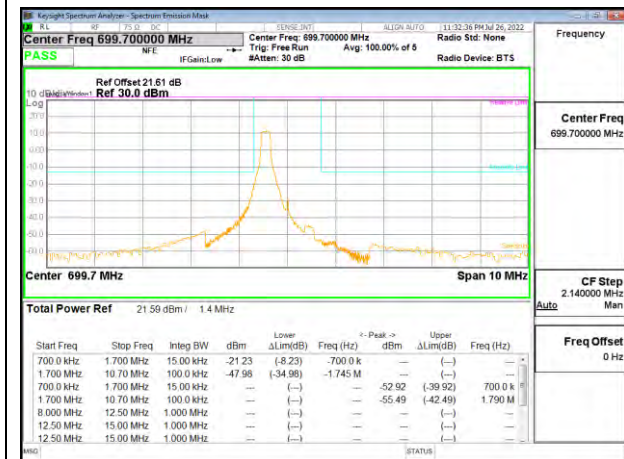


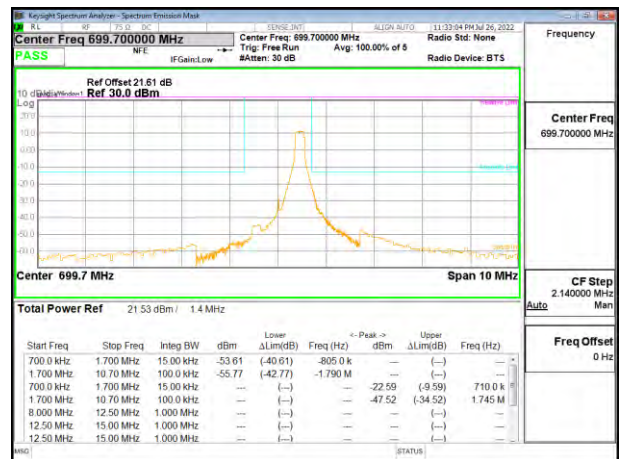
LTE12 1.4MHz QPSK HIGH Ch RB1-5



LTE12 1.4MHz QPSK HIGH Ch RB6-0



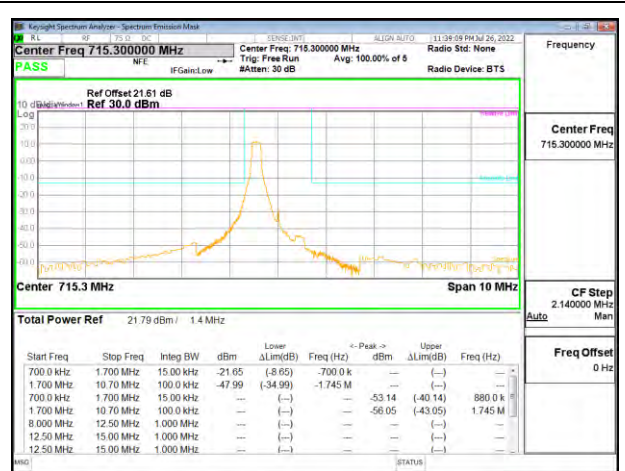
LTE12 1.4MHz 16QAM LOW Ch RB1-0



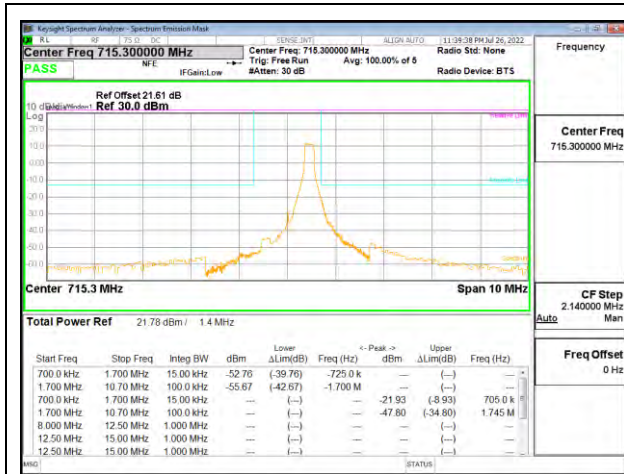
LTE12 1.4MHz 16QAM LOW Ch RB1-5



LTE12 1.4MHz 16QAM LOW Ch RB6-0



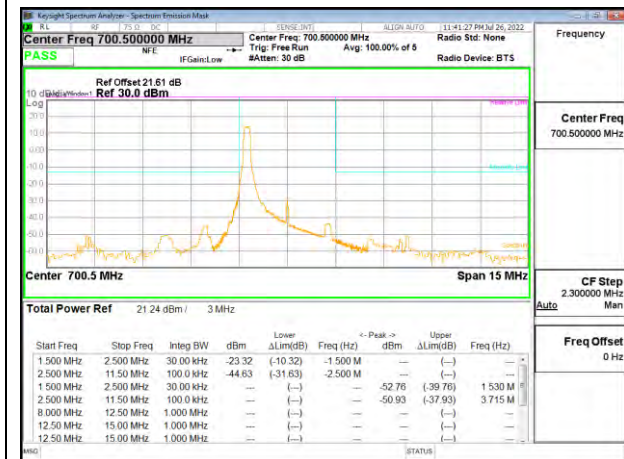
LTE12 1.4MHz 16QAM HIGH Ch RB1-0



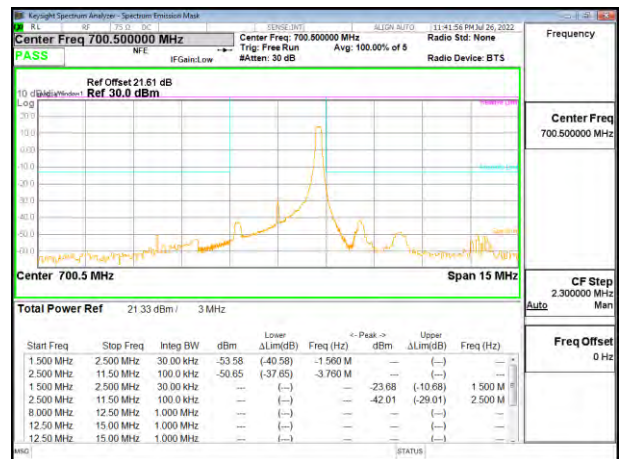
LTE12 1.4MHz 16QAM HIGH Ch RB1-5



LTE12 1.4MHz 16QAM HIGH Ch RB6-0



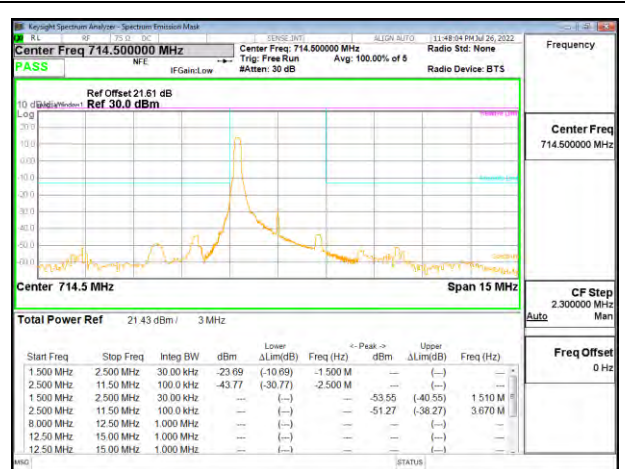
LTE12 3MHz QPSK LOW Ch RB1-0



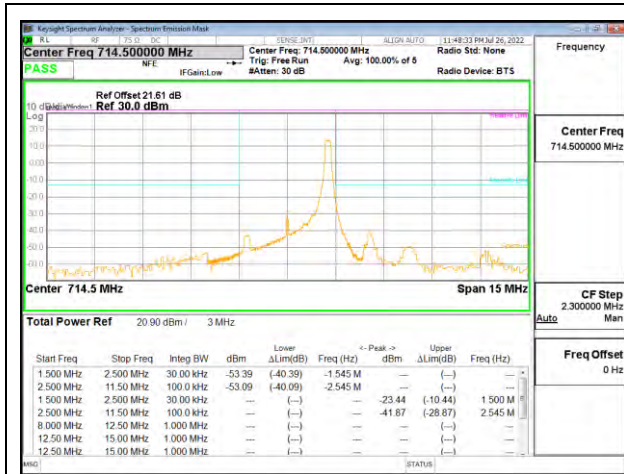
LTE12 3MHz QPSK LOW Ch RB1-14



LTE12 3MHz QPSK LOW Ch RB15-0



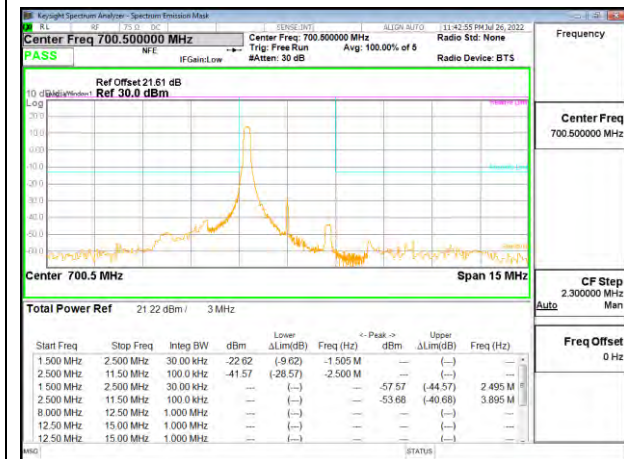
LTE12 3MHz QPSK HIGH Ch RB1-0



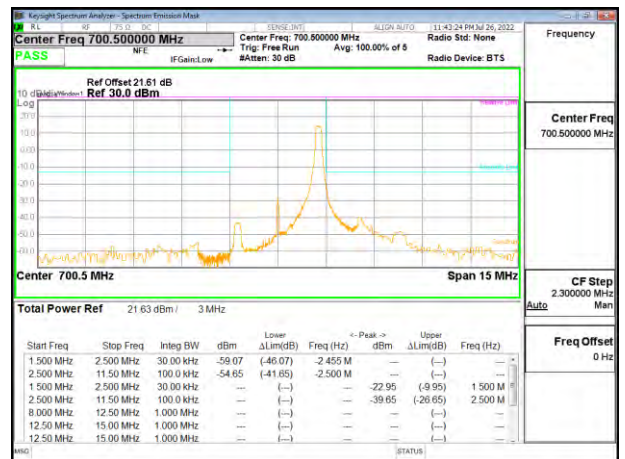
LTE12 3MHz QPSK HIGH Ch RB1-14



LTE12 3MHz QPSK HIGH Ch RB15-0



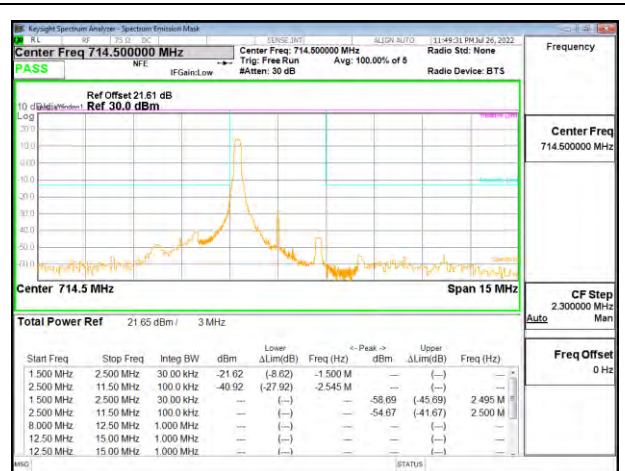
LTE12 3MHz 16QAM LOW Ch RB1-0



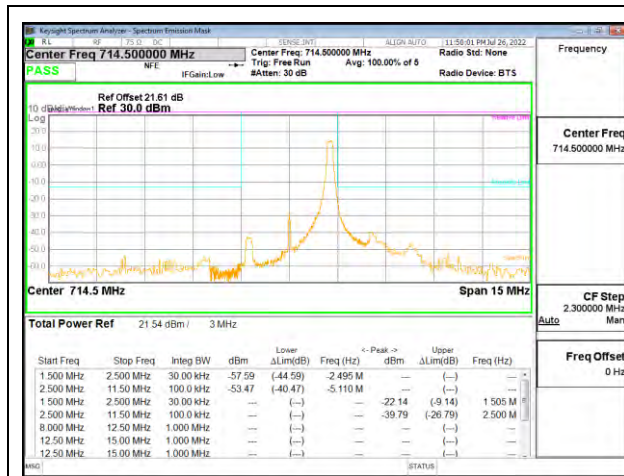
LTE12 3MHz 16QAM LOW Ch RB1-14



LTE12 3MHz 16QAM LOW Ch RB15-0



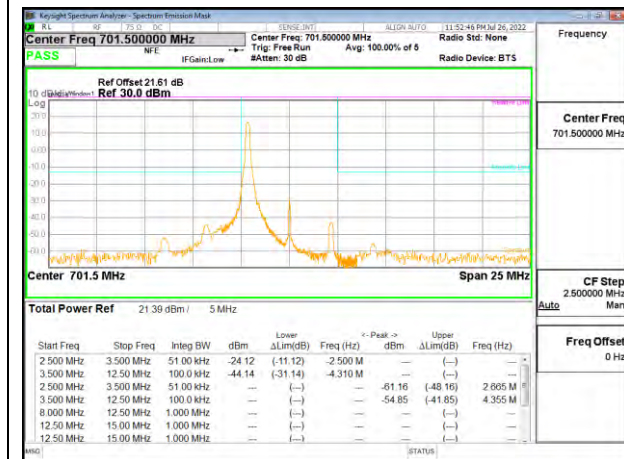
LTE12 3MHz 16QAM HIGH Ch RB1-0



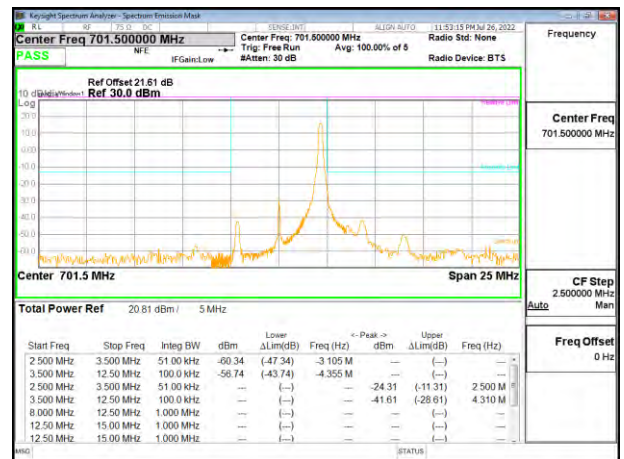
LTE12 3MHz 16QAM HIGH Ch RB1-14



LTE12 3MHz 16QAM HIGH Ch RB15-0



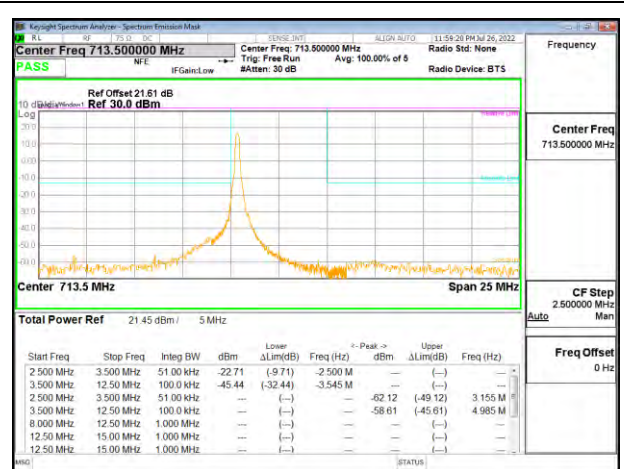
LTE12 5MHz QPSK LOW Ch RB1-0



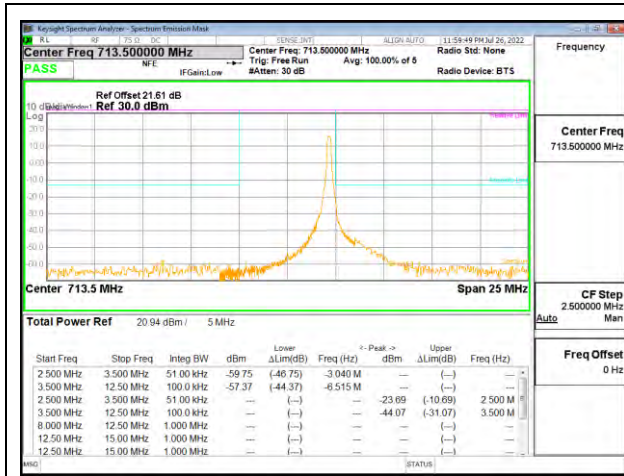
LTE12 5MHz QPSK LOW Ch RB1-24



LTE12 5MHz QPSK LOW Ch RB25-0



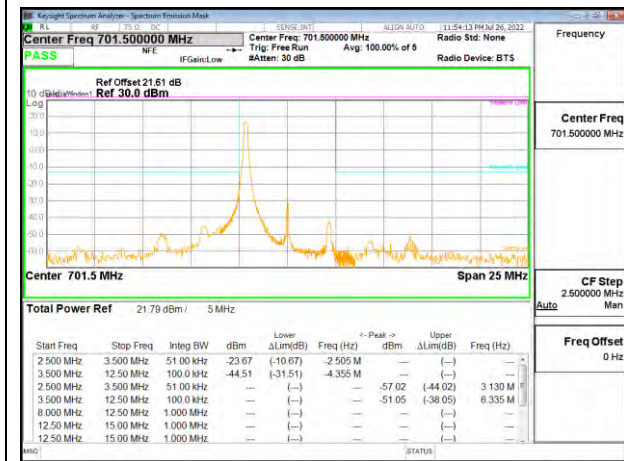
LTE12 5MHz QPSK HIGH Ch RB1-0



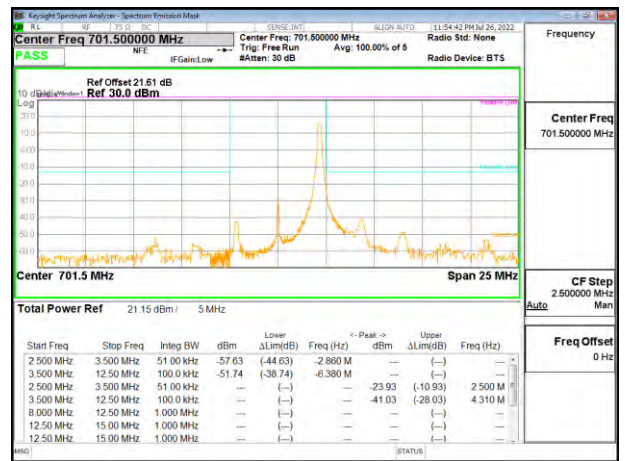
LTE12 5MHz QPSK HIGH Ch RB1-24



LTE12 5MHz QPSK HIGH Ch RB25-0



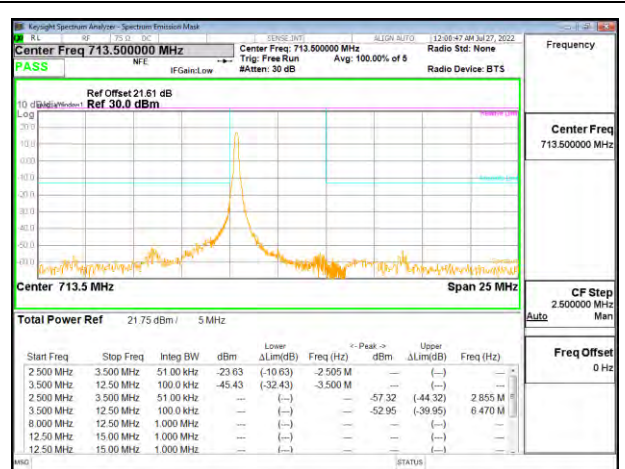
LTE12 5MHz 16QAM LOW Ch RB1-0



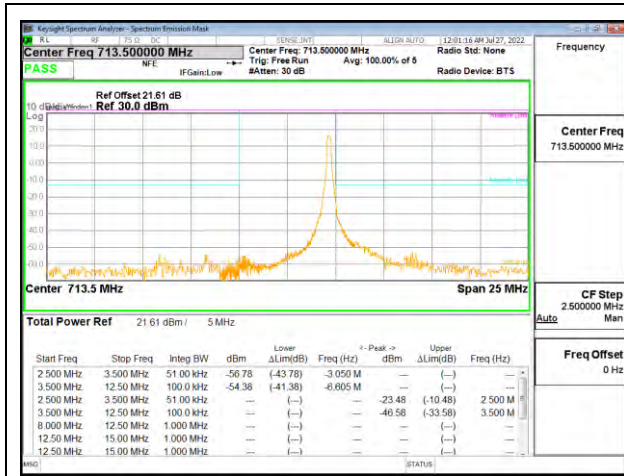
