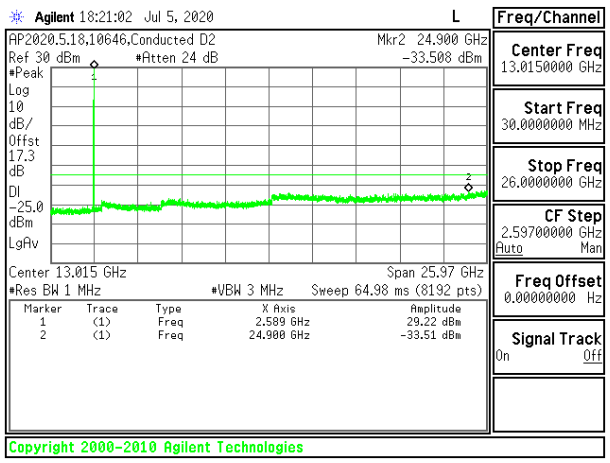
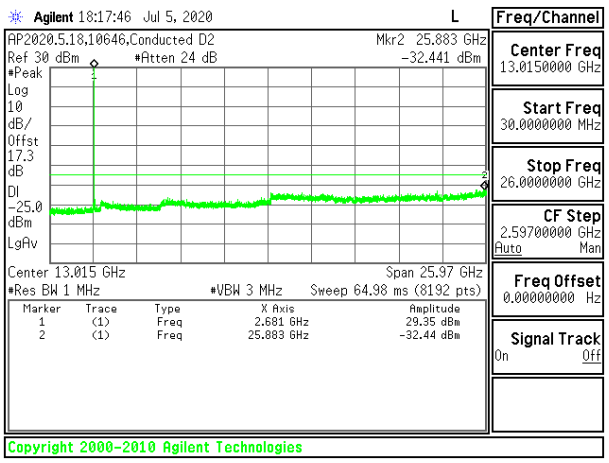
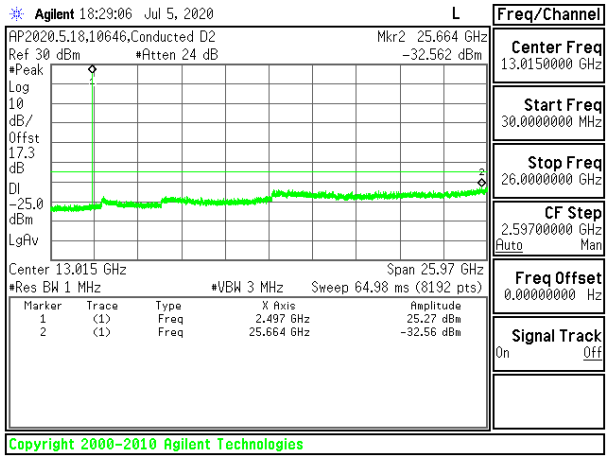


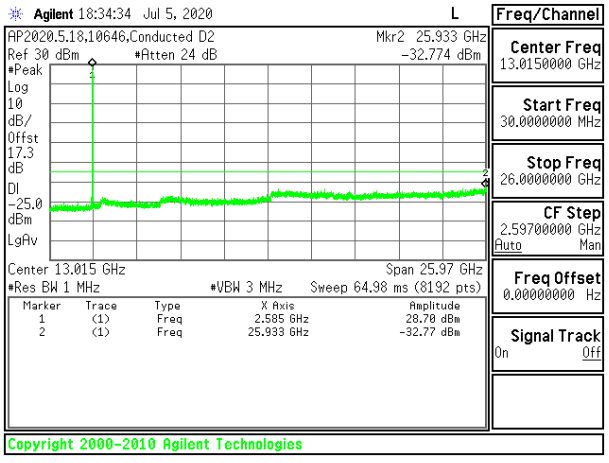
LTE B41 10MHz QPSK Middle Channel RB1-0



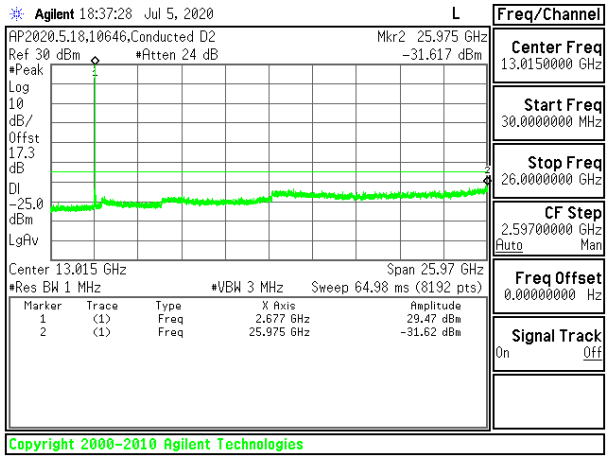
LTE B41 10MHz QPSK High Channel RB1-0



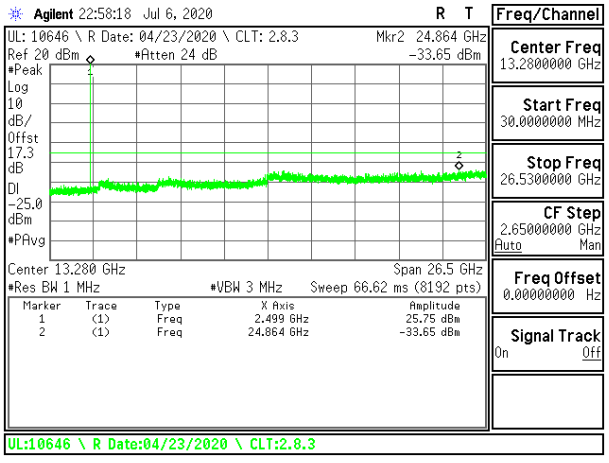
LTE B41 15MHz QPSK Low Channel RB1-0



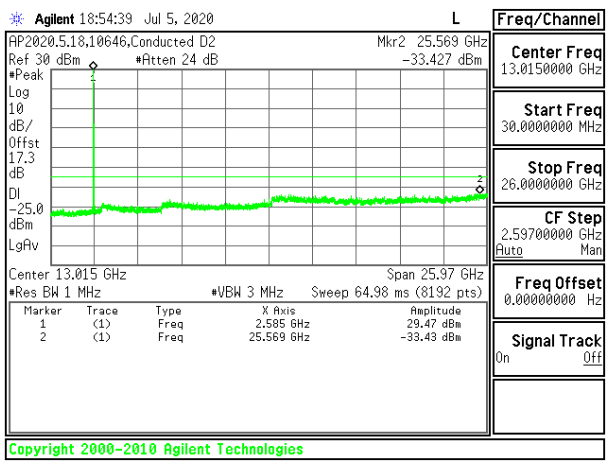
LTE B41 15MHz QPSK Middle Channel RB1-0



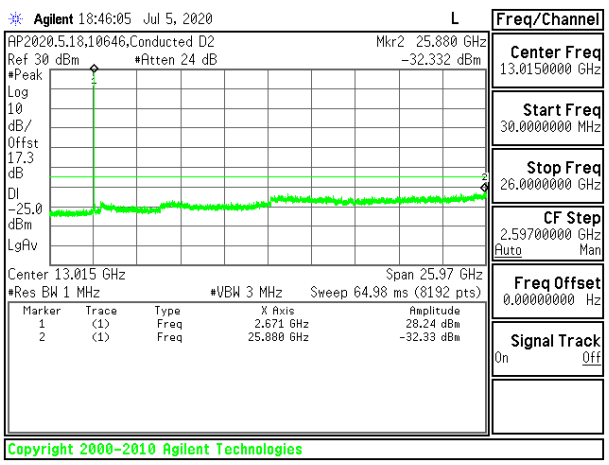
LTE B41 15MHz QPSK High Channel RB1-0



LTE B41 20MHz QPSK Low Channel RB1-0

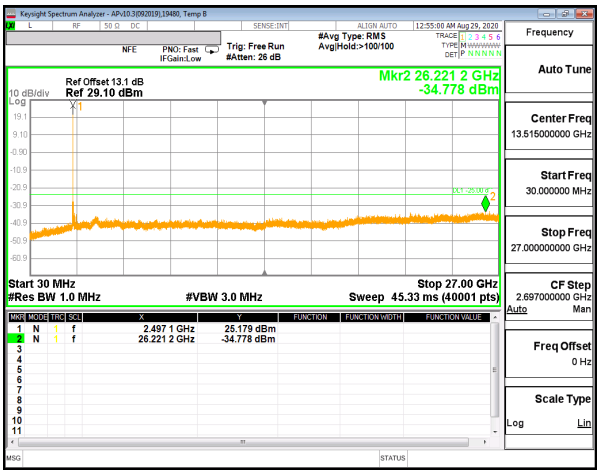


LTE B41 20MHz QPSK Middle Channel RB1-0

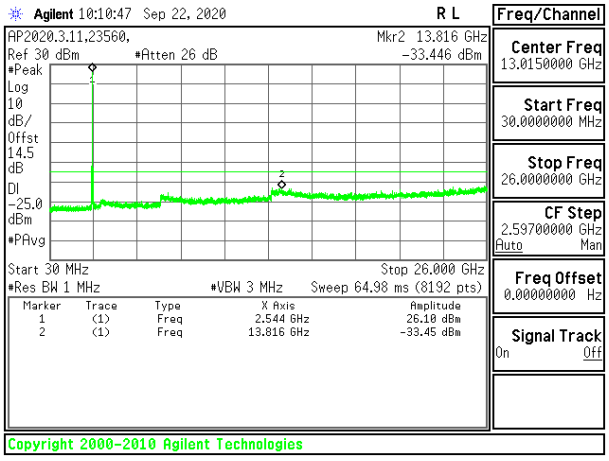


LTE B41 20MHz QPSK High Channel RB1-0

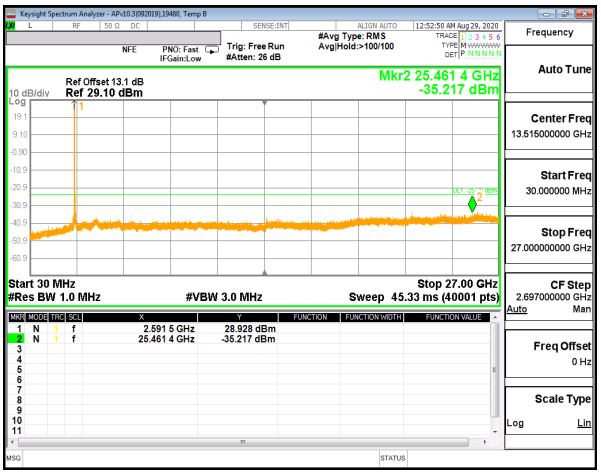
5G NR BAND n41



5G NR Band n41 100MHz QPSK Low Channel RB1-1



5G NR Band n41 100MHz QPSK Middle Channel RB1-1



5G NR Band n41 100MHz QPSK High Channel RB1-1

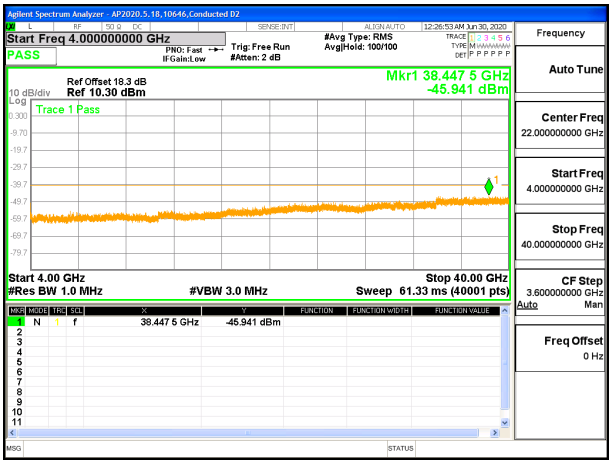
INTENTIONALLY VOID

8.3.12. LTE BAND 48

LIMITS

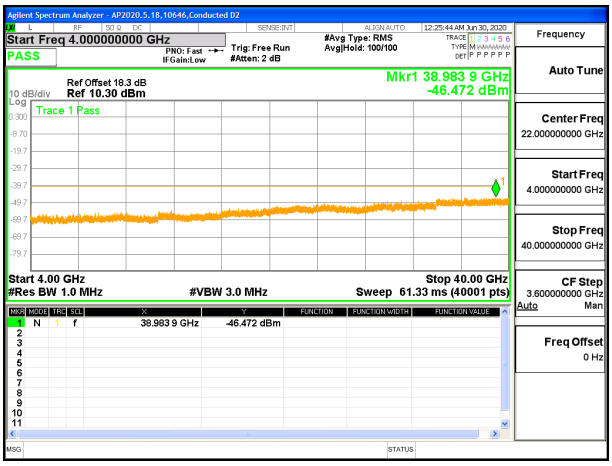
FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

LTE B48 5MHz QPSK Low Channel RB1-0 (30MHz to 4GHz)



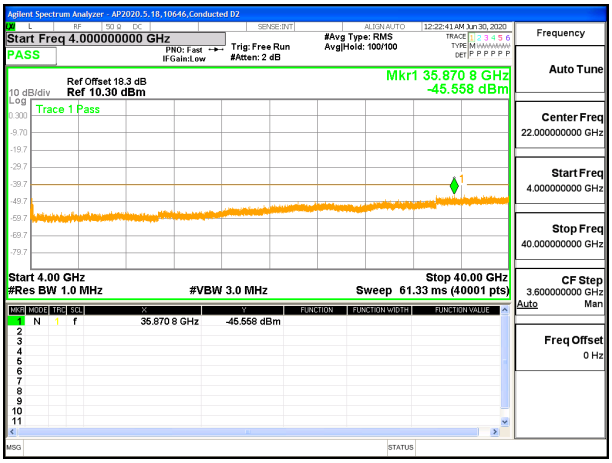
LTE B48 5MHz QPSK Low Channel RB1-0 (4G to 40G)

LTE B48 5MHz QPSK Mid Channel RB1-0 (30MHz to 4GHz)



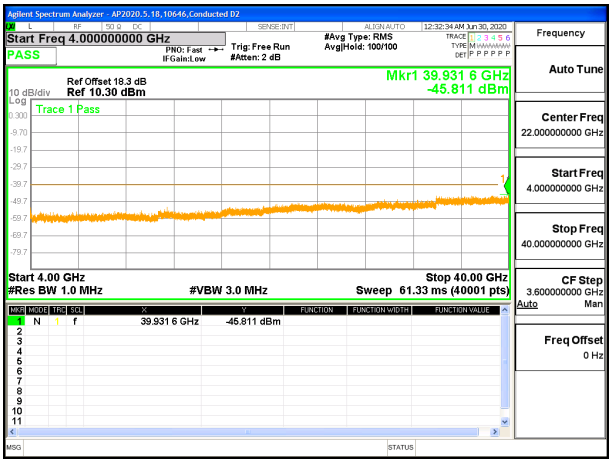
LTE B48 5MHz QPSK Middle Channel RB1-0 (4G to 40G)

LTE B48 5MHz QPSK High Channel RB1-0 (30MHz to 4GHz)



LTE B48 5MHz QPSK High Channel RB1-0 (4G to 40G)

LTE B48 10MHz QPSK Low Channel RB1-0 (30MHz to 4GHz)



LTE B48 10MHz QPSK Low Channel RB1-0 (4G to 40G)

LTE B48 10MHz QPSK Mid Channel RB1-0 (30MHz to 4GHz)

LTE B48 10MHz QPSK Middle Channel RB1-0 (4G to 40G)

LTE B48 10MHz QPSK High Channel RB1-0 (30MHz to 4GHz)

LTE B48 10MHz QPSK High Channel RB1-0 (4G to 40G)

LTE B48 15MHz QPSK Low Channel RB1-0 (30MHz to 4GHz)

LTE B48 15MHz QPSK Low Channel RB1-0 (4G to 40G)

LTE B48 15MHz QPSK Mid Channel RB1-0 (30MHz to 4GHz)

LTE B48 15MHz QPSK Middle Channel RB1-0 (4G to 40G)

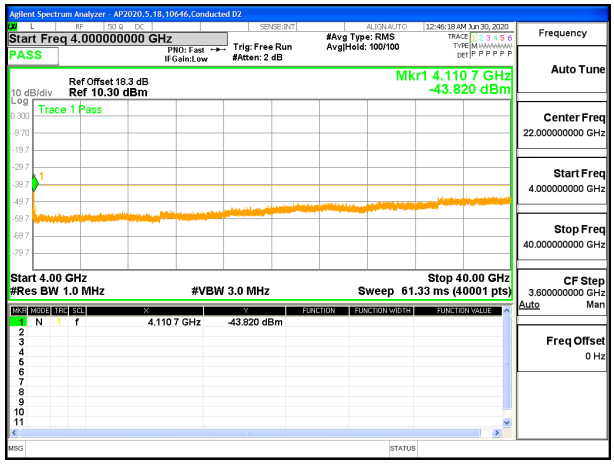
LTE B48 15MHz QPSK High Channel RB1-0 (30MHz to 4GHz)

LTE B48 15MHz QPSK High Channel RB1-0 (4G to 40G)

LTE B48 20MHz QPSK Low Channel RB1-0 (30MHz to 4GHz)

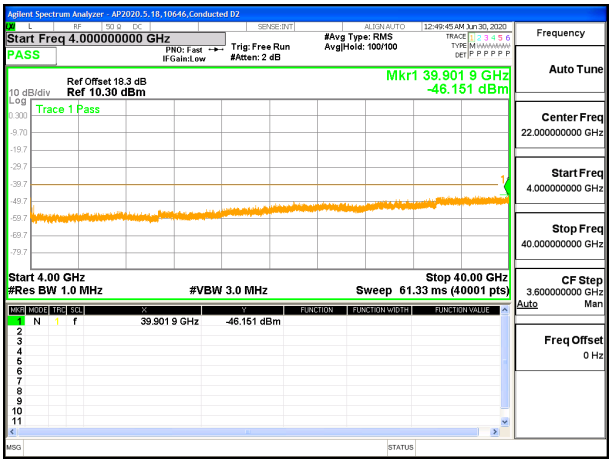
LTE B48 20MHz QPSK Low Channel RB1-0 (4G to 40G)

LTE B48 20MHz QPSK Mid Channel RB1-0 (30MHz to 4GHz)



LTE B48 20MHz QPSK Middle Channel RB1-0 (4G to 40G)

LTE B48 20MHz QPSK High Channel RB1-0 (30MHz to 4GHz)

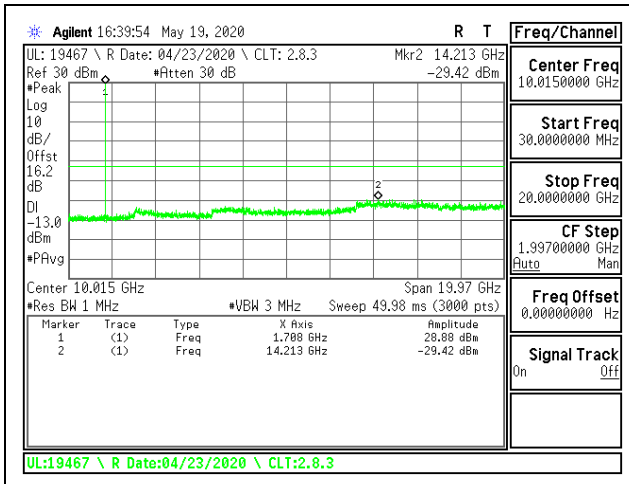


LTE B48 20MHz QPSK High Channel RB1-0 (4G to 40G)

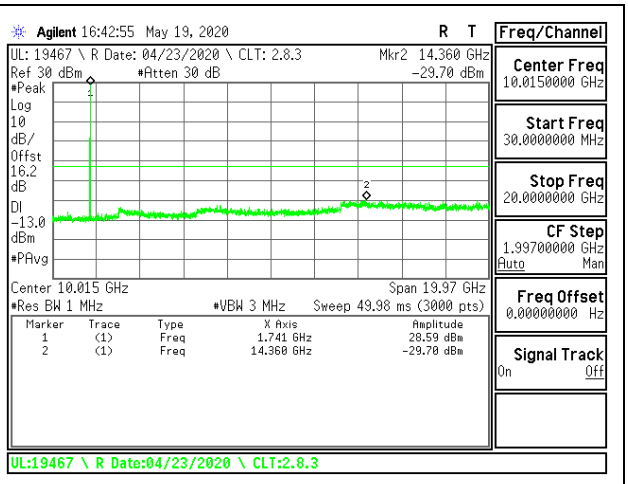
8.3.13. LTE BAND 66

LIMITS

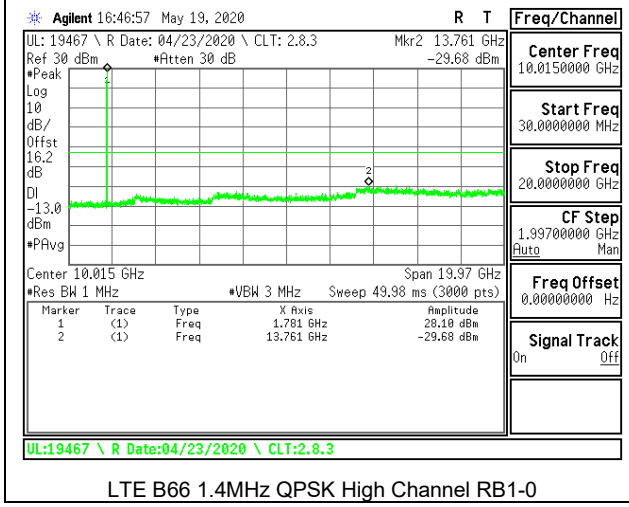
FCC: §27.53 (h)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



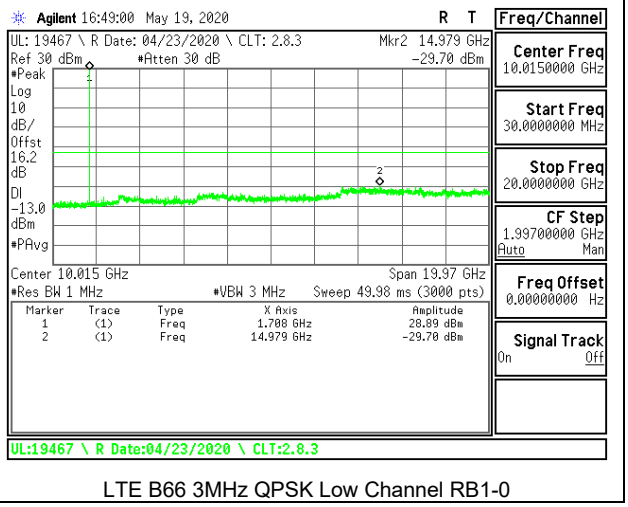
LTE B66 1.4MHz QPSK Low Channel RB1-0



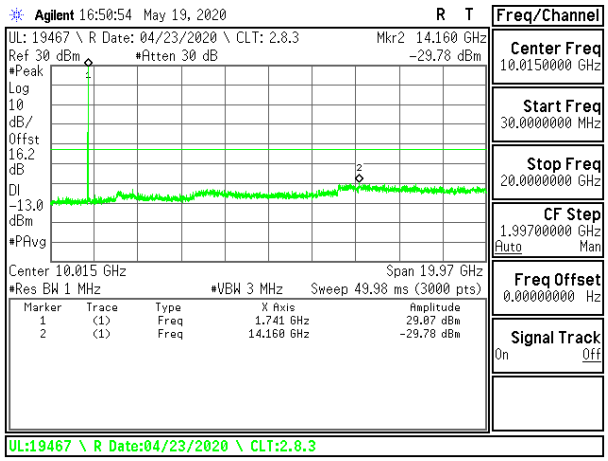
LTE B66 1.4MHz QPSK Middle Channel RB1-0



