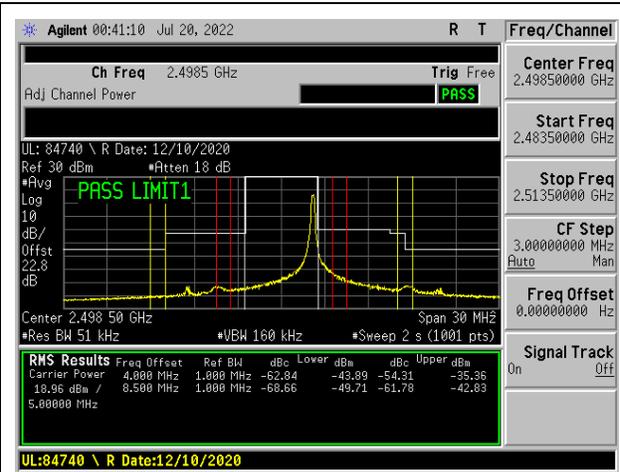
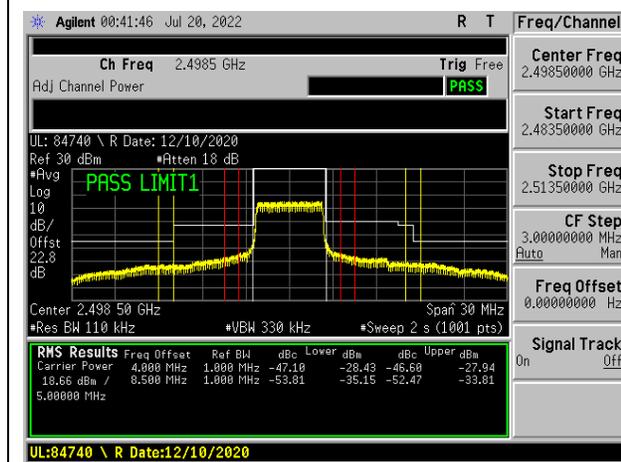


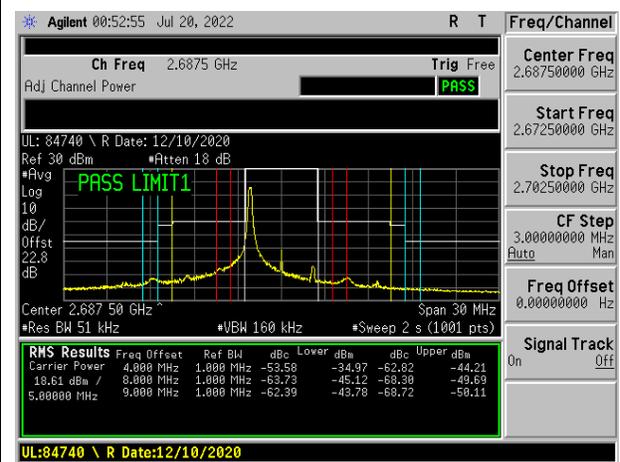
LTE41 5MHz QPSK LOW Ch RB1-0



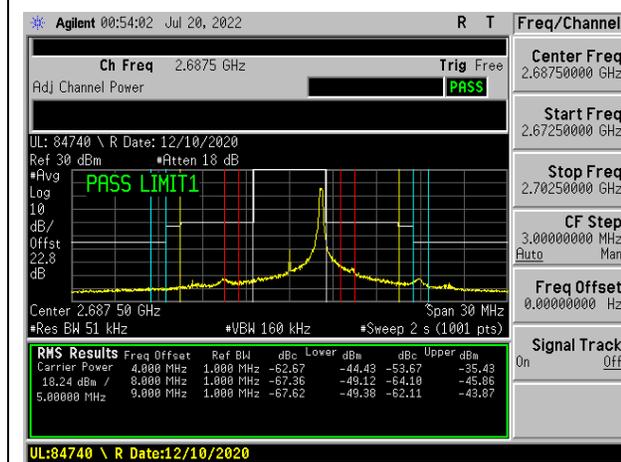
LTE41 5MHz QPSK LOW Ch RB1-24



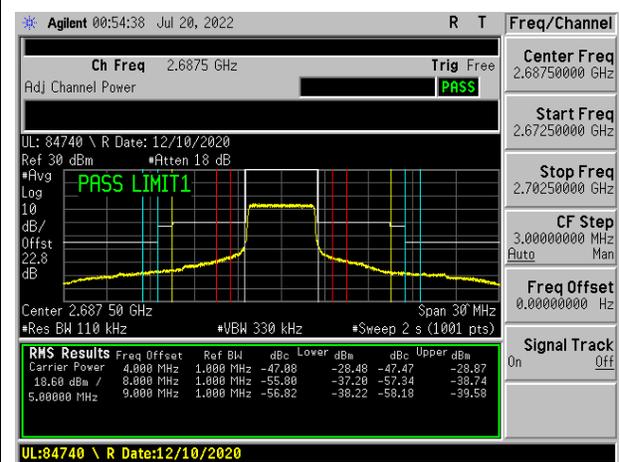
LTE41 5MHz QPSK LOW Ch RB25-0



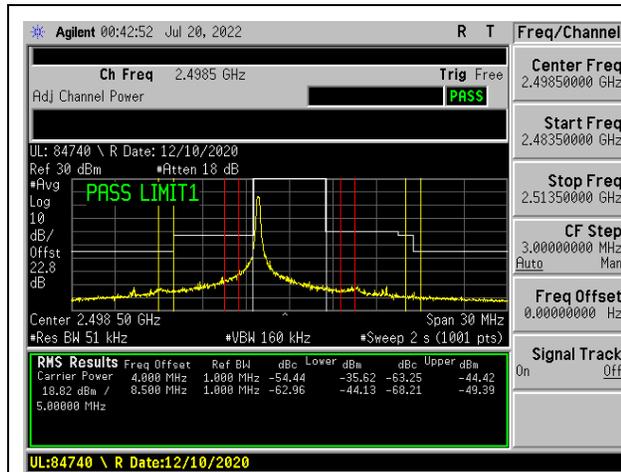
LTE41 5MHz QPSK HIGH Ch RB1-0



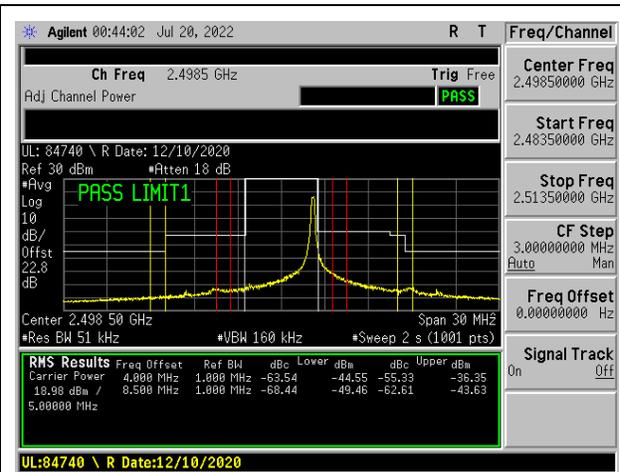
LTE41 5MHz QPSK HIGH Ch RB1-24



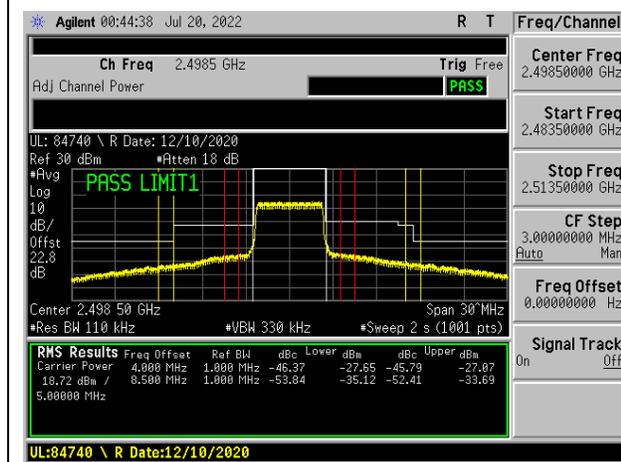
LTE41 5MHz QPSK HIGH Ch RB25-0



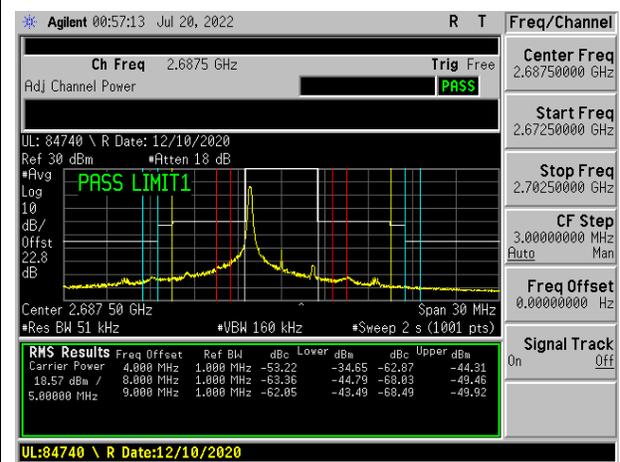
LTE41 5MHz 16QAM LOW Ch RB1-0



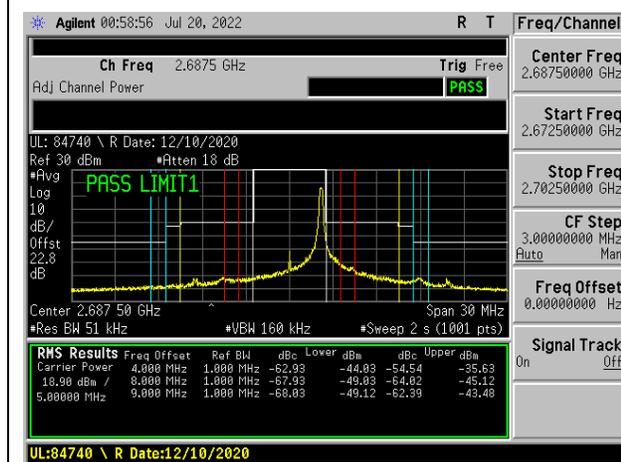
LTE41 5MHz 16QAM LOW Ch RB1-24



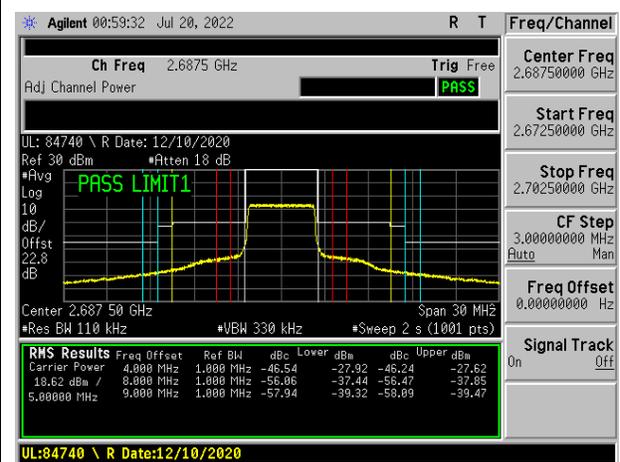
LTE41 5MHz 16QAM LOW Ch RB25-0



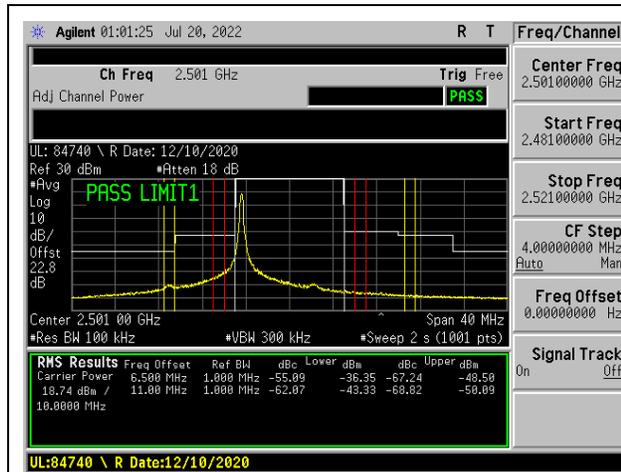
LTE41 5MHz 16QAM HIGH Ch RB1-0



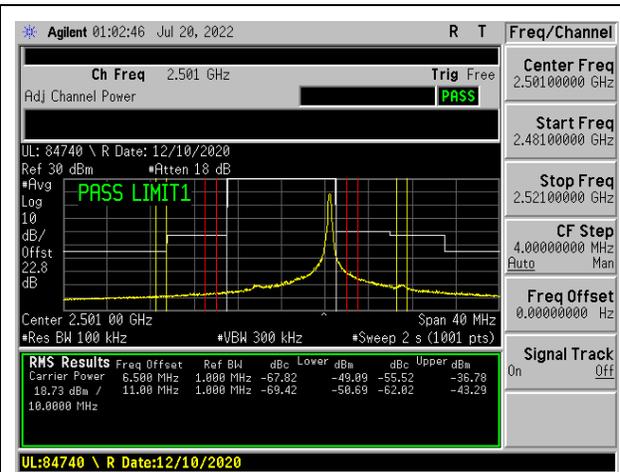
LTE41 5MHz 16QAM HIGH Ch RB1-24



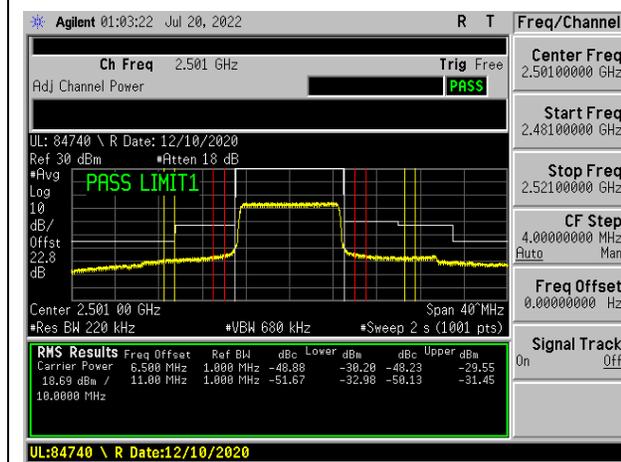
LTE41 5MHz 16QAM HIGH Ch RB25-0



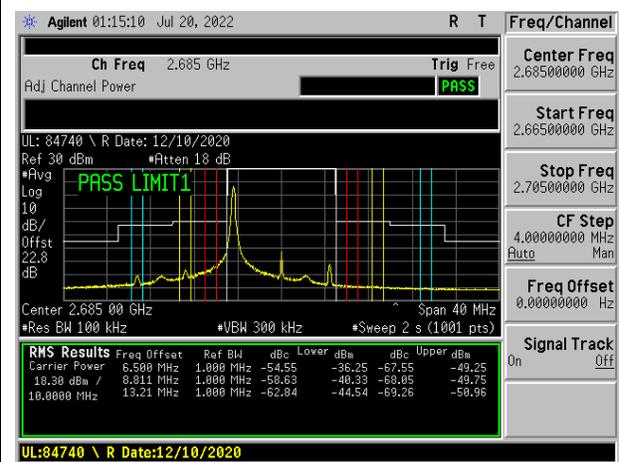
LTE41 10MHz QPSK LOW Ch RB1-0



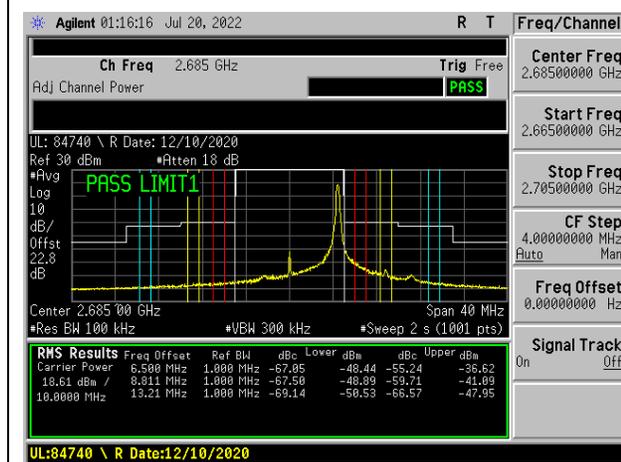
LTE41 10MHz QPSK LOW Ch RB1-49



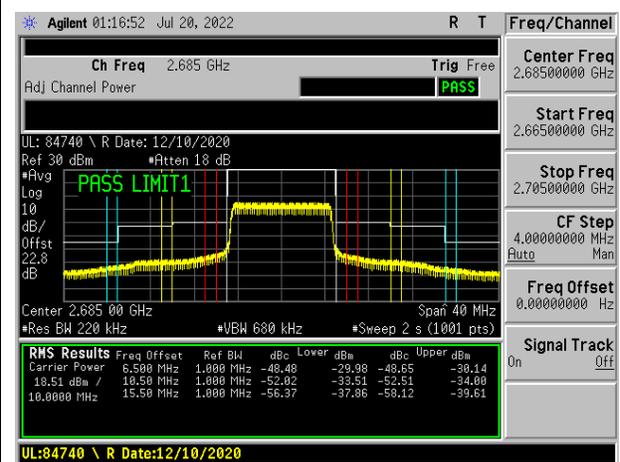
LTE41 10MHz QPSK LOW Ch RB50-0



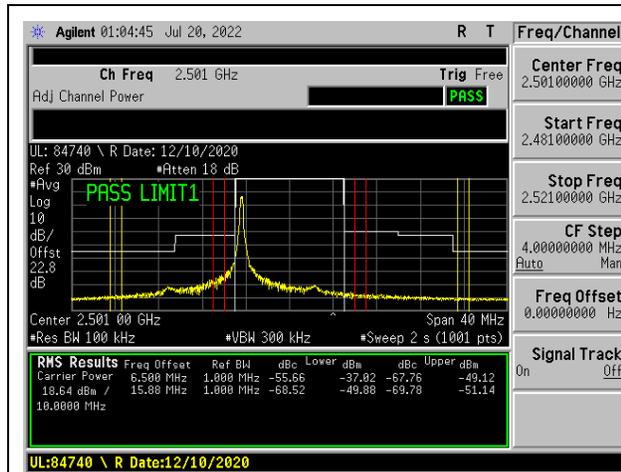
LTE41 10MHz QPSK HIGH Ch RB1-0



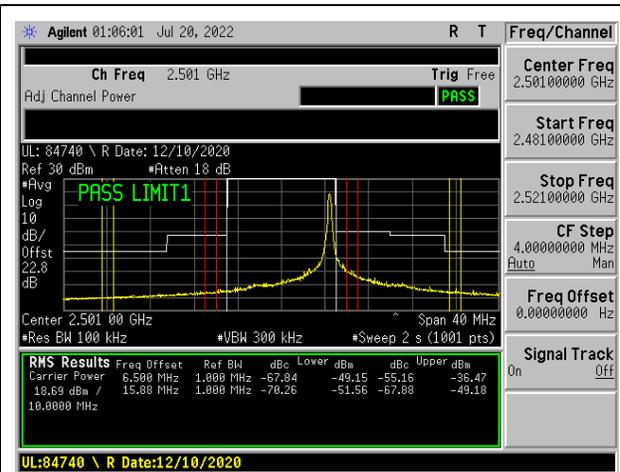
LTE41 10MHz QPSK HIGH Ch RB1-49



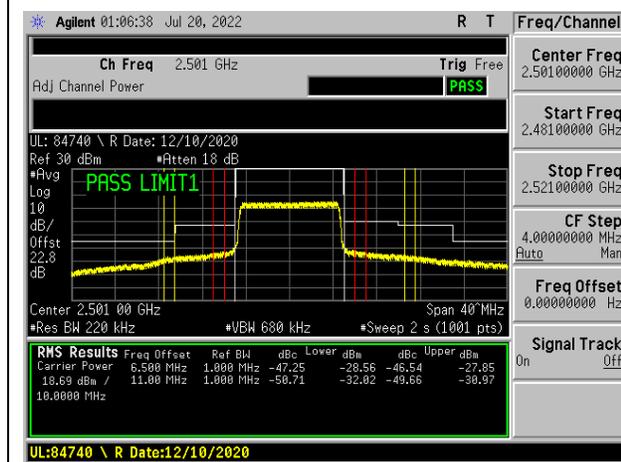
LTE41 10MHz QPSK HIGH Ch RB50-0



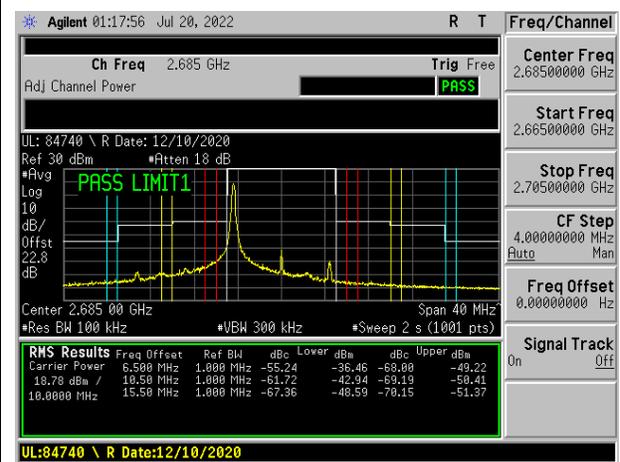
LTE41 10MHz 16QAM LOW Ch RB1-0



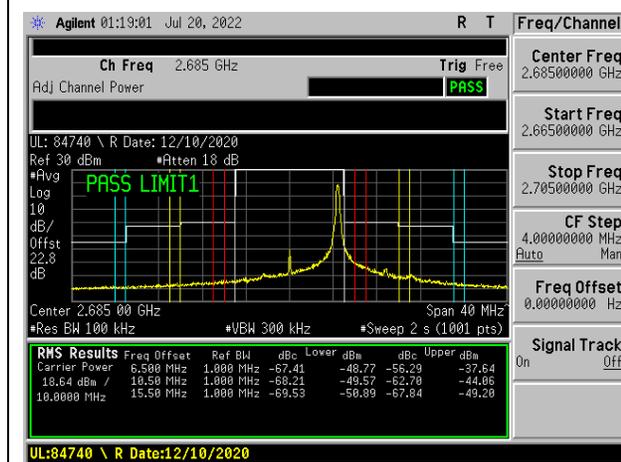
LTE41 10MHz 16QAM LOW Ch RB1-49



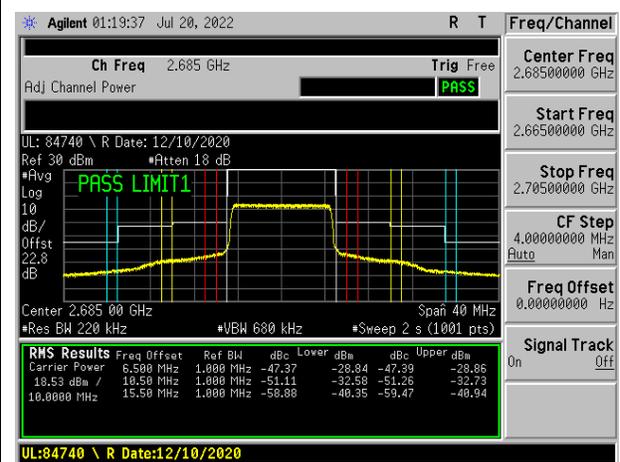
LTE41 10MHz 16QAM LOW Ch RB50-0



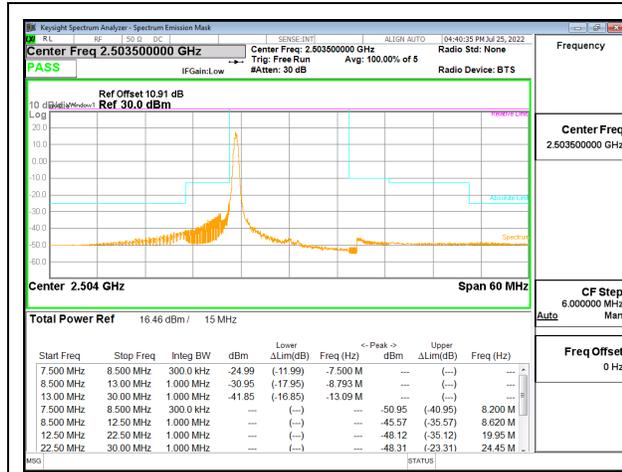
LTE41 10MHz 16QAM HIGH Ch RB1-0



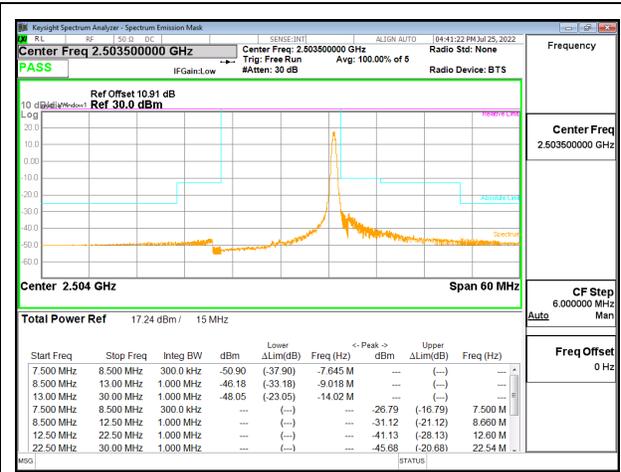
LTE41 10MHz 16QAM HIGH Ch RB1-49



LTE41 10MHz 16QAM HIGH Ch RB50-0



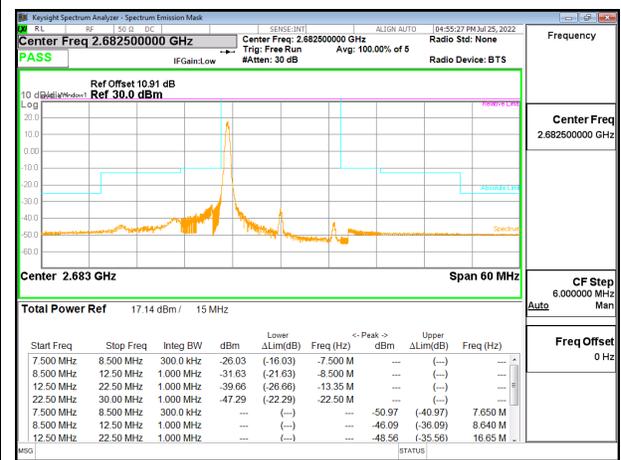
LTE41 15MHz QPSK LOW Ch RB1-0



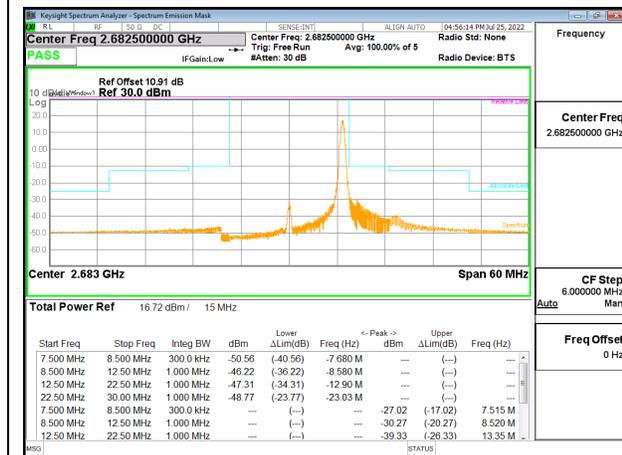
LTE41 15MHz QPSK LOW Ch RB1-74



LTE41 15MHz QPSK LOW Ch RB75-0



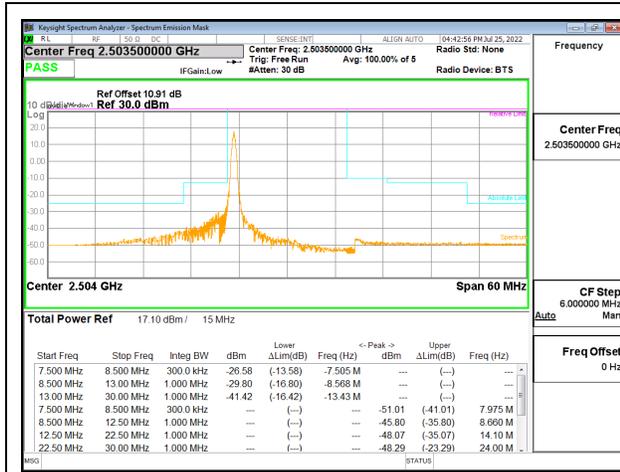
LTE41 15MHz QPSK HIGH Ch RB1-0



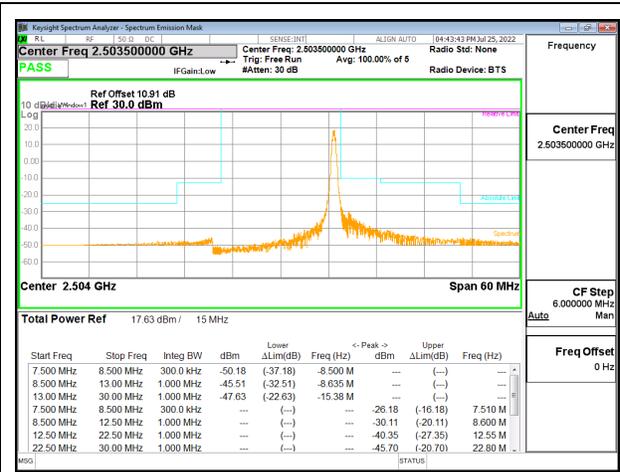
LTE41 15MHz QPSK HIGH Ch RB1-74



LTE41 15MHz QPSK HIGH Ch RB75-0



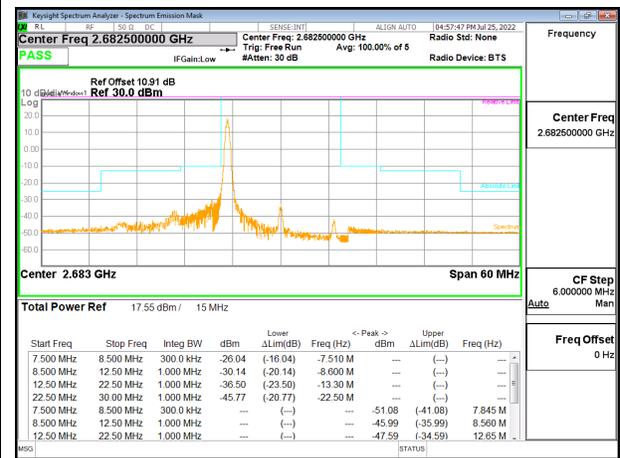
LTE41 15MHz 16QAM LOW Ch RB1-0



LTE41 15MHz 16QAM LOW Ch RB1-74



LTE41 15MHz 16QAM LOW Ch RB75-0



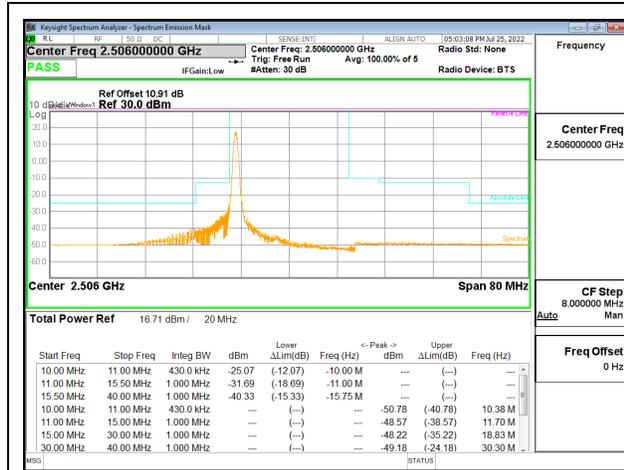
LTE41 15MHz 16QAM HIGH Ch RB1-0



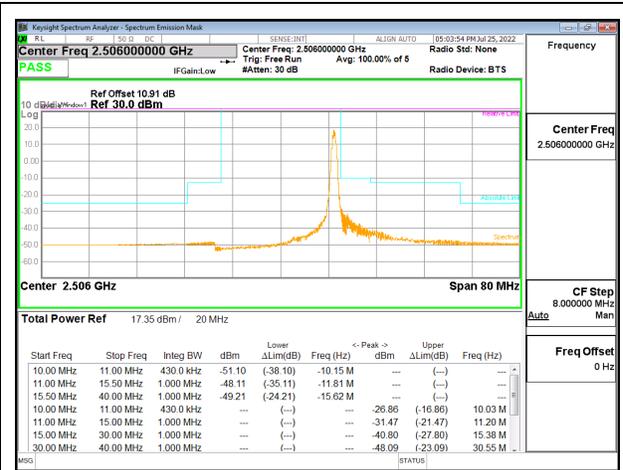
LTE41 15MHz 16QAM HIGH Ch RB1-74



LTE41 15MHz 16QAM HIGH Ch RB75-0



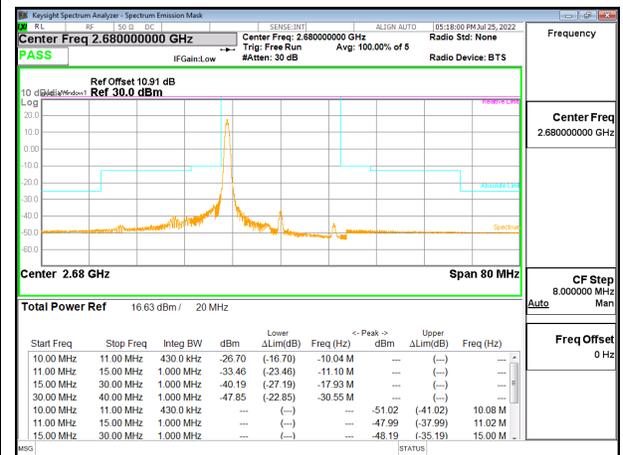
LTE41 20MHz QPSK LOW Ch RB1-0



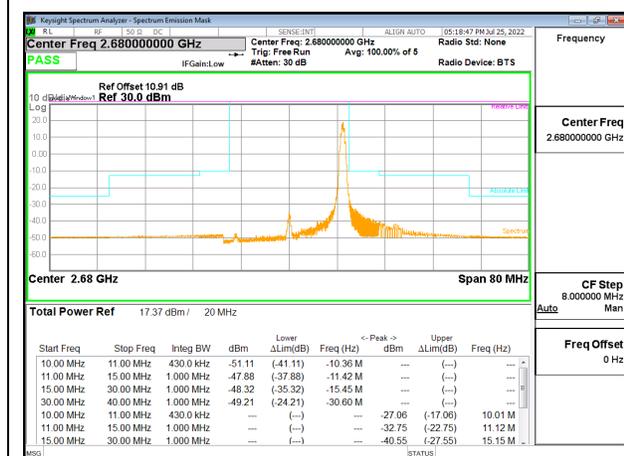
LTE41 20MHz QPSK LOW Ch RB1-99



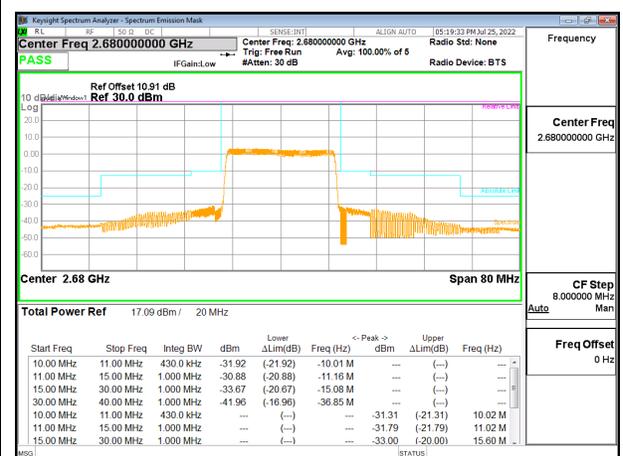
LTE41 20MHz QPSK LOW Ch RB100-0



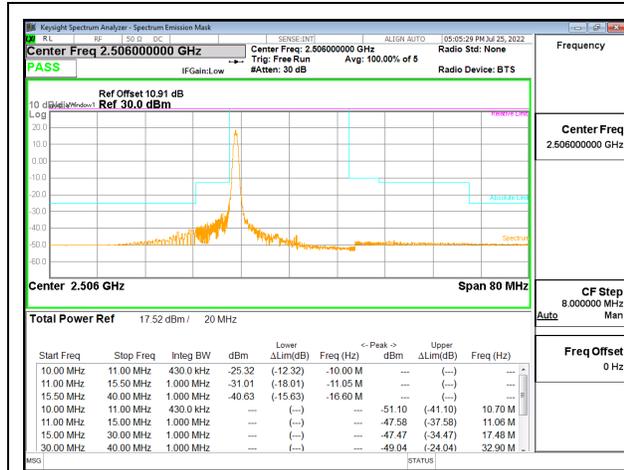
LTE41 20MHz QPSK HIGH Ch RB1-0



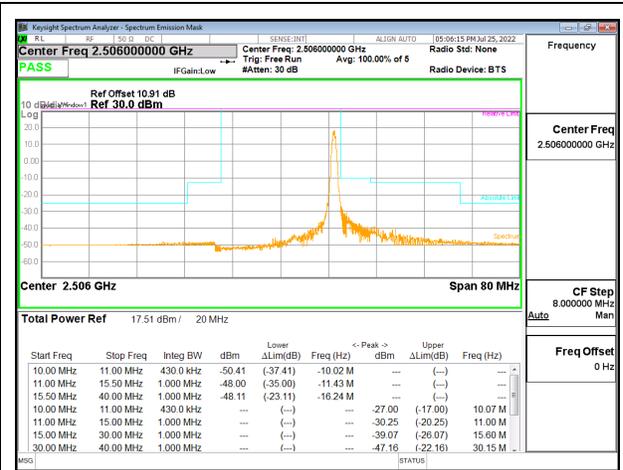
LTE41 20MHz QPSK HIGH Ch RB1-99



LTE41 20MHz QPSK HIGH Ch RB100-0



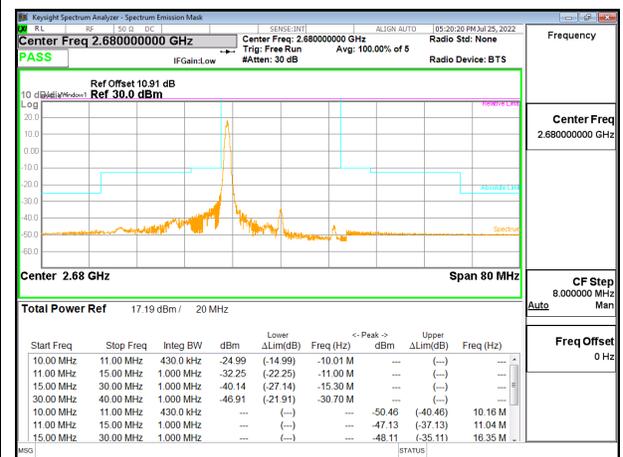
LTE41 20MHz 16QAM LOW Ch RB1-0



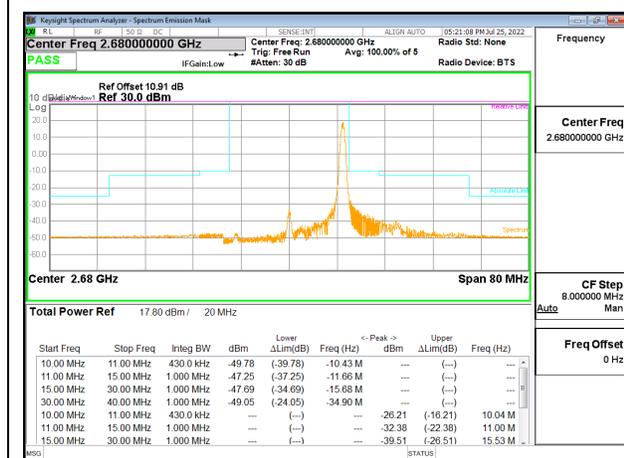
LTE41 20MHz 16QAM LOW Ch RB1-99



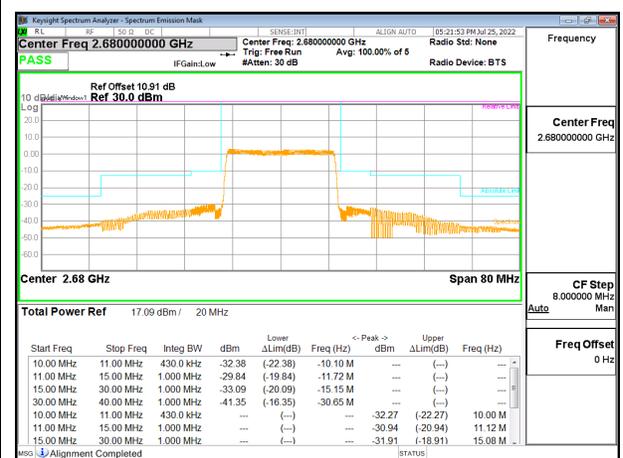
LTE41 20MHz 16QAM LOW Ch RB100-0



LTE41 20MHz 16QAM HIGH Ch RB1-0



LTE41 20MHz 16QAM HIGH Ch RB1-99



LTE41 20MHz 16QAM HIGH Ch RB100-0

9.3. OUT OF BAND EMISSIONS

TEST PROCEDURE

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

For each out of band emissions measurement:

- (v) Set display line at -13 dBm, -25dBm and -40dBm according to the band Limit
- (vi) Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

