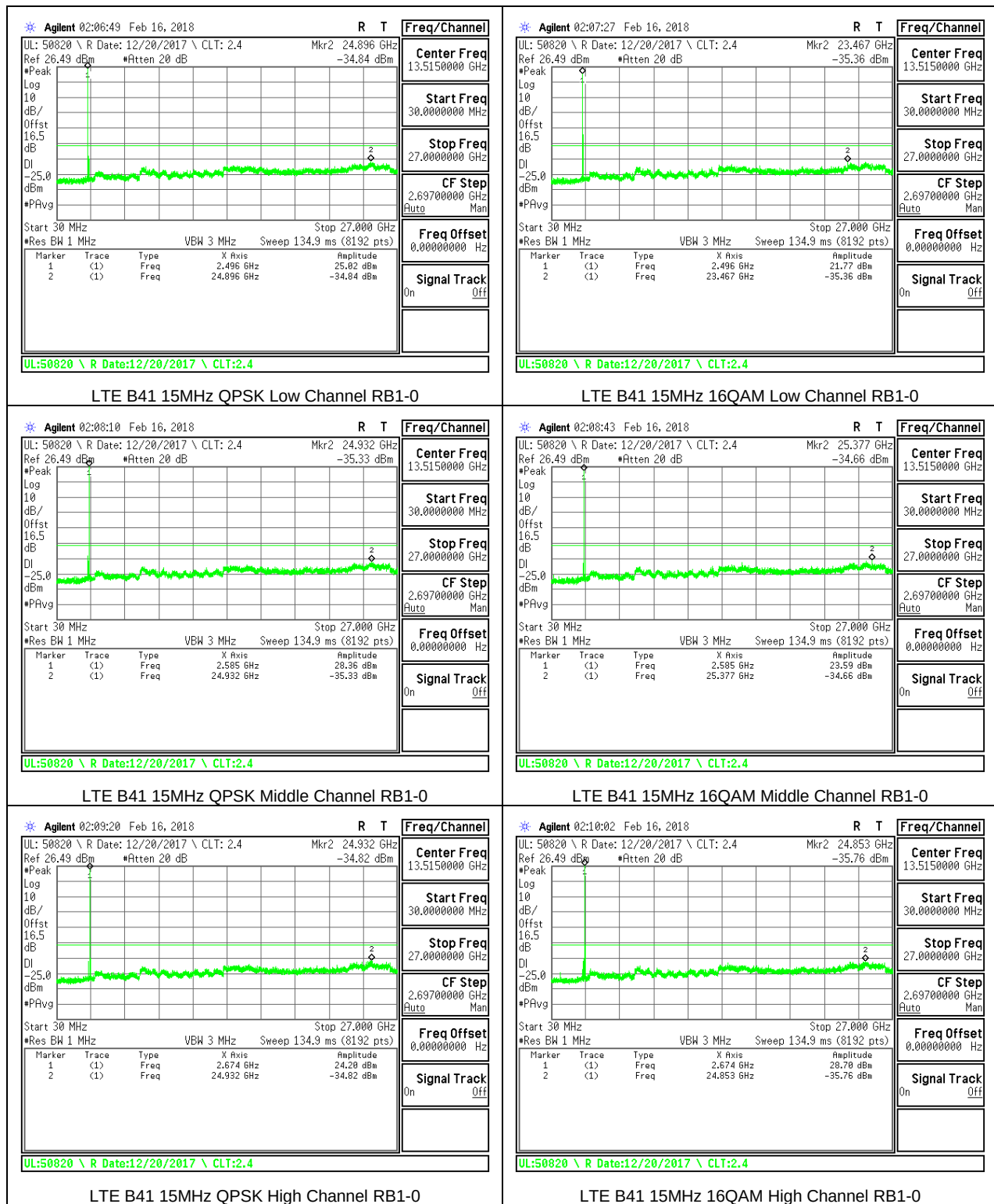
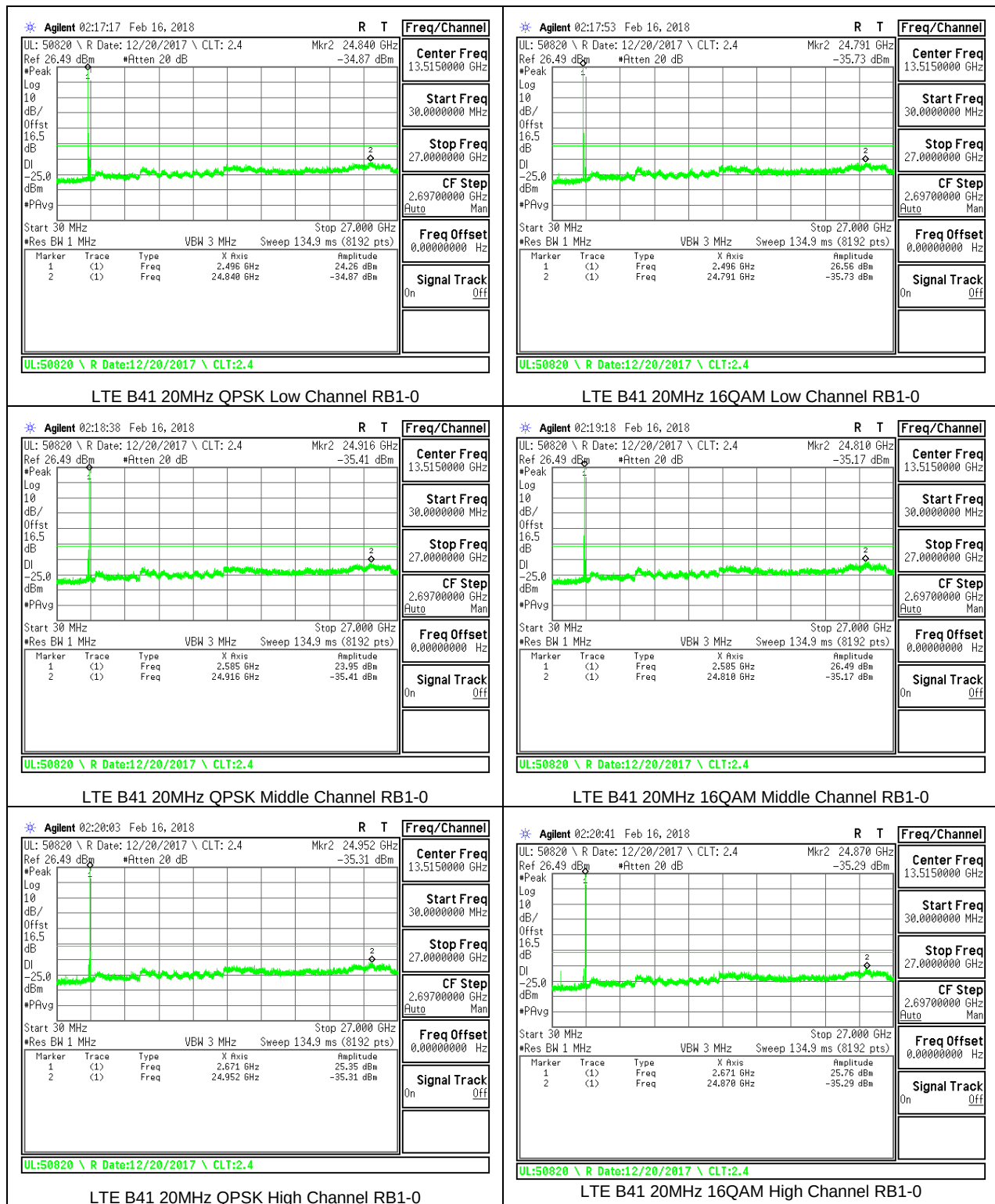
