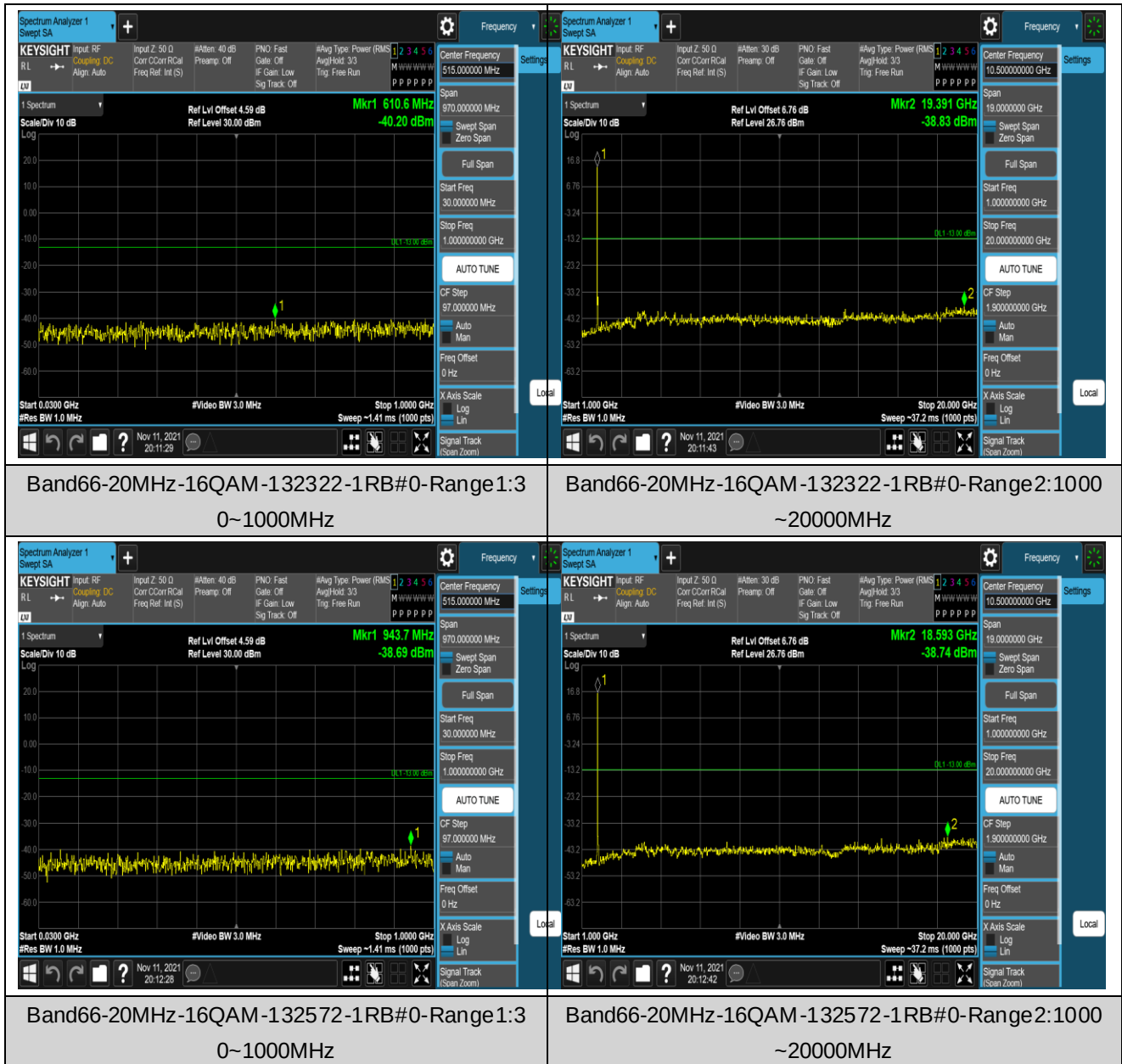




Appendix F: Frequency Stability

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	-12.63	-0.006718	Within authorized band for Band 2	Pass
	-20	-14.58	-0.007755		
	-10	-9.06	-0.004819		
	0	-12.60	-0.006702		
	10	-11.79	-0.006271		
	20	-11.79	-0.006271		
	30	-8.07	-0.004293		
	40	-10.64	-0.005660		
	50	-9.87	-0.005250		
16QAM					
3.85	-30	-12.86	-0.006840	Within authorized band for Band 2	Pass
	-20	-10.96	-0.005830		
	-10	-16.77	-0.008920		
	0	-15.23	-0.008101		
	10	-5.54	-0.002947		
	20	-9.61	-0.005112		
	30	-11.59	-0.006165		
	40	-10.60	-0.005638		
	50	-11.97	-0.006367		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-11.59	-0.006165	Within authorized band for Band 2	Pass
	3.85	-15.45	-0.008218		
	4.23	-15.25	-0.008112		
16QAM					
25	3.50	-10.87	-0.005782	Within authorized band for Band 2	Pass
	3.85	-8.63	-0.004590		
	4.23	-12.07	-0.006420		
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					
3.85	-30	-11.96	-0.006903	Within authorized band for Band 4	Pass
	-20	-13.05	-0.007532		
	-10	2.96	0.001709		
	0	-12.13	-0.007001		
	10	-9.81	-0.005662		
	20	-6.01	-0.003469		
	30	-2.29	-0.001322		
	40	-10.19	-0.005882		
	50	-9.43	-0.005443		
16QAM					
3.85	-30	-6.69	-0.003861	Within authorized band for Band 4	Pass
	-20	7.30	0.004214		
	-10	-8.90	-0.005137		
	0	-5.97	-0.003446		
	10	-11.62	-0.006707		
	20	-6.62	-0.003821		
	30	8.35	0.004820		
	40	-4.13	-0.002384		
	50	-7.67	-0.004427		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	3.66	0.002113	Within authorized band for Band 4	Pass
	3.85	-1.52	-0.000877		
	4.23	-14.43	-0.008329		
16QAM					
25	3.50	-12.47	-0.007198	Within authorized band for Band 4	Pass
	3.85	5.48	0.003163		
	4.23	-12.59	-0.007267		
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	-12.80	-0.015302	±2.5	Pass
	-20	-9.23	-0.011034		
	-10	-9.23	-0.011034		
	0	-5.34	-0.006384		
	10	-5.85	-0.006993		
	20	-10.53	-0.012588		
	30	-6.54	-0.007818		
	40	-12.07	-0.014429		
	50	-11.56	-0.013819		
16QAM					
3.85	-30	1.33	0.001590	±2.5	Pass
	-20	-17.42	-0.020825		
	-10	-13.40	-0.016019		
	0	-8.63	-0.010317		