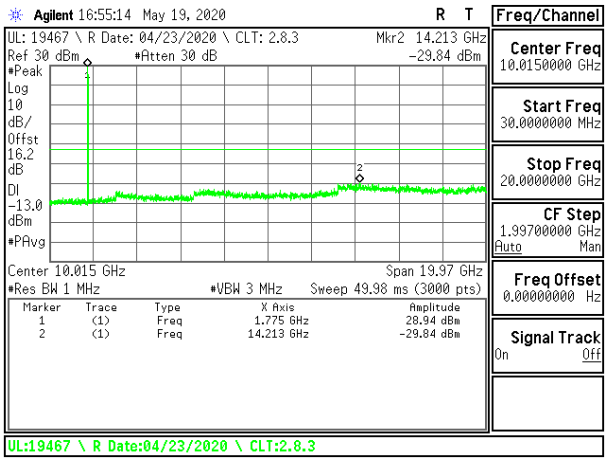
LTE B66 1.4MHz QPSK High Channel RB1-0



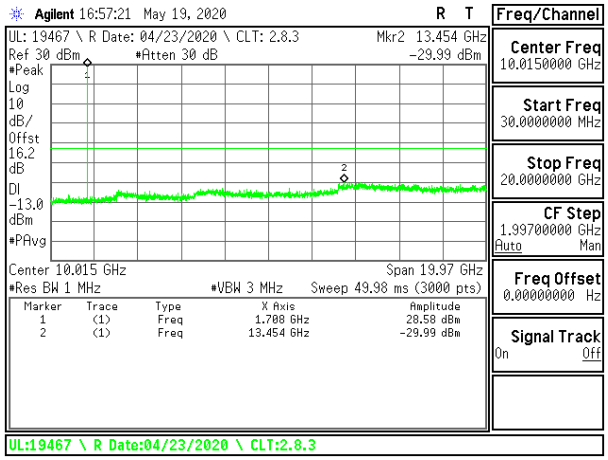
LTE B66 3MHz QPSK Low Channel RB1-0



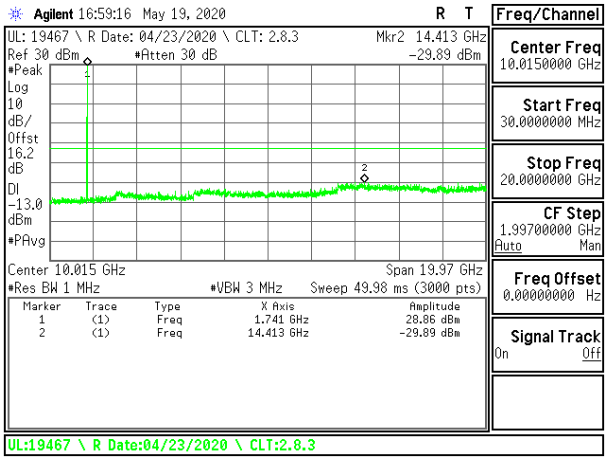
LTE B66 3MHz QPSK Middle Channel RB1-0



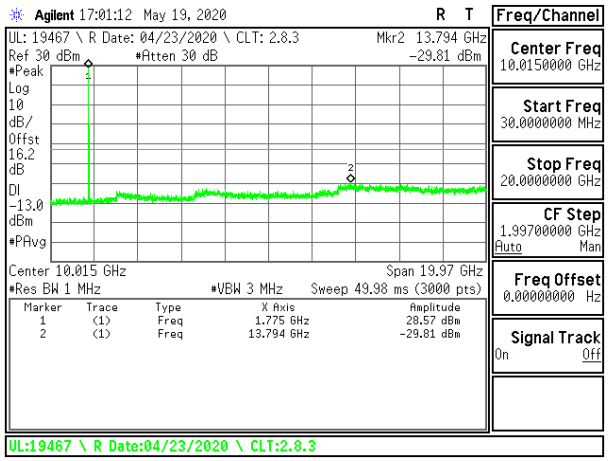
LTE B66 3MHz QPSK High Channel RB1-0



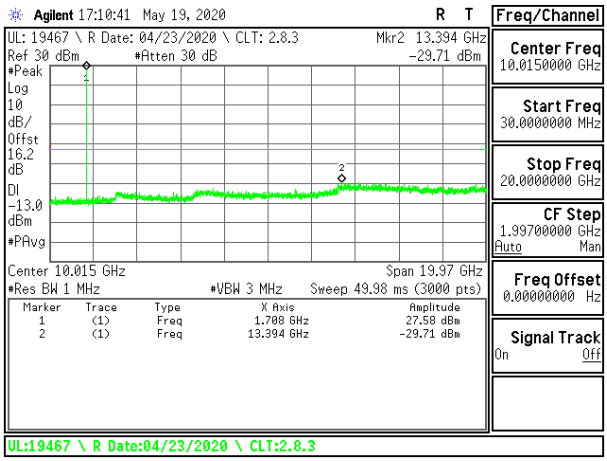
LTE B66 5MHz QPSK Low Channel RB1-0



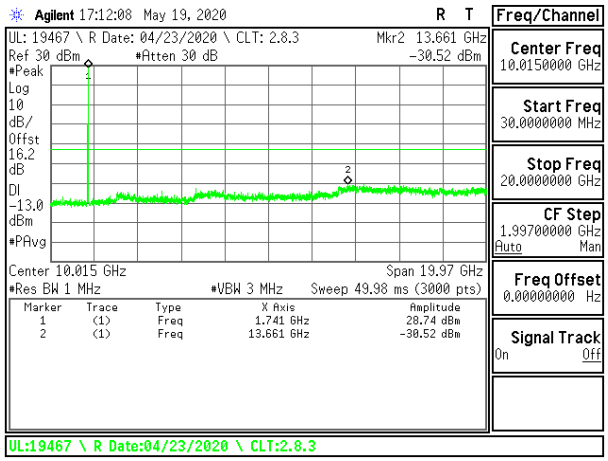
LTE B66 5MHz QPSK Middle Channel RB1-0



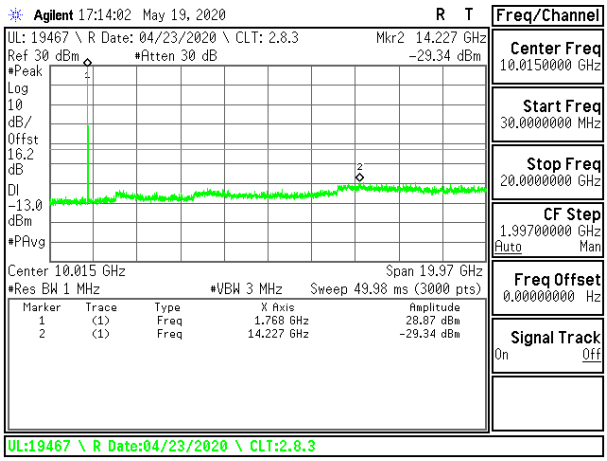
LTE B66 5MHz QPSK High Channel RB1-0



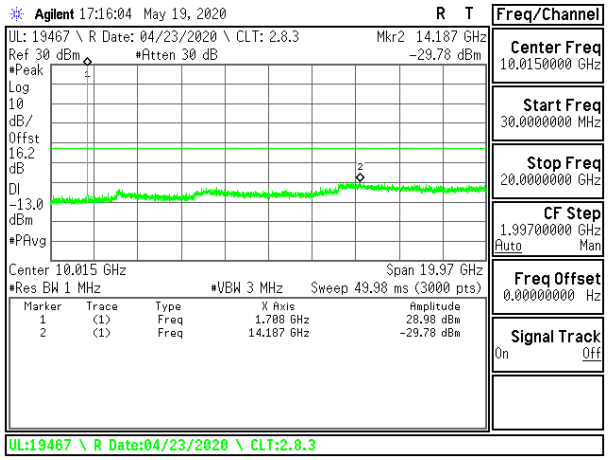
LTE B66 10MHz QPSK Low Channel RB1-0



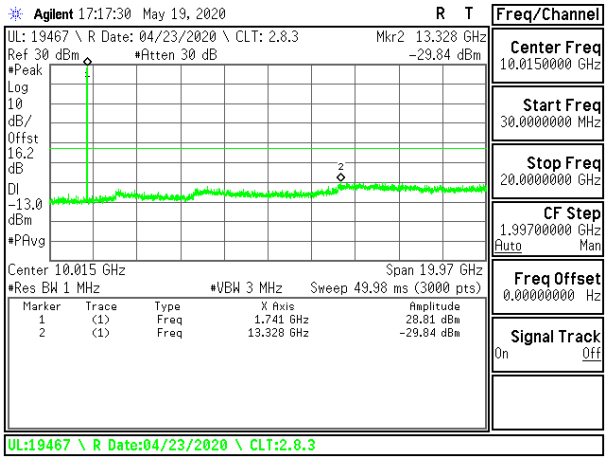
LTE B66 10MHz QPSK Middle Channel RB1-0



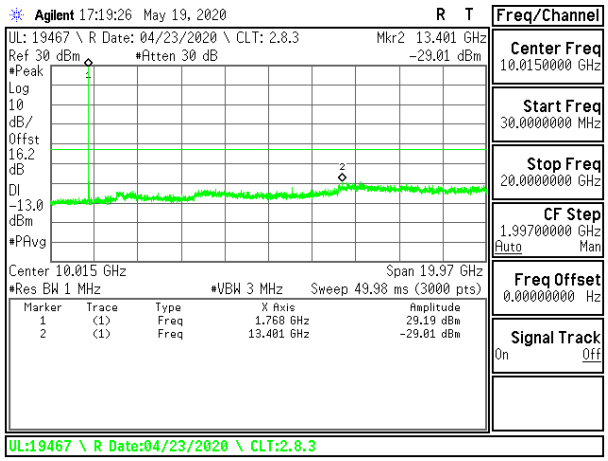
LTE B66 10MHz QPSK High Channel RB1-0



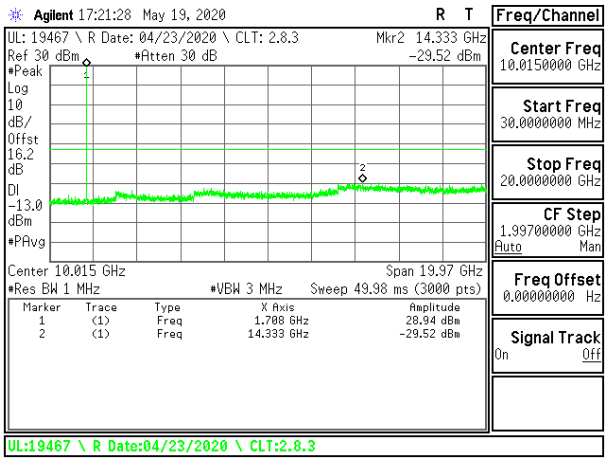
LTE B66 15MHz QPSK Low Channel RB1-0



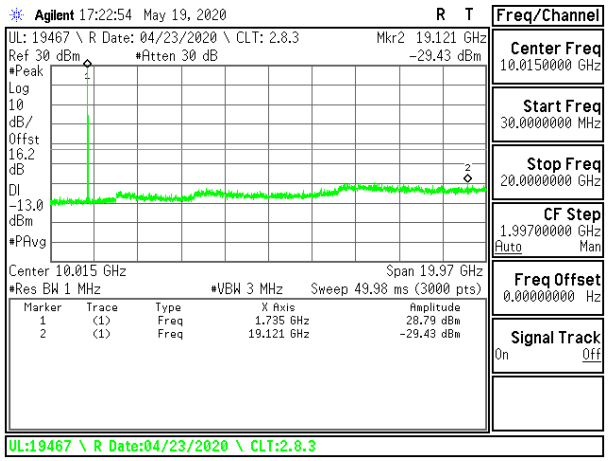
LTE B66 15MHz QPSK Middle Channel RB1-0



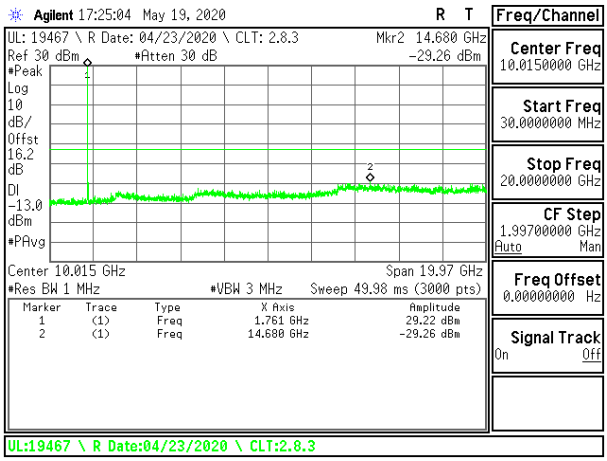
LTE B66 15MHz QPSK High Channel RB1-0



LTE B66 20MHz QPSK Low Channel RB1-0



LTE B66 20MHz QPSK Middle Channel RB1-0

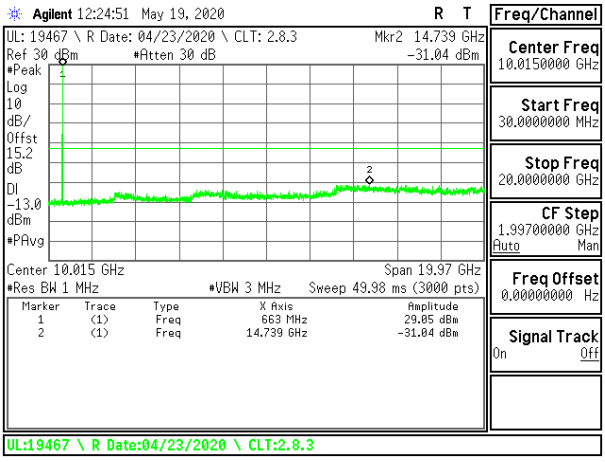


LTE B66 20MHz QPSK High Channel RB1-0

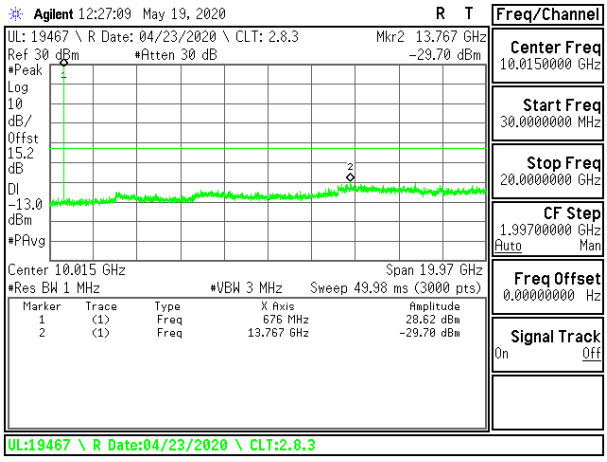
8.3.14. LTE BAND 71

LIMITS

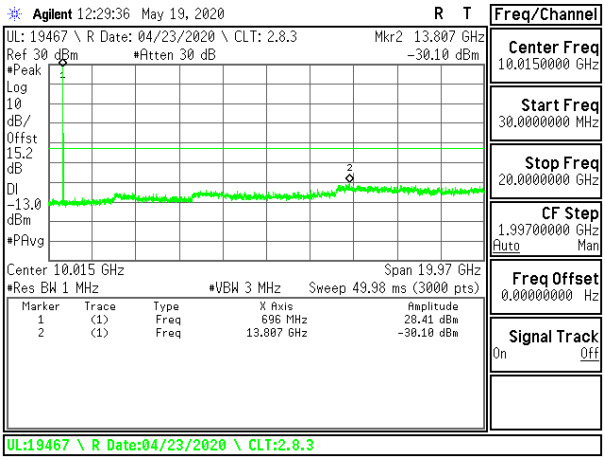
FCC: §27.53 (g)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



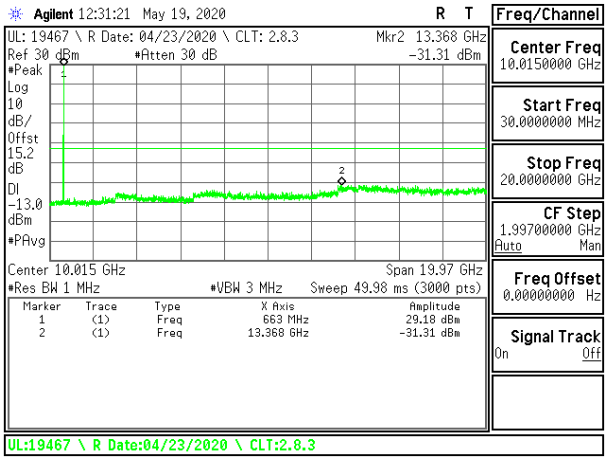
LTE B71 5MHz QPSK Low Channel RB1-0



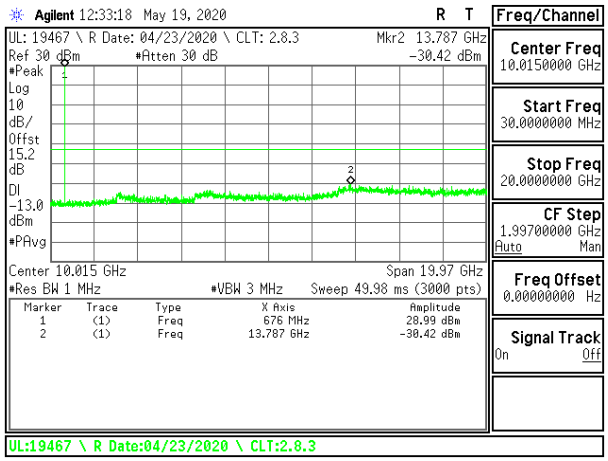
LTE B71 5MHz QPSK Middle Channel RB1-0



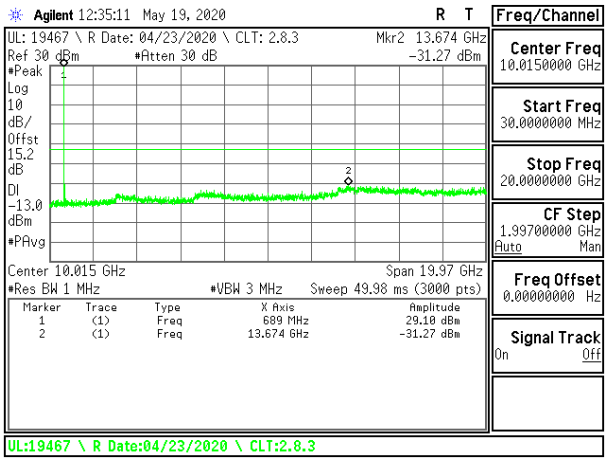
LTE B71 5MHz QPSK High Channel RB1-0



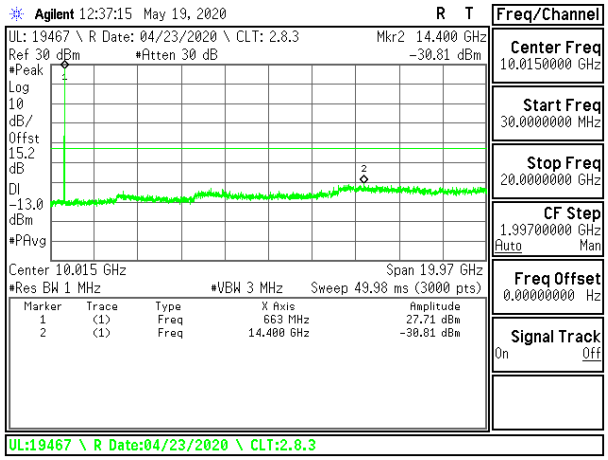
LTE B71 10MHz QPSK Low Channel RB1-0



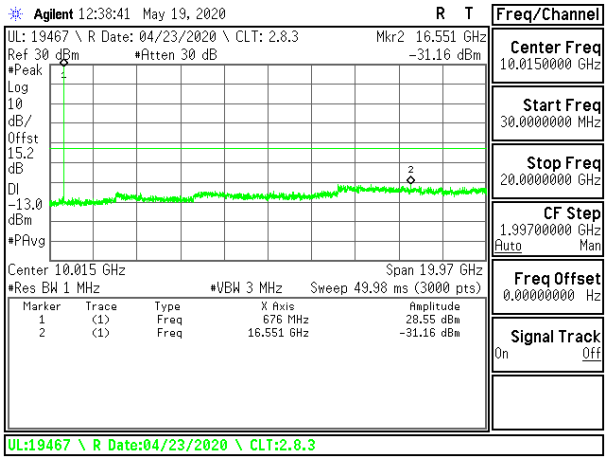
LTE B71 10MHz QPSK Middle Channel RB1-0



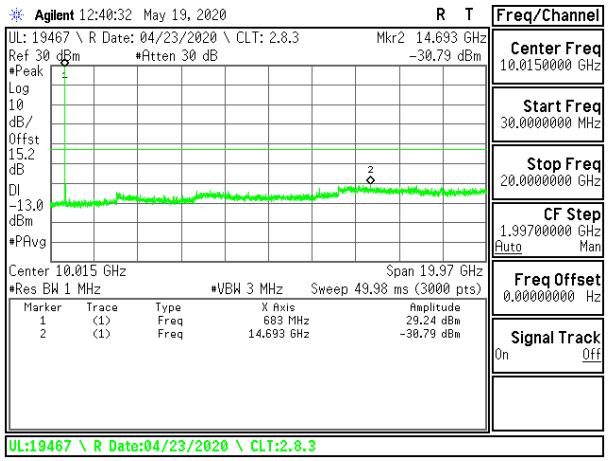
LTE 71 10MHz QPSK High Channel RB1-0



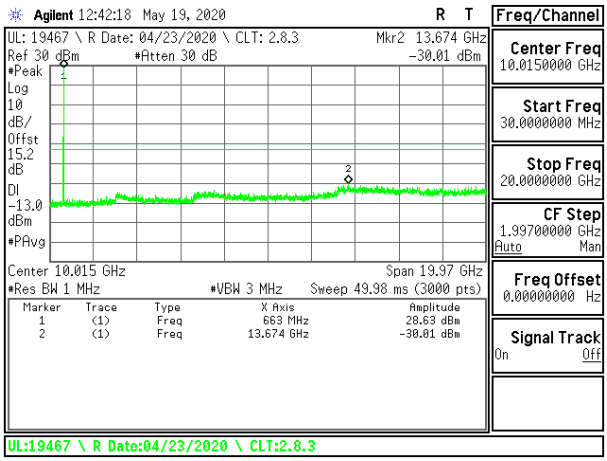
LTE B71 15MHz QPSK Low Channel RB1-0



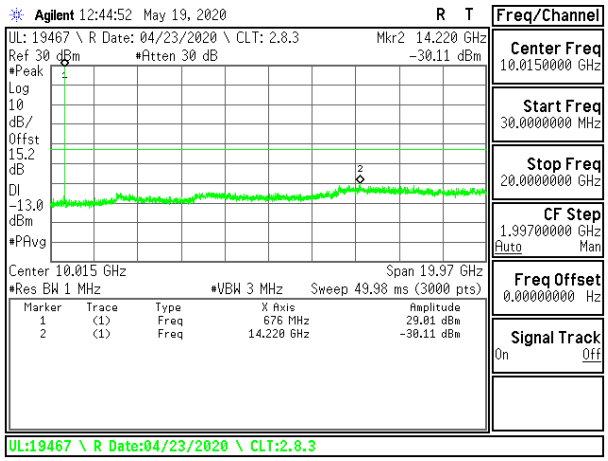
LTE B71 15MHz QPSK Middle Channel RB1-0



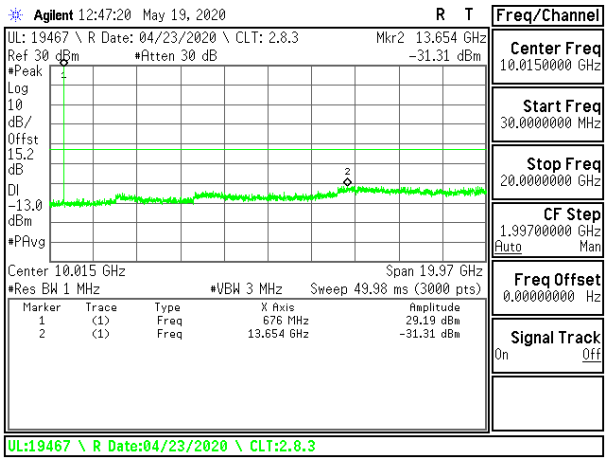
LTE B71 15MHz QPSK High Channel RB1-0



LTE B71 20MHz QPSK Low Channel RB1-0



LTE B71 20MHz QPSK Middle Channel RB1-0

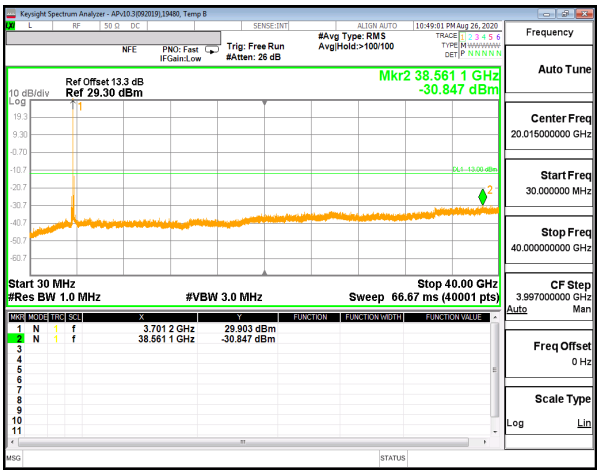


LTE B71 20MHz QPSK High Channel RB1-0

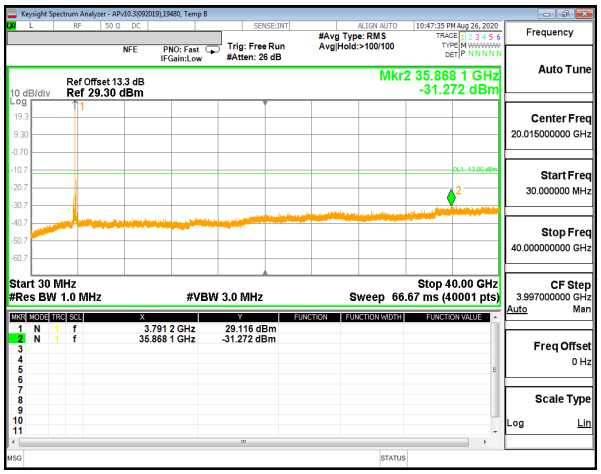
8.3.15. **5G NR BAND n77**

LIMITS

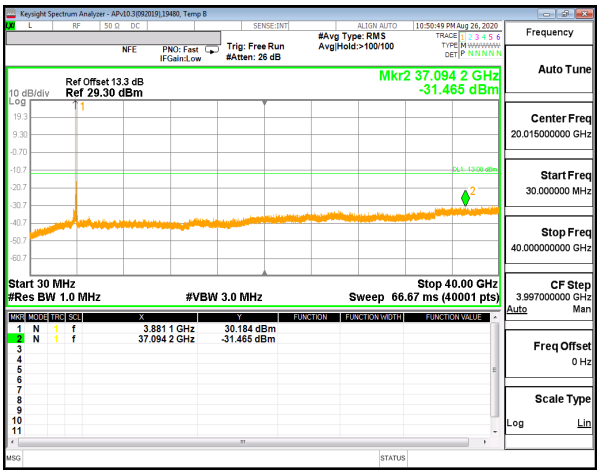
FCC: §27.53
Emission limits
(l) 3.7 GHz Service. The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.



5G NR Band n77 100MHz QPSK Low Channel RB1-1



5G NR Band n77 100MHz QPSK Mid Channel RB1-1



5G NR Band n77 100MHz QPSK High Channel RB1-1

8.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
  End Voltage, 3.2VDC.

Frequency Stability vs Temperature:
The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC is reached.

Frequency Stability vs Voltage:
The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

8.4.1. 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:	19179	Test Date:	7/22/2020

QPSK (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1851.0167	1908.9924		
Extreme (50C)		1851.0167	1908.9924	8.1	0.004
Extreme (40C)		1851.0167	1908.9924	-14.6	-0.008
Extreme (30C)		1851.0167	1908.9924	10.5	0.006
Extreme (10C)		1851.0167	1908.9924	-11.6	-0.006
Extreme (0C)		1851.0167	1908.9924	-7.4	-0.004
Extreme (-10C)		1851.0167	1908.9924	12.9	0.007
Extreme (-20C)		1851.0167	1908.9924	12.7	0.007
Extreme (-30C)		1851.0167	1908.9924	12.5	0.007
20C	15%	1851.0167	1908.9924	-12.1	-0.006
	-15%	1851.0167	1908.9924	-12.6	-0.007
	End Point	1851.0167	1908.9924	-12.0	-0.006

8.4.2. LTE BAND 5 AND 5G NR BAND n5

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:	19179	Test Date:	7/22/2020

LTE BAND 5 QPSK (10MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.5001	848.4931		
Extreme (50C)		824.5001	848.4931	-7.7	-0.009
Extreme (40C)		824.5001	848.4931	-6.6	-0.008
Extreme (30C)		824.5001	848.4931	-6.8	-0.008
Extreme (10C)		824.5001	848.4931	-6.4	-0.008
Extreme (0C)		824.5001	848.4931	7.0	0.008
Extreme (-10C)		824.5001	848.4931	6.6	0.008
Extreme (-20C)		824.5001	848.4931	-7.1	-0.008
Extreme (-30C)		824.5001	848.4931	-5.5	-0.007
20C	15%	824.5001	848.4931	-6.1	-0.007
	-15%	824.5001	848.4931	-7.4	-0.009
	End Point	824.5001	848.4931	-7.7	-0.009

5G NR BAND n5 QPSK (20MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	2.8	(MHz)	(MHz)		
Normal (20C)	Normal	824.4696	847.4339		
Extreme (50C)		824.4696	847.4339	-11.5	-0.014
Extreme (40C)		824.4696	847.4339	-11.0	-0.013
Extreme (30C)		824.4696	847.4339	-11.5	-0.014
Extreme (10C)		824.4696	847.4339	-12.1	-0.015
Extreme (0C)		824.4696	847.4339	-12.4	-0.015
Extreme (-10C)		824.4696	847.4339	-11.6	-0.014
Extreme (-20C)		824.4696	847.4339	-13.0	-0.016
Extreme (-30C)		824.4696	847.4339	-8.1	-0.010
20C	15%	824.4696	847.4339	-14.5	-0.017
	-15%	824.4696	847.4339	-14.4	-0.017
	End Point Voltage	824.4696	847.4339	-14.4	-0.017

8.4.3. LTE BAND 7

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:	19179	Test Date:	7/22/2020

QPSK (20MHz BANDWIDTH)

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2501.0165	2568.9927		
Extreme (50C)		2501.0165	2568.9927	-12.4	-0.005
Extreme (40C)		2501.0165	2568.9927	-11.3	-0.004
Extreme (30C)		2501.0165	2568.9927	-14.9	-0.006
Extreme (10C)		2501.0165	2568.9927	-14.3	-0.006
Extreme (0C)		2501.0165	2568.9927	11.7	0.005
Extreme (-10C)		2501.0165	2568.9927	11.5	0.005
Extreme (-20C)		2501.0165	2568.9927	-13.6	-0.005
Extreme (-30C)		2501.0165	2568.9927	-15.5	-0.006
20C	15%	2501.0165	2568.9927	-13.9	-0.005
	-15%	2501.0165	2568.9927	-14.1	-0.006
	End Point	2501.0165	2568.9927	-15.4	-0.006

8.4.4. LTE BAND 12 AND 5G NR BAND n12

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:	19179	Test Date:	7/22/2020

LTE BAND 12 QPSK (10MHz BANDWIDTH)

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.5110	715.5351		
Extreme (50C)		699.5110	715.5351	-7.4	-0.010
Extreme (40C)		699.5110	715.5351	4.7	0.007
Extreme (30C)		699.5110	715.5351	-6.1	-0.009
Extreme (10C)		699.5110	715.5351	-7.6	-0.011
Extreme (0C)		699.5110	715.5351	-8.8	-0.012
Extreme (-10C)		699.5110	715.5351	6.2	0.009
Extreme (-20C)		699.5110	715.5351	-4.1	-0.006
Extreme (-30C)		699.5110	715.5351	4.9	0.007
20C	15%	699.5110	715.5351	-8.4	-0.012
	-15%	699.5110	715.5351	-7.4	-0.010
	End Point	699.5110	715.5351	-7.6	-0.011

5G NR BAND n12 QPSK (15MHz BANDWIDTH)

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.3905	714.8979		
Extreme (50C)		699.3905	714.8979	-14.1	-0.020
Extreme (40C)		699.3905	714.8979	-11.3	-0.016
Extreme (30C)		699.3905	714.8979	-13.1	-0.019
Extreme (10C)		699.3905	714.8979	-13.2	-0.019
Extreme (0C)		699.3905	714.8979	-14.1	-0.020
Extreme (-10C)		699.3905	714.8979	-14.3	-0.020
Extreme (-20C)		699.3905	714.8979	-12.5	-0.018
Extreme (-30C)		699.3905	714.8979	-13.2	-0.019
20C	15%	699.3905	714.8979	-12.6	-0.018
	-15%	699.3905	714.8979	-11.3	-0.016
	End Point	699.3905	714.8979	-11.4	-0.016

8.4.5. **LTE BAND 13**

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:	19179	Test Date:	7/7/2020

QPSK (10MHz BANDWIDTH)

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	777.4698	786.5190		
Extreme (50C)		777.4698	786.5190	-6.2	-0.008
Extreme (40C)		777.4698	786.5190	-4.3	-0.005
Extreme (30C)		777.4698	786.5190	-5.4	-0.007
Extreme (10C)		777.4698	786.5190	-4.3	-0.006
Extreme (0C)		777.4698	786.5190	-6.8	-0.009
Extreme (-10C)		777.4698	786.5190	-4.9	-0.006
Extreme (-20C)		777.4698	786.5190	7.6	0.010
Extreme (-30C)		777.4698	786.5190	-8.5	-0.011
20C	15%	777.4698	786.5190	-7.6	-0.010
	-15%	777.4698	786.5190	4.5	0.006
	End Point	777.4698	786.5190	-7.8	-0.010

8.4.6. LTE BAND 14

LIMITS

FCC: §90.539
(e) The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 ppm or better when AFC is locked to a base station, and 5 ppm or better when AFC is not locked.

Test Engineer ID:	19179	Test Date:	7/22/2020

QPSK (10MHz BANDWIDTH)

Limit		788	798	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	788.2150	797.4875		
Extreme (50C)		788.2150	797.4875	1.2	0.002
Extreme (40C)		788.2150	797.4875	1.5	0.002
Extreme (30C)		788.2150	797.4875	1.3	0.002
Extreme (10C)		788.2150	797.4875	1.7	0.002
Extreme (0C)		788.2150	797.4875	1.3	0.002
Extreme (-10C)		788.2150	797.4875	1.8	0.002
Extreme (-20C)		788.2150	797.4875	1.8	0.002
Extreme (-30C)		788.2150	797.4875	1.9	0.002
20C	15%	788.2150	797.4875	2.0	0.003
	-15%	788.2150	797.4875	1.9	0.002
	End Point	788.2150	797.4875	-0.6	-0.001

8.4.7. LTE BAND 17

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:	19179	Test Date:	7/22/2020

QPSK (10MHz BANDWIDTH)

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	704.5084	715.5065		
Extreme (50C)		704.5084	715.5065	-9.4	-0.013
Extreme (40C)		704.5084	715.5065	-3.1	-0.004
Extreme (30C)		704.5084	715.5065	-3.9	-0.005
Extreme (10C)		704.5084	715.5065	-7.7	-0.011
Extreme (0C)		704.5084	715.5065	8.6	0.012
Extreme (-10C)		704.5084	715.5065	-7.8	-0.011
Extreme (-20C)		704.5084	715.5065	-5.0	-0.007
Extreme (-30C)		704.5084	715.5065	-7.8	-0.011
20C	15%	704.5084	715.5065	-9.2	-0.013
	-15%	704.5084	715.5065	-10.7	-0.015
	End Point	704.5084	715.5065	-7.7	-0.011

8.4.8. LTE BAND 25

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:	19179	Test Date:	7/22/2020

QPSK (20MHz BANDWIDTH)

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1851.0119	1913.9804		
Extreme (50C)		1851.0119	1913.9804	-13.4	-0.007
Extreme (40C)		1851.0119	1913.9804	7.9	0.004
Extreme (30C)		1851.0119	1913.9804	-13.1	-0.007
Extreme (10C)		1851.0119	1913.9804	-14.4	-0.008
Extreme (0C)		1851.0119	1913.9804	-14.5	-0.008
Extreme (-10C)		1851.0119	1913.9804	12.8	0.007
Extreme (-20C)		1851.0119	1913.9804	-11.4	-0.006
Extreme (-30C)		1851.0119	1913.9804	-13.8	-0.007
20C	15%	1851.0119	1913.9804	-15.0	-0.008
	-15%	1851.0119	1913.9804	-13.5	-0.007
	End Point	1851.0119	1913.9804	-15.3	-0.008

8.4.9. LTE BAND 26 (FCC PART 90S)

LIMITS

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

Test Engineer ID:	19179	Test Date:	7/22/2020

QPSK (10MHz BANDWIDTH)

Limit		814	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	814.4998	823.5100		
Extreme (50C)		814.4998	823.5100	-9.0	-0.011
Extreme (40C)		814.4998	823.5100	-5.3	-0.006
Extreme (30C)		814.4998	823.5100	-10.2	-0.012
Extreme (10C)		814.4998	823.5100	-8.9	-0.011
Extreme (0C)		814.4998	823.5100	-6.0	-0.007
Extreme (-10C)		814.4998	823.5100	-11.0	-0.013
Extreme (-20C)		814.4998	823.5100	-9.0	-0.011
Extreme (-30C)		814.4998	823.5100	-5.7	-0.007
20C	15%	814.4998	823.5100	-9.0	-0.011
	-15%	814.4998	823.5100	-9.3	-0.011
	End Point	814.4998	823.5100	-8.8	-0.011

8.4.10. LTE BAND 30

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:	19179	Test Date:	7/22/2020

QPSK (10MHz BANDWIDTH)

Limit		2305	2315	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2305.4882	2314.5213		
Extreme (50C)		2305.4882	2314.5213	-15.3	-0.007
Extreme (40C)		2305.4882	2314.5213	11.3	0.005
Extreme (30C)		2305.4882	2314.5213	-13.8	-0.006
Extreme (10C)		2305.4882	2314.5213	-15.5	-0.007
Extreme (0C)		2305.4882	2314.5213	11.6	0.005
Extreme (-10C)		2305.4882	2314.5213	12.7	0.006
Extreme (-20C)		2305.4882	2314.5213	-9.6	-0.004
Extreme (-30C)		2305.4882	2314.5213	12.5	0.005
20C	15%	2305.4882	2314.5213	-14.3	-0.006
	-15%	2305.4882	2314.5213	14.1	0.006
	End Point	2305.4882	2314.5213	-13.4	-0.006

8.4.11. LTE BAND 41 AND 5G NR BAND n41

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:	19179	Test Date:	7/22/2020

LTE BAND 41FCC QPSK (20MHz BANDWIDTH)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.6527	2689.0749		
Extreme (50C)		2496.6527	2689.0749	-24.7	-0.010
Extreme (40C)		2496.6527	2689.0749	-22.1	-0.009
Extreme (30C)		2496.6527	2689.0749	-23.5	-0.009
Extreme (10C)		2496.6527	2689.0749	-21.2	-0.008
Extreme (0C)		2496.6527	2689.0749	-22.4	-0.009
Extreme (-10C)		2496.6527	2689.0749	-21.2	-0.008
Extreme (-20C)		2496.6527	2689.0749	-18.7	-0.007
Extreme (-30C)		2496.6527	2689.0749	-21.6	-0.008
20C	15%	2496.6527	2689.0749	-23.2	-0.009
	-15%	2496.6527	2689.0749	-21.4	-0.008
	End Point	2496.6527	2689.0749	-19.9	-0.008

5G NR BAND n41 QPSK (100MHz BANDWIDTH)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	2.8	(MHz)	(MHz)		
Normal (20C)	Normal	2496.9842	2688.0618		
Extreme (50C)		2496.9842	2688.0618	-38.8	-0.015
Extreme (40C)		2496.9842	2688.0618	-33.8	-0.013
Extreme (30C)		2496.9842	2688.0619	34.5	0.013
Extreme (10C)		2496.9842	2688.0618	-30.1	-0.012
Extreme (0C)		2496.9842	2688.0618	-28.6	-0.011
Extreme (-10C)		2496.9842	2688.0619	28.4	0.011
Extreme (-20C)		2496.9842	2688.0618	-35.7	-0.014
Extreme (-30C)		2496.9842	2688.0618	-28.8	-0.011
20C	15%	2496.9842	2688.0618	-40.0	-0.015
	-15%	2496.9842	2688.0618	-30.3	-0.012
	End Point Voltage	2496.9842	2688.0618	-36.8	-0.014

8.4.12. LTE BAND 48

LIMITS

Test Engineer ID:	19179	Test Date:	7/22/2020

LTE BAND 48 QPSK (20MHz BANDWIDTH)