LTE12 5MHz 16QAM LOW Ch RB1-24



LTE12 5MHz 16QAM LOW Ch RB25-0



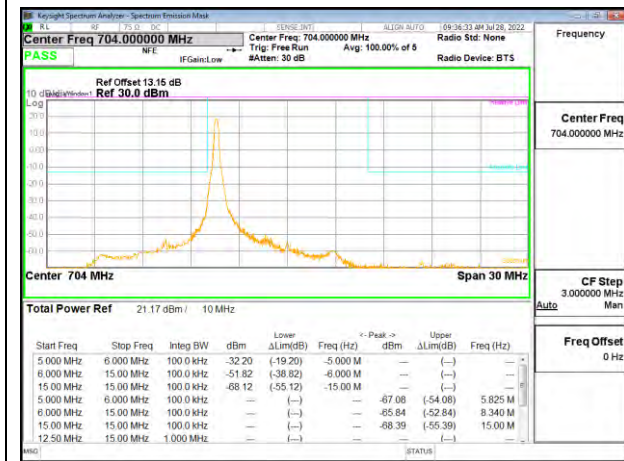
LTE12 5MHz 16QAM HIGH Ch RB1-0



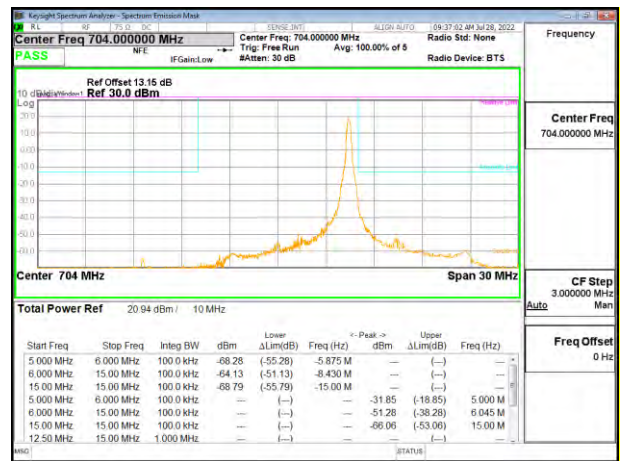
LTE12 5MHz 16QAM HIGH Ch RB1-24



LTE12 5MHz 16QAM HIGH Ch RB25-0



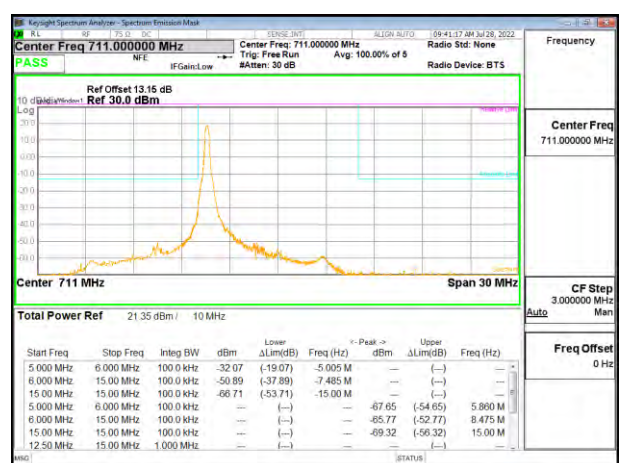
LTE12 10MHz QPSK LOW Ch RB1-0



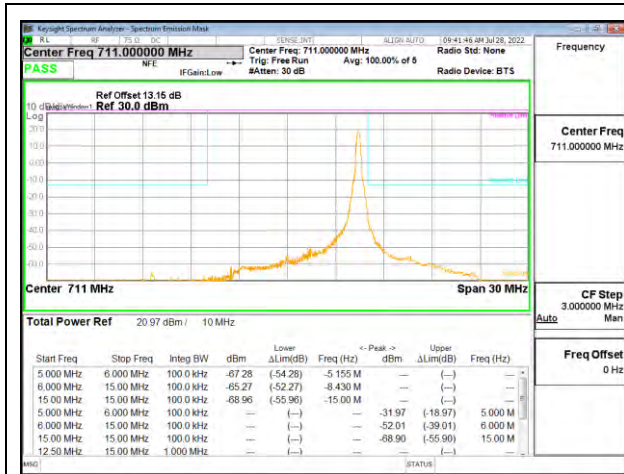
LTE12 10MHz QPSK LOW Ch RB1-49



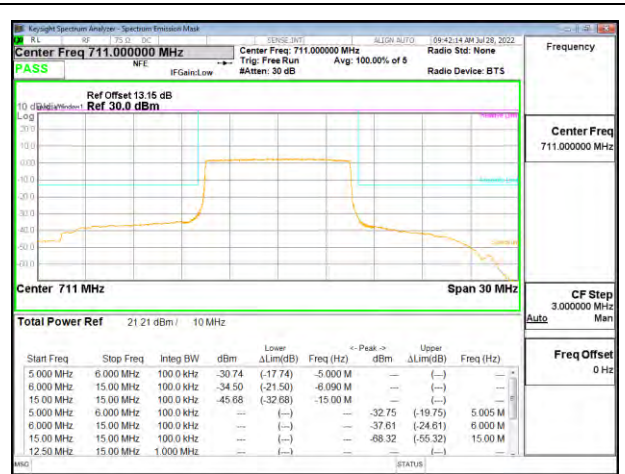
LTE12 10MHz QPSK LOW Ch RB50-0



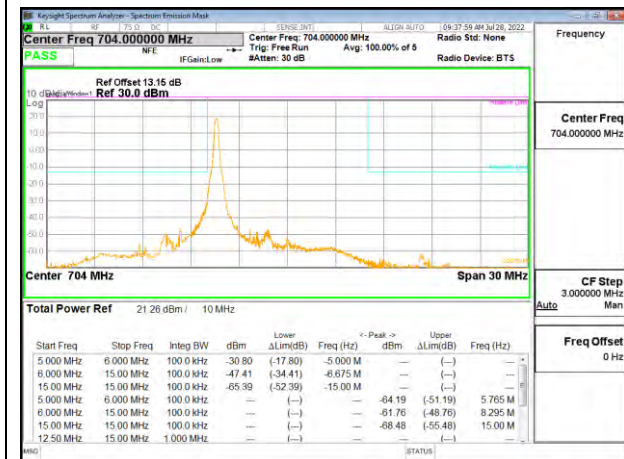
LTE12 10MHz QPSK HIGH Ch RB1-0



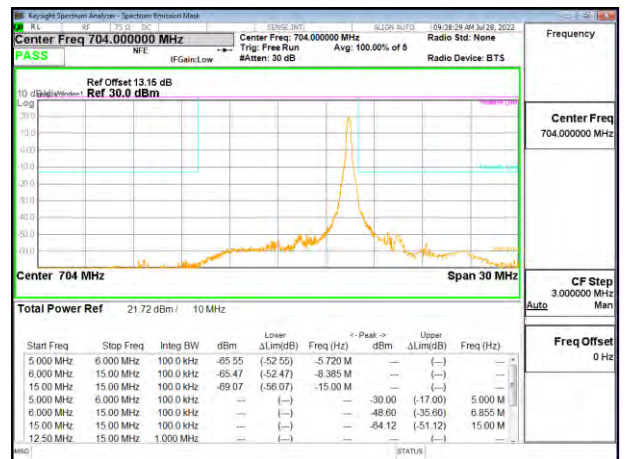
LTE12 10MHz QPSK HIGH Ch RB1-49



LTE12 10MHz QPSK HIGH Ch RB50-0



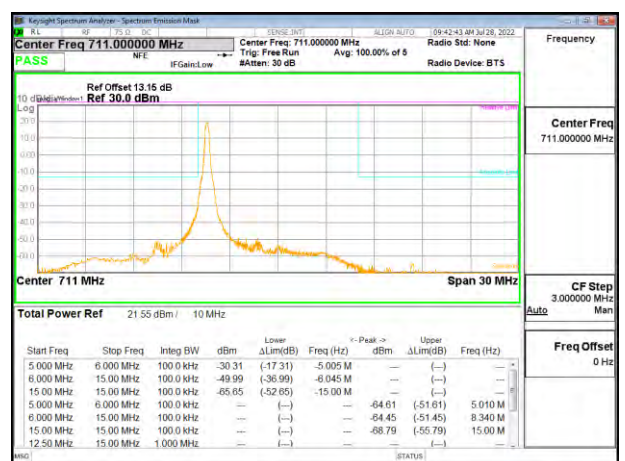
LTE12 10MHz 16QAM LOW Ch RB1-0



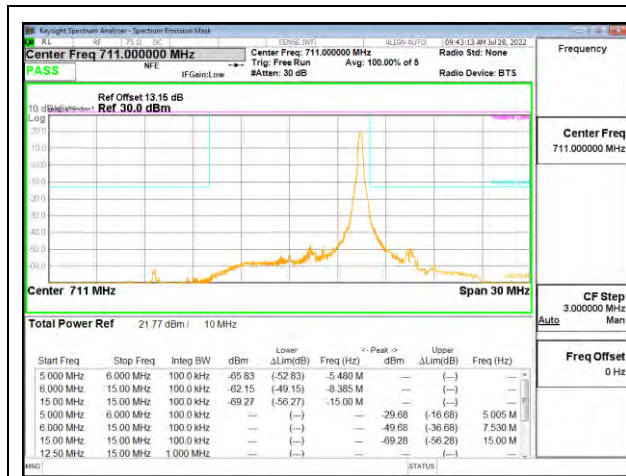
LTE12 10MHz 16QAM LOW Ch RB1-49



LTE12 10MHz 16QAM LOW Ch RB50-0



LTE12 10MHz 16QAM HIGH Ch RB1-0



LTE12 10MHz 16QAM HIGH Ch RB1-49



LTE12 10MHz 16QAM HIGH Ch RB50-0

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)

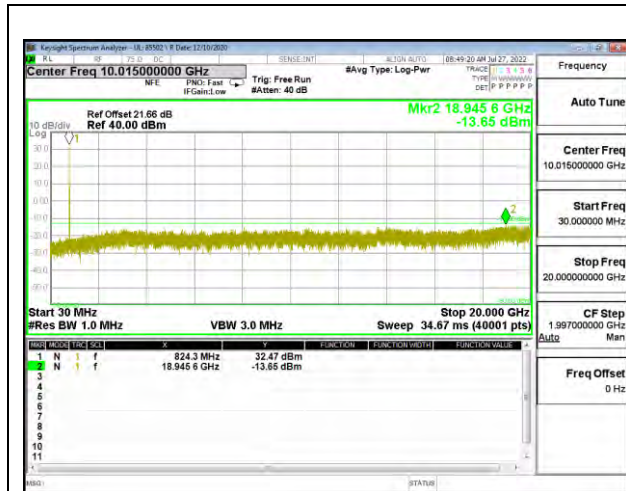
RESULTS

9.3.1. GSM GSM850

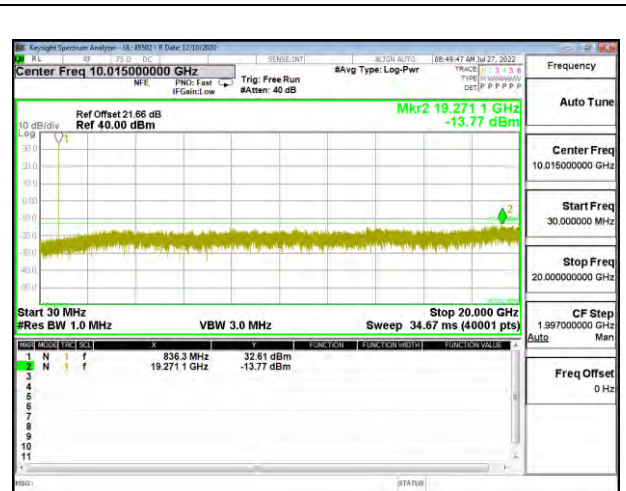
LIMITS

FCC: §22.917

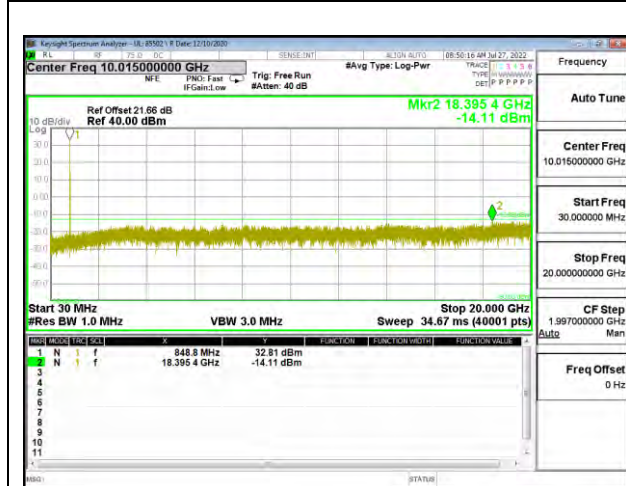
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



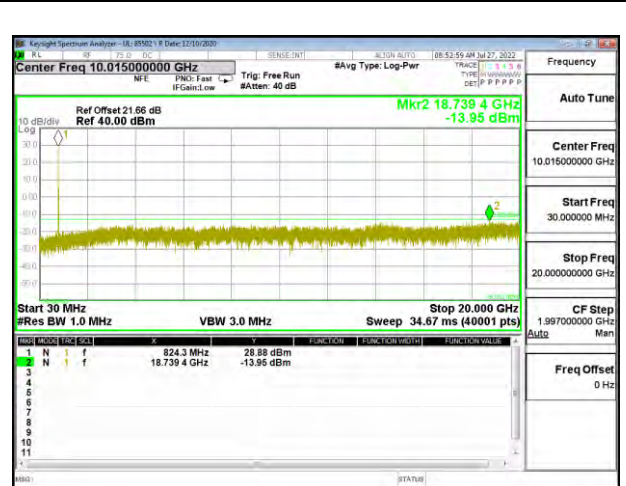
GSM850 GPRS LOW Channel



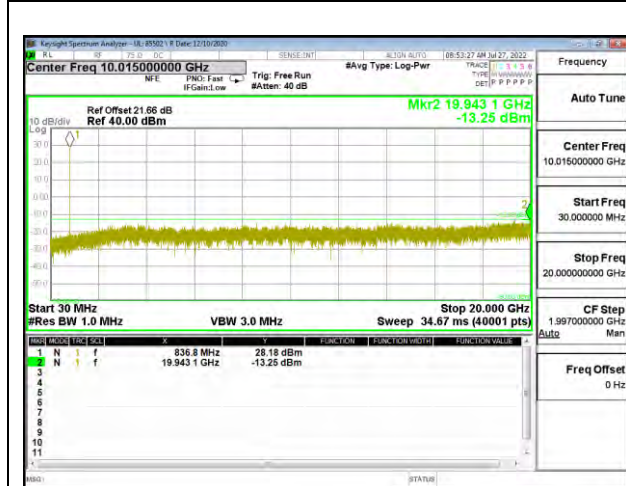
GSM850 GPRS MID Channel



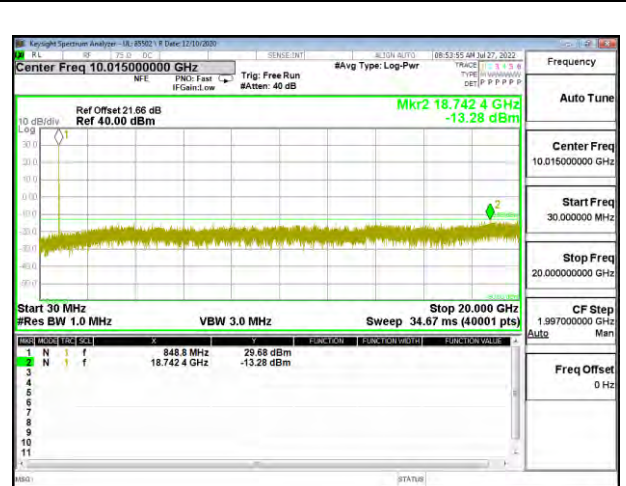
GSM850 GPRS HIGH Channel



GSM850 EGPRS LOW Channel



GSM850 EGPRS MID Channel



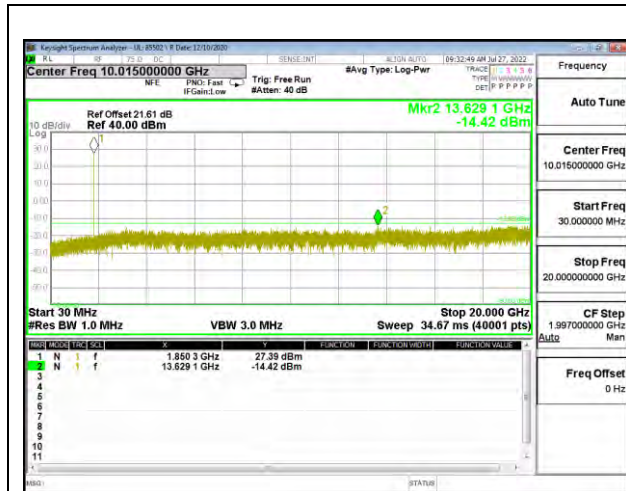
GSM850 EGPRS HIGH Channel

9.3.2. GSM GSM1900

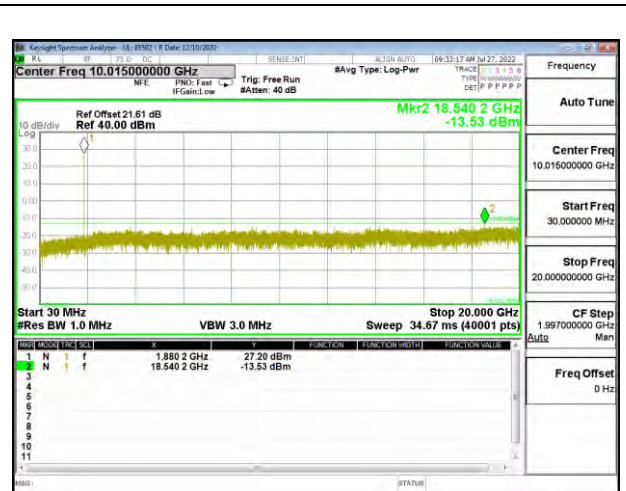
LIMITS

FCC: §24.238 (a)

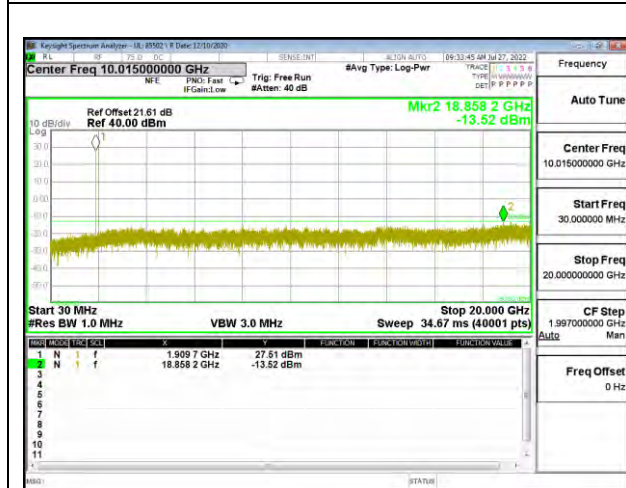
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.



