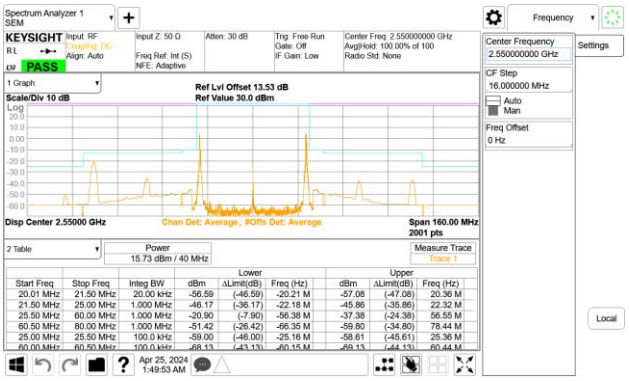
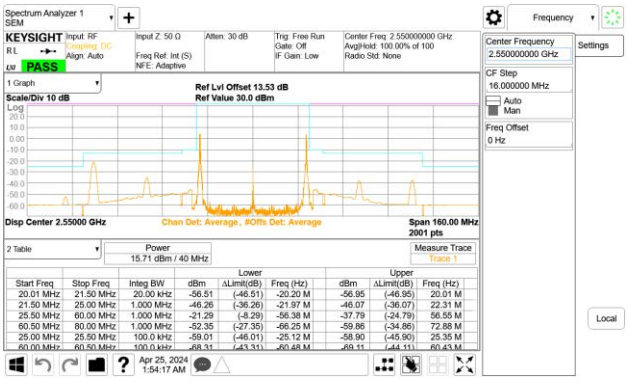
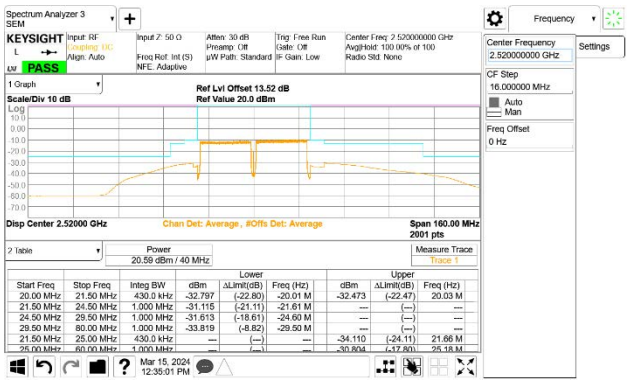


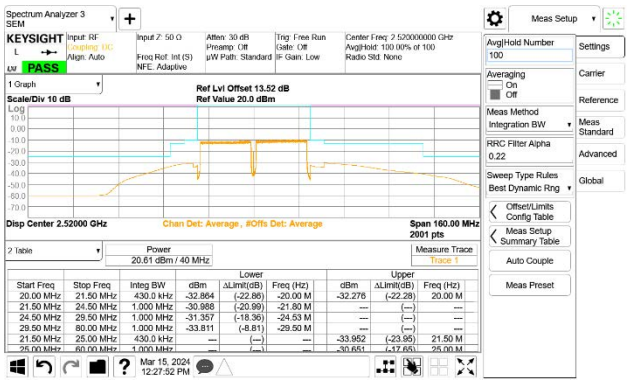
LTE B7 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



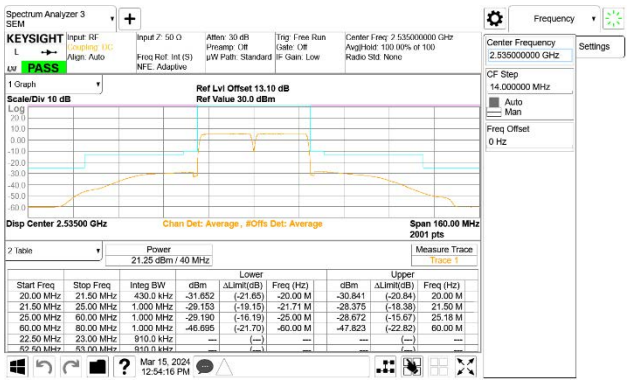
LTE B7 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



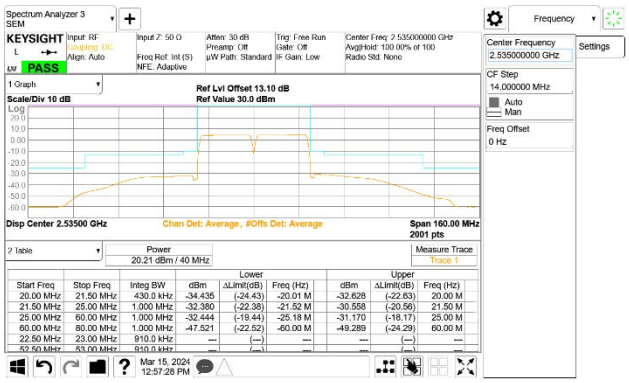
LTE B7 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



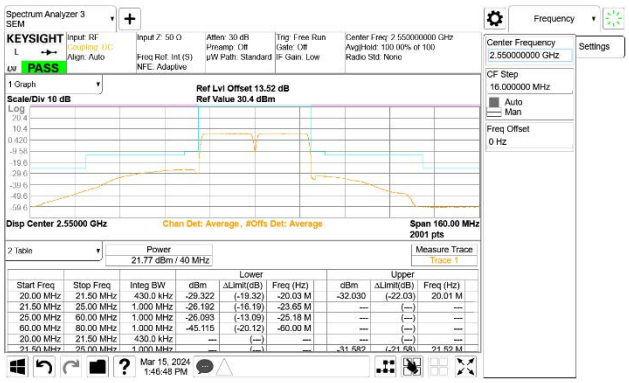
LTE B7 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



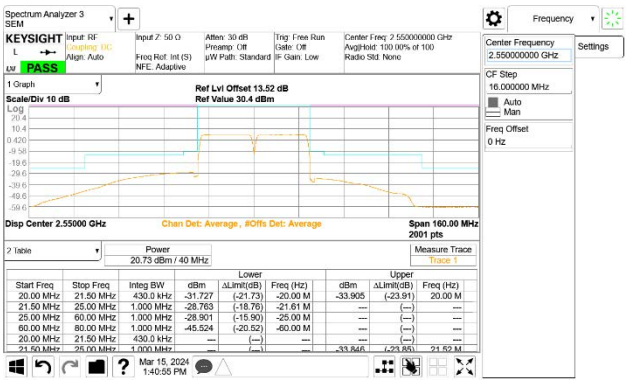
LTE B7 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B7 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B7 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

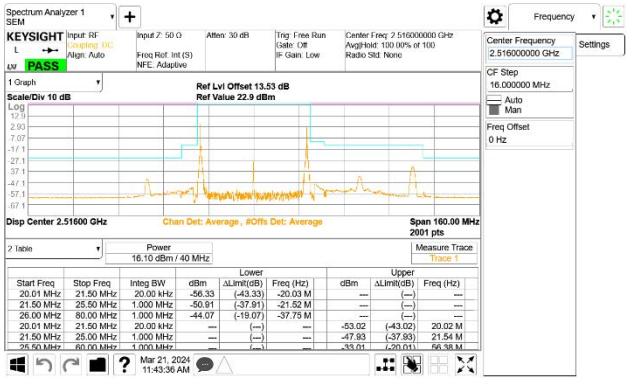


LTE B7 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

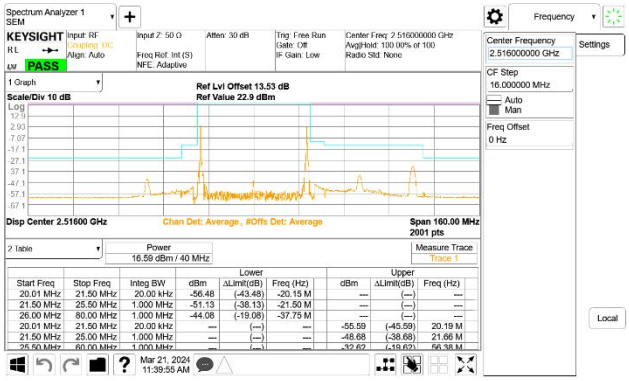
9.2.3. LTE BAND 41C

LIMITS

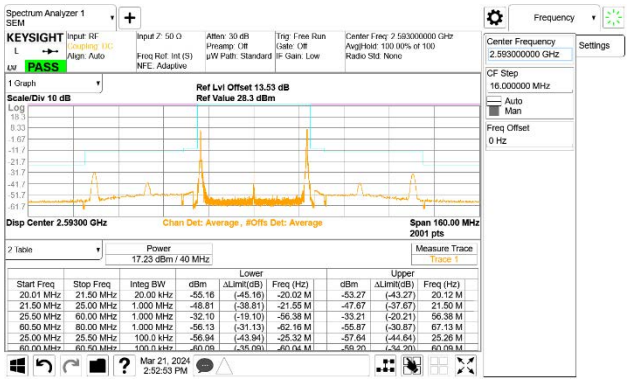
FCC: §27.53(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.



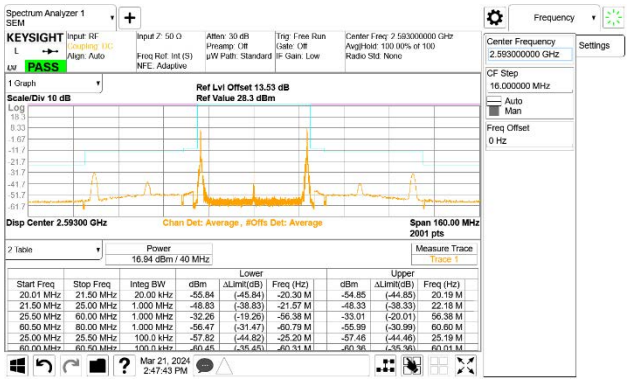
LTE B41 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



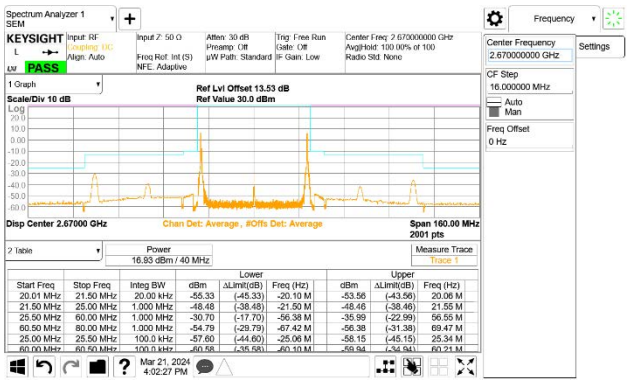
LTE B41 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



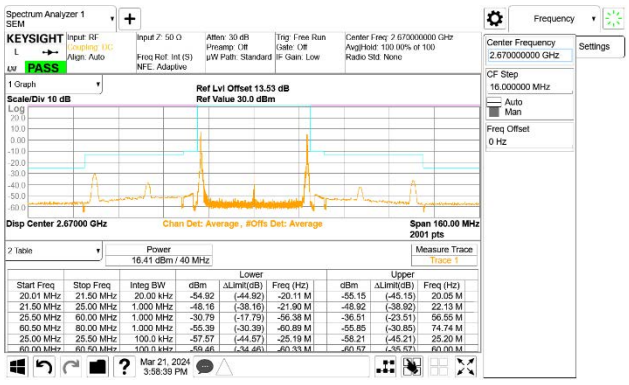
LTE B41 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



