Appendix-B LTE Cat M1 Band 13

Effective (Isotropic) Radiated Power Output Data for M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NBIndex	Power (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1	0	Low	21.17	23.47	34.77	PASS
Band13	5MHz	QPSK	23205	1	5	Low	21.04	23.34	34.77	PASS
Band13	5MHz	QPSK	23205	6	0	Low	20.26	22.56	34.77	PASS
Band13	5MHz	QPSK	23230	1	0	Low	21.02	23.32	34.77	PASS
Band13	5MHz	QPSK	23230	1	5	Low	20.78	23.08	34.77	PASS
Band13	5MHz	QPSK	23230	6	0	Low	20.23	22.53	34.77	PASS
Band13	5MHz	QPSK	23255	1	0	High	20.87	23.17	34.77	PASS
Band13	5MHz	QPSK	23255	1	5	High	20.75	23.05	34.77	PASS
Band13	5MHz	QPSK	23255	6	0	High	20.15	22.45	34.77	PASS
Band13	10MHz	QPSK	23230	1	0	Low	21.14	23.44	34.77	PASS
Band13	10MHz	QPSK	23230	1	5	Low	20.96	23.26	34.77	PASS
Band13	10MHz	QPSK	23230	6	0	Low	20.15	22.45	34.77	PASS
Band13	5MHz	16QAM	23205	1	0	Low	21.54	23.84	34.77	PASS
Band13	5MHz	16QAM	23205	1	5	Low	21.27	23.57	34.77	PASS
Band13	5MHz	16QAM	23205	5	0	Low	20.13	22.43	34.77	PASS
Band13	5MHz	16QAM	23230	1	0	Low	21.29	23.59	34.77	PASS
Band13	5MHz	16QAM	23230	1	5	Low	21.23	23.53	34.77	PASS
Band13	5MHz	16QAM	23230	5	0	Low	20.08	22.38	34.77	PASS
Band13	5MHz	16QAM	23255	1	0	High	20.98	23.28	34.77	PASS
Band13	5MHz	16QAM	23255	1	5	High	20.96	23.26	34.77	PASS
Band13	5MHz	16QAM	23255	5	0	High	20.11	22.41	34.77	PASS
Band13	10MHz	16QAM	23230	1	0	Low	21.39	23.69	34.77	PASS
Band13	10MHz	16QAM	23230	1	5	Low	21.32	23.62	34.77	PASS
Band13	10MHz	16QAM	23230	5	0	Low	21.17	23.47	34.77	PASS

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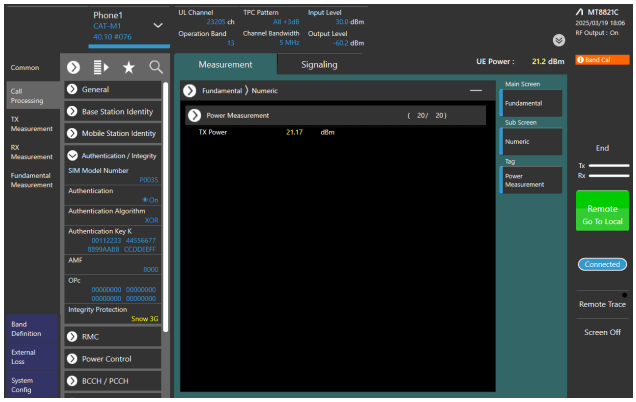
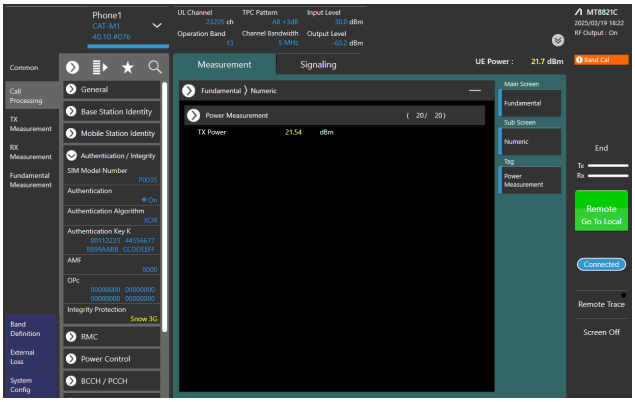
Test Graphs

	
Band13-5MHz-1RB#0-QPSK-23205-PASS	Band13-5MHz-1RB#0-16QAM-23205-PASS

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Peak-to-Average Ratio(CCDF) for M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NBIndex	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	6	0	Low	4.59	<=13	PASS
Band13	10MHz	QPSK	23230	6	0	High	4.68	<=13	PASS
Band13	10MHz	16QAM	23230	5	0	Low	4.42	<=13	PASS
Band13	10MHz	16QAM	23230	5	0	High	4.48	<=13	PASS

