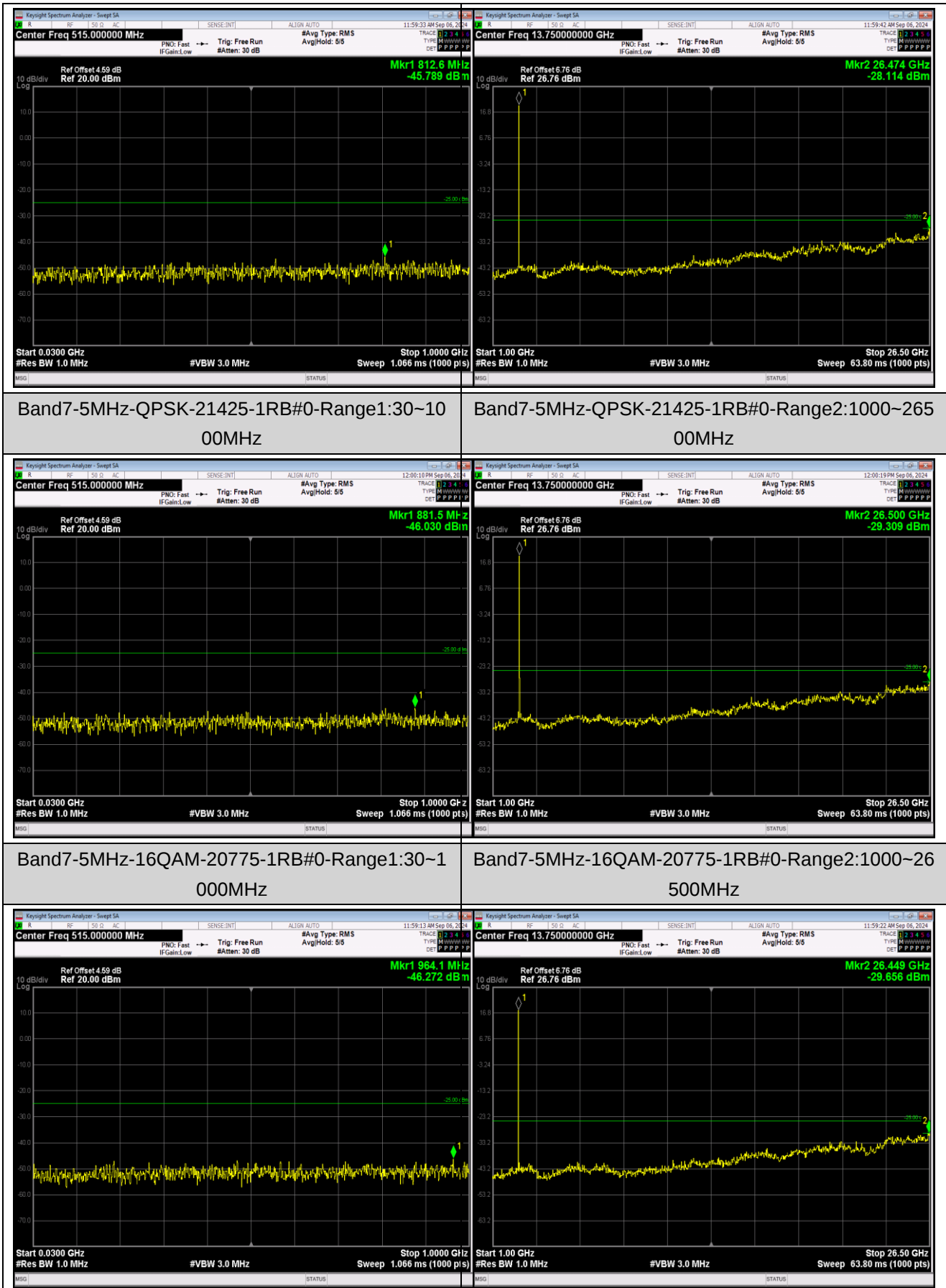
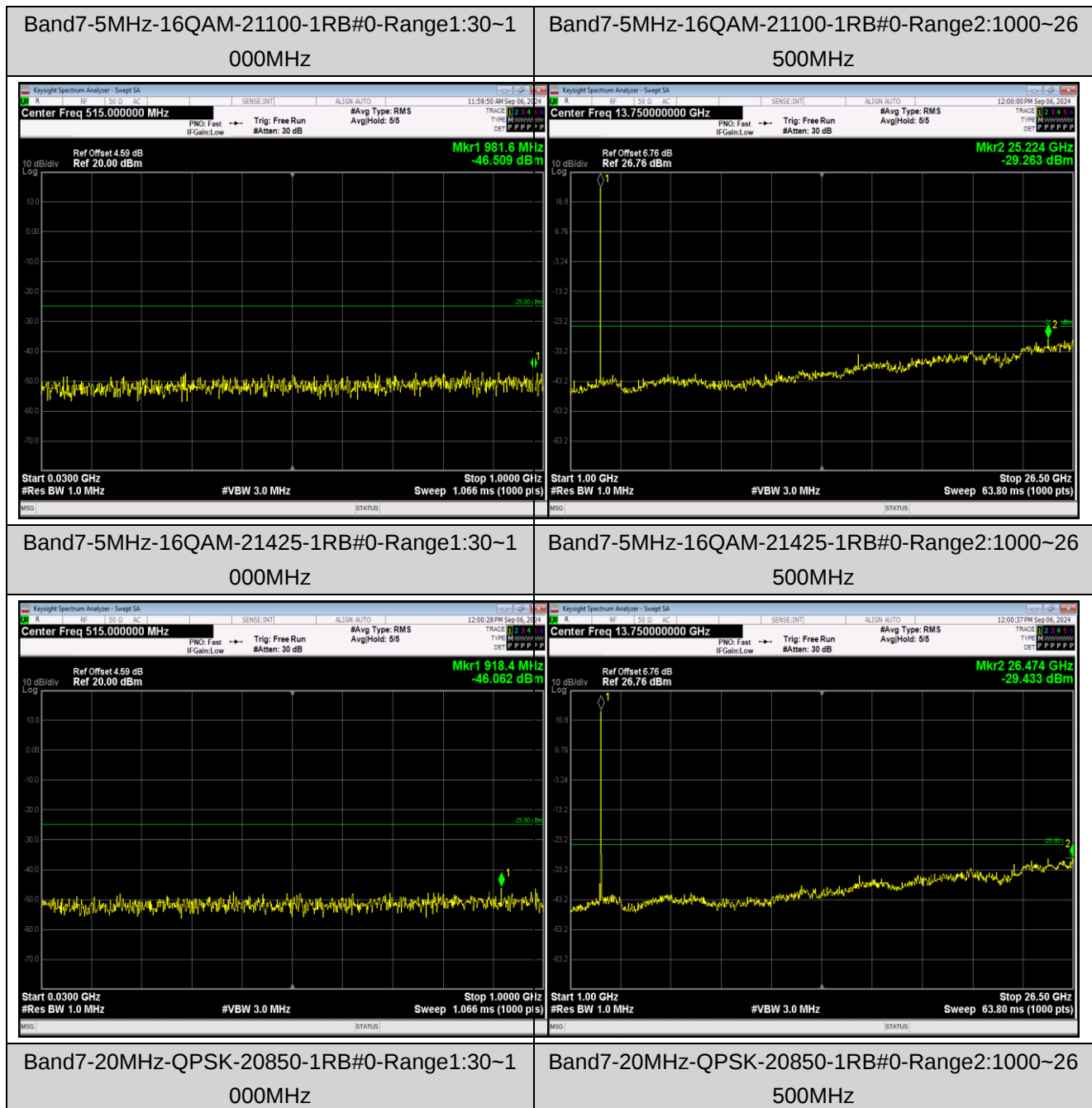
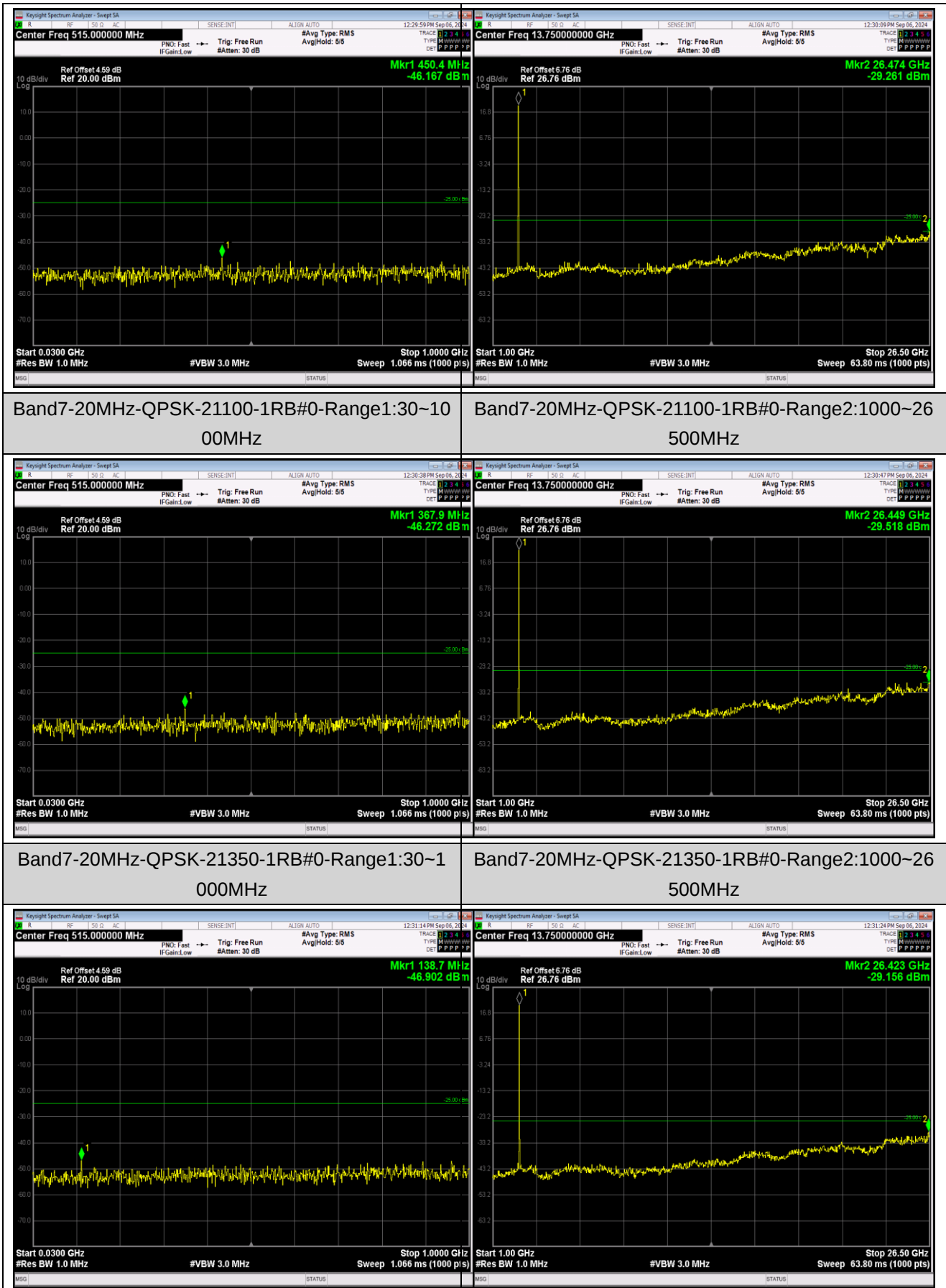
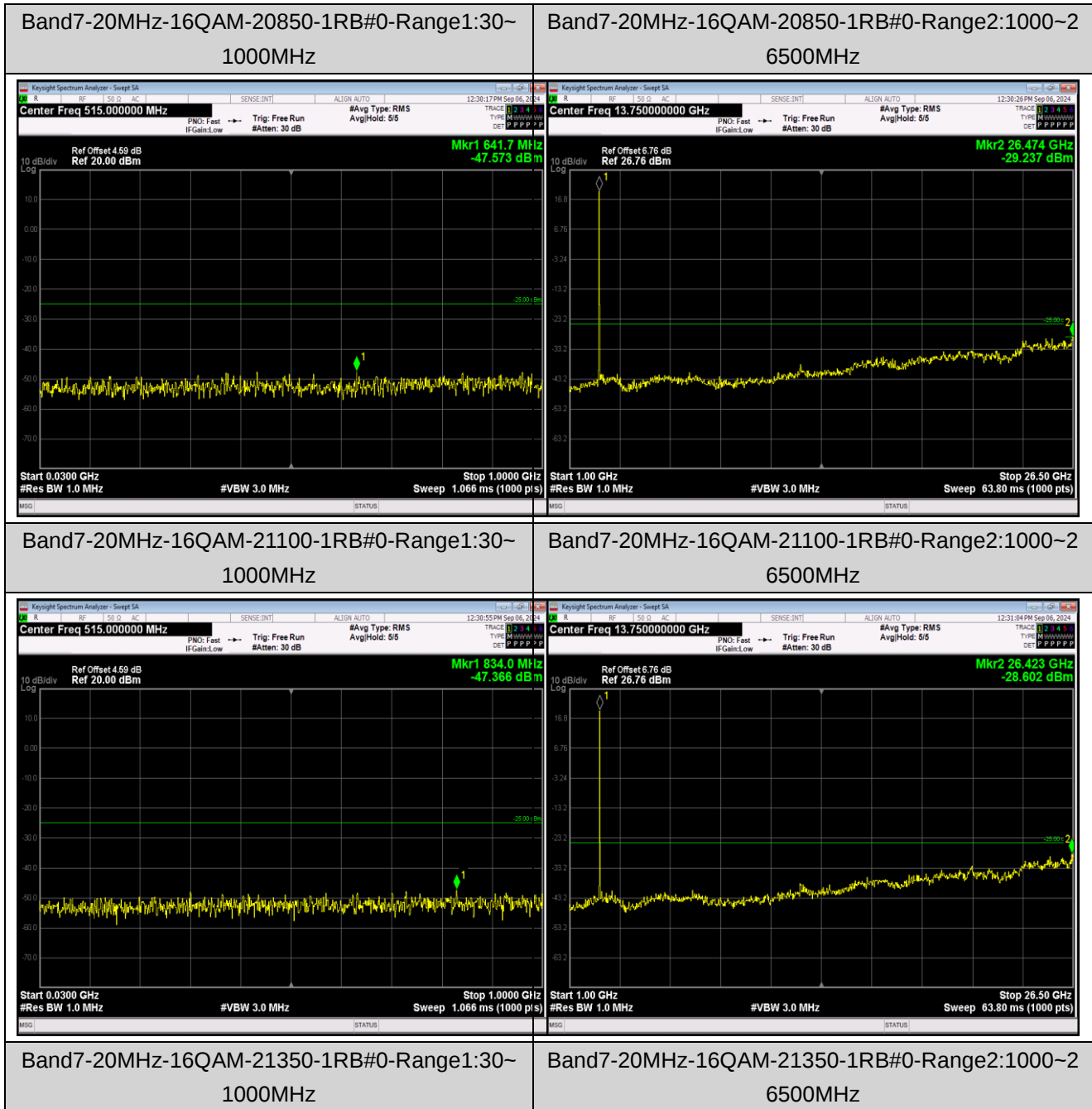
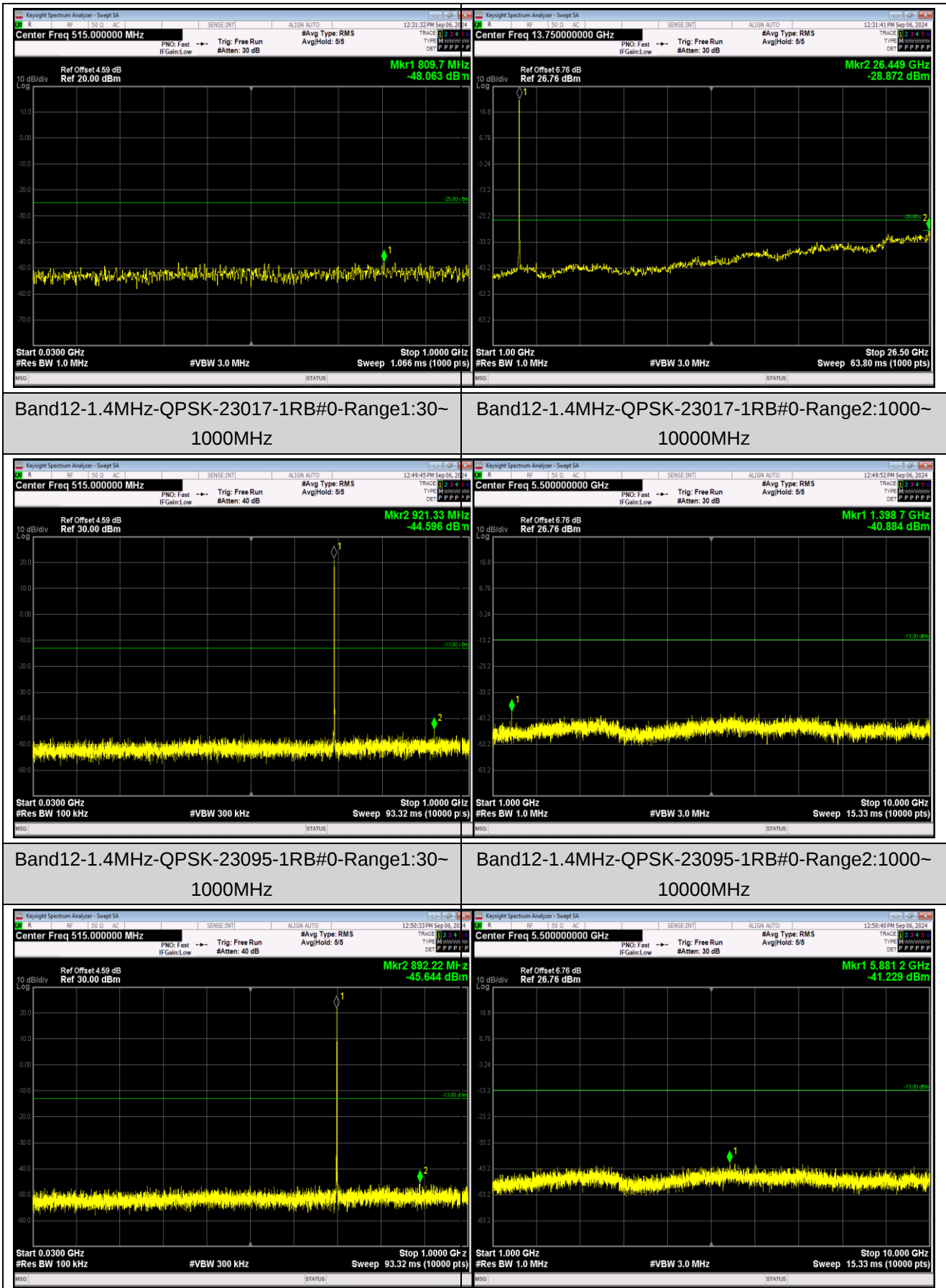


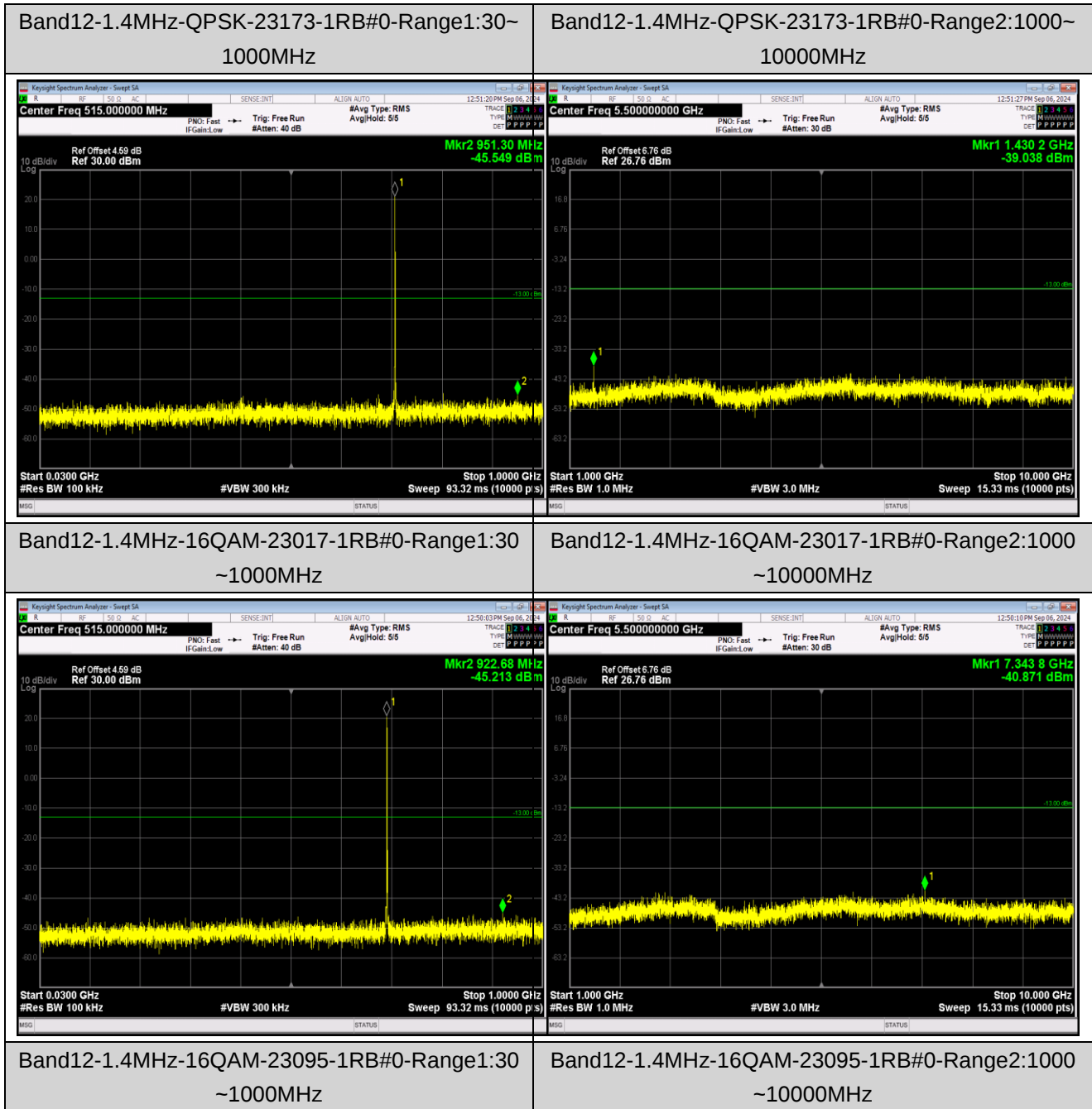


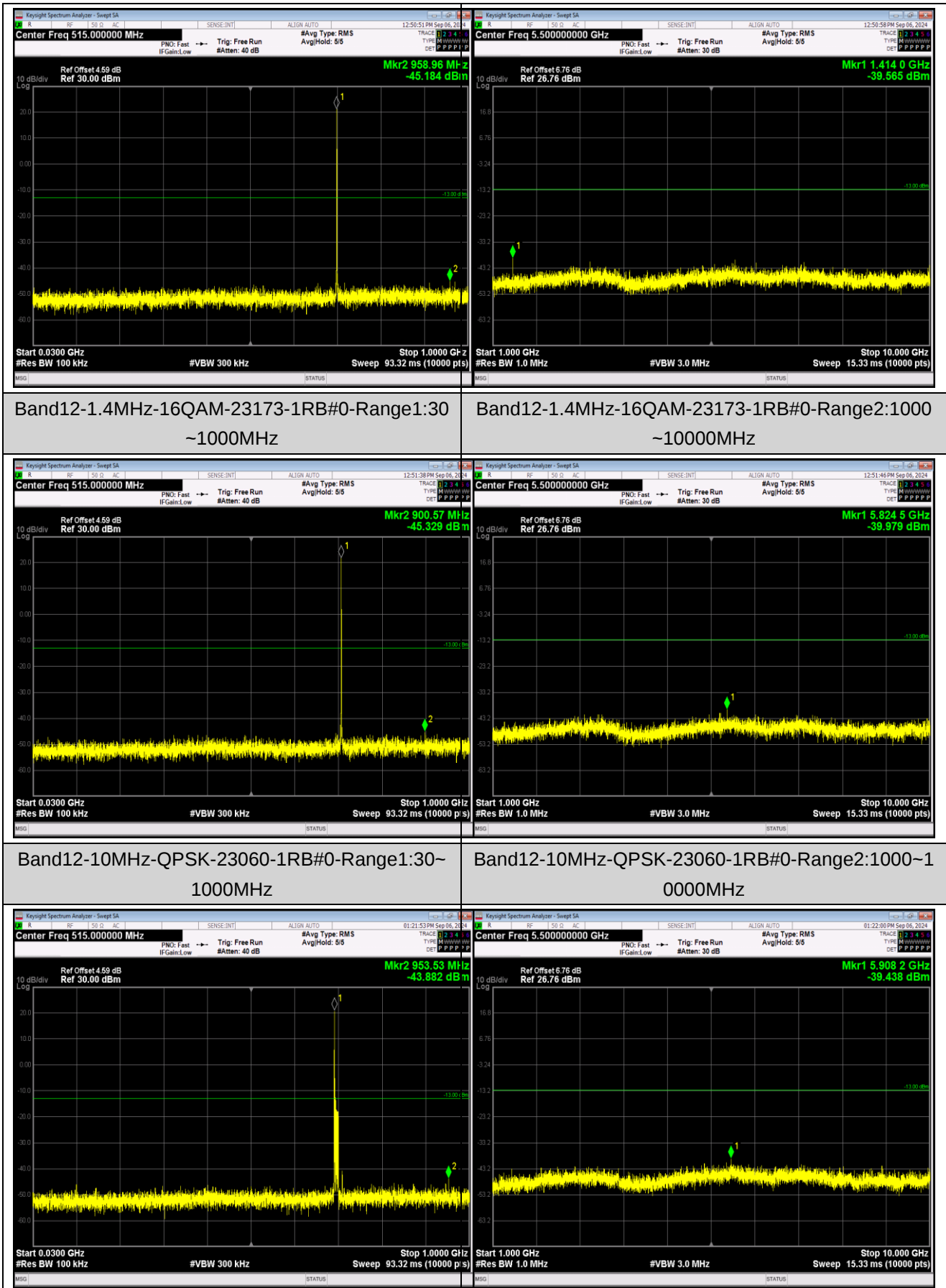


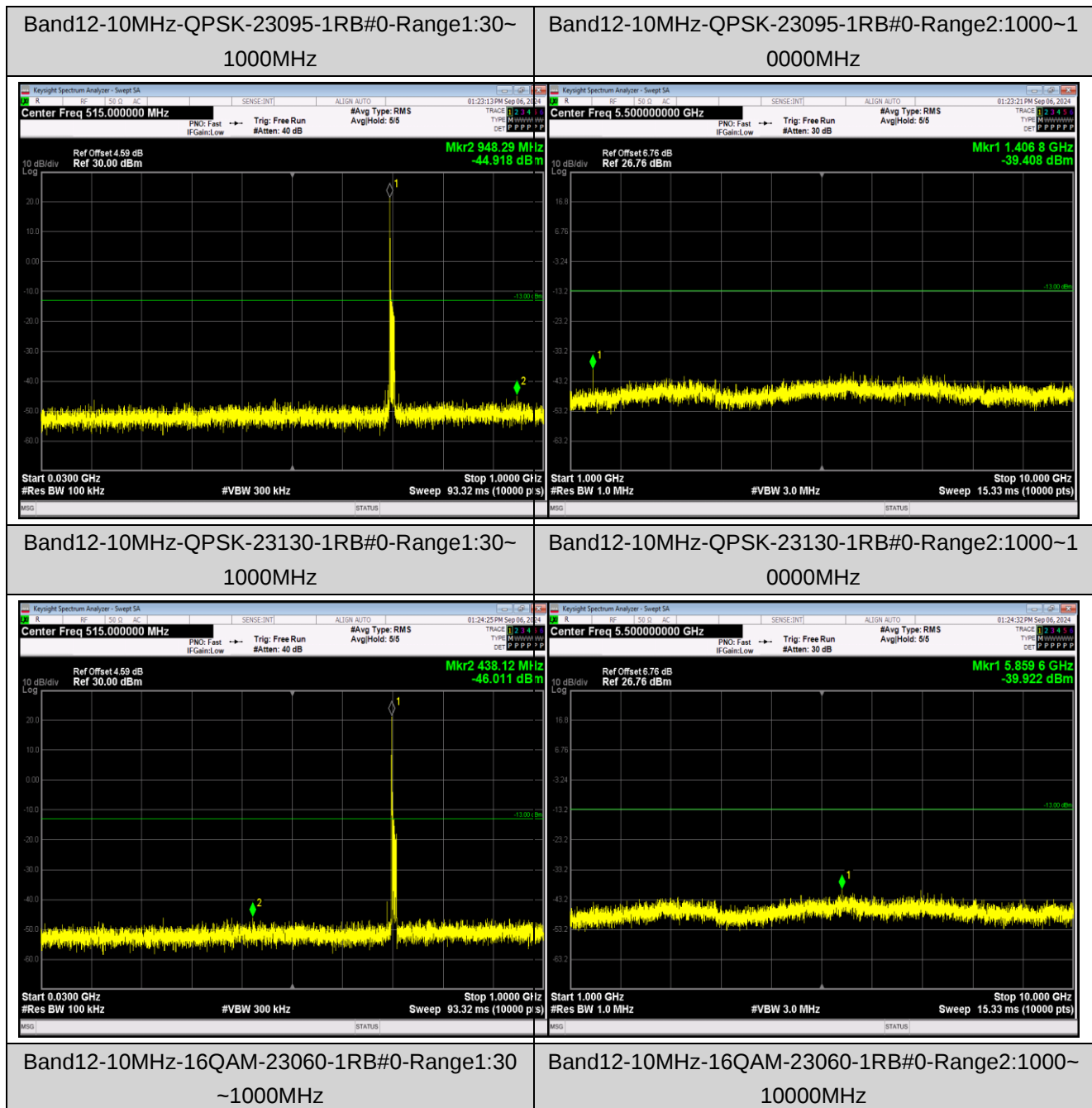


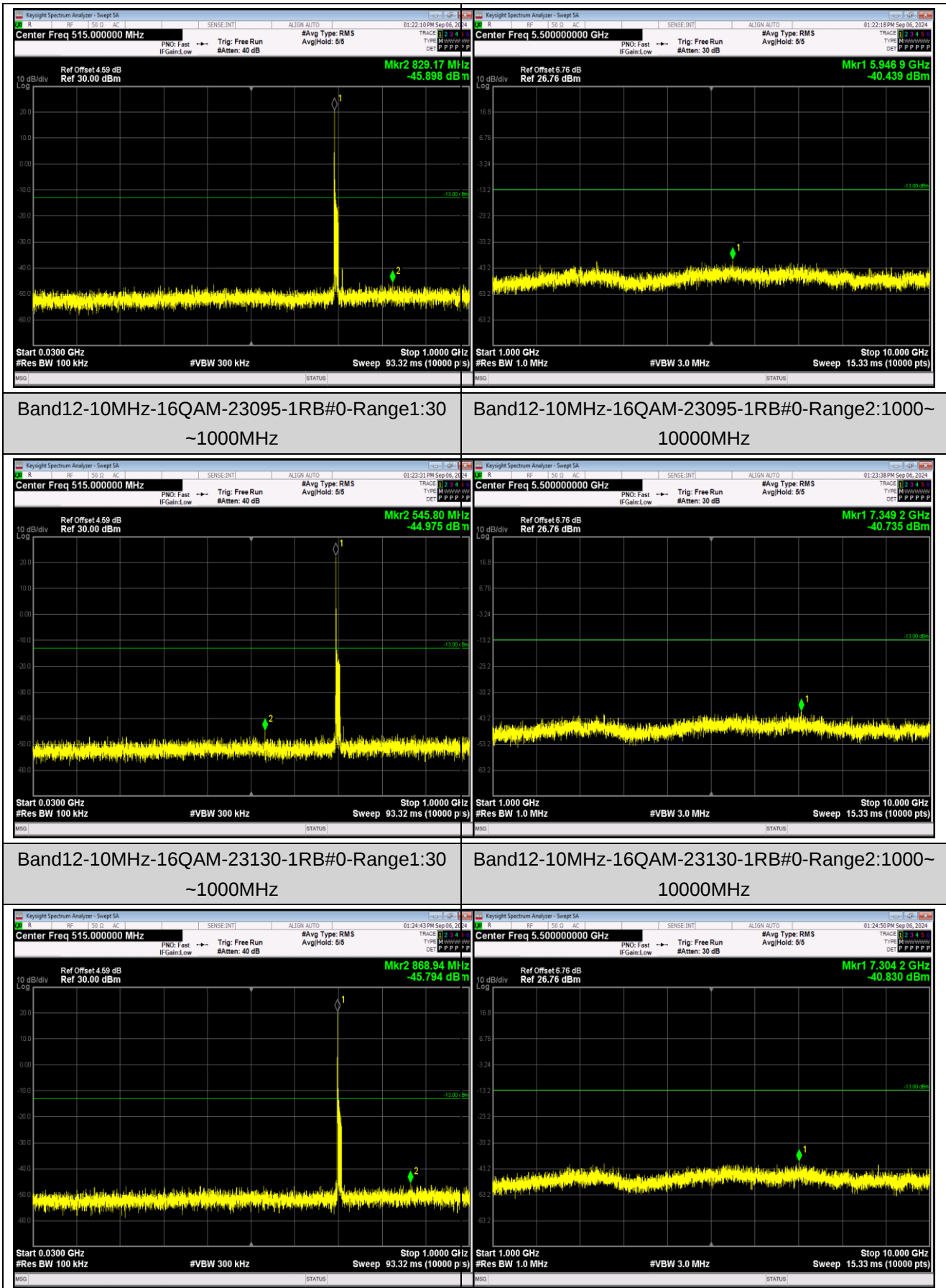












Appendix F: Frequency Stability

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					
3.70	-30	-38.42	-0.020436	Within authorized band for Band 2	Pass
	-20	-13.18	-0.007011		
	-10	-27.32	-0.014532		
