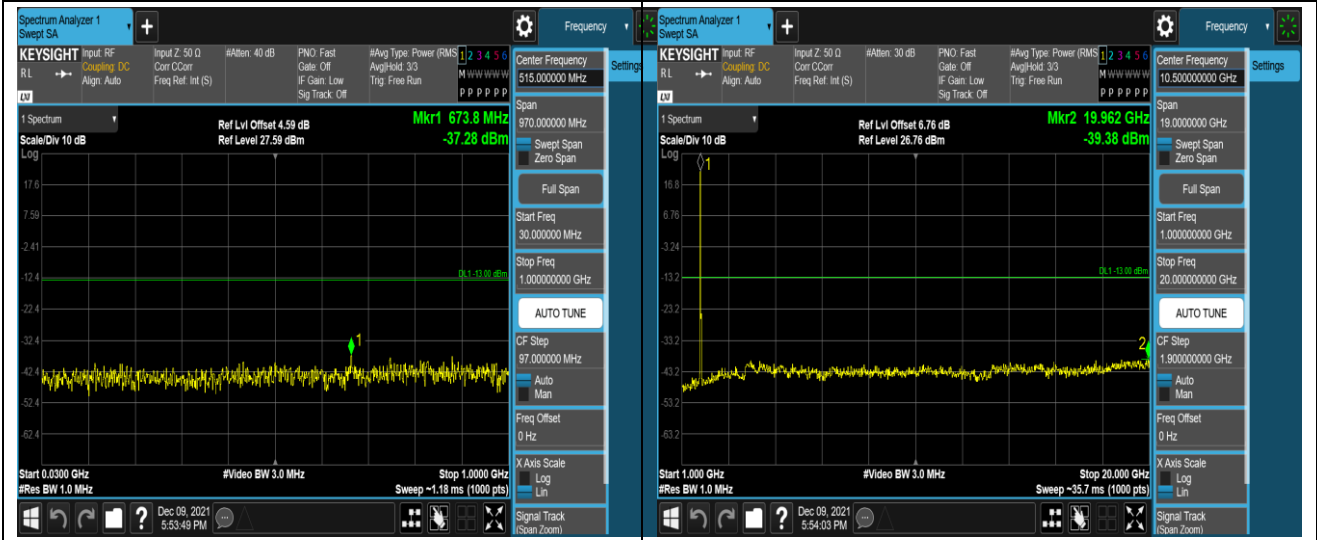


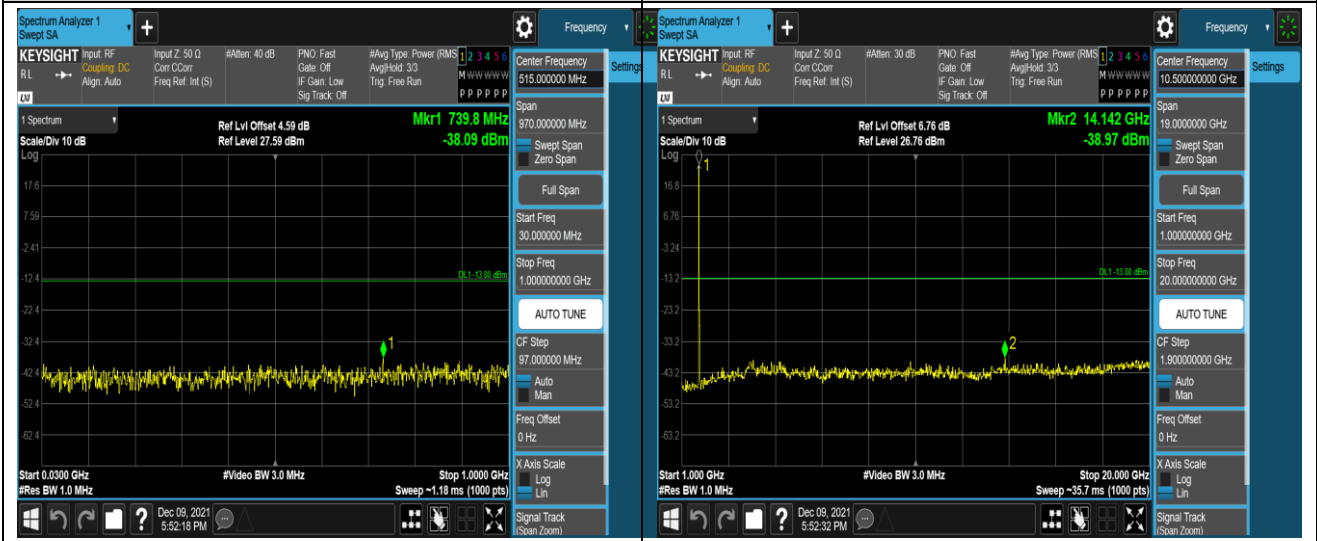
Band66-20MHz-QPSK-132322-1RB#0-Range1:30  
~1000MHz

