

Appendix for LTE BAND 13

Product Name: Smart Phone

Model No: X68

Appendix A: Average Power Output Data

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	24.29	PASS
Band13	5MHz	16QAM	23205	1RB#0	23.09	PASS
Band13	5MHz	QPSK	23205	1RB#12	24.32	PASS
Band13	5MHz	16QAM	23205	1RB#12	23.19	PASS
Band13	5MHz	QPSK	23205	1RB#24	24.11	PASS
Band13	5MHz	16QAM	23205	1RB#24	23.05	PASS
Band13	5MHz	QPSK	23205	12RB#0	23.14	PASS
Band13	5MHz	16QAM	23205	12RB#0	22.05	PASS
Band13	5MHz	QPSK	23205	12RB#6	23.15	PASS
Band13	5MHz	16QAM	23205	12RB#6	22.02	PASS
Band13	5MHz	QPSK	23205	12RB#13	23.13	PASS
Band13	5MHz	16QAM	23205	12RB#13	22.10	PASS
Band13	5MHz	QPSK	23205	25RB#0	23.12	PASS
Band13	5MHz	16QAM	23205	25RB#0	22.15	PASS
Band13	5MHz	QPSK	23230	1RB#0	24.12	PASS
Band13	5MHz	16QAM	23230	1RB#0	23.15	PASS
Band13	5MHz	QPSK	23230	1RB#12	24.18	PASS
Band13	5MHz	16QAM	23230	1RB#12	23.30	PASS
Band13	5MHz	QPSK	23230	1RB#24	24.03	PASS
Band13	5MHz	16QAM	23230	1RB#24	23.06	PASS
Band13	5MHz	QPSK	23230	12RB#0	23.23	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.26	PASS
Band13	5MHz	QPSK	23230	12RB#6	23.26	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.22	PASS
Band13	5MHz	QPSK	23230	12RB#13	23.06	PASS
Band13	5MHz	16QAM	23230	12RB#13	22.16	PASS
Band13	5MHz	QPSK	23230	25RB#0	23.21	PASS
Band13	5MHz	16QAM	23230	25RB#0	22.19	PASS
Band13	5MHz	QPSK	23255	1RB#0	24.06	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.96	PASS
Band13	5MHz	QPSK	23255	1RB#12	24.17	PASS
Band13	5MHz	16QAM	23255	1RB#12	23.07	PASS
Band13	5MHz	QPSK	23255	1RB#24	24.06	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.85	PASS
Band13	5MHz	QPSK	23255	12RB#0	23.13	PASS
Band13	5MHz	16QAM	23255	12RB#0	22.11	PASS

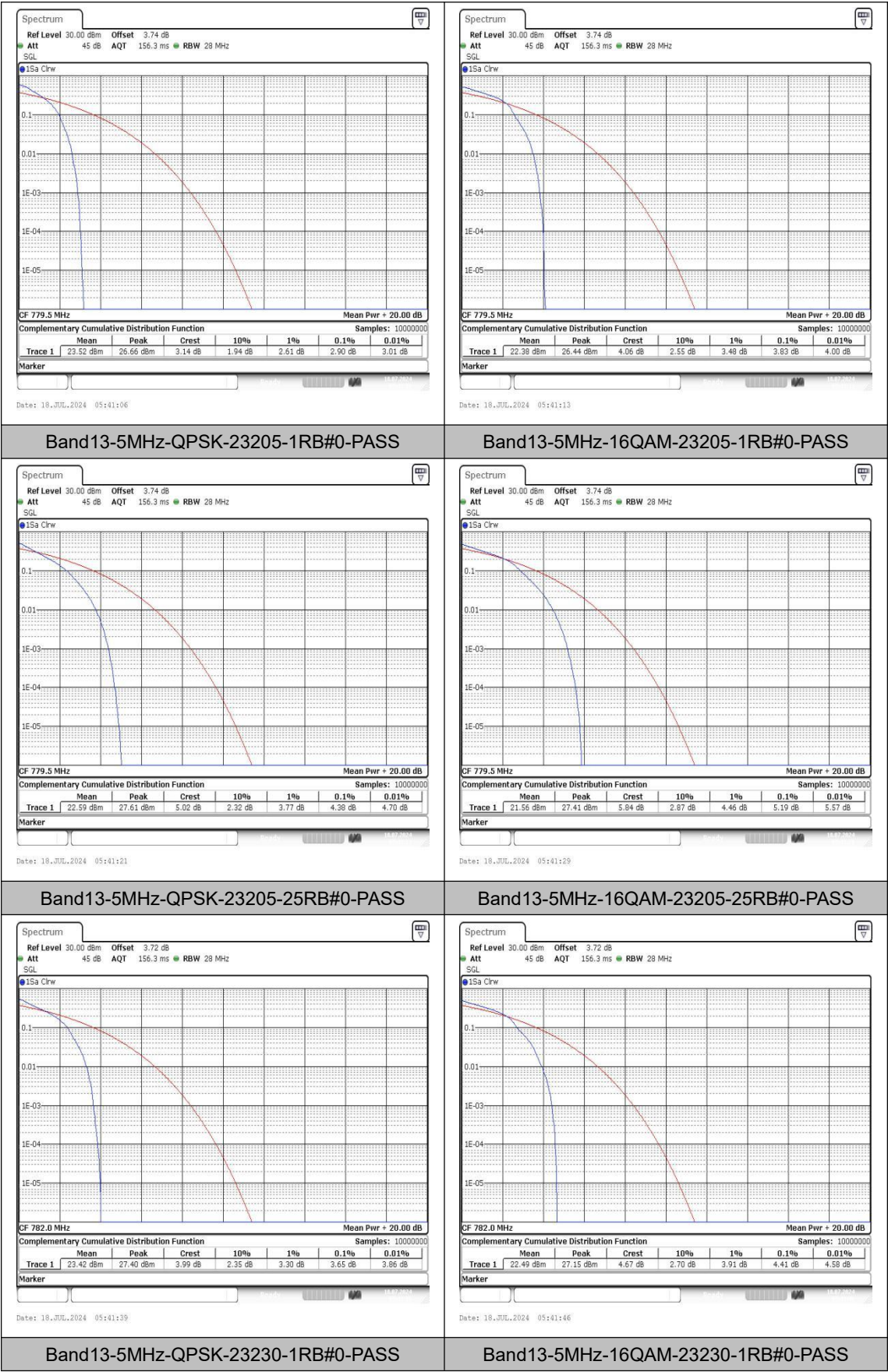
Band13	5MHz	QPSK	23255	12RB#6	23.16	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.18	PASS
Band13	5MHz	QPSK	23255	12RB#13	23.09	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.05	PASS
Band13	5MHz	QPSK	23255	25RB#0	23.16	PASS
Band13	5MHz	16QAM	23255	25RB#0	22.19	PASS
Band13	10MHz	QPSK	23230	1RB#0	24.36	PASS
Band13	10MHz	16QAM	23230	1RB#0	23.16	PASS
Band13	10MHz	QPSK	23230	1RB#24	24.24	PASS
Band13	10MHz	16QAM	23230	1RB#24	23.30	PASS
Band13	10MHz	QPSK	23230	1RB#49	24.08	PASS
Band13	10MHz	16QAM	23230	1RB#49	23.01	PASS
Band13	10MHz	QPSK	23230	25RB#0	23.25	PASS
Band13	10MHz	16QAM	23230	25RB#0	22.21	PASS
Band13	10MHz	QPSK	23230	25RB#12	23.24	PASS
Band13	10MHz	16QAM	23230	25RB#12	22.24	PASS
Band13	10MHz	QPSK	23230	25RB#25	23.22	PASS
Band13	10MHz	16QAM	23230	25RB#25	22.18	PASS
Band13	10MHz	QPSK	23230	50RB#0	23.23	PASS
Band13	10MHz	16QAM	23230	50RB#0	22.20	PASS

