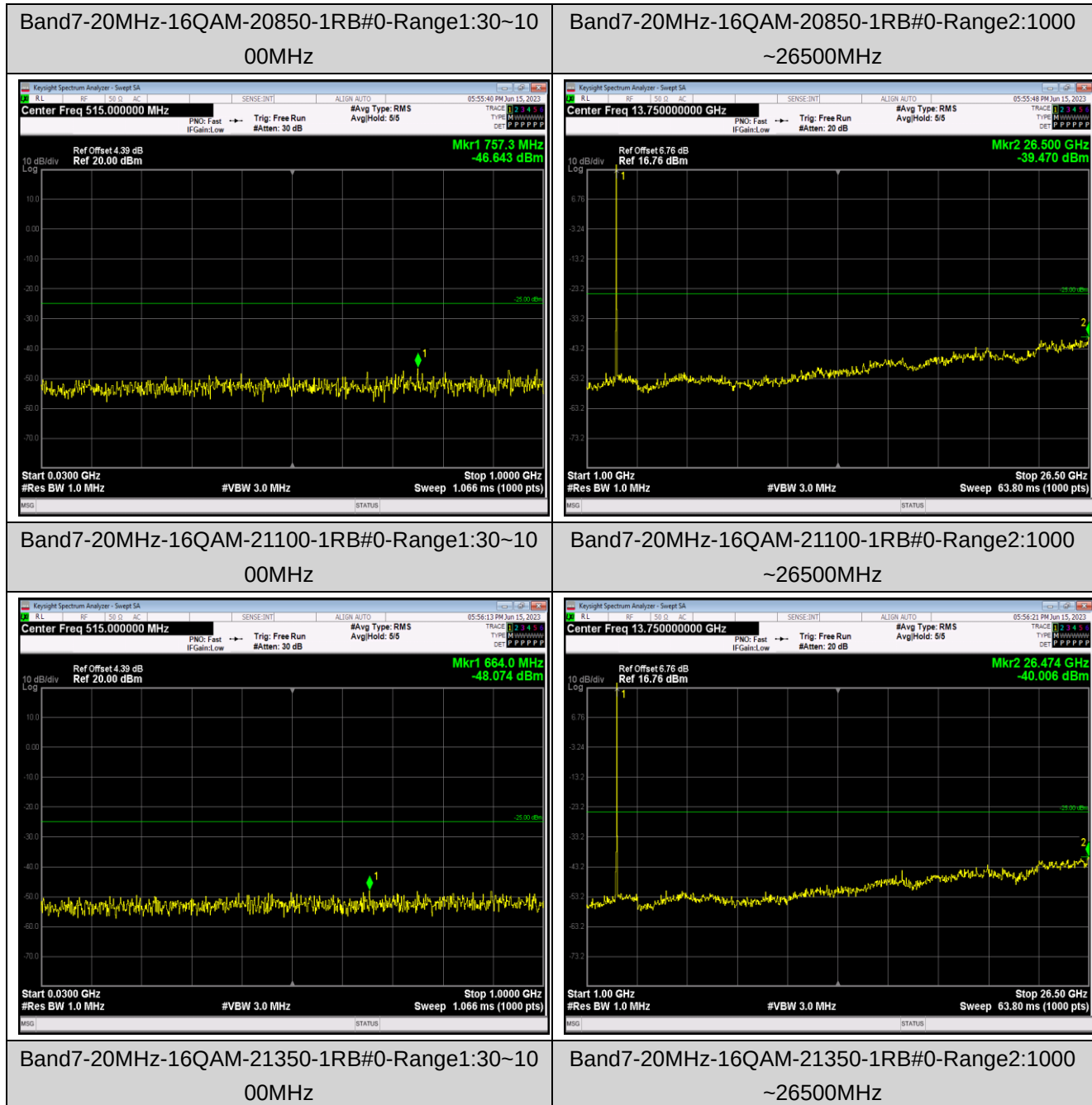