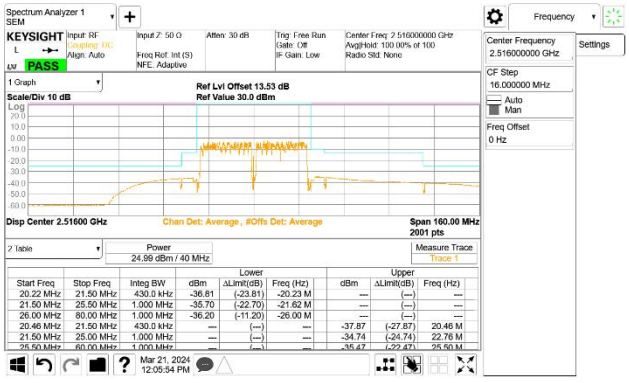
LTE B41 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



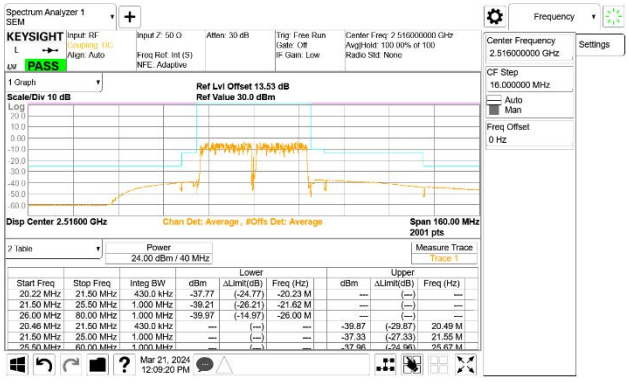
LTE B41 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



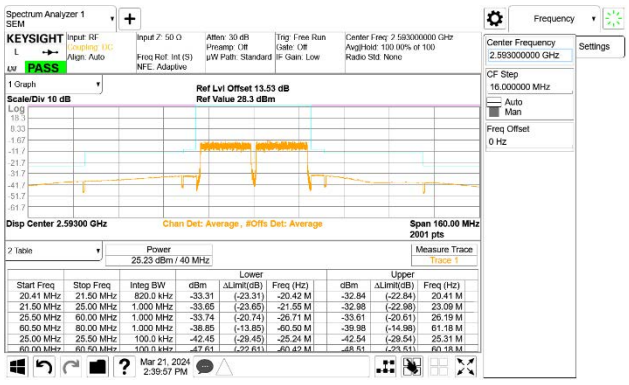
LTE B41 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



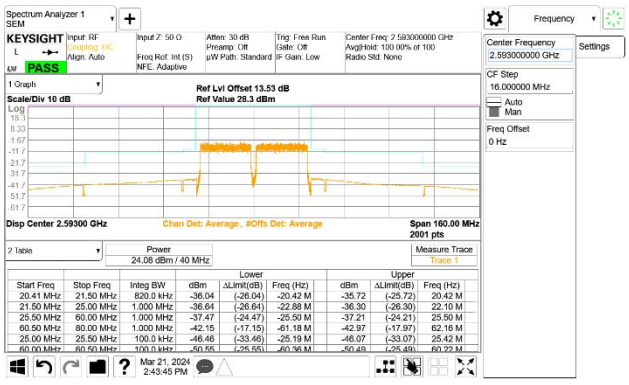
LTE B41 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



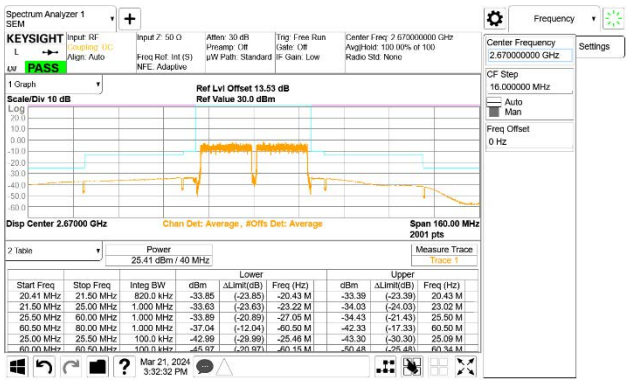
LTE B41 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



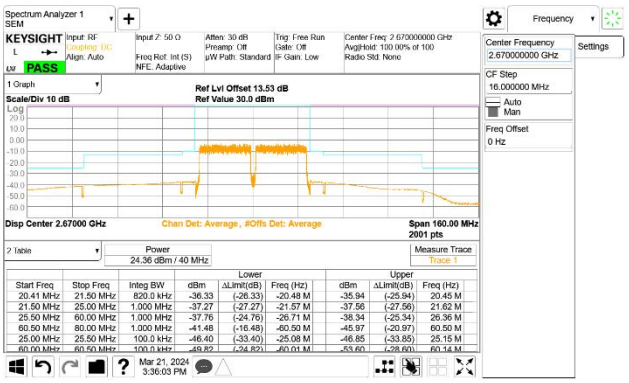
LTE B41 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B41 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B41 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

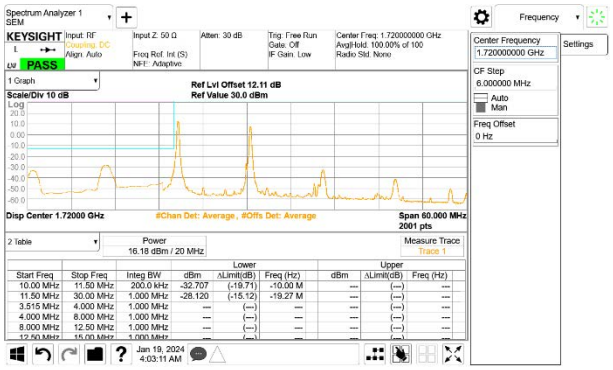


LTE B41 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

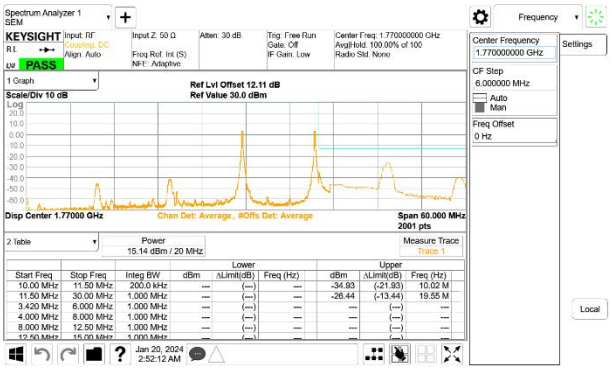
9.2.4. LTE BAND 66B

LIMITS

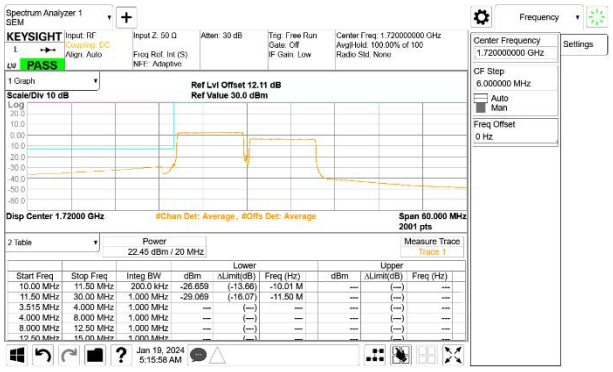
FCC: §27.53(h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.



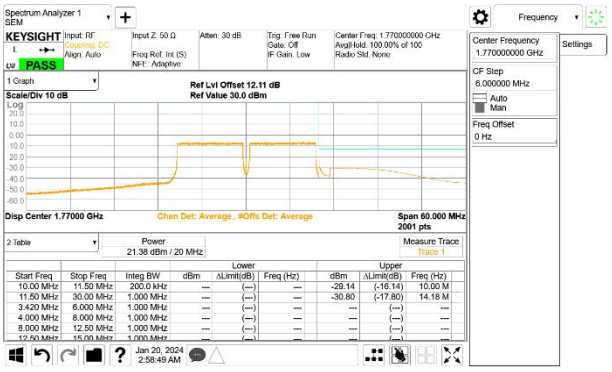
LTE B66B 10MHz + 10MHz QPSK Low Ch RB1-0 + RB1-0



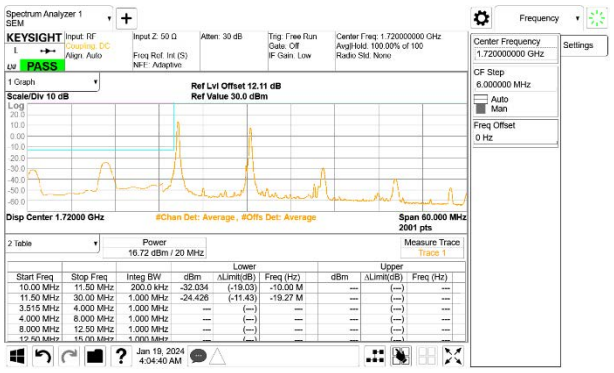
LTE B66B 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-49



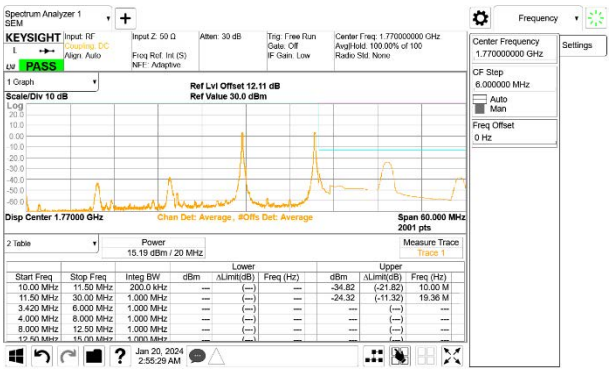
LTE B66B 10MHz + 10MHz QPSK Low Ch RB50-0 + RB50-0



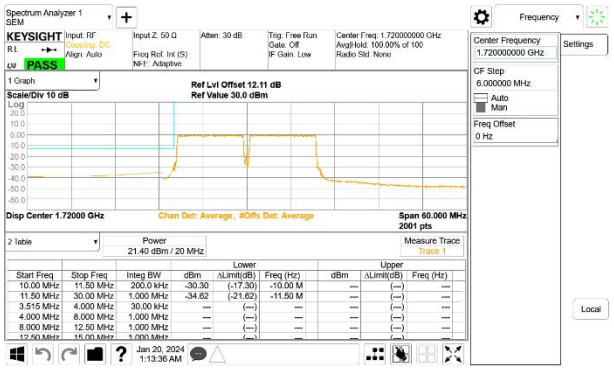
LTE B66B 10MHz + 10MHz QPSK High Ch RB50-0 + RB50-0



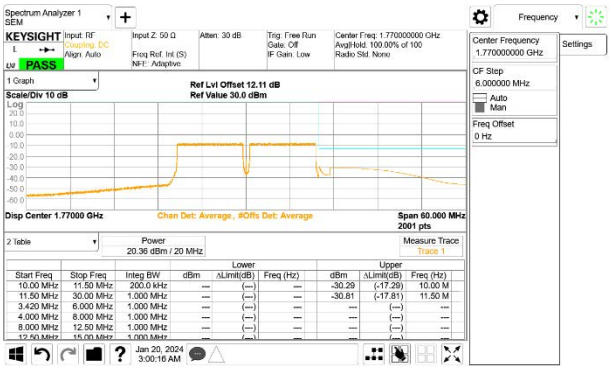
LTE B66B 10MHz + 10MHz 16QAM Low Ch RB1-0 + RB1-0



