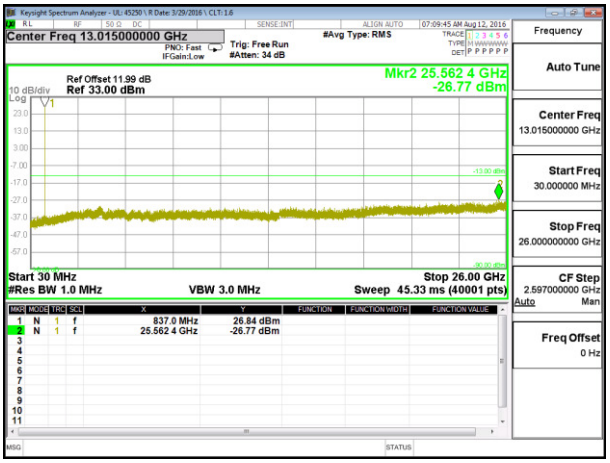
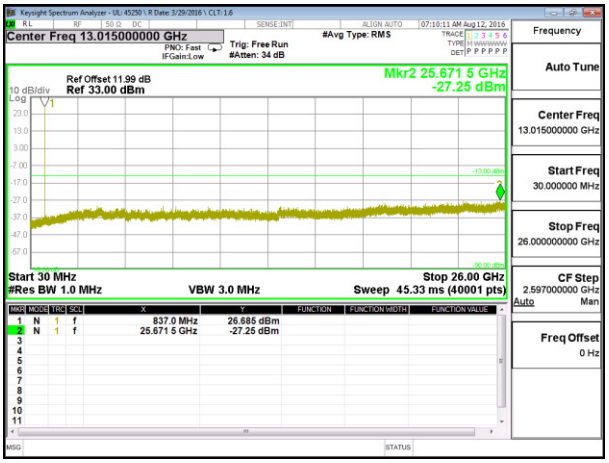
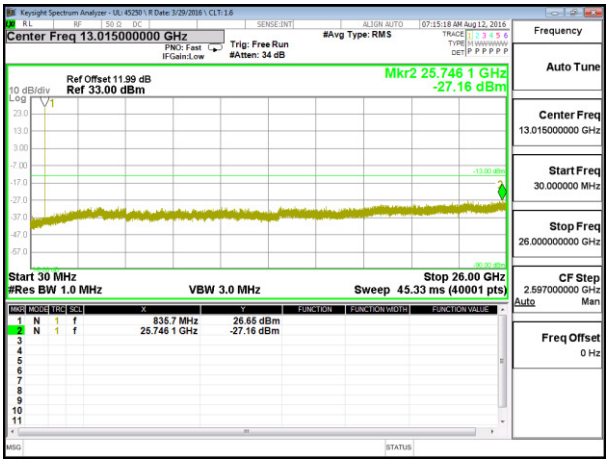


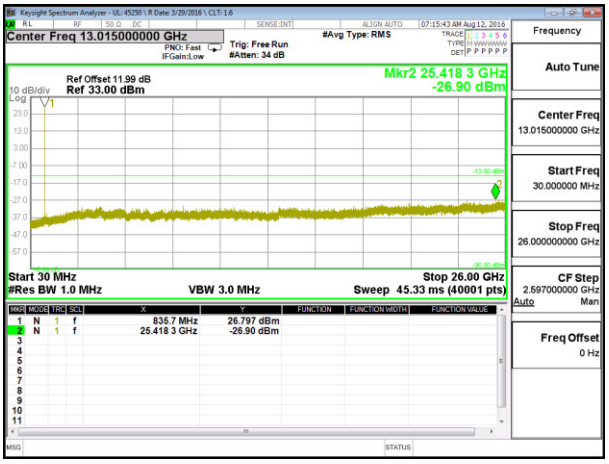

LTE B5 1.4MHz QPSK Middle Channel



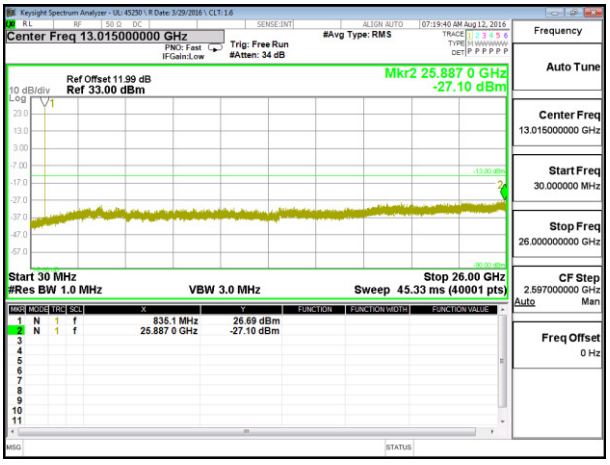

LTE B5 1.4MHz 16QAM Middle Channel



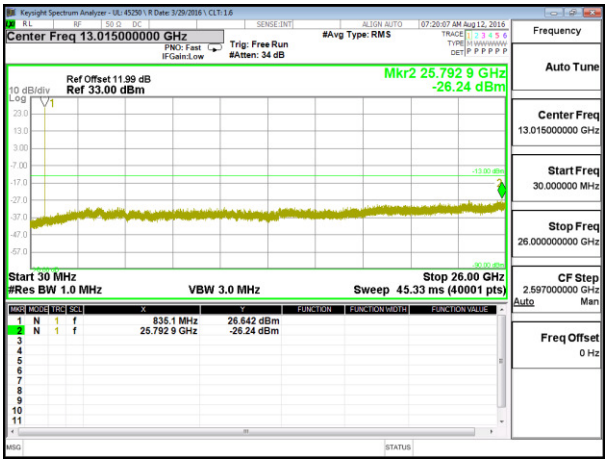

LTE B5 3MHz QPSK Middle Channel



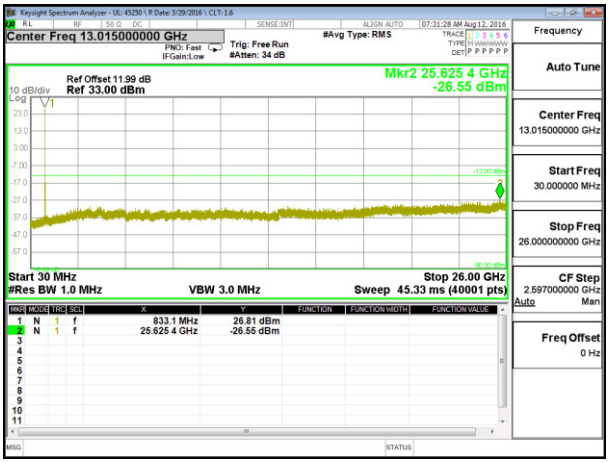

LTE B5 3MHz 16QAM Middle Channel



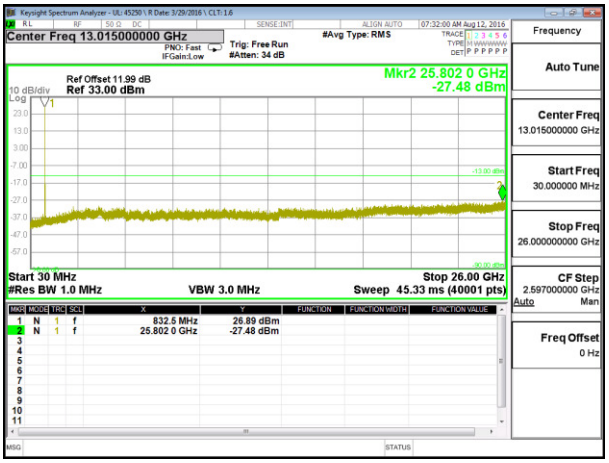

LTE B5 5MHz QPSK Middle Channel




LTE B5 5MHz 16QAM Middle Channel



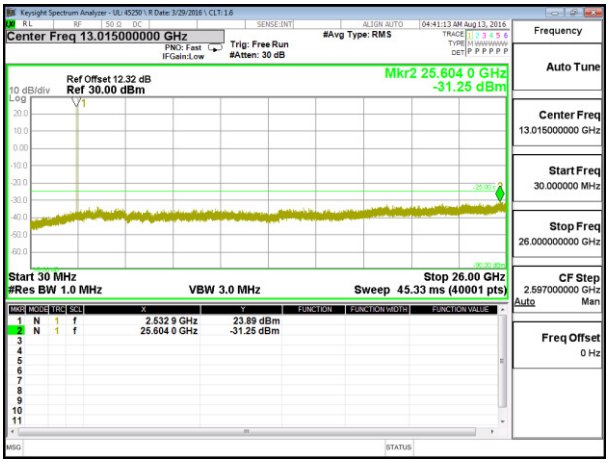

LTE B5 10MHz QPSK Middle Channel



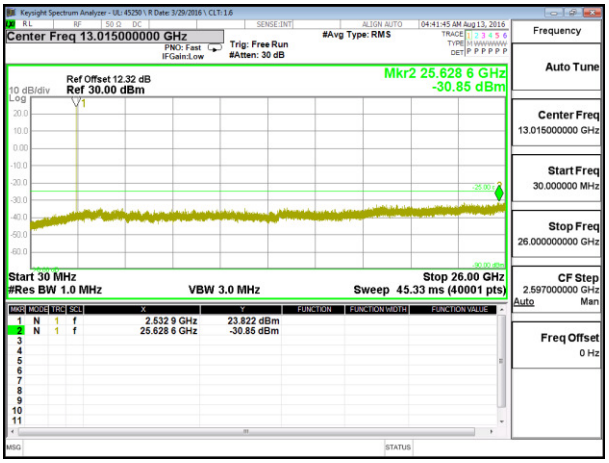

LTE B5 10MHz 16QAM Middle Channel

**LTE Band 7**

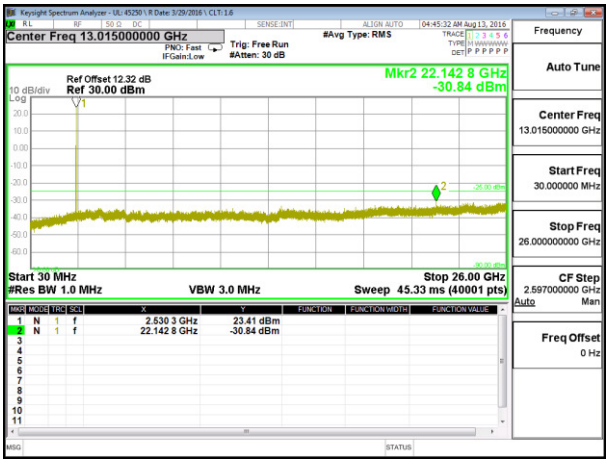
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 5 | QPSK | 2502.5 | -30.93 | -25 | -5.93 |
| | | 2535 | -31.25 | -25 | -6.25 |
| | | 2567.5 | -31.24 | -25 | -6.24 |
| | 16QAM | 2502.5 | -31.03 | -25 | -6.03 |
| | | 2535 | -30.85 | -25 | -5.85 |
| | | 2567.5 | -30.68 | -25 | -5.68 |
| 10 | QPSK | 2505 | -31.22 | -25 | -6.22 |
| | | 2535 | -30.84 | -25 | -5.84 |
| | | 2565 | -30.98 | -25 | -5.98 |
| | 16QAM | 2505 | -29.96 | -25 | -4.96 |
| | | 2535 | -31.65 | -25 | -6.65 |
| | | 2565 | -30.73 | -25 | -5.73 |
| 15 | QPSK | 2507.5 | -30.98 | -25 | -5.98 |
| | | 2535 | -30.12 | -25 | -5.12 |
| | | 2562.5 | -30.76 | -25 | -5.76 |
| | 16QAM | 2507.5 | -30.18 | -25 | -5.18 |
| | | 2535 | -31.06 | -25 | -6.06 |
| | | 2562.5 | -30.09 | -25 | -5.09 |
| 20 | QPSK | 2510 | -31.11 | -25 | -6.11 |
| | | 2535 | -30.46 | -25 | -5.46 |
| | | 2560 | -30.27 | -25 | -5.27 |
| | 16QAM | 2510 | -30.73 | -25 | -5.73 |
| | | 2535 | -29.92 | -25 | -4.92 |
| | | 2560 | -31.09 | -25 | -4.09 |



