

9.2.7.LTE13 ADJACENT CHANNEL POWER

LIMITS

FCC: §27.53

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

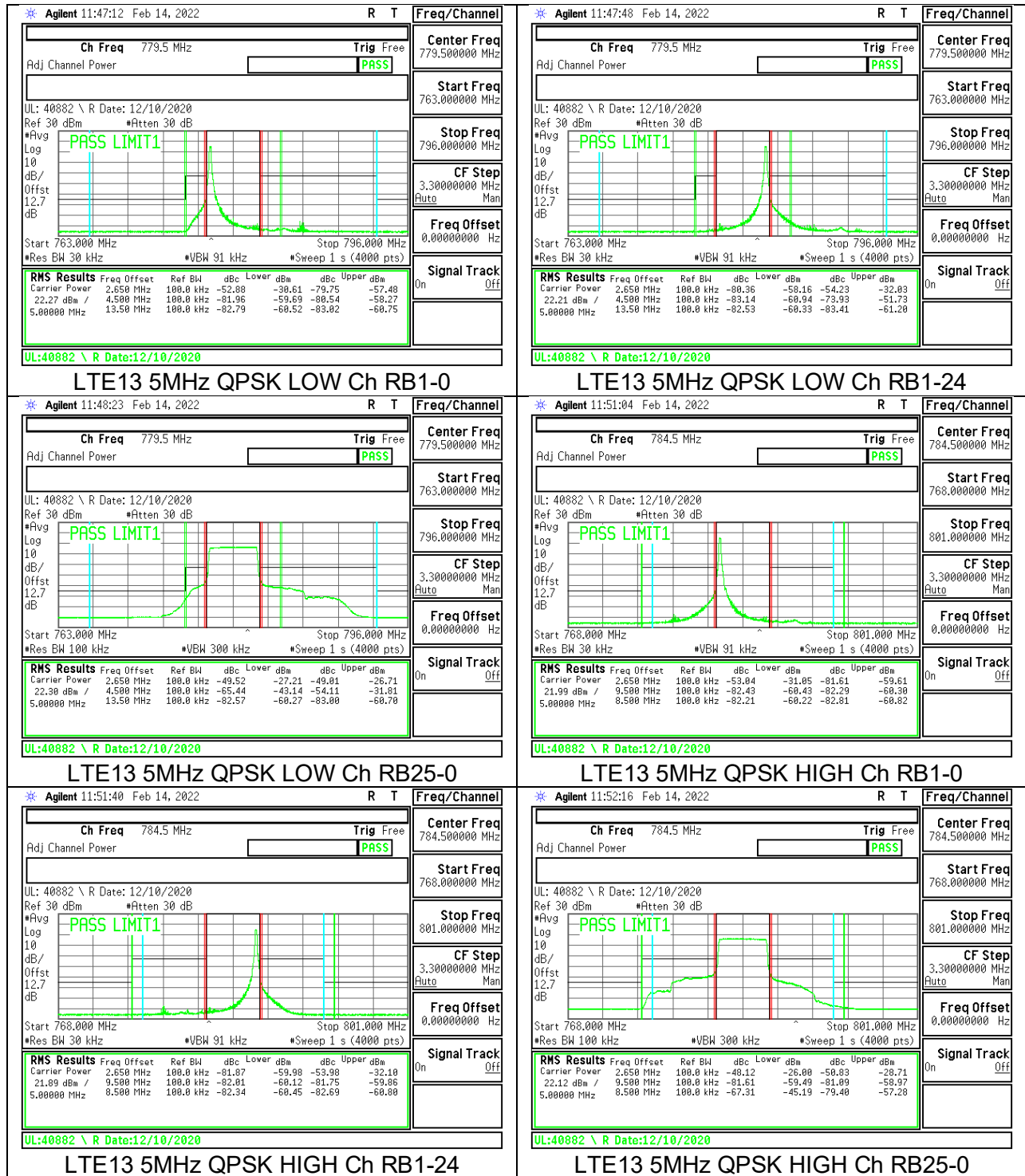
(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

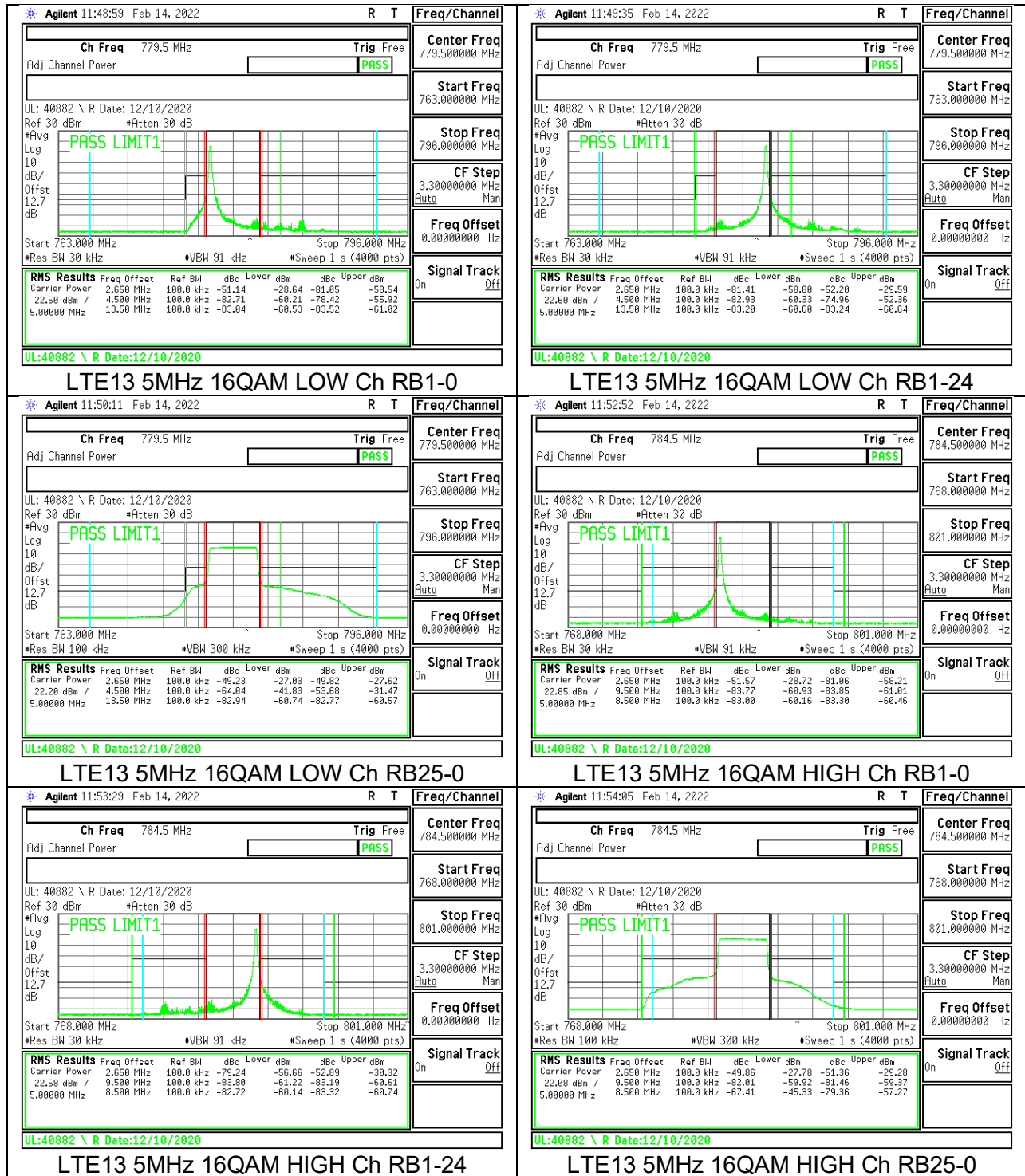
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

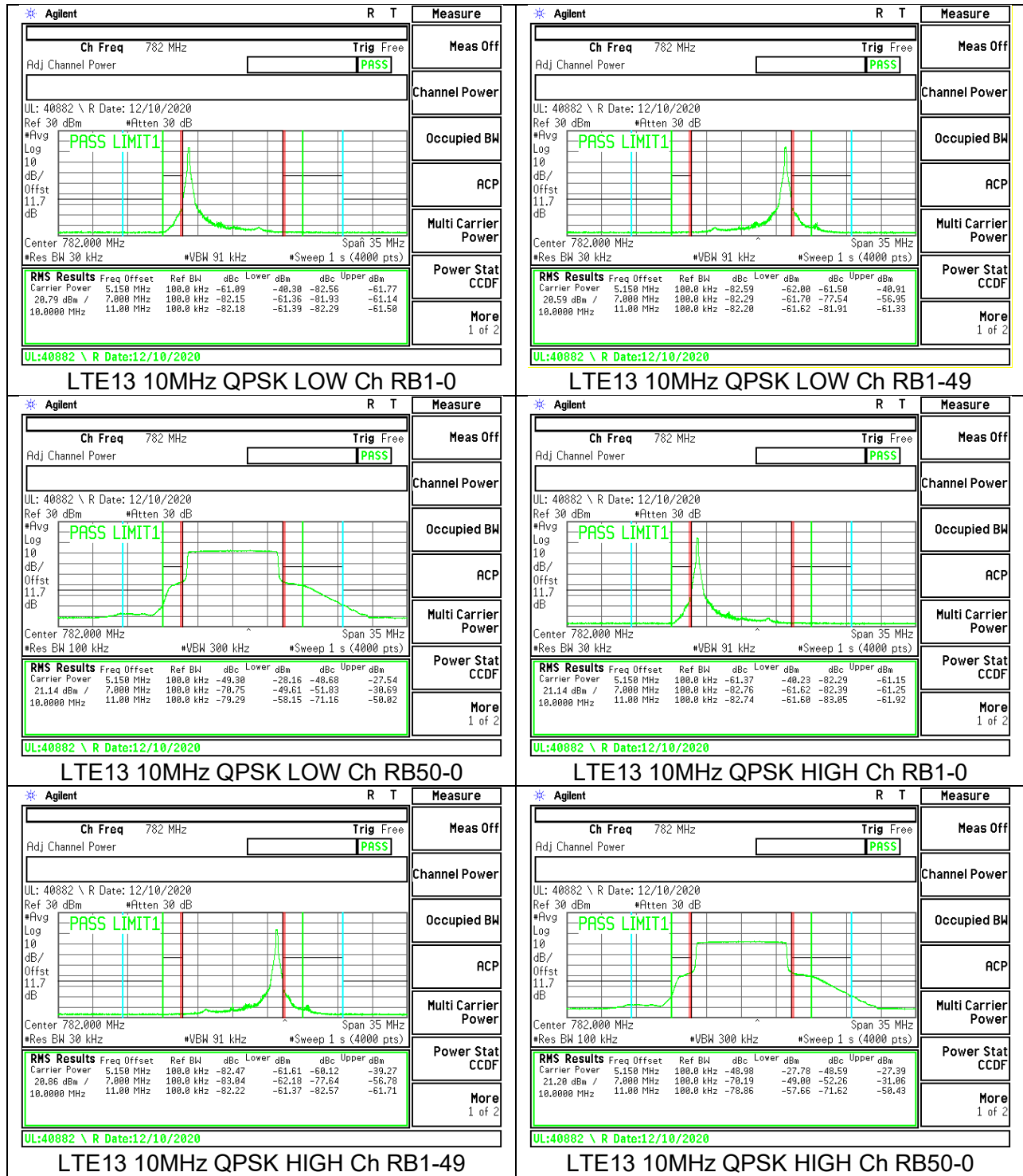
(5) Compliance with the provisions of paragraphs (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

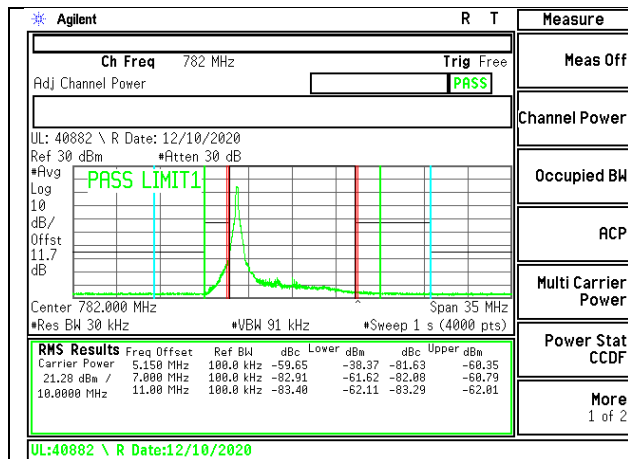
(6) Compliance with the provisions of paragraphs (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40 dBm/MHz).

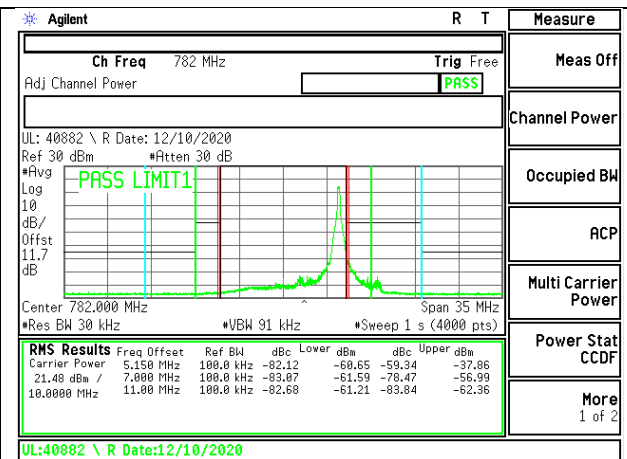




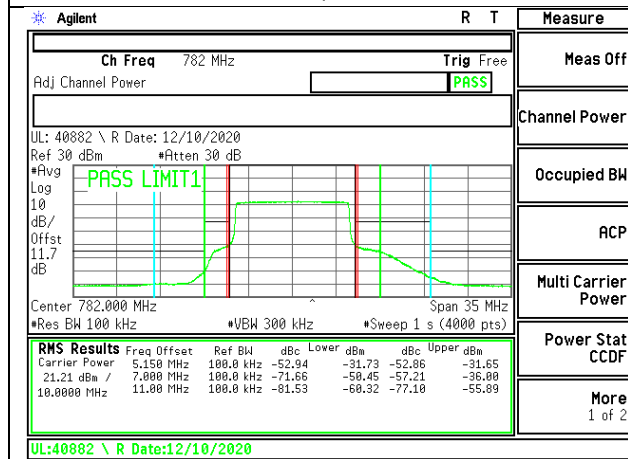




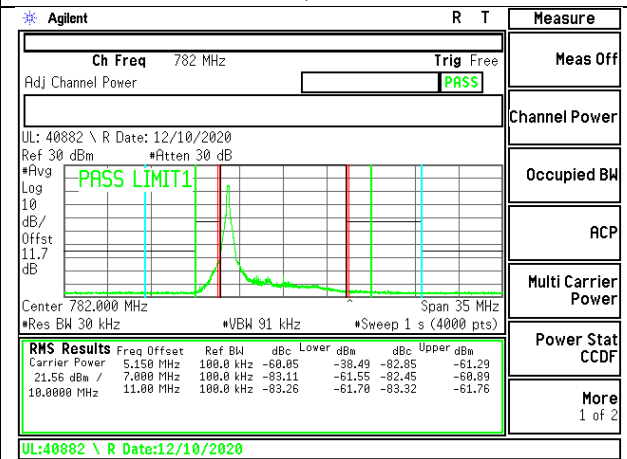
LTE13 10MHz 16QAM LOW Ch RB1-0



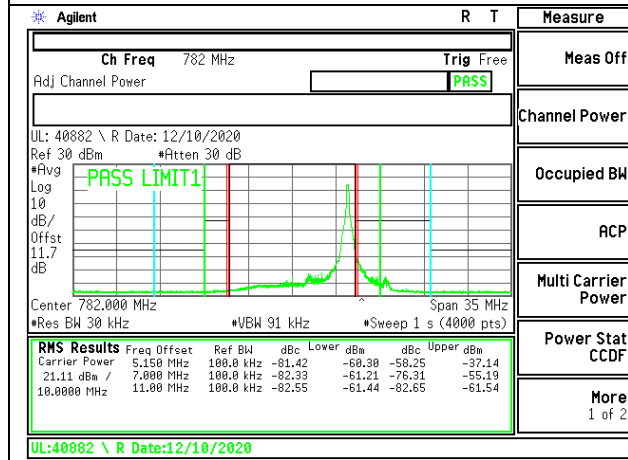
LTE13 10MHz 16QAM LOW Ch RB1-49



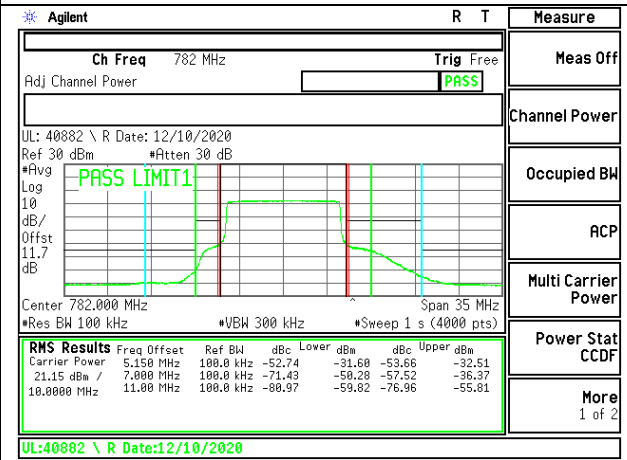
LTE13 10MHz 16QAM LOW Ch RB50-0



LTE13 10MHz 16QAM HIGH Ch RB1-0



LTE13 10MHz 16QAM HIGH Ch RB1-49



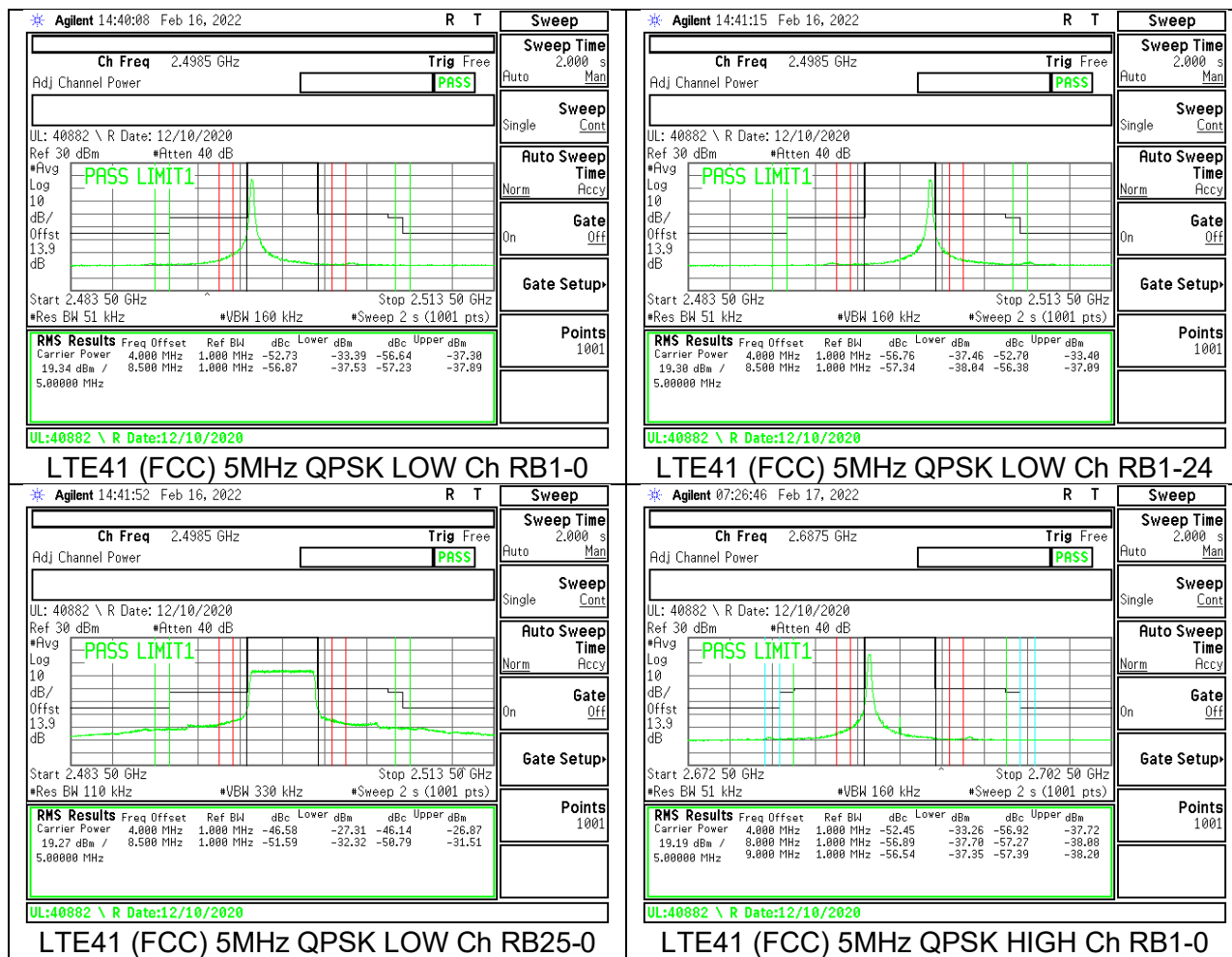
LTE13 10MHz 16QAM HIGH Ch RB50-0

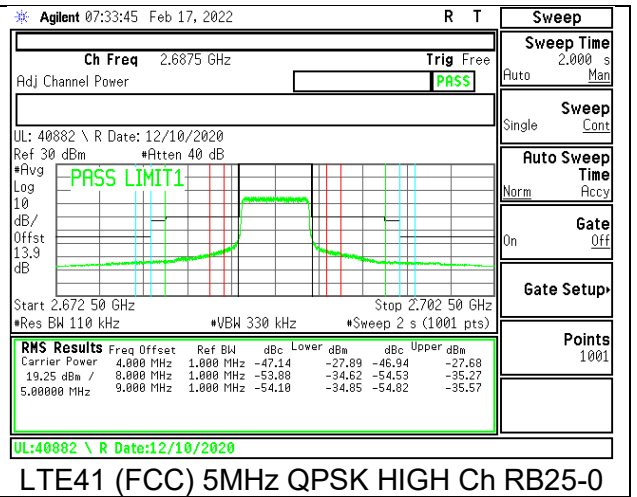
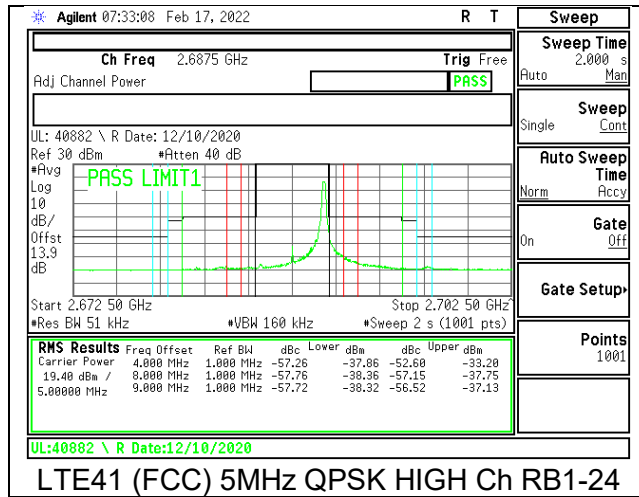
9.2.8.LTE41 (FCC) ADJACENT CHANNEL POWER LIMITS

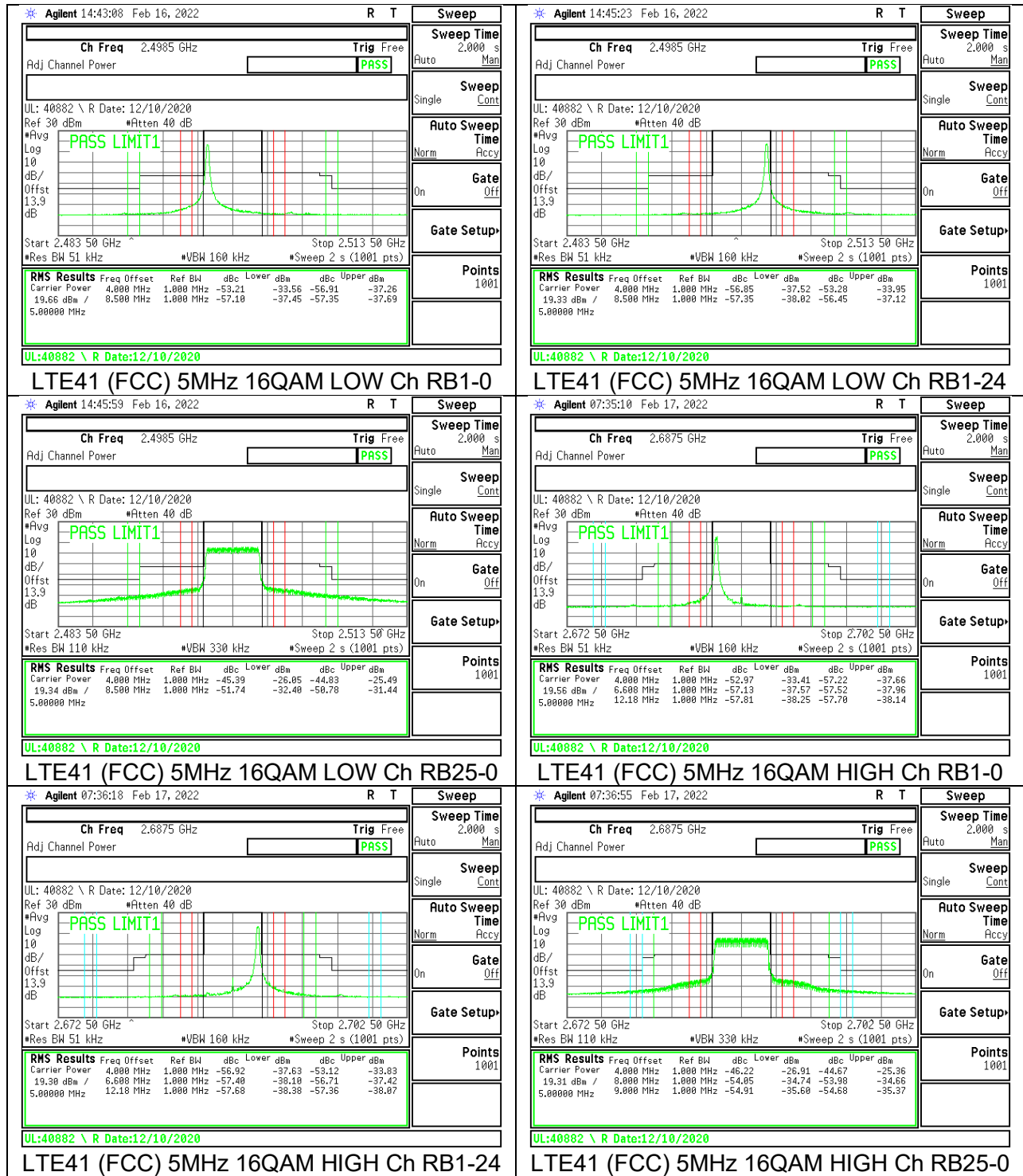
LIMITS

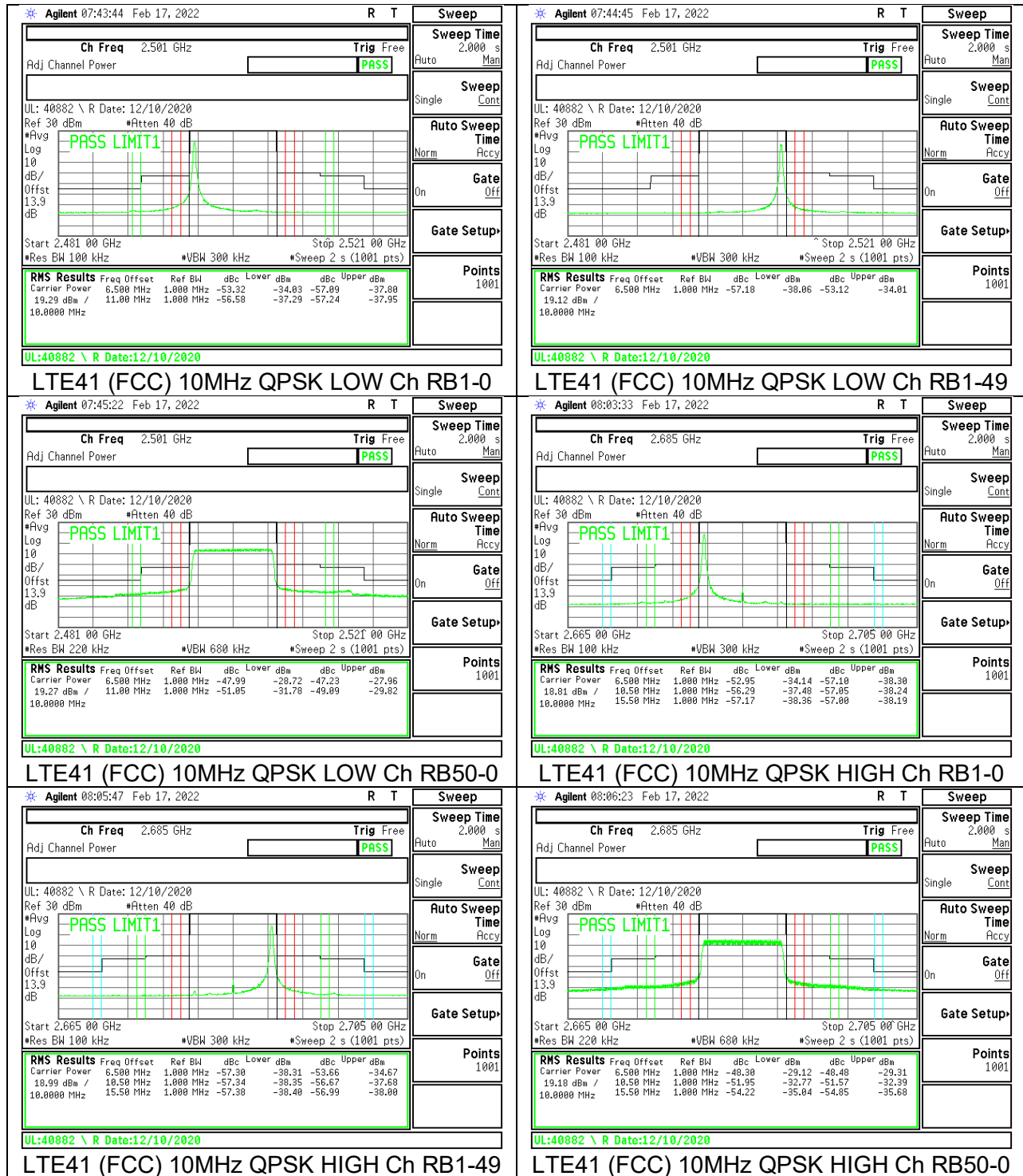
FCC: §27.53

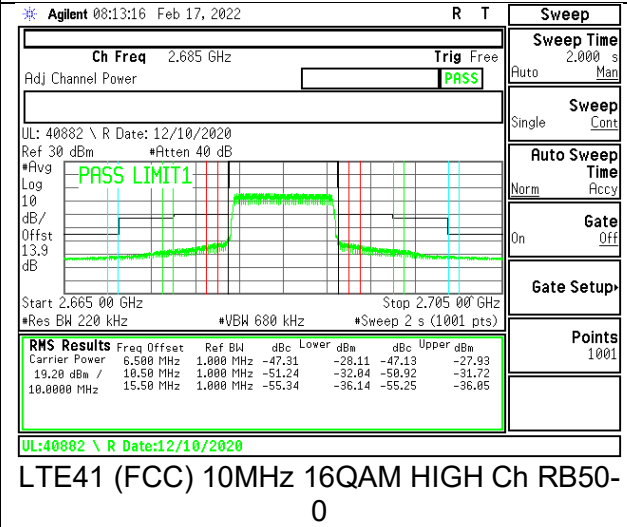
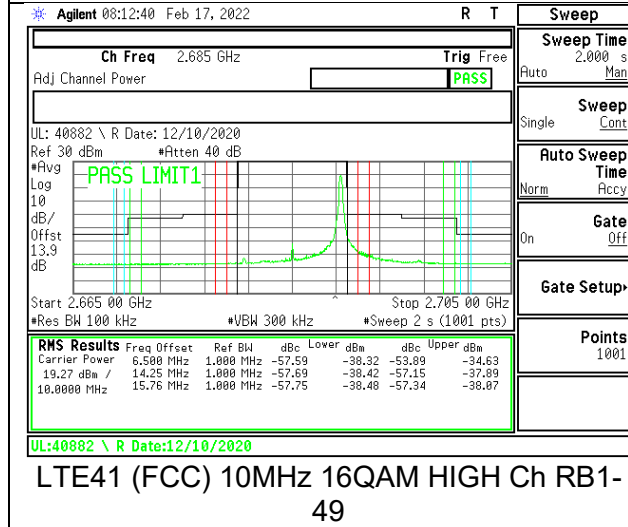
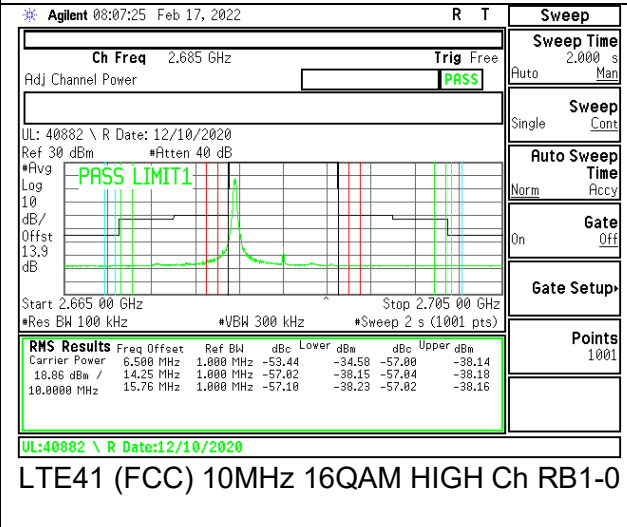
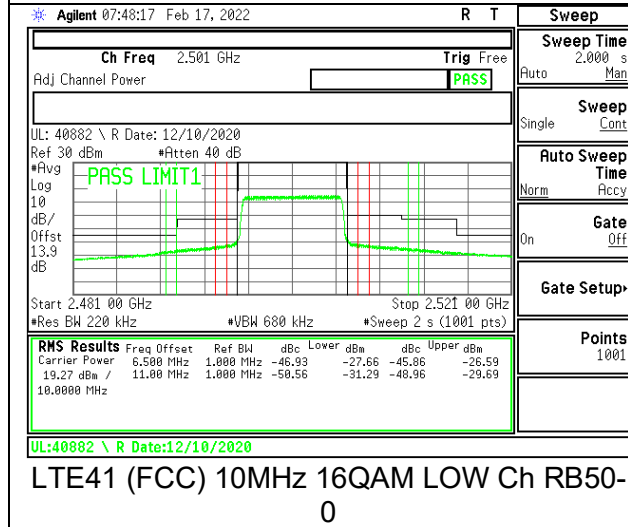
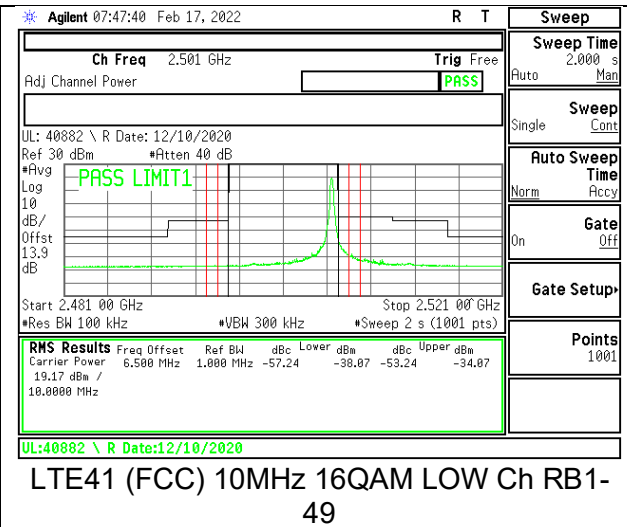
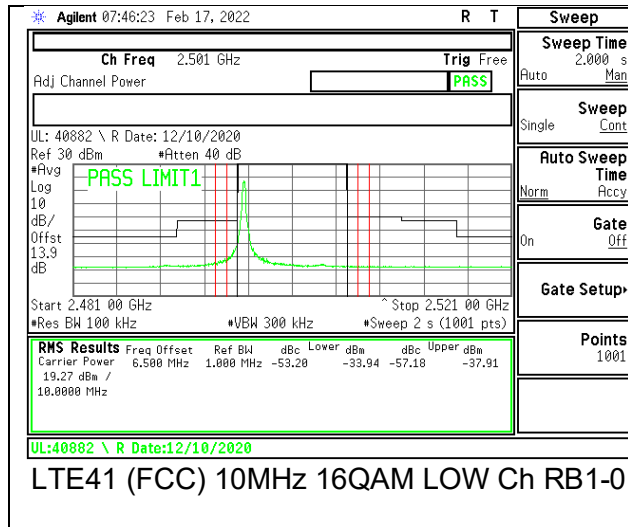
(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

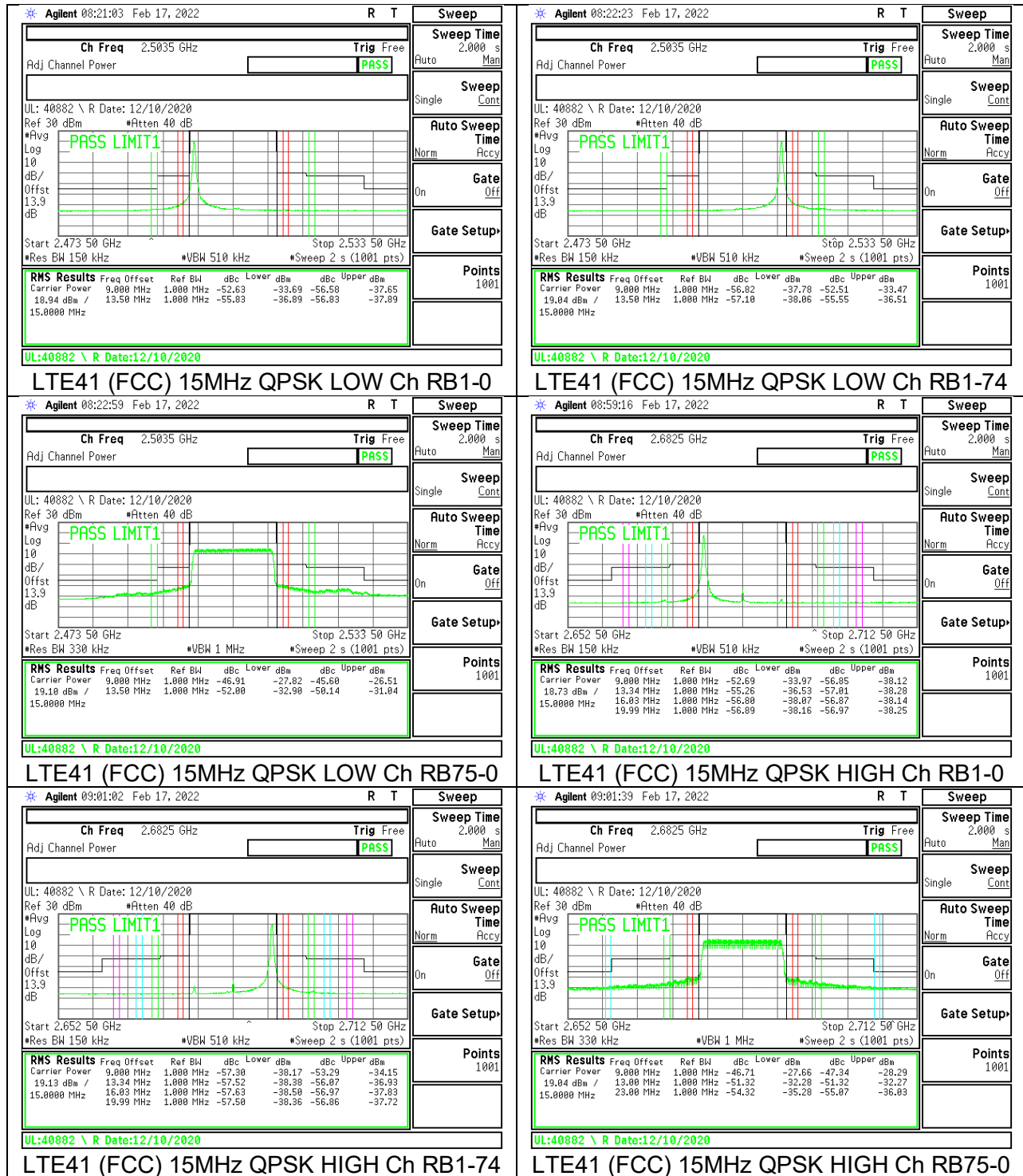


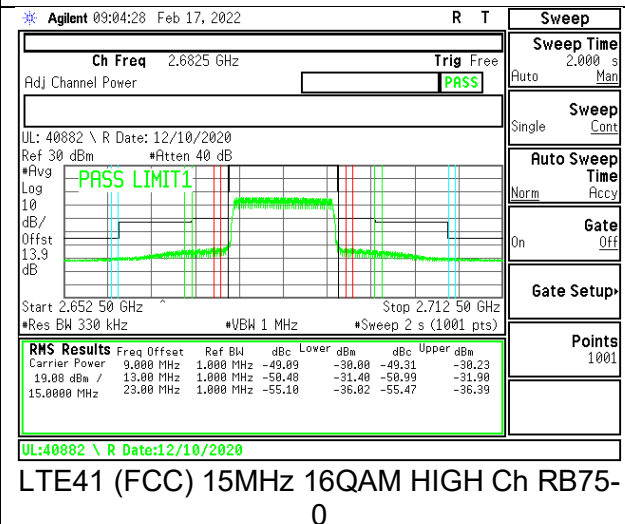
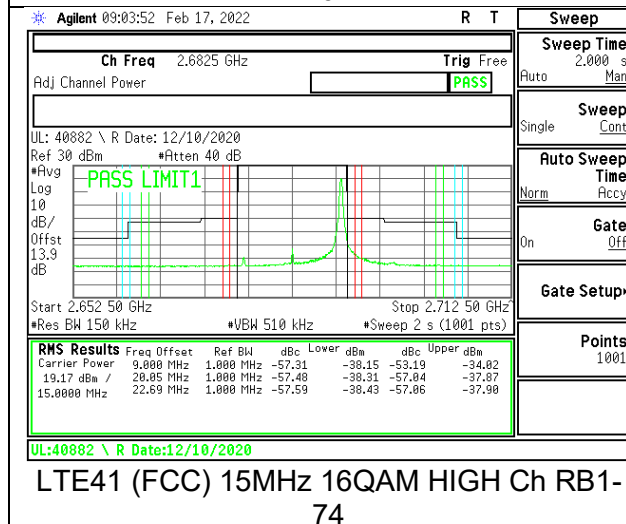
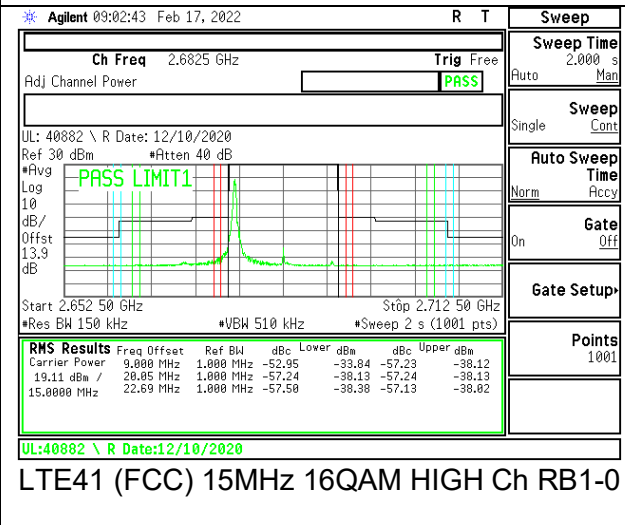
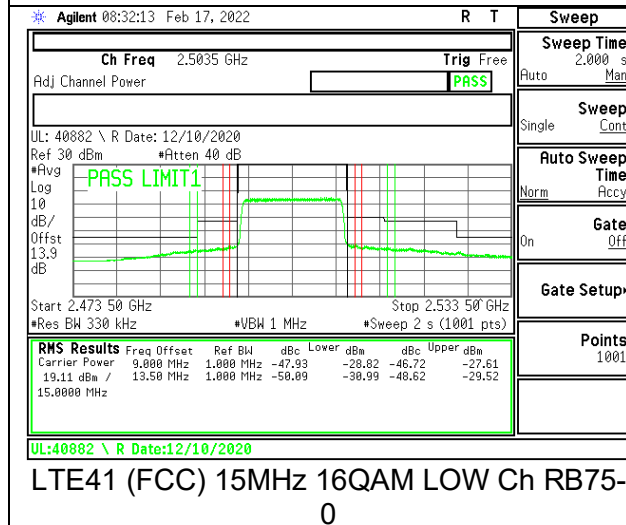
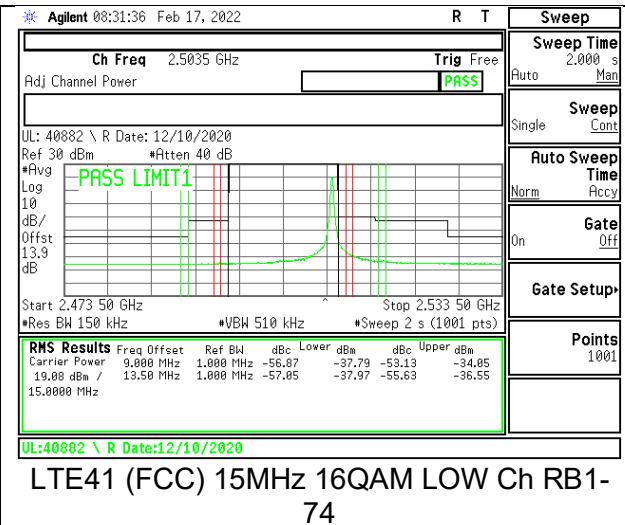
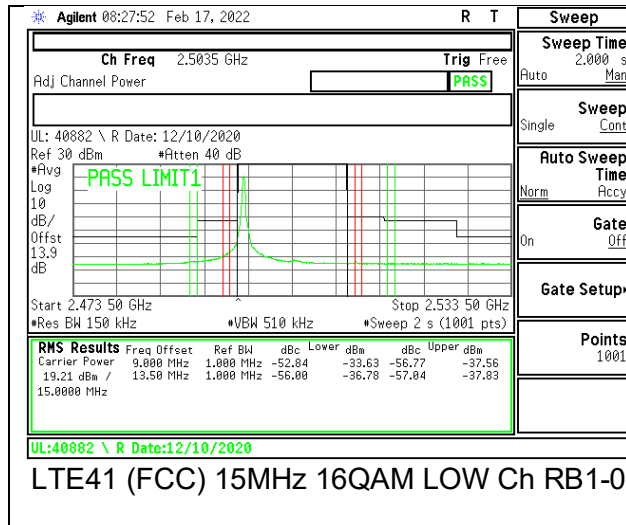


