

Appendix for Band 13

Report No.: BCTC2504135595-3E

Applicant: Shanghai TUGE Data Technologies Co., Ltd.

Product Name: Smart IoT 4G Router

Test Model: TR40

Tested Date: 2025-04-03 to 2025-05-16

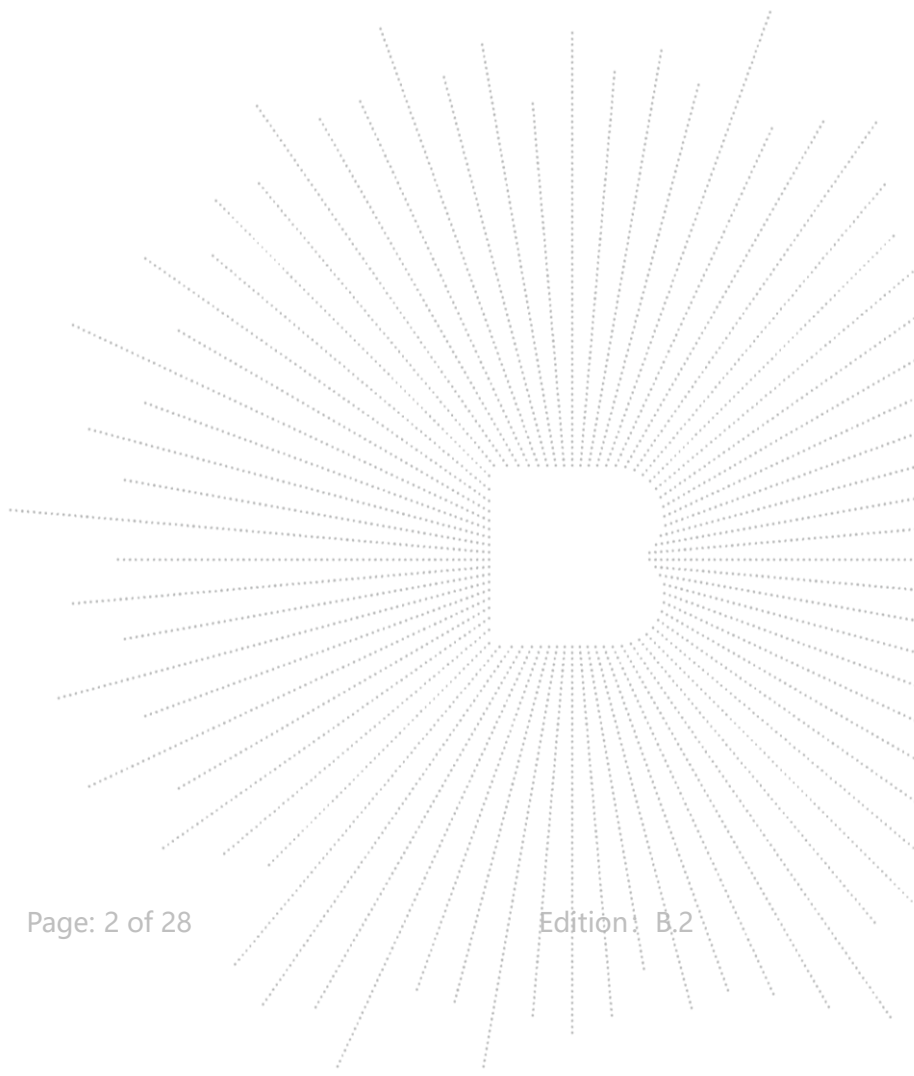
Issued Date: 2025-05-22

Shenzhen BCTC Testing Co., Ltd.



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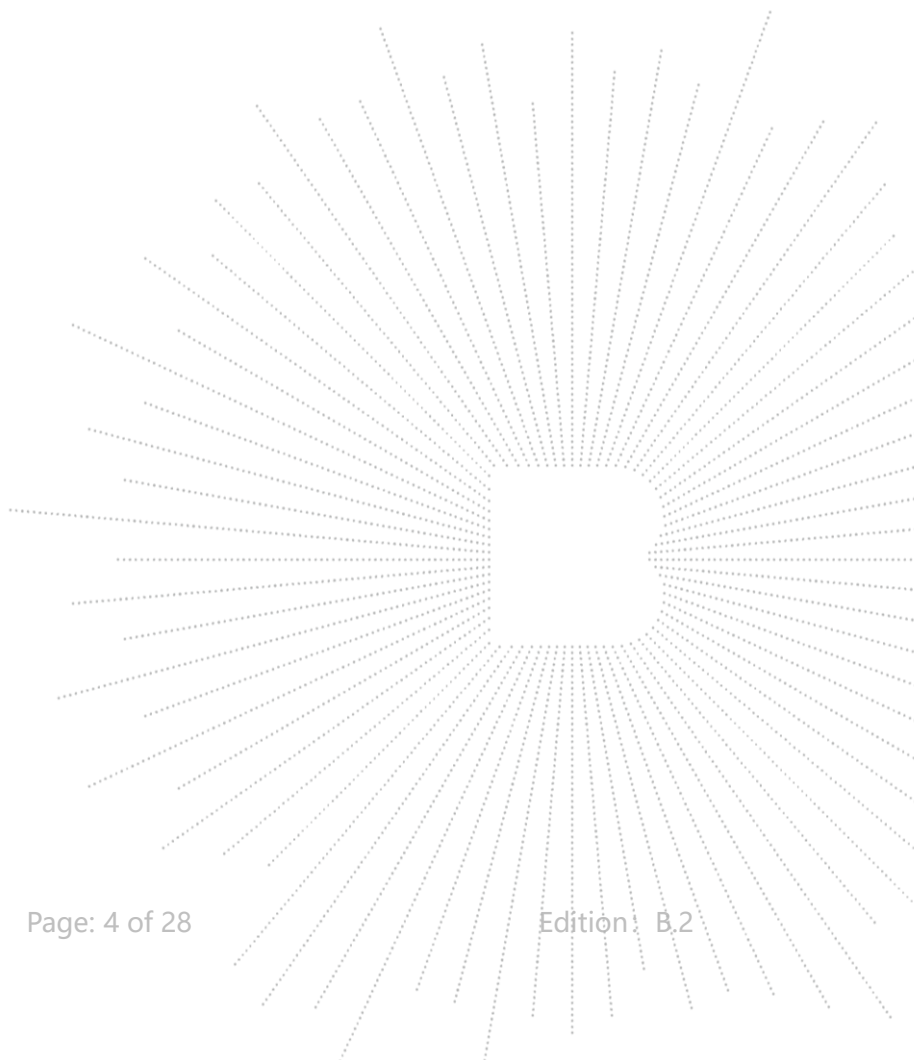
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Appendix 1. Conducted output power

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Verdict
Band13	5	23205	1	#0	QPSK	23.14	PASS
Band13	5	23205	1	#Mid	QPSK	23.09	PASS
Band13	5	23205	1	#Max	QPSK	22.95	PASS
Band13	5	23205	12	#0	QPSK	22.15	PASS
Band13	5	23205	12	#Mid	QPSK	22.04	PASS
Band13	5	23205	12	#Max	QPSK	21.96	PASS
Band13	5	23205	25	#0	QPSK	22.00	PASS
Band13	5	23205	1	#0	16QAM	21.90	PASS
Band13	5	23205	1	#Mid	16QAM	21.82	PASS
Band13	5	23205	1	#Max	16QAM	21.63	PASS
Band13	5	23205	12	#0	16QAM	21.00	PASS
Band13	5	23205	12	#Mid	16QAM	20.93	PASS
Band13	5	23205	12	#Max	16QAM	20.90	PASS
Band13	5	23205	25	#0	16QAM	21.08	PASS
Band13	5	23230	1	#0	QPSK	22.93	PASS
Band13	5	23230	1	#Mid	QPSK	22.73	PASS
Band13	5	23230	1	#Max	QPSK	22.81	PASS
Band13	5	23230	12	#0	QPSK	21.97	PASS
Band13	5	23230	12	#Mid	QPSK	21.95	PASS
Band13	5	23230	12	#Max	QPSK	21.87	PASS
Band13	5	23230	25	#0	QPSK	21.94	PASS
Band13	5	23230	1	#0	16QAM	21.94	PASS
Band13	5	23230	1	#Mid	16QAM	21.81	PASS
Band13	5	23230	1	#Max	16QAM	21.91	PASS
Band13	5	23230	12	#0	16QAM	20.99	PASS
Band13	5	23230	12	#Mid	16QAM	21.04	PASS
Band13	5	23230	12	#Max	16QAM	20.78	PASS
Band13	5	23230	25	#0	16QAM	21.00	PASS
Band13	5	23255	1	#0	QPSK	22.72	PASS
Band13	5	23255	1	#Mid	QPSK	22.73	PASS
Band13	5	23255	1	#Max	QPSK	22.70	PASS
Band13	5	23255	12	#0	QPSK	21.87	PASS
Band13	5	23255	12	#Mid	QPSK	21.93	PASS
Band13	5	23255	12	#Max	QPSK	22.13	PASS
Band13	5	23255	25	#0	QPSK	21.87	PASS
Band13	5	23255	1	#0	16QAM	21.94	PASS
Band13	5	23255	1	#Mid	16QAM	21.98	PASS
Band13	5	23255	1	#Max	16QAM	22.15	PASS
Band13	5	23255	12	#0	16QAM	20.66	PASS
Band13	5	23255	12	#Mid	16QAM	20.65	PASS

Band13	5	23255	12	#Max	16QAM	20.91	PASS
Band13	5	23255	25	#0	16QAM	20.84	PASS
Band13	10	23230	1	#0	QPSK	23.03	PASS
Band13	10	23230	1	#Mid	QPSK	22.84	PASS
Band13	10	23230	1	#Max	QPSK	22.81	PASS
Band13	10	23230	25	#0	QPSK	22.06	PASS
Band13	10	23230	25	#Mid	QPSK	21.92	PASS
Band13	10	23230	25	#Max	QPSK	21.90	PASS
Band13	10	23230	50	#0	QPSK	21.93	PASS
Band13	10	23230	1	#0	16QAM	23.05	PASS
Band13	10	23230	1	#Mid	16QAM	22.81	PASS
Band13	10	23230	1	#Max	16QAM	22.94	PASS
Band13	10	23230	25	#0	16QAM	20.79	PASS
Band13	10	23230	25	#Mid	16QAM	20.97	PASS
Band13	10	23230	25	#Max	16QAM	20.67	PASS
Band13	10	23230	50	#0	16QAM	21.11	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	28.14	0.036	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	NV	NT	24.25	0.031	-2.5	2.5	PASS
Band 13	5	23205	25	#0	QPSK	HV	NT	21.77	0.028	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	LV	NT	19.23	0.025	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	NV	NT	19.61	0.025	-2.5	2.5	PASS
Band 13	5	23205	25	#0	16QAM	HV	NT	19.90	0.026	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	LV	NT	2.15	0.003	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	NV	NT	1.69	0.002	-2.5	2.5	PASS
Band 13	5	23230	25	#0	QPSK	HV	NT	-0.57	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	LV	NT	-0.73	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	NV	NT	-0.87	-0.001	-2.5	2.5	PASS
Band 13	5	23230	25	#0	16QAM	HV	NT	-0.33	0.000	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	LV	NT	5.36	0.007	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	NV	NT	4.51	0.006	-2.5	2.5	PASS
Band 13	5	23255	25	#0	QPSK	HV	NT	3.86	0.005	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	LV	NT	3.08	0.004	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	NV	NT	2.25	0.003	-2.5	2.5	PASS
Band 13	5	23255	25	#0	16QAM	HV	NT	2.26	0.003	-2.5	2.5	PASS



Band 13	10	23230	50	#0	QPSK	LV	NT	20.04	0.026	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	NV	NT	17.02	0.022	-2.5	2.5	PASS
Band 13	10	23230	50	#0	QPSK	HV	NT	15.29	0.020	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	LV	NT	13.23	0.017	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	NV	NT	14.52	0.019	-2.5	2.5	PASS
Band 13	10	23230	50	#0	16QAM	HV	NT	14.16	0.018	-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
NV NT	Band13	5	23205	25	#0	QPSK	NV	-30	44.53	0.057	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	-20	47.08	0.060	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	0	-1.24	-0.002	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	10	5.16	0.007	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	20	11.36	0.015	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	30	17.98	0.023	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	40	23.09	0.030	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	QPSK	NV	50	27.64	0.035	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	16QAM	NV	-30	31.01	0.040	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	16QAM	NV	-20	34.45	0.044	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	16QAM	NV	0	37.16	0.048	-2.5	2.5	PASS
NV NT	Band13	5	23205	25	#0	16QAM	NV	10	40.31	0.052	-2.5	2.5	PASS
NV	Band13	5	232	25	#0	16Q	NV	20	44.0	0.05	-2.5	2.5	PA

