



# **CERTIFICATION TEST REPORT**

**Report Number. :** 11723997-E10V2

**Applicant :** APPLE, INC.  
1 INFINITE LOOP  
CUPERTINO, CA 95014, U.S.A.

**Model :** A1906

**FCC ID :** BCG-E3171A

**EUT Description :** SMARTPHONE

**Test Standard(s) :** FCC CFR47 PART 27

**Date Of Issue:**

July 31, 2017

**Prepared by:**

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Revision History

| Rev. | Issue Date | Revisions                                 | Revised By              |
|------|------------|-------------------------------------------|-------------------------|
| V1   | 7/25/2017  | Initial Review                            | --                      |
| V2   | 7/31/2017  | Updated report to address TCB's questions | Tony Wang /<br>Mona Hua |

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** APPLE, INC.  
1 INFINITE LOOP  
CUPERTINO, CA 95014, U.S.A.

**EUT DESCRIPTION:** SMARTPHONE

**MODEL:** A1906

**SERIAL NUMBER:** C7CTW01MJ8TP

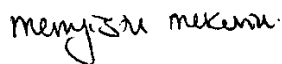
**DATE TESTED:** APRIL18, 2017 – JULY 30, 2017

| APPLICABLE STANDARDS |              |
|----------------------|--------------|
| STANDARD             | TEST RESULTS |
| FCC CFR47 PART 27    | Pass         |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For  
UL Verification Services Inc. By:



MENGISTU MEKURIA  
SENIOR ENGINEER  
UL VERIFICATION SERVICES INC.

Prepared By:



TINA CHU  
TEST ENGINEER  
UL VERIFICATION SERVICES INC.

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26:2015, FCC CFR 47 Part 2, FCC KDB 971168 D01 v02r02, KDB 971168 D02 v01, Part 27.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street                            | 47266 Benicia Street                                       |
|-------------------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> Chamber A (IC:2324B-1) | <input checked="" type="checkbox"/> Chamber D (IC:22541-1) |
| <input type="checkbox"/> Chamber B (IC:2324B-2) | <input checked="" type="checkbox"/> Chamber E (IC:22541-2) |
| <input type="checkbox"/> Chamber C (IC:2324B-3) | <input type="checkbox"/> Chamber F (IC:22541-3)            |
|                                                 | <input type="checkbox"/> Chamber G (IC:22541-4)            |
|                                                 | <input type="checkbox"/> Chamber H (IC:22541-5)            |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamplifier Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                                | UNCERTAINTY |
|------------------------------------------|-------------|
| Conducted Disturbance, 9KHz to 0.15 MHz  | 3.84 dB     |
| Conducted Disturbance, 0.15 to 30 MHz    | 3.65 dB     |
| Radiated Disturbance, 9KHz to 30 MHz     | 3.15 dB     |
| Radiated Disturbance, 30 to 1000 MHz     | 5.36 dB     |
| Radiated Disturbance, 1000 to 18000 MHz  | 4.32 dB     |
| Radiated Disturbance, 18000 to 26000 MHz | 4.45 dB     |
| Radiated Disturbance, 26000 to 40000 MHz | 5.24 dB     |
| Occupied Channel Bandwidth               | ±0.39 %     |
| Temperature                              | ±0.9 °C     |
| Supply voltages                          | ±0.45 %     |
| Time                                     | ±0.02 %     |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The Equipment Under Test is a mobile phone with GSM, GPRS, EGPRS, UMTS, LTE, TD-SCDMA and CDMA technologies. It also supports IEEE 802.11a/b/g/n/ac, Bluetooth®, GPS and NFC. The device has a built-in inductive charging receiver which is not user accessible. The rechargeable battery is not user accessible.

### 5.2. MAXIMUM OUTPUT POWER

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations EIRP output powers as follows:

#### 5.2.1. LAT 1

##### OUTPUT POWER FOR LTE BAND 7

| Part 27 / RSS199 LTE Band 7 |                          |            |                |       |
|-----------------------------|--------------------------|------------|----------------|-------|
| Bandwidth<br>(MHz)          | Frequency<br>Range (MHz) | Modulation | EIRP (Average) |       |
|                             |                          |            | dBm            | mW    |
| 10+20                       | 2500 - 2570              | QPSK       | 20.8           | 120.2 |
|                             |                          | 16QAM      | 19.8           | 95.5  |
|                             |                          | 64QAM      | 18.2           | 66.1  |
| 20+10                       |                          | QPSK       | 20.9           | 123.0 |
|                             |                          | 16QAM      | 19.8           | 95.5  |
|                             |                          | 64QAM      | 18.5           | 70.8  |
| 15+15                       |                          | QPSK       | 21.1           | 128.8 |
|                             |                          | 16QAM      | 20.0           | 100.0 |
|                             |                          | 64QAM      | 18.2           | 66.1  |
| 15+20                       |                          | QPSK       | 21.0           | 125.9 |
|                             |                          | 16QAM      | 19.9           | 97.7  |
|                             |                          | 64QAM      | 18.3           | 67.6  |
| 20+15                       |                          | QPSK       | 20.9           | 123.0 |
|                             |                          | 16QAM      | 19.9           | 97.7  |
|                             |                          | 64QAM      | 18.5           | 70.8  |
| 20+20                       |                          | QPSK       | 21.1           | 128.8 |
|                             |                          | 16QAM      | 20.1           | 102.3 |
|                             |                          | 64QAM      | 18.4           | 69.2  |



# **OUTPUT POWER FOR LTE BAND 41**

| Part 27 / RSS199 LTE Band 41 |                          |            |                |       |
|------------------------------|--------------------------|------------|----------------|-------|
| Bandwidth<br>(MHz)           | Frequency<br>Range (MHz) | Modulation | EIRP (Average) |       |
|                              |                          |            | dBm            | mW    |
| 5+20                         | 2496-2690                | QPSK       | 21.2           | 131.8 |
|                              |                          | 16QAM      | 20.1           | 102.3 |
|                              |                          | 64QAM      | 18.7           | 74.1  |
| 20+5                         |                          | QPSK       | 21.0           | 125.9 |
|                              |                          | 16QAM      | 20.1           | 102.3 |
|                              |                          | 64QAM      | 18.6           | 72.4  |
| 10+20                        |                          | QPSK       | 21.1           | 128.8 |
|                              |                          | 16QAM      | 20.0           | 100.0 |
|                              |                          | 64QAM      | 18.4           | 69.2  |
| 20+10                        |                          | QPSK       | 21.1           | 128.8 |
|                              |                          | 16QAM      | 20.0           | 100.0 |
|                              |                          | 64QAM      | 18.8           | 75.9  |
| 15+15                        |                          | QPSK       | 21.2           | 131.8 |
|                              |                          | 16QAM      | 20.0           | 100.0 |
|                              |                          | 64QAM      | 18.5           | 70.8  |
| 15+20                        |                          | QPSK       | 21.2           | 131.8 |
|                              |                          | 16QAM      | 20.1           | 102.3 |
|                              |                          | 64QAM      | 18.4           | 69.2  |
| 20+15                        |                          | QPSK       | 21.0           | 125.9 |
|                              |                          | 16QAM      | 20.3           | 107.2 |
|                              |                          | 64QAM      | 18.7           | 74.1  |
| 20+20                        |                          | QPSK       | 21.0           | 125.9 |
|                              |                          | 16QAM      | 19.9           | 97.7  |
|                              |                          | 64QAM      | 18.7           | 74.1  |

## 5.2.2. UAT 1

### OUTPUT POWER FOR LTE BAND 7

| Part 27 / RSS199 LTE Band 7 |                          |            |                |       |
|-----------------------------|--------------------------|------------|----------------|-------|
| Bandwidth<br>(MHz)          | Frequency<br>Range (MHz) | Modulation | EIRP (Average) |       |
|                             |                          |            | dBm            | mW    |
| 10+20                       | 2500 - 2570              | QPSK       | 20.4           | 109.6 |
|                             |                          | 16QAM      | 19.2           | 83.2  |
|                             |                          | 64QAM      | 17.7           | 58.9  |
| 20+10                       |                          | QPSK       | 20.4           | 109.6 |
|                             |                          | 16QAM      | 19.3           | 85.1  |
|                             |                          | 64QAM      | 17.9           | 61.7  |
| 15+15                       |                          | QPSK       | 20.5           | 112.2 |
|                             |                          | 16QAM      | 19.2           | 83.2  |
|                             |                          | 64QAM      | 18.0           | 63.1  |
| 15+20                       |                          | QPSK       | 20.4           | 109.6 |
|                             |                          | 16QAM      | 19.5           | 89.1  |
|                             |                          | 64QAM      | 17.9           | 61.7  |
| 20+15                       |                          | QPSK       | 20.3           | 107.2 |
|                             |                          | 16QAM      | 19.2           | 83.2  |
|                             |                          | 64QAM      | 18.0           | 63.1  |
| 20+20                       |                          | QPSK       | 20.4           | 109.6 |
|                             |                          | 16QAM      | 19.1           | 81.3  |
|                             |                          | 64QAM      | 17.9           | 61.7  |

**OUTPUT POWER FOR LTE BAND 41 (FCC)**

| Part 27 / RSS199 LTE Band 41 |                       |            |                |       |
|------------------------------|-----------------------|------------|----------------|-------|
| Bandwidth (MHz)              | Frequency Range (MHz) | Modulation | EIRP (Average) |       |
|                              |                       |            | dBm            | mW    |
| 5+20                         | 2496-2690             | QPSK       | 21.2           | 131.8 |
|                              |                       | 16QAM      | 20.3           | 107.2 |
|                              |                       | 64QAM      | 19.0           | 79.4  |
| 20+5                         |                       | QPSK       | 21.5           | 141.3 |
|                              |                       | 16QAM      | 20.4           | 109.6 |
|                              |                       | 64QAM      | 18.5           | 70.8  |
| 10+20                        |                       | QPSK       | 21.5           | 141.3 |
|                              |                       | 16QAM      | 20.4           | 109.6 |
|                              |                       | 64QAM      | 18.8           | 75.9  |
| 20+10                        |                       | QPSK       | 21.5           | 141.3 |
|                              |                       | 16QAM      | 20.3           | 107.2 |
|                              |                       | 64QAM      | 18.5           | 70.8  |
| 15+15                        |                       | QPSK       | 21.4           | 138.0 |
|                              |                       | 16QAM      | 20.5           | 112.2 |
|                              |                       | 64QAM      | 18.8           | 75.9  |
| 15+20                        |                       | QPSK       | 21.2           | 131.8 |
|                              |                       | 16QAM      | 20.5           | 112.2 |
|                              |                       | 64QAM      | 18.7           | 74.1  |
| 20+15                        |                       | QPSK       | 21.5           | 141.3 |
|                              |                       | 16QAM      | 20.3           | 107.2 |
|                              |                       | 64QAM      | 18.6           | 72.4  |
| 20+20                        |                       | QPSK       | 21.5           | 141.3 |
|                              |                       | 16QAM      | 20.5           | 112.2 |
|                              |                       | 64QAM      | 18.9           | 77.6  |

### 5.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 0.32.00.

### 5.4. MAXIMUM ANTENNA GAIN

Please see table below:

| LTE BANDS                    | LAT 1 Antenna Gain (dBi) | UAT 1 Antenna Gain (dBi) |
|------------------------------|--------------------------|--------------------------|
| LTE Band 7, 2500 – 2570 MHz  | -2.64                    | 2.17                     |
| LTE Band 41, 2496 – 2690 MHz | -2.57                    | 2.22                     |

### 5.5. WORST-CASE CONFIGURATION AND MODE

The EUT supports LTE dual carrier Bands of: Band 7, and Band 41.

For radiated tests, the EUT was investigated in three orthogonal orientations X/Y/Z on both LAT 1 and UAT 1 antennas, it was determined that X (Flatbed) orientation was worst-case orientation for all bands on both antennas without AC/DC adapter, headphones, or laptop.

Radiated spurious emissions were investigated below 30MHz, 30MHz-1GHz and above 1GHz. There were no emissions found on below 30MHz and 30MHz-1GHz.

Tests were performed on the conducted test at LAT 1 antenna as worst case since it has higher output powers. Only output power and occupied bandwidth were performed on the 64QAM due to power is lower than QPSK/16QAM.

All of the test modes for each test items are the worst case configuration after investigation.

For simultaneous transmission of multiple channels from the 2.4GHz and Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |                   |                |
|------------------------|--------------|-------------------|----------------|
| Description            | Manufacturer | Model             | Serial Number  |
| AC/DC adapter          | HP           | HNSTNN-DA40       | WDWR70BAR9AKS8 |
| Laptop                 | HP           | HP ProBook 450 G2 | CND5367Z97     |

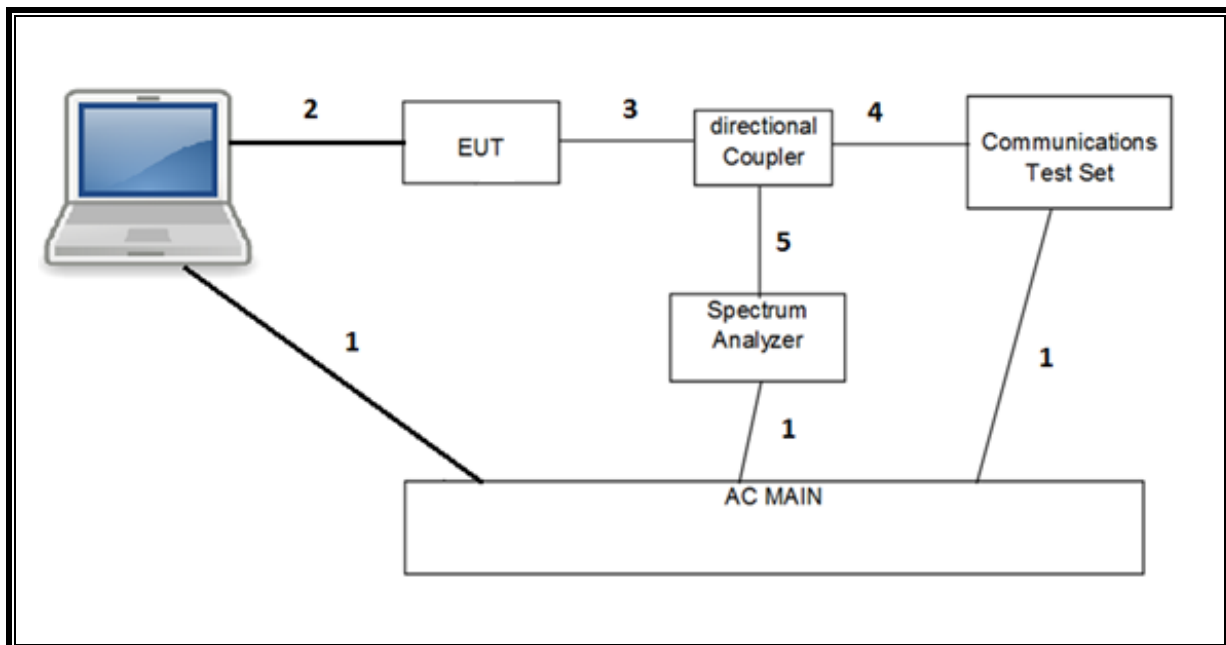
### I/O CABLES (RF Conducted Test)

| I/O Cable List |           |                      |                        |             |                  |         |
|----------------|-----------|----------------------|------------------------|-------------|------------------|---------|
| Cable No       | Port      | # of identical ports | Connector Type         | Cable Type  | Cable Length (m) | Remarks |
| 1              | AC        | 3                    | US 115V                | Un-shielded | 2.0m             | N/A     |
| 2              | USB       | 1                    | DC                     | Un-shielded | 1.0m             | N/A     |
| 3              | RF In/Out | 1                    | EUT                    | Un-shielded | 0.6m             | N/A     |
| 4              | RF In/Out | 1                    | Communication Test Set | Un-shielded | 1.2m             | N/A     |
| 5              | RF In/Out | 1                    | Barrel                 | N/A         | N/A              | N/A     |

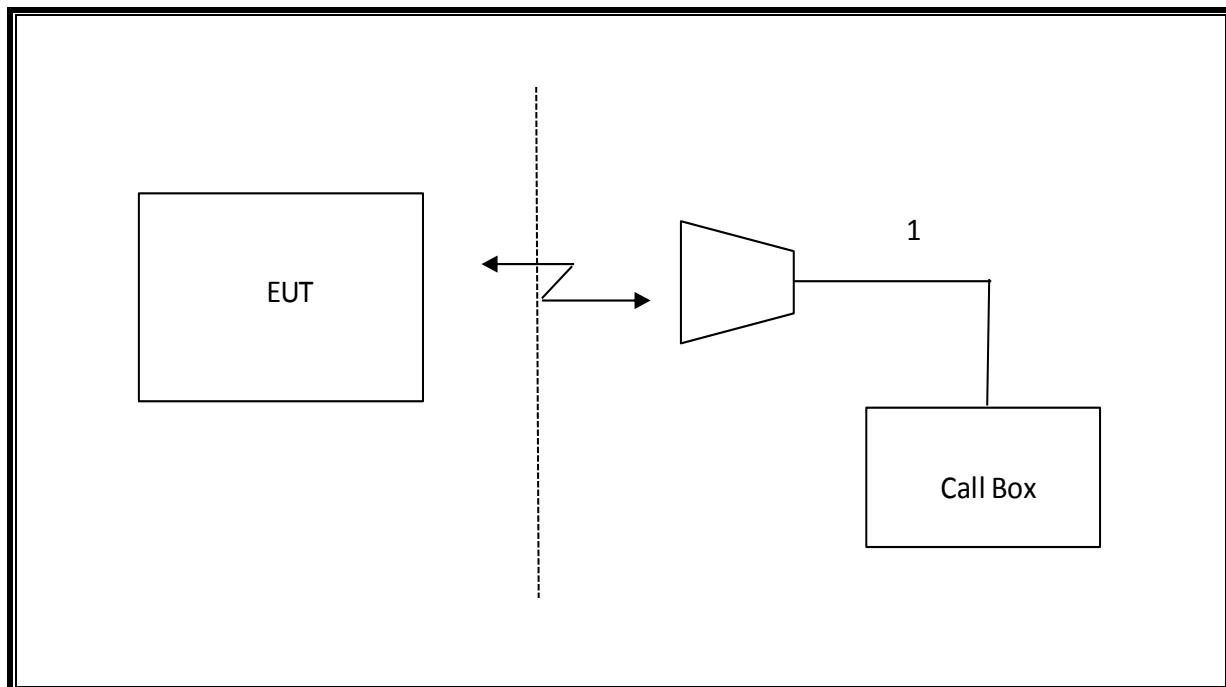
### I/O CABLES (RF Radiated Test)

| I/O Cable List |           |                      |                |             |                  |         |
|----------------|-----------|----------------------|----------------|-------------|------------------|---------|
| Cable No       | Port      | # of identical ports | Connector Type | Cable Type  | Cable Length (m) | Remarks |
| 1              | RF In/Out | 1                    | Antenna        | Un-shielded | 5m               | NA      |

### CONDUCTED SETUP



### RADIATED SETUP



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST                                |                     |                    |              |                         |
|----------------------------------------------------|---------------------|--------------------|--------------|-------------------------|
| Description                                        | Manufacturer        | Model              | Asset        | Cal Due                 |
| Antenna, Horn 1-18GHz                              | ETS Lindaren        | 3117               | T862         | 4/20/2018               |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz        | Sunol Sciences      | JB1                | T243         | 10/11/2017              |
| *Amplifier, 10KHz to 1GHz, 32dB                    | Sonoma              | 310N               | T286         | 5/4/2017                |
| Amplifier, 1 to 18GHz                              | Miteq               | AFS42-00101800-25- | T740         | 11/29/17                |
| Spectrum Analyzer, PXA 3Hz to 44GHz                | Keysight            | N9030A             | T340         | 12/14/2017              |
| Antenna, Horn 1-18GHz                              | ETS Lindaren        | 3117               | T863         | 6/9/2018                |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz        | Sunol Sciences      | JB3                | T900         | 5/31/2018               |
| Amplifier, 1 to 18GHz                              | Miteq               | AFS42-00101800-25- | T1131        | 9/23/2017               |
| *Amplifier, 10KHz to 1GHz, 32dB                    | Sonoma              | 310N               | T285         | 6/20/2017               |
| Spectrum Analyzer, PXA 3Hz to 44GHz                | Keysight            | N9030A             | T1113        | 12/20/2017              |
| Wideband Communication Test Set, Call Box          | R&S GmbH & Co. KG   | CMW500             | AE0038201512 | connection purpose only |
| Spectrum Analyzer, PSA 3Hz to 44GHz                | Keysight            | E4446A             | T123         | 10/20/2017              |
| *Directional Coupler                               | KRYTAR              | 152610             | T922         | 6/17/2017               |
| Directional Coupler                                | KRYTAR              | 152610             | T1536        | 4/24/2018               |
| Directional Coupler                                | KRYTAR              | 152610             | T1538        | 4/24/2018               |
| *Power Meter, P-series single channel              | Keysight            | N1912A             | T1245        | 5/3/2017                |
| Power Meter, P-series single channel               | Keysight            | N1912A             | T1245        | 4/26/2018               |
| Power Sensor, P - series, 50MHz to 18GHz, Wideband | Keysight            | N1921A             | T1227        | 8/12/2017               |
| Filter, HPF 3.0GHz                                 | MICROTRONICS        | HPM17543           | T487         | 1/28/2018               |
| *Filter, HPF 1.2GHz                                | Micro-Tronics       | WHKX1.2/15G-6ST    | T1182        | 5/31/2017               |
| *Spectrum Analyzer, PXA, 3Hz to 44GHz              | Keysight            | N9030A             | T1210        | 6/30/2017               |
| *Wideband Communication Test Set, Call Box         | R&S GmbH & Co. KG   | CMW500             | T959         | 7/9/2017                |
| Wideband Communication Test Set, Call Box          | R&S GmbH & Co. KG   | CMW500             | T971         | 8/5/2017                |
| Chamber, Environmental                             | Cincinnati Sub Zero | ZPHS-8-3.5-SCT/WC  | T754         | 9/10/2017               |
| Antenna, Horn 1-18GHz                              | Emco                | 3115               | T59          | 11/18/2017              |
| Amplifier, 26.5GHz to 40GHz                        | Miteq               | NSP 4000 SP2       | T88          | 4/29/2018               |
| *Amplifier, 1 to 26.5GHz, 23.5dB Gain minimum      | Keysight            | 8449B              | T404         | 7/5/2017                |
| *Antenna, Horn 18 to 26.5GHz                       | ARA                 | MWH-1826/B         | T447         | 6/16/2017               |
| Antenna, Horn 26.5GHz to 40GHz                     | ARA                 | MWH-2640           | T90          | 8/19/2017               |
| Spectrum Analyzer                                  | Keysight            | 8564E              | T106         | 9/7/2017                |
| Antenna, Active Loop 9KHz to 30MHz                 | EMCO                | 6502               | T1616        | 12/12/2017              |

NOTE: Equipment that calibrated during the testing period was set for test after the calibration.

\*Testing is completed before equipment expiration date.

## 7. TRANSMITTER OUTPUT POWER (CONDUCTED AND EIRP)

### RULE PART(S)

FCC: §2.1046, §27.50

### EIRP LIMIT

FCC 27.50 (h) The following power limits shall apply in the BRS and EBS:

(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

### TEST PROCEDURE

All LTE bands conducted average power is obtained from the CMW500 telecommunication test set.

3GPP TR 36.827, TR.36 830 and TR 36.831

ANSI C63.26:2015

KDB 971168 Section 5.6

$$ERP/EIRP = P_{Meas} + GT - LC$$

where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P<sub>Meas</sub>, typically dBW or dBm);

P<sub>Meas</sub> = measured transmitter output power or PSD, in dBm or dBW;

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

### MODES TESTED

- LTE Band 7
- LTE Band 41

### RESULT

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted and EIRP output powers as follows:



## 7.1. LAT 1

### 7.1.1. LTE BAND 7

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 50874 | <b>Date:</b> | 6/11/17 |
|------------|-------|--------------|---------|

#### OUTPUT POWER FOR LTE BAND 7 (10.0MHz + 20.0MHz)

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 10MHz / 20MHz      | 2505.5          | 2519.9          | QPSK       | 1      | 49     | 1       | 0       | 23.4                    | 20.8               | 33.0             | -12.3       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.7                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.2                    | 19.6               | 33.0             | -13.5       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.8                    | 18.1               | 33.0             | -14.9       |
|                    | 2525.6          | 2540.0          | QPSK       | 1      | 49     | 1       | 0       | 23.4                    | 20.7               | 33.0             | -12.3       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.8                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.3                    | 19.7               | 33.0             | -13.4       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.5                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    | 2545.6          | 2560.0          | QPSK       | 1      | 49     | 1       | 0       | 23.5                    | 20.8               | 33.0             | -12.2       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.4                    | 19.8               | 33.0             | -13.3       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -15.0       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 10.0MHz)**

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 10MHz      | 2510.0          | 2524.4          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.7                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.4                    | 19.7               | 33.0             | -13.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.3                    | 12.7               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.2                    | 12.6               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    | 2530.1          | 2544.5          | QPSK       | 1      | 99     | 1       | 0       | 23.4                    | 20.8               | 33.0             | -12.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.2                    | 12.5               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.4                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.0                    | 12.4               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.5                    | 17.9               | 33.0             | -15.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.2                    | 12.6               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    | 2550.1          | 2564.5          | QPSK       | 1      | 99     | 1       | 0       | 23.4                    | 20.7               | 33.0             | -12.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.1                    | 12.5               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.4                    | 19.7               | 33.0             | -13.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.1                    | 12.5               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 15.1                    | 12.5               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |

**OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 15MHz      | 2507.5          | 2522.5          | QPSK       | 1      | 74     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.5                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.4                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.9       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.8                    | 18.1               | 33.0             | -14.9       |
|                    | 2527.5          | 2542.5          | QPSK       | 1      | 74     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.6                    | 18.0               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    | 2547.5          | 2562.5          | QPSK       | 1      | 74     | 1       | 0       | 23.8                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.6                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.5                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 20MHz      | 2507.8          | 2524.9          | QPSK       | 1      | 74     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.6                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    | 2525.3          | 2542.4          | 64QAM      | 1      | 74     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.9                    | 18.3               | 33.0             | -14.8       |
|                    |                 |                 | QPSK       | 1      | 74     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.6                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.5                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.9                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.9                    | 18.3               | 33.0             | -14.7       |
|                    | 2542.9          | 2560.0          | QPSK       | 1      | 74     | 1       | 0       | 23.5                    | 20.8               | 33.0             | -12.2       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.6                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.5                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -15.0       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.8                    | 18.1               | 33.0             | -14.9       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 15MHz      | 2510.0          | 2527.1          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.6                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    | 2527.6          | 2544.7          | 64QAM      | 1      | 99     | 1       | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.1                    | 18.5               | 33.0             | -14.6       |
|                    |                 |                 | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.6                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2545.1          | 2562.2          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.4                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.9                    | 18.2               | 33.0             | -14.8       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | -2.64           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz/<br>20MHz    | 2510.0          | 2529.8          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.3                    | 12.7               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.6               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.1                    | 12.5               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2525.1          | 2544.9          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.6                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.3                    | 12.7               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.6                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -15.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.6               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.0                    | 18.3               | 33.0             | -14.7       |
|                    | 2540.2          | 2560.0          | QPSK       | 1      | 99     | 1       | 0       | 23.8                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.5               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.5                    | 18.9               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.7                    | 20.1               | 33.0             | -13.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.3                    | 12.7               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.7                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.3                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.9                    | 18.2               | 33.0             | -14.8       |

## 7.1.2. LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 50874 | <b>Date:</b> | 6/11/17 |
|------------|-------|--------------|---------|

### OUTPUT POWER FOR LTE BAND 41 (5.0MHz + 20.0MHz)

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 5MHz / 20MHz       | 2499.3          | 2511.0          | QPSK       | 1      | 24     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 24     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 24     | 1       | 0       | 21.2                    | 18.7               | 33.0             | -14.4       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2583.8          | 2595.5          | QPSK       | 1      | 24     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 24     | 1       | 0       | 22.7                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 20.6                    | 18.1               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 24     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2668.3          | 2680.0          | QPSK       | 1      | 24     | 1       | 0       | 23.8                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 21.5                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 24     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 24     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 5.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 5MHz       | 2506.0          | 2517.7          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.3                    | 12.7               | 33.0             | -20.3       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 21.6                    | 19.1               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.3                    | 12.7               | 33.0             | -20.3       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 21.2                    | 18.6               | 33.0             | -14.4       |
|                    | 2590.5          | 2602.2          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 20.9               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.3                    | 12.7               | 33.0             | -20.3       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 20.7                    | 18.2               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.0                    | 18.5               | 33.0             | -14.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.3                    | 12.7               | 33.0             | -20.3       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2675.0          | 2686.7          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.3                    | 12.7               | 33.0             | -20.3       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 21.4                    | 18.9               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.6                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 20.4                    | 17.9               | 33.0             | -15.2       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.9                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |

**OUTPUT POWER FOR LTE BAND 41 (10.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 10MHz / 20MHz      | 2501.5          | 2515.9          | QPSK       | 1      | 49     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.6                    | 19.1               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.9                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    | 2583.6          | 2598.0          | QPSK       | 1      | 49     | 1       | 0       | 23.6                    | 21.1               | 33.0             | -12.0       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.5                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2665.6          | 2680.0          | QPSK       | 1      | 49     | 1       | 0       | 23.7                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 20.4                    | 17.9               | 33.0             | -15.2       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 10.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 10MHz      | 2506.0          | 2520.4          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.6                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.2                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2588.1          | 2602.5          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 21.1               | 33.0             | -12.0       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.7                    | 19.2               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.3                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2670.1          | 2684.5          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 21.4                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 20.0               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |

**OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 15MHz      | 2503.5          | 2518.5          | QPSK       | 1      | 74     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.6                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.6                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.9                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2585.5          | 2600.5          | QPSK       | 1      | 74     | 1       | 0       | 23.8                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.6                    | 19.1               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.6                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.0                    | 18.5               | 33.0             | -14.6       |
|                    | 2667.5          | 2682.5          | QPSK       | 1      | 74     | 1       | 0       | 23.4                    | 20.8               | 33.0             | -12.2       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 21.4                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.4                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |

**OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 20MHz      | 2503.8          | 2520.9          | QPSK       | 1      | 74     | 1       | 0       | 23.7                    | 21.2               | 33.0             | -11.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.6                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |
|                    | 2583.3          | 2600.4          | QPSK       | 1      | 74     | 1       | 0       | 23.6                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.4                    | 19.9               | 33.0             | -13.2       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.8                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2662.9          | 2680.0          | QPSK       | 1      | 74     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 21.6                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 22.7                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.5                    | 18.0               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |



**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 15MHz      | 2506.0          | 2523.1          | QPSK       | 1      | 99     | 1       | 0       | 23.6                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.8                    | 20.3               | 33.0             | -12.8       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.7                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.2                    | 18.7               | 33.0             | -14.4       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.2                    | 18.6               | 33.0             | -14.4       |
|                    | 2585.6          | 2602.7          | QPSK       | 1      | 99     | 1       | 0       | 23.4                    | 20.9               | 33.0             | -12.2       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.6                    | 19.1               | 33.0             | -14.0       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.3                    | 18.7               | 33.0             | -14.3       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.0                    | 18.5               | 33.0             | -14.6       |
|                    | 2665.1          | 2682.2          | QPSK       | 1      | 99     | 1       | 0       | 23.4                    | 20.8               | 33.0             | -12.2       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 21.4                    | 18.9               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.2                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | -2.57           |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz/<br>20MHz    | 2506.0          | 2525.8          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 21.0               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.7                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.5                    | 19.9               | 33.0             | -13.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.0                    | 12.4               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.3                    | 18.7               | 33.0             | -14.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.1                    | 12.5               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.1                    | 18.5               | 33.0             | -14.5       |
|                    | 2583.1          | 2602.9          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 21.0               | 33.0             | -12.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.1                    | 12.6               | 33.0             | -20.5       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.6                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.4                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.0                    | 12.4               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.7                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.0                    | 12.4               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.0                    | 18.4               | 33.0             | -14.6       |
|                    | 2660.2          | 2680.0          | QPSK       | 1      | 99     | 1       | 0       | 23.5                    | 21.0               | 33.0             | -12.1       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.0                    | 12.4               | 33.0             | -20.6       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 21.4                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 22.4                    | 19.8               | 33.0             | -13.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.2                    | 12.6               | 33.0             | -20.4       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.5                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 20.9                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 15.4                    | 12.8               | 33.0             | -20.2       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 20.4                    | 17.8               | 33.0             | -15.2       |

## 7.2. UAT 1

### 7.2.1. LTE BAND 7

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 38602 | <b>Date:</b> | 7/30/17 |
|------------|-------|--------------|---------|

#### OUTPUT POWER FOR LTE BAND 7 (10.0MHz + 20.0MHz)

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 10MHz / 20MHz      | 2505.5          | 2519.9          | QPSK       | 1      | 49     | 1       | 0       | 18.3                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.0                    | 18.2               | 33.0             | -14.9       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 16.9                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.1                    | 17.2               | 33.0             | -15.8       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 15.5                    | 17.6               | 33.0             | -15.4       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.4                    | 17.5               | 33.0             | -15.5       |
|                    | 2525.6          | 2540.0          | QPSK       | 1      | 49     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.7       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.4                    | 17.6               | 33.0             | -15.5       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 15.3                    | 17.5               | 33.0             | -15.5       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.6                    | 17.7               | 33.0             | -15.3       |
|                    | 2545.6          | 2560.0          | QPSK       | 1      | 49     | 1       | 0       | 17.9                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 16.7                    | 18.9               | 33.0             | -14.1       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 14.9                    | 17.1               | 33.0             | -15.9       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.4                    | 17.6               | 33.0             | -15.5       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 10.0MHz)**

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 10MHz      | 2510.0          | 2524.4          | QPSK       | 1      | 99     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.8                     | 11.9               | 33.0             | -21.1       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.5                    | 18.7               | 33.0             | -14.4       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.9                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.6                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.6                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.5                    | 17.7               | 33.0             | -15.4       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.8                     | 12.0               | 33.0             | -21.0       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.6                    | 17.8               | 33.0             | -15.3       |
|                    | 2530.1          | 2544.5          | QPSK       | 1      | 99     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.7                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.5                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.9                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.6                     | 11.7               | 33.0             | -21.3       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.5                    | 17.7               | 33.0             | -15.4       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.6                    | 17.8               | 33.0             | -15.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.9                     | 12.1               | 33.0             | -20.9       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.6                    | 17.8               | 33.0             | -15.3       |
|                    | 2550.1          | 2564.5          | QPSK       | 1      | 99     | 1       | 0       | 18.2                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.7                     | 11.9               | 33.0             | -21.1       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 17.1                    | 19.3               | 33.0             | -13.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.6                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.3                    | 17.5               | 33.0             | -15.5       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.2                    | 17.4               | 33.0             | -15.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 49      | 9.7                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 15.7                    | 17.9               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 15MHz      | 2507.5          | 2522.5          | QPSK       | 1      | 74     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.1                    | 17.3               | 33.0             | -15.8       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.5                    | 17.6               | 33.0             | -15.4       |
|                    | 2527.5          | 2542.5          | QPSK       | 1      | 74     | 1       | 0       | 18.3                    | 20.5               | 33.0             | -12.5       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 16.9                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.0                    | 17.2               | 33.0             | -15.8       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 15.2                    | 17.4               | 33.0             | -15.7       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.8                    | 18.0               | 33.0             | -15.0       |
|                    | 2547.5          | 2562.5          | QPSK       | 1      | 74     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 16.9                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.2                    | 17.3               | 33.0             | -15.7       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 15.2                    | 17.4               | 33.0             | -15.6       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.1                    | 17.3               | 33.0             | -15.7       |

**OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 20MHz      | 2507.8          | 2524.9          | QPSK       | 1      | 74     | 1       | 0       | 18.3                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.0                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 17.1                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.0                    | 17.1               | 33.0             | -15.9       |
|                    | 2525.3          | 2542.4          | QPSK       | 1      | 74     | 1       | 0       | 15.6                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.7                    | 17.9               | 33.0             | -15.1       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.2                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.1                    | 18.2               | 33.0             | -14.8       |
|                    | 2542.9          | 2560.0          | QPSK       | 1      | 74     | 1       | 0       | 17.1                    | 19.3               | 33.0             | -13.7       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.1                    | 17.3               | 33.0             | -15.7       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 15.2                    | 17.4               | 33.0             | -15.6       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.7                    | 17.9               | 33.0             | -15.1       |
|                    | 2542.9          | 2560.0          | QPSK       | 1      | 74     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.4                    | 18.6               | 33.0             | -14.5       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.4                    | 17.5               | 33.0             | -15.5       |
|                    | 2542.9          | 2560.0          | QPSK       | 1      | 74     | 1       | 0       | 15.5                    | 17.7               | 33.0             | -15.4       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 15.8                    | 17.9               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 15MHz      | 2510.0          | 2527.1          | QPSK       | 1      | 99     | 1       | 0       | 18.2                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.4                    | 18.6               | 33.0             | -14.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.4                    | 17.5               | 33.0             | -15.5       |
|                    | 2527.6          | 2544.7          | QPSK       | 1      | 99     | 1       | 0       | 15.6                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.8                    | 18.0               | 33.0             | -15.1       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 17.9                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    | 2545.1          | 2562.2          | QPSK       | 1      | 99     | 1       | 0       | 16.8                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.3                    | 17.5               | 33.0             | -15.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 15.8                    | 18.0               | 33.0             | -15.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.9                    | 18.0               | 33.0             | -15.0       |
|                    | 2545.1          | 2562.2          | QPSK       | 1      | 99     | 1       | 0       | 17.9                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.2                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.8                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.1                    | 17.3               | 33.0             | -15.7       |
|                    | 2545.1          | 2562.2          | QPSK       | 1      | 99     | 1       | 0       | 15.4                    | 17.6               | 33.0             | -15.4       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 15.8                    | 18.0               | 33.0             | -15.1       |

**OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | 2.17            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz/<br>20MHz    | 2510.0          | 2529.8          | QPSK       | 1      | 99     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.7                     | 11.9               | 33.0             | -21.1       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.9                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.8                     | 12.0               | 33.0             | -21.0       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.7                    | 17.8               | 33.0             | -15.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.7                     | 11.9               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |
|                    | 2525.1          | 2544.9          | QPSK       | 1      | 99     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.8                     | 12.0               | 33.0             | -21.1       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.8                    | 19.0               | 33.0             | -14.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.6                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.4                    | 17.6               | 33.0             | -15.4       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.6                    | 17.8               | 33.0             | -15.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.7                     | 11.9               | 33.0             | -21.1       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.7                    | 17.9               | 33.0             | -15.1       |
|                    | 2540.2          | 2560.0          | QPSK       | 1      | 99     | 1       | 0       | 18.0                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.6                     | 11.8               | 33.0             | -21.2       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 16.9                    | 19.1               | 33.0             | -14.0       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.8                     | 12.0               | 33.0             | -21.0       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.2                    | 17.4               | 33.0             | -15.6       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 9.8                     | 12.0               | 33.0             | -21.0       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.5                    | 17.7               | 33.0             | -15.3       |

## 7.2.2. LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 40813 | <b>Date:</b> | 6/13/17 |
|------------|-------|--------------|---------|

### OUTPUT POWER FOR LTE BAND 41 (5.0MHz + 20.0MHz)

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 5MHz / 20MHz       | 2499.3          | 2511.0          | QPSK       | 1      | 24     | 1       | 0       | 18.9                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.9                    | 19.2               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 24     | 1       | 0       | 17.8                    | 20.0               | 33.0             | -13.0       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 24     | 1       | 0       | 16.6                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 | QPSK       | 1      | 24     | 1       | 0       | 19.0                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 17.6                    | 19.8               | 33.0             | -13.2       |
|                    | 2583.8          | 2595.5          | 16QAM      | 1      | 24     | 1       | 0       | 17.9                    | 20.2               | 33.0             | -12.9       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.6                    | 18.8               | 33.0             | -14.2       |
|                    |                 |                 | 64QAM      | 1      | 24     | 1       | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.7                    | 19.0               | 33.0             | -14.1       |
|                    |                 |                 | QPSK       | 1      | 24     | 1       | 0       | 18.9                    | 21.2               | 33.0             | -11.9       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 24     | 1       | 0       | 18.0                    | 20.3               | 33.0             | -12.8       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    | 2668.3          | 2680.0          | 64QAM      | 1      | 24     | 1       | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 25     | 0      | 100     | 0       | 16.6                    | 18.8               | 33.0             | -14.2       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 5.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 5MHz       | 2506.0          | 2517.7          | QPSK       | 1      | 99     | 1       | 0       | 19.3                    | 21.5               | 33.0             | -11.5       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.8                    | 13.0               | 33.0             | -20.0       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    | 2590.5          | 2602.2          | QPSK       | 1      | 99     | 1       | 0       | 19.1                    | 21.3               | 33.0             | -11.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.7                    | 12.9               | 33.0             | -20.1       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    | 2675.0          | 2686.7          | QPSK       | 1      | 99     | 1       | 0       | 18.9                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.8                    | 13.0               | 33.0             | -20.0       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 17.3                    | 19.6               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 17.9                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 24      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 25      | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |



**OUTPUT POWER FOR LTE BAND 41 (10.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 10MHz / 20MHz      | 2501.5          | 2515.9          | QPSK       | 1      | 49     | 1       | 0       | 19.2                    | 21.5               | 33.0             | -11.6       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    | 2583.6          | 2598.0          | QPSK       | 1      | 49     | 1       | 0       | 19.3                    | 21.5               | 33.0             | -11.5       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.9                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 15.9                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    | 2665.6          | 2680.0          | QPSK       | 1      | 49     | 1       | 0       | 19.1                    | 21.3               | 33.0             | -11.7       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 49     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 | 64QAM      | 1      | 49     | 1       | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 |            | 50     | 0      | 100     | 0       | 16.6                    | 18.8               | 33.0             | -14.2       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 10.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 10MHz      | 2506.0          | 2520.4          | QPSK       | 1      | 99     | 1       | 0       | 19.2                    | 21.5               | 33.0             | -11.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    | 2588.1          | 2602.5          | QPSK       | 1      | 99     | 1       | 0       | 19.1                    | 21.3               | 33.0             | -11.7       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 17.1                    | 19.3               | 33.0             | -13.7       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    | 2670.1          | 2684.5          | QPSK       | 1      | 99     | 1       | 0       | 19.0                    | 21.3               | 33.0             | -11.8       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.0                    | 20.3               | 33.0             | -12.8       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 15.9                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 |            | 100    | 0      | 50      | 0       | 16.0                    | 18.3               | 33.0             | -14.8       |

**OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 15MHz      | 2503.5          | 2518.5          | QPSK       | 1      | 74     | 1       | 0       | 19.0                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 17.1                    | 19.3               | 33.0             | -13.7       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.2                    | 20.4               | 33.0             | -12.6       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    | 2585.5          | 2600.5          | QPSK       | 1      | 74     | 1       | 0       | 19.2                    | 21.4               | 33.0             | -11.6       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.9                    | 19.1               | 33.0             | -13.9       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.3                    | 20.5               | 33.0             | -12.5       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 15.9                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.6                    | 18.8               | 33.0             | -14.2       |
|                    | 2667.5          | 2682.5          | QPSK       | 1      | 74     | 1       | 0       | 19.0                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.4                    | 18.7               | 33.0             | -14.4       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 |            | 75     | 0      | 75      | 0       | 16.5                    | 18.8               | 33.0             | -14.3       |

**OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 15MHz / 20MHz      | 2503.8          | 2520.9          | QPSK       | 1      | 74     | 1       | 0       | 18.9                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 17.0                    | 19.2               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    | 2583.3          | 2600.4          | QPSK       | 1      | 74     | 1       | 0       | 19.0                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 17.1                    | 19.3               | 33.0             | -13.7       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 17.9                    | 20.1               | 33.0             | -12.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.5                    | 18.7               | 33.0             | -14.3       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    | 2662.9          | 2680.0          | QPSK       | 1      | 74     | 1       | 0       | 18.9                    | 21.1               | 33.0             | -11.9       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 74     | 1       | 0       | 18.2                    | 20.5               | 33.0             | -12.6       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 74     | 1       | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 |            | 75     | 0      | 100     | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 15.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz / 15MHz      | 2506.0          | 2523.1          | QPSK       | 1      | 99     | 1       | 0       | 19.3                    | 21.5               | 33.0             | -11.5       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 17.0                    | 19.3               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    | 2585.6          | 2602.7          | QPSK       | 1      | 99     | 1       | 0       | 19.1                    | 21.3               | 33.0             | -11.7       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 17.1                    | 19.4               | 33.0             | -13.7       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    | 2665.1          | 2682.2          | QPSK       | 1      | 99     | 1       | 0       | 19.0                    | 21.2               | 33.0             | -11.8       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 17.2                    | 19.4               | 33.0             | -13.6       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.1                    | 18.4               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.0                    | 18.2               | 33.0             | -14.8       |
|                    |                 |                 |            | 100    | 0      | 75      | 0       | 16.4                    | 18.6               | 33.0             | -14.4       |

**OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 20.0MHz)**

| Antenna Gain (dBi) |                 | 2.22            |            |        |        |         |         |                         |                    |                  |             |
|--------------------|-----------------|-----------------|------------|--------|--------|---------|---------|-------------------------|--------------------|------------------|-------------|
| Bandwidth          | Frequency (MHz) | Frequency (MHz) | Modulation | PCC RB | PCC RB | SCC1 RB | SCC1 RB | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Limit (dBm) | Margin (dB) |
|                    |                 |                 |            | Size   | Offset | Size    | Offset  |                         |                    |                  |             |
| 20MHz/<br>20MHz    | 2506.0          | 2525.8          | QPSK       | 1      | 99     | 1       | 0       | 19.2                    | 21.4               | 33.0             | -11.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.0                    | 20.2               | 33.0             | -12.8       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.8                    | 13.0               | 33.0             | -20.0       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 15.9                    | 18.1               | 33.0             | -14.9       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    | 2583.1          | 2602.9          | QPSK       | 1      | 99     | 1       | 0       | 19.1                    | 21.3               | 33.0             | -11.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 17.0                    | 19.3               | 33.0             | -13.8       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.1                    | 20.3               | 33.0             | -12.7       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 11.0                    | 13.2               | 33.0             | -19.8       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.1                    | 18.3               | 33.0             | -14.7       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.2                    | 18.4               | 33.0             | -14.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    | 2660.2          | 2680.0          | QPSK       | 1      | 99     | 1       | 0       | 19.2                    | 21.5               | 33.0             | -11.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 11.0                    | 13.2               | 33.0             | -19.8       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 17.3                    | 19.5               | 33.0             | -13.5       |
|                    |                 |                 | 16QAM      | 1      | 99     | 1       | 0       | 18.2                    | 20.5               | 33.0             | -12.6       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 10.9                    | 13.1               | 33.0             | -19.9       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.3                    | 18.5               | 33.0             | -14.5       |
|                    |                 |                 | 64QAM      | 1      | 99     | 1       | 0       | 16.6                    | 18.9               | 33.0             | -14.2       |
|                    |                 |                 |            | 1      | 0      | 1       | 99      | 11.1                    | 13.3               | 33.0             | -19.7       |
|                    |                 |                 |            | 100    | 0      | 100     | 0       | 16.5                    | 18.8               | 33.0             | -14.3       |

## **8. CONDUCTED TEST RESULTS**

### **8.1. OCCUPIED BANDWIDTH**

#### **RULE PART(S)**

FCC: §2.1049

#### **LIMITS**

For reporting purposes only

#### **TEST PROCEDURE**

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

#### **MODES TESTED**

- LTE Band 7
- LTE Band 41

#### **RESULTS**

# LTE BAND 7

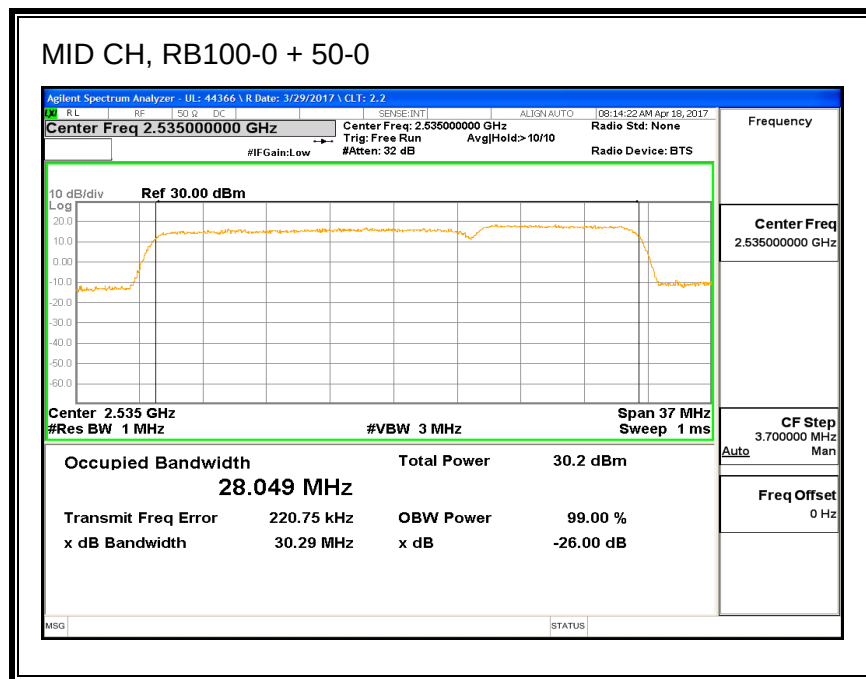
| BAND          | MODE                     | RB SIZE/ RB<br>OFFSET | f<br>((MHz) | 99% BW (MHz) | - 26dB BW<br>(MHz) |
|---------------|--------------------------|-----------------------|-------------|--------------|--------------------|
| LTE<br>BAND 7 | 20MHz + 10MHz BAND QPSK  | 100/0 + 50/0          | 2535        | 28.049       | 30.29              |
|               | 20MHz + 10MHz BAND 16QAM |                       |             | 28.020       | 30.23              |
|               | 20MHz + 10MHz BAND 64QAM |                       |             | 28.105       | 30.23              |
|               | 20MHz + 20MHz BAND QPSK  | 100/0 + 100/0         | 2535        | 37.720       | 40.26              |
|               | 20MHz + 20MHz BAND 16QAM |                       |             | 37.784       | 40.20              |
|               | 20MHz + 20MHz BAND 64QAM |                       |             | 37.704       | 40.05              |
|               | 10MHz + 20MHz BAND QPSK  | 50/0 + 100/0          | 2535        | 28.096       | 30.29              |
|               | 10MHz + 20MHz BAND 16QAM |                       |             | 28.066       | 30.23              |
|               | 10MHz + 20MHz BAND 64QAM |                       |             | 28.058       | 30.03              |
|               | 15MHz + 15MHz BAND QPSK  | 75/0 + 75/0           |             | 28.639       | 30.83              |
|               | 15MHz + 15MHz BAND 16QAM |                       |             | 28.626       | 30.82              |
|               | 15MHz + 15MHz BAND 64QAM |                       |             | 28.633       | 30.95              |
|               | 15MHz + 20MHz BAND QPSK  | 75/0 + 100/0          |             | 32.958       | 35.29              |
|               | 15MHz + 20MHz BAND 16QAM |                       |             | 32.840       | 35.28              |
|               | 15MHz + 20MHz BAND 64QAM |                       |             | 32.908       | 35.12              |
|               | 20MHz + 15MHz BAND QPSK  | 100/0 + 75/0          |             | 32.871       | 35.20              |
|               | 20MHz + 15MHz BAND 16QAM |                       |             | 32.908       | 35.25              |
|               | 20MHz + 15MHz BAND 64QAM |                       |             | 32.871       | 35.34              |

**LTE BAND 41 (FCC)**

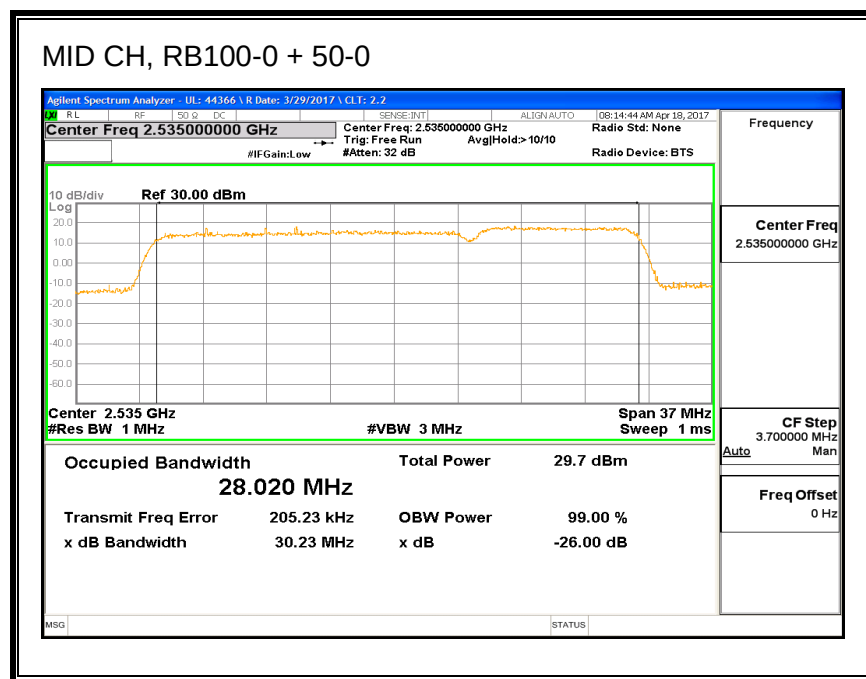
| BAND              | MODE                     | RB SIZE/ RB OFFSET | f (MHz) | 99% BW (MHz) | - 26dB BW (MHz) |
|-------------------|--------------------------|--------------------|---------|--------------|-----------------|
| LTE BAND 41 (FCC) | 20MHz + 5MHz BAND QPSK   | 100/0 + 25/0       | 2593    | 23.14        | 25.023          |
|                   | 20MHz + 5MHz BAND 16QAM  |                    |         | 23.352       | 25.35           |
|                   | 20MHz + 5MHz BAND 64QAM  |                    |         | 23.398       | 25.84           |
|                   | 20MHz + 20MHz BAND QPSK  | 100/0 + 100/0      | 2593    | 37.774       | 39.96           |
|                   | 20MHz + 20MHz BAND 16QAM |                    |         | 37.799       | 41.96           |
|                   | 20MHz + 20MHz BAND 64QAM |                    |         | 37.714       | 43.40           |
|                   | 5MHz + 20MHz BAND QPSK   | 25/0 + 100/0       | 2593    | 23.3174      | 25.052          |
|                   | 5MHz + 20MHz BAND 16QAM  |                    |         | 23.4327      | 25.113          |
|                   | 5MHz + 20MHz BAND 64QAM  |                    |         | 23.354       | 25.15           |
|                   | 10MHz + 20MHz BAND QPSK  | 50/0 + 100/0       |         | 28.0512      | 31.258          |
|                   | 10MHz + 20MHz BAND 16QAM |                    |         | 28.0087      | 30.474          |
|                   | 10MHz + 20MHz BAND 64QAM |                    |         | 28.111       | 30.09           |
|                   | 20MHz + 10MHz BAND QPSK  | 100/0 + 50/0       |         | 28.099       | 33.12           |
|                   | 20MHz + 10MHz BAND 16QAM |                    |         | 28.004       | 30.10           |
|                   | 20MHz + 10MHz BAND 64QAM |                    |         | 28.119       | 32.67           |
|                   | 15MHz + 15MHz BAND QPSK  | 75/0 + 75/0        |         | 28.5514      | 32.093          |
|                   | 15MHz + 15MHz BAND 16QAM |                    |         | 28.6010      | 31.345          |
|                   | 15MHz + 15MHz BAND 64QAM |                    |         | 28.656       | 32.14           |
|                   | 15MHz + 20MHz BAND QPSK  | 75/0 + 100/0       | 2593    | 32.7422      | 35.293          |
|                   | 15MHz + 20MHz BAND 16QAM |                    |         | 32.8255      | 35.051          |
|                   | 15MHz + 20MHz BAND 64QAM | 32.838             |         | 36.88        |                 |
|                   | 20MHz + 15MHz BAND QPSK  | 100/0 + 75/0       |         | 32.988       | 34.96           |
|                   | 20MHz + 15MHz BAND 16QAM |                    |         | 32.808       | 35.15           |
|                   | 20MHz + 15MHz BAND 64QAM |                    |         | 32.881       | 35.03           |

### 8.1.1. LTE BAND 7

#### QPSK, (20.0MHz + 10.0MHz BAND WIDTH)

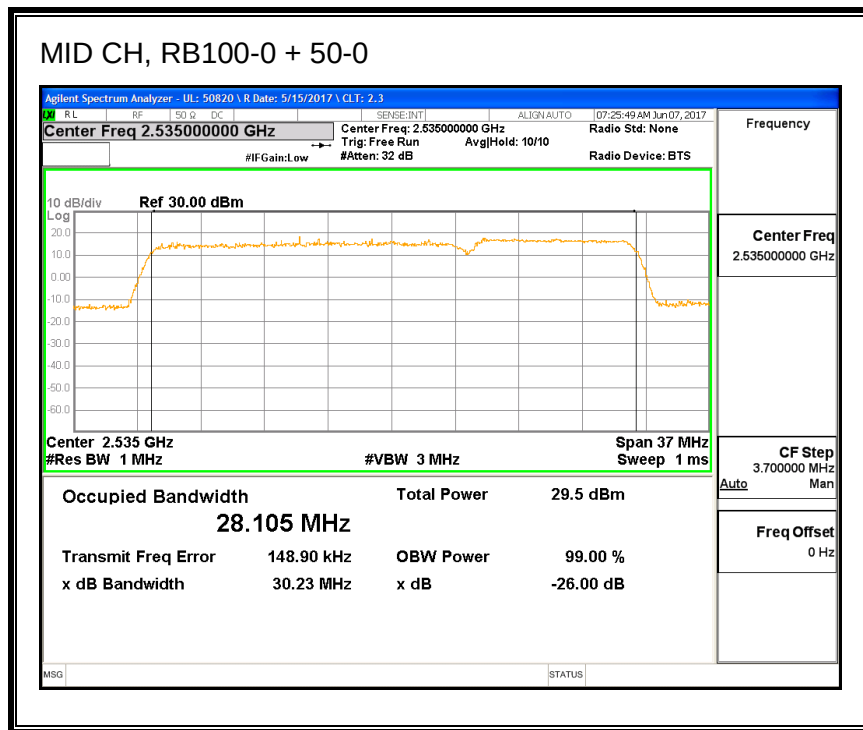


#### 16QAM, (20.0MHz + 10.0MHz BAND WIDTH)

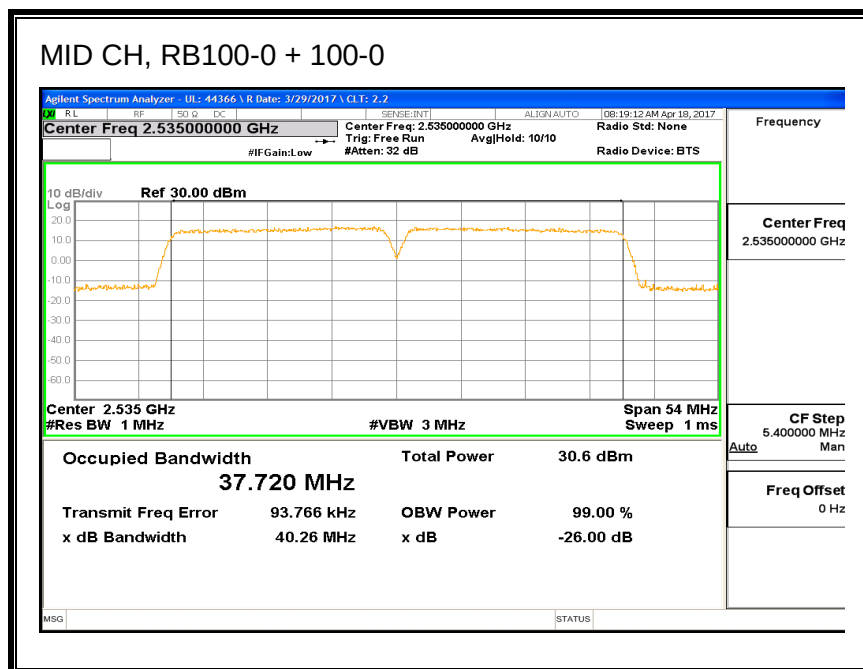




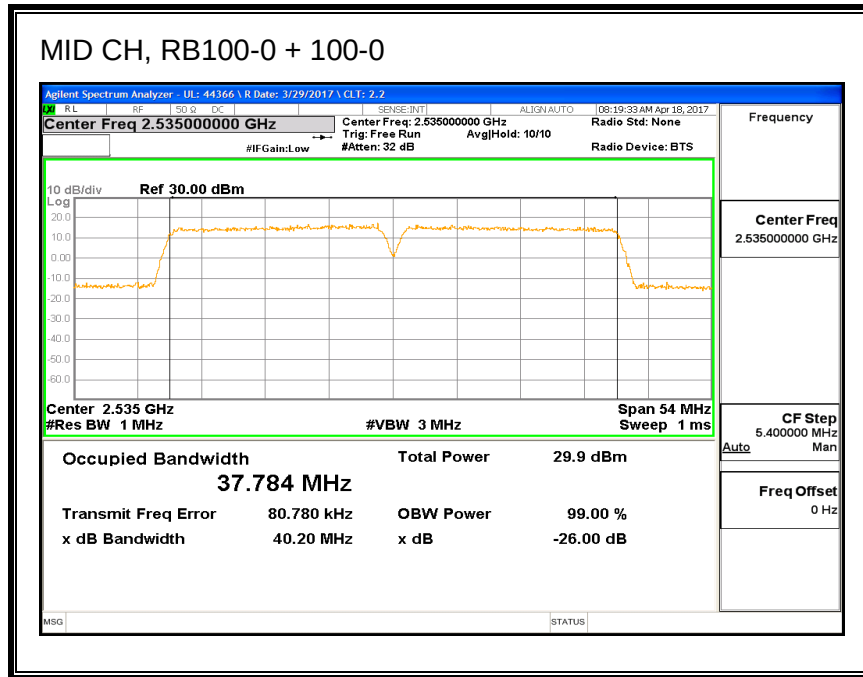
**64QAM, (20.0MHz + 10.0MHz BAND WIDTH)**



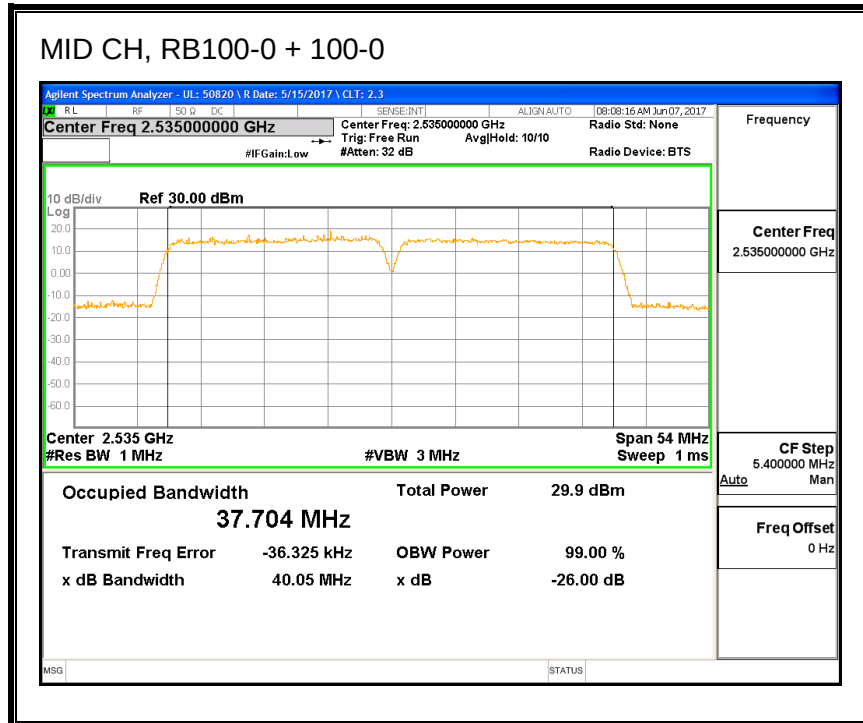
**QPSK, (20.0MHz + 20.0MHz BAND WIDTH)**



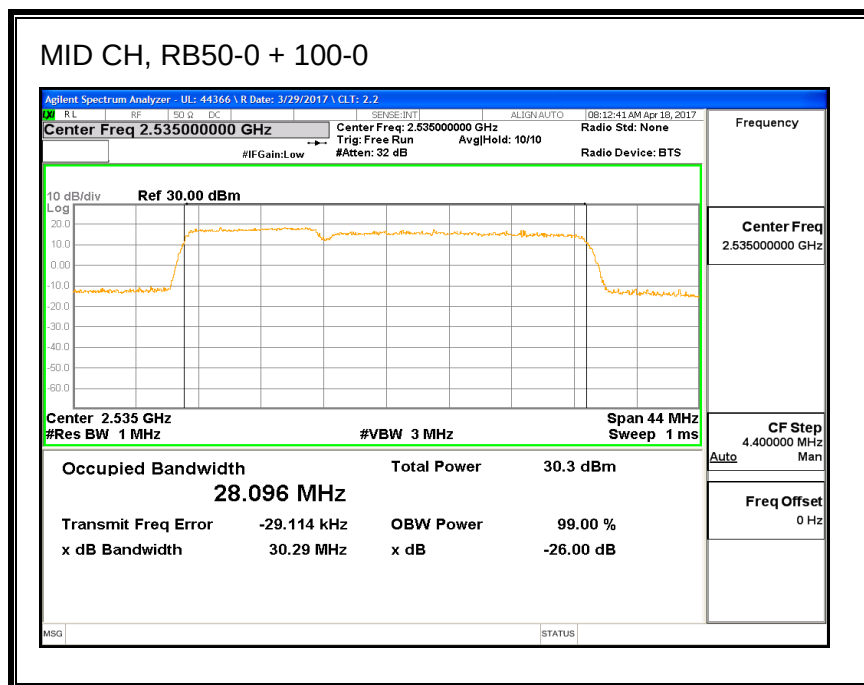
**16QAM, (20.0MHz + 20.0MHz BAND WIDTH)**



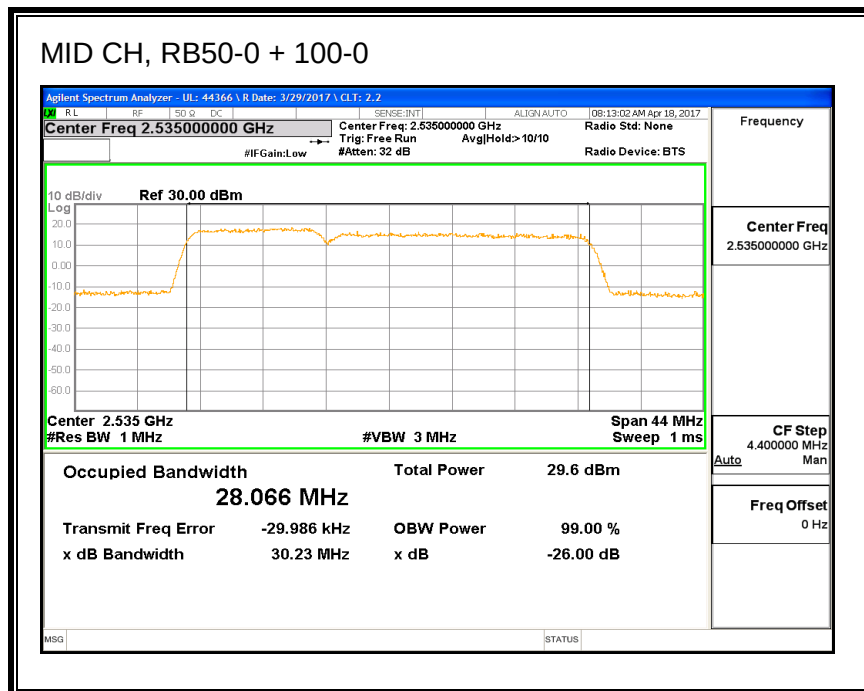
**64QAM, (20.0MHz + 20.0MHz BAND WIDTH)**



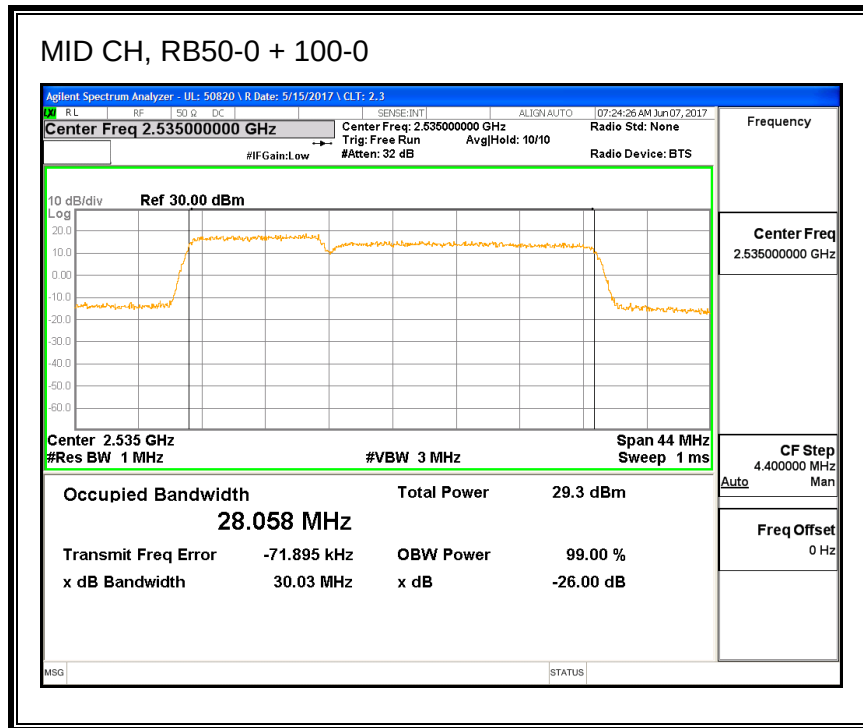
**QPSK, (10.0MHz + 20.0MHz BAND WIDTH)**



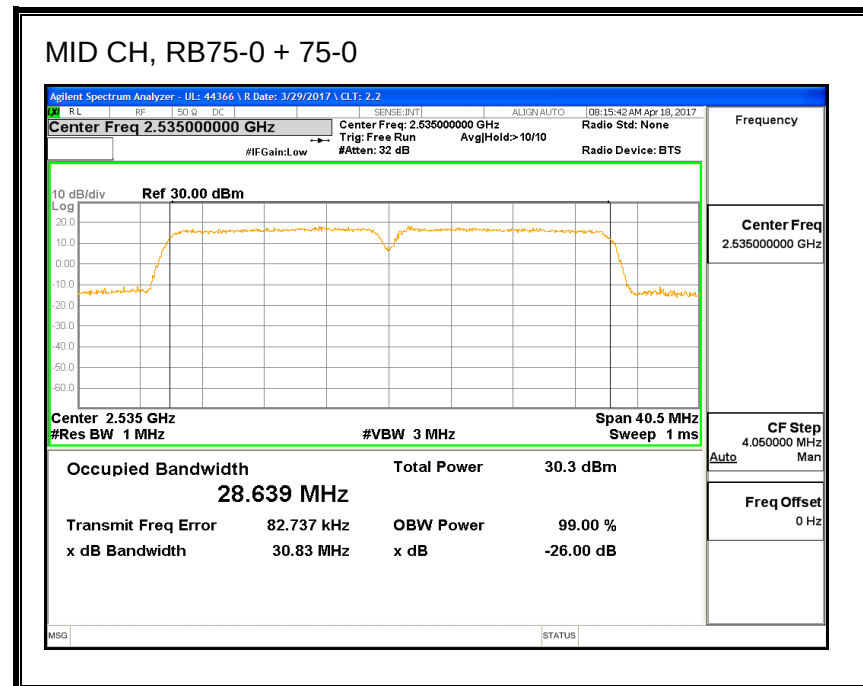
**16QAM, (10.0MHz + 20.0MHz BAND WIDTH)**



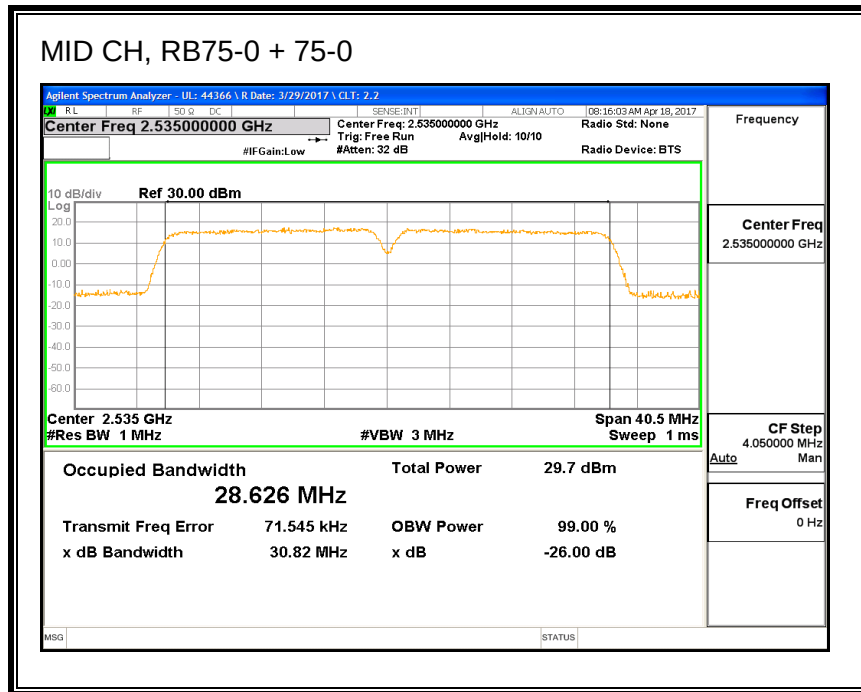
**64QAM, (10.0MHz + 20.0MHz BAND WIDTH)**



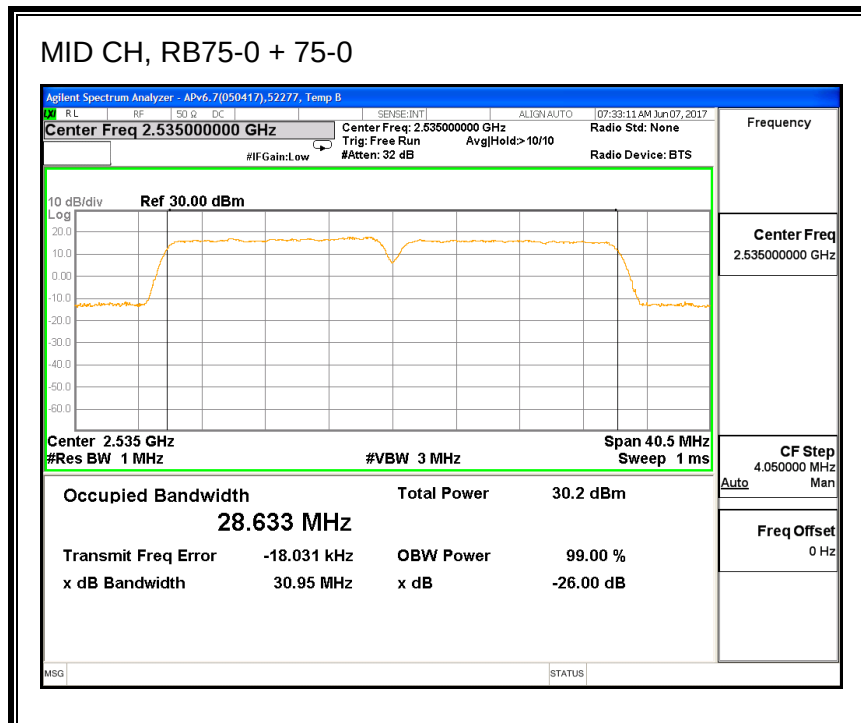
**QPSK, (15.0MHz + 15.0MHz BAND WIDTH)**