LTE B66B 10MHz + 10MHz 16QAM High Ch RB1-49 + RB1-49



LTE B66B 10MHz + 10MHz 16QAM Low Ch RB50-0 + RB50-0

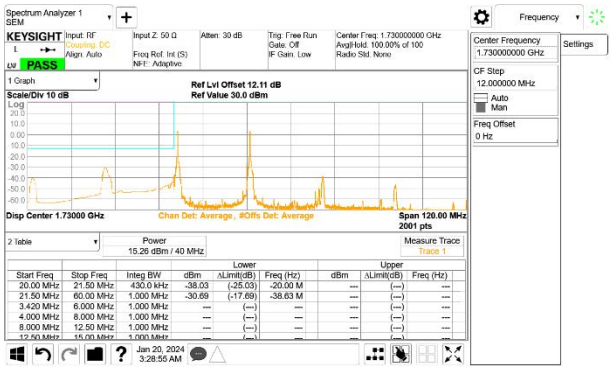


LTE B66B 10MHz + 10MHz 16QAM High Ch RB50-0 + RB50-0

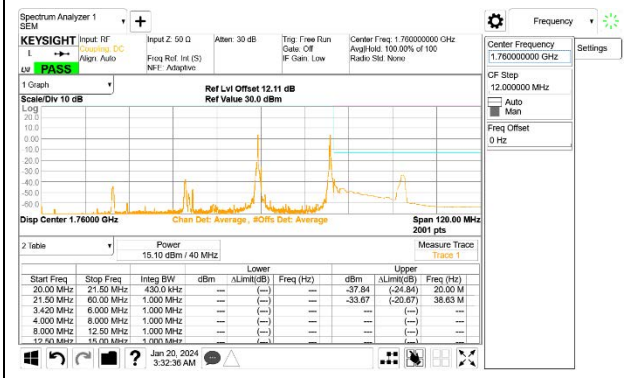
9.2.5. LTE BAND 66C

LIMITS

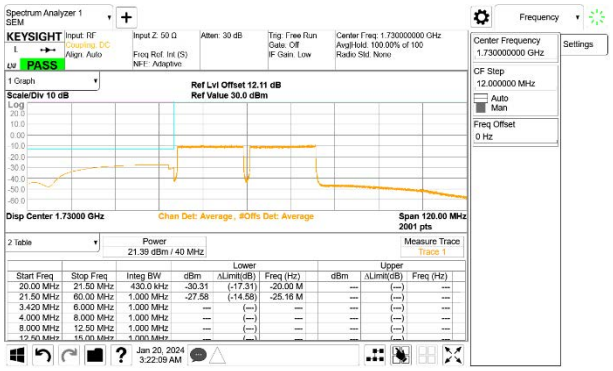
FCC: §27.53(h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.



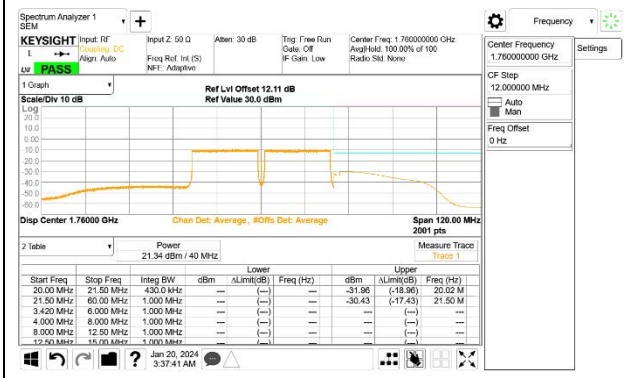
LTE B66C 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-0



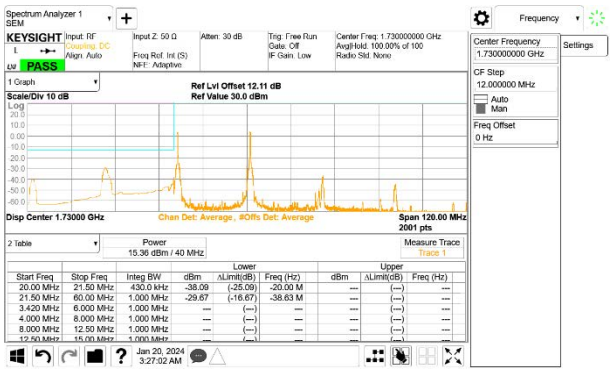
LTE B66C 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-99



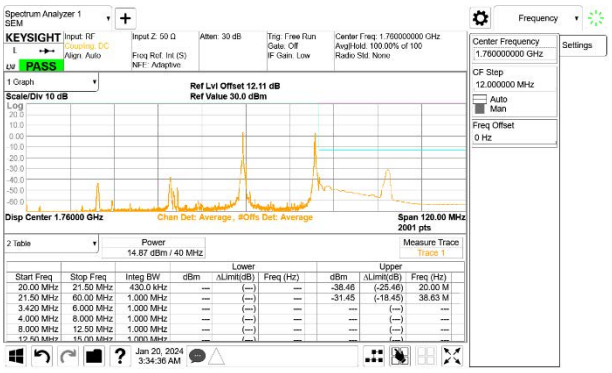
LTE B66C 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



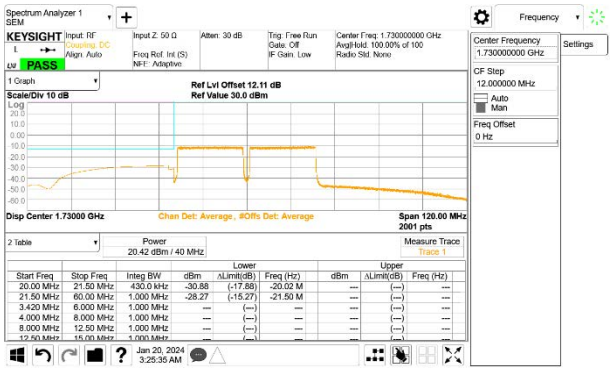
LTE B66C 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0



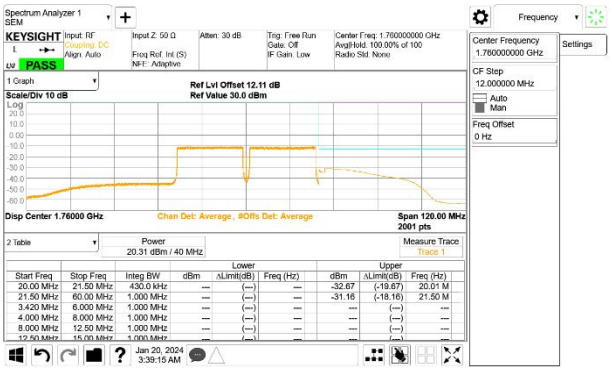
LTE B66C 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-0



LTE B66C 20MHz + 20MHz 16QAM High Ch RB1-99 + RB1-99



LTE B66C 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



LTE B66C 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

9.3. OUT OF BAND EMISSIONS

TEST PROCEDURE

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

For each out of band emissions measurement:

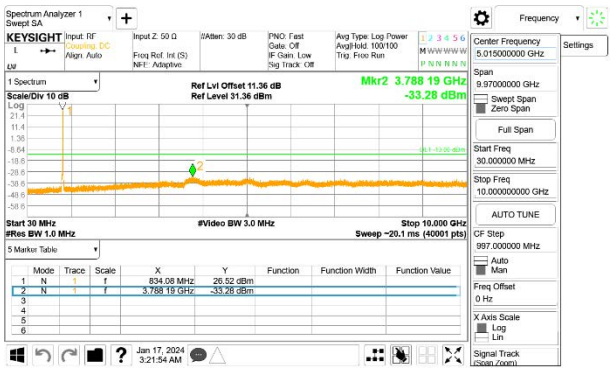
- Set display line at -13 dBm to band 5 and -25 dBm to band 7 and 41
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

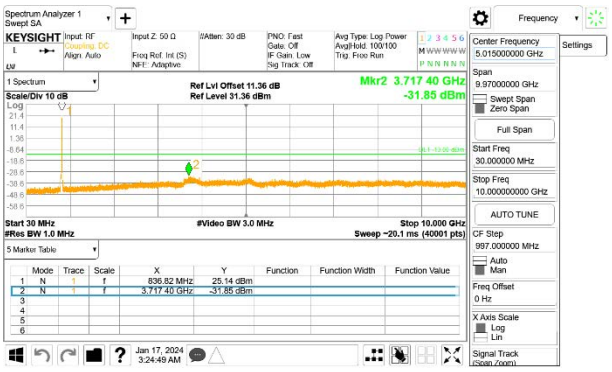
9.3.1. LTE BAND 5B

LIMITS

FCC: §22.917
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B5 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0



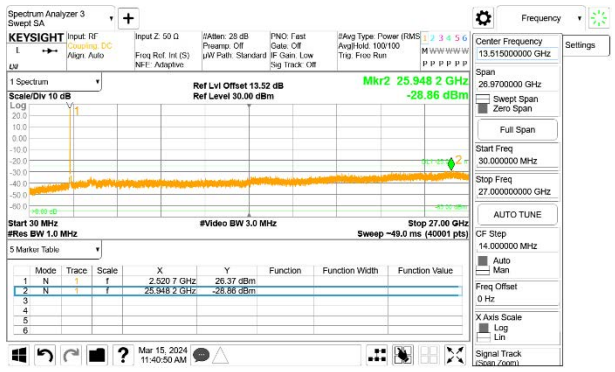
LTE B5 10MHz + 10MHz QPSK Middle Ch RB1-49 + RB1-0

LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-0

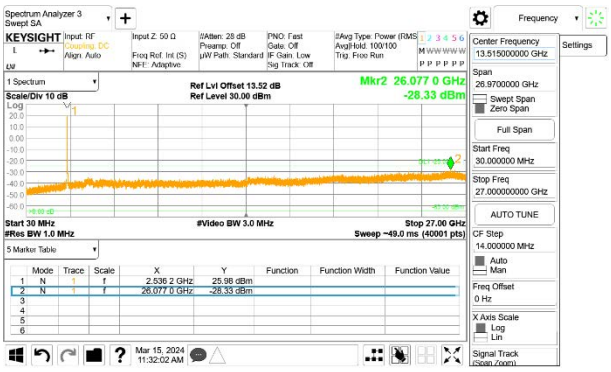
9.3.2. LTE BAND 7C

LIMITS

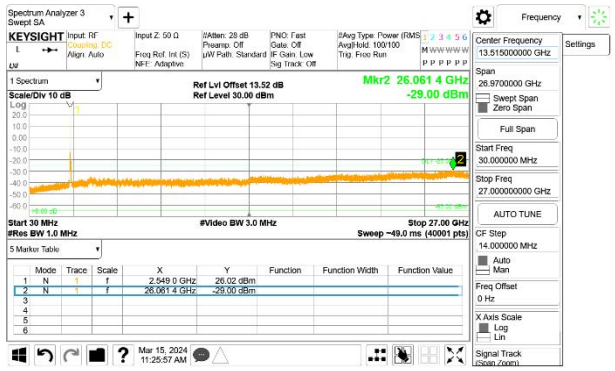
FCC: §27.53 (m)
The minimum permissible attenuation level of any spurious emissions is 55 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B7 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0



