

Appendix for Band 13

Report No.: BCTC2310372691-2E

Applicant: Cube Tracker LLC

Product Name: CUBE GPS PRO

Model/Type
reference: CUBE GPS PRO

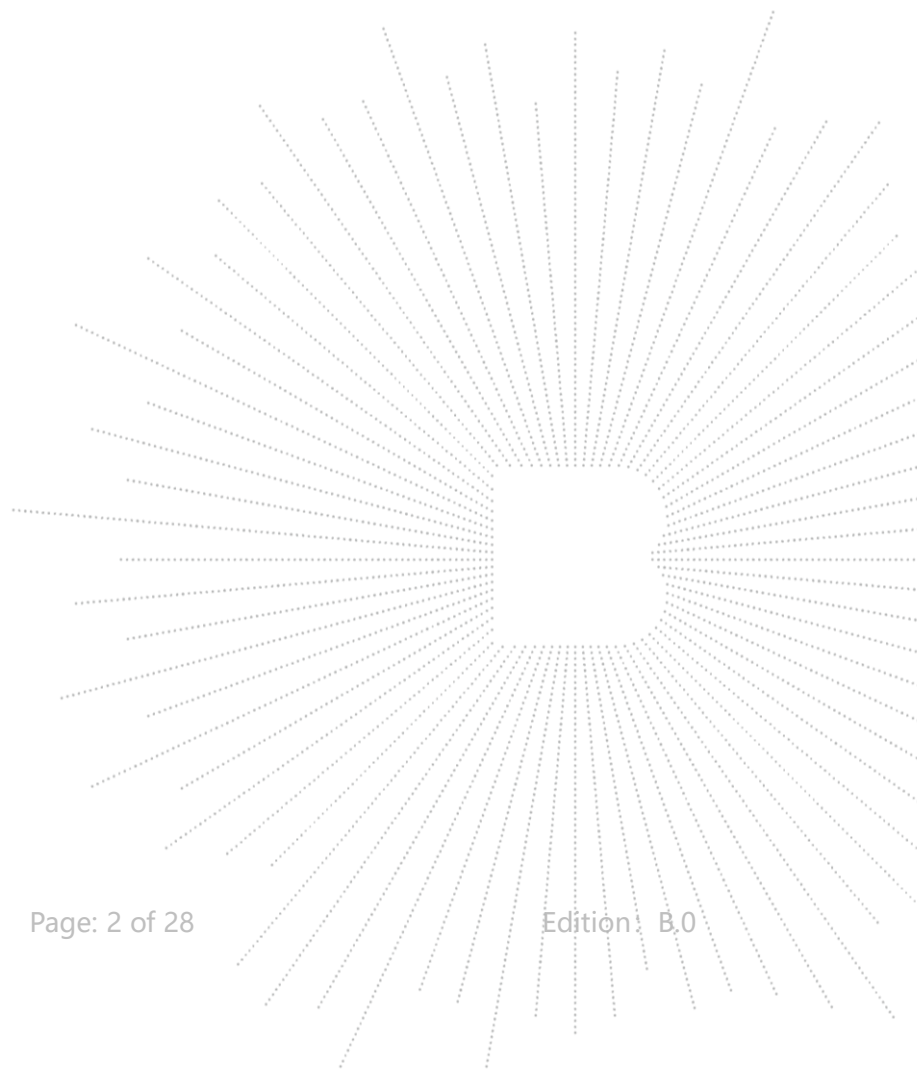
Tested Date: 2023-10-25 to 2023-11-15

Issued Date: 2023-11-17

Shenzhen BCTC Testing Co., Ltd.

Contents

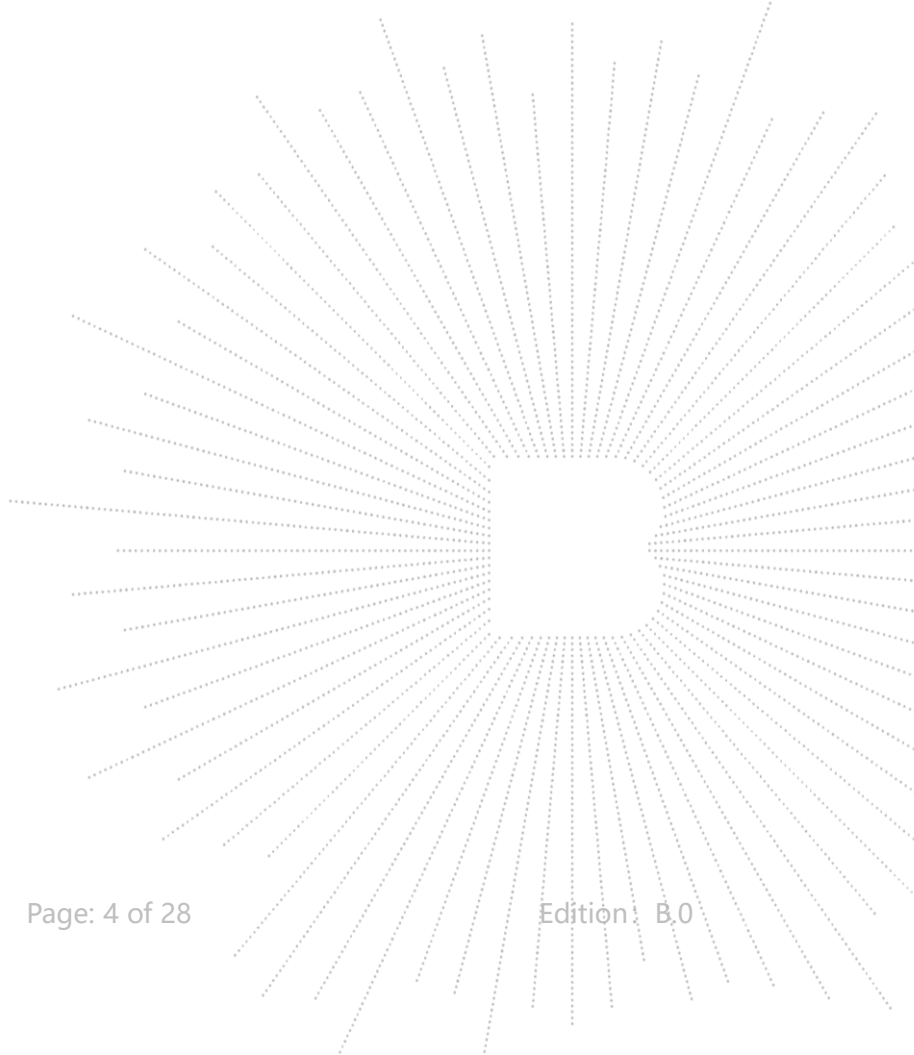
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Appendix 1. Conducted output power

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Verdict
Band13	5	23205	1	#0	QPSK	23.31	PASS
Band13	5	23205	1	#Mid	QPSK	23.49	PASS
Band13	5	23205	1	#Max	QPSK	23.36	PASS
Band13	5	23205	12	#0	QPSK	22.37	PASS
Band13	5	23205	12	#Mid	QPSK	22.43	PASS
Band13	5	23205	12	#Max	QPSK	22.34	PASS
Band13	5	23205	25	#0	QPSK	22.34	PASS
Band13	5	23205	1	#0	16QAM	22.06	PASS
Band13	5	23205	1	#Mid	16QAM	22.43	PASS
Band13	5	23205	1	#Max	16QAM	22.02	PASS
Band13	5	23205	12	#0	16QAM	21.23	PASS
Band13	5	23205	12	#Mid	16QAM	21.32	PASS
Band13	5	23205	12	#Max	16QAM	21.31	PASS
Band13	5	23205	25	#0	16QAM	21.32	PASS
Band13	5	23230	1	#0	QPSK	23.26	PASS
Band13	5	23230	1	#Mid	QPSK	23.58	PASS
Band13	5	23230	1	#Max	QPSK	23.38	PASS
Band13	5	23230	12	#0	QPSK	22.36	PASS
Band13	5	23230	12	#Mid	QPSK	22.33	PASS
Band13	5	23230	12	#Max	QPSK	22.43	PASS
Band13	5	23230	25	#0	QPSK	22.36	PASS
Band13	5	23230	1	#0	16QAM	21.98	PASS
Band13	5	23230	1	#Mid	16QAM	22.19	PASS
Band13	5	23230	1	#Max	16QAM	22.11	PASS
Band13	5	23230	12	#0	16QAM	21.23	PASS
Band13	5	23230	12	#Mid	16QAM	21.28	PASS
Band13	5	23230	12	#Max	16QAM	21.31	PASS
Band13	5	23230	25	#0	16QAM	21.35	PASS
Band13	5	23255	1	#0	QPSK	23.19	PASS
Band13	5	23255	1	#Mid	QPSK	23.61	PASS
Band13	5	23255	1	#Max	QPSK	23.38	PASS
Band13	5	23255	12	#0	QPSK	22.39	PASS
Band13	5	23255	12	#Mid	QPSK	22.52	PASS
Band13	5	23255	12	#Max	QPSK	22.46	PASS
Band13	5	23255	25	#0	QPSK	22.48	PASS
Band13	5	23255	1	#0	16QAM	22.07	PASS
Band13	5	23255	1	#Mid	16QAM	22.35	PASS
Band13	5	23255	1	#Max	16QAM	22.12	PASS
Band13	5	23255	12	#0	16QAM	21.40	PASS
Band13	5	23255	12	#Mid	16QAM	21.36	PASS

Band13	5	23255	12	#Max	16QAM	21.28	PASS
Band13	5	23255	25	#0	16QAM	21.41	PASS
Band13	10	23230	1	#0	QPSK	23.39	PASS
Band13	10	23230	1	#Mid	QPSK	23.47	PASS
Band13	10	23230	1	#Max	QPSK	23.55	PASS
Band13	10	23230	25	#0	QPSK	22.41	PASS
Band13	10	23230	25	#Mid	QPSK	22.45	PASS
Band13	10	23230	25	#Max	QPSK	22.44	PASS
Band13	10	23230	50	#0	QPSK	22.34	PASS
Band13	10	23230	1	#0	16QAM	22.23	PASS
Band13	10	23230	1	#Mid	16QAM	22.33	PASS
Band13	10	23230	1	#Max	16QAM	22.34	PASS
Band13	10	23230	25	#0	16QAM	21.31	PASS
Band13	10	23230	25	#Mid	16QAM	21.37	PASS
Band13	10	23230	25	#Max	16QAM	21.43	PASS
Band13	10	23230	50	#0	16QAM	21.37	PASS



Appendix 2. Frequency stability

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Voltage (Vdc)	Temperature (C)	Result (Hz)	Result (ppm)	Low Limit (ppm)	high Limit (ppm)	Verdict
Band 13	5	23205	25	#0	QPSK	LV	NT	-2.13	-0.03	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	NT	-2.73	-0.04	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	HV	NT	-2.15	-0.03	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	LV	NT	-1.56	-0.02	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	NT	-1.86	-0.02	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	HV	NT	-2.83	-0.04	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	LV	NT	-1.23	-0.02	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	NT	-0.97	-0.01	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	HV	NT	-0.87	-0.01	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	LV	NT	-1.22	-0.02	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	NT	-1.04	-0.01	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	HV	NT	-0.84	-0.01	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	LV	NT	-1.03	-0.01	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	NT	-0.73	-0.01	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	HV	NT	0.11	0.00	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	LV	NT	-0.19	0.00	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	NT	-1.13	-0.01	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	HV	NT	-0.43	-0.01	-2.5	2.5	PASS

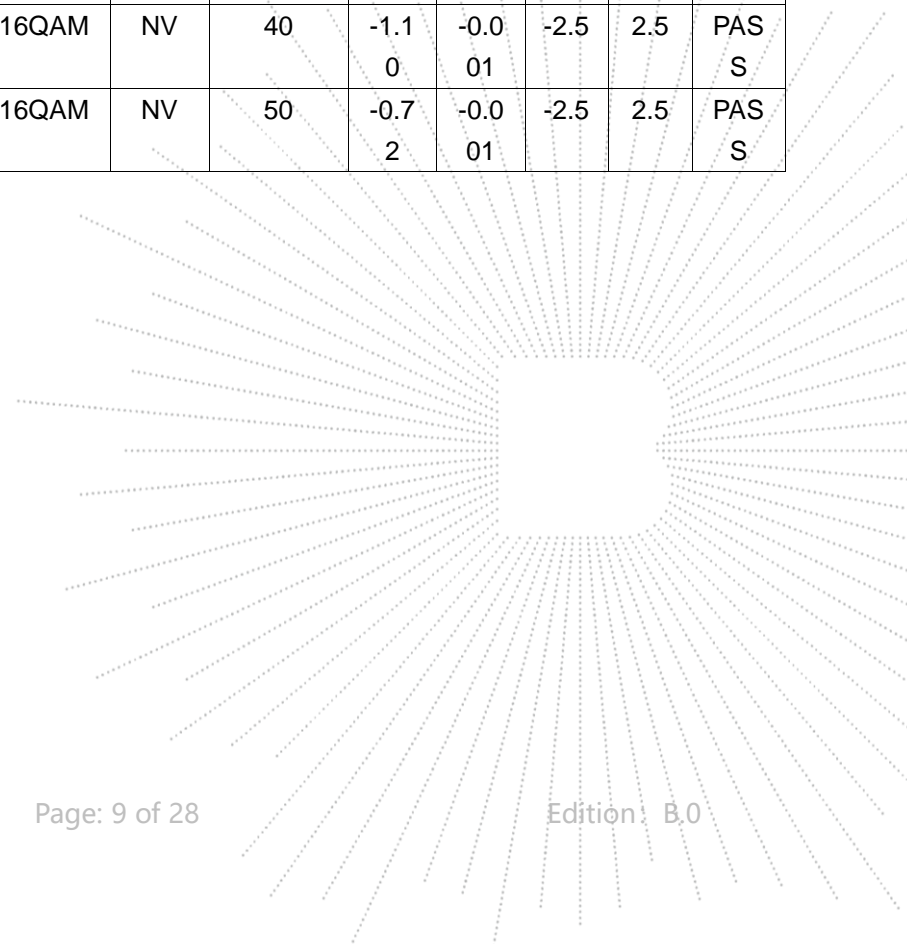
Band 13	10	23230	50	#0	QPSK	LV	NT	-1.13	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	NT	-1.40	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	HV	NT	-1.39	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	LV	NT	-0.86	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	NT	-0.90	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	HV	NT	-0.72	-0.001	-2.5	2.5	PASS