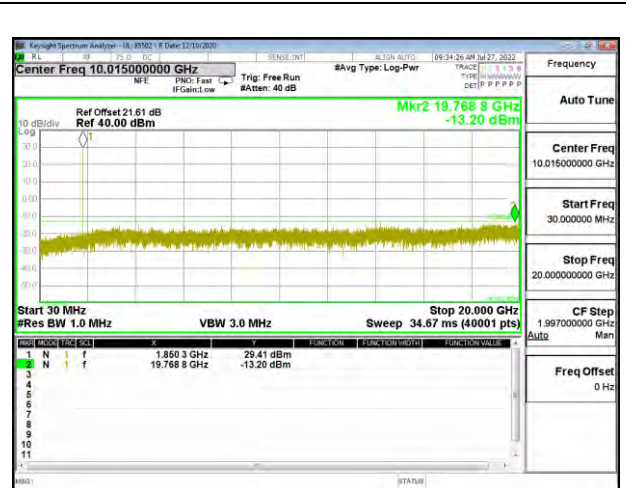
GSM1900 GPRS LOW Channel



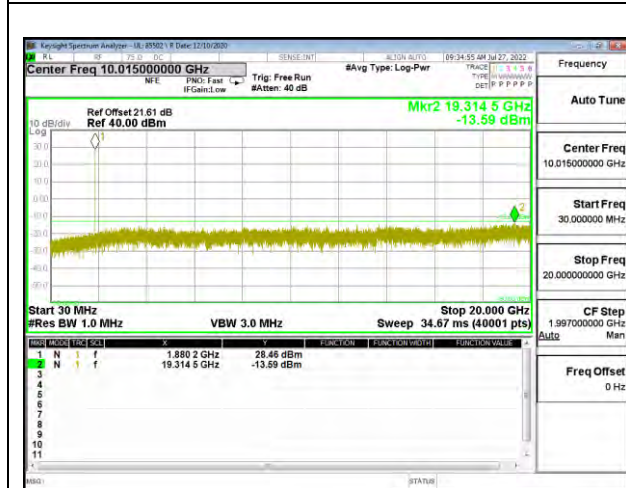
GSM1900 GPRS MID Channel



GSM1900 GPRS HIGH Channel



GSM1900 EGPRS LOW Channel



GSM1900 EGPRS MID Channel



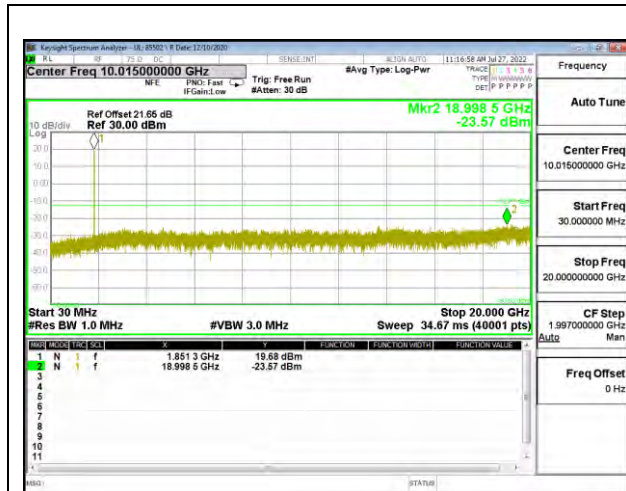
GSM1900 EGPRS HIGH Channel

9.3.3. WCDMA BAND 2

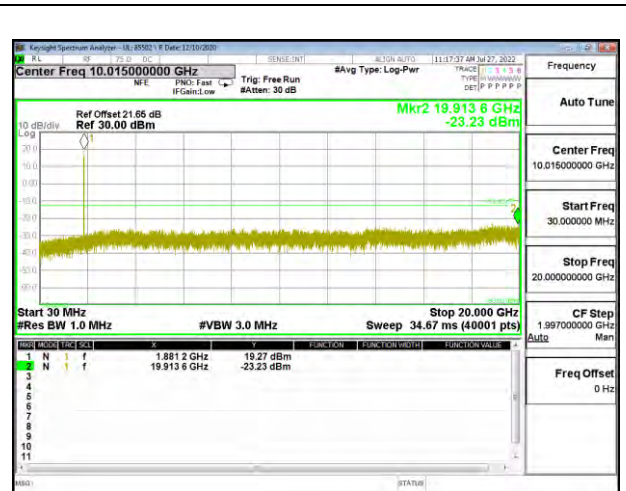
LIMITS

FCC: §24.238

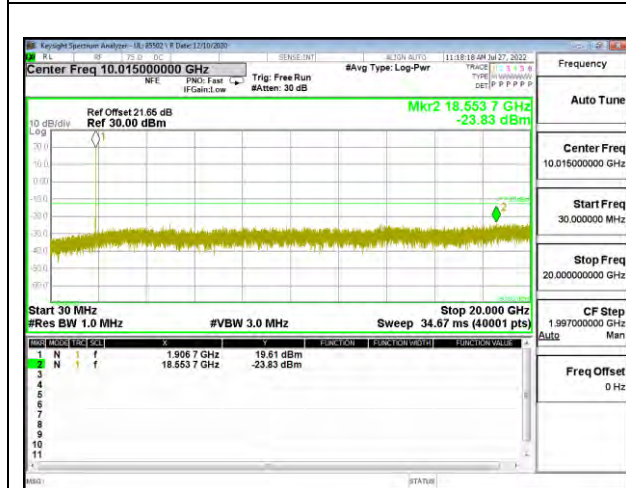
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



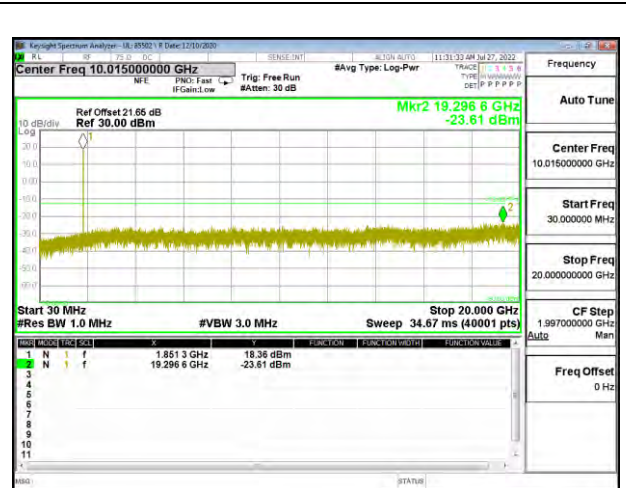
BAND 2 Rel 99 LOW Channel



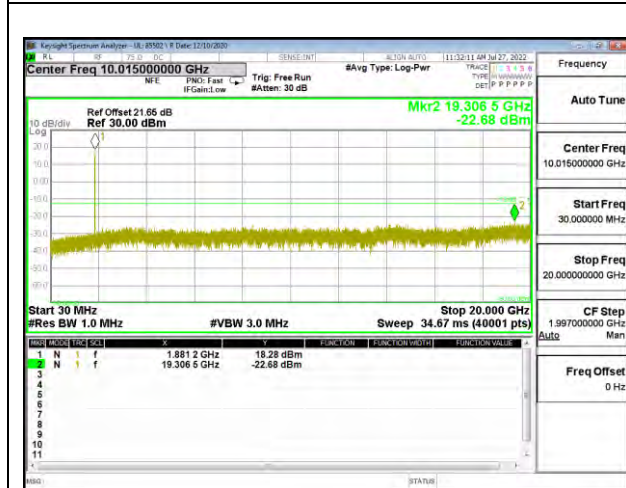
BAND 2 Rel 99 MID Channel



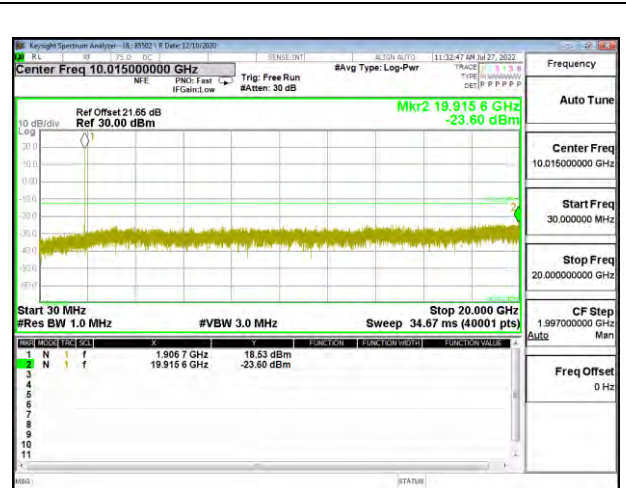
BAND 2 Rel 99 HIGH Channel



BAND 2 HSDPA LOW Channel



BAND 2 HSDPA MID Channel



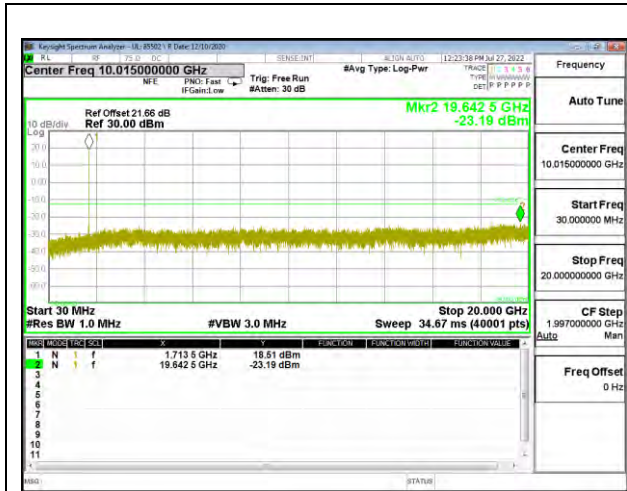
BAND 2 HSDPA HIGH Channel

9.3.4. WCDMA BAND 4

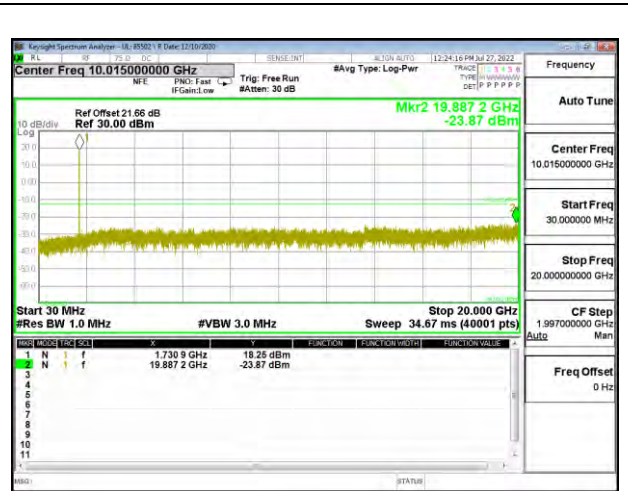
LIMITS

FCC: §27.53(h)

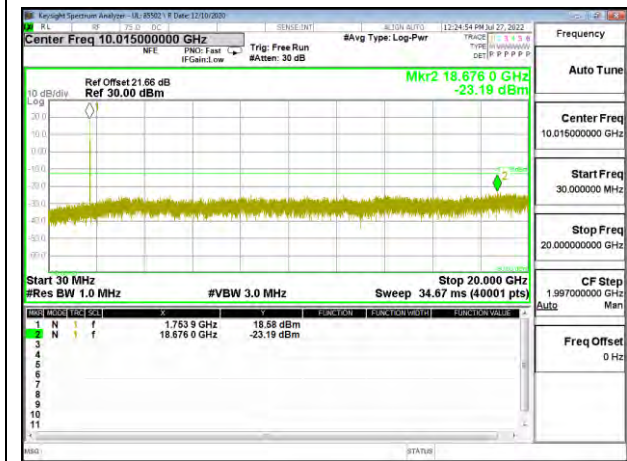
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