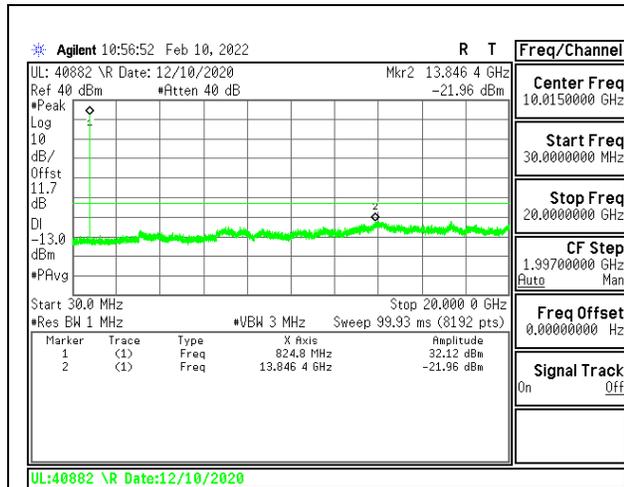
RESULTS

9.3.1. GSM GSM850

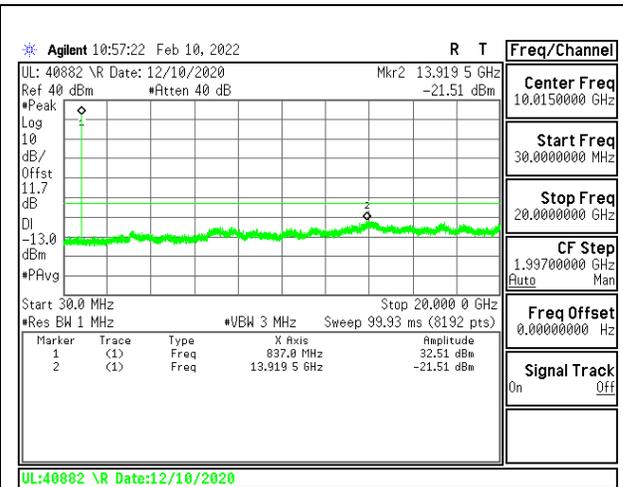
LIMITS

FCC: §22.917

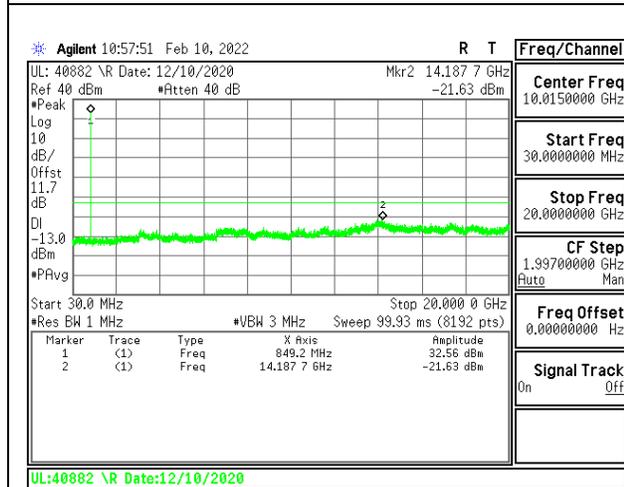
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



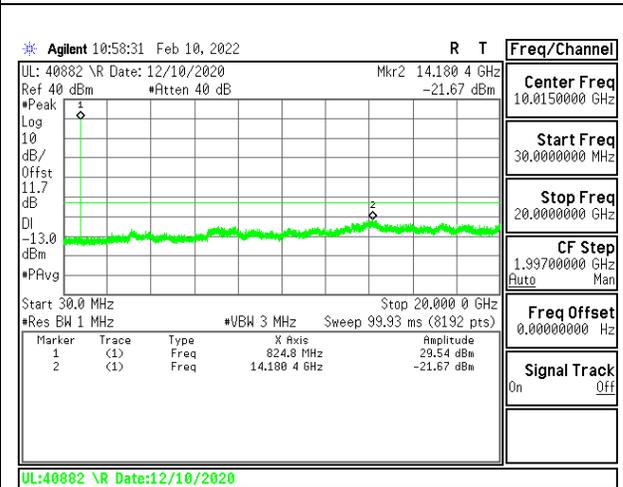
GSM850 GPRS LOW Channel



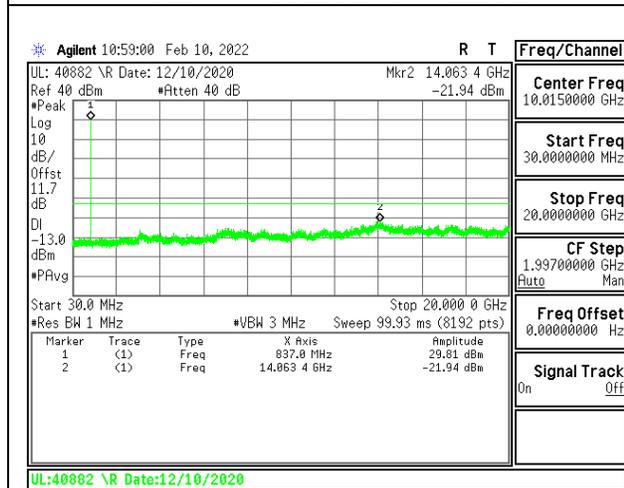
GSM850 GPRS MID Channel



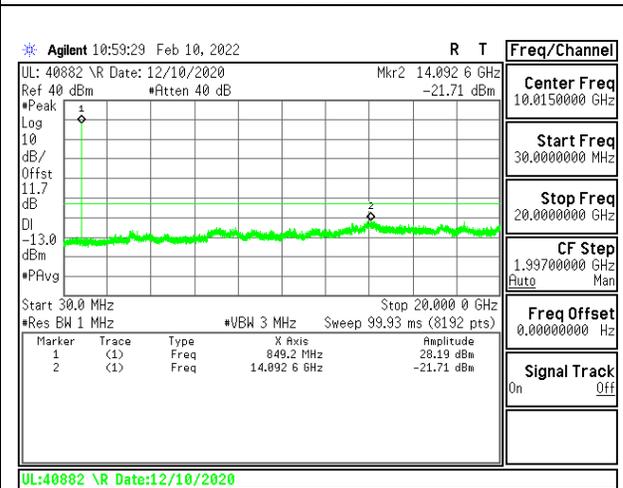
GSM850 GPRS HIGH Channel



GSM850 EGPRS LOW Channel



GSM850 EGPRS MID Channel



GSM850 EGPRS HIGH Channel

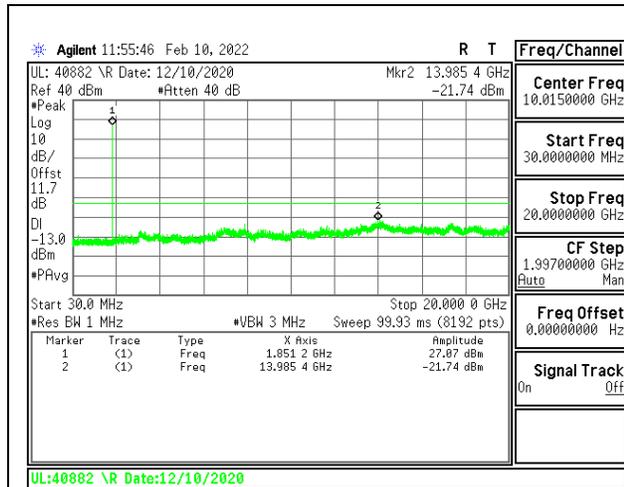
Note: Test was performed on 2022-07-20. Due to a software error on the spectrum analyzer, the internal date, and therefore date reported on the above plots, are incorrect.

9.3.2. GSM GSM1900

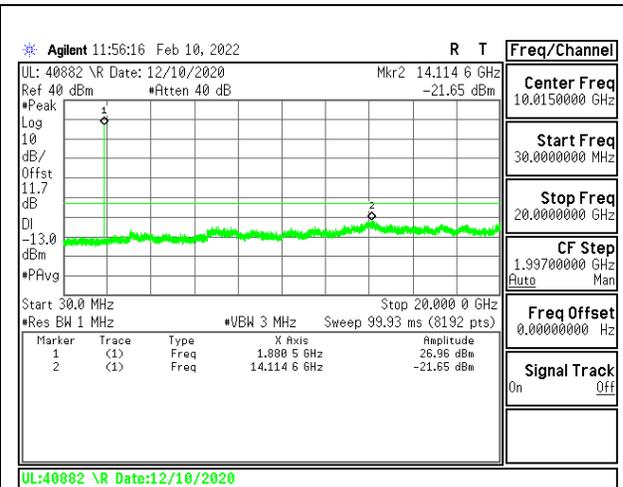
LIMITS

FCC: §24.238 (a)

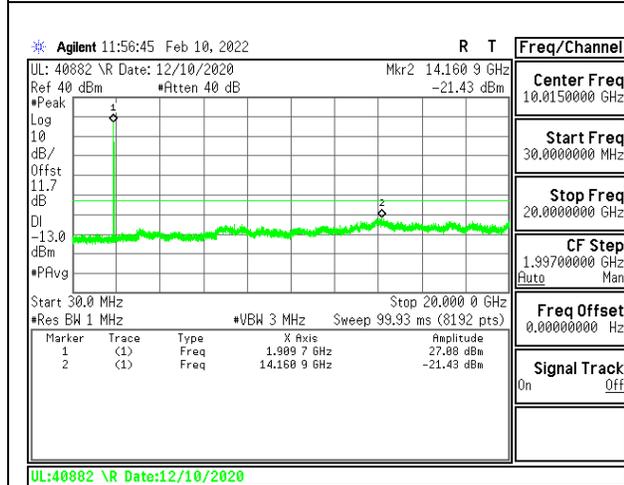
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.



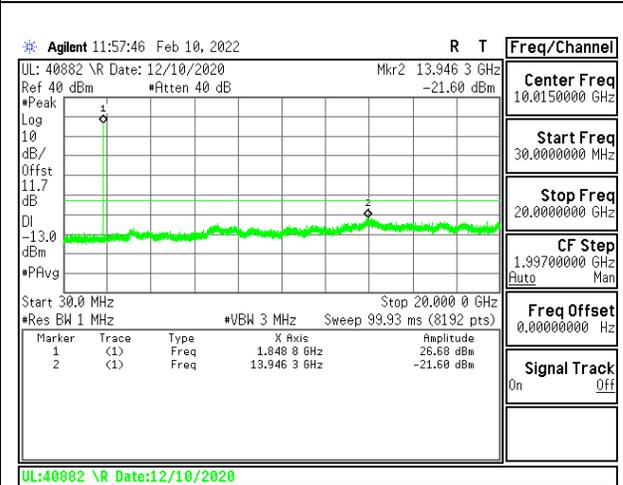
GSM1900 GPRS LOW Channel



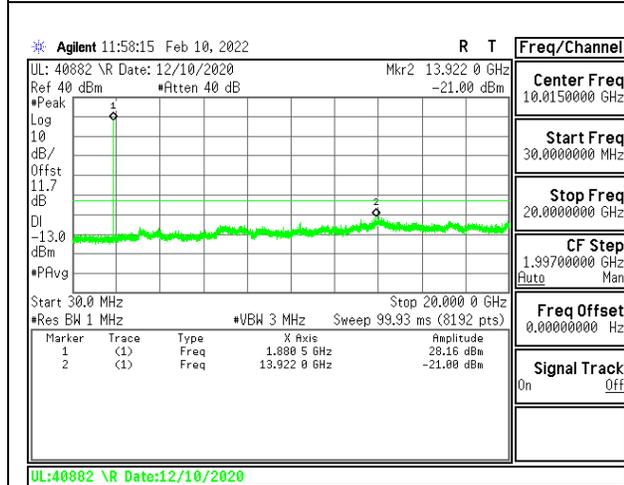
GSM1900 GPRS MID Channel



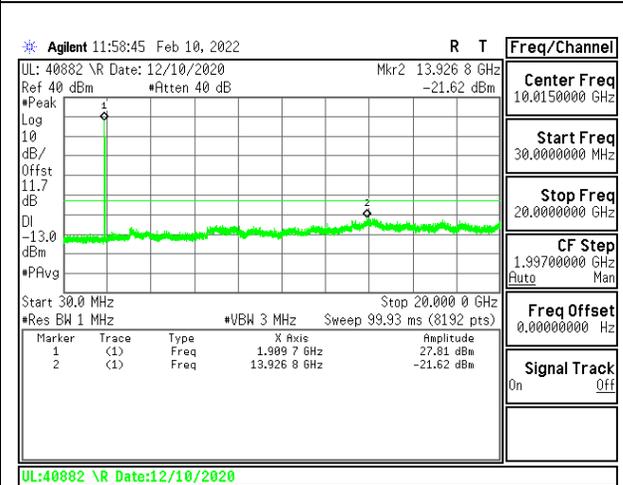
GSM1900 GPRS HIGH Channel



GSM1900 EGPRS LOW Channel



GSM1900 EGPRS MID Channel



GSM1900 EGPRS HIGH Channel

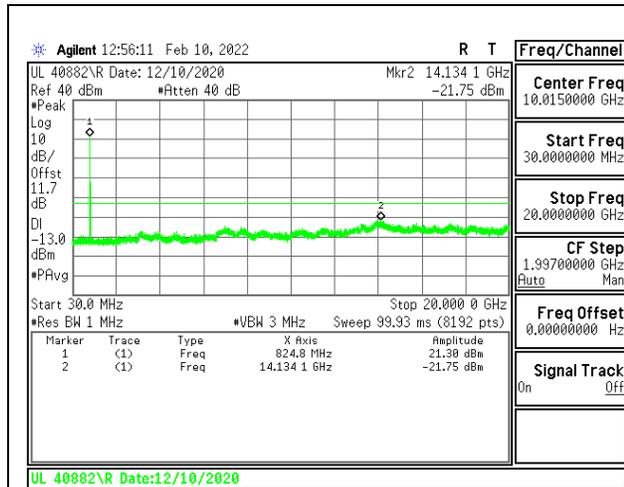
Note: Test was performed on 2022-07-20. Due to a software error on the spectrum analyzer, the internal date, and therefore date reported on the above plots, are incorrect.

9.3.3. WCDMA BAND 5

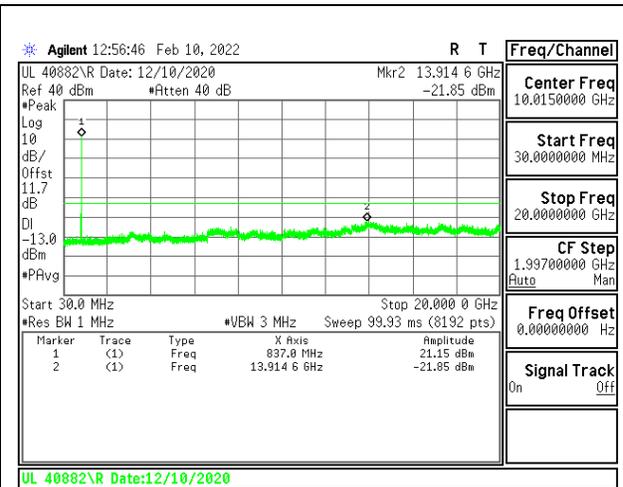
LIMITS

FCC: §22.917

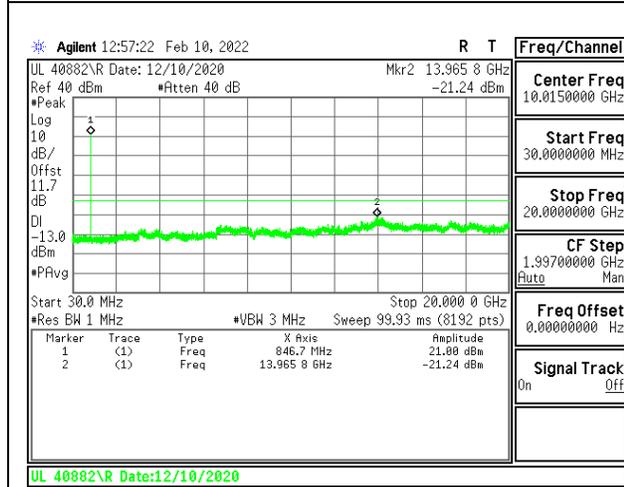
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



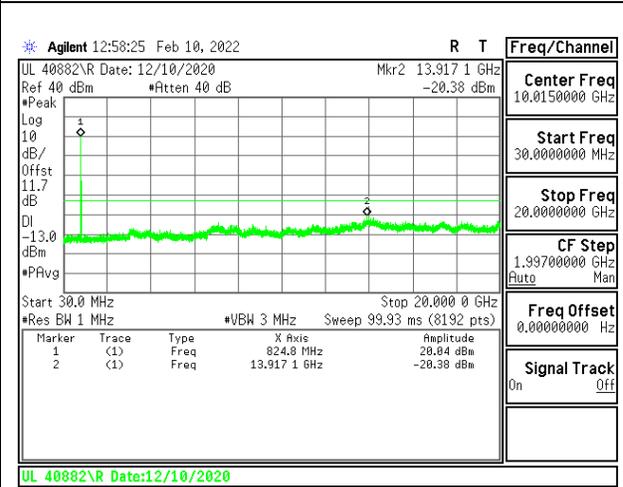
BAND 5 Rel 99 LOW Channel



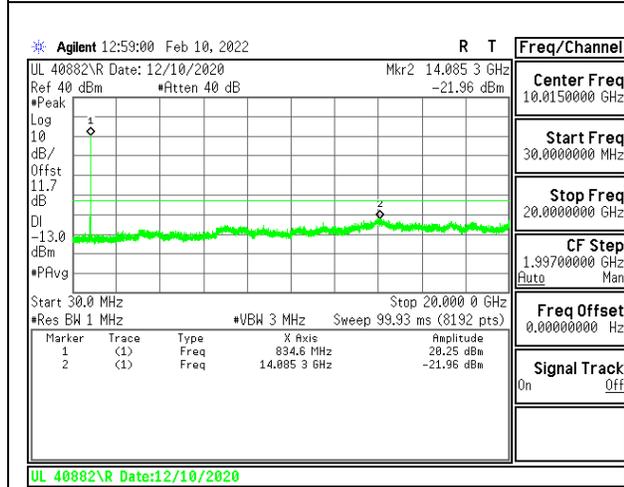
BAND 5 Rel 99 MID Channel



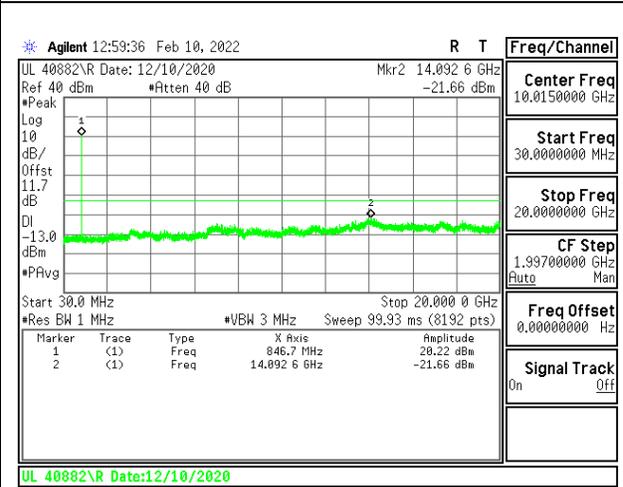
BAND 5 Rel 99 HIGH Channel



BAND 5 HSDPA LOW Channel



BAND 5 HSDPA MID Channel



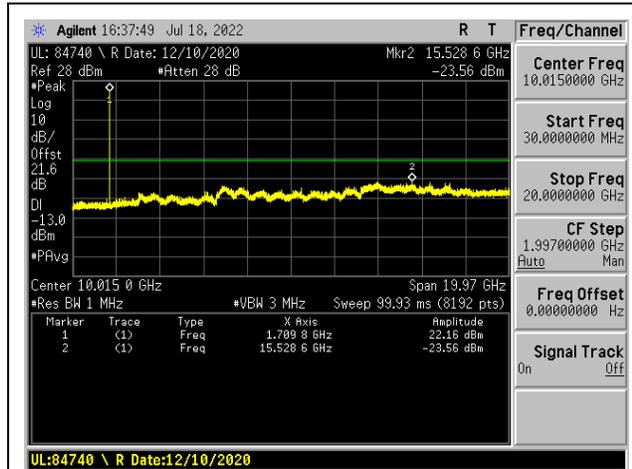
BAND 5 HSDPA HIGH Channel

9.3.4. LTE BAND 4

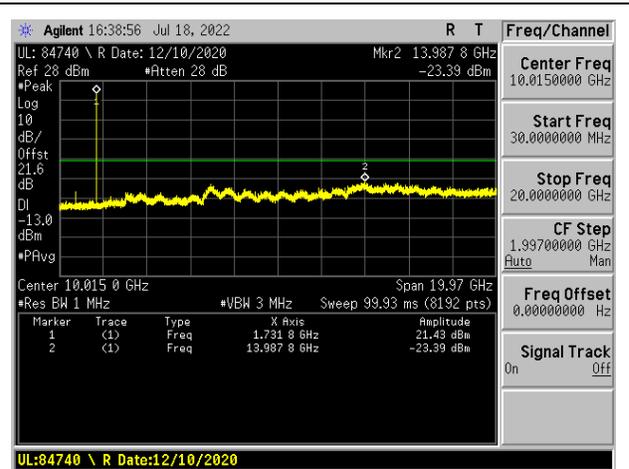
LIMITS

FCC: §27.53(h)

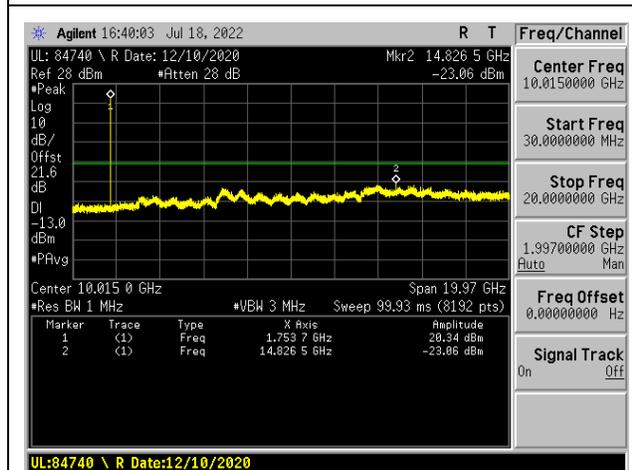
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



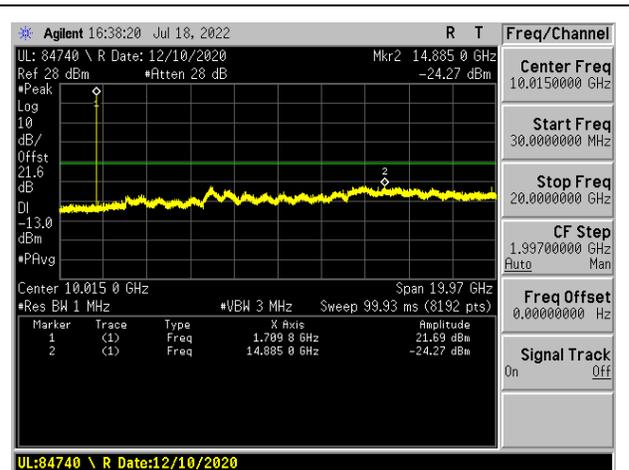
LTE4 1.4MHz QPSK LOW Ch RB1-0



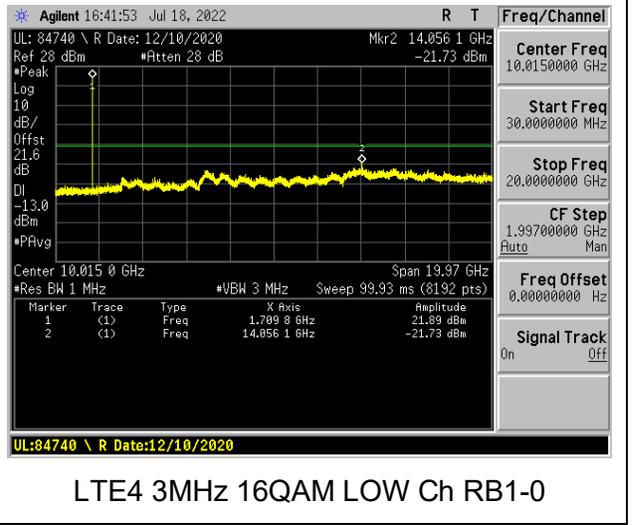
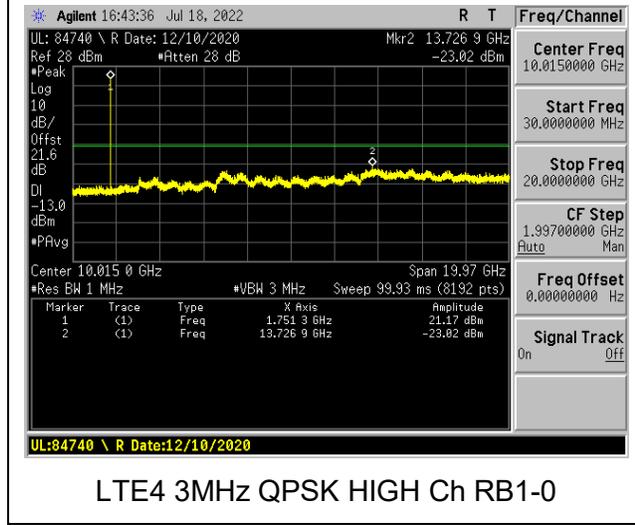
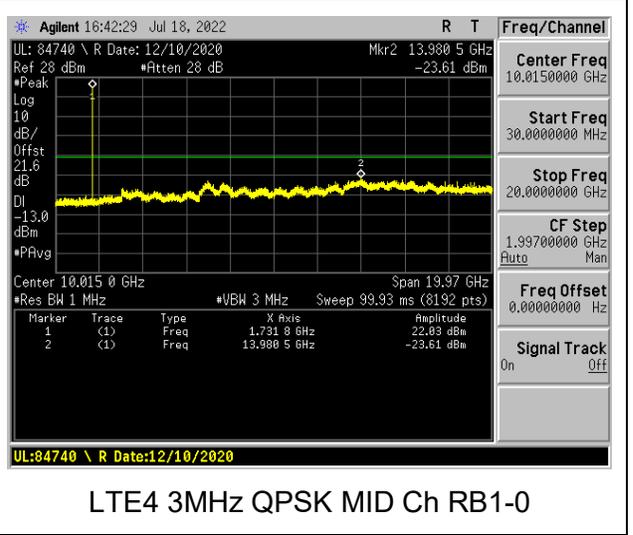
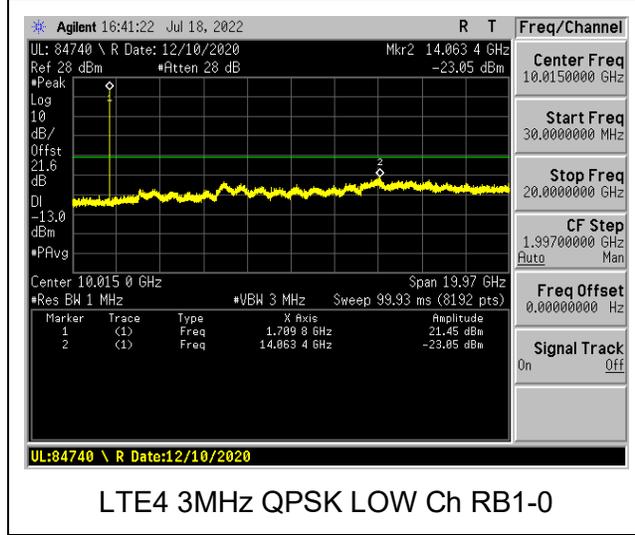
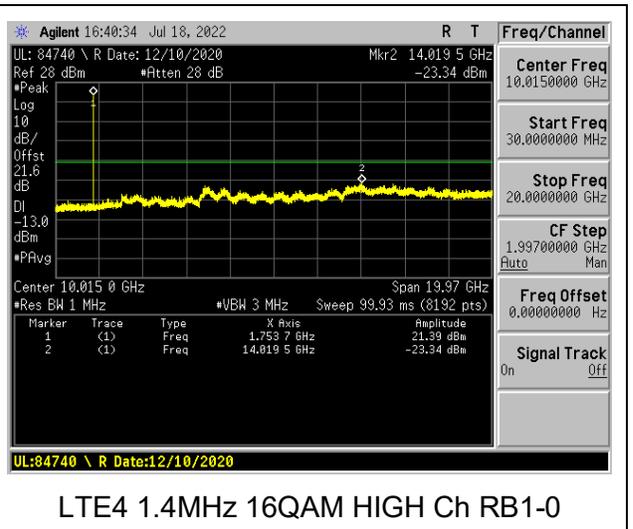
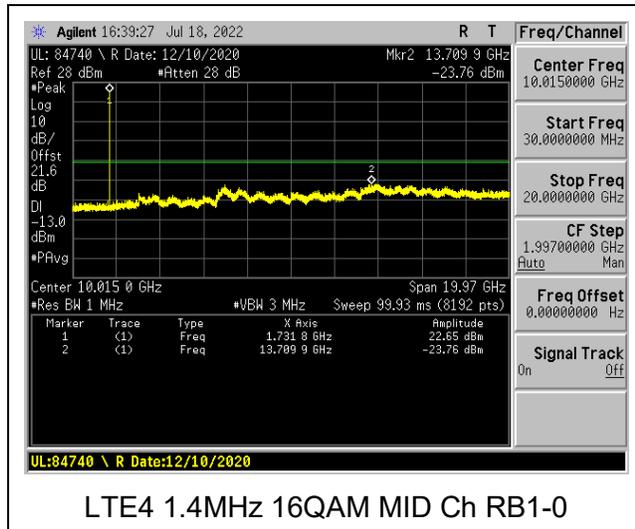
LTE4 1.4MHz QPSK MID Ch RB1-0

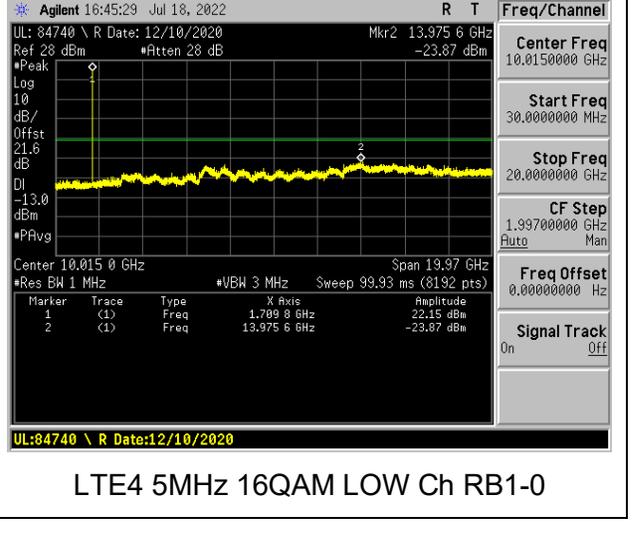
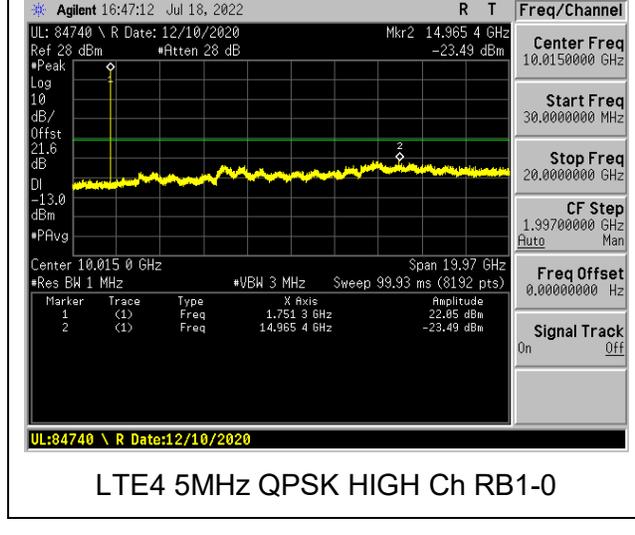
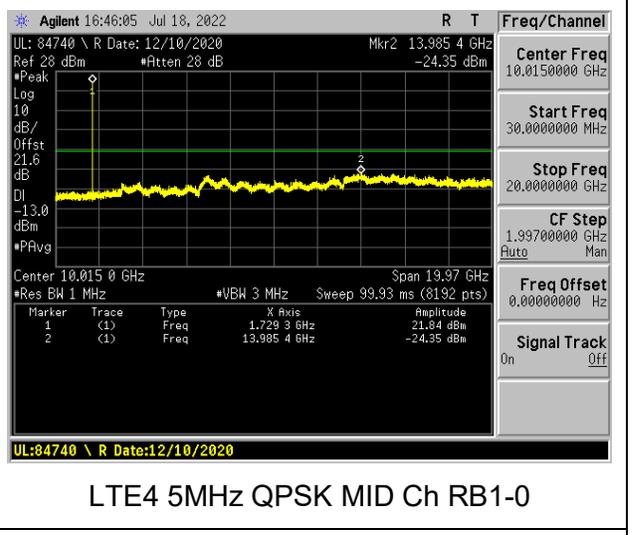
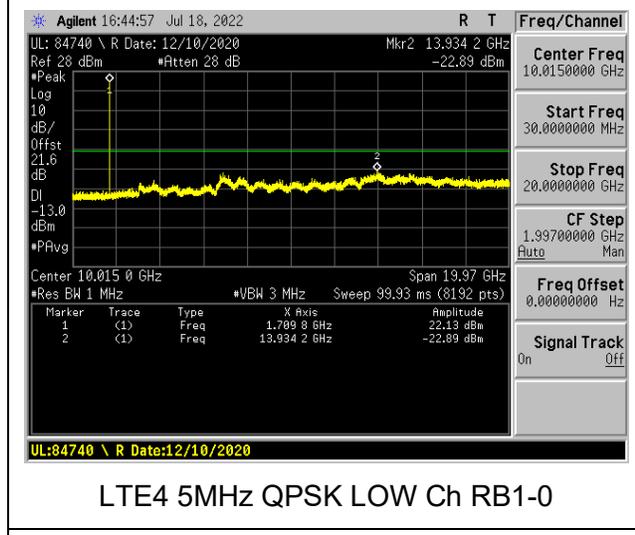
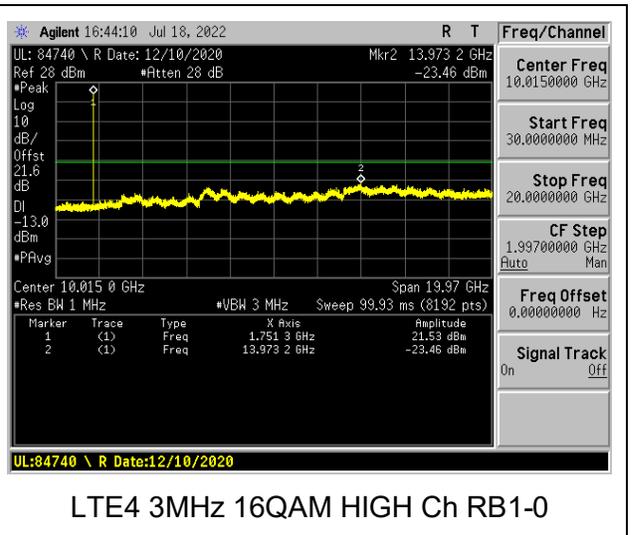
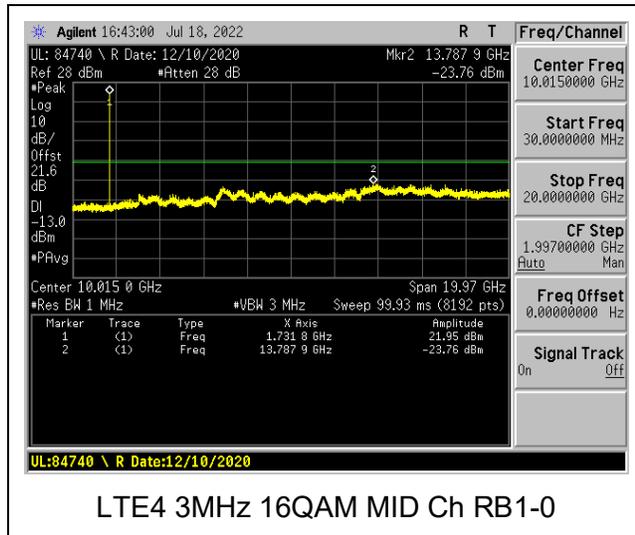


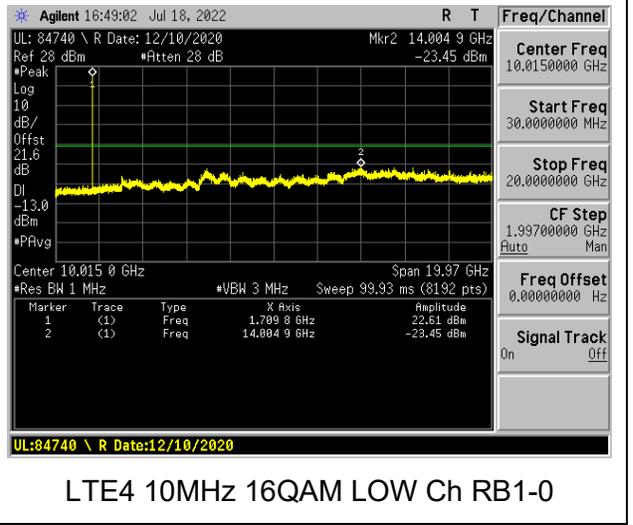
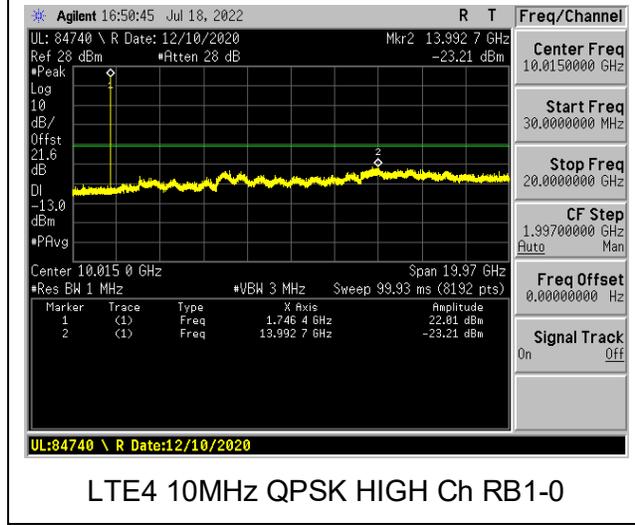
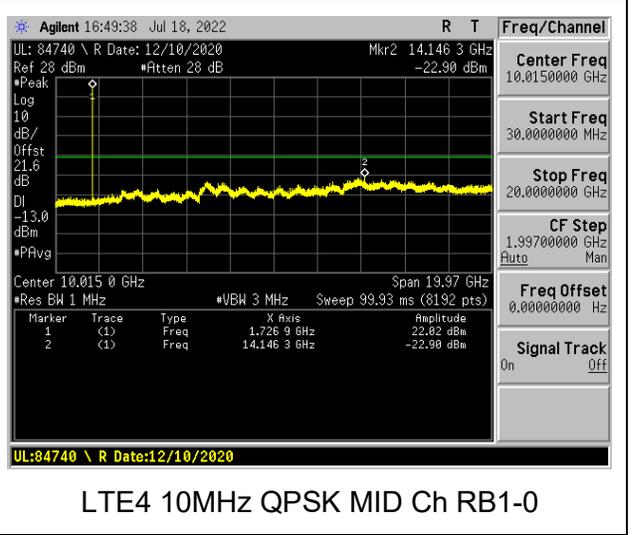
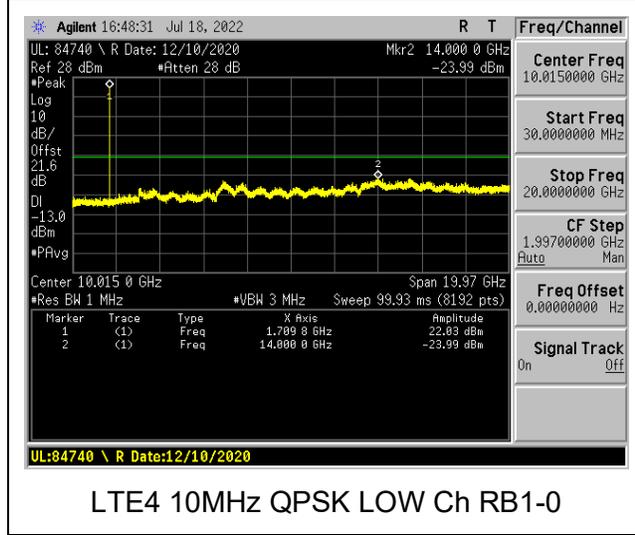
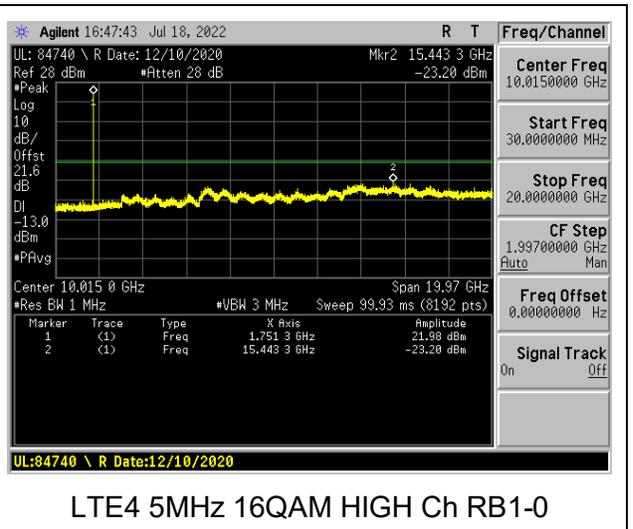
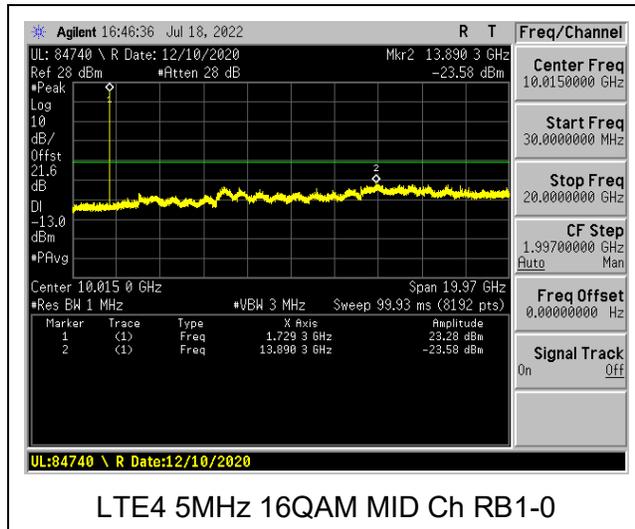
LTE4 1.4MHz QPSK HIGH Ch RB1-0