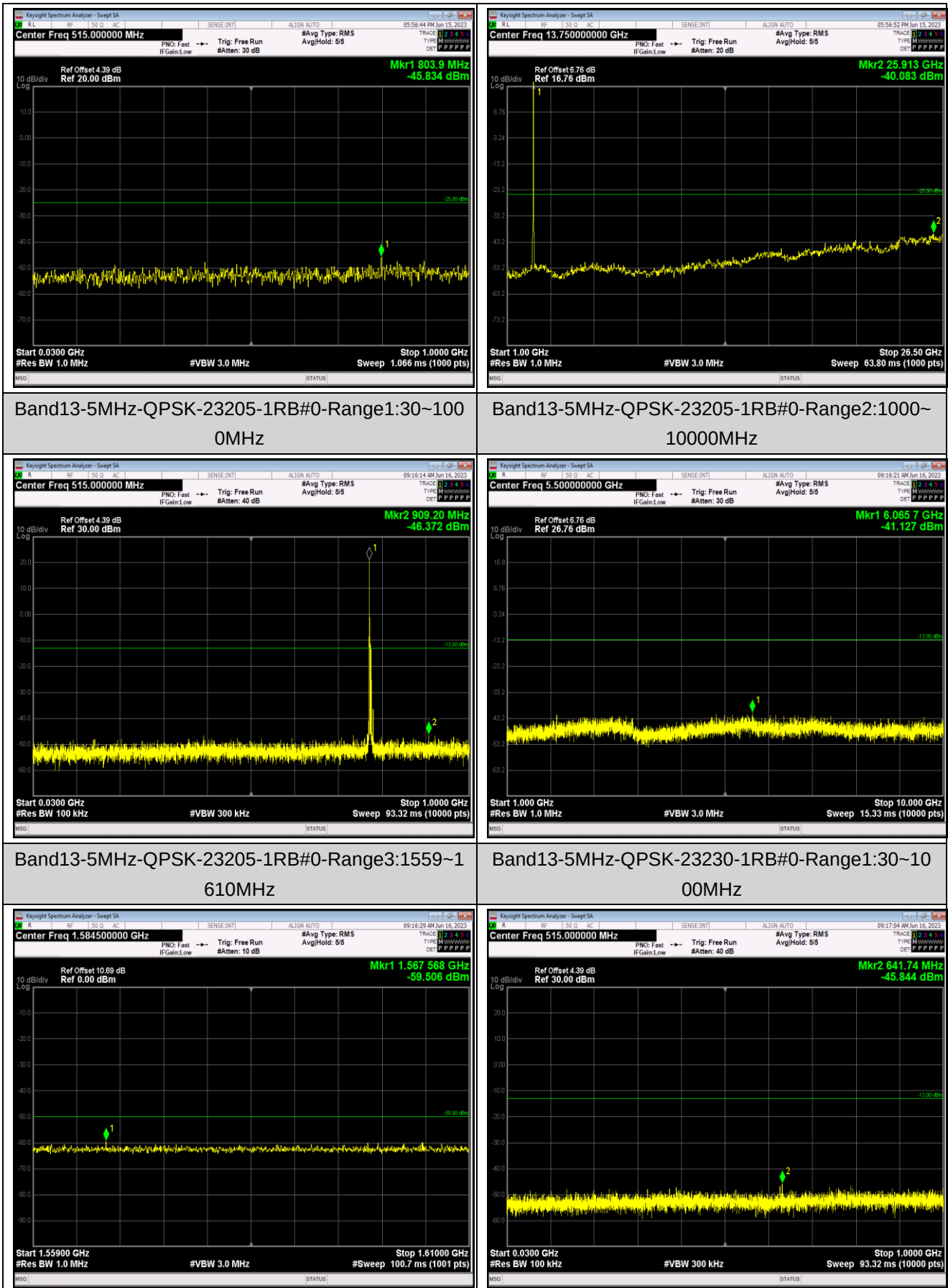
