

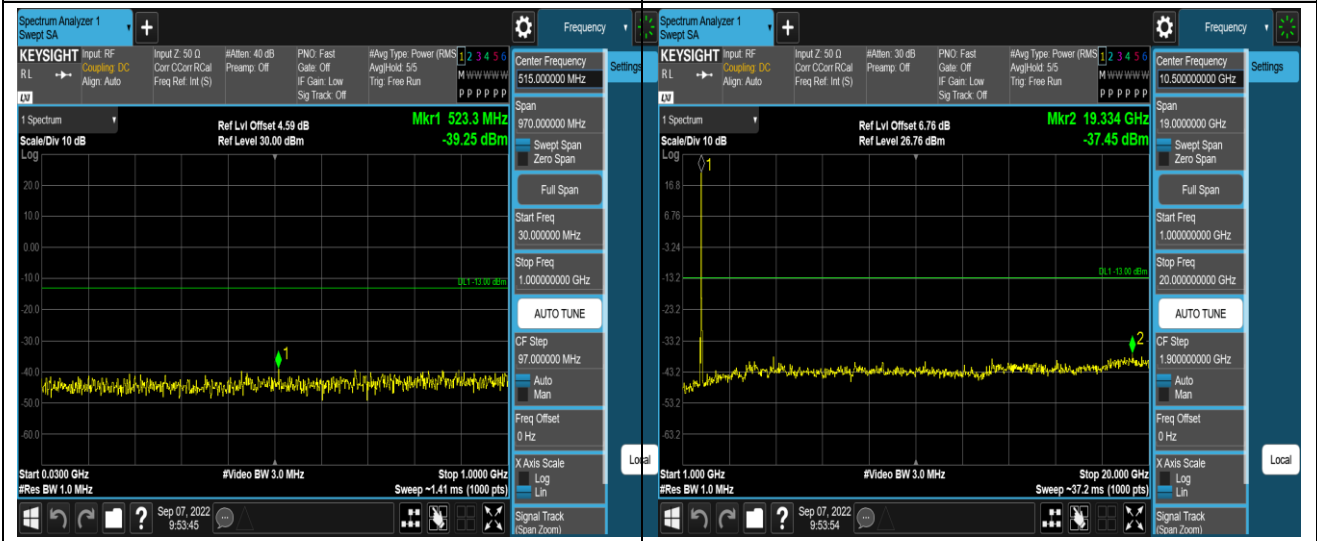
Band66-20MHz-QPSK-132322-1RB#0-Range1:30  
~1000MHz

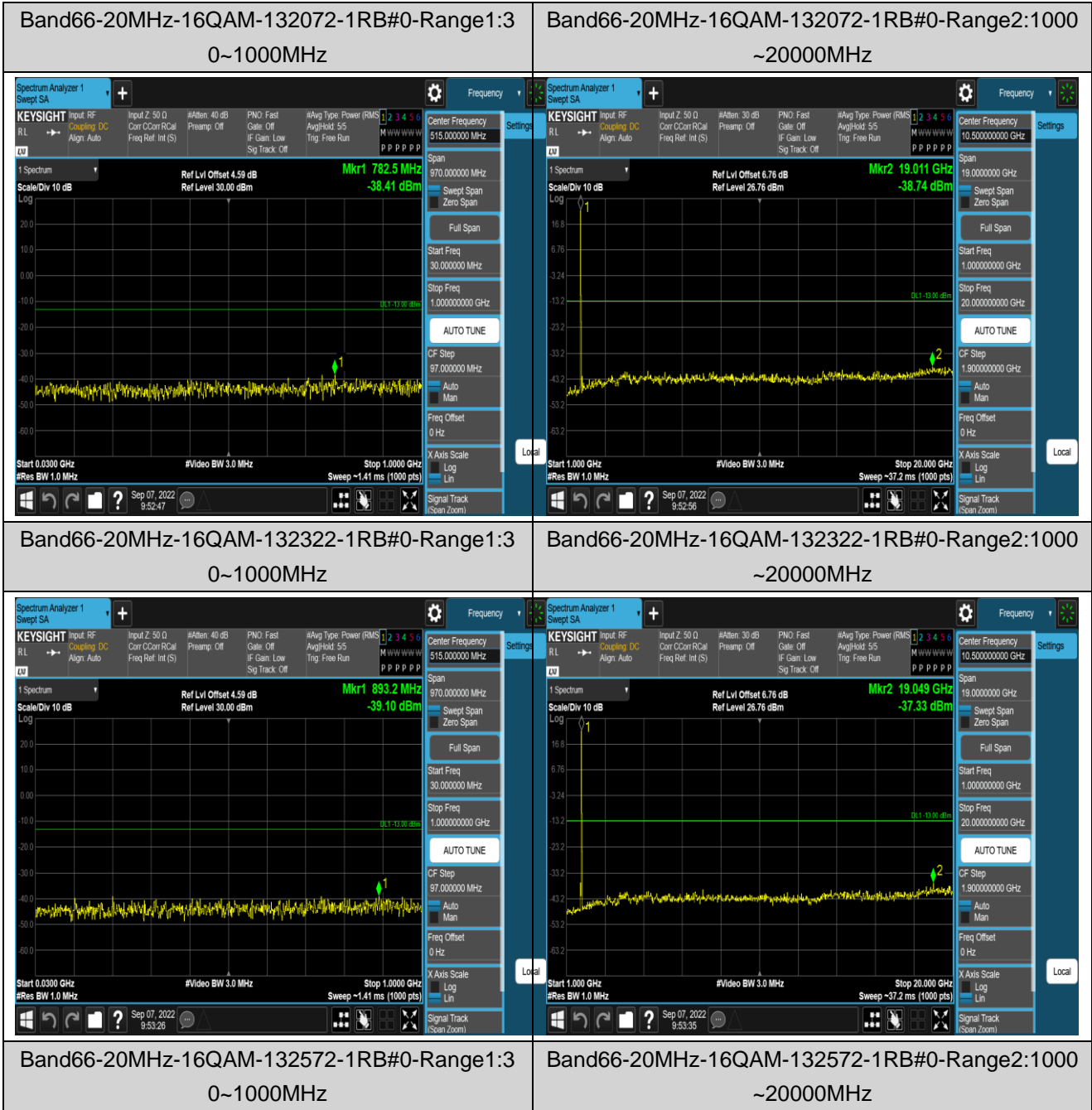
Band66-20MHz-QPSK-132322-1RB#0-Range2:1000~  
20000MHz