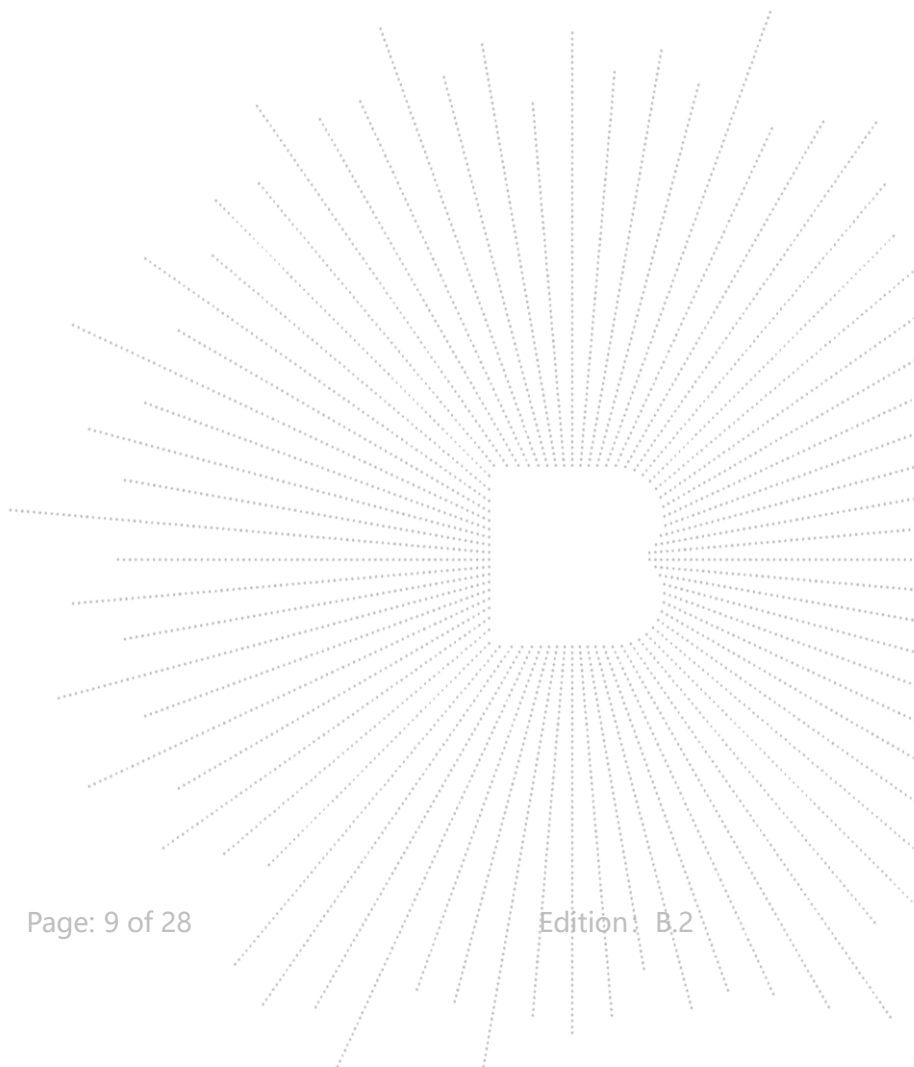


NT	3		05			AM			2	6			SS
NV	Band1	5	232	25	#0	16Q	NV	30	47.0	0.06	-2.5	2.5	PA
NT	3		05			AM			6	0			SS
NV	Band1	5	232	25	#0	16Q	NV	40	0.30	0.00	-2.5	2.5	PA
NT	3		05			AM				0			SS
NV	Band1	5	232	25	#0	16Q	NV	50	2.53	0.00	-2.5	2.5	PA
NT	3		05			AM				3			SS
NV	Band1	5	232	25	#0	QPS	NV	-30	1.70	0.00	-2.5	2.5	PA
NT	3		30			K				2			SS
NV	Band1	5	232	25	#0	QPS	NV	-20	3.28	0.00	-2.5	2.5	PA
NT	3		30			K				4			SS
NV	Band1	5	232	25	#0	QPS	NV	0	3.38	0.00	-2.5	2.5	PA
NT	3		30			K				4			SS
NV	Band1	5	232	25	#0	QPS	NV	10	3.03	0.00	-2.5	2.5	PA
NT	3		30			K				4			SS
NV	Band1	5	232	25	#0	QPS	NV	20	0.69	0.00	-2.5	2.5	PA
NT	3		30			K				1			SS
NV	Band1	5	232	25	#0	QPS	NV	30	0.89	0.00	-2.5	2.5	PA
NT	3		30			K				1			SS
NV	Band1	5	232	25	#0	QPS	NV	40	-0.2	0.00	-2.5	2.5	PA
NT	3		30			K			0	0			SS
NV	Band1	5	232	25	#0	QPS	NV	50	-2.1	-0.0	-2.5	2.5	PA
NT	3		30			K			7	03			SS
NV	Band1	5	232	25	#0	16Q	NV	-30	-2.5	-0.0	-2.5	2.5	PA
NT	3		30			AM			3	03			SS
NV	Band1	5	232	25	#0	16Q	NV	-20	-4.2	-0.0	-2.5	2.5	PA
NT	3		30			AM			2	05			SS
NV	Band1	5	232	25	#0	16Q	NV	0	-3.8	-0.0	-2.5	2.5	PA
NT	3		30			AM			1	05			SS
NV	Band1	5	232	25	#0	16Q	NV	10	-2.2	-0.0	-2.5	2.5	PA
NT	3		30			AM			3	03			SS
NV	Band1	5	232	25	#0	16Q	NV	20	-1.7	-0.0	-2.5	2.5	PA
NT	3		30			AM			2	02			SS
NV	Band1	5	232	25	#0	16Q	NV	30	-0.4	-0.0	-2.5	2.5	PA
NT	3		30			AM			7	01			SS
NV	Band1	5	232	25	#0	16Q	NV	40	0.13	0.00	-2.5	2.5	PA
NT	3		30			AM				0			SS
NV	Band1	5	232	25	#0	16Q	NV	50	1.95	0.00	-2.5	2.5	PA
NT	3		30			AM				2			SS
NV	Band1	5	232	25	#0	QPS	NV	-30	3.40	0.00	-2.5	2.5	PA
NT	3		55			K				4			SS
NV	Band1	5	232	25	#0	QPS	NV	-20	3.69	0.00	-2.5	2.5	PA
NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	QPS	NV	0	4.13	0.00	-2.5	2.5	PA



NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	QPS	NV	10	4.06	0.00	-2.5	2.5	PA
NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	QPS	NV	20	3.73	0.00	-2.5	2.5	PA
NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	QPS	NV	30	4.03	0.00	-2.5	2.5	PA
NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	QPS	NV	40	2.12	0.00	-2.5	2.5	PA
NT	3		55			K				3			SS
NV	Band1	5	232	25	#0	QPS	NV	50	4.25	0.00	-2.5	2.5	PA
NT	3		55			K				5			SS
NV	Band1	5	232	25	#0	16Q	NV	-30	4.65	0.00	-2.5	2.5	PA
NT	3		55			AM				6			SS
NV	Band1	5	232	25	#0	16Q	NV	-20	6.08	0.00	-2.5	2.5	PA
NT	3		55			AM				8			SS
NV	Band1	5	232	25	#0	16Q	NV	0	8.08	0.01	-2.5	2.5	PA
NT	3		55			AM				0			SS
NV	Band1	5	232	25	#0	16Q	NV	10	10.4	0.01	-2.5	2.5	PA
NT	3		55			AM				0			SS
NV	Band1	5	232	25	#0	16Q	NV	20	13.0	0.01	-2.5	2.5	PA
NT	3		55			AM				3			SS
NV	Band1	5	232	25	#0	16Q	NV	30	15.4	0.02	-2.5	2.5	PA
NT	3		55			AM				4			SS
NV	Band1	5	232	25	#0	16Q	NV	40	16.7	0.02	-2.5	2.5	PA
NT	3		55			AM				7			SS
NV	Band1	5	232	25	#0	16Q	NV	50	18.2	0.02	-2.5	2.5	PA
NT	3		55			AM				5			SS
NV	Band1	10	232	50	#0	QPS	NV	-30	41.7	0.05	-2.5	2.5	PA
NT	3		30			K				9			SS
NV	Band1	10	232	50	#0	QPS	NV	-20	37.3	0.04	-2.5	2.5	PA
NT	3		30			K				6			SS
NV	Band1	10	232	50	#0	QPS	NV	0	36.9	0.04	-2.5	2.5	PA
NT	3		30			K				2			SS
NV	Band1	10	232	50	#0	QPS	NV	10	36.9	0.04	-2.5	2.5	PA
NT	3		30			K				8			SS
NV	Band1	10	232	50	#0	QPS	NV	20	36.8	0.04	-2.5	2.5	PA
NT	3		30			K				1			SS
NV	Band1	10	232	50	#0	QPS	NV	30	35.8	0.04	-2.5	2.5	PA
NT	3		30			K				3			SS
NV	Band1	10	232	50	#0	QPS	NV	40	34.5	0.04	-2.5	2.5	PA
NT	3		30			K				0			SS
NV	Band1	10	232	50	#0	QPS	NV	50	32.1	0.04	-2.5	2.5	PA
NT	3		30			K				9			SS
NV	Band1	10	232	50	#0	16Q	NV	-30	28.7	0.03	-2.5	2.5	PA

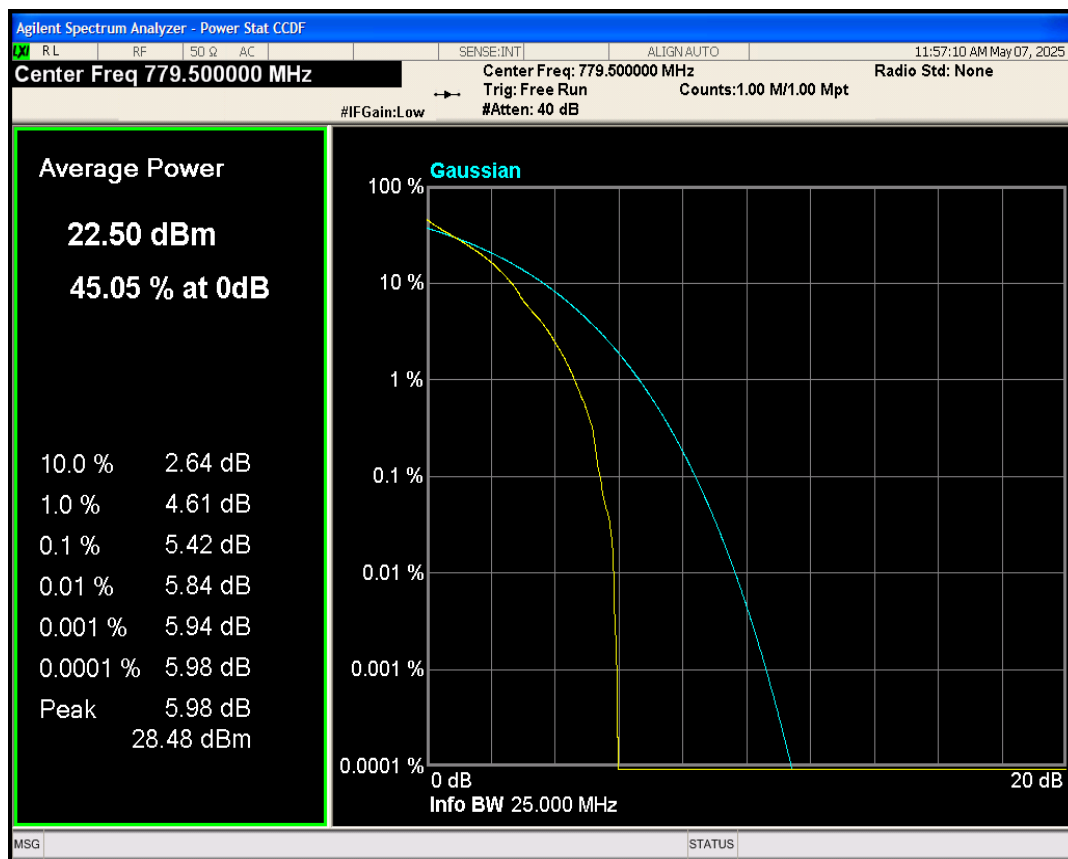
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NV	Band1	10	232	50	#0	16Q	NV	-20	27.5	0.03	-2.5	2.5	PA
NT	3		30			AM			5	5			SS
NV	Band1	10	232	50	#0	16Q	NV	0	26.0	0.03	-2.5	2.5	PA
NT	3		30			AM			8	3			SS
NV	Band1	10	232	50	#0	16Q	NV	10	25.6	0.03	-2.5	2.5	PA
NT	3		30			AM			8	3			SS
NV	Band1	10	232	50	#0	16Q	NV	20	23.2	0.03	-2.5	2.5	PA
NT	3		30			AM			7	0			SS
NV	Band1	10	232	50	#0	16Q	NV	30	23.6	0.03	-2.5	2.5	PA
NT	3		30			AM			3	0			SS
NV	Band1	10	232	50	#0	16Q	NV	40	26.6	0.03	-2.5	2.5	PA
NT	3		30			AM			5	4			SS
NV	Band1	10	232	50	#0	16Q	NV	50	27.0	0.03	-2.5	2.5	PA
NT	3		30			AM			2	5			SS



Appendix 3. Peak-to-Average Ratio

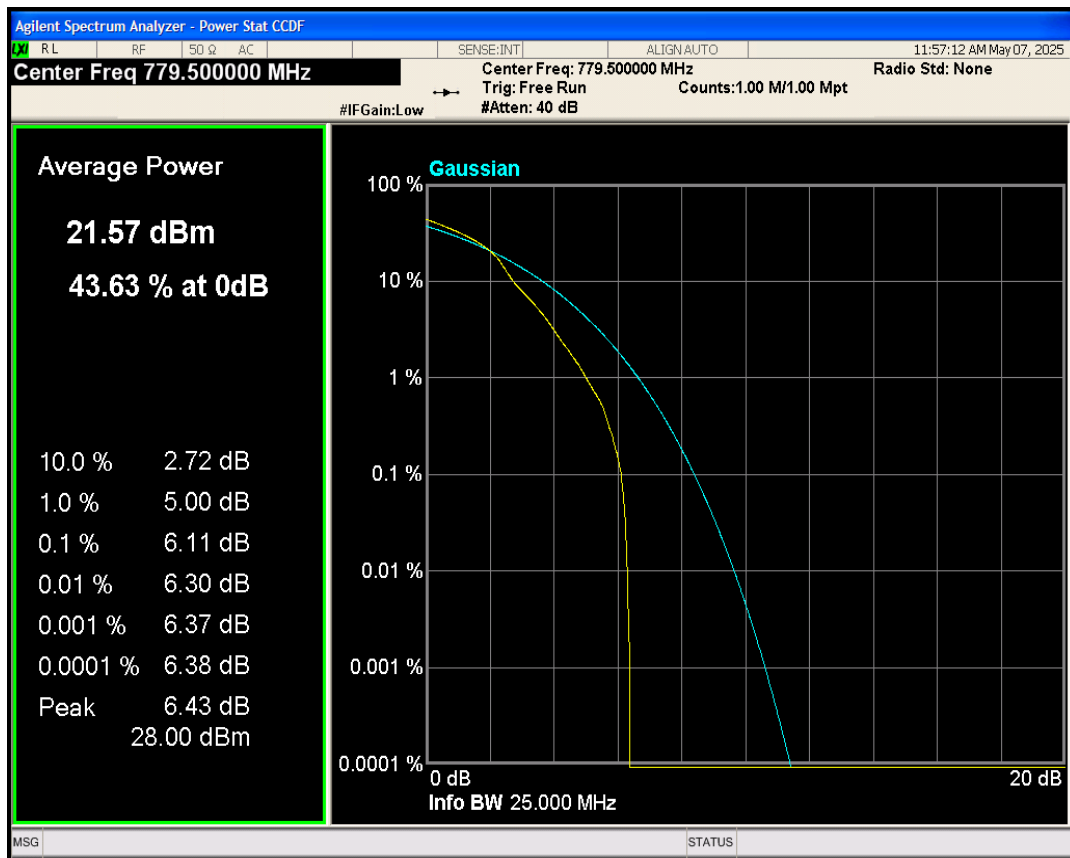
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Result (dB)	high Limit (dB)	Verdict
Band13	5	23205	1	#0	QPSK	5.42	13	PASS
Band13	5	23205	1	#0	16QAM	6.11	13	PASS
Band13	5	23230	1	#0	QPSK	5.03	13	PASS
Band13	5	23230	1	#0	16QAM	5.87	13	PASS
Band13	5	23255	1	#0	QPSK	4.67	13	PASS
Band13	5	23255	1	#0	16QAM	5.36	13	PASS
Band13	10	23230	1	#0	QPSK	5.31	13	PASS
Band13	10	23230	1	#0	16QAM	6.33	13	PASS