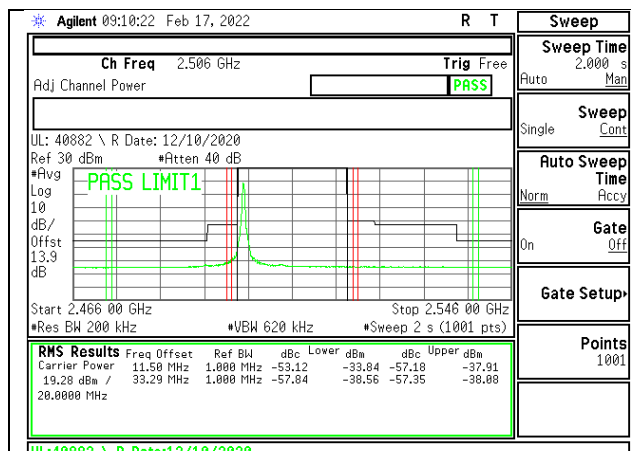




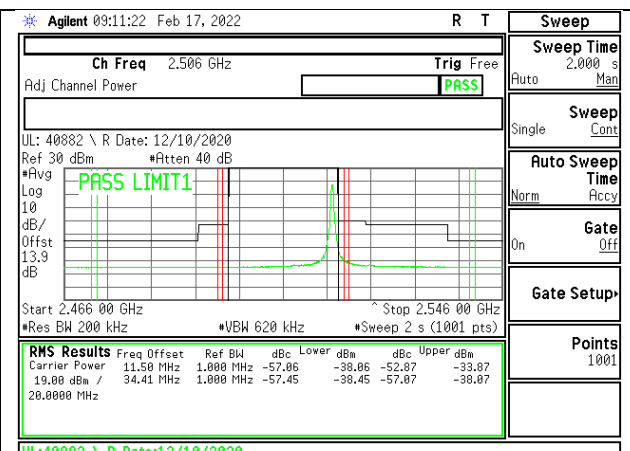




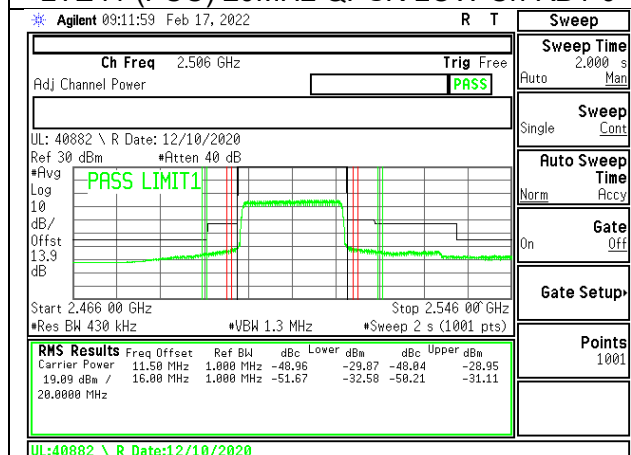




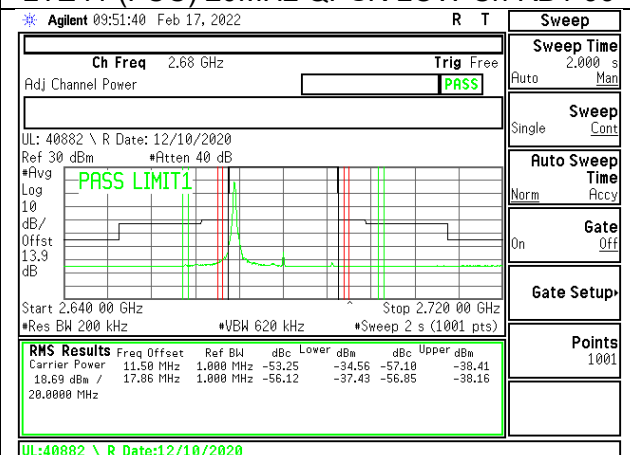
LTE41 (FCC) 20MHz QPSK LOW Ch RB1-0



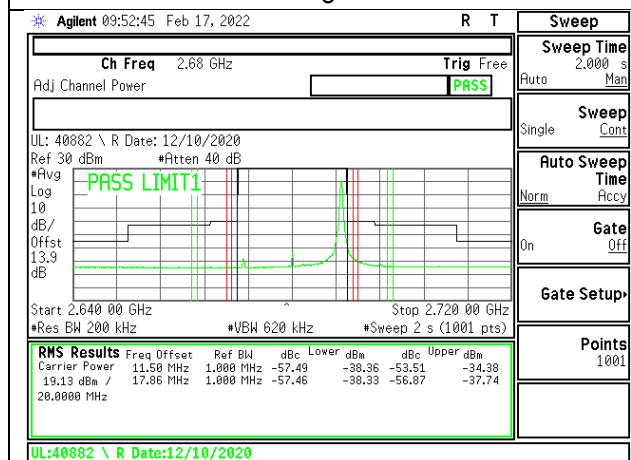
LTE41 (FCC) 20MHz QPSK LOW Ch RB1-99



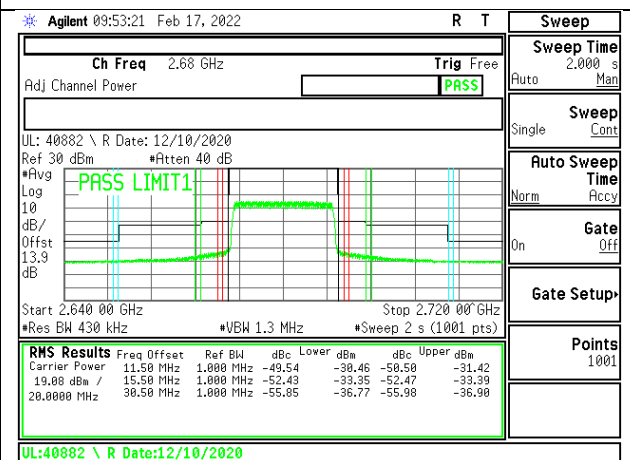
LTE41 (FCC) 20MHz QPSK LOW Ch RB100-0



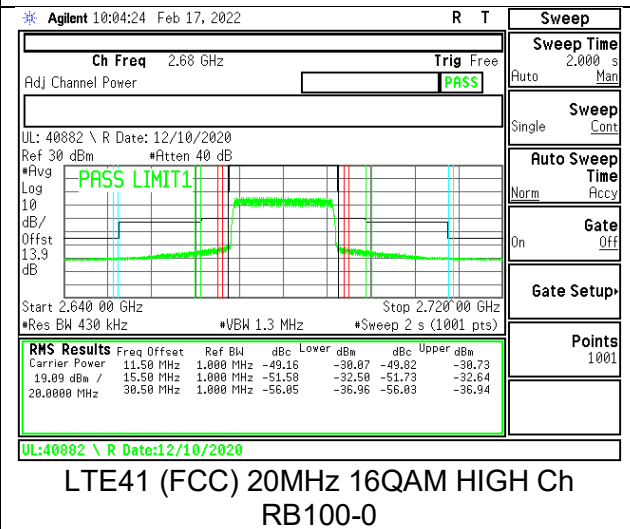
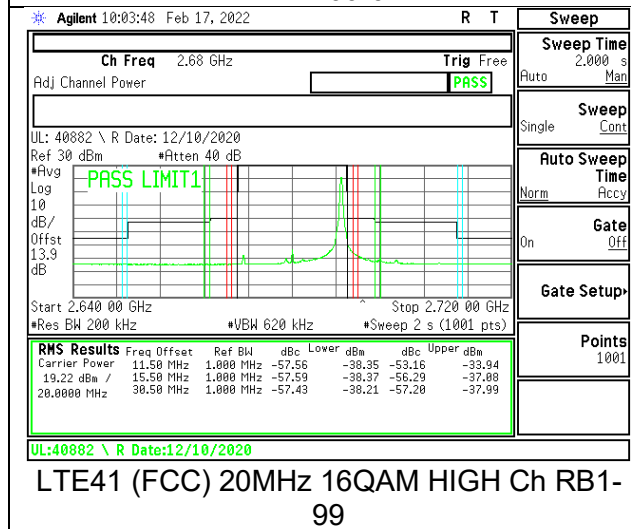
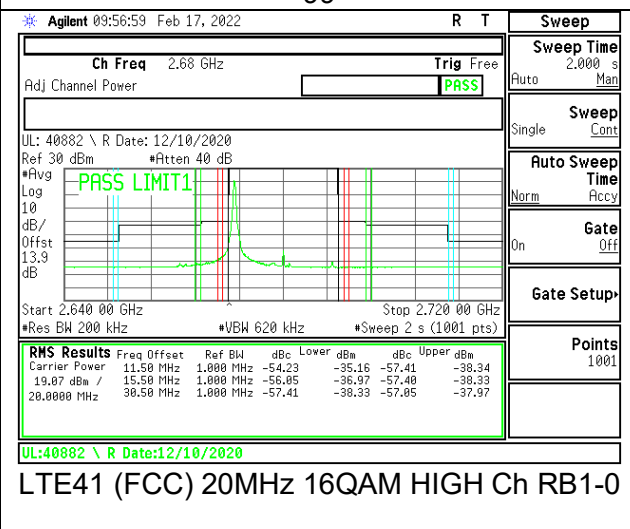
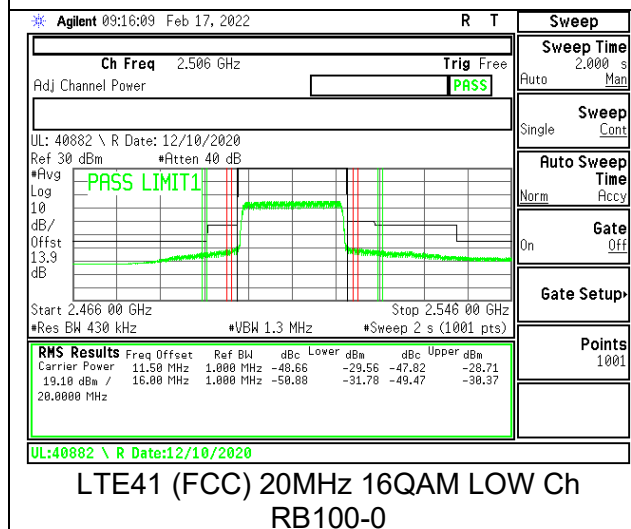
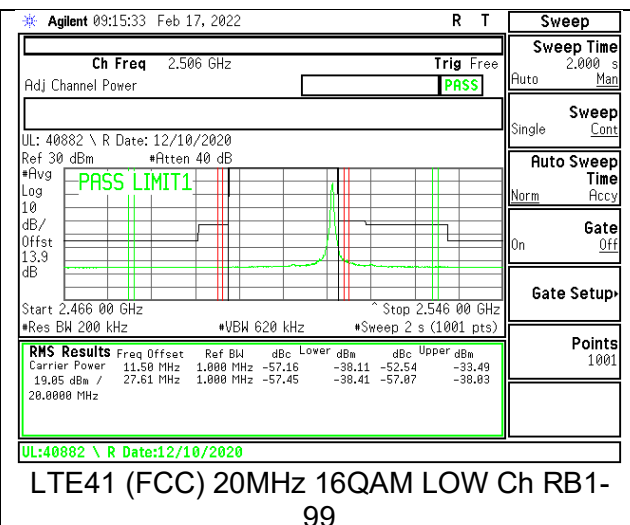
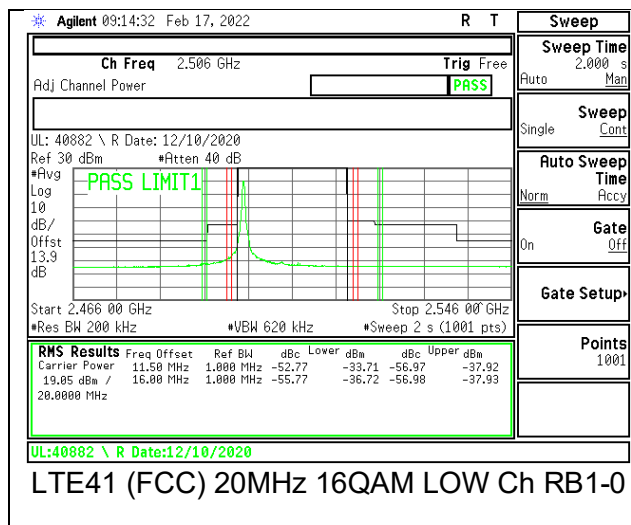
LTE41 (FCC) 20MHz QPSK HIGH Ch RB1-0



LTE41 (FCC) 20MHz QPSK HIGH Ch RB1-99



LTE41 (FCC) 20MHz QPSK HIGH Ch RB100-0



9.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, §27.53

LIMITS

FCC: §22.917, §24.238, §27.53 (h)

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

TEST PROCEDURE

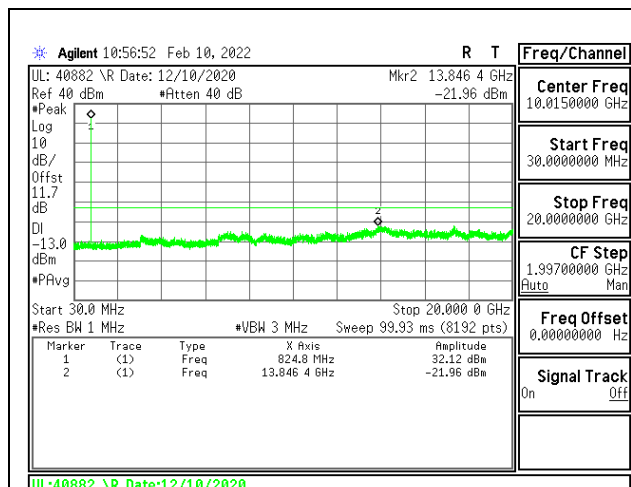
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case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

For each out of band emissions measurement:

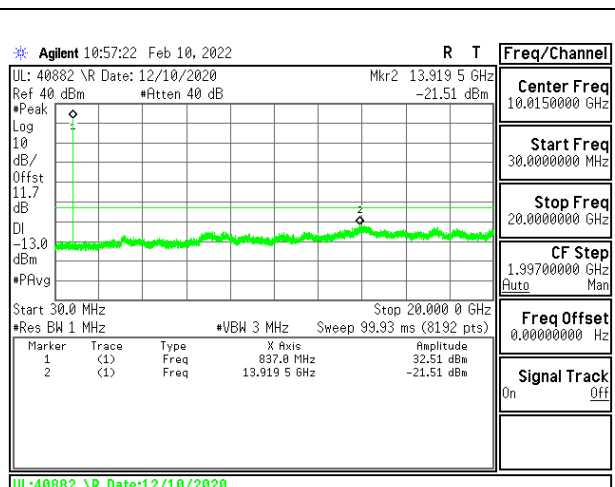
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

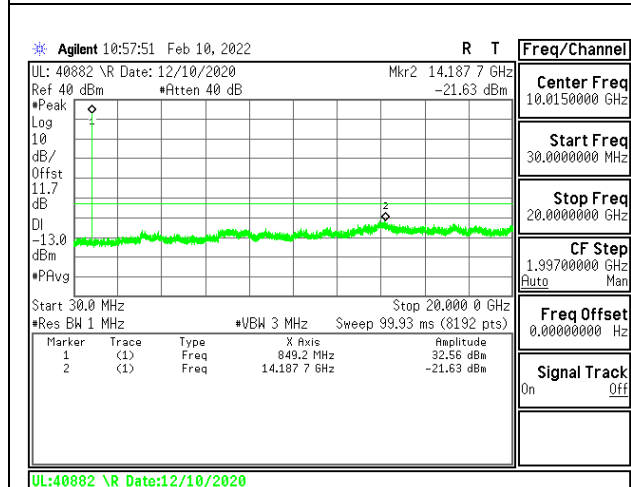
9.3.1.GSM GSM850



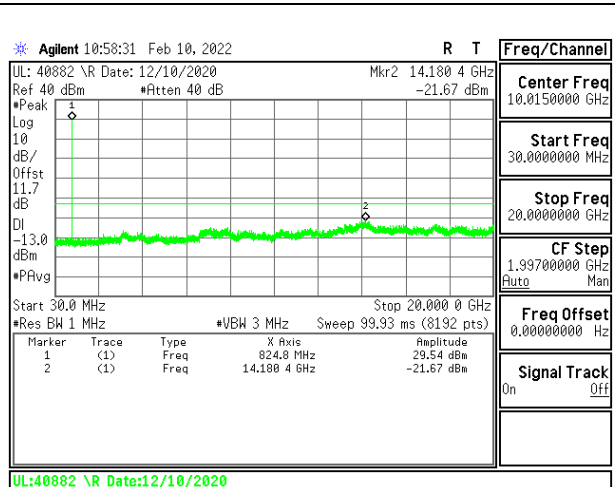
GSM850 GPRS LOW Channel



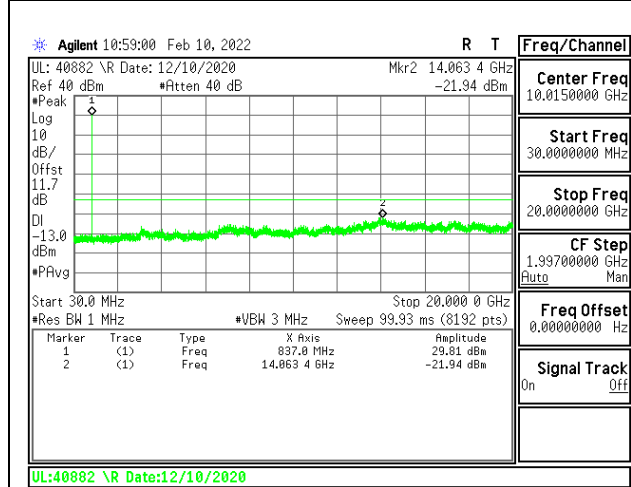
GSM850 GPRS MID Channel



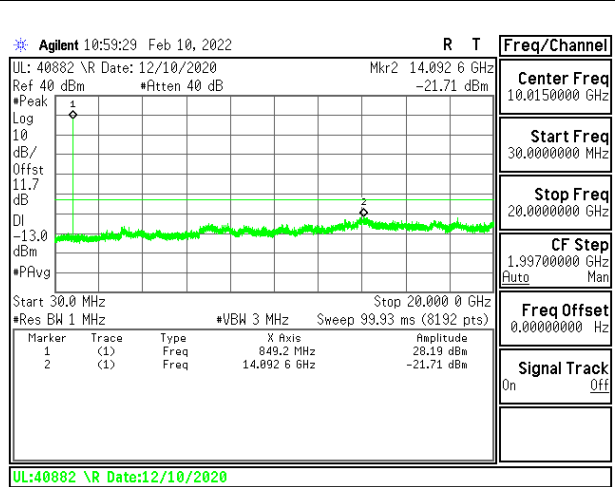
GSM850 GPRS HIGH Channel



GSM850 EGPRS LOW Channel

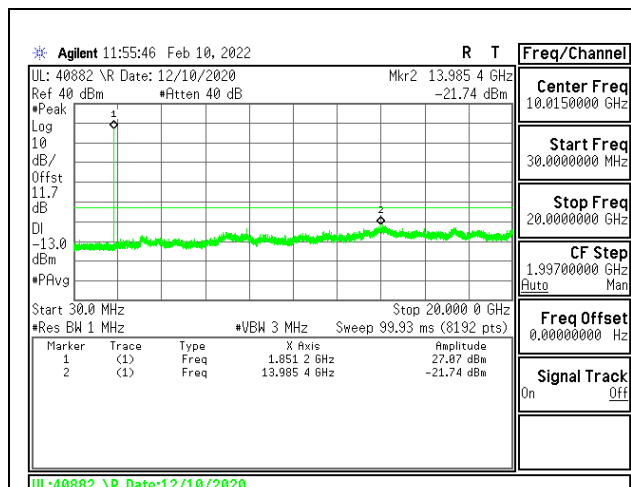


GSM850 EGPRS MID Channel

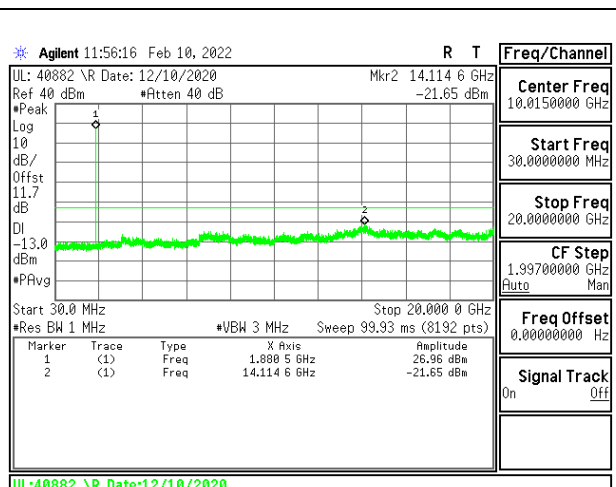


GSM850 EGPRS HIGH Channel

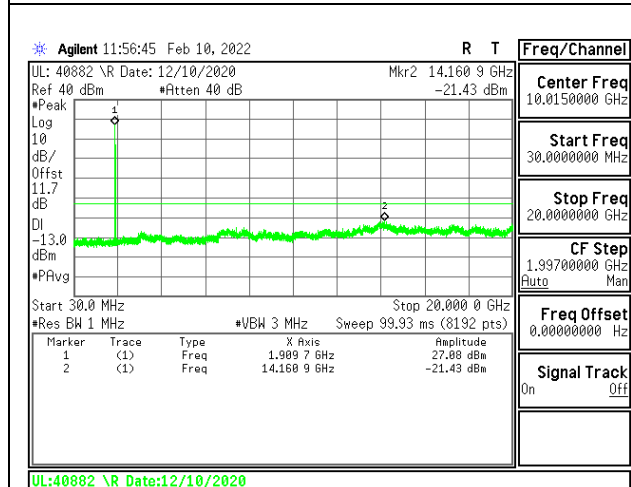
9.3.2.GSM GSM1900



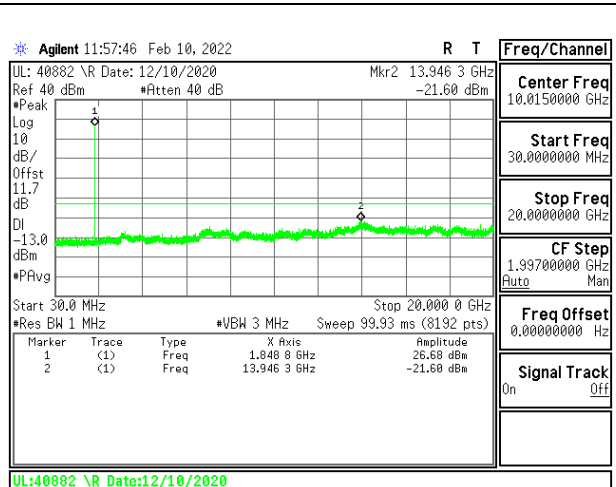
GSM1900 GPRS LOW Channel



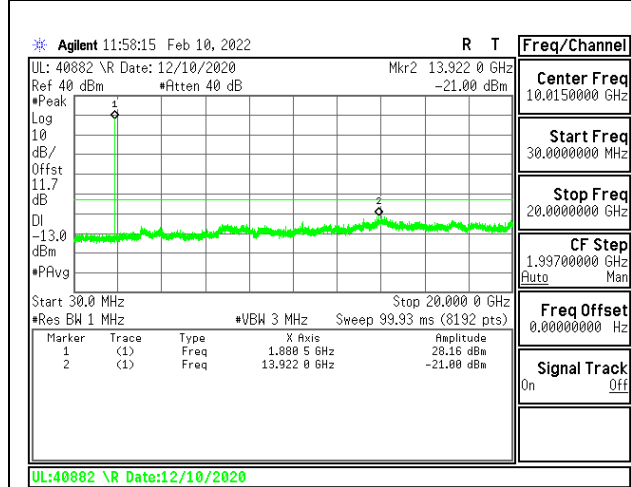
GSM1900 GPRS MID Channel



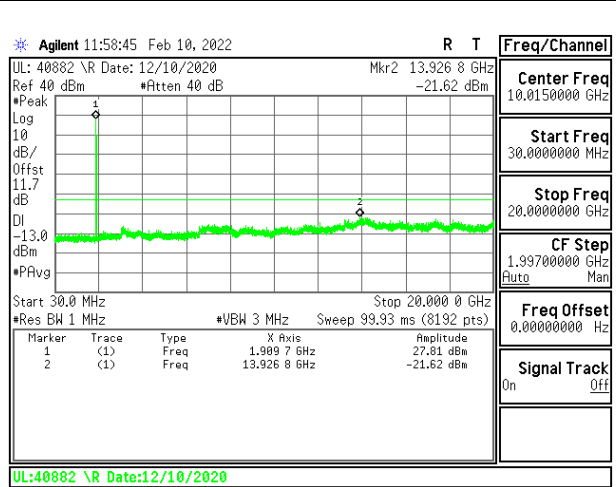
GSM1900 GPRS HIGH Channel



GSM1900 EGPRS LOW Channel

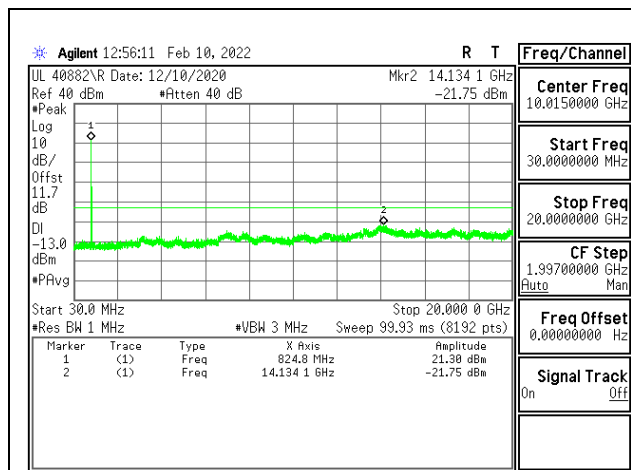


GSM1900 EGPRS MID Channel

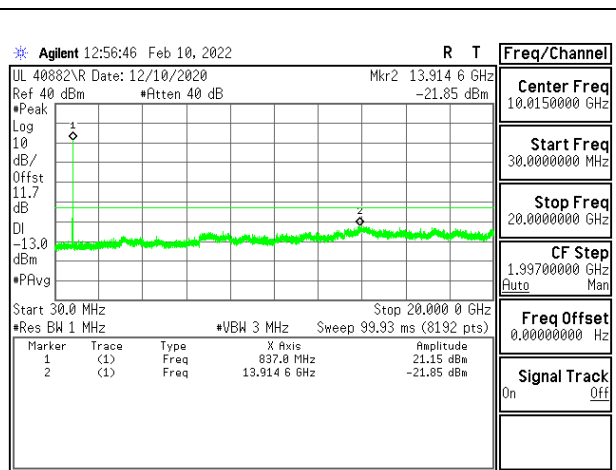


GSM1900 EGPRS HIGH Channel

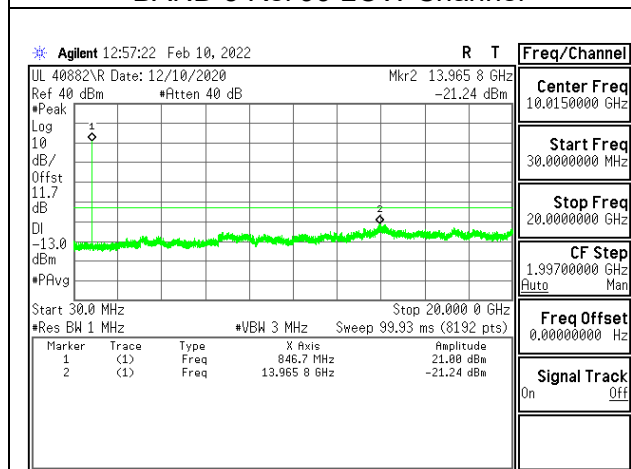
9.3.3.WCDMA BAND 5



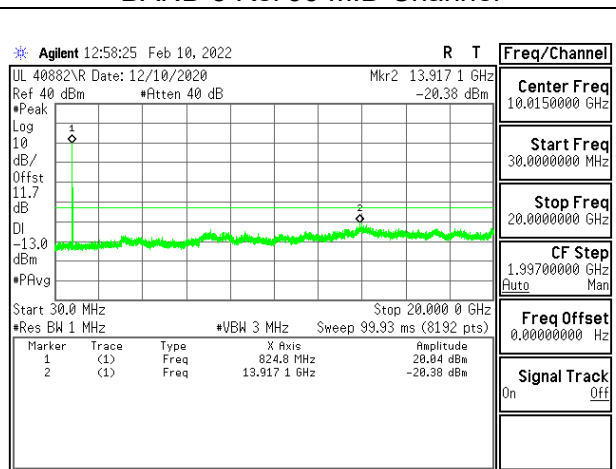
BAND 5 Rel 99 LOW Channel



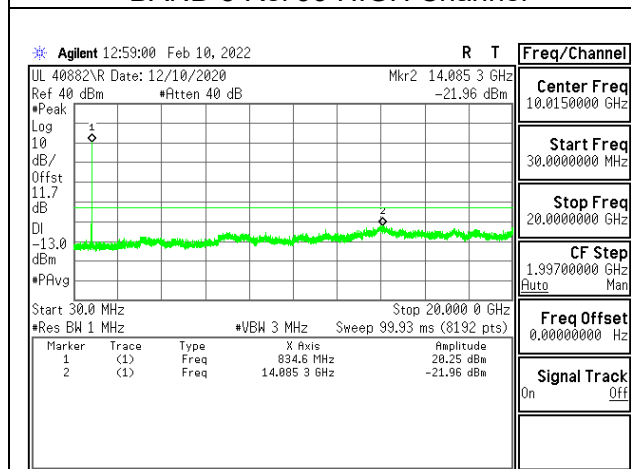
BAND 5 Rel 99 MID Channel



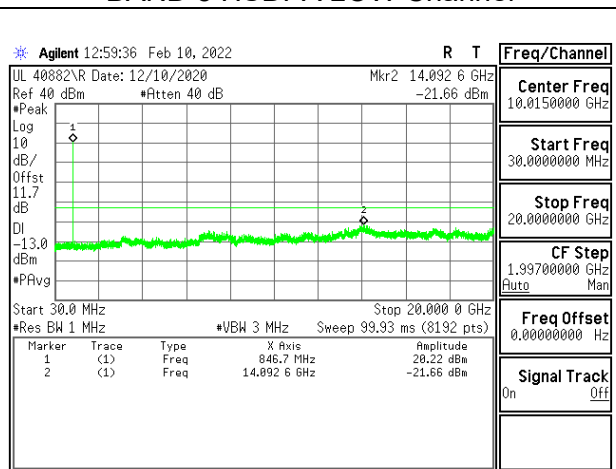
BAND 5 Rel 99 HIGH Channel



BAND 5 HSDPA LOW Channel



BAND 5 HSDPA MID Channel



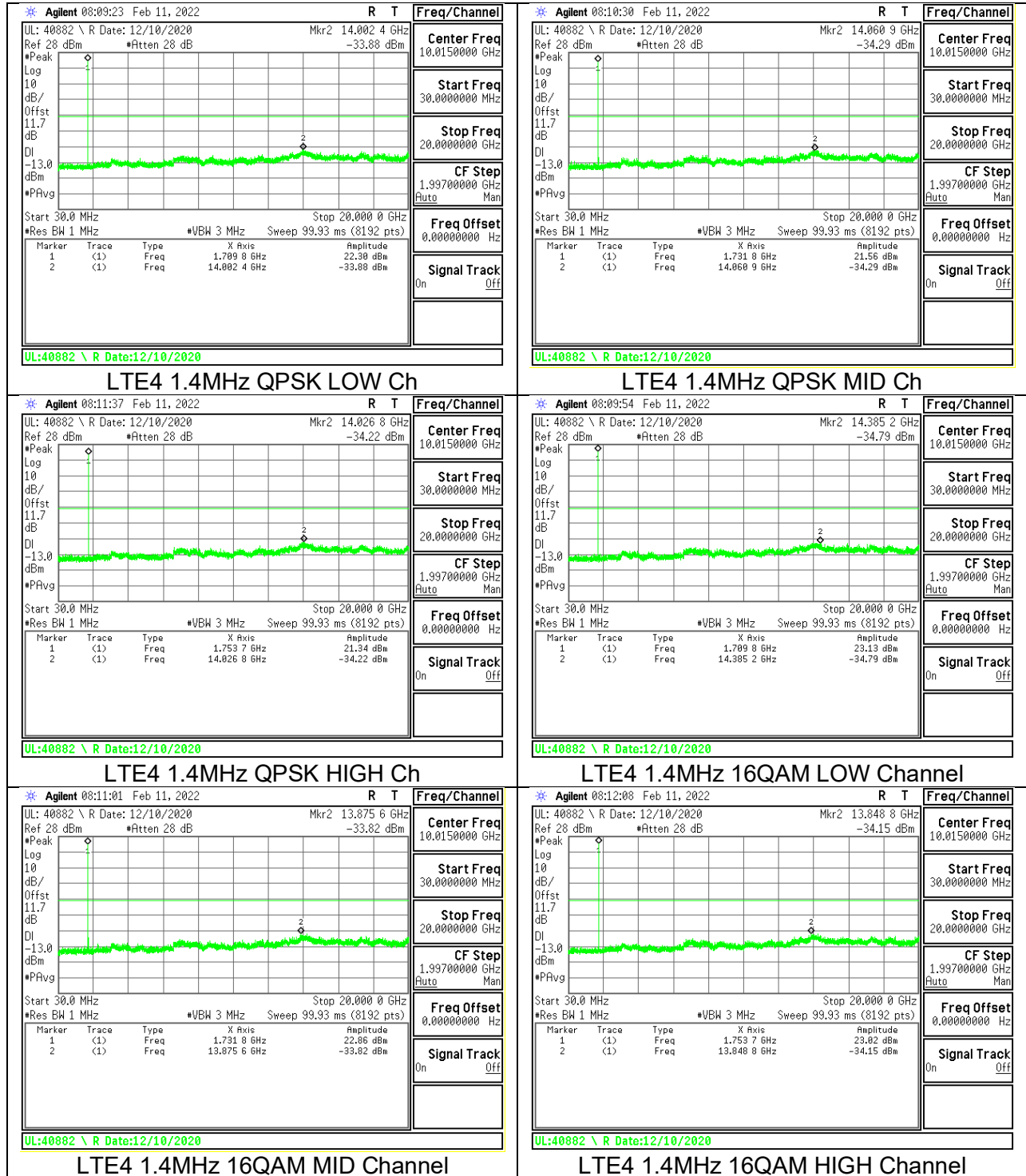
BAND 5 HSDPA HIGH Channel

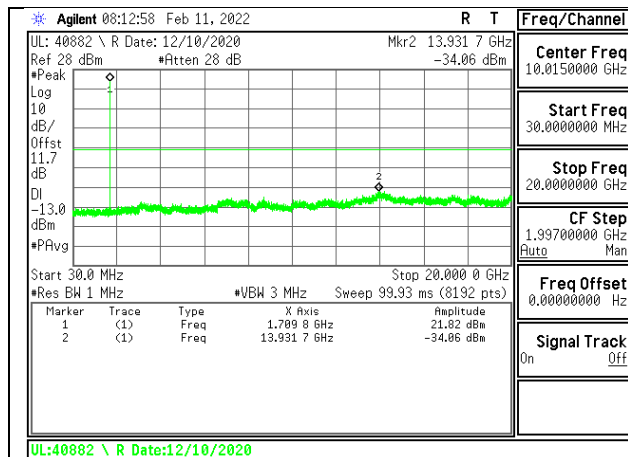
9.3.4.LTE4

LIMITS

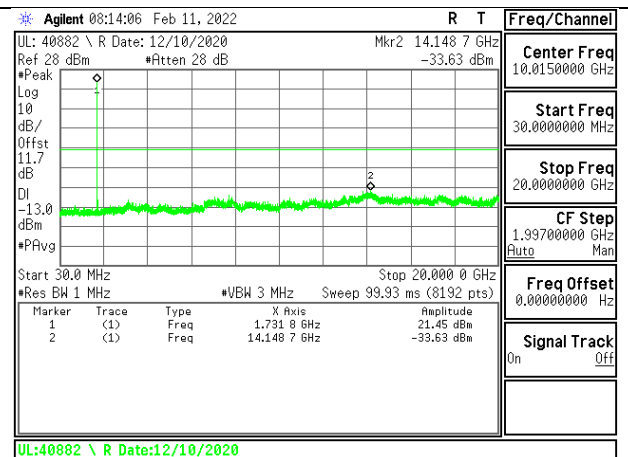
FCC: §27.53(h)

