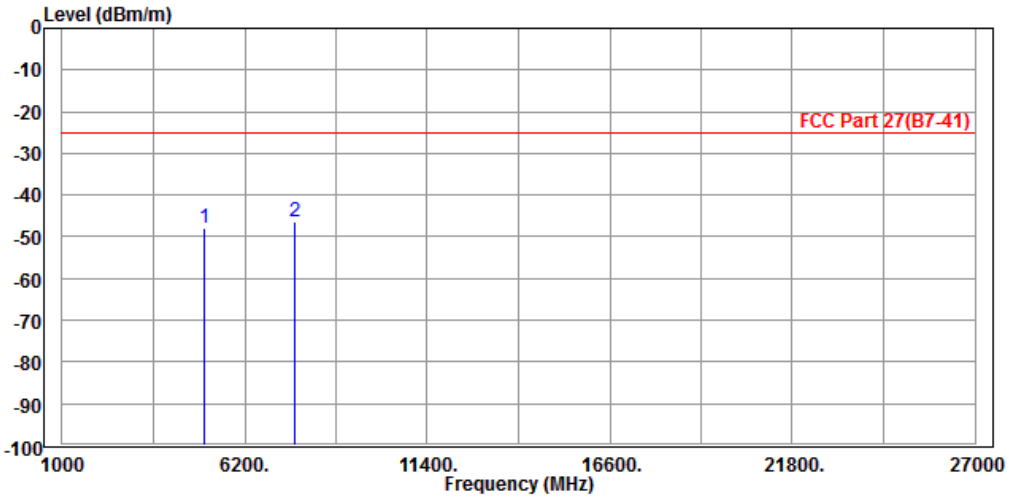
| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -48.37 | -56.81 | -25.00 | -23.37 | 8.44 | Peak | Horizontal |
| 2 | PP | 7605.000 | -45.66 | -59.14 | -25.00 | -20.66 | 13.48 | Peak | Horizontal |



| MODE | TX channel 21100 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

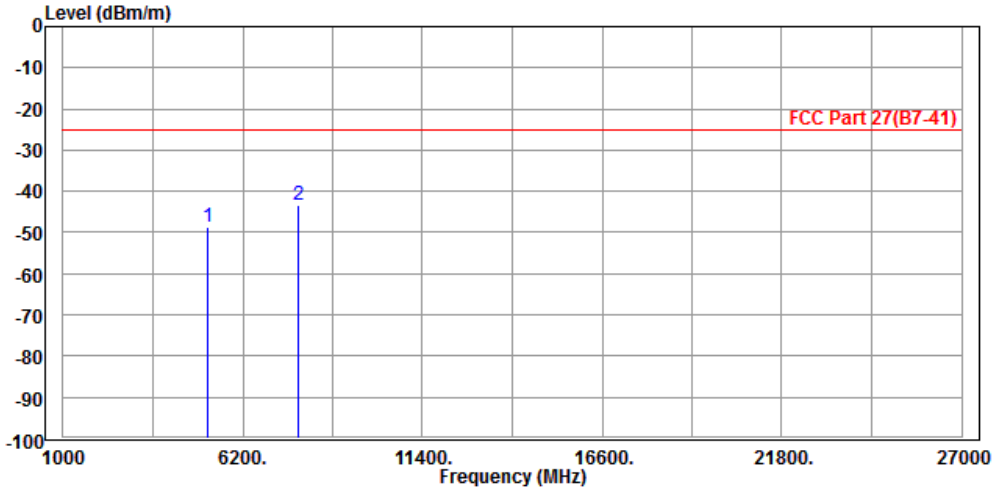
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5056.000 | -47.78 | -55.77 | -25.00 | -22.78 | 7.99 | Peak | Vertical |
| 2 | PP | 7605.000 | -46.54 | -59.53 | -25.00 | -21.54 | 12.99 | Peak | Vertical |



## LTE Band 38
## CHANNEL BANDWIDTH: 5MHz / QPSK

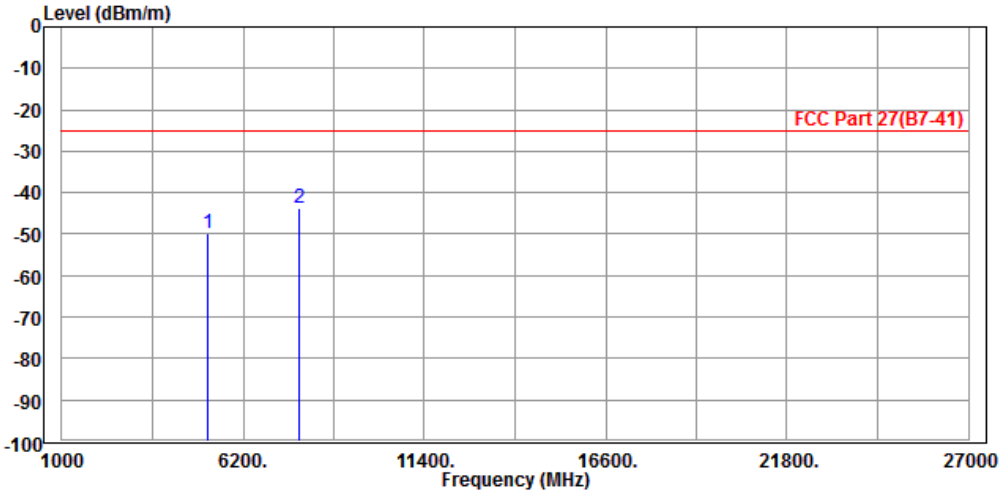
| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.65 | -57.24 | -25.00 | -23.65 | 8.59 | Peak | Horizontal |
| 2 | PP | 7785.000 | -43.51 | -57.25 | -25.00 | -18.51 | 13.74 | Peak | Horizontal |



| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -49.63 | -57.61 | -25.00 | -24.63 | 7.98 | Peak | Vertical |
| 2 | PP | 7785.000 | -43.76 | -57.06 | -25.00 | -18.76 | 13.30 | Peak | Vertical |

