

Appendix E for KSCR2307001146AT-B66

1. Out of band rejection

1.1 Band66

1.1.1 Test Result

Band: 66 / NTNV							
Signal	Sweep Frequency Range (MHz)	TX Type	ANT	F0 (MHz)	FL (MHz)	FH (MHz)	Verdict
CW	1930 - 2380	SISO	1	2171.2	2089.3	2218.9	Pass

1.1.2 Test Graph



2. AGC threshold

2.1 Band66

2.1.1 Test Result

Band: 66 / NTNV					
Signal	Frequency (MHz)	TX Type	ANT	AGC Threshold (dBm)	Verdict
AWGN	2171.2	SISO	1	-3	Pass
GMSK	2171.2	SISO	1	-3	Pass

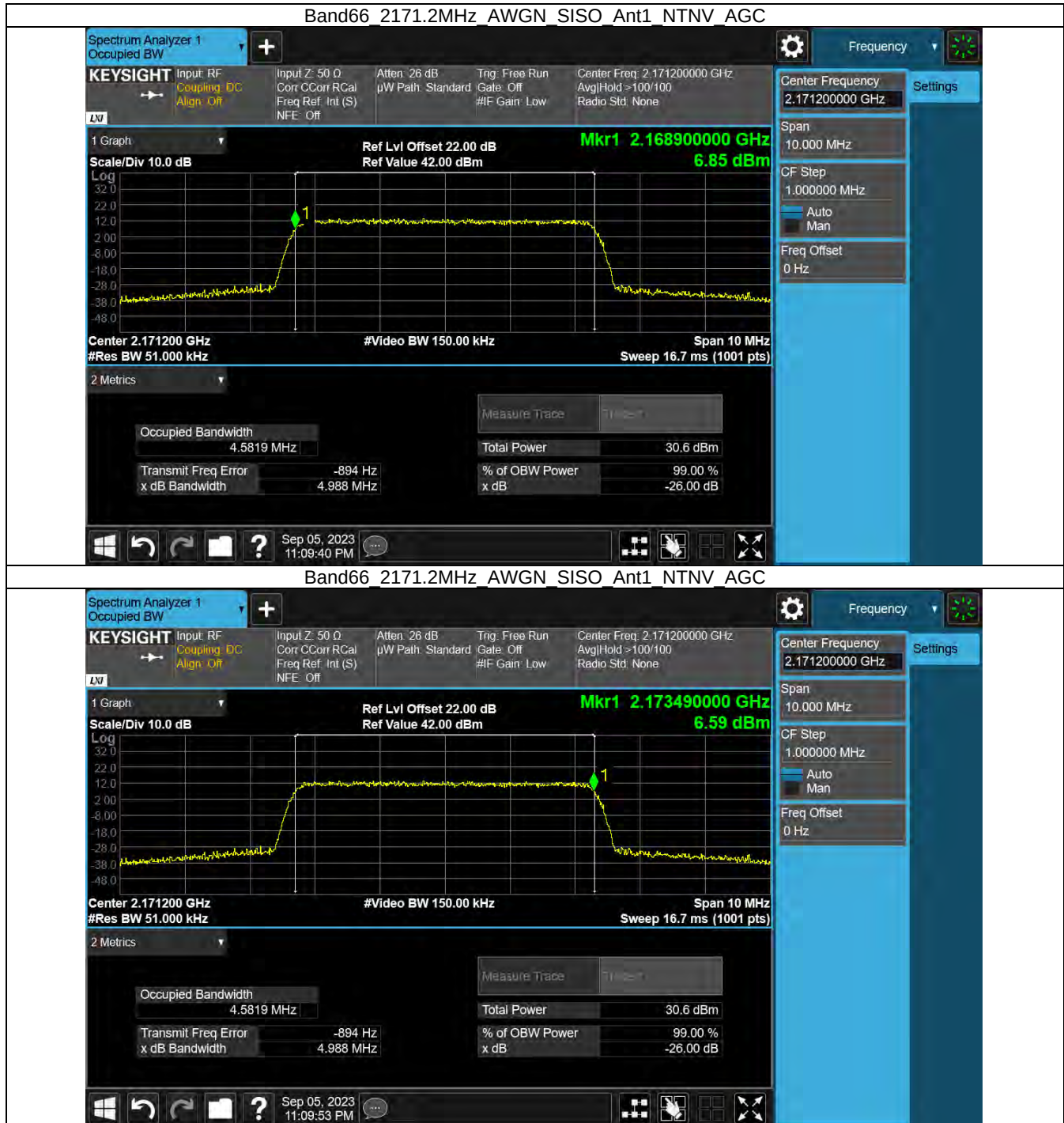
3. Input-versus-output signal comparison

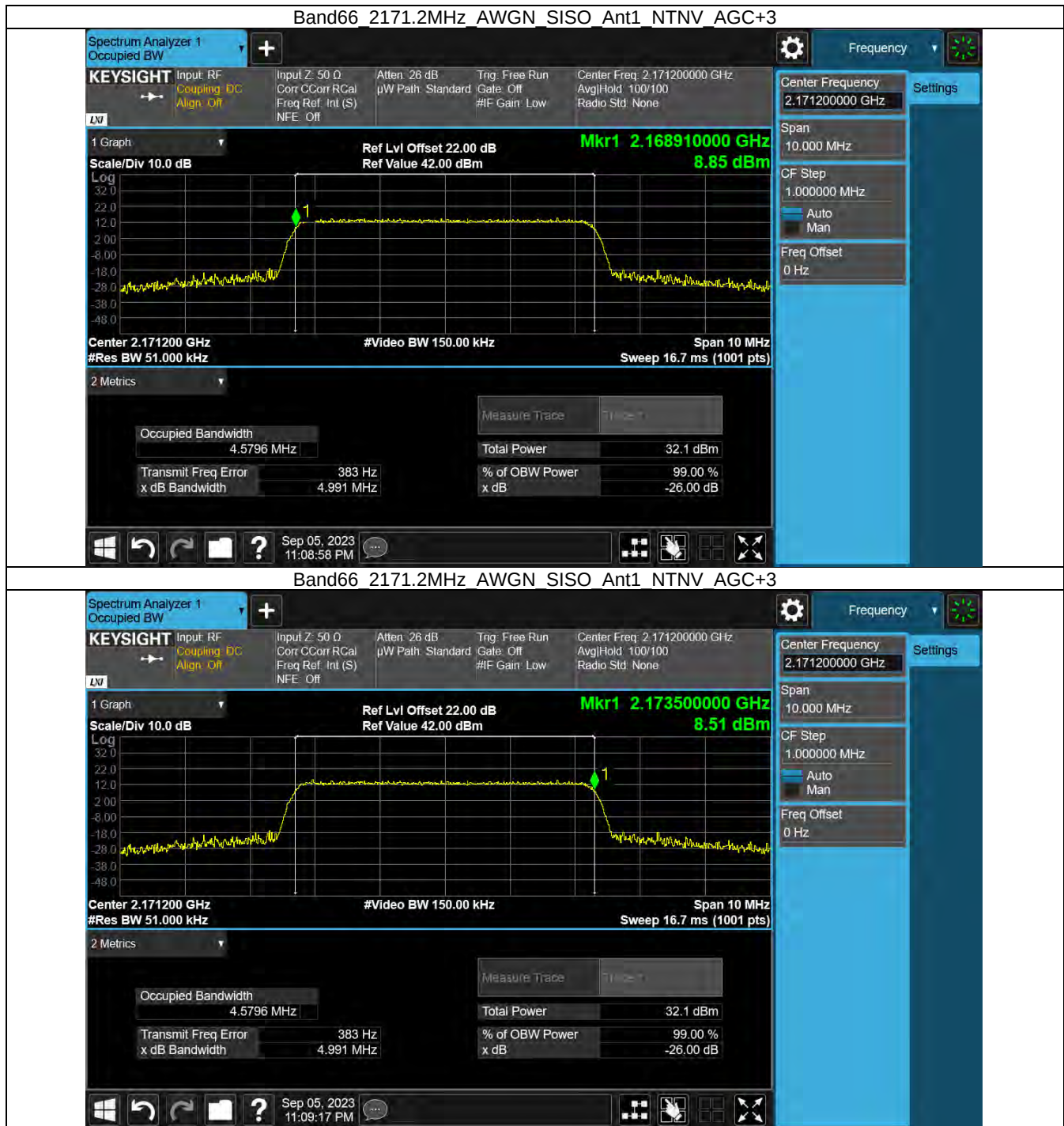
3.1 Band66_OBW

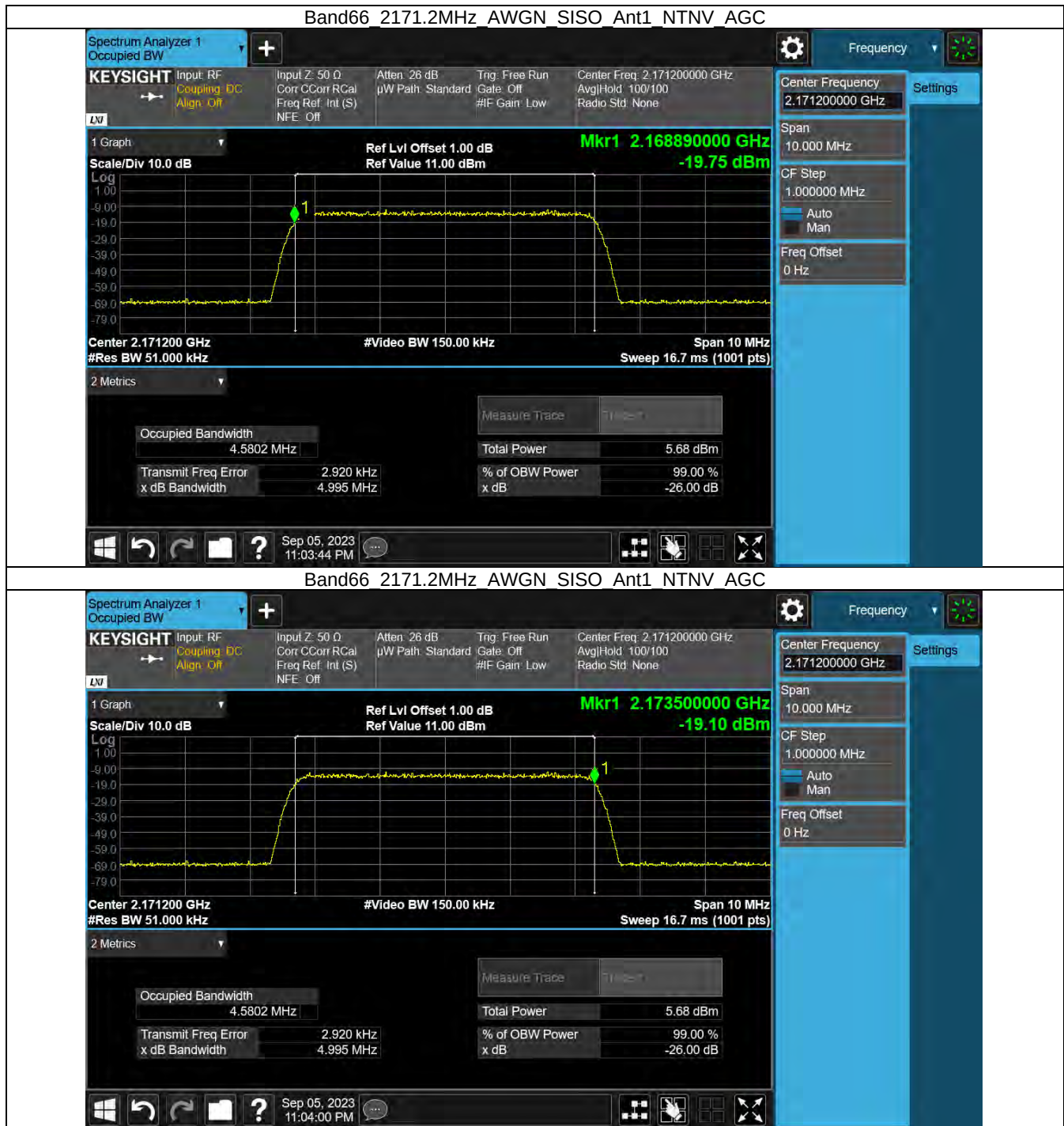
3.1.1 Test Result

Band: 66 / NTNV									
Signal			TX Type	ANT	99% OBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-3	2171.2	SISO	1	4.5819	4.5802	0.0371	5	Pass
	0	2171.2	SISO	1	4.5796	4.5844	-0.1050	5	Pass
GMSK	-3	2171.2	SISO	1	0.24588	0.24575	0.0529	5	Pass
	0	2171.2	SISO	1	0.24586	0.24575	0.0448	5	Pass

3.1.2 Test Graph

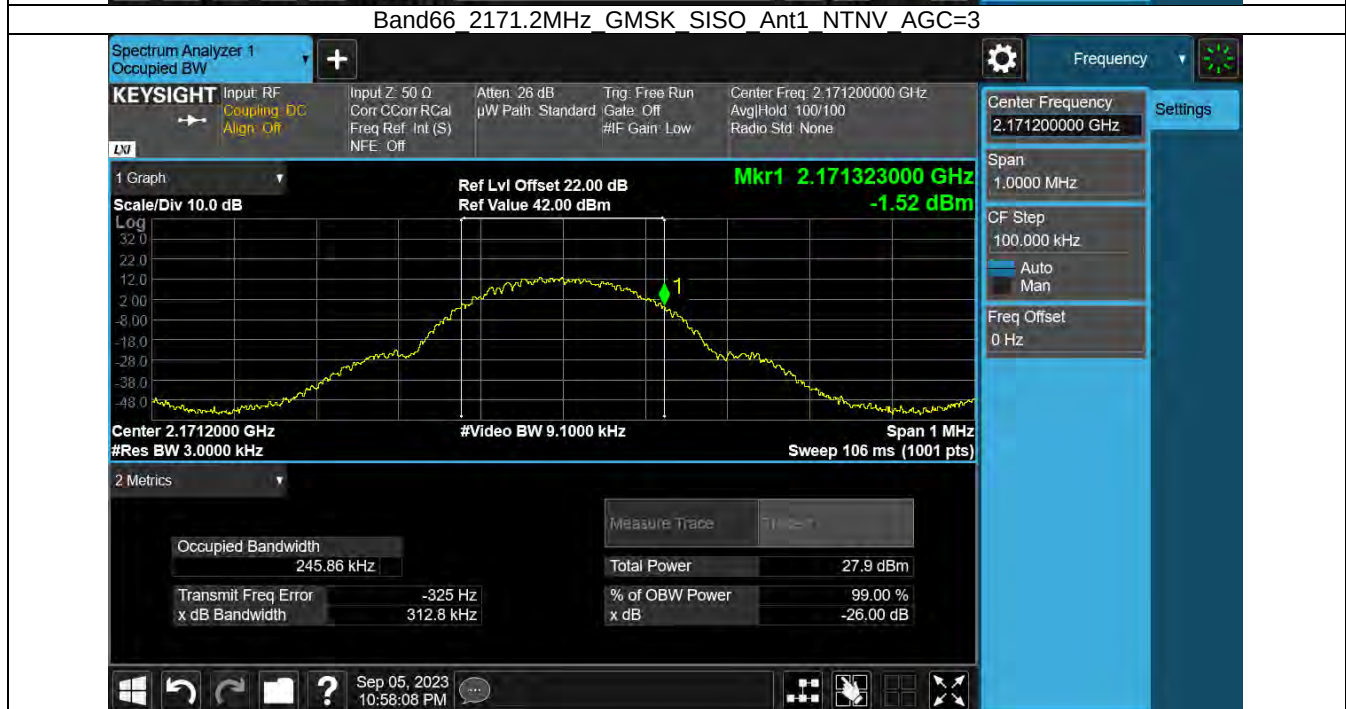
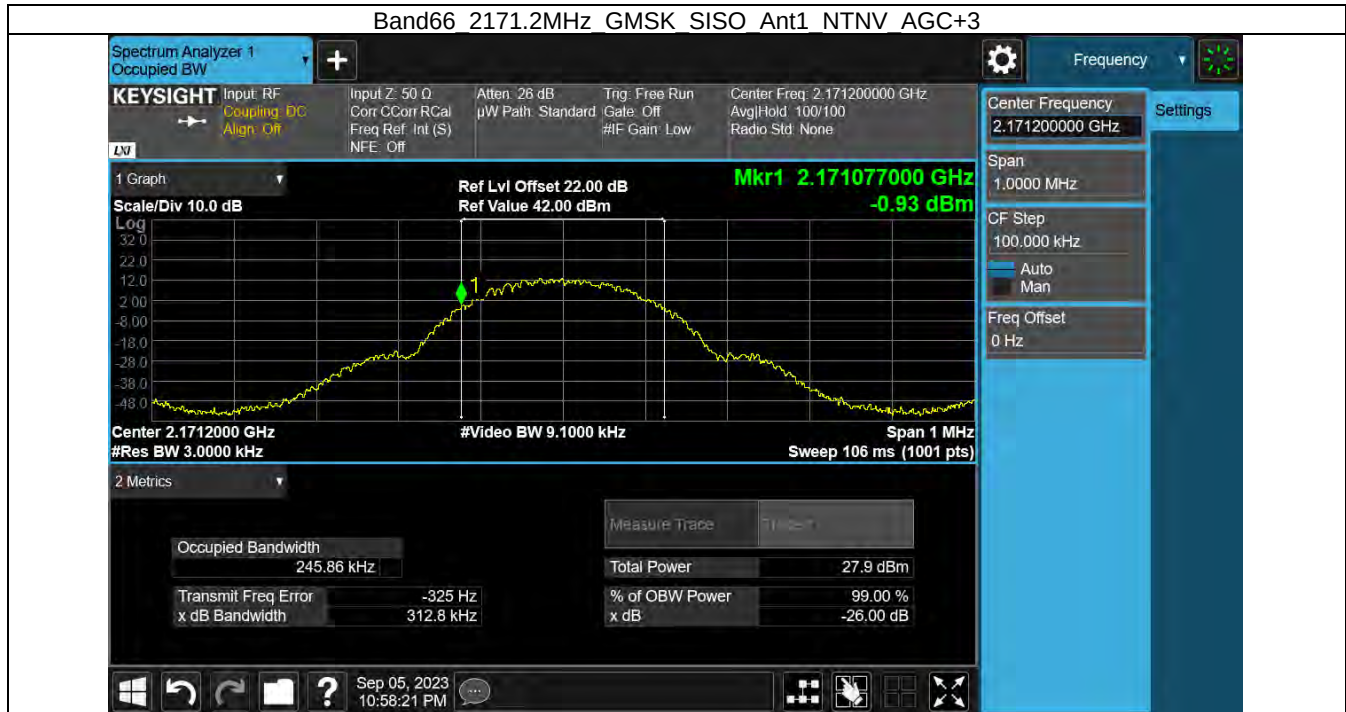














