

Appendix for LTE BAND 13

Product Name: Smart Phone

Model No: Nova

Appendix A: Average Power Output Data

Test Result

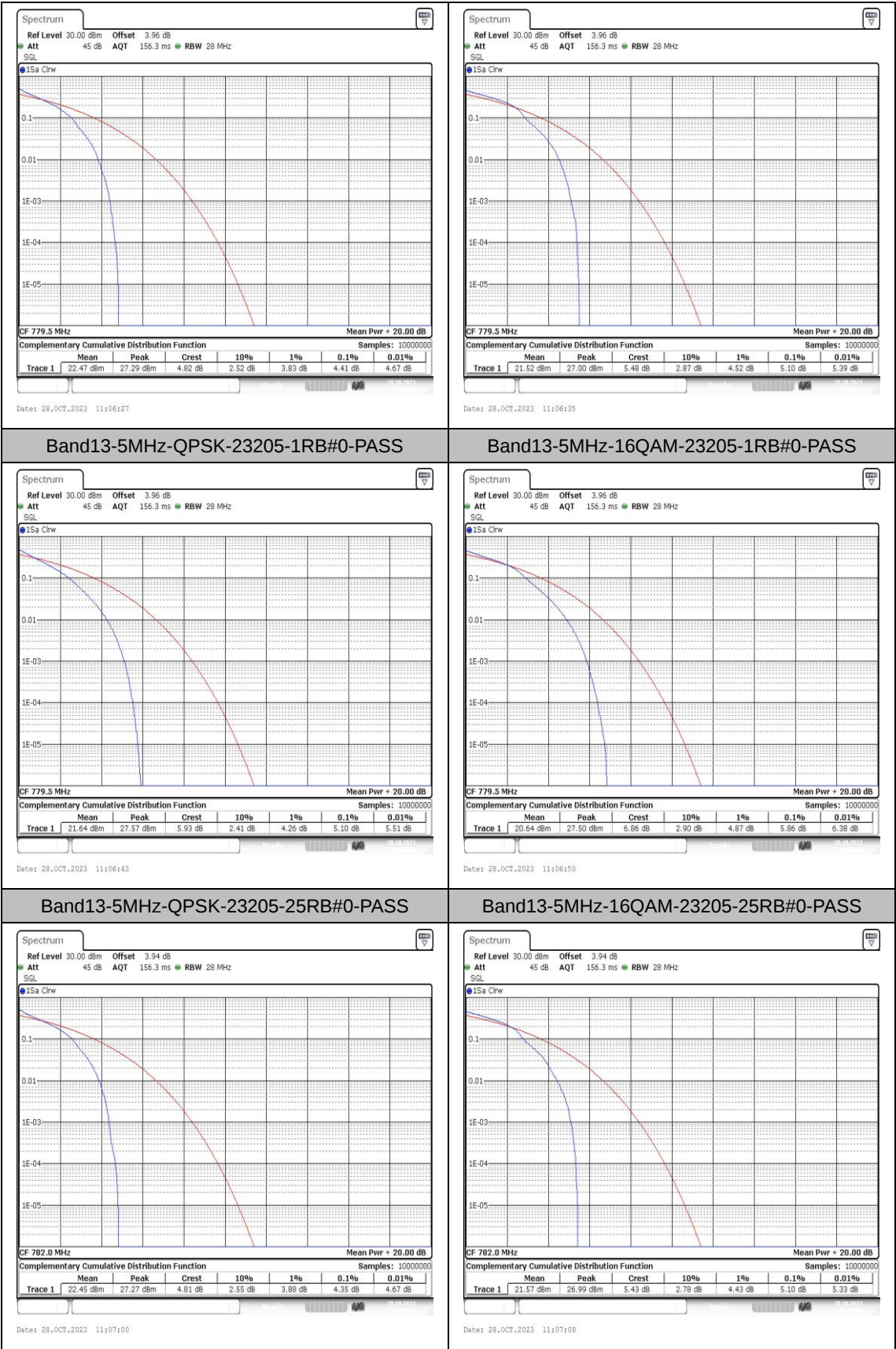
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	23.89	PASS
Band13	5MHz	16QAM	23205	1RB#0	22.95	PASS
Band13	5MHz	QPSK	23205	1RB#12	24.01	PASS
Band13	5MHz	16QAM	23205	1RB#12	23.00	PASS
Band13	5MHz	QPSK	23205	1RB#24	23.85	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.85	PASS
Band13	5MHz	QPSK	23205	12RB#0	22.94	PASS
Band13	5MHz	16QAM	23205	12RB#0	21.94	PASS
Band13	5MHz	QPSK	23205	12RB#6	22.95	PASS
Band13	5MHz	16QAM	23205	12RB#6	21.90	PASS
Band13	5MHz	QPSK	23205	12RB#13	22.83	PASS
Band13	5MHz	16QAM	23205	12RB#13	21.87	PASS
Band13	5MHz	QPSK	23205	25RB#0	22.95	PASS
Band13	5MHz	16QAM	23205	25RB#0	21.97	PASS
Band13	5MHz	QPSK	23230	1RB#0	23.88	PASS
Band13	5MHz	16QAM	23230	1RB#0	23.05	PASS
Band13	5MHz	QPSK	23230	1RB#12	23.91	PASS
Band13	5MHz	16QAM	23230	1RB#12	23.13	PASS
Band13	5MHz	QPSK	23230	1RB#24	23.81	PASS
Band13	5MHz	16QAM	23230	1RB#24	23.02	PASS
Band13	5MHz	QPSK	23230	12RB#0	22.91	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.01	PASS
Band13	5MHz	QPSK	23230	12RB#6	22.93	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.05	PASS
Band13	5MHz	QPSK	23230	12RB#13	22.83	PASS
Band13	5MHz	16QAM	23230	12RB#13	21.91	PASS
Band13	5MHz	QPSK	23230	25RB#0	22.93	PASS
Band13	5MHz	16QAM	23230	25RB#0	21.91	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.85	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.87	PASS
Band13	5MHz	QPSK	23255	1RB#12	23.92	PASS
Band13	5MHz	16QAM	23255	1RB#12	22.85	PASS
Band13	5MHz	QPSK	23255	1RB#24	23.74	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.76	PASS
Band13	5MHz	QPSK	23255	12RB#0	22.86	PASS
Band13	5MHz	16QAM	23255	12RB#0	21.94	PASS

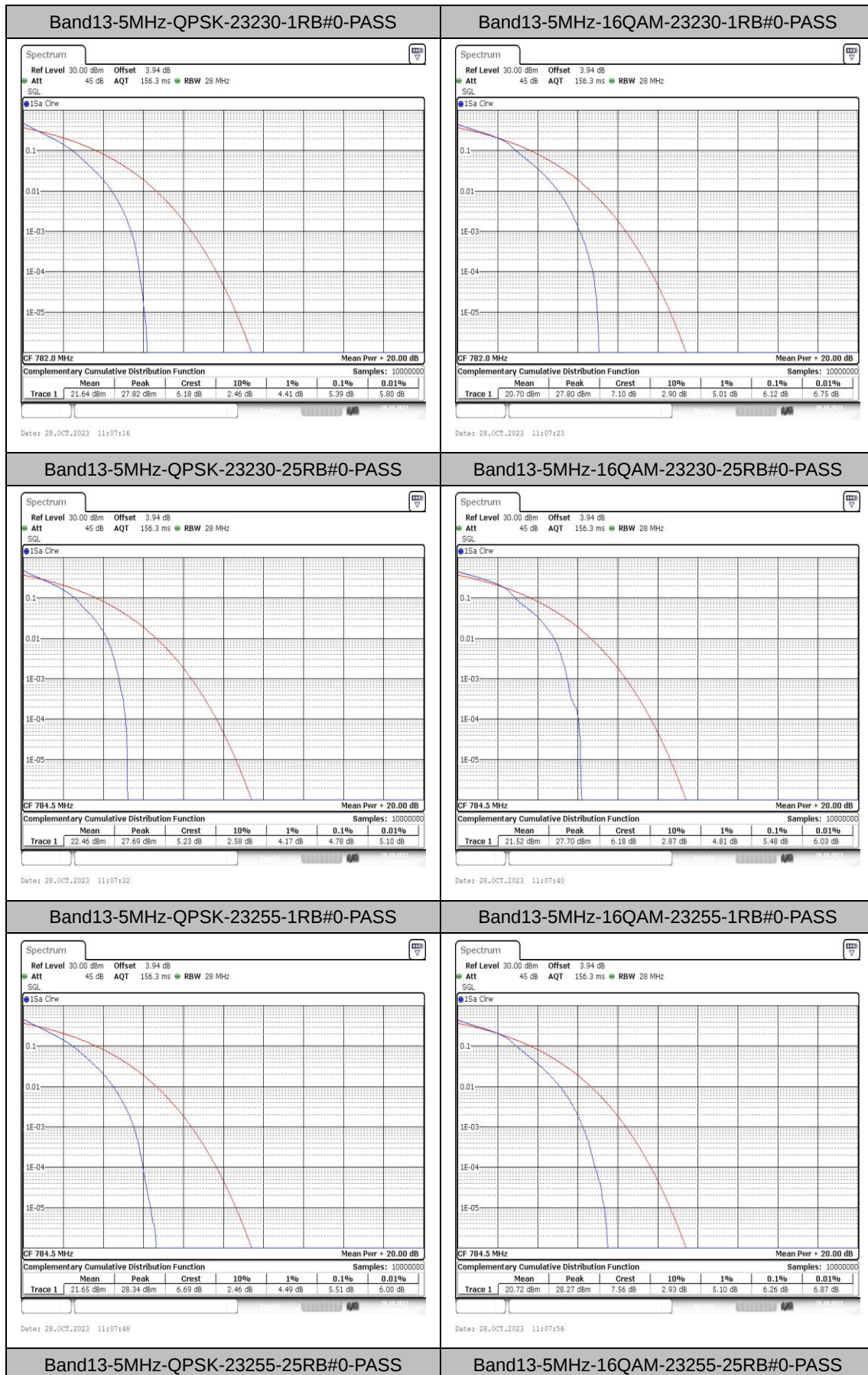
Band13	5MHz	QPSK	23255	12RB#6	22.89	PASS
Band13	5MHz	16QAM	23255	12RB#6	21.93	PASS
Band13	5MHz	QPSK	23255	12RB#13	22.80	PASS
Band13	5MHz	16QAM	23255	12RB#13	21.87	PASS
Band13	5MHz	QPSK	23255	25RB#0	22.91	PASS
Band13	5MHz	16QAM	23255	25RB#0	22.01	PASS
Band13	10MHz	QPSK	23230	1RB#0	23.99	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.98	PASS
Band13	10MHz	QPSK	23230	1RB#24	24.06	PASS
Band13	10MHz	16QAM	23230	1RB#24	23.08	PASS
Band13	10MHz	QPSK	23230	1RB#49	23.79	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.79	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.98	PASS
Band13	10MHz	16QAM	23230	25RB#0	21.96	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.99	PASS
Band13	10MHz	16QAM	23230	25RB#12	21.96	PASS
Band13	10MHz	QPSK	23230	25RB#25	22.86	PASS
Band13	10MHz	16QAM	23230	25RB#25	21.88	PASS
Band13	10MHz	QPSK	23230	50RB#0	22.90	PASS
Band13	10MHz	16QAM	23230	50RB#0	21.94	PASS