	0	-35.00	-0.018617		
	10	-42.04	-0.022362		
	20	-52.69	-0.028027		
	30	-23.00	-0.012234		
	40	-26.31	-0.013995		
	50	-33.17	-0.017644		
16QAM					
3.70	-30	-44.62	-0.023734	Within authorized band for Band 2	Pass
	-20	-41.04	-0.021830		
	-10	-47.51	-0.025271		
	0	-51.88	-0.027596		
	10	16.08	0.008553		
	20	17.29	0.009197		
	30	15.99	0.008505		
	40	19.44	0.010340		
	50	22.03	0.011718		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-42.26	-0.022479	Within authorized band for Band 2	Pass
	3.70	-4.33	-0.002303		
	4.20	-22.27	-0.011846		
16QAM					
25	3.50	-36.61	-0.019473	Within authorized band for Band 2	Pass
	3.70	-36.89	-0.019622		
	4.20	-42.21	-0.022452		
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					
3.70	-30	-8.58	-0.004952	Within authorized band for Band 4	Pass
	-20	32.39	0.018696		
	-10	22.97	0.013258		
	0	42.04	0.024266		
	10	38.04	0.021957		
	20	45.88	0.026482		
	30	15.84	0.009143		
	40	-8.15	-0.004704		
	50	25.88	0.014938		
16QAM					
3.70	-30	19.70	0.011371	Within authorized band for Band 4	Pass
	-20	27.51	0.015879		
	-10	30.98	0.017882		
	0	35.88	0.020710		
	10	-7.22	-0.004167		
	20	12.33	0.007117		
	30	20.17	0.011642		
	40	30.84	0.017801		