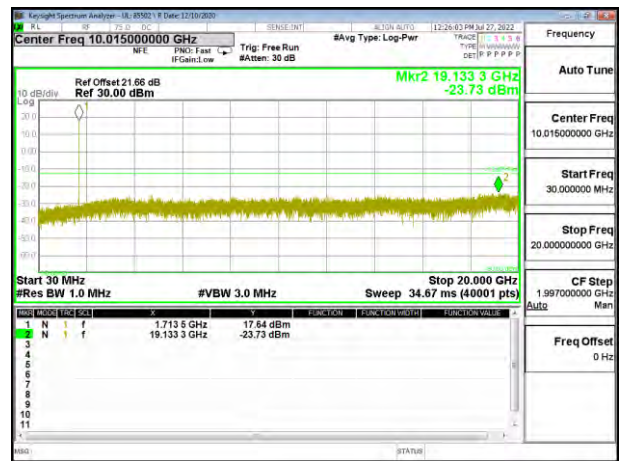
BAND 4 Rel 99 LOW Channel



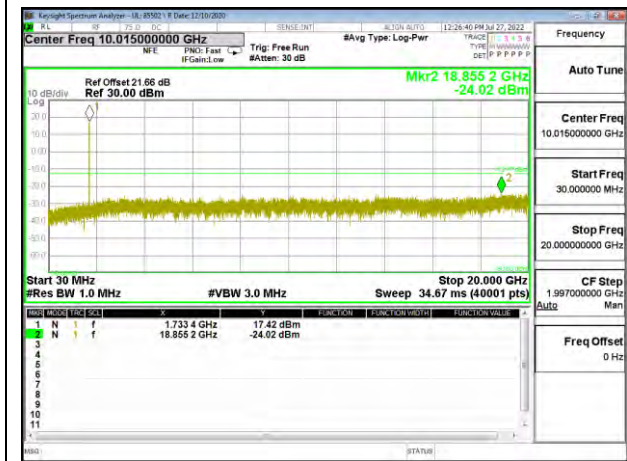
BAND 4 Rel 99 MID Channel



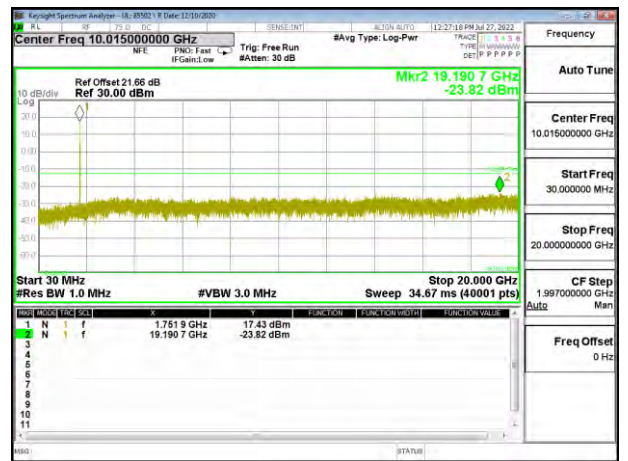
BAND 4 Rel 99 HIGH Channel



BAND 4 HSDPA LOW Channel



BAND 4 HSDPA MID Channel



BAND 4 HSDPA HIGH Channel

9.3.5. LTE BAND 2

LIMITS

FCC: §24.238

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



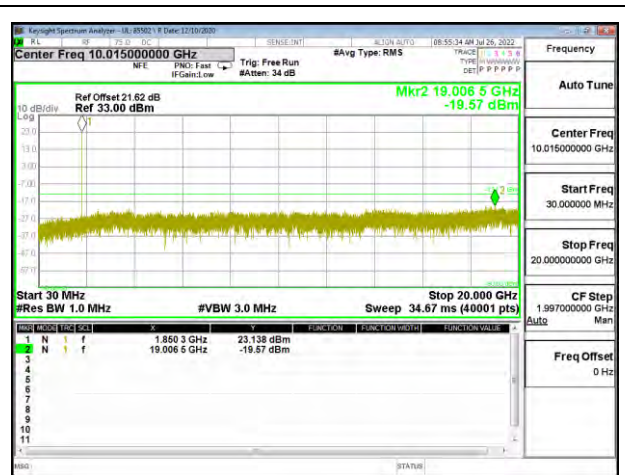
LTE2 1.4MHz QPSK LOW Ch RB1-0



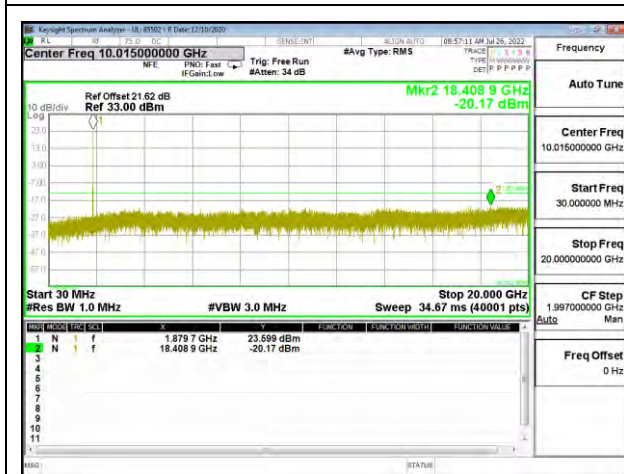
LTE2 1.4MHz QPSK MID Ch RB1-0



LTE2 1.4MHz QPSK HIGH Ch RB1-0



LTE2 1.4MHz 16QAM LOW Ch RB1-0



LTE2 1.4MHz 16QAM MID Ch RB1-0



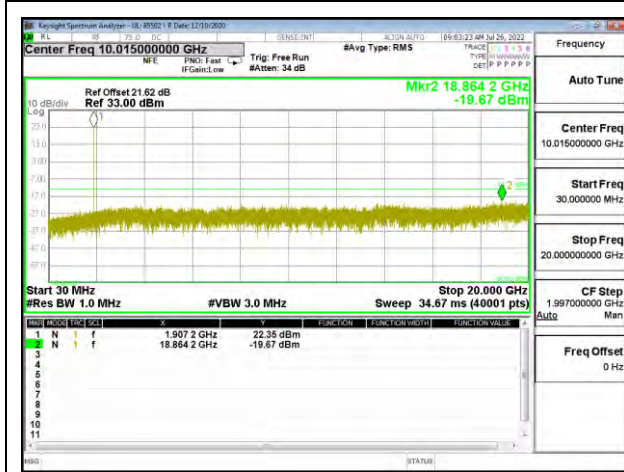
LTE2 1.4MHz 16QAM HIGH Ch RB1-0



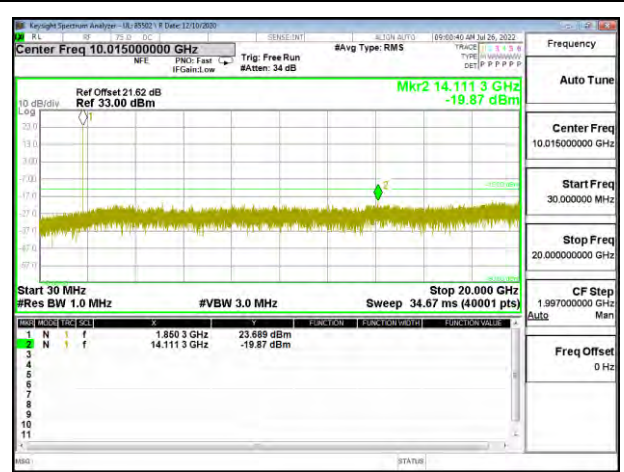
LTE2 3MHz QPSK LOW Ch RB1-0



LTE2 3MHz QPSK MID Ch RB1-0



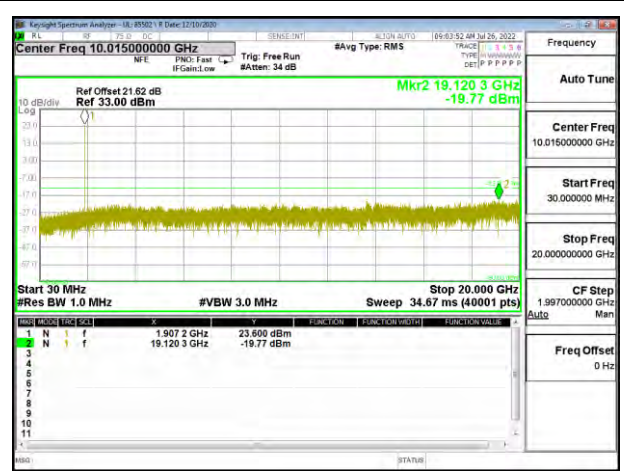
LTE2 3MHz QPSK HIGH Ch RB1-0



LTE2 3MHz 16QAM LOW Ch RB1-0



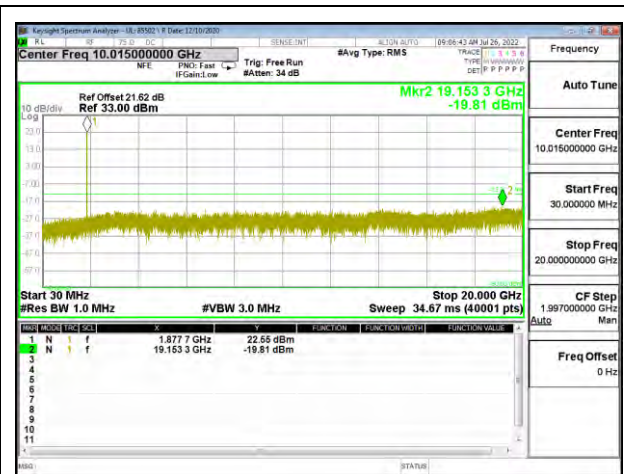
LTE2 3MHz 16QAM MID Ch RB1-0



LTE2 3MHz 16QAM HIGH Ch RB1-0



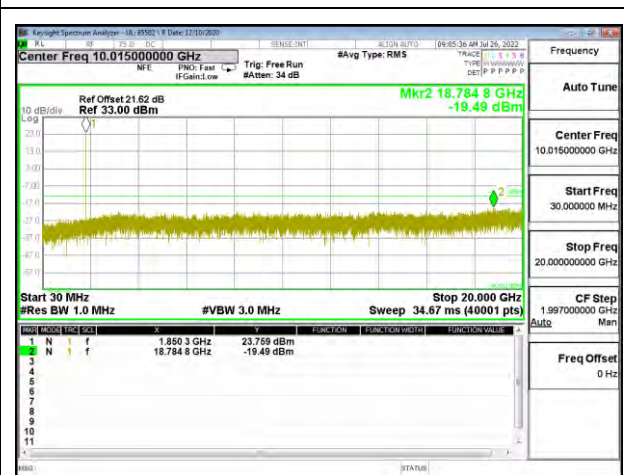
LTE2 5MHz QPSK LOW Ch RB1-0



LTE2 5MHz QPSK MID Ch RB1-0



LTE2 5MHz QPSK HIGH Ch RB1-0



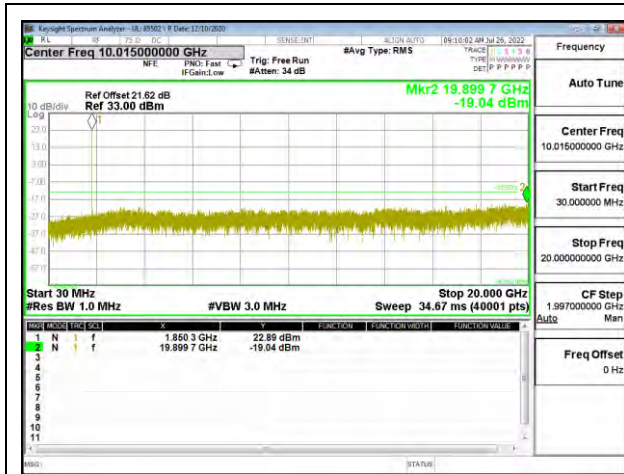
LTE2 5MHz 16QAM LOW Ch RB1-0



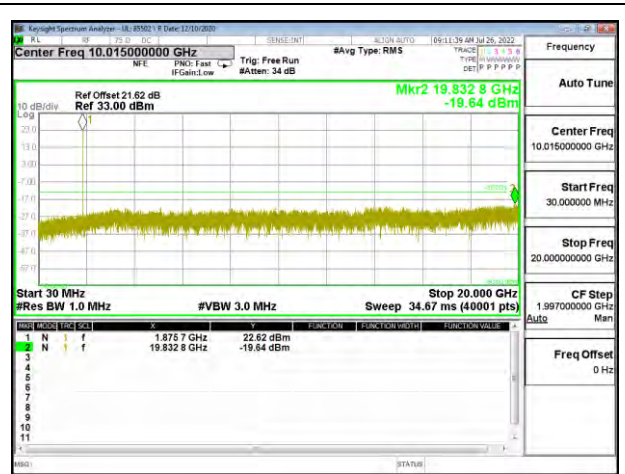
LTE2 5MHz 16QAM MID Ch RB1-0



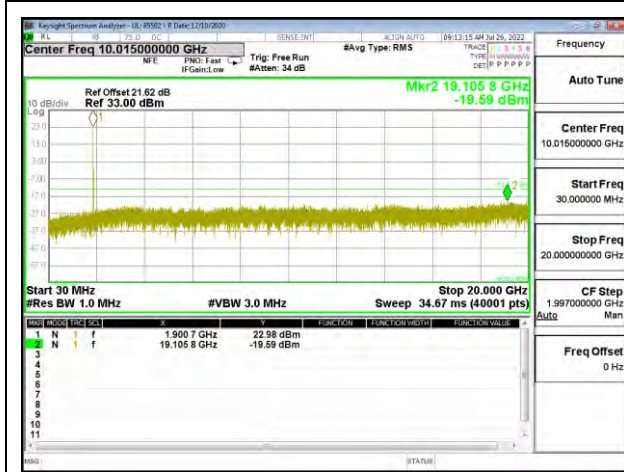
LTE2 5MHz 16QAM HIGH Ch RB1-0



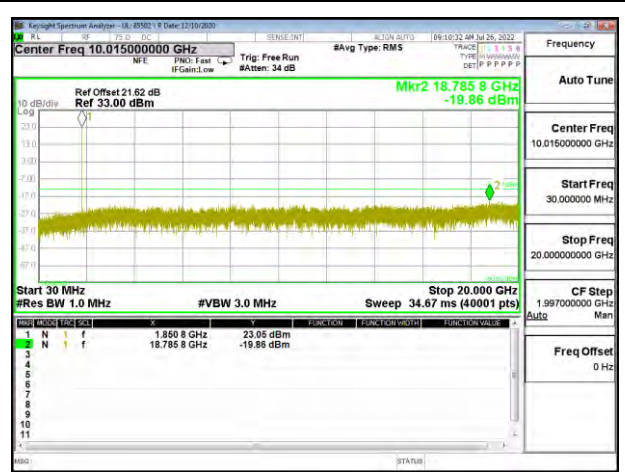
LTE2 10MHz QPSK LOW Ch RB1-0



LTE2 10MHz QPSK MID Ch RB1-0



LTE2 10MHz QPSK HIGH Ch RB1-0



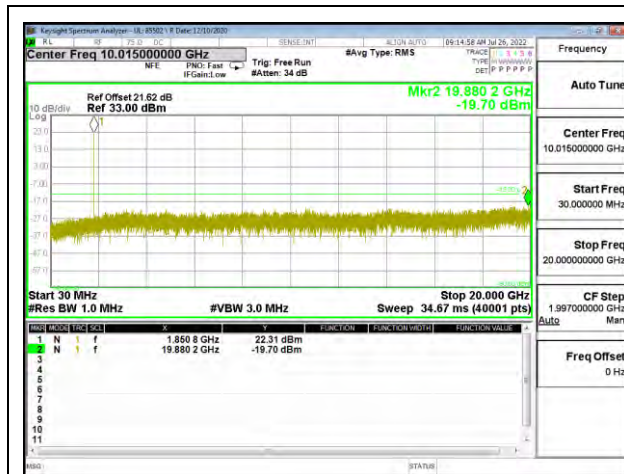
LTE2 10MHz 16QAM LOW Ch RB1-0



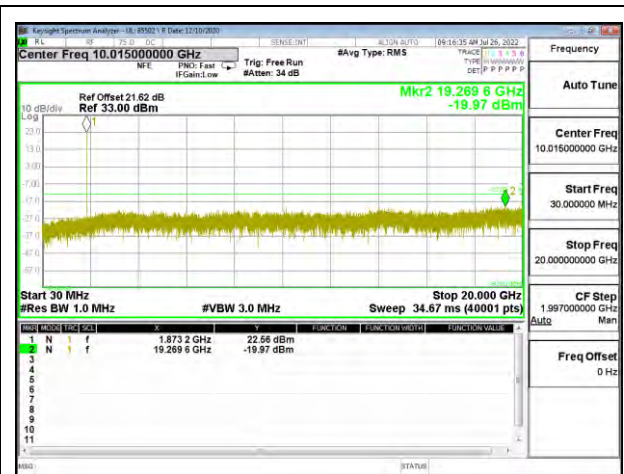
LTE2 10MHz 16QAM MID Ch RB1-0



LTE2 10MHz 16QAM HIGH Ch RB1-0



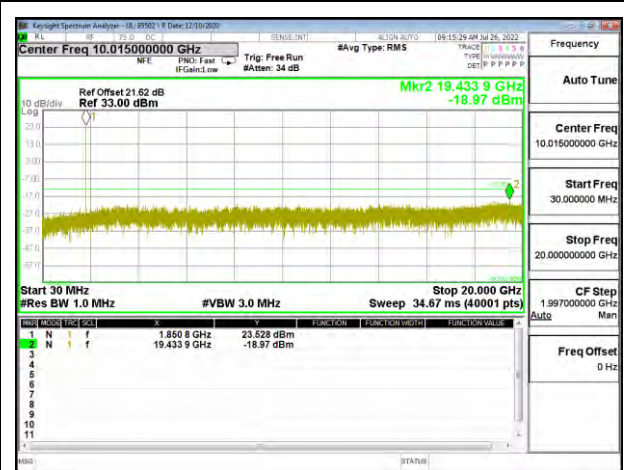
LTE2 15MHz QPSK LOW Ch RB1-0



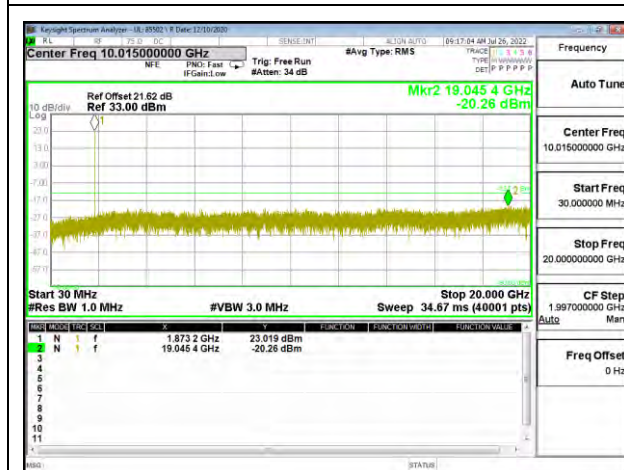
LTE2 15MHz QPSK MID Ch RB1-0



LTE2 15MHz QPSK HIGH Ch RB1-0



LTE2 15MHz 16QAM LOW Ch RB1-0



LTE2 15MHz 16QAM MID Ch RB1-0



LTE2 15MHz 16QAM HIGH Ch RB1-0



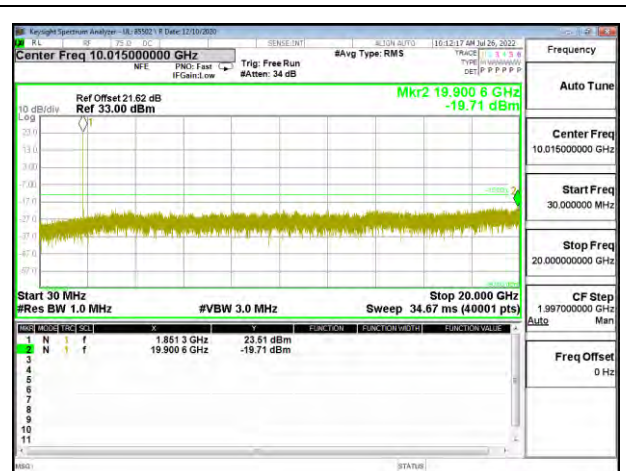
LTE2 20MHz QPSK LOW Ch RB1-0



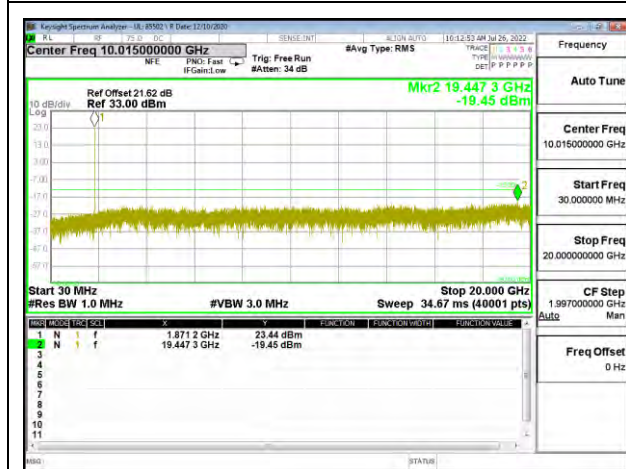
LTE2 20MHz QPSK MID Ch RB1-0



LTE2 20MHz QPSK HIGH Ch RB1-0



LTE2 20MHz 16QAM LOW Ch RB1-0



LTE2 20MHz 16QAM MID Ch RB1-0



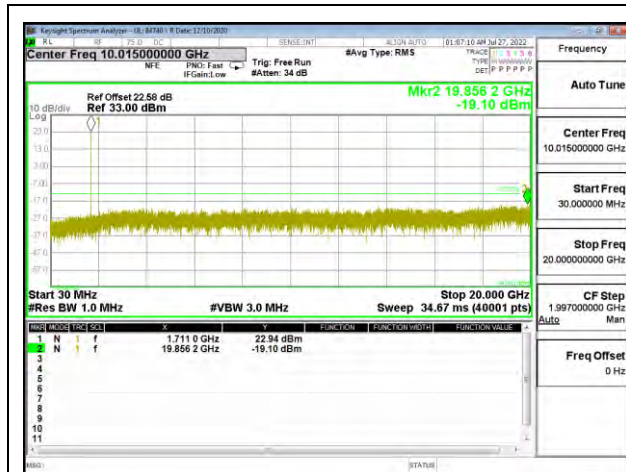
LTE2 20MHz 16QAM HIGH Ch RB1-0

9.3.6. LTE BAND 4

LIMITS

FCC: §27.53(h)

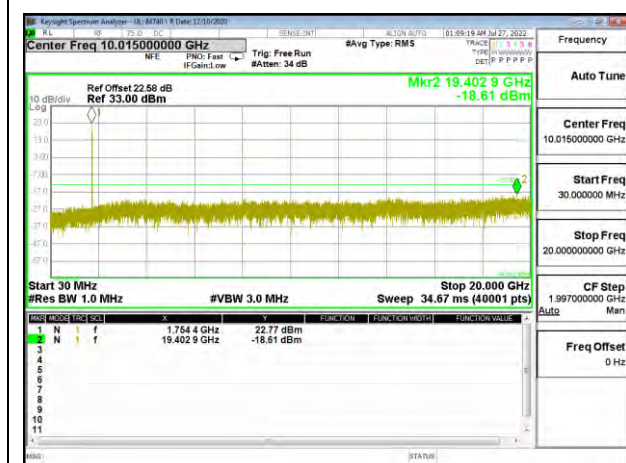
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



