25	4.40	-11.20	-0.004231
	3.45	-9.16	-0.003458

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

The EUT doesn’t work below -10℃

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.

LTEBand 7

Channel Bandwidth: 5MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4754	PASS
	MCH	25	0	4.4750	PASS
	HCH	25	0	4.4867	PASS
16QAM	LCH	25	0	4.4695	PASS
	MCH	25	0	4.4734	PASS
	HCH	25	0	4.4734	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9634	PASS
	MCH	50	0	8.9541	PASS
	HCH	50	0	8.9560	PASS
16QAM	LCH	50	0	8.9438	PASS
	MCH	50	0	8.9354	PASS
	HCH	50	0	8.9493	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.433	PASS
	MCH	75	0	13.434	PASS
	HCH	75	0	13.450	PASS
16QAM	LCH	75	0	13.410	PASS
	MCH	75	0	13.412	PASS
	HCH	75	0	13.429	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.877	PASS
	MCH	100	0	17.875	PASS
	HCH	100	0	17.875	PASS
16QAM	LCH	100	0	17.885	PASS
	MCH	100	0	17.872	PASS
	HCH	100	0	17.870	PASS

LTEBand 38

Channel Bandwidth: 5MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4715	PASS
	MCH	25	0	4.4663	PASS
	HCH	25	0	4.4764	PASS
16QAM	LCH	25	0	4.4639	PASS
	MCH	25	0	4.4787	PASS
	HCH	25	0	4.4564	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9275	PASS
	MCH	50	0	8.9181	PASS
	HCH	50	0	8.9400	PASS
16QAM	LCH	50	0	8.9096	PASS
	MCH	50	0	8.9318	PASS
	HCH	50	0	8.9402	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.374	PASS
	MCH	75	0	13.382	PASS
	HCH	75	0	13.422	PASS
16QAM	LCH	75	0	13.377	PASS
	MCH	75	0	13.421	PASS
	HCH	75	0	13.421	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.844	PASS
	MCH	100	0	17.819	PASS
	HCH	100	0	17.859	PASS
16QAM	LCH	100	0	17.841	PASS
	MCH	100	0	17.839	PASS
	HCH	100	0	17.861	PASS

LTEBand 40(1)

Channel Bandwidth: 5MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.5049	PASS
	MCH	25	0	4.5158	PASS
	HCH	25	0	4.5016	PASS
16QAM	LCH	25	0	4.5046	PASS
	MCH	25	0	4.5040	PASS
	HCH	25	0	4.5016	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	MCH	50	0	8.9802	PASS
16QAM	MCH	50	0	8.9944	PASS

LTEBand 40(2)

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.5048	PASS
	MCH	25	0	4.5109	PASS
	HCH	25	0	4.5023	PASS
16QAM	LCH	25	0	4.5048	PASS
	MCH	25	0	4.5002	PASS
	HCH	25	0	4.4926	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	MCH	50	0	9.0019	PASS
16QAM	MCH	50	0	8.9811	PASS

LTEBand 41

Channel Bandwidth: 5MHz

Channel Bandwidth: 5 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.4746	PASS
	MCH	25	0	4.4629	PASS
	HCH	25	0	4.4755	PASS
16QAM	LCH	25	0	4.4735	PASS
	MCH	25	0	4.4692	PASS
	HCH	25	0	4.4649	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	8.9403	PASS
	MCH	50	0	8.9365	PASS
	HCH	50	0	8.9485	PASS
16QAM	LCH	50	0	8.9481	PASS
	MCH	50	0	8.9463	PASS
	HCH	50	0	8.9338	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.413	PASS
	MCH	75	0	13.416	PASS
	HCH	75	0	13.391	PASS
16QAM	LCH	75	0	13.413	PASS
	MCH	75	0	13.408	PASS
	HCH	75	0	13.399	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20 MHz					
Modulation	Channel	RB Configuration		Occupied Bandwidth(MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	17.851	PASS
	MCH	100	0	17.854	PASS
	HCH	100	0	17.844	PASS
16QAM	LCH	100	0	17.857	PASS
	MCH	100	0	17.856	PASS
	HCH	100	0	17.829	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.

LTEBand 7

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.736	PASS
	MCH	25	0	4.729	PASS
	HCH	25	0	4.758	PASS
16QAM	LCH	25	0	4.722	PASS
	MCH	25	0	4.743	PASS
	HCH	25	0	4.779	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.409	PASS
	MCH	50	0	9.388	PASS
	HCH	50	0	9.877	PASS
16QAM	LCH	50	0	9.363	PASS
	MCH	50	0	9.349	PASS
	HCH	50	0	9.398	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.05	PASS
	MCH	75	0	14.04	PASS
	HCH	75	0	21.58	PASS
16QAM	LCH	75	0	14.02	PASS
	MCH	75	0	14.01	PASS
	HCH	75	0	16.80	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.52	PASS
	MCH	100	0	18.59	PASS
	HCH	100	0	18.78	PASS
16QAM	LCH	100	0	18.56	PASS
	MCH	100	0	18.59	PASS
	HCH	100	0	18.58	PASS

LTEBand 38

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.692	PASS
	MCH	25	0	4.657	PASS
	HCH	25	0	4.727	PASS
16QAM	LCH	25	0	4.716	PASS
	MCH	25	0	4.762	PASS
	HCH	25	0	4.718	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.297	PASS
	MCH	50	0	9.367	PASS
	HCH	50	0	9.381	PASS
16QAM	LCH	50	0	9.331	PASS
	MCH	50	0	9.291	PASS
	HCH	50	0	9.336	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	13.91	PASS
	MCH	75	0	13.97	PASS
	HCH	75	0	13.93	PASS
16QAM	LCH	75	0	13.91	PASS
	MCH	75	0	13.91	PASS
	HCH	75	0	13.92	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.49	PASS
	MCH	100	0	18.47	PASS
	HCH	100	0	18.54	PASS
16QAM	LCH	100	0	18.51	PASS
	MCH	100	0	18.53	PASS
	HCH	100	0	18.48	PASS

LTEBand 40(1)

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.879	PASS
	MCH	25	0	4.841	PASS
	HCH	25	0	4.990	PASS
16QAM	LCH	25	0	4.876	PASS
	MCH	25	0	4.900	PASS
	HCH	25	0	4.972	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	MCH	50	0	9.547	PASS
16QAM	MCH	50	0	9.566	PASS

LTEBand 40(2)

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.890	PASS
	MCH	25	0	4.842	PASS
	HCH	25	0	4.940	PASS
16QAM	LCH	25	0	4.892	PASS
	MCH	25	0	4.904	PASS
	HCH	25	0	4.927	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	MCH	50	0	9.542	PASS
16QAM	MCH	50	0	9.571	PASS

LTE Band 41

Channel Bandwidth: 5 MHz

Channel Bandwidth: 5MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	25	0	4.784	PASS
	MCH	25	0	4.700	PASS
	HCH	25	0	4.707	PASS
16QAM	LCH	25	0	4.704	PASS
	MCH	25	0	4.728	PASS
	HCH	25	0	4.755	PASS