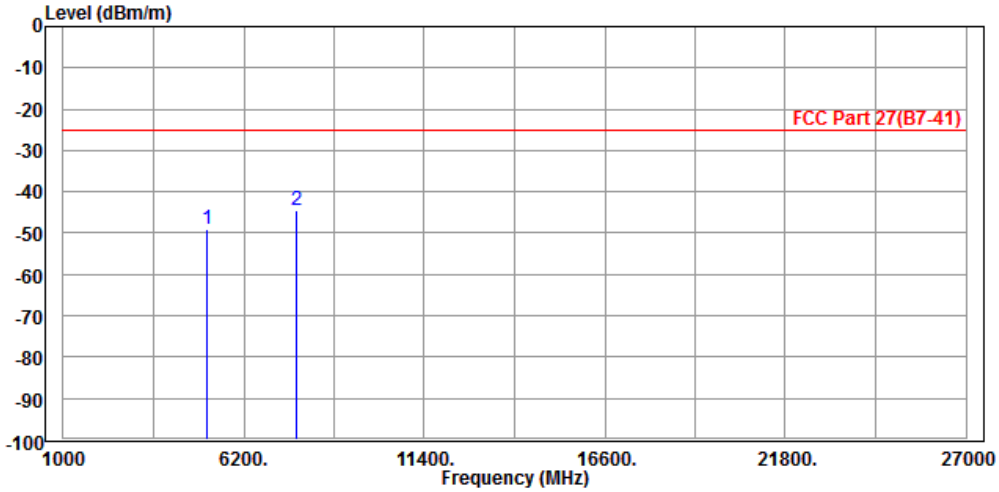


## CHANNEL BANDWIDTH: 10MHz / QPSK

### CH 37800

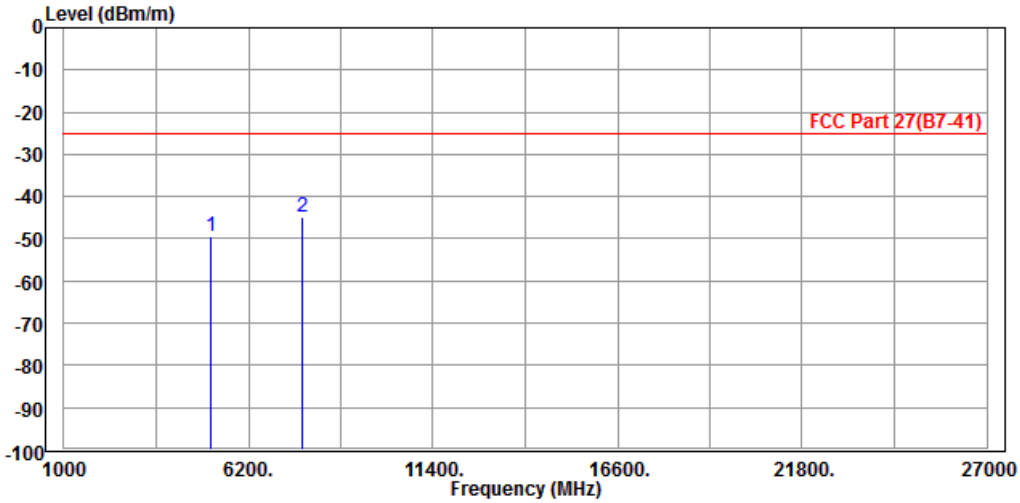
| MODE | TX channel 37800 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5160.000 | -49.08 | -57.64 | -25.00 | -24.08 | 8.56 | Peak | Horizontal |
| 2 | PP | 7725.000 | -44.41 | -58.06 | -25.00 | -19.41 | 13.65 | Peak | Horizontal |



| MODE | TX channel 37800 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

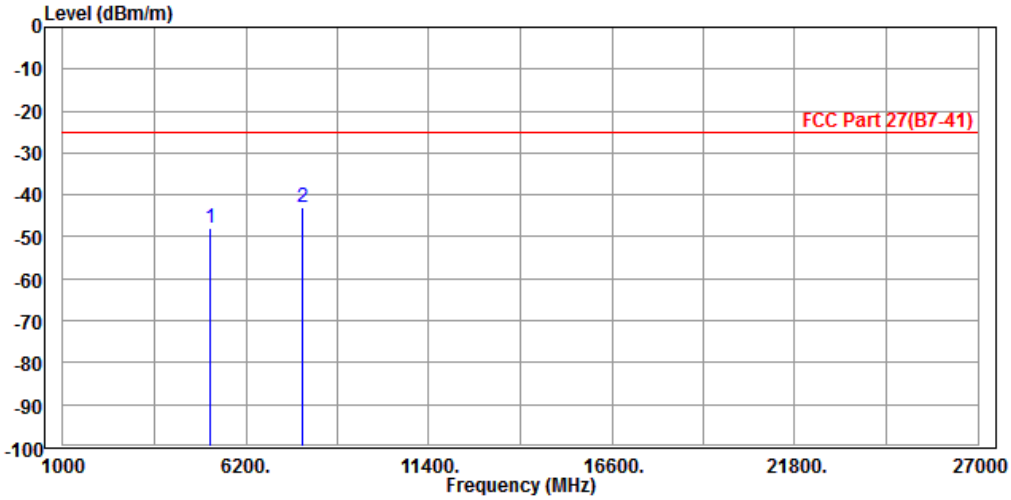
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5160.000 | -49.56 | -57.54 | -25.00 | -24.56 | 7.98 | Peak | Vertical |
| 2 | PP | 7725.000 | -45.05 | -58.25 | -25.00 | -20.05 | 13.20 | Peak | Vertical |



