

LTE Band 7

Middle Channel, $f_0 = 2535$ MHz			
Temperature (°C)	Power Supplied (VDC)	Frequency Error (Hz)	Frequency Error (ppm)
-10	3.8	-2.98	-0.001189
0		-1.52	-0.000606
10		0.20	0.000080
20		-8.04	-0.003213
30		0.54	0.000217
40		0.29	0.000114
25	4.35	-4.39	-0.001755
	3.23	-5.08	-0.002029

Note: Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

The EUT doesn't work below -10°C

9. OCCUPIED BANDWIDTH

9.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

9.2 PROVISIONS APPLICABLE

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power

9.3 MEASUREMENT RESULT

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

LTE Band 2

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0763	PASS
	MCH	6	0	1.0828	PASS
	HCH	6	0	1.0746	PASS
16QAM	LCH	6	0	1.0747	PASS
	MCH	6	0	1.0777	PASS
	HCH	6	0	1.0777	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6798	PASS
	MCH	15	0	2.6844	PASS
	HCH	15	0	2.6817	PASS
16QAM	LCH	15	0	2.6757	PASS
	MCH	15	0	2.6796	PASS
	HCH	15	0	2.6754	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4783	PASS
	MCH	25	0	4.4746	PASS
	HCH	25	0	4.4804	PASS
16QAM	LCH	25	0	4.4779	PASS
	MCH	25	0	4.4810	PASS
	HCH	25	0	4.4781	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9522	PASS
	MCH	50	0	8.9442	PASS
	HCH	50	0	8.9413	PASS
16QAM	LCH	50	0	8.9369	PASS
	MCH	50	0	8.9360	PASS
	HCH	50	0	8.9349	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.405	PASS
	MCH	75	0	13.407	13.372
	HCH	75	0	13.402	PASS
16QAM	LCH	75	0	13.402	PASS
	MCH	75	0	13.406	PASS
	HCH	75	0	13.404	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.876	PASS
	MCH	100	0	17.899	PASS
	HCH	100	0	17.856	PASS
16QAM	LCH	100	0	17.856	PASS
	MCH	100	0	17.894	PASS
	HCH	100	0	17.846	PASS

LTE Band 4

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.0768	PASS
	MCH	6	0	1.0779	PASS
	HCH	6	0	1.0793	PASS
16QAM	LCH	6	0	1.0775	PASS
	MCH	6	0	1.0769	PASS
	HCH	6	0	1.0776	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.6816	PASS
	MCH	15	0	2.6774	PASS
	HCH	15	0	2.6826	PASS
16QAM	LCH	15	0	2.6756	PASS
	MCH	15	0	2.6768	PASS
	HCH	15	0	2.6791	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4771	PASS
	MCH	25	0	4.4748	PASS
	HCH	25	0	4.4719	PASS
16QAM	LCH	25	0	4.4753	PASS
	MCH	25	0	4.4783	PASS
	HCH	25	0	4.4803	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9577	PASS
	MCH	50	0	8.9473	PASS
	HCH	50	0	8.9355	PASS
16QAM	LCH	50	0	8.9426	PASS
	MCH	50	0	8.9279	PASS
	HCH	50	0	8.9459	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.406	PASS
	MCH	75	0	13.409	PASS
	HCH	75	0	13.410	PASS
16QAM	LCH	75	0	13.406	PASS
	MCH	75	0	13.391	PASS
	HCH	75	0	13.404	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.881	PASS
	MCH	100	0	17.857	PASS
	HCH	100	0	17.882	PASS
16QAM	LCH	100	0	17.865	PASS
	MCH	100	0	17.849	PASS
	HCH	100	0	17.886	PASS

LTE Band 7

Channel Bandwidth: 5MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4855	PASS
	MCH	25	0	4.4781	PASS
	HCH	25	0	4.4714	PASS
16QAM	LCH	25	0	4.4794	PASS
	MCH	25	0	4.4782	PASS
	HCH	25	0	4.4786	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9582	PASS
	MCH	50	0	8.9392	PASS
	HCH	50	0	8.9628	PASS
16QAM	LCH	50	0	8.9371	PASS
	MCH	50	0	8.9504	PASS
	HCH	50	0	8.9403	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.419	PASS
	MCH	75	0	13.408	PASS
	HCH	75	0	13.426	PASS
16QAM	LCH	75	0	13.409	PASS
	MCH	75	0	13.399	PASS
	HCH	75	0	13.420	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.869	PASS
	MCH	100	0	17.828	PASS
	HCH	100	0	17.880	PASS
16QAM	LCH	100	0	17.864	PASS
	MCH	100	0	17.836	PASS
	HCH	100	0	17.879	PASS

Note: Please refers to Appendix B for compliance test plots for Occupied Bandwidth (99%)

10. EMISSION BANDWIDTH

10.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

10.2 PROVISIONS APPLICABLE

The emission bandwidth is defined as two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

10.3 MEASUREMENT RESULT

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

LTE Band 2

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.223	PASS
	MCH	6	0	1.227	PASS
	HCH	6	0	1.206	PASS
16QAM	LCH	6	0	1.236	PASS
	MCH	6	0	1.239	PASS
	HCH	6	0	1.248	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.820	PASS
	MCH	15	0	2.833	PASS
	HCH	15	0	2.826	PASS
16QAM	LCH	15	0	2.819	PASS
	MCH	15	0	2.818	PASS
	HCH	15	0	2.810	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.908	PASS
	MCH	25	0	4.879	PASS
	HCH	25	0	4.826	PASS
16QAM	LCH	25	0	4.855	PASS
	MCH	25	0	4.888	PASS
	HCH	25	0	4.865	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.534	PASS
	MCH	50	0	9.516	PASS
	HCH	50	0	9.541	PASS
16QAM	LCH	50	0	9.538	PASS
	MCH	50	0	9.546	PASS
	HCH	50	0	9.496	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.20	PASS
	MCH	75	0	14.11	PASS
	HCH	75	0	14.20	PASS
16QAM	LCH	75	0	14.14	PASS
	MCH	75	0	14.15	PASS
	HCH	75	0	14.05	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.63	PASS
	MCH	100	0	18.70	PASS
	HCH	100	0	18.56	PASS
16QAM	LCH	100	0	18.62	PASS
	MCH	100	0	18.66	PASS
	HCH	100	0	18.58	PASS

LTE Band 4

Channel Bandwidth: 1.4 MHz

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	6	0	1.223	PASS
	MCH	6	0	1.221	PASS
	HCH	6	0	1.218	PASS
16QAM	LCH	6	0	1.251	PASS
	MCH	6	0	1.237	PASS
	HCH	6	0	1.220	PASS

Channel Bandwidth: 3 MHz

Channel Bandwidth: 3 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	15	0	2.829	PASS
	MCH	15	0	2.817	PASS
	HCH	15	0	2.832	PASS
16QAM	LCH	15	0	2.829	PASS
	MCH	15	0	2.818	PASS
	HCH	15	0	2.817	PASS

