

Band4-1.4MHz-QPSK-19957-1RB#0-Range1:30~1000MHz

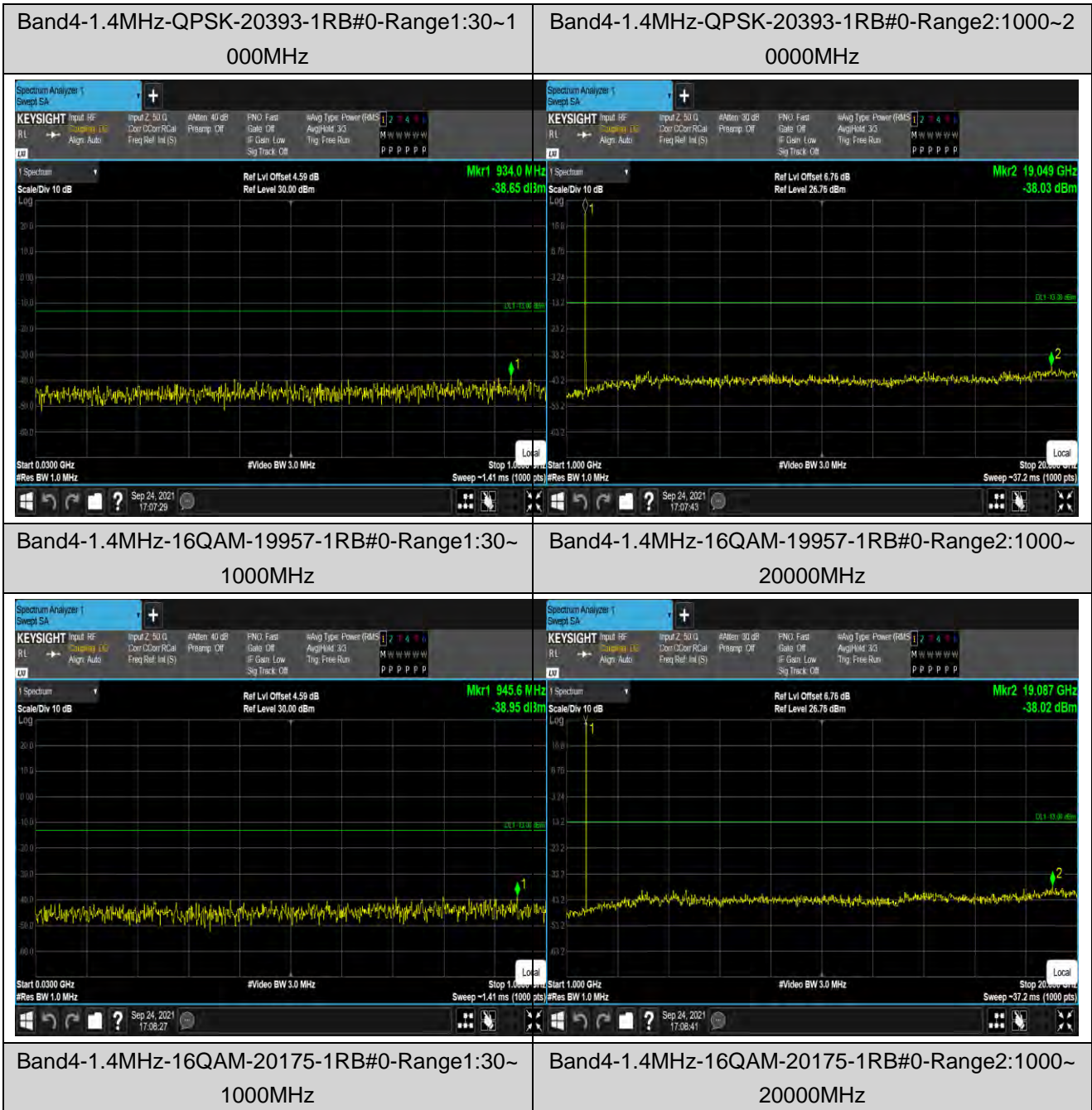
Band4-1.4MHz-QPSK-19957-1RB#0-Range2:1000~2000MHz

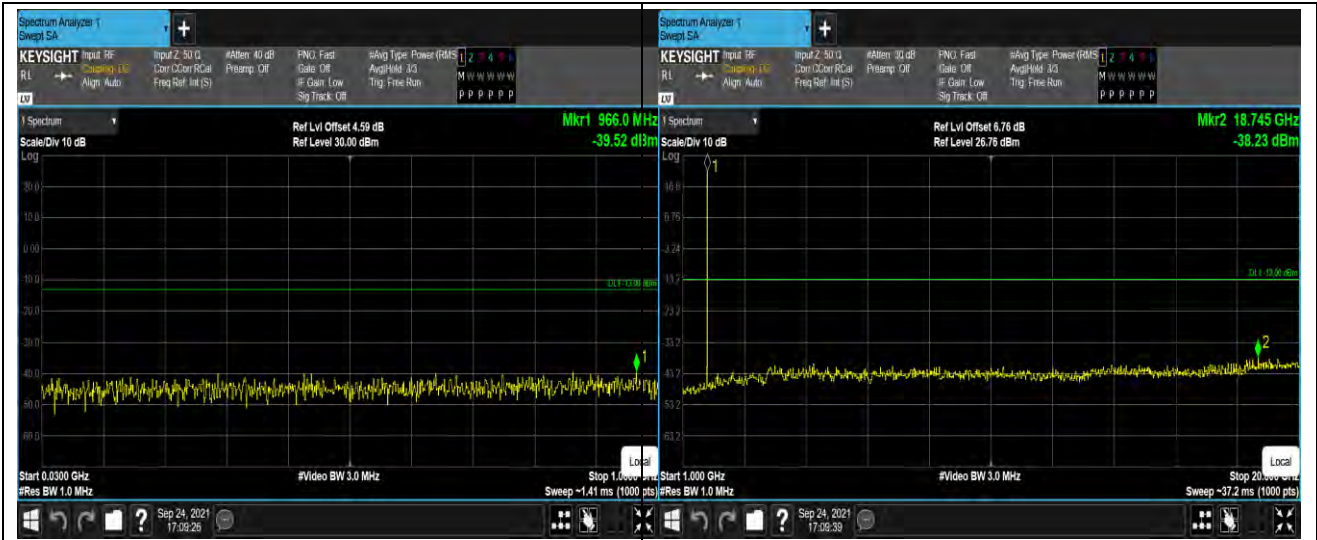


Band4-1.4MHz-QPSK-20175-1RB#0-Range1:30~1000MHz

Band4-1.4MHz-QPSK-20175-1RB#0-Range2:1000~2000MHz

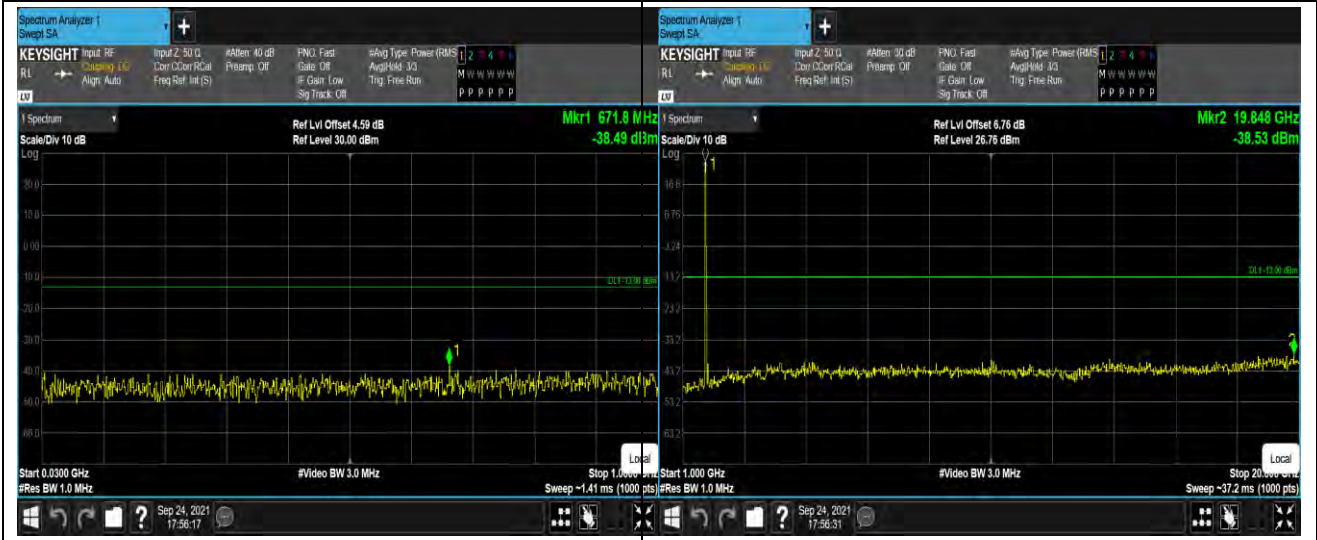






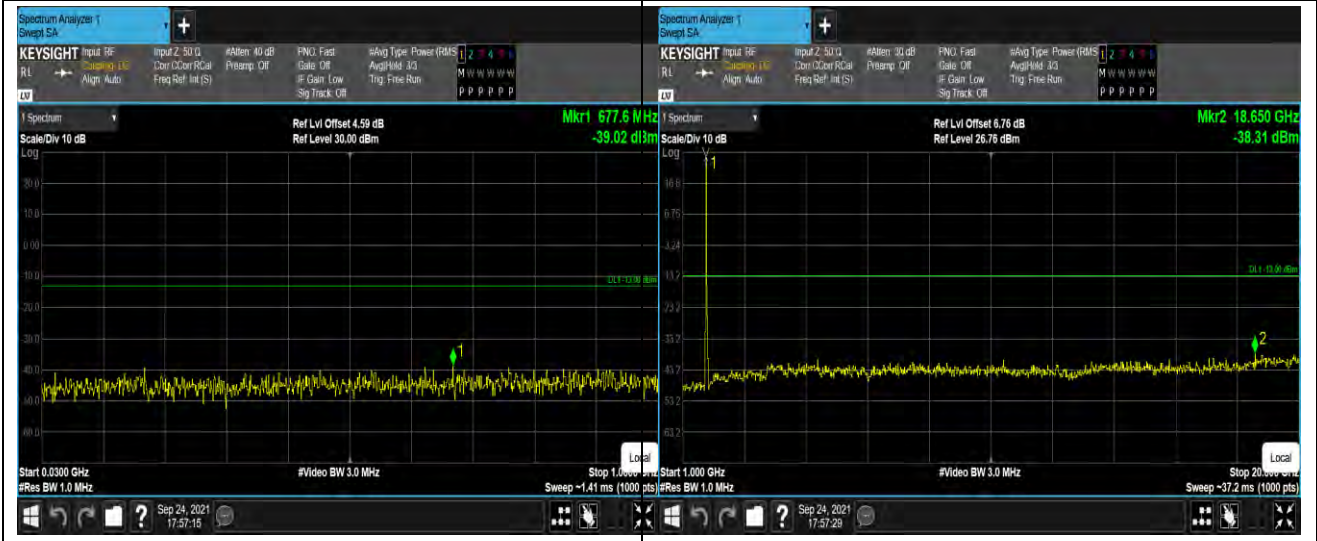
Band4-1.4MHz-16QAM-20393-1RB#0-Range1:30~1000MHz

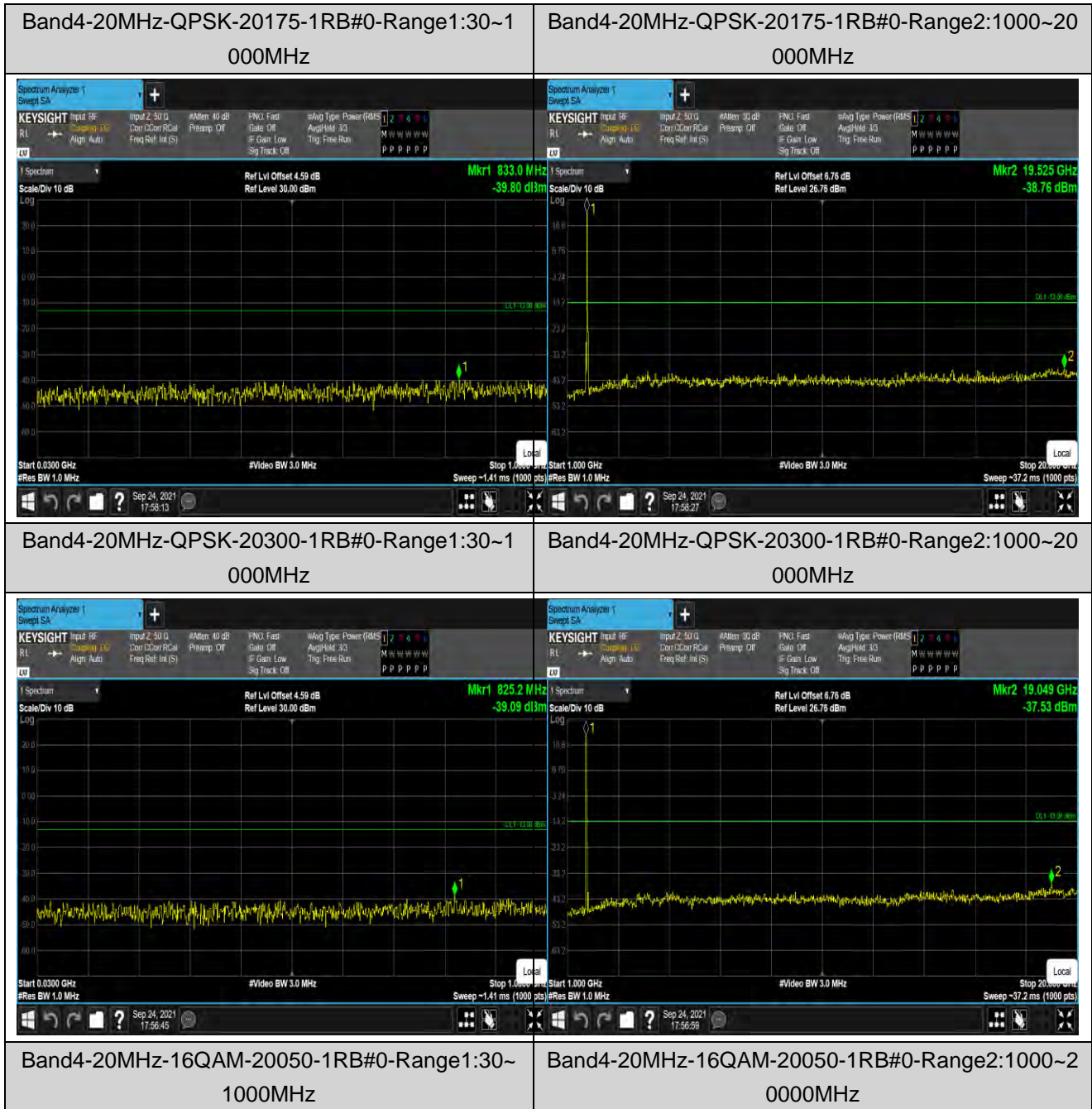
Band4-1.4MHz-16QAM-20393-1RB#0-Range2:1000~20000MHz

