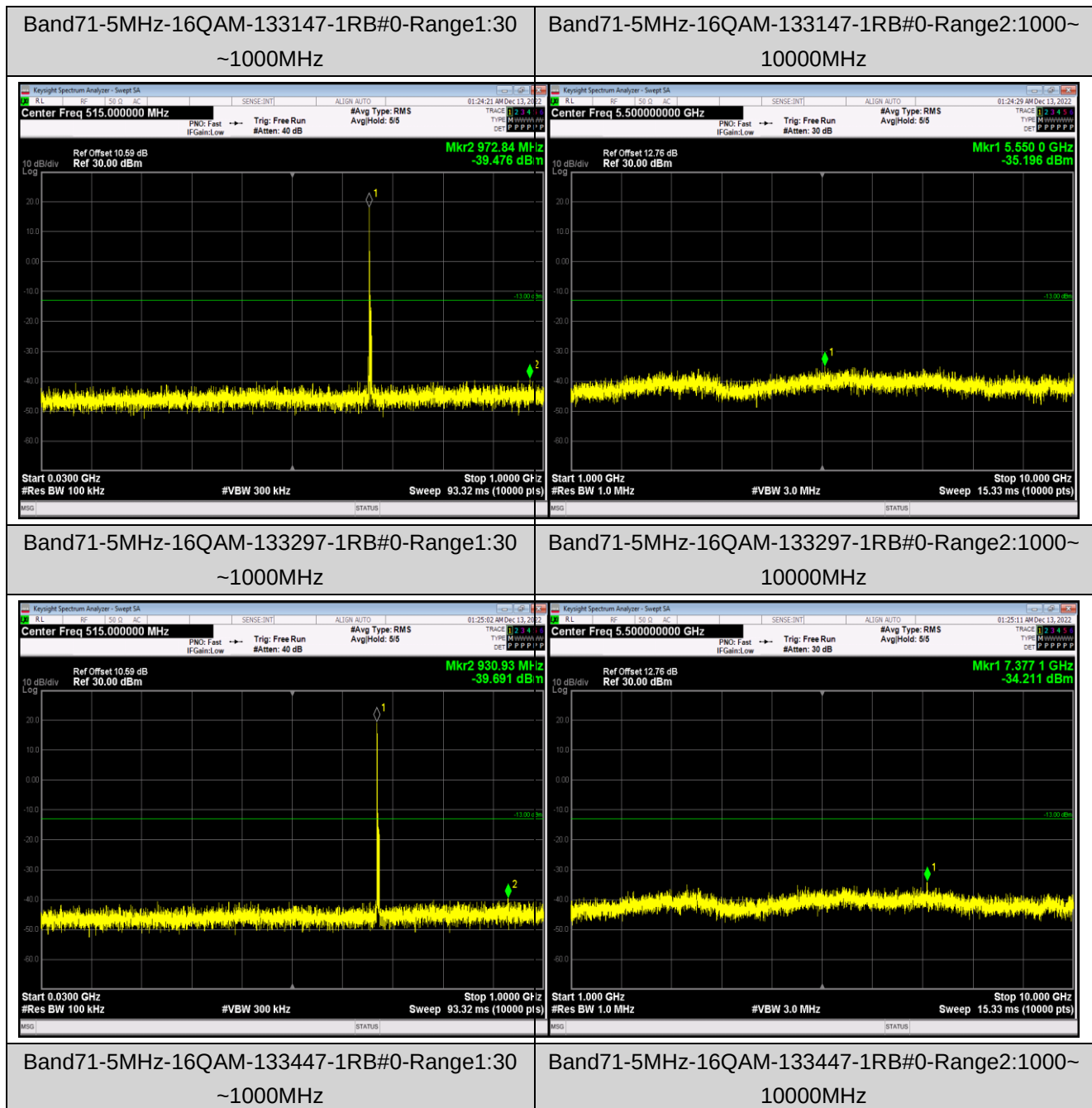
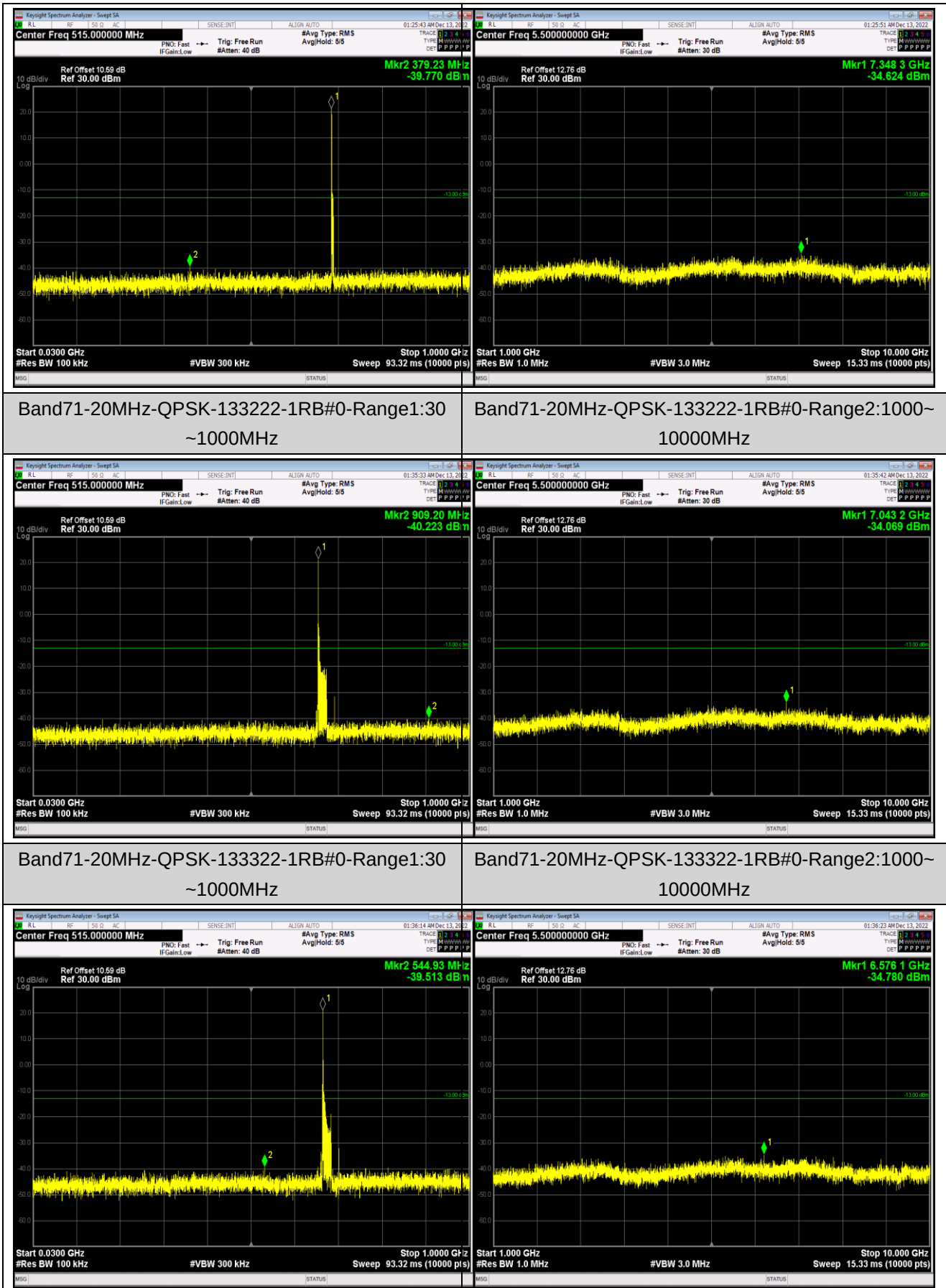
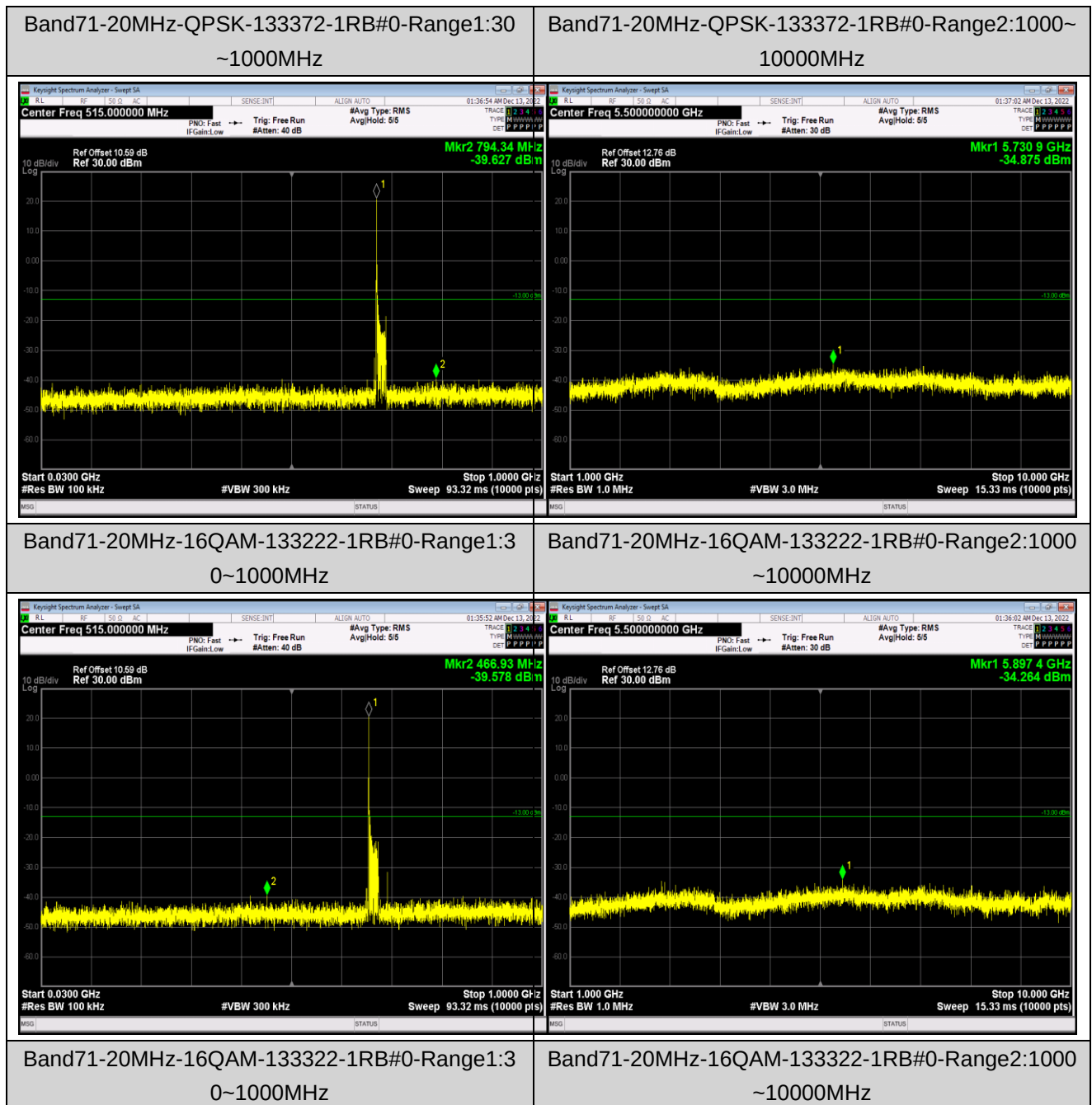
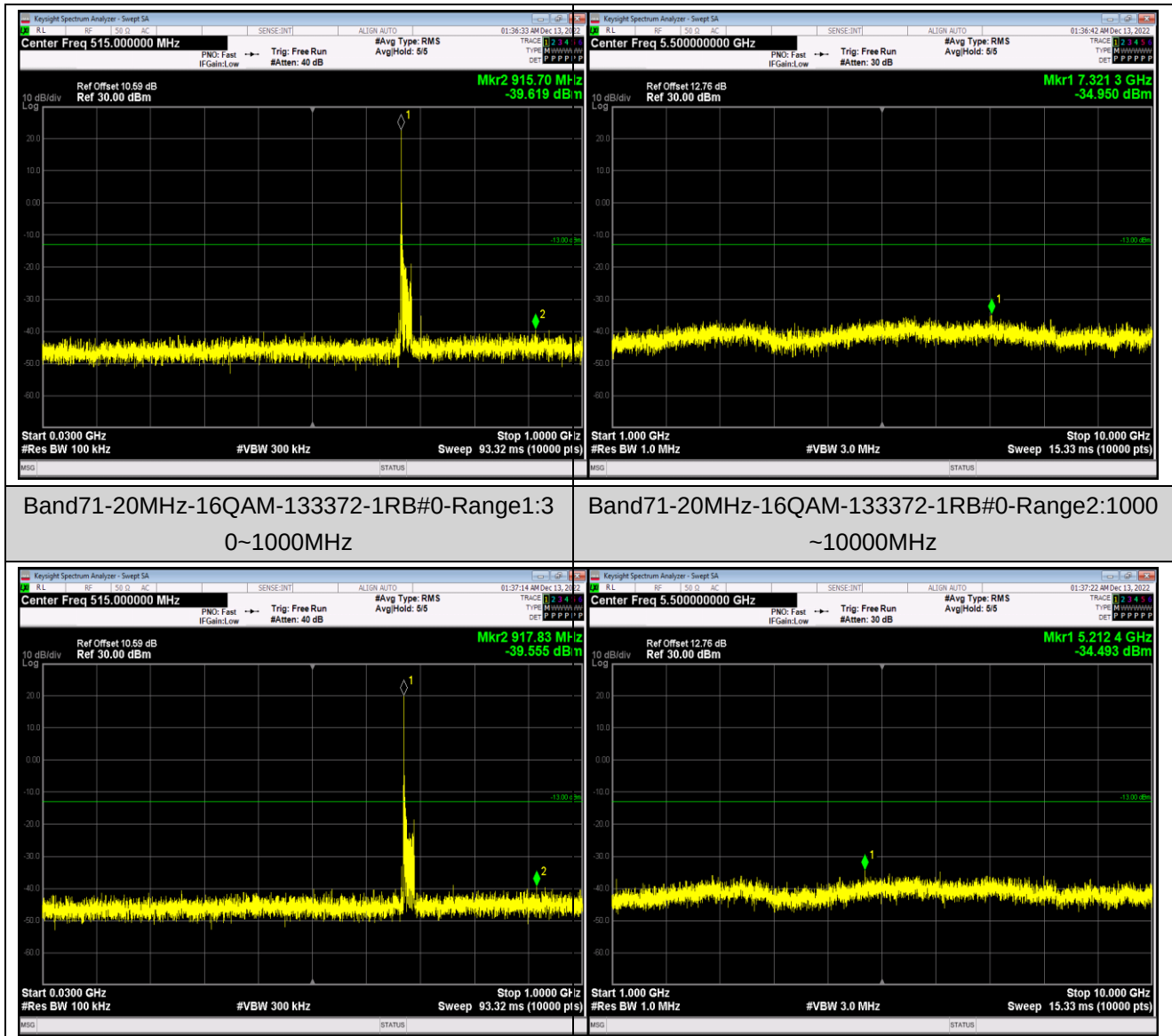










Appendix F: Frequency Stability

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					
3.85	-30	8.47	0.004505	Within authorized band for Band 2	Pass
	-20	12.93	0.006878		
	-10	1.99	0.001059		
	0	2.53	0.001346		
	10	6.05	0.003218		
	20	-11.56	-0.006149		
	30	-11.84	-0.006298		
	40	-11.26	-0.005989		
	50	4.65	0.002473		
16QAM					
3.85	-30	-10.03	-0.005335	Within authorized band for Band 2	Pass
	-20	-8.17	-0.004346		
	-10	-12.87	-0.006846		
	0	-12.22	-0.006500		
	10	-2.23	-0.001186		
	20	-3.28	-0.001745		
	30	-3.93	-0.002090		
	40	-5.06	-0.002691		
	50	-7.45	-0.003963		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-8.85	-0.004707	Within authorized band for Band 2	Pass
	3.85	-6.52	-0.003468		
	4.45	-8.77	-0.004665		
16QAM					
25	3.50	-8.60	-0.004574	Within authorized band for Band 2	Pass
	3.85	5.12	0.002723		
	4.45	7.12	0.003787		
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					
3.85	-30	4.31	0.005152	±2.5	Pass
	-20	4.15	0.004961		