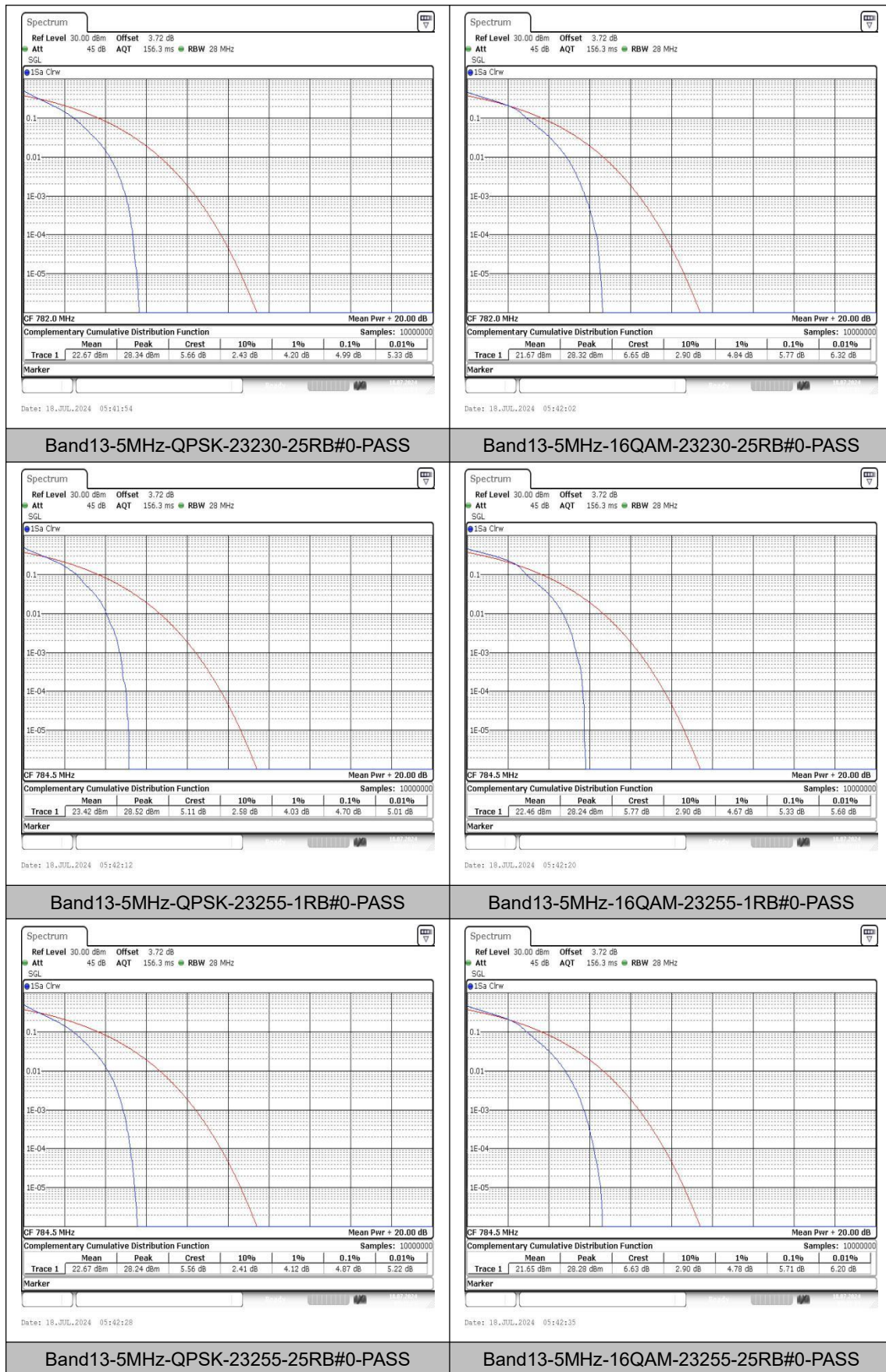
Appendix B: Peak-to-Average Ratio(CCDF)

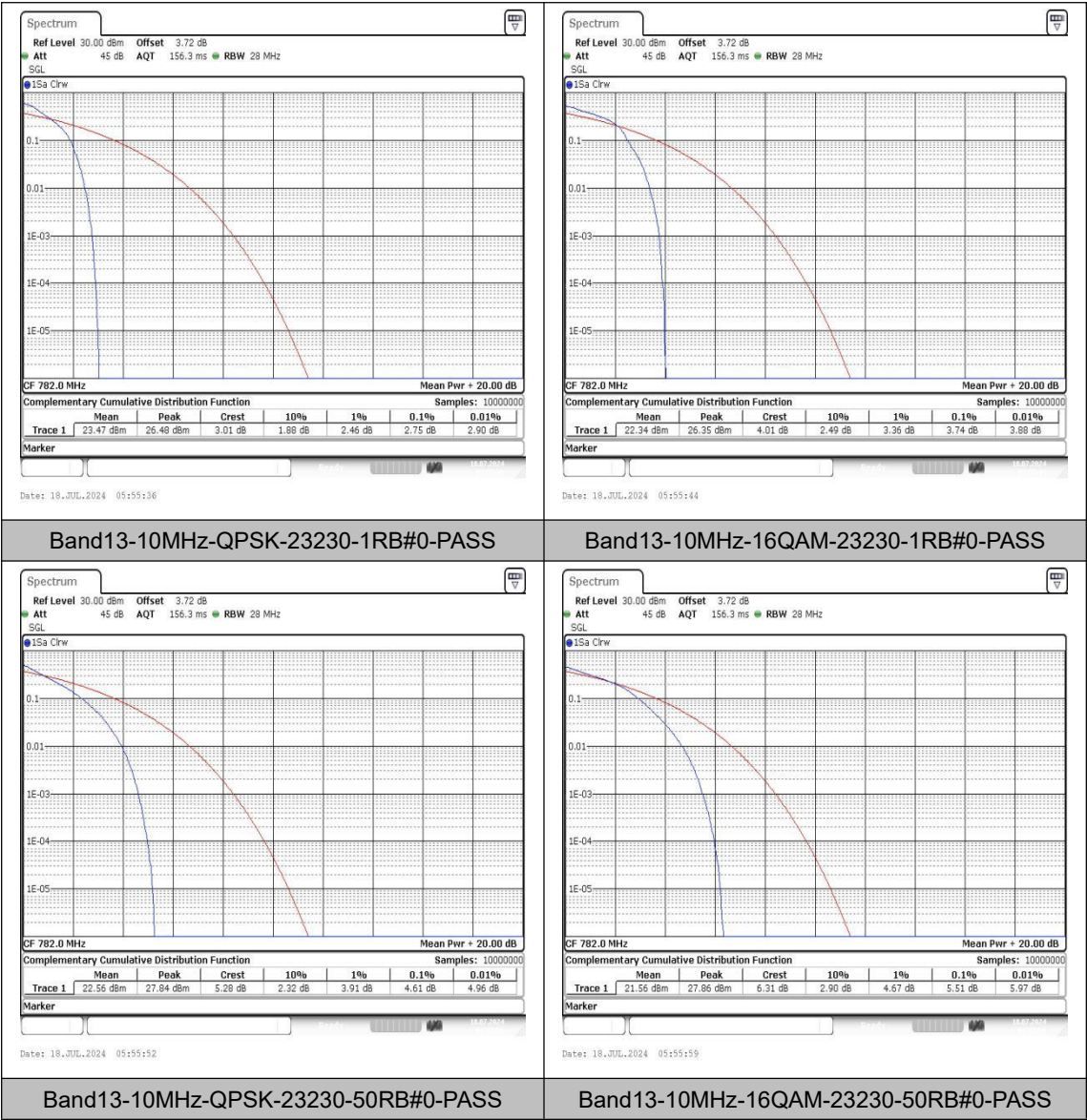
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	2.90	13	PASS
Band13	5MHz	16QAM	23205	1RB#0	3.83	13	PASS
Band13	5MHz	QPSK	23205	25RB#0	4.38	13	PASS
Band13	5MHz	16QAM	23205	25RB#0	5.19	13	PASS
Band13	5MHz	QPSK	23230	1RB#0	3.65	13	PASS
Band13	5MHz	16QAM	23230	1RB#0	4.41	13	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.99	13	PASS
Band13	5MHz	16QAM	23230	25RB#0	5.77	13	PASS
Band13	5MHz	QPSK	23255	1RB#0	4.70	13	PASS
Band13	5MHz	16QAM	23255	1RB#0	5.33	13	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.87	13	PASS
Band13	5MHz	16QAM	23255	25RB#0	5.71	13	PASS
Band13	10MHz	QPSK	23230	1RB#0	2.75	13	PASS
Band13	10MHz	16QAM	23230	1RB#0	3.74	13	PASS
Band13	10MHz	QPSK	23230	50RB#0	4.61	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.51	13	PASS

