

Appendix for KSCR2401000129AT-B5

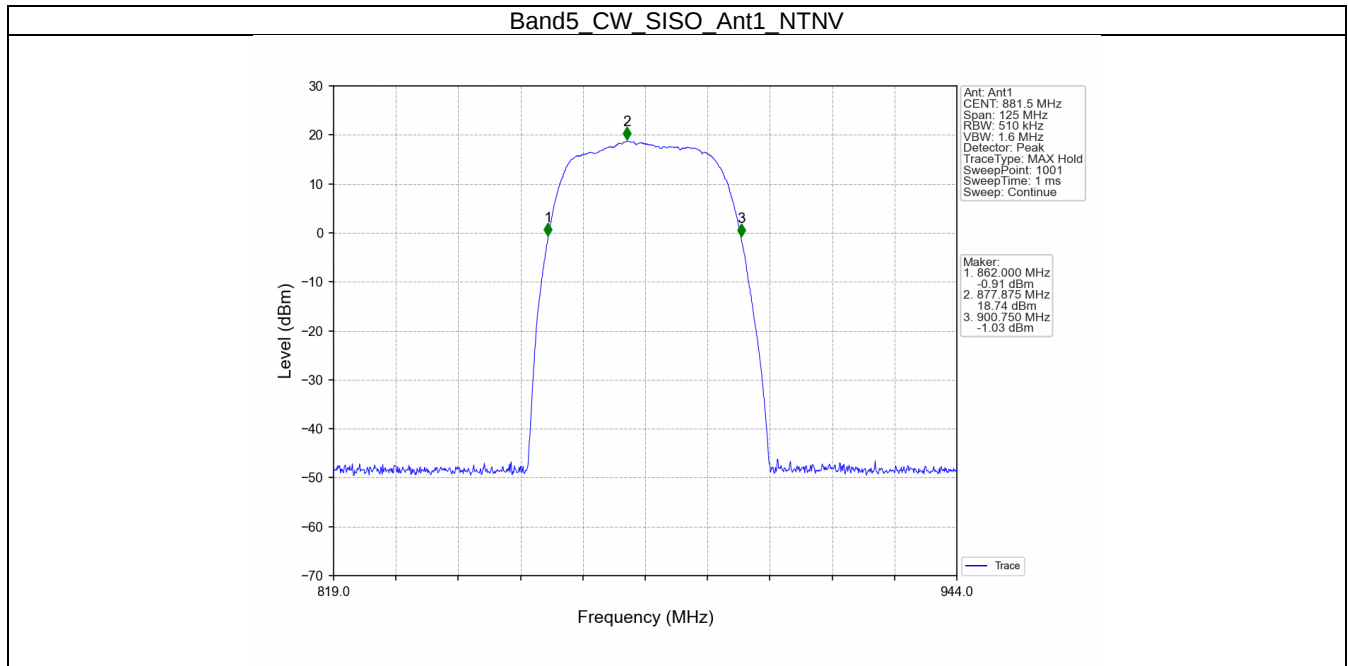
1. Out of band rejection

1.1 Band5

1.1.1 Test Result

Band: 5 / NTNV							
Signal	Sweep Frequency Range (MHz)	TX Type	ANT	F0 (MHz)	FL (MHz)	FH (MHz)	Verdict
CW	819 - 944	SISO	1	877.875	862.000	900.750	Pass

1.1.2 Test Graph



2. AGC threshold

2.1 Band5

2.1.1 Test Result

Band: 5 / NTNV					
Signal	Frequency (MHz)	TX Type	ANT	AGC Threshold (dBm)	Verdict
AWGN	877.875	SISO	1	-5.00	Pass
GMSK	877.875	SISO	1	-5.00	Pass

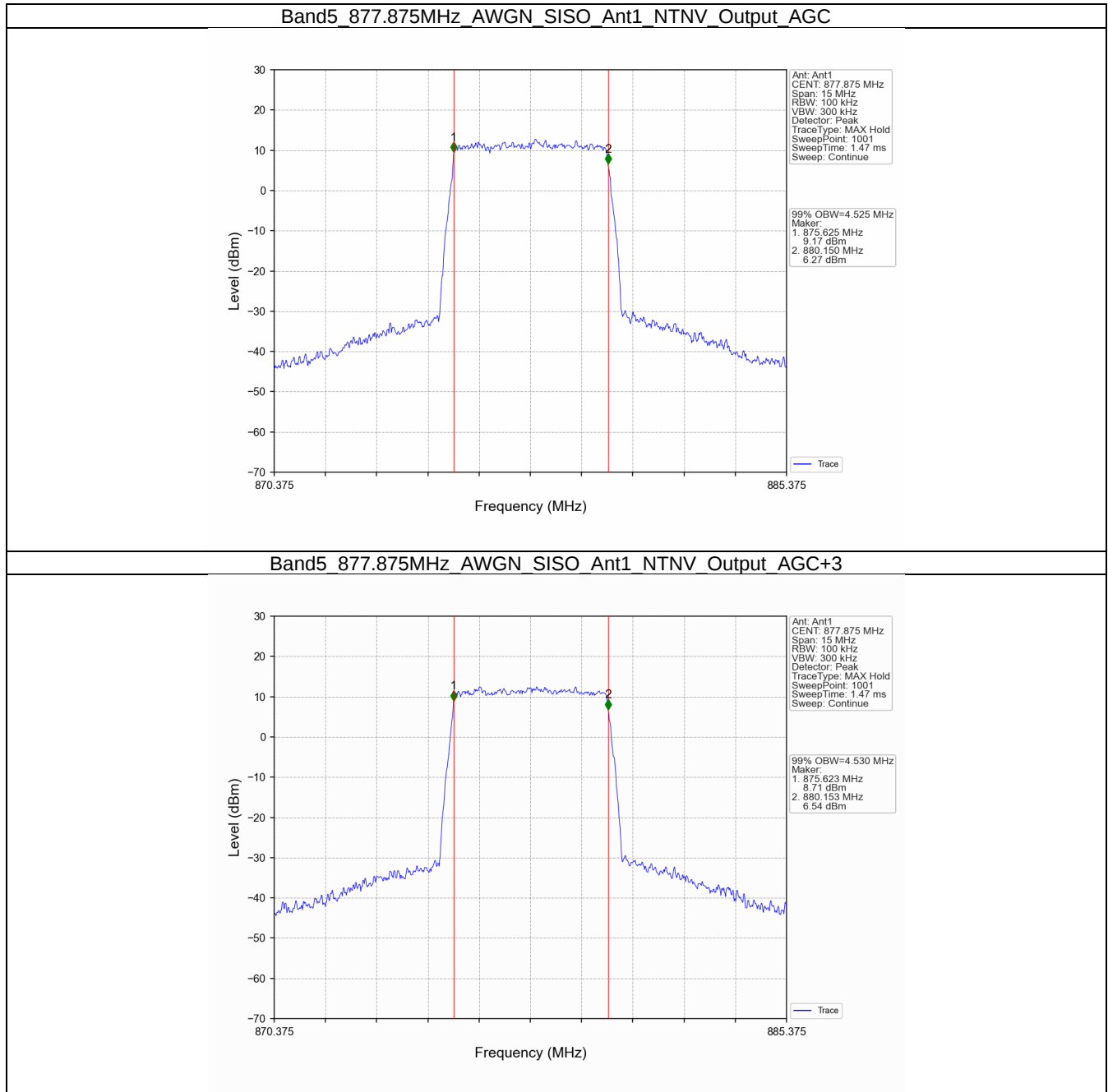
3. Input-versus-output signal comparison

3.1 Band5_OBW

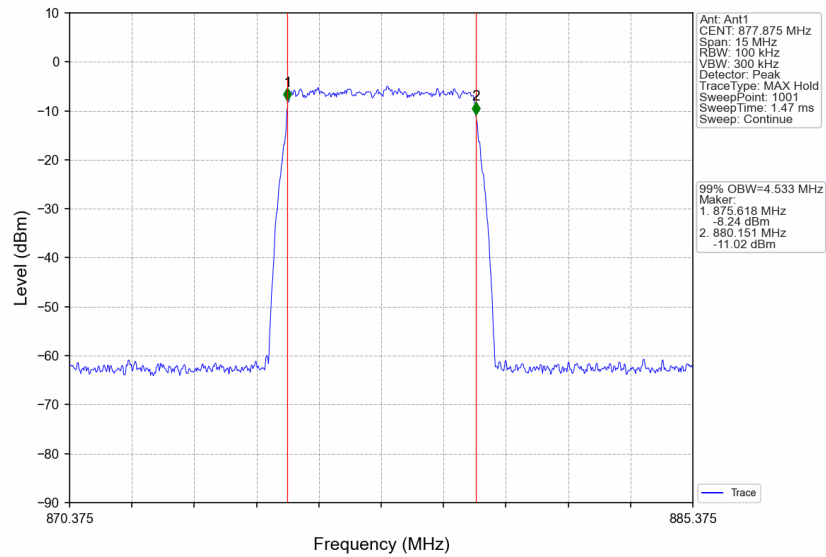
3.1.1 Test Result

Band: 5 / NTNV									
Signal			TX Type	ANT	99% OBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-5	877.875	SISO	1	4.525	4.533	-0.1760	5	Pass
	-2	877.875	SISO	1	4.530	4.541	-0.2420	5	Pass
GMSK	-5	877.875	SISO	1	0.245	0.244	0.4098	5	Pass
	-2	877.875	SISO	1	0.243	0.244	-0.4100	5	Pass

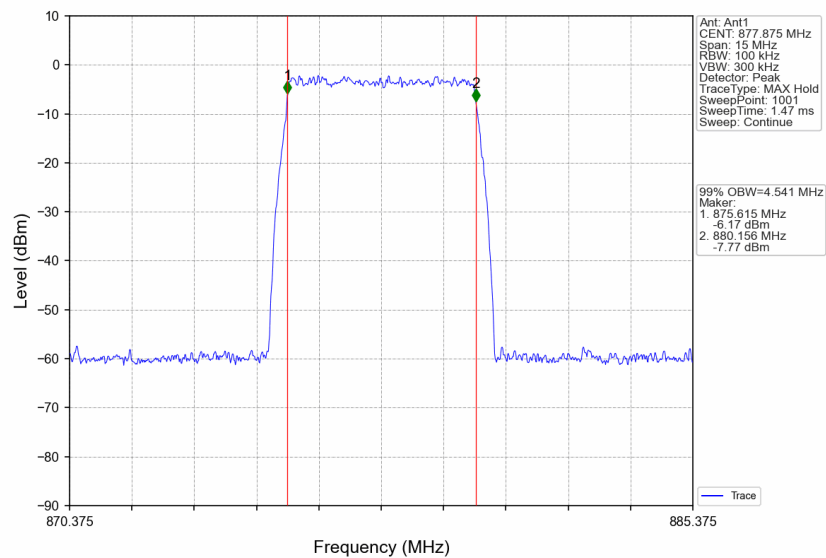
3.1.2 Test Graph



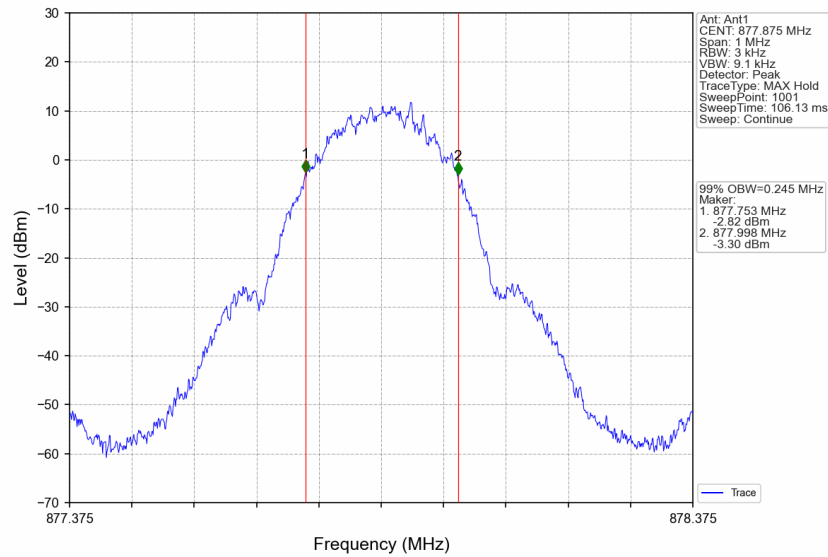
Band5_877.875MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



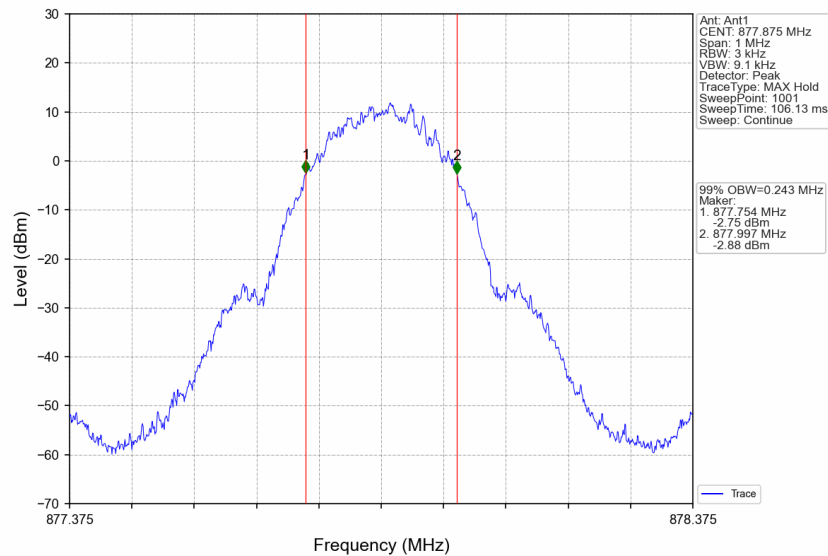
Band5_877.875MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



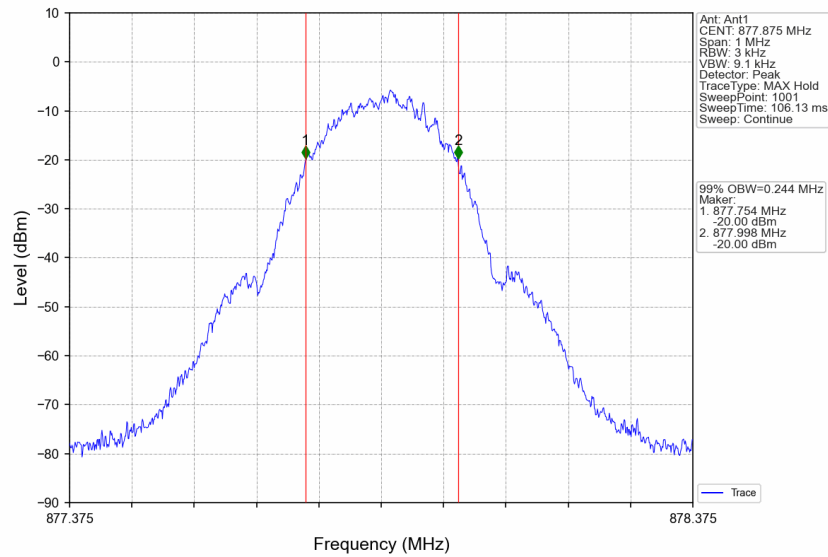
Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Output_AGC



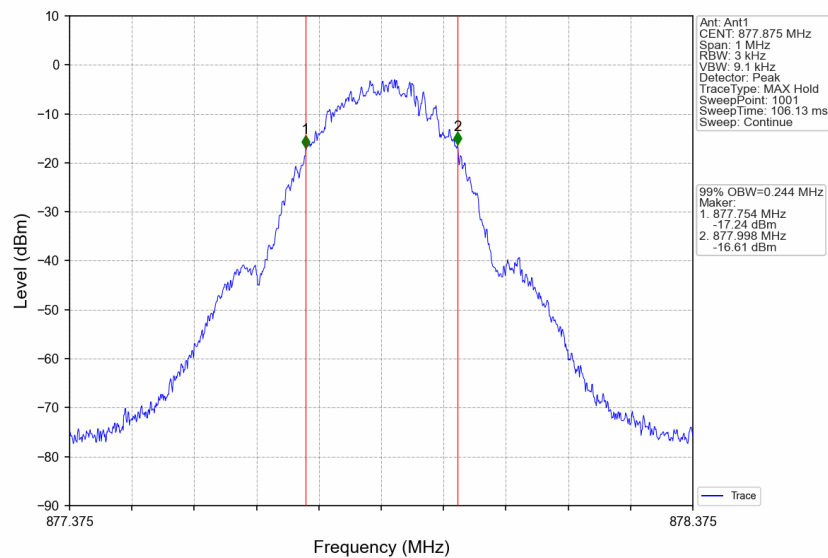
Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Output_AGC+3



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3

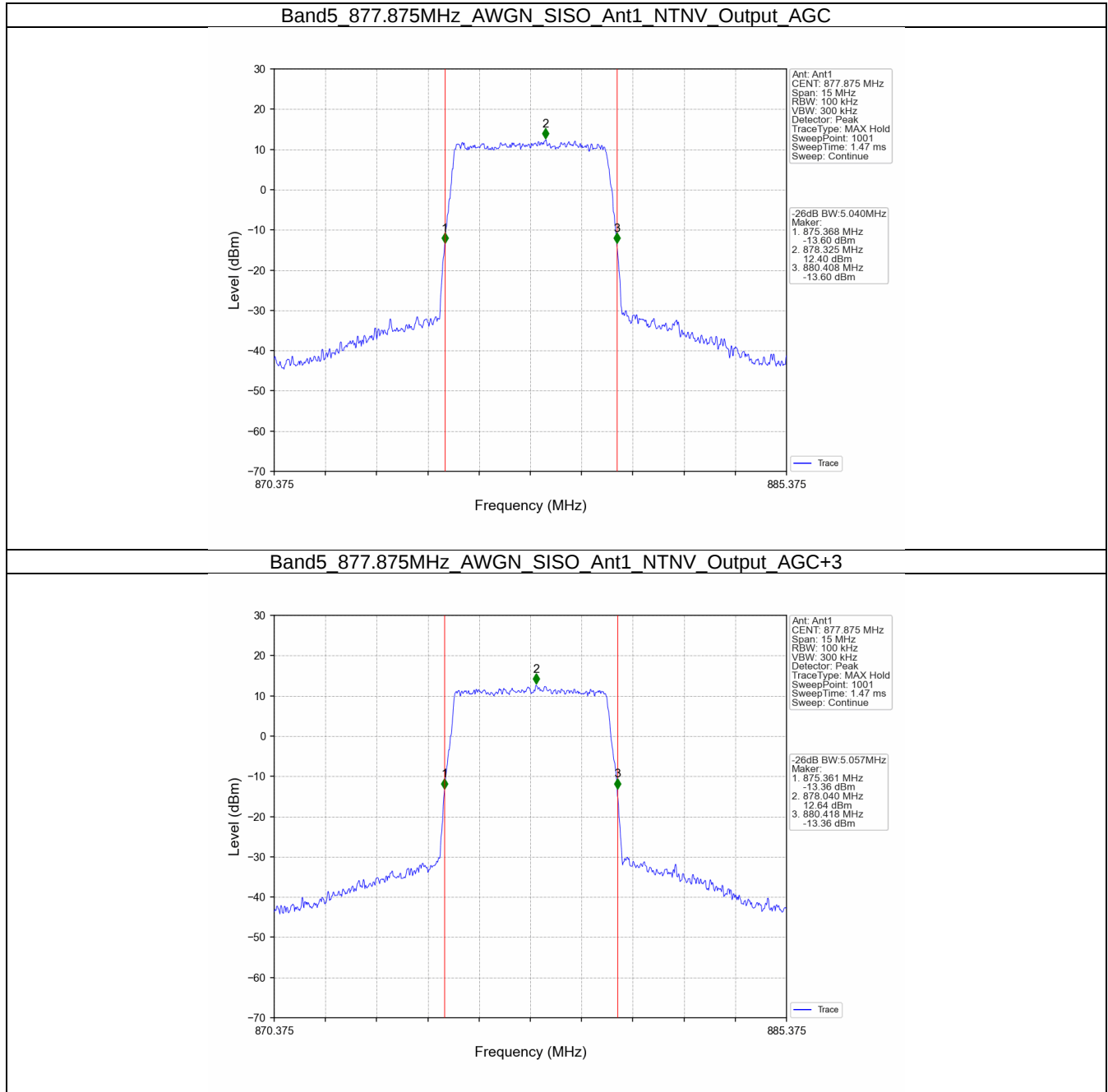


3.2 Band5_EBW

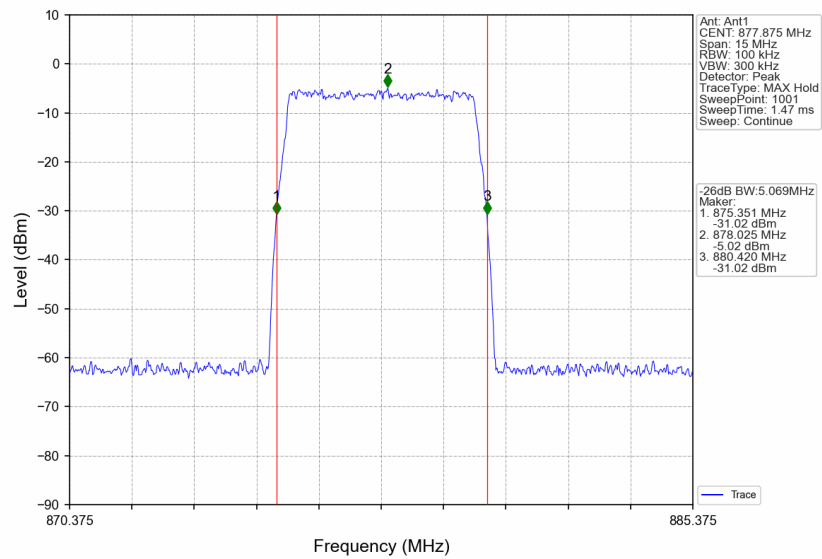
3.2.1 Test Result

Band: 5 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-5	877.875	SISO	1	5.040	5.069	-0.5720	5	Pass
	-2	877.875	SISO	1	5.057	5.056	0.0198	5	Pass
GMSK	-5	877.875	SISO	1	0.314	0.313	0.3195	5	Pass
	-2	877.875	SISO	1	0.313	0.316	-0.9490	5	Pass

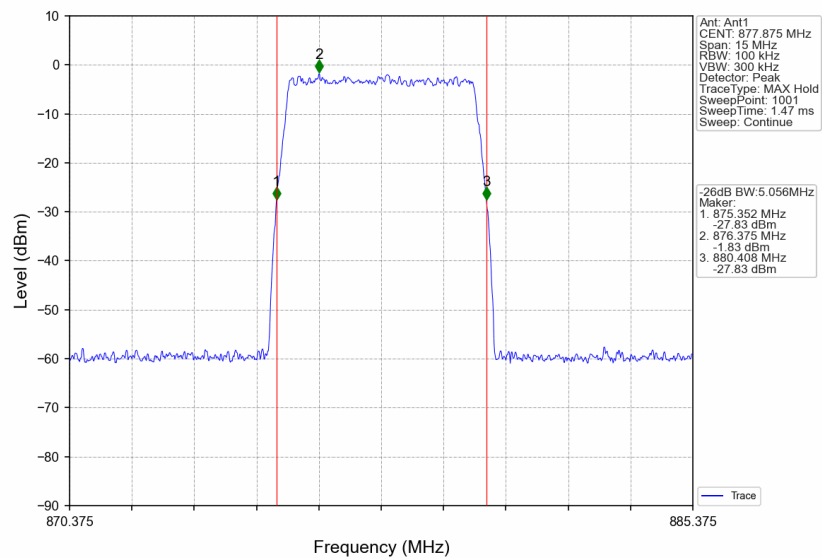
3.2.2 Test Graph



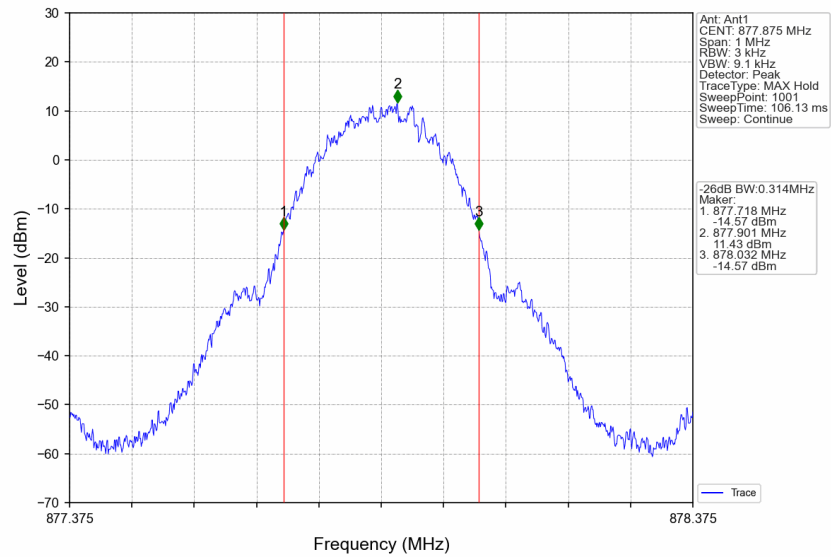
Band5_877.875MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



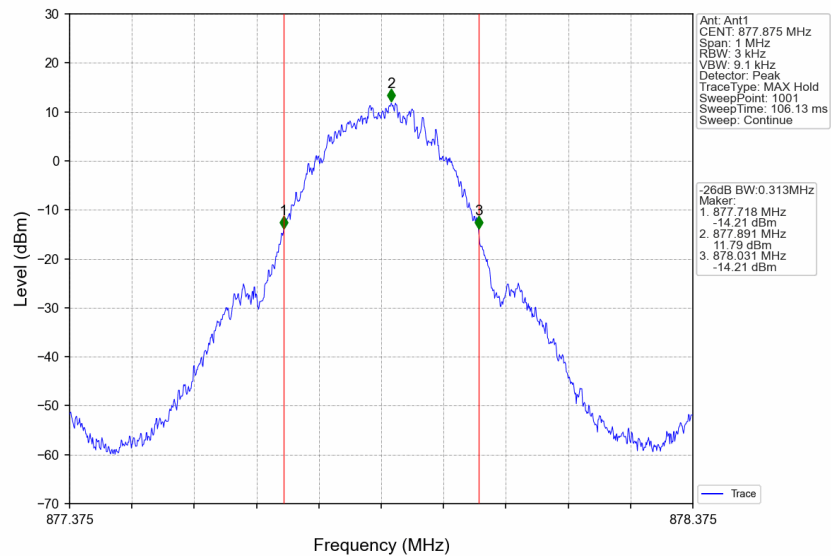
Band5_877.875MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



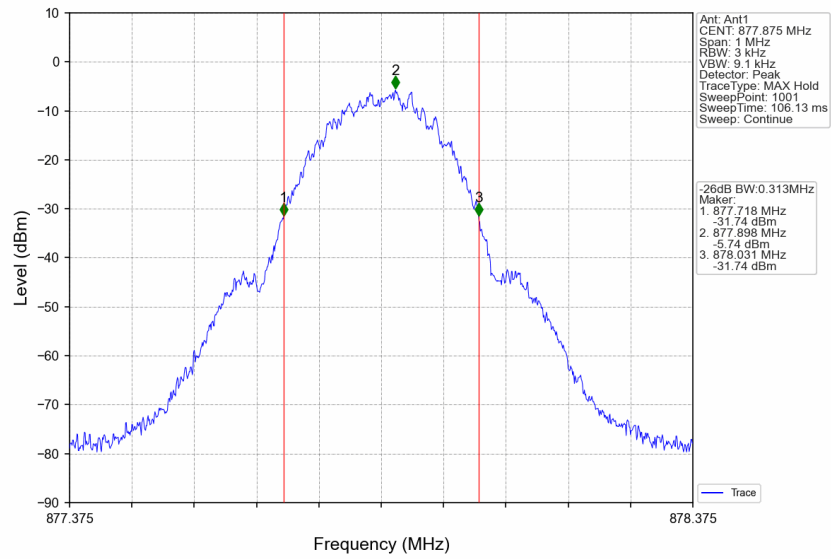
Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Output_AGC



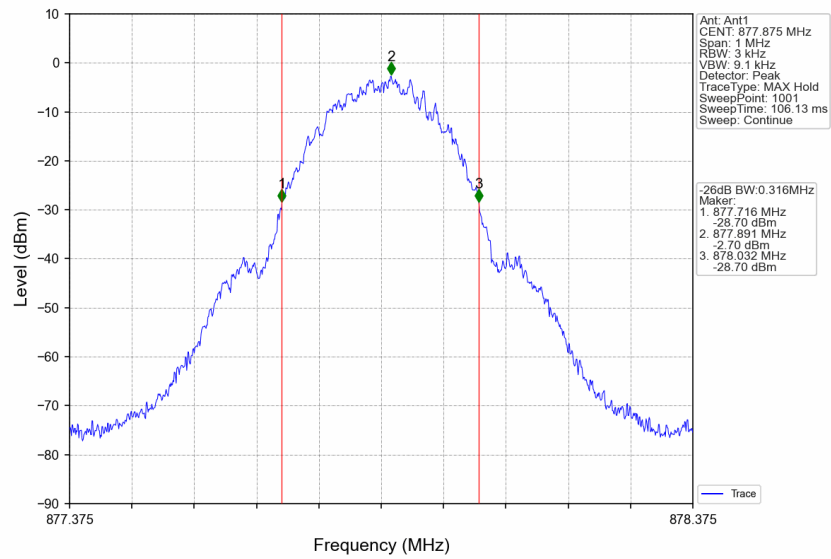
Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Output_AGC+3



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



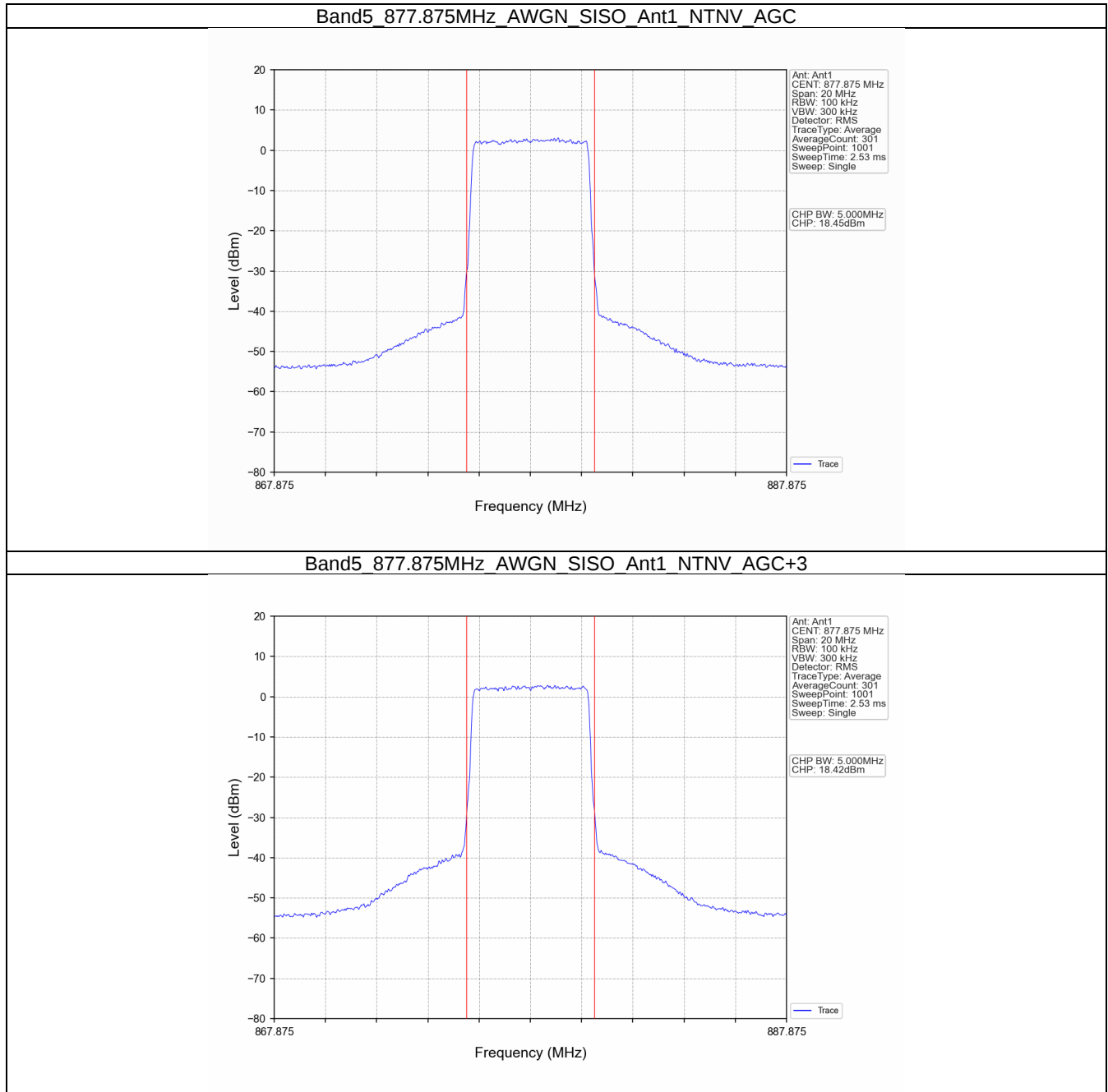
4. Input/output power and amplifier/booster gain

4.1 Band5_ERP

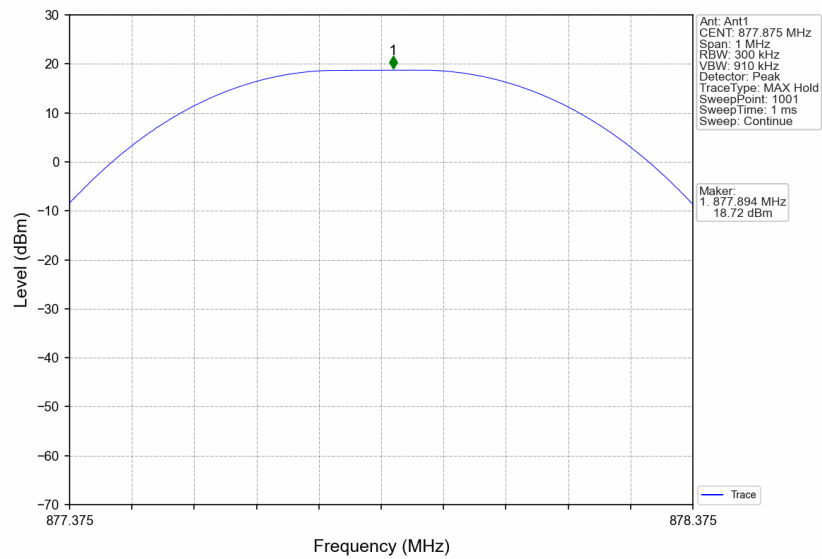
4.1.1 Test Result

Band: 5 / NTNV										
Signal			TX Type	ANT	Conducted Power (dBm)		ERP (dBm)		Booster Gain (dB)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	Result	Limit		
AWGN	-5	877.875	SISO	1	18.45	-6.05	18.93	<=56.99	24.50	Pass
	-2	877.875	SISO	1	18.42	-2.07	18.90	<=56.99	/	Pass
GMSK	-5	877.875	SISO	1	18.72	-6.11	19.20	<=56.99	24.83	Pass
	-2	877.875	SISO	1	18.76	-2.92	19.24	<=56.99	/	Pass

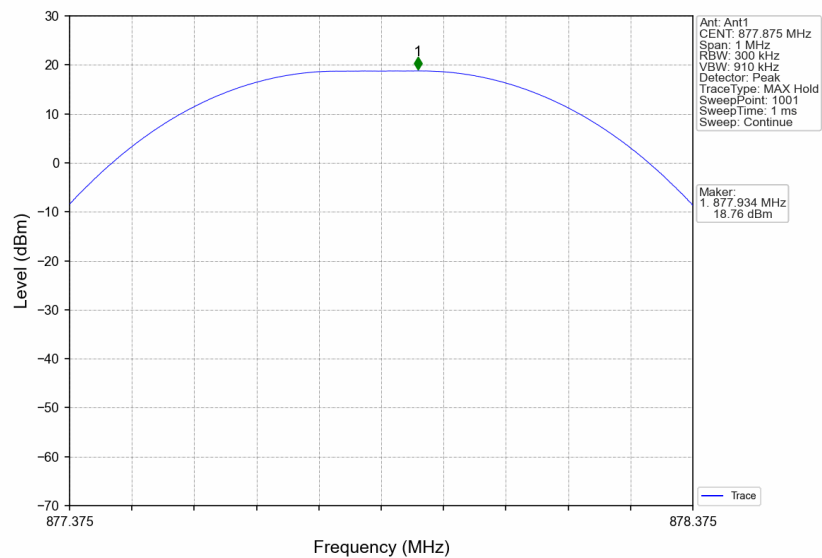
4.1.2 Test Graph



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_AGC



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_AGC+3



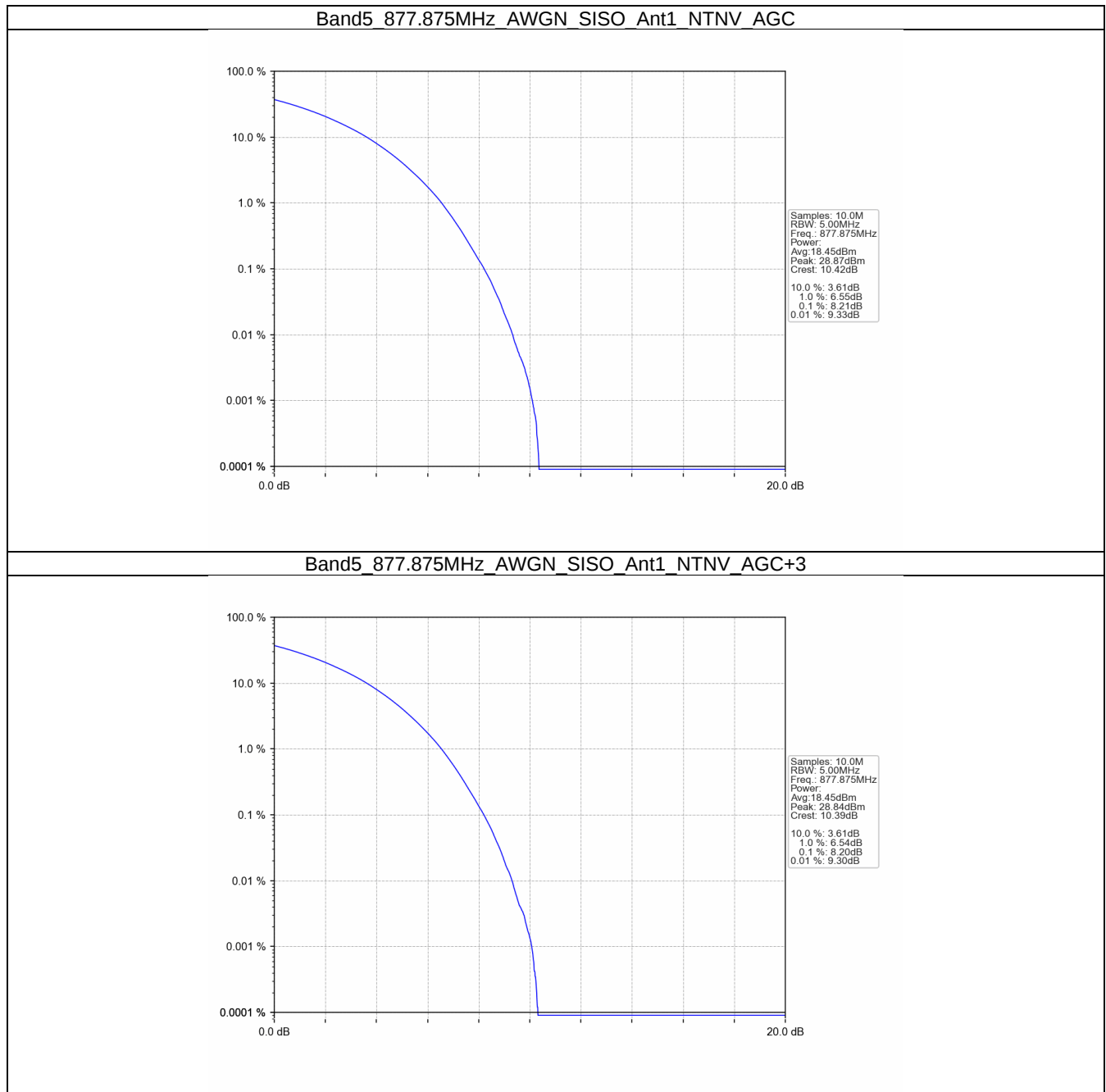


4.2 Band5_PAPR

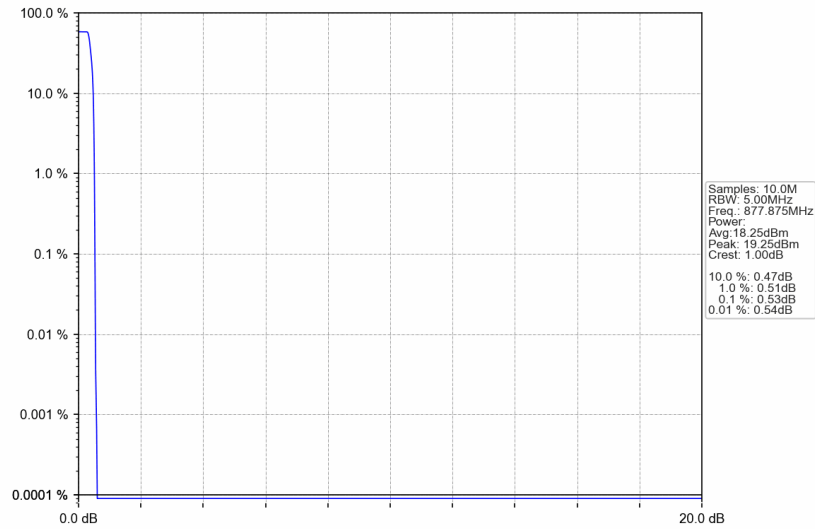
4.2.1 Test Result

Band: 5 / NTNv							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
AWGN	-5	877.875	SISO	1	8.21	<=13	Pass
	-2	877.875	SISO	1	8.20	<=13	Pass
GMSK	-5	877.875	SISO	1	0.53	<=13	Pass
	-2	877.875	SISO	1	0.35	<=13	Pass

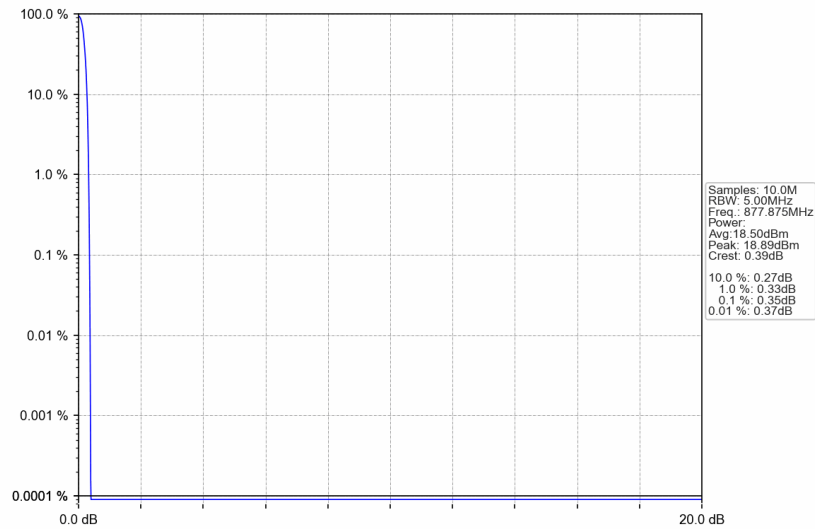
4.2.2 Test Graph



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_AGC



Band5_877.875MHz_GMSK_SISO_Ant1_NTNV_AGC+3



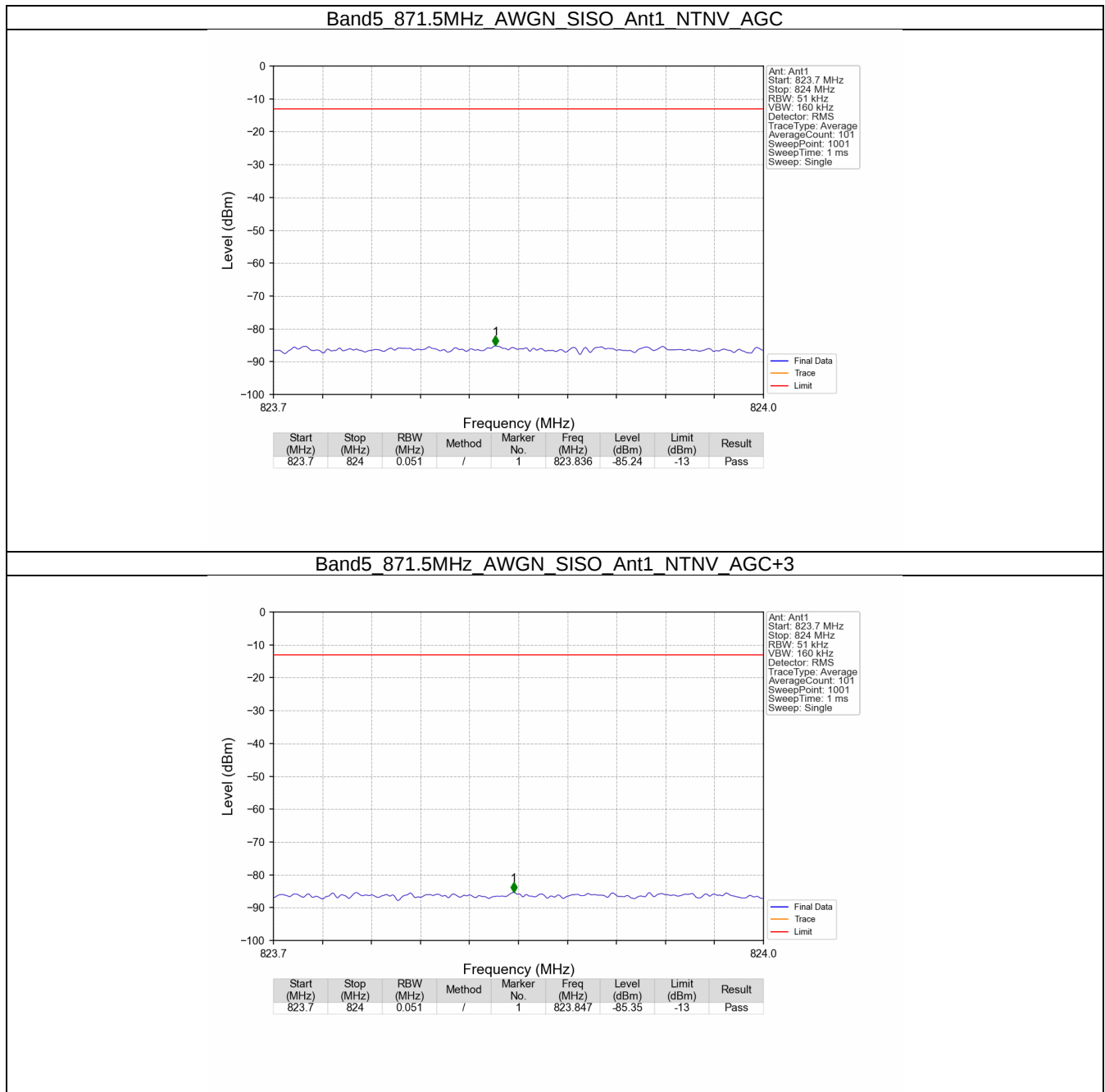
5. Out-of-band/out-of-block (including intermodulation) emissions

5.1 Band5

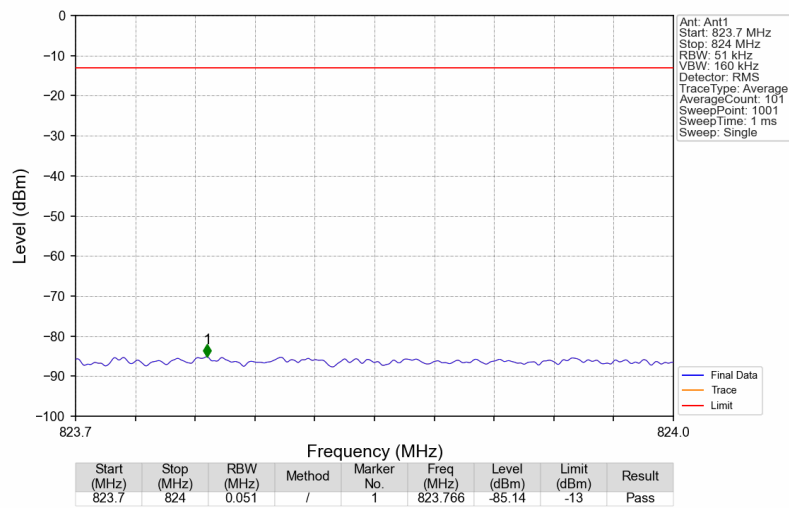
5.1.1 Test Result

Band: 5 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	AWGN	-5	871.5	LCH	SISO	1	-85.24	Refer To Test Graph	Pass
		-2	871.5	LCH	SISO	1	-85.35	Refer To Test Graph	Pass
One	AWGN	-5	871.5	LCH	SISO	1	-85.14	Refer To Test Graph	Pass
		-2	871.5	LCH	SISO	1	-85.42	Refer To Test Graph	Pass
Two	AWGN	-5	891.5	HCH	SISO	1	-85.29	Refer To Test Graph	Pass
		-2	891.5	HCH	SISO	1	-85.63	Refer To Test Graph	Pass
One	AWGN	-5	891.5	HCH	SISO	1	-85.60	Refer To Test Graph	Pass
		-2	891.5	HCH	SISO	1	-85.24	Refer To Test Graph	Pass
Two	GMSK	-5	869.1	LCH	SISO	1	-97.28	Refer To Test Graph	Pass
		-2	869.1	LCH	SISO	1	-97.11	Refer To Test Graph	Pass
One	GMSK	-5	869.1	LCH	SISO	1	-97.23	Refer To Test Graph	Pass
		-2	869.1	LCH	SISO	1	-97.16	Refer To Test Graph	Pass
Two	GMSK	-5	893.9	HCH	SISO	1	-97.55	Refer To Test Graph	Pass
		-2	893.9	HCH	SISO	1	-97.46	Refer To Test Graph	Pass
One	GMSK	-5	893.9	HCH	SISO	1	-97.39	Refer To Test Graph	Pass
		-2	893.9	HCH	SISO	1	-97.46	Refer To Test Graph	Pass

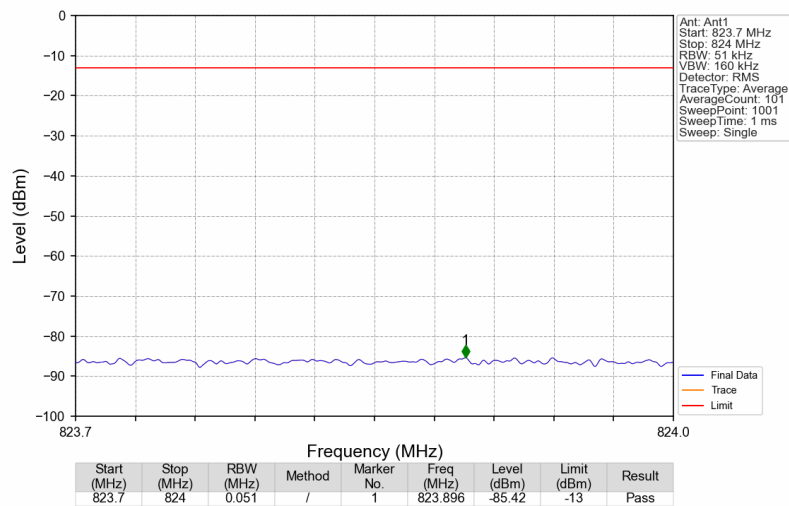
5.1.2 Test Graph



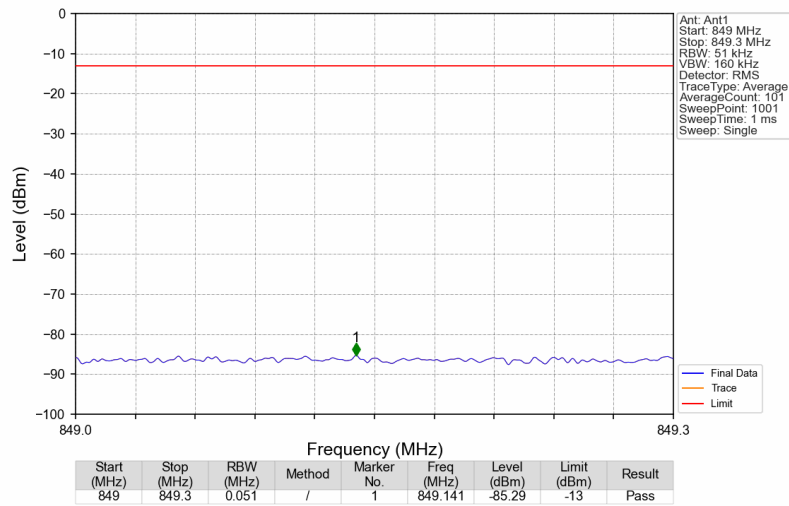
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC



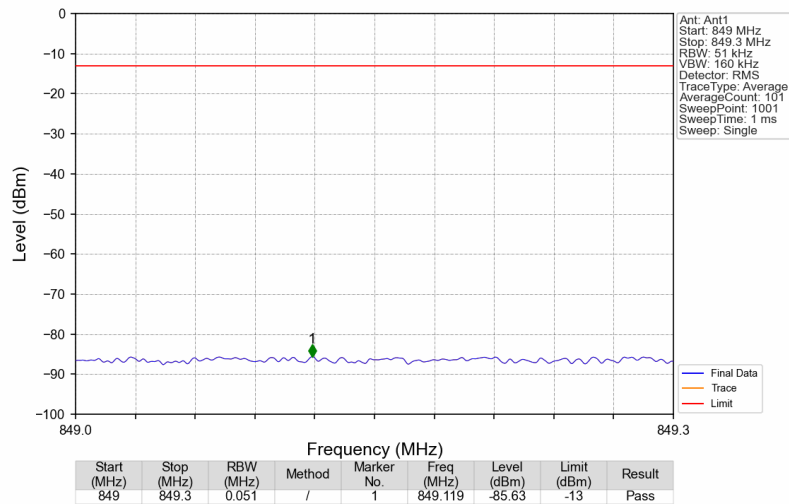
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



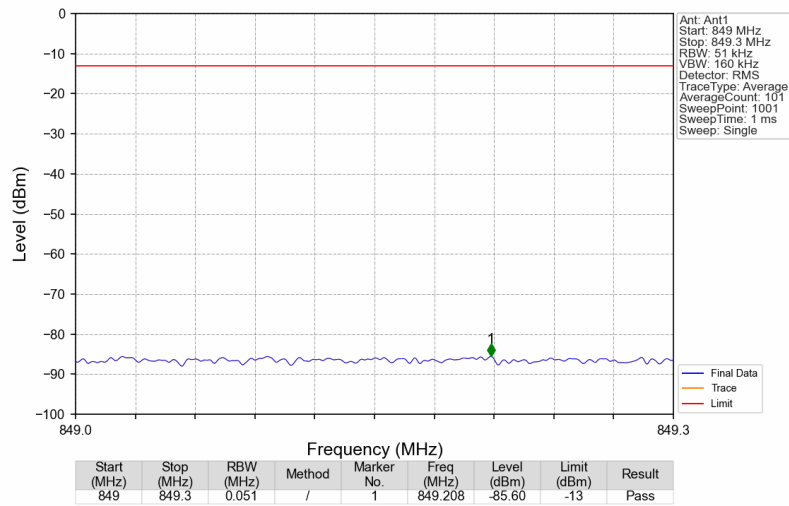
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC



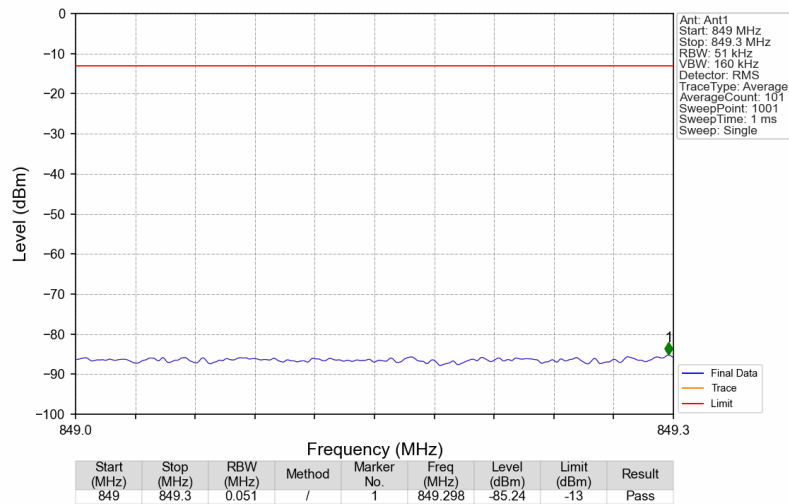
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



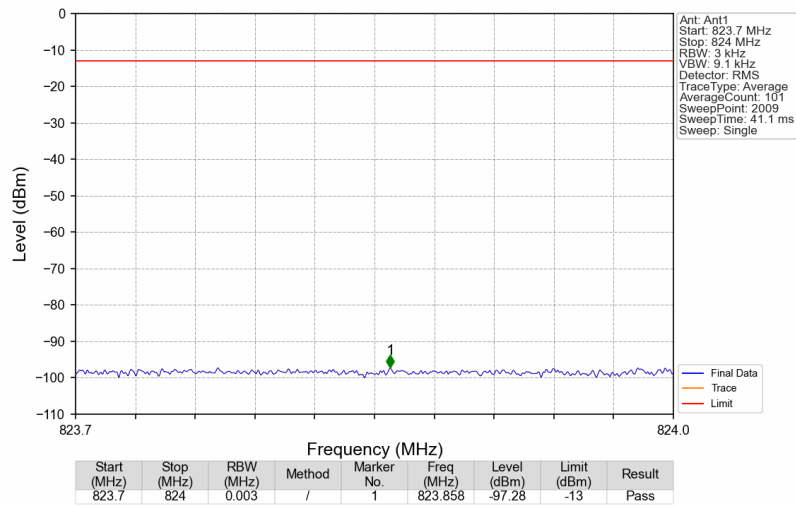
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC



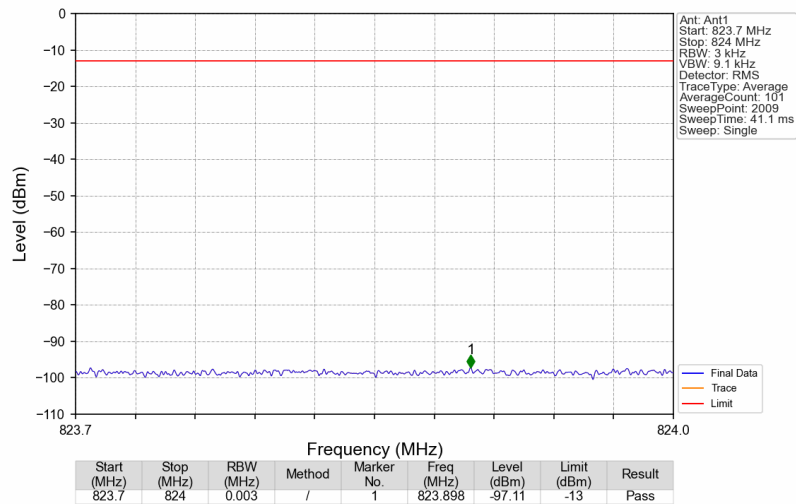
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



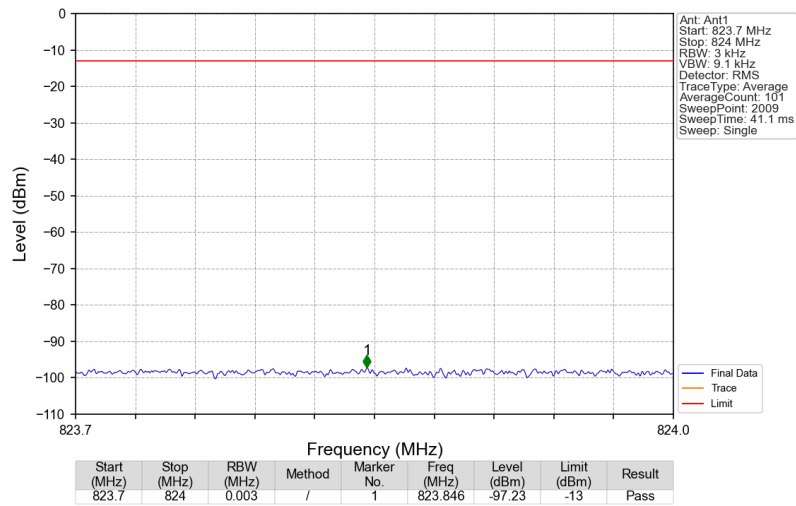
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV_AGC



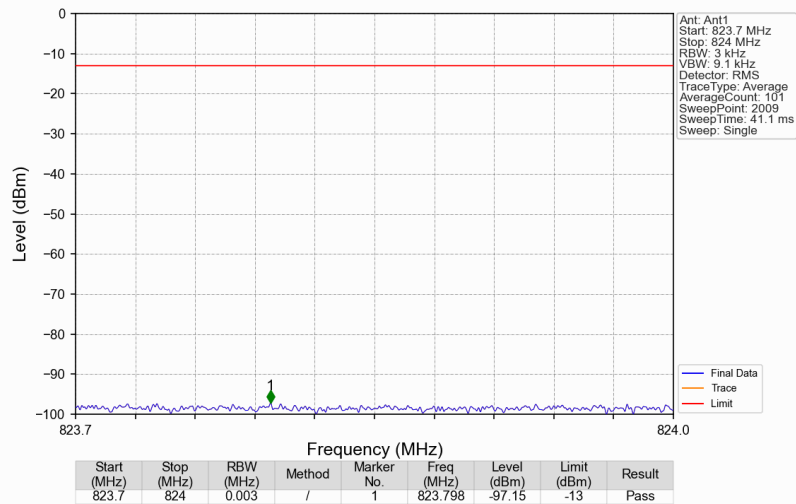
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV_AGC+3



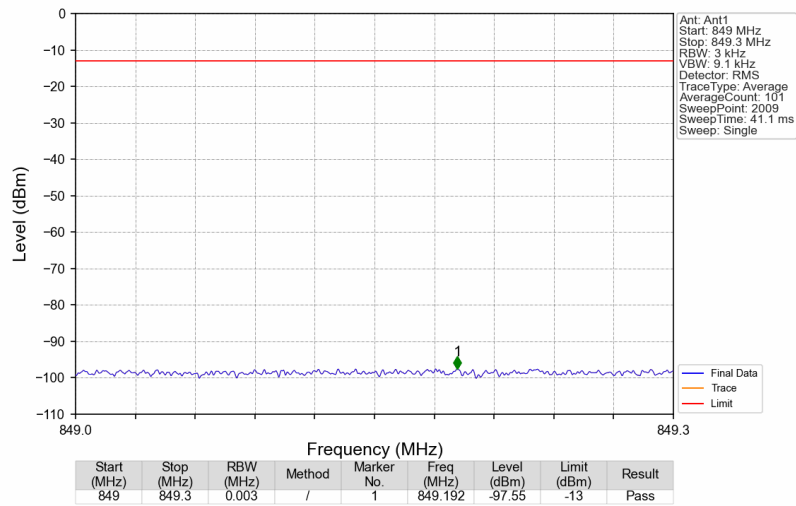
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV_AGC



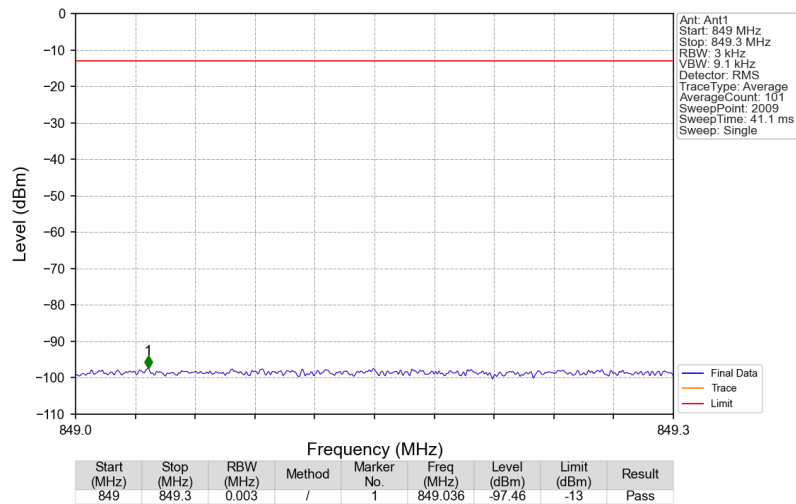
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV_AGC+3