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

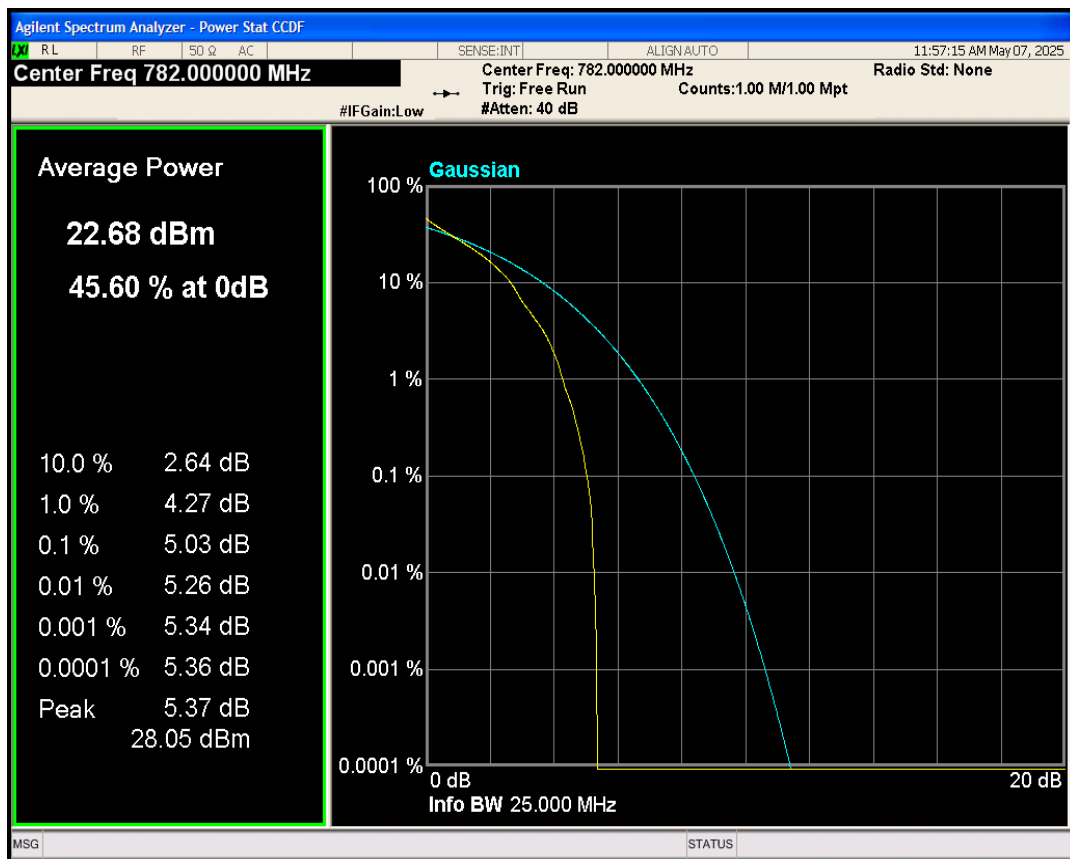




Band13 16QAM BW=5MHz Channel=23205 RB Size=1 Position=#0

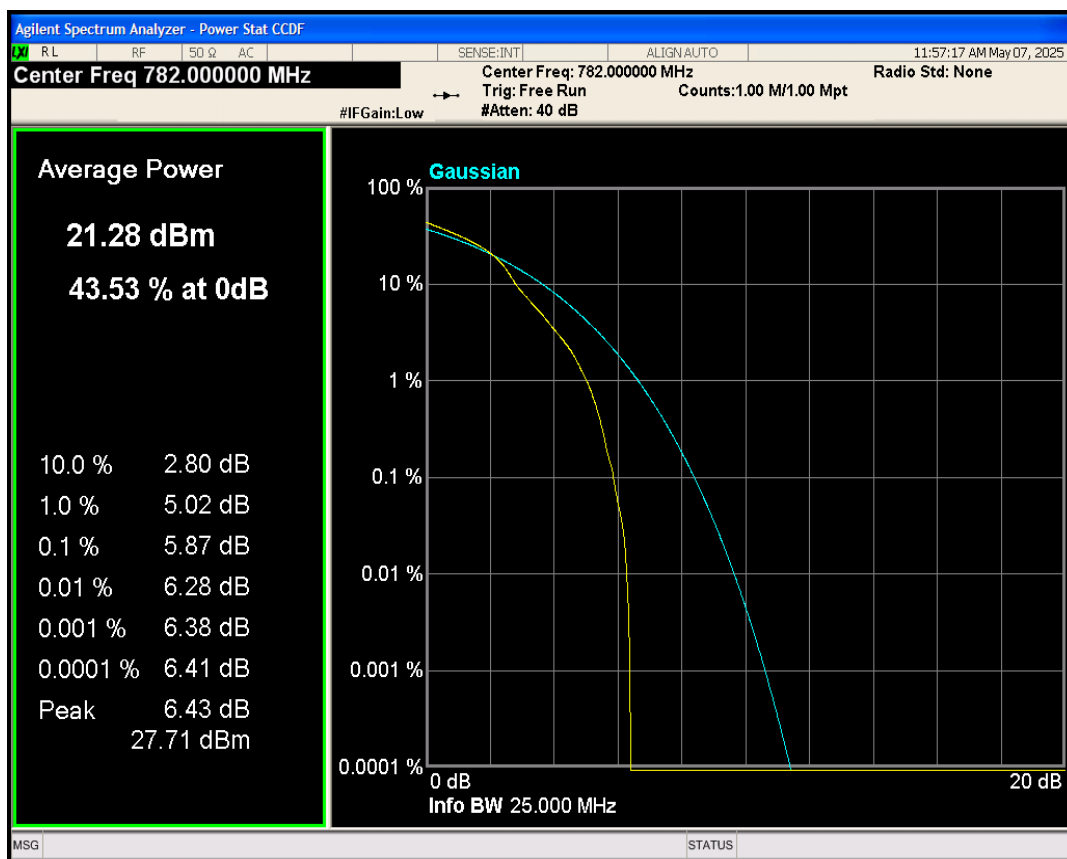


Band13 QPSK BW=5MHz Channel=23230 RB Size=1 Position=#0

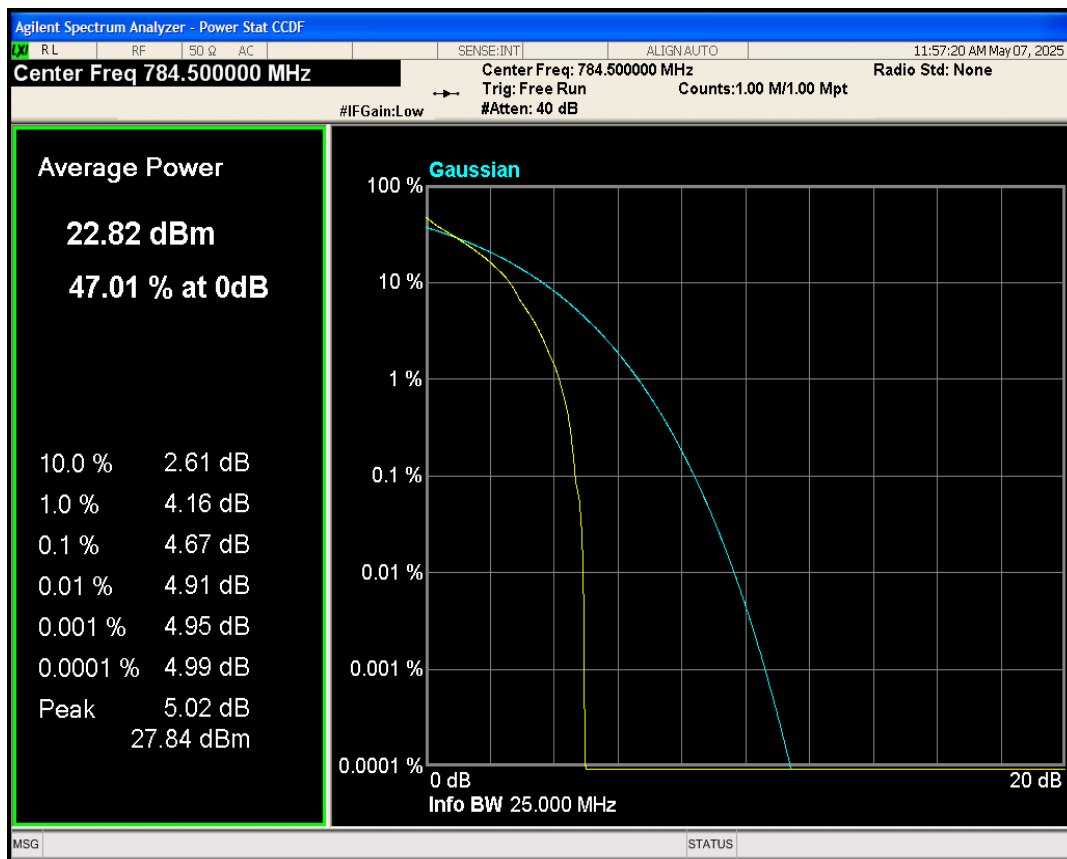




Band13 16QAM BW=5MHz Channel=23230 RB Size=1 Position=#0

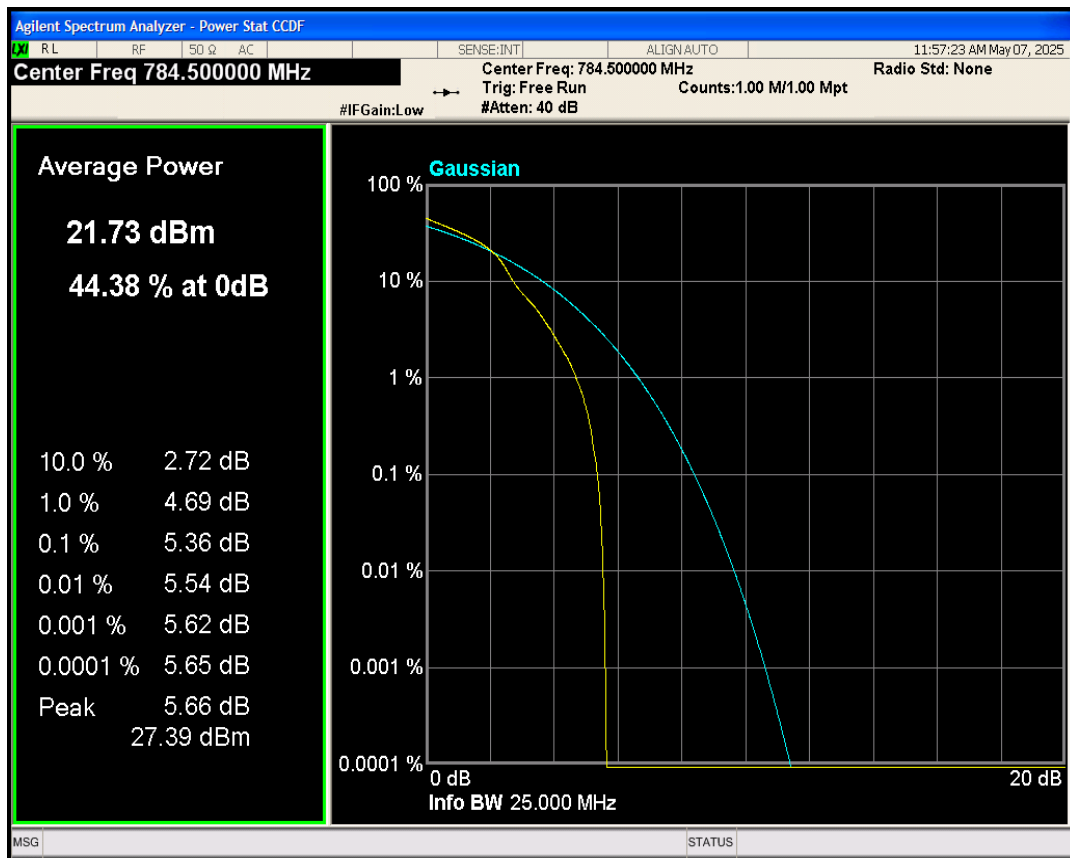


Band13 QPSK BW=5MHz Channel=23255 RB Size=1 Position=#0

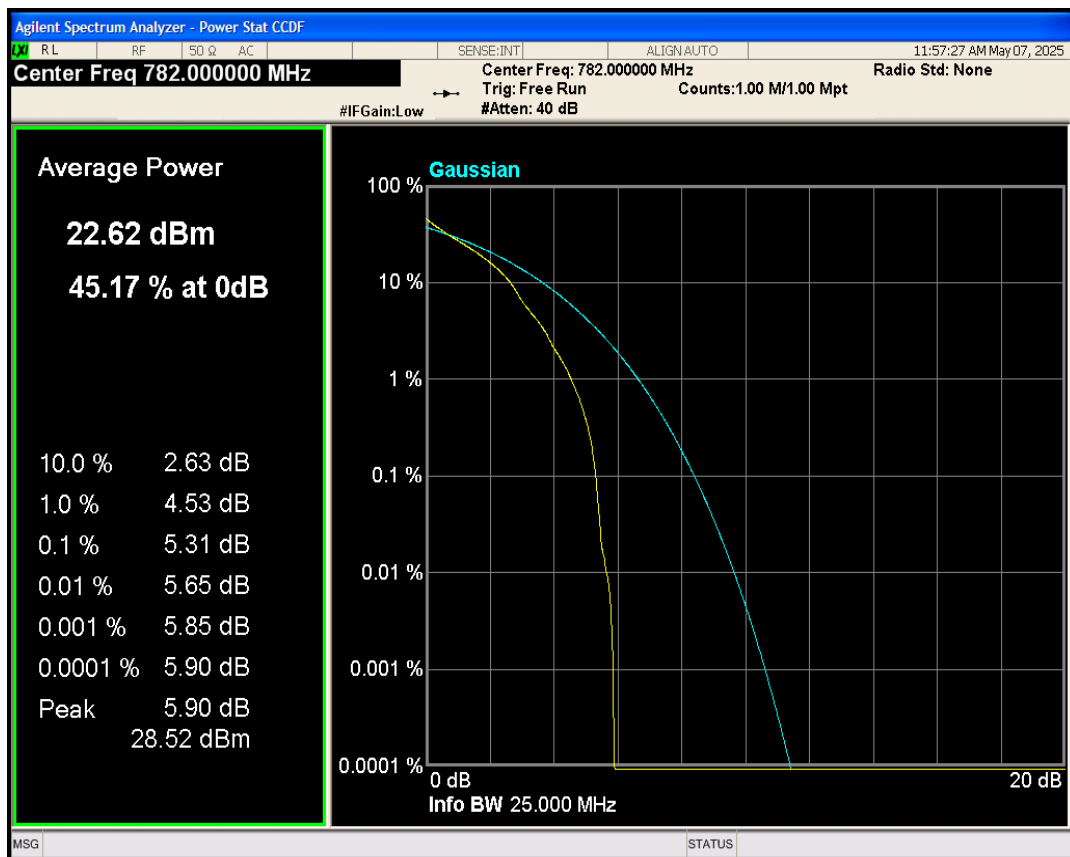




Band13 16QAM BW=5MHz Channel=23255 RB Size=1 Position=#0

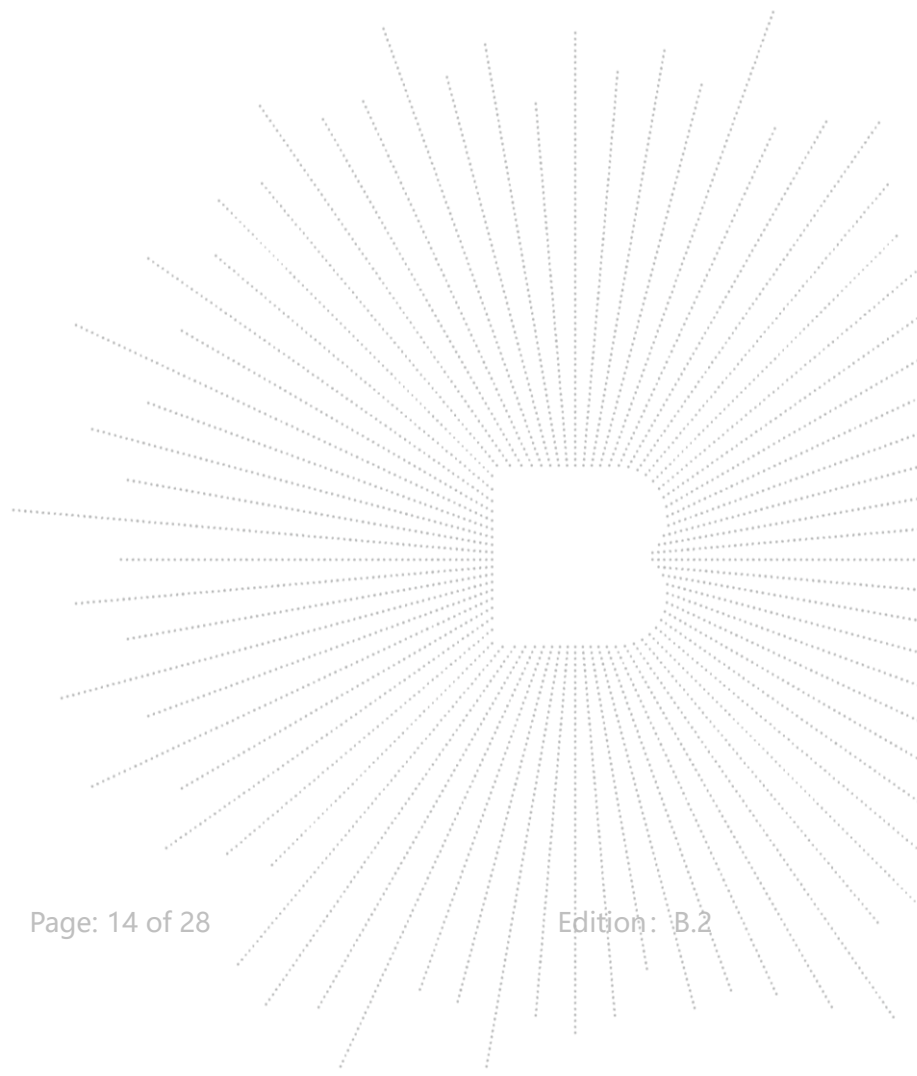
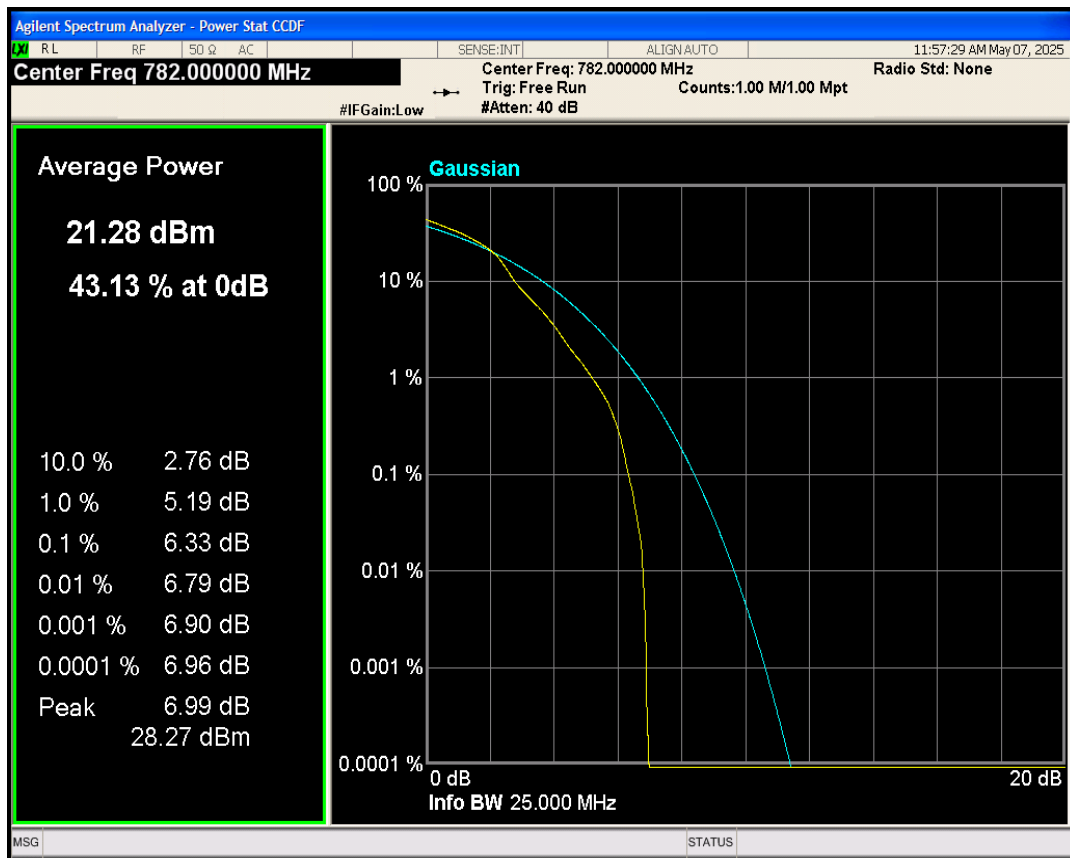