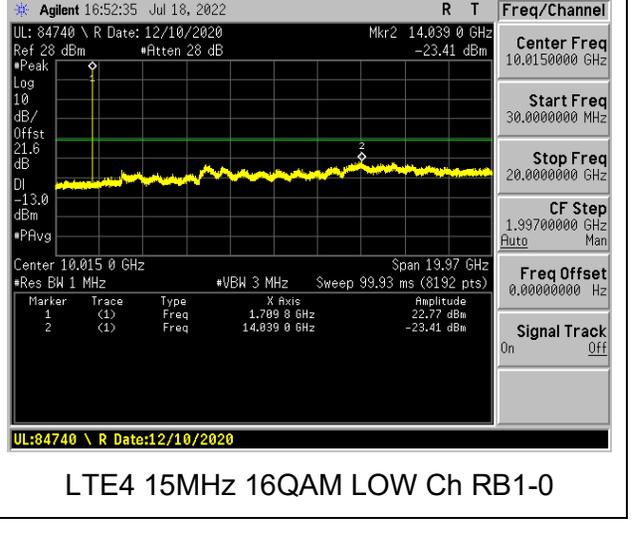
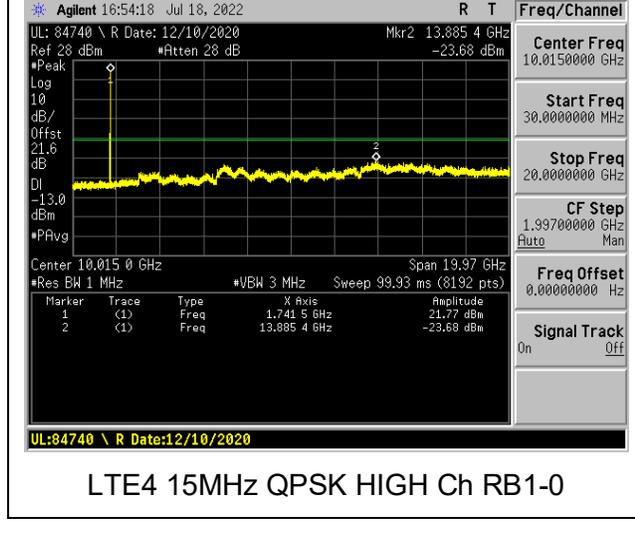
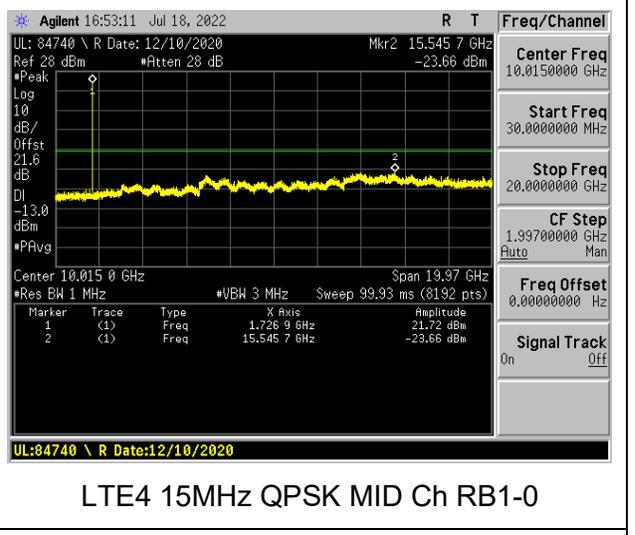
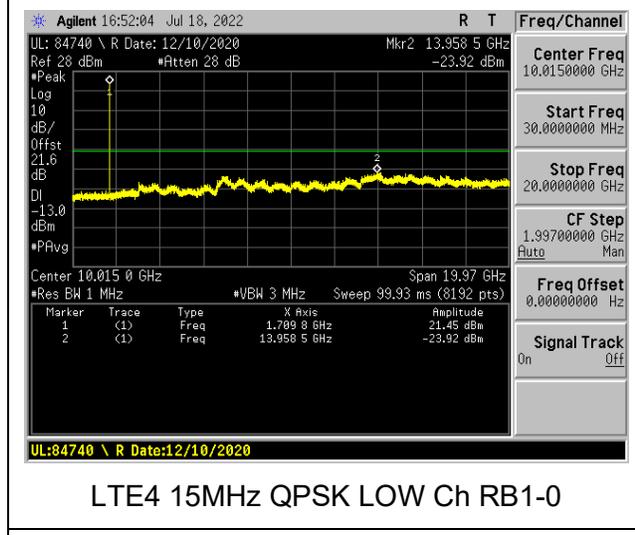
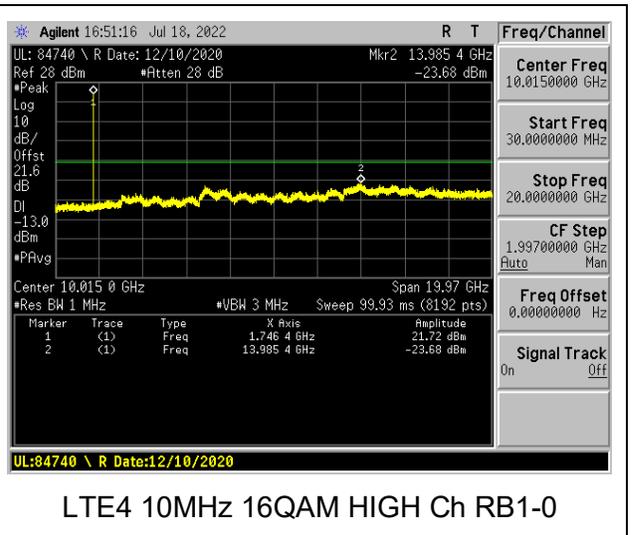
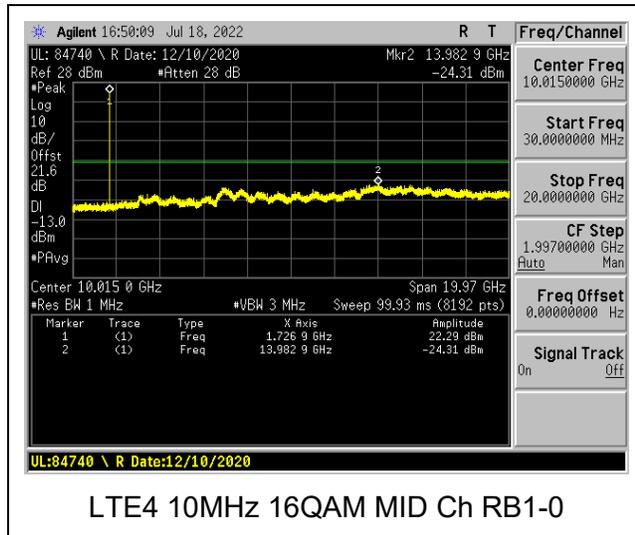


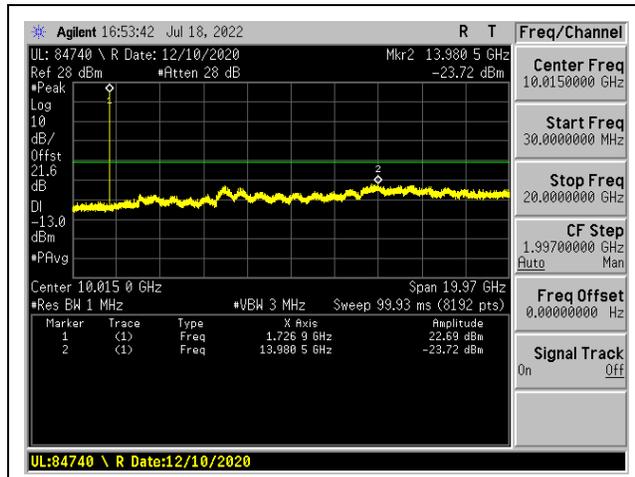
LTE4 1.4MHz 16QAM LOW Ch RB1-0



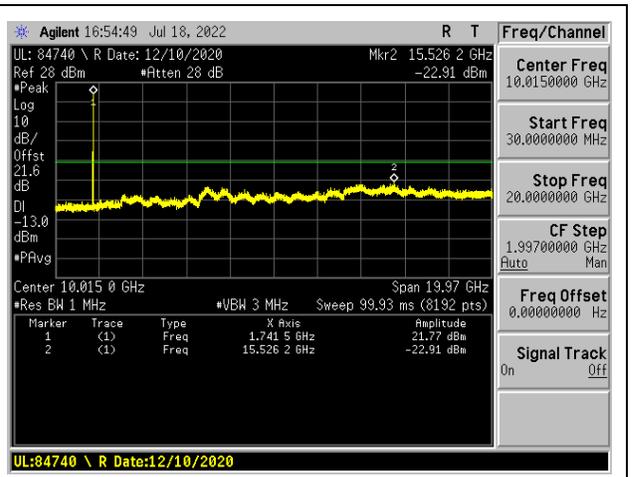




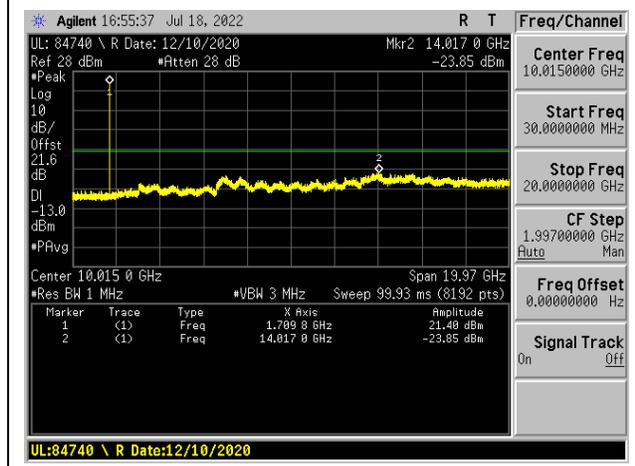




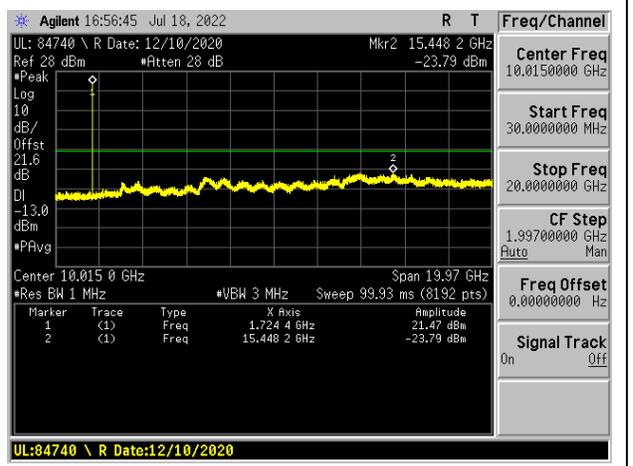
LTE4 15MHz 16QAM MID Ch RB1-0



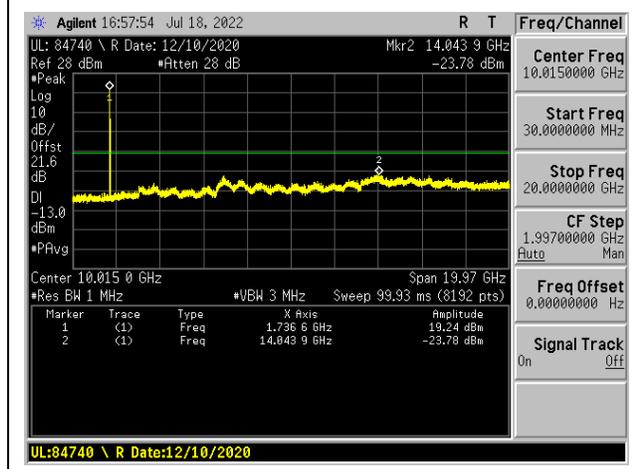
LTE4 15MHz 16QAM HIGH Ch RB1-0



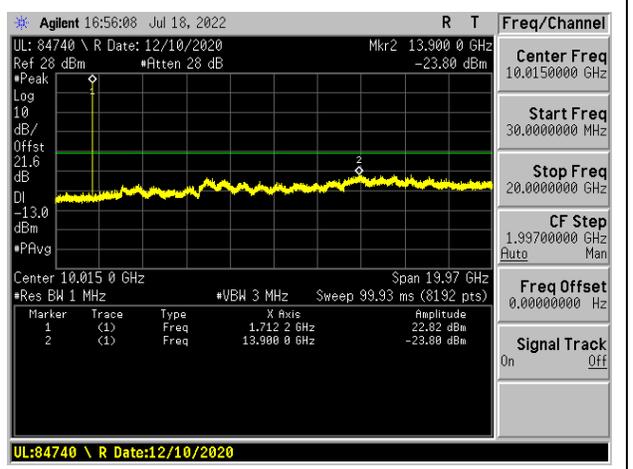
LTE4 20MHz QPSK LOW Ch RB1-0



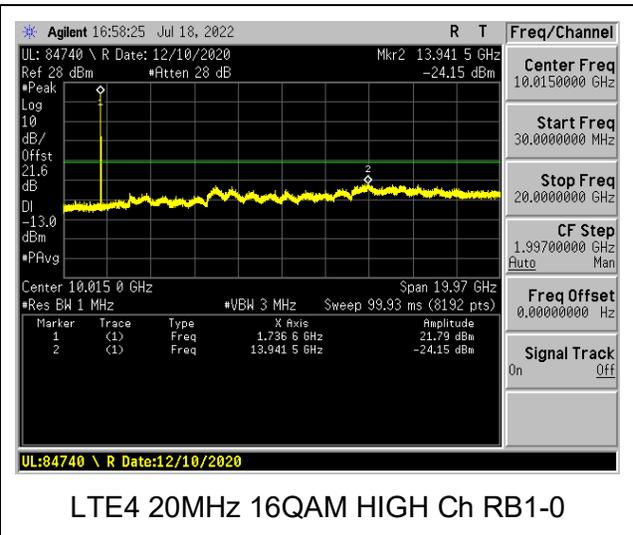
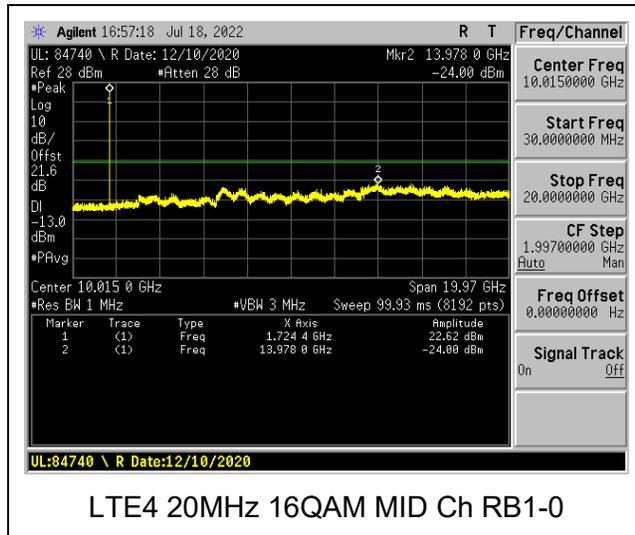
LTE4 20MHz QPSK MID Ch RB1-0



LTE4 20MHz QPSK HIGH Ch RB1-0



LTE4 20MHz 16QAM LOW Ch RB1-0

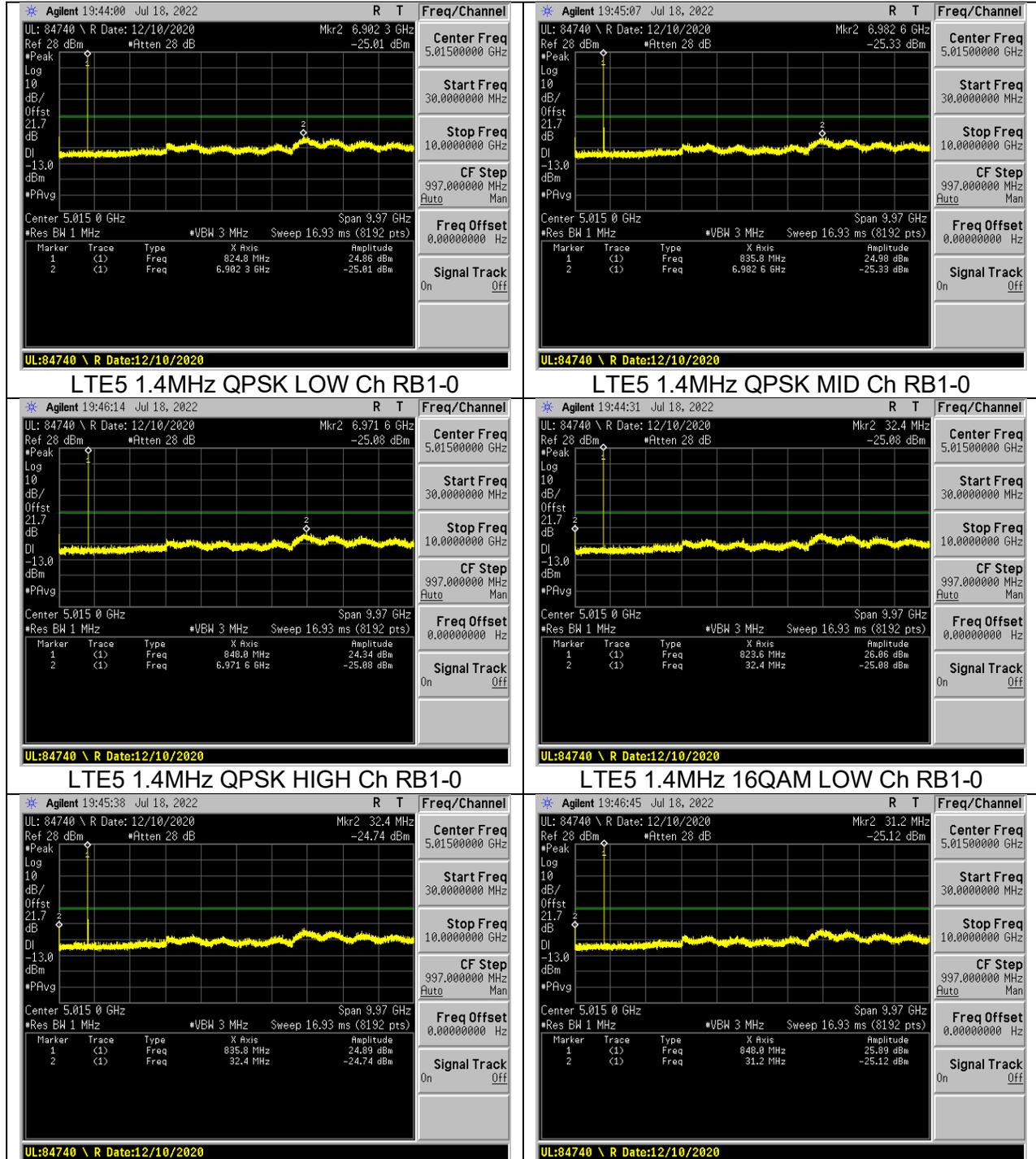


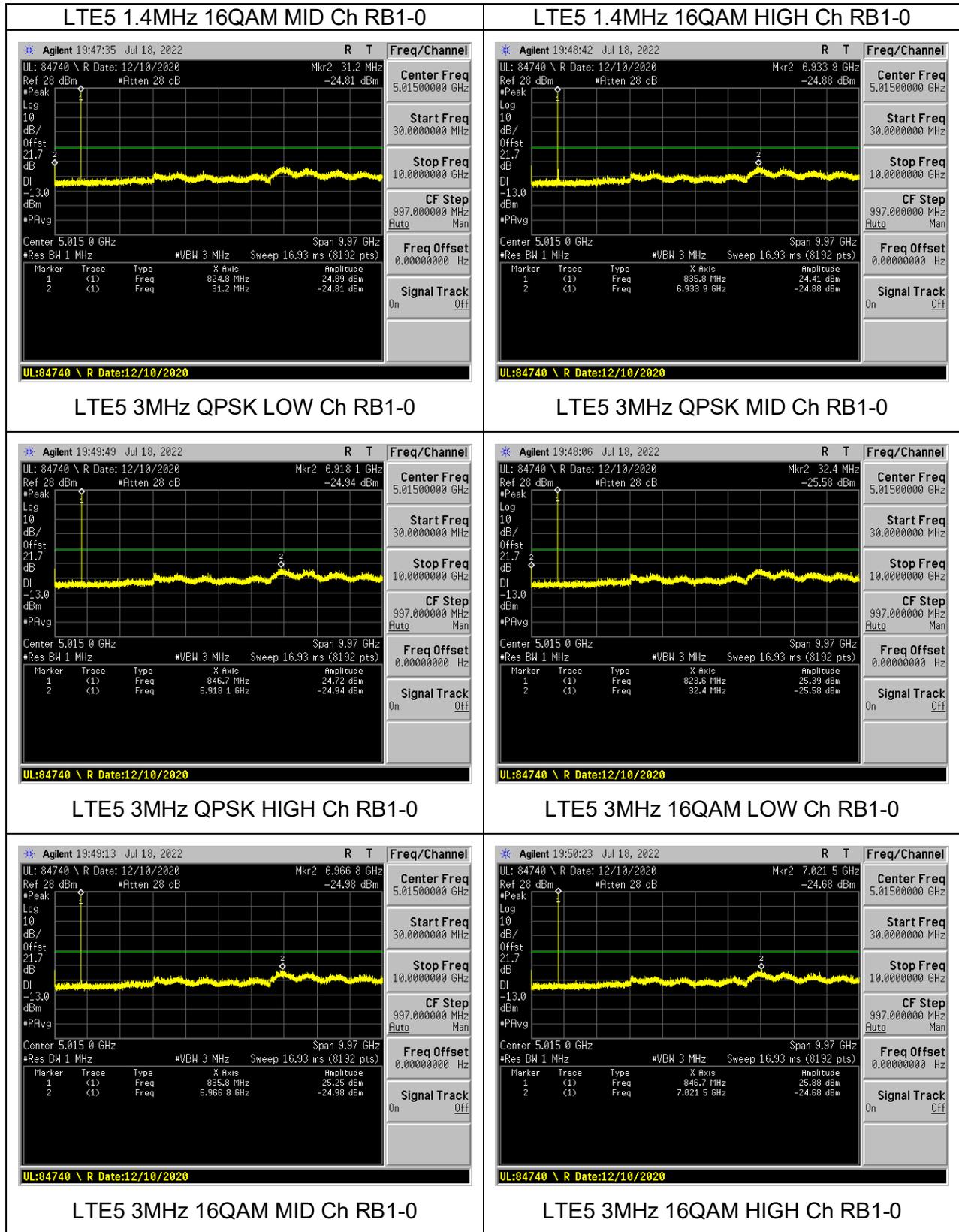
9.3.5. LTE BAND 5

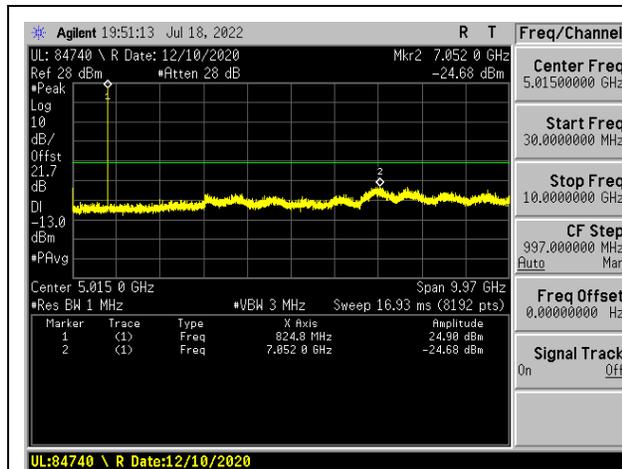
LIMITS

FCC: §22.917

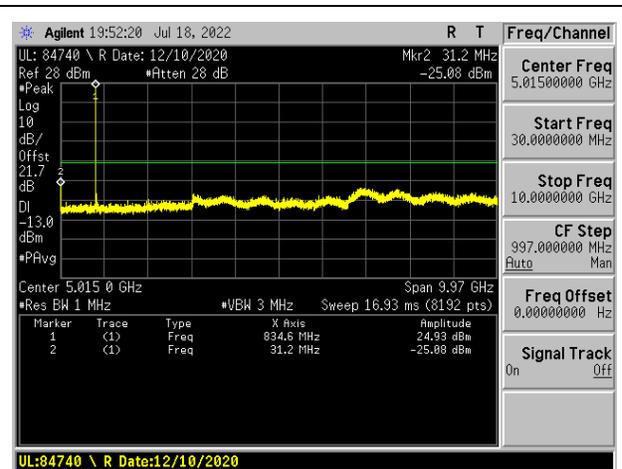
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



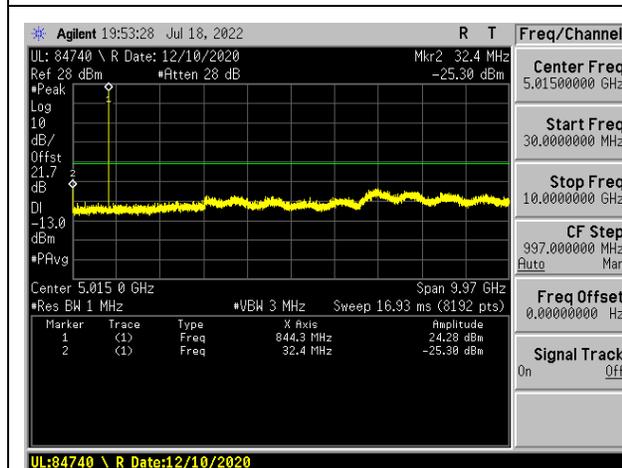




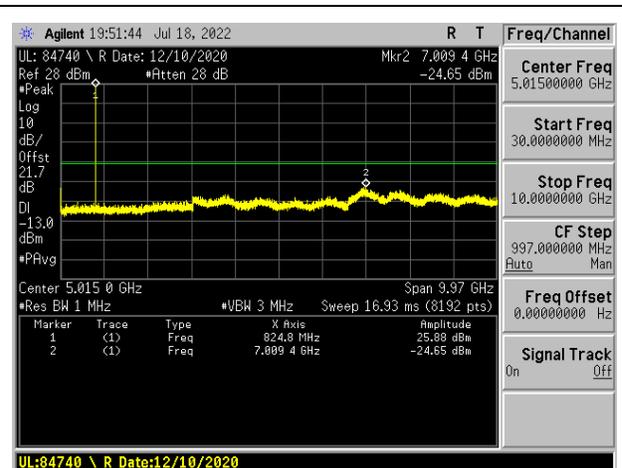
LTE5 5MHz QPSK LOW Ch RB1-0



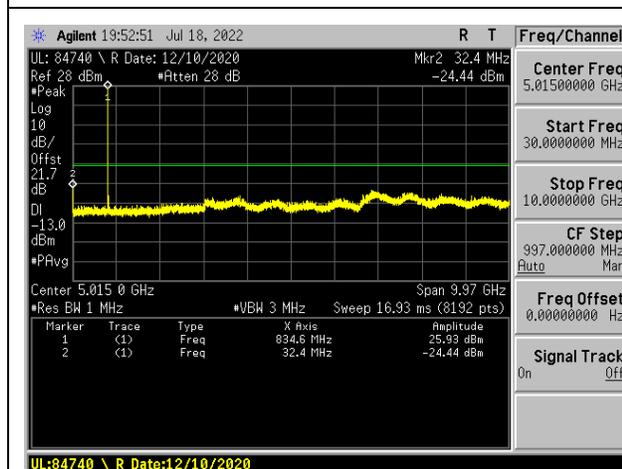
LTE5 5MHz QPSK MID Ch RB1-0



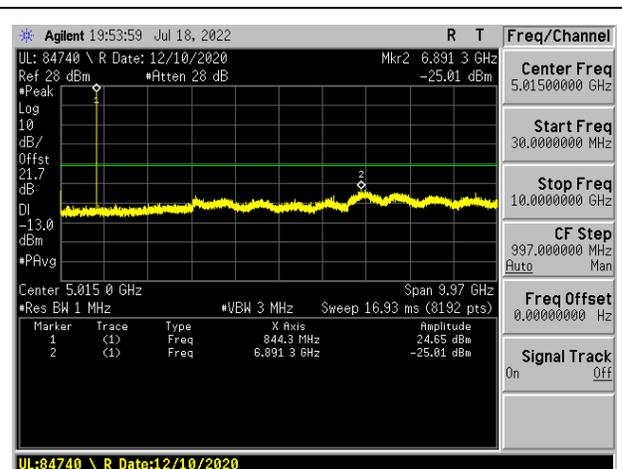
LTE5 5MHz QPSK HIGH Ch RB1-0



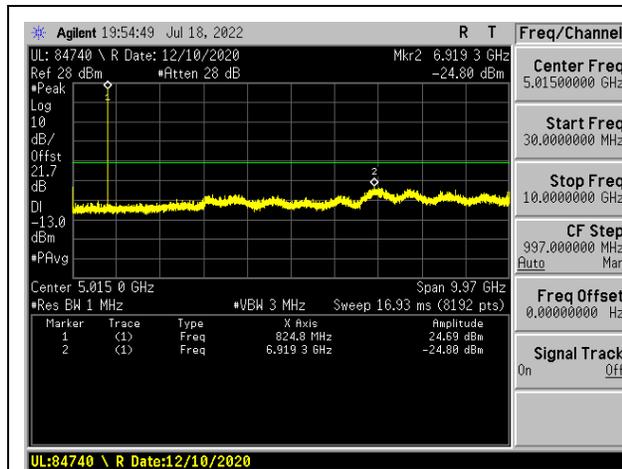
LTE5 5MHz 16QAM LOW Ch RB1-0



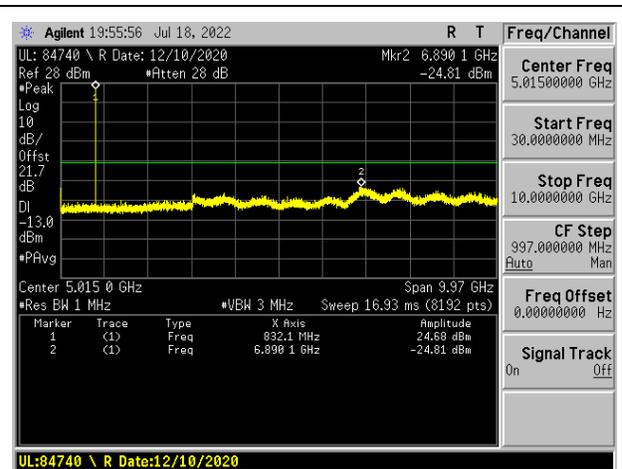
LTE5 5MHz 16QAM MID Ch RB1-0



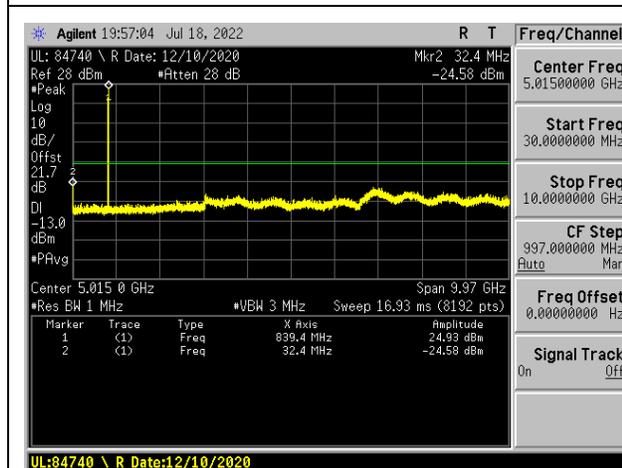
LTE5 5MHz 16QAM HIGH Ch RB1-0



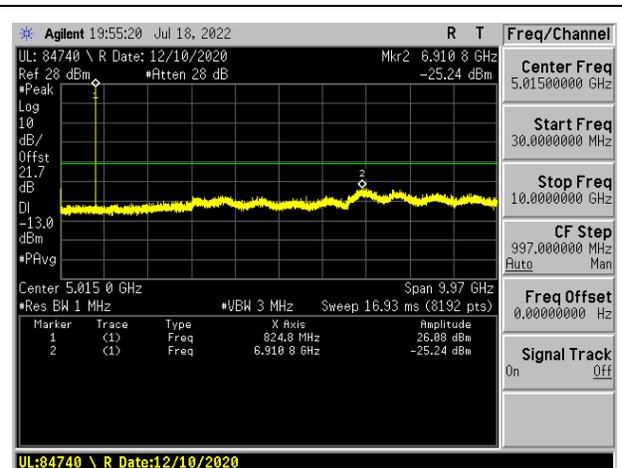
LTE5 10MHz QPSK LOW Ch RB1-0



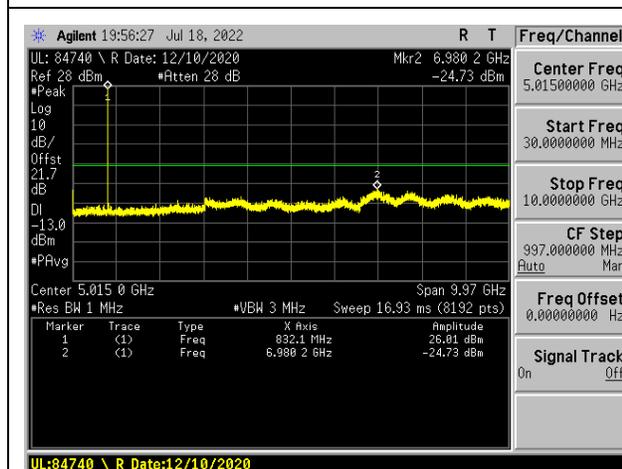
LTE5 10MHz QPSK MID Ch RB1-0



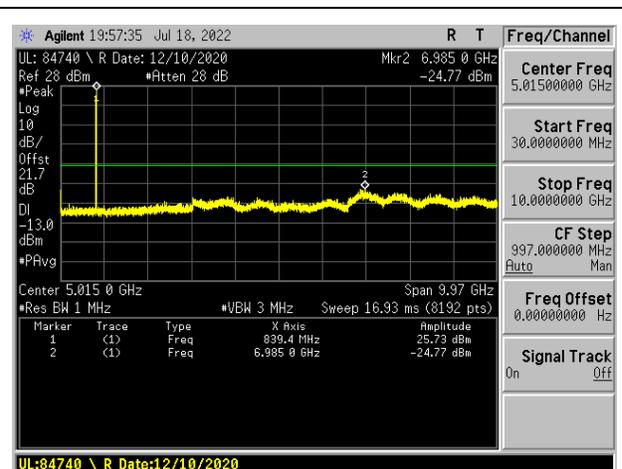
LTE5 10MHz QPSK HIGH Ch RB1-0



LTE5 10MHz 16QAM LOW Ch RB1-0



LTE5 10MHz 16QAM MID Ch RB1-0



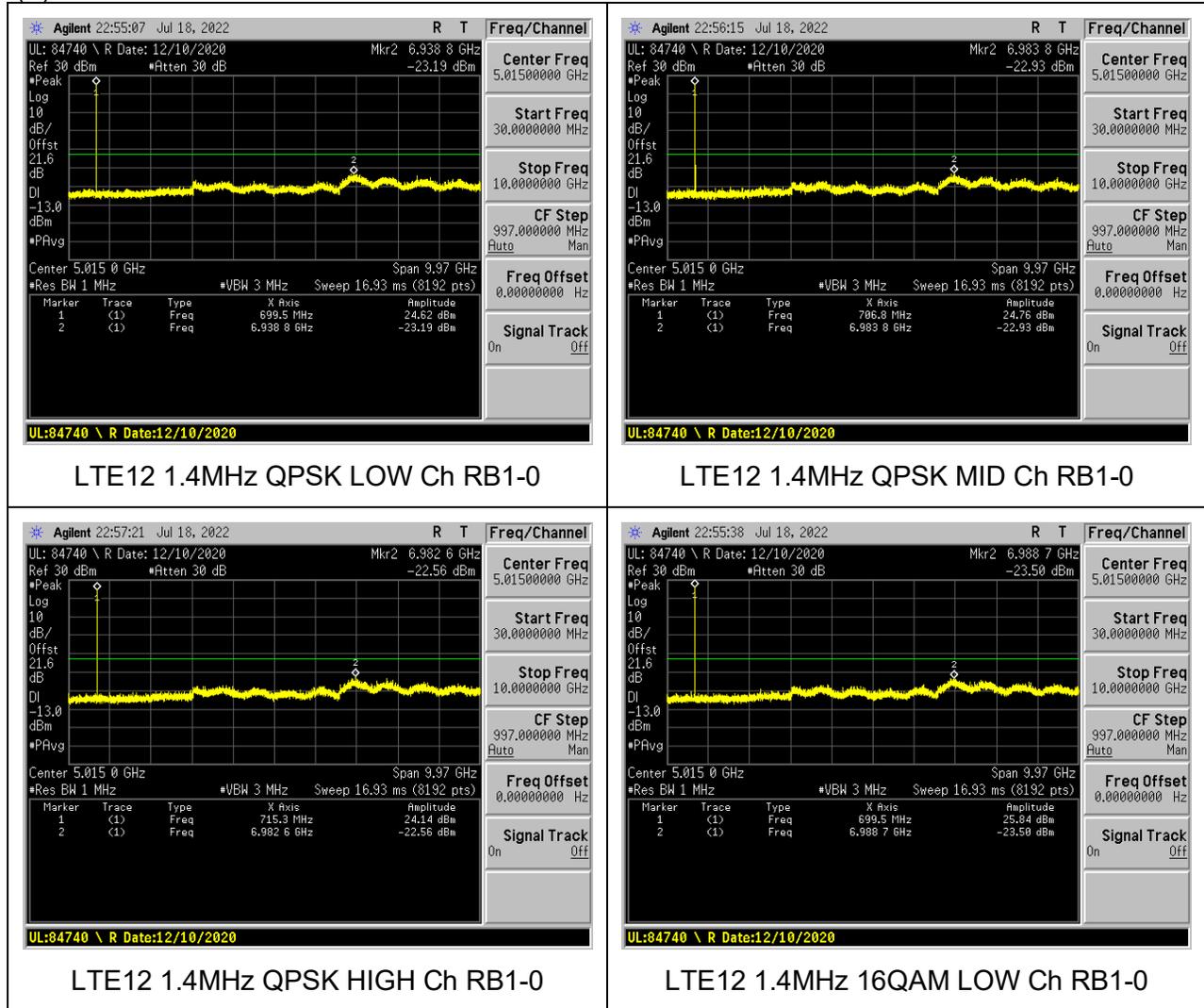
LTE5 10MHz 16QAM HIGH Ch RB1-0

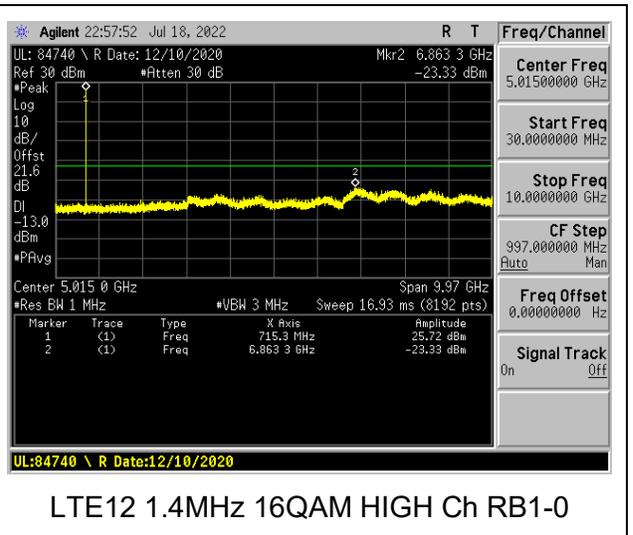
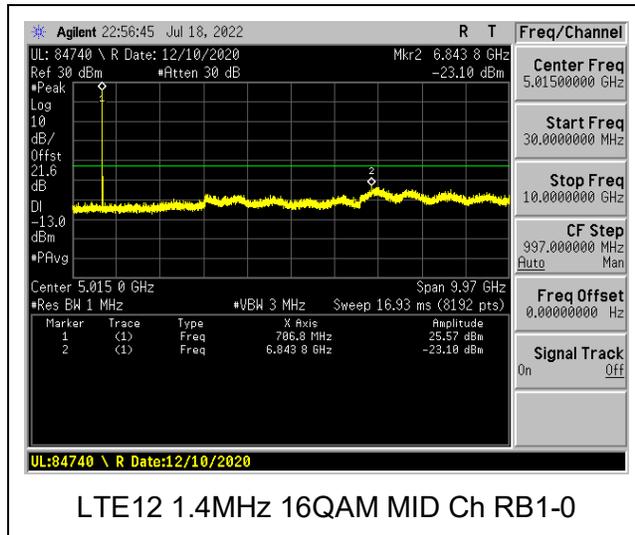
9.3.6. LTE BAND 12

