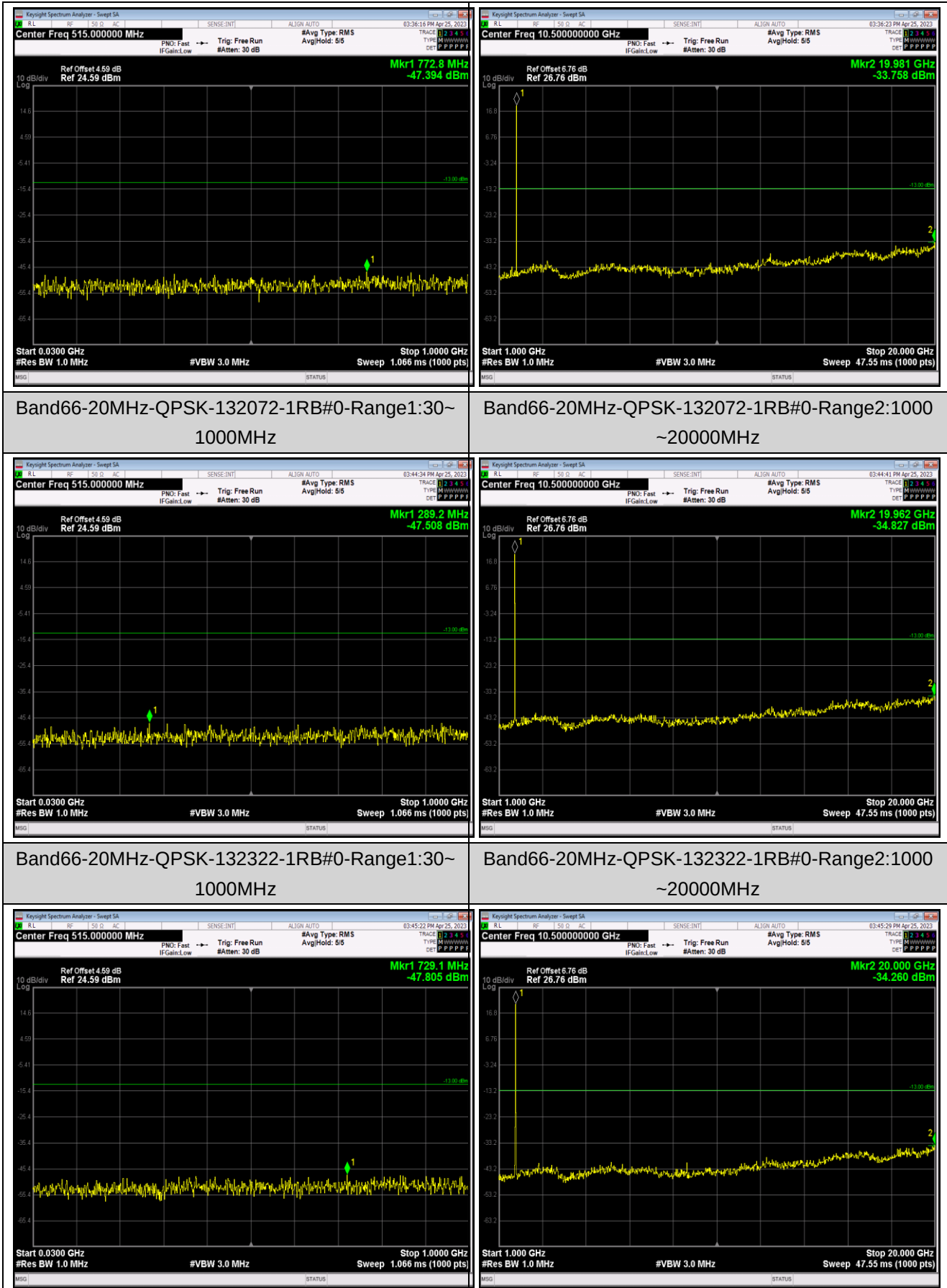
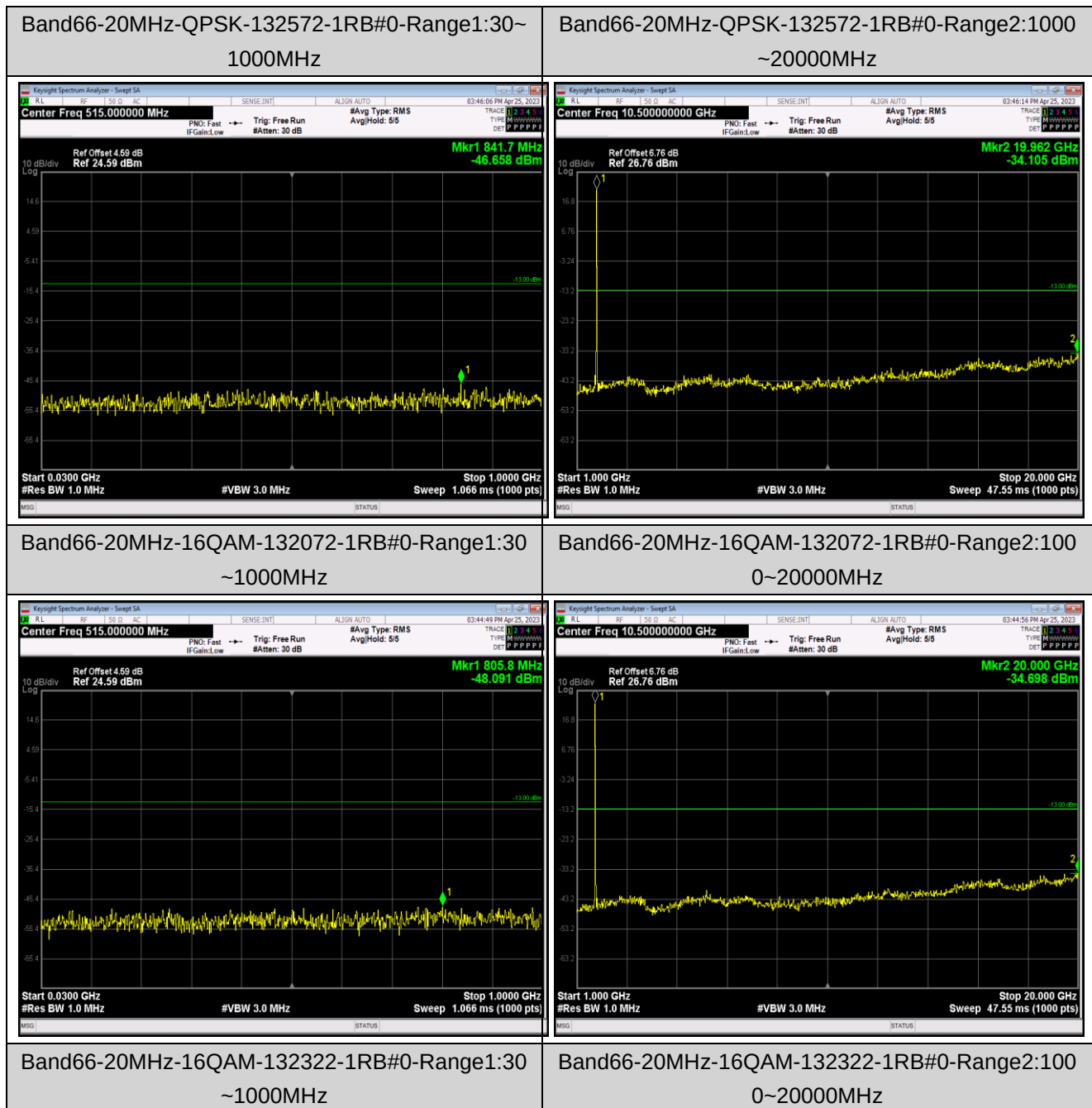
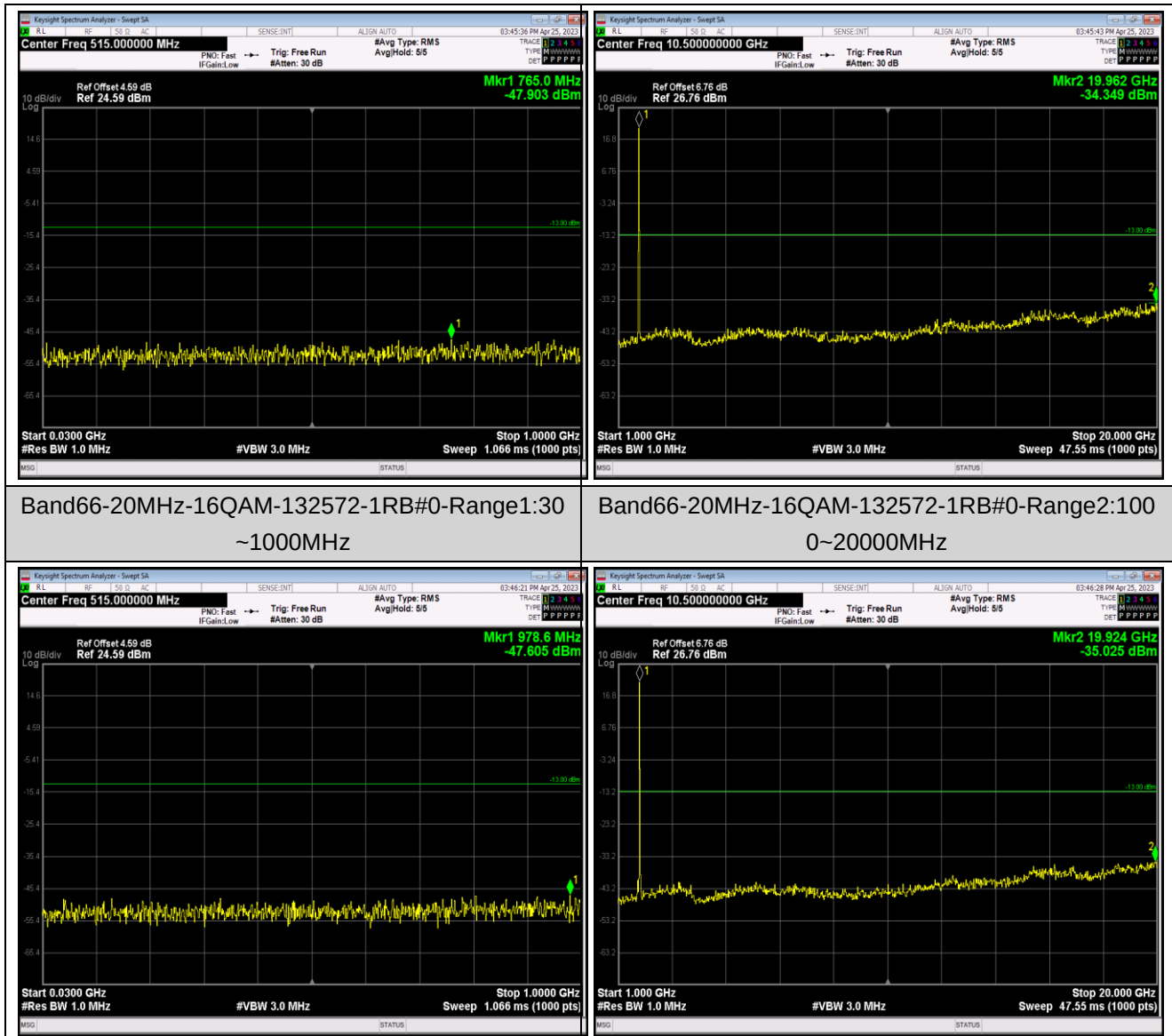








Band66-20MHz-16QAM-132572-1RB#0-Range1:30
~1000MHz

Band66-20MHz-16QAM-132572-1RB#0-Range2:100
0~20000MHz

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					
3.87	-30	40.67	0.021633	Within authorized band for Band 2	Pass
	-20	13.45	0.007154		
	-10	21.84	0.011617		
	0	32.73	0.017410		
	10	39.63	0.021080		
	20	44.42	0.023628		
	30	44.57	0.023707		
	40	-19.15	-0.010186		
	50	-6.11	-0.003250		
16QAM					
3.87	-30	53.49	0.028452	Within authorized band for Band 2	Pass
	-20	28.82	0.015330		
	-10	52.24	0.027787		
	0	21.39	0.011378		
	10	44.53	0.023686		
	20	16.98	0.009032		
	30	29.90	0.015904		
	40	42.04	0.022362		
	50	4.91	0.002612		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	15.31	0.008144	Within authorized band for Band 2	Pass
	3.87	-4.85	-0.002580		
	4.45	29.93	0.015920		
16QAM					
25	3.45	20.99	0.011165	Within authorized band for Band 2	Pass
	3.87	18.08	0.009617		
	4.45	9.88	0.005255		
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					
3.87	-30	-41.90	-0.016529	Within authorized band for Band 7	Pass
	-20	-34.48	-0.013602		
	-10	-46.39	-0.018300		
	0	-19.05	-0.007515		
	10	-51.34	-0.020252		
	20	-44.96	-0.017736		
	30	-19.98	-0.007882		
	40	-42.53	-0.016777		
	50	-32.77	-0.012927		
16QAM					