Limit		3550	3700	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		3550.9602	3699.0189		
Extreme (50C)		3550.9602	3699.0189	-6.7	-0.002
Extreme (40C)		3550.9602	3699.0189	-5.5	-0.002
Extreme (30C)		3550.9602	3699.0189	-6.3	-0.002
Extreme (10C)	Normal	3550.9602	3699.0189	-4.6	-0.001
Extreme (0C)		3550.9602	3699.0189	-3.8	-0.001
Extreme (-10C)		3550.9602	3699.0189	2.2	0.001
Extreme (-20C)		3550.9602	3699.0189	-5.7	-0.002
Extreme (-30C)		3550.9602	3699.0189	-6.7	-0.002
20C	15%	3550.9602	3699.0189	-4.2	-0.001
	-15%	3550.9602	3699.0189	-5.7	-0.002
	End Point	3550.9602	3699.0189	-2.8	-0.001

8.4.13. LTE BAND 66

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:	19179	Test Date:	7/22/2020

LTE BAND 66 QPSK (20MHz BANDWIDTH)

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1711.0181	1778.9932		
Extreme (50C)		1711.0181	1778.9932	-10.0	-0.006
Extreme (40C)		1711.0181	1778.9932	-10.6	-0.006
Extreme (30C)		1711.0181	1778.9932	-12.9	-0.007
Extreme (10C)		1711.0181	1778.9932	-11.7	-0.007
Extreme (0C)		1711.0181	1778.9932	-11.3	-0.006
Extreme (-10C)		1711.0181	1778.9932	10.9	0.006
Extreme (-20C)		1711.0181	1778.9932	-9.0	-0.005
Extreme (-30C)		1711.0181	1778.9932	-12.9	-0.007
20C	15%	1711.0181	1778.9932	-13.8	-0.008
	-15%	1711.0181	1778.9932	-13.2	-0.008
	End Point	1711.0181	1778.9932	-13.5	-0.008

8.4.14. LTE BAND 71

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:	19179	Test Date:	7/22/2020

QPSK (20MHz BANDWIDTH)

Limit		663	698	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	664.0116	696.9901		
Extreme (50C)		664.0116	696.9901	-5.8	-0.009
Extreme (40C)		664.0116	696.9901	-5.1	-0.007
Extreme (30C)		664.0116	696.9901	-4.4	-0.006
Extreme (10C)		664.0116	696.9901	-3.9	-0.006
Extreme (0C)		664.0116	696.9901	4.1	0.006
Extreme (-10C)		664.0116	696.9901	5.3	0.008
Extreme (-20C)		664.0116	696.9901	4.9	0.007
Extreme (-30C)		664.0116	696.9901	-3.8	-0.006
20C	15%	664.0116	696.9901	-3.7	-0.005
	-15%	664.0116	696.9901	2.6	0.004
	End Point	664.0116	696.9901	3.5	0.005

8.4.15. 5G NR BAND n77

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:	19179	Test Date:	7/22/2020

5G NR BAND n77 QPSK (100MHz BANDWIDTH)

Limit		3700	3980	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	3700.8297	3978.0063		
Extreme (50C)		3700.8296	3978.0062	-66.7	-0.017
Extreme (40C)		3700.8296	3978.0062	-54.0	-0.014
Extreme (30C)		3700.8297	3978.0063	32.7	0.009
Extreme (10C)		3700.8297	3978.0063	-37.8	-0.010
Extreme (0C)		3700.8297	3978.0063	-44.7	-0.012
Extreme (-10C)		3700.8297	3978.0063	-47.8	-0.012
Extreme (-20C)		3700.8297	3978.0063	-34.9	-0.009
Extreme (-30C)		3700.8297	3978.0063	-37.2	-0.010
20C	15%	3700.8297	3978.0063	-27.4	-0.007
	-15%	3700.8297	3978.0063	-29.6	-0.008
	End Point	3700.8297	3978.0063	-31.3	-0.008

8.5. PEAK-TO-AVERAGE POWER RATIO

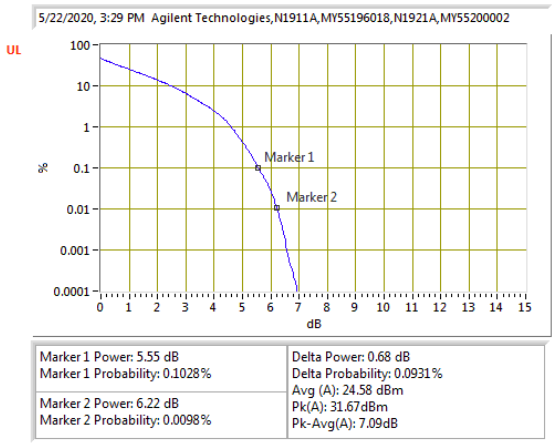
LIMIT

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

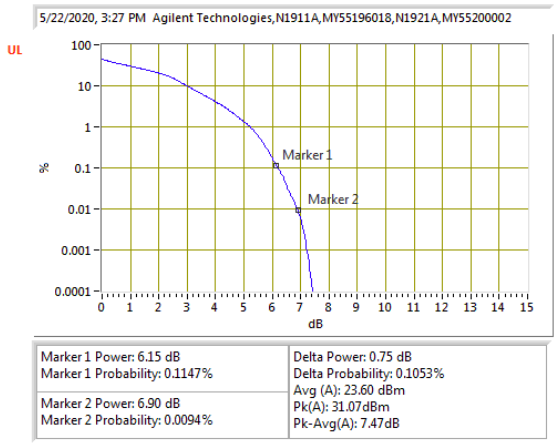
RESULT

The highest output power antenna port 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.

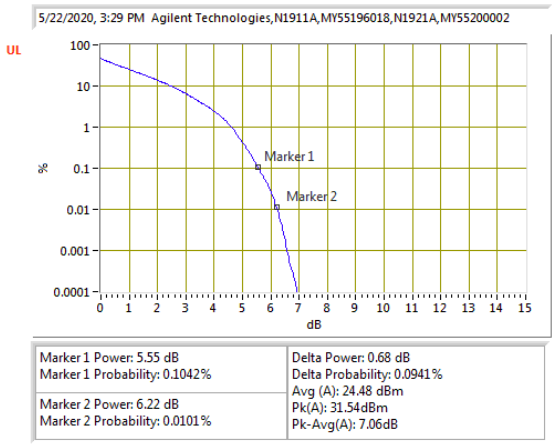
8.5.1. **LTE BAND 2**



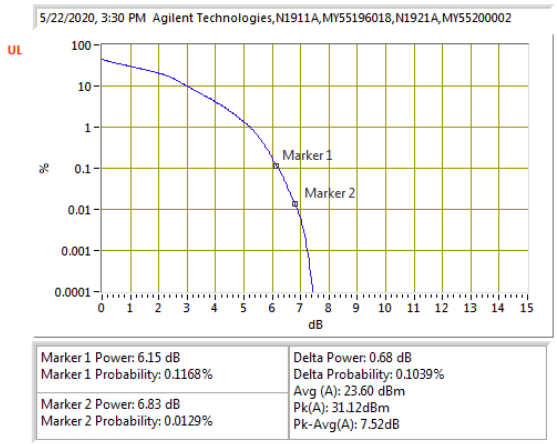
LTE B2 1.4MHz QPSK Middle Channel



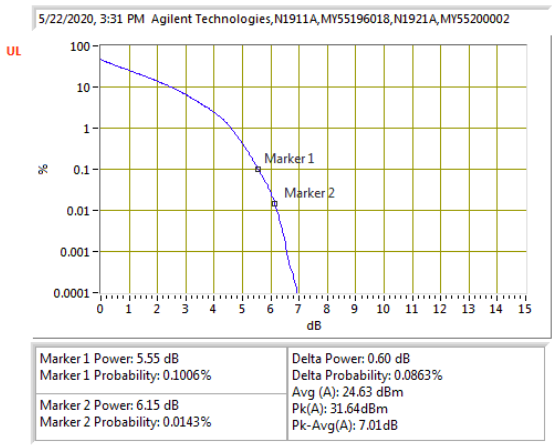
LTE B2 1.4MHz 16QAM Middle Channel



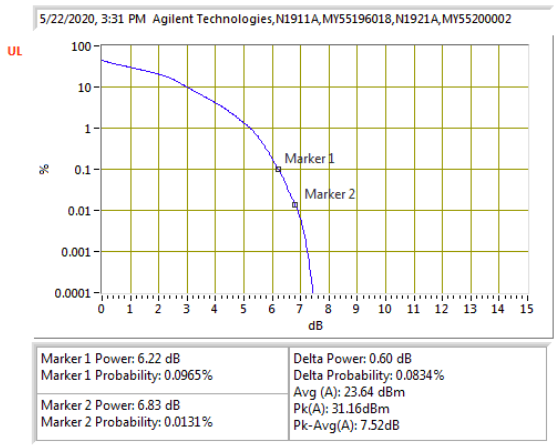
LTE B2 3MHz QPSK Middle Channel



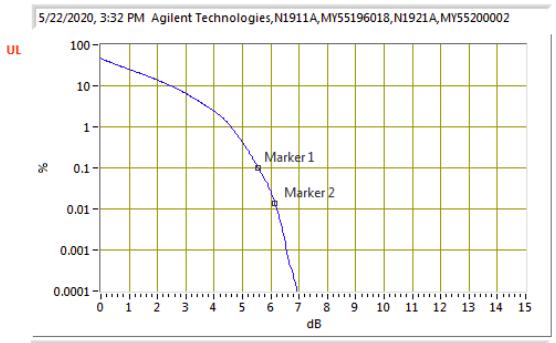
LTE B2 3MHz 16QAM Middle Channel



LTE B2 5MHz QPSK Middle Channel

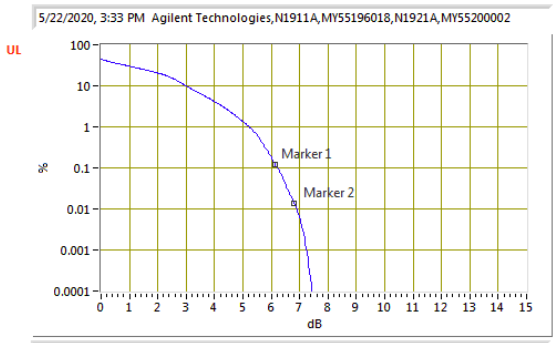


LTE B2 5MHz 16QAM Middle Channel



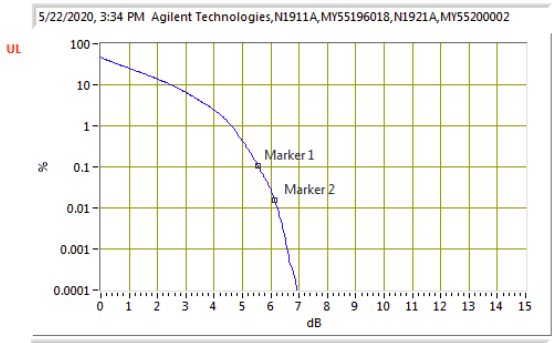
Marker 1 Power: 5.55 dB Marker 1 Probability: 0.1003%	Delta Power: 0.60 dB Delta Probability: 0.0864% Avg (A): 24.63 dBm Pk(A): 31.62dBm Pk-Avg(A): 7.00dB
Marker 2 Power: 6.15 dB Marker 2 Probability: 0.0139%	

LTE B2 10MHz QPSK Middle Channel



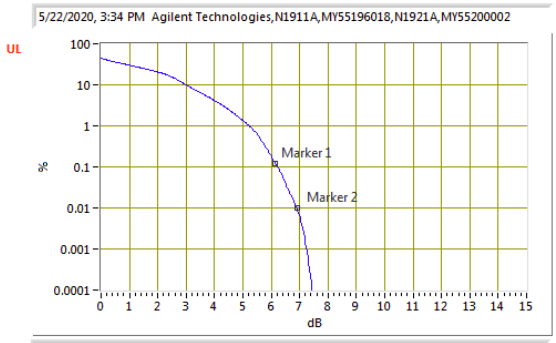
Marker 1 Power: 6.15 dB Marker 1 Probability: 0.1185%	Delta Power: 0.68 dB Delta Probability: 0.1051% Avg (A): 23.65 dBm Pk(A): 31.19dBm Pk-Avg(A): 7.55dB
Marker 2 Power: 6.83 dB Marker 2 Probability: 0.0134%	

LTE B2 10MHz 16QAM Middle Channel



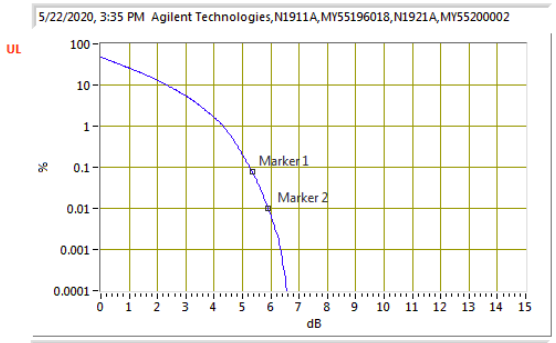
Marker 1 Power: 5.55 dB Marker 1 Probability: 0.1041%	Delta Power: 0.60 dB Delta Probability: 0.0889% Avg (A): 24.62 dBm Pk(A): 31.67dBm Pk-Avg(A): 7.05dB
Marker 2 Power: 6.15 dB Marker 2 Probability: 0.0152%	

LTE B2 15MHz QPSK Middle Channel



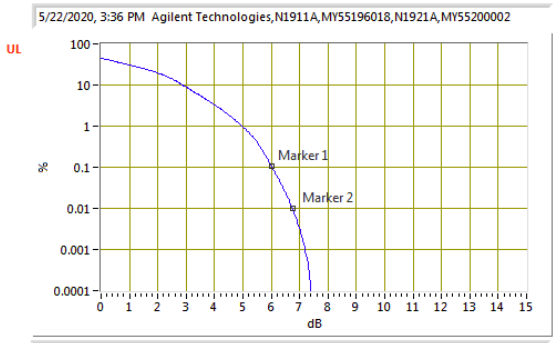
Marker 1 Power: 6.15 dB Marker 1 Probability: 0.1187%	Delta Power: 0.75 dB Delta Probability: 0.1086% Avg (A): 23.65 dBm Pk(A): 31.19dBm Pk-Avg(A): 7.54dB
Marker 2 Power: 6.90 dB Marker 2 Probability: 0.0101%	

LTE B2 15MHz 16QAM Middle Channel



Marker 1 Power: 5.33 dB Marker 1 Probability: 0.0819%	Delta Power: 0.60 dB Delta Probability: 0.0724% Avg (A): 24.61 dBm Pk(A): 31.36dBm Pk-Avg(A): 6.75dB
Marker 2 Power: 5.92 dB Marker 2 Probability: 0.0095%	

LTE B2 20MHz QPSK Middle Channel

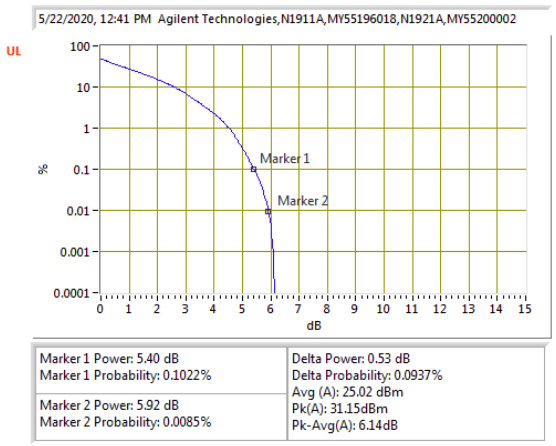


Marker 1 Power: 6.00 dB Marker 1 Probability: 0.1095%	Delta Power: 0.75 dB Delta Probability: 0.0993% Avg (A): 23.62 dBm Pk(A): 31.09dBm Pk-Avg(A): 7.47dB
Marker 2 Power: 6.75 dB Marker 2 Probability: 0.0102%	

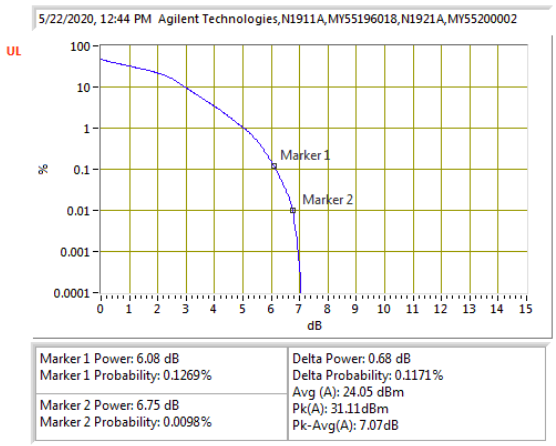
LTE B2 20MHz 16QAM Middle Channel

8.5.2. LTE BAND 5 AND 5G NR BAND n5

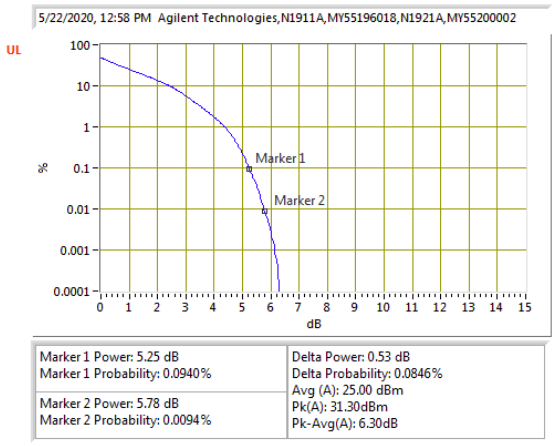
LTE BAND 5



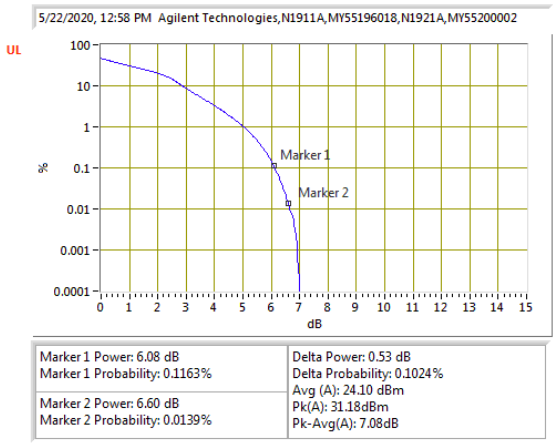
LTE B5 1.4MHz QPSK Middle Channel



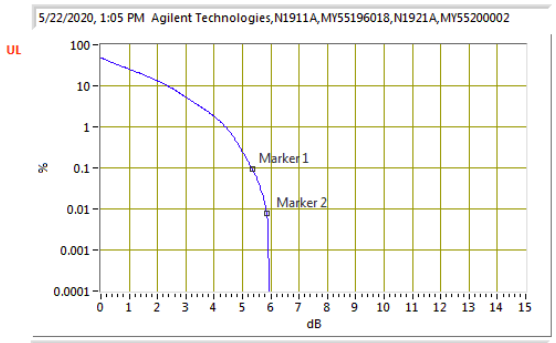
LTE B5 1.4MHz 16QAM Middle Channel



LTE B5 3MHz QPSK Middle Channel

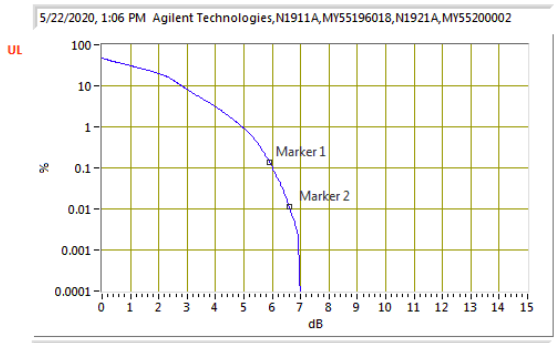


LTE B5 3MHz 16QAM Middle Channel



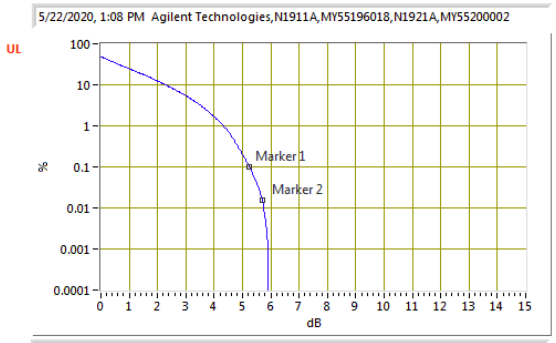
Marker 1 Power: 5.33 dB Marker 1 Probability: 0.0976%	Delta Power: 0.53 dB Delta Probability: 0.0897% Avg (A): 25.10 dBm Pk(A): 31.07dBm Pk-Avg(A): 5.97dB
Marker 2 Power: 5.85 dB Marker 2 Probability: 0.0078%	

LTE B5 5MHz QPSK Middle Channel



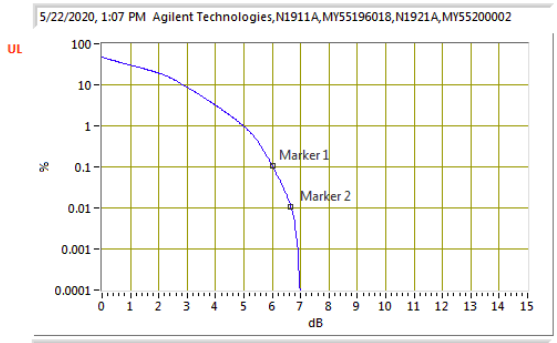
Marker 1 Power: 5.92 dB Marker 1 Probability: 0.1301%	Delta Power: 0.68 dB Delta Probability: 0.1185% Avg (A): 24.14 dBm Pk(A): 31.15dBm Pk-Avg(A): 7.02dB
Marker 2 Power: 6.60 dB Marker 2 Probability: 0.0116%	

LTE B5 5MHz 16QAM Middle Channel



Marker 1 Power: 5.25 dB Marker 1 Probability: 0.1007%	Delta Power: 0.45 dB Delta Probability: 0.0854% Avg (A): 24.93 dBm Pk(A): 30.90dBm Pk-Avg(A): 5.97dB
Marker 2 Power: 5.70 dB Marker 2 Probability: 0.0153%	

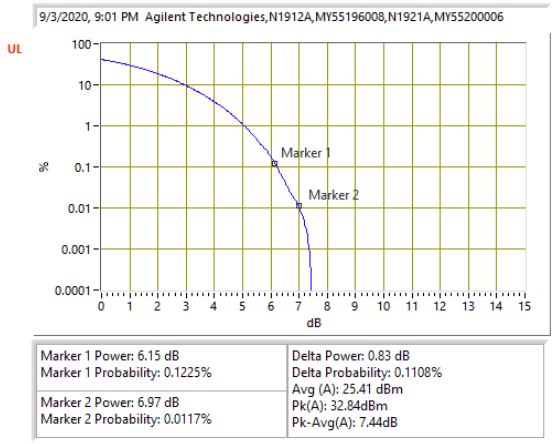
LTE B5 10MHz QPSK Middle Channel



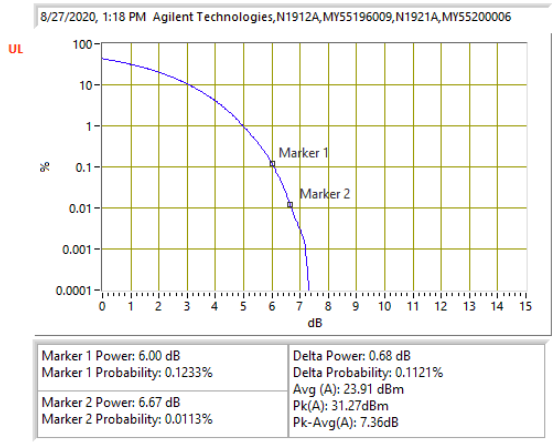
Marker 1 Power: 6.00 dB Marker 1 Probability: 0.1061%	Delta Power: 0.68 dB Delta Probability: 0.0961% Avg (A): 24.01 dBm Pk(A): 31.05dBm Pk-Avg(A): 7.04dB
Marker 2 Power: 6.67 dB Marker 2 Probability: 0.0101%	

