TD-LTE/LTE FDD terminal

M/N:HP-N323

FCC ID:2BN5N-HPN323

Applicant:HPYJ USA LLC

Appendix for LTE Band 13

Appendix A: Conducted Power Output Data

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	22.65	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.63	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.55	PASS
Band13	5MHz	QPSK	23205	12RB#0	22.36	PASS
Band13	5MHz	QPSK	23205	12RB#6	22.39	PASS
Band13	5MHz	QPSK	23205	12RB#13	22.21	PASS
Band13	5MHz	QPSK	23205	25RB#0	22.39	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.62	PASS
Band13	5MHz	16QAM	23205	1RB#12	22.75	PASS
Band13	5MHz	16QAM	23205	1RB#24	21.58	PASS
Band13	5MHz	16QAM	23205	12RB#0	21.52	PASS
Band13	5MHz	16QAM	23205	12RB#6	21.50	PASS
Band13	5MHz	16QAM	23205	12RB#13	21.43	PASS
Band13	5MHz	16QAM	23205	25RB#0	21.45	PASS
Band13	5MHz	QPSK	23230	1RB#0	23.74	PASS
Band13	5MHz	QPSK	23230	1RB#12	22.26	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.12	PASS
Band13	5MHz	QPSK	23230	12RB#0	22.01	PASS
Band13	5MHz	QPSK	23230	12RB#6	22.16	PASS
Band13	5MHz	QPSK	23230	12RB#13	20.83	PASS
Band13	5MHz	QPSK	23230	25RB#0	21.51	PASS
Band13	5MHz	16QAM	23230	1RB#0	22.68	PASS
Band13	5MHz	16QAM	23230	1RB#12	21.09	PASS
Band13	5MHz	16QAM	23230	1RB#24	20.92	PASS
Band13	5MHz	16QAM	23230	12RB#0	21.26	PASS
Band13	5MHz	16QAM	23230	12RB#6	21.27	PASS
Band13	5MHz	16QAM	23230	12RB#13	19.98	PASS
Band13	5MHz	16QAM	23230	25RB#0	20.72	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.10	PASS
Band13	5MHz	QPSK	23255	1RB#12	22.51	PASS
Band13	5MHz	QPSK	23255	1RB#24	23.73	PASS
Band13	5MHz	QPSK	23255	12RB#0	20.78	PASS
Band13	5MHz	QPSK	23255	12RB#6	20.79	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.94	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.40	PASS

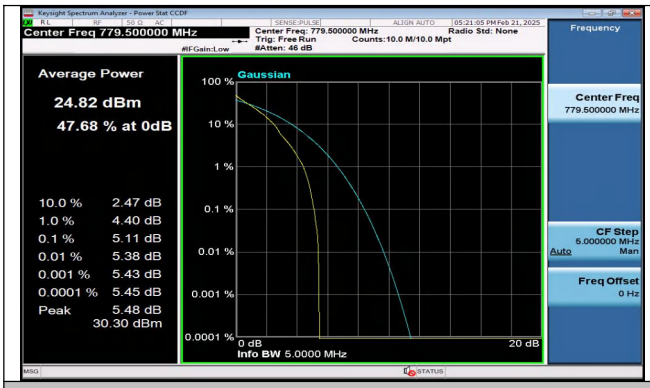
Band13	5MHz	16QAM	23255	1RB#0	20.90	PASS
Band13	5MHz	16QAM	23255	1RB#12	21.29	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.60	PASS
Band13	5MHz	16QAM	23255	12RB#0	19.89	PASS
Band13	5MHz	16QAM	23255	12RB#6	19.90	PASS
Band13	5MHz	16QAM	23255	12RB#13	21.15	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.61	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.87	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.34	PASS
Band13	10MHz	QPSK	23230	1RB#49	23.74	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.32	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.34	PASS
Band13	10MHz	QPSK	23230	25RB#25	21.39	PASS
Band13	10MHz	QPSK	23230	50RB#0	21.91	PASS
Band13	10MHz	16QAM	23230	1RB#0	21.87	PASS
Band13	10MHz	16QAM	23230	1RB#24	21.39	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.65	PASS
Band13	10MHz	16QAM	23230	25RB#0	21.40	PASS
Band13	10MHz	16QAM	23230	25RB#12	21.38	PASS
Band13	10MHz	16QAM	23230	25RB#25	20.46	PASS

Appendix B: Peak-to-Average Ratio(CCDF)

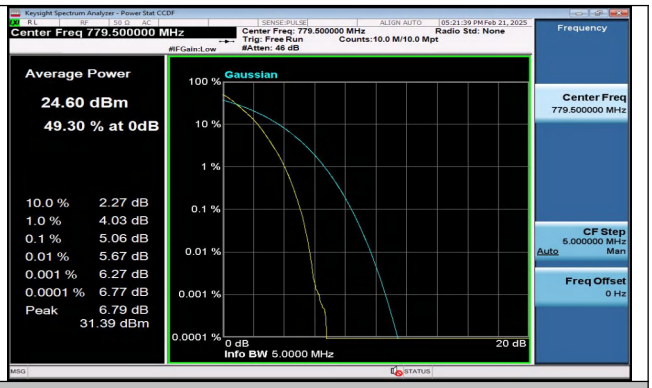
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	5.11	13	PASS
Band13	5MHz	QPSK	23205	25RB#0	5.06	13	PASS
Band13	5MHz	16QAM	23205	1RB#0	5.80	13	PASS
Band13	5MHz	16QAM	23205	25RB#0	5.71	13	PASS
Band13	5MHz	QPSK	23230	1RB#0	3.38	13	PASS
Band13	5MHz	QPSK	23230	25RB#0	5.84	13	PASS
Band13	5MHz	16QAM	23230	1RB#0	4.00	13	PASS
Band13	5MHz	16QAM	23230	25RB#0	6.41	13	PASS
Band13	5MHz	QPSK	23255	1RB#0	5.94	13	PASS
Band13	5MHz	QPSK	23255	25RB#0	5.88	13	PASS
Band13	5MHz	16QAM	23255	1RB#0	6.43	13	PASS
Band13	5MHz	16QAM	23255	25RB#0	6.53	13	PASS
Band13	10MHz	QPSK	23230	1RB#0	4.81	13	PASS
Band13	10MHz	QPSK	23230	50RB#0	5.68	13	PASS
Band13	10MHz	16QAM	23230	1RB#0	5.62	13	PASS