## CH 38000

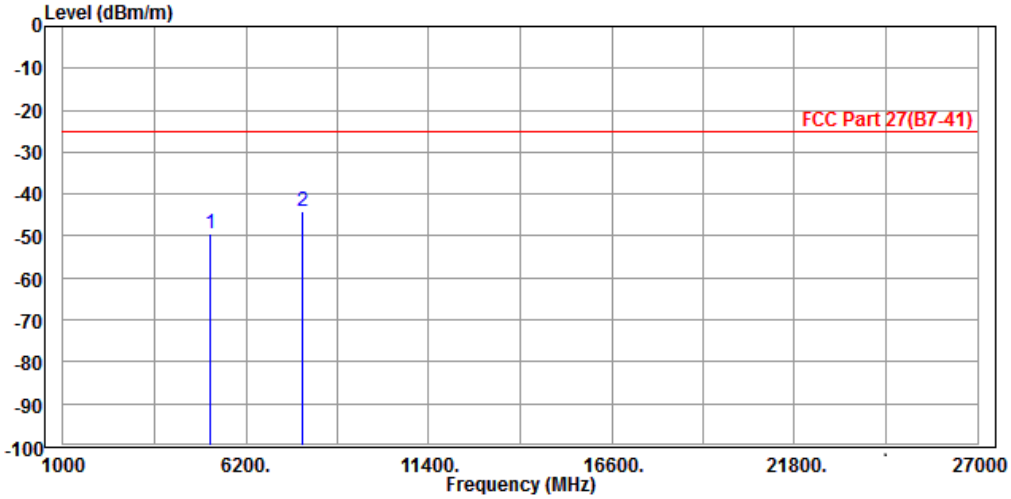
| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.08 | -56.67 | -25.00 | -23.08 | 8.59 | Peak | Horizontal |
| 2 | PP | 7785.000 | -42.92 | -56.66 | -25.00 | -17.92 | 13.74 | Peak | Horizontal |



| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

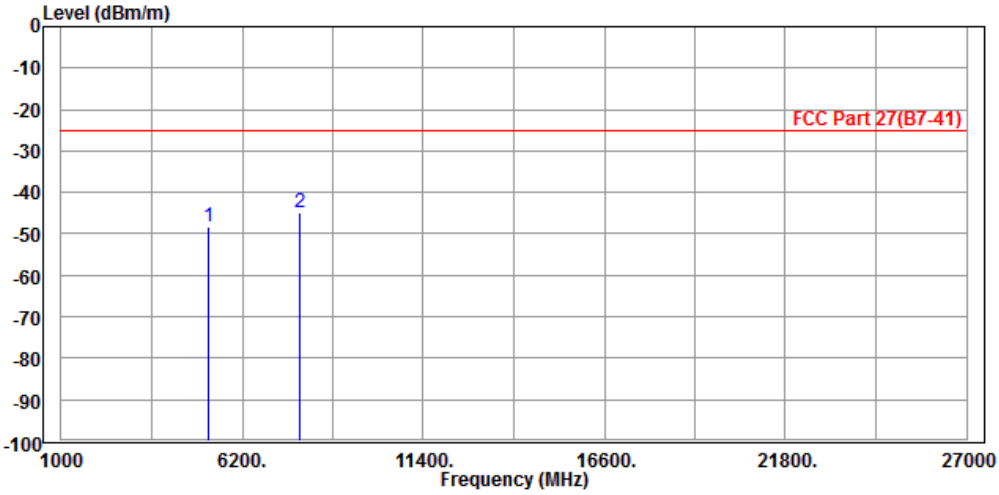
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -49.45 | -57.43 | -25.00 | -24.45 | 7.98 | Peak | Vertical |
| 2 | PP | 7785.000 | -44.28 | -57.58 | -25.00 | -19.28 | 13.30 | Peak | Vertical |



## CH 38200

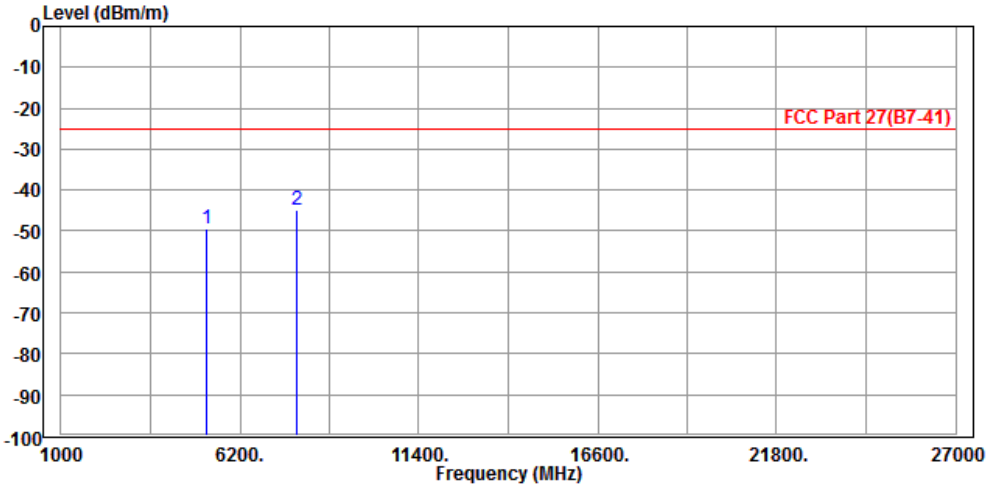
| MODE | TX channel 38200 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5238.000 | -48.25 | -56.90 | -25.00 | -23.25 | 8.65 | Peak | Horizontal |
| 2 | PP | 7845.000 | -44.70 | -58.52 | -25.00 | -19.70 | 13.82 | Peak | Horizontal |



