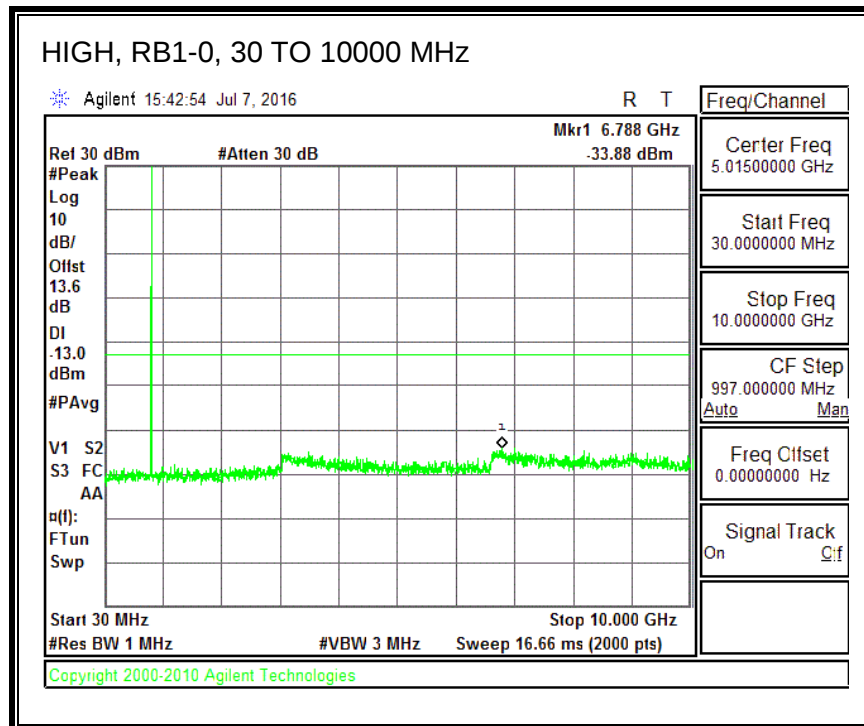
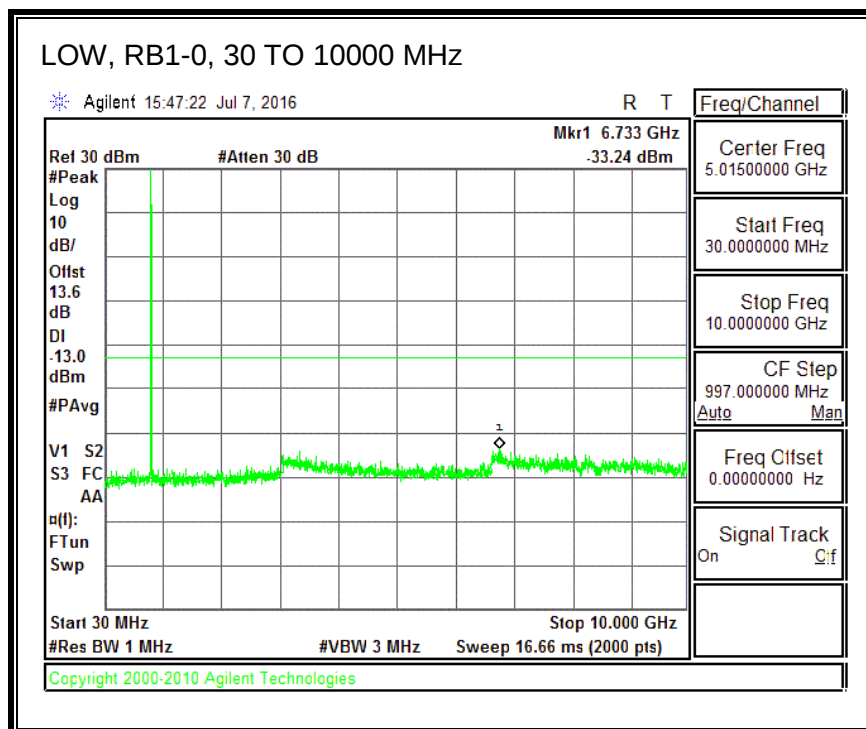
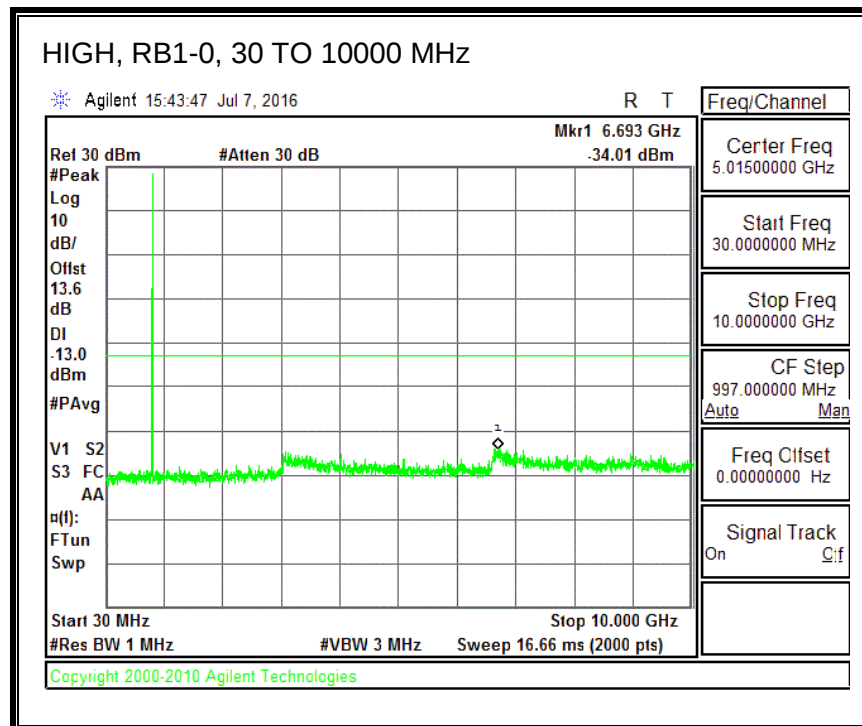
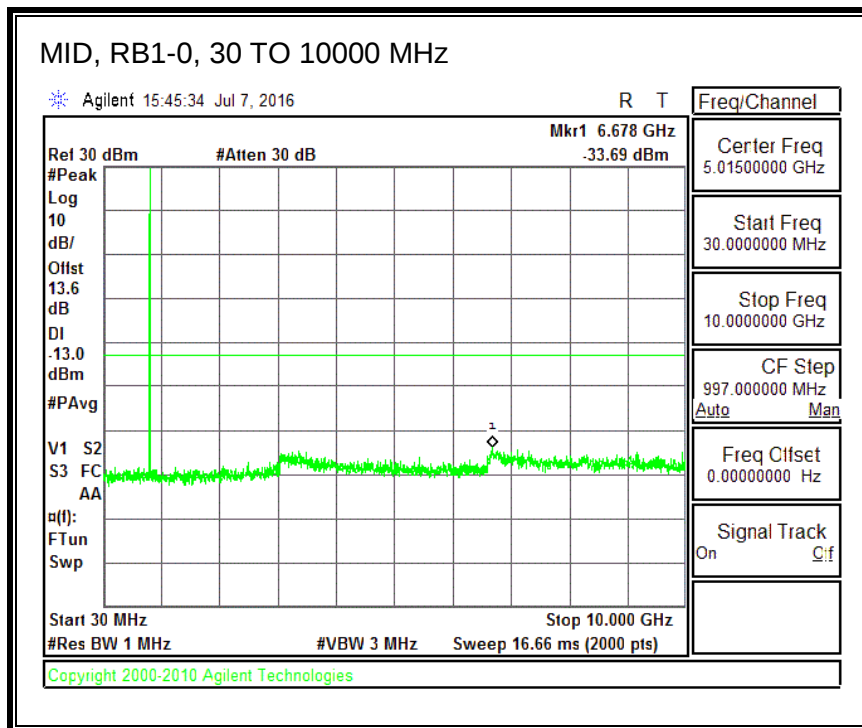


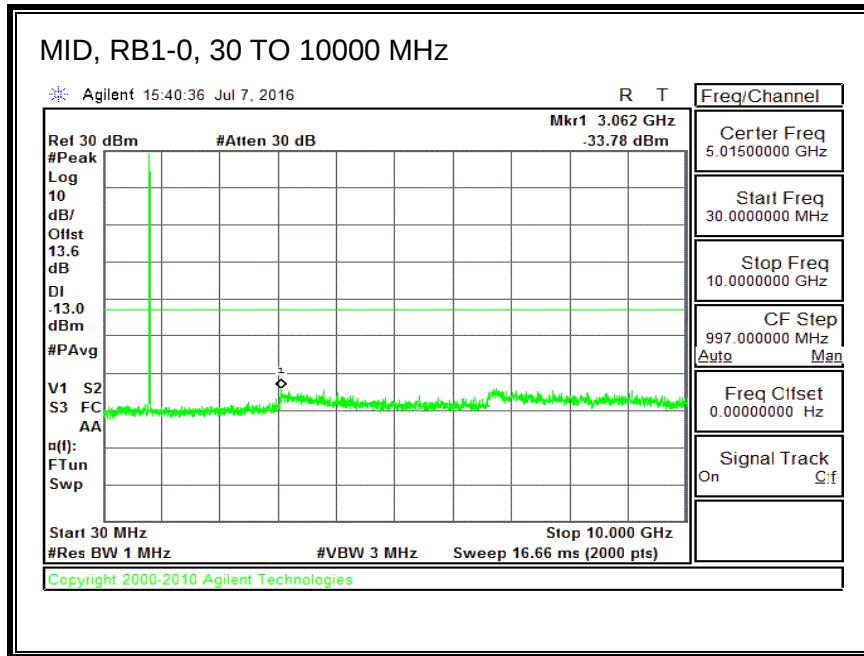


**16QAM, (5.0 MHz BAND WIDTH)**

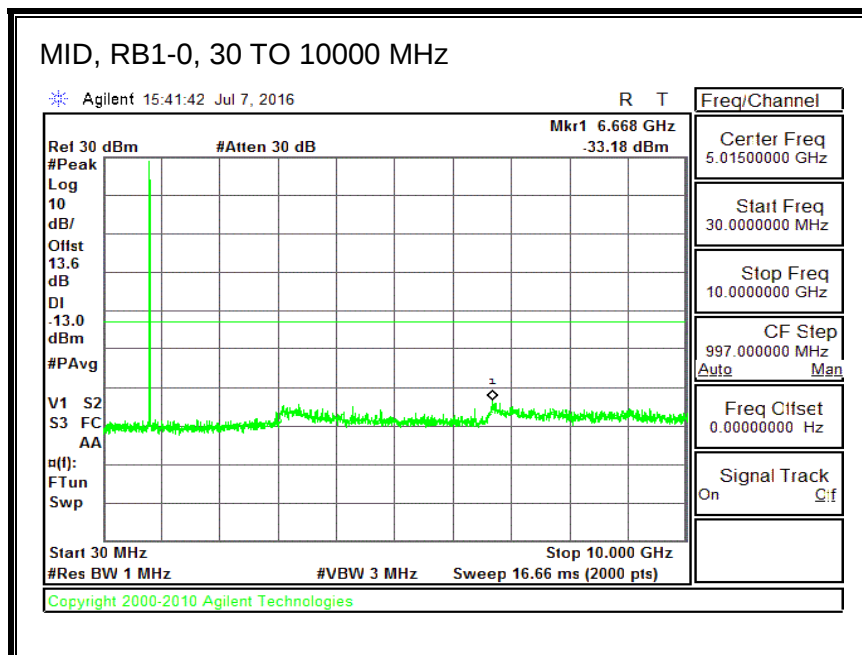




**QPSK, (10.0 MHz BAND WIDTH)**

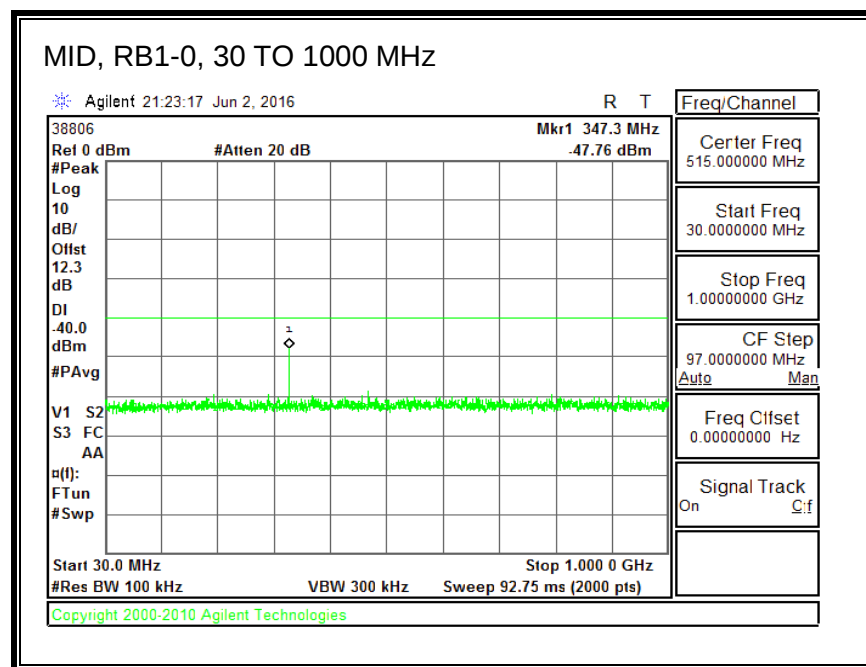
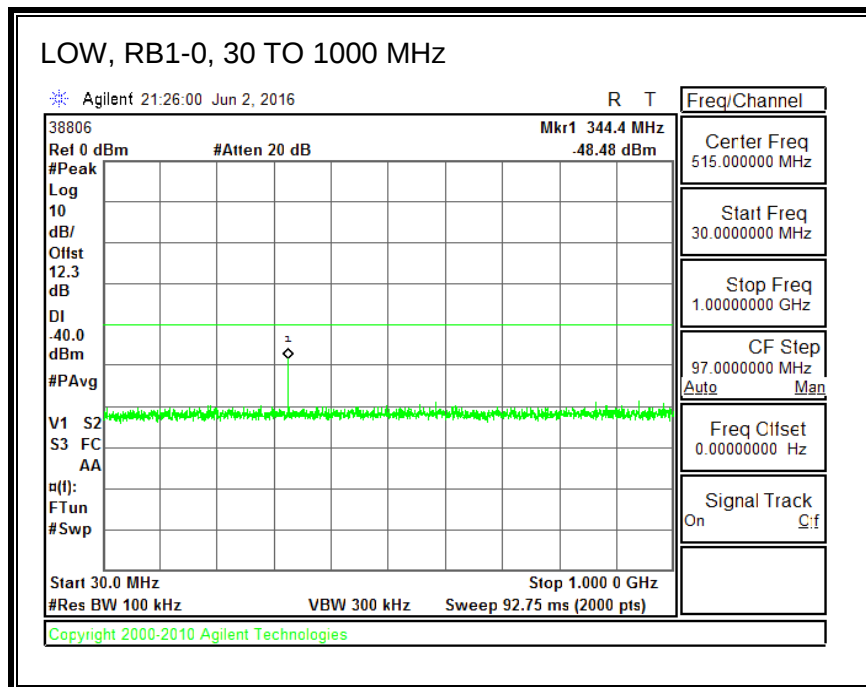


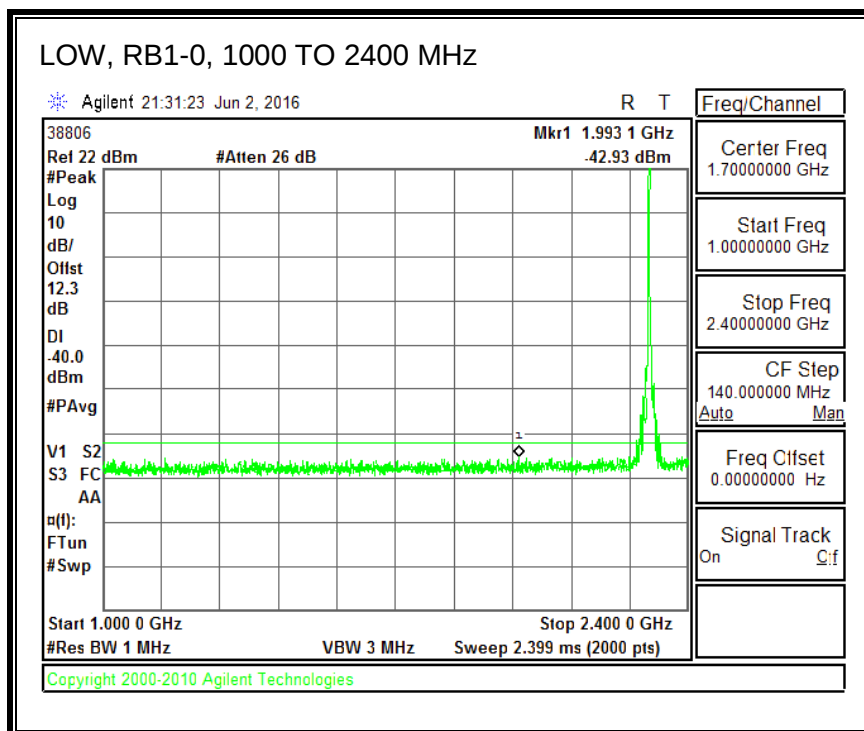
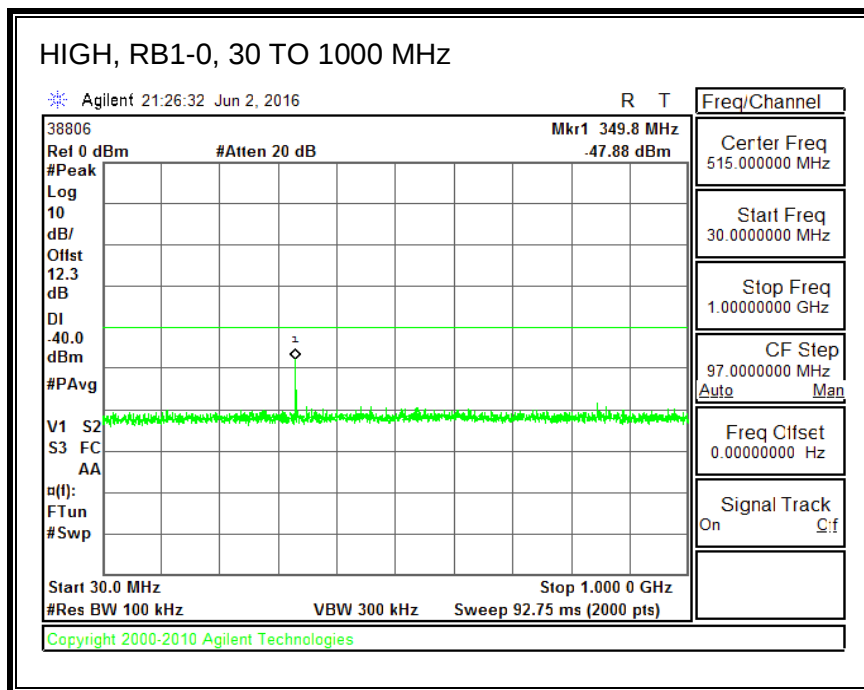
**16QAM, (10.0 MHz BAND WIDTH)**

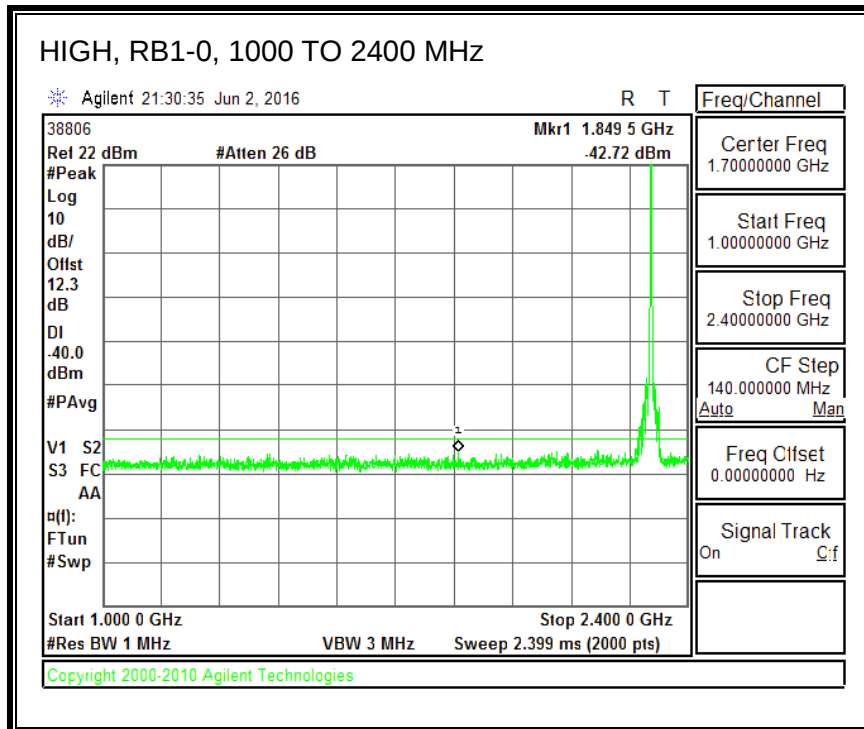
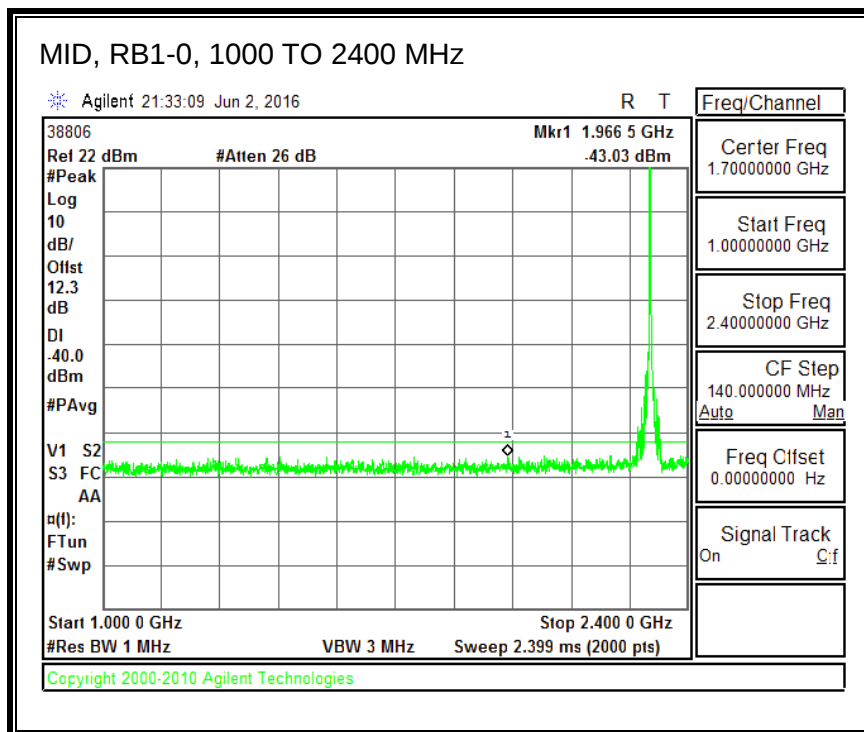


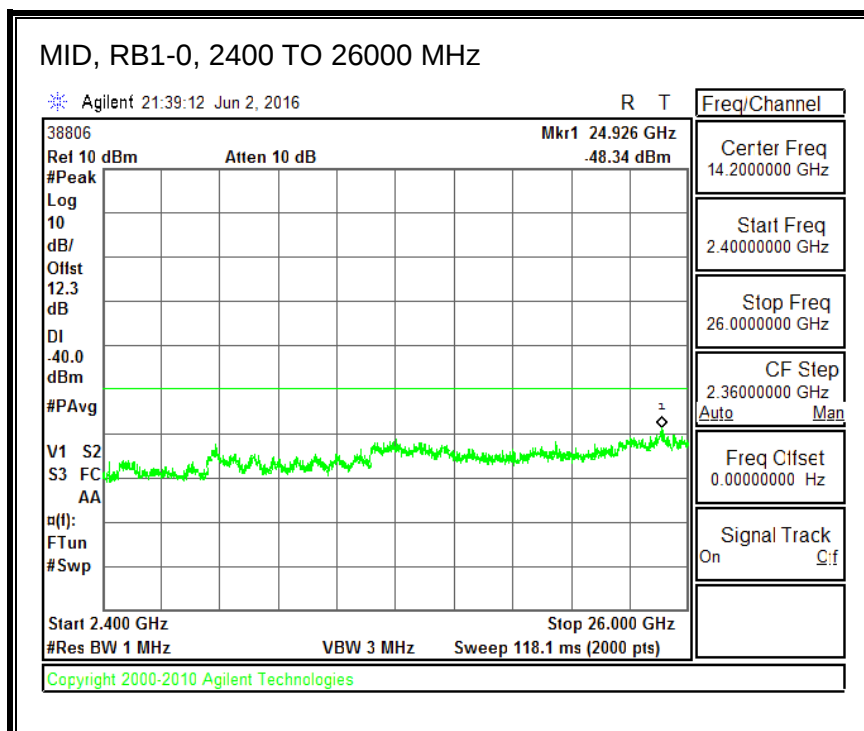
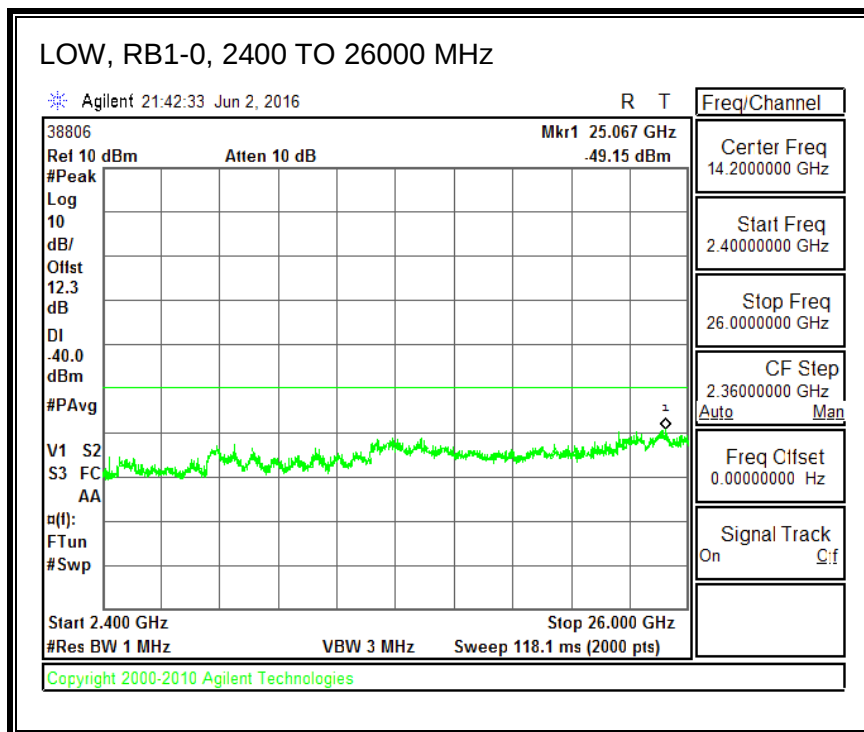
### 8.3.11. LTE BAND 30