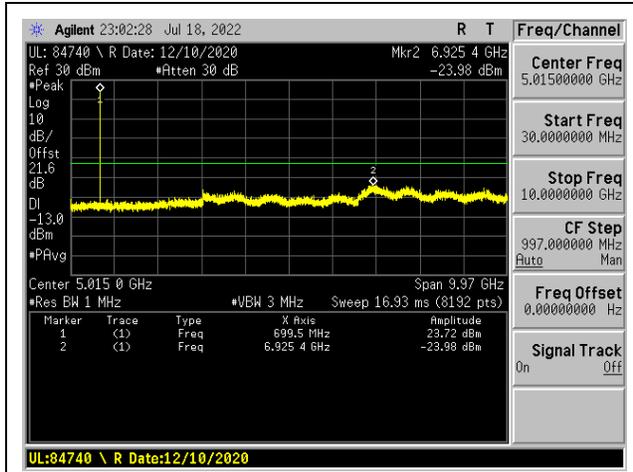
LIMITS

FCC: §27.53 (g)

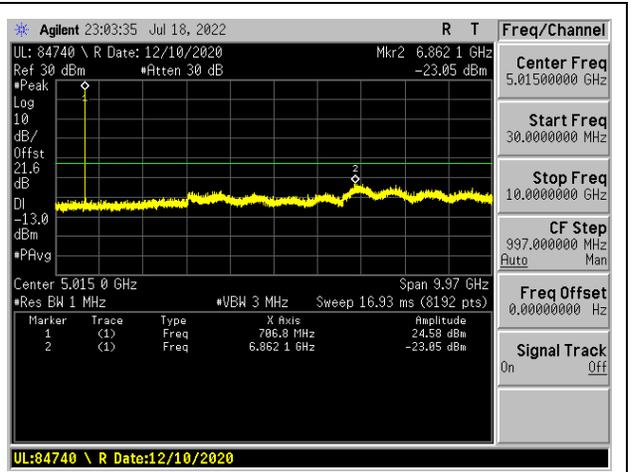
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



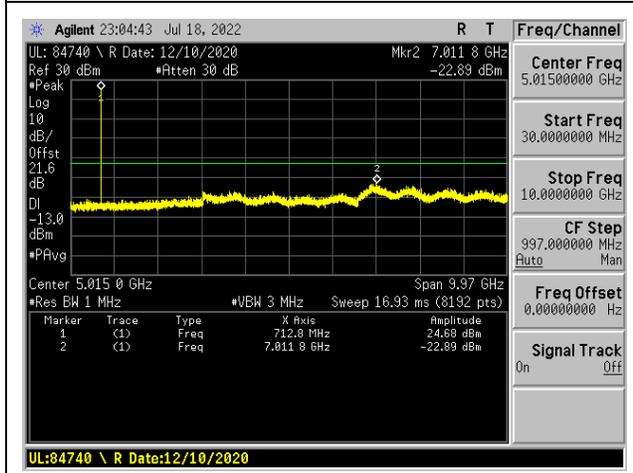




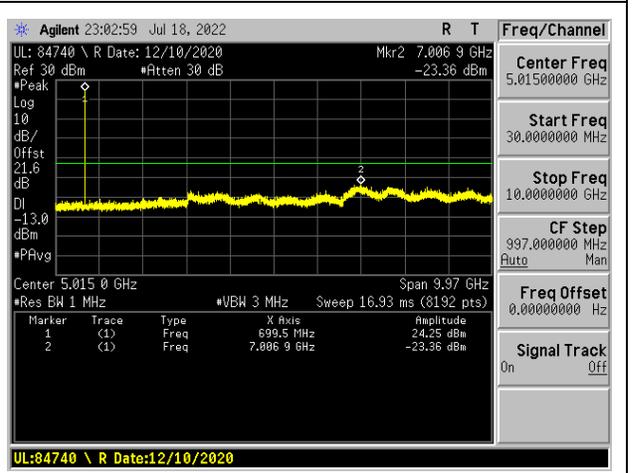
LTE12 3MHz QPSK LOW Ch RB1-0



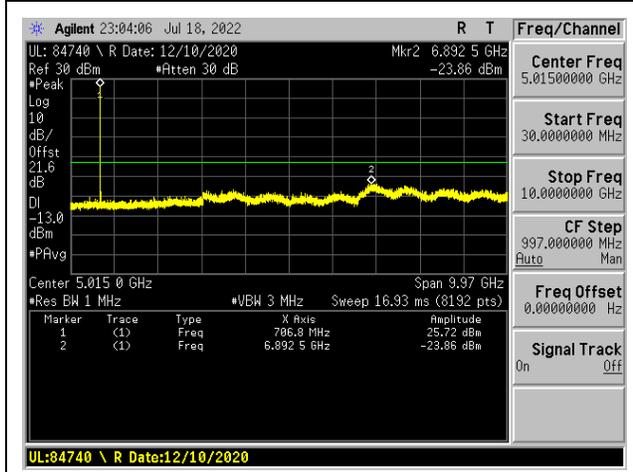
LTE12 3MHz QPSK MID Ch RB1-0



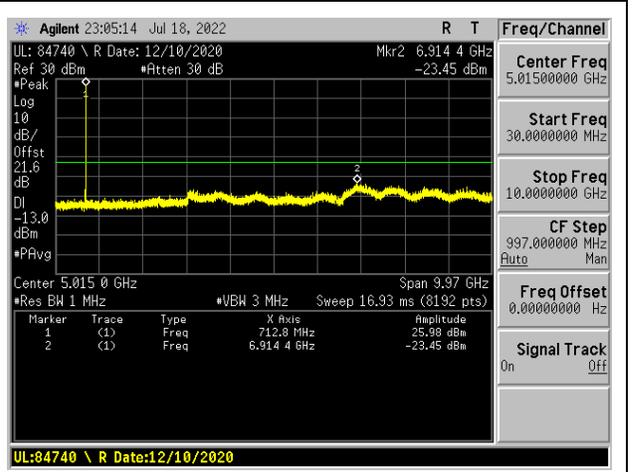
LTE12 3MHz QPSK HIGH Ch RB1-0



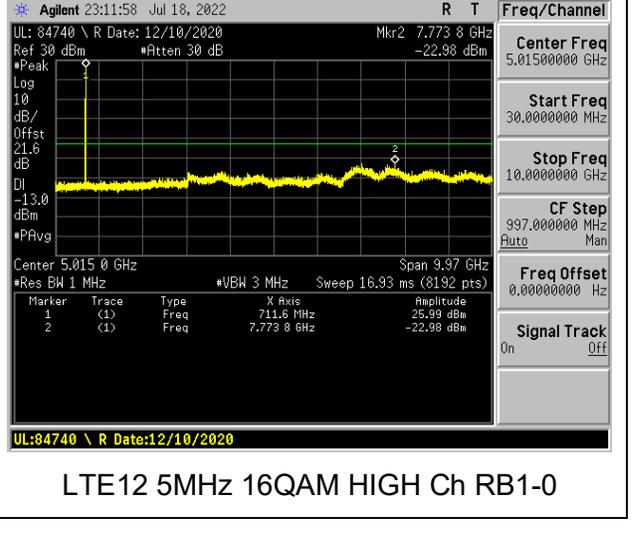
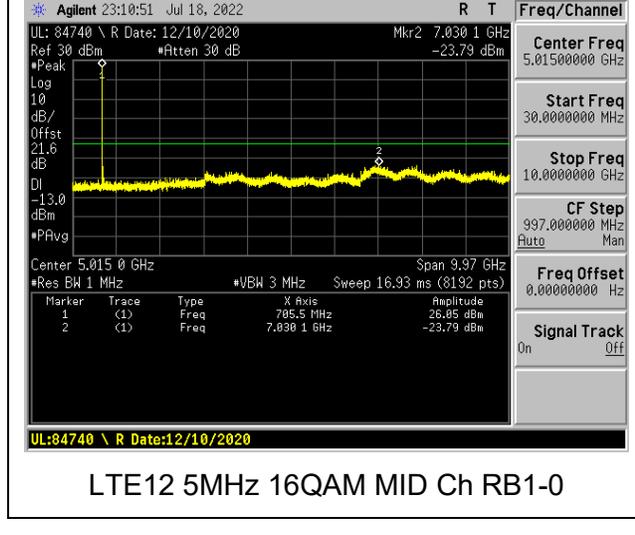
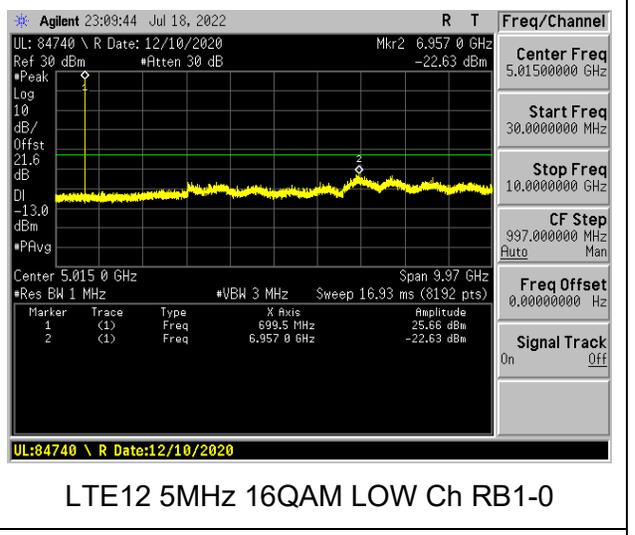
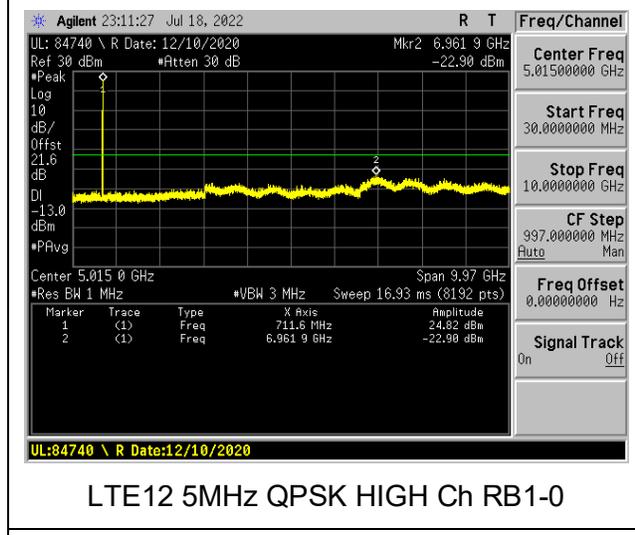
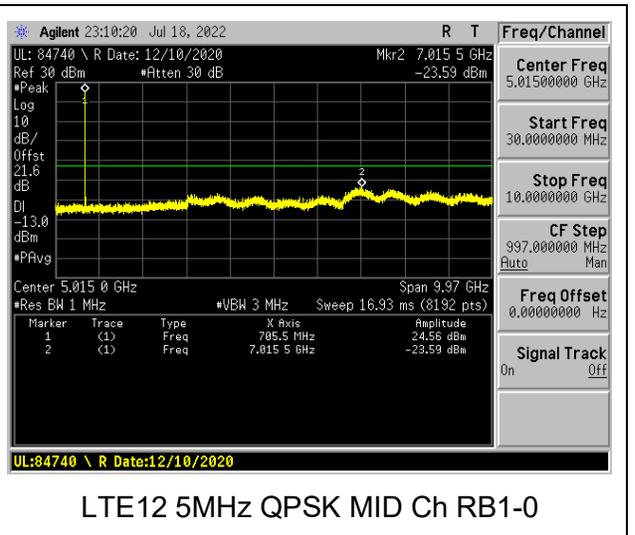
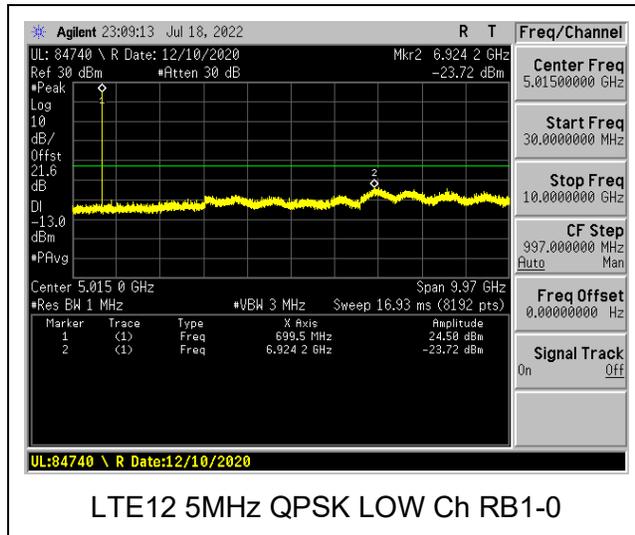
LTE12 3MHz 16QAM LOW Ch RB1-0

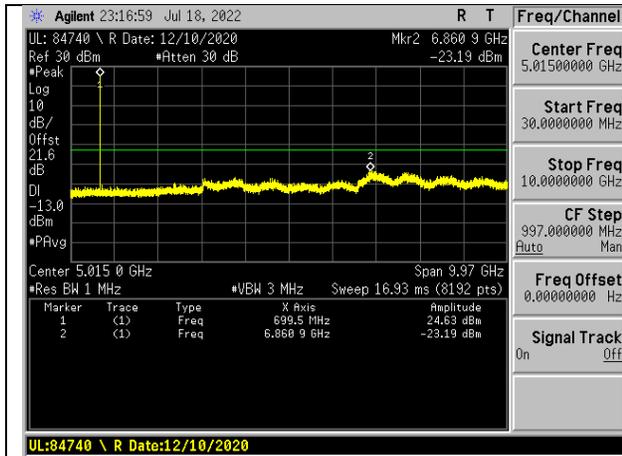


LTE12 3MHz 16QAM MID Ch RB1-0

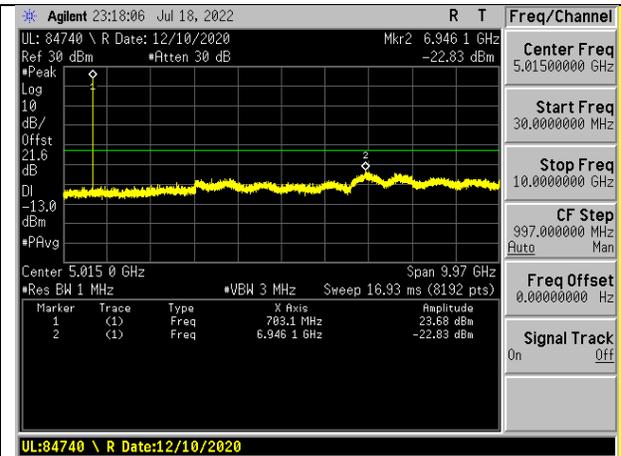


LTE12 3MHz 16QAM HIGH Ch RB1-0

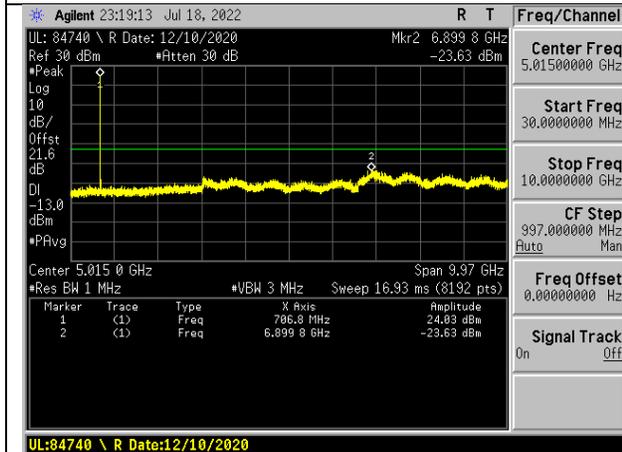




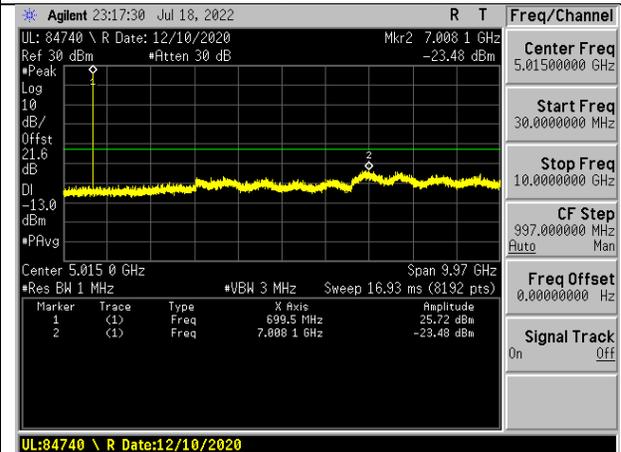
LTE12 10MHz QPSK LOW Ch RB1-0



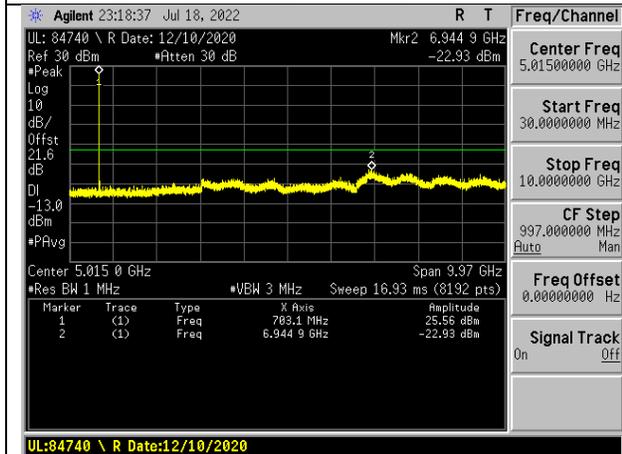
LTE12 10MHz QPSK MID Ch RB1-0



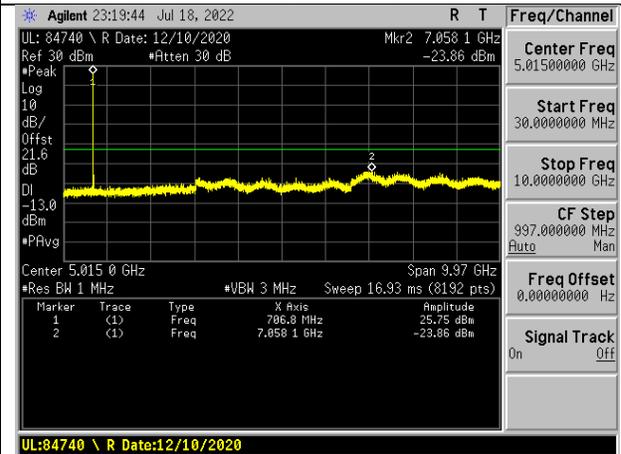
LTE12 10MHz QPSK HIGH Ch RB1-0



LTE12 10MHz 16QAM LOW Ch RB1-0



LTE12 10MHz 16QAM MID Ch RB1-0



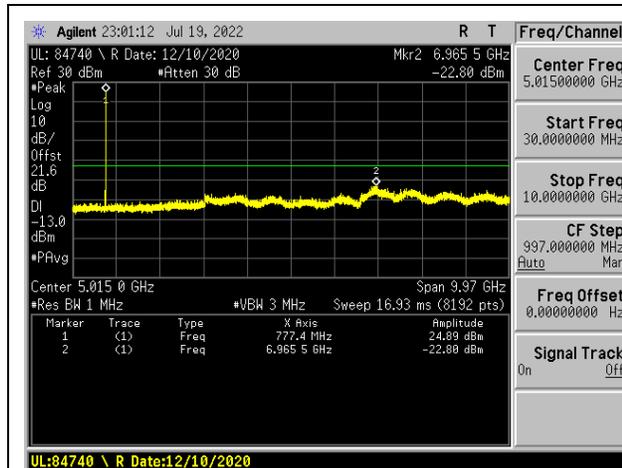
LTE12 10MHz 16QAM HIGH Ch RB1-0

9.3.7. LTE BAND 13

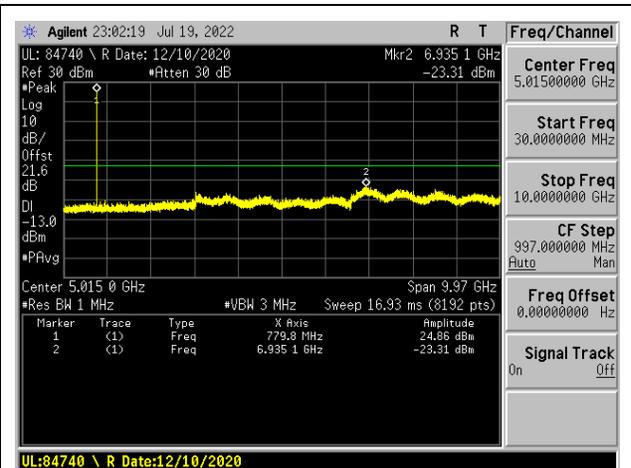
LIMITS

FCC: §27.53 (c), (f)

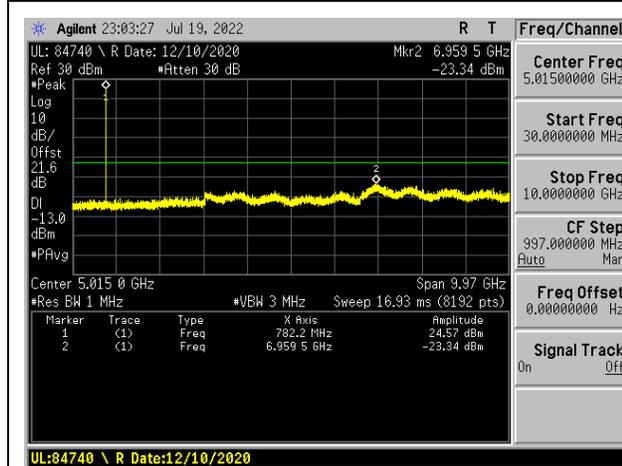
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts. The band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. Note: Radiated data in section 9.1.6 confirms a compliance for the emissions in GPS 1559 - 1610 MHz band were wideband emissions therefore the -40 dBm / MHz limit was used.



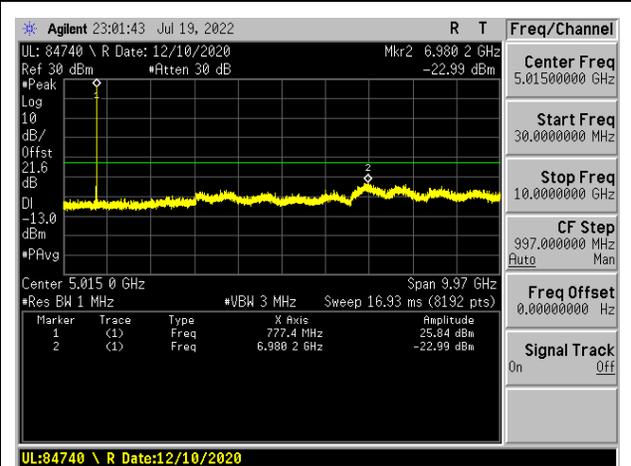
LTE13 5MHz QPSK LOW Ch RB1-0



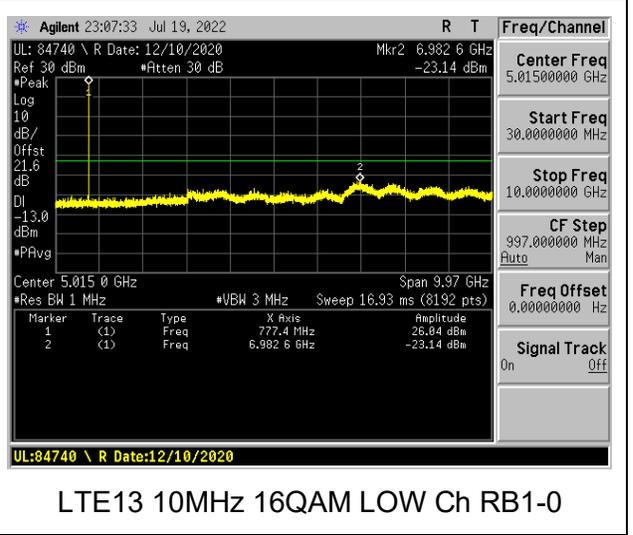
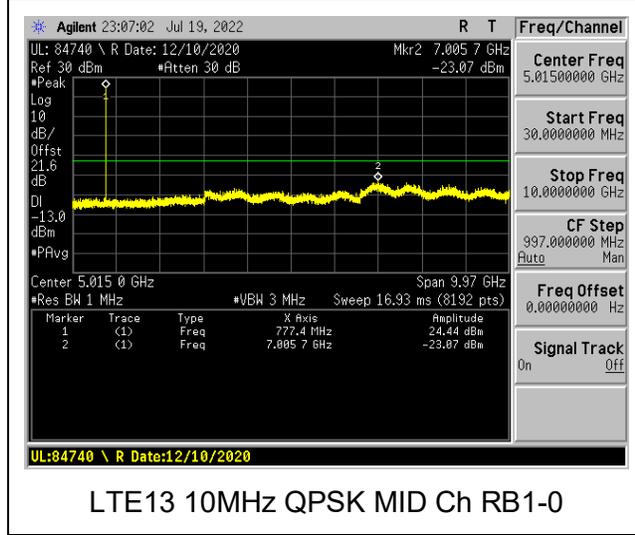
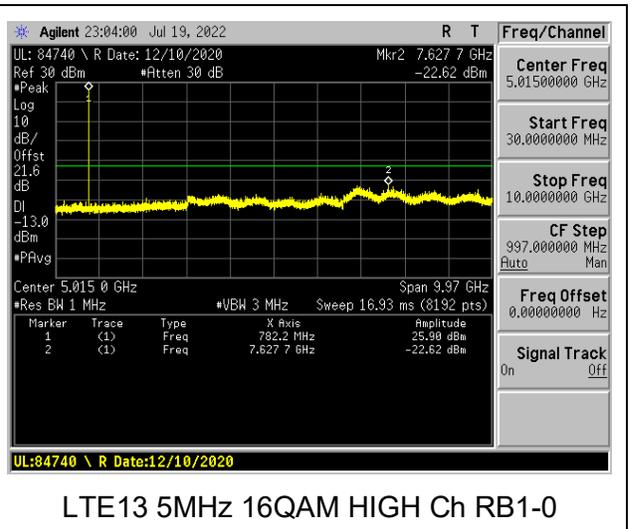
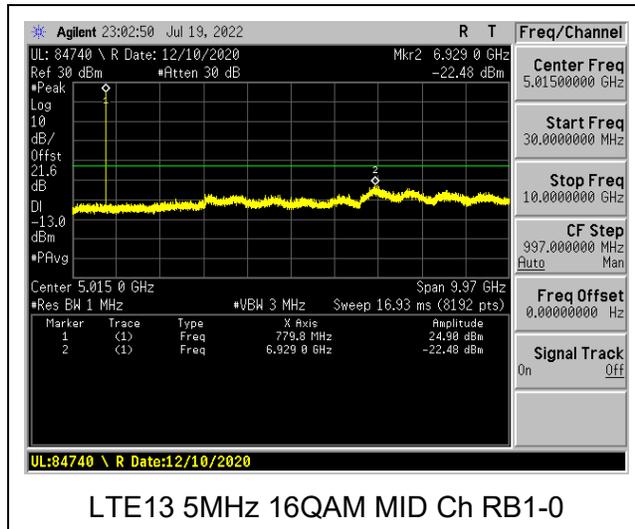
LTE13 5MHz QPSK MID Ch RB1-0



LTE13 5MHz QPSK HIGH Ch RB1-0



LTE13 5MHz 16QAM LOW Ch RB1-0

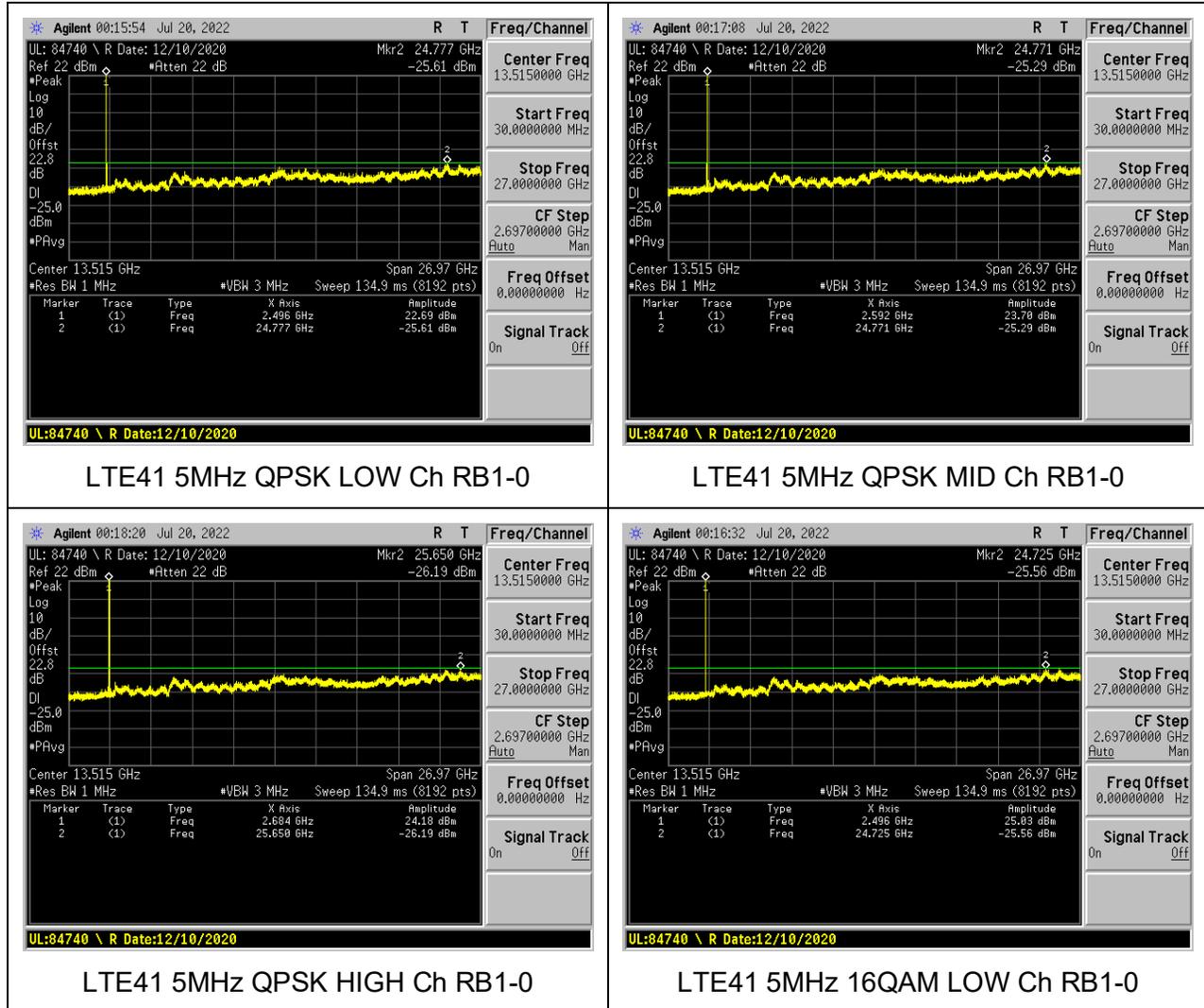


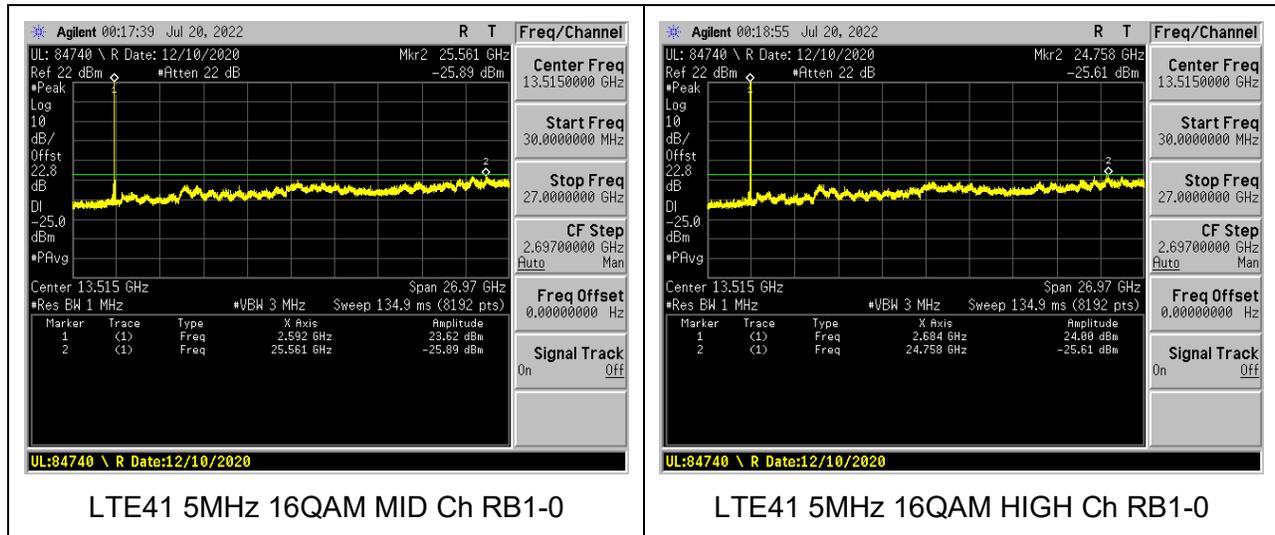
9.3.8. LTE BAND 41

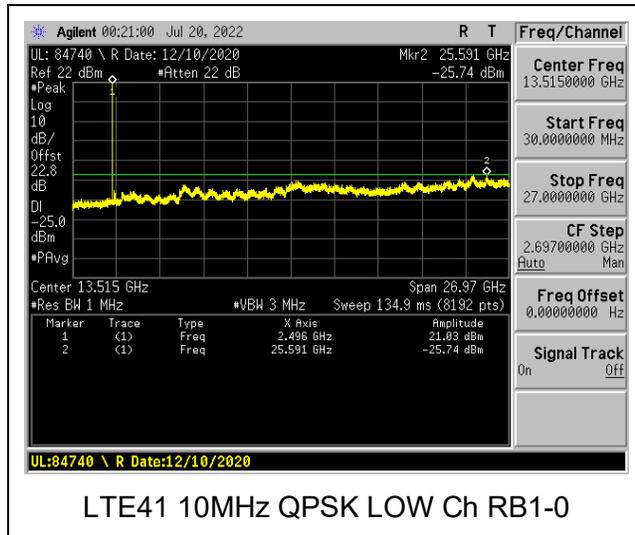
LIMITS

FCC: §27.53 (m)

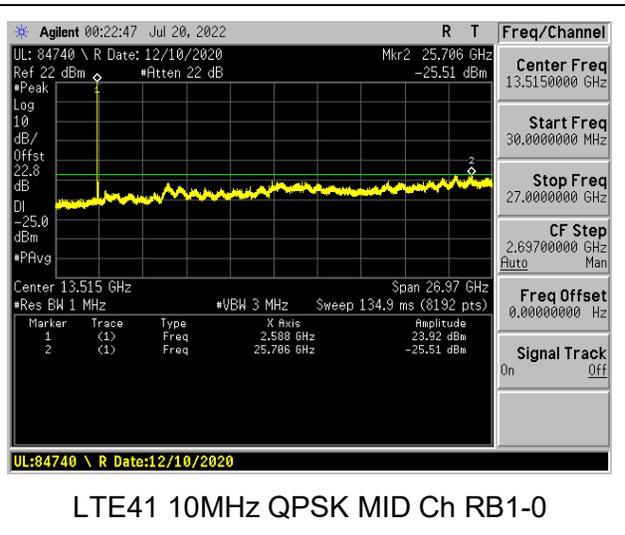
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