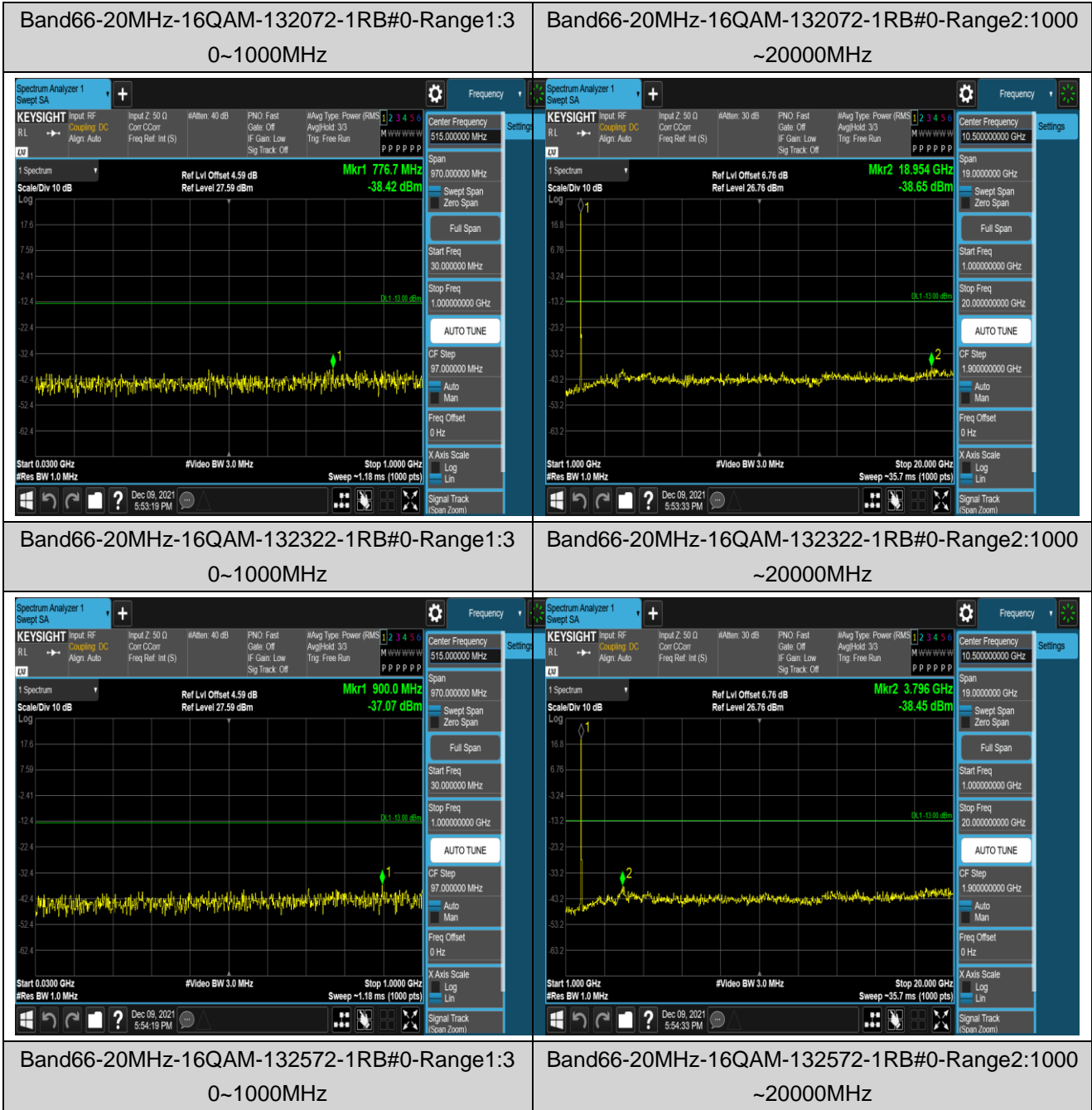
Band66-20MHz-QPSK-132322-1RB#0-Range2:1000~  
20000MHz