LTE B7 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

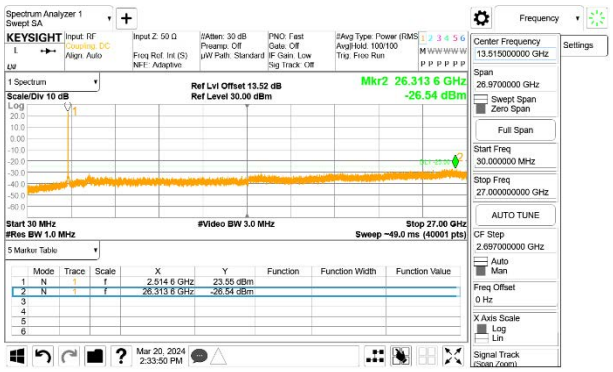


LTE B7 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

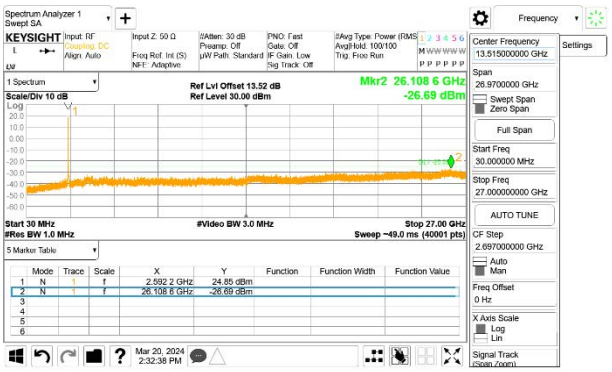
9.3.3. LTE BAND 41C

LIMITS

FCC: §27.53 (m)
The minimum permissible attenuation level of any spurious emissions is 55 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B41 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0



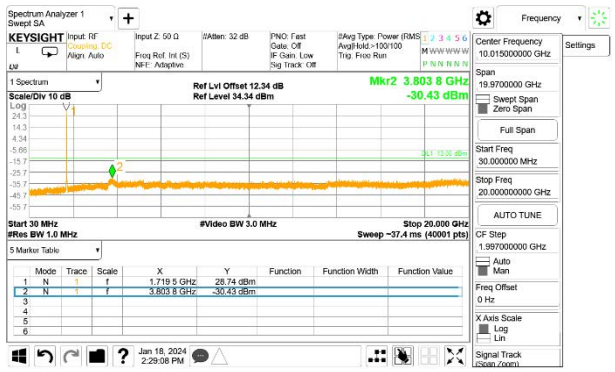
LTE B41 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

LTE B41 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

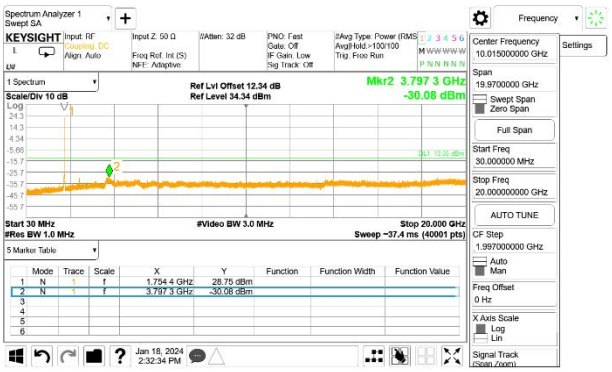
9.3.5. LTE BAND 66B

LIMITS

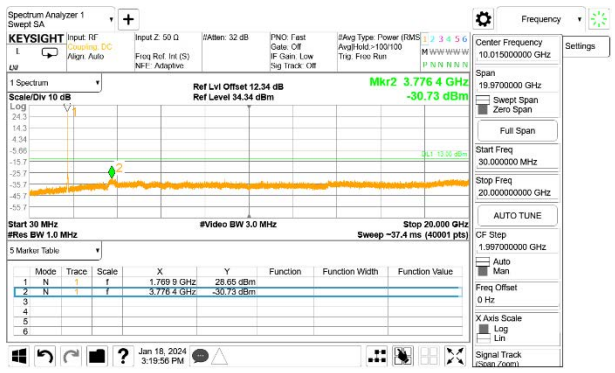
FCC: §27.53 (h)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B66B 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0



LTE B66B 10MHz + 10MHz QPSK Middle Ch RB1-49 + RB1-0

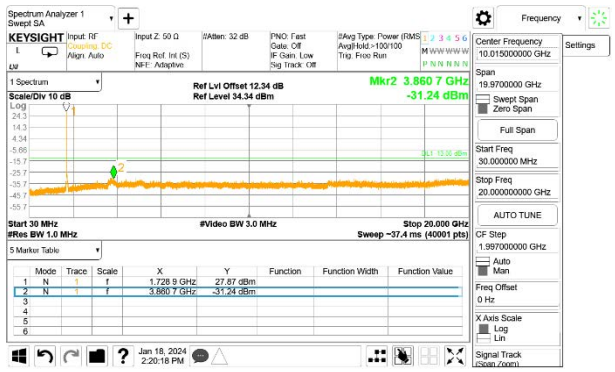


LTE B66B 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-0

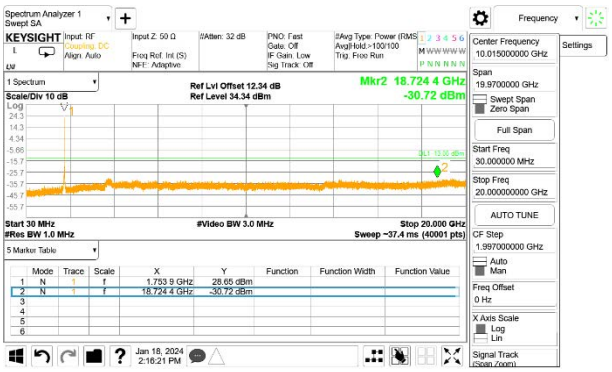
9.3.6. LTE BAND 66C

LIMITS

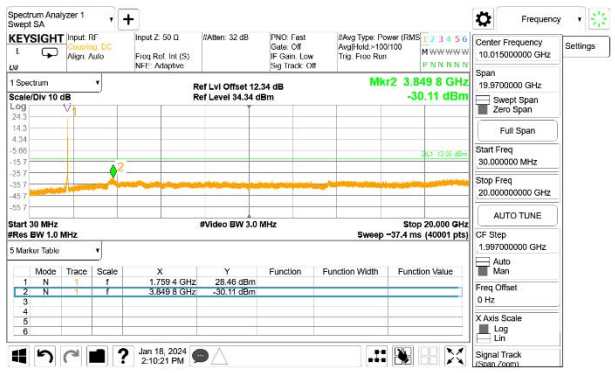
FCC: §27.53 (h)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B66C 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0



LTE B66C 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0



LTE B66C 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

  Low voltage, 3.6VDC, Normal, 3.89VDC and High voltage, 4.48VDC.
  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.

9.4.1. LTE BAND 5B

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:	25780	Test Date:	2024-03-21

QPSK (10MHz + 10MHz BANDWIDTH)

Band	5	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	824.5736	848.4263			
Extreme (50°C)		824.5736	848.4263	2.7	0.003	Yes
Extreme (40°C)		824.5736	848.4263	3.8	0.005	Yes
Extreme (30°C)		824.5736	848.4263	-2.8	-0.003	Yes
Extreme (10°C)		824.5736	848.4263	-3.3	-0.004	Yes
Extreme (0°C)		824.5736	848.4263	-2.8	-0.003	Yes
Extreme (-10°C)		824.5736	848.4263	-5.0	-0.006	Yes
Extreme (-20°C)		824.5736	848.4263	4.1	0.005	Yes
Extreme (-30°C)		824.5736	848.4263	-2.8	-0.003	Yes
20°C	15%	824.5728	848.4317	-3.6	-0.004	Yes
	-15%	824.5728	848.4317	-3.1	-0.004	Yes
	End Point Voltage	824.5728	848.4317	-2.4	-0.003	Yes

9.4.2. LTE BAND 7C

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:	25780	Test Date:	2024-03-22

QPSK (20MHz + 20MHz BANDWIDTH)

Band	7	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2500	2570			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)		2501.1421	2568.8429			
Extreme (50°C)		2501.1421	2568.8429	9.2	0.004	Yes
Extreme (40°C)		2501.1421	2568.8429	7.2	0.003	Yes
Extreme (30°C)		2501.1421	2568.8429	-9.0	-0.004	Yes
Extreme (10°C)	Normal	2501.1421	2568.8429	4.8	0.002	Yes
Extreme (0°C)		2501.1421	2568.8429	-7.8	-0.003	Yes
Extreme (-10°C)		2501.1421	2568.8429	10.3	0.004	Yes
Extreme (-20°C)		2501.1421	2568.8429	13.3	0.005	Yes
Extreme (-30°C)		2501.1421	2568.8429	21.4	0.008	Yes
20°C	15%	2501.1503	2568.8834	-7.5	-0.003	Yes
	-15%	2501.1503	2568.8834	-7.9	-0.003	Yes
	End Point Voltage	2501.1503	2568.8834	-6.7	-0.003	Yes

9.4.3. LTE BAND 41C

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:	25780	Test Date:	2024-03-22

QPSK (20MHz + 20MHz BANDWIDTH)

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	2496.5607	2689.5263			
Extreme (50°C)		2496.5607	2689.5263	9.5	0.004	Yes
Extreme (40°C)		2496.5607	2689.5263	6.6	0.003	Yes
Extreme (30°C)		2496.5607	2689.5262	-9.9	-0.004	Yes
Extreme (10°C)		2496.5607	2689.5263	-6.7	-0.003	Yes
Extreme (0°C)		2496.5607	2689.5263	-8.2	-0.003	Yes
Extreme (-10°C)		2496.5607	2689.5263	-9.1	-0.004	Yes
Extreme (-20°C)		2496.5607	2689.5263	9.2	0.004	Yes
Extreme (-30°C)		2496.5607	2689.5263	14.5	0.006	Yes
20°C	15%	2496.5607	2689.5263	-6.9	-0.003	Yes
	-15%	2496.5607	2689.5262	-10.9	-0.004	Yes
	End Point Voltage	2496.5607	2689.5263	-8.3	-0.003	Yes

9.4.4. LTE BAND 66B

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:	25780	Test Date:	2024-03-22

QPSK (10MHz + 10MHz BANDWIDTH)

Band	66	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1780			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	1710.5815	1779.4173			
Extreme (50°C)		1710.5815	1779.4173	-4.2	-0.002	Yes
Extreme (40°C)		1710.5815	1779.4173	-5.2	-0.003	Yes
Extreme (30°C)		1710.5815	1779.4173	-7.1	-0.004	Yes
Extreme (10°C)		1710.5815	1779.4173	10.3	0.006	Yes
Extreme (0°C)		1710.5815	1779.4173	6.2	0.004	Yes
Extreme (-10°C)		1710.5815	1779.4173	5.0	0.003	Yes
Extreme (-20°C)		1710.5815	1779.4173	7.5	0.004	Yes
Extreme (-30°C)		1710.5815	1779.4173	-5.5	-0.003	Yes
20°C	15%	1710.5815	1779.4173	18.8	0.011	Yes
	-15%	1710.5816	1779.4173	21.1	0.012	Yes
	End Point Voltage	1710.5815	1779.4173	17.5	0.010	Yes

9.4.5. LTE BAND 66C

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:	25780	Test Date:	2024-03-22

QPSK (20MHz + 20MHz BANDWIDTH)

Band	66	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		1710	1780			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	1711.1595	1778.8653			
Extreme (50°C)		1711.1595	1778.8653	8.2	0.005	Yes
Extreme (40°C)		1711.1595	1778.8653	6.7	0.004	Yes
Extreme (30°C)		1711.1595	1778.8653	-6.2	-0.004	Yes
Extreme (10°C)		1711.1595	1778.8653	-12.2	-0.007	Yes
Extreme (0°C)		1711.1595	1778.8653	6.4	0.004	Yes
Extreme (-10°C)		1711.1595	1778.8653	4.8	0.003	Yes
Extreme (-20°C)		1711.1595	1778.8653	5.2	0.003	Yes
Extreme (-30°C)		1711.1595	1778.8653	-5.8	-0.003	Yes
20°C	15%	1711.1595	1778.8653	-3.6	-0.002	Yes
	-15%	1711.1595	1778.8653	4.7	0.003	Yes
	End Point Voltage	1711.1595	1778.8653	-8.4	-0.005	Yes

9.5. 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

Test was performed on Antenna 1; 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 ratio criteria.