| MODE | TX channel 38200 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

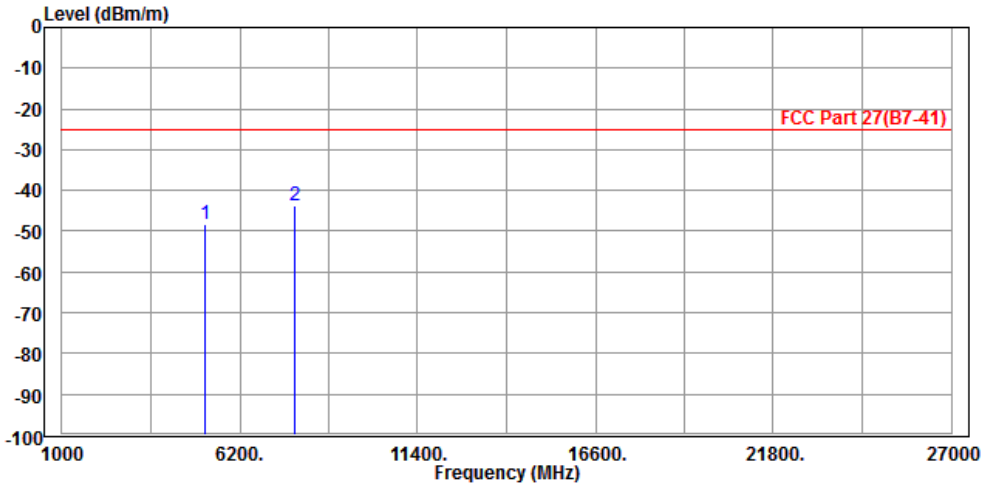
| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5238.000 | -49.57 | -57.55 | -25.00 | -24.57 | 7.98 | Peak | Vertical |
| 2 PP | 7845.000 | -44.81 | -58.22 | -25.00 | -19.81 | 13.41 | Peak | Vertical |



## CHANNEL BANDWIDTH: 15MHz / QPSK

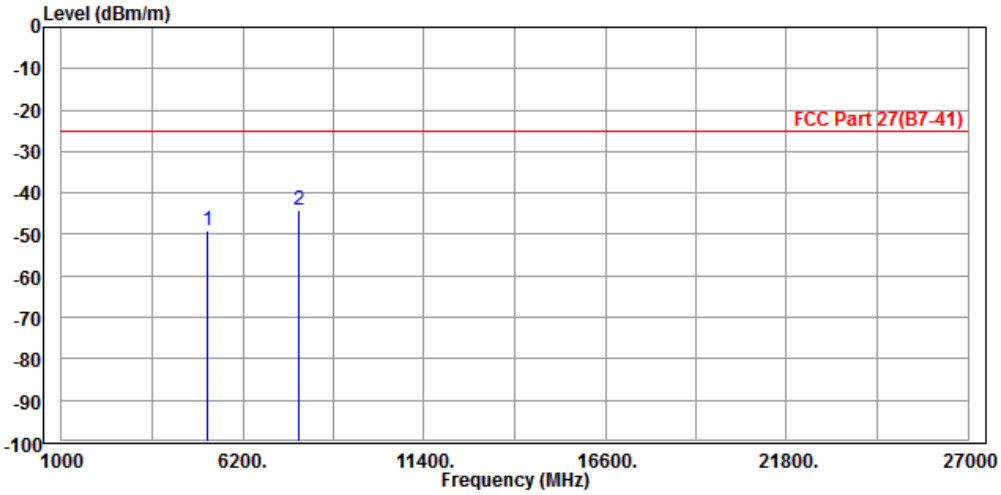
| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5186.000 | -48.13 | -56.72 | -25.00 | -23.13 | 8.59 | Peak | Horizontal |
| 2 PP | 7785.000 | -43.68 | -57.42 | -25.00 | -18.68 | 13.74 | Peak | Horizontal |



| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

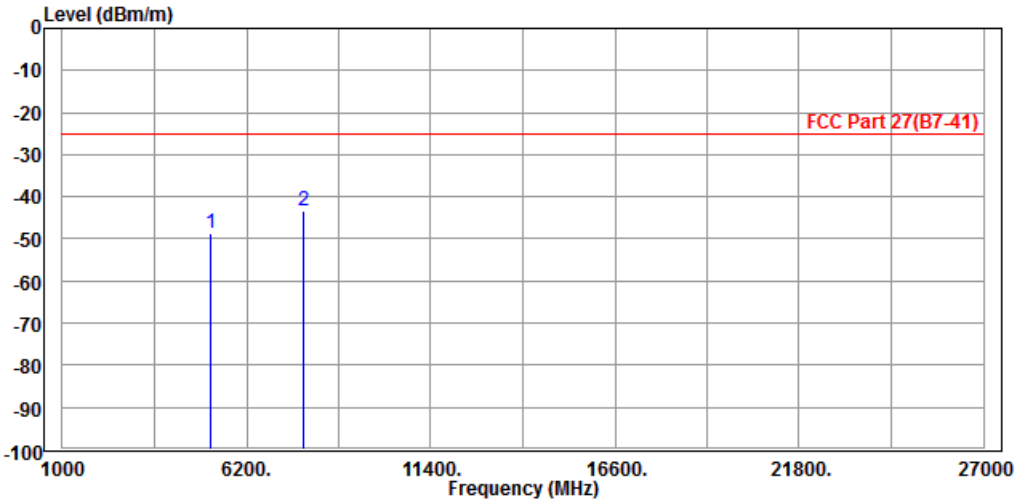
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -49.03 | -57.01 | -25.00 | -24.03 | 7.98 | Peak | Vertical |
| 2 | PP | 7785.000 | -44.09 | -57.39 | -25.00 | -19.09 | 13.30 | Peak | Vertical |



## CHANNEL BANDWIDTH: 20MHz / QPSK

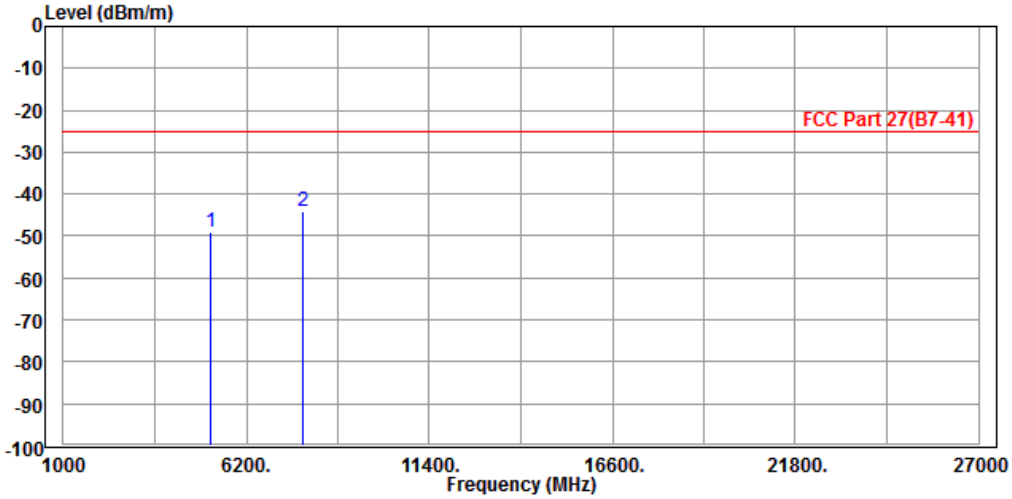
| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5186.000 | -48.67 | -57.26 | -25.00 | -23.67 | 8.59 | Peak | Horizontal |
| 2 PP | 7785.000 | -43.38 | -57.12 | -25.00 | -18.38 | 13.74 | Peak | Horizontal |



| MODE | TX channel 38000 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 26deg. C, 56%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