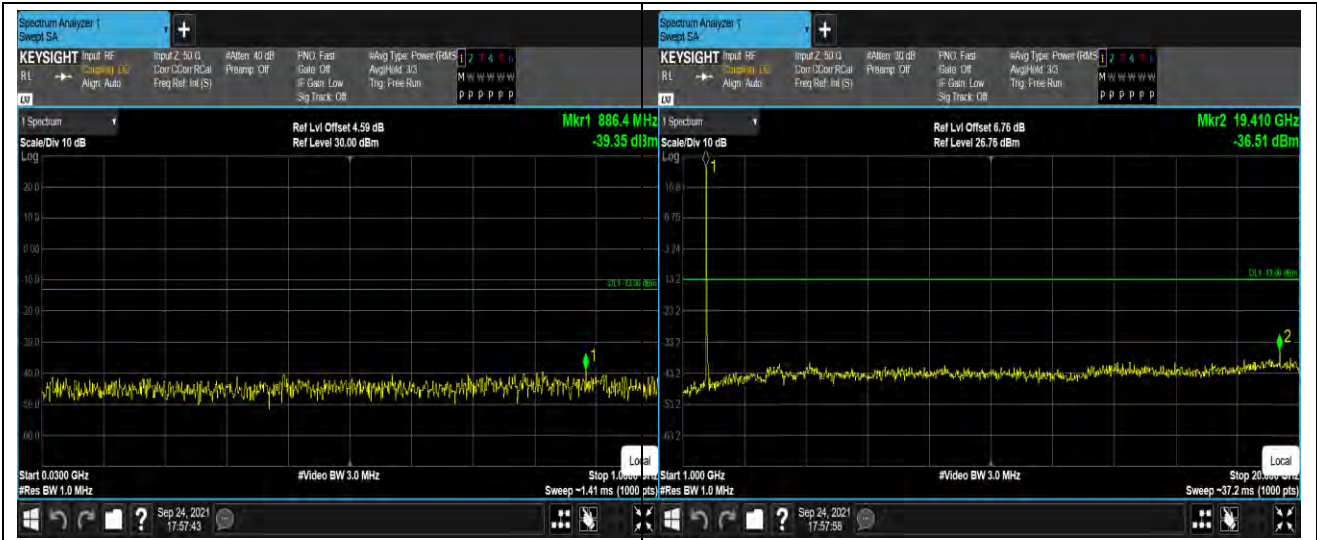


Band4-20MHz-QPSK-20050-1RB#0-Range1:30~1000MHz

Band4-20MHz-QPSK-20050-1RB#0-Range2:1000~20000MHz

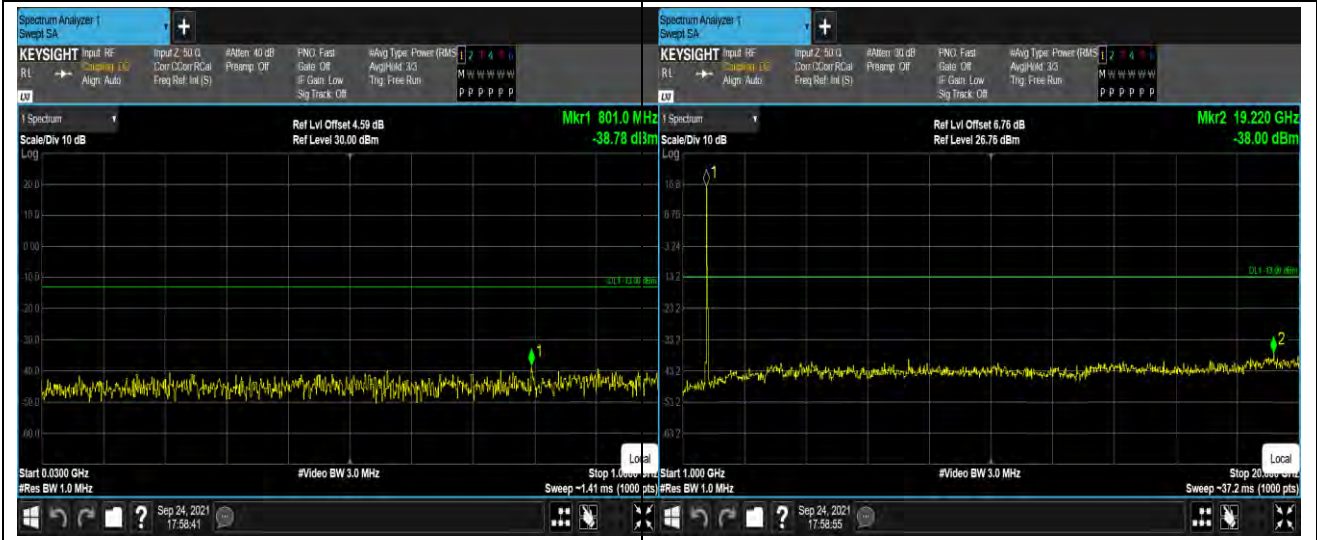






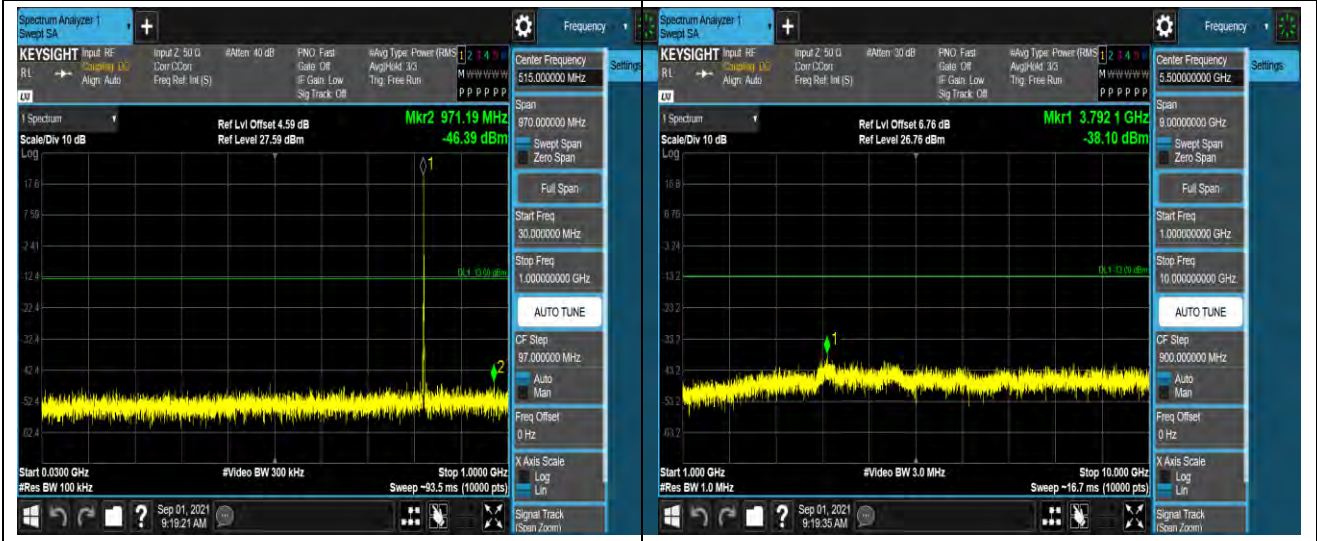
Band4-20MHz-16QAM-20175-1RB#0-Range1:30~1000MHz

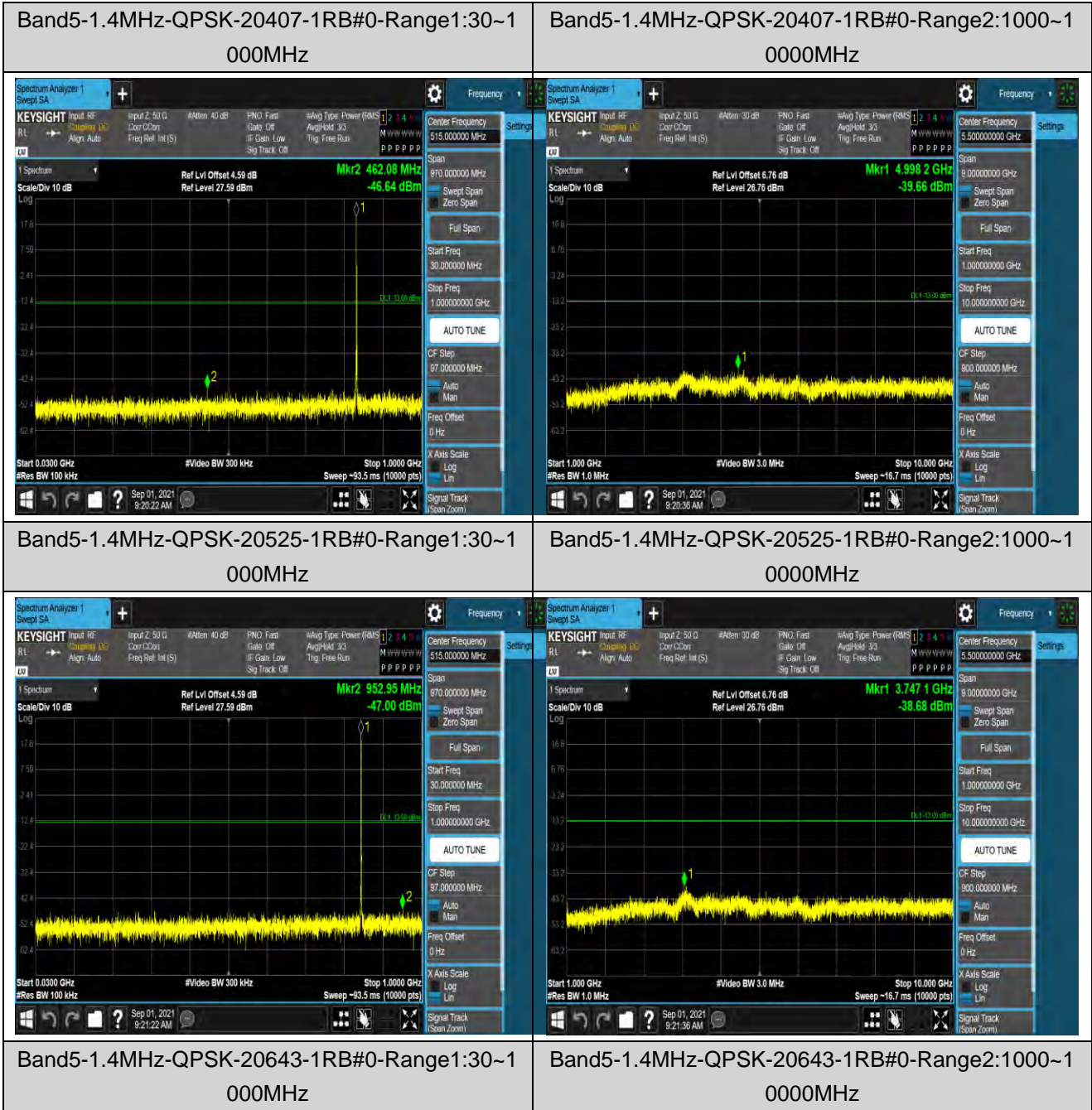
Band4-20MHz-16QAM-20175-1RB#0-Range2:1000~2000MHz



Band4-20MHz-16QAM-20300-1RB#0-Range1:30~1000MHz

Band4-20MHz-16QAM-20300-1RB#0-Range2:1000~2000MHz

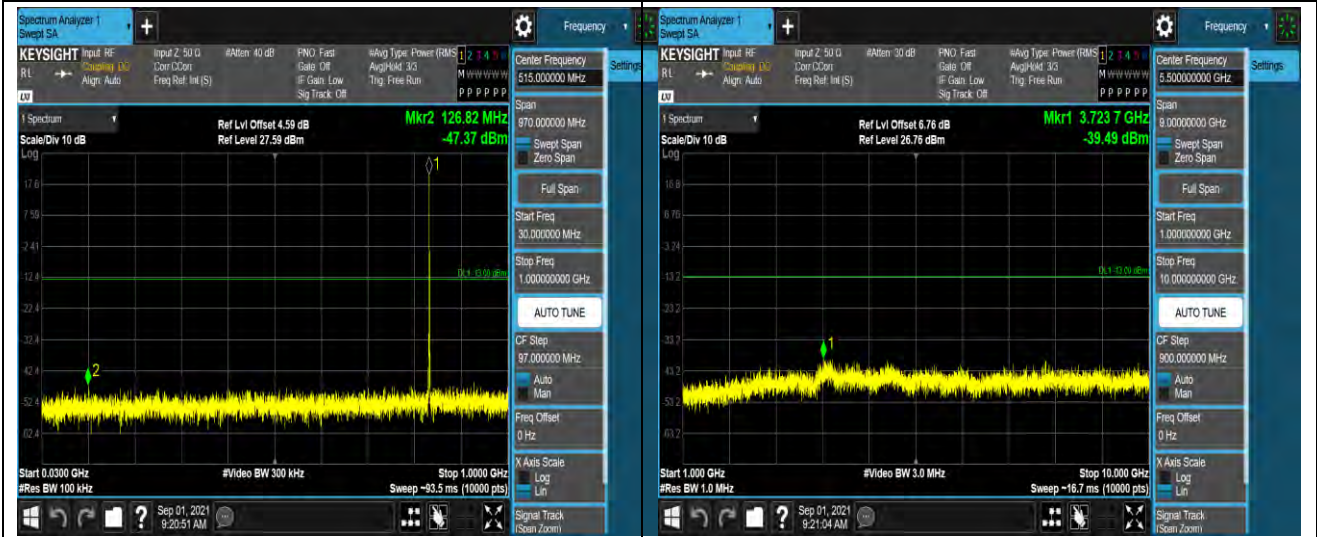






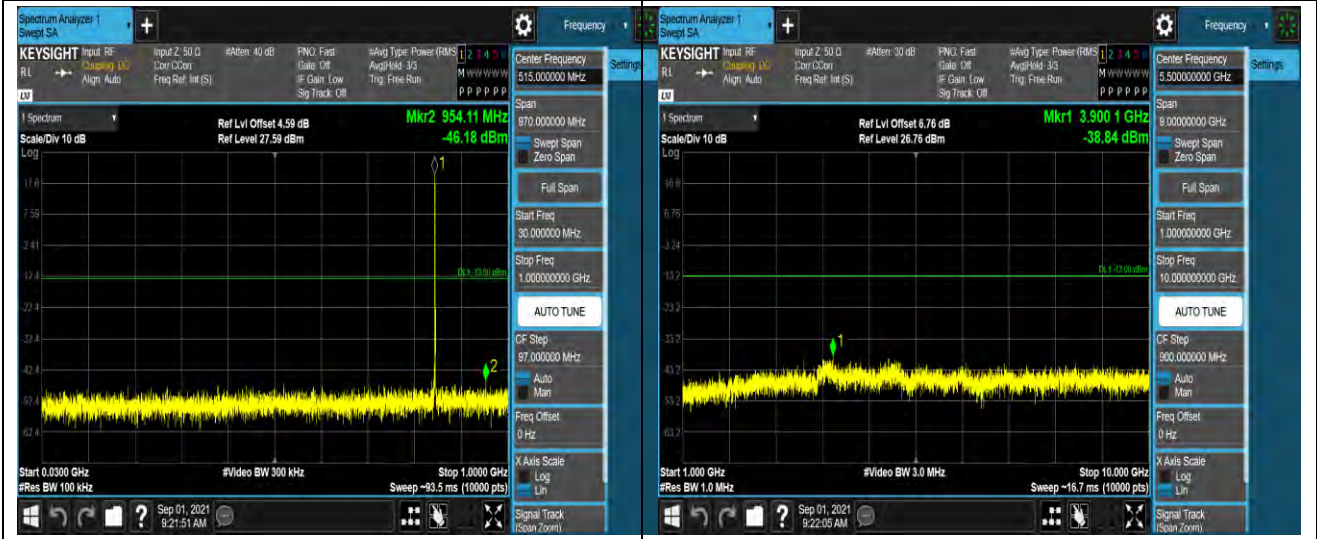
Band5-1.4MHz-16QAM-20407-1RB#0-Range1:30~1000MHz