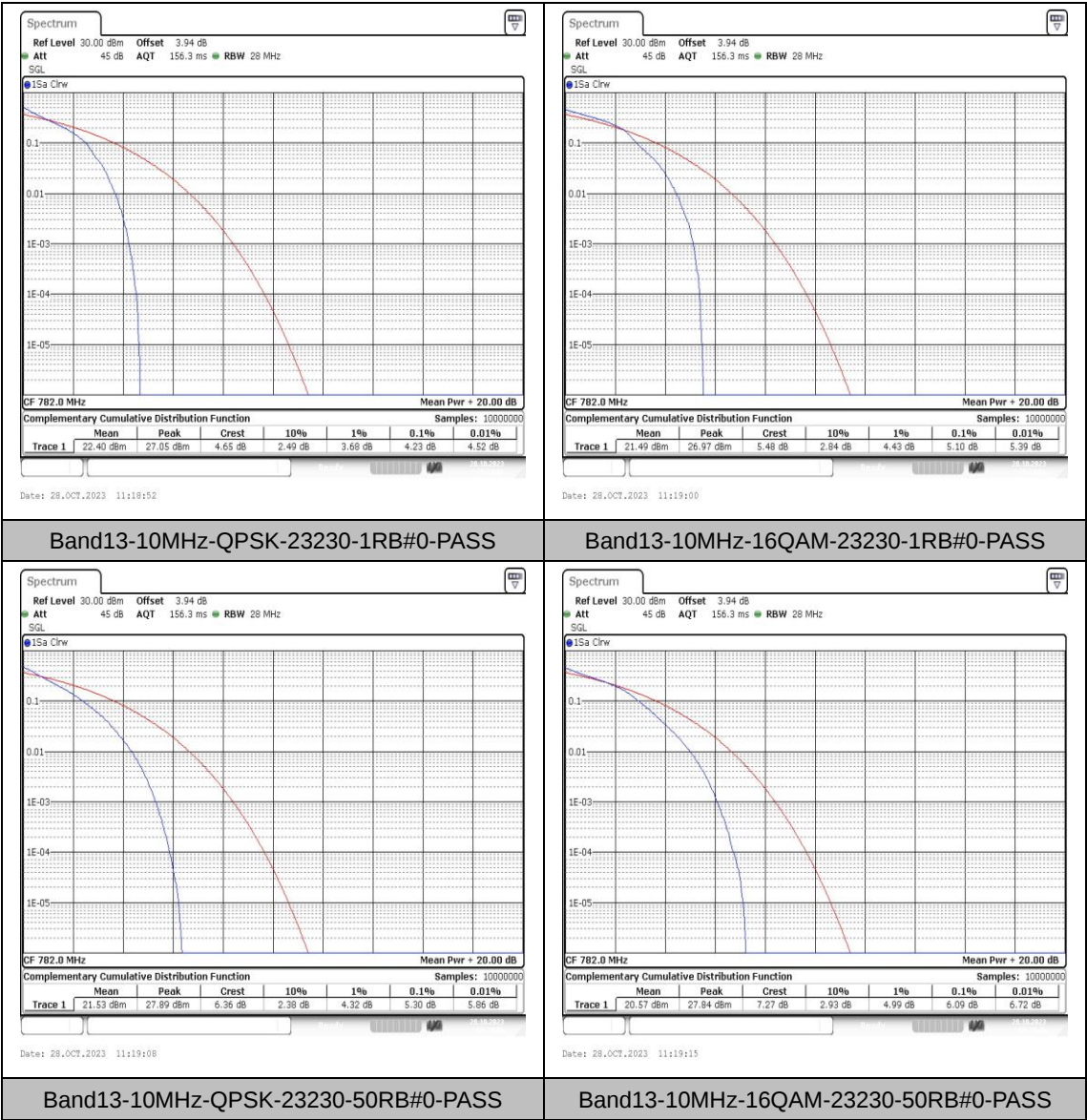
Appendix B: Peak-to-Average Ratio(CCDF)**Test Result**

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	4.41	13	PASS
Band13	5MHz	16QAM	23205	1RB#0	5.10	13	PASS
Band13	5MHz	QPSK	23205	25RB#0	5.10	13	PASS
Band13	5MHz	16QAM	23205	25RB#0	5.86	13	PASS
Band13	5MHz	QPSK	23230	1RB#0	4.35	13	PASS
Band13	5MHz	16QAM	23230	1RB#0	5.10	13	PASS
Band13	5MHz	QPSK	23230	25RB#0	5.39	13	PASS
Band13	5MHz	16QAM	23230	25RB#0	6.12	13	PASS
Band13	5MHz	QPSK	23255	1RB#0	4.78	13	PASS
Band13	5MHz	16QAM	23255	1RB#0	5.48	13	PASS
Band13	5MHz	QPSK	23255	25RB#0	5.51	13	PASS
Band13	5MHz	16QAM	23255	25RB#0	6.26	13	PASS
Band13	10MHz	QPSK	23230	1RB#0	4.23	13	PASS
Band13	10MHz	16QAM	23230	1RB#0	5.10	13	PASS
Band13	10MHz	QPSK	23230	50RB#0	5.30	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	6.09	13	PASS