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					
3.85	-30	-7.61	-0.004048	Within authorized band for Band 2	Pass
	-20	10.11	0.005378		
	-10	-15.82	-0.008415		
	0	-15.76	-0.008383		
	10	-15.76	-0.008383		
	20	-15.39	-0.008186		
	30	16.58	0.008819		
	40	-21.11	-0.011229		
	50	-20.13	-0.010707		
16QAM					
3.85	-30	-18.83	-0.010016	Within authorized band for Band 2	Pass
	-20	-17.22	-0.00916		
	-10	-20.33	-0.010814		
	0	-19.14	-0.010181		
	10	-18.8	-0.01		
	20	-20.14	-0.010713		
	30	134.18	0.071372		
	40	-17.97	-0.009559		
	50	-15.58	-0.008287		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	5.32	0.00283	Within authorized band for Band 2	Pass
	3.85	-18.42	-0.009798		
	4.40	-9.83	-0.005229		
16QAM					
25	3.50	-18.27	-0.009718	Within authorized band for Band 2	Pass
	3.85	-20.76	-0.011043		
	4.40	-21.24	-0.011298		

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		
<b>QPSK</b>					
3.85	-30	-8.1	-0.004675	Within authorized band for Band 4	Pass
	-20	-23.4	-0.013506		
	-10	-16.68	-0.009628		
	0	-23.2	-0.013391		
	10	97.48	0.056266		
	20	-16.98	-0.009801		
	30	-18.63	-0.010753		
	40	56.25	0.032468		
	50	-22.34	-0.012895		
<b>16QAM</b>					
3.85	-30	-14.58	-0.008416	Within authorized band for Band 4	Pass
	-20	-9.64	-0.005564		
	-10	-7.65	-0.004416		
	0	2.95	0.001703		
	10	6.62	0.003821		
	20	-7.24	-0.004179		
	30	7.77	0.004485		
	40	-13.28	-0.007665		
	50	-6.42	-0.003706		
<b>Voltage</b>					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-20.86	-0.01204	Within authorized band for Band 4	Pass
	3.85	-16.92	-0.009766		
	4.40	-21.44	-0.012375		
<b>16QAM</b>					
25	3.50	-22.23	-0.012831	Within authorized band for Band 4	Pass
	3.85	-19.01	-0.010973		
	4.40	-22.24	-0.012837		
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	-5.76	-0.006886	±2.5	Pass
	-20	-11.09	-0.013258		
	-10	-4.03	-0.004818		
	0	-7.17	-0.008571		
	10	-5.76	-0.006886		
	20	-10.94	-0.013078		
	30	-6.44	-0.007699		
	40	-4.84	-0.005786		
	50	-6.08	-0.007268		
16QAM					
3.85	-30	-2.72	-0.003252	±2.5	Pass
	-20	-8.24	-0.009851		
	-10	-9.16	-0.01095		
	0	-4.31	-0.005152		
	10	-11.6	-0.013867		
	20	-6.48	-0.007747		
	30	-8.65	-0.010341		
	40	-4.21	-0.005033		
	50	-7.25	-0.008667		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-5.62	-0.006718	±2.5	Pass
	3.85	-10.03	-0.01199		
	4.40	-8.01	-0.009576		
16QAM					
25	3.50	-10.03	-0.01199	±2.5	Pass
	3.85	-5.12	-0.006121		
	4.40	-7.37	-0.008811		