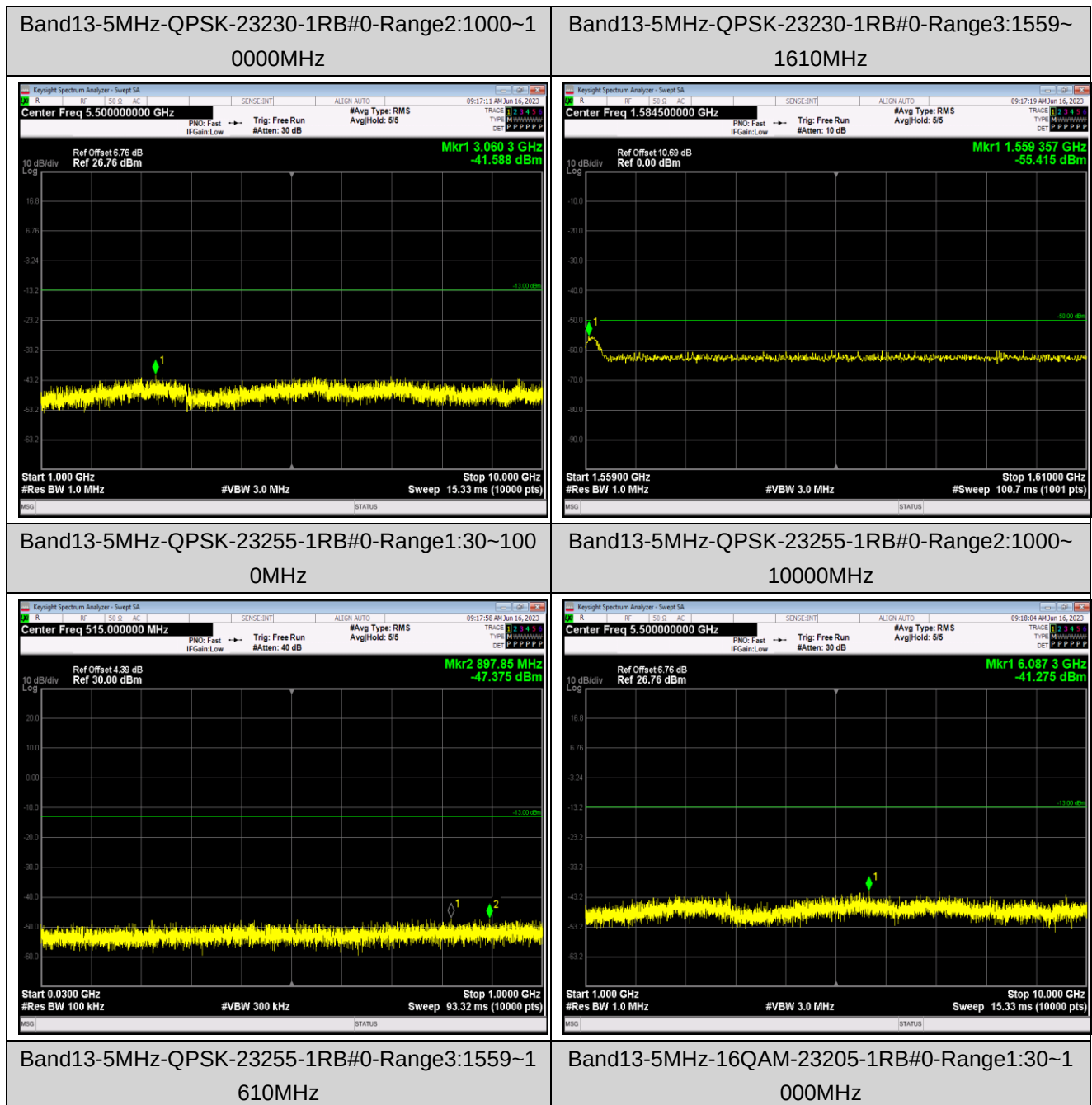