LTE B5 10MHz 16QAM Middle Channel

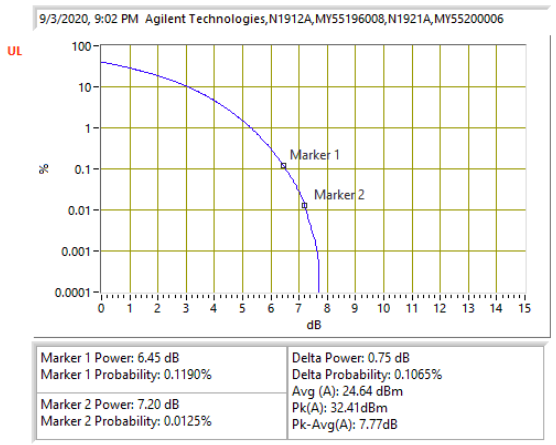
5G NR BAND n5



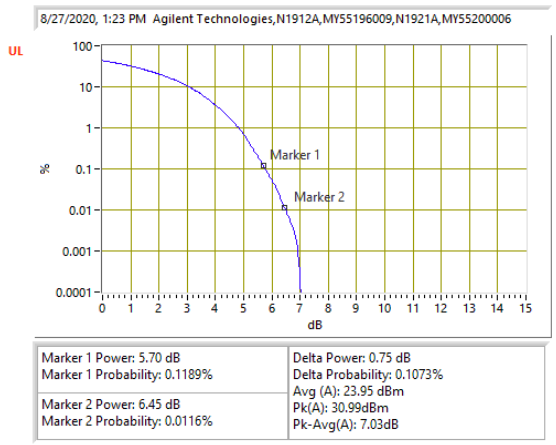
5G NR Band n5 15MHz QPSK Middle Channel



5G NR Band n5 15MHz 16QAM Middle Channel

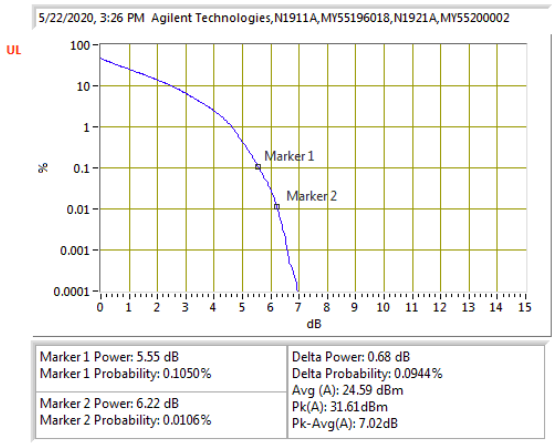


5G NR Band n5 20MHz QPSK Middle Channel

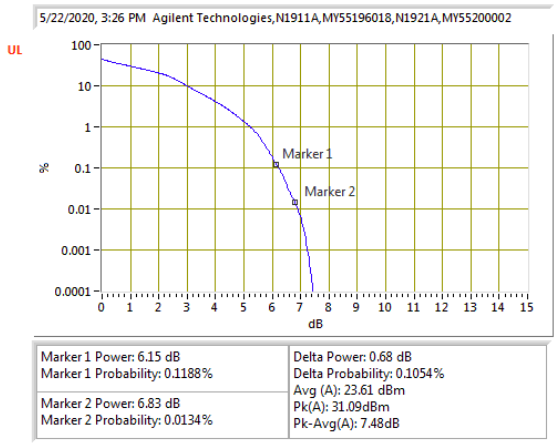


5G NR Band n5 20MHz 16QAM Middle Channel

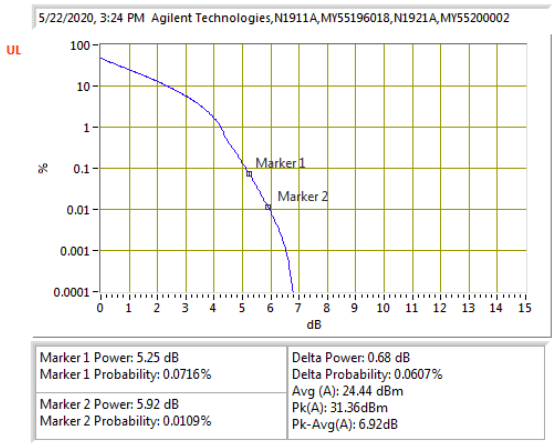
8.5.3. **LTE BAND 7**



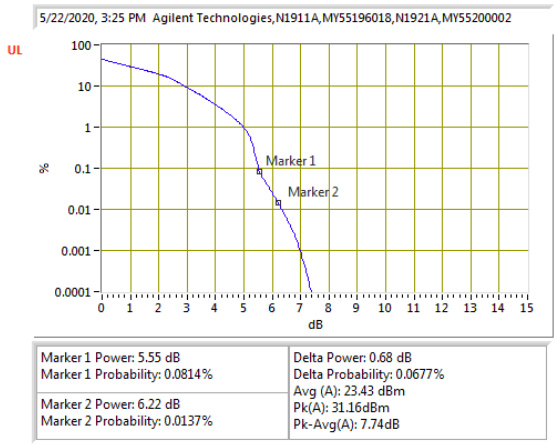
LTE B7 5MHz QPSK Middle Channel



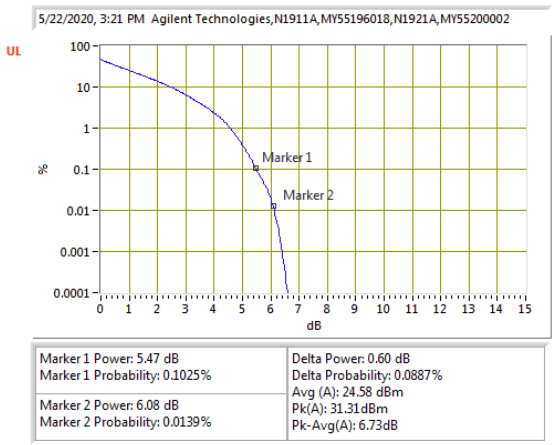
LTE B7 5MHz 16QAM Middle Channel



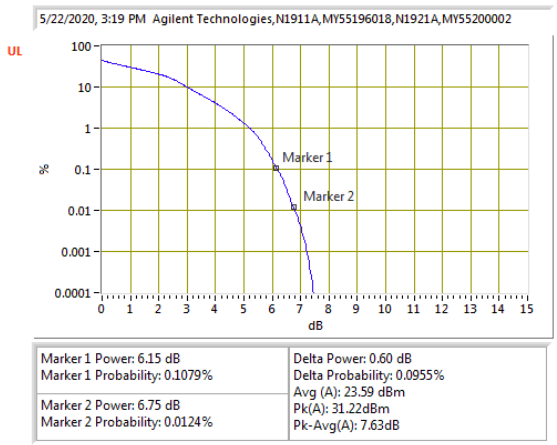
LTE B7 10MHz QPSK Middle Channel



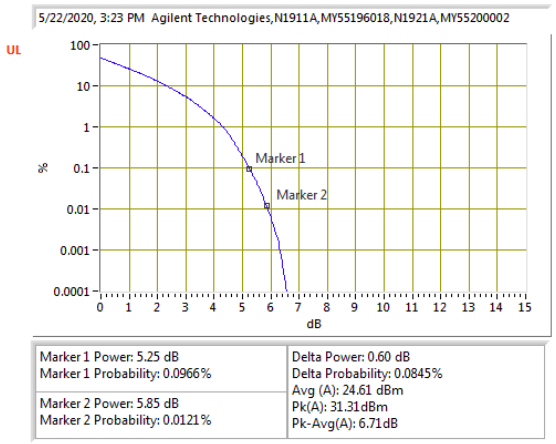
LTE B7 10MHz 16QAM Middle Channel



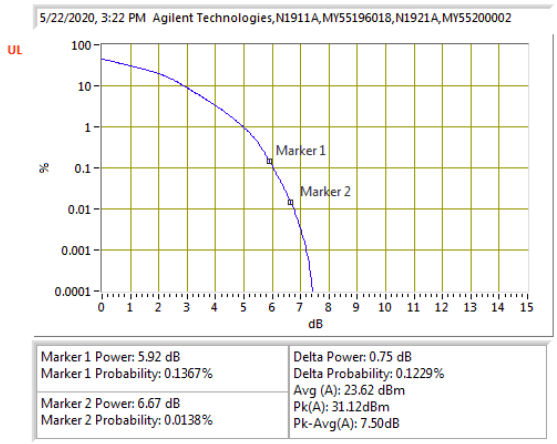
LTE B7 15MHz QPSK Middle Channel



LTE B7 15MHz 16QAM Middle Channel



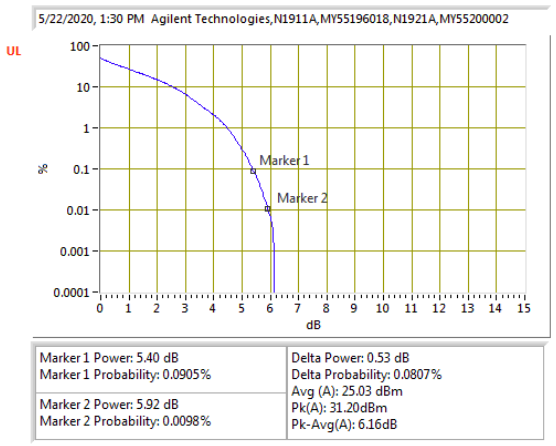
LTE B7 20MHz QPSK Middle Channel



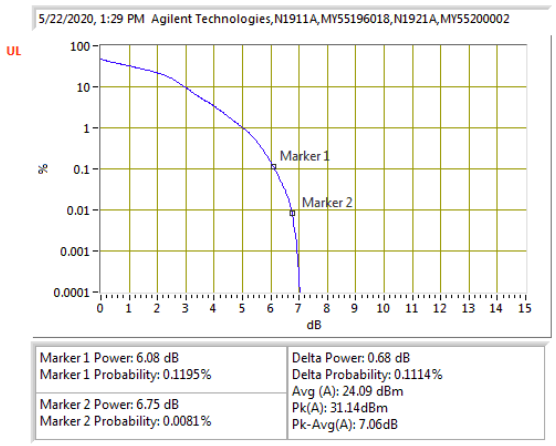
LTE B7 20MHz 16QAM Middle Channel

8.5.4. LTE BAND 12 AND 5G NR BAND n12

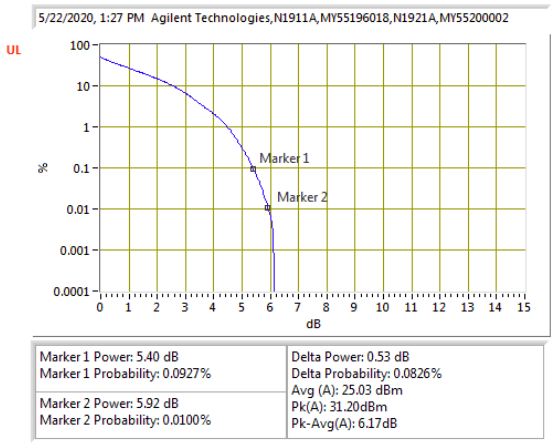
LTE BAND 12



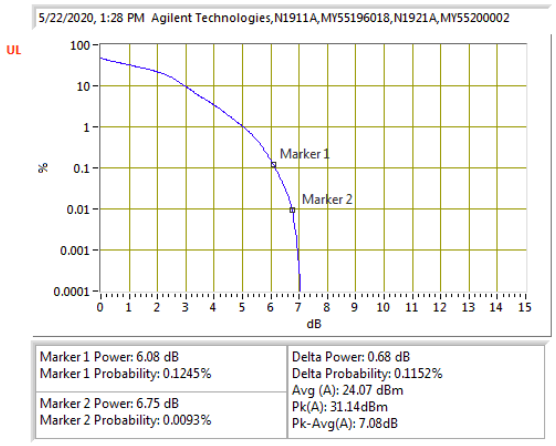
LTE B12 1.4MHz QPSK Middle Channel



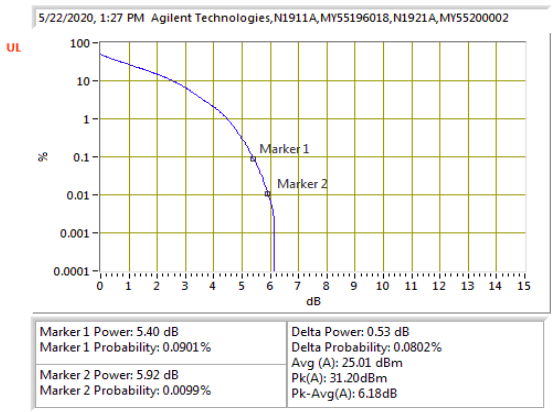
LTE B12 1.4MHz 16QAM Middle Channel



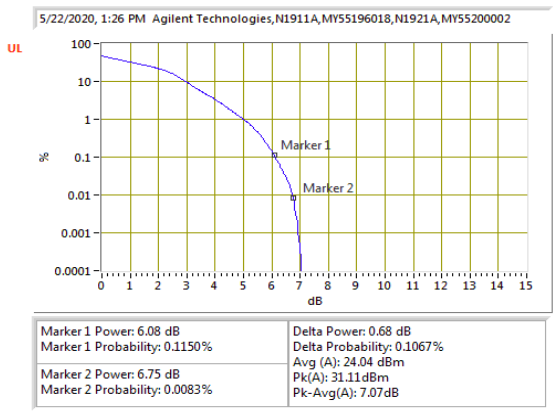
LTE B12 3MHz QPSK Middle Channel



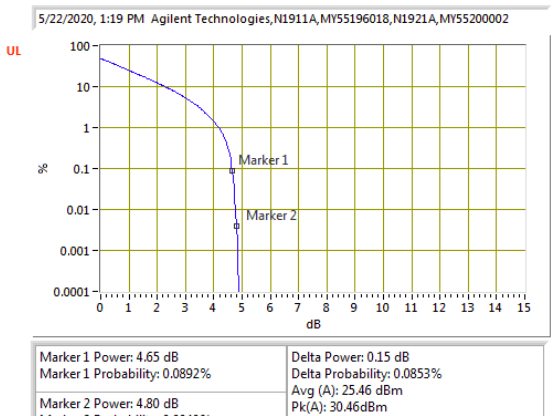
LTE B12 3MHz 16QAM Middle Channel



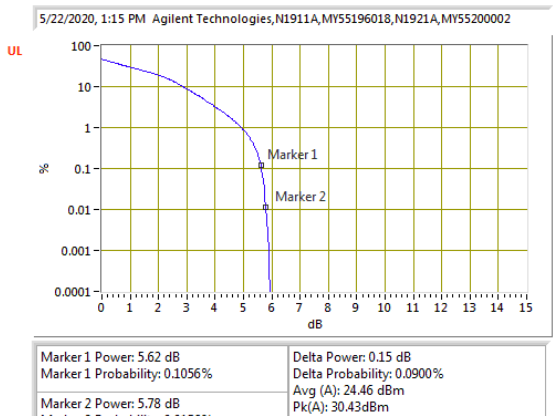
LTE B12 5MHz QPSK Middle Channel



LTE B12 5MHz 16QAM Middle Channel

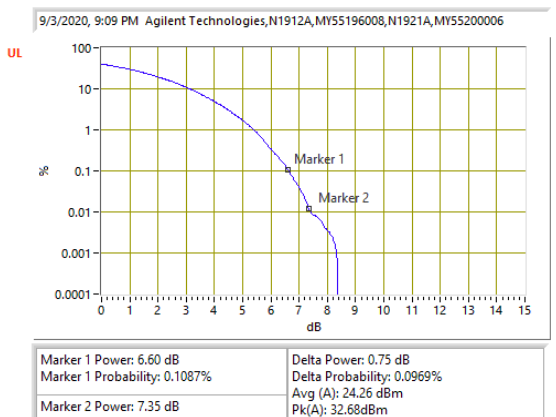


LTE B12 10MHz QPSK Middle Channel

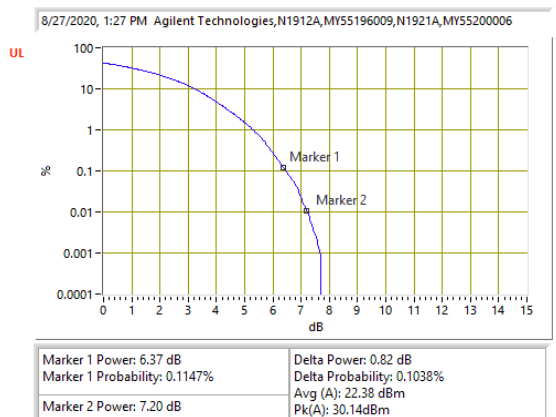


LTE B12 10MHz 16QAM Middle Channel

5G NR BAND n12

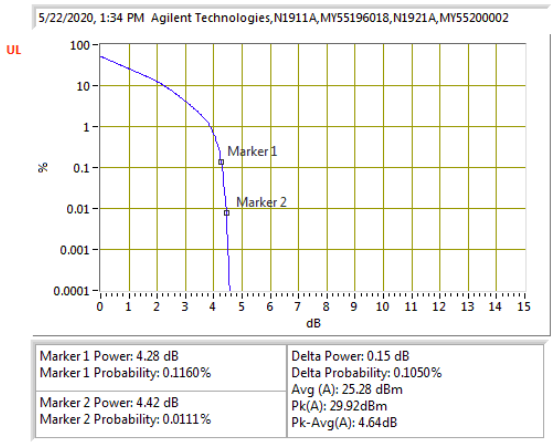


5G NR Band n12 15MHz QPSK Middle Channel

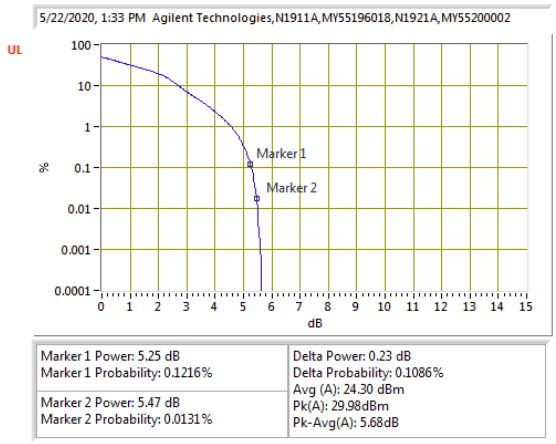


5G NR Band n12 15MHz 16QAM Middle Channel

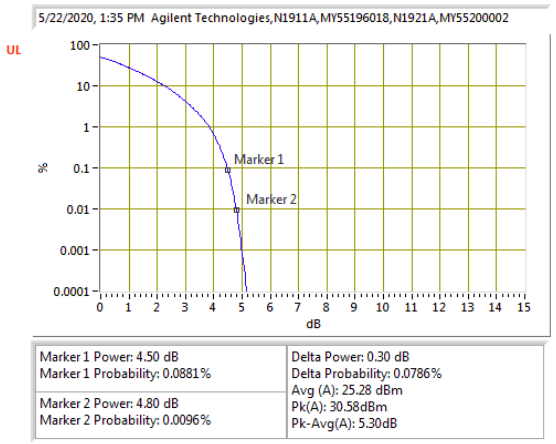
8.5.5. **LTE BAND 13**



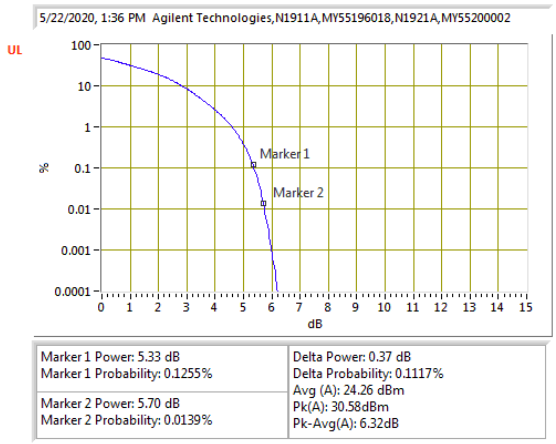
LTE B13 5MHz QPSK Middle Channel



LTE B13 5MHz 16QAM Middle Channel

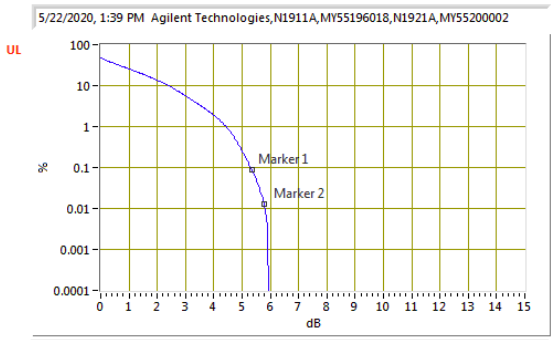


LTE B13 10MHz QPSK Middle Channel

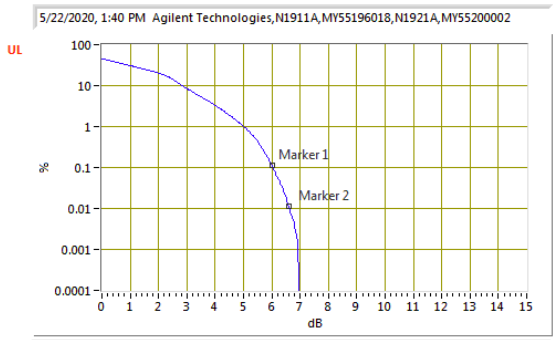


LTE B13 10MHz 16QAM Middle Channel

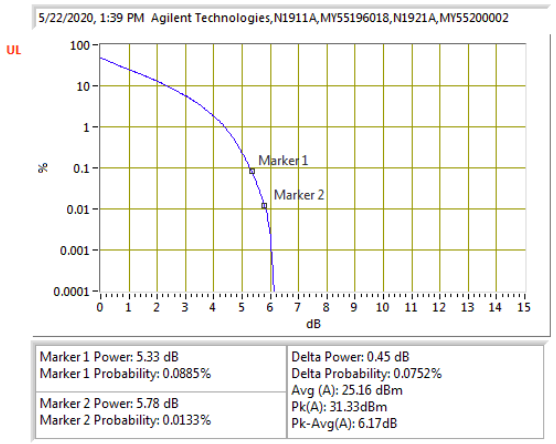
8.5.6. **LTE BAND 14**



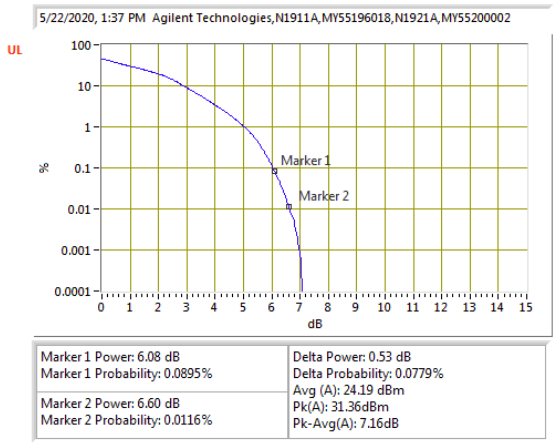
LTE B14 5MHz QPSK Middle Channel



LTE B14 5MHz 16QAM Middle Channel

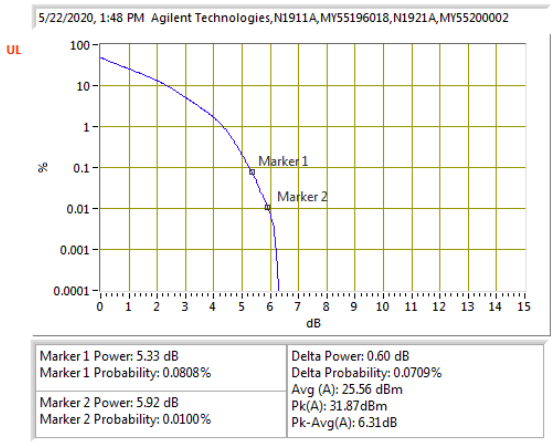


LTE B14 10MHz QPSK Middle Channel

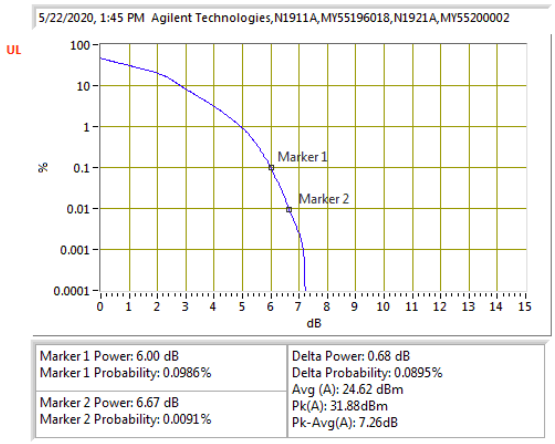


LTE B14 10MHz 16QAM Middle Channel

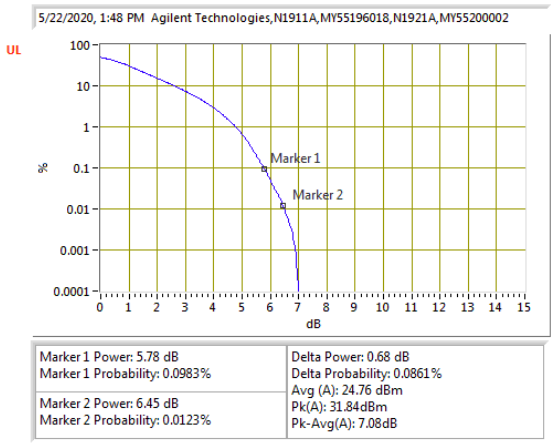
8.5.7. **LTE BAND 17**



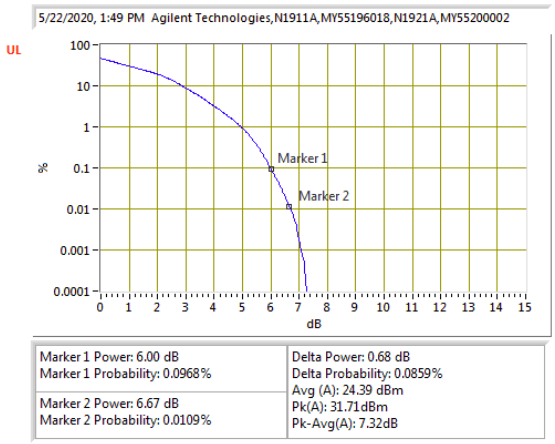
LTE B17 5MHz QPSK Middle Channel



LTE B17 5MHz 16QAM Middle Channel

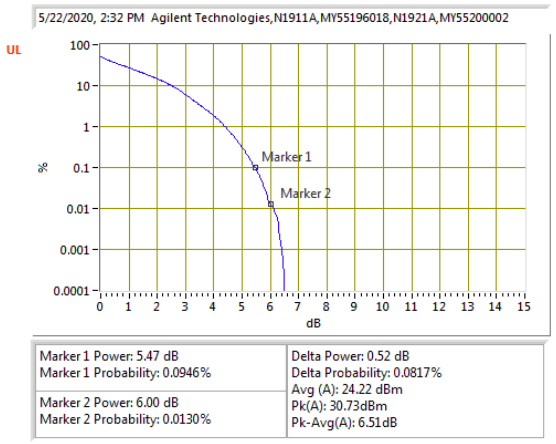


LTE B17 10MHz QPSK Middle Channel

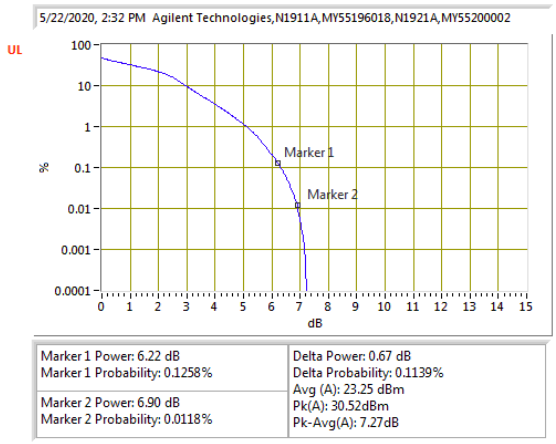


LTE B17 10MHz 16QAM Middle Channel

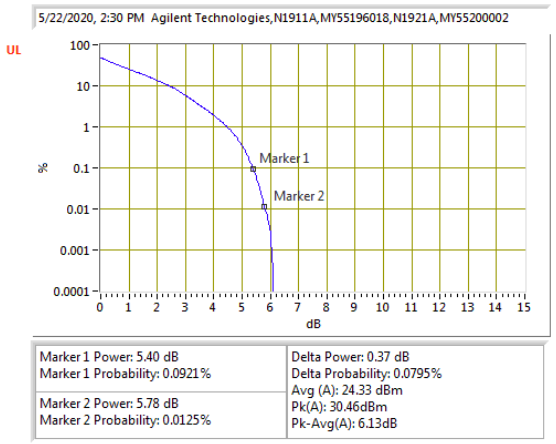
8.5.8. **LTE BAND 25**



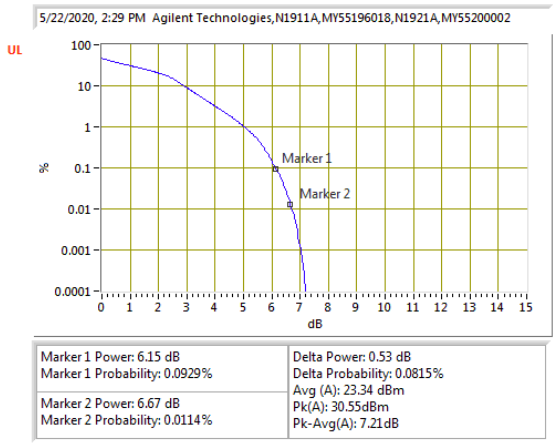
LTE B25 1.4MHz QPSK Middle Channel



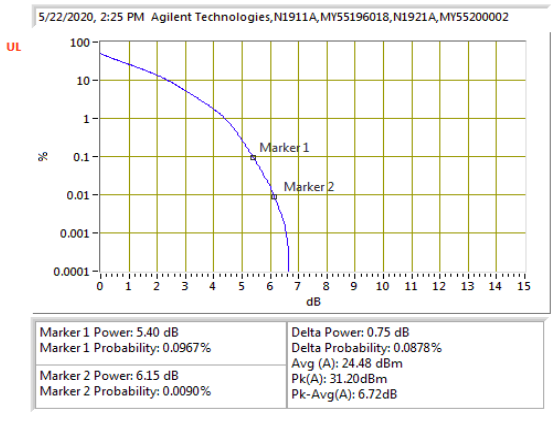
LTE B25 1.4MHz 16QAM Middle Channel



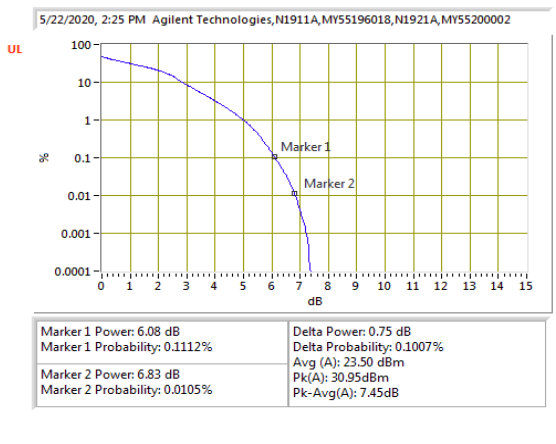
LTE B25 3MHz QPSK Middle Channel



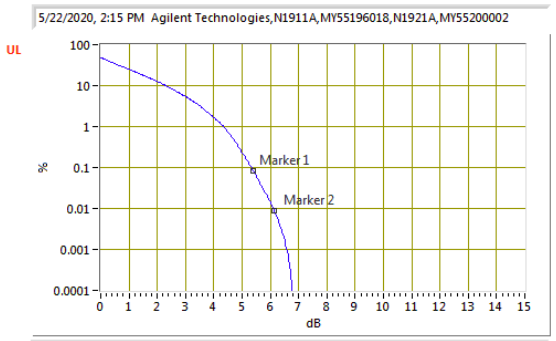
LTE B25 3MHz 16QAM Middle Channel



LTE B2 5MHz QPSK Middle Channel

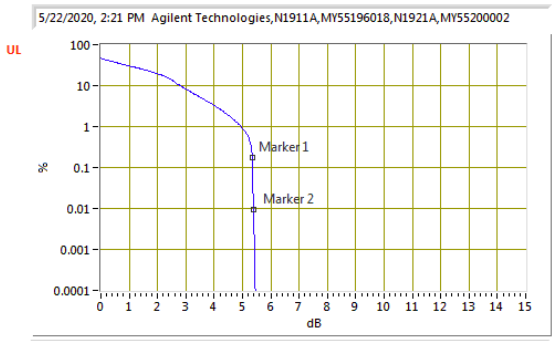


LTE B2 5MHz 16QAM Middle Channel



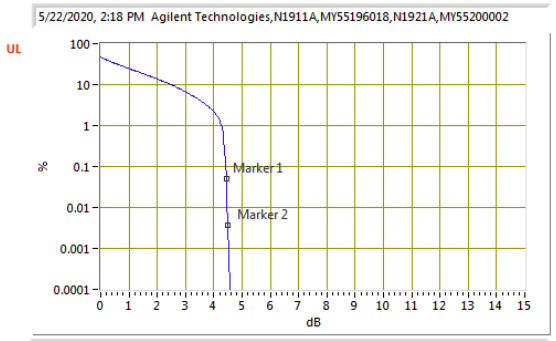
Marker 1 Power: 5.40 dB Marker 1 Probability: 0.0833%	Delta Power: 0.75 dB Delta Probability: 0.0744% Avg (A): 24.39 dBm Pk(A): 31.24dBm Pk-Avg(A): 6.85dB
Marker 2 Power: 6.15 dB Marker 2 Probability: 0.0089%	

LTE B25 10MHz QPSK Middle Channel



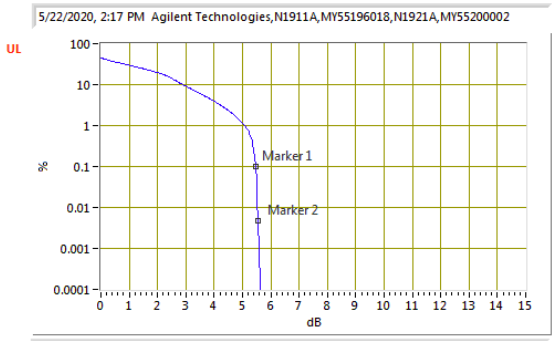
Marker 1 Power: 5.33 dB Marker 1 Probability: 0.2481%	Delta Power: 0.07 dB Delta Probability: 0.2385% Avg (A): 23.47 dBm Pk(A): 28.94dBm Pk-Avg(A): 5.47dB
Marker 2 Power: 5.40 dB Marker 2 Probability: 0.0096%	

LTE B25 10MHz 16QAM Middle Channel



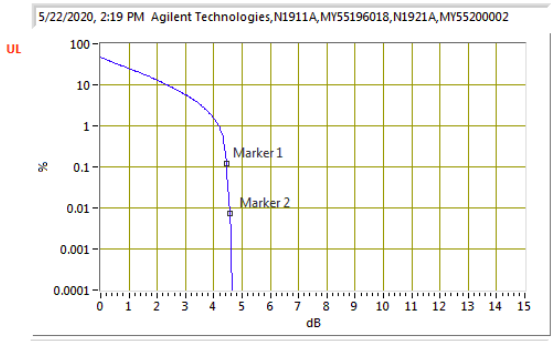
Marker 1 Power: 4.42 dB Marker 1 Probability: 0.0817%	Delta Power: 0.07 dB Delta Probability: 0.0781% Avg (A): 24.61 dBm Pk(A): 29.23dBm Pk-Avg(A): 4.61dB
Marker 2 Power: 4.50 dB Marker 2 Probability: 0.0036%	

LTE B25 15MHz QPSK Middle Channel



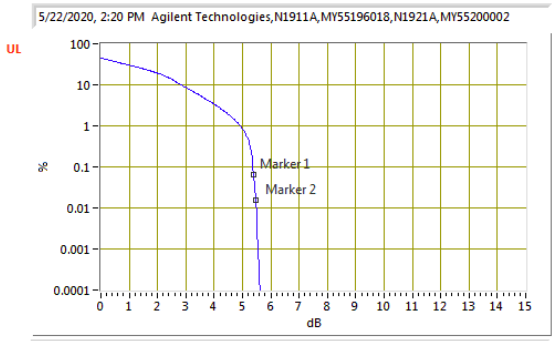
Marker 1 Power: 5.47 dB Marker 1 Probability: 0.0681%	Delta Power: 0.07 dB Delta Probability: 0.0633% Avg (A): 23.59 dBm Pk(A): 29.24dBm Pk-Avg(A): 5.65dB
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0048%	

LTE B25 15MHz 16QAM Middle Channel



Marker 1 Power: 4.42 dB Marker 1 Probability: 0.1642%	Delta Power: 0.15 dB Delta Probability: 0.1599% Avg (A): 24.60 dBm Pk(A): 29.29dBm Pk-Avg(A): 4.70dB
Marker 2 Power: 4.58 dB Marker 2 Probability: 0.0043%	

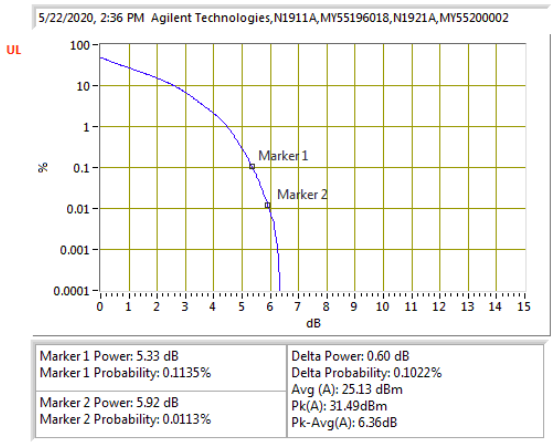
LTE B25 20MHz QPSK Middle Channel



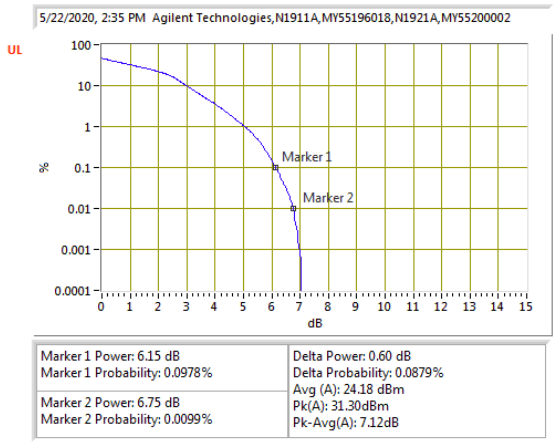
Marker 1 Power: 5.40 dB Marker 1 Probability: 0.0637%	Delta Power: 0.08 dB Delta Probability: 0.0530% Avg (A): 23.58 dBm Pk(A): 29.24dBm Pk-Avg(A): 5.66dB
Marker 2 Power: 5.47 dB Marker 2 Probability: 0.0107%	