Band13 QPSK BW=10MHz Channel=23230 RB Size=1 Position=#0





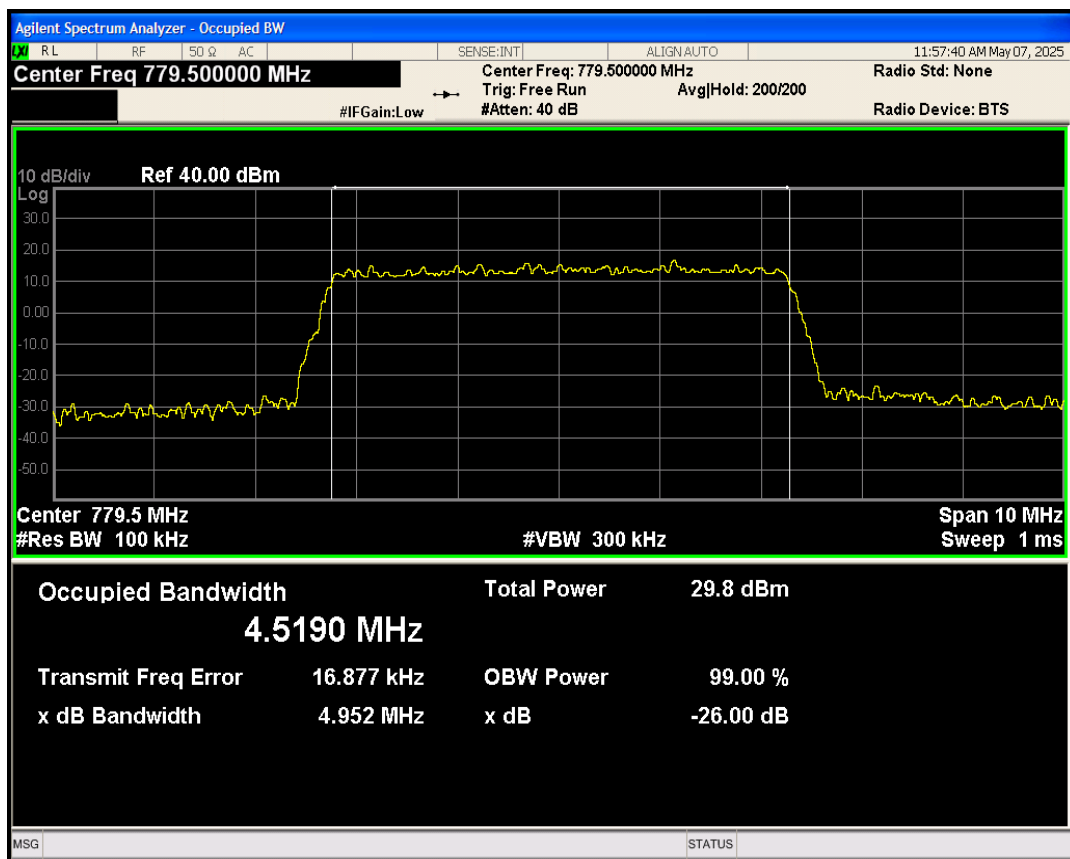
Band13 16QAM BW=10MHz Channel=23230 RB Size=1 Position=#0



Appendix 4. Occupied bandwidth

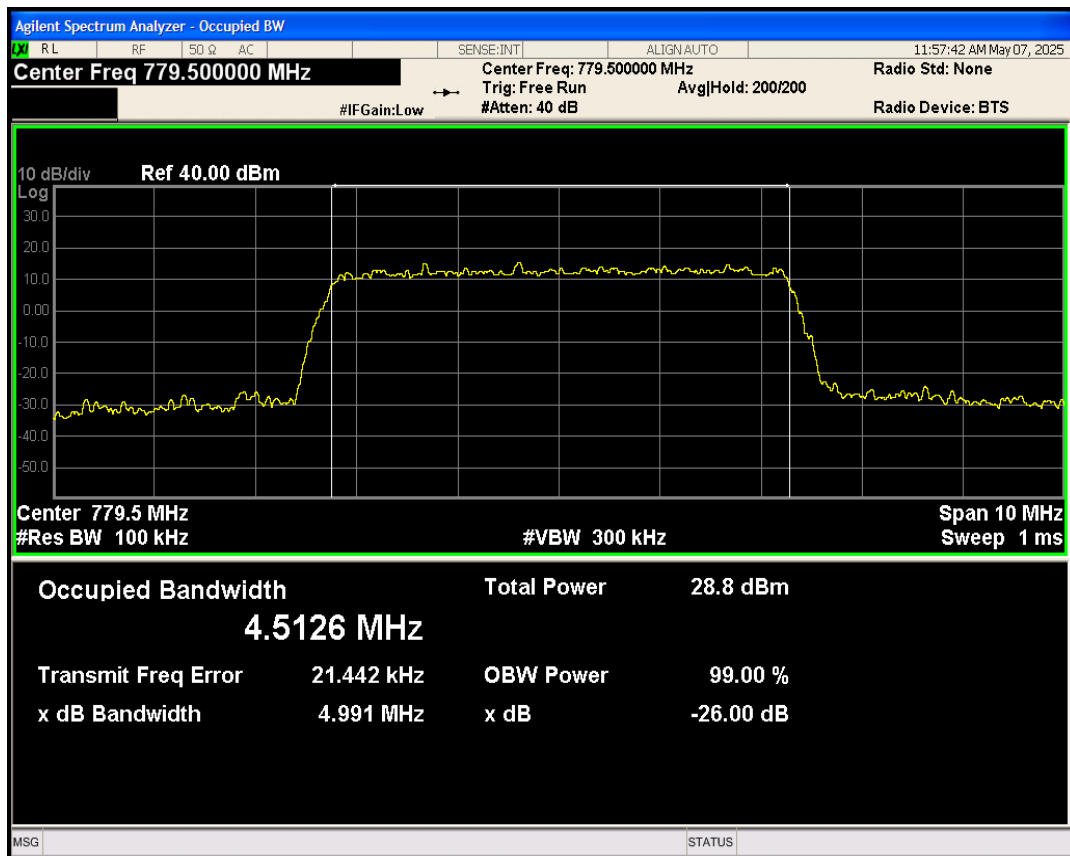
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	99% OBW (MHz)	-26dB EBW (MHz)	Verdict
Band13	5	23205	25	#0	QPSK	4.519	4.952	PASS
Band13	5	23205	25	#0	16QAM	4.513	4.991	PASS
Band13	5	23230	25	#0	QPSK	4.497	4.948	PASS
Band13	5	23230	25	#0	16QAM	4.516	4.947	PASS
Band13	5	23255	25	#0	QPSK	4.517	4.968	PASS
Band13	5	23255	25	#0	16QAM	4.529	4.948	PASS
Band13	10	23230	50	#0	QPSK	8.965	9.841	PASS
Band13	10	23230	50	#0	16QAM	8.975	9.801	PASS