	50	31.59	0.018234		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	34.07	0.019665	Within authorized band for Band 4	Pass
	3.70	44.85	0.025887		
	4.20	47.99	0.027700		
16QAM					
25	3.50	5.79	0.003342	Within authorized band for Band 4	Pass
	3.70	25.82	0.014903		
	4.20	19.13	0.011042		
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					
3.70	-30	39.50	0.047221	±2.5	Pass
	-20	15.69	0.018757		
	-10	38.34	0.045834		
	0	9.26	0.011070		
	10	28.01	0.033485		
	20	43.60	0.052122		
	30	6.57	0.007854		
	40	20.33	0.024304		
	50	28.62	0.034214		
16QAM					
3.70	-30	44.85	0.053616	±2.5	Pass
	-20	46.76	0.055900		
	-10	49.02	0.058601		
	0	4.75	0.005678		
	10	6.05	0.007233		
	20	7.34	0.008775		
	30	12.59	0.015051		
	40	13.69	0.016366		
	50	15.52	0.018553		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	10.97	0.013114	±2.5	Pass
	3.70	17.11	0.020454		
	4.20	48.54	0.058027		
16QAM					
25	3.50	45.13	0.053951	±2.5	Pass
	3.70	39.53	0.047256		
	4.20	43.97	0.052564		
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					
3.70	-30	56.13	0.022142	Within authorized band for Band 7	Pass
	-20	47.99	0.018931		
	-10	51.61	0.020359		
	0	-9.41	-0.003712		