LTE B25 20MHz 16QAM Middle Channel

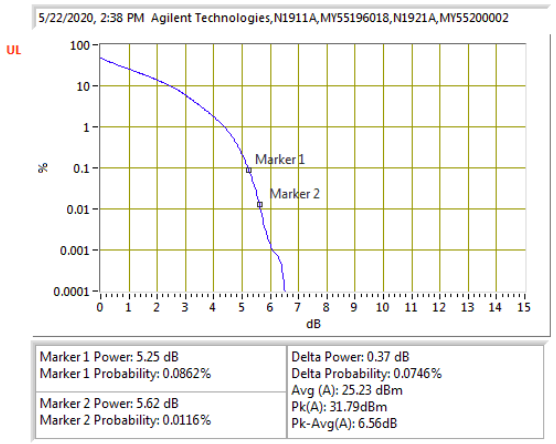
8.5.9. **LTE BAND 26 (FCC PART 90S)**



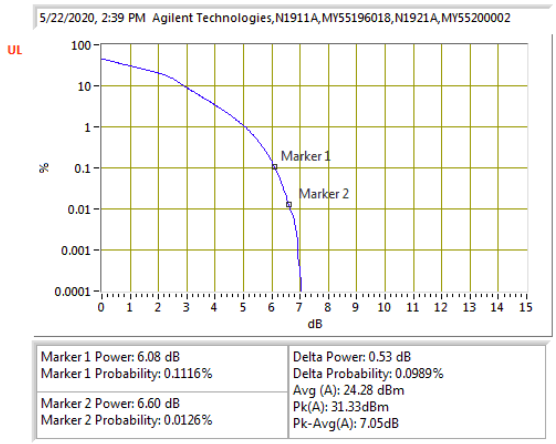
LTE B26 1.4MHz QPSK Middle Channel



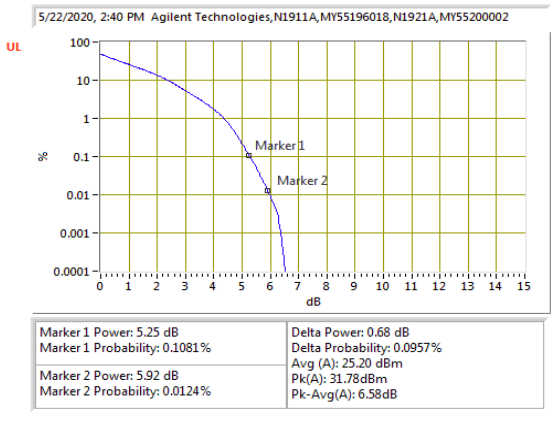
LTE B26 1.4MHz 16QAM Middle Channel



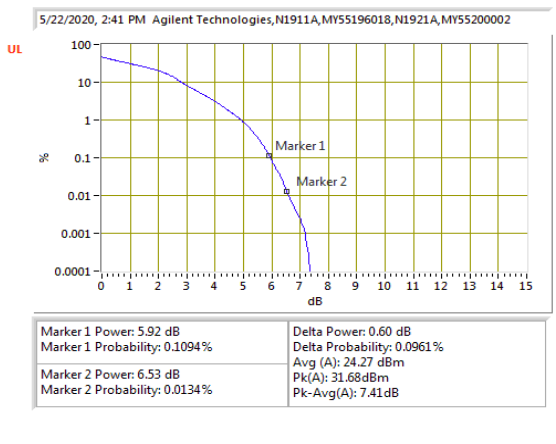
LTE B26 3MHz QPSK Middle Channel



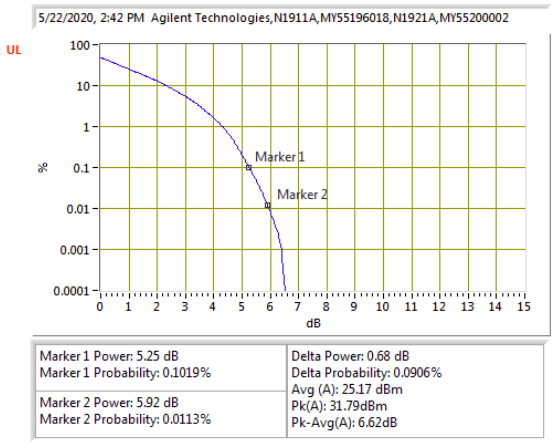
LTE B26 3MHz 16QAM Middle Channel



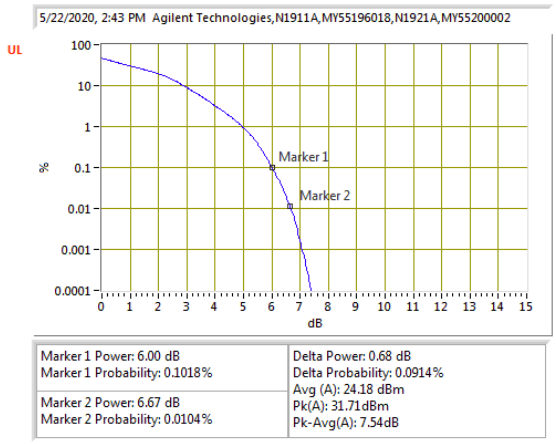
LTE B26 5MHz QPSK Middle Channel



LTE B26 5MHz 16QAM Middle Channel

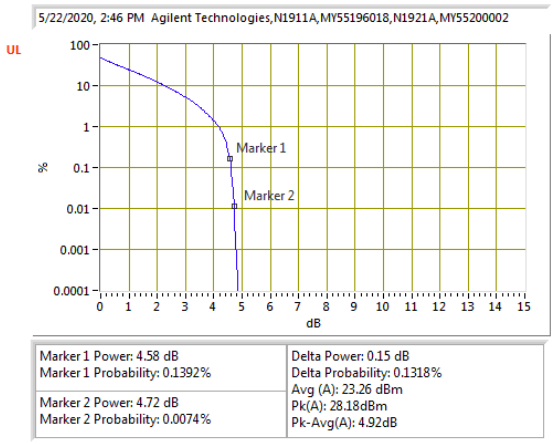


LTE B26 10MHz QPSK Middle Channel

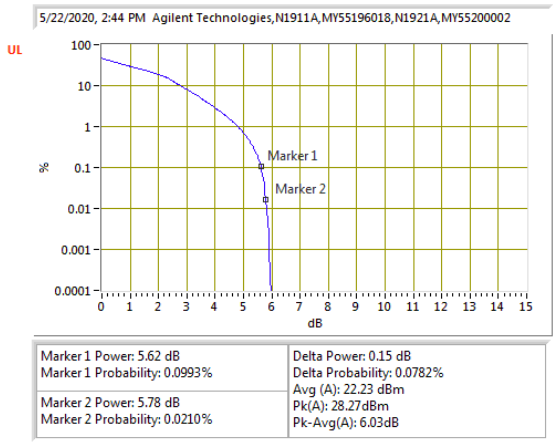


LTE B26 10MHz 16QAM Middle Channel

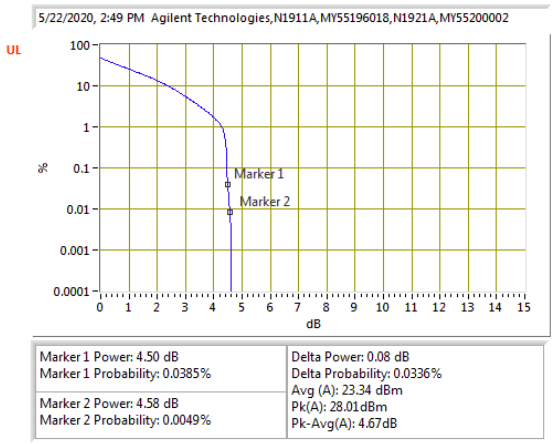
8.5.10. **LTE BAND 30**



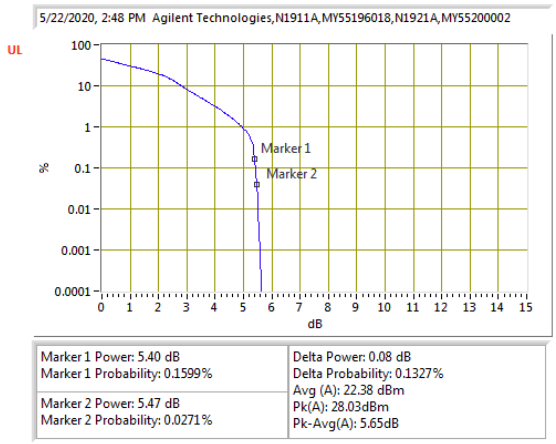
LTE B30 5MHz QPSK Middle Channel



LTE B30 5MHz 16QAM Middle Channel



LTE B30 10MHz QPSK Middle Channel



LTE B30 10MHz 16QAM Middle Channel

8.5.11. LTE BAND 41 AND 5G NR BAND n41

Test Engineer ID:	19179	Test Date:	7/22/2020

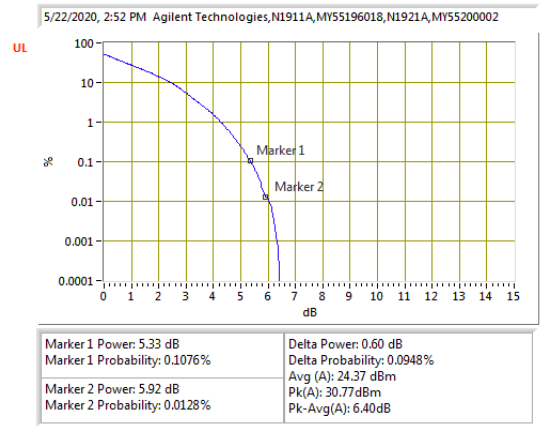
Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 41	5MHz	2595.0	25	0	QPSK	31.64	18.44	6.21
					16QAM	31.43	17.44	7.00
	10MHz		50	0	QPSK	31.75	18.38	6.38
					16QAM	31.57	17.36	7.22
	15MHz		75	0	QPSK	31.77	18.55	6.23
					16QAM	31.78	17.55	7.24
	20MHz		100	0	QPSK	31.66	18.48	6.19
					16QAM	31.55	17.47	7.09
5G NR Band n41	40MHz		100	0	QPSK	31.40	26.9	4.50
					16QAM	31.74	26.12	5.62
	50MHz		128	0	QPSK	31.76	26.98	4.78
					16QAM	31.86	26.01	5.85
	60MHz		162	0	QPSK	31.54	27.01	4.53
					16QAM	31.79	25.95	5.84
	80MHz		216	0	QPSK	31.44	26.94	4.50
					16QAM	31.63	25.95	5.68
	90MHz		240	0	QPSK	31.12	26.98	4.14
					16QAM	31.40	25.94	5.46
	100MHz		270	0	QPSK	30.85	26.92	3.93
					16QAM	31.31	25.89	5.42
Duty Cycle Correction Factor (dB) =			6.99					

8.5.12. **LTE BAND 48**

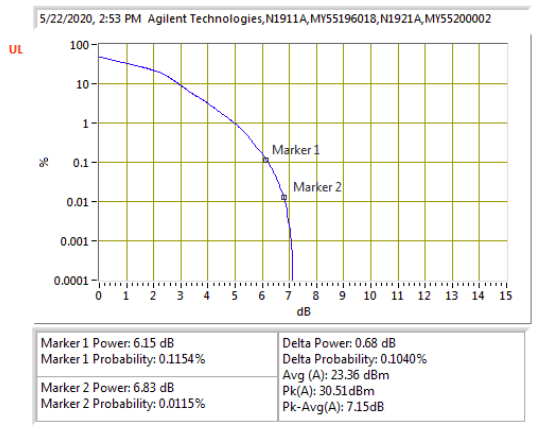
Test Engineer ID:	19179	**Test Date:**	7/22/2020

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
Band 48	5MHz	3625.0	25	0	QPSK	30.00	16.66	6.34
					16QAM	31.25	16.66	7.59
	10MHz		50	0	QPSK	30.49	16.6	6.89
					16QAM	30.93	16.57	7.36
	15MHz		75	0	QPSK	30.46	16.75	6.71
					16QAM	33.31	16.78	9.53
	20MHz		100	0	QPSK	30.55	16.7	6.85
					16QAM	31.16	16.72	7.44
Duty Cycle Correction Factor (dB) =			7.00					
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor								

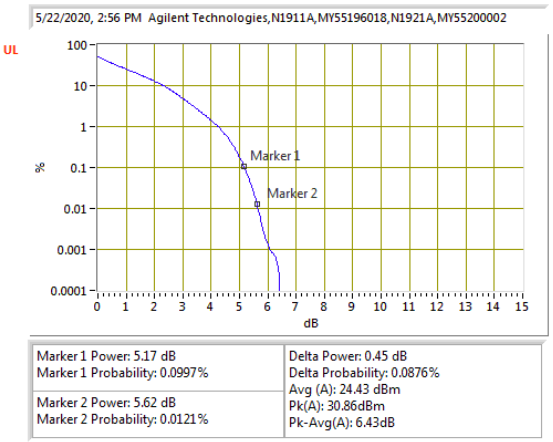
8.5.13. **LTE BAND 66**



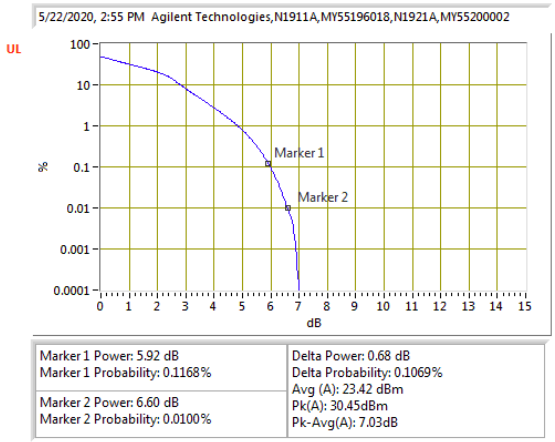
LTE B66 1.4MHz QPSK Middle Channel



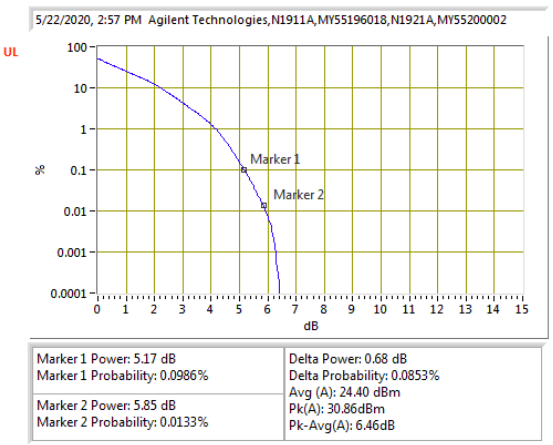
LTE B66 1.4MHz 16QAM Middle Channel



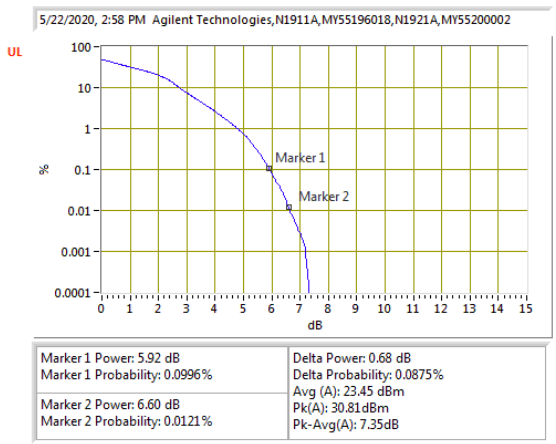
LTE B66 3MHz QPSK Middle Channel



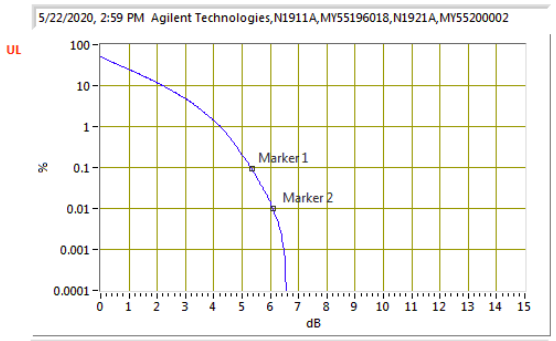
LTE B66 3MHz 16QAM Middle Channel



LTE B66 5MHz QPSK Middle Channel

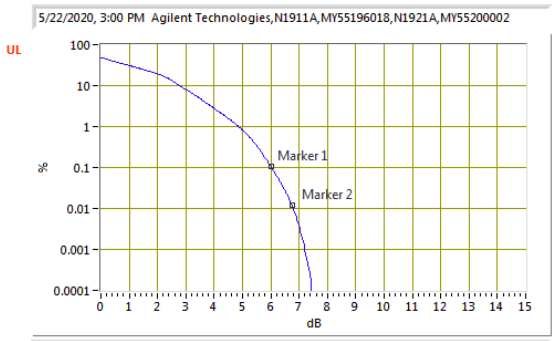


LTE B66 5MHz 16QAM Middle Channel



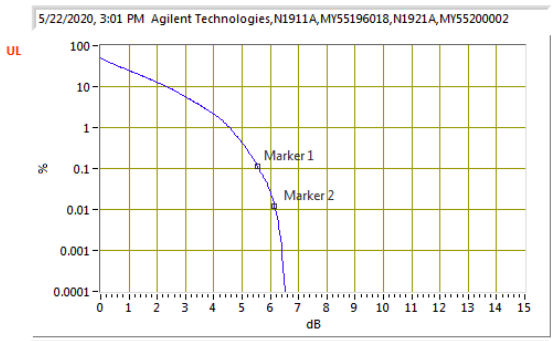
Marker 1 Power: 5.33 dB Marker 1 Probability: 0.0967%	Delta Power: 0.75 dB Delta Probability: 0.0860% Avg (A): 24.37 dBm Pk(A): 31.00dBm Pk-Avg(A): 6.63dB
Marker 2 Power: 6.08 dB Marker 2 Probability: 0.0107%	

LTE B66 10MHz QPSK Middle Channel



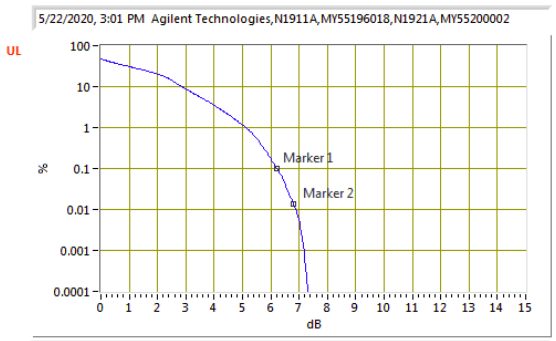
Marker 1 Power: 6.00 dB Marker 1 Probability: 0.1049%	Delta Power: 0.75 dB Delta Probability: 0.0926% Avg (A): 23.39 dBm Pk(A): 30.89dBm Pk-Avg(A): 7.50dB
Marker 2 Power: 6.75 dB Marker 2 Probability: 0.0123%	

LTE B66 10MHz 16QAM Middle Channel



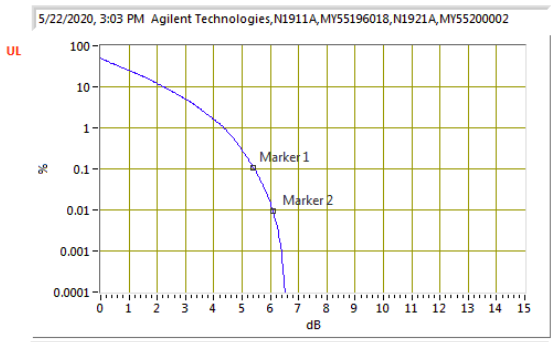
Marker 1 Power: 5.55 dB Marker 1 Probability: 0.1117%	Delta Power: 0.60 dB Delta Probability: 0.0994% Avg (A): 24.57 dBm Pk(A): 31.16dBm Pk-Avg(A): 6.59dB
Marker 2 Power: 6.15 dB Marker 2 Probability: 0.0123%	

LTE B66 15MHz QPSK Middle Channel



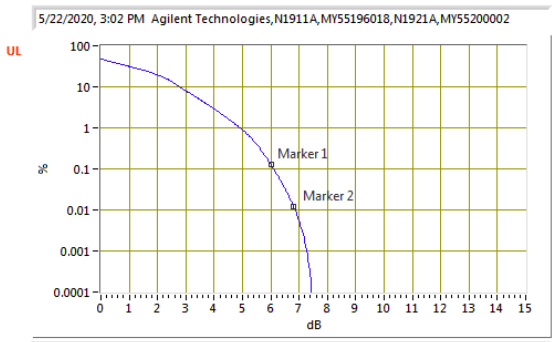
Marker 1 Power: 6.22 dB Marker 1 Probability: 0.0981%	Delta Power: 0.60 dB Delta Probability: 0.0851% Avg (A): 23.64 dBm Pk(A): 31.02dBm Pk-Avg(A): 7.38dB
Marker 2 Power: 6.83 dB Marker 2 Probability: 0.0130%	

LTE B66 15MHz 16QAM Middle Channel



Marker 1 Power: 5.40 dB Marker 1 Probability: 0.1091%	Delta Power: 0.68 dB Delta Probability: 0.0987% Avg (A): 24.55 dBm Pk(A): 31.14dBm Pk-Avg(A): 6.60dB
Marker 2 Power: 6.08 dB Marker 2 Probability: 0.0104%	

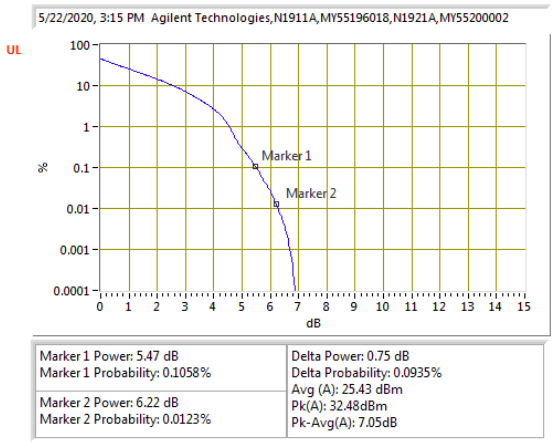
LTE B66 20MHz QPSK Middle Channel



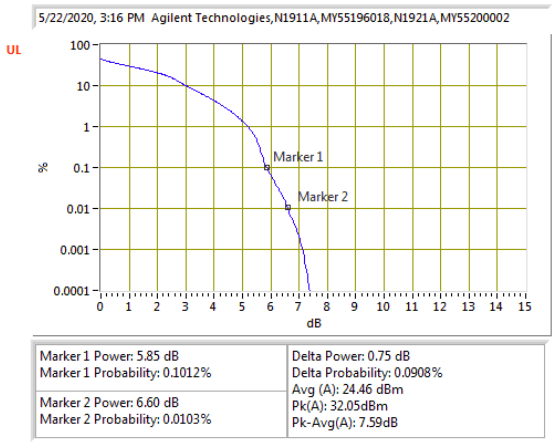
Marker 1 Power: 6.00 dB Marker 1 Probability: 0.1276%	Delta Power: 0.83 dB Delta Probability: 0.1161% Avg (A): 23.60 dBm Pk(A): 31.13dBm Pk-Avg(A): 7.52dB
Marker 2 Power: 6.83 dB Marker 2 Probability: 0.0116%	

LTE B66 20MHz 16QAM Middle Channel

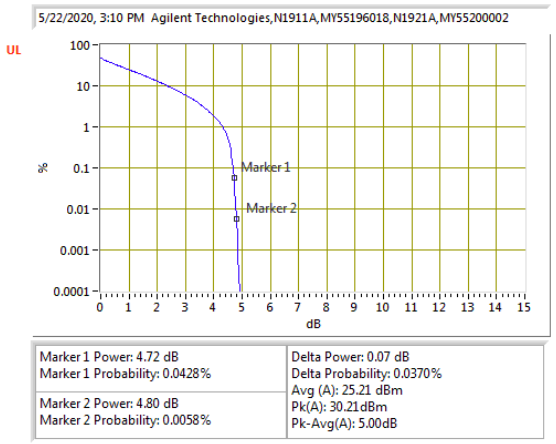
8.5.14. LTE BAND 71



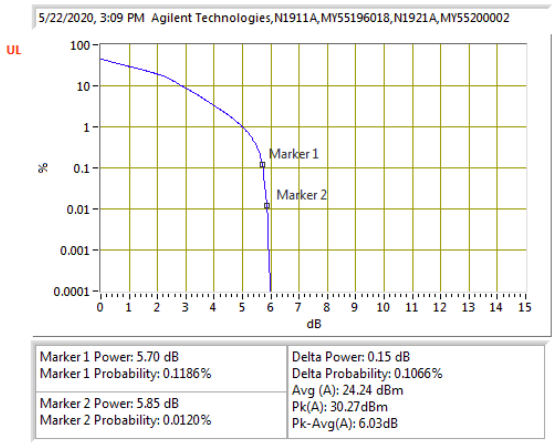
LTE B71 5MHz QPSK Middle Channel



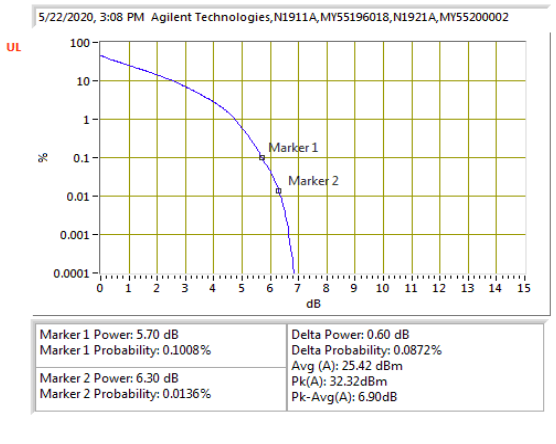
LTE B71 5MHz 16QAM Middle Channel



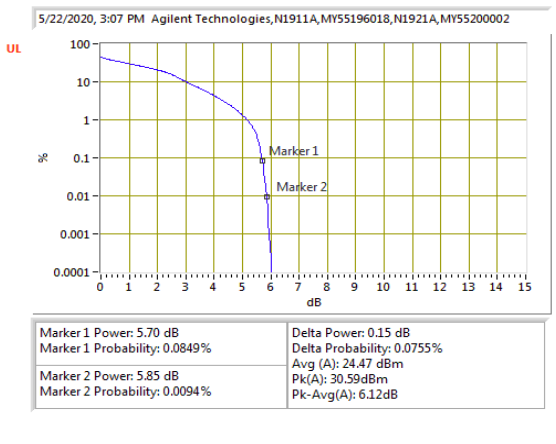
LTE B71 10MHz QPSK Middle Channel



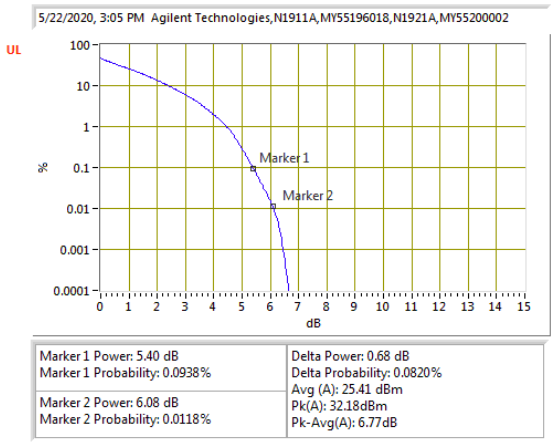
LTE B71 10MHz 16QAM Middle Channel



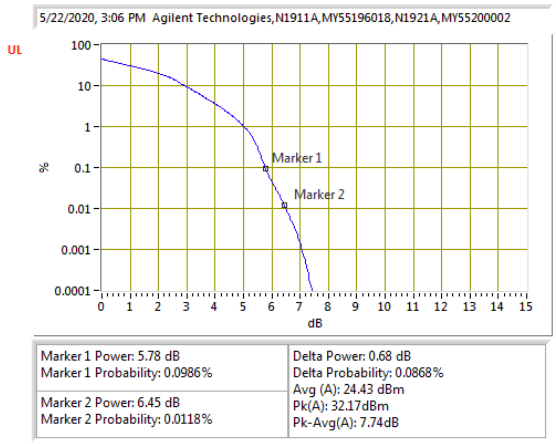
LTE B71 15MHz QPSK Middle Channel



LTE B71 15MHz 16QAM Middle Channel



LTE B71 20MHz QPSK Middle Channel



LTE B71 20MHz 16QAM Middle Channel

8.5.15. **5G NR BAND n77**

Test Engineer ID:	20773	**Test Date:**	9/3/2020

Band	Bandwidth (MHz)	Frequency (MHz)	RB Allocation	RB OffSet	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
						Peak	Average	
5G NR Band n77	40MHz	3840.0	100	0	QPSK	31.70	26.53	5.17
					16QAM	32.43	26.97	5.46
	50MHz		128	0	QPSK	31.62	26.5	5.12
					16QAM	31.68	26.61	5.07
	60MHz		162	0	QPSK	30.81	25.87	4.94
					16QAM	31.42	26.59	4.83
	80MHz		216	0	QPSK	30.24	25.83	4.41
					16QAM	31.05	26.48	4.57
	90MHz		240	0	QPSK	30.01	25.82	4.19
					16QAM	31.77	26.49	5.28
	100MHz		270	0	QPSK	29.83	25.8	4.03
					16QAM	30.73	26.42	4.31

9. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement method.

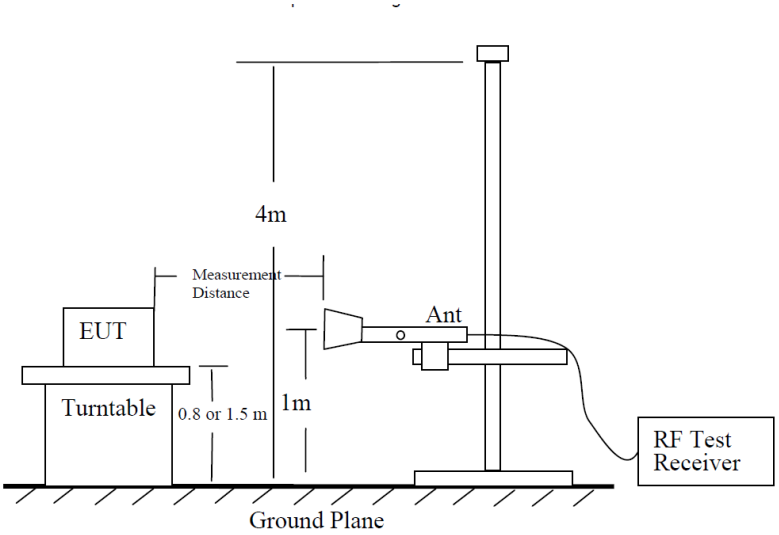


Figure 6 —Test site-up for radiated ERP and/or EIRP measurements

Radiated Power Measurement Calculation According to ANSI C63.26-2015

a) E (dBµV/m) = Measured amplitude level (dBµV) + Cable Loss (dB) + Antenna Factor (dB/m).

b) E (dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

c) E (dBµV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

d) EIRP (dBm) = E (dBµV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m.

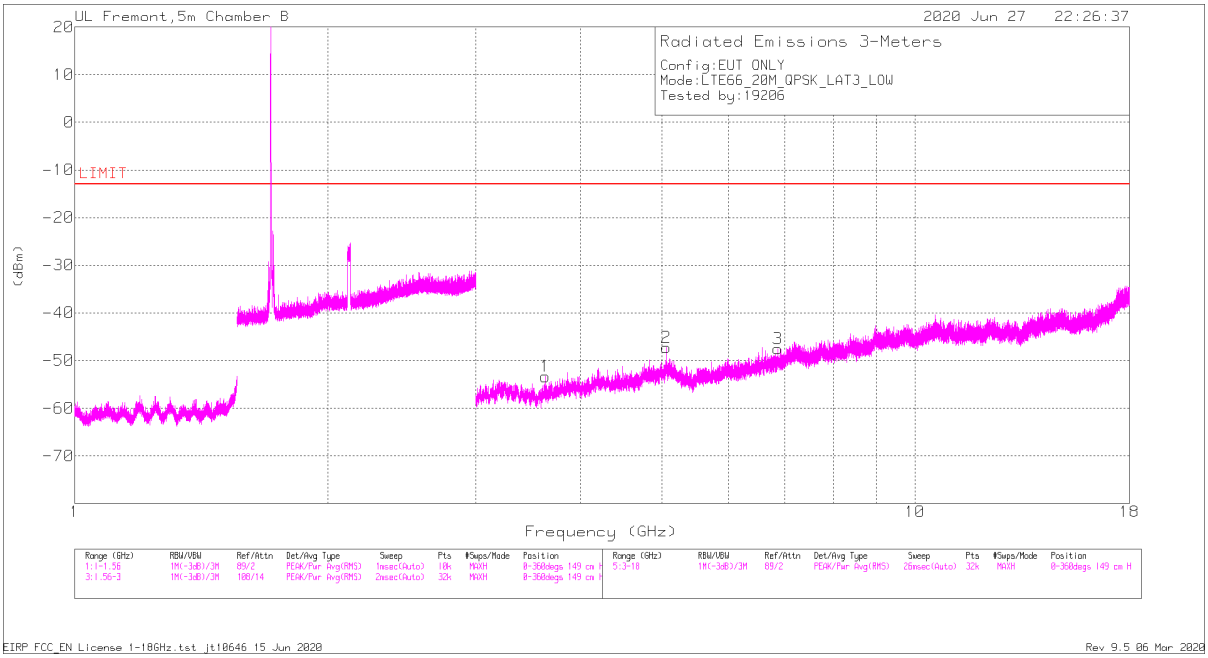
So, from d)

The measuring distance is usually at 3m, then 20*Log(3)=9.5424

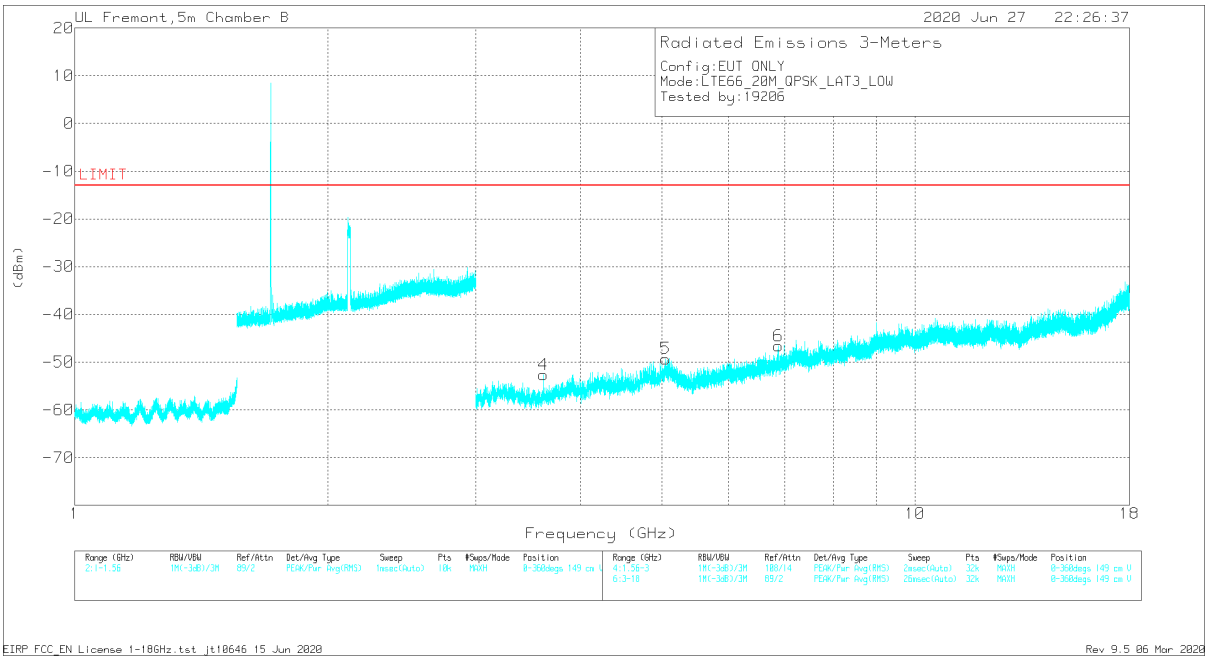
Then, EIRP (dBm) = E (dBµV/m) + 9.5424 − 104.8 = E (dBµV/m) – 95.2576

Note that: we do confidence check to our chambers every day to see if any degradation from expected/normal reading reference data. Also we do ambient check to all our chambers every month.