Channel Bandwidth: 10 MHz

Channel Bandwidth: 10MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	50	0	9.411	PASS
	MCH	50	0	9.352	PASS
	HCH	50	0	9.322	PASS
16QAM	LCH	50	0	9.306	PASS
	MCH	50	0	9.295	PASS
	HCH	50	0	9.332	PASS

Channel Bandwidth: 15 MHz

Channel Bandwidth: 15MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	75	0	14.00	PASS
	MCH	75	0	13.98	PASS
	HCH	75	0	13.93	PASS
16QAM	LCH	75	0	13.99	PASS
	MCH	75	0	14.00	PASS
	HCH	75	0	13.99	PASS

Channel Bandwidth: 20 MHz

Channel Bandwidth: 20MHz					
Modulation	Channel	RB Configuration		26dB Bandwidth (MHz)	Verdict
		Size	Offset		
QPSK	LCH	100	0	18.52	PASS
	MCH	100	0	18.51	PASS
	HCH	100	0	18.53	PASS
16QAM	LCH	100	0	18.53	PASS
	MCH	100	0	18.52	PASS
	HCH	100	0	18.53	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

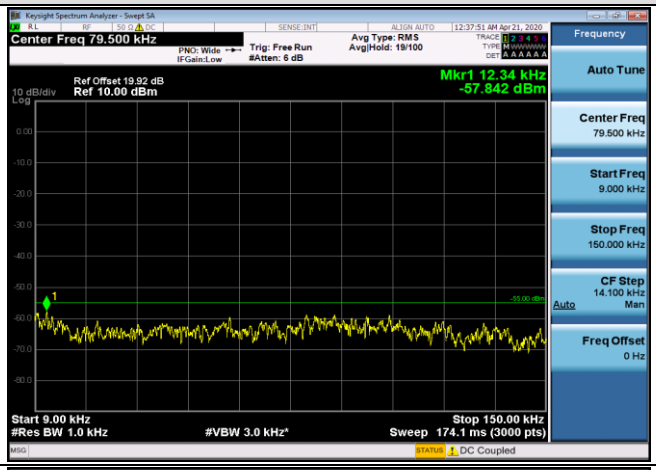
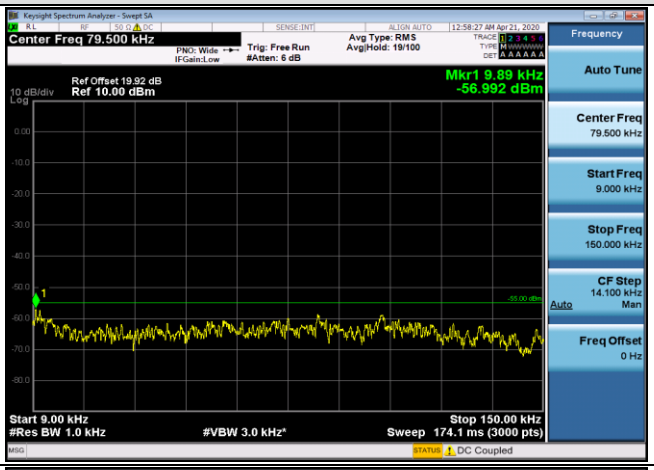
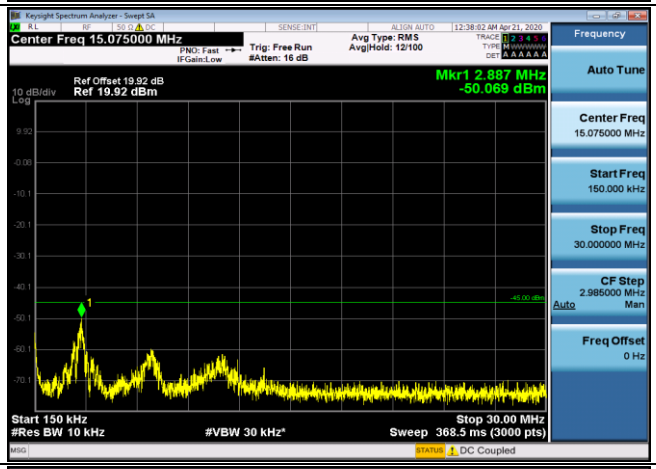
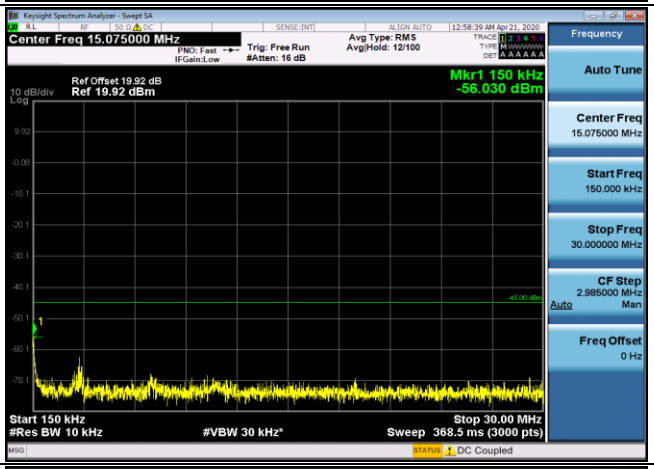
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequency. All data rates were investigated to determine the worst case configuration. All modes 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 + log10(P[Watts]), where P is the transmitter power in Watts.
For FCC rules§27.53(m)
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