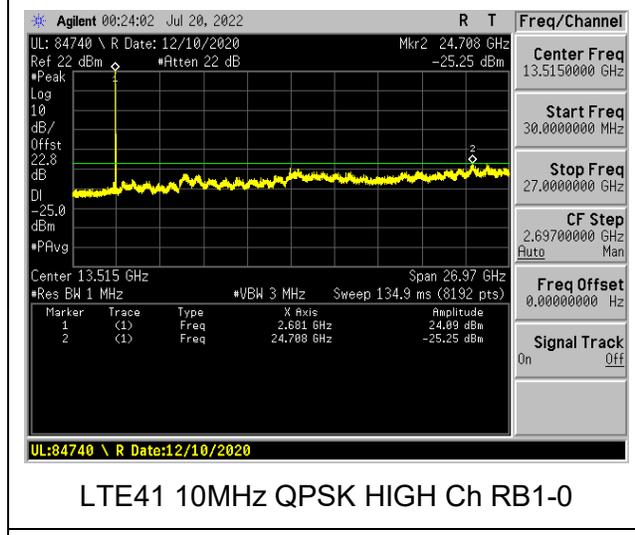




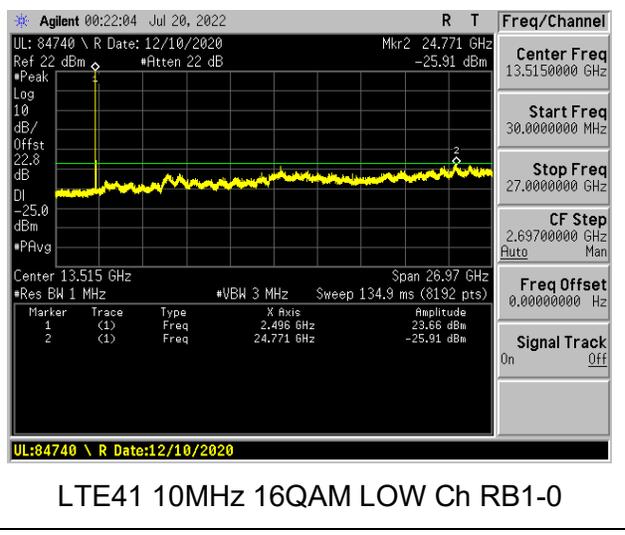
LTE41 10MHz QPSK LOW Ch RB1-0



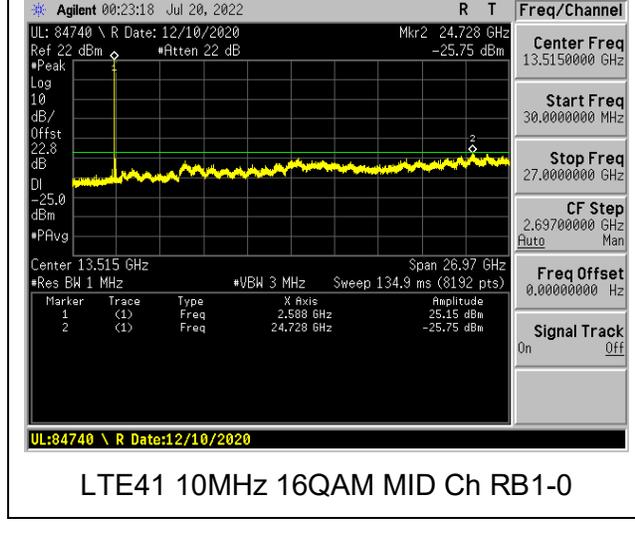
LTE41 10MHz QPSK MID Ch RB1-0



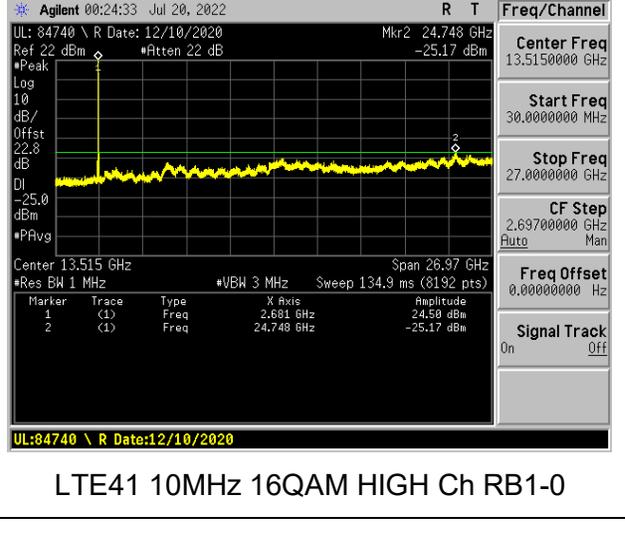
LTE41 10MHz QPSK HIGH Ch RB1-0



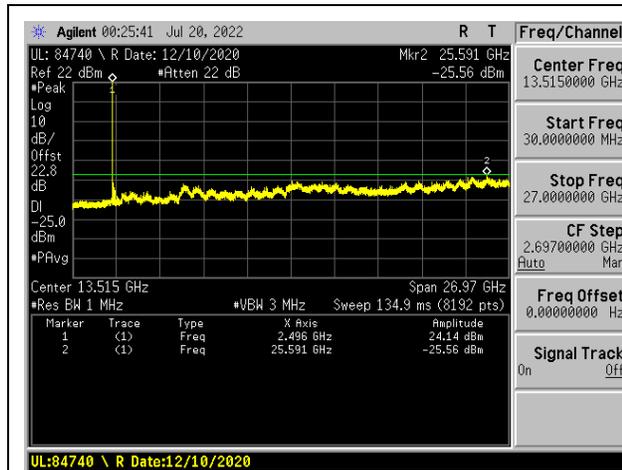
LTE41 10MHz 16QAM LOW Ch RB1-0



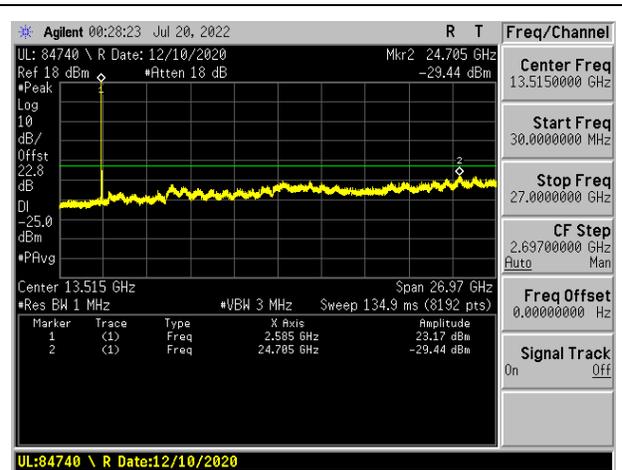
LTE41 10MHz 16QAM MID Ch RB1-0



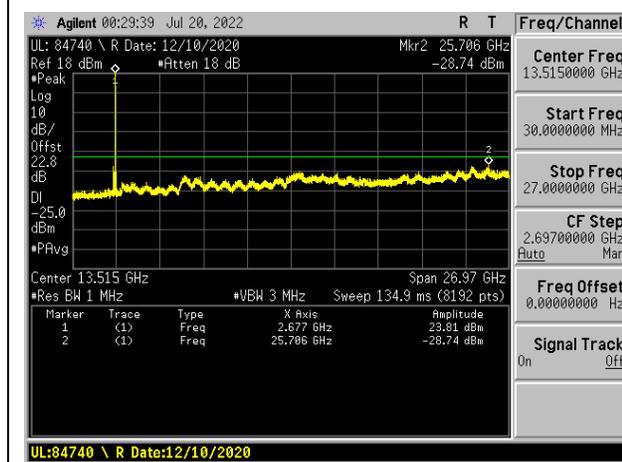
LTE41 10MHz 16QAM HIGH Ch RB1-0



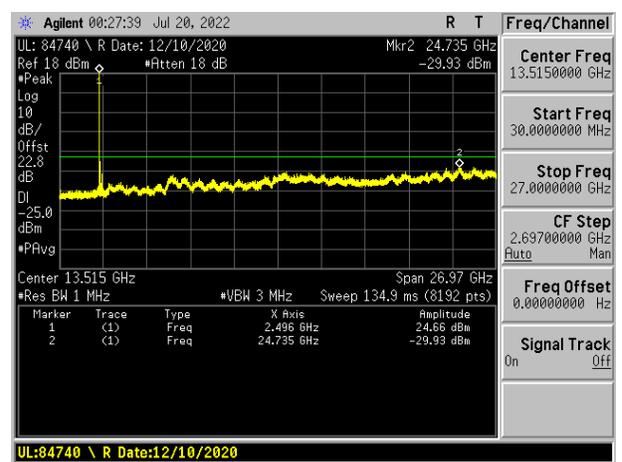
LTE41 15MHz QPSK LOW Ch RB1-0



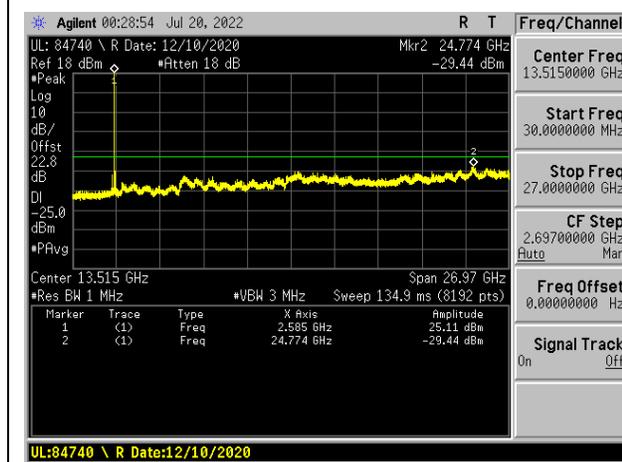
LTE41 15MHz QPSK MID Ch RB1-0



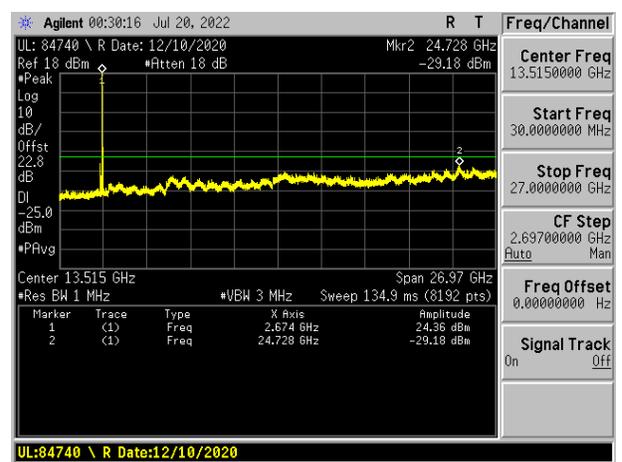
LTE41 15MHz QPSK HIGH Ch RB1-0



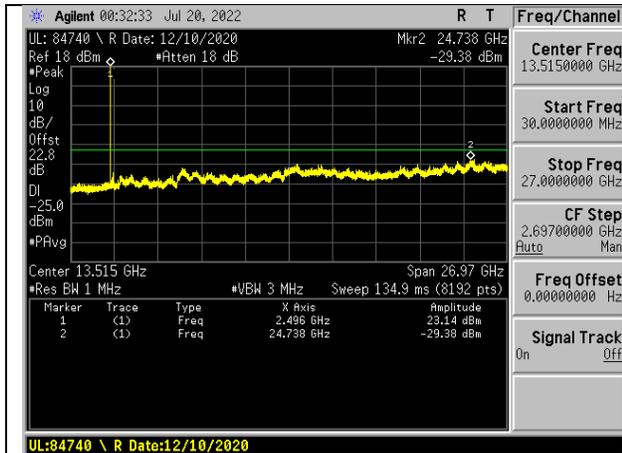
LTE41 15MHz 16QAM LOW Ch RB1-0



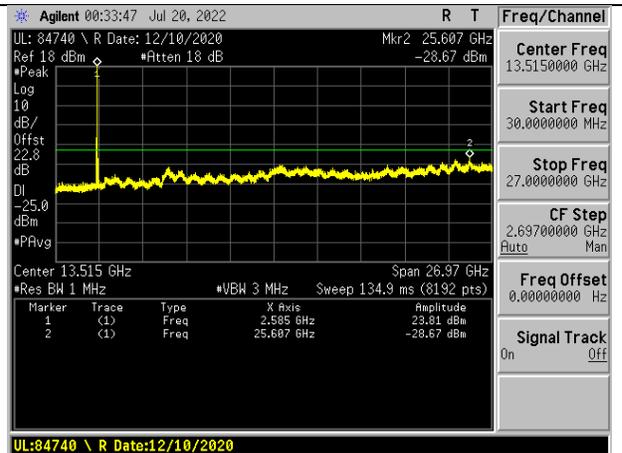
LTE41 15MHz 16QAM MID Ch RB1-0



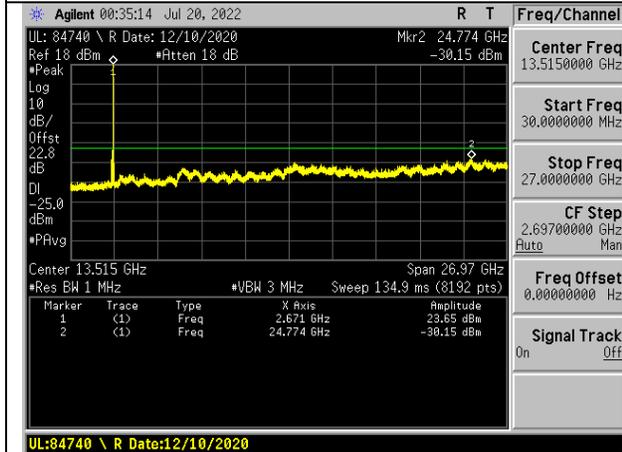
LTE41 15MHz 16QAM HIGH Ch RB1-0



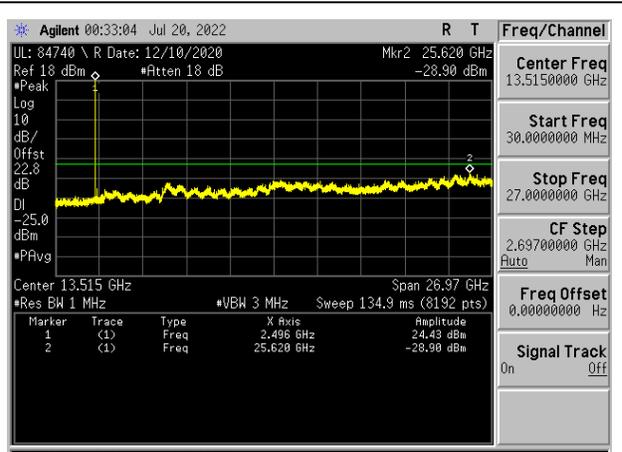
LTE41 20MHz QPSK LOW Ch RB1-0



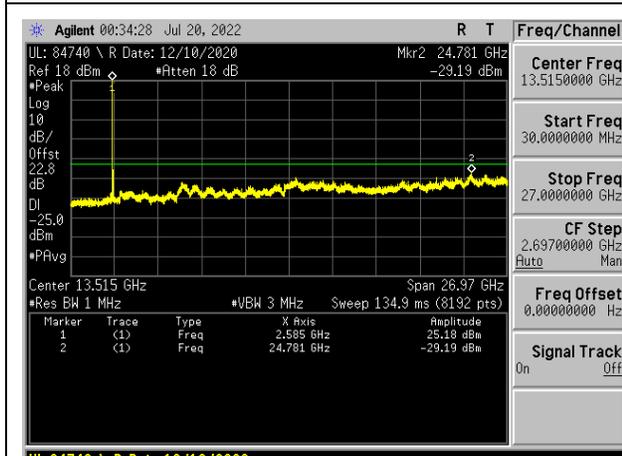
LTE41 20MHz QPSK MID Ch RB1-0



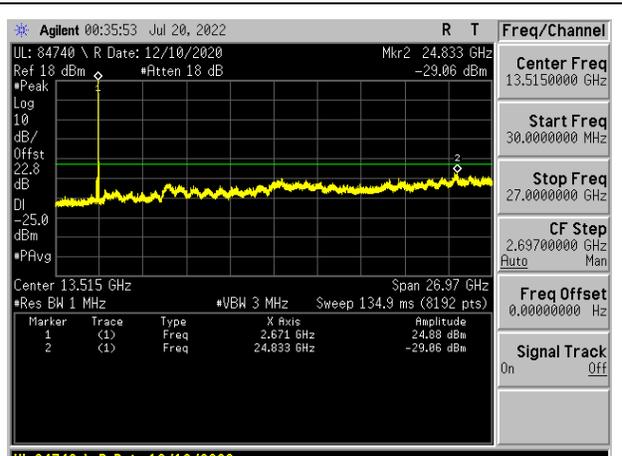
LTE41 20MHz QPSK HIGH Ch RB1-0



LTE41 20MHz 16QAM LOW Ch RB1-0



LTE41 20MHz 16QAM MID Ch RB1-0



LTE41 20MHz 16QAM HIGH Ch RB1-0

9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- (i) Temp. = -30°C to +50°C
- (ii) Voltage = Normal, Endpoint
 Normal, 3.89VDC
 End Voltage, 3.69VDC.

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

RESULTS

9.4.1. GSM

GSM850

| | | | |
|-------------------|-------------|------------|------------|
| Test Engineer ID: | 85502/44389 | Test Date: | 2022-07-22 |
|-------------------|-------------|------------|------------|

| Limit | | 824 | 849 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 824.2000 | 848.8000 | | | | |
| Extreme (50C) | | 824.2000 | 848.8000 | 16.0 | 17.0 | 0.04 | 0.04 |
| Extreme (40C) | | 824.2000 | 848.8000 | 19.8 | 19.4 | 0.05 | 0.05 |
| Extreme (30C) | | 824.2000 | 848.8000 | 18.4 | 21.0 | 0.04 | 0.05 |
| Extreme (10C) | | 824.2000 | 848.8000 | 22.6 | 23.5 | 0.05 | 0.06 |
| Extreme (0C) | | 824.2000 | 848.8000 | 22.9 | 19.6 | 0.06 | 0.05 |
| Extreme (-10C) | | 824.2000 | 848.8000 | 22.0 | 25.8 | 0.05 | 0.06 |
| Extreme (-20C) | | 824.2000 | 848.8000 | 21.4 | 22.9 | 0.05 | 0.05 |
| Extreme (-30C) | | 824.2000 | 848.8000 | 19.8 | 22.3 | 0.05 | 0.05 |
| 20C | | End Point | 824.2000 | 848.8000 | 22.3 | 21.7 | 0.05 |

GSM1900

| | | | |
|--------------------------|-------------|-------------------|------------|
| Test Engineer ID: | 85502/44389 | Test Date: | 2022-07-22 |
|--------------------------|-------------|-------------------|------------|

| Limit | | 1850 | 1910 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|-----------|----------------|-----------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm | F high @ -13dBm | | | | |
| Temperature | Voltage | (MHz) | (MHz) | | | | |
| Normal (20C) | Normal | 1850.2000 | 1909.8000 | | | | |
| Extreme (50C) | | 1850.2000 | 1909.8000 | 16.7 | 16.6 | 0.02 | 0.02 |
| Extreme (40C) | | 1850.2000 | 1909.8000 | 15.0 | 16.2 | 0.02 | 0.02 |
| Extreme (30C) | | 1850.2000 | 1909.8000 | 15.3 | 15.5 | 0.02 | 0.02 |
| Extreme (10C) | | 1850.2000 | 1909.8000 | 15.7 | 15.4 | 0.02 | 0.02 |
| Extreme (0C) | | 1850.2000 | 1909.8000 | 21.3 | 21.0 | 0.02 | 0.02 |
| Extreme (-10C) | | 1850.2000 | 1909.8000 | 22.0 | 22.7 | 0.02 | 0.02 |
| Extreme (-20C) | | 1850.2000 | 1909.8000 | 22.9 | 24.7 | 0.02 | 0.03 |
| Extreme (-30C) | | 1850.2000 | 1909.8000 | 22.3 | 22.2 | 0.02 | 0.02 |
| 20C | End Point | 1850.2000 | 1909.8000 | 21.0 | 21.9 | 0.02 | 0.02 |

9.4.2. WCDMA

REL99

| | | | |
|--------------------------|-------------|-------------------|------------|
| Test Engineer ID: | 84740/44389 | Test Date: | 2022-07-22 |
|--------------------------|-------------|-------------------|------------|

| Limit | | 824 | 849 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------|-----------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm | F high @ -13dBm | | | | |
| Temperature | Voltage | (MHz) | (MHz) | | | | |
| Normal (20C) | Normal | 826.4000 | 846.6000 | | | | |
| Extreme (50C) | | 826.4000 | 846.6000 | 1.3 | -3.1 | 0.00 | -0.01 |
| Extreme (40C) | | 826.4000 | 846.6000 | 1.6 | -2.9 | 0.00 | -0.01 |
| Extreme (30C) | | 826.4000 | 846.6000 | 2.7 | -2.7 | 0.01 | -0.01 |
| Extreme (10C) | | 826.4000 | 846.6000 | 0.5 | -0.7 | 0.00 | 0.00 |
| Extreme (0C) | | 826.4000 | 846.6000 | -1.7 | 2.1 | 0.00 | 0.00 |
| Extreme (-10C) | | 826.4000 | 846.6000 | -1.5 | 2.6 | 0.00 | 0.01 |
| Extreme (-20C) | | 826.4000 | 846.6000 | -2.2 | 4.1 | -0.01 | 0.01 |
| Extreme (-30C) | | 826.4000 | 846.6000 | -3.1 | 3.8 | -0.01 | 0.01 |
| 20C | | End Point | 826.4000 | 846.6000 | -1.8 | 2.1 | 0.00 |

9.4.3. LTE BAND 4

LIMITS

FCC: §27.54

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

| | | | |
|-------------------|-------------|------------|------------|
| Test Engineer ID: | 85502/44389 | Test Date: | 2022-07-23 |
|-------------------|-------------|------------|------------|

QPSK (20MHz)

| Limit | | 1710 | 1755 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 1720.0000 | 1745.0000 | | | | |
| Extreme (50C) | | 1720.0000 | 1745.0000 | -2.8 | -3.5 | 0.00 | 0.00 |
| Extreme (40C) | | 1720.0000 | 1745.0000 | -2.6 | -1.9 | 0.00 | 0.00 |
| Extreme (30C) | | 1720.0000 | 1745.0000 | 2.7 | 3.0 | 0.00 | 0.00 |
| Extreme (10C) | | 1720.0000 | 1745.0000 | 2.5 | 2.7 | 0.00 | 0.00 |
| Extreme (0C) | | 1720.0000 | 1745.0000 | 1.2 | 2.1 | 0.00 | 0.00 |
| Extreme (-10C) | | 1720.0000 | 1745.0000 | 2.0 | 0.6 | 0.00 | 0.00 |
| Extreme (-20C) | | 1720.0000 | 1745.0000 | -2.0 | 2.2 | 0.00 | 0.00 |
| Extreme (-30C) | | 1720.0000 | 1745.0000 | 1.9 | 2.5 | 0.00 | 0.00 |
| 20C | | End Point | 1720.0000 | 1745.0000 | -2.0 | -2.4 | 0.00 |

9.4.4. LTE BAND 5

LIMITS

FCC: §22.355

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

| | | | |
|--------------------------|-------------|-------------------|------------|
| Test Engineer ID: | 84740/44389 | Test Date: | 2022-07-22 |
|--------------------------|-------------|-------------------|------------|

QPSK (10MHz)

| Limit | | 824 | 849 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 829.0000 | 844.0000 | | | | |
| Extreme (50C) | | 829.0000 | 844.0000 | -2.1 | 0.6 | -0.01 | 0.00 |
| Extreme (40C) | | 829.0000 | 844.0000 | 1.1 | 0.1 | 0.00 | 0.00 |
| Extreme (30C) | | 829.0000 | 844.0000 | -0.5 | -0.3 | 0.00 | 0.00 |
| Extreme (10C) | | 829.0000 | 844.0000 | 0.0 | 0.1 | 0.00 | 0.00 |
| Extreme (0C) | | 829.0000 | 844.0000 | 0.1 | 0.8 | 0.00 | 0.00 |
| Extreme (-10C) | | 829.0000 | 844.0000 | -0.4 | -0.4 | 0.00 | 0.00 |
| Extreme (-20C) | | 829.0000 | 844.0000 | 0.9 | -0.9 | 0.00 | 0.00 |
| Extreme (-30C) | | 829.0000 | 844.0000 | -0.1 | 0.4 | 0.00 | 0.00 |
| 20C | | End Point | 829.0000 | 844.0000 | 1.2 | 1.2 | 0.00 |

9.4.5. LTE BAND 12

LIMITS

FCC: §27.54

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

| | | | |
|-------------------|-------------|------------|------------|
| Test Engineer ID: | 84740/44389 | Test Date: | 2022-07-22 |
|-------------------|-------------|------------|------------|

QPSK (10MHz)

| Limit | | 699 | 716 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 704.0000 | 711.0000 | | | | |
| Extreme (50C) | | 704.0000 | 711.0000 | -0.4 | 0.4 | 0.00 | 0.00 |
| Extreme (40C) | | 704.0000 | 711.0000 | 0.1 | 0.9 | 0.00 | 0.00 |
| Extreme (30C) | | 704.0000 | 711.0000 | 0.2 | 0.4 | 0.00 | 0.00 |
| Extreme (10C) | | 704.0000 | 711.0000 | 0.3 | 0.6 | 0.00 | 0.00 |
| Extreme (0C) | | 704.0000 | 711.0000 | 0.8 | 0.4 | 0.00 | 0.00 |
| Extreme (-10C) | | 704.0000 | 711.0000 | -0.2 | 0.5 | 0.00 | 0.00 |
| Extreme (-20C) | | 704.0000 | 711.0000 | 0.4 | 0.4 | 0.00 | 0.00 |
| Extreme (-30C) | | 704.0000 | 711.0000 | 0.0 | 0.1 | 0.00 | 0.00 |
| 20C | | End Point | 704.0000 | 711.0000 | 0.1 | 0.5 | 0.00 |

9.4.6. LTE BAND 13

LIMITS

FCC: §27.54

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

| | | | |
|-------------------|-------------|------------|------------|
| Test Engineer ID: | 85502/44389 | Test Date: | 2022-07-23 |
|-------------------|-------------|------------|------------|

QPSK (10MHz)

| Limit | | 777 | 787 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 779.5000 | 784.5000 | | | | |
| Extreme (50C) | | 779.5000 | 784.5000 | 1.1 | -0.3 | 0.00 | 0.00 |
| Extreme (40C) | | 779.5000 | 784.5000 | -1.8 | 1.7 | 0.00 | 0.00 |
| Extreme (30C) | | 779.5000 | 784.5000 | 2.8 | 2.3 | 0.01 | 0.01 |
| Extreme (10C) | | 779.5000 | 784.5000 | 2.0 | 2.2 | 0.01 | 0.01 |
| Extreme (0C) | | 779.5000 | 784.5000 | 2.2 | 2.2 | 0.01 | 0.01 |
| Extreme (-10C) | | 779.5000 | 784.5000 | 3.0 | 2.5 | 0.01 | 0.01 |
| Extreme (-20C) | | 779.5000 | 784.5000 | 2.1 | 1.6 | 0.01 | 0.00 |
| Extreme (-30C) | | 779.5000 | 784.5000 | 2.2 | 3.6 | 0.01 | 0.01 |
| 20C | | End Point | 779.5000 | 784.5000 | 2.5 | 2.2 | 0.01 |

9.4.7. LTE BAND 41

LIMITS

FCC: §27.54

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

| | | | |
|-------------------|-------------|------------|------------|
| Test Engineer ID: | 85502/44389 | Test Date: | 2022-07-23 |
|-------------------|-------------|------------|------------|

QPSK (20MHz)

| Limit | | 2496 | 2690 | Delta (Hz) LOW | Delta (Hz) HIGH | Frequency Stability (ppm) LOW | Frequency Stability (ppm) HIGH |
|----------------|---------|----------------------|-----------------------|----------------|-----------------|-------------------------------|--------------------------------|
| Condition | | F low @ -13dBm (MHz) | F high @ -13dBm (MHz) | | | | |
| Temperature | Voltage | | | | | | |
| Normal (20C) | Normal | 2506.0000 | 2680.0000 | | | | |
| Extreme (50C) | | 2506.0000 | 2680.0000 | -2.6 | -3.5 | 0.00 | 0.00 |
| Extreme (40C) | | 2506.0000 | 2680.0000 | -3.7 | -3.4 | 0.00 | 0.00 |
| Extreme (30C) | | 2506.0000 | 2680.0000 | -3.3 | -3.0 | 0.00 | 0.00 |
| Extreme (10C) | | 2506.0000 | 2680.0000 | -2.3 | -3.1 | 0.00 | 0.00 |
| Extreme (0C) | | 2506.0000 | 2680.0000 | -3.5 | -3.4 | 0.00 | 0.00 |
| Extreme (-10C) | | 2506.0000 | 2680.0000 | -3.6 | -3.0 | 0.00 | 0.00 |
| Extreme (-20C) | | 2506.0000 | 2680.0000 | -2.8 | -2.2 | 0.00 | 0.00 |
| Extreme (-30C) | | 2506.0000 | 2680.0000 | -3.6 | -3.4 | 0.00 | 0.00 |
| 20C | | End Point | 2506.0000 | 2680.0000 | -2.5 | -2.9 | 0.00 |

9.5. PEAK TO AVERAGE RATIO

LIMIT

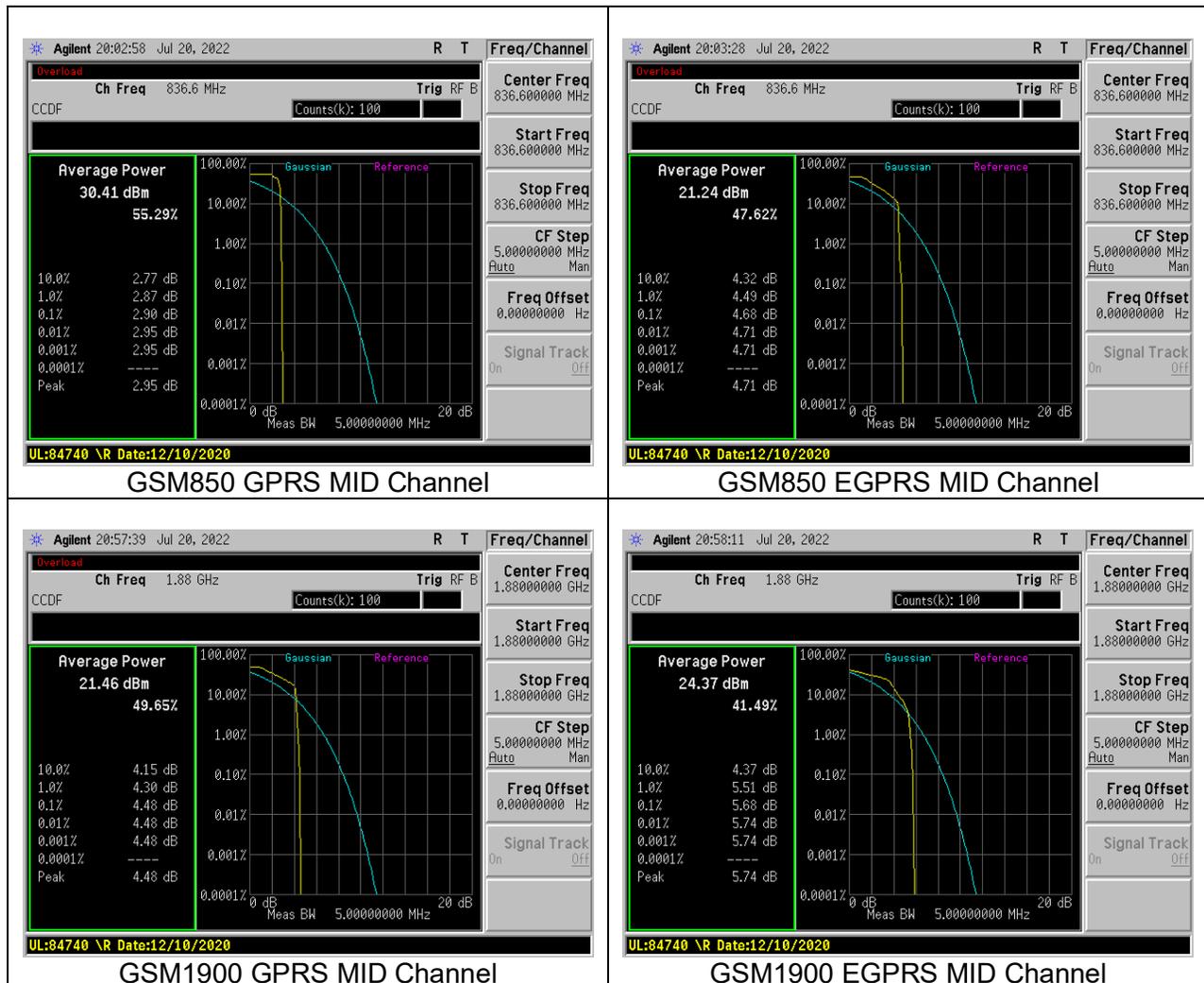
FCC 22.913 (d), 24.232 (d), 27.50 (d) (5), 27.50 (j) (4)

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.

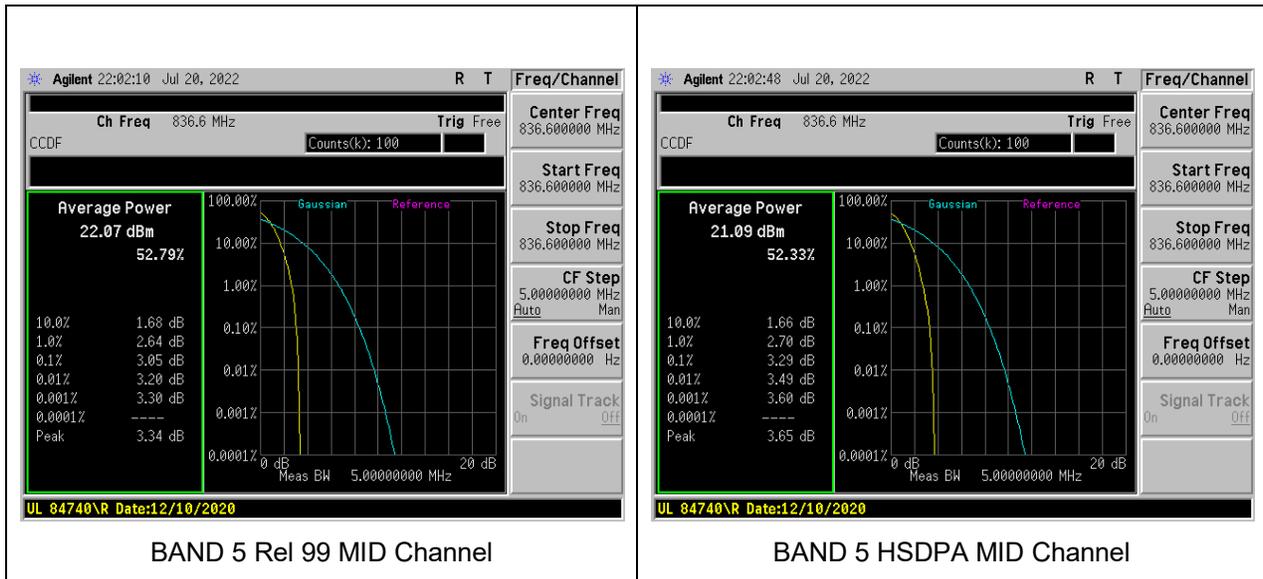
RESULTS

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

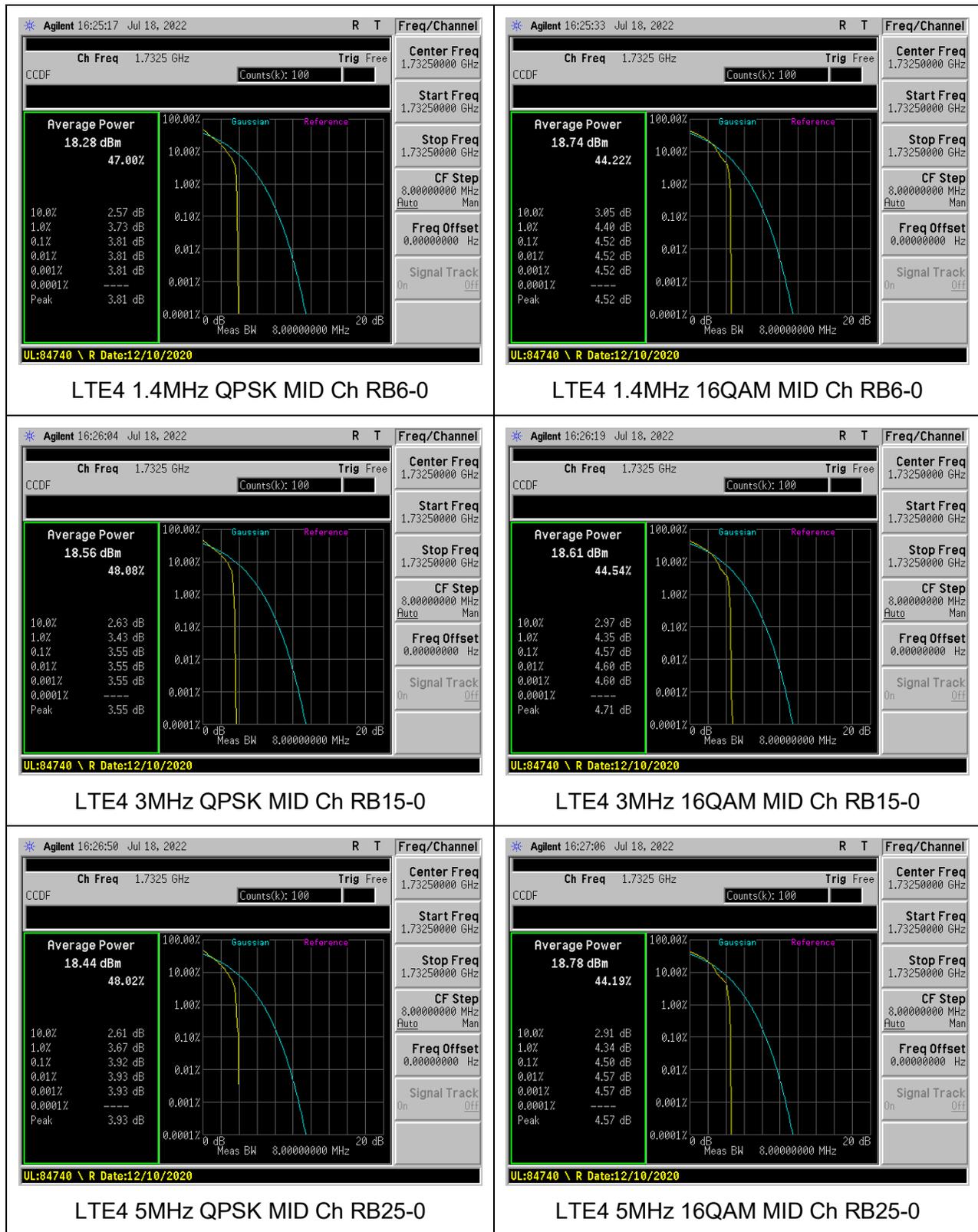
9.5.1. GSM



9.5.2. WCDMA



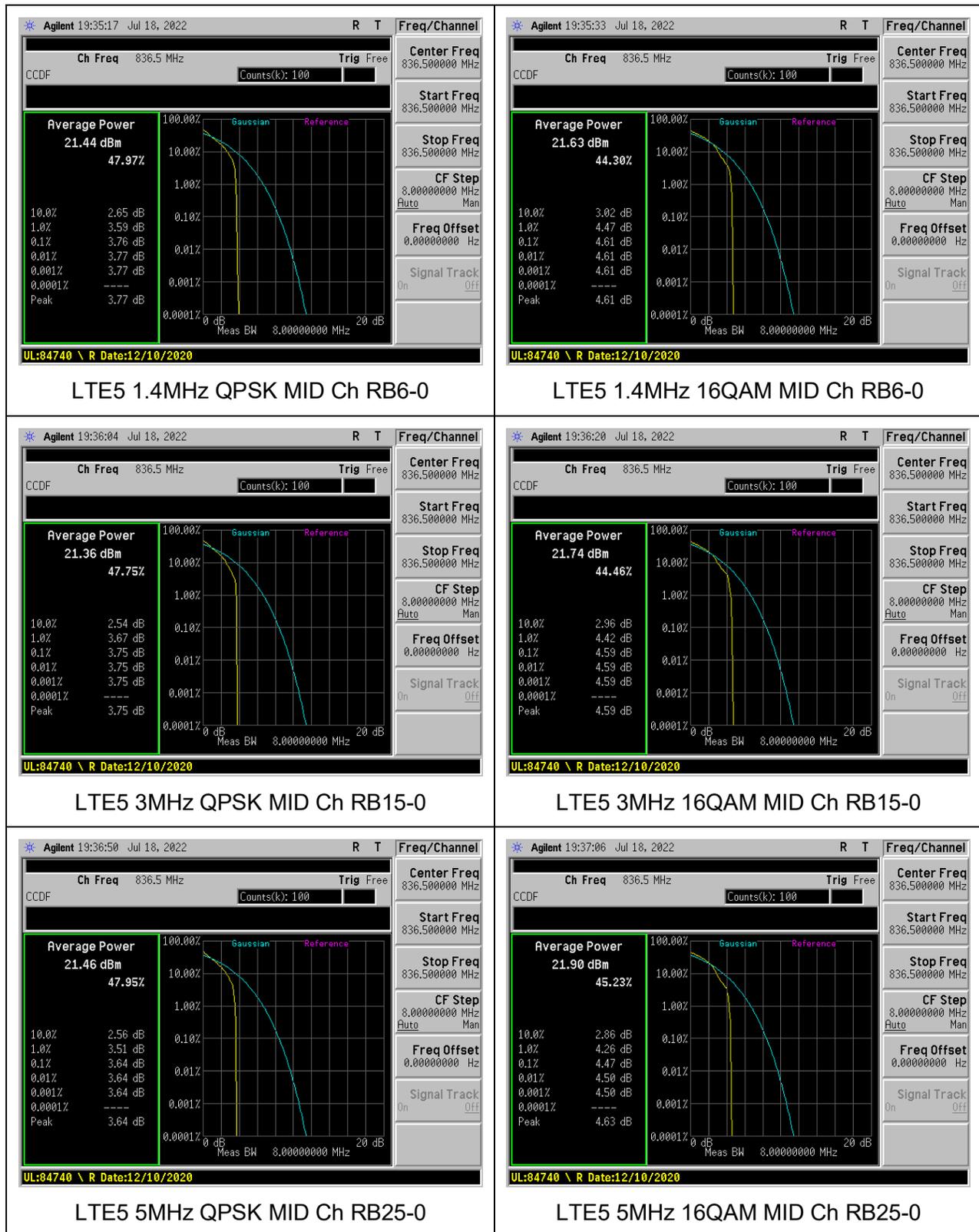
9.5.3. LTE BAND 4



| LTE Band and BW: | QPSK Mid Channel(dBm): | 16QAM Mid Channel(dBm): |
|------------------|------------------------|-------------------------|
| Band 4 10MHz | 23.32 - 17.90 = 5.42 | 24.25 - 17.9 = 6.35 |
| Band 4 15MHz | 23.36 - 17.7 = 5.66 | 24.24 - 17.8 = 6.44 |
| Band 4 20MHz | 23.19 - 17.76 = 5.43 | 24.30 - 17.77 = 6.53 |

Note: Due to limitations of the test equipment PAR testing of frequencies with BWs greater than or equal to 10MHz were done with a Wideband power meter. Testing was performed in accordance with ANCI:C63.26-2015, where $PAPR (dB) = P_{pk} (Meas. Peak Power) - P_{avg} (Meas. Avg Power)$.

9.5.4. LTE BAND 5



| LTE Band and BW: | QPSK Mid Channel: | 16QAM Mid Channel: |
|------------------|-----------------------------|-----------------------------|
| Band 5 10MHz | 26.14dBm – 21.6dBm = 4.61dB | 27.07dBm – 22.0dBm = 5.69dB |

Note: Due to limitations of the test equipment PAR testing of frequencies with BWs greater than or equal to 10MHz were done with a Wideband power meter. Testing was performed in accordance with ANCI:C63.26-2015, where $PAPR (dB) = P_{pk} (Meas. Peak Power) - P_{avg} (Meas. Avg Power)$.