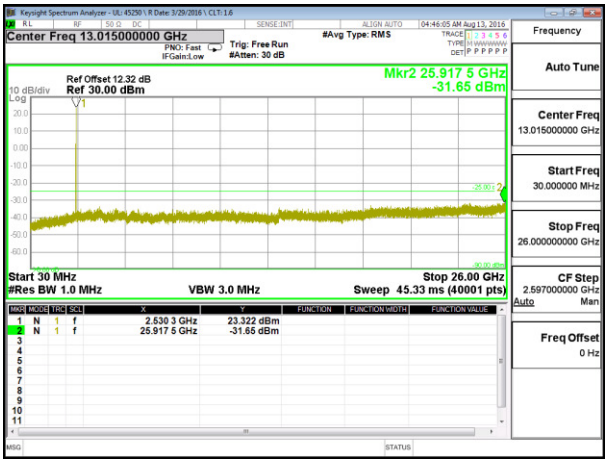

LTE B7 5MHz QPSK Middle Channel



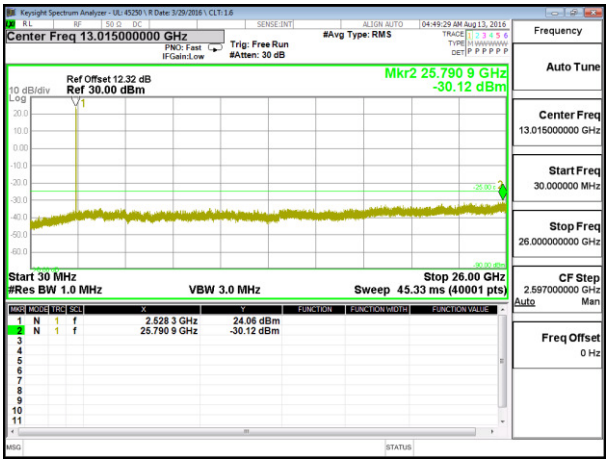

LTE B7 5MHz 16QAM Middle Channel



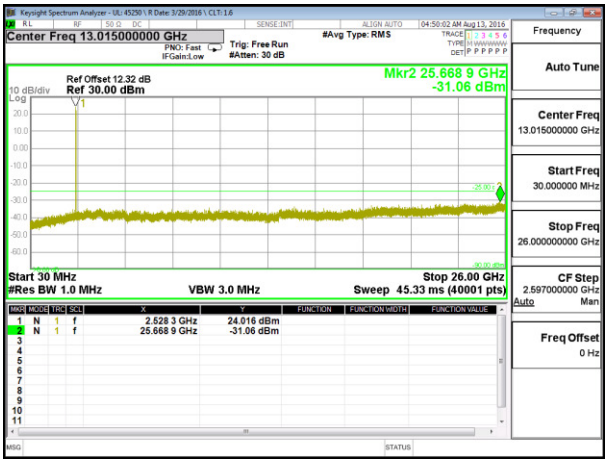

LTE B7 10MHz QPSK Middle Channel



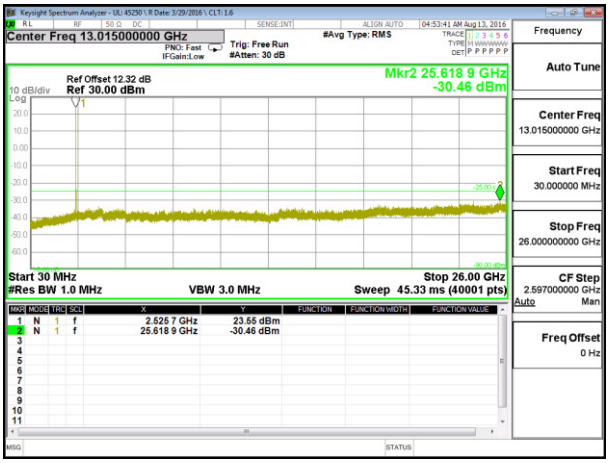

LTE B7 10MHz 16QAM Middle Channel



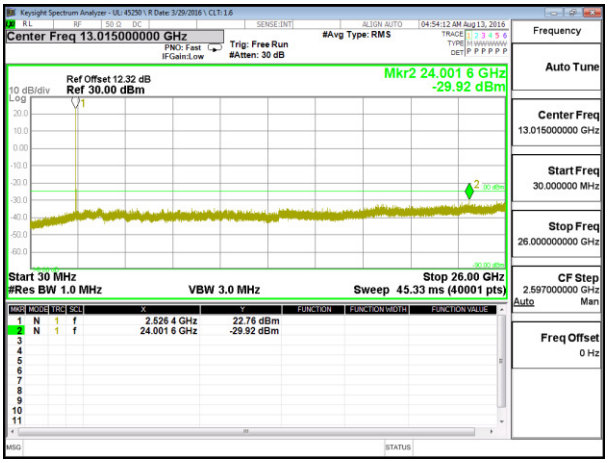

LTE B7 15MHz QPSK Middle Channel




LTE B7 15MHz 16QAM Middle Channel



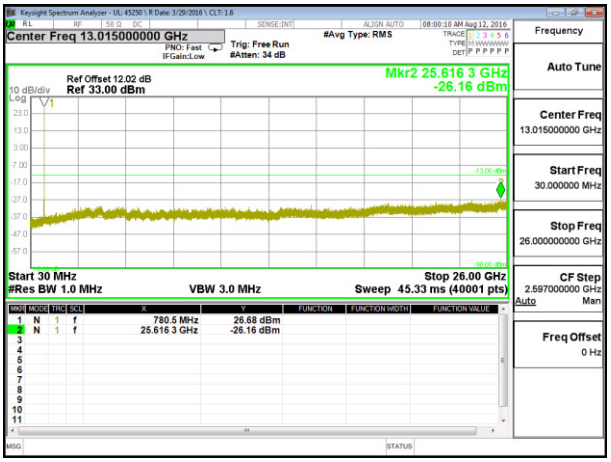

LTE B7 20MHz QPSK Middle Channel



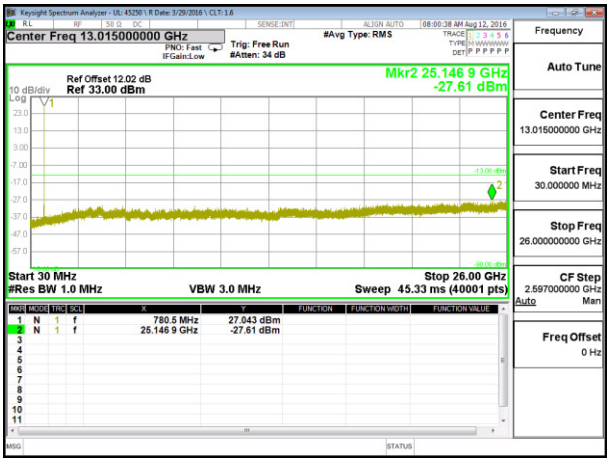

LTE B7 20MHz 16QAM Middle Channel

**LTE Band 13**

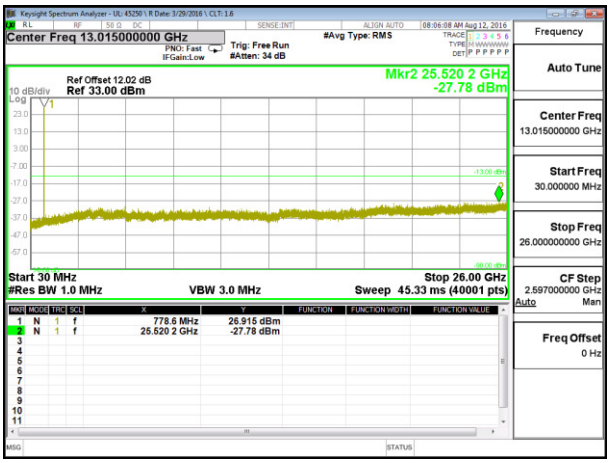
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 5 | QPSK | 779.5 | -26.94 | -13 | -13.94 |
| | | 782 | -26.16 | -13 | -13.16 |
| | | 784.5 | -27.54 | -13 | -14.54 |
| | 16QAM | 779.5 | -26.53 | -13 | -13.53 |
| | | 782 | -27.61 | -13 | -14.61 |
| | | 784.5 | -26.66 | -13 | -13.66 |
| 10 | QPSK | 782 | - | -13 | - |
| | | 782 | -27.78 | -13 | -14.78 |
| | | 782 | - | -13 | - |
| | 16QAM | 782 | - | -13 | - |
| | | 782 | -26.94 | -13 | -13.94 |
| | | 782 | - | -13 | - |



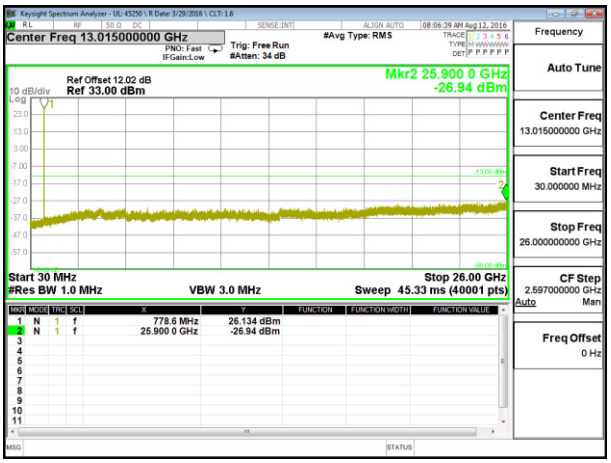

LTE B13 5MHz QPSK Middle Channel




LTE B13 5MHz 16QAM Middle Channel



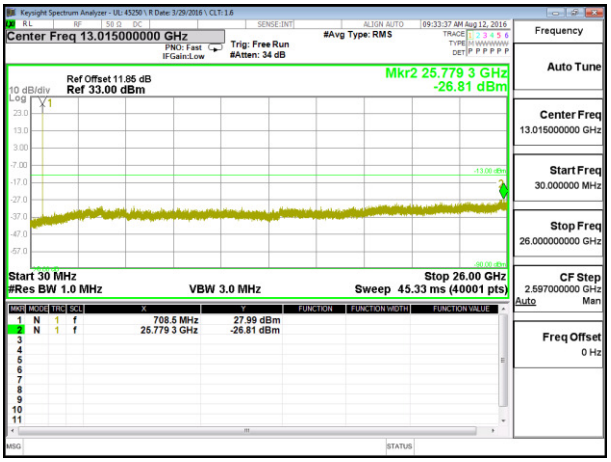

LTE B13 10MHz QPSK Middle Channel



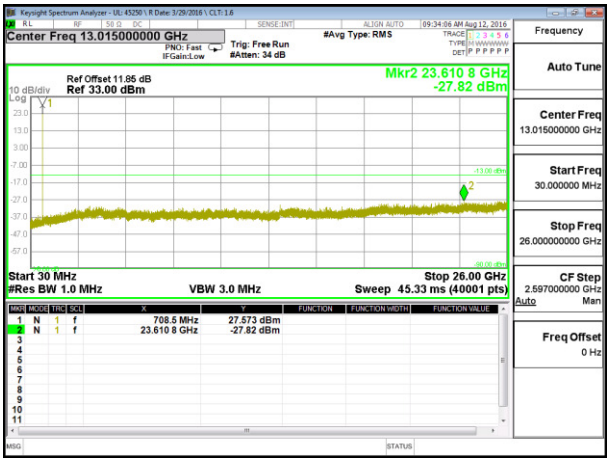

LTE B13 10MHz 16QAM Middle Channel

**LTE Band 17**

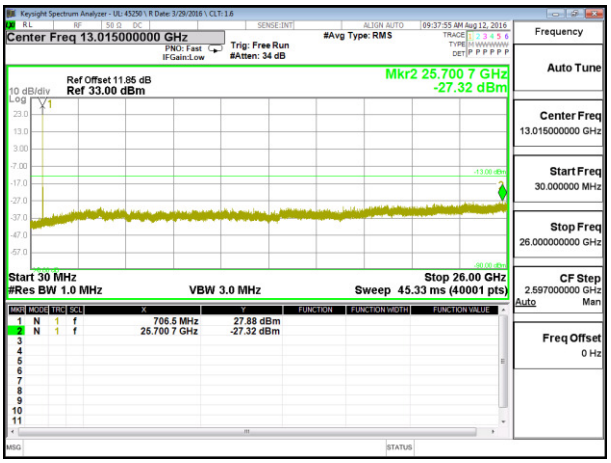
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 5 | QPSK | 706.5 | -27.47 | -13 | -14.47 |
| | | 710 | -26.81 | -13 | -13.81 |
| | | 713.5 | -27.61 | -13 | -14.61 |
| | 16QAM | 706.5 | -27.37 | -13 | -14.37 |
| | | 710 | -27.82 | -13 | -14.82 |
| | | 713.5 | -26.81 | -13 | -13.81 |
| 10 | QPSK | 709 | -27.64 | -13 | -14.64 |
| | | 710 | -27.32 | -13 | -14.32 |
| | | 711 | -27.10 | -13 | -14.10 |
| | 16QAM | 709 | -26.98 | -13 | -13.98 |
| | | 710 | -27.61 | -13 | -14.61 |
| | | 711 | -27.50 | -13 | -14.50 |



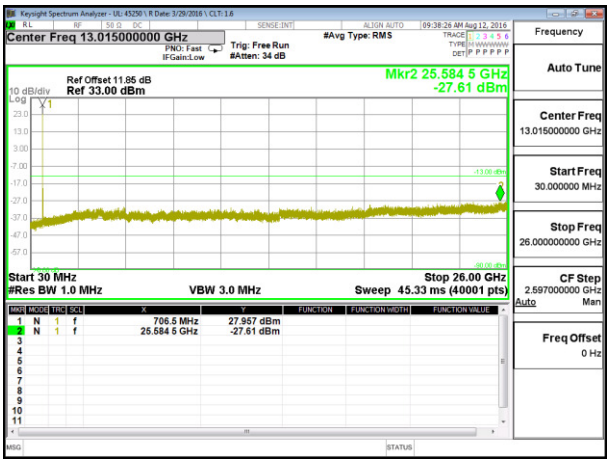

LTE B17 5MHz QPSK Middle Channel




LTE B17 5MHz 16QAM Middle Channel




LTE B17 10MHz QPSK Middle Channel



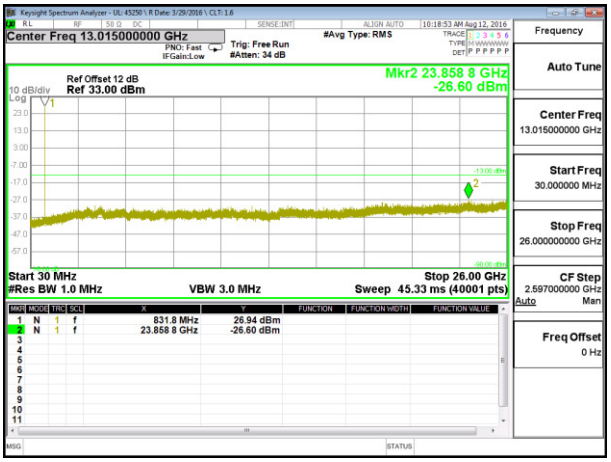

LTE B17 10MHz 16QAM Middle Channel

**LTE Band 26-Part 90**

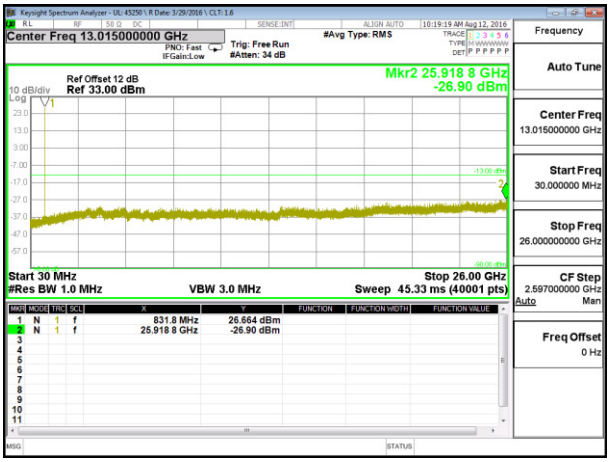
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 1.4 | QPSK | 814.7 | -27.44 | -13 | -14.44 |
| | 16QAM | 814.7 | -26.76 | -13 | -13.76 |
| 3 | QPSK | 815.5 | -26.20 | -13 | -13.20 |
| | 16QAM | 815.5 | -26.89 | -13 | -13.89 |
| 5 | QPSK | 816.5 | -26.67 | -13 | -13.67 |
| | 16QAM | 816.5 | -26.09 | -13 | -13.09 |
| 10 | QPSK | 819 | -27.52 | -13 | -14.52 |
| | 16QAM | 819 | -26.99 | -13 | -13.99 |