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Voltage (Vdc)	Temperature (C)	Result (Hz)	Result (ppm)	Low Limit (ppm)	high Limit (ppm)	Verdict
Band 13	5	23205	25	#0	QPSK	NV	-30	-2.62	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	-20	-2.15	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	-10	-1.53	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	0	-1.85	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	10	-1.92	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	20	-1.53	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	30	-2.19	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	40	-2.55	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	50	-1.65	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	-30	-1.87	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	-20	-1.19	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	-10	-2.22	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	0	-0.97	-0.001	-2.5	2.5	PASS

Band 13	5	23205	25	#0	16QAM	NV	10	-1.97	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	20	-1.93	-0.002	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	30	-2.22	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	40	-2.50	-0.003	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	50	-1.63	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	-30	-1.12	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	-20	-1.32	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	-10	-1.39	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	0	-1.17	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	10	-0.66	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	20	-1.60	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	30	-0.47	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	40	-1.72	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	50	-0.46	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	-30	-2.09	-0.003	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	-20	-0.17	0.000	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	-10	-0.13	0.000	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	0	-1.42	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	10	-1.03	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	20	-0.70	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	30	-1.36	-0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	40	-0.56	-0.001	-2.5	2.5	PASS

Band 13	5	23230	25	#0	16QAM	NV	50	-1.19	-0.002	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	-30	-0.24	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	-20	-0.20	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	-10	-0.62	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	0	-0.93	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	10	-0.64	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	20	0.24	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	30	-0.27	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	40	-0.20	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	50	-0.46	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	-30	-0.54	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	-20	-1.60	-0.002	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	-10	-0.84	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	0	-0.64	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	10	-0.82	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	20	-0.79	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	30	-0.53	-0.001	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	40	-0.17	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	50	-0.03	0.000	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	-30	-1.29	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	-20	-1.57	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	-10	-0.67	-0.001	-2.5	2.5	PASS

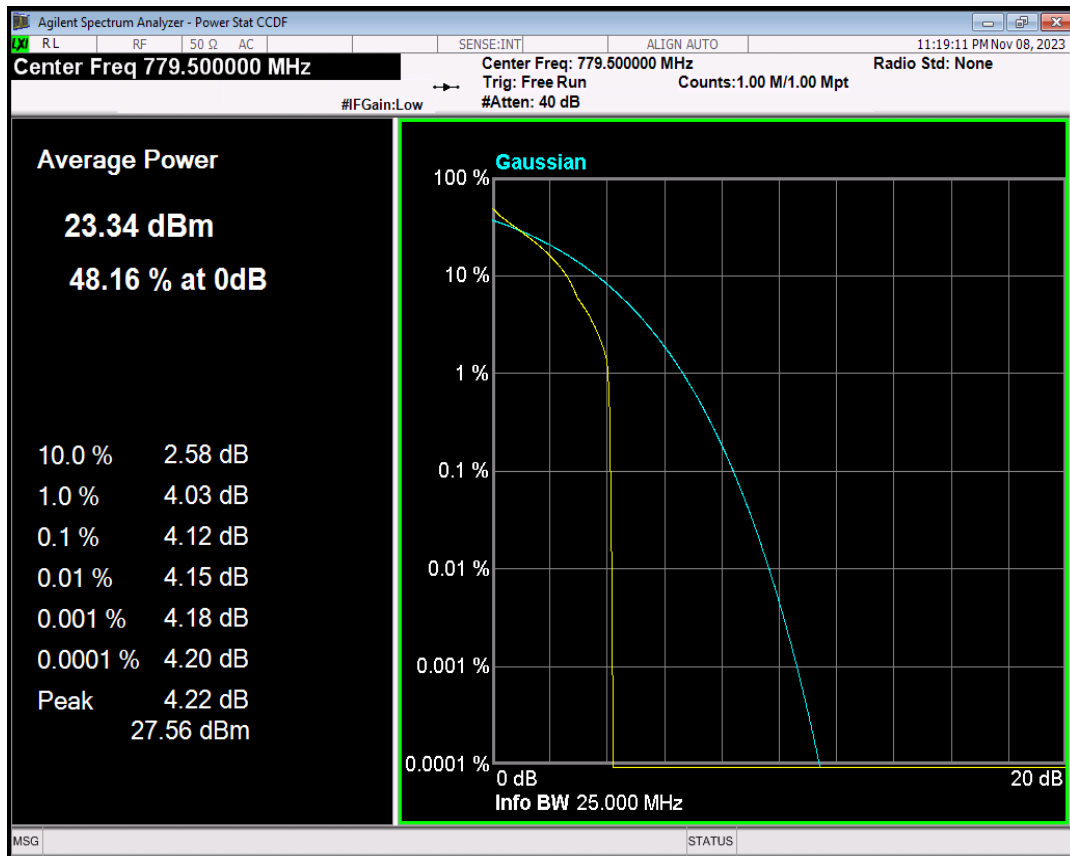
Band 13	10	23230	50	#0	QPSK	NV	0	-0.34	0.000	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	10	-1.34	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	20	-1.12	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	30	-0.31	0.000	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	40	-1.17	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	50	-1.93	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	-30	-0.93	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	-20	-1.02	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	-10	-0.94	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	0	-0.50	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	10	-1.75	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	20	-1.86	-0.002	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	30	-1.02	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	40	-1.10	-0.001	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	50	-0.72	-0.001	-2.5	2.5	PASS



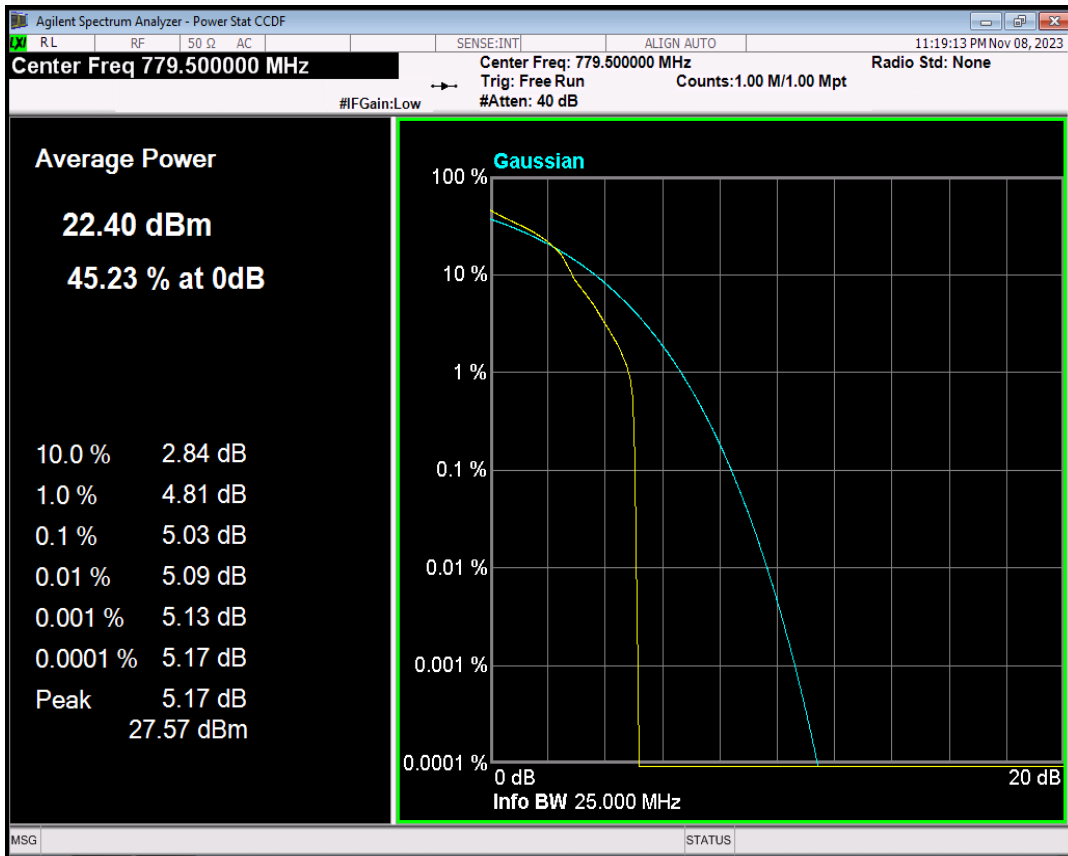
Appendix 3. Peak-to-Average Ratio

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Result (dB)	high Limit (dB)	Verdict
Band13	5	23205	1	#0	QPSK	4.12	13	PASS
Band13	5	23205	1	#0	16QAM	5.03	13	PASS
Band13	5	23230	1	#0	QPSK	4.44	13	PASS
Band13	5	23230	1	#0	16QAM	5.35	13	PASS
Band13	5	23255	1	#0	QPSK	4.34	13	PASS
Band13	5	23255	1	#0	16QAM	5.30	13	PASS
Band13	10	23230	1	#0	QPSK	4.19	13	PASS
Band13	10	23230	1	#0	16QAM	5.13	13	PASS

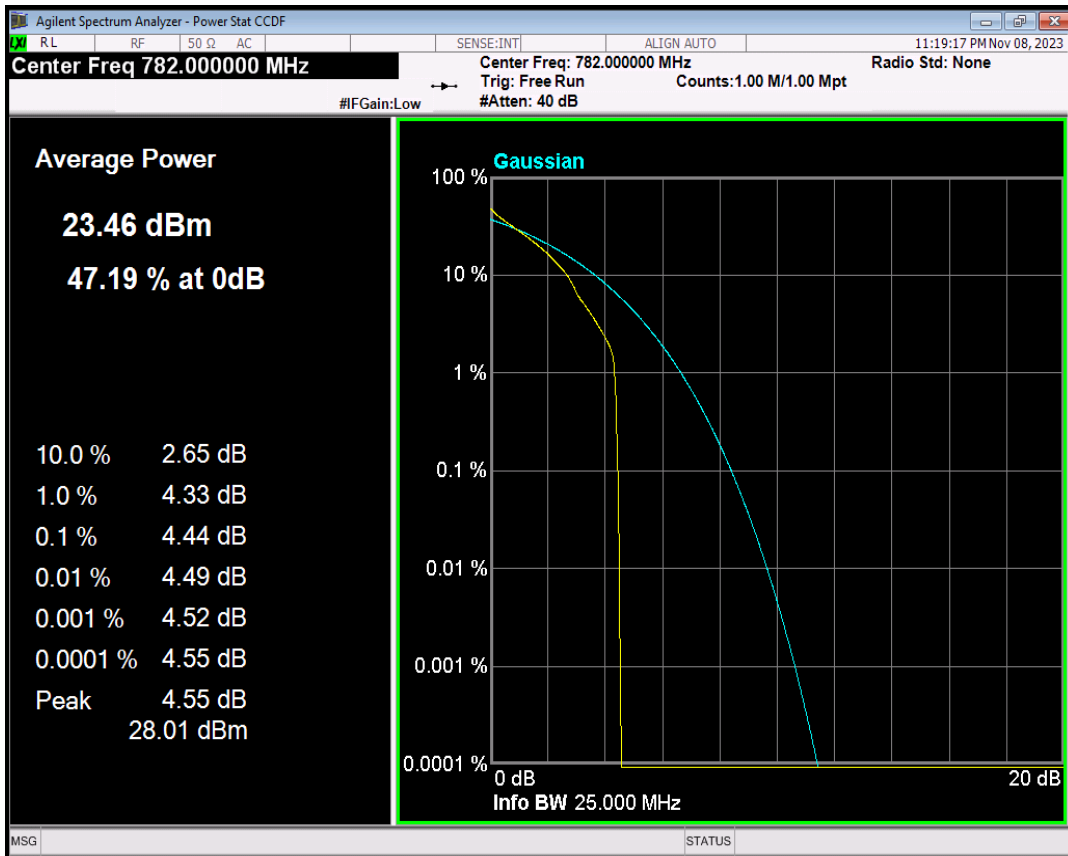
Band13 QPSK BW=5MHz Channel=23205 RB Size=1 Position=#0



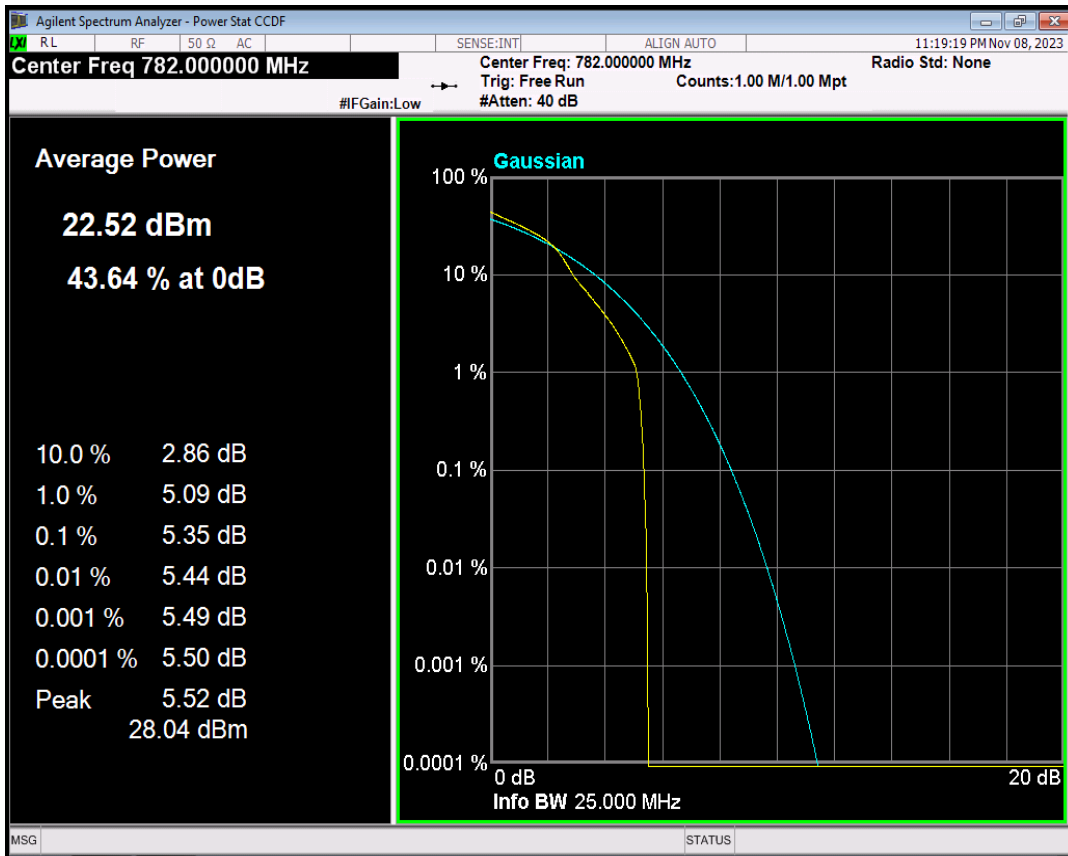
Band13 16QAM BW=5MHz Channel=23205 RB Size=1 Position=#0