LTE4 1.4MHz QPSK LOW Ch RB1-0



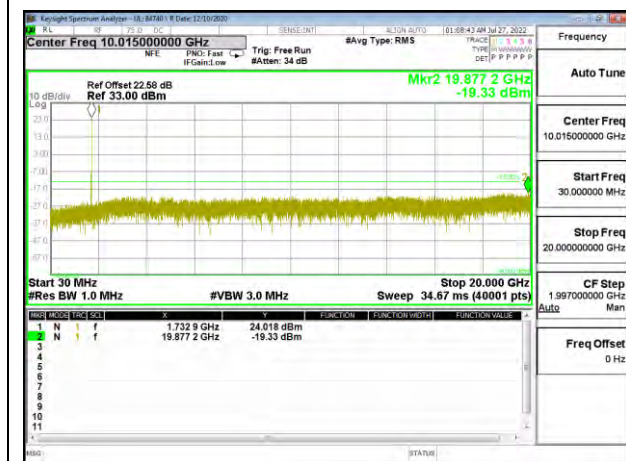
LTE4 1.4MHz QPSK MID Ch RB1-0



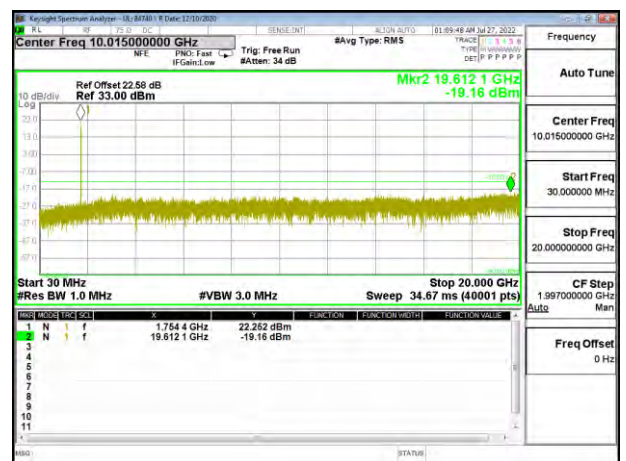
LTE4 1.4MHz QPSK HIGH Ch RB1-0



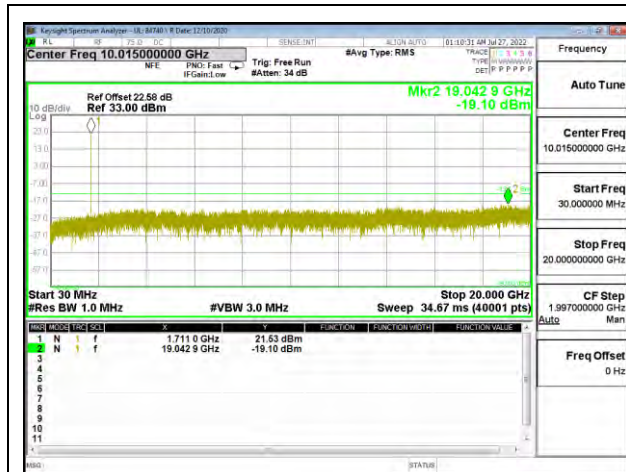
LTE4 1.4MHz 16QAM LOW Ch RB1-0



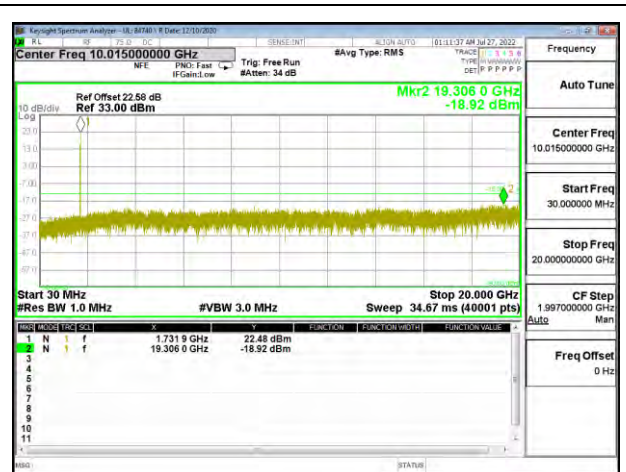
LTE4 1.4MHz 16QAM MID Ch RB1-0



LTE4 1.4MHz 16QAM HIGH Ch RB1-0



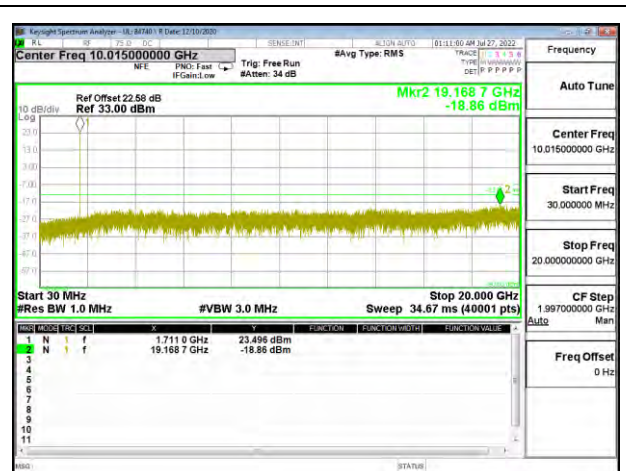
LTE4 3MHz QPSK LOW Ch RB1-0



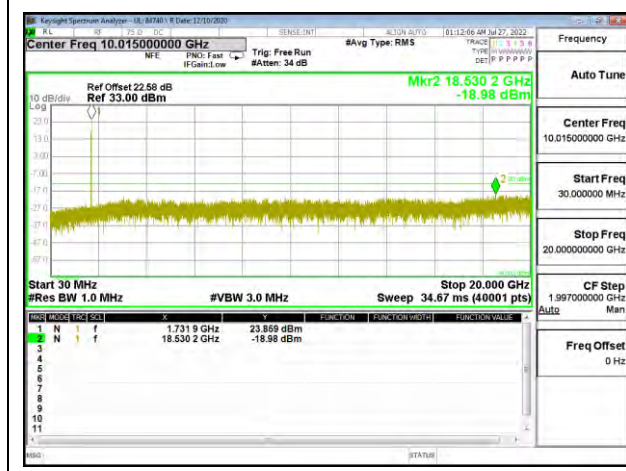
LTE4 3MHz QPSK MID Ch RB1-0



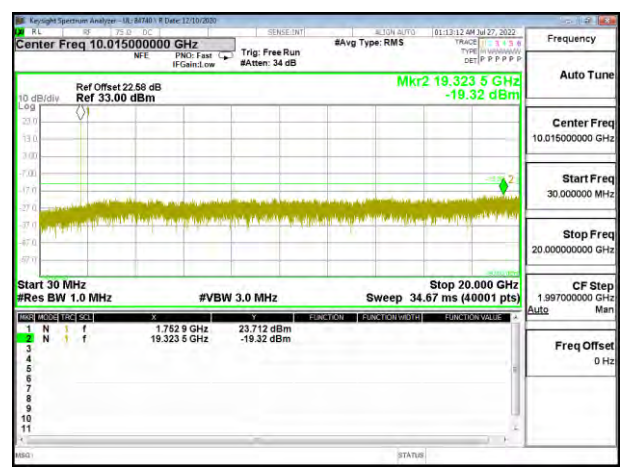
LTE4 3MHz QPSK HIGH Ch RB1-0



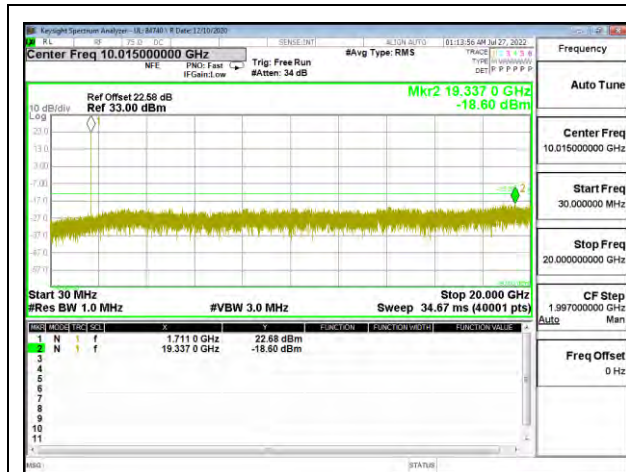
LTE4 3MHz 16QAM LOW Ch RB1-0



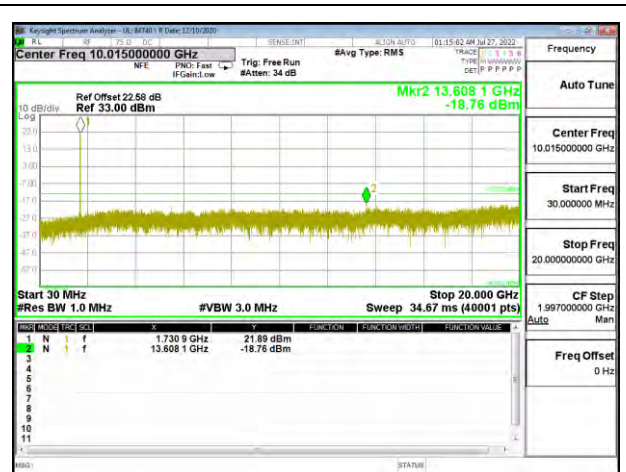
LTE4 3MHz 16QAM MID Ch RB1-0



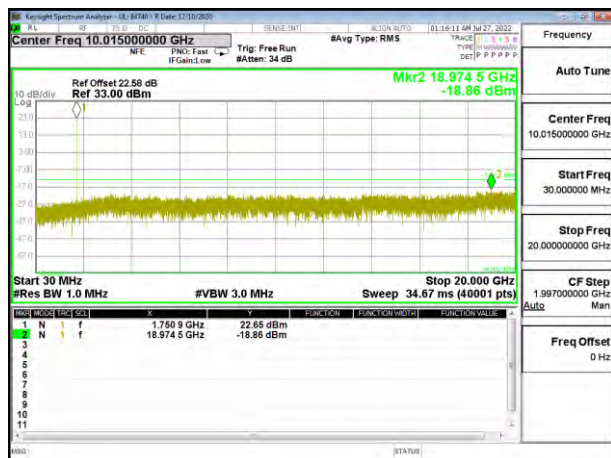
LTE4 3MHz 16QAM HIGH Ch RB1-0



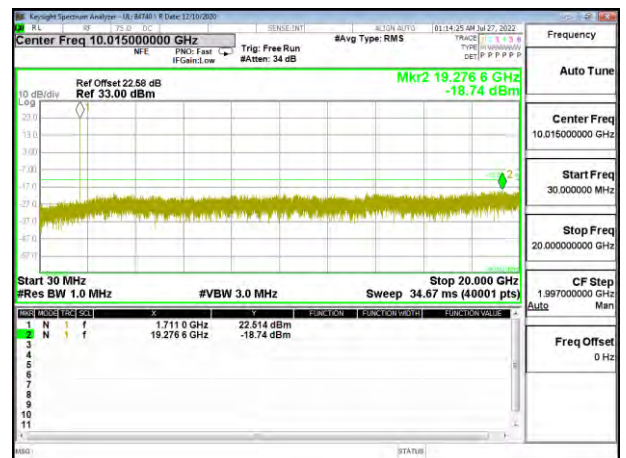
LTE4 5MHz QPSK LOW Ch RB1-0



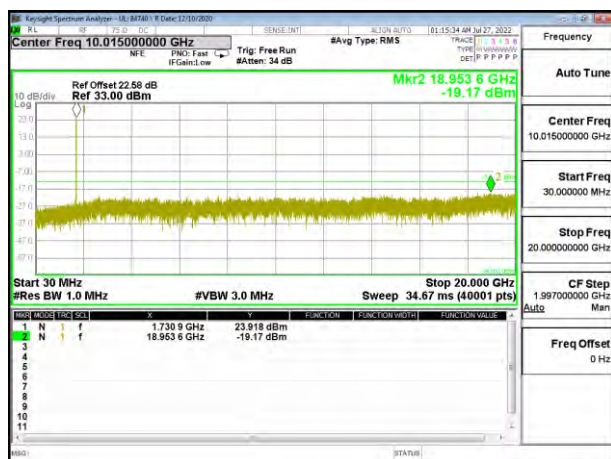
LTE4 5MHz QPSK MID Ch RB1-0



LTE4 5MHz QPSK HIGH Ch RB1-0



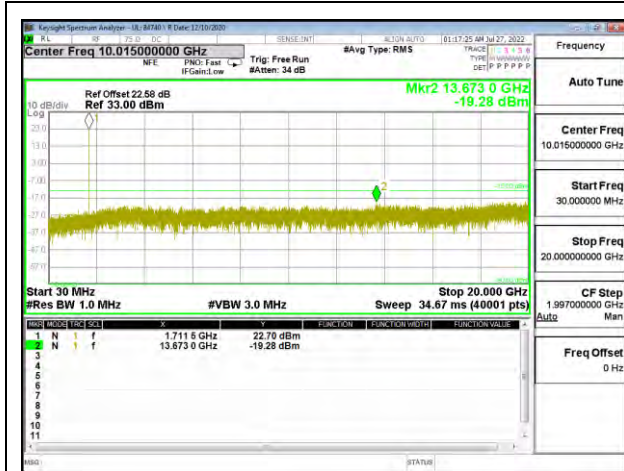
LTE4 5MHz 16QAM LOW Ch RB1-0



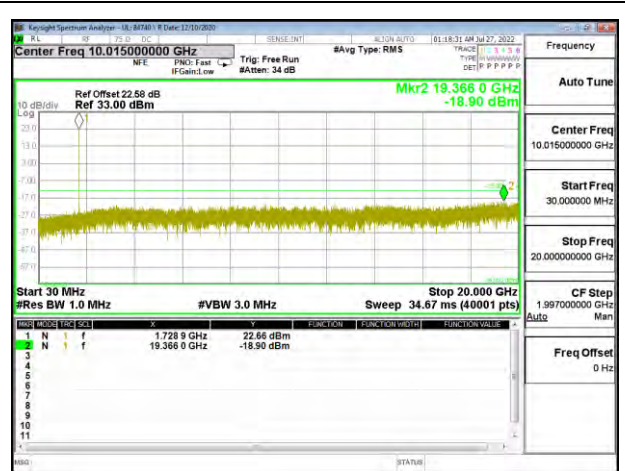
LTE4 5MHz 16QAM MID Ch RB1-0



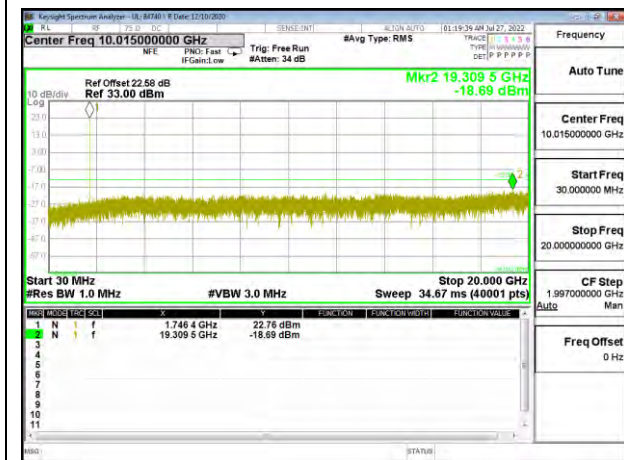
LTE4 5MHz 16QAM HIGH Ch RB1-0



LTE4 10MHz QPSK LOW Ch RB1-0



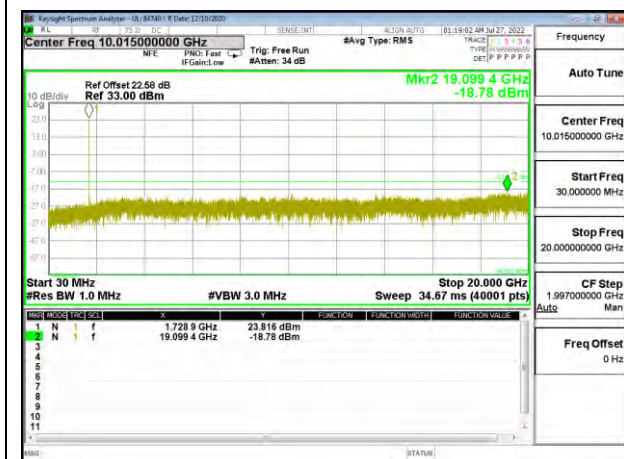
LTE4 10MHz QPSK MID Ch RB1-0



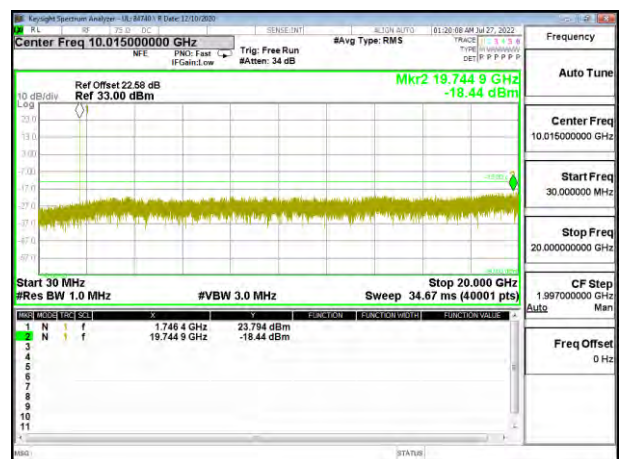
LTE4 10MHz QPSK HIGH Ch RB1-0



LTE4 10MHz 16QAM LOW Ch RB1-0



LTE4 10MHz 16QAM MID Ch RB1-0



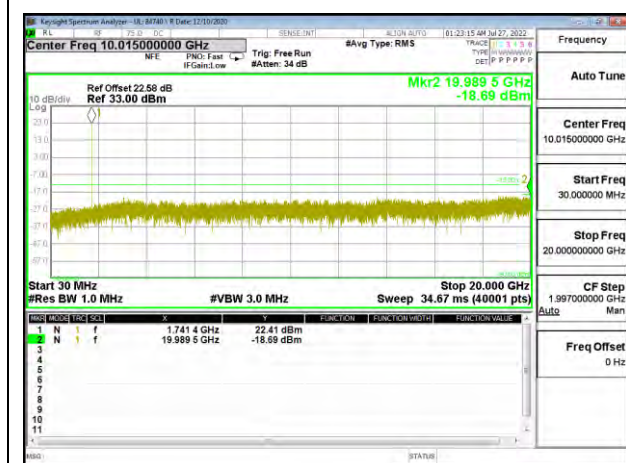
LTE4 10MHz 16QAM HIGH Ch RB1-0



LTE4 15MHz QPSK LOW Ch RB1-0



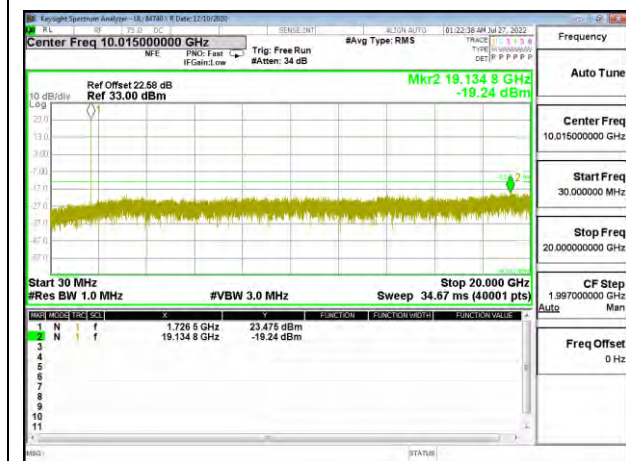
LTE4 15MHz QPSK MID Ch RB1-0



LTE4 15MHz QPSK HIGH Ch RB1-0



LTE4 15MHz 16QAM LOW Ch RB1-0



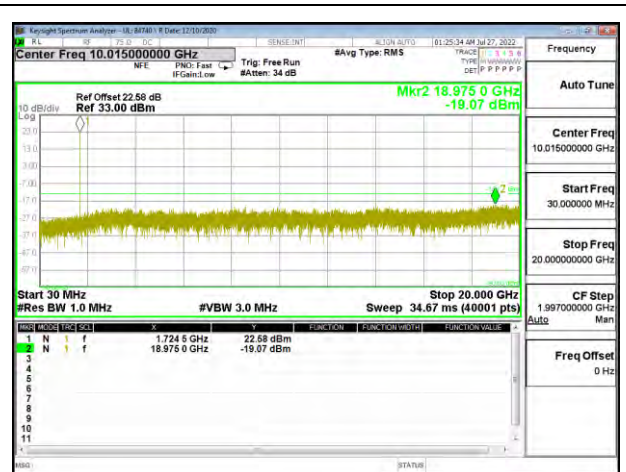
LTE4 15MHz 16QAM MID Ch RB1-0



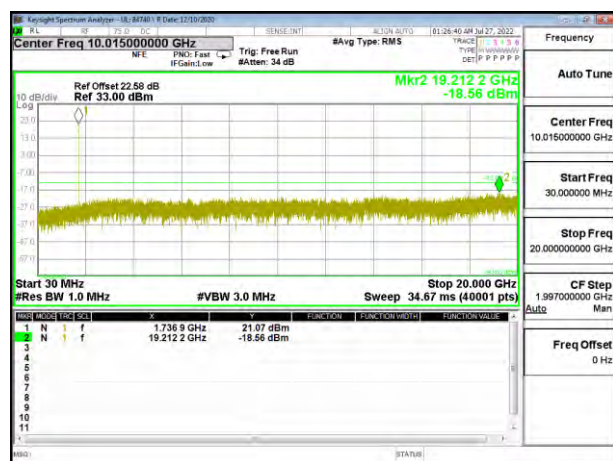
LTE4 15MHz 16QAM HIGH Ch RB1-0



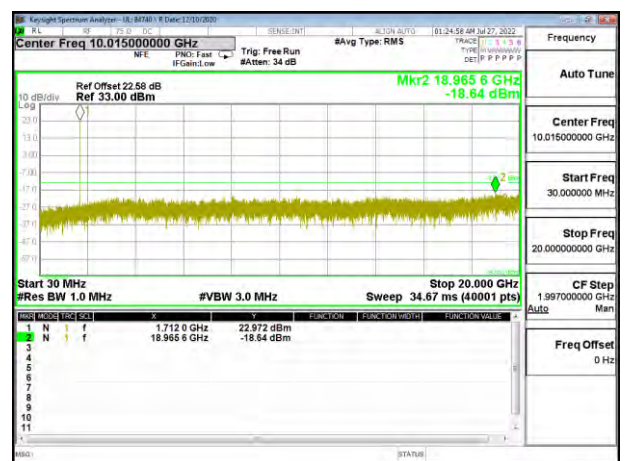
LTE4 20MHz QPSK LOW Ch RB1-0



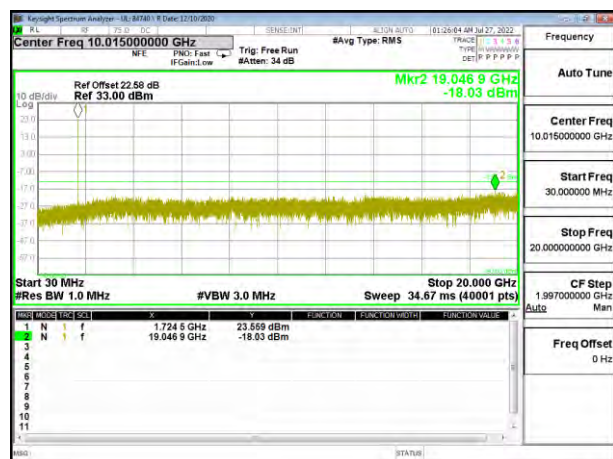
LTE4 20MHz QPSK MID Ch RB1-0



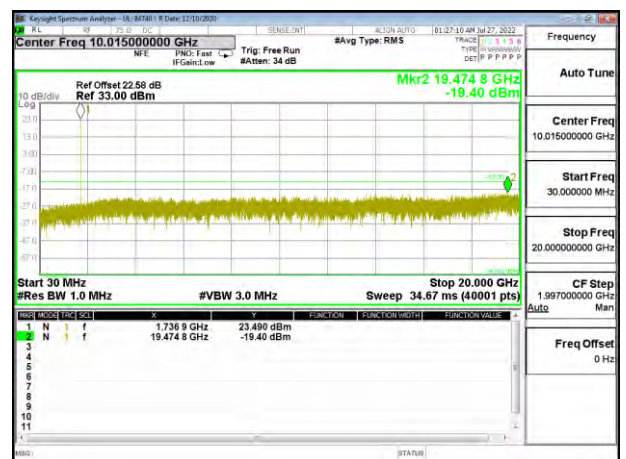
LTE4 20MHz QPSK HIGH Ch RB1-0



LTE4 20MHz 16QAM LOW Ch RB1-0



LTE4 20MHz 16QAM MID Ch RB1-0



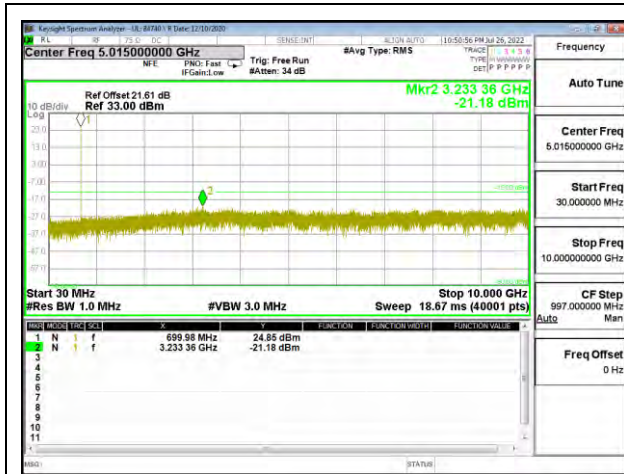
LTE4 20MHz 16QAM HIGH Ch RB1-0

9.3.7. LTE BAND 12

LIMITS

FCC: §27.53 (g)

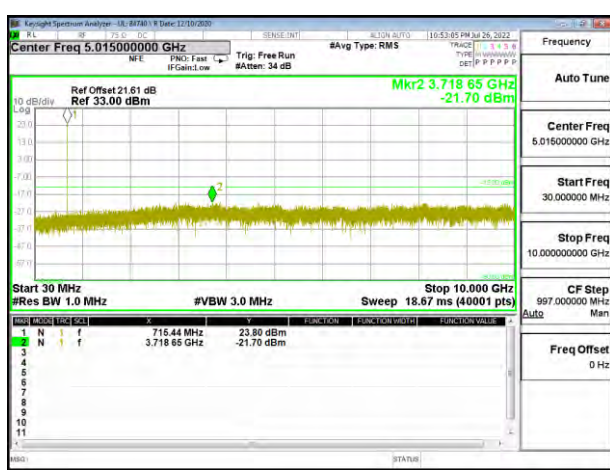
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log (P)$ dB where transmitting power (P) in Watts.



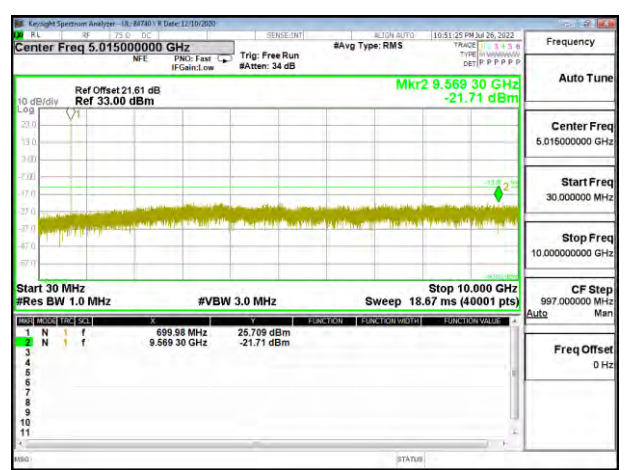
LTE12 1.4MHz QPSK LOW Ch RB1-0



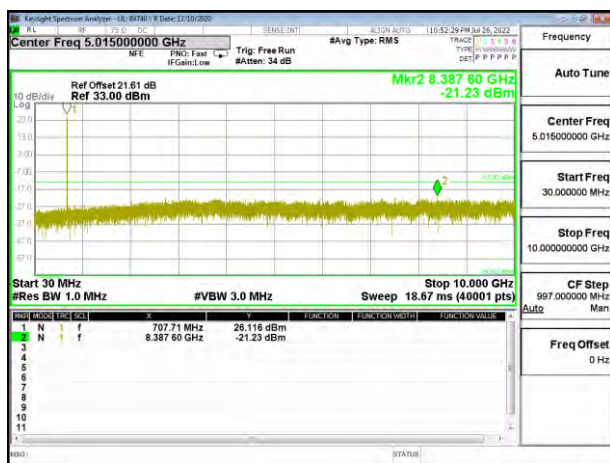
LTE12 1.4MHz QPSK MID Ch RB1-0



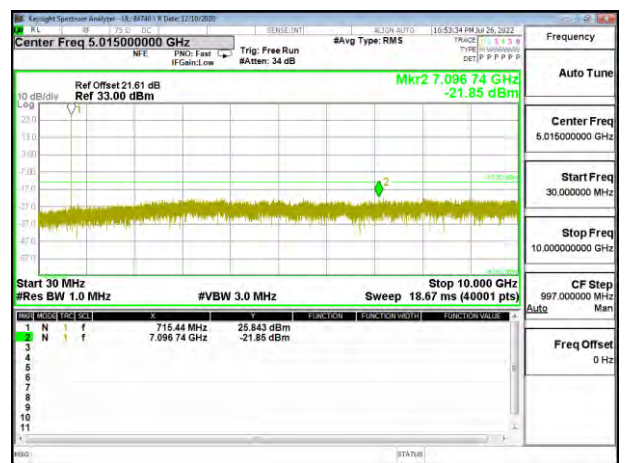
LTE12 1.4MHz QPSK HIGH Ch RB1-0



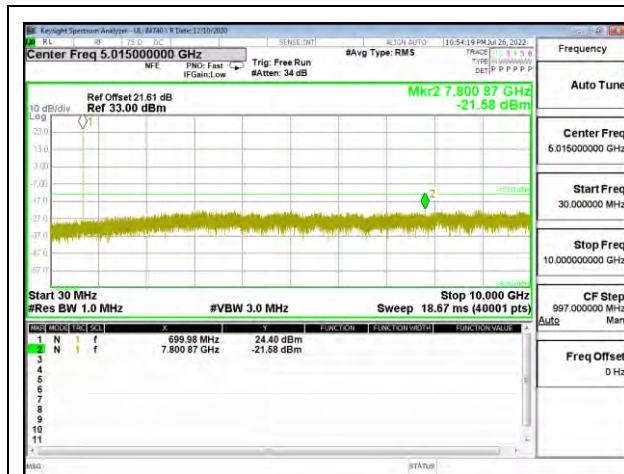
LTE12 1.4MHz 16QAM LOW Ch RB1-0



LTE12 1.4MHz 16QAM MID Ch RB1-0



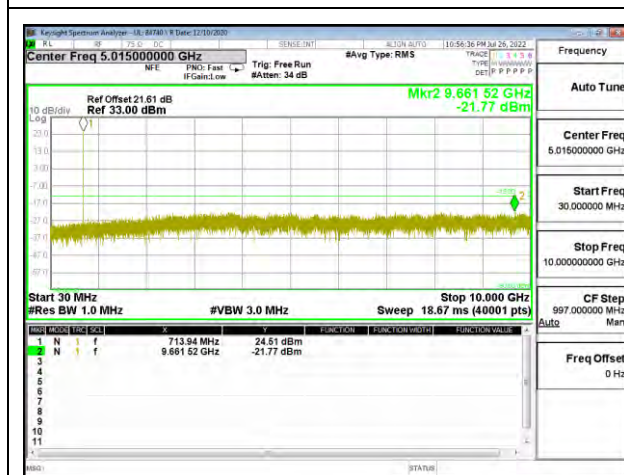
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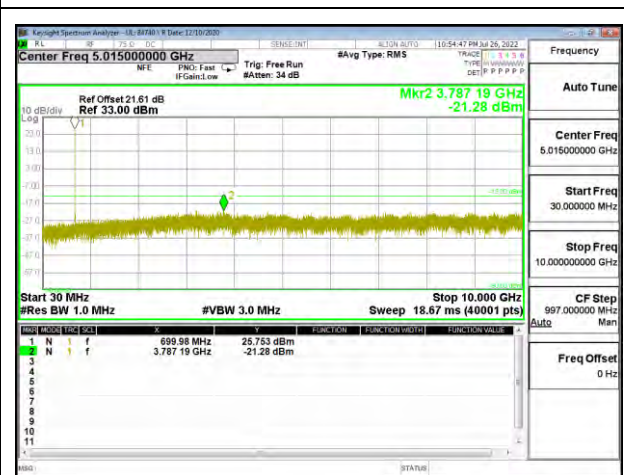
LTE12 3MHz QPSK LOW Ch RB1-0