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

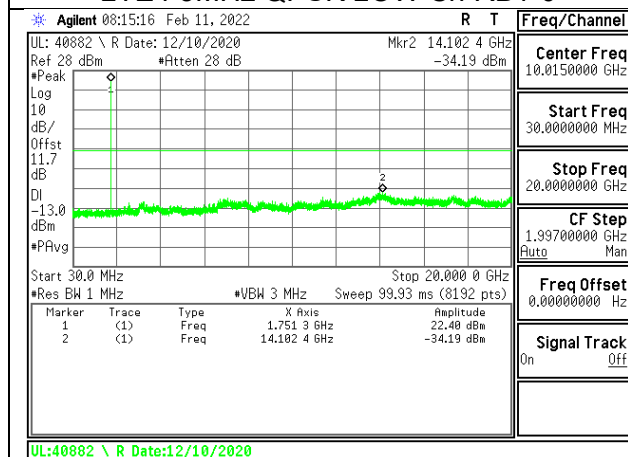




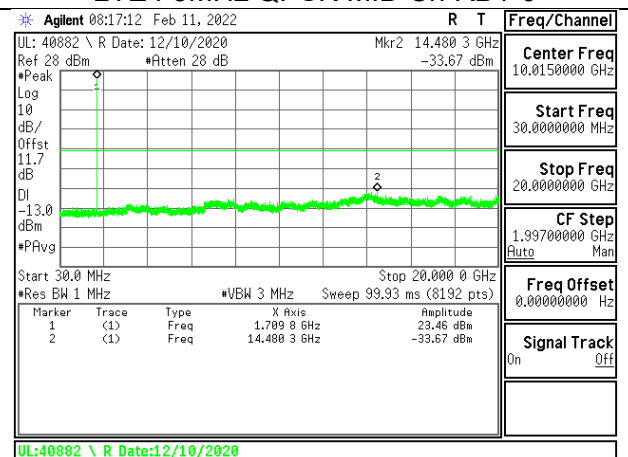
LTE4 3MHz QPSK LOW Ch RB1-0



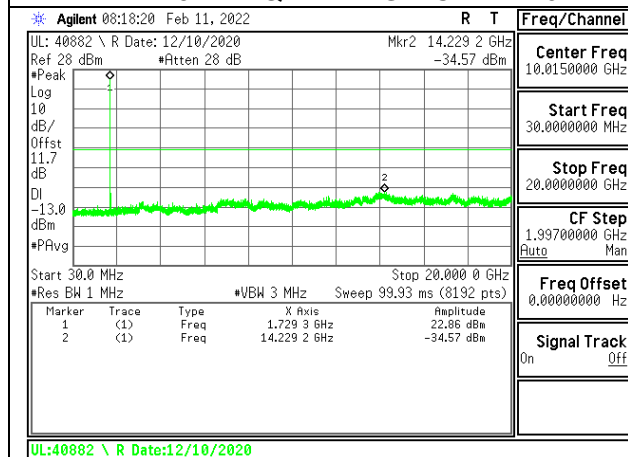
LTE4 3MHz QPSK MID Ch RB1-0



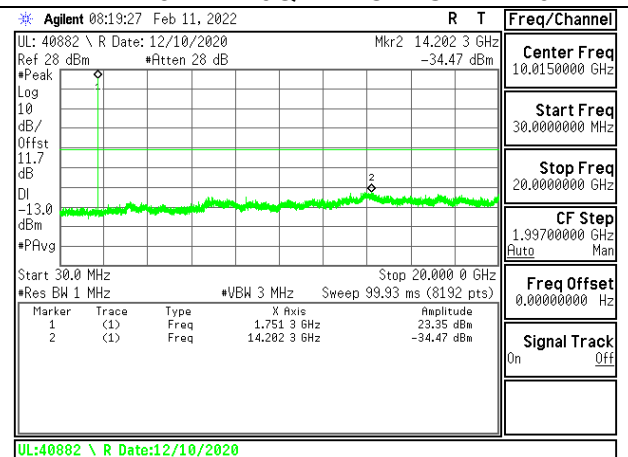
LTE4 3MHz QPSK HIGH Ch RB1-0



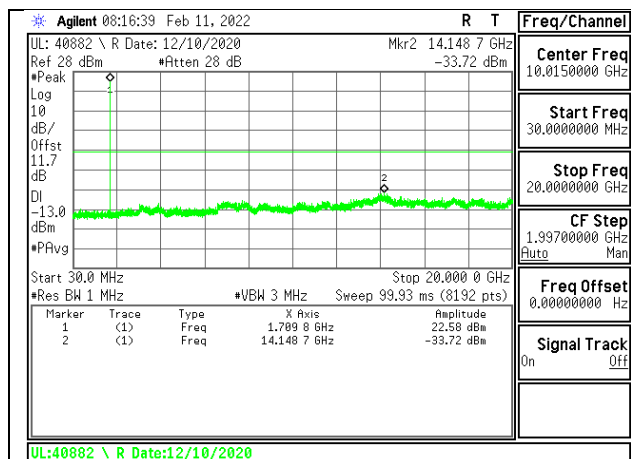
LTE4 3MHz 16QAM LOW Ch RB1-0



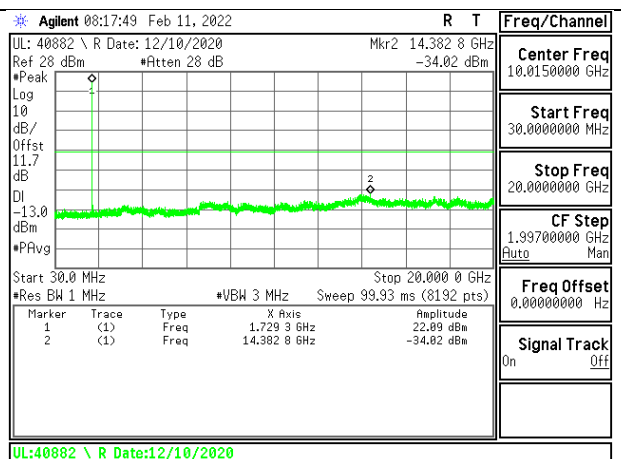
LTE4 3MHz 16QAM MID Ch RB1-0



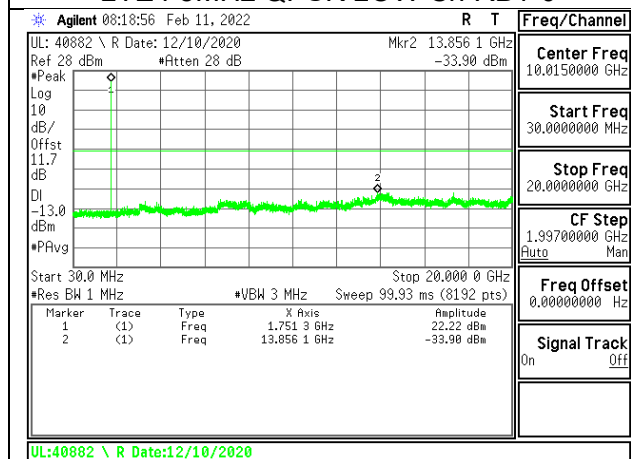
LTE4 3MHz 16QAM HIGH Ch RB1-0



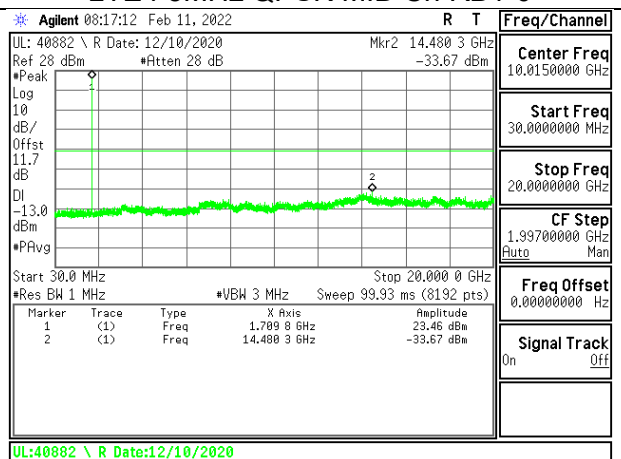
LTE4 5MHz QPSK LOW Ch RB1-0



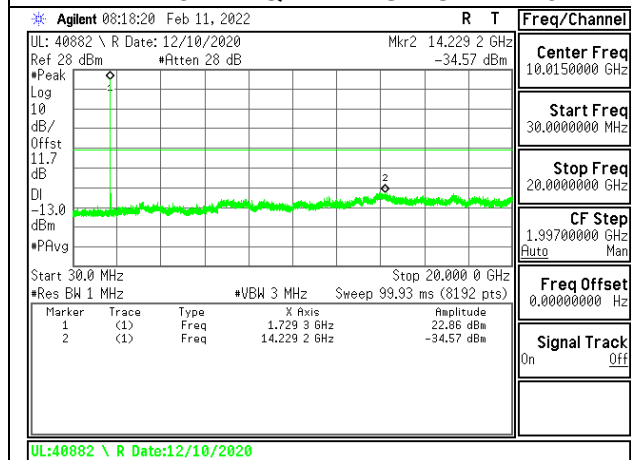
LTE4 5MHz QPSK MID Ch RB1-0



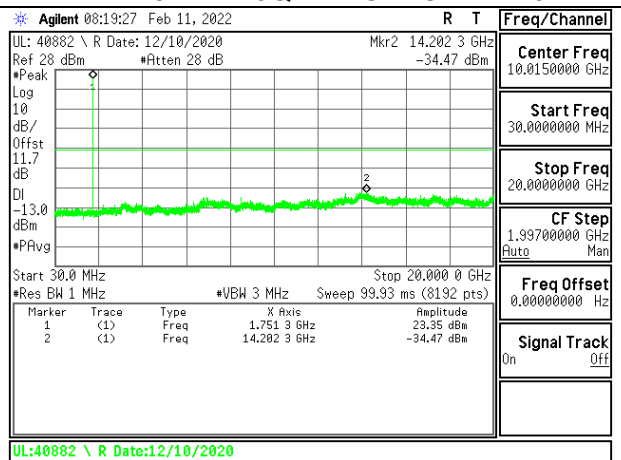
LTE4 5MHz QPSK HIGH Ch RB1-0



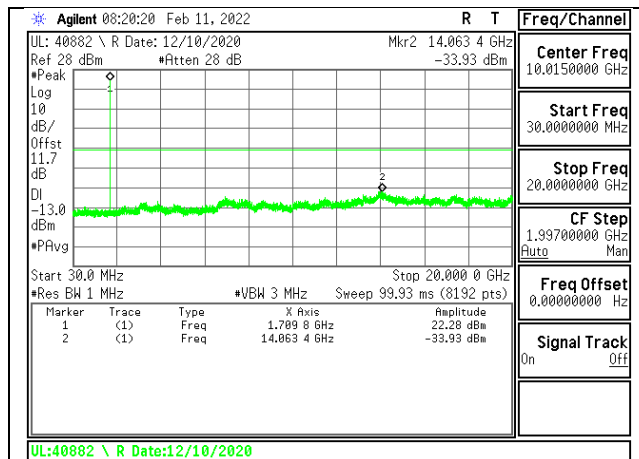
LTE4 5MHz 16QAM LOW Ch RB1-0



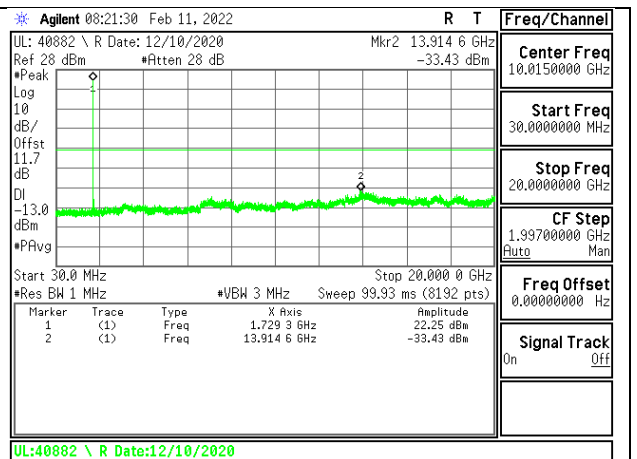
LTE4 5MHz 16QAM MID Ch RB1-0



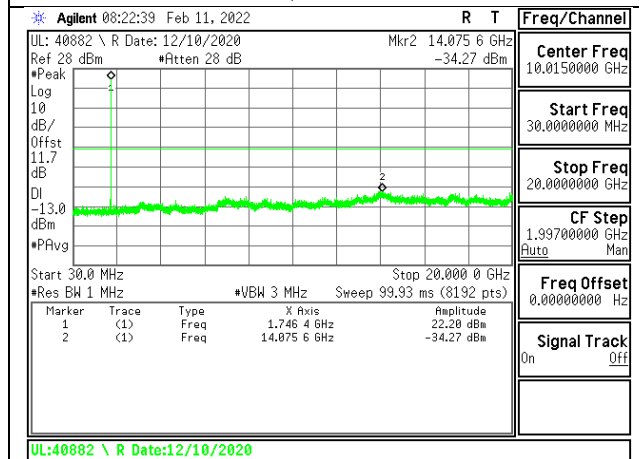
LTE4 5MHz 16QAM HIGH Ch RB1-0



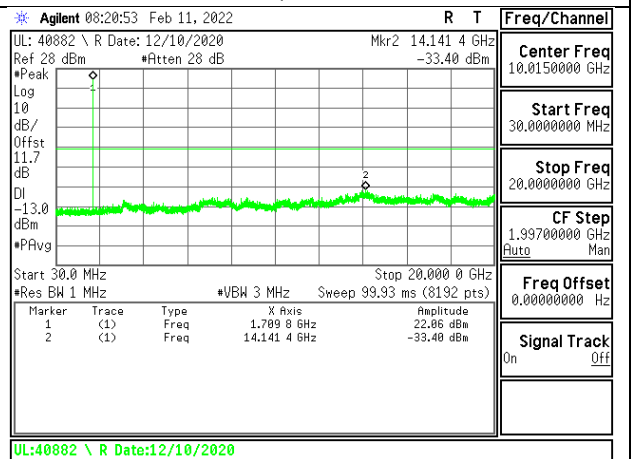
LTE4 10MHz QPSK LOW Ch RB1-0



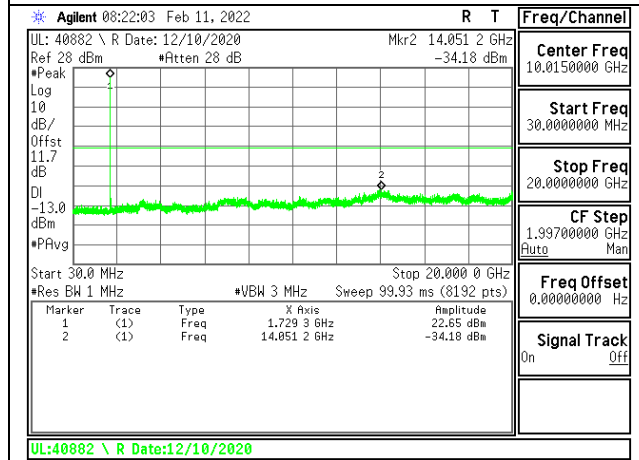
LTE4 10MHz QPSK MID Ch RB1-0



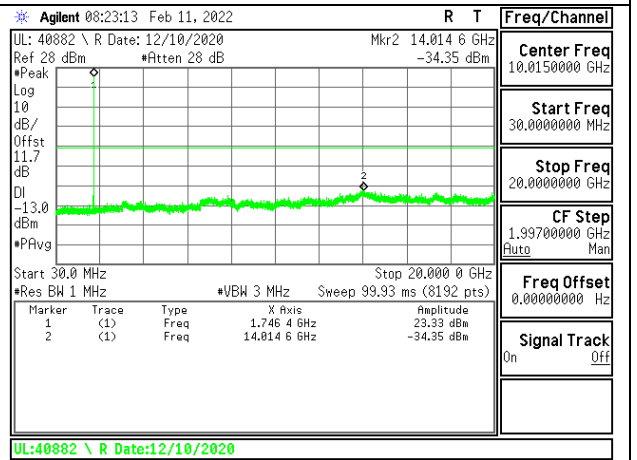
LTE4 10MHz QPSK HIGH Ch RB1-0



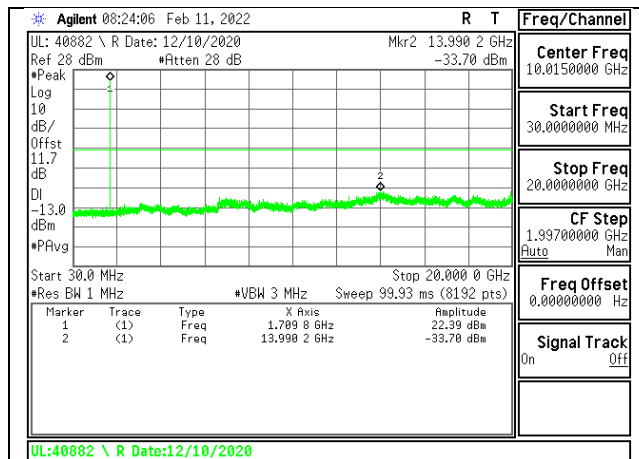
LTE4 10MHz 16QAM LOW Ch RB1-0



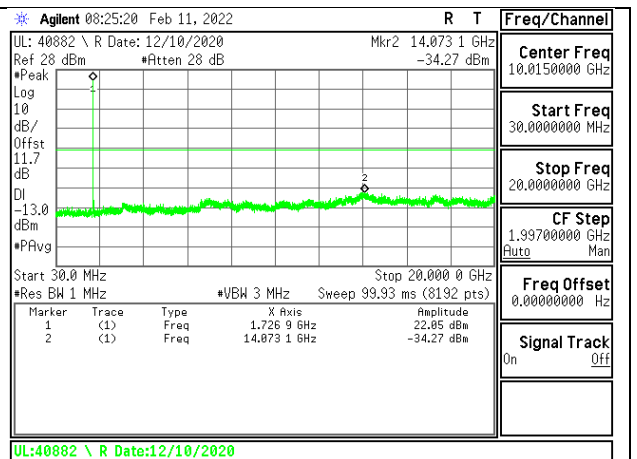
LTE4 10MHz 16QAM MID Ch RB1-0



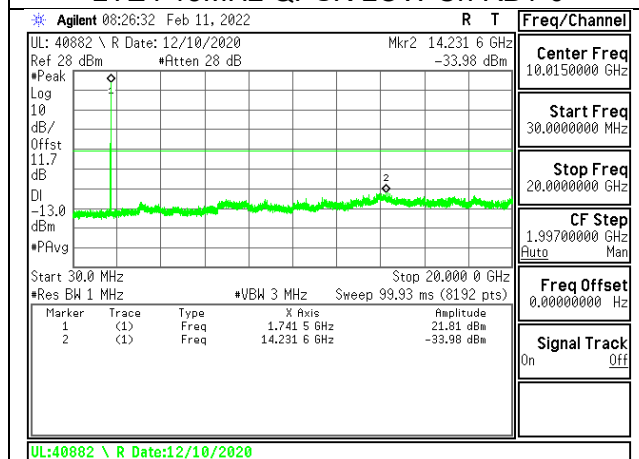
LTE4 10MHz 16QAM HIGH Ch RB1-0



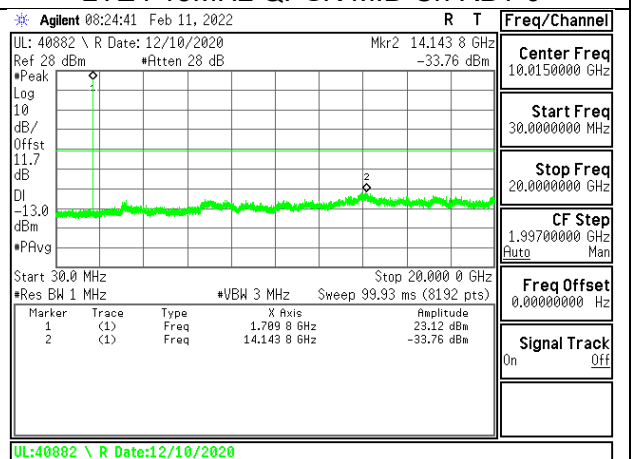
LTE4 15MHz QPSK LOW Ch RB1-0



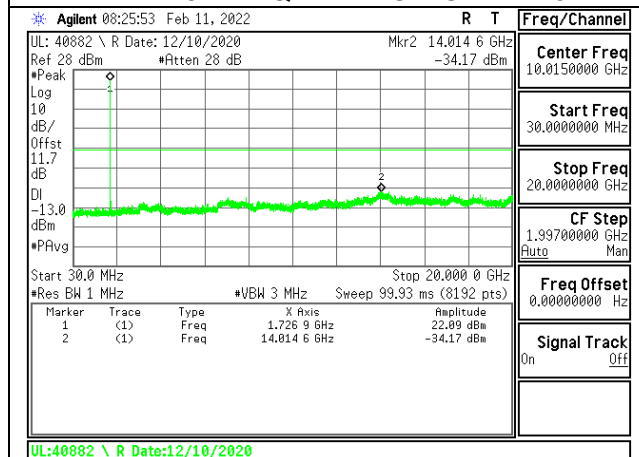
LTE4 15MHz QPSK MID Ch RB1-0



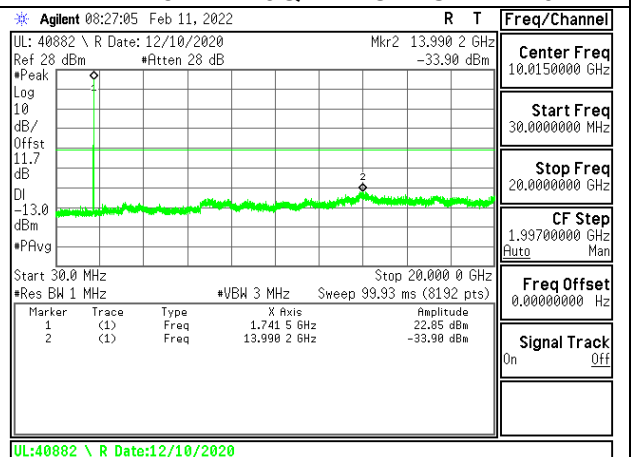
LTE4 15MHz QPSK HIGH Ch RB1-0



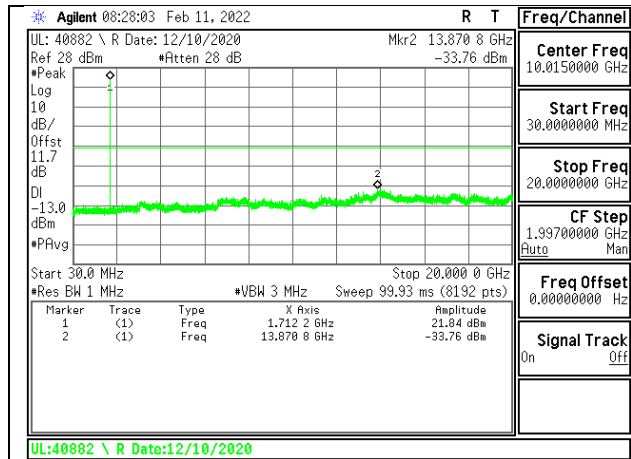
LTE4 15MHz 16QAM LOW Ch RB1-0



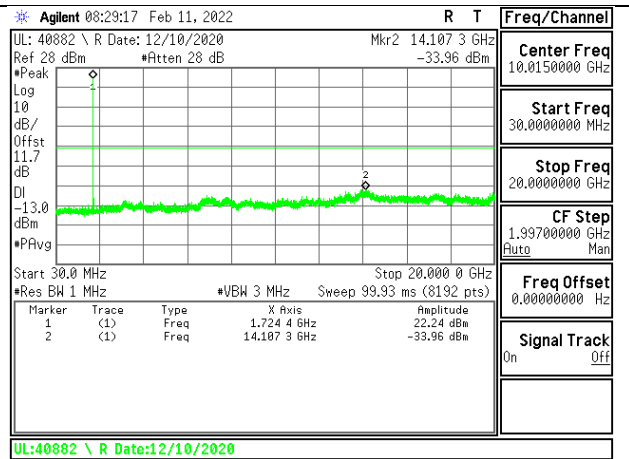
LTE4 15MHz 16QAM MID Ch RB1-0



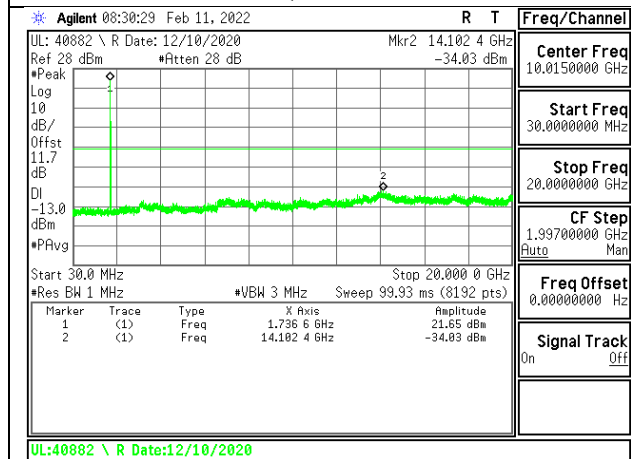
LTE4 15MHz 16QAM HIGH Ch RB1-0



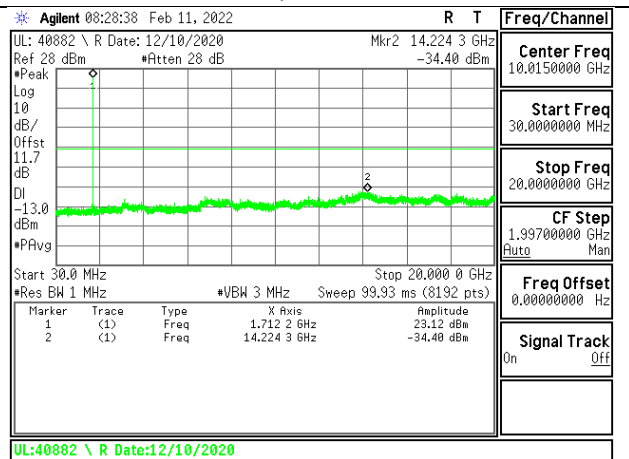
LTE4 20MHz QPSK LOW Ch RB1-0



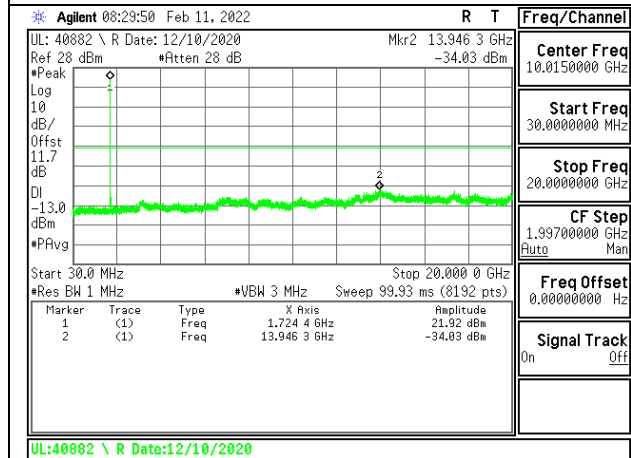
LTE4 20MHz QPSK MID Ch RB1-0



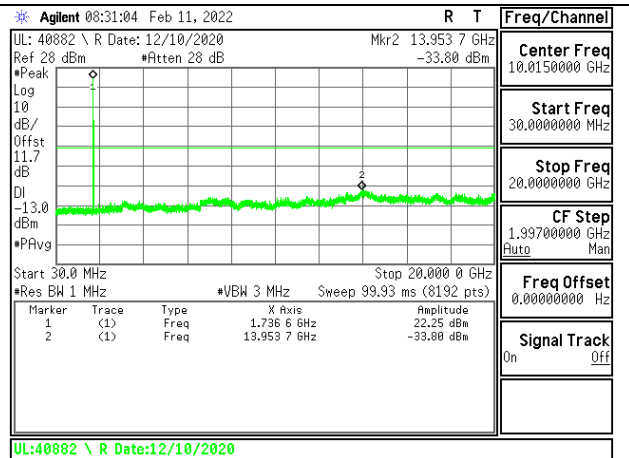
LTE4 20MHz QPSK HIGH Ch RB1-0



LTE4 20MHz 16QAM LOW Ch RB1-0



LTE4 20MHz 16QAM MID Ch RB1-0



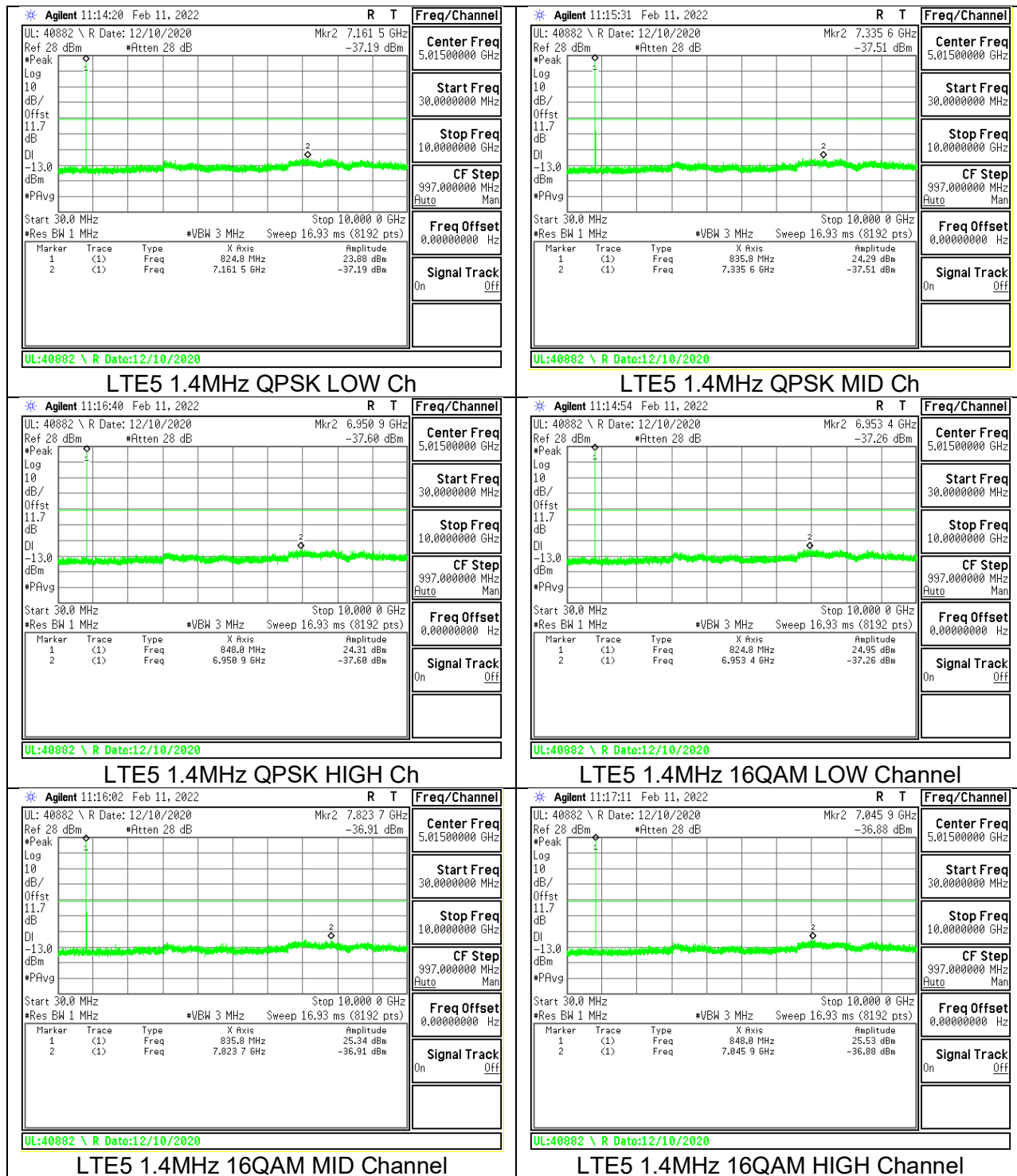
LTE4 20MHz 16QAM HIGH Ch RB1-0

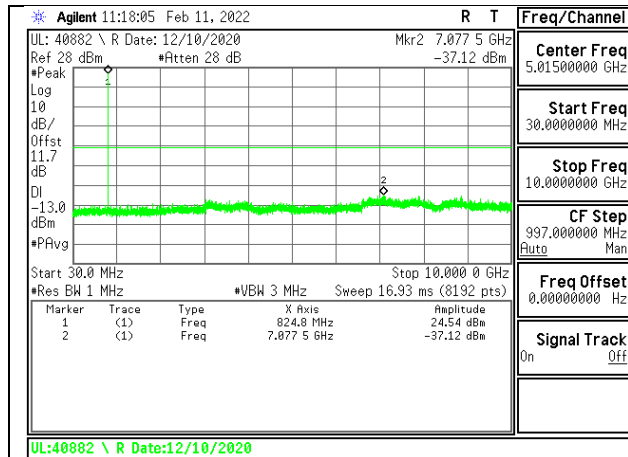
9.3.5.LTE5

LIMITS

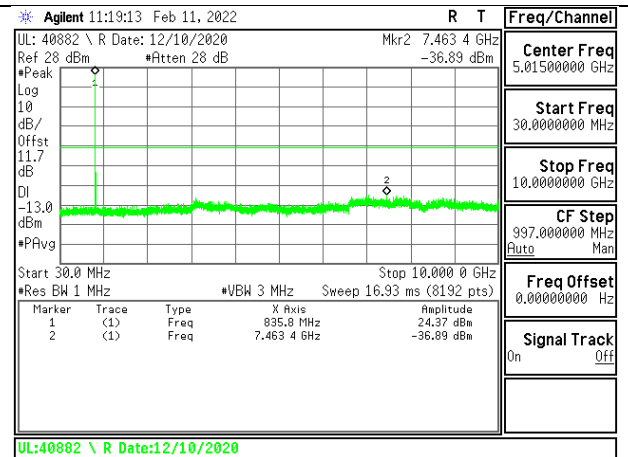
FCC: §22.917

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

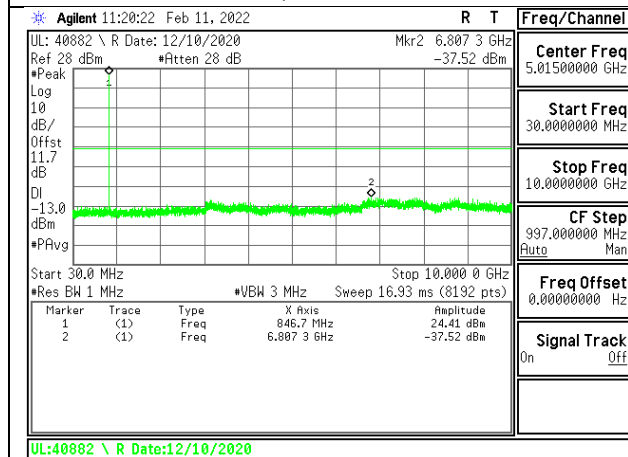




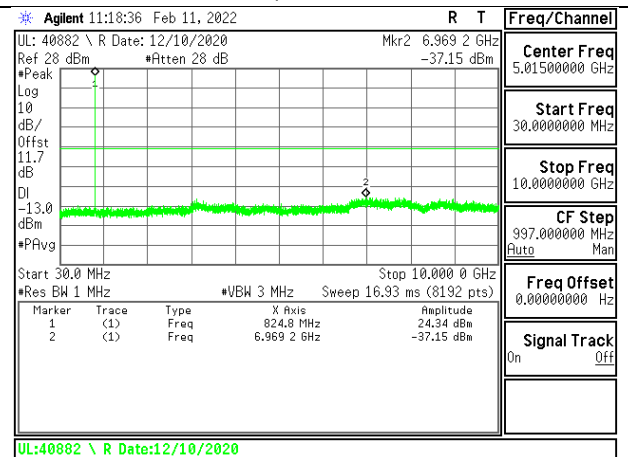
LTE5 3MHz QPSK LOW Ch RB1-0



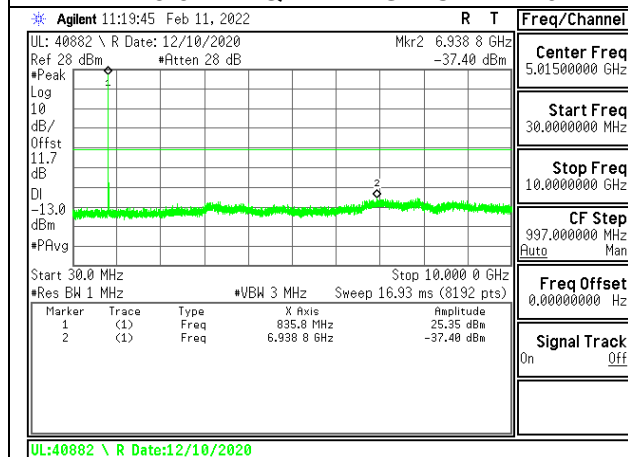
LTE5 3MHz QPSK MID Ch RB1-0



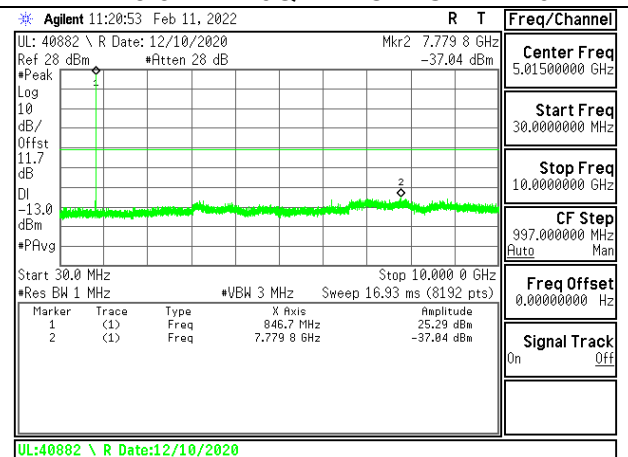
LTE5 3MHz QPSK HIGH Ch RB1-0



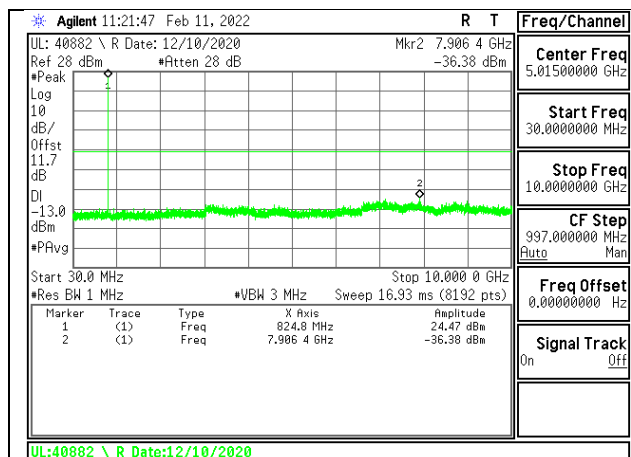
LTE5 3MHz 16QAM LOW Ch RB1-0



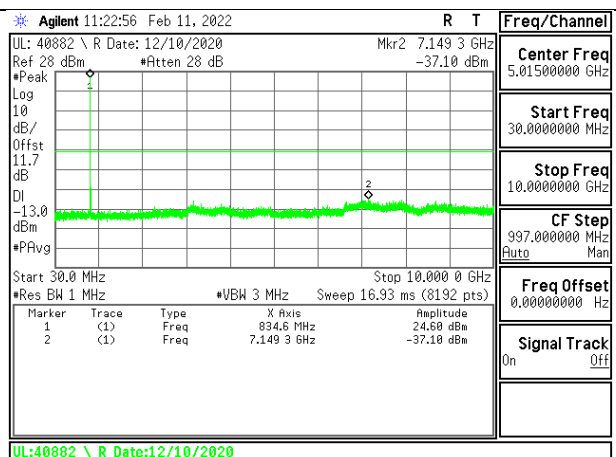
LTE5 3MHz 16QAM MID Ch RB1-0



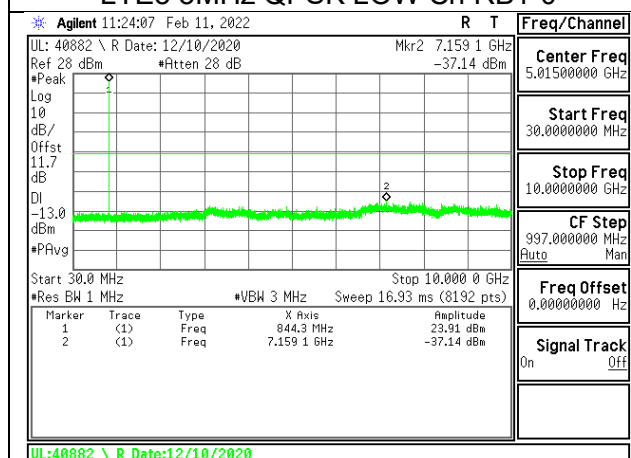
LTE5 3MHz 16QAM HIGH Ch RB1-0



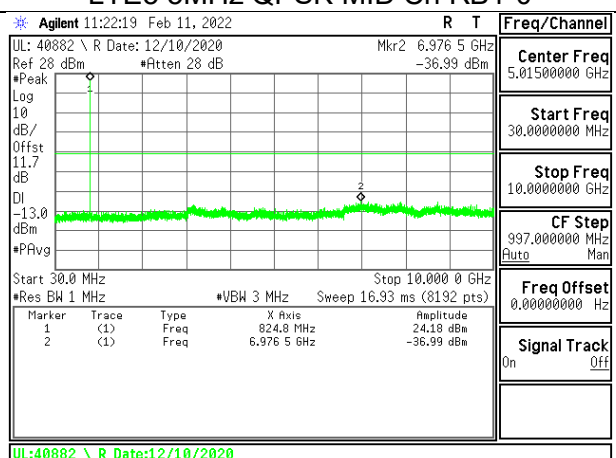
LTE5 5MHz QPSK LOW Ch RB1-0



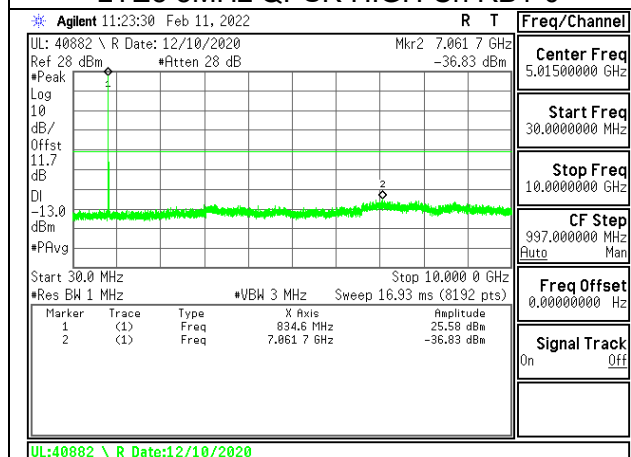