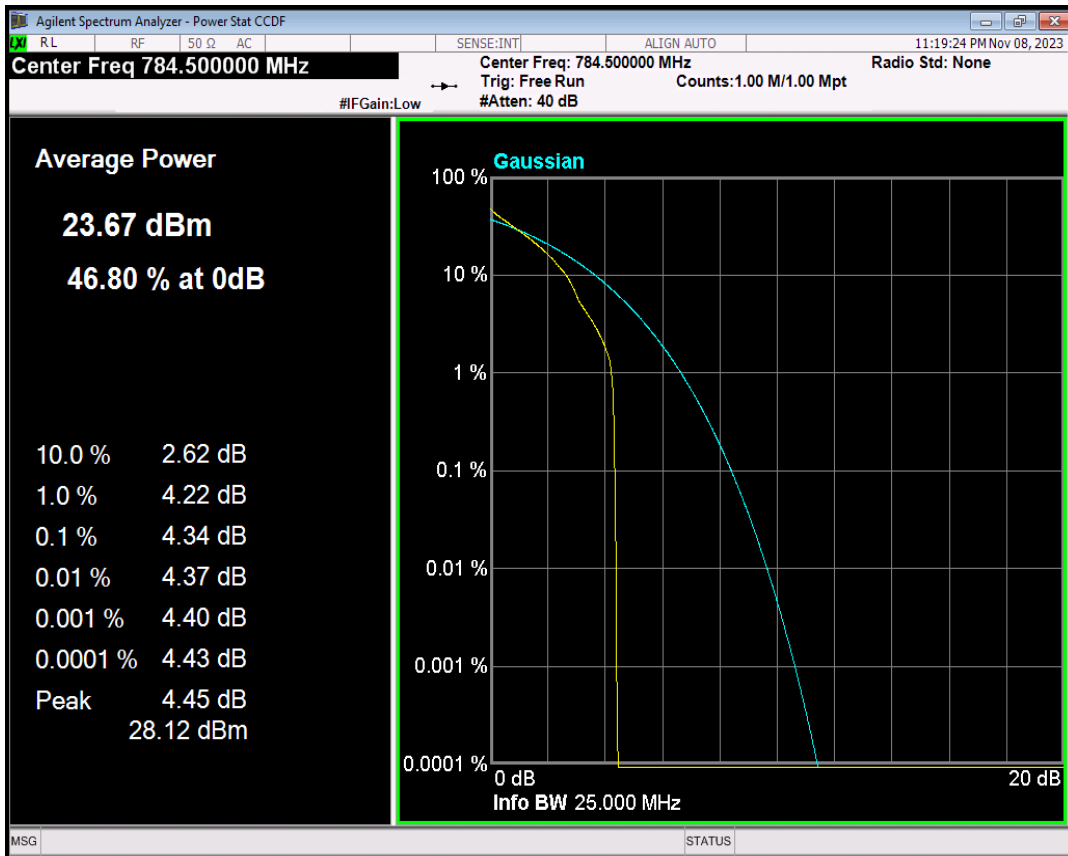
Band13 QPSK BW=5MHz Channel=23230 RB Size=1 Position=#0



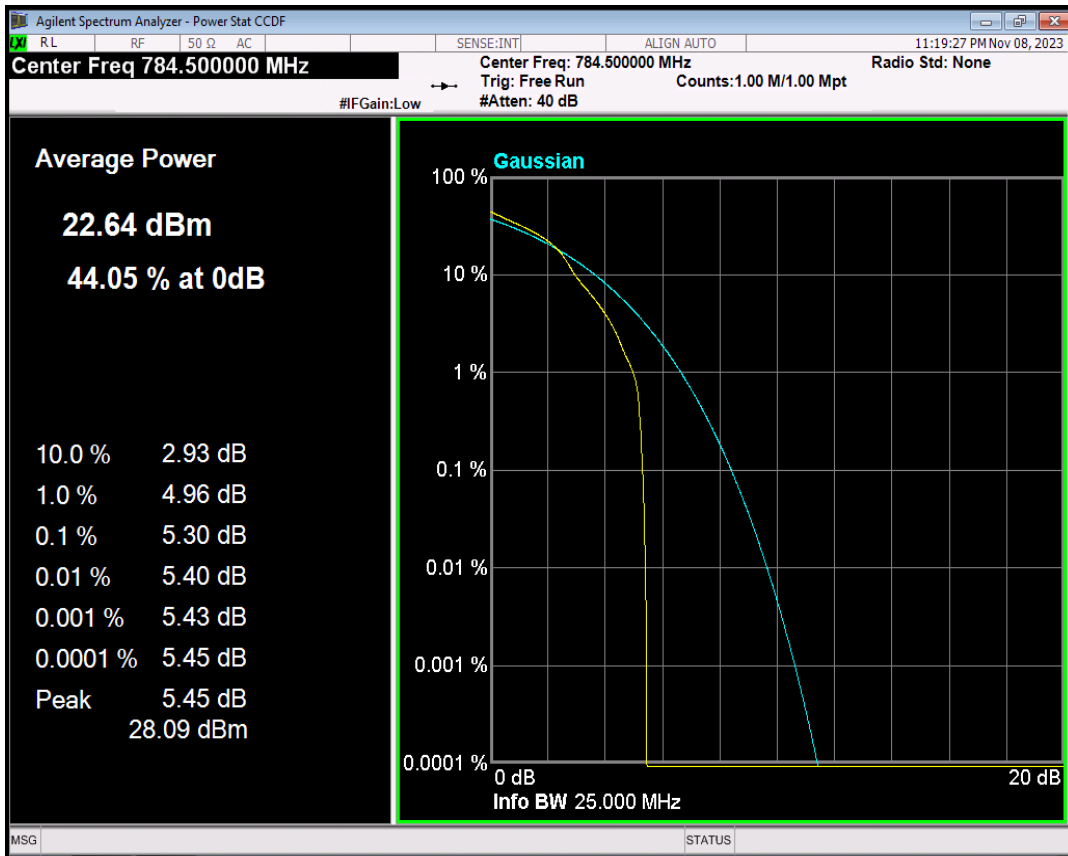
Band13 16QAM BW=5MHz Channel=23230 RB Size=1 Position=#0



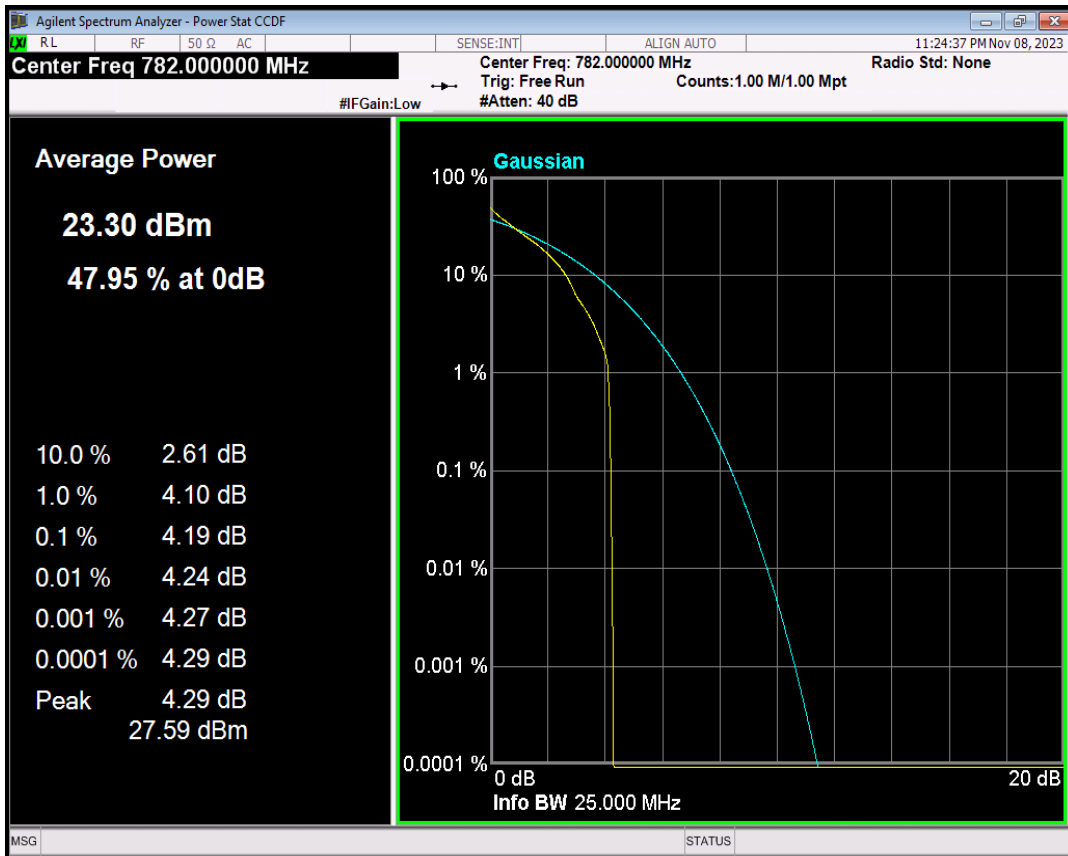
Band13 QPSK BW=5MHz Channel=23255 RB Size=1 Position=#0



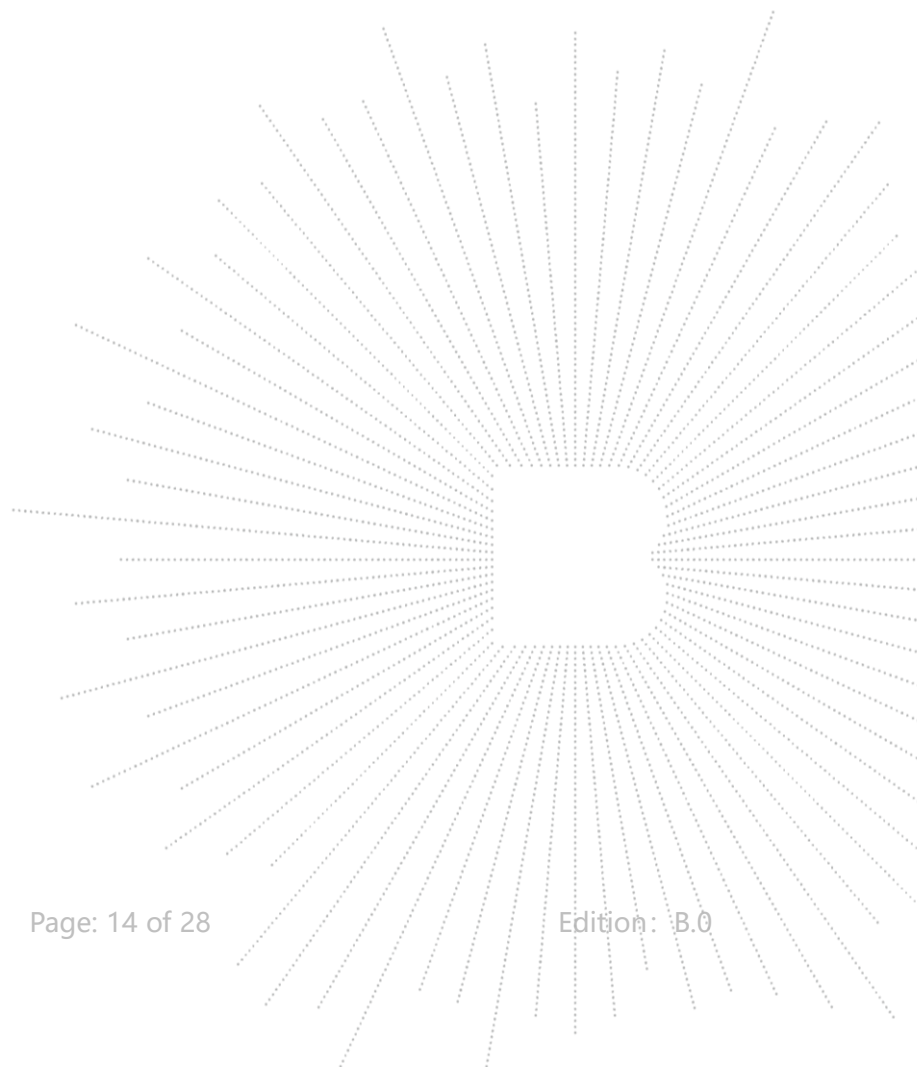
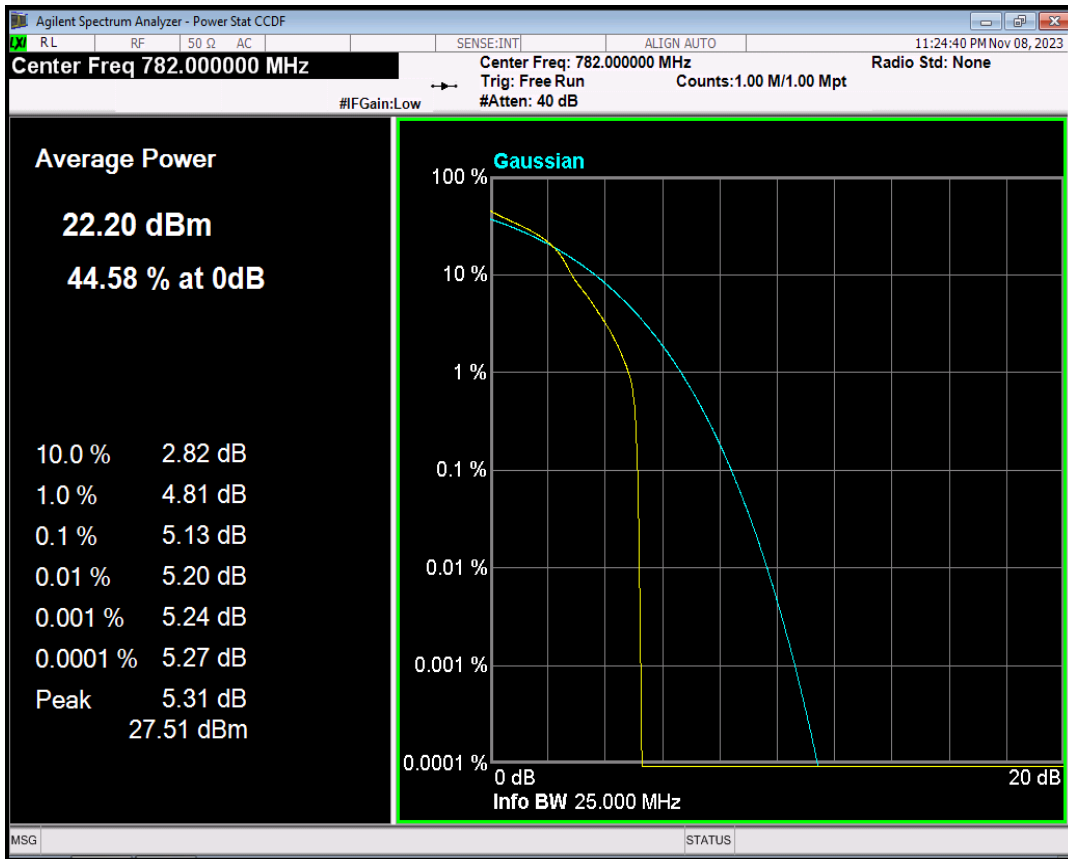
Band13 16QAM BW=5MHz Channel=23255 RB Size=1 Position=#0