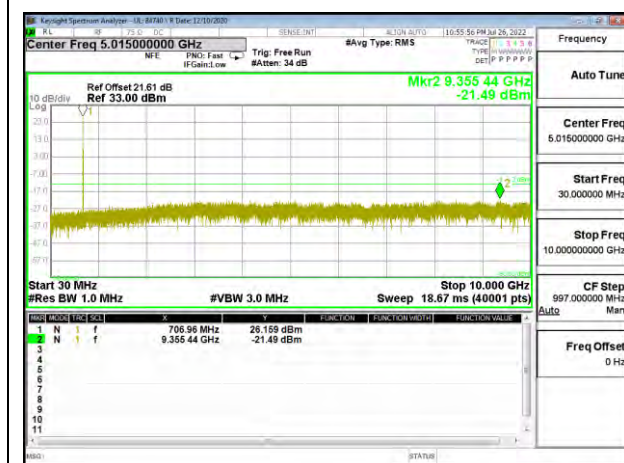
LTE12 3MHz QPSK MID Ch RB1-0



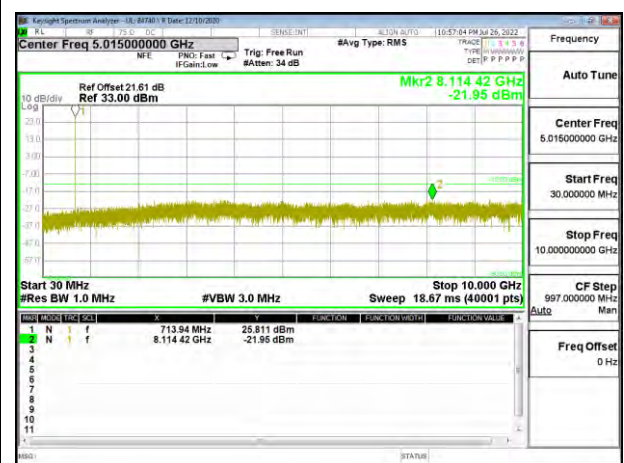
LTE12 3MHz QPSK HIGH Ch RB1-0



LTE12 3MHz 16QAM LOW Ch RB1-0



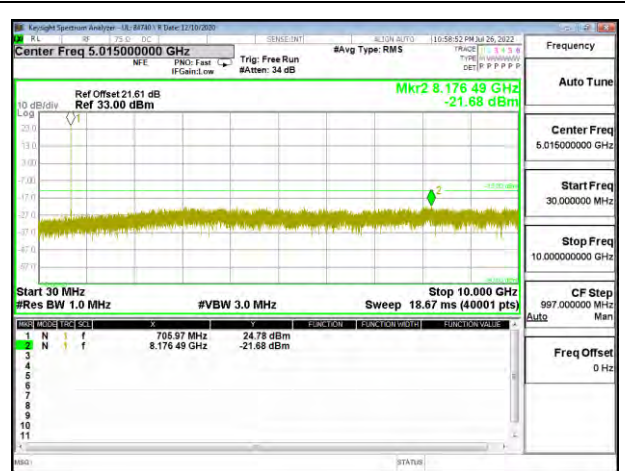
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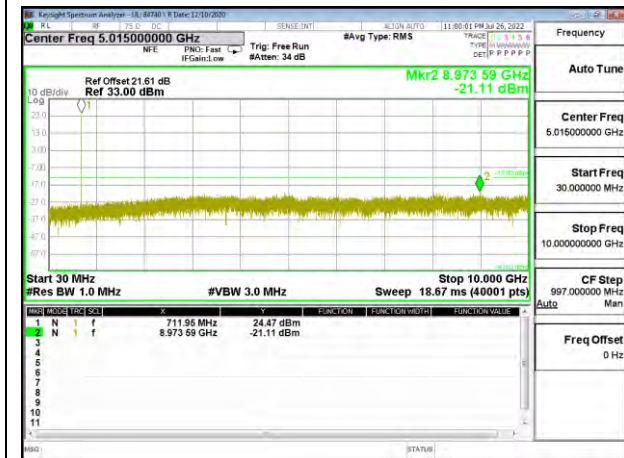
LTE12 3MHz 16QAM HIGH Ch RB1-0



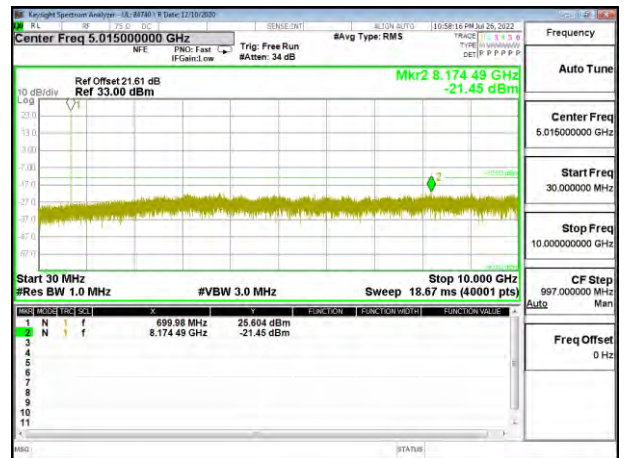
LTE12 5MHz QPSK LOW Ch RB1-0



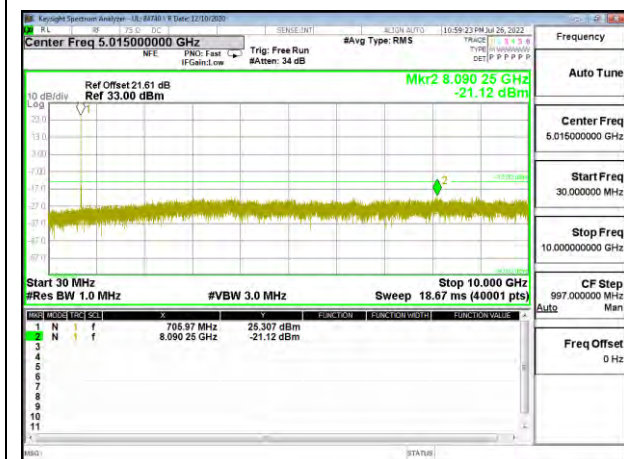
LTE12 5MHz QPSK MID Ch RB1-0



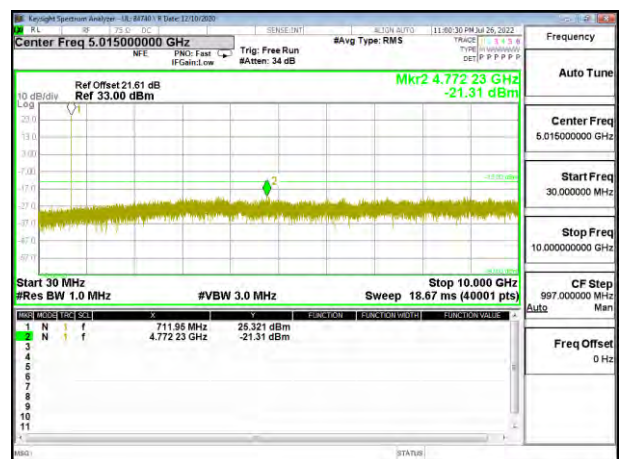
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LTE12 5MHz 16QAM LOW Ch RB1-0



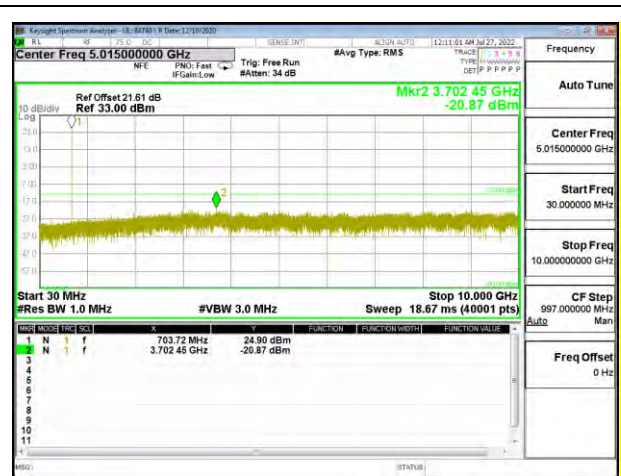
LTE12 5MHz 16QAM MID Ch RB1-0



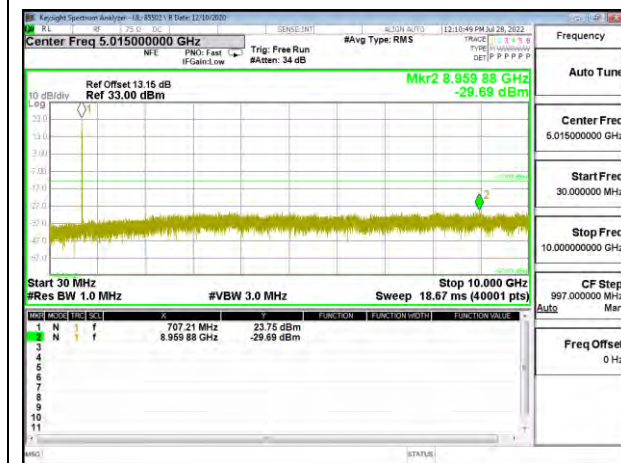
LTE12 5MHz 16QAM HIGH Ch RB1-0



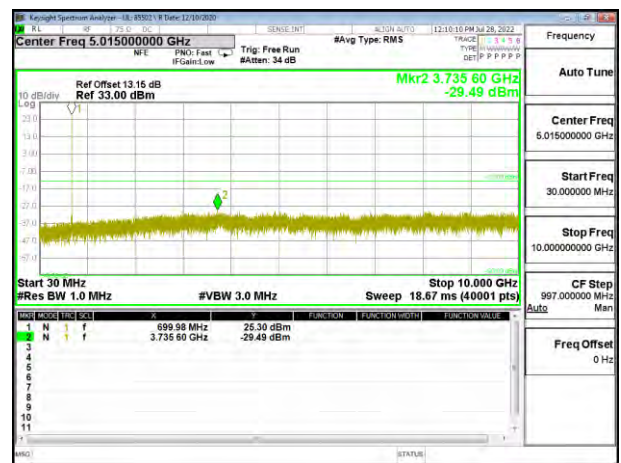
LTE12 10MHz QPSK LOW Ch RB1-0



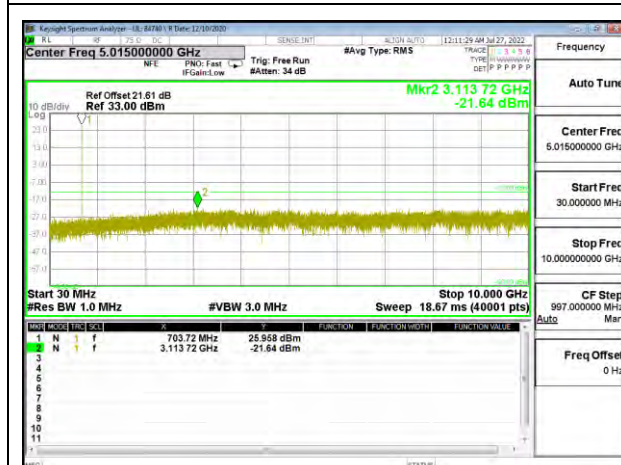
LTE12 10MHz QPSK MID Ch RB1-0



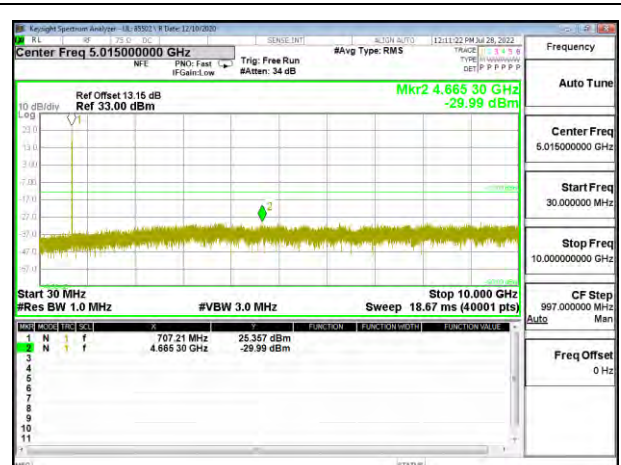
LTE12 10MHz QPSK HIGH Ch RB1-0



LTE12 10MHz 16QAM LOW Ch RB1-0



LTE12 10MHz 16QAM MID Ch RB1-0



LTE12 10MHz 16QAM HIGH Ch RB1-0

9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

(vii) Temp. = -30°C to +50°C

(viii) Voltage = (85% - 115%)

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

Test Engineer ID:	84740/44389	Test Date:	2022-07-28
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GSM850

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	824.2000	848.0000				
Extreme (50C)		824.2000	848.0000	22.5	24.2	0.05	0.06
Extreme (40C)		824.2000	848.0000	23.8	25.4	0.06	0.06
Extreme (30C)		824.2000	848.0000	25.1	23.3	0.06	0.05
Extreme (10C)		824.2000	848.0000	23.3	23.7	0.06	0.06
Extreme (0C)		824.2001	848.0000	31.7	25.4	0.08	0.06
Extreme (-10C)		824.2001	848.0001	29.4	26.1	0.07	0.06
Extreme (-20C)		824.2000	848.0000	26.7	24.6	0.06	0.06
Extreme (-30C)		824.2000	848.0001	27.1	27.6	0.07	0.06
20C		End Point	824.2000	848.0001	26.3	27.3	0.06

GSM1900

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	19.9	18.5	0.02	0.02
Extreme (40C)		1850.2000	1909.8000	17.9	18.3	0.02	0.02
Extreme (30C)		1850.2000	1909.8000	19.5	16.9	0.02	0.02
Extreme (10C)		1850.2000	1909.8000	17.8	16.7	0.02	0.02
Extreme (0C)		1850.2000	1909.8000	16.3	16.7	0.02	0.02
Extreme (-10C)		1850.2000	1909.8000	15.5	15.9	0.02	0.02
Extreme (-20C)		1850.2000	1909.8000	14.9	14.5	0.02	0.02
Extreme (-30C)		1850.2000	1909.8000	13.6	13.9	0.01	0.01
20C		End Point	1850.2000	1909.8000	13.5	14.7	0.01

9.4.2. WCDMA

Test Engineer ID:	27465/44389	Test Date:	2022-07-28
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BAND 2

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	1852.4000	1907.6000				
Extreme (50C)		1852.4000	1907.6000	5.0	-1.7	0.01	0.00
Extreme (40C)		1852.4000	1907.6000	1.8	-0.3	0.00	0.00
Extreme (30C)		1852.4000	1907.6000	-0.5	1.4	0.00	0.00
Extreme (10C)		1852.4000	1907.6000	0.6	7.4	0.00	0.01
Extreme (0C)		1852.4000	1907.6000	-2.2	9.5	0.00	0.01
Extreme (-10C)		1852.4000	1907.6000	-1.9	9.3	0.00	0.01
Extreme (-20C)		1852.4000	1907.6000	-1.6	8.5	0.00	0.01
Extreme (-30C)		1852.4000	1907.6000	0.5	6.0	0.00	0.01
20C		End Point	1852.4000	1907.6000	2.6	1.8	0.00

BAND 4

Limit		1710	1755	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	1712.4000	1752.5000				
Extreme (50C)		1712.4000	1752.5000	13.9	-12.5	0.02	-0.01
Extreme (40C)		1712.4000	1752.5000	8.0	-5.0	0.01	-0.01
Extreme (30C)		1712.4000	1752.5000	-2.9	2.7	0.00	0.00
Extreme (10C)		1712.4000	1752.5000	-13.7	18.9	-0.02	0.02
Extreme (0C)		1712.4000	1752.5000	-20.0	25.8	-0.02	0.03
Extreme (-10C)		1712.4000	1752.5000	-20.4	27.7	-0.02	0.03
Extreme (-20C)		1712.4000	1752.5000	-17.9	24.3	-0.02	0.03
Extreme (-30C)		1712.4000	1752.5000	-14.6	19.6	-0.02	0.02
20C		End Point	1712.4000	1752.5000	7.5	-4.3	0.01

9.4.3. LTE BAND 2

LIMITS

FCC: §24.235

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

Test Engineer ID:	27465/44389	Test Date:	2022-07-27
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QPSK (20MHz)

Limit		1850	1910	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	1860.0000	1900.0000				
Extreme (50C)		1860.0000	1900.0000	0.4	-0.2	0.00	0.00
Extreme (40C)		1860.0000	1900.0000	0.0	0.2	0.00	0.00
Extreme (30C)		1860.0000	1900.0000	0.6	0.3	0.00	0.00
Extreme (10C)		1860.0000	1900.0000	-0.8	-0.5	0.00	0.00
Extreme (0C)		1860.0000	1900.0000	1.0	-0.7	0.00	0.00
Extreme (-10C)		1860.0000	1900.0000	-1.0	0.8	0.00	0.00
Extreme (-20C)		1860.0000	1900.0000	0.0	-1.0	0.00	0.00
Extreme (-30C)		1860.0000	1900.0000	0.1	-0.5	0.00	0.00
20C		End Point	1860.0000	1900.0000	-0.9	1.0	0.00

9.4.4. 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:	27465/44389	Test Date:	2022-07-27
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QPSK (20MHz)

Limit		1710	1755	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	1720.0000	1745.0000				
Extreme (50C)		1720.0000	1745.0000	-0.8	0.9	0.00	0.00
Extreme (40C)		1720.0000	1745.0000	0.4	-0.3	0.00	0.00
Extreme (30C)		1720.0000	1745.0000	-1.0	-0.9	0.00	0.00
Extreme (10C)		1720.0000	1745.0000	0.5	0.8	0.00	0.00
Extreme (0C)		1720.0000	1745.0000	0.3	-0.3	0.00	0.00
Extreme (-10C)		1720.0000	1745.0000	0.4	0.8	0.00	0.00
Extreme (-20C)		1720.0000	1745.0000	-0.6	0.4	0.00	0.00
Extreme (-30C)		1720.0000	1745.0000	-0.2	0.4	0.00	0.00
20C	End Point	1720.0000	1745.0000	-0.3	-0.4	0.00	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:	2022-07-27
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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	0.6	-0.8	0.00	0.00
Extreme (40C)		704.0000	711.0000	0.8	-1.0	0.00	0.00
Extreme (30C)		704.0000	711.0000	0.5	-2.0	0.00	-0.01
Extreme (10C)		704.0000	711.0000	1.1	-0.9	0.00	0.00
Extreme (0C)		704.0000	711.0000	1.0	-0.1	0.00	0.00
Extreme (-10C)		704.0000	711.0000	0.1	0.0	0.00	0.00
Extreme (-20C)		704.0000	711.0000	1.3	-0.1	0.00	0.00
Extreme (-30C)		704.0000	711.0000	1.1	-0.8	0.00	0.00
20C		End Point	704.0000	711.0000	0.0	-0.5	0.00

9.5. PEAK TO AVERAGE RATIO

LIMIT

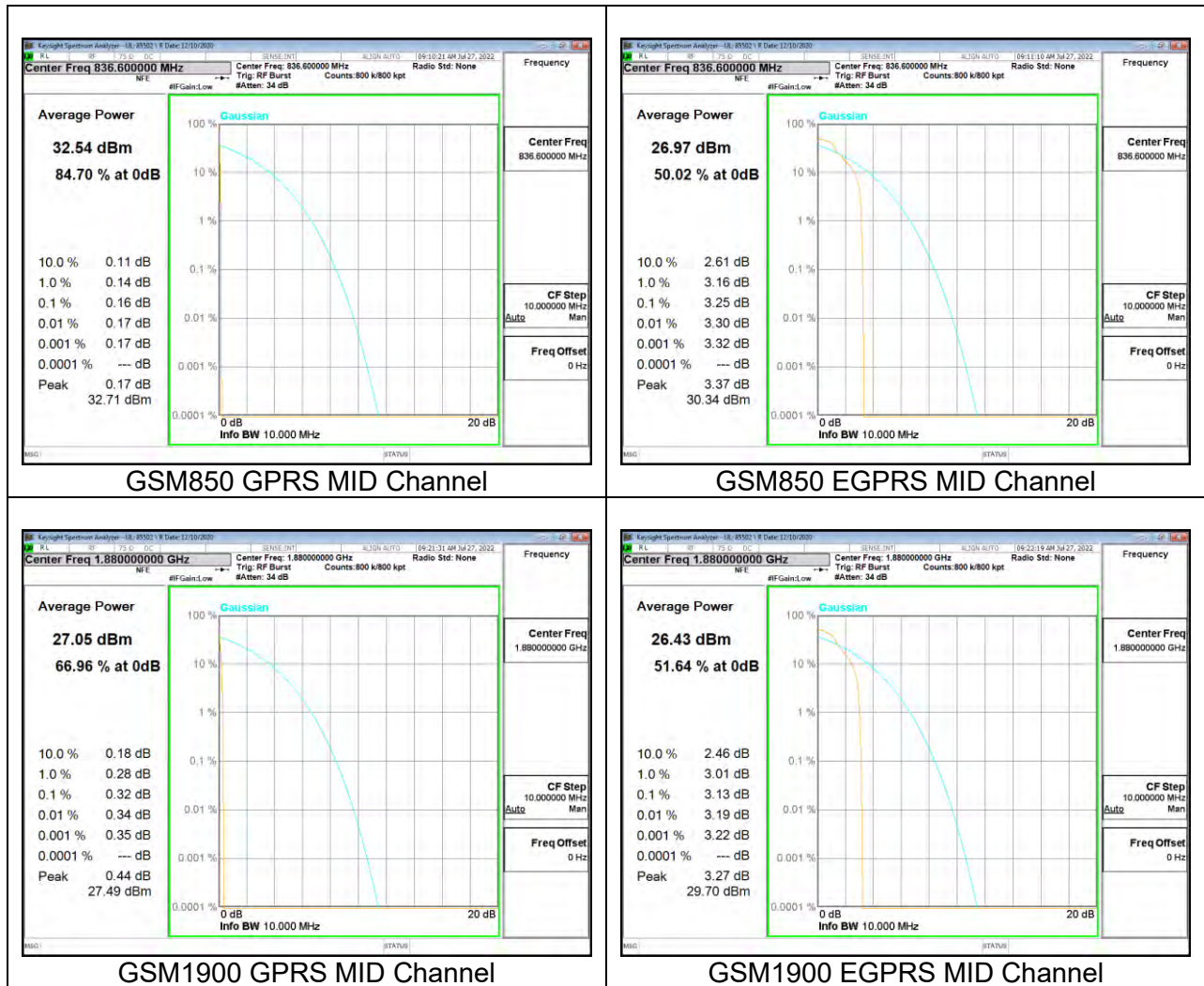
FCC 22.913 (d), 24.232 (d), 27.50 (d) (5), 27.50 (j) (4)

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.