Test Graphs





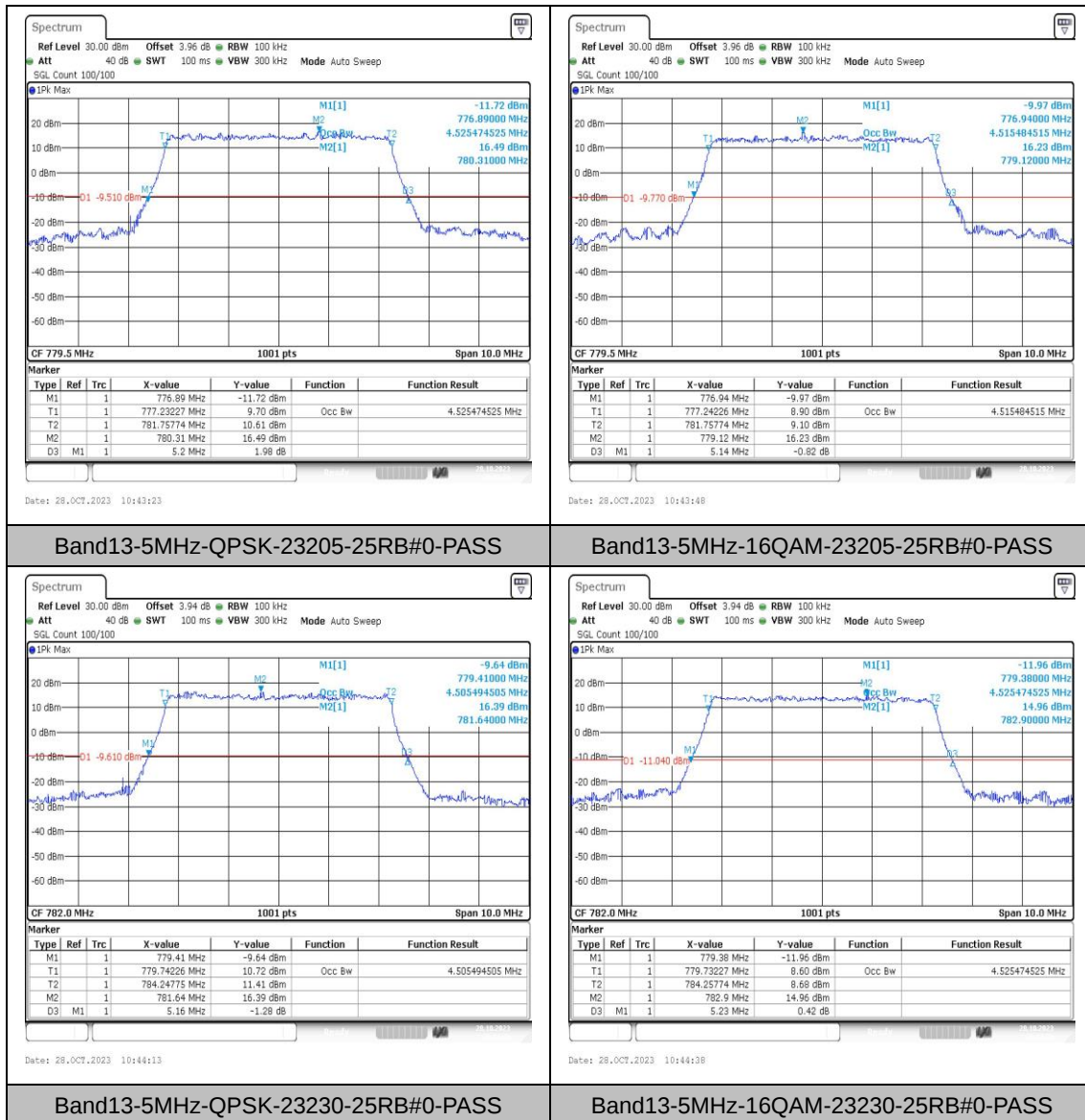


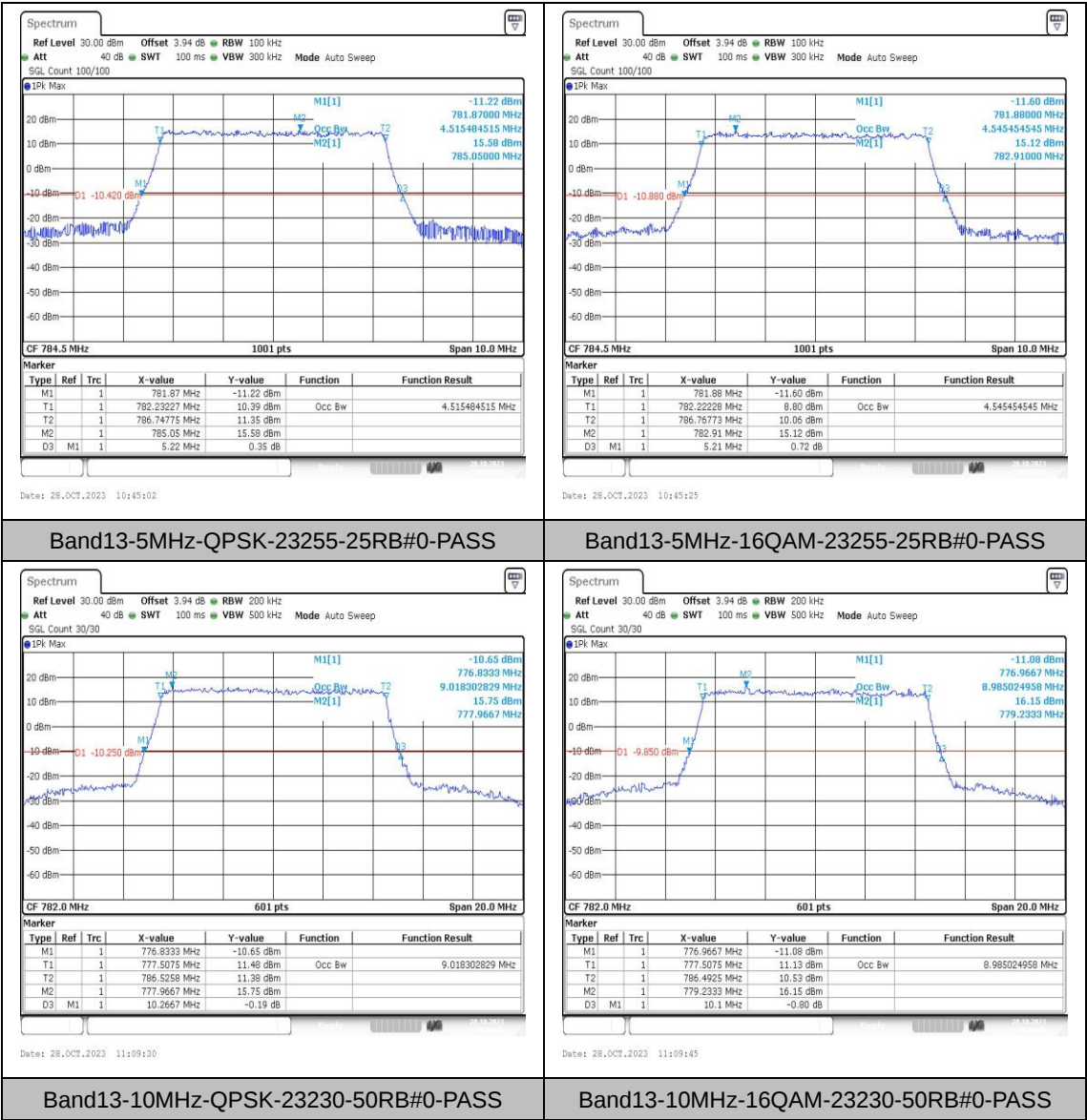
Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.525	5.20	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.515	5.14	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.505	5.16	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.525	5.23	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.515	5.22	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.545	5.21	PASS
Band13	10MHz	QPSK	23230	50RB#0	9.018	10.27	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.985	10.10	PASS