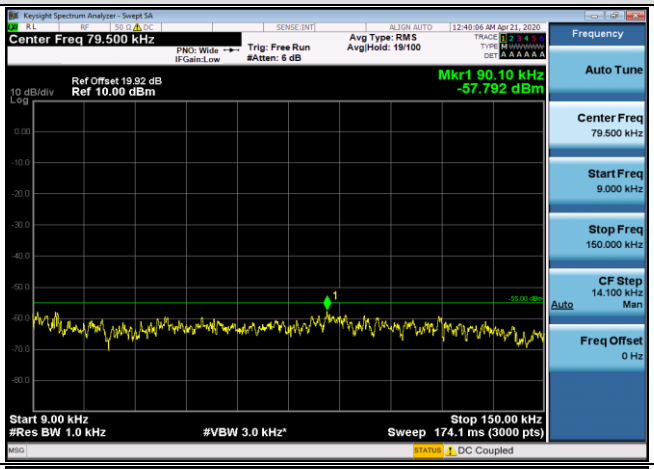
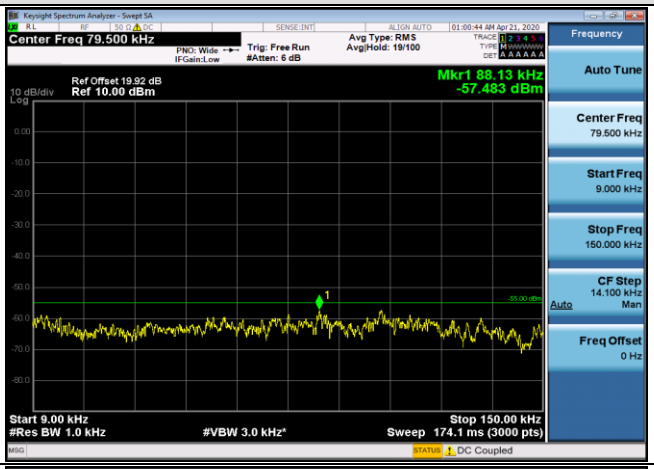
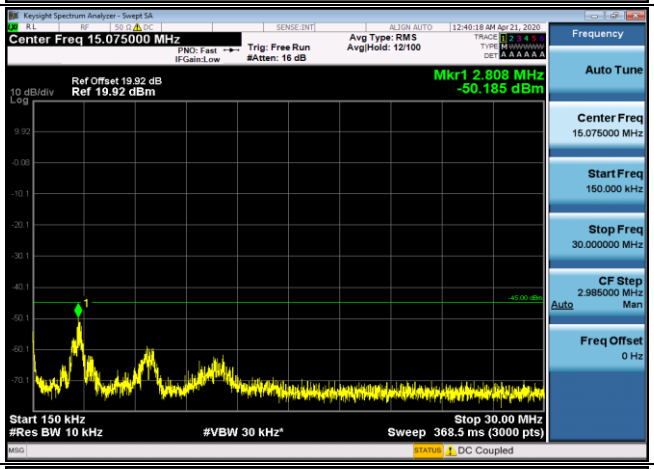
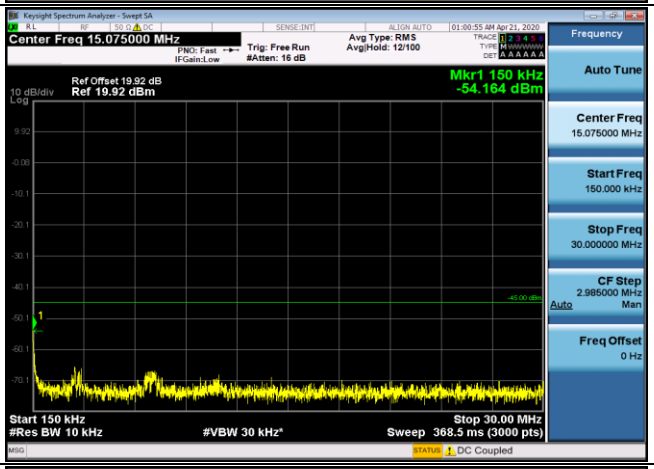
Please refers to Appendix C for compliance test plots for band edge

APPENDIX ATEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

LTE BAND 7

5MHz_LCH_QPSK_1RB#0	20MHz_LCH_QPSK_1RB#0
	
	

5MHz_MCH_QPSK_1RB#0	20MHz_MCH_QPSK_1RB#0
	
	

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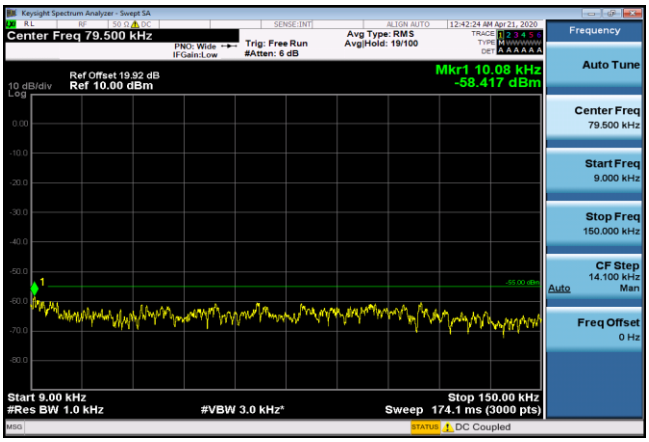	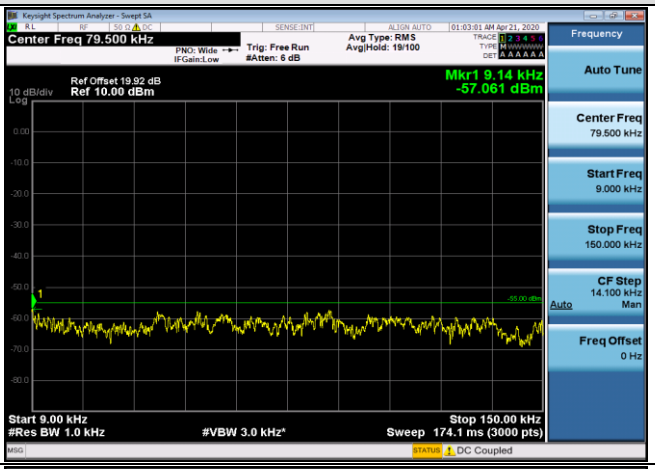
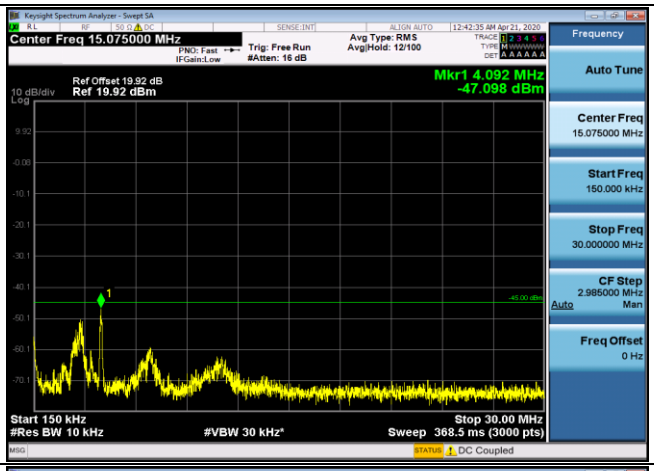	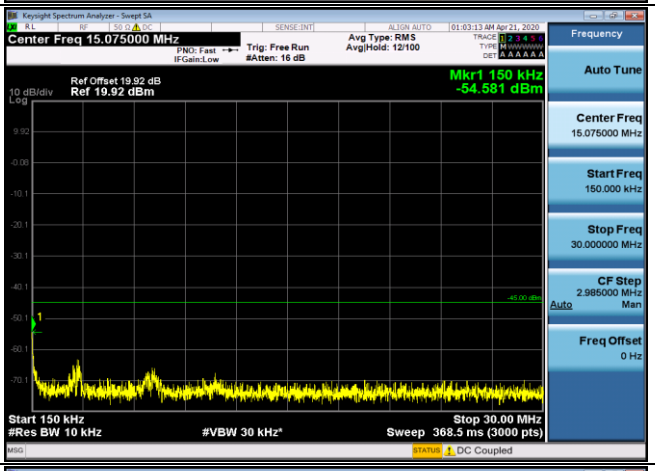