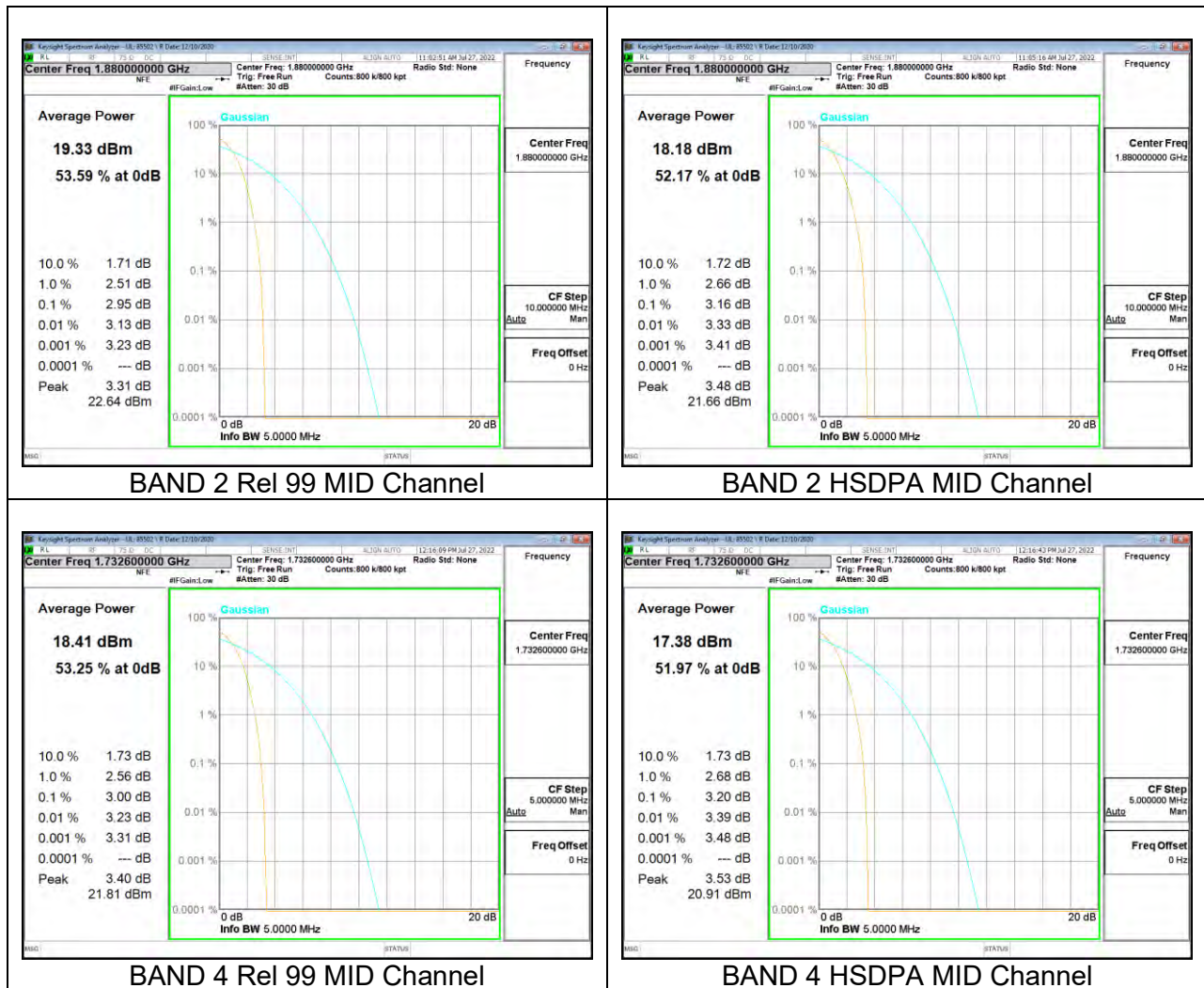
RESULTS

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.

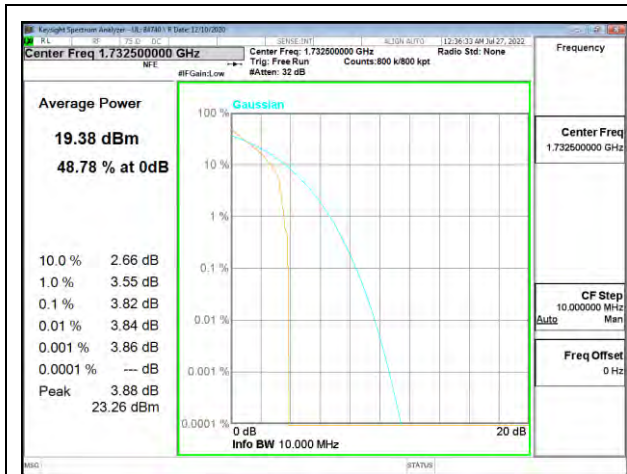
9.5.1. GSM



9.5.2. WCDMA



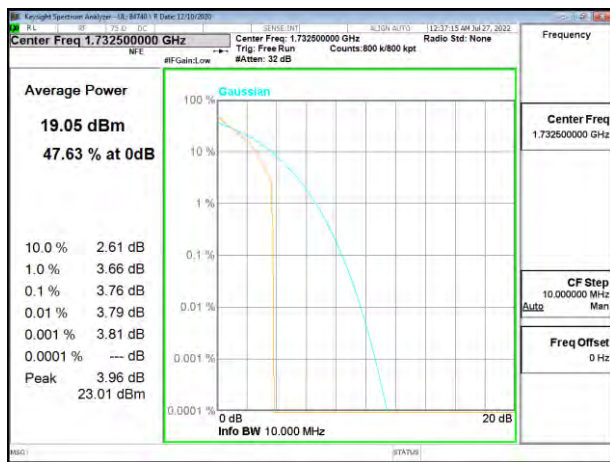
9.5.3. LTE BAND 2



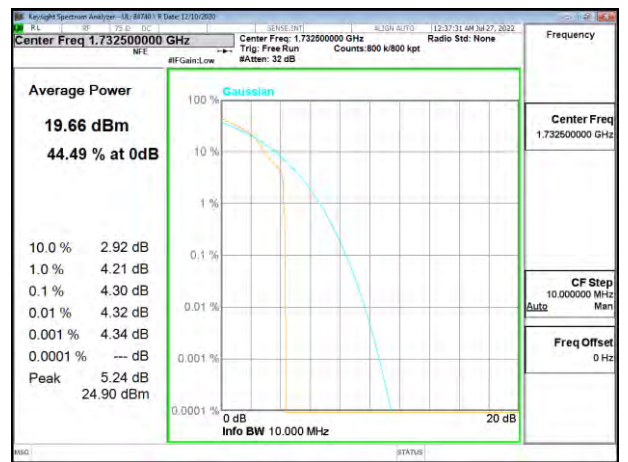
LTE2 1.4MHz QPSK MID Ch RB6-0



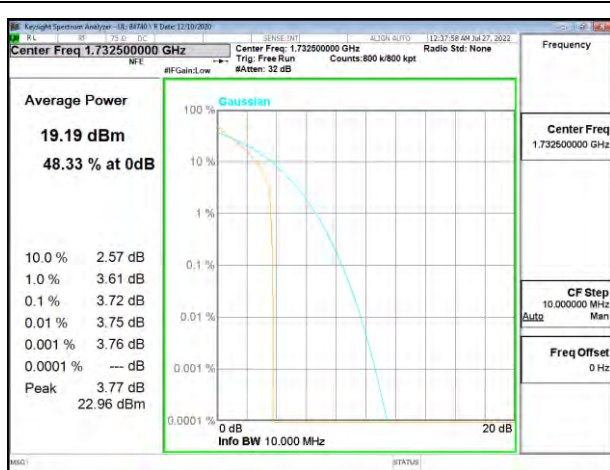
LTE2 1.4MHz 16QAM MID Ch RB6-0



LTE2 3MHz QPSK MID Ch RB15-0



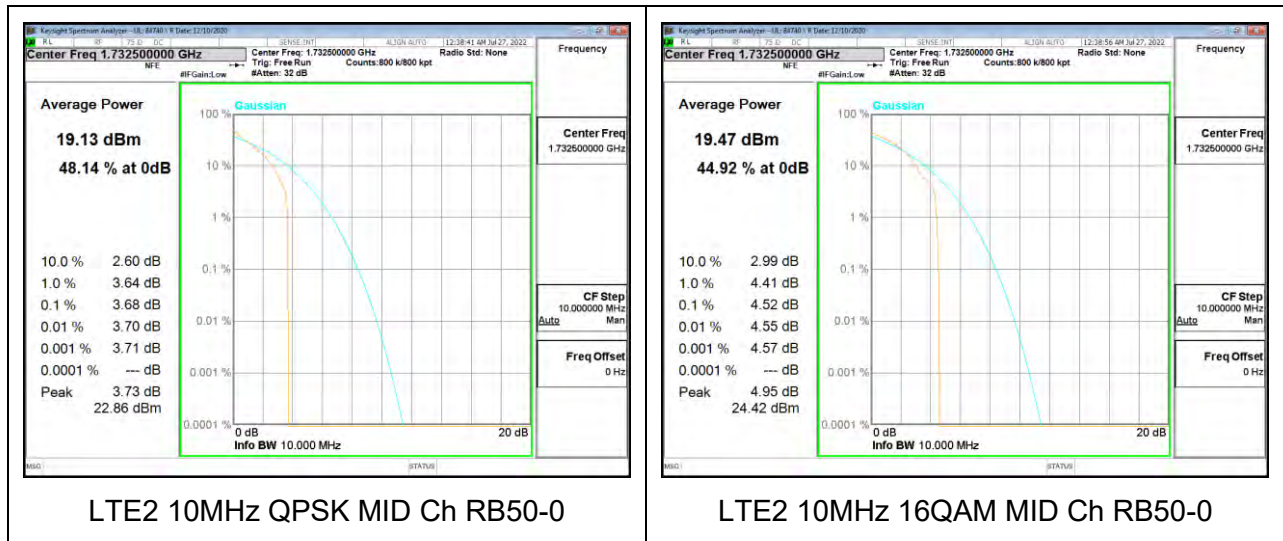
LTE2 3MHz 16QAM MID Ch RB15-0



LTE2 5MHz QPSK MID Ch RB25-0



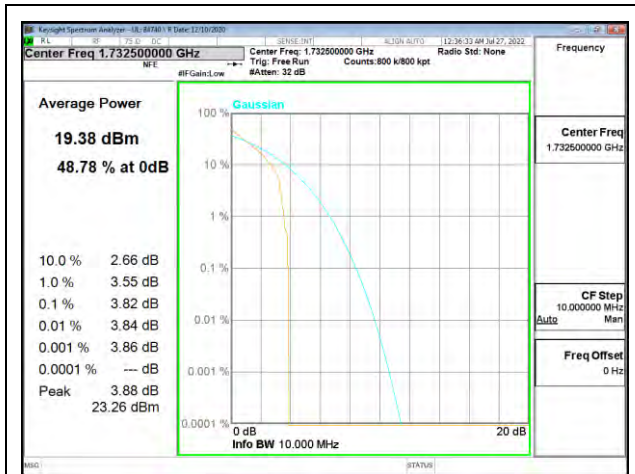
LTE2 5MHz 16QAM MID Ch RB25-0



LTE Band and BW:	QPSK Mid Channel(dBm):	16QAM Mid Channel(dBm):
Band 2 15MHz	24.3 – 19.0 = 5.30	25.4 – 19.0 = 6.40
Band 2 20MHz	24.32 – 19.02 = 5.30	25.30 – 19.10 = 6.20

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 $PAPR (dB) = P_{pk} (Meas. Peak Power) - P_{avg} (Meas. Avg Power)$.

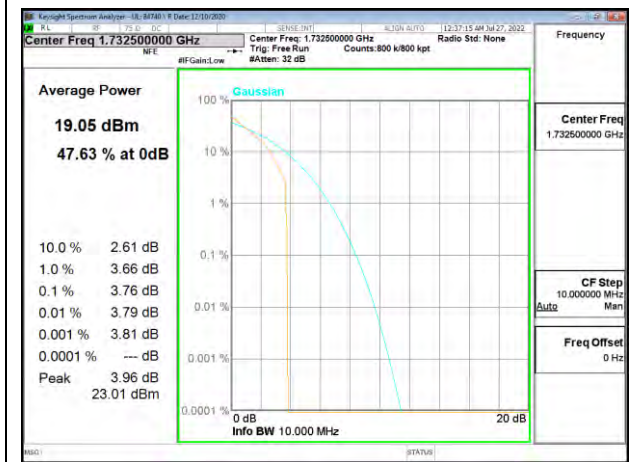
9.5.4. LTE BAND 4



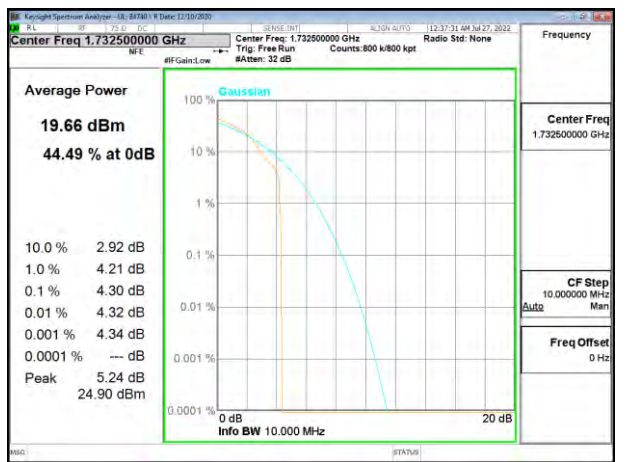
LTE4 1.4MHz QPSK MID Ch RB6-0



LTE4 1.4MHz 16QAM MID Ch RB6-0



LTE4 3MHz QPSK MID Ch RB15-0



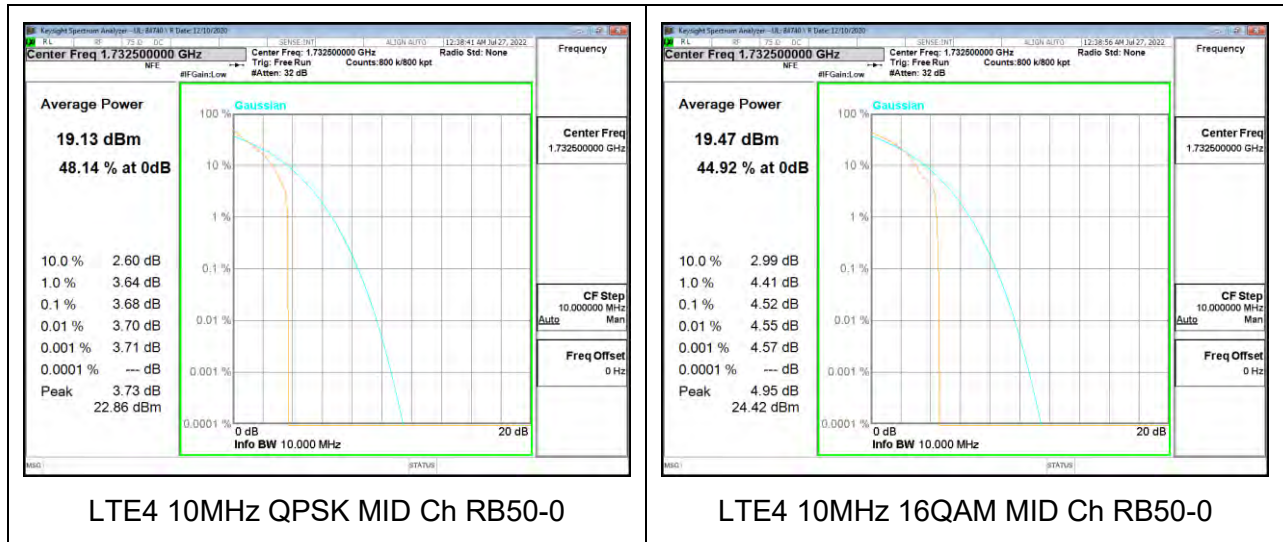
LTE4 3MHz 16QAM MID Ch RB15-0



LTE4 5MHz QPSK MID Ch RB25-0



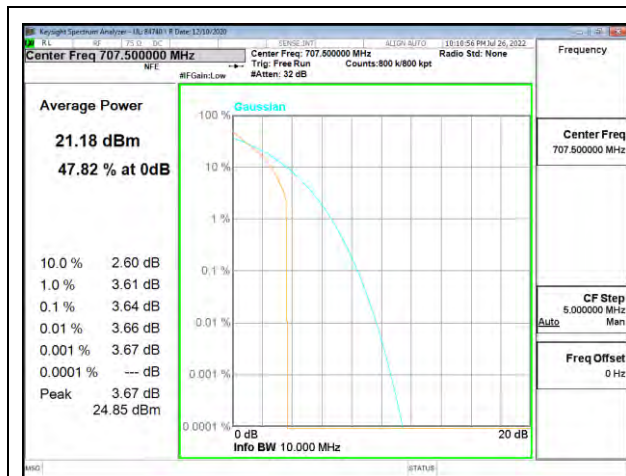
LTE4 5MHz 16QAM MID Ch RB25-0



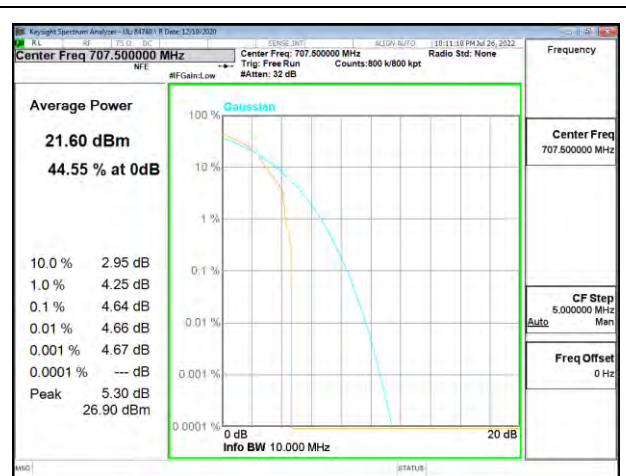
LTE Band and BW:	QPSK Mid Channel(dBm):	16QAM Mid Channel(dBm):
Band 4 15MHz	23.15 – 17.89 = 5.26	24.24 – 17.91 = 6.33
Band 4 20MHz	23.12 – 17.90 = 5.22	24.18 – 17.94 = 6.24

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 $P_{PAR} (dB) = P_{pk} (Meas. Peak Power) - P_{avg} (Meas. Avg Power)$.