Test Graphs



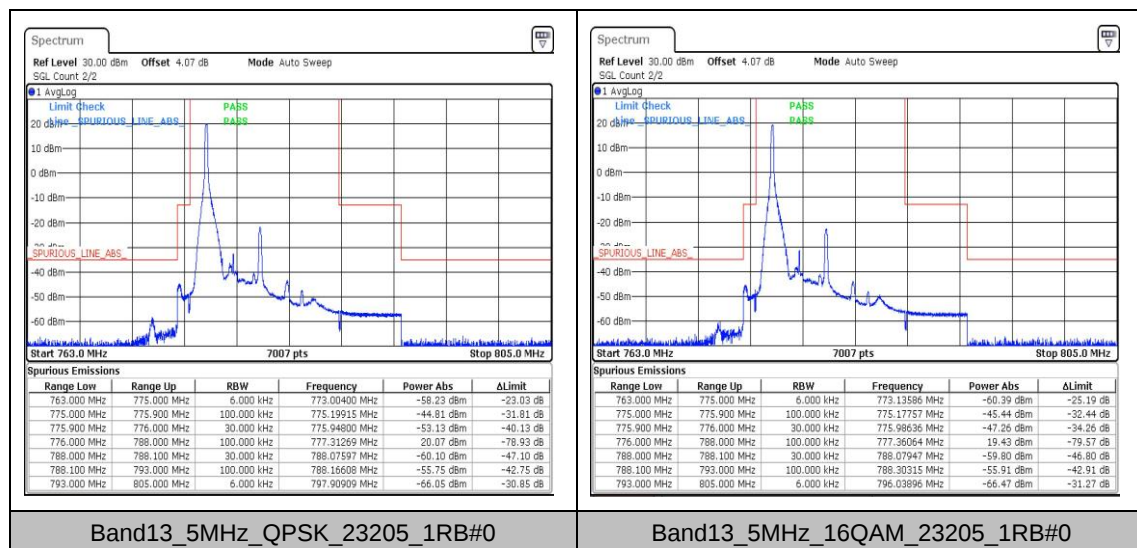


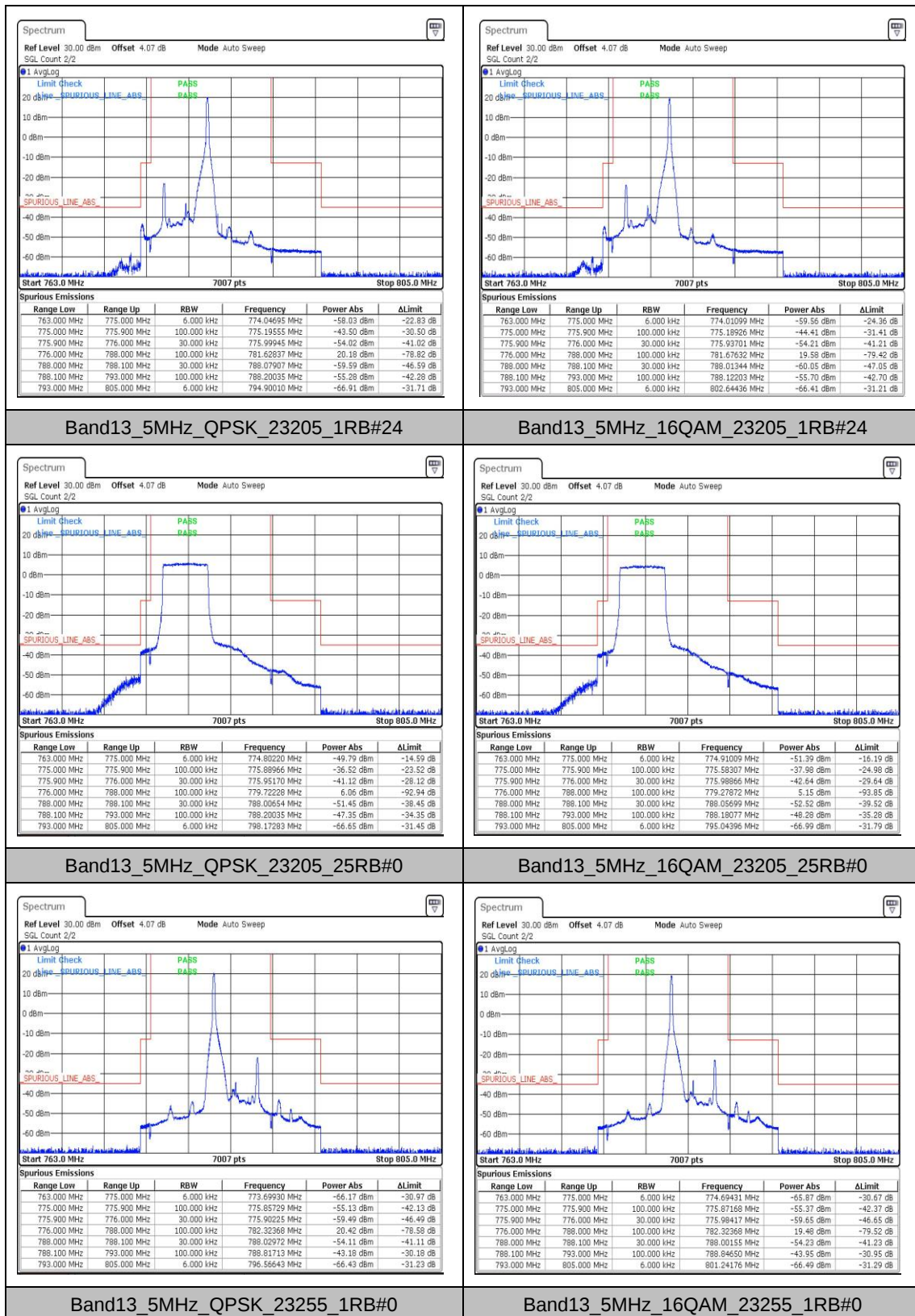
Appendix D: Band Edge

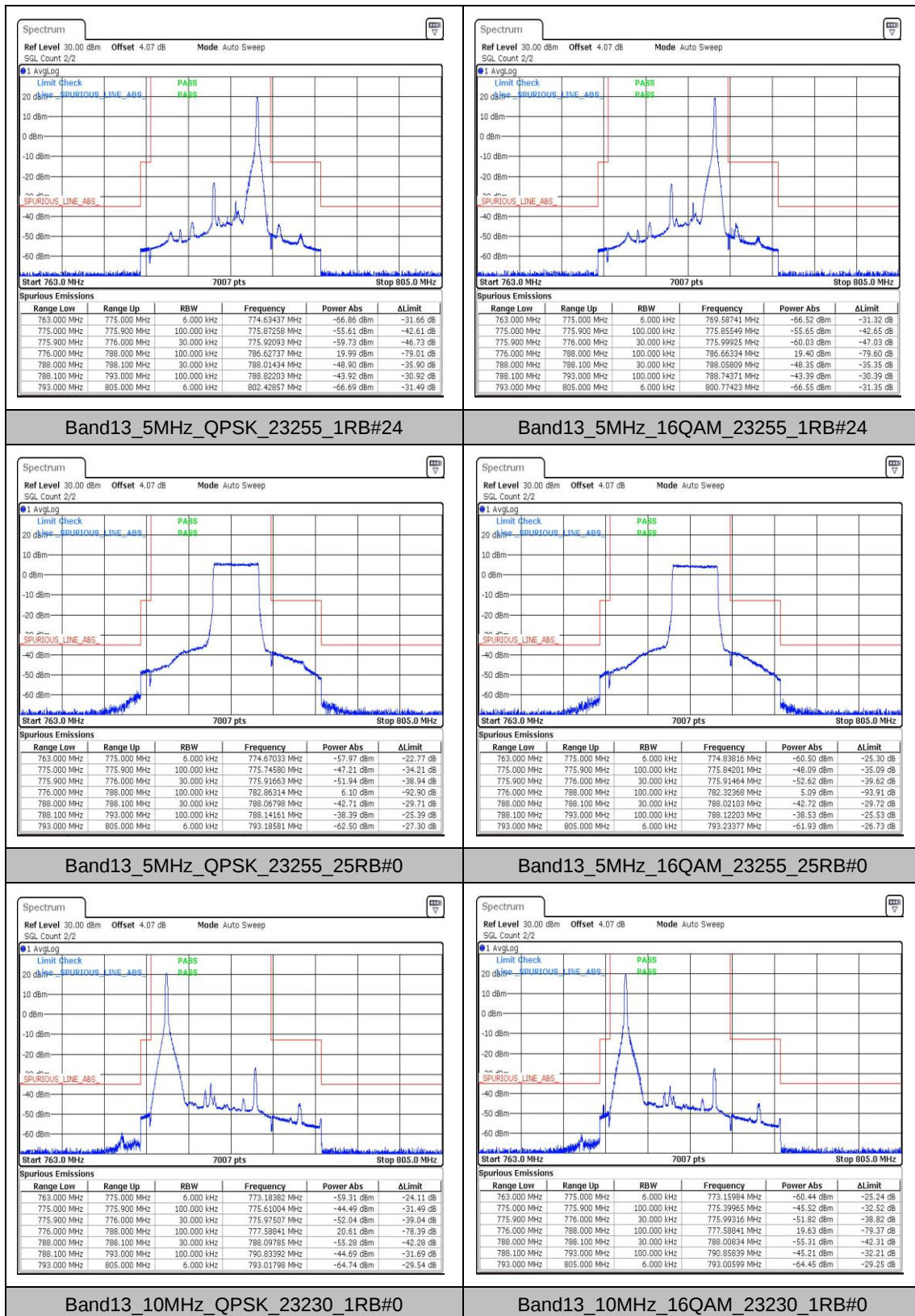
Test Result

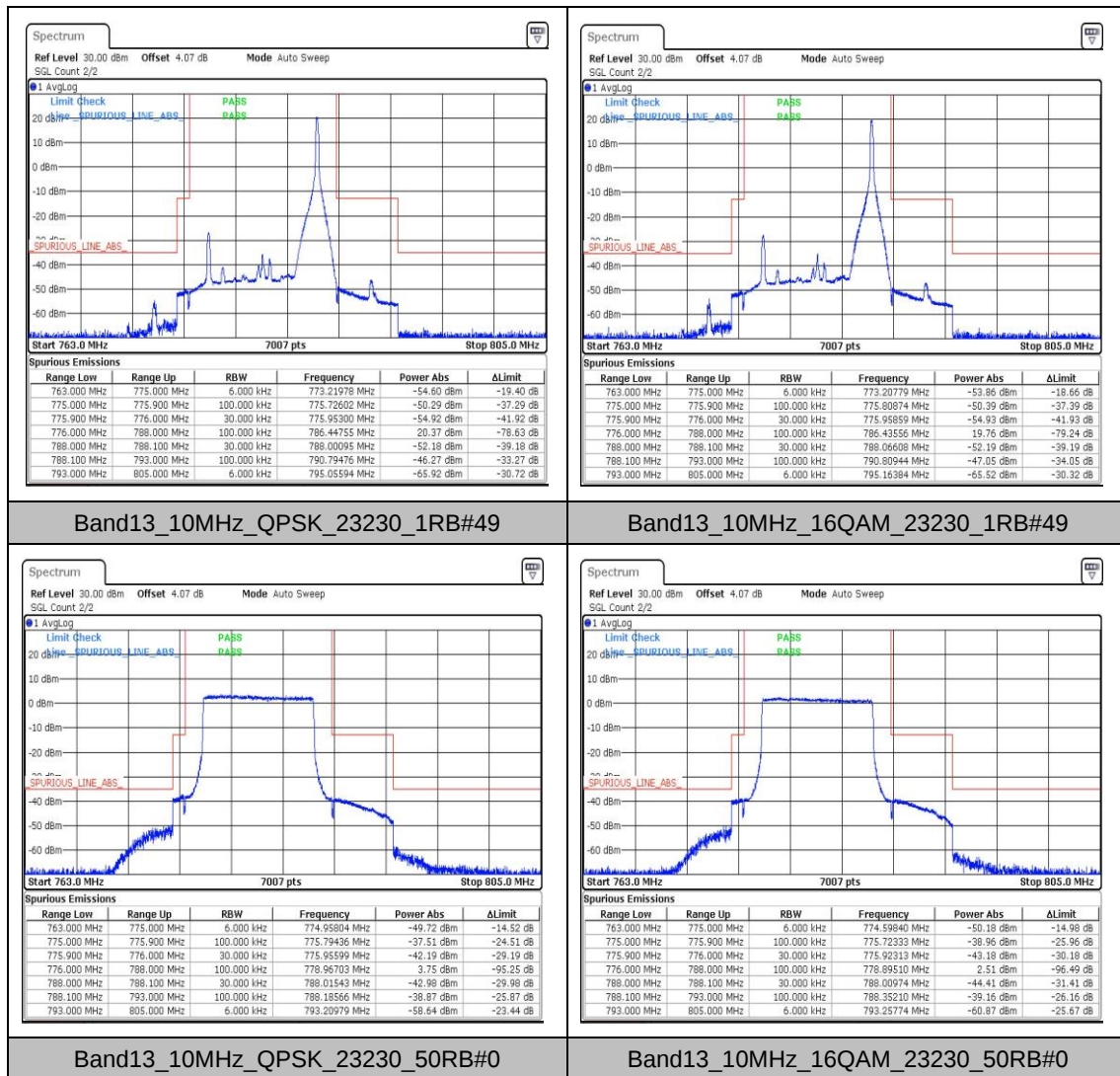
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	-58.23	PASS
Band13	5MHz	16QAM	23205	1RB#0	-60.39	PASS
Band13	5MHz	QPSK	23205	1RB#24	-58.03	PASS
Band13	5MHz	16QAM	23205	1RB#24	-59.56	PASS
Band13	5MHz	QPSK	23205	25RB#0	-49.79	PASS
Band13	5MHz	16QAM	23205	25RB#0	-51.39	PASS
Band13	5MHz	QPSK	23255	1RB#0	-43.18	PASS
Band13	5MHz	16QAM	23255	1RB#0	-65.87	PASS
Band13	5MHz	QPSK	23255	1RB#24	-43.92	PASS
Band13	5MHz	16QAM	23255	1RB#24	-43.39	PASS
Band13	5MHz	QPSK	23255	25RB#0	-57.97	PASS
Band13	5MHz	16QAM	23255	25RB#0	-60.50	PASS
Band13	10MHz	QPSK	23230	1RB#0	-59.31	PASS
Band13	10MHz	16QAM	23230	1RB#0	-60.44	PASS
Band13	10MHz	QPSK	23230	1RB#49	-54.60	PASS
Band13	10MHz	16QAM	23230	1RB#49	-53.86	PASS
Band13	10MHz	QPSK	23230	50RB#0	-49.72	PASS
Band13	10MHz	16QAM	23230	50RB#0	-50.18	PASS