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.925	PASS
	MCH	25	0	4.927	PASS
	HCH	25	0	4.850	PASS
16QAM	LCH	25	0	4.880	PASS
	MCH	25	0	4.878	PASS
	HCH	25	0	4.906	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.543	PASS
	MCH	50	0	9.490	PASS
	HCH	50	0	9.484	PASS
16QAM	LCH	50	0	9.498	PASS
	MCH	50	0	9.461	PASS
	HCH	50	0	9.546	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.17	PASS
	MCH	75	0	14.24	PASS
	HCH	75	0	14.17	PASS
16QAM	LCH	75	0	14.20	PASS
	MCH	75	0	14.07	PASS
	HCH	75	0	14.18	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.62	PASS
	MCH	100	0	18.56	PASS
	HCH	100	0	18.71	PASS
16QAM	LCH	100	0	18.58	PASS
	MCH	100	0	18.67	PASS
	HCH	100	0	18.66	PASS

LTE Band 7

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.812	PASS
	MCH	25	0	4.935	PASS
	HCH	25	0	4.920	PASS
16QAM	LCH	25	0	4.926	PASS
	MCH	25	0	4.866	PASS
	HCH	25	0	4.932	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.520	PASS
	MCH	50	0	9.536	PASS
	HCH	50	0	9.619	PASS
16QAM	LCH	50	0	9.490	PASS
	MCH	50	0	9.549	PASS
	HCH	50	0	9.490	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.38	PASS
	MCH	75	0	14.16	PASS
	HCH	75	0	14.30	PASS
16QAM	LCH	75	0	14.14	PASS
	MCH	75	0	14.16	PASS
	HCH	75	0	14.19	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.64	PASS
	MCH	100	0	18.72	PASS
	HCH	100	0	18.69	PASS
16QAM	LCH	100	0	18.63	PASS
	MCH	100	0	18.66	PASS
	HCH	100	0	18.74	PASS

Note: Please refers to Appendix B for compliance test plots for emission bandwidth (-26dBc)

11. BAND EDGE

11.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

11.2 PROVISIONS APPLICABLE

As Specified in FCC rules of §2.1051 §24.238(a) §27.53(g) §27.53(h) §27.53(m)
KDB 971168 D01v03 – Section 6.0

11.3 MEASUREMENT RESULT

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequency. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

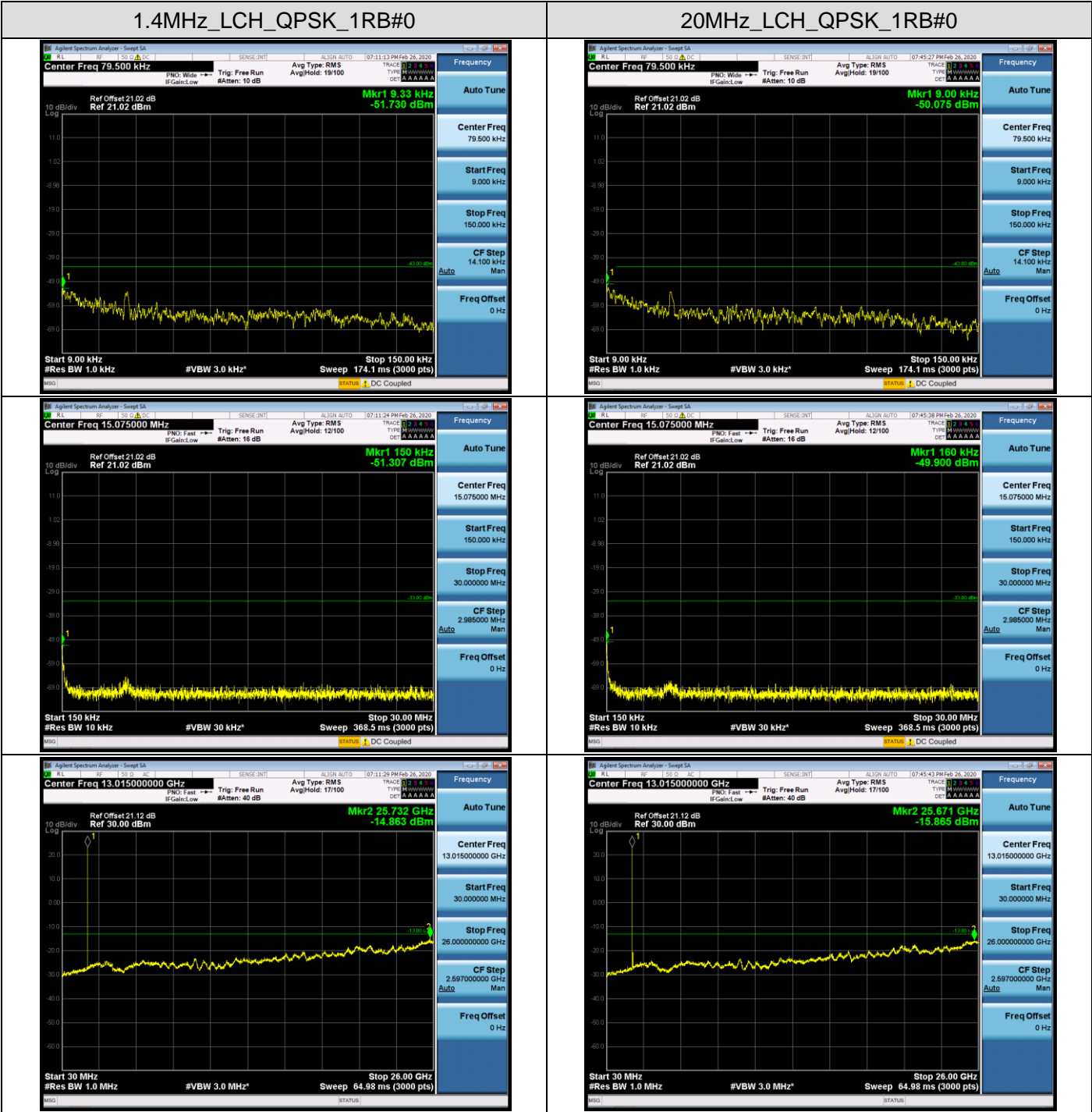
The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

For Band 7:

- (i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
- (ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
- (iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