LTE5 5MHz QPSK MID Ch RB1-0



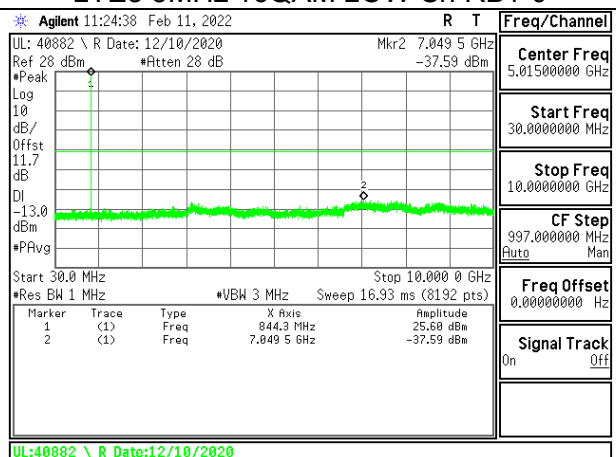
LTE5 5MHz QPSK HIGH Ch RB1-0



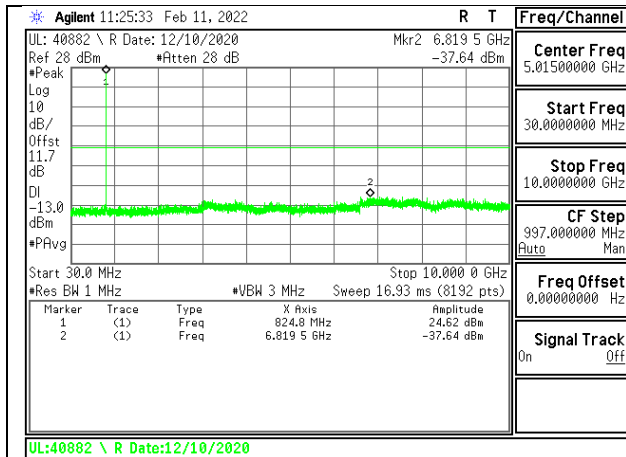
LTE5 5MHz 16QAM LOW Ch RB1-0



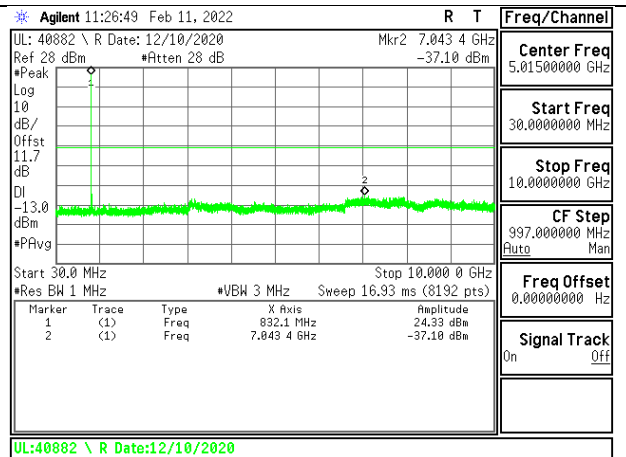
LTE5 5MHz 16QAM MID Ch RB1-0



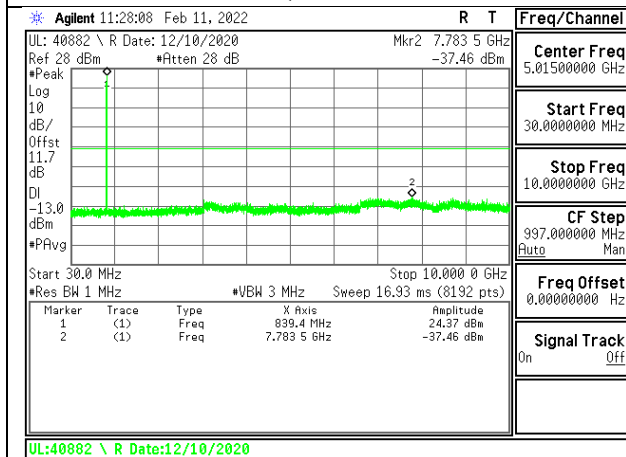
LTE5 5MHz 16QAM HIGH Ch RB1-0



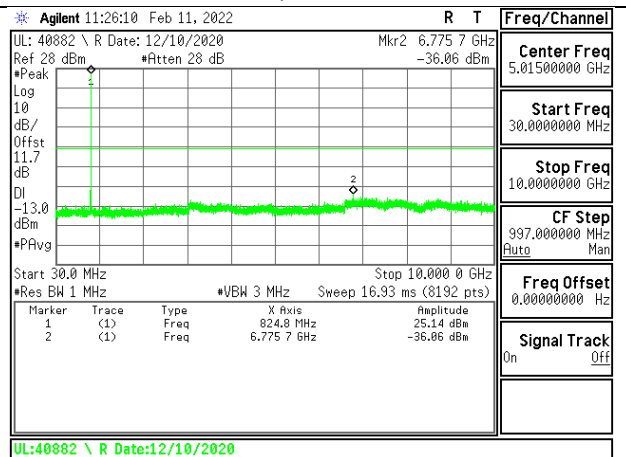
LTE5 10MHz QPSK LOW Ch RB1-0



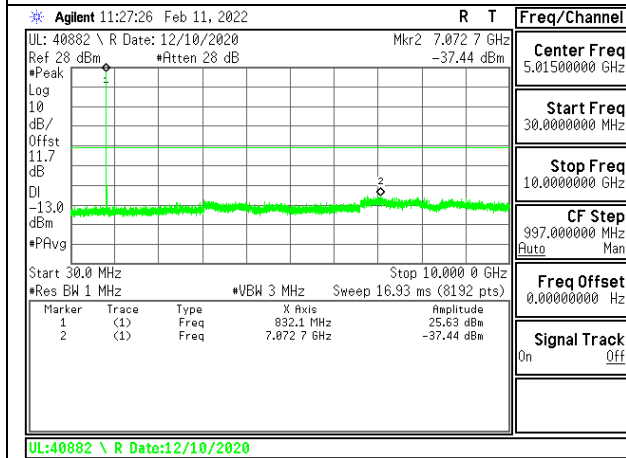
LTE5 10MHz QPSK MID Ch RB1-0



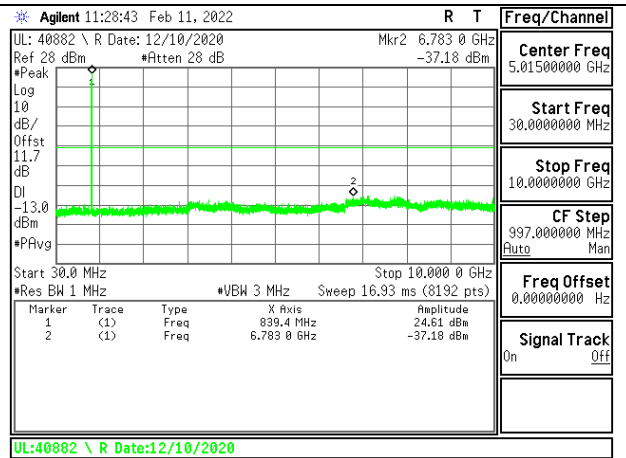
LTE5 10MHz QPSK HIGH Ch RB1-0



LTE5 10MHz 16QAM LOW Ch RB1-0



LTE5 10MHz 16QAM MID Ch RB1-0



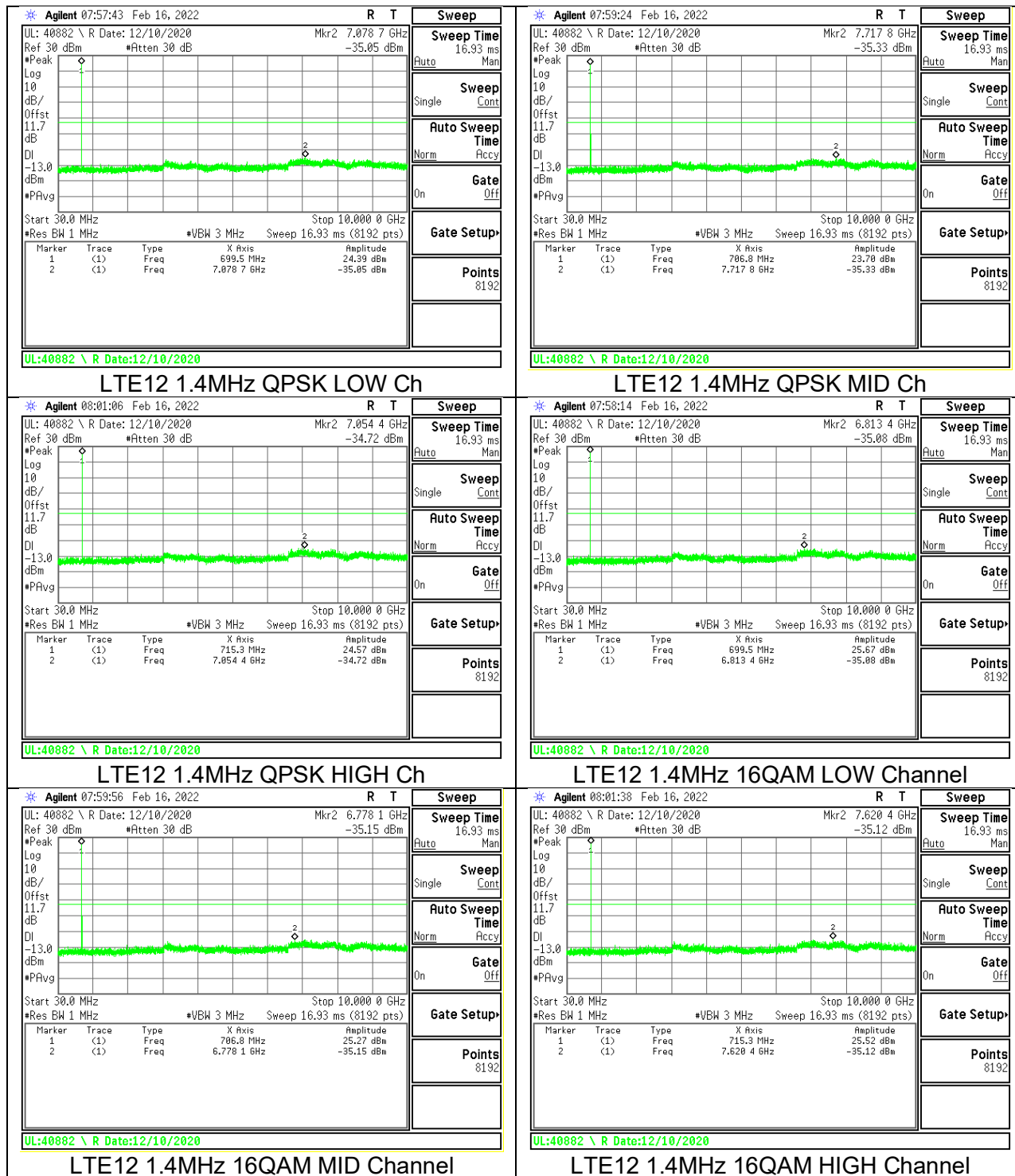
LTE5 10MHz 16QAM HIGH Ch RB1-0

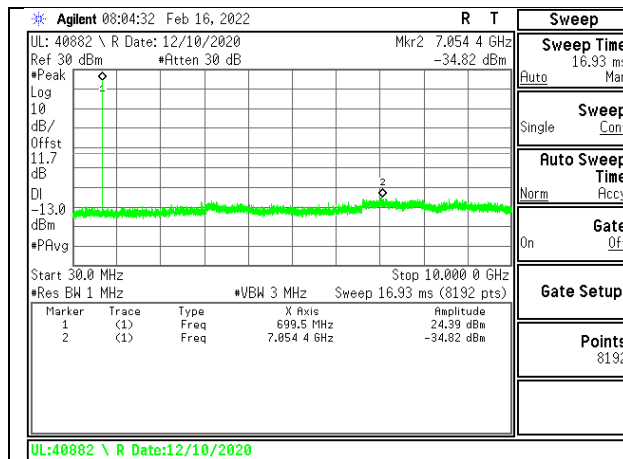
9.3.6.LTE12

LIMITS

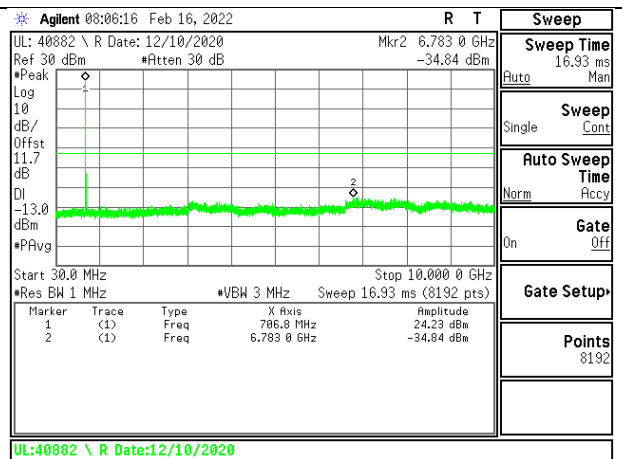
FCC: §27.53 (g)

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

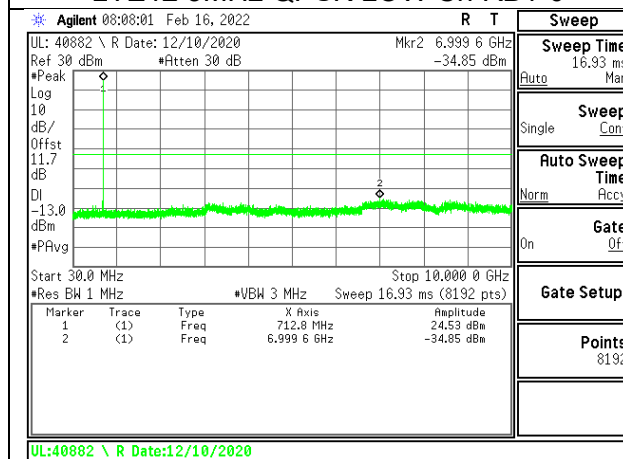




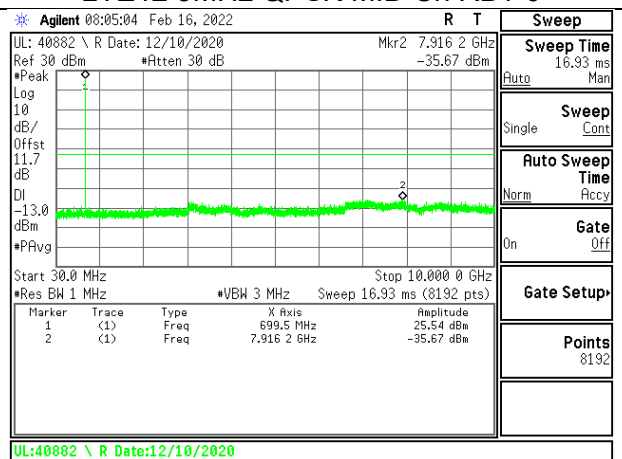
LTE12 3MHz QPSK LOW Ch RB1-0



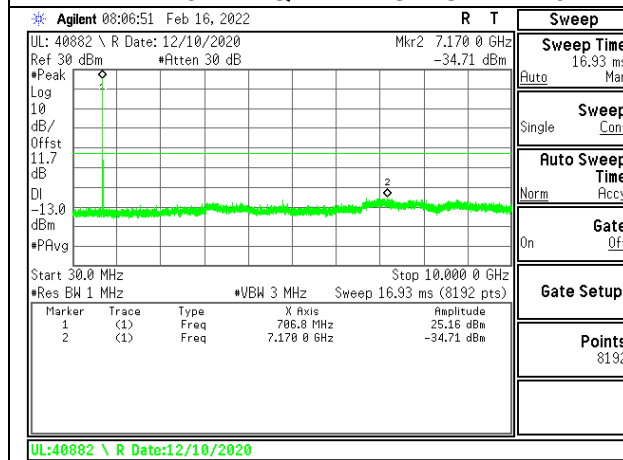
LTE12 3MHz QPSK MID Ch RB1-0



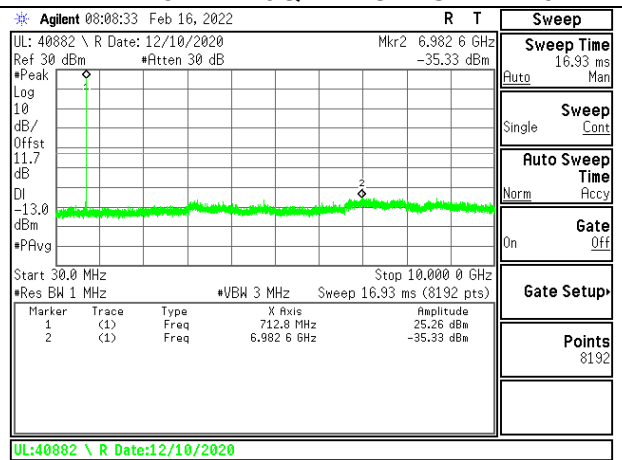
LTE12 3MHz QPSK HIGH Ch RB1-0



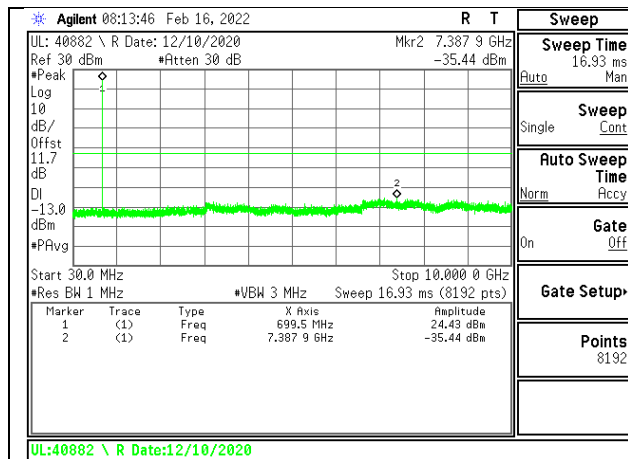
LTE12 3MHz 16QAM LOW Ch RB1-0



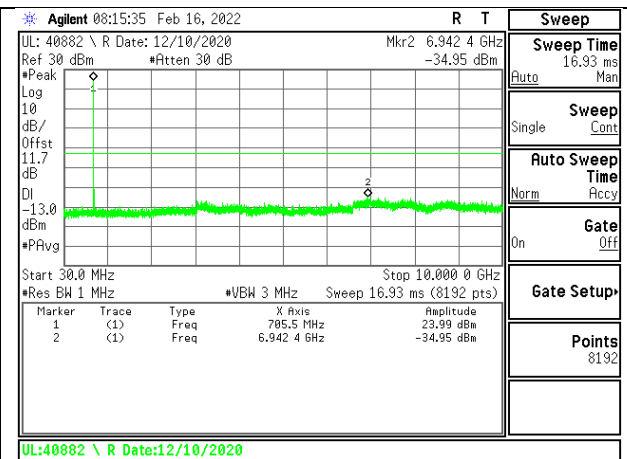
LTE12 3MHz 16QAM MID Ch RB1-0



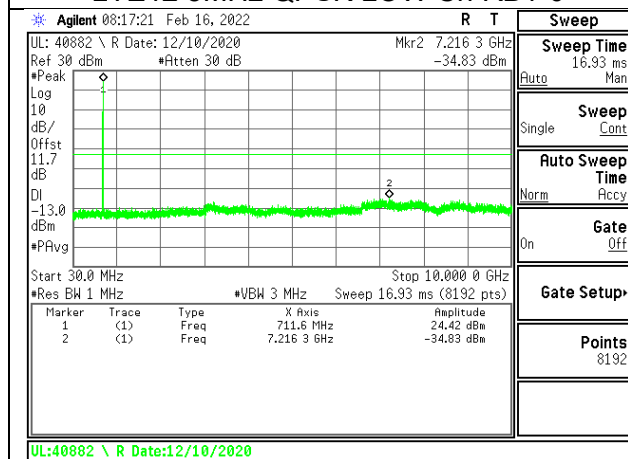
LTE12 3MHz 16QAM HIGH Ch RB1-0



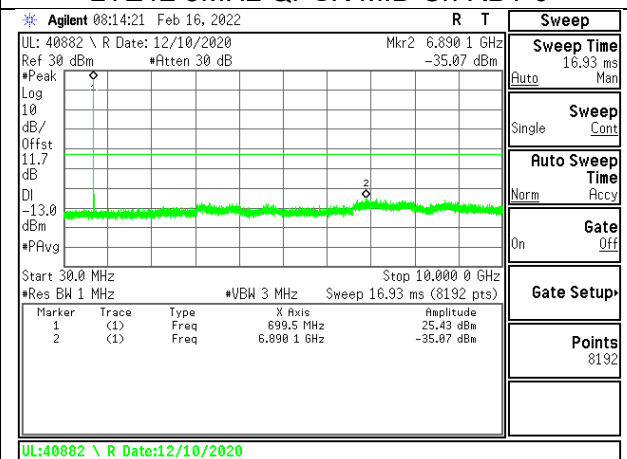
LTE12 5MHz QPSK LOW Ch RB1-0



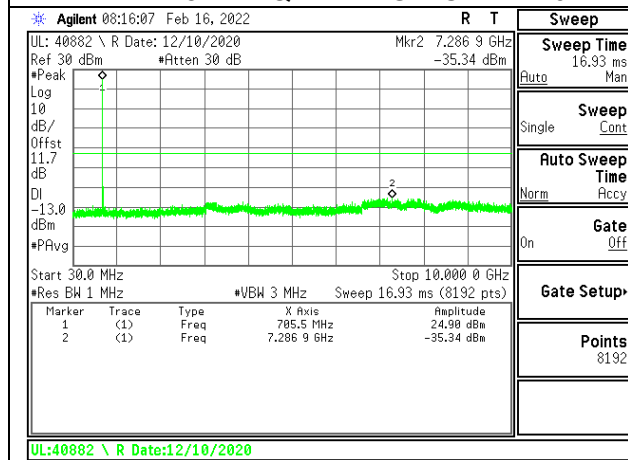
LTE12 5MHz QPSK MID Ch RB1-0



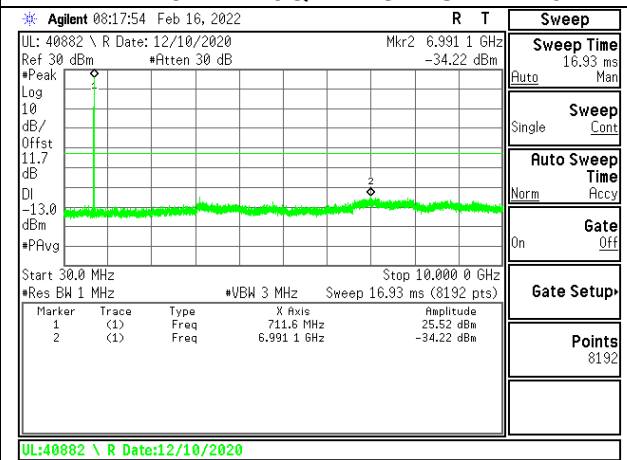
LTE12 5MHz QPSK HIGH Ch RB1-0



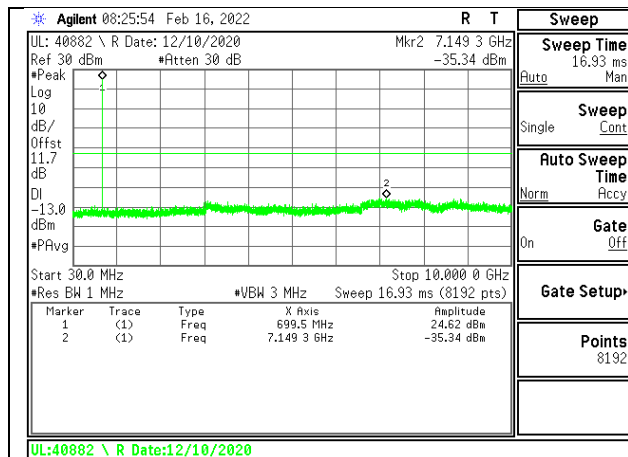
LTE12 5MHz 16QAM LOW Ch RB1-0



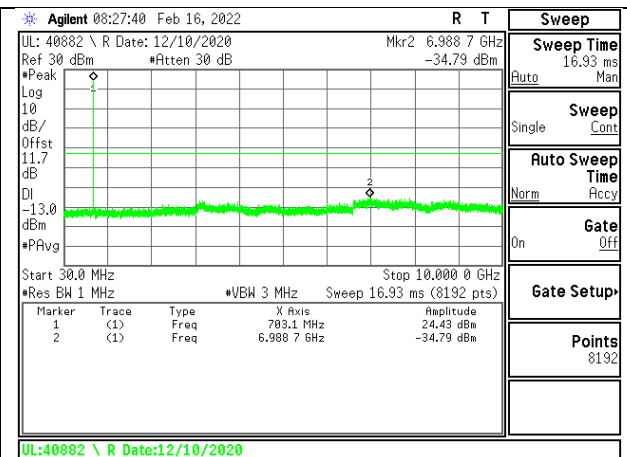
LTE12 5MHz 16QAM MID Ch RB1-0



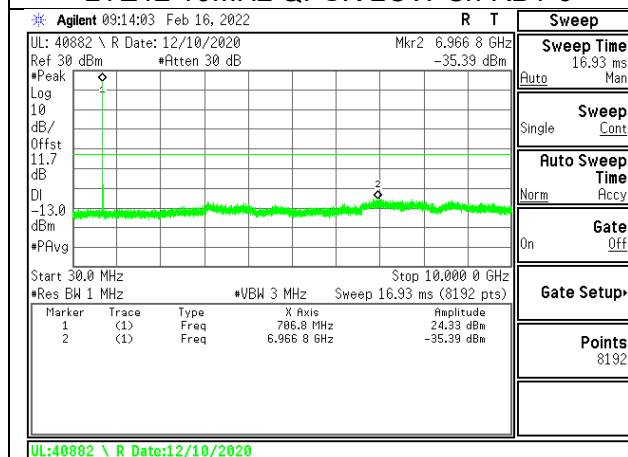
LTE12 5MHz 16QAM HIGH Ch RB1-0



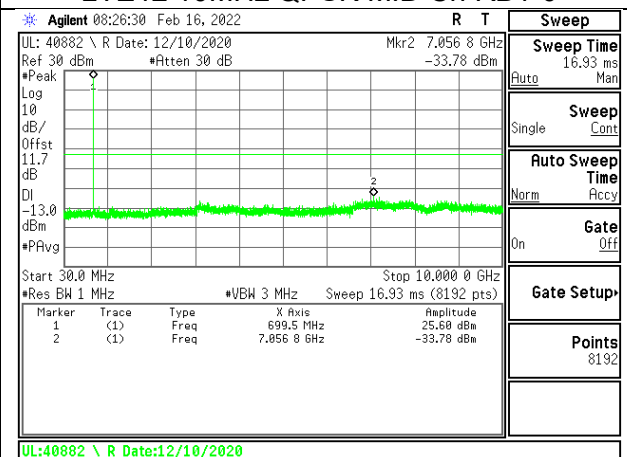
LTE12 10MHz QPSK LOW Ch RB1-0



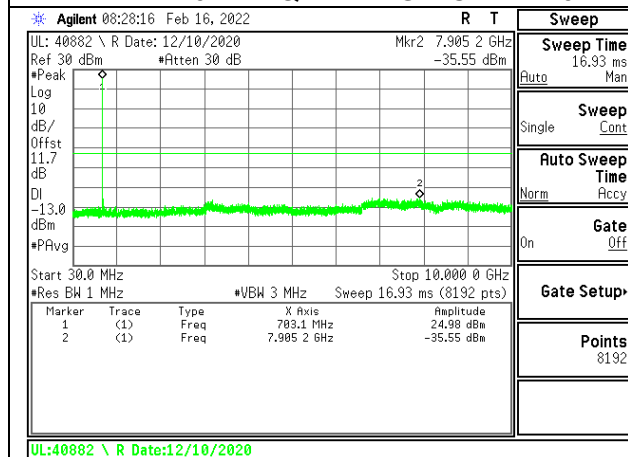
LTE12 10MHz QPSK MID Ch RB1-0



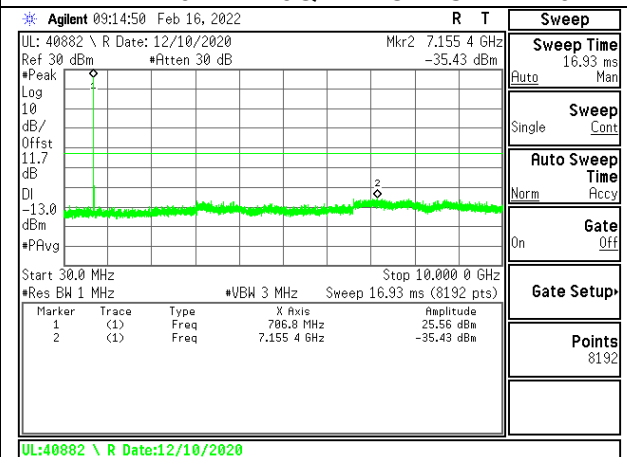
LTE12 10MHz QPSK HIGH Ch RB1-0



LTE12 10MHz 16QAM LOW Ch RB1-0



LTE12 10MHz 16QAM MID Ch RB1-0



LTE12 10MHz 16QAM HIGH Ch RB1-0

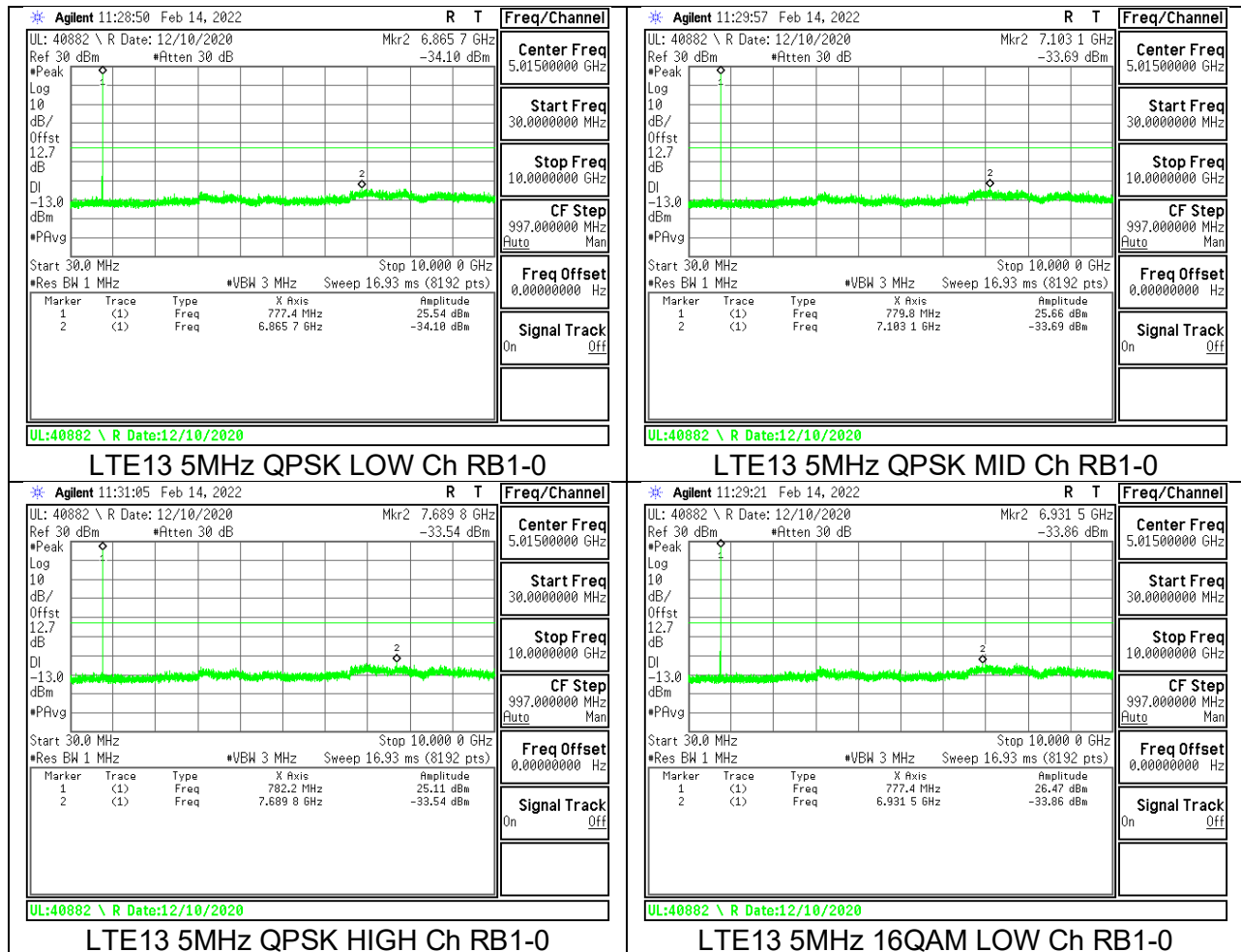
9.3.7.LTE13

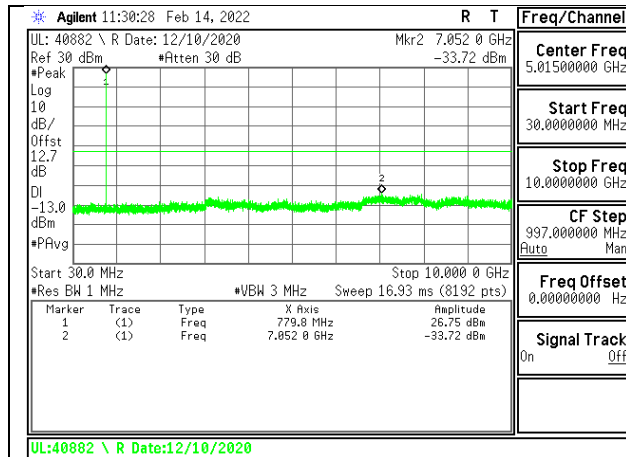
LIMITS

FCC: §27.53 (c), (f)

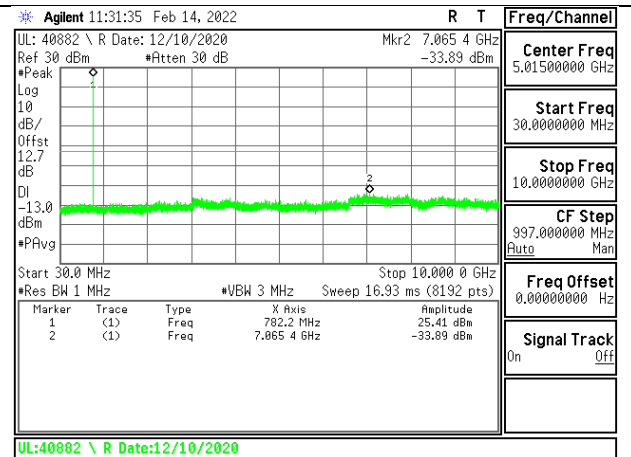
The minimum permissible attenuation level of any spurious emissions is $43 + 10 \log(P)$ dB where transmitting power (P) in Watts. The band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less 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.

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.

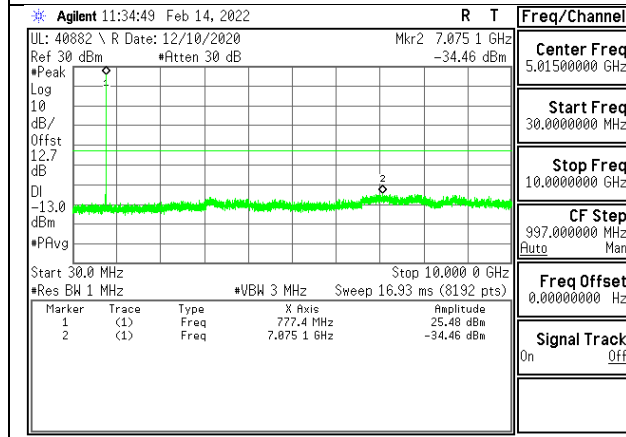




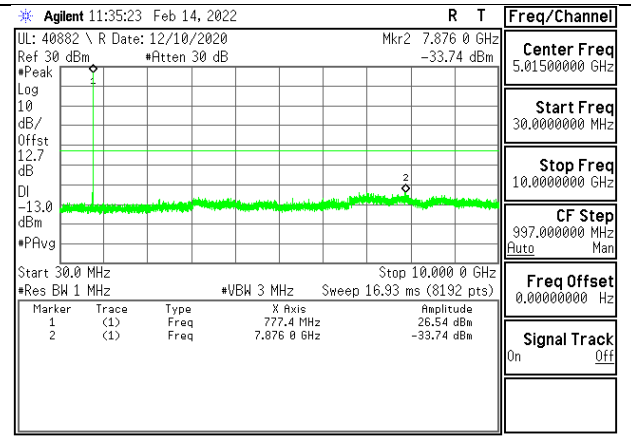
LTE13 5MHz 16QAM MID Ch RB1-0



LTE13 5MHz 16QAM HIGH Ch RB1-0



LTE13 10MHz QPSK MID Ch RB1-0

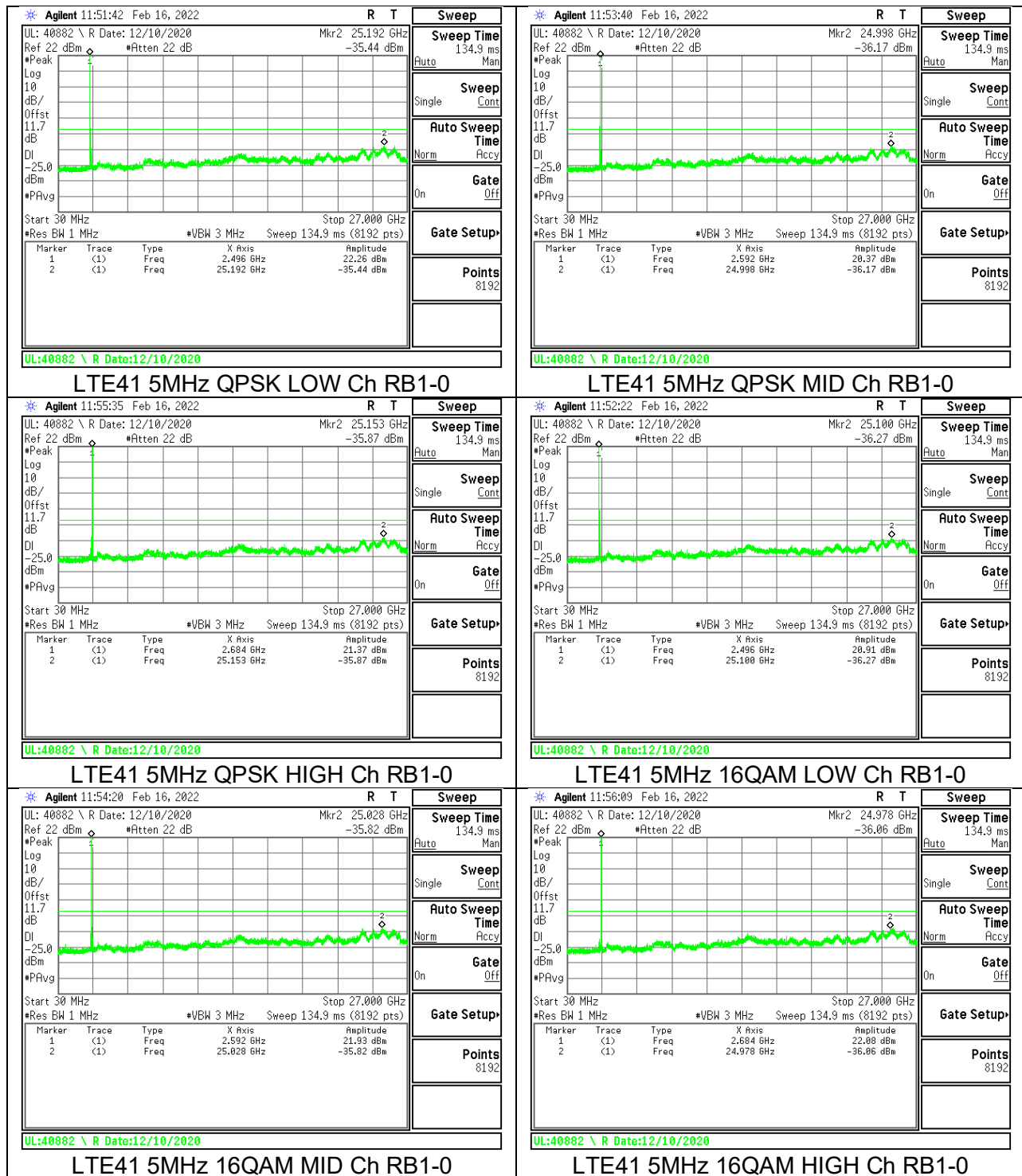


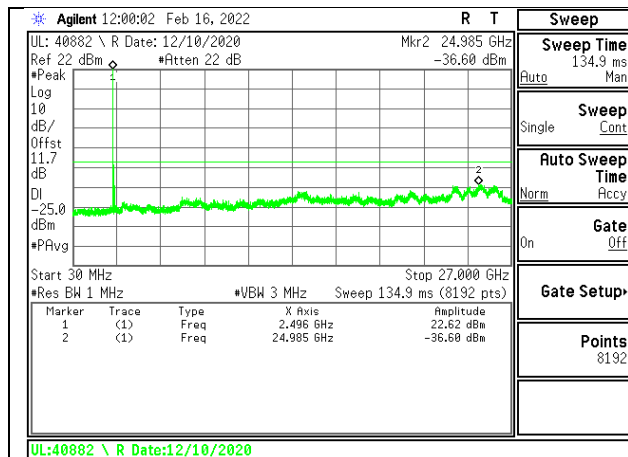
LTE13 10MHz 16QAM MID Ch RB1-0

9.3.8.LTE41

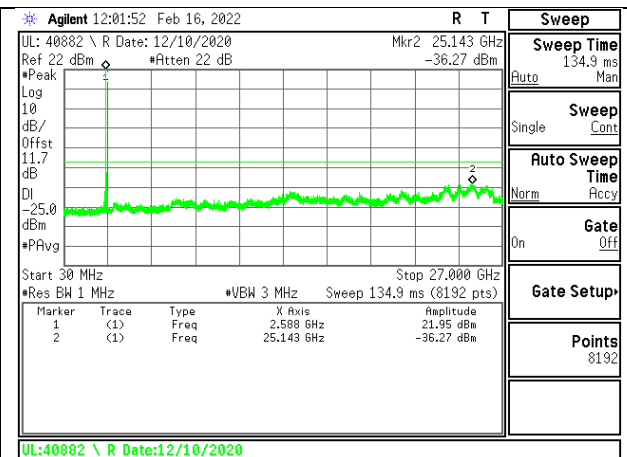
FCC: \$27.53 (m)