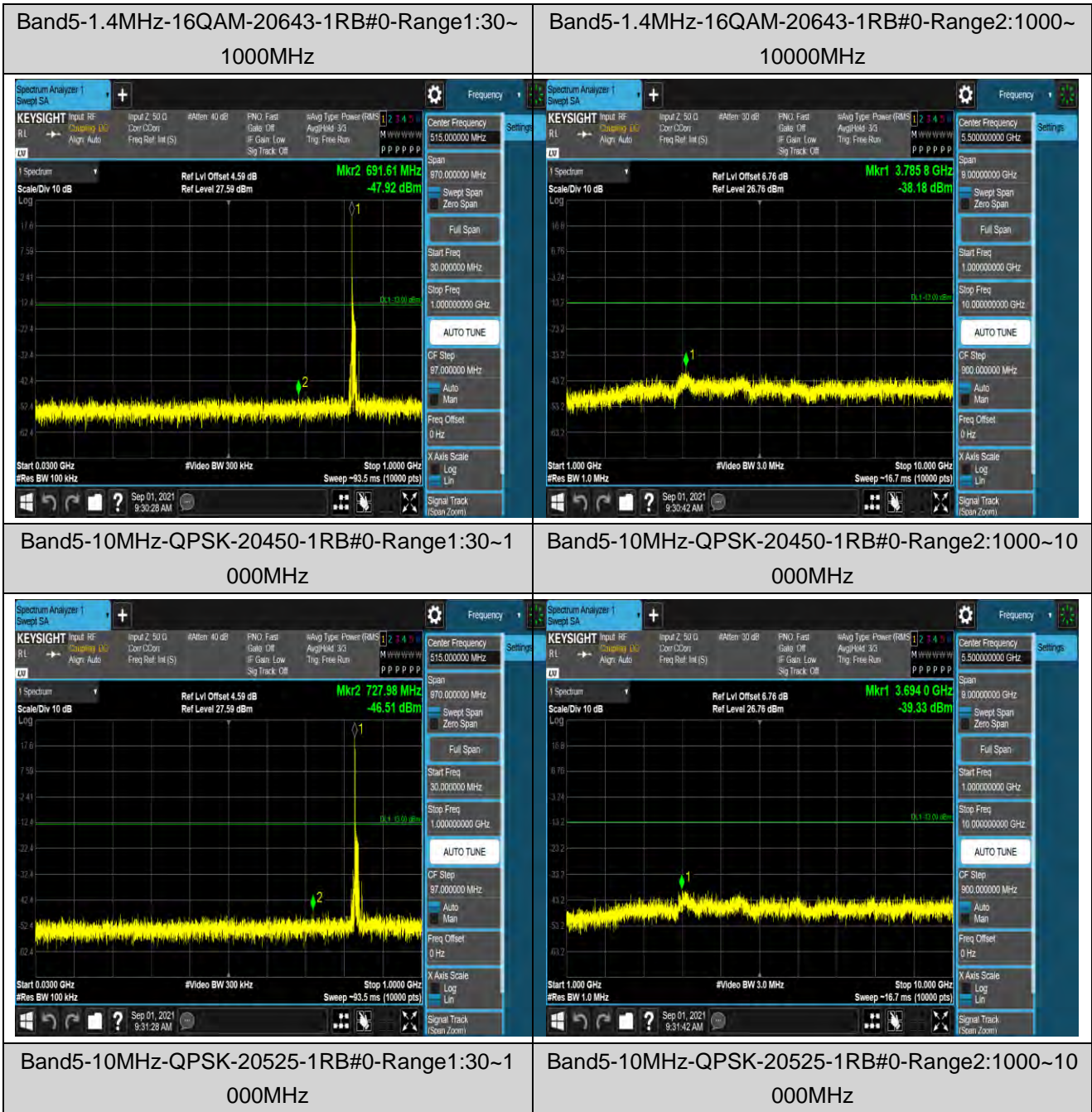
Band5-1.4MHz-16QAM-20407-1RB#0-Range2:1000~10000MHz

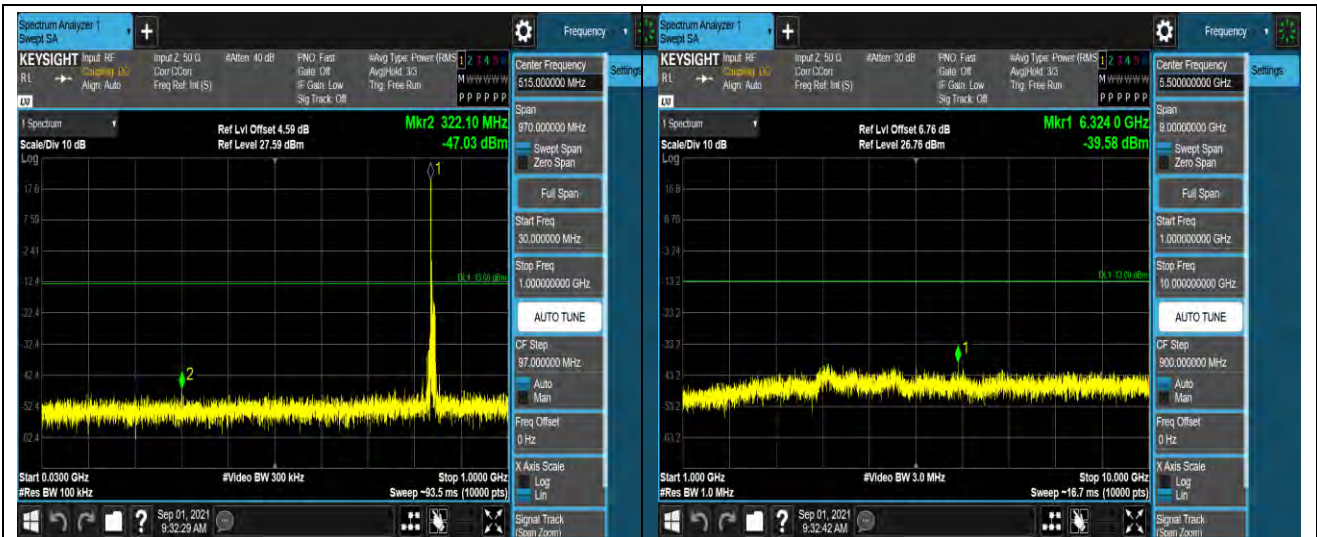


Band5-1.4MHz-16QAM-20525-1RB#0-Range1:30~1000MHz

Band5-1.4MHz-16QAM-20525-1RB#0-Range2:1000~10000MHz

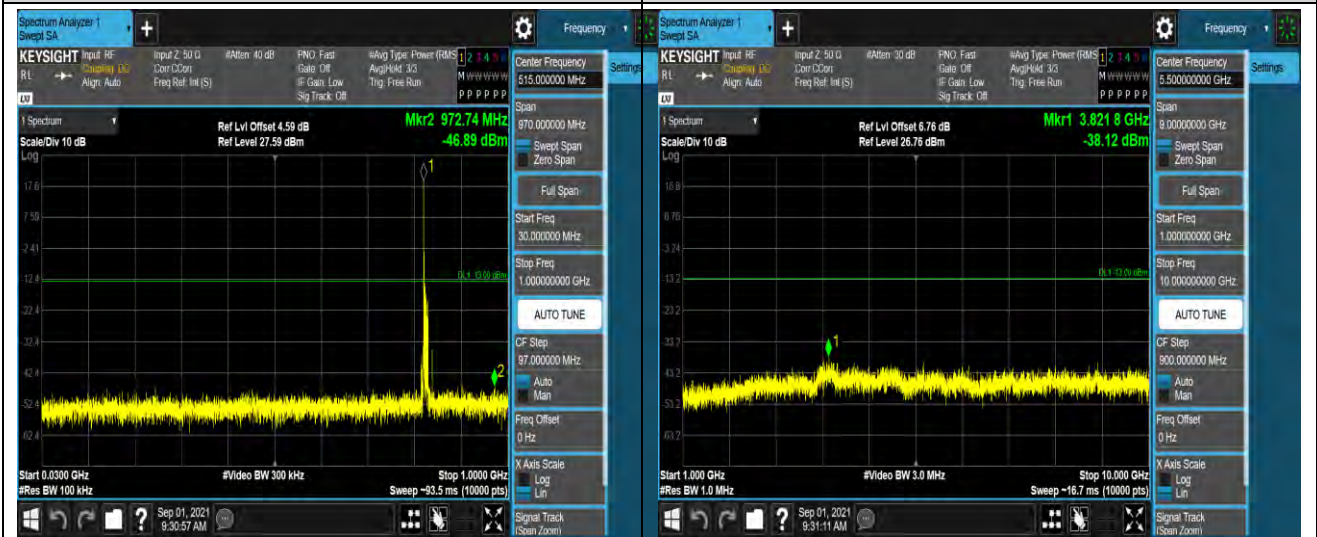






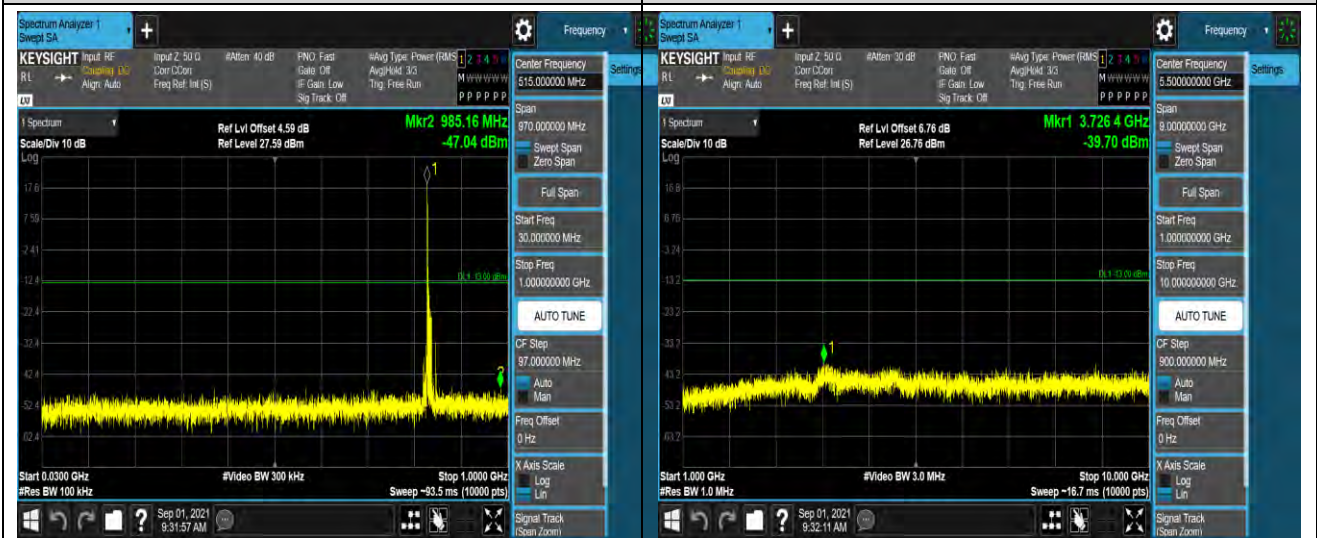
Band5-10MHz-QPSK-20600-1RB#0-Range1:30~1000MHz

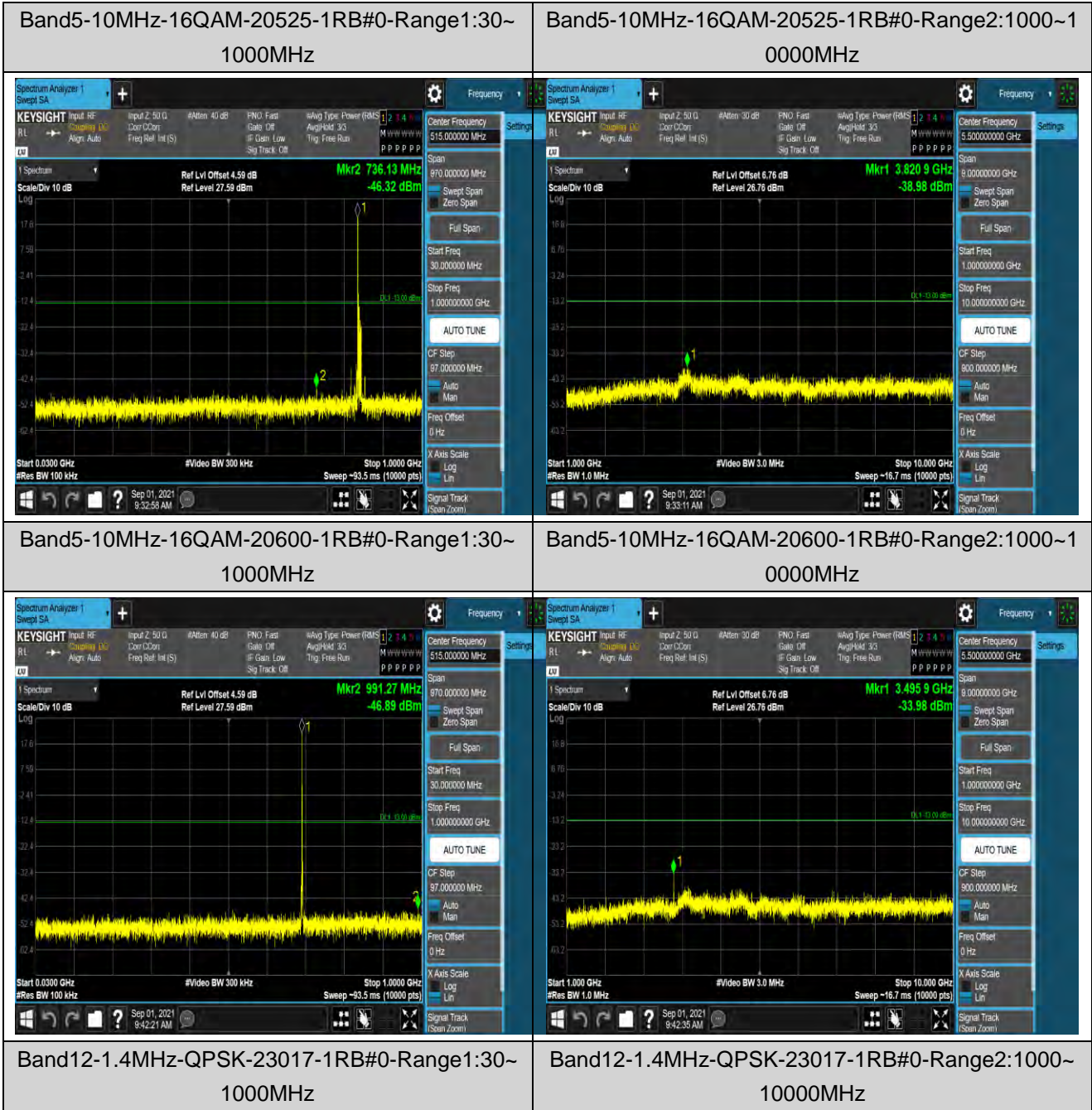
Band5-10MHz-QPSK-20600-1RB#0-Range2:1000~10000MHz