3.87	-30	-26.18	-0.010327	Within authorized band for Band 7	Pass
	-20	-21.20	-0.008363		
	-10	-52.80	-0.020828		
	0	-21.54	-0.008497		
	10	-13.28	-0.005239		
	20	-42.06	-0.016592		
	30	-36.55	-0.014418		
	40	-10.94	-0.004316		
	50	-36.92	-0.014564		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-36.31	-0.014323	Within authorized band for Band 7	Pass
	3.87	-39.44	-0.015558		
	4.45	-49.24	-0.019424		
16QAM					
25	3.45	-31.34	-0.012363	Within authorized band for Band 7	Pass
	3.87	15.65	0.006174		
	4.45	-42.63	-0.016817		
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					
3.87	-30	4.11	0.005809	Within authorized band for Band 12	Pass
	-20	-7.72	-0.010912		
	-10	-9.17	-0.012961		
	0	-14.03	-0.019830		
	10	-17.92	-0.025329		
	20	-21.16	-0.029908		
	30	-18.65	-0.026360		
	40	-17.32	-0.024481		
	50	-18.18	-0.025696		
16QAM					
3.87	-30	17.94	0.025357	Within authorized band for Band 12	Pass
	-20	25.01	0.035350		
	-10	31.24	0.044155		
	0	35.63	0.050360		
	10	39.22	0.055435		
	20	43.67	0.061724		
	30	45.66	0.064537		
	40	3.82	0.005399		
	50	9.41	0.013300		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	17.48	0.024707	Within authorized band for Band 12	Pass
	3.87	22.20	0.031378		
	4.45	10.59	0.014968		
16QAM					
25	3.45	-3.36	-0.004749	Within authorized band for Band 12	Pass
	3.87	-17.64	-0.024933		
	4.45	9.77	0.013809		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 13part:

Reference Frequency: LTE Band 13(10MHz) Middle channel=23230 Frequency=782.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.87	-30	-25.61	-0.032749	Within authorized band for Band 13	Pass
	-20	-35.33	-0.045179		
	-10	-40.44	-0.051714		
	0	-40.51	-0.051803		
	10	-41.73	-0.053363		
	20	-43.99	-0.056253		
	30	-44.89	-0.057404		
	40	-45.98	-0.058798		
	50	-44.00	-0.056266		
16QAM					
3.87	-30	-13.78	-0.017621	Within authorized band for Band 13	Pass
	-20	-7.24	-0.009258		
	-10	4.12	0.005269		
	0	8.38	0.010716		
	10	11.89	0.015205		
	20	16.55	0.021164		
	30	16.71	0.021368		
	40	16.82	0.021509		
	50	17.88	0.022864		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-13.42	-0.017161	Within authorized band for Band 13	Pass
	3.87	-8.94	-0.011432		
	4.45	-22.40	-0.028645		
16QAM					
25	3.45	-30.03	-0.038402	Within authorized band for Band 13	Pass
	3.87	-46.23	-0.059118		
	4.45	-21.43	-0.027404		
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					
3.87	-30	25.85	0.036408	Within authorized band for Band 17	Pass
	-20	27.21	0.038324		
	-10	29.95	0.042183		
	0	35.46	0.049944		
	10	42.83	0.060324		
	20	43.89	0.061817		
	30	44.37	0.062493		
	40	46.86	0.066000		
	50	4.72	0.006648		
16QAM					
3.87	-30	17.81	0.025085	Within authorized band for Band 17	Pass
	-20	32.22	0.045380		
	-10	49.11	0.069169		
	0	9.01	0.012690		
	10	20.41	0.028746		
	20	29.15	0.041056		
	30	38.08	0.053634		
	40	49.68	0.069972		