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

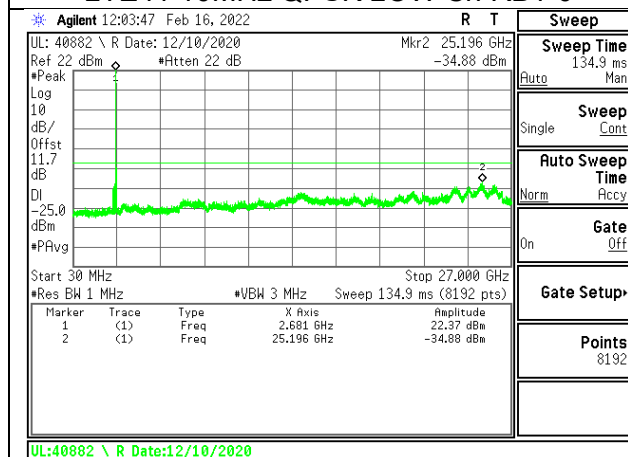




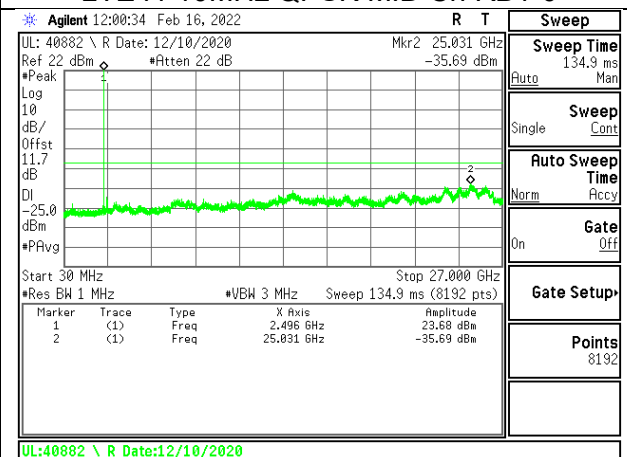
LTE41 10MHz QPSK LOW Ch RB1-0



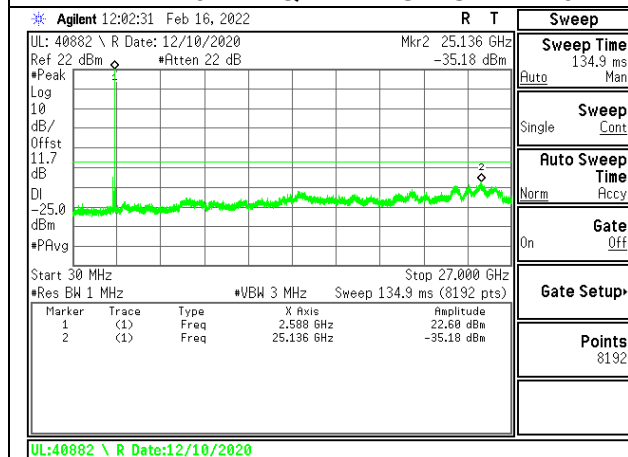
LTE41 10MHz QPSK MID Ch RB1-0



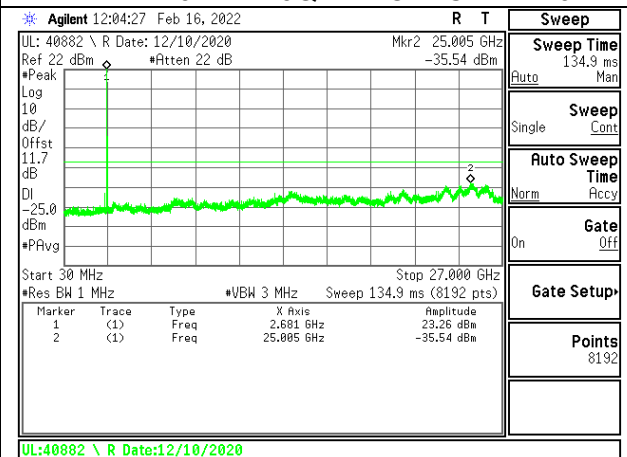
LTE41 10MHz QPSK HIGH Ch RB1-0



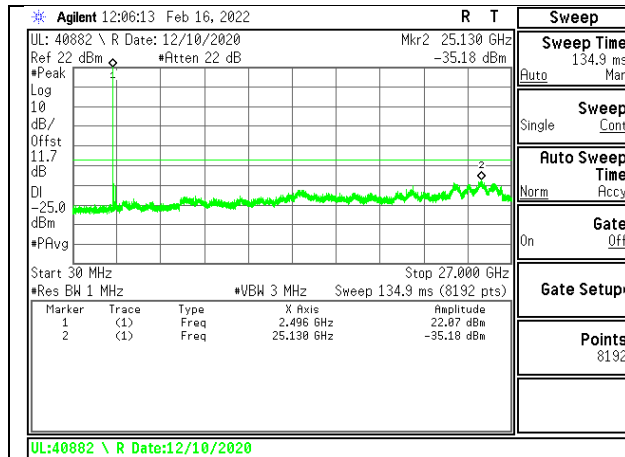
LTE41 10MHz 16QAM LOW Ch RB1-0



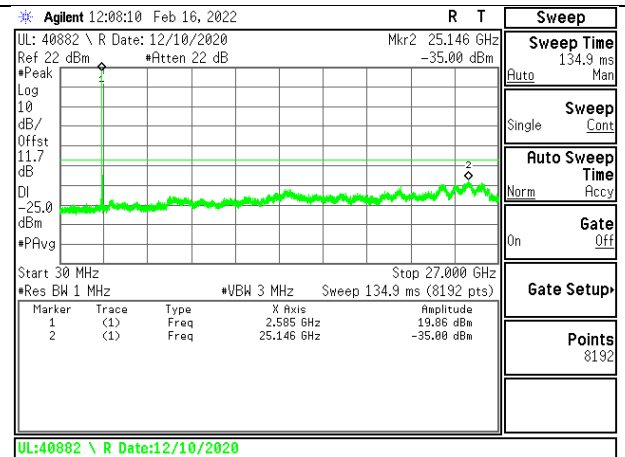
LTE41 10MHz 16QAM MID Ch RB1-0



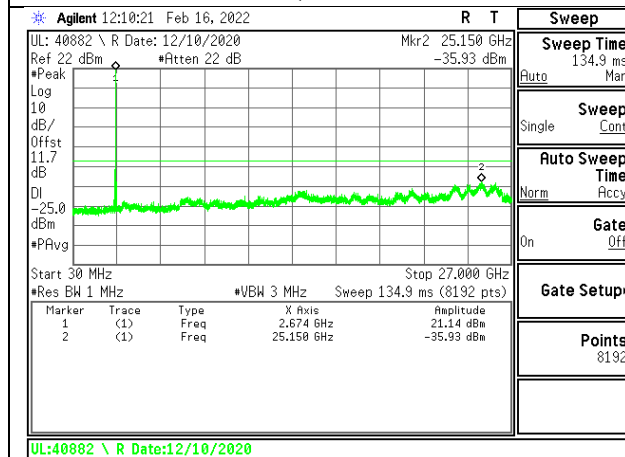
LTE41 10MHz 16QAM HIGH Ch RB1-0



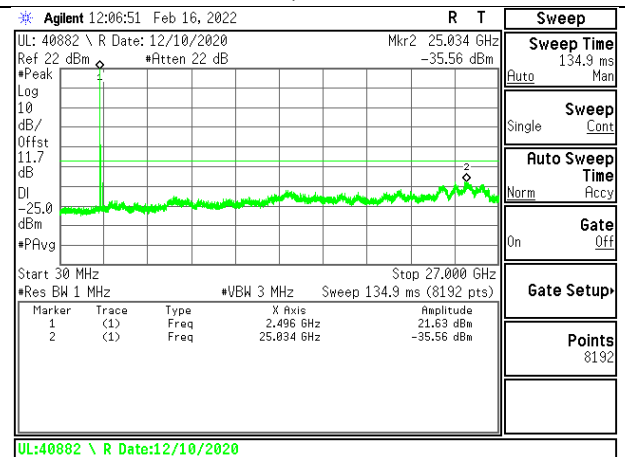
LTE41 15MHz QPSK LOW Ch RB1-0



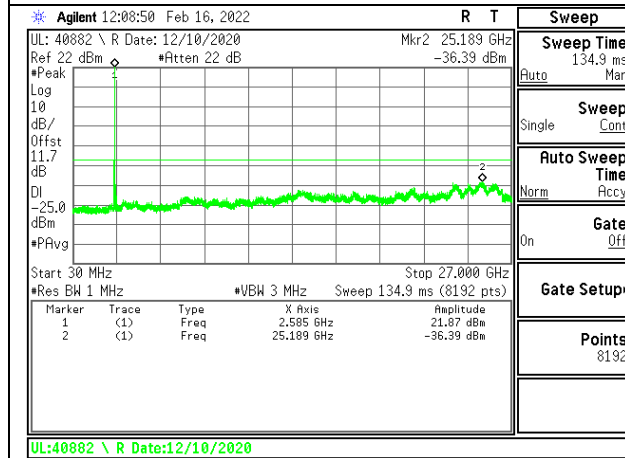
LTE41 15MHz QPSK MID Ch RB1-0



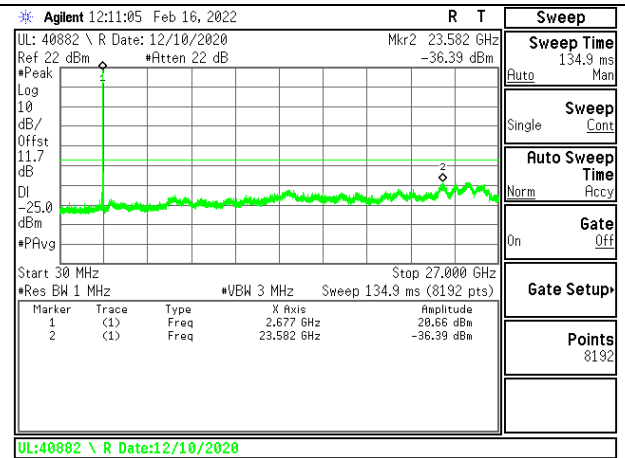
LTE41 15MHz QPSK HIGH Ch RB1-0



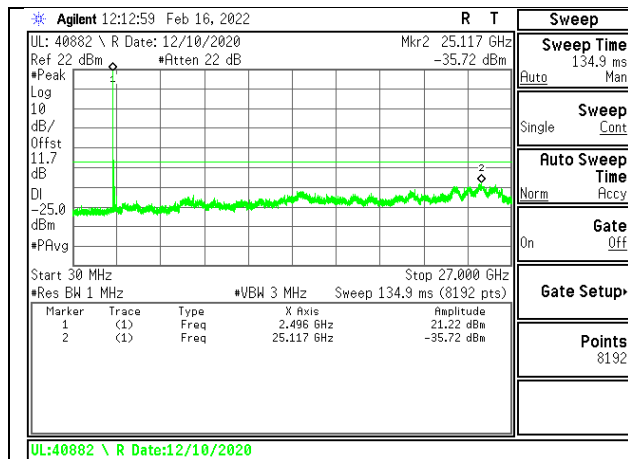
LTE41 15MHz 16QAM LOW Ch RB1-0



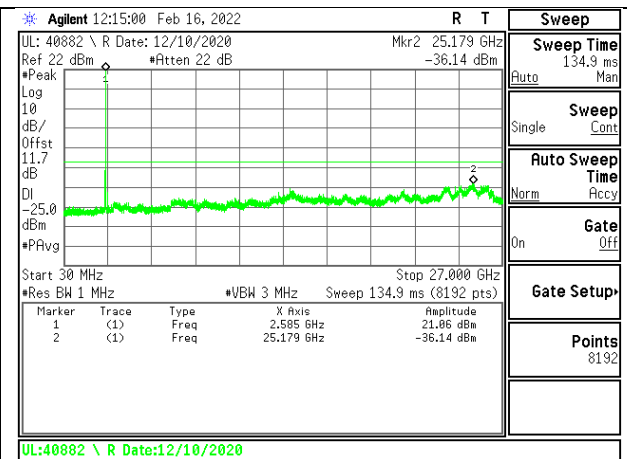
LTE41 15MHz 16QAM MID Ch RB1-0



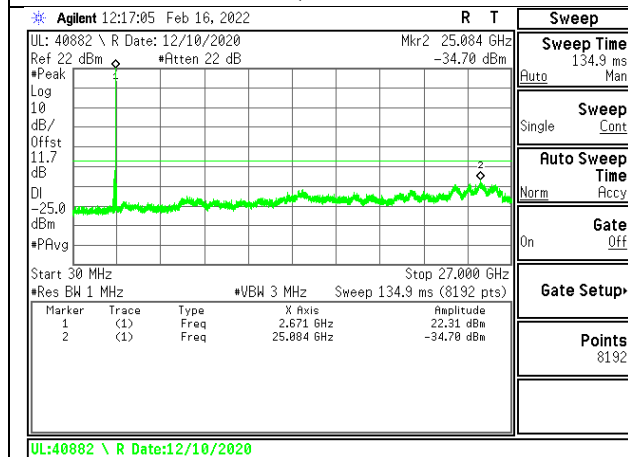
LTE41 15MHz 16QAM HIGH Ch RB1-0



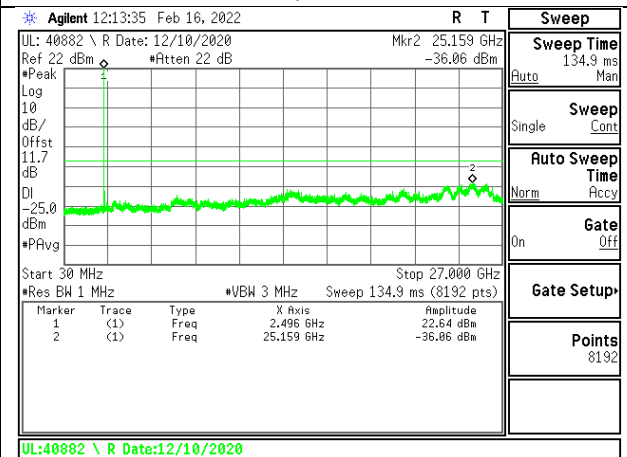
LTE41 20MHz QPSK LOW Ch RB1-0



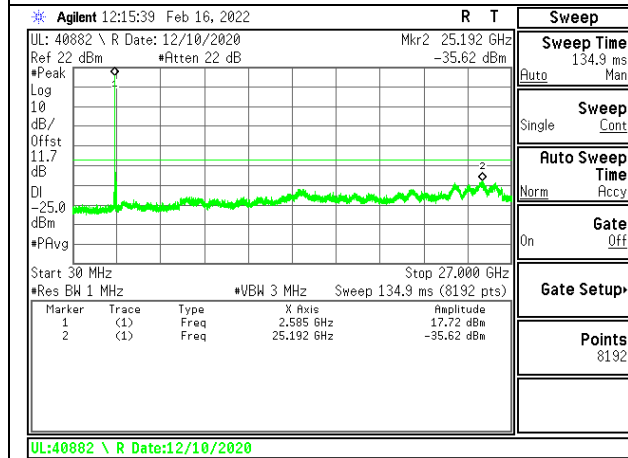
LTE41 20MHz QPSK MID Ch RB1-0



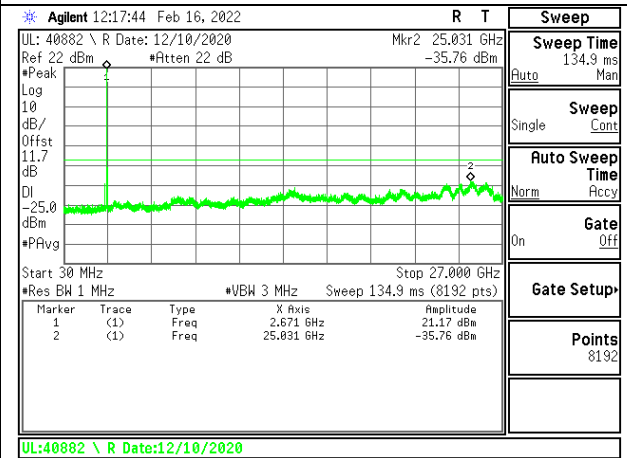
LTE41 20MHz QPSK HIGH Ch RB1-0



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

RULE PART(S)

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

LIMITS

FCC §22.355, §90.213

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

FCC §24.235 & §27.54

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30°C to $+50^{\circ}\text{C}$
- Voltage = Normal, End Point

Normal, 3.89VDC

End Point, 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 $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

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

RESULTS

See the following pages.

9.4.1.GSM

Test Engineer ID:	40882	Test Date:	2/17/2022
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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	824.0002	849.0000				
Extreme (50C)		824.0002	849.0000	10.3	10.0	0.02	0.02
Extreme (40C)		824.0002	849.0000	11.5	11.4	0.03	0.03
Extreme (30C)		824.0002	849.0000	13.5	12.7	0.03	0.03
Extreme (10C)		824.0002	849.0000	15.4	13.0	0.04	0.03
Extreme (0C)		824.0002	849.0000	14.4	14.6	0.03	0.03
Extreme (-10C)		824.0002	849.0000	15.7	13.9	0.04	0.03
Extreme (-20C)		824.0002	849.0000	22.3	25.5	0.05	0.06
Extreme (-30C)		824.0002	849.0000	24.4	23.6	0.06	0.06
20C		End Point	824.0002	849.0000	14.3	11.3	0.03

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	1850.0050	1909.0160				
Extreme (50C)		1850.0050	1909.0160	15.6	17.3	0.02	0.02
Extreme (40C)		1850.0050	1909.0160	14.4	12.4	0.02	0.01
Extreme (30C)		1850.0050	1909.0160	12.6	13.5	0.01	0.01
Extreme (10C)		1850.0050	1909.0160	12.5	13.3	0.01	0.01
Extreme (0C)		1850.0050	1909.0160	14.1	12.1	0.02	0.01
Extreme (-10C)		1850.0050	1909.0160	13.6	13.6	0.01	0.01
Extreme (-20C)		1850.0050	1909.0160	20.1	23.2	0.02	0.02
Extreme (-30C)		1850.0050	1909.0160	16.3	17.7	0.02	0.02
20C		End Point	1850.0050	1909.0160	13.6	14.4	0.01

9.4.2.WCDMA

Test Engineer ID:	40882	Test Date:	2022-02-17 – 2022-02-22
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BAND 5

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	824.0130	848.9590				
Extreme (50C)		824.0130	848.9590	12.0	14.2	0.03	0.03
Extreme (40C)		824.0130	848.9590	12.4	12.1	0.03	0.03
Extreme (30C)		824.0130	848.9590	17.5	14.3	0.04	0.03
Extreme (10C)		824.0130	848.9590	16.7	16.3	0.04	0.04
Extreme (0C)		824.0130	848.9590	21.1	20.3	0.05	0.05
Extreme (-10C)		824.0130	848.9590	20.6	21.4	0.05	0.05
Extreme (-20C)		824.0130	848.9590	24.2	24.7	0.06	0.06
Extreme (-30C)		824.0130	848.9590	32.1	26.5	0.08	0.06
20C		End Point	824.0130	848.9590	13.3	13.6	0.03

9.4.3.LTE4

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:	40882	Test Date:	2022-02-17 – 2022-02-22
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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 (MHz)	F high @ -13dBm (MHz)				
Temperature	Voltage						
Normal (20C)	Normal	1710.0780	1754.9860				
Extreme (50C)		1710.0780	1754.9860	13.4	13.5	0.02	0.02
Extreme (40C)		1710.0780	1754.9860	16.6	14.4	0.02	0.02
Extreme (30C)		1710.0780	1754.9860	16.3	16.3	0.02	0.02
Extreme (10C)		1710.0780	1754.9860	12.9	13.1	0.02	0.01
Extreme (0C)		1710.0780	1754.9860	14.4	13.6	0.02	0.02
Extreme (-10C)		1710.0780	1754.9860	20.7	22.1	0.02	0.03
Extreme (-20C)		1710.0780	1754.9860	20.6	23.1	0.02	0.03
Extreme (-30C)		1710.0780	1754.9860	32.2	29.6	0.04	0.03
20C		End Point	1710.0780	1754.9860	13.0	12.1	0.02

9.4.4.LTE5

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:	40882	Test Date:	2022-02-17 – 2022-02-22
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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	824.0160	848.9670				
Extreme (50C)		824.0160	848.9670	14.2	14.3	0.03	0.03
Extreme (40C)		824.0160	848.9670	12.4	13.3	0.03	0.03
Extreme (30C)		824.0160	848.9670	22.4	19.6	0.05	0.05
Extreme (10C)		824.0160	848.9670	14.4	14.6	0.03	0.03
Extreme (0C)		824.0160	848.9670	15.9	13.7	0.04	0.03
Extreme (-10C)		824.0160	848.9670	14.6	23.1	0.04	0.05
Extreme (-20C)		824.0160	848.9670	15.7	19.6	0.04	0.05
Extreme (-30C)		824.0160	848.9670	23.5	22.4	0.06	0.05
20C		End Point	824.0160	848.9670	23.5	25.6	0.06

9.4.5.LTE12

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:	40882	Test Date:	2022-02-17 – 2022-02-22
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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	699.0140	715.9670				
Extreme (50C)		699.0140	715.9670	16.2	12.7	0.05	0.04
Extreme (40C)		699.0140	715.9670	15.7	14.7	0.04	0.04
Extreme (30C)		699.0140	715.9670	21.6	21.7	0.06	0.06
Extreme (10C)		699.0140	715.9670	22.3	23.5	0.06	0.07
Extreme (0C)		699.0140	715.9670	25.3	25.4	0.07	0.07
Extreme (-10C)		699.0140	715.9670	24.2	22.6	0.07	0.06
Extreme (-20C)		699.0140	715.9670	33.7	31.0	0.10	0.09
Extreme (-30C)		699.0140	715.9670	42.6	34.2	0.12	0.10
20C		End Point	699.0140	715.9670	23.3	21.0	0.07

9.4.6.LTE13

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:	40882	Test Date:	2022-02-17 – 2022-02-22
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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	777.0360	786.8960				
Extreme (50C)		777.0360	786.8960	9.6	12.2	0.02	0.03
Extreme (40C)		777.0360	786.8960	13.7	13.6	0.04	0.03
Extreme (30C)		777.0360	786.8960	11.7	11.7	0.03	0.03
Extreme (10C)		777.0360	786.8960	16.4	15.2	0.04	0.04
Extreme (0C)		777.0360	786.8960	16.4	16.0	0.04	0.04
Extreme (-10C)		777.0360	786.8960	14.3	12.3	0.04	0.03
Extreme (-20C)		777.0360	786.8960	23.5	29.4	0.06	0.07
Extreme (-30C)		777.0360	786.8960	14.4	11.0	0.04	0.03
20C		End Point	777.0360	786.8960	16.3	13.3	0.04

9.4.7.LTE41

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:	40882	Test Date:	2022-02-17 – 2022-02-22
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QPSK (20MHz)

Limit		2496	2690	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	2497.0120	2689.9190				
Extreme (50C)		2497.0120	2689.9190	13.4	12.0	0.01	0.01
Extreme (40C)		2497.0120	2689.9190	14.1	12.4	0.01	0.01
Extreme (30C)		2497.0120	2689.9190	18.1	19.6	0.01	0.01
Extreme (10C)		2497.0120	2689.9190	12.3	12.3	0.01	0.01
Extreme (0C)		2497.0120	2689.9190	14.4	11.7	0.01	0.01
Extreme (-10C)		2497.0120	2689.9190	11.8	11.3	0.01	0.01
Extreme (-20C)		2497.0120	2689.9190	16.8	15.4	0.01	0.01
Extreme (-30C)		2497.0120	2689.9190	4.7	12.2	0.00	0.01
20C		End Point	2497.0120	2689.9190	12.2	14.4	0.01

9.5. PEAK TO AVERAGE RATIO

LIMITS

FCC 27.50(d)

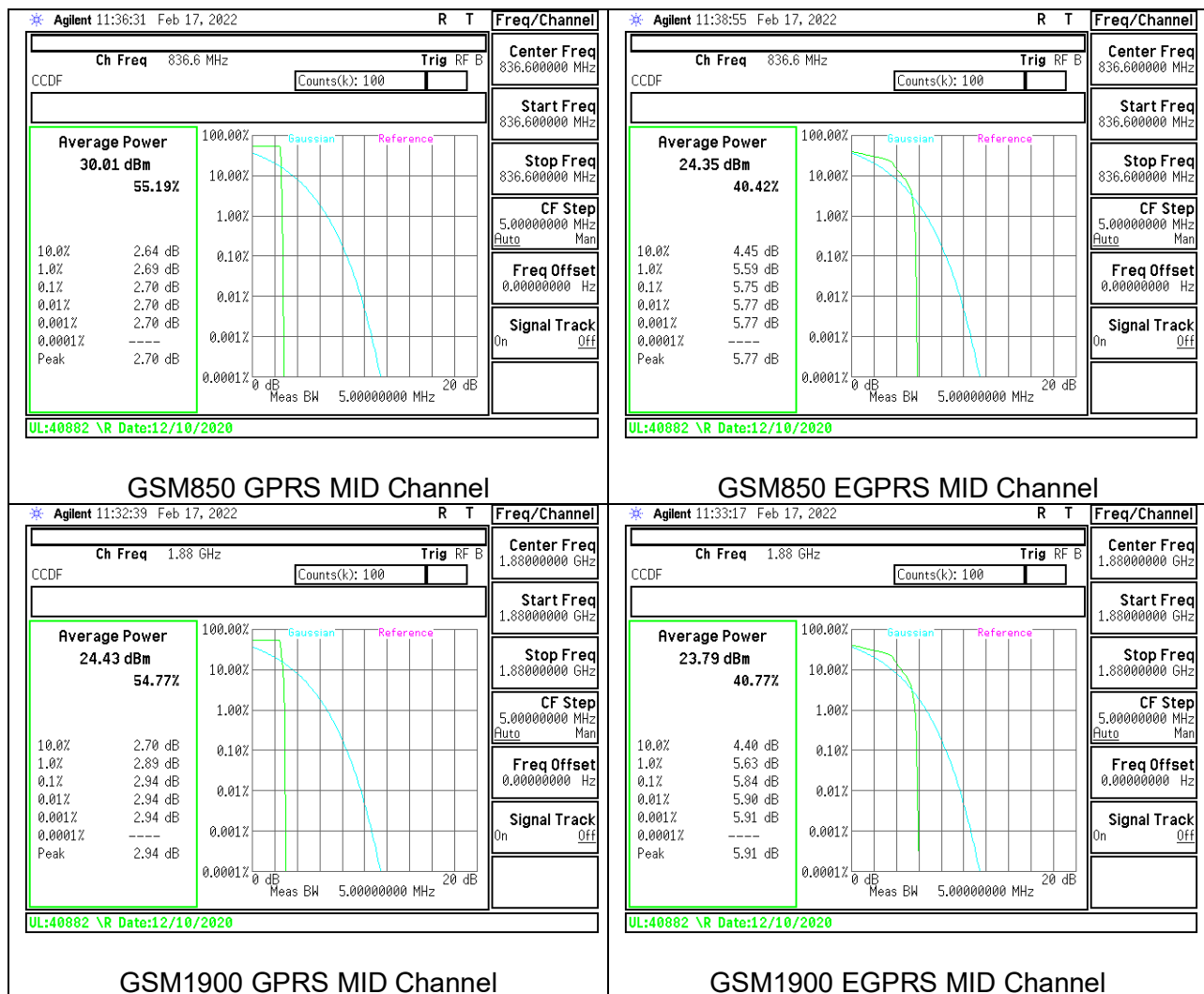
In addition, the peak to average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

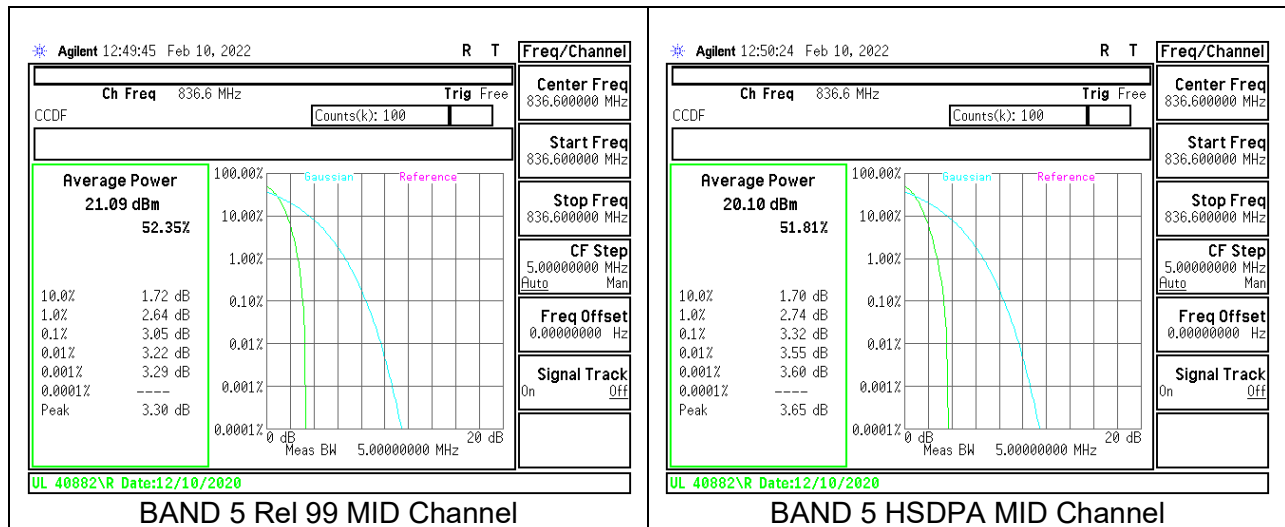
The results from all CCDF plots are passed with 13dB peak-to-average power ratio criteria.

Test Engineer ID:	40882	Test Date:	2022-02-10/2022-02-11/2022-02-17
	39005		2022-03-15

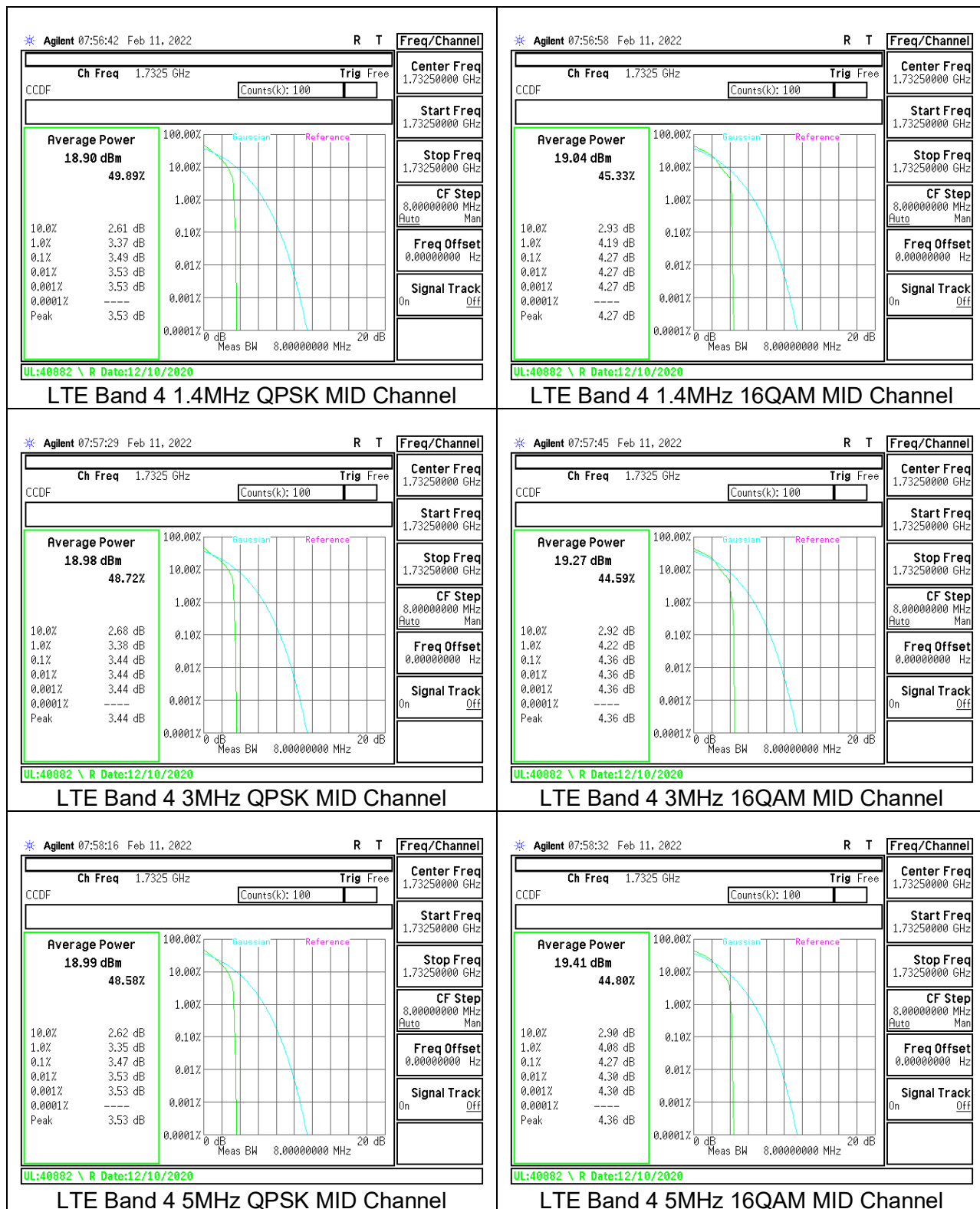
9.5.1.GSM



9.5.2.WCDMA



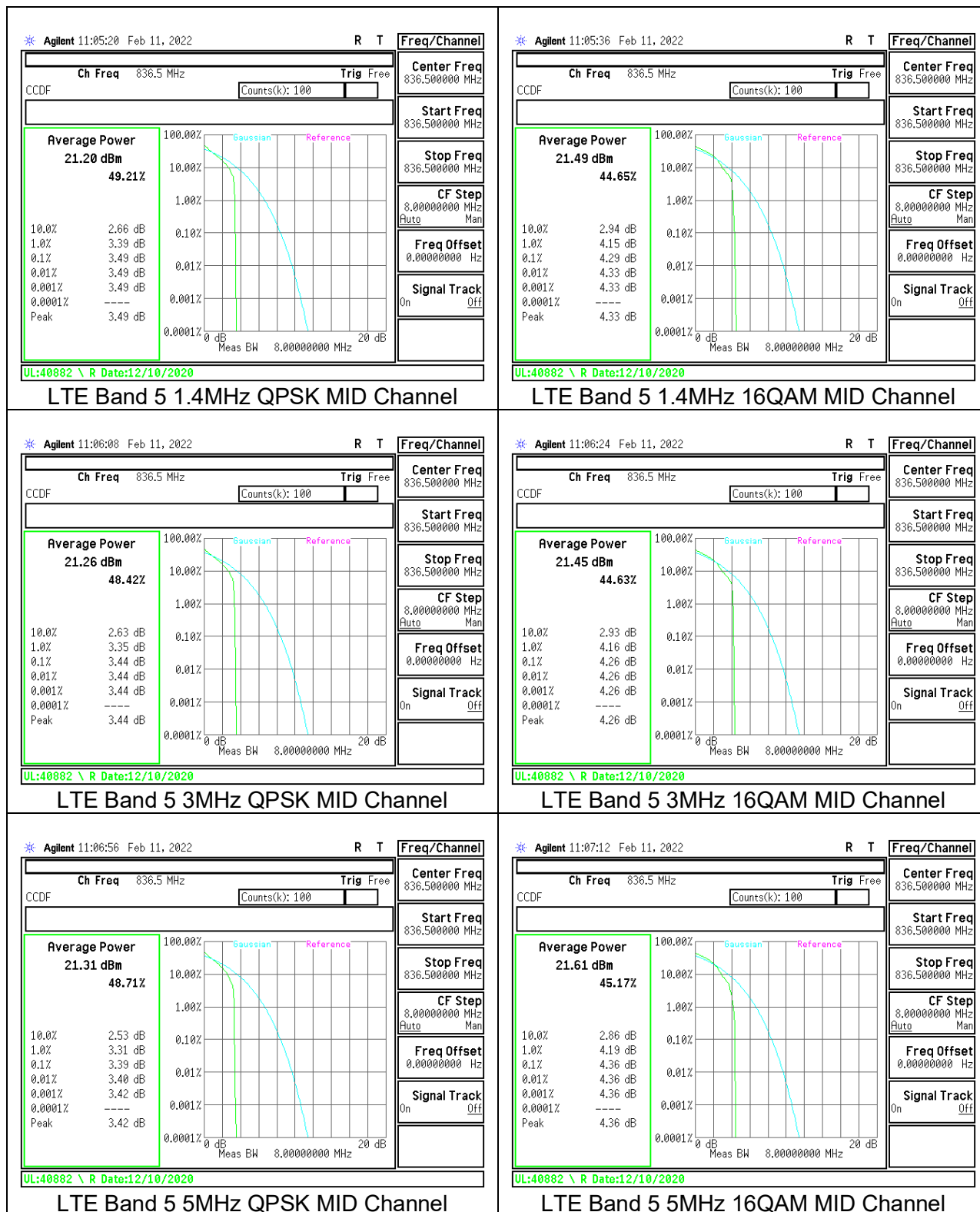
9.5.3.LTE4



LTE Band and BW:	QPSK Mid Channel:	16QAM Mid Channel:
Band 4 10MHz	24.41dBm – 19.7dBm = 4.71dB	25.40dBm – 19.7dBm = 5.7dB
Band 4 15MHz	24.36dBm – 19.6dBm = 4.76dB	25.53dBm – 19.9dBm = 5.63dB
Band 4 20MHz	24.35dBm – 19.6dBm = 4.75dB	25.12dBm – 20.0dBm = 5.12dB

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.LTE5



LTE Band and BW:	QPSK Mid Channel:	16QAM Mid Channel:
Band 5 10MHz	26.21dBm – 21.6dBm = 4.61dB	27.69dBm – 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

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53.

LIMITS

FCC: §22.917(a), §24.238(a), §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.

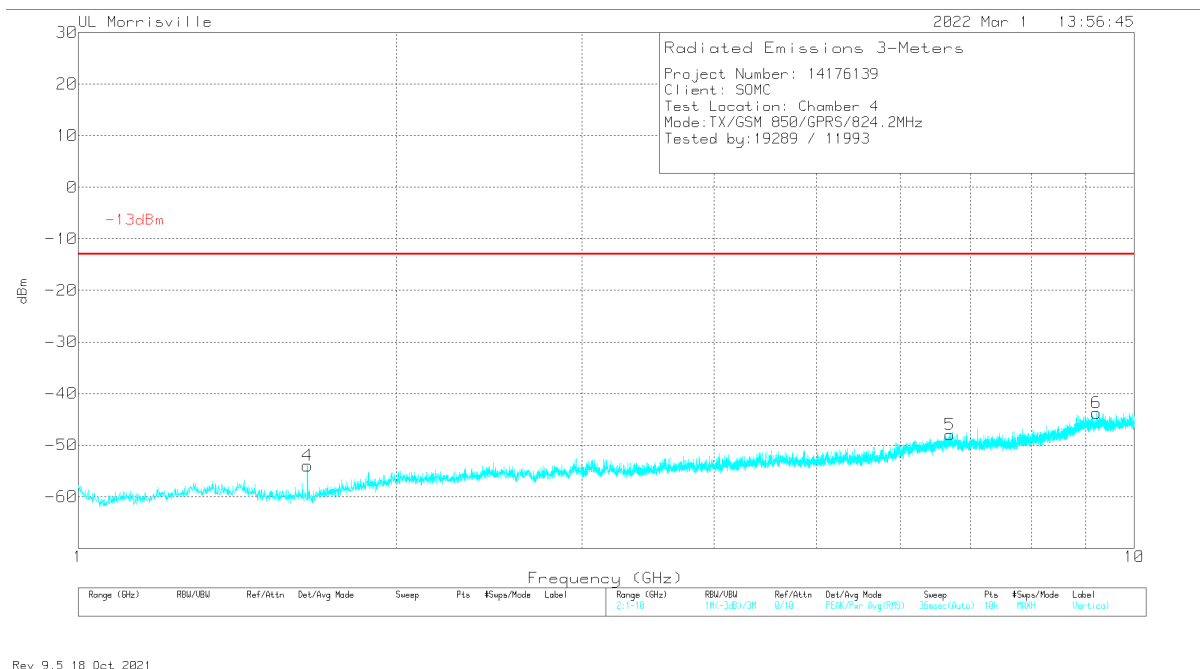
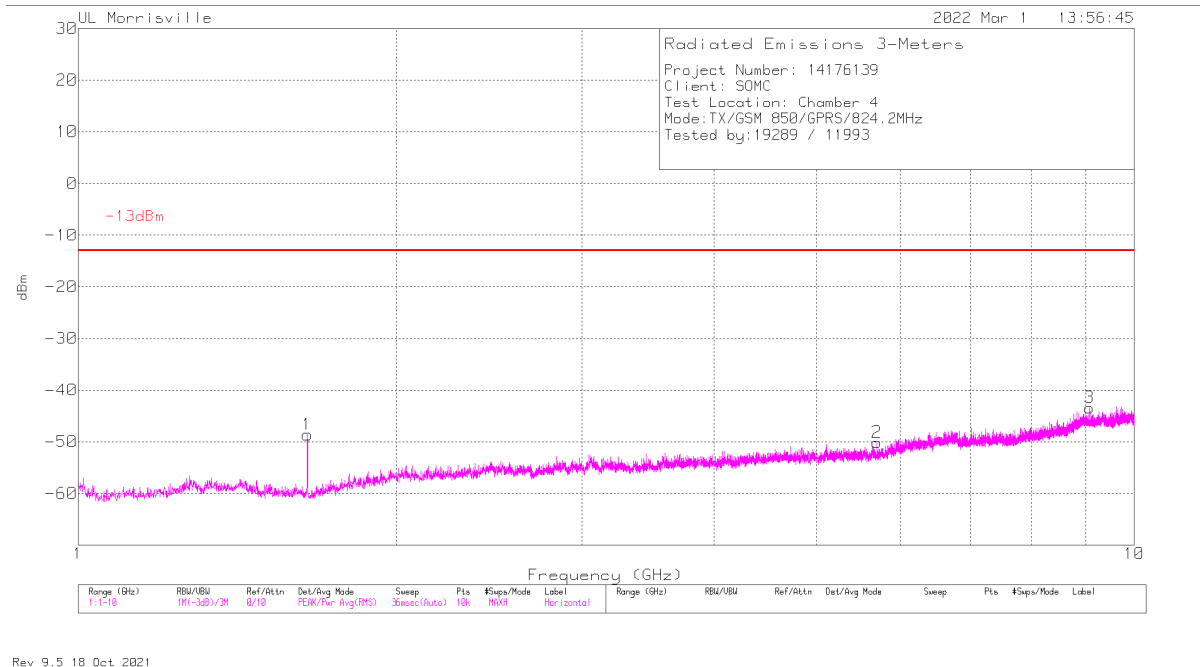
TEST PROCEDURE

KDB 971168 D01 v02r02/D02 v01

RESULTS

10.1.1. GSM GSM850

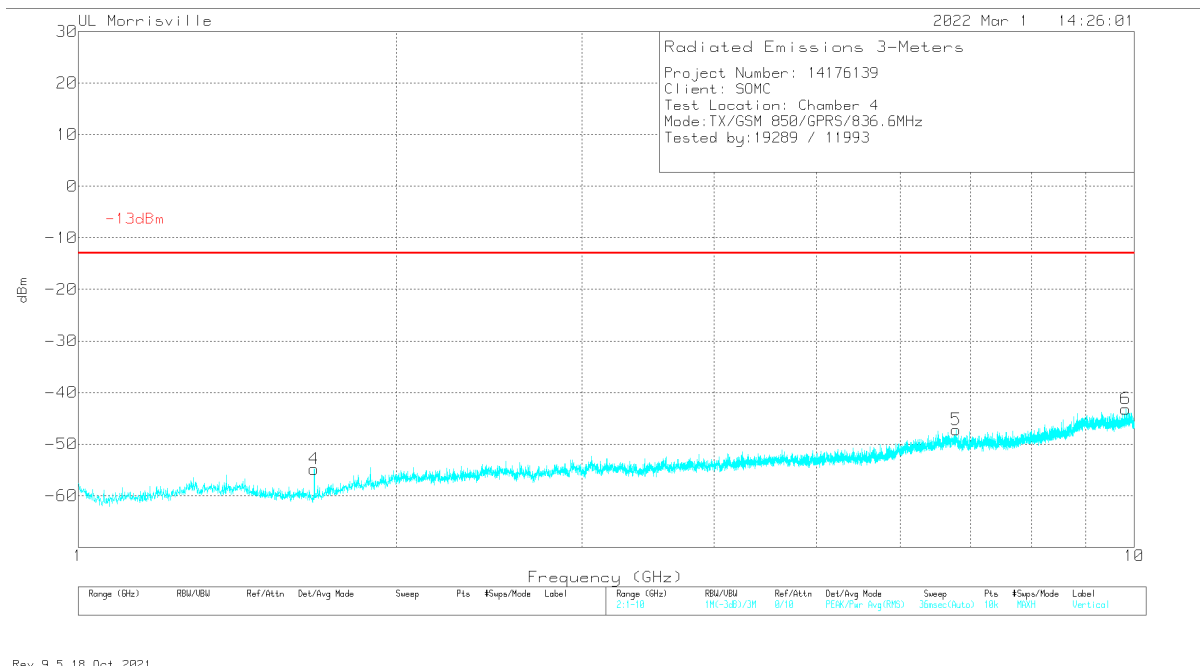
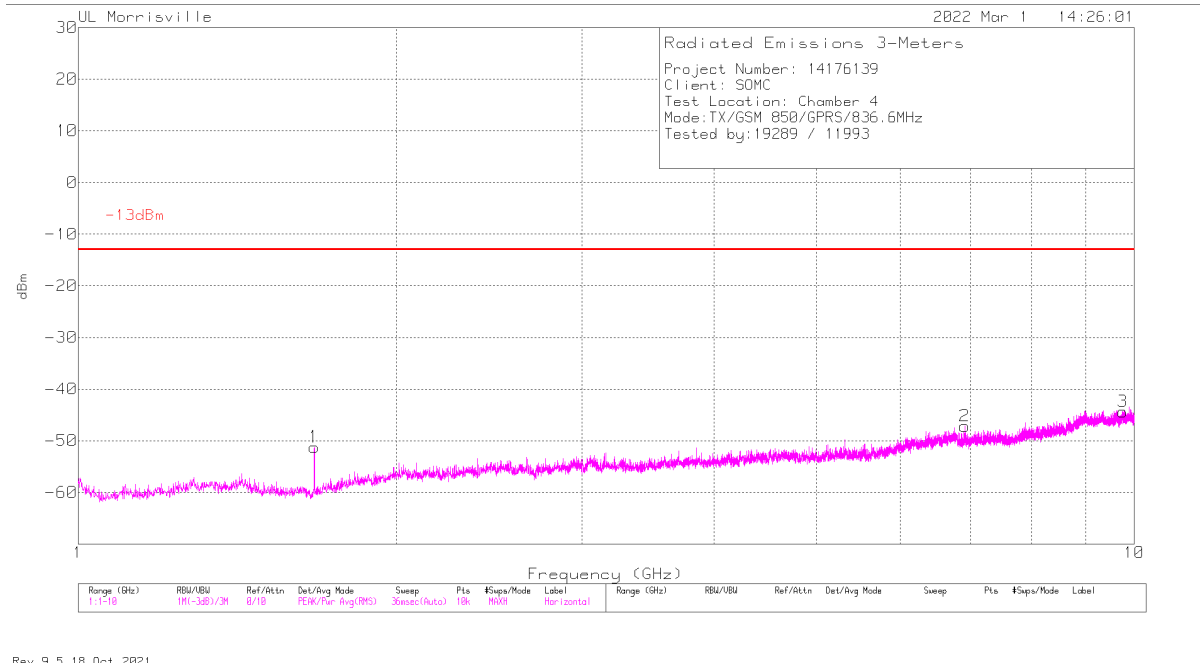
GPRS Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.648	-52.22	Pk	27.9	-36.6	.5	11.8	-48.62	-13	-35.62	0-360	100	H
4	1.648	-57.58	Pk	27.9	-36.6	.5	11.8	-53.98	-13	-40.98	0-360	100	V
2	5.707	-64.95	Pk	34.5	-31.9	.4	11.8	-50.15	-13	-37.15	0-360	100	H
5	6.6898	-66.28	Pk	35.5	-29.6	.6	11.8	-47.98	-13	-34.98	0-360	200	V
3	9.0703	-65	Pk	36	-26.9	.7	11.8	-43.4	-13	-30.4	0-360	200	H
6	9.2116	-65.44	Pk	36.2	-27	.7	11.8	-43.74	-13	-30.74	0-360	100	V