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>					
3.85	-30	-5.79	-0.008184	Within authorized band for Band 12	Pass
	-20	-2.95	-0.00417		
	-10	-5.98	-0.008452		
	0	-9.46	-0.013371		
	10	-15.22	-0.021512		
	20	-7.87	-0.011124		
	30	-9.16	-0.012947		
	40	-9.96	-0.014078		
	50	-4.99	-0.007053		
<b>16QAM</b>					
3.85	-30	-4.11	-0.005809	Within authorized band for Band 12	Pass
	-20	-6.95	-0.009823		
	-10	-5.89	-0.008325		
	0	-6.15	-0.008693		
	10	-5.54	-0.00783		
	20	-13.46	-0.019025		
	30	-11.89	-0.016806		
	40	-13.79	-0.019491		
	50	4.15	0.005866		
<b>Voltage</b>					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-10.76	-0.015208	Within authorized band for Band 12	Pass
	3.85	-9.4	-0.013286		
	4.40	-11.07	-0.015647		
<b>16QAM</b>					
25	3.50	-6.91	-0.009767	Within authorized band for Band 12	Pass
	3.85	-8.27	-0.011689		
	4.40	-6.94	-0.009809		

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		
<b>QPSK</b>					
3.85	-30	-8.75	-0.012324	Within authorized band for Band 17	Pass
	-20	-12.97	-0.018268		
	-10	-11.66	-0.016423		
	0	-8.4	-0.011831		
	10	-8.78	-0.012366		
	20	-10.17	-0.014324		
	30	-2.85	-0.004014		
	40	-7.05	-0.00993		
	50	-9.4	-0.013239		
<b>16QAM</b>					
3.85	-30	-10.19	-0.014352	Within authorized band for Band 17	Pass
	-20	-5.16	-0.007268		
	-10	-5.06	-0.007127		
	0	-5.48	-0.007718		
	10	-4.99	-0.007028		
	20	-7.95	-0.011197		
	30	-5.81	-0.008183		
	40	-9.57	-0.013479		
	50	-5.05	-0.007113		
<b>Voltage</b>					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-7.71	-0.010859	Within authorized band for Band 17	Pass
	3.85	-8.41	-0.011845		
	4.40	-6.48	-0.009127		
<b>16QAM</b>					
25	3.50	-10.64	-0.014986	Within authorized band for Band 17	Pass
	3.85	-11.22	-0.015803		
	4.40	-10.1	-0.014225		

*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		
<b>QPSK</b>					
3.85	-30	-12.03	-0.006894	Within authorized band for Band 66	Pass
	-20	-4.03	-0.002309		
	-10	3.19	0.001828		
	0	-13.48	-0.007725		
	10	-3.95	-0.002264		
	20	-7.42	-0.004252		
	30	-7.21	-0.004132		
	40	-3.85	-0.002206		
	50	-8.1	-0.004642		
<b>16QAM</b>					
3.85	-30	-9.9	-0.005673	Within authorized band for Band 66	Pass
	-20	5.12	0.002934		
	-10	-9.21	-0.005278		
	0	-12.59	-0.007215		
	10	-12.04	-0.0069		
	20	-13.35	-0.00765		
	30	-10.7	-0.006132		
	40	-12.76	-0.007312		
	50	2.32	0.00133		
<b>Voltage</b>					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
<b>QPSK</b>					
25	3.50	-10	-0.005731	Within authorized band for Band 66	Pass
	3.85	-10.97	-0.006287		
	4.40	-12.23	-0.007009		
<b>16QAM</b>					
25	3.50	1.62	0.000928	Within authorized band for Band 66	Pass
	3.85	-4.19	-0.002401		
	4.40	5.02	0.002877		

Remark: All bandwidth and all modulation had been tested, but only the worst case data displayed in this report.