	50	19.88	0.028000		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	32.82	0.046225	Within authorized band for Band 17	Pass
	3.87	13.62	0.019183		
	4.45	30.14	0.042451		
16QAM					
25	3.45	33.79	0.047592	Within authorized band for Band 17	Pass
	3.87	15.03	0.021169		
	4.45	-4.12	-0.005803		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 26 (part 90)part:

Reference Frequency: LTE Band 26(10MHz) Middle channel=26740 Frequency=810.9MHz					
Temperature					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.87	-30	-49.51	-0.060452	Within authorized band for Band 26	Pass
	-20	-37.31	-0.045556		
	-10	-50.02	-0.061074		
	0	-51.58	-0.062979		
	10	-37.41	-0.045678		
	20	-22.26	-0.027179		
	30	-39.28	-0.047961		
	40	-47.45	-0.057937		
	50	-46.46	-0.056728		
16QAM					
3.87	-30	-46.41	-0.056667	Within authorized band for Band 26	Pass
	-20	-14.13	-0.017253		
	-10	-31.81	-0.038840		
	0	-42.11	-0.051416		
	10	-5.76	-0.007033		
	20	-16.94	-0.020684		
	30	-35.46	-0.043297		
	40	-2.16	-0.002637		
	50	-16.55	-0.020208		
Voltage					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	-39.91	-0.048730	Within authorized band for Band 26	Pass
	3.87	-51.23	-0.062552		
	4.45	-39.94	-0.048767		
16QAM					
25	3.45	-21.39	-0.026117	Within authorized band for Band 26	Pass
	3.87	-46.05	-0.056227		
	4.45	-33.90	-0.041392		
Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.					