	10	21.19	0.008359		
	20	47.66	0.018801		
	30	46.03	0.018158		
	40	35.09	0.013842		
	50	18.81	0.007420		
16QAM					
3.70	-30	10.61	0.004185	Within authorized band for Band 7	Pass
	-20	39.32	0.015511		
	-10	10.69	0.004217		
	0	42.49	0.016761		
	10	8.27	0.003262		
	20	32.40	0.012781		
	30	9.01	0.003554		
	40	34.19	0.013487		
	50	-16.67	-0.006576		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	53.03	0.020919	Within authorized band for Band 7	Pass
	3.70	53.76	0.021207		
	4.20	48.78	0.019243		
16QAM					
25	3.50	-8.88	-0.003503	Within authorized band for Band 7	Pass
	3.70	15.32	0.006043		
	4.20	34.99	0.013803		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 12 part:

Reference Frequency: LTE Band 12(10MHz) Middle channel=23095 Frequency=707.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.70	-30	20.79	0.029385	Within authorized band for Band 12	Pass
	-20	33.50	0.047350		
	-10	43.39	0.061329		
	0	4.16	0.005880		
	10	13.30	0.018799		
	20	20.51	0.028989		
	30	26.87	0.037979		
	40	32.09	0.045357		
	50	38.58	0.054530		
16QAM					
3.70	-30	48.31	0.068283	Within authorized band for Band 12	Pass
	-20	46.28	0.065413		
	-10	45.30	0.064028		
	0	48.72	0.068862		
	10	47.25	0.066784		
	20	49.08	0.069371		
	30	-6.97	-0.009852		
	40	-6.68	-0.009442		
	50	-8.44	-0.011929		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	30.17	0.042643	Within authorized band for Band 12	Pass
	3.70	4.45	0.006290		
	4.20	50.21	0.070968		
16QAM					
25	3.50	47.64	0.067336	Within authorized band for Band 12	Pass
	3.70	44.86	0.063406		
	4.20	47.16	0.066657		
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
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
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	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