Test Graphs









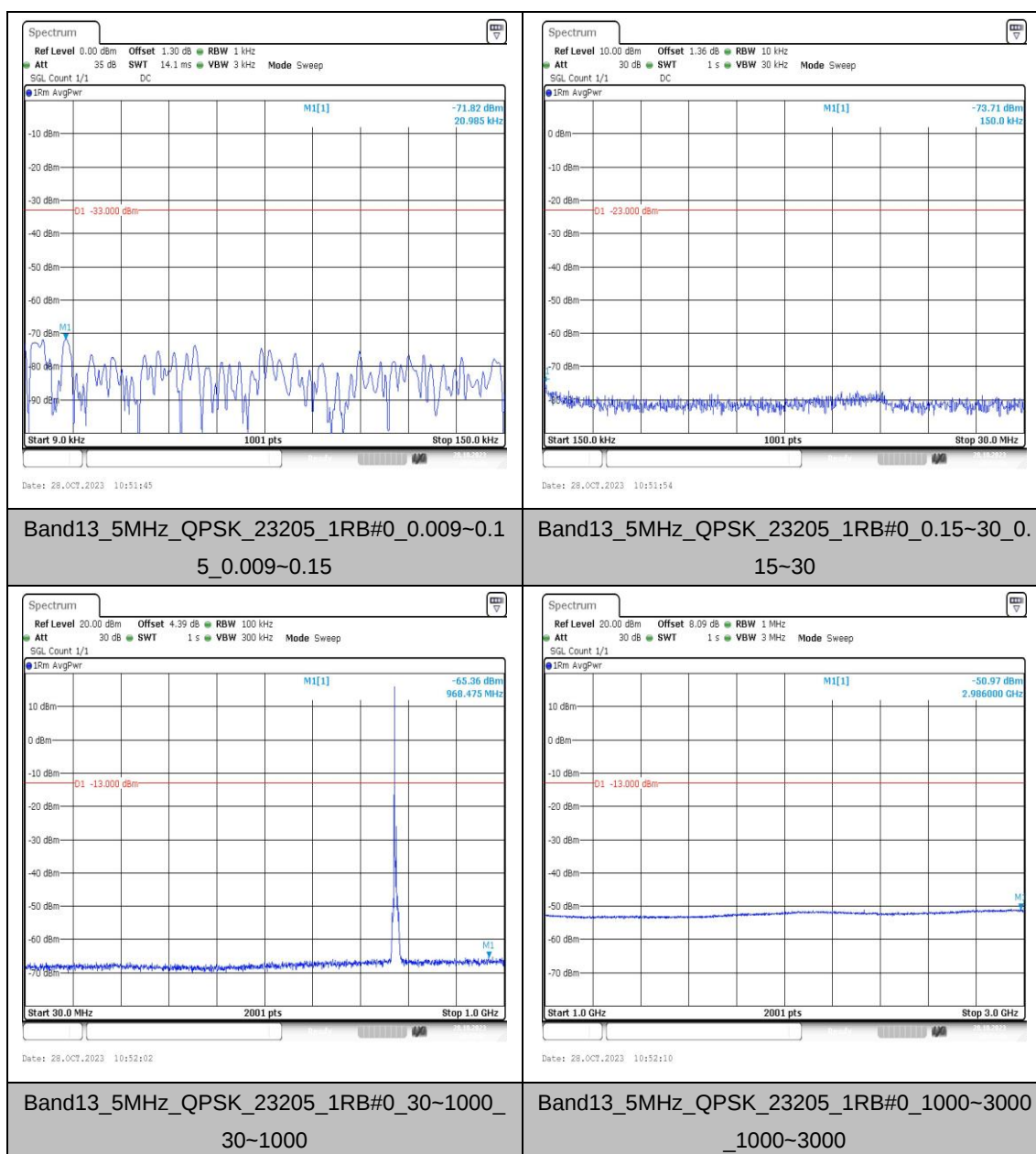
Appendix E: Conducted Spurious Emission

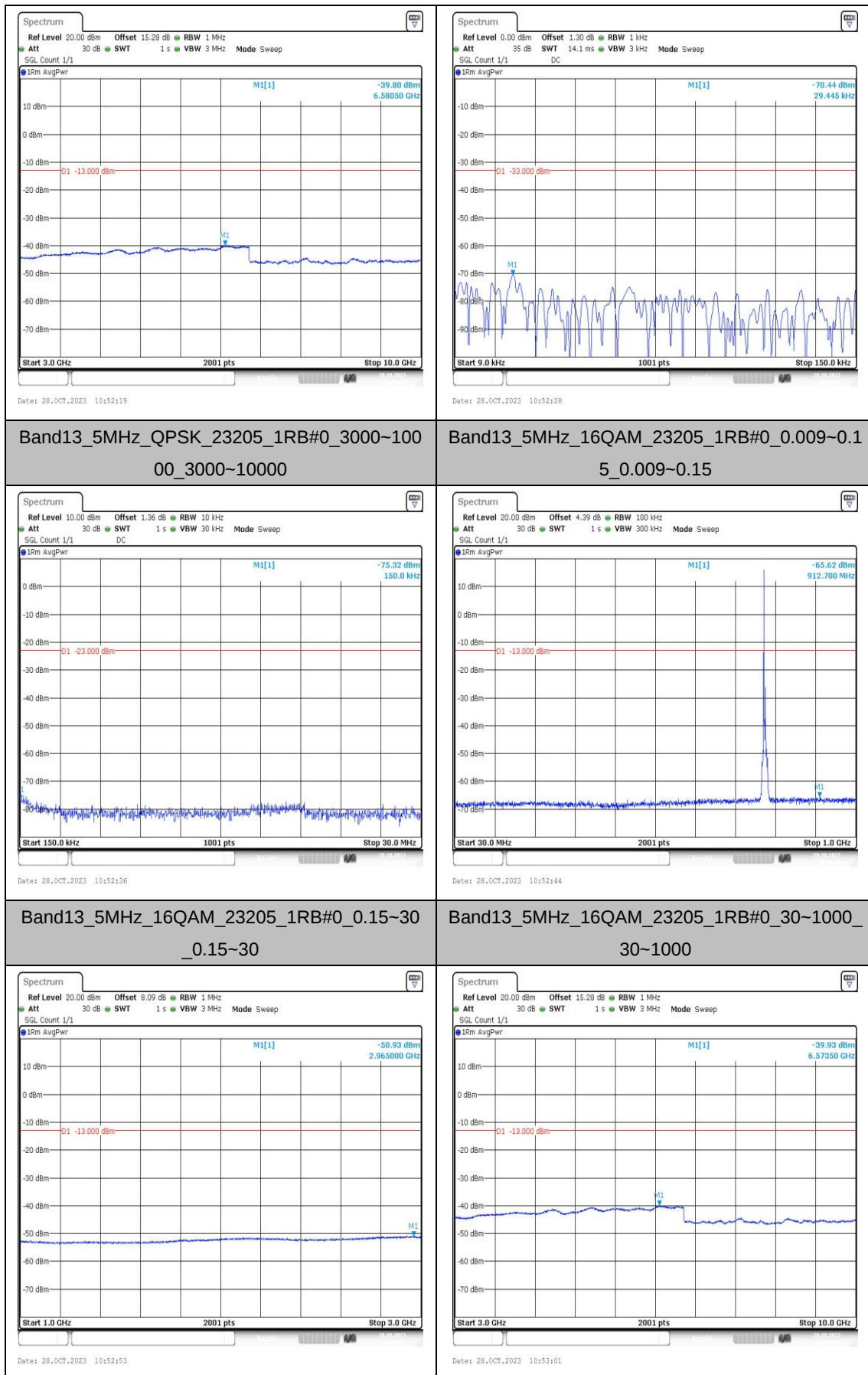
Test Result

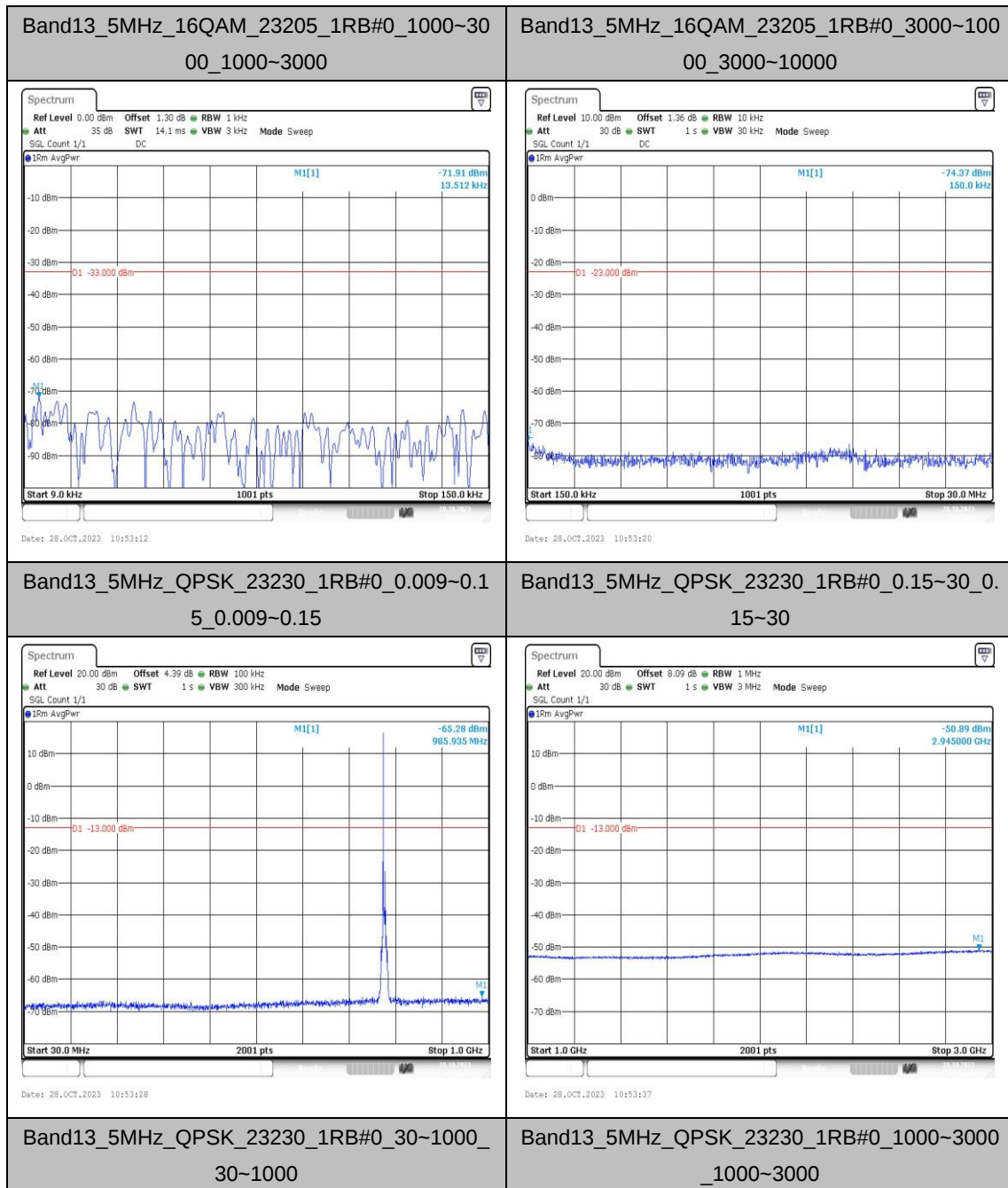
Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Verdict
Band13	5MHz	QPSK	23205	1RB#0	0.009~0.15	PASS
Band13	5MHz	QPSK	23205	1RB#0	0.15~30	PASS
Band13	5MHz	QPSK	23205	1RB#0	30~1000	PASS
Band13	5MHz	QPSK	23205	1RB#0	1000~3000	PASS
Band13	5MHz	QPSK	23205	1RB#0	3000~10000	PASS
Band13	5MHz	16QAM	23205	1RB#0	0.009~0.15	PASS
Band13	5MHz	16QAM	23205	1RB#0	0.15~30	PASS
Band13	5MHz	16QAM	23205	1RB#0	30~1000	PASS
Band13	5MHz	16QAM	23205	1RB#0	1000~3000	PASS
Band13	5MHz	16QAM	23205	1RB#0	3000~10000	PASS
Band13	5MHz	QPSK	23230	1RB#0	0.009~0.15	PASS
Band13	5MHz	QPSK	23230	1RB#0	0.15~30	PASS
Band13	5MHz	QPSK	23230	1RB#0	30~1000	PASS
Band13	5MHz	QPSK	23230	1RB#0	1000~3000	PASS
Band13	5MHz	QPSK	23230	1RB#0	3000~10000	PASS
Band13	5MHz	16QAM	23230	1RB#0	0.009~0.15	PASS
Band13	5MHz	16QAM	23230	1RB#0	0.15~30	PASS
Band13	5MHz	16QAM	23230	1RB#0	30~1000	PASS