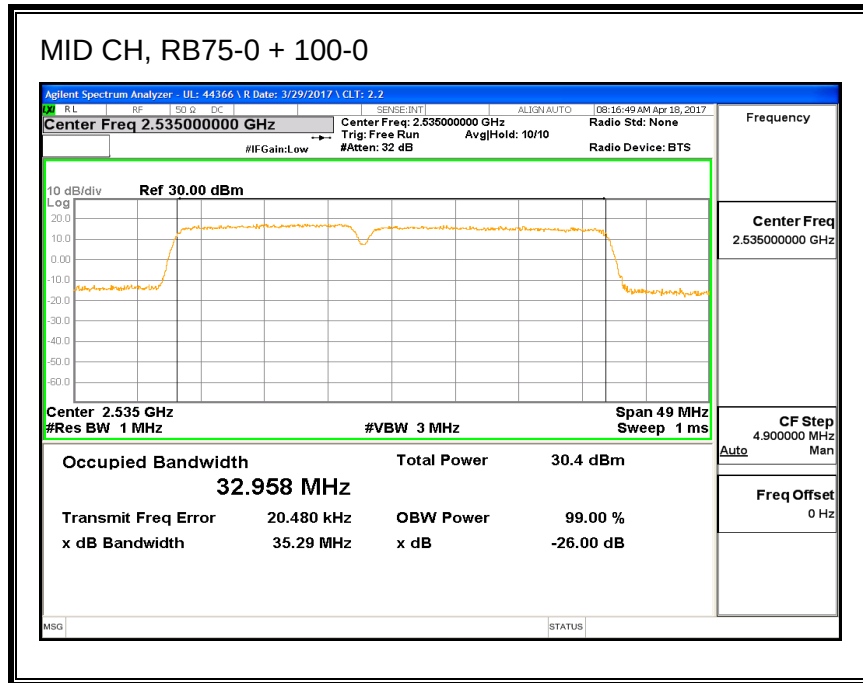
**16QAM, (15.0MHz + 15.0MHz BAND WIDTH)**



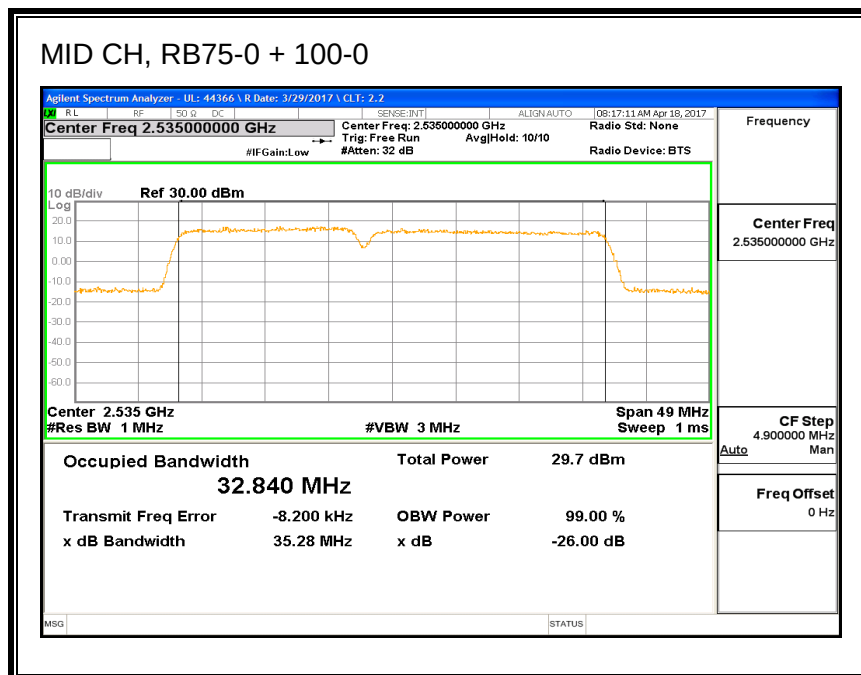
**64QAM, (15.0MHz + 15.0MHz BAND WIDTH)**



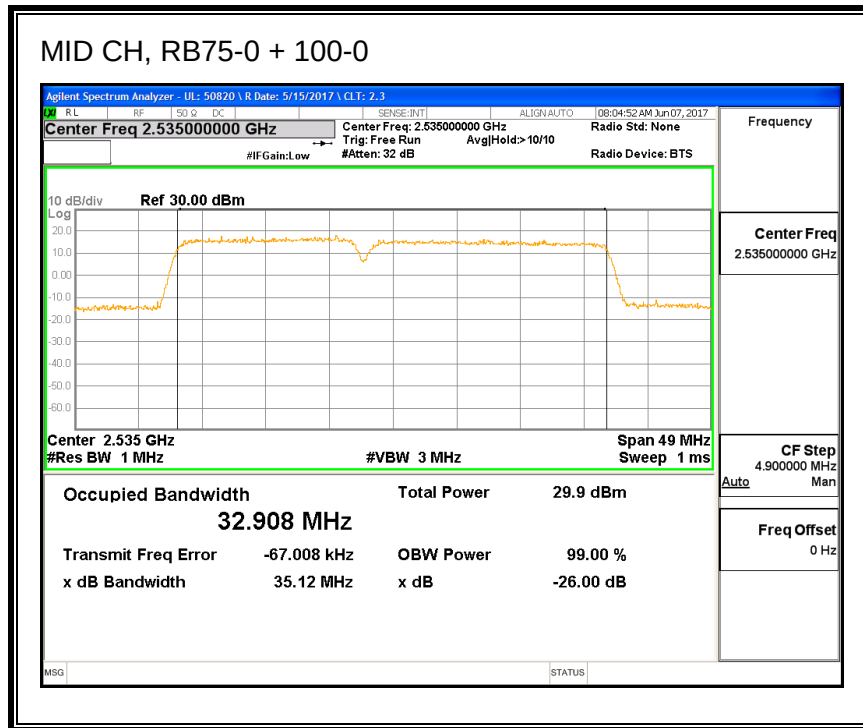
**QPSK, (15.0MHz + 20.0MHz BAND WIDTH)**



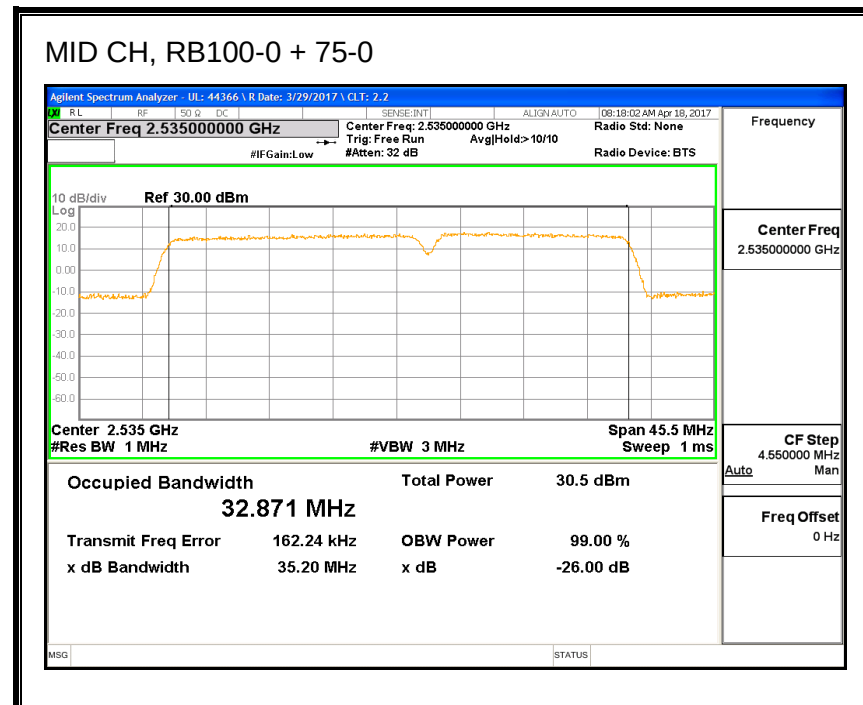
**16QAM, (15.0MHz + 20.0MHz BAND WIDTH)**



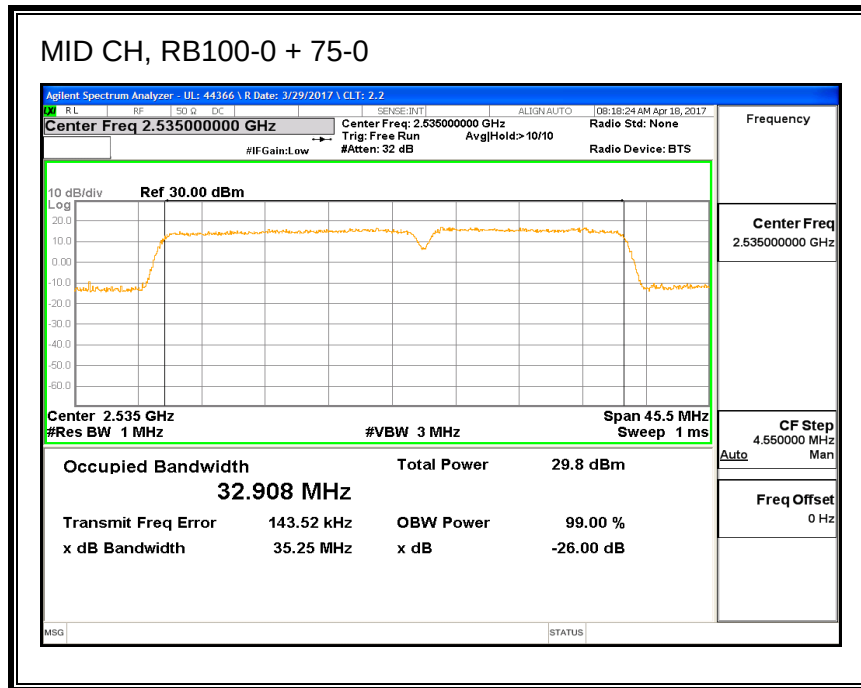
**64QAM, (15.0MHz + 20.0MHz BAND WIDTH)**



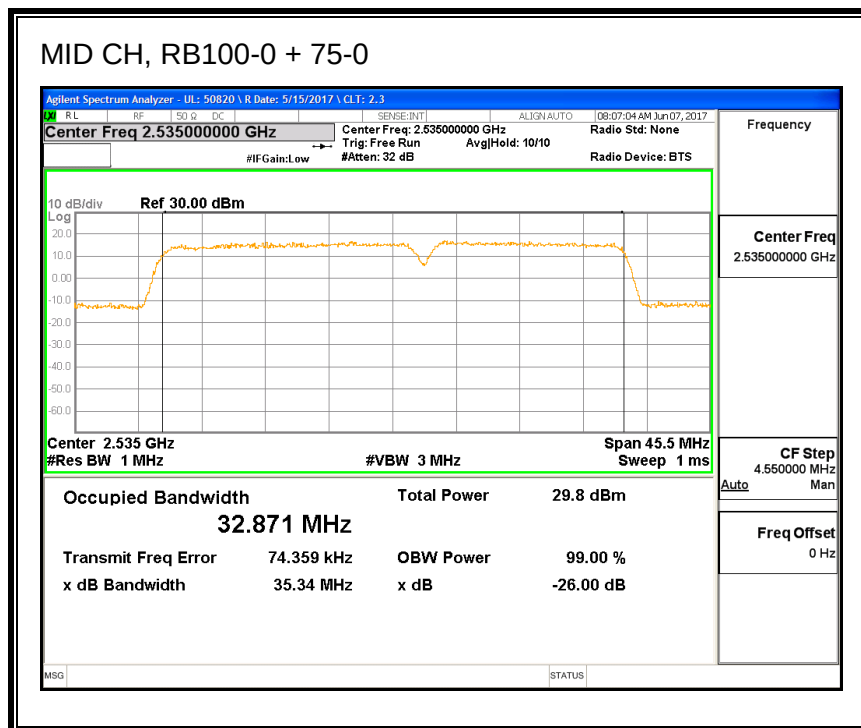
**QPSK, (20.0MHz + 15.0MHz BAND WIDTH)**



**16QAM, (20.0MHz + 15.0MHz BAND WIDTH)**



**64QAM, (20.0MHz + 15.0MHz BAND WIDTH)**

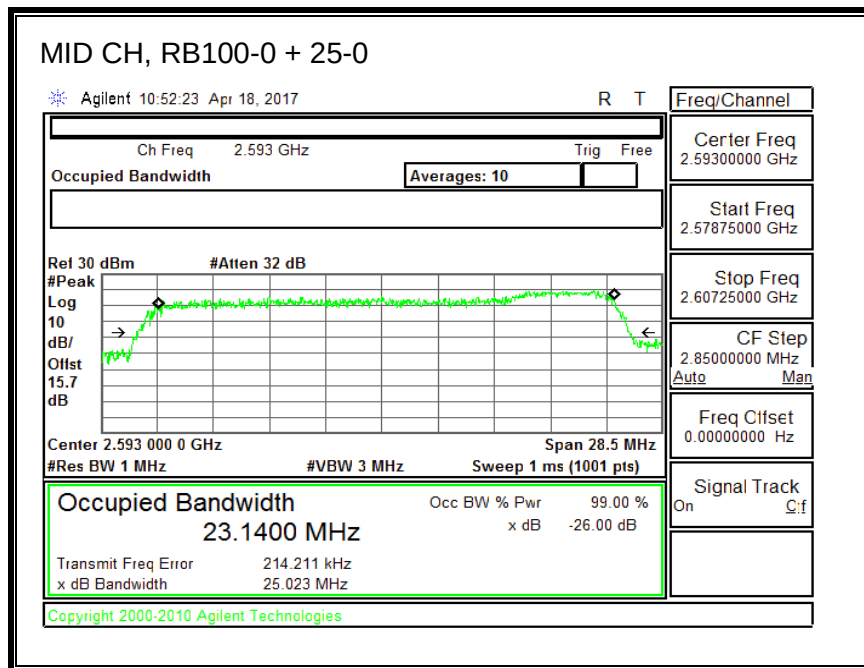




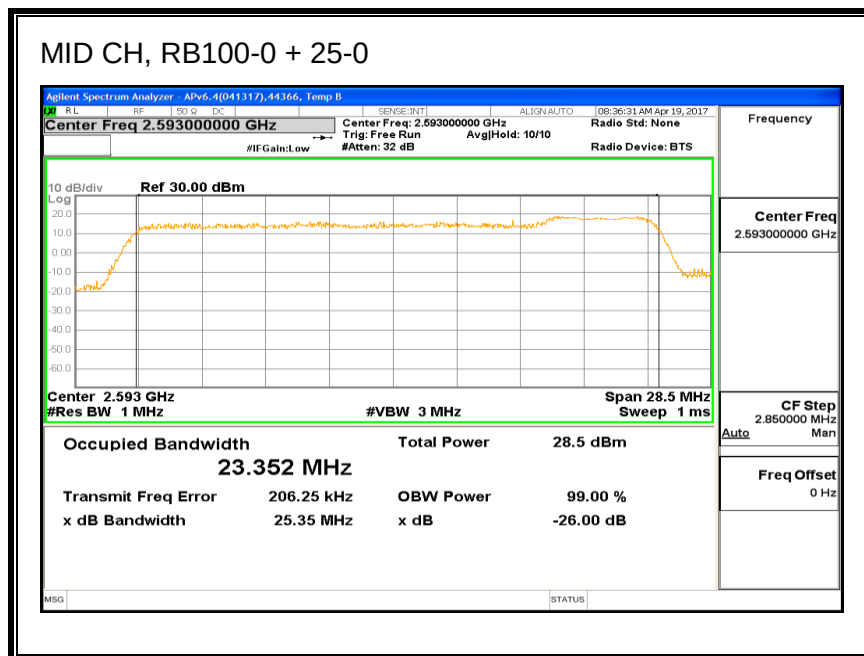
### 8.1.2. LTE BAND 41

|     |       |       |         |
|-----|-------|-------|---------|
| ID: | 44366 | Date: | 4/21/17 |
|-----|-------|-------|---------|

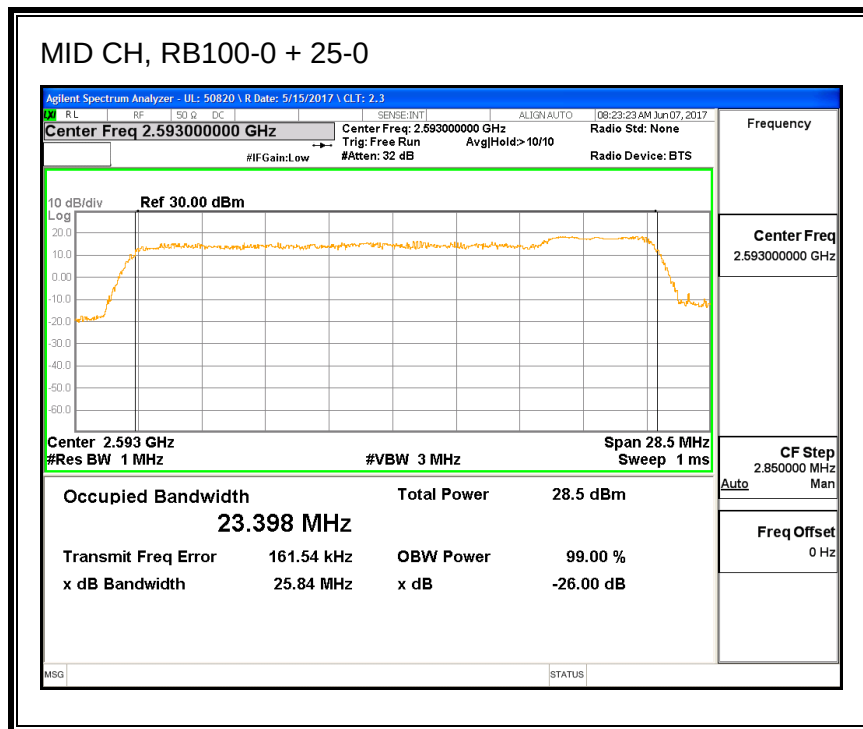
#### QPSK, (20.0MHz + 5.0MHz BAND WIDTH)



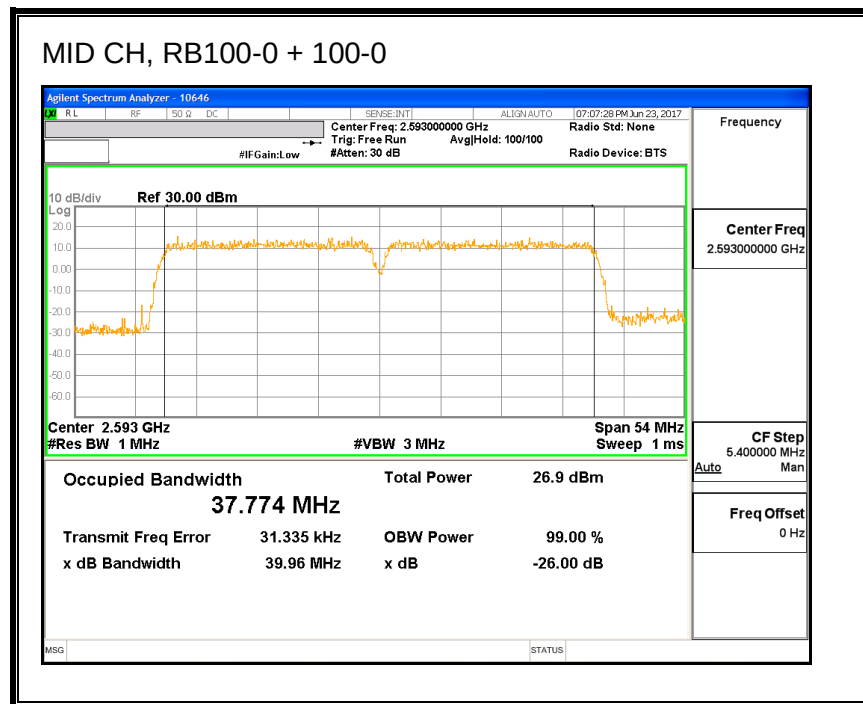
#### 16QAM, (20.0MHz + 5.0MHz BAND WIDTH)



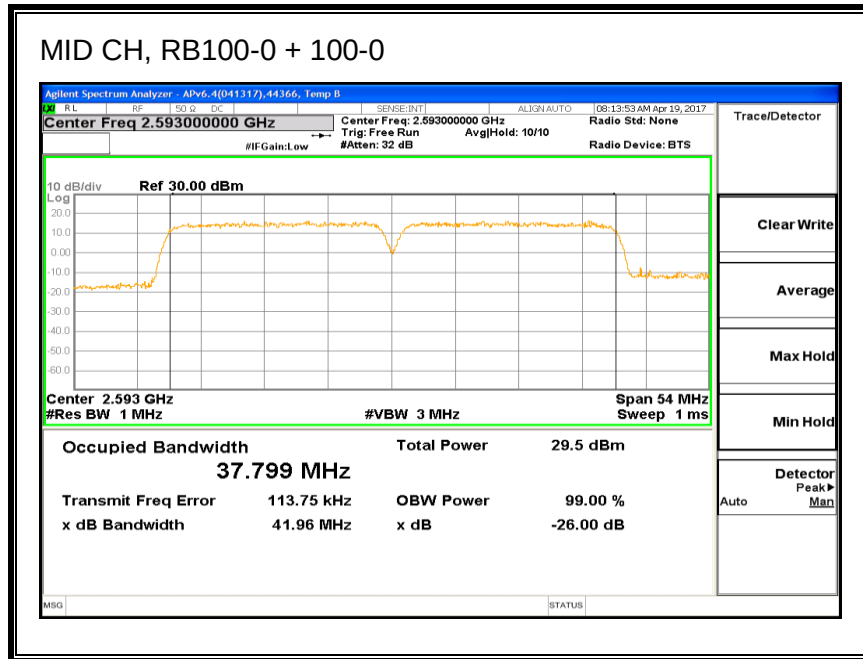
**64QAM, (20.0MHz + 5.0MHz BAND WIDTH)**



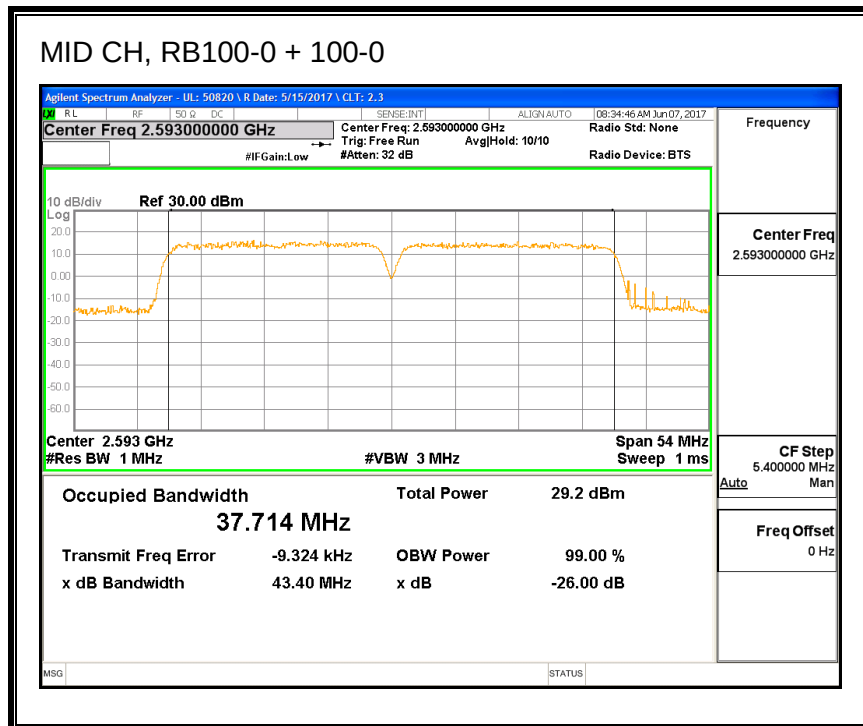
**QPSK, (20.0MHz + 20.0MHz BAND WIDTH)**



**16QAM, (20.0MHz + 20.0MHz BAND WIDTH)**



**64QAM, (20.0MHz + 20.0MHz BAND WIDTH)**



MID CH, RB25-0 + 100-0

Agilent 11:03:11 Apr 18, 2017 R T

|                                                           |  |              |  |
|-----------------------------------------------------------|--|--------------|--|
| Ch Freq <span style="margin-left: 50px;">2.593 GHz</span> |  | Trig Free    |  |
| Occupied Bandwidth                                        |  | Averages: 10 |  |
|                                                           |  |              |  |

Ref 30 dBm #Atten 32 dB

#Peak

Log

10

dB/

Offst

15.7

dB

Center Freq  
2.5930000 GHz

Stop Freq  
2.6125000 GHz

CF Step  
3.9000000 MHz

Freq Offset  
0.0000000 Hz

Center 2.593 000 GHz Span 39 MHz

#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (1001 pts)

|                                                                          |  |                                                              |  |
|--------------------------------------------------------------------------|--|--------------------------------------------------------------|--|
| Occupied Bandwidth                                                       |  | Occ BW % Pwr <span style="margin-left: 20px;">99.00 %</span> |  |
| 23.3174 MHz                                                              |  | x dB <span style="margin-left: 20px;">-26.00 dB</span>       |  |
| Transmit Freq Error <span style="margin-left: 50px;">-166.746 kHz</span> |  |                                                              |  |
| x dB Bandwidth <span style="margin-left: 50px;">25.052 MHz</span>        |  |                                                              |  |

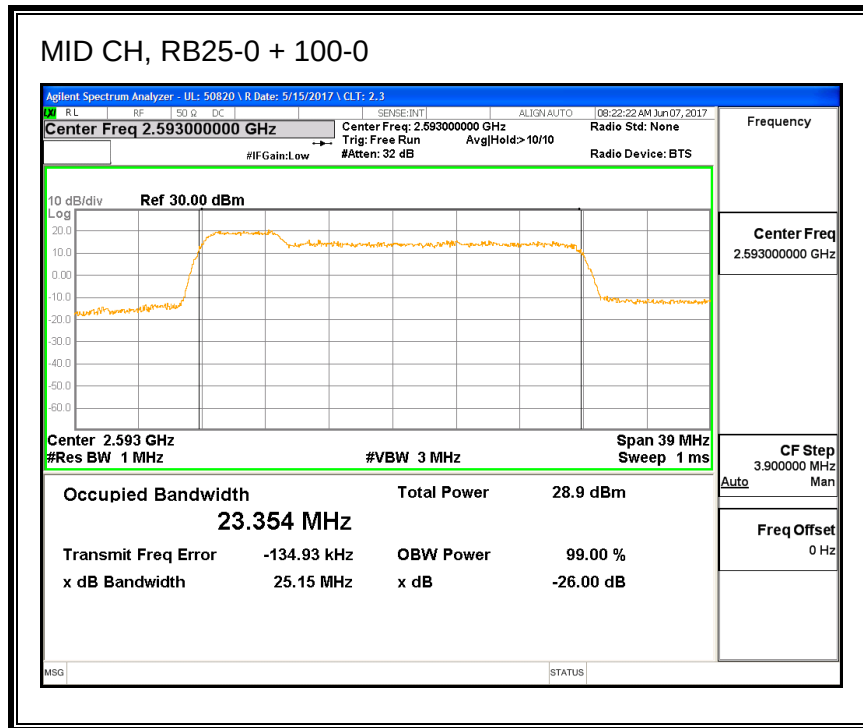
Signal Track

On Off

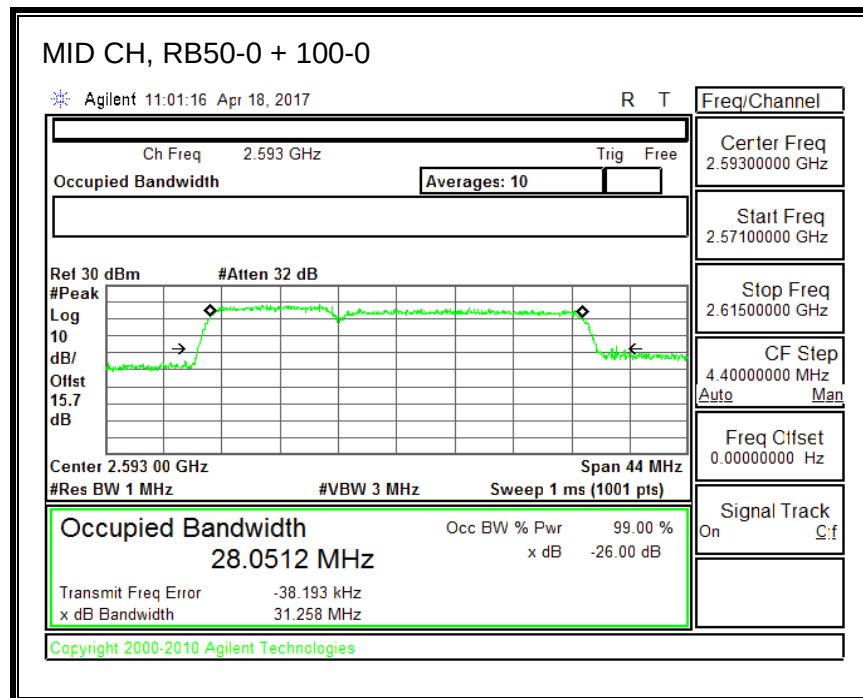
Copyright 2000-2010 Agilent Technologies

[illegible]

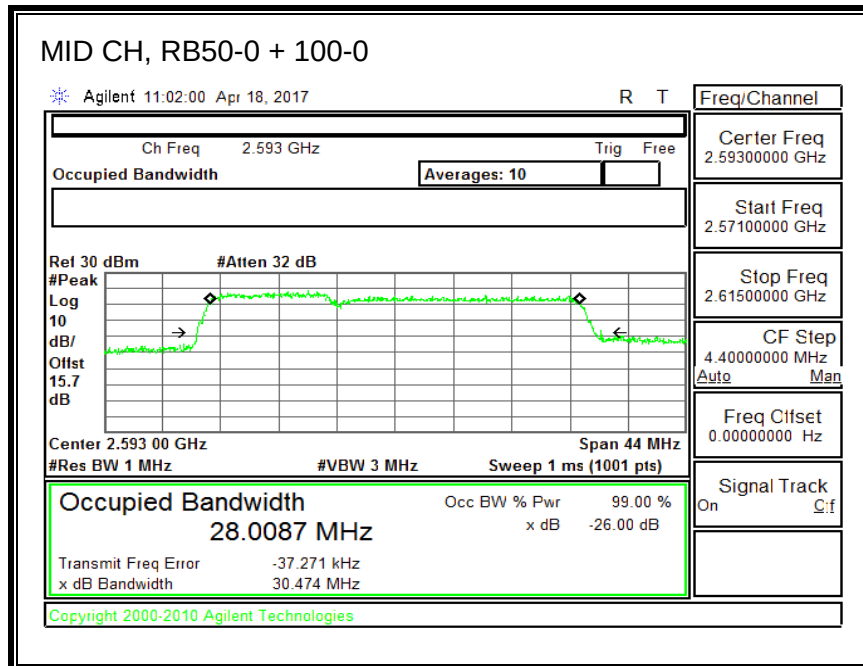
**64QAM, (5.0MHz + 20.0MHz BAND WIDTH)**



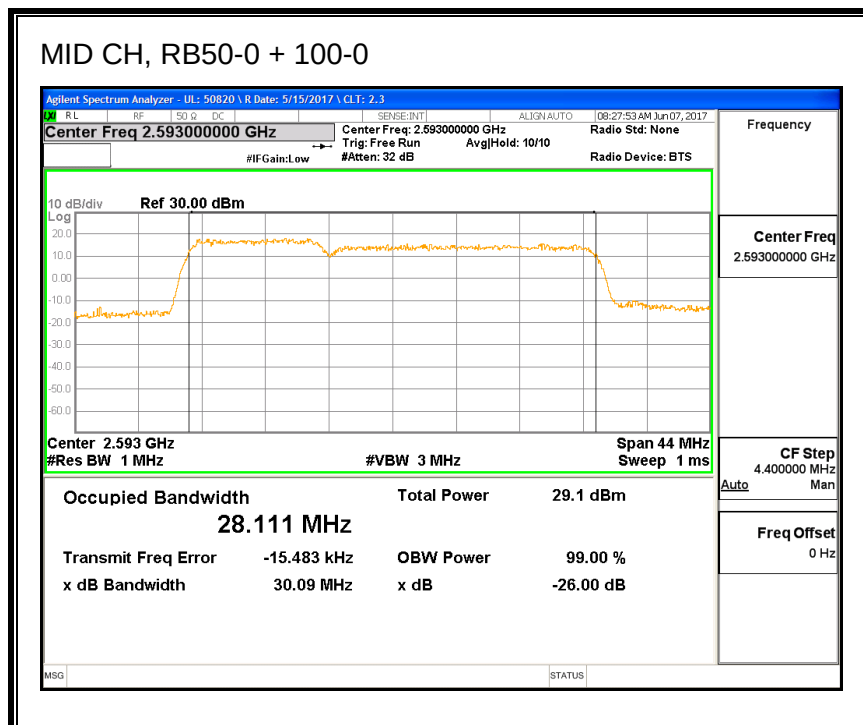
**QPSK, (10.0MHz + 20.0MHz BAND WIDTH)**



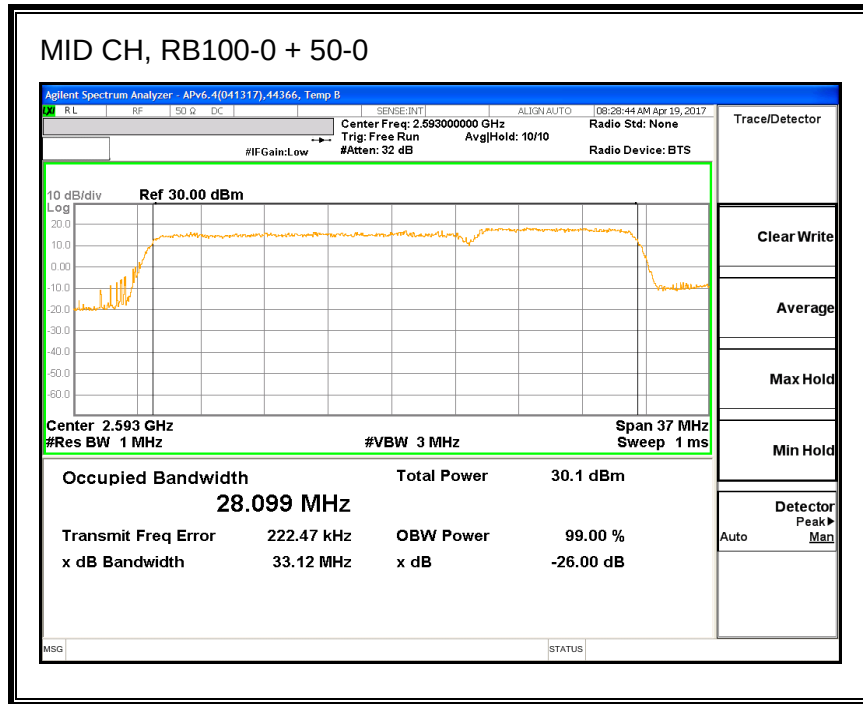
**16QAM, (10.0MHz + 20.0MHz BAND WIDTH)**



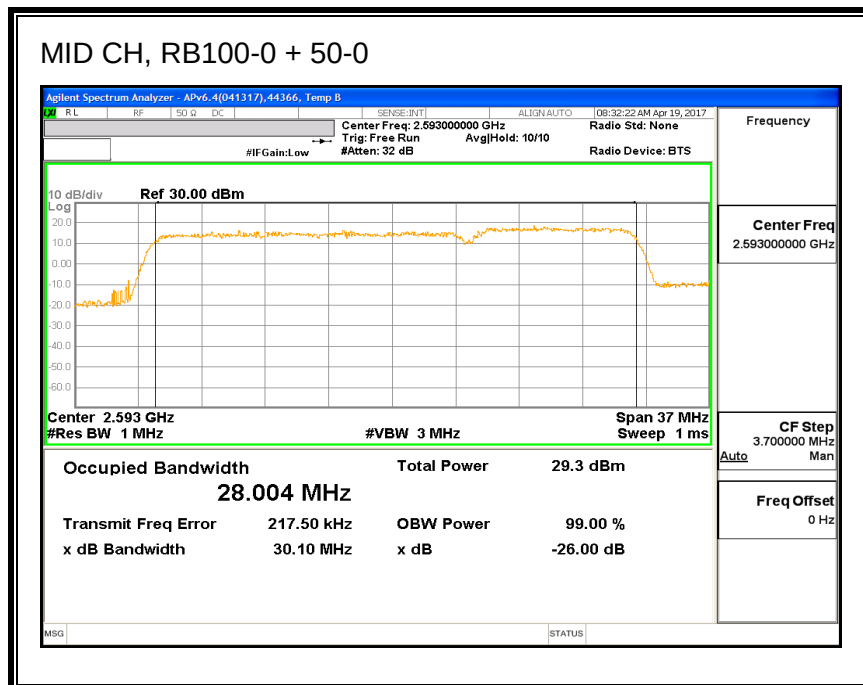
**64QAM, (10.0MHz + 20.0MHz BAND WIDTH)**