	-10	5.74	0.006862		
	0	4.09	0.004889		
	10	4.22	0.005045		
	20	5.15	0.006157		
	30	5.69	0.006802		
	40	-4.52	-0.005403		
	50	6.12	0.007316		
16QAM					
3.85	-30	3.29	0.003933	±2.5	Pass
	-20	4.36	0.005212		
	-10	-6.11	-0.007304		
	0	-2.76	-0.003299		
	10	4.13	0.004937		
	20	-6.29	-0.007519		
	30	5.26	0.006288		
	40	-3.18	-0.003802		
	50	1.29	0.001542		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-3.82	-0.004567	±2.5	Pass
	3.85	3.43	0.004100		
	4.45	4.01	0.004794		
16QAM					
25	3.50	-6.98	-0.008344	±2.5	Pass
	3.85	-5.15	-0.006157		
	4.45	2.32	0.002773		
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					
3.85	-30	6.49	0.009173	Within authorized band for Band 12	Pass
	-20	5.34	0.007548		
	-10	5.49	0.007760		
	0	5.19	0.007336		
	10	5.25	0.007420		
	20	4.05	0.005724		
	30	4.02	0.005682		
	40	4.78	0.006756		
	50	3.50	0.004947		
16QAM					
3.85	-30	-1.56	-0.002205	Within authorized band for Band 12	Pass
	-20	-4.26	-0.006021		
	-10	-2.13	-0.003011		
	0	-5.79	-0.008184		
	10	-3.10	-0.004382		
	20	4.48	0.006332		
	30	6.34	0.008961		
	40	4.26	0.006021		
	50	-5.64	-0.007972		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	3.59	0.005074	Within authorized band for Band 12	Pass