Test Graphs





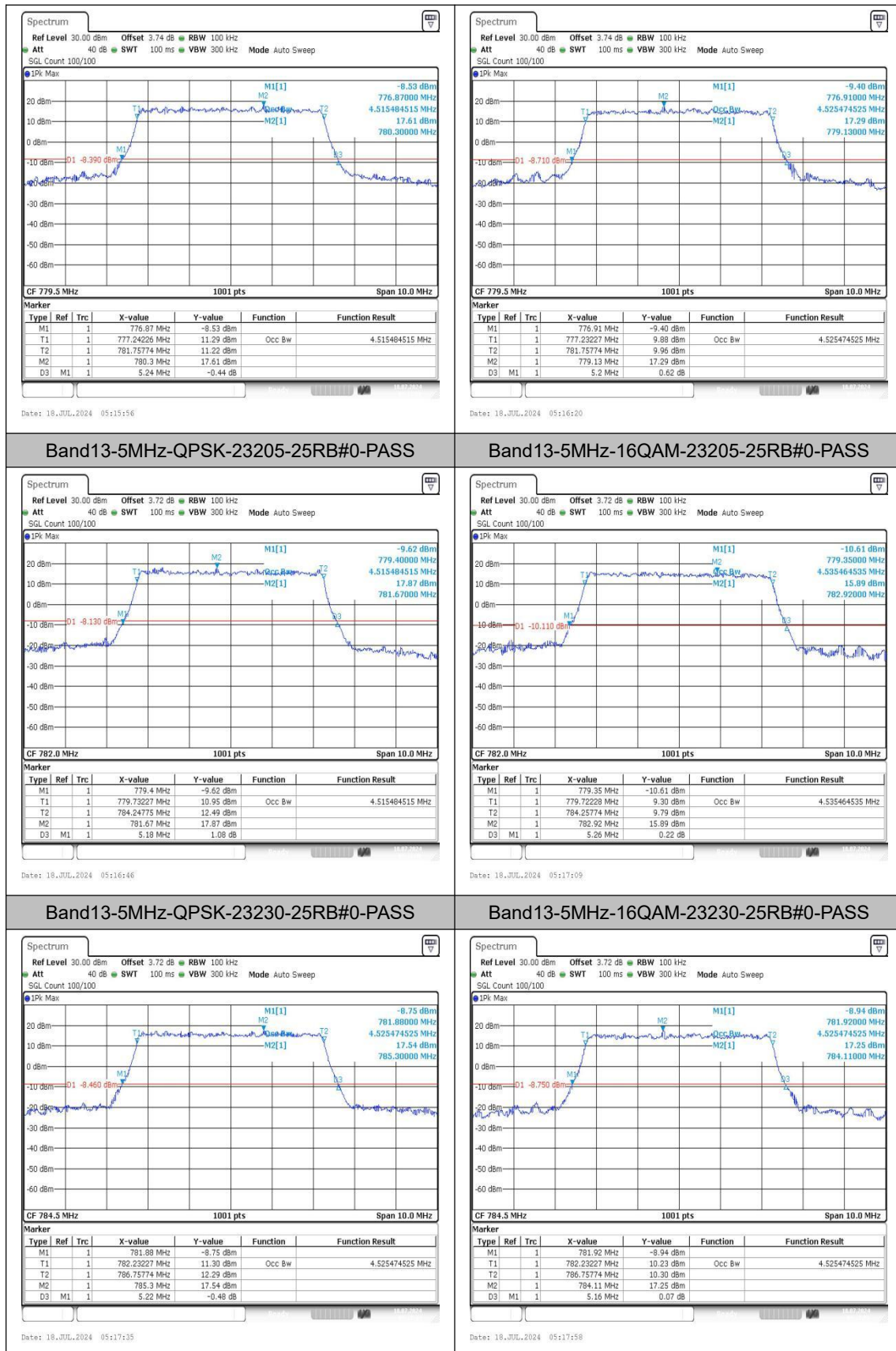


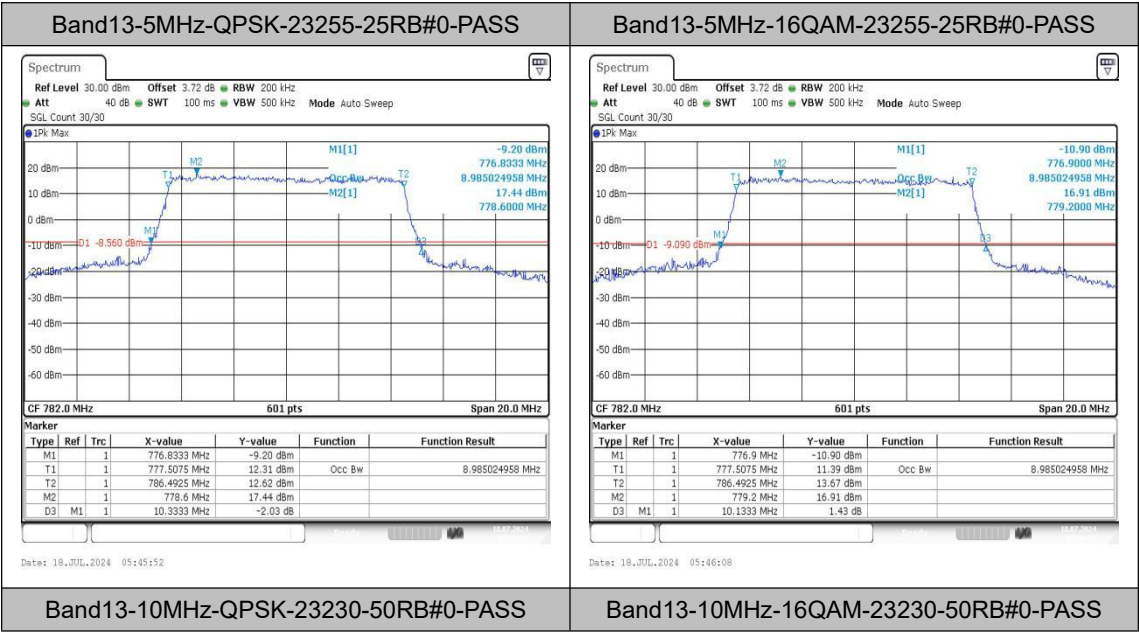
Appendix C: 26dB Bandwidth and Occupied Bandwidth

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.515	5.24	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.525	5.20	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.515	5.18	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.535	5.26	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.525	5.22	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.525	5.16	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.985	10.33	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.985	10.13	PASS