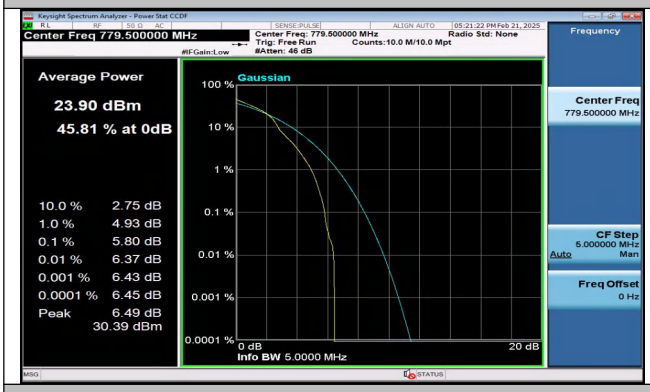
Test Graphs



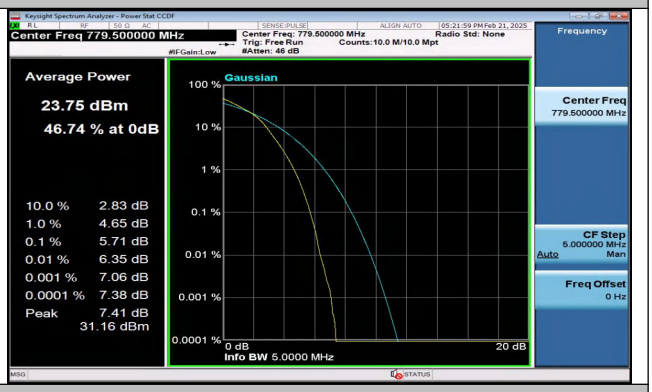
Band13-5MHz-QPSK-23205-1RB#0-PASS



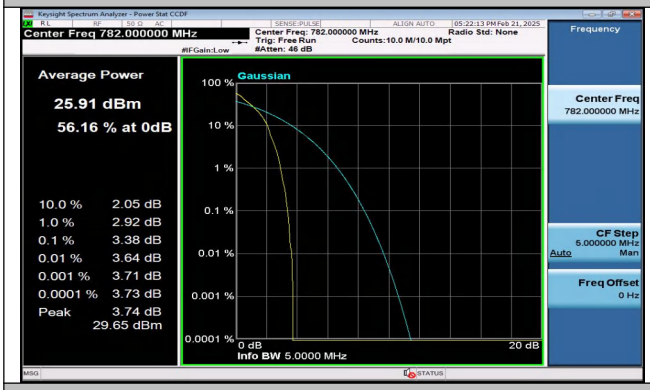
Band13-5MHz-QPSK-23205-25RB#0-PASS



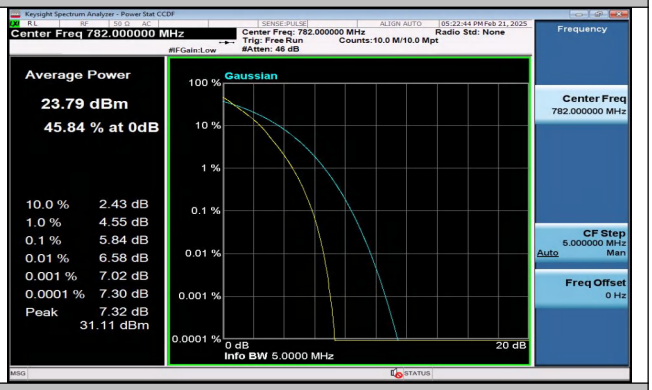
Band13-5MHz-16QAM-23205-1RB#0-PASS



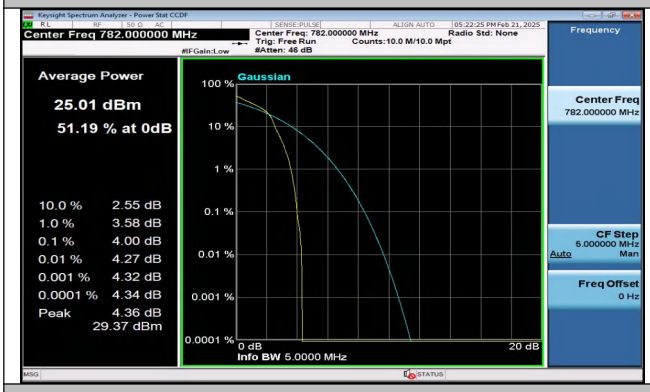
Band13-5MHz-16QAM-23205-25RB#0-PASS



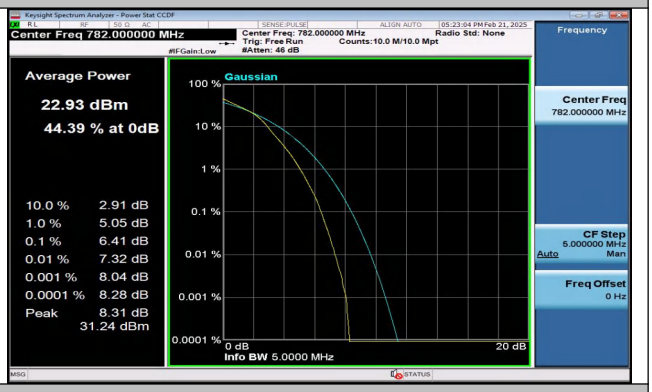
Band13-5MHz-QPSK-23230-1RB#0-PASS



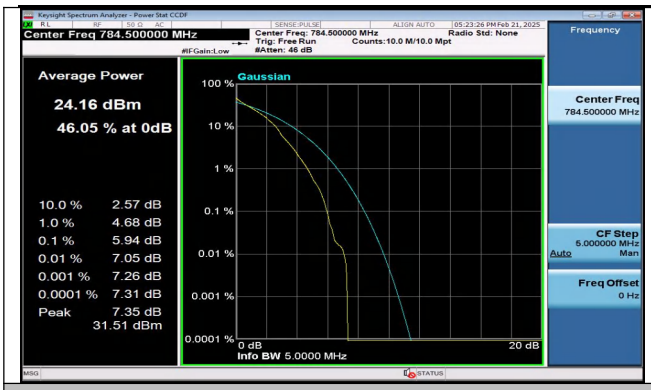
Band13-5MHz-QPSK-23230-25RB#0-PASS



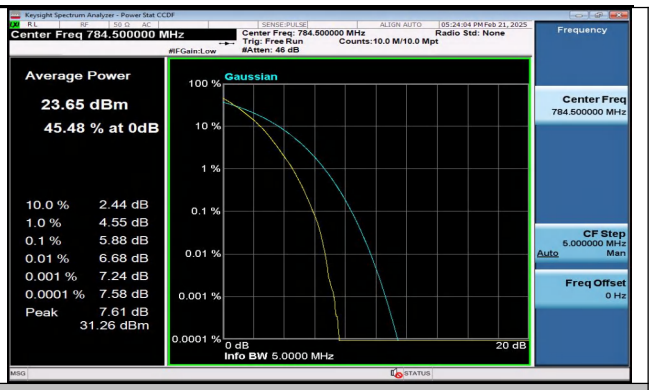
Band13-5MHz-16QAM-23230-1RB#0-PASS



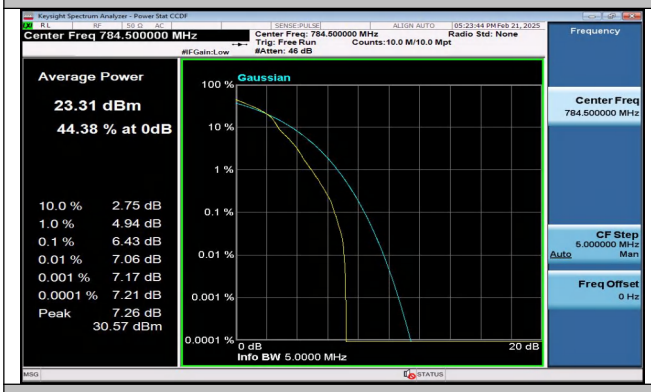
Band13-5MHz-16QAM-23230-25RB#0-PASS



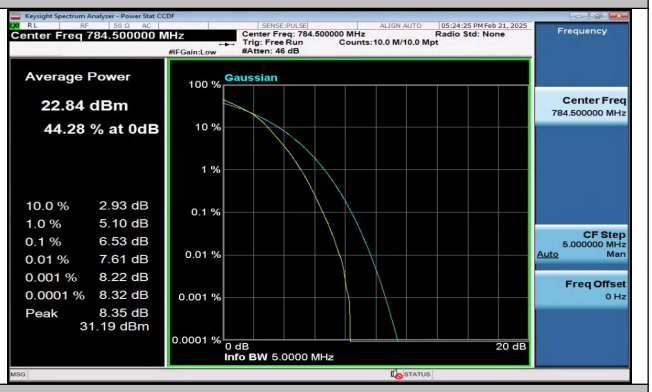
Band13-5MHz-QPSK-23255-1RB#0-PASS



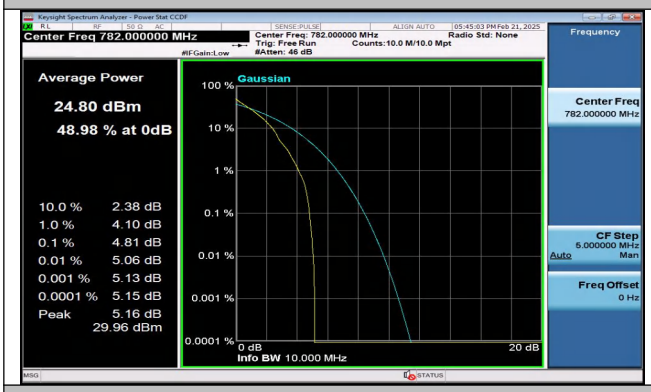
Band13-5MHz-QPSK-23255-25RB#0-PASS



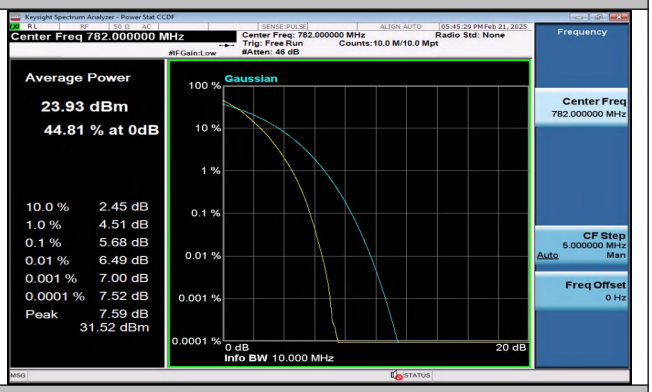