Pk - Peak detector

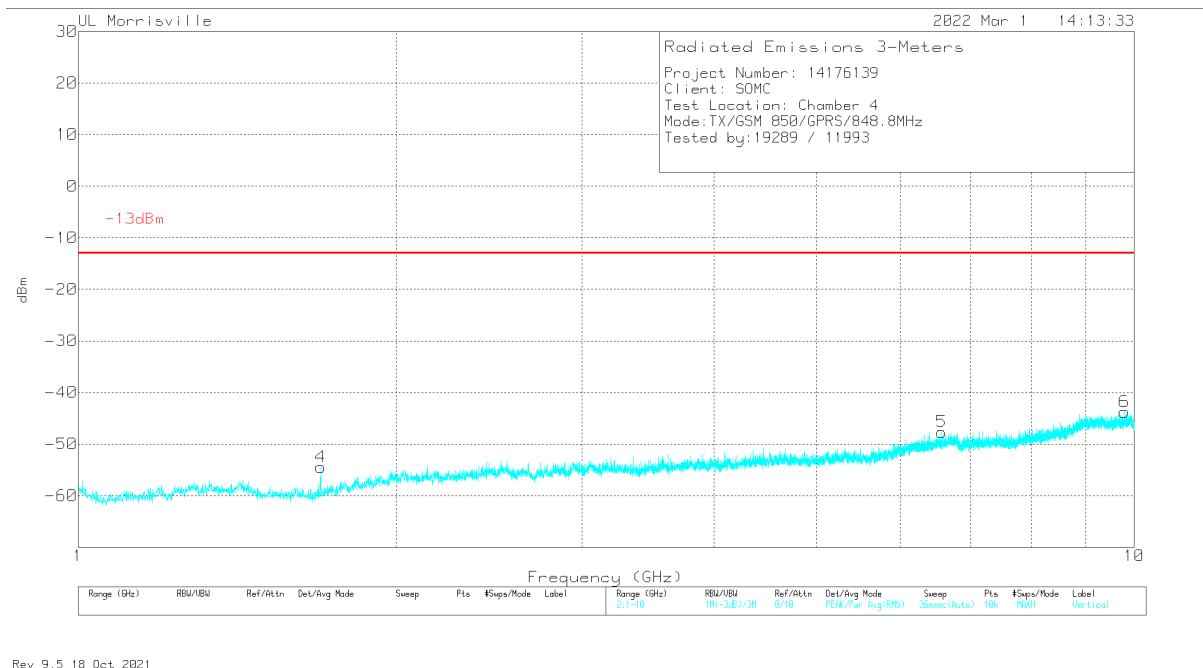
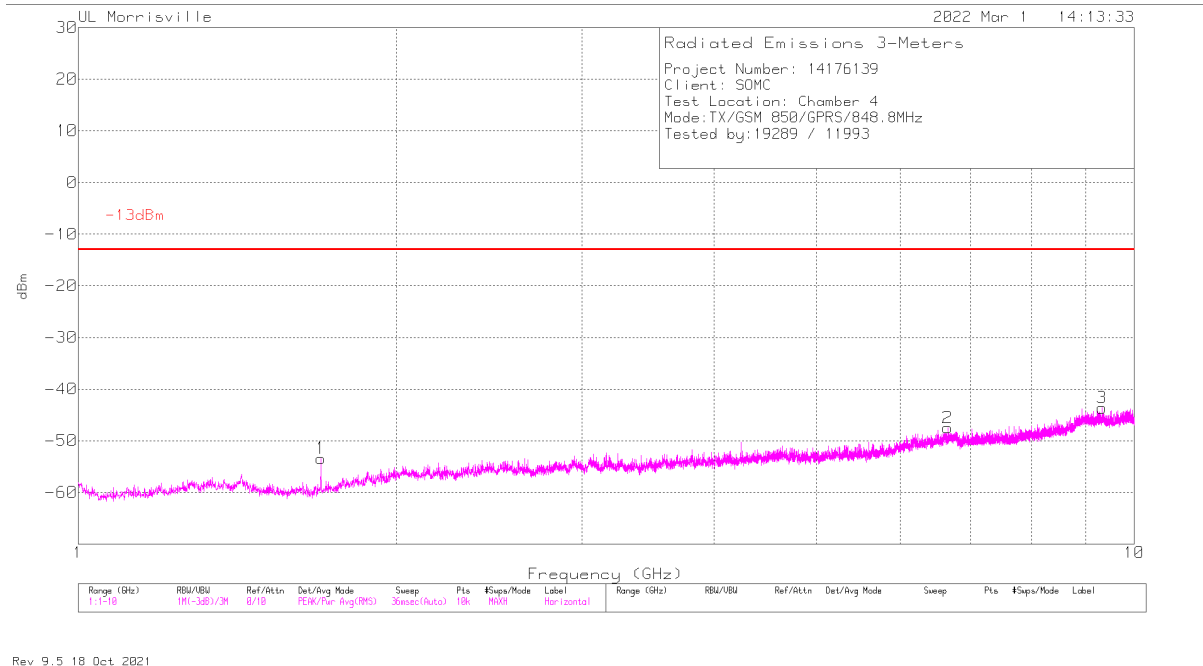
GPRS Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.6723	-58.54	Pk	28	-36.6	.5	11.8	-54.84	-13	-41.84	0-360	200	V
1	1.6732	-54.93	Pk	28	-36.6	.5	11.8	-51.23	-13	-38.23	0-360	100	H
5	6.7798	-65.51	Pk	35.5	-29.7	.7	11.8	-47.21	-13	-34.21	0-360	200	V
2	6.9103	-65.76	Pk	35.6	-29.4	.6	11.8	-47.16	-13	-34.16	0-360	100	H
3	9.7579	-66.67	Pk	36.7	-27.1	.9	11.8	-44.37	-13	-31.37	0-360	100	H
6	9.8164	-65.37	Pk	36.8	-27	.6	11.8	-43.17	-13	-30.17	0-360	300	V

Pk - Peak detector

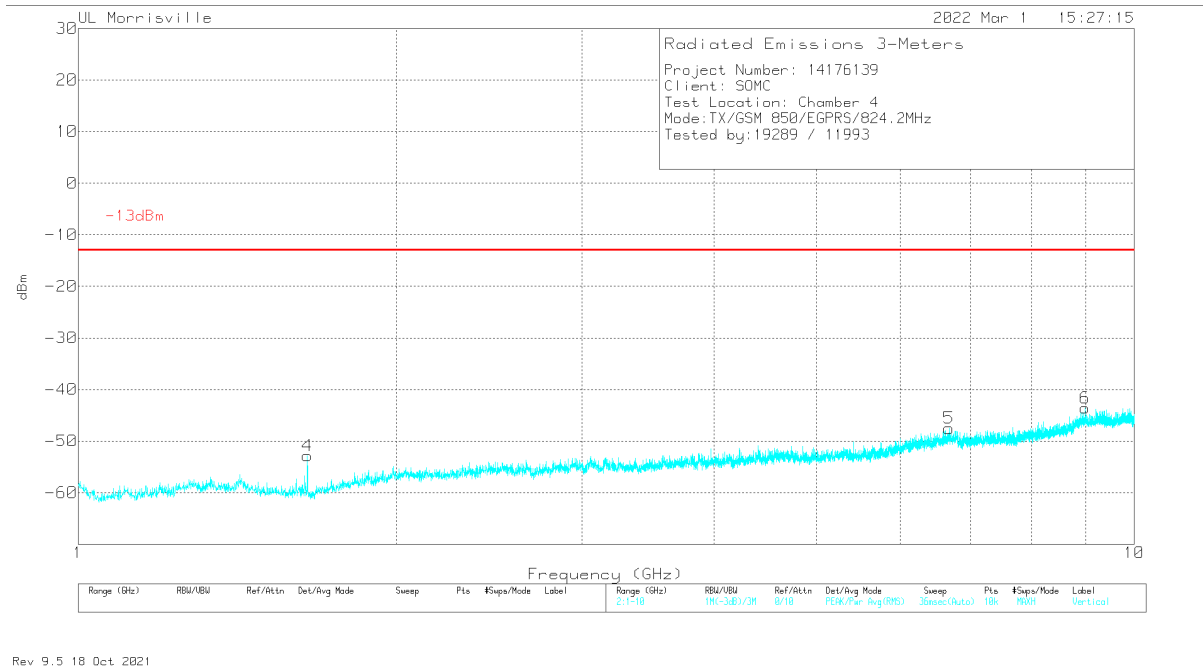
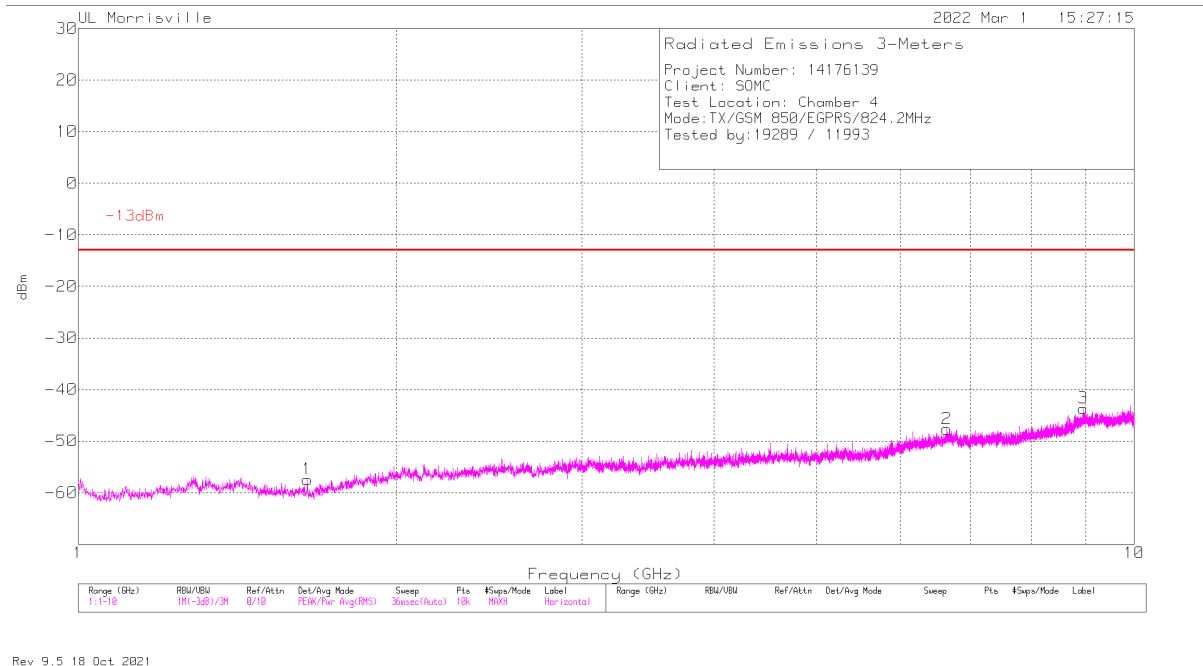
GPRS High Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.6966	-58.46	Pk	28.4	-36.7	.5	11.8	-54.46	-13	-41.46	0-360	200	V
1	1.6975	-57.41	Pk	28.4	-36.7	.5	11.8	-53.41	-13	-40.41	0-360	100	H
5	6.571	-65.66	Pk	35.4	-29.8	.6	11.8	-47.66	-13	-34.66	0-360	300	V
2	6.6583	-65.61	Pk	35.5	-29.8	.6	11.8	-47.51	-13	-34.51	0-360	100	H
3	9.3277	-66.02	Pk	36.4	-26.5	.7	11.8	-43.62	-13	-30.62	0-360	200	H
6	9.7885	-66.24	Pk	36.8	-27	.9	11.8	-43.74	-13	-30.74	0-360	300	V

Pk - Peak detector

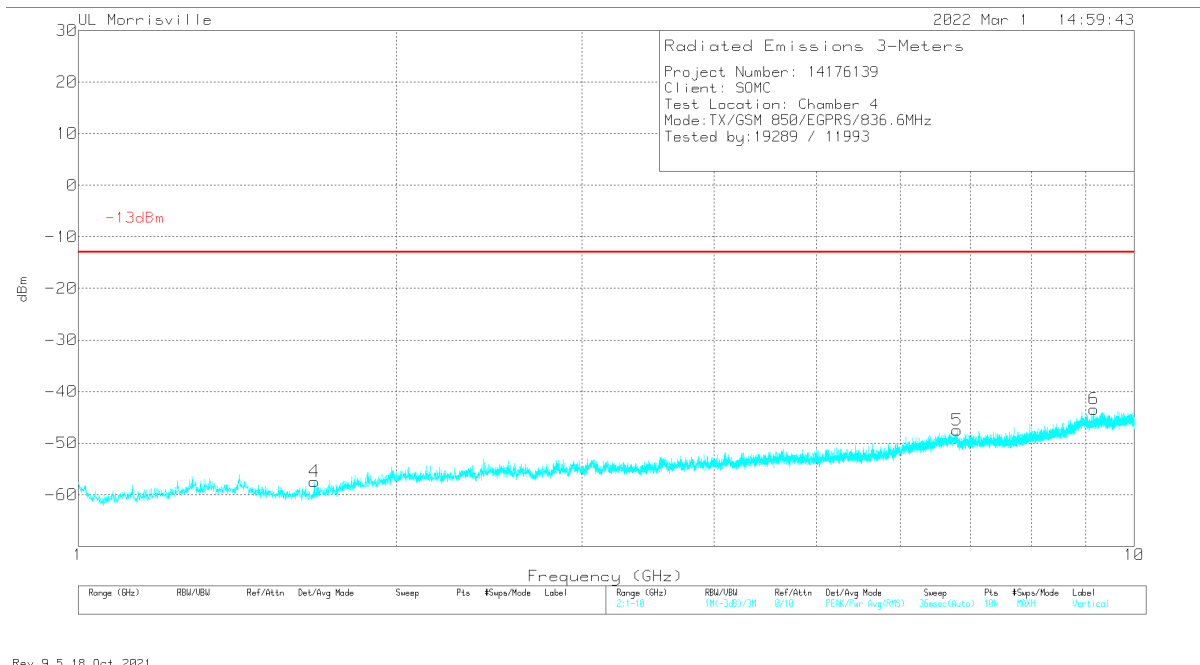
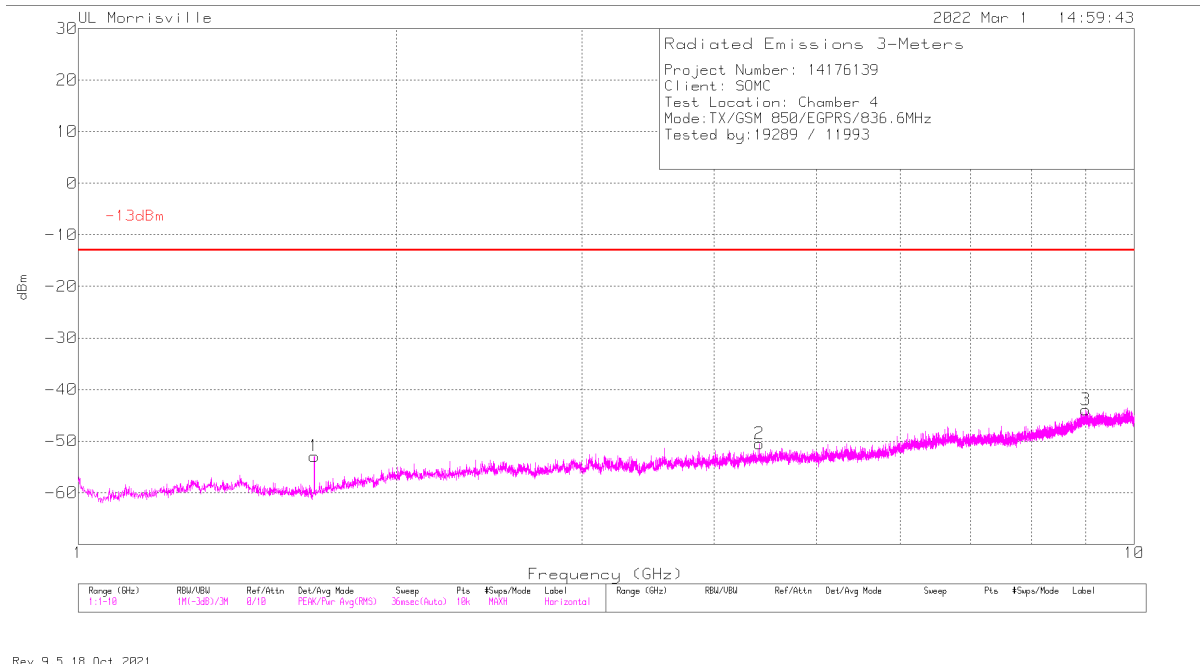
EGPRS Mode Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.648	-61.02	Pk	27.9	-36.6	.5	11.8	-57.42	-13	-44.42	0-360	200	H
4	1.648	-56.47	Pk	27.9	-36.6	.5	11.8	-52.87	-13	-39.87	0-360	300	V
2	6.643	-65.75	Pk	35.5	-29.9	.7	11.8	-47.65	-13	-34.65	0-360	100	H
5	6.6763	-65.82	Pk	35.5	-29.6	.6	11.8	-47.52	-13	-34.52	0-360	200	V
3	8.9506	-65.15	Pk	35.9	-26.8	.6	11.8	-43.65	-13	-30.65	0-360	100	H
6	8.9875	-65.31	Pk	35.9	-26.5	.5	11.8	-43.61	-13	-30.61	0-360	200	V

Pk - Peak detector

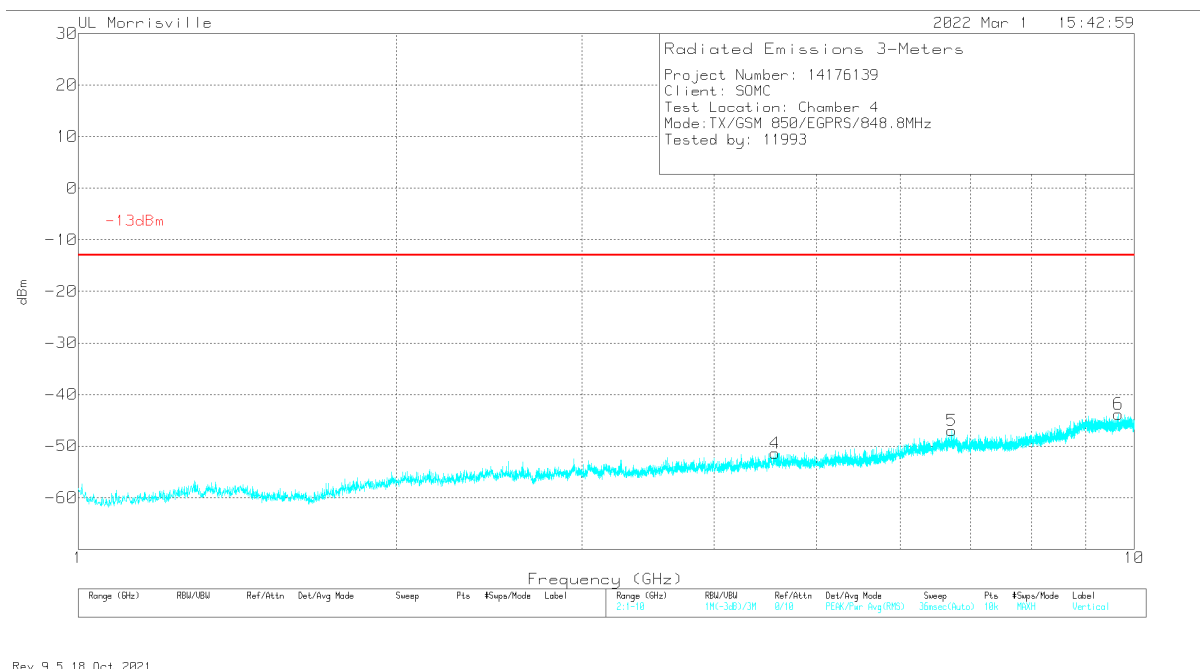
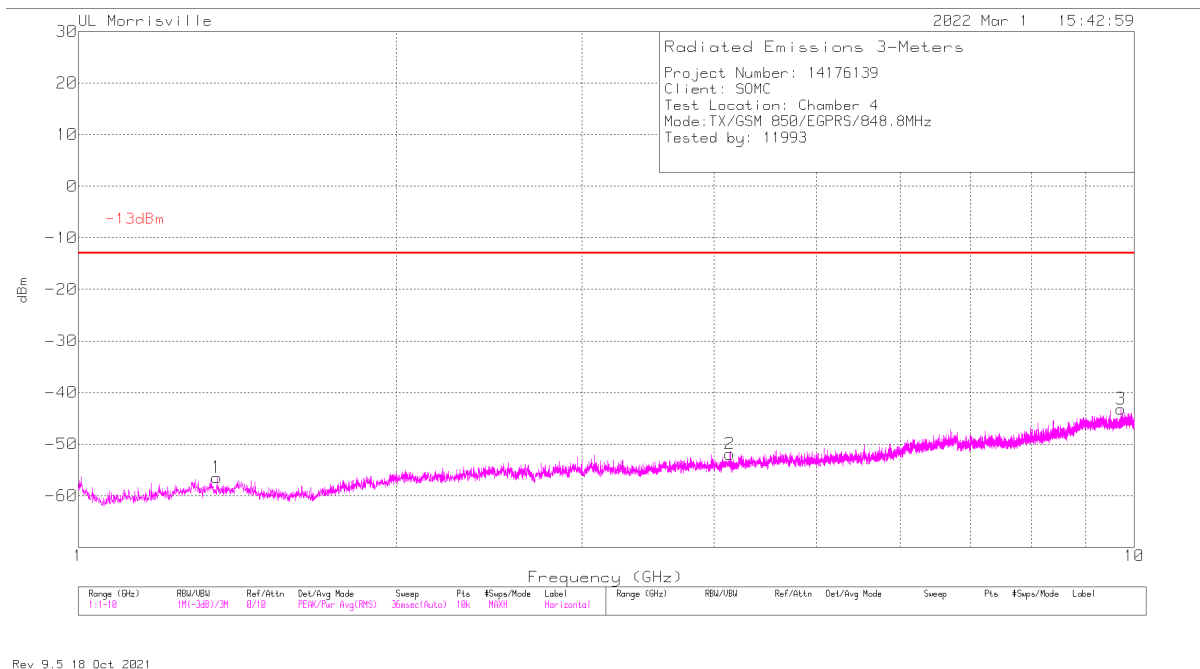
EGPRS Mode Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.6732	-56.61	Pk	28	-36.6	.5	11.8	-52.91	-13	-39.91	0-360	200	H
4	1.6732	-61.15	Pk	28	-36.6	.5	11.8	-57.45	-13	-44.45	0-360	200	V
2	4.4155	-63.38	Pk	33.6	-32.8	.3	11.8	-50.48	-13	-37.48	0-360	100	H
5	6.7969	-65.9	Pk	35.4	-29.5	.7	11.8	-47.5	-13	-34.5	0-360	300	V
3	8.9974	-65.62	Pk	35.9	-26.5	.5	11.8	-43.92	-13	-30.92	0-360	100	H
6	9.154	-65.01	Pk	36.2	-26.9	.5	11.8	-43.41	-13	-30.41	0-360	300	V

Pk - Peak detector

EGPSR Mode High Channel

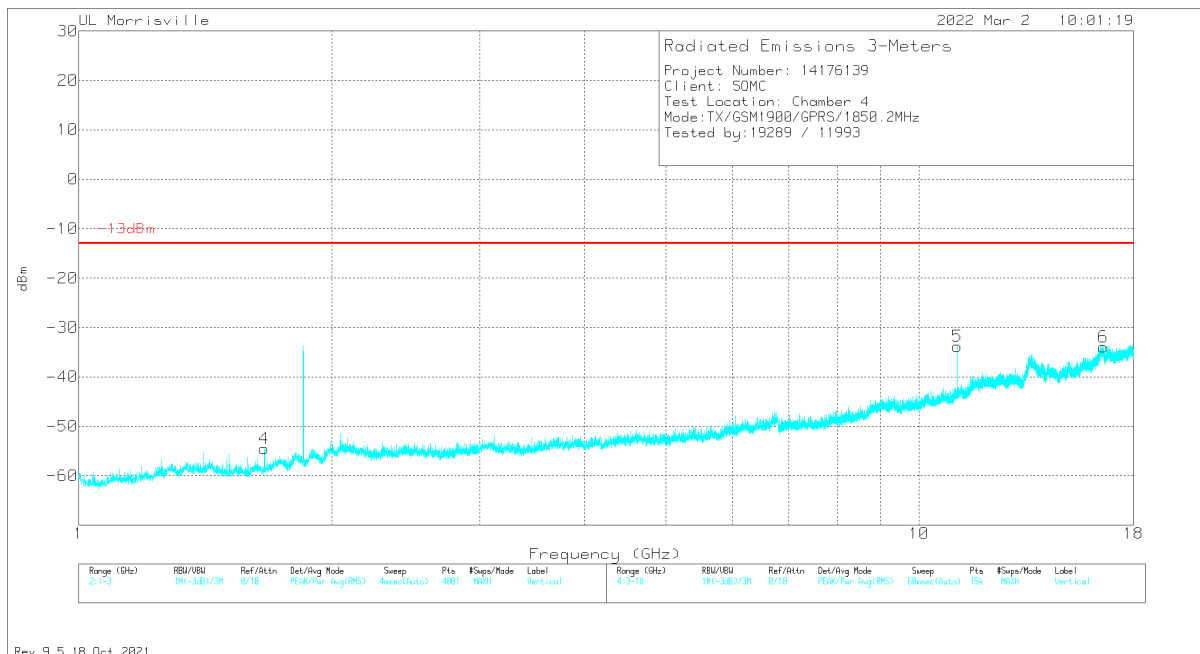
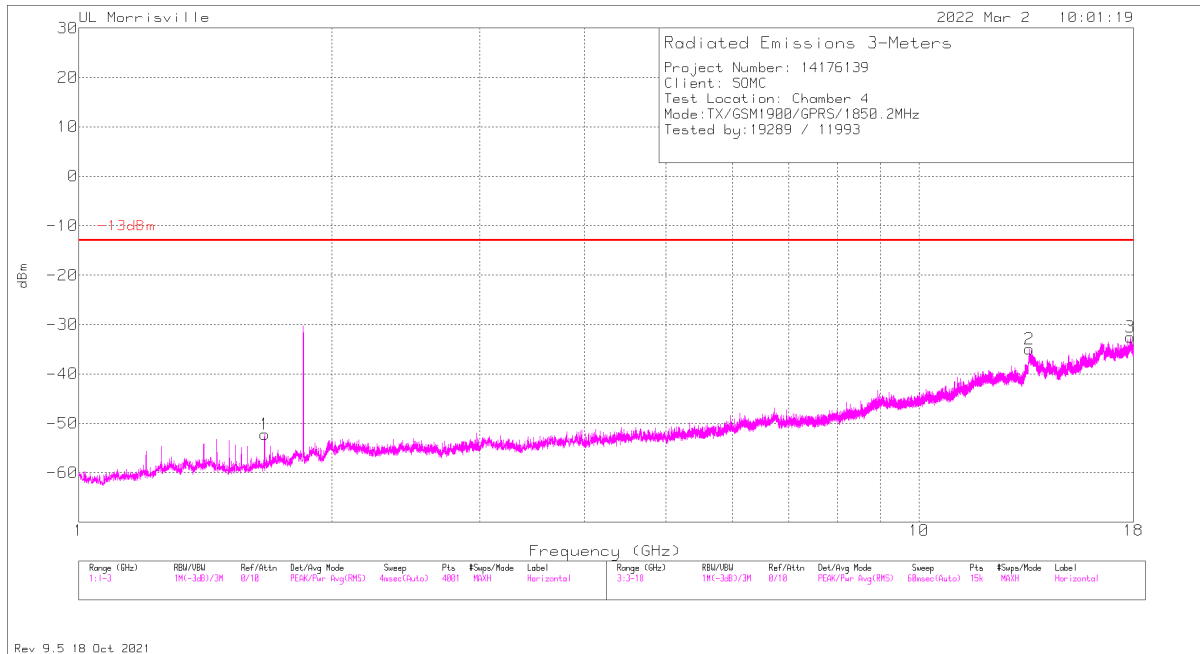


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.3528	-61.78	Pk	29.3	-36.6	.8	11.8	-56.48	-13	-43.48	0-360	200	H
2	4.1392	-64.21	Pk	33.4	-33.3	.4	11.8	-51.91	-13	-38.91	0-360	100	H
4	4.5703	-64.81	Pk	34	-32.7	.3	11.8	-51.41	-13	-38.41	0-360	200	V
5	6.7204	-65.1	Pk	35.5	-29.7	.5	11.8	-47	-13	-34	0-360	300	V
6	9.6571	-65.98	Pk	36.6	-27	.8	11.8	-43.78	-13	-30.78	0-360	300	V
3	9.7174	-65.18	Pk	36.7	-27.1	.6	11.8	-43.18	-13	-30.18	0-360	100	H

Pk - Peak detector

10.1.2. GSM GSM1900

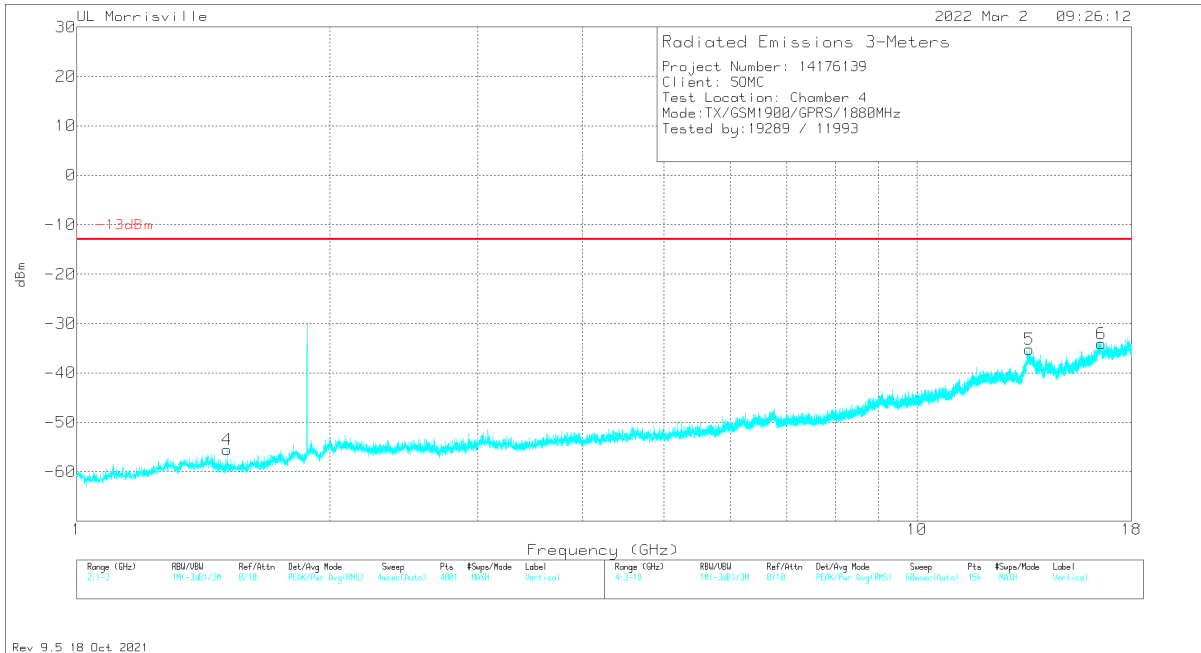
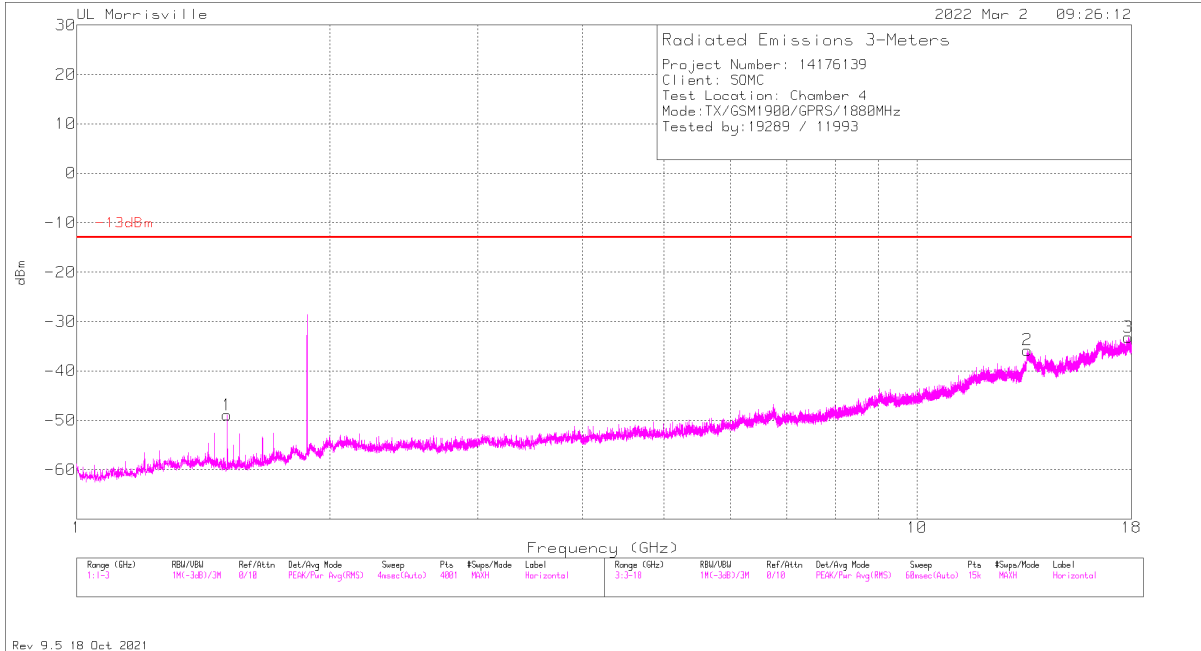
GPRS Mode Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.6635	-59.08	Pk	27.8	-36.7	11.8	1.7	-54.48	-13	-41.48	0-360	300	V
1	1.664	-56.84	Pk	27.8	-36.7	11.8	1.7	-52.24	-13	-39.24	0-360	100	H
5	11.102	-58.66	Pk	37.9	-24.9	11.8	0	-33.86	-13	-20.86	0-360	200	V
2	13.544	-62.86	Pk	38.7	-22.6	11.8	0	-34.96	-13	-21.96	0-360	200	H
6	16.577	-66.08	Pk	41.5	-21.2	11.8	0	-33.98	-13	-20.98	0-360	300	V
3	17.857	-66.37	Pk	41.3	-19.3	11.8	0	-32.57	-13	-19.57	0-360	200	H

Pk - Peak detector

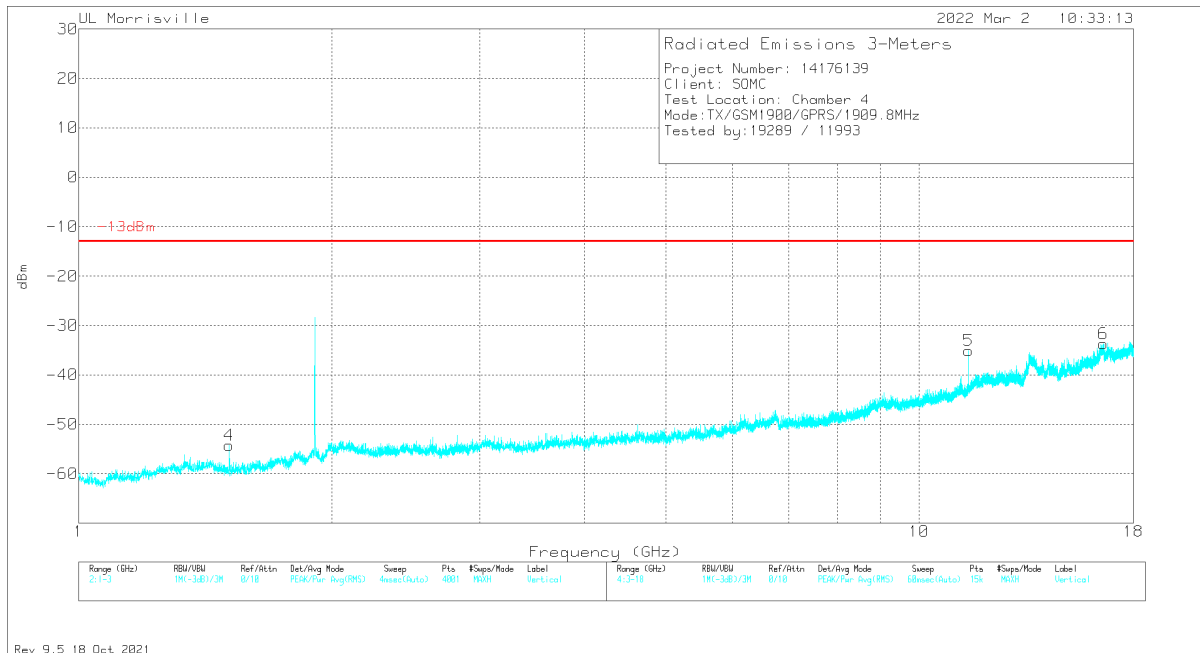
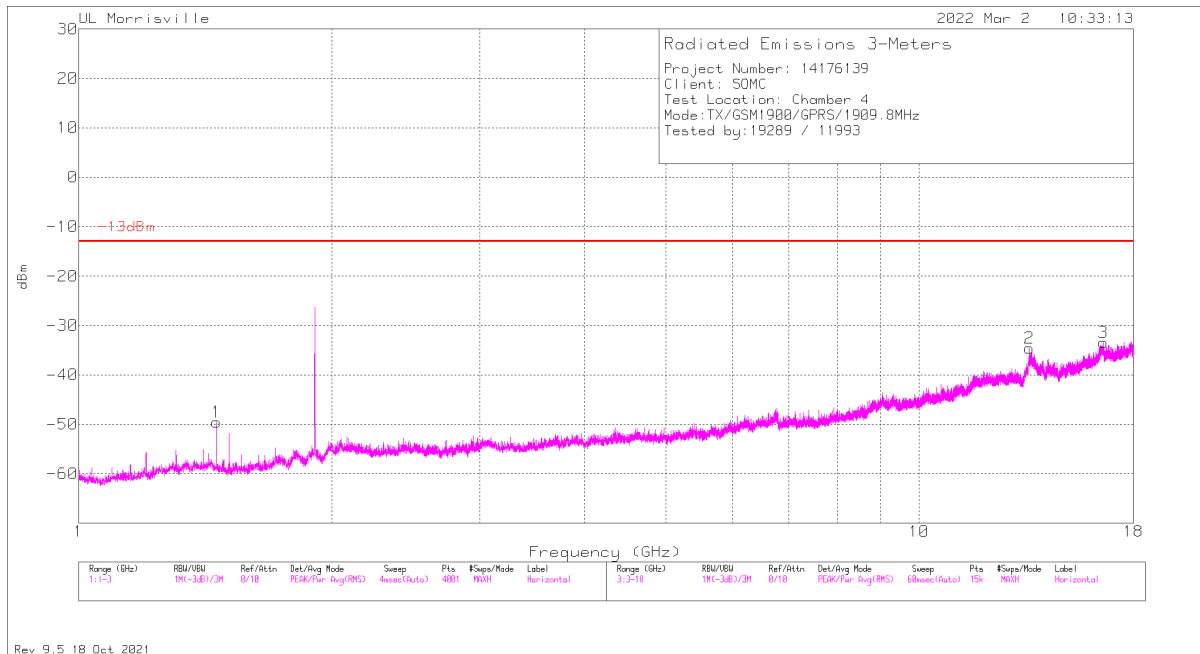
GPRS Mode Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.51	-59.83	Pk	28.1	-36.6	11.8	1	-55.53	-13	-42.53	0-360	100	V
1	1.5105	-53.25	Pk	28.1	-36.6	11.8	1	-48.95	-13	-35.95	0-360	300	H
2	13.537	-63.78	Pk	38.7	-22.5	11.8	0	-35.78	-13	-22.78	0-360	100	H
5	13.613	-62.74	Pk	38.7	-23	11.8	0	-35.24	-13	-22.24	0-360	200	V
6	16.565	-66.21	Pk	41.5	-21.2	11.8	0	-34.11	-13	-21.11	0-360	300	V
3	17.849	-66.99	Pk	41.3	-19.3	11.8	0	-33.19	-13	-20.19	0-360	100	H

Pk - Peak detector

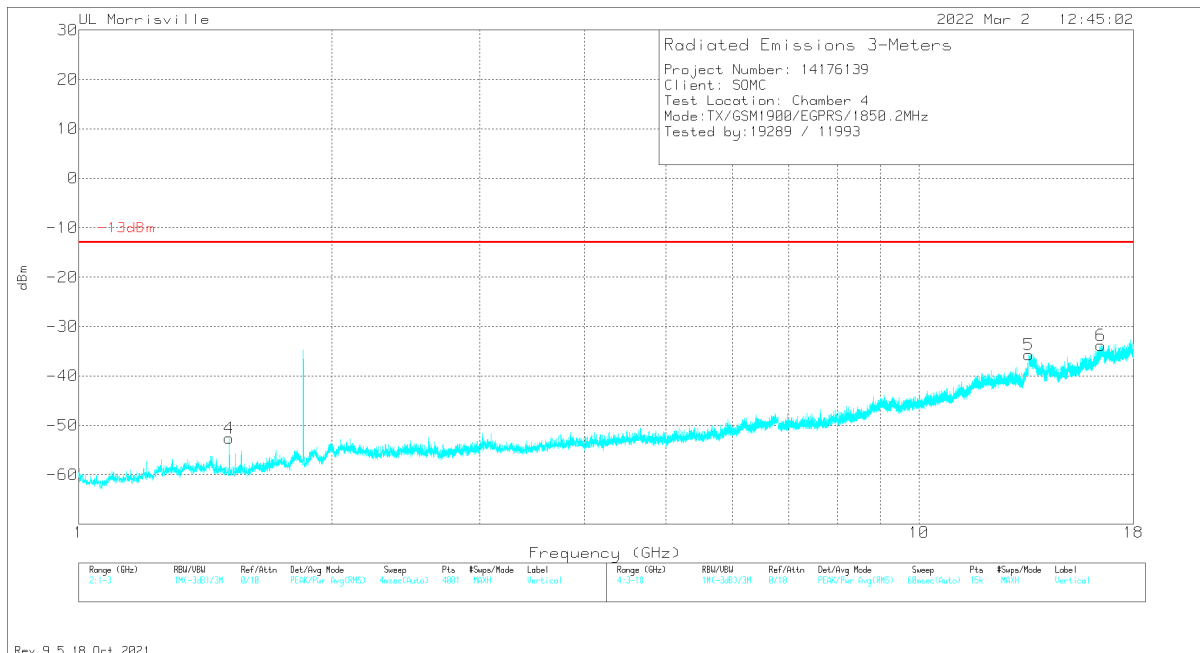
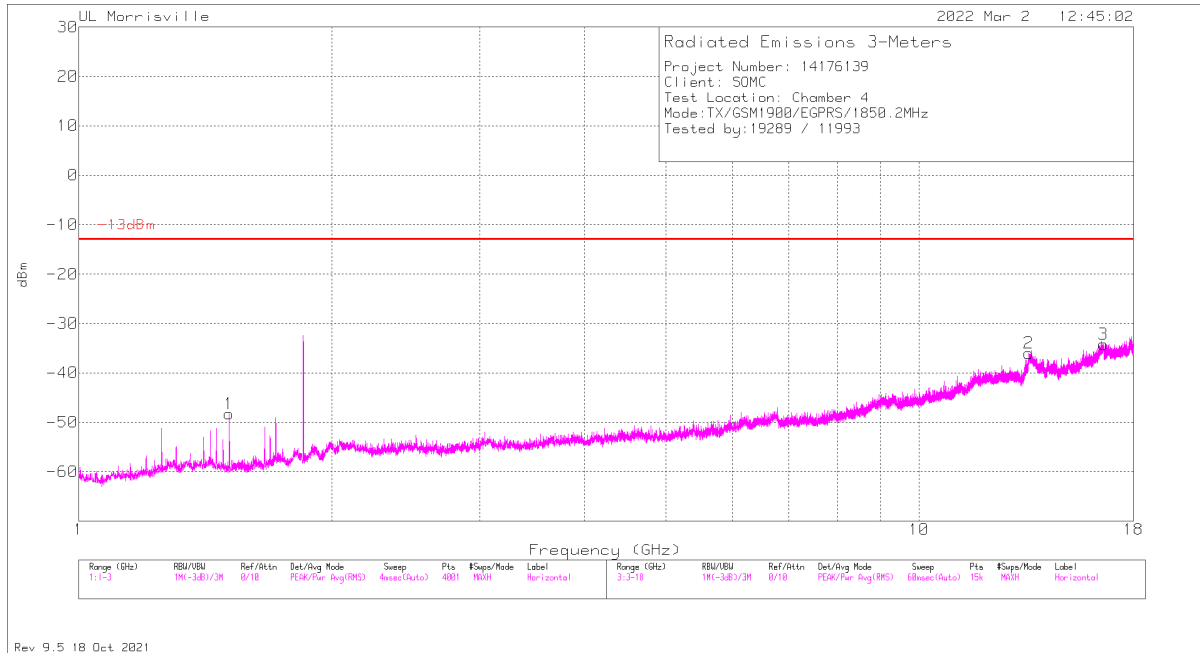
GPRS Mode High Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.459	-54.27	Pk	28.7	-36.6	11.8	.8	-49.57	-13	-36.57	0-360	100	H
4	1.5105	-58.55	Pk	28.1	-36.6	11.8	1	-54.25	-13	-41.25	0-360	300	V
5	11.459	-60.71	Pk	38	-24.2	11.8	0	-35.11	-13	-22.11	0-360	200	V
2	13.54	-62.44	Pk	38.7	-22.6	11.8	0	-34.54	-13	-21.54	0-360	100	H
3	16.566	-65.51	Pk	41.5	-21.2	11.8	0	-33.41	-13	-20.41	0-360	200	H
6	16.584	-65.78	Pk	41.5	-21.2	11.8	0	-33.68	-13	-20.68	0-360	300	V

