

## 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.

### RESULT

Test was performed on Antenna 1; 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 ratio criteria.

### 8.5.1 LTE BAND 7

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 39004 | <b>Date:</b> | 5/14/18 |
|------------|-------|--------------|---------|

| Band                                                                                       | Bandwidth (MHz) | PCC f (MHz) | SCC1 f (MHz) | Modulation | Conducted Power (dBm) |         | Peak-to-Average Power Ratio (dB) |
|--------------------------------------------------------------------------------------------|-----------------|-------------|--------------|------------|-----------------------|---------|----------------------------------|
|                                                                                            |                 |             |              |            | Peak                  | Average |                                  |
| Band 7                                                                                     | 10MHz / 20MHz   | 2525.6      | 2540.0       | QPSK       | 31.30                 | 23.53   | 7.77                             |
|                                                                                            |                 |             |              | 16QAM      | 31.30                 | 22.49   | 8.81                             |
|                                                                                            | 15 MHz / 15MHz  | 2527.5      | 2542.5       | QPSK       | 31.07                 | 23.18   | 7.89                             |
|                                                                                            |                 |             |              | 16QAM      | 30.98                 | 22.27   | 8.71                             |
|                                                                                            | 15MHz / 20MHz   | 2525.3      | 2542.4       | QPSK       | 31.00                 | 23.20   | 7.80                             |
|                                                                                            |                 |             |              | 16QAM      | 31.09                 | 22.30   | 8.79                             |
|                                                                                            | 20MHz / 10MHz   | 2530.1      | 2544.5       | QPSK       | 32.67                 | 23.54   | 9.13                             |
|                                                                                            |                 |             |              | 16QAM      | 32.67                 | 22.40   | 10.27                            |
|                                                                                            | 20MHz / 15MHz   | 2527.6      | 2544.7       | QPSK       | 32.80                 | 23.66   | 9.14                             |
|                                                                                            |                 |             |              | 16QAM      | 32.83                 | 22.56   | 10.27                            |
|                                                                                            | 20MHz / 20MHz   | 2525.1      | 2544.9       | QPSK       | 32.85                 | 23.60   | 9.25                             |
|                                                                                            |                 |             |              | 16QAM      | 32.96                 | 22.59   | 10.37                            |
| Duty Cycle Correction Factor (dB) =                                                        |                 |             |              |            |                       |         |                                  |
| Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor |                 |             |              |            |                       |         |                                  |

## 8.5.2 LTE BAND 41

|            |       |              |         |
|------------|-------|--------------|---------|
| <b>ID:</b> | 10643 | <b>Date:</b> | 5/14/18 |
|------------|-------|--------------|---------|

| Band                                                                                       | Bandwidth (MHz) | PCC f (MHz) | SCC1 f (MHz) | Modulation | Conducted Power (dBm) |         | Peak-to-Average Power Ratio (dB) |
|--------------------------------------------------------------------------------------------|-----------------|-------------|--------------|------------|-----------------------|---------|----------------------------------|
|                                                                                            |                 |             |              |            | Peak                  | Average |                                  |
| Band 41 (FCC)                                                                              | 5MHz / 20MHz    | 2583.8      | 2595.5       | QPSK       | 31.64                 | 15.59   | 9.06                             |
|                                                                                            |                 |             |              | 16QAM      | 31.17                 | 14.62   | 9.56                             |
|                                                                                            | 10MHz / 20MHz   | 2583.6      | 2598.0       | QPSK       | 31.48                 | 15.84   | 8.65                             |
|                                                                                            |                 |             |              | 16QAM      | 31.42                 | 14.84   | 9.59                             |
|                                                                                            | 15MHz / 15MHz   | 2585.5      | 2600.5       | QPSK       | 31.24                 | 15.85   | 8.40                             |
|                                                                                            |                 |             |              | 16QAM      | 31.63                 | 14.88   | 9.76                             |
|                                                                                            | 15MHz / 20MHz   | 2583.3      | 2600.4       | QPSK       | 31.33                 | 15.78   | 8.56                             |
|                                                                                            |                 |             |              | 16QAM      | 31.21                 | 14.83   | 9.39                             |
|                                                                                            | 20MHz / 5MHz    | 2590.5      | 2602.2       | QPSK       | 31.43                 | 15.89   | 8.55                             |
|                                                                                            |                 |             |              | 16QAM      | 31.34                 | 14.96   | 9.39                             |
|                                                                                            | 20MHz / 10MHz   | 2588.1      | 2602.5       | QPSK       | 31.28                 | 15.82   | 8.47                             |
|                                                                                            |                 |             |              | 16QAM      | 31.26                 | 14.88   | 9.39                             |
|                                                                                            | 20MHz / 15MHz   | 2585.6      | 2602.7       | QPSK       | 31.39                 | 15.86   | 8.54                             |
|                                                                                            |                 |             |              | 16QAM      | 31.39                 | 14.89   | 9.51                             |
|                                                                                            | 20MHz / 20MHz   | 2583.1      | 2602.9       | QPSK       | 31.17                 | 15.88   | 8.30                             |
|                                                                                            |                 |             |              | 16QAM      | 31.36                 | 14.94   | 9.43                             |
| Duty Cycle Correction Factor (dB) =                                                        |                 |             | 6.99         |            |                       |         |                                  |
| Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor |                 |             |              |            |                       |         |                                  |

## 9. RADIATED TEST RESULTS

### 9.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

#### RULE PART(S)

§2.1053, §27.53

#### LIMIT

FCC: §27.53 (m)