	10	-11.63	-0.013903		
	20	-11.12	-0.013293		
	30	-4.56	-0.005451		
	40	-12.03	-0.014381		
	50	-13.72	-0.016402		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-11.72	-0.014011	±2.5	Pass
	3.85	-11.34	-0.013556		
	4.23	-4.92	-0.005882		
16QAM					
25	3.50	-6.77	-0.008093	±2.5	Pass
	3.85	-8.51	-0.010173		
	4.23	-6.11	-0.007304		
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					
3.85	-30	5.49	0.002166	Within authorized band for Band 7	Pass
	-20	-14.79	-0.005834		
	-10	-16.12	-0.006359		
	0	-4.45	-0.001755		
	10	-13.40	-0.005286		
	20	-4.79	-0.001890		
	30	-3.32	-0.001310		
	40	5.41	0.002134		
	50	4.45	0.001755		
16QAM					
3.85	-30	-12.46	-0.004915	Within authorized band for Band 7	Pass
	-20	-3.68	-0.001452		
	-10	-4.05	-0.001598		
	0	-8.61	-0.003396		
	10	-12.60	-0.004970		
	20	-10.36	-0.004087		
	30	-10.51	-0.004146		
	40	9.01	0.003554		
	50	-13.93	-0.005495		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-13.73	-0.005416	Within authorized band for Band 7	Pass
	3.85	-13.69	-0.005400		
	4.23	5.16	0.002036		
16QAM					
25	3.50	-3.28	-0.001294	Within authorized band for Band 7	Pass
	3.85	-4.65	-0.001834		
	4.23	3.43	0.001353		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 38 part:

Reference Frequency: LTE Band 38(10MHz) Middle channel=38000 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	10.16	0.003915	Within authorized band for Band 38	Pass
	-20	8.00	0.003083		
	-10	-10.96	-0.004224		
	0	8.61	0.003318		
	10	-9.07	-0.003495		
	20	-12.00	-0.004624		
	30	6.52	0.002513		
	40	-13.13	-0.005060		
	50	-9.38	-0.003615		
16QAM					
3.85	-30	-10.93	-0.004212	Within authorized band for Band 38	Pass
	-20	-4.42	-0.001703		
	-10	-11.01	-0.004243		
	0	-15.66	-0.006035		
	10	-11.76	-0.004532		
	20	8.51	0.003279		
	30	-11.62	-0.004478		
	40	8.77	0.003380		
	50	-9.13	-0.003518		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-7.84	-0.003021	Within authorized band for Band 38	Pass
	3.85	-15.25	-0.005877		
	4.23	-14.29	-0.005507		
16QAM					
25	3.50	-8.41	-0.003241	Within authorized band for Band 38	Pass
	3.85	-4.98	-0.001919		
	4.23	-7.65	-0.002948		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 41 part:

Reference Frequency: LTE Band 41 (10MHz) Middle channel=40640 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	-5.08	-0.001958	Within authorized band for Band 41	Pass
	-20	-6.75	-0.002601		
	-10	-16.71	-0.006439		
	0	3.55	0.001368		
	10	-4.82	-0.001857		
	20	9.63	0.003711		
	30	-12.27	-0.004728		
	40	-13.49	-0.005198		
	50	-19.31	-0.007441		
16QAM					
3.85	-30	-4.65	-0.001792	Within authorized band for Band 41	Pass
	-20	-12.92	-0.004979		
	-10	-12.96	-0.004994		
	0	-14.96	-0.005765		
	10	-13.06	-0.005033		
	20	-9.47	-0.003649		
	30	11.43	0.004405		
	40	-16.14	-0.006220		
	50	-14.83	-0.005715		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	7.37	0.002840	Within authorized band for Band 41	Pass
	3.85	-13.86	-0.005341		
	4.23	2.42	0.000933		
16QAM					
25	3.50	-12.63	-0.004867	Within authorized band for Band41	Pass
	3.85	-12.15	-0.004682		
	4.23	-7.88	-0.003037		
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	-11.72	-0.006716	Within authorized band for Band 66	Pass
	-20	-7.05	-0.004040		
	-10	-10.27	-0.005885		
	0	-7.58	-0.004344		
	10	-15.31	-0.008774		
	20	-3.76	-0.002155		
	30	-9.50	-0.005444		
	40	-11.54	-0.006613		
	50	-12.16	-0.006968		
16QAM					
3.85	-30	-12.09	-0.006928	Within authorized band for Band 66	Pass
	-20	-14.65	-0.008395		
	-10	-5.55	-0.003181		
	0	-14.79	-0.008476		
	10	-7.54	-0.004321		
	20	-10.09	-0.005782		
	30	-10.20	-0.005845		
	40	-13.56	-0.007771		
	50	-9.81	-0.005622		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-12.85	-0.007364	Within authorized band for Band 66	Pass
	3.85	-12.19	-0.006986		
	4.23	-9.26	-0.005307		
16QAM					
25	3.50	-10.19	-0.005840	Within authorized band for Band 66	Pass
	3.85	-14.62	-0.008378		
	4.23	-12.52	-0.007175		
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
Band38	20MHz	QPSK	38000	100RB#0	PASS	PASS
Band38	20MHz	16QAM	38000	100RB#0	PASS	PASS
Band41	20MHz	QPSK	40640	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40640	100RB#0	PASS	PASS
Band66	20MHz	QPSK	132322	100RB#0	PASS	PASS
Band66	20MHz	16QAM	132322	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

