

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	14.31	0.007612	Within authorized band for Band 2	Pass
	-20	-17.05	-0.009069		
	-10	-12.75	-0.006782		
	0	16.64	0.008851		
	10	-9.71	-0.005165		
	20	-18.50	-0.009840		
	30	-1.90	-0.001011		
	40	17.55	0.009335		
	50	11.74	0.006245		
16QAM					
3.87	-30	-16.22	-0.008628	Within authorized band for Band 2	Pass
	-20	-14.89	-0.007920		
	-10	18.40	0.009787		
	0	6.27	0.003335		
	10	-14.29	-0.007601		
	20	-6.62	-0.003521		
	30	13.09	0.006963		
	40	6.59	0.003505		
	50	5.97	0.003176		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	13.69	0.007282	Within authorized band for Band 2	Pass
	3.87	-14.26	-0.007585		
	4.45	-16.72	-0.008894		
16QAM					
25	3.50	14.55	0.007739	Within authorized band for Band 2	Pass
	3.87	10.11	0.005378		
	4.45	10.51	0.005590		
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					
3.87	-30	-5.09	-0.006085	±2.5	Pass
	-20	-4.73	-0.005655		
	-10	-8.98	-0.010735		
	0	-9.68	-0.011572		
	10	-9.34	-0.011166		
	20	-12.72	-0.015206		
	30	-8.71	-0.010412		
	40	6.18	0.007388		
	50	-3.16	-0.003778		
16QAM					
3.87	-30	-7.52	-0.008990	±2.5	Pass
	-20	-5.74	-0.006862		
	-10	2.03	0.002427		
	0	-7.54	-0.009014		
	10	-7.25	-0.008667		
	20	-6.35	-0.007591		
	30	-3.52	-0.004208		
	40	-6.78	-0.008105		
	50	-0.86	-0.001028		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-8.80	-0.010520	±2.5	Pass
	3.87	-9.97	-0.011919		
	4.45	-4.61	-0.005511		
16QAM					
25	3.50	-6.32	-0.007555	±2.5	Pass
	3.87	4.86	0.005810		
	4.45	-5.66	-0.006766		
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	-18.18	-0.007172	Within authorized band for Band 7	Pass
	-20	-28.81	-0.011365		
	-10	-9.63	-0.003799		
	0	-25.62	-0.010107		
	10	-19.34	-0.007629		
	20	-14.31	-0.005645		
	30	19.34	0.007629		
	40	-17.74	-0.006998		
	50	-11.97	-0.004722		
16QAM					
3.87	-30	-17.71	-0.006986	Within authorized band for Band 7	Pass
	-20	-33.87	-0.013361		
	-10	-22.33	-0.008809		
	0	16.34	0.006446		
	10	20.60	0.008126		
	20	-7.04	-0.002777		
	30	-13.38	-0.005278		
	40	16.29	0.006426		
	50	-16.19	-0.006387		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-20.53	-0.008099	Within authorized band for Band 7	Pass
	3.87	-24.22	-0.009554		
	4.45	-35.10	-0.013846		
16QAM					
25	3.50	13.02	0.005136	Within authorized band for Band 7	Pass
	3.87	-7.77	-0.003065		
	4.45	12.09	0.004769		
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	-6.02	-0.008479	Within authorized band for Band 17	Pass
	-20	-3.52	-0.004958		
	-10	-1.46	-0.002056		
	0	-7.98	-0.011239		
	10	-4.45	-0.006268		
	20	-10.24	-0.014423		
	30	-5.69	-0.008014		
	40	-5.36	-0.007549		
	50	-4.98	-0.007014		
16QAM					
3.87	-30	-3.08	-0.004338	Within authorized band for Band 17	Pass
	-20	-9.91	-0.013958		
	-10	-8.67	-0.012211		
	0	-8.90	-0.012535		
	10	-1.49	-0.002099		
	20	-11.62	-0.016366		
	30	-4.89	-0.006887		
	40	-7.75	-0.010915		
	50	-10.36	-0.014592		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-5.74	-0.008085	Within authorized band for Band 17	Pass
	3.87	-12.02	-0.016930		
	4.45	-7.44	-0.010479		
16QAM					
25	3.50	-5.11	-0.007197	Within authorized band for Band 17	Pass
	3.87	-5.06	-0.007127		
	4.45	-9.14	-0.012873		
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	22.03	0.008489	Within authorized band for Band 41	Pass
	-20	-20.86	-0.008039		
	-10	-17.25	-0.006647		
	0	-10.33	-0.003981		
	10	-25.31	-0.009753		
	20	-17.88	-0.006890		
	30	-16.82	-0.006482		
	40	22.40	0.008632		
	50	-24.20	-0.009326		
16QAM					
3.87	-30	-13.13	-0.005060	Within authorized band for Band 41	Pass
	-20	17.75	0.006840		
	-10	19.04	0.007337		
	0	18.01	0.006940		
	10	-21.54	-0.008301		
	20	-3.48	-0.001341		
	30	11.00	0.004239		
	40	24.26	0.009349		
	50	17.87	0.006886		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-15.36	-0.005919	Within authorized band for Band 41	Pass
	3.87	19.74	0.007607		
	4.45	16.24	0.006258		
16QAM					
25	3.50	20.06	0.007730	Within authorized band for Band41	Pass
	3.87	13.52	0.005210		
	4.45	14.52	0.005595		
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	17.05	0.009771	Within authorized band for Band 66	Pass
	-20	-15.85	-0.009083		
	-10	14.16	0.008115		
	0	7.21	0.004132		
	10	9.70	0.005559		
	20	5.95	0.003410		
	30	-16.75	-0.009599		
	40	-5.25	-0.003009		
	50	-13.58	-0.007782		
16QAM					
3.87	-30	-12.57	-0.007203	Within authorized band for Band 66	Pass
	-20	-17.02	-0.009754		
	-10	-16.04	-0.009192		
	0	12.53	0.007181		
	10	-18.67	-0.010699		
	20	-17.74	-0.010166		
	30	-15.31	-0.008774		
	40	20.31	0.011639		
	50	-18.61	-0.010665		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-12.46	-0.007140	Within authorized band for Band 66	Pass
	3.87	10.04	0.005754		
	4.45	-15.32	-0.008779		
16QAM					
25	3.50	-14.13	-0.008097	Within authorized band for Band 66	Pass
	3.87	-19.51	-0.011181		
	4.45	14.85	0.008510		
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
Band7	20MHz	QPSK	21100	100RB#0	PASS	PASS
Band7	20MHz	16QAM	21100	100RB#0	PASS	PASS
Band17	10MHz	QPSK	23790	50RB#0	PASS	PASS
Band17	10MHz	16QAM	23790	50RB#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