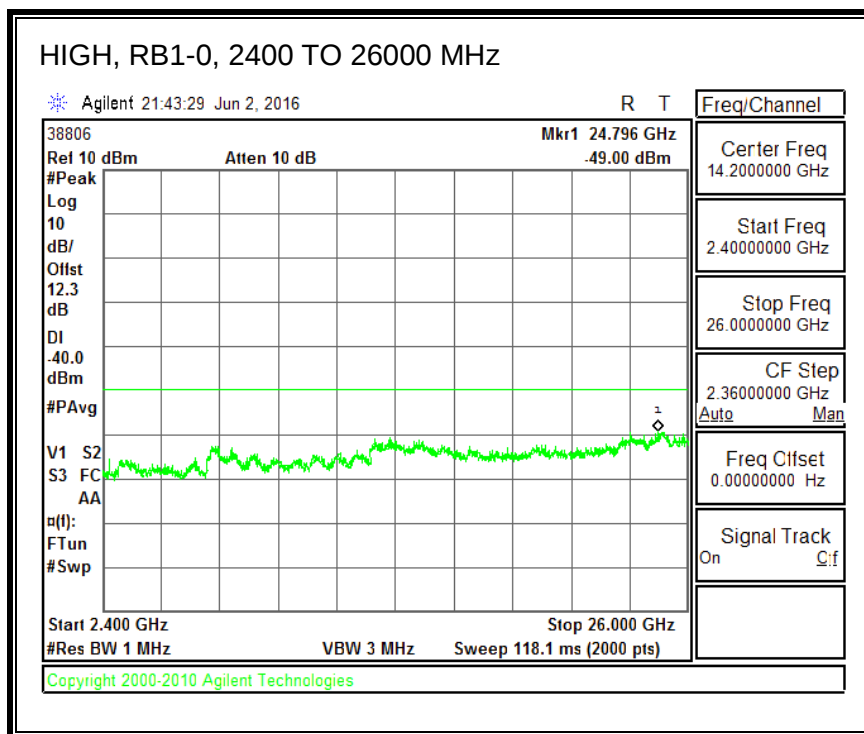
#### QPSK, (5.0 MHz BAND WIDTH)



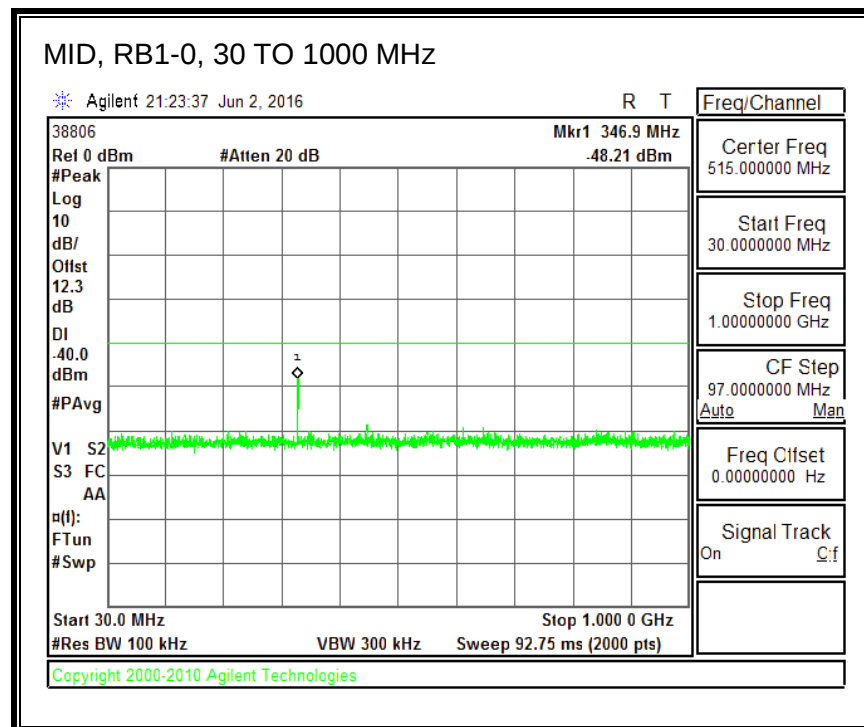
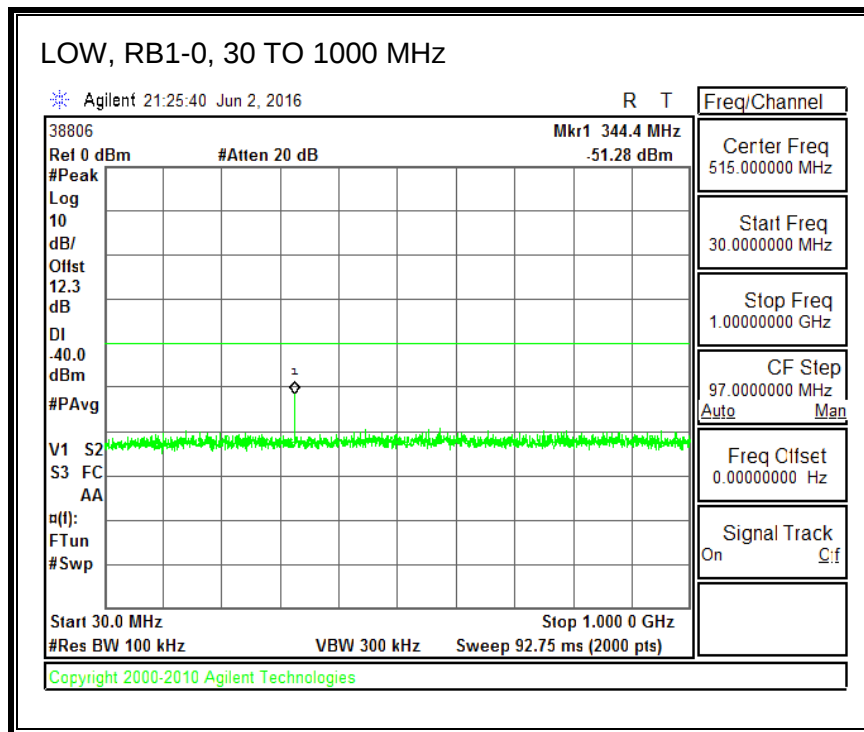


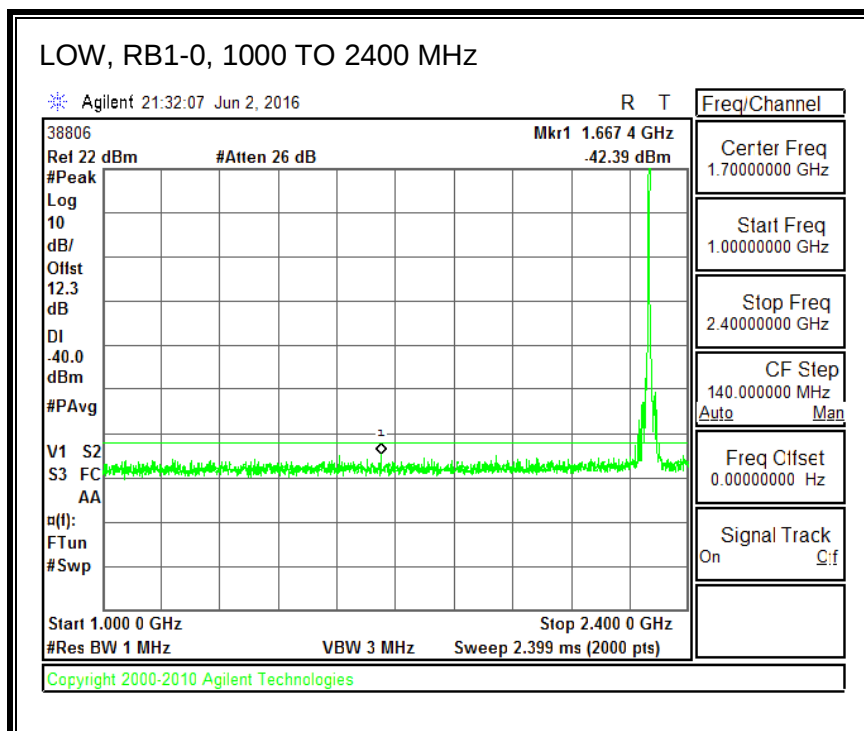
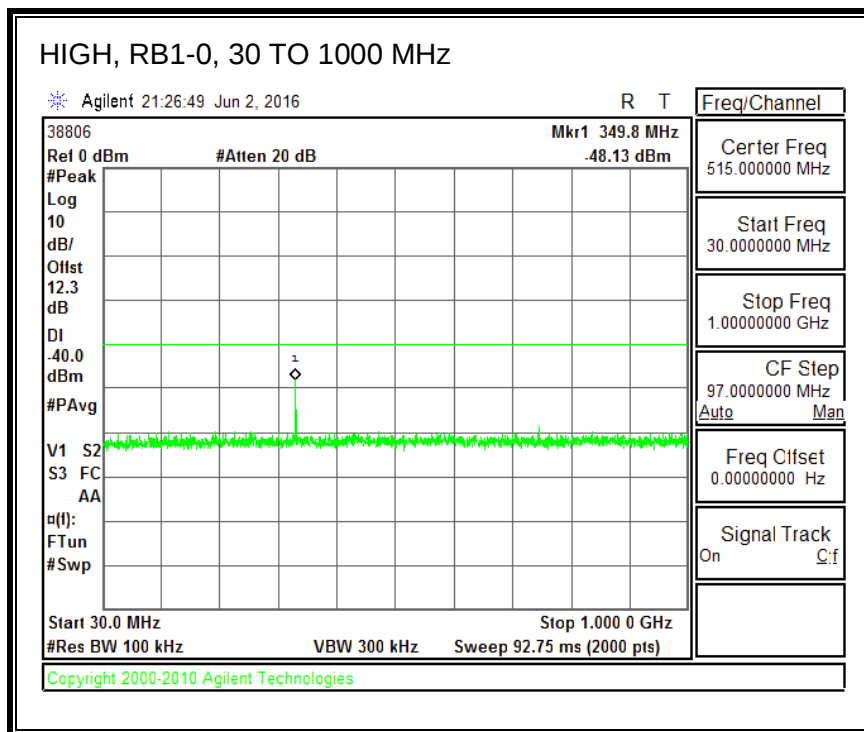


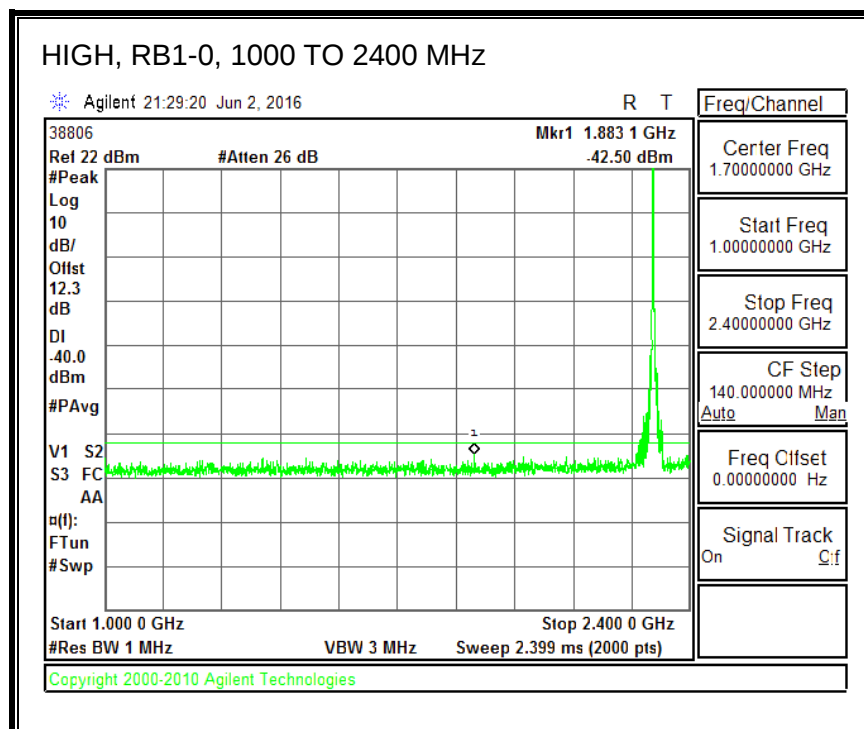
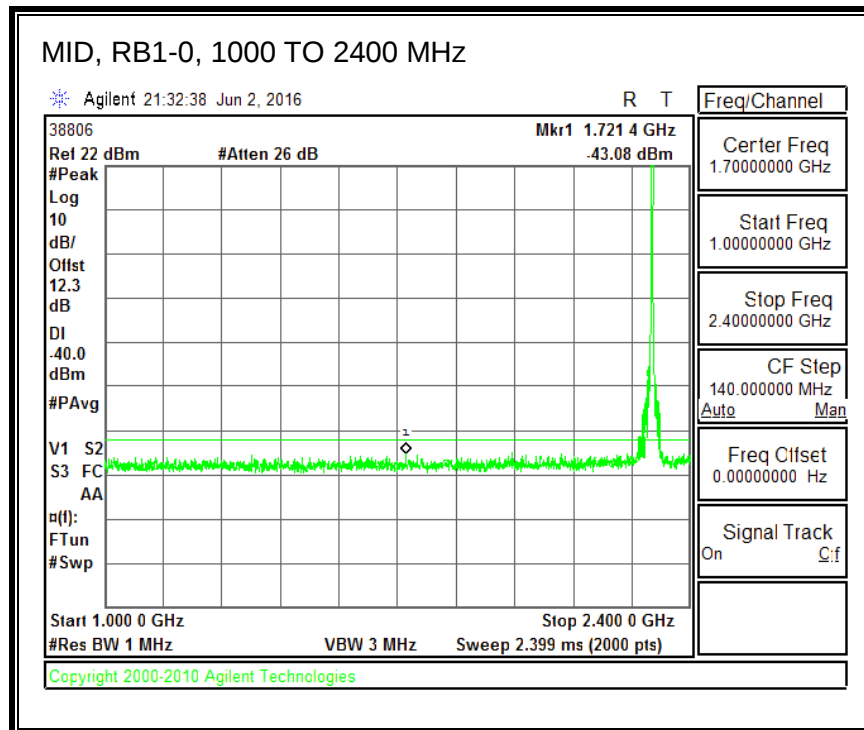


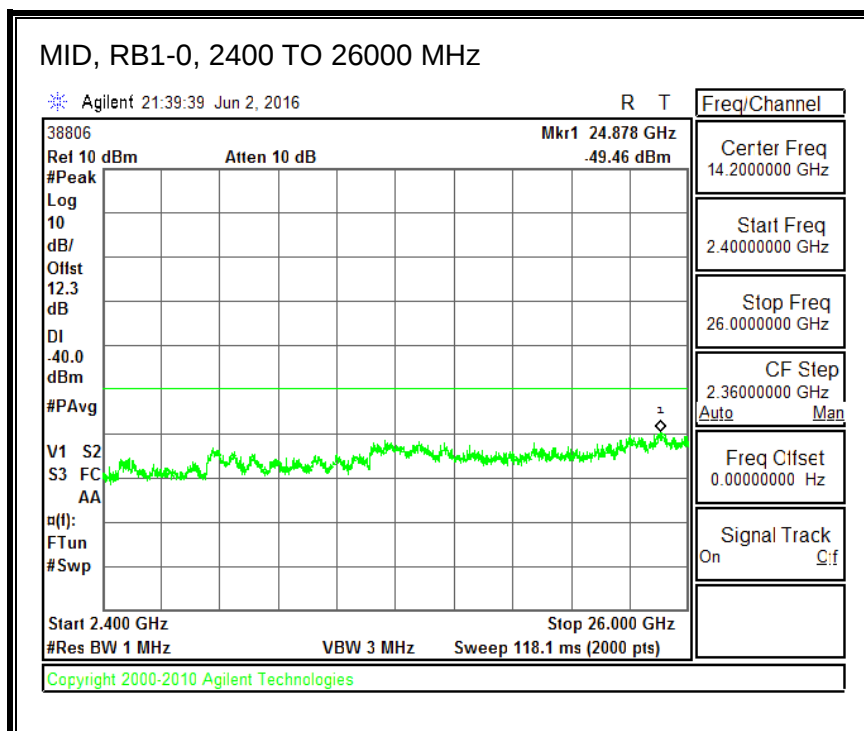
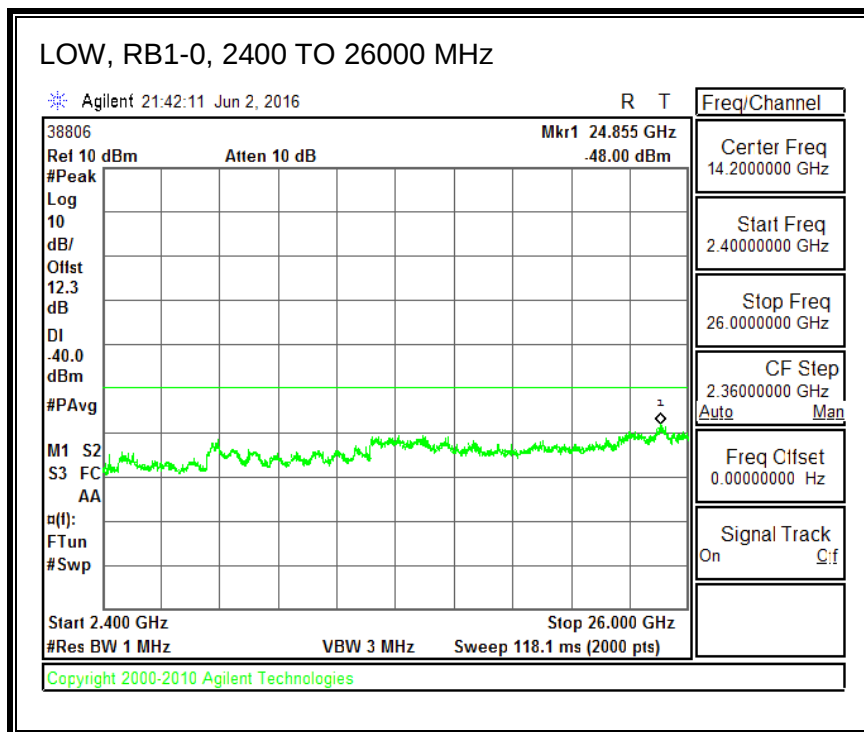


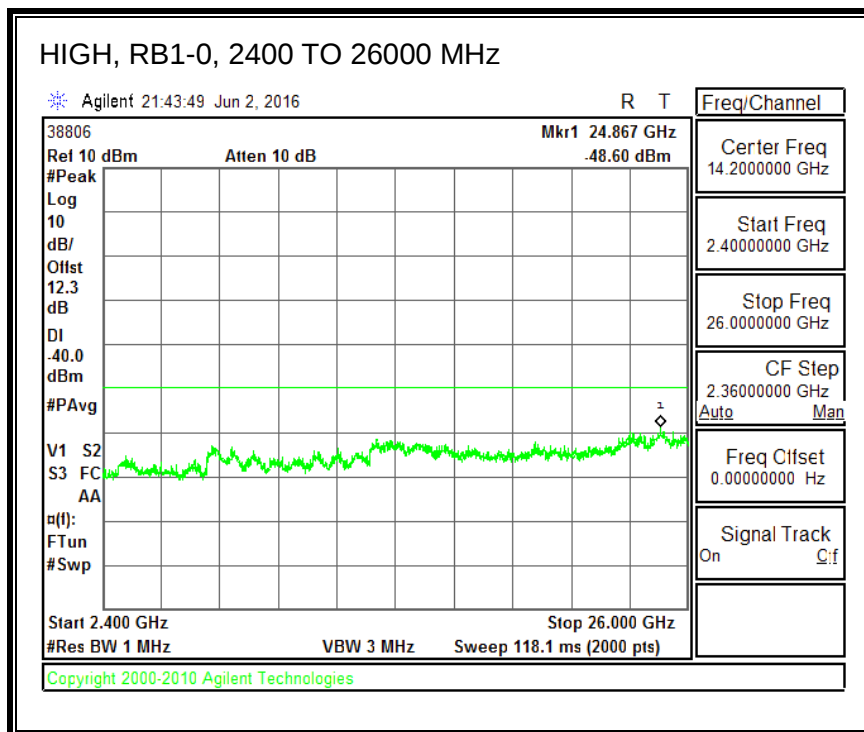
**16QAM, (5.0 MHz BAND WIDTH)**



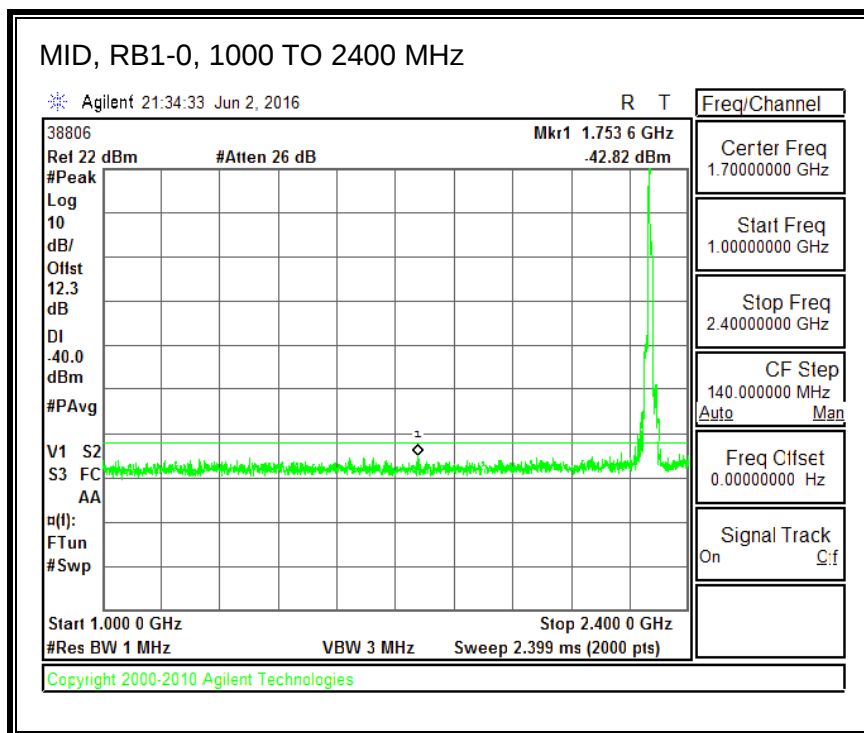
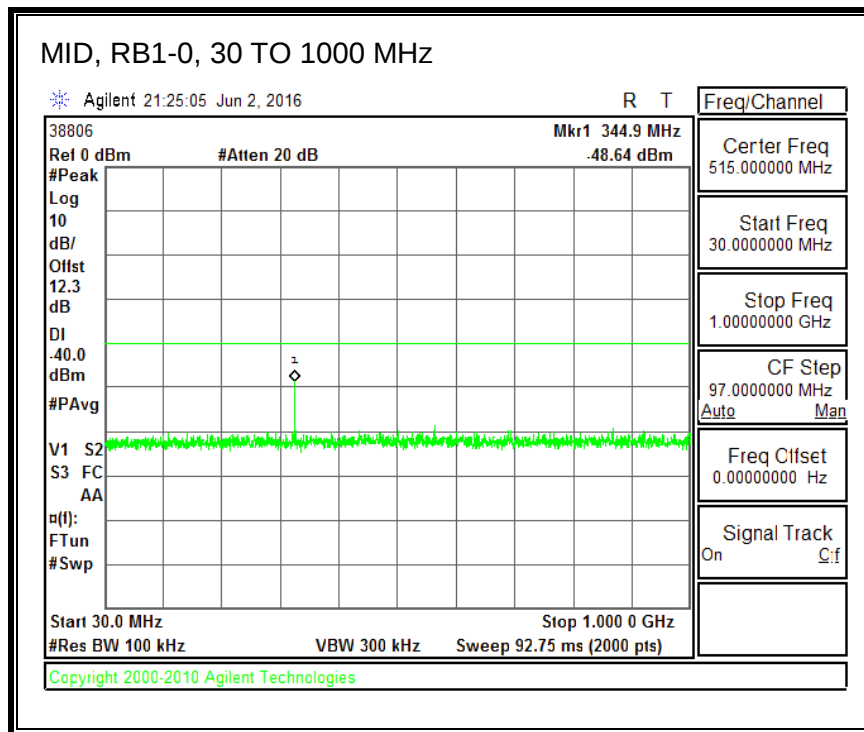