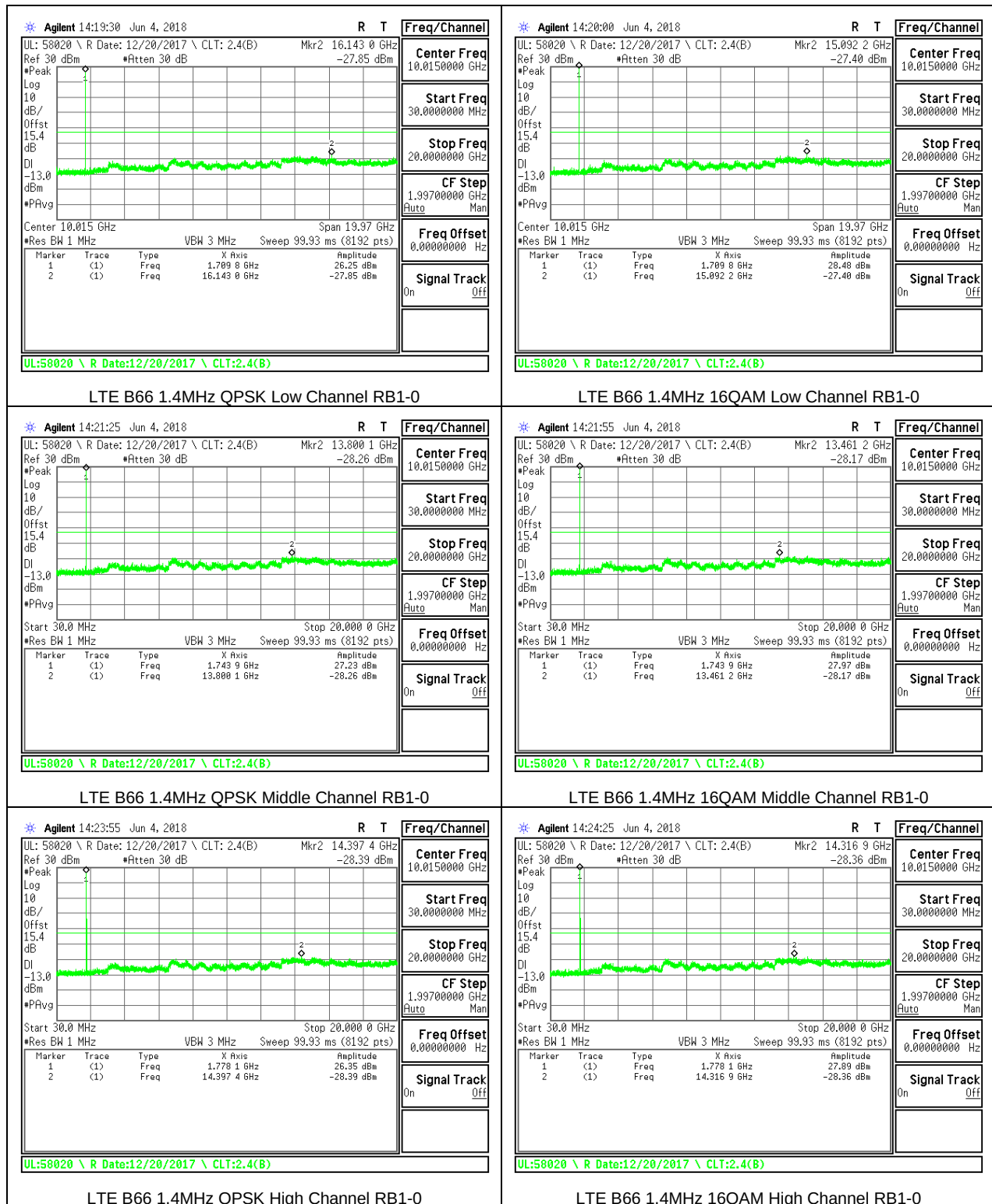
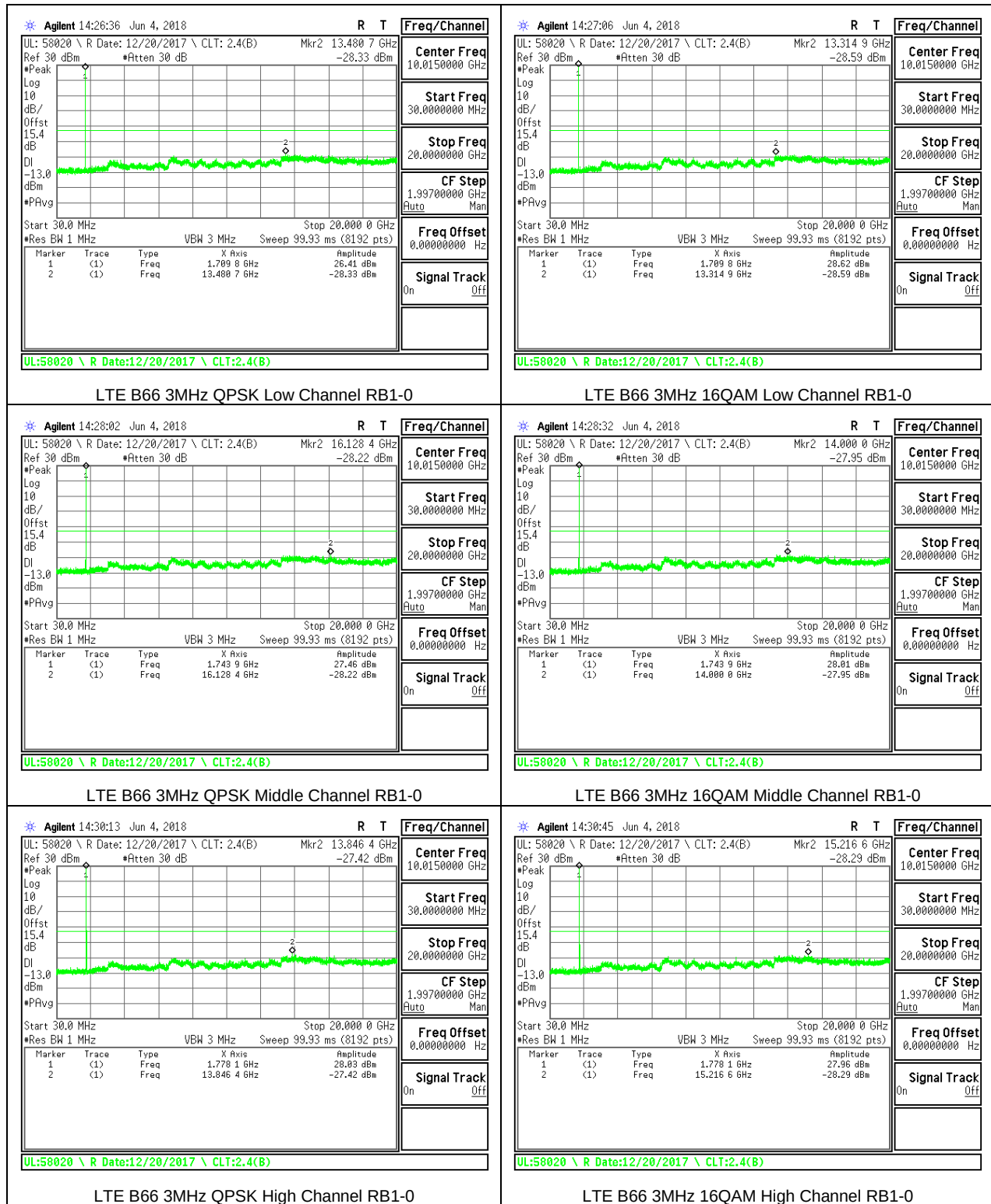