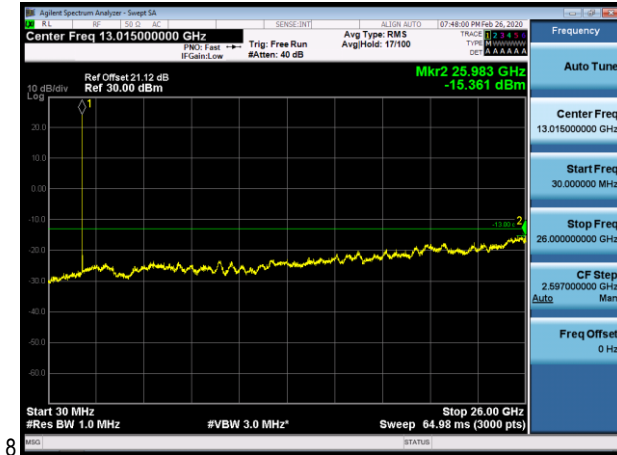
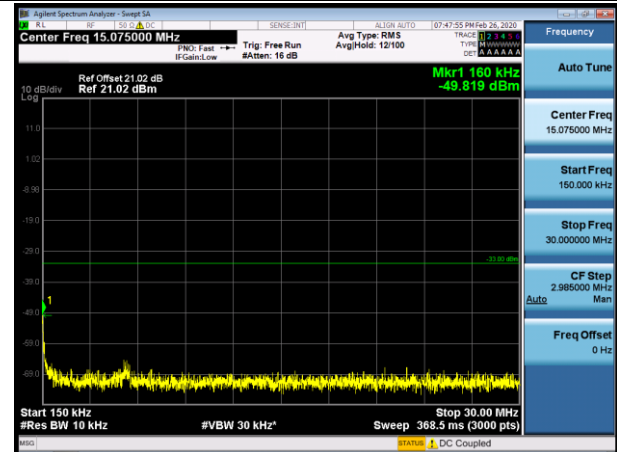
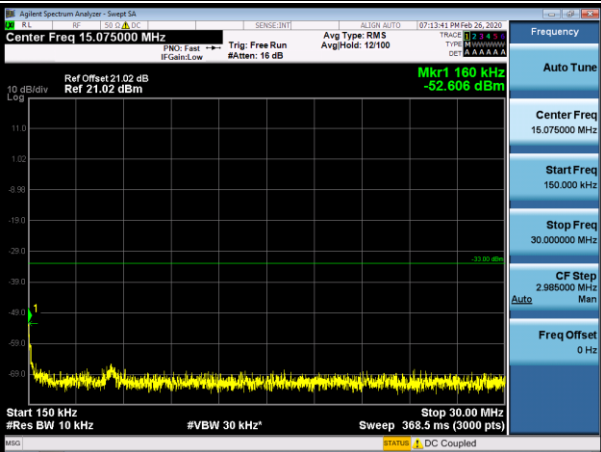
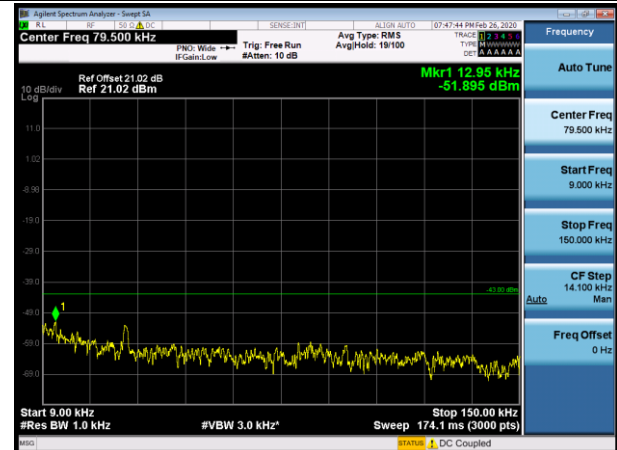
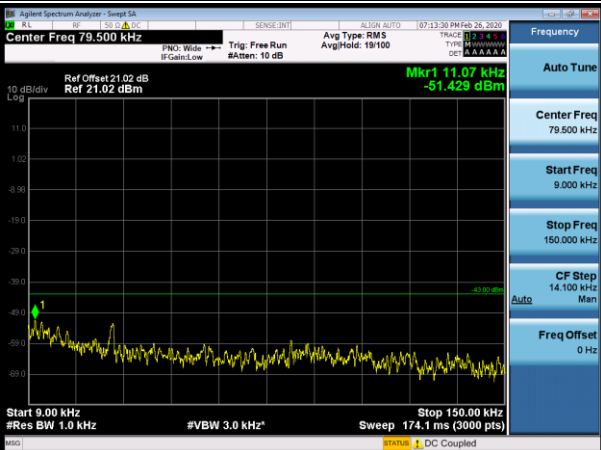
Please refers to Appendix C for compliance test plots for band edge