Band13-5MHz-16QAM-23255-1RB#0-PASS



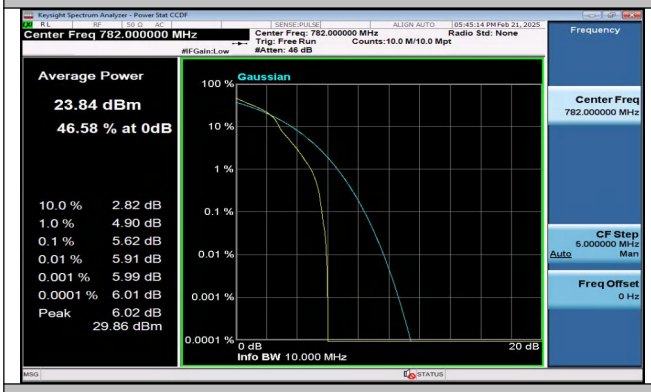
Band13-5MHz-16QAM-23255-25RB#0-PASS



Band13-10MHz-QPSK-23230-1RB#0-PASS



Band13-10MHz-QPSK-23230-50RB#0-PASS



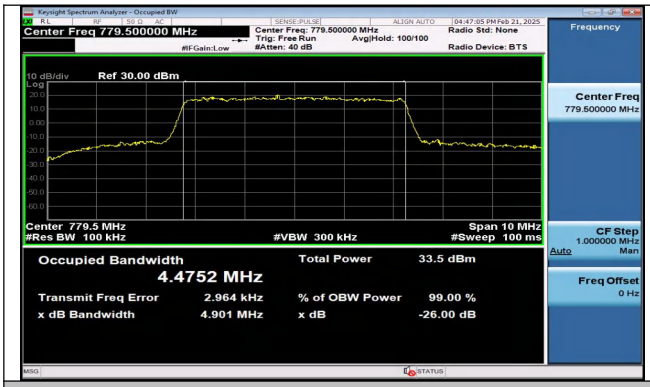
Band13-10MHz-16QAM-23230-1RB#0-PASS

Appendix C: 26dB Bandwidth and Occupied Bandwidth

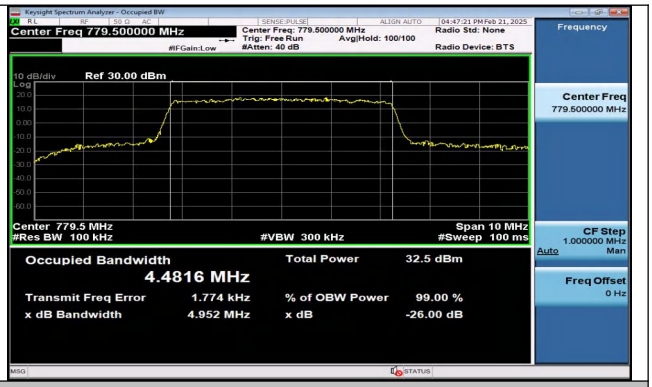
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.4752	4.901	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.4816	4.952	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.5155	4.987	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.5264	4.970	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.5131	4.976	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.5028	4.968	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.9949	9.826	PASS
Band13	10MHz	16QAM	23230	27RB#0	4.9397	5.612	PASS