**LTE Band 26-Part 22**

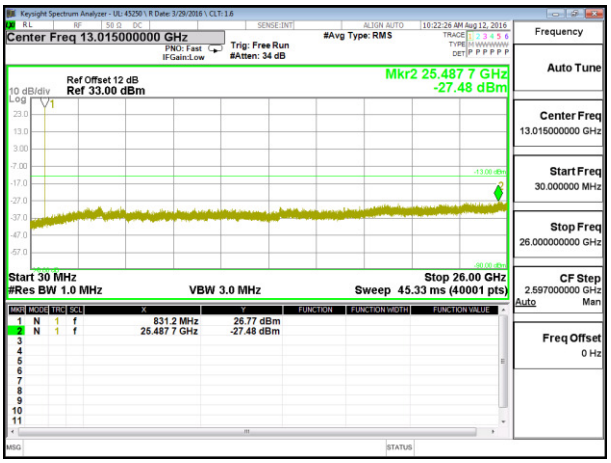
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 1.4 | QPSK | 831.5 | -26.60 | -13 | -13.60 |
| | | 848.3 | -26.83 | -13 | -13.83 |
| | 16QAM | 831.5 | -26.90 | -13 | -13.90 |
| | | 848.3 | -26.58 | -13 | -13.58 |
| 3 | QPSK | 831.5 | -27.48 | -13 | -14.48 |
| | | 847.5 | -26.77 | -13 | -13.77 |
| | 16QAM | 831.5 | -27.38 | -13 | -14.38 |
| | | 847.5 | -26.63 | -13 | -13.63 |
| 5 | QPSK | 831.5 | -26.74 | -13 | -13.74 |
| | | 846.5 | -27.16 | -13 | -14.16 |
| | 16QAM | 831.5 | -27.00 | -13 | -14.00 |
| | | 846.5 | -26.75 | -13 | -13.75 |
| 10 | QPSK | 831.5 | -27.16 | -13 | -14.16 |
| | | 844 | -26.68 | -13 | -13.68 |
| | 16QAM | 831.5 | -27.02 | -13 | -14.02 |
| | | 844 | -27.46 | -13 | -14.46 |
| 15 | QPSK | 836.5 | -26.34 | -13 | -13.34 |
| | | 841.5 | -26.56 | -13 | -13.56 |
| | 16QAM | 836.5 | -27.17 | -13 | -14.17 |
| | | 841.5 | -26.74 | -13 | -13.74 |



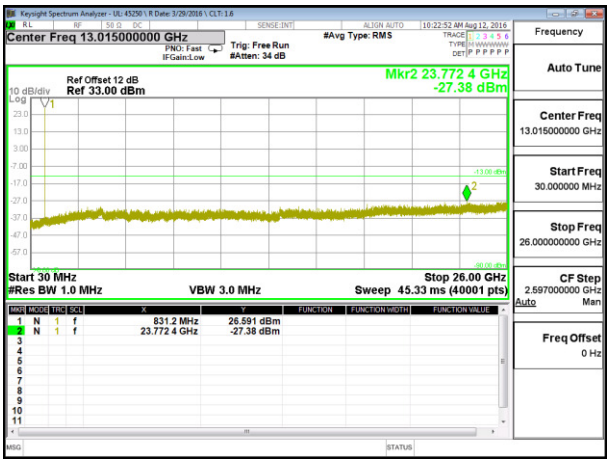

LTE B26 1.4MHz QPSK Middle Channel



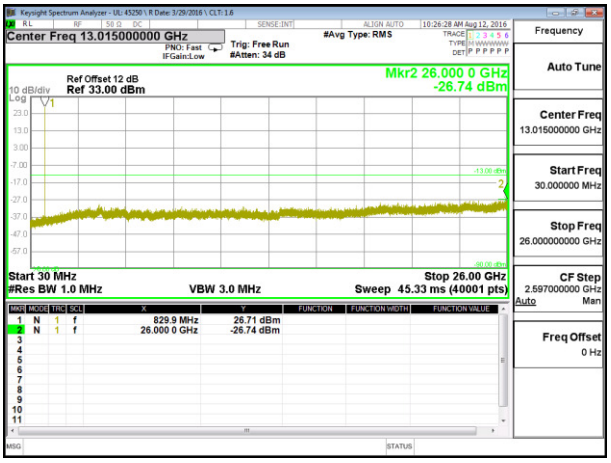

LTE B26 1.4MHz 16QAM Middle Channel



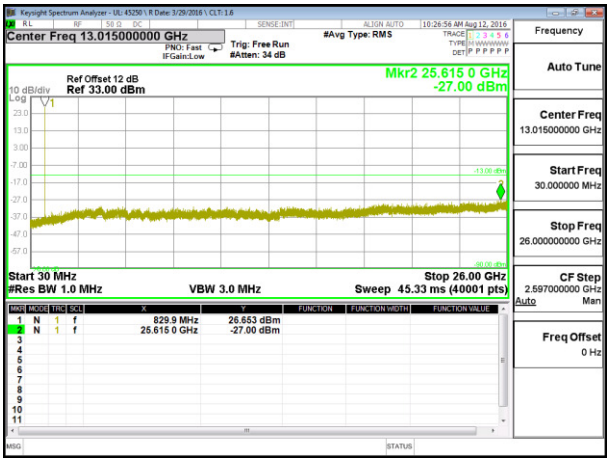

LTE B26 3MHz QPSK Middle Channel



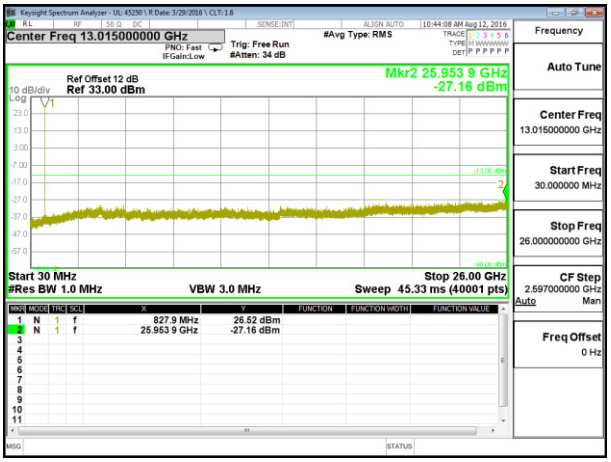

LTE B26 3MHz 16QAM Middle Channel



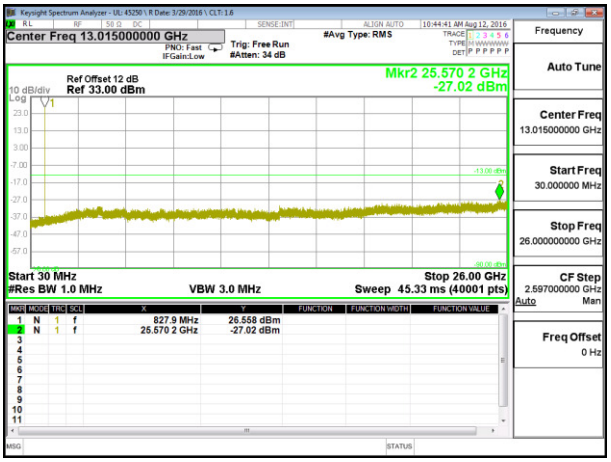

LTE B26 5MHz QPSK Middle Channel



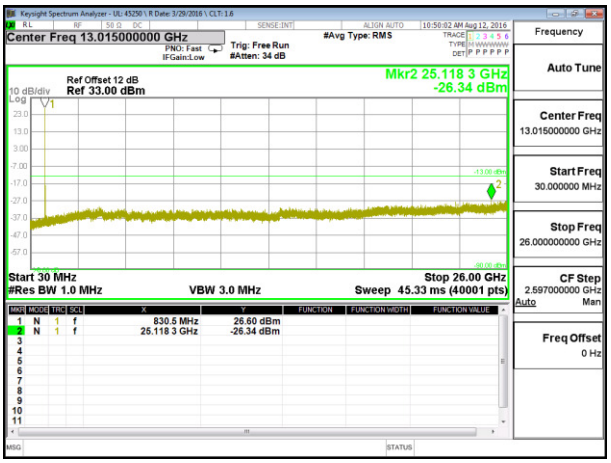

LTE B26 5MHz 16QAM Middle Channel



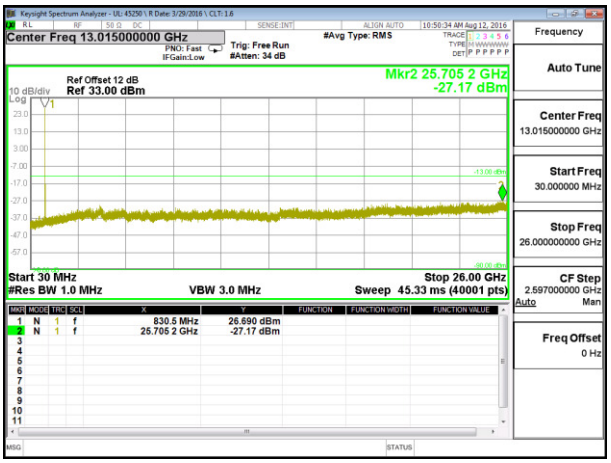

LTE B26 10MHz QPSK Middle Channel




LTE B26 10MHz 16QAM Middle Channel



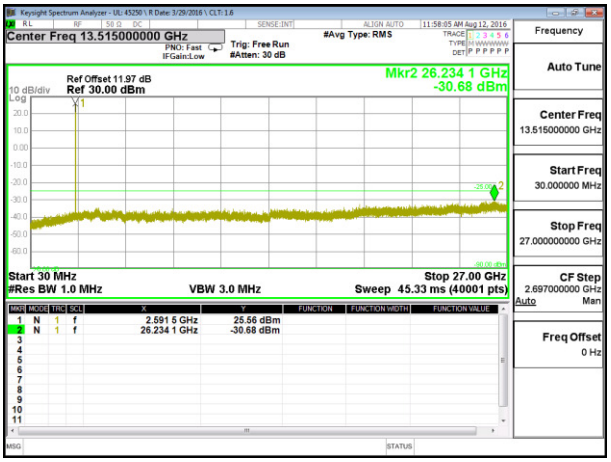

LTE B26 15MHz QPSK Middle Channel



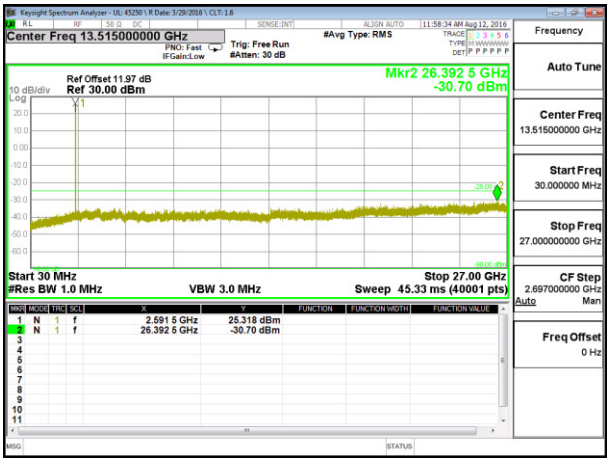

LTE B26 15MHz 16QAM Middle Channel

**LTE Band 41**

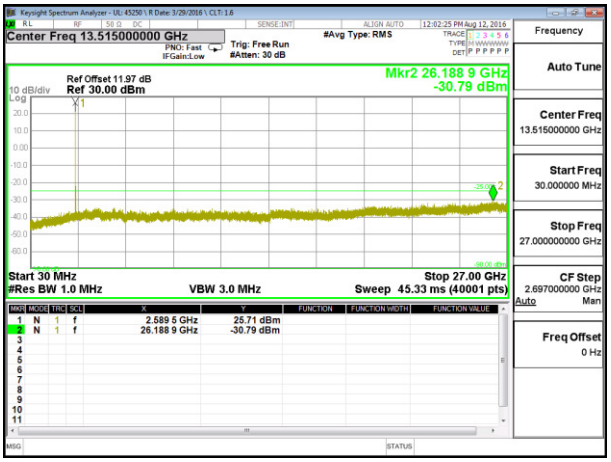
| BW(MHz) | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---|---|---|---|---|---|
| 5 | QPSK | 2498.5 | -30.65 | -25 | -5.65 |
| | | 2593 | -30.68 | -25 | -5.68 |
| | | 2687.5 | -29.43 | -25 | -4.43 |
| | 16QAM | 2498.5 | -30.33 | -25 | -5.33 |
| | | 2593 | -30.70 | -25 | -5.7 |
| | | 2687.5 | -30.75 | -25 | -5.75 |
| 10 | QPSK | 2501 | -30.19 | -25 | -5.19 |
| | | 2593 | -30.79 | -25 | -5.79 |
| | | 2685 | -30.60 | -25 | -5.6 |
| | 16QAM | 2501 | -30.95 | -25 | -5.95 |
| | | 2593 | -31.06 | -25 | -6.06 |
| | | 2685 | -30.57 | -25 | -5.57 |
| 15 | QPSK | 2503.5 | -30.31 | -25 | -5.31 |
| | | 2593 | -30.64 | -25 | -5.64 |
| | | 2682.5 | -30.06 | -25 | -5.06 |
| | 16QAM | 2503.5 | -30.49 | -25 | -5.49 |
| | | 2593 | -30.14 | -25 | -5.14 |
| | | 2682.5 | -30.57 | -25 | -5.57 |
| 20 | QPSK | 2506 | -30.86 | -25 | -5.86 |
| | | 2593 | -30.79 | -25 | -5.79 |
| | | 2680 | -30.6 | -25 | -5.6 |
| | 16QAM | 2506 | -30.67 | -25 | -5.67 |
| | | 2593 | -29.71 | -25 | -4.71 |
| | | 2680 | -30.22 | -25 | -5.22 |