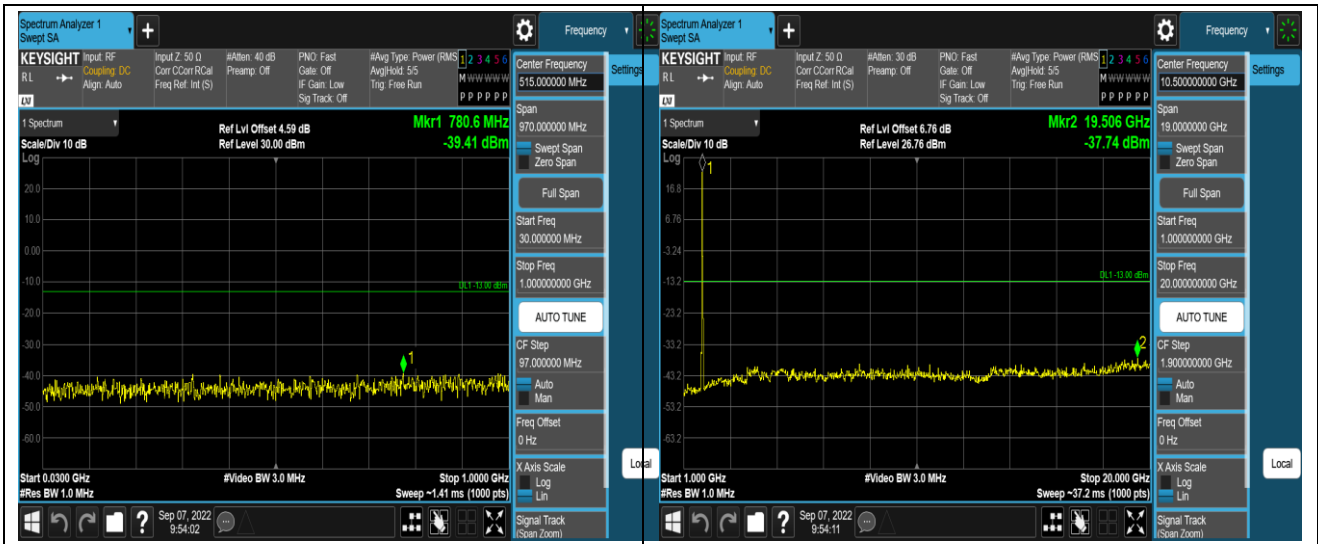


Band66-20MHz-QPSK-132572-1RB#0-Range1:30  
~1000MHz

Band66-20MHz-QPSK-132572-1RB#0-Range2:1000~  
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					
3.70	-30	50.91	0.027080	Within authorized band for Band 2	Pass
	-20	45.98	0.024457		
	-10	33.82	0.017989		
	0	13.43	0.007144		
	10	39.63	0.021080		
	20	9.74	0.005181		
	30	37.55	0.019973		
	40	52.80	0.028085		
	50	31.17	0.016580		
16QAM					
3.70	-30	50.91	-0.006559	Within authorized band for Band 2	Pass
	-20	45.98	-0.006819		
	-10	33.82	-0.006096		
	0	13.43	-0.006947		
	10	39.63	-0.008090		
	20	9.74	-0.002000		
	30	37.55	-0.006096		
	40	52.80	-0.005633		
	50	31.17	-0.002878		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-13.39	-0.007122	Within authorized band for Band 2	Pass
	3.70	44.88	0.023872		
	4.20	-15.76	-0.008383		
16QAM					
25	3.50	12.46	0.006628	Within authorized band for Band 2	Pass
	3.70	-34.25	-0.018218		
	4.20	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 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					
3.70	-30	-6.95	-0.008308	±2.5	Pass
	-20	-4.06	-0.004854		
	-10	-2.95	-0.003527		
	0	6.77	0.008093		
	10	5.51	0.006587		
	20	9.36	0.011189		
	30	10.96	0.013102		
	40	11.93	0.014262		
	50	12.30	0.014704		
16QAM					
3.70	-30	-6.95	0.022797	±2.5	Pass
	-20	-4.06	0.019438		
	-10	-2.95	0.020299		
	0	6.77	0.021291		
	10	5.51	0.021255		
	20	9.36	0.023921		
	30	10.96	0.021124		
	40	11.93	0.019665		
	50	12.30	0.020550		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-12.57	-0.015027	±2.5	Pass
	3.70	-5.15	-0.006157		
	4.20	-10.99	-0.013138		
16QAM					
25	3.50	19.53	0.023347	±2.5	Pass
	3.70	16.79	0.020072		
	4.20	18.94	0.022642		

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		
<b>QPSK</b>					
3.70	-30	-9.36	-0.013230	Within authorized band for Band 12	Pass
	-20	-4.39	-0.006205		
	-10	2.92	0.004127		
	0	3.30	0.004664		
	10	6.14	0.008678		
	20	7.22	0.010205		
	30	7.68	0.010855		
	40	9.47	0.013385		
	50	10.79	0.015251		
<b>16QAM</b>					
3.70	-30	-9.36	0.011406	Within authorized band for Band 12	Pass
	-20	-4.39	0.007336		
	-10	2.92	0.007760		
	0	3.30	0.005541		
	10	6.14	0.005258		