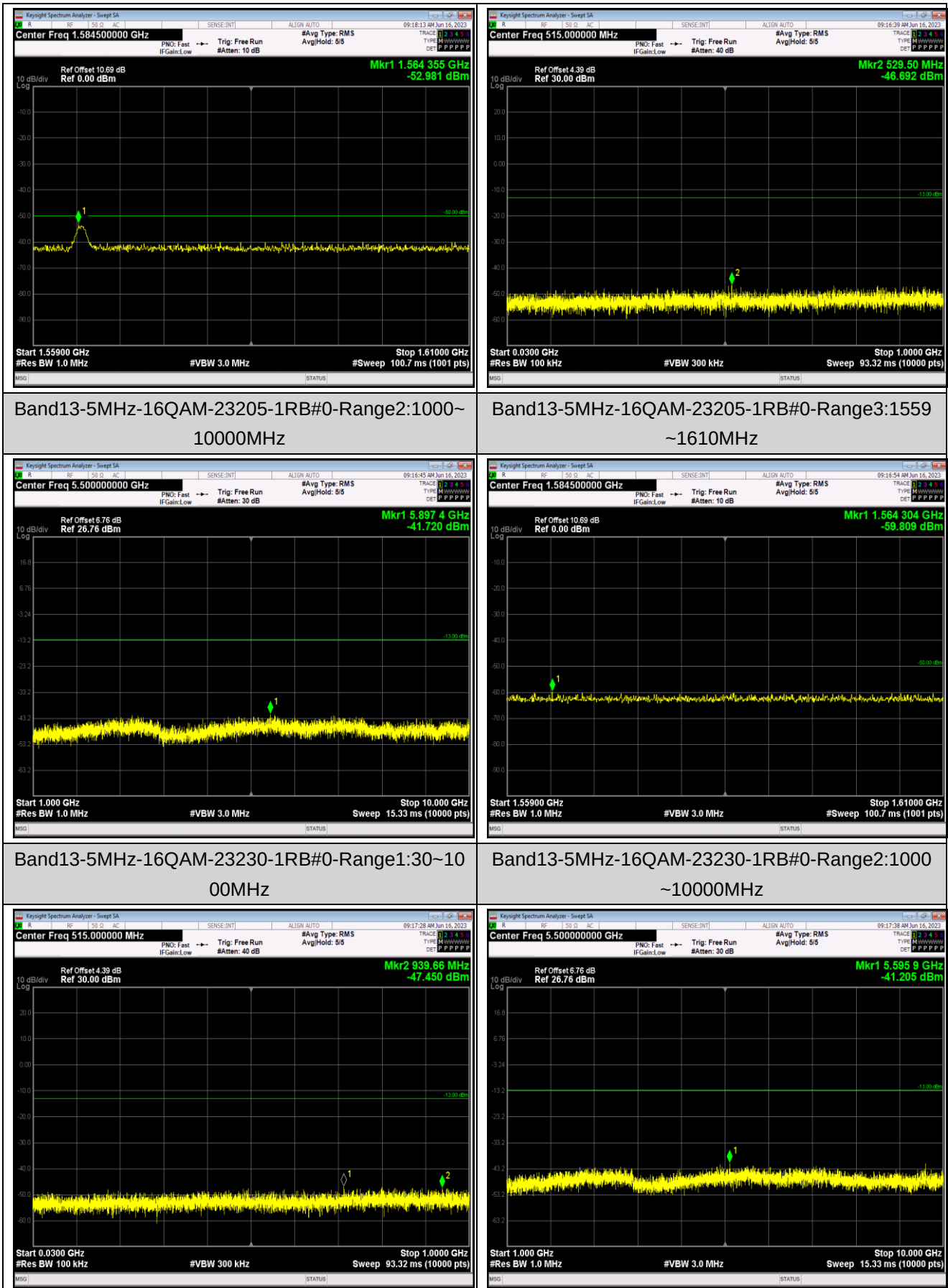