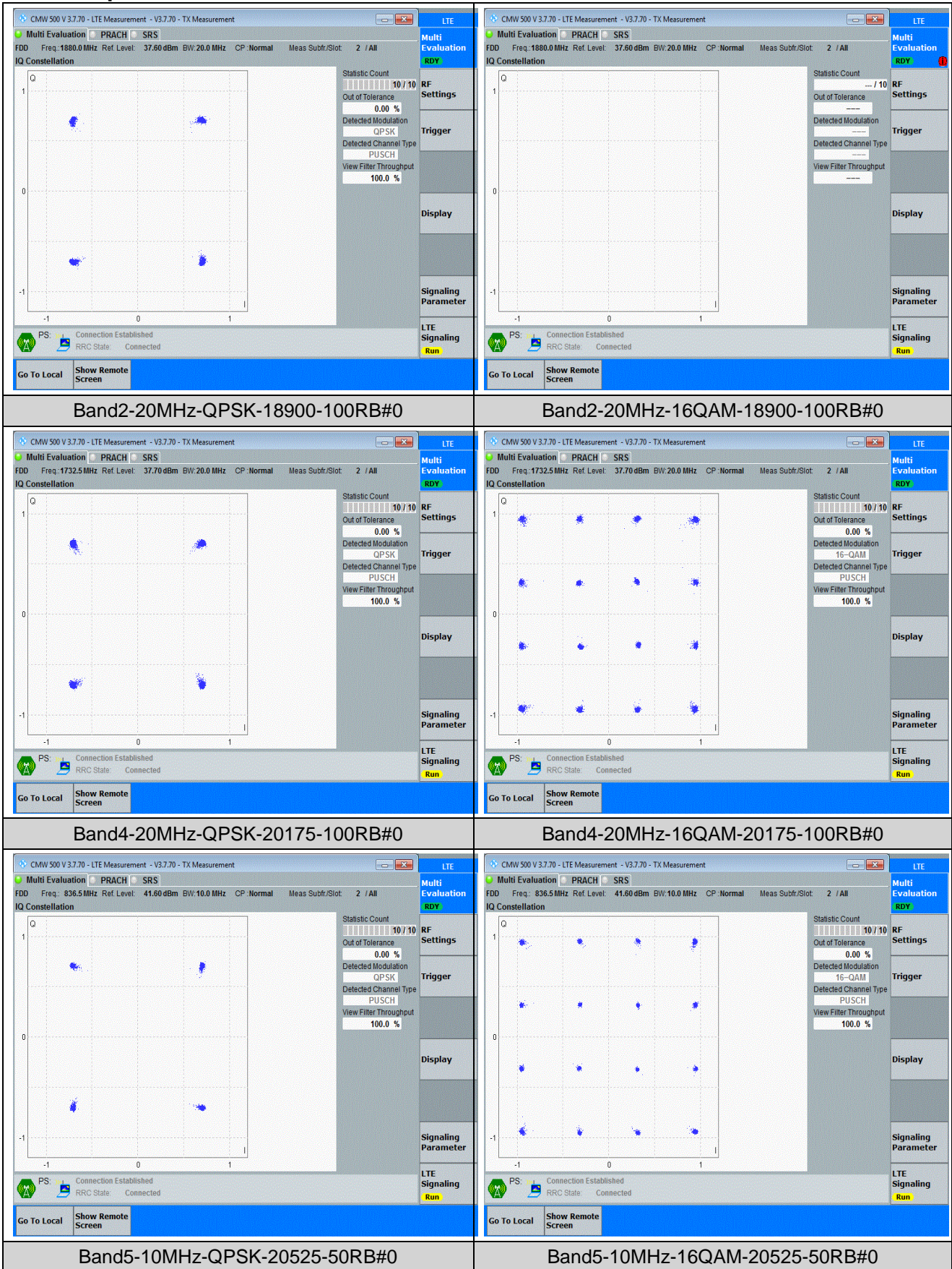
## Appendix G: Modulation Characteristics