Test Graphs



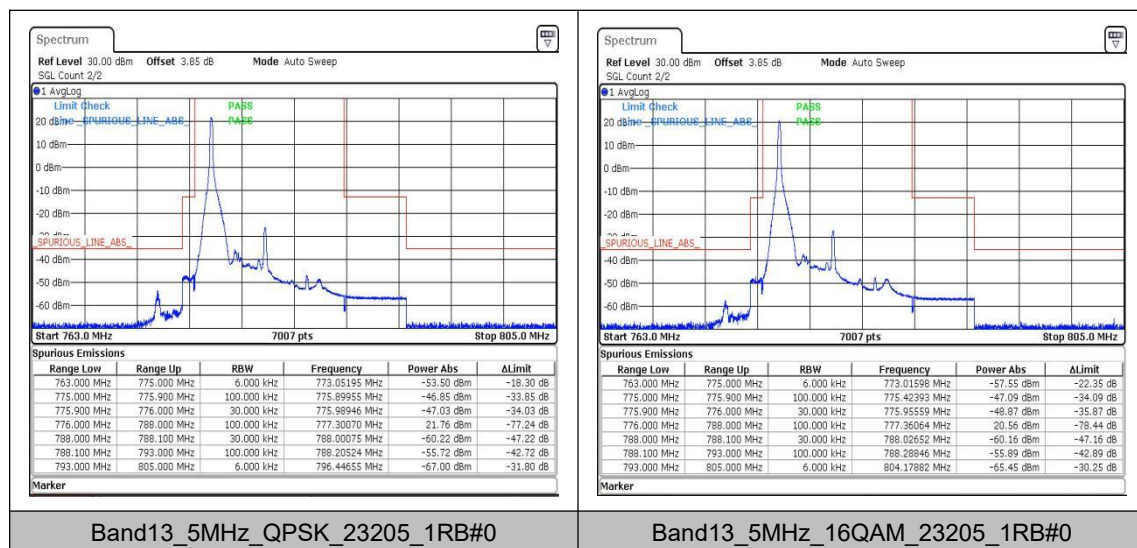


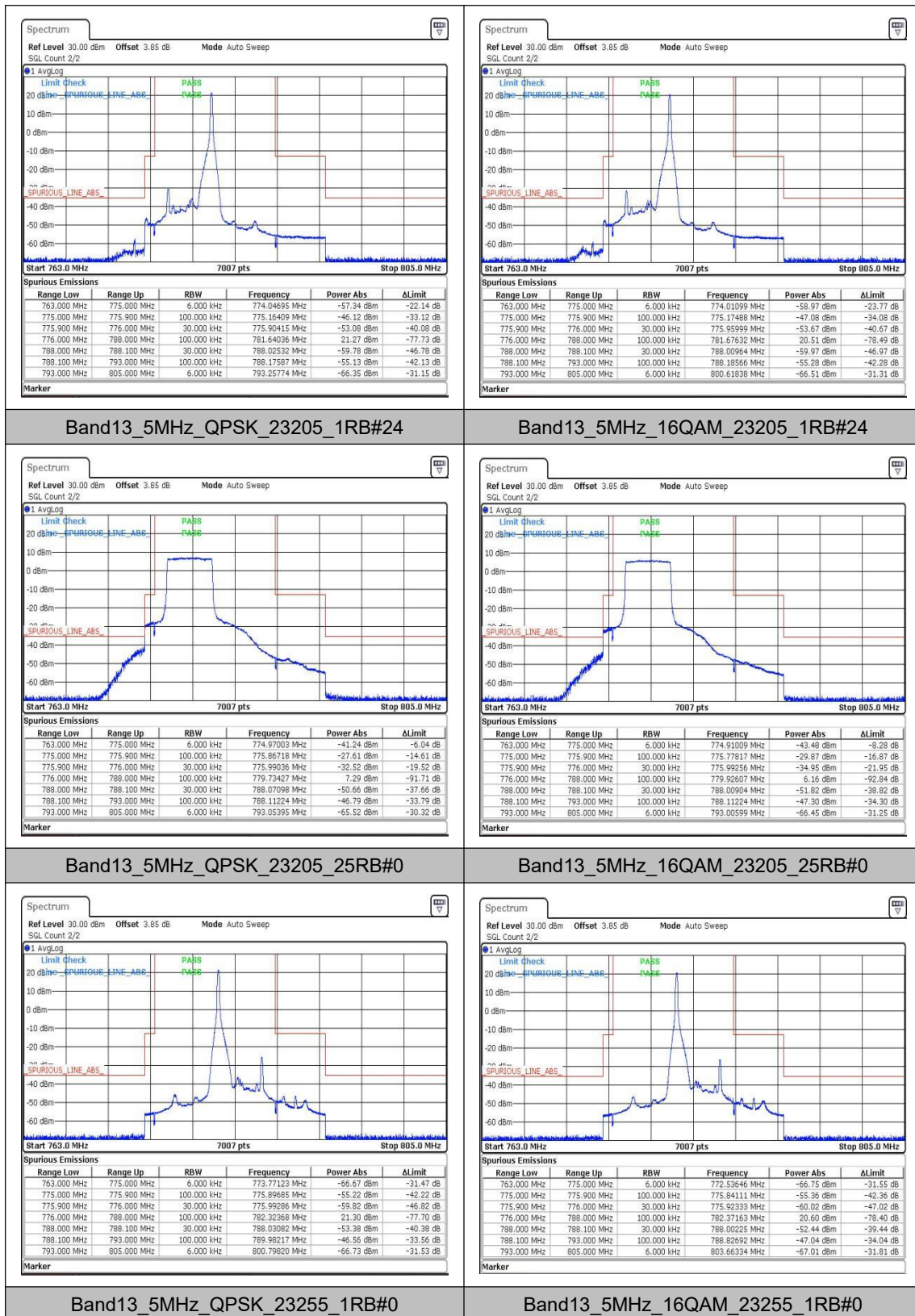
Appendix D: Band Edge

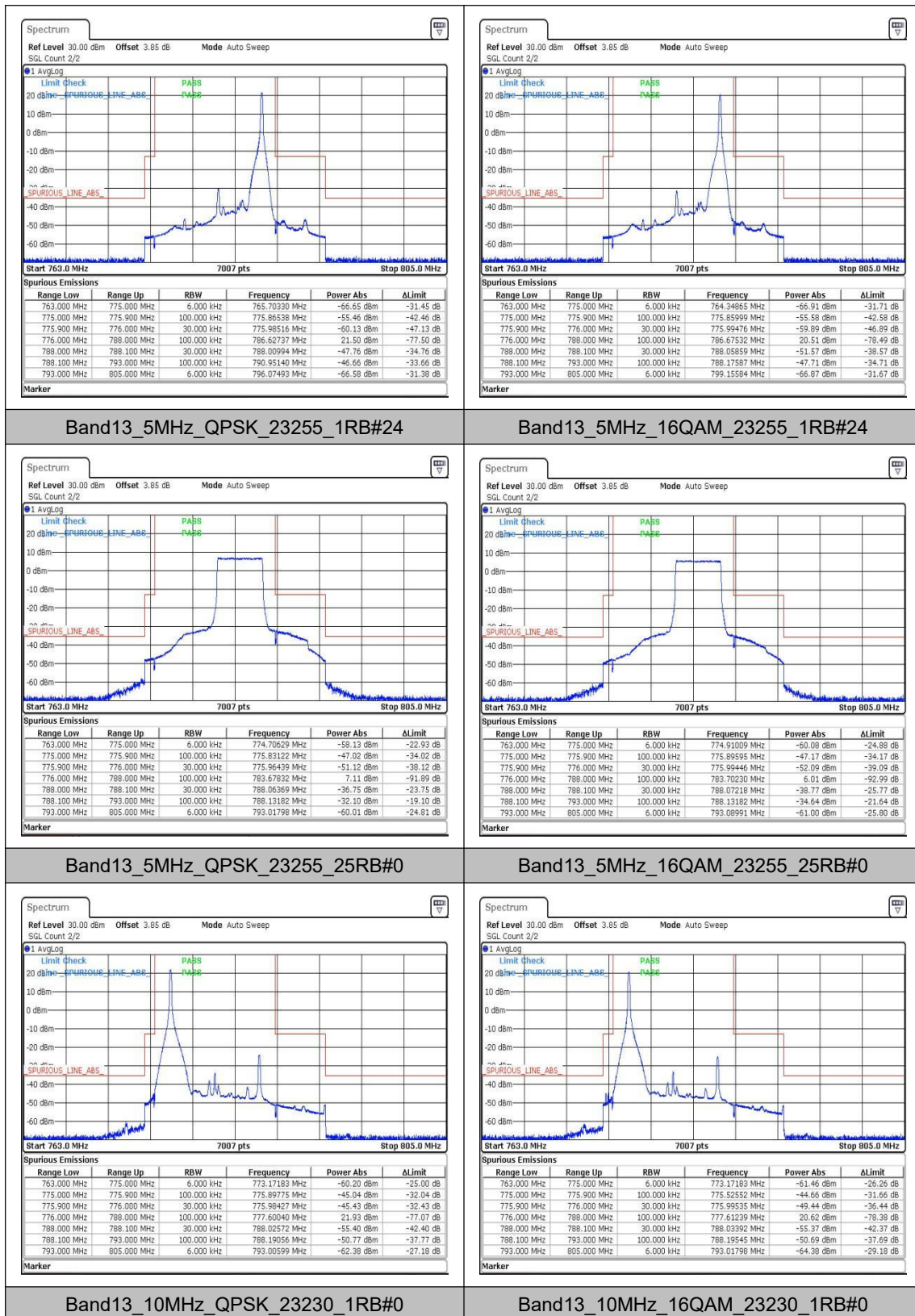
Test Result

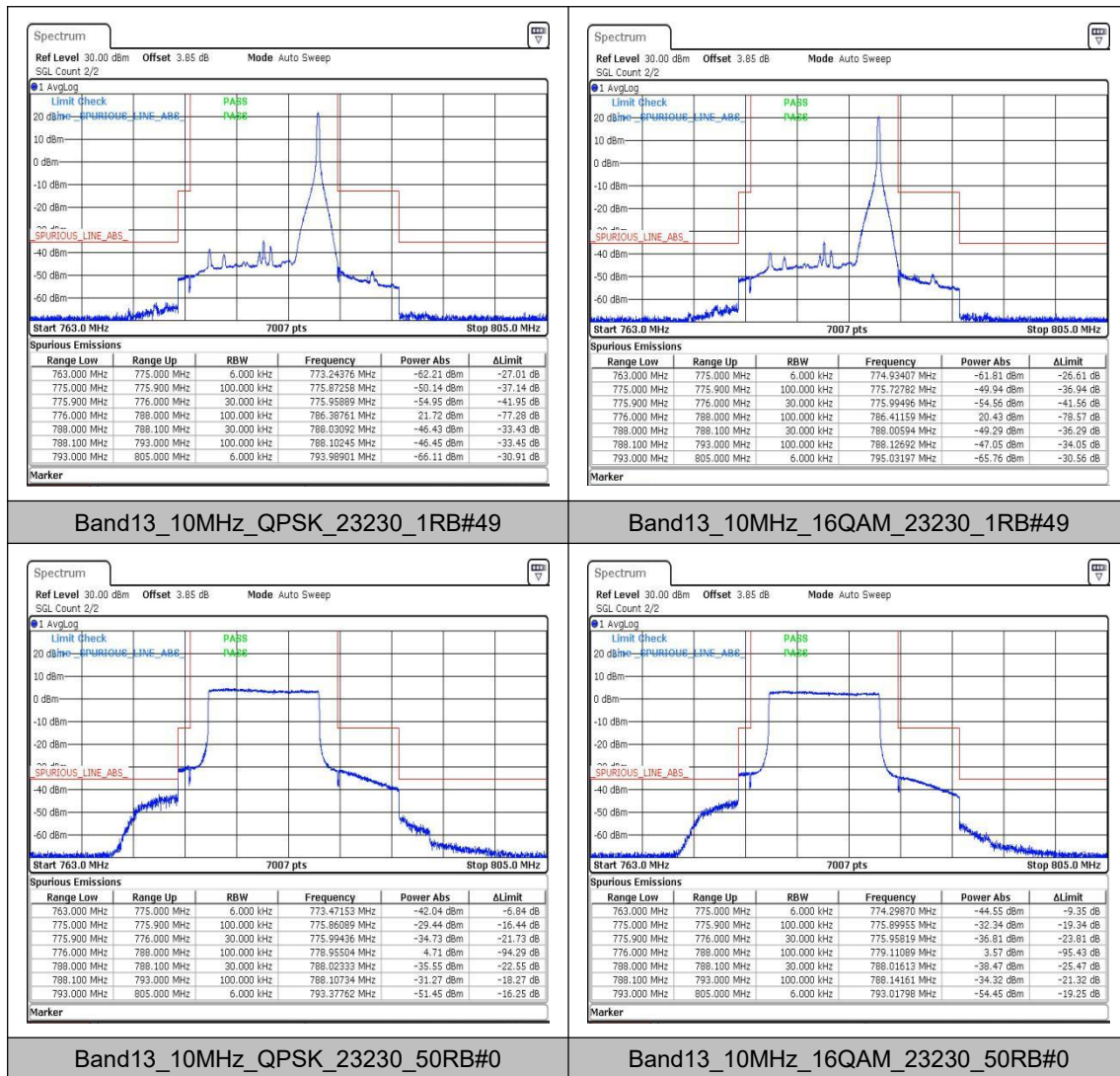
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	-53.50	PASS
Band13	5MHz	16QAM	23205	1RB#0	-57.55	PASS
Band13	5MHz	QPSK	23205	1RB#24	-57.34	PASS
Band13	5MHz	16QAM	23205	1RB#24	-58.97	PASS
Band13	5MHz	QPSK	23205	25RB#0	-41.24	PASS
Band13	5MHz	16QAM	23205	25RB#0	-43.48	PASS
Band13	5MHz	QPSK	23255	1RB#0	-66.67	PASS
Band13	5MHz	16QAM	23255	1RB#0	-66.75	PASS
Band13	5MHz	QPSK	23255	1RB#24	-66.58	PASS
Band13	5MHz	16QAM	23255	1RB#24	-66.87	PASS
Band13	5MHz	QPSK	23255	25RB#0	-32.10	PASS
Band13	5MHz	16QAM	23255	25RB#0	-34.64	PASS
Band13	10MHz	QPSK	23230	1RB#0	-60.20	PASS
Band13	10MHz	16QAM	23230	1RB#0	-61.46	PASS
Band13	10MHz	QPSK	23230	1RB#49	-62.21	PASS
Band13	10MHz	16QAM	23230	1RB#49	-61.81	PASS
Band13	10MHz	QPSK	23230	50RB#0	-42.04	PASS
Band13	10MHz	16QAM	23230	50RB#0	-44.55	PASS