At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

#### TEST PROCEDURE

KDB 971168 D01 v03r01/ D02 v02r01

#### MODES TESTED

- LTE Band 7
- LTE Band 41

#### RESULTS

## 9.1.1. LTE BAND 7

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, QPSK, UL CA 20/10

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2510MHz)-2524.48MHz 1.99 1-0     |                  |                 |          |                        |        |            |       |       |       |       |
| 5.03                                          | -79.2            | H               | 3.0      | -20.7                  | 36.2   | 1.0        | -56.0 | -25.0 | -31.9 |       |
| 7.55                                          | -72.3            | H               | 3.0      | -19.1                  | 35.1   | 1.0        | -53.2 | -25.0 | -28.2 |       |
| 10.07                                         | -72.2            | H               | 3.0      | -16.0                  | 33.3   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 5.03                                          | -70.7            | V               | 3.0      | -21.4                  | 36.2   | 1.0        | -56.7 | -25.0 | -31.7 |       |
| 7.55                                          | -73.4            | V               | 3.0      | -20.2                  | 35.1   | 1.0        | -54.3 | -25.0 | -29.3 |       |
| 10.07                                         | -73.3            | V               | 3.0      | -17.9                  | 33.3   | 1.0        | -50.3 | -25.0 | -25.3 |       |
| Mid Channel (2536.18MHz)-2544.58MHz 1.99 1-0  |                  |                 |          |                        |        |            |       |       |       |       |
| 5.07                                          | -71.1            | H               | 3.0      | -21.6                  | 36.3   | 1.0        | -56.8 | -25.0 | -31.8 |       |
| 7.61                                          | -72.0            | H               | 3.0      | -18.9                  | 35.1   | 1.0        | -52.8 | -25.0 | -27.8 |       |
| 10.15                                         | -73.3            | H               | 3.0      | -17.7                  | 33.3   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| 5.07                                          | -71.2            | V               | 3.0      | -21.9                  | 36.3   | 1.0        | -57.1 | -25.0 | -32.1 |       |
| 7.61                                          | -72.0            | V               | 3.0      | -18.9                  | 35.1   | 1.0        | -52.9 | -25.0 | -27.9 |       |
| 10.15                                         | -73.5            | V               | 3.0      | -18.1                  | 33.3   | 1.0        | -50.4 | -25.0 | -25.4 |       |
| High Channel (2550.18MHz)-2564.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |       |       |       |       |
| 5.11                                          | -70.4            | H               | 3.0      | -20.8                  | 36.3   | 1.0        | -56.1 | -25.0 | -31.1 |       |
| 7.67                                          | -72.3            | H               | 3.0      | -18.9                  | 35.0   | 1.0        | -53.0 | -25.0 | -28.0 |       |
| 10.23                                         | -72.8            | H               | 3.0      | -17.2                  | 33.2   | 1.0        | -49.4 | -25.0 | -24.4 |       |
| 5.11                                          | -70.3            | V               | 3.0      | -20.9                  | 36.3   | 1.0        | -56.2 | -25.0 | -31.2 |       |
| 7.67                                          | -72.5            | V               | 3.0      | -20.2                  | 35.0   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 10.23                                         | -73.8            | V               | 3.0      | -18.4                  | 33.2   | 1.0        | -50.6 | -25.0 | -25.6 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, QPSK, UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|------|-------|-------|-------|
| Low Channel (2510MHz)-2529.88MHz 1.99 1-0    |                  |                 |          |                        |        |            |      |       |       |       |
| 5.03                                         | 49.8             | H               | 3.0      | 16.9                   | 36.1   | 1.0        | 51.9 | 25.0  | 26.9  |       |
| 7.56                                         | 73.0             | H               | 3.0      | 15.1                   | 36.3   | 1.0        | 50.4 | 25.0  | 25.4  |       |
| 10.08                                        | 72.9             | H               | 3.0      | 12.0                   | 33.4   | 1.0        | 44.5 | 25.0  | 19.5  |       |
| 5.04                                         | 76.2             | V               | 3.0      | 17.5                   | 36.3   | 1.0        | 52.0 | 25.0  | 27.0  |       |
| 7.56                                         | 72.4             | V               | 3.0      | 14.7                   | 34.8   | 1.0        | 48.5 | 25.0  | 23.5  |       |
| 10.08                                        | 72.9             | V               | 3.0      | 12.0                   | 32.1   | 1.0        | 43.1 | 25.0  | 18.1  |       |
| Mid Channel (2525.18MHz)-2544.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.07                                         | 70.4             | H               | 3.0      | 17.4                   | 36.0   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.61                                         | 71.6             | H               | 3.0      | 13.7                   | 35.2   | 1.0        | 47.9 | 25.0  | 22.9  |       |
| 10.14                                        | 72.8             | H               | 3.0      | 11.9                   | 32.0   | 1.0        | 42.3 | 25.0  | 17.3  |       |
| 5.07                                         | 69.9             | V               | 3.0      | 17.2                   | 36.1   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.61                                         | 71.9             | V               | 3.0      | 16.2                   | 35.1   | 1.0        | 48.2 | 25.0  | 23.2  |       |
| 10.14                                        | 74.2             | V               | 3.0      | 13.3                   | 33.3   | 1.0        | 45.6 | 25.0  | 20.6  |       |
| High Channel (2540.28MHz)-2560.8MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.11                                         | 69.5             | H               | 3.0      | 16.4                   | 36.2   | 1.0        | 51.6 | 25.0  | 26.6  |       |
| 7.67                                         | 71.5             | H               | 3.0      | 13.5                   | 36.0   | 1.0        | 48.5 | 25.0  | 23.5  |       |
| 10.23                                        | 72.3             | H               | 3.0      | 11.3                   | 32.0   | 1.0        | 42.4 | 25.0  | 17.4  |       |
| 5.11                                         | 70.4             | V               | 3.0      | 17.6                   | 36.3   | 1.0        | 52.6 | 25.0  | 27.6  |       |
| 7.67                                         | 71.3             | V               | 3.0      | 13.5                   | 35.8   | 1.0        | 48.3 | 25.0  | 23.3  |       |
| 10.23                                        | 73.1             | V               | 3.0      | 12.1                   | 33.2   | 1.0        | 44.3 | 25.0  | 19.3  |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, 16QAM UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|------|-------|-------|-------|
| Low Channel (2510MHz)-2529.88MHz 1.99 1-0    |                  |                 |          |                        |        |            |      |       |       |       |
| 5.04                                         | 79.2             | H               | 3.0      | 17.3                   | 36.1   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.56                                         | 72.3             | H               | 3.0      | 14.4                   | 36.2   | 1.0        | 49.7 | 25.0  | 24.7  |       |
| 10.08                                        | 72.5             | H               | 3.0      | 11.4                   | 33.4   | 1.0        | 44.1 | 25.0  | 19.1  |       |
| 5.04                                         | 79.5             | V               | 3.0      | 17.8                   | 36.2   | 1.0        | 53.1 | 25.0  | 28.1  |       |
| 7.56                                         | 72.3             | V               | 3.0      | 14.6                   | 34.9   | 1.0        | 49.4 | 25.0  | 24.4  |       |
| 10.08                                        | 72.8             | V               | 3.0      | 11.9                   | 32.1   | 1.0        | 43.0 | 25.0  | 18.0  |       |
| Mid Channel (2525.18MHz)-2544.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.07                                         | 72.8             | H               | 3.0      | 19.0                   | 36.0   | 1.0        | 53.9 | 25.0  | 28.9  |       |
| 7.61                                         | 71.5             | H               | 3.0      | 13.6                   | 35.2   | 1.0        | 47.8 | 25.0  | 22.8  |       |
| 10.14                                        | 71.9             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.0 | 25.0  | 17.0  |       |
| 5.07                                         | 70.6             | V               | 3.0      | 17.9                   | 36.1   | 1.0        | 53.0 | 25.0  | 28.0  |       |
| 7.61                                         | 70.8             | V               | 3.0      | 13.3                   | 35.7   | 1.0        | 48.8 | 25.0  | 23.8  |       |
| 10.14                                        | 73.7             | V               | 3.0      | 12.0                   | 36.2   | 1.0        | 48.0 | 25.0  | 23.0  |       |
| High Channel (2540.28MHz)-2560.8MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.11                                         | 70.0             | H               | 3.0      | 16.9                   | 36.2   | 1.0        | 52.1 | 25.0  | 27.1  |       |
| 7.67                                         | 71.5             | H               | 3.0      | 13.5                   | 36.0   | 1.0        | 48.5 | 25.0  | 23.5  |       |
| 10.23                                        | 72.8             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.9 | 25.0  | 17.9  |       |
| 5.11                                         | 70.0             | V               | 3.0      | 18.0                   | 36.2   | 1.0        | 53.3 | 25.0  | 28.3  |       |
| 7.67                                         | 71.7             | V               | 3.0      | 13.9                   | 35.9   | 1.0        | 48.7 | 25.0  | 23.7  |       |
| 10.23                                        | 72.6             | V               | 3.0      | 11.8                   | 36.3   | 1.0        | 47.1 | 25.0  | 22.1  |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, 16QAM UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|------|-------|-------|-------|
| Low Channel (2510MHz)-2529.88MHz 1.99 1-0    |                  |                 |          |                        |        |            |      |       |       |       |
| 5.04                                         | 79.2             | H               | 3.0      | 17.3                   | 36.1   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.56                                         | 72.3             | H               | 3.0      | 14.4                   | 36.2   | 1.0        | 49.7 | 25.0  | 24.7  |       |
| 10.08                                        | 72.5             | H               | 3.0      | 11.4                   | 33.4   | 1.0        | 44.1 | 25.0  | 19.1  |       |
| 5.04                                         | 79.5             | V               | 3.0      | 17.8                   | 36.2   | 1.0        | 53.1 | 25.0  | 28.1  |       |
| 7.56                                         | 72.3             | V               | 3.0      | 14.6                   | 34.9   | 1.0        | 49.4 | 25.0  | 24.4  |       |
| 10.08                                        | 72.8             | V               | 3.0      | 11.9                   | 32.1   | 1.0        | 43.0 | 25.0  | 18.0  |       |
| Mid Channel (2525.18MHz)-2544.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.07                                         | 72.8             | H               | 3.0      | 19.0                   | 36.0   | 1.0        | 53.9 | 25.0  | 28.9  |       |
| 7.61                                         | 71.5             | H               | 3.0      | 13.6                   | 35.2   | 1.0        | 47.8 | 25.0  | 22.8  |       |
| 10.14                                        | 71.9             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.0 | 25.0  | 17.0  |       |
| 5.07                                         | 70.6             | V               | 3.0      | 17.9                   | 36.1   | 1.0        | 53.0 | 25.0  | 28.0  |       |
| 7.61                                         | 70.8             | V               | 3.0      | 13.3                   | 35.7   | 1.0        | 48.8 | 25.0  | 23.8  |       |
| 10.14                                        | 73.7             | V               | 3.0      | 12.0                   | 36.2   | 1.0        | 48.0 | 25.0  | 23.0  |       |
| High Channel (2540.28MHz)-2560.8MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.11                                         | 70.0             | H               | 3.0      | 16.9                   | 36.2   | 1.0        | 52.1 | 25.0  | 27.1  |       |
| 7.67                                         | 71.5             | H               | 3.0      | 13.5                   | 36.0   | 1.0        | 48.5 | 25.0  | 23.5  |       |
| 10.23                                        | 72.8             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.9 | 25.0  | 17.9  |       |
| 5.11                                         | 70.0             | V               | 3.0      | 18.0                   | 36.2   | 1.0        | 53.3 | 25.0  | 28.3  |       |
| 7.67                                         | 71.7             | V               | 3.0      | 13.9                   | 35.9   | 1.0        | 48.7 | 25.0  | 23.7  |       |
| 10.23                                        | 72.6             | V               | 3.0      | 11.8                   | 36.3   | 1.0        | 47.1 | 25.0  | 22.1  |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, 16QAM UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|------|-------|-------|-------|
| Low Channel (2510MHz)-2529.88MHz 1.99 1-0    |                  |                 |          |                        |        |            |      |       |       |       |
| 5.04                                         | 79.2             | H               | 3.0      | 17.3                   | 36.1   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.56                                         | 72.3             | H               | 3.0      | 14.4                   | 36.2   | 1.0        | 49.7 | 25.0  | 24.7  |       |
| 10.08                                        | 72.5             | H               | 3.0      | 11.4                   | 33.4   | 1.0        | 44.1 | 25.0  | 19.1  |       |
| 5.04                                         | 79.5             | V               | 3.0      | 17.8                   | 36.2   | 1.0        | 53.1 | 25.0  | 28.1  |       |
| 7.56                                         | 72.3             | V               | 3.0      | 14.6                   | 34.9   | 1.0        | 49.4 | 25.0  | 24.4  |       |
| 10.08                                        | 72.8             | V               | 3.0      | 11.9                   | 32.1   | 1.0        | 43.0 | 25.0  | 18.0  |       |
| Mid Channel (2525.18MHz)-2544.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.07                                         | 72.8             | H               | 3.0      | 19.0                   | 36.0   | 1.0        | 53.9 | 25.0  | 28.9  |       |
| 7.61                                         | 71.5             | H               | 3.0      | 13.6                   | 35.2   | 1.0        | 47.8 | 25.0  | 22.8  |       |
| 10.14                                        | 71.9             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.0 | 25.0  | 17.0  |       |
| 5.07                                         | 70.6             | V               | 3.0      | 17.9                   | 36.1   | 1.0        | 53.0 | 25.0  | 28.0  |       |
| 7.61                                         | 70.8             | V               | 3.0      | 13.3                   | 35.7   | 1.0        | 48.8 | 25.0  | 23.8  |       |
| 10.14                                        | 73.7             | V               | 3.0      | 12.0                   | 36.2   | 1.0        | 48.0 | 25.0  | 23.0  |       |
| High Channel (2540.28MHz)-2560.8MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.11                                         | 70.0             | H               | 3.0      | 16.9                   | 36.2   | 1.0        | 52.1 | 25.0  | 27.1  |       |
| 7.67                                         | 71.5             | H               | 3.0      | 13.5                   | 36.0   | 1.0        | 48.5 | 25.0  | 23.5  |       |
| 10.23                                        | 72.8             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.9 | 25.0  | 17.9  |       |
| 5.11                                         | 70.0             | V               | 3.0      | 18.0                   | 36.2   | 1.0        | 53.3 | 25.0  | 28.3  |       |
| 7.67                                         | 71.7             | V               | 3.0      | 13.9                   | 35.9   | 1.0        | 48.7 | 25.0  | 23.7  |       |
| 10.23                                        | 72.6             | V               | 3.0      | 11.8                   | 36.3   | 1.0        | 47.1 | 25.0  | 22.1  |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/02/18

12491

EUT Only

LTE Band 7, 16QAM UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

3m Chamber G

Pre-amplifier

3m Chamber G

Filter

Filter

Limit

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | ERP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|------------------------|--------|------------|------|-------|-------|-------|
| Low Channel (2510MHz)-2529.88MHz 1.99 1-0    |                  |                 |          |                        |        |            |      |       |       |       |
| 5.04                                         | 79.2             | H               | 3.0      | 17.3                   | 36.1   | 1.0        | 52.3 | 25.0  | 27.3  |       |
| 7.56                                         | 72.3             | H               | 3.0      | 14.4                   | 36.2   | 1.0        | 49.7 | 25.0  | 24.7  |       |
| 10.08                                        | 72.5             | H               | 3.0      | 11.4                   | 33.4   | 1.0        | 44.1 | 25.0  | 19.1  |       |
| 5.04                                         | 79.5             | V               | 3.0      | 17.8                   | 36.2   | 1.0        | 53.1 | 25.0  | 28.1  |       |
| 7.56                                         | 72.3             | V               | 3.0      | 14.6                   | 34.9   | 1.0        | 49.4 | 25.0  | 24.4  |       |
| 10.08                                        | 72.8             | V               | 3.0      | 11.9                   | 32.1   | 1.0        | 43.0 | 25.0  | 18.0  |       |
| Mid Channel (2525.18MHz)-2544.58MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.07                                         | 72.8             | H               | 3.0      | 19.0                   | 36.0   | 1.0        | 53.9 | 25.0  | 28.9  |       |
| 7.61                                         | 71.5             | H               | 3.0      | 13.6                   | 35.2   | 1.0        | 47.8 | 25.0  | 22.8  |       |
| 10.14                                        | 71.9             | H               | 3.0      | 11.0                   | 32.0   | 1.0        | 42.0 | 25.0  | 17.0  |       |
| 5.07                                         | 70.6             | V               | 3.0      | 17.9                   | 36.1   | 1.0        | 53.0 | 25.0  | 28.0  |       |
| 7.61                                         | 70.8             | V               | 3.0      | 13.3                   | 35.7   | 1.0        | 48.8 | 25.0  | 23.8  |       |
| 10.14                                        | 73.7             | V               | 3.0      | 12.0                   | 36.2   | 1.0        | 48.0 | 25.0  | 23.0  |       |
| High Channel (2540.28MHz)-2560.8MHz 1.99 1-0 |                  |                 |          |                        |        |            |      |       |       |       |
| 5.11                                         | 70.0             | H               | 3.0      | 16.9                   | 36.2   |            |      |       |       |       |