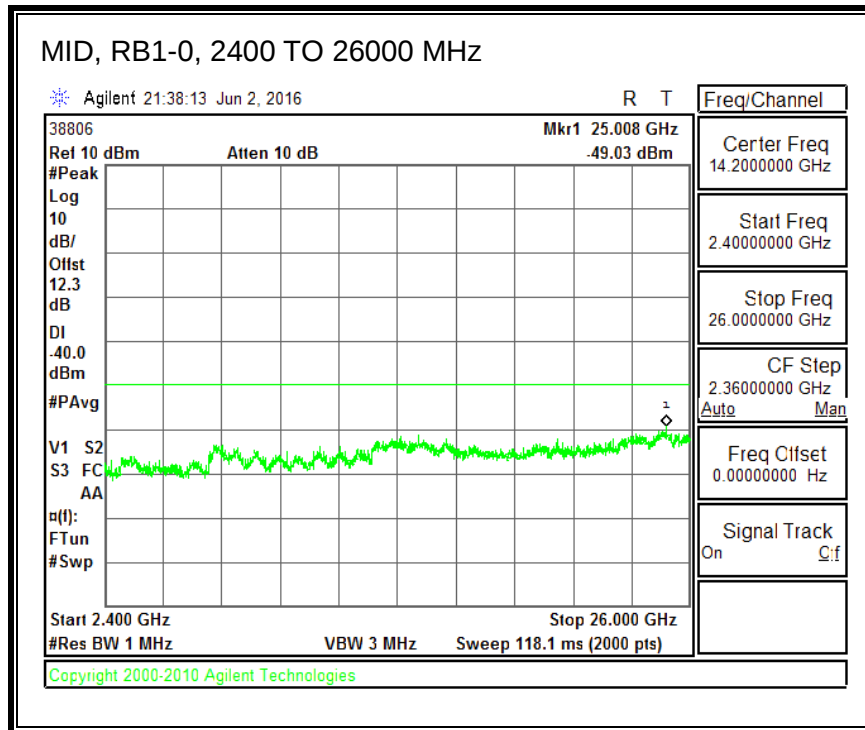




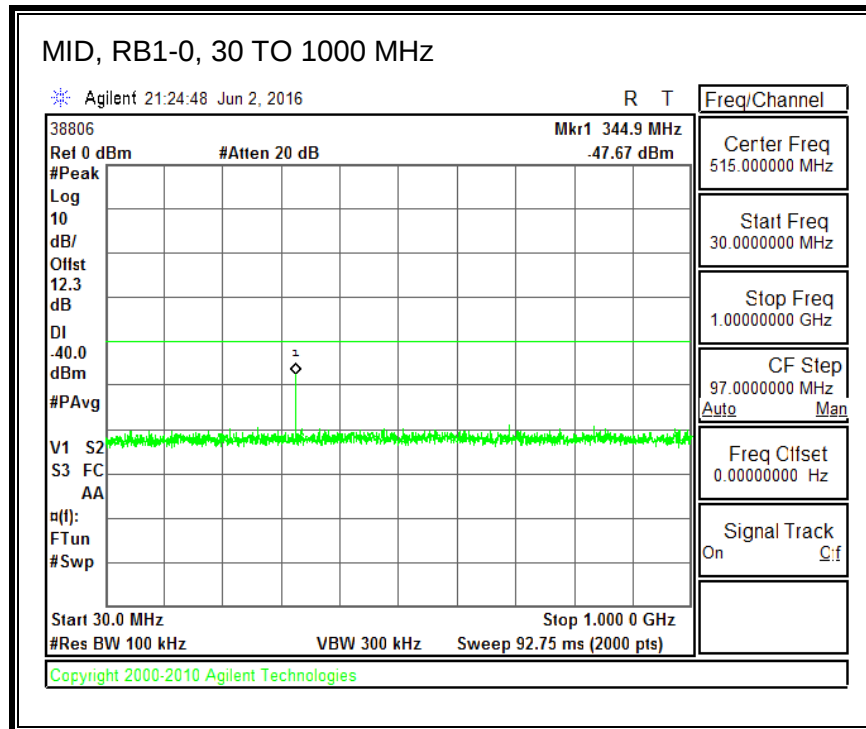


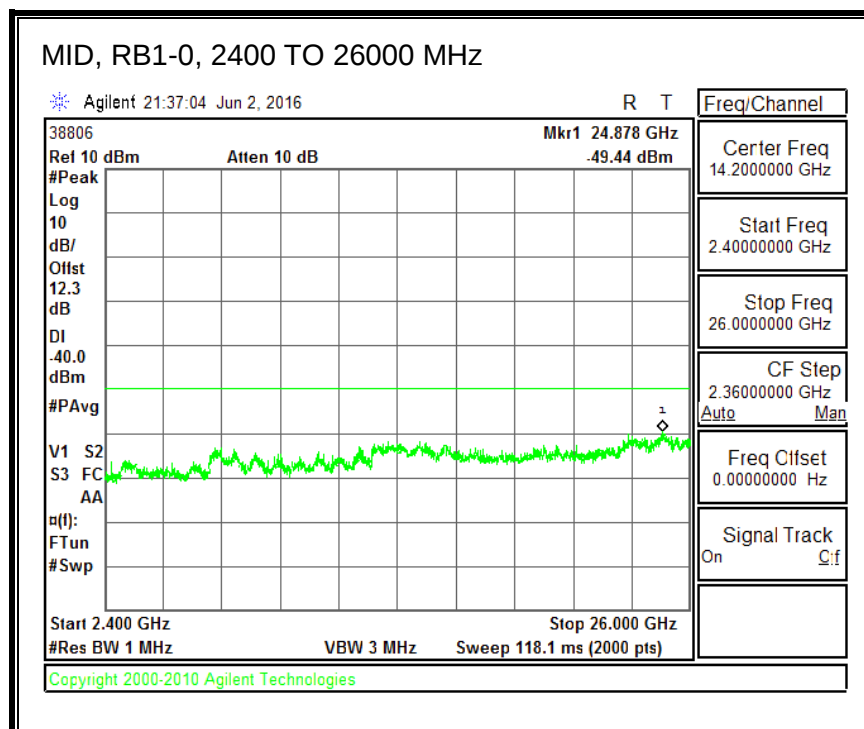
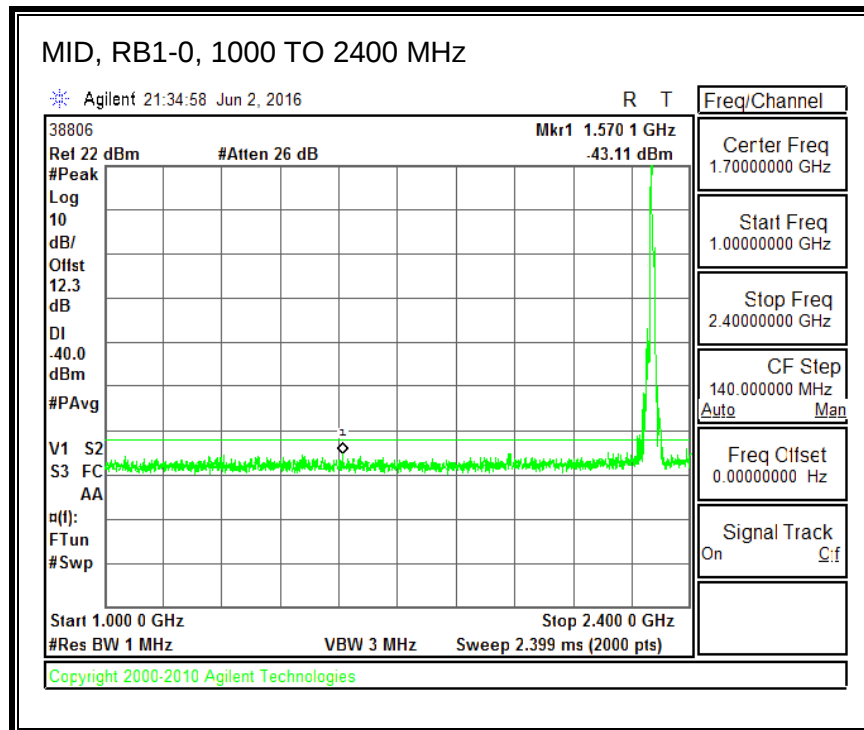
**QPSK, (10.0 MHz BAND WIDTH)**





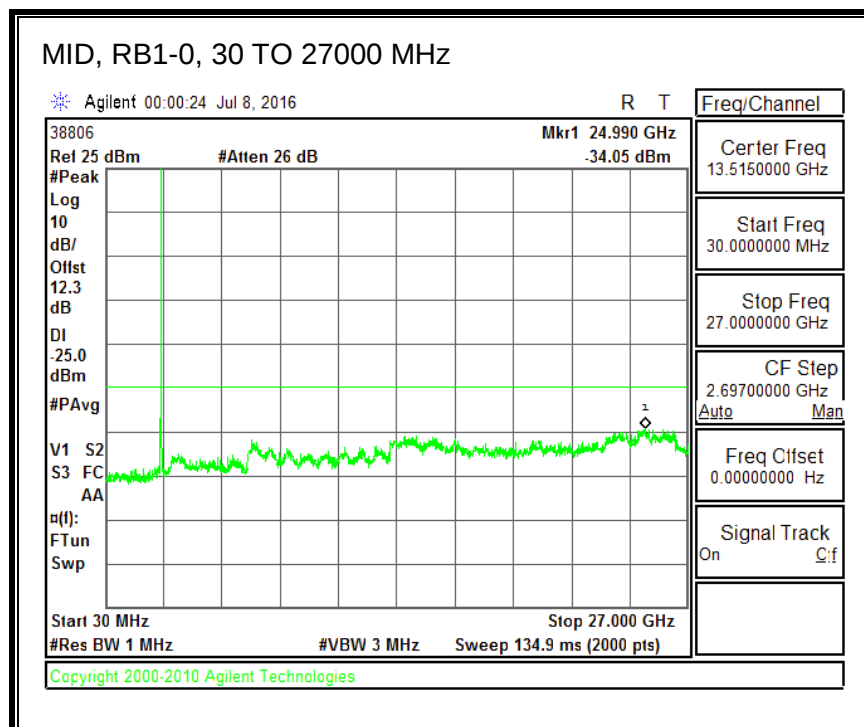
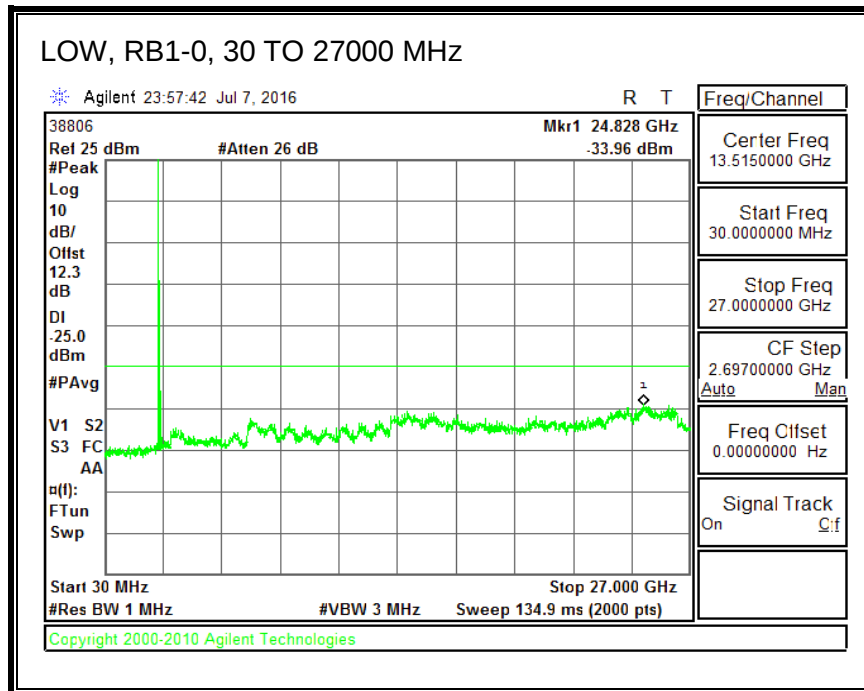
**16QAM, (10.0 MHz BAND WIDTH)**

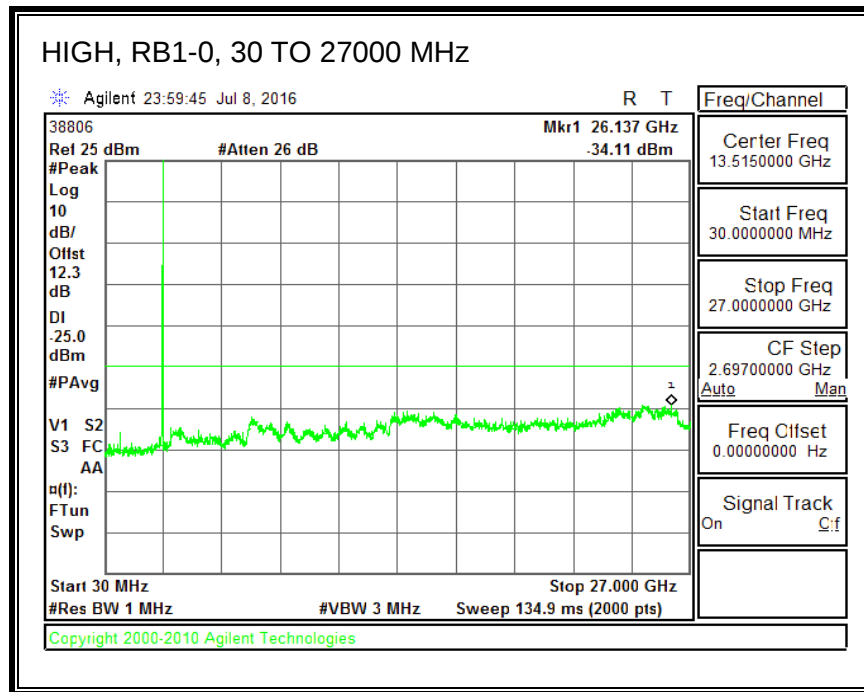




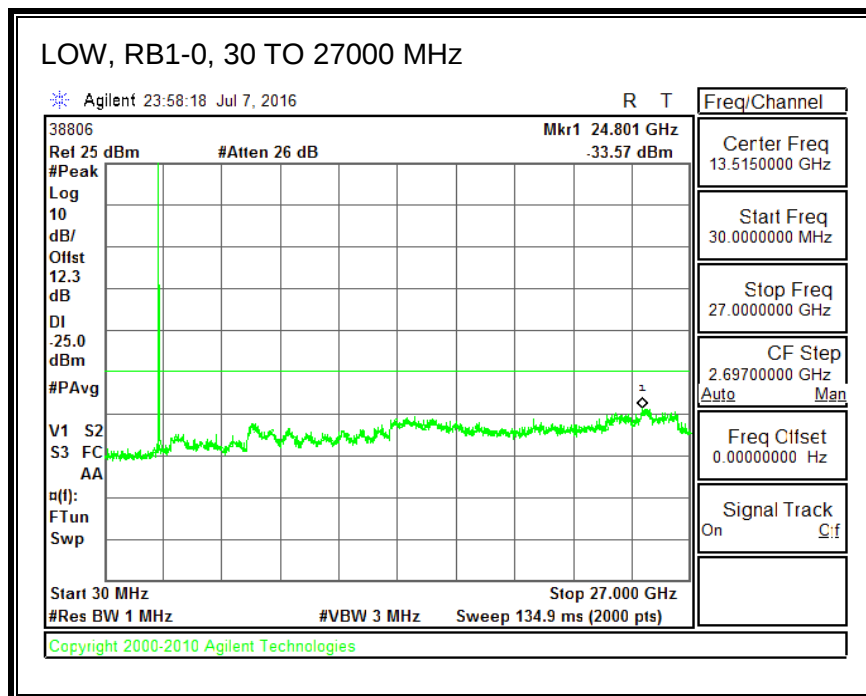
### 8.3.12. LTE BAND 41

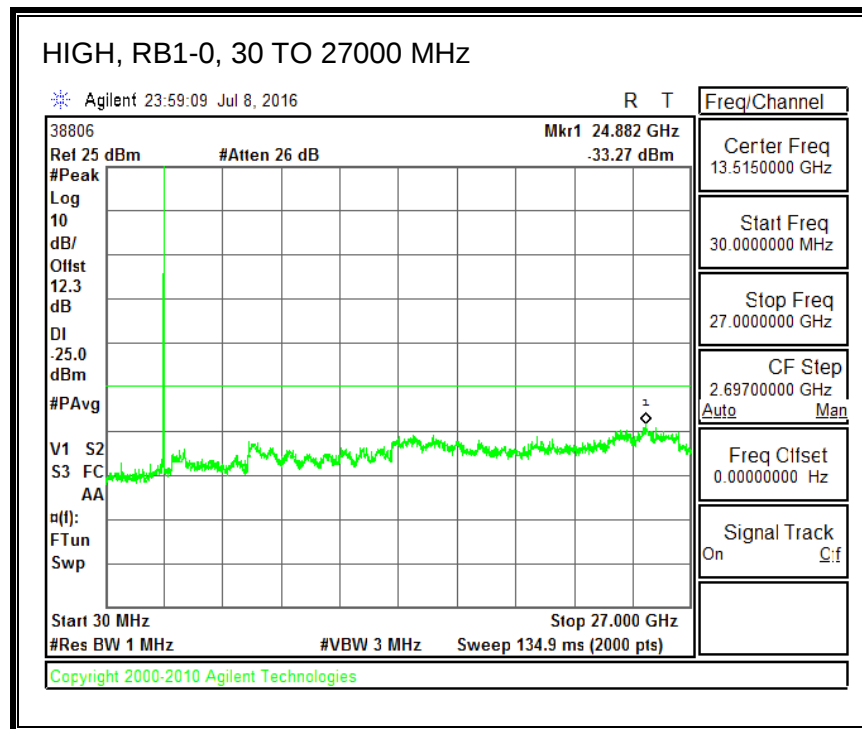
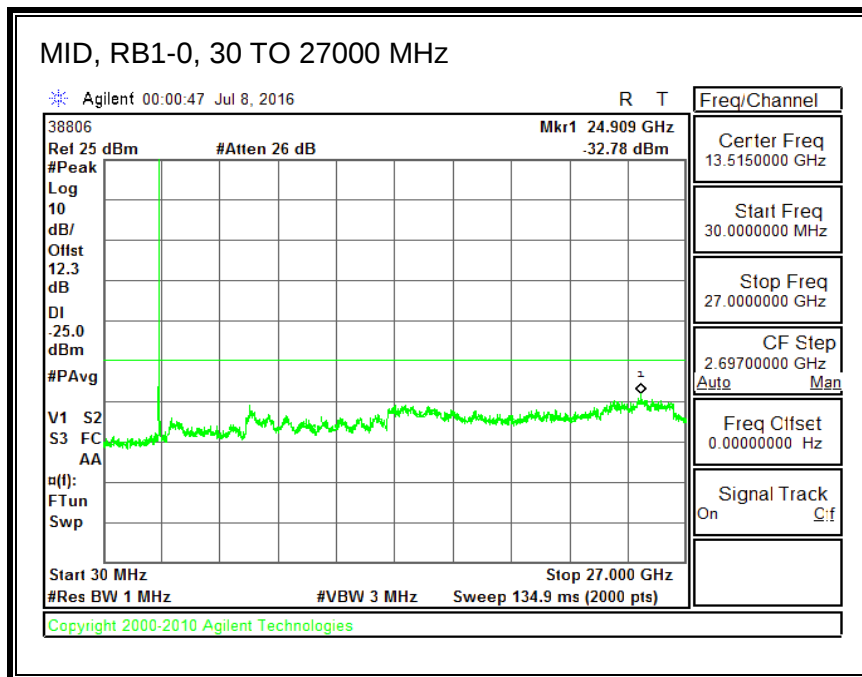
#### QPSK, (5.0 MHz BAND WIDTH)



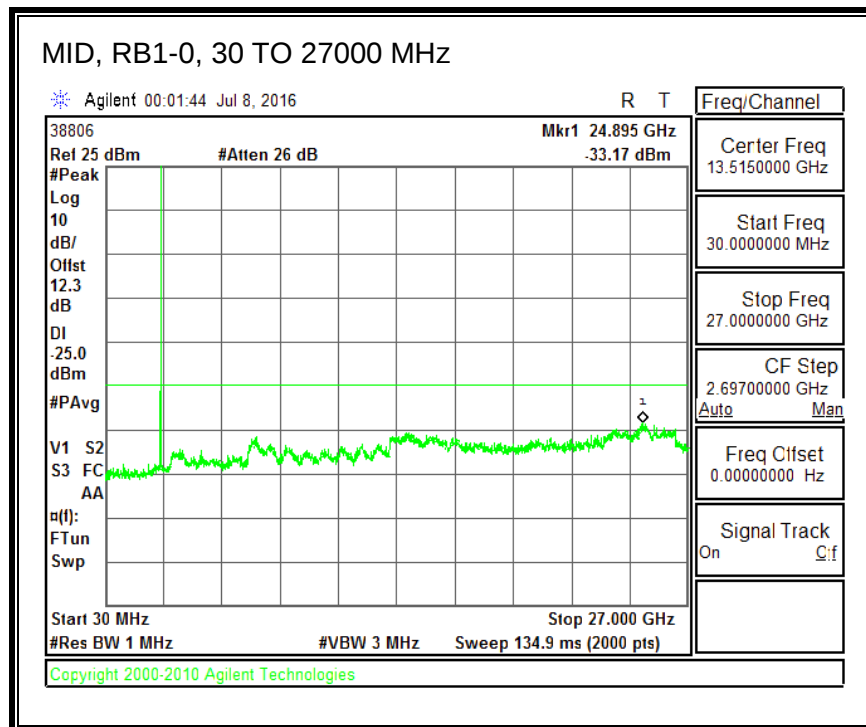
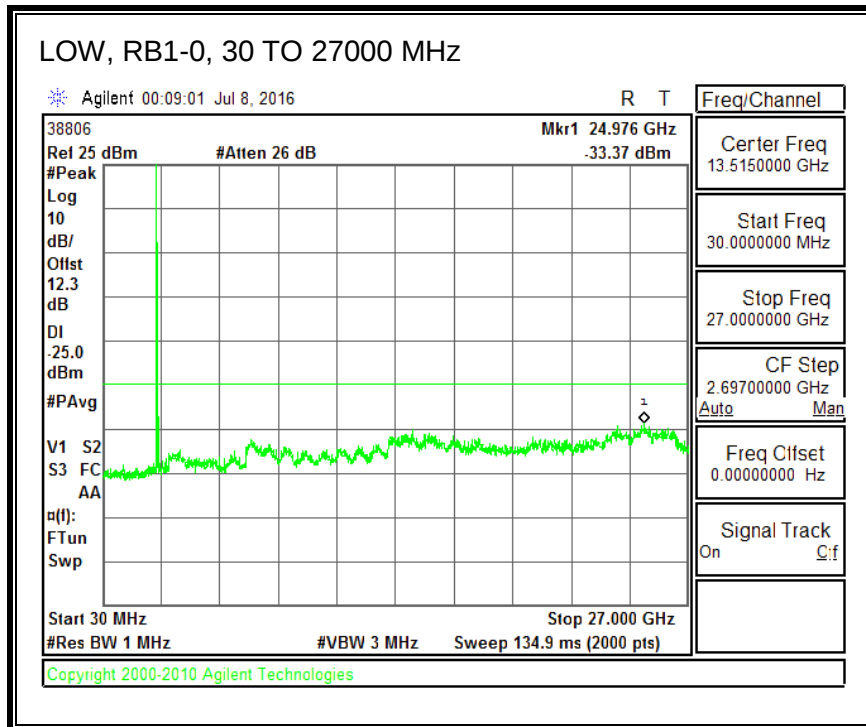


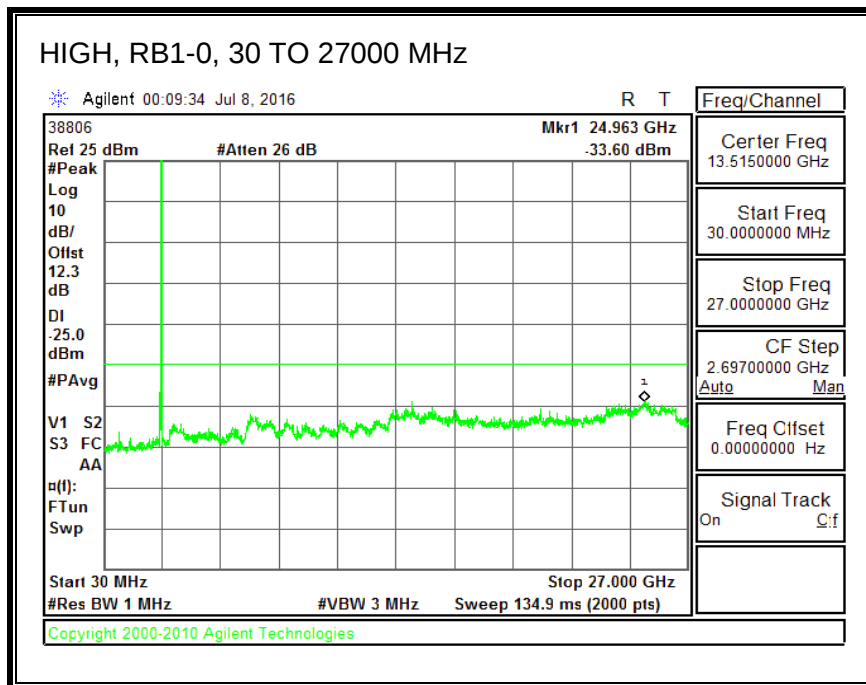
**16QAM, (5.0 MHz BAND WIDTH)**



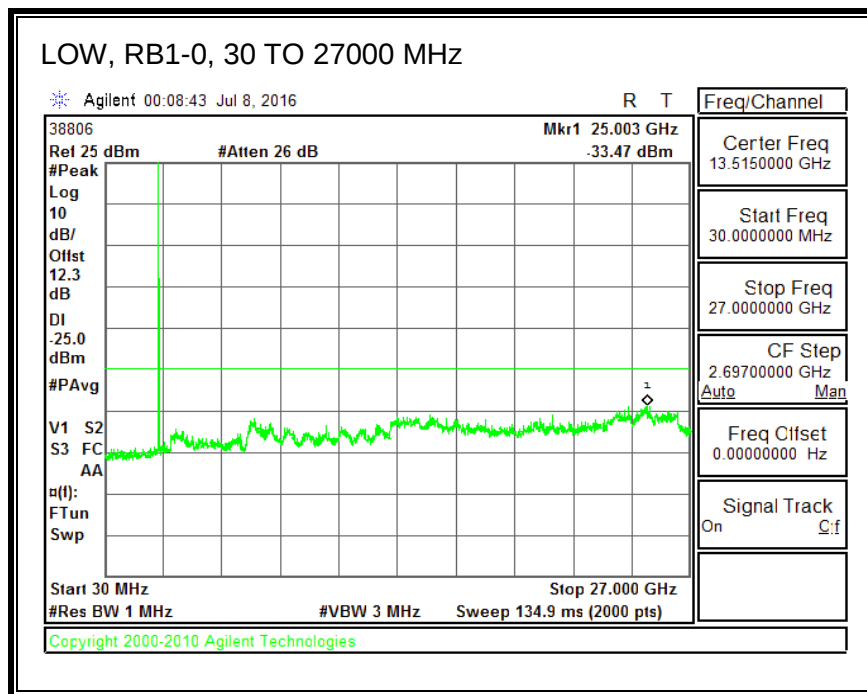


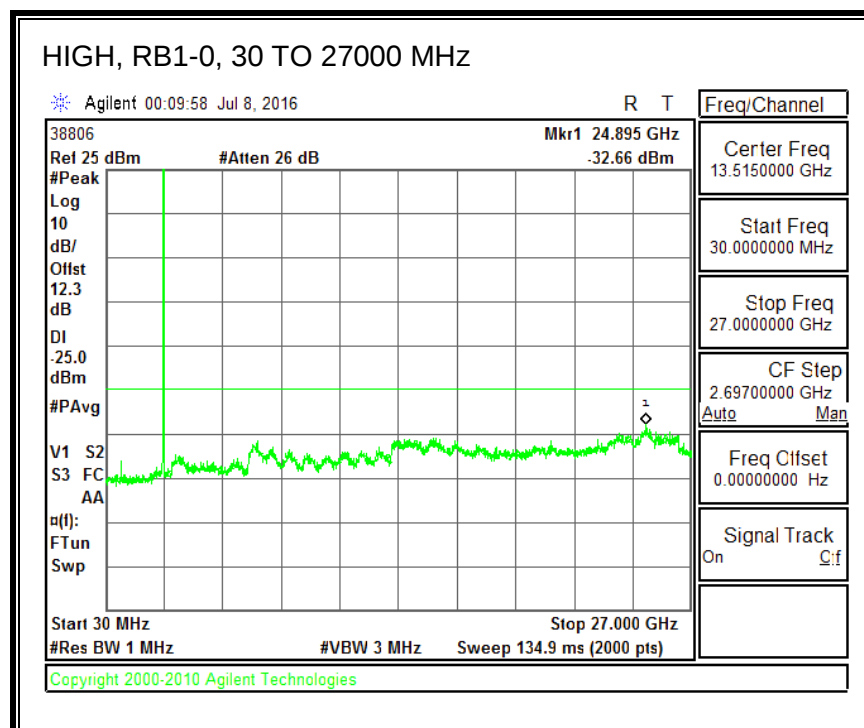
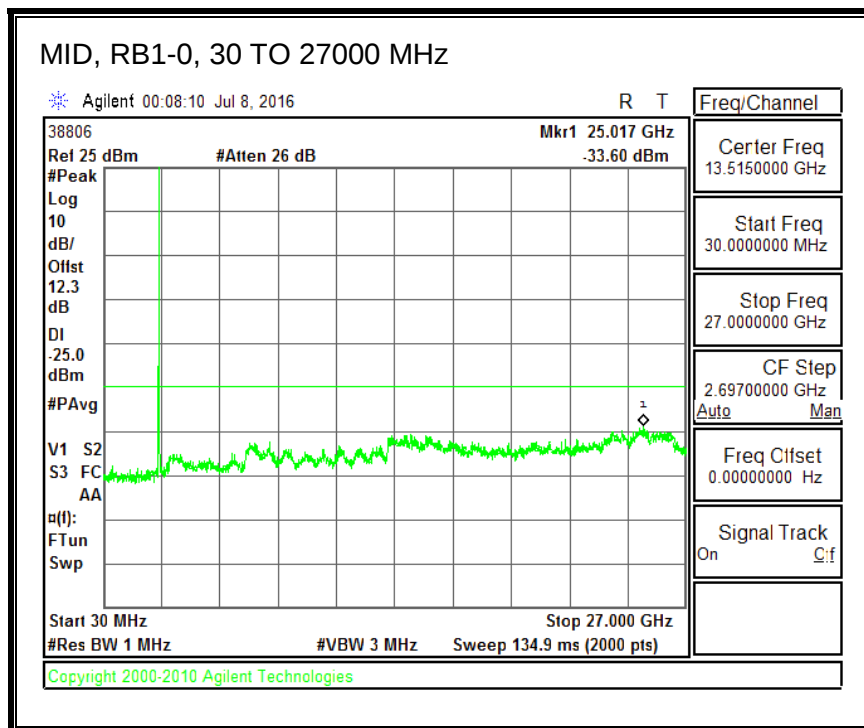
**QPSK, (10.0 MHz BAND WIDTH)**