9.1. Example Plot



Horizontal Polarity



Vertical Polarity

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4	3.61031	39.71	Pk	30	-27.1	-95.2	-52.59	-13	-39.59	V
1	3.63094	38.95	Pk	30.1	-27.2	-95.2	-53.35	-13	-40.35	H
5	5.04656	37.02	Pk	33.8	-24.9	-95.2	-49.28	-13	-36.28	V
2	5.055	38.94	Pk	33.8	-24.8	-95.2	-47.26	-13	-34.26	H
3	6.86484	35.11	Pk	36.2	-23.6	-95.2	-47.49	-13	-34.49	H
6	6.88219	36.03	Pk	36.3	-23.7	-95.2	-46.57	-13	-33.57	V

Pk - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
3.60697	38.52	Pk	30	-27.2	-95.2	-53.88	-13	-40.88	V
3.63416	38.89	Pk	30.1	-27.2	-95.2	-53.41	-13	-40.41	H
5.04281	37.77	Pk	33.7	-24.9	-95.2	-48.63	-13	-35.63	V
5.0513	37.1	Pk	33.8	-24.7	-95.2	-49	-13	-36	H
6.86762	37.12	Pk	36.1	-23.6	-95.2	-45.58	-13	-32.58	H
6.88347	36.27	Pk	36.2	-23.7	-95.2	-46.43	-13	-33.43	V

Pk - Peak detector

EIRP FCC_EN License 1-18GHz.tst jt10646 15 Jun 2020

Rev 9.5 06 Mar 2020

9.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 1

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.

All tests above 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

RESULTS

9.2.1. LTE BAND 2

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.

QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/14/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 2 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.72091	36.37	Pk	32.9	-25.8	-95.2	-51.73	-13	-38.73	H
5.58194	35.06	Pk	35.2	-24.1	-95.2	-49.04	-13	-36.04	H
7.44109	32.68	Pk	35.6	-22.1	-95.2	-49.02	-13	-36.02	H
3.71963	35.69	Pk	32.9	-25.8	-95.2	-52.41	-13	-39.41	V
5.57875	34.39	Pk	35.2	-24.1	-95.2	-49.71	-13	-36.71	V
7.43845	33.29	Pk	35.6	-22.1	-95.2	-48.41	-13	-35.41	V
Mid Channel, 1880MHz									
3.7592	34.48	Pk	32.9	-25.8	-95.2	-53.62	-13	-40.62	H
5.64114	34.63	Pk	35.1	-24.3	-95.2	-49.77	-13	-36.77	H
7.51881	32.38	Pk	35.5	-22	-95.2	-49.32	-13	-36.32	H
3.75973	35.23	Pk	32.9	-25.8	-95.2	-52.87	-13	-39.87	V
5.64141	34.73	Pk	35.1	-24.3	-95.2	-49.67	-13	-36.67	V
7.51966	32.78	Pk	35.5	-22	-95.2	-48.92	-13	-35.92	V
High Channel, 1900MHz									
3.80034	35.5	Pk	33	-25.5	-95.2	-52.2	-13	-39.2	H
5.70076	33.15	Pk	35	-24	-95.2	-51.05	-13	-38.05	H
7.60025	32.92	Pk	35.6	-21.8	-95.2	-48.48	-13	-35.48	H
3.79936	36.19	Pk	33	-25.5	-95.2	-51.51	-13	-38.51	V
5.70183	34.5	Pk	35	-24	-95.2	-49.7	-13	-36.7	V
7.60018	32.49	Pk	35.6	-21.8	-95.2	-48.91	-13	-35.91	V

9.2.2. LTE BAND 5 AND 5G NR BAND n5

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.

QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 5 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 829MHz									
1.73831	-56.03	Pk	29.7	-29.4	11.9	-43.83	-13	-30.83	H
2.31325	-77.76	Pk	31.4	-28	12.3	-62.06	-13	-49.06	H
3.25185	-78.59	Pk	32.9	-26.3	11.7	-60.29	-13	-47.29	H
1.74068	-76.94	Pk	29.7	-29.3	13.5	-63.04	-13	-50.04	V
2.32391	-77.49	Pk	31.5	-28	11.9	-62.09	-13	-49.09	V
3.27619	-78.21	Pk	32.8	-26.2	11.9	-59.71	-13	-46.71	V
Mid Channel, 836.5MHz									
1.66343	41.02	Pk	28.7	-29.6	-95.2	-55.08	-13	-42.08	H
2.53949	38.85	Pk	32.2	-27.3	-95.2	-51.45	-13	-38.45	H
3.2133	37.26	Pk	33.6	-26.2	-95.2	-50.54	-13	-37.54	H
1.66696	39.89	Pk	28.7	-29.5	-95.2	-56.11	-13	-43.11	V
1.65374	39.8	Pk	28.5	-29.5	-95.2	-56.4	-13	-43.4	V
3.23434	29.05	Pk	33	-26.3	-95.2	-59.45	-13	-46.45	V
High Channel, 844MHz									
1.65588	40.72	Pk	28.6	-29.5	-95.2	-55.38	-13	-42.38	H
2.28862	38.73	Pk	31.4	-28.1	-95.2	-53.17	-13	-40.17	H
3.23429	38.06	Pk	33	-26.3	-95.2	-50.44	-13	-37.44	H
1.64472	40.68	Pk	28.5	-29.5	-95.2	-55.52	-13	-42.52	V
2.27661	39.38	Pk	31.4	-28.1	-95.2	-52.52	-13	-39.52	V
3.2231	38.88	Pk	33.2	-26.2	-95.2	-49.32	-13	-36.32	V

QPSK 5G NR BAND n5 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/26/2020
Test Engineer:	19212
Configuration:	EUT only
Mode	5G NR Band n5 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 834MHz									
1.66752	41.31	Pk	28.9	-32.2	-95.2	-56.49	-13	-43.49	V
1.66754	41.45	Pk	28.9	-32.2	-95.2	-56.35	-13	-43.35	H
2.50075	40.4	Pk	33.5	-31.3	-95.2	-52	-13	-39	H
2.50435	40.56	Pk	33.5	-31.3	-95.2	-51.74	-13	-38.74	V
3.33662	41.04	Pk	33	-30.2	-95.2	-50.86	-13	-37.86	V
3.33741	40.52	Pk	33	-30.2	-95.2	-51.38	-13	-38.38	H
Mid Channel, 836.5MHz									
1.67257	41.69	Pk	29	-32.2	-95.2	-56.01	-13	-43.01	V
1.67448	41.51	Pk	29	-32.2	-95.2	-56.19	-13	-43.19	H
2.50829	40.86	Pk	33.5	-31.4	-95.2	-51.54	-13	-38.54	V
2.50894	40.66	Pk	33.5	-31.4	-95.2	-51.74	-13	-38.74	H
3.34491	40.24	Pk	32.9	-30.2	-95.2	-51.76	-13	-38.76	H
3.34677	39.93	Pk	33	-30.1	-95.2	-51.87	-13	-38.87	V
High Channel, 839MHz									
1.67775	41.93	Pk	28.9	-32.2	-95.2	-55.87	-13	-42.87	V
1.67777	41.18	Pk	28.9	-32.2	-95.2	-56.62	-13	-43.62	H
2.517	41.12	Pk	33.5	-31.4	-95.2	-51.28	-13	-38.28	H
2.51876	40.63	Pk	33.5	-31.3	-95.2	-51.57	-13	-38.57	V
3.35433	39.9	Pk	33	-30.1	-95.2	-51.8	-13	-38.8	V
3.35594	39.57	Pk	33	-30.1	-95.2	-52.13	-13	-39.13	H

9.2.3. **LTE BAND 7**

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2510MHz									
5.01851	34.12	Pk	34.3	-24.2	-95.2	-50.98	-25	-25.98	H
7.53098	33.82	Pk	35.6	-21.9	-95.2	-47.68	-25	-22.68	H
10.0377	31.53	Pk	37	-19.5	-95.2	-46.17	-25	-21.17	H
5.01926	35.15	Pk	34.3	-24.2	-95.2	-49.95	-25	-24.95	V
7.52914	32.76	Pk	35.6	-21.9	-95.2	-48.74	-25	-23.74	V
10.03887	31.45	Pk	37.1	-19.5	-95.2	-46.15	-25	-21.15	V
Mid Channel, 2535MHz									
5.07252	33.88	Pk	34.3	-24.4	-95.2	-51.42	-25	-26.42	H
7.60434	33.67	Pk	35.7	-21.8	-95.2	-47.63	-25	-22.63	H
10.13954	30.68	Pk	37.1	-18.8	-95.2	-46.22	-25	-21.22	H
5.07162	35.67	Pk	34.3	-24.4	-95.2	-49.63	-25	-24.63	V
7.60513	32.66	Pk	35.7	-21.9	-95.2	-48.74	-25	-23.74	V
10.13825	31.2	Pk	37.1	-18.8	-95.2	-45.7	-25	-20.7	V
High Channel, 2560MHz									
5.12105	34.1	Pk	34.4	-24.2	-95.2	-50.9	-25	-25.9	H
7.68096	32.81	Pk	35.7	-22	-95.2	-48.69	-25	-23.69	H
10.23989	31.09	Pk	37.3	-19	-95.2	-45.81	-25	-20.81	H
5.12212	35.07	Pk	34.4	-24.2	-95.2	-49.93	-25	-24.93	V
7.68015	33.17	Pk	35.7	-22	-95.2	-48.33	-25	-23.33	V
10.23986	31.66	Pk	37.3	-19	-95.2	-45.24	-25	-20.24	V

9.2.4. LTE BAND 12 AND 5G NR BAND n12

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/12/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE Band 12 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 704MHz									
1.42668	40.12	Pk	28.6	-30.1	-95.2	-56.58	-13	-43.58	H
2.13038	39.18	Pk	31.1	-28.4	-95.2	-53.32	-13	-40.32	H
2.82243	37.52	Pk	32.2	-27.2	-95.2	-52.68	-13	-39.68	H
1.4346	39.86	Pk	28.4	-30	-95.2	-56.94	-13	-43.94	V
2.1091	38.54	Pk	31.1	-28.4	-95.2	-53.96	-13	-40.96	V
2.82579	37.91	Pk	32.2	-27.2	-95.2	-52.29	-13	-39.29	V
Mid Channel, 707.5MHz									
1.42514	39.99	Pk	28.6	-30.1	-95.2	-56.71	-13	-43.71	H
2.10961	41.09	Pk	31.1	-28.4	-95.2	-51.41	-13	-38.41	H
2.83137	38.17	Pk	32.2	-27.2	-95.2	-52.03	-13	-39.03	H
1.43277	39.96	Pk	28.4	-30.1	-95.2	-56.94	-13	-43.94	V
2.10951	39.3	Pk	31.1	-28.4	-95.2	-53.2	-13	-40.2	V
2.81721	37.93	Pk	32.2	-27.2	-95.2	-52.27	-13	-39.27	V
High Channel, 711MHz									
1.33025	40.83	Pk	29.2	-30.5	-95.2	-55.67	-13	-42.67	H
1.84506	39.5	Pk	30.6	-29.1	-95.2	-54.2	-13	-41.2	H
2.12013	40.07	Pk	31.1	-28.4	-95.2	-52.43	-13	-39.43	H
1.32347	40.09	Pk	29.4	-30.5	-95.2	-56.21	-13	-43.21	V
2.11951	38.5	Pk	31.1	-28.4	-95.2	-54	-13	-41	V
2.93161	36.66	Pk	31.8	-26.9	-95.2	-53.64	-13	-40.64	V

QPSK 5G NR BAND n12 (15.0MHZ BANDWIDTH)

Project #:	13179110
Date:	9/4/2020
Test Engineer:	50822
Configuration:	EUT only
Mode	5G NR Band n12 QPSK 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 706.5MHz									
1.4153	42.06	Pk	25.3	-30.7	-95.2	-57.64	-13	-44.64	V
1.41855	41.63	Pk	25.3	-30.7	-95.2	-58.07	-13	-45.07	H
2.1081	39.35	Pk	26.9	-29.6	-95.2	-58.05	-13	-45.05	V
2.1111	39.3	Pk	26.9	-29.5	-95.2	-58	-13	-45	H
2.67681	39.94	Pk	29.2	-28.9	-95.2	-54.36	-13	-41.36	H
2.73331	39.33	Pk	29	-28.9	-95.2	-55.17	-13	-42.17	V
Mid Channel, 707.5									
1.4155	43.83	Pk	25.3	-30.7	-95.2	-55.87	-13	-42.87	H
1.41595	41.94	Pk	25.3	-30.7	-95.2	-57.76	-13	-44.76	V
2.04676	40.59	Pk	27	-29.7	-95.2	-56.71	-13	-43.71	V
2.12587	40.06	Pk	26.9	-29.6	-95.2	-57.34	-13	-44.34	H
2.95961	39.72	Pk	29.6	-28.7	-95.2	-54.08	-13	-41.08	V
2.96803	39.91	Pk	29.7	-28.7	-95.2	-53.79	-13	-40.79	H
High Channel, 708.5									
1.51151	41.98	Pk	24.8	-30.6	-95.2	-58.22	-13	-45.22	V
1.51987	42	Pk	24.8	-30.6	-95.2	-58.2	-13	-45.2	H
2.26644	40.76	Pk	27.4	-29.5	-95.2	-56.04	-13	-43.04	H
2.26828	41.23	Pk	27.4	-29.5	-95.2	-55.57	-13	-42.57	V
3.2128	39.65	Pk	31.4	-28.4	-95.2	-52.05	-13	-39.05	V
3.26315	39.86	Pk	31.4	-28.3	-95.2	-51.74	-13	-38.74	H

9.2.5. LTE BAND 13

LIMITS

FCC: §27.53
(c) 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.
(f) Emissions in 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.

QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE Band 13 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 782MHz									
1.52794	39.02	Pk	28	-29.8	-95.2	-57.98	-40	-17.98	H
2.35264	38.16	Pk	31.7	-28	-95.2	-53.34	-13	-40.34	H
3.18941	36.52	Pk	32.8	-26.3	-95.2	-52.18	-13	-39.18	H
1.52782	39.2	Pk	28	-29.8	-95.2	-57.8	-40	-17.8	V
2.3359	38.08	Pk	31.6	-28	-95.2	-53.52	-13	-40.52	V
3.21375	36.17	Pk	33.6	-26.2	-95.2	-51.63	-13	-38.63	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.2.6. **LTE BAND 14**

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, 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:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in 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. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE Band 14 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.59384	38.89	Pk	28	-29.6	-95.2	-57.91	-40	-17.91	H
2.36298	37.87	Pk	31.8	-27.9	-95.2	-53.43	-13	-40.43	H
3.2029	36.82	Pk	33.2	-26.2	-95.2	-51.38	-13	-38.38	H
1.5932	39.46	Pk	27.9	-29.6	-95.2	-57.44	-40	-17.44	V
2.36774	37.48	Pk	31.9	-28	-95.2	-53.82	-13	-40.82	V
3.19551	36.62	Pk	32.9	-26.2	-95.2	-51.88	-13	-38.88	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.2.7. LTE BAND 17

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 17 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/14/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE Band 17 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 710MHz									
1.41876	40.33	Pk	28.7	-30.2	-95.2	-56.37	-13	-43.37	H
2.11711	39.96	Pk	31.2	-28.4	-95.2	-52.44	-13	-39.44	H
2.81928	38	Pk	32.2	-27.2	-95.2	-52.2	-13	-39.2	H
2.82396	37.28	Pk	32.2	-27.2	-95.2	-52.92	-13	-39.92	H
1.43204	39.13	Pk	28.5	-30.1	-95.2	-57.67	-13	-44.67	V
2.10381	38.27	Pk	31.1	-28.4	-95.2	-54.23	-13	-41.23	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.2.8. LTE BAND 25

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.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.72144	35.29	Pk	32.9	-25.8	-95.2	-52.81	-13	-39.81	H
5.58192	33.74	Pk	35.2	-24.1	-95.2	-50.36	-13	-37.36	H
7.43936	33.17	Pk	35.6	-22.1	-95.2	-48.53	-13	-35.53	H
3.72206	34.11	Pk	32.9	-25.8	-95.2	-53.99	-13	-40.99	V
5.58101	34.37	Pk	35.2	-24.1	-95.2	-49.73	-13	-36.73	V
7.43933	32.1	Pk	35.6	-22.1	-95.2	-49.6	-13	-36.6	V
Mid Channel, 1882.5MHz									
3.76586	33.76	Pk	33	-25.7	-95.2	-54.14	-13	-41.14	H
5.64619	34.46	Pk	35.1	-24.3	-95.2	-49.94	-13	-36.94	H
7.52857	33.12	Pk	35.6	-21.9	-95.2	-48.38	-13	-35.38	H
3.76787	34.58	Pk	33	-25.7	-95.2	-53.32	-13	-40.32	V
5.64638	34.58	Pk	35.1	-24.3	-95.2	-49.82	-13	-36.82	V
7.52881	32.6	Pk	35.6	-21.9	-95.2	-48.9	-13	-35.9	V
High Channel, 1905MHz									
3.81032	-72.25	Pk	32.9	-25.5	11.7	-53.15	-13	-40.15	181
5.71981	-73.66	Pk	35	-23.9	12	-50.56	-13	-37.56	293
7.61943	-75.49	Pk	35.6	-22	11.9	-49.99	-13	-36.99	259
3.8094	-72.45	Pk	32.9	-25.5	11.4	-53.65	-13	-40.65	118
5.70705	-73.39	Pk	34.9	-23.9	11.8	-50.59	-13	-37.59	158
7.62015	-75.07	Pk	35.7	-22	12	-49.37	-13	-36.37	95

9.2.9. LTE BAND 26 (FCC PART 90S)

LIMITS

FCC: §90.691
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 26 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T892 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 819MHz									
1.76661	-67.93	Pk	30.1	-29.3	-95.2	-53.75	-13	-40.93	H
2.46214	-69	Pk	32.3	-27.8	-95.2	-50.84	-13	-40	H
3.20526	-70.37	Pk	33.4	-26.2	-95.2	-50.24	-13	-38.17	H
1.75425	-68.04	Pk	29.8	-29.3	-95.2	-53.93	-13	-41.24	V
2.44708	-68.62	Pk	32.3	-27.9	-95.2	-51.11	-13	-39.82	V
3.17255	-70.13	Pk	32.7	-26.4	-95.2	-50.42	-13	-38.93	V

9.2.10. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/14/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 30 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.61028	32.17	Pk	33.9	-24.9	-95.2	-54.03	-40	-14.03	H
6.91684	31.99	Pk	35.6	-22.8	-95.2	-50.41	-40	-10.41	H
9.21966	30.55	Pk	36.3	-19.9	-95.2	-48.25	-40	-8.25	H
4.61087	33.78	Pk	33.9	-24.9	-95.2	-52.42	-40	-12.42	V
6.91702	33.35	Pk	35.6	-22.8	-95.2	-49.05	-40	-9.05	V
9.21992	30.7	Pk	36.3	-19.9	-95.2	-48.1	-40	-8.1	V

9.2.11. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/13/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 41FCC QPSK
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.00811	35.54	Pk	34.3	-24.3	-95.2	-49.66	-25	-24.66	H
7.51746	33.53	Pk	35.5	-22	-95.2	-48.17	-25	-23.17	H
10.02473	32.56	Pk	37.1	-19.4	-95.2	-44.94	-25	-19.94	H
5.01226	35.91	Pk	34.3	-24.3	-95.2	-49.29	-25	-24.29	V
7.51822	33.56	Pk	35.5	-22	-95.2	-48.14	-25	-23.14	V
10.02383	31.87	Pk	37.1	-19.4	-95.2	-45.63	-25	-20.63	V
Mid Channel, 2595MHz									
5.1843	36.91	Pk	34.4	-24.1	-95.2	-47.99	-25	-22.99	H
7.77858	34.22	Pk	35.7	-21.5	-95.2	-46.78	-25	-21.78	H
10.37257	32.35	Pk	37.4	-19	-95.2	-44.45	-25	-19.45	H
5.18511	36.66	Pk	34.4	-24.1	-95.2	-48.24	-25	-23.24	V
7.78053	34.58	Pk	35.6	-21.5	-95.2	-46.52	-25	-21.52	V
10.37311	32.85	Pk	37.5	-19	-95.2	-43.85	-25	-18.85	V
High Channel, 2680MHz									
5.35933	36.18	Pk	34.6	-23.8	-95.2	-48.22	-25	-23.22	H
8.03502	34.41	Pk	35.7	-21.3	-95.2	-46.39	-25	-21.39	H
10.71916	31.59	Pk	37.9	-18.6	-95.2	-44.31	-25	-19.31	H
5.36056	36.44	Pk	34.6	-23.8	-95.2	-47.96	-25	-22.96	V
8.03973	34.17	Pk	35.7	-21.2	-95.2	-46.53	-25	-21.53	V
10.72128	31.72	Pk	37.9	-18.7	-95.2	-44.28	-25	-19.28	V

QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/25/2020
Test Engineer:	19497
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.01741	37.59	Pk	33.7	-26	-95.2	-49.11	-25	-24.11	H
5.02949	38.21	Pk	33.7	-26	-95.2	-48.59	-25	-23.59	V
7.27169	35.84	Pk	37.2	-23.4	-95.2	-45.16	-25	-20.16	V
7.30719	35.26	Pk	37.1	-23.4	-95.2	-45.94	-25	-20.94	H
10.39571	34.09	Pk	39.3	-19.6	-95.2	-40.61	-25	-15.61	V
10.4629	33.8	Pk	39.5	-19.6	-95.2	-40.8	-25	-15.8	H
Mid Channel, 2593MHz									
5.08602	38.05	Pk	33.8	-26.2	-95.2	-48.75	-25	-23.75	H
5.09892	39.24	Pk	33.9	-26.4	-95.2	-47.66	-25	-22.66	V
7.03533	36.08	Pk	36.6	-23.7	-95.2	-45.72	-25	-20.72	V
7.26983	36.93	Pk	37.2	-23.4	-95.2	-43.97	-25	-18.97	H
10.44314	34.85	Pk	39.4	-19.2	-95.2	-39.35	-25	-14.35	V
10.45655	34.49	Pk	39.5	-19.4	-95.2	-39.91	-25	-14.91	H
High Channel, 2640MHz									
5.27081	38.99	Pk	34.7	-27.9	-95.2	-49.11	-25	-24.11	V
5.28691	40.36	Pk	34.7	-28	-95.2	-47.74	-25	-22.74	H
7.89062	36.2	Pk	36.1	-23.4	-95.2	-45.7	-25	-20.7	V
7.91018	37.22	Pk	36.2	-23.4	-95.2	-44.88	-25	-19.88	H
10.49739	34.61	Pk	37.8	-20.6	-95.2	-42.79	-25	-17.79	V
10.57371	35.79	Pk	37.8	-20.5	-95.2	-41.21	-25	-16.21	H

9.2.12. LTE BAND 66

LIMITS

FCC: §27.53 (h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	6/27/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode	LTE Band 48 QPSK
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.41246	40.1	Pk	30.6	-27.6	-95.2	-52.1	-13	-39.1	V
3.41444	38.81	Pk	30.6	-27.6	-95.2	-53.39	-13	-40.39	H
5.08042	37.49	Pk	33.8	-24.9	-95.2	-48.81	-13	-35.81	H
5.09446	37.7	Pk	33.9	-24.7	-95.2	-48.3	-13	-35.3	V
6.90702	35.65	Pk	36.1	-23.5	-95.2	-46.95	-13	-33.95	V
6.91874	35.71	Pk	36.3	-23.3	-95.2	-46.49	-13	-33.49	H
Mid Channel, 1745MHz									
3.41468	31.44	Av	30.6	-27.6	-95.2	-60.76	-13	-47.76	V
3.47216	38.62	Pk	30.3	-27.3	-95.2	-53.58	-13	-40.58	H
5.15631	37.63	Pk	33.8	-25.4	-95.2	-49.17	-13	-36.17	H
5.16206	38.31	Pk	33.8	-25.3	-95.2	-48.39	-13	-35.39	V
6.27104	36.72	Pk	34.5	-24.2	-95.2	-48.18	-13	-35.18	H
6.33814	36.7	Pk	34.5	-23.8	-95.2	-47.8	-13	-34.8	V
High Channel, 1770MHz									
3.51012	39.85	Pk	30.2	-27.2	-95.2	-52.35	-13	-39.35	H
3.52256	38.55	Pk	30.2	-27.3	-95.2	-53.75	-13	-40.75	V
5.11837	37.74	Pk	33.9	-24.7	-95.2	-48.26	-13	-35.26	V
5.16903	37.59	Pk	33.7	-25.4	-95.2	-49.31	-13	-36.31	H
7.21548	35.53	Pk	37.2	-22.6	-95.2	-45.07	-13	-32.07	V
7.27982	36.53	Pk	37.1	-23.1	-95.2	-44.67	-13	-31.67	H

9.2.13. LTE BAND 71

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/12/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 71QPSK
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 673.0MHz									
1.32825	42.91	Pk	29.3	-30.5	-95.2	-53.49	-13	-40.49	H
1.98878	36.25	Pk	30.9	-28.7	-95.2	-56.75	-13	-43.75	H
2.65162	35.28	Pk	32.4	-27.3	-95.2	-54.82	-13	-41.82	H
1.32839	41.9	Pk	29.3	-30.5	-95.2	-54.5	-13	-41.5	V
1.98811	36.84	Pk	30.9	-28.7	-95.2	-56.16	-13	-43.16	V
2.65142	36.31	Pk	32.4	-27.3	-95.2	-53.79	-13	-40.79	V
Mid Channel, 680.5MHz									
1.36039	37.59	Pk	29.6	-30.3	-95.2	-58.31	-13	-45.31	H
2.03924	35.85	Pk	31.1	-28.6	-95.2	-56.85	-13	-43.85	H
2.72216	36.3	Pk	32.5	-27.3	-95.2	-53.7	-13	-40.7	H
1.36062	37.7	Pk	29.6	-30.3	-95.2	-58.2	-13	-45.2	V
2.04093	37.37	Pk	31.1	-28.6	-95.2	-55.33	-13	-42.33	V
2.72242	36.65	Pk	32.5	-27.3	-95.2	-53.35	-13	-40.35	V
High Channel, 688.0MHz									
1.35792	38.42	Pk	29.7	-30.4	-95.2	-57.48	-13	-44.48	H
2.03387	37.25	Pk	31	-28.6	-95.2	-55.55	-13	-42.55	H
2.71342	34.87	Pk	32.4	-27.3	-95.2	-55.23	-13	-42.23	H
1.35774	38.53	Pk	29.7	-30.4	-95.2	-57.37	-13	-44.37	V
2.03413	36.29	Pk	31	-28.6	-95.2	-56.51	-13	-43.51	V
2.71269	35.32	Pk	32.4	-27.3	-95.2	-54.78	-13	-41.78	V

9.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

9.3.1. **LTE BAND 2**

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.

QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/15/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 2 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.70185	32.31	Pk	33	-26	-95.2	-55.89	-13	-42.89	H
5.55198	31.98	Pk	35.1	-24	-95.2	-52.12	-13	-39.12	H
7.40184	30.66	Pk	35.6	-21.9	-95.2	-50.84	-13	-37.84	H
3.7003	33.15	Pk	33	-26	-95.2	-55.05	-13	-42.05	V
5.54935	31.74	Pk	35.1	-23.9	-95.2	-52.26	-13	-39.26	V
7.3991	32.02	Pk	35.6	-21.9	-95.2	-49.48	-13	-36.48	V
Mid Channel, 1880MHz									
3.74057	32.22	Pk	32.9	-25.8	-95.2	-55.88	-13	-42.88	H
5.60833	31.35	Pk	35.2	-24.2	-95.2	-52.85	-13	-39.85	H
7.48125	31.18	Pk	35.5	-22.1	-95.2	-50.62	-13	-37.62	H
3.74046	32.34	Pk	32.9	-25.8	-95.2	-55.76	-13	-42.76	V
5.61153	33.18	Pk	35.2	-24.2	-95.2	-51.02	-13	-38.02	V
7.47707	31.16	Pk	35.6	-22	-95.2	-50.44	-13	-37.44	V
High Channel, 1900MHz									
3.78306	34.06	Pk	33	-25.5	-95.2	-53.64	-13	-40.64	H
5.67151	31.45	Pk	35	-24.2	-95.2	-52.95	-13	-39.95	H
7.55973	30.28	Pk	35.6	-22	-95.2	-51.32	-13	-38.32	H
3.77966	32.76	Pk	33	-25.5	-95.2	-54.94	-13	-41.94	V
5.66793	32.11	Pk	35	-24.2	-95.2	-52.29	-13	-39.29	V
7.55968	31.11	Pk	35.6	-22	-95.2	-50.49	-13	-37.49	V

9.3.2. LTE BAND 5 AND 5G NR BAND n5

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.

