

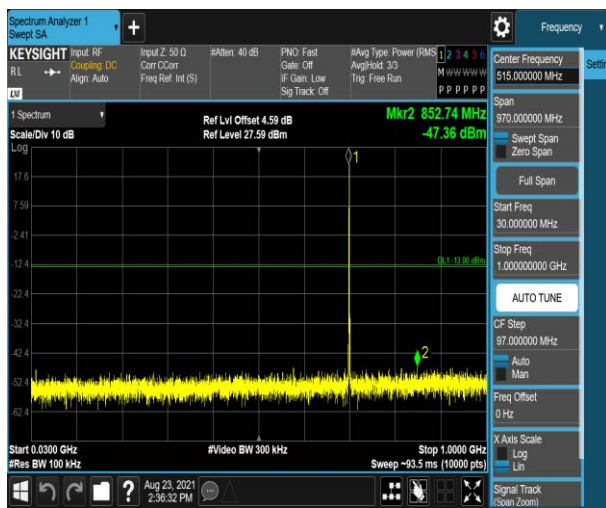
Band12-1.4MHz-16QAM-23017:30~1000MHz



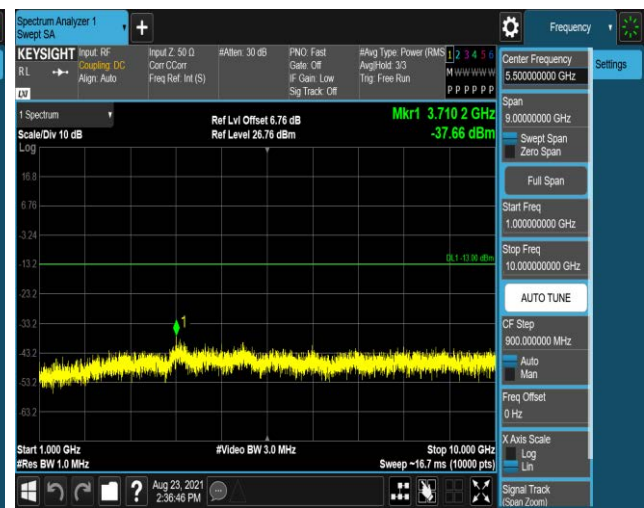
Band12-1.4MHz-16QAM-23017:1000~10000MHz



Band12-1.4MHz-16QAM-23095:30~1000MHz



Band12-1.4MHz-16QAM-23095:1000~10000MHz

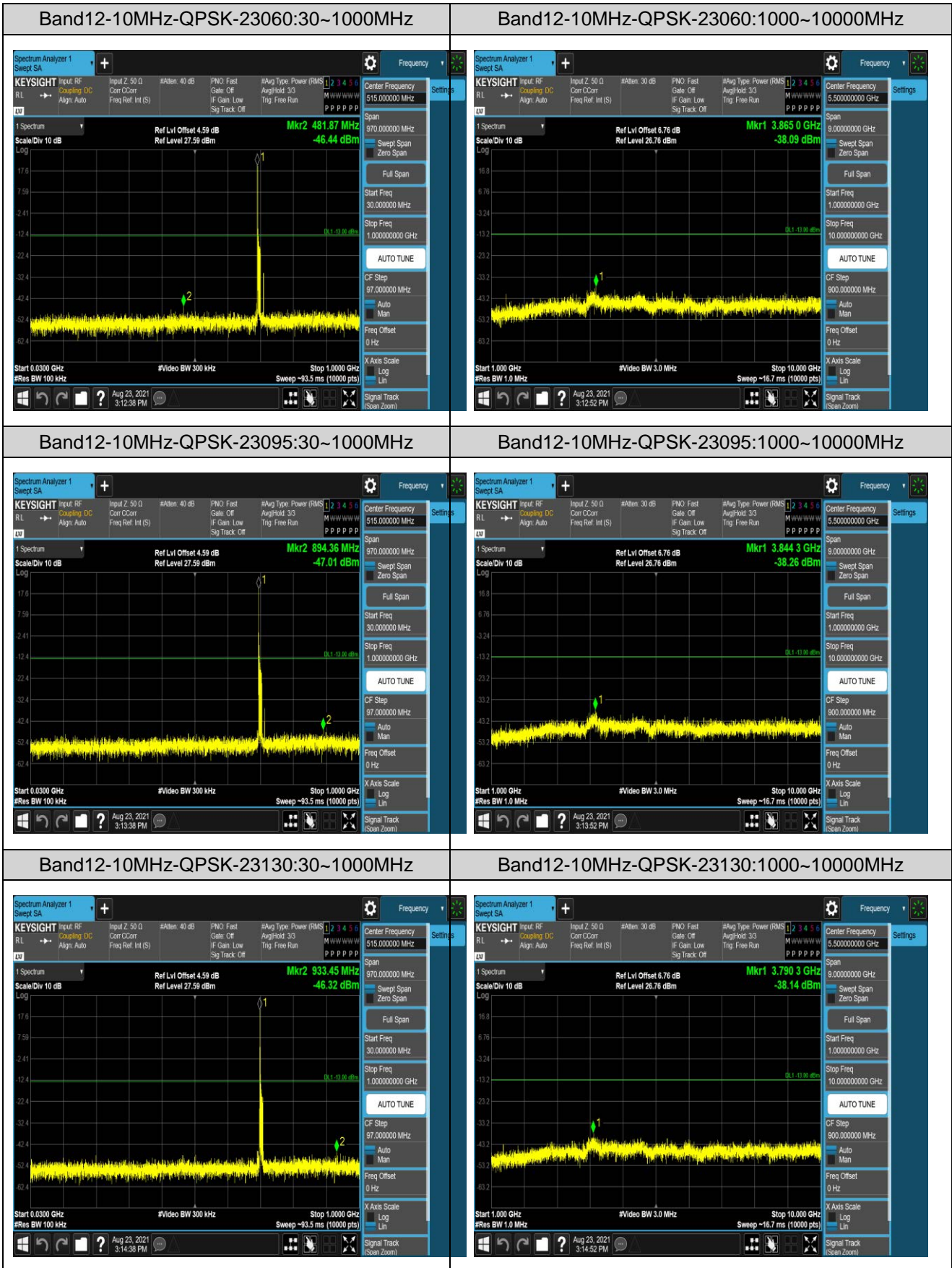