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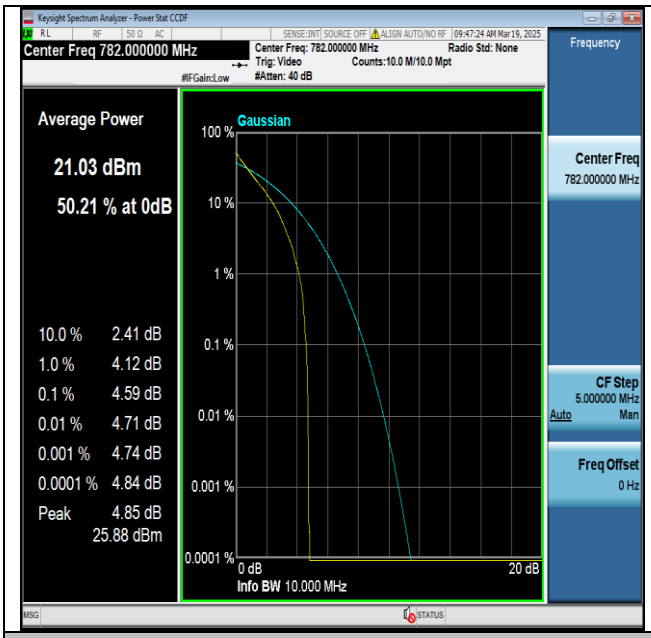
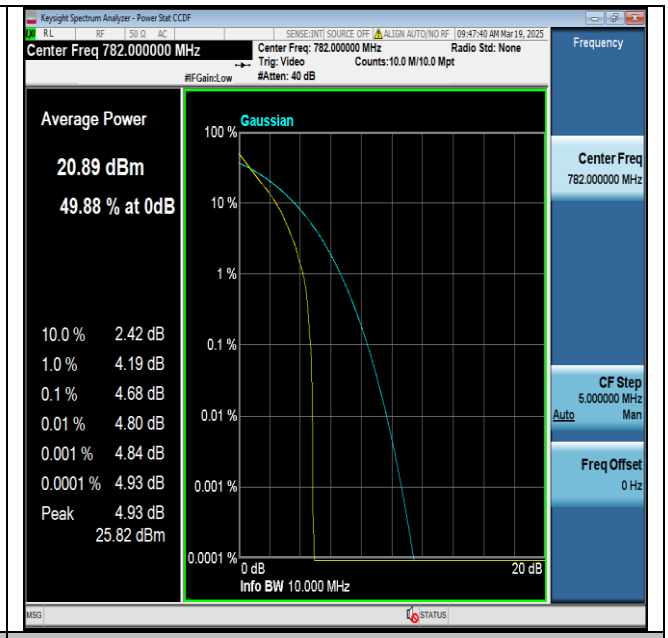
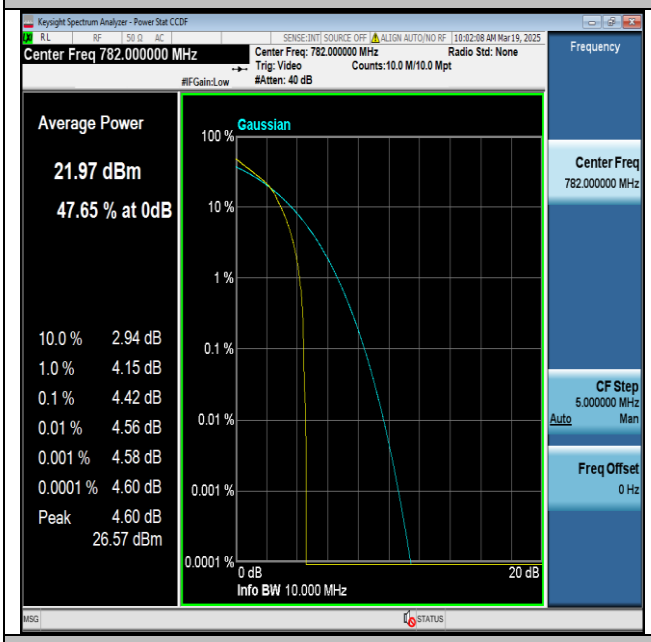
Test Graphs



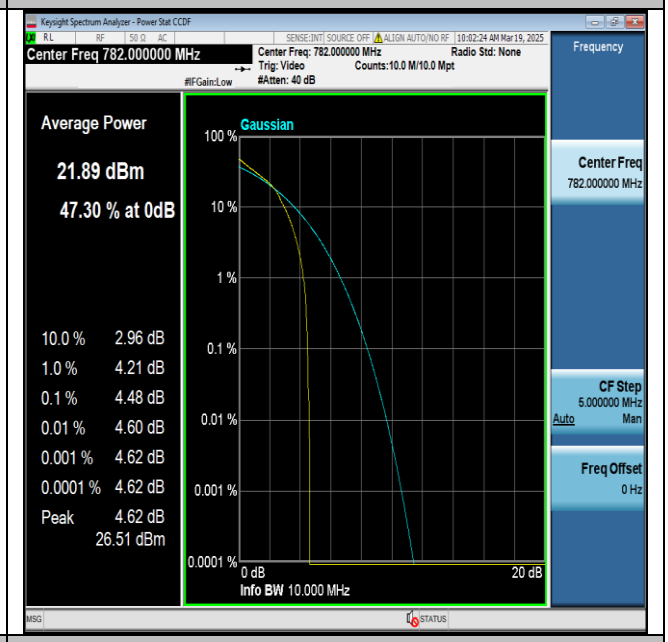
Band13-10MHz-QPSK-23230-PASS



Band13-10MHz-QPSK-23230-PASS



Band13-10MHz-16QAM-23230-PASS



Band13-10MHz-16QAM-23230-PASS

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26dB Bandwidth and Occupied Bandwidth for M1

Test Result

Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NB Index	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	6	0	Low	1.0879	1.254	PASS
Band13	5MHz	QPSK	23230	6	0	Low	1.0871	1.236	PASS
Band13	5MHz	QPSK	23255	6	0	High	1.0856	1.240	PASS
Band13	10MHz	QPSK	23230	6	0	Low	1.0940	1.270	PASS
Band13	10MHz	QPSK	23230	6	0	High	1.0947	1.267	PASS
Band13	5MHz	16QAM	23205	5	0	Low	0.91515	1.092	PASS
Band13	5MHz	16QAM	23230	5	0	Low	0.91952	1.106	PASS
Band13	5MHz	16QAM	23255	5	0	High	0.91129	1.137	PASS
Band13	10MHz	16QAM	23230	5	0	Low	0.91772	1.092	PASS
Band13	10MHz	16QAM	23230	5	0	High	0.92583	1.097	PASS