TEST PLOTS FOR CONDUCTED SPURIOUS EMISSION

LTE BAND 38

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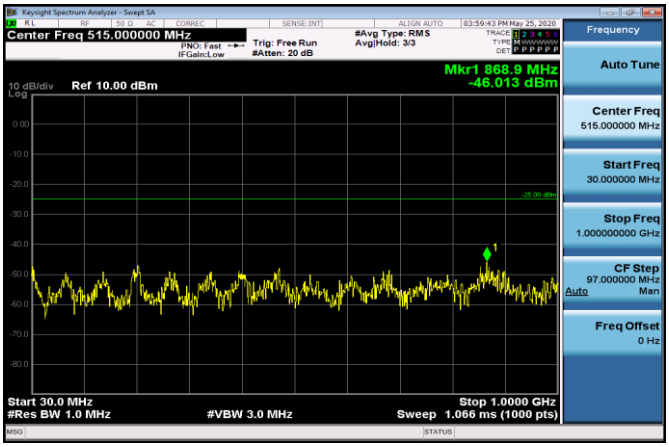
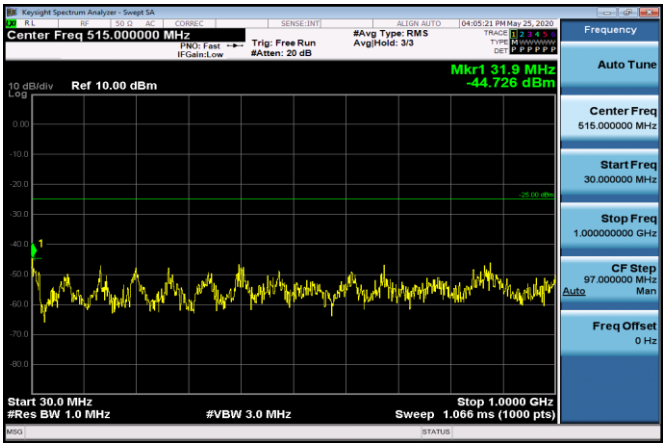
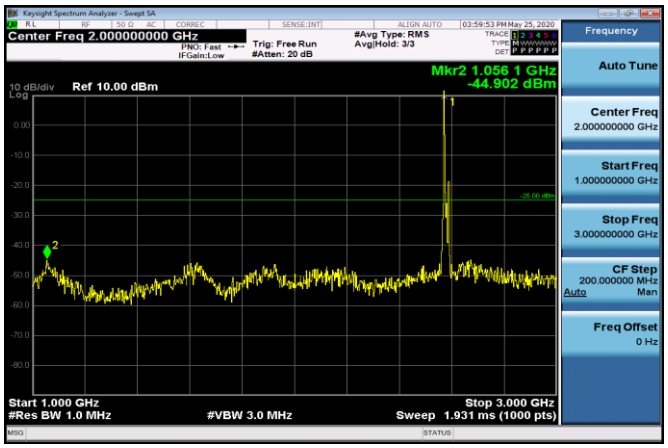
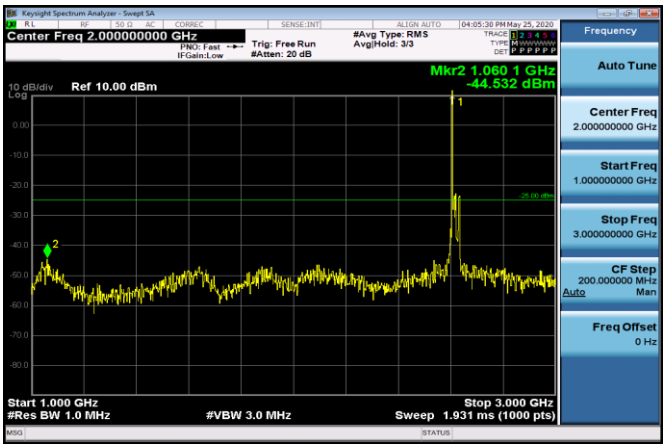
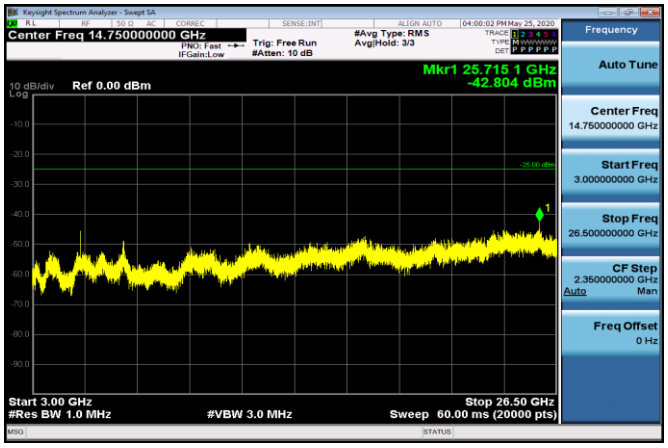
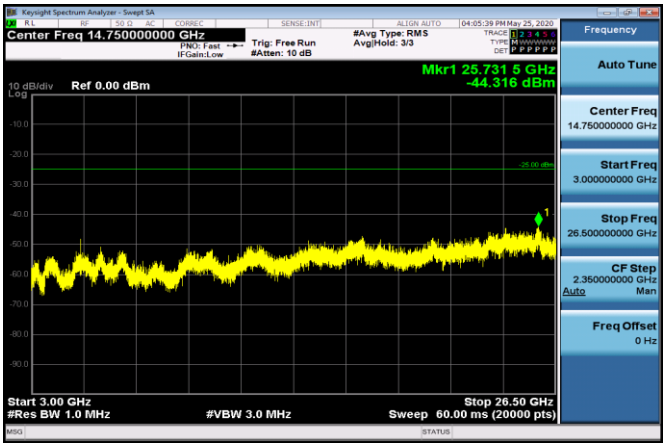
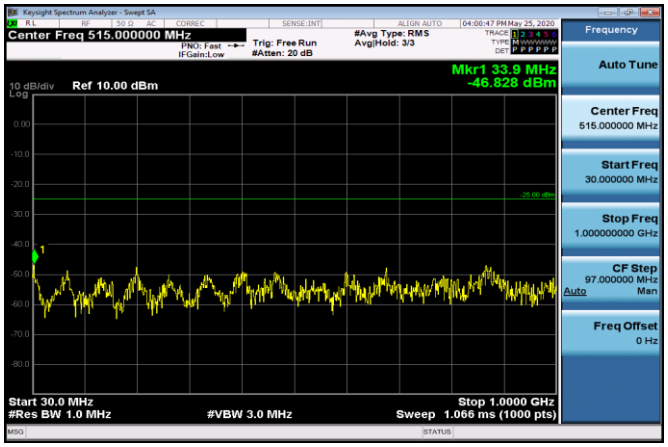
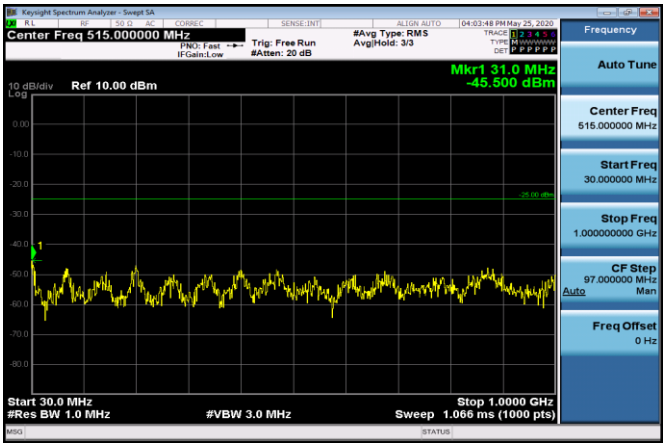