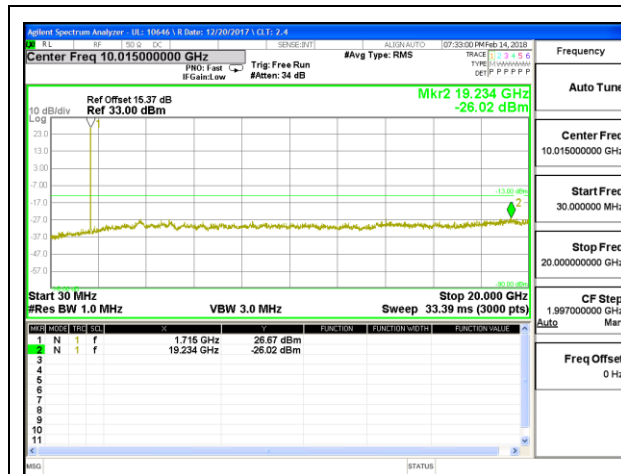
### 8.3.12. LTE BAND 66



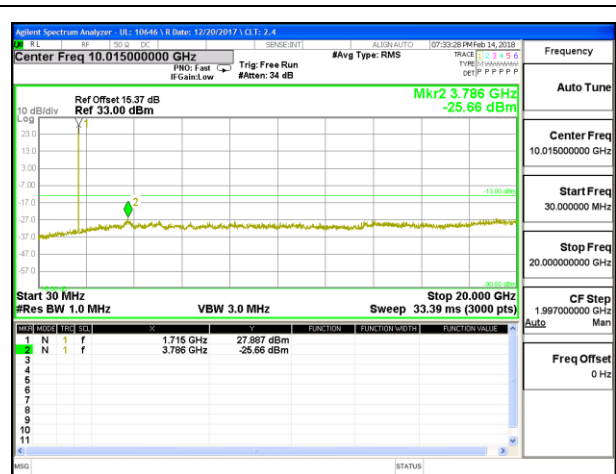




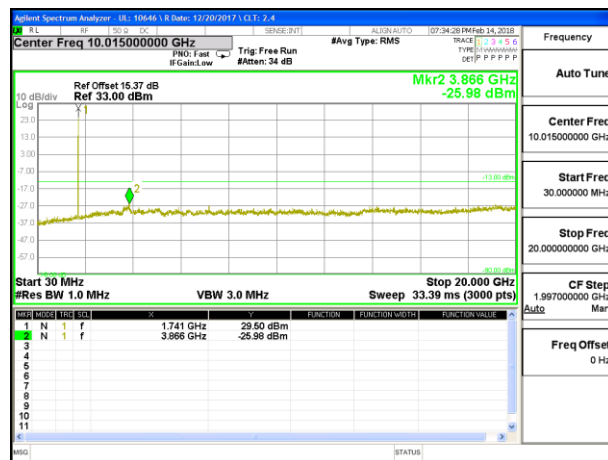




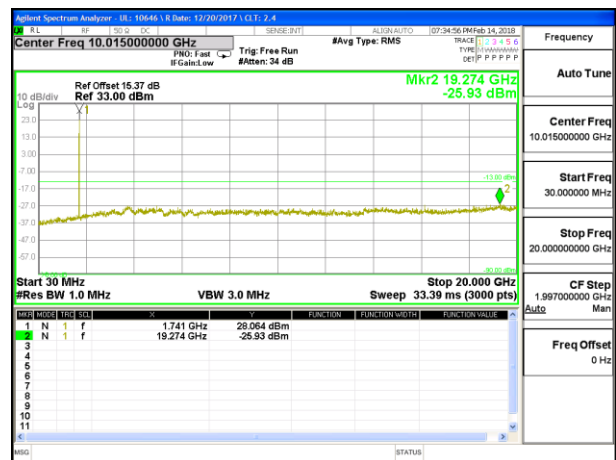
LTE B66 15MHz QPSK Low Channel RB1-0



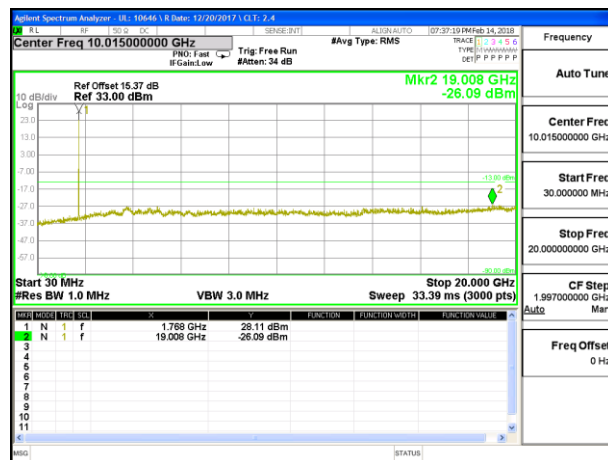
LTE B66 15MHz 16QAM Low Channel RB1-0



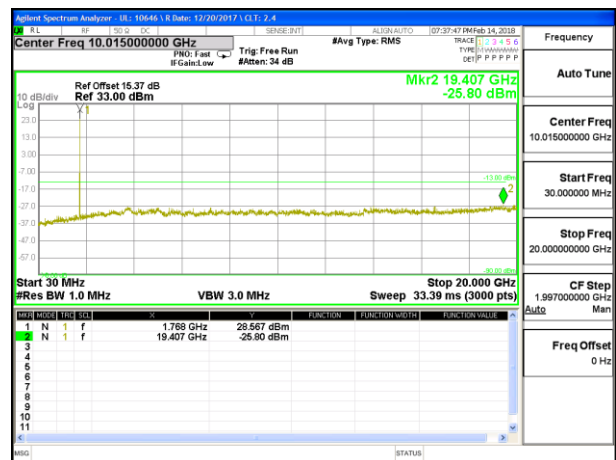
LTE B66 15MHz QPSK Middle Channel RB1-0



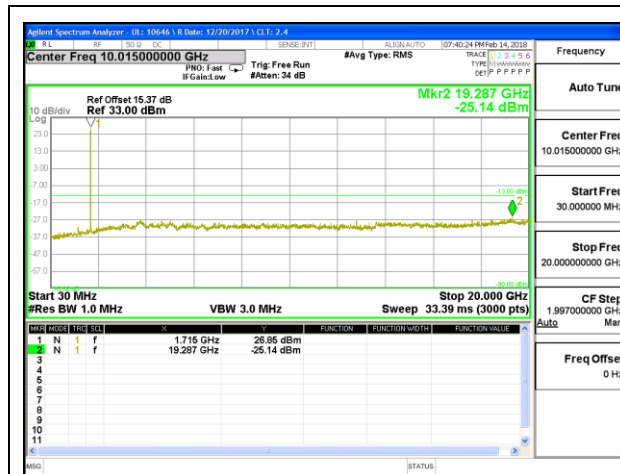
LTE B66 15MHz 16QAM Middle Channel RB1-0



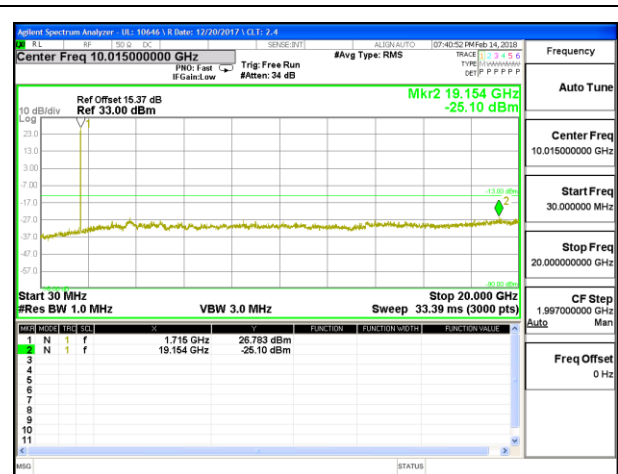
LTE B66 15MHz QPSK High Channel RB1-0



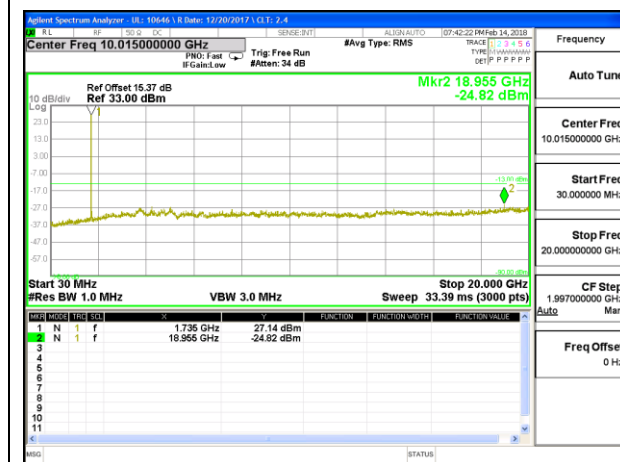
LTE B66 15MHz 16QAM High Channel RB1-0



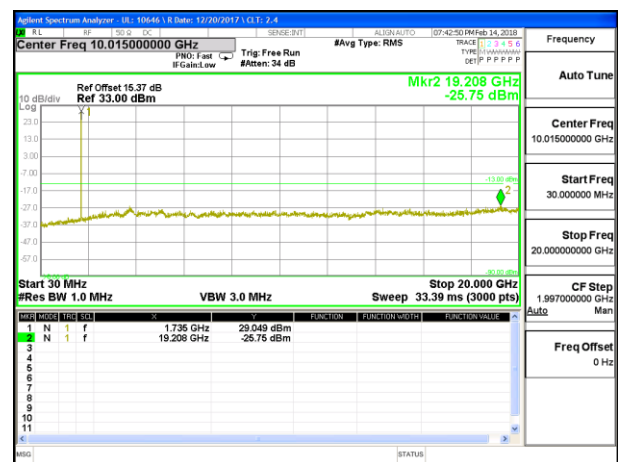