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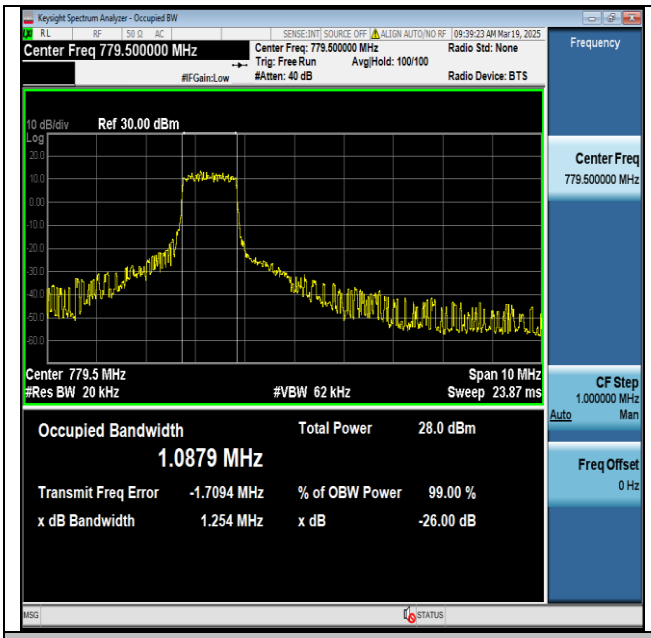
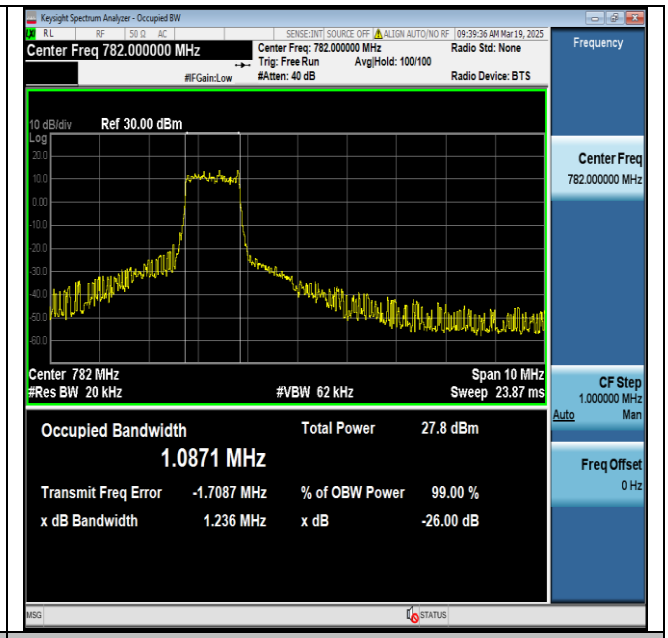
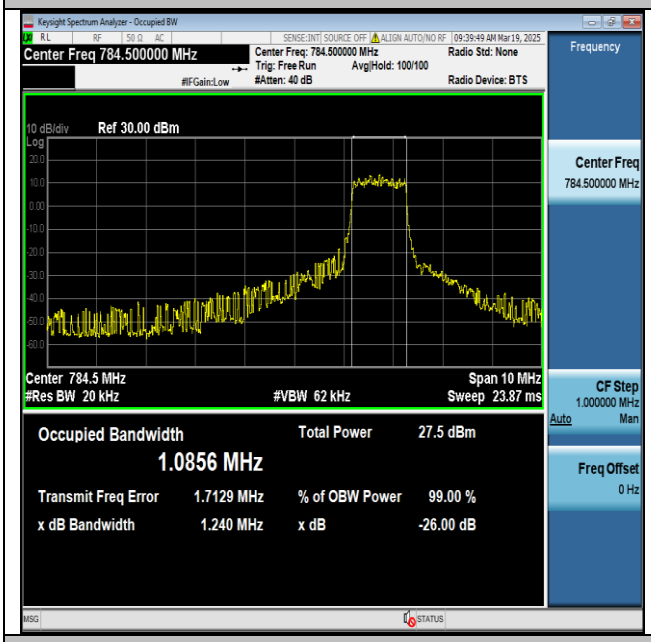
Test Graphs