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

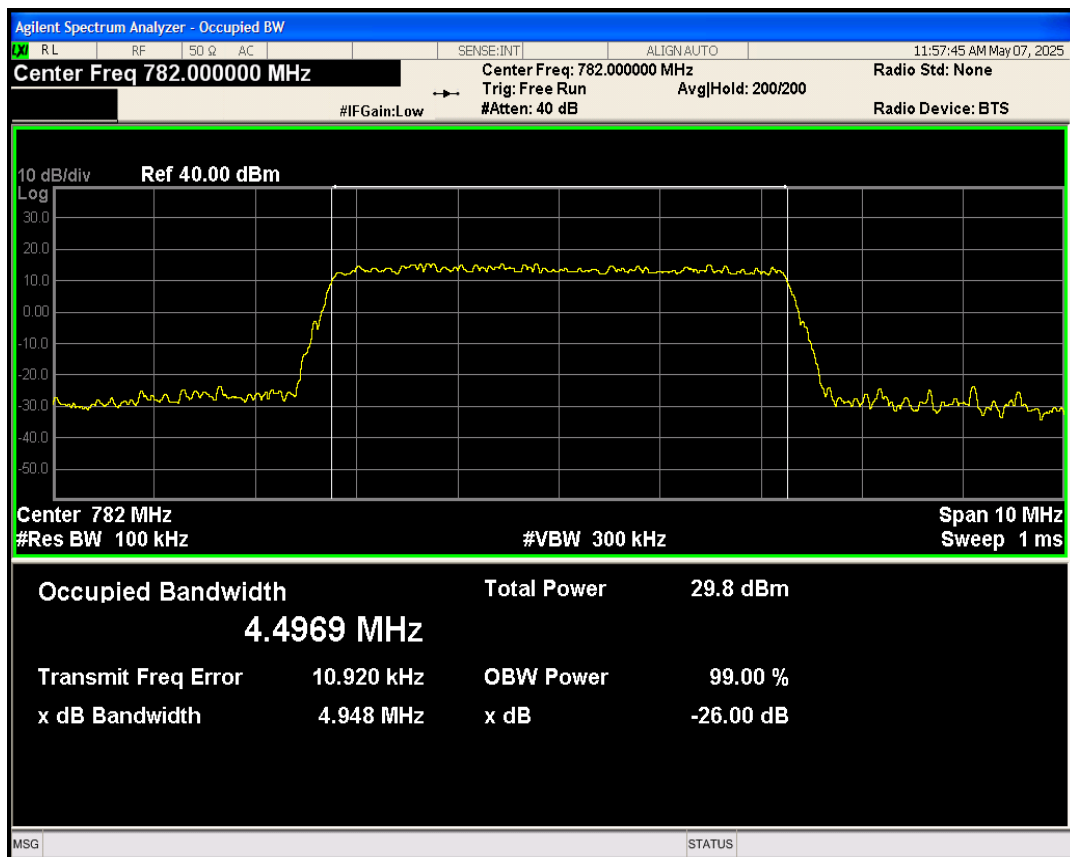




Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0

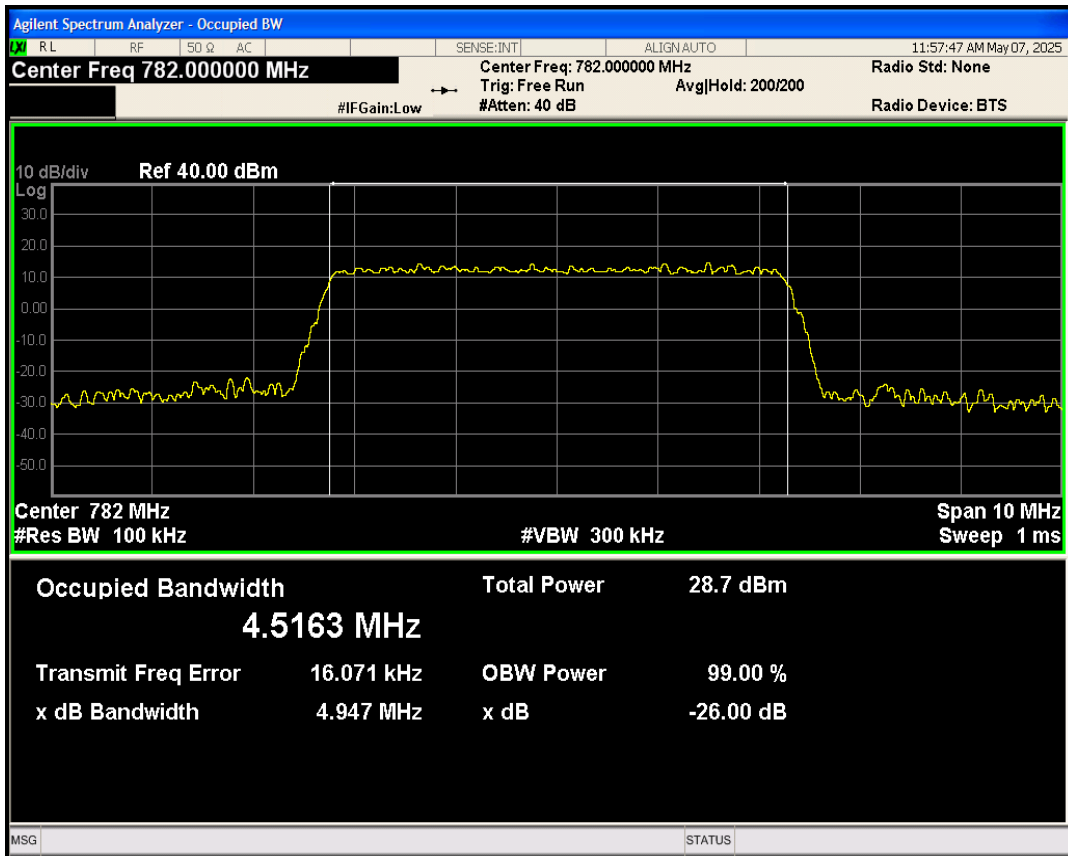


Band13 QPSK BW=5MHz Channel=23230 RB Size=25 Position=#0

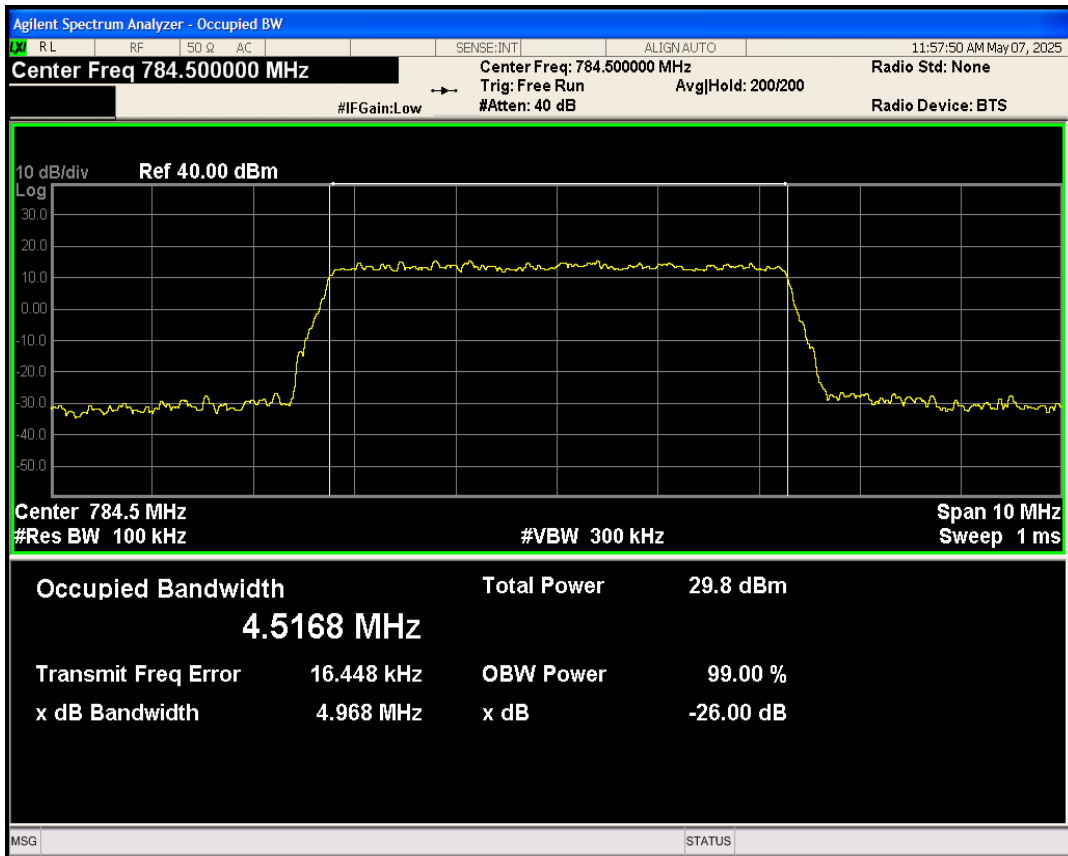




Band13 16QAM BW=5MHz Channel=23230 RB Size=25 Position=#0

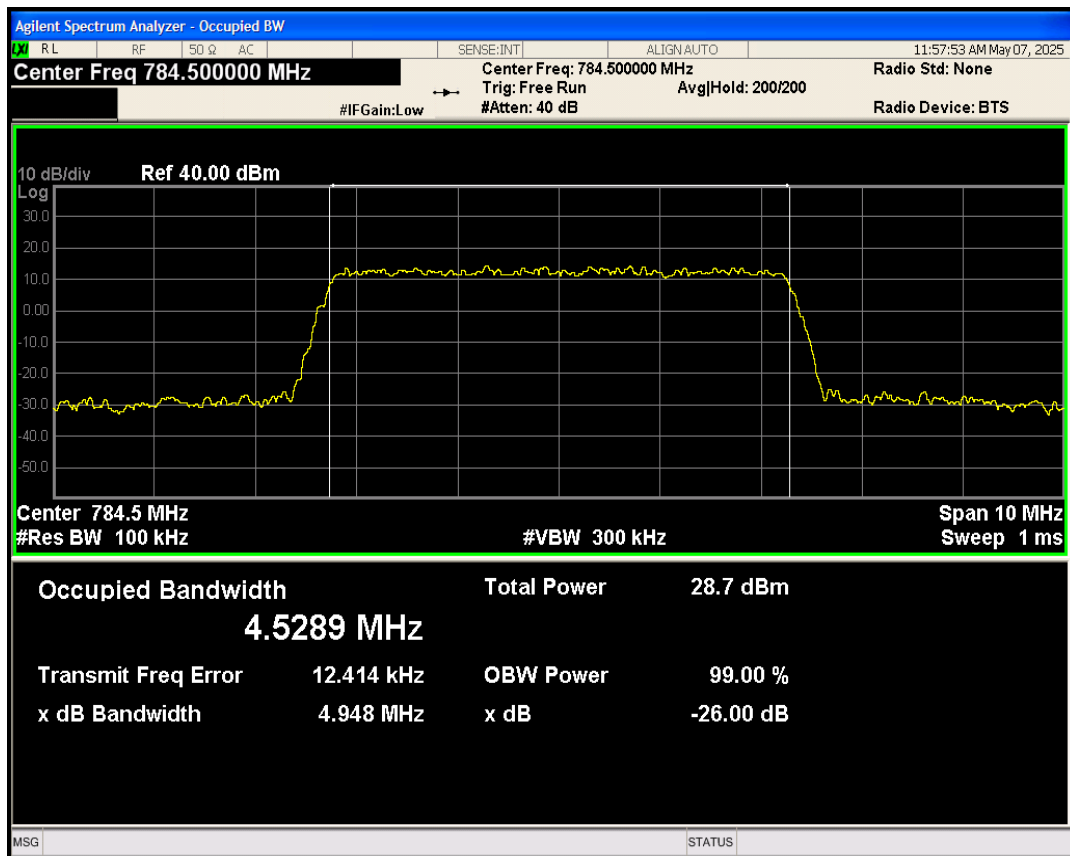


Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0

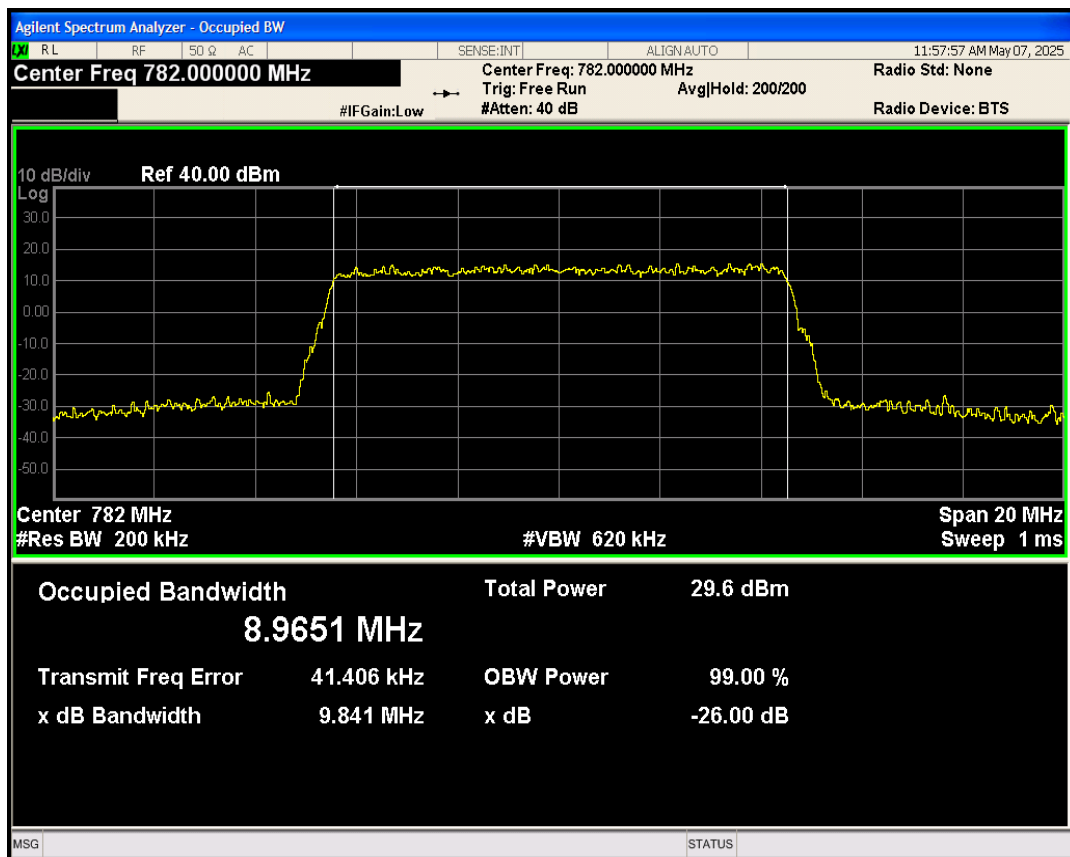




Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0

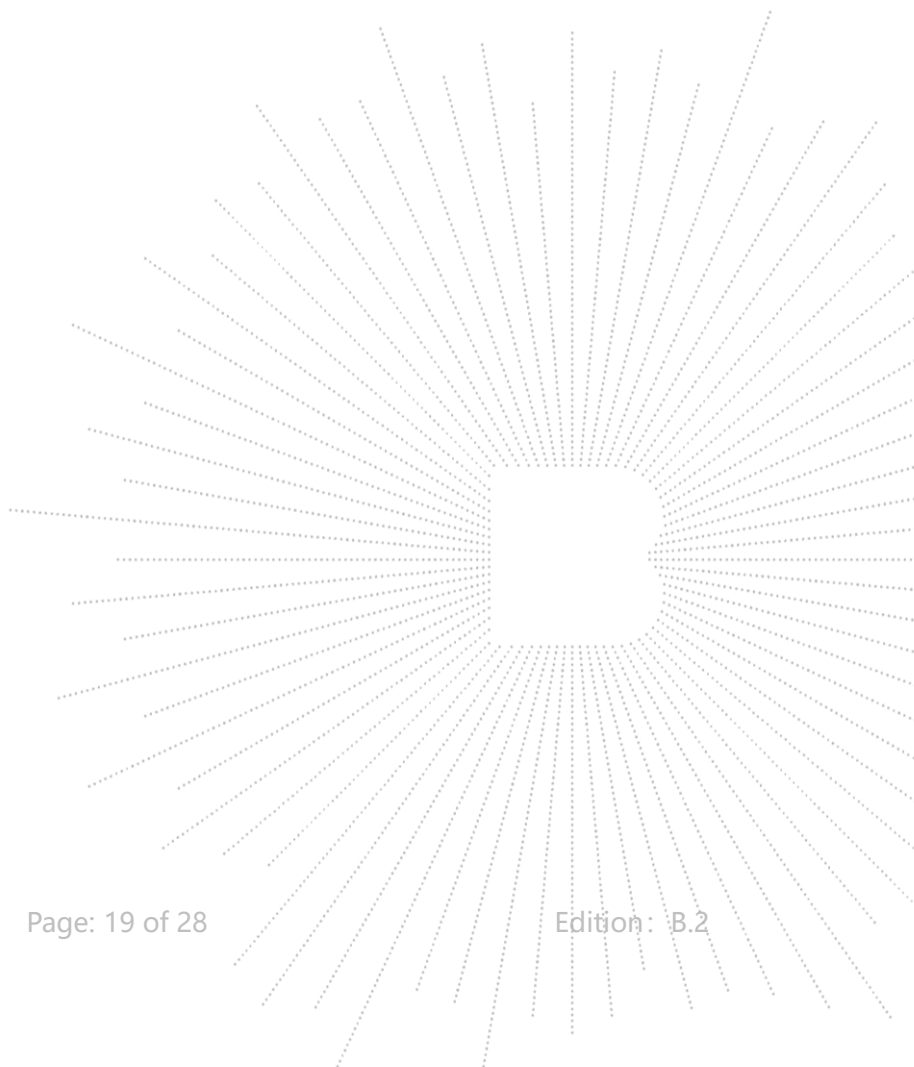
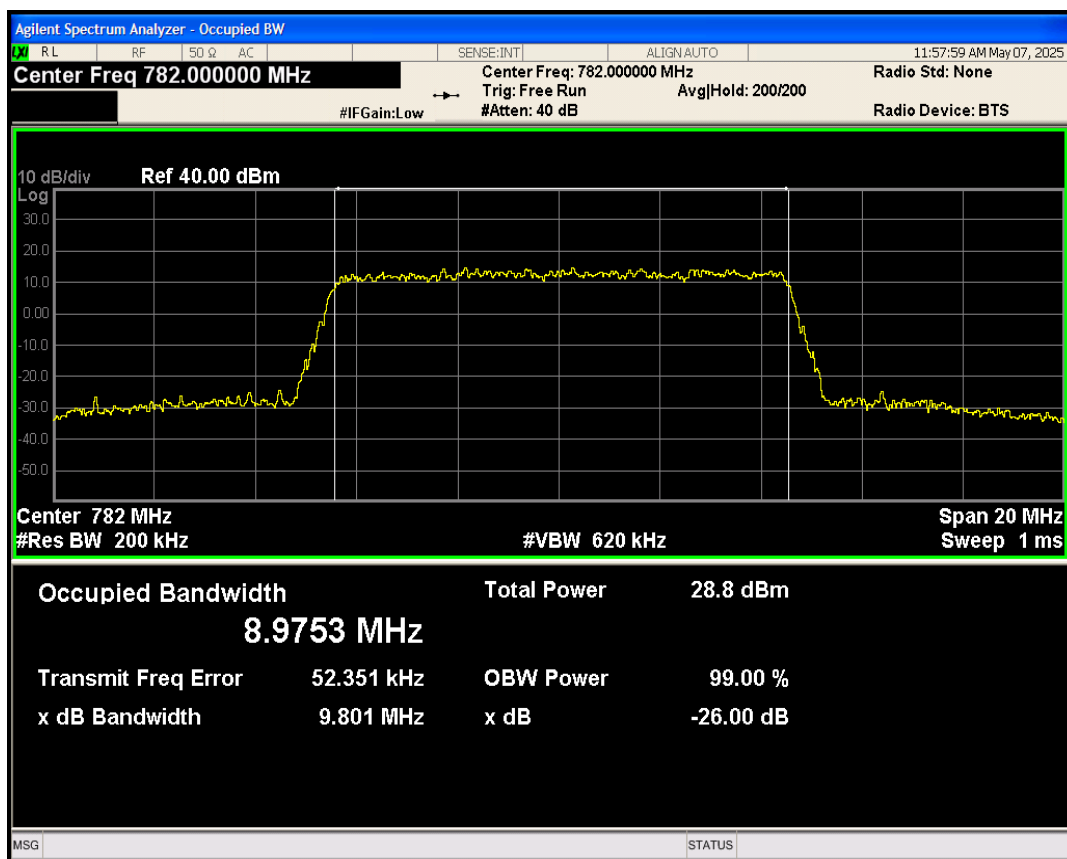