Test Graphs









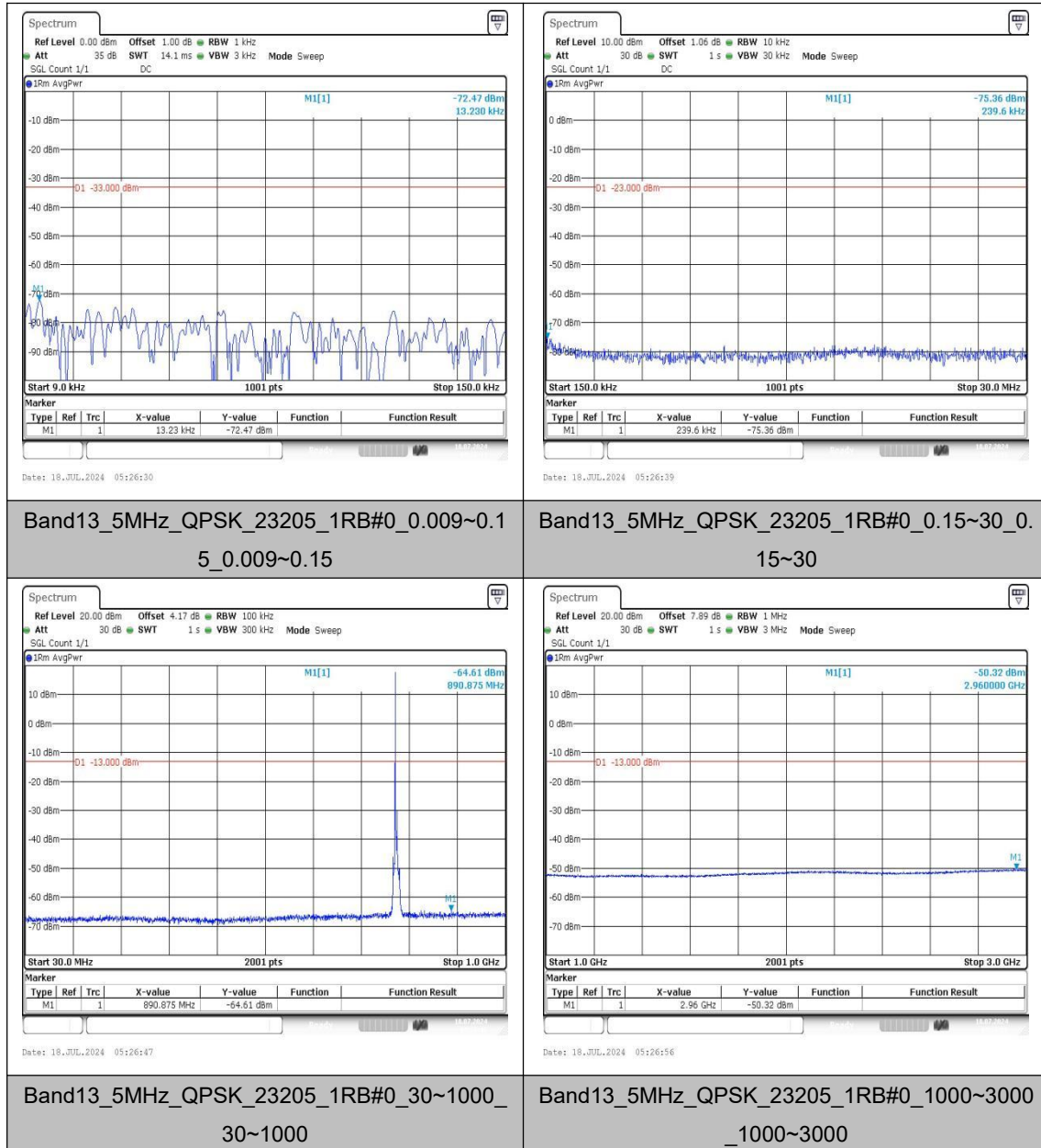
Appendix E: Conducted Spurious Emission

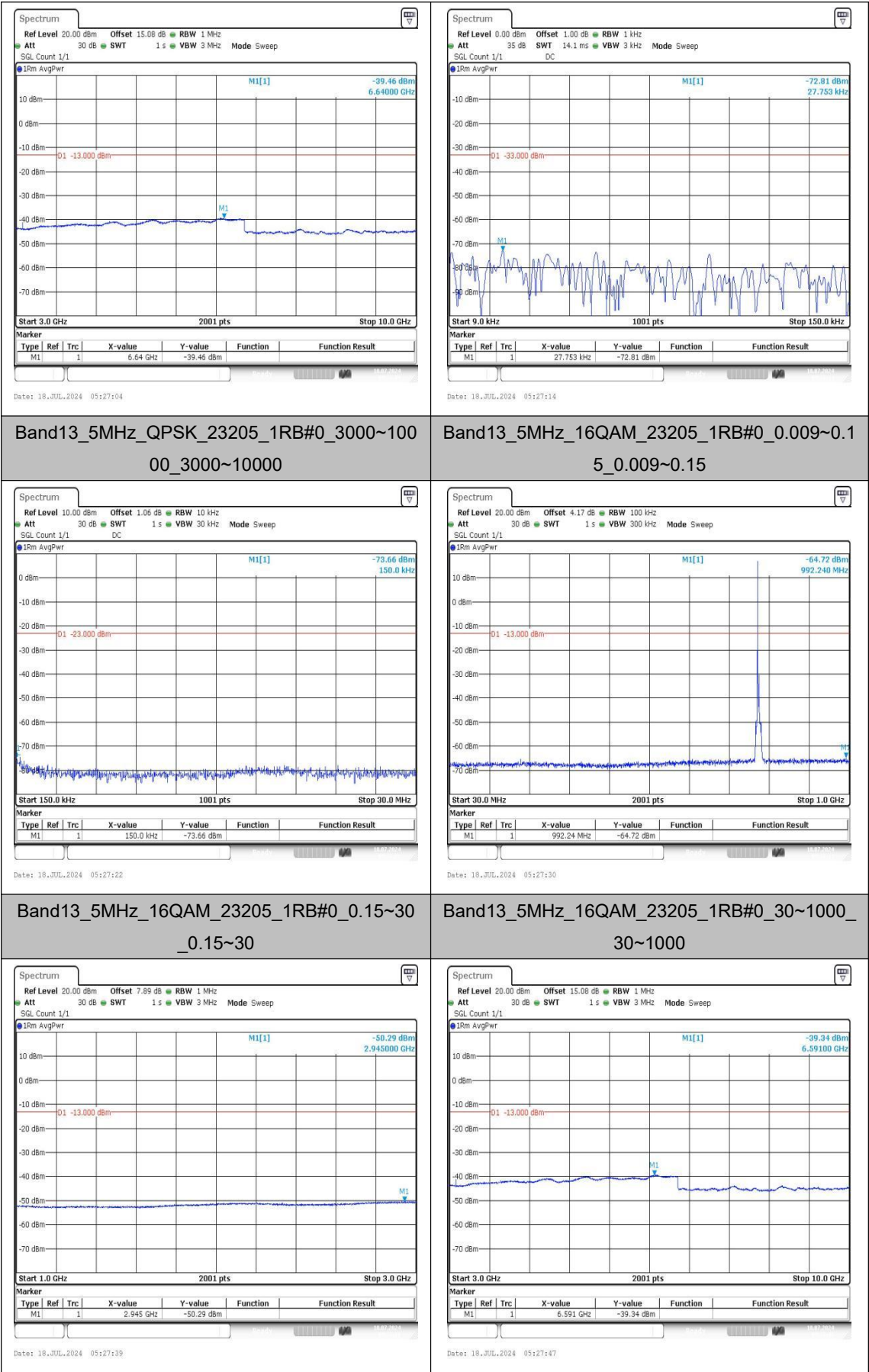
Test Result

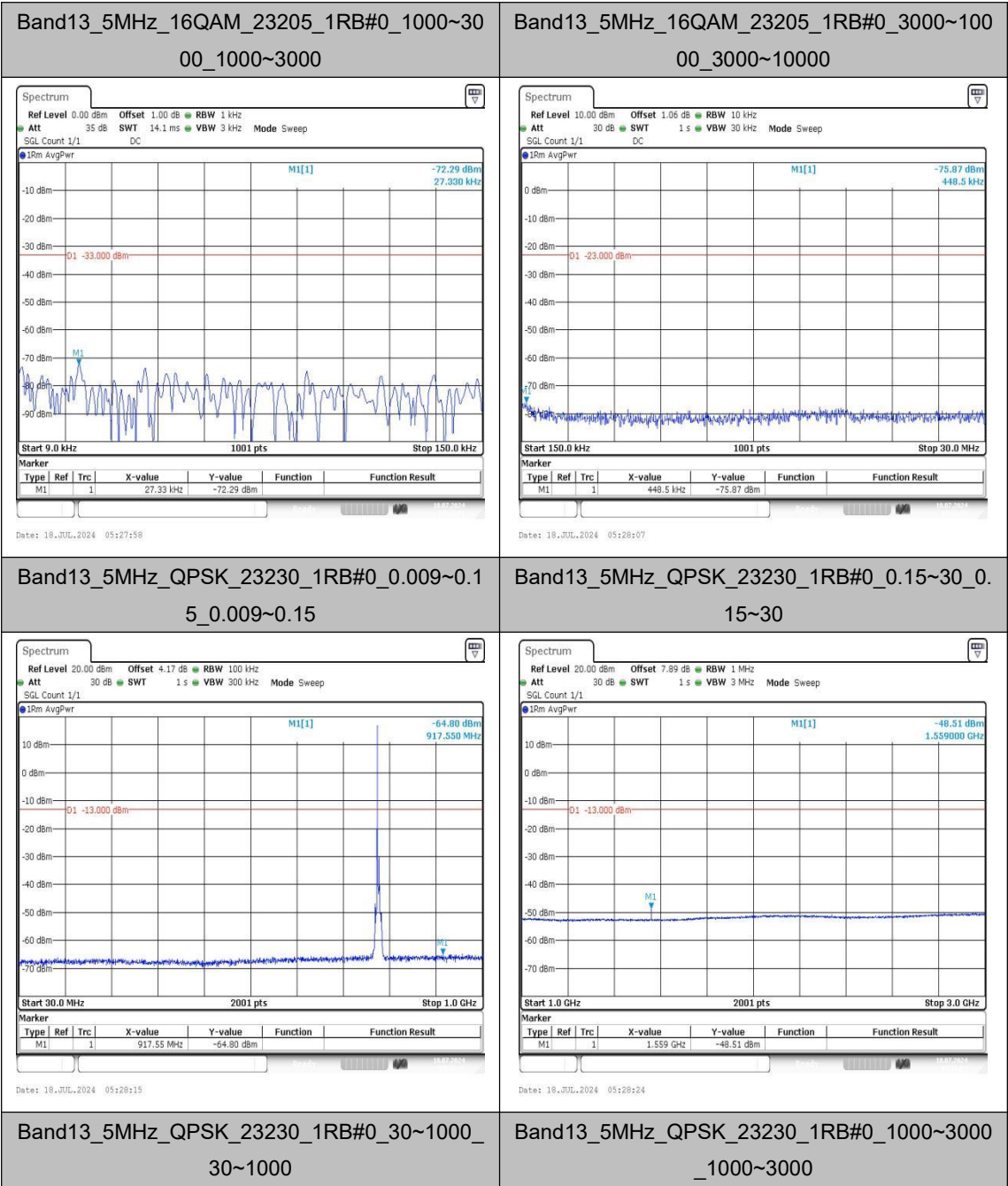
Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Verdict
Band13	5MHz	QPSK	23205	1RB#0	0.009~0.15	PASS
Band13	5MHz	QPSK	23205	1RB#0	0.15~30	PASS
Band13	5MHz	QPSK	23205	1RB#0	30~1000	PASS