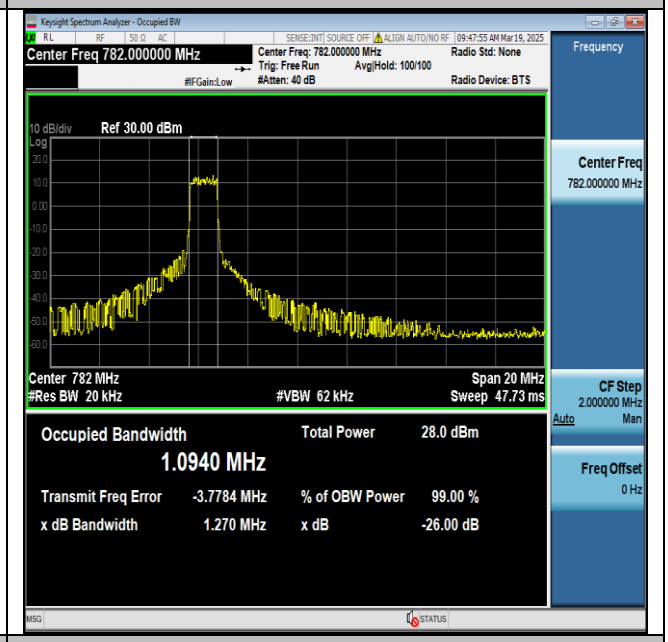
Band13-5MHz-QPSK-23205-PASS



Band13-5MHz-QPSK-23230-PASS



Band13-5MHz-QPSK-23255-PASS



Band13-10MHz-QPSK-23230-PASS

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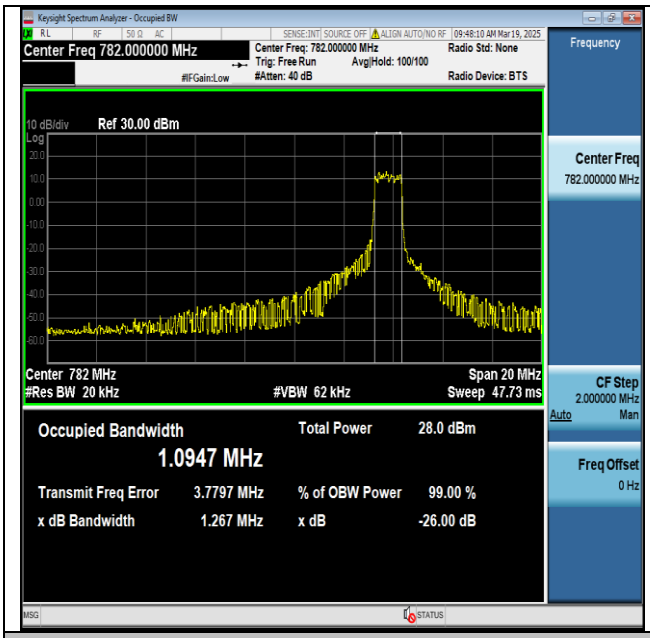
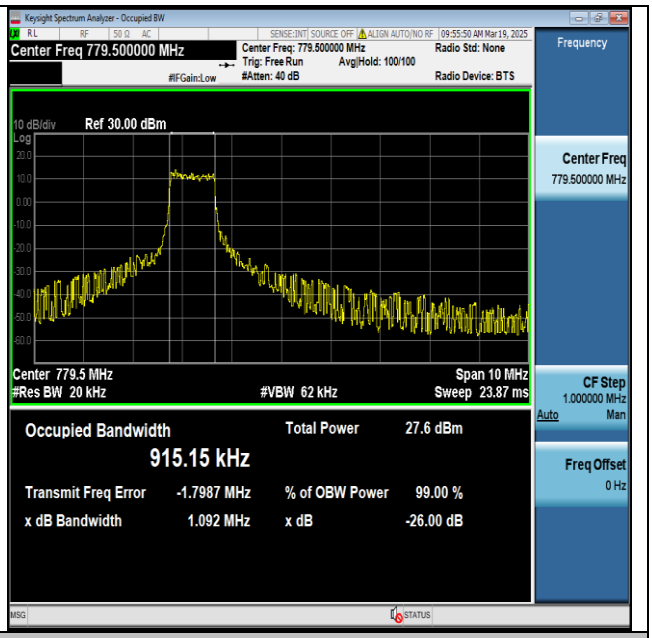
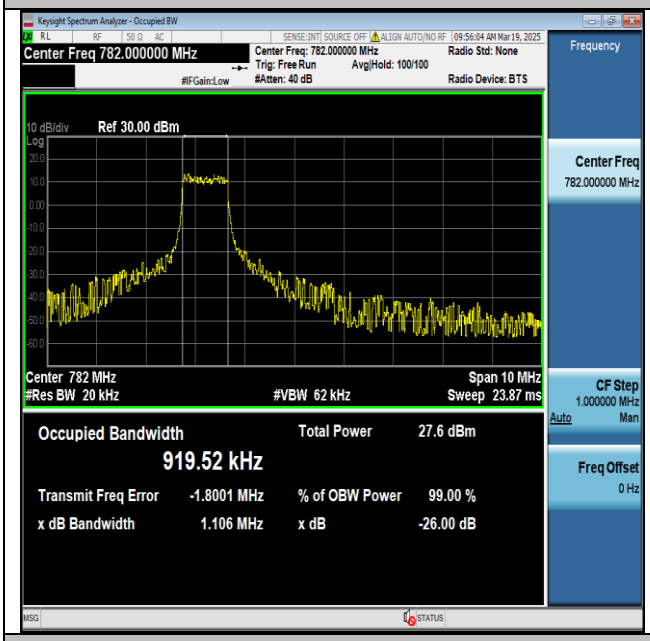


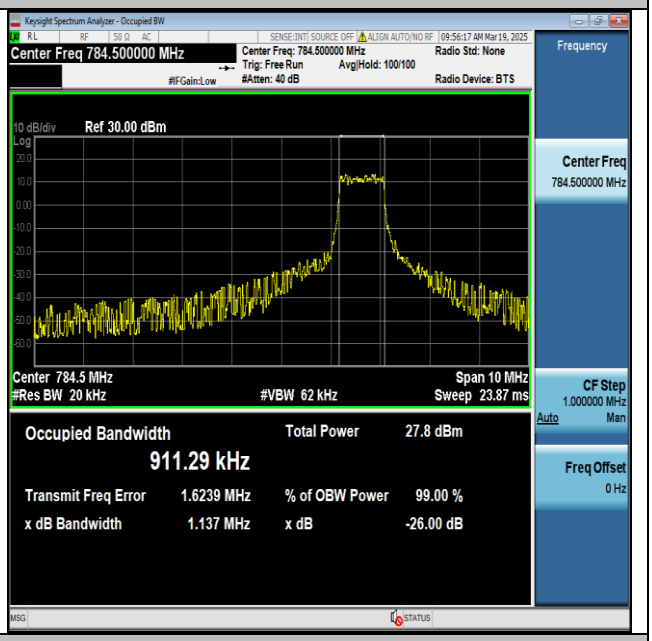
Band13-10MHz-QPSK-23230-PASS



Band13-5MHz-16QAM-23205-PASS



Band13-5MHz-16QAM-23230-PASS



Band13-5MHz-16QAM-23255-PASS

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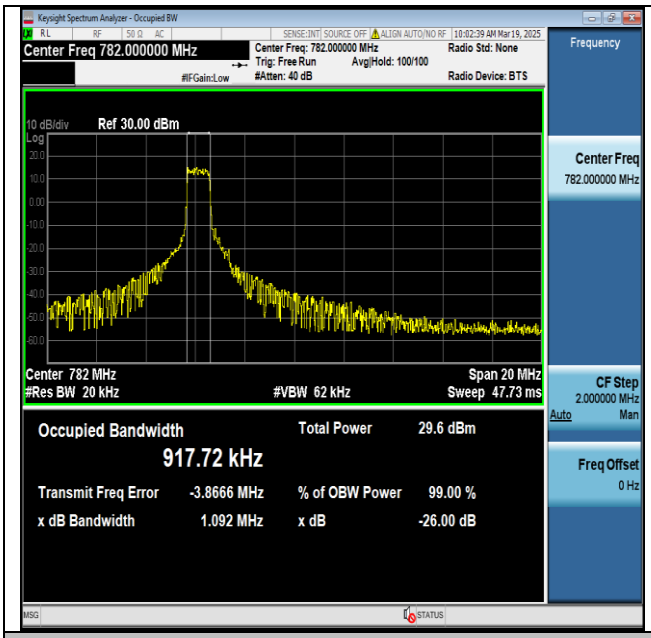
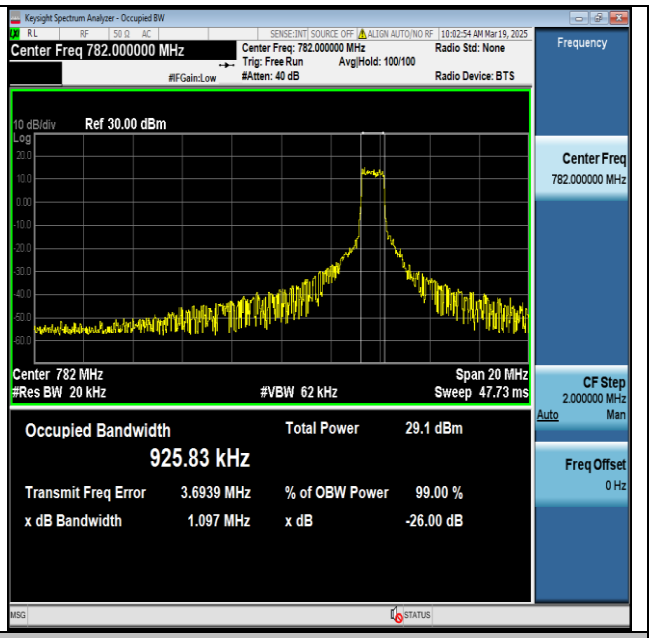