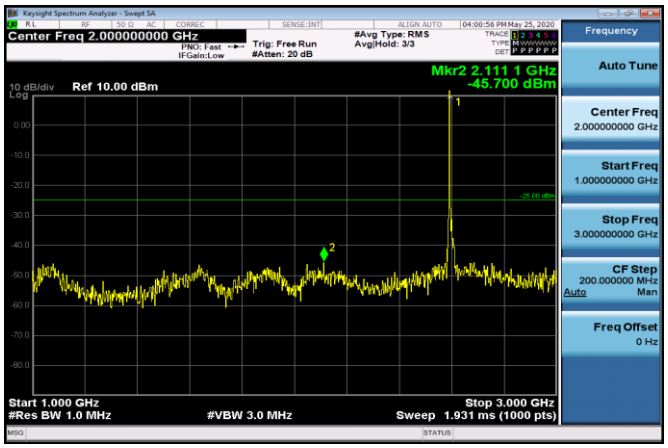
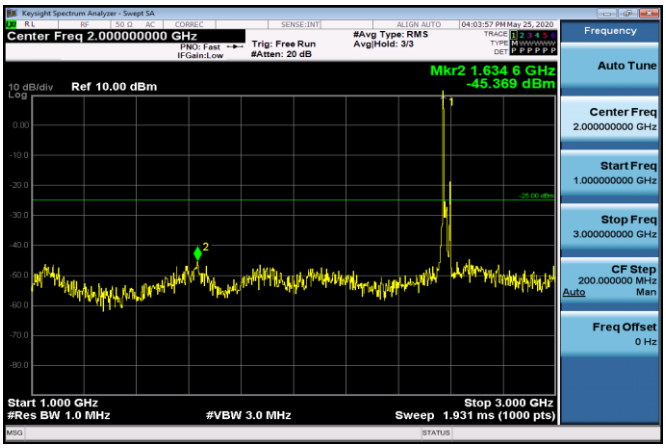
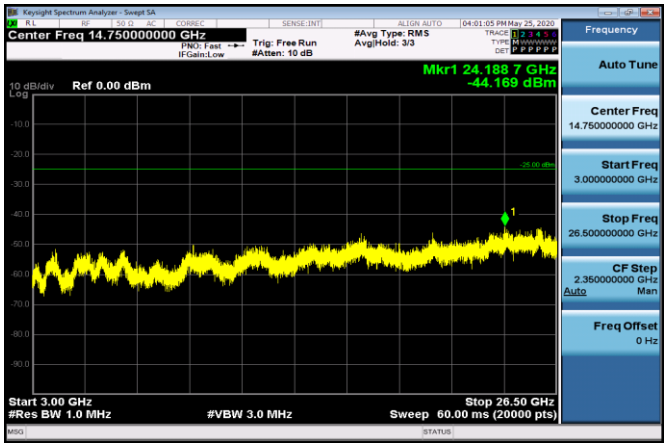
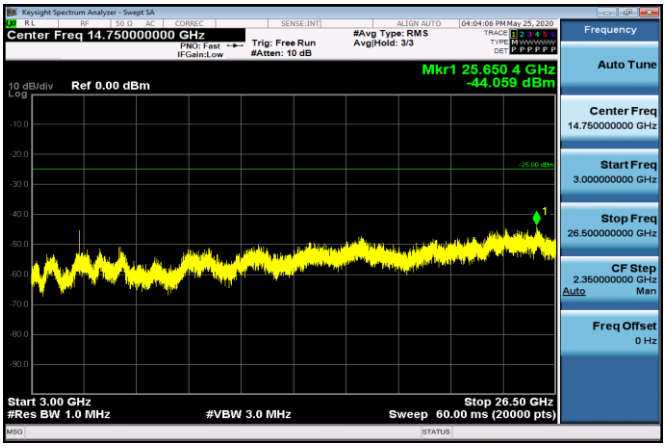
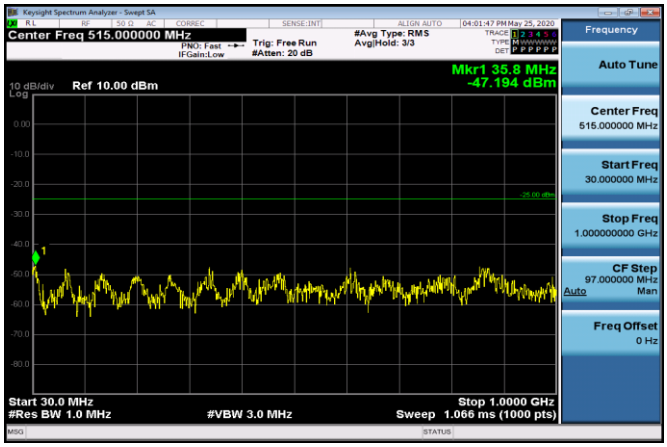
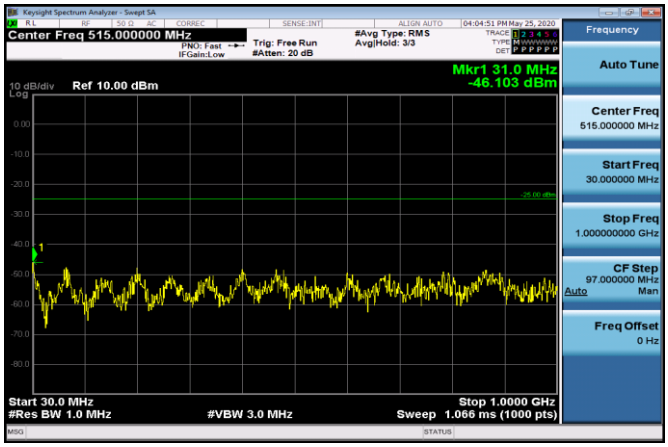
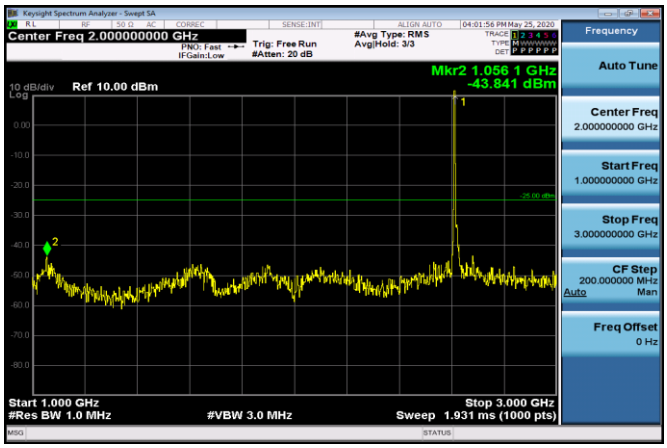
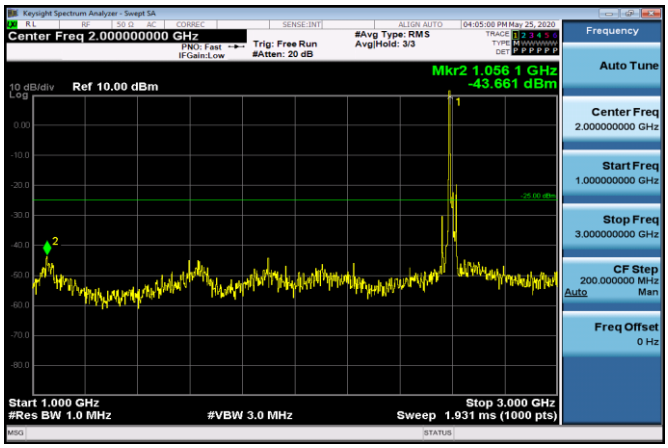
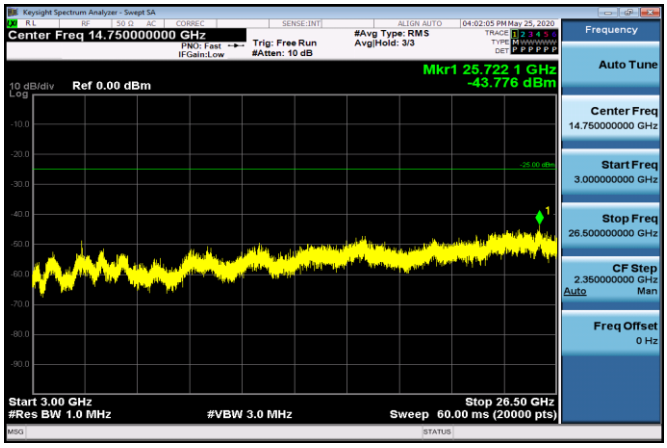
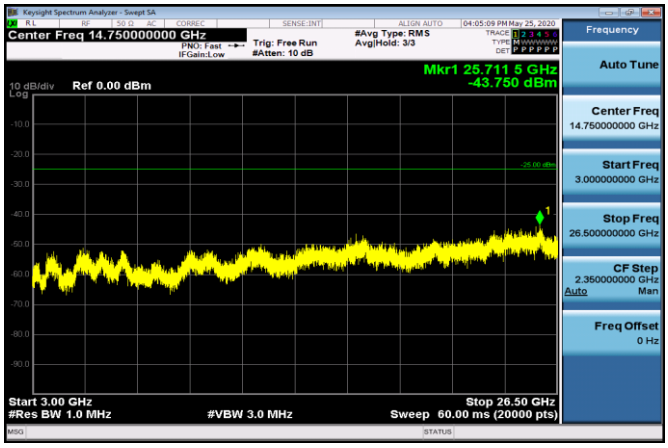
	