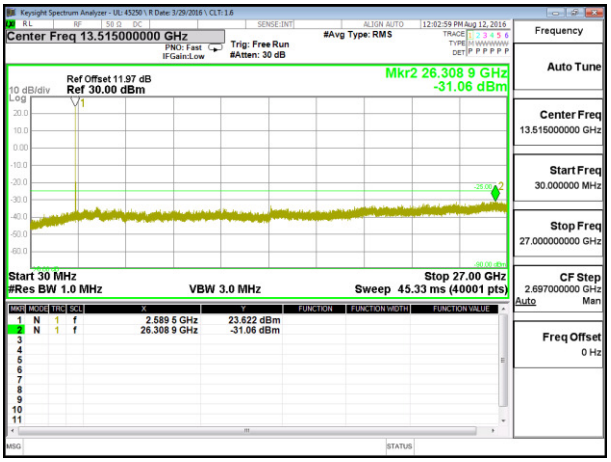

LTE B41 5MHz QPSK Middle Channel



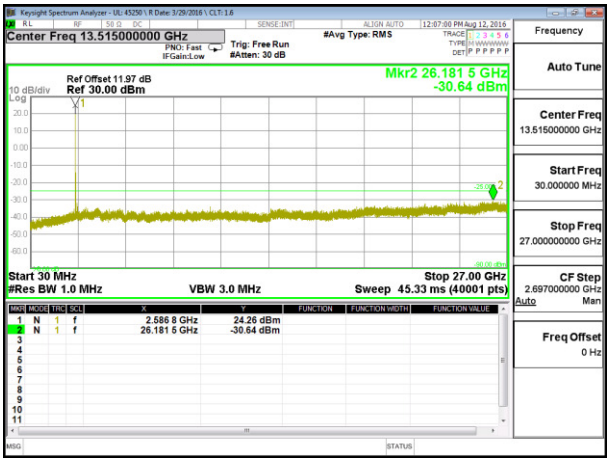

LTE B41 5MHz 16QAM Middle Channel



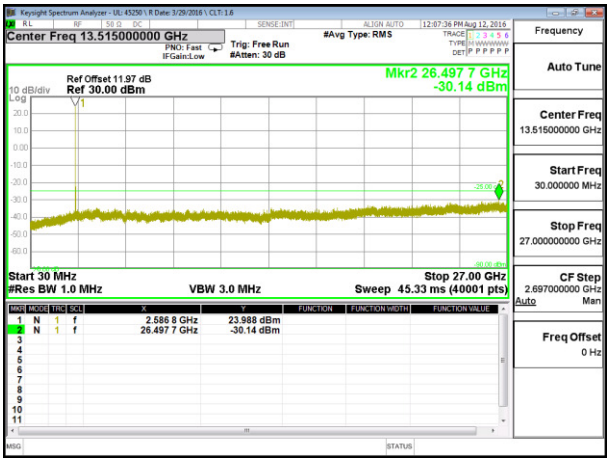

LTE B41 10MHz QPSK Middle Channel



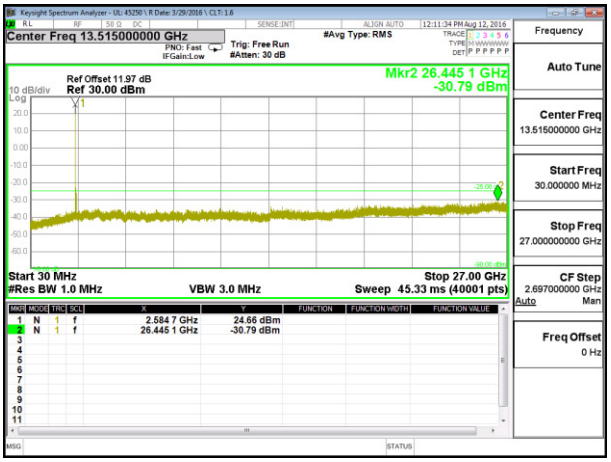

LTE B41 10MHz 16QAM Middle Channel



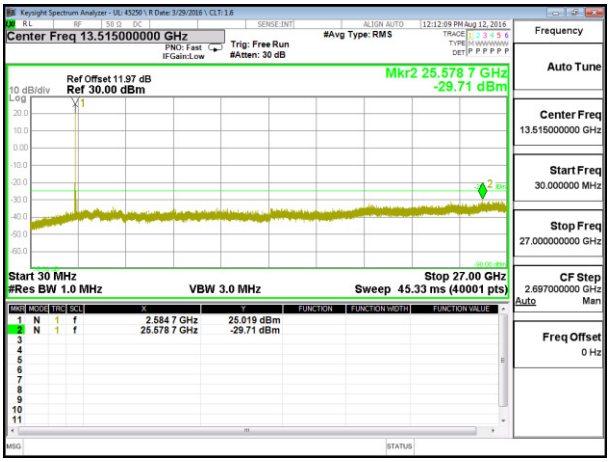

LTE B41 15MHz QPSK Middle Channel




LTE B41 15MHz 16QAM Middle Channel




LTE B41 20MHz QPSK Middle Channel




LTE B41 20MHz 16QAM Middle Channel

# 13. FREQUENCY STABILITY

**RULE PART(S)**

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213

**LIMITS**

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

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

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

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

**TEST PROCEDURE**

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

**Test Information**

Date: 8/9-8/19 2016
Tester: Angel

## 13.1. FREQUENCY STABILITY RESULTS

**GSM 1900**

GPRS

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 1850.0280 | 1909.9670 | | |
| Extreme (50C) | | 1850.0280 | 1909.9670 | -5.4 | -0.003 |
| Extreme (40C) | | 1850.0280 | 1909.9670 | 6.5 | 0.003 |
| Extreme (30C) | | 1850.0280 | 1909.9670 | -5.0 | -0.003 |
| Extreme (10C) | | 1850.0280 | 1909.9670 | 7.1 | 0.004 |
| Extreme (0C) | | 1850.0280 | 1909.9670 | 7.3 | 0.004 |
| Extreme (-10C) | | 1850.0280 | 1909.9670 | 6.6 | 0.004 |
| Extreme (-20C) | | 1850.0280 | 1909.9670 | 7.0 | 0.004 |
| Extreme (-30C) | | 1850.0280 | 1909.9670 | 7.8 | 0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 1850.0280 | 1909.9670 | 5.3 | 0.003 |
| | 4.2 Vdc | 1850.0280 | 1909.9670 | -4.6 | -0.002 |
| | 3.6 Vdc | 1850.0280 | 1909.9670 | 5.3 | 0.003 |

EGPRS

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 1850.0380 | 1909.9620 | | |
| Extreme (50C) | | 1850.0380 | 1909.9620 | -5.4 | -0.003 |
| Extreme (40C) | | 1850.0380 | 1909.9620 | 6.5 | 0.003 |
| Extreme (30C) | | 1850.0380 | 1909.9620 | -5.0 | -0.003 |
| Extreme (10C) | | 1850.0380 | 1909.9620 | 7.1 | 0.004 |
| Extreme (0C) | | 1850.0380 | 1909.9620 | 7.3 | 0.004 |
| Extreme (-10C) | | 1850.0380 | 1909.9620 | 6.6 | 0.004 |
| Extreme (-20C) | | 1850.0380 | 1909.9620 | 7.0 | 0.004 |
| Extreme (-30C) | | 1850.0380 | 1909.9620 | 7.8 | 0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 1850.0380 | 1909.9620 | 5.3 | 0.003 |
| | 4.2 Vdc | 1850.0380 | 1909.9620 | -4.6 | -0.002 |
| | 3.6 Vdc | 1850.0380 | 1909.9620 | 5.3 | 0.003 |

**LTE Band 4**

QPSK, (20MHz BANDWIDTH)

| Limit | | 1710 | 1755 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 1710.8000 | 1754.3300 | | |
| Extreme (50C) | | 1710.8000 | 1754.3300 | 5.0 | 0.003 |
| Extreme (40C) | | 1710.8000 | 1754.3300 | 6.5 | 0.004 |
| Extreme (30C) | | 1710.8000 | 1754.3300 | -5.0 | -0.003 |
| Extreme (10C) | | 1710.8000 | 1754.3300 | 7.1 | 0.004 |
| Extreme (0C) | | 1710.8000 | 1754.3300 | 7.3 | 0.004 |
| Extreme (-10C) | | 1710.8000 | 1754.3300 | 6.6 | 0.004 |
| Extreme (-20C) | | 1710.8000 | 1754.3300 | 7.0 | 0.004 |
| Extreme (-30C) | | 1710.8000 | 1754.3300 | 7.8 | 0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 1710.8000 | 1754.3300 | 5.3 | 0.003 |
| | 4.2 Vdc | 1710.8000 | 1754.3300 | -4.6 | -0.003 |
| | 3.6 Vdc | 1710.8000 | 1754.3300 | 5.3 | 0.003 |

16QAM, (20MHz BANDWIDTH)

| Limit | | 1710 | 1755 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 1710.8000 | 1754.3300 | | |
| Extreme (50C) | | 1710.8000 | 1754.3300 | 5.0 | 0.003 |
| Extreme (40C) | | 1710.8000 | 1754.3300 | 6.5 | 0.004 |
| Extreme (30C) | | 1710.8000 | 1754.3300 | -5.0 | -0.003 |
| Extreme (10C) | | 1710.8000 | 1754.3300 | 7.1 | 0.004 |
| Extreme (0C) | | 1710.8000 | 1754.3300 | 7.3 | 0.004 |
| Extreme (-10C) | | 1710.8000 | 1754.3300 | 6.6 | 0.004 |
| Extreme (-20C) | | 1710.8000 | 1754.3300 | 7.0 | 0.004 |
| Extreme (-30C) | | 1710.8000 | 1754.3300 | 7.8 | 0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 1710.8000 | 1754.3300 | 5.3 | 0.003 |
| | 4.2 Vdc | 1710.8000 | 1754.3300 | -4.6 | -0.003 |
| | 3.6 Vdc | 1710.8000 | 1754.3300 | 5.3 | 0.003 |

**LTE Band 5**

| Reference Frequency: PCS Mid Channel | | 836.5 | MHz @ 20°C |
|---|---|---|---|
| Limit: to stay +- 2.5 ppm = | | 2091.250 | Hz |
| Power Supply | Environment | Frequency Deviation Measured with Time Elapse | | |
| (Vdc) | Temperature (°C) | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.80 | 50 | 836.499997 | 0.010 | 2.5 |
| 3.80 | 40 | 836.499997 | 0.009 | 2.5 |
| 3.80 | 30 | 836.499996 | 0.010 | 2.5 |
| ***3.80*** | ***20*** | **836.500005** | **0** | ***2.5*** |
| 3.80 | 10 | 836.500003 | 0.002 | 2.5 |
| 3.80 | 0 | 836.500004 | 0.000 | 2.5 |
| 3.80 | -10 | 836.500003 | 0.001 | 2.5 |
| 3.80 | -20 | 836.500003 | 0.002 | 2.5 |
| 3.80 | -30 | 836.499997 | 0.009 | 2.5 |

| Reference Frequency: PCS Mid Channel | | 836.5 | MHz @ 20°C |
|---|---|---|---|
| Limit: to stay +- 2.5 ppm = | | 2091.250 | Hz |
| Power Supply | Environment | Frequency Deviation Measured with Time Elapse | | |
| (Vdc) | Temperature (°C) | (MHz) | Delta (ppm) | Limit (ppm) |
| ***3.80*** | ***20*** | ***836.500005*** | ***0*** | ***2.5*** |
| 4.20 | 20 | 836.5000032 | *0.002* | 2.5 |
| 3.60 | 20 | 836.5000055 | *-0.001* | 2.5 |

Note: LTE B5 test data cover WCDMA B5

**LTE Band 7**

QPSK, (20MHz BANDWIDTH)

| Limit | | 2500 | 2570 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 2500.7300 | 2569.3300 | | |
| Extreme (50C) | | 2500.7300 | 2569.3300 | -5.8 | -0.002 |
| Extreme (40C) | | 2500.7300 | 2569.3300 | -9.9 | -0.004 |
| Extreme (30C) | | 2500.7300 | 2569.3300 | -8.9 | -0.004 |
| Extreme (10C) | | 2500.7300 | 2569.3300 | -8.2 | -0.003 |
| Extreme (0C) | | 2500.7300 | 2569.3300 | -8.8 | -0.003 |
| Extreme (-10C) | | 2500.7300 | 2569.3300 | -8.0 | -0.003 |
| Extreme (-20C) | | 2500.7300 | 2569.3300 | -7.9 | -0.003 |
| Extreme (-30C) | | 2500.7300 | 2569.3300 | -10.7 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 2500.7300 | 2569.3300 | -8.7 | -0.003 |
| | 4.2 Vdc | 2500.7300 | 2569.3300 | -9.6 | -0.004 |
| | 3.6 Vdc | 2500.7300 | 2569.3300 | -7.8 | -0.003 |

16QAM, (20MHz BANDWIDTH)

| Limit | | 2500 | 2570 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 2500.7300 | 2569.3300 | | |
| Extreme (50C) | | 2500.7300 | 2569.3300 | -5.8 | -0.002 |
| Extreme (40C) | | 2500.7300 | 2569.3300 | -9.9 | -0.004 |
| Extreme (30C) | | 2500.7300 | 2569.3300 | -8.9 | -0.004 |
| Extreme (10C) | | 2500.7300 | 2569.3300 | -8.2 | -0.003 |
| Extreme (0C) | | 2500.7300 | 2569.3300 | -8.8 | -0.003 |
| Extreme (-10C) | | 2500.7300 | 2569.3300 | -8.0 | -0.003 |
| Extreme (-20C) | | 2500.7300 | 2569.3300 | -7.9 | -0.003 |
| Extreme (-30C) | | 2500.7300 | 2569.3300 | -10.7 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 2500.7300 | 2569.3300 | -8.7 | -0.003 |
| | 4.2 Vdc | 2500.7300 | 2569.3300 | -9.6 | -0.004 |
| | 3.6 Vdc | 2500.7300 | 2569.3300 | -7.8 | -0.003 |

**LTE Band 13**

QPSK, (10MHz BANDWIDTH)

| Limit | | 777 | 787 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 777.3700 | 786.7000 | | |
| Extreme (50C) | | 777.3700 | 786.7000 | -3.4 | -0.004 |
| Extreme (40C) | | 777.3700 | 786.7000 | -4.4 | -0.006 |
| Extreme (30C) | | 777.3700 | 786.7000 | -4.0 | -0.005 |
| Extreme (10C) | | 777.3700 | 786.7000 | 3.7 | 0.005 |
| Extreme (0C) | | 777.3700 | 786.7000 | 4.5 | 0.006 |
| Extreme (-10C) | | 777.3700 | 786.7000 | 3.0 | 0.004 |
| Extreme (-20C) | | 777.3700 | 786.7000 | 3.4 | 0.004 |
| Extreme (-30C) | | 777.3700 | 786.7000 | -3.6 | -0.005 |
| | | | | | |
| 25C | 3.8 Vdc | 777.3700 | 786.7000 | -3.2 | -0.004 |
| | 4.2 Vdc | 777.3700 | 786.7000 | -3.4 | -0.004 |
| | 3.6 Vdc | 777.3700 | 786.7000 | 3.0 | 0.004 |