QPSK LTE BAND 5 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/14/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE 5 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 829MHz									
1.67976	39.37	Pk	28.9	-29.5	-95.2	-56.43	-13	-43.43	H
2.47378	41.87	Pk	32.3	-27.7	-95.2	-48.73	-13	-35.73	H
3.5878	34.8	Pk	33.1	-25.9	-95.2	-53.2	-13	-40.2	H
1.65859	38.81	Pk	28.7	-29.5	-95.2	-57.19	-13	-44.19	V
2.46191	38.72	Pk	32.3	-27.8	-95.2	-51.98	-13	-38.98	V
3.54366	37.36	Pk	33	-25.8	-95.2	-50.64	-13	-37.64	V
Mid Channel, 836.5MHz									
1.69785	39.22	Pk	29.2	-29.5	-95.2	-56.28	-13	-43.28	H
2.49623	42.36	Pk	32.3	-27.6	-95.2	-48.14	-13	-35.14	H
3.3153	36.75	Pk	32.7	-26.5	-95.2	-52.25	-13	-39.25	H
1.6924	39.62	Pk	29.1	-29.4	-95.2	-55.88	-13	-42.88	V
2.49595	41.87	Pk	32.3	-27.6	-95.2	-48.63	-13	-35.63	V
3.54546	37.18	Pk	33	-25.9	-95.2	-50.92	-13	-37.92	V
High Channel, 844MHz									
1.67898	40.76	Pk	28.9	-29.5	-95.2	-55.04	-13	-42.04	H
2.51856	39.68	Pk	32.3	-27.5	-95.2	-50.72	-13	-37.72	H
3.3789	36.92	Pk	32.7	-26.6	-95.2	-52.18	-13	-39.18	H
1.68057	39.87	Pk	28.9	-29.5	-95.2	-55.93	-13	-42.93	V
2.51896	40.38	Pk	32.3	-27.5	-95.2	-50.02	-13	-37.02	V
3.38438	36.55	Pk	32.7	-26.6	-95.2	-52.55	-13	-39.55	V

QPSK 5G NR BAND n5 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/226/2020
Test Engineer:	19212
Configuration:	EUT Only
Mode	5G NR Band n5 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 834MHz									
1.66732	42.17	Pk	28.9	-32.2	-95.2	-55.63	-13	-42.63	V
1.66935	41.49	Pk	28.9	-32.2	-95.2	-56.31	-13	-43.31	H
2.50076	41.01	Pk	33.5	-31.3	-95.2	-51.39	-13	-38.39	H
2.50292	41.86	Pk	33.5	-31.3	-95.2	-50.54	-13	-37.54	V
3.33619	40.55	Pk	33	-30.2	-95.2	-51.35	-13	-38.35	V
3.33715	40.4	Pk	33	-30.2	-95.2	-51.5	-13	-38.5	H
Mid Channel, 836.5MHz									
1.67276	41.94	Pk	29	-32.2	-95.2	-55.76	-13	-42.76	H
1.67368	41.52	Pk	29	-32.2	-95.2	-56.18	-13	-43.18	V
2.50863	40.87	Pk	33.5	-31.4	-95.2	-51.53	-13	-38.53	V
2.51115	41	Pk	33.5	-31.4	-95.2	-51.4	-13	-38.4	H
3.34521	40.29	Pk	33	-30.1	-95.2	-51.51	-13	-38.51	H
3.34732	40.08	Pk	33	-30.1	-95.2	-51.72	-13	-38.72	V
High Channel, 839MHz									
1.67621	42.06	Pk	29	-32.2	-95.2	-55.64	-13	-42.64	H
1.67976	42.06	Pk	28.9	-32.2	-95.2	-55.74	-13	-42.74	V
2.51547	40.97	Pk	33.5	-31.4	-95.2	-51.43	-13	-38.43	V
2.51873	41.04	Pk	33.5	-31.3	-95.2	-51.16	-13	-38.16	H
3.35477	39.98	Pk	33	-30.1	-95.2	-51.72	-13	-38.72	V
3.35478	39.99	Pk	33	-30.1	-95.2	-51.71	-13	-38.71	H

9.3.3. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/19/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 7 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.00069	-74.6	Pk	34.3	-24.3	11.5	-53.1	-25	-28.1	249
7.50224	-75.44	Pk	35.5	-22.2	12.2	-49.94	-25	-24.94	164
10.00086	-76.71	Pk	36.9	-19.3	11.6	-47.51	-25	-22.51	335
5.00096	-72.95	Pk	34.3	-24.3	11.8	-51.15	-25	-26.15	102
7.50102	-76.48	Pk	35.5	-22.2	12.3	-50.88	-25	-25.88	345
10.00082	-76.7	Pk	36.9	-19.3	11.6	-47.5	-25	-22.5	175
Mid Channel, 2535MHz									
5.05337	31.6	Pk	34.3	-24.4	-95.2	-53.7	-25	-28.7	H
7.57071	30.09	Pk	35.6	-21.9	-95.2	-51.41	-25	-26.41	H
10.10018	29.86	Pk	37.1	-19.3	-95.2	-47.54	-25	-22.54	H
5.05321	33.56	Pk	34.3	-24.4	-95.2	-51.74	-25	-26.74	V
7.56964	30.5	Pk	35.6	-21.9	-95.2	-51	-25	-26	V
10.10002	30.07	Pk	37.1	-19.3	-95.2	-47.33	-25	-22.33	V
High Channel, 2560MHz									
5.09969	33.2	Pk	34.3	-24.3	-95.2	-52	-25	-27	H
7.64973	30.68	Pk	35.6	-21.9	-95.2	-50.82	-25	-25.82	H
10.19983	30.35	Pk	37.3	-18.7	-95.2	-46.25	-25	-21.25	H
5.10046	33.41	Pk	34.4	-24.3	-95.2	-51.69	-25	-26.69	V
7.64964	30.3	Pk	35.6	-21.9	-95.2	-51.2	-25	-26.2	V
10.2027	29.82	Pk	37.3	-18.7	-95.2	-46.78	-25	-21.78	V

9.3.4. LTE BAND 12 AND 5G NR Band n12

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 12 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/20/2020
Test Engineer:	31300
Configuration:	EUT only
Mode	LTEn12 QPSK 15MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 704MHz									
1.78086	39.25	Pk	30.4	-29.3	-95.2	-54.85	-13	-41.85	H
2.29681	38.72	Pk	31.4	-28	-95.2	-53.08	-13	-40.08	H
3.02673	38.48	Pk	32.6	-26.9	-95.2	-51.02	-13	-38.02	H
1.76434	39.04	Pk	30	-29.3	-95.2	-55.46	-13	-42.46	V
2.27176	38.54	Pk	31.4	-28.2	-95.2	-53.46	-13	-40.46	V
3.0331	37.69	Pk	32.6	-26.9	-95.2	-51.81	-13	-38.81	V
Mid Channel, 707.5MHz									
1.63269	39.76	Pk	28.4	-29.6	-95.2	-56.64	-13	-43.64	H
2.44166	39.23	Pk	32.2	-27.9	-95.2	-51.67	-13	-38.67	H
3.23032	36.97	Pk	33.1	-26.3	-95.2	-51.43	-13	-38.43	H
1.62759	39.27	Pk	28.3	-29.6	-95.2	-57.23	-13	-44.23	V
2.43382	42.64	Pk	32.2	-27.9	-95.2	-48.26	-13	-35.26	V
3.2202	36.23	Pk	33.3	-26.2	-95.2	-51.87	-13	-38.87	V
High Channel, 711MHz									
1.4342	-67.4	Pk	28.4	-30.1	11.9	-57.2	-13	-44.2	336
2.12185	-68.21	Pk	31.1	-28.4	12.4	-53.11	-13	-40.11	22
2.81193	-69.65	Pk	32.2	-27.2	12	-52.65	-13	-39.65	56
1.42238	-67.59	Pk	28.6	-30.1	12.4	-56.69	-13	-43.69	78
2.11265	-68.13	Pk	31.2	-28.4	11.6	-53.73	-13	-40.73	150
2.82554	-68.68	Pk	32.2	-27.2	12	-51.68	-13	-38.68	134

QPSK 5G NR BAND n12 (15.0MHZ BANDWIDTH)

Project #:	13179110
Date:	9/4/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	5G NR Band n12 QPSK 15MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 706.5MHz									
1.46484	41.99	Pk	25	-30.6	-95.2	-57.91	-13	-44.91	H
1.48735	41.25	Pk	24.9	-30.6	-95.2	-58.75	-13	-45.75	V
2.20602	40.63	Pk	27.3	-29.6	-95.2	-56.27	-13	-43.27	V
2.20645	41.37	Pk	27.3	-29.6	-95.2	-55.53	-13	-42.53	H
2.89755	40.11	Pk	29.2	-28.6	-95.2	-53.99	-13	-40.99	V
2.96211	40.18	Pk	29.6	-28.6	-95.2	-53.52	-13	-40.52	H
Mid Channel, 707.5MHz									
1.4155	43.83	Pk	25.3	-30.7	-95.2	-55.87	-13	-42.87	H
1.41595	41.94	Pk	25.3	-30.7	-95.2	-57.76	-13	-44.76	V
2.04676	40.59	Pk	27	-29.7	-95.2	-56.71	-13	-43.71	V
2.12587	40.06	Pk	26.9	-29.6	-95.2	-57.34	-13	-44.34	H
2.95961	39.72	Pk	29.6	-28.7	-95.2	-54.08	-13	-41.08	V
2.96803	39.91	Pk	29.7	-28.7	-95.2	-53.79	-13	-40.79	H
High Channel, 708.5MHz									
1.51151	41.98	Pk	24.8	-30.6	-95.2	-58.22	-13	-45.22	V
1.51987	42	Pk	24.8	-30.6	-95.2	-58.2	-13	-45.2	H
2.26644	40.76	Pk	27.4	-29.5	-95.2	-56.04	-13	-43.04	H
2.26828	41.23	Pk	27.4	-29.5	-95.2	-55.57	-13	-42.57	V
3.2128	39.65	Pk	31.4	-28.4	-95.2	-52.05	-13	-39.05	V
3.26315	39.86	Pk	31.4	-28.3	-95.2	-51.74	-13	-38.74	H

9.3.5. LTE BAND 13

LIMITS

FCC: §27.53
(c) 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.
(f) Emissions in 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.

QPSK LTE BAND 13 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/14/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE 13 QPSK 15MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 782MHz									
2.3162	38.26	Pk	31.5	-28	-95.2	-53.44	-13	-40.44	H
3.1456	36.4	Pk	32.7	-26.3	-95.2	-52.4	-13	-40.4	H
1.54038	39.86	Pk	28.1	-29.8	-95.2	-57.04	-40	-17.04	H
1.53319	40.2	Pk	28	-29.7	-95.2	-56.7	-40	-16.7	V
2.33286	40.26	Pk	31.5	-28	-95.2	-51.44	-13	-38.44	V
2.43213	42.08	Pk	32.2	-27.9	-95.2	-48.82	-13	-35.82	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.3.6. **LTE BAND 14**

LIMITS

FCC: §90.543 Emission Limitations. (Band 14)
(e) For operations in the 758-768 MHz and the 788-798 MHz bands, 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:
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in 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. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation

QPSK LTE BAND 14 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	6/15/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE 14 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.59974	41.05	Pk	28	-29.6	-95.2	-55.75	-40	-15.75	H
2.36551	39.71	Pk	31.8	-28	-95.2	-51.69	-13	-38.69	H
3.17317	38.25	Pk	32.7	-26.4	-95.2	-50.65	-13	-37.65	H
1.58449	40.75	Pk	27.9	-29.6	-95.2	-56.15	-40	-16.15	V
2.36201	39.31	Pk	31.8	-27.9	-95.2	-51.99	-13	-38.99	V
3.16682	38.69	Pk	32.7	-26.4	-95.2	-50.21	-13	-37.21	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.3.7. **LTE BAND 17**

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 17 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/15/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE 17 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 793MHz									
1.31344	39.58	Pk	29.3	-30.5	-95.2	-56.82	-13	-43.82	H
2.11683	41.74	Pk	31.2	-28.4	-95.2	-50.66	-13	-37.66	H
2.851	36.8	Pk	32.1	-27.2	-95.2	-53.5	-13	-40.5	H
1.30619	39.19	Pk	29.3	-30.5	-95.2	-57.21	-13	-44.21	V
2.11664	40.1	Pk	31.2	-28.4	-95.2	-52.3	-13	-39.3	V
2.83861	34.29	Pk	32.2	-27.2	-95.2	-55.91	-13	-42.91	V

*** Emissions in the GPS band were wideband emissions therefore the -40dBm/MHz limit was used.**

9.3.8. **LTE BAND 25**

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.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/15/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 25 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.70185	33.13	Pk	33	-26	-95.2	-55.07	-13	-42.07	H
5.5479	31.69	Pk	35.1	-23.9	-95.2	-52.31	-13	-39.31	H
7.40119	30.19	Pk	35.6	-21.9	-95.2	-51.31	-13	-38.31	H
3.70389	33.75	Pk	33	-26	-95.2	-54.45	-13	-41.45	V
5.54899	31.88	Pk	35.1	-23.9	-95.2	-52.12	-13	-39.12	V
7.39966	31.58	Pk	35.6	-21.9	-95.2	-49.92	-13	-36.92	V
Mid Channel, 1882.5MHz									
3.7438	32.52	Pk	32.9	-25.8	-95.2	-55.58	-13	-42.58	H
5.61856	32.19	Pk	35.1	-24.3	-95.2	-52.21	-13	-39.21	H
7.49433	30.89	Pk	35.6	-22.2	-95.2	-50.91	-13	-37.91	H
3.74616	34.15	Pk	32.9	-25.8	-95.2	-53.95	-13	-40.95	V
5.61894	33.66	Pk	35.1	-24.3	-95.2	-50.74	-13	-37.74	V
7.49224	32.09	Pk	35.6	-22.2	-95.2	-49.71	-13	-36.71	V
High Channel, 1905MHz									
3.7916	31.48	Pk	32.9	-25.4	-95.2	-56.22	-13	-43.22	H
5.68497	31.82	Pk	35	-24.1	-95.2	-52.48	-13	-39.48	H
7.58007	30.92	Pk	35.5	-21.9	-95.2	-50.68	-13	-37.68	H
3.78973	34.5	Pk	32.9	-25.5	-95.2	-53.3	-13	-40.3	V
5.68429	33.07	Pk	35	-24.1	-95.2	-51.23	-13	-38.23	V
7.57979	32.37	Pk	35.5	-21.9	-95.2	-49.23	-13	-36.23	V

9.3.9. LTE BAND 26 (FCC PART 90S)

LIMITS

FCC: §90.691
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 26 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/15/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 26 QPSK 10MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 819MHz									
1.63996	35.43	Pk	28.4	-29.5	-95.2	-60.87	-13	-47.87	H
2.45851	35.55	Pk	32.3	-27.8	-95.2	-55.15	-13	-42.15	H
3.27579	32.68	Pk	32.8	-26.2	-95.2	-55.92	-13	-42.92	H
1.6379	36.13	Pk	28.4	-29.6	-95.2	-60.27	-13	-47.27	V
2.45637	33.32	Pk	32.3	-27.9	-95.2	-57.48	-13	-44.48	V
3.27598	31.56	Pk	32.8	-26.2	-95.2	-57.04	-13	-44.04	V

9.3.10. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/15/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 26 QPSK 15MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.60946	32.58	Pk	33.9	-24.9	-95.2	-53.62	-40	-13.62	H
6.91763	30.86	Pk	35.6	-22.8	-95.2	-51.54	-40	-11.54	H
9.21847	30.28	Pk	36.3	-19.9	-95.2	-48.52	-40	-8.52	H
4.61057	33.76	Pk	33.9	-24.9	-95.2	-52.44	-40	-12.44	V
6.91476	32.8	Pk	35.6	-22.8	-95.2	-49.6	-40	-9.6	V
9.2224	31.38	Pk	36.3	-19.9	-95.2	-47.42	-40	-7.42	V

9.3.11. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	113179110
Date:	5/14/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE 41 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
4.99187	34.89	Pk	34.2	-24.2	-95.2	-50.31	-25	-25.31	H
7.48774	33.47	Pk	35.5	-22.1	-95.2	-48.33	-25	-23.33	H
9.98398	31.94	Pk	36.9	-19.4	-95.2	-45.76	-25	-20.76	H
4.99205	35.23	Pk	34.2	-24.2	-95.2	-49.97	-25	-24.97	V
7.48743	32.97	Pk	35.5	-22.1	-95.2	-48.83	-25	-23.83	V
9.98386	31.25	Pk	36.9	-19.4	-95.2	-46.45	-25	-21.45	V
Mid Channel, 2593MHz									
5.16691	35.98	Pk	34.4	-24	-95.2	-48.82	-25	-23.82	H
7.74871	33.22	Pk	35.7	-21.7	-95.2	-47.98	-25	-22.98	H
10.3323	31.35	Pk	37.4	-18.7	-95.2	-45.15	-25	-20.15	H
5.16637	35.76	Pk	34.4	-24	-95.2	-49.04	-25	-24.04	V
7.74999	33.14	Pk	35.7	-21.7	-95.2	-48.06	-25	-23.06	V
10.33165	31.36	Pk	37.4	-18.7	-95.2	-45.14	-25	-20.14	V
High Channel, 2680MHz									
5.34047	33.55	Pk	34.6	-23.9	-95.2	-50.95	-25	-25.95	H
8.00829	33.37	Pk	35.7	-21.4	-95.2	-47.53	-25	-22.53	H
10.67869	32.02	Pk	37.9	-19.1	-95.2	-44.38	-25	-19.38	H
5.3411	34.45	Pk	34.6	-23.9	-95.2	-50.05	-25	-25.05	V
8.00956	32.07	Pk	35.7	-21.4	-95.2	-48.83	-25	-23.83	V
10.68244	31.64	Pk	37.9	-19.1	-95.2	-44.76	-25	-19.76	V

QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/26/2020
Test Engineer:	19479
Configuration:	EUT Only
Mode	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546mHz									
4.99956	39.93	Pk	34.1	-28.4	-95.2	-48.77	-25	-23.77	V
5.04177	39.07	Pk	34.2	-28	-95.2	-49.33	-25	-24.33	H
7.61765	36.43	Pk	35.8	-23.5	-95.2	-46.07	-25	-21.07	V
7.64337	37.18	Pk	35.9	-23.6	-95.2	-45.32	-25	-20.32	H
10.17931	36.39	Pk	37.5	-20.9	-95.2	-41.61	-25	-16.61	V
10.18635	35.72	Pk	37.5	-20.9	-95.2	-42.18	-25	-17.18	H
Mid Channel, 2593MHz									
5.16613	39.65	Pk	34.5	-27.7	-95.2	-48.05	-25	-23.05	V
5.19207	39.56	Pk	34.7	-27.6	-95.2	-47.74	-25	-22.74	H
7.77916	36.12	Pk	35.9	-23.4	-95.2	-46.28	-25	-21.28	V
7.78764	36.91	Pk	36	-23.4	-95.2	-45.29	-25	-20.29	H
10.36092	35.65	Pk	37.7	-20.2	-95.2	-41.25	-25	-16.25	H
10.41026	34.4	Pk	37.7	-20.2	-95.2	-42.5	-25	-17.5	V
High Channel, 2640MHz									
5.2753	38.3	Pk	34.7	-27.9	-95.2	-49.8	-25	-24.8	V
5.27805	39.43	Pk	34.7	-27.9	-95.2	-48.67	-25	-23.67	H
7.88162	37.34	Pk	36.1	-23.5	-95.2	-44.76	-25	-19.76	V
7.912	37.31	Pk	36.1	-23.4	-95.2	-44.89	-25	-19.89	H
10.54373	35.84	Pk	37.8	-20.4	-95.2	-41.46	-25	-16.46	H
10.57665	35.79	Pk	37.8	-20.5	-95.2	-41.21	-25	-16.21	V

9.3.12. LTE BAND 66

LIMITS

FCC: §27.53 (h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/27/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode	LTE 66 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.51656	37.81	Pk	30.1	-27.3	-95.2	-54.59	-13	-41.59	H
3.52078	37.12	Pk	30.2	-27.3	-95.2	-55.18	-13	-42.18	V
5.18484	38.02	Pk	33.6	-25.6	-95.2	-49.18	-13	-36.18	V
5.38406	37.57	Pk	33	-25.3	-95.2	-49.93	-13	-36.93	H
7.21828	34.15	Pk	37.2	-22.6	-95.2	-46.45	-13	-33.45	H
7.21828	35.39	Pk	37.2	-22.6	-95.2	-45.21	-13	-32.21	V
Mid Channel, 1745MHz									
3.47015	31.54	Pk	32.8	-26.1	-95.2	-56.96	-13	-43.96	H
5.20497	32.87	Pk	34.3	-24.1	-95.2	-52.13	-13	-39.13	H
6.93896	30.91	Pk	35.6	-22.8	-95.2	-51.49	-13	-38.49	H
3.47473	34.39	Pk	32.8	-26.1	-95.2	-54.11	-13	-41.11	V
5.20392	32.53	Pk	34.3	-24.1	-95.2	-52.47	-13	-39.47	V
6.93887	31.72	Pk	35.6	-22.8	-95.2	-50.68	-13	-37.68	V
High Channel, 1770MHz									
3.5101	39.05	Pk	30.2	-27.2	-95.2	-53.15	-13	-40.15	V
3.56506	39.07	Pk	30.1	-27.5	-95.2	-53.53	-13	-40.53	H
5.07633	37.1	Pk	33.8	-24.9	-95.2	-49.2	-13	-36.2	H
5.12701	37.17	Pk	33.8	-24.8	-95.2	-49.03	-13	-36.03	V
7.22084	36.28	Pk	37.1	-22.6	-95.2	-44.42	-13	-31.42	V
7.25449	35.92	Pk	37.2	-23.1	-95.2	-45.18	-13	-32.18	H

9.3.13. LTE BAND 71

LIMITS

FCC: §27.53 (g)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 71 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/18/2020
Test Engineer:	12491
Configuration:	EUT Only
Mode	LTE Band 71QPSK
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 673.0MHz									
1.326	37.28	Pk	29.3	-30.5	-95.2	-59.12	-13	-46.12	H
1.99237	40.57	Pk	30.9	-28.7	-95.2	-52.43	-13	-39.43	H
2.65241	34.92	Pk	32.4	-27.3	-95.2	-55.18	-13	-42.18	H
1.32638	38.88	Pk	29.3	-30.5	-95.2	-57.52	-13	-44.52	V
1.99227	40.9	Pk	30.9	-28.7	-95.2	-52.1	-13	-39.1	V
2.65147	35.12	Pk	32.4	-27.3	-95.2	-54.98	-13	-41.98	V
Mid Channel, 680.5MHz									
1.34134	35.25	Pk	29.5	-30.5	-95.2	-60.95	-13	-47.95	H
2.0117	33.89	Pk	30.9	-28.7	-95.2	-59.11	-13	-46.11	H
2.68079	32.22	Pk	32.4	-27.2	-95.2	-57.78	-13	-44.78	H
1.33872	36.85	Pk	29.5	-30.5	-95.2	-59.35	-13	-46.35	V
2.0132	34.25	Pk	30.9	-28.7	-95.2	-58.75	-13	-45.75	V
2.68428	32.55	Pk	32.4	-27.2	-95.2	-57.45	-13	-44.45	V
High Channel, 688.0MHz									
1.35918	38.47	Pk	29.6	-30.4	-95.2	-57.53	-13	-44.53	H
2.0342	35.88	Pk	31	-28.6	-95.2	-56.92	-13	-43.92	H
2.71265	34.93	Pk	32.4	-27.3	-95.2	-55.17	-13	-42.17	H
1.35937	37.36	Pk	29.6	-30.3	-95.2	-58.54	-13	-45.54	V
2.03434	37.01	Pk	31	-28.6	-95.2	-55.79	-13	-42.79	V
2.71257	35.35	Pk	32.4	-27.3	-95.2	-54.75	-13	-41.75	V

9.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 3

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

9.4.1. LTE BAND 2

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.

QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/19/2020
Test Engineer:	39006
Configuration:	EUT Only
Mode	LTE 2 QPSK 20MHz
Chamber #:	Chamber I

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.6274	36.88	Pk	33	-26	-95.2	-51.32	-13	-38.32	H
5.65475	35.28	Pk	35	-24.3	-95.2	-49.22	-13	-36.22	H
7.33714	33.34	Pk	35.5	-22	-95.2	-48.36	-13	-35.36	H
3.67255	36.52	Pk	32.9	-25.9	-95.2	-51.68	-13	-38.68	V
5.64557	35.48	Pk	35.1	-24.3	-95.2	-48.92	-13	-35.92	V
7.29963	33.75	Pk	35.5	-22.3	-95.2	-48.25	-13	-35.25	V
Mid Channel, 1880MHz									
3.77387	36.81	Pk	33	-25.6	-95.2	-50.99	-13	-37.99	H
5.58755	35.06	Pk	35.2	-24.2	-95.2	-49.14	-13	-36.14	H
7.66254	33.76	Pk	35.7	-21.9	-95.2	-47.64	-13	-34.64	H
3.7428	36.83	Pk	32.9	-25.8	-95.2	-51.27	-13	-38.27	V
5.61313	37.11	Pk	35.2	-24.3	-95.2	-47.19	-13	-34.19	V
7.67869	33.38	Pk	35.7	-22	-95.2	-48.12	-13	-35.12	V
High Channel, 1900MHz									
3.80744	36.52	Pk	32.9	-25.5	-95.2	-51.28	-13	-38.28	H
5.67054	35.27	Pk	35	-24.2	-95.2	-49.13	-13	-36.13	H
7.59887	33.56	Pk	35.6	-21.8	-95.2	-47.84	-13	-34.84	H
3.80248	37.16	Pk	32.9	-25.5	-95.2	-50.64	-13	-37.64	V
4.45132	36.47	Pk	33.7	-24.8	-95.2	-49.83	-13	-36.83	V
5.65209	35.31	Pk	35	-24.3	-95.2	-49.19	-13	-36.19	V

9.4.2. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/21/2020
Test Engineer:	50822
Configuration:	EUT Only
Mode	LTE 7 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.01536	40.41	Pk	34.4	-28.3	-95.2	-48.69	-25	-23.69	H
5.02701	39.22	Pk	34.3	-28.1	-95.2	-49.78	-25	-24.78	V
7.49702	36.25	Pk	35.7	-23.8	-95.2	-47.05	-25	-22.05	V
7.54798	36.9	Pk	35.8	-23.8	-95.2	-46.3	-25	-21.3	H
10.29087	34.92	Pk	37.4	-20.6	-95.2	-43.48	-25	-18.48	V
10.36643	35.27	Pk	37.4	-20.2	-95.2	-42.73	-25	-17.73	H
Mid Channel, 2535MHz									
5.05662	39.53	Pk	34.3	-28	-95.2	-49.37	-25	-24.37	H
5.05746	39.68	Pk	34.3	-28	-95.2	-49.22	-25	-24.22	V
7.61055	36.05	Pk	35.8	-23.6	-95.2	-46.95	-25	-21.95	H
7.63493	36.26	Pk	35.8	-23.6	-95.2	-46.74	-25	-21.74	V
10.15451	36	Pk	37.2	-21.1	-95.2	-43.1	-25	-18.1	H
10.17512	36.25	Pk	37.2	-20.9	-95.2	-42.65	-25	-17.65	V
High Channel, 2560MHz									
5.09209	38.7	Pk	34.4	-27.8	-95.2	-49.9	-25	-24.9	V
5.11704	39.88	Pk	34.5	-27.9	-95.2	-48.72	-25	-23.72	H
7.68149	36	Pk	35.8	-23.3	-95.2	-46.7	-25	-21.7	H
7.70592	36.62	Pk	35.8	-23.5	-95.2	-46.28	-25	-21.28	V
10.23251	35.36	Pk	37.3	-20.6	-95.2	-43.14	-25	-18.14	H
10.25632	36.13	Pk	37.3	-20.6	-95.2	-42.37	-25	-17.37	V

9.4.3. **LTE BAND 25**

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.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/21/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode	LTE 25 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.852	36.42	Pk	33	-25.3	-95.2	-51.08	-13	-38.08	H
5.83519	34.87	Pk	35.1	-23.8	-95.2	-49.03	-13	-36.03	H
7.35568	33.38	Pk	35.6	-22.1	-95.2	-48.32	-13	-35.32	H
3.83862	36.1	Pk	33	-25.4	-95.2	-51.5	-13	-38.5	V
5.79404	34.7	Pk	35.1	-23.7	-95.2	-49.1	-13	-36.1	V
7.35384	33.33	Pk	35.5	-22.1	-95.2	-48.47	-13	-35.47	V
Mid Channel, 1882.5MHz									
3.76363	40.81	Pk	33.6	-29.6	-95.2	-50.39	-13	-37.39	H
3.78942	40.78	Pk	33.6	-29.5	-95.2	-50.32	-13	-37.32	V
5.62131	38.55	Pk	34.8	-27.1	-95.2	-48.95	-13	-35.95	V
5.64836	38.18	Pk	34.8	-27.1	-95.2	-49.32	-13	-36.32	H
7.54581	37.13	Pk	35.8	-23.9	-95.2	-46.17	-13	-33.17	H
7.58687	37.71	Pk	35.8	-23.8	-95.2	-45.49	-13	-32.49	V
High Channel, 1905MHz									
3.8062	40.85	Pk	33.7	-29.5	-95.2	-50.15	-13	-37.15	V
3.82266	40.8	Pk	33.7	-29.5	-95.2	-50.2	-13	-37.2	H
5.69171	38.74	Pk	34.8	-27.3	-95.2	-48.96	-13	-35.96	V
5.73992	38.65	Pk	34.9	-27.4	-95.2	-49.05	-13	-36.05	H
7.62422	36.46	Pk	35.8	-23.5	-95.2	-46.44	-13	-33.44	H
7.66024	36.27	Pk	35.8	-23.4	-95.2	-46.53	-13	-33.53	V

9.4.4. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	9/21/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode	LTE 30 QPSK 10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
2.68459	39.86	Pk	33	-29.5	-95.2	-51.84	-40	-11.84	V
3.48884	39.37	Pk	33.1	-28.1	-95.2	-50.83	-40	-10.83	H
3.87987	38.24	Pk	33.8	-27.3	-95.2	-50.46	-40	-10.46	V
5.15976	36.89	Pk	34.5	-26.4	-95.2	-50.21	-40	-10.21	H
7.44115	34.76	Pk	36.2	-22.8	-95.2	-47.04	-40	-7.04	V
8.12626	34.67	Pk	36.1	-22	-95.2	-46.43	-40	-6.43	H

9.4.5. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/21/2020
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE 41 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.01068	39.56	Pk	34.3	-28.3	-95.2	-49.64	-25	-24.64	H
5.01145	39.82	Pk	34.3	-28.3	-95.2	-49.38	-25	-24.38	V
7.51848	36.77	Pk	35.7	-23.9	-95.2	-46.63	-25	-21.63	V
7.51952	36.57	Pk	35.7	-23.9	-95.2	-46.83	-25	-21.83	H
10.02372	35.49	Pk	37.1	-21	-95.2	-43.61	-25	-18.61	V
10.02581	35.12	Pk	37.1	-21.1	-95.2	-44.08	-25	-19.08	H
Mid Channel, 2593MHz									
5.18598	39.12	Pk	34.6	-27.7	-95.2	-49.18	-25	-24.18	V
5.18757	39.01	Pk	34.6	-27.7	-95.2	-49.29	-25	-24.29	H
7.78103	36.32	Pk	35.8	-23.4	-95.2	-46.48	-25	-21.48	H
7.78149	36.28	Pk	35.8	-23.4	-95.2	-46.52	-25	-21.52	V
10.36973	34.82	Pk	37.4	-20.2	-95.2	-43.18	-25	-18.18	H
10.37206	34.85	Pk	37.4	-20.2	-95.2	-43.15	-25	-18.15	V
High Channel, 2680MHz									
5.36017	39.6	Pk	35	-27.9	-95.2	-48.5	-25	-23.5	H
5.36162	39.16	Pk	35	-27.9	-95.2	-48.94	-25	-23.94	V
8.04184	36.94	Pk	35.8	-23.1	-95.2	-45.56	-25	-20.56	V
8.04228	36.53	Pk	35.8	-23.1	-95.2	-45.97	-25	-20.97	H
10.72064	35.52	Pk	37.9	-20.2	-95.2	-41.98	-25	-16.98	H
10.72191	35.49	Pk	37.9	-20.2	-95.2	-42.01	-25	-17.01	V

QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/26/2020
Test Engineer:	19479
Configuration:	EUT Only
Mode	LTE n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.07839	39.97	Pk	34.4	-27.8	-95.2	-47.93	-25	-22.93	V
5.08988	39.61	Pk	34.4	-27.8	-95.2	-48.19	-25	-23.19	H
7.63109	37.26	Pk	35.9	-23.6	-95.2	-45.24	-25	-20.24	H
7.63293	36.69	Pk	35.9	-23.6	-95.2	-45.81	-25	-20.81	V
10.20638	35.13	Pk	37.5	-20.9	-95.2	-42.67	-25	-17.67	H
10.21048	35.36	Pk	37.6	-20.9	-95.2	-42.24	-25	-17.24	V
Mid Channel, 2593MHz									
5.17832	38.47	Pk	34.6	-27.8	-95.2	-49.23	-25	-24.23	H
5.17932	39.46	Pk	34.6	-27.8	-95.2	-48.24	-25	-23.24	V
7.78072	36.39	Pk	35.9	-23.4	-95.2	-46.01	-25	-21.01	H
7.78228	37.83	Pk	35.9	-23.4	-95.2	-44.57	-25	-19.57	V
10.37913	35.55	Pk	37.7	-20.3	-95.2	-41.45	-25	-16.45	H
10.4011	35.52	Pk	37.7	-20.3	-95.2	-41.48	-25	-16.48	V
High Channel, 2640MHz									
5.27085	39.36	Pk	34.7	-27.9	-95.2	-48.74	-25	-23.74	H
5.27809	38.25	Pk	34.7	-27.9	-95.2	-49.85	-25	-24.85	V
7.91453	35.78	Pk	36.2	-23.4	-95.2	-46.32	-25	-21.32	H
7.94292	37.18	Pk	36.1	-23.5	-95.2	-45.22	-25	-20.22	V
10.52274	34.68	Pk	37.7	-20.6	-95.2	-42.92	-25	-17.92	V
10.59568	34.95	Pk	37.8	-20.1	-95.2	-41.65	-25	-16.65	H

9.4.6. **LTE BAND 66**

LIMITS

FCC: §27.53 (h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	8/11/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode	LTE 66 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.60697	38.52	Pk	30	-27.2	-95.2	-53.88	-13	-40.88	V
3.63416	38.89	Pk	30.1	-27.2	-95.2	-53.41	-13	-40.41	H
5.04281	37.77	Pk	33.7	-24.9	-95.2	-48.63	-13	-35.63	V
5.0513	37.1	Pk	33.8	-24.7	-95.2	-49	-13	-36	H
6.86762	37.12	Pk	36.1	-23.6	-95.2	-45.58	-13	-32.58	H
6.88347	36.27	Pk	36.2	-23.7	-95.2	-46.43	-13	-33.43	V
Mid Channel, 1745MHz									
3.50211	39.89	Pk	34.2	-29.7	-95.2	-50.81	-13	-37.81	V
3.50742	40.57	Pk	33.9	-29.7	-95.2	-50.43	-13	-37.43	H
5.255	38.5	Pk	34.8	-27.9	-95.2	-49.8	-13	-36.8	H
5.27369	39.3	Pk	34.9	-27.9	-95.2	-48.9	-13	-35.9	V
7.00526	36.63	Pk	35.9	-24.6	-95.2	-47.27	-13	-34.27	V
7.01024	36.77	Pk	35.9	-24.5	-95.2	-47.03	-13	-34.03	H
High Channel, 1770MHz									
3.4573	39.26	Pk	30.3	-27.3	-95.2	-52.94	-13	-39.94	V
3.52196	39.19	Pk	30.2	-27.3	-95.2	-53.11	-13	-40.11	H
5.0531	38.3	Pk	33.8	-24.7	-95.2	-47.8	-13	-34.8	V
5.18486	37.78	Pk	33.6	-25.6	-95.2	-49.42	-13	-36.42	H
7.20713	36.05	Pk	37	-22.7	-95.2	-44.85	-13	-31.85	V
7.26137	36.32	Pk	37.1	-23.1	-95.2	-44.88	-13	-31.88	H

9.5. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

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

RESULTS

Both QPSK and 16QAM modes are tested, widest QPSK bandwidths results are reported as worst case

9.5.1. **LTE BAND 2**

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.