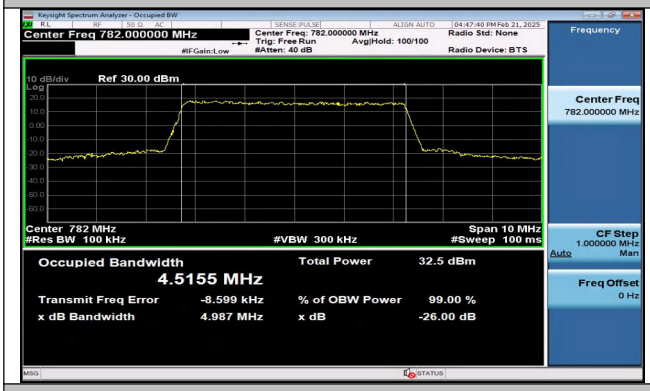
Test Graphs



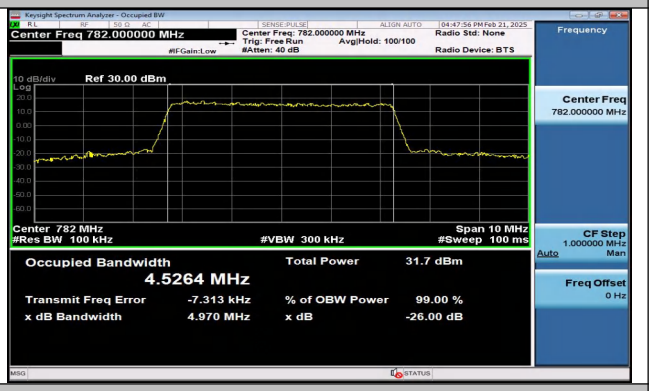
Band13-5MHz-QPSK-23205-25RB#0-PASS



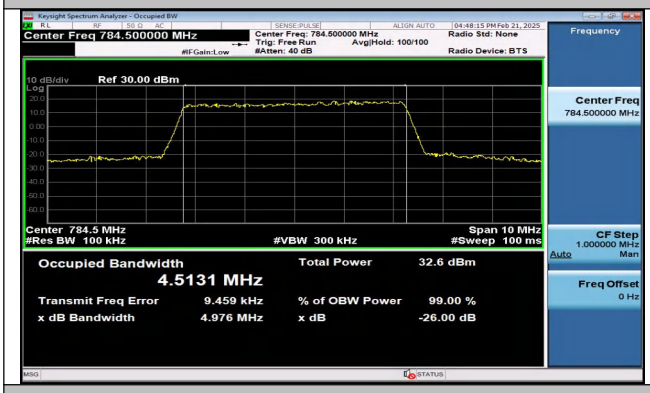
Band13-5MHz-16QAM-23205-25RB#0-PASS



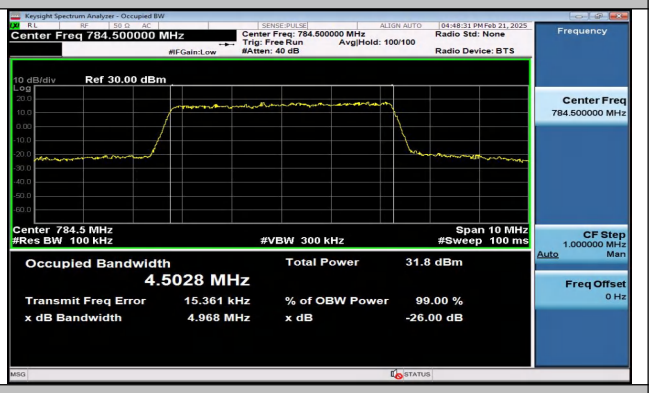
Band13-5MHz-QPSK-23230-25RB#0-PASS



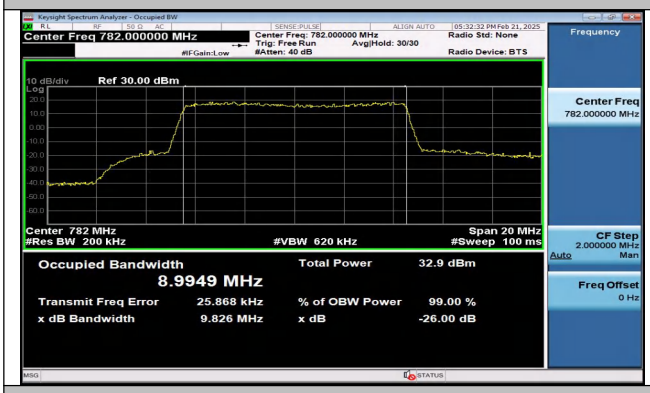
Band13-5MHz-16QAM-23230-25RB#0-PASS



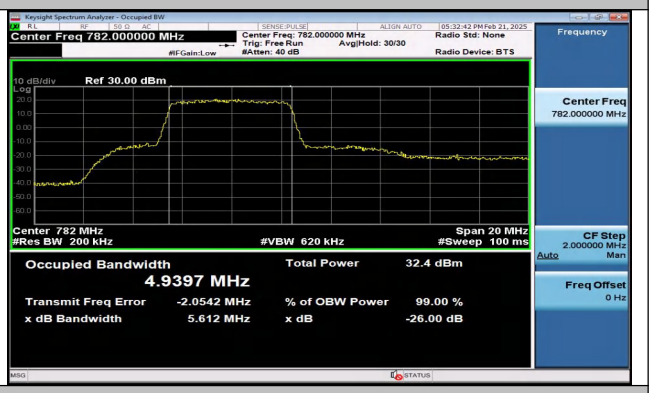
Band13-5MHz-QPSK-23255-25RB#0-PASS



Band13-5MHz-16QAM-23255-25RB#0-PASS



Band13-10MHz-QPSK-23230-50RB#0-PASS



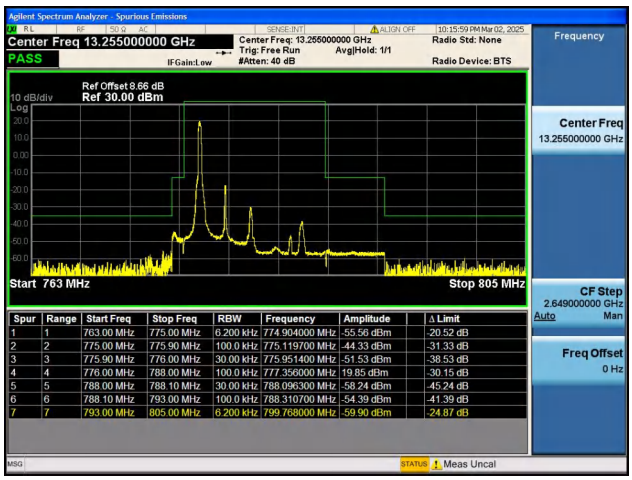
Band13-10MHz-16QAM-23230-27RB#0-PASS

Appendix D: Band Edge

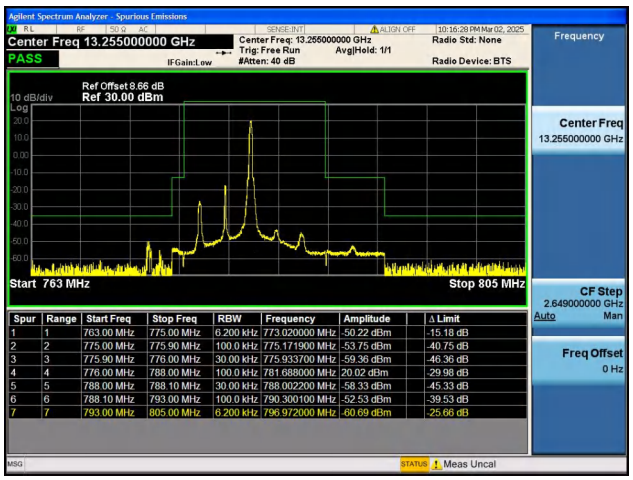
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	-55.56	PASS