Pk - Peak detector

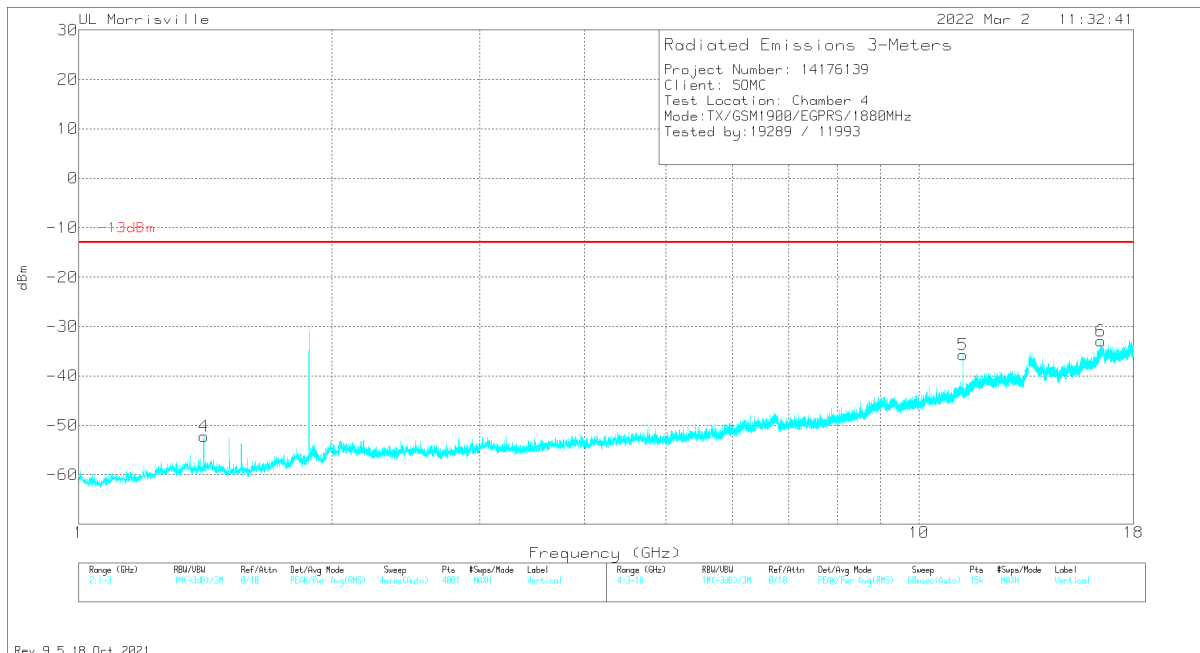
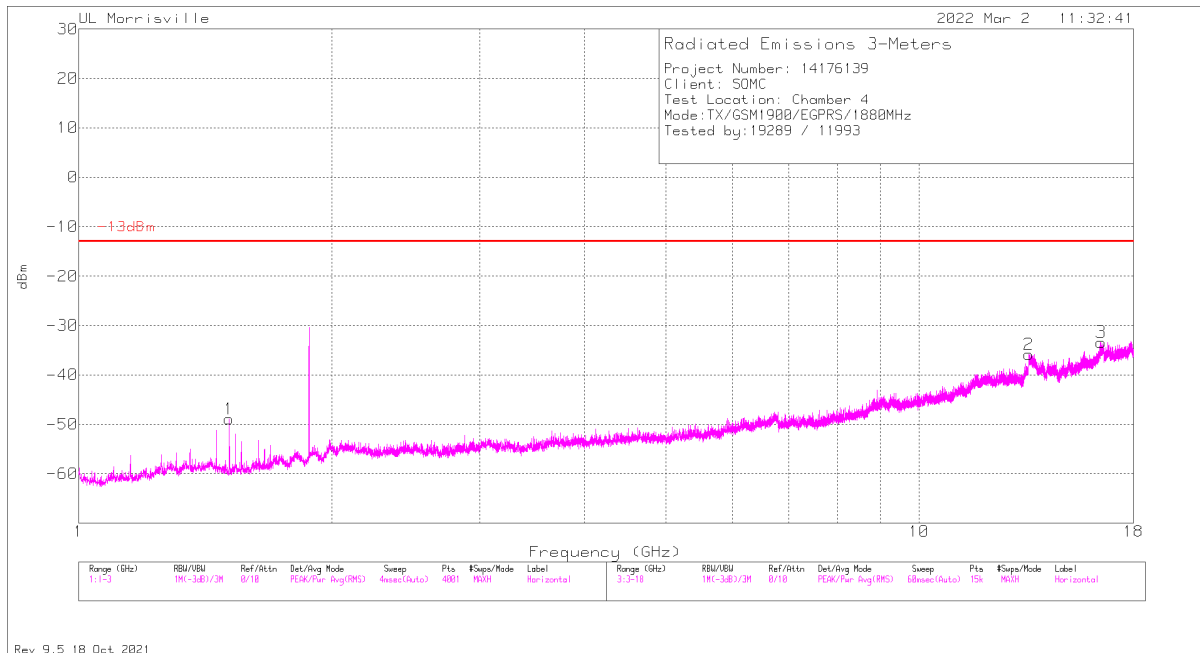
EGPRS Mode Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5105	-52.6	Pk	28.1	-36.6	11.8	1	-48.3	-13	-35.3	0-360	100	H
4	1.5105	-56.87	Pk	28.1	-36.6	11.8	1	-52.57	-13	-39.57	0-360	300	V
2	13.511	-64.03	Pk	38.7	-22.5	11.8	0	-36.03	-13	-23.03	0-360	200	H
5	13.517	-63.67	Pk	38.7	-22.6	11.8	0	-35.77	-13	-22.77	0-360	300	V
6	16.472	-65.67	Pk	41.2	-21.1	11.8	0	-33.77	-13	-20.77	0-360	200	V
3	16.582	-66.34	Pk	41.5	-21.2	11.8	0	-34.24	-13	-21.24	0-360	200	H

Pk - Peak detector

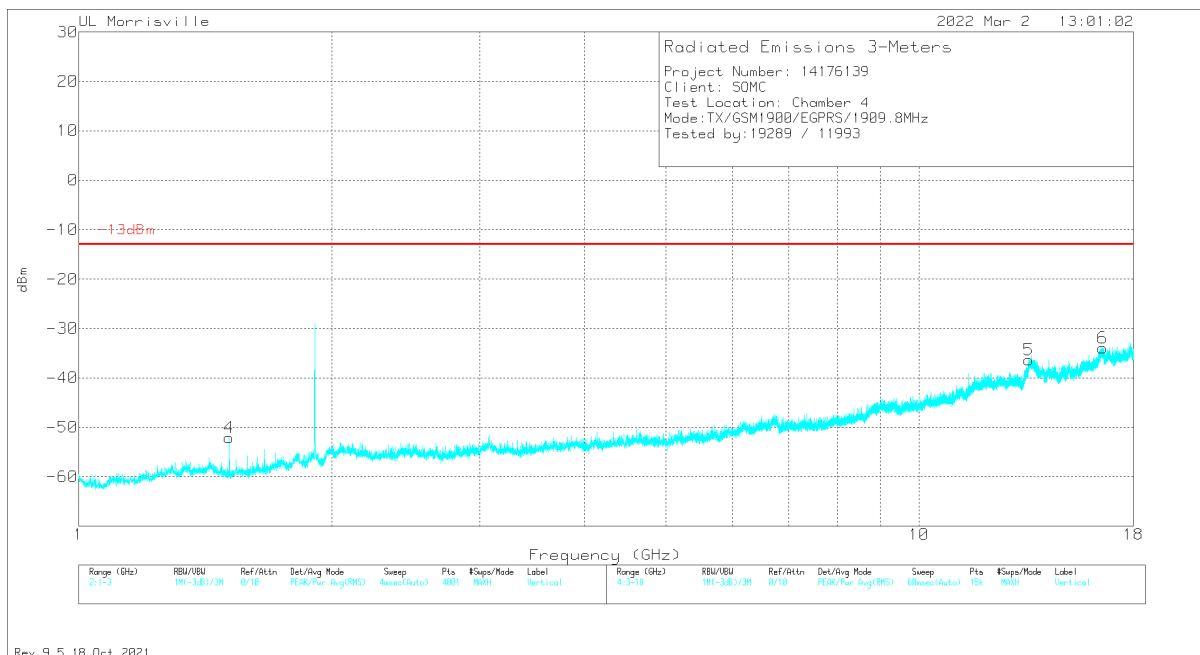
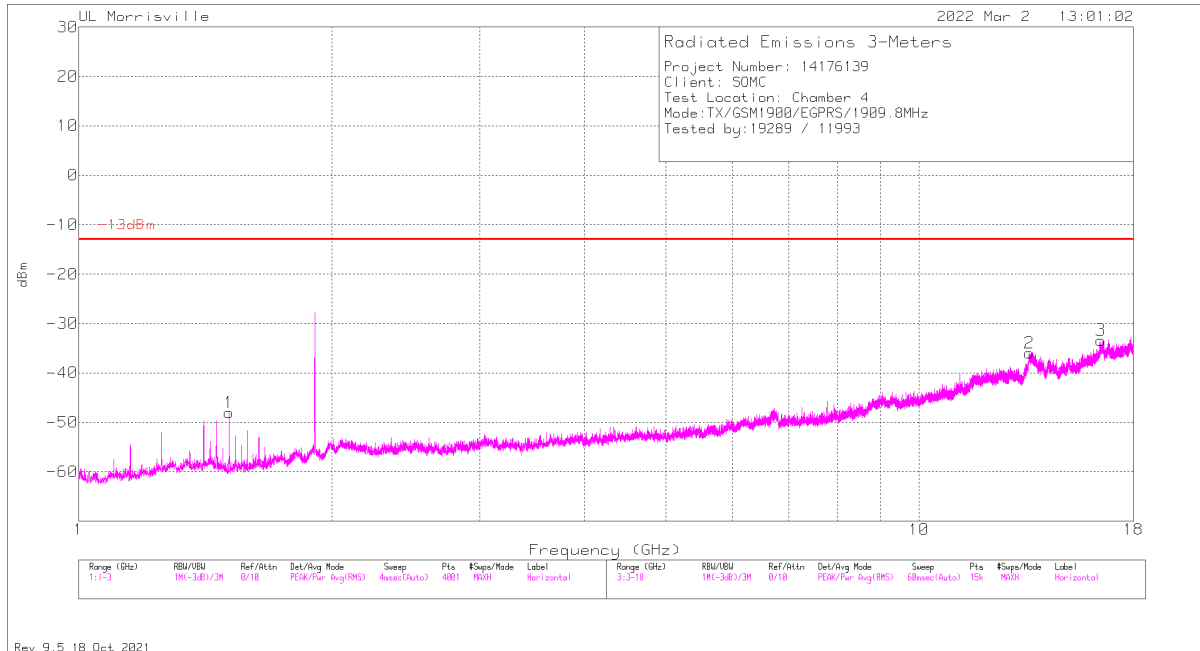
EGPRS Mode Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.4085	-57.43	Pk	29.2	-36.6	11.8	.8	-52.23	-13	-39.23	0-360	200	V
1	1.51	-53.22	Pk	28.1	-36.6	11.8	1	-48.92	-13	-35.92	0-360	300	H
5	11.28	-60.62	Pk	37.9	-24.8	11.8	0	-35.72	-13	-22.72	0-360	200	V
2	13.509	-63.86	Pk	38.7	-22.5	11.8	0	-35.86	-13	-22.86	0-360	200	H
6	16.456	-64.84	Pk	41.2	-21.1	11.8	0	-32.94	-13	-19.94	0-360	300	V
3	16.475	-65.27	Pk	41.2	-21.1	11.8	0	-33.37	-13	-20.37	0-360	100	H

Pk - Peak detector

EGPRS Mode High Channel

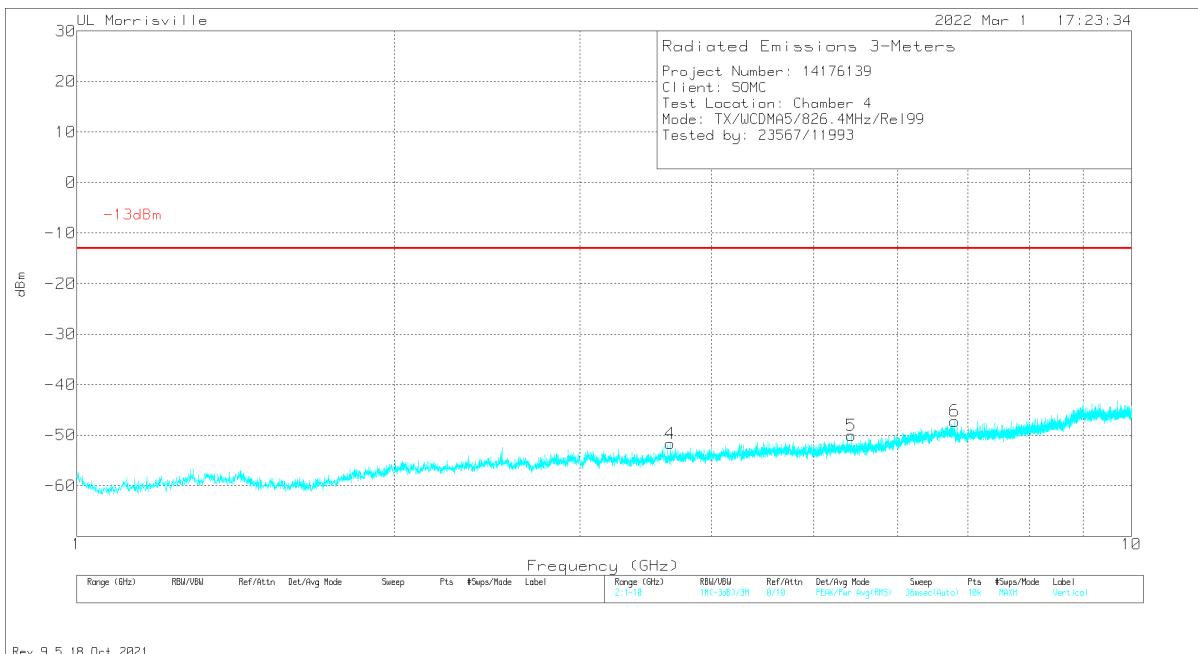
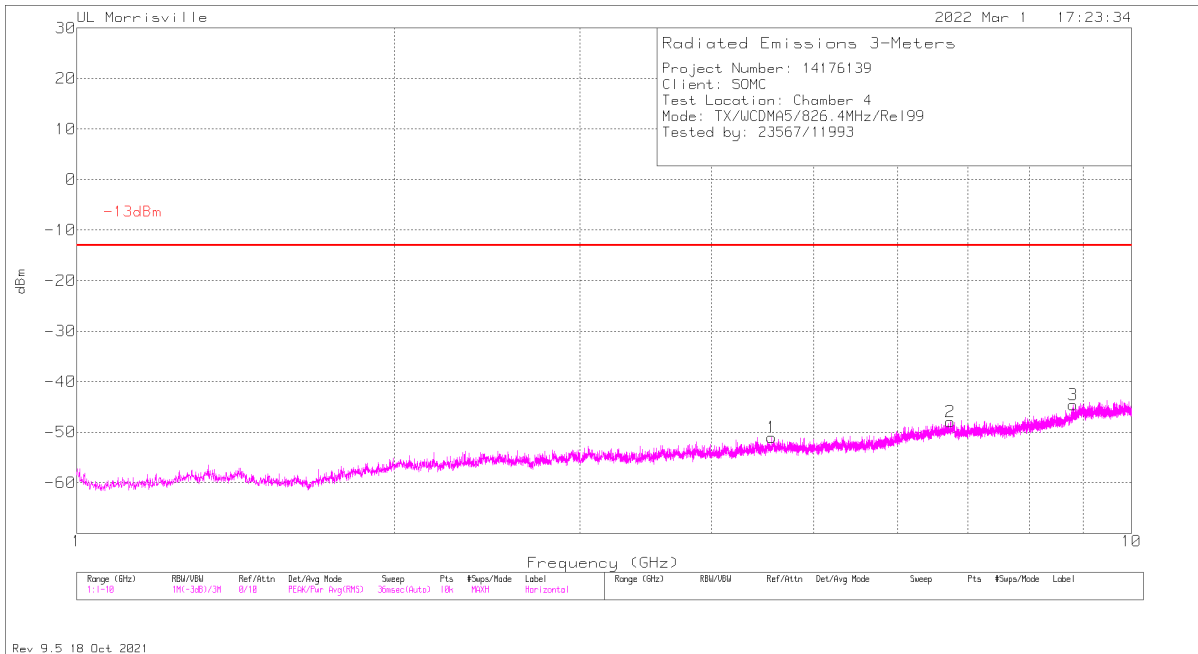


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.5105	-52.3	Pk	28.1	-36.6	11.8	1	-48	-13	-35	0-360	100	H
4	1.5105	-56.4	Pk	28.1	-36.6	11.8	1	-52.1	-13	-39.1	0-360	200	V
5	13.509	-64.39	Pk	38.7	-22.5	11.8	0	-36.39	-13	-23.39	0-360	300	V
2	13.545	-63.72	Pk	38.7	-22.7	11.8	0	-35.92	-13	-22.92	0-360	200	H
3	16.462	-65.27	Pk	41.2	-21.1	11.8	0	-33.37	-13	-20.37	0-360	100	H
6	16.554	-65.99	Pk	41.5	-21.2	11.8	0	-33.89	-13	-20.89	0-360	300	V

Pk - Peak detector

10.1.3. WCDMA BAND 5

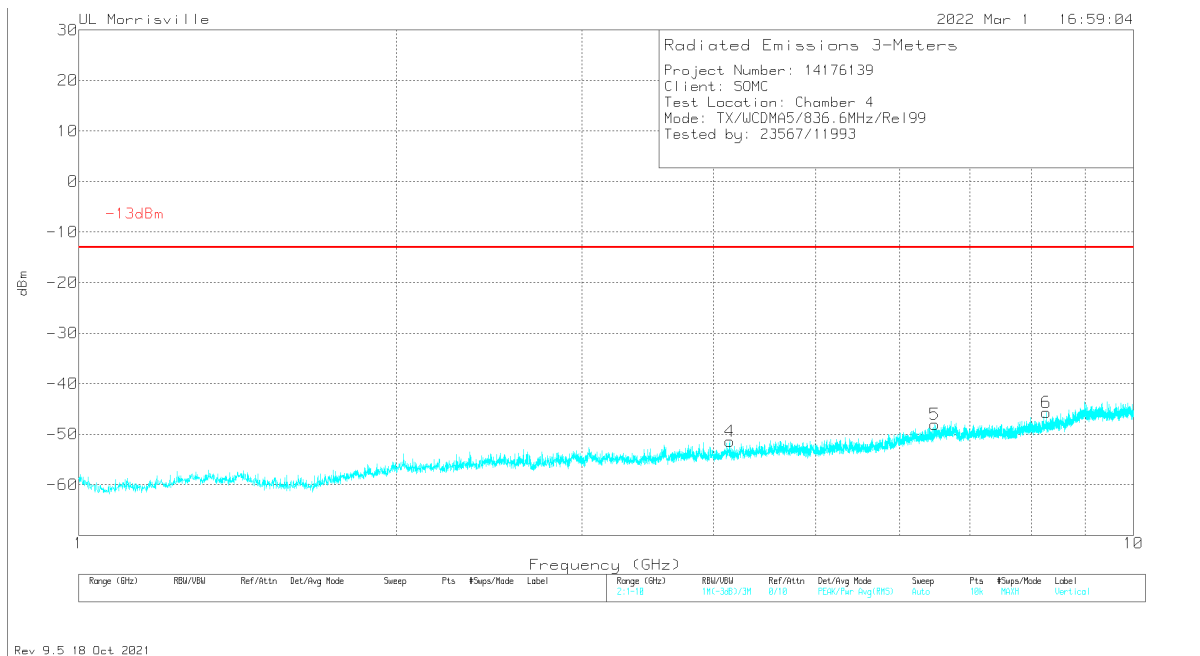
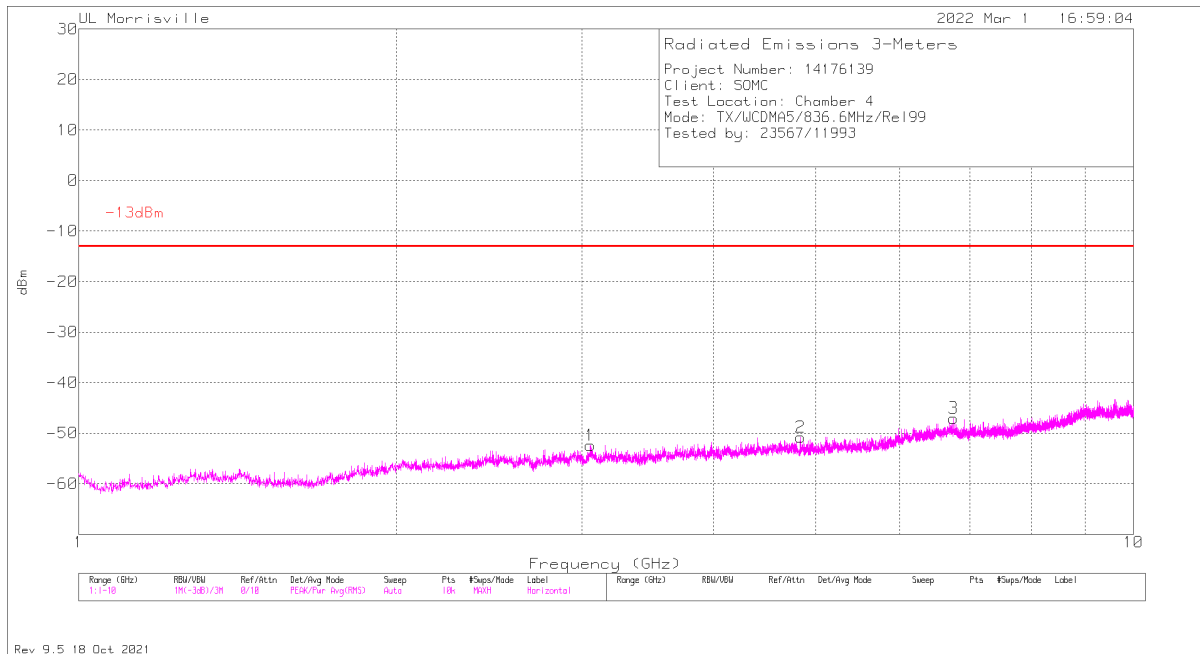
Rel 99 Mode Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	3.655	-62.09	Pk	33.1	-34.8	.3	11.8	-51.69	-13	-38.69	0-360	200	V
1	4.5604	-64.3	Pk	34	-32.8	.3	11.8	-51	-13	-38	0-360	200	H
5	5.4271	-64	Pk	34.4	-32.5	.3	11.8	-50	-13	-37	0-360	300	V
2	6.7321	-65.89	Pk	35.5	-29.8	.5	11.8	-47.89	-13	-34.89	0-360	100	H
6	6.7987	-65.65	Pk	35.4	-29.5	.7	11.8	-47.25	-13	-34.25	0-360	200	V
3	8.8084	-65.7	Pk	35.9	-27.2	.6	11.8	-44.6	-13	-31.6	0-360	100	H

Pk - Peak detector

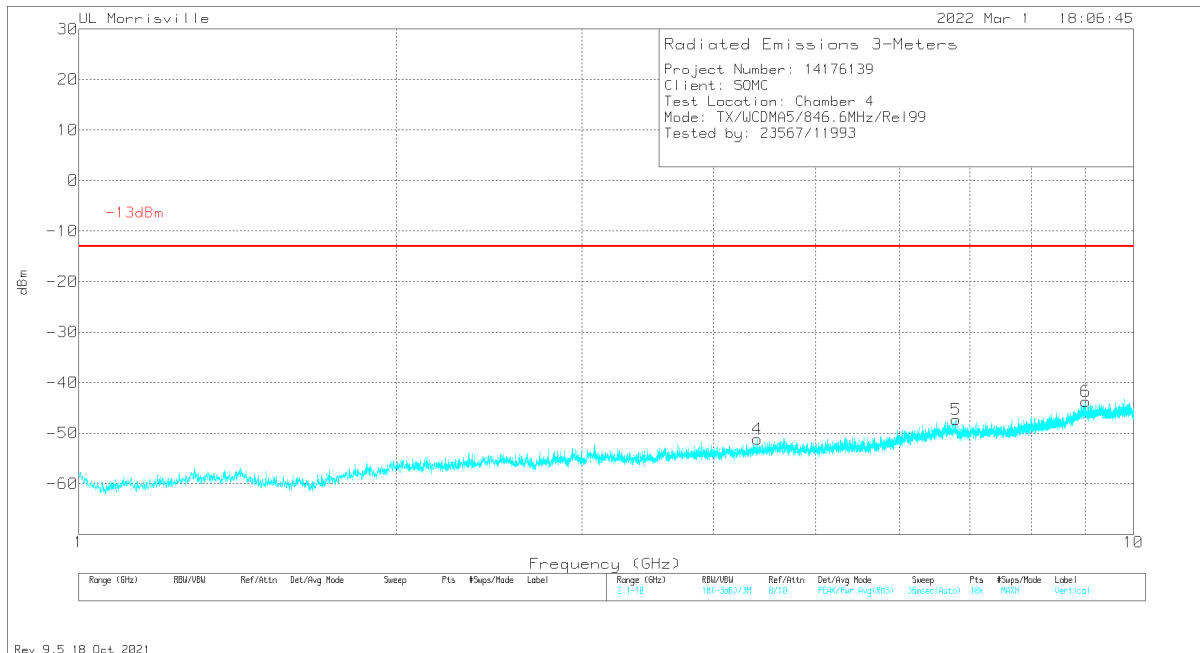
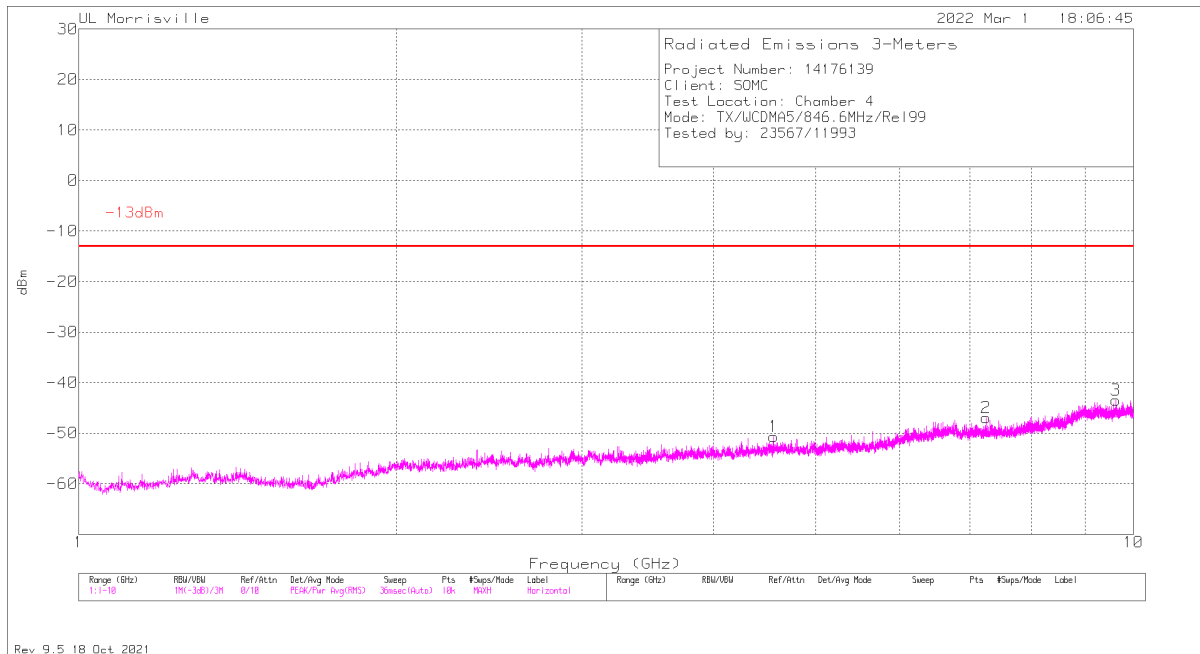
Rel 99 Mode Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	3.0556	-61.79	Pk	33	-36.1	.7	11.8	-52.39	-13	-39.39	0-360	200	H
4	4.141	-63.67	Pk	33.4	-33.3	.4	11.8	-51.37	-13	-38.37	0-360	300	V
2	4.8367	-64.13	Pk	33.9	-32.7	.3	11.8	-50.83	-13	-37.83	0-360	200	H
5	6.4765	-66.18	Pk	35.4	-29.8	.7	11.8	-48.08	-13	-35.08	0-360	200	V
3	6.7546	-65.01	Pk	35.5	-29.9	.6	11.8	-47.01	-13	-34.01	0-360	100	H
6	8.2657	-65.25	Pk	35.7	-28.4	.5	11.8	-45.65	-13	-32.65	0-360	300	V

Pk - Peak detector

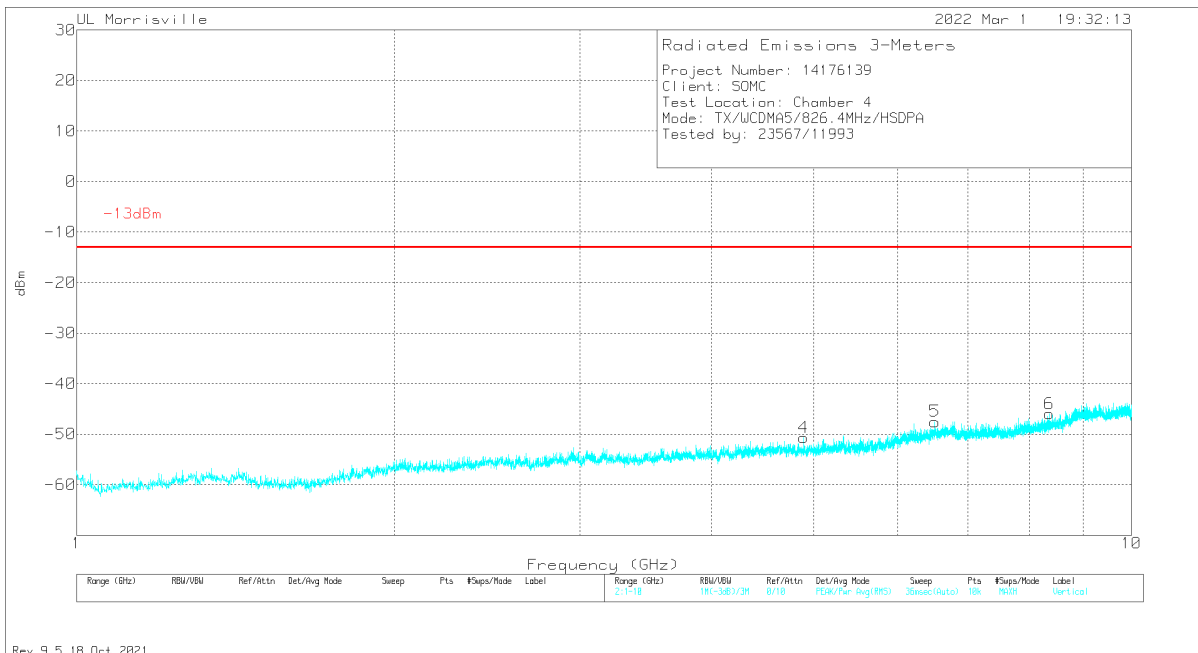
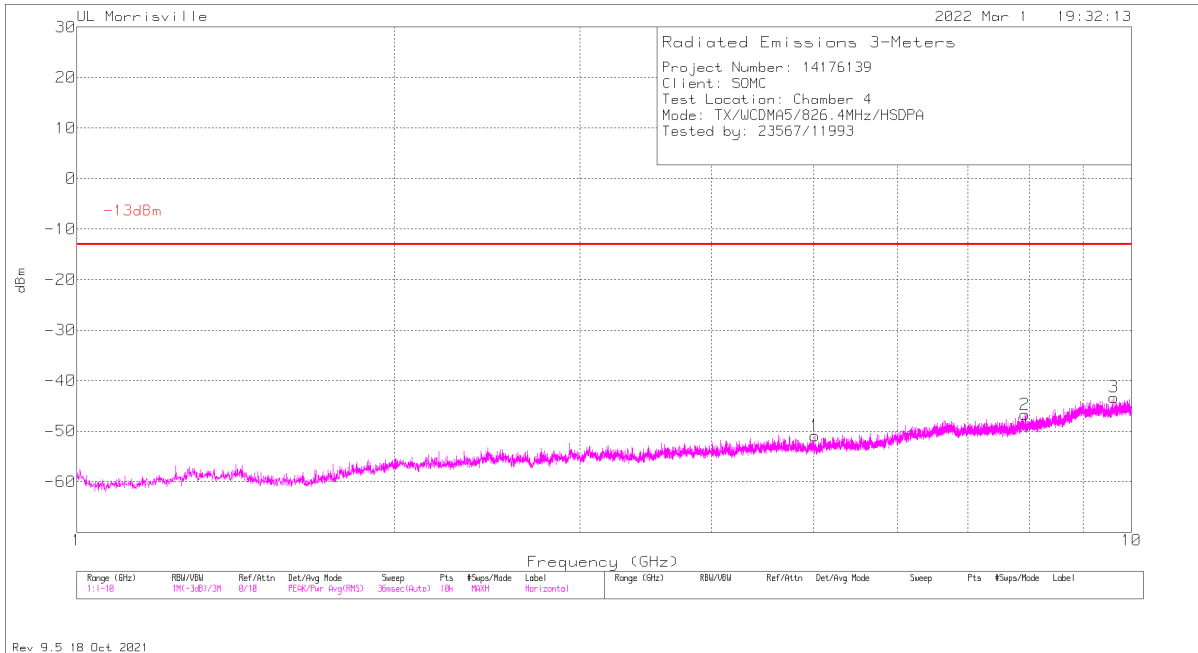
Rel 99 Mode High Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	4.3984	-64.2	Pk	33.6	-32.8	.4	11.8	-51.2	-13	-38.2	0-360	300	V
1	4.5568	-63.88	Pk	34	-32.9	.3	11.8	-50.68	-13	-37.68	0-360	200	H
5	6.7852	-65.73	Pk	35.5	-29.6	.7	11.8	-47.33	-13	-34.33	0-360	300	V
2	7.2532	-65.41	Pk	35.5	-29.3	.5	11.8	-46.91	-13	-33.91	0-360	100	H
6	9.0136	-65.36	Pk	35.9	-26.5	.4	11.8	-43.76	-13	-30.76	0-360	300	V
3	9.6265	-65.92	Pk	36.6	-26.8	.9	11.8	-43.42	-13	-30.42	0-360	100	H

Pk - Peak detector

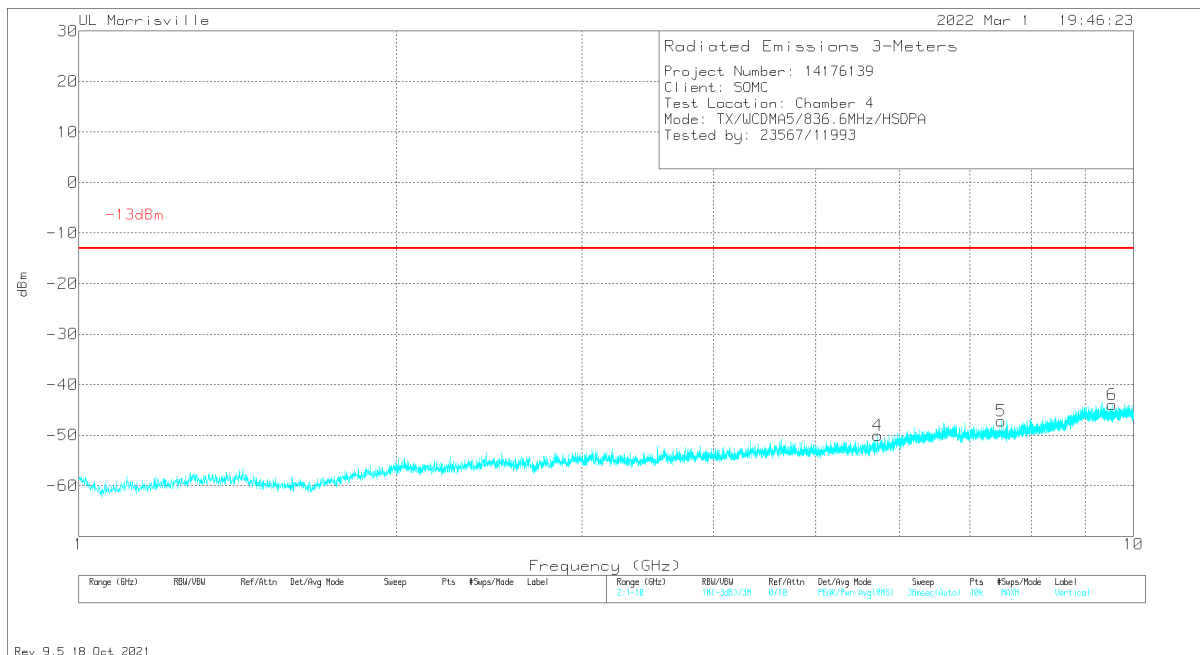
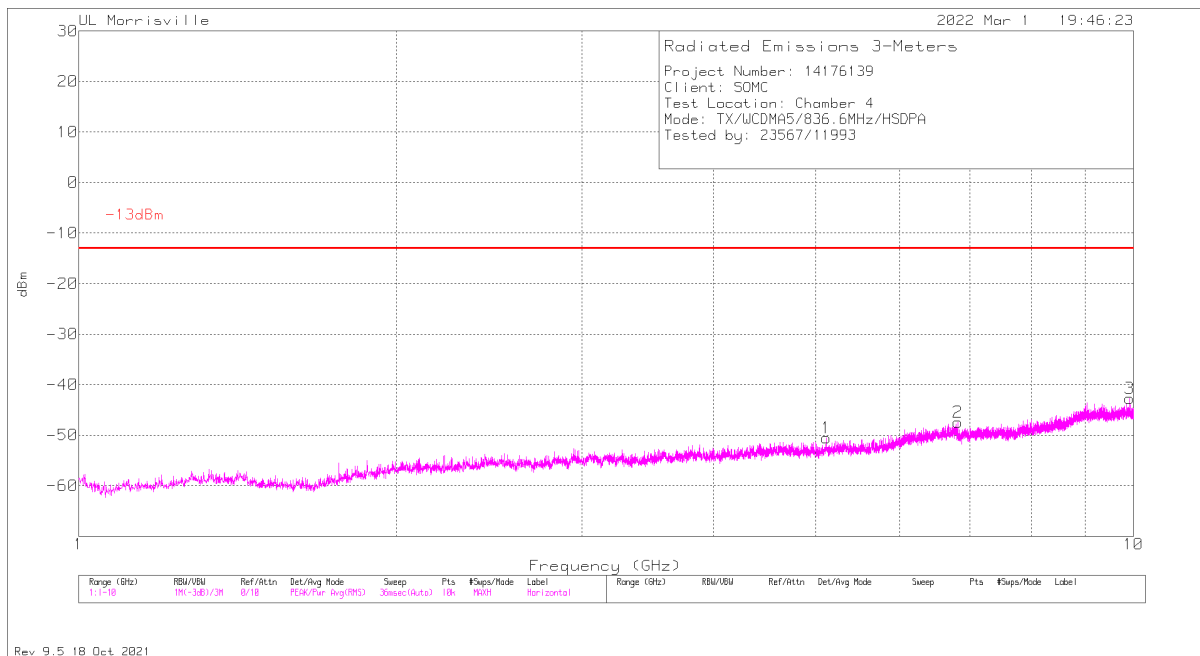
HSDPA Mode Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	4.888	-63.81	Pk	33.9	-32.9	.3	11.8	-50.71	-13	-37.71	0-360	300	V
1	5.0095	-63.86	Pk	33.9	-33.1	.4	11.8	-50.86	-13	-37.86	0-360	200	H
5	6.5116	-65.6	Pk	35.5	-29.9	.7	11.8	-47.5	-13	-34.5	0-360	300	V
2	7.9264	-65.57	Pk	35.7	-29	.4	11.8	-46.67	-13	-33.67	0-360	100	H
6	8.3629	-65.85	Pk	35.7	-28	.4	11.8	-45.95	-13	-32.95	0-360	300	V
3	9.6247	-65.78	Pk	36.6	-26.8	.9	11.8	-43.28	-13	-30.28	0-360	100	H

Pk - Peak detector

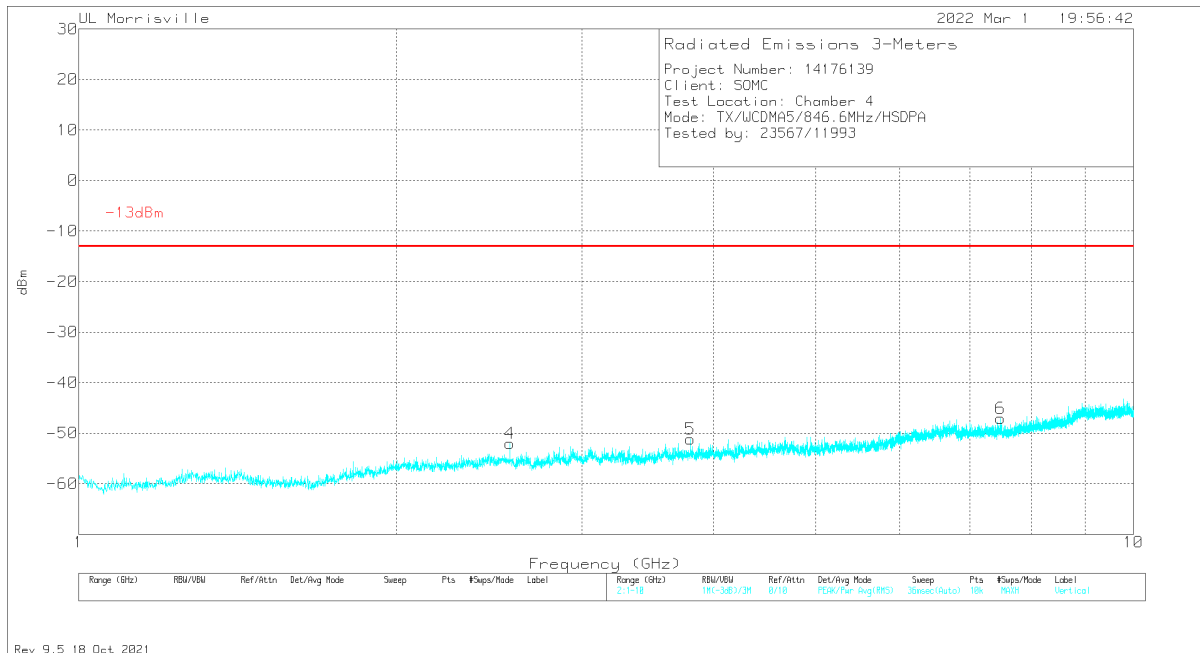
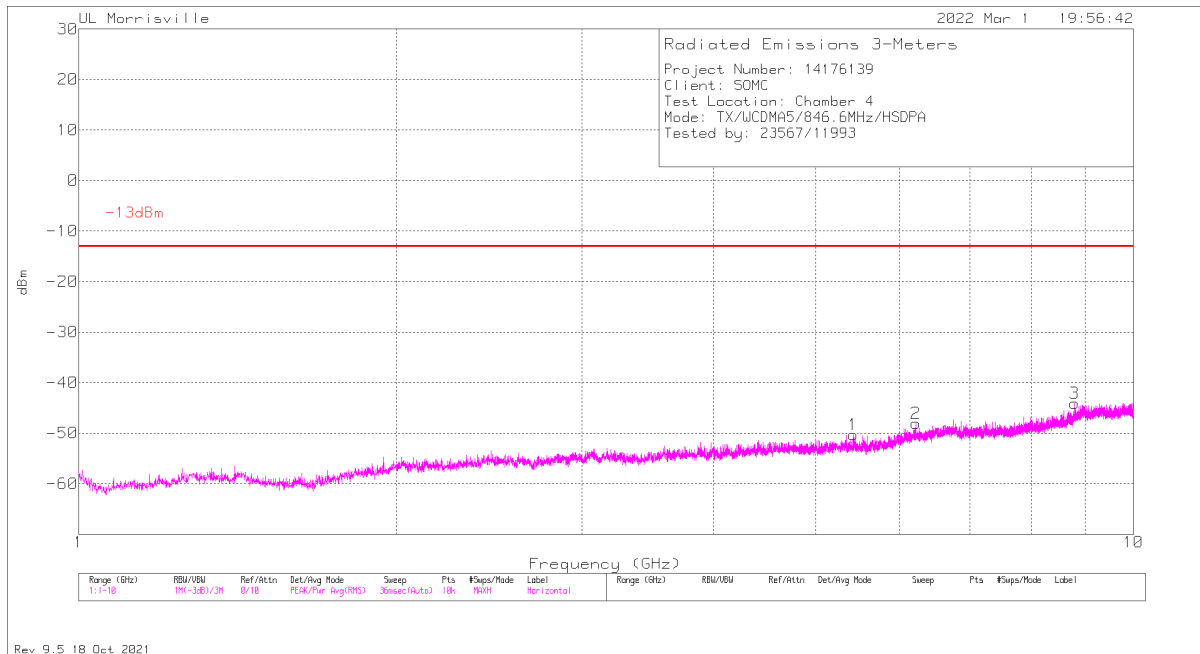
HSDPA Mode Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.1157	-64.23	Pk	34.1	-32.6	.4	11.8	-50.53	-13	-37.53	0-360	100	H
4	5.7187	-64.99	Pk	34.5	-31.8	.4	11.8	-50.09	-13	-37.09	0-360	300	V
2	6.8131	-65.86	Pk	35.5	-29.6	.7	11.8	-47.46	-13	-34.46	0-360	200	H
5	7.4926	-66.05	Pk	35.7	-29.2	.6	11.8	-47.15	-13	-34.15	0-360	300	V
6	9.5491	-66.12	Pk	36.5	-26.8	.6	11.8	-44.02	-13	-31.02	0-360	200	V
3	9.9127	-65.19	Pk	37	-27.2	.9	11.8	-42.69	-13	-29.69	0-360	100	H