LTE B66 20MHz QPSK Low Channel RB1-0



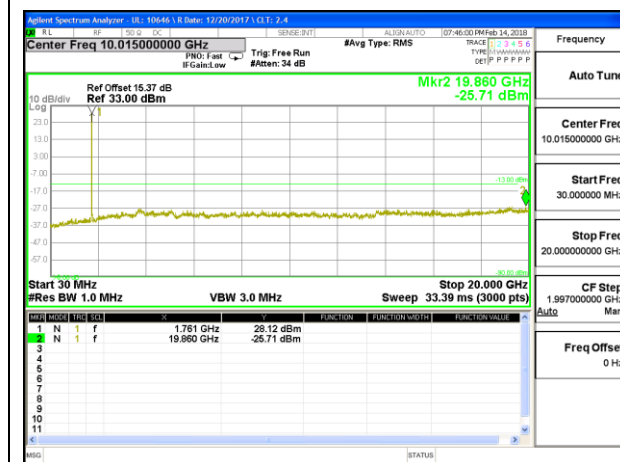
LTE B66 20MHz 16QAM Low Channel RB1-0



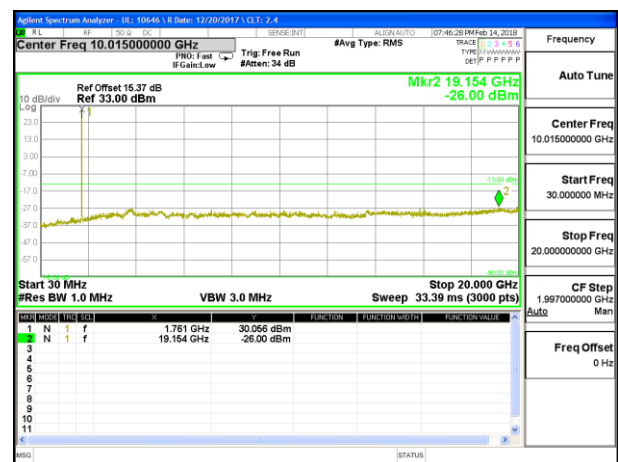
LTE B66 20MHz QPSK Middle Channel RB1-0



LTE B66 20MHz 16QAM Middle Channel RB1-0



LTE B66 20MHz QPSK High Channel RB1-0



LTE B66 20MHz 16QAM High Channel RB1-0



## 8.4. FREQUENCY STABILITY

### RULE PART(S)

§2.1055, §22.355, §24.235, §27.54, §90.213 and §90.539

### LIMITS

FCC: §22.355, §90.213

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

FCC: §90.539

(e) The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 ppm or better when AFC is locked to a base station, and 5 ppm or better when AFC is not locked.