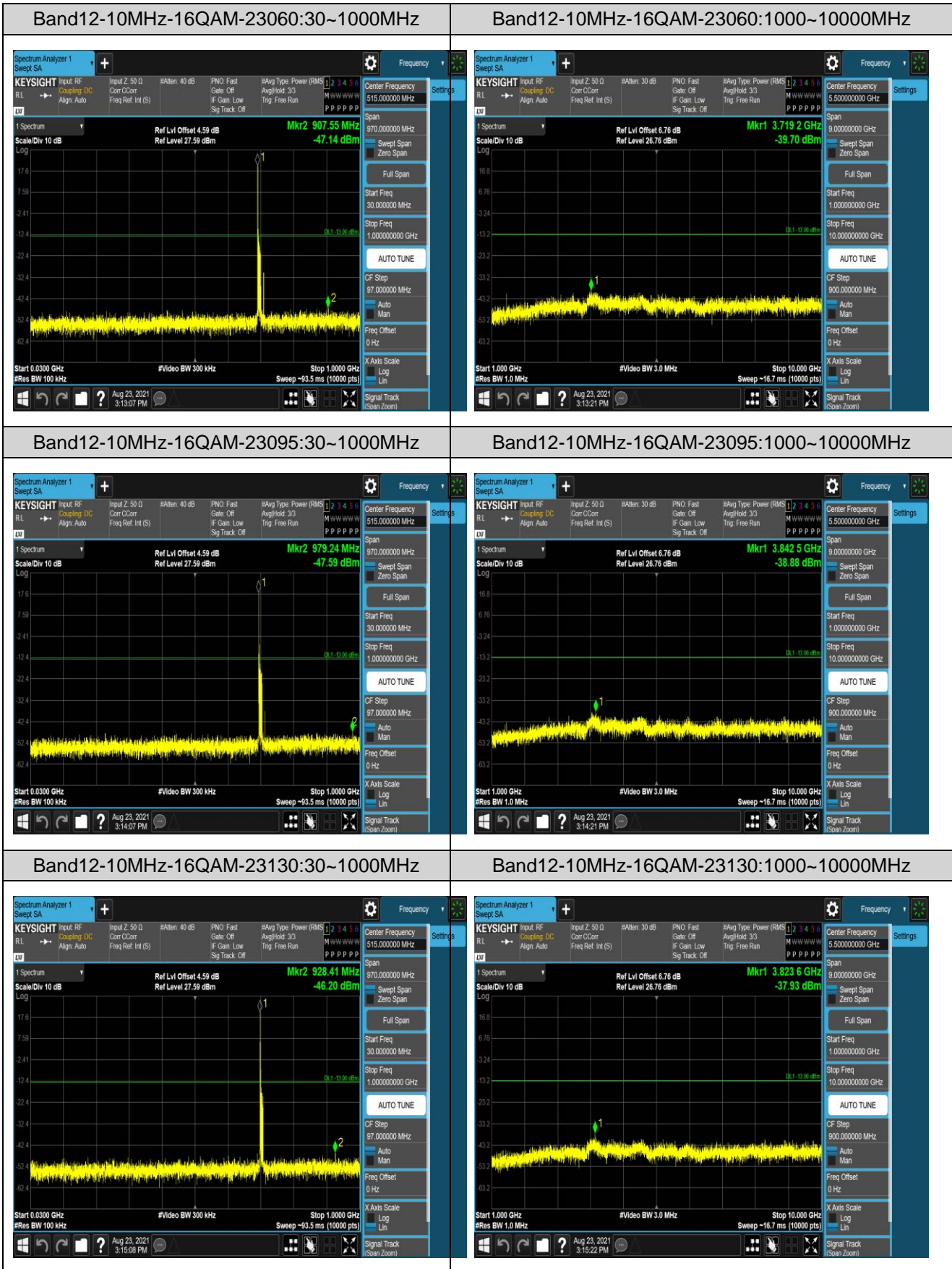
Band12-1.4MHz-16QAM-23173:30~1000MHz

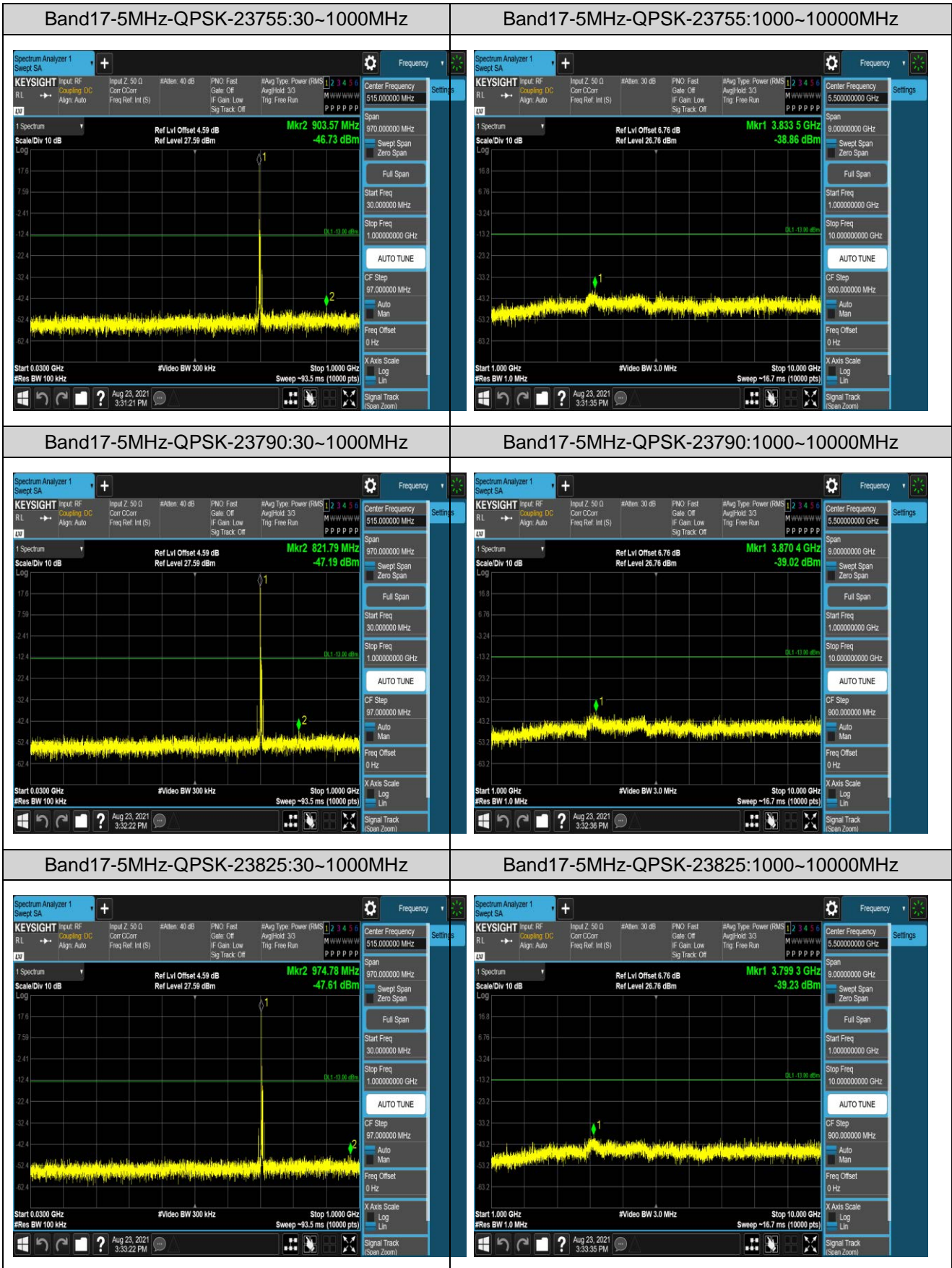


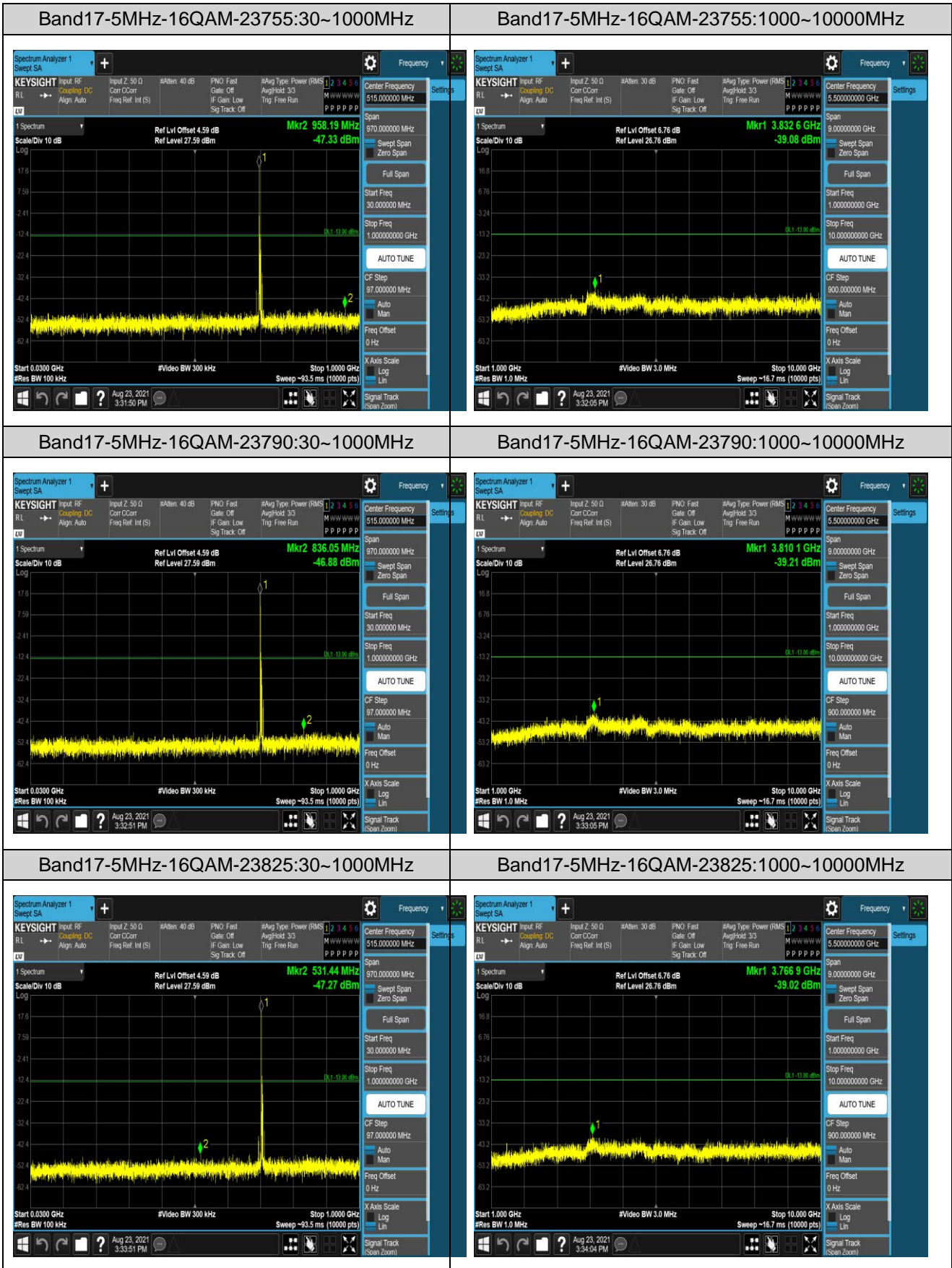
Band12-1.4MHz-16QAM-23173:1000~10000MHz

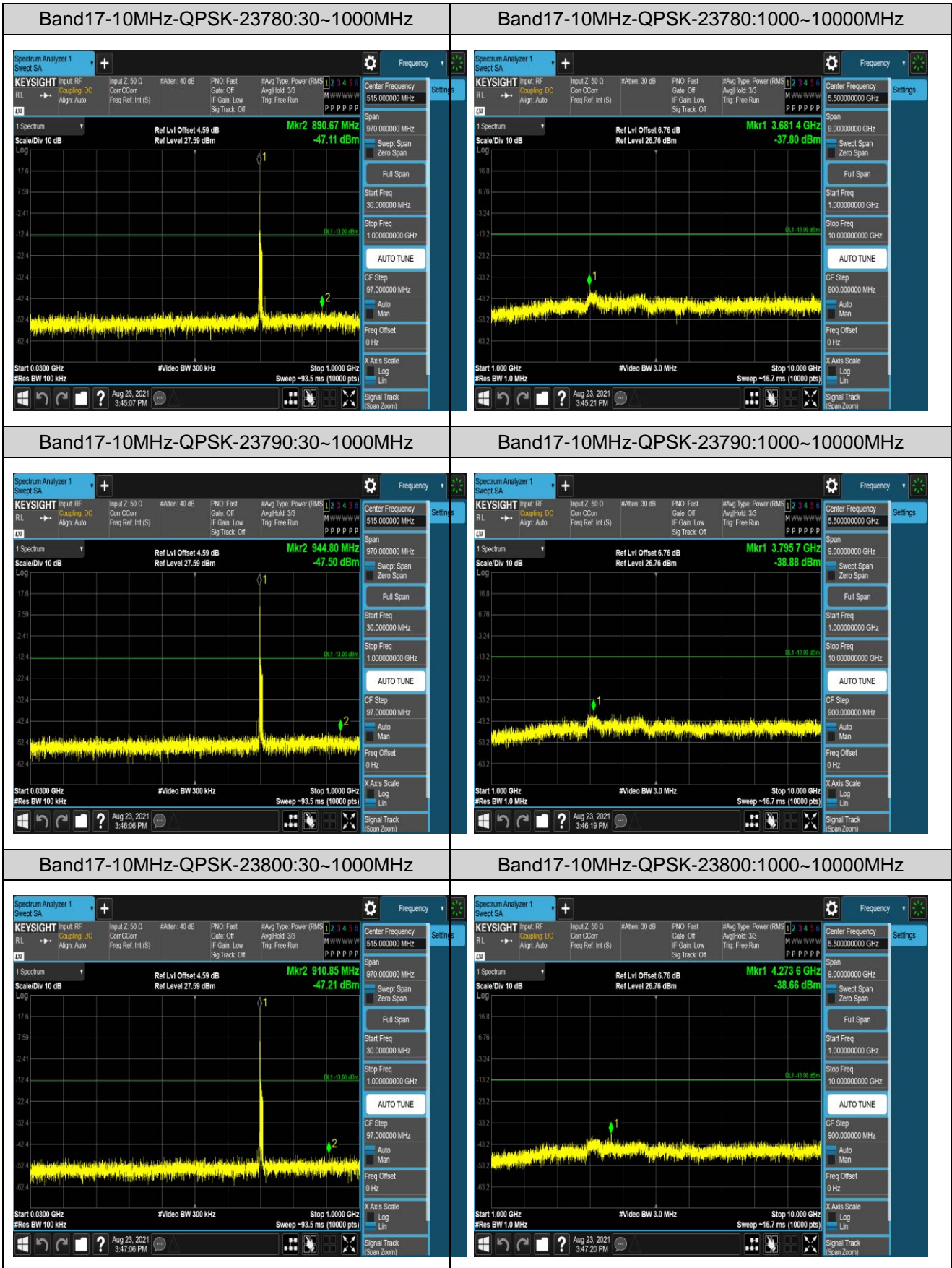


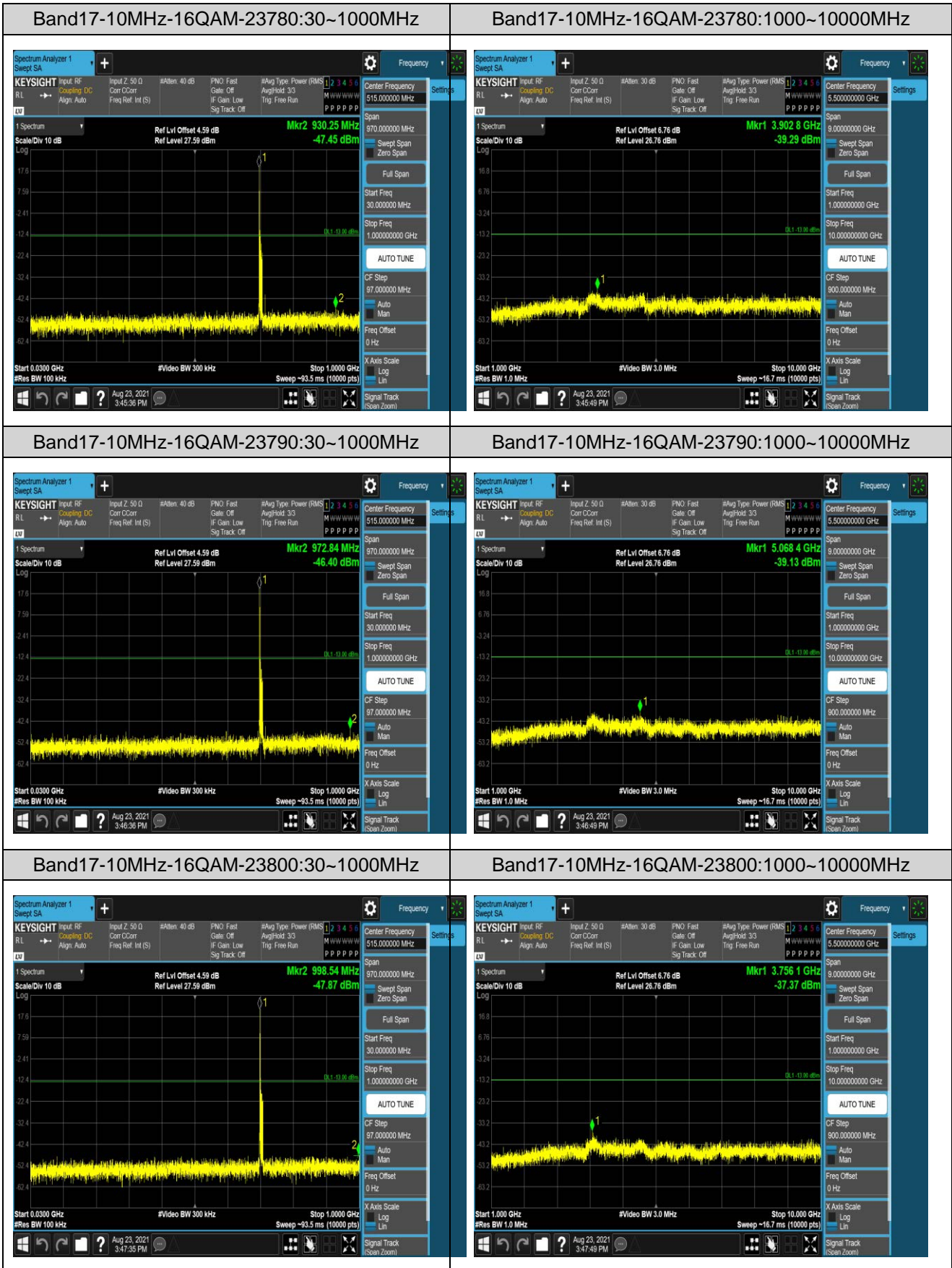