16QAM, (10MHz BANDWIDTH)

| Limit | | 777 | 2570 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 777.3700 | 786.6700 | | |
| Extreme (50C) | | 777.3700 | 786.6700 | -5.8 | -0.003 |
| Extreme (40C) | | 777.3700 | 786.6700 | -9.9 | -0.006 |
| Extreme (30C) | | 777.3700 | 786.6700 | -8.9 | -0.005 |
| Extreme (10C) | | 777.3700 | 786.6700 | -8.2 | -0.005 |
| Extreme (0C) | | 777.3700 | 786.6700 | -8.8 | -0.005 |
| Extreme (-10C) | | 777.3700 | 786.6700 | -8.0 | -0.005 |
| Extreme (-20C) | | 777.3700 | 786.6700 | -7.9 | -0.005 |
| Extreme (-30C) | | 777.3700 | 786.6700 | -10.7 | -0.006 |
| | | | | | |
| 25C | 3.8 Vdc | 777.3700 | 786.6700 | -8.7 | -0.005 |
| | 4.2 Vdc | 777.3700 | 786.6700 | -9.6 | -0.006 |
| | 3.6 Vdc | 777.3700 | 786.6700 | -7.8 | -0.005 |

**LTE Band 17**

QPSK, (10MHz BANDWIDTH)

| Limit | | 704 | 716 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 704.3700 | 715.7000 | | |
| Extreme (50C) | | 704.3700 | 715.7000 | -2.3 | -0.003 |
| Extreme (40C) | | 704.3700 | 715.7000 | -2.2 | -0.003 |
| Extreme (30C) | | 704.3700 | 715.7000 | -3.1 | -0.004 |
| Extreme (10C) | | 704.3700 | 715.7000 | 3.8 | 0.005 |
| Extreme (0C) | | 704.3700 | 715.7000 | 3.7 | 0.005 |
| Extreme (-10C) | | 704.3700 | 715.7000 | 3.4 | 0.005 |
| Extreme (-20C) | | 704.3700 | 715.7000 | 3.2 | 0.004 |
| Extreme (-30C) | | 704.3700 | 715.7000 | -3.1 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 704.3700 | 715.7000 | 3.7 | 0.005 |
| | 4.2 Vdc | 704.3700 | 715.7000 | 3.4 | 0.005 |
| | 3.6 Vdc | 704.3700 | 715.7000 | 3.9 | 0.006 |

16QAM, (10MHz BANDWIDTH)

| Limit | | 704 | 716 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 704.4000 | 715.7000 | | |
| Extreme (50C) | | 704.4000 | 715.7000 | -2.3 | -0.003 |
| Extreme (40C) | | 704.4000 | 715.7000 | -2.2 | -0.003 |
| Extreme (30C) | | 704.4000 | 715.7000 | -3.1 | -0.004 |
| Extreme (10C) | | 704.4000 | 715.7000 | 3.8 | 0.005 |
| Extreme (0C) | | 704.4000 | 715.7000 | 3.7 | 0.005 |
| Extreme (-10C) | | 704.4000 | 715.7000 | 3.4 | 0.005 |
| Extreme (-20C) | | 704.4000 | 715.7000 | 3.2 | 0.004 |
| Extreme (-30C) | | 704.4000 | 715.7000 | -3.1 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 704.4000 | 715.7000 | 3.7 | 0.005 |
| | 4.2 Vdc | 704.4000 | 715.7000 | 3.4 | 0.005 |
| | 3.6 Vdc | 704.4000 | 715.7000 | 3.9 | 0.006 |

**LTE Band 41**

QPSK, (20MHz BANDWIDTH)

| Limit | | 2496 | 2690 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8 Vdc | 2496.8000 | 2689.3300 | | |
| Extreme (50C) | | 2496.8000 | 2689.3300 | -5.8 | -0.002 |
| Extreme (40C) | | 2496.8000 | 2689.3300 | -9.9 | -0.004 |
| Extreme (30C) | | 2496.8000 | 2689.3300 | -8.9 | -0.003 |
| Extreme (10C) | | 2496.8000 | 2689.3300 | -8.2 | -0.003 |
| Extreme (0C) | | 2496.8000 | 2689.3300 | -8.8 | -0.003 |
| Extreme (-10C) | | 2496.8000 | 2689.3300 | -8.0 | -0.003 |
| Extreme (-20C) | | 2496.8000 | 2689.3300 | -7.9 | -0.003 |
| Extreme (-30C) | | 2496.8000 | 2689.3300 | -10.7 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 2496.8000 | 2689.3300 | -8.7 | -0.003 |
| | 4.2 Vdc | 2496.8000 | 2689.3300 | -9.6 | -0.004 |
| | 3.6 Vdc | 2496.8000 | 2689.3300 | -7.8 | -0.003 |

16QAM, (20MHz BANDWIDTH)

| Limit | | 2496 | 2690 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (25C) | 3.8Vdc | 2496.8000 | 2689.3300 | | |
| Extreme (50C) | | 2496.8000 | 2689.3300 | -5.8 | -0.002 |
| Extreme (40C) | | 2496.8000 | 2689.3300 | -9.9 | -0.004 |
| Extreme (30C) | | 2496.8000 | 2689.3300 | -8.9 | -0.003 |
| Extreme (10C) | | 2496.8000 | 2689.3300 | -8.2 | -0.003 |
| Extreme (0C) | | 2496.8000 | 2689.3300 | -8.8 | -0.003 |
| Extreme (-10C) | | 2496.8000 | 2689.3300 | -8.0 | -0.003 |
| Extreme (-20C) | | 2496.8000 | 2689.3300 | -7.9 | -0.003 |
| Extreme (-30C) | | 2496.8000 | 2689.3300 | -10.7 | -0.004 |
| | | | | | |
| 25C | 3.8 Vdc | 2496.8000 | 2689.3300 | -8.7 | -0.003 |
| | 4.2 Vdc | 2496.8000 | 2689.3300 | -9.6 | -0.004 |
| | 3.6 Vdc | 2496.8000 | 2689.3300 | -7.8 | -0.003 |

# 14. RADIATED TEST RESULTS

## 14.1. RADIATED POWER (ERP & EIRP)

**RULE PART(S)**

FCC: §2. 1046, §22. 913, §24. 232, §27

**LIMITS**

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

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

27.50 (b) - (10) Portable stations (handheld devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP. (LTE B13)

27.50 (c) - (10) Portable stations (handheld devices) are limited to 3 watts ERP; (LTE B17)

27.50 (d) - (4) Fixed, mobile, and portable (handheld) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 4)

27.50 (h) - (2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power. (LTE B41 & 7)

90.635 (b) - The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw). (LTE B26)

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

**TEST PROCEDURE**

ANSI / TIA / EIA 603D Clause 2.2.17; PSA setting reference to 971168 D01 v02r02

For peak power measurement with a PSA:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

### 14.1.1. ERP/EIRP RESULTS AND TABLE

**GSM**

| Band | Mode | Channel | f(MHz) | ERP/EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| GSM850 | GPRS | 128 | 824.2 | 26.16 | 413.05 |
| | | 190 | 836.6 | 27.43 | 553.35 |
| | | 251 | 848.8 | 27.02 | 503.50 |
| | EGPRS | 128 | 824.2 | 20.90 | 123.03 |
| | | 190 | 836.6 | 21.97 | 157.40 |
| | | 251 | 848.8 | 21.45 | 139.64 |
| GSM1900 | GPRS | 512 | 1850.2 | 25.99 | 397.19 |
| | | 661 | 1880 | 27.13 | 516.42 |
| | | 810 | 1909.8 | 26.54 | 450.82 |
| | EGPRS | 512 | 1850.2 | 22.94 | 196.79 |
| | | 661 | 1880 | 24.20 | 263.03 |
| | | 810 | 1909.8 | 23.29 | 213.30 |

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS sample)**
**Mode: GPRS850**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | | |
| 824.20 | 32.72 | V | 5.1 | 0.7 | -1.45 | 26.16 | 38.5 | -12.3 | |
| 824.20 | 23.40 | H | 5.1 | 0.7 | -1.45 | 16.84 | 38.5 | -21.6 | |
| Mid Ch | | | | | | | | | |
| 836.60 | 34.05 | V | 5.2 | 0.7 | -1.45 | 27.43 | 38.5 | -11.0 | |
| 836.60 | 24.19 | H | 5.2 | 0.7 | -1.45 | 17.57 | 38.5 | -20.9 | |
| High Ch | | | | | | | | | |
| 848.80 | 33.66 | V | 5.2 | 0.7 | -1.45 | 27.02 | 38.5 | -11.4 | |
| 848.80 | 25.07 | H | 5.2 | 0.7 | -1.45 | 18.43 | 38.5 | -20.0 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

GSM850 GPRS

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS sample)**
**Mode: EGPRS850**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | | |
| 824.20 | 27.46 | V | 5.1 | 0.7 | -1.45 | 20.90 | 38.5 | -17.5 | |
| 824.20 | 18.04 | H | 5.1 | 0.7 | -1.45 | 11.48 | 38.5 | -27.0 | |
| Mid Ch | | | | | | | | | |
| 836.60 | 28.59 | V | 5.2 | 0.7 | -1.45 | 21.97 | 38.5 | -16.5 | |
| 836.60 | 18.61 | H | 5.2 | 0.7 | -1.45 | 11.99 | 38.5 | -26.5 | |
| High Ch | | | | | | | | | |
| 848.80 | 28.09 | V | 5.2 | 0.7 | -1.45 | 21.45 | 38.5 | -17.0 | |
| 848.80 | 19.44 | H | 5.2 | 0.7 | -1.45 | 12.80 | 38.5 | -25.6 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

GSM850 EGPRS

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/06/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS sample)**
**Mode: GPRS1900**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1850.20 | 29.73 | V | 8.1 | 4.4 | 25.99 | 33.0 | -7.0 | |
| 1850.20 | 25.77 | H | 8.1 | 4.4 | 22.03 | 33.0 | -11.0 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 31.00 | V | 8.2 | 4.3 | 27.13 | 33.0 | -5.9 | |
| 1880.00 | 26.40 | H | 8.2 | 4.3 | 22.53 | 33.0 | -10.5 | |
| High Ch | | | | | | | | |
| 1909.80 | 30.56 | V | 8.2 | 4.2 | 26.54 | 33.0 | -6.5 | |
| 1909.80 | 26.01 | H | 8.2 | 4.2 | 21.99 | 33.0 | -11.0 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

GSM1900 GPRS

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/06/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS sample)**
**Mode: EGPRS1900**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1850.20 | 26.68 | V | 8.1 | 4.4 | 22.94 | 33.0 | -10.1 | |
| 1850.20 | 22.73 | H | 8.1 | 4.4 | 18.99 | 33.0 | -14.0 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 28.07 | V | 8.2 | 4.3 | 24.20 | 33.0 | -8.8 | |
| 1880.00 | 23.47 | H | 8.2 | 4.3 | 19.60 | 33.0 | -13.4 | |
| High Ch | | | | | | | | |
| 1909.80 | 27.31 | V | 8.2 | 4.2 | 23.29 | 33.0 | -9.7 | |
| 1909.80 | 22.76 | H | 8.2 | 4.2 | 18.74 | 33.0 | -14.3 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

GSM1900 EGPRS

**WCDMA**

| Mode | Channel | f(MHz) | ERP/EIRP | |
|---|---|---|---|---|
| | | | dBm | mW |
| REL99 | 9262 | 1852.4 | 18.49 | 70.63 |
| | 9400 | 1880 | 18.29 | 67.45 |
| | 9538 | 1907.6 | 18.30 | 67.61 |
| HSDPA | 9262 | 1852.4 | 17.00 | 50.12 |
| | 9400 | 1880 | 16.80 | 47.86 |
| | 9538 | 1907.6 | 16.78 | 47.64 |
| REL99 | 1312 | 1712.4 | 17.39 | 54.83 |
| | 1413 | 1732.6 | 17.99 | 62.95 |
| | 1513 | 1752.6 | 18.51 | 70.96 |
| HSDPA | 1312 | 1712.4 | 15.81 | 38.11 |
| | 1413 | 1732.6 | 16.43 | 43.95 |
| | 1513 | 1752.6 | 16.91 | 49.09 |
| REL99 | 4132 | 826.4 | 19.40 | 87.10 |
| | 4183 | 836.6 | 19.82 | 95.94 |
| | 4233 | 846.6 | 19.07 | 80.72 |
| HSDPA | 4132 | 826.4 | 18.57 | 71.94 |
| | 4183 | 836.6 | 19.31 | 85.31 |
| | 4233 | 846.6 | 18.81 | 76.03 |

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS)**
**Mode: WCDMA2, REL99**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.40 | 22.24 | V | 8.1 | 4.4 | 18.49 | 33.0 | -14.5 | |
| 1852.40 | 17.73 | H | 8.1 | 4.4 | 13.98 | 33.0 | -19.0 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 22.16 | V | 8.2 | 4.3 | 18.29 | 33.0 | -14.7 | |
| 1880.00 | 18.24 | H | 8.2 | 4.3 | 14.37 | 33.0 | -18.6 | |
| High Ch | | | | | | | | |
| 1907.60 | 22.31 | V | 8.2 | 4.2 | 18.30 | 33.0 | -14.7 | |
| 1907.60 | 17.89 | H | 8.2 | 4.2 | 13.88 | 33.0 | -19.1 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

B2 REL99

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS sample)**
**Mode: WCDMA2, HSDPA**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1852.40 | 20.75 | V | 8.1 | 4.4 | 17.00 | 33.0 | -16.0 | |
| 1852.40 | 16.26 | H | 8.1 | 4.4 | 12.51 | 33.0 | -20.5 | |
| Mid Ch | | | | | | | | |
| 1880.00 | 20.67 | V | 8.2 | 4.3 | 16.80 | 33.0 | -16.2 | |
| 1880.00 | 16.76 | H | 8.2 | 4.3 | 12.89 | 33.0 | -20.1 | |
| High Ch | | | | | | | | |
| 1907.60 | 20.79 | V | 8.2 | 4.2 | 16.78 | 33.0 | -16.2 | |
| 1907.60 | 16.35 | H | 8.2 | 4.2 | 12.34 | 33.0 | -20.7 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

B2 HSDPA

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/11/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (GSM/UMTS Sample)**
**Mode: WCDMA4, REL99**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.40 | 20.41 | V | 7.7 | 4.7 | 17.39 | 33.0 | -15.6 | |
| 1712.40 | 15.12 | H | 7.7 | 4.7 | 12.10 | 33.0 | -20.9 | |
| Mid Ch | | | | | | | | |
| 1732.60 | 21.11 | V | 7.8 | 4.6 | 17.99 | 33.0 | -15.0 | |
| 1732.60 | 15.78 | H | 7.8 | 4.6 | 12.66 | 33.0 | -20.3 | |
| High Ch | | | | | | | | |
| 1752.60 | 21.74 | V | 7.8 | 4.6 | 18.51 | 33.0 | -14.5 | |
| 1752.60 | 16.82 | H | 7.8 | 4.6 | 13.59 | 33.0 | -19.4 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