Band13	5MHz	QPSK	23205	1RB#0	1000~3000	PASS
Band13	5MHz	QPSK	23205	1RB#0	3000~10000	PASS
Band13	5MHz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

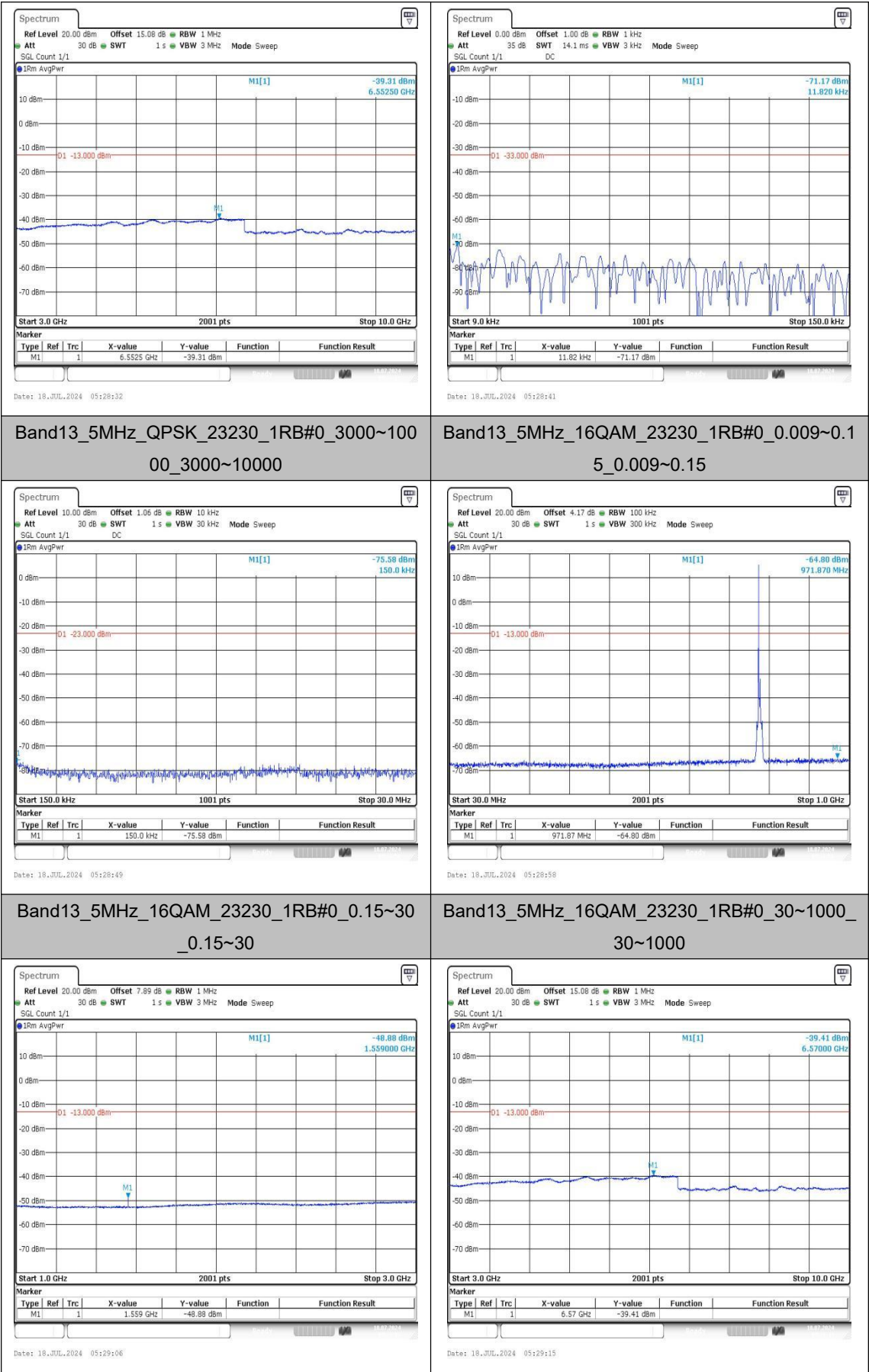
Band13	10MHz	16QAM	23230	1RB#0	0.15~30	PASS
Band13	10MHz	16QAM	23230	1RB#0	30~1000	PASS
Band13	10MHz	16QAM	23230	1RB#0	1000~3000	PASS
Band13	10MHz	16QAM	23230	1RB#0	3000~10000	PASS