Band13-10MHz-16QAM-23230-PASS



Band13-10MHz-16QAM-23230-PASS

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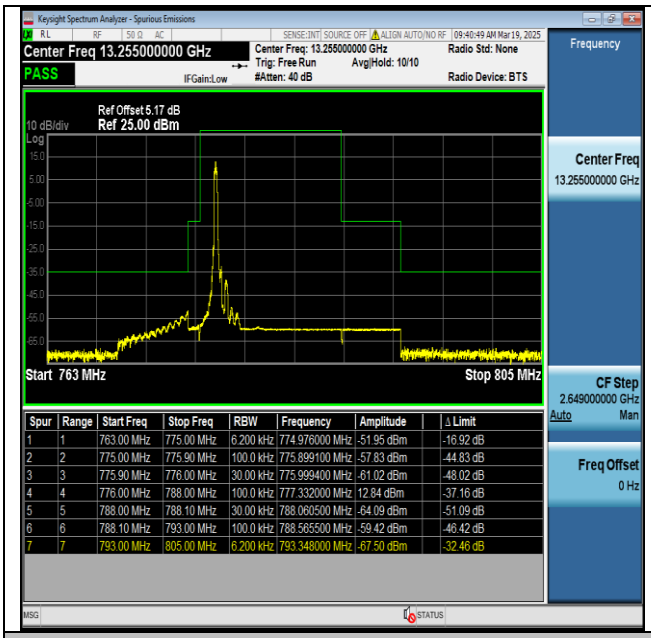
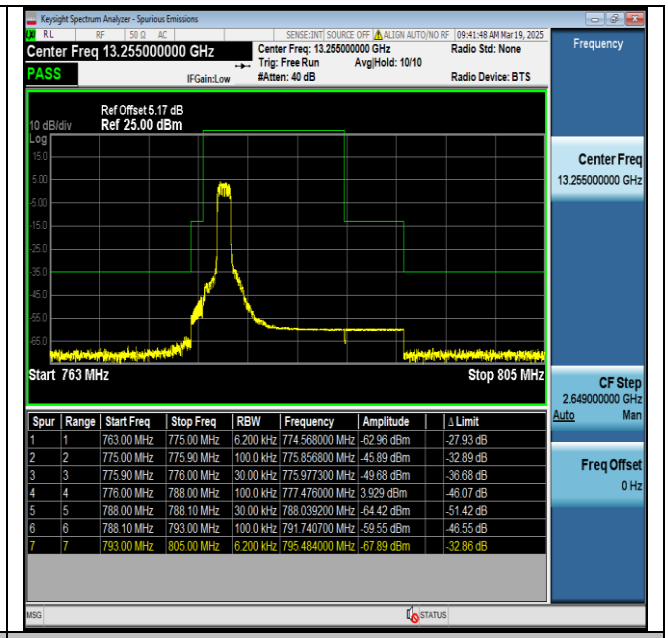
Band Edge for M1