Band13 QPSK BW=10MHz Channel=23230 RB Size=1 Position=#0



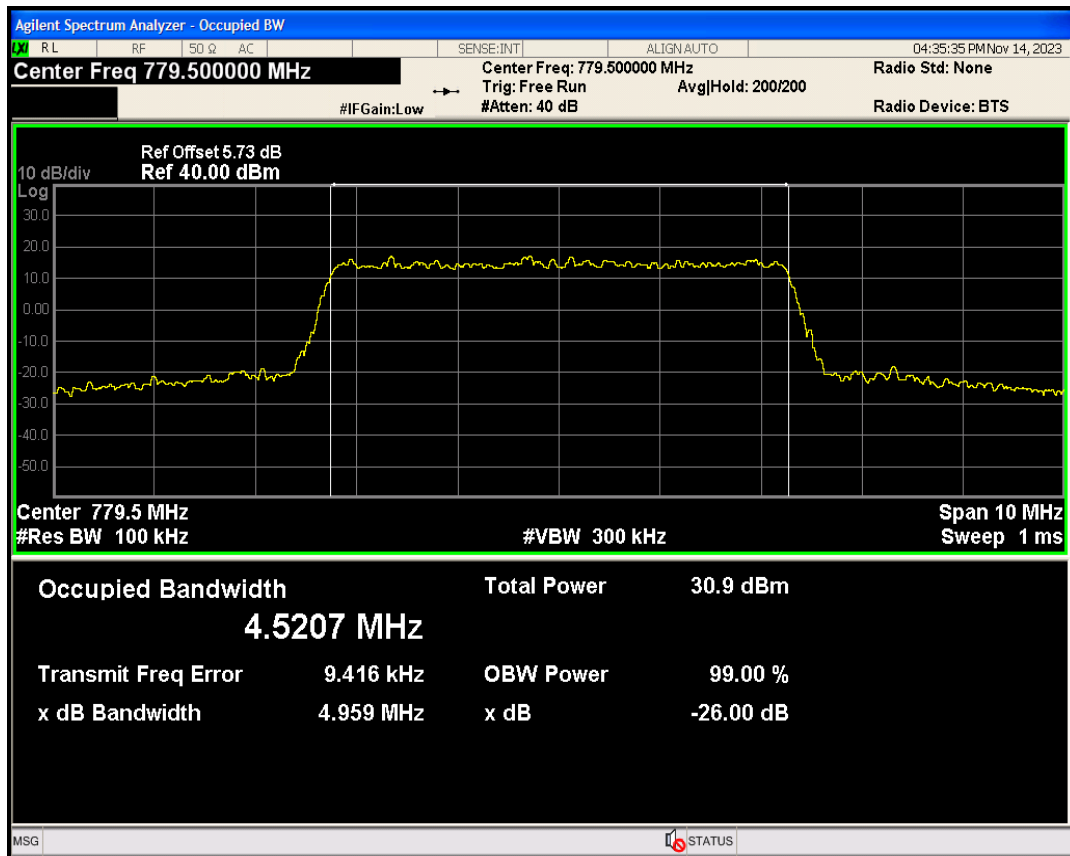
Band13 16QAM BW=10MHz Channel=23230 RB Size=1 Position=#0



Appendix 4. Occupied bandwidth

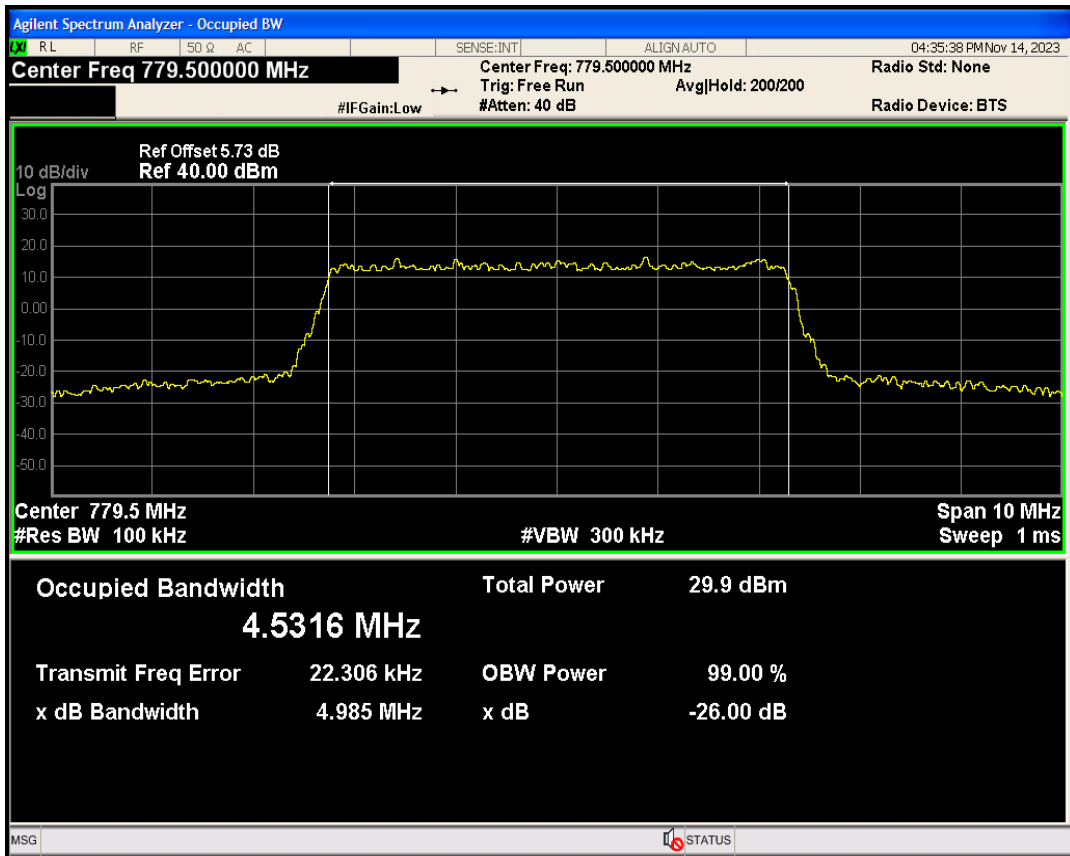
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	99% OBW (MHz)	-26dB EBW (MHz)	Verdict
Band13	5	23205	25	#0	QPSK	4.521	4.959	PASS
Band13	5	23205	25	#0	16QAM	4.532	4.985	PASS
Band13	5	23230	25	#0	QPSK	4.508	4.951	PASS
Band13	5	23230	25	#0	16QAM	4.515	4.943	PASS
Band13	5	23255	25	#0	QPSK	4.516	4.960	PASS
Band13	5	23255	25	#0	16QAM	4.500	4.891	PASS
Band13	10	23230	50	#0	QPSK	8.952	9.793	PASS
Band13	10	23230	50	#0	16QAM	8.951	9.818	PASS