	3.85	4.84	0.006841		
	4.45	2.30	0.003251		
16QAM					
25	3.50	4.29	0.006064	Within authorized band for Band 12	Pass
	3.85	5.99	0.008466		
	4.45	5.92	0.008367		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 17 part:

Reference Frequency: LTE Band 17(10MHz) Middle channel=23790 Frequency=710.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	6.15	0.008662	Within authorized band for Band 17	Pass
	-20	3.93	0.005535		
	-10	-2.72	-0.003831		
	0	1.89	0.002662		
	10	-2.52	-0.003549		
	20	3.50	0.004930		
	30	3.83	0.005394		
	40	-3.98	-0.005606		
	50	-2.69	-0.003789		
16QAM					
3.85	-30	-2.20	-0.003099	Within authorized band for Band 17	Pass
	-20	-3.02	-0.004254		
	-10	3.29	0.004634		
	0	3.40	0.004789		
	10	1.52	0.002141		
	20	3.76	0.005296		
	30	4.56	0.006423		
	40	5.38	0.007577		
	50	5.34	0.007521		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	7.07	0.009958	Within authorized band for Band 17	Pass
	3.85	-3.52	-0.004958		
	4.45	4.58	0.006451		
16QAM					
25	3.50	-2.23	-0.003141	Within authorized band for Band 17	Pass
	3.85	-4.06	-0.005718		