LTE Band 26 (part 22)part:

Reference Frequency: LTE Band 26(10MHz) Middle channel=26915 Frequency=836.5MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.87	-30	-41.03	-0.049050	Within authorized band for Band 26	Pass
	-20	-40.61	-0.048548		
	-10	-28.85	-0.034489		
	0	-4.01	-0.004794		
	10	-24.18	-0.028906		
	20	-46.18	-0.055206		
	30	-10.59	-0.012660		
	40	-29.68	-0.035481		
	50	-40.71	-0.048667		
16QAM					
3.87	-30	5.28	0.006312	Within authorized band for Band 26	Pass
	-20	8.71	0.010412		
	-10	9.20	0.010998		
	0	16.58	0.019821		
	10	24.39	0.029157		
	20	22.16	0.026491		
	30	21.27	0.025427		
	40	24.92	0.029791		
	50	23.89	0.028559		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	12.33	0.014740	Within authorized band for Band 17	Pass
	3.87	42.26	0.050520		
	4.45	-21.44	-0.025631		
16QAM					
25	3.45	-7.81	-0.009337	Within authorized band for Band 17	Pass
	3.87	-8.44	-0.010090		
	4.45	2.73	0.003264		
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					
3.87	-30	43.99	0.016952	Within authorized band for Band 41	Pass
	-20	-17.29	-0.006663		
	-10	-18.14	-0.006990		
	0	-18.84	-0.007260		
	10	-23.92	-0.009218		
	20	9.37	0.003611		
	30	31.69	0.012212		
	40	16.88	0.006505		
	50	-8.41	-0.003241		
16QAM					
3.87	-30	35.61	0.013723	Within authorized band for Band 41	Pass
	-20	17.25	0.006647		
	-10	21.70	0.008362		
	0	43.19	0.016644		
	10	36.09	0.013908		
	20	37.15	0.014316		
	30	47.98	0.018489		
	40	-11.93	-0.004597		
	50	25.58	0.009857		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	40.90	0.015761	Within authorized band for Band 41	Pass
	3.87	20.59	0.007934		
	4.45	40.64	0.015661		
16QAM					
25	3.45	48.88	0.018836	Within authorized band for Band41	Pass
	3.87	10.46	0.004031		
	4.45	19.86	0.007653		
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					
3.87	-30	11.73	0.006722	Within authorized band for Band 66	Pass
	-20	4.15	0.002378		
	-10	-6.84	-0.003920		
	0	-12.62	-0.007232		
	10	4.15	0.002378		
	20	7.41	0.004246		
	30	3.08	0.001765		
	40	10.40	0.005960		
	50	9.31	0.005335		
16QAM					
3.87	-30	29.57	0.016946	Within authorized band for Band 66	Pass
	-20	18.95	0.010860		
	-10	31.49	0.018046		
	0	11.97	0.006860		
	10	25.53	0.014630		
	20	4.13	0.002367		
	30	16.84	0.009650		
	40	27.15	0.015559		
	50	38.42	0.022017		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.45	47.28	0.027095	Within authorized band for Band 66	Pass
	3.87	45.13	0.025862		
	4.45	6.98	0.004000		
16QAM					
25	3.45	24.19	0.013862	Within authorized band for Band 66	Pass
	3.87	14.89	0.008533		
	4.45	49.65	0.028453		
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
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
Band13	10MHz	QPSK	23230	50RB#0	PASS	PASS
Band13	10MHz	16QAM	23230	50RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#0	PASS	PASS
Band26	10MHz	QPSK	26740	50RB#0	PASS	PASS
Band26	10MHz	16QAM	26740	50RB#0	PASS	PASS
Band26	15MHz	QPSK	26915	75RB#0	PASS	PASS
Band26	15MHz	16QAM	26915	75RB#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