9.5.1. LTE BAND 5B

Test Engineer ID:	50822	Test Date:	2024-01-17

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 5	3MHz / 5MHz	834.0	837.9	QPSK	30.67	23.97	6.70
				16QAM	30.71	24.06	6.65
	5 MHz / 3MHz	835.0	838.9	QPSK	30.65	23.92	6.73
				16QAM	30.77	24.01	6.76
	5MHz / 10MHz	831.6	838.8	QPSK	30.23	22.24	7.99
				16QAM	29.91	21.23	8.68
	10MHz / 5MHz	834.3	841.5	QPSK	30.35	22.16	8.19
				16QAM	29.44	20.92	8.52
	10MHz / 10MHz	831.5	841.4	QPSK	30.31	22.07	8.24
				16QAM	29.60	21.12	8.48
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.2. LTE BAND 7C

Test Engineer ID:	50822	Test Date:	2024-03-14

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 7	10MHz / 20MHz	2525.6	2540.0	QPSK	31.24	22.48	8.76
				16QAM	31.05	21.51	9.54
	20MHz / 10MHz	2530.1	2544.5	QPSK	31.40	22.51	8.89
				16QAM	31.14	21.48	9.66
	15 MHz / 15MHz	2527.5	2542.5	QPSK	31.25	22.44	8.81
				16QAM	31.03	21.45	9.58
	15MHz / 20MHz	2525.3	2542.4	QPSK	31.21	22.41	8.80
				16QAM	30.76	21.44	9.32
	20MHz / 15MHz	2527.6	2544.7	QPSK	31.30	22.45	8.85
				16QAM	31.04	21.46	9.58
	20MHz / 20MHz	2525.1	2544.9	QPSK	31.29	22.41	8.88
				16QAM	31.08	21.42	9.66
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.3. LTE BAND 41C

Test Engineer ID:	19210	Test Date:	2024-04-24

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 41 (FCC)	5MHz / 20MHz	2583.8	2595.5	QPSK	30.16	18.23	9.68
				16QAM	29.17	17.19	9.73
	20MHz / 5MHz	2590.5	2602.2	QPSK	30.34	18.34	9.75
				16QAM	29.50	17.33	9.92
	10MHz / 20MHz	2583.6	2598.0	QPSK	29.84	18.21	9.38
				16QAM	29.10	17.19	9.66
	20MHz / 10MHz	2588.1	2602.5	QPSK	30.29	18.26	9.78
				16QAM	29.42	17.26	9.91
	15MHz / 15MHz	2585.5	2600.5	QPSK	29.90	18.17	9.48
				16QAM	29.01	17.16	9.60
	15MHz / 20MHz	2583.3	2600.4	QPSK	29.94	18.20	9.49
				16QAM	28.98	17.17	9.56
	20MHz / 15MHz	2585.6	2602.7	QPSK	29.90	18.14	9.51
				16QAM	28.97	17.16	9.56
	20MHz / 20MHz	2583.1	2602.9	QPSK	29.42	18.07	9.10
				16QAM	28.69	17.07	9.37
Duty Cycle Correction Factor (dB) =			2.25				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.4. LTE BAND 66B

Test Engineer ID:	50822	Test Date:	2024-01-19

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 66B	5MHz / 5MHz	1752.6	1757.4	QPSK	29.58	21.12	8.46
				16QAM	28.48	20.10	8.38
	5MHz / 10MHz	1750.3	1757.5	QPSK	29.41	21.09	8.32
				16QAM	28.41	20.09	8.32
	10 MHz / 5MHz	1752.5	1759.7	QPSK	29.40	21.12	8.28
				16QAM	28.29	20.1	8.19
	5MHz / 15MHz	1748.1	1757.4	QPSK	30.36	21.08	9.28
				16QAM	30.57	20.04	10.53
	15MHz / 5MHz	1752.6	1761.9	QPSK	30.26	21.14	9.12
				16QAM	30.10	20.08	10.02
	10MHz / 10MHz	1750.1	1760.0	QPSK	29.55	21.1	8.45
				16QAM	28.40	20.06	8.34
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.5. LTE BAND 66C

Test Engineer ID:	50822	Test Date:	2024-01-19

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 66C	10MHz / 15MHz	1749.9	1759.9	QPSK	30.57	21.02	9.55
				16QAM	30.39	20.02	10.37
	15MHz / 10MHz	1750.1	1762.1	QPSK	30.29	21.07	9.22
				16QAM	30.23	20.09	10.14
	10MHz / 20MHz	1745.6	1760.0	QPSK	30.32	21.00	9.32
				16QAM	30.03	20.02	10.01
	20MHz / 10MHz	1750.1	1764.5	QPSK	30.46	21.11	9.35
				16QAM	30.31	20.10	10.21
	15MHz / 15MHz	1747.5	1762.5	QPSK	30.80	21.06	9.74
				16QAM	30.50	20.05	10.45
	15MHz / 20MHz	1745.3	1762.4	QPSK	30.69	21.02	9.67
				16QAM	30.05	20.01	10.04
	20MHz / 15MHz	1747.6	1764.7	QPSK	30.15	21.06	9.09
				16QAM	30.00	20.05	9.95
	20MHz / 5MHz	1752.5	1764.2	QPSK	30.92	21.09	9.83
				16QAM	30.33	20.1	10.23
	5MHz / 20MHz	1745.8	1757.5	QPSK	30.59	21.03	9.56
				16QAM	30.46	20.02	10.44
	20MHz / 20MHz	1745.1	1764.9	QPSK	30.23	21.02	9.21
				16QAM	30.28	20.02	10.26
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

10. RADIATED TEST RESULTS

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.

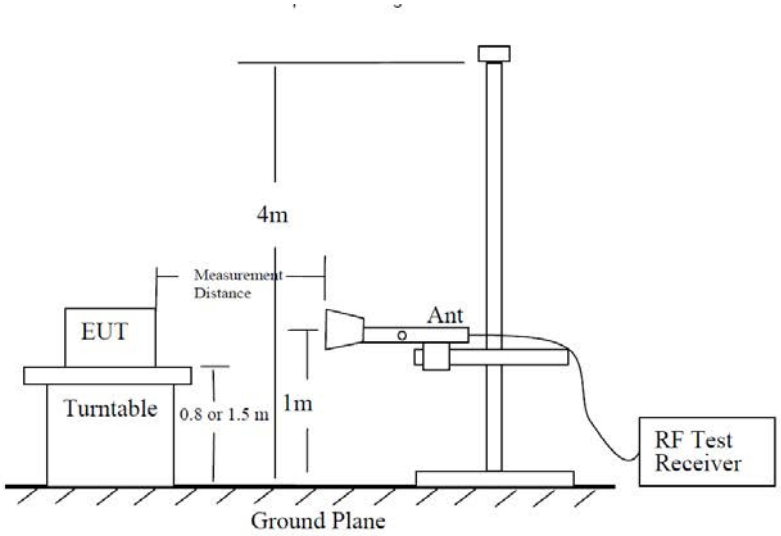


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

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.

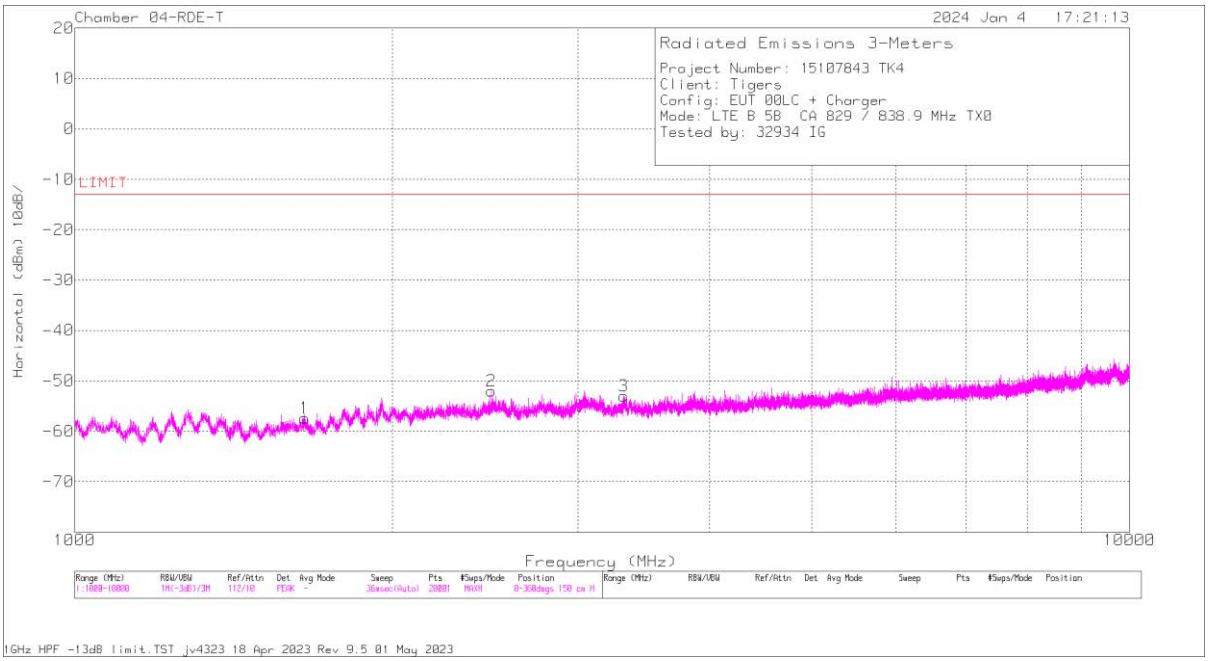
So, from d)