Band13	5MHz	16QAM	23230	1RB#0	1000~3000	PASS
Band13	5MHz	16QAM	23230	1RB#0	3000~10000	PASS
Band13	5MHz	QPSK	23255	1RB#0	0.009~0.15	PASS
Band13	5MHz	QPSK	23255	1RB#0	0.15~30	PASS
Band13	5MHz	QPSK	23255	1RB#0	30~1000	PASS
Band13	5MHz	QPSK	23255	1RB#0	1000~3000	PASS
Band13	5MHz	QPSK	23255	1RB#0	3000~10000	PASS
Band13	5MHz	16QAM	23255	1RB#0	0.009~0.15	PASS
Band13	5MHz	16QAM	23255	1RB#0	0.15~30	PASS
Band13	5MHz	16QAM	23255	1RB#0	30~1000	PASS
Band13	5MHz	16QAM	23255	1RB#0	1000~3000	PASS
Band13	5MHz	16QAM	23255	1RB#0	3000~10000	PASS
Band13	10MHz	QPSK	23230	1RB#0	0.009~0.15	PASS
Band13	10MHz	QPSK	23230	1RB#0	0.15~30	PASS
Band13	10MHz	QPSK	23230	1RB#0	30~1000	PASS
Band13	10MHz	QPSK	23230	1RB#0	1000~3000	PASS
Band13	10MHz	QPSK	23230	1RB#0	3000~10000	PASS

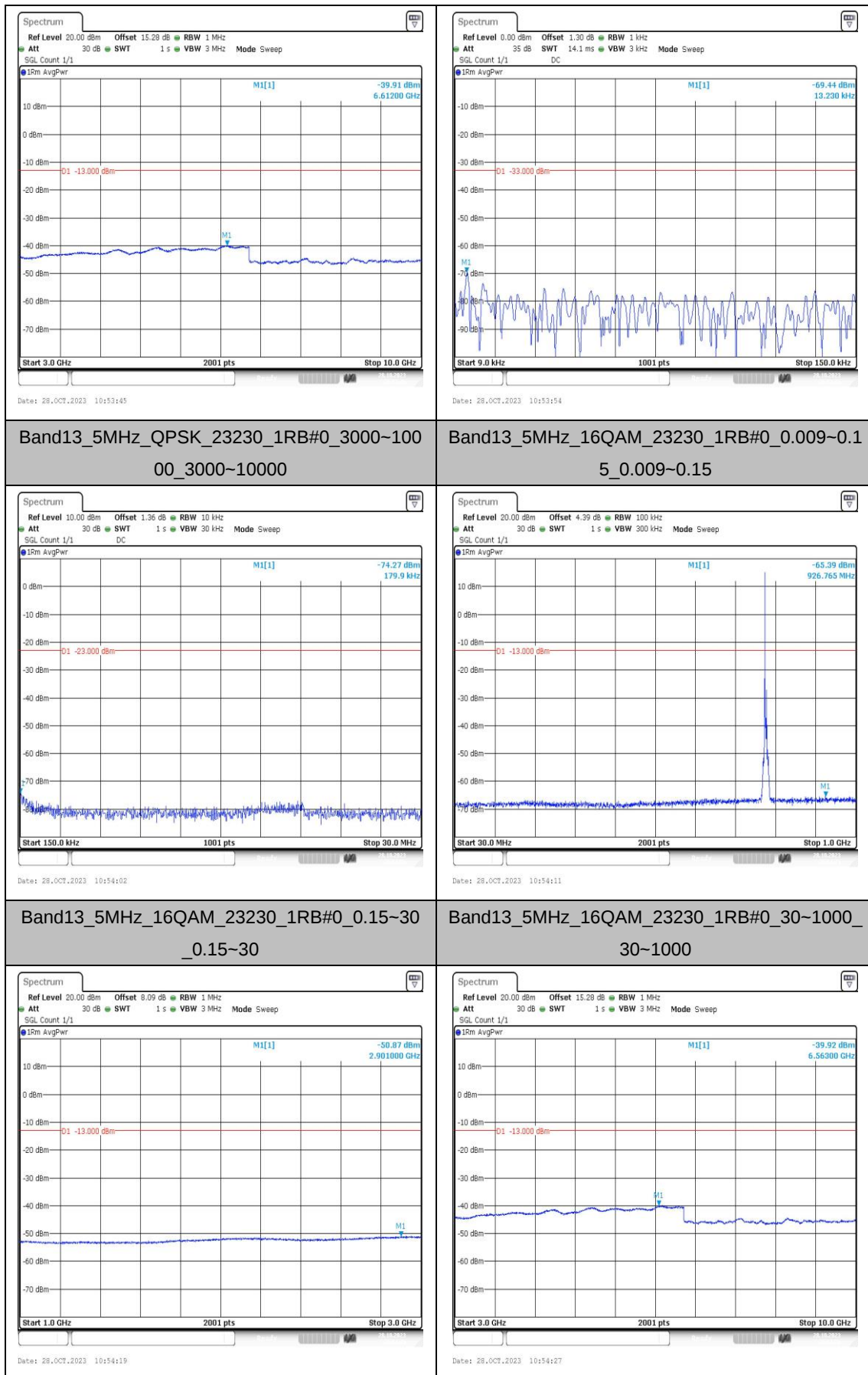
Band13	10MHz	16QAM	23230	1RB#0	0.009~0.15	PASS
Band13	10MHz	16QAM	23230	1RB#0	0.15~30	PASS
Band13	10MHz	16QAM	23230	1RB#0	30~1000	PASS
Band13	10MHz	16QAM	23230	1RB#0	1000~3000	PASS
Band13	10MHz	16QAM	23230	1RB#0	3000~10000	PASS