Band13	5MHz	QPSK	23205	1RB#24	-50.22	PASS
Band13	5MHz	QPSK	23205	25RB#0	-38.16	PASS
Band13	5MHz	QPSK	23255	1RB#0	-59.36	PASS
Band13	5MHz	QPSK	23255	1RB#24	-59.93	PASS
Band13	5MHz	QPSK	23255	25RB#0	-53.29	PASS
Band13	5MHz	16QAM	23205	1RB#0	-55.92	PASS
Band13	5MHz	16QAM	23205	1RB#24	-48.37	PASS
Band13	5MHz	16QAM	23205	25RB#0	-42.81	PASS
Band13	5MHz	16QAM	23255	1RB#0	-61.29	PASS
Band13	5MHz	16QAM	23255	1RB#24	-60.70	PASS
Band13	5MHz	16QAM	23255	25RB#0	-53.88	PASS
Band13	10MHz	QPSK	23230	1RB#0	-51.67	PASS
Band13	10MHz	QPSK	23230	1RB#49	-51.42	PASS
Band13	10MHz	QPSK	23230	50RB#0	-42.08	PASS
Band13	10MHz	16QAM	23230	1RB#0	-51.86	PASS
Band13	10MHz	16QAM	23230	1RB#49	-54.19	PASS