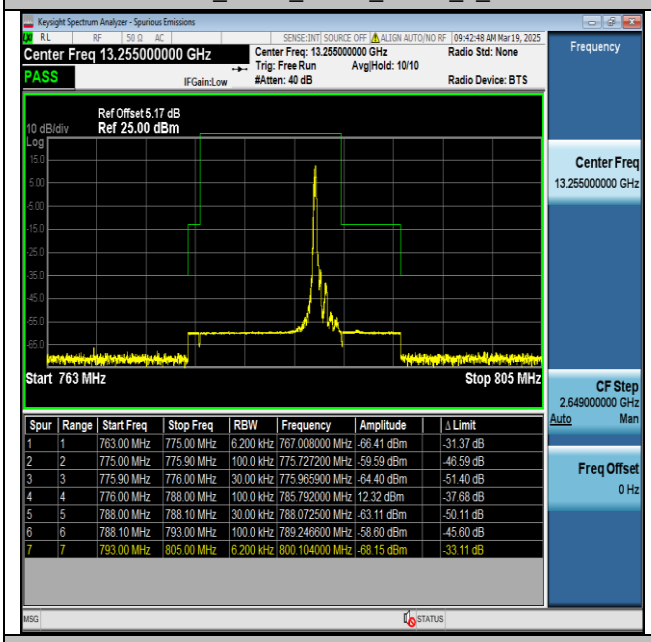
Test Graphs



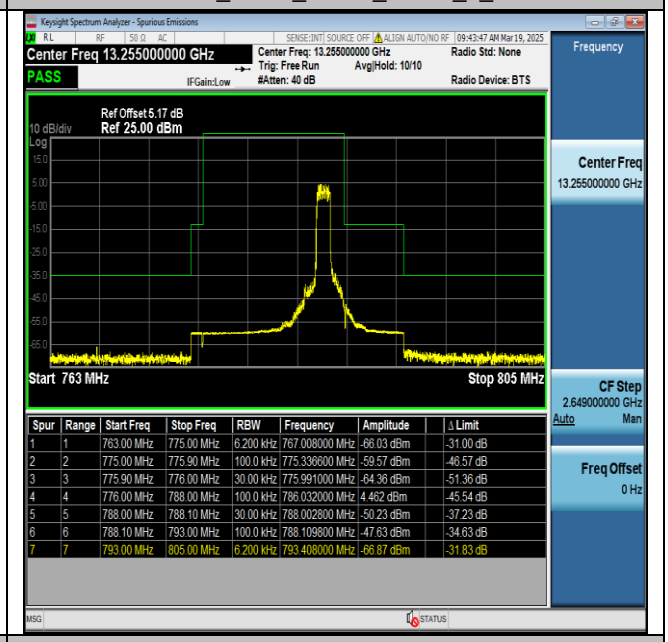
Band13_5MHz_QPSK_23205_1_Low



Band13_5MHz_QPSK_23205_6_Low



Band13_5MHz_QPSK_23255_1_High



Band13_5MHz_QPSK_23255_6_High

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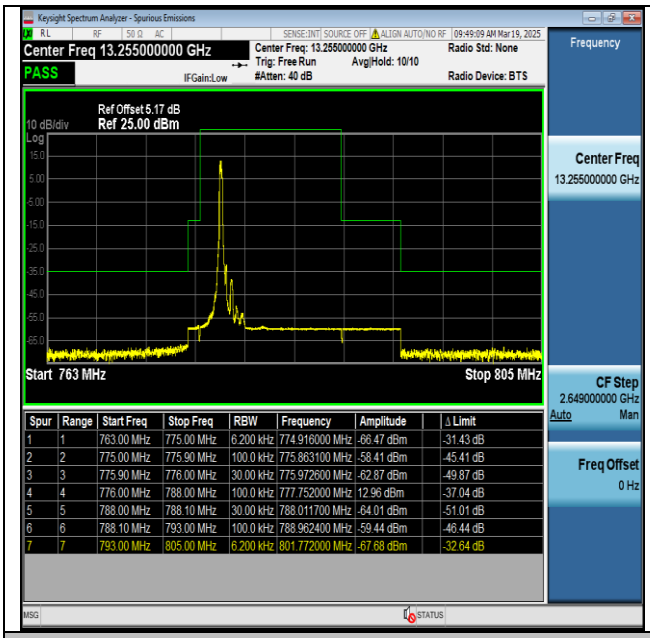
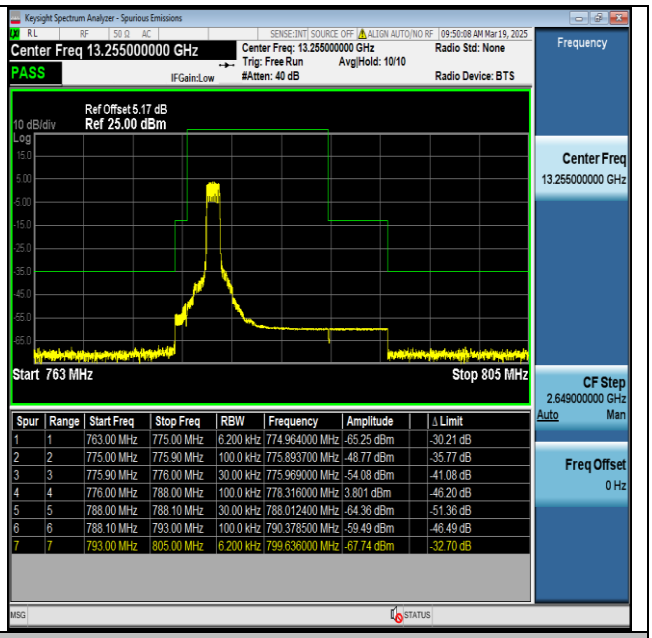


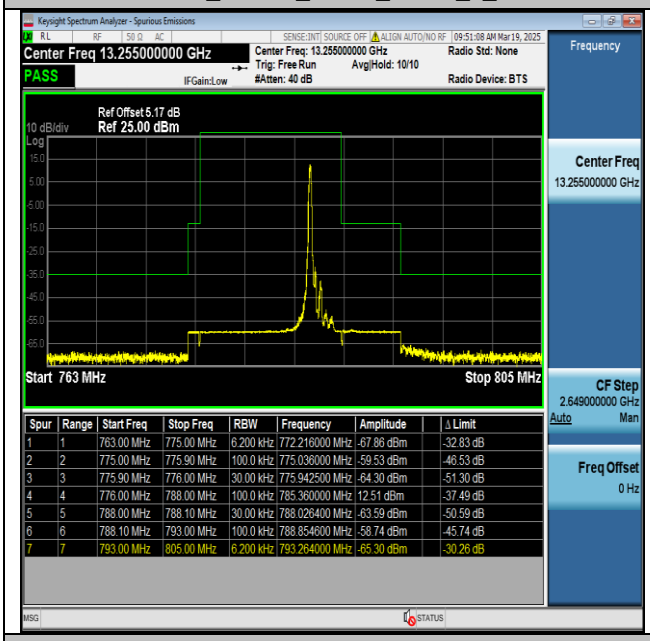
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	774.916000 MHz	-66.47 dBm	-31.43 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.863100 MHz	-58.41 dBm	-45.41 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.972600 MHz	-62.87 dBm	-49.87 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	777.752000 MHz	12.96 dBm	-37.04 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.011700 MHz	-64.01 dBm	-51.01 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.962400 MHz	-59.44 dBm	-46.44 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	801.772000 MHz	-67.68 dBm	-32.64 dB

Band13_10MHz_QPSK_23230_1_Low



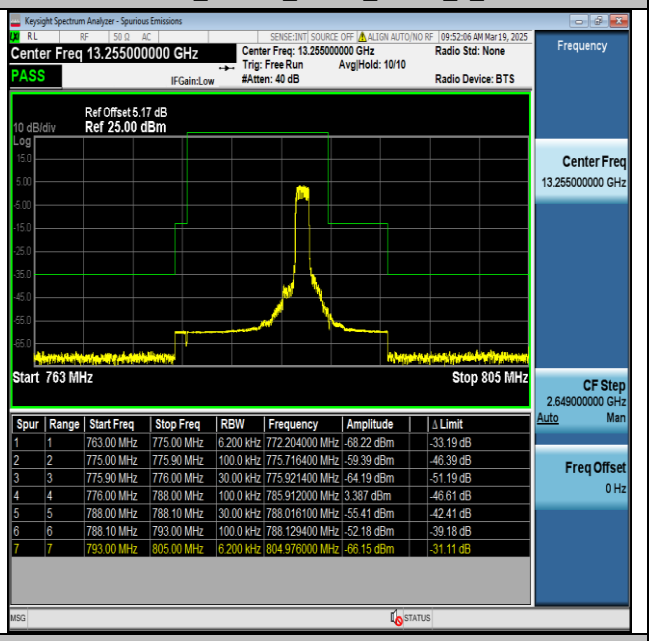
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	774.964000 MHz	-65.25 dBm	-30.21 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.893700 MHz	-48.77 dBm	-35.77 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.969000 MHz	-54.08 dBm	-41.08 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	778.316000 MHz	3.801 dBm	-46.20 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.012400 MHz	-64.36 dBm	-51.36 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	790.378500 MHz	-59.49 dBm	-46.49 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	799.636000 MHz	-67.74 dBm	-32.70 dB

Band13_10MHz_QPSK_23230_6_Low



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	772.216000 MHz	-67.86 dBm	-32.83 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.036000 MHz	-59.53 dBm	-46.53 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.942500 MHz	-64.30 dBm	-51.30 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	785.360000 MHz	12.51 dBm	-37.49 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.026400 MHz	-63.59 dBm	-50.59 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.854600 MHz	-58.74 dBm	-45.74 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	793.264000 MHz	-65.30 dBm	-30.26 dB