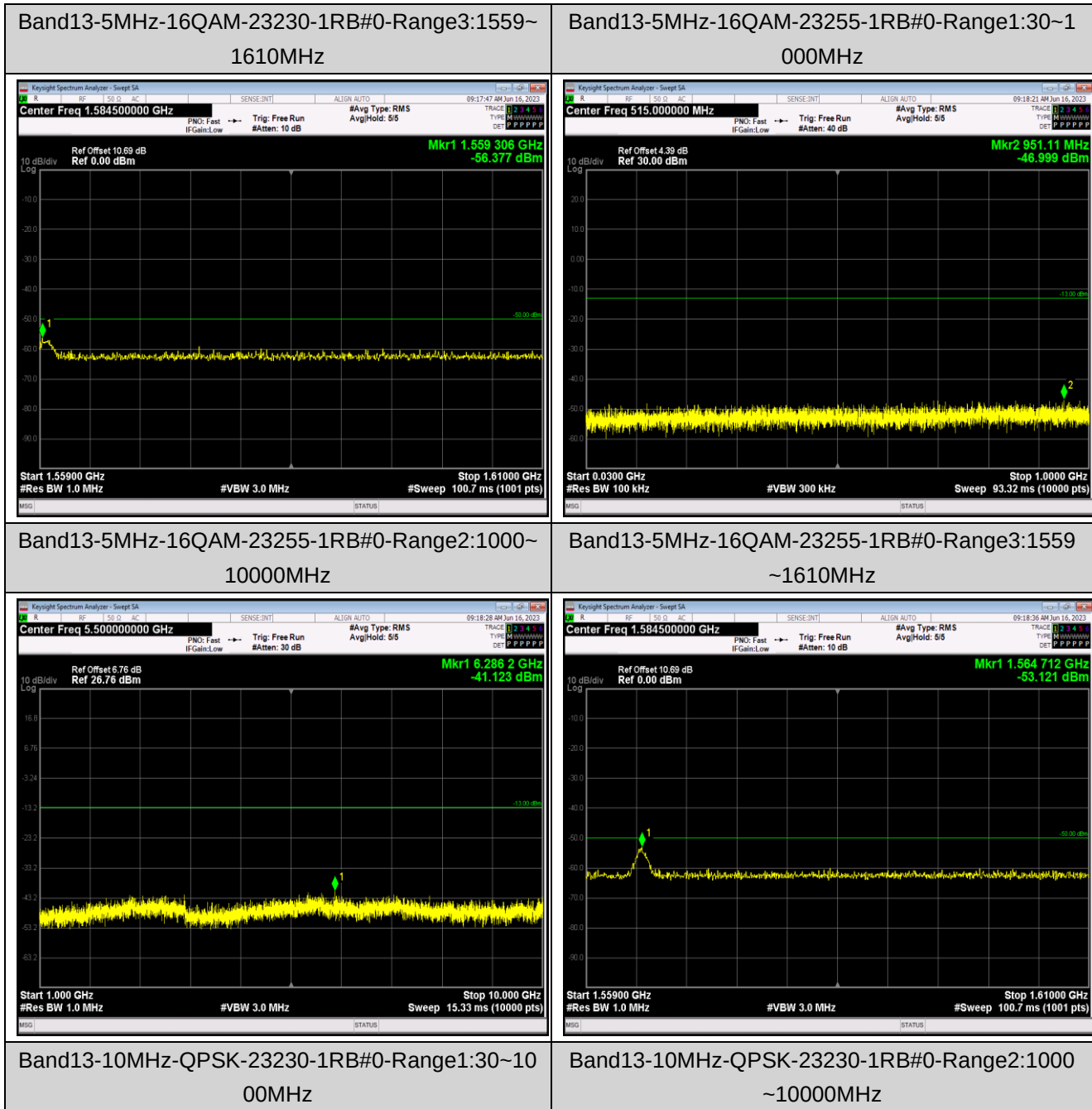