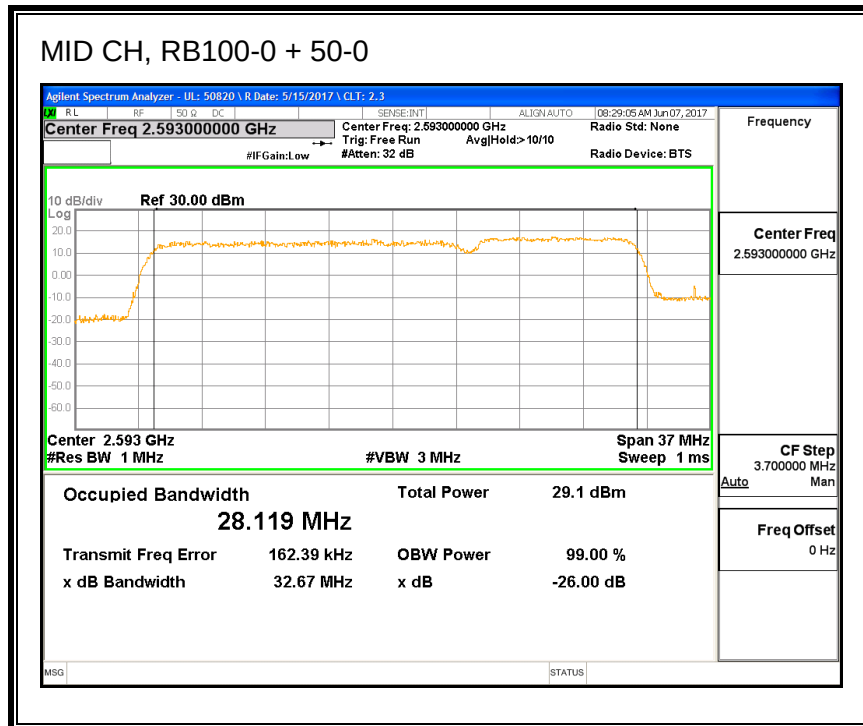
**QPSK, (20.0MHz + 10.0MHz BAND WIDTH)**



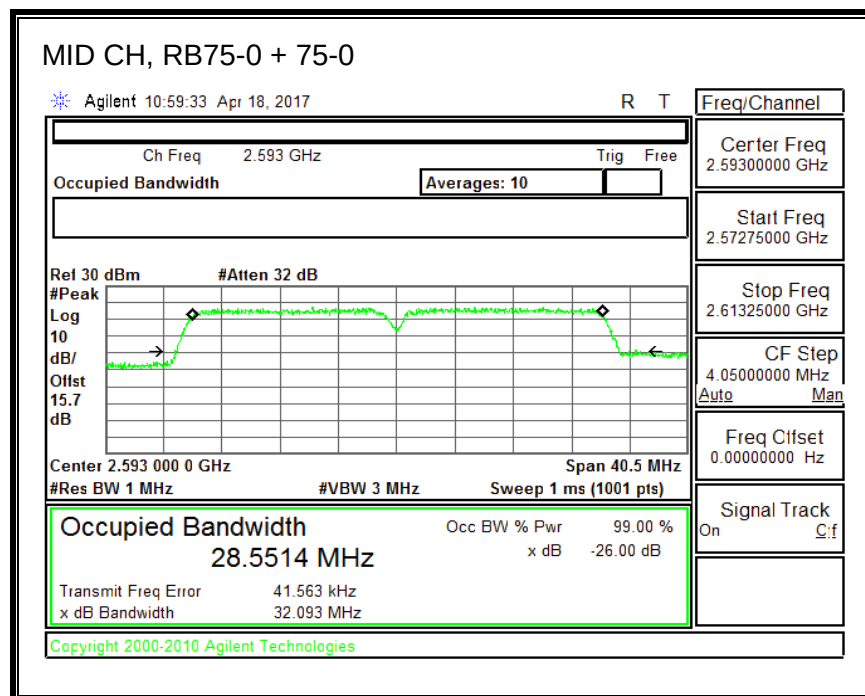
**16QAM, (20.0MHz + 10.0MHz BAND WIDTH)**



**64QAM, (20.0MHz + 10.0MHz BAND WIDTH)**

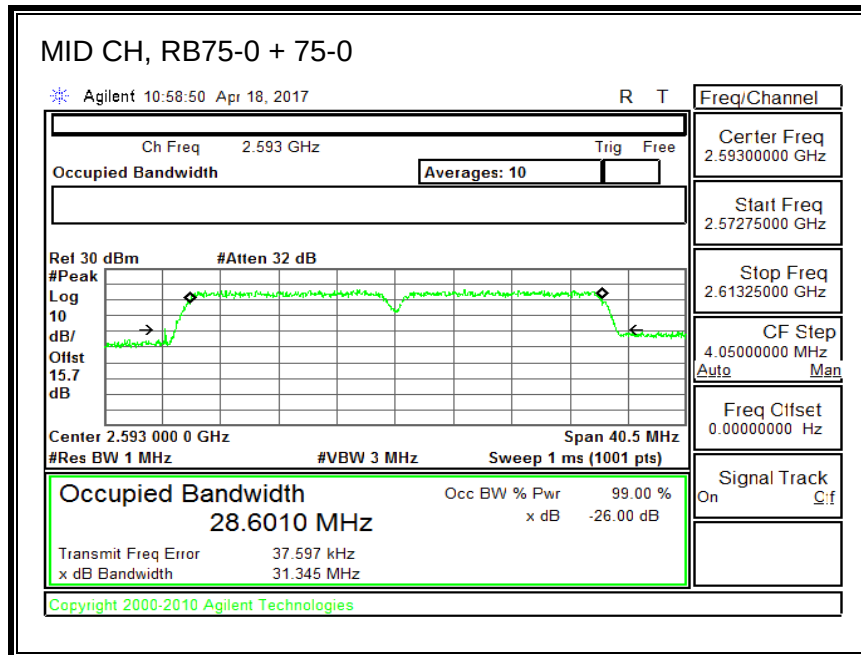


**QPSK, (15.0MHz + 15.0MHz BAND WIDTH)**

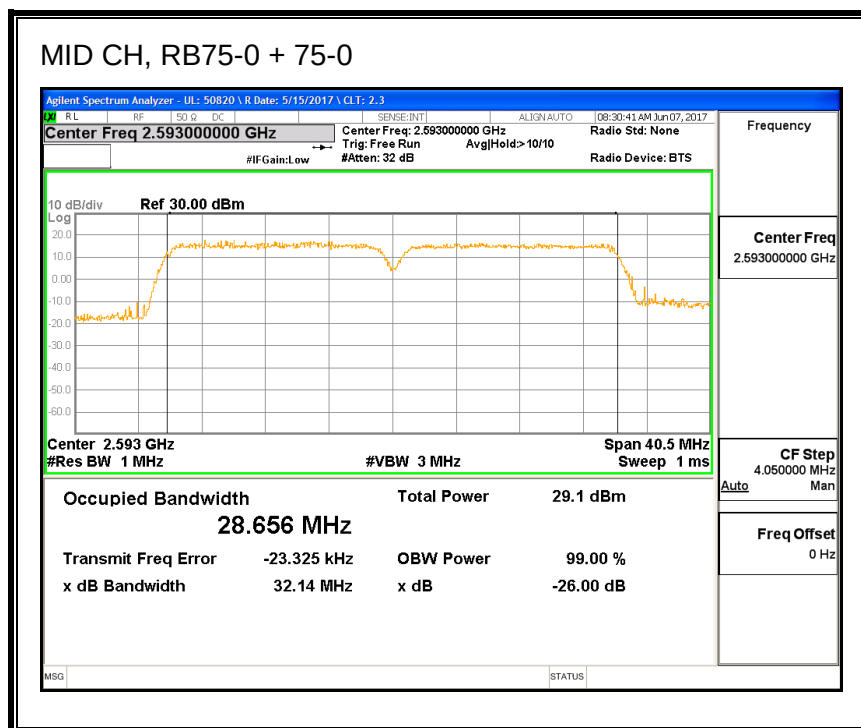




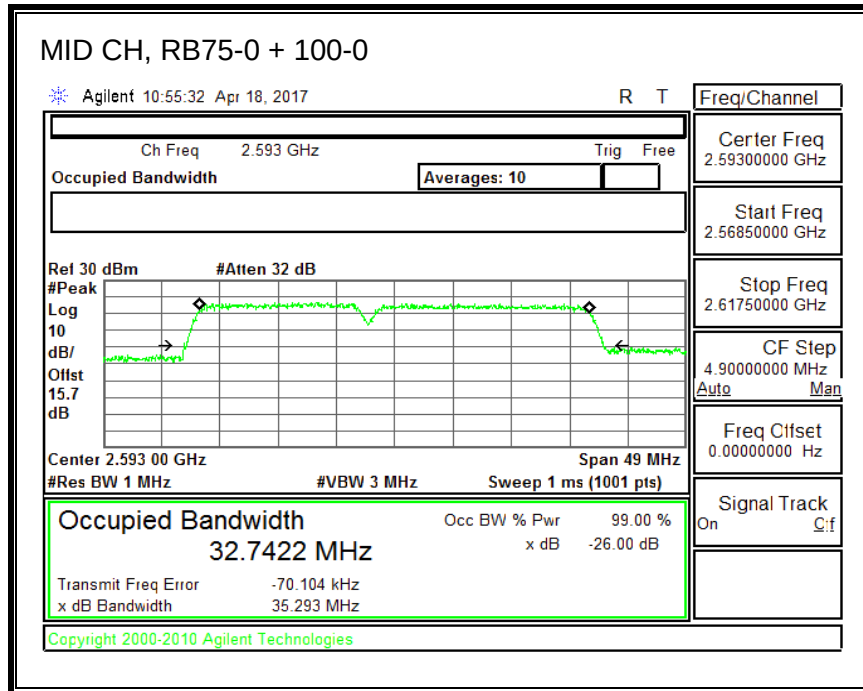
**16QAM, (15.0MHz + 15.0MHz BAND WIDTH)**



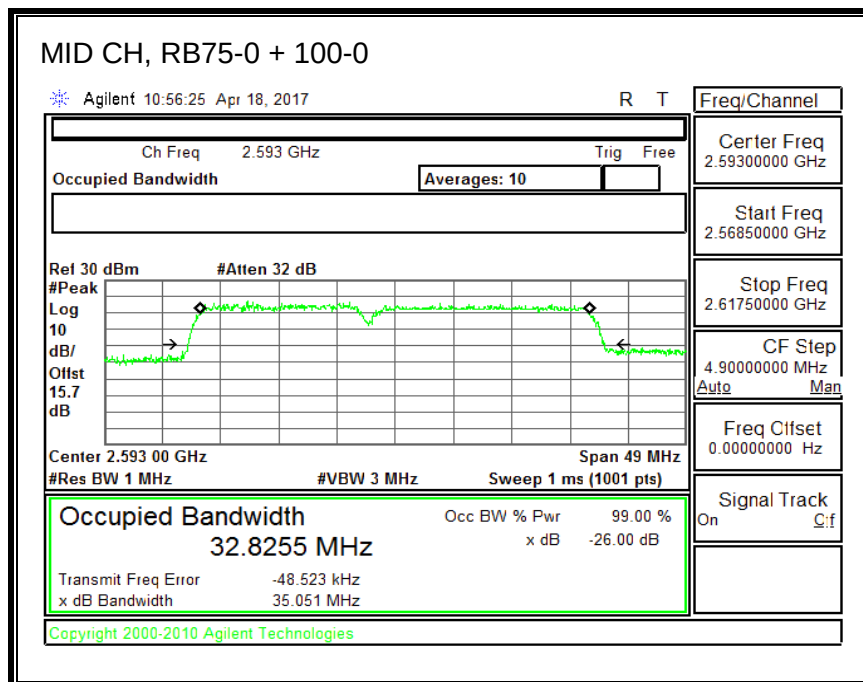
**64QAM, (15.0MHz + 15.0MHz BAND WIDTH)**



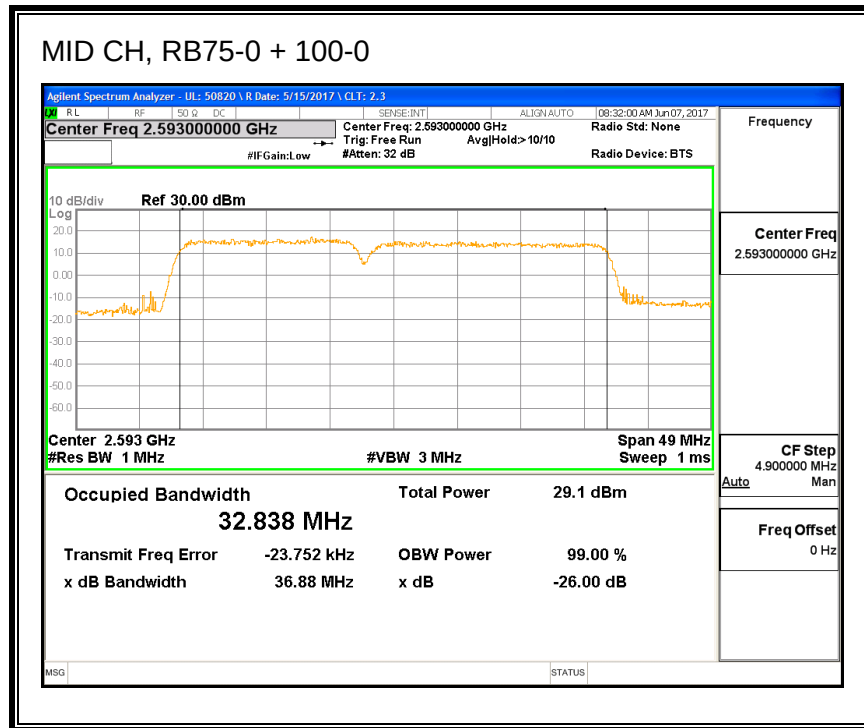
**QPSK, (15.0MHz + 20.0MHz BAND WIDTH)**



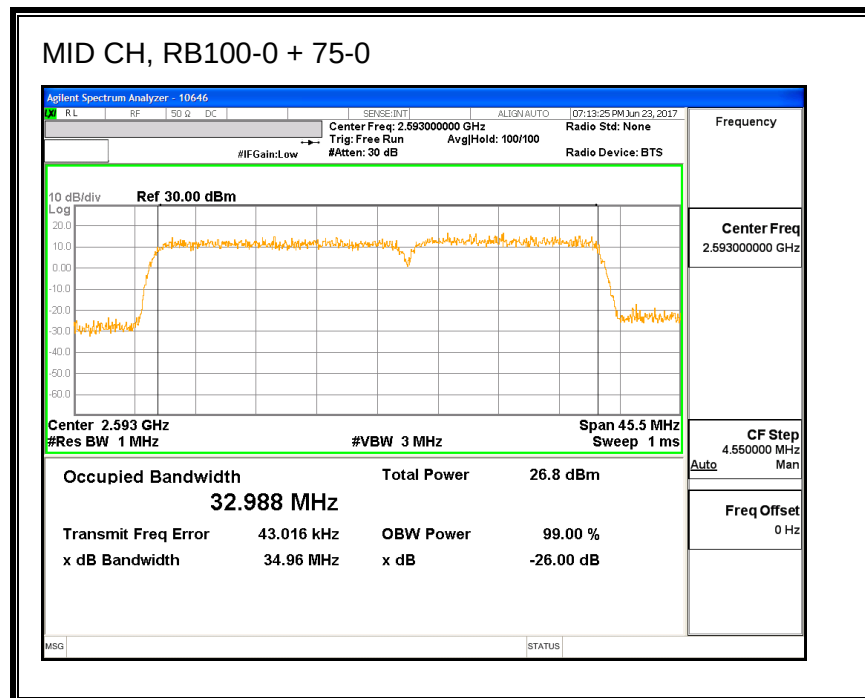
**16QAM, (15.0MHz + 20.0MHz BAND WIDTH)**



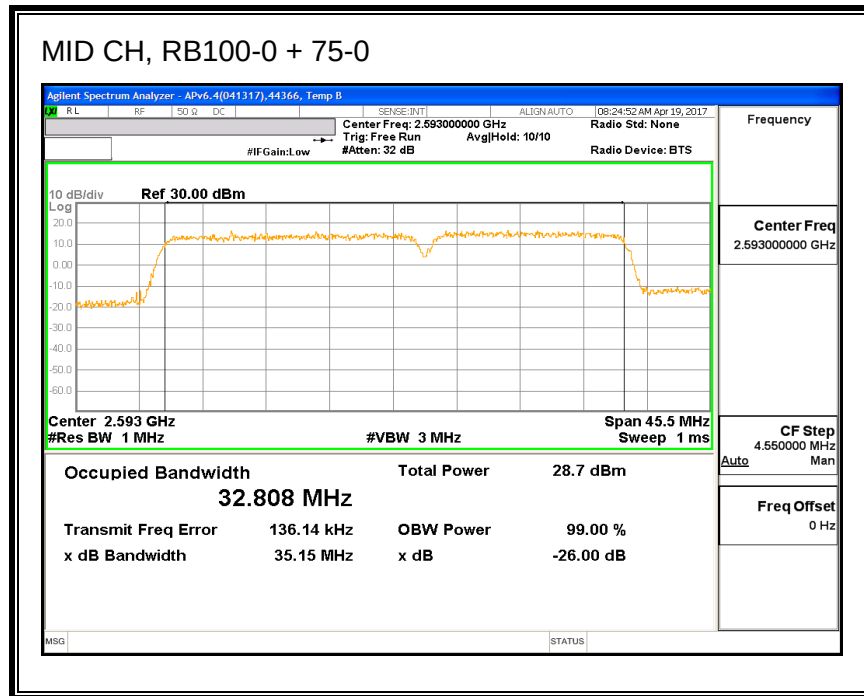
**64QAM, (15.0MHz + 20.0MHz BAND WIDTH)**



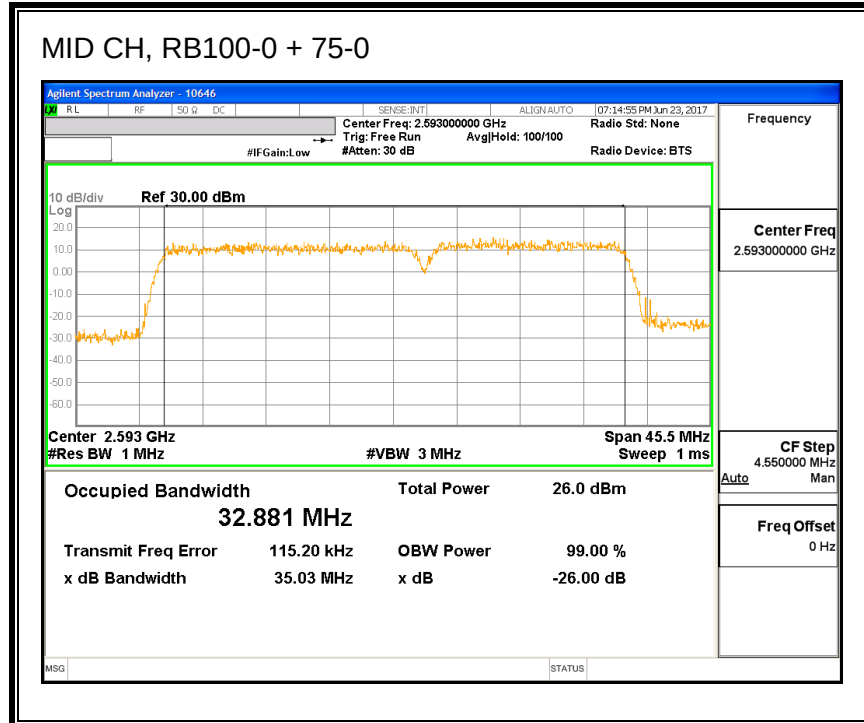
**QPSK, (20.0MHz + 15.0MHz BAND WIDTH)**



**16QAM, (20.0MHz + 15.0MHz BAND WIDTH)**



**64QAM, (20.0MHz + 15.0MHz BAND WIDTH)**



## 8.2. EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §27.53

### LIMITS

FCC: §27.53

(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; 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, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

(m)(4) 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 than  $43 + 10 \log (P)$  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. Show citation box.

### **TEST PROCEDURE FOR FCC PART 27**

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

Set resolution bandwidth to at least 1% of emission bandwidth.

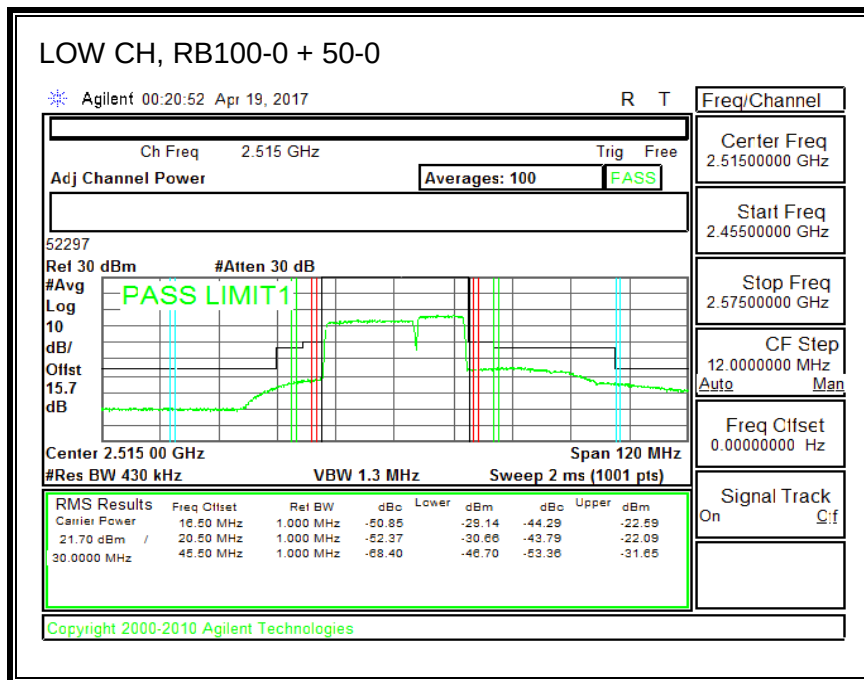
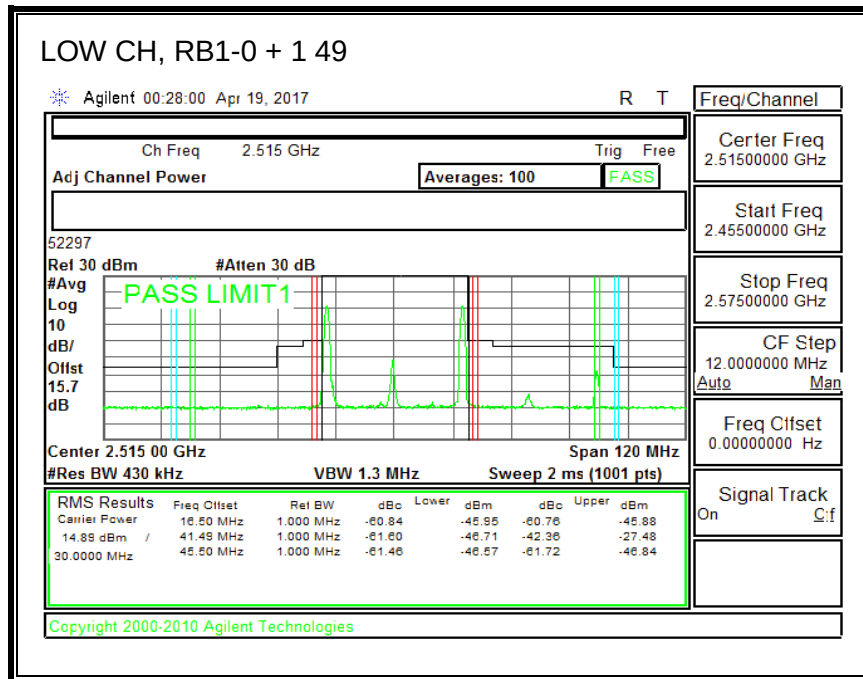
### **MODES TESTED**

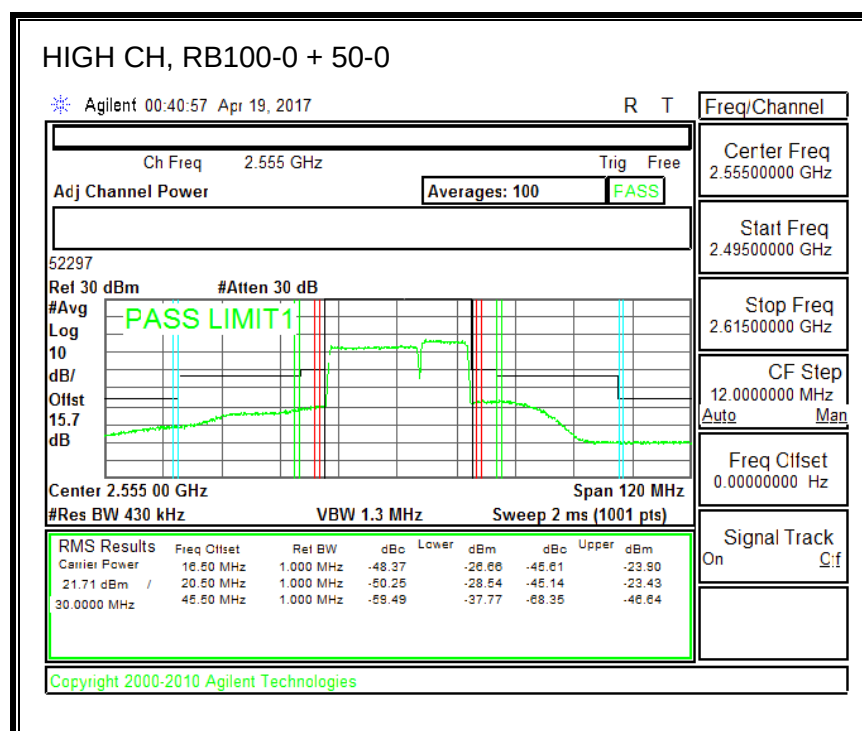
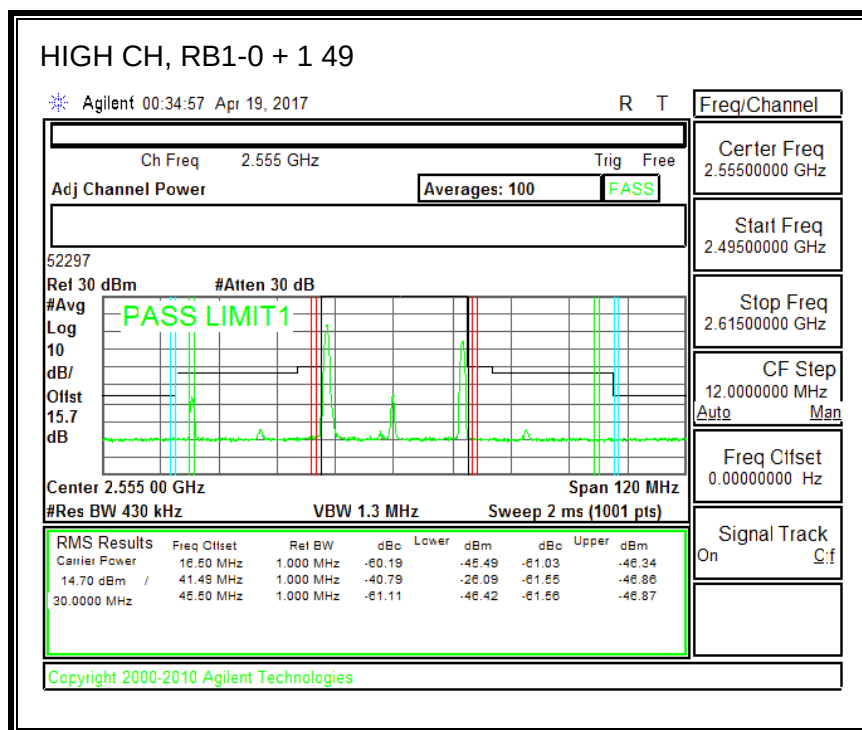
- LTE Band 7
- LTE Band 41

### **RESULTS**

## 8.2.1. LTE BAND 7

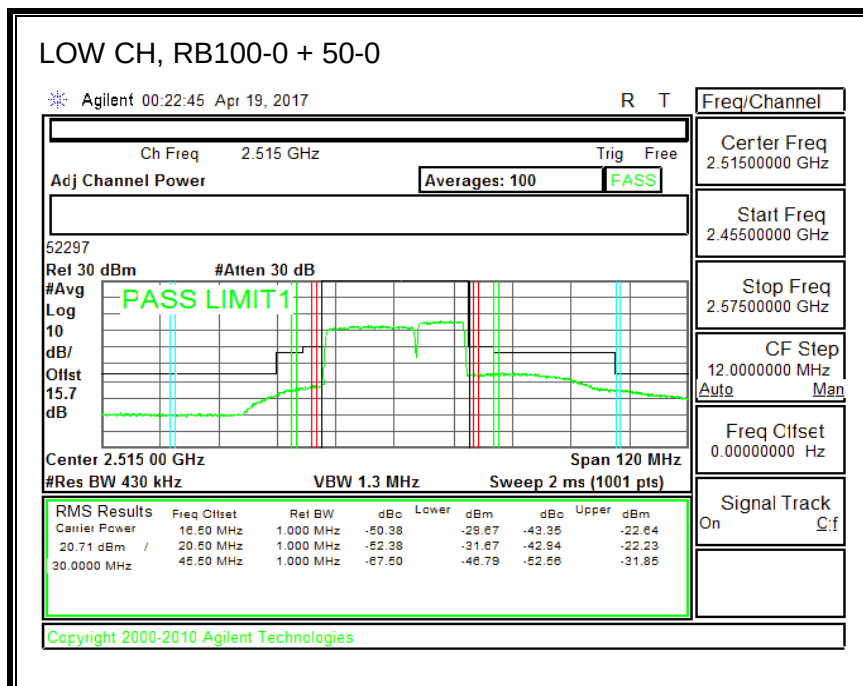
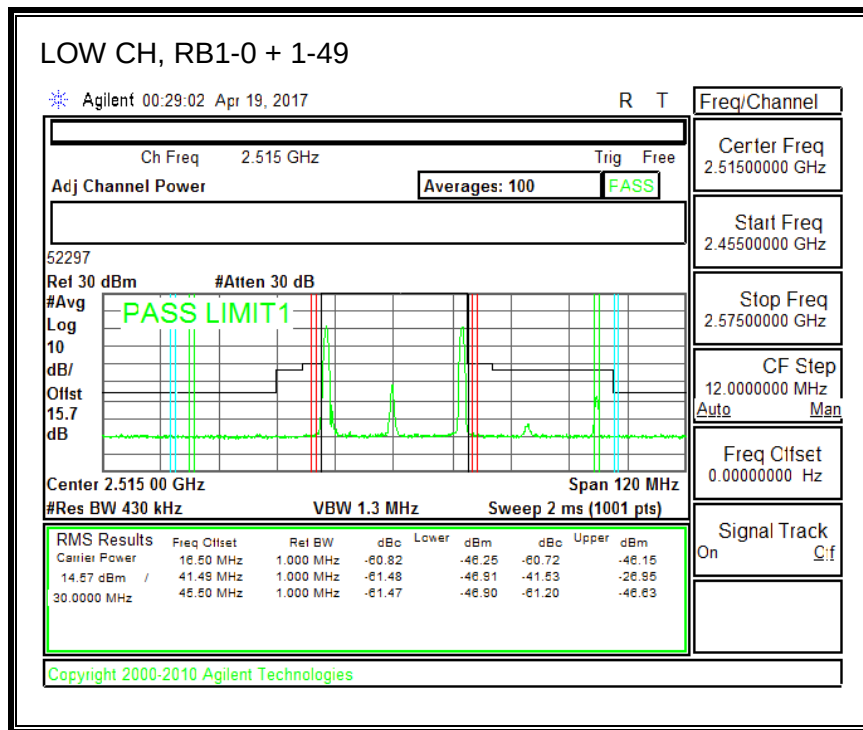
### QPSK, (20.0 MHz + 10.0 MHz BAND WIDTH)

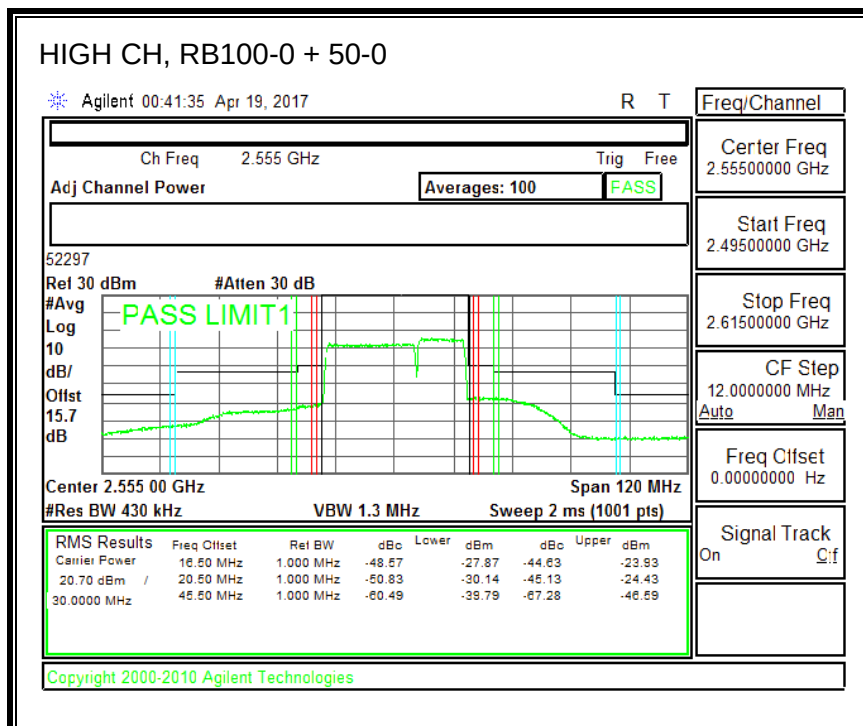
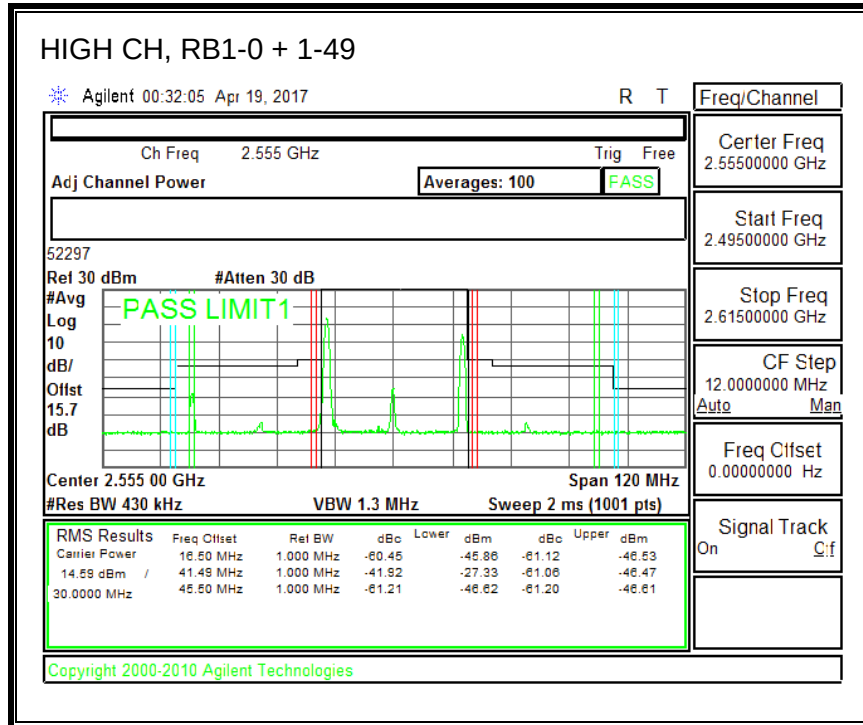




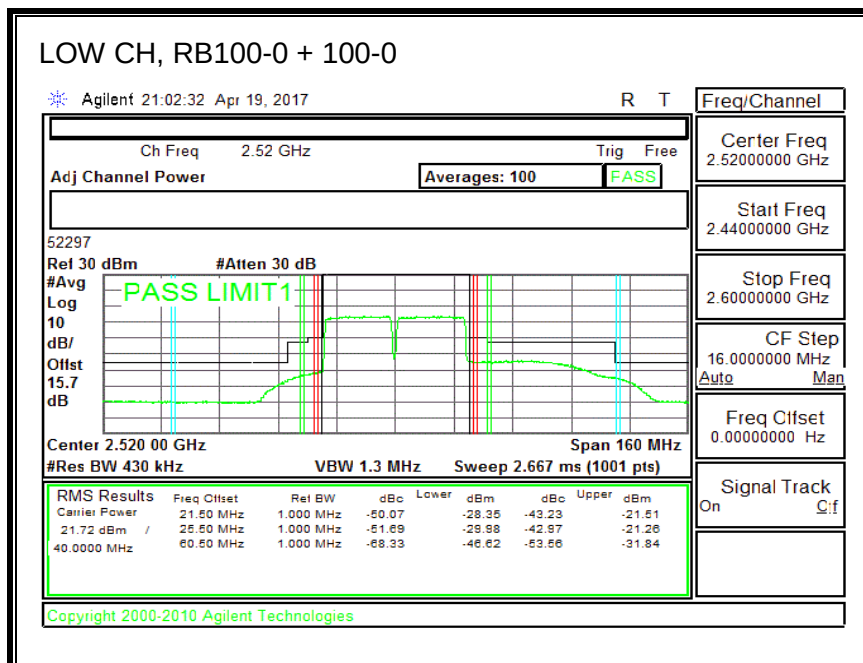
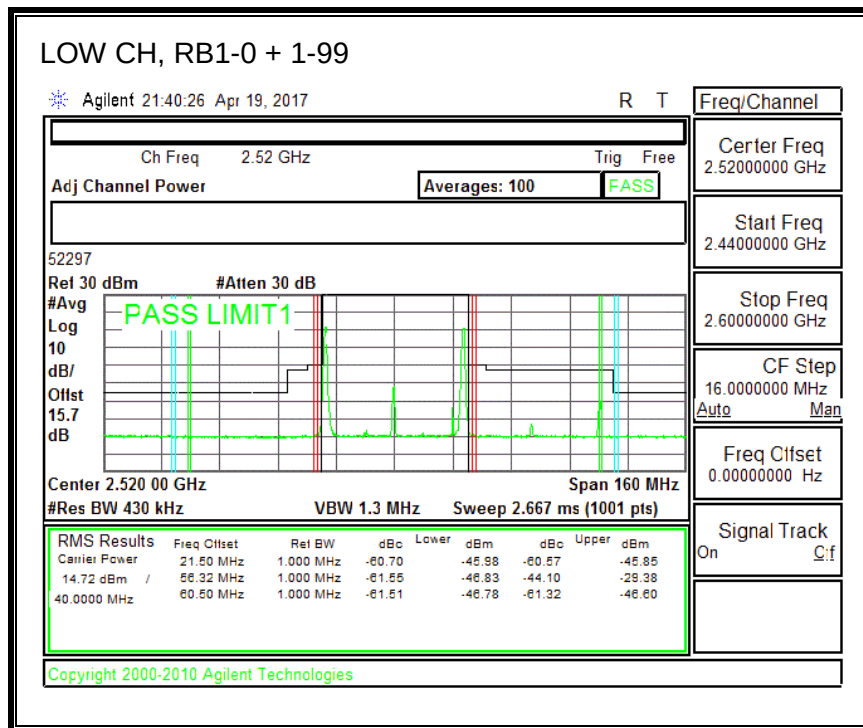