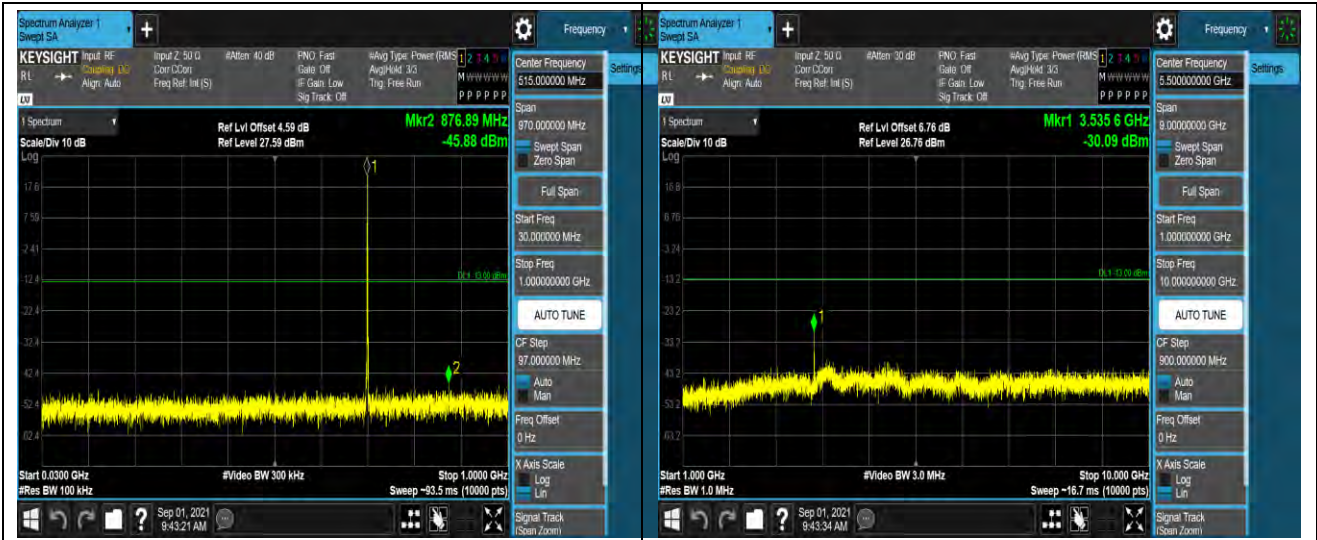


Band5-10MHz-16QAM-20450-1RB#0-Range1:30~1000MHz

Band5-10MHz-16QAM-20450-1RB#0-Range2:1000~10000MHz

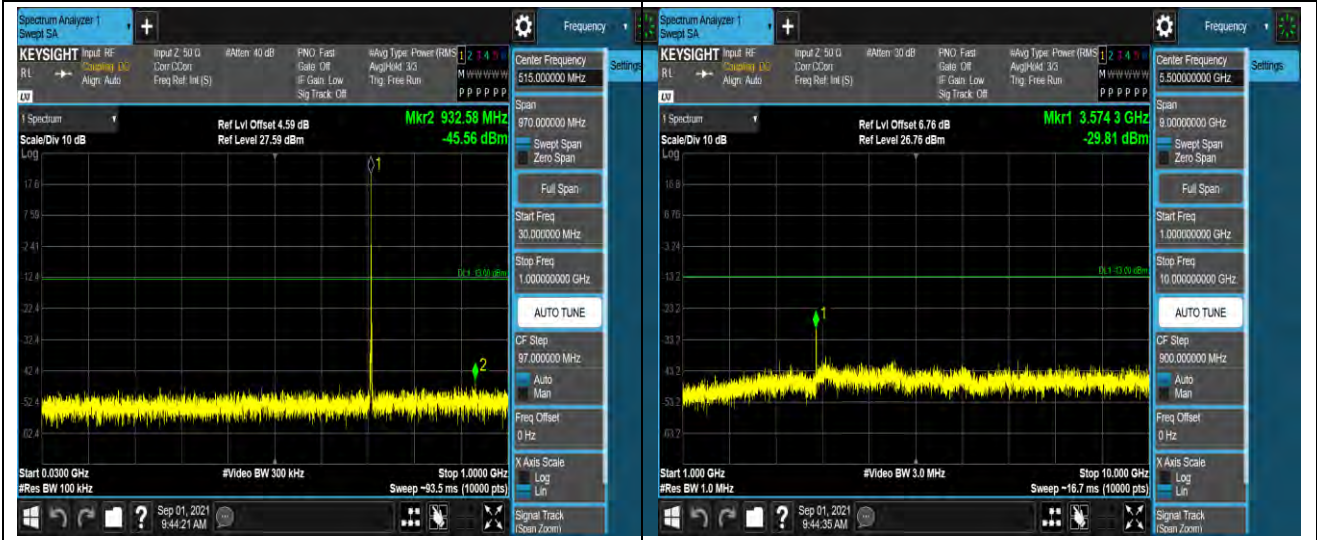






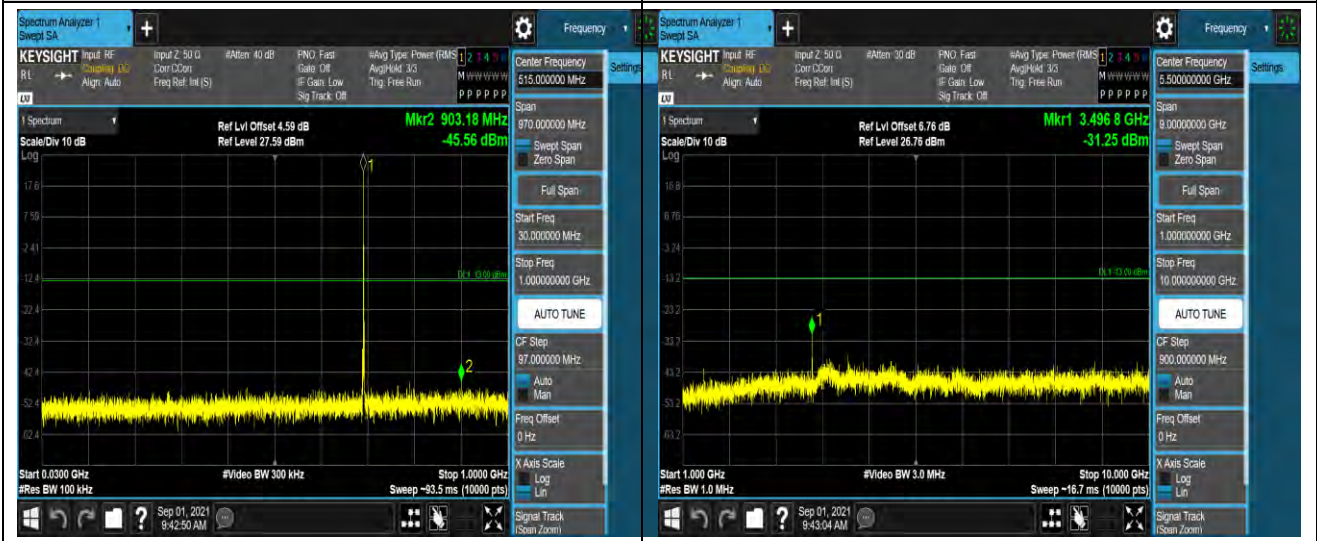
Band12-1.4MHz-QPSK-23095-1RB#0-Range1:30~1000MHz

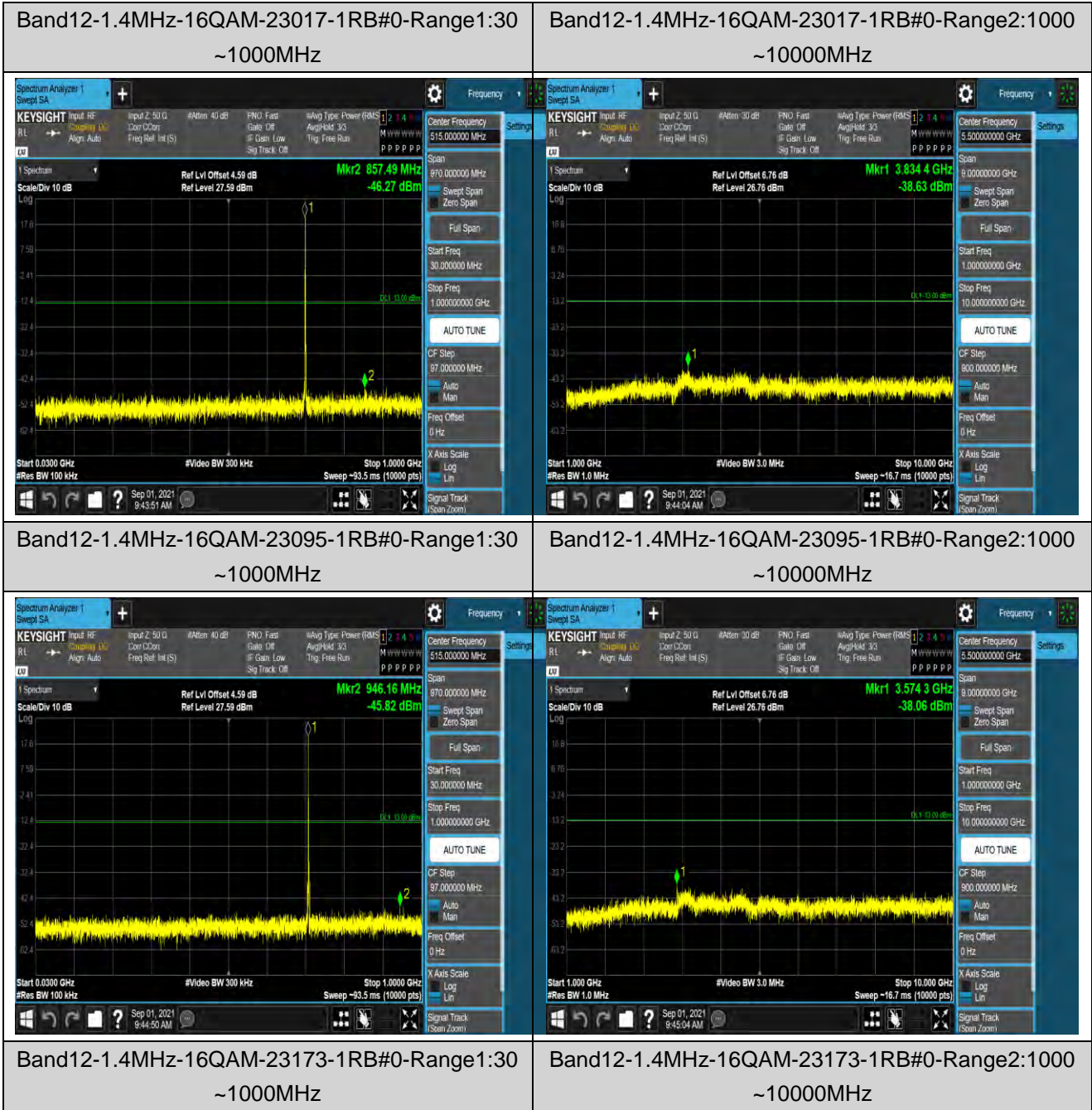
Band12-1.4MHz-QPSK-23095-1RB#0-Range2:1000~10000MHz

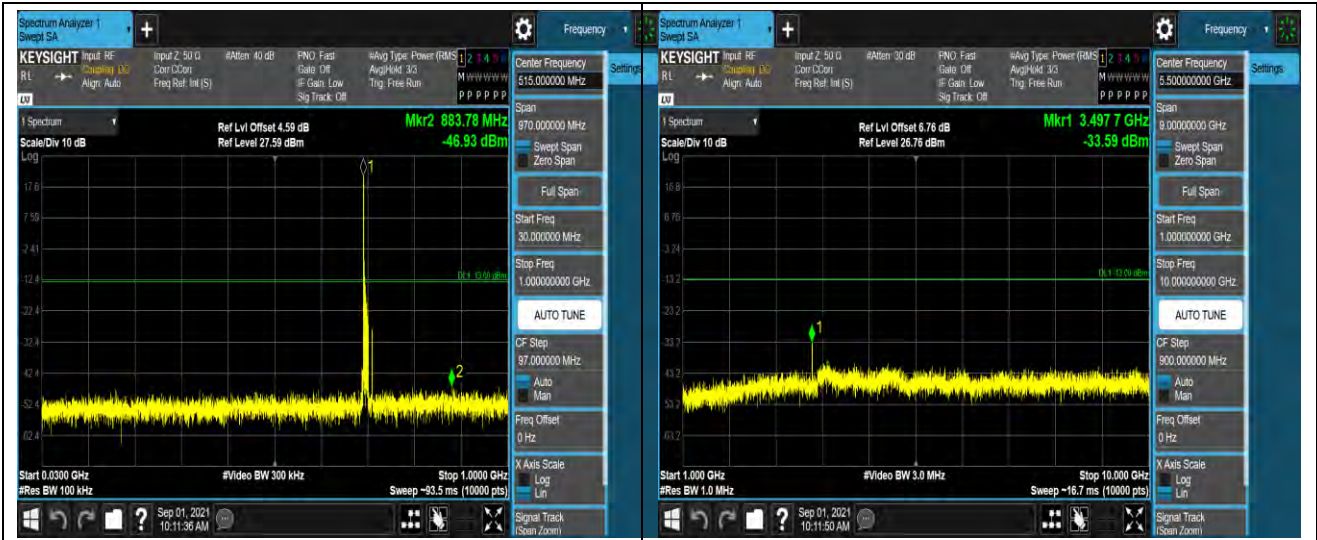


Band12-1.4MHz-QPSK-23173-1RB#0-Range1:30~1000MHz

Band12-1.4MHz-QPSK-23173-1RB#0-Range2:1000~10000MHz

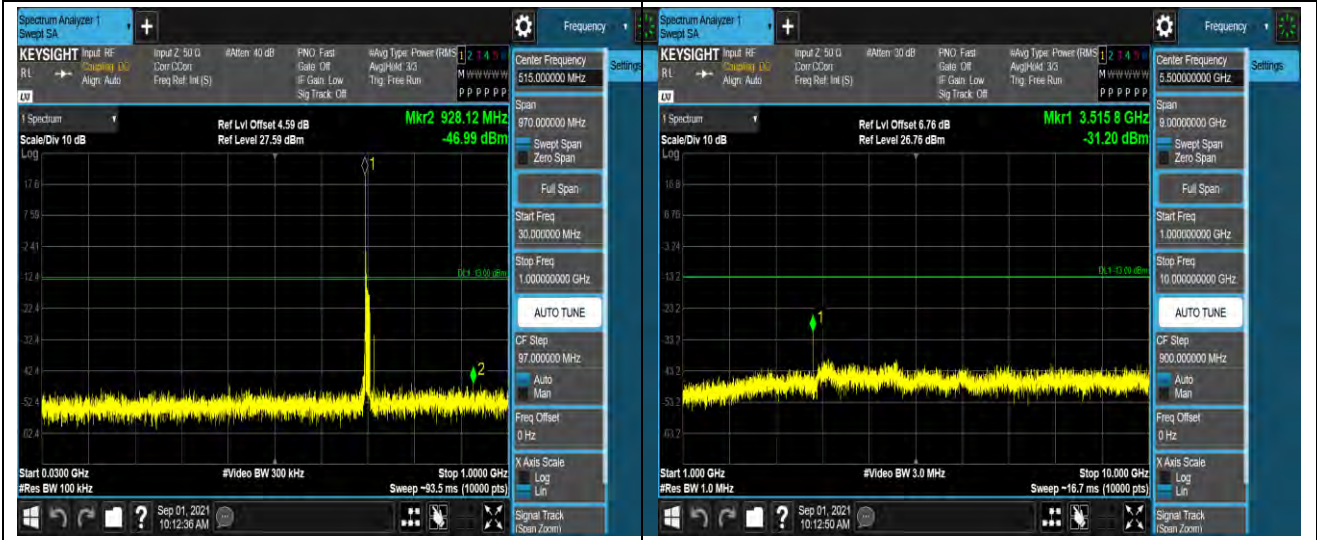






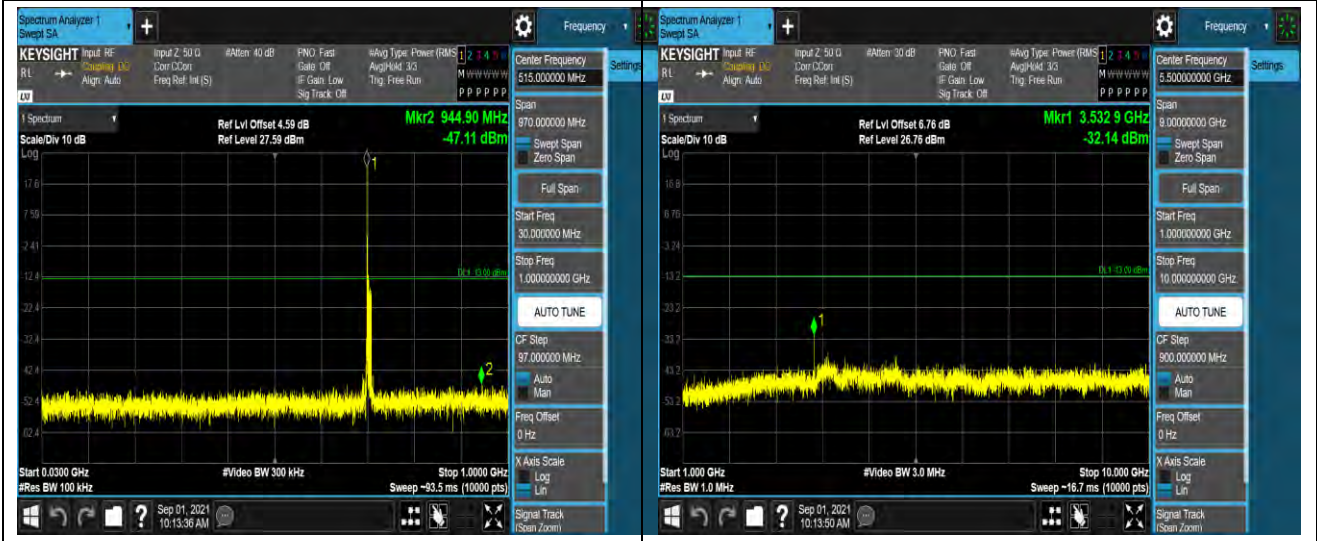
Band12-10MHz-QPSK-23060-1RB#0-Range1:30~1000MHz