	4.45	-3.30	-0.004648		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 41 part: (2555-2655)

Reference Frequency: LTE Band 41 (10MHz) Middle channel=40740 Frequency=2605.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	12.86	0.004937	Within authorized band for Band 41	Pass
	-20	18.58	0.007132		
	-10	10.44	0.004008		
	0	7.07	0.002714		
	10	4.18	0.001605		
	20	-9.60	-0.003685		
	30	-15.18	-0.005827		
	40	-18.67	-0.007167		
	50	-24.25	-0.009309		
16QAM					
3.85	-30	-32.72	-0.012560	Within authorized band for Band 41	Pass
	-20	-35.76	-0.013727		
	-10	-38.87	-0.014921		
	0	-38.47	-0.014768		
	10	-41.97	-0.016111		
	20	-43.16	-0.016568		
	30	-43.33	-0.016633		
	40	-48.35	-0.018560		
	50	-49.55	-0.019021		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-49.17	-0.018875	Within authorized band for Band 41	Pass
	3.85	-23.72	-0.009106		
	4.45	-51.48	-0.019762		
16QAM					
25	3.50	-26.46	-0.010157	Within authorized band for Band41	Pass
	3.85	-29.43	-0.011298		
	4.45	-32.19	-0.012357		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 66 part:

Reference Frequency: LTE Band 66 (10MHz) Middle channel=132322 Frequency=1745.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-15.64	-0.008963	Within authorized band for Band 66	Pass