B4 REL99

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/11/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (GSM/UMTS Sample)**
**Mode: WCDMA4, HSDPA**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.40 | 18.83 | V | 7.7 | 4.7 | 15.81 | 33.0 | -17.2 | |
| 1712.40 | 13.38 | H | 7.7 | 4.7 | 10.36 | 33.0 | -22.6 | |
| Mid Ch | | | | | | | | |
| 1732.60 | 19.55 | V | 7.8 | 4.6 | 16.43 | 33.0 | -16.6 | |
| 1732.60 | 14.21 | H | 7.8 | 4.6 | 11.09 | 33.0 | -21.9 | |
| High Ch | | | | | | | | |
| 1752.60 | 20.14 | V | 7.8 | 4.6 | 16.91 | 33.0 | -16.1 | |
| 1752.60 | 15.19 | H | 7.8 | 4.6 | 11.96 | 33.0 | -21.0 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

B4 HSDPA

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/31/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS Sample)**
**Mode: WCDMA5, REL99**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | | |
| 826.40 | 25.97 | V | 5.1 | 0.7 | -1.45 | 19.40 | 38.5 | -19.0 | |
| 826.40 | 15.83 | H | 5.1 | 0.7 | -1.45 | 9.26 | 38.5 | -29.2 | |
| Mid Ch | | | | | | | | | |
| 836.60 | 26.44 | V | 5.2 | 0.7 | -1.45 | 19.82 | 38.5 | -18.6 | |
| 836.60 | 17.18 | H | 5.2 | 0.7 | -1.45 | 10.56 | 38.5 | -27.9 | |
| High Ch | | | | | | | | | |
| 846.60 | 25.70 | V | 5.2 | 0.7 | -1.45 | 19.07 | 38.5 | -19.4 | |
| 846.60 | 17.61 | H | 5.2 | 0.7 | -1.45 | 10.98 | 38.5 | -27.5 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

B5 REL99

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/31/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (GSM/UMTS Sample)**
**Mode: WCDMA5, HSDPA**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | | |
| 826.40 | 25.14 | V | 5.1 | 0.7 | -1.45 | 18.57 | 38.5 | -19.9 | |
| 826.40 | 14.66 | H | 5.1 | 0.7 | -1.45 | 8.09 | 38.5 | -30.4 | |
| Mid Ch | | | | | | | | | |
| 836.60 | 25.93 | V | 5.2 | 0.7 | -1.45 | 19.31 | 38.5 | -19.1 | |
| 836.60 | 15.84 | H | 5.2 | 0.7 | -1.45 | 9.22 | 38.5 | -29.2 | |
| High Ch | | | | | | | | | |
| 846.60 | 25.44 | V | 5.2 | 0.7 | -1.45 | 18.81 | 38.5 | -19.6 | |
| 846.60 | 16.32 | H | 5.2 | 0.7 | -1.45 | 9.69 | 38.5 | -28.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

B5 HSDPA

**LTE Band 4**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 1.4 | QPSK | 1/0 | 1710.7 | 17.23 | 52.84 |
| | | 1/0 | 1732.5 | 17.39 | 54.83 |
| | | 1/0 | 1754.3 | 16.77 | 47.53 |
| | 16QAM | 1/0 | 1710.7 | 16.45 | 44.16 |
| | | 1/0 | 1732.5 | 16.61 | 45.81 |
| | | 1/0 | 1754.3 | 16.03 | 40.09 |
| 3 | QPSK | 1/0 | 1711.5 | 17.15 | 51.88 |
| | | 1/0 | 1732.5 | 16.06 | 40.36 |
| | | 1/0 | 1753.5 | 16.64 | 46.13 |
| | 16QAM | 1/0 | 1711.5 | 16.30 | 42.66 |
| | | 1/0 | 1732.5 | 15.33 | 34.12 |
| | | 1/0 | 1753.5 | 15.90 | 38.90 |
| 5 | QPSK | 1/0 | 1712.5 | 17.17 | 52.12 |
| | | 1/0 | 1732.5 | 17.50 | 56.23 |
| | | 1/0 | 1752.5 | 17.35 | 54.33 |
| | 16QAM | 1/0 | 1712.5 | 16.63 | 46.03 |
| | | 1/0 | 1732.5 | 16.68 | 46.56 |
| | | 1/0 | 1752.5 | 16.53 | 44.98 |
| 10 | QPSK | 1/0 | 1715 | 16.84 | 48.31 |
| | | 1/0 | 1732.5 | 16.34 | 43.05 |
| | | 1/0 | 1750 | 17.84 | 60.81 |
| | 16QAM | 1/0 | 1715 | 16.11 | 40.83 |
| | | 1/0 | 1732.5 | 15.58 | 36.14 |
| | | 1/0 | 1750 | 17.00 | 50.12 |
| 15 | QPSK | 1/0 | 1717.5 | 16.48 | 44.46 |
| | | 1/0 | 1732.5 | 17.13 | 51.64 |
| | | 1/0 | 1747.5 | 17.59 | 57.41 |
| | 16QAM | 1/0 | 1717.5 | 15.78 | 37.84 |
| | | 1/0 | 1732.5 | 16.31 | 42.76 |
| | | 1/0 | 1747.5 | 16.75 | 47.32 |
| 20 | QPSK | 1/0 | 1720 | 16.84 | 48.31 |
| | | 1/0 | 1732.5 | 16.02 | 39.99 |
| | | 1/0 | 1745 | 17.15 | 51.88 |
| | 16QAM | 1/0 | 1720 | 16.06 | 40.36 |
| | | 1/0 | 1732.5 | 15.13 | 32.58 |
| | | 1/0 | 1745 | 16.26 | 42.27 |

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 1.4M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1710.70 | 20.25 | V | 7.7 | 4.7 | 17.23 | 30.0 | -12.8 | |
| 1710.70 | 13.35 | H | 7.7 | 4.7 | 10.33 | 30.0 | -19.7 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 20.51 | V | 7.8 | 4.6 | 17.39 | 30.0 | -12.6 | |
| 1732.50 | 15.83 | H | 7.8 | 4.6 | 12.71 | 30.0 | -17.3 | |
| High Ch | | | | | | | | |
| 1754.30 | 20.01 | V | 7.8 | 4.6 | 16.77 | 30.0 | -13.2 | |
| 1754.30 | 15.38 | H | 7.8 | 4.6 | 12.14 | 30.0 | -17.9 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 1.4MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 1.4M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1710.70 | 19.47 | V | 7.7 | 4.7 | 16.45 | 30.0 | -13.5 | |
| 1710.70 | 12.65 | H | 7.7 | 4.7 | 9.63 | 30.0 | -20.4 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.73 | V | 7.8 | 4.6 | 16.61 | 30.0 | -13.4 | |
| 1732.50 | 15.03 | H | 7.8 | 4.6 | 11.91 | 30.0 | -18.1 | |
| High Ch | | | | | | | | |
| 1754.30 | 19.27 | V | 7.8 | 4.6 | 16.03 | 30.0 | -14.0 | |
| 1754.30 | 14.58 | H | 7.8 | 4.6 | 11.34 | 30.0 | -18.7 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 1.4MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 3M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1711.50 | 20.17 | V | 7.7 | 4.7 | 17.15 | 30.0 | -12.9 | |
| 1711.50 | 8.63 | H | 7.7 | 4.7 | 5.61 | 30.0 | -24.4 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.18 | V | 7.8 | 4.6 | 16.06 | 30.0 | -13.9 | |
| 1732.50 | 15.65 | H | 7.8 | 4.6 | 12.53 | 30.0 | -17.5 | |
| High Ch | | | | | | | | |
| 1753.50 | 19.87 | V | 7.8 | 4.6 | 16.64 | 30.0 | -13.4 | |
| 1753.50 | 15.15 | H | 7.8 | 4.6 | 11.92 | 30.0 | -18.1 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 3MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 3M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1711.50 | 19.32 | V | 7.7 | 4.7 | 16.30 | 30.0 | -13.7 | |
| 1711.50 | 7.85 | H | 7.7 | 4.7 | 4.83 | 30.0 | -25.2 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 18.45 | V | 7.8 | 4.6 | 15.33 | 30.0 | -14.7 | |
| 1732.50 | 14.74 | H | 7.8 | 4.6 | 11.62 | 30.0 | -18.4 | |
| High Ch | | | | | | | | |
| 1753.50 | 19.13 | V | 7.8 | 4.6 | 15.90 | 30.0 | -14.1 | |
| 1753.50 | 14.41 | H | 7.8 | 4.6 | 11.18 | 30.0 | -18.8 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 3MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 5M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.50 | 20.20 | V | 7.7 | 4.7 | 17.17 | 30.0 | -12.8 | |
| 1712.50 | 13.44 | H | 7.7 | 4.7 | 10.41 | 30.0 | -19.6 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 20.62 | V | 7.8 | 4.6 | 17.50 | 30.0 | -12.5 | |
| 1732.50 | 15.40 | H | 7.8 | 4.6 | 12.28 | 30.0 | -17.7 | |
| High Ch | | | | | | | | |
| 1752.50 | 20.58 | V | 7.8 | 4.6 | 17.35 | 30.0 | -12.6 | |
| 1752.50 | 14.16 | H | 7.8 | 4.6 | 10.93 | 30.0 | -19.1 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 5MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 5M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1712.50 | 19.36 | V | 7.7 | 4.7 | 16.33 | 30.0 | -13.7 | |
| 1712.50 | 12.45 | H | 7.7 | 4.7 | 9.42 | 30.0 | -20.6 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.80 | V | 7.8 | 4.6 | 16.68 | 30.0 | -13.3 | |
| 1732.50 | 14.65 | H | 7.8 | 4.6 | 11.53 | 30.0 | -18.5 | |
| High Ch | | | | | | | | |
| 1752.50 | 19.76 | V | 7.8 | 4.6 | 16.53 | 30.0 | -13.5 | |
| 1752.50 | 13.31 | H | 7.8 | 4.6 | 10.08 | 30.0 | -19.9 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 5MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 10M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1715.00 | 19.88 | V | 7.7 | 4.7 | 16.84 | 30.0 | -13.2 | |
| 1715.00 | 8.66 | H | 7.7 | 4.7 | 5.62 | 30.0 | -24.4 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.46 | V | 7.8 | 4.6 | 16.34 | 30.0 | -13.7 | |
| 1732.50 | 10.26 | H | 7.8 | 4.6 | 7.14 | 30.0 | -22.9 | |
| High Ch | | | | | | | | |
| 1750.00 | 21.05 | V | 7.8 | 4.6 | 17.84 | 30.0 | -12.2 | |
| 1750.00 | 14.75 | H | 7.8 | 4.6 | 11.54 | 30.0 | -18.5 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 10MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 10M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1715.00 | 19.15 | V | 7.7 | 4.7 | 16.11 | 30.0 | -13.9 | |
| 1715.00 | 7.91 | H | 7.7 | 4.7 | 4.87 | 30.0 | -25.1 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 18.70 | V | 7.8 | 4.6 | 15.58 | 30.0 | -14.4 | |
| 1732.50 | 9.59 | H | 7.8 | 4.6 | 6.47 | 30.0 | -23.5 | |
| High Ch | | | | | | | | |
| 1750.00 | 20.21 | V | 7.8 | 4.6 | 17.00 | 30.0 | -13.0 | |
| 1750.00 | 14.01 | H | 7.8 | 4.6 | 10.80 | 30.0 | -19.2 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 10MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 15M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1717.50 | 19.53 | V | 7.7 | 4.7 | 16.48 | 30.0 | -13.5 | |
| 1717.50 | 14.12 | H | 7.7 | 4.7 | 11.07 | 30.0 | -18.9 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 20.25 | V | 7.8 | 4.6 | 17.13 | 30.0 | -12.9 | |
| 1732.50 | 16.19 | H | 7.8 | 4.6 | 13.07 | 30.0 | -16.9 | |
| High Ch | | | | | | | | |
| 1747.50 | 20.79 | V | 7.8 | 4.6 | 17.59 | 30.0 | -12.4 | |
| 1747.50 | 15.51 | H | 7.8 | 4.6 | 12.31 | 30.0 | -17.7 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 15MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 15M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1717.50 | 18.83 | V | 7.7 | 4.7 | 15.78 | 30.0 | -14.2 | |
| 1717.50 | 13.50 | H | 7.7 | 4.7 | 10.45 | 30.0 | -19.5 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.43 | V | 7.8 | 4.6 | 16.31 | 30.0 | -13.7 | |
| 1732.50 | 15.61 | H | 7.8 | 4.6 | 12.49 | 30.0 | -17.5 | |
| High Ch | | | | | | | | |
| 1747.50 | 19.95 | V | 7.8 | 4.6 | 16.75 | 30.0 | -13.2 | |
| 1747.50 | 14.79 | H | 7.8 | 4.6 | 11.59 | 30.0 | -18.4 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 15MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 20M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1720.00 | 19.90 | V | 7.7 | 4.7 | 16.84 | 30.0 | -13.2 | |
| 1720.00 | 8.58 | H | 7.7 | 4.7 | 5.52 | 30.0 | -24.5 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 19.14 | V | 7.8 | 4.6 | 16.02 | 30.0 | -14.0 | |
| 1732.50 | 12.98 | H | 7.8 | 4.6 | 9.86 | 30.0 | -20.1 | |
| High Ch | | | | | | | | |
| 1745.00 | 20.33 | V | 7.8 | 4.6 | 17.15 | 30.0 | -12.9 | |
| 1745.00 | 15.62 | H | 7.8 | 4.6 | 12.44 | 30.0 | -17.6 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 20MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/05/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 4, 20M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 1720.00 | 19.12 | V | 7.7 | 4.7 | 16.06 | 30.0 | -13.9 | |
| 1720.00 | 7.90 | H | 7.7 | 4.7 | 4.84 | 30.0 | -25.2 | |
| Mid Ch | | | | | | | | |
| 1732.50 | 18.25 | V | 7.8 | 4.6 | 15.13 | 30.0 | -14.9 | |
| 1732.50 | 12.31 | H | 7.8 | 4.6 | 9.19 | 30.0 | -20.8 | |
| High Ch | | | | | | | | |
| 1745.00 | 19.44 | V | 7.8 | 4.6 | 16.26 | 30.0 | -13.7 | |
| 1745.00 | 14.78 | H | 7.8 | 4.6 | 11.60 | 30.0 | -18.4 | |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B4 20MHz 16QAM