Band13 QPSK BW=10MHz Channel=23230 RB Size=50 Position=#0





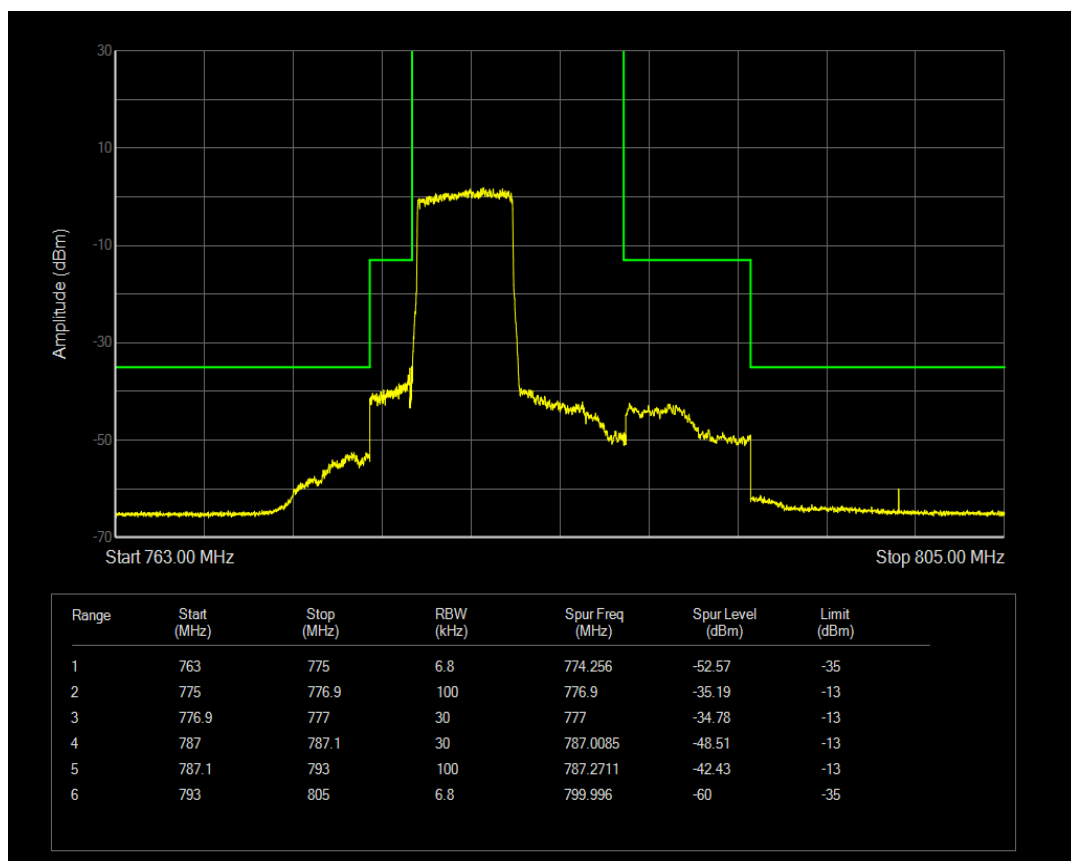
Band13 16QAM BW=10MHz Channel=23230 RB Size=50 Position=#0



Appendix 5. Band edge

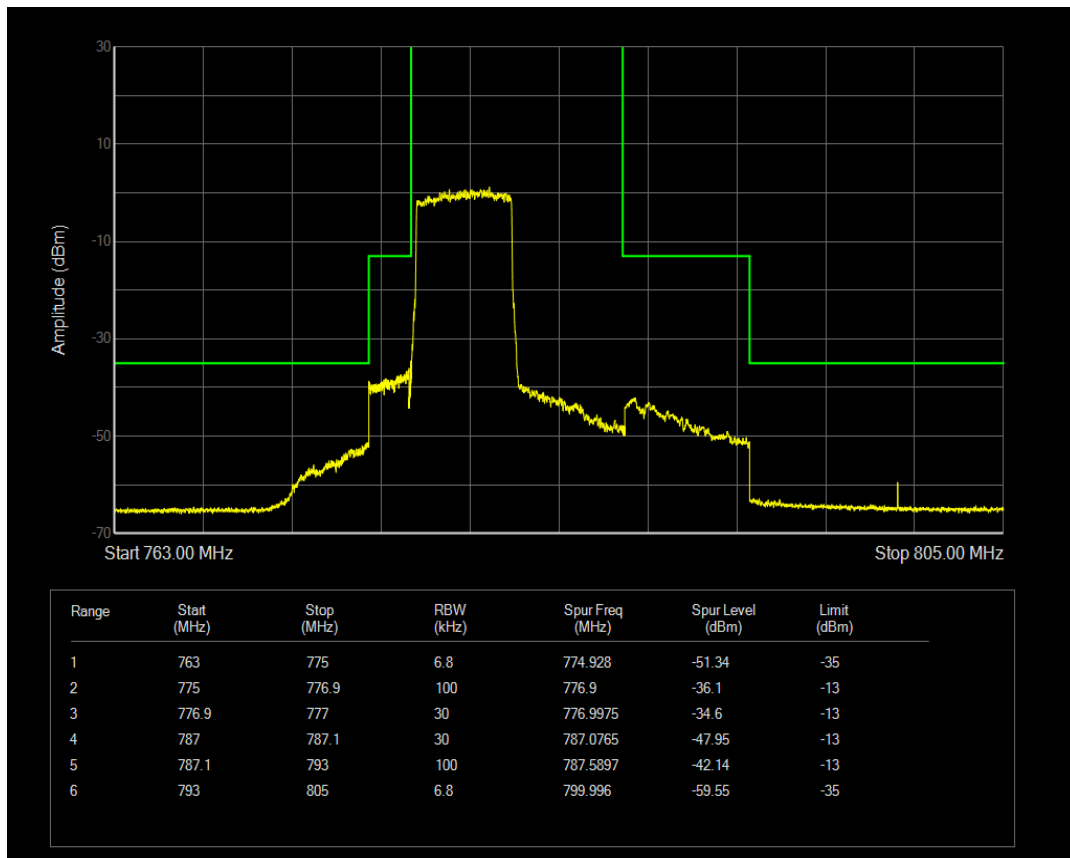
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
Band13	5	23205	25	#0	QPSK	774.26	-52.57	-35	PASS
Band13	5	23205	25	#0	16QAM	774.93	-51.34	-35	PASS
Band13	5	23255	25	#0	QPSK	787.01	-33.42	-13	PASS
Band13	5	23255	25	#0	16QAM	787.01	-34.26	-13	PASS
Band13	10	23230	50	#0	QPSK	774.88	-51.29	-35	PASS
Band13	10	23230	50	#0	16QAM	774.99	-50.07	-35	PASS