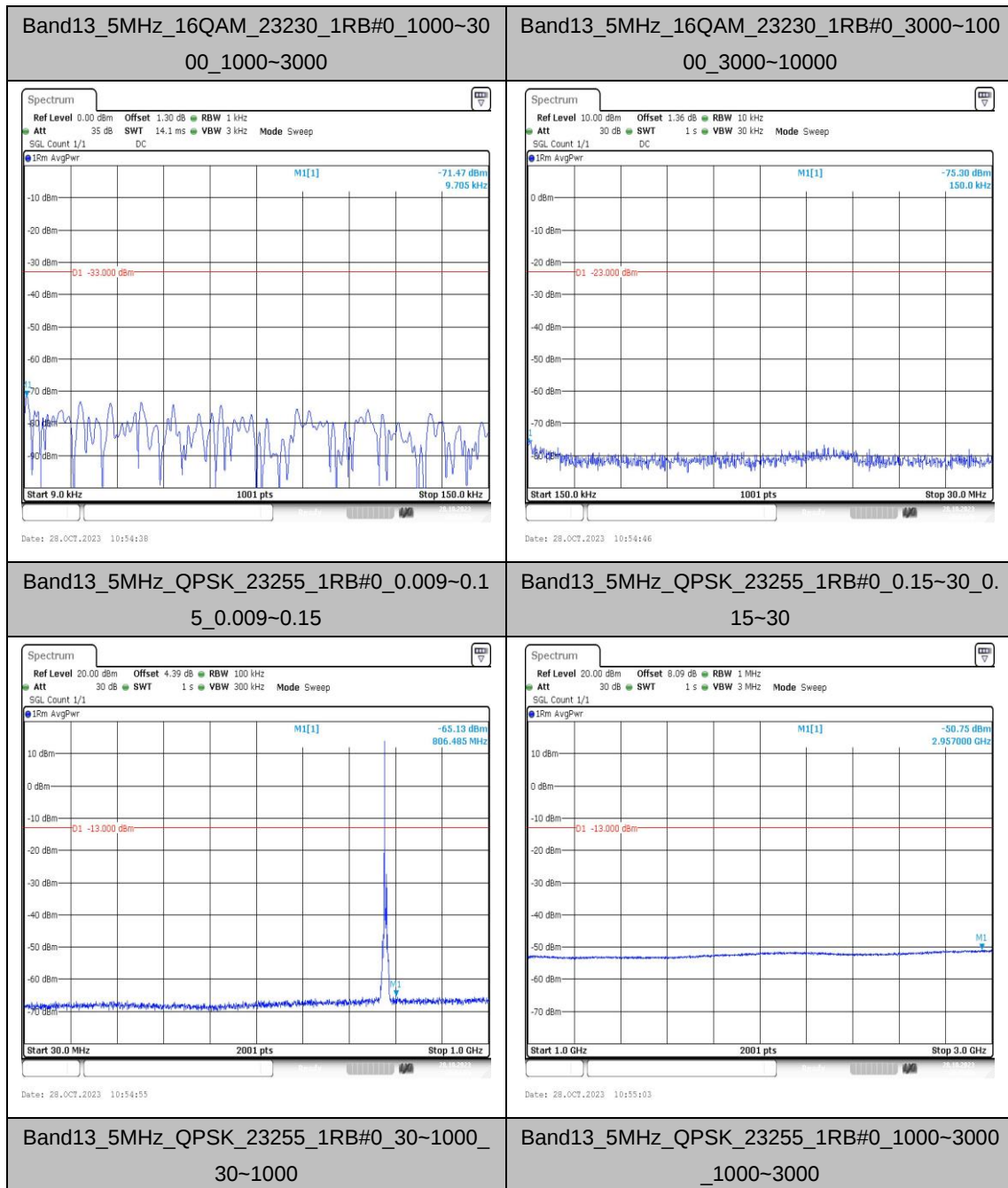
Test Graphs

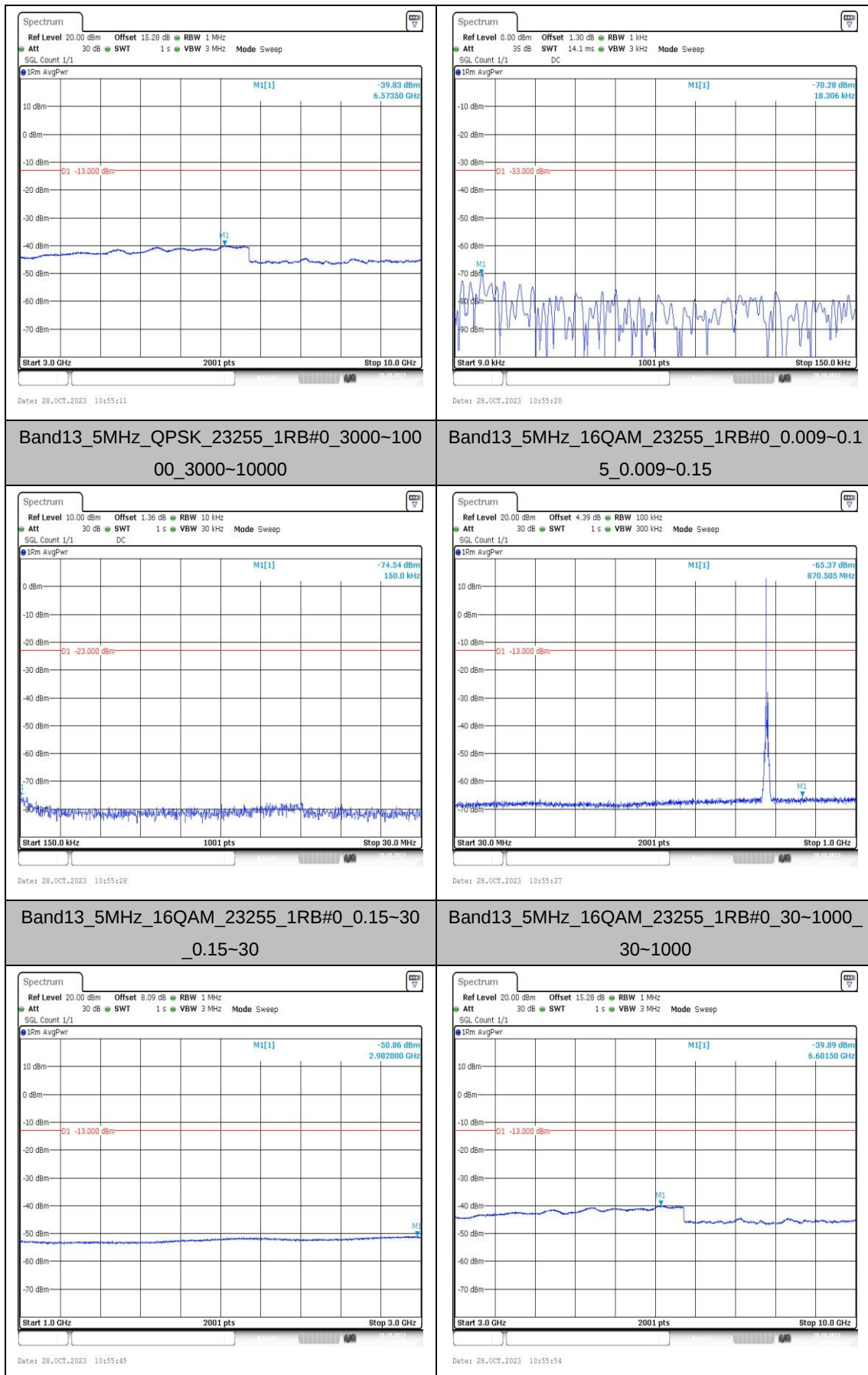


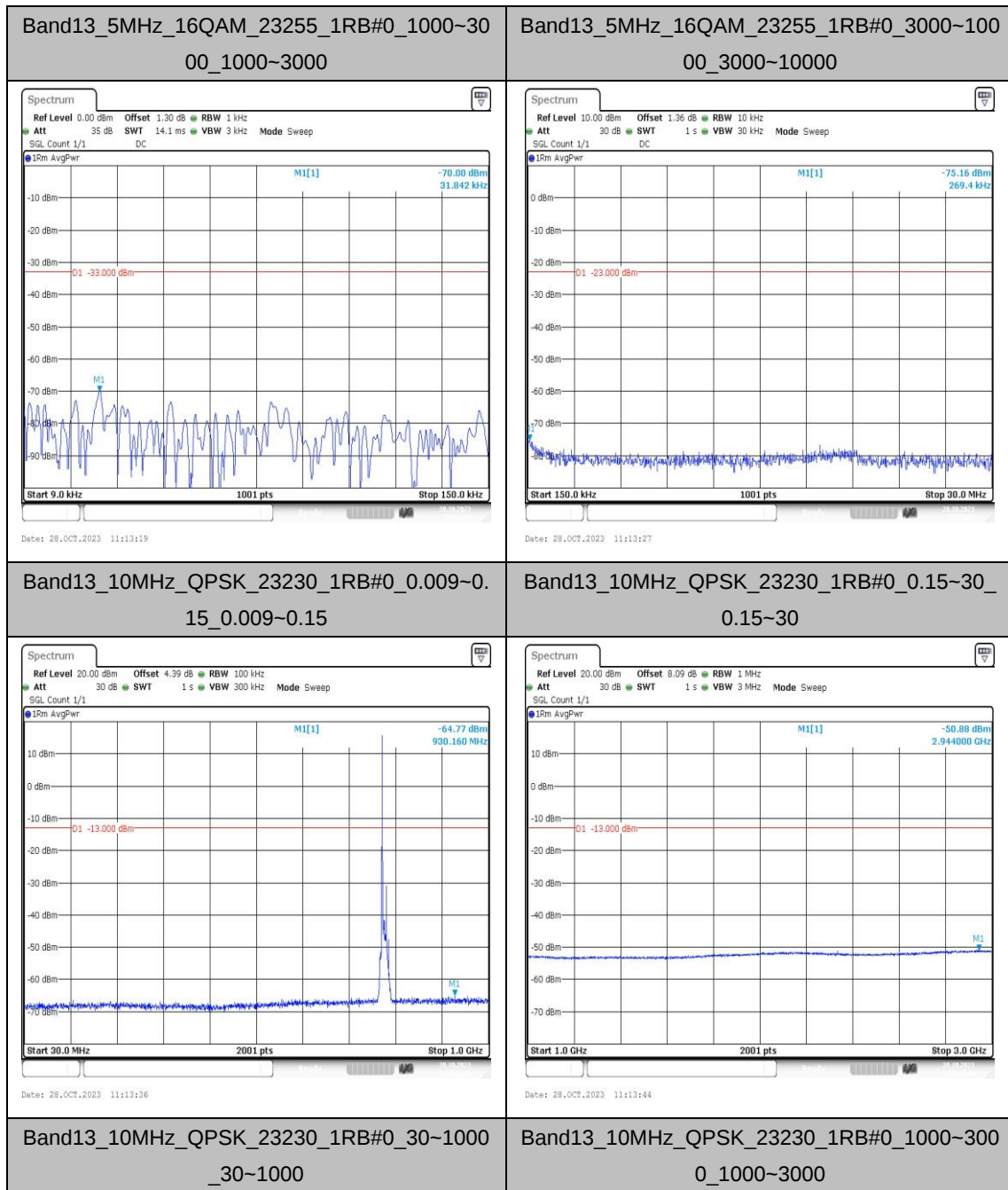


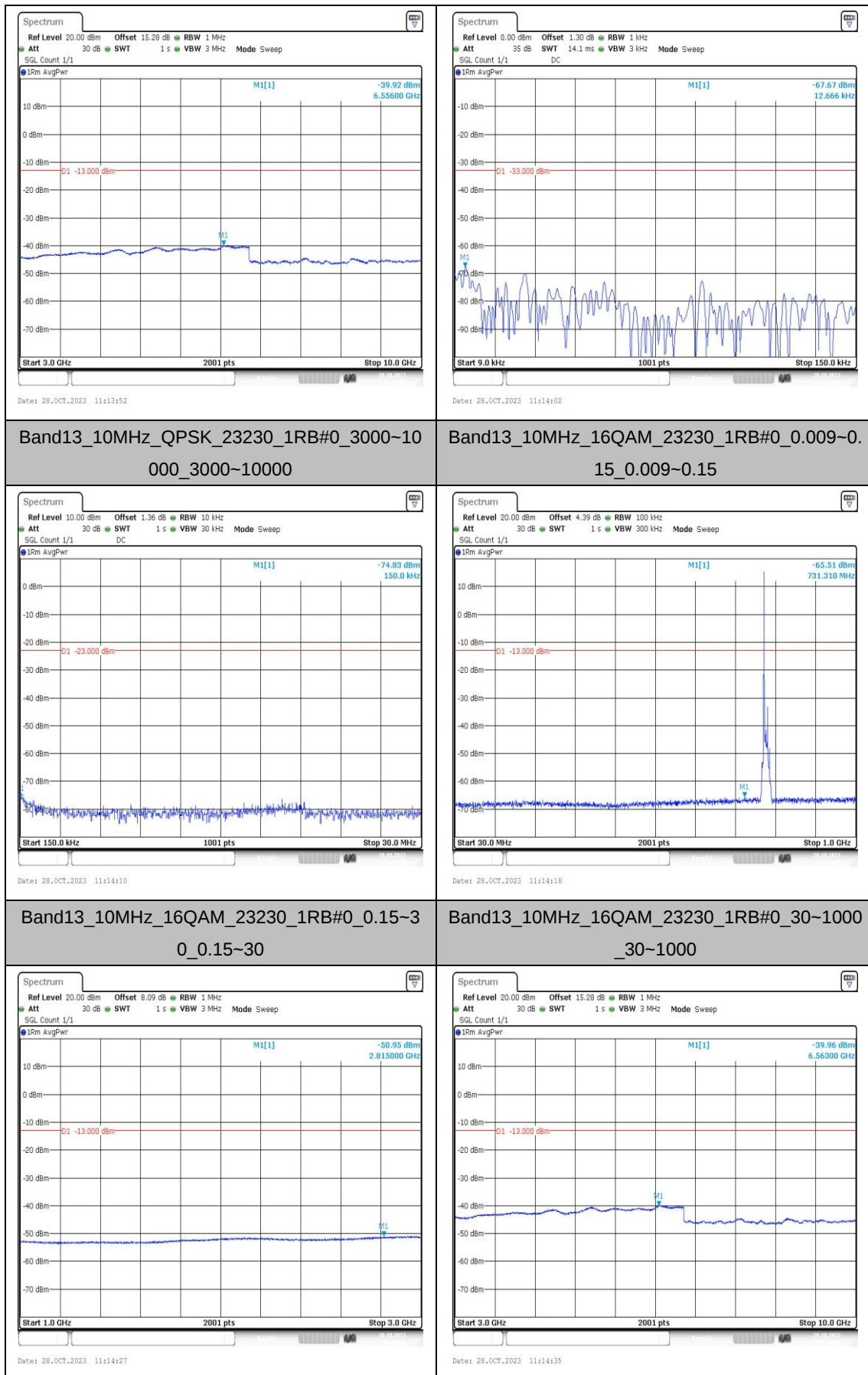












Band13_10MHz_16QAM_23230_1RB#0_1000~3000_1000~3000	Band13_10MHz_16QAM_23230_1RB#0_3000~10000_3000~10000
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Appendix F: Frequency Stability

Test Result

Voltage										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	VN	NT	-12.15	-0.015587	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	VL	NT	-4.26	-0.005465	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	VH	NT	-3.50	-0.004490	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VN	NT	-8.90	-0.011418	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VL	NT	-2.56	-0.003284	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VH	NT	-10.84	-0.013906	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VN	NT	-9.06	-0.011586	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VL	NT	-12.77	-0.016330	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VH	NT	-11.20	-0.014322	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VN	NT	-6.87	-0.008785	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VL	NT	-10.54	-0.013478	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VH	NT	-11.01	-0.014079	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VN	NT	-10.53	-0.013423	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VL	NT	-6.64	-0.008464	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VH	NT	-4.15	-0.005290	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VN	NT	-10.71	-0.013652	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VL	NT	-9.46	-0.012059	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VH	NT	-11.96	-0.015245	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-6.32	-0.008082	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	-8.74	-0.011176	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-10.80	-0.013811	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-8.75	-0.011189	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-5.55	-0.007097	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-5.72	-0.007315	±2.5	PASS

Temperature										
Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	NV	-30	-3.99	-0.005119	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	-20	-9.38	-0.012033	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	-10	-5.85	-0.007505	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	0	-11.07	-0.014201	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	10	-11.30	-0.014496	±2.5	PASS

Band13	5MHz	QPSK	23205	25RB#0	NV	20	-8.50	-0.010904	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	30	-6.39	-0.008198	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	40	-10.46	-0.013419	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	50	-10.69	-0.013714	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-30	-7.67	-0.009840	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-20	-13.15	-0.016870	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-10	-12.20	-0.015651	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	0	-11.59	-0.014869	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	10	-10.37	-0.013303	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	20	-12.35	-0.015843	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	30	-1.83	-0.002348	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	40	-10.07	-0.012919	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	50	-11.49	-0.014740	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-30	-8.14	-0.010409	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-20	-9.77	-0.012494	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-10	