APPENDIX A TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION
LTE BAND 2



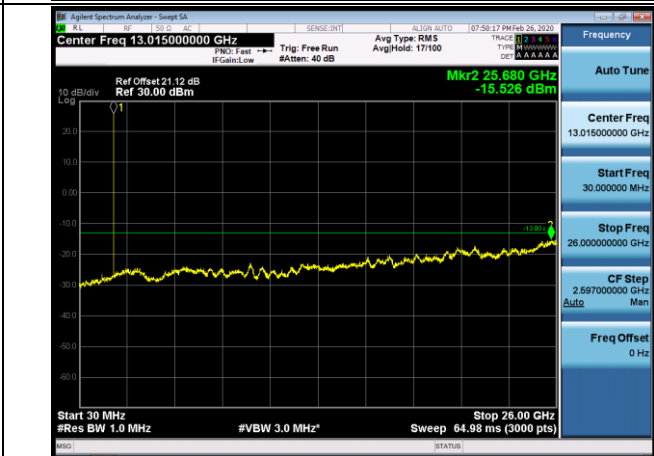
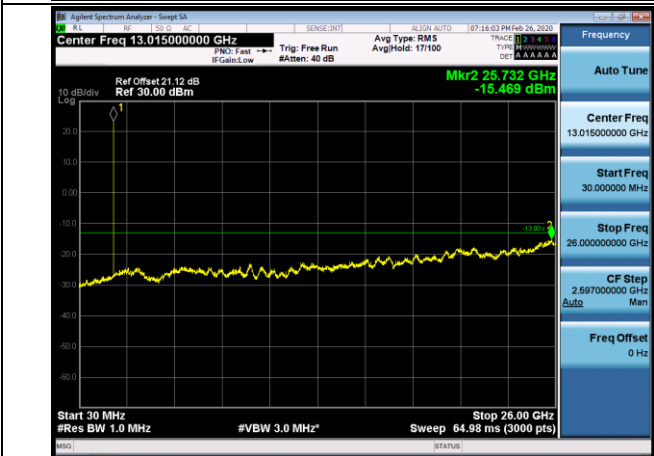
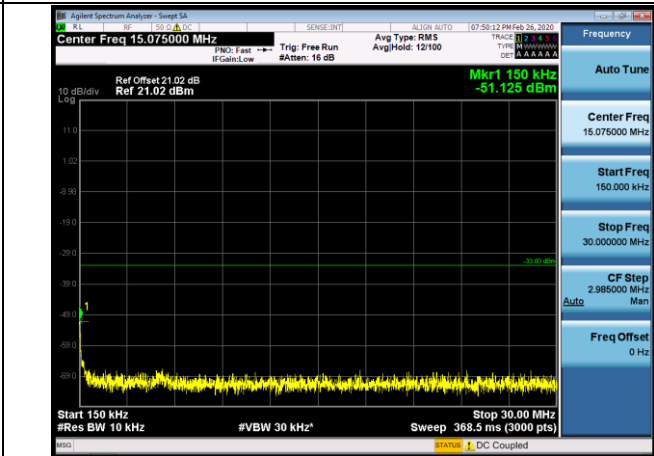
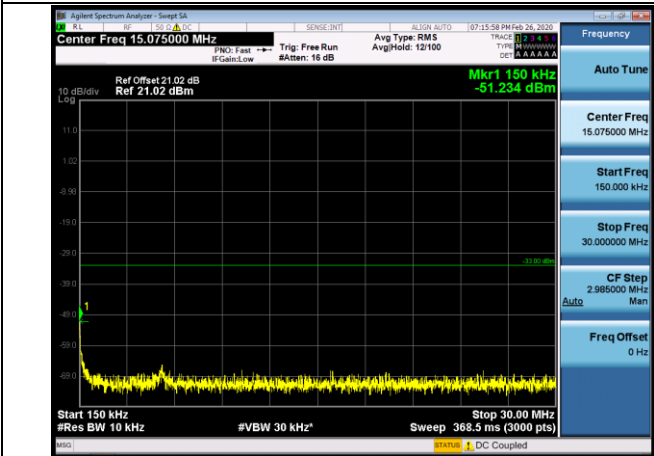
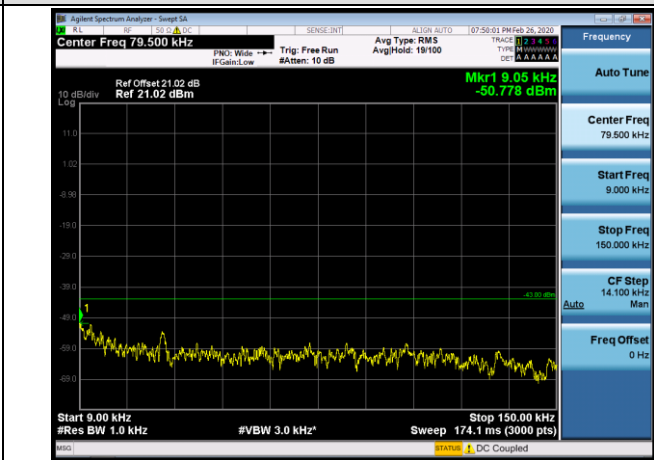
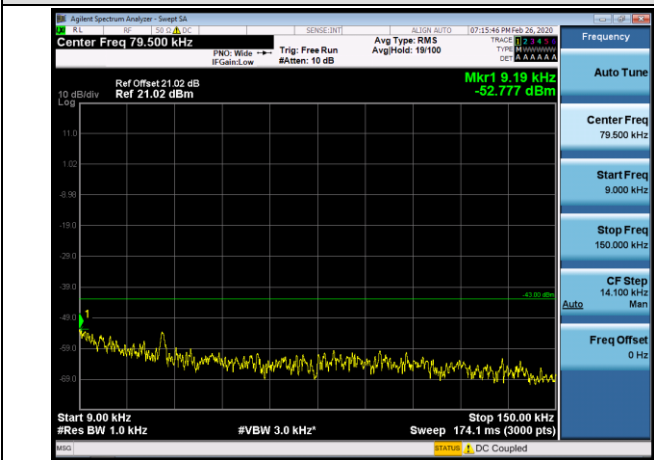
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20MHz_MCH_QPSK_1RB#0