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

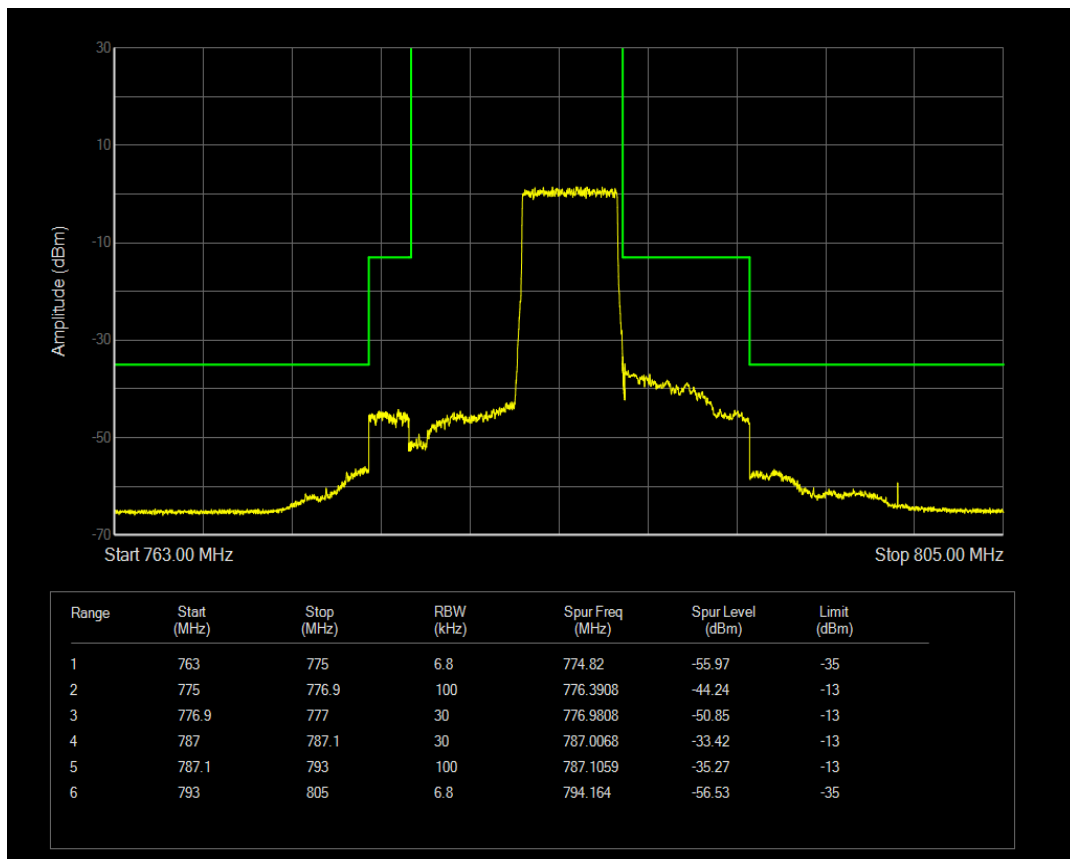




Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0

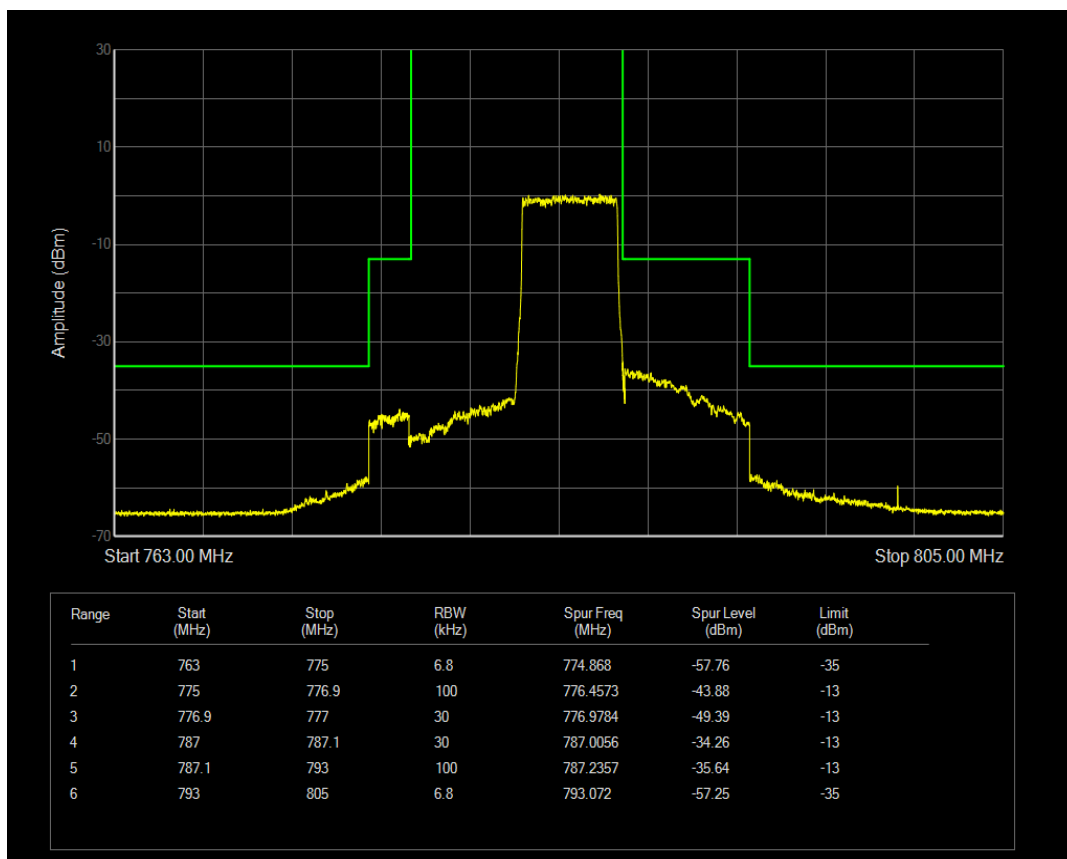


Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0

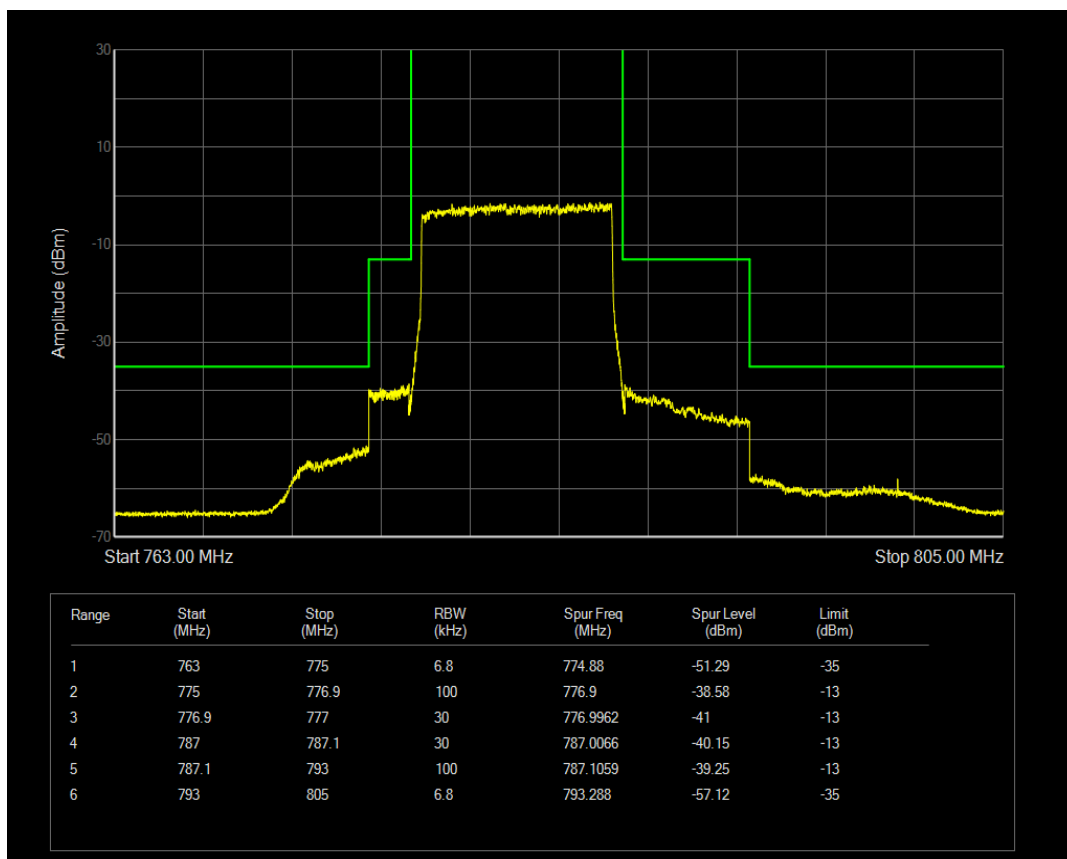




Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0

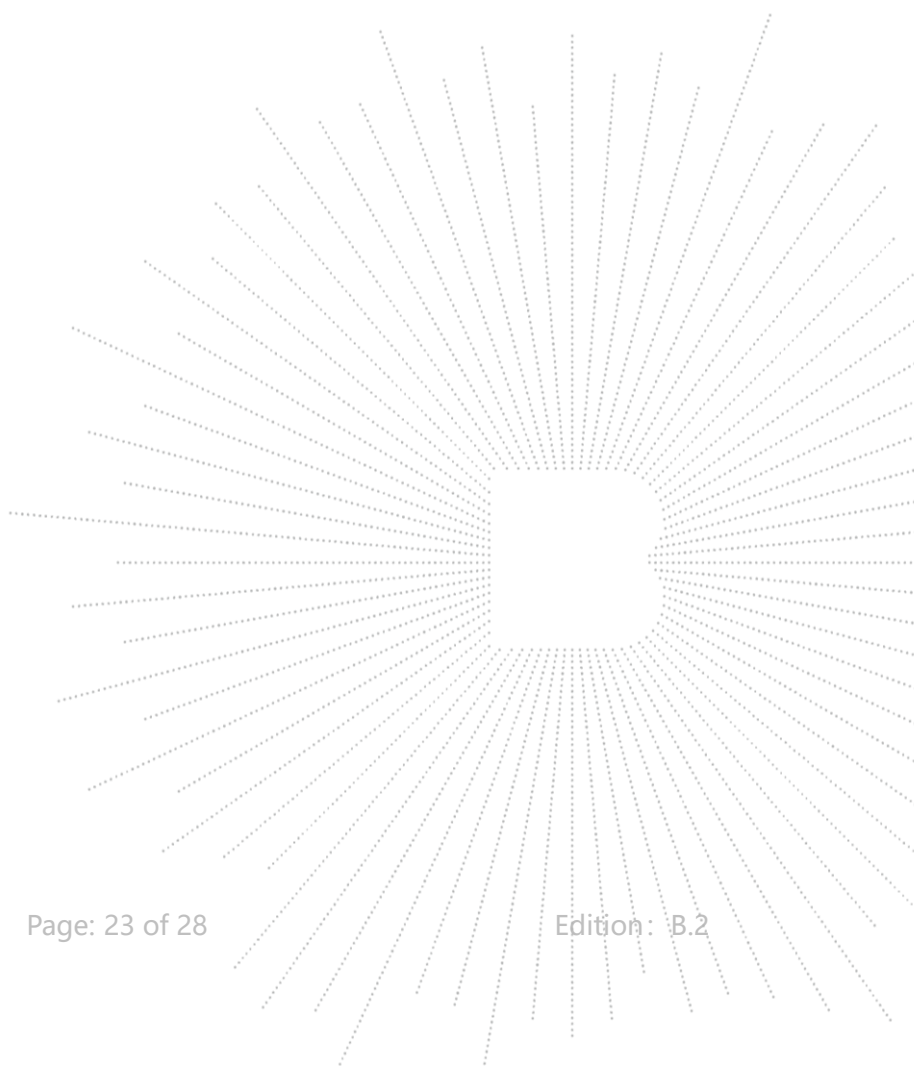
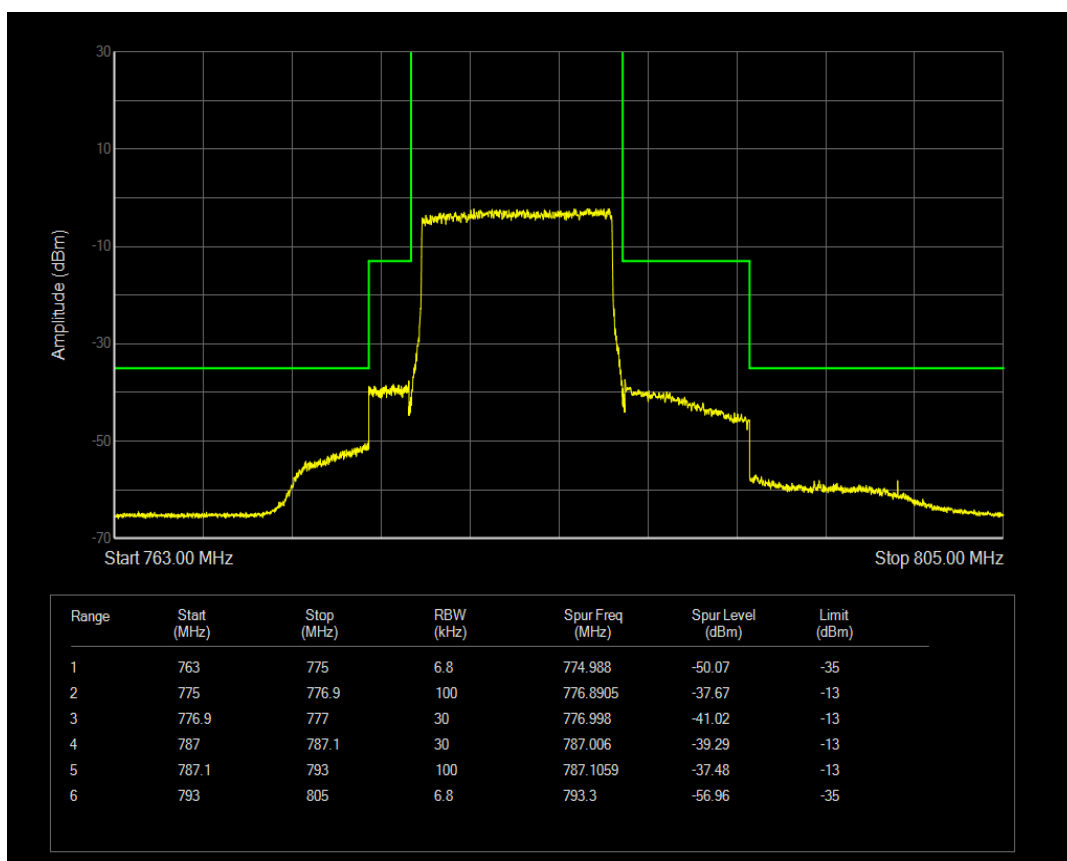


Band13 QPSK BW=10MHz Channel=23230 RB Size=50 Position=#0





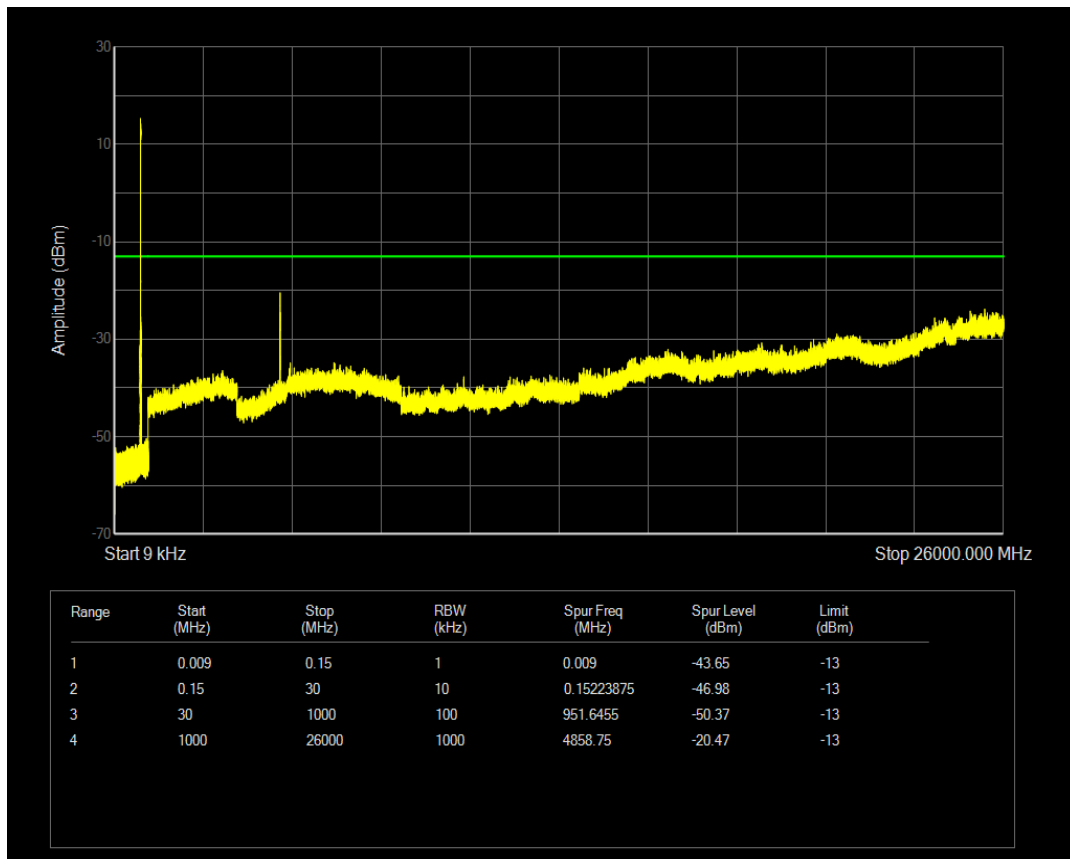
Band13 16QAM BW=10MHz Channel=23230 RB Size=50 Position=#0



Appendix 6. Out-of-band emissions

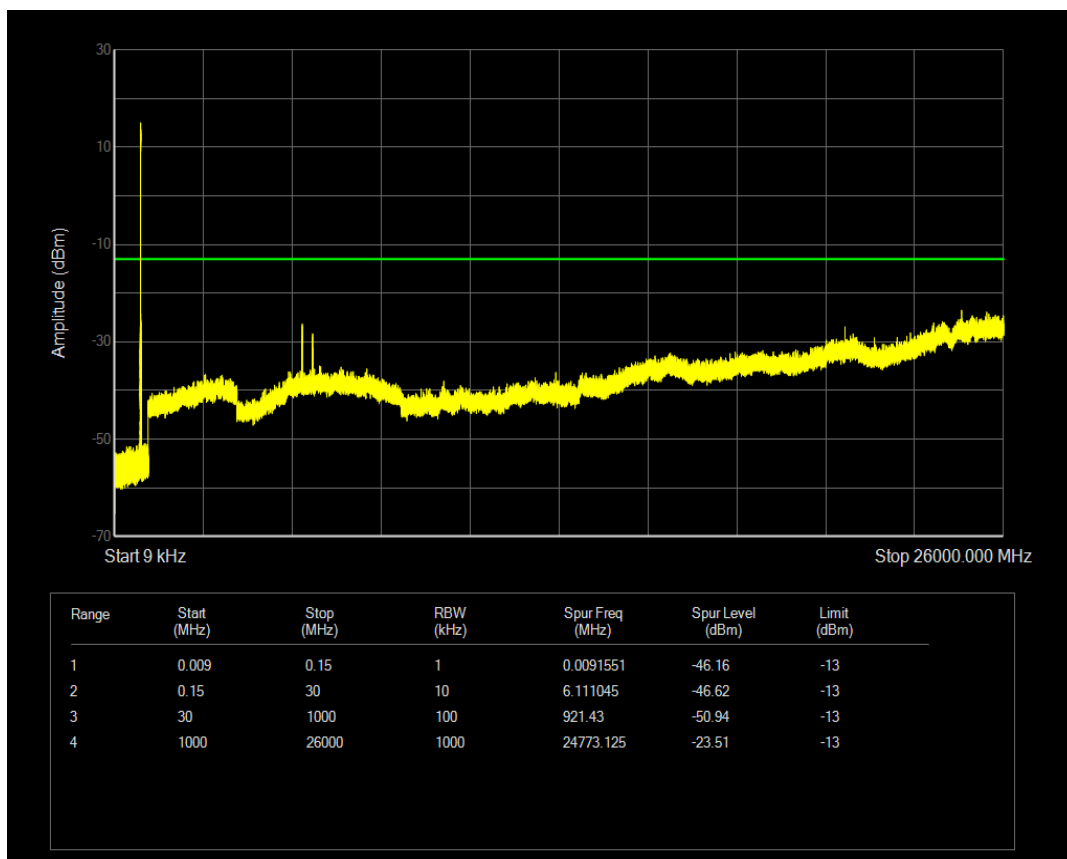
Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Spur Freq (MHz)	Spur Level (dBm)	Limit (dBm)	Verdict
Band13	5	23205	25	#0	QPSK	4858.75	-20.47	-13	PASS
Band13	5	23205	25	#0	16QAM	24773.13	-23.51	-13	PASS
Band13	5	23230	25	#0	QPSK	25419.38	-23.89	-13	PASS
Band13	5	23230	25	#0	16QAM	25473.13	-24.45	-13	PASS
Band13	5	23255	25	#0	QPSK	4861.25	-21.26	-13	PASS
Band13	5	23255	25	#0	16QAM	24696.25	-24.00	-13	PASS
Band13	10	23230	50	#0	QPSK	25999.38	-22.86	-13	PASS
Band13	10	23230	50	#0	16QAM	25996.88	-22.91	-13	PASS