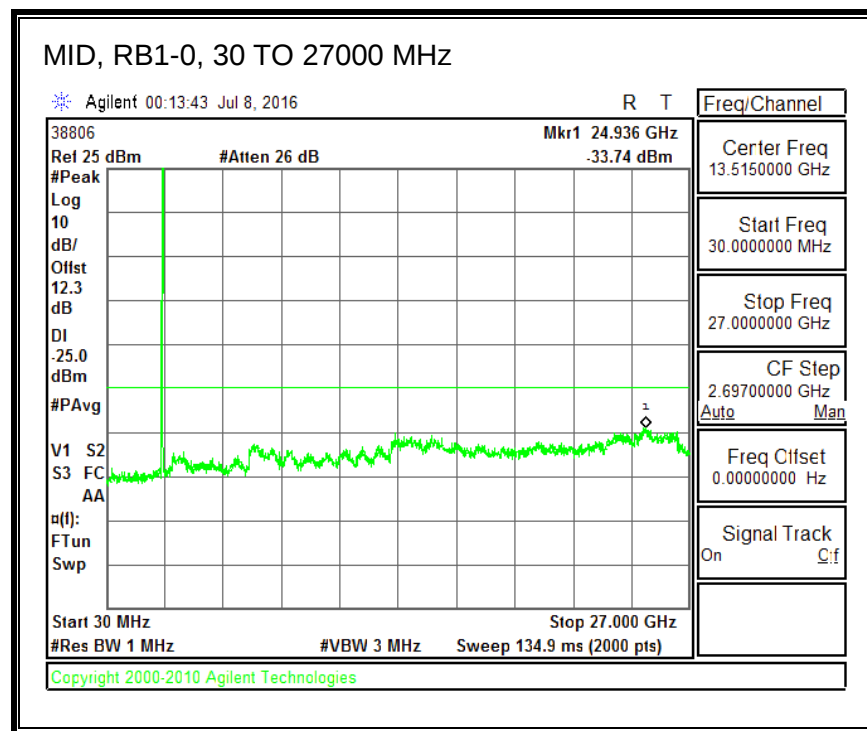
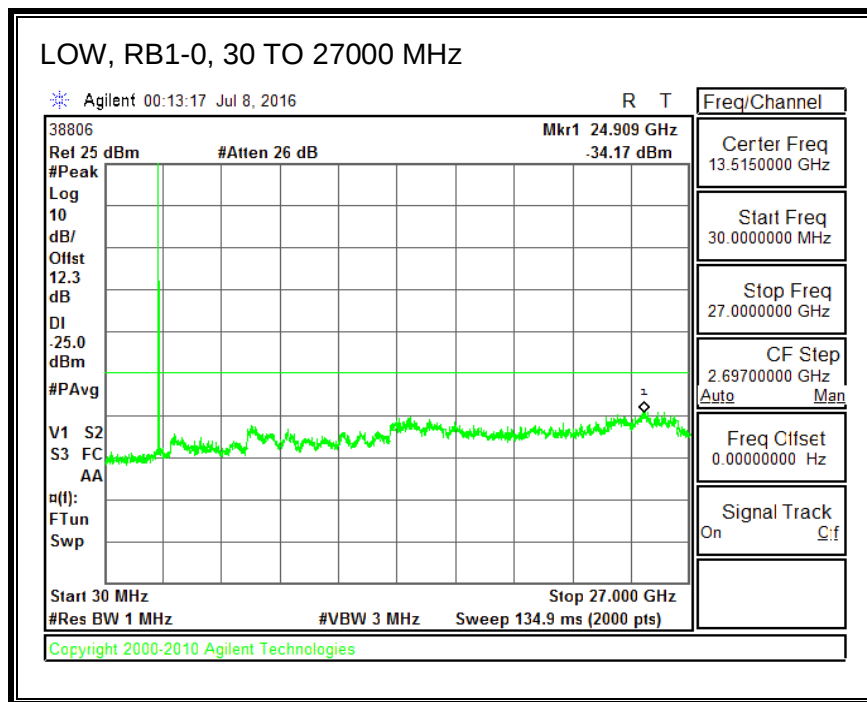


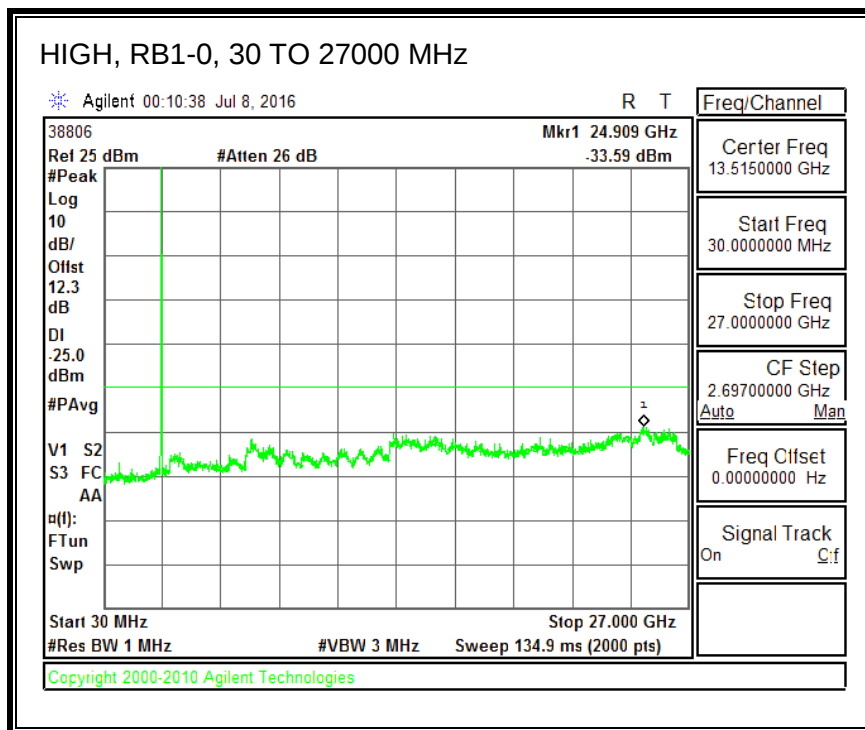
**16QAM, (10.0 MHz BAND WIDTH)**



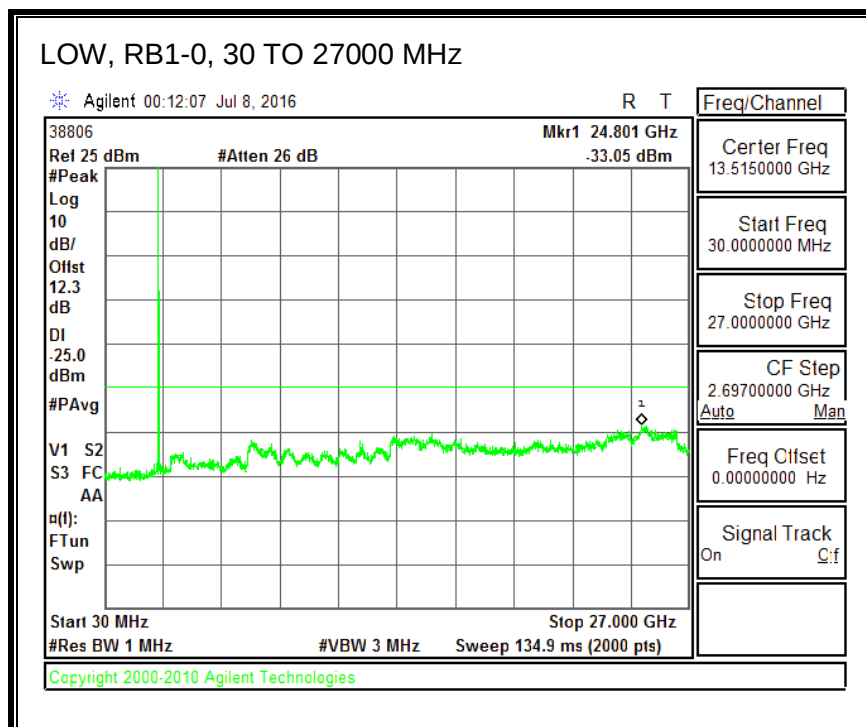


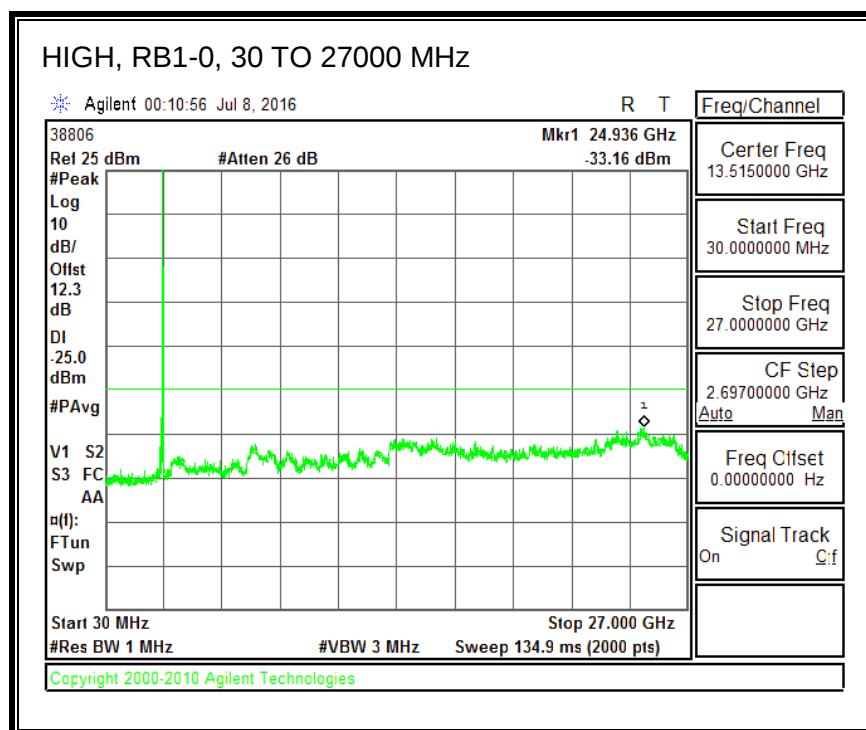
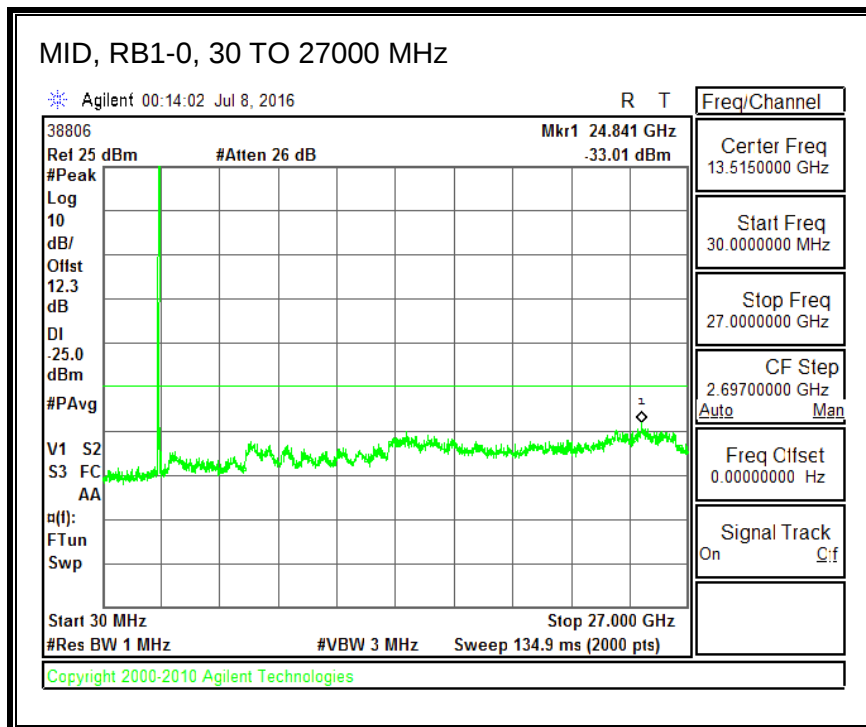
**QPSK, (15.0 MHz BAND WIDTH)**



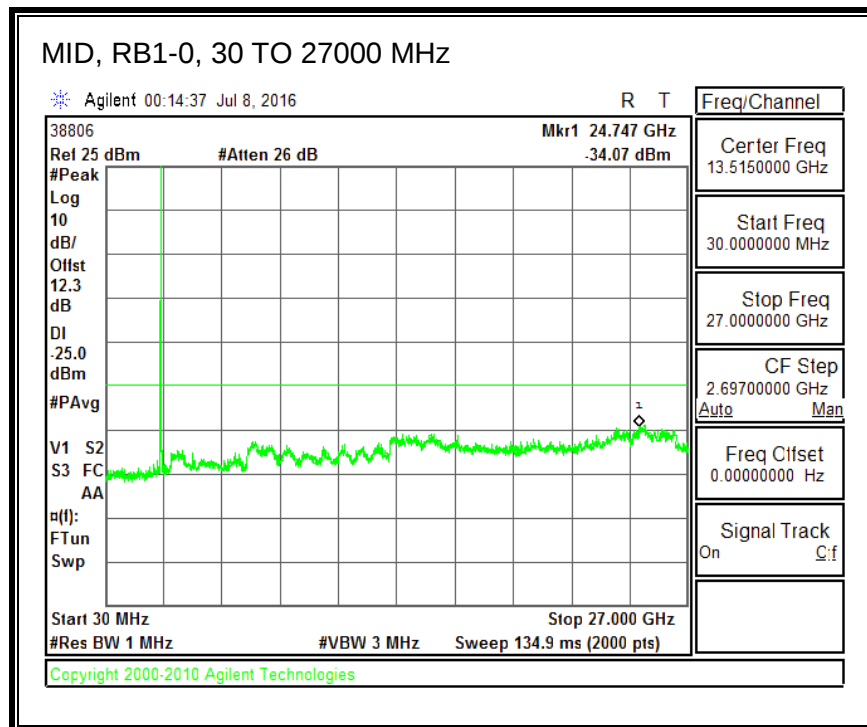
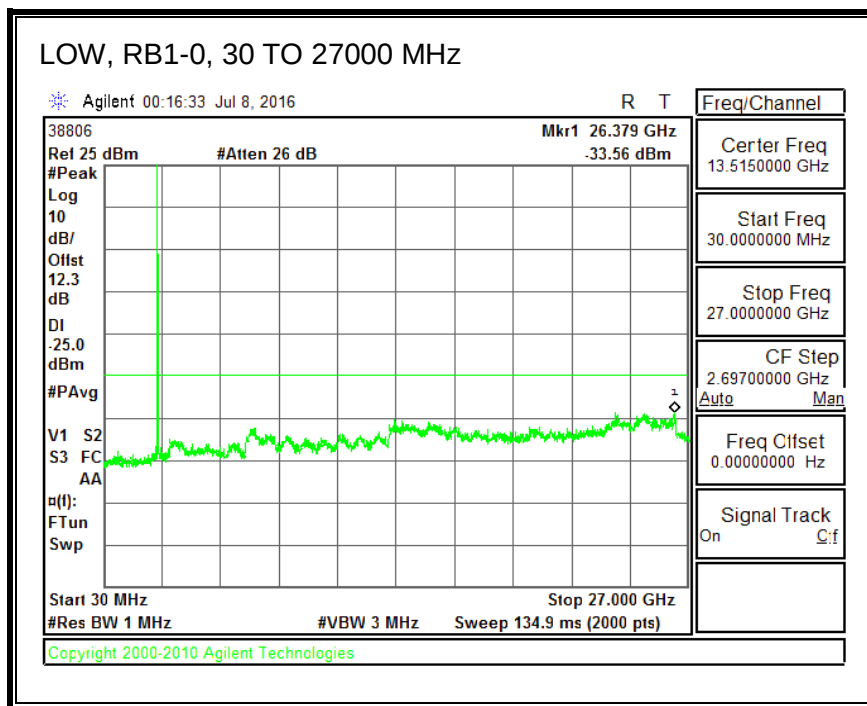


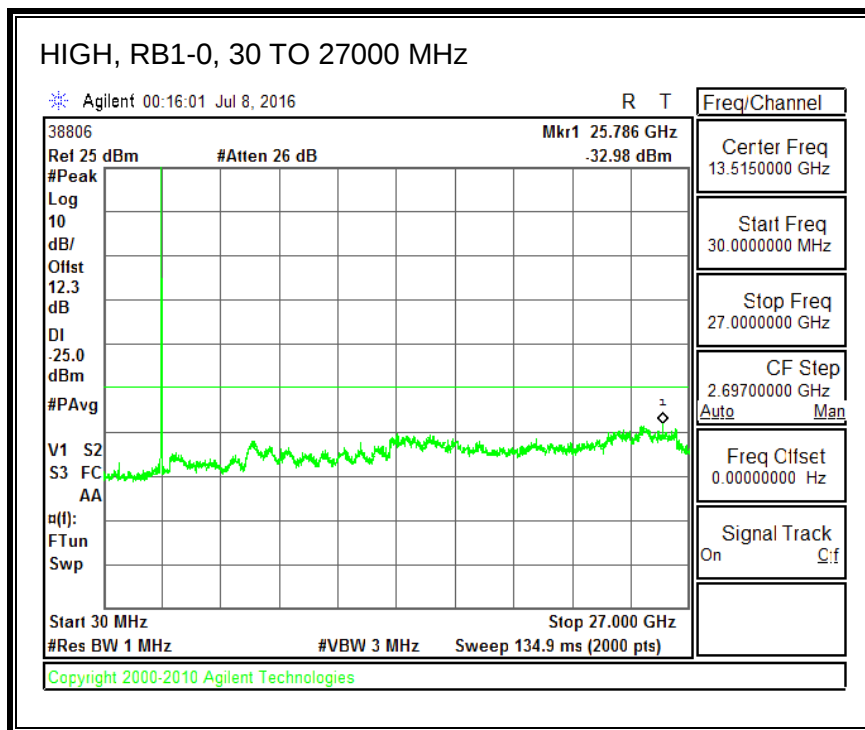
**16QAM, (15.0 MHz BAND WIDTH)**



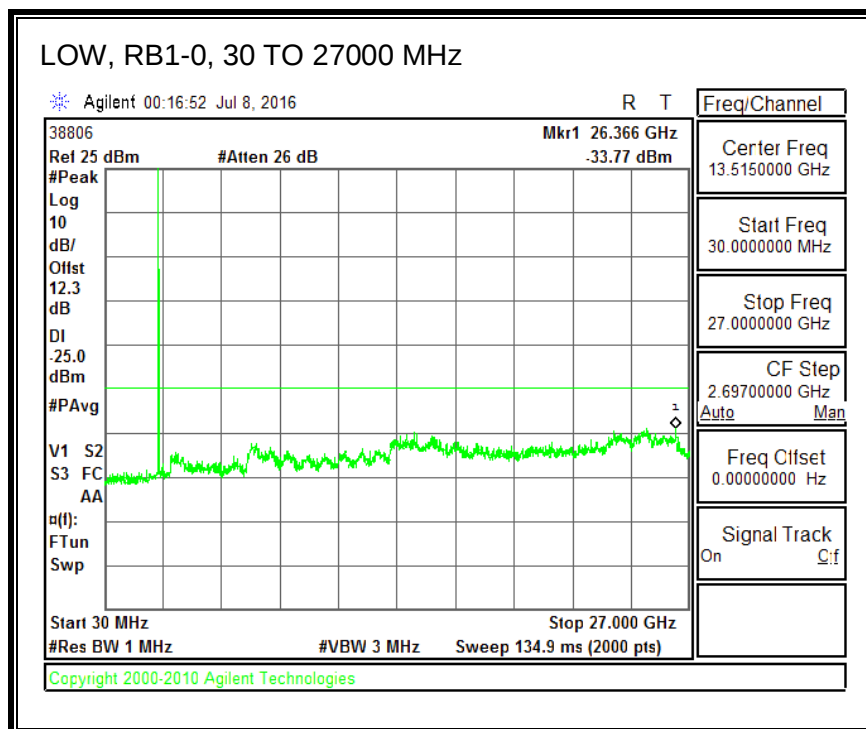


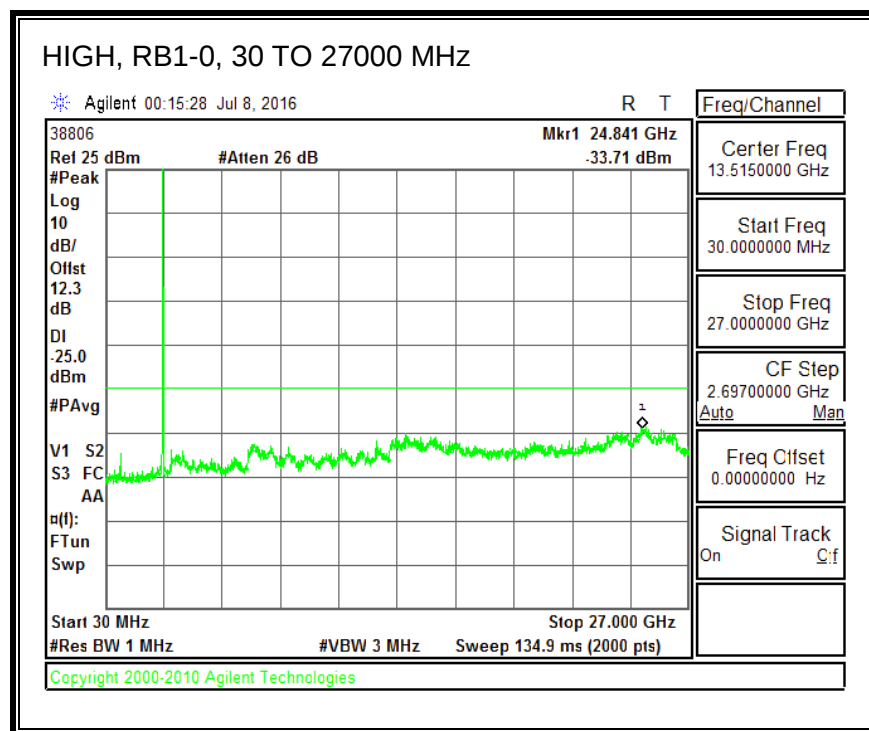
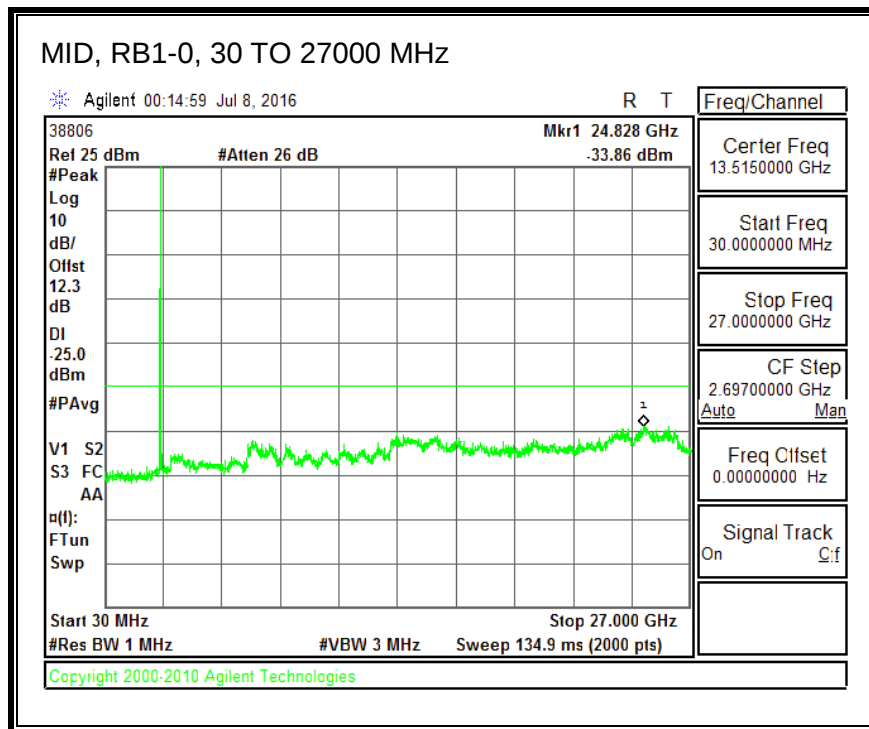
**QPSK, (20.0 MHz BAND WIDTH)**





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





## 9. FREQUENCY STABILITY

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.691

### LIMITS

§22.355

The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations.

§24.235 & §27.54

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

§90.213 - The carrier frequency shall not depart from the reference frequency in excess of  $\pm 2.5$  ppm for mobile stations

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
- Voltage = low voltage, 3.4VDC, Normal, 3.8VDC and High voltage, 4.3VDC.

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

The EUT is placed inside a temperature chamber. The temperature is set to  $20^{\circ}\text{C}$  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  $+50^{\circ}\text{C}$  is reached.

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

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

### MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 27
- LTE Band 30
- LTE Band 41

### RESULTS

See the following pages.