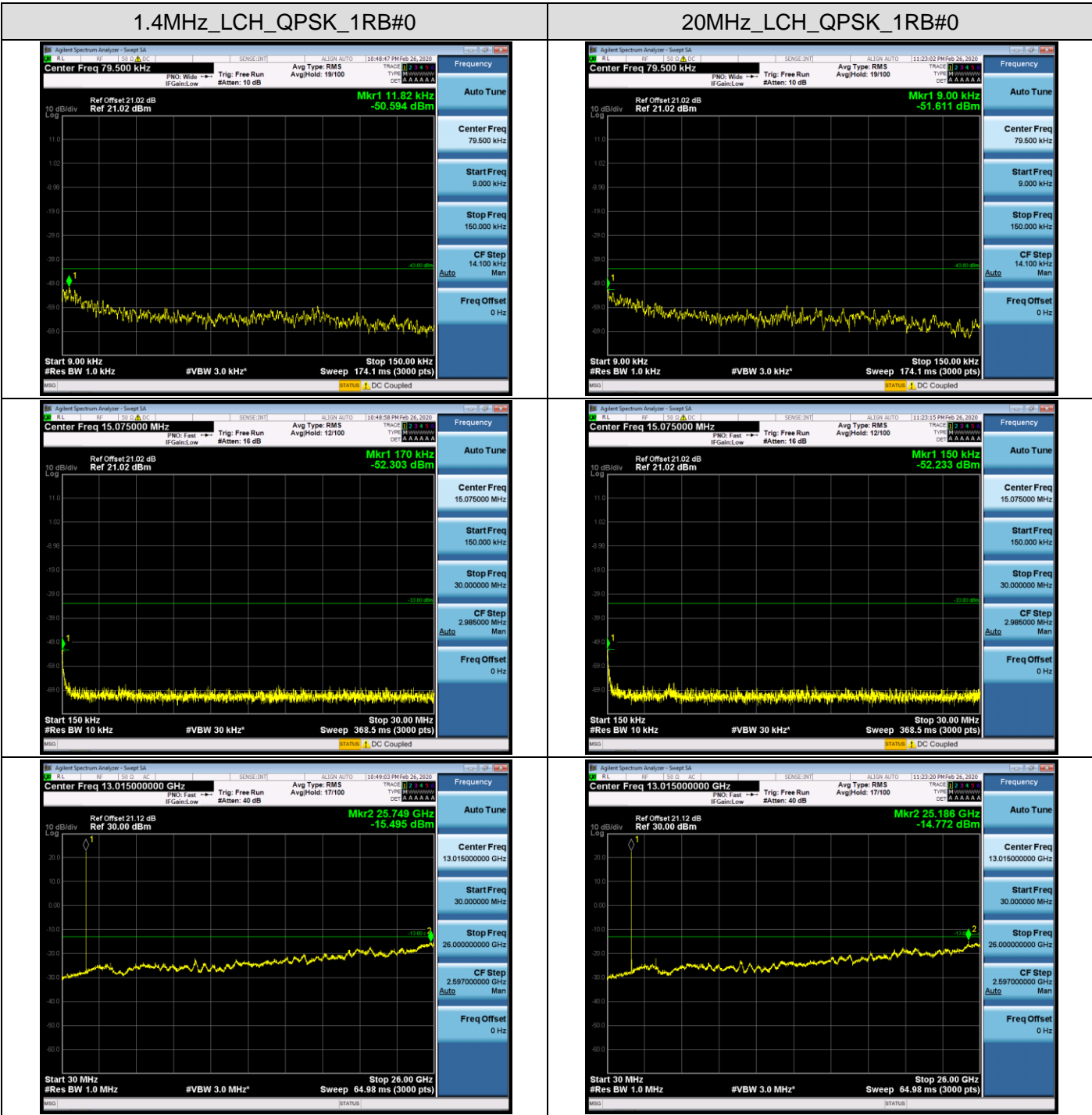


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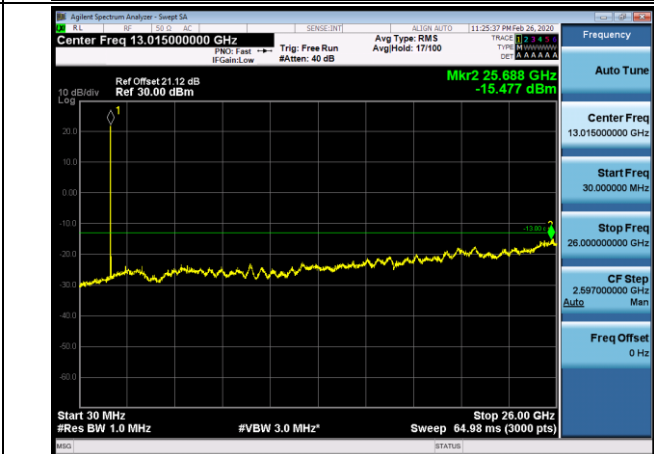
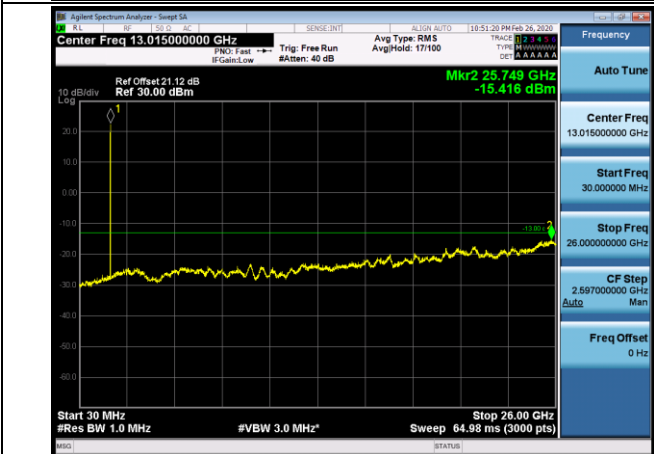
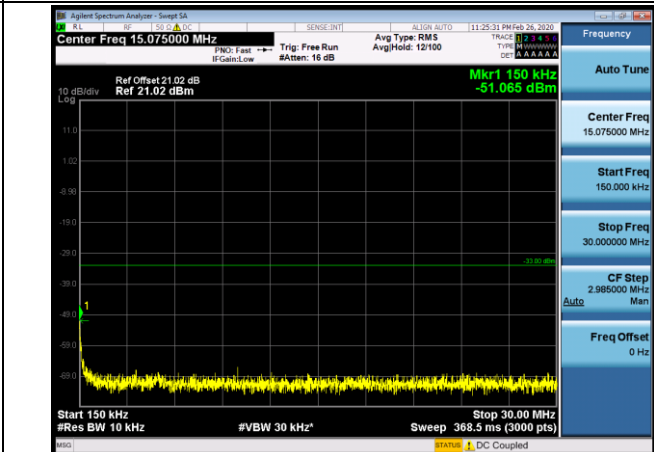
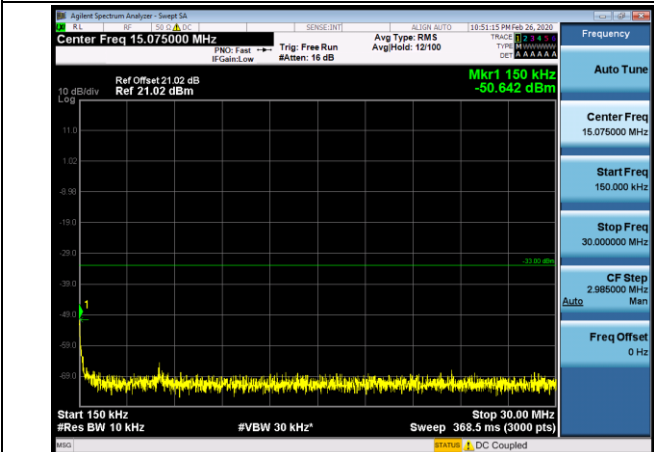
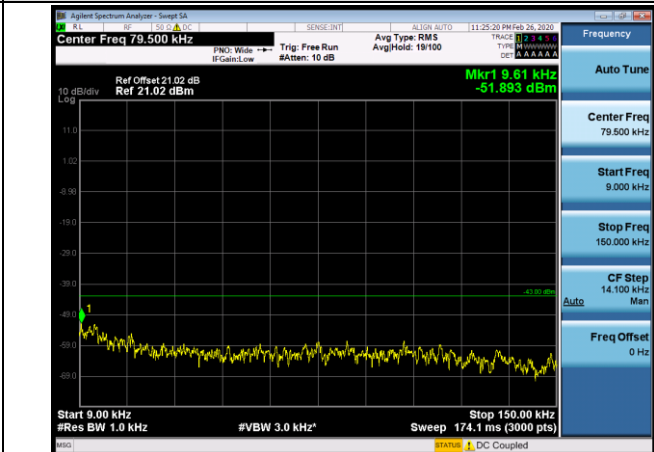
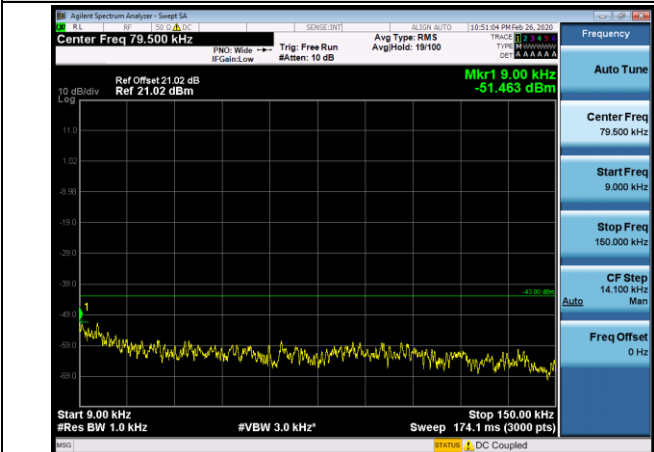


**TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION
 LTE BAND 4**



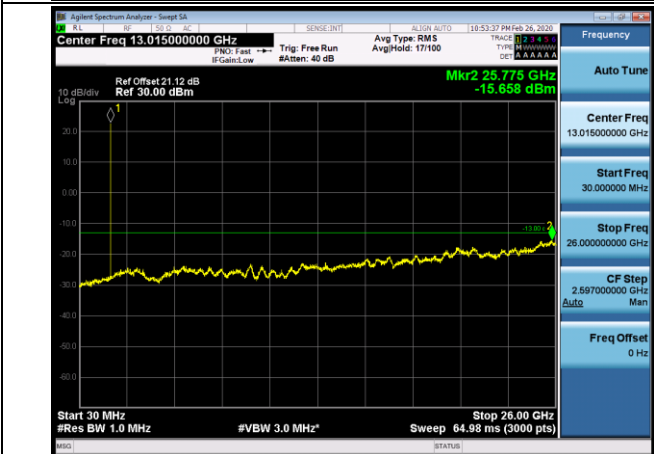
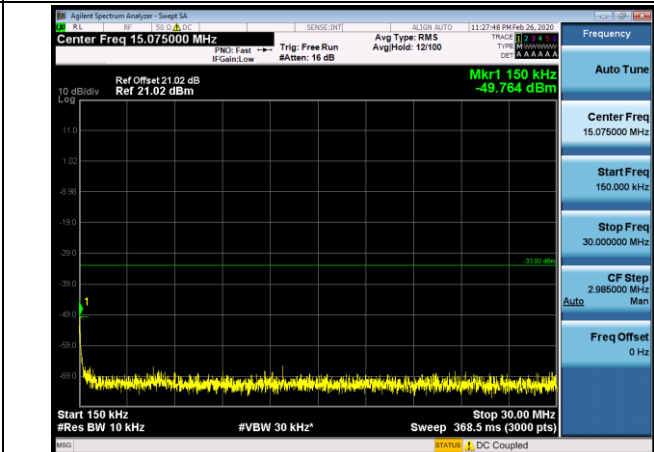
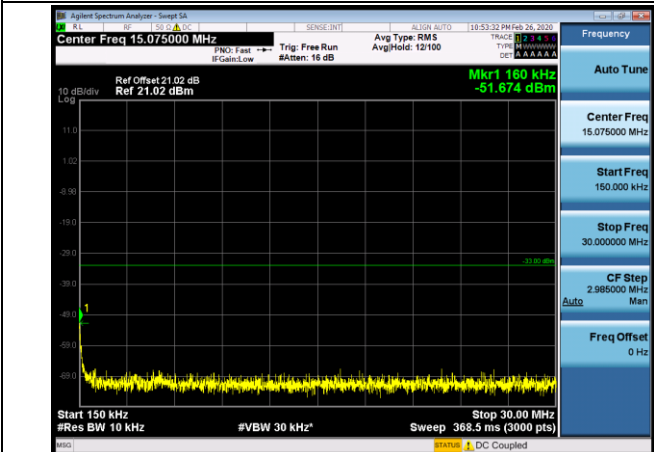
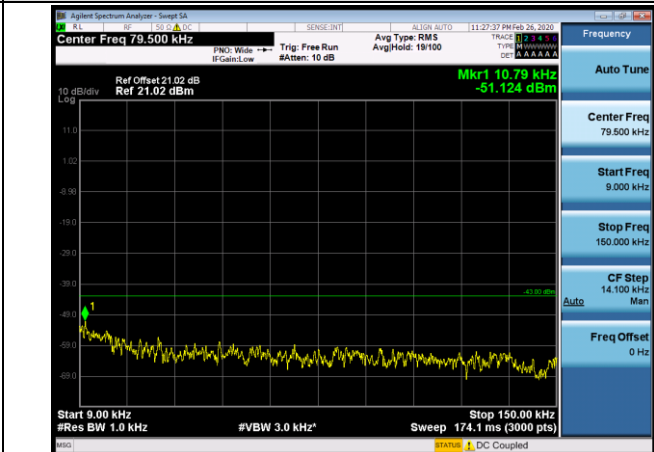
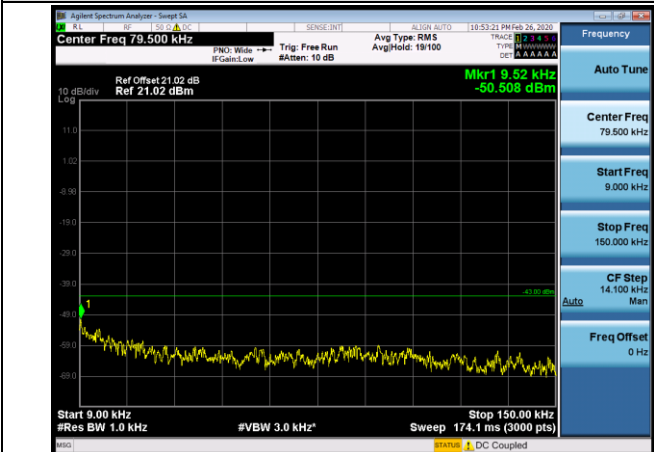
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20MHz_MCH_QPSK_1RB#0