FCC: §24.235 & §27.54

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

### TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. =  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)  
Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.  
End Voltage, 3.2VDC.

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

The EUT is placed inside a temperature chamber. The temperature is set to  $20^{\circ}\text{C}$  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 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 14
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

**RESULTS**

See the following pages.

### 8.4.1. LTE BAND 2

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### 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 (20C)   | Normal    | 1851.0113                  | 1908.9952                   |               |                                 |
| Extreme (50C)  |           | 1851.0113                  | 1908.9952                   | 14.4          | 0.008                           |
| Extreme (40C)  |           | 1851.0113                  | 1908.9952                   | 15.1          | 0.008                           |
| Extreme (30C)  |           | 1851.0113                  | 1908.9952                   | 15.2          | 0.008                           |
| Extreme (10C)  |           | 1851.0113                  | 1908.9952                   | 15.6          | 0.008                           |
| Extreme (0C)   |           | 1851.0112                  | 1908.9952                   | -14.0         | -0.007                          |
| Extreme (-10C) |           | 1851.0112                  | 1908.9952                   | -12.1         | -0.006                          |
| Extreme (-20C) |           | 1851.0112                  | 1908.9952                   | -32.8         | -0.017                          |
| Extreme (-30C) |           | 1851.0112                  | 1908.9952                   | -43.3         | -0.023                          |
|                |           |                            |                             |               |                                 |
| 20C            | 15%       | 1851.0113                  | 1908.9952                   | 15.6          | 0.008                           |
|                | -15%      | 1851.0113                  | 1908.9952                   | 17.3          | 0.009                           |
|                | End Point | 1851.0112                  | 1908.9952                   | -16.1         | -0.009                          |

### 8.4.2. LTE BAND 5

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 824                  | 849                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 824.2326             | 848.4996              |            |                           |
| Extreme (50C)  |           | 824.2326             | 848.4996              | 9.7        | 0.012                     |
| Extreme (40C)  |           | 824.2326             | 848.4996              | 8.2        | 0.010                     |
| Extreme (30C)  |           | 824.2325             | 848.4996              | -28.1      | -0.034                    |
| Extreme (10C)  |           | 824.2326             | 848.4996              | 10.7       | 0.013                     |
| Extreme (0C)   |           | 824.2325             | 848.4995              | -61.5      | -0.074                    |
| Extreme (-10C) |           | 824.2325             | 848.4996              | -24.0      | -0.029                    |
| Extreme (-20C) |           | 824.2326             | 848.4997              | 63.7       | 0.076                     |
| Extreme (-30C) |           | 824.2326             | 848.4997              | 63.2       | 0.076                     |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 824.2326             | 848.4996              | 27.1       | 0.032                     |
|                | -15%      | 824.2326             | 848.4996              | 30.8       | 0.037                     |
|                | End Point | 824.2326             | 848.4996              | 23.7       | 0.028                     |

### 8.4.3. LTE BAND 7

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 2500                 | 2570                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2500.2058            | 2569.1608             |            |                           |
| Extreme (50C)  |           | 2500.2057            | 2569.1608             | -57.5      | -0.023                    |
| Extreme (40C)  |           | 2500.2057            | 2569.1607             | -65.7      | -0.026                    |
| Extreme (30C)  |           | 2500.2057            | 2569.1608             | -57.9      | -0.023                    |
| Extreme (10C)  |           | 2500.2057            | 2569.1608             | -47.7      | -0.019                    |
| Extreme (0C)   |           | 2500.2058            | 2569.1609             | 51.0       | 0.020                     |
| Extreme (-10C) |           | 2500.2057            | 2569.1607             | -105.3     | -0.042                    |
| Extreme (-20C) |           | 2500.2056            | 2569.1607             | -132.9     | -0.052                    |
| Extreme (-30C) |           | 2500.2057            | 2569.1607             | -77.1      | -0.030                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2500.2058            | 2569.1609             | 55.9       | 0.022                     |
|                | -15%      | 2500.2058            | 2569.1609             | 54.8       | 0.022                     |
|                | End Point | 2500.2058            | 2569.1609             | 67.3       | 0.027                     |

### 8.4.4. LTE BAND 12

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 699                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 699.3320             | 715.6306              |            |                           |
| Extreme (50C)  |           | 699.3320             | 715.6306              | 15.4       | 0.022                     |
| Extreme (40C)  |           | 699.3320             | 715.6306              | 15.3       | 0.022                     |
| Extreme (30C)  |           | 699.3320             | 715.6306              | 16.6       | 0.023                     |
| Extreme (10C)  |           | 699.3320             | 715.6306              | 14.6       | 0.021                     |
| Extreme (0C)   |           | 699.3320             | 715.6306              | 23.8       | 0.034                     |
| Extreme (-10C) |           | 699.3320             | 715.6306              | 18.8       | 0.027                     |
| Extreme (-20C) |           | 699.3320             | 715.6306              | 15.3       | 0.022                     |
| Extreme (-30C) |           | 699.3320             | 715.6306              | 14.3       | 0.020                     |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 699.3320             | 715.6306              | 22.9       | 0.032                     |
|                | -15%      | 699.3320             | 715.6306              | 20.3       | 0.029                     |
|                | End Point | 699.3320             | 715.6306              | 21.1       | 0.030                     |