## 9.1. LTE BAND 2

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 1850                       | 1910                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 1851.0222                  | 1908.9805                   |               |                                 |
| Extreme (50C)  |           | 1851.0222                  | 1908.9806                   | 22.1          | 0.012                           |
| Extreme (40C)  |           | 1851.0222                  | 1908.9806                   | 18.7          | 0.010                           |
| Extreme (30C)  |           | 1851.0222                  | 1908.9806                   | 19.4          | 0.010                           |
| Extreme (10C)  |           | 1851.0222                  | 1908.9806                   | 19.6          | 0.010                           |
| Extreme (0C)   |           | 1851.0222                  | 1908.9806                   | 18.7          | 0.010                           |
| Extreme (-10C) |           | 1851.0222                  | 1908.9806                   | 21.6          | 0.012                           |
| Extreme (-20C) |           | 1851.0222                  | 1908.9806                   | 21.3          | 0.011                           |
| Extreme (-30C) |           | 1851.0222                  | 1908.9806                   | 21.0          | 0.011                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 1851.0222                  | 1908.9806                   | 22.0          | 0.012                           |
|                | -10%      | 1851.0222                  | 1908.9806                   | 20.0          | 0.011                           |
|                | End Point | 1851.0222                  | 1908.9806                   | 18.6          | 0.010                           |

### 16QAM, (20MHz BANDWIDTH)

| Limit          |           | 1850                       | 1910                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 1851.0250                  | 1908.9753                   |               |                                 |
| Extreme (50C)  |           | 1851.0250                  | 1908.9753                   | 19.6          | 0.010                           |
| Extreme (40C)  |           | 1851.0250                  | 1908.9753                   | 21.1          | 0.011                           |
| Extreme (30C)  |           | 1851.0250                  | 1908.9753                   | 18.3          | 0.010                           |
| Extreme (10C)  |           | 1851.0250                  | 1908.9753                   | 21.7          | 0.012                           |
| Extreme (0C)   |           | 1851.0250                  | 1908.9753                   | 22.7          | 0.012                           |
| Extreme (-10C) |           | 1851.0250                  | 1908.9753                   | 18.2          | 0.010                           |
| Extreme (-20C) |           | 1851.0250                  | 1908.9753                   | 18.0          | 0.010                           |
| Extreme (-30C) |           | 1851.0250                  | 1908.9753                   | 17.7          | 0.009                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 1851.0250                  | 1908.9753                   | 17.5          | 0.009                           |
|                | -10%      | 1851.0250                  | 1908.9753                   | 22.2          | 0.012                           |
|                | End Point | 1851.0250                  | 1908.9753                   | 22.7          | 0.012                           |

## 9.2. LTE BAND 4

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 1710                       | 1755                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 1711.0261                  | 1753.9738                   |               |                                 |
| Extreme (50C)  |           | 1711.0261                  | 1753.9739                   | 11.3          | 0.007                           |
| Extreme (40C)  |           | 1711.0261                  | 1753.9739                   | 12.7          | 0.007                           |
| Extreme (30C)  |           | 1711.0261                  | 1753.9739                   | 15.0          | 0.009                           |
| Extreme (10C)  |           | 1711.0261                  | 1753.9739                   | 9.2           | 0.005                           |
| Extreme (0C)   |           | 1711.0261                  | 1753.9739                   | 10.4          | 0.006                           |
| Extreme (-10C) |           | 1711.0261                  | 1753.9739                   | 12.8          | 0.007                           |
| Extreme (-20C) |           | 1711.0261                  | 1753.9739                   | 12.5          | 0.007                           |
| Extreme (-30C) |           | 1711.0261                  | 1753.9739                   | 12.1          | 0.007                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 1711.0261                  | 1753.9739                   | 13.2          | 0.008                           |
|                | -10%      | 1711.0261                  | 1753.9739                   | 11.3          | 0.006                           |
|                | End Point | 1711.0261                  | 1753.9738                   | -8.7          | -0.005                          |

### 16QAM, (20MHz BANDWIDTH)

| Limit          |           | 1710                       | 1755                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 1711.0279                  | 1753.9732                   |               |                                 |
| Extreme (50C)  |           | 1711.0280                  | 1753.9732                   | 16.9          | 0.010                           |
| Extreme (40C)  |           | 1711.0280                  | 1753.9732                   | 19.6          | 0.011                           |
| Extreme (30C)  |           | 1711.0280                  | 1753.9732                   | 8.8           | 0.005                           |
| Extreme (10C)  |           | 1711.0280                  | 1753.9732                   | 10.0          | 0.006                           |
| Extreme (0C)   |           | 1711.0280                  | 1753.9732                   | 8.4           | 0.005                           |
| Extreme (-10C) |           | 1711.0280                  | 1753.9732                   | 11.0          | 0.006                           |
| Extreme (-20C) |           | 1711.0280                  | 1753.9732                   | 10.7          | 0.006                           |
| Extreme (-30C) |           | 1711.0280                  | 1753.9732                   | 10.5          | 0.006                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 1711.0280                  | 1753.9732                   | 11.0          | 0.006                           |
|                | -10%      | 1711.0280                  | 1753.9732                   | 11.3          | 0.007                           |
|                | End Point | 1711.0280                  | 1753.9732                   | 10.5          | 0.006                           |

### 9.3. LTE BAND 5

|     |       |       |         |
|-----|-------|-------|---------|
| ID: | 45200 | Date: | 4/25/16 |
|-----|-------|-------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 824                  | 849                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 824.4929             | 848.5055              |            |                           |
| Extreme (50C)  |           | 824.4929             | 848.5055              | 11.0       | 0.013                     |
| Extreme (40C)  |           | 824.4929             | 848.5055              | 12.9       | 0.015                     |
| Extreme (30C)  |           | 824.4929             | 848.5055              | 11.2       | 0.013                     |
| Extreme (10C)  |           | 824.4929             | 848.5055              | 10.3       | 0.012                     |
| Extreme (0C)   |           | 824.4929             | 848.5055              | 10.8       | 0.013                     |
| Extreme (-10C) |           | 824.4929             | 848.5055              | 12.4       | 0.015                     |
| Extreme (-20C) |           | 824.4929             | 848.5055              | 12.1       | 0.014                     |
| Extreme (-30C) |           | 824.4929             | 848.5055              | 11.8       | 0.014                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 824.4929             | 848.5055              | 11.0       | 0.013                     |
|                | -10%      | 824.4929             | 848.5055              | 10.1       | 0.012                     |
|                | End Point | 824.4929             | 848.5055              | 10.0       | 0.012                     |

#### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 824                  | 849                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 824.5043             | 848.4955              |            |                           |
| Extreme (50C)  |           | 824.5043             | 848.4956              | 11.7       | 0.014                     |
| Extreme (40C)  |           | 824.5043             | 848.4956              | 11.4       | 0.014                     |
| Extreme (30C)  |           | 824.5043             | 848.4956              | 12.3       | 0.015                     |
| Extreme (10C)  |           | 824.5043             | 848.4955              | 9.6        | 0.012                     |
| Extreme (0C)   |           | 824.5043             | 848.4956              | 11.9       | 0.014                     |
| Extreme (-10C) |           | 824.5043             | 848.4955              | 10.2       | 0.012                     |
| Extreme (-20C) |           | 824.5043             | 848.4955              | 9.9        | 0.012                     |
| Extreme (-30C) |           | 824.5043             | 848.4955              | 9.6        | 0.012                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 824.5043             | 848.4956              | 12.1       | 0.014                     |
|                | -10%      | 824.5043             | 848.4956              | 13.6       | 0.016                     |
|                | End Point | 824.5043             | 848.4956              | 12.6       | 0.015                     |

## 9.4. LTE BAND 7

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 2500                 | 2570                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 2501.0175            | 2568.9796             |            |                           |
| Extreme (50C)  |           | 2501.0175            | 2568.9796             | 13.1       | 0.005                     |
| Extreme (40C)  |           | 2501.0175            | 2568.9796             | 23.8       | 0.009                     |
| Extreme (30C)  |           | 2501.0175            | 2568.9796             | 16.1       | 0.006                     |
| Extreme (10C)  |           | 2501.0175            | 2568.9796             | 21.6       | 0.009                     |
| Extreme (0C)   |           | 2501.0175            | 2568.9796             | 18.1       | 0.007                     |
| Extreme (-10C) |           | 2501.0175            | 2568.9796             | 15.5       | 0.006                     |
| Extreme (-20C) |           | 2501.0175            | 2568.9796             | 15.1       | 0.006                     |
| Extreme (-30C) |           | 2501.0175            | 2568.9796             | 14.9       | 0.006                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 2501.0175            | 2568.9796             | 16.3       | 0.006                     |
|                | -10%      | 2501.0175            | 2568.9796             | 15.5       | 0.006                     |
|                | End Point | 2501.0175            | 2568.9796             | 16.7       | 0.007                     |

### 16QAM, (20MHz BANDWIDTH)

| Limit          |           | 2500                       | 2570                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 2501.0258                  | 2568.9796                   |               |                                 |
| Extreme (50C)  |           | 2501.0258                  | 2568.9796                   | 14.1          | 0.006                           |
| Extreme (40C)  |           | 2501.0259                  | 2568.9796                   | 17.8          | 0.007                           |
| Extreme (30C)  |           | 2501.0259                  | 2568.9796                   | 16.7          | 0.007                           |
| Extreme (10C)  |           | 2501.0259                  | 2568.9796                   | 17.4          | 0.007                           |
| Extreme (0C)   |           | 2501.0259                  | 2568.9796                   | 17.0          | 0.007                           |
| Extreme (-10C) |           | 2501.0259                  | 2568.9796                   | 15.1          | 0.006                           |
| Extreme (-20C) |           | 2501.0258                  | 2568.9796                   | 14.9          | 0.006                           |
| Extreme (-30C) |           | 2501.0258                  | 2568.9796                   | 14.6          | 0.006                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 2501.0259                  | 2568.9796                   | 17.6          | 0.007                           |
|                | -10%      | 2501.0259                  | 2568.9796                   | 15.3          | 0.006                           |
|                | End Point | 2501.0259                  | 2568.9796                   | 17.2          | 0.007                           |

## 9.5. LTE BAND 12

|     |       |       |         |
|-----|-------|-------|---------|
| ID: | 45200 | Date: | 4/25/16 |
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### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 699                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 699.5028             | 715.4995              |            |                           |
| Extreme (50C)  |           | 699.5028             | 715.4995              | 9.5        | 0.01                      |
| Extreme (40C)  |           | 699.5028             | 715.4995              | 8.2        | 0.01                      |
| Extreme (30C)  |           | 699.5028             | 715.4995              | 8.7        | 0.01                      |
| Extreme (10C)  |           | 699.5028             | 715.4995              | 7.6        | 0.01                      |
| Extreme (0C)   |           | 699.5028             | 715.4995              | 7.0        | 0.01                      |
| Extreme (-10C) |           | 699.5028             | 715.4995              | 9.2        | 0.01                      |
| Extreme (-20C) |           | 699.5028             | 715.4995              | 8.8        | 0.01                      |
| Extreme (-30C) |           | 699.5028             | 715.4995              | 8.6        | 0.01                      |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 699.5028             | 715.4995              | 12.3       | 0.02                      |
|                | -10%      | 699.5028             | 715.4995              | 9.6        | 0.01                      |
|                | End Point | 699.5028             | 715.4995              | 8.7        | 0.01                      |

### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 699                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 699.5003             | 715.4964              |            |                           |
| Extreme (50C)  |           | 699.5003             | 715.4964              | 8.7        | 0.01                      |
| Extreme (40C)  |           | 699.5003             | 715.4964              | 8.6        | 0.01                      |
| Extreme (30C)  |           | 699.5003             | 715.4964              | 8.6        | 0.01                      |
| Extreme (10C)  |           | 699.5003             | 715.4964              | 6.9        | 0.01                      |
| Extreme (0C)   |           | 699.5003             | 715.4964              | 9.4        | 0.01                      |
| Extreme (-10C) |           | 699.5003             | 715.4964              | 7.8        | 0.01                      |
| Extreme (-20C) |           | 699.5003             | 715.4964              | 7.5        | 0.01                      |
| Extreme (-30C) |           | 699.5003             | 715.4964              | 7.3        | 0.01                      |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 699.5003             | 715.4964              | 7.6        | 0.01                      |
|                | -10%      | 699.5003             | 715.4964              | 8.4        | 0.01                      |
|                | End Point | 699.5003             | 715.4964              | 8.6        | 0.01                      |

## 9.6. LTE BAND 13

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 777                        | 787                         | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 777.4918                   | 777.5045                    |               |                                 |
| Extreme (50C)  |           | 777.4918                   | 777.5045                    | 8.9           | 0.01                            |
| Extreme (40C)  |           | 777.4918                   | 777.5045                    | 9.8           | 0.01                            |
| Extreme (30C)  |           | 777.4918                   | 777.5045                    | 11.0          | 0.01                            |
| Extreme (10C)  |           | 777.4918                   | 777.5045                    | 9.0           | 0.01                            |
| Extreme (0C)   |           | 777.4918                   | 777.5045                    | 10.0          | 0.01                            |
| Extreme (-10C) |           | 777.4918                   | 777.5045                    | 9.6           | 0.01                            |
| Extreme (-20C) |           | 777.4918                   | 777.5045                    | 9.4           | 0.01                            |
| Extreme (-30C) |           | 777.4918                   | 777.5045                    | 9.1           | 0.01                            |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 777.4918                   | 777.5045                    | 8.0           | 0.01                            |
|                | -10%      | 777.4918                   | 777.5045                    | 10.0          | 0.01                            |
|                | End Point | 777.4918                   | 777.5045                    | 7.8           | 0.01                            |

### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 777                  | 787                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 786.5056             | 786.5011              |            |                           |
| Extreme (50C)  |           | 786.5056             | 786.5011              | 7.1        | 0.01                      |
| Extreme (40C)  |           | 786.5056             | 786.5011              | 9.2        | 0.01                      |
| Extreme (30C)  |           | 786.5056             | 786.5011              | 9.7        | 0.01                      |
| Extreme (10C)  |           | 786.5056             | 786.5011              | 9.1        | 0.01                      |
| Extreme (0C)   |           | 786.5056             | 786.5011              | 8.7        | 0.01                      |
| Extreme (-10C) |           | 786.5056             | 786.5011              | 8.3        | 0.01                      |
| Extreme (-20C) |           | 786.5056             | 786.5011              | 8.0        | 0.01                      |
| Extreme (-30C) |           | 786.5056             | 786.5011              | 7.9        | 0.01                      |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 786.5056             | 786.5011              | 7.5        | 0.01                      |
|                | -10%      | 786.5056             | 786.5011              | 8.5        | 0.01                      |
|                | End Point | 786.5056             | 786.5011              | 8.9        | 0.01                      |

## 9.7. LTE BAND 17

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 704                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 704.5017             | 715.4993              |            |                           |
| Extreme (50C)  |           | 704.5018             | 715.4993              | 9.4        | 0.013                     |
| Extreme (40C)  |           | 704.5017             | 715.4993              | 7.9        | 0.011                     |
| Extreme (30C)  |           | 704.5018             | 715.4993              | 9.6        | 0.013                     |
| Extreme (10C)  |           | 704.5017             | 715.4993              | 6.2        | 0.009                     |
| Extreme (0C)   |           | 704.5018             | 715.4993              | 10.1       | 0.014                     |
| Extreme (-10C) |           | 704.5018             | 715.4993              | 10.4       | 0.015                     |
| Extreme (-20C) |           | 704.5018             | 715.4993              | 10.1       | 0.014                     |
| Extreme (-30C) |           | 704.5018             | 715.4993              | 9.8        | 0.014                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 704.5018             | 715.4993              | 11.7       | 0.016                     |
|                | -10%      | 704.5018             | 715.4993              | 10.1       | 0.014                     |
|                | End Point | 704.5018             | 715.4993              | 9.3        | 0.013                     |

### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 704                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 704.4990             | 715.4996              |            |                           |
| Extreme (50C)  |           | 704.4991             | 715.4997              | 11.1       | 0.016                     |
| Extreme (40C)  |           | 704.4990             | 715.4997              | 8.9        | 0.012                     |
| Extreme (30C)  |           | 704.4990             | 715.4997              | 9.8        | 0.014                     |
| Extreme (10C)  |           | 704.4991             | 715.4997              | 11.1       | 0.016                     |
| Extreme (0C)   |           | 704.4990             | 715.4996              | 6.9        | 0.010                     |
| Extreme (-10C) |           | 704.4990             | 715.4996              | 7.3        | 0.010                     |
| Extreme (-20C) |           | 704.4990             | 715.4996              | 7.1        | 0.010                     |
| Extreme (-30C) |           | 704.4990             | 715.4996              | 6.9        | 0.010                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 704.4990             | 715.4996              | 7.4        | 0.010                     |
|                | -10%      | 704.4990             | 715.4996              | 8.1        | 0.011                     |
|                | End Point | 704.4990             | 715.4996              | 7.9        | 0.011                     |

## 9.8. LTE BAND 25

|     |       |       |         |
|-----|-------|-------|---------|
| ID: | 45200 | Date: | 4/25/16 |
|-----|-------|-------|---------|

### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 1850                 | 1915                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 1851.0210            | 1913.9775             |            |                           |
| Extreme (50C)  |           | 1851.0210            | 1913.9775             | -10.3      | -0.005                    |
| Extreme (40C)  |           | 1851.0210            | 1913.9775             | -10.9      | -0.006                    |
| Extreme (30C)  |           | 1851.0210            | 1913.9775             | 9.4        | 0.005                     |
| Extreme (10C)  |           | 1851.0210            | 1913.9775             | -13.0      | -0.007                    |
| Extreme (0C)   |           | 1851.0210            | 1913.9775             | 16.0       | 0.008                     |
| Extreme (-10C) |           | 1851.0210            | 1913.9775             | -12.3      | -0.007                    |
| Extreme (-20C) |           | 1851.0210            | 1913.9775             | -12.1      | -0.006                    |
| Extreme (-30C) |           | 1851.0210            | 1913.9775             | -11.8      | -0.006                    |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 1851.0210            | 1913.9775             | 12.6       | 0.007                     |
|                | -10%      | 1851.0210            | 1913.9775             | 10.2       | 0.005                     |
|                | End Point | 1851.0210            | 1913.9775             | 8.7        | 0.005                     |

### 16QAM, (20MHz BANDWIDTH)

| Limit          |           | 1850                 | 1915                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 1851.0283            | 1913.9728             |            |                           |
| Extreme (50C)  |           | 1851.0283            | 1913.9728             | 14.9       | 0.008                     |
| Extreme (40C)  |           | 1851.0283            | 1913.9728             | 18.1       | 0.010                     |
| Extreme (30C)  |           | 1851.0283            | 1913.9728             | -11.5      | -0.006                    |
| Extreme (10C)  |           | 1851.0283            | 1913.9728             | 12.9       | 0.007                     |
| Extreme (0C)   |           | 1851.0283            | 1913.9728             | 11.2       | 0.006                     |
| Extreme (-10C) |           | 1851.0283            | 1913.9728             | 11.1       | 0.006                     |
| Extreme (-20C) |           | 1851.0283            | 1913.9728             | 10.9       | 0.006                     |
| Extreme (-30C) |           | 1851.0283            | 1913.9728             | 10.6       | 0.006                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 1851.0283            | 1913.9728             | 9.4        | 0.005                     |
|                | -10%      | 1851.0283            | 1913.9728             | 22.8       | 0.012                     |
|                | End Point | 1851.0283            | 1913.9728             | -12.6      | -0.007                    |

## 9.9. LTE BAND 26

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
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### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 814                        | 824                         | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 814.4991                   | 823.5016                    |               |                                 |
| Extreme (50C)  |           | 814.4992                   | 823.5016                    | 10.1          | 0.012                           |
| Extreme (40C)  |           | 814.4992                   | 823.5016                    | 9.8           | 0.012                           |
| Extreme (30C)  |           | 814.4992                   | 823.5016                    | 9.3           | 0.011                           |
| Extreme (10C)  |           | 814.4992                   | 823.5016                    | 9.5           | 0.012                           |
| Extreme (0C)   |           | 814.4992                   | 823.5016                    | 9.3           | 0.011                           |
| Extreme (-10C) |           | 814.4992                   | 823.5016                    | 12.6          | 0.015                           |
| Extreme (-20C) |           | 814.4992                   | 823.5016                    | 12.4          | 0.015                           |
| Extreme (-30C) |           | 814.4992                   | 823.5016                    | 12.2          | 0.015                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 814.4992                   | 823.5016                    | 10.5          | 0.013                           |
|                | -10%      | 814.4992                   | 823.5016                    | 9.5           | 0.012                           |
|                | End Point | 814.4992                   | 823.5016                    | 10.7          | 0.013                           |

### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 814                        | 824                         | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 814.5041                   | 823.5055                    |               |                                 |
| Extreme (50C)  |           | 814.5041                   | 823.5055                    | 9.1           | 0.011                           |
| Extreme (40C)  |           | 814.5041                   | 823.5055                    | 8.1           | 0.010                           |
| Extreme (30C)  |           | 814.5041                   | 823.5055                    | 8.3           | 0.010                           |
| Extreme (10C)  |           | 814.5041                   | 823.5055                    | 5.0           | 0.006                           |
| Extreme (0C)   |           | 814.5041                   | 823.5055                    | 9.0           | 0.011                           |
| Extreme (-10C) |           | 814.5041                   | 823.5055                    | 12.9          | 0.016                           |
| Extreme (-20C) |           | 814.5041                   | 823.5055                    | 12.7          | 0.015                           |
| Extreme (-30C) |           | 814.5041                   | 823.5055                    | 12.4          | 0.015                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 814.5041                   | 823.5055                    | 9.5           | 0.012                           |
|                | -10%      | 814.5041                   | 823.5055                    | 11.4          | 0.014                           |
|                | End Point | 814.5041                   | 823.5055                    | 9.5           | 0.012                           |

## 9.10. LTE BAND 27

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
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### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 814                  | 824                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 814.5018             | 823.4993              |            |                           |
| Extreme (50C)  |           | 814.5018             | 823.4993              | 12.0       | 0.015                     |
| Extreme (40C)  |           | 814.5018             | 823.4993              | 10.7       | 0.013                     |
| Extreme (30C)  |           | 814.5018             | 823.4993              | 12.4       | 0.015                     |
| Extreme (10C)  |           | 814.5018             | 823.4993              | 11.1       | 0.014                     |
| Extreme (0C)   |           | 814.5018             | 823.4993              | 9.9        | 0.012                     |
| Extreme (-10C) |           | 814.5018             | 823.4993              | 12.9       | 0.016                     |
| Extreme (-20C) |           | 814.5018             | 823.4993              | 12.6       | 0.015                     |
| Extreme (-30C) |           | 814.5018             | 823.4993              | 12.4       | 0.015                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 814.5018             | 823.4993              | 10.3       | 0.013                     |
|                | -10%      | 814.5018             | 823.4993              | 10.2       | 0.012                     |
|                | End Point | 814.5018             | 823.4993              | 9.8        | 0.012                     |

### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 814                  | 824                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 814.5028             | 823.5011              |            |                           |
| Extreme (50C)  |           | 814.5029             | 823.5012              | 10.7       | 0.013                     |
| Extreme (40C)  |           | 814.5029             | 823.5012              | 11.2       | 0.014                     |
| Extreme (30C)  |           | 814.5029             | 823.5012              | 12.6       | 0.015                     |
| Extreme (10C)  |           | 814.5029             | 823.5012              | 10.4       | 0.013                     |
| Extreme (0C)   |           | 814.5029             | 823.5012              | 9.9        | 0.012                     |
| Extreme (-10C) |           | 814.5029             | 823.5012              | 11.1       | 0.014                     |
| Extreme (-20C) |           | 814.5029             | 823.5012              | 10.8       | 0.013                     |
| Extreme (-30C) |           | 814.5029             | 823.5012              | 10.6       | 0.013                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 814.5029             | 823.5012              | 10.6       | 0.013                     |
|                | -10%      | 814.5029             | 823.5012              | 10.3       | 0.013                     |
|                | End Point | 814.5029             | 823.5012              | 9.8        | 0.012                     |

### 9.11. LTE BAND 30

|     |       |       |         |
|-----|-------|-------|---------|
| ID: | 45200 | Date: | 4/25/16 |
|-----|-------|-------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 2305                 | 2315                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 2305.5021            | 2314.4980             |            |                           |
| Extreme (50C)  |           | 2305.5021            | 2314.4980             | 21.2       | 0.009                     |
| Extreme (40C)  |           | 2305.5021            | 2314.4980             | 14.3       | 0.006                     |
| Extreme (30C)  |           | 2305.5021            | 2314.4980             | 13.0       | 0.006                     |
| Extreme (10C)  |           | 2305.5021            | 2314.4980             | 11.7       | 0.005                     |
| Extreme (0C)   |           | 2305.5021            | 2314.4980             | -17.1      | -0.007                    |
| Extreme (-10C) |           | 2305.5021            | 2314.4980             | 16.0       | 0.007                     |
| Extreme (-20C) |           | 2305.5021            | 2314.4980             | 15.7       | 0.007                     |
| Extreme (-30C) |           | 2305.5021            | 2314.4980             | 15.4       | 0.007                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 2305.5021            | 2314.4980             | 14.1       | 0.006                     |
|                | -10%      | 2305.5021            | 2314.4980             | -12.2      | -0.005                    |
|                | End Point | 2305.5021            | 2314.4980             | 15.2       | 0.007                     |

#### 16QAM, (10MHz BANDWIDTH)

| Limit          |           | 2305                 | 2315                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 2305.5017            | 2314.4989             |            |                           |
| Extreme (50C)  |           | 2305.5018            | 2314.4989             | 18.7       | 0.008                     |
| Extreme (40C)  |           | 2305.5018            | 2314.4989             | 14.0       | 0.006                     |
| Extreme (30C)  |           | 2305.5018            | 2314.4989             | 12.7       | 0.005                     |
| Extreme (10C)  |           | 2305.5018            | 2314.4989             | 14.9       | 0.006                     |
| Extreme (0C)   |           | 2305.5018            | 2314.4989             | 15.4       | 0.007                     |
| Extreme (-10C) |           | 2305.5018            | 2314.4989             | 16.0       | 0.007                     |
| Extreme (-20C) |           | 2305.5018            | 2314.4989             | 15.8       | 0.007                     |
| Extreme (-30C) |           | 2305.5018            | 2314.4989             | 15.6       | 0.007                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 2305.5018            | 2314.4989             | 15.2       | 0.007                     |
|                | -10%      | 2305.5018            | 2314.4989             | 15.1       | 0.007                     |
|                | End Point | 2305.5018            | 2314.4989             | 14.6       | 0.006                     |

## 9.12. LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 45200 | <b>Date:</b> | 4/25/16 |
|------------|-------|--------------|---------|

### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 2496                       | 2690                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (25C)   | Normal    | 2496.9613                  | 2689.0736                   |               |                                 |
| Extreme (50C)  |           | 2496.9613                  | 2689.0736                   | 16.3          | 0.006                           |
| Extreme (40C)  |           | 2496.9613                  | 2689.0736                   | 16.0          | 0.006                           |
| Extreme (30C)  |           | 2496.9613                  | 2689.0736                   | -14.7         | -0.006                          |
| Extreme (10C)  |           | 2496.9613                  | 2689.0736                   | 17.6          | 0.007                           |
| Extreme (0C)   |           | 2496.9613                  | 2689.0736                   | 14.6          | 0.006                           |
| Extreme (-10C) |           | 2496.9613                  | 2689.0736                   | 16.6          | 0.006                           |
| Extreme (-20C) |           | 2496.9613                  | 2689.0736                   | 16.4          | 0.006                           |
| Extreme (-30C) |           | 2496.9613                  | 2689.0736                   | 16.2          | 0.006                           |
|                |           |                            |                             |               |                                 |
| 25C            | 10%       | 2496.9613                  | 2689.0736                   | 21.9          | 0.008                           |
|                | -10%      | 2496.9613                  | 2689.0736                   | 18.4          | 0.007                           |
|                | End Point | 2496.9613                  | 2689.0736                   | 17.5          | 0.007                           |

### 16QAM, (20MHz BANDWIDTH)

| Limit          |           | 2496                 | 2690                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (25C)   | Normal    | 2496.9560            | 2689.0738             |            |                           |
| Extreme (50C)  |           | 2496.9560            | 2689.0738             | 17.1       | 0.007                     |
| Extreme (40C)  |           | 2496.9560            | 2689.0738             | 14.9       | 0.006                     |
| Extreme (30C)  |           | 2496.9560            | 2689.0738             | 16.9       | 0.007                     |
| Extreme (10C)  |           | 2496.9560            | 2689.0738             | 16.0       | 0.006                     |
| Extreme (0C)   |           | 2496.9560            | 2689.0738             | 15.3       | 0.006                     |
| Extreme (-10C) |           | 2496.9560            | 2689.0738             | 14.8       | 0.006                     |
| Extreme (-20C) |           | 2496.9560            | 2689.0738             | 14.5       | 0.006                     |
| Extreme (-30C) |           | 2496.9560            | 2689.0738             | 14.3       | 0.006                     |
|                |           |                      |                       |            |                           |
| 25C            | 10%       | 2496.9560            | 2689.0738             | 16.6       | 0.006                     |
|                | -10%      | 2496.9560            | 2689.0738             | 17.0       | 0.007                     |
|                | End Point | 2496.9560            | 2689.0738             | 14.8       | 0.006                     |

## 10. RADIATED TEST RESULTS

### 10.1. RADIATED POWER (ERP & EIRP), LAT

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP

§90.635 Limitations on power and antenna height.

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

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

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

| Antenna height (ATT) meters (feet)   | Effective radiated power (watts) <sup>1,2,4</sup> |
|--------------------------------------|---------------------------------------------------|
| Above 1,372 (4,500)                  | 65                                                |
| Above 1,220 (4,000) to 1,372 (4,500) | 70                                                |
| Above 1,067 (3,500) to 1,220 (4,000) | 75                                                |
| Above 915 (3,000) to 1,067 (3,500)   | 100                                               |
| Above 763 (2,500) to 915 (3,000)     | 140                                               |
| Above 610 (2,000) to 763 (2,500)     | 200                                               |
| Above 458 (1,500) to 610 (2,000)     | 350                                               |
| Above 305 (1,000) to 458 (1,500)     | 600                                               |
| Up to 305 (1,000)                    | 31,000                                            |

1 Power is given in terms of effective radiated power (ERP).

2 Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.