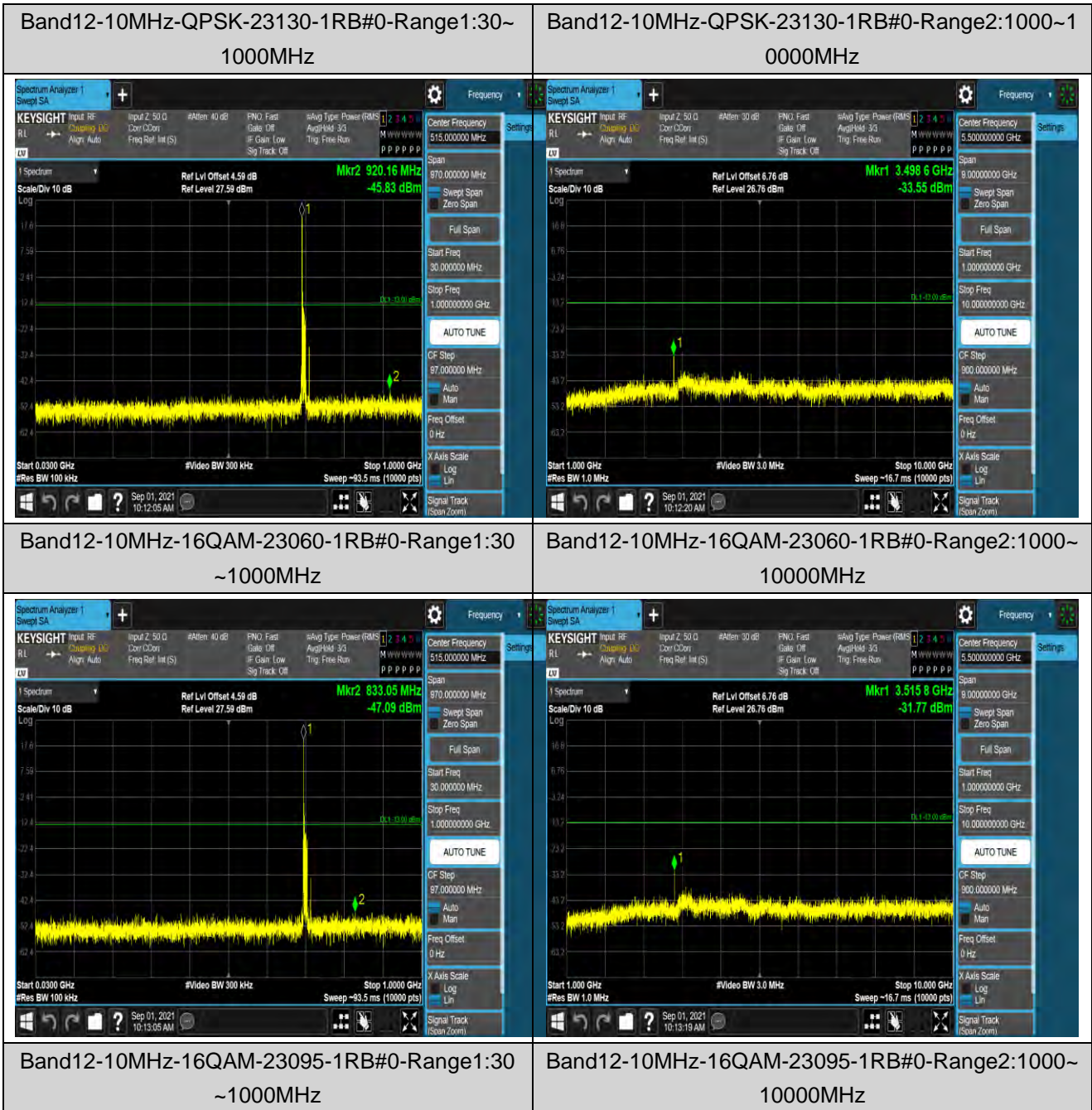
Band12-10MHz-QPSK-23060-1RB#0-Range2:1000~10000MHz

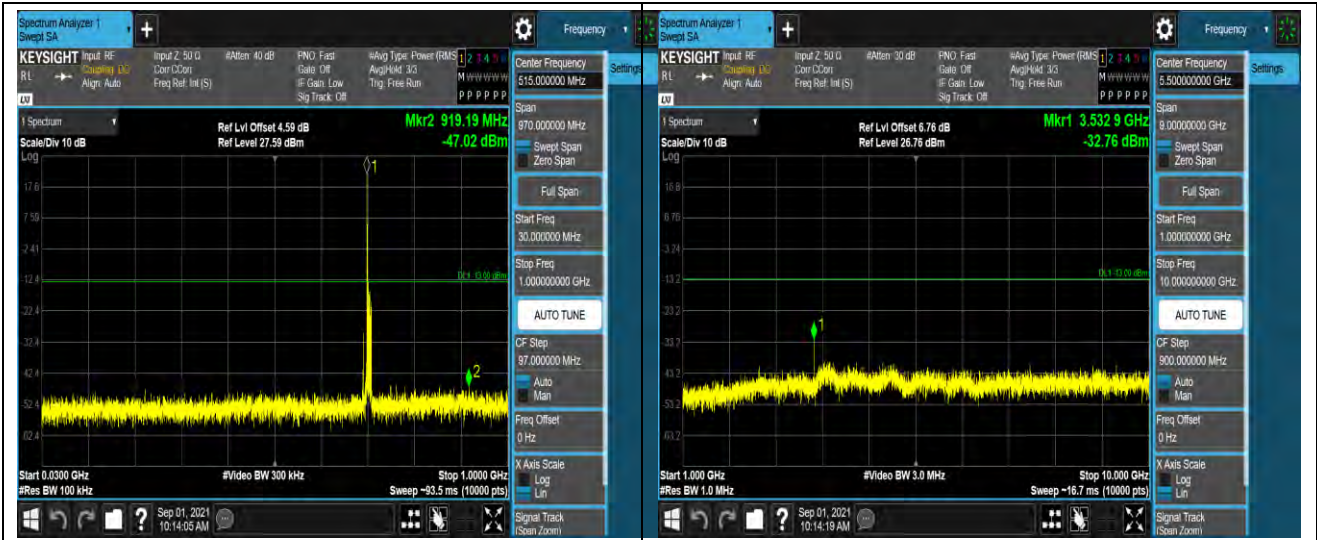


Band12-10MHz-QPSK-23095-1RB#0-Range1:30~1000MHz

Band12-10MHz-QPSK-23095-1RB#0-Range2:1000~10000MHz

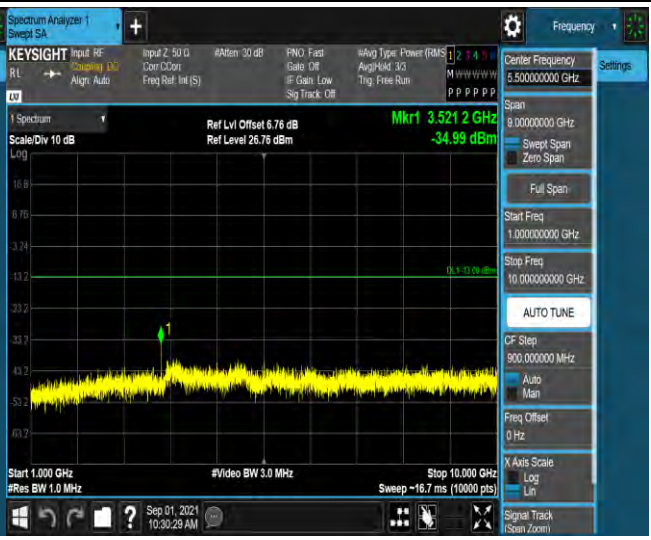
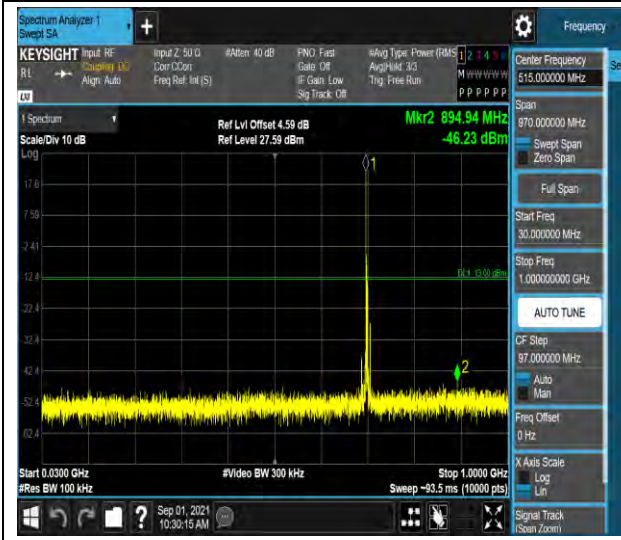






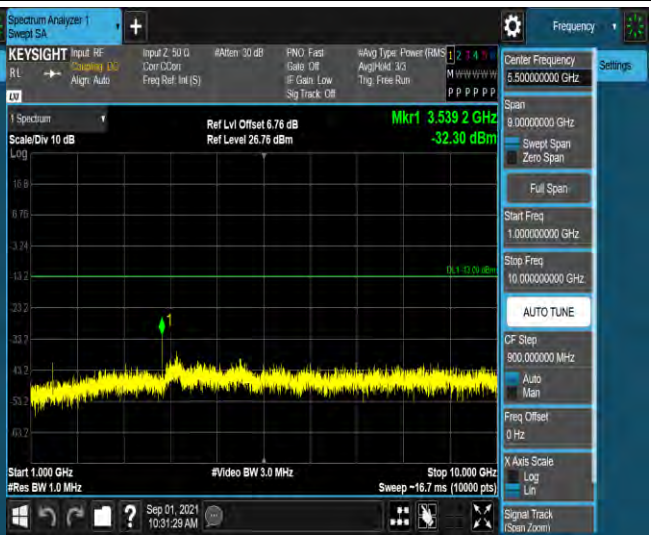
Band12-10MHz-16QAM-23130-1RB#0-Range1:30~1000MHz

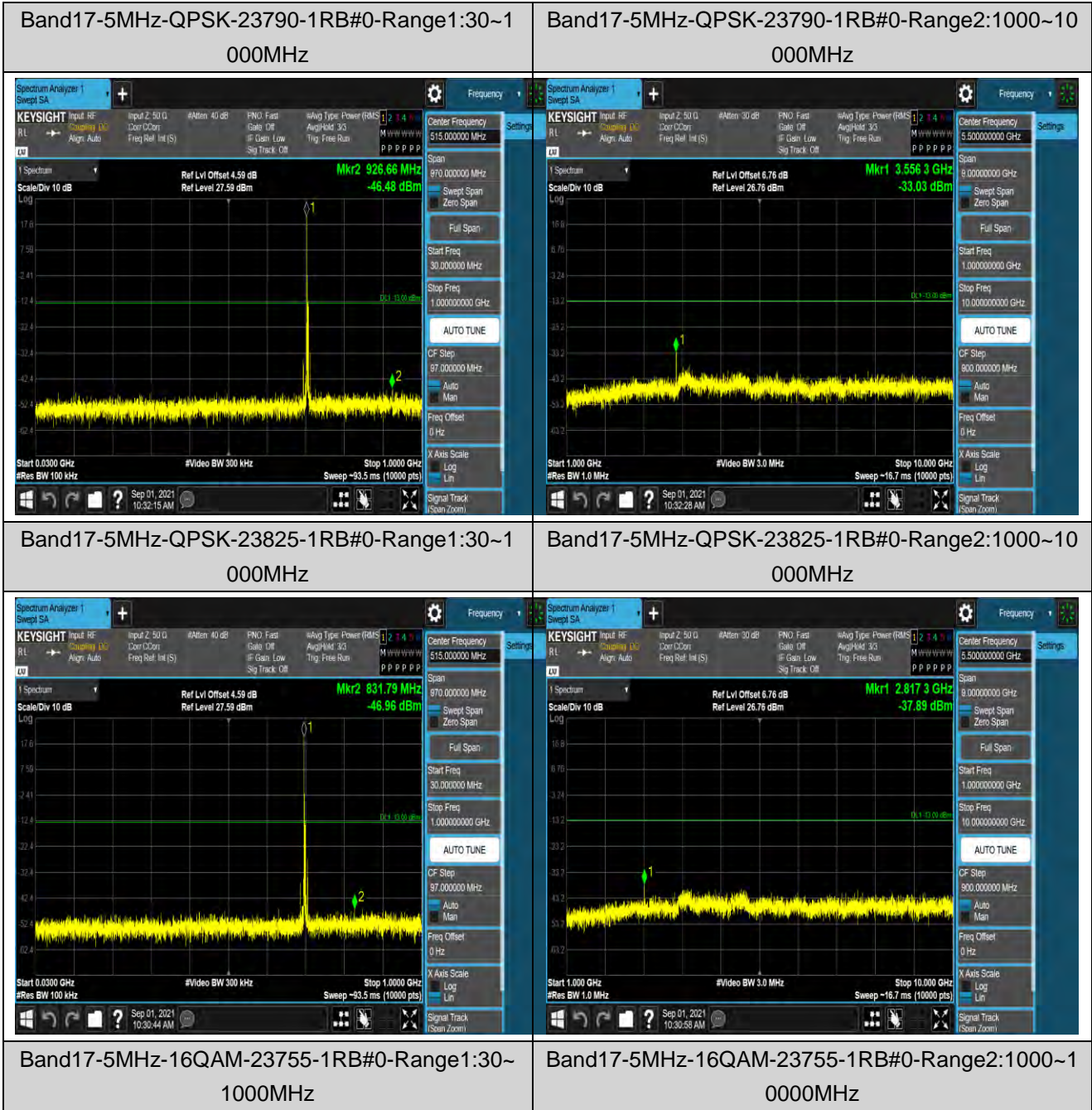
Band12-10MHz-16QAM-23130-1RB#0-Range2:1000~10000MHz