**LTE Band 5**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | ERP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 1.4 | QPSK | 1/0 | 824.7 | 17.83 | 60.67 |
| | | 1/0 | 836.5 | 19.03 | 79.98 |
| | | 1/0 | 848.3 | 18.28 | 67.30 |
| | 16QAM | 1/0 | 824.7 | 16.94 | 49.43 |
| | | 1/0 | 836.5 | 18.05 | 63.83 |
| | | 1/0 | 848.3 | 17.45 | 55.59 |
| 3 | QPSK | 1/0 | 825.5 | 17.88 | 61.38 |
| | | 1/0 | 836.5 | 19.06 | 80.54 |
| | | 1/0 | 847.5 | 18.45 | 69.98 |
| | 16QAM | 1/0 | 825.5 | 17.07 | 50.93 |
| | | 1/0 | 836.5 | 18.19 | 65.92 |
| | | 1/0 | 847.5 | 17.75 | 59.57 |
| 5 | QPSK | 1/0 | 826.5 | 17.86 | 61.09 |
| | | 1/0 | 836.5 | 19.05 | 80.35 |
| | | 1/0 | 846.5 | 18.26 | 66.99 |
| | 16QAM | 1/0 | 826.5 | 16.98 | 49.89 |
| | | 1/0 | 836.5 | 18.28 | 67.30 |
| | | 1/0 | 846.5 | 17.38 | 54.70 |
| 10 | QPSK | 1/0 | 829 | 17.87 | 61.24 |
| | | 1/0 | 836.5 | 19.03 | 79.98 |
| | | 1/0 | 844 | 18.20 | 66.07 |
| | 16QAM | 1/0 | 829 | 17.07 | 50.93 |
| | | 1/0 | 836.5 | 18.33 | 68.08 |
| | | 1/0 | 844 | 17.46 | 55.72 |

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 1.4MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 824.70 | 24.39 | V | 5.1 | 0.7 | -1.45 | 17.83 | 38.5 | -20.6 | |
| 824.70 | 14.92 | H | 5.1 | 0.7 | -1.45 | 8.36 | 38.5 | -30.1 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 25.65 | V | 5.2 | 0.7 | -1.45 | 19.03 | 38.5 | -19.4 | |
| 836.50 | 15.98 | H | 5.2 | 0.7 | -1.45 | 9.36 | 38.5 | -29.1 | |
| High Ch | | | | | | | | | |
| 848.30 | 24.92 | V | 5.2 | 0.7 | -1.45 | 18.28 | 38.5 | -20.2 | |
| 848.30 | 16.26 | H | 5.2 | 0.7 | -1.45 | 9.62 | 38.5 | -28.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 1.4MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 1.4MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 824.70 | 23.50 | V | 5.1 | 0.7 | -1.45 | 16.94 | 38.5 | -21.5 | |
| 824.70 | 13.98 | H | 5.1 | 0.7 | -1.45 | 7.42 | 38.5 | -31.0 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 24.67 | V | 5.2 | 0.7 | -1.45 | 18.05 | 38.5 | -20.4 | |
| 836.50 | 15.00 | H | 5.2 | 0.7 | -1.45 | 8.38 | 38.5 | -30.1 | |
| High Ch | | | | | | | | | |
| 848.30 | 24.09 | V | 5.2 | 0.7 | -1.45 | 17.45 | 38.5 | -21.0 | |
| 848.30 | 15.33 | H | 5.2 | 0.7 | -1.45 | 8.69 | 38.5 | -29.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 1.4MHz 16QAM

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 3MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 825.50 | 24.45 | V | 5.1 | 0.7 | -1.45 | 17.88 | 38.5 | -20.6 | |
| 825.50 | 15.00 | H | 5.1 | 0.7 | -1.45 | 8.43 | 38.5 | -30.0 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 25.68 | V | 5.2 | 0.7 | -1.45 | 19.06 | 38.5 | -19.4 | |
| 836.50 | 16.08 | H | 5.2 | 0.7 | -1.45 | 9.46 | 38.5 | -29.0 | |
| High Ch | | | | | | | | | |
| 847.50 | 25.09 | V | 5.2 | 0.7 | -1.45 | 18.45 | 38.5 | -20.0 | |
| 847.50 | 16.28 | H | 5.2 | 0.7 | -1.45 | 9.64 | 38.5 | -28.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 3MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 3MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 825.50 | 23.64 | V | 5.1 | 0.7 | -1.45 | 17.07 | 38.5 | -21.4 | |
| 825.50 | 14.09 | H | 5.1 | 0.7 | -1.45 | 7.52 | 38.5 | -30.9 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 24.81 | V | 5.2 | 0.7 | -1.45 | 18.19 | 38.5 | -20.3 | |
| 836.50 | 15.20 | H | 5.2 | 0.7 | -1.45 | 8.58 | 38.5 | -29.9 | |
| High Ch | | | | | | | | | |
| 847.50 | 24.39 | V | 5.2 | 0.7 | -1.45 | 17.75 | 38.5 | -20.7 | |
| 847.50 | 15.52 | H | 5.2 | 0.7 | -1.45 | 8.88 | 38.5 | -29.6 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 3MHz 16QAM

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 5MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 826.50 | 24.43 | V | 5.1 | 0.7 | -1.45 | 17.86 | 38.5 | -20.6 | |
| 826.50 | 14.97 | H | 5.1 | 0.7 | -1.45 | 8.40 | 38.5 | -30.1 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 25.67 | V | 5.2 | 0.7 | -1.45 | 19.05 | 38.5 | -19.4 | |
| 836.50 | 16.07 | H | 5.2 | 0.7 | -1.45 | 9.45 | 38.5 | -29.0 | |
| High Ch | | | | | | | | | |
| 846.50 | 24.89 | V | 5.2 | 0.7 | -1.45 | 18.26 | 38.5 | -20.2 | |
| 846.50 | 16.32 | H | 5.2 | 0.7 | -1.45 | 9.69 | 38.5 | -28.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 5MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 5MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 826.50 | 23.55 | V | 5.1 | 0.7 | -1.45 | 16.98 | 38.5 | -21.5 | |
| 826.50 | 14.12 | H | 5.1 | 0.7 | -1.45 | 7.55 | 38.5 | -30.9 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 24.90 | V | 5.2 | 0.7 | -1.45 | 18.28 | 38.5 | -20.2 | |
| 836.50 | 15.30 | H | 5.2 | 0.7 | -1.45 | 8.68 | 38.5 | -29.8 | |
| High Ch | | | | | | | | | |
| 846.50 | 24.01 | V | 5.2 | 0.7 | -1.45 | 17.38 | 38.5 | -21.1 | |
| 846.50 | 15.55 | H | 5.2 | 0.7 | -1.45 | 8.92 | 38.5 | -29.5 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 5MHz 16QAM

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 10MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 829.00 | 24.45 | V | 5.1 | 0.7 | -1.45 | 17.87 | 38.5 | -20.6 | |
| 829.00 | 15.04 | H | 5.1 | 0.7 | -1.45 | 8.46 | 38.5 | -30.0 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 25.65 | V | 5.2 | 0.7 | -1.45 | 19.03 | 38.5 | -19.4 | |
| 836.50 | 15.95 | H | 5.2 | 0.7 | -1.45 | 9.33 | 38.5 | -29.1 | |
| High Ch | | | | | | | | | |
| 844.00 | 24.83 | V | 5.2 | 0.7 | -1.45 | 18.20 | 38.5 | -20.2 | |
| 844.00 | 16.19 | H | 5.2 | 0.7 | -1.45 | 9.47 | 38.5 | -29.0 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 10MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/09/2016**
**Test Engineer: Mark Nolting**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 5, 10MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 829.00 | 23.65 | V | 5.1 | 0.7 | -1.45 | 17.07 | 38.5 | -21.4 | |
| 829.00 | 14.06 | H | 5.1 | 0.7 | -1.45 | 7.48 | 38.5 | -31.0 | |
| Mid Ch | | | | | | | | | |
| 836.50 | 24.95 | V | 5.2 | 0.7 | -1.45 | 18.33 | 38.5 | -20.1 | |
| 836.50 | 15.15 | H | 5.2 | 0.7 | -1.45 | 8.53 | 38.5 | -29.9 | |
| High Ch | | | | | | | | | |
| 844.00 | 24.09 | V | 5.2 | 0.7 | -1.45 | 17.46 | 38.5 | -21.0 | |
| 844.00 | 15.24 | H | 5.2 | 0.7 | -1.45 | 8.61 | 38.5 | -29.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B5 10MHz 16QAM

**LTE Band 7**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | EIRP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 5 | QPSK | 1/0 | 2502.5 | 20.49 | 111.94 |
| | | 1/0 | 2535 | 20.39 | 109.40 |
| | | 1/0 | 2567.5 | 20.83 | 121.06 |
| | 16QAM | 1/0 | 2502.5 | 20.48 | 111.69 |
| | | 1/0 | 2535 | 20.34 | 108.14 |
| | | 1/0 | 2567.5 | 20.74 | 118.58 |
| 10 | QPSK | 1/0 | 2505 | 20.31 | 107.40 |
| | | 1/0 | 2535 | 19.80 | 95.50 |
| | | 1/0 | 2565 | 21.46 | 139.96 |
| | 16QAM | 1/0 | 2505 | 20.13 | 103.04 |
| | | 1/0 | 2535 | 19.64 | 92.04 |
| | | 1/0 | 2565 | 21.43 | 139.00 |
| 15 | QPSK | 1/0 | 2507.5 | 19.64 | 92.04 |
| | | 1/0 | 2535 | 19.21 | 83.37 |
| | | 1/0 | 2562.5 | 20.93 | 123.88 |
| | 16QAM | 1/0 | 2507.5 | 19.60 | 91.20 |
| | | 1/0 | 2535 | 19.14 | 82.04 |
| | | 1/0 | 2562.5 | 20.87 | 122.18 |
| 20 | QPSK | 1/0 | 2510 | 19.83 | 96.16 |
| | | 1/0 | 2535 | 19.22 | 83.56 |
| | | 1/0 | 2560 | 20.69 | 117.22 |
| | 16QAM | 1/0 | 2510 | 19.81 | 95.72 |
| | | 1/0 | 2535 | 19.20 | 83.18 |
| | | 1/0 | 2560 | 20.58 | 114.29 |

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 5M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2502.50 | 24.55 | V | 9.6 | 5.5 | 20.49 | 33.0 | -12.5 | Pk |
| 2502.50 | 21.44 | H | 9.6 | 5.5 | 17.38 | 33.0 | -15.6 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 24.44 | V | 9.6 | 5.6 | 20.39 | 33.0 | -12.6 | Pk |
| 2535.00 | 21.82 | H | 9.6 | 5.6 | 17.77 | 33.0 | -15.2 | Pk |
| High Ch | | | | | | | | |
| 2567.50 | 24.87 | V | 9.7 | 5.7 | 20.83 | 33.0 | -12.2 | Pk |
| 2567.50 | 18.51 | H | 9.7 | 5.7 | 14.47 | 33.0 | -18.5 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 5MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 5M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2502.50 | 24.54 | V | 9.6 | 5.5 | 20.48 | 33.0 | -12.5 | Pk |
| 2502.50 | 21.30 | H | 9.6 | 5.5 | 17.24 | 33.0 | -15.8 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 24.39 | V | 9.6 | 5.6 | 20.34 | 33.0 | -12.7 | Pk |
| 2535.00 | 21.78 | H | 9.6 | 5.6 | 17.73 | 33.0 | -15.3 | Pk |
| High Ch | | | | | | | | |
| 2567.50 | 24.78 | V | 9.7 | 5.7 | 20.74 | 33.0 | -12.3 | Pk |
| 2567.50 | 18.40 | H | 9.7 | 5.7 | 14.36 | 33.0 | -18.6 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 5MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 10M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2505.00 | 24.37 | V | 9.6 | 5.5 | 20.31 | 33.0 | -12.7 | Pk |
| 2505.00 | 21.78 | H | 9.6 | 5.5 | 17.72 | 33.0 | -15.3 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.85 | V | 9.6 | 5.6 | 19.80 | 33.0 | -13.2 | Pk |
| 2535.00 | 22.28 | H | 9.6 | 5.6 | 18.23 | 33.0 | -14.8 | Pk |
| High Ch | | | | | | | | |
| 2565.00 | 25.49 | V | 9.7 | 5.7 | 21.46 | 33.0 | -11.5 | Pk |
| 2565.00 | 23.19 | H | 9.7 | 5.7 | 19.16 | 33.0 | -13.8 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 10MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 10M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2505.00 | 24.19 | V | 9.6 | 5.5 | 20.13 | 33.0 | -12.9 | Pk |
| 2505.00 | 21.74 | H | 9.6 | 5.5 | 17.68 | 33.0 | -15.3 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.69 | V | 9.6 | 5.6 | 19.64 | 33.0 | -13.4 | Pk |
| 2535.00 | 22.25 | H | 9.6 | 5.6 | 18.20 | 33.0 | -14.8 | Pk |
| High Ch | | | | | | | | |
| 2565.00 | 25.46 | V | 9.7 | 5.7 | 21.43 | 33.0 | -11.6 | Pk |
| 2565.00 | 23.02 | H | 9.7 | 5.7 | 18.99 | 33.0 | -14.0 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 10MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 15M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2507.50 | 23.70 | V | 9.6 | 5.5 | 19.64 | 33.0 | -13.4 | Pk |
| 2507.50 | 21.02 | H | 9.6 | 5.5 | 16.96 | 33.0 | -16.0 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.26 | V | 9.6 | 5.6 | 19.21 | 33.0 | -13.8 | Pk |
| 2535.00 | 21.44 | H | 9.6 | 5.6 | 17.39 | 33.0 | -15.6 | Pk |
| High Ch | | | | | | | | |
| 2562.50 | 24.96 | V | 9.7 | 5.7 | 20.93 | 33.0 | -12.1 | Pk |
| 2562.50 | 21.91 | H | 9.7 | 5.7 | 17.88 | 33.0 | -15.1 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 15MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 15M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2507.50 | 23.66 | V | 9.6 | 5.5 | 19.60 | 33.0 | -13.4 | Pk |
| 2507.50 | 20.98 | H | 9.6 | 5.5 | 16.92 | 33.0 | -16.1 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.19 | V | 9.6 | 5.6 | 19.14 | 33.0 | -13.9 | Pk |
| 2535.00 | 21.36 | H | 9.6 | 5.6 | 17.31 | 33.0 | -15.7 | Pk |
| High Ch | | | | | | | | |
| 2562.50 | 24.90 | V | 9.7 | 5.7 | 20.87 | 33.0 | -12.1 | Pk |
| 2562.50 | 21.89 | H | 9.7 | 5.7 | 17.86 | 33.0 | -15.1 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 15MHz 16QAM