10. RADIATED TEST RESULTS

10.1. FIELD STRENGTH OF SPURIOUS RADIATION ABOVE 1GHz

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

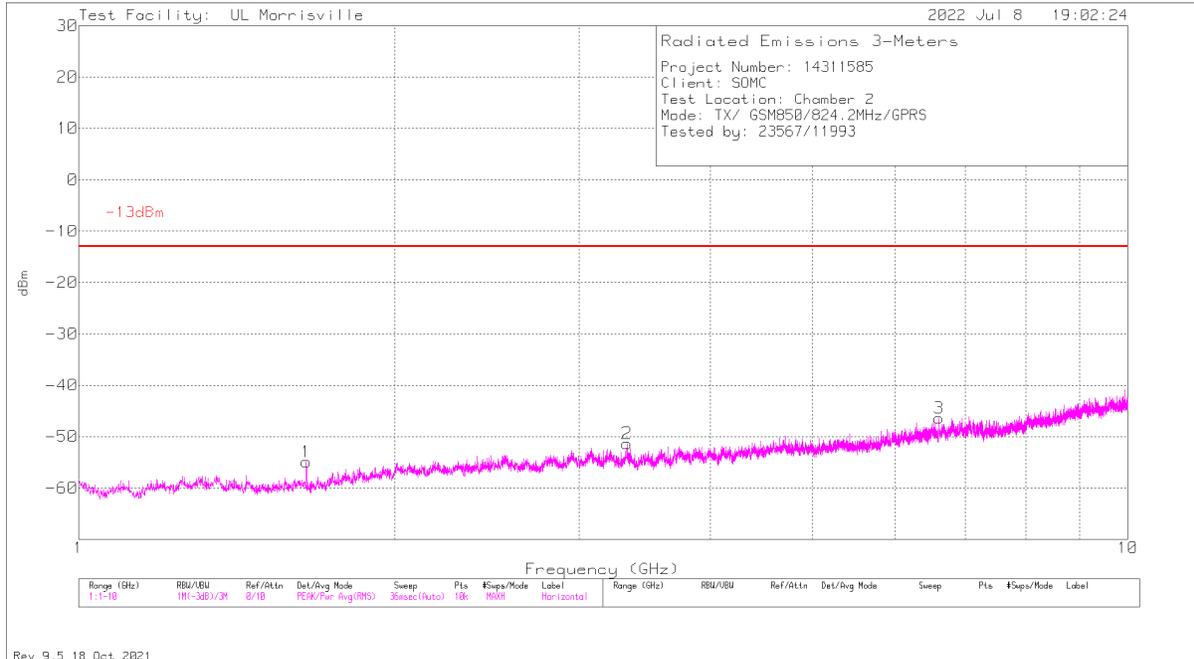
10.1.1. GSM850

LIMITS

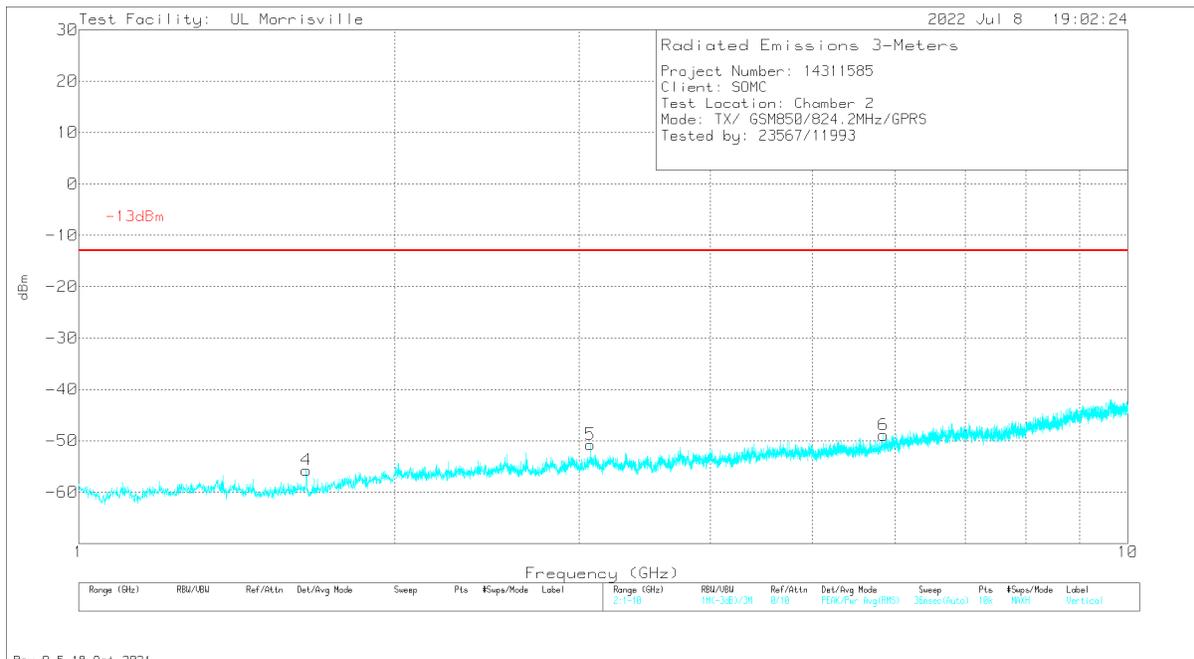
FCC: §22.917 (a)

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

GPRS Low Channel



Rev 9.5 18 Oct 2021

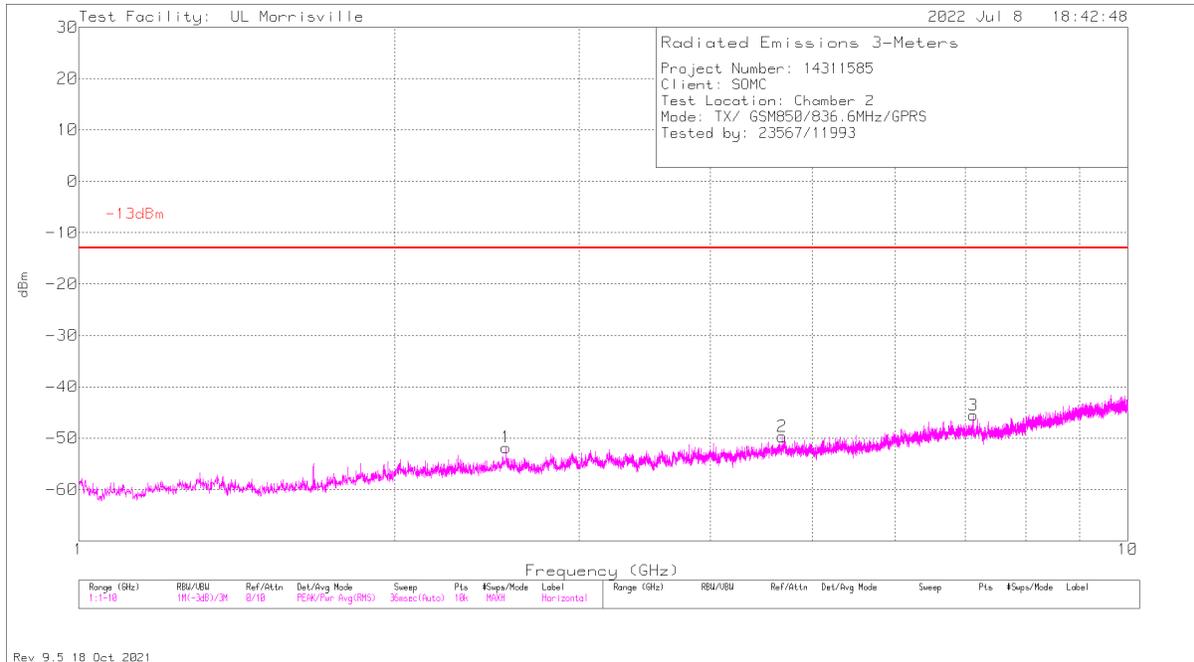


Rev 9.5 18 Oct 2021

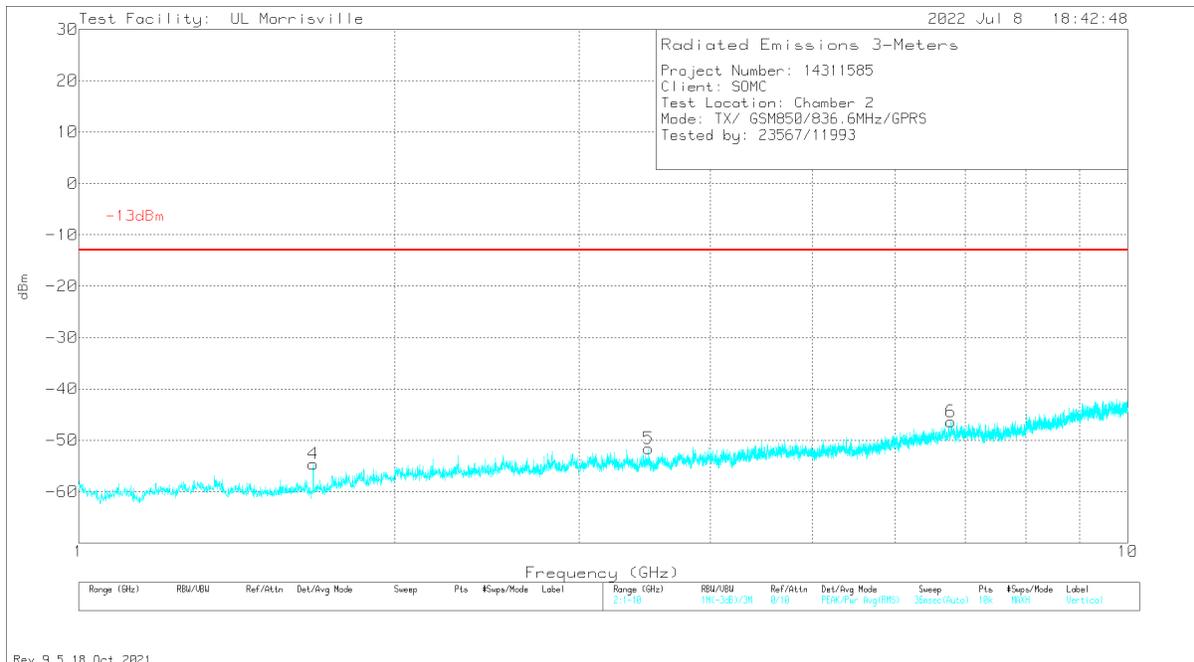
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 1.648 | -61.02 | Pk | 28.6 | -34.8 | .5 | 11.8 | -54.92 | -13 | -41.92 | 0-360 | 101 | H |
| 4 | 1.648 | -61.81 | Pk | 28.6 | -34.8 | .5 | 11.8 | -55.71 | -13 | -42.71 | 0-360 | 101 | V |
| 5 | 3.0745 | -62.85 | Pk | 33 | -33.4 | .7 | 11.8 | -50.75 | -13 | -37.75 | 0-360 | 101 | V |
| 2 | 3.331 | -63.47 | Pk | 32.6 | -33.1 | .8 | 11.8 | -51.37 | -13 | -38.37 | 0-360 | 101 | H |
| 6 | 5.851 | -66.26 | Pk | 34.9 | -29.8 | .5 | 11.8 | -48.86 | -13 | -35.86 | 0-360 | 200 | V |
| 3 | 6.607 | -65.81 | Pk | 35.6 | -28.6 | .6 | 11.8 | -46.41 | -13 | -33.41 | 0-360 | 101 | H |

Pk - Peak detector

GPRS Mid channel



Rev 9.5 18 Oct 2021

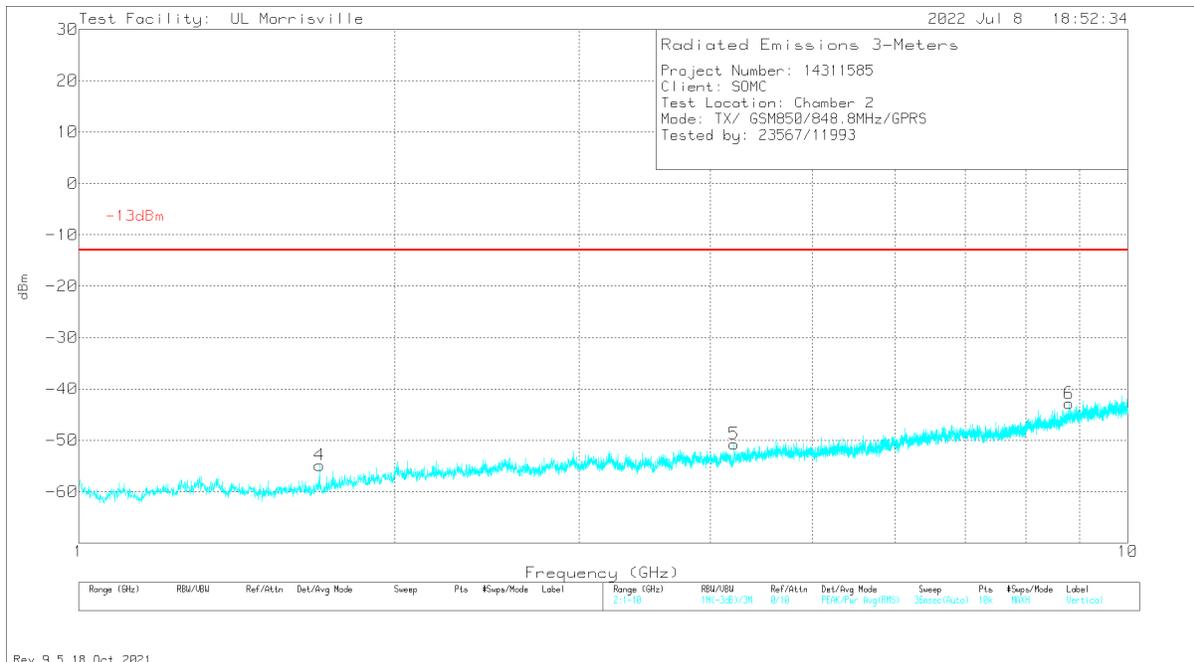
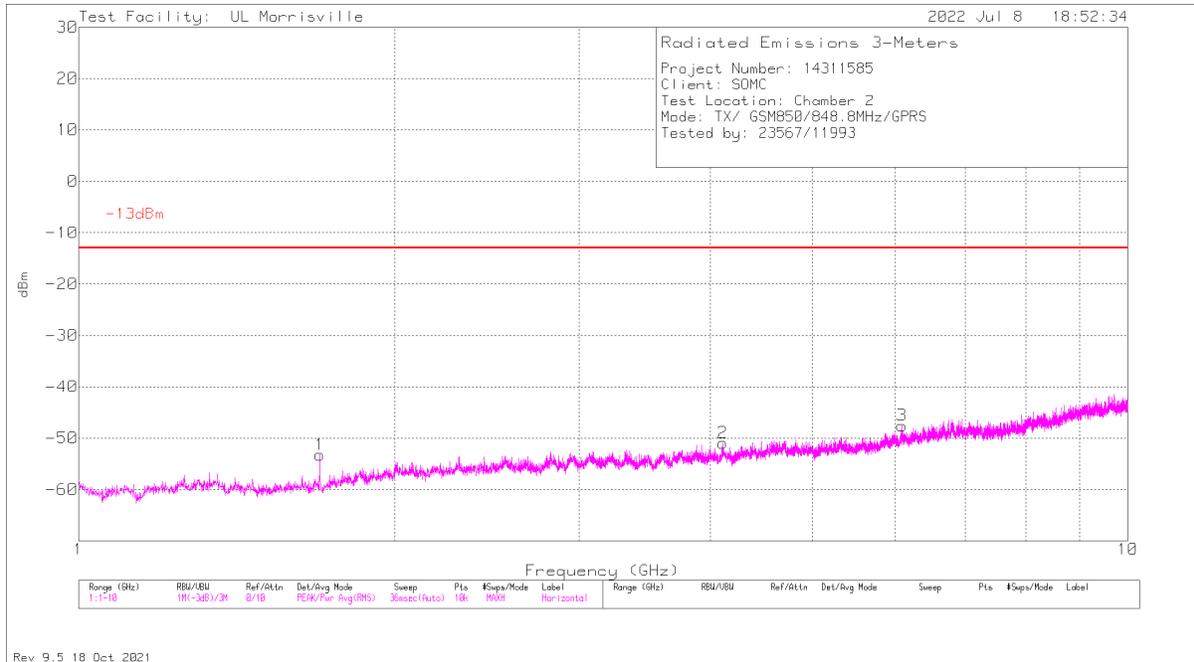


Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 4 | 1.6732 | -60.81 | Pk | 28.5 | -34.6 | .5 | 11.8 | -54.61 | -13 | -41.61 | 0-360 | 101 | V |
| 1 | 2.5543 | -63.01 | Pk | 32.5 | -33.6 | .5 | 11.8 | -51.81 | -13 | -38.81 | 0-360 | 200 | H |
| 5 | 3.4921 | -63.58 | Pk | 32.5 | -32.8 | .5 | 11.8 | -51.58 | -13 | -38.58 | 0-360 | 101 | V |
| 2 | 4.6855 | -65.01 | Pk | 34.1 | -30.9 | .3 | 11.8 | -49.71 | -13 | -36.71 | 0-360 | 100 | H |
| 6 | 6.7816 | -65.68 | Pk | 35.6 | -28.8 | .7 | 11.8 | -46.38 | -13 | -33.38 | 0-360 | 200 | V |
| 3 | 7.1254 | -65.54 | Pk | 35.7 | -28 | .5 | 11.8 | -45.54 | -13 | -32.54 | 0-360 | 300 | H |

Pk - Peak detector

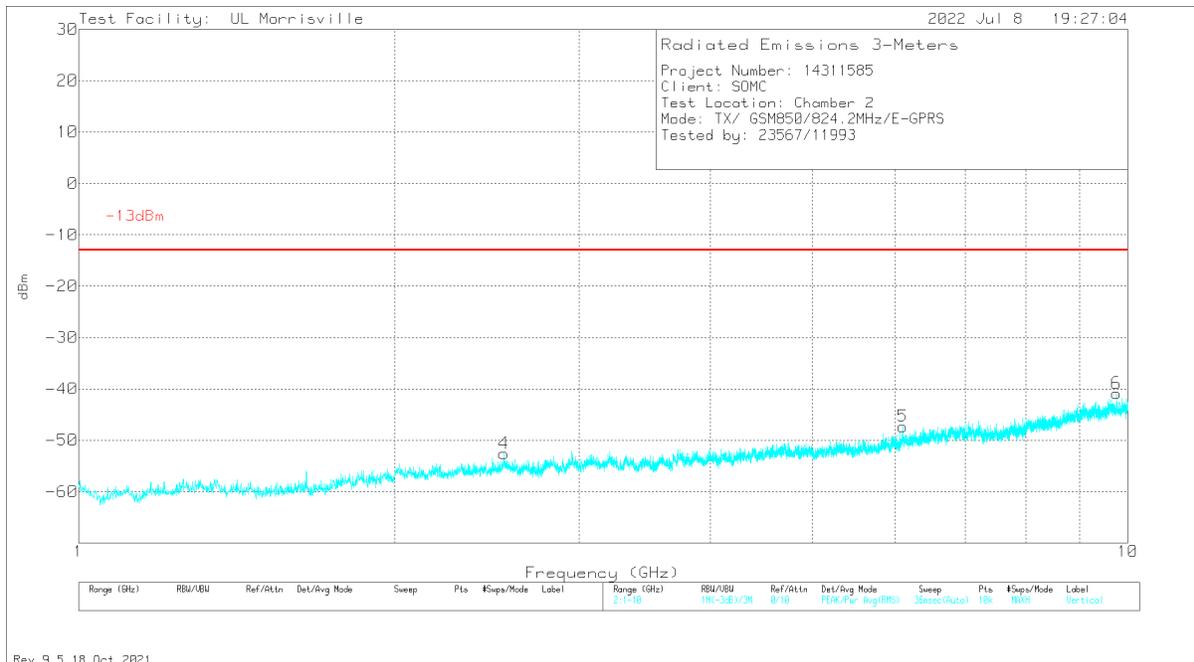
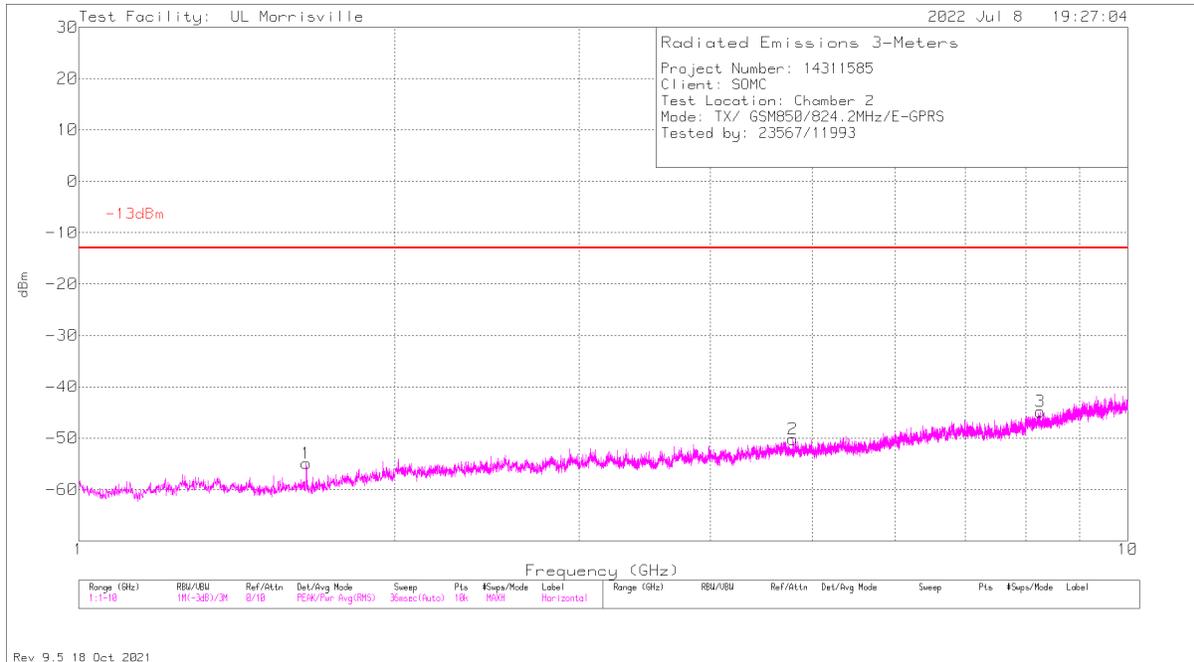
GPRS High Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 4 | 1.6966 | -61.35 | Pk | 28.7 | -34.5 | .5 | 11.8 | -54.85 | -13 | -41.85 | 0-360 | 101 | V |
| 1 | 1.6975 | -59.75 | Pk | 28.7 | -34.5 | .5 | 11.8 | -53.25 | -13 | -40.25 | 0-360 | 101 | H |
| 2 | 4.1095 | -64.95 | Pk | 33.4 | -31.7 | .5 | 11.8 | -50.95 | -13 | -37.95 | 0-360 | 199 | H |
| 5 | 4.2157 | -64.13 | Pk | 33.2 | -31.9 | .3 | 11.8 | -50.73 | -13 | -37.73 | 0-360 | 101 | V |
| 3 | 6.0904 | -66.24 | Pk | 35.2 | -29.1 | .8 | 11.8 | -47.54 | -13 | -34.54 | 0-360 | 101 | H |
| 6 | 8.7886 | -64.93 | Pk | 36 | -26.2 | .5 | 11.8 | -42.83 | -13 | -29.83 | 0-360 | 101 | V |

Pk - Peak detector

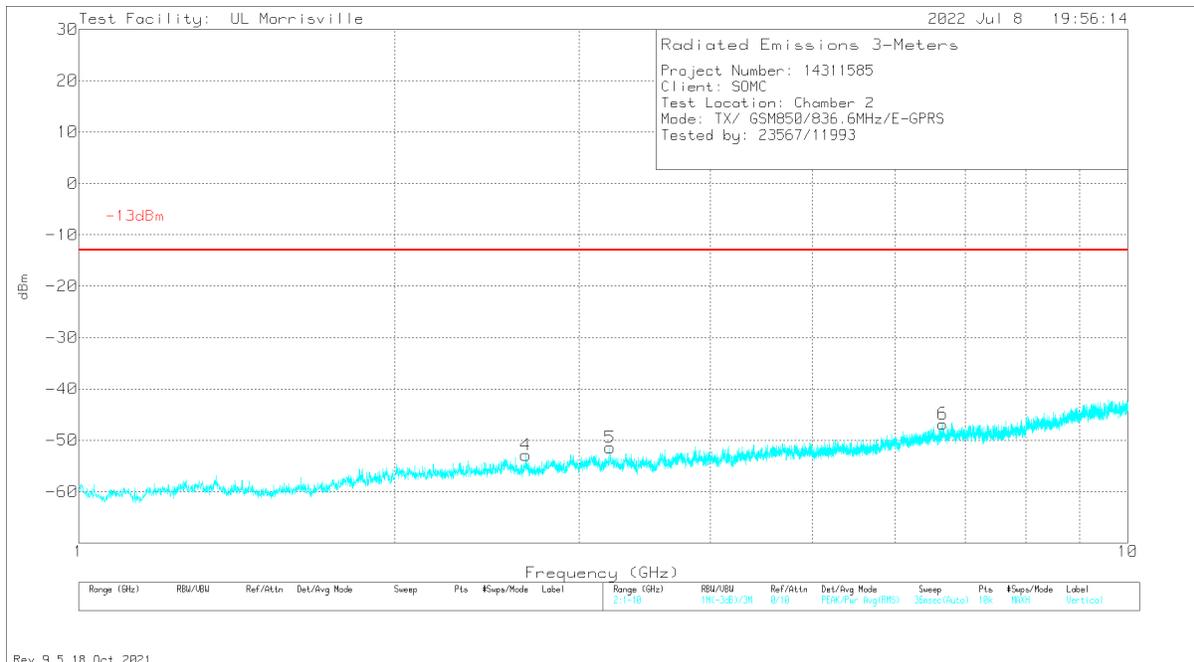
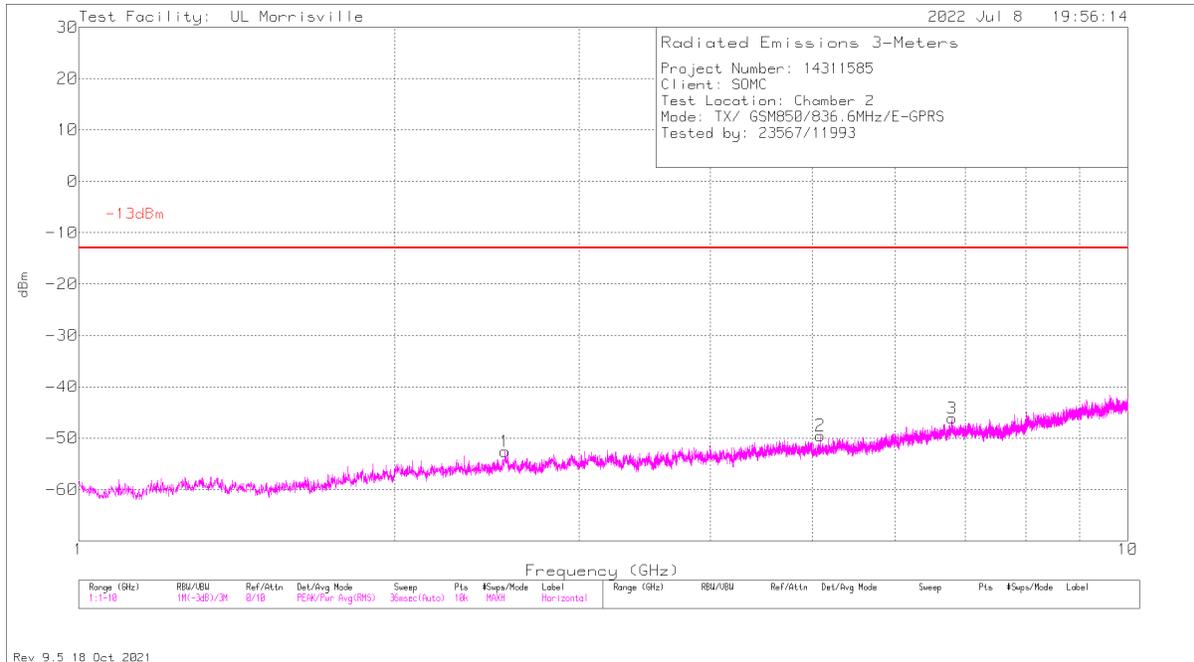
EGPRS Low Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 1.648 | -61.04 | Pk | 28.6 | -34.8 | .5 | 11.8 | -54.94 | -13 | -41.94 | 0-360 | 101 | H |
| 4 | 2.5426 | -63.68 | Pk | 32.5 | -33.7 | .5 | 11.8 | -52.58 | -13 | -39.58 | 0-360 | 201 | V |
| 2 | 4.7935 | -65 | Pk | 34 | -31.3 | .3 | 11.8 | -50.2 | -13 | -37.2 | 0-360 | 300 | H |
| 5 | 6.1012 | -65.91 | Pk | 35.3 | -29.2 | .7 | 11.8 | -47.31 | -13 | -34.31 | 0-360 | 201 | V |
| 3 | 8.2522 | -65.86 | Pk | 35.8 | -27 | .4 | 11.8 | -44.86 | -13 | -31.86 | 0-360 | 101 | H |
| 6 | 9.7516 | -64.59 | Pk | 36.8 | -25.8 | .9 | 11.8 | -40.89 | -13 | -27.89 | 0-360 | 300 | V |

Pk - Peak detector

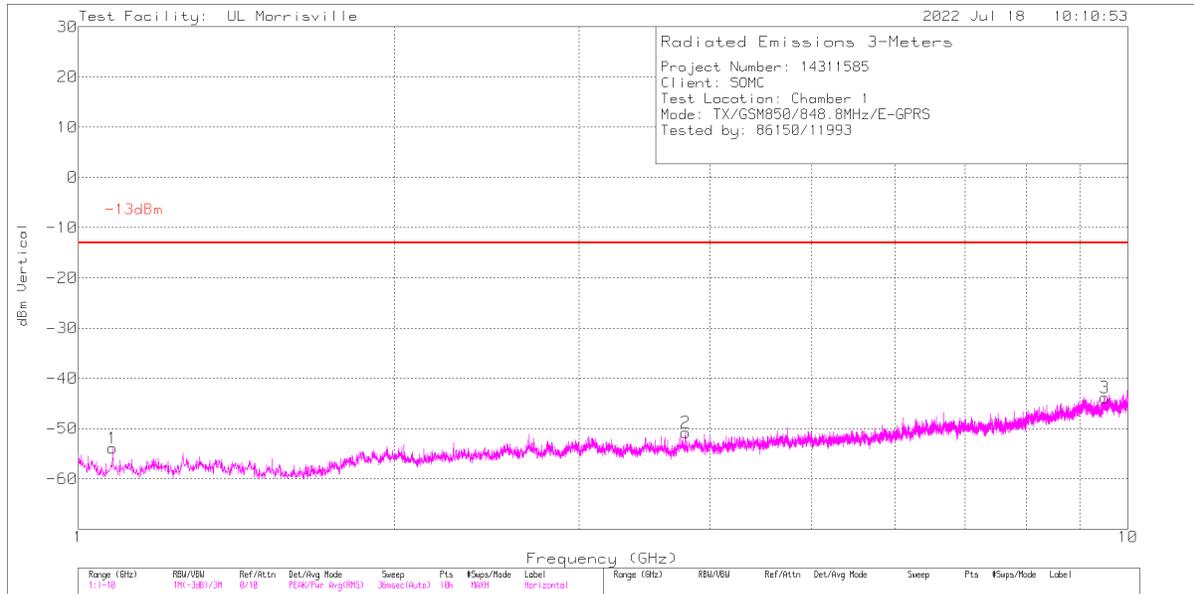
EGPRS Mid Channel



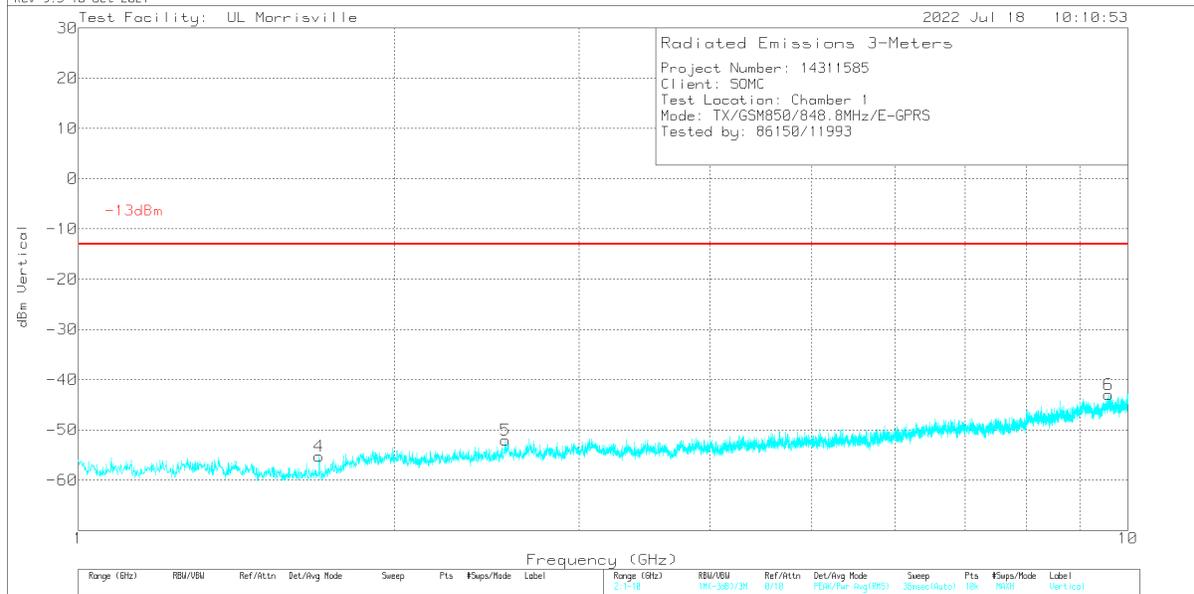
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 2.5489 | -63.83 | Pk | 32.5 | -33.6 | .5 | 11.8 | -52.63 | -13 | -39.63 | 0-360 | 300 | H |
| 4 | 2.6677 | -63.48 | Pk | 32.1 | -33.8 | .5 | 11.8 | -52.88 | -13 | -39.88 | 0-360 | 200 | V |
| 5 | 3.2095 | -63.62 | Pk | 32.8 | -33.2 | .8 | 11.8 | -51.42 | -13 | -38.42 | 0-360 | 101 | V |
| 2 | 5.0896 | -64.32 | Pk | 34.1 | -31.5 | .4 | 11.8 | -49.52 | -13 | -36.52 | 0-360 | 300 | H |
| 6 | 6.6601 | -66.34 | Pk | 35.6 | -28.5 | .6 | 11.8 | -46.84 | -13 | -33.84 | 0-360 | 300 | V |
| 3 | 6.7987 | -66.24 | Pk | 35.6 | -28 | .7 | 11.8 | -46.14 | -13 | -33.14 | 0-360 | 200 | H |

Pk - Peak detector

EGPRS High Channel



Rev 9.5 18 Oct 2021



Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 1.0783 | -59 | Pk | 27.7 | -35.6 | 1.2 | 11.8 | -53.9 | -13 | -40.9 | 0-360 | 101 | H |
| 4 | 1.6966 | -60.82 | Pk | 29 | -35.7 | .5 | 11.8 | -55.22 | -13 | -42.22 | 0-360 | 200 | V |
| 5 | 2.5516 | -62.65 | Pk | 32.6 | -34.3 | .5 | 11.8 | -52.05 | -13 | -39.05 | 0-360 | 200 | V |
| 2 | 3.79 | -63.14 | Pk | 33.4 | -33 | .2 | 11.8 | -50.74 | -13 | -37.74 | 0-360 | 300 | H |
| 3 | 9.5104 | -64.86 | Pk | 36.8 | -28.5 | .9 | 11.8 | -43.86 | -13 | -30.86 | 0-360 | 300 | H |
| 6 | 9.5833 | -63.34 | Pk | 36.8 | -28.8 | .6 | 11.8 | -42.94 | -13 | -29.94 | 0-360 | 200 | V |

Pk - Peak detector

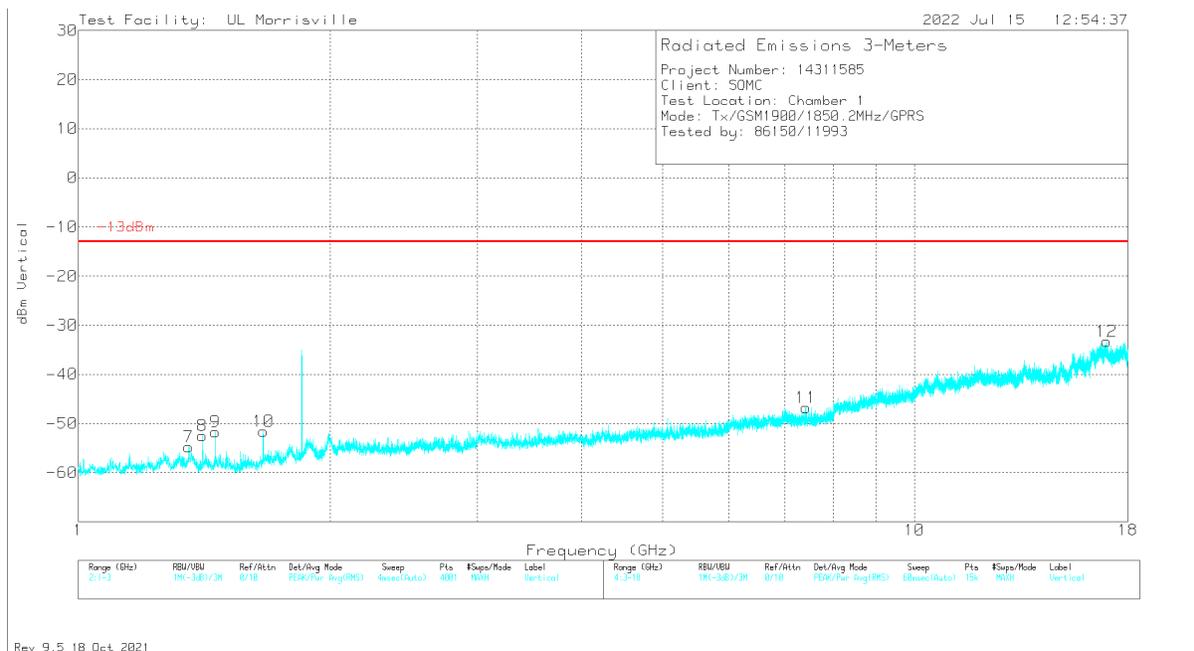
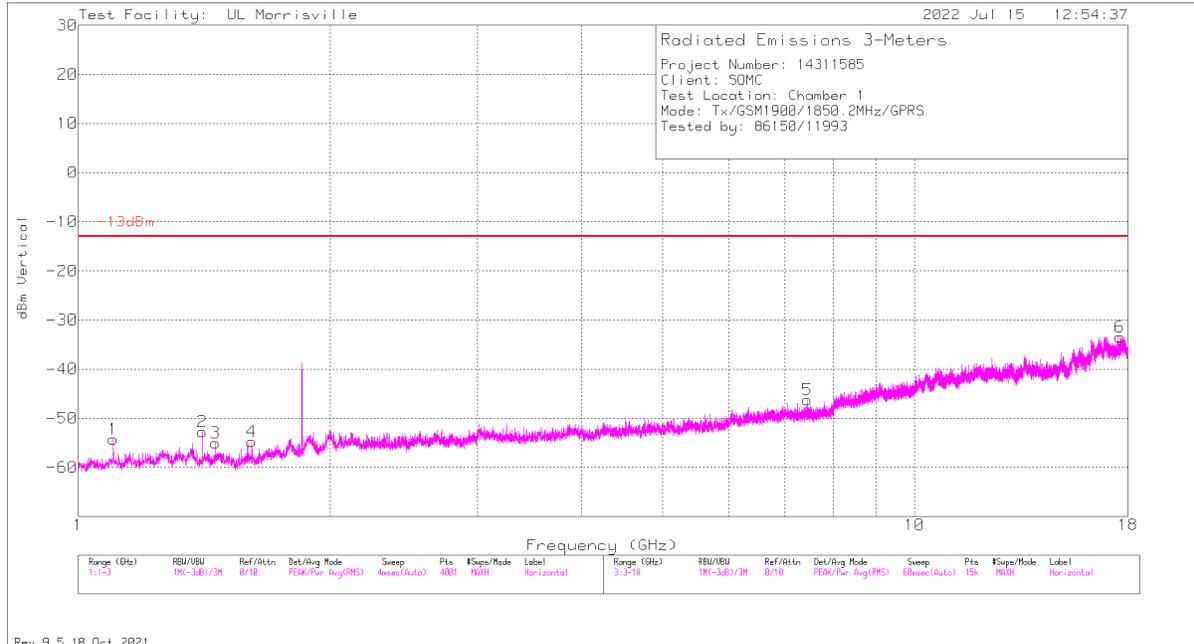
10.1.2. GSM1900

LIMITS

FCC: §24.238 (a)

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

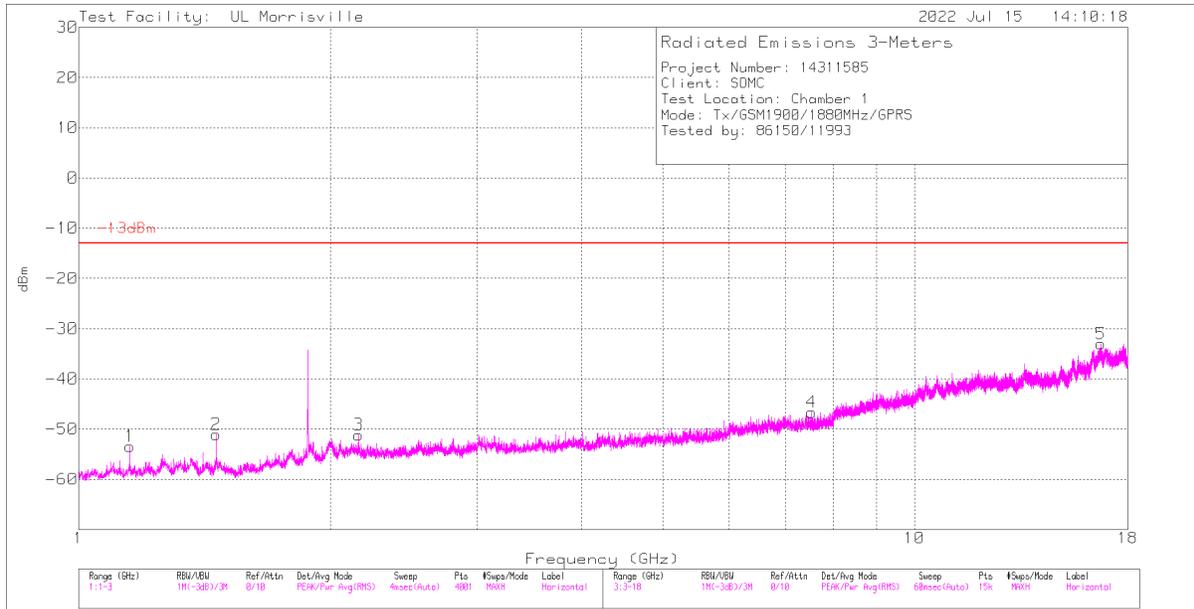
GPRS Low Channel



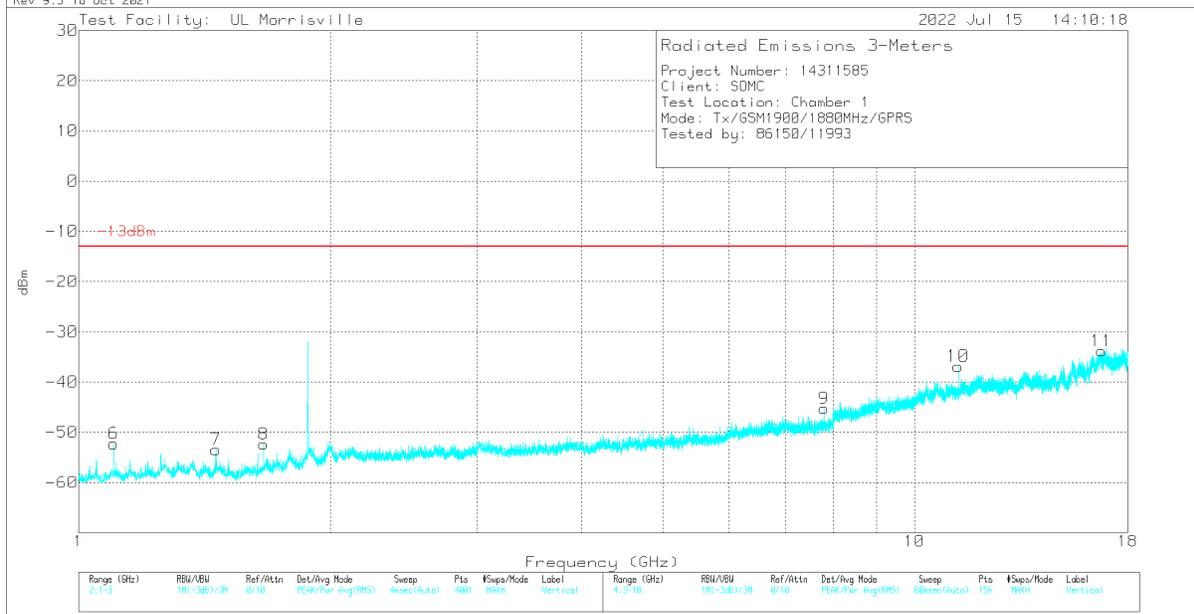
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 1.101 | -58.41 | Pk | 28.1 | -36 | 11.8 | .3 | -54.21 | -13 | -41.21 | 0-360 | 101 | H |
| 7 | 1.356 | -60.54 | Pk | 29.6 | -36.2 | 11.8 | .6 | -54.74 | -13 | -41.74 | 0-360 | 101 | V |
| 2 | 1.4075 | -58.56 | Pk | 28.7 | -35.5 | 11.8 | .8 | -52.76 | -13 | -39.76 | 0-360 | 101 | H |
| 8 | 1.4075 | -58.24 | Pk | 28.7 | -35.5 | 11.8 | .8 | -52.44 | -13 | -39.44 | 0-360 | 200 | V |
| 3 | 1.4585 | -60.79 | Pk | 28.5 | -35.3 | 11.8 | .8 | -54.99 | -13 | -41.99 | 0-360 | 300 | H |
| 9 | 1.459 | -57.56 | Pk | 28.5 | -35.3 | 11.8 | .8 | -51.76 | -13 | -38.76 | 0-360 | 200 | V |
| 4 | 1.6125 | -60.87 | Pk | 28.4 | -35.4 | 11.8 | 1.3 | -54.77 | -13 | -41.77 | 0-360 | 300 | H |
| 10 | 1.664 | -58.13 | Pk | 28.6 | -35.6 | 11.8 | 1.7 | -51.63 | -13 | -38.63 | 0-360 | 101 | V |
| 11 | 7.414 | -65.11 | Pk | 35.6 | -29.1 | 11.8 | 0 | -46.81 | -13 | -33.81 | 0-360 | 101 | V |
| 5 | 7.451 | -64.2 | Pk | 35.6 | -29.4 | 11.8 | 0 | -46.2 | -13 | -33.2 | 0-360 | 300 | H |
| 12 | 16.968 | -63.32 | Pk | 41.8 | -23.6 | 11.8 | 0 | -33.32 | -13 | -20.32 | 0-360 | 200 | V |
| 6 | 17.614 | -63.58 | Pk | 41.2 | -22.8 | 11.8 | 0 | -33.38 | -13 | -20.38 | 0-360 | 300 | H |