	20	7.22	0.002587		
	30	7.68	0.004495		
	40	9.47	0.002714		
	50	10.79	-0.003717		
<b>Voltage</b>					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-14.39	-0.020354	Within authorized band for Band 12	Pass
	3.70	-14.38	-0.020339		
	4.20	-5.98	-0.008458		
<b>16QAM</b>					
25	3.50	-14.46	-0.020452	Within authorized band for Band 12	Pass
	3.70	-12.59	-0.017801		
	4.20	-6.79	-0.009603		

*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					
3.70	-30	-9.08	-0.012789	Within authorized band for Band 17	Pass
	-20	-48.88	-0.068845		
	-10	-39.75	-0.055986		
	0	-29.44	-0.041465		
	10	-12.96	-0.018254		
	20	-41.56	-0.058535		
	30	-16.79	-0.023648		
	40	-41.77	-0.058831		
	50	-20.13	-0.028352		
16QAM					
3.70	-30	-9.08	-0.043239	Within authorized band for Band 17	Pass
	-20	-48.88	-0.057479		
	-10	-39.75	-0.046563		
	0	-29.44	-0.030451		
	10	-12.96	-0.055352		
	20	-41.56	-0.014592		
	30	-16.79	-0.012113		
	40	-41.77	-0.016296		
	50	-20.13	-0.073577		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-52.06	-0.073324	Within authorized band for Band 17	Pass
	3.70	-52.22	-0.073549		
	4.20	-36.55	-0.051479		
16QAM					
25	3.50	-52.49	-0.073930	Within authorized band for Band 17	Pass
	3.70	-51.39	-0.072380		
	4.20	-36.27	-0.051085		

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					
3.70	-30	20.70	0.011862	Within authorized band for Band 66	Pass
	-20	21.90	0.012550		
	-10	33.67	0.019295		
	0	37.06	0.021238		
	10	16.22	0.009295		
	20	23.45	0.013438		
	30	30.43	0.017438		
	40	37.28	0.021364		
	50	37.18	0.021307		
16QAM					
3.70	-30	20.70	-0.011032	Within authorized band for Band 66	Pass
	-20	21.90	-0.014831		
	-10	33.67	-0.015656		
	0	37.06	-0.018625		
	10	16.22	-0.020619		
	20	23.45	-0.022275		
	30	30.43	-0.021880		
	40	37.28	0.004705		
	50	37.18	0.003713		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	11.69	0.006699	Within authorized band for Band 66	Pass
	3.70	8.90	0.005100		
	4.20	17.45	0.010000		
16QAM					
25	3.50	11.56	0.006625	Within authorized band for Band 66	Pass
	3.70	10.9	0.006246		
	4.20	12.15	0.006963		

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
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