Band66-1.4MHz-QPSK-131979:30~1000MHz



Band66-1.4MHz-QPSK-131979:1000~20000MHz



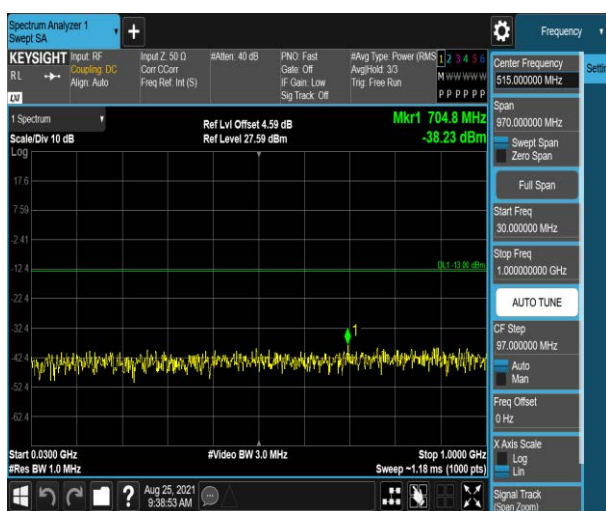
Band66-1.4MHz-QPSK-132322:30~1000MHz



Band66-1.4MHz-QPSK-132322:1000~20000MHz

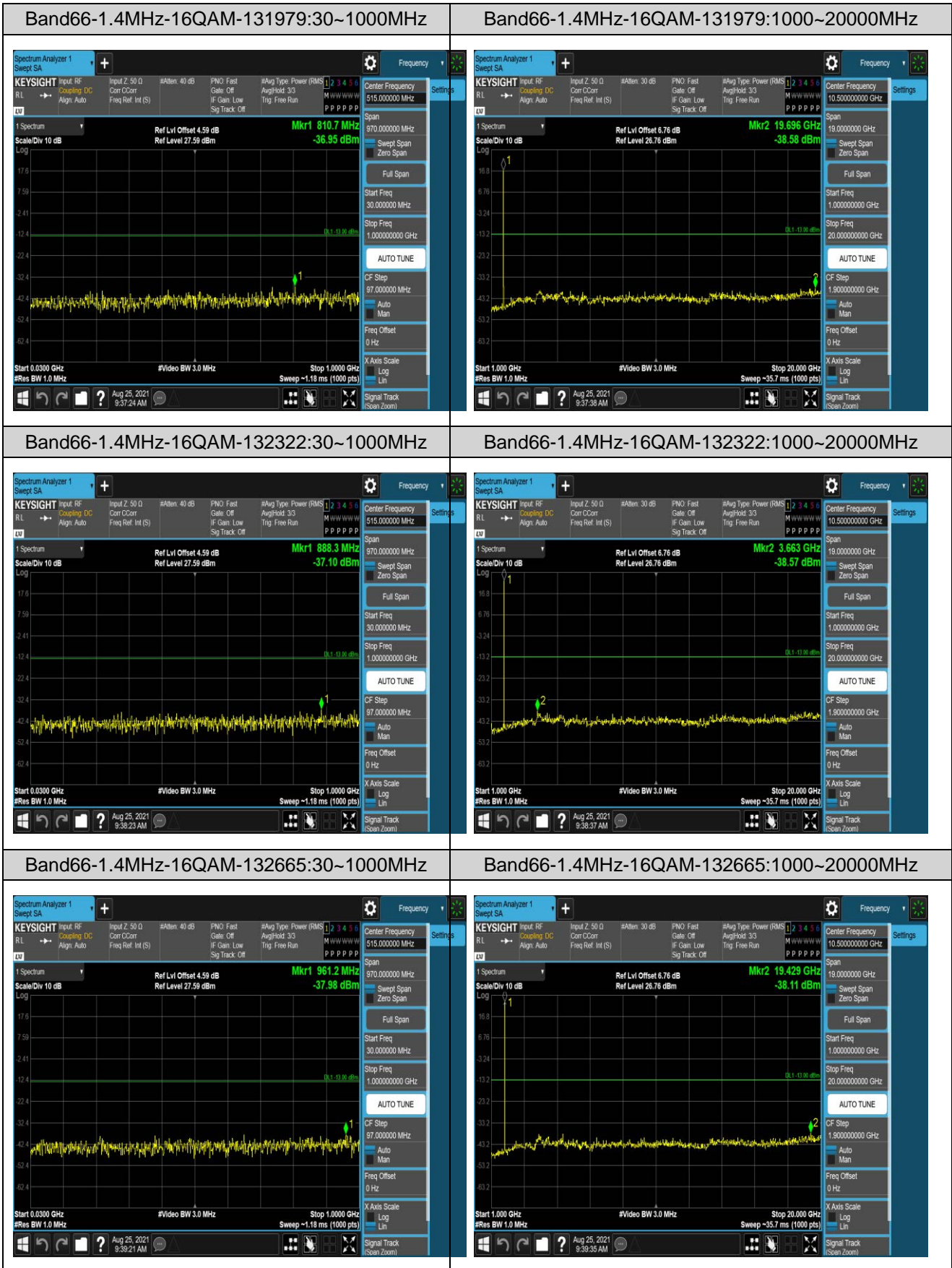


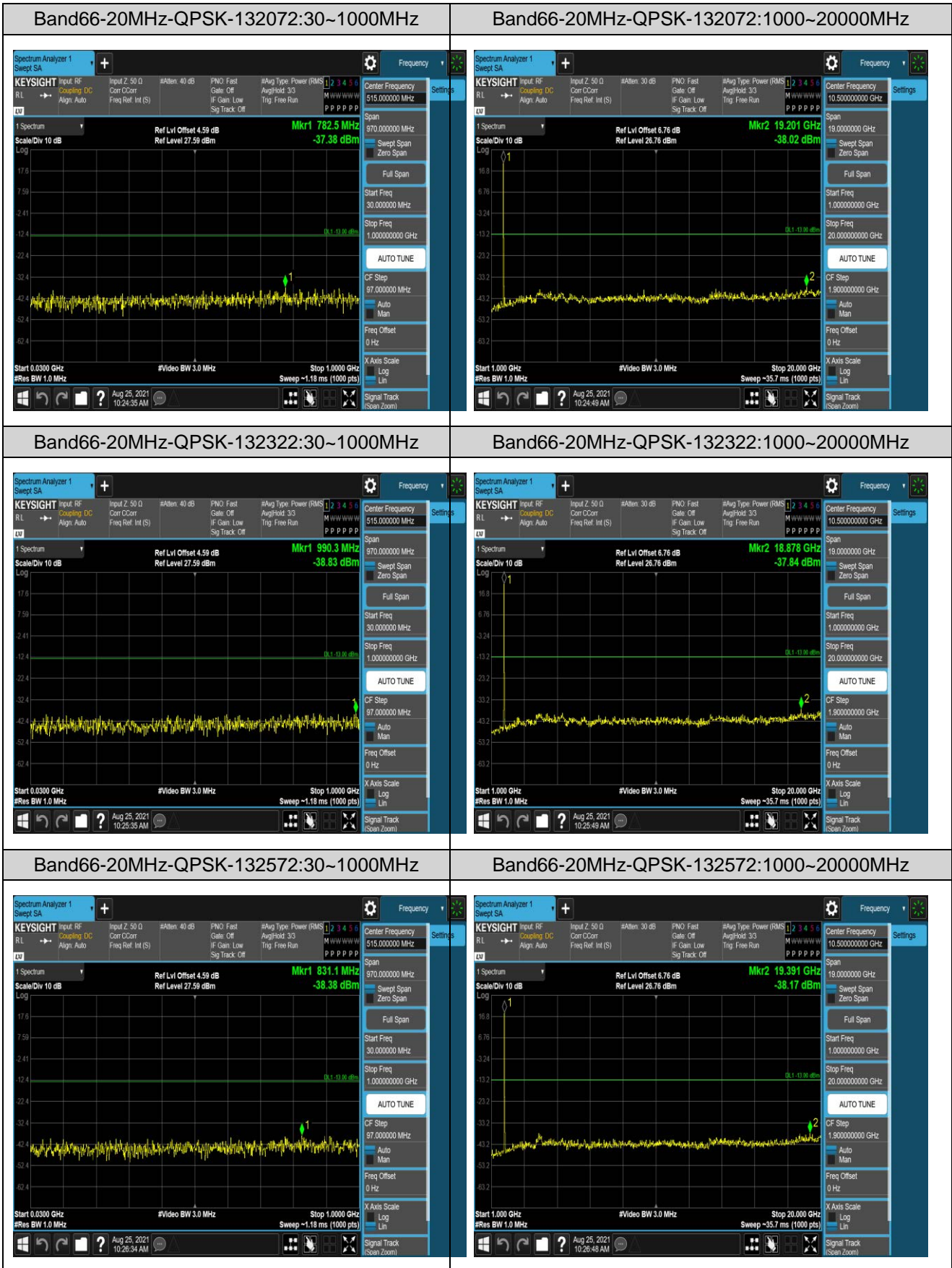