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 20M, QPSK**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2510.00 | 23.89 | V | 9.6 | 5.5 | 19.83 | 33.0 | -13.2 | Pk |
| 2510.00 | 20.21 | H | 9.6 | 5.5 | 16.15 | 33.0 | -16.8 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.27 | V | 9.6 | 5.6 | 19.22 | 33.0 | -13.8 | Pk |
| 2535.00 | 21.40 | H | 9.6 | 5.6 | 17.35 | 33.0 | -15.6 | Pk |
| High Ch | | | | | | | | |
| 2560.00 | 24.72 | V | 9.7 | 5.7 | 20.69 | 33.0 | -12.3 | Pk |
| 2560.00 | 22.52 | H | 9.7 | 5.7 | 18.49 | 33.0 | -14.5 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 20MHz QPSK

**Fundamental Substitution Measurement (Fc > 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/08/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE sample #1)**
**Mode: LTE 7, 20M, 16QAM**

**Test Equipment:**
**Substitution:** Horn antenna AT0078, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|
| Low Ch | | | | | | | | |
| 2510.00 | 23.87 | V | 9.6 | 5.5 | 19.81 | 33.0 | -13.2 | Pk |
| 2510.00 | 20.18 | H | 9.6 | 5.5 | 16.12 | 33.0 | -16.9 | Pk |
| Mid Ch | | | | | | | | |
| 2535.00 | 23.25 | V | 9.6 | 5.6 | 19.20 | 33.0 | -13.8 | Pk |
| 2535.00 | 21.38 | H | 9.6 | 5.6 | 17.33 | 33.0 | -15.7 | Pk |
| High Ch | | | | | | | | |
| 2560.00 | 24.61 | V | 9.7 | 5.7 | 20.58 | 33.0 | -12.4 | Pk |
| 2560.00 | 22.44 | H | 9.7 | 5.7 | 18.41 | 33.0 | -14.6 | Pk |

Rev. 11.02.2015
Note: For Band 4 EIRP limit is 30dBm

LTE B7 20MHz 16QAM

**LTE Band 13**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | ERP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 5 | QPSK | 1/0 | 779.5 | 16.98 | 49.89 |
| | | 1/0 | 782 | 17.16 | 52.00 |
| | | 1/0 | 784.5 | 15.31 | 33.96 |
| | 16QAM | 1/0 | 779.5 | 15.96 | 39.45 |
| | | 1/0 | 782 | 16.33 | 42.95 |
| | | 1/0 | 784.5 | 14.53 | 28.38 |
| 10 | QPSK | 1/0 | 782 | 16.35 | 43.15 |
| | 16QAM | 1/0 | 782 | 15.51 | 35.56 |

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 13, 5MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 779.50 | 23.13 | V | 4.9 | 0.9 | -1.20 | 16.98 | 38.5 | -21.5 | |
| 779.50 | 13.65 | H | 4.9 | 0.9 | -1.20 | 7.50 | 38.5 | -31.0 | |
| Mid Ch | | | | | | | | | |
| 782.00 | 23.35 | V | 5.0 | 0.9 | -1.23 | 17.16 | 38.5 | -21.3 | |
| 782.00 | 9.80 | H | 5.0 | 0.9 | -1.23 | 3.61 | 38.5 | -34.8 | |
| High Ch | | | | | | | | | |
| 784.50 | 21.55 | V | 5.0 | 0.9 | -1.26 | 15.31 | 38.5 | -23.1 | |
| 784.50 | 13.27 | H | 5.0 | 0.9 | -1.26 | 7.03 | 38.5 | -31.4 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 5MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 13, 5MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 779.50 | 22.11 | V | 4.9 | 0.9 | -1.20 | 15.96 | 38.5 | -22.5 | |
| 779.50 | 12.69 | H | 4.9 | 0.9 | -1.20 | 6.54 | 38.5 | -31.9 | |
| Mid Ch | | | | | | | | | |
| 782.00 | 22.52 | V | 5.0 | 0.9 | -1.23 | 16.33 | 38.5 | -22.1 | |
| 782.00 | 8.95 | H | 5.0 | 0.9 | -1.23 | 2.76 | 38.5 | -35.7 | |
| High Ch | | | | | | | | | |
| 784.50 | 20.77 | V | 5.0 | 0.9 | -1.26 | 14.53 | 38.5 | -23.9 | |
| 784.50 | 12.41 | H | 5.0 | 0.9 | -1.26 | 6.17 | 38.5 | -32.3 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 5MHz 16QAM

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 13, 10MHz, QPSK**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| | 0.00 | V | | | -2.15 | | 38.5 | | |
| | 0.00 | H | | | -2.15 | | 38.5 | | |
| Mid Ch | | | | | | | | | |
| 782.00 | 22.54 | V | 5.0 | 0.9 | -1.23 | 16.35 | 38.5 | -22.1 | |
| 782.00 | 12.00 | H | 5.0 | 0.9 | -1.23 | 5.81 | 38.5 | -32.6 | |
| High Ch | | | | | | | | | |
| | 0.00 | V | | | -2.15 | | 38.5 | | |
| | 0.00 | H | | | -2.15 | | 38.5 | | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 10MHz QPSK

**Fundamental Substitution Measurement (Fc < 1GHz)**
**UL LLC, Chamber N**

**Company: SOMC**
**Project #: 16J23633N**
**Date: 08/10/2016**
**Test Engineer: Brian Kiewra / John Manser**
**Configuration: Standalone (LTE Sample #1)**
**Mode: LTE 13, 10MHz, 16QAM**

**Test Equipment:**
**Substitution:** Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| | 0.00 | V | | | -2.15 | | 38.5 | | |
| | 0.00 | H | | | -2.15 | | 38.5 | | |
| Mid Ch | | | | | | | | | |
| 782.00 | 21.70 | V | 5.0 | 0.9 | -1.23 | 15.51 | 38.5 | -22.9 | |
| 782.00 | 11.12 | H | 5.0 | 0.9 | -1.23 | 4.93 | 38.5 | -33.5 | |
| High Ch | | | | | | | | | |
| | 0.00 | V | | | -2.15 | | 38.5 | | |
| | 0.00 | H | | | -2.15 | | 38.5 | | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B13 10MHz 16QAM

**LTE Band 17**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | ERP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 5 | QPSK | 1/0 | 706.5 | 18.79 | 75.68 |
| | | 1/0 | 710 | 19.09 | 81.10 |
| | | 1/0 | 713.5 | 19.46 | 88.31 |
| | 16QAM | 1/0 | 706.5 | 18.06 | 63.97 |
| | | 1/0 | 710 | 18.17 | 65.61 |
| | | 1/0 | 713.5 | 18.63 | 72.95 |
| 10 | QPSK | 1/0 | 709 | 19.21 | 83.37 |
| | | 1/0 | 710 | 19.34 | 85.90 |
| | | 1/0 | 711 | 19.43 | 87.70 |
| | 16QAM | 1/0 | 709 | 18.36 | 68.55 |
| | | 1/0 | 710 | 18.33 | 68.08 |
| | | 1/0 | 711 | 18.54 | 71.45 |

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633N
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 5MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 706.50 | 23.78 | V | 4.7 | 1.9 | -0.23 | 18.79 | 38.5 | -19.7 | |
| 706.50 | 12.24 | H | 4.7 | 1.9 | -0.23 | 7.33 | 38.5 | -31.1 | |
| Mid Ch | | | | | | | | | |
| 710.00 | 24.06 | V | 4.7 | 1.9 | -0.27 | 19.09 | 38.5 | -19.4 | |
| 710.00 | 12.50 | H | 4.7 | 1.9 | -0.27 | 7.53 | 38.5 | -30.9 | |
| High Ch | | | | | | | | | |
| 713.50 | 24.49 | V | 4.7 | 1.8 | -0.31 | 19.46 | 38.5 | -19.0 | |
| 713.50 | 12.71 | H | 4.7 | 1.8 | -0.31 | 7.68 | 38.5 | -30.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 5MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633N
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 5MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 706.50 | 22.97 | V | 4.7 | 1.9 | -0.23 | 18.06 | 38.5 | -20.4 | |
| 706.50 | 11.42 | H | 4.7 | 1.9 | -0.23 | 6.51 | 38.5 | -31.9 | |
| Mid Ch | | | | | | | | | |
| 710.00 | 23.14 | V | 4.7 | 1.9 | -0.27 | 18.17 | 38.5 | -20.3 | |
| 710.00 | 11.55 | H | 4.7 | 1.9 | -0.27 | 6.58 | 38.5 | -31.9 | |
| High Ch | | | | | | | | | |
| 713.50 | 23.66 | V | 4.7 | 1.8 | -0.31 | 18.63 | 38.5 | -19.8 | |
| 713.50 | 11.92 | H | 4.7 | 1.8 | -0.31 | 6.89 | 38.5 | -31.6 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 5MHz 16QAM

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633N
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 10MHz, QPSK

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 709.00 | 24.17 | V | 4.7 | 1.9 | -0.26 | 19.21 | 38.5 | -19.2 | |
| 709.00 | 12.43 | H | 4.7 | 1.9 | -0.26 | 7.47 | 38.5 | -31.0 | |
| Mid Ch | | | | | | | | | |
| 710.00 | 24.31 | V | 4.7 | 1.9 | -0.27 | 19.34 | 38.5 | -19.1 | |
| 710.00 | 12.39 | H | 4.7 | 1.9 | -0.27 | 7.42 | 38.5 | -31.0 | |
| High Ch | | | | | | | | | |
| 711.00 | 24.42 | V | 4.7 | 1.9 | -0.28 | 19.43 | 38.5 | -19.0 | |
| 711.00 | 12.62 | H | 4.7 | 1.9 | -0.28 | 7.63 | 38.5 | -30.8 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 10MHz QPSK

Fundamental Substitution Measurement (Fc < 1GHz)
UL LLC, Chamber N

Company: SOMC
Project #: 16J23633N
Date: 08/11/2016
Test Engineer: Mark Nolting
Configuration: Standalone (LTE Sample #1)
Mode: LTE 17, 10MHz, 16QAM

Test Equipment:
Substitution: Dipole antenna AT0016, cable CBL055, and signal-source T374

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low | | | | | | | | | |
| 709.00 | 23.32 | V | 4.7 | 1.9 | -0.26 | 18.36 | 38.5 | -20.1 | |
| 709.00 | 11.61 | H | 4.7 | 1.9 | -0.26 | 6.65 | 38.5 | -31.8 | |
| Mid Ch | | | | | | | | | |
| 710.00 | 23.30 | V | 4.7 | 1.9 | -0.27 | 18.33 | 38.5 | -20.1 | |
| 710.00 | 11.51 | H | 4.7 | 1.9 | -0.27 | 6.54 | 38.5 | -31.9 | |
| High Ch | | | | | | | | | |
| 711.00 | 23.53 | V | 4.7 | 1.9 | -0.28 | 18.54 | 38.5 | -19.9 | |
| 711.00 | 11.52 | H | 4.7 | 1.9 | -0.28 | 6.53 | 38.5 | -31.9 | |

Rev. 11.02.2015
Note: For Band 13/17 ERP limit is 34.77dBm; For Band 26 limit is 50dBm

LTE B17 10MHz 16QAM

**LTE Band 26-Part 90**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | ERP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 1.4 | QPSK | 1/0 | 814.7 | 16.55 | 45.19 |
| | 16QAM | 1/0 | 814.7 | 15.63 | 36.56 |
| 3 | QPSK | 1/0 | 815.5 | 16.65 | 46.24 |
| | 16QAM | 1/0 | 815.5 | 15.78 | 37.84 |
| 5 | QPSK | 1/0 | 816.5 | 16.98 | 49.89 |
| | 16QAM | 1/0 | 816.5 | 16.20 | 41.69 |
| 10 | QPSK | 1/0 | 819 | 15.97 | 39.54 |
| | 16QAM | 1/0 | 819 | 15.13 | 32.58 |

**LTE Band 26-Part 22**

| BW (MHz) | Mode | RB/RB Size | f(MHz) | ERP | |
|---|---|---|---|---|---|
| | | | | dBm | mW |
| 1.4 | QPSK | 1/0 | 824.7 | 17.29 | 53.58 |
| | | 1/0 | 831.5 | 18.06 | 63.97 |
| | | 1/0 | 848.3 | 18.17 | 65.61 |
| | 16QAM | 1/0 | 824.7 | 16.36 | 43.25 |
| | | 1/0 | 831.5 | 17.06 | 50.82 |
| | | 1/0 | 848.3 | 17.23 | 52.84 |
| 3 | QPSK | 1/0 | 825.5 | 17.45 | 55.59 |
| | | 1/0 | 831.5 | 18.06 | 63.97 |
| | | 1/0 | 847.5 | 18.16 | 65.46 |
| | 16QAM | 1/0 | 825.5 | 16.60 | 45.71 |
| | | 1/0 | 831.5 | 17.12 | 51.52 |
| | | 1/0 | 847.5 | 17.35 | 54.33 |
| 5 | QPSK | 1/0 | 826.5 | 17.48 | 55.98 |
| | | 1/0 | 831.5 | 17.82 | 60.53 |
| | | 1/0 | 846.5 | 18.25 | 66.83 |
| | 16QAM | 1/0 | 826.5 | 16.80 | 47.86 |
| | | 1/0 | 831.5 | 16.97 | 49.77 |
| | | 1/0 | 846.5 | 17.49 | 56.10 |
| 10 | QPSK | 1/0 | 829 | 17.10 | 51.29 |
| | | 1/0 | 831.5 | 17.54 | 56.75 |
| | | 1/0 | 844 | 18.17 | 65.61 |
| | 16QAM | 1/0 | 829 | 16.20 | 41.69 |
| | | 1/0 | 831.5 | 16.76 | 47.42 |
| | | 1/0 | 844 | 17.17 | 52.12 |
| 15 | QPSK | 1/0 | 831.5 | 18.08 | 64.27 |
| | | 1/0 | 836.5 | 18.42 | 69.50 |
| | | 1/0 | 841.5 | 18.77 | 75.34 |
| | 16QAM | 1/0 | 831.5 | 17.35 | 54.33 |
| | | 1/0 | 836.5 | 17.59 | 57.41 |
| | | 1/0 | 841.5 | 18.00 | 63.10 |