Band13_10MHz_QPSK_23230_1_High



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	772.204000 MHz	-68.22 dBm	-33.19 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.716400 MHz	-59.39 dBm	-46.39 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.921400 MHz	-64.19 dBm	-51.19 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	785.912000 MHz	3.387 dBm	-46.61 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.016100 MHz	-55.41 dBm	-42.41 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.129400 MHz	-52.18 dBm	-39.18 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	804.976000 MHz	-66.15 dBm	-31.11 dB

Band13_10MHz_QPSK_23230_6_High

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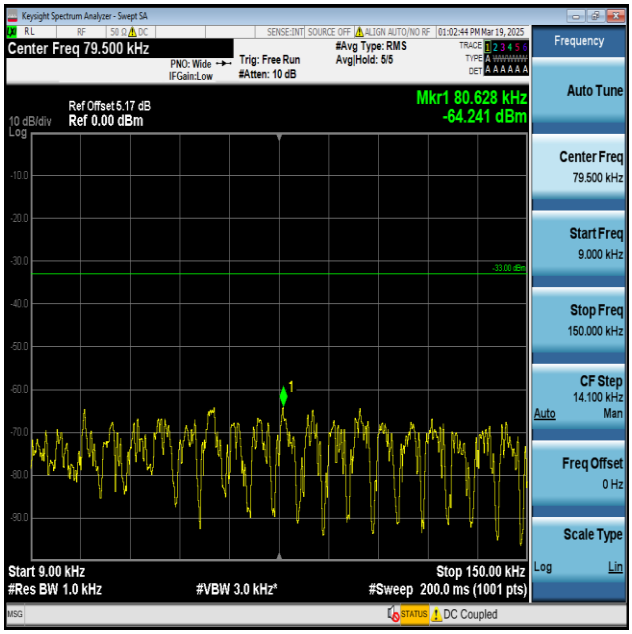
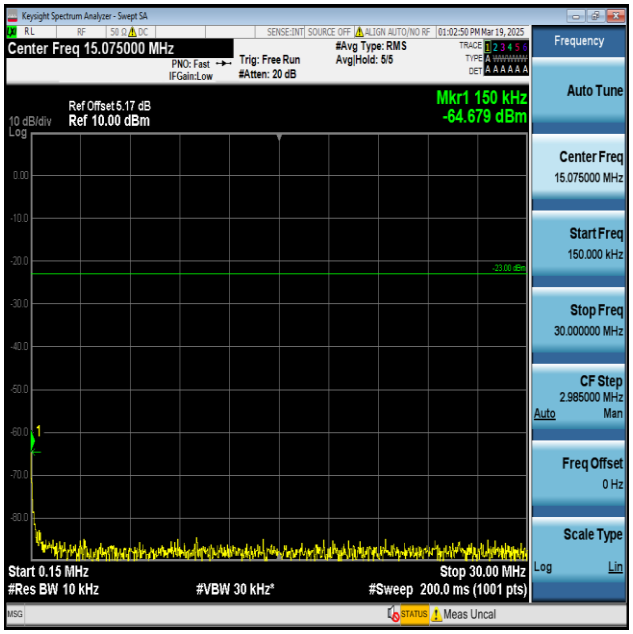
Conducted Spurious Emission for M1