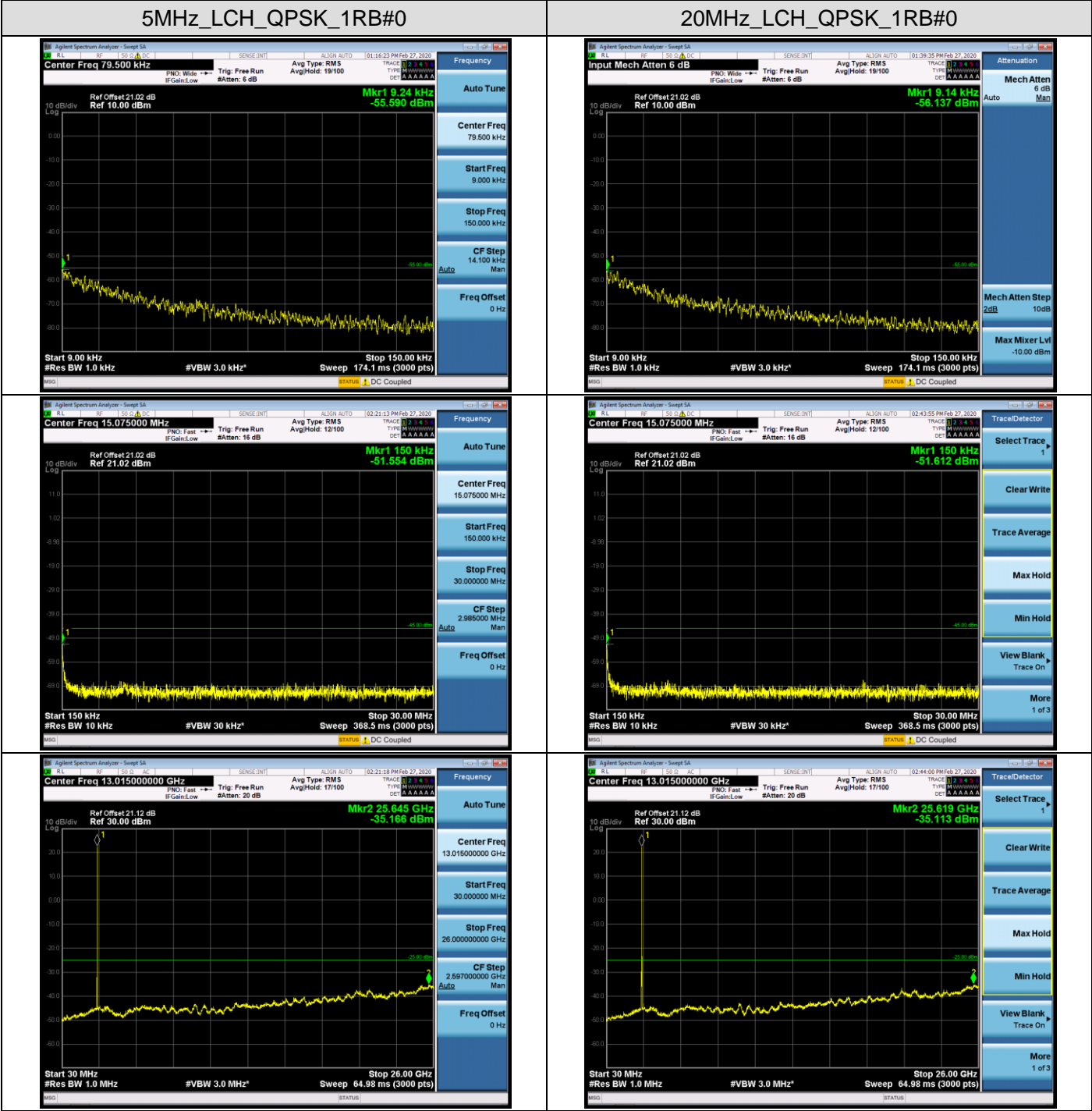


1.4MHz_HCH_QPSK_1RB#0

20MHz_HCH_QPSK_1RB#0

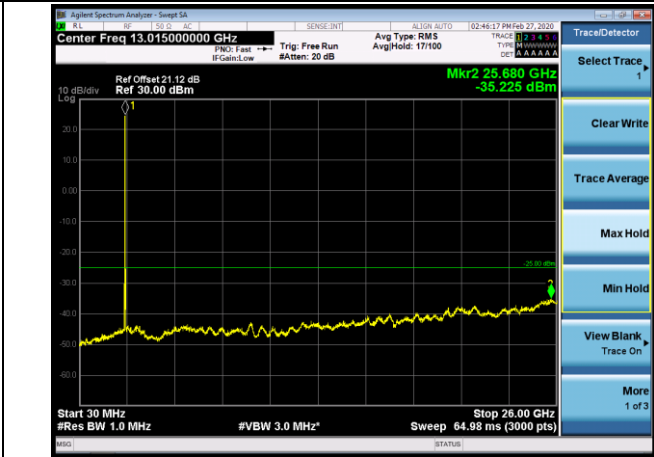
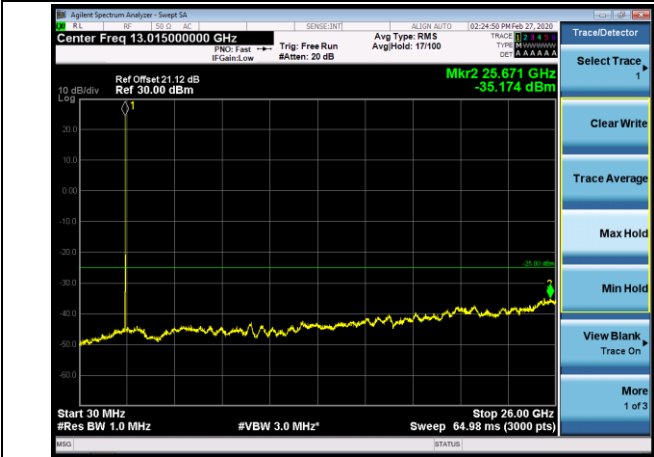
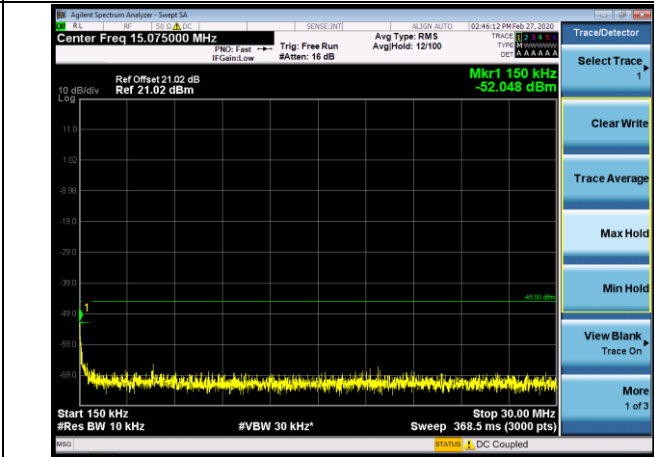
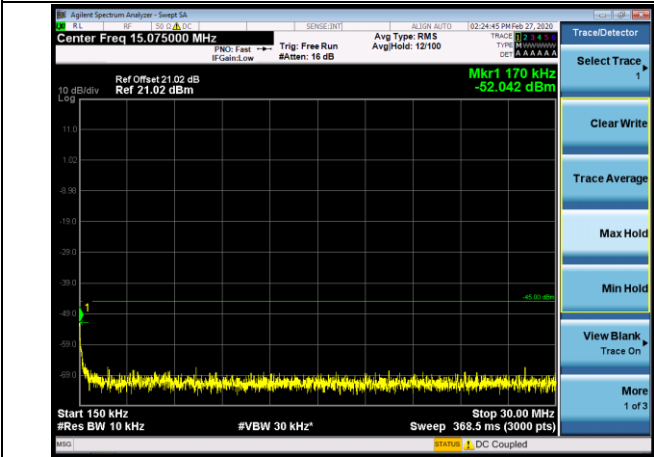
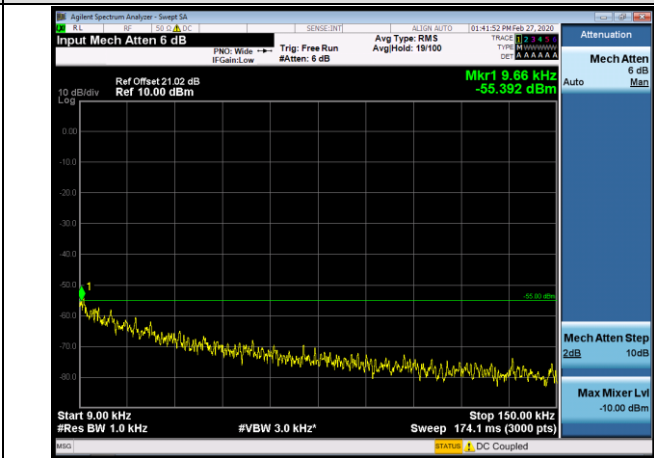
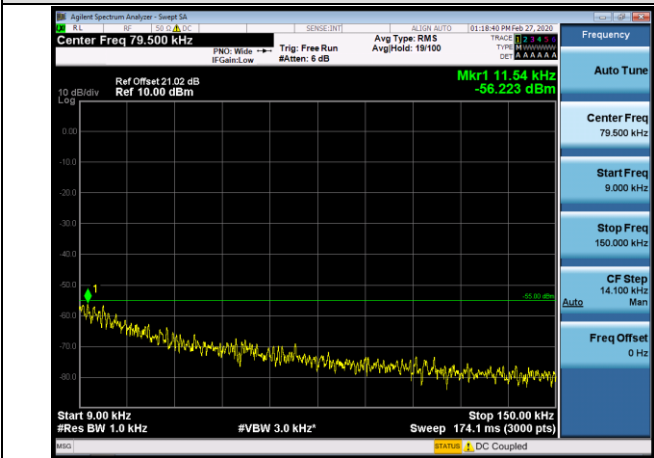


TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION
 LTE BAND 7



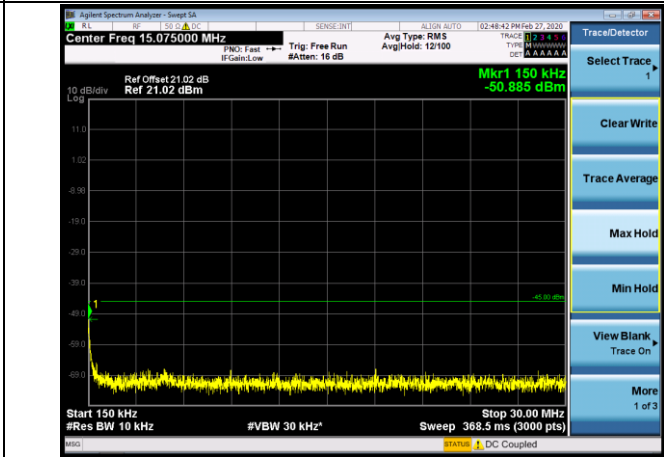
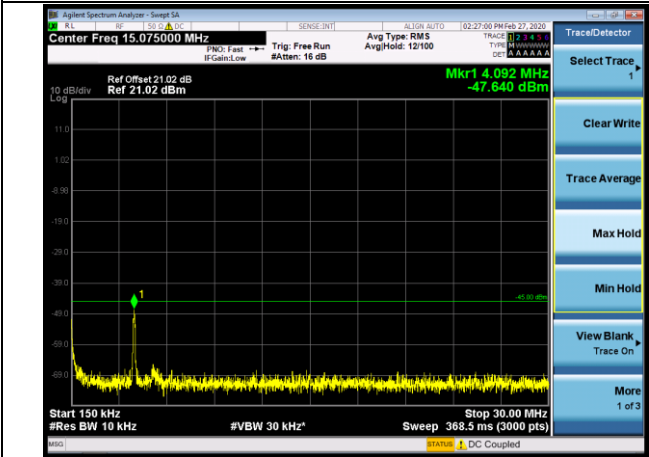
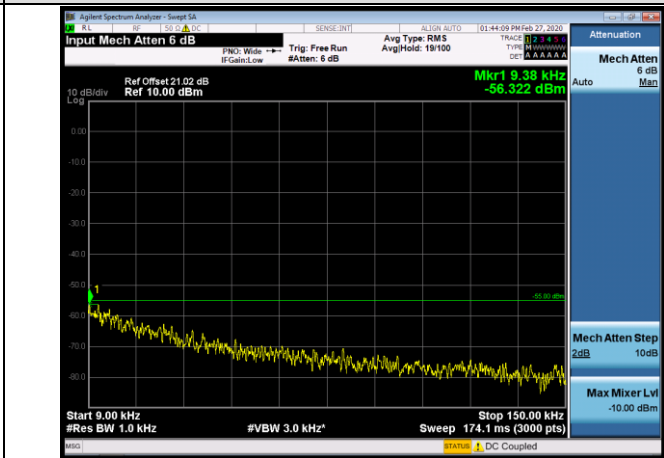
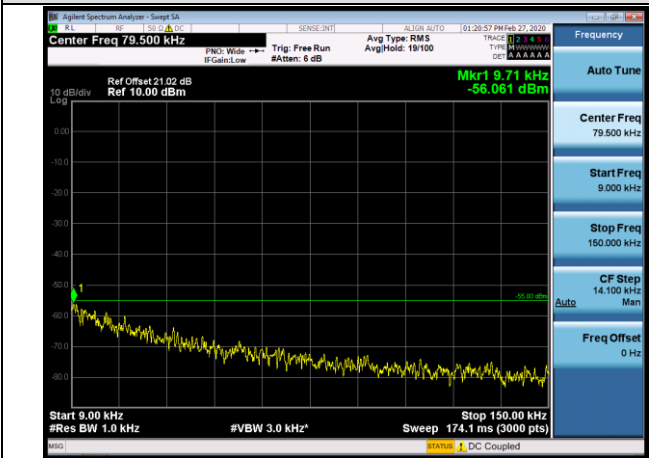
5MHz_MCH_QPSK_1RB#0

20MHz_MCH_QPSK_1RB#0



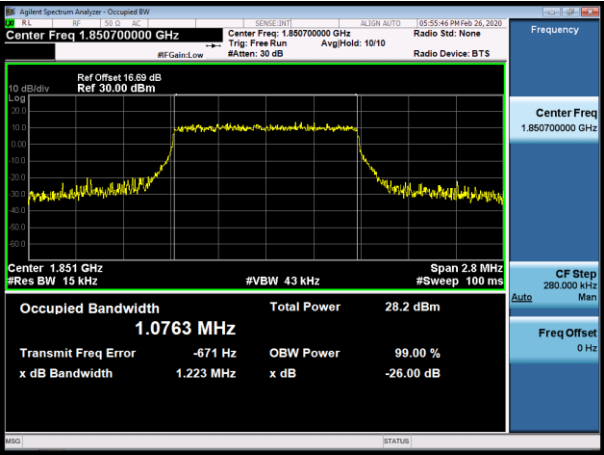
5MHz_HCH_QPSK_1RB#0

20MHz_HCH_QPSK_1RB#0

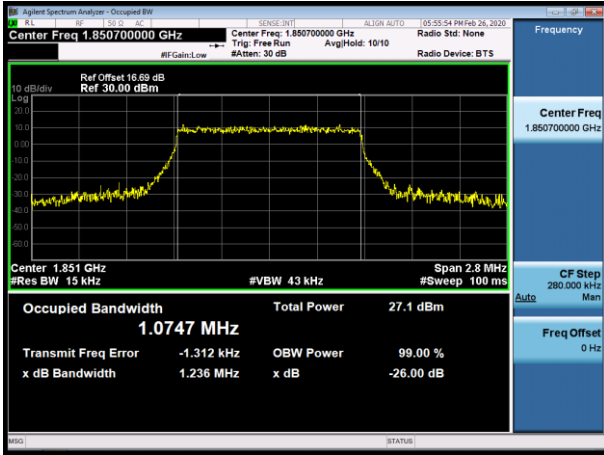


**APPENDIX B TEST PLOTS FOR OCCUPIED BANDWIDTH (99%)
 EMISSION BANDWIDTH (-26dBc)
 LTE Band 2 Channel Bandwidth: 1.4 MHz**

LCH_QPSK_6RB#0



LCH_16QAM_6RB#0



MCH_QPSK_6RB#0



MCH_16QAM_6RB#0