### 8.4.5. LTE BAND 13

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 777                  | 787                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 777.1121             | 786.8886              |            |                           |
| Extreme (50C)  |           | 777.1121             | 786.8887              | 22.0       | 0.028                     |
| Extreme (40C)  |           | 777.1121             | 786.8887              | 24.2       | 0.031                     |
| Extreme (30C)  |           | 777.1121             | 786.8887              | 23.3       | 0.030                     |
| Extreme (10C)  |           | 777.1121             | 786.8887              | 19.1       | 0.024                     |
| Extreme (0C)   |           | 777.1121             | 786.8887              | 24.4       | 0.031                     |
| Extreme (-10C) |           | 777.1121             | 786.8887              | 46.9       | 0.060                     |
| Extreme (-20C) |           | 777.1121             | 786.8887              | 52.0       | 0.067                     |
| Extreme (-30C) |           | 777.1122             | 786.8887              | 74.5       | 0.095                     |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 777.1121             | 786.8887              | 25.9       | 0.033                     |
|                | -15%      | 777.1121             | 786.8887              | 30.4       | 0.039                     |
|                | End Point | 777.1121             | 786.8887              | 27.8       | 0.036                     |

### 8.4.6. LTE BAND 14

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 788                  | 798                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 788.3352             | 797.6663              |            |                           |
| Extreme (50C)  |           | 788.3352             | 797.6663              | -20.2      | -0.025                    |
| Extreme (40C)  |           | 788.3352             | 797.6664              | 21.3       | 0.027                     |
| Extreme (30C)  |           | 788.3352             | 797.6664              | 9.9        | 0.013                     |
| Extreme (10C)  |           | 788.3352             | 797.6663              | -53.8      | -0.068                    |
| Extreme (0C)   |           | 788.3352             | 797.6663              | -28.7      | -0.036                    |
| Extreme (-10C) |           | 788.3352             | 797.6664              | 9.9        | 0.013                     |
| Extreme (-20C) |           | 788.3352             | 797.6664              | 12.2       | 0.015                     |
| Extreme (-30C) |           | 788.3352             | 797.6664              | 15.5       | 0.020                     |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 788.3352             | 797.6664              | 33.4       | 0.042                     |
|                | -15%      | 788.3352             | 797.6664              | 42.7       | 0.054                     |
|                | End Point | 788.3353             | 797.6664              | 47.9       | 0.060                     |

### 8.4.7. LTE BAND 17

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 10646 | <b>Date:</b> | 5/30/18 |
|------------|-------|--------------|---------|

#### QPSK, (10MHz BANDWIDTH)

| Limit          |           | 704                  | 716                   | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 704.3240             | 715.6690              |            |                           |
| Extreme (50C)  |           | 704.3240             | 715.6691              | 15.4       | 0.022                     |
| Extreme (40C)  |           | 704.3240             | 715.6691              | 15.3       | 0.021                     |
| Extreme (30C)  |           | 704.3240             | 715.6691              | 16.6       | 0.023                     |
| Extreme (10C)  |           | 704.3240             | 715.6691              | 14.6       | 0.021                     |
| Extreme (0C)   |           | 704.3240             | 715.6691              | 23.8       | 0.034                     |
| Extreme (-10C) |           | 704.3240             | 715.6691              | 18.8       | 0.026                     |
| Extreme (-20C) |           | 704.3240             | 715.6691              | 15.3       | 0.022                     |
| Extreme (-30C) |           | 704.3240             | 715.6691              | 14.3       | 0.020                     |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 704.3240             | 715.6691              | 22.9       | 0.032                     |
|                | -15%      | 704.3240             | 715.6691              | 20.3       | 0.029                     |
|                | End Point | 704.3240             | 715.6691              | 21.1       | 0.030                     |

### 8.4.8. LTE BAND 25

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 10646 | <b>Date:</b> | 5/30/18 |
|------------|-------|--------------|---------|

#### QPSK, (20MHz BANDWIDTH)

| Limit          |           | 1850           | 1915            | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------|-----------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm | F high @ -13dBm |            |                           |
| Temperature    | Voltage   | (MHz)          | (MHz)           |            |                           |
| Normal (20C)   | Normal    | 1850.8196      | 1914.1317       |            |                           |
| Extreme (50C)  |           | 1850.8197      | 1914.1318       | 14.4       | 0.008                     |
| Extreme (40C)  |           | 1850.8197      | 1914.1318       | 15.1       | 0.008                     |
| Extreme (30C)  |           | 1850.8197      | 1914.1318       | 15.2       | 0.008                     |
| Extreme (10C)  |           | 1850.8197      | 1914.1318       | 15.6       | 0.008                     |
| Extreme (0C)   |           | 1850.8196      | 1914.1317       | -14.0      | -0.007                    |
| Extreme (-10C) |           | 1850.8196      | 1914.1317       | -12.1      | -0.006                    |
| Extreme (-20C) |           | 1850.8196      | 1914.1317       | -32.8      | -0.017                    |
| Extreme (-30C) |           | 1850.8196      | 1914.1317       | -43.3      | -0.023                    |
|                |           |                |                 |            |                           |
| 20C            | 15%       | 1850.8197      | 1914.1318       | 15.6       | 0.008                     |
|                | -15%      | 1850.8197      | 1914.1318       | 17.3       | 0.009                     |
|                | End Point | 1850.8196      | 1914.1317       | -16.1      | -0.009                    |

#### 8.4.9. LTE BAND 26 (FCC PART 90S)

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 10646 | <b>Date:</b> | 6/21/18 |
|------------|-------|--------------|---------|

##### 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 (20C)   | Normal    | 814.3193                   | 823.6911                    |               |                                 |
| Extreme (50C)  |           | 814.3193                   | 823.6911                    | 7.8           | 0.010                           |
| Extreme (40C)  |           | 814.3193                   | 823.6911                    | 8.4           | 0.010                           |
| Extreme (30C)  |           | 814.3193                   | 823.6911                    | 9.4           | 0.012                           |
| Extreme (10C)  |           | 814.3193                   | 823.6911                    | 8.5           | 0.010                           |
| Extreme (0C)   |           | 814.3193                   | 823.6911                    | 9.8           | 0.012                           |
| Extreme (-10C) |           | 814.3193                   | 823.6911                    | 10.1          | 0.012                           |
| Extreme (-20C) |           | 814.3193                   | 823.6911                    | 10.5          | 0.013                           |
| Extreme (-30C) |           | 814.3193                   | 823.6911                    | 8.2           | 0.010                           |
|                |           |                            |                             |               |                                 |
| 20C            | 15%       | 814.3193                   | 823.6911                    | 7.3           | 0.009                           |
|                | -15%      | 814.3193                   | 823.6911                    | 7.1           | 0.009                           |
|                | End Point | 814.3193                   | 823.6911                    | 7.0           | 0.009                           |

#### 8.4.10. LTE BAND 30

|            |               |              |         |
|------------|---------------|--------------|---------|
| <b>ID:</b> | 44410 / 50893 | <b>Date:</b> | 3/12/18 |
|------------|---------------|--------------|---------|