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

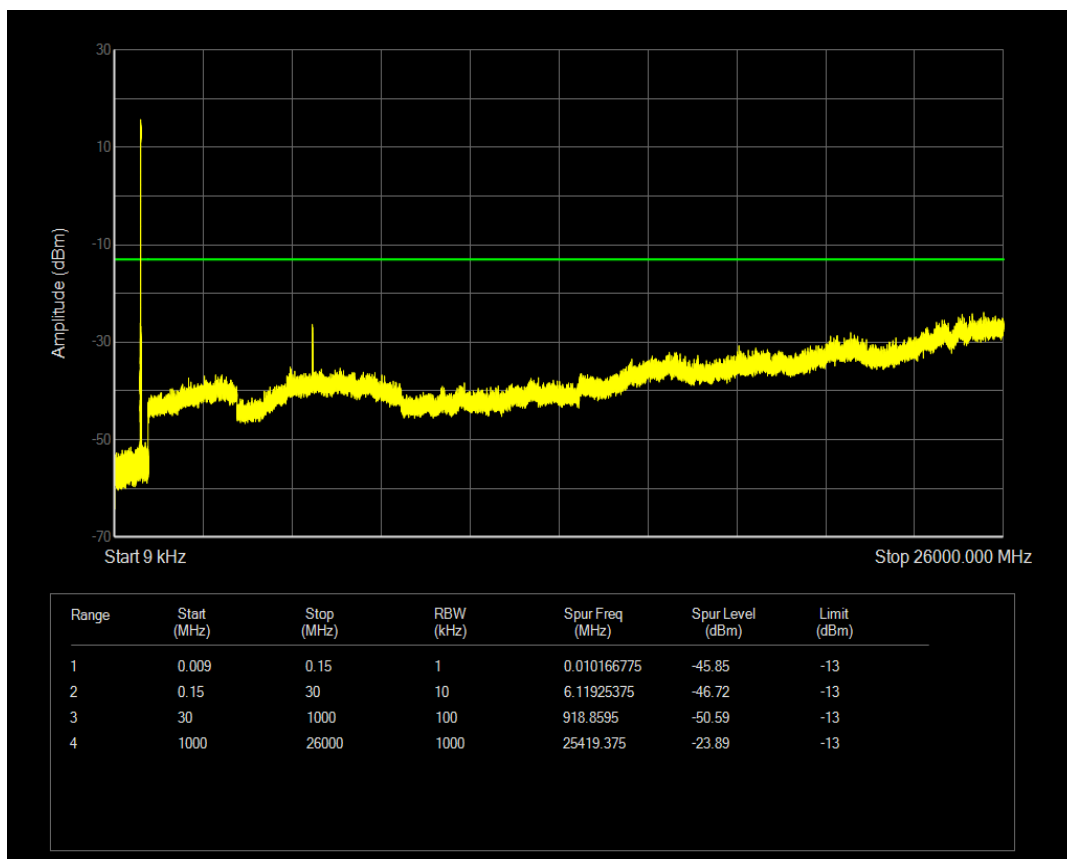




Band13 16QAM BW=5MHz Channel=23205 RB Size=25 Position=#0

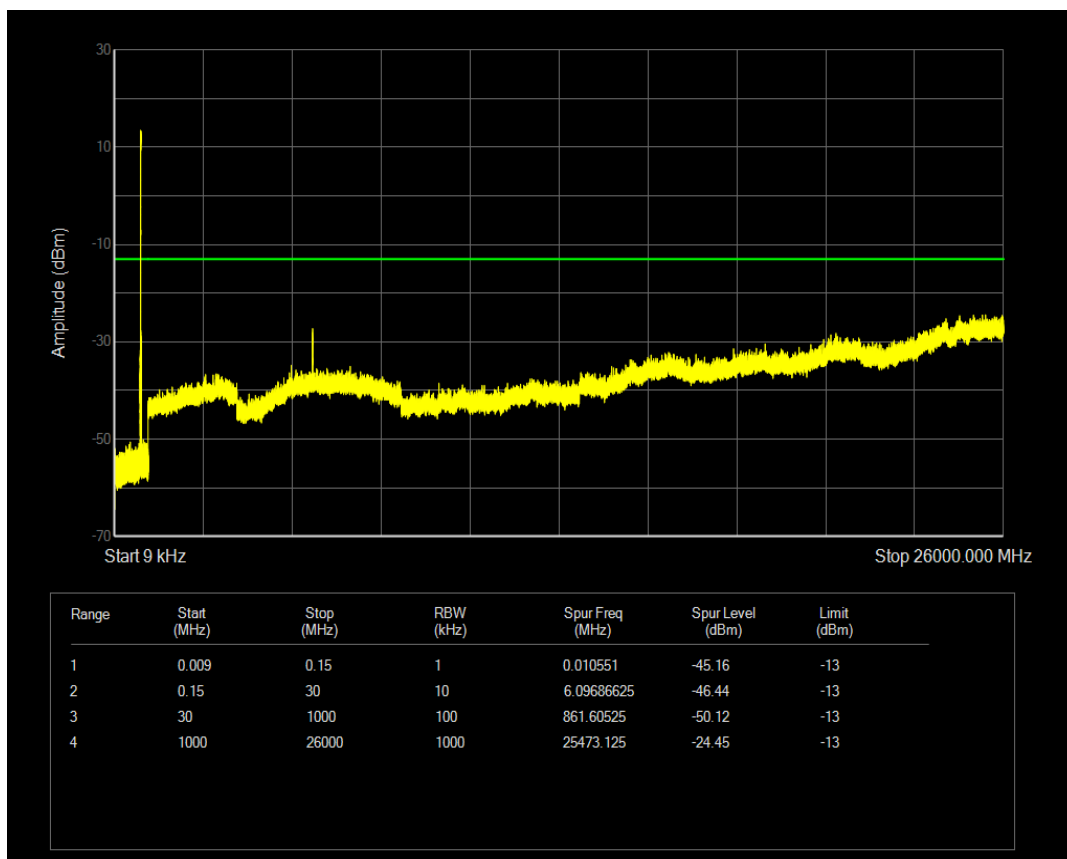


Band13 QPSK BW=5MHz Channel=23230 RB Size=25 Position=#0

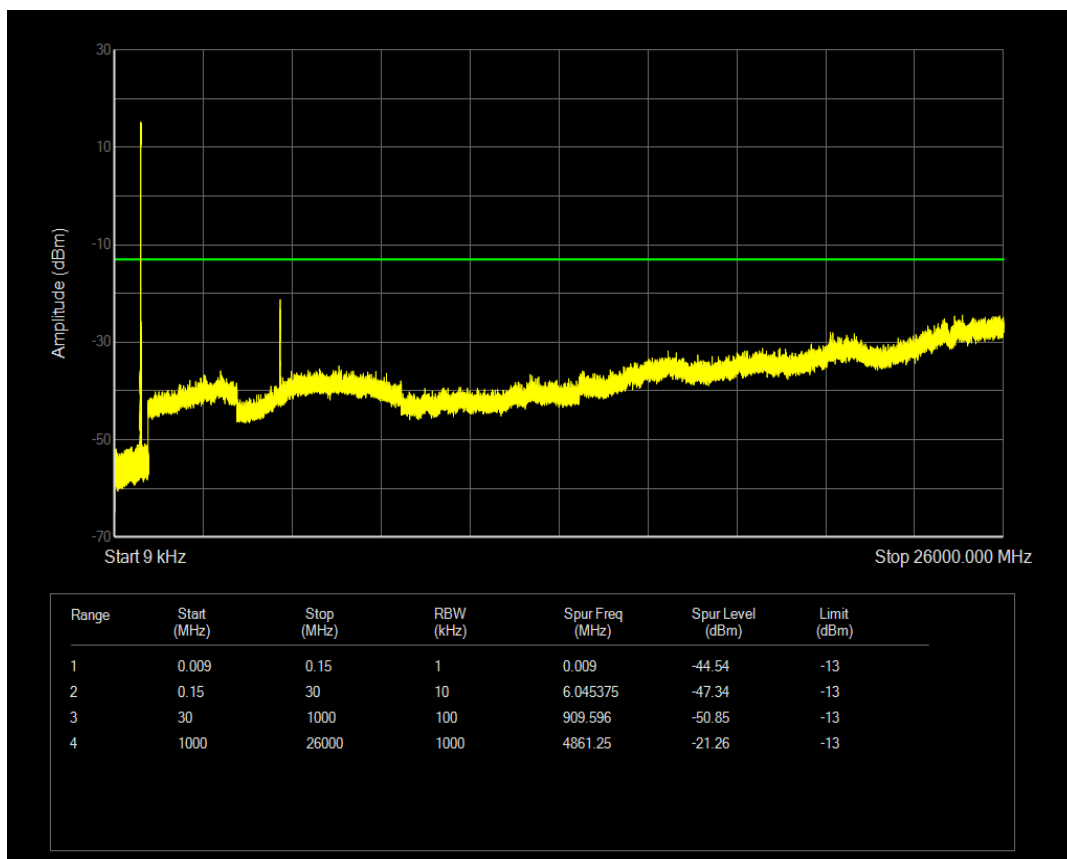




Band13 16QAM BW=5MHz Channel=23230 RB Size=25 Position=#0

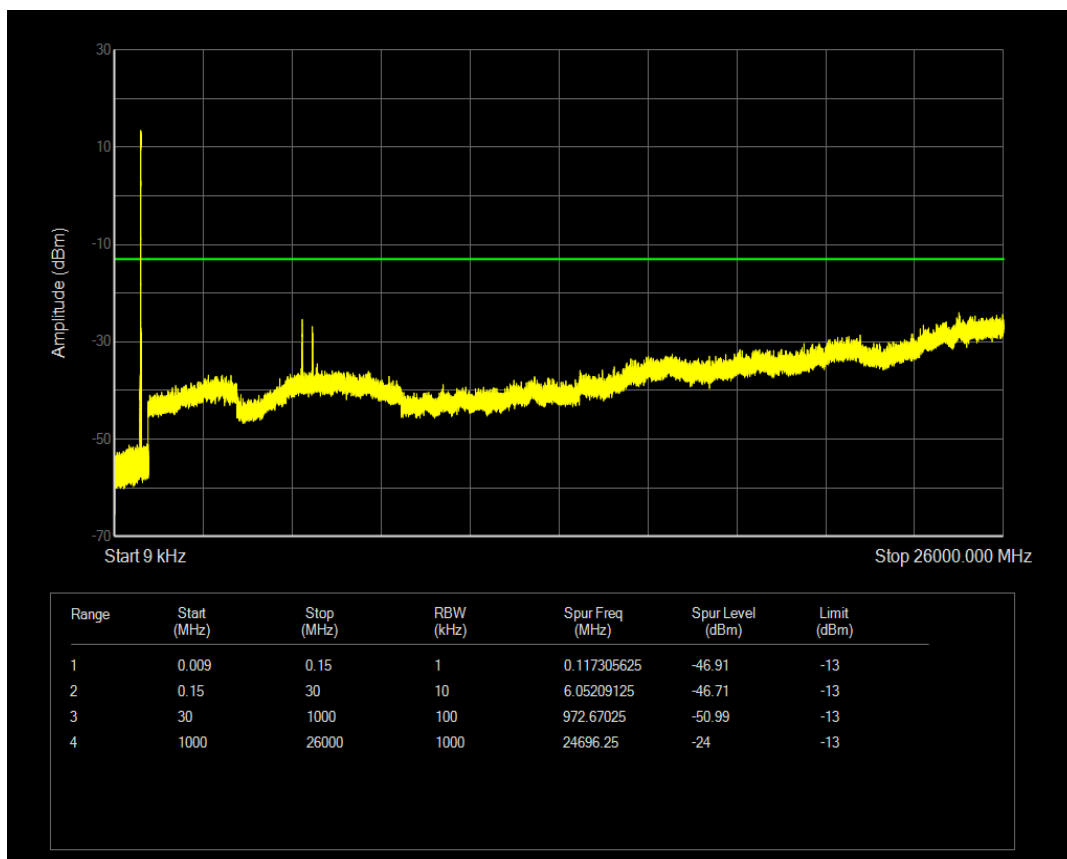


Band13 QPSK BW=5MHz Channel=23255 RB Size=25 Position=#0

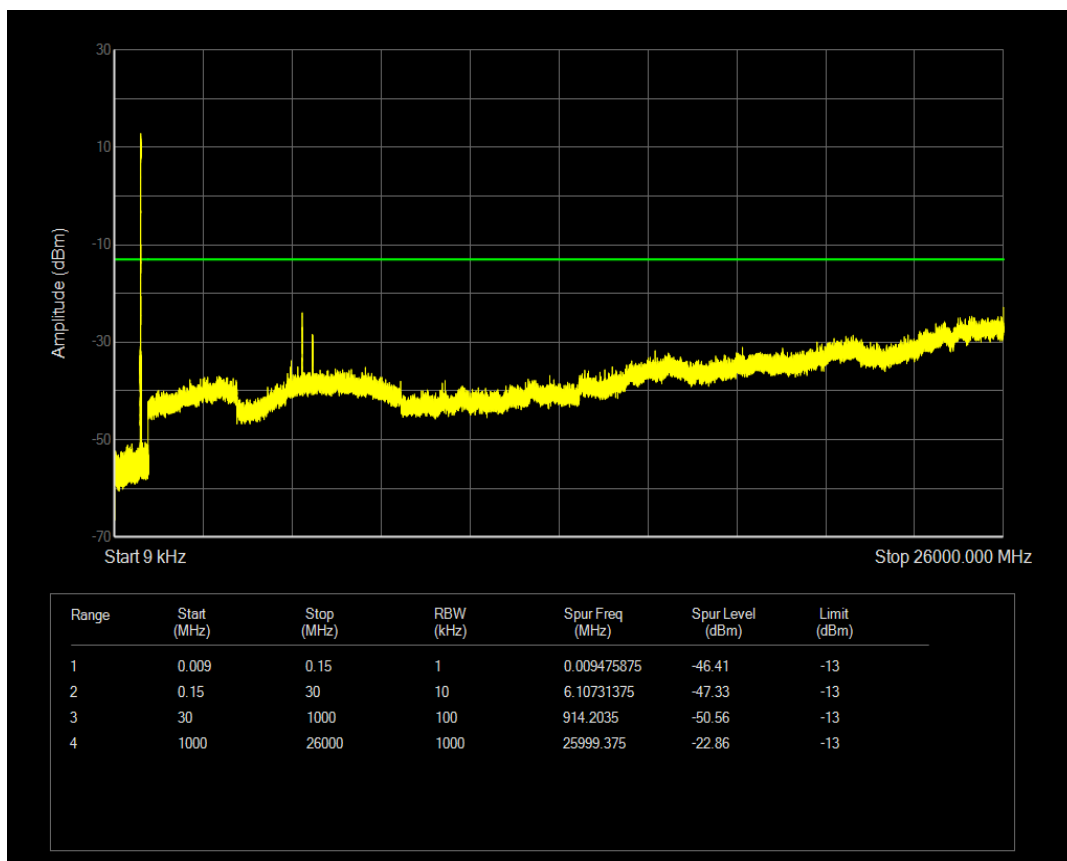




Band13 16QAM BW=5MHz Channel=23255 RB Size=25 Position=#0



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



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