Band66-1.4MHz-QPSK-132665:30~1000MHz



Band66-1.4MHz-QPSK-132665:1000~20000MHz







Band66-20MHz-16QAM-132072:30~1000MHz



Band66-20MHz-16QAM-132072:1000~20000MHz



Band66-20MHz-16QAM-132322:30~1000MHz



Band66-20MHz-16QAM-132322:1000~20000MHz



Band66-20MHz-16QAM-132572:30~1000MHz



Band66-20MHz-16QAM-132572:1000~20000MHz



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	-6.57	-0.003495	Within authorized band for Band 2	Pass
	-20	-8.81	-0.004686		
	-10	-10.06	-0.005351		
	0	-13.86	-0.007372		
	10	-20.77	-0.011048		
	20	-21.00	-0.011170		
	30	-19.61	-0.010431		
	40	-23.09	-0.012282		
	50	-22.60	-0.012021		
16QAM					
3.70	-30	13.59	0.007229	Within authorized band for Band 2	Pass
	-20	22.63	0.012037		
	-10	38.11	0.020271		
	0	6.78	0.003606		
	10	15.72	0.008362		
	20	20.61	0.010963		
	30	29.83	0.015867		
	40	32.01	0.017027		
	50	39.22	0.020862		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-9.26	-0.004926	Within authorized band for Band 2	Pass
	3.70	-17.51	-0.009314		
	4.20	4.18	0.002223		
16QAM					
25	3.50	-19.83	-0.010548	Within authorized band for Band 2	Pass
	3.70	-24.72	-0.013149		
	4.20	-8.27	-0.004399		