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

| Limit          |           | 2305                       | 2315                        | Delta<br>(Hz) | Frequency<br>Stability<br>(ppm) |
|----------------|-----------|----------------------------|-----------------------------|---------------|---------------------------------|
| Condition      |           | F low @<br>-13dBm<br>(MHz) | F high @<br>-13dBm<br>(MHz) |               |                                 |
| Temperature    | Voltage   |                            |                             |               |                                 |
| Normal (20C)   | Normal    | 2305.3439                  | 2314.6491                   |               |                                 |
| Extreme (50C)  |           | 2305.3440                  | 2314.6492                   | 87.0          | 0.038                           |
| Extreme (40C)  |           | 2305.3440                  | 2314.6492                   | 81.2          | 0.035                           |
| Extreme (30C)  |           | 2305.3440                  | 2314.6492                   | 82.2          | 0.036                           |
| Extreme (10C)  |           | 2305.3440                  | 2314.6492                   | 73.8          | 0.032                           |
| Extreme (0C)   |           | 2305.3440                  | 2314.6492                   | 83.8          | 0.036                           |
| Extreme (-10C) |           | 2305.3438                  | 2314.6491                   | -59.9         | -0.026                          |
| Extreme (-20C) |           | 2305.3439                  | 2314.6492                   | 53.2          | 0.023                           |
| Extreme (-30C) |           | 2305.3439                  | 2314.6492                   | 48.7          | 0.021                           |
|                |           |                            |                             |               |                                 |
| 20C            | 15%       | 2305.3440                  | 2314.6492                   | 77.4          | 0.034                           |
|                | -15%      | 2305.3440                  | 2314.6492                   | 78.2          | 0.034                           |
|                | End Point | 2305.3440                  | 2314.6492                   | 81.1          | 0.035                           |

#### 8.4.11. LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 50893 | <b>Date:</b> | 3/12/18 |
|------------|-------|--------------|---------|

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

| Limit          |           | 2496                 | 2690                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 2496.9075            | 2689.0947             |            |                           |
| Extreme (50C)  |           | 2496.9074            | 2689.0946             | -42.6      | -0.016                    |
| Extreme (40C)  |           | 2496.9075            | 2689.0946             | -41.5      | -0.016                    |
| Extreme (30C)  |           | 2496.9074            | 2689.0946             | -61.5      | -0.024                    |
| Extreme (10C)  |           | 2496.9075            | 2689.0946             | -29.0      | -0.011                    |
| Extreme (0C)   |           | 2496.9075            | 2689.0946             | -28.4      | -0.011                    |
| Extreme (-10C) |           | 2496.9075            | 2689.0946             | -30.7      | -0.012                    |
| Extreme (-20C) |           | 2496.9075            | 2689.0946             | -28.1      | -0.011                    |
| Extreme (-30C) |           | 2496.9075            | 2689.0947             | -26.7      | -0.010                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 2496.9074            | 2689.0946             | -65.8      | -0.025                    |
|                | -15%      | 2496.9076            | 2689.0948             | 109.9      | 0.042                     |
|                | End Point | 2496.9075            | 2689.0946             | -38.2      | -0.015                    |

#### 8.4.12. LTE BAND 66

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 44410 | <b>Date:</b> | 3/12/18 |
|------------|-------|--------------|---------|

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

| Limit          |           | 1710                 | 1780                  | Delta (Hz) | Frequency Stability (ppm) |
|----------------|-----------|----------------------|-----------------------|------------|---------------------------|
| Condition      |           | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) |            |                           |
| Temperature    | Voltage   |                      |                       |            |                           |
| Normal (20C)   | Normal    | 1710.8368            | 1779.1458             |            |                           |
| Extreme (50C)  |           | 1710.8368            | 1779.1458             | 15.0       | 0.009                     |
| Extreme (40C)  |           | 1710.8369            | 1779.1458             | 15.9       | 0.009                     |
| Extreme (30C)  |           | 1710.8369            | 1779.1458             | 16.0       | 0.009                     |
| Extreme (10C)  |           | 1710.8369            | 1779.1458             | 17.0       | 0.010                     |
| Extreme (0C)   |           | 1710.8368            | 1779.1458             | 13.4       | 0.008                     |
| Extreme (-10C) |           | 1710.8368            | 1779.1457             | -55.5      | -0.032                    |
| Extreme (-20C) |           | 1710.8367            | 1779.1456             | -137.3     | -0.079                    |
| Extreme (-30C) |           | 1710.8367            | 1779.1456             | -123.0     | -0.070                    |
|                |           |                      |                       |            |                           |
| 20C            | 15%       | 1710.8369            | 1779.1458             | 16.8       | 0.010                     |
|                | -15%      | 1710.8369            | 1779.1458             | 16.2       | 0.009                     |
|                | End Point | 1710.8369            | 1779.1458             | 16.5       | 0.009                     |



## 8.5. PEAK-TO-AVERAGE POWER RATIO

### LIMIT

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

### MODES TESTED

- LTE Band 2
- LTE Band 5
- LTE Band 7
- LTE Band 12
- LTE Band 13
- LTE Band 14
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 30
- LTE Band 41
- LTE Band 66