Pk - Peak detector

HSDPA Mode High Channel

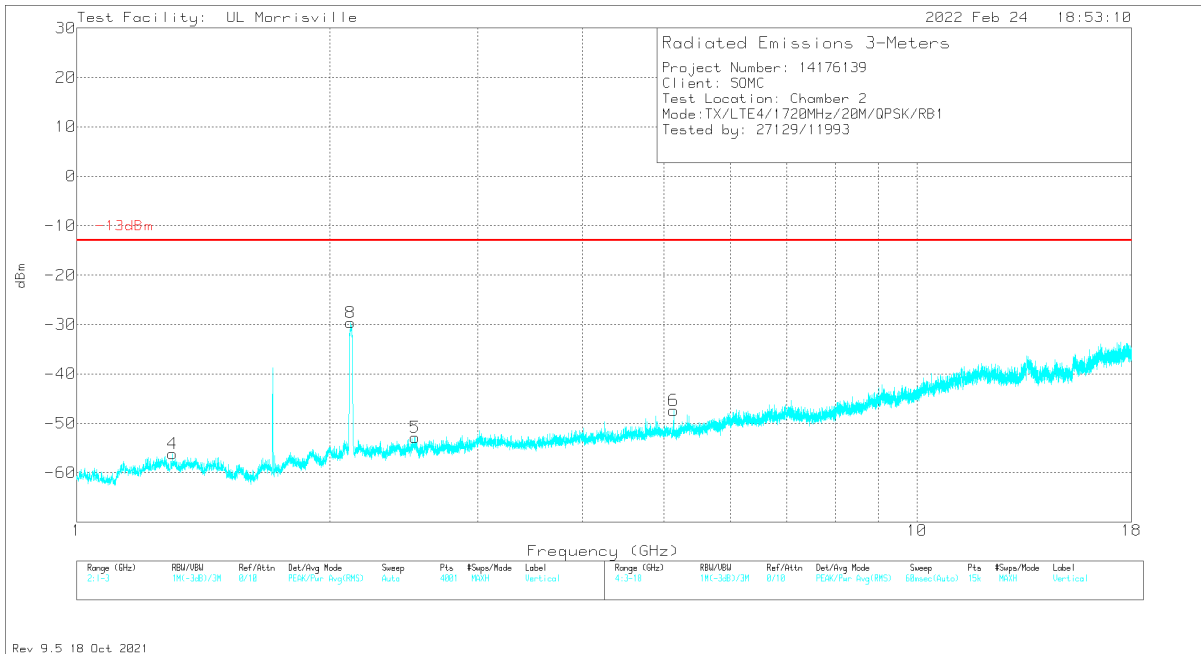
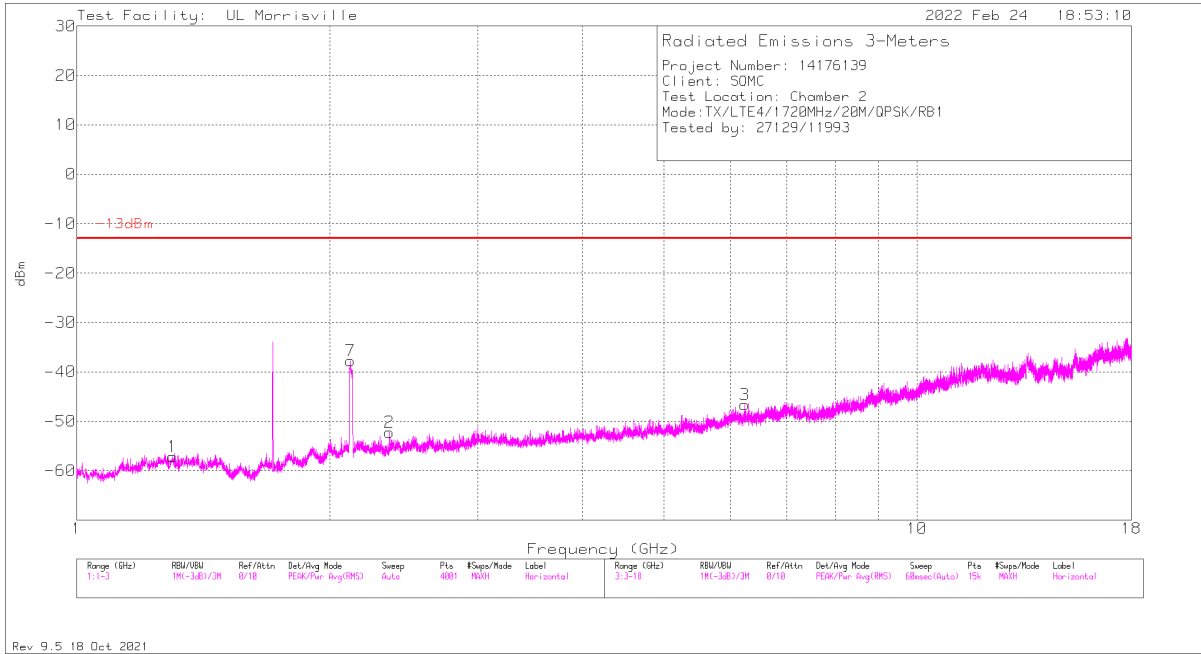


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	206211 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	2.5633	-59.99	Pk	32.2	-36.6	.5	11.8	-52.09	-13	-39.09	0-360	300	V
5	3.8017	-62.33	Pk	33.4	-34.2	.2	11.8	-51.13	-13	-38.13	0-360	300	V
1	5.4217	-64.36	Pk	34.4	-32.4	.3	11.8	-50.26	-13	-37.26	0-360	100	H
2	6.2164	-65.68	Pk	35.3	-30.3	.8	11.8	-48.08	-13	-35.08	0-360	100	H
6	7.4818	-65.96	Pk	35.6	-29.1	.6	11.8	-47.06	-13	-34.06	0-360	300	V
3	8.7985	-65.11	Pk	35.9	-27.2	.5	11.8	-44.11	-13	-31.11	0-360	200	H

Pk - Peak detector

10.1.4. LTE4

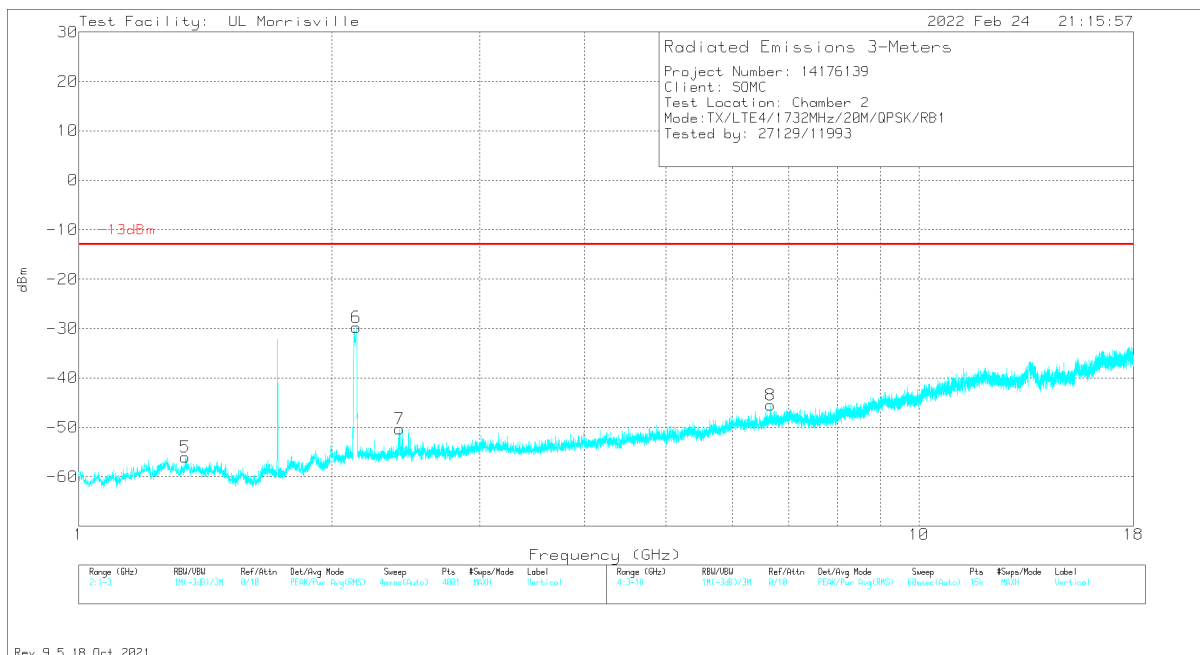
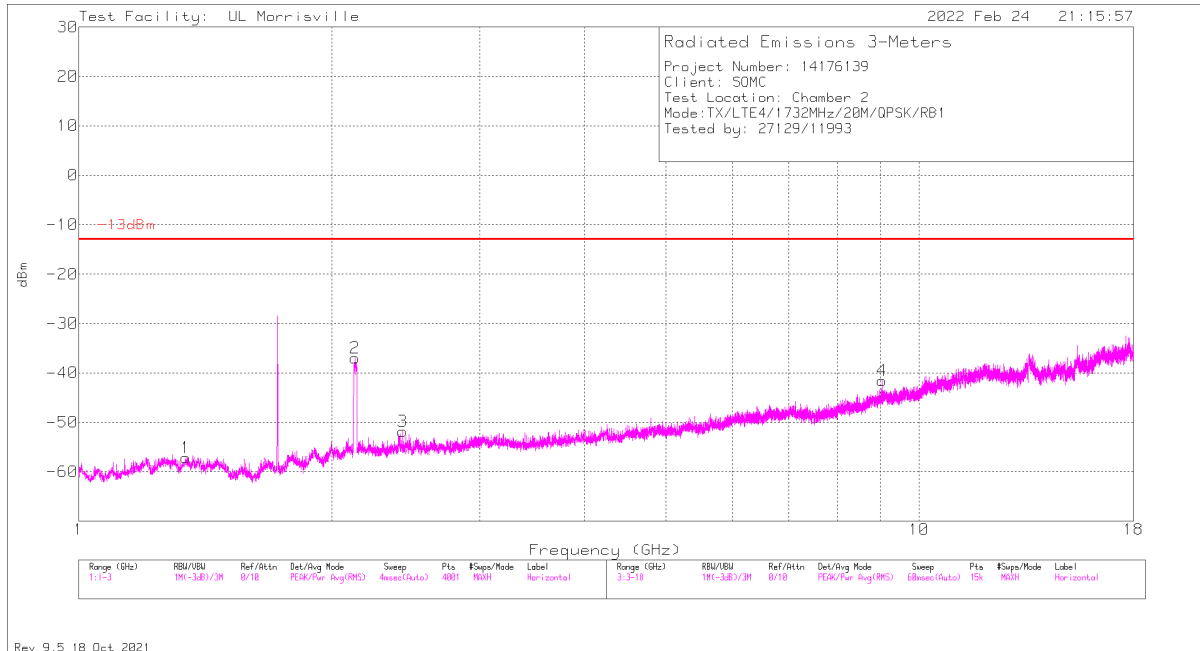
QPSK 20MHz 1720MHz Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.3	-64.51	Pk	29.2	-34.8	11.8	1.1	-57.21	-13	-44.21	0-360	299	H
4	1.3	-63.51	Pk	29.2	-34.8	11.8	1.1	-56.21	-13	-43.21	0-360	101	V
7	2.116 (DL)	-47.55	Pk	31.4	-34.4	11.8	1	-37.75	-	-	0-360	200	H
8	2.1185 (DL)	-39.35	Pk	31.4	-34.5	11.8	1	-29.65	-	-	0-360	299	V
2	2.357	-62.67	Pk	32.2	-34.1	11.8	.6	-52.17	-13	-39.17	0-360	200	H
5	2.526	-64.35	Pk	32.9	-33.7	11.8	.5	-52.85	-13	-39.85	0-360	200	V
6	5.133	-63.04	Pk	34.2	-30.4	11.8	0	-47.44	-13	-34.44	0-360	101	V
3	6.235	-66.69	Pk	35.6	-27.3	11.8	0	-46.59	-13	-33.59	0-360	101	H

Pk - Peak detector

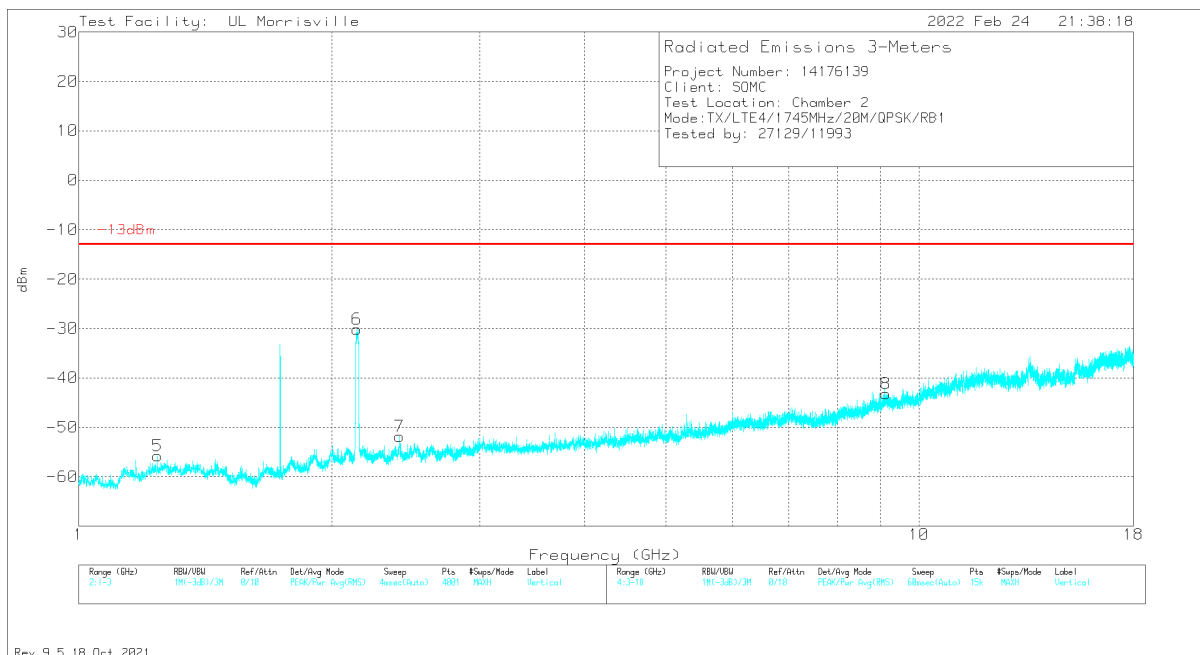
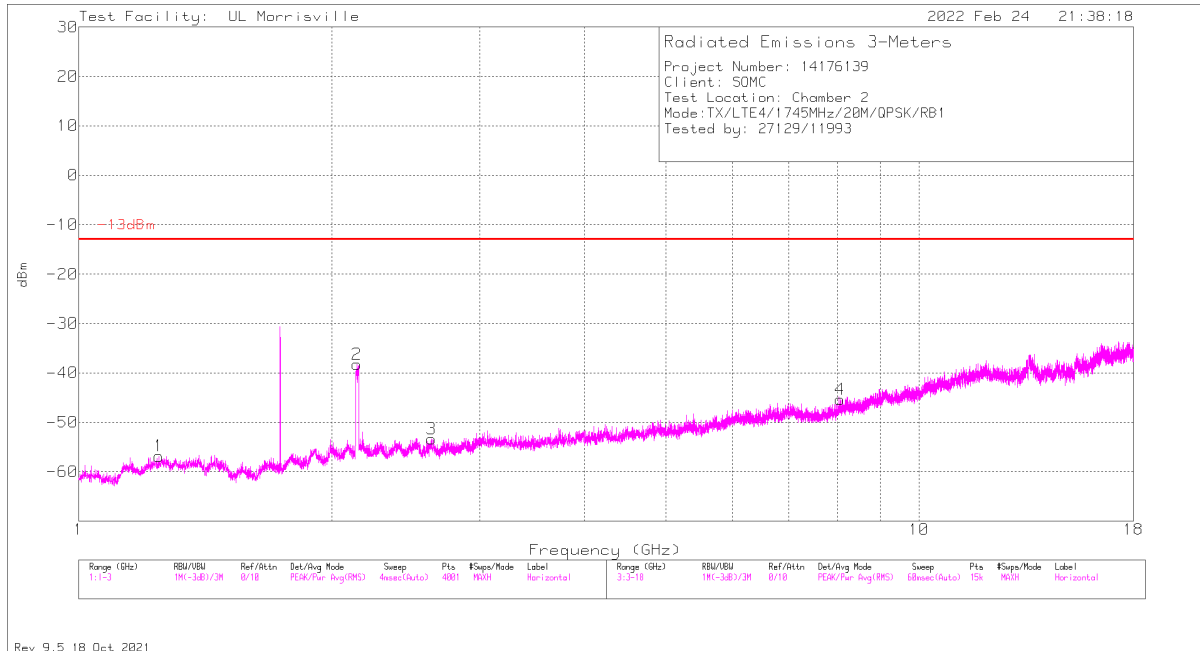
QPSK 20MHz 1732MHz Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	1.3385	-63.25	Pk	29	-34.7	11.8	1.1	-56.05	-13	-43.05	0-360	200	V
1	1.3405	-64.33	Pk	29	-34.7	11.8	1.1	-57.13	-13	-44.13	0-360	199	H
2	2.131 (DL)	-47.07	Pk	31.6	-34.3	11.8	1	-36.97	-	-	0-360	199	H
6	2.1395 (DL)	-39.8	Pk	31.5	-34.3	11.8	1	-29.8	-	-	0-360	299	V
7	2.4105	-61.12	Pk	32.4	-34	11.8	.6	-50.32	-13	-37.32	0-360	200	V
3	2.4305	-62.28	Pk	32.2	-34.1	11.8	.5	-51.88	-13	-38.88	0-360	299	H
8	6.653	-66.12	Pk	35.8	-27	11.8	0	-45.52	-13	-32.52	0-360	101	V
4	9.032	-63.3	Pk	36.2	-26.3	11.8	0	-41.6	-13	-28.6	0-360	199	H

Pk - Peak detector

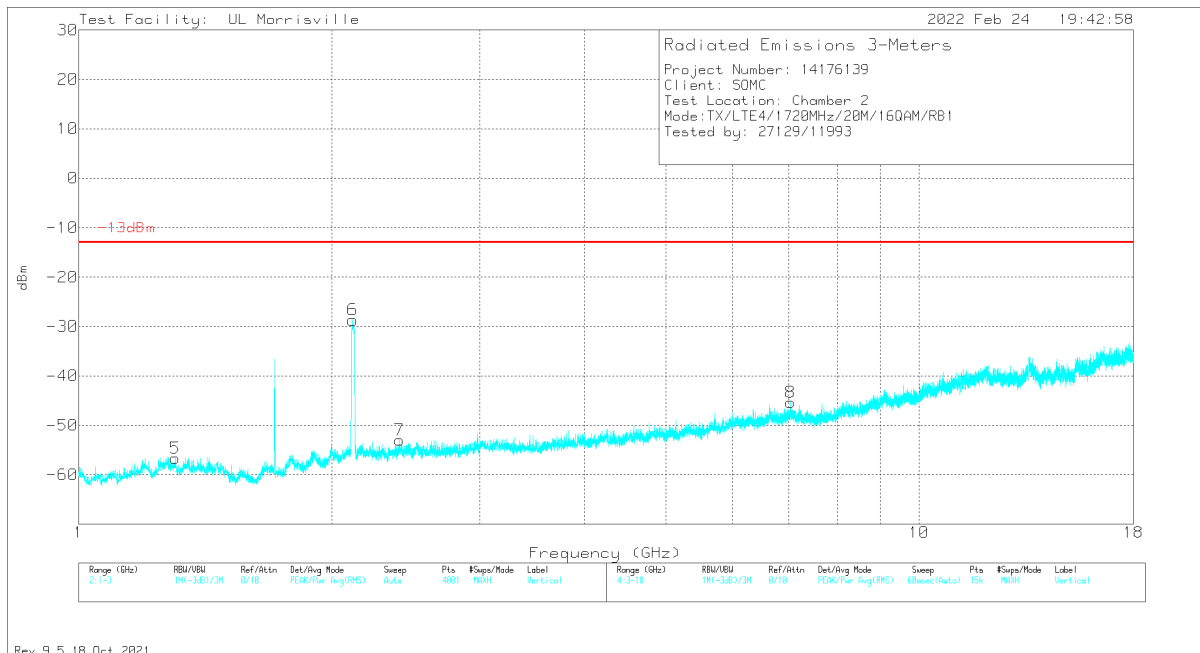
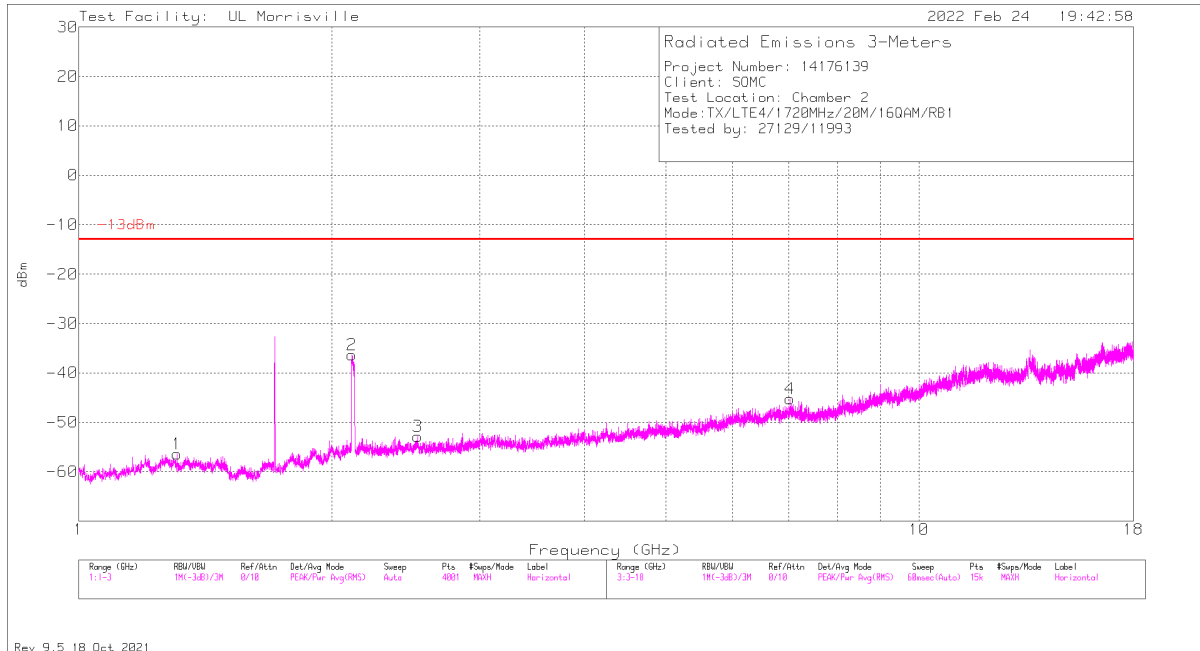
QPSK 20MHZ 1745MHz High Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	1.241	-62.69	Pk	28.9	-35	11.8	1.2	-55.79	-13	-42.79	0-360	101	V
1	1.246	-63.75	Pk	29	-35	11.8	1.1	-56.85	-13	-43.85	0-360	101	H
2	2.143 (DL)	-48.22	Pk	31.5	-34.3	11.8	1	-38.22	-	-	0-360	199	H
6	2.143 (DL)	-40.15	Pk	31.5	-34.3	11.8	1	-30.15	-	-	0-360	200	V
7	2.409	-62.89	Pk	32.4	-33.8	11.8	.6	-51.89	-13	-38.89	0-360	200	V
3	2.6315	-64.33	Pk	32.7	-33.9	11.8	.4	-53.33	-13	-40.33	0-360	101	H
4	8.052	-66.38	Pk	35.8	-26.6	11.8	0	-45.38	-13	-32.38	0-360	200	H
8	9.14	-66.13	Pk	36.3	-25.2	11.8	0	-43.23	-13	-30.23	0-360	300	V

Pk - Peak detector

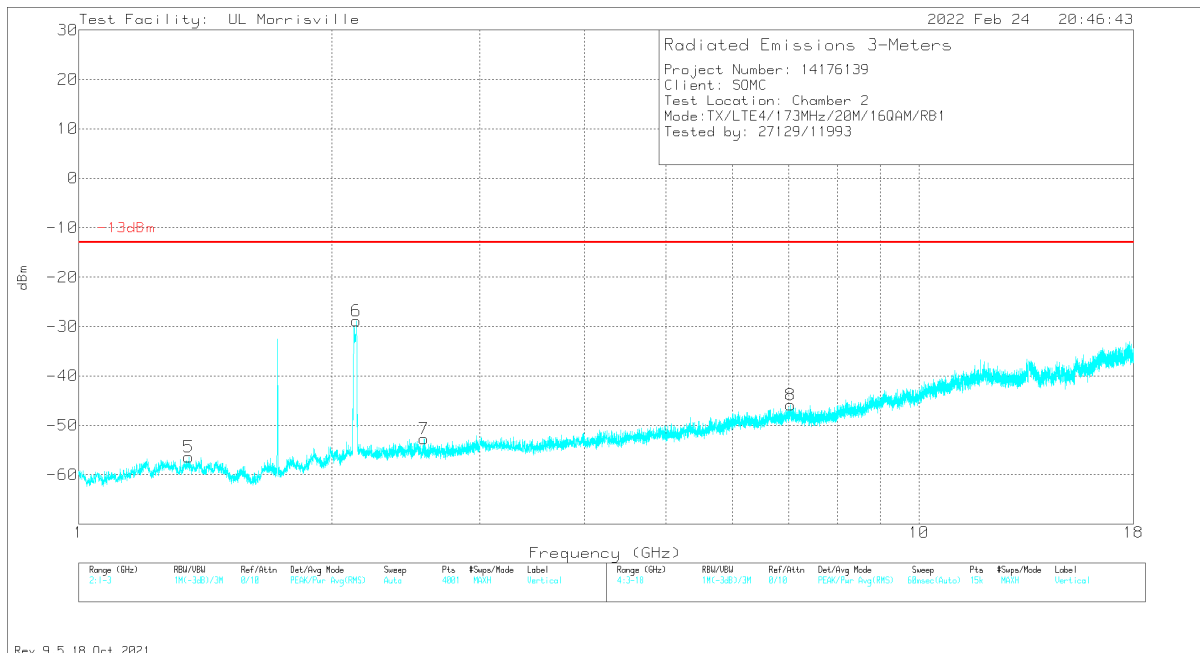
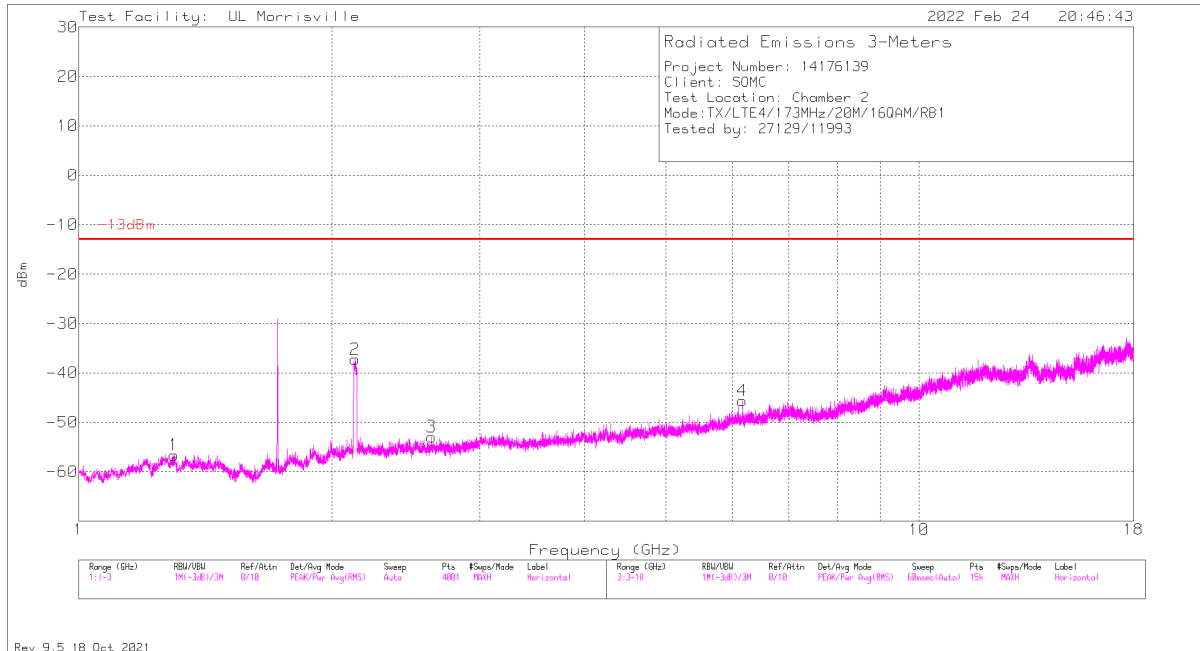
16QAM 20MHz 1720MHz Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	1.3015	-63.91	Pk	29.1	-34.7	11.8	1.1	-56.61	-13	-43.61	0-360	101	V
1	1.31	-63.13	Pk	28.5	-34.7	11.8	1.1	-56.43	-13	-43.43	0-360	299	H
2	2.1145 (DL)	-46.23	Pk	31.4	-34.3	11.8	1	-36.33	-	-	0-360	199	H
6	2.1195 (DL)	-38.37	Pk	31.4	-34.5	11.8	1	-28.67	-	-	0-360	299	V
7	2.408	-64.05	Pk	32.4	-33.7	11.8	.6	-52.95	-13	-39.95	0-360	299	V
3	2.531	-64.25	Pk	33.1	-34	11.8	.5	-52.85	-13	-39.85	0-360	299	H
4	7.024	-66.33	Pk	35.8	-26.5	11.8	0	-45.23	-13	-32.23	0-360	300	H
8	7.029	-66.29	Pk	35.8	-26.7	11.8	0	-45.39	-13	-32.39	0-360	200	V

Pk - Peak detector

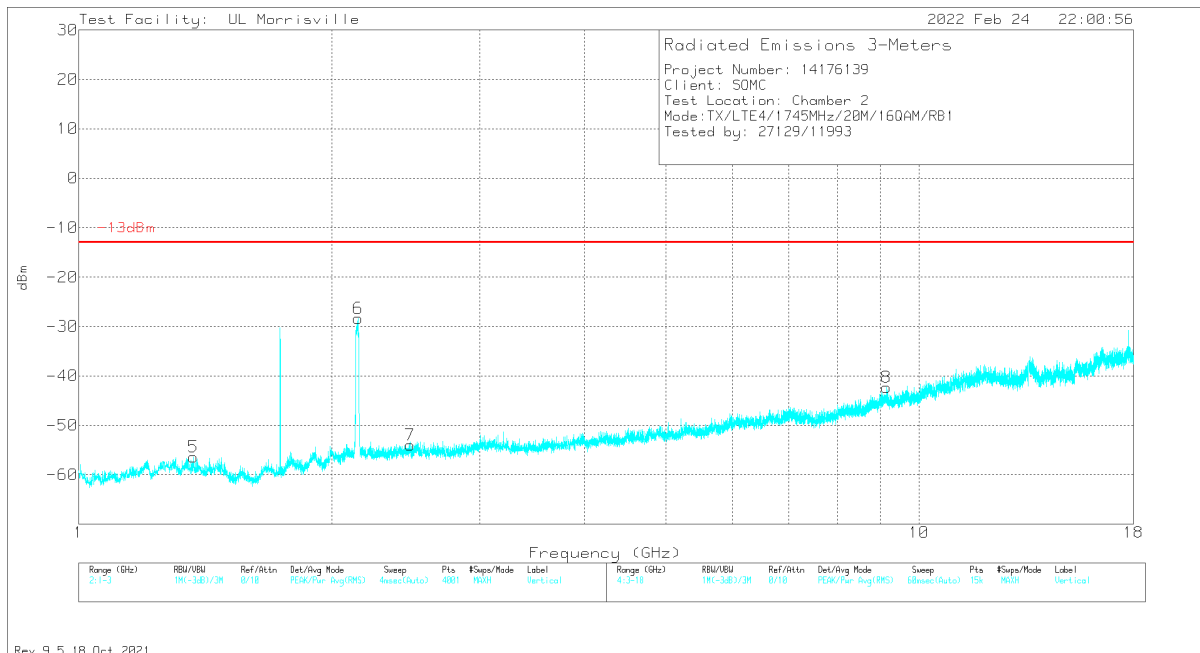
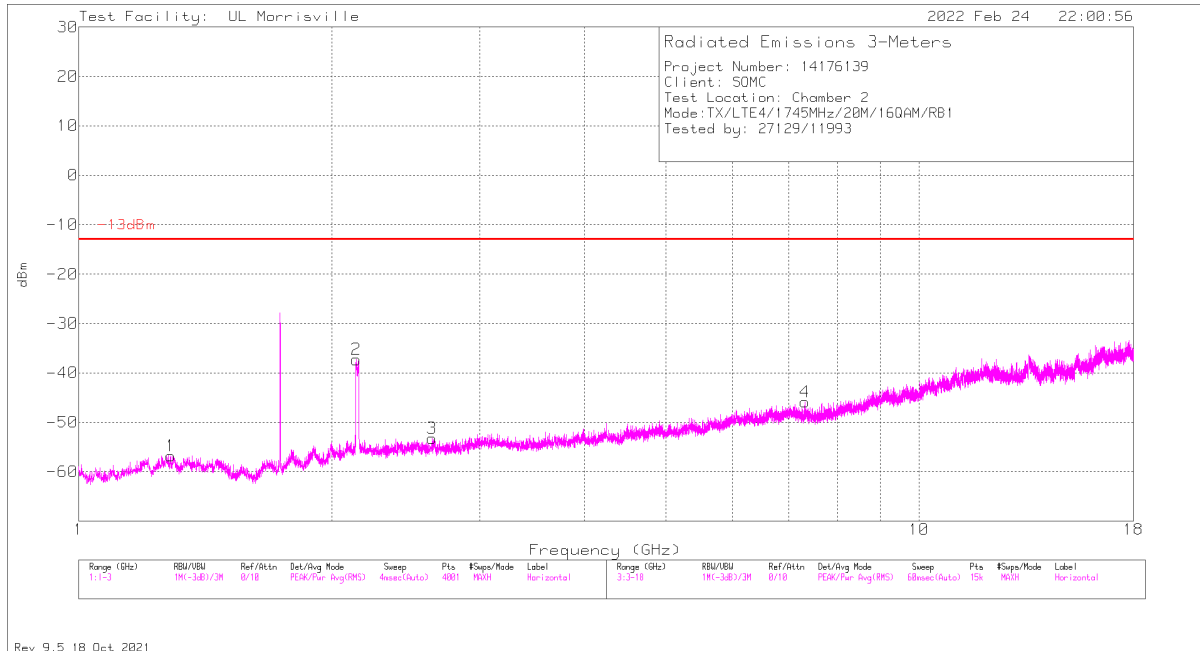
16QAM 20MHz 1732MHz Mid Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.299	-63.8	Pk	29.2	-34.9	11.8	1.1	-56.6	-13	-43.6	0-360	300	H
5	1.3515	-63.62	Pk	29.3	-35	11.8	1.1	-56.42	-13	-43.42	0-360	300	V
2	2.133 (DL)	-47.22	Pk	31.6	-34.4	11.8	1	-37.22	-	-	0-360	199	H
6	2.14 (DL)	-38.89	Pk	31.5	-34.3	11.8	1	-28.89	-	-	0-360	300	V
7	2.5775	-63.76	Pk	32.6	-33.8	11.8	.4	-52.76	-13	-39.76	0-360	300	V
3	2.631	-63.92	Pk	32.7	-33.9	11.8	.4	-52.92	-13	-39.92	0-360	101	H
4	6.164	-64.07	Pk	35.5	-28.9	11.8	0	-45.67	-13	-32.67	0-360	300	H
8	7.038	-66.75	Pk	35.8	-26.7	11.8	0	-45.85	-13	-32.85	0-360	200	V

Pk - Peak detector

16QAM 20MHZ 1745MHZ High Channel

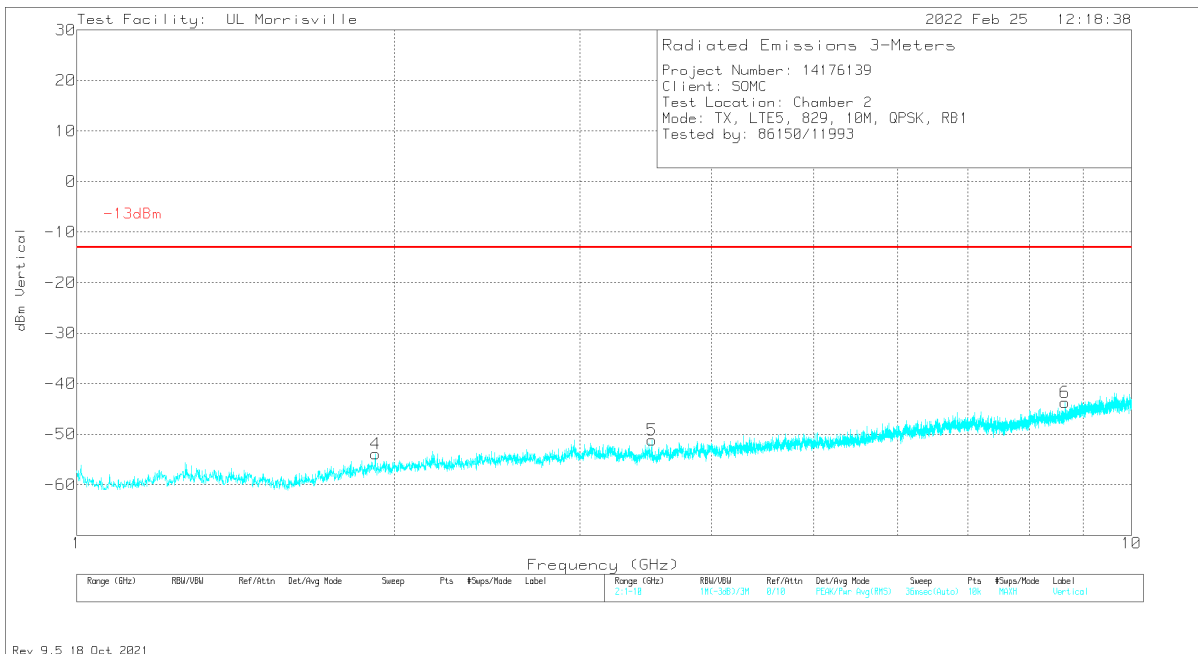
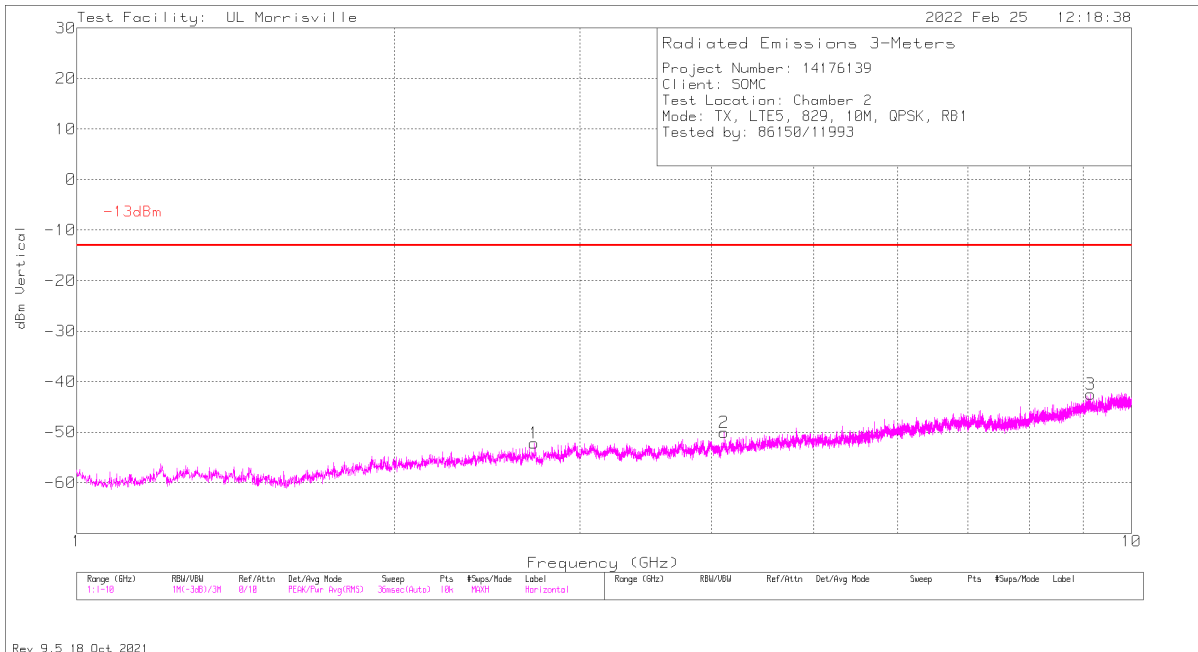


Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	CF (dB)	Filter (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.286	-63.65	Pk	29.1	-35	11.8	1	-56.75	-13	-43.75	0-360	300	H
5	1.3685	-63.86	Pk	29.3	-34.8	11.8	1.1	-56.46	-13	-43.46	0-360	101	V
2	2.1395 (DL)	-47.3	Pk	31.5	-34.3	11.8	1	-37.3	-	-	0-360	101	H
6	2.149 (DL)	-38.71	Pk	31.5	-34	11.8	1	-28.41	-	-	0-360	300	V
7	2.481	-65.15	Pk	32.6	-33.7	11.8	.5	-53.95	-13	-40.95	0-360	300	V
3	2.632	-64.14	Pk	32.7	-34	11.8	.4	-53.24	-13	-40.24	0-360	101	H
4	7.313	-66.46	Pk	35.7	-26.9	11.8	0	-45.86	-13	-32.86	0-360	299	H
8	9.148	-64.48	Pk	36.3	-25.9	11.8	0	-42.28	-13	-29.28	0-360	299	V

Pk - Peak detector

10.1.5. LTE5

QPSK 10Mhz 829MHz Low Channel



Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AT0072 (dB/m)	Amp/Cbl (dB)	Filter (dB)	CF (dB)	Corrected Reading dBm	-13dBm	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.9198	-62.65	Pk	30.9	-34.4	.4	11.8	-53.95	-13	-40.95	0-360	200	V
1	2.7136	-63.37	Pk	32.5	-33.6	.5	11.8	-52.17	-13	-39.17	0-360	101	H
5	3.5092	-63.58	Pk	32.9	-32.7	.4	11.8	-51.18	-13	-38.18	0-360	101	V
2	4.1104	-64.49	Pk	33.6	-31.5	.5	11.8	-50.09	-13	-37.09	0-360	299	H
6	8.6545	-65.22	Pk	36	-26.8	.5	11.8	-43.72	-13	-30.72	0-360	101	V
3	9.1432	-64.93	Pk	36.3	-26.1	.5	11.8	-42.43	-13	-29.43	0-360	299	H

Pk - Peak detector