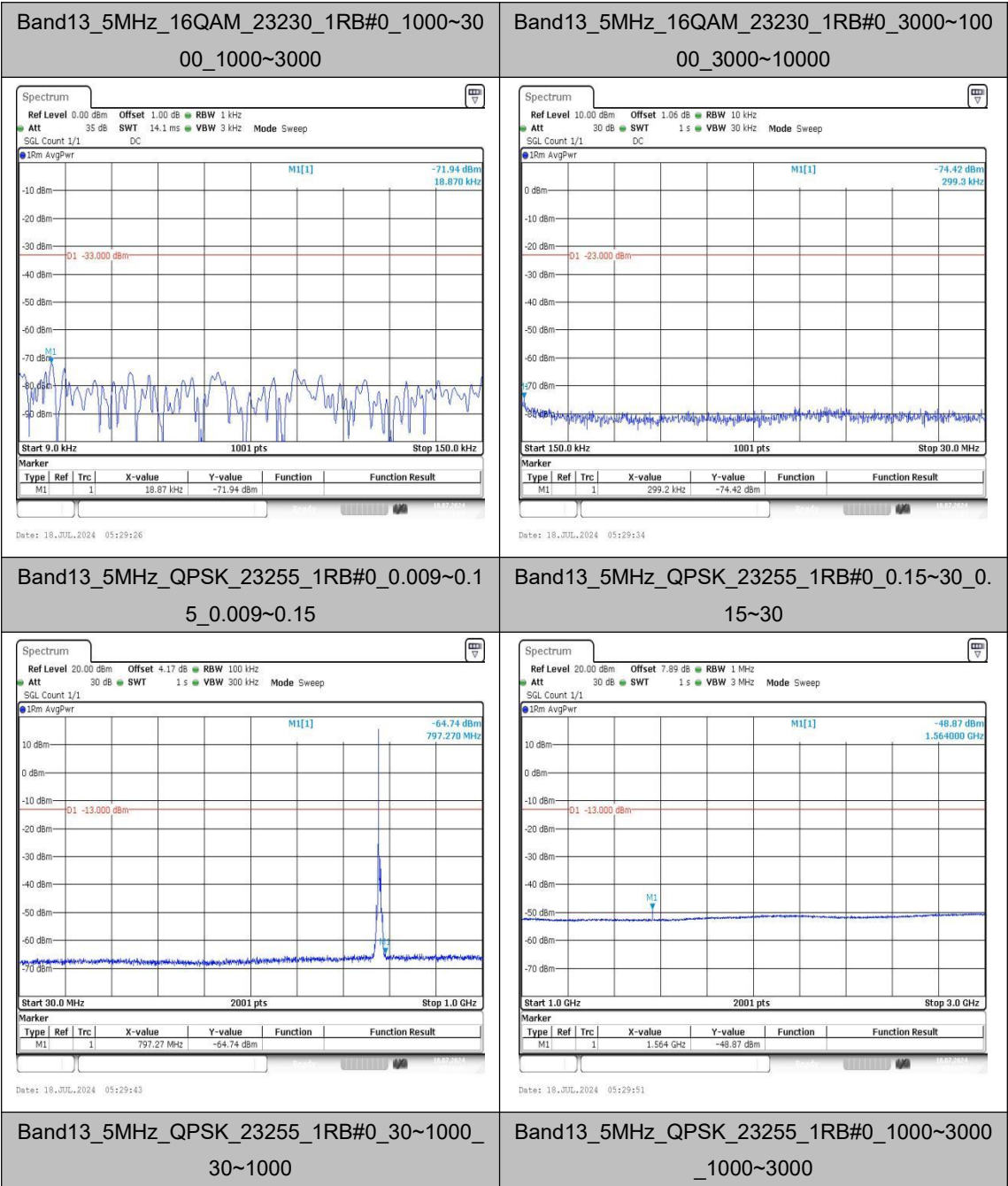
Test Graphs

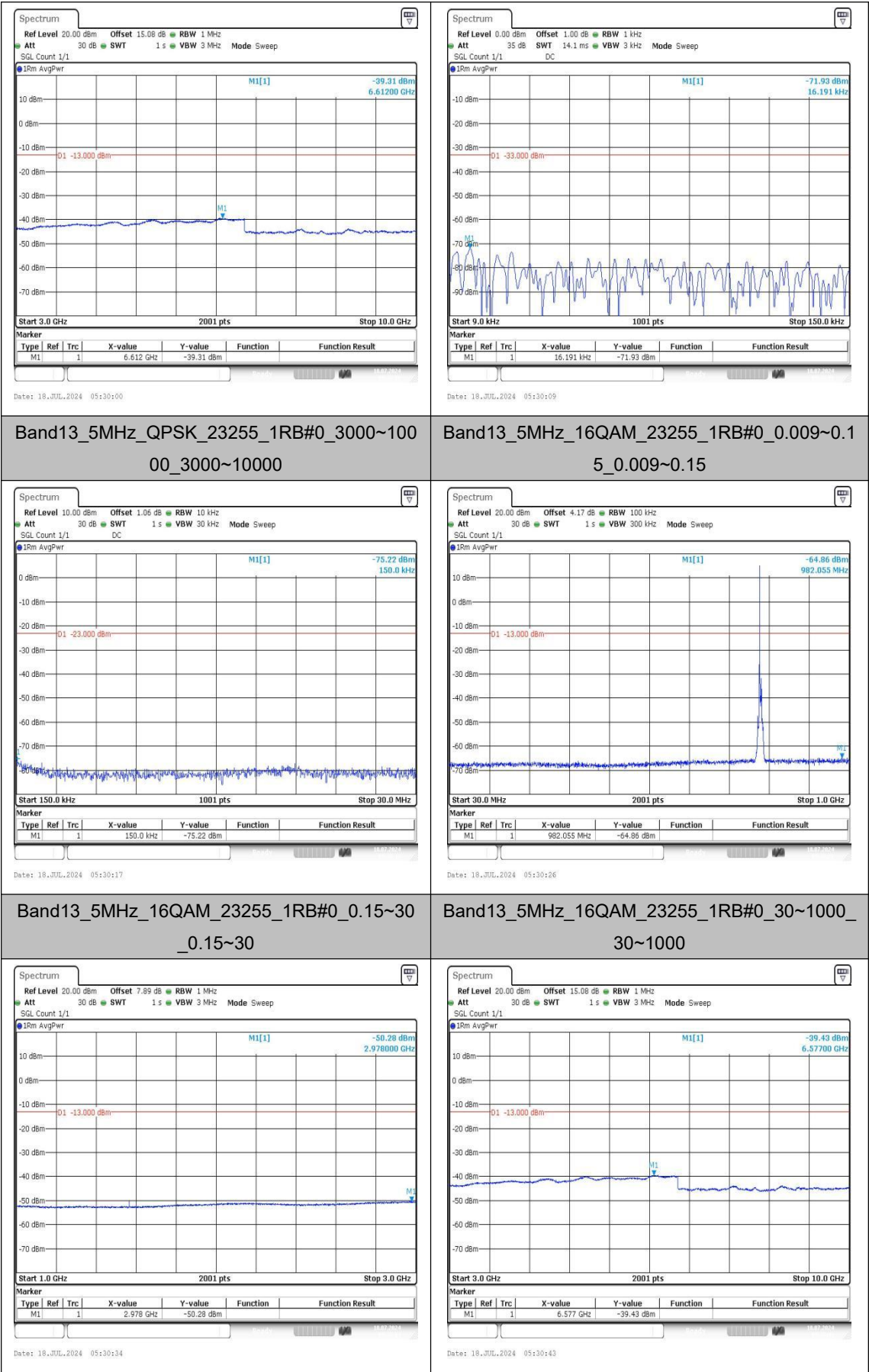


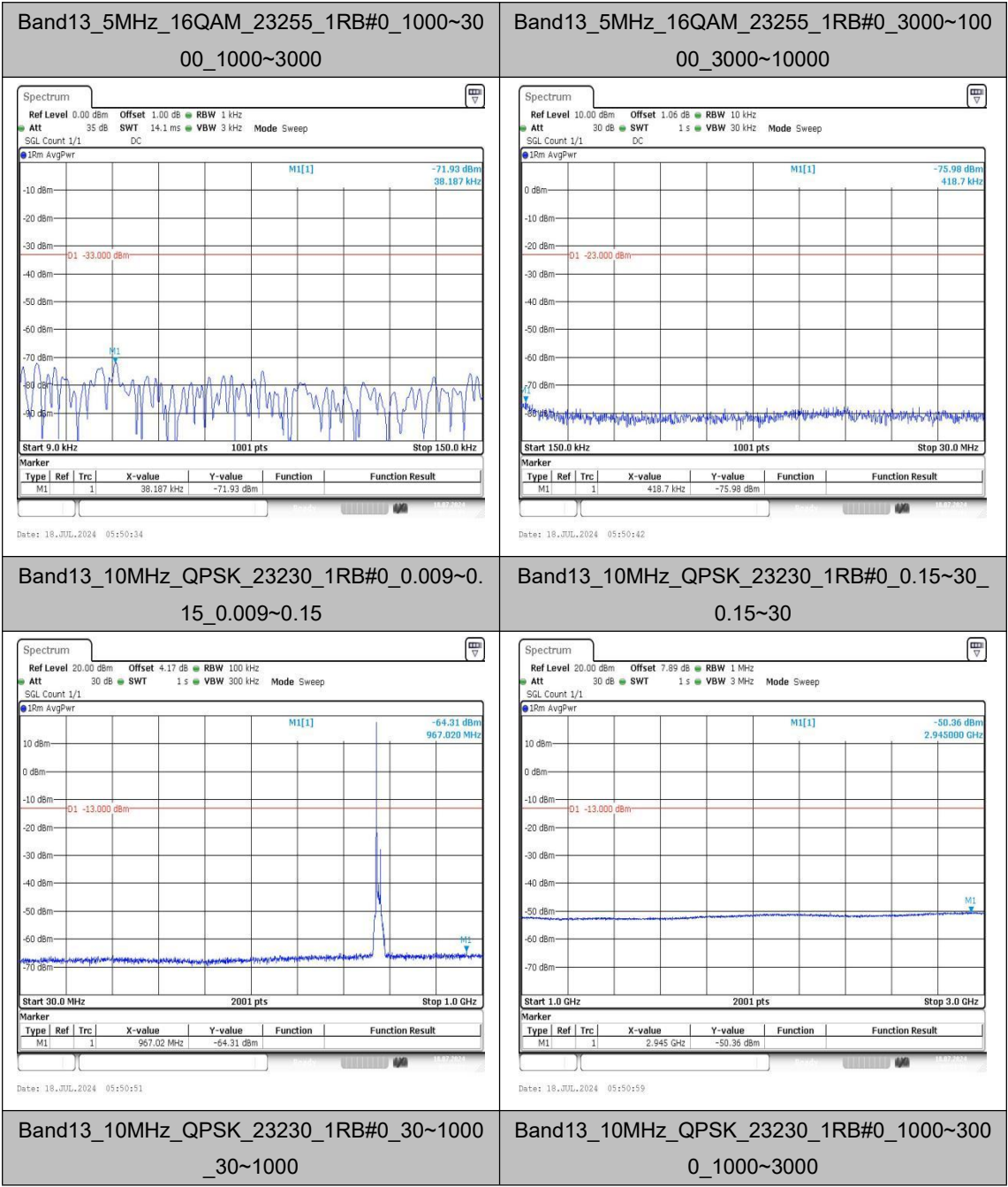


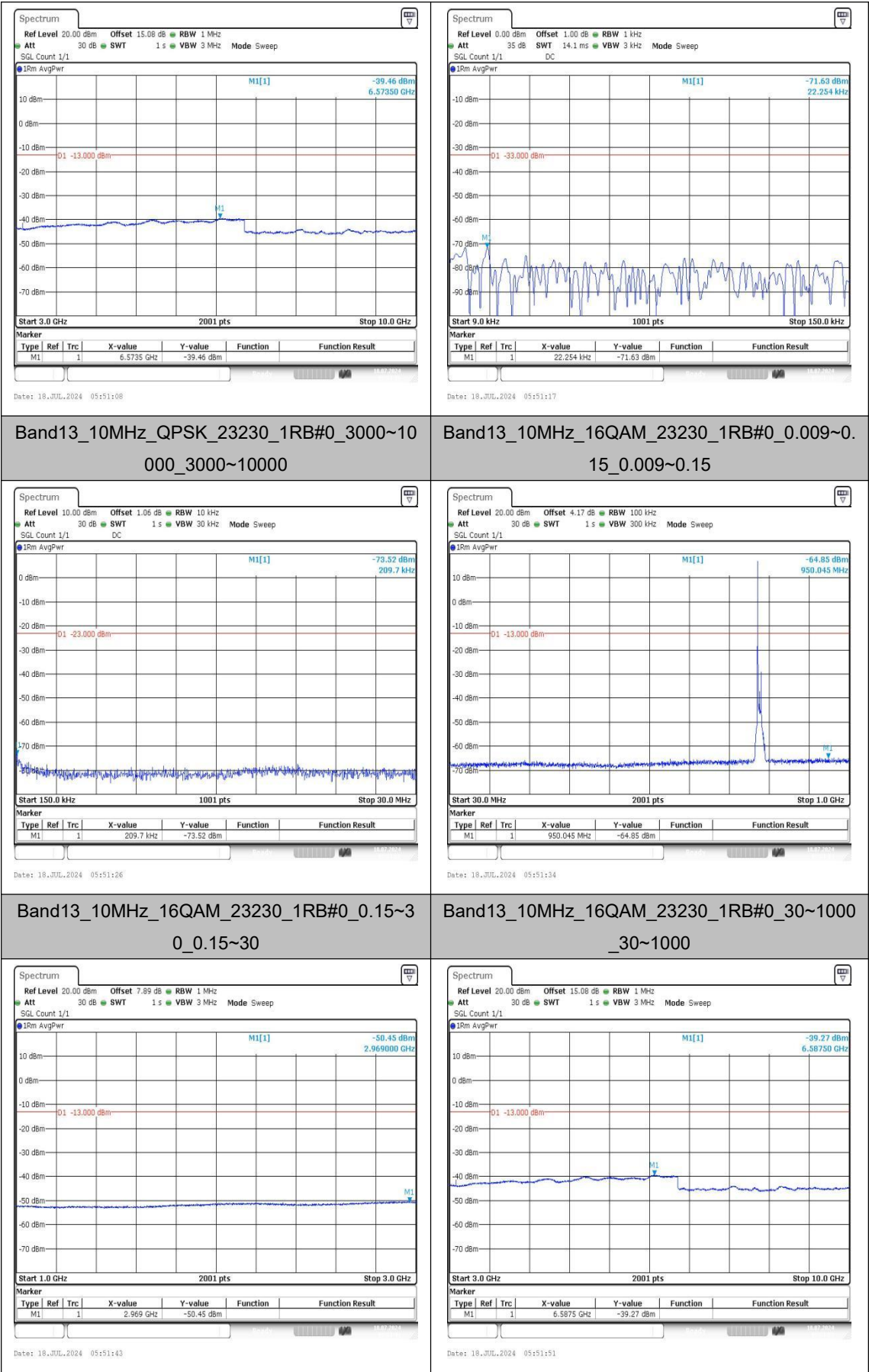












Band13_10MHz_16QAM_23230_1RB#0_1000~3000_1000~3000	Band13_10MHz_16QAM_23230_1RB#0_3000~10000_3000~10000
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Appendix F: Frequency Stability

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	-6.98	-0.008954	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	VL	NT	-9.46	-0.012136	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	VH	NT	-6.82	-0.008749	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VN	NT	-2.42	-0.003105	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VL	NT	-8.78	-0.011264	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	VH	NT	-9.80	-0.012572	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VN	NT	-7.82	-0.010000	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VL	NT	-7.22	-0.009233	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	VH	NT	-9.34	-0.011944	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VN	NT	-6.37	-0.008146	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VL	NT	-10.81	-0.013824	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	VH	NT	-3.26	-0.004169	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VN	NT	-5.59	-0.007126	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VL	NT	-6.67	-0.008502	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	VH	NT	-4.46	-0.005685	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VN	NT	-7.75	-0.009879	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VL	NT	-10.36	-0.013206	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	VH	NT	-10.76	-0.013716	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-10.03	-0.012826	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	-8.41	-0.010754	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-9.11	-0.011650	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-7.82	-0.010000	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-4.52	-0.005780	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-4.79	-0.006125	±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	-10.07	-0.012919	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	-20	-7.80	-0.010006	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	-10	-7.75	-0.009942	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	0	-11.74	-0.015061	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	10	-8.78	-0.011264	±2.5	PASS

Band13	5MHz	QPSK	23205	25RB#0	NV	20	-4.72	-0.006055	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	30	-7.87	-0.010096	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	40	-9.41	-0.012072	±2.5	PASS
Band13	5MHz	QPSK	23205	25RB#0	NV	50	-7.67	-0.009840	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-30	-12.47	-0.015997	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-20	-8.84	-0.011341	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	-10	-9.73	-0.012482	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	0	-4.26	-0.005465	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	10	-8.18	-0.010494	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	20	-6.98	-0.008954	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	30	-4.23	-0.005427	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	40	-7.42	-0.009519	±2.5	PASS