QPSK LTE BAND 2 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	6/28/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode:	LTE Band 2 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 1860MHz									
3.67089	39.22	Pk	30.2	-27	-95.2	-52.78	-13	-39.78	V
3.70283	39	Pk	30.3	-27.4	-95.2	-53.3	-13	-40.3	H
5.55317	43.8	Pk	33.3	-25.9	-95.2	-44	-13	-31	H
5.55348	41.16	Pk	33.3	-25.9	-95.2	-46.64	-13	-33.64	V
7.21164	35.63	Pk	37.1	-22.6	-95.2	-45.07	-13	-32.07	H
7.22313	35.48	Pk	37.1	-22.5	-95.2	-45.12	-13	-32.12	V
Mid Channel, 1880MHz									
3.74212	39.14	Pk	30.5	-27.5	-95.2	-53.06	-13	-40.06	H
3.75842	38.78	Pk	30.6	-27.5	-95.2	-53.32	-13	-40.32	V
5.50837	37.91	Pk	33.2	-26	-95.2	-50.09	-13	-37.09	V
5.51169	37.24	Pk	33.2	-26	-95.2	-50.76	-13	-37.76	H
7.27784	36.58	Pk	37.1	-23.1	-95.2	-44.62	-13	-31.62	V
7.35903	35.89	Pk	37	-23.7	-95.2	-46.01	-13	-33.01	H
High Channel, 1900MHz									
3.90048	38.49	Pk	31.4	-26.7	-95.2	-52.01	-13	-39.01	H
3.9071	38.68	Pk	31.4	-26.8	-95.2	-51.92	-13	-38.92	V
5.56742	37.34	Pk	33.3	-25.8	-95.2	-50.36	-13	-37.36	H
5.67344	39.72	Pk	33	-24.4	-95.2	-46.88	-13	-33.88	V
7.63994	36.38	Pk	37	-23.6	-95.2	-45.42	-13	-32.42	H
7.64597	35.8	Pk	37	-23.6	-95.2	-46	-13	-33	V

9.5.2. LTE BAND 7

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	6/28/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode	LTE Band 7 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 2510MHz									
5.08303	37.87	Pk	33.8	-26.2	-95.2	-48.93	-25	-23.93	H
5.08567	37.54	Pk	33.8	-26.2	-95.2	-49.26	-25	-24.26	V
7.21489	36.23	Pk	37.2	-23.6	-95.2	-44.97	-25	-19.97	H
7.26515	36.83	Pk	37.1	-23.4	-95.2	-44.17	-25	-19.17	V
9.93098	34.36	Pk	38.4	-19.8	-95.2	-41.54	-25	-16.54	H
9.97466	34.35	Pk	38.3	-19.8	-95.2	-41.85	-25	-16.85	V
Mid Channel, 2535MHz									
5.01709	37.68	Pk	33.8	-26	-95.2	-48.92	-25	-23.92	H
5.03483	38.01	Pk	33.7	-26.1	-95.2	-48.89	-25	-23.89	V
7.26271	36.23	Pk	37.1	-23.5	-95.2	-44.87	-25	-19.87	V
7.32938	35.88	Pk	37	-23.7	-95.2	-45.72	-25	-20.72	H
10.24581	33.7	Pk	38.8	-19.4	-95.2	-41.3	-25	-16.3	V
10.26317	33.85	Pk	38.9	-19.7	-95.2	-41.45	-25	-16.45	H
High Channel, 2560MHz									
5.06579	37.28	Pk	33.8	-26.2	-95.2	-49.72	-25	-24.72	V
5.0786	37.58	Pk	33.8	-26.1	-95.2	-49.22	-25	-24.22	H
7.64803	35.44	Pk	36.9	-23.5	-95.2	-45.96	-25	-20.96	H
7.6664	36.56	Pk	36.9	-23.4	-95.2	-44.84	-25	-19.84	V
9.68335	35.3	Pk	38.7	-20.1	-95.2	-40.5	-25	-15.5	V
10.11208	34.68	Pk	38.4	-19.9	-95.2	-41.32	-25	-16.32	H

9.5.3. **LTE BAND 25**

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.

QPSK LTE BAND 25 (20.0MHZ BANDWIDTH)

Project #:	1379110
Date:	6/28/2020
Test Engineer:	19206
Configuration:	EUT Only
Mode:	LTE Band 25 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1860MHz									
3.7924	39.21	Pk	30.8	-27.3	-95.2	-52.49	-13	-39.49	H
3.84163	38.86	Pk	31.1	-27.2	-95.2	-52.44	-13	-39.44	V
5.55331	40.49	Pk	33.3	-25.9	-95.2	-47.31	-13	-34.31	H
5.58742	37.61	Pk	33.2	-25.5	-95.2	-49.89	-13	-36.89	V
7.1994	35.79	Pk	37.1	-22.8	-95.2	-45.11	-13	-32.11	H
7.26441	36.08	Pk	37.1	-23.1	-95.2	-45.12	-13	-32.12	V
Mid Channel, 1882.5MHz									
3.72629	39.77	Pk	30.4	-27.4	-95.2	-52.43	-13	-39.43	V
3.74299	40.15	Pk	30.5	-27.5	-95.2	-52.05	-13	-39.05	H
5.62082	41.68	Pk	33.1	-25.1	-95.2	-45.52	-13	-32.52	V
5.62102	40.21	Pk	33.1	-25.1	-95.2	-46.99	-13	-33.99	H
7.51021	36.12	Pk	36.8	-23.1	-95.2	-45.38	-13	-32.38	V
7.51395	36.21	Pk	36.8	-23.1	-95.2	-45.29	-13	-32.29	H
High Channel, 1905MHz									
3.86342	38.94	Pk	31.2	-27.1	-95.2	-52.16	-13	-39.16	V
3.88129	38.21	Pk	31.3	-27	-95.2	-52.69	-13	-39.69	H
5.68818	41.51	Pk	33.1	-24.1	-95.2	-44.69	-13	-31.69	V
5.82594	37.7	Pk	33.5	-25.5	-95.2	-49.5	-13	-36.5	H
7.71637	35.35	Pk	37.1	-22.2	-95.2	-44.95	-13	-31.95	H
7.72828	35.58	Pk	37.1	-21.8	-95.2	-44.32	-13	-31.32	V

9.5.4. LTE BAND 30

LIMITS

FCC: §27.53 (a)
For mobile and portable stations operating in the 2305-2315 MHz: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

QPSK LTE BAND 30 (10.0MHZ BANDWIDTH)

Project #:	13179110
Date:	9/15/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode:	LTE Band 30 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Mid Channel, 2310MHz									
4.34212	37.39	Pk	33.6	-26.8	-95.2	-51.01	-40	-11.01	H
4.5544	38.47	Pk	34	-27.2	-95.2	-49.93	-40	-9.93	V
6.3984	36.04	Pk	36.3	-24.1	-95.2	-46.96	-40	-6.96	V
6.44276	35.63	Pk	36.4	-23.8	-95.2	-46.97	-40	-6.97	H
9.06678	34.42	Pk	36.4	-20.9	-95.2	-45.28	-40	-5.28	V
9.12596	34.31	Pk	36.5	-21	-95.2	-45.39	-40	-5.39	H

9.5.5. LTE BAND 41 AND 5G NR BAND n41

LIMITS

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	5/22/2020
Test Engineer:	20792
Configuration:	EUT Only
Mode:	LTE Band 41FCC QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2506MHz									
5.01317	39.35	Pk	34.3	-28.3	-95.2	-49.85	-25	-24.85	H
5.01331	38.26	Pk	34.3	-28.3	-95.2	-50.94	-25	-25.94	V
7.517	35.52	Pk	35.7	-23.9	-95.2	-47.88	-25	-22.88	V
7.5193	35.37	Pk	35.7	-23.9	-95.2	-48.03	-25	-23.03	H
10.02399	34.34	Pk	37.1	-21.1	-95.2	-44.86	-25	-19.86	V
10.02599	34.31	Pk	37.1	-21.1	-95.2	-44.89	-25	-19.89	H
Mid Channel, 2593MHz									
5.18588	39.27	Pk	34.6	-27.7	-95.2	-49.03	-25	-24.03	H
5.18712	39.13	Pk	34.6	-27.7	-95.2	-49.17	-25	-24.17	V
7.7799	36.33	Pk	35.8	-23.4	-95.2	-46.47	-25	-21.47	V
7.78045	35.96	Pk	35.8	-23.4	-95.2	-46.84	-25	-21.84	H
10.37178	34.08	Pk	37.4	-20.2	-95.2	-43.92	-25	-18.92	V
10.37243	33.8	Pk	37.4	-20.2	-95.2	-44.2	-25	-19.2	H
High Channel, 2680MHz									
5.3601	37.92	Pk	35	-27.9	-95.2	-50.18	-25	-25.18	H
5.36067	37.32	Pk	35	-27.9	-95.2	-50.78	-25	-25.78	V
8.03909	35.4	Pk	35.8	-23.1	-95.2	-47.1	-25	-22.1	H
8.03959	35.98	Pk	35.8	-23.1	-95.2	-46.52	-25	-21.52	V
10.71955	34.78	Pk	37.9	-20.2	-95.2	-42.72	-25	-17.72	V
10.72216	34.45	Pk	37.9	-20.2	-95.2	-43.05	-25	-18.05	H

QPSK 5G NR BAND n41 (100.0MHZ BANDWIDTH)

Project #:	13179110
Date:	7/26/2020
Test Engineer:	19497
Configuration:	EUT Only
Mode:	5G NR Band n41 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 2546MHz									
5.05535	39.69	Pk	34.3	-28	-95.2	-48.61	-25	-23.61	V
5.08758	40.05	Pk	34.4	-27.8	-95.2	-47.75	-25	-22.75	H
7.61751	36.39	Pk	35.8	-23.5	-95.2	-46.11	-25	-21.11	V
7.63629	37.5	Pk	35.9	-23.6	-95.2	-45	-25	-20	H
10.16111	36.23	Pk	37.5	-21	-95.2	-41.97	-25	-16.97	H
10.17403	35.2	Pk	37.5	-20.9	-95.2	-42.8	-25	-17.8	V
Mid Channel, 2593MHz									
5.17655	39.63	Pk	34.6	-27.8	-95.2	-48.07	-25	-23.07	H
5.18082	38.65	Pk	34.6	-27.7	-95.2	-48.95	-25	-23.95	V
7.74069	36.13	Pk	35.9	-23.4	-95.2	-46.27	-25	-21.27	V
7.78145	35.98	Pk	35.9	-23.4	-95.2	-46.42	-25	-21.42	H
10.35927	34.73	Pk	37.7	-20.2	-95.2	-42.17	-25	-17.17	V
10.37437	33.67	Pk	37.7	-20.2	-95.2	-43.23	-25	-18.23	H
High Channel, 2640MHz									
5.27663	37.95	Pk	34.7	-27.9	-95.2	-50.15	-25	-25.15	V
5.27918	38.6	Pk	34.7	-27.9	-95.2	-49.5	-25	-24.5	H
7.91426	37.61	Pk	36.2	-23.4	-95.2	-44.49	-25	-19.49	V
7.92075	36.07	Pk	36.2	-23.4	-95.2	-46.13	-25	-21.13	H
10.56155	35.58	Pk	37.8	-20.5	-95.2	-41.62	-25	-16.62	H
10.56703	35.53	Pk	37.8	-20.5	-95.2	-41.57	-25	-16.57	V

9.5.6. **LTE BAND 48**

LIMITS

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	9/13/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode:	LTE Band 48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
5.51189	26.3	RMS	35	-25.5	-95.2	-58.8	-40	-18.8	H
5.67706	24.94	RMS	35.2	-25.4	-95.2	-59.96	-40	-19.96	V
7.06728	24.33	RMS	36.1	-23.5	-95.2	-57.57	-40	-17.57	H
7.30151	24.31	RMS	36.1	-22.6	-95.2	-56.79	-40	-16.79	V
8.6339	23.33	RMS	36.1	-21.5	-95.2	-56.37	-40	-16.37	H
9.05018	22.94	RMS	36.4	-21.2	-95.2	-56.16	-40	-16.16	V
Mid Channel, 3625MHz									
5.56748	25.72	RMS	35	-25.5	-95.2	-59.68	-40	-19.68	H
5.62292	25.37	RMS	35.1	-25.5	-95.2	-59.73	-40	-19.73	V
6.83627	24.35	RMS	36.4	-23.4	-95.2	-57.35	-40	-17.35	V
6.84149	23.97	RMS	36.5	-23.3	-95.2	-57.53	-40	-17.53	H
7.88115	23.63	RMS	36.1	-22.5	-95.2	-56.97	-40	-16.97	V
8.5175	23.72	RMS	36.1	-22	-95.2	-56.68	-40	-16.68	H
High Channel, 3690MHz									
5.57589	26.24	RMS	35	-25.6	-95.2	-59.26	-40	-19.26	H
5.91654	25.46	RMS	35.7	-25	-95.2	-58.54	-40	-18.54	V
6.83949	24.15	RMS	36.5	-23.3	-95.2	-57.35	-40	-17.35	H
7.69405	23.27	RMS	35.9	-22.1	-95.2	-57.23	-40	-17.23	V
9.66376	22.53	RMS	37	-21	-95.2	-56.07	-40	-16.07	H
10.64359	22.47	RMS	37.8	-19.6	-95.2	-53.93	-40	-13.93	V

9.5.7. **LTE BAND 66**

LIMITS

FCC: §27.53 (h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 66 (20.0MHZ BANDWIDTH)

Project #:	13179110
Date:	6/28/2020
Test Engineer:	19410
Configuration:	EUT Only
Mode:	LTE Band 66 QPSK 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 1720MHz									
3.44055	37.9	Pk	30.4	-27.3	-95.2	-54.2	-13	-41.2	V
3.44171	38.34	Pk	30.4	-27.3	-95.2	-53.76	-13	-40.76	H
5.15911	37.57	Pk	33.8	-25.3	-95.2	-49.13	-13	-36.13	H
5.16165	37.81	Pk	33.8	-25.3	-95.2	-48.89	-13	-35.89	V
6.87956	36.13	Pk	36.3	-23.6	-95.2	-46.37	-13	-33.37	V
6.87964	35.62	Pk	36.3	-23.6	-95.2	-46.88	-13	-33.88	H
Mid Channel, 1745MHz									
3.48936	37.65	Pk	30.2	-27.2	-95.2	-54.55	-13	-41.55	H
3.49107	37.92	Pk	30.2	-27.2	-95.2	-54.28	-13	-41.28	V
5.23445	38.48	Pk	33.5	-26.4	-95.2	-49.62	-13	-36.62	H
5.23467	37.64	Pk	33.5	-26.4	-95.2	-50.46	-13	-37.46	V
6.9789	36.12	Pk	36.4	-23.8	-95.2	-46.48	-13	-33.48	V
6.97982	36.93	Pk	36.4	-23.8	-95.2	-45.67	-13	-32.67	H
High Channel, 1770MHz									
3.5399	38.3	Pk	30.2	-27.4	-95.2	-54.1	-13	-41.1	V
3.5402	38.03	Pk	30.2	-27.4	-95.2	-54.37	-13	-41.37	H
5.30965	36.63	Pk	33.3	-25.9	-95.2	-51.17	-13	-38.17	V
5.3105	37.66	Pk	33.2	-25.8	-95.2	-50.14	-13	-37.14	H
7.07924	35.79	Pk	36.6	-23.3	-95.2	-46.11	-13	-33.11	V
7.081	35.95	Pk	36.7	-23.3	-95.2	-45.85	-13	-32.85	H

9.5.8. **5G NR BAND n77**

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13179116
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.49772	36.25	Pk	36	-23.1	-95.2	-46.05	-13	-33.05	V
7.50109	36.31	Pk	36	-23.2	-95.2	-46.09	-13	-33.09	H
11.24888	34.29	Pk	38	-19.6	-95.2	-42.51	-13	-29.51	H
11.24889	34.84	Pk	38	-19.6	-95.2	-41.96	-13	-28.96	V
14.99855	34.18	Pk	39.9	-19.5	-95.2	-40.62	-13	-27.62	H
15.00095	35.14	Pk	39.9	-19.5	-95.2	-39.66	-13	-26.66	V
Mid Channel, 3840MHz									
7.6783	36.54	Pk	35.9	-22.9	-95.2	-45.66	-13	-32.66	H
7.67952	36.23	Pk	35.9	-22.9	-95.2	-45.97	-13	-32.97	V
11.51816	34.68	Pk	38.4	-19.6	-95.2	-41.72	-13	-28.72	V
11.51935	34.71	Pk	38.4	-19.6	-95.2	-41.69	-13	-28.69	H
15.55958	35.3	Pk	40.9	-19.8	-95.2	-38.8	-13	-25.8	V
15.56189	34.54	Pk	40.9	-19.9	-95.2	-39.66	-13	-26.66	H
High Channel, 3930MHz									
7.85935	36.47	Pk	36	-23.6	-95.2	-46.33	-13	-33.33	V
7.86043	36.04	Pk	36	-23.6	-95.2	-46.76	-13	-33.76	H
11.78825	34.76	Pk	38.8	-19.4	-95.2	-41.04	-13	-28.04	V
11.78959	34.01	Pk	38.8	-19.4	-95.2	-41.79	-13	-28.79	H
15.71803	34.17	Pk	40.7	-18.7	-95.2	-39.03	-13	-26.03	H
15.71836	34.54	Pk	40.7	-18.8	-95.2	-38.76	-13	-25.76	V

9.6. FIELD STRENGTH OF SPURIOUS RADIATION, ANT7

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.

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

9.6.1. LTE BAND 48

LIMITS

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13179116
Date:	9/13/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode	LTE 48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346(dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3560MHz									
5.75178	25.78	RMS	35.3	-26	-95.2	-59.72	-40	-19.72	V
5.91891	25.27	RMS	35.7	-25	-95.2	-58.73	-40	-18.73	H
6.77887	24.44	RMS	36.6	-23.9	-95.2	-57.56	-40	-17.56	V
7.18565	24.21	RMS	36	-23	-95.2	-57.39	-40	-17.39	H
8.23153	23.43	RMS	36.1	-21.9	-95.2	-57.07	-40	-17.07	V
8.41059	23.24	RMS	36.1	-22.2	-95.2	-57.16	-40	-17.16	H
Mid Channel, 3625MHz									
5.17095	26.84	RMS	34.6	-26.3	-95.2	-59.56	-40	-19.56	V
5.56995	26.52	RMS	35	-25.5	-95.2	-58.88	-40	-18.88	H
6.43598	25.15	RMS	36.4	-23.9	-95.2	-57.05	-40	-17.05	V
7.12895	24.16	RMS	36	-23.3	-95.2	-57.84	-40	-17.84	H
8.6312	23.26	RMS	36.1	-21.5	-95.2	-56.44	-40	-16.44	V
8.86243	23.76	RMS	36.3	-21.9	-95.2	-56.34	-40	-16.34	H
High Channel, 3690MHz									
6.50049	24.47	RMS	36.5	-24.3	-95.2	-58.13	-40	-18.13	V
6.77577	24.57	RMS	36.6	-23.9	-95.2	-57.43	-40	-17.43	H
8.05026	24.13	RMS	36.1	-22.2	-95.2	-56.37	-40	-16.37	V
8.2833	23.3	RMS	36.1	-21.8	-95.2	-57	-40	-17	H
9.78174	22.87	RMS	37.2	-21	-95.2	-55.23	-40	-15.23	V
10.23953	22.7	RMS	37.6	-20.1	-95.2	-54.4	-40	-14.4	H

9.6.2. **5G NR BAND n77**

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13179116
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.49988	36.02	Pk	36	-23.2	-95.2	-46.38	-13	-33.38	H
7.50186	35.97	Pk	36	-23.2	-95.2	-46.43	-13	-33.43	V
11.24797	34.24	Pk	38	-19.6	-95.2	-42.56	-13	-29.56	H
11.24918	27.69	Pk	38	-19.6	-95.2	-49.11	-13	-36.11	V
15.0001	35.27	Pk	39.9	-19.5	-95.2	-39.53	-13	-26.53	V
15.00193	34.44	Pk	39.9	-19.5	-95.2	-40.36	-13	-27.36	H
Mid Channel, 3840MHz									
7.68103	36.39	Pk	35.9	-22.9	-95.2	-45.81	-13	-32.81	V
7.68196	36.64	Pk	35.9	-22.8	-95.2	-45.46	-13	-32.46	H
11.52064	34.77	Pk	38.4	-19.6	-95.2	-41.63	-13	-28.63	H
11.52082	35	Pk	38.4	-19.6	-95.2	-41.4	-13	-28.4	V
15.36099	35.1	Pk	41	-20.1	-95.2	-39.2	-13	-26.2	V
15.36159	35.36	Pk	41	-20.1	-95.2	-38.94	-13	-25.94	H
High Channel, 3930MHz									
7.8606	35.97	Pk	36	-23.6	-95.2	-46.83	-13	-33.83	H
7.86149	36.64	Pk	36	-23.6	-95.2	-46.16	-13	-33.16	V
11.79033	33.37	Pk	38.8	-19.4	-95.2	-42.43	-13	-29.43	H
11.79189	35.06	Pk	38.8	-19.4	-95.2	-40.74	-13	-27.74	V
15.71819	33.87	Pk	40.7	-18.8	-95.2	-39.43	-13	-26.43	V
15.71966	34.73	Pk	40.7	-18.8	-95.2	-38.57	-13	-25.57	H

9.7. FIELD STRENGTH OF SPURIOUS RADIATION, ANT8

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.

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

9.7.1. LTE BAND 48

LIMITS

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13179116
Date:	9/15/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode:	LTE48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 3560MHz									
5.80273	26.16	RMS	35.4	-25.3	-95.2	-58.44	-40	-18.44	H
5.86128	25.57	RMS	35.5	-25.4	-95.2	-58.93	-40	-18.93	V
7.18386	24.55	RMS	36	-23	-95.2	-57.05	-40	-17.05	H
7.70171	23.97	RMS	35.8	-22.2	-95.2	-56.83	-40	-16.83	V
9.62	23.34	RMS	37	-21	-95.2	-55.26	-40	-15.26	V
9.84635	23.19	RMS	37.3	-20.7	-95.2	-54.81	-40	-14.81	H
Mid Channel, 3625MHz									
5.97297	25.72	RMS	35.7	-24.5	-95.2	-57.88	-40	-17.88	H
6.43495	25.19	RMS	36.3	-23.9	-95.2	-57.11	-40	-17.11	V
7.87745	23.69	RMS	36.1	-22.4	-95.2	-56.81	-40	-16.81	H
8.50612	23.23	RMS	36.1	-22	-95.2	-57.07	-40	-17.07	V
9.20863	23.25	RMS	36.4	-21.7	-95.2	-56.55	-40	-16.55	H
9.77844	22.89	RMS	37.2	-20.9	-95.2	-55.11	-40	-15.11	V
High Channel, 3690MHz									
6.37449	25.56	RMS	36.4	-24.4	-95.2	-57.04	-40	-17.04	H
6.37465	25.51	RMS	36.4	-24.4	-95.2	-57.09	-40	-17.09	V
8.11663	23.94	RMS	36.1	-22.2	-95.2	-56.76	-40	-16.76	V
8.22664	22.62	RMS	36.1	-22	-95.2	-57.88	-40	-17.88	H
9.96276	22.52	RMS	37.3	-20	-95.2	-54.68	-40	-14.68	V
9.96382	22.75	RMS	37.3	-20	-95.2	-54.45	-40	-14.45	H

9.7.2. **5G NR BAND n77**

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13179116
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.49975	36.12	Pk	36	-23.2	-95.2	-46.28	-13	-33.28	H
7.50011	35.88	Pk	36	-23.2	-95.2	-46.52	-13	-33.52	V
11.25119	34	Pk	38	-19.6	-95.2	-42.8	-13	-29.8	H
11.25126	34.66	Pk	38	-19.6	-95.2	-42.14	-13	-29.14	V
14.99881	34.77	Pk	39.9	-19.5	-95.2	-40.03	-13	-27.03	H
15.00067	34.75	Pk	39.9	-19.5	-95.2	-40.05	-13	-27.05	V
Mid Channel, 3840MHz									
7.67883	37.01	Pk	35.9	-22.9	-95.2	-45.19	-13	-32.19	H
7.67999	36.66	Pk	35.9	-22.9	-95.2	-45.54	-13	-32.54	V
11.51901	34.36	Pk	38.4	-19.6	-95.2	-42.04	-13	-29.04	H
11.52159	34.94	Pk	38.4	-19.6	-95.2	-41.46	-13	-28.46	V
15.35784	35.79	Pk	41	-20.1	-95.2	-38.51	-13	-25.51	V
15.36084	34.78	Pk	41	-20.1	-95.2	-39.52	-13	-26.52	H
High Channel, 3930MHz									
7.85961	36.65	Pk	36	-23.6	-95.2	-46.15	-13	-33.15	V
7.8603	36.34	Pk	36	-23.6	-95.2	-46.46	-13	-33.46	H
11.78822	34.34	Pk	38.8	-19.4	-95.2	-41.46	-13	-28.46	V
11.79137	34.16	Pk	38.8	-19.4	-95.2	-41.64	-13	-28.64	H
15.71825	34.9	Pk	40.7	-18.8	-95.2	-38.4	-13	-25.4	V
15.71877	34.02	Pk	40.7	-18.8	-95.2	-39.28	-13	-26.28	H

9.8. FIELD STRENGTH OF SPURIOUS RADIATION, ANT9

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.

All tests below 1GHz were done with a Resolution Bandwidth of 100kHz, and a Video Bandwidth of 300kHz.

9.8.1. LTE BAND 48

LIMITS

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ BANDWIDTH)

Project #:	13179116
Date:	9/14/2020
Test Engineer:	30606
Configuration:	EUT Only
Mode:	LTE48 QPSK 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	Margin (dB)	Polarity
Low Channel, 3560MHz									
5.69045	26.02	RMS	35.2	-25.6	-95.2	-59.08	-40	-19.08	H
6.15696	24.34	RMS	35.9	-24.8	-95.2	-59.26	-40	-19.26	V
6.82767	23.68	RMS	36.5	-23.6	-95.2	-58.12	-40	-18.12	H
7.69703	23.77	RMS	35.9	-22.2	-95.2	-56.93	-40	-16.93	V
8.79991	23.53	RMS	36.3	-22	-95.2	-56.67	-40	-16.67	H
9.49534	22.99	RMS	36.8	-20.5	-95.2	-55.31	-40	-15.31	V
Mid Channel, 3625MHz									
5.74395	26.13	RMS	35.2	-26	-95.2	-59.47	-40	-19.47	H
6.42997	25.09	RMS	36.4	-24	-95.2	-57.21	-40	-17.21	V
7.36866	23.52	RMS	36.1	-22.9	-95.2	-57.88	-40	-17.88	H
8.16879	23.98	RMS	36.1	-21.9	-95.2	-56.42	-40	-16.42	V
9.51635	22.33	RMS	36.9	-20.4	-95.2	-55.87	-40	-15.87	H
10.41579	22.21	RMS	37.7	-19.5	-95.2	-54.19	-40	-14.19	V
High Channel, 3690MHz									
5.39874	25.93	RMS	34.9	-26.3	-95.2	-60.17	-40	-20.17	V
5.51529	26.24	RMS	35	-25.6	-95.2	-58.86	-40	-18.86	H
6.43683	25.02	RMS	36.4	-23.9	-95.2	-57.18	-40	-17.18	H
6.43908	24.92	RMS	36.3	-23.9	-95.2	-57.38	-40	-17.38	V
8.80221	23.4	RMS	36.3	-22	-95.2	-56.8	-40	-16.8	H
8.81212	23.82	RMS	36.3	-21.9	-95.2	-56.28	-40	-16.28	V

9.8.2. **5G NR BAND n77**

LIMITS

FCC: §27.53
(l) 3.7 GHz Service.The following emission limits apply to stations transmitting in the 3700-3980 MHz band:
(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

QPSK 5G NR BAND n77 (100.0MHZ BANDWIDTH)

Project #:	13179116
Date:	7/25/2020
Test Engineer:	19169
Configuration:	EUT Only
Mode	5G NR Band n77 QPSK 100MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T348 (dB/m)	Amp/Cbl (dB)	EIRP CF	Corrected Reading (dBm)	Harmonics limit	PK Margin (dB)	Polarity
Low Channel, 3750MHz									
7.49903	36.32	Pk	36	-23.1	-95.2	-45.98	-13	-32.98	V
7.50139	36.03	Pk	36	-23.2	-95.2	-46.37	-13	-33.37	H
11.24865	34.58	Pk	38	-19.6	-95.2	-42.22	-13	-29.22	H
11.25072	34.71	Pk	38	-19.6	-95.2	-42.09	-13	-29.09	V
14.99867	34.94	Pk	39.9	-19.5	-95.2	-39.86	-13	-26.86	V
15.00149	34.21	Pk	39.9	-19.5	-95.2	-40.59	-13	-27.59	H
Mid Channel, 3840MHz									
7.68011	36.61	Pk	35.9	-22.9	-95.2	-45.59	-13	-32.59	H
7.68141	36.61	Pk	35.9	-22.9	-95.2	-45.59	-13	-32.59	V
11.51829	34.99	Pk	38.4	-19.6	-95.2	-41.41	-13	-28.41	H
11.51909	34.87	Pk	38.4	-19.6	-95.2	-41.53	-13	-28.53	V
15.62951	35	Pk	40.9	-20	-95.2	-39.3	-13	-26.3	V
15.63104	34.46	Pk	40.9	-19.9	-95.2	-39.74	-13	-26.74	H
High Channel, 3930MHz									
7.85945	37	Pk	36	-23.6	-95.2	-45.8	-13	-32.8	V
7.86176	36.44	Pk	36	-23.6	-95.2	-46.36	-13	-33.36	H
11.78805	34.99	Pk	38.8	-19.4	-95.2	-40.81	-13	-27.81	V
11.78866	35.18	Pk	38.8	-19.4	-95.2	-40.62	-13	-27.62	H
15.71819	34.26	Pk	40.7	-18.8	-95.2	-39.04	-13	-26.04	V
15.72013	34.24	Pk	40.7	-18.8	-95.2	-39.06	-13	-26.06	H

10. SETUP PHOTOS

Please refer to 13179110-EP1V1 for setup photos

END OF REPORT