Band13 QPSK BW=5MHz Channel=23205 RB Size=25 Position=#0

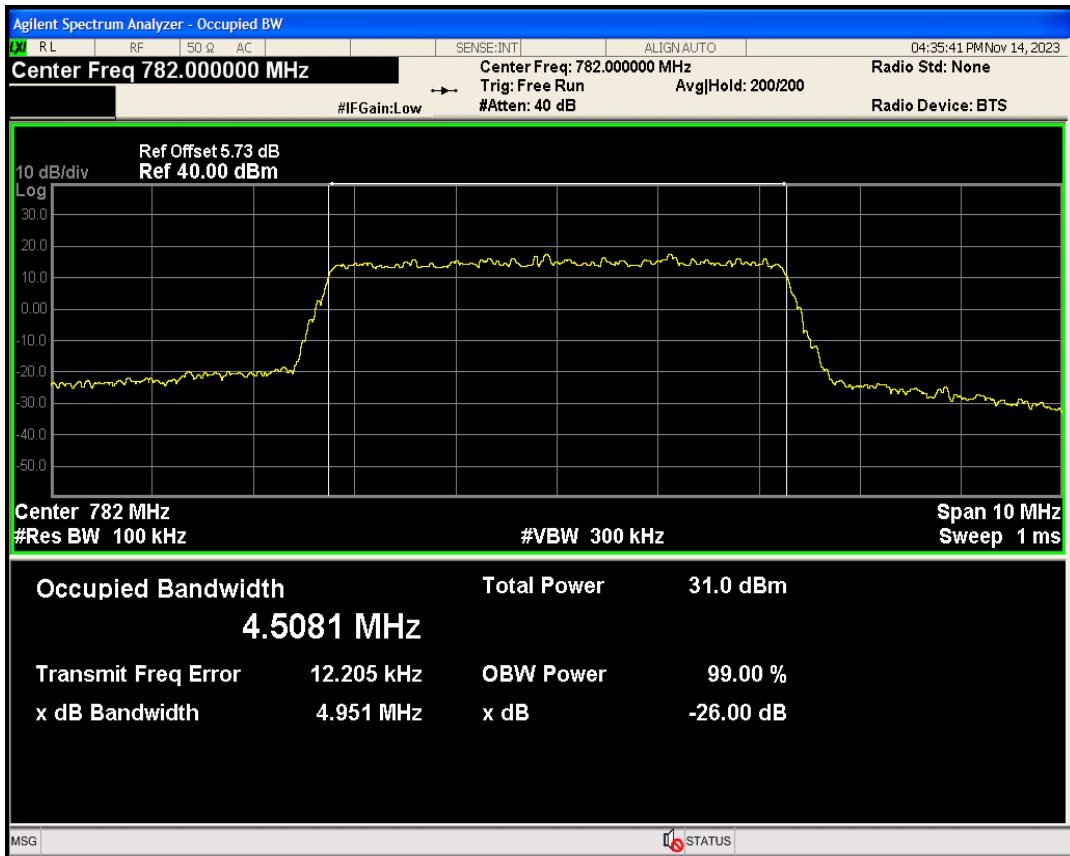




Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0

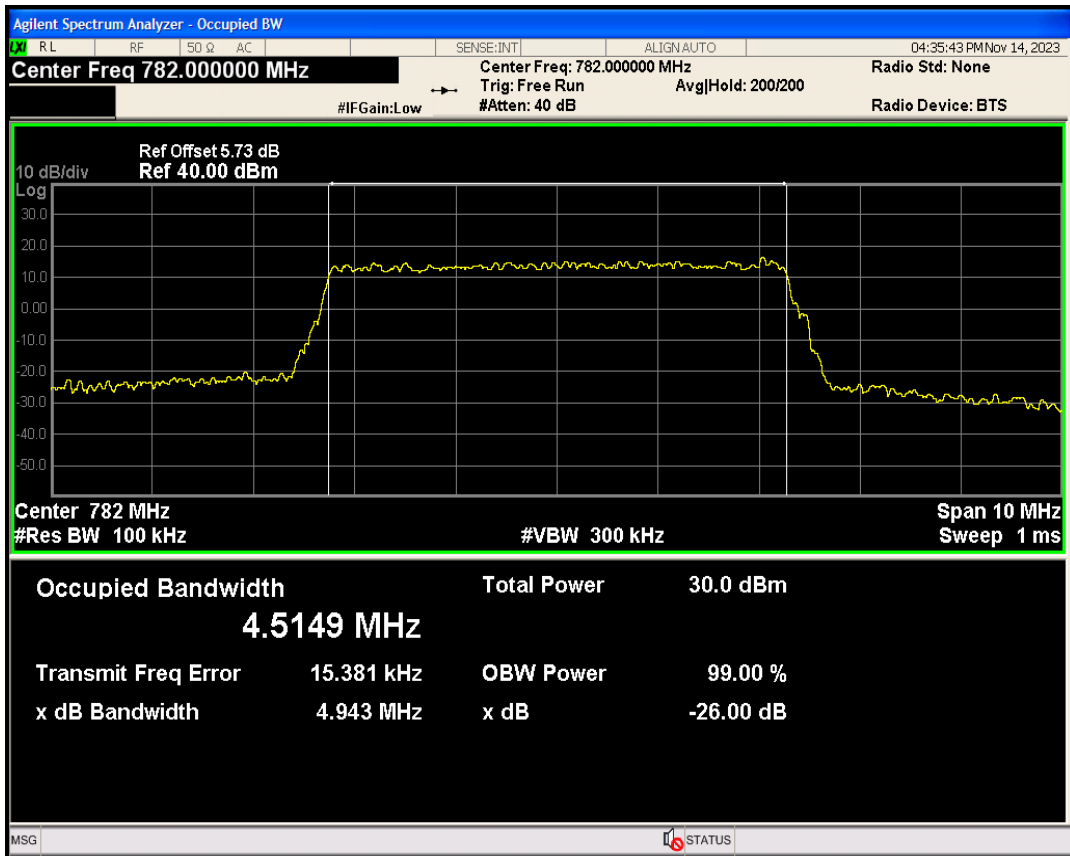


Band13 QPSK BW=5MHz Channel=23230 RB Size=25 Position=#0

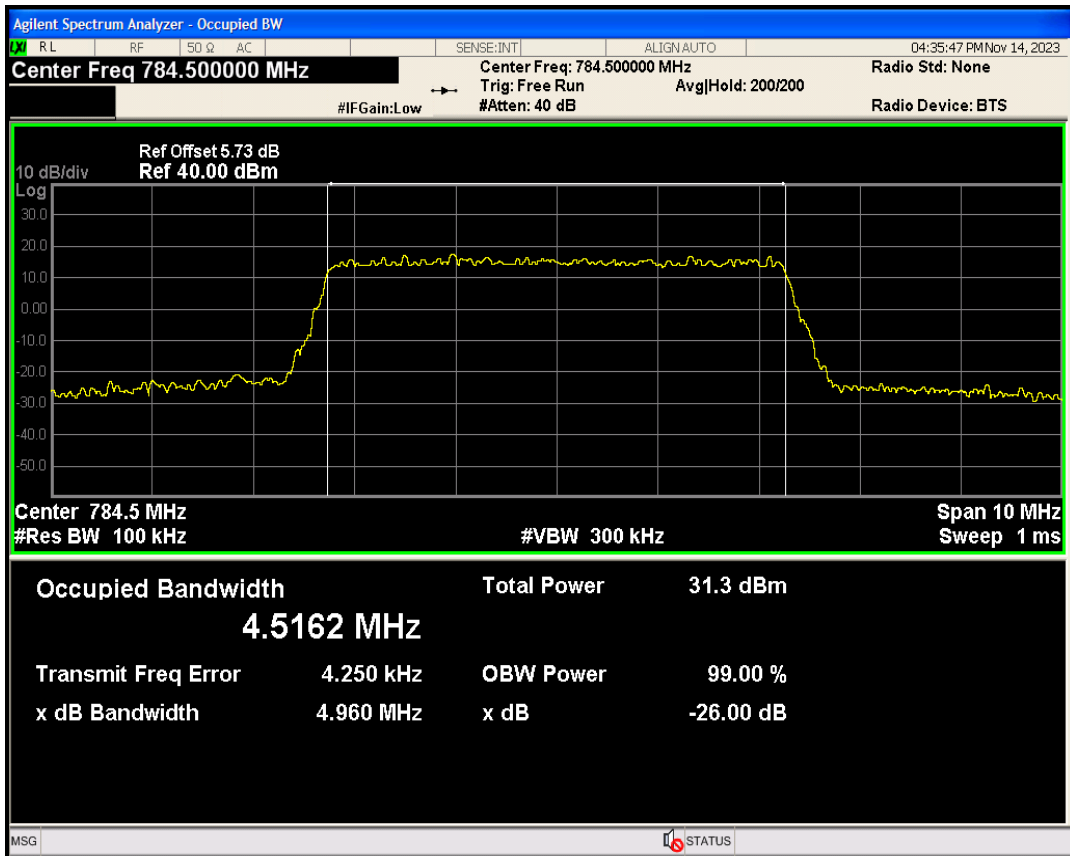




Band13 16QAM BW=5MHz Channel=23230 RB Size=25 Position=#0

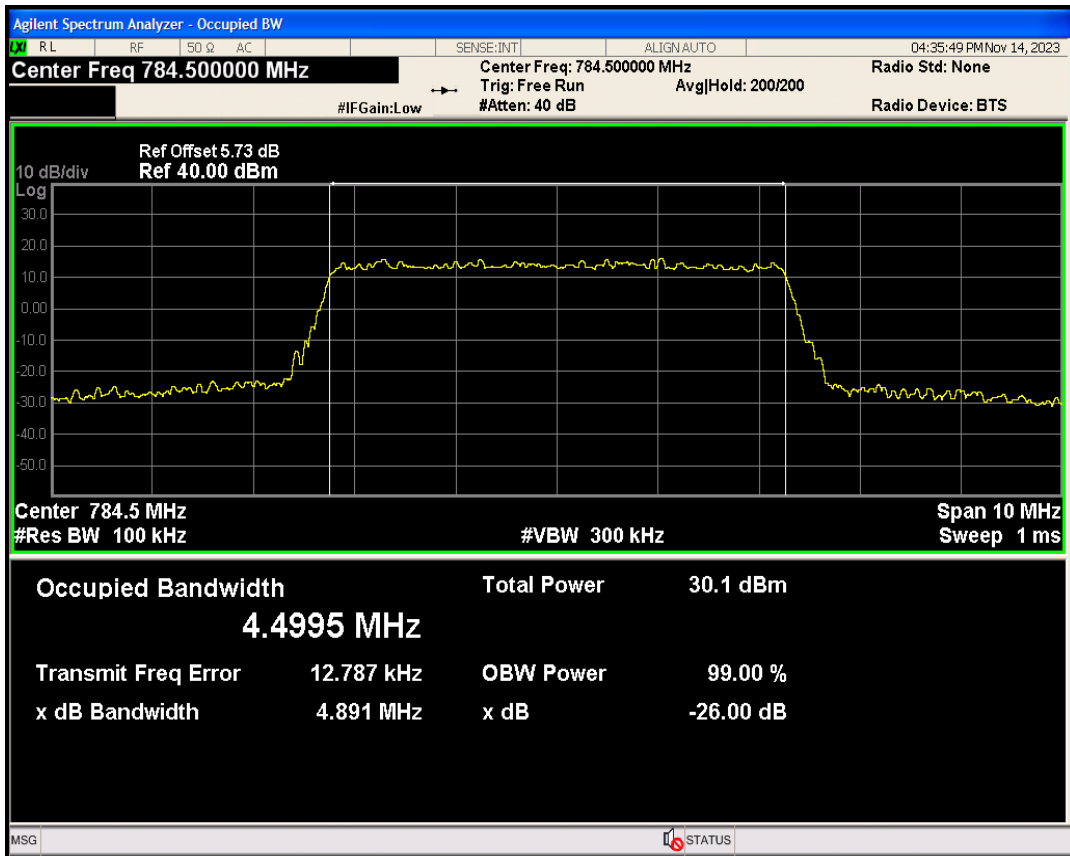


Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0

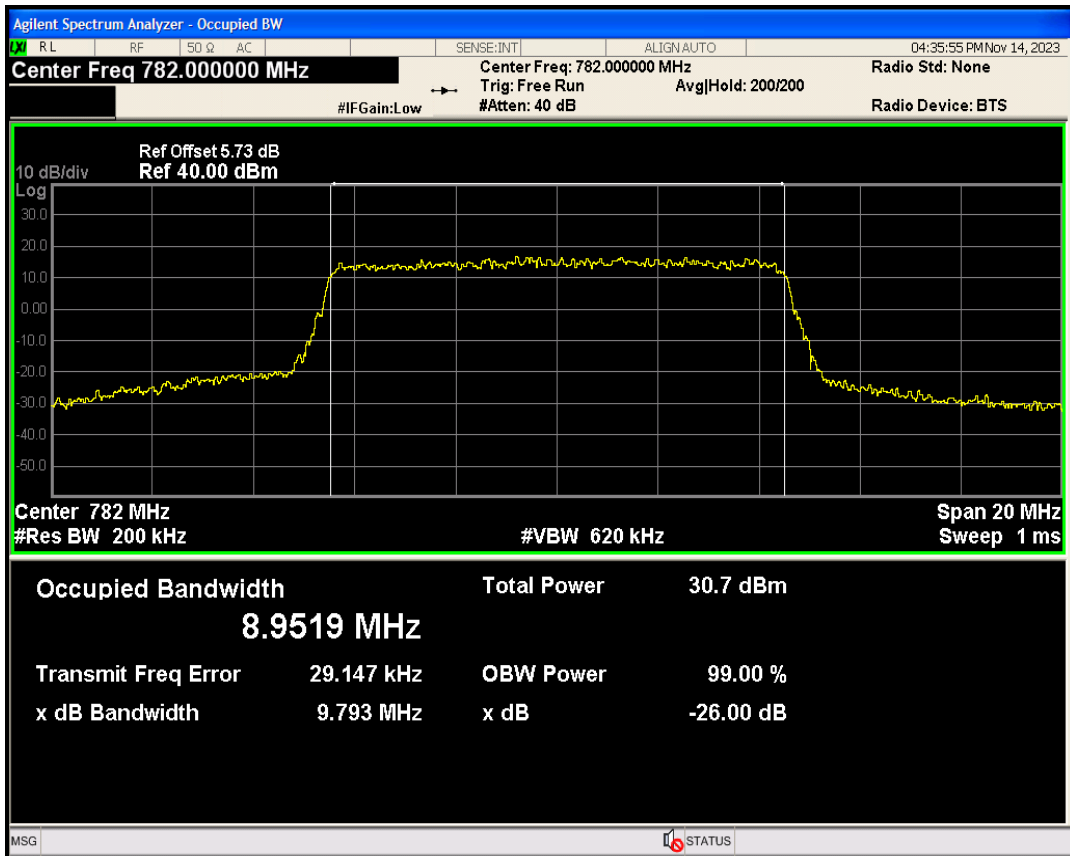




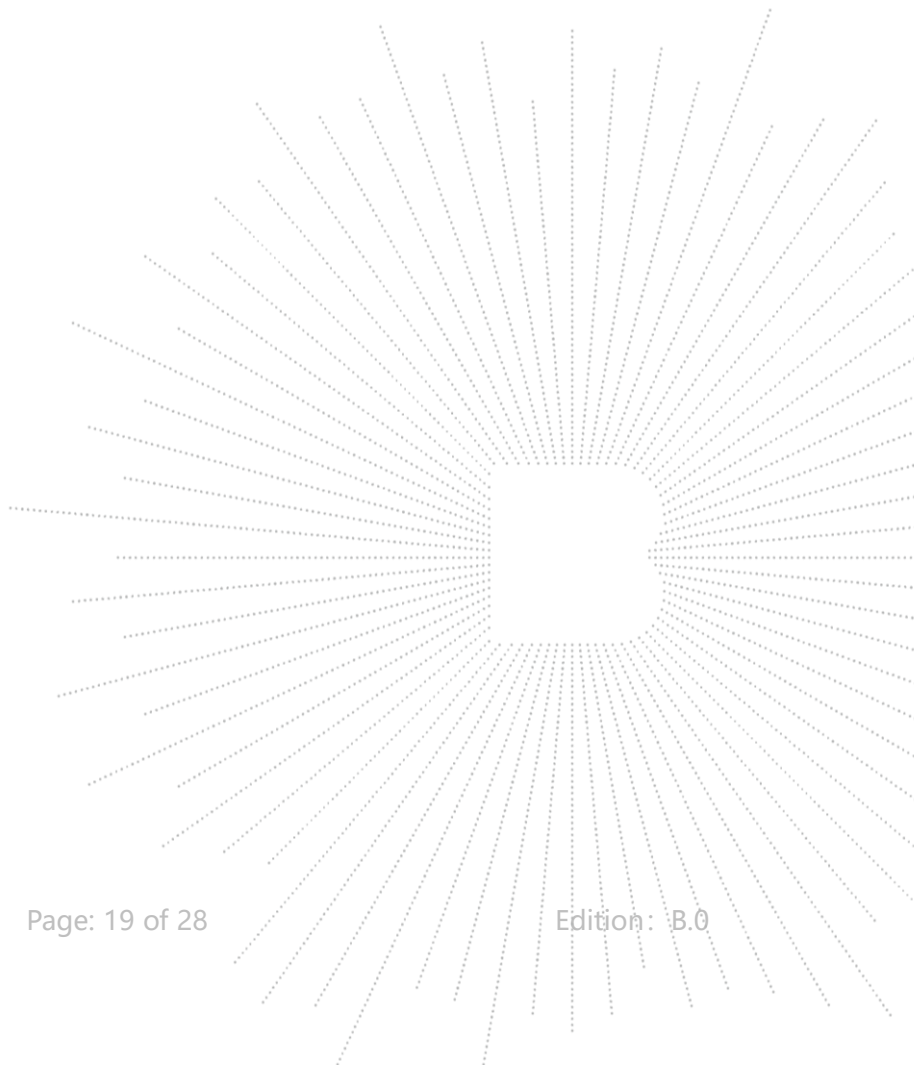
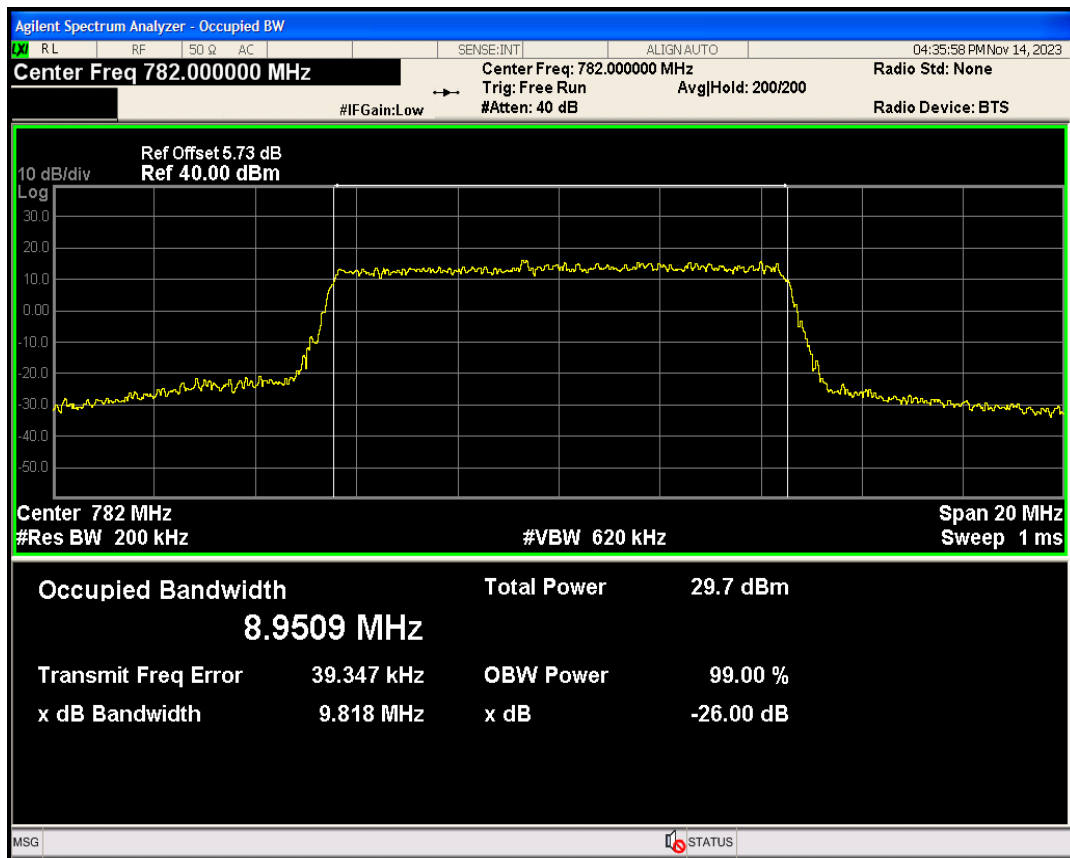
Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0