	
	

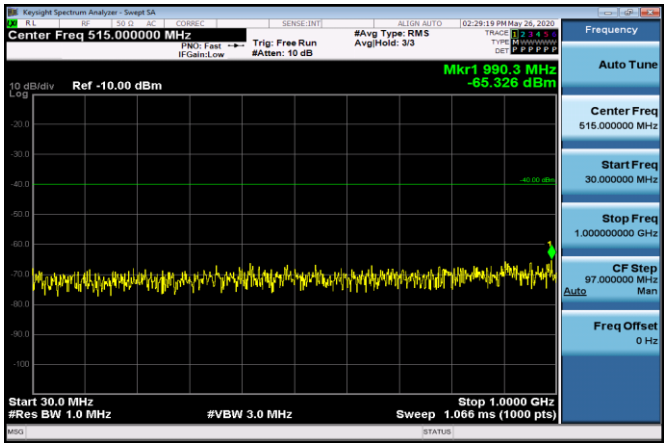
5MHz_MCH_QPSK_1RB#0	20MHz_MCH_QPSK_1RB#0
	
	
	

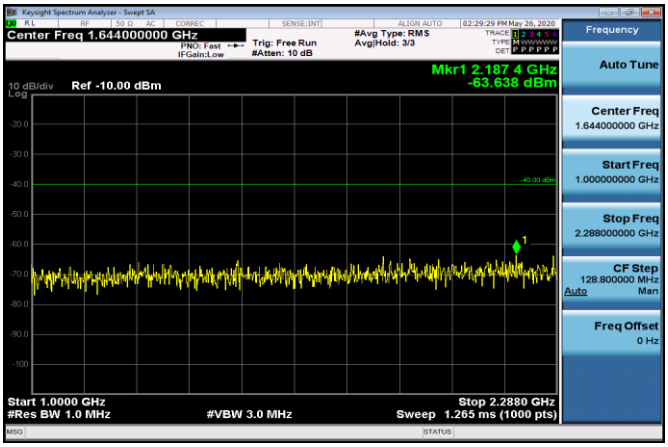
5MHz_HCH_QPSK_1RB#0	20MHz_HCH_QPSK_1RB#0
	
	
	

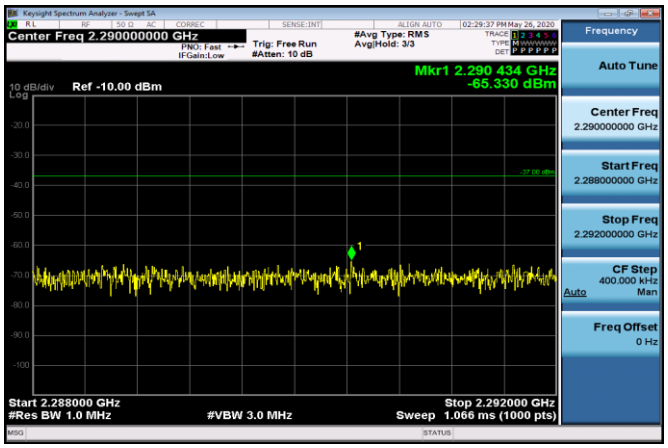
EST PLOTS FOR CONDUCTED SPURIOUS EMISSION

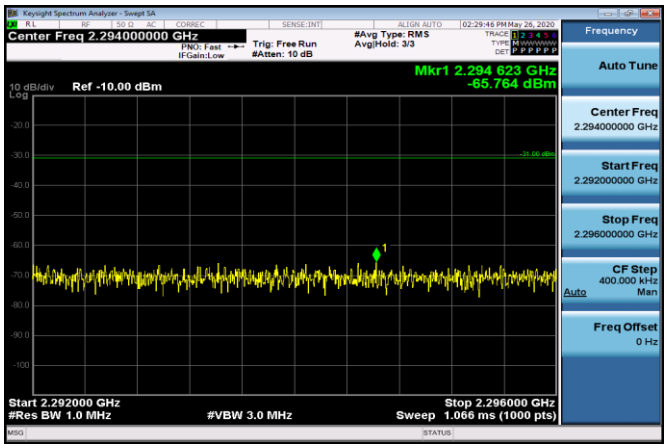
LTE BAND 40(1)