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

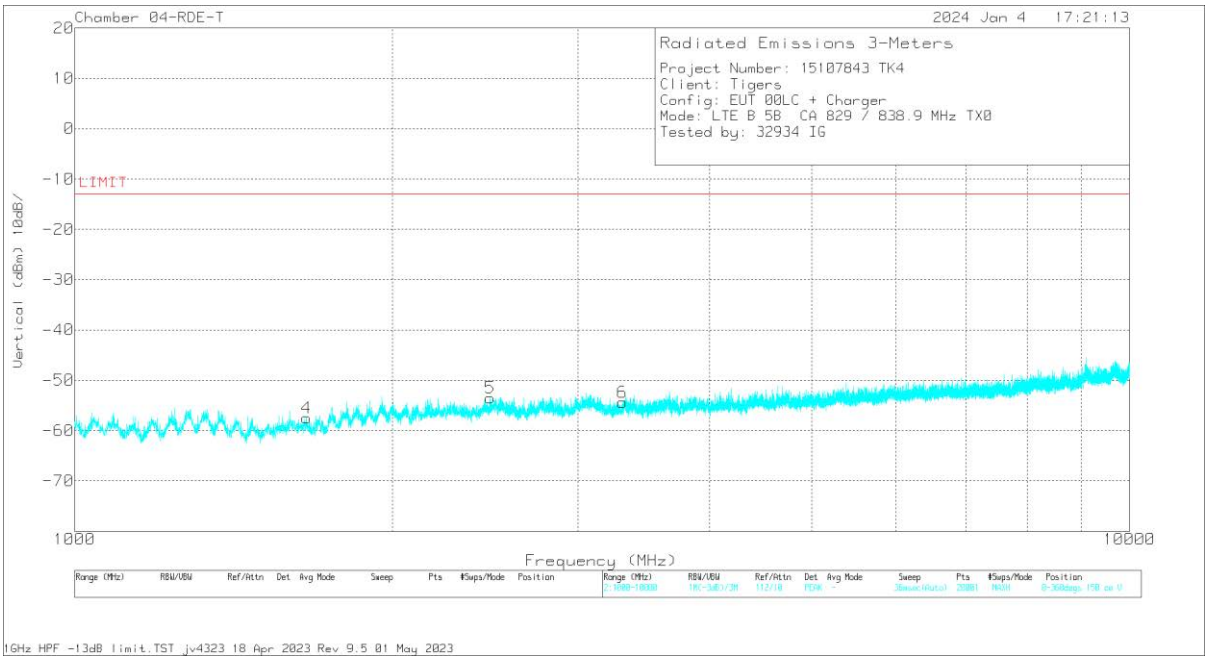
Then, EIRP (dBm) = E (dBµV/m) + 9.5424 − 104.8 = E (dBµV/m) – 95.2576

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

Example Plot



Horizontal Polarity



Vertical Polarity

Trace Markers

Frequency (MHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
2.483650	59.44	Pk	32.2	-95.2	-48.46	-52.02	-13	-39.02	H
1.652500	56.87	Pk	28.5	-95.2	-47.58	-57.41	-13	-44.41	H
1.659250	56.47	Pk	28.5	-95.2	-47.29	-57.52	-13	-44.52	V
2.475550	57.87	Pk	32.2	-95.2	-48.40	-53.53	-13	-40.53	V
3.303550	53.46	Pk	32.7	-95.2	-45.36	-54.40	-13	-41.40	V
3.313000	55.07	Pk	32.7	-95.2	-45.57	-53.00	-13	-40.00	H

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 0

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02r02

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

RESULTS

10.1.1. LTE BAND 5B

LIMIT

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 + 10.0MHZ BANDWIDTH)

Project #:	15107843
Date:	2024-01-04
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 5 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
2.483650	59.44	Pk	32.2	-95.2	-48.46	-52.02	-13	-39.02	H
1.652500	56.87	Pk	28.5	-95.2	-47.58	-57.41	-13	-44.41	H
3.313000	55.07	Pk	32.7	-95.2	-45.57	-53.00	-13	-40.00	H
1.659250	56.47	Pk	28.5	-95.2	-47.29	-57.52	-13	-44.52	V
2.475550	57.87	Pk	32.2	-95.2	-48.40	-53.53	-13	-40.53	V
3.303550	53.46	Pk	32.7	-95.2	-45.36	-54.40	-13	-41.40	V
Mid Channel, 831.6MHz + 841.5MHz									
1.673650	55.74	Pk	28.7	-95.2	-47.55	-58.31	-13	-45.31	H
2.509750	57.17	Pk	32.3	-95.2	-48.21	-53.94	-13	-40.94	H
3.331000	54.52	Pk	32.7	-95.2	-45.33	-53.31	-13	-40.31	H
1.661500	56.90	Pk	28.6	-95.2	-47.21	-56.91	-13	-43.91	V
2.525950	56.81	Pk	32.3	-95.2	-47.81	-53.90	-13	-40.90	V
3.401650	55.63	Pk	32.7	-95.2	-45.30	-52.17	-13	-39.17	V
High Channel, 834.1MHz + 844MHz									
1.665550	56.44	Pk	28.6	-95.2	-47.54	-57.7	-13	-44.70	H
2.494450	57.70	Pk	32.3	-95.2	-48.32	-53.52	-13	-40.52	H
3.330100	54.82	Pk	32.7	-95.2	-45.41	-53.09	-13	-40.09	H
1.654750	56.52	Pk	28.5	-95.2	-47.50	-57.68	-13	-44.68	V
2.495800	57.44	Pk	32.3	-95.2	-48.22	-53.68	-13	-40.68	V
3.326050	53.72	Pk	32.7	-95.2	-45.15	-53.93	-13	-40.93	V

10.1.2. LTE BAND 7C

LIMIT

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 + 20.0MHZ BANDWIDTH)

Project #:	15107843
Date:	2024-01-04
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE Band 7 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.040000	54.08	Pk	34	-95.2	-46.51	-53.63	-25	-28.63	H
7.560000	51.47	Pk	35.8	-95.2	-44.10	-52.03	-25	-27.03	H
10.800000	53.07	Pk	37.7	-95.2	-41.66	-46.09	-25	-21.09	H
5.040000	53.44	Pk	34	-95.2	-46.51	-54.27	-25	-29.27	V
7.560000	52.16	Pk	35.8	-95.2	-44.10	-51.34	-25	-26.34	V
10.800000	50.63	Pk	37.7	-95.2	-41.66	-48.53	-25	-23.53	V
Mid Channel, 2525.1MHz + 2544.9MHz									
5.070000	53.46	Pk	34.1	-95.2	-46.58	-54.22	-25	-29.22	H
7.605000	51.76	Pk	35.8	-95.2	-44.20	-51.84	-25	-26.84	H
10.140000	51.69	Pk	37.2	-95.2	-41.90	-48.21	-25	-23.21	H
5.070000	53.09	Pk	34.1	-95.2	-46.58	-54.59	-25	-29.59	V
7.605000	51.57	Pk	35.8	-95.2	-44.20	-52.03	-25	-27.03	V
10.140000	52.70	Pk	37.2	-95.2	-41.90	-47.20	-25	-22.20	V
High Channel, 2540.2MHz + 2560MHz									
5.100500	53.33	Pk	34.1	-95.2	-46.39	-54.16	-25	-29.16	H
7.650000	51.15	Pk	35.8	-95.2	-44.13	-52.38	-25	-27.38	H
10.200000	53.29	Pk	37.3	-95.2	-41.77	-46.38	-25	-21.38	H
5.100500	55.19	Pk	34.1	-95.2	-46.39	-52.30	-25	-27.30	V
7.650000	51.02	Pk	35.8	-95.2	-44.13	-52.51	-25	-27.51	V
10.200000	53.07	Pk	37.3	-95.2	-41.77	-46.60	-25	-21.60	V

10.1.3. LTE BAND 41C

LIMIT

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 + 20.0MHZ BANDWIDTH)

Project #:	15107843
Date:	2024-01-04
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE BAND 41 20.0MHz + 20.0MHz
Chamber #:	01-RDE-Q

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.033000	52.87	Pk	34.3	-95.2	-46.64	-54.67	-25	-29.67	H
7.549000	51.10	Pk	35.5	-95.2	-44.35	-52.95	-25	-27.95	H
10.064000	52.72	Pk	37.1	-95.2	-44.34	-49.72	-25	-24.72	H
7.549000	51.93	Pk	35.5	-95.2	-44.35	-52.12	-25	-27.12	V
5.032500	51.86	Pk	34.3	-95.2	-46.63	-55.67	-25	-30.67	V
10.063500	51.67	Pk	37.1	-95.2	-44.32	-50.75	-25	-25.75	V
Mid Channel, 2583.1MHz + 2602.9MHz									
5.187000	52.49	Pk	34.2	-95.2	-46.39	-54.90	-25	-29.9	H
7.779000	51.32	Pk	35.6	-95.2	-44.50	-52.78	-25	-27.78	H
10.372500	53.27	Pk	37.5	-95.2	-44.70	-49.13	-25	-24.13	H
5.187000	52.74	Pk	34.2	-95.2	-46.39	-54.65	-25	-29.65	V
7.775000	51.60	Pk	35.6	-95.2	-44.50	-52.50	-25	-27.50	V
10.372500	52.64	Pk	37.5	-95.2	-44.70	-49.76	-25	-24.76	V
High Channel, 2660.2MHz + 2680MHz									
5.340000	52.61	Pk	34.2	-95.2	-46.33	-54.72	-25	-29.72	H
8.010500	51.72	Pk	35.7	-95.2	-44.67	-52.45	-25	-27.45	H
10.680500	52.34	Pk	37.7	-95.2	-45.07	-50.23	-25	-25.23	H
5.340000	53.32	Pk	34.2	-95.2	-46.33	-54.01	-25	-29.01	V
8.010500	51.73	Pk	35.7	-95.2	-44.67	-52.44	-25	-27.44	V
10.680500	52.79	Pk	37.7	-95.2	-45.07	-49.78	-25	-24.78	V

10.1.4. LTE BAND 66B

LIMIT

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.

Table 6: Unwanted emission limits	
Offset from the edge of the frequency block or frequency block group	**Unwanted emission limits**
≤1 MHz	-13 dBm/(1% of B*)
>1 MHz	-13 dBm/MHz

*B is the frequency block or frequency block group.

QPSK LTE BAND 66B (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-01-04
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1715MHz + 1724.9MHz									
3.507000	54.45	Pk	32.8	-95.2	-45.22	-53.17	-13	-40.17	V
3.499000	53.97	Pk	32.8	-95.2	-45.31	-53.74	-13	-40.74	H
5.255000	54.36	Pk	34.4	-95.2	-45.84	-52.28	-13	-39.28	V
5.260500	54.50	Pk	34.4	-95.2	-45.89	-52.19	-13	-39.19	H
7.012500	53.27	Pk	35.6	-95.2	-43.63	-49.96	-13	-36.96	H
7.036500	53.23	Pk	35.6	-95.2	-43.61	-49.98	-13	-36.98	V
Mid Channel,1750.1MHz + 1760MHz									
3.500500	53.81	Pk	32.8	-95.2	-45.11	-53.70	-13	-40.70	H
3.501000	53.48	Pk	32.8	-95.2	-45.1	-54.02	-13	-41.02	V
5.279500	54.50	Pk	34.4	-95.2	-45.87	-52.17	-13	-39.17	H
5.290000	54.21	Pk	34.4	-95.2	-45.98	-52.57	-13	-39.57	V
7.017000	53.52	Pk	35.6	-95.2	-43.8	-49.88	-13	-36.88	V
7.017500	53.86	Pk	35.6	-95.2	-43.85	-49.59	-13	-36.59	H
High Channel, 1765.1MHz + 1775MHz									
3.543000	53.97	Pk	32.9	-95.2	-45.05	-53.38	-13	-40.38	H
3.525000	52.89	Pk	32.9	-95.2	-44.82	-54.23	-13	-41.23	V
5.289000	54.43	Pk	34.4	-95.2	-45.99	-52.36	-13	-39.36	H
5.289500	54.07	Pk	34.4	-95.2	-45.99	-52.72	-13	-39.72	V
7.050500	53.02	Pk	35.6	-95.2	-43.59	-50.17	-13	-37.17	V
7.056000	54.00	Pk	35.6	-95.2	-43.72	-49.32	-13	-36.32	H

10.1.5. LTE BAND 66C

LIMIT

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.