Band13 QPSK BW=10MHz Channel=23230 RB Size=50 Position=#0



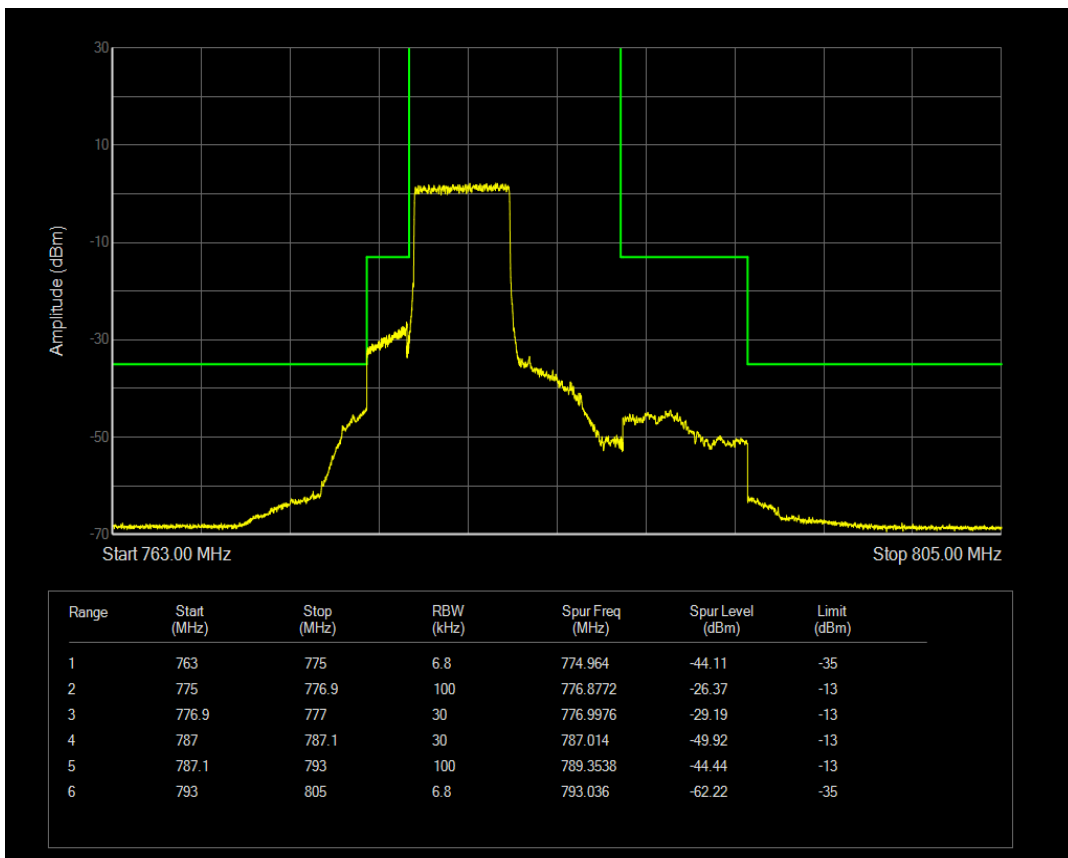
Band13 16QAM BW=10MHz Channel=23230 RB Size=50 Position=#0



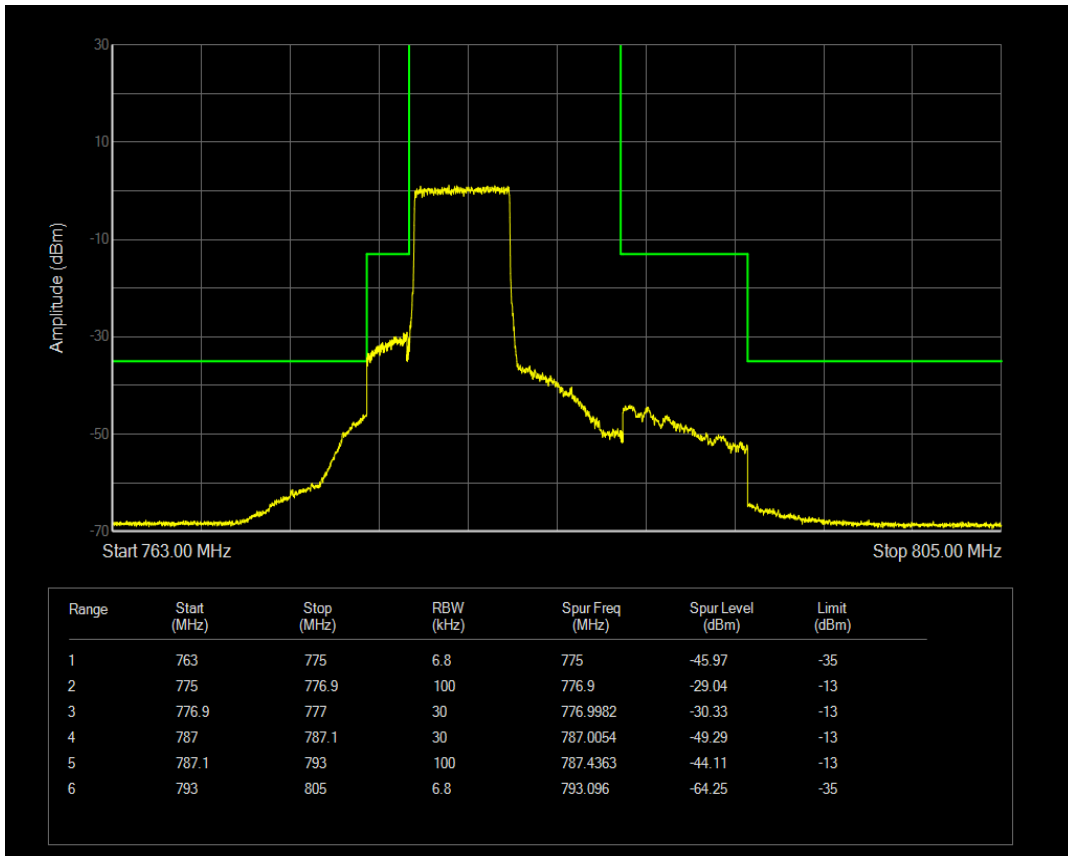
Appendix 5. Band edge

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
Band13	5	23205	25	#0	QPSK	774.96	-44.11	-35	PASS
Band13	5	23205	25	#0	16QAM	775	-45.97	-35	PASS
Band13	5	23255	25	#0	QPSK	787	-28.91	-13	PASS
Band13	5	23255	25	#0	16QAM	787.01	-30.54	-13	PASS
Band13	10	23230	50	#0	QPSK	774.94	-45.64	-35	PASS
Band13	10	23230	50	#0	16QAM	774.77	-47.12	-35	PASS

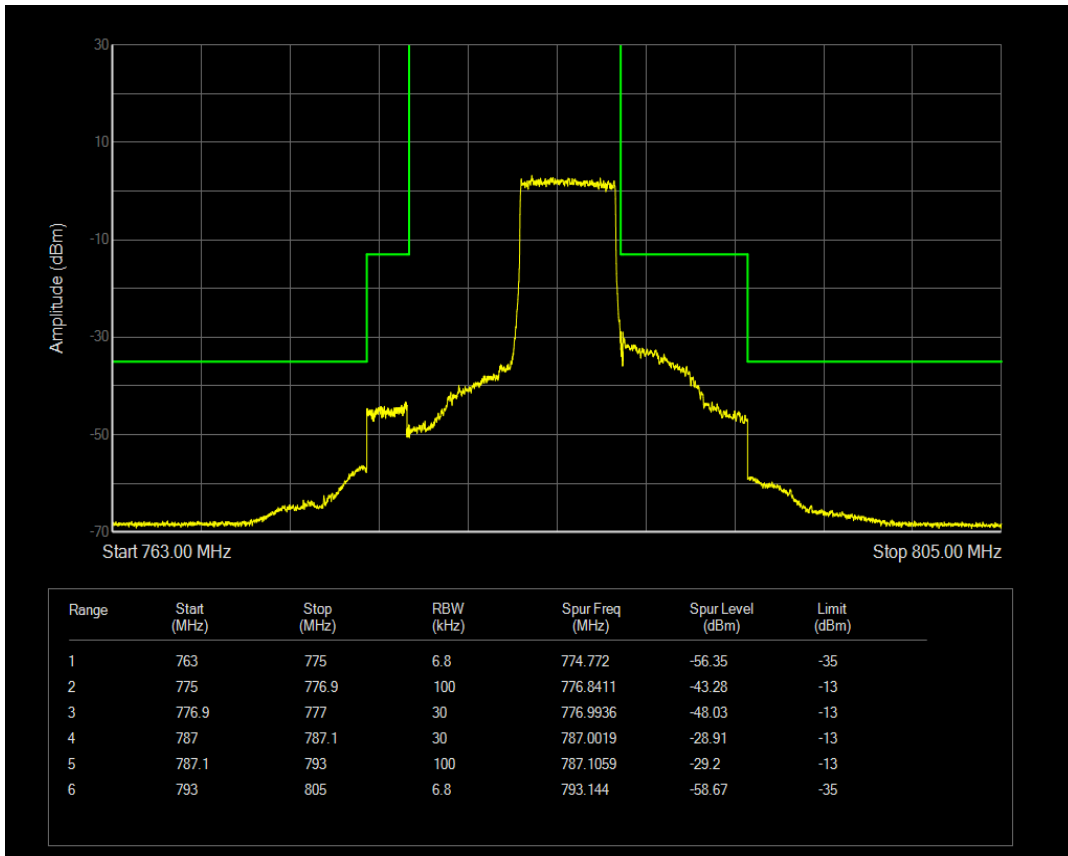
Band13 QPSK BW=5MHz Channel=23205 RB Size=25 Position=#0

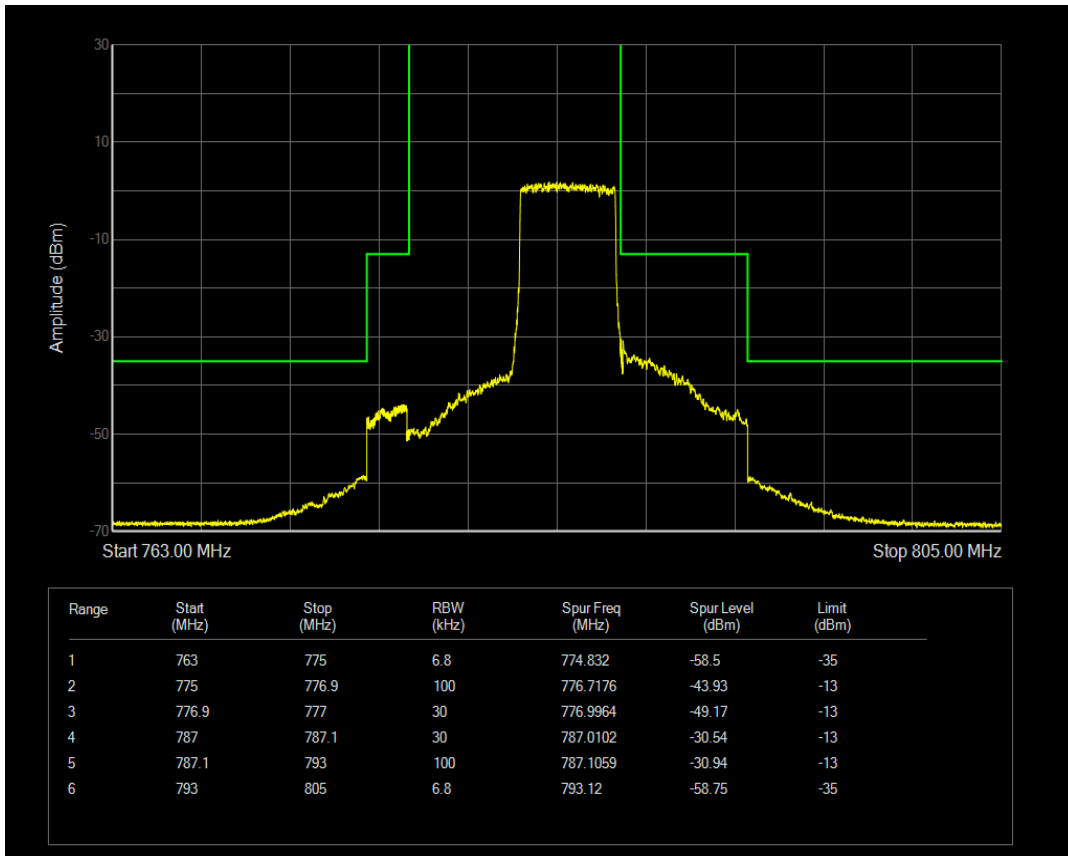
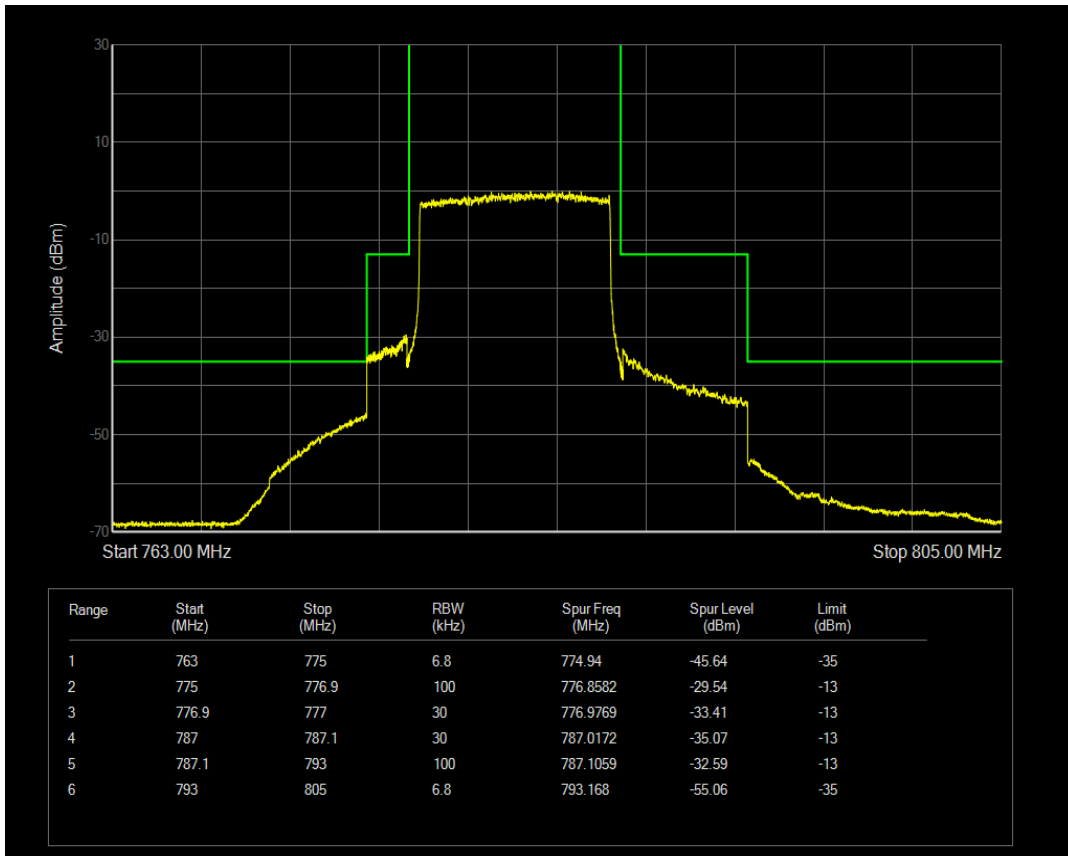


Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0

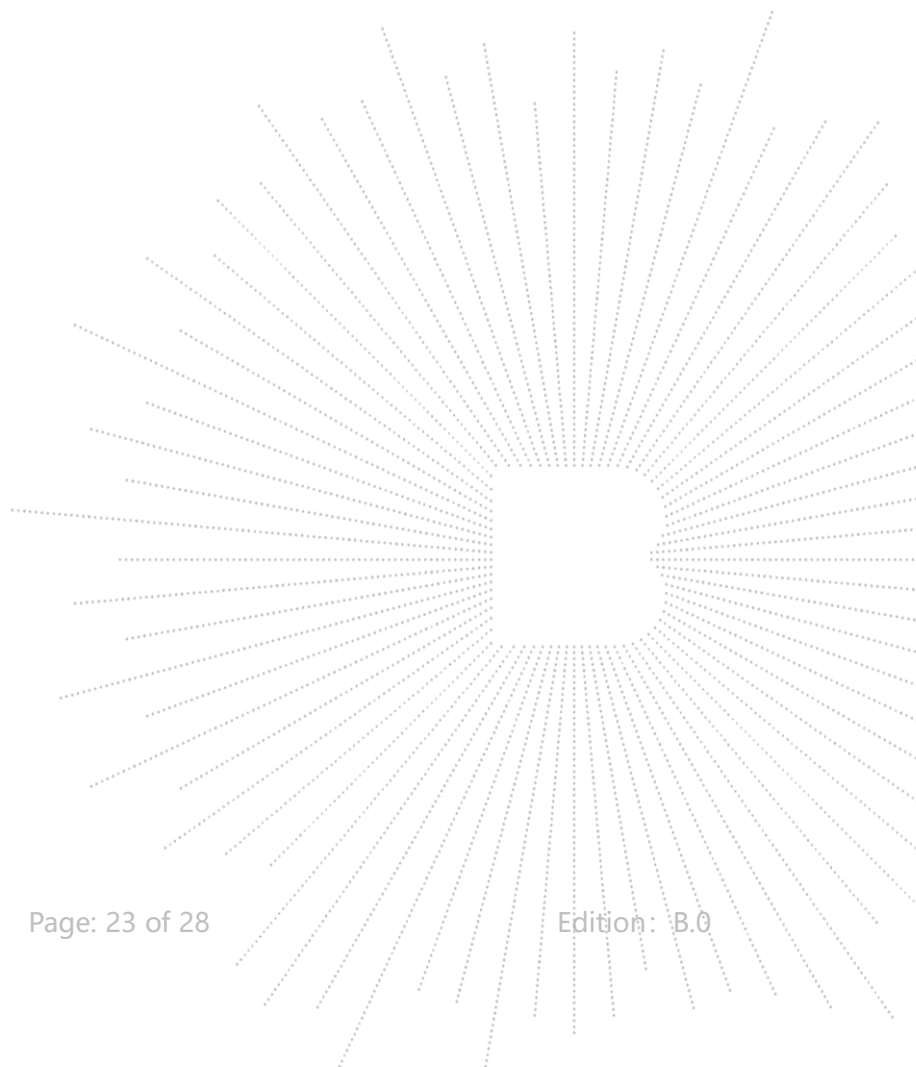
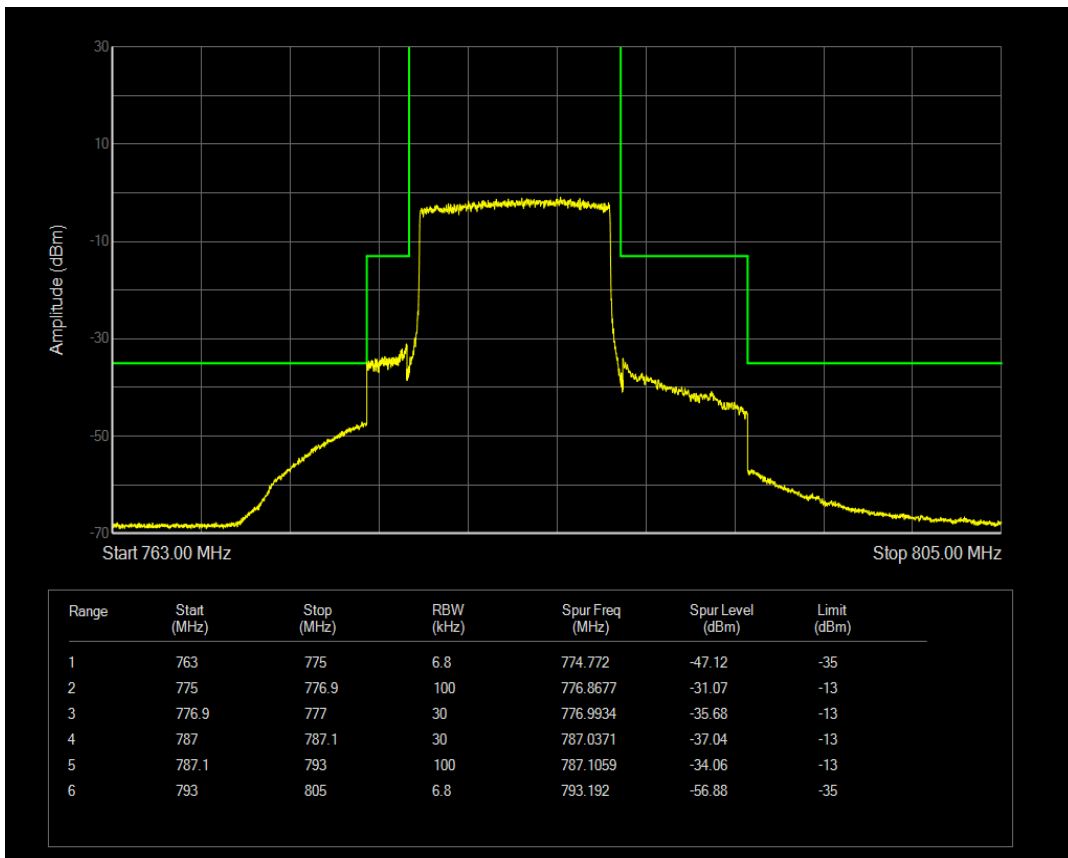


Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0



Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0

Band13 QPSK BW=10MHz Channel=23230 RB Size=50 Position=#0


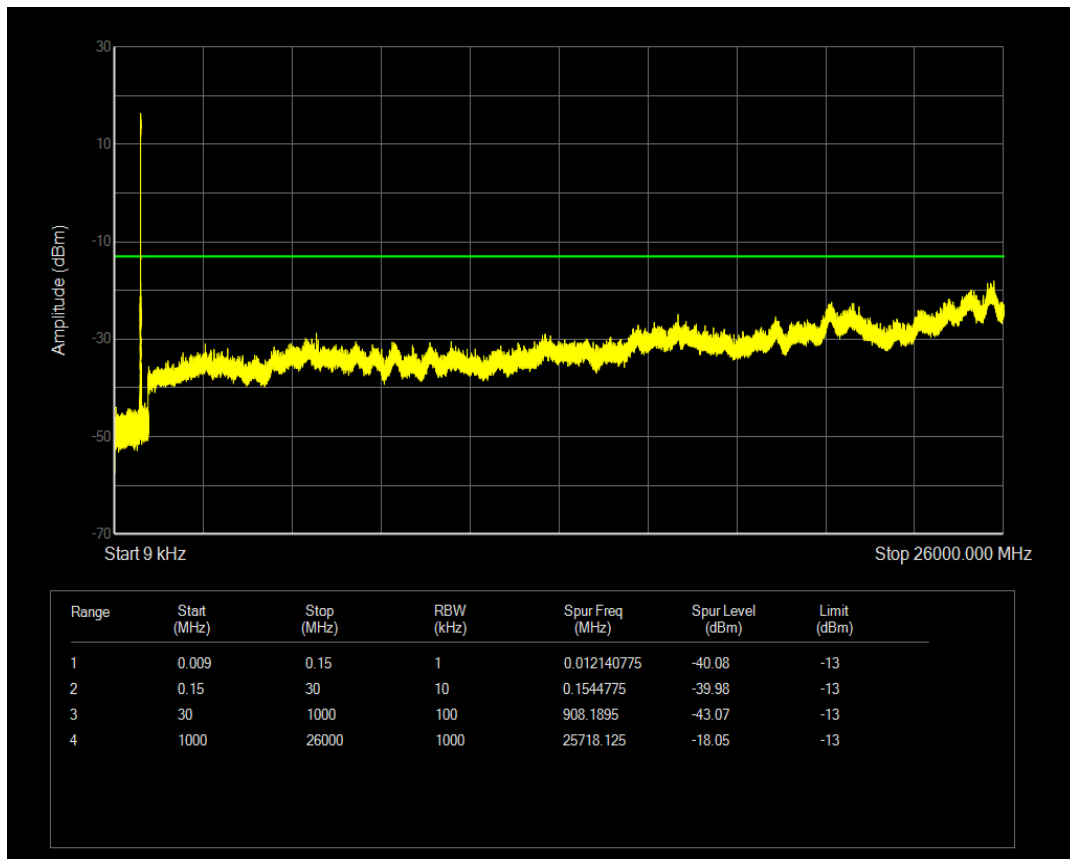
Band13 16QAM BW=10MHz Channel=23230 RB Size=50 Position=#0



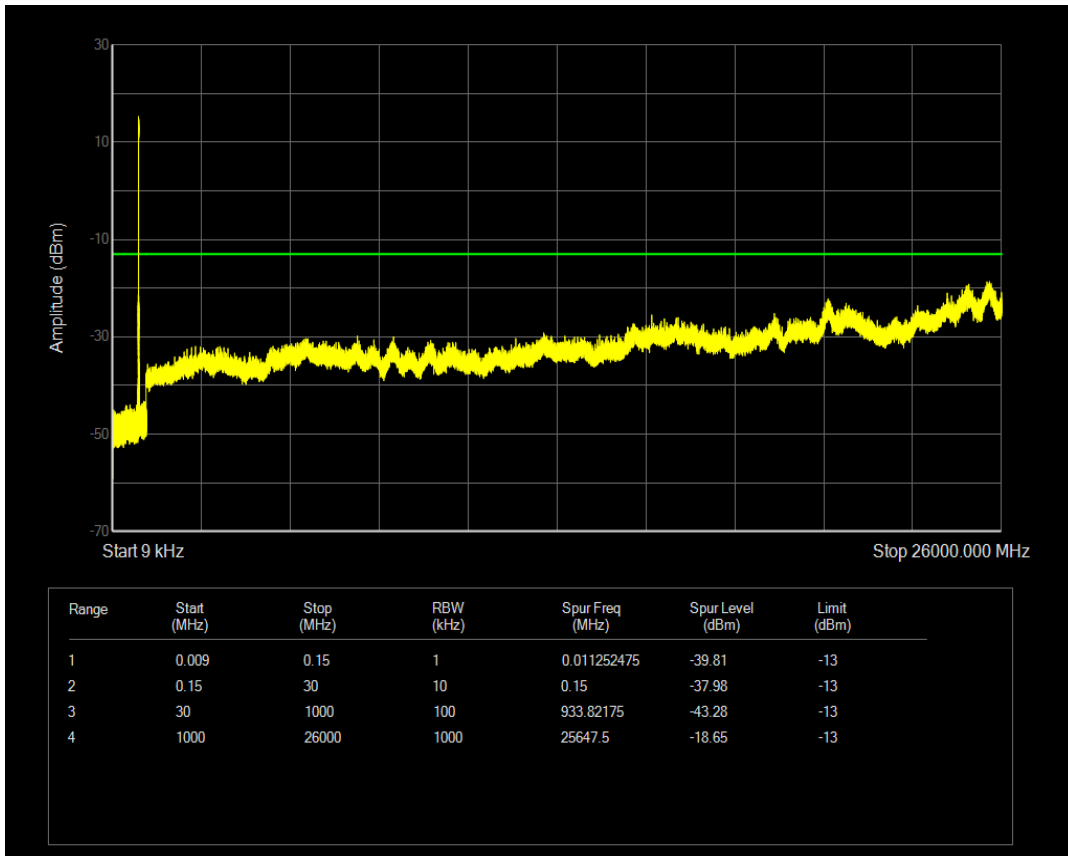
Appendix 6. Out-of-band emissions

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
Band13	5	23205	25	#0	QPSK	25718.13	-18.05	-13	PASS
Band13	5	23205	25	#0	16QAM	25647.50	-18.65	-13	PASS
Band13	5	23230	25	#0	QPSK	25626.88	-17.87	-13	PASS
Band13	5	23230	25	#0	16QAM	25601.88	-18.98	-13	PASS
Band13	5	23255	25	#0	QPSK	25631.88	-18.83	-13	PASS
Band13	5	23255	25	#0	16QAM	25678.75	-18.42	-13	PASS
Band13	10	23230	50	#0	QPSK	25616.88	-18.40	-13	PASS
Band13	10	23230	50	#0	16QAM	25650.63	-17.40	-13	PASS