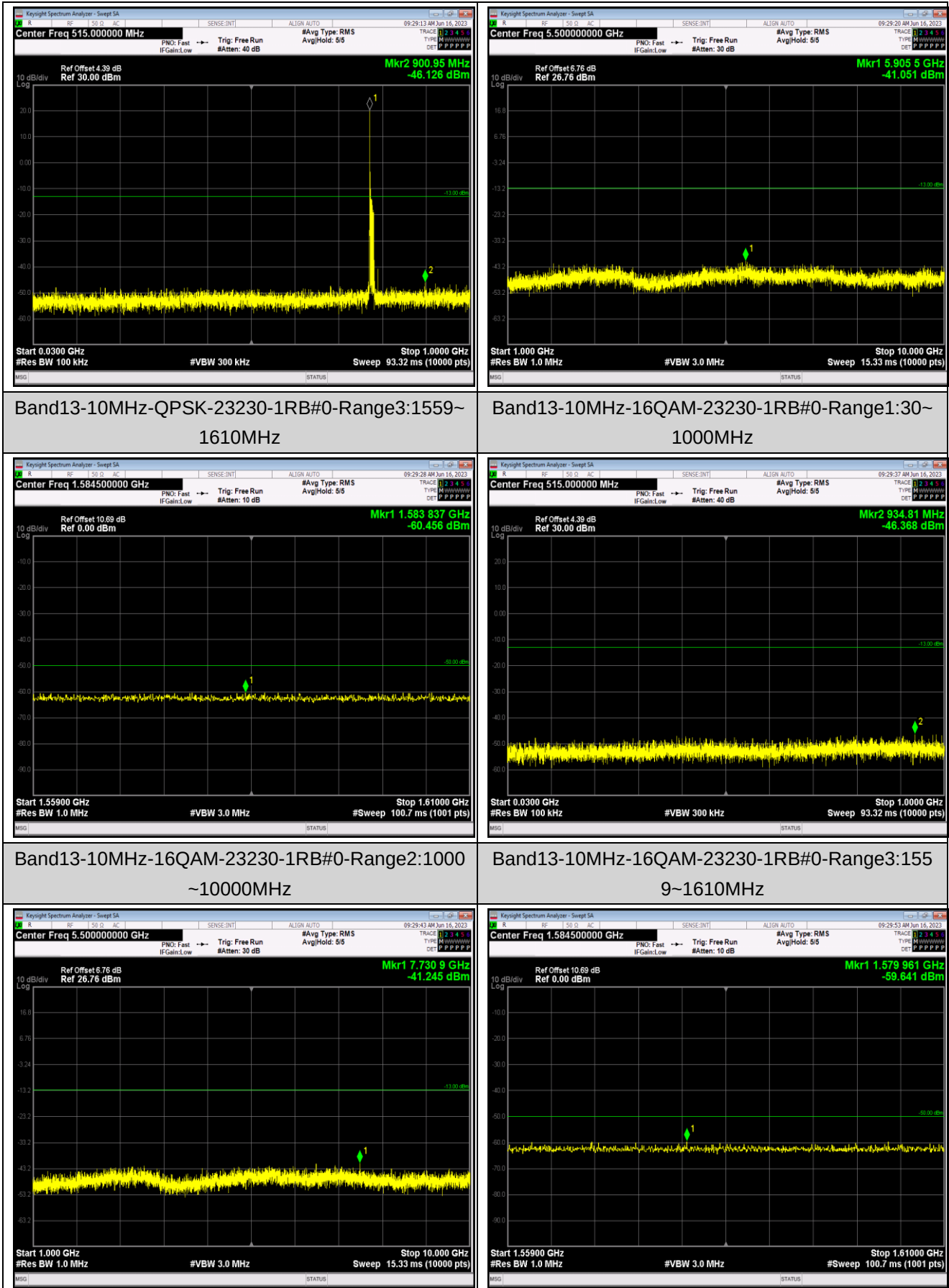












Appendix F: Frequency Stability

Test Result

LTE Band 2 part:

Reference Frequency: LTE Band 2 (10MHz) Middle channel=18900 Frequency=1880.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	51.11	0.027186	Within authorized band for Band 2	Pass
	-20	31.26	0.016628		
	-10	9.27	0.004931		
	0	32.84	0.017468		
	10	3.69	0.001963		
	20	25.65	0.013644		
	30	40.28	0.021426		
	40	48.57	0.025835		
	50	6.91	0.003676		
16QAM					
3.8	-30	17.74	0.009436	Within authorized band for Band 2	Pass
	-20	50.45	0.026835		
	-10	49.77	0.026473		
	0	48.88	0.026000		
	10	16.12	0.008574		
	20	29.51	0.015697		
	30	-19.21	-0.010218		
	40	-32.33	-0.017197		
	50	-33.00	-0.017553		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-12.70	-0.006755	Within authorized band for Band 2	Pass
	3.80	-55.48	-0.029511		
	4.37	17.41	0.009261		
16QAM					
25	3.23	6.29	0.003346	Within authorized band for Band 2	Pass
	3.80	18.71	0.009952		
	4.37	-12.12	-0.006447		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 4 part:

Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 Frequency=1732.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	-9.08	-0.005241	Within authorized band for Band 4	Pass
	-20	5.14	0.002967		
	-10	7.08	0.004087		
	0	16.02	0.009247		
	10	31.63	0.018257		
	20	32.43	0.018719		
	30	31.84	0.018378		
	40	36.38	0.020999		
	50	42.50	0.024531		
16QAM					
3.8	-30	26.11	0.015071	Within authorized band for Band 4	Pass
	-20	20.30	0.011717		
	-10	9.63	0.005558		
	0	6.48	0.003740		
	10	-4.41	-0.002545		
	20	-18.60	-0.010736		
	30	-18.97	-0.010949		
	40	-28.87	-0.016664		
	50	-28.88	-0.016670		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-17.09	-0.009864	Within authorized band for Band 4	Pass
	3.80	-36.56	-0.021102		
	4.37	-16.49	-0.009518		
16QAM					
25	3.23	43.97	0.025380	Within authorized band for Band 4	Pass
	3.80	37.78	0.021807		
	4.37	35.49	0.020485		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 5 part:

Reference Frequency: LTE Band 5(10MHz) Middle channel=20525 Frequency=836.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	-28.80	-0.034429	±2.5	Pass
	-20	-28.41	-0.033963		
	-10	-18.41	-0.022008		
	0	-16.95	-0.020263		
	10	-14.93	-0.017848		
	20	-12.62	-0.015087		
	30	-11.44	-0.013676		
	40	-9.76	-0.011668		
	50	-10.19	-0.012182		
16QAM					
3.8	-30	-21.93	-0.026216	±2.5	Pass
	-20	-23.56	-0.028165		
	-10	-28.12	-0.033616		
	0	-32.00	-0.038255		
	10	-33.26	-0.039761		
	20	-34.60	-0.041363		
	30	-39.51	-0.047233		
	40	-39.40	-0.047101		
	50	-42.70	-0.051046		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-35.68	-0.042654	±2.5	Pass
	3.80	-28.15	-0.033652		
	4.37	-31.41	-0.037549		
16QAM					
25	3.23	-11.00	-0.013150	±2.5	Pass
	3.80	-11.01	-0.013162		
	4.37	-17.25	-0.020622		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 7 part:

Reference Frequency: LTE Band 7(10MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	57.09	0.022521	Within authorized band for Band 7	Pass
	-20	58.32	0.023006		
	-10	27.84	0.010982		
	0	-13.43	-0.005298		
	10	26.25	0.010355		
	20	16.19	0.006387		
	30	23.55	0.009290		
	40	30.67	0.012099		
	50	37.49	0.014789		
16QAM					
3.8	-30	-17.97	-0.007089	Within authorized band for Band 7	Pass
	-20	-37.02	-0.014604		
	-10	-40.60	-0.016016		
	0	-17.81	-0.007026		
	10	-39.28	-0.015495		
	20	-44.90	-0.017712		
	30	-18.98	-0.007487		
	40	-34.88	-0.013759		
	50	-48.45	-0.019112		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-17.67	-0.006970	Within authorized band for Band 7	Pass
	3.80	-49.64	-0.019582		
	4.37	15.48	0.006107		
16QAM					
25	3.23	31.24	0.012323	Within authorized band for Band 7	Pass
	3.80	6.29	0.002481		
	4.37	20.34	0.008024		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 13 part:

Reference Frequency: LTE Band 13(10MHz) Middle channel=23230 Frequency=782.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.8	-30	-1.50	-0.001918	Within authorized band for Band 13	Pass
	-20	2.72	0.003478		
	-10	3.98	0.005090		
	0	2.60	0.003325		
	10	-2.92	-0.003734		
	20	-3.02	-0.003862		
	30	-5.15	-0.006586		
	40	-5.09	-0.006509		
	50	-5.52	-0.007059		
16QAM					
3.8	-30	-14.56	-0.018619	Within authorized band for Band 13	Pass
	-20	-17.70	-0.022634		
	-10	-22.30	-0.028517		
	0	-28.57	-0.036535		
	10	-34.19	-0.043721		
	20	-37.15	-0.047506		
	30	-37.55	-0.048018		
	40	-44.07	-0.056355		
	50	-46.22	-0.059105		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.23	-6.09	-0.007788	Within authorized band for Band 13	Pass
	3.80	-5.61	-0.007174		
	4.37	-5.59	-0.007148		
16QAM					
25	3.23	3.65	0.004668	Within authorized band for Band 13	Pass
	3.80	4.28	0.005473		
	4.37	-8.40	-0.010742		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

Appendix G: Modulation Characteristics

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result	Verdict
Band2	20MHz	QPSK	18900	100RB#0	PASS	PASS
Band2	20MHz	16QAM	18900	100RB#0	PASS	PASS
Band2	20MHz	64QAM	18900	100RB#0	PASS	PASS
Band4	20MHz	QPSK	20175	100RB#0	PASS	PASS
Band4	20MHz	16QAM	20175	100RB#0	PASS	PASS
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band13	10MHz	QPSK	23230	50RB#0	PASS	PASS
Band13	10MHz	16QAM	23230	50RB#0	PASS	PASS

Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

Test Graphs