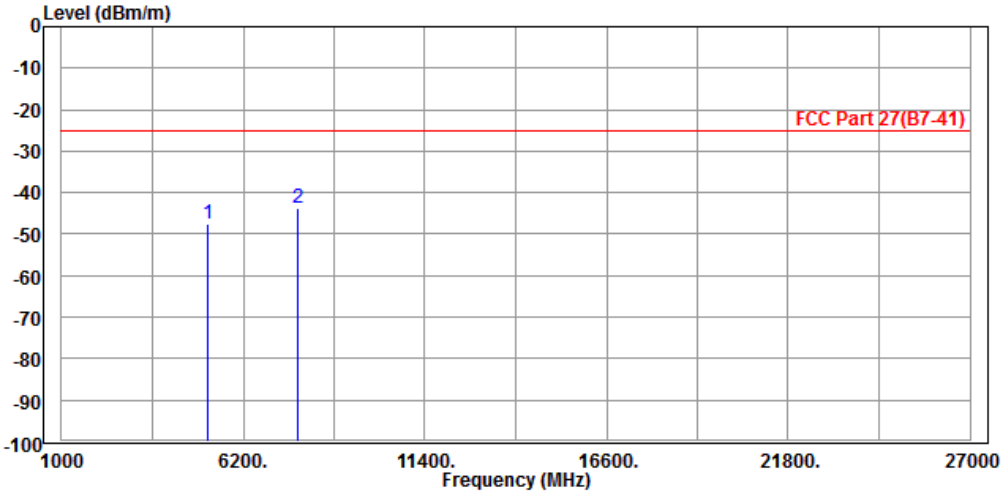
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -49.02 | -57.00 | -25.00 | -24.02 | 7.98 | Peak | Vertical |
| 2 | PP | 7785.000 | -44.07 | -57.37 | -25.00 | -19.07 | 13.30 | Peak | Vertical |



## LTE Band 41
## CHANNEL BANDWIDTH: 5MHz / QPSK

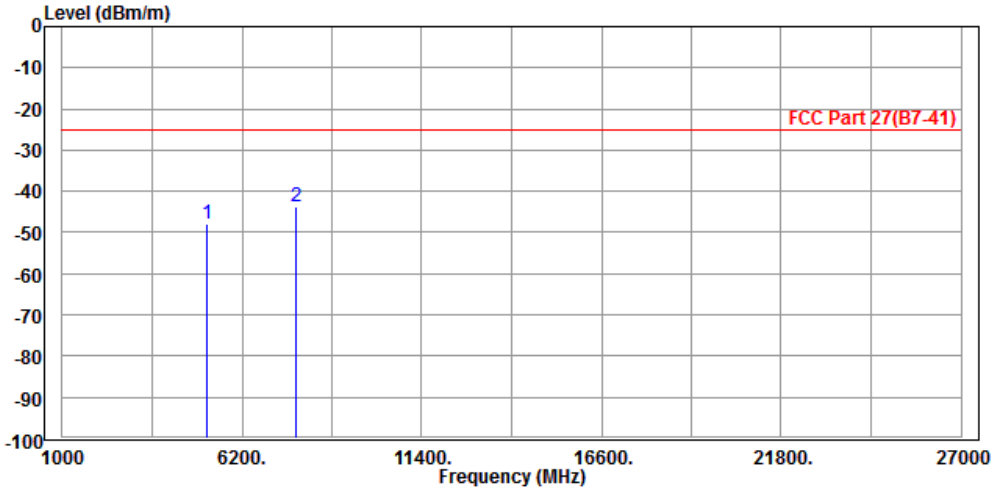
| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -47.70 | -56.29 | -25.00 | -22.70 | 8.59 | Peak | Horizontal |
| 2 | PP | 7779.000 | -43.56 | -57.29 | -25.00 | -18.56 | 13.73 | Peak | Horizontal |



| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -47.92 | -55.90 | -25.00 | -22.92 | 7.98 | Peak | Vertical |
| 2 | PP | 7779.000 | -43.85 | -57.14 | -25.00 | -18.85 | 13.29 | Peak | Vertical |