## 9.1.2. LTE BAND 41 (FCC)

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, QPSK UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2517.7MHz 1-99, 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                          | -49.7            | H               | 3.0      | -19.7                   | 36.9   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.52                                          | -74.3            | H               | 3.0      | -20.4                   | 35.9   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 10.02                                         | -75.5            | H               | 3.0      | -18.9                   | 33.7   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 5.01                                          | -48.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.2 | -25.0 | -29.3 |       |
| 7.52                                          | -72.2            | V               | 3.0      | -18.6                   | 35.9   | 1.0        | -51.5 | -25.0 | -28.5 |       |
| 10.02                                         | -75.2            | V               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99, 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.18                                          | -70.2            | H               | 3.0      | -19.8                   | 36.8   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.77                                          | -73.8            | H               | 3.0      | -19.6                   | 35.7   | 1.0        | -54.3 | -25.0 | -29.3 |       |
| 10.36                                         | -74.9            | H               | 3.0      | -19.2                   | 33.7   | 1.0        | -50.9 | -25.0 | -25.9 |       |
| 5.18                                          | -70.0            | V               | 3.0      | -19.5                   | 36.8   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 7.77                                          | -72.3            | V               | 3.0      | -18.4                   | 35.7   | 1.0        | -53.1 | -25.0 | -28.1 |       |
| 10.36                                         | -73.6            | V               | 3.0      | -17.3                   | 33.7   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99, 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.35                                          | -68.8            | H               | 3.0      | -19.1                   | 36.8   | 1.0        | -54.9 | -25.0 | -29.9 |       |
| 8.03                                          | -71.8            | H               | 3.0      | -17.4                   | 35.5   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| 10.70                                         | -72.5            | H               | 3.0      | -16.6                   | 33.7   | 1.0        | -48.4 | -25.0 | -24.4 |       |
| 5.35                                          | -68.7            | V               | 3.0      | -17.9                   | 36.8   | 1.0        | -53.7 | -25.0 | -28.7 |       |
| 8.03                                          | -72.4            | V               | 3.0      | -18.2                   | 35.5   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.70                                         | -74.7            | V               | 3.0      | -18.3                   | 33.7   | 1.0        | -51.0 | -25.0 | -26.0 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, QPSK UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2517.7MHz 1-99, 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                          | -49.7            | H               | 3.0      | -19.7                   | 36.9   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.52                                          | -74.3            | H               | 3.0      | -20.4                   | 35.9   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 10.02                                         | -75.5            | H               | 3.0      | -18.9                   | 33.7   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 5.01                                          | -48.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.2 | -25.0 | -29.3 |       |
| 7.52                                          | -72.2            | V               | 3.0      | -18.6                   | 35.9   | 1.0        | -51.5 | -25.0 | -28.5 |       |
| 10.02                                         | -75.2            | V               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99, 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.18                                          | -70.2            | H               | 3.0      | -19.8                   | 36.8   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.77                                          | -73.8            | H               | 3.0      | -19.6                   | 35.7   | 1.0        | -54.3 | -25.0 | -29.3 |       |
| 10.36                                         | -74.9            | H               | 3.0      | -19.2                   | 33.7   | 1.0        | -50.9 | -25.0 | -25.9 |       |
| 5.18                                          | -70.0            | V               | 3.0      | -19.5                   | 36.8   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 7.77                                          | -72.3            | V               | 3.0      | -18.4                   | 35.7   | 1.0        | -53.1 | -25.0 | -28.1 |       |
| 10.36                                         | -73.6            | V               | 3.0      | -17.3                   | 33.7   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99, 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.35                                          | -68.8            | H               | 3.0      | -19.1                   | 36.8   | 1.0        | -54.9 | -25.0 | -29.9 |       |
| 8.03                                          | -71.8            | H               | 3.0      | -17.4                   | 35.5   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| 10.70                                         | -72.5            | H               | 3.0      | -16.6                   | 33.7   | 1.0        | -48.4 | -25.0 | -24.4 |       |
| 5.35                                          | -68.7            | V               | 3.0      | -17.9                   | 36.8   | 1.0        | -53.7 | -25.0 | -28.7 |       |
| 8.03                                          | -72.4            | V               | 3.0      | -18.2                   | 35.5   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.70                                         | -74.7            | V               | 3.0      | -18.3                   | 33.7   | 1.0        | -51.0 | -25.0 | -26.0 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, 16QAM UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|-----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2517.7MHz 1-99, 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                          | -49.7            | H               | 3.0      | -19.7                   | 36.9   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.52                                          | -74.3            | H               | 3.0      | -20.4                   | 35.9   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 10.02                                         | -75.5            | H               | 3.0      | -18.9                   | 33.7   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 5.01                                          | -48.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.2 | -25.0 | -29.3 |       |
| 7.52                                          | -72.2            | V               | 3.0      | -18.6                   | 35.9   | 1.0        | -51.5 | -25.0 | -28.5 |       |
| 10.02                                         | -75.2            | V               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99, 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.18                                          | -70.2            | H               | 3.0      | -19.8                   | 36.8   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 7.77                                          | -73.8            | H               | 3.0      | -19.6                   | 35.7   | 1.0        | -54.3 | -25.0 | -29.3 |       |
| 10.36                                         | -74.9            | H               | 3.0      | -19.2                   | 33.7   | 1.0        | -50.9 | -25.0 | -25.9 |       |
| 5.18                                          | -70.0            | V               | 3.0      | -19.5                   | 36.8   | 1.0        | -55.3 | -25.0 | -30.3 |       |
| 7.77                                          | -72.3            | V               | 3.0      | -18.4                   | 35.7   | 1.0        | -53.1 | -25.0 | -28.1 |       |
| 10.36                                         | -73.6            | V               | 3.0      | -17.3                   | 33.7   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99, 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.35                                          | -68.8            | H               | 3.0      | -19.1                   | 36.8   | 1.0        | -54.9 | -25.0 | -29.9 |       |
| 8.03                                          | -71.8            | H               | 3.0      | -17.4                   | 35.5   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| 10.70                                         | -72.5            | H               | 3.0      | -16.6                   | 33.7   | 1.0        | -48.4 | -25.0 | -24.4 |       |
| 5.35                                          | -68.7            | V               | 3.0      | -17.9                   | 36.8   | 1.0        | -53.7 | -25.0 | -28.7 |       |
| 8.03                                          | -72.4            | V               | 3.0      | -18.2                   | 35.5   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.70                                         | -74.7            | V               | 3.0      | -18.3                   | 33.7   | 1.0        | -51.0 | -25.0 | -26.0 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, 16QAM UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                         | -69.0            | H               | 3.0      | -18.9                   | 36.9   | 1.0        | -54.7 | -25.0 | -29.7 |       |
| 7.52                                         | -71.4            | H               | 3.0      | -17.8                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.2            | H               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| 5.01                                         | -69.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.4 | -25.0 | -29.4 |       |
| 7.52                                         | -74.4            | V               | 3.0      | -18.0                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.4            | V               | 3.0      | -19.2                   | 33.7   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.17                                         | -69.4            | H               | 3.0      | -18.9                   | 36.8   | 1.0        | -54.8 | -25.0 | -29.8 |       |
| 7.75                                         | -73.2            | H               | 3.0      | -18.3                   | 35.7   | 1.0        | -54.1 | -25.0 | -29.1 |       |
| 10.33                                        | -73.8            | H               | 3.0      | -17.5                   | 33.7   | 1.0        | -50.2 | -25.0 | -25.2 |       |
| 5.17                                         | -68.9            | V               | 3.0      | -18.4                   | 36.8   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 7.75                                         | -71.9            | V               | 3.0      | -18.0                   | 35.7   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.33                                        | -73.7            | V               | 3.0      | -17.4                   | 33.7   | 1.0        | -50.1 | -25.0 | -25.1 |       |
| High Channel (2660.2MHz) + 2680MHz 1-99 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.32                                         | -70.4            | H               | 3.0      | -19.0                   | 36.8   | 1.0        | -55.4 | -25.0 | -30.4 |       |
| 7.98                                         | -75.8            | H               | 3.0      | -19.7                   | 35.5   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 10.64                                        | -76.2            | H               | 3.0      | -18.8                   | 33.7   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 5.32                                         | -70.3            | V               | 3.0      | -18.9                   | 36.8   | 1.0        | -55.4 | -25.0 | -30.4 |       |
| 7.98                                         | -72.6            | V               | 3.0      | -18.5                   | 35.5   | 1.0        | -53.0 | -25.0 | -28.0 |       |
| 10.64                                        | -73.8            | V               | 3.0      | -18.6                   | 33.7   | 1.0        | -49.3 | -25.0 | -24.3 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, 16QAM UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                         | -69.0            | H               | 3.0      | -18.9                   | 36.9   | 1.0        | -54.7 | -25.0 | -29.7 |       |
| 7.52                                         | -71.4            | H               | 3.0      | -17.8                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.2            | H               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| 5.01                                         | -69.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.4 | -25.0 | -29.4 |       |
| 7.52                                         | -74.4            | V               | 3.0      | -18.0                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.4            | V               | 3.0      | -19.2                   | 33.7   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.17                                         | -69.4            | H               | 3.0      | -18.9                   | 36.8   | 1.0        | -54.8 | -25.0 | -29.8 |       |
| 7.75                                         | -73.2            | H               | 3.0      | -18.3                   | 35.7   | 1.0        | -54.1 | -25.0 | -29.1 |       |
| 10.33                                        | -73.8            | H               | 3.0      | -17.5                   | 33.7   | 1.0        | -50.2 | -25.0 | -25.2 |       |
| 5.17                                         | -68.9            | V               | 3.0      | -18.4                   | 36.8   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 7.75                                         | -71.9            | V               | 3.0      | -18.0                   | 35.7   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.33                                        | -73.7            | V               | 3.0      | -17.4                   | 33.7   | 1.0        | -50.1 | -25.0 | -25.1 |       |
| High Channel (2660.2MHz) + 2680MHz 1-99 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.32                                         | -70.4            | H               | 3.0      | -19.0                   | 36.8   | 1.0        | -55.4 | -25.0 | -30.4 |       |
| 7.98                                         | -75.8            | H               | 3.0      | -19.7                   | 35.5   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 10.64                                        | -76.2            | H               | 3.0      | -18.8                   | 33.7   | 1.0        | -51.6 | -25.0 | -26.6 |       |
| 5.32                                         | -70.3            | V               | 3.0      | -18.9                   | 36.8   | 1.0        | -55.4 | -25.0 | -30.4 |       |
| 7.98                                         | -72.6            | V               | 3.0      | -18.5                   | 35.5   | 1.0        | -53.0 | -25.0 | -28.0 |       |
| 10.64                                        | -73.8            | V               | 3.0      | -18.6                   | 33.7   | 1.0        | -49.3 | -25.0 | -24.3 |       |

Rev. 05.21.15

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

4/19/2018

12492

EUT ONLY

LTE Band 41, 16QAM UL CA 205

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B41

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                                         | -69.0            | H               | 3.0      | -18.9                   | 36.9   | 1.0        | -54.7 | -25.0 | -29.7 |       |
| 7.52                                         | -71.4            | H               | 3.0      | -17.8                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.2            | H               | 3.0      | -19.0                   | 33.7   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| 5.01                                         | -69.7            | V               | 3.0      | -18.5                   | 36.9   | 1.0        | -54.4 | -25.0 | -29.4 |       |
| 7.52                                         | -74.4            | V               | 3.0      | -18.0                   | 35.9   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.02                                        | -75.4            | V               | 3.0      | -19.2                   | 33.7   | 1.0        | -51.9 | -25.0 | -26.9 |       |
| Mid Channel (2583.1MHz) + 2602.9MHz 1-99 1-0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.17                                         | -69.4            | H               | 3.0      | -18.9                   | 36.8   | 1.0        | -54.8 | -25.0 | -29.8 |       |
| 7.75                                         | -73.2            | H               | 3.0      | -18.3                   | 35.7   | 1.0        | -54.1 | -25.0 | -29.1 |       |
| 10.33                                        | -73.8            | H               | 3.0      | -17.5                   | 33.7   | 1.0        | -50.2 | -25.0 | -25.2 |       |
| 5.17                                         | -68.9            | V               | 3.0      | -18.4                   | 36.8   | 1.0        | -54.2 | -25.0 | -29.2 |       |
| 7.75                                         | -71.9            | V               | 3.0      | -18.0                   | 35.7   | 1.0        | -52.7 | -25.0 | -27.7 |       |
| 10.33                                        | -73.7            | V               | 3.0      | -17.4                   | 33.7   | 1.0        | -50.1 | -25.0 | -25.1 |       |
| High Channel (2660.2MHz) + 2680MHz 1-99 1-0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.32                                         | -70.4            | H               | 3.0      | -19.0                   | 36.8   | 1.0        | -55.4 | -25.0 | -30.4 |       |