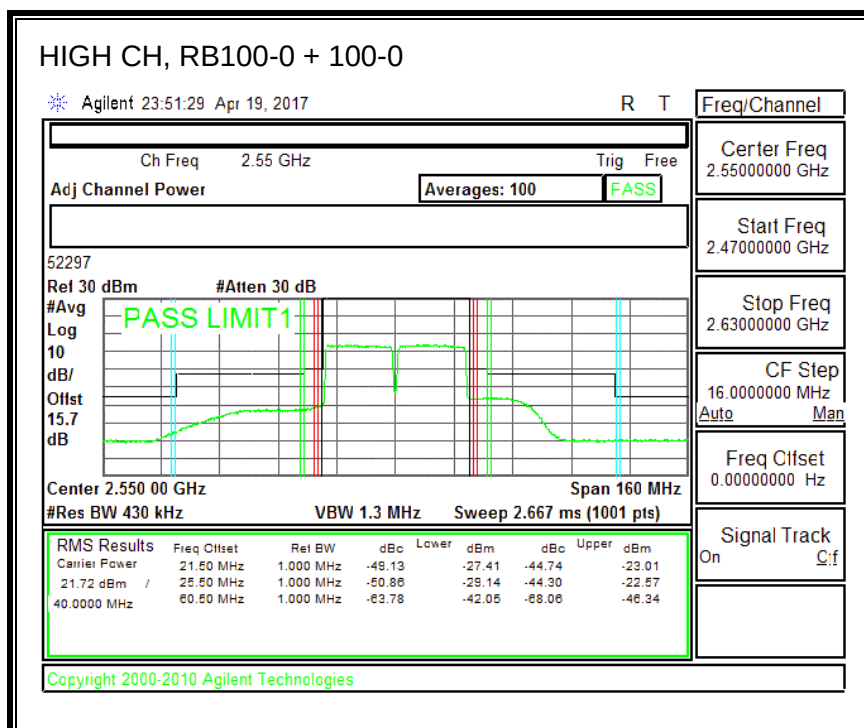
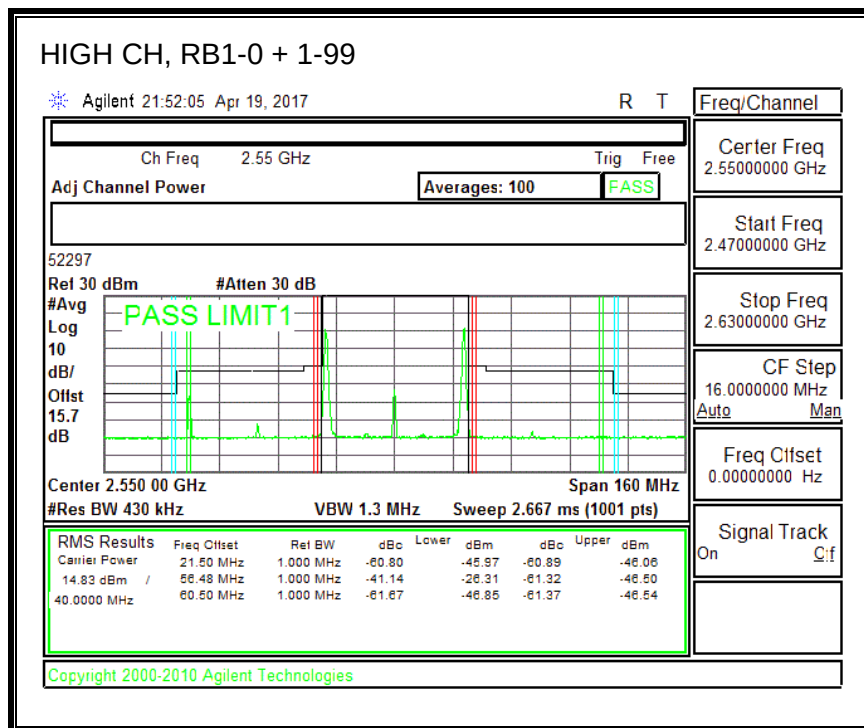
**16QAM (20.0 MHz + 10.0 MHz BAND WIDTH)**



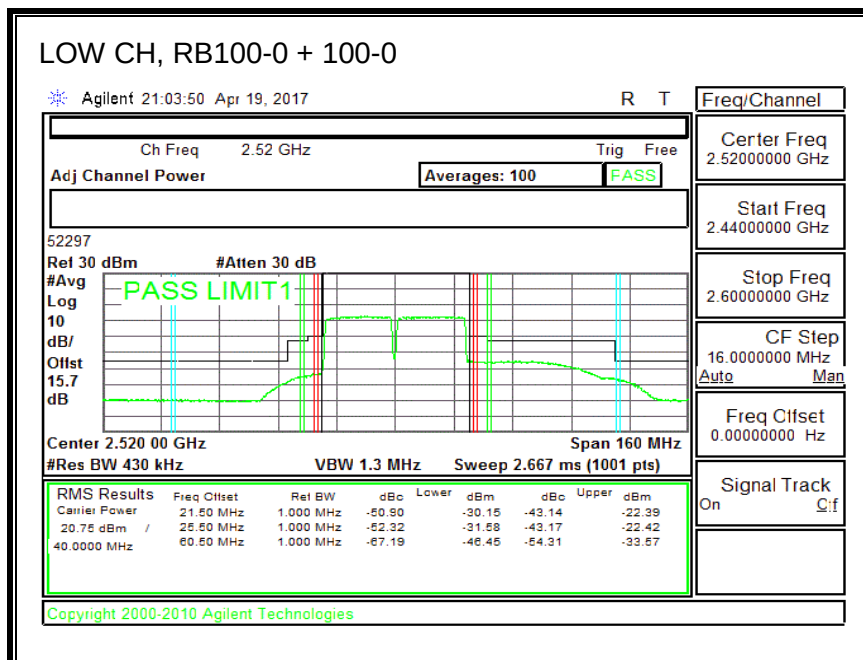
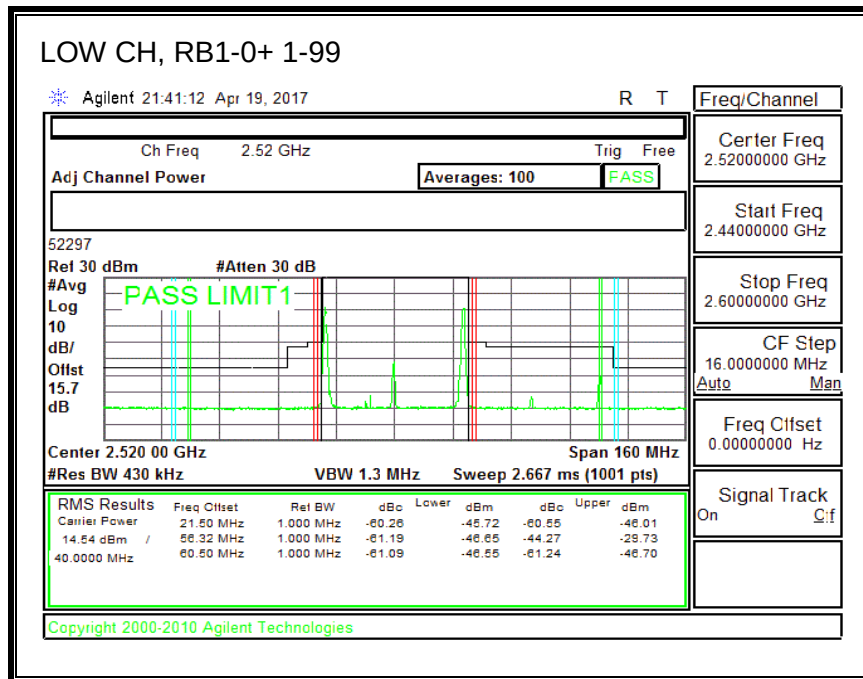


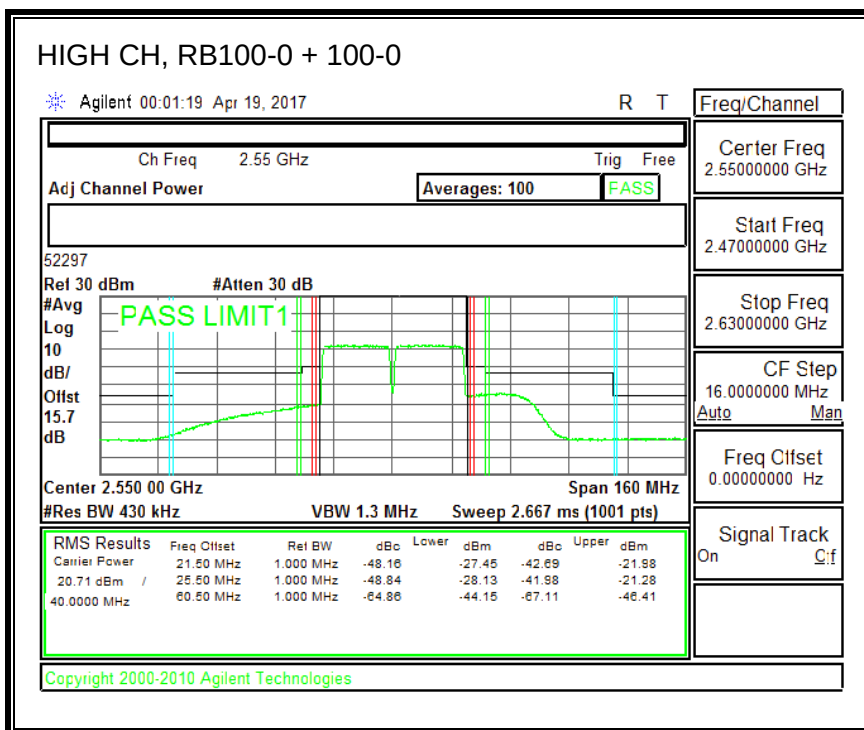
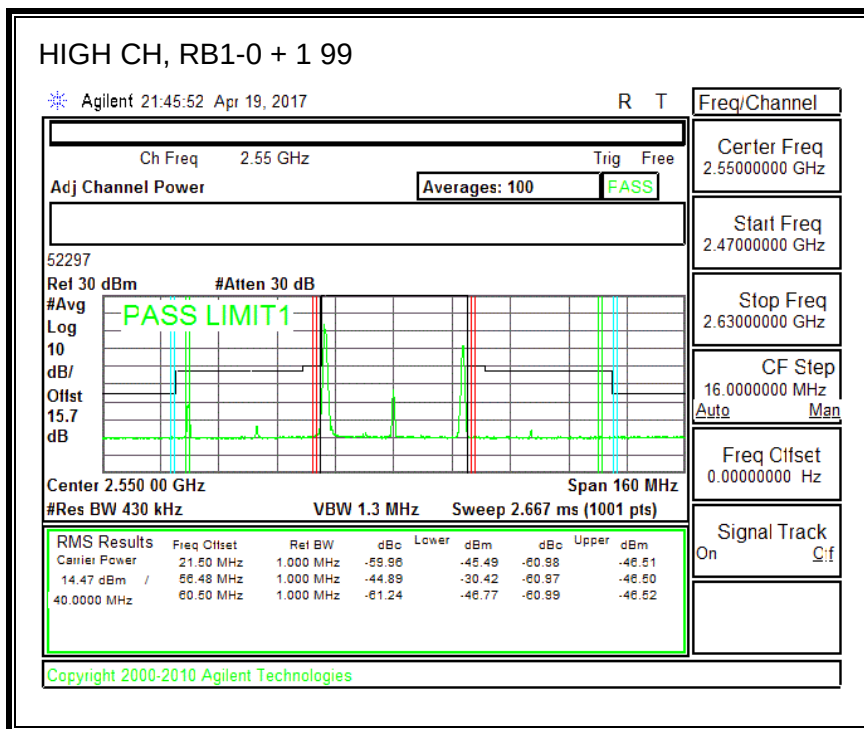
**QPSK, (20.0 MHz + 20.0 MHz BAND WIDTH)**





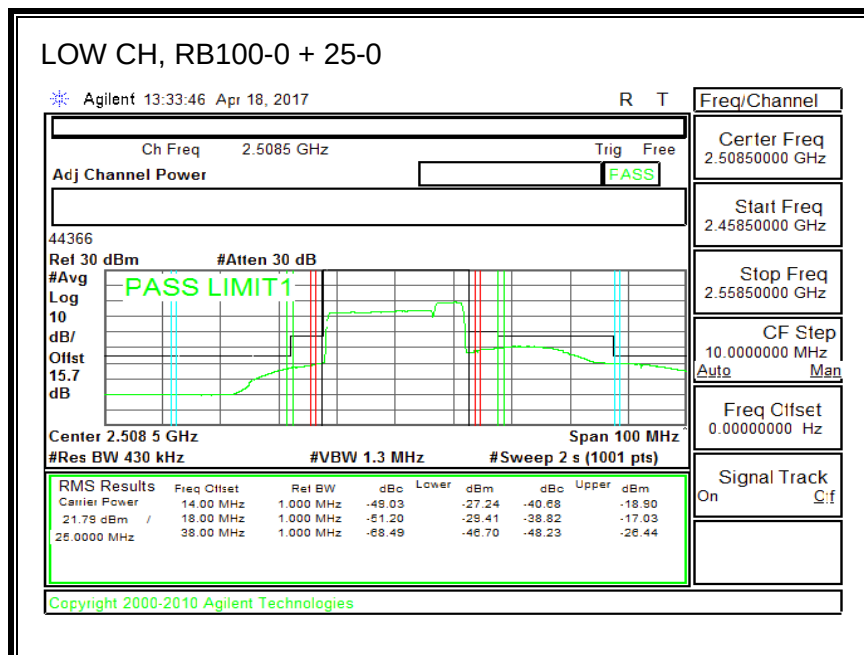
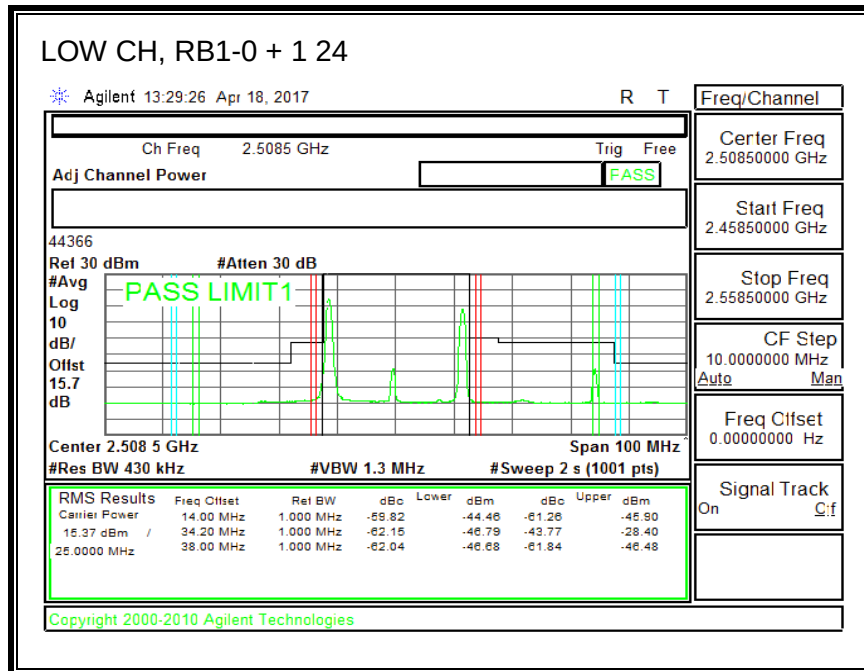
**16QAM (20.0 MHz + 20.0 MHz BAND WIDTH)**

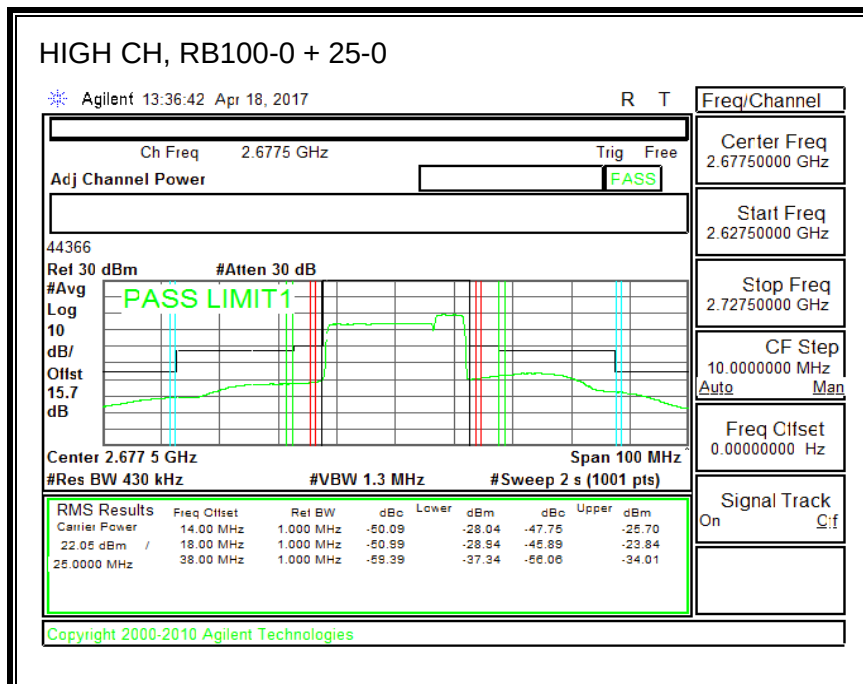
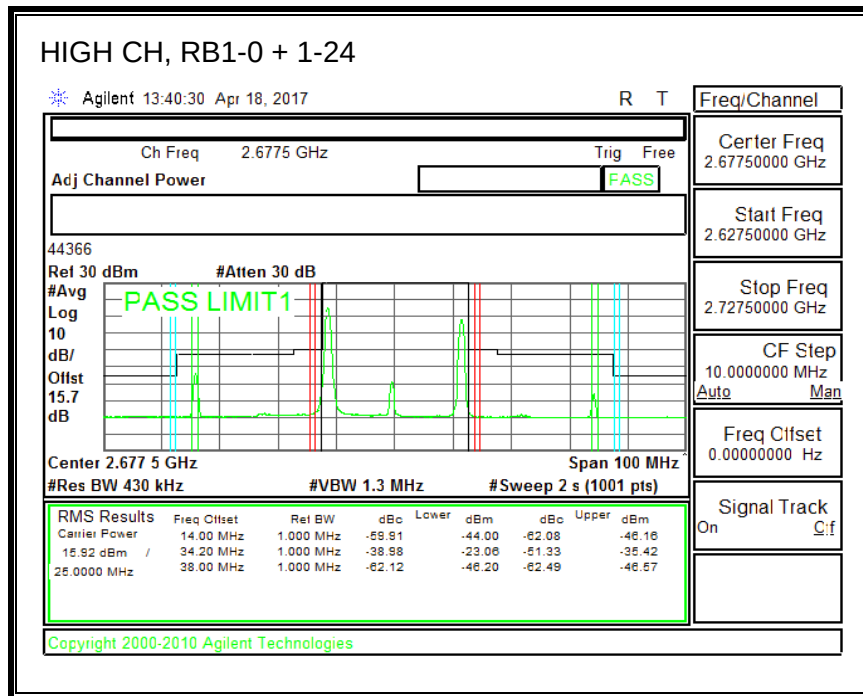




## 8.2.2. LTE BAND 41

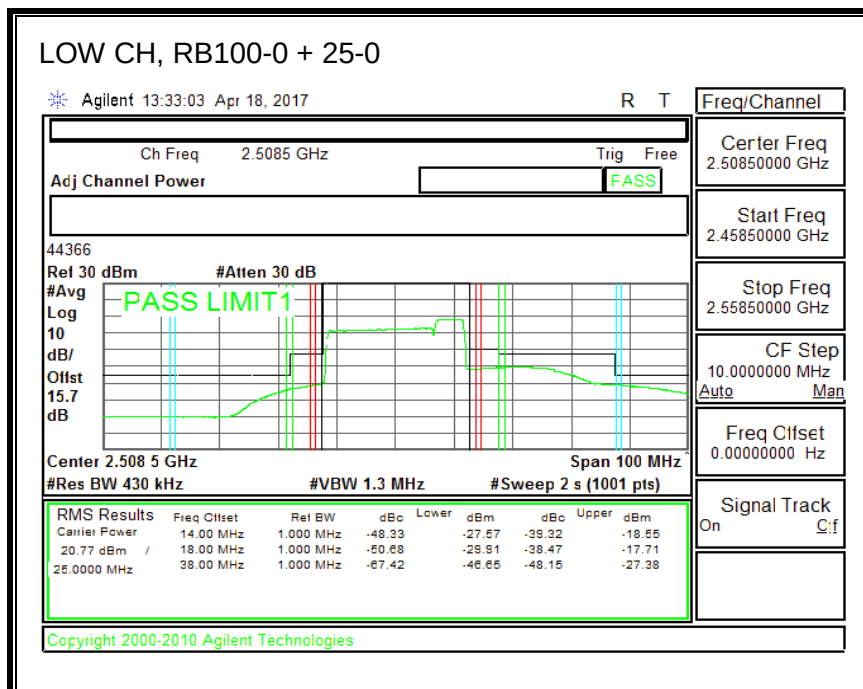
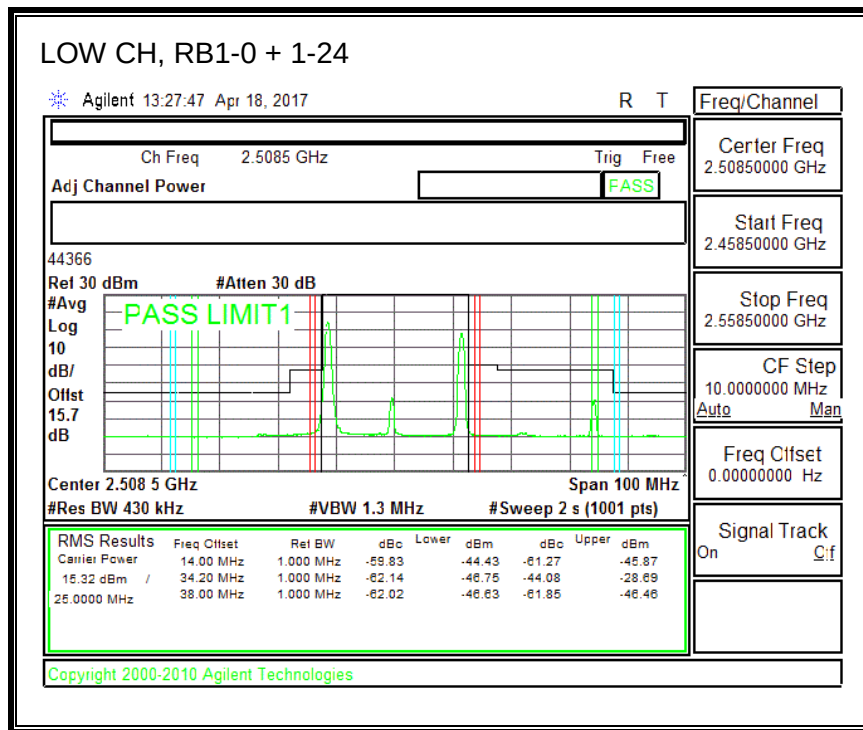
### QPSK, (20.0 MHz + 5.0 MHz BAND WIDTH)

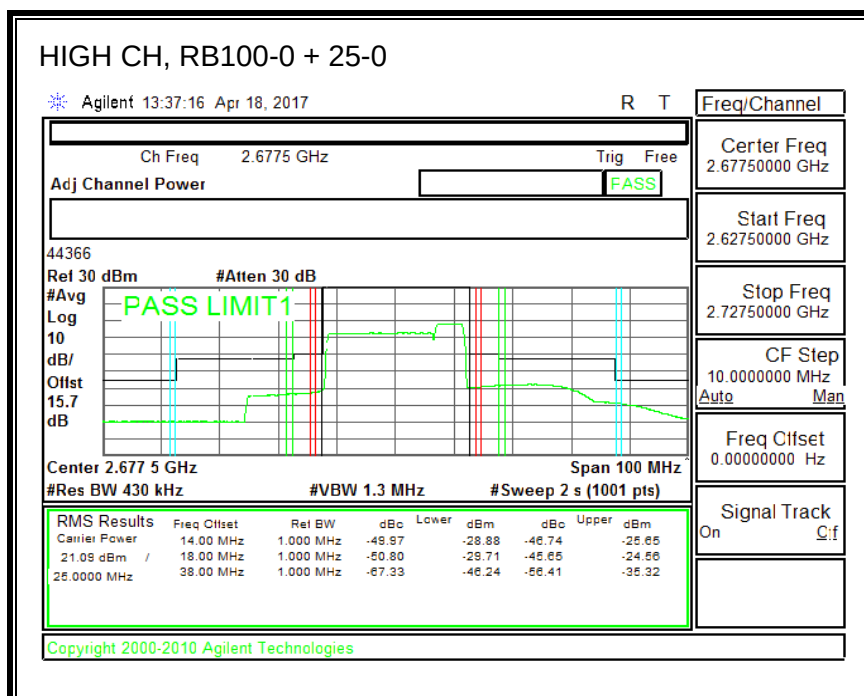
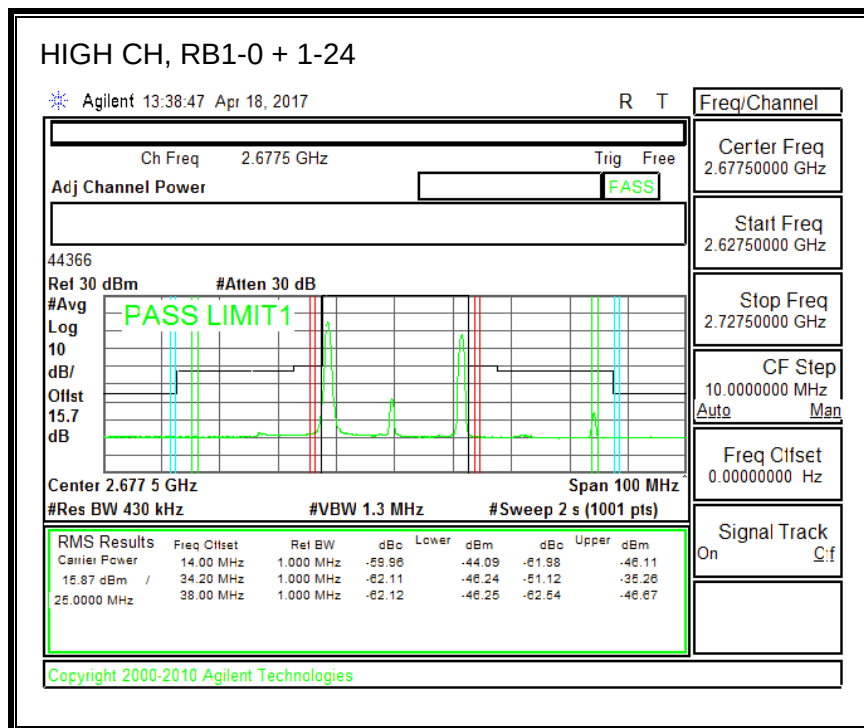




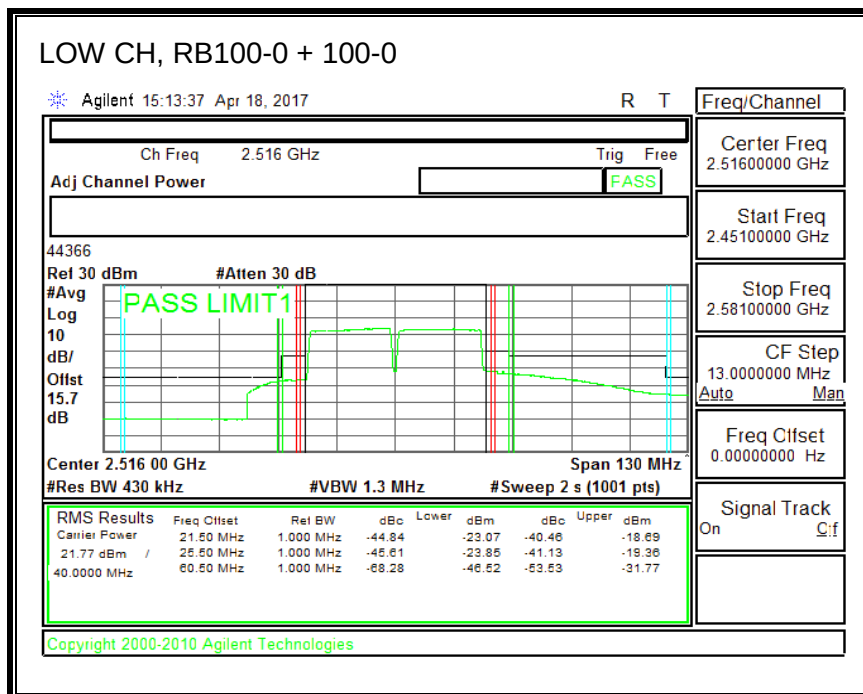
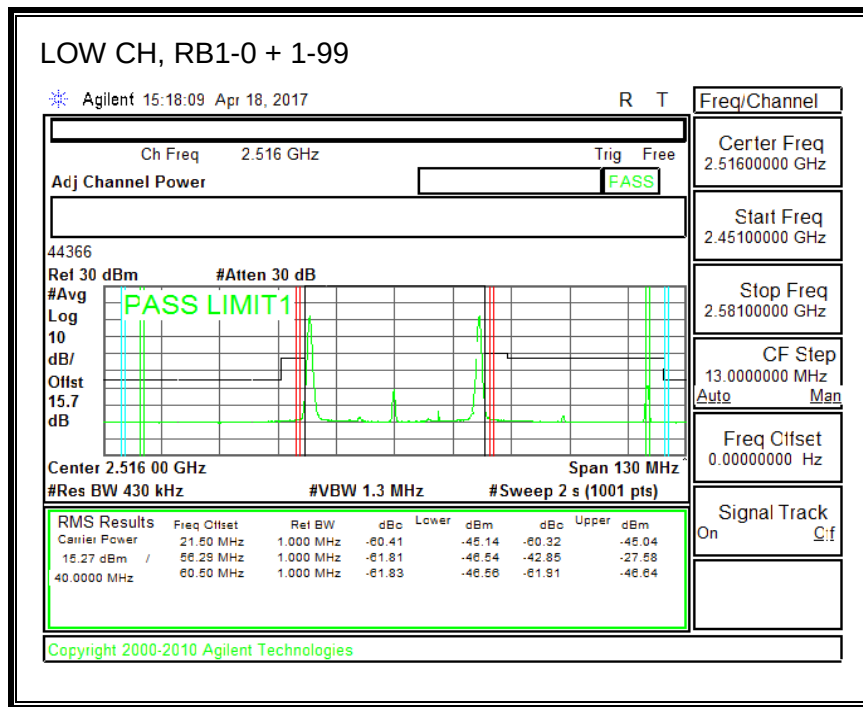


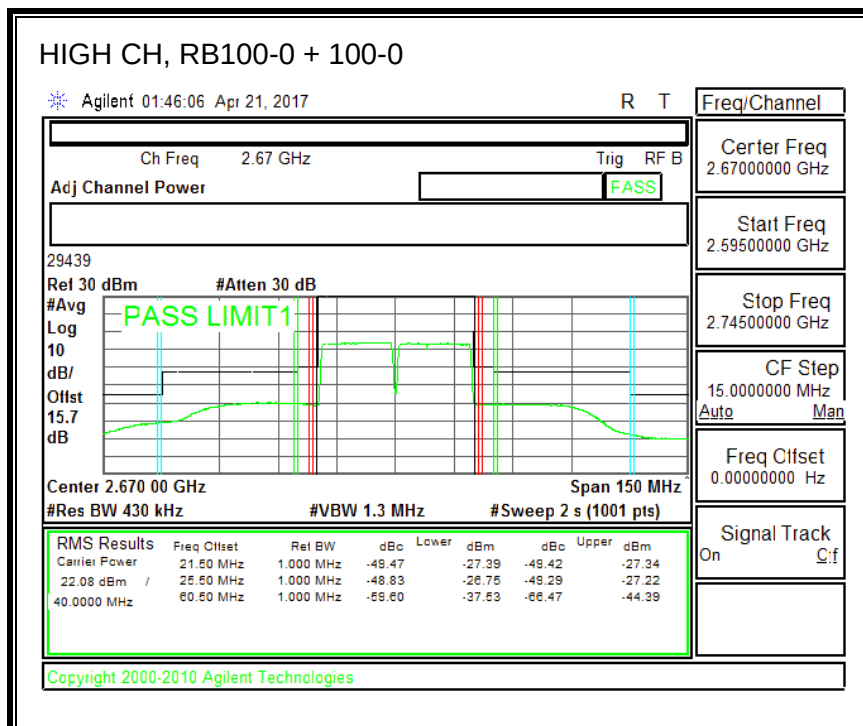
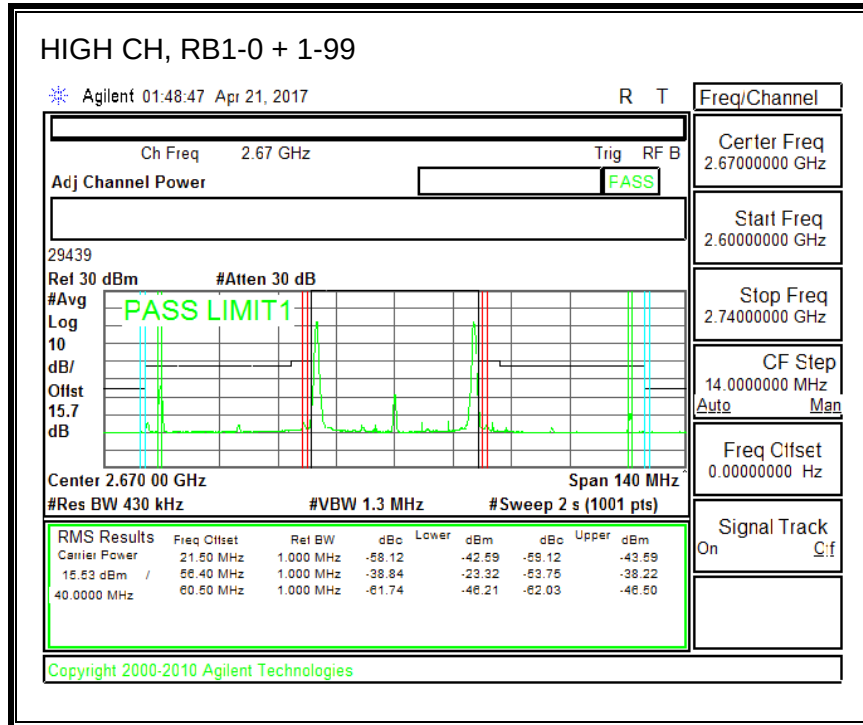
**16QAM (20.0 MHz + 5.0 MHz BAND WIDTH)**