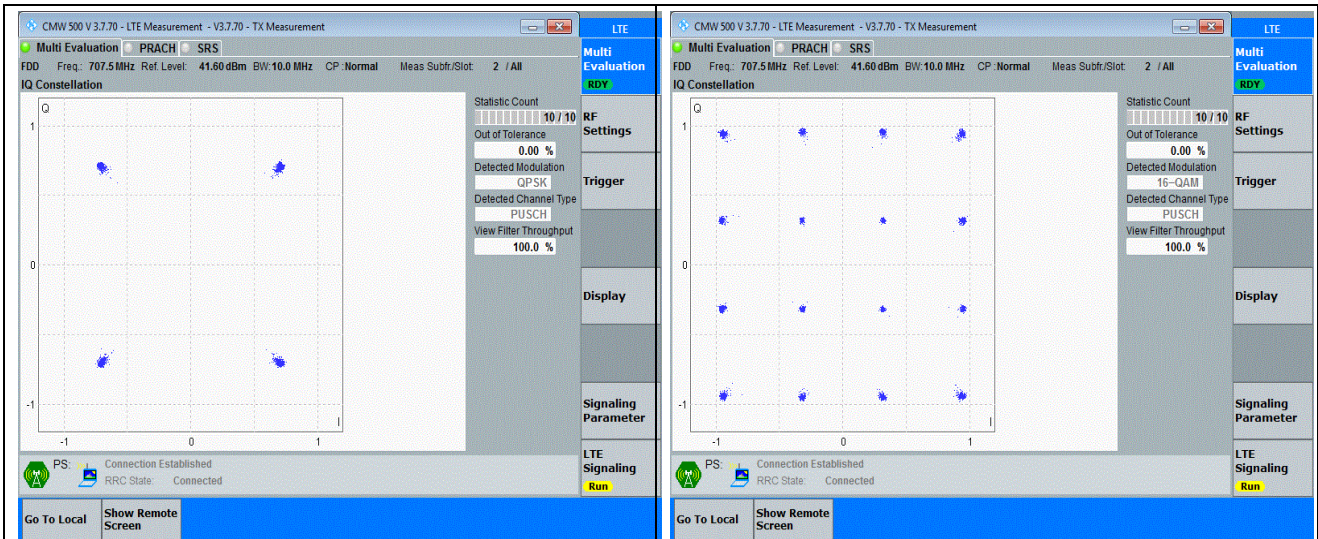
### Test Result

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
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.*