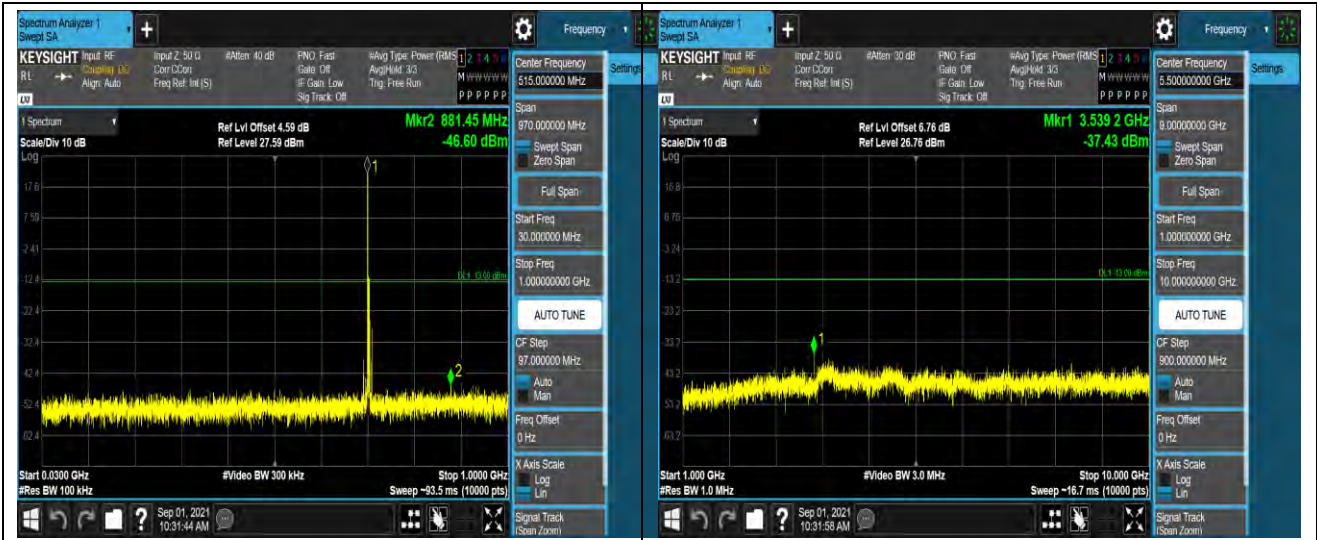


Band17-5MHz-QPSK-23755-1RB#0-Range1:30~1000MHz

Band17-5MHz-QPSK-23755-1RB#0-Range2:1000~10000MHz







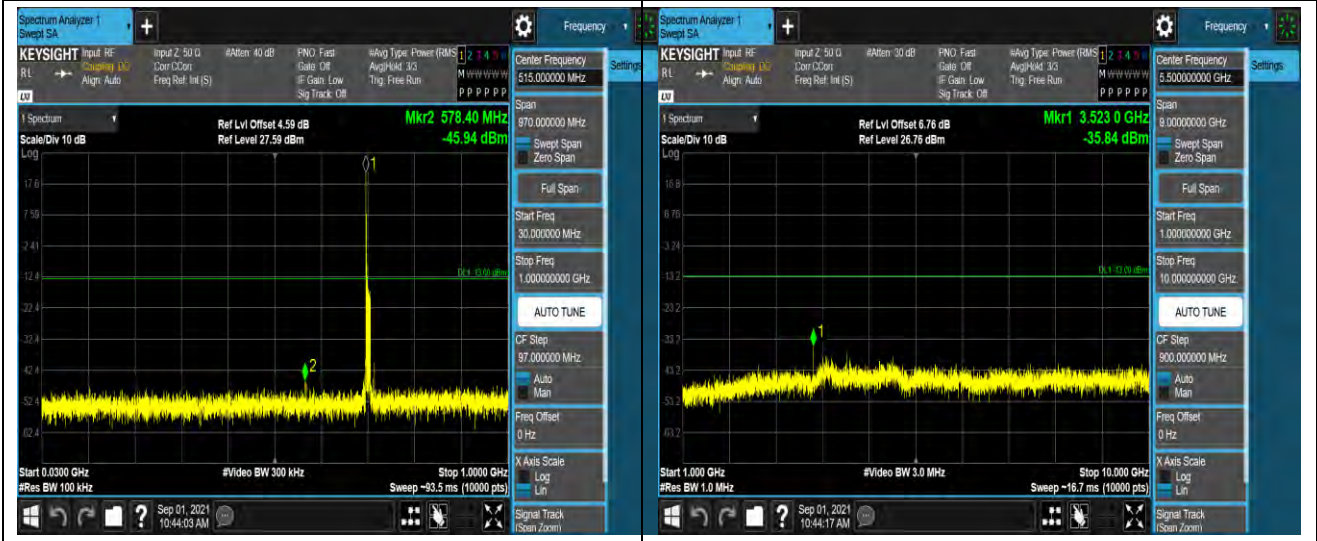
Band17-5MHz-16QAM-23790-1RB#0-Range1:30~1000MHz

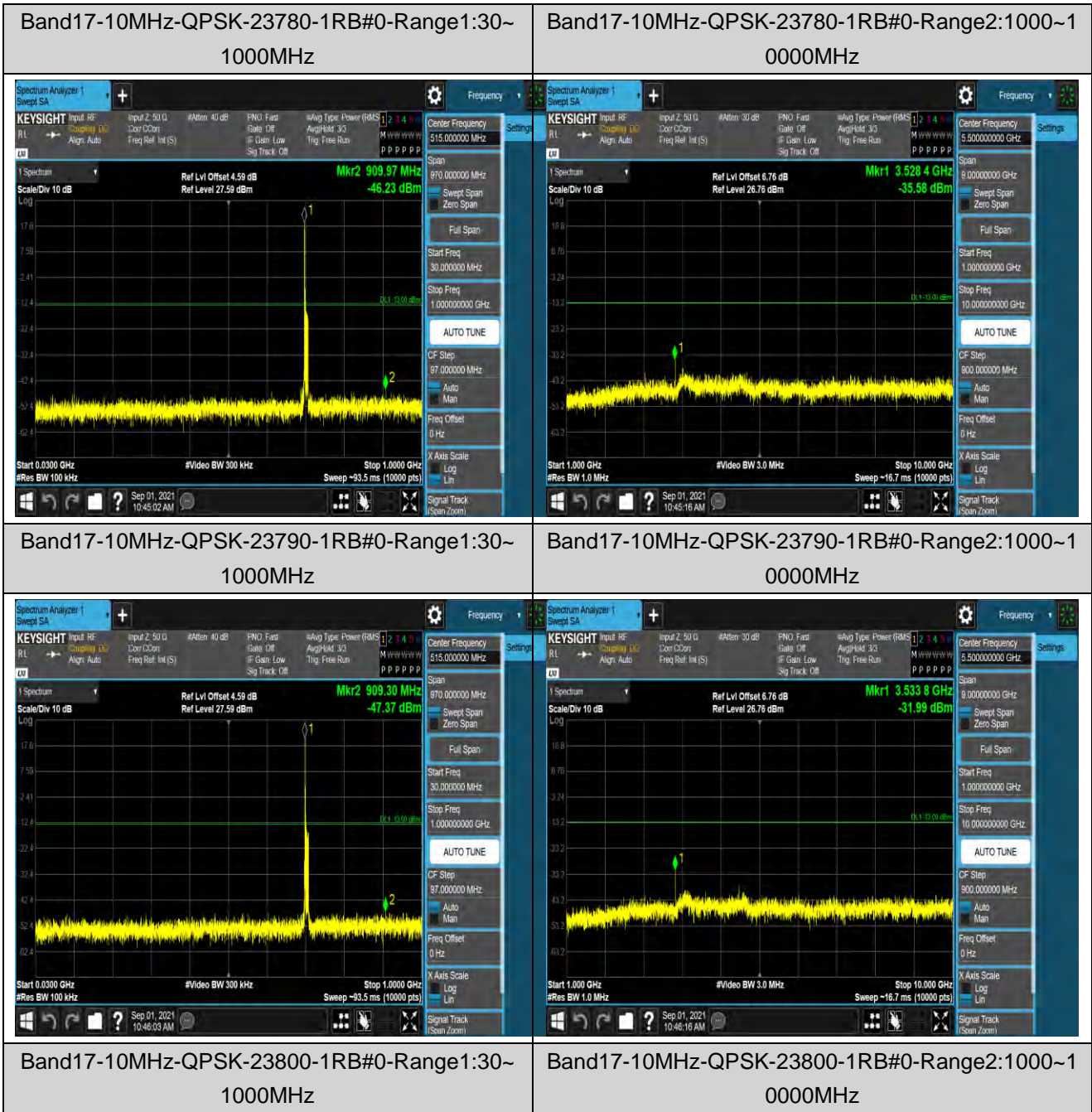
Band17-5MHz-16QAM-23790-1RB#0-Range2:1000~10000MHz

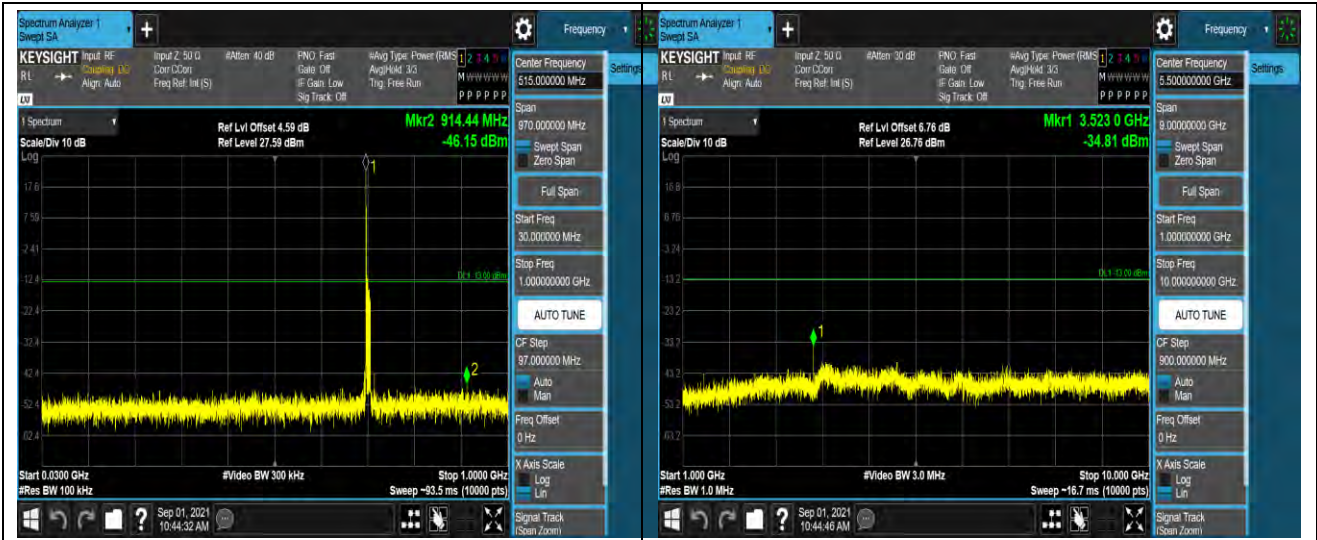


Band17-5MHz-16QAM-23825-1RB#0-Range1:30~1000MHz

Band17-5MHz-16QAM-23825-1RB#0-Range2:1000~10000MHz

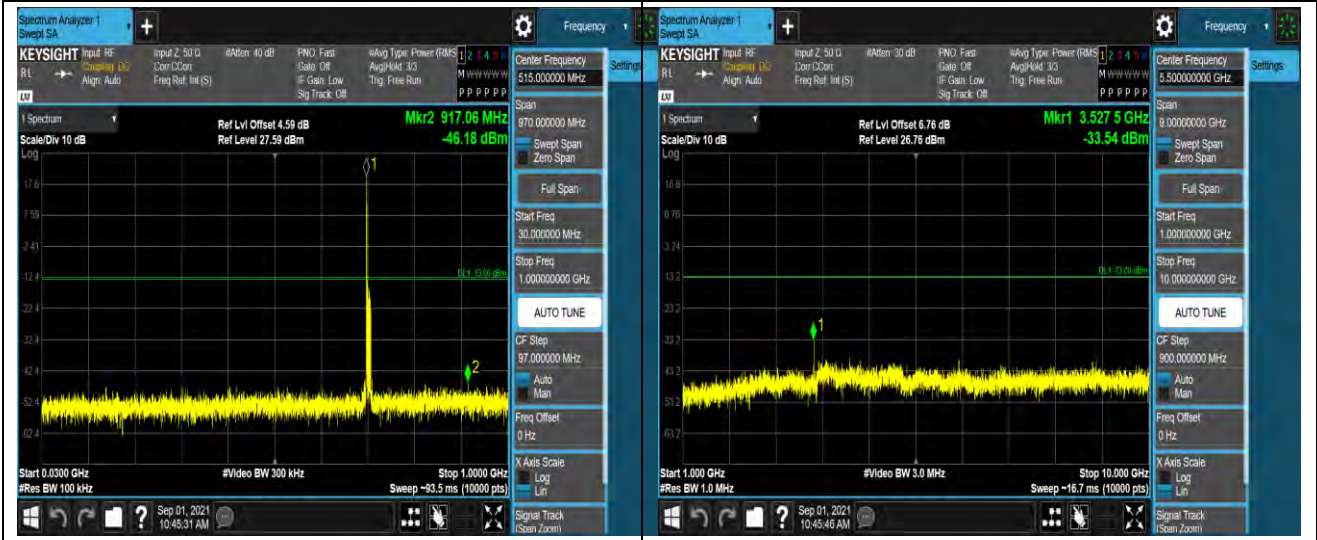






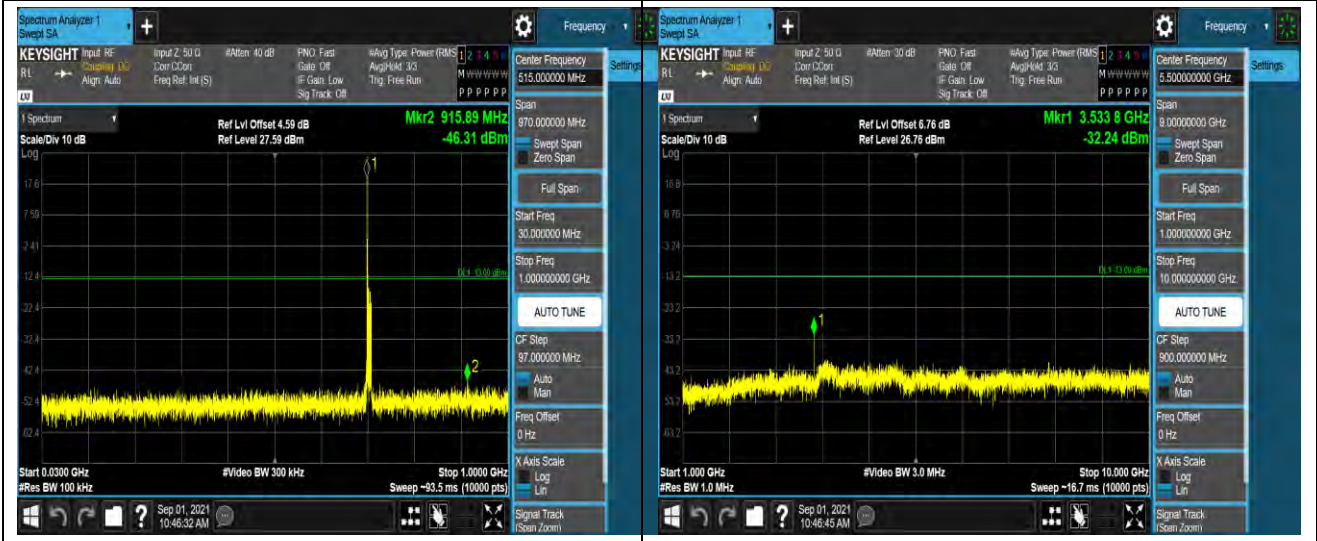
Band17-10MHz-16QAM-23780-1RB#0-Range1:30
~1000MHz