Table 6: Unwanted emission limits	
Offset from the edge of the frequency block or frequency block group	**Unwanted emission limits**
≤1 MHz	-13 dBm/(1% of B*)
>1 MHz	-13 dBm/MHz

*B is the frequency block or frequency block group.

QPSK LTE BAND 66C (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-01-04
Test Engineer:	IG 32934
Configuration:	EUT only
Mode	LTE Band 66 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1720MHz + 1739.8MHz									
3.430000	54.29	Pk	32.7	-95.2	-45.17	-53.38	-13	-40.38	H
5.158200	54.34	Pk	34.2	-95.2	-46.18	-52.84	-13	-39.84	H
6.895000	54.34	Pk	35.6	-95.2	-44.43	-49.69	-13	-36.69	H
3.426500	53.66	Pk	32.7	-95.2	-45.19	-54.03	-13	-41.03	V
5.126500	55.32	Pk	34.2	-95.2	-46.34	-52.02	-13	-39.02	V
6.938000	53.17	Pk	35.6	-95.2	-44.03	-50.46	-13	-37.46	V
Mid Channel,1745.1MHz + 1764.9MHz									
3.494500	53.82	Pk	32.8	-95.2	-45.01	-53.59	-13	-40.59	H
5.247500	54.67	Pk	34.4	-95.2	-45.87	-52.00	-13	-39.00	H
6.974500	54.02	Pk	35.6	-95.2	-43.63	-49.21	-13	-36.21	H
3.463500	54.53	Pk	32.8	-95.2	-45.17	-53.04	-13	-40.04	V
5.278500	54.60	Pk	34.4	-95.2	-45.82	-52.02	-13	-39.02	V
6.953500	53.29	Pk	35.6	-95.2	-43.84	-50.15	-13	-37.15	V
High Channel, 1750.2MHz + 1770MHz									
3.500000	53.60	Pk	32.8	-95.2	-45.12	-53.92	-13	-40.92	H
3.484000	54.47	Pk	32.8	-95.2	-45.29	-53.22	-13	-40.22	V
5.223000	54.96	Pk	34.3	-95.2	-45.93	-51.87	-13	-38.87	V
5.245500	53.64	Pk	34.4	-95.2	-45.86	-53.02	-13	-40.02	H
7.017000	53.72	Pk	35.6	-95.2	-43.8	-49.68	-13	-36.68	V
7.022000	53.80	Pk	35.6	-95.2	-43.77	-49.57	-13	-36.57	H

10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 1

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02r02

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

RESULTS

10.2.1. LTE BAND 5B

LIMIT

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 + 10.0MHZ BANDWIDTH)

Project #:	151007843
Date:	2024-01-04
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 5 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	80404_ACF (dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
1.655200	56.41	Pk	28.5	-95.2	-47.48	-57.77	-13	-44.77	H
2.489500	57.35	Pk	32.3	-95.2	-48.27	-53.82	-13	-40.82	H
3.326050	54.62	Pk	32.7	-95.2	-45.15	-53.03	-13	-40.03	H
1.645300	57.23	Pk	28.4	-95.2	-47.70	-57.27	-13	-44.27	V
2.489950	57.84	Pk	32.3	-95.2	-48.25	-53.31	-13	-40.31	V
3.310300	53.69	Pk	32.7	-95.2	-45.40	-54.21	-13	-41.21	V
Mid Channel, 831.6MHz + 841.5MHz									
1.678150	54.06	Pk	28.7	-95.2	-47.46	-59.9	-13	-46.90	H
2.516950	55.91	Pk	32.3	-95.2	-48.12	-55.11	-13	-42.11	H
3.356200	54.25	Pk	32.7	-95.2	-45.30	-53.55	-13	-40.55	H
1.678150	54.94	Pk	28.7	-95.2	-47.46	-59.02	-13	-46.02	V
2.516950	55.34	Pk	32.3	-95.2	-48.12	-55.68	-13	-42.68	V
3.356200	52.22	Pk	32.7	-95.2	-45.30	-55.58	-13	-42.58	V
High Channel, 834.1MHz + 844MHz									
1.678150	53.90	Pk	28.7	-95.2	-47.46	-60.06	-13	-47.06	H
3.356200	52.18	Pk	32.7	-95.2	-45.30	-55.62	-13	-42.62	H
1.678150	54.33	Pk	28.7	-95.2	-47.46	-59.63	-13	-46.63	V
3.356200	52.87	Pk	32.7	-95.2	-45.30	-54.93	-13	-41.93	V
2.516950	55.03	Pk	32.3	-95.2	-48.12	-55.99	-13	-42.99	H
2.516950	55.15	Pk	32.3	-95.2	-48.12	-55.87	-13	-42.87	V

10.2.2. LTE BAND 66B

LIMIT

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 66B (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-02-08
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-Q

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1715MHz + 1724.9MHz									
3.440500	53.57	Pk	32.9	-95.2	-45.97	-54.70	-13	-41.70	H
3.440500	53.23	Pk	32.9	-95.2	-45.97	-55.04	-13	-42.04	V
5.160000	52.18	Pk	34.2	-95.2	-46.11	-54.93	-13	-41.93	H
5.160000	54.12	Pk	34.2	-95.2	-46.11	-52.99	-13	-39.99	V
6.880000	51.46	Pk	35.5	-95.2	-44.20	-52.44	-13	-39.44	H
6.880000	51.06	Pk	35.5	-95.2	-44.20	-52.84	-13	-39.84	V
Mid Channel,1750.1MHz + 1760MHz									
3.510000	52.99	Pk	32.9	-95.2	-46.13	-55.44	-13	-42.44	H
3.510000	52.55	Pk	32.9	-95.2	-46.13	-55.88	-13	-42.88	V
5.266000	53.77	Pk	34.1	-95.2	-46.24	-53.57	-13	-40.57	H
5.266000	52.90	Pk	34.1	-95.2	-46.24	-54.44	-13	-41.44	V
7.020500	53.30	Pk	35.5	-95.2	-44.77	-51.17	-13	-38.17	H
7.020500	50.62	Pk	35.5	-95.2	-44.77	-53.85	-13	-40.85	V
High Channel, 1765.1MHz + 1775MHz									
3.540000	53.01	Pk	32.9	-95.2	-46.39	-55.68	-13	-42.68	H
3.540000	53.56	Pk	32.9	-95.2	-46.39	-55.13	-13	-42.13	V
5.310000	53.48	Pk	34.2	-95.2	-46.22	-53.74	-13	-40.74	H
5.310000	52.66	Pk	34.2	-95.2	-46.22	-54.56	-13	-41.56	V
7.080000	50.22	Pk	35.6	-95.2	-44.56	-53.94	-13	-40.94	H
7.080000	51.62	Pk	35.6	-95.2	-44.56	-52.54	-13	-39.54	V

10.2.3. LTE BAND 66C

LIMIT

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 66C (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-02-20
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-Q

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1720MHz + 1739.8MHz									
3.460500	51.76	Pk	32.9	-95.2	-46.06	-56.60	-13	-43.60	H
3.460500	52.81	Pk	32.9	-95.2	-46.06	-55.55	-13	-42.55	V
5.190000	51.38	Pk	34.2	-95.2	-46.11	-55.73	-13	-42.73	H
5.190000	52.35	Pk	34.2	-95.2	-46.11	-54.76	-13	-41.76	V
6.920500	52.33	Pk	35.5	-95.2	-44.67	-52.04	-13	-39.04	H
6.920500	51.83	Pk	35.5	-95.2	-44.67	-52.54	-13	-39.54	V
Mid Channel,1745.1MHz + 1764.9MHz									
3.510000	52.65	Pk	32.9	-95.2	-46.13	-55.78	-13	-42.78	H
3.510000	51.86	Pk	32.9	-95.2	-46.13	-56.57	-13	-43.57	V
5.265500	53.14	Pk	34.1	-95.2	-46.24	-54.20	-13	-41.20	H
5.265500	52.15	Pk	34.1	-95.2	-46.24	-55.19	-13	-42.19	V
7.020000	51.62	Pk	35.5	-95.2	-44.78	-52.86	-13	-39.86	H
7.020000	51.36	Pk	35.5	-95.2	-44.78	-53.12	-13	-40.12	V
High Channel, 1750.2MHz + 1770MHz									
3.520000	51.82	Pk	32.9	-95.2	-46.17	-56.65	-13	-43.65	H
3.520000	53.03	Pk	32.9	-95.2	-46.17	-55.44	-13	-42.44	V
5.280000	52.47	Pk	34.1	-95.2	-46.32	-54.95	-13	-41.95	H
5.280000	52.85	Pk	34.1	-95.2	-46.32	-54.57	-13	-41.57	V
7.040500	51.25	Pk	35.6	-95.2	-44.77	-53.12	-13	-40.12	H
7.040500	51.44	Pk	35.6	-95.2	-44.77	-52.93	-13	-39.93	V

10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02r02

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

RESULTS

10.3.1. LTE BAND 7C

LIMIT

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 + 20.0MHZ BANDWIDTH)

Project #:	15107843
Date:	2024-01-04
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE Band 7 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.040000	52.92	Pk	34.0	-95.2	-46.51	-54.79	-25	-29.79	H
7.560000	51.94	Pk	35.8	-95.2	-44.10	-51.56	-25	-26.56	H
10.800000	50.56	Pk	37.7	-95.2	-41.66	-48.60	-25	-23.60	H
5.040000	52.09	Pk	34.0	-95.2	-46.51	-55.62	-25	-30.62	V
7.560000	52.53	Pk	35.8	-95.2	-44.10	-50.97	-25	-25.97	V
10.800000	52.06	Pk	37.7	-95.2	-41.66	-47.10	-25	-22.10	V
Mid Channel, 2525.1MHz + 2544.9MHz									
5.070000	52.27	Pk	34.1	-95.2	-46.58	-55.41	-25	-30.41	H
7.605000	50.59	Pk	35.8	-95.2	-44.20	-53.01	-25	-28.01	H
10.140000	51.16	Pk	37.2	-95.2	-41.90	-48.74	-25	-23.74	H
5.070000	53.10	Pk	34.1	-95.2	-46.58	-54.58	-25	-29.58	V
7.605000	51.96	Pk	35.8	-95.2	-44.20	-51.64	-25	-26.64	V
10.140000	51.66	Pk	37.2	-95.2	-41.90	-48.24	-25	-23.24	V
High Channel, 2540.2MHz + 2560MHz									
5.100000	53.77	Pk	34.1	-95.2	-46.35	-53.68	-25	-28.68	H
7.650000	50.66	Pk	35.8	-95.2	-44.13	-52.87	-25	-27.87	H
10.200000	52.54	Pk	37.3	-95.2	-41.77	-47.13	-25	-22.13	H
5.100000	53.79	Pk	34.1	-95.2	-46.35	-53.66	-25	-28.66	V
7.650000	51.33	Pk	35.8	-95.2	-44.13	-52.20	-25	-27.20	V
10.200000	52.26	Pk	37.3	-95.2	-41.77	-47.41	-25	-22.41	V