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/20/18

52275

EUT Only

LTE Band 7, 1MHz QPSK

Test Equipment:

Substitution: Horn T59 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber H

3m Chamber H

Filter

LTE B7

| Frequency (GHz)          | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|--------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2502.5MHz)  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.01                     | -78.4            | H               | 3.0      | -28.4                   | 38.9   | 1.0        | -68.3 | -25.0 | -11.3 |       |
| 7.51                     | -74.5            | H               | 3.0      | -28.7                   | 35.9   | 1.0        | -55.6 | -25.0 | -30.6 |       |
| 10.01                    | -77.8            | H               | 3.0      | -21.1                   | 33.7   | 1.0        | -53.7 | -25.0 | -38.7 |       |
| 5.01                     | -71.2            | V               | 3.0      | -21.9                   | 38.9   | 1.0        | -68.9 | -25.0 | -11.9 |       |
| 7.51                     | -75.9            | V               | 3.0      | -22.3                   | 35.9   | 1.0        | -57.2 | -25.0 | -32.2 |       |
| 10.01                    | -76.5            | V               | 3.0      | -26.3                   | 33.7   | 1.0        | -53.0 | -25.0 | -38.0 |       |
| Mid Channel (2535MHz)    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                     | -72.4            | H               | 3.0      | -22.3                   | 38.9   | 1.0        | -68.1 | -25.0 | -33.1 |       |
| 7.61                     | -77.0            | H               | 3.0      | -22.1                   | 35.8   | 1.0        | -57.9 | -25.0 | -32.9 |       |
| 10.14                    | -76.7            | H               | 3.0      | -26.1                   | 33.7   | 1.0        | -52.8 | -25.0 | -37.8 |       |
| 5.07                     | -72.2            | V               | 3.0      | -21.9                   | 38.9   | 1.0        | -51.7 | -25.0 | -32.7 |       |
| 7.61                     | -75.0            | V               | 3.0      | -21.3                   | 35.8   | 1.0        | -56.1 | -25.0 | -31.1 |       |
| 10.14                    | -77.6            | V               | 3.0      | -21.3                   | 33.7   | 1.0        | -54.0 | -25.0 | -39.0 |       |
| High Channel (2567.5MHz) |                  |                 |          |                         |        |            |       |       |       |       |
| 5.14                     | -71.3            | H               | 3.0      | -21.1                   | 38.9   | 1.0        | -68.9 | -25.0 | -11.9 |       |
| 7.70                     | -75.2            | H               | 3.0      | -21.2                   | 35.8   | 1.0        | -55.9 | -25.0 | -30.9 |       |
| 10.27                    | -76.7            | H               | 3.0      | -26.1                   | 33.7   | 1.0        | -52.8 | -25.0 | -37.8 |       |
| 5.14                     | -72.2            | V               | 3.0      | -21.7                   | 38.8   | 1.0        | -51.6 | -25.0 | -31.6 |       |
| 7.70                     | -76.6            | V               | 3.0      | -22.8                   | 35.8   | 1.0        | -57.5 | -25.0 | -32.5 |       |
| 10.27                    | -77.4            | V               | 3.0      | -21.1                   | 33.7   | 1.0        | -53.8 | -25.0 | -38.8 |       |

Rev. 05.21.15

LTE B7 20MHz + 10MHz QPSK

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/20/18

52275

EUT Only

LTE Band 7, 1MHz QPSK, UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

LTE B7

| Frequency (GHz)                             | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|---------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2510MHz)+ 2509.8MHz 1.99 1.0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                        | -64.3            | H               | 3.0      | -11.3                   | 36.1   | 1.0        | -46.4 | -25.0 | -21.4 |       |
| 7.56                                        | -67.0            | H               | 3.0      | -9.2                    | 36.3   | 1.0        | -44.4 | -25.0 | -19.4 |       |
| 10.06                                       | -66.0            | H               | 3.0      | -5.2                    | 33.4   | 1.0        | -37.6 | -25.0 | -12.6 |       |
| 5.04                                        | -64.3            | V               | 3.0      | -11.6                   | 36.3   | 1.0        | -46.9 | -25.0 | -21.9 |       |
| 7.56                                        | -66.9            | V               | 3.0      | -8.3                    | 34.8   | 1.0        | -43.0 | -25.0 | -18.0 |       |
| 10.06                                       | -66.9            | V               | 3.0      | -6.1                    | 32.1   | 1.0        | -37.1 | -25.0 | -12.1 |       |
| Mid Channel (2525.1MHz)+2544.9MHz 1.99 1.0  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                        | -64.0            | H               | 3.0      | -11.0                   | 36.0   | 1.0        | -46.0 | -25.0 | -21.0 |       |
| 7.67                                        | -67.2            | H               | 3.0      | -9.3                    | 35.2   | 1.0        | -43.6 | -25.0 | -18.6 |       |
| 10.14                                       | -68.0            | H               | 3.0      | -7.1                    | 32.8   | 1.0        | -38.1 | -25.0 | -13.1 |       |
| 5.07                                        | -63.7            | V               | 3.0      | -11.0                   | 36.1   | 1.0        | -46.1 | -25.0 | -21.1 |       |
| 7.67                                        | -66.6            | V               | 3.0      | -8.2                    | 33.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.14                                       | -67.3            | V               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.6 | -25.0 | -16.6 |       |
| High Channel (2540.3MHz)+2560.8MHz 1.99 1.0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                        | -64.0            | H               | 3.0      | -10.9                   | 36.2   | 1.0        | -46.1 | -25.0 | -21.1 |       |
| 7.67                                        | -65.5            | H               | 3.0      | -7.6                    | 36.0   | 1.0        | -42.6 | -25.0 | -17.6 |       |
| 10.23                                       | -67.3            | H               | 3.0      | -6.3                    | 32.0   | 1.0        | -37.3 | -25.0 | -12.3 |       |
| 5.11                                        | -63.4            | V               | 3.0      | -10.7                   | 36.3   | 1.0        | -43.9 | -25.0 | -20.9 |       |
| 7.67                                        | -65.0            | V               | 3.0      | -8.6                    | 35.8   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 10.23                                       | -67.3            | V               | 3.0      | -6.5                    | 36.3   | 1.0        | -41.8 | -25.0 | -16.8 |       |

Rev. 05.21.15

LTE B7 20MHz + 20MHz QPSK

High Frequency Substitution Measurement

UL Fremont Radiated Chamber

Company:

Project #:

Date:

Test Engineer:

Configuration:

Mode:

04/20/18

52275

EUT Only

LTE Band 7, 1MHz QPSK, UL CA 20/20

Test Equipment:

Substitution: Horn T344 Substitution, and 8R SMA Cable

Chamber

Pre-amplifier

Filter

Limit

3m Chamber E

3m Chamber E

Filter

LTE B7

| Frequency (GHz)                              | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
|----------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Low Channel (2510MHz)+ 2509.8MHz 1.99 1.0    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                         | -64.3            | H               | 3.0      | -8.6                    | 36.1   | 1.0        | -44.7 | -25.0 | -18.7 |       |
| 7.56                                         | -67.0            | H               | 3.0      | -9.1                    | 36.3   | 1.0        | -44.4 | -25.0 | -18.4 |       |
| 10.06                                        | -66.0            | H               | 3.0      | -7.8                    | 33.4   | 1.0        | -39.4 | -25.0 | -14.4 |       |
| 5.04                                         | -64.0            | V               | 3.0      | -10.9                   | 36.3   | 1.0        | -46.2 | -25.0 | -21.2 |       |
| 7.56                                         | -66.7            | V               | 3.0      | -9.1                    | 34.8   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 10.06                                        | -67.0            | V               | 3.0      | -7.1                    | 32.1   | 1.0        | -38.1 | -25.0 | -13.1 |       |
| Mid Channel (2525.1MHz)+2544.9MHz 1.99 1.0   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                         | -62.0            | H               | 3.0      | -8.9                    | 36.0   | 1.0        | -44.8 | -25.0 | -18.8 |       |
| 7.67                                         | -66.2            | H               | 3.0      | -8.2                    | 36.2   | 1.0        | -42.6 | -25.0 | -17.6 |       |
| 10.14                                        | -67.6            | H               | 3.0      | -6.8                    | 32.0   | 1.0        | -37.6 | -25.0 | -12.6 |       |
| 5.07                                         | -62.0            | V               | 3.0      | -10.3                   | 36.1   | 1.0        | -46.2 | -25.0 | -21.2 |       |
| 7.67                                         | -62.1            | V               | 3.0      | -8.1                    | 33.7   | 1.0        | -42.6 | -25.0 | -17.6 |       |
| 10.14                                        | -66.4            | V               | 3.0      | -5.5                    | 36.2   | 1.0        | -40.7 | -25.0 | -15.7 |       |
| High Channel (2540.3MHz)+ 2560.8MHz 1.99 1.0 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                         | -64.0            | H               | 3.0      | -11.4                   | 36.2   | 1.0        | -46.6 | -25.0 | -21.6 |       |
| 7.67                                         | -66.0            | H               | 3.0      | -8.1                    | 36.0   | 1.0        | -44.0 | -25.0 | -19.0 |       |
| 10.23                                        | -67.6            | H               | 3.0      | -6.9                    | 32.0   | 1.0        | -37.6 | -25.0 | -12.6 |       |
| 5.11                                         | -64.1            | V               | 3.0      | -12.3                   | 36.3   | 1.0        | -47.8 | -25.0 | -22.8 |       |
| 7.67                                         | -66.3            | V               | 3.0      | -8.5                    | 36.0   | 1.0        | -43.3 | -25.0 | -18.3 |       |
| 10.23                                        | -67.6            | V               | 3.0      | -6.6                    | 36.5   | 1.0        | -41.3 | -25.0 | -16.3 |       |