	-20	-12.42	-0.007117		
	-10	-8.51	-0.004877		
	0	9.64	0.005524		
	10	3.32	0.001903		
	20	-7.55	-0.004327		
	30	-13.46	-0.007713		
	40	-15.88	-0.009100		
	50	-10.36	-0.005937		
16QAM					
3.85	-30	-9.34	-0.005352	Within authorized band for Band 66	Pass
	-20	-13.06	-0.007484		
	-10	-10.60	-0.006074		
	0	-14.63	-0.008384		
	10	-14.28	-0.008183		
	20	-16.72	-0.009582		
	30	-13.43	-0.007696		
	40	-14.73	-0.008441		
	50	-3.42	-0.001960		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-6.64	-0.003805	Within authorized band for Band 66	Pass
	3.85	6.78	0.003885		
	4.45	2.79	0.001599		
16QAM					
25	3.50	-12.55	-0.007192	Within authorized band for Band 66	Pass
	3.85	-13.13	-0.007524		
	4.45	-11.99	-0.006871		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 71 part:

Reference Frequency: LTE Band 66 (10MHz) Middle channel=133297 Frequency=680.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	3.33	0.004893	Within authorized band for Band 71	Pass
	-20	-3.15	-0.004629		
	-10	-1.97	-0.002895		
	0	1.30	0.001910		
	10	1.95	0.002866		
	20	1.82	0.002675		