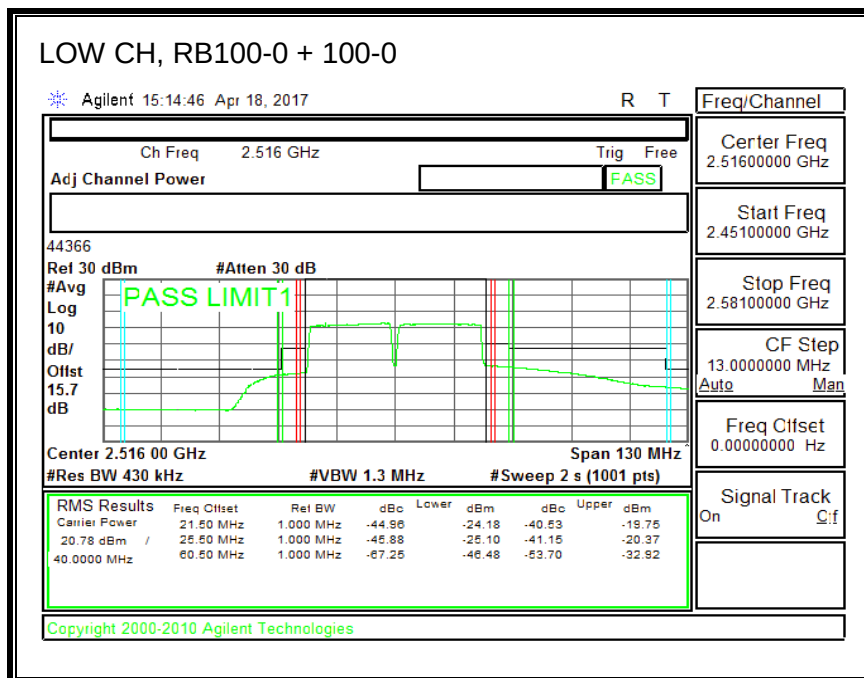
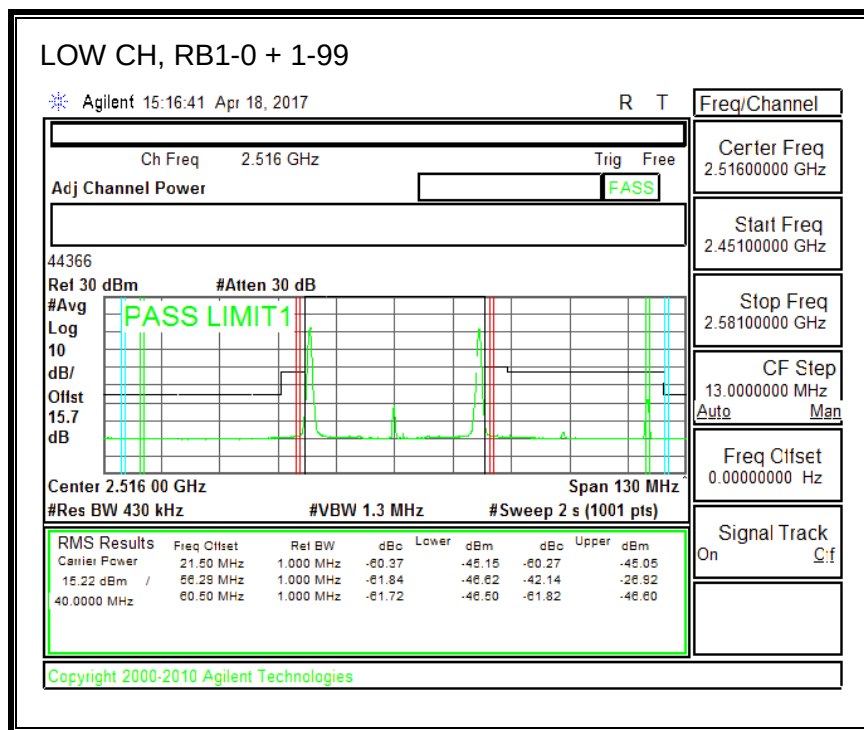


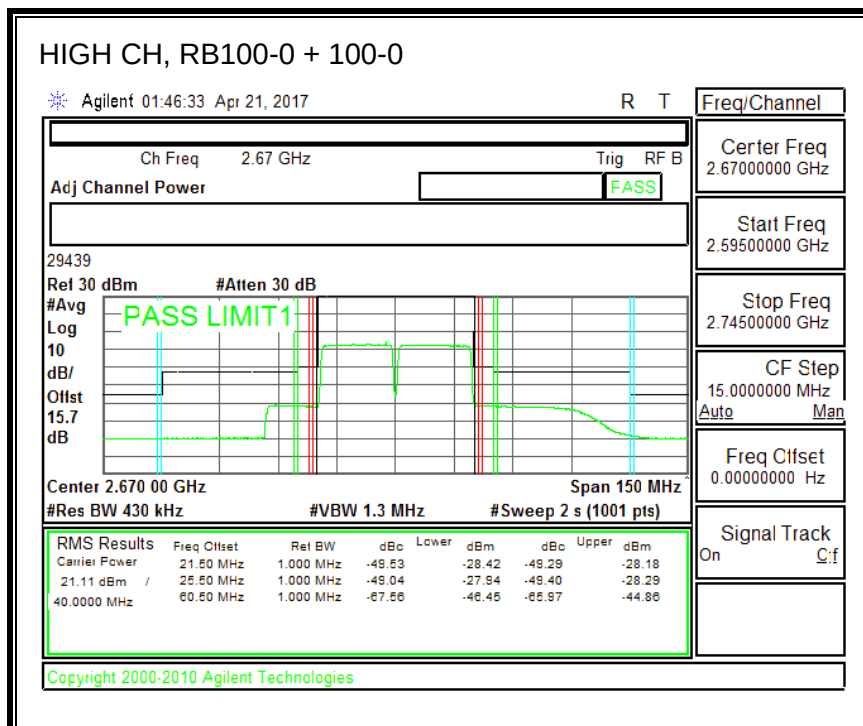
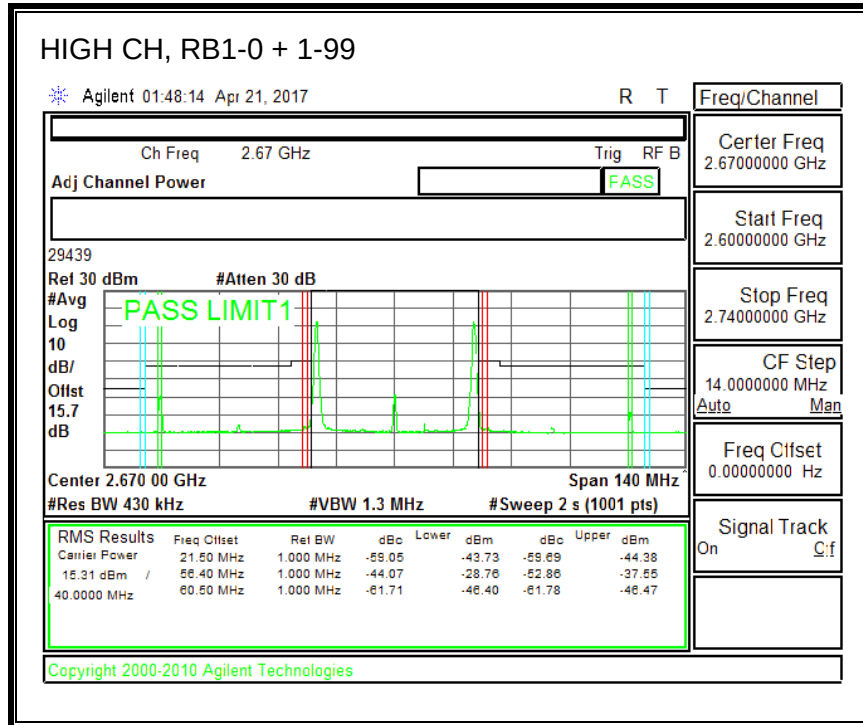
**QPSK, (20.0 MHz + 20.0 MHz BAND WIDTH)**





**16QAM (20.0 MHz + 20.0 MHz BAND WIDTH)**





### **8.3. OUT OF BAND EMISSIONS**

#### **RULE PART(S)**

FCC: §2.1051, §27.53

#### **LIMITS**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

#### **TEST PROCEDURE**

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

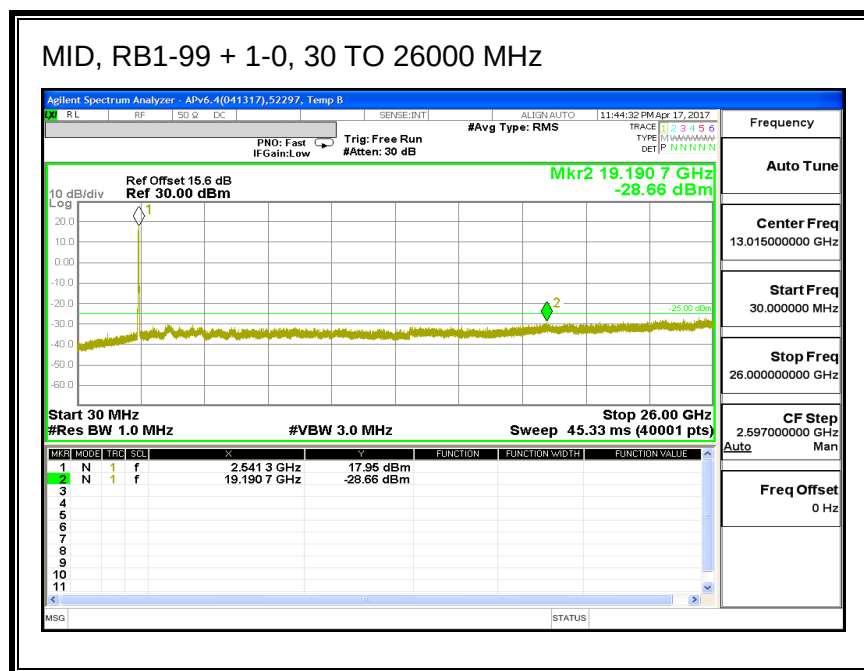
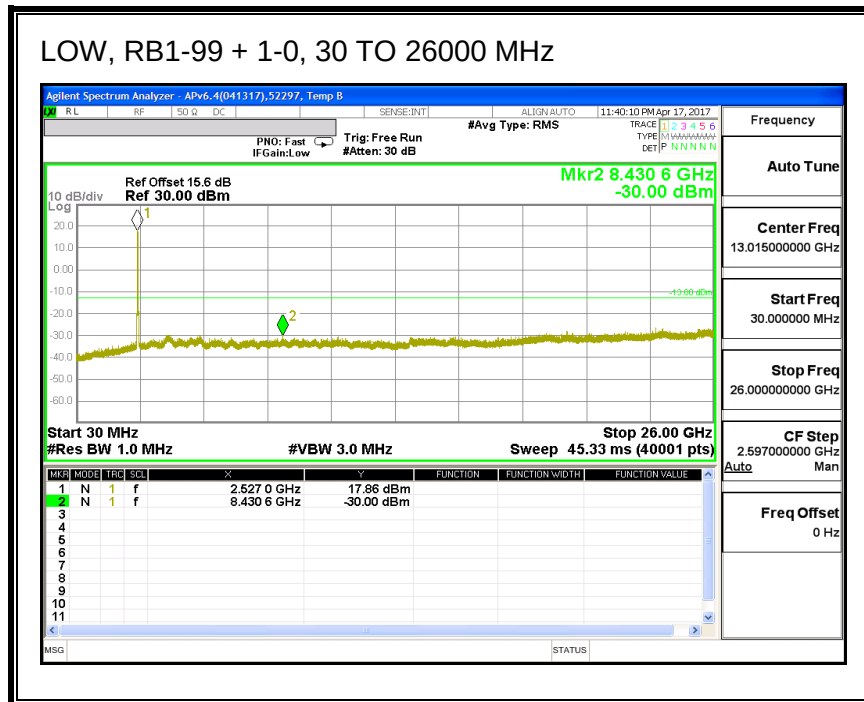
- Set display line at -25 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

#### **MODES TESTED**

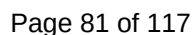
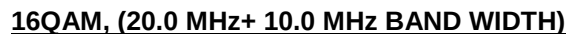
- LTE Band 7
- LTE Band 41

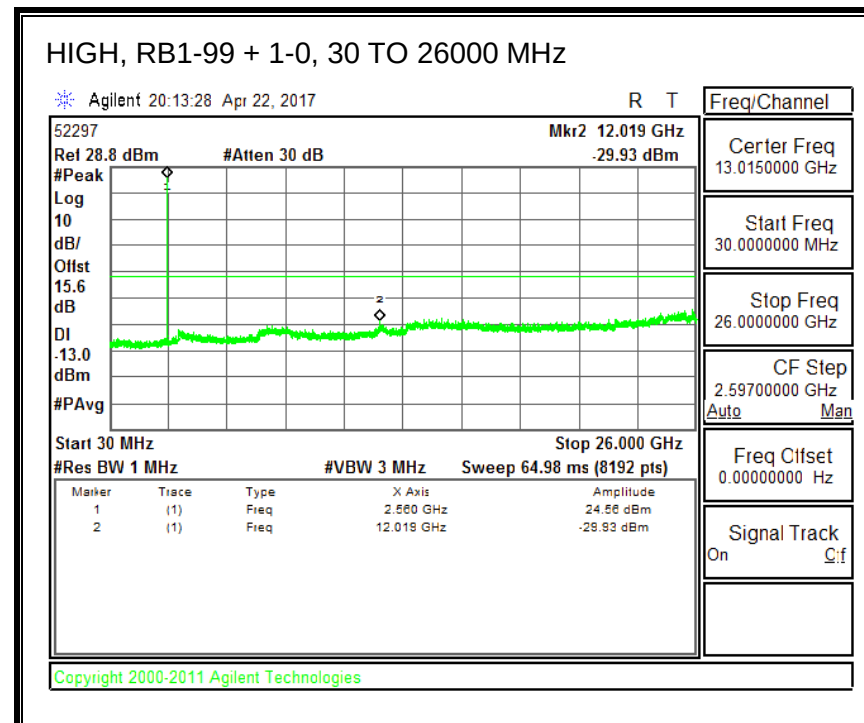
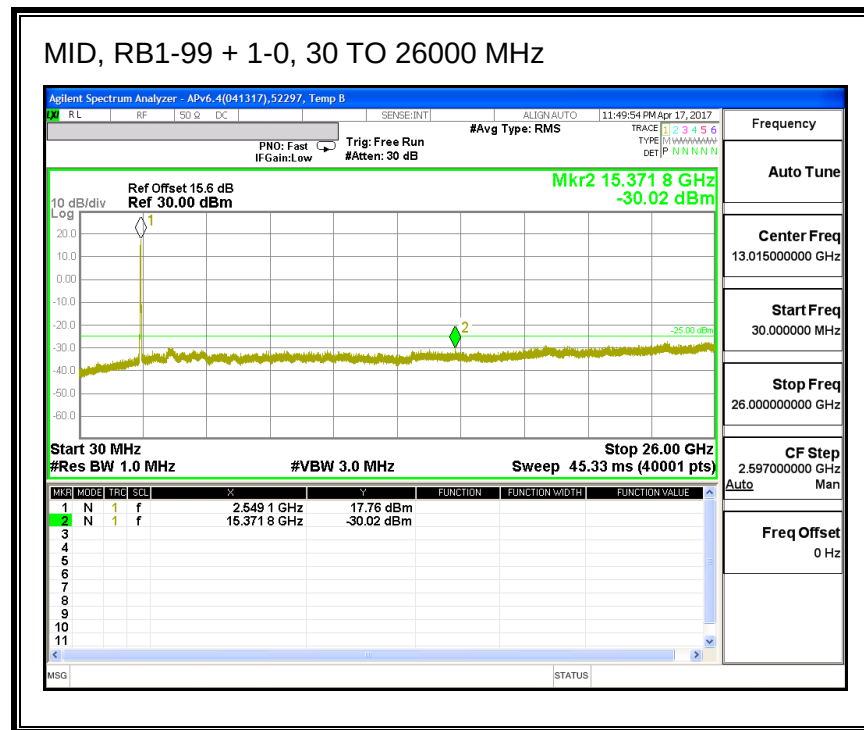
### 8.3.1. LTE BAND 7

#### QPSK, (20.0 MHz+ 10.0 MHz BAND WIDTH)

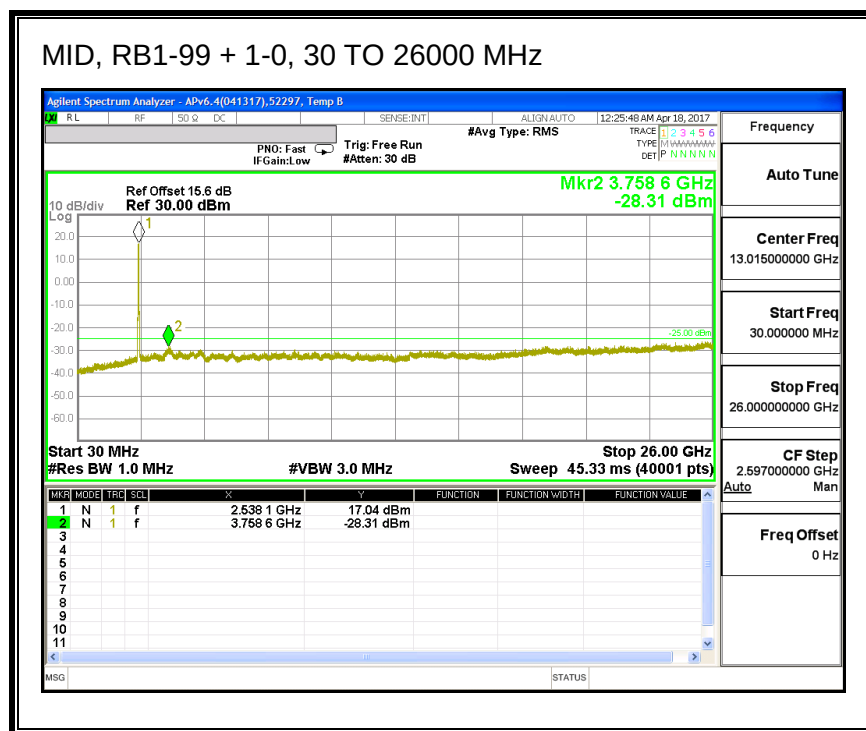
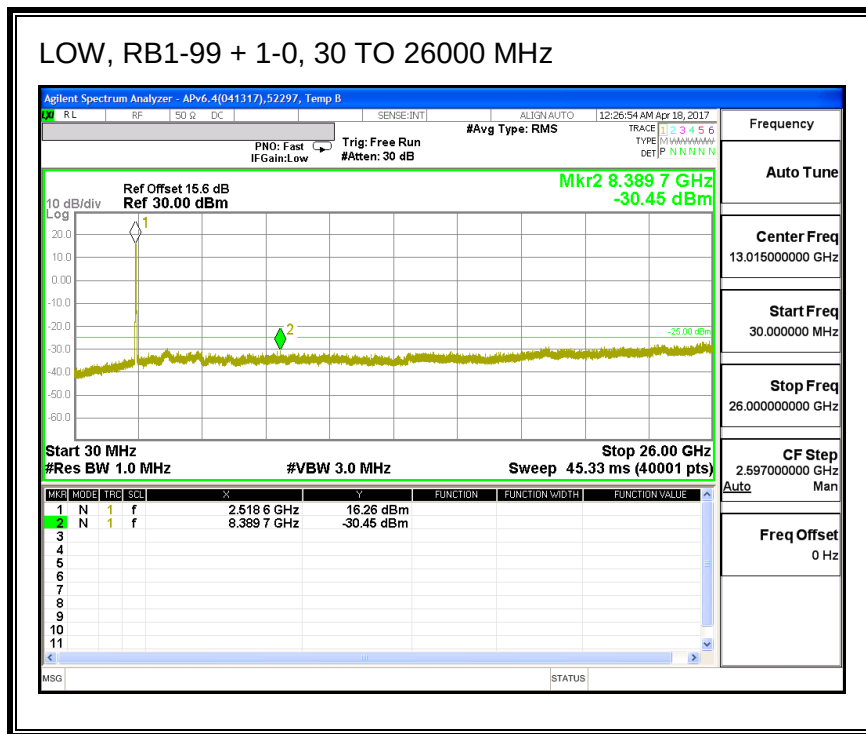


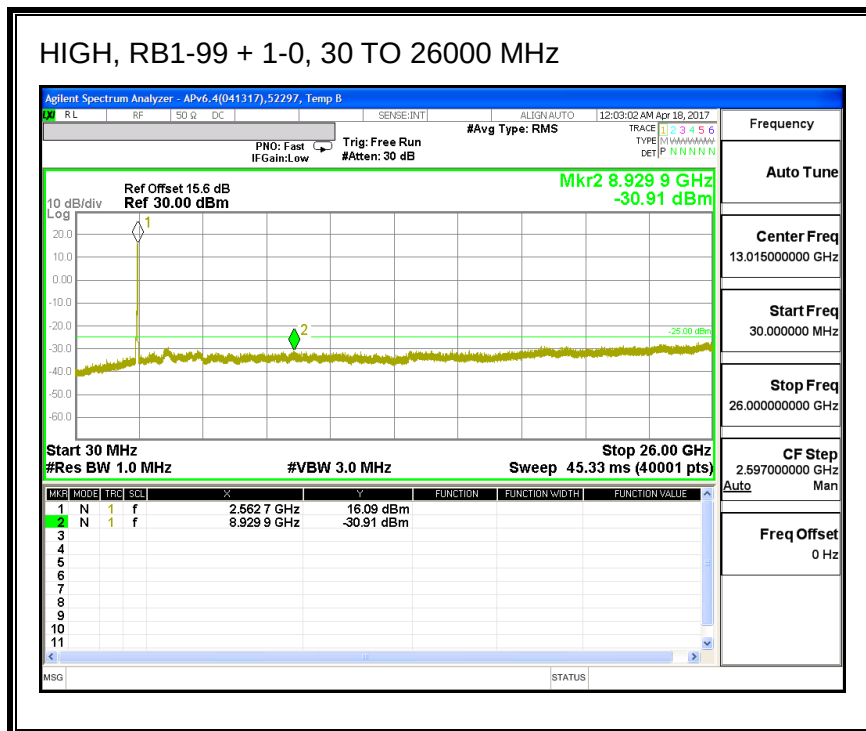




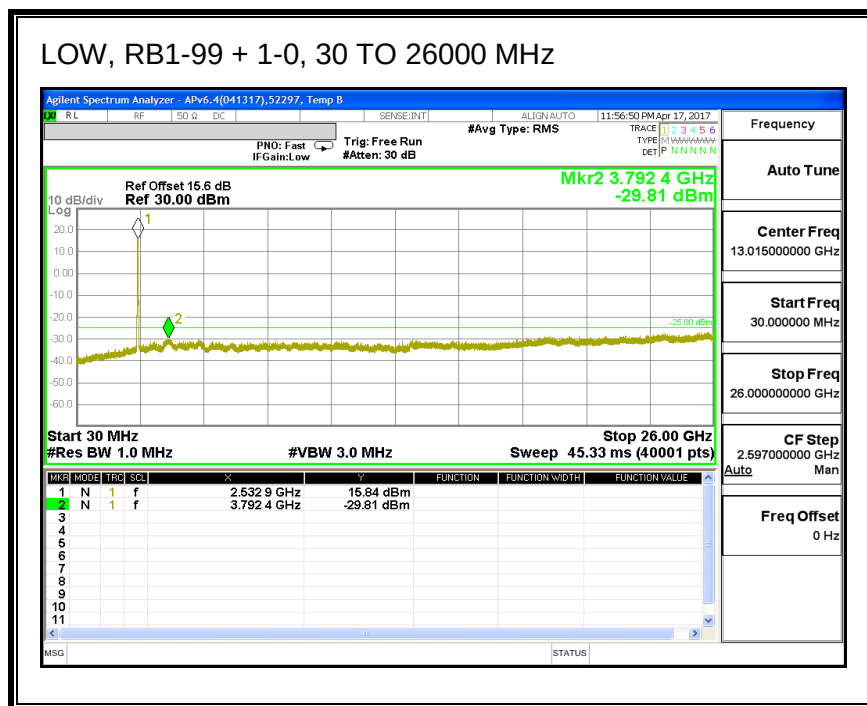


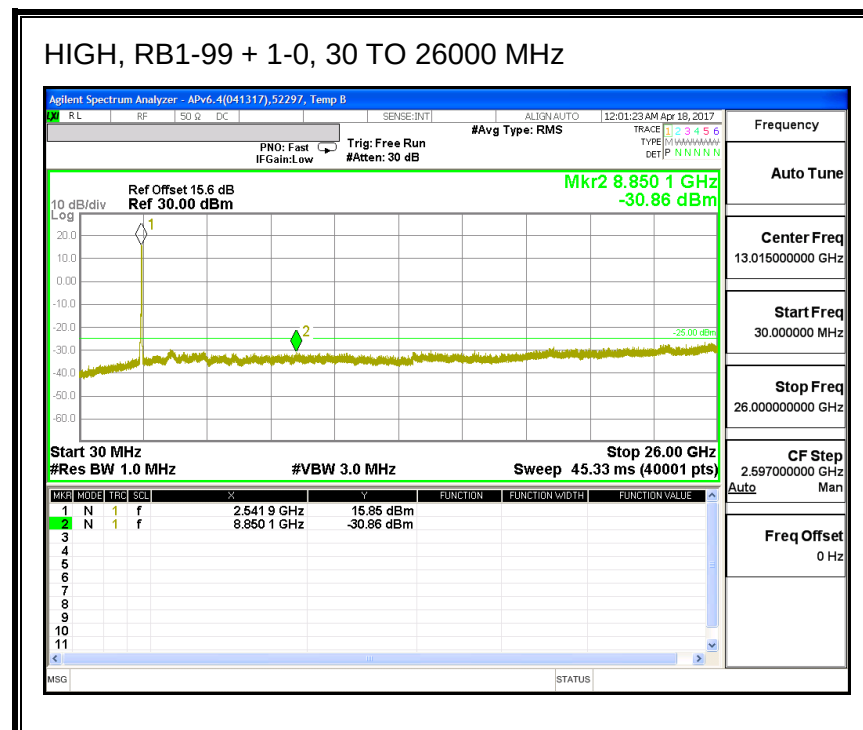
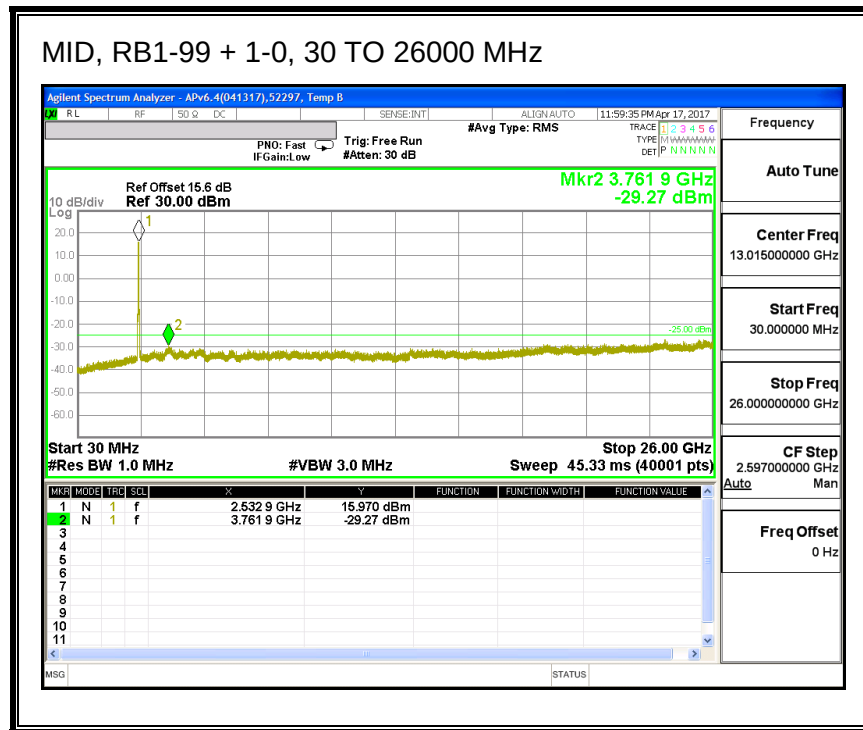
**QPSK, (20.0 MHz+ 20.0 MHz BAND WIDTH)**





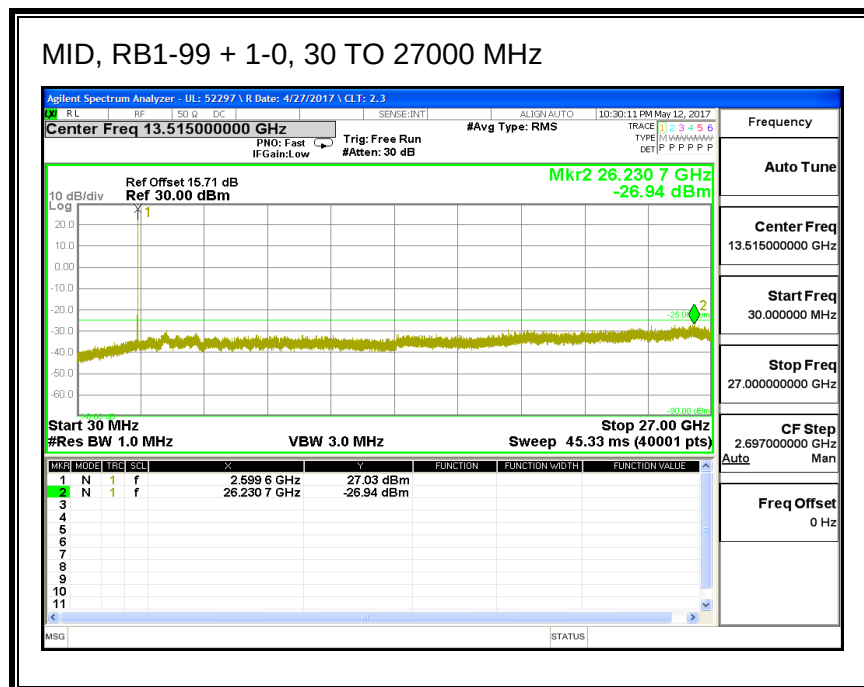
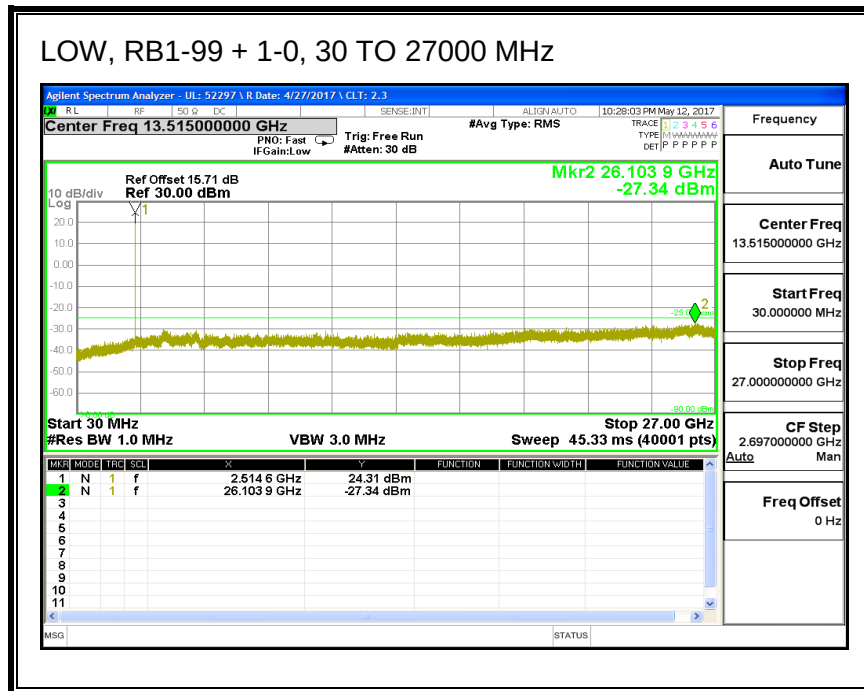
**16QAM, (20.0 MHz+ 20.0 MHz BAND WIDTH)**



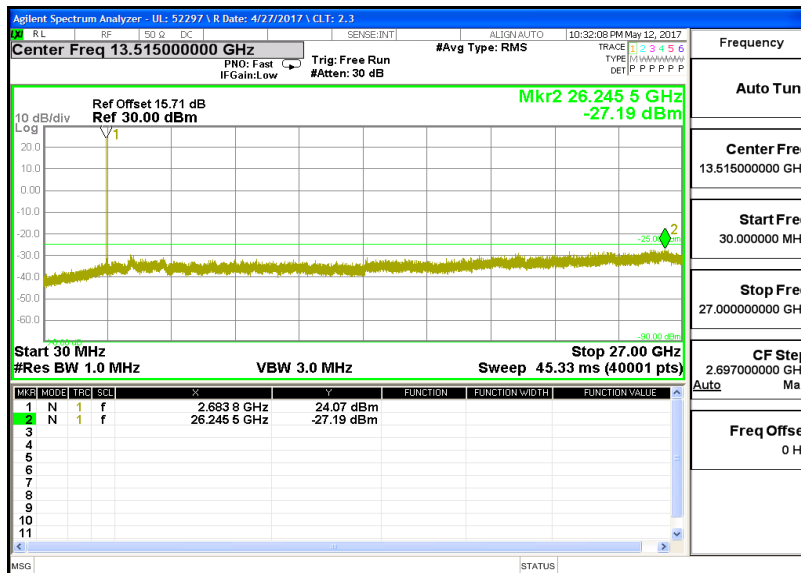


### 8.3.2. LTE BAND 41

#### QPSK, (20.0 MHz+ 5.0 MHz BAND WIDTH)

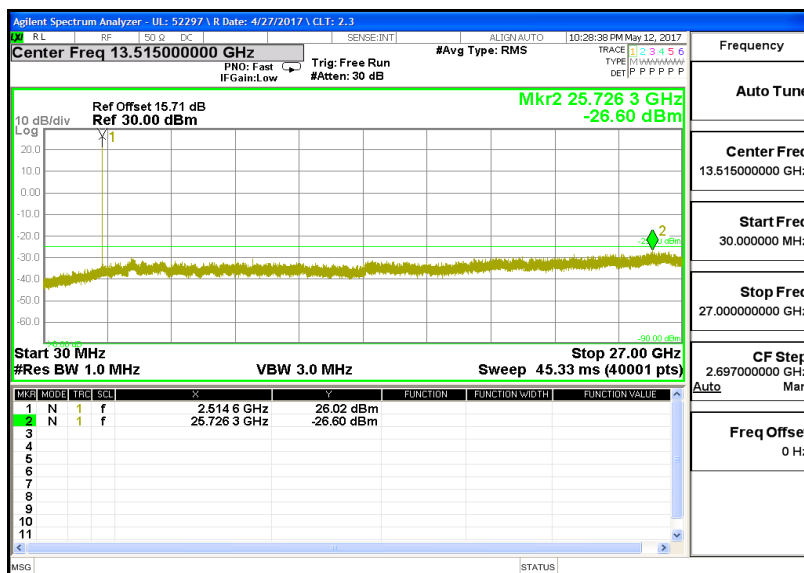


# HIGH, RB1-99 + 1-0, 30 TO 27000 MHz

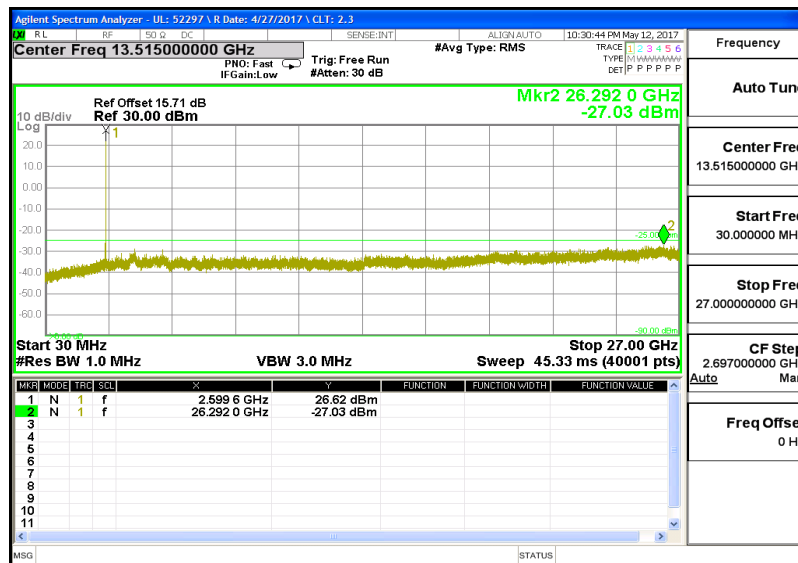


## 16QAM, (20.0 MHz+ 5.0 MHz BAND WIDTH)

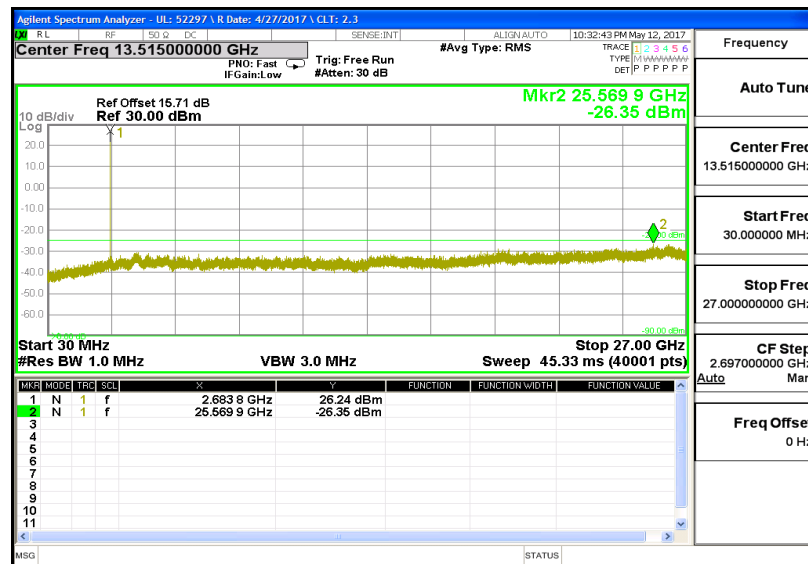
# LOW, RB1-99 + 1-0, 30 TO 27000 MHz



### MID, RB1-99 + 1-0, 30 TO 27000 MHz

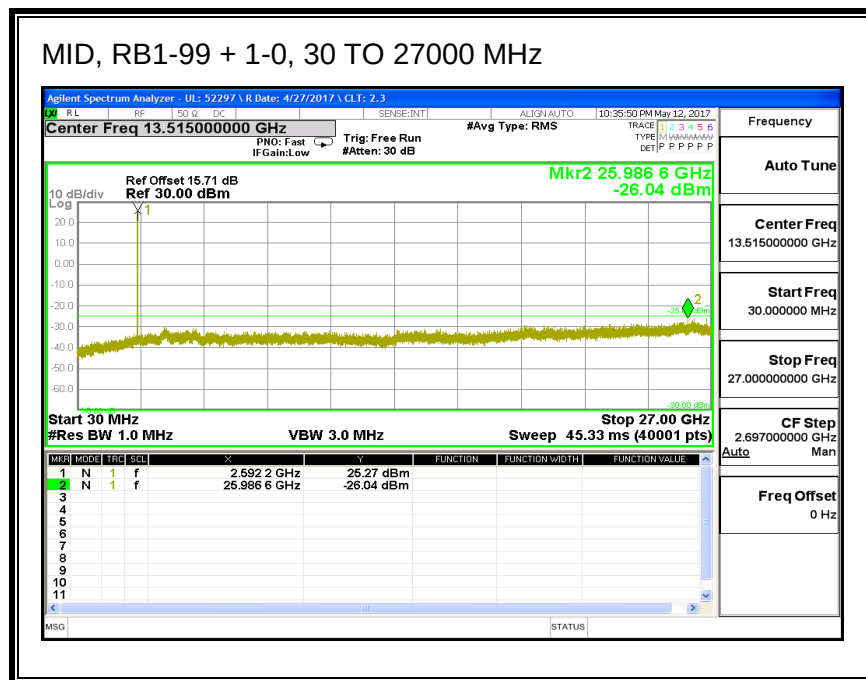
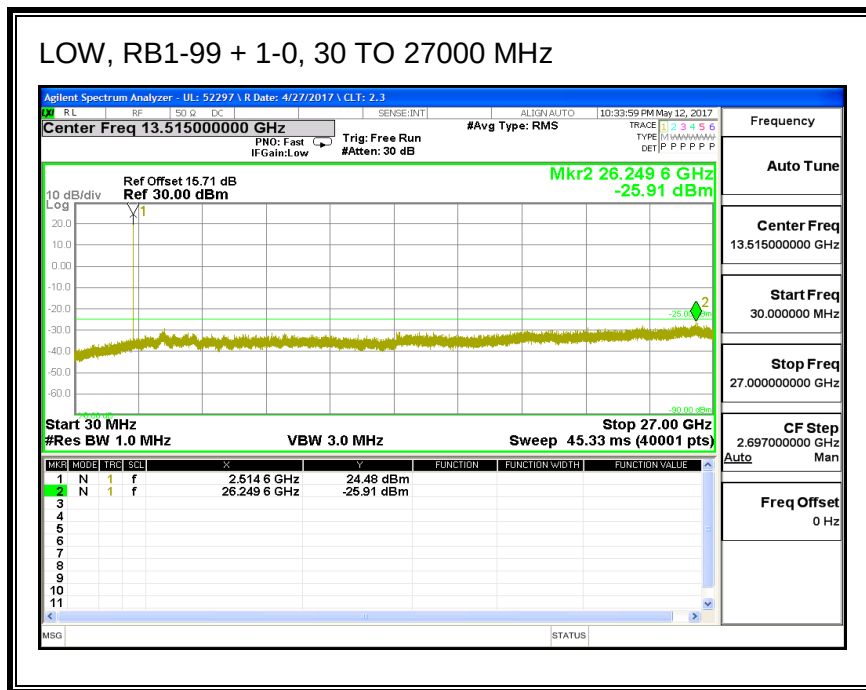