Rev. 05.21.15

LTE B7 20MHz + 20MHz 16QAM



## 9.3. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 3

### 9.3.1. LTE BAND 7

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                          |                  |                 |          |                         |        |            |       |       |       |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|--|
| Company: Project #: 04/25/18<br>Date: 10649<br>Test Engineer: EUT Only<br>Configuration: LTE Band 7, QPSK, UL CA 2010<br>Mode:<br><br>Test Equipment:<br>Substitution: Horn T344 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                                                         |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |  |
| 3m Chamber E                                                                                                                                                                                                    |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |  |
| Frequency (GHz)                                                                                                                                                                                                 | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| Low Channel (2510MHz)+2524.4MHz 1-99 1-0                                                                                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.03                                                                                                                                                                                                            | -63.8            | H               | 3.0      | -10.8                   | 38.7   | 1.0        | -48.5 | -25.0 | -23.5 |       |  |
| 7.55                                                                                                                                                                                                            | -66.2            | H               | 3.0      | -8.3                    | 37.7   | 1.0        | -45.1 | -25.0 | -20.1 |       |  |
| 10.07                                                                                                                                                                                                           | -67.1            | H               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |  |
| 5.03                                                                                                                                                                                                            | -63.2            | V               | 3.0      | -10.8                   | 38.7   | 1.0        | -48.3 | -25.0 | -23.3 |       |  |
| 7.55                                                                                                                                                                                                            | -66.2            | V               | 3.0      | -8.7                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |  |
| 10.07                                                                                                                                                                                                           | -67.3            | V               | 3.0      | -6.4                    | 36.2   | 1.0        | -41.6 | -25.0 | -16.6 |       |  |
| Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0                                                                                                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.07                                                                                                                                                                                                            | -64.1            | H               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |  |
| 7.61                                                                                                                                                                                                            | -66.4            | H               | 3.0      | -7.5                    | 37.7   | 1.0        | -44.2 | -25.0 | -19.2 |       |  |
| 10.15                                                                                                                                                                                                           | -66.8            | H               | 3.0      | -6.0                    | 36.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |  |
| 5.07                                                                                                                                                                                                            | -63.5            | V               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.7 | -25.0 | -23.7 |       |  |
| 7.61                                                                                                                                                                                                            | -66.4            | V               | 3.0      | -8.7                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |  |
| 10.15                                                                                                                                                                                                           | -66.6            | V               | 3.0      | -8.7                    | 36.2   | 1.0        | -40.9 | -25.0 | -15.9 |       |  |
| High Channel (2550.1MHz)+2564.5MHz 1-99 1-0                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.11                                                                                                                                                                                                            | -63.4            | H               | 3.0      | -10.3                   | 38.7   | 1.0        | -47.9 | -25.0 | -22.9 |       |  |
| 7.67                                                                                                                                                                                                            | -65.8            | H               | 3.0      | -7.9                    | 37.6   | 1.0        | -44.2 | -25.0 | -19.2 |       |  |
| 10.23                                                                                                                                                                                                           | -67.1            | H               | 3.0      | -6.1                    | 36.3   | 1.0        | -41.3 | -25.0 | -16.3 |       |  |
| 5.11                                                                                                                                                                                                            | -63.5            | V               | 3.0      | -10.7                   | 38.7   | 1.0        | -48.4 | -25.0 | -23.4 |       |  |
| 7.67                                                                                                                                                                                                            | -65.7            | V               | 3.0      | -7.9                    | 37.6   | 1.0        | -44.5 | -25.0 | -19.5 |       |  |
| 10.23                                                                                                                                                                                                           | -65.7            | V               | 3.0      | -4.7                    | 36.3   | 1.0        | -39.8 | -25.0 | -14.8 |       |  |
| Rev. 05.21.15                                                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |  |

LTE B7 20MHz + 10MHz QPSK

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                          |                  |                 |          |                         |        |            |       |       |       |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|--|
| Company: Project #: 04/25/18<br>Date: 10649<br>Test Engineer: EUT Only<br>Configuration: LTE Band 7, QPSK, UL CA 2020<br>Mode:<br><br>Test Equipment:<br>Substitution: Horn T344 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                                                         |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |  |
| 3m Chamber E                                                                                                                                                                                                    |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |  |
| Frequency (GHz)                                                                                                                                                                                                 | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| Low Channel (2510MHz)+2529.8MHz 1-99 1-0                                                                                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.04                                                                                                                                                                                                            | -63.7            | H               | 3.0      | -10.8                   | 36.1   | 1.0        | -45.9 | -25.0 | -20.9 |       |  |
| 7.56                                                                                                                                                                                                            | -65.5            | H               | 3.0      | -8.0                    | 36.3   | 1.0        | -43.3 | -25.0 | -18.3 |       |  |
| 10.08                                                                                                                                                                                                           | -66.1            | H               | 3.0      | -5.2                    | 33.4   | 1.0        | -37.7 | -25.0 | -12.7 |       |  |
| 5.04                                                                                                                                                                                                            | -63.2            | V               | 3.0      | -10.5                   | 36.3   | 1.0        | -45.8 | -25.0 | -20.8 |       |  |
| 7.56                                                                                                                                                                                                            | -66.0            | V               | 3.0      | -9.1                    | 34.8   | 1.0        | -42.0 | -25.0 | -17.0 |       |  |
| 10.08                                                                                                                                                                                                           | -67.6            | V               | 3.0      | -6.8                    | 32.1   | 1.0        | -37.8 | -25.0 | -12.8 |       |  |
| Mid Channel (2525.1MHz)+2544.5MHz 1-99 1-0                                                                                                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.07                                                                                                                                                                                                            | -63.6            | H               | 3.0      | -10.6                   | 36.8   | 1.0        | -45.5 | -25.0 | -20.5 |       |  |
| 7.61                                                                                                                                                                                                            | -66.4            | H               | 3.0      | -8.4                    | 35.2   | 1.0        | -42.7 | -25.0 | -17.7 |       |  |
| 10.14                                                                                                                                                                                                           | -66.9            | H               | 3.0      | -6.0                    | 32.8   | 1.0        | -37.0 | -25.0 | -12.0 |       |  |
| 5.07                                                                                                                                                                                                            | -63.3            | V               | 3.0      | -10.6                   | 36.1   | 1.0        | -45.7 | -25.0 | -20.7 |       |  |
| 7.61                                                                                                                                                                                                            | -65.9            | V               | 3.0      | -8.1                    | 37.7   | 1.0        | -44.7 | -25.0 | -19.7 |       |  |
| 10.14                                                                                                                                                                                                           | -66.0            | V               | 3.0      | -7.0                    | 36.2   | 1.0        | -42.2 | -25.0 | -17.2 |       |  |
| High Channel (2540.1MHz)+2560.8MHz 1-99 1-0                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.12                                                                                                                                                                                                            | -63.6            | H               | 3.0      | -10.4                   | 36.2   | 1.0        | -45.7 | -25.0 | -20.7 |       |  |
| 7.68                                                                                                                                                                                                            | -65.9            | H               | 3.0      | -7.9                    | 36.0   | 1.0        | -42.9 | -25.0 | -17.9 |       |  |
| 10.25                                                                                                                                                                                                           | -66.8            | H               | 3.0      | -5.8                    | 32.8   | 1.0        | -36.0 | -25.0 | -11.0 |       |  |
| 5.12                                                                                                                                                                                                            | -63.7            | V               | 3.0      | -9.8                    | 36.3   | 1.0        | -45.1 | -25.0 | -20.1 |       |  |
| 7.68                                                                                                                                                                                                            | -66.2            | V               | 3.0      | -6.9                    | 35.8   | 1.0        | -41.0 | -25.0 | -16.0 |       |  |
| 10.25                                                                                                                                                                                                           | -66.4            | V               | 3.0      | -5.3                    | 36.3   | 1.0        | -40.6 | -25.0 | -15.6 |       |  |
| Rev. 05.21.15                                                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |  |

LTE B7 20MHz + 20MHz QPSK

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                          |                  |                 |          |                         |        |            |       |       |       |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|--|
| Company: Project #: 04/25/18<br>Date: 10649<br>Test Engineer: EUT Only<br>Configuration: LTE Band 7, 16QAM UL CA 2020<br>Mode:<br><br>Test Equipment:<br>Substitution: Horn T344 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |  |
| Chamber                                                                                                                                                                                                         |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |  |
| 3m Chamber E                                                                                                                                                                                                    |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |  |
| Frequency (GHz)                                                                                                                                                                                                 | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |  |
| Low Channel (2510MHz)+2529.8MHz 1-99 1-0                                                                                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.04                                                                                                                                                                                                            | -63.2            | H               | 3.0      | -10.3                   | 36.1   | 1.0        | -45.4 | -25.0 | -20.4 |       |  |
| 7.56                                                                                                                                                                                                            | -65.3            | H               | 3.0      | -7.5                    | 36.3   | 1.0        | -42.7 | -25.0 | -17.7 |       |  |
| 10.08                                                                                                                                                                                                           | -67.4            | H               | 3.0      | -6.5                    | 33.4   | 1.0        | -39.0 | -25.0 | -14.0 |       |  |
| 5.04                                                                                                                                                                                                            | -63.4            | V               | 3.0      | -10.8                   | 36.3   | 1.0        | -46.1 | -25.0 | -21.1 |       |  |
| 7.56                                                                                                                                                                                                            | -65.7            | V               | 3.0      | -8.0                    | 34.8   | 1.0        | -41.8 | -25.0 | -16.8 |       |  |
| 10.08                                                                                                                                                                                                           | -66.3            | V               | 3.0      | -5.4                    | 32.1   | 1.0        | -36.5 | -25.0 | -11.5 |       |  |
| Mid Channel (2525.1MHz)+2544.5MHz 1-99 1-0                                                                                                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.07                                                                                                                                                                                                            | -64.0            | H               | 3.0      | -10.0                   | 36.0   | 1.0        | -45.9 | -25.0 | -20.9 |       |  |
| 7.61                                                                                                                                                                                                            | -66.9            | H               | 3.0      | -8.0                    | 35.2   | 1.0        | -42.3 | -25.0 | -17.3 |       |  |
| 10.14                                                                                                                                                                                                           | -67.9            | H               | 3.0      | -7.0                    | 32.8   | 1.0        | -38.0 | -25.0 | -13.0 |       |  |
| 5.07                                                                                                                                                                                                            | -63.8            | V               | 3.0      | -11.1                   | 36.1   | 1.0        | -46.2 | -25.0 | -21.2 |       |  |
| 7.61                                                                                                                                                                                                            | -65.9            | V               | 3.0      | -8.2                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |  |
| 10.14                                                                                                                                                                                                           | -66.8            | V               | 3.0      | -5.8                    | 36.2   | 1.0        | -41.1 | -25.0 | -16.1 |       |  |
| High Channel (2540.1MHz)+2560.8MHz 1-99 1-0                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |  |
| 5.12                                                                                                                                                                                                            | -63.6            | H               | 3.0      | -10.5                   | 36.2   | 1.0        | -45.7 | -25.0 | -20.7 |       |  |
| 7.68                                                                                                                                                                                                            | -65.7            | H               | 3.0      | -7.7                    | 36.0   | 1.0        | -42.7 | -25.0 | -17.7 |       |  |
| 10.25                                                                                                                                                                                                           | -66.5            | H               | 3.0      | -5.5                    | 33.8   | 1.0        | -36.5 | -25.0 | -11.5 |       |  |
| 5.12                                                                                                                                                                                                            | -63.7            | V               | 3.0      | -10.9                   | 36.3   | 1.0        | -46.1 | -25.0 | -21.1 |       |  |
| 7.68                                                                                                                                                                                                            | -66.2            | V               | 3.0      | -8.4                    | 35.9   | 1.0        | -43.2 | -25.0 | -18.2 |       |  |
| 10.25                                                                                                                                                                                                           | -65.4            | V               | 3.0      | -4.4                    | 36.3   | 1.0        | -39.7 | -25.0 | -14.7 |       |  |
| Rev. 05.21.15                                                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |  |