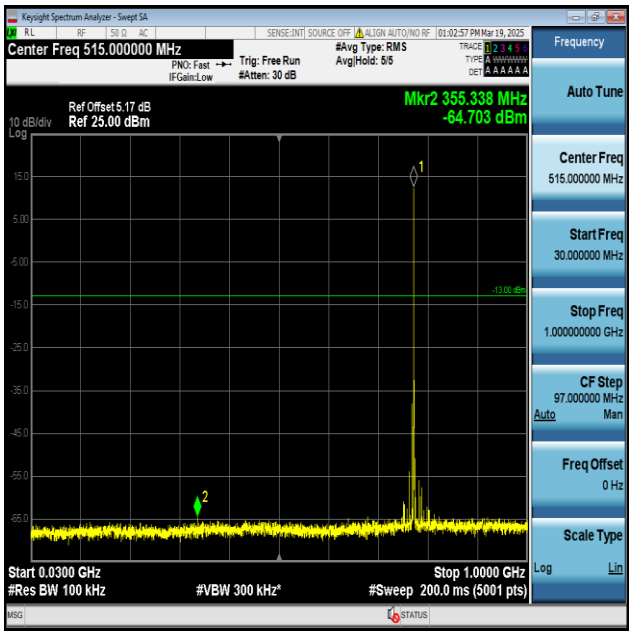
Test Graphs



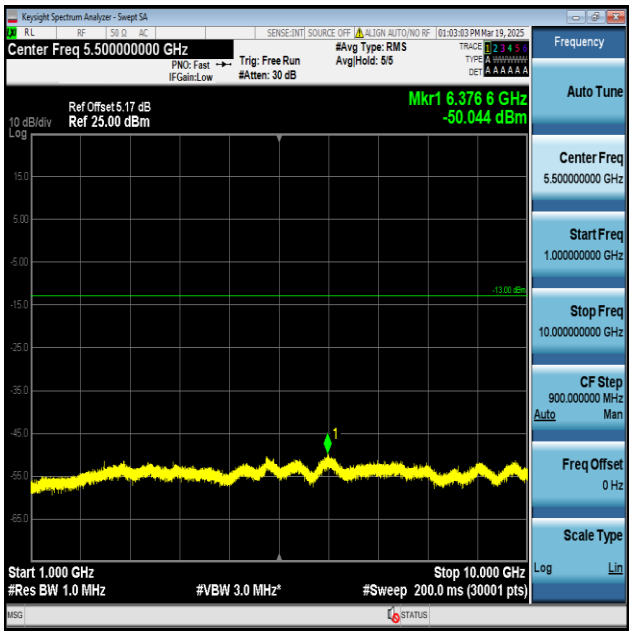
Band13-10MHz-QPSK-23230-PASS_1_Low



Band13-10MHz-QPSK-23230-PASS_1_Low



Band13-10MHz-QPSK-23230-PASS_1_Low



Band13-10MHz-QPSK-23230-PASS_1_Low

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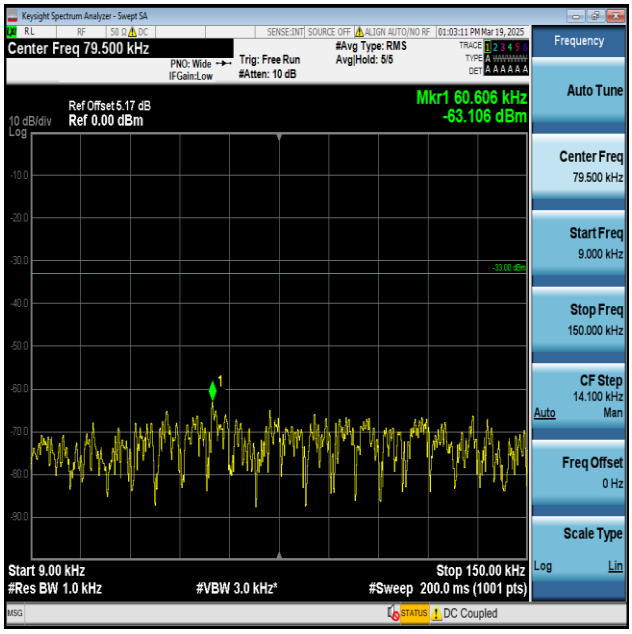
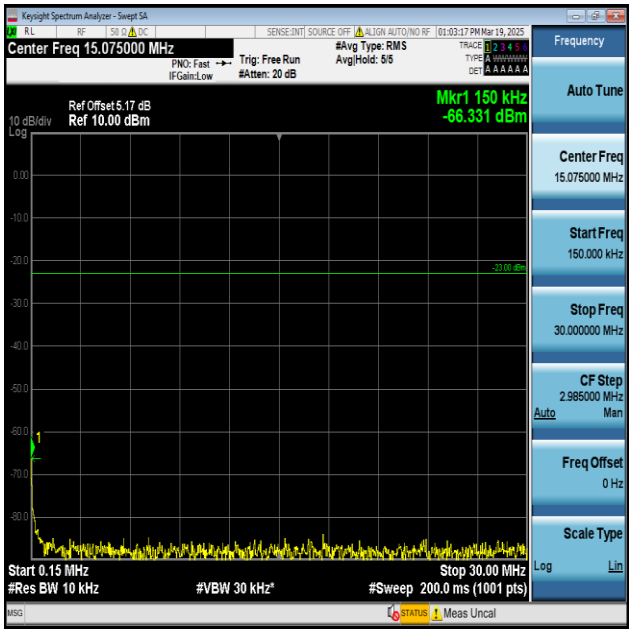
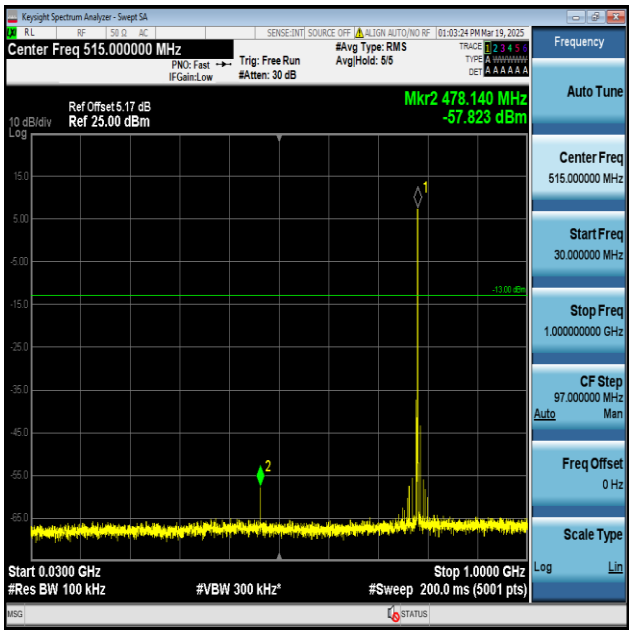


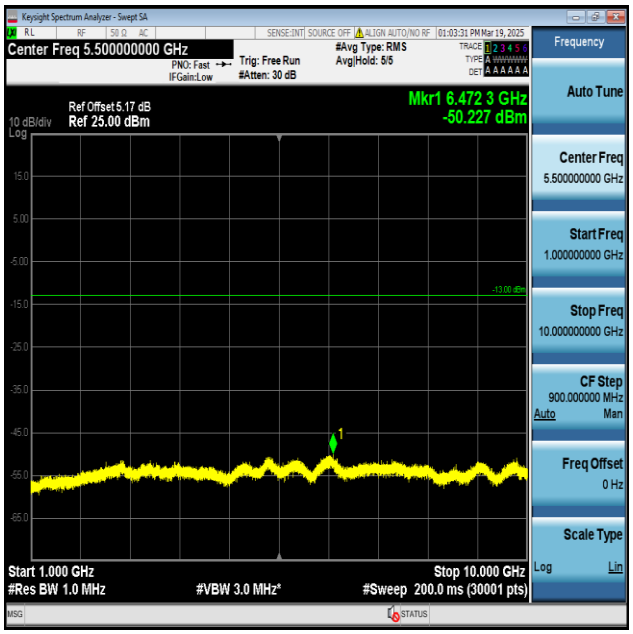
Band13-10MHz-QPSK-23230-PASS_1_High



Band13-10MHz-QPSK-23230-PASS_1_High



Band13-10MHz-QPSK-23230-PASS_1_High



Band13-10MHz-QPSK-23230-PASS_1_High

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Frequency Stability for M1

Test Result

Voltage											
Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NB Index	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Verdict
Band13	10MHz	QPSK	23230	6	0	Low	VN	NT	-5.40	-0.006905	PASS
Band13	10MHz	QPSK	23230	6	0	Low	VL	NT	-4.70	-0.006010	PASS
Band13	10MHz	QPSK	23230	6	0	Low	VH	NT	-4.20	-0.005371	PASS

Temperature											
Band	Bandwidth	Modulation	Channel	RB Size	RB Start	NB Index	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Verdict
Band13	10MHz	QPSK	23230	6	0	Low	NV	-30	-6.30	-0.008056	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	-20	-5.40	-0.006905	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	-10	-5.80	-0.007417	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	0	-6.60	-0.008440	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	10	-5.10	-0.006522	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	20	-5.80	-0.007417	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	30	-4.60	-0.005882	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	40	-5.10	-0.006522	PASS
Band13	10MHz	QPSK	23230	6	0	Low	NV	50	-6.20	-0.007928	PASS

~The End~

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