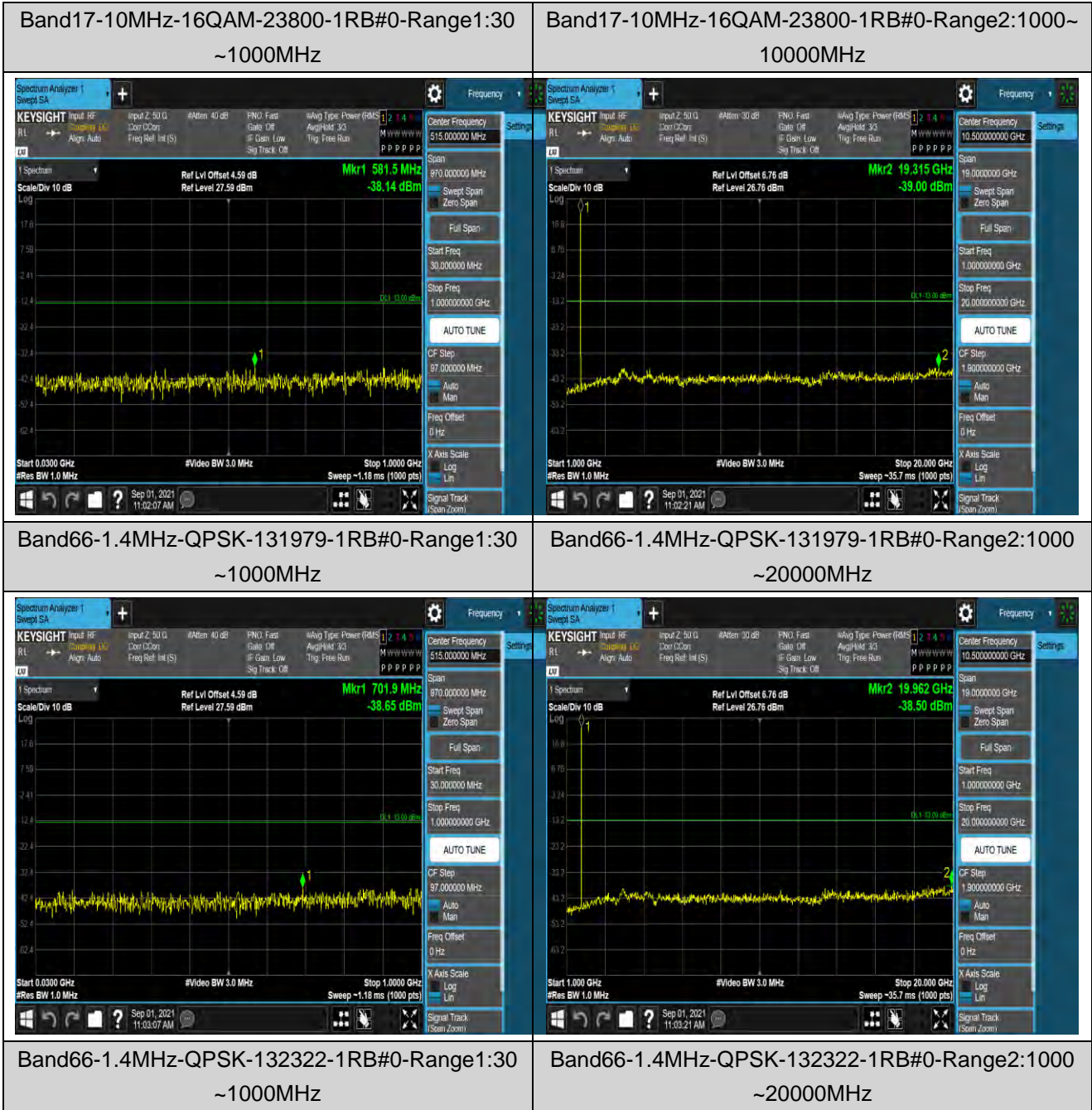
Band17-10MHz-16QAM-23780-1RB#0-Range2:1000~
10000MHz



Band17-10MHz-16QAM-23790-1RB#0-Range1:30
~1000MHz

Band17-10MHz-16QAM-23790-1RB#0-Range2:1000~
10000MHz







Band66-1.4MHz-QPSK-132665-1RB#0-Range1:30
~1000MHz

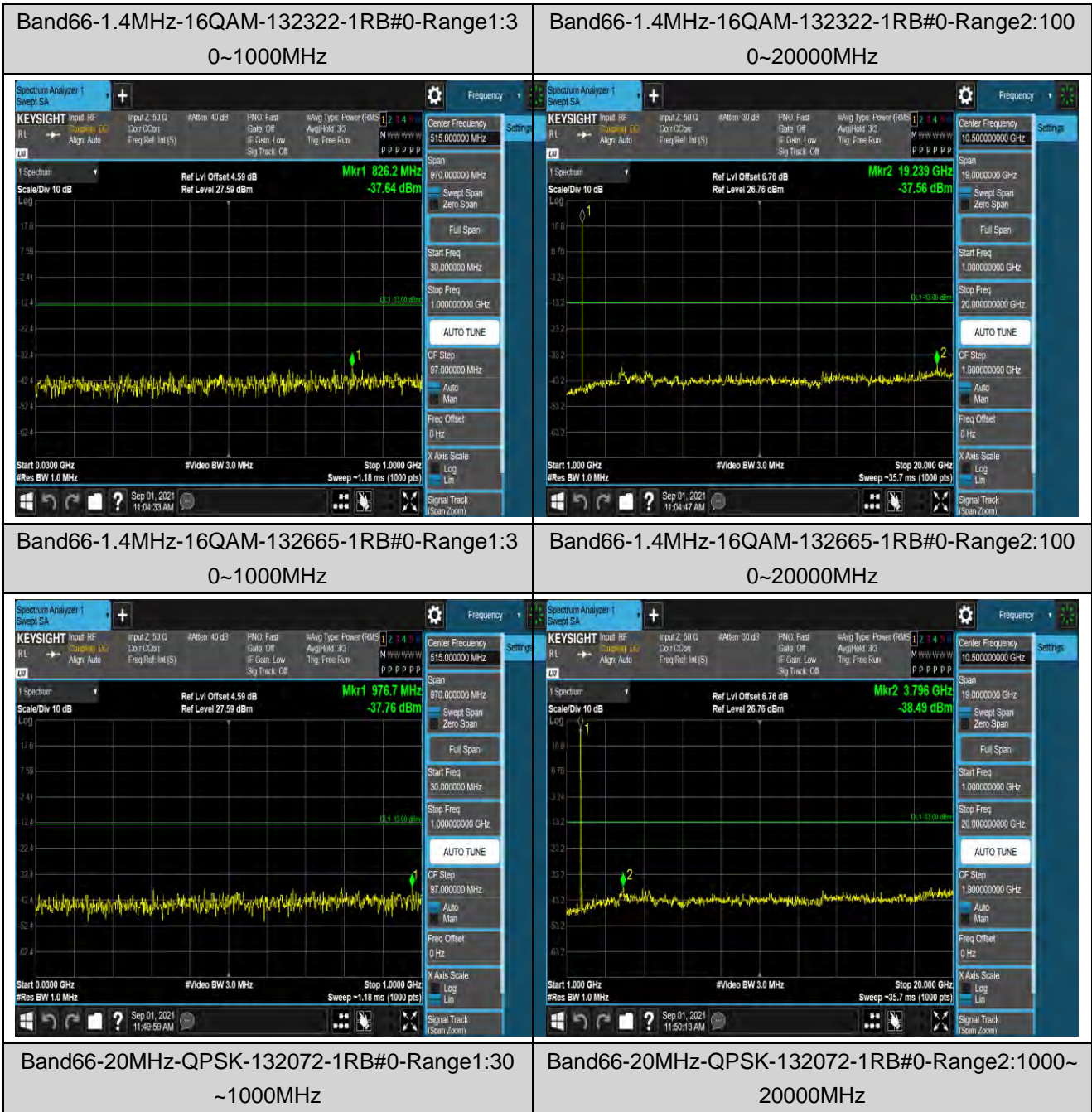
Band66-1.4MHz-QPSK-132665-1RB#0-Range2:1000
~20000MHz



Band66-1.4MHz-16QAM-131979-1RB#0-Range1:3
0~1000MHz

Band66-1.4MHz-16QAM-131979-1RB#0-Range2:100
0~20000MHz







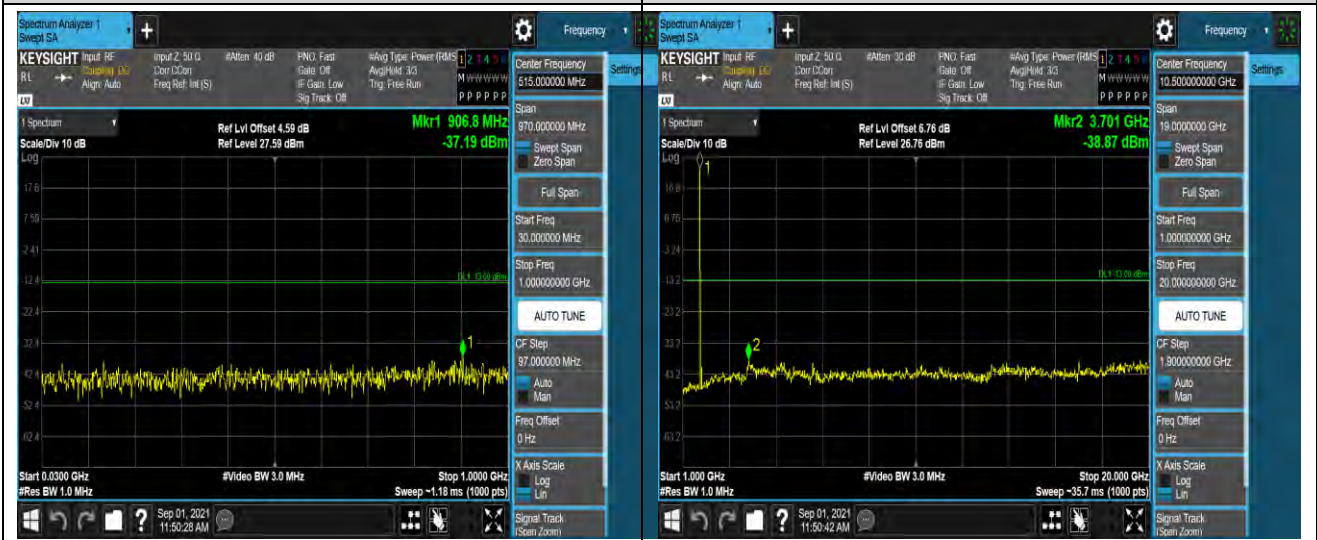
Band66-20MHz-QPSK-132322-1RB#0-Range1:30~1000MHz

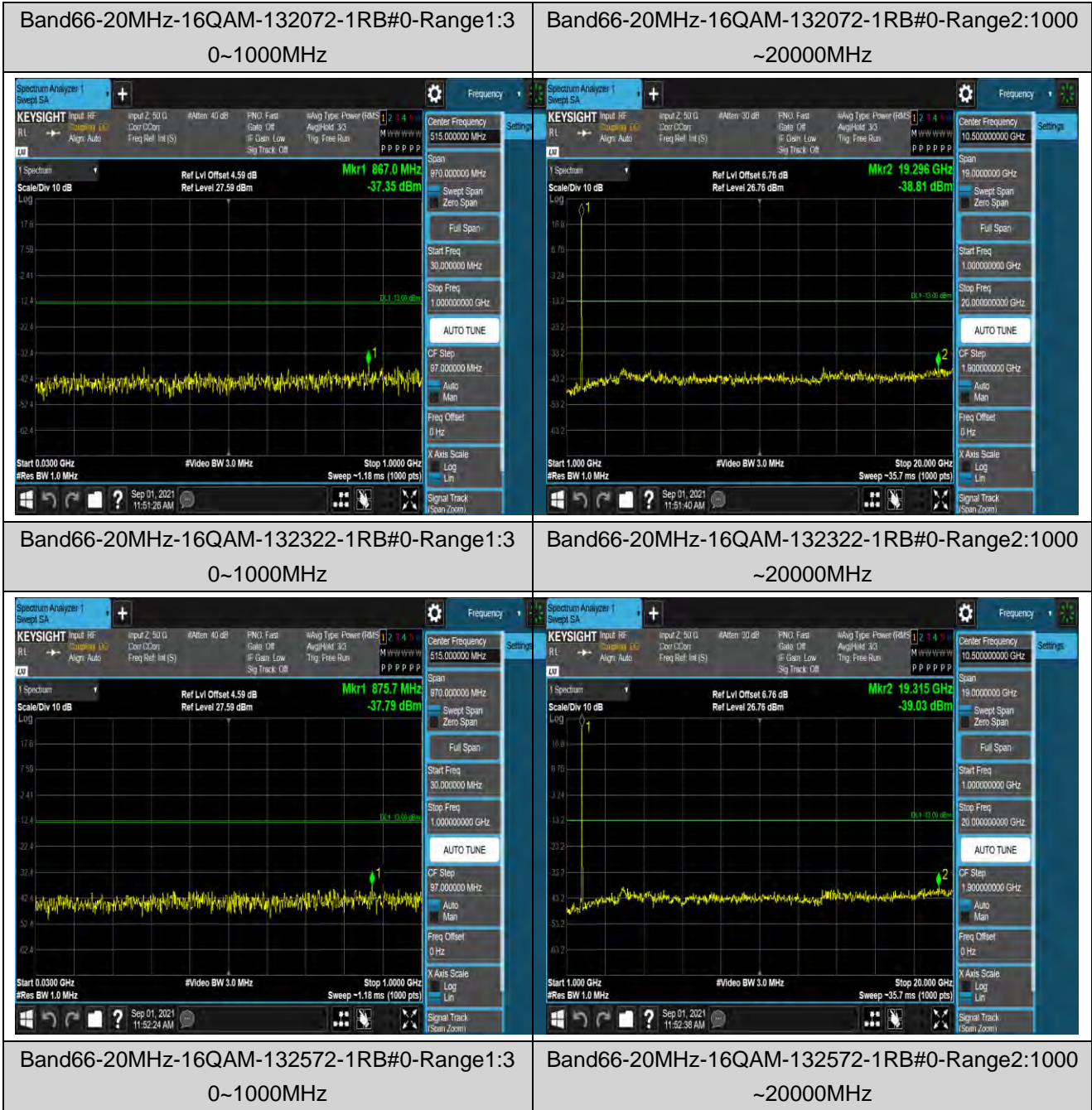
Band66-20MHz-QPSK-132322-1RB#0-Range2:1000~20000MHz



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	-15.22	-0.008096	Within authorized band for Band 2	Pass
	-20	-48.69	-0.025899		
	-10	-19.34	-0.010287		
	0	-52.36	-0.027851		
	10	-4.08	-0.002170		
	20	-28.80	-0.015319		
	30	-15.39	-0.008186		
	40	-35.98	-0.019138		
	50	-48.17	-0.025622		
16QAM					
3.70	-30	-24.46	-0.013011	Within authorized band for Band 2	Pass
	-20	-44.09	-0.023452		
	-10	-9.10	-0.004840		
	0	-18.94	-0.010074		
	10	-33.69	-0.017920		
	20	-44.86	-0.023862		
	30	-47.82	-0.025436		
	40	-56.92	-0.030277		
	50	-5.48	-0.002915		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
20	3.50	-39.90	-0.021223	Within authorized band for Band 2	Pass
	3.70	-8.31	-0.004420		
	4.25	-17.31	-0.009207		
16QAM					
20	3.50	-4.62	-0.002457	Within authorized band for Band 2	Pass
	3.70	3.69	0.001963		
	4.25	-9.00	-0.004787		

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	-14.12	-0.008150	Within authorized band for Band 4	Pass
	-20	-13.75	-0.007937		
	-10	-14.28	-0.008242		
	0	-12.76	-0.007365		
	10	-14.83	-0.008560		
	20	-10.41	-0.006009		
	30	-13.18	-0.007608		
	40	-11.92	-0.006880		
	50	-14.08	-0.008127		
16QAM					
3.70	-30	10.47	0.006043	Within authorized band for Band 4	Pass
	-20	14.59	0.008421		
	-10	21.89	0.012635		
	0	21.56	0.012444		
	10	27.55	0.015902		
	20	29.43	0.016987		
	30	32.24	0.018609		
	40	35.39	0.020427		
	50	39.12	0.022580		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	3.50	-11.23	-0.006482	Within authorized band for Band 4	Pass
	3.70	-13.32	-0.007688		
	4.25	-12.36	-0.007134		
16QAM					
25	3.50	-4.59	-0.002649	Within authorized band for Band 4	Pass
	3.70	-10.64	-0.006141		
	4.25	9.24	0.005333		

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	-18.55	-0.022176	±2.5	Pass
	-20	-19.15	-0.022893		
	-10	-19.81	-0.023682		
	0	-20.41	-0.024399		
	10	-40.30	-0.048177		
	20	-37.51	-0.044842		
	30	-36.61	-0.043766		
	40	-38.50	-0.046025		
	50	-34.42	-0.041148		
16QAM					
3.70	-30	-26.58	-0.031775	±2.5	Pass
	-20	-25.91	-0.030974		
	-10	-25.42	-0.030389		
	0	-24.09	-0.028799		
	10	-23.07	-0.027579		
	20	-20.48	-0.024483		
	30	-20.06	-0.023981		
	40	-18.44	-0.022044		
	50	-19.27	-0.023036		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
20	3.50	-10.27	-0.012277	±2.5	Pass
	3.70	-5.09	-0.006085		
	4.25	-15.65	-0.018709		
16QAM					
20	3.50	-31.29	-0.037406	±2.5	Pass
	3.70	-36.09	-0.043144		
	4.25	-28.94	-0.034597		
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	-6.82	-0.009640	Within authorized band for Band 12	Pass
	-20	-8.01	-0.011322		
	-10	-15.11	-0.021357		
	0	-15.54	-0.021965		
	10	-11.44	-0.016170		
	20	-10.63	-0.015025		
	30	-10.73	-0.015166		
	40	-10.43	-0.014742		
	50	-11.20	-0.015830		
16QAM					
3.70	-30	5.22	0.007378	Within authorized band for Band 12	Pass
	-20	6.61	0.009343		
	-10	12.30	0.017385		
	0	14.29	0.020198		
	10	14.41	0.020367		
	20	18.83	0.026615		
	30	20.31	0.028707		
	40	21.44	0.030304		
	50	22.06	0.031180		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
20	3.50	-3.88	-0.005484	Within authorized band for Band 12	Pass
	3.70	-6.18	-0.008735		
	4.25	-3.60	-0.005088		
16QAM					
20	3.50	-6.65	-0.009399	Within authorized band for Band 12	Pass
	3.70	-11.74	-0.016594		
	4.25	1.34	0.001894		

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	-2.36	-0.003324	Within authorized band for Band 17	Pass
	-20	-4.42	-0.006225		
	-10	-5.09	-0.007169		
	0	-16.16	-0.022761		
	10	-7.12	-0.010028		
	20	-6.48	-0.009127		
	30	-8.28	-0.011662		
	40	-9.18	-0.012930		
	50	-7.04	-0.009915		
16QAM					
3.70	-30	-4.49	-0.006324	Within authorized band for Band 17	Pass
	-20	-3.98	-0.005606		
	-10	-2.55	-0.003592		
	0	0.76	0.001070		
	10	-2.09	-0.002944		
	20	3.29	0.004634		
	30	4.66	0.006563		
	40	5.12	0.007211		
	50	6.21	0.008746		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
20	3.50	2.89	0.004070	Within authorized band for Band 17	Pass
	3.70	2.39	0.003366		
	4.25	-2.68	-0.003775		
16QAM					
20	3.50	-7.80	-0.010986	Within authorized band for Band 17	Pass
	3.70	-7.93	-0.011169		
	4.25	-5.44	-0.007662		

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	-28.71	-0.016453	Within authorized band for Band 66	Pass
	-20	-27.82	-0.015943		
	-10	-29.35	-0.016819		
	0	-29.25	-0.016762		
	10	-27.62	-0.015828		
	20	-18.38	-0.010533		
	30	-18.81	-0.010779		
	40	-23.05	-0.013209		
	50	-22.36	-0.012814		
16QAM					
3.70	-30	7.08	0.004057	Within authorized band for Band 66	Pass
	-20	12.15	0.006963		
	-10	17.31	0.009920		
	0	19.73	0.011307		
	10	20.30	0.011633		
	20	26.61	0.015249		
	30	24.91	0.014275		
	40	34.40	0.019713		
	50	32.87	0.018837		
Voltage					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
20	3.50	-31.70	-0.018166	Within authorized band for Band 66	Pass
	3.70	-30.76	-0.017628		
	4.25	-27.45	-0.015731		
16QAM					
20	3.50	-9.64	-0.005524	Within authorized band for Band 66	Pass
	3.70	-18.97	-0.010871		
	4.25	3.36	0.001926		

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

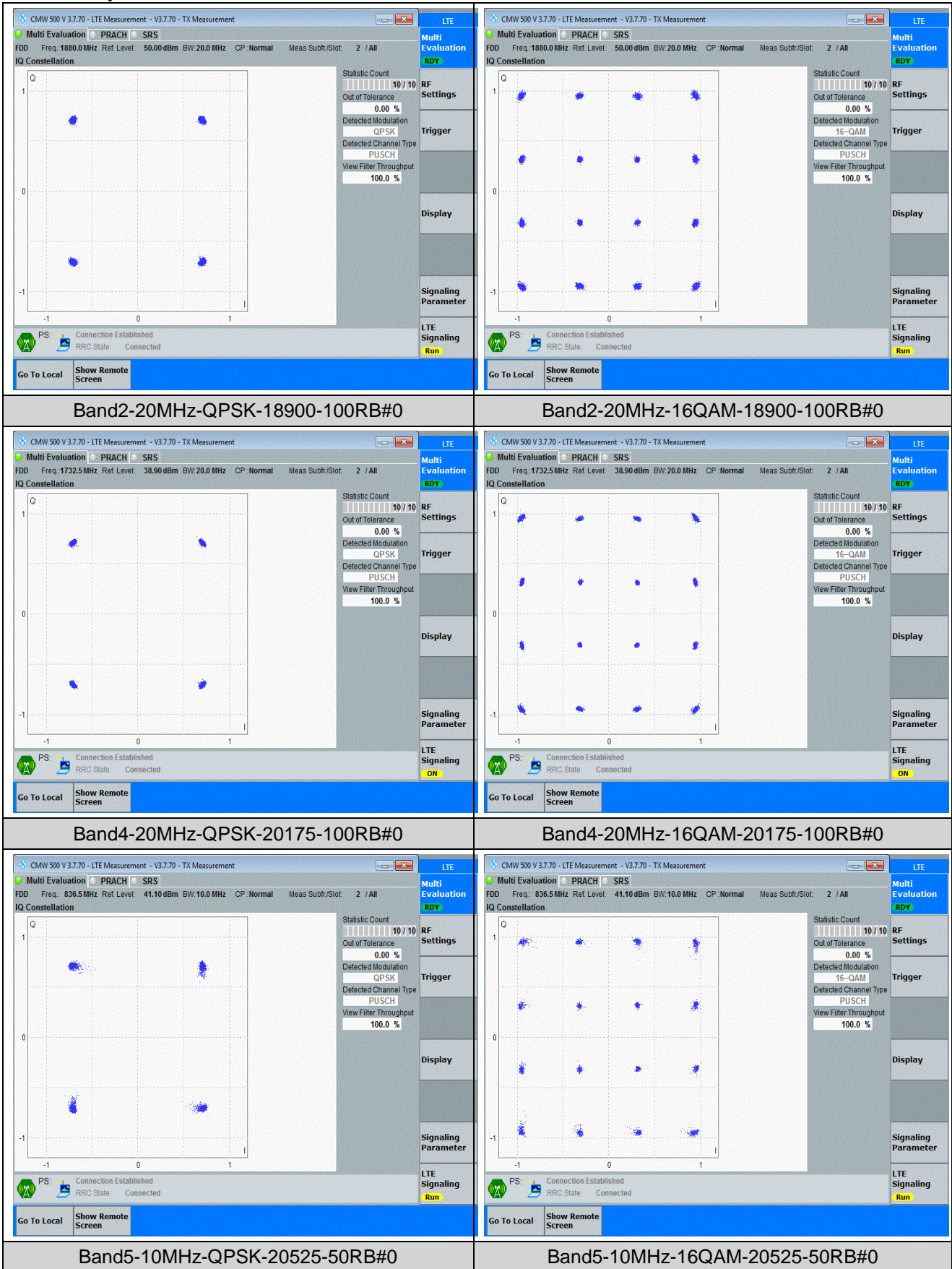
Appendix G: Modulation Characteristics

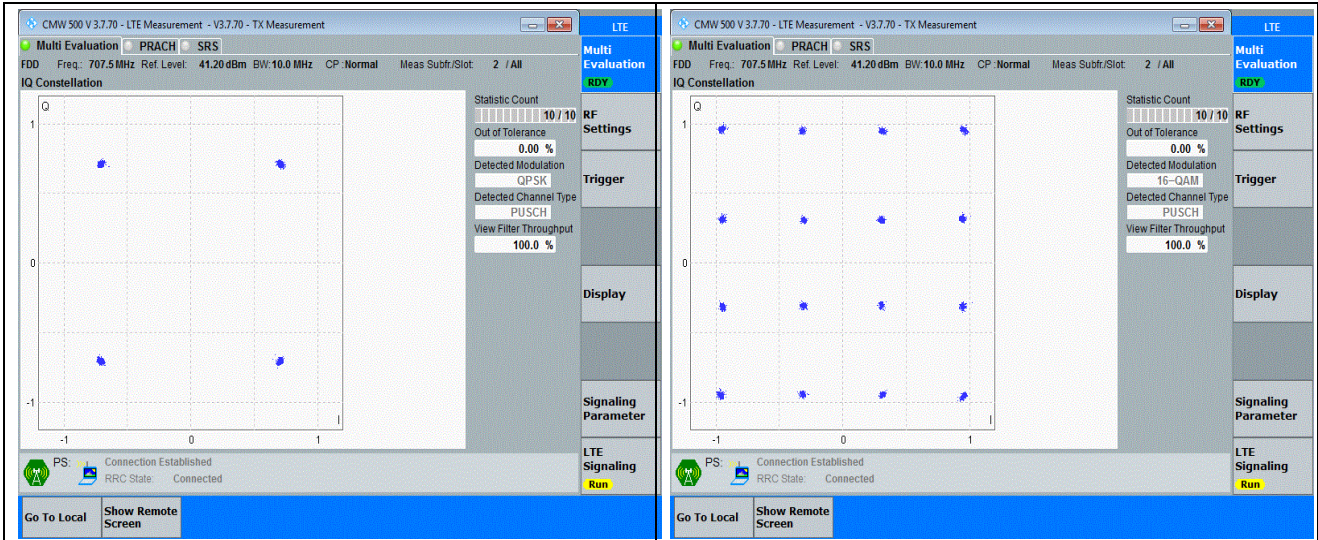
Test Result

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.

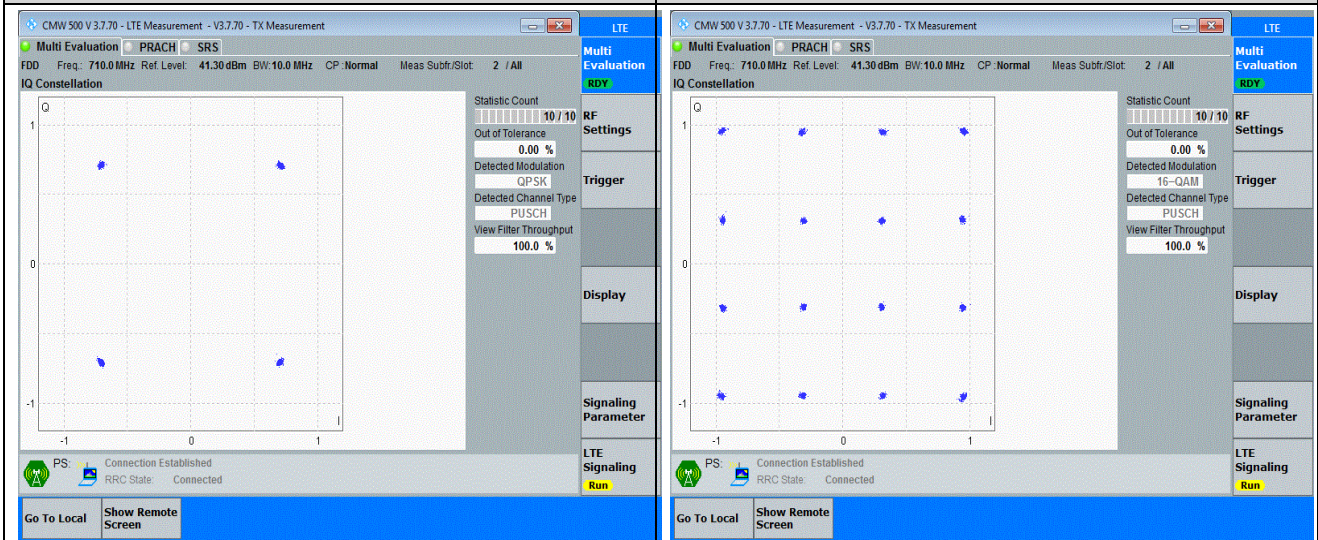
Test Graphs





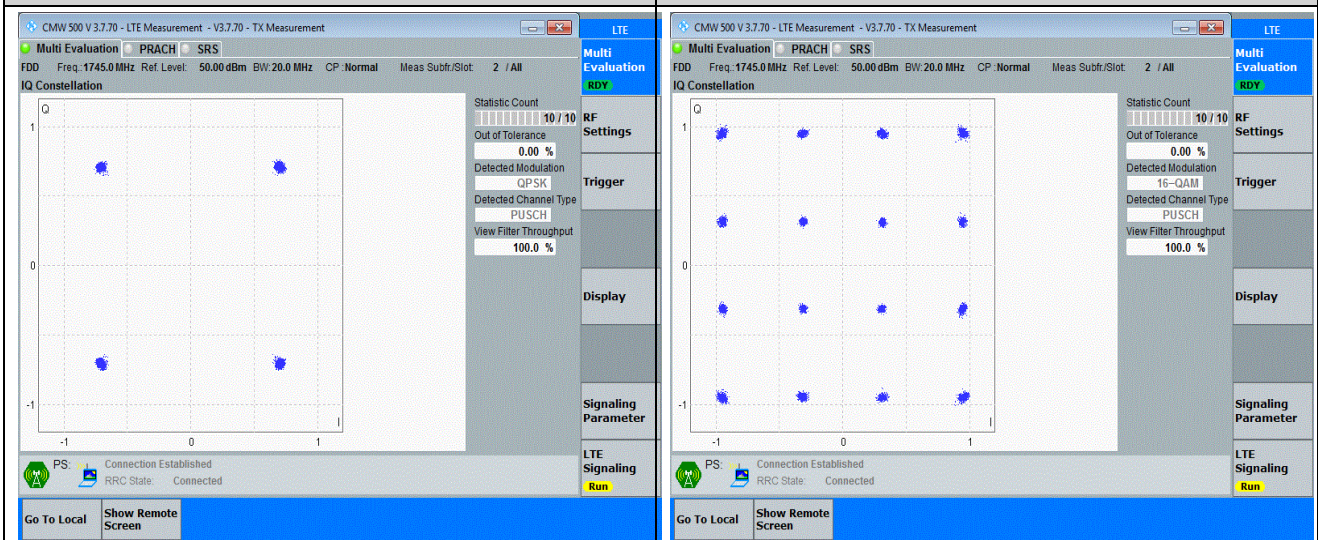
Band12-10MHz-QPSK-23095-50RB#0

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