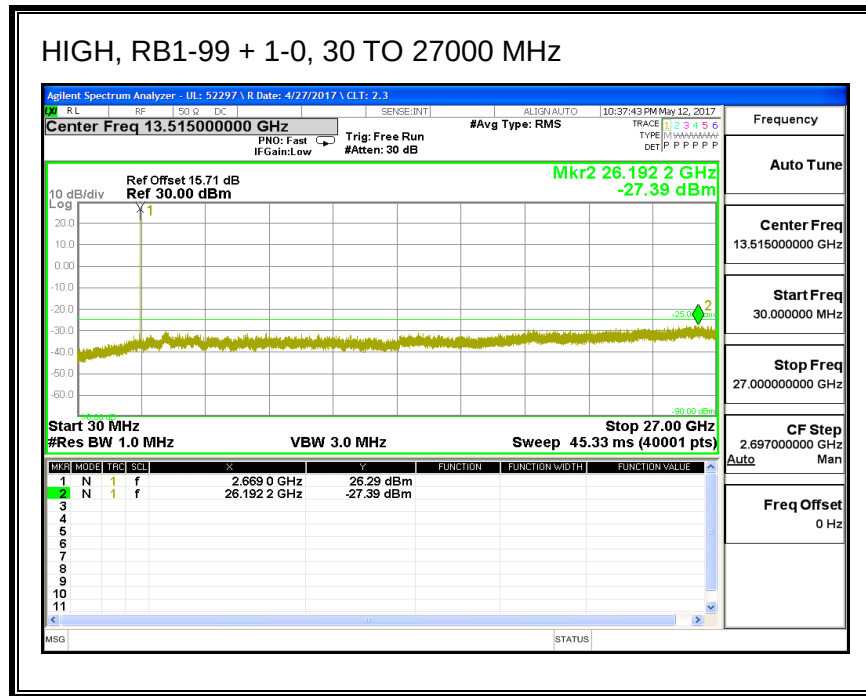
### HIGH, RB1-99 + 1-0, 30 TO 27000 MHz



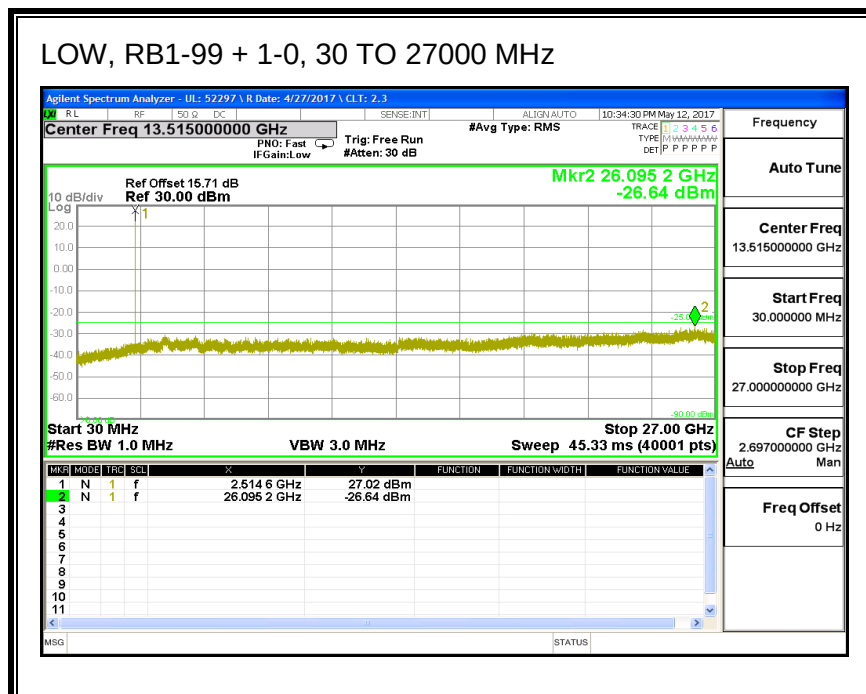


**QPSK, (20.0 MHz+ 20.0 MHz BAND WIDTH)**

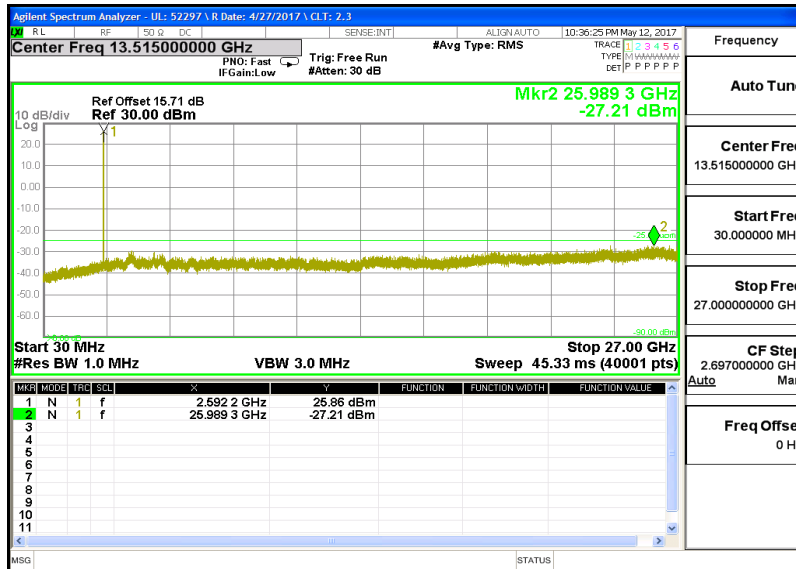




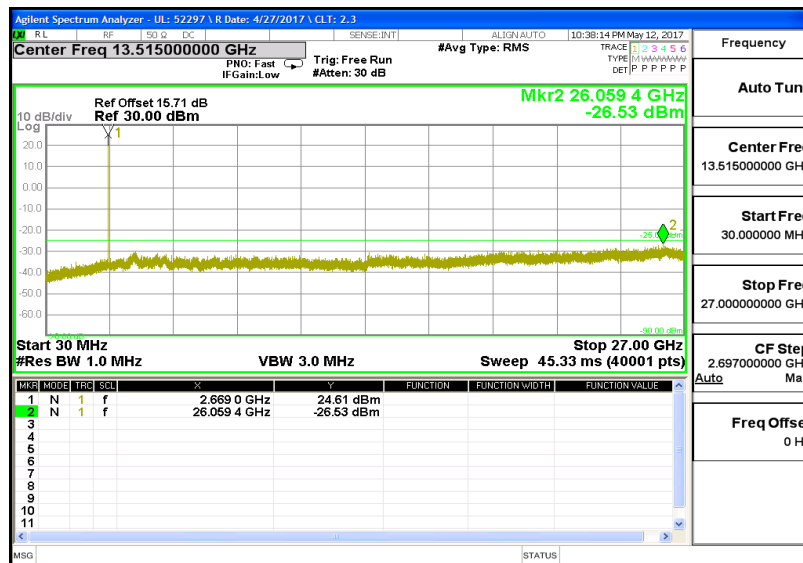
**16QAM, (20.0 MHz+ 20.0 MHz BAND WIDTH)**



### MID, RB1-99 + 1-0, 30 TO 27000 MHz



### HIGH, RB1-99 + 1-0, 30 TO 27000 MHz



## 9. FREQUENCY STABILITY

### RULE PART(S)

FCC: §2.1055, §27.54

### LIMITS

§27.54

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30° to +50°C
- Voltage = (85% - 115%)

Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.  
End Voltage, 3.2VDC.

### **Frequency Stability vs Temperature:**

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

### **Frequency Stability vs Voltage:**

The peak frequency error is recorded (worst-case).

### MODES TESTED

LTE Band 7

LTE Band 41

## 9.1. LTE BAND 7

|            |       |              |        |
|------------|-------|--------------|--------|
| <b>ID:</b> | 38602 | <b>Date:</b> | 5/4/17 |
|------------|-------|--------------|--------|

### QPSK, (20MHz + 10MHz BANDWIDTH)

| Limit          |           | 2500                 | 2570                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2501.0422            | 2568.9943             |            |                           |
| Extreme (50C)  |           | 2501.0422            | 2568.9943             | 40.1       | 0.016                     |
| Extreme (40C)  |           | 2501.0422            | 2568.9943             | 33.1       | 0.013                     |
| Extreme (30C)  |           | 2501.0422            | 2568.9943             | -34.8      | -0.014                    |
| Extreme (10C)  |           | 2501.0421            | 2568.9942             | -52.2      | -0.021                    |
| Extreme (0C)   |           | 2501.0422            | 2568.9943             | -47.4      | -0.019                    |
| Extreme (-10C) |           | 2501.0421            | 2568.9942             | -51.0      | -0.020                    |
| Extreme (-20C) |           | 2501.0421            | 2568.9942             | -58.5      | -0.023                    |
| Extreme (-30C) |           | 2501.0421            | 2568.9942             | -65.5      | -0.026                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2501.0422            | 2568.9943             | -42.3      | -0.017                    |
|                | -15%      | 2501.0422            | 2568.9943             | -47.4      | -0.019                    |
|                | End Point | 2501.0421            | 2568.9942             | -50.2      | -0.020                    |

### QPSK, (20MHz + 20MHz BANDWIDTH)

| Limit          |           | 2500                 | 2570                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2501.0422            | 2569.0138             |            |                           |
| Extreme (50C)  |           | 2501.0422            | 2569.0138             | 41.7       | 0.016                     |
| Extreme (40C)  |           | 2501.0422            | 2569.0138             | 33.4       | 0.013                     |
| Extreme (30C)  |           | 2501.0422            | 2569.0138             | 28.6       | 0.011                     |
| Extreme (10C)  |           | 2501.0422            | 2569.0138             | 21.2       | 0.008                     |
| Extreme (0C)   |           | 2501.0422            | 2569.0138             | 31.8       | 0.013                     |
| Extreme (-10C) |           | 2501.0422            | 2569.0138             | 11.5       | 0.005                     |
| Extreme (-20C) |           | 2501.0422            | 2569.0137             | -23.4      | -0.009                    |
| Extreme (-30C) |           | 2501.0422            | 2569.0137             | -46.8      | -0.018                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2501.0422            | 2569.0138             | 25.5       | 0.010                     |
|                | -15%      | 2501.0422            | 2569.0138             | 23.7       | 0.009                     |
|                | End Point | 2501.0422            | 2569.0138             | 27.1       | 0.011                     |

## 9.2. LTE BAND 41

|            |       |              |        |
|------------|-------|--------------|--------|
| <b>ID:</b> | 38602 | <b>Date:</b> | 5/4/17 |
|------------|-------|--------------|--------|

### QPSK, (20MHz + 5MHz BANDWIDTH)

| Limit          |           | 2496                 | 2690                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2496.7123            | 2689.1318             |            |                           |
| Extreme (50C)  |           | 2496.7123            | 2689.1318             | 16.0       | 0.006                     |
| Extreme (40C)  |           | 2496.7123            | 2689.1318             | 15.4       | 0.006                     |
| Extreme (30C)  |           | 2496.7123            | 2689.1318             | 15.9       | 0.006                     |
| Extreme (10C)  |           | 2496.7123            | 2689.1318             | -15.3      | -0.006                    |
| Extreme (0C)   |           | 2496.7123            | 2689.1318             | -19.6      | -0.008                    |
| Extreme (-10C) |           | 2496.7123            | 2689.1318             | -32.5      | -0.013                    |
| Extreme (-20C) |           | 2496.7123            | 2689.1318             | -32.6      | -0.013                    |
| Extreme (-30C) |           | 2496.7123            | 2689.1318             | -33.3      | -0.013                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2496.7123            | 2689.1318             | 13.4       | 0.005                     |
|                | -15%      | 2496.7123            | 2689.1318             | -11.5      | -0.004                    |
|                | End Point | 2496.7123            | 2689.1318             | -13.6      | -0.005                    |

### QPSK, (20MHz + 20MHz BANDWIDTH)

| Limit          |           | 2496                 | 2690                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2496.8011            | 2689.2447             |            |                           |
| Extreme (50C)  |           | 2496.8012            | 2689.2448             | 65.0       | 0.025                     |
| Extreme (40C)  |           | 2496.8012            | 2689.2448             | 62.3       | 0.024                     |
| Extreme (30C)  |           | 2496.8011            | 2689.2447             | 35.8       | 0.014                     |
| Extreme (10C)  |           | 2496.8011            | 2689.2447             | -34.6      | -0.013                    |
| Extreme (0C)   |           | 2496.8011            | 2689.2447             | -43.9      | -0.017                    |
| Extreme (-10C) |           | 2496.8010            | 2689.2446             | -50.6      | -0.020                    |
| Extreme (-20C) |           | 2496.8011            | 2689.2447             | -47.8      | -0.018                    |
| Extreme (-30C) |           | 2496.8010            | 2689.2446             | -50.6      | -0.020                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2496.8011            | 2689.2447             | 27.8       | 0.011                     |
|                | -15%      | 2496.8011            | 2689.2447             | -22.5      | -0.009                    |
|                | End Point | 2496.8011            | 2689.2447             | -29.7      | -0.011                    |

## 10. PEAK-TO-AVERAGE RATIO

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

### RESULT

Test was performed on LAT 1 antenna; full resource block (FRB) for each bandwidth combination was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average ratio criteria.

#### 10.1.1. LTE BAND 7

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 52297 | <b>Date:</b> | 4/19/17 |
|------------|-------|--------------|---------|

| Mode                                                                                 | Channel Band-  | PCC f (MHz) | SCC1 f (MHz) | Modulation | Conducted Power (dBm) |         | Peak-to-      |
|--------------------------------------------------------------------------------------|----------------|-------------|--------------|------------|-----------------------|---------|---------------|
|                                                                                      |                |             |              |            | Peak                  | Average | Average Ratio |
| LTE Band 7                                                                           | 10MHz / 20MHz  | 2525.6      | 2540.0       | QPSK       | 28.38                 | 21.78   | 6.60          |
|                                                                                      |                |             |              | 16QAM      | 28.37                 | 20.79   | 7.58          |
|                                                                                      | 15 MHz / 15MHz | 2527.5      | 2542.5       | QPSK       | 28.12                 | 21.74   | 6.38          |
|                                                                                      |                |             |              | 16QAM      | 28.10                 | 20.78   | 7.32          |
|                                                                                      | 15MHz / 20MHz  | 2525.3      | 2542.4       | QPSK       | 29.77                 | 21.74   | 8.03          |
|                                                                                      |                |             |              | 16QAM      | 28.12                 | 20.78   | 7.34          |
|                                                                                      | 20MHz / 10MHz  | 2530.1      | 2544.5       | QPSK       | 29.80                 | 21.81   | 7.99          |
|                                                                                      |                |             |              | 16QAM      | 29.64                 | 20.83   | 8.81          |
|                                                                                      | 20MHz / 15MHz  | 2527.6      | 2544.7       | QPSK       | 29.85                 | 21.78   | 8.07          |
|                                                                                      |                |             |              | 16QAM      | 27.99                 | 20.78   | 7.21          |
|                                                                                      | 20MHz / 20MHz  | 2525.1      | 2544.9       | QPSK       | 29.65                 | 21.73   | 7.92          |
|                                                                                      |                |             |              | 16QAM      | 29.30                 | 20.78   | 8.52          |
| Duty Cycle Correction Factor                                                         |                |             | 0            |            |                       |         |               |
| Peak to Average Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor |                |             |              |            |                       |         |               |

## 10.1.2. LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 52297 | <b>Date:</b> | 4/19/17 |
|------------|-------|--------------|---------|

| Mode                                                                                 | Channel Band-width | PCC f (MHz) | SCC1 f (MHz) | Modulation | Conducted Power (dBm) |         | Peak-to-Average Ratio (PAR) |
|--------------------------------------------------------------------------------------|--------------------|-------------|--------------|------------|-----------------------|---------|-----------------------------|
|                                                                                      |                    |             |              |            | Peak                  | Average |                             |
| LTE Band 41 (FCC)                                                                    | 5MHz / 20MHz       | 2583.8      | 2595.5       | QPSK       | 29.34                 | 14.96   | 7.30                        |
|                                                                                      |                    |             |              | 16QAM      | 29.34                 | 13.95   | 8.31                        |
|                                                                                      | 10MHz / 20MHz      | 2583.6      | 2598.0       | QPSK       | 29.34                 | 14.92   | 7.34                        |
|                                                                                      |                    |             |              | 16QAM      | 29.34                 | 13.91   | 8.35                        |
|                                                                                      | 15MHz / 15MHz      | 2585.5      | 2600.5       | QPSK       | 28.15                 | 14.98   | 6.09                        |
|                                                                                      |                    |             |              | 16QAM      | 28.29                 | 13.99   | 7.22                        |
|                                                                                      | 15MHz / 20MHz      | 2583.3      | 2600.4       | QPSK       | 29.30                 | 14.86   | 7.36                        |
|                                                                                      |                    |             |              | 16QAM      | 29.20                 | 13.91   | 8.21                        |
|                                                                                      | 20MHz / 5MHz       | 2590.5      | 2602.2       | QPSK       | 29.25                 | 14.99   | 7.18                        |
|                                                                                      |                    |             |              | 16QAM      | 29.25                 | 13.98   | 8.19                        |
|                                                                                      | 20MHz / 10MHz      | 2588.1      | 2602.5       | QPSK       | 29.24                 | 14.98   | 7.18                        |
|                                                                                      |                    |             |              | 16QAM      | 29.28                 | 13.97   | 8.23                        |
|                                                                                      | 20MHz / 15MHz      | 2585.6      | 2602.7       | QPSK       | 29.17                 | 14.90   | 7.19                        |
|                                                                                      |                    |             |              | 16QAM      | 29.16                 | 13.92   | 8.16                        |
|                                                                                      | 20MHz / 20MHz      | 2583.1      | 2602.9       | QPSK       | 29.18                 | 14.86   | 7.24                        |
|                                                                                      |                    |             |              | 16QAM      | 29.12                 | 13.9    | 8.14                        |
| Duty Cycle Correction Factor                                                         |                    |             | 7.08         |            |                       |         |                             |
| Peak to Average Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor |                    |             |              |            |                       |         |                             |



## 11. RADIATED TEST RESULTS

### 11.1. FIELD STRENGTH OF SPURIOUS RADIATION, LAT 1

#### RULE PART(S)

FCC: §2.1053, §27.53

#### LIMIT

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

#### TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than  $43 + 10 \log_{10}(p)$ , dB at the channel edges and  $55 + 10 \log_{10}(p)$  at 5.5 MHz away and beyond the channel edges where  $p$  in (a) and (b) is the transmitter power measured in watts.

#### **MODES TESTED**

- LTE Band 7
- LTE Band 41

#### **RESULTS**

# 11.1.1. LTE BAND 7

## QPSK LTE BAND 7 (20.0MHZ + 10.0MHZ BANDWIDTH)

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 7, QPSK UL CA 20/10

**Test Equipment:**  
 Substitution: Horn T344 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B7

| Frequency (GHz)                                    | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2510MHz)+2524.4MHz 1-99 1-0</b>    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                               | -65.4            | H               | 3.0      | -15.0                   | 33.0   | 1.0        | -47.0 | -25.0 | -22.0 |       |
| 7.55                                               | -66.8            | H               | 3.0      | -12.3                   | 30.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 10.07                                              | -67.1            | H               | 3.0      | -9.5                    | 27.3   | 1.0        | -35.8 | -25.0 | -10.8 |       |
| 5.03                                               | -65.7            | V               | 3.0      | -15.7                   | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 7.55                                               | -67.7            | V               | 3.0      | -13.1                   | 30.2   | 1.0        | -42.3 | -25.0 | -17.3 |       |
| 10.07                                              | -68.5            | V               | 3.0      | -11.4                   | 27.3   | 1.0        | -37.7 | -25.0 | -12.7 |       |
| <b>Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                               | -65.4            | H               | 3.0      | -14.9                   | 33.0   | 1.0        | -46.9 | -25.0 | -21.9 |       |
| 7.61                                               | -66.4            | H               | 3.0      | -11.7                   | 30.1   | 1.0        | -40.9 | -25.0 | -15.9 |       |
| 10.15                                              | -67.7            | H               | 3.0      | -10.1                   | 27.3   | 1.0        | -36.4 | -25.0 | -11.4 |       |
| 5.07                                               | -65.7            | V               | 3.0      | -15.6                   | 33.0   | 1.0        | -47.5 | -25.0 | -22.5 |       |
| 7.61                                               | -67.3            | V               | 3.0      | -12.6                   | 30.1   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 10.15                                              | -67.3            | V               | 3.0      | -10.2                   | 27.3   | 1.0        | -36.6 | -25.0 | -11.6 |       |
| <b>High Channel (2550.1MHz)+2564.5MHz 1-99 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                               | -65.9            | H               | 3.0      | -15.4                   | 32.9   | 1.0        | -47.3 | -25.0 | -22.3 |       |
| 7.67                                               | -67.1            | H               | 3.0      | -12.4                   | 30.1   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 10.23                                              | -68.2            | H               | 3.0      | -10.5                   | 27.4   | 1.0        | -36.9 | -25.0 | -11.9 |       |
| 5.11                                               | -65.6            | V               | 3.0      | -15.5                   | 32.9   | 1.0        | -47.4 | -25.0 | -22.4 |       |
| 7.67                                               | -65.9            | V               | 3.0      | -11.1                   | 30.1   | 1.0        | -40.1 | -25.0 | -15.1 |       |
| 10.23                                              | -67.9            | V               | 3.0      | -10.8                   | 27.4   | 1.0        | -37.2 | -25.0 | -12.2 |       |

Rev. 05.21.15

**16QAM LTE BAND 7 (20.0MHZ + 10.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 7, 16QAM UL CA 20/10

**Test Equipment:**  
 Substitution: Horn T344 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B7

| Frequency (GHz)                                    | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2510MHz)+2524.4MHz 1-99 1-0</b>    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                               | -65.5            | H               | 3.0      | -15.1                   | 33.0   | 1.0        | -47.0 | -25.0 | -22.0 |       |
| 7.55                                               | -67.0            | H               | 3.0      | -12.5                   | 30.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 10.07                                              | -66.8            | H               | 3.0      | -9.2                    | 27.3   | 1.0        | -35.5 | -25.0 | -10.5 |       |
| 5.03                                               | -65.8            | V               | 3.0      | -15.8                   | 33.0   | 1.0        | -47.7 | -25.0 | -22.7 |       |
| 7.55                                               | -67.7            | V               | 3.0      | -13.0                   | 30.2   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| 10.07                                              | -68.2            | V               | 3.0      | -11.2                   | 27.3   | 1.0        | -37.4 | -25.0 | -12.4 |       |
| <b>Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                               | -65.3            | H               | 3.0      | -14.8                   | 33.0   | 1.0        | -46.8 | -25.0 | -21.8 |       |
| 7.61                                               | -66.4            | H               | 3.0      | -11.7                   | 30.1   | 1.0        | -40.9 | -25.0 | -15.9 |       |
| 10.15                                              | -67.6            | H               | 3.0      | -10.0                   | 27.3   | 1.0        | -36.3 | -25.0 | -11.3 |       |
| 5.07                                               | -65.7            | V               | 3.0      | -15.6                   | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 7.61                                               | -67.3            | V               | 3.0      | -12.5                   | 30.1   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 10.15                                              | -67.4            | V               | 3.0      | -10.3                   | 27.3   | 1.0        | -36.6 | -25.0 | -11.6 |       |
| <b>High Channel (2550.1MHz)+2564.5MHz 1-99 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                               | -66.1            | H               | 3.0      | -15.6                   | 32.9   | 1.0        | -47.5 | -25.0 | -22.5 |       |
| 7.67                                               | -67.0            | H               | 3.0      | -12.3                   | 30.1   | 1.0        | -41.4 | -25.0 | -16.4 |       |
| 10.23                                              | -68.2            | H               | 3.0      | -10.5                   | 27.4   | 1.0        | -36.9 | -25.0 | -11.9 |       |
| 5.11                                               | -65.5            | V               | 3.0      | -15.4                   | 32.9   | 1.0        | -47.3 | -25.0 | -22.3 |       |
| 7.67                                               | -65.9            | V               | 3.0      | -11.1                   | 30.1   | 1.0        | -40.1 | -25.0 | -15.1 |       |
| 10.23                                              | -67.8            | V               | 3.0      | -10.7                   | 27.4   | 1.0        | -37.1 | -25.0 | -12.1 |       |

Rev. 05.21.15

**QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 7, QPSK UL CA 20/20

**Test Equipment:**  
 Substitution: Horn T344 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B7

| Frequency (GHz)                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|---------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                              | -64.6            | H               | 3.0      | -16.5                   | 36.1   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 7.56                                              | -66.5            | H               | 3.0      | -16.8                   | 36.3   | 1.0        | -52.1 | -25.0 | -27.1 |       |
| 10.08                                             | -67.0            | H               | 3.0      | -11.6                   | 33.4   | 1.0        | -44.0 | -25.0 | -19.0 |       |
| 5.04                                              | -65.5            | V               | 3.0      | -15.9                   | 36.3   | 1.0        | -51.2 | -25.0 | -26.2 |       |
| 7.56                                              | -67.4            | V               | 3.0      | -13.8                   | 34.8   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 10.08                                             | -67.7            | V               | 3.0      | -11.7                   | 32.1   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| <b>Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 5.05                                              | -65.3            | H               | 3.0      | -14.3                   | 36.0   | 1.0        | -49.2 | -25.0 | -24.2 |       |
| 7.63                                              | -67.1            | H               | 3.0      | -14.1                   | 35.2   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 10.18                                             | -67.3            | H               | 3.0      | -11.0                   | 32.0   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| 5.05                                              | -65.1            | V               | 3.0      | -17.5                   | 36.1   | 1.0        | -52.6 | -25.0 | -27.6 |       |
| 7.63                                              | -66.9            | V               | 3.0      | -12.2                   | 30.1   | 1.0        | -41.3 | -25.0 | -16.3 |       |
| 10.18                                             | -68.2            | V               | 3.0      | -11.1                   | 27.3   | 1.0        | -37.5 | -25.0 | -12.5 |       |
| <b>High Channel (2540.2MHz)+2560MHz 1-99 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.10                                              | -65.6            | H               | 3.0      | -16.4                   | 36.2   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 7.65                                              | -67.6            | H               | 3.0      | -16.9                   | 36.0   | 1.0        | -52.0 | -25.0 | -27.0 |       |
| 10.20                                             | -66.8            | H               | 3.0      | -10.5                   | 32.0   | 1.0        | -41.6 | -25.0 | -16.6 |       |
| 5.10                                              | -65.7            | V               | 3.0      | -18.7                   | 36.3   | 1.0        | -53.9 | -25.0 | -28.9 |       |
| 7.65                                              | -68.4            | V               | 3.0      | -17.2                   | 35.8   | 1.0        | -52.0 | -25.0 | -27.0 |       |
| 10.20                                             | -67.6            | V               | 3.0      | -10.5                   | 27.4   | 1.0        | -36.9 | -25.0 | -11.9 |       |

Rev. 05.21.15

**16QAM LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 5/03/174<br><b>Test Engineer:</b> 44353<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 7, 16QAM UL CA 20/20 |                  |                 |          |                         |        |            |       |       |       |       |
| <b>Test Equipment:</b><br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                      |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber D                                                                                                                                                                 |                  | 3m Chamber D    |          | Filter                  |        | LTE B7     |       |       |       |       |
| Frequency (GHz)                                                                                                                                                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| <b>Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0</b>                                                                                                                             |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                                                                                                                                                         | -64.7            | H               | 3.0      | -14.3                   | 33.0   | 1.0        | -46.3 | -25.0 | -21.3 |       |
| 7.56                                                                                                                                                                         | -68.2            | H               | 3.0      | -13.7                   | 30.2   | 1.0        | -42.9 | -25.0 | -17.9 |       |
| 10.08                                                                                                                                                                        | -68.7            | H               | 3.0      | -11.1                   | 27.3   | 1.0        | -37.3 | -25.0 | -12.3 |       |
| 5.04                                                                                                                                                                         | -64.9            | V               | 3.0      | -14.8                   | 33.0   | 1.0        | -46.8 | -25.0 | -21.8 |       |
| 7.56                                                                                                                                                                         | -67.7            | V               | 3.0      | -13.0                   | 30.2   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| 10.08                                                                                                                                                                        | -66.6            | V               | 3.0      | -9.6                    | 27.3   | 1.0        | -35.9 | -25.0 | -10.9 |       |
| <b>Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0</b>                                                                                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| 5.05                                                                                                                                                                         | -65.4            | H               | 3.0      | -14.9                   | 33.0   | 1.0        | -46.9 | -25.0 | -21.9 |       |
| 7.63                                                                                                                                                                         | -67.2            | H               | 3.0      | -12.5                   | 30.1   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 10.18                                                                                                                                                                        | -67.3            | H               | 3.0      | -9.6                    | 27.3   | 1.0        | -36.0 | -25.0 | -11.0 |       |
| 5.05                                                                                                                                                                         | -65.7            | V               | 3.0      | -15.6                   | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 7.63                                                                                                                                                                         | -67.9            | V               | 3.0      | -13.1                   | 30.1   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| 10.18                                                                                                                                                                        | -67.3            | V               | 3.0      | -10.2                   | 27.3   | 1.0        | -36.5 | -25.0 | -11.5 |       |
| <b>High Channel (2540.2MHz)+2560MHz 1-99 1-0</b>                                                                                                                             |                  |                 |          |                         |        |            |       |       |       |       |
| 5.10                                                                                                                                                                         | -65.0            | H               | 3.0      | -14.5                   | 32.9   | 1.0        | -46.4 | -25.0 | -21.4 |       |
| 7.65                                                                                                                                                                         | -67.5            | H               | 3.0      | -12.8                   | 30.1   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 10.20                                                                                                                                                                        | -68.0            | H               | 3.0      | -10.3                   | 27.4   | 1.0        | -36.7 | -25.0 | -11.7 |       |
| 5.10                                                                                                                                                                         | -65.6            | V               | 3.0      | -15.5                   | 32.9   | 1.0        | -47.4 | -25.0 | -22.4 |       |
| 7.65                                                                                                                                                                         | -67.5            | V               | 3.0      | -12.7                   | 30.1   | 1.0        | -41.8 | -25.0 | -16.8 |       |
| 10.20                                                                                                                                                                        | -67.8            | V               | 3.0      | -10.7                   | 27.4   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| Rev. 05.21.15                                                                                                                                                                |                  |                 |          |                         |        |            |       |       |       |       |

## 11.1.2. LTE BAND 41

### QPSK LTE BAND 41 (20.0MHZ + 5.0MHZ BANDWIDTH)

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                      |                     |                    |          |                               |        |            |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 05/03/17<br><b>Test Engineer:</b> 44353<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 41, QPSK UL CA 20/5 |                     |                    |          |                               |        |            |       |       |       |       |
| <b>Test Equipment:</b><br>Substitution: Horn T59 Substitution, and 8ft SMA Cable                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |
| Chamber                                                                                                                                                                     |                     | Pre-amplifier      |          | Filter                        |        | Limit      |       |       |       |       |
| 3m Chamber D                                                                                                                                                                |                     | 3m Chamber D       |          | Filter                        |        | LTE B41    |       |       |       |       |
| Frequency<br>(GHz)                                                                                                                                                          | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| <b>Low Channel (2506MHz)+2517.7MHz 1-99, 1-0</b>                                                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |
| 4.05                                                                                                                                                                        | -64.9               | H                  | 3.0      | -16.0                         | 33.7   | 1.0        | -48.7 | -25.0 | -23.7 |       |
| 6.65                                                                                                                                                                        | -65.4               | H                  | 3.0      | -12.2                         | 31.3   | 1.0        | -42.5 | -25.0 | -17.5 |       |
| 9.23                                                                                                                                                                        | -66.8               | H                  | 3.0      | -10.2                         | 28.2   | 1.0        | -37.3 | -25.0 | -12.3 |       |
| 4.07                                                                                                                                                                        | -65.1               | V                  | 3.0      | -16.3                         | 33.7   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 6.70                                                                                                                                                                        | -66.1               | V                  | 3.0      | -12.6                         | 31.2   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 9.30                                                                                                                                                                        | -67.2               | V                  | 3.0      | -10.9                         | 28.1   | 1.0        | -38.0 | -25.0 | -13.0 |       |
| <b>Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0</b>                                                                                                                          |                     |                    |          |                               |        |            |       |       |       |       |
| 6.05                                                                                                                                                                        | -65.3               | H                  | 3.0      | -13.1                         | 31.9   | 1.0        | -44.0 | -25.0 | -19.0 |       |
| 7.65                                                                                                                                                                        | -65.8               | H                  | 3.0      | -11.2                         | 30.1   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| 11.25                                                                                                                                                                       | -66.6               | H                  | 3.0      | -8.7                          | 28.0   | 1.0        | -35.7 | -25.0 | -10.7 |       |
| 6.04                                                                                                                                                                        | -65.6               | V                  | 3.0      | -13.5                         | 31.9   | 1.0        | -44.5 | -25.0 | -19.5 |       |
| 7.63                                                                                                                                                                        | -66.1               | V                  | 3.0      | -11.3                         | 30.1   | 1.0        | -40.5 | -25.0 | -15.5 |       |
| 11.05                                                                                                                                                                       | -66.9               | V                  | 3.0      | -9.4                          | 27.9   | 1.0        | -36.2 | -25.0 | -11.2 |       |
| <b>High Channel (2675MHz)+2686.7MHz 1-99, 1-0</b>                                                                                                                           |                     |                    |          |                               |        |            |       |       |       |       |
| 4.76                                                                                                                                                                        | -64.9               | H                  | 3.0      | -14.9                         | 33.2   | 1.0        | -47.1 | -25.0 | -22.1 |       |
| 7.84                                                                                                                                                                        | -65.4               | H                  | 3.0      | -10.5                         | 29.9   | 1.0        | -39.3 | -25.0 | -14.3 |       |
| 10.13                                                                                                                                                                       | -67.0               | H                  | 3.0      | -9.4                          | 27.3   | 1.0        | -35.7 | -25.0 | -10.7 |       |
| 7.75                                                                                                                                                                        | -65.4               | V                  | 3.0      | -10.6                         | 30.0   | 1.0        | -39.5 | -25.0 | -14.5 |       |
| 7.73                                                                                                                                                                        | -66.1               | V                  | 3.0      | -11.3                         | 30.0   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| 10.20                                                                                                                                                                       | -67.0               | V                  | 3.0      | -9.9                          | 27.4   | 1.0        | -36.3 | -25.0 | -11.3 |       |
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**16QAM LTE BAND 41 (20.0MHZ + 5.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/04/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 41, 16QAM UL CA 20/5