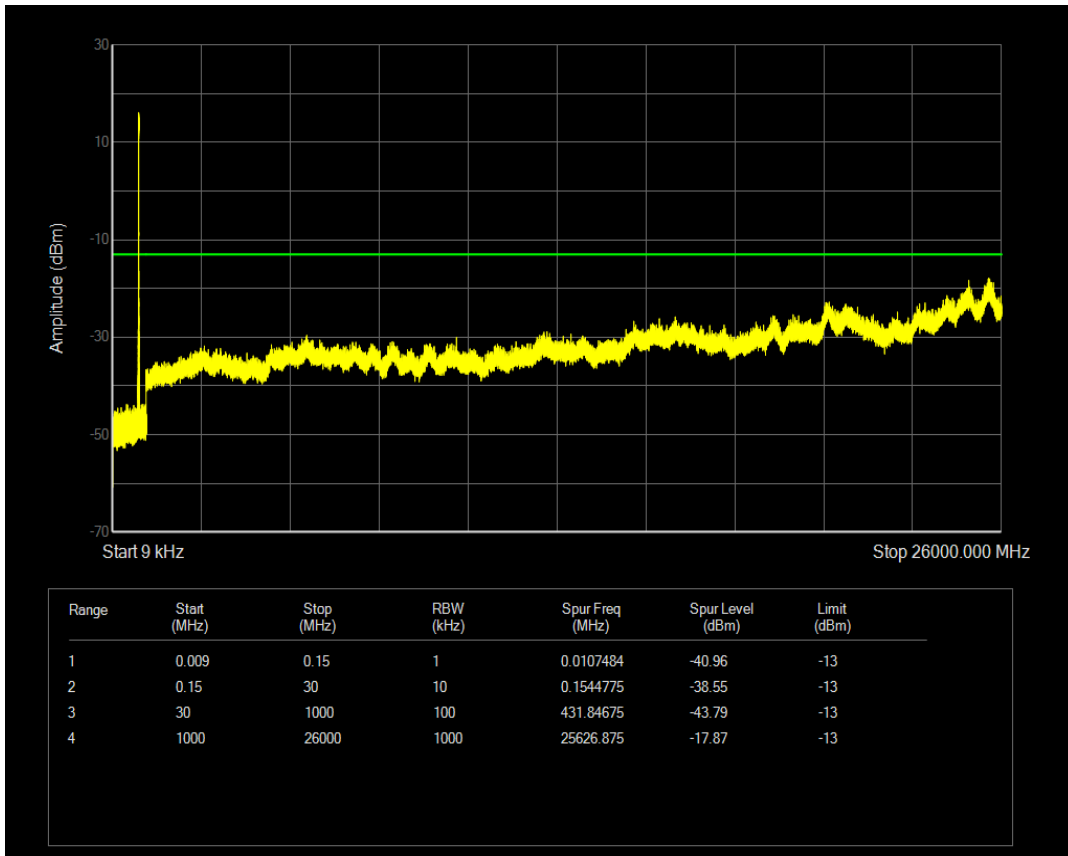
Band13 QPSK BW=5MHz Channel=23205 RB Size=25 Position=#0



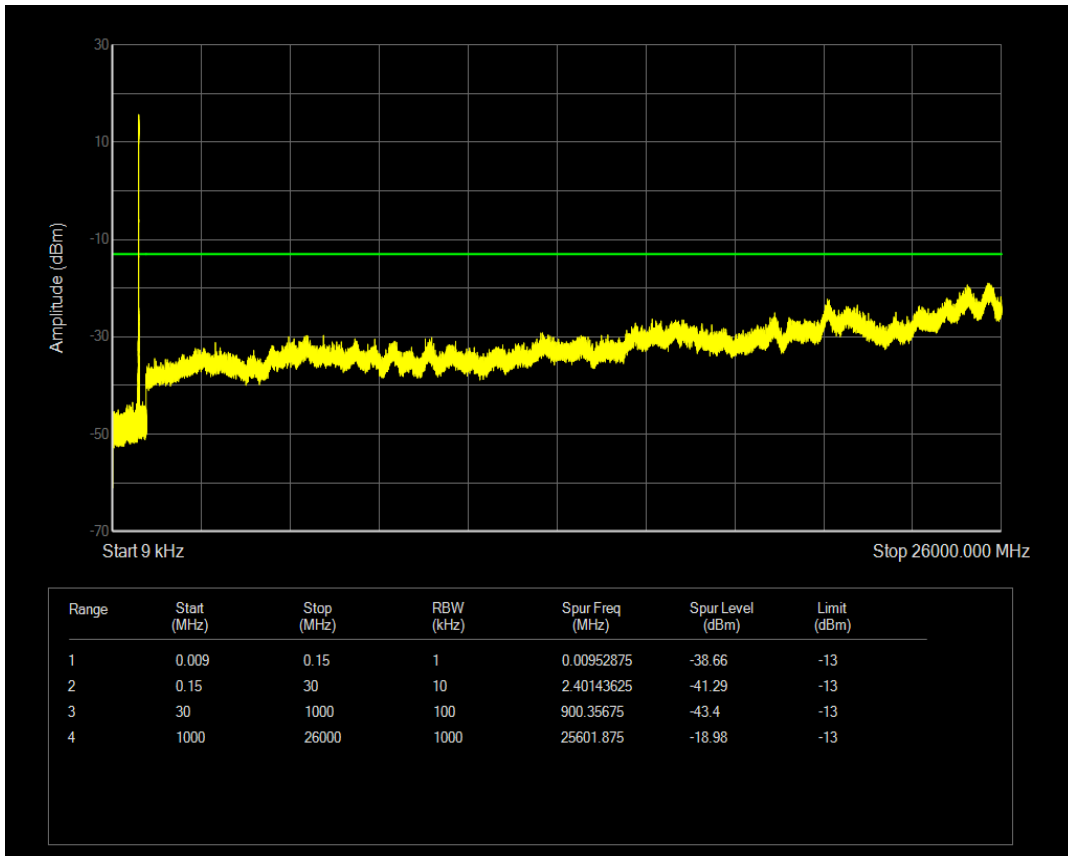
Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0



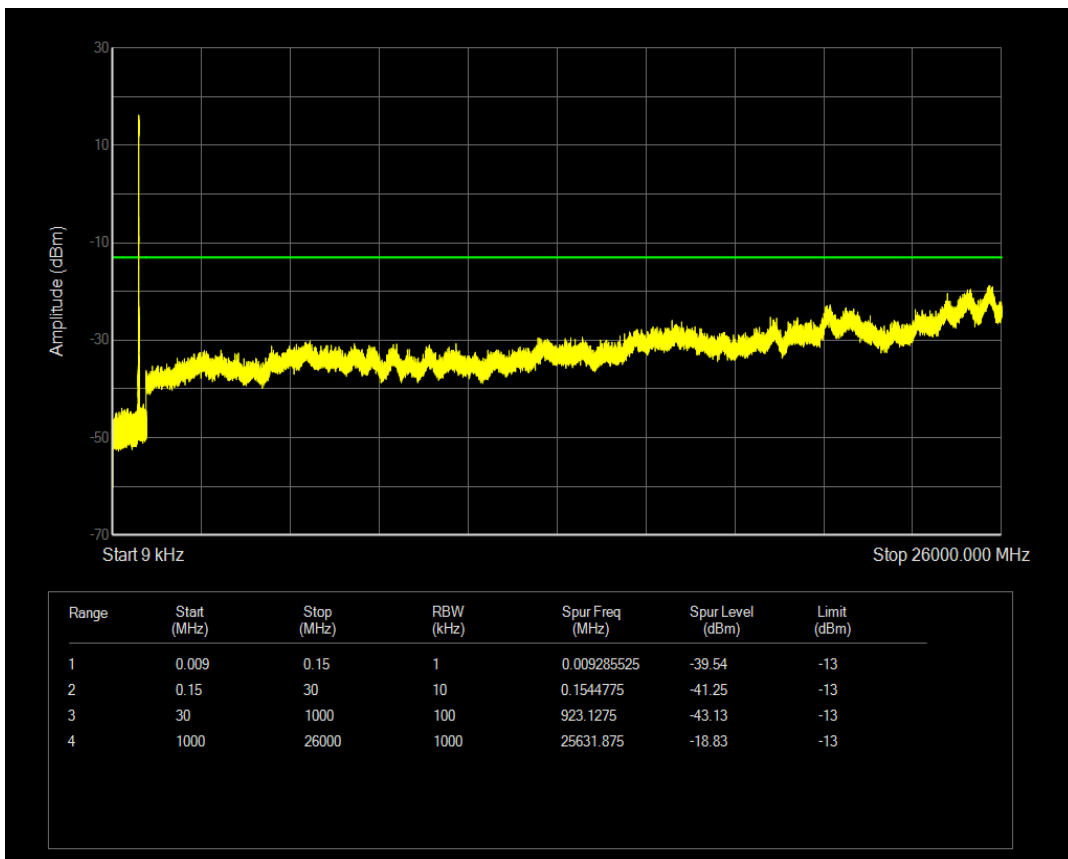
Band13 QPSK BW=5MHz Channel=23230 RB Size=25 Position=#0



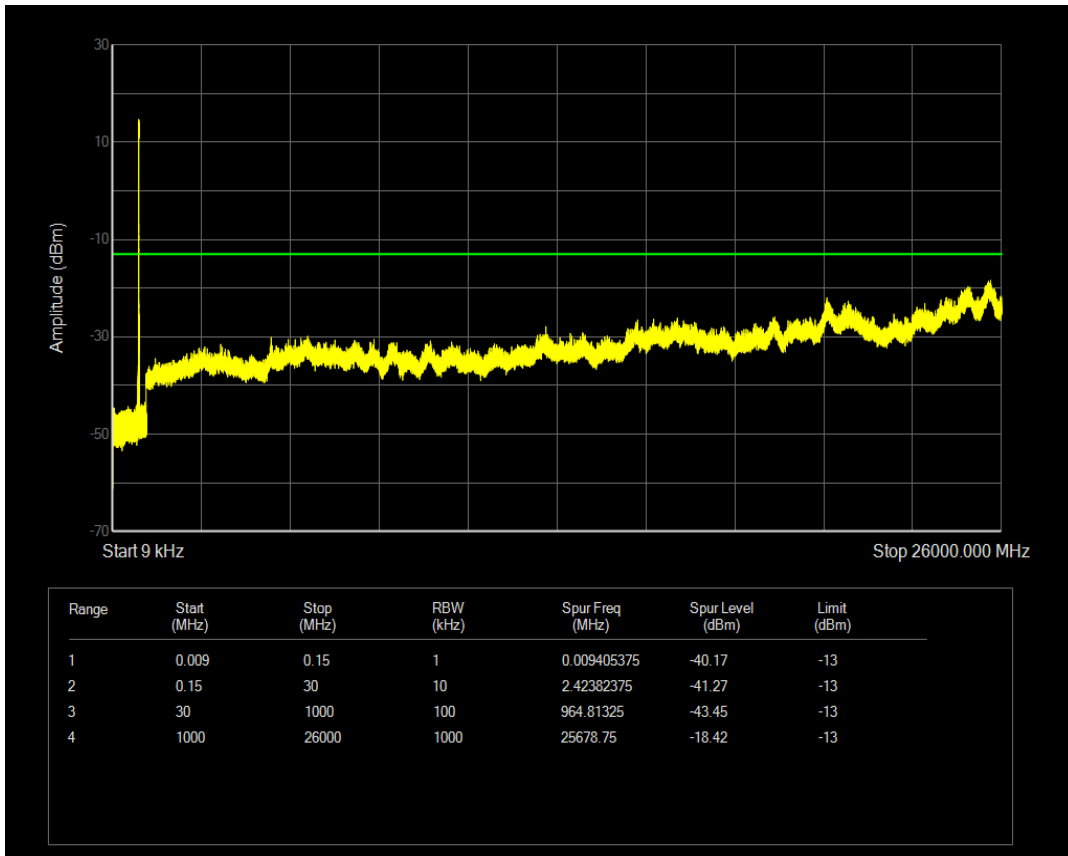
Band13 16QAM BW=5MHz Channel=23230 RB Size=25 Position=#0



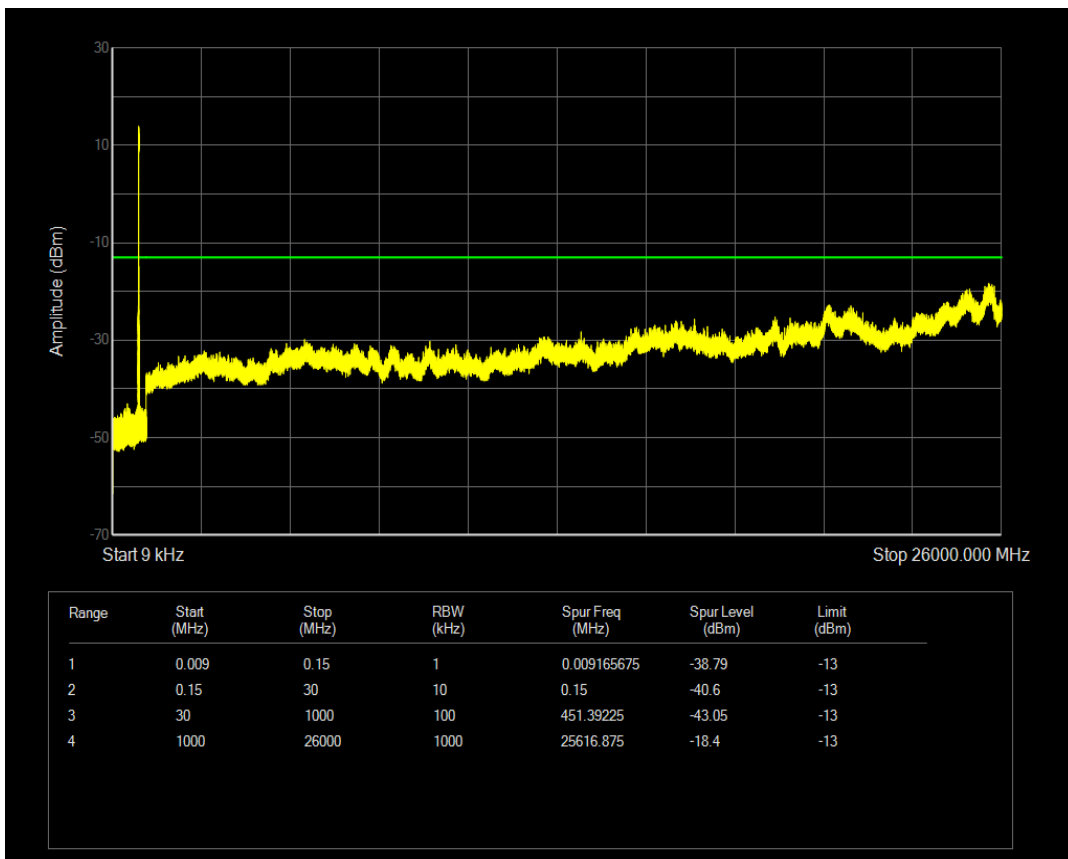
Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0



Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0



Band13 QPSK BW=10MHz Channel=23230 RB Size=50 Position=#0



Band13 16QAM BW=10MHz Channel=23230 RB Size=50 Position=#0