3 Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP). 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**

ANSI C63.26:2015 / TIA / EIA 603-D Clause 2.2.17

KDB 971168 D01 RF power output using broadband peak and average power meter method.

#### **MODES TESTED**

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 27
- LTE Band 30
- LTE Band 41

#### **RESULTS**

**EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|-------------------|------------|---------|---------------|--------|
|                   |            |         | dBm           | mW     |
| 1.4MHz Band QPSK  | 1/0        | 1850.7  | <b>24.41</b>  | 276.06 |
|                   |            | 1880.0  | 23.65         | 231.74 |
|                   |            | 1909.3  | 23.29         | 213.30 |
| 1.4MHz Band 16QAM | 1/0        | 1850.7  | <b>23.67</b>  | 232.81 |
|                   |            | 1880.0  | <b>22.85</b>  | 192.75 |
|                   |            | 1909.3  | 22.39         | 173.38 |

**EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|-------------------|------------|---------|---------------|--------|
|                   |            |         | dBm           | mW     |
| 3.0MHz Band QPSK  | 1/0        | 1851.5  | <b>24.42</b>  | 276.69 |
|                   |            | 1880.0  | <b>23.61</b>  | 229.61 |
|                   |            | 1908.5  | 23.23         | 210.38 |
| 3.0MHz Band 16QAM | 1/0        | 1851.5  | <b>23.86</b>  | 243.22 |
|                   |            | 1880.0  | <b>22.86</b>  | 193.20 |
|                   |            | 1908.5  | 22.34         | 171.40 |

**EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|-------------------|------------|---------|---------------|--------|
|                   |            |         | dBm           | mW     |
| 5.0MHz Band QPSK  | 1/0        | 1852.5  | <b>24.65</b>  | 291.74 |
|                   |            | 1880.0  | 23.71         | 234.96 |
|                   |            | 1907.5  | 23.41         | 219.28 |
| 5.0MHz Band 16QAM | 1/0        | 1852.5  | <b>23.75</b>  | 237.14 |
|                   |            | 1880.0  | 22.85         | 192.75 |
|                   |            | 1907.5  | 22.62         | 182.81 |

**EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 10.0MHz Band QPSK  | 1/0        | 1855.0  | <b>24.57</b>  | 286.42 |
|                    |            | 1880.0  | 23.56         | 226.99 |
|                    |            | 1905.0  | 23.59         | 228.56 |
| 10.0MHz Band 16QAM | 1/0        | 1855.0  | <b>23.75</b>  | 237.14 |
|                    |            | 1880.0  | 23.01         | 199.99 |
|                    |            | 1905.0  | 22.68         | 185.35 |

**EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)**

| Mode             | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|------------------|------------|---------|---------------|--------|
|                  |            |         | dBm           | mW     |
| 15MHz Band QPSK  | 1/0        | 1857.5  | <b>24.31</b>  | 269.77 |
|                  |            | 1880.0  | 23.86         | 243.22 |
|                  |            | 1902.5  | 23.85         | 242.66 |
| 15MHz Band 16QAM | 1/0        | 1857.5  | <b>23.52</b>  | 224.91 |
|                  |            | 1880.0  | 23.10         | 204.17 |
|                  |            | 1902.5  | 23.16         | 207.01 |

**EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|-------------------|------------|---------|---------------|--------|
|                   |            |         | dBm           | mW     |
| 20.0MHz Band QPSK | 1/0        | 1860.0  | <b>24.45</b>  | 278.61 |
|                   |            | 1880.0  | 23.96         | 248.89 |
|                   |            | 1900.0  | 24.10         | 257.04 |
| 20MHz Band 16QAM  | 1/0        | 1860.0  | <b>23.54</b>  | 225.94 |
|                   |            | 1880.0  | 23.42         | 219.79 |
|                   |            | 1900.0  | 23.48         | 222.84 |

**EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 1.4 MHZ BAND QPSK  | 1/0        | 1710.7  | <b>23.67</b>  | 232.81 |
|                    |            | 1732.5  | 23.61         | 229.61 |
|                    |            | 1754.3  | 23.05         | 201.84 |
| 1.4 MHZ BAND 16QAM | 1/0        | 1710.7  | <b>23.29</b>  | 213.30 |
|                    |            | 1732.5  | 23.12         | 205.12 |
|                    |            | 1754.3  | 22.30         | 169.82 |

**EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 3.0 MHZ BAND QPSK  | 1/0        | 1711.5  | 22.22         | 166.72 |
|                    |            | 1732.5  | <b>23.66</b>  | 232.27 |
|                    |            | 1753.5  | 23.14         | 206.06 |
| 3.0 MHZ BAND 16QAM | 1/0        | 1711.5  | <b>22.91</b>  | 195.43 |
|                    |            | 1732.5  | 22.86         | 193.20 |
|                    |            | 1753.5  | 22.48         | 177.01 |

**EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 5.0 MHZ BAND QPSK  | 1/0        | 1712.5  | 22.29         | 169.43 |
|                    |            | 1732.5  | <b>23.66</b>  | 232.27 |
|                    |            | 1752.5  | 23.49         | 223.36 |
| 5.0 MHZ BAND 16QAM | 1/0        | 1712.5  | 22.74         | 187.93 |
|                    |            | 1732.5  | <b>22.93</b>  | 196.34 |
|                    |            | 1752.5  | 22.88         | 194.09 |

**EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 10.0 MHZ BAND QPSK  | 1/0        | 1715.0  | <b>23.73</b>  | 236.05 |
|                     |            | 1732.5  | 23.48         | 222.84 |
|                     |            | 1750.0  | 23.13         | 205.59 |
| 10.0 MHZ BAND 16QAM | 1/0        | 1715.0  | 22.11         | 162.55 |
|                     |            | 1732.5  | <b>22.71</b>  | 186.64 |
|                     |            | 1750.0  | 22.29         | 169.43 |

**EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 15.0 MHZ BAND QPSK  | 1/0        | 1717.5  | <b>23.35</b>  | 216.27 |
|                     |            | 1732.5  | 23.31         | 214.29 |
|                     |            | 1747.5  | 22.92         | 195.88 |
| 15.0 MHZ BAND 16QAM | 1/0        | 1717.5  | 22.73         | 187.50 |
|                     |            | 1732.5  | <b>22.78</b>  | 189.67 |
|                     |            | 1747.5  | 22.28         | 169.04 |

**EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 20.0 MHZ BAND QPSK  | 1/0        | 1720.0  | 22.64         | 183.65 |
|                     |            | 1732.5  | <b>23.32</b>  | 214.78 |
|                     |            | 1745.0  | 23.25         | 211.35 |
| 20.0 MHZ BAND 16QAM | 1/0        | 1720.0  | 22.32         | 170.61 |
|                     |            | 1732.5  | 22.54         | 179.47 |
|                     |            | 1745.0  | <b>22.62</b>  | 182.81 |

**ERP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|-------------------|------------|---------|---------------|-------|
|                   |            |         | dBm           | mW    |
| 1.4MHz Band QPSK  | 1/0        | 824.7   | 16.06         | 40.36 |
|                   |            | 836.5   | 17.28         | 53.46 |
|                   |            | 848.3   | <b>17.51</b>  | 56.36 |
| 1.4MHz Band 16QAM | 1/0        | 824.7   | 15.05         | 31.99 |
|                   |            | 836.5   | 16.55         | 45.19 |
|                   |            | 848.3   | <b>17.00</b>  | 50.12 |

**ERP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|--------------------|------------|---------|---------------|-------|
|                    |            |         | dBm           | mW    |
| 3.0 MHZ BAND QPSK  | 1/0        | 825.5   | 15.86         | 38.55 |
|                    |            | 836.5   | 17.18         | 52.24 |
|                    |            | 847.5   | <b>17.53</b>  | 56.62 |
| 3.0 MHZ BAND 16QAM | 1/0        | 825.5   | 15.02         | 31.77 |
|                    |            | 836.5   | 16.34         | 43.05 |
|                    |            | 847.5   | <b>16.75</b>  | 47.32 |

**ERP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)**

| Mode            | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|-----------------|------------|---------|---------------|-------|
|                 |            |         | dBm           | mW    |
| 5MHz Band QPSK  | 1/0        | 826.5   | 15.94         | 39.26 |
|                 |            | 836.5   | 17.25         | 53.09 |
|                 |            | 846.5   | <b>17.35</b>  | 54.33 |
| 5MHz Band 16QAM | 1/0        | 826.5   | 15.26         | 33.57 |
|                 |            | 836.5   | 16.73         | 47.10 |
|                 |            | 846.5   | <b>16.87</b>  | 48.64 |

**ERP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|---------------------|------------|---------|---------------|-------|
|                     |            |         | dBm           | mW    |
| 10.0 MHZ BAND QPSK  | 1/0        | 829.0   | 16.07         | 40.46 |
|                     |            | 836.5   | <b>17.12</b>  | 51.52 |
|                     |            | 844.0   | 16.54         | 45.08 |
| 10.0 MHZ BAND 16QAM | 1/0        | 829.0   | 15.85         | 38.46 |
|                     |            | 836.5   | <b>16.36</b>  | 43.25 |
|                     |            | 844.0   | 15.67         | 36.90 |

**EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 5.0 MHZ BAND QPSK  | 25/0       | 2502.5  | 25.45         | 350.75 |
|                    |            | 2535.0  | 26.56         | 452.90 |
|                    |            | 2567.5  | <b>26.66</b>  | 463.45 |
| 5.0 MHZ BAND 16QAM | 25/0       | 2502.5  | 24.63         | 290.40 |
|                    |            | 2535.0  | 25.74         | 374.97 |
|                    |            | 2567.5  | <b>25.84</b>  | 383.71 |

**EIRP POWER FOR LTE BAND 7 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 10.0 MHZ BAND QPSK  | 50/0       | 2505.0  | 25.83         | 382.82 |
|                     |            | 2535.0  | 26.62         | 459.20 |
|                     |            | 2565.0  | <b>26.91</b>  | 490.91 |
| 10.0 MHZ BAND 16QAM | 50/0       | 2505.0  | 24.90         | 309.03 |
|                     |            | 2535.0  | 25.69         | 370.68 |
|                     |            | 2565.0  | <b>25.98</b>  | 396.28 |

**EIRP POWER FOR LTE BAND 7 (15.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 15.0 MHZ BAND QPSK  | 75/0       | 2507.5  | 25.74         | 374.97 |
|                     |            | 2535.0  | 26.61         | 458.14 |
|                     |            | 2562.5  | <b>26.89</b>  | 488.65 |
| 15.0 MHZ BAND 16QAM | 75/0       | 2507.5  | 25.02         | 317.69 |
|                     |            | 2535.0  | 25.89         | 388.15 |
|                     |            | 2562.5  | <b>26.17</b>  | 414.00 |

**EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 20.0 MHZ BAND QPSK  | 100/0      | 2510.0  | 25.43         | 349.14 |
|                     |            | 2535.0  | 26.24         | 420.73 |
|                     |            | 2560.0  | <b>26.88</b>  | 487.53 |
| 20.0 MHZ BAND 16QAM | 100/0      | 2510.0  | 24.63         | 290.40 |
|                     |            | 2535.0  | 25.44         | 349.95 |
|                     |            | 2560.0  | <b>26.08</b>  | 405.51 |

**ERP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|-------------------|------------|---------|---------------|-------|
|                   |            |         | dBm           | mW    |
| 1.4MHz Band QPSK  | 1/0        | 699.7   | 16.83         | 48.19 |
|                   |            | 707.5   | 17.46         | 55.72 |
|                   |            | 715.3   | <b>18.21</b>  | 66.22 |
| 1.4MHz Band 16QAM | 1/0        | 699.7   | 15.92         | 39.08 |
|                   |            | 707.5   | 16.70         | 46.77 |
|                   |            | 715.3   | <b>17.61</b>  | 57.68 |

**ERP POWER FOR LTE BAND 12 (3.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | dBm          | mW    |
|--------------------|------------|---------|--------------|-------|
| 3.0 MHZ BAND QPSK  | 1/0        | 700.5   | 16.65        | 46.24 |
|                    |            | 707.5   | 17.59        | 57.41 |
|                    |            | 714.5   | <b>18.23</b> | 66.53 |
| 3.0 MHZ BAND 16QAM | 1/0        | 700.5   | 16.06        | 40.36 |
|                    |            | 707.5   | <b>17.52</b> | 56.49 |
|                    |            | 714.5   | 17.47        | 55.85 |

**ERP POWER FOR LTE BAND 12 (5.0MHZ BANDWIDTH)**

| Mode            | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|-----------------|------------|---------|---------------|-------|
|                 |            |         | dBm           | mW    |
| 5MHz Band QPSK  | 1/0        | 701.5   | 16.90         | 48.98 |
|                 |            | 707.5   | 17.77         | 59.84 |
|                 |            | 713.5   | <b>18.08</b>  | 64.27 |
| 5MHz Band 16QAM | 1/0        | 701.5   | 16.17         | 41.40 |
|                 |            | 707.5   | 16.94         | 49.43 |
|                 |            | 713.5   | <b>17.37</b>  | 54.58 |

**ERP POWER FOR LTE BAND 12 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | ERP (Average) |       |
|---------------------|------------|---------|---------------|-------|
|                     |            |         | dBm           | mW    |
| 10.0 MHZ BAND QPSK  | 1/0        | 704.0   | 17.06         | 50.82 |
|                     |            | 707.5   | 17.58         | 57.28 |
|                     |            | 711.0   | <b>17.78</b>  | 59.98 |
| 10.0 MHZ BAND 16QAM | 1/0        | 704.0   | 16.42         | 43.85 |
|                     |            | 707.5   | 16.83         | 48.19 |
|                     |            | 711.0   | <b>17.08</b>  | 51.05 |

**ERP POWER FOR LTE BAND 13 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | ERP(Average) |        |
|--------------------|------------|---------|--------------|--------|
|                    |            |         | dBm          | mW     |
| 5.0 MHZ BAND QPSK  | 1/0        | 779.5   | 20.15        | 103.51 |
|                    |            | 782.0   | 20.34        | 108.14 |
|                    |            | 784.5   | <b>20.56</b> | 113.76 |
| 5.0 MHZ BAND 16QAM | 1/0        | 779.5   | 19.30        | 85.11  |
|                    |            | 782.0   | 19.61        | 91.41  |
|                    |            | 784.5   | <b>19.80</b> | 95.50  |

**ERP POWER FOR LTE BAND 13 (10.0MHZ BANDWIDTH)**

| Mode              | RB/RB SIZE | f (MHz) | ERP(Average) |        |
|-------------------|------------|---------|--------------|--------|
|                   |            |         | dBm          | mW     |
| 10 MHZ BAND QPSK  | 1/0        | 782.0   | <b>20.07</b> | 101.62 |
| 10 MHZ BAND 16QAM | 1/0        |         | <b>19.22</b> | 83.56  |

**ERP POWER FOR LTE BAND 17 (5.0MHZ BANDWIDTH)**

| Mode            | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|-----------------|------------|---------|--------------|-------|
|                 |            |         | dBm          | mW    |
| 5MHz Band QPSK  | 1/0        | 706.5   | 18.26        | 66.99 |
|                 |            | 710.0   | 18.36        | 68.55 |
|                 |            | 713.5   | <b>18.72</b> | 74.47 |
| 5MHz Band 16QAM | 1/0        | 706.5   | <b>17.68</b> | 58.61 |
|                 |            | 710.0   | 17.50        | 56.23 |
|                 |            | 713.5   | 17.64        | 58.08 |

**EIRP POWER FOR LTE BAND 17 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|---------------------|------------|---------|--------------|-------|
|                     |            |         | dBm          | mW    |
| 10.0 MHZ BAND QPSK  | 1/0        | 710.0   | <b>18.38</b> | 68.87 |
| 10.0 MHZ BAND 16QAM |            | 710.0   | <b>17.70</b> | 58.88 |

**EIRP POWER FOR LTE BAND 25 (1.4MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 1.4 MHZ BAND QPSK  | 1/0        | 1850.7  | 24.82         | 303.39 |
|                    |            | 1882.5  | <b>25.76</b>  | 376.70 |
|                    |            | 1914.3  | 25.05         | 319.89 |
| 1.4 MHZ BAND 16QAM | 1/0        | 1850.7  | 24.26         | 266.69 |
|                    |            | 1882.5  | <b>25.21</b>  | 331.89 |
|                    |            | 1914.3  | 24.56         | 285.76 |

**EIRP POWER FOR LTE BAND 25 (3.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 3.0 MHZ BAND QPSK  | 1/0        | 1851.5  | 24.61         | 289.07 |
|                    |            | 1882.5  | <b>25.83</b>  | 382.82 |
|                    |            | 1913.5  | 25.41         | 347.54 |
| 3.0 MHZ BAND 16QAM | 1/0        | 1851.5  | 24.11         | 257.63 |
|                    |            | 1882.5  | <b>25.00</b>  | 316.23 |
|                    |            | 1913.5  | 24.75         | 298.54 |

**EIRP POWER FOR LTE BAND 25 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 5.0 MHZ BAND QPSK  | 1/0        | 1852.5  | 24.92         | 310.46 |
|                    |            | 1882.5  | <b>26.16</b>  | 413.05 |
|                    |            | 1912.5  | 24.79         | 301.30 |
| 5.0 MHZ BAND 16QAM | 1/0        | 1852.5  | 24.40         | 275.42 |
|                    |            | 1882.5  | <b>25.20</b>  | 331.13 |
|                    |            | 1912.5  | 24.10         | 257.04 |

**EIRP POWER FOR LTE BAND 25 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 10.0 MHZ BAND QPSK  | 1/0        | 1855.0  | 24.68         | 293.76 |
|                     |            | 1882.5  | <b>26.04</b>  | 401.79 |
|                     |            | 1910.0  | 25.04         | 319.15 |
| 10.0 MHZ BAND 16QAM | 1/0        | 1855.0  | 24.09         | 256.45 |
|                     |            | 1882.5  | <b>25.25</b>  | 334.97 |
|                     |            | 1910.0  | 24.15         | 260.02 |

**EIRP POWER FOR LTE BAND 25 (15.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 15.0 MHZ BAND QPSK  | 1/0        | 1857.5  | 24.75         | 298.54 |
|                     |            | 1882.5  | <b>26.07</b>  | 404.58 |
|                     |            | 1907.5  | 24.98         | 314.77 |
| 15.0 MHZ BAND 16QAM | 1/0        | 1857.5  | 23.99         | 250.61 |
|                     |            | 1882.5  | <b>25.51</b>  | 355.63 |
|                     |            | 1907.5  | 24.46         | 279.25 |

**EIRP POWER FOR LTE BAND 25 (20.0MHZ BANDWIDTH)**

| Mode                   | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|------------------------|------------|---------|---------------|--------|
|                        |            |         | dBm           | mW     |
| 20.0 MHZ BAND<br>QPSK  | 1/0        | 1860.0  | 24.75         | 298.54 |
|                        |            | 1882.5  | <b>26.19</b>  | 415.91 |
|                        |            | 1905.0  | 25.59         | 362.24 |
| 20.0 MHZ BAND<br>16QAM | 1/0        | 1860.0  | 24.05         | 254.10 |
|                        |            | 1882.5  | <b>25.84</b>  | 383.71 |
|                        |            | 1905.0  | 25.15         | 327.34 |

**ERP POWER FOR LTE BAND 26 (1.4MHZ BANDWIDTH)**

| Mode                  | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|-----------------------|------------|---------|--------------|-------|
|                       |            |         | dBm          | mW    |
| 1.4 MHZ BAND<br>QPSK  | 1/0        | 814.7   | 18.27        | 67.14 |
|                       |            | 819.0   | 18.44        | 69.82 |
|                       |            | 823.3   | <b>19.20</b> | 83.18 |
| 1.4 MHZ BAND<br>16QAM | 1/0        | 814.7   | 17.47        | 55.85 |
|                       |            | 819.0   | 17.64        | 58.08 |
|                       |            | 823.3   | <b>18.40</b> | 69.18 |

**ERP POWER FOR LTE BAND 26 (3.0MHZ BANDWIDTH)**

| Mode                  | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|-----------------------|------------|---------|--------------|-------|
|                       |            |         | dBm          | mW    |
| 3.0 MHZ BAND<br>QPSK  | 1/0        | 815.5   | 18.29        | 67.45 |
|                       |            | 819.0   | 18.52        | 71.12 |
|                       |            | 822.5   | <b>19.26</b> | 84.33 |
| 3.0 MHZ BAND<br>16QAM | 1/0        | 815.5   | 17.39        | 54.83 |
|                       |            | 819.0   | 17.62        | 57.81 |
|                       |            | 822.5   | <b>18.36</b> | 68.55 |

**ERP POWER FOR LTE BAND 26 (5.0MHZ BANDWIDTH)**

| Mode                  | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|-----------------------|------------|---------|--------------|-------|
|                       |            |         | dBm          | mW    |
| 5.0 MHZ BAND<br>QPSK  | 1/0        | 816.5   | 18.19        | 65.92 |
|                       |            | 819.0   | 18.36        | 68.55 |
|                       |            | 821.5   | <b>19.14</b> | 82.04 |
| 5.0 MHZ BAND<br>16QAM | 1/0        | 816.5   | 17.06        | 50.82 |
|                       |            | 819.0   | 17.29        | 53.58 |
|                       |            | 821.5   | <b>18.03</b> | 63.53 |

**ERP POWER FOR LTE BAND 26 (10.0MHZ BANDWIDTH)**

| Mode                   | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|------------------------|------------|---------|--------------|-------|
|                        |            |         | dBm          | mW    |
| 10.0 MHZ BAND<br>QPSK  | 1/0        | 819.0   | <b>18.79</b> | 75.68 |
| 10.0 MHZ BAND<br>16QAM | 1/0        | 819.0   | <b>17.98</b> | 62.81 |

**ERP POWER FOR LTE BAND 27 (1.4MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|--------------------|------------|---------|--------------|-------|
|                    |            |         | dBm          | mW    |
| 1.4 MHZ BAND QPSK  | 1/0        | 814.7   | <b>19.25</b> | 84.14 |
|                    |            | 819.0   | 18.90        | 77.62 |
|                    |            | 823.3   | 19.17        | 82.60 |
| 1.4 MHZ BAND 16QAM | 1/0        | 814.7   | <b>18.30</b> | 67.61 |
|                    |            | 819.0   | 18.20        | 66.07 |
|                    |            | 823.3   | 18.22        | 66.37 |

**ERP POWER FOR LTE BAND 27 (3.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|--------------------|------------|---------|--------------|-------|
|                    |            |         | dBm          | mW    |
| 3.0 MHZ BAND QPSK  | 1/0        | 815.5   | 19.21        | 83.37 |
|                    |            | 819.0   | 18.96        | 78.70 |
|                    |            | 822.5   | <b>19.30</b> | 85.11 |
| 3.0 MHZ BAND 16QAM | 1/0        | 815.5   | <b>18.42</b> | 69.50 |
|                    |            | 819.0   | 18.18        | 65.77 |
|                    |            | 822.5   | 18.40        | 69.18 |

**ERP POWER FOR LTE BAND 27 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|--------------------|------------|---------|--------------|-------|
|                    |            |         | dBm          | mW    |
| 5.0 MHZ BAND QPSK  | 1/0        | 816.5   | 19.18        | 82.79 |
|                    |            | 819.0   | 18.88        | 77.27 |
|                    |            | 821.5   | <b>19.23</b> | 83.75 |
| 5.0 MHZ BAND 16QAM | 1/0        | 816.5   | 18.25        | 66.83 |
|                    |            | 819.0   | 18.17        | 65.61 |
|                    |            | 821.5   | <b>18.29</b> | 67.45 |

**ERP POWER FOR LTE BAND 27 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | ERP(Average) |       |
|---------------------|------------|---------|--------------|-------|
|                     |            |         | dBm          | mW    |
| 10.0 MHZ BAND QPSK  | 1/0        | 819.0   | <b>18.83</b> | 76.38 |
| 10.0 MHZ BAND 16QAM | 1/0        | 819.0   | <b>18.03</b> | 63.53 |

**EIRP POWER FOR LTE BAND 30 (5.0MHZ BANDWIDTH)**

| Mode            | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|-----------------|------------|---------|---------------|--------|
|                 |            |         | dBm           | mW     |
| 5MHz Band QPSK  | 1/0        | 2307.5  | 21.45         | 139.64 |
|                 |            | 2310.0  | 21.86         | 153.46 |
|                 |            | 2312.5  | <b>22.20</b>  | 165.96 |
| 5MHz Band 16QAM | 1/0        | 2307.5  | 20.75         | 118.85 |
|                 |            | 2310.0  | 21.16         | 130.50 |
|                 |            | 2312.5  | <b>21.50</b>  | 141.25 |

**EIRP POWER FOR LTE BAND 30 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 10.0 MHZ BAND QPSK  | 1/0        | 2310.0  | <b>21.78</b>  | 150.66 |
| 10.0 MHZ BAND 16QAM |            | 2310.0  | <b>20.98</b>  | 125.31 |

**EIRP POWER FOR LTE BAND 41 (5.0MHZ BANDWIDTH)**

| Mode               | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|--------------------|------------|---------|---------------|--------|
|                    |            |         | dBm           | mW     |
| 5.0 MHZ BAND QPSK  | 25/0       | 2498.5  | 25.48         | 353.18 |
|                    |            | 2593.0  | <b>26.47</b>  | 443.61 |
|                    |            | 2687.5  | 25.95         | 393.55 |
| 5.0 MHZ BAND 16QAM | 25/0       | 2498.5  | 24.73         | 297.17 |
|                    |            | 2593.0  | <b>25.72</b>  | 373.25 |
|                    |            | 2687.5  | 25.20         | 331.13 |

**EIRP POWER FOR LTE BAND 41 (10.0MHZ BANDWIDTH)**

| Mode                | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|---------------------|------------|---------|---------------|--------|
|                     |            |         | dBm           | mW     |
| 10.0 MHZ BAND QPSK  | 50/0       | 2501.0  | 25.26         | 335.74 |
|                     |            | 2593.0  | <b>26.59</b>  | 456.04 |
|                     |            | 2685.0  | 26.00         | 398.11 |
| 10.0 MHZ BAND 16QAM | 50/0       | 2501.0  | 24.48         | 280.54 |
|                     |            | 2593.0  | <b>25.81</b>  | 381.07 |
|                     |            | 2685.0  | 25.22         | 332.66 |

**EIRP POWER FOR LTE BAND 41 (15.0MHZ BANDWIDTH)**

| Mode                   | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|------------------------|------------|---------|---------------|--------|
|                        |            |         | dBm           | mW     |
| 15.0 MHZ BAND<br>QPSK  | 75/0       | 2503.5  | 25.31         | 339.63 |
|                        |            | 2593.0  | <b>26.39</b>  | 435.51 |
|                        |            | 2682.5  | 26.02         | 399.94 |
| 15.0 MHZ BAND<br>16QAM | 75/0       | 2503.5  | 24.48         | 280.54 |
|                        |            | 2593.0  | <b>25.56</b>  | 359.75 |
|                        |            | 2682.5  | 25.19         | 330.37 |

**EIRP POWER FOR LTE BAND 41 (20.0MHZ BANDWIDTH)**

| Mode                   | RB/RB SIZE | f (MHz) | EIRP(Average) |        |
|------------------------|------------|---------|---------------|--------|
|                        |            |         | dBm           | mW     |
| 20.0 MHZ BAND<br>QPSK  | 100/0      | 2506.0  | 25.72         | 373.25 |
|                        |            | 2593.0  | <b>26.59</b>  | 456.04 |
|                        |            | 2680.0  | 26.21         | 417.83 |
| 20.0 MHZ BAND<br>16QAM | 100/0      | 2506.0  | 24.82         | 303.39 |
|                        |            | 2593.0  | <b>25.69</b>  | 370.68 |
|                        |            | 2680.0  | 25.31         | 339.63 |