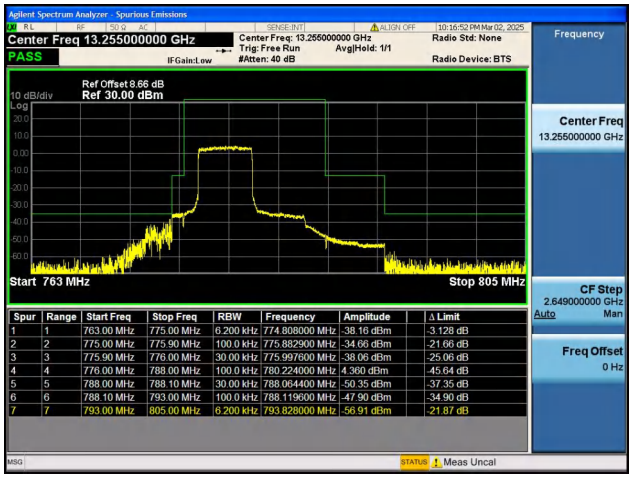
Test Graphs



Band13_5MHz_QPSK_23205_1RB#0

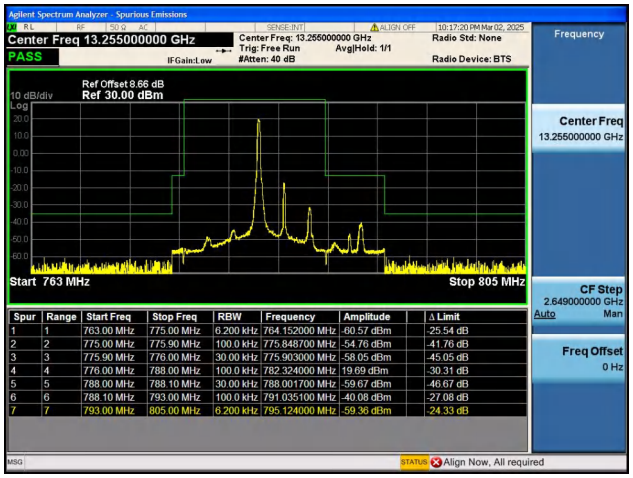


Band13_5MHz_QPSK_23205_1RB#24



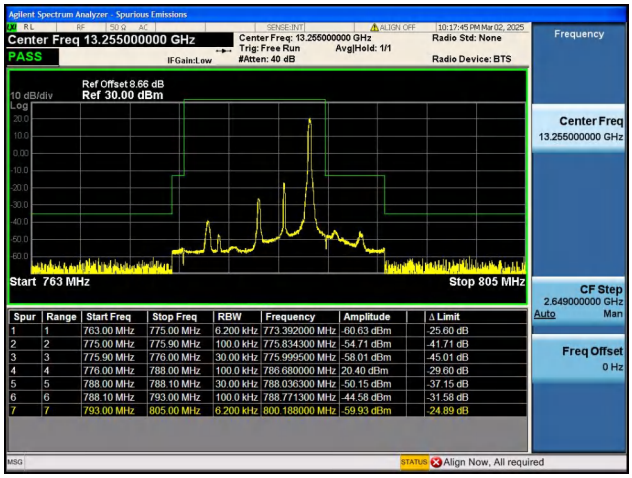
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	774.808000 MHz	-38.16 dBm	-3.128 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.882900 MHz	-34.66 dBm	-21.66 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.997600 MHz	-38.06 dBm	-25.06 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	780.224000 MHz	4.360 dBm	-45.64 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.064400 MHz	-50.35 dBm	-37.35 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.119600 MHz	-47.90 dBm	-34.90 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	793.828000 MHz	-56.91 dBm	-21.87 dB

Band13_5MHz_QPSK_23205_25RB#0



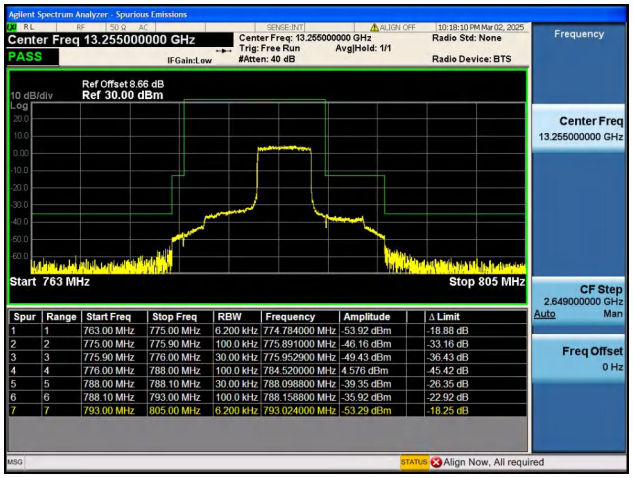
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	764.152000 MHz	-60.57 dBm	-25.54 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.848700 MHz	-54.76 dBm	-41.76 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.903000 MHz	-58.05 dBm	-45.05 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	782.324000 MHz	19.69 dBm	-30.31 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.001700 MHz	-59.67 dBm	-46.67 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	791.035100 MHz	-40.08 dBm	-27.08 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	795.124000 MHz	-59.36 dBm	-24.33 dB

Band13_5MHz_QPSK_23255_1RB#0



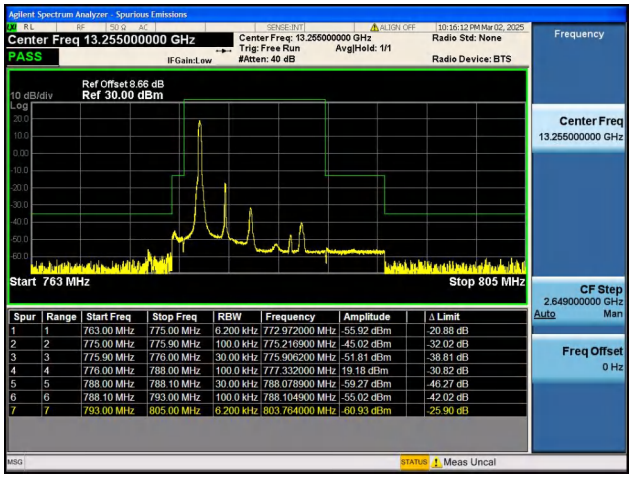
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	773.392000 MHz	-60.63 dBm	-25.60 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.834300 MHz	-54.71 dBm	-41.71 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.999500 MHz	-58.01 dBm	-45.01 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	786.680000 MHz	20.40 dBm	-29.60 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.036300 MHz	-50.15 dBm	-37.15 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.771300 MHz	-44.58 dBm	-31.58 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	800.188000 MHz	-59.93 dBm	-24.89 dB

