



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	6.55	0.003484	Within authorized band for Band 2	Pass
	-20	9.03	0.004803		
	-10	11.92	0.006340		
	0	12.12	0.006447		
	10	4.11	0.002186		
	20	9.51	0.005059		
	30	6.61	0.003516		
	40	3.19	0.001697		
	50	6.07	0.003229		
16QAM					
3.85	-30	7.07	0.003761	Within authorized band for Band 2	Pass
	-20	-10.56	-0.005617		
	-10	8.11	0.004314		
	0	5.19	0.002761		
	10	9.40	0.005000		
	20	6.15	0.003271		
	30	-2.15	-0.001144		
	40	6.45	0.003431		
	50	5.94	0.003160		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	11.62	0.006181	Within authorized band for Band 2	Pass
	3.85	7.08	0.003766		
	4.40	11.86	0.006309		
16QAM					
25	3.50	6.34	0.003372	Within authorized band for Band 2	Pass
	3.85	15.22	0.008096		
	4.40	5.02	0.002670		

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	-2.79	-0.003335	±2.5	Pass
	-20	-2.56	-0.003060		
	-10	-3.62	-0.004328		
	0	0.99	0.001184		
	10	-3.22	-0.003849		
	20	-4.32	-0.005164		
	30	-4.55	-0.005439		
	40	-5.99	-0.007161		
	50	-8.44	-0.010090		
16QAM					
3.85	-30	-3.23	-0.003861	±2.5	Pass
	-20	2.78	0.003323		
	-10	-7.07	-0.008452		
	0	-3.52	-0.004208		
	10	2.98	0.003562		
	20	-2.05	-0.002451		
	30	-6.39	-0.007639		
	40	-5.87	-0.007017		
	50	-3.53	-0.004220		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-8.35	-0.009982	±2.5	Pass
	3.85	-1.06	-0.001267		
	4.40	-4.51	-0.005392		
16QAM					
25	3.50	1.53	0.001829	±2.5	Pass
	3.85	-4.53	-0.005415		
	4.40	3.63	0.004340		

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	-9.04	-0.003566	Within authorized band for Band 7	Pass
	-20	-5.38	-0.002122		
	-10	-9.66	-0.003811		
	0	-10.34	-0.004079		
	10	7.64	0.003014		
	20	-4.32	-0.001704		
	30	2.82	0.001112		
	40	-2.33	-0.000919		
	50	-4.69	-0.001850		
16QAM					
3.85	-30	-3.68	-0.001452	Within authorized band for Band 7	Pass
	-20	-3.99	-0.001574		
	-10	4.08	0.001609		
	0	12.22	0.004821		
	10	2.22	0.000876		
	20	10.81	0.004264		
	30	-11.94	-0.004710		
	40	-15.46	-0.006099		
	50	6.01	0.002371		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	7.34	0.002895	Within authorized band for Band 7	Pass
	3.85	-8.71	-0.003436		
	4.40	14.09	0.005558		
16QAM					
25	3.50	9.70	0.003826	Within authorized band for Band 7	Pass
	3.85	-2.92	-0.001152		
	4.40	-10.16	-0.004008		

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=40620 Frequency=2595.0MHz					
Temperature					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	19.54	0.007536	Within authorized band for Band 41	Pass
	-20	5.87	0.002264		
	-10	10.14	0.003911		
	0	12.57	0.004848		
	10	-4.85	-0.001870		
	20	9.01	0.003475		
	30	8.37	0.003228		
	40	15.13	0.005835		
	50	11.60	0.004474		
16QAM					
3.85	-30	3.55	0.001369	Within authorized band for Band 41	Pass
	-20	14.62	0.005638		
	-10	19.13	0.007378		
	0	20.41	0.007871		
	10	13.15	0.005071		
	20	19.80	0.007636		
	30	9.63	0.003714		
	40	21.63	0.008342		
	50	7.27	0.002804		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-7.90	-0.003047	Within authorized band for Band 41	Pass
	3.85	11.89	0.004585		
	4.40	15.35	0.005920		
16QAM					
25	3.50	22.20	0.008562	Within authorized band for Band41	Pass
	3.85	7.20	0.002777		
	4.40	10.71	0.004130		

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	9.80	0.005616	Within authorized band for Band 66	Pass
	-20	2.60	0.001490		
	-10	12.83	0.007352		
	0	2.66	0.001524		
	10	-5.75	-0.003295		
	20	4.71	0.002699		
	30	-9.63	-0.005519		
	40	11.26	0.006453		
	50	7.72	0.004424		
16QAM					
3.85	-30	1.87	0.001072	Within authorized band for Band 66	Pass
	-20	8.40	0.004814		
	-10	-3.85	-0.002206		
	0	11.22	0.006430		
	10	8.58	0.004917		
	20	-7.48	-0.004287		
	30	9.86	0.005650		
	40	11.66	0.006682		
	50	8.51	0.004877		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-5.56	-0.003186	Within authorized band for Band 66	Pass
	3.85	-1.67	-0.000957		
	4.40	4.99	0.002860		
16QAM					
25	3.50	-3.08	-0.001765	Within authorized band for Band 66	Pass
	3.85	-9.78	-0.005605		
	4.40	10.97	0.006287		

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
Band41	20MHz	QPSK	40620	100RB#0	PASS	PASS
Band41	20MHz	16QAM	40620	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