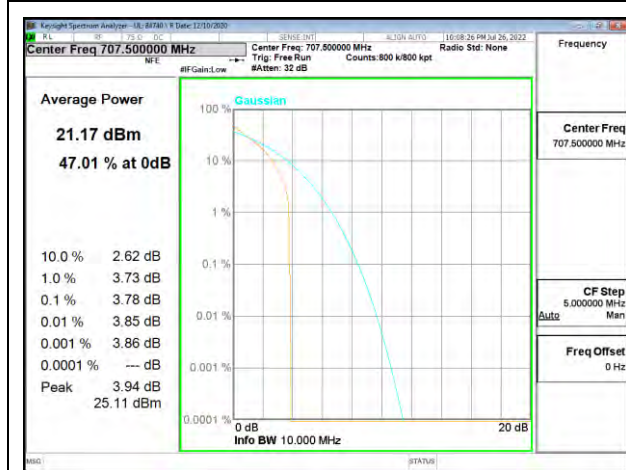
9.5.5. LTE BAND 12



LTE12 10MHz QPSK MID Ch RB50-0



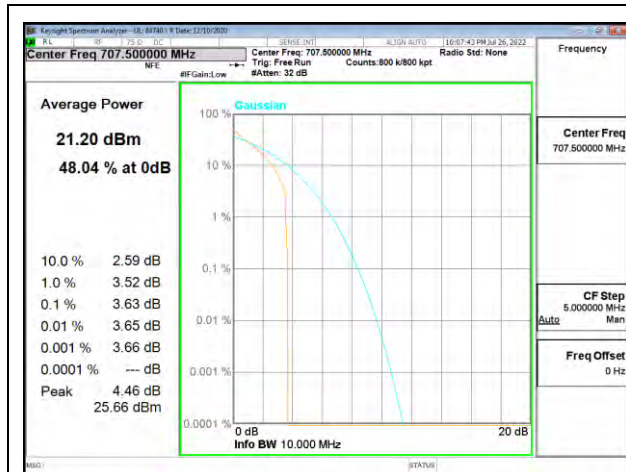
LTE12 10MHz 16QAM MID Ch RB50-0



LTE12 5MHz QPSK MID Ch RB25-0



LTE12 5MHz 16QAM MID Ch RB25-0



LTE12 3MHz QPSK MID Ch RB15-0



LTE12 3MHz 16QAM MID Ch RB15-0



LTE12 1.4MHz QPSK MID Ch RB6-0



LTE12 1.4MHz 16QAM MID Ch RB6-0

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

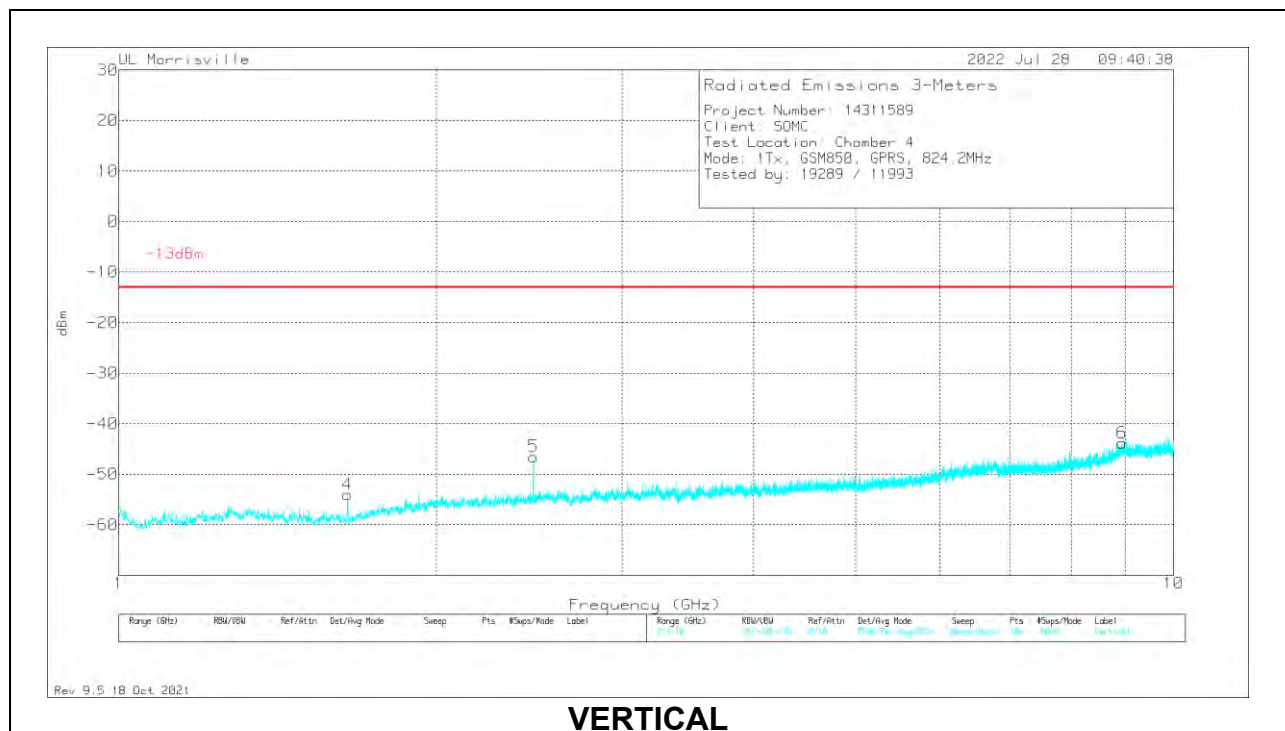
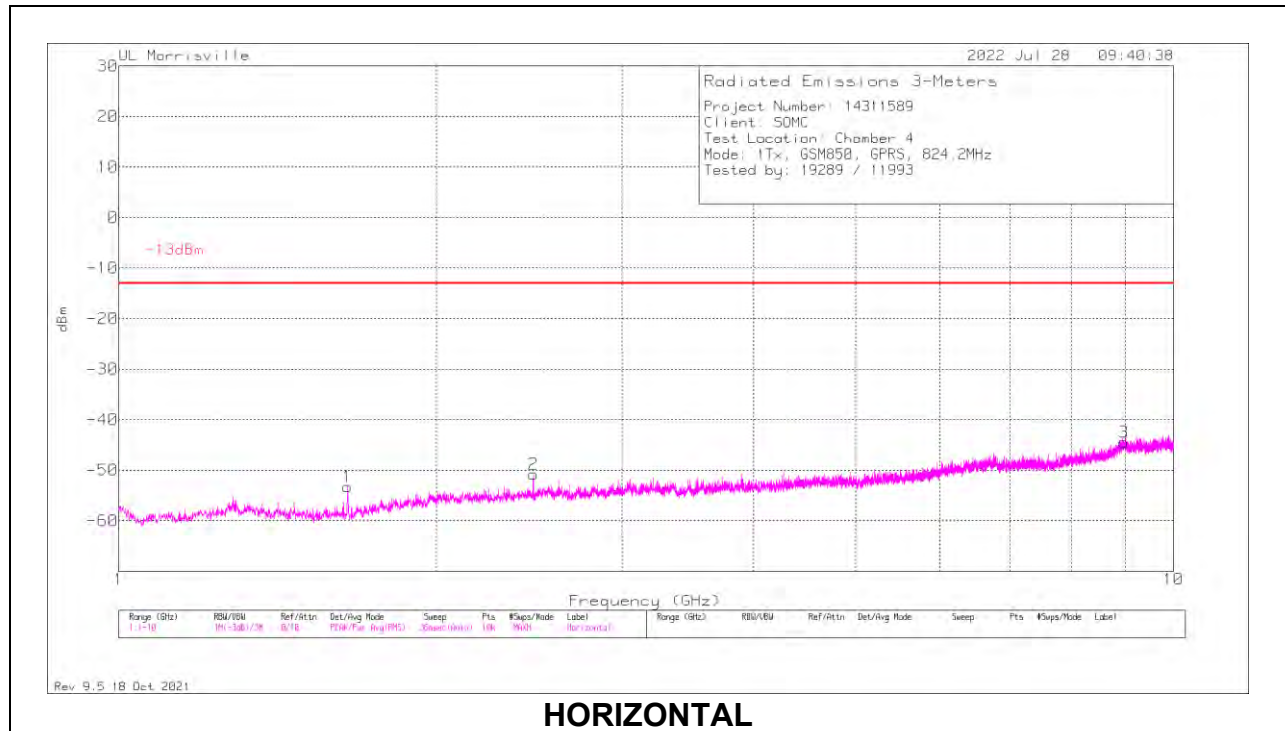
LIMITS

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 RESULTS

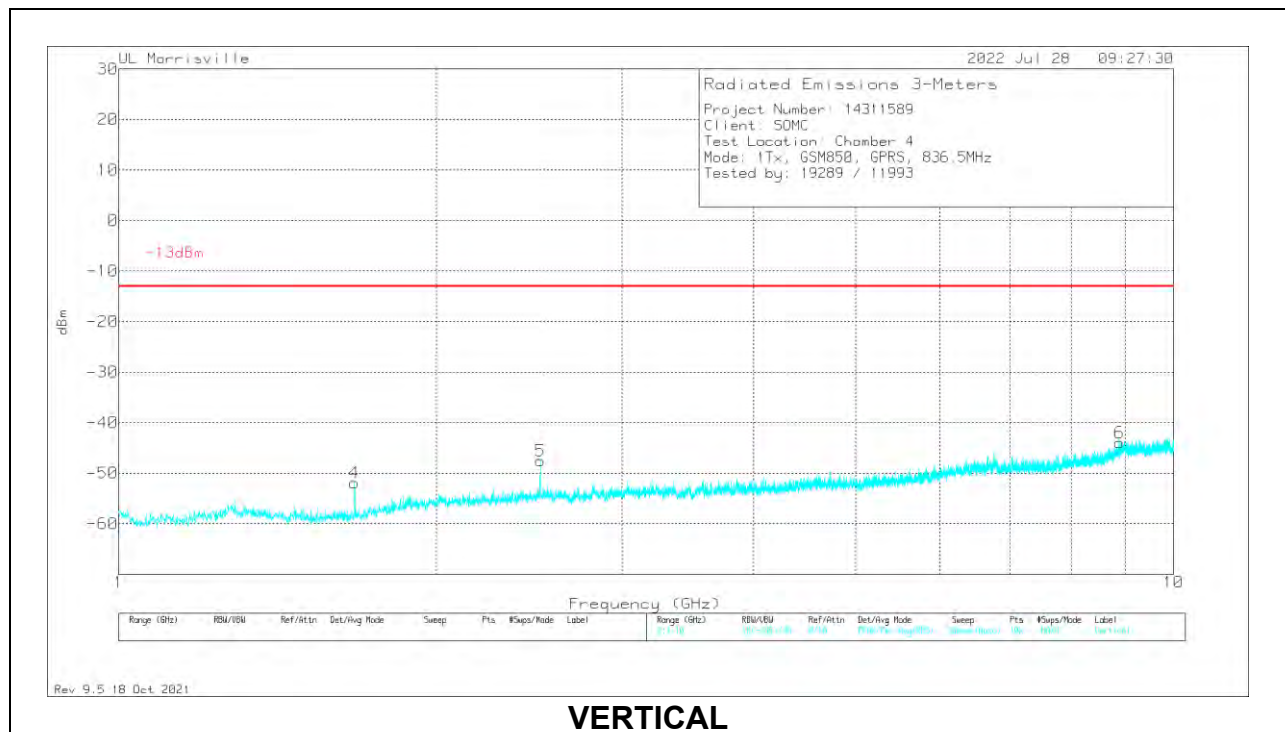
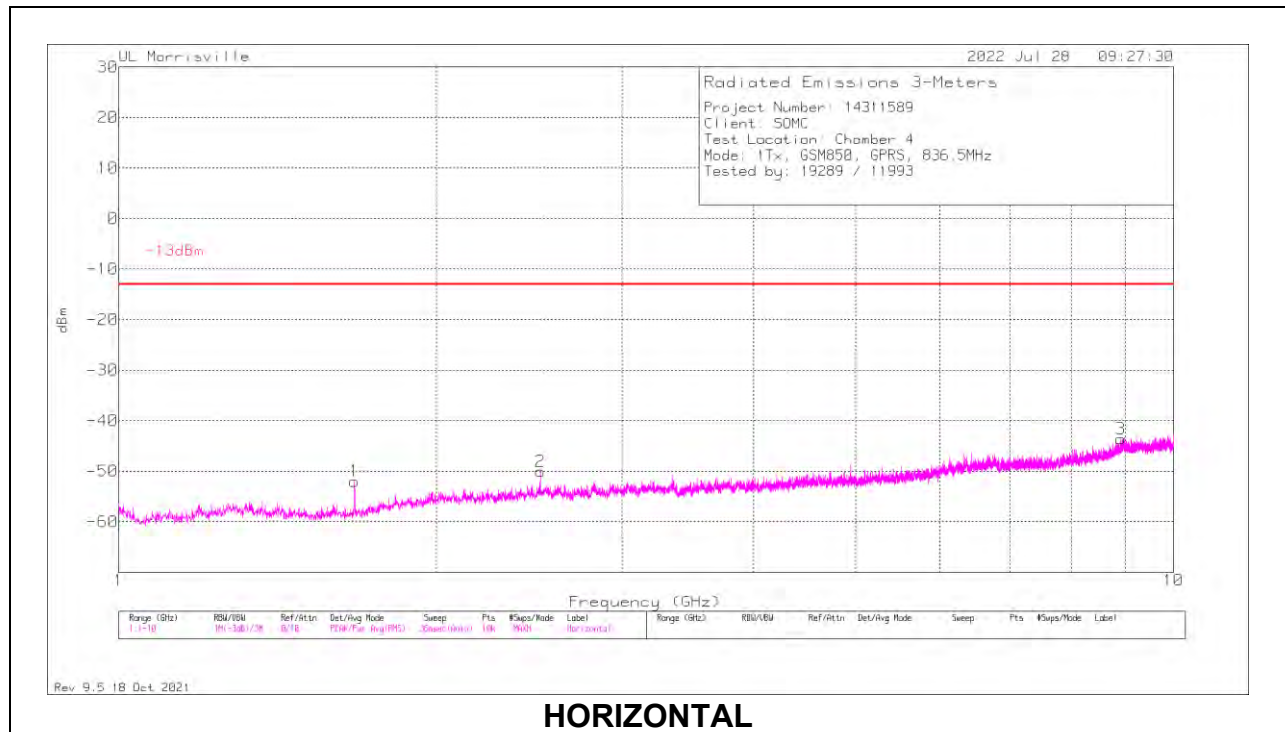


RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.648	-57.92	Pk	28.8	-36.4	.5	11.8	-53.22	-13	-40.22	0-360	100	H
4	1.648	-58.7	Pk	28.8	-36.4	.5	11.8	-54	-13	-41	0-360	200	V
2	2.4724	-59.45	Pk	32.6	-36.1	.4	11.8	-50.75	-13	-37.75	0-360	100	H
5	2.4724	-55.21	Pk	32.6	-36.1	.4	11.8	-46.51	-13	-33.51	0-360	300	V
6	8.9335	-65.78	Pk	36.1	-26.5	.6	11.8	-43.78	-13	-30.78	0-360	300	V
3	8.9722	-66.66	Pk	36.1	-26.2	.5	11.8	-44.46	-13	-31.46	0-360	100	H

Pk - Peak detector

MID CHANNEL RESULTS

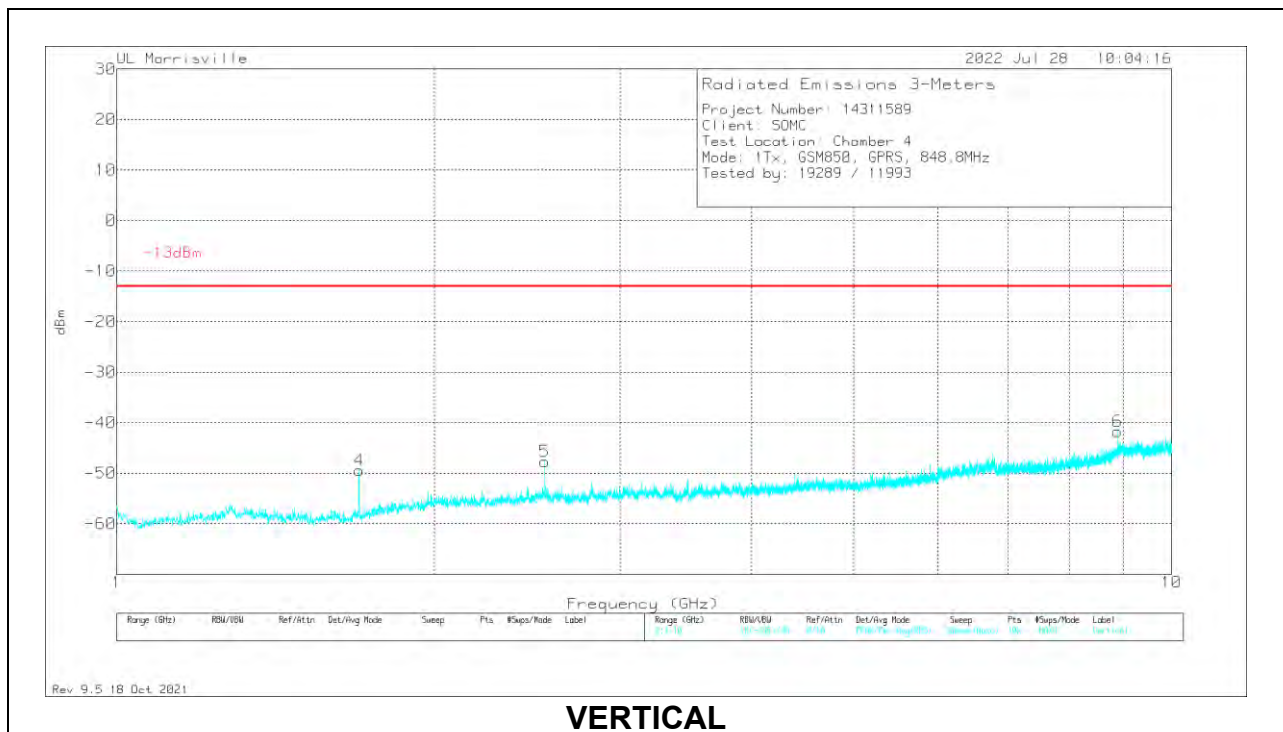
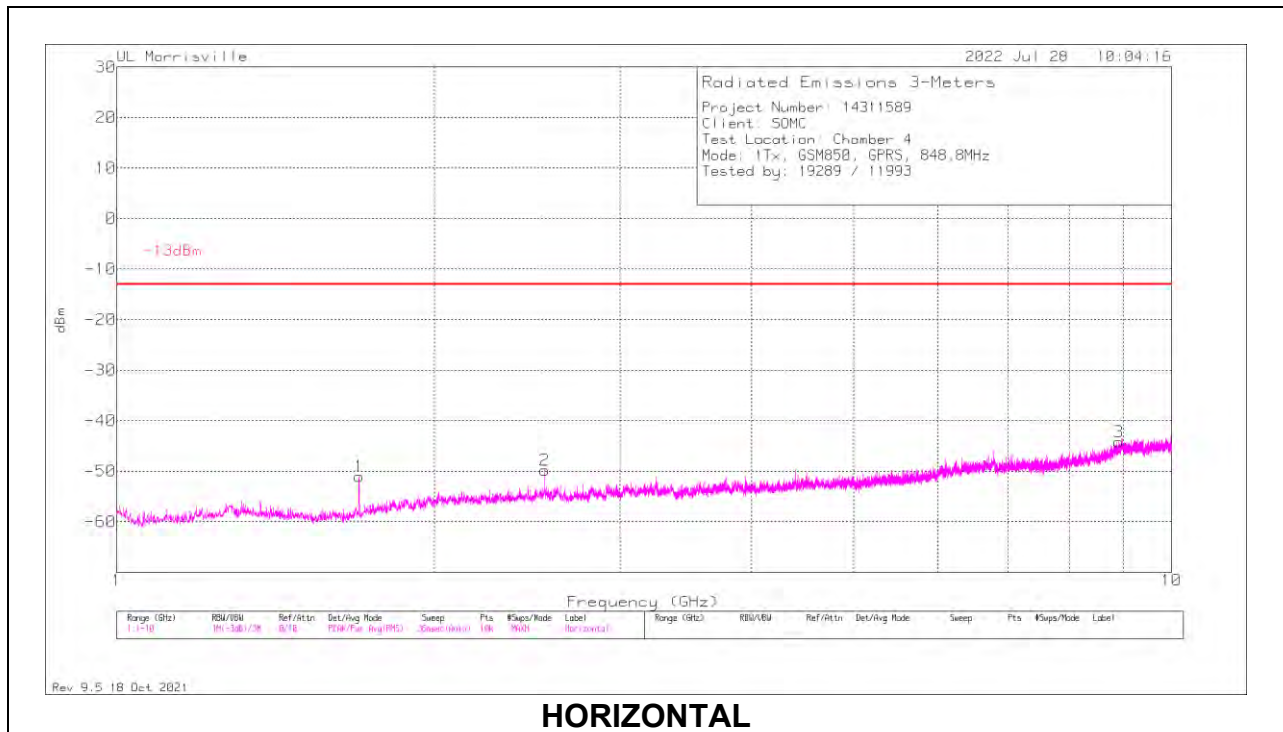


RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.6723	-56.97	Pk	28.9	-36.2	.5	11.8	-51.97	-13	-38.97	0-360	100	H
4	1.6732	-56.88	Pk	28.9	-36.2	.5	11.8	-51.88	-13	-38.88	0-360	200	V
2	2.5093	-58.63	Pk	32.7	-36.3	.4	11.8	-50.03	-13	-37.03	0-360	100	H
5	2.5102	-56.2	Pk	32.7	-36.3	.4	11.8	-47.6	-13	-34.6	0-360	200	V
6	8.8921	-65.82	Pk	36.1	-26.5	.5	11.8	-43.92	-13	-30.92	0-360	200	V
3	8.911	-65.6	Pk	36.1	-26.4	.5	11.8	-43.6	-13	-30.6	0-360	100	H

Pk - Peak detector

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0067 (dB/m)	Gain/Loss (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.6975	-56.09	Pk	29.1	-36.3	.5	11.8	-50.99	-13	-37.99	0-360	200	H
4	1.6975	-54.5	Pk	29.1	-36.3	.5	11.8	-49.4	-13	-36.4	0-360	300	V
2	2.5462	-58.65	Pk	32.8	-36.3	.5	11.8	-49.85	-13	-36.85	0-360	100	H
5	2.5462	-56.53	Pk	32.8	-36.3	.5	11.8	-47.73	-13	-34.73	0-360	300	V
6	8.8867	-63.4	Pk	36.1	-26.6	.4	11.8	-41.7	-13	-28.7	0-360	200	V
3	8.9182	-66.31	Pk	36.1	-26.4	.6	11.8	-44.21	-13	-31.21	0-360	200	H

Pk - Peak detector

EGPRS

LOW CHANNEL RESULTS