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		
QPSK					
3.70	-30	-14.78	-0.008531	Within authorized band for Band 4	Pass
	-20	-32.67	-0.018857		
	-10	-24.72	-0.014268		
	0	-10.59	-0.006113		
	10	-32.76	-0.018909		
	20	-10.14	-0.005853		
	30	-29.85	-0.017229		
	40	-27.15	-0.015671		
	50	-46.13	-0.026626		
16QAM					
3.70	-30	-12.73	-0.007348	Within authorized band for Band 4	Pass
	-20	-4.98	-0.002874		
	-10	8.15	0.004704		
	0	23.83	0.013755		
	10	-8.43	-0.004866		
	20	11.42	0.006592		
	30	18.48	0.010667		
	40	-5.18	-0.002990		
	50	9.54	0.005506		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	30.00	0.017316	Within authorized band for Band 4	Pass
	3.70	10.60	0.006118		
	4.20	15.45	0.008918		
16QAM					
25	3.50	-14.73	-0.008502	Within authorized band for Band 4	Pass
	3.70	-44.75	-0.025830		
	4.20	-17.35	-0.010014		

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	8.67	0.010365	±2.5	Pass
	-20	11.24	0.013437		
	-10	10.27	0.012277		
	0	8.43	0.010078		
	10	-3.76	-0.004495		
	20	2.98	0.003562		
	30	-1.75	-0.002092		
	40	-6.71	-0.008022		
	50	-14.91	-0.017824		
16QAM					
3.70	-30	-15.44	-0.018458	±2.5	Pass
	-20	-13.23	-0.015816		
	-10	-9.48	-0.011333		
	0	-10.03	-0.011990		
	10	-4.08	-0.004877		
	20	4.18	0.004997		
	30	19.37	0.023156		
	40	24.66	0.029480		
	50	31.79	0.038004		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	12.03	0.014381	±2.5	Pass
	3.70	3.65	0.004363		
	4.20	21.29	0.025451		
16QAM					
25	3.50	-22.79	-0.027244	±2.5	Pass
	3.70	-19.74	-0.023598		
	4.20	-20.81	-0.024877		

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					
3.70	-30	14.83	0.020961	Within authorized band for Band 12	Pass
	-20	12.62	0.017837		
	-10	24.52	0.034657		
	0	20.94	0.029597		
	10	30.63	0.043293		
	20	24.42	0.034516		
	30	28.95	0.040919		
	40	22.95	0.032438		
	50	14.83	0.020961		
16QAM					
3.70	-30	43.60	0.061625	Within authorized band for Band 12	Pass
	-20	7.55	0.010671		
	-10	14.79	0.020905		
	0	27.79	0.039279		
	10	36.88	0.052127		
	20	44.82	0.063350		
	30	6.64	0.009385		
	40	10.01	0.014148		
	50	23.76	0.033583		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	6.54	0.009244	Within authorized band for Band 12	Pass
	3.70	-1.75	-0.002473		
	4.20	13.36	0.018883		
16QAM					
25	3.50	29.23	0.041314	Within authorized band for Band 12	Pass
	3.70	30.11	0.042558		
	4.20	37.47	0.052961		
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	10.00	0.014085	Within authorized band for Band 17	Pass
	-20	26.31	0.037056		
	-10	21.47	0.030239		
	0	25.99	0.036606		
	10	24.76	0.034873		
	20	29.34	0.041324		
	30	24.33	0.034268		
	40	24.63	0.034690		
	50	28.60	0.040282		
16QAM					
3.70	-30	10.61	0.014944	Within authorized band for Band 17	Pass
	-20	3.25	0.004577		
	-10	10.90	0.015352		
	0	10.83	0.015254		
	10	14.51	0.020437		
	20	8.45	0.011901		
	30	9.73	0.013704		
	40	8.90	0.012535		
	50	6.02	0.008479		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	2.69	0.003789	Within authorized band for Band 17	Pass
	3.70	2.43	0.003423		
	4.20	12.76	0.017972		
16QAM					
25	3.50	17.91	0.025225	Within authorized band for Band 17	Pass
	3.70	19.43	0.027366		
	4.20	11.64	0.016394		
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	46.35	0.026562	Within authorized band for Band 66	Pass
	-20	31.36	0.017971		
	-10	47.85	0.027421		
	0	24.19	0.013862		
	10	4.51	0.002585		
	20	15.13	0.008670		
	30	9.91	0.005679		
	40	-5.38	-0.003083		
	50	14.68	0.008413		
16QAM					
3.70	-30	9.56	0.005479	Within authorized band for Band 66	Pass
	-20	4.39	0.002516		
	-10	10.30	0.005903		
	0	36.23	0.020762		
	10	38.35	0.021977		
	20	10.97	0.006287		
	30	11.99	0.006871		
	40	34.46	0.019748		
	50	8.94	0.005123		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	19.17	0.010986	Within authorized band for Band 66	Pass
	3.70	-19.48	-0.011163		
	4.20	35.68	0.020447		
16QAM					
25	3.50	-14.33	-0.008212	Within authorized band for Band 66	Pass
	3.70	28.02	0.016057		
	4.20	26.65	0.015272		
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