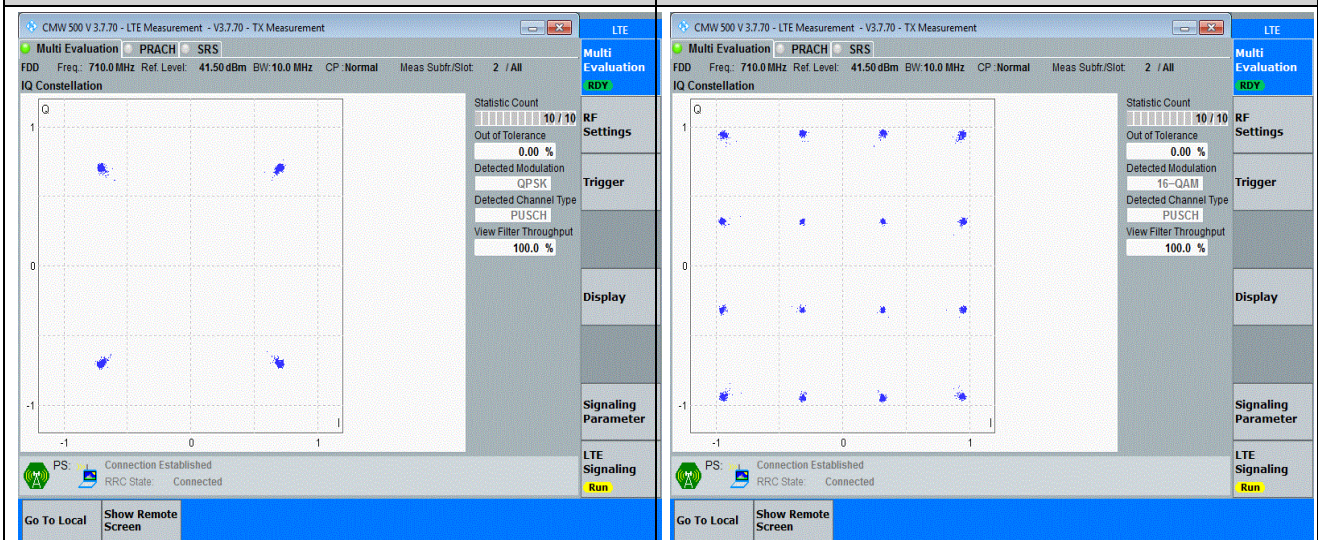
### Test Graphs





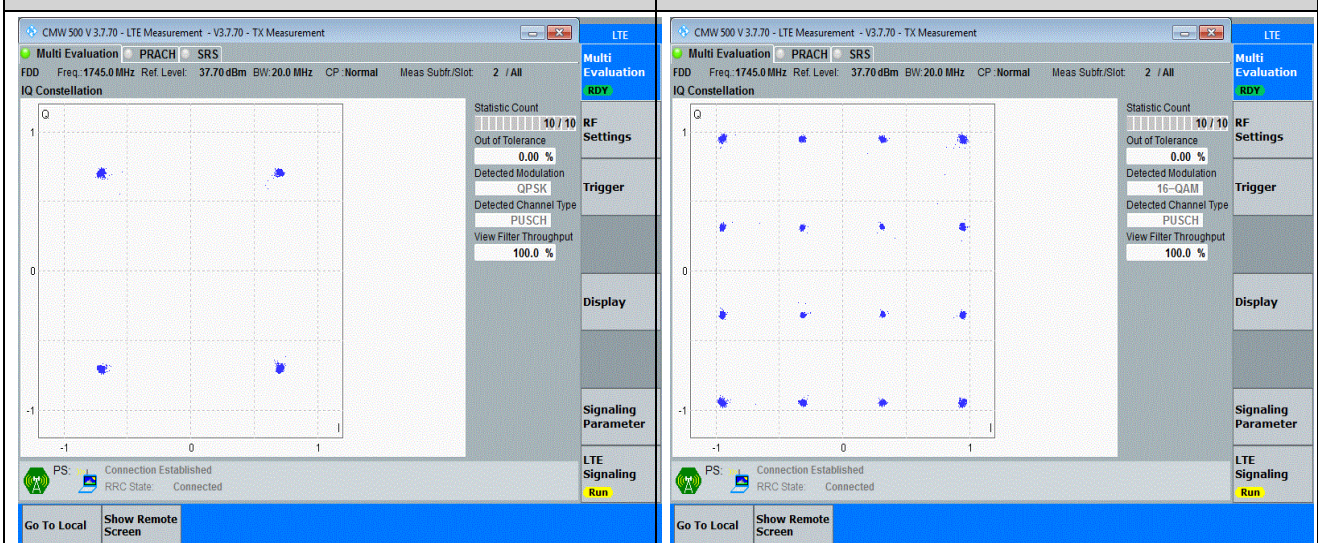
Band12-10MHz-QPSK-23095-50RB#0

Band12-10MHz-16QAM-23095-50RB#0



Band17-10MHz-QPSK-23790-50RB#0

Band17-10MHz-16QAM-23790-50RB#0



Band66-20MHz-QPSK-132322-100RB#0

Band66-20MHz-16QAM-132322-100RB#0