**Test Equipment:**  
Substitution: Horn T59 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B41

| Frequency (GHz)                                    | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz)+2517.7MHz 1-99, 1-0</b>   |                  |                 |          |                         |        |            |       |       |       |       |
| 4.05                                               | -65.2            | H               | 3.0      | -16.3                   | 33.7   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 6.65                                               | -65.9            | H               | 3.0      | -12.7                   | 31.3   | 1.0        | -43.0 | -25.0 | -18.0 |       |
| 9.23                                               | -66.4            | H               | 3.0      | -9.8                    | 28.2   | 1.0        | -37.0 | -25.0 | -12.0 |       |
| 4.07                                               | -65.3            | V               | 3.0      | -16.5                   | 33.7   | 1.0        | -49.1 | -25.0 | -24.1 |       |
| 6.70                                               | -66.1            | V               | 3.0      | -12.6                   | 31.2   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 9.30                                               | -67.0            | V               | 3.0      | -10.7                   | 28.1   | 1.0        | -37.8 | -25.0 | -12.8 |       |
| <b>Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 6.05                                               | -64.9            | H               | 3.0      | -12.8                   | 31.9   | 1.0        | -43.7 | -25.0 | -18.7 |       |
| 7.65                                               | -65.4            | H               | 3.0      | -10.8                   | 30.1   | 1.0        | -39.9 | -25.0 | -14.9 |       |
| 11.25                                              | -66.8            | H               | 3.0      | -8.9                    | 28.0   | 1.0        | -35.9 | -25.0 | -10.9 |       |
| 6.04                                               | -65.1            | V               | 3.0      | -13.0                   | 31.9   | 1.0        | -44.0 | -25.0 | -19.0 |       |
| 7.63                                               | -66.0            | V               | 3.0      | -11.2                   | 30.1   | 1.0        | -40.4 | -25.0 | -15.4 |       |
| 11.05                                              | -67.2            | V               | 3.0      | -9.7                    | 27.9   | 1.0        | -36.6 | -25.0 | -11.6 |       |
| <b>High Channel (2675MHz)+2686.7MHz 1-99, 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 4.76                                               | -65.3            | H               | 3.0      | -15.3                   | 33.2   | 1.0        | -47.5 | -25.0 | -22.5 |       |
| 7.84                                               | -66.0            | H               | 3.0      | -11.1                   | 29.9   | 1.0        | -39.9 | -25.0 | -14.9 |       |
| 10.13                                              | -67.1            | H               | 3.0      | -9.5                    | 27.3   | 1.0        | -35.8 | -25.0 | -10.8 |       |
| 7.75                                               | -65.1            | V               | 3.0      | -10.2                   | 30.0   | 1.0        | -39.2 | -25.0 | -14.2 |       |
| 7.73                                               | -65.9            | V               | 3.0      | -11.0                   | 30.0   | 1.0        | -40.0 | -25.0 | -15.0 |       |
| 10.20                                              | -66.0            | V               | 3.0      | -8.9                    | 27.4   | 1.0        | -35.3 | -25.0 | -10.3 |       |

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**QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 41, QPSK UL CA 20/20

**Test Equipment:**  
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber D

Pre-amplifier

3m Chamber D

Filter

Filter

Limit

LTE B41

| Frequency<br>(GHz)                                  | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz) + 2525.8MHz 1-99 1-0</b>   |                     |                    |          |                               |        |            |       |       |       |       |
| 4.87                                                | -65.3               | H                  | 3.0      | -15.2                         | 33.1   | 1.0        | -47.3 | -25.0 | -22.3 |       |
| 7.68                                                | -65.9               | H                  | 3.0      | -11.2                         | 30.1   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| 10.25                                               | -66.3               | H                  | 3.0      | -8.6                          | 27.4   | 1.0        | -35.0 | -25.0 | -10.0 |       |
| 4.90                                                | -64.8               | V                  | 3.0      | -14.9                         | 33.1   | 1.0        | -47.0 | -25.0 | -22.0 |       |
| 7.69                                                | -65.3               | V                  | 3.0      | -10.5                         | 30.1   | 1.0        | -39.6 | -25.0 | -14.6 |       |
| 10.30                                               | -67.4               | V                  | 3.0      | -10.3                         | 27.4   | 1.0        | -36.7 | -25.0 | -11.7 |       |
| <b>Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0</b> |                     |                    |          |                               |        |            |       |       |       |       |
| 5.15                                                | -65.1               | H                  | 3.0      | -14.5                         | 32.9   | 1.0        | -46.4 | -25.0 | -21.4 |       |
| 7.75                                                | -65.7               | H                  | 3.0      | -11.0                         | 30.0   | 1.0        | -39.9 | -25.0 | -14.9 |       |
| 10.33                                               | -66.8               | H                  | 3.0      | -9.1                          | 27.4   | 1.0        | -35.6 | -25.0 | -10.6 |       |
| 5.20                                                | -64.8               | V                  | 3.0      | -14.5                         | 32.9   | 1.0        | -46.4 | -25.0 | -21.4 |       |
| 7.76                                                | -66.0               | V                  | 3.0      | -11.1                         | 30.0   | 1.0        | -40.1 | -25.0 | -15.1 |       |
| 10.33                                               | -66.9               | V                  | 3.0      | -9.7                          | 27.4   | 1.0        | -36.2 | -25.0 | -11.2 |       |
| <b>High Channel (2660.2MHz) + 2680MHz 1-99 1-0</b>  |                     |                    |          |                               |        |            |       |       |       |       |
| 5.50                                                | -65.0               | H                  | 3.0      | -13.8                         | 32.5   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 7.73                                                | -65.8               | H                  | 3.0      | -11.0                         | 30.0   | 1.0        | -40.0 | -25.0 | -15.0 |       |
| 10.70                                               | -67.1               | H                  | 3.0      | -9.4                          | 27.6   | 1.0        | -36.0 | -25.0 | -11.0 |       |
| 5.60                                                | -65.1               | V                  | 3.0      | -14.0                         | 32.4   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 7.73                                                | -65.5               | V                  | 3.0      | -10.6                         | 30.0   | 1.0        | -39.6 | -25.0 | -14.6 |       |
| 10.70                                               | -66.8               | V                  | 3.0      | -9.5                          | 27.6   | 1.0        | -36.1 | -25.0 | -11.1 |       |

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**16QAM LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 44353  
**Configuration:** EUT Only  
**Mode:** LTE Band 41, 16QAM UL CA 20/20

**Test Equipment:**  
Substitution: Horn T59 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B41

| Frequency<br>(GHz)                                  | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz) + 2525.8MHz 1-99 1-0</b>   |                     |                    |          |                               |        |            |       |       |       |       |
| 4.87                                                | -65.2               | H                  | 3.0      | -15.0                         | 33.1   | 1.0        | -47.1 | -25.0 | -22.1 |       |
| 7.68                                                | -65.3               | H                  | 3.0      | -10.6                         | 30.1   | 1.0        | -39.6 | -25.0 | -14.6 |       |
| 10.25                                               | -66.8               | H                  | 3.0      | -9.2                          | 27.4   | 1.0        | -35.6 | -25.0 | -10.6 |       |
| 4.90                                                | -65.3               | V                  | 3.0      | -15.4                         | 33.1   | 1.0        | -47.5 | -25.0 | -22.5 |       |
| 7.69                                                | -65.6               | V                  | 3.0      | -10.8                         | 30.1   | 1.0        | -39.9 | -25.0 | -14.9 |       |
| 10.30                                               | -67.7               | V                  | 3.0      | -10.6                         | 27.4   | 1.0        | -37.0 | -25.0 | -12.0 |       |
| <b>Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0</b> |                     |                    |          |                               |        |            |       |       |       |       |
| 5.15                                                | -65.2               | H                  | 3.0      | -14.6                         | 32.9   | 1.0        | -46.5 | -25.0 | -21.5 |       |
| 7.75                                                | -65.6               | H                  | 3.0      | -10.8                         | 30.0   | 1.0        | -39.8 | -25.0 | -14.8 |       |
| 10.33                                               | -67.1               | H                  | 3.0      | -9.4                          | 27.4   | 1.0        | -35.9 | -25.0 | -10.9 |       |
| 5.20                                                | -64.9               | V                  | 3.0      | -14.6                         | 32.9   | 1.0        | -46.5 | -25.0 | -21.5 |       |
| 7.76                                                | -65.7               | V                  | 3.0      | -10.9                         | 30.0   | 1.0        | -39.8 | -25.0 | -14.8 |       |
| 10.33                                               | -68.2               | V                  | 3.0      | -11.1                         | 27.4   | 1.0        | -37.5 | -25.0 | -12.5 |       |
| <b>High Channel (2660.2MHz) + 2680MHz 1-99 1-0</b>  |                     |                    |          |                               |        |            |       |       |       |       |
| 5.50                                                | -64.9               | H                  | 3.0      | -13.7                         | 32.5   | 1.0        | -45.3 | -25.0 | -20.3 |       |
| 7.73                                                | -65.3               | H                  | 3.0      | -10.5                         | 30.0   | 1.0        | -39.5 | -25.0 | -14.5 |       |
| 10.70                                               | -66.8               | H                  | 3.0      | -9.0                          | 27.6   | 1.0        | -35.7 | -25.0 | -10.7 |       |
| 5.60                                                | -65.2               | V                  | 3.0      | -14.0                         | 32.4   | 1.0        | -45.5 | -25.0 | -20.5 |       |
| 7.73                                                | -65.7               | V                  | 3.0      | -10.8                         | 30.0   | 1.0        | -39.8 | -25.0 | -14.8 |       |
| 10.70                                               | -67.3               | V                  | 3.0      | -10.0                         | 27.6   | 1.0        | -36.6 | -25.0 | -11.6 |       |

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## 11.2. FIELD STRENGTH OF SPURIOUS RADIATION, UAT 1

### 11.2.1. LTE BAND 7

#### QPSK LTE BAND 7 (20.0MHZ + 10.0MHZ BANDWIDTH)

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

Company:  
Project #:  
Date: 05/04/17  
Test Engineer: 44353  
Configuration: EUT Only  
Mode: LTE Band 7, QPSK UL CA 20/10

Test Equipment:  
Substitution: Horn T344 Substitution, and 8ft SMA Cable

Chamber

3m Chamber D

Pre-amplifier

3m Chamber D

Filter

Filter

Limit

LTE B7

| Frequency<br>(GHz)                                 | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2510MHz)+2524.4MHz 1-99 1-0</b>    |                     |                    |          |                               |        |            |       |       |       |       |
| 5.03                                               | -65.4               | H                  | 3.0      | -15.0                         | 33.0   | 1.0        | -46.9 | -25.0 | -21.9 |       |
| 7.55                                               | -67.4               | H                  | 3.0      | -12.9                         | 30.2   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 10.07                                              | -66.4               | H                  | 3.0      | -8.8                          | 27.3   | 1.0        | -35.1 | -25.0 | -10.1 |       |
| 5.03                                               | -66.0               | V                  | 3.0      | -16.0                         | 33.0   | 1.0        | -47.9 | -25.0 | -22.9 |       |
| 7.55                                               | -67.4               | V                  | 3.0      | -12.7                         | 30.2   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| 10.07                                              | -67.8               | V                  | 3.0      | -10.8                         | 27.3   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| <b>Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0</b>  |                     |                    |          |                               |        |            |       |       |       |       |
| 5.07                                               | -65.2               | H                  | 3.0      | -14.7                         | 33.0   | 1.0        | -46.7 | -25.0 | -21.7 |       |
| 7.61                                               | -66.3               | H                  | 3.0      | -11.7                         | 30.1   | 1.0        | -40.9 | -25.0 | -15.9 |       |
| 10.15                                              | -66.9               | H                  | 3.0      | -9.2                          | 27.3   | 1.0        | -35.5 | -25.0 | -10.5 |       |
| 5.07                                               | -66.4               | V                  | 3.0      | -16.3                         | 33.0   | 1.0        | -48.2 | -25.0 | -23.2 |       |
| 7.61                                               | -67.8               | V                  | 3.0      | -13.1                         | 30.1   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| 10.15                                              | -67.8               | V                  | 3.0      | -10.7                         | 27.3   | 1.0        | -37.0 | -25.0 | -12.0 |       |
| <b>High Channel (2550.1MHz)+2564.5MHz 1-99 1-0</b> |                     |                    |          |                               |        |            |       |       |       |       |
| 5.11                                               | -66.0               | H                  | 3.0      | -15.4                         | 32.9   | 1.0        | -47.3 | -25.0 | -22.3 |       |
| 7.67                                               | -67.6               | H                  | 3.0      | -13.0                         | 30.1   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| 10.23                                              | -68.4               | H                  | 3.0      | -10.8                         | 27.4   | 1.0        | -37.2 | -25.0 | -12.2 |       |
| 5.11                                               | -66.1               | V                  | 3.0      | -15.9                         | 32.9   | 1.0        | -47.8 | -25.0 | -22.8 |       |
| 7.67                                               | -68.1               | V                  | 3.0      | -13.3                         | 30.1   | 1.0        | -42.4 | -25.0 | -17.4 |       |
| 10.23                                              | -67.3               | V                  | 3.0      | -10.2                         | 27.4   | 1.0        | -36.6 | -25.0 | -11.6 |       |

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**16QAM LTE BAND 7 (20.0MHZ + 10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                       |                     |                    |          |                               |        |            |       |       |       |       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|--|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 05/04/17<br><b>Test Engineer:</b> 44353<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 7, 16QAM UL CA 20/10 |                     |                    |          |                               |        |            |       |       |       |       |  |
| <b>Test Equipment:</b><br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                      |                     | Pre-amplifier      |          | Filter                        |        | Limit      |       |       |       |       |  |
| 3m Chamber D                                                                                                                                                                 |                     | 3m Chamber D       |          | Filter                        |        | LTE B7     |       |       |       |       |  |
| Frequency<br>(GHz)                                                                                                                                                           | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| <b>Low Channel (2510MHz)+2524.4MHz 1-99 1-0</b>                                                                                                                              |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.03                                                                                                                                                                         | -66.0               | H                  | 3.0      | -15.6                         | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |  |
| 7.55                                                                                                                                                                         | -67.5               | H                  | 3.0      | -13.0                         | 30.2   | 1.0        | -42.2 | -25.0 | -17.2 |       |  |
| 10.07                                                                                                                                                                        | -67.8               | H                  | 3.0      | -10.2                         | 27.3   | 1.0        | -36.5 | -25.0 | -11.5 |       |  |
| 5.03                                                                                                                                                                         | -66.6               | V                  | 3.0      | -16.6                         | 33.0   | 1.0        | -48.6 | -25.0 | -23.6 |       |  |
| 7.55                                                                                                                                                                         | -67.6               | V                  | 3.0      | -12.9                         | 30.2   | 1.0        | -42.1 | -25.0 | -17.1 |       |  |
| 10.07                                                                                                                                                                        | -68.5               | V                  | 3.0      | -11.5                         | 27.3   | 1.0        | -37.7 | -25.0 | -12.7 |       |  |
| <b>Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0</b>                                                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.07                                                                                                                                                                         | -65.2               | H                  | 3.0      | -14.7                         | 33.0   | 1.0        | -46.7 | -25.0 | -21.7 |       |  |
| 7.61                                                                                                                                                                         | -67.2               | H                  | 3.0      | -12.6                         | 30.1   | 1.0        | -41.7 | -25.0 | -16.7 |       |  |
| 10.15                                                                                                                                                                        | -67.1               | H                  | 3.0      | -9.5                          | 27.3   | 1.0        | -35.8 | -25.0 | -10.8 |       |  |
| 5.07                                                                                                                                                                         | -66.4               | V                  | 3.0      | -16.3                         | 33.0   | 1.0        | -48.3 | -25.0 | -23.3 |       |  |
| 7.61                                                                                                                                                                         | -67.7               | V                  | 3.0      | -13.0                         | 30.1   | 1.0        | -42.1 | -25.0 | -17.1 |       |  |
| 10.15                                                                                                                                                                        | -68.7               | V                  | 3.0      | -11.6                         | 27.3   | 1.0        | -37.9 | -25.0 | -12.9 |       |  |
| <b>High Channel (2550.1MHz)+2564.5MHz 1-99 1-0</b>                                                                                                                           |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.11                                                                                                                                                                         | -66.7               | H                  | 3.0      | -16.1                         | 32.9   | 1.0        | -48.1 | -25.0 | -23.1 |       |  |
| 7.67                                                                                                                                                                         | -67.0               | H                  | 3.0      | -12.3                         | 30.1   | 1.0        | -41.4 | -25.0 | -16.4 |       |  |
| 10.23                                                                                                                                                                        | -68.0               | H                  | 3.0      | -10.4                         | 27.4   | 1.0        | -36.8 | -25.0 | -11.8 |       |  |
| 5.11                                                                                                                                                                         | -66.0               | V                  | 3.0      | -15.8                         | 32.9   | 1.0        | -47.7 | -25.0 | -22.7 |       |  |
| 7.67                                                                                                                                                                         | -68.0               | V                  | 3.0      | -13.2                         | 30.1   | 1.0        | -42.3 | -25.0 | -17.3 |       |  |
| 10.23                                                                                                                                                                        | -66.9               | V                  | 3.0      | -9.8                          | 27.4   | 1.0        | -36.2 | -25.0 | -11.2 |       |  |
| Rev. 05.21.15                                                                                                                                                                |                     |                    |          |                               |        |            |       |       |       |       |  |

**QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                      |                     |                    |          |                               |        |            |       |       |       |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|--|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 05/04/17<br><b>Test Engineer:</b> 44353<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 7, QPSK UL CA 20/20 |                     |                    |          |                               |        |            |       |       |       |       |  |
| <b>Test Equipment:</b><br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                                                           |                     |                    |          |                               |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                     |                     | Pre-amplifier      |          | Filter                        |        | Limit      |       |       |       |       |  |
| 3m Chamber D                                                                                                                                                                |                     | 3m Chamber D       |          | Filter                        |        | LTE B7     |       |       |       |       |  |
| Frequency<br>(GHz)                                                                                                                                                          | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| <b>Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0</b>                                                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.04                                                                                                                                                                        | -65.8               | H                  | 3.0      | -17.7                         | 36.1   | 1.0        | -52.8 | -25.0 | -27.8 |       |  |
| 7.56                                                                                                                                                                        | -67.3               | H                  | 3.0      | -17.5                         | 36.3   | 1.0        | -52.8 | -25.0 | -27.8 |       |  |
| 10.08                                                                                                                                                                       | -67.5               | H                  | 3.0      | -12.1                         | 33.4   | 1.0        | -44.5 | -25.0 | -19.5 |       |  |
| 5.04                                                                                                                                                                        | -66.2               | V                  | 3.0      | -16.7                         | 36.3   | 1.0        | -51.9 | -25.0 | -26.9 |       |  |
| 7.56                                                                                                                                                                        | -68.1               | V                  | 3.0      | -14.5                         | 34.8   | 1.0        | -48.3 | -25.0 | -23.3 |       |  |
| 10.08                                                                                                                                                                       | -68.4               | V                  | 3.0      | -12.5                         | 32.1   | 1.0        | -43.5 | -25.0 | -18.5 |       |  |
| <b>Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0</b>                                                                                                                           |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.05                                                                                                                                                                        | -66.2               | H                  | 3.0      | -15.2                         | 36.0   | 1.0        | -50.2 | -25.0 | -25.2 |       |  |
| 7.63                                                                                                                                                                        | -67.8               | H                  | 3.0      | -14.8                         | 35.2   | 1.0        | -49.0 | -25.0 | -24.0 |       |  |
| 10.18                                                                                                                                                                       | -67.7               | H                  | 3.0      | -11.4                         | 32.0   | 1.0        | -42.4 | -25.0 | -17.4 |       |  |
| 5.05                                                                                                                                                                        | -65.9               | V                  | 3.0      | -18.2                         | 36.1   | 1.0        | -53.3 | -25.0 | -28.3 |       |  |
| 7.63                                                                                                                                                                        | -67.8               | V                  | 3.0      | -13.0                         | 30.1   | 1.0        | -42.1 | -25.0 | -17.1 |       |  |
| 10.18                                                                                                                                                                       | -67.7               | V                  | 3.0      | -10.7                         | 27.3   | 1.0        | -37.0 | -25.0 | -12.0 |       |  |
| <b>High Channel (2540.2MHz)+2560MHz 1-99 1-0</b>                                                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.10                                                                                                                                                                        | -64.9               | H                  | 3.0      | -15.8                         | 36.2   | 1.0        | -51.0 | -25.0 | -26.0 |       |  |
| 7.65                                                                                                                                                                        | -66.9               | H                  | 3.0      | -16.2                         | 36.0   | 1.0        | -51.2 | -25.0 | -26.2 |       |  |
| 10.20                                                                                                                                                                       | -68.6               | H                  | 3.0      | -12.3                         | 32.0   | 1.0        | -43.3 | -25.0 | -18.3 |       |  |
| 5.10                                                                                                                                                                        | -66.1               | V                  | 3.0      | -19.0                         | 36.3   | 1.0        | -54.3 | -25.0 | -29.3 |       |  |
| 7.65                                                                                                                                                                        | -66.7               | V                  | 3.0      | -15.4                         | 35.8   | 1.0        | -50.2 | -25.0 | -25.2 |       |  |
| 10.20                                                                                                                                                                       | -67.2               | V                  | 3.0      | -10.1                         | 27.4   | 1.0        | -36.4 | -25.0 | -11.4 |       |  |
| Rev. 05.21.15                                                                                                                                                               |                     |                    |          |                               |        |            |       |       |       |       |  |

**16QAM LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                       |                     |                    |          |                               |        |            |       |       |       |       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|--|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 05/04/17<br><b>Test Engineer:</b> 44353<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 7, 16QAM UL CA 20/20 |                     |                    |          |                               |        |            |       |       |       |       |  |
| <b>Test Equipment:</b><br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                      |                     | Pre-amplifier      |          | Filter                        |        | Limit      |       |       |       |       |  |
| 3m Chamber D                                                                                                                                                                 |                     | 3m Chamber D       |          | Filter                        |        | LTE B7     |       |       |       |       |  |
| Frequency<br>(GHz)                                                                                                                                                           | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| <b>Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0</b>                                                                                                                             |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.04                                                                                                                                                                         | -66.4               | H                  | 3.0      | -15.9                         | 33.0   | 1.0        | -47.9 | -25.0 | -22.9 |       |  |
| 7.56                                                                                                                                                                         | -68.3               | H                  | 3.0      | -13.7                         | 30.2   | 1.0        | -42.9 | -25.0 | -17.9 |       |  |
| 10.08                                                                                                                                                                        | -68.4               | H                  | 3.0      | -10.8                         | 27.3   | 1.0        | -37.1 | -25.0 | -12.1 |       |  |
| 5.04                                                                                                                                                                         | -65.7               | V                  | 3.0      | -15.7                         | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |  |
| 7.56                                                                                                                                                                         | -67.0               | V                  | 3.0      | -12.3                         | 30.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |  |
| 10.08                                                                                                                                                                        | -67.4               | V                  | 3.0      | -10.4                         | 27.3   | 1.0        | -36.7 | -25.0 | -11.7 |       |  |
| <b>Mid Channel (2525.1MHz)+2544.9MHz 1-99 1-0</b>                                                                                                                            |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.05                                                                                                                                                                         | -66.2               | H                  | 3.0      | -15.7                         | 33.0   | 1.0        | -47.7 | -25.0 | -22.7 |       |  |
| 7.63                                                                                                                                                                         | -67.2               | H                  | 3.0      | -12.6                         | 30.1   | 1.0        | -41.7 | -25.0 | -16.7 |       |  |
| 10.18                                                                                                                                                                        | -68.1               | H                  | 3.0      | -10.5                         | 27.3   | 1.0        | -36.8 | -25.0 | -11.8 |       |  |
| 5.05                                                                                                                                                                         | -65.7               | V                  | 3.0      | -15.6                         | 33.0   | 1.0        | -47.6 | -25.0 | -22.6 |       |  |
| 7.63                                                                                                                                                                         | -67.1               | V                  | 3.0      | -12.3                         | 30.1   | 1.0        | -41.4 | -25.0 | -16.4 |       |  |
| 10.18                                                                                                                                                                        | -67.4               | V                  | 3.0      | -10.4                         | 27.3   | 1.0        | -36.7 | -25.0 | -11.7 |       |  |
| <b>High Channel (2540.2MHz)+2560MHz 1-99 1-0</b>                                                                                                                             |                     |                    |          |                               |        |            |       |       |       |       |  |
| 5.10                                                                                                                                                                         | -65.9               | H                  | 3.0      | -15.4                         | 32.9   | 1.0        | -47.4 | -25.0 | -22.4 |       |  |
| 7.65                                                                                                                                                                         | -67.5               | H                  | 3.0      | -12.9                         | 30.1   | 1.0        | -42.0 | -25.0 | -17.0 |       |  |
| 10.20                                                                                                                                                                        | -67.9               | H                  | 3.0      | -10.2                         | 27.4   | 1.0        | -36.6 | -25.0 | -11.6 |       |  |
| 5.10                                                                                                                                                                         | -65.6               | V                  | 3.0      | -15.4                         | 32.9   | 1.0        | -47.3 | -25.0 | -22.3 |       |  |
| 7.65                                                                                                                                                                         | -66.0               | V                  | 3.0      | -11.2                         | 30.1   | 1.0        | -40.3 | -25.0 | -15.3 |       |  |
| 10.20                                                                                                                                                                        | -67.5               | V                  | 3.0      | -10.4                         | 27.4   | 1.0        | -36.7 | -25.0 | -11.7 |       |  |
| Rev. 05.21.15                                                                                                                                                                |                     |                    |          |                               |        |            |       |       |       |       |  |

## 11.2.2. LTE BAND 41

### QPSK LTE BAND 41 (20.0MHZ + 5.0MHZ BANDWIDTH)

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

Company:  
Project #:  
Date: 05/03/17  
Test Engineer: 31300  
Configuration: EUT Only  
Mode: LTE Band 41, QPSK UL CA 20/5

Test Equipment:  
Substitution: Horn T59 Substitution, and 8ft SMA Cable

**Chamber**

3m Chamber D

**Pre-amplifier**

3m Chamber D

**Filter**

Filter

**Limit**

LTE B41

| Frequency (GHz)                                    | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz)+2517.7MHz 1-99, 1-0</b>   |                  |                 |          |                         |        |            |       |       |       |       |
| 4.05                                               | -66.8            | H               | 3.0      | -17.9                   | 33.7   | 1.0        | -50.5 | -25.0 | -25.5 |       |
| 6.65                                               | -68.5            | H               | 3.0      | -15.2                   | 31.3   | 1.0        | -45.5 | -25.0 | -20.5 |       |
| 9.23                                               | -68.3            | H               | 3.0      | -11.7                   | 28.2   | 1.0        | -38.9 | -25.0 | -13.9 |       |
| 4.07                                               | -67.5            | V               | 3.0      | -18.6                   | 33.7   | 1.0        | -51.3 | -25.0 | -26.3 |       |
| 6.70                                               | -68.7            | V               | 3.0      | -15.2                   | 31.2   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 9.30                                               | -68.3            | V               | 3.0      | -11.9                   | 28.1   | 1.0        | -39.0 | -25.0 | -14.0 |       |
| <b>Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 6.05                                               | -67.9            | H               | 3.0      | -15.7                   | 31.9   | 1.0        | -46.6 | -25.0 | -21.6 |       |
| 7.65                                               | -68.2            | H               | 3.0      | -13.6                   | 30.1   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| 11.25                                              | -68.8            | H               | 3.0      | -11.0                   | 28.0   | 1.0        | -37.9 | -25.0 | -12.9 |       |
| 6.04                                               | -68.0            | V               | 3.0      | -15.9                   | 31.9   | 1.0        | -46.9 | -25.0 | -21.9 |       |
| 7.63                                               | -66.9            | V               | 3.0      | -12.2                   | 30.1   | 1.0        | -41.3 | -25.0 | -16.3 |       |
| 11.05                                              | -67.7            | V               | 3.0      | -10.2                   | 27.9   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| <b>High Channel (2675MHz)+2686.7MHz 1-99, 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 4.76                                               | -67.4            | H               | 3.0      | -17.4                   | 33.2   | 1.0        | -49.5 | -25.0 | -24.5 |       |
| 7.84                                               | -68.7            | H               | 3.0      | -13.8                   | 29.9   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| 10.13                                              | -67.5            | H               | 3.0      | -9.9                    | 27.3   | 1.0        | -36.2 | -25.0 | -11.2 |       |
| 7.75                                               | -68.0            | V               | 3.0      | -13.1                   | 30.0   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 7.73                                               | -67.4            | V               | 3.0      | -12.5                   | 30.0   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 10.20                                              | -68.0            | V               | 3.0      | -10.9                   | 27.4   | 1.0        | -37.3 | -25.0 | -12.3 |       |

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**16QAM LTE BAND 41 (20.0MHZ + 5.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 31300  
**Configuration:** EUT Only  
**Mode:** LTE Band 41, 16QAM UL CA 20/5

**Test Equipment:**  
Substitution: Horn T59 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B41

| Frequency (GHz)                                    | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz)+2517.7MHz 1-99, 1-0</b>   |                  |                 |          |                         |        |            |       |       |       |       |
| 4.05                                               | -66.5            | H               | 3.0      | -17.6                   | 33.7   | 1.0        | -50.3 | -25.0 | -25.3 |       |
| 6.65                                               | -68.3            | H               | 3.0      | -15.1                   | 31.3   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 9.23                                               | -68.8            | H               | 3.0      | -12.2                   | 28.2   | 1.0        | -39.4 | -25.0 | -14.4 |       |
| 4.07                                               | -67.2            | V               | 3.0      | -18.4                   | 33.7   | 1.0        | -51.0 | -25.0 | -26.0 |       |
| 6.70                                               | -69.0            | V               | 3.0      | -15.5                   | 31.2   | 1.0        | -45.7 | -25.0 | -20.7 |       |
| 9.30                                               | -68.6            | V               | 3.0      | -12.2                   | 28.1   | 1.0        | -39.3 | -25.0 | -14.3 |       |
| <b>Mid Channel (2590.5MHz)+2602.2MHz 1-99, 1-0</b> |                  |                 |          |                         |        |            |       |       |       |       |
| 6.05                                               | -66.9            | H               | 3.0      | -14.8                   | 31.9   | 1.0        | -45.7 | -25.0 | -20.7 |       |
| 7.65                                               | -67.5            | H               | 3.0      | -12.8                   | 30.1   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 11.25                                              | -68.8            | H               | 3.0      | -11.0                   | 28.0   | 1.0        | -38.0 | -25.0 | -13.0 |       |
| 6.04                                               | -68.3            | V               | 3.0      | -16.2                   | 31.9   | 1.0        | -47.1 | -25.0 | -22.1 |       |
| 7.63                                               | -68.2            | V               | 3.0      | -13.5                   | 30.1   | 1.0        | -42.6 | -25.0 | -17.6 |       |
| 11.05                                              | -67.8            | V               | 3.0      | -10.3                   | 27.9   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| <b>High Channel (2675MHz)+2686.7MHz 1-99, 1-0</b>  |                  |                 |          |                         |        |            |       |       |       |       |
| 4.76                                               | -65.7            | H               | 3.0      | -15.7                   | 33.2   | 1.0        | -47.9 | -25.0 | -22.9 |       |
| 7.84                                               | -68.0            | H               | 3.0      | -13.1                   | 29.9   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 10.13                                              | -68.5            | H               | 3.0      | -10.8                   | 27.3   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| 7.75                                               | -67.4            | V               | 3.0      | -12.6                   | 30.0   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 7.73                                               | -67.8            | V               | 3.0      | -13.0                   | 30.0   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| 10.20                                              | -68.2            | V               | 3.0      | -11.1                   | 27.4   | 1.0        | -37.4 | -25.0 | -12.4 |       |

Rev. 05.21.15



**QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| <b>Company:</b><br><b>Project #:</b><br><b>Date:</b> 05/03/17<br><b>Test Engineer:</b> 31300<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 41, QPSK UL CA 20/20 |                  |                 |          |                         |        |            |       |       |       |       |
| <b>Test Equipment:</b><br>Substitution: Horn T59 Substitution, and 8ft SMA Cable                                                                                             |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                      |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber D                                                                                                                                                                 |                  | 3m Chamber D    |          | Filter                  |        | LTE B41    |       |       |       |       |
| Frequency (GHz)                                                                                                                                                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| <b>Low Channel (2506MHz) + 2525.8MHz 1-99 1-0</b>                                                                                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| 4.87                                                                                                                                                                         | -66.2            | H               | 3.0      | -16.0                   | 33.1   | 1.0        | -48.1 | -25.0 | -23.1 |       |
| 7.68                                                                                                                                                                         | -68.6            | H               | 3.0      | -13.9                   | 30.1   | 1.0        | -42.9 | -25.0 | -17.9 |       |
| 10.25                                                                                                                                                                        | -69.0            | H               | 3.0      | -11.3                   | 27.4   | 1.0        | -37.7 | -25.0 | -12.7 |       |
| 4.90                                                                                                                                                                         | -66.7            | V               | 3.0      | -16.8                   | 33.1   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.69                                                                                                                                                                         | -67.8            | V               | 3.0      | -13.0                   | 30.1   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 10.30                                                                                                                                                                        | -67.8            | V               | 3.0      | -10.7                   | 27.4   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| <b>Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0</b>                                                                                                                          |                  |                 |          |                         |        |            |       |       |       |       |
| 5.15                                                                                                                                                                         | -67.2            | H               | 3.0      | -16.6                   | 32.9   | 1.0        | -48.5 | -25.0 | -23.5 |       |
| 7.75                                                                                                                                                                         | -67.7            | H               | 3.0      | -12.9                   | 30.0   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 10.33                                                                                                                                                                        | -69.0            | H               | 3.0      | -11.3                   | 27.4   | 1.0        | -37.8 | -25.0 | -12.8 |       |
| 5.20                                                                                                                                                                         | -67.3            | V               | 3.0      | -17.1                   | 32.9   | 1.0        | -48.9 | -25.0 | -23.9 |       |
| 7.76                                                                                                                                                                         | -68.4            | V               | 3.0      | -13.6                   | 30.0   | 1.0        | -42.5 | -25.0 | -17.5 |       |
| 10.33                                                                                                                                                                        | -68.3            | V               | 3.0      | -11.2                   | 27.4   | 1.0        | -37.6 | -25.0 | -12.6 |       |
| <b>High Channel (2660.2MHz) + 2680MHz 1-99 1-0</b>                                                                                                                           |                  |                 |          |                         |        |            |       |       |       |       |
| 5.50                                                                                                                                                                         | -67.6            | H               | 3.0      | -16.4                   | 32.5   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 7.73                                                                                                                                                                         | -68.5            | H               | 3.0      | -13.7                   | 30.0   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| 10.70                                                                                                                                                                        | -68.9            | H               | 3.0      | -11.2                   | 27.6   | 1.0        | -37.8 | -25.0 | -12.8 |       |
| 5.60                                                                                                                                                                         | -67.7            | V               | 3.0      | -16.6                   | 32.4   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 7.73                                                                                                                                                                         | -67.4            | V               | 3.0      | -12.6                   | 30.0   | 1.0        | -41.6 | -25.0 | -16.6 |       |
| 10.70                                                                                                                                                                        | -68.7            | V               | 3.0      | -11.4                   | 27.6   | 1.0        | -38.0 | -25.0 | -13.0 |       |
| Rev. 05.21.15                                                                                                                                                                |                  |                 |          |                         |        |            |       |       |       |       |

**16QAM LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)**

**High Frequency Substitution Measurement**  
**UL Fremont Radiated Chamber**

**Company:**  
**Project #:**  
**Date:** 05/03/17  
**Test Engineer:** 31300  
**Configuration:** EUT Only  
**Mode:** LTE Band 41, 16QAM UL CA 20/20

**Test Equipment:**  
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

**Chamber**  
 3m Chamber D

**Pre-amplifier**  
 3m Chamber D

**Filter**  
 Filter

**Limit**  
 LTE B41

| Frequency<br>(GHz)                                  | SA reading<br>(dBm) | Ant. Pol.<br>(H/V) | Distance | EIRP @ TX<br>Ant End<br>(dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------------|---------------------|--------------------|----------|-------------------------------|--------|------------|-------|-------|-------|-------|
| <b>Low Channel (2506MHz) + 2525.8MHz 1-99 1-0</b>   |                     |                    |          |                               |        |            |       |       |       |       |
| 4.87                                                | -66.3               | H                  | 3.0      | -16.1                         | 33.1   | 1.0        | -48.2 | -25.0 | -23.2 |       |
| 7.68                                                | -68.1               | H                  | 3.0      | -13.4                         | 30.1   | 1.0        | -42.4 | -25.0 | -17.4 |       |
| 10.25                                               | -67.6               | H                  | 3.0      | -9.9                          | 27.4   | 1.0        | -36.3 | -25.0 | -11.3 |       |
| 4.90                                                | -66.4               | V                  | 3.0      | -16.5                         | 33.1   | 1.0        | -48.6 | -25.0 | -23.6 |       |
| 7.69                                                | -67.7               | V                  | 3.0      | -12.9                         | 30.1   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 10.30                                               | -67.7               | V                  | 3.0      | -10.6                         | 27.4   | 1.0        | -37.0 | -25.0 | -12.0 |       |
| <b>Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0</b> |                     |                    |          |                               |        |            |       |       |       |       |
| 5.15                                                | -66.8               | H                  | 3.0      | -16.2                         | 32.9   | 1.0        | -48.1 | -25.0 | -23.1 |       |
| 7.75                                                | -68.6               | H                  | 3.0      | -13.9                         | 30.0   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 10.33                                               | -68.7               | H                  | 3.0      | -11.0                         | 27.4   | 1.0        | -37.4 | -25.0 | -12.4 |       |
| 5.20                                                | -66.9               | V                  | 3.0      | -16.6                         | 32.9   | 1.0        | -48.5 | -25.0 | -23.5 |       |
| 7.76                                                | -68.2               | V                  | 3.0      | -13.3                         | 30.0   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| 10.33                                               | -68.9               | V                  | 3.0      | -11.8                         | 27.4   | 1.0        | -38.2 | -25.0 | -13.2 |       |
| <b>High Channel (2660.2MHz) + 2680MHz 1-99 1-0</b>  |                     |                    |          |                               |        |            |       |       |       |       |
| 5.50                                                | -66.3               | H                  | 3.0      | -15.1                         | 32.5   | 1.0        | -46.6 | -25.0 | -21.6 |       |
| 7.73                                                | -67.0               | H                  | 3.0      | -12.3                         | 30.0   | 1.0        | -41.3 | -25.0 | -16.3 |       |
| 10.70                                               | -67.0               | H                  | 3.0      | -9.3                          | 27.6   | 1.0        | -35.9 | -25.0 | -10.9 |       |
| 5.60                                                | -65.7               | V                  | 3.0      | -14.5                         | 32.4   | 1.0        | -45.9 | -25.0 | -20.9 |       |
| 7.73                                                | -68.0               | V                  | 3.0      | -13.1                         | 30.0   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 10.70                                               | -69.0               | V                  | 3.0      | -11.7                         | 27.6   | 1.0        | -38.4 | -25.0 | -13.4 |       |

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