Band13_5MHz_QPSK_23255_1RB#24



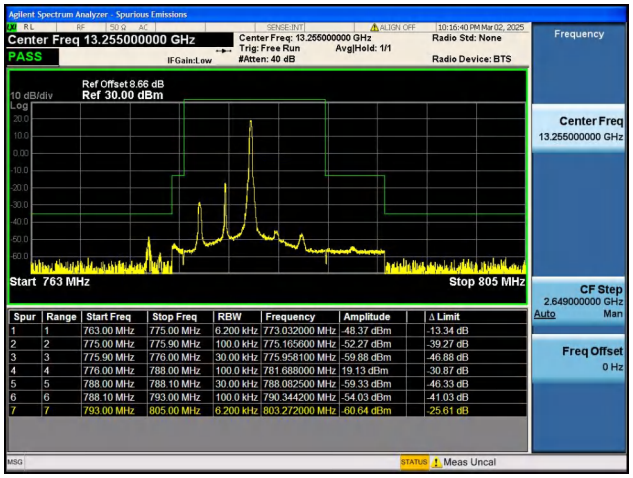
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	774.784000 MHz	-53.92 dBm	-18.88 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.891000 MHz	-46.16 dBm	-33.16 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.952900 MHz	-49.43 dBm	-36.43 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	784.520000 MHz	4.576 dBm	-45.42 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.098800 MHz	-39.35 dBm	-26.35 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.158800 MHz	-35.92 dBm	-22.92 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	793.024000 MHz	-53.29 dBm	-18.25 dB

Band13_5MHz_QPSK_23255_25RB#0



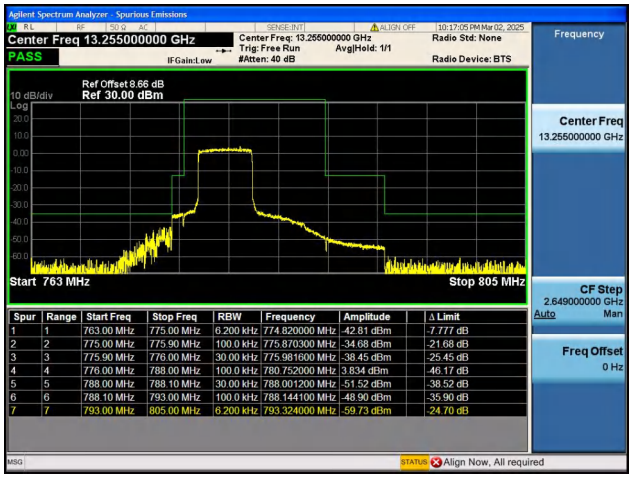
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	772.972000 MHz	-55.92 dBm	-20.88 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.216900 MHz	-45.02 dBm	-32.02 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.906200 MHz	-51.81 dBm	-38.81 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	777.332000 MHz	19.18 dBm	-30.82 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.078900 MHz	-59.27 dBm	-46.27 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	788.104900 MHz	-55.02 dBm	-42.02 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	803.764000 MHz	-60.93 dBm	-25.90 dB

Band13_5MHz_16QAM_23205_1RB#0

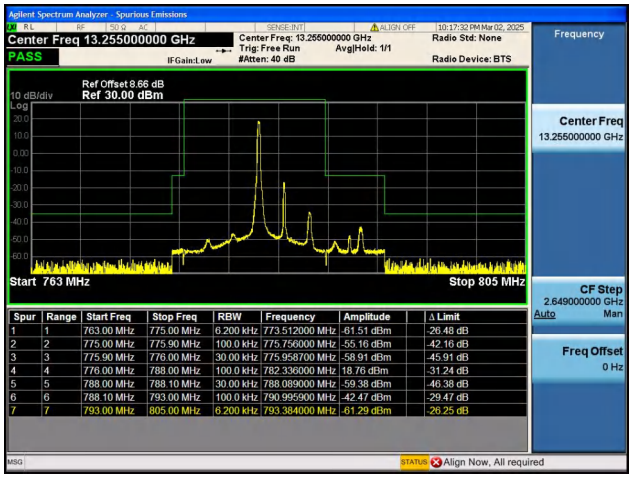


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	763.00 MHz	775.00 MHz	6.200 kHz	773.032000 MHz	-48.37 dBm	-13.34 dB
2	2	775.00 MHz	775.90 MHz	100.0 kHz	775.165600 MHz	-52.27 dBm	-39.27 dB
3	3	775.90 MHz	776.00 MHz	30.00 kHz	775.958100 MHz	-59.88 dBm	-46.88 dB
4	4	776.00 MHz	788.00 MHz	100.0 kHz	781.688000 MHz	19.13 dBm	-30.87 dB
5	5	788.00 MHz	788.10 MHz	30.00 kHz	788.082500 MHz	-59.33 dBm	-46.33 dB
6	6	788.10 MHz	793.00 MHz	100.0 kHz	790.344200 MHz	-54.03 dBm	-41.03 dB
7	7	793.00 MHz	805.00 MHz	6.200 kHz	803.272000 MHz	-60.64 dBm	-25.61 dB