Band13	5MHz	16QAM	23205	25RB#0	NV	50	-9.83	-0.012611	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-30	-9.56	-0.012225	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-20	-13.78	-0.017621	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	-10	-5.51	-0.007046	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	0	-14.32	-0.018312	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	10	-7.25	-0.009271	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	20	-10.59	-0.013542	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	30	-11.50	-0.014706	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	40	-12.83	-0.016407	±2.5	PASS
Band13	5MHz	QPSK	23230	25RB#0	NV	50	-4.96	-0.006343	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-30	-8.14	-0.010409	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-20	1.67	0.002136	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	-10	-3.76	-0.004808	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	0	-4.68	-0.005985	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	10	-8.34	-0.010665	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	20	-6.98	-0.008926	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	30	-4.94	-0.006317	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	40	-11.46	-0.014655	±2.5	PASS
Band13	5MHz	16QAM	23230	25RB#0	NV	50	-8.33	-0.010652	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-30	-12.66	-0.016138	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-20	-12.30	-0.015679	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	-10	-7.70	-0.009815	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	0	-8.38	-0.010682	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	10	-10.03	-0.012785	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	20	-10.44	-0.013308	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	30	-12.06	-0.015373	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	40	-13.63	-0.017374	±2.5	PASS
Band13	5MHz	QPSK	23255	25RB#0	NV	50	-8.51	-0.010848	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	-30	-5.58	-0.007113	±2.5	PASS

Band13	5MHz	16QAM	23255	25RB#0	NV	-20	-10.69	-0.013627	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	-10	-5.24	-0.006679	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	0	-5.61	-0.007151	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	10	-5.71	-0.007279	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	20	-4.79	-0.006106	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	30	-5.54	-0.007062	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	40	-8.43	-0.010746	±2.5	PASS
Band13	5MHz	16QAM	23255	25RB#0	NV	50	-6.27	-0.007992	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	-7.60	-0.009719	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-3.58	-0.004578	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-10	-3.88	-0.004962	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-10.81	-0.013824	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-3.76	-0.004808	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-12.07	-0.015435	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-7.87	-0.010064	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-6.62	-0.008465	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	1.09	0.001394	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-12.66	-0.016189	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-5.49	-0.007020	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-10	-8.17	-0.010448	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-3.38	-0.004322	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-10.43	-0.013338	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-4.22	-0.005396	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-0.94	-0.001202	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-9.77	-0.012494	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-7.25	-0.009271	±2.5	PASS