	30	-3.79	-0.005569		
	40	-4.42	-0.006495		
	50	-4.19	-0.006157		
16QAM					
3.85	-30	2.82	0.004144	Within authorized band for Band 71	Pass
	-20	-5.78	-0.008494		
	-10	-3.12	-0.004585		
	0	-5.91	-0.008685		
	10	-4.61	-0.006774		
	20	-2.85	-0.004188		
	30	-5.34	-0.007847		
	40	-3.83	-0.005628		
	50	4.15	0.006098		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	5.45	0.008009	Within authorized band for Band 71	Pass
	3.85	3.28	0.004820		
	4.45	5.18	0.007612		
16QAM					
25	3.50	2.26	0.003321	Within authorized band for Band 71	Pass
	3.85	-3.08	-0.004526		
	4.45	4.02	0.005907		
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
Band5	10MHz	QPSK	20525	50RB#0	PASS	PASS
Band5	10MHz	16QAM	20525	50RB#0	PASS	PASS
Band12	10MHz	QPSK	23095	50RB#0	PASS	PASS
Band12	10MHz	16QAM	23095	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band41	20MHz	QPSK	40740	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40740	100RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	100RB#0	PASS	PASS
Band71	20MHz	QPSK	133322	100RB#0	PASS	PASS
Band71	20MHz	16QAM	133322	100RB#0	PASS	PASS

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

Test Graphs