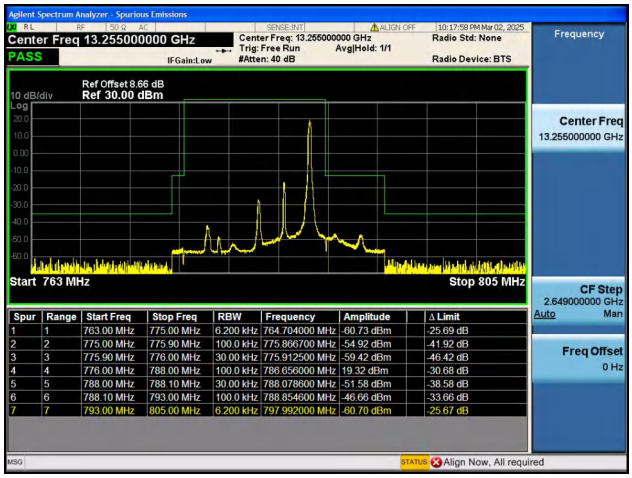
Band13_5MHz_16QAM_23205_1RB#24



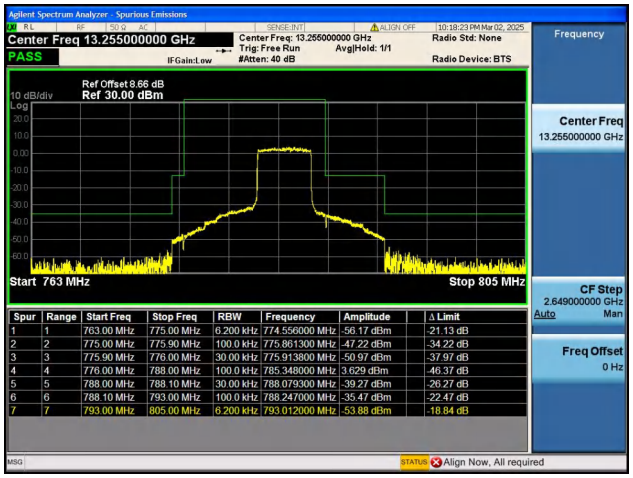
Band13_5MHz_16QAM_23205_25RB#0



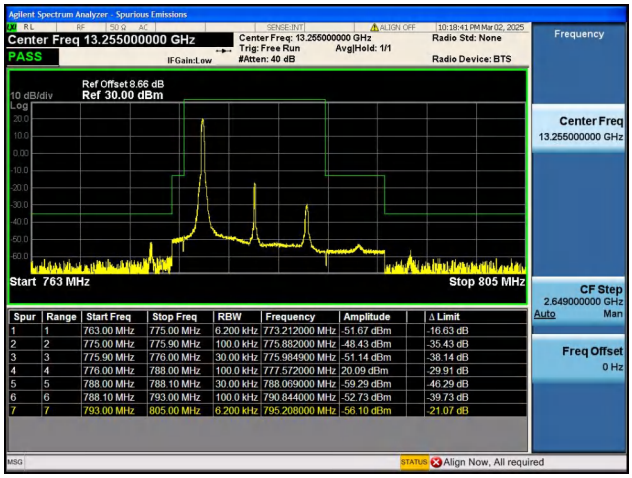
Band13_5MHz_16QAM_23255_1RB#0



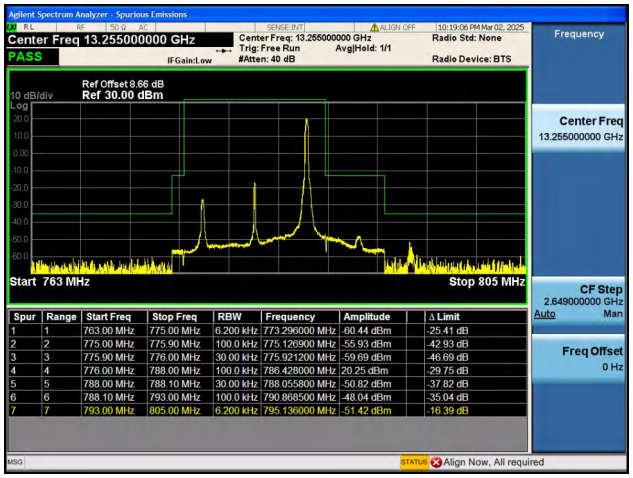
Band13_5MHz_16QAM_23255_1RB#24



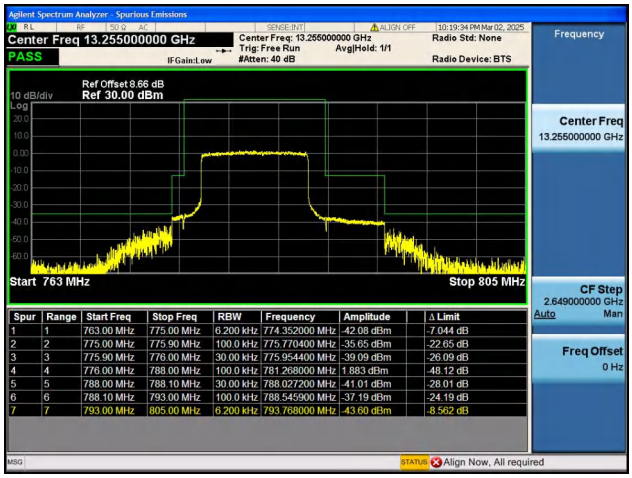
Band13_5MHz_16QAM_23255_25RB#0



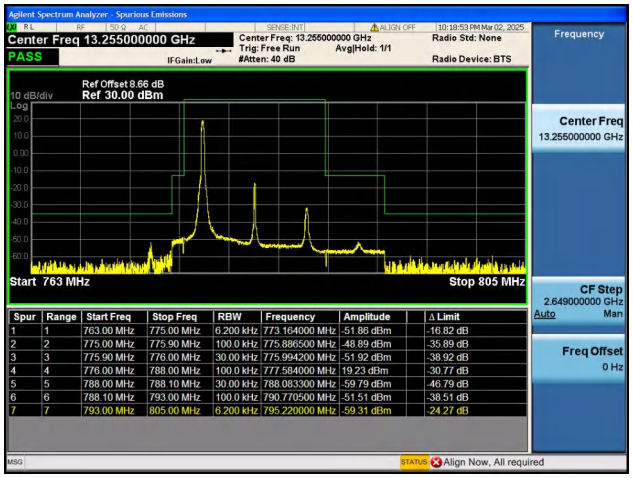
Band13_10MHz_QPSK_23230_1RB#0



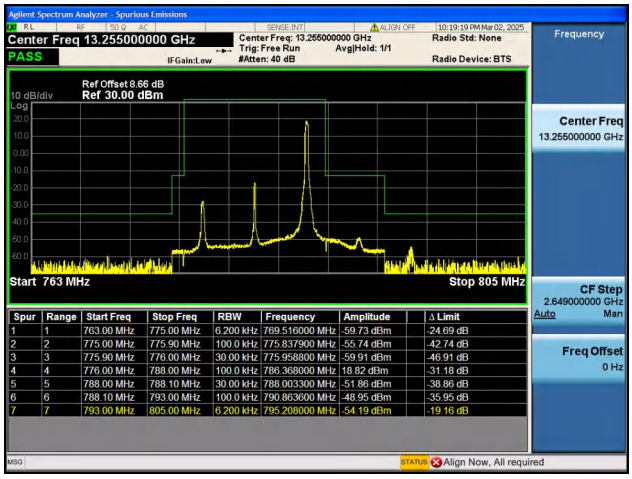
Band13_10MHz_QPSK_23230_1RB#49



Band13_10MHz_QPSK_23230_50RB#0



Band13_10MHz_16QAM_23230_1RB#0



Band13_10MHz_16QAM_23230_1RB#49