Band66 2171.2MHz GMSK SISO Ant1 NTN AGC



Band66 2171.2MHz GMSK SISO Ant1 NTN AGC+3

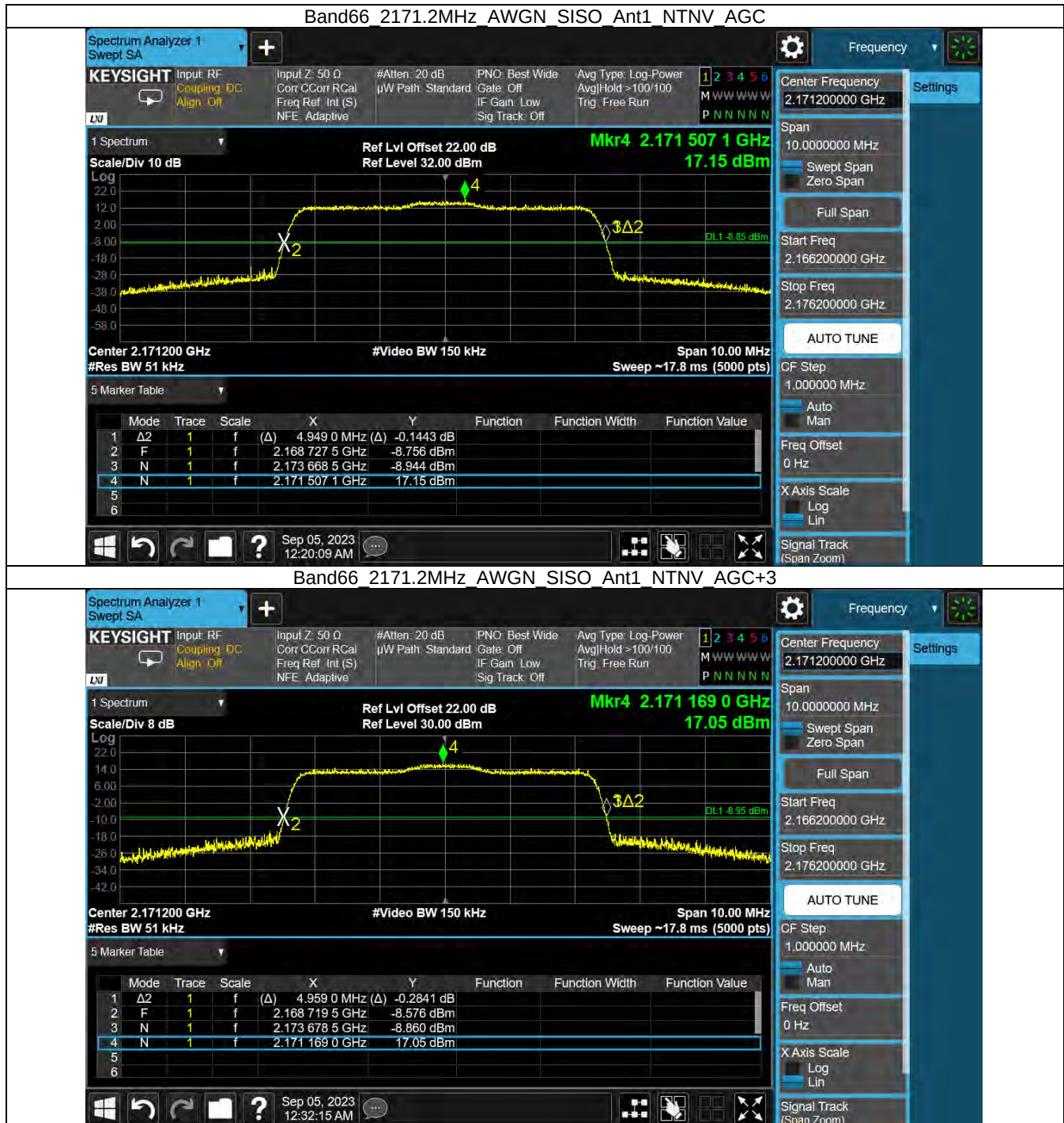


3.2 Band66_EBW

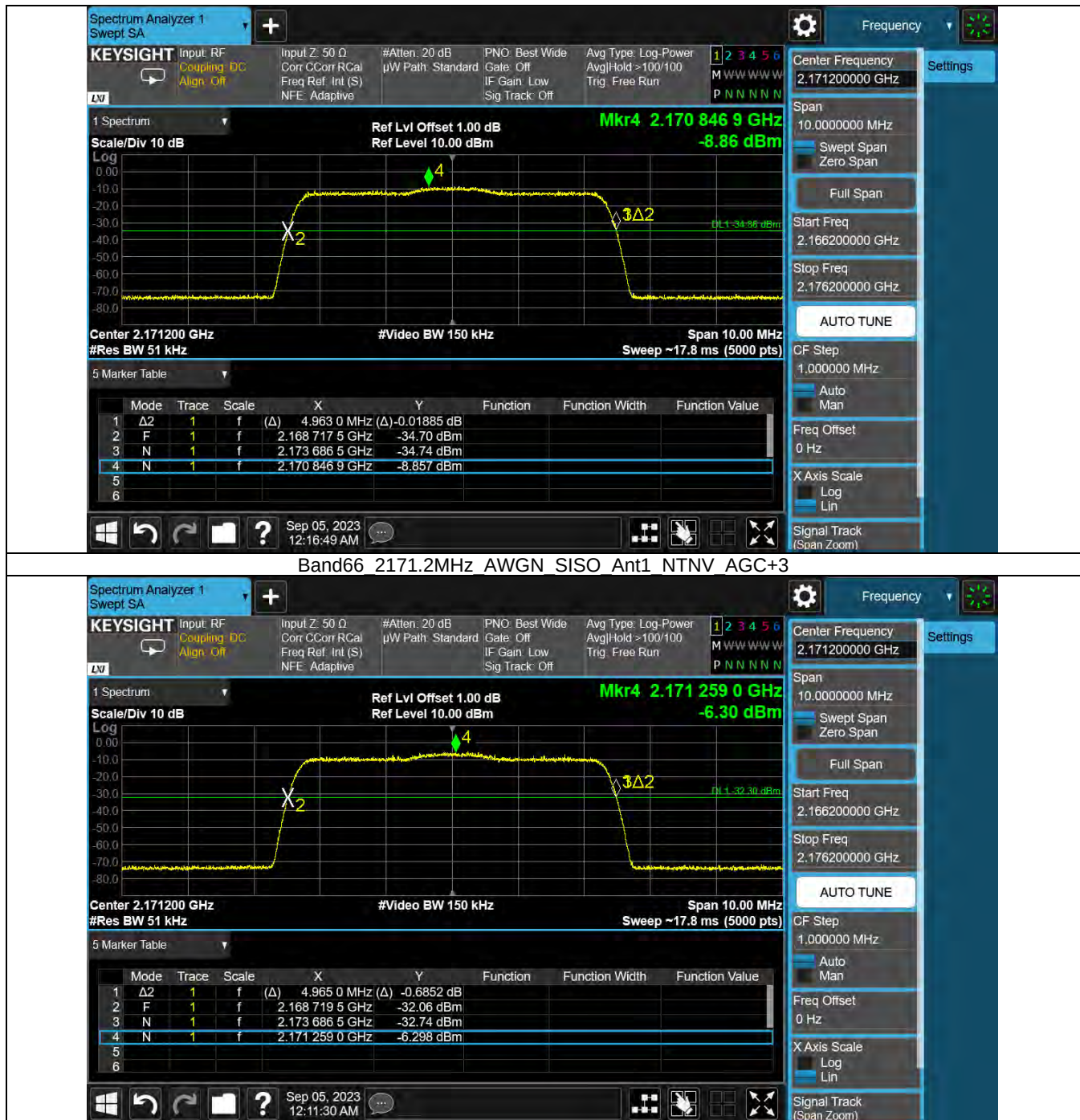
3.2.1 Test Result

Band: 66 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-3	2171.2	SISO	1	4.949	4.963	-0.282	5	Pass
	0	2171.2	SISO	1	4.959	4.965	-0.121	5	Pass
GMSK	-3	2171.2	SISO	1	0.31266	0.31426	-0.509	5	Pass
	0	2171.2	SISO	1	0.31286	0.31306	-0.064	5	Pass

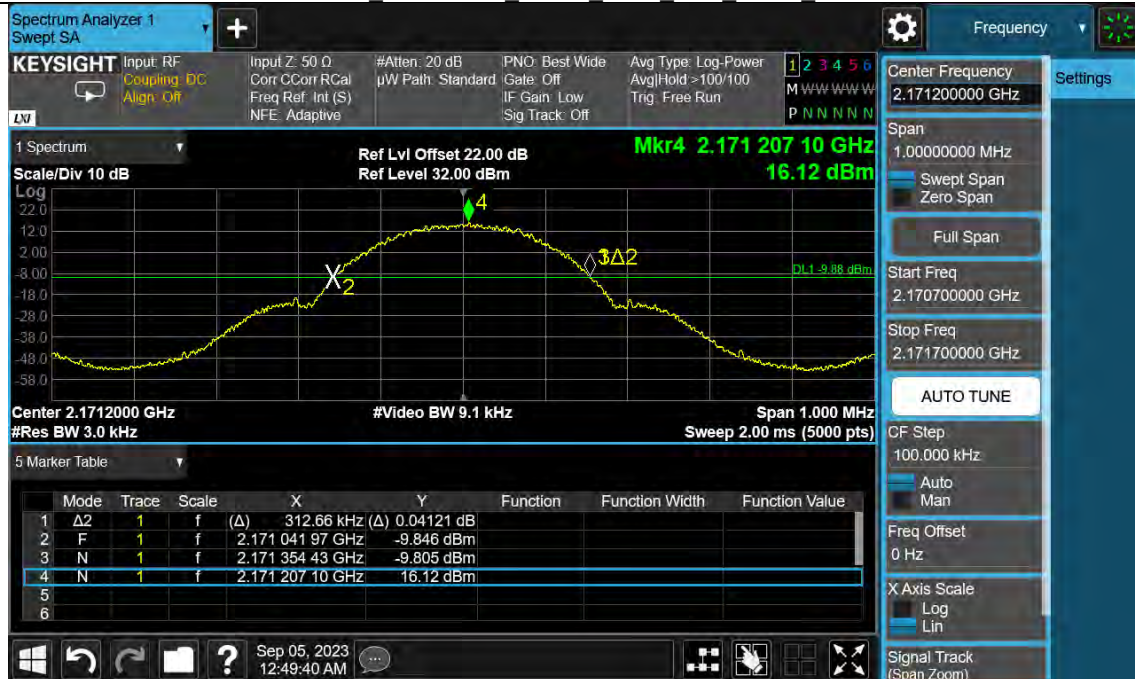
3.2.2 Test Graph



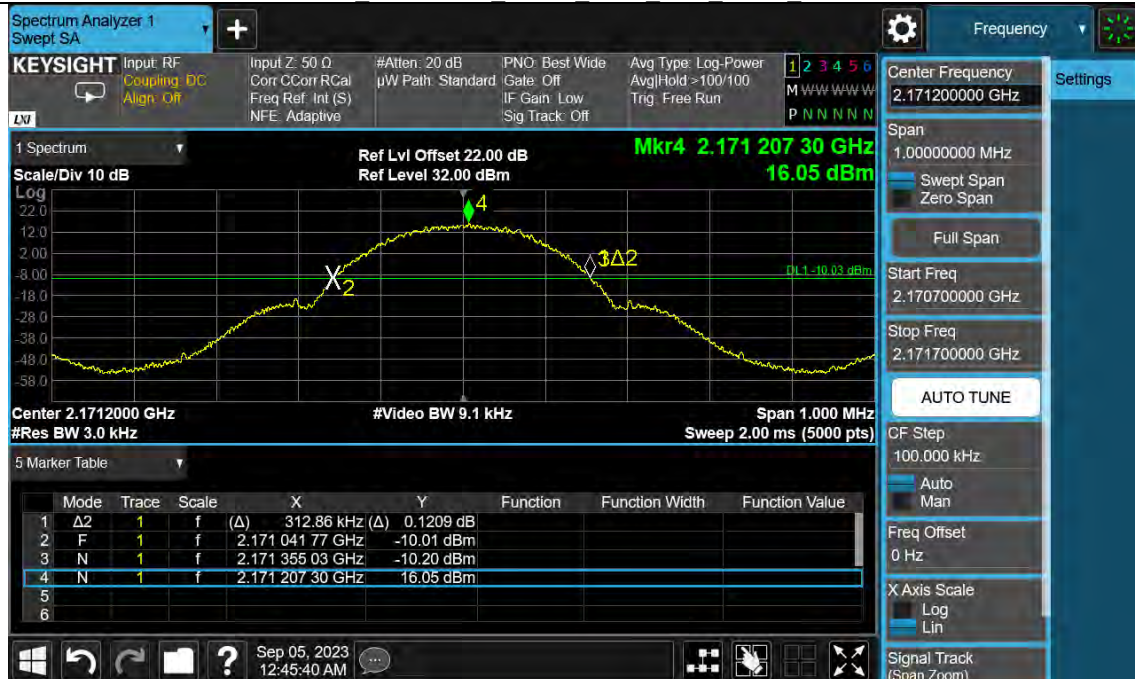
Band66 2171.2MHz AWGN SISO Ant1 NTN AGC



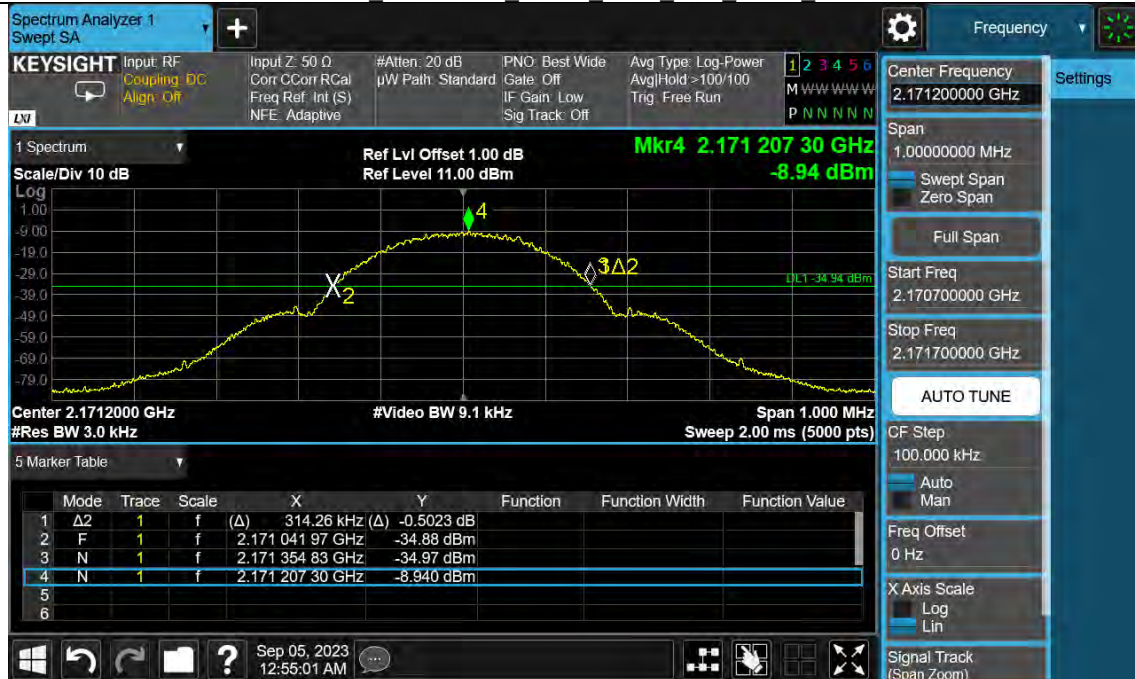
Band66 2171.2MHz GMSK SISO Ant1 NTN AGC



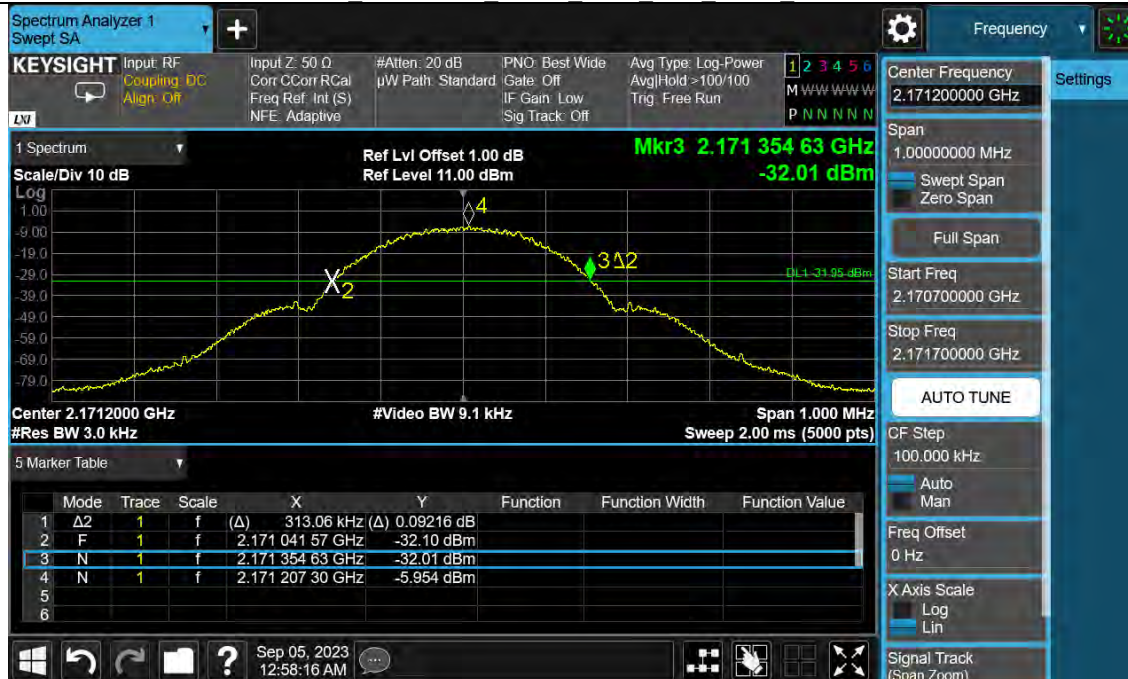
Band66 2171.2MHz GMSK SISO Ant1 NTN AGC+3



Band66 2171.2MHz GMSK SISO Ant1 NTN NV AGC



Band66 2171.2MHz GMSK SISO Ant1 NTN NV AGC+3



4. Input/output power and amplifier/booster gain

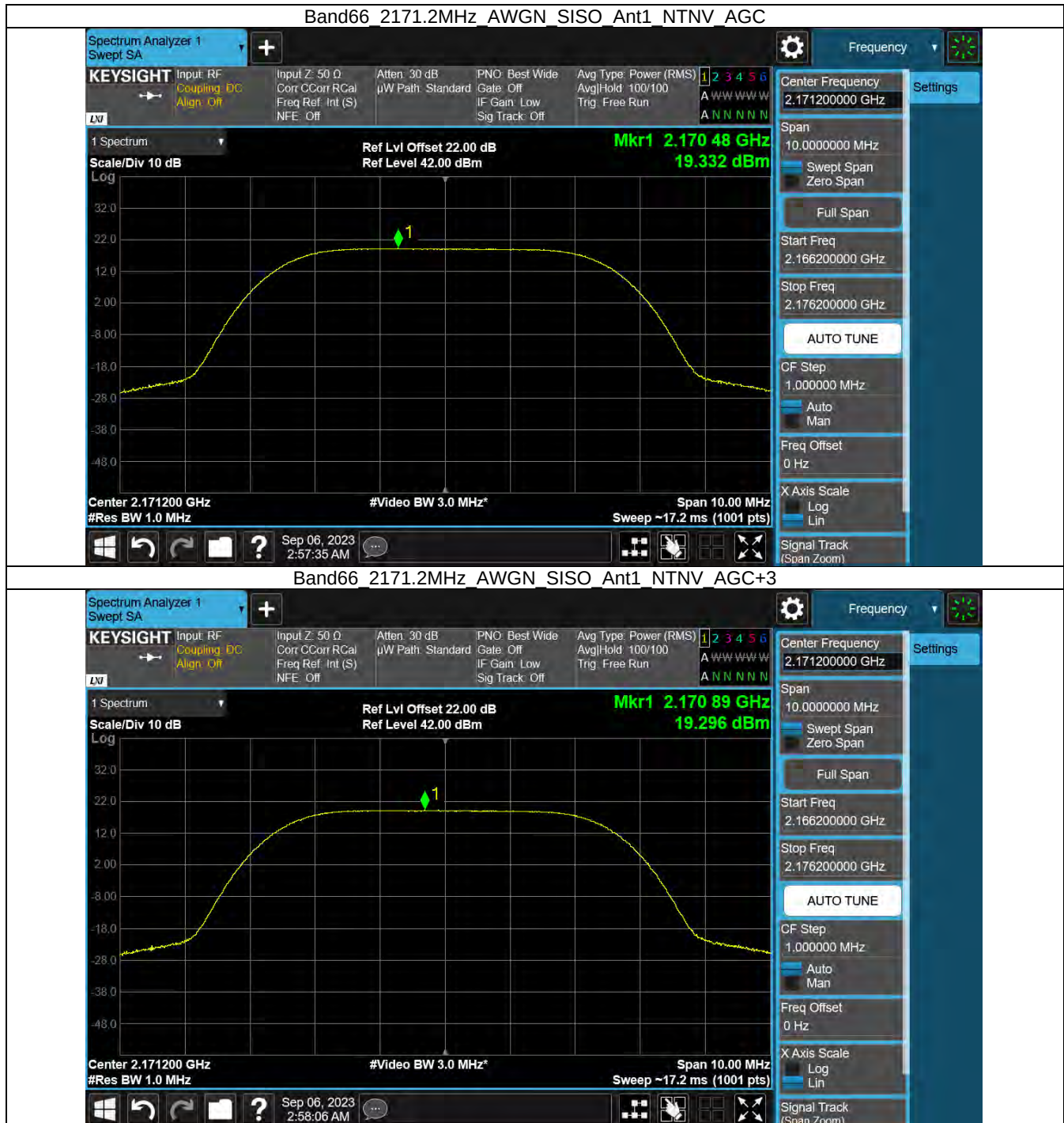
4.1 Band66_EIRP

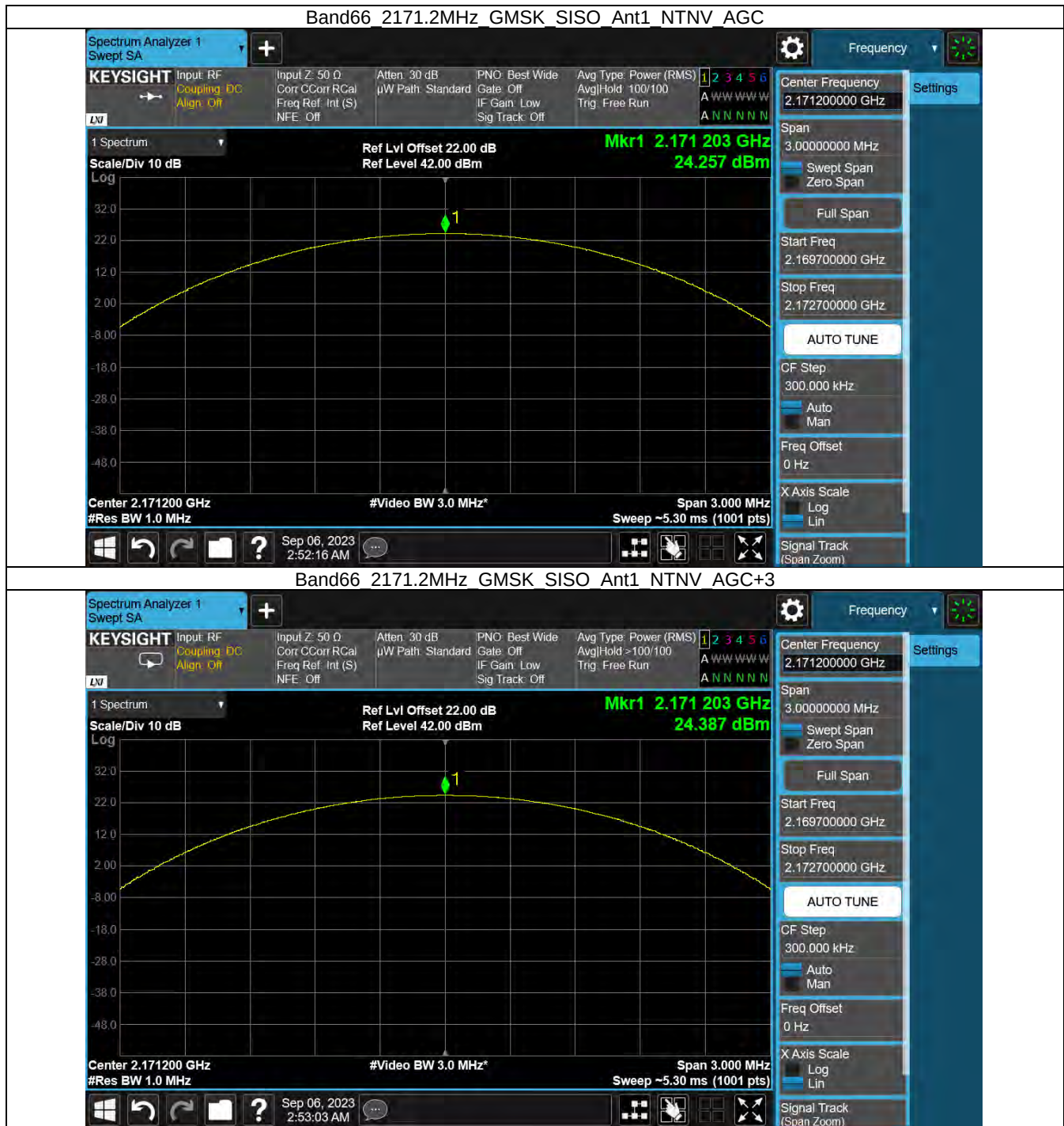
4.1.1 Test Result

Band: 66 / NTNV										
Signal			TX Type	ANT	Conducted Power (dBm/MHz)		EIRP (dBm/MHz)		Booster Gain (dB)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	Result	Limit		
AWGN	-3	2171.2	SISO	1	19.332	-7.72	24.762	<=62.15	27.052	Pass
	0	2171.2	SISO	1	19.296	-3.69	24.726	<=62.15	/	Pass
GMSK	-3	2171.2	SISO	1	24.257	-3.12	29.687	<=62.15	27.377	Pass
	0	2171.2	SISO	1	24.387	0.65	29.817	<=62.15	/	Pass

2110MHz-2180MHz / NTNV							
Operation Band	Frequency (MHz)	Signal Type	Signal Level	Input Power (dBm)	Total Output Power (dBm)	EIRP (dBm)	Gain (dB)
2110MHz-2180MHz	2171.2	AWGN	Pre-AGC	-3	24.45	29.88	/
			3dB Above AGC	0	24.49	29.92	/
	2171.2	GMSK	Pre-AGC	-3	24.53	29.96	/
			3dB Above AGC	0	24.58	30.01	/

4.1.2 Test Graph



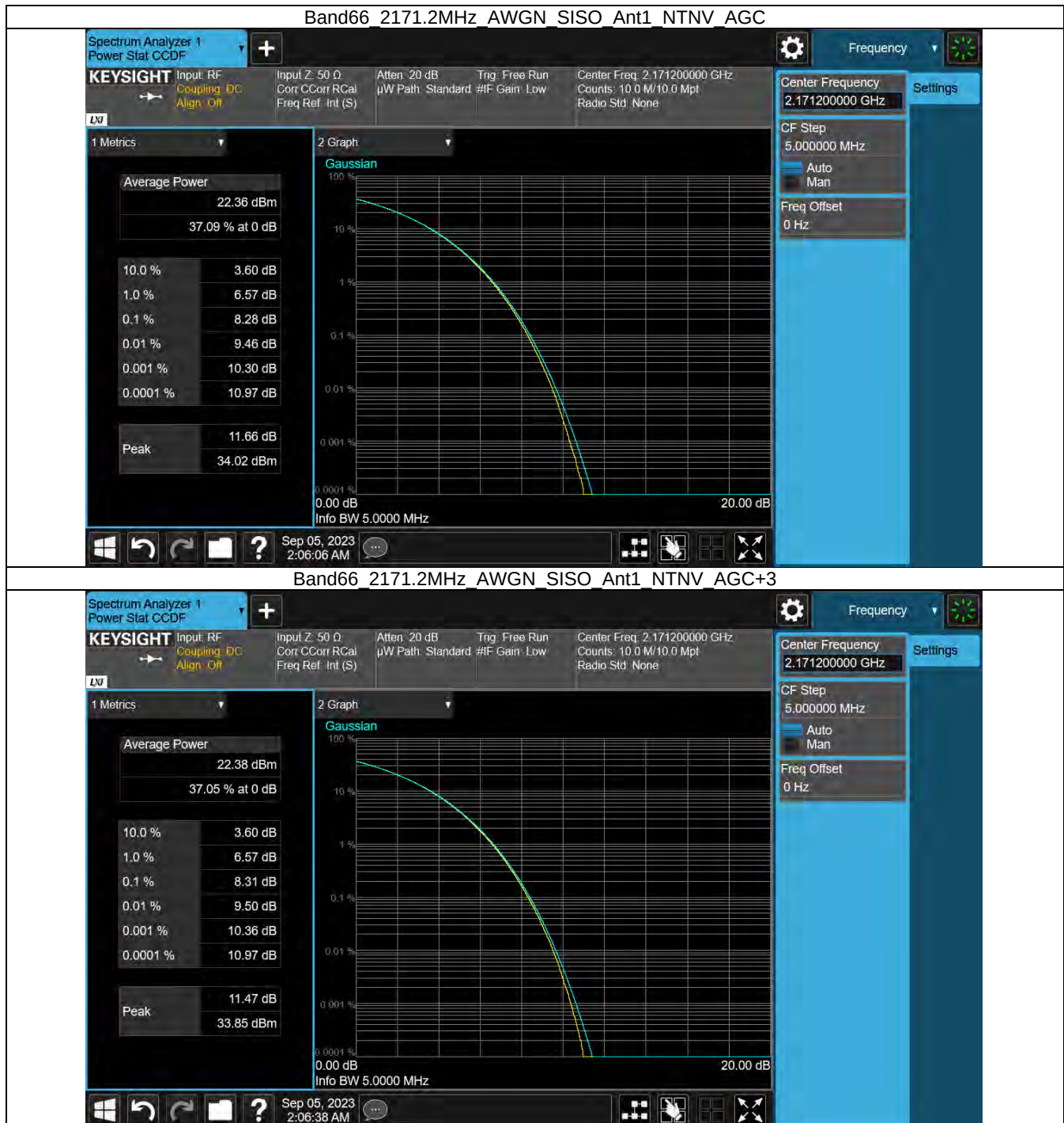


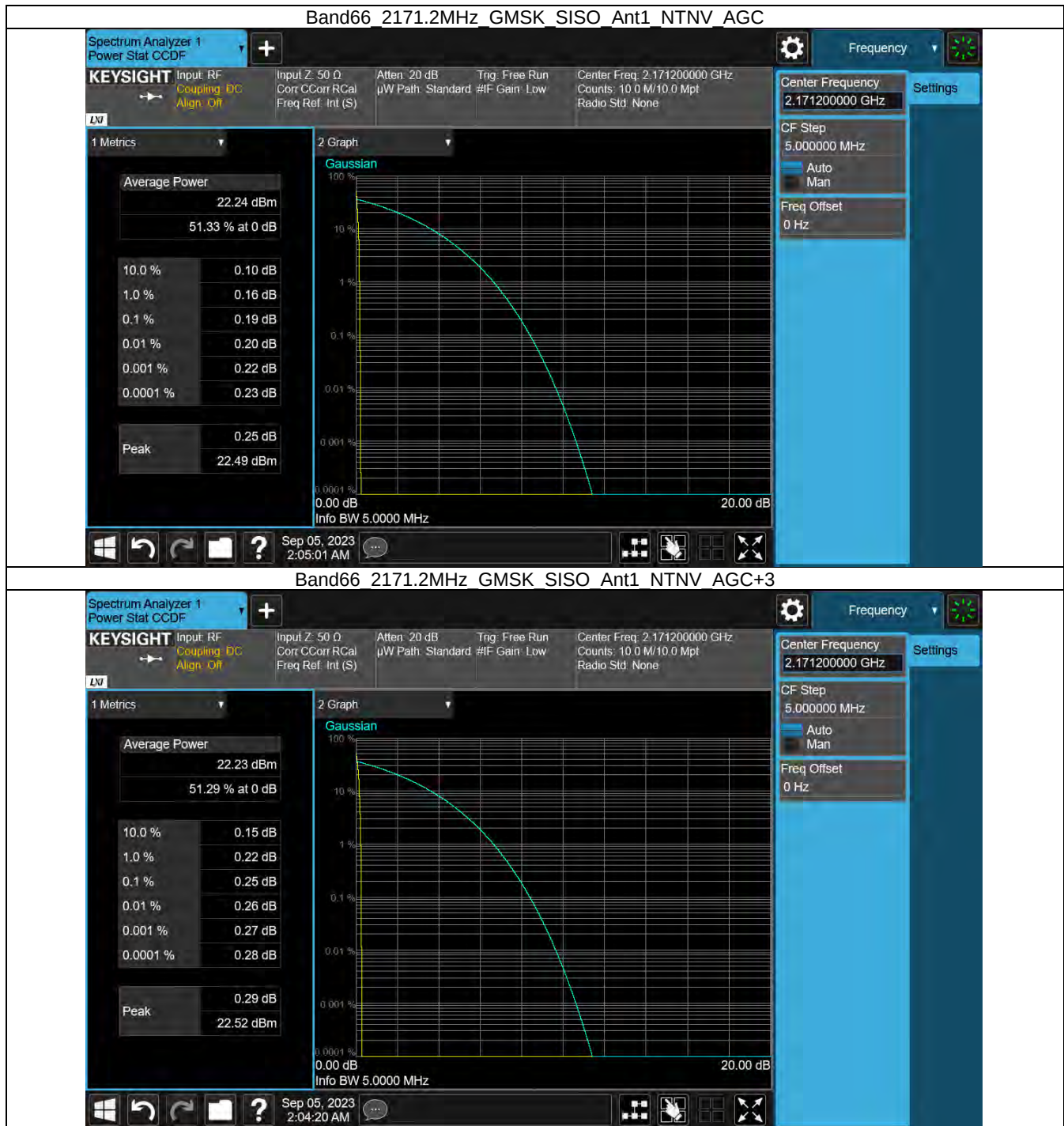
4.2 Band66_PAPR

4.2.1 Test Result

Band: 66 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
AWGN	-3	2171.2	SISO	1	8.28	<=13	Pass
	0	2171.2	SISO	1	8.31	<=13	Pass
GMSK	-3	2171.2	SISO	1	0.19	<=13	Pass
	0	2171.2	SISO	1	0.21	<=13	Pass

4.2.2 Test Graph





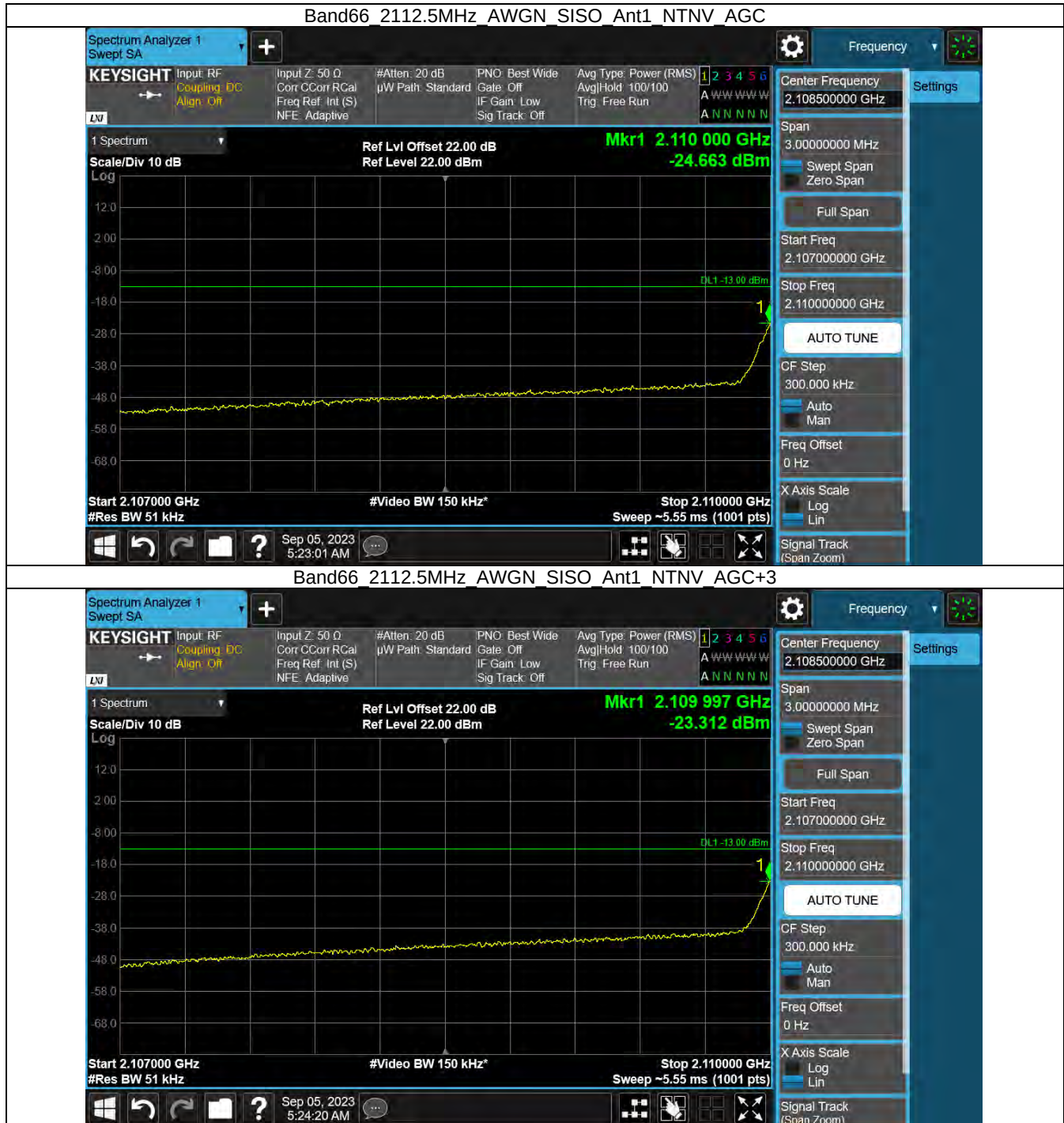
5. Out-of-band/out-of-block (including intermodulation) emissions

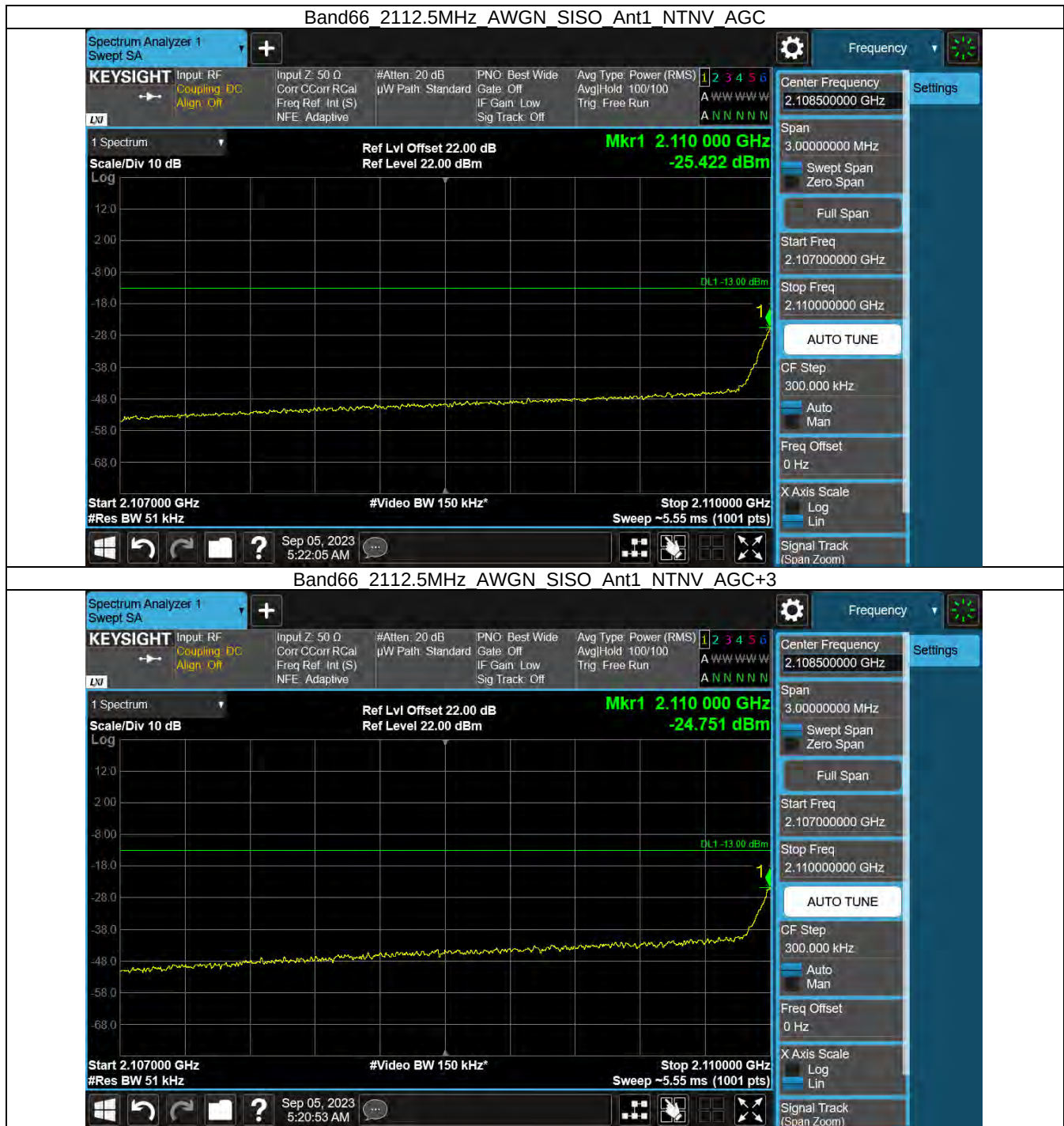
5.1 Band66

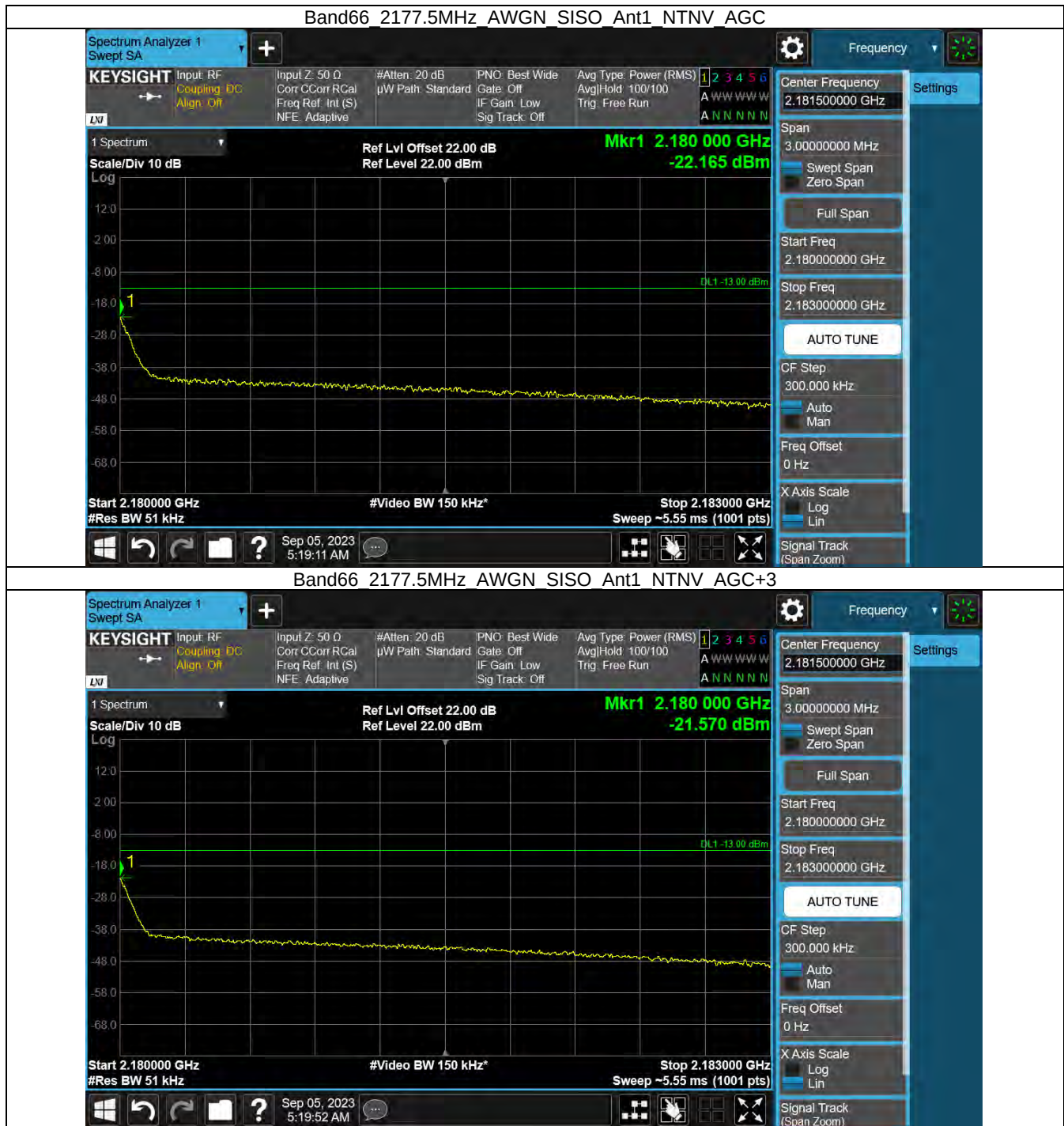
5.1.1 Test Result

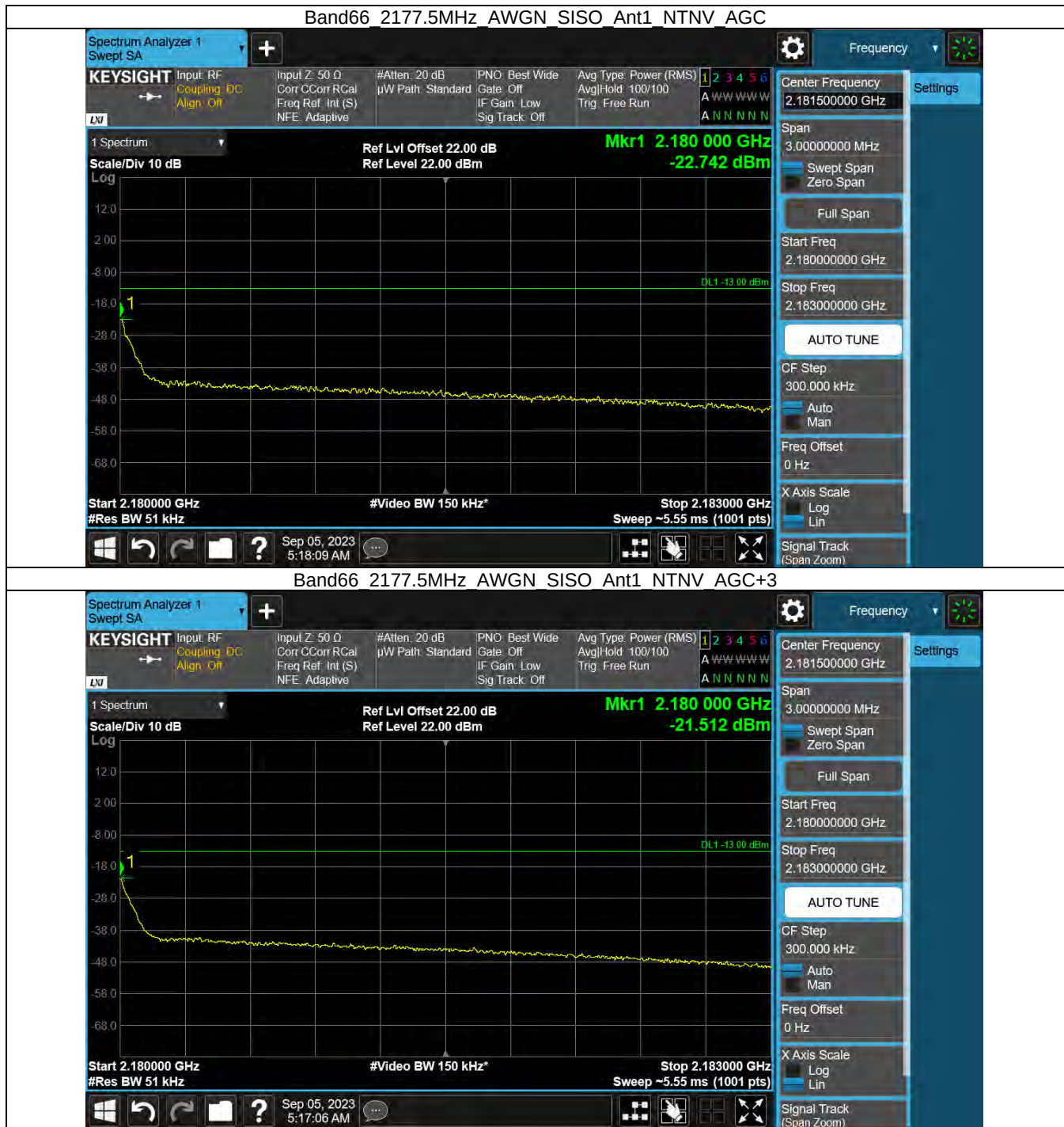
Band: 66 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	AWGN	-3	2112.5	LCH	SISO	1	-24.663	Refer To Test Graph	Pass
		0	2112.5	LCH	SISO	1	-23.312	Refer To Test Graph	Pass
One	AWGN	-3	2112.5	LCH	SISO	1	-25.422	Refer To Test Graph	Pass
		0	2112.5	LCH	SISO	1	-24.751	Refer To Test Graph	Pass
Two	AWGN	-3	2177.5	HCH	SISO	1	-22.165	Refer To Test Graph	Pass
		0	2177.5	HCH	SISO	1	-21.570	Refer To Test Graph	Pass
One	AWGN	-3	2177.5	HCH	SISO	1	-22.742	Refer To Test Graph	Pass
		0	2177.5	HCH	SISO	1	-21.512	Refer To Test Graph	Pass
Two	GMSK	-3	2110.2	LCH	SISO	1	-34.562	Refer To Test Graph	Pass
		0	2110.2	LCH	SISO	1	-32.284	Refer To Test Graph	Pass
One	GMSK	-3	2110.2	LCH	SISO	1	-34.908	Refer To Test Graph	Pass
		0	2110.2	LCH	SISO	1	-32.241	Refer To Test Graph	Pass
Two	GMSK	-3	2179.8	HCH	SISO	1	-34.016	Refer To Test Graph	Pass
		0	2179.8	HCH	SISO	1	-30.327	Refer To Test Graph	Pass
One	GMSK	-3	2179.8	HCH	SISO	1	-32.614	Refer To Test Graph	Pass
		0	2179.8	HCH	SISO	1	-31.076	Refer To Test Graph	Pass

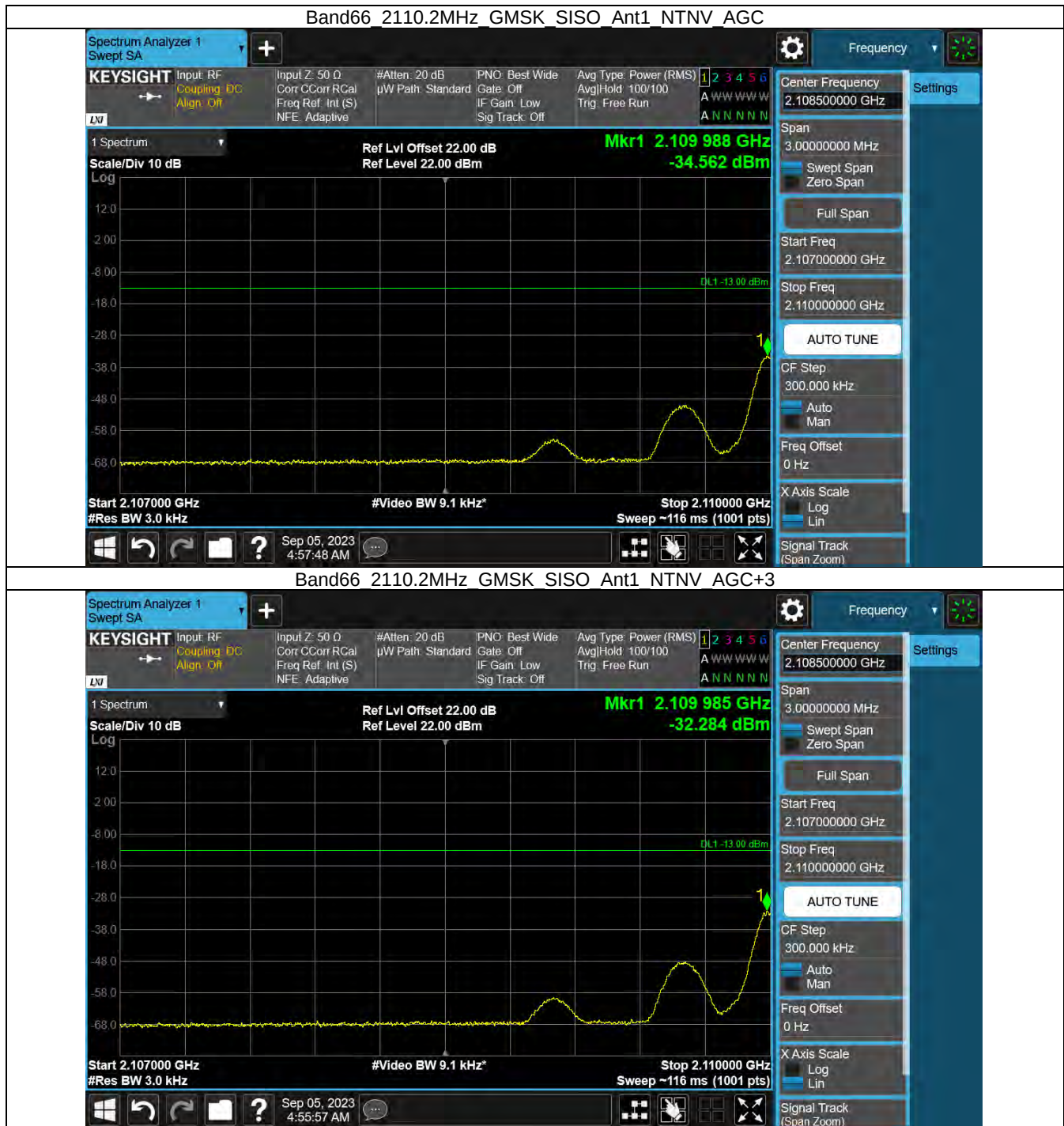
5.1.2 Test Graph

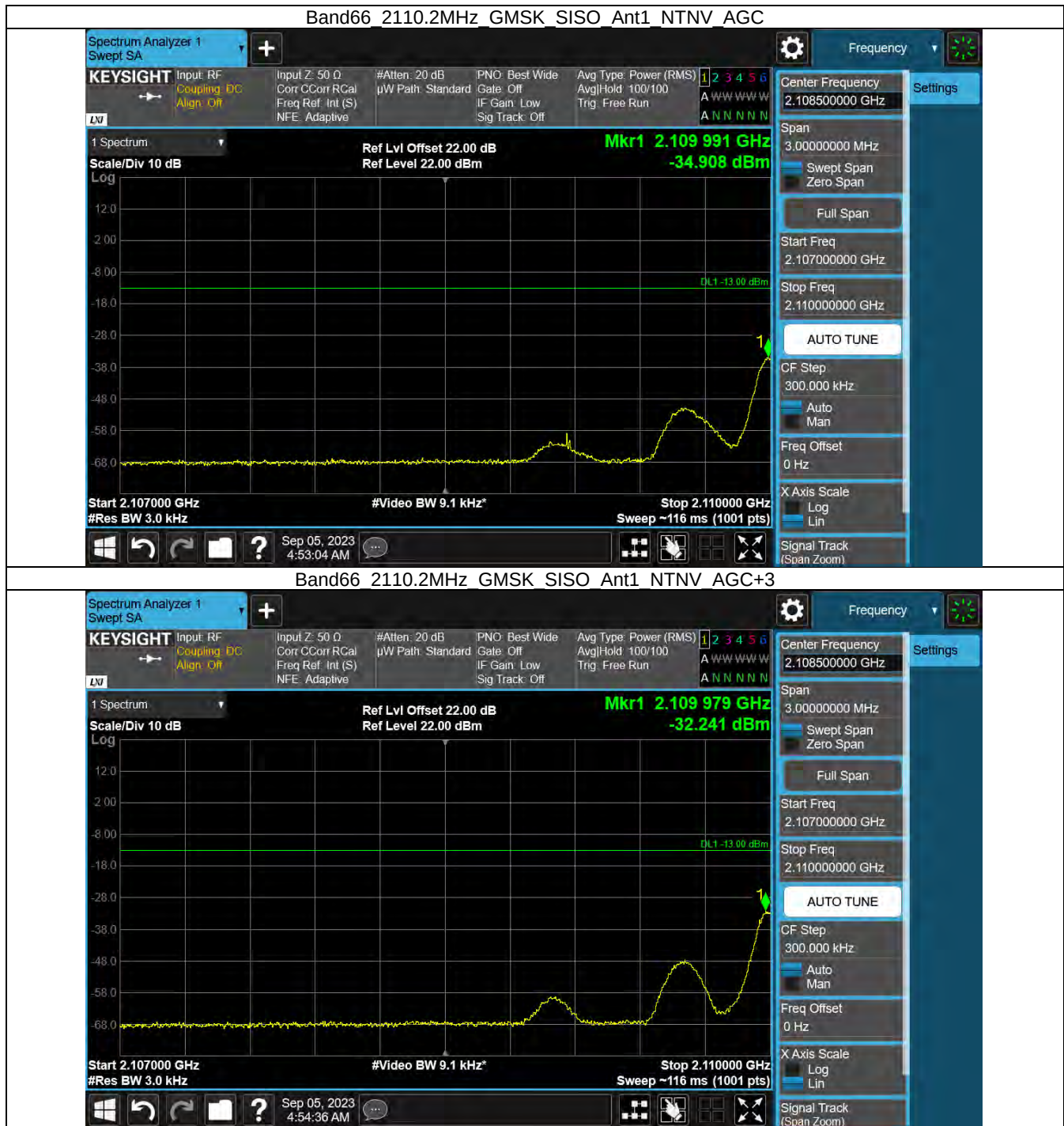


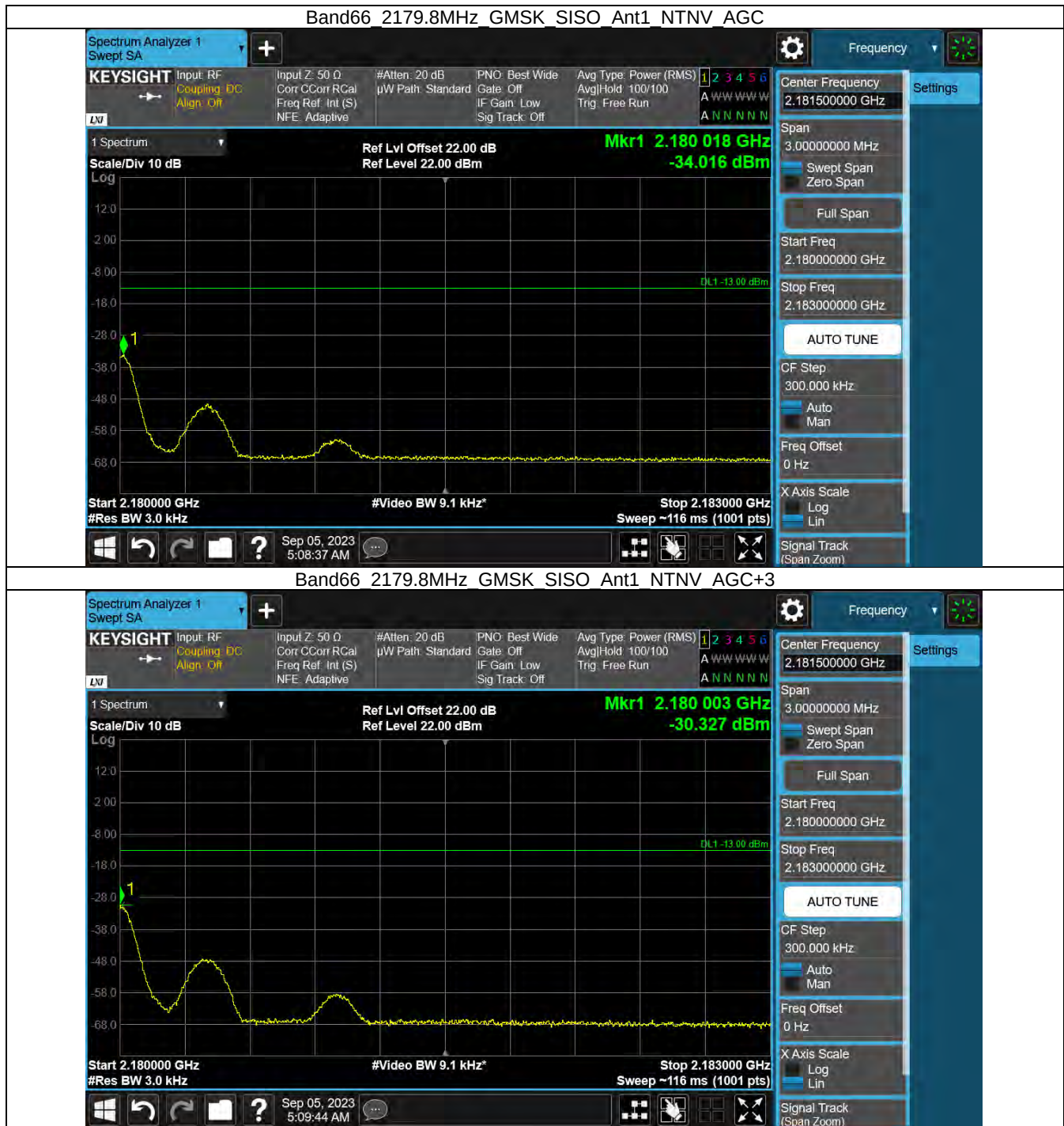


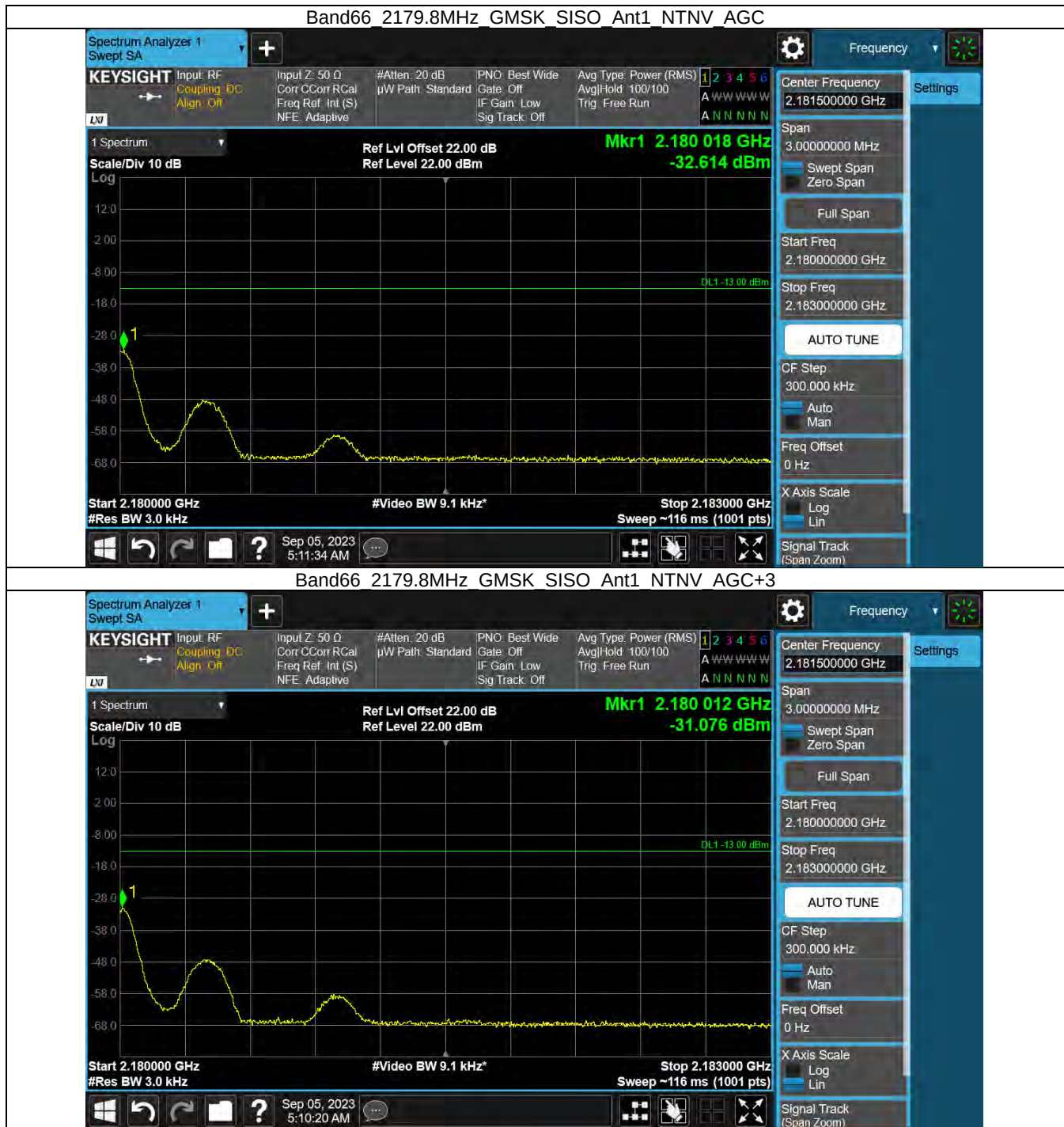












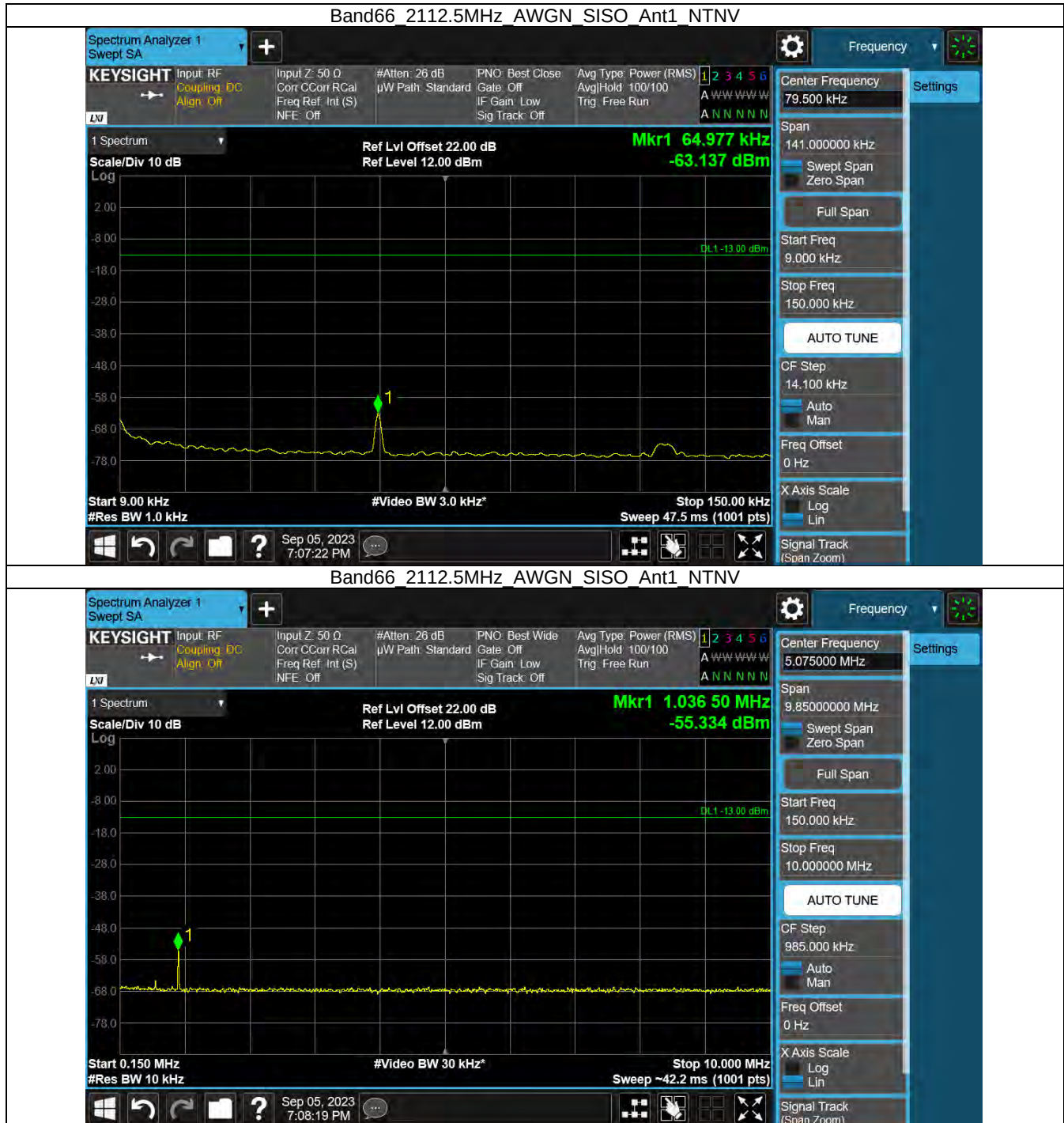
6. Spurious emissions

6.1 Band66

6.1.1 Test Result

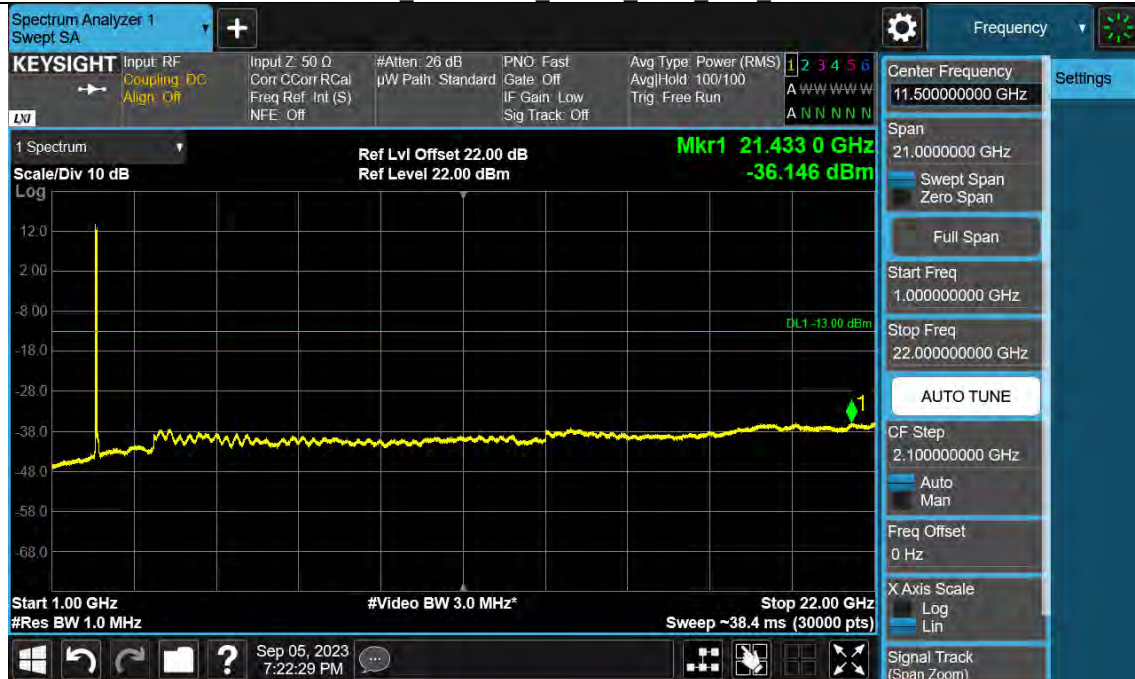
Band: 66 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
AWGN	-3	2112.5	LCH	SISO	1	Refer To Test Graph		Pass
		2145	MCH	SISO	1	Refer To Test Graph		Pass
		2177.5	HCH	SISO	1	Refer To Test Graph		Pass
GMSK	-3	2110.2	LCH	SISO	1	Refer To Test Graph		Pass
		2145	MCH	SISO	1	Refer To Test Graph		Pass
		2179.8	HCH	SISO	1	Refer To Test Graph		Pass

6.1.2 Test Graph

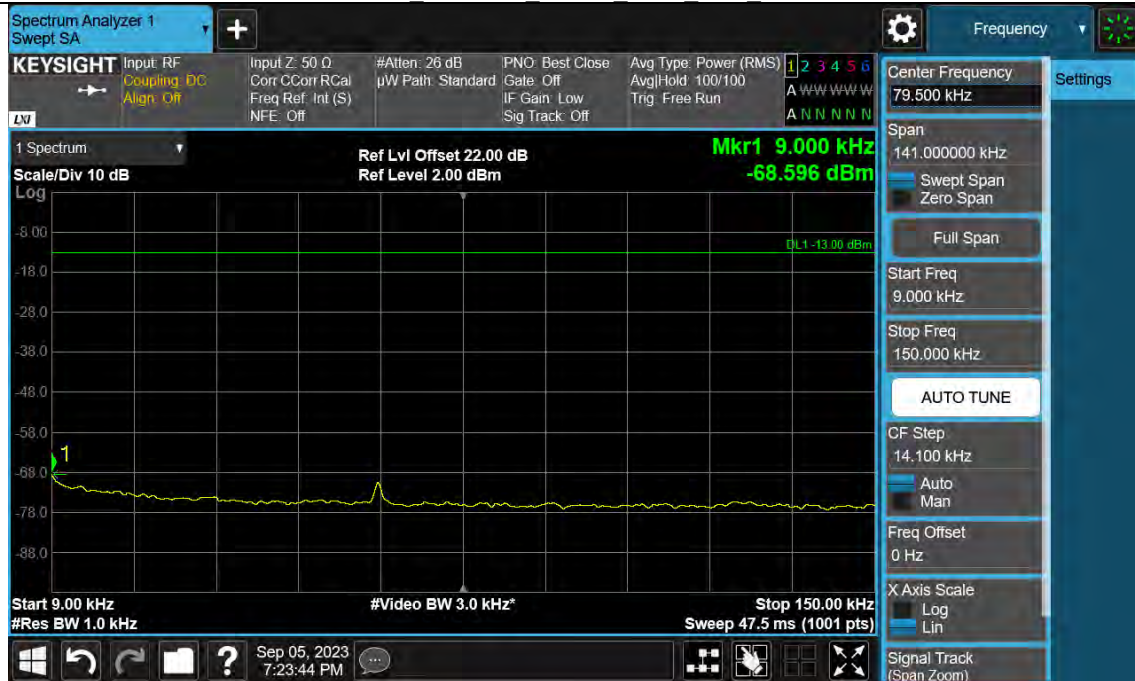


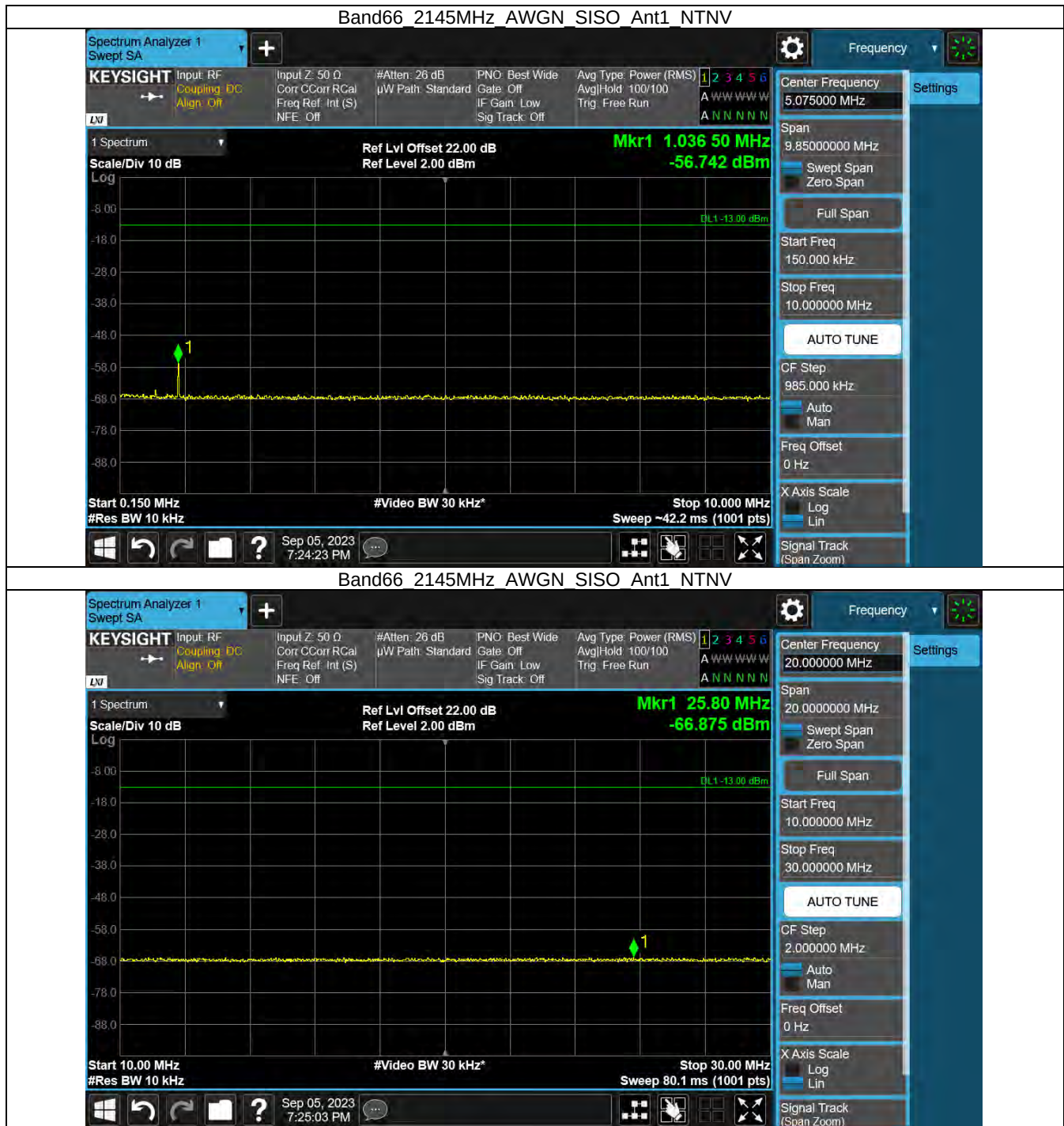


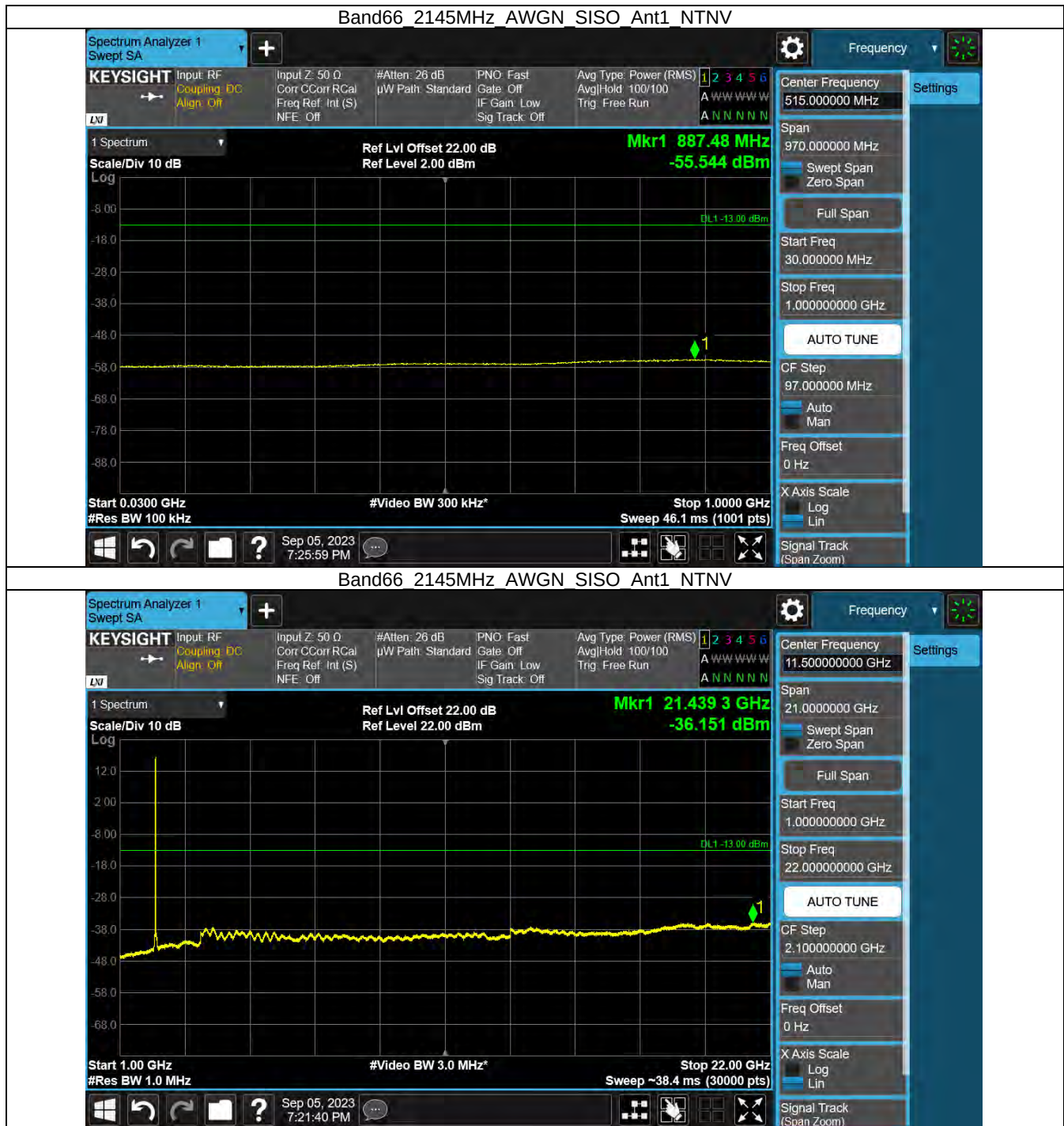
Band66 2112.5MHz AWGN SISO Ant1 NTN



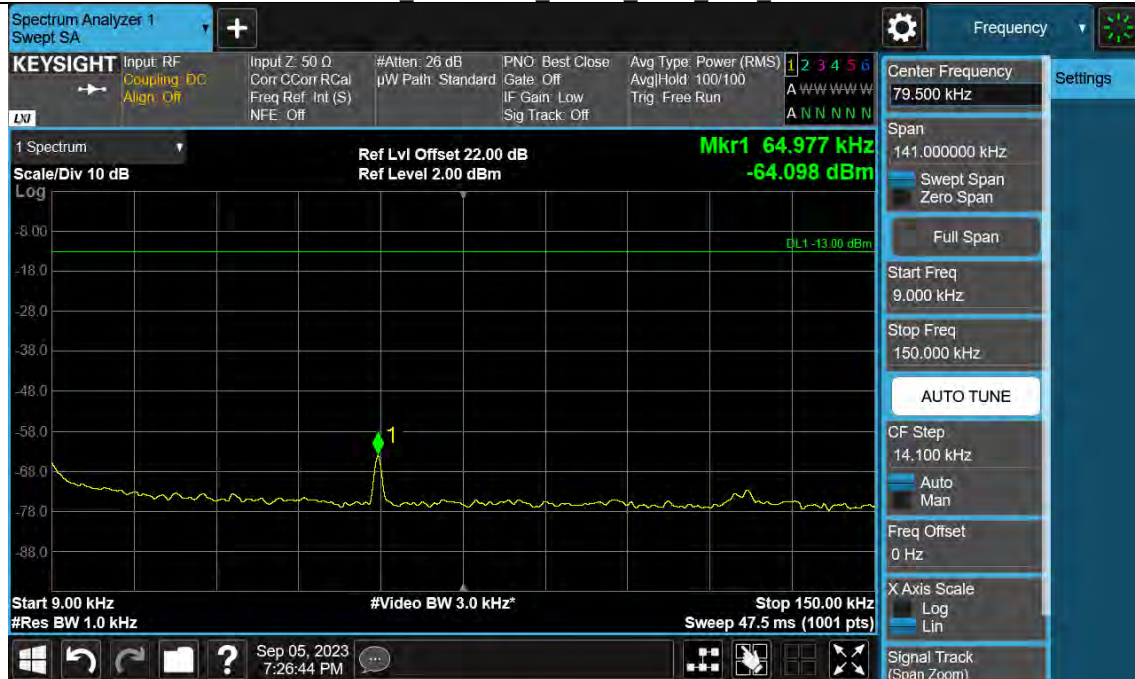
Band66 2145MHz AWGN SISO Ant1 NTN







Band66 2177.5MHz AWGN SISO Ant1 NTN

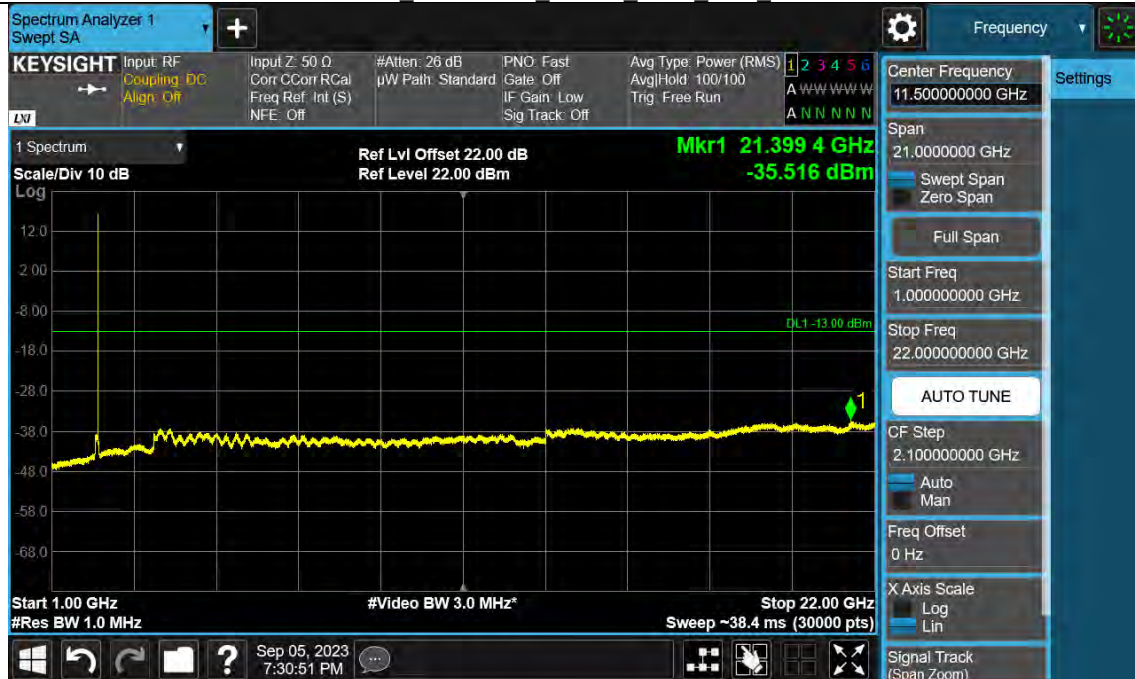


Band66 2177.5MHz AWGN SISO Ant1 NTN

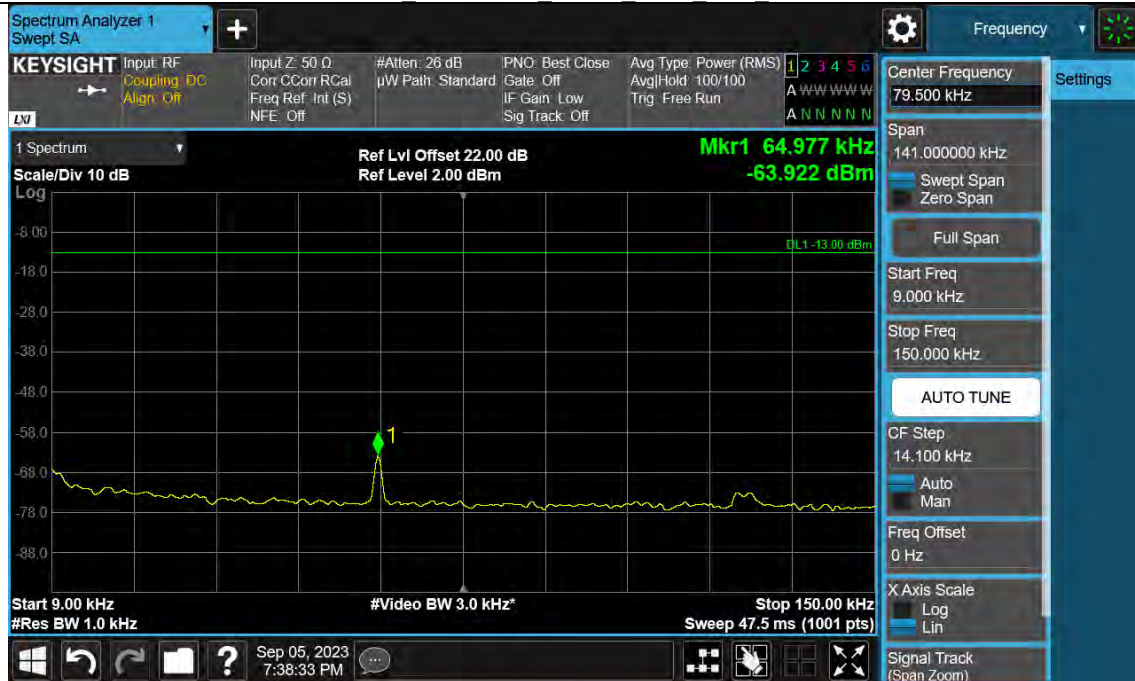




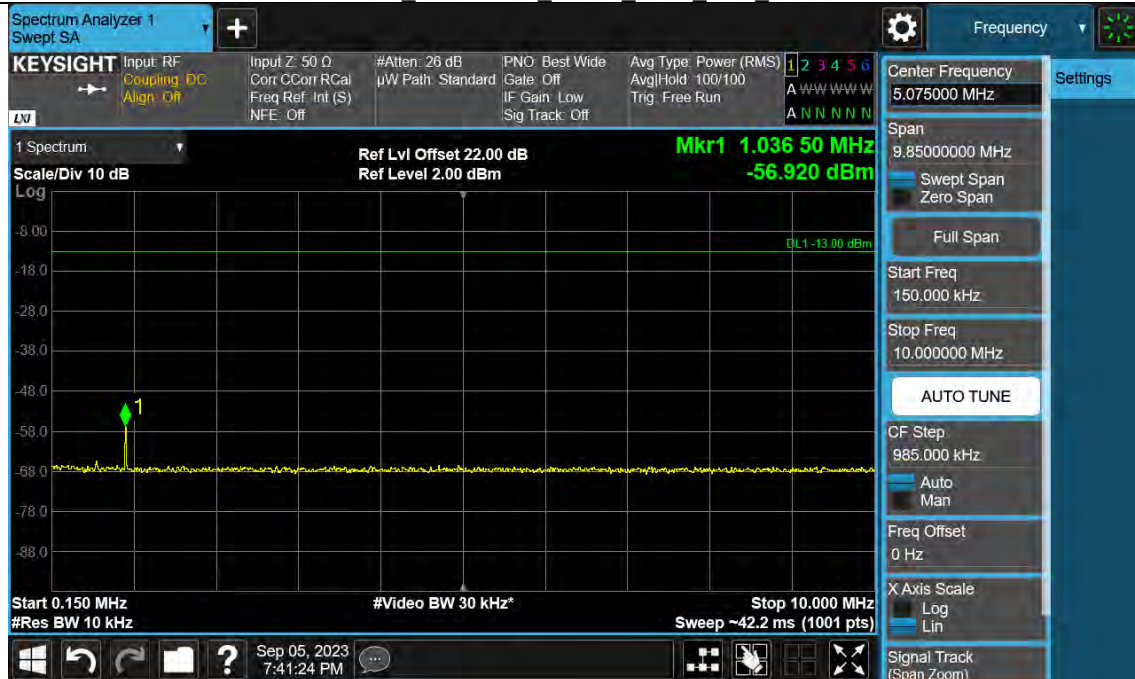
Band66 2177.5MHz AWGN SISO Ant1 NTN



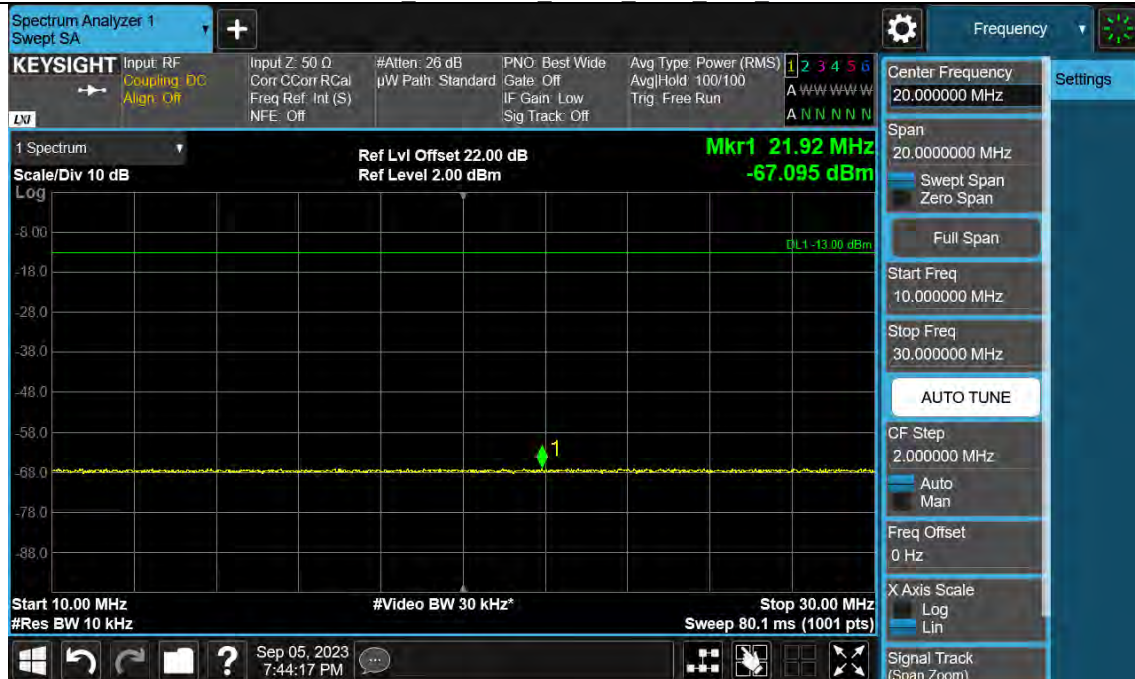
Band66 2110.2MHz GMSK SISO Ant1 NTN



Band66 2110.2MHz GMSK SISO Ant1 NTN



Band66 2110.2MHz GMSK SISO Ant1 NTN



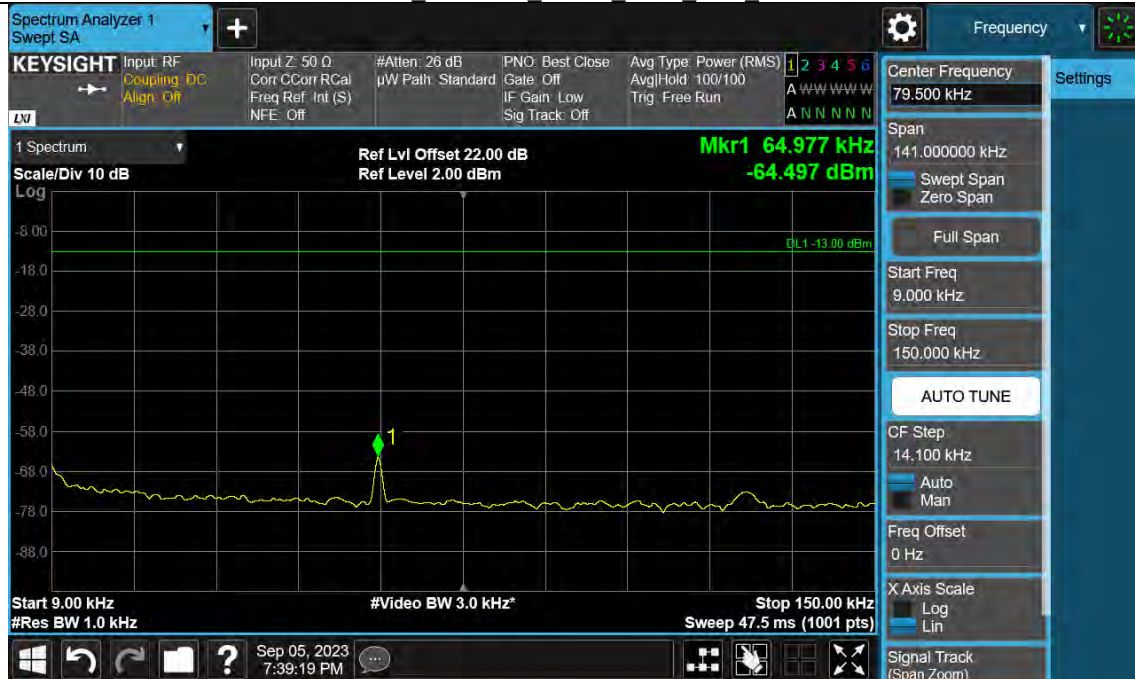
Band66 2110.2MHz GMSK SISO Ant1 NTN



Band66 2110.2MHz GMSK SISO Ant1 NTN



Band66_2145MHz_GMSK_SISO_Ant1_NTNV

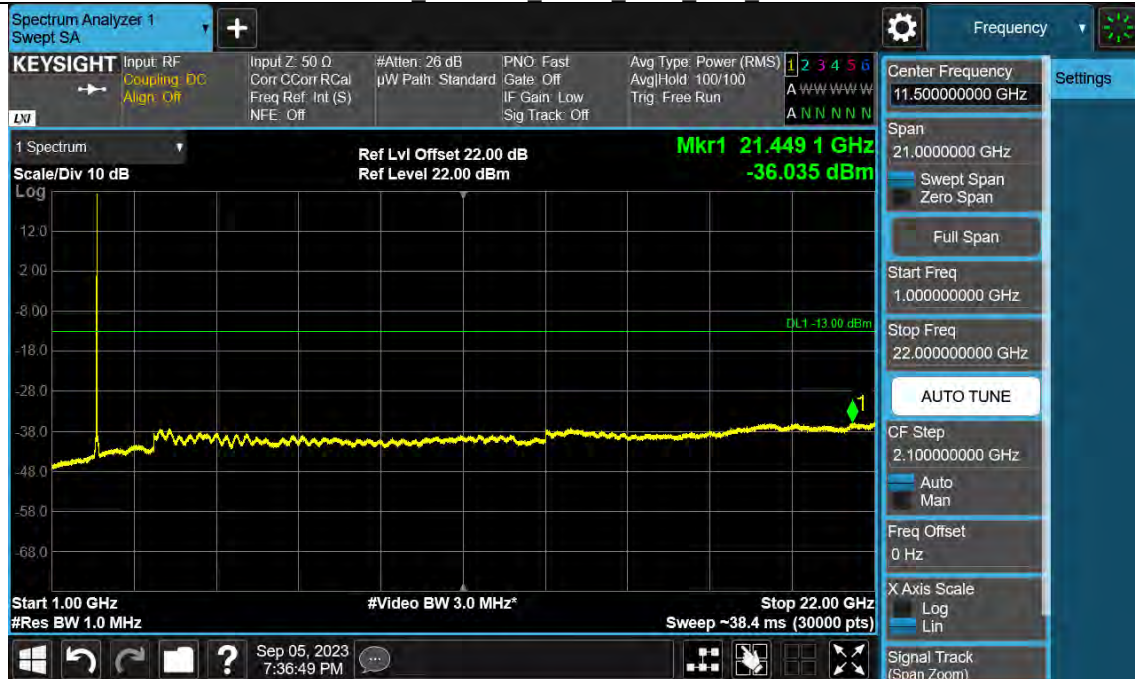


Band66_2145MHz_GMSK_SISO_Ant1_NTNV

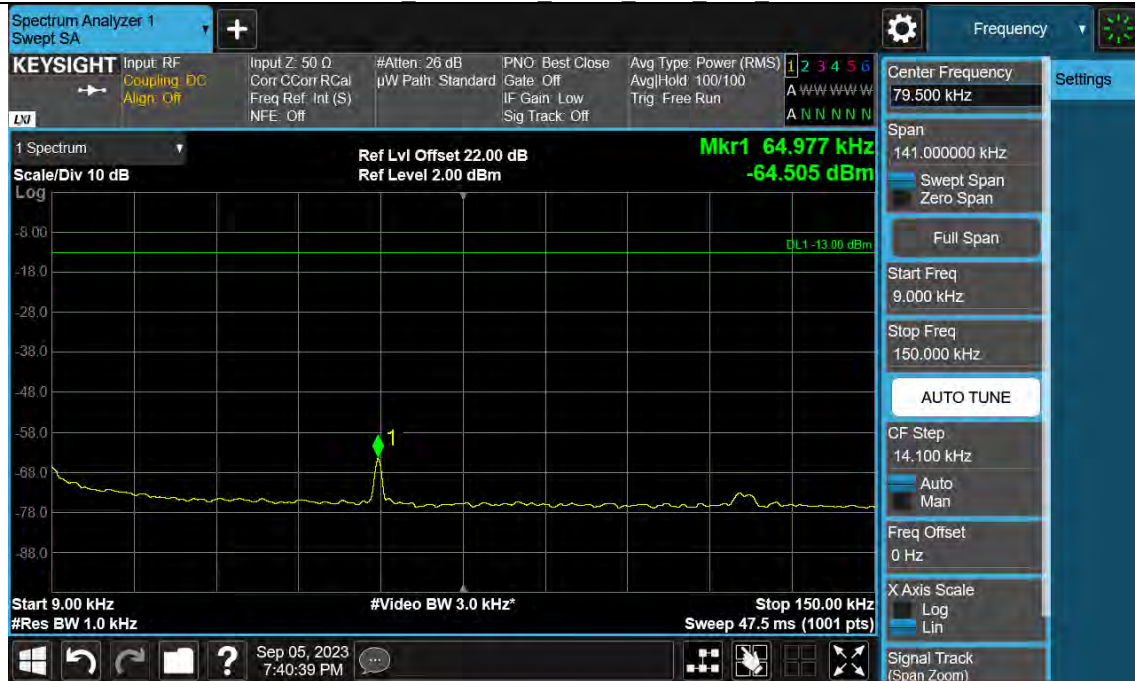


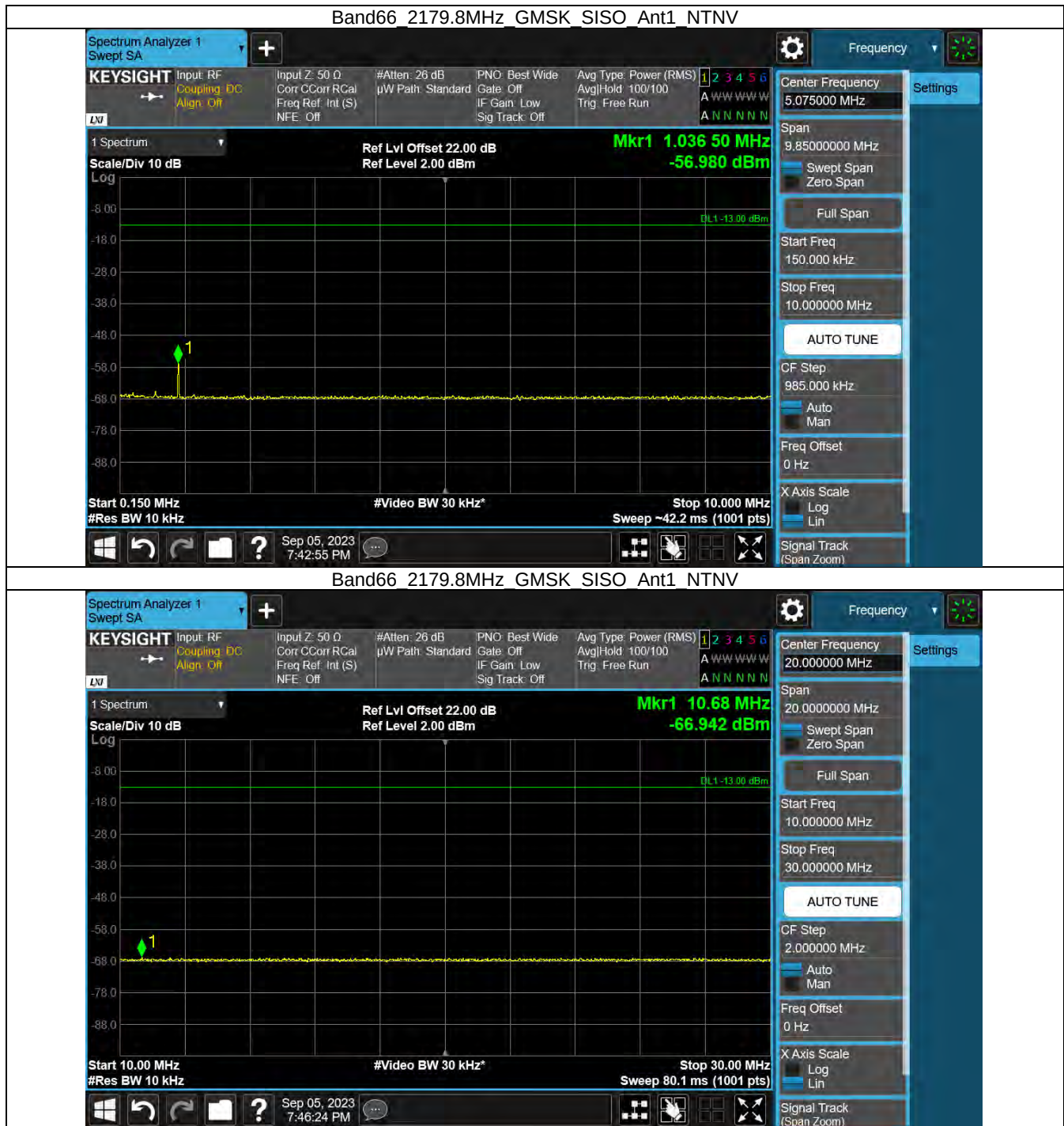


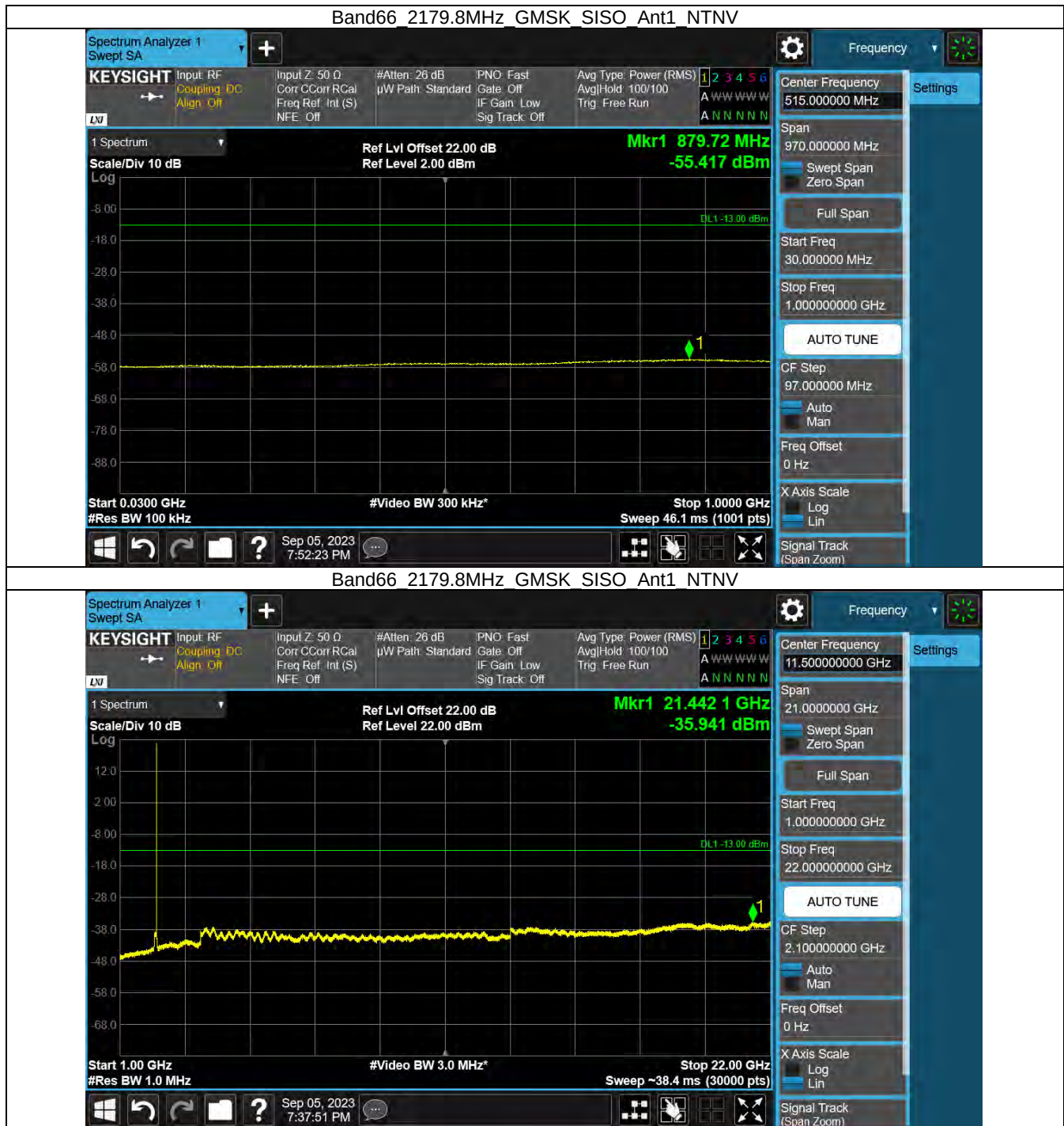
Band66_2145MHz_GMSK_SISO_Ant1_NTNV



Band66_2179.8MHz_GMSK_SISO_Ant1_NTNV







7. Frequency stability measurements

7.1 Band66_Ant1

7.1.1 Test Result

Band: 66							
Signal			Temp (°C)	Voltage (VDC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	0.2	2110.2	20	40.8	-163	-0.077	Pass
				48	-169	-0.080	Pass
				55.2	-167	-0.079	Pass
			-30	48	-162	-0.077	Pass
			-20	48	-165	-0.078	Pass
			-10	48	-166	-0.079	Pass
			0	48	-168	-0.080	Pass
			10	48	-164	-0.078	Pass
			30	48	-161	-0.076	Pass
			40	48	-165	-0.078	Pass
			50	48	-170	-0.081	Pass
		2145	20	40.8	-172	-0.080	Pass
				48	-175	-0.082	Pass
				55.2	-174	-0.081	Pass
			-30	48	-176	-0.082	Pass
			-20	48	-179	-0.083	Pass
			-10	48	-180	-0.084	Pass
			0	48	-176	-0.082	Pass
			10	48	-185	-0.086	Pass
			30	48	-179	-0.083	Pass
			40	48	-177	-0.083	Pass
			50	48	-174	-0.081	Pass
		2179.8	20	40.8	-171	-0.078	Pass
				48	-177	-0.081	Pass
				55.2	-174	-0.080	Pass
			-30	48	-178	-0.082	Pass
			-20	48	-171	-0.078	Pass
			-10	48	-175	-0.080	Pass
			0	48	-179	-0.082	Pass
			10	48	-170	-0.078	Pass
			30	48	-169	-0.078	Pass
			40	48	-176	-0.081	Pass
			50	48	-172	-0.079	Pass

8. Radiated Spurious Emissions

8.1 Band66_Ant1

8.1.1 Test Result

AWGN_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
94.100	Horizontal	-68.99	-13	-55.99	pass
151.375	Horizontal	-61.86	-13	-48.86	pass
731.059	Horizontal	-63.32	-13	-50.32	pass
1355.82	Horizontal	-49.62	-13	-36.62	pass
7898.17	Horizontal	-47.97	-13	-34.97	pass
12624.20	Horizontal	-43.96	-13	-30.96	pass
90.350	Vertical	-62.68	-13	-49.68	pass
156.815	Vertical	-59.54	-13	-46.54	pass
641.959	Vertical	-60.58	-13	-47.58	pass
1329.25	Vertical	-47.07	-13	-34.07	pass
7942.92	Vertical	-51.10	-13	-38.10	pass
12595.97	Vertical	-40.62	-13	-27.62	pass

AWGN_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
98.614	Horizontal	-62.45	-13	-49.45	pass
168.598	Horizontal	-64.17	-13	-51.17	pass
688.162	Horizontal	-62.73	-13	-49.73	pass
1355.380	Horizontal	-51.99	-13	-38.99	pass
7940.190	Horizontal	-49.95	-13	-36.95	pass
12595.190	Horizontal	-39.68	-13	-26.68	pass
76.295	Vertical	-69.81	-13	-56.81	pass
256.059	Vertical	-59.74	-13	-46.74	pass
523.046	Vertical	-61.33	-13	-48.33	pass
1352.69	Vertical	-50.40	-13	-37.40	pass
7910.42	Vertical	-48.56	-13	-35.56	pass
12639.12	Vertical	-42.55	-13	-29.55	pass

AWGN_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
192.118	Horizontal	-64.10	-13	-51.10	pass
378.102	Horizontal	-63.17	-13	-50.17	pass
592.369	Horizontal	-57.02	-13	-44.02	pass
1337.83	Horizontal	-51.08	-13	-38.08	pass
7898.44	Horizontal	-50.32	-13	-37.32	pass
12623.60	Horizontal	-39.72	-13	-26.72	pass
147.195	Vertical	-63.94	-13	-50.94	pass
245.699	Vertical	-64.44	-13	-51.44	pass
697.616	Vertical	-62.05	-13	-49.05	pass
1341.92	Vertical	-47.69	-13	-34.69	pass
7935.29	Vertical	-55.13	-13	-42.13	pass
12600.75	Vertical	-40.54	-13	-27.54	pass

GMSK_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
86.324	Horizontal	-62.45	-13	-49.45	pass
175.638	Horizontal	-60.62	-13	-47.62	pass
763.622	Horizontal	-59.06	-13	-46.06	pass
2112.63	Horizontal	-54.54	-13	-41.54	pass
8003.38	Horizontal	-50.05	-13	-37.05	pass
11609.82	Horizontal	-40.81	-13	-27.81	pass
161.535	Vertical	-65.13	-13	-52.13	pass
260.089	Vertical	-61.22	-13	-48.22	pass
513.206	Vertical	-63.05	-13	-50.05	pass
2120.62	Vertical	-46.80	-13	-33.80	pass
8018.33	Vertical	-52.06	-13	-39.06	pass
11622.10	Vertical	-39.79	-13	-26.79	pass

GMSK_Middle channel					
Frequency	Spurious Emission		Limit	Over limit	Result

	Polarization and Level				
MHz	polarization	dBm	dBm	dB	
79.694	Horizontal	-68.47	-13	-55.47	pass
189.528	Horizontal	-60.15	-13	-47.15	pass
374.372	Horizontal	-60.71	-13	-47.71	pass
2114.70	Horizontal	-50.83	-13	-37.83	pass
7996.86	Horizontal	-52.84	-13	-39.84	pass
11613.02	Horizontal	-44.17	-13	-31.17	pass
137.475	Vertical	-64.57	-13	-51.57	pass
259.359	Vertical	-63.64	-13	-50.64	pass
519.576	Vertical	-63.70	-13	-50.70	pass
2131.15	Vertical	-52.51	-13	-39.51	pass
8044.14	Vertical	-48.56	-13	-35.56	pass
11628.70	Vertical	-36.77	-13	-23.77	pass

GMSK_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
49.930	Horizontal	-68.82	-13	-55.82	pass
244.545	Horizontal	-62.29	-13	-49.29	pass
648.279	Horizontal	-60.85	-13	-47.85	pass
2084.61	Horizontal	-52.32	-13	-39.32	pass
8117.93	Horizontal	-47.53	-13	-34.53	pass
11779.19	Horizontal	-40.77	-13	-27.77	pass
137.945	Vertical	-62.54	-13	-49.54	pass
252.299	Vertical	-63.79	-13	-50.79	pass
504.786	Vertical	-63.10	-13	-50.10	pass
2106.74	Vertical	-53.83	-13	-40.83	pass
8096.26	Vertical	-48.62	-13	-35.62	pass
11783.67	Vertical	-41.58	-13	-28.58	pass