Pk - Peak detector

GPRS Mid Channel



Rev 9.5 18 Oct 2021

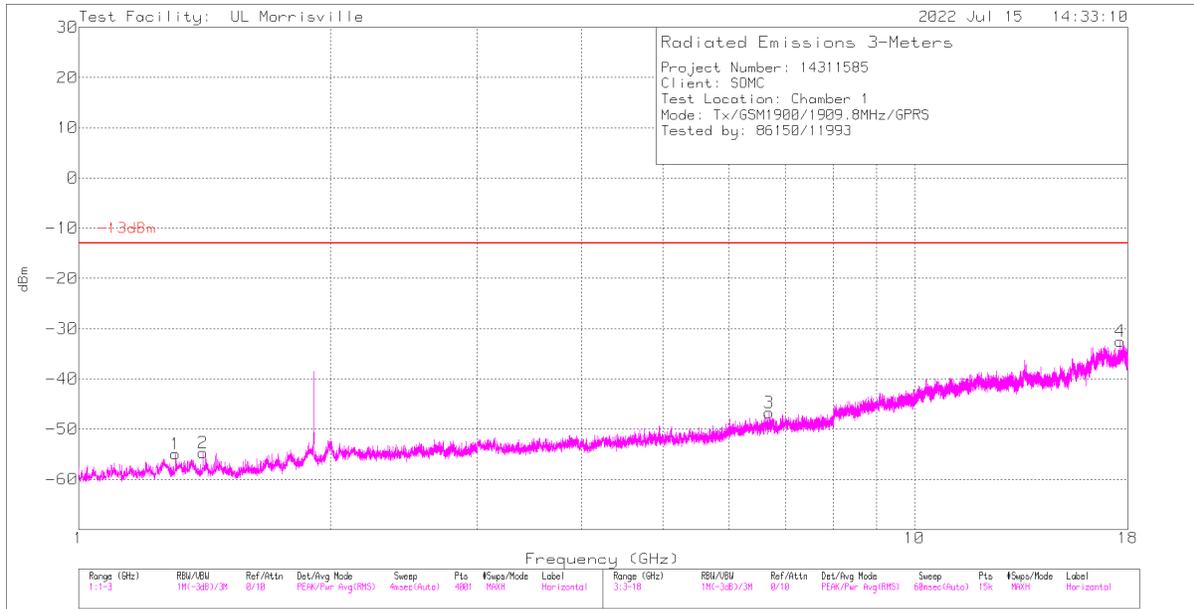


Rev 9.5 18 Oct 2021

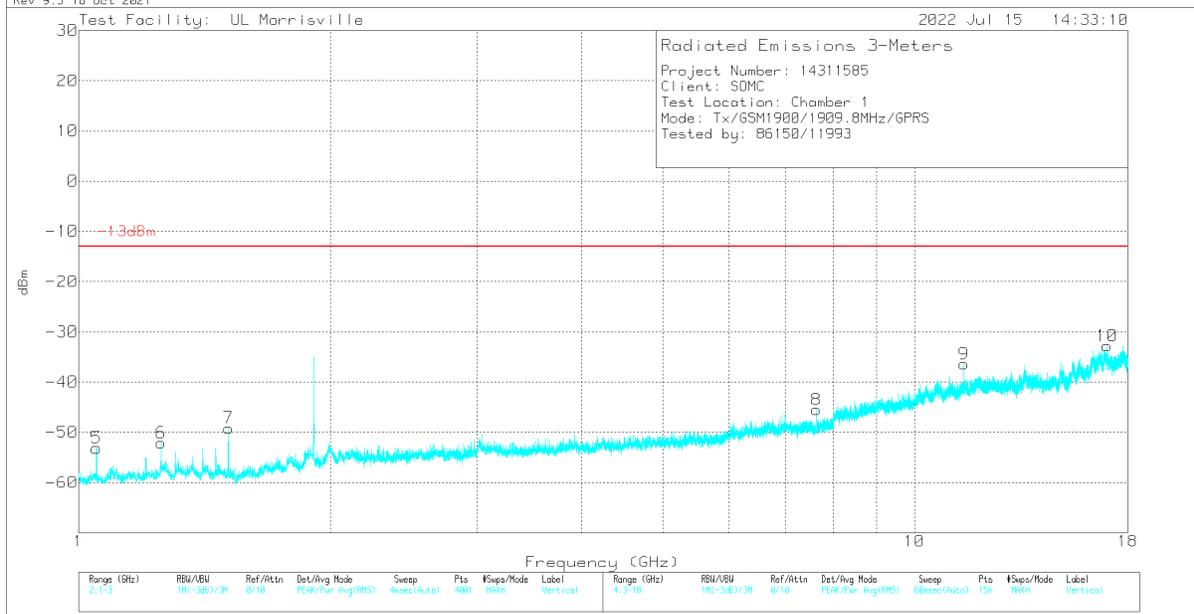
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 6 | 1.101 | -56.46 | Pk | 28.1 | -36 | 11.8 | .3 | -52.26 | -13 | -39.26 | 0-360 | 200 | V |
| 1 | 1.1515 | -57.91 | Pk | 28.1 | -35.7 | 11.8 | .3 | -53.41 | -13 | -40.41 | 0-360 | 200 | H |
| 7 | 1.459 | -59.21 | Pk | 28.5 | -35.3 | 11.8 | .8 | -53.41 | -13 | -40.41 | 0-360 | 200 | V |
| 2 | 1.46 | -56.96 | Pk | 28.5 | -35.2 | 11.8 | .8 | -51.06 | -13 | -38.06 | 0-360 | 300 | H |
| 8 | 1.664 | -58.86 | Pk | 28.6 | -35.6 | 11.8 | 1.7 | -52.36 | -13 | -39.36 | 0-360 | 101 | V |
| 3 | 2.1605 | -60.97 | Pk | 31.4 | -34.8 | 11.8 | 1.4 | -51.17 | -13 | -38.17 | 0-360 | 200 | H |
| 4 | 7.532 | -64.75 | Pk | 35.7 | -29.4 | 11.8 | 0 | -46.65 | -13 | -33.65 | 0-360 | 101 | H |
| 9 | 7.793 | -63.85 | Pk | 35.8 | -29 | 11.8 | 0 | -45.25 | -13 | -32.25 | 0-360 | 299 | V |
| 10 | 11.279 | -60.14 | Pk | 38 | -26.5 | 11.8 | 0 | -36.84 | -13 | -23.84 | 0-360 | 101 | V |
| 5 | 16.711 | -63.54 | Pk | 41.8 | -23.1 | 11.8 | 0 | -33.04 | -13 | -20.04 | 0-360 | 300 | H |
| 11 | 16.743 | -63.78 | Pk | 41.9 | -23.7 | 11.8 | 0 | -33.78 | -13 | -20.78 | 0-360 | 299 | V |

Pk - Peak detector

GPRS High Channel



Rev 9.5 18 Oct 2021

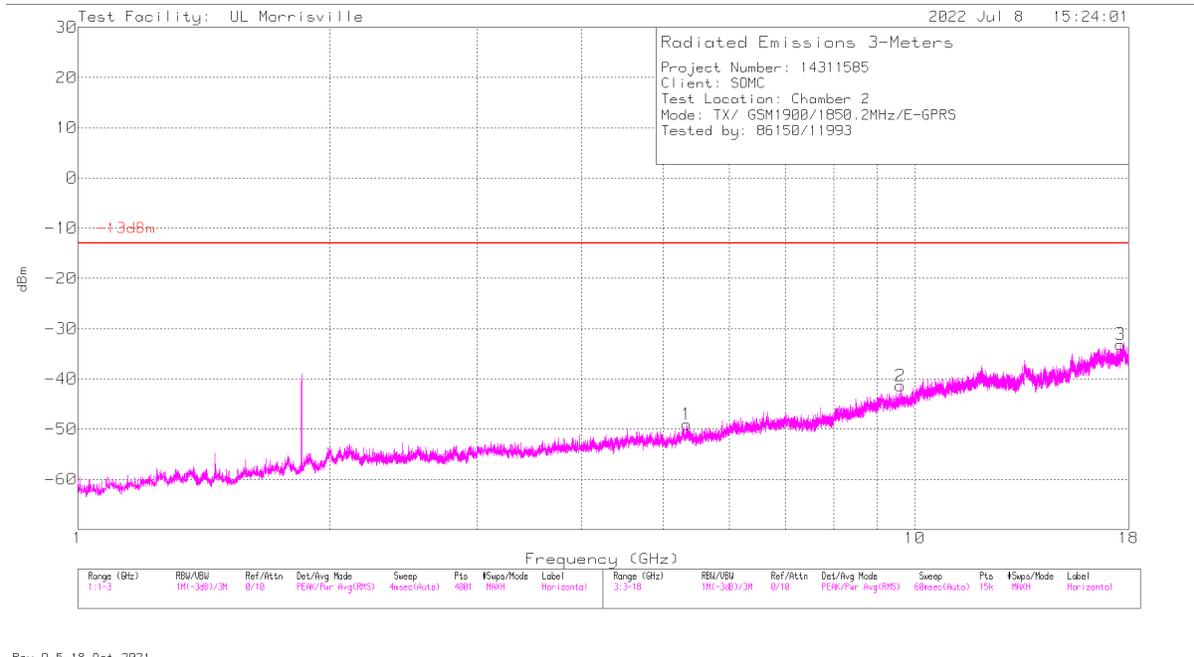


Rev 9.5 18 Oct 2021

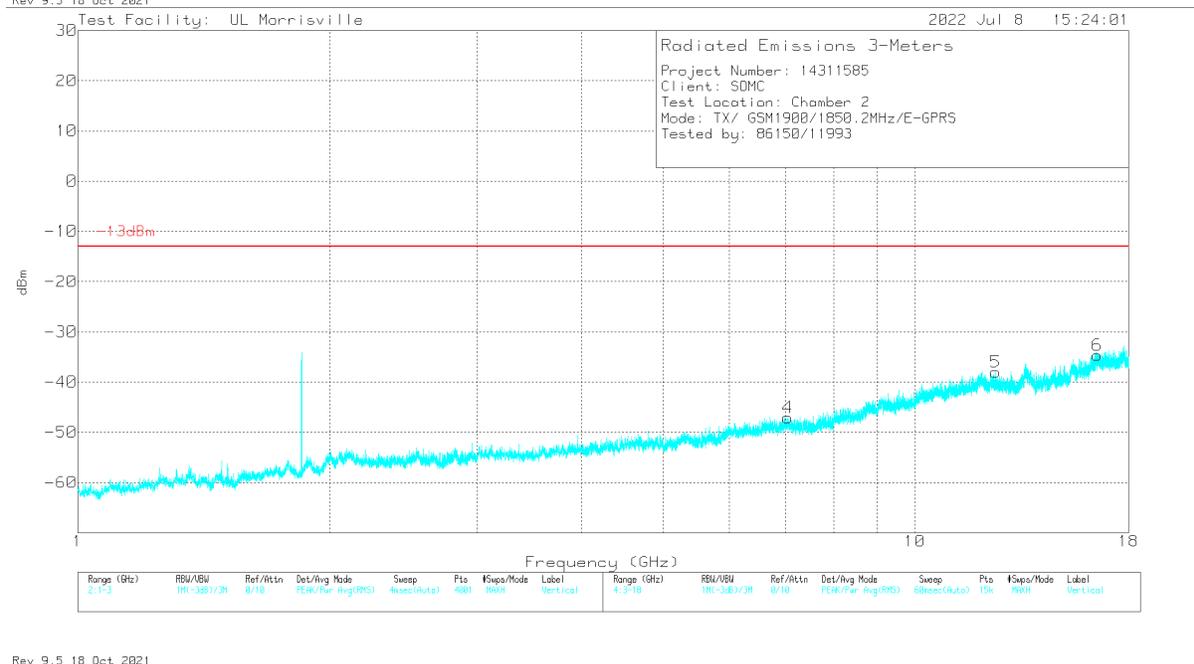
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 5 | 1.05 | -56.73 | Pk | 27.2 | -35.7 | 11.8 | .3 | -53.13 | -13 | -40.13 | 0-360 | 300 | V |
| 6 | 1.255 | -57.89 | Pk | 29.4 | -35.9 | 11.8 | .5 | -52.09 | -13 | -39.09 | 0-360 | 200 | V |
| 1 | 1.3055 | -60.76 | Pk | 29.5 | -36 | 11.8 | .5 | -54.96 | -13 | -41.96 | 0-360 | 100 | H |
| 2 | 1.408 | -60.5 | Pk | 28.7 | -35.5 | 11.8 | .8 | -54.7 | -13 | -41.7 | 0-360 | 299 | H |
| 7 | 1.5105 | -54.66 | Pk | 28.1 | -35.4 | 11.8 | 1 | -49.16 | -13 | -36.16 | 0-360 | 101 | V |
| 3 | 6.701 | -64.35 | Pk | 35.5 | -29.7 | 11.8 | 0 | -46.75 | -13 | -33.75 | 0-360 | 101 | H |
| 8 | 7.634 | -63.78 | Pk | 35.7 | -29.2 | 11.8 | 0 | -45.48 | -13 | -32.48 | 0-360 | 101 | V |
| 9 | 11.459 | -60.62 | Pk | 38.1 | -25.7 | 11.8 | 0 | -36.42 | -13 | -23.42 | 0-360 | 101 | V |
| 10 | 17 | -62.1 | Pk | 41.8 | -24.3 | 11.8 | 0 | -32.8 | -13 | -19.8 | 0-360 | 200 | V |
| 4 | 17.618 | -63.3 | Pk | 41.2 | -22.2 | 11.8 | 0 | -32.5 | -13 | -19.5 | 0-360 | 199 | H |

Pk - Peak detector

EGPRS Low Channel



Rev 9.5 18 Oct 2021

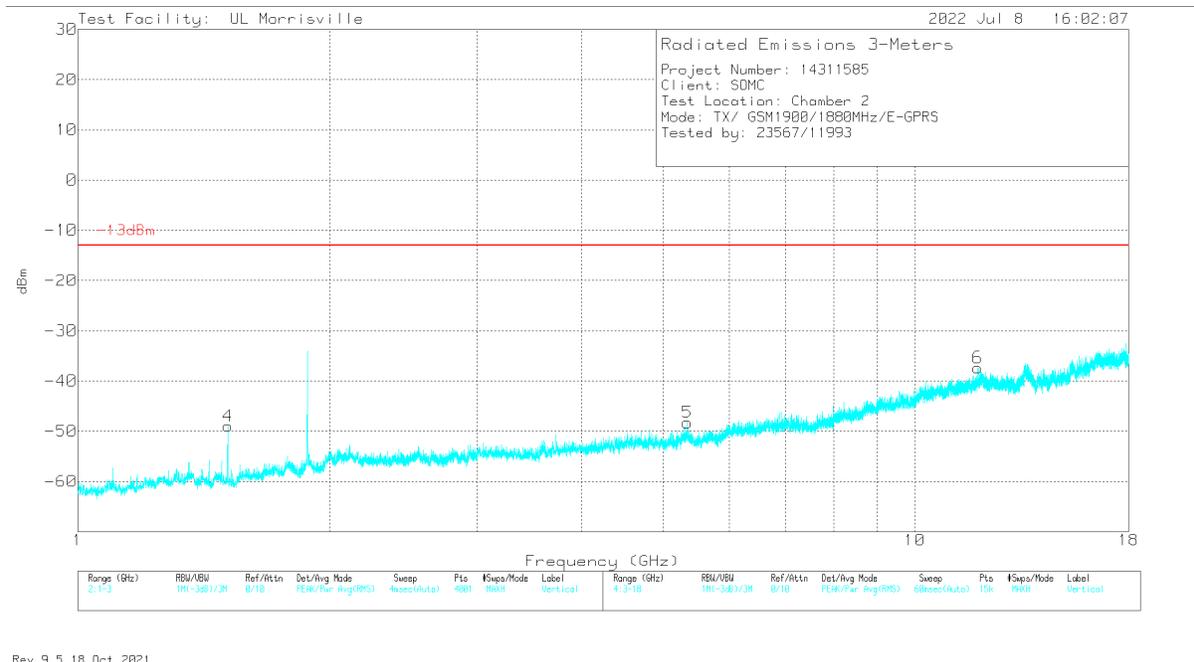
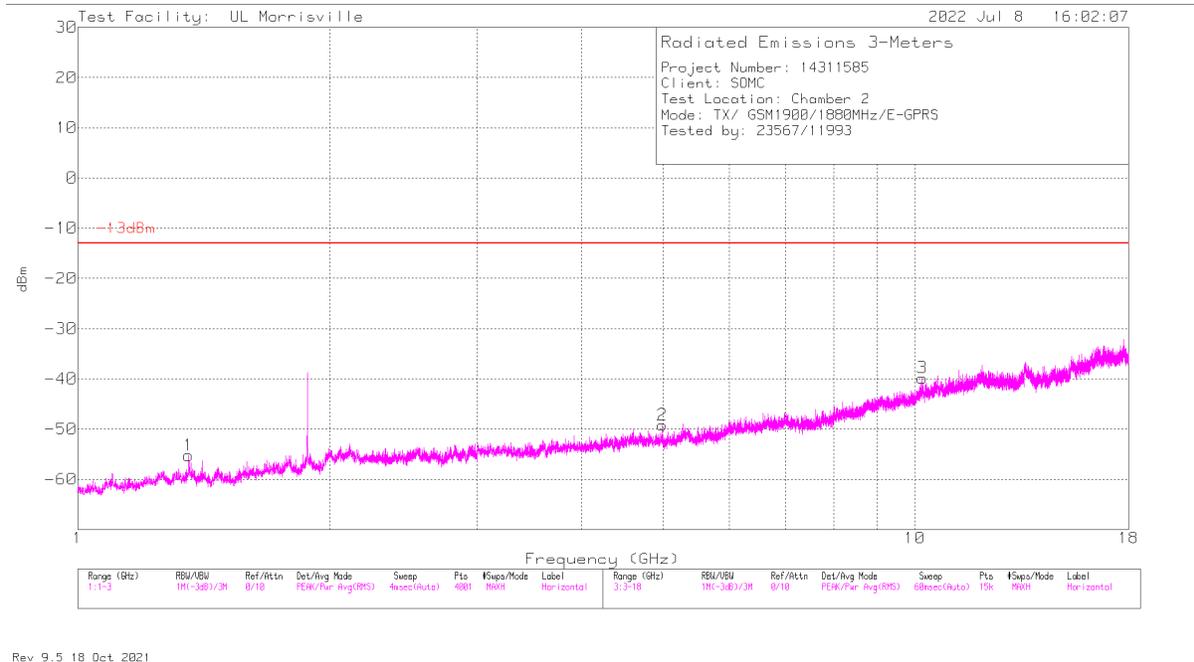


Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 5.34 | -66.55 | Pk | 34.6 | -28.9 | 11.8 | 0 | -49.05 | -13 | -36.05 | 0-360 | 300 | H |
| 4 | 7.049 | -67.29 | Pk | 35.6 | -27.2 | 11.8 | 0 | -47.09 | -13 | -34.09 | 0-360 | 101 | V |
| 2 | 9.609 | -64.78 | Pk | 36.7 | -25.1 | 11.8 | 0 | -41.38 | -13 | -28.38 | 0-360 | 200 | H |
| 5 | 12.482 | -64.71 | Pk | 38.9 | -24 | 11.8 | 0 | -38.01 | -13 | -25.01 | 0-360 | 101 | V |
| 6 | 16.512 | -65.65 | Pk | 41.3 | -22.1 | 11.8 | 0 | -34.65 | -13 | -21.65 | 0-360 | 300 | V |
| 3 | 17.603 | -65.34 | Pk | 41.2 | -20.8 | 11.8 | 0 | -33.14 | -13 | -20.14 | 0-360 | 101 | H |

Pk - Peak detector

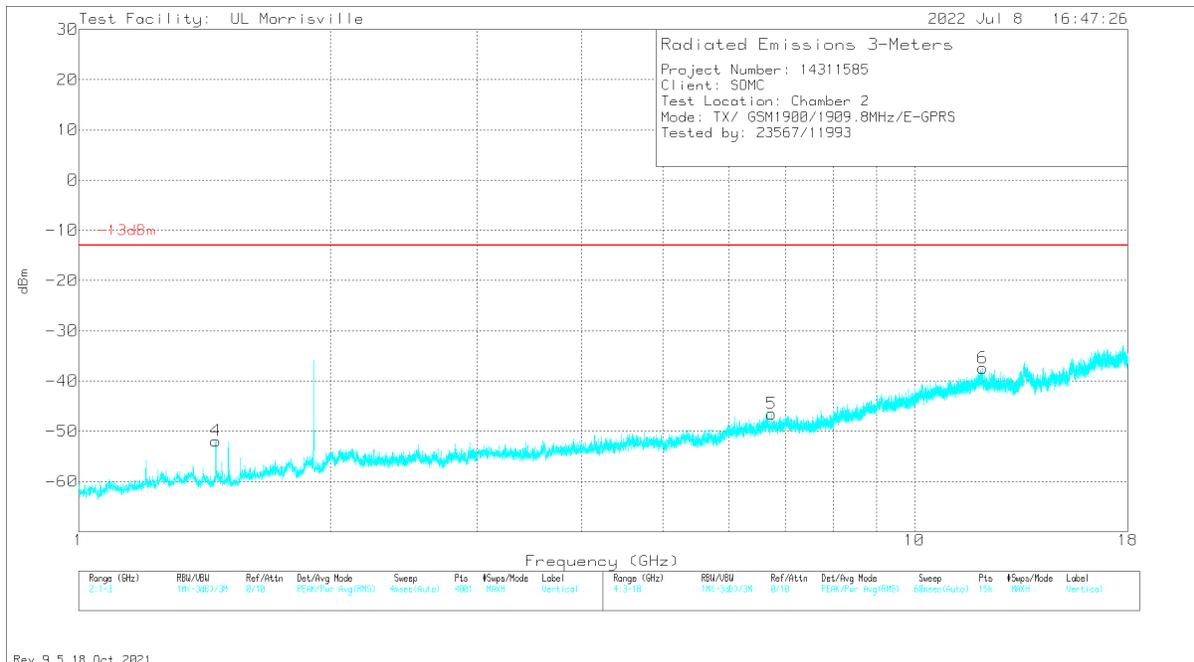
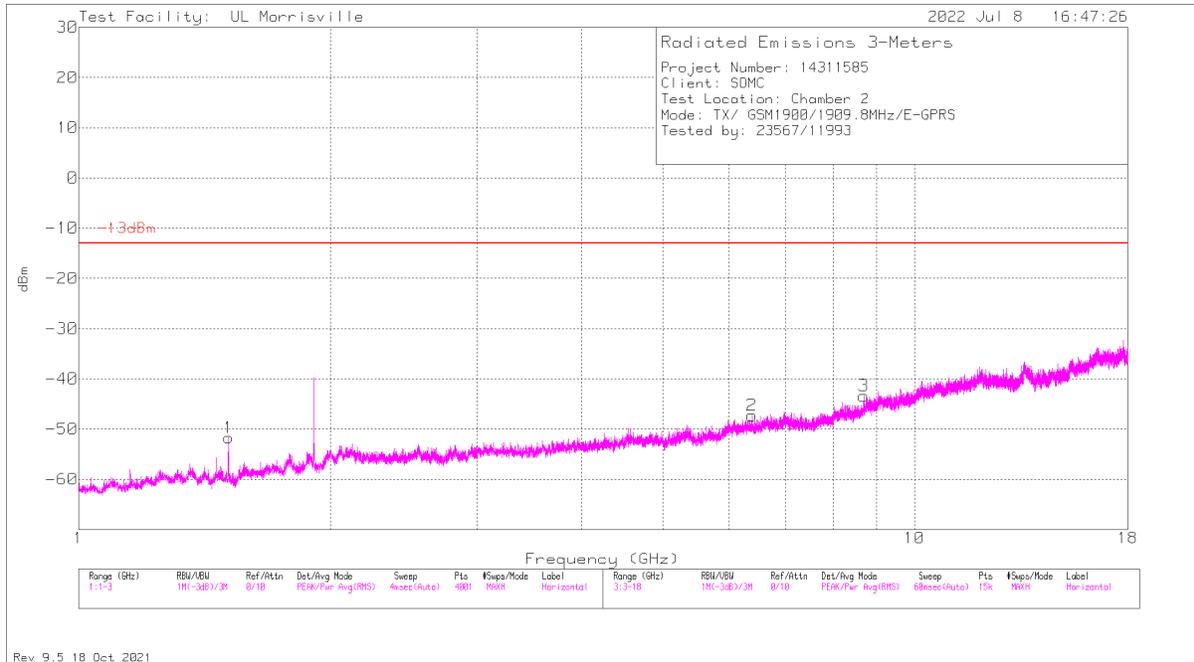
EGPRS Mid Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 1.3565 | -62.04 | Pk | 29.2 | -34.8 | 11.8 | .6 | -55.24 | -13 | -42.24 | 0-360 | 299 | H |
| 4 | 1.511 | -54.67 | Pk | 27.7 | -34.8 | 11.8 | 1 | -48.97 | -13 | -35.97 | 0-360 | 200 | V |
| 2 | 4.991 | -64.31 | Pk | 34 | -30.7 | 11.8 | 0 | -49.21 | -13 | -36.21 | 0-360 | 200 | H |
| 5 | 5.348 | -66.17 | Pk | 34.6 | -28.5 | 11.8 | 0 | -48.27 | -13 | -35.27 | 0-360 | 201 | V |
| 3 | 10.205 | -64.71 | Pk | 37.3 | -24.2 | 11.8 | 0 | -39.81 | -13 | -26.81 | 0-360 | 200 | H |
| 6 | 11.893 | -64.48 | Pk | 38.5 | -23.2 | 11.8 | 0 | -37.38 | -13 | -24.38 | 0-360 | 300 | V |

PK - Peak detector

EGPRS High Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | 206211 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 4 | 1.459 | -58.29 | Pk | 28.2 | -34.4 | 11.8 | .8 | -51.89 | -13 | -38.89 | 0-360 | 199 | V |
| 1 | 1.5105 | -57.43 | Pk | 27.7 | -34.8 | 11.8 | 1 | -51.73 | -13 | -38.73 | 0-360 | 200 | H |
| 2 | 6.39 | -66.37 | Pk | 35.5 | -28.2 | 11.8 | 0 | -47.27 | -13 | -34.27 | 0-360 | 101 | H |
| 5 | 6.743 | -66.03 | Pk | 35.6 | -27.9 | 11.8 | 0 | -46.53 | -13 | -33.53 | 0-360 | 200 | V |
| 3 | 8.696 | -64.9 | Pk | 36 | -26.3 | 11.8 | 0 | -43.4 | -13 | -30.4 | 0-360 | 300 | H |
| 6 | 12.064 | -64.82 | Pk | 38.6 | -23 | 11.8 | 0 | -37.42 | -13 | -24.42 | 0-360 | 200 | V |

Pk - Peak detector

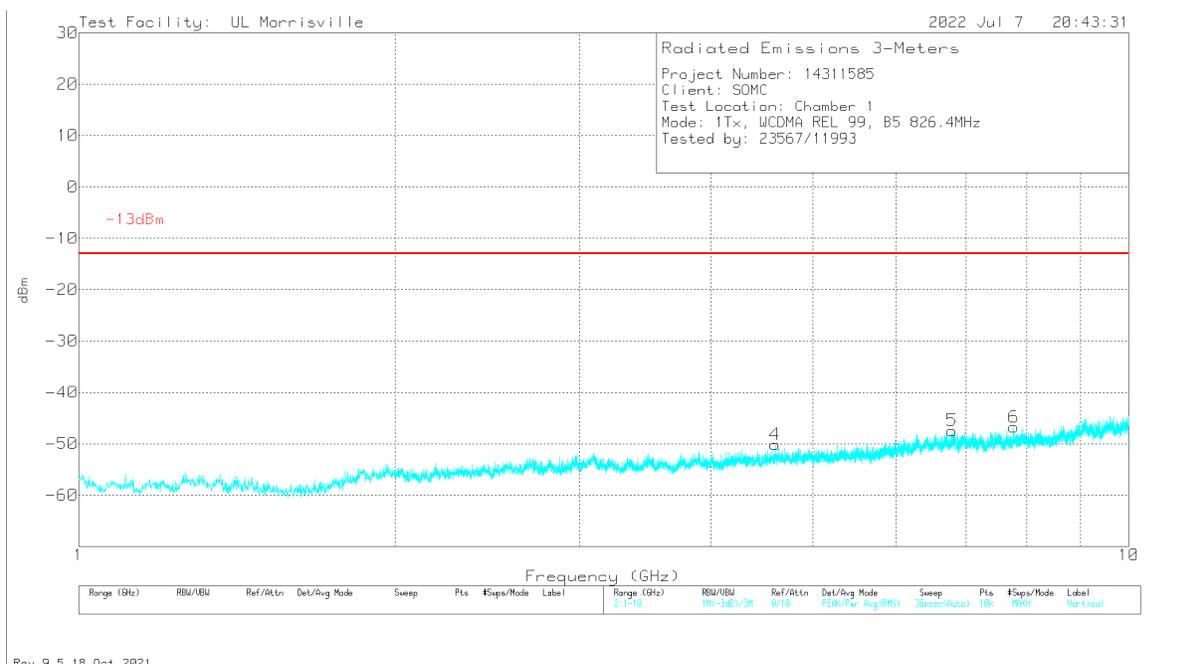
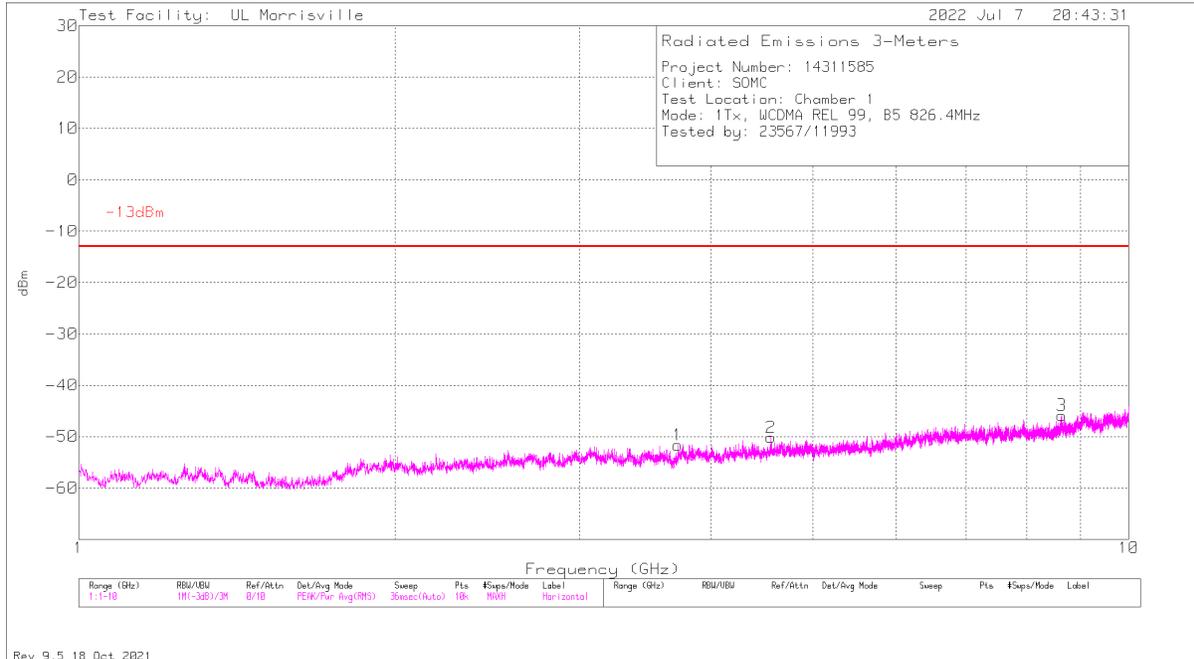
10.1.3. WCDMA5

LIMITS

FCC: §22.917 (a)

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

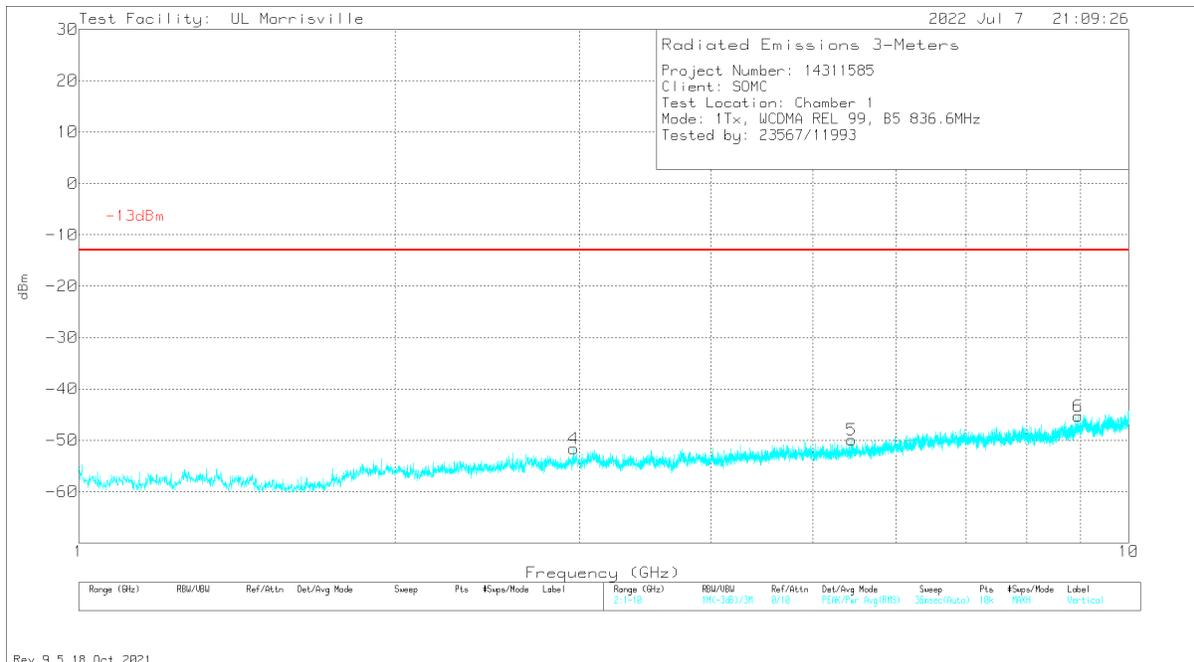
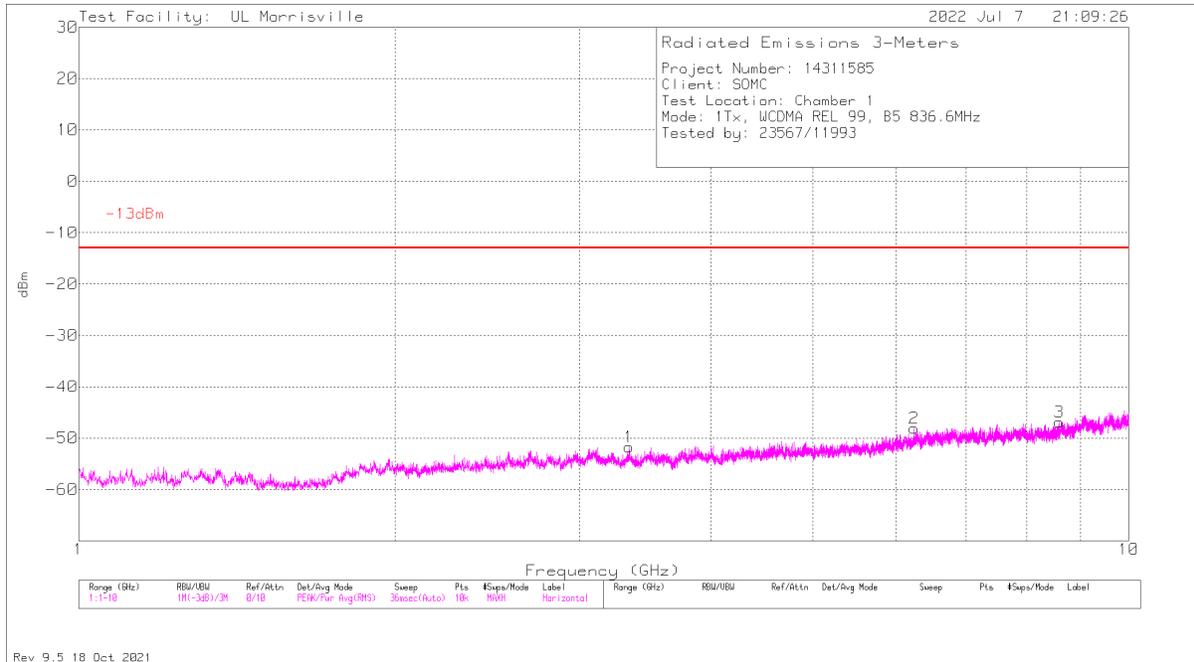
REL 99 Low Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 3.7189 | -63.98 | Pk | 33.1 | -33.2 | .6 | 11.8 | -51.68 | -13 | -38.68 | 0-360 | 101 | H |
| 2 | 4.564 | -63.36 | Pk | 34 | -32.9 | .3 | 11.8 | -50.16 | -13 | -37.16 | 0-360 | 300 | H |
| 4 | 4.6045 | -63.24 | Pk | 34.1 | -33.1 | .3 | 11.8 | -50.14 | -13 | -37.14 | 0-360 | 300 | V |
| 5 | 6.787 | -64.94 | Pk | 35.5 | -30.5 | .7 | 11.8 | -47.44 | -13 | -34.44 | 0-360 | 300 | V |
| 6 | 7.7734 | -65.27 | Pk | 35.8 | -29.6 | .5 | 11.8 | -46.77 | -13 | -33.77 | 0-360 | 101 | V |
| 3 | 8.6338 | -65.39 | Pk | 35.8 | -28.5 | .4 | 11.8 | -45.89 | -13 | -32.89 | 0-360 | 300 | H |