LTE B7 20MHz + 20MHz 16QAM

### 9.3.2. LTE BAND 41

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                            |                  |                 |          |                         |        |            |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Company:<br>Project #:<br>Date: 04/25/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 41, QPSK UL CA 205  |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T59 Substitution, and 8ft SMA Cable                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                           | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                      | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2517.7MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                              | -63.6            | H               | 3.0      | -10.7                   | 38.7   | 1.0        | -48.4 | -25.0 | -23.4 |       |
| 7.54                                                                                                                              | -66.1            | H               | 3.0      | -8.2                    | 37.7   | 1.0        | -45.0 | -25.0 | -20.0 |       |
| 10.06                                                                                                                             | -68.1            | H               | 3.0      | -7.2                    | 36.2   | 1.0        | -42.6 | -25.0 | -17.4 |       |
| 5.03                                                                                                                              | -62.9            | V               | 3.0      | -10.3                   | 38.7   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 7.54                                                                                                                              | -65.9            | V               | 3.0      | -8.2                    | 37.7   | 1.0        | -45.0 | -25.0 | -20.0 |       |
| 10.06                                                                                                                             | -67.8            | V               | 3.0      | -7.0                    | 36.2   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99 1-0                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                              | -64.7            | H               | 3.0      | -11.2                   | 38.7   | 1.0        | -48.9 | -25.0 | -23.9 |       |
| 7.79                                                                                                                              | -65.1            | H               | 3.0      | -9.9                    | 37.6   | 1.0        | -43.5 | -25.0 | -18.5 |       |
| 10.39                                                                                                                             | -68.1            | H               | 3.0      | -8.9                    | 36.4   | 1.0        | -42.3 | -25.0 | -17.3 |       |
| 5.19                                                                                                                              | -64.2            | V               | 3.0      | -11.3                   | 38.7   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 7.79                                                                                                                              | -66.1            | V               | 3.0      | -8.2                    | 37.6   | 1.0        | -44.7 | -25.0 | -19.7 |       |
| 10.39                                                                                                                             | -67.8            | V               | 3.0      | -8.6                    | 36.4   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.36                                                                                                                              | -66.4            | H               | 3.0      | -12.7                   | 38.6   | 1.0        | -50.4 | -25.0 | -25.4 |       |
| 8.04                                                                                                                              | -65.4            | H               | 3.0      | -7.0                    | 37.4   | 1.0        | -43.4 | -25.0 | -18.4 |       |
| 10.72                                                                                                                             | -67.5            | H               | 3.0      | -6.1                    | 36.6   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 5.36                                                                                                                              | -66.4            | V               | 3.0      | -13.1                   | 38.6   | 1.0        | -50.8 | -25.0 | -25.8 |       |
| 8.04                                                                                                                              | -66.0            | V               | 3.0      | -7.7                    | 37.4   | 1.0        | -44.1 | -25.0 | -19.1 |       |
| 10.72                                                                                                                             | -67.3            | V               | 3.0      | -5.6                    | 36.6   | 1.0        | -41.3 | -25.0 | -16.3 |       |
| Rev: 05.21.15                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 5MHz QPSK                                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/25/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 41, QPSK UL CA 205  |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T59 Substitution, and 8ft SMA Cable                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                           | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                      | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                              | -61.7            | H               | 3.0      | -8.7                    | 38.7   | 1.0        | -46.4 | -25.0 | -21.4 |       |
| 7.55                                                                                                                              | -66.0            | H               | 3.0      | -8.2                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.06                                                                                                                             | -68.1            | H               | 3.0      | -7.3                    | 36.2   | 1.0        | -42.4 | -25.0 | -17.4 |       |
| 5.03                                                                                                                              | -63.3            | V               | 3.0      | -10.6                   | 38.7   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 7.55                                                                                                                              | -65.8            | V               | 3.0      | -8.1                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.06                                                                                                                             | -67.2            | V               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| Mid Channel (2583.1MHz) + 2602.2MHz 1-99 1-0                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                              | -63.7            | H               | 3.0      | -10.5                   | 38.7   | 1.0        | -48.2 | -25.0 | -23.2 |       |
| 7.79                                                                                                                              | -65.0            | H               | 3.0      | -8.8                    | 37.6   | 1.0        | -43.4 | -25.0 | -18.4 |       |
| 10.37                                                                                                                             | -66.0            | H               | 3.0      | -4.9                    | 36.4   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| 5.19                                                                                                                              | -63.5            | V               | 3.0      | -10.6                   | 38.7   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 7.79                                                                                                                              | -65.0            | V               | 3.0      | -7.0                    | 37.6   | 1.0        | -43.6 | -25.0 | -18.6 |       |
| 10.37                                                                                                                             | -66.3            | V               | 3.0      | -5.1                    | 36.4   | 1.0        | -40.5 | -25.0 | -15.5 |       |
| High Channel (2660.2MHz) + 2680MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.34                                                                                                                              | -68.6            | H               | 3.0      | -13.0                   | 38.6   | 1.0        | -50.7 | -25.0 | -25.7 |       |
| 8.01                                                                                                                              | -64.7            | H               | 3.0      | -6.3                    | 37.4   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| 10.68                                                                                                                             | -68.3            | H               | 3.0      | -7.0                    | 36.6   | 1.0        | -42.5 | -25.0 | -17.5 |       |
| 5.34                                                                                                                              | -67.6            | V               | 3.0      | -14.2                   | 38.6   | 1.0        | -51.8 | -25.0 | -26.8 |       |
| 8.01                                                                                                                              | -67.1            | V               | 3.0      | -8.9                    | 37.4   | 1.0        | -45.3 | -25.0 | -20.3 |       |
| 10.68                                                                                                                             | -68.4            | V               | 3.0      | -4.9                    | 36.6   | 1.0        | -40.5 | -25.0 | -15.5 |       |
| Rev: 05.21.15                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 20MHz QPSK                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/25/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 41, 16QAM UL CA 205 |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T59 Substitution, and 8ft SMA Cable                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                           | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                      | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                              | -64.2            | H               | 3.0      | -11.2                   | 38.7   | 1.0        | -48.9 | -25.0 | -23.9 |       |
| 7.55                                                                                                                              | -66.3            | H               | 3.0      | -8.5                    | 37.7   | 1.0        | -45.2 | -25.0 | -20.2 |       |
| 10.06                                                                                                                             | -67.6            | H               | 3.0      | -6.7                    | 36.2   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 5.03                                                                                                                              | -64.2            | V               | 3.0      | -11.6                   | 38.7   | 1.0        | -49.3 | -25.0 | -24.3 |       |
| 7.55                                                                                                                              | -65.8            | V               | 3.0      | -8.1                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.06                                                                                                                             | -68.0            | V               | 3.0      | -7.2                    | 36.2   | 1.0        | -42.4 | -25.0 | -17.4 |       |
| Mid Channel (2583.1MHz) + 2602.2MHz 1-99 1-0                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                              | -65.1            | H               | 3.0      | -11.8                   | 38.7   | 1.0        | -49.5 | -25.0 | -24.5 |       |
| 7.79                                                                                                                              | -65.1            | H               | 3.0      | -7.0                    | 37.6   | 1.0        | -43.6 | -25.0 | -18.6 |       |
| 10.37                                                                                                                             | -67.9            | H               | 3.0      | -6.8                    | 36.4   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 5.19                                                                                                                              | -64.0            | V               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.79                                                                                                                              | -65.8            | V               | 3.0      | -7.8                    | 37.6   | 1.0        | -44.4 | -25.0 | -19.4 |       |
| 10.37                                                                                                                             | -67.0            | V               | 3.0      | -5.8                    | 36.4   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| High Channel (2660.2MHz) + 2680MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.34                                                                                                                              | -65.0            | H               | 3.0      | -11.4                   | 38.6   | 1.0        | -49.1 | -25.0 | -24.1 |       |
| 8.01                                                                                                                              | -65.5            | H               | 3.0      | -7.1                    | 37.4   | 1.0        | -43.5 | -25.0 | -18.5 |       |
| 10.68                                                                                                                             | -65.8            | H               | 3.0      | -4.5                    | 36.6   | 1.0        | -40.0 | -25.0 | -15.0 |       |
| 5.34                                                                                                                              | -66.4            | V               | 3.0      | -12.1                   | 38.6   | 1.0        | -50.9 | -25.0 | -25.9 |       |
| 8.01                                                                                                                              | -66.4            | V               | 3.0      | -8.2                    | 37.4   | 1.0        | -44.6 | -25.0 | -19.6 |       |
| 10.68                                                                                                                             | -67.7            | V               | 3.0      | -6.2                    | 36.6   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| Rev: 05.21.15                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 20MHz 16QAM                                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |

## 9.4. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 4

### 9.4.1. LTE BAND 7

|                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
|----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                           |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/27/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 7, QPSK UL CA 2010 |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                          |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber E                                                                                                                     |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |
| Frequency (GHz)                                                                                                                  | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2510MHz)+2524.4MHz 1-99 1-0                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                             | -64.8            | H               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.55                                                                                                                             | -66.6            | H               | 3.0      | -8.7                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 10.07                                                                                                                            | -68.8            | H               | 3.0      | -6.9                    | 36.2   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| 5.03                                                                                                                             | -63.4            | V               | 3.0      | -10.8                   | 38.7   | 1.0        | -48.5 | -25.0 | -23.5 |       |
| 7.55                                                                                                                             | -65.6            | V               | 3.0      | -7.9                    | 37.7   | 1.0        | -44.7 | -25.0 | -19.7 |       |
| 10.07                                                                                                                            | -67.2            | V               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                                                                                                             | -64.9            | H               | 3.0      | -10.6                   | 38.7   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 7.61                                                                                                                             | -66.9            | H               | 3.0      | -8.0                    | 37.7   | 1.0        | -45.7 | -25.0 | -20.7 |       |
| 10.15                                                                                                                            | -68.8            | H               | 3.0      | -5.9                    | 36.2   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| 5.07                                                                                                                             | -64.4            | V               | 3.0      | -12.1                   | 38.7   | 1.0        | -49.8 | -25.0 | -24.8 |       |
| 7.61                                                                                                                             | -66.5            | V               | 3.0      | -8.7                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 10.15                                                                                                                            | -67.4            | V               | 3.0      | -6.5                    | 36.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| High Channel (2550.1MHz)+2564.5MHz 1-99 1-0                                                                                      |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                                                                                                             | -64.9            | H               | 3.0      | -11.8                   | 38.7   | 1.0        | -49.5 | -25.0 | -24.5 |       |
| 7.67                                                                                                                             | -65.8            | H               | 3.0      | -7.9                    | 37.6   | 1.0        | -44.4 | -25.0 | -19.4 |       |
| 10.23                                                                                                                            | -67.2            | H               | 3.0      | -6.2                    | 36.3   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 5.11                                                                                                                             | -63.8            | V               | 3.0      | -11.2                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.67                                                                                                                             | -65.6            | V               | 3.0      | -7.8                    | 37.6   | 1.0        | -44.5 | -25.0 | -19.5 |       |
| 10.23                                                                                                                            | -66.5            | V               | 3.0      | -5.5                    | 36.3   | 1.0        | -40.8 | -25.0 | -15.8 |       |
| Rev. 05.21.15                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |

LTE B7 20MHz + 10MHz QPSK

|                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/27/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 7, 16QAM UL CA 2010 |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                           |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber E                                                                                                                      |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |
| Frequency (GHz)                                                                                                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2510MHz)+2524.4MHz 1-99 1-0                                                                                          |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                              | -64.3            | H               | 3.0      | -11.4                   | 38.7   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 7.55                                                                                                                              | -65.6            | H               | 3.0      | -7.8                    | 37.7   | 1.0        | -44.5 | -25.0 | -19.5 |       |
| 10.07                                                                                                                             | -67.6            | H               | 3.0      | -6.8                    | 36.2   | 1.0        | -41.9 | -25.0 | -16.9 |       |
| 5.03                                                                                                                              | -64.1            | V               | 3.0      | -11.4                   | 38.7   | 1.0        | -48.1 | -25.0 | -23.1 |       |
| 7.55                                                                                                                              | -67.0            | V               | 3.0      | -6.3                    | 37.7   | 1.0        | -46.0 | -25.0 | -21.0 |       |
| 10.07                                                                                                                             | -67.5            | V               | 3.0      | -6.6                    | 36.2   | 1.0        | -41.8 | -25.0 | -16.8 |       |
| Mid Channel (2530.1MHz)+2544.5MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                                                                                                              | -64.9            | H               | 3.0      | -10.2                   | 38.7   | 1.0        | -48.9 | -25.0 | -23.9 |       |
| 7.61                                                                                                                              | -67.0            | H               | 3.0      | -8.1                    | 37.7   | 1.0        | -45.7 | -25.0 | -20.7 |       |
| 10.15                                                                                                                             | -67.2            | H               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 5.07                                                                                                                              | -64.3            | V               | 3.0      | -11.6                   | 38.7   | 1.0        | -49.2 | -25.0 | -24.2 |       |
| 7.61                                                                                                                              | -66.2            | V               | 3.0      | -8.5                    | 37.7   | 1.0        | -45.2 | -25.0 | -20.2 |       |
| 10.15                                                                                                                             | -65.9            | V               | 3.0      | -5.0                    | 36.2   | 1.0        | -40.2 | -25.0 | -15.2 |       |
| High Channel (2550.1MHz)+2564.5MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                                                                                                              | -63.3            | H               | 3.0      | -10.3                   | 38.7   | 1.0        | -47.9 | -25.0 | -22.9 |       |
| 7.67                                                                                                                              | -66.0            | H               | 3.0      | -8.0                    | 37.6   | 1.0        | -44.6 | -25.0 | -19.6 |       |
| 10.23                                                                                                                             | -66.0            | H               | 3.0      | -5.9                    | 36.3   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| 5.11                                                                                                                              | -64.4            | V               | 3.0      | -11.6                   | 38.7   | 1.0        | -49.3 | -25.0 | -24.3 |       |
| 7.67                                                                                                                              | -65.9            | V               | 3.0      | -8.1                    | 37.6   | 1.0        | -44.8 | -25.0 | -19.8 |       |
| 10.23                                                                                                                             | -66.9            | V               | 3.0      | -5.8                    | 36.3   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| Rev. 05.21.15                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |

LTE B7 20MHz + 10MHz 16QAM

|                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
|----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                           |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/26/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 7, QPSK UL CA 2020 |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                          |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber E                                                                                                                     |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |
| Frequency (GHz)                                                                                                                  | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                                                                                                             | -64.3            | H               | 3.0      | -16.2                   | 36.1   | 1.0        | -51.3 | -25.0 | -26.3 |       |
| 7.56                                                                                                                             | -67.0            | H               | 3.0      | -17.3                   | 36.3   | 1.0        | -52.6 | -25.0 | -27.6 |       |
| 10.08                                                                                                                            | -66.0            | H               | 3.0      | -10.6                   | 33.4   | 1.0        | -43.1 | -25.0 | -18.1 |       |
| 5.04                                                                                                                             | -64.3            | V               | 3.0      | -14.7                   | 36.3   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| 7.56                                                                                                                             | -66.9            | V               | 3.0      | -13.4                   | 34.8   | 1.0        | -47.1 | -25.0 | -22.1 |       |
| 10.08                                                                                                                            | -66.9            | V               | 3.0      | -10.8                   | 32.1   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| Mid Channel (2525.1MHz)+2544.5MHz 1-99 1-0                                                                                       |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                                                                                                             | -64.0            | H               | 3.0      | -13.0                   | 36.0   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 7.61                                                                                                                             | -67.2            | H               | 3.0      | -14.2                   | 35.2   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 10.14                                                                                                                            | -68.0            | H               | 3.0      | -11.7                   | 32.0   | 1.0        | -42.7 | -25.0 | -17.7 |       |
| 5.07                                                                                                                             | -63.7            | V               | 3.0      | -16.0                   | 36.1   | 1.0        | -51.1 | -25.0 | -26.1 |       |
| 7.61                                                                                                                             | -66.0            | V               | 3.0      | -8.2                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.14                                                                                                                            | -67.3            | V               | 3.0      | -6.3                    | 36.2   | 1.0        | -41.6 | -25.0 | -16.6 |       |
| High Channel (2540.2MHz)+2560MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                                                                                                             | -64.0            | H               | 3.0      | -14.8                   | 36.2   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| 7.67                                                                                                                             | -65.5            | H               | 3.0      | -14.8                   | 36.0   | 1.0        | -49.9 | -25.0 | -24.9 |       |
| 10.23                                                                                                                            | -67.3            | H               | 3.0      | -11.9                   | 32.0   | 1.0        | -42.0 | -25.0 | -17.0 |       |
| 5.11                                                                                                                             | -63.4            | V               | 3.0      | -16.4                   | 36.3   | 1.0        | -51.7 | -25.0 | -26.7 |       |
| 7.67                                                                                                                             | -65.8            | V               | 3.0      | -14.5                   | 35.8   | 1.0        | -49.4 | -25.0 | -24.4 |       |
| 10.23                                                                                                                            | -67.5            | V               | 3.0      | -6.5                    | 36.3   | 1.0        | -41.8 | -25.0 | -16.8 |       |
| Rev. 05.21.15                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |

LTE B7 20MHz + 20MHz QPSK compare the two

|                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                            |                  |                 |          |                         |        |            |       |       |       |       |
| Company:<br>Project #:<br>Date: 04/26/18<br>Test Engineer: 10641<br>Configuration: EUT Only<br>Mode: LTE Band 7, 16QAM UL CA 2020 |                  |                 |          |                         |        |            |       |       |       |       |
| Test Equipment:<br>Substitution: Horn T344 Substitution, and 8ft SMA Cable                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                           |                  | Pre-amplifier   |          | Filter                  |        | Limit      |       |       |       |       |
| 3m Chamber E                                                                                                                      |                  | 3m Chamber E    |          | Filter                  |        | LTE B7     |       |       |       |       |
| Frequency (GHz)                                                                                                                   | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2510MHz)+ 2529.8MHz 1-99 1-0                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| 5.04                                                                                                                              | -62.5            | H               | 3.0      | -8.6                    | 38.7   | 1.0        | -47.3 | -25.0 | -22.3 |       |
| 7.56                                                                                                                              | -67.0            | H               | 3.0      | -8.1                    | 37.7   | 1.0        | -45.9 | -25.0 | -20.9 |       |
| 10.08                                                                                                                             | -68.7            | H               | 3.0      | -7.8                    | 36.2   | 1.0        | -43.0 | -25.0 | -18.0 |       |
| 5.04                                                                                                                              | -63.6            | V               | 3.0      | -10.9                   | 38.7   | 1.0        | -48.6 | -25.0 | -23.6 |       |
| 7.56                                                                                                                              | -66.7            | V               | 3.0      | -8.1                    | 37.7   | 1.0        | -45.8 | -25.0 | -20.8 |       |
| 10.08                                                                                                                             | -67.9            | V               | 3.0      | -7.1                    | 36.2   | 1.0        | -42.2 | -25.0 | -17.2 |       |
| Mid Channel (2525.1MHz)+2544.5MHz 1-99 1-0                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
| 5.07                                                                                                                              | -62.9            | H               | 3.0      | -8.9                    | 38.7   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 7.61                                                                                                                              | -68.2            | H               | 3.0      | -8.2                    | 37.7   | 1.0        | -44.9 | -25.0 | -19.9 |       |
| 10.14                                                                                                                             | -67.5            | H               | 3.0      | -6.6                    | 36.2   | 1.0        | -41.8 | -25.0 | -16.8 |       |
| 5.07                                                                                                                              | -62.8            | V               | 3.0      | -10.1                   | 38.7   | 1.0        | -47.7 | -25.0 | -22.7 |       |
| 7.61                                                                                                                              | -67.2            | V               | 3.0      | -8.5                    | 37.7   | 1.0        | -46.2 | -25.0 | -21.2 |       |
| 10.14                                                                                                                             | -68.4            | V               | 3.0      | -5.5                    | 36.2   | 1.0        | -40.7 | -25.0 | -15.7 |       |
| High Channel (2540.2MHz)+2560MHz 1-99 1-0                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
| 5.11                                                                                                                              | -64.5            | H               | 3.0      | -11.4                   | 38.7   | 1.0        | -49.0 | -25.0 | -24.0 |       |
| 7.67                                                                                                                              | -68.9            | H               | 3.0      | -4.9                    | 37.6   | 1.0        | -45.6 | -25.0 | -20.6 |       |
| 10.23                                                                                                                             | -67.9            | H               | 3.0      | -6.9                    | 36.3   | 1.0        | -42.1 | -25.0 | -17.1 |       |
| 5.11                                                                                                                              | -65.1            | V               | 3.0      | -12.3                   | 38.7   | 1.0        | -50.0 | -25.0 | -25.0 |       |
| 7.67                                                                                                                              | -66.3            | V               | 3.0      | -8.5                    | 37.6   | 1.0        | -45.1 | -25.0 | -20.1 |       |
| 10.23                                                                                                                             | -67.0            | V               | 3.0      | -6.0                    | 36.3   | 1.0        | -41.3 | -25.0 | -16.3 |       |
| Rev. 05.21.15                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |

LTE B7 20MHz + 20MHz 16QAM

## 9.4.2. LTE BAND 41

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Company:<br>Project #:<br>Date: 04/27/18<br>Test Engineer: 10649<br>Configuration: EUT Only<br>Mode: LTE Band 41, QPSK UL CA 2015<br>Test Equipment:<br>Substitution: Horn T59 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                                                       | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                                                                                                  | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                                                                                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2517.7MHz 1-99 1-0                                                                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.02                                                                                                                                                                                                          | -63.2            | H               | 3.0      | -10.3                   | 38.7   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 7.54                                                                                                                                                                                                          | -65.5            | H               | 3.0      | -7.7                    | 37.7   | 1.0        | -44.4 | -25.0 | -19.4 |       |
| 10.06                                                                                                                                                                                                         | -66.5            | H               | 3.0      | -5.6                    | 36.2   | 1.0        | -40.8 | -25.0 | -15.8 |       |
| 5.02                                                                                                                                                                                                          | -63.7            | V               | 3.0      | -11.9                   | 38.7   | 1.0        | -46.7 | -25.0 | -23.7 |       |
| 7.54                                                                                                                                                                                                          | -66.2            | V               | 3.0      | -8.5                    | 37.7   | 1.0        | -45.3 | -25.0 | -20.3 |       |
| 10.06                                                                                                                                                                                                         | -67.2            | V               | 3.0      | -6.4                    | 36.2   | 1.0        | -41.6 | -25.0 | -16.6 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99 1-0                                                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                                                                                                          | -63.7            | H               | 3.0      | -8.9                    | 38.7   | 1.0        | -47.6 | -25.0 | -22.6 |       |
| 7.79                                                                                                                                                                                                          | -64.9            | H               | 3.0      | -6.8                    | 37.6   | 1.0        | -43.3 | -25.0 | -18.3 |       |
| 10.39                                                                                                                                                                                                         | -66.5            | H               | 3.0      | -5.7                    | 36.4   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| 5.19                                                                                                                                                                                                          | -64.0            | V               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.79                                                                                                                                                                                                          | -65.8            | V               | 3.0      | -7.9                    | 37.6   | 1.0        | -44.5 | -25.0 | -19.5 |       |
| 10.39                                                                                                                                                                                                         | -66.1            | V               | 3.0      | -6.8                    | 36.4   | 1.0        | -40.3 | -25.0 | -15.3 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99 1-0                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.36                                                                                                                                                                                                          | -63.3            | H               | 3.0      | -8.7                    | 38.6   | 1.0        | -46.3 | -25.0 | -21.3 |       |
| 8.94                                                                                                                                                                                                          | -64.8            | H               | 3.0      | -6.4                    | 37.4   | 1.0        | -42.8 | -25.0 | -17.8 |       |
| 10.72                                                                                                                                                                                                         | -67.0            | H               | 3.0      | -5.6                    | 36.6   | 1.0        | -41.2 | -25.0 | -16.2 |       |
| 5.36                                                                                                                                                                                                          | -64.0            | V               | 3.0      | -10.7                   | 38.6   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 8.94                                                                                                                                                                                                          | -64.6            | V               | 3.0      | -6.7                    | 37.4   | 1.0        | -43.0 | -25.0 | -18.0 |       |
| 10.72                                                                                                                                                                                                         | -66.7            | V               | 3.0      | -5.1                    | 36.6   | 1.0        | -40.7 | -25.0 | -15.7 |       |
| Rev. 05.21.15                                                                                                                                                                                                 |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 5MHz QPSK                                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Company:<br>Project #:<br>Date: 04/27/18<br>Test Engineer: 10649<br>Configuration: EUT Only<br>Mode: LTE Band 41, 16QAM UL CA 2015<br>Test Equipment:<br>Substitution: Horn T59 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                                                        | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                                                                                                   | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                                                                                                | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2517.7MHz 1-99 1-0                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |
| 5.02                                                                                                                                                                                                           | -63.2            | H               | 3.0      | -10.4                   | 38.7   | 1.0        | -48.1 | -25.0 | -23.1 |       |
| 7.54                                                                                                                                                                                                           | -66.3            | H               | 3.0      | -8.4                    | 37.7   | 1.0        | -45.2 | -25.0 | -20.2 |       |
| 10.06                                                                                                                                                                                                          | -67.4            | H               | 3.0      | -6.5                    | 36.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| 5.02                                                                                                                                                                                                           | -63.4            | V               | 3.0      | -10.8                   | 38.7   | 1.0        | -48.5 | -25.0 | -23.5 |       |
| 7.54                                                                                                                                                                                                           | -66.3            | V               | 3.0      | -8.7                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 10.06                                                                                                                                                                                                          | -67.4            | V               | 3.0      | -6.5                    | 36.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| Mid Channel (2590.5MHz) + 2602.2MHz 1-99 1-0                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                                                                                                           | -63.8            | H               | 3.0      | -10.5                   | 38.7   | 1.0        | -48.2 | -25.0 | -23.2 |       |
| 7.79                                                                                                                                                                                                           | -63.9            | H               | 3.0      | -8.8                    | 37.6   | 1.0        | -42.3 | -25.0 | -17.3 |       |
| 10.39                                                                                                                                                                                                          | -67.2            | H               | 3.0      | -6.1                    | 36.4   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| 5.19                                                                                                                                                                                                           | -63.0            | V               | 3.0      | -10.0                   | 38.7   | 1.0        | -47.7 | -25.0 | -22.7 |       |
| 7.79                                                                                                                                                                                                           | -64.9            | V               | 3.0      | -8.9                    | 37.6   | 1.0        | -43.5 | -25.0 | -18.5 |       |
| 10.39                                                                                                                                                                                                          | -67.3            | V               | 3.0      | -6.1                    | 36.4   | 1.0        | -41.5 | -25.0 | -16.5 |       |
| High Channel (2675MHz) + 2686.7MHz 1-99 1-0                                                                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.36                                                                                                                                                                                                           | -63.1            | H               | 3.0      | -8.4                    | 38.6   | 1.0        | -47.1 | -25.0 | -22.1 |       |
| 8.94                                                                                                                                                                                                           | -65.3            | H               | 3.0      | -6.8                    | 37.4   | 1.0        | -43.2 | -25.0 | -18.2 |       |
| 10.72                                                                                                                                                                                                          | -67.3            | H               | 3.0      | -5.9                    | 36.6   | 1.0        | -41.4 | -25.0 | -16.4 |       |
| 5.36                                                                                                                                                                                                           | -64.0            | V               | 3.0      | -10.4                   | 38.6   | 1.0        | -48.0 | -25.0 | -23.0 |       |
| 8.94                                                                                                                                                                                                           | -65.4            | V               | 3.0      | -7.2                    | 37.4   | 1.0        | -43.6 | -25.0 | -18.6 |       |
| 10.72                                                                                                                                                                                                          | -68.4            | V               | 3.0      | -6.9                    | 36.6   | 1.0        | -40.5 | -25.0 | -15.5 |       |
| Rev. 05.21.15                                                                                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 5MHz 16QAM                                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                        |                  |                 |          |                         |        |            |       |       |       |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Company:<br>Project #:<br>Date: 04/26/18<br>Test Engineer: 10649<br>Configuration: EUT Only<br>Mode: LTE Band 41, QPSK UL CA 2020<br>Test Equipment:<br>Substitution: Horn T59 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                                                       | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                                                                                                  | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                                                                                               | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0                                                                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                                                                                                          | -63.7            | H               | 3.0      | -10.8                   | 38.7   | 1.0        | -48.5 | -25.0 | -23.5 |       |
| 7.55                                                                                                                                                                                                          | -66.5            | H               | 3.0      | -8.6                    | 37.7   | 1.0        | -45.4 | -25.0 | -20.4 |       |
| 10.06                                                                                                                                                                                                         | -66.5            | H               | 3.0      | -5.6                    | 36.2   | 1.0        | -40.8 | -25.0 | -15.8 |       |
| 5.03                                                                                                                                                                                                          | -62.7            | V               | 3.0      | -10.0                   | 38.7   | 1.0        | -47.7 | -25.0 | -22.7 |       |
| 7.55                                                                                                                                                                                                          | -65.5            | V               | 3.0      | -7.8                    | 37.7   | 1.0        | -44.6 | -25.0 | -19.6 |       |
| 10.06                                                                                                                                                                                                         | -67.3            | V               | 3.0      | -6.5                    | 36.2   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| Mid Channel (2583.1MHz) + 2602.2MHz 1-99 1-0                                                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                                                                                                          | -63.7            | H               | 3.0      | -10.4                   | 38.7   | 1.0        | -48.1 | -25.0 | -23.1 |       |
| 7.79                                                                                                                                                                                                          | -65.8            | H               | 3.0      | -7.3                    | 37.6   | 1.0        | -43.9 | -25.0 | -18.9 |       |
| 10.37                                                                                                                                                                                                         | -66.5            | H               | 3.0      | -5.4                    | 36.4   | 1.0        | -40.7 | -25.0 | -15.7 |       |
| 5.19                                                                                                                                                                                                          | -63.6            | V               | 3.0      | -10.7                   | 38.7   | 1.0        | -48.4 | -25.0 | -23.4 |       |
| 7.79                                                                                                                                                                                                          | -66.0            | V               | 3.0      | -8.0                    | 37.6   | 1.0        | -44.8 | -25.0 | -19.8 |       |
| 10.37                                                                                                                                                                                                         | -66.8            | V               | 3.0      | -5.8                    | 36.4   | 1.0        | -41.0 | -25.0 | -16.0 |       |
| High Channel (2660.2MHz) + 2680.0MHz 1-99 1-0                                                                                                                                                                 |                  |                 |          |                         |        |            |       |       |       |       |
| 5.34                                                                                                                                                                                                          | -65.4            | H               | 3.0      | -11.8                   | 38.6   | 1.0        | -49.5 | -25.0 | -24.5 |       |
| 8.91                                                                                                                                                                                                          | -65.5            | H               | 3.0      | -7.1                    | 37.4   | 1.0        | -43.5 | -25.0 | -18.5 |       |
| 10.68                                                                                                                                                                                                         | -67.0            | H               | 3.0      | -5.6                    | 36.6   | 1.0        | -41.2 | -25.0 | -16.2 |       |
| 5.34                                                                                                                                                                                                          | -65.4            | V               | 3.0      | -12.2                   | 38.6   | 1.0        | -49.8 | -25.0 | -24.8 |       |
| 8.91                                                                                                                                                                                                          | -66.5            | V               | 3.0      | -8.2                    | 37.4   | 1.0        | -44.6 | -25.0 | -19.6 |       |
| 10.68                                                                                                                                                                                                         | -67.6            | V               | 3.0      | -6.1                    | 36.6   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| Rev. 05.21.15                                                                                                                                                                                                 |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 20MHz QPSK                                                                                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |

| High Frequency Substitution Measurement<br>UL Fremont Radiated Chamber                                                                                                                                         |                  |                 |          |                         |        |            |       |       |       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|----------|-------------------------|--------|------------|-------|-------|-------|-------|
| Company:<br>Project #:<br>Date: 04/26/18<br>Test Engineer: 10649<br>Configuration: EUT Only<br>Mode: LTE Band 41, 16QAM UL CA 2020<br>Test Equipment:<br>Substitution: Horn T59 Substitution, and 8R SMA Cable |                  |                 |          |                         |        |            |       |       |       |       |
| Chamber                                                                                                                                                                                                        | Pre-amplifier    | Filter          | Limit    |                         |        |            |       |       |       |       |
| 3m Chamber E                                                                                                                                                                                                   | 3m Chamber E     | Filter          | LTE B41  |                         |        |            |       |       |       |       |
| Frequency (GHz)                                                                                                                                                                                                | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP  | Limit | Delta | Notes |
| Low Channel (2500MHz) + 2525.8MHz 1-99 1-0                                                                                                                                                                     |                  |                 |          |                         |        |            |       |       |       |       |
| 5.03                                                                                                                                                                                                           | -64.0            | H               | 3.0      | -11.1                   | 38.7   | 1.0        | -48.8 | -25.0 | -23.8 |       |
| 7.55                                                                                                                                                                                                           | -65.0            | H               | 3.0      | -7.1                    | 37.7   | 1.0        | -43.9 | -25.0 | -18.9 |       |
| 10.06                                                                                                                                                                                                          | -66.8            | H               | 3.0      | -5.9                    | 36.2   | 1.0        | -41.1 | -25.0 | -16.1 |       |
| 5.03                                                                                                                                                                                                           | -63.5            | V               | 3.0      | -10.9                   | 38.7   | 1.0        | -48.6 | -25.0 | -23.6 |       |
| 7.55                                                                                                                                                                                                           | -65.9            | V               | 3.0      | -8.3                    | 37.7   | 1.0        | -45.0 | -25.0 | -20.0 |       |
| 10.06                                                                                                                                                                                                          | -67.1            | V               | 3.0      | -6.2                    | 36.2   | 1.0        | -41.4 | -25.0 | -16.4 |       |
| Mid Channel (2583.1MHz) + 2602.2MHz 1-99 1-0                                                                                                                                                                   |                  |                 |          |                         |        |            |       |       |       |       |
| 5.19                                                                                                                                                                                                           | -63.3            | H               | 3.0      | -10.1                   | 38.7   | 1.0        | -47.8 | -25.0 | -22.8 |       |
| 7.79                                                                                                                                                                                                           | -65.8            | H               | 3.0      | -7.7                    | 37.6   | 1.0        | -44.5 | -25.0 | -19.5 |       |
| 10.37                                                                                                                                                                                                          | -66.6            | H               | 3.0      | -5.5                    | 36.4   | 1.0        | -40.8 | -25.0 | -15.8 |       |
| 5.19                                                                                                                                                                                                           | -63.6            | V               | 3.0      | -10.7                   | 38.7   | 1.0        | -48.3 | -25.0 | -23.3 |       |
| 7.79                                                                                                                                                                                                           | -65.4            | V               | 3.0      | -7.4                    | 37.6   | 1.0        | -44.0 | -25.0 | -19.0 |       |
| 10.37                                                                                                                                                                                                          | -67.2            | V               | 3.0      | -6.0                    | 36.4   | 1.0        | -41.4 | -25.0 | -16.4 |       |
| High Channel (2660.2MHz) + 2680.0MHz 1-99 1-0                                                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
| 5.34                                                                                                                                                                                                           | -65.4            | H               | 3.0      | -11.8                   | 38.6   | 1.0        | -48.5 | -25.0 | -24.5 |       |
| 8.91                                                                                                                                                                                                           | -65.5            | H               | 3.0      | -7.1                    | 37.4   | 1.0        | -43.5 | -25.0 | -18.5 |       |
| 10.68                                                                                                                                                                                                          | -67.0            | H               | 3.0      | -5.6                    | 36.6   | 1.0        | -41.2 | -25.0 | -16.2 |       |
| 5.34                                                                                                                                                                                                           | -65.4            | V               | 3.0      | -12.2                   | 38.6   | 1.0        | -49.8 | -25.0 | -24.8 |       |
| 8.91                                                                                                                                                                                                           | -66.5            | V               | 3.0      | -8.2                    | 37.4   | 1.0        | -44.6 | -25.0 | -19.6 |       |
| 10.68                                                                                                                                                                                                          | -67.6            | V               | 3.0      | -6.1                    | 36.6   | 1.0        | -41.7 | -25.0 | -16.7 |       |
| Rev. 05.21.15                                                                                                                                                                                                  |                  |                 |          |                         |        |            |       |       |       |       |
| LTE B41 20MHz + 20MHz 16QAM                                                                                                                                                                                    |                  |                 |          |                         |        |            |       |       |       |       |

## 10. SETUP PHOTOS

Please refer to 12204512-EP1V1 setup photo