## 10.1.1. LTE BAND 2

### QPSK EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

| High Frequency Fundamental Measurement<br>UL Fremont Radiated Chamber D              |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52279                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 2 QPSK 1.4MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.851                                                                                | 14.3                | V                         | 0.98               | 8.05                  | 21.32         | 33.0           | -11.7               |       |
| 1.851                                                                                | 17.3                | H                         | 0.98               | 8.05                  | 24.41         | 33.0           | -8.6                |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.2                | V                         | 0.98               | 8.03                  | 20.24         | 33.0           | -12.8               |       |
| 1.880                                                                                | 16.6                | H                         | 0.98               | 8.03                  | 23.65         | 33.0           | -9.4                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 1.909                                                                                | 12.6                | V                         | 0.98               | 8.05                  | 19.62         | 33.0           | -13.4               |       |
| 1.909                                                                                | 16.2                | H                         | 0.98               | 8.05                  | 23.29         | 33.0           | -9.7                |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                            |                     |                    |                    |                       |               |                |                     |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/16/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 2 16QAM 1.4MHz BW |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b><br>Receiving: Horn T346, and Chamber D SMA Cables<br>Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                    |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                                                                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                                                                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.851                                                                                                                                                                               | 13.3                | V                  | 0.98               | 8.05                  | 20.38         | 33.0           | -12.6               |       |
| 1.851                                                                                                                                                                               | 16.6                | H                  | 0.98               | 8.05                  | 23.67         | 33.0           | -9.3                |       |
| Mid Ch                                                                                                                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                                                                                                               | 12.4                | V                  | 0.98               | 8.03                  | 19.43         | 33.0           | -13.6               |       |
| 1.880                                                                                                                                                                               | 15.8                | H                  | 0.98               | 8.03                  | 22.85         | 33.0           | -10.2               |       |
| High Ch                                                                                                                                                                             |                     |                    |                    |                       |               |                |                     |       |
| 1.909                                                                                                                                                                               | 11.9                | V                  | 0.98               | 8.05                  | 18.94         | 33.0           | -14.1               |       |
| 1.909                                                                                                                                                                               | 15.3                | H                  | 0.98               | 8.05                  | 22.39         | 33.0           | -10.6               |       |
| Rev. 10.24.13                                                                                                                                                                       |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52279                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 2 QPSK 3MHz BW                                                 |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.852                                                                                | 13.3                | V                  | 0.98               | 8.05                  | 20.38         | 33.0           | -12.6               |       |
| 1.852                                                                                | 17.4                | H                  | 0.98               | 8.05                  | 24.42         | 33.0           | -8.6                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.3                | V                  | 0.98               | 8.03                  | 20.30         | 33.0           | -12.7               |       |
| 1.880                                                                                | 16.6                | H                  | 0.98               | 8.03                  | 23.61         | 33.0           | -9.4                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.909                                                                                | 13.2                | V                  | 0.98               | 8.05                  | 20.28         | 33.0           | -12.7               |       |
| 1.909                                                                                | 16.2                | H                  | 0.98               | 8.05                  | 23.23         | 33.0           | -9.8                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52279                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 2 16QAM 3MHz BW                                                       |                     |                    |                    |                       |               |                |                     |       |
| Test Equipment:                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.852                                                                                | 13.3                | V                  | 0.98               | 8.05                  | 20.38         | 33.0           | -12.6               |       |
| 1.852                                                                                | 16.8                | H                  | 0.98               | 8.05                  | 23.86         | 33.0           | -9.1                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                | 12.5                | V                  | 0.98               | 8.03                  | 19.59         | 33.0           | -13.4               |       |
| 1.880                                                                                | 15.8                | H                  | 0.98               | 8.03                  | 22.86         | 33.0           | -10.1               |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.909                                                                                | 11.9                | V                  | 0.98               | 8.05                  | 19.00         | 33.0           | -14.0               |       |
| 1.909                                                                                | 15.3                | H                  | 0.98               | 8.05                  | 22.34         | 33.0           | -10.7               |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                         |                     |                    |                    |                       |               |                |                     |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/16/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 2 QPSK 5MHz BW |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b><br>Receiving: Horn T346, and Chamber D SMA Cables<br>Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                 |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                                                                                                                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |               |                |                     |       |
| 1.853                                                                                                                                                                            | 14.1                | V                  | 0.98               | 8.05                  | 21.18         | 33.0           | -11.8               |       |
| 1.853                                                                                                                                                                            | 17.6                | H                  | 0.98               | 8.05                  | 24.65         | 33.0           | -8.4                |       |
| <b>Mid Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                                                                                                            | 13.4                | V                  | 0.98               | 8.03                  | 20.45         | 33.0           | -12.6               |       |
| 1.880                                                                                                                                                                            | 16.7                | H                  | 0.98               | 8.03                  | 23.71         | 33.0           | -9.3                |       |
| <b>High Ch</b>                                                                                                                                                                   |                     |                    |                    |                       |               |                |                     |       |
| 1.908                                                                                                                                                                            | 13.0                | V                  | 0.98               | 8.04                  | 20.03         | 33.0           | -13.0               |       |
| 1.908                                                                                                                                                                            | 16.4                | H                  | 0.98               | 8.04                  | 23.41         | 33.0           | -9.6                |       |
| Rev. 10.24.13                                                                                                                                                                    |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52279                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 2 16QAM 5MHz BW                                                       |                     |                    |                    |                       |               |                |                     |       |
| Test Equipment:                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.853                                                                                | 13.4                | V                  | 0.98               | 8.05                  | 20.51         | 33.0           | -12.5               |       |
| 1.853                                                                                | 16.7                | H                  | 0.98               | 8.05                  | 23.75         | 33.0           | -9.3                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.1                | V                  | 0.98               | 8.03                  | 20.15         | 33.0           | -12.9               |       |
| 1.880                                                                                | 15.8                | H                  | 0.98               | 8.03                  | 22.85         | 33.0           | -10.2               |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.908                                                                                | 12.4                | V                  | 0.98               | 8.04                  | 19.42         | 33.0           | -13.6               |       |
| 1.908                                                                                | 15.6                | H                  | 0.98               | 8.04                  | 22.62         | 33.0           | -10.4               |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52279                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 2 QPSK 10MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                        |                     |                          |                    |                       |               |                |                     |       |
| 1.855                                                                                | 14.1                | V                        | 0.98               | 8.05                  | 21.18         | 33.0           | -11.8               |       |
| 1.855                                                                                | 17.5                | H                        | 0.98               | 8.05                  | 24.57         | 33.0           | -8.4                |       |
| <b>Mid Ch</b>                                                                        |                     |                          |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.5                | V                        | 0.98               | 8.03                  | 20.58         | 33.0           | -12.4               |       |
| 1.880                                                                                | 16.5                | H                        | 0.98               | 8.03                  | 23.56         | 33.0           | -9.4                |       |
| <b>High Ch</b>                                                                       |                     |                          |                    |                       |               |                |                     |       |
| 1.905                                                                                | 13.6                | V                        | 0.98               | 8.04                  | 20.69         | 33.0           | -12.3               |       |
| 1.905                                                                                | 16.5                | H                        | 0.98               | 8.04                  | 23.59         | 33.0           | -9.4                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52279                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 2 16QAM 10MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.855                                                                                | 13.4                | V                         | 0.98               | 8.05                  | 20.48         | 33.0           | -12.5               |       |
| 1.855                                                                                | 16.7                | H                         | 0.98               | 8.05                  | 23.75         | 33.0           | -9.3                |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.880                                                                                | 12.7                | V                         | 0.98               | 8.03                  | 19.73         | 33.0           | -13.3               |       |
| 1.880                                                                                | 16.0                | H                         | 0.98               | 8.03                  | 23.01         | 33.0           | -10.0               |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 1.905                                                                                | 12.9                | V                         | 0.98               | 8.04                  | 19.93         | 33.0           | -13.1               |       |
| 1.905                                                                                | 15.6                | H                         | 0.98               | 8.04                  | 22.68         | 33.0           | -10.3               |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                          |                     |                    |                    |                       |               |                |                     |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/16/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 2 QPSK 15MHz BW |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b><br>Receiving: Horn T346, and Chamber D SMA Cables<br>Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                  |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                                                                                                                          | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |
| 1.858                                                                                                                                                                             | 14.3                | V                  | 0.98               | 8.04                  | 21.32         | 33.0           | -11.7               |       |
| 1.858                                                                                                                                                                             | 17.3                | H                  | 0.98               | 8.04                  | 24.31         | 33.0           | -8.7                |       |
| <b>Mid Ch</b>                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                                                                                                             | 14.0                | V                  | 0.98               | 8.03                  | 21.02         | 33.0           | -12.0               |       |
| 1.880                                                                                                                                                                             | 16.8                | H                  | 0.98               | 8.03                  | 23.86         | 33.0           | -9.1                |       |
| <b>High Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |               |                |                     |       |
| 1.903                                                                                                                                                                             | 14.2                | V                  | 0.98               | 8.03                  | 21.28         | 33.0           | -11.7               |       |
| 1.903                                                                                                                                                                             | 16.8                | H                  | 0.98               | 8.03                  | 23.85         | 33.0           | -9.2                |       |
| Rev. 10.24.13                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52279                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 2 16QAM 15MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.858                                                                                | 13.5                | V                         | 0.98               | 8.04                  | 20.52         | 33.0           | -12.5               |       |
| 1.858                                                                                | 16.5                | H                         | 0.98               | 8.04                  | 23.52         | 33.0           | -9.5                |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.1                | V                         | 0.98               | 8.03                  | 20.19         | 33.0           | -12.8               |       |
| 1.880                                                                                | 16.1                | H                         | 0.98               | 8.03                  | 23.10         | 33.0           | -9.9                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 1.903                                                                                | 13.6                | V                         | 0.98               | 8.03                  | 20.62         | 33.0           | -12.4               |       |
| 1.903                                                                                | 16.1                | H                         | 0.98               | 8.03                  | 23.16         | 33.0           | -9.8                |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52279                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 2 QPSK 20MHz BW                                                |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                        |                     |                    |                    |                       |               |                |                     |       |
| 1.860                                                                                | 14.3                | V                  | 0.98               | 8.04                  | 21.31         | 33.0           | -11.7               |       |
| 1.860                                                                                | 17.4                | H                  | 0.98               | 8.04                  | 24.45         | 33.0           | -8.5                |       |
| <b>Mid Ch</b>                                                                        |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                | 14.2                | V                  | 0.98               | 8.03                  | 21.20         | 33.0           | -11.8               |       |
| 1.880                                                                                | 16.9                | H                  | 0.98               | 8.03                  | 23.96         | 33.0           | -9.0                |       |
| <b>High Ch</b>                                                                       |                     |                    |                    |                       |               |                |                     |       |
| 1.900                                                                                | 13.9                | V                  | 0.98               | 8.02                  | 20.96         | 33.0           | -12.0               |       |
| 1.900                                                                                | 17.1                | H                  | 0.98               | 8.02                  | 24.10         | 33.0           | -8.9                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52279                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 2 16QAM 20MHz BW                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Equipment:                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T346, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.860                                                                                | 13.5                | V                  | 0.98               | 8.04                  | 20.52         | 33.0           | -12.5               |       |
| 1.860                                                                                | 16.5                | H                  | 0.98               | 8.04                  | 23.54         | 33.0           | -9.5                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.880                                                                                | 13.1                | V                  | 0.98               | 8.03                  | 20.19         | 33.0           | -12.8               |       |
| 1.880                                                                                | 16.4                | H                  | 0.98               | 8.03                  | 23.42         | 33.0           | -9.6                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.900                                                                                | 13.5                | V                  | 0.98               | 8.02                  | 20.53         | 33.0           | -12.5               |       |
| 1.900                                                                                | 16.4                | H                  | 0.98               | 8.02                  | 23.48         | 33.0           | -9.5                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

## 10.1.2. LTE BAND 4

### QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52291                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 4 QPSK 1.4MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.711                                                                                | 13.1                | V                         | 0.95               | 8.27                  | 20.38         | 30.0           | -9.6                |       |
| 1.711                                                                                | 16.4                | H                         | 0.95               | 8.27                  | 23.67         | 30.0           | -6.3                |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.8                | V                         | 0.95               | 8.23                  | 20.07         | 30.0           | -9.9                |       |
| 1.733                                                                                | 16.3                | H                         | 0.95               | 8.23                  | 23.61         | 30.0           | -6.4                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 1.754                                                                                | 12.2                | V                         | 0.95               | 8.18                  | 19.47         | 30.0           | -10.5               |       |
| 1.754                                                                                | 15.8                | H                         | 0.95               | 8.18                  | 23.05         | 30.0           | -7.0                |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52291                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 4 16QAM 1.4MHz BW                                                     |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.711                                                                                | 13.2                | V                  | 0.95               | 8.27                  | 20.48         | 30.0           | -9.5                |       |
| 1.711                                                                                | 16.0                | H                  | 0.95               | 8.27                  | 23.29         | 30.0           | -6.7                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.0                | V                  | 0.95               | 8.23                  | 19.30         | 30.0           | -10.7               |       |
| 1.733                                                                                | 15.8                | H                  | 0.95               | 8.23                  | 23.12         | 30.0           | -6.9                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.754                                                                                | 11.3                | V                  | 0.95               | 8.18                  | 18.54         | 30.0           | -11.5               |       |
| 1.754                                                                                | 15.1                | H                  | 0.95               | 8.18                  | 22.30         | 30.0           | -7.7                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 QPSK 3MHz BW                                                 |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.712                                                                                | 12.2                | V                  | 0.95               | 8.27                  | 19.48         | 30.0           | -10.5               |       |
| 1.712                                                                                | 14.9                | H                  | 0.95               | 8.27                  | 22.22         | 30.0           | -7.8                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.7                | V                  | 0.95               | 8.23                  | 19.98         | 30.0           | -10.0               |       |
| 1.733                                                                                | 16.4                | H                  | 0.95               | 8.23                  | 23.66         | 30.0           | -6.3                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.754                                                                                | 13.0                | V                  | 0.95               | 8.18                  | 20.25         | 30.0           | -9.7                |       |
| 1.754                                                                                | 15.9                | H                  | 0.95               | 8.18                  | 23.14         | 30.0           | -6.9                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52291                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 4 16QAM 3MHz BW                                                       |                     |                    |                    |                       |               |                |                     |       |
| Test Equipment:                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.712                                                                                | 12.5                | V                  | 0.95               | 8.27                  | 19.82         | 30.0           | -10.2               |       |
| 1.712                                                                                | 15.6                | H                  | 0.95               | 8.27                  | 22.91         | 30.0           | -7.1                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 11.9                | V                  | 0.95               | 8.23                  | 19.13         | 30.0           | -10.9               |       |
| 1.733                                                                                | 15.6                | H                  | 0.95               | 8.23                  | 22.86         | 30.0           | -7.1                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.754                                                                                | 12.5                | V                  | 0.95               | 8.18                  | 19.76         | 30.0           | -10.2               |       |
| 1.754                                                                                | 15.3                | H                  | 0.95               | 8.18                  | 22.48         | 30.0           | -7.5                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 QPSK 5MHz BW                                                 |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.713                                                                                | 11.7                | V                  | 0.95               | 8.27                  | 18.98         | 30.0           | -11.0               |       |
| 1.713                                                                                | 15.0                | H                  | 0.95               | 8.27                  | 22.29         | 30.0           | -7.7                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.6                | V                  | 0.95               | 8.23                  | 19.92         | 30.0           | -10.1               |       |
| 1.733                                                                                | 16.4                | H                  | 0.95               | 8.23                  | 23.66         | 30.0           | -6.3                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.753                                                                                | 12.8                | V                  | 0.95               | 8.18                  | 19.98         | 30.0           | -10.0               |       |
| 1.753                                                                                | 16.3                | H                  | 0.95               | 8.18                  | 23.49         | 30.0           | -6.5                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 16QAM 5MHz BW                                                |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.713                                                                                | 12.2                | V                  | 0.95               | 8.27                  | 19.55         | 30.0           | -10.5               |       |
| 1.713                                                                                | 15.4                | H                  | 0.95               | 8.27                  | 22.74         | 30.0           | -7.3                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 11.9                | V                  | 0.95               | 8.23                  | 19.22         | 30.0           | -10.8               |       |
| 1.733                                                                                | 15.7                | H                  | 0.95               | 8.23                  | 22.93         | 30.0           | -7.1                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.753                                                                                | 12.7                | V                  | 0.95               | 8.18                  | 19.91         | 30.0           | -10.1               |       |
| 1.753                                                                                | 15.7                | H                  | 0.95               | 8.18                  | 22.88         | 30.0           | -7.1                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 6/16/2016                |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 52291                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 4 QPSK 10MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                        |                     |                          |                    |                       |               |                |                     |       |
| 1.715                                                                                | 12.4                | V                        | 0.95               | 8.26                  | 19.70         | 30.0           | -10.3               |       |
| 1.715                                                                                | 16.4                | H                        | 0.95               | 8.26                  | 23.73         | 30.0           | -6.3                |       |
| <b>Mid Ch</b>                                                                        |                     |                          |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.8                | V                        | 0.95               | 8.23                  | 20.06         | 30.0           | -9.9                |       |
| 1.733                                                                                | 16.2                | H                        | 0.95               | 8.23                  | 23.48         | 30.0           | -6.5                |       |
| <b>High Ch</b>                                                                       |                     |                          |                    |                       |               |                |                     |       |
| 1.750                                                                                | 12.9                | V                        | 0.95               | 8.19                  | 20.18         | 30.0           | -9.8                |       |
| 1.750                                                                                | 15.9                | H                        | 0.95               | 8.19                  | 23.13         | 30.0           | -6.9                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 16QAM 10MHz BW                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.715                                                                                | 11.0                | V                  | 0.95               | 8.26                  | 18.26         | 30.0           | -11.7               |       |
| 1.715                                                                                | 14.8                | H                  | 0.95               | 8.26                  | 22.11         | 30.0           | -7.9                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.1                | V                  | 0.95               | 8.23                  | 19.34         | 30.0           | -10.7               |       |
| 1.733                                                                                | 15.4                | H                  | 0.95               | 8.23                  | 22.71         | 30.0           | -7.3                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.750                                                                                | 11.0                | V                  | 0.95               | 8.19                  | 18.21         | 30.0           | -11.8               |       |
| 1.750                                                                                | 15.1                | H                  | 0.95               | 8.19                  | 22.29         | 30.0           | -7.7                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                          |                     |                    |                    |                       |               |                |                     |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/16/2016<br><b>Test Engineer:</b> 52291<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 4 QPSK 15MHz BW |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b><br>Receiving: Horn T712, and Chamber D SMA Cables<br>Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                  |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                                                                                                                          | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| <b>Low Ch</b>                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |
| 1.718                                                                                                                                                                             | 13.6                | V                  | 0.95               | 8.26                  | 20.94         | 30.0           | -9.1                |       |
| 1.718                                                                                                                                                                             | 16.0                | H                  | 0.95               | 8.26                  | 23.35         | 30.0           | -6.7                |       |
| <b>Mid Ch</b>                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                                                                                                             | 13.3                | V                  | 0.95               | 8.23                  | 20.62         | 30.0           | -9.4                |       |
| 1.733                                                                                                                                                                             | 16.0                | H                  | 0.95               | 8.23                  | 23.31         | 30.0           | -6.7                |       |
| <b>High Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |               |                |                     |       |
| 1.748                                                                                                                                                                             | 13.1                | V                  | 0.95               | 8.19                  | 20.38         | 30.0           | -9.6                |       |
| 1.748                                                                                                                                                                             | 15.7                | H                  | 0.95               | 8.19                  | 22.92         | 30.0           | -7.1                |       |
| Rev. 10.24.13                                                                                                                                                                     |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| Company:                                                                             |                     |                    |                    |                       |               |                |                     |       |
| Project #: 16U23366                                                                  |                     |                    |                    |                       |               |                |                     |       |
| Date: 6/16/2016                                                                      |                     |                    |                    |                       |               |                |                     |       |
| Test Engineer: 52291                                                                 |                     |                    |                    |                       |               |                |                     |       |
| Configuration: EUT Only                                                              |                     |                    |                    |                       |               |                |                     |       |
| Mode: LTE Band 4 16QAM 15MHz BW                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.718                                                                                | 15.6                | V                  | 0.95               | 8.26                  | 22.89         | 30.0           | -7.1                |       |
| 1.718                                                                                | 15.4                | H                  | 0.95               | 8.26                  | 22.73         | 30.0           | -7.3                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 12.4                | V                  | 0.95               | 8.23                  | 19.66         | 30.0           | -10.3               |       |
| 1.733                                                                                | 15.5                | H                  | 0.95               | 8.23                  | 22.78         | 30.0           | -7.2                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.748                                                                                | 12.7                | V                  | 0.95               | 8.19                  | 19.92         | 30.0           | -10.1               |       |
| 1.748                                                                                | 15.0                | H                  | 0.95               | 8.19                  | 22.28         | 30.0           | -7.7                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 QPSK 20MHz BW                                                |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.720                                                                                | 13.6                | V                  | 0.95               | 8.25                  | 20.89         | 30.0           | -9.1                |       |
| 1.720                                                                                | 15.3                | H                  | 0.95               | 8.25                  | 22.64         | 30.0           | -7.4                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 13.8                | V                  | 0.95               | 8.23                  | 21.09         | 30.0           | -8.9                |       |
| 1.733                                                                                | 16.0                | H                  | 0.95               | 8.23                  | 23.32         | 30.0           | -6.7                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.745                                                                                | 14.0                | V                  | 0.95               | 8.20                  | 21.22         | 30.0           | -8.8                |       |
| 1.745                                                                                | 16.0                | H                  | 0.95               | 8.20                  | 23.25         | 30.0           | -6.8                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                    |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                    |                    |                       |               |                |                     |       |
| <b>Project #:</b> 16U23366                                                           |                     |                    |                    |                       |               |                |                     |       |
| <b>Date:</b> 6/16/2016                                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b> 52291                                                          |                     |                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b> EUT Only                                                       |                     |                    |                    |                       |               |                |                     |       |
| <b>Mode:</b> LTE Band 4 16QAM 20MHz BW                                               |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                    |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                    |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.720                                                                                | 12.2                | V                  | 0.95               | 8.25                  | 19.46         | 30.0           | -10.5               |       |
| 1.720                                                                                | 15.0                | H                  | 0.95               | 8.25                  | 22.32         | 30.0           | -7.7                |       |
| Mid Ch                                                                               |                     |                    |                    |                       |               |                |                     |       |
| 1.733                                                                                | 13.1                | V                  | 0.95               | 8.23                  | 20.33         | 30.0           | -9.7                |       |
| 1.733                                                                                | 15.3                | H                  | 0.95               | 8.23                  | 22.54         | 30.0           | -7.5                |       |
| High Ch                                                                              |                     |                    |                    |                       |               |                |                     |       |
| 1.745                                                                                | 15.5                | V                  | 0.95               | 8.20                  | 22.75         | 30.0           | -7.3                |       |
| 1.745                                                                                | 15.4                | H                  | 0.95               | 8.20                  | 22.62         | 30.0           | -7.4                |       |
| Rev. 10.24.13                                                                        |                     |                    |                    |                       |               |                |                     |       |

### 10.1.3. LTE BAND 5

#### QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                           |                     |                    |                    |                       |              |               |                    |                     |                |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/15/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 5 QPSK 1.4MHz BW |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b><br>Receiving: Sunoi T408, and Chamber D Cable<br>Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                        |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                                                                                                                           | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                                                                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 824.70                                                                                                                                                                             | 9.63                | V                  | 0.6                | 0.0                   | 9.01         | 11.16         | 38.45              | 40.60               | -29.4          |       |
| 824.70                                                                                                                                                                             | 16.68               | H                  | 0.6                | 0.0                   | 16.06        | 18.21         | 38.45              | 40.60               | -22.4          |       |
| Mid Ch                                                                                                                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 836.50                                                                                                                                                                             | 11.28               | V                  | 0.6                | 0.0                   | 10.66        | 12.81         | 38.45              | 40.60               | -27.8          |       |
| 836.50                                                                                                                                                                             | 17.90               | H                  | 0.6                | 0.0                   | 17.28        | 19.43         | 38.45              | 40.60               | -21.2          |       |
| High Ch                                                                                                                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 848.30                                                                                                                                                                             | 10.69               | V                  | 0.6                | 0.0                   | 10.07        | 12.22         | 38.45              | 40.60               | -28.4          |       |
| 848.30                                                                                                                                                                             | 18.13               | H                  | 0.6                | 0.0                   | 17.51        | 19.66         | 38.45              | 40.60               | -20.9          |       |
| Rev. 10.24.13                                                                                                                                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| Company:                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Project #: 16U23366                                                                 |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Date: 6/15/2016                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Test Engineer: 52279                                                                |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Configuration: EUT Only                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Mode: LTE Band 5 16QAM 1.4MHz BW                                                    |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Test Equipment:                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 824.70                                                                              | 8.51                | V                  | 0.6                | 0.0                   | 7.89         | 10.04         | 38.45              | 40.60               | -30.6          |       |
| 824.70                                                                              | 15.67               | H                  | 0.6                | 0.0                   | 15.05        | 17.20         | 38.45              | 40.60               | -23.4          |       |
| Mid Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 836.50                                                                              | 10.50               | V                  | 0.6                | 0.0                   | 9.88         | 12.03         | 38.45              | 40.60               | -28.6          |       |
| 836.50                                                                              | 17.17               | H                  | 0.6                | 0.0                   | 16.55        | 18.70         | 38.45              | 40.60               | -21.9          |       |
| High Ch                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 848.30                                                                              | 10.15               | V                  | 0.6                | 0.0                   | 9.53         | 11.68         | 38.45              | 40.60               | -28.9          |       |
| 848.30                                                                              | 17.62               | H                  | 0.6                | 0.0                   | 17.00        | 19.15         | 38.45              | 40.60               | -21.4          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

**QPSK EIRP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                         |                     |                    |                    |                       |              |               |                    |                     |                |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/15/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 5 QPSK 3MHz BW |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b><br><b>Receiving:</b> Sunol T408, and Chamber D Cable<br><b>Substitution:</b> Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)        |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                                                                                                                         | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| <b>Low Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 825.50                                                                                                                                                                           | 9.95                | V                  | 0.6                | 0.0                   | 9.33         | 11.48         | 38.45              | 40.60               | -29.1          |       |
| 825.50                                                                                                                                                                           | 16.48               | H                  | 0.6                | 0.0                   | 15.86        | 18.01         | 38.45              | 40.60               | -22.6          |       |
| <b>Mid Ch</b>                                                                                                                                                                    |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 836.50                                                                                                                                                                           | 11.33               | V                  | 0.6                | 0.0                   | 10.71        | 12.86         | 38.45              | 40.60               | -27.7          |       |
| 836.50                                                                                                                                                                           | 17.80               | H                  | 0.6                | 0.0                   | 17.18        | 19.33         | 38.45              | 40.60               | -21.3          |       |
| <b>High Ch</b>                                                                                                                                                                   |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 847.50                                                                                                                                                                           | 10.74               | V                  | 0.6                | 0.0                   | 10.12        | 12.27         | 38.45              | 40.60               | -28.3          |       |
| 847.50                                                                                                                                                                           | 18.15               | H                  | 0.6                | 0.0                   | 17.53        | 19.68         | 38.45              | 40.60               | -20.9          |       |
| Rev. 10.24.13                                                                                                                                                                    |                     |                    |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                  |                 |                 |                    |           |            |                 |                  |             |       |
|-------------------------------------------------------------------------------------|------------------|-----------------|-----------------|--------------------|-----------|------------|-----------------|------------------|-------------|-------|
| Company:                                                                            |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Project #: 16U23366                                                                 |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Date: 6/15/2016                                                                     |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Test Engineer: 52279                                                                |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Configuration: EUT Only                                                             |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Mode: LTE Band 5 16QAM 3MHz BW                                                      |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Test Equipment:                                                                     |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                  |                 |                 |                    |           |            |                 |                  |             |       |
| f MHz                                                                               | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | EIRP (dBm) | ERP Limit (dBm) | EIRP Limit (dBm) | Margin (dB) | Notes |
| Low Ch                                                                              |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 825.50                                                                              | 8.52             | V               | 0.6             | 0.0                | 7.90      | 10.05      | 38.45           | 40.60            | -30.5       |       |
| 825.50                                                                              | 15.64            | H               | 0.6             | 0.0                | 15.02     | 17.17      | 38.45           | 40.60            | -23.4       |       |
| Mid Ch                                                                              |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 836.50                                                                              | 10.63            | V               | 0.6             | 0.0                | 10.01     | 12.16      | 38.45           | 40.60            | -28.4       |       |
| 836.50                                                                              | 16.96            | H               | 0.6             | 0.0                | 16.34     | 18.49      | 38.45           | 40.60            | -22.1       |       |
| High Ch                                                                             |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 847.50                                                                              | 10.23            | V               | 0.6             | 0.0                | 9.61      | 11.76      | 38.45           | 40.60            | -28.8       |       |
| 847.50                                                                              | 17.37            | H               | 0.6             | 0.0                | 16.75     | 18.90      | 38.45           | 40.60            | -21.7       |       |
| Rev. 10.24.13                                                                       |                  |                 |                 |                    |           |            |                 |                  |             |       |