10.3.2. LTE BAND 41C

LIMIT

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 + 20.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-01-08
Test Engineer:	AC 32168
Configuration:	EUT + Charger
Mode	LTE BAND 41 20.0MHz + 20.0MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB) - 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.033000	52.87	Pk	34.3	-95.2	-46.64	-54.67	-25	-29.67	H
7.549000	51.10	Pk	35.5	-95.2	-44.35	-52.95	-25	-27.95	H
10.064000	52.72	Pk	37.1	-95.2	-44.34	-49.72	-25	-24.72	H
5.032500	51.86	Pk	34.3	-95.2	-46.63	-55.67	-25	-30.67	V
7.549000	51.93	Pk	35.5	-95.2	-44.35	-52.12	-25	-27.12	V
10.063500	51.67	Pk	37.1	-95.2	-44.32	-50.75	-25	-25.75	V
Mid Channel, 2583.1MHz + 2602.9MHz									
5.187000	52.49	Pk	34.2	-95.2	-46.39	-54.90	-25	-29.90	H
7.779000	51.32	Pk	35.6	-95.2	-44.50	-52.78	-25	-27.78	H
10.372500	53.27	Pk	37.5	-95.2	-44.70	-49.13	-25	-24.13	H
5.187000	52.74	Pk	34.2	-95.2	-46.39	-54.65	-25	-29.65	V
7.775000	51.60	Pk	35.6	-95.2	-44.50	-52.50	-25	-27.50	V
10.372500	52.64	Pk	37.5	-95.2	-44.70	-49.76	-25	-24.76	V
High Channel, 2660.2MHz + 2680MHz									
5.340000	52.61	Pk	34.2	-95.2	-46.33	-54.72	-25	-29.72	H
8.010500	51.72	Pk	35.7	-95.2	-44.67	-52.45	-25	-27.45	H
10.680500	52.34	Pk	37.7	-95.2	-45.07	-50.23	-25	-25.23	H
5.340000	53.32	Pk	34.2	-95.2	-46.33	-54.01	-25	-29.01	V
8.010500	51.73	Pk	35.7	-95.2	-44.67	-52.44	-25	-27.44	V
10.680500	52.79	Pk	37.7	-95.2	-45.07	-49.78	-25	-24.78	V

10.3.3. LTE BAND 66B

LIMIT

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 66B (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-01-04
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1715MHz + 1724.9MHz									
3.441000	52.94	Pk	32.8	-95.2	-45.06	-54.52	-13	-41.52	H
5.152500	54.58	Pk	34.2	-95.2	-46.17	-52.59	-13	-39.59	H
6.870500	53.44	Pk	35.6	-95.2	-44.61	-50.77	-13	-37.77	H
5.149000	55.60	Pk	34.2	-95.2	-46.26	-51.66	-13	-38.66	V
3.440500	53.61	Pk	32.8	-95.2	-45.06	-53.85	-13	-40.85	V
6.834500	53.42	Pk	35.6	-95.2	-44.45	-50.63	-13	-37.63	V
Mid Channel,1750.1MHz + 1760MHz									
3.499500	54.35	Pk	32.8	-95.2	-45.22	-53.27	-13	-40.27	H
5.254500	53.63	Pk	34.4	-95.2	-45.81	-52.98	-13	-39.98	H
7.037500	53.25	Pk	35.6	-95.2	-43.61	-49.96	-13	-36.96	H
3.492500	54.22	Pk	32.8	-95.2	-45.17	-53.35	-13	-40.35	V
5.271000	54.11	Pk	34.4	-95.2	-45.84	-52.53	-13	-39.53	V
7.044500	54.16	Pk	35.6	-95.2	-43.61	-49.05	-13	-36.05	V
High Channel, 1765.1MHz + 1775MHz									
3.533000	53.76	Pk	32.9	-95.2	-44.97	-53.51	-13	-40.51	H
5.305500	54.08	Pk	34.5	-95.2	-46.00	-52.62	-13	-39.62	H
7.069500	53.42	Pk	35.6	-95.2	-44.12	-50.3	-13	-37.30	H
3.535000	54.06	Pk	32.9	-95.2	-45.03	-53.27	-13	-40.27	V
5.272500	54.67	Pk	34.4	-95.2	-45.87	-52	-13	-39.00	V
7.038500	54.40	Pk	35.6	-95.2	-43.62	-48.82	-13	-35.82	V

10.3.4. LTE BAND 66C

LIMIT

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 66C (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-01-05
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-T

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1720MHz + 1739.8MHz									
3.460000	51.88	Pk	32.8	-95.2	-45.32	-55.84	-13	-42.84	H
5.190000	53.34	Pk	34.3	-95.2	-46.15	-53.71	-13	-40.71	H
6.920000	52.59	Pk	35.6	-95.2	-44.08	-51.09	-13	-38.09	H
3.460000	51.93	Pk	32.8	-95.2	-45.32	-55.79	-13	-42.79	V
5.190000	52.49	Pk	34.3	-95.2	-46.15	-54.56	-13	-41.56	V
6.920000	52.46	Pk	35.6	-95.2	-44.08	-51.22	-13	-38.22	V
Mid Channel,1745.1MHz + 1764.9MHz									
3.510000	52.22	Pk	32.8	-95.2	-45.08	-55.26	-13	-42.26	H
3.510000	50.92	Pk	32.8	-95.2	-45.08	-56.56	-13	-43.56	V
5.265000	52.98	Pk	34.4	-95.2	-45.98	-53.80	-13	-40.80	H
5.265000	54.51	Pk	34.4	-95.2	-45.98	-52.27	-13	-39.27	V
7.020000	53.56	Pk	35.6	-95.2	-43.77	-49.81	-13	-36.81	H
7.020000	51.66	Pk	35.6	-95.2	-43.77	-51.71	-13	-38.71	V
High Channel, 1750.2MHz + 1770MHz									
3.520000	51.15	Pk	32.8	-95.2	-44.99	-56.24	-13	-43.24	H
3.520000	52.94	Pk	32.8	-95.2	-44.99	-54.45	-13	-41.45	V
5.280000	52.68	Pk	34.4	-95.2	-45.92	-54.04	-13	-41.04	H
5.280000	52.73	Pk	34.4	-95.2	-45.92	-53.99	-13	-40.99	V
7.040000	53.09	Pk	35.6	-95.2	-43.68	-50.19	-13	-37.19	H
7.040000	53.09	Pk	35.6	-95.2	-43.68	-50.19	-13	-37.19	H

10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT5

TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02r02

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

RESULTS

10.4.1. LTE BAND 66B

LIMIT

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 66B (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-02-09
Test Engineer:	AC 32188
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 10MHz + 10MHz
Chamber #:	04-RDE-Q

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1715MHz + 1724.9MHz									
3.440500	52.77	Pk	32.9	-95.2	-45.97	-55.50	-13	-42.50	H
5.160000	54.20	Pk	34.2	-95.2	-46.11	-52.91	-13	-39.91	H
6.880500	51.32	Pk	35.5	-95.2	-44.24	-52.62	-13	-39.62	H
3.440500	52.50	Pk	32.9	-95.2	-45.97	-55.77	-13	-42.77	V
5.160000	52.62	Pk	34.2	-95.2	-46.11	-54.49	-13	-41.49	V
6.880500	50.78	Pk	35.5	-95.2	-44.24	-53.16	-13	-40.16	V
Mid Channel,1750.1MHz + 1760MHz									
3.510500	53.12	Pk	32.9	-95.2	-46.11	-55.29	-13	-42.29	H
5.26550	53.24	Pk	34.1	-95.2	-46.24	-54.10	-13	-41.10	H
7.020000	51.30	Pk	35.5	-95.2	-44.78	-53.18	-13	-40.18	H
3.510500	52.59	Pk	32.9	-95.2	-46.11	-55.82	-13	-42.82	V
5.265500	53.39	Pk	34.1	-95.2	-46.24	-53.95	-13	-40.95	V
7.020000	52.94	Pk	35.5	-95.2	-44.78	-51.54	-13	-38.54	V
High Channel, 1765.1MHz + 1775MHz									
3.536500	53.76	Pk	32.9	-95.2	-46.35	-54.89	-13	-41.89	H
5.304500	53.03	Pk	34.2	-95.2	-46.21	-54.18	-13	-41.18	H
7.072500	51.56	Pk	35.6	-95.2	-44.73	-52.77	-13	-39.77	H
3.536500	53.37	Pk	32.9	-95.2	-46.35	-55.28	-13	-42.28	V
5.304500	52.92	Pk	34.2	-95.2	-46.21	-54.29	-13	-41.29	V
7.072500	51.61	Pk	35.6	-95.2	-44.73	-52.72	-13	-39.72	V

10.4.2. LTE BAND 66C

LIMIT

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 66C (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	15107858
Date:	2024-02-20
Test Engineer:	IG 32934
Configuration:	EUT + Charger
Mode	LTE Band 66 QPSK 20MHz + 20MHz
Chamber #:	04-RDE-Q

Frequency (GHz)	Meter Reading (dBuV)	Det	226673 ACF (dB) 3mH	EIRP CF	Gain/Loss (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 1720MHz + 1739.8MHz									
3.460500	53.46	Pk	32.9	-95.2	-46.06	-54.90	-13	-41.90	H
3.460500	53.06	Pk	32.9	-95.2	-46.06	-55.30	-13	-42.30	V
5.190000	52.05	Pk	34.2	-95.2	-46.11	-55.06	-13	-42.06	H
5.190000	52.85	Pk	34.2	-95.2	-46.11	-54.26	-13	-41.26	V
6.920500	52.23	Pk	35.5	-95.2	-44.67	-52.14	-13	-39.14	H
6.920500	52.45	Pk	35.5	-95.2	-44.67	-51.92	-13	-38.92	V
Mid Channel,1745.1MHz + 1764.9MHz									
3.510500	53.54	Pk	32.9	-95.2	-46.11	-54.87	-13	-41.87	H
3.510500	53.72	Pk	32.9	-95.2	-46.11	-54.69	-13	-41.69	V
5.265500	51.97	Pk	34.1	-95.2	-46.24	-55.37	-13	-42.37	H
5.265500	51.95	Pk	34.1	-95.2	-46.24	-55.39	-13	-42.39	V
7.020500	51.62	Pk	35.5	-95.2	-44.77	-52.85	-13	-39.85	H
7.020500	52.61	Pk	35.5	-95.2	-44.77	-51.86	-13	-38.86	V
High Channel, 1750.2MHz + 1770MHz									
3.520500	52.28	Pk	32.9	-95.2	-46.20	-56.22	-13	-43.22	H
3.520500	52.55	Pk	32.9	-95.2	-46.20	-55.95	-13	-42.95	V
5.280000	54.61	Pk	34.1	-95.2	-46.32	-52.81	-13	-39.81	H
5.280000	52.81	Pk	34.1	-95.2	-46.32	-54.61	-13	-41.61	V
7.040000	51.87	Pk	35.6	-95.2	-44.76	-52.49	-13	-39.49	H
7.040000	52.96	Pk	35.6	-95.2	-44.76	-51.40	-13	-38.40	V

11. SETUP PHOTOS

Please refer to 15107843-EP1 for setup photos.

END OF REPORT