-8.18	-0.010460	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	0	-9.41	-0.012033	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	10	-10.46	-0.013376	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	20	-14.93	-0.019092	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	30	-2.12	-0.002711	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	40	-11.00	-0.014066	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	50	-9.83	-0.012570	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-30	-9.87	-0.012621	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-20	-5.56	-0.007110	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-10	-10.03	-0.012826	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	0	-4.38	-0.005601	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	10	-8.58	-0.010972	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	20	-8.18	-0.010460	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	30	-14.20	-0.018159	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	40	-13.05	-0.016688	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	50	-6.77	-0.008657	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-30	-5.91	-0.007533	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-20	-11.79	-0.015029	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-10	-10.76	-0.013716	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	0	-10.94	-0.013945	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	10	-11.56	-0.014736	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	20	-7.64	-0.009739	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	30	-8.67	-0.011052	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	40	-9.03	-0.011511	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	50	-8.61	-0.010975	±2.5	PASS

Band13	5MHz	16QAM	23255	25RB#0	NV	-30	-5.98	-0.007623	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	-20	-10.64	-0.013563	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	-10	-12.99	-0.016558	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	0	-2.78	-0.003544	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	10	-9.70	-0.012365	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	20	-8.50	-0.010835	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	30	-4.68	-0.005966	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	40	-14.35	-0.018292	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	50	2.10	0.002677	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	-12.93	-0.016535	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-4.73	-0.006049	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-10	-8.37	-0.010703	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-3.78	-0.004834	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-4.76	-0.006087	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-6.81	-0.008708	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-10.44	-0.013350	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-13.75	-0.017583	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-12.66	-0.016189	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-11.26	-0.014399	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-13.90	-0.017775	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-10	-6.44	-0.008235	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-6.61	-0.008453	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-9.86	-0.012609	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-6.88	-0.008798	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-9.77	-0.012494	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-9.23	-0.011803	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-13.66	-0.017468	±2.5	PASS