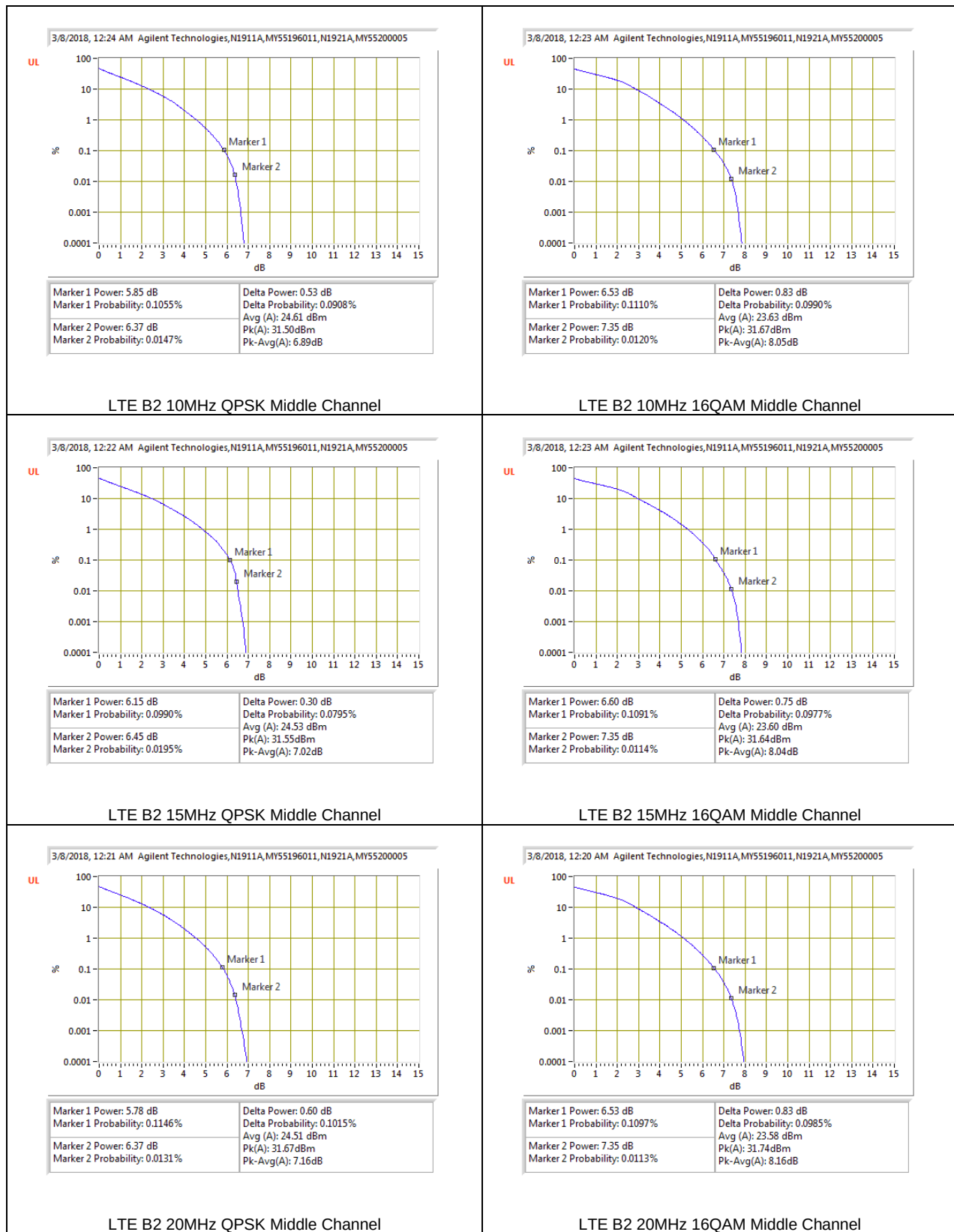
### RESULT

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

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 39004 | <b>Date:</b> | 3/18/18 |
|------------|-------|--------------|---------|

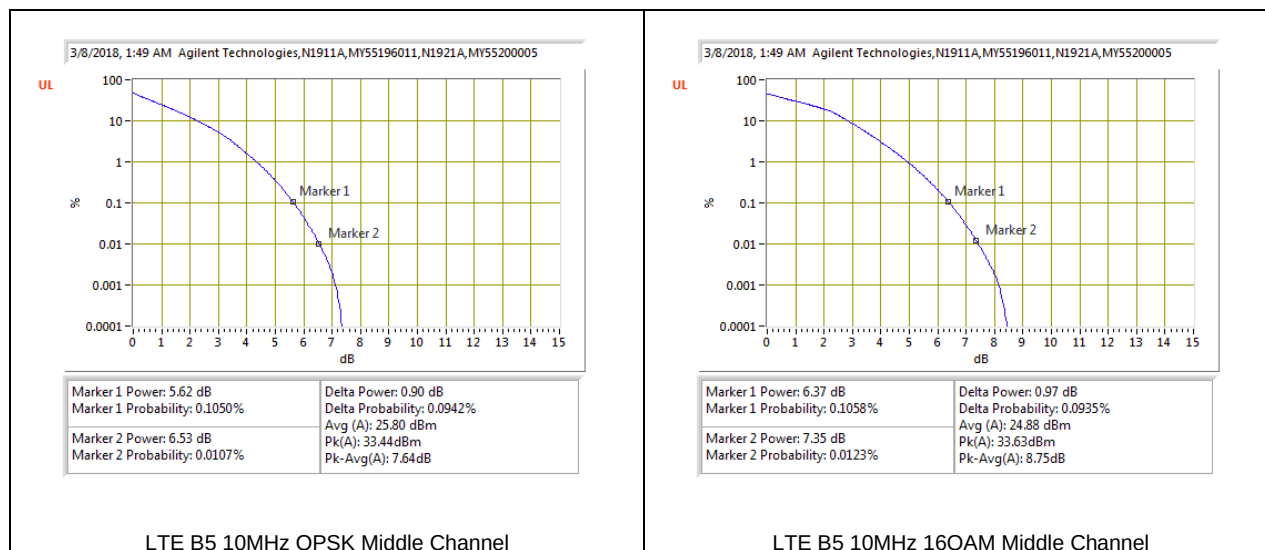
## 8.5.1. LTE BAND 2





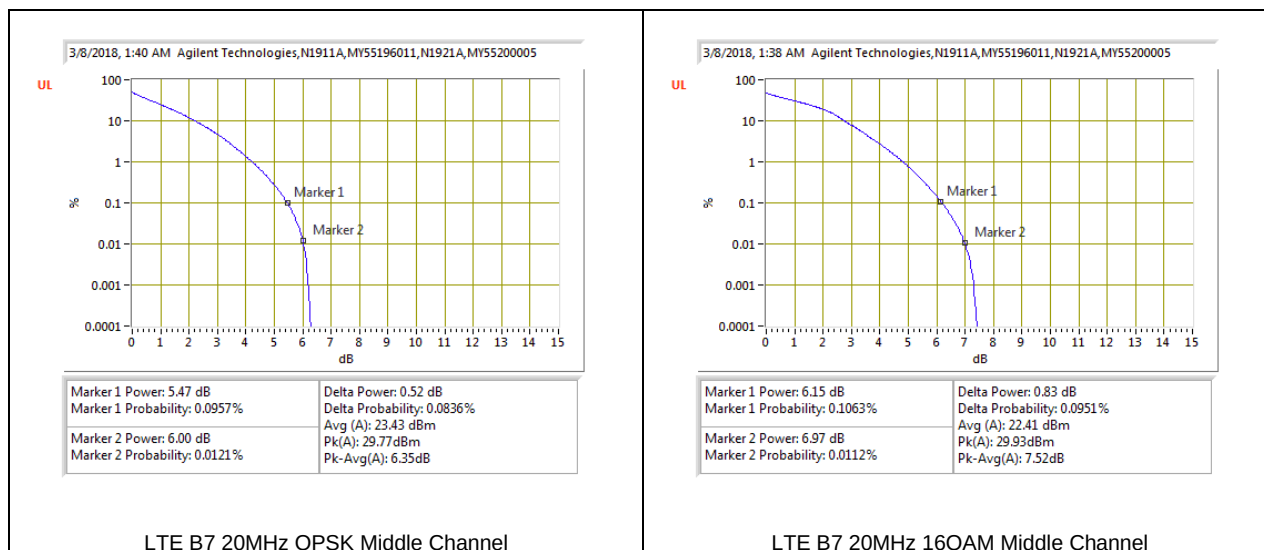
## 8.5.2. LTE BAND 5





### 8.5.3. LTE BAND 7





## 8.5.4. LTE BAND 12