**QPSK EIRP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                         |                  |                 |                 |                    |           |            |                 |                  |             |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|-----------------|--------------------|-----------|------------|-----------------|------------------|-------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/15/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 5 QPSK 5MHz BW |                  |                 |                 |                    |           |            |                 |                  |             |       |
| <b>Test Equipment:</b><br>Receiving: Sunol T408, and Chamber D Cable<br>Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                      |                  |                 |                 |                    |           |            |                 |                  |             |       |
| f MHz                                                                                                                                                                            | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | EIRP (dBm) | ERP Limit (dBm) | EIRP Limit (dBm) | Margin (dB) | Notes |
| <b>Low Ch</b>                                                                                                                                                                    |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 826.50                                                                                                                                                                           | 10.43            | V               | 0.6             | 0.0                | 9.81      | 11.96      | 38.45           | 40.60            | -28.6       |       |
| 826.50                                                                                                                                                                           | 16.56            | H               | 0.6             | 0.0                | 15.94     | 18.09      | 38.45           | 40.60            | -22.5       |       |
| <b>Mid Ch</b>                                                                                                                                                                    |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 836.50                                                                                                                                                                           | 12.21            | V               | 0.6             | 0.0                | 11.59     | 13.74      | 38.45           | 40.60            | -26.9       |       |
| 836.50                                                                                                                                                                           | 17.87            | H               | 0.6             | 0.0                | 17.25     | 19.40      | 38.45           | 40.60            | -21.2       |       |
| <b>High Ch</b>                                                                                                                                                                   |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 846.50                                                                                                                                                                           | 12.65            | V               | 0.6             | 0.0                | 12.03     | 14.18      | 38.45           | 40.60            | -26.4       |       |
| 846.50                                                                                                                                                                           | 17.97            | H               | 0.6             | 0.0                | 17.35     | 19.50      | 38.45           | 40.60            | -21.1       |       |
| Rev. 10.24.13                                                                                                                                                                    |                  |                 |                 |                    |           |            |                 |                  |             |       |

**16QAM EIRP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                  |                 |                 |                    |           |            |                 |                  |             |       |
|-------------------------------------------------------------------------------------|------------------|-----------------|-----------------|--------------------|-----------|------------|-----------------|------------------|-------------|-------|
| Company:                                                                            |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Project #: 16U23366                                                                 |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Date: 6/15/2016                                                                     |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Test Engineer: 52279                                                                |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Configuration: EUT Only                                                             |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Mode: LTE Band 5 16QAM 5MHz BW                                                      |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Test Equipment:                                                                     |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                  |                 |                 |                    |           |            |                 |                  |             |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                  |                 |                 |                    |           |            |                 |                  |             |       |
| f MHz                                                                               | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | EIRP (dBm) | ERP Limit (dBm) | EIRP Limit (dBm) | Margin (dB) | Notes |
| Low Ch                                                                              |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 826.50                                                                              | 9.42             | V               | 0.6             | 0.0                | 8.80      | 10.95      | 38.45           | 40.60            | -29.6       |       |
| 826.50                                                                              | 15.88            | H               | 0.6             | 0.0                | 15.26     | 17.41      | 38.45           | 40.60            | -23.2       |       |
| Mid Ch                                                                              |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 836.50                                                                              | 11.60            | V               | 0.6             | 0.0                | 10.98     | 13.13      | 38.45           | 40.60            | -27.5       |       |
| 836.50                                                                              | 17.35            | H               | 0.6             | 0.0                | 16.73     | 18.88      | 38.45           | 40.60            | -21.7       |       |
| High Ch                                                                             |                  |                 |                 |                    |           |            |                 |                  |             |       |
| 846.50                                                                              | 12.07            | V               | 0.6             | 0.0                | 11.45     | 13.60      | 38.45           | 40.60            | -27.0       |       |
| 846.50                                                                              | 17.49            | H               | 0.6             | 0.0                | 16.87     | 19.02      | 38.45           | 40.60            | -21.6       |       |
| Rev. 10.24.13                                                                       |                  |                 |                 |                    |           |            |                 |                  |             |       |

**QPSK EIRP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                          |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b>                                                                     |                     |                          |                    |                       |              |               |                    |                     |                |       |
| <b>Project #:</b>                                                                   |                     | 16U23366                 |                    |                       |              |               |                    |                     |                |       |
| <b>Date:</b>                                                                        |                     | 6/15/2016                |                    |                       |              |               |                    |                     |                |       |
| <b>Test Engineer:</b>                                                               |                     | 52279                    |                    |                       |              |               |                    |                     |                |       |
| <b>Configuration:</b>                                                               |                     | EUT Only                 |                    |                       |              |               |                    |                     |                |       |
| <b>Mode:</b>                                                                        |                     | LTE Band 5 QPSK 10MHz BW |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b>                                                              |                     |                          |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                          |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                              |                     |                          |                    |                       |              |               |                    |                     |                |       |
| 829.00                                                                              | 10.24               | V                        | 0.6                | 0.0                   | 9.62         | 11.77         | 38.45              | 40.60               | -28.8          |       |
| 829.00                                                                              | 16.69               | H                        | 0.6                | 0.0                   | 16.07        | 18.22         | 38.45              | 40.60               | -22.4          |       |
| Mid Ch                                                                              |                     |                          |                    |                       |              |               |                    |                     |                |       |
| 836.50                                                                              | 12.09               | V                        | 0.6                | 0.0                   | 11.47        | 13.62         | 38.45              | 40.60               | -27.0          |       |
| 836.50                                                                              | 17.74               | H                        | 0.6                | 0.0                   | 17.12        | 19.27         | 38.45              | 40.60               | -21.3          |       |
| High Ch                                                                             |                     |                          |                    |                       |              |               |                    |                     |                |       |
| 844.00                                                                              | 12.47               | V                        | 0.6                | 0.0                   | 11.85        | 14.00         | 38.45              | 40.60               | -26.6          |       |
| 844.00                                                                              | 17.16               | H                        | 0.6                | 0.0                   | 16.54        | 18.69         | 38.45              | 40.60               | -21.9          |       |
| Rev. 10.24.13                                                                       |                     |                          |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| Company:                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Project #: 16U23366                                                                 |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Date: 6/15/2016                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Test Engineer: 52279                                                                |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Configuration: EUT Only                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Mode: LTE Band 5 16QAM 10MHz BW                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Test Equipment:                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 829.00                                                                              | 9.47                | V                  | 0.6                | 0.0                   | 8.85         | 11.00         | 38.45              | 40.60               | -29.6          |       |
| 829.00                                                                              | 16.47               | H                  | 0.6                | 0.0                   | 15.85        | 18.00         | 38.45              | 40.60               | -22.6          |       |
| Mid Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 836.50                                                                              | 11.79               | V                  | 0.6                | 0.0                   | 11.17        | 13.32         | 38.45              | 40.60               | -27.3          |       |
| 836.50                                                                              | 16.98               | H                  | 0.6                | 0.0                   | 16.36        | 18.51         | 38.45              | 40.60               | -22.1          |       |
| High Ch                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 844.00                                                                              | 11.58               | V                  | 0.6                | 0.0                   | 10.96        | 13.11         | 38.45              | 40.60               | -27.5          |       |
| 844.00                                                                              | 16.29               | H                  | 0.6                | 0.0                   | 15.67        | 17.82         | 38.45              | 40.60               | -22.8          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

#### 10.1.4. LTE BAND 7

##### QPSK EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                        |                     |                    |                    |                       |               |                |                     |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 7/1/2016<br><b>Test Engineer:</b> 45200<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 7 QPSK 5MHz BW |                     |                    |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b><br>Receiving: Horn T712, and Chamber D SMA Cables<br>Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                |                     |                    |                    |                       |               |                |                     |       |
| f<br>GHz                                                                                                                                                                        | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                                                                                                                          |                     |                    |                    |                       |               |                |                     |       |
| 2.503                                                                                                                                                                           | 17.3                | V                  | 1.15               | 9.34                  | 25.45         | 33.0           | -7.6                |       |
| 2.503                                                                                                                                                                           | 15.2                | H                  | 1.15               | 9.34                  | 23.34         | 33.0           | -9.7                |       |
| Mid Ch                                                                                                                                                                          |                     |                    |                    |                       |               |                |                     |       |
| 2.535                                                                                                                                                                           | 18.3                | V                  | 1.16               | 9.38                  | 26.56         | 33.0           | -6.4                |       |
| 2.535                                                                                                                                                                           | 16.2                | H                  | 1.16               | 9.38                  | 24.42         | 33.0           | -8.6                |       |
| High Ch                                                                                                                                                                         |                     |                    |                    |                       |               |                |                     |       |
| 2.568                                                                                                                                                                           | 18.4                | V                  | 1.17               | 9.43                  | 26.66         | 33.0           | -6.3                |       |
| 2.568                                                                                                                                                                           | 15.6                | H                  | 1.17               | 9.43                  | 23.88         | 33.0           | -9.1                |       |
| Rev. 10.24.13                                                                                                                                                                   |                     |                    |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 16QAM 5MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.503                                                                                | 16.4                | V                        | 1.15               | 9.34                  | 24.63         | 33.0           | -8.4                |       |
| 2.503                                                                                | 14.3                | H                        | 1.15               | 9.34                  | 22.52         | 33.0           | -10.5               |       |
| Mid Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.535                                                                                | 17.5                | V                        | 1.16               | 9.38                  | 25.74         | 33.0           | -7.3                |       |
| 2.535                                                                                | 15.4                | H                        | 1.16               | 9.38                  | 23.60         | 33.0           | -9.4                |       |
| High Ch                                                                              |                     |                          |                    |                       |               |                |                     |       |
| 2.568                                                                                | 17.6                | V                        | 1.17               | 9.43                  | 25.84         | 33.0           | -7.2                |       |
| 2.568                                                                                | 14.8                | H                        | 1.17               | 9.43                  | 23.06         | 33.0           | -9.9                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 7 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 QPSK 10MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.505                                                                                | 17.6                | V                        | 1.15               | 9.34                  | 25.83         | 33.0           | -7.2                |       |
| 2.505                                                                                | 15.2                | H                        | 1.15               | 9.34                  | 23.35         | 33.0           | -9.6                |       |
| Mid Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.535                                                                                | 18.4                | V                        | 1.16               | 9.38                  | 26.62         | 33.0           | -6.4                |       |
| 2.535                                                                                | 15.9                | H                        | 1.16               | 9.38                  | 24.16         | 33.0           | -8.8                |       |
| High Ch                                                                              |                     |                          |                    |                       |               |                |                     |       |
| 2.565                                                                                | 18.7                | V                        | 1.17               | 9.43                  | 26.91         | 33.0           | -6.1                |       |
| 2.565                                                                                | 15.6                | H                        | 1.17               | 9.43                  | 23.88         | 33.0           | -9.1                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 7 (10.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                  |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 16QAM 10MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.505                                                                                | 16.7                | V                         | 1.15               | 9.34                  | 24.90         | 33.0           | -8.1                |       |
| 2.505                                                                                | 14.2                | H                         | 1.15               | 9.34                  | 22.42         | 33.0           | -10.6               |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.535                                                                                | 17.5                | V                         | 1.16               | 9.38                  | 25.69         | 33.0           | -7.3                |       |
| 2.535                                                                                | 15.0                | H                         | 1.16               | 9.38                  | 23.23         | 33.0           | -9.8                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 2.565                                                                                | 17.7                | V                         | 1.17               | 9.43                  | 25.98         | 33.0           | -7.0                |       |
| 2.565                                                                                | 14.7                | H                         | 1.17               | 9.43                  | 22.95         | 33.0           | -10.1               |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 7 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 QPSK 15MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.508                                                                                | 17.6                | V                        | 1.15               | 9.34                  | 25.74         | 33.0           | -7.3                |       |
| 2.508                                                                                | 15.3                | H                        | 1.15               | 9.34                  | 23.47         | 33.0           | -9.5                |       |
| Mid Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.535                                                                                | 18.4                | V                        | 1.16               | 9.38                  | 26.61         | 33.0           | -6.4                |       |
| 2.535                                                                                | 16.1                | H                        | 1.16               | 9.38                  | 24.36         | 33.0           | -8.6                |       |
| High Ch                                                                              |                     |                          |                    |                       |               |                |                     |       |
| 2.563                                                                                | 18.6                | V                        | 1.17               | 9.42                  | 26.89         | 33.0           | -6.1                |       |
| 2.563                                                                                | 15.8                | H                        | 1.17               | 9.42                  | 24.07         | 33.0           | -8.9                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 7 (15.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                  |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 16QAM 15MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.508                                                                                | 16.8                | V                         | 1.15               | 9.34                  | 25.02         | 33.0           | -8.0                |       |
| 2.508                                                                                | 14.6                | H                         | 1.15               | 9.34                  | 22.75         | 33.0           | -10.3               |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.535                                                                                | 17.7                | V                         | 1.16               | 9.38                  | 25.89         | 33.0           | -7.1                |       |
| 2.535                                                                                | 15.4                | H                         | 1.16               | 9.38                  | 23.64         | 33.0           | -9.4                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 2.563                                                                                | 17.9                | V                         | 1.17               | 9.42                  | 26.17         | 33.0           | -6.8                |       |
| 2.563                                                                                | 15.1                | H                         | 1.17               | 9.42                  | 23.35         | 33.0           | -9.6                |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

**QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                          |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|--------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                          |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                 |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                 |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                    |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                 |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 QPSK 20MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                          |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                          |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                          |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)       | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.510                                                                                | 17.2                | V                        | 1.15               | 9.35                  | 25.43         | 33.0           | -7.6                |       |
| 2.510                                                                                | 15.3                | H                        | 1.15               | 9.35                  | 23.45         | 33.0           | -9.5                |       |
| Mid Ch                                                                               |                     |                          |                    |                       |               |                |                     |       |
| 2.535                                                                                | 18.0                | V                        | 1.16               | 9.38                  | 26.24         | 33.0           | -6.8                |       |
| 2.535                                                                                | 16.1                | H                        | 1.16               | 9.38                  | 24.33         | 33.0           | -8.7                |       |
| High Ch                                                                              |                     |                          |                    |                       |               |                |                     |       |
| 2.560                                                                                | 18.6                | V                        | 1.17               | 9.42                  | 26.88         | 33.0           | -6.1                |       |
| 2.560                                                                                | 16.1                | H                        | 1.17               | 9.42                  | 24.37         | 33.0           | -8.6                |       |
| Rev. 10.24.13                                                                        |                     |                          |                    |                       |               |                |                     |       |

**16QAM EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D             |                     |                           |                    |                       |               |                |                     |       |
|--------------------------------------------------------------------------------------|---------------------|---------------------------|--------------------|-----------------------|---------------|----------------|---------------------|-------|
| <b>Company:</b>                                                                      |                     |                           |                    |                       |               |                |                     |       |
| <b>Project #:</b>                                                                    |                     | 16U23366                  |                    |                       |               |                |                     |       |
| <b>Date:</b>                                                                         |                     | 7/1/2016                  |                    |                       |               |                |                     |       |
| <b>Test Engineer:</b>                                                                |                     | 45200                     |                    |                       |               |                |                     |       |
| <b>Configuration:</b>                                                                |                     | EUT Only                  |                    |                       |               |                |                     |       |
| <b>Mode:</b>                                                                         |                     | LTE Band 7 16QAM 20MHz BW |                    |                       |               |                |                     |       |
| <b>Test Equipment:</b>                                                               |                     |                           |                    |                       |               |                |                     |       |
| Receiving: Horn T712, and Chamber D SMA Cables                                       |                     |                           |                    |                       |               |                |                     |       |
| Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                           |                    |                       |               |                |                     |       |
| f<br>GHz                                                                             | SG reading<br>(dBm) | Ant. Pol.<br>(H/V)        | Cable Loss<br>(dB) | Antenna Gain<br>(dBi) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin EIRP<br>(dB) | Notes |
| Low Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.510                                                                                | 16.4                | V                         | 1.15               | 9.35                  | 24.63         | 33.0           | -8.4                |       |
| 2.510                                                                                | 14.5                | H                         | 1.15               | 9.35                  | 22.65         | 33.0           | -10.3               |       |
| Mid Ch                                                                               |                     |                           |                    |                       |               |                |                     |       |
| 2.535                                                                                | 17.2                | V                         | 1.16               | 9.38                  | 25.44         | 33.0           | -7.6                |       |
| 2.535                                                                                | 15.3                | H                         | 1.16               | 9.38                  | 23.53         | 33.0           | -9.5                |       |
| High Ch                                                                              |                     |                           |                    |                       |               |                |                     |       |
| 2.560                                                                                | 17.8                | V                         | 1.17               | 9.42                  | 26.08         | 33.0           | -6.9                |       |
| 2.560                                                                                | 15.3                | H                         | 1.17               | 9.42                  | 23.57         | 33.0           | -9.4                |       |
| Rev. 10.24.13                                                                        |                     |                           |                    |                       |               |                |                     |       |

## 10.1.5. LTE BAND 12

### QPSK EIRP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/15/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 12 QPSK 1.4MHz BW |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b><br><b>Receiving:</b> Sunoi T408, and Chamber D Cable<br><b>Substitution:</b> Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)           |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                                                                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                                                                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 699.70                                                                                                                                                                              | 8.15                | V                  | 0.55               | 0.0                   | 7.60         | 9.75          | 34.77              | 36.99               | -27.2          |       |
| 699.70                                                                                                                                                                              | 17.38               | H                  | 0.55               | 0.0                   | 16.83        | 18.98         | 34.77              | 36.99               | -18.0          |       |
| Mid Ch                                                                                                                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                                                                                                                              | 9.45                | V                  | 0.55               | 0.0                   | 8.90         | 11.05         | 34.77              | 36.99               | -25.9          |       |
| 707.50                                                                                                                                                                              | 18.01               | H                  | 0.55               | 0.0                   | 17.46        | 19.61         | 34.77              | 36.99               | -17.4          |       |
| High Ch                                                                                                                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 715.30                                                                                                                                                                              | 10.46               | V                  | 0.55               | 0.0                   | 9.91         | 12.06         | 34.77              | 36.99               | -24.9          |       |
| 715.30                                                                                                                                                                              | 18.76               | H                  | 0.55               | 0.0                   | 18.21        | 20.36         | 34.77              | 36.99               | -16.6          |       |
| Rev. 10.24.13                                                                                                                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 12 (1.4MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b>                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Project #:</b> 16U23366                                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Date:</b> 6/15/2016                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Engineer:</b> 52279                                                         |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Configuration:</b> EUT Only                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Mode:</b> LTE Band 12 16QAM 1.4MHz BW                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b>                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| <b>Low Ch</b>                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 699.70                                                                              | 7.39                | V                  | 0.55               | 0.0                   | 6.84         | 8.99          | 34.77              | 36.99               | -28.0          |       |
| 699.70                                                                              | 16.47               | H                  | 0.55               | 0.0                   | 15.92        | 18.07         | 34.77              | 36.99               | -18.9          |       |
| <b>Mid Ch</b>                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                              | 8.46                | V                  | 0.55               | 0.0                   | 7.91         | 10.06         | 34.77              | 36.99               | -26.9          |       |
| 707.50                                                                              | 17.25               | H                  | 0.55               | 0.0                   | 16.70        | 18.85         | 34.77              | 36.99               | -18.1          |       |
| <b>High Ch</b>                                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 715.30                                                                              | 9.82                | V                  | 0.55               | 0.0                   | 9.27         | 11.42         | 34.77              | 36.99               | -25.6          |       |
| 715.30                                                                              | 18.16               | H                  | 0.55               | 0.0                   | 17.61        | 19.76         | 34.77              | 36.99               | -17.2          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

**QPSK EIRP POWER FOR LTE BAND 12 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D                                                                                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b><br><b>Project #:</b> 16U23366<br><b>Date:</b> 6/15/2016<br><b>Test Engineer:</b> 52279<br><b>Configuration:</b> EUT Only<br><b>Mode:</b> LTE Band 12 QPSK 3MHz BW |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b><br>Receiving: Sunol T408, and Chamber D Cable<br>Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)                       |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                                                                                                                          | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                                                                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 700.50                                                                                                                                                                            | 7.98                | V                  | 0.55               | 0.0                   | 7.43         | 9.58          | 34.77              | 36.99               | -27.4          |       |
| 700.50                                                                                                                                                                            | 17.20               | H                  | 0.55               | 0.0                   | 16.65        | 18.80         | 34.77              | 36.99               | -18.2          |       |
| Mid Ch                                                                                                                                                                            |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                                                                                                                            | 9.17                | V                  | 0.55               | 0.0                   | 8.62         | 10.77         | 34.77              | 36.99               | -26.2          |       |
| 707.50                                                                                                                                                                            | 18.14               | H                  | 0.55               | 0.0                   | 17.59        | 19.74         | 34.77              | 36.99               | -17.2          |       |
| High Ch                                                                                                                                                                           |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 714.50                                                                                                                                                                            | 10.35               | V                  | 0.55               | 0.0                   | 9.80         | 11.95         | 34.77              | 36.99               | -25.0          |       |
| 714.50                                                                                                                                                                            | 18.78               | H                  | 0.55               | 0.0                   | 18.23        | 20.38         | 34.77              | 36.99               | -16.6          |       |
| Rev. 10.24.13                                                                                                                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 12 (3.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b>                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Project #:</b> 16U23366                                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Date:</b> 6/15/2016                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Engineer:</b> 52279                                                         |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Configuration:</b> EUT Only                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Mode:</b> LTE Band 12 16QAM 3MHz BW                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b>                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 700.50                                                                              | 7.17                | V                  | 0.55               | 0.0                   | 6.62         | 8.77          | 34.77              | 36.99               | -28.2          |       |
| 700.50                                                                              | 16.61               | H                  | 0.55               | 0.0                   | 16.06        | 18.21         | 34.77              | 36.99               | -18.8          |       |
| Mid Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                              | 8.43                | V                  | 0.55               | 0.0                   | 7.88         | 10.03         | 34.77              | 36.99               | -27.0          |       |
| 707.50                                                                              | 18.07               | H                  | 0.55               | 0.0                   | 17.52        | 19.67         | 34.77              | 36.99               | -17.3          |       |
| High Ch                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 714.50                                                                              | 9.66                | V                  | 0.55               | 0.0                   | 9.11         | 11.26         | 34.77              | 36.99               | -25.7          |       |
| 714.50                                                                              | 18.02               | H                  | 0.55               | 0.0                   | 17.47        | 19.62         | 34.77              | 36.99               | -17.4          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

**QPSK EIRP POWER FOR LTE BAND 12 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b>                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Project #:</b> 16U23366                                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Date:</b> 6/15/2016                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Engineer:</b> 52279                                                         |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Configuration:</b> EUT Only                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Mode:</b> LTE Band 12 QPSK 5MHz BW                                               |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b>                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| Low Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 701.50                                                                              | 8.27                | V                  | 0.55               | 0.0                   | 7.72         | 9.87          | 34.77              | 36.99               | -27.1          |       |
| 701.50                                                                              | 17.45               | H                  | 0.55               | 0.0                   | 16.90        | 19.05         | 34.77              | 36.99               | -17.9          |       |
| Mid Ch                                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                              | 9.27                | V                  | 0.55               | 0.0                   | 8.72         | 10.87         | 34.77              | 36.99               | -26.1          |       |
| 707.50                                                                              | 18.32               | H                  | 0.55               | 0.0                   | 17.77        | 19.92         | 34.77              | 36.99               | -17.1          |       |
| High Ch                                                                             |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 713.50                                                                              | 10.42               | V                  | 0.55               | 0.0                   | 9.87         | 12.02         | 34.77              | 36.99               | -25.0          |       |
| 713.50                                                                              | 18.63               | H                  | 0.55               | 0.0                   | 18.08        | 20.23         | 34.77              | 36.99               | -16.8          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |

**16QAM EIRP POWER FOR LTE BAND 12 (5.0MHZ BANDWIDTH)**

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber D            |                     |                    |                    |                       |              |               |                    |                     |                |       |
|-------------------------------------------------------------------------------------|---------------------|--------------------|--------------------|-----------------------|--------------|---------------|--------------------|---------------------|----------------|-------|
| <b>Company:</b>                                                                     |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Project #:</b> 16U23366                                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Date:</b> 6/15/2016                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Engineer:</b> 52279                                                         |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Configuration:</b> EUT Only                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Mode:</b> LTE Band 12 16QAM 5MHz BW                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| <b>Test Equipment:</b>                                                              |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Receiving: Sunol T408, and Chamber D Cable                                          |                     |                    |                    |                       |              |               |                    |                     |                |       |
| Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA) |                     |                    |                    |                       |              |               |                    |                     |                |       |
| f<br>MHz                                                                            | SG reading<br>(dBm) | Ant. Pol.<br>(H/V) | Cable Loss<br>(dB) | Antenna Gain<br>(dBd) | ERP<br>(dBm) | EIRP<br>(dBm) | ERP Limit<br>(dBm) | EIRP Limit<br>(dBm) | Margin<br>(dB) | Notes |
| <b>Low Ch</b>                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 701.50                                                                              | 7.59                | V                  | 0.55               | 0.0                   | 7.04         | 9.19          | 34.77              | 36.99               | -27.8          |       |
| 701.50                                                                              | 16.72               | H                  | 0.55               | 0.0                   | 16.17        | 18.32         | 34.77              | 36.99               | -18.7          |       |
| <b>Mid Ch</b>                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 707.50                                                                              | 8.38                | V                  | 0.55               | 0.0                   | 7.83         | 9.98          | 34.77              | 36.99               | -27.0          |       |
| 707.50                                                                              | 17.49               | H                  | 0.55               | 0.0                   | 16.94        | 19.09         | 34.77              | 36.99               | -17.9          |       |
| <b>High Ch</b>                                                                      |                     |                    |                    |                       |              |               |                    |                     |                |       |
| 713.50                                                                              | 9.53                | V                  | 0.55               | 0.0                   | 8.98         | 11.13         | 34.77              | 36.99               | -25.9          |       |
| 713.50                                                                              | 17.92               | H                  | 0.55               | 0.0                   | 17.37        | 19.52         | 34.77              | 36.99               | -17.5          |       |
| Rev. 10.24.13                                                                       |                     |                    |                    |                       |              |               |                    |                     |                |       |