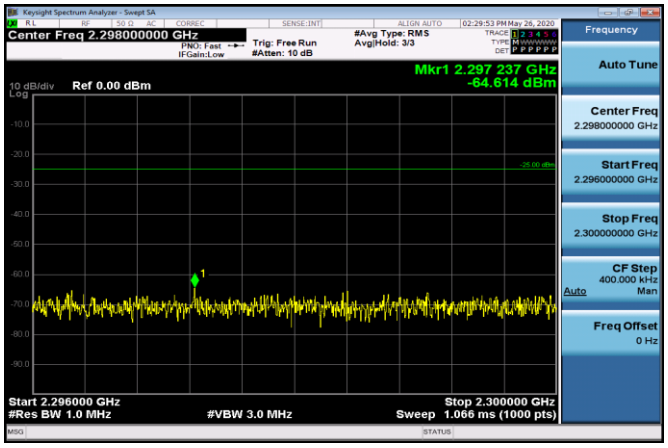
5MHz_LCH_QPSK_1RB#0

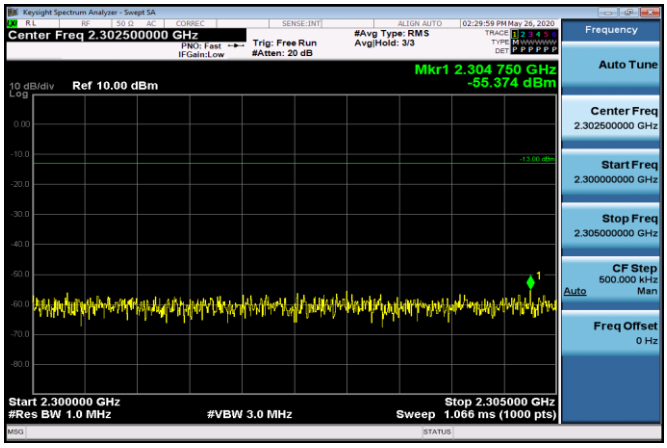


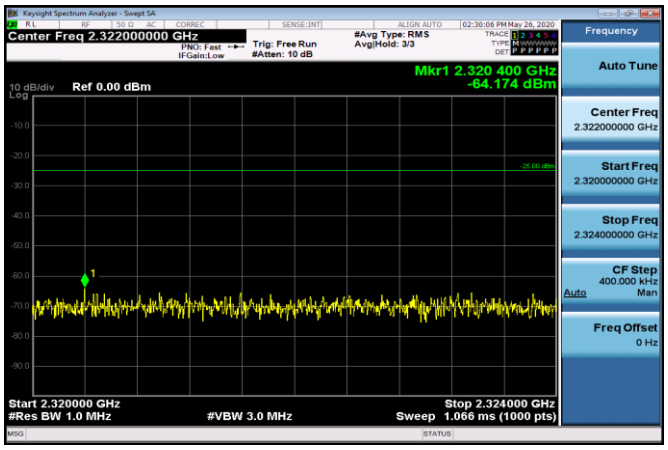


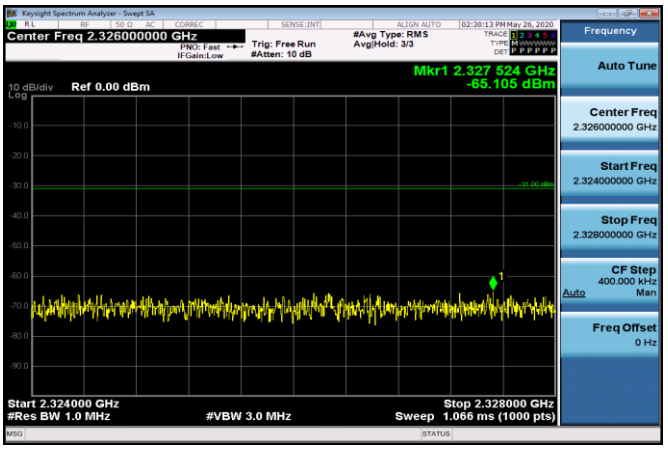


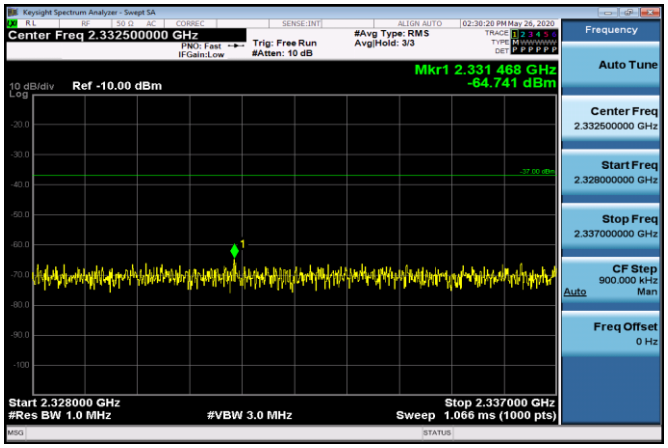


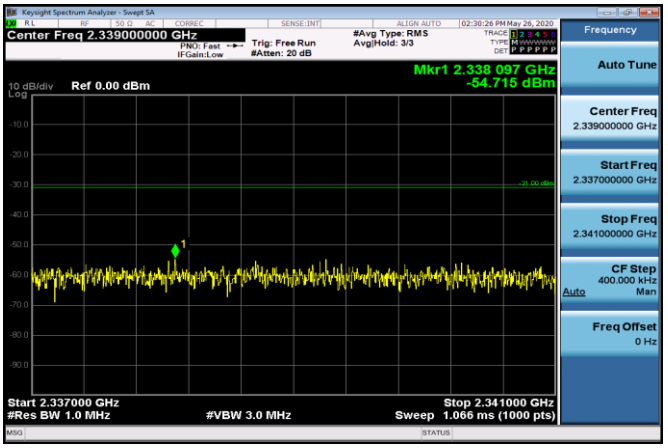


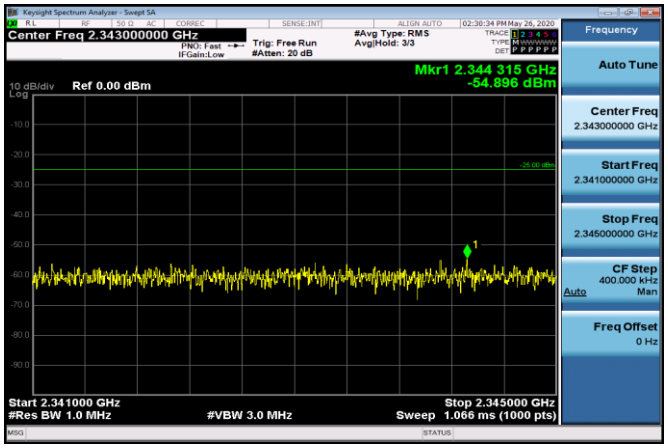


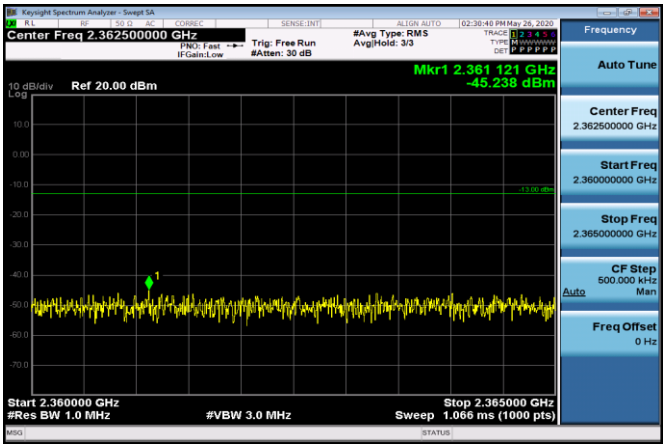

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.322000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:06 PM May 26, 2020
Mkr1 2.320 400 GHz
-64.174 dBm
10 dB/div
Ref 0.00 dBm
Start 2.320000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.324000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.322000000 GHz
Start Freq
2.320000000 GHz
Stop Freq
2.324000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz

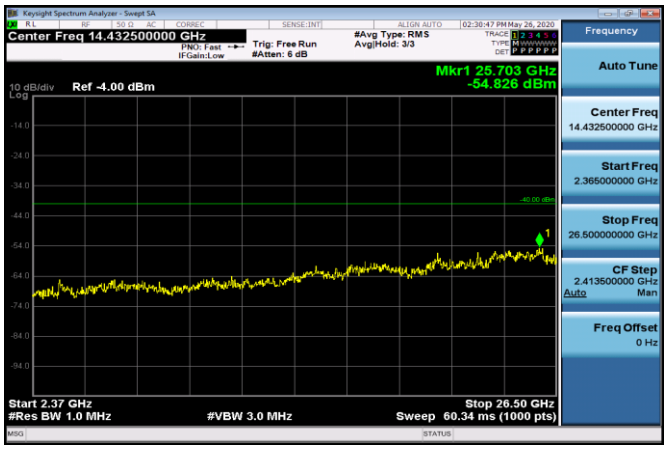
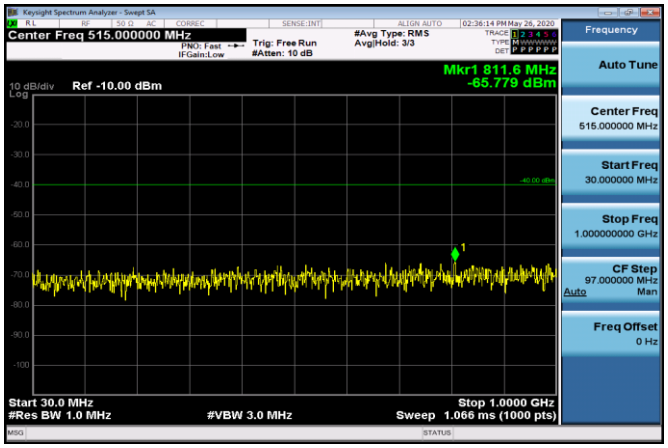
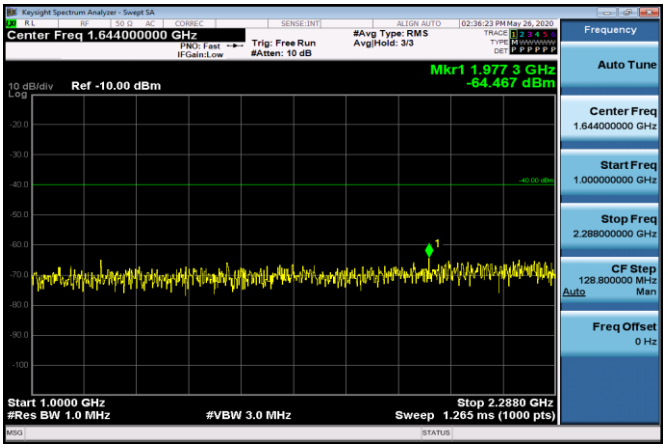
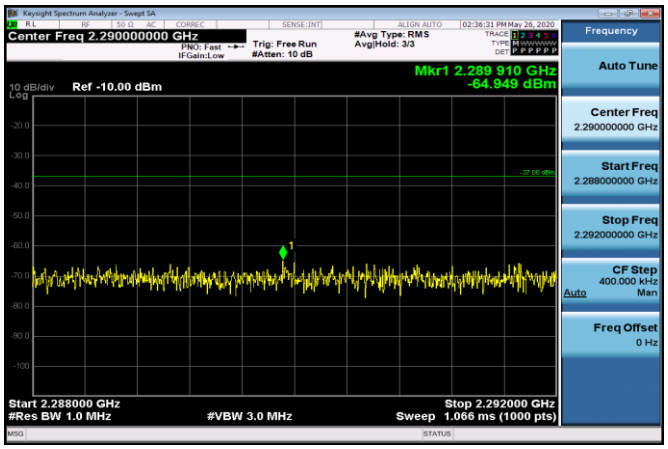
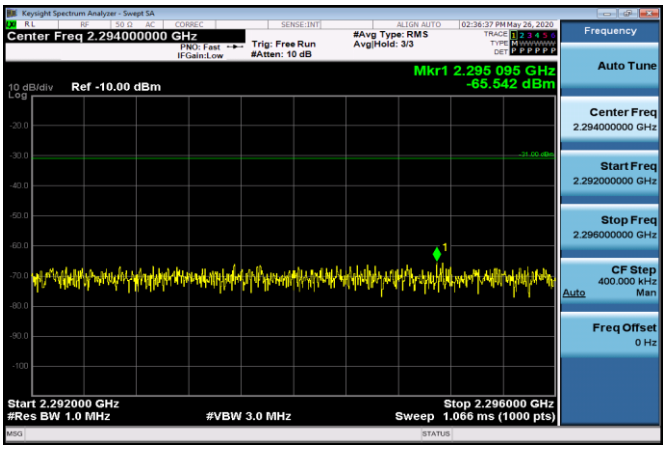

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.326000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:13 PM May 26, 2020
Mkr1 2.327 524 GHz
-65.105 dBm
10 dB/div
Ref 0.00 dBm
Start 2.324000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.328000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.326000000 GHz
Start Freq
2.324000000 GHz
Stop Freq
2.328000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.332500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:20 PM May 26, 2020
Mkr1 2.331 468 GHz
-64.741 dBm
10 dB/div
Ref -10.00 dBm
Start 2.328000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.337000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.332500000 GHz
Start Freq
2.328000000 GHz
Stop Freq
2.337000000 GHz
CF Step
900.000 kHz
Auto
Man
Freq Offset
0 Hz


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.339000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:26 PM May 26, 2020
Mkr1 2.338 097 GHz
-54.715 dBm
10 dB/div
Ref 0.00 dBm
Start 2.337000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.341000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.339000000 GHz
Start Freq
2.337000000 GHz
Stop Freq
2.341000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.343000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:34 PM May 26, 2020
Mkr1 2.344 315 GHz
-54.896 dBm
10 dB/div
Ref 0.00 dBm
Start 2.341000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.345000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.343000000 GHz
Start Freq
2.341000000 GHz
Stop Freq
2.345000000 GHz
CF Step
400.000 kHz
Auto
Man
Freq Offset
0 Hz


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.362500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 3/3
02:30:40 PM May 26, 2020
Mkr1 2.361 121 GHz
-45.238 dBm
10 dB/div
Ref 20.00 dBm
Start 2.360000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 2.365000 GHz
Sweep 1.066 ms (1000 pts)
Frequency
Auto Tune
Center Freq
2.362500000 GHz
Start Freq
2.360000000 GHz
Stop Freq
2.365000000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz



5MHz_MCH_QPSK_1RB#0