Pk - Peak detector

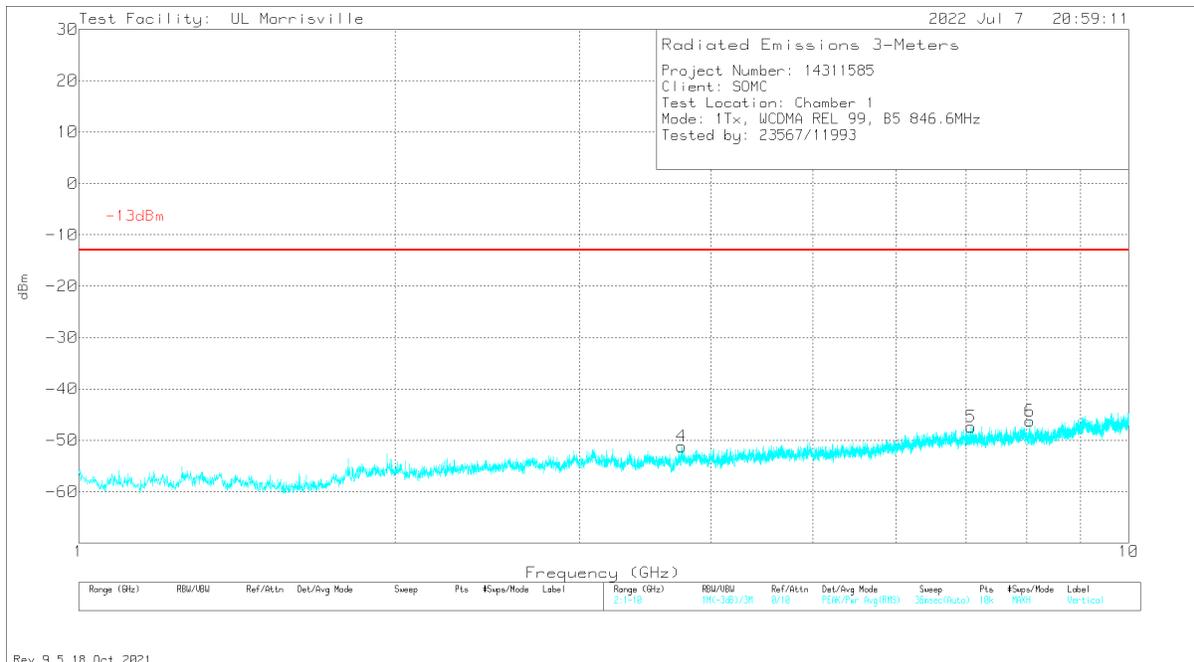
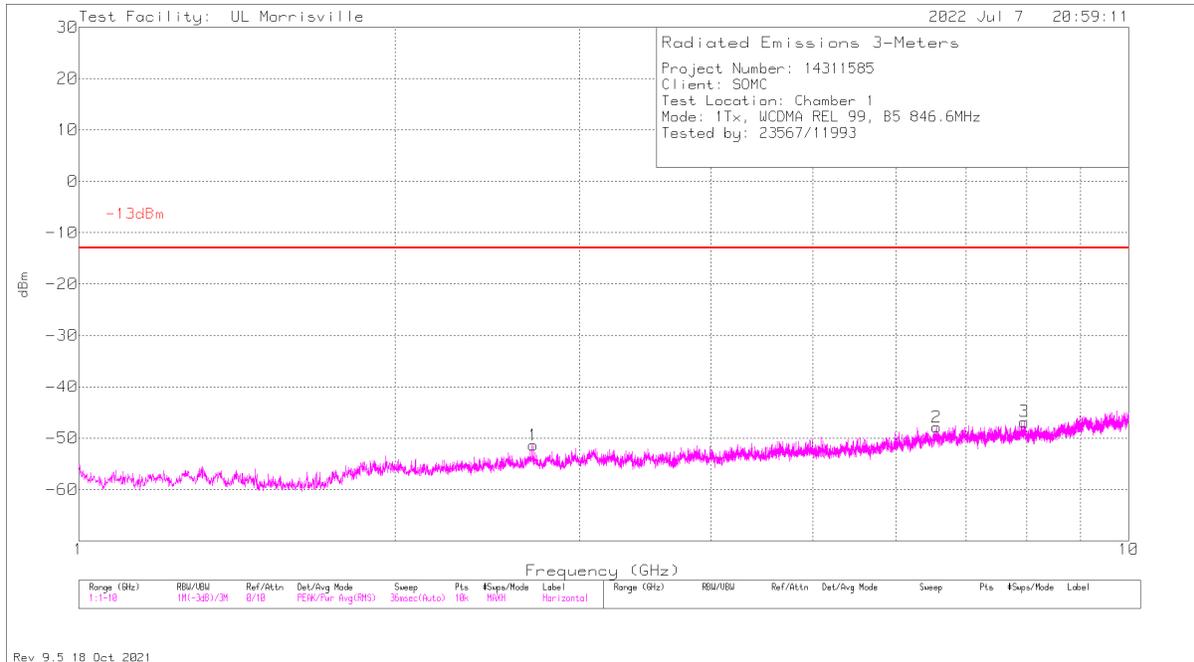
REL 99 Mid Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 4 | 2.9602 | -62.95 | Pk | 32.8 | -33.9 | .6 | 11.8 | -51.65 | -13 | -38.65 | 0-360 | 200 | V |
| 1 | 3.3436 | -63.75 | Pk | 32.8 | -33.3 | .7 | 11.8 | -51.75 | -13 | -38.75 | 0-360 | 200 | H |
| 5 | 5.4469 | -63.84 | Pk | 34.4 | -32.6 | .3 | 11.8 | -49.94 | -13 | -36.94 | 0-360 | 101 | V |
| 2 | 6.2479 | -64 | Pk | 35.3 | -32 | .8 | 11.8 | -48.1 | -13 | -35.1 | 0-360 | 299 | H |
| 3 | 8.5861 | -65.27 | Pk | 35.8 | -29.6 | .4 | 11.8 | -46.87 | -13 | -33.87 | 0-360 | 200 | H |
| 6 | 8.9488 | -64.09 | Pk | 36.2 | -29.8 | .6 | 11.8 | -45.29 | -13 | -32.29 | 0-360 | 101 | V |

Pk - Peak detector

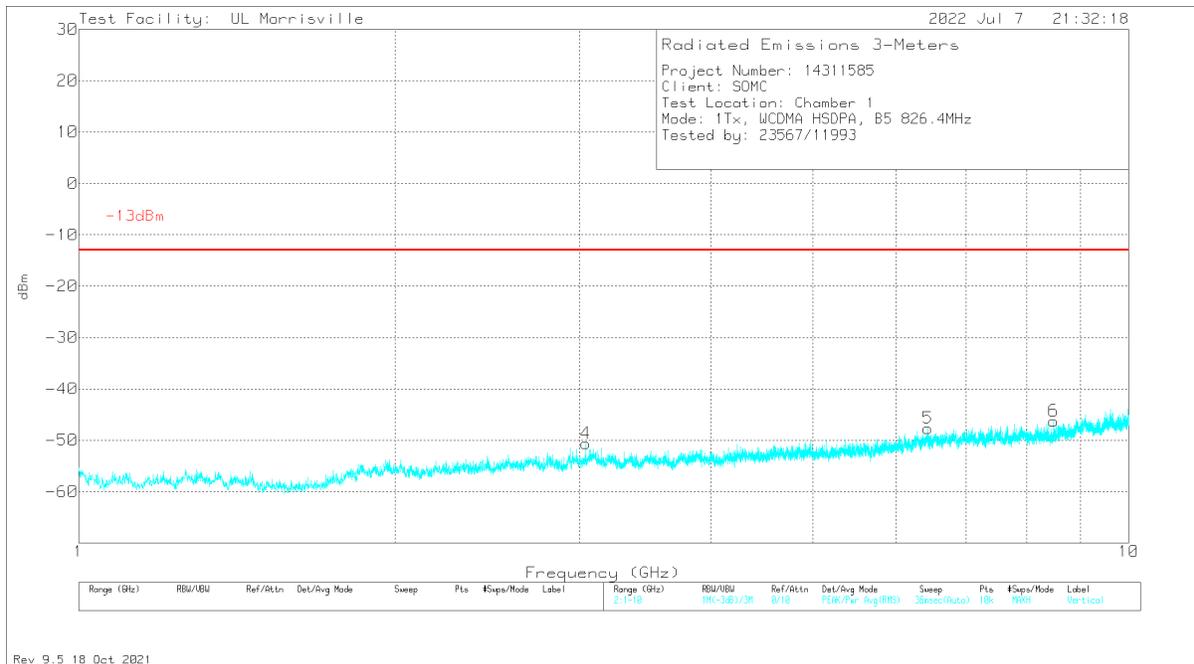
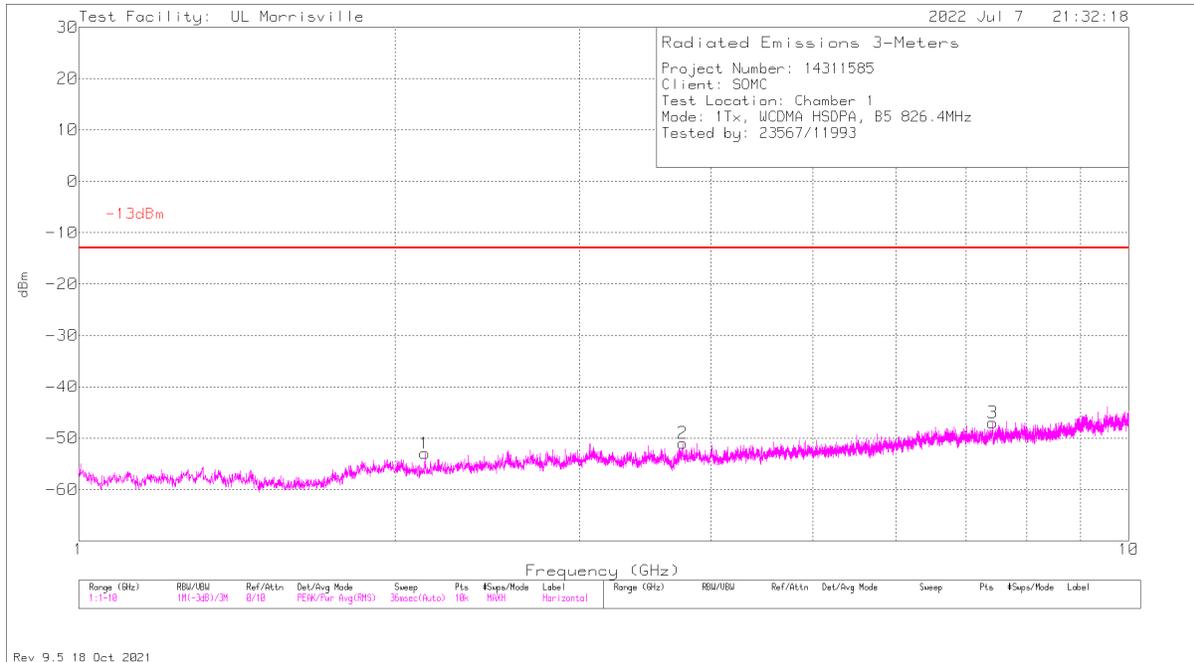
REL 99 High Channel



| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 2.71 | -62.6 | Pk | 32.5 | -33.6 | .5 | 11.8 | -51.4 | -13 | -38.4 | 0-360 | 300 | H |
| 4 | 3.7522 | -63.87 | Pk | 33.4 | -33 | .5 | 11.8 | -51.17 | -13 | -38.17 | 0-360 | 101 | V |
| 2 | 6.5656 | -65.06 | Pk | 35.5 | -30.7 | .6 | 11.8 | -47.86 | -13 | -34.86 | 0-360 | 199 | H |
| 5 | 7.0741 | -65.21 | Pk | 35.6 | -30.2 | .6 | 11.8 | -47.41 | -13 | -34.41 | 0-360 | 300 | V |
| 3 | 7.9507 | -65.71 | Pk | 35.8 | -29.1 | .4 | 11.8 | -46.81 | -13 | -33.81 | 0-360 | 199 | H |
| 6 | 8.0497 | -64.96 | Pk | 35.9 | -29.4 | .4 | 11.8 | -46.26 | -13 | -33.26 | 0-360 | 101 | V |

Pk - Peak detector

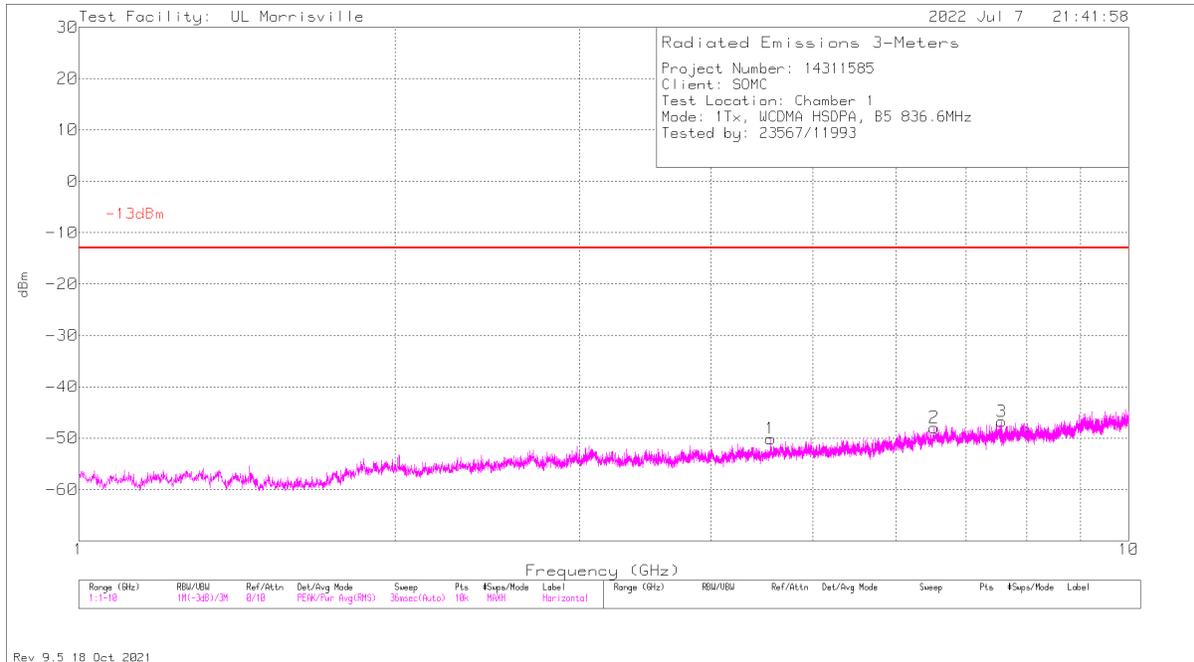
HSDPA Low Channel



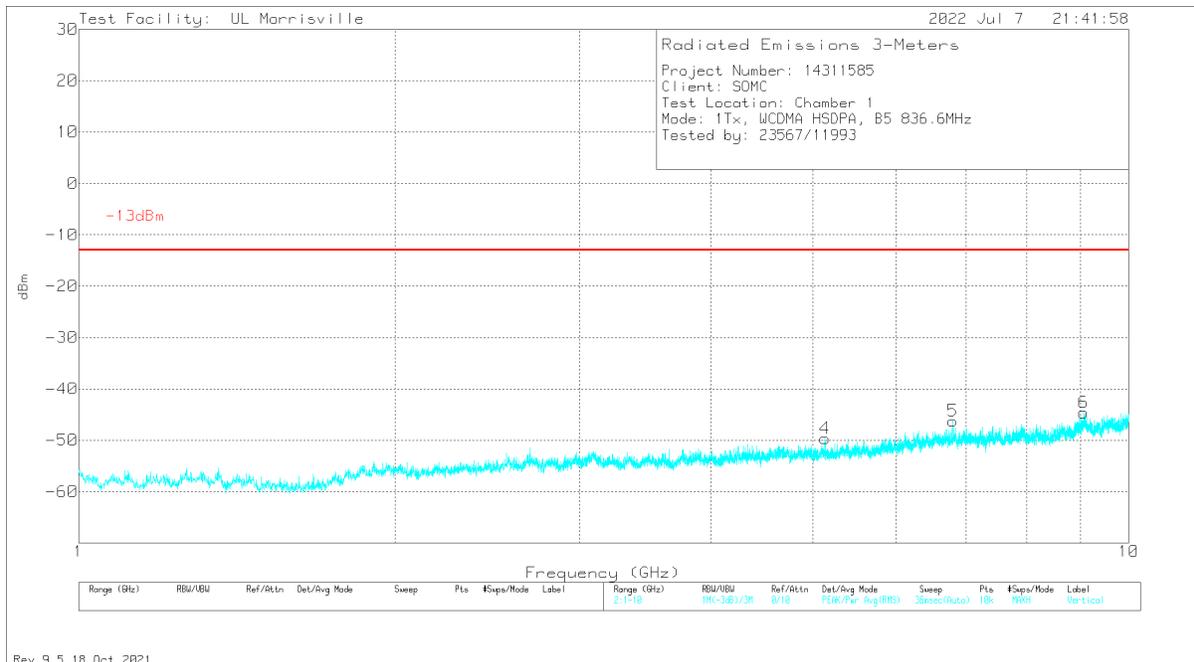
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 2.1358 | -61.89 | Pk | 31.4 | -34.7 | .4 | 11.8 | -52.99 | -13 | -39.99 | 0-360 | 101 | H |
| 4 | 3.0403 | -62.44 | Pk | 33.1 | -33.7 | .6 | 11.8 | -50.64 | -13 | -37.64 | 0-360 | 300 | V |
| 2 | 3.7612 | -63.59 | Pk | 33.4 | -33 | .4 | 11.8 | -50.99 | -13 | -37.99 | 0-360 | 101 | H |
| 5 | 6.4369 | -64.37 | Pk | 35.6 | -31.3 | .6 | 11.8 | -47.67 | -13 | -34.67 | 0-360 | 101 | V |
| 3 | 7.4188 | -65.38 | Pk | 35.6 | -29.5 | .5 | 11.8 | -46.98 | -13 | -33.98 | 0-360 | 300 | H |
| 6 | 8.4844 | -64.83 | Pk | 35.8 | -29.4 | .4 | 11.8 | -46.23 | -13 | -33.23 | 0-360 | 101 | V |

Pk - Peak detector

HSDPA Mid Channel



Rev 9.5 18 Oct 2021

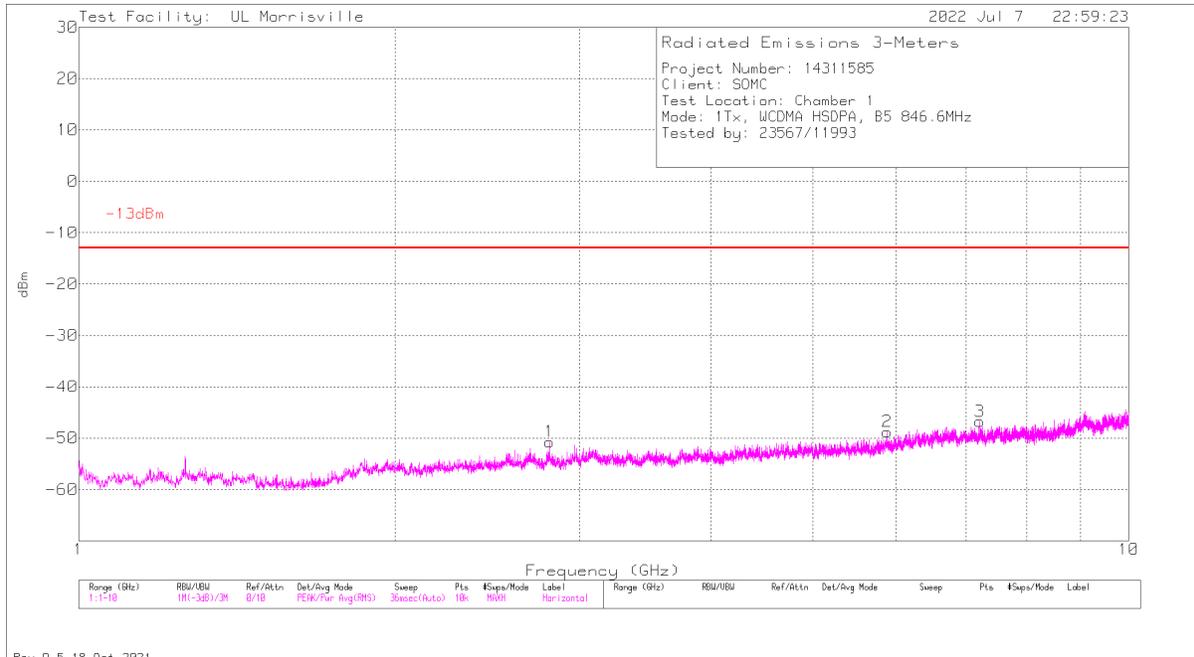


Rev 9.5 18 Oct 2021

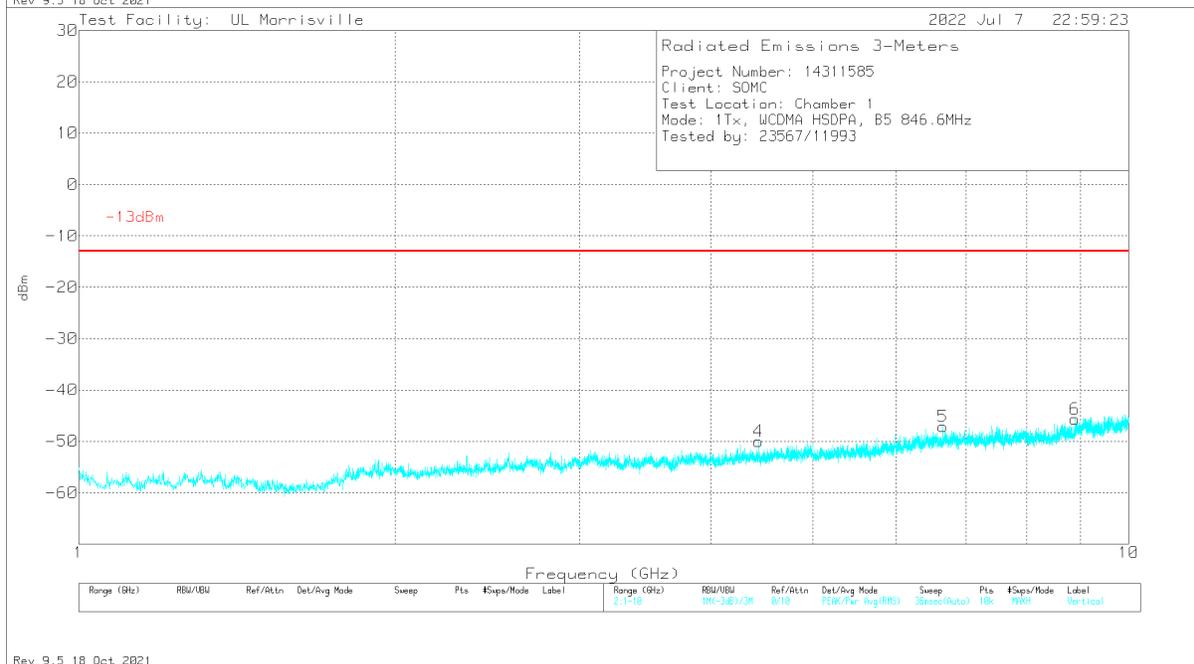
| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 4.5595 | -63.21 | Pk | 34 | -33 | .3 | 11.8 | -50.11 | -13 | -37.11 | 0-360 | 200 | H |
| 4 | 5.1373 | -63.76 | Pk | 34.2 | -32.3 | .4 | 11.8 | -49.66 | -13 | -36.66 | 0-360 | 101 | V |
| 2 | 6.5251 | -64.85 | Pk | 35.6 | -31.2 | .7 | 11.8 | -47.95 | -13 | -34.95 | 0-360 | 101 | H |
| 5 | 6.8023 | -63.66 | Pk | 35.5 | -30.6 | .7 | 11.8 | -46.26 | -13 | -33.26 | 0-360 | 200 | V |
| 3 | 7.5718 | -64.58 | Pk | 35.7 | -30.3 | .6 | 11.8 | -46.78 | -13 | -33.78 | 0-360 | 101 | H |
| 6 | 9.0541 | -63.9 | Pk | 36.2 | -29.3 | .6 | 11.8 | -44.6 | -13 | -31.6 | 0-360 | 300 | V |

Pk - Peak detector

HSDPA High Channel



Rev 9.5 18 Oct 2021



Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | Filter (dB) | CF (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|-------------|---------|-----------------------|--------|-------------|----------------|-------------|----------|
| 1 | 2.8072 | -62.01 | Pk | 32.6 | -33.7 | .6 | 11.8 | -50.71 | -13 | -37.71 | 0-360 | 299 | H |
| 4 | 4.438 | -63.03 | Pk | 33.7 | -32.8 | .3 | 11.8 | -50.03 | -13 | -37.03 | 0-360 | 101 | V |
| 2 | 5.8888 | -64.06 | Pk | 35 | -32 | .5 | 11.8 | -48.76 | -13 | -35.76 | 0-360 | 200 | H |
| 5 | 6.6565 | -63.94 | Pk | 35.5 | -31.1 | .6 | 11.8 | -47.14 | -13 | -34.14 | 0-360 | 101 | V |
| 3 | 7.2127 | -64.37 | Pk | 35.7 | -30.5 | .6 | 11.8 | -46.77 | -13 | -33.77 | 0-360 | 200 | H |
| 6 | 8.8849 | -64.57 | Pk | 36.2 | -29.5 | .4 | 11.8 | -45.67 | -13 | -32.67 | 0-360 | 200 | V |

PK - Peak detector

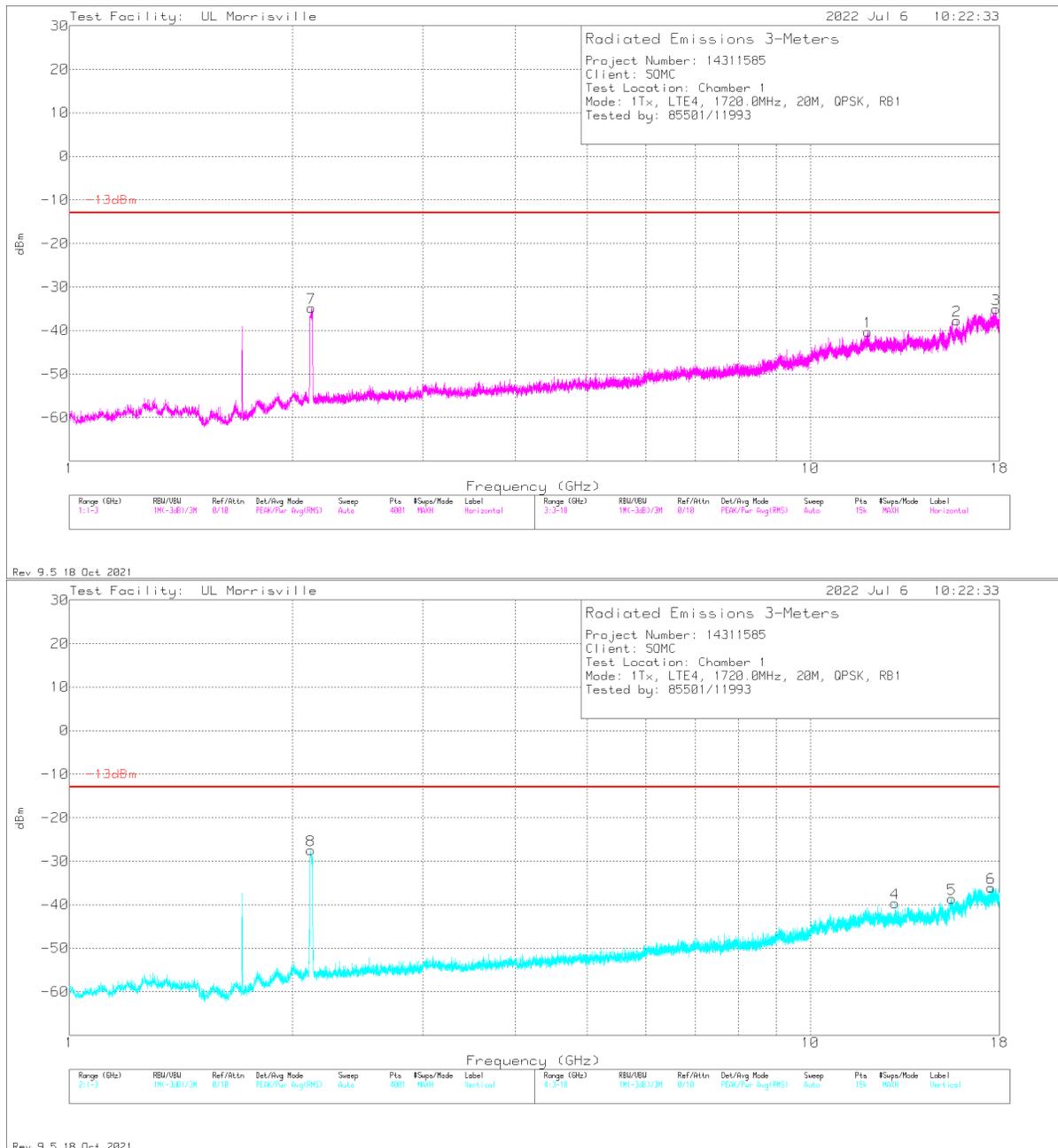
10.1.4. LTE BAND 4

LIMITS

FCC: §27.53(h)

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

QPSK LTE4 (20MHz Low Channel, 1720MHz)

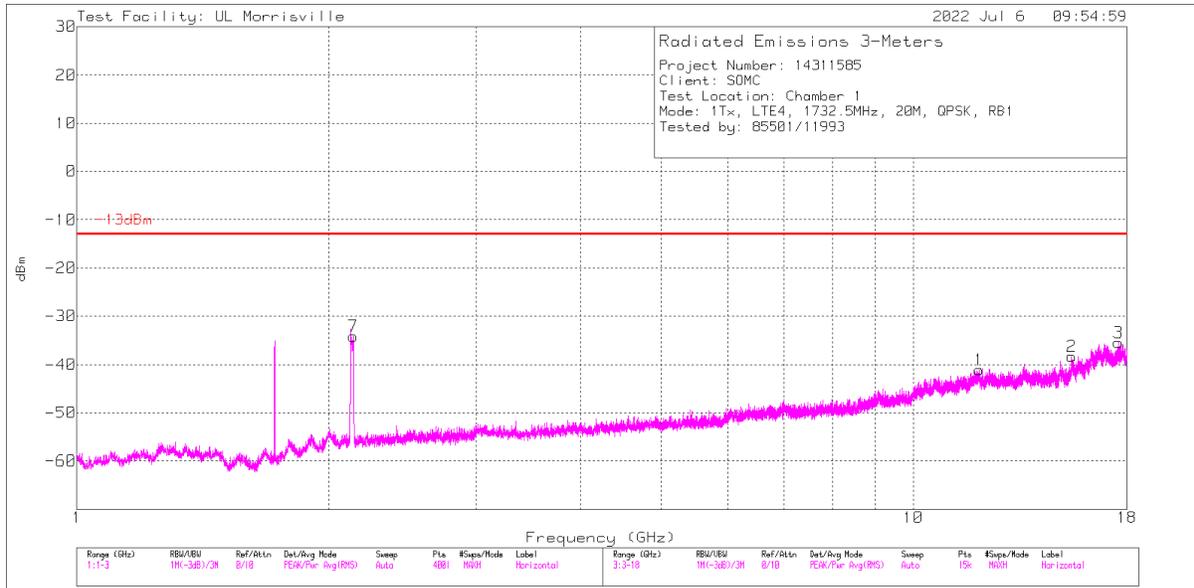


| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 8 | 2.117 (DL) | -36.66 | Pk | 31.3 | -34.9 | 11.8 | 1 | - | - | - | 0-360 | 299 | V |
| 7 | 2.1215 (DL) | -44.05 | Pk | 31.3 | -34.9 | 11.8 | 1 | - | - | - | 0-360 | 199 | H |
| 1 | 11.956 | -65.31 | Pk | 38.7 | -25.5 | 11.8 | 0 | -40.31 | -13 | -27.31 | 0-360 | 101 | H |
| 4 | 13 | -65.1 | Pk | 39.2 | -25.6 | 11.8 | 0 | -39.7 | -13 | -26.7 | 0-360 | 101 | V |
| 5 | 15.515 | -67.14 | Pk | 40.1 | -23.4 | 11.8 | 0 | -38.64 | -13 | -25.64 | 0-360 | 300 | V |
| 2 | 15.764 | -66.02 | Pk | 40.4 | -23.9 | 11.8 | 0 | -37.72 | -13 | -24.72 | 0-360 | 300 | H |
| 6 | 17.539 | -65.37 | Pk | 41.2 | -23.7 | 11.8 | 0 | -36.07 | -13 | -23.07 | 0-360 | 300 | V |
| 3 | 17.81 | -66.58 | Pk | 41.2 | -21.5 | 11.8 | 0 | -35.08 | -13 | -22.08 | 0-360 | 300 | H |

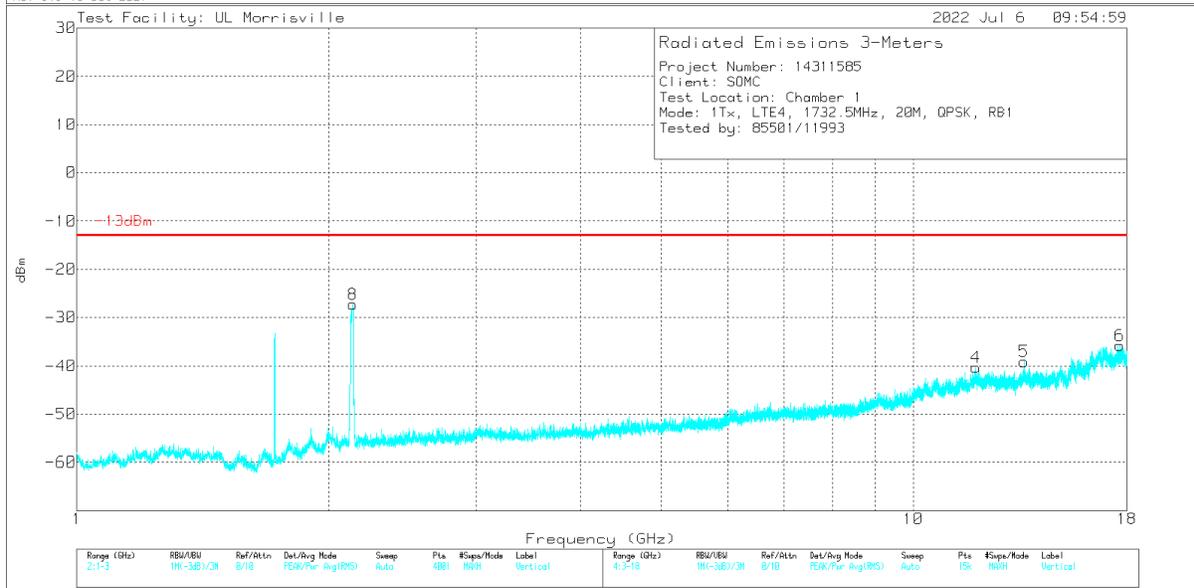
Pk - Peak detector

DL - Downlink

QPSK LTE4 (20MHz, Mid Channel, 1732.5MHz)



Rev 9.5 18 Oct 2021



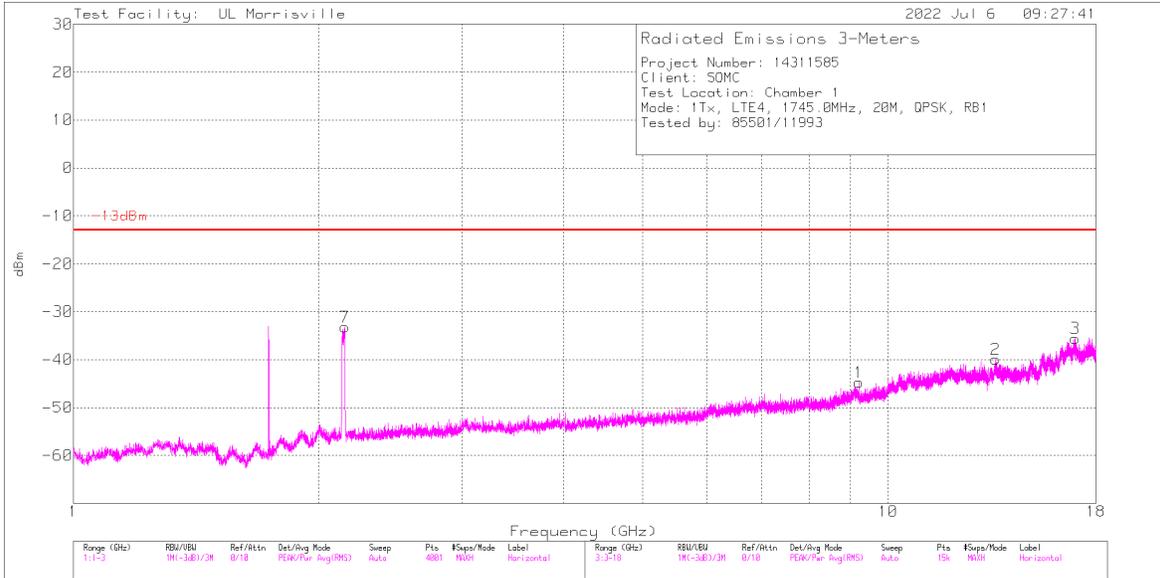
Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 8(DL) | 2.138 | -36.69 | Pk | 31.4 | -34.8 | 11.8 | 1 | -27.29 | -13 | -14.29 | 0-360 | 200 | V |
| 7(DL) | 2.141 | -43.45 | Pk | 31.4 | -34.9 | 11.8 | 1 | -34.15 | -13 | -21.15 | 0-360 | 300 | H |
| 4 | 11.877 | -65.11 | Pk | 38.6 | -25.6 | 11.8 | 0 | -40.31 | -13 | -27.31 | 0-360 | 300 | V |
| 1 | 11.986 | -65.71 | Pk | 38.7 | -25.9 | 11.8 | 0 | -41.11 | -13 | -28.11 | 0-360 | 299 | H |
| 5 | 13.559 | -62.33 | Pk | 38.7 | -27.3 | 11.8 | 0 | -39.13 | -13 | -26.13 | 0-360 | 201 | V |
| 2 | 15.46 | -66.8 | Pk | 40 | -23.3 | 11.8 | 0 | -38.3 | -13 | -25.3 | 0-360 | 299 | H |
| 3 | 17.587 | -65.35 | Pk | 41.2 | -23.1 | 11.8 | 0 | -35.45 | -13 | -22.45 | 0-360 | 101 | H |
| 6 | 17.653 | -65.57 | Pk | 41.2 | -23.2 | 11.8 | 0 | -35.77 | -13 | -22.77 | 0-360 | 201 | V |

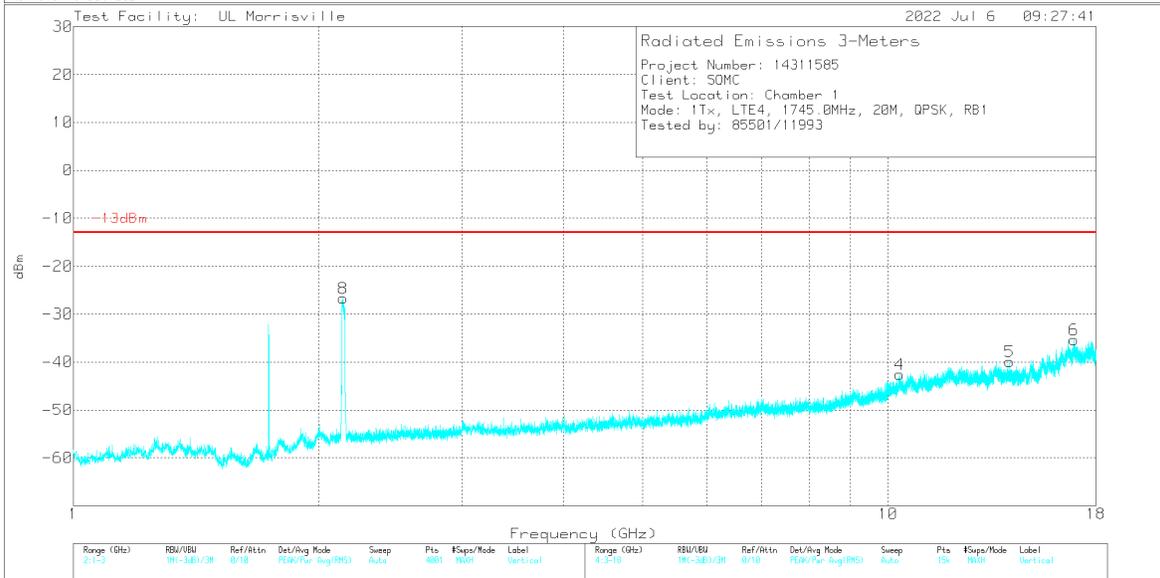
Pk - Peak detector

DL – Down link

QPSK LTE4 (20MHz High Channel, 1745MHz)



Rev 9.5 18 Oct 2021



Rev 9.5 18 Oct 2021

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AT0072 (dB/m) | Gain/Loss (dB) | CF (dB) | Filter (dB) | Corrected Reading dBm | -13dBm | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|---------------------|-----|---------------|----------------|---------|-------------|-----------------------|--------|-------------|----------------|-------------|----------|
| 8 | 2.143 (DL) | -35.98 | Pk | 31.4 | -34.9 | 11.8 | 1 | - | - | - | 0-360 | 201 | V |
| 7 | 2.1535 (DL) | -42.46 | Pk | 31.4 | -34.9 | 11.8 | 1 | - | - | - | 0-360 | 299 | H |
| 1 | 9.208 | -64.23 | Pk | 36.3 | -28.6 | 11.8 | 0 | -44.73 | -13 | -31.73 | 0-360 | 300 | H |
| 4 | 10.327 | -67.04 | Pk | 37.5 | -24.8 | 11.8 | 0 | -42.54 | -13 | -29.54 | 0-360 | 201 | V |
| 2 | 13.565 | -63.64 | Pk | 38.7 | -26.8 | 11.8 | 0 | -39.94 | -13 | -26.94 | 0-360 | 300 | H |
| 5 | 14.1 | -64.17 | Pk | 38.9 | -26.4 | 11.8 | 0 | -39.87 | -13 | -26.87 | 0-360 | 201 | V |
| 6 | 16.909 | -66.13 | Pk | 41.9 | -22.9 | 11.8 | 0 | -35.33 | -13 | -22.33 | 0-360 | 300 | V |
| 3 | 16.964 | -65.73 | Pk | 41.8 | -23.4 | 11.8 | 0 | -35.53 | -13 | -22.53 | 0-360 | 199 | H |

PK - Peak detector; DL - Downlink