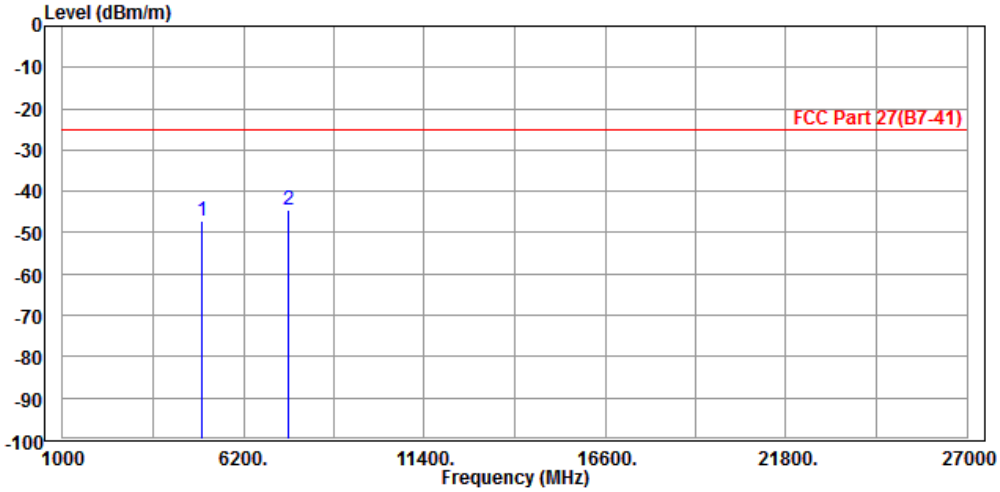


## CHANNEL BANDWIDTH: 10MHz / QPSK

### CH39700

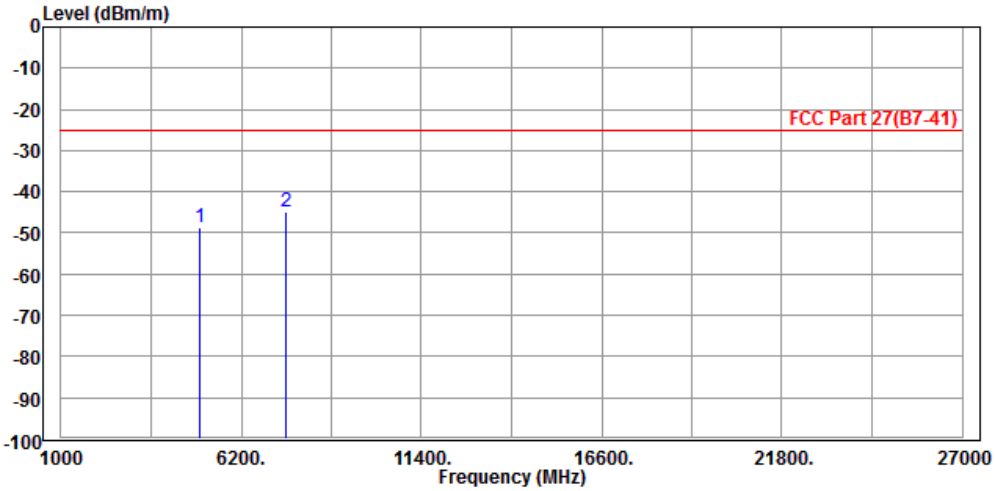
| MODE | TX channel 39700 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5004.000 | -47.29 | -55.67 | -25.00 | -22.29 | 8.38 | Peak | Horizontal |
| 2 | PP | 7503.000 | -44.40 | -57.74 | -25.00 | -19.40 | 13.34 | Peak | Horizontal |



| MODE | TX channel 39700 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

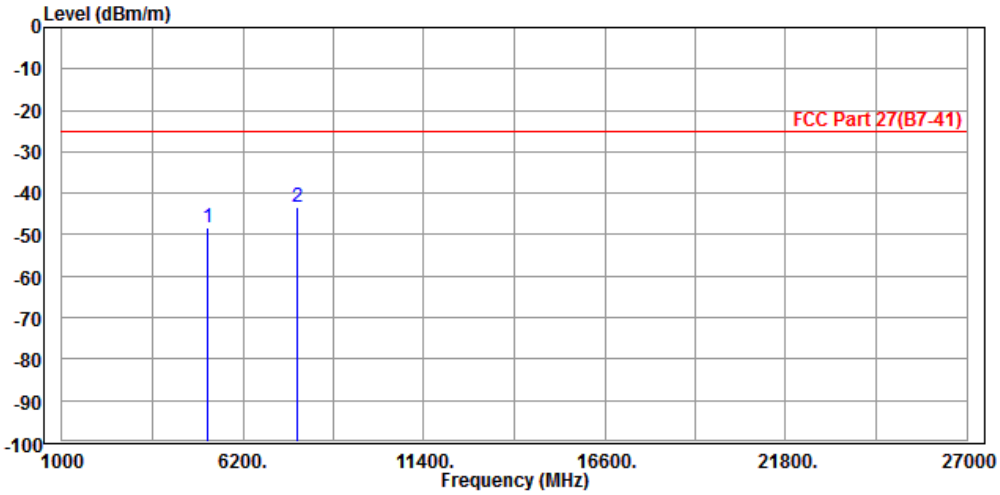
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5004.000 | -48.55 | -56.54 | -25.00 | -23.55 | 7.99 | Peak | Vertical |
| 2 | PP | 7503.000 | -44.96 | -57.77 | -25.00 | -19.96 | 12.81 | Peak | Vertical |



**CH40620**

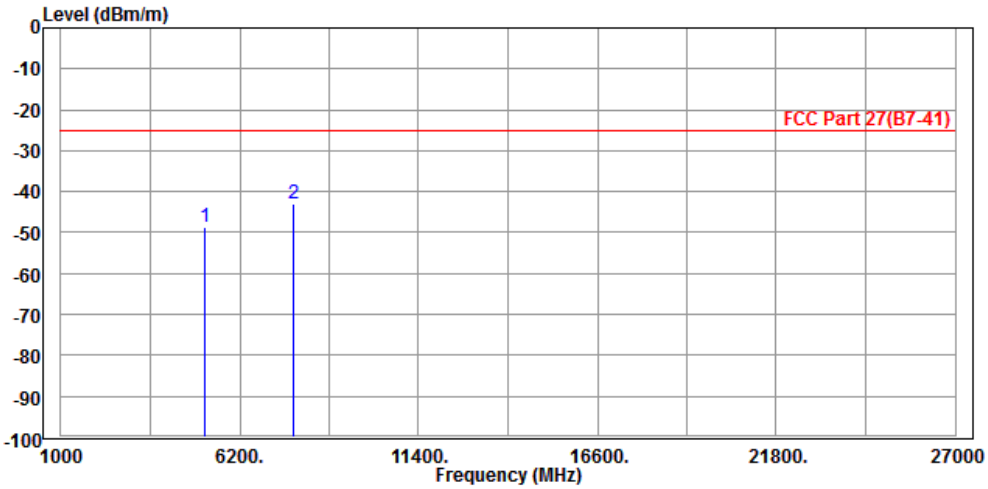
| | | | |
|---|---|---|---|
| **MODE** | TX channel 40620 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | DC 5/9V from adapter |
| **TESTED BY** | Simon Yang | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.13 | -56.72 | -25.00 | -23.13 | 8.59 | Peak | Horizontal |
| 2 | PP | 7779.000 | -43.19 | -56.92 | -25.00 | -18.19 | 13.73 | Peak | Horizontal |



| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

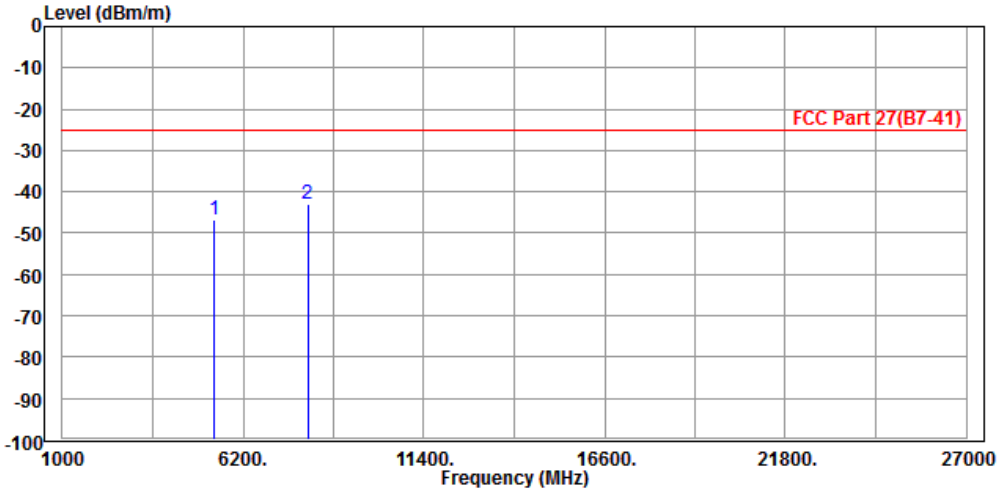
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.79 | -56.77 | -25.00 | -23.79 | 7.98 | Peak | Vertical |
| 2 | PP | 7779.000 | -42.79 | -56.08 | -25.00 | -17.79 | 13.29 | Peak | Vertical |



**CH41540**

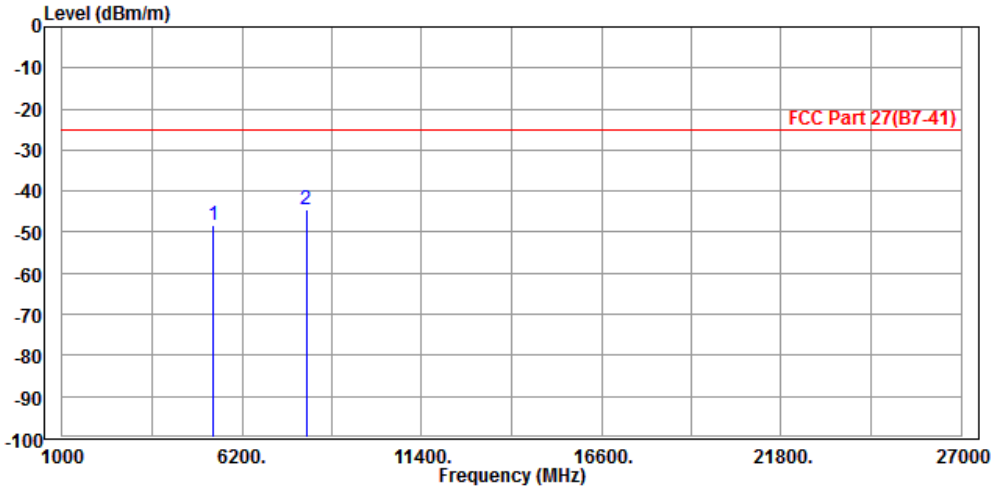
| | | | |
|---|---|---|---|
| **MODE** | TX channel 41540 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | DC 5/9V from adapter |
| **TESTED BY** | Simon Yang | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

| | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | 5368.000 | -46.64 | -55.45 | -25.00 | -21.64 | 8.81 | Peak | Horizontal |
| 2 PP | 8055.000 | -42.93 | -57.14 | -25.00 | -17.93 | 14.21 | Peak | Horizontal |



| MODE | TX channel 41540 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

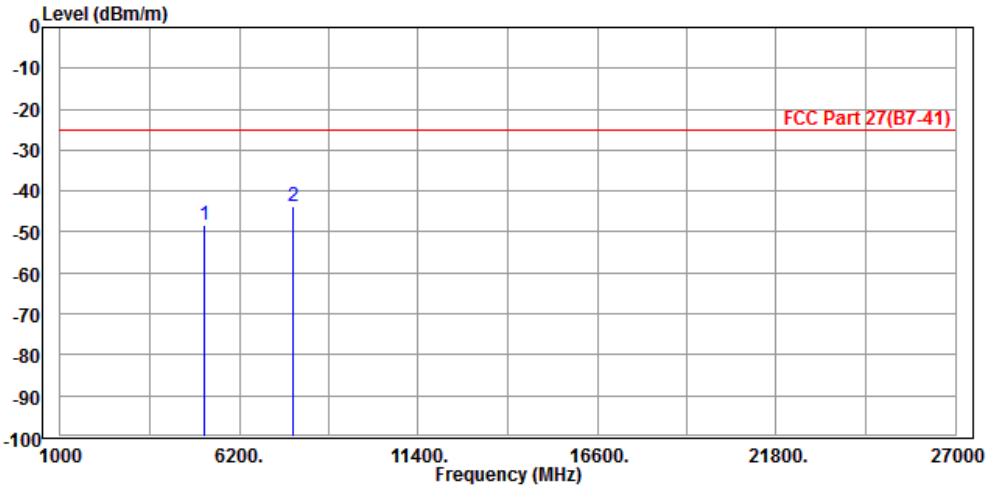
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5368.000 | -48.23 | -56.21 | -25.00 | -23.23 | 7.98 | Peak | Vertical |
| 2 | PP | 8055.000 | -44.51 | -58.33 | -25.00 | -19.51 | 13.82 | Peak | Vertical |



## CHANNEL BANDWIDTH: 15MHz / QPSK

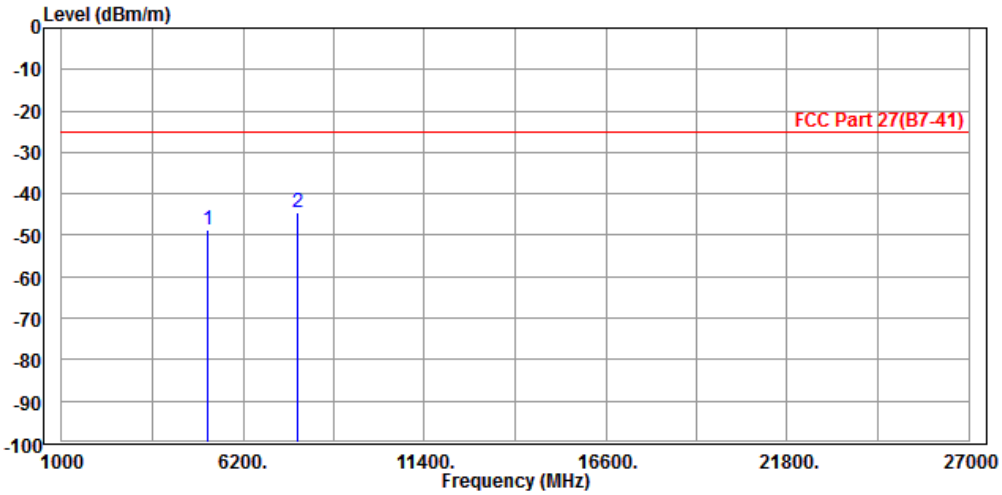
| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.47 | -57.06 | -25.00 | -23.47 | 8.59 | Peak | Horizontal |
| 2 | PP | 7779.000 | -43.75 | -57.48 | -25.00 | -18.75 | 13.73 | Peak | Horizontal |



| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

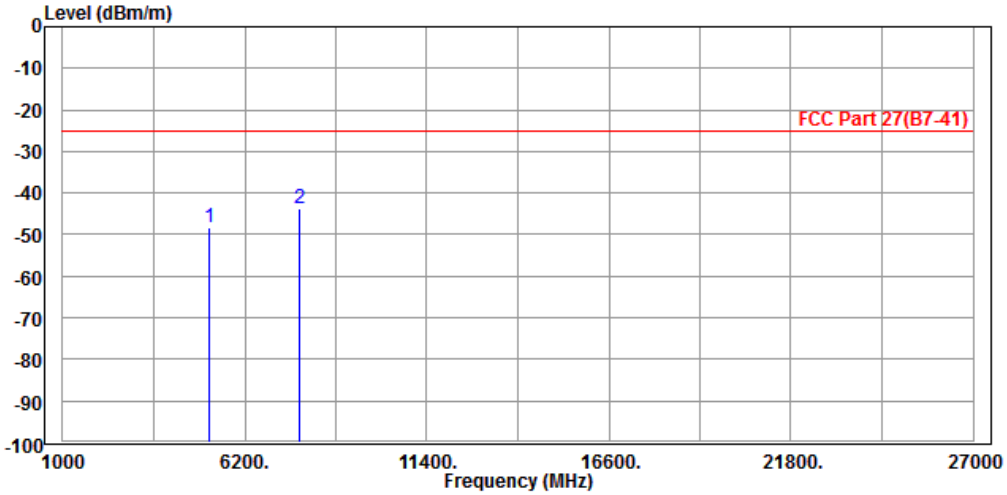
| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.59 | -56.57 | -25.00 | -23.59 | 7.98 | Peak | Vertical |
| 2 | PP | 7779.000 | -44.39 | -57.68 | -25.00 | -19.39 | 13.29 | Peak | Vertical |



## CHANNEL BANDWIDTH: 20MHz / QPSK

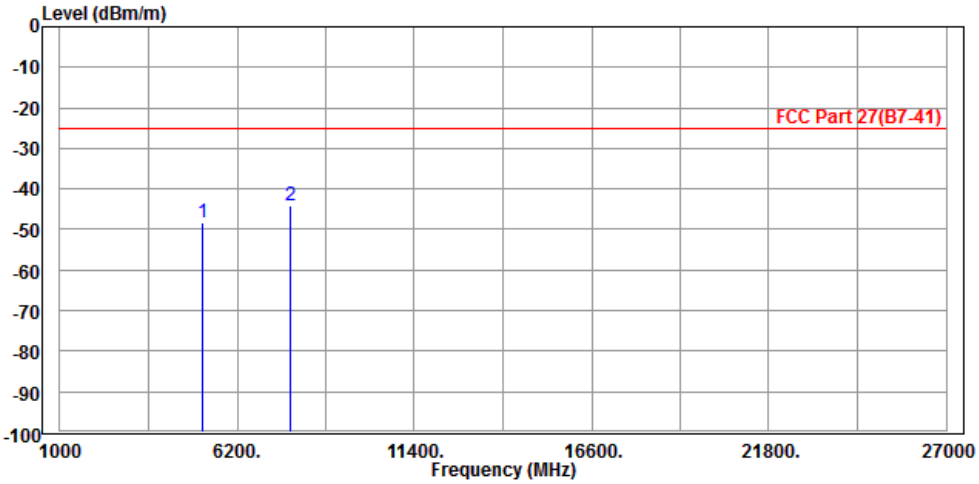
| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.29 | -56.88 | -25.00 | -23.29 | 8.59 | Peak | Horizontal |
| 2 | PP | 7779.000 | -43.91 | -57.64 | -25.00 | -18.91 | 13.73 | Peak | Horizontal |



| MODE | TX channel 40620 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | DC 5/9V from adapter |
| TESTED BY | Simon Yang | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

| | | Freq | Level | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBm/m | dBm | dBm/m | dB | dB/m | | |
| 1 | | 5186.000 | -48.44 | -56.42 | -25.00 | -23.44 | 7.98 | Peak | Vertical |
| 2 | PP | 7779.000 | -44.02 | -57.31 | -25.00 | -19.02 | 13.29 | Peak | Vertical |



# 4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

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**Web Site**: www.adt.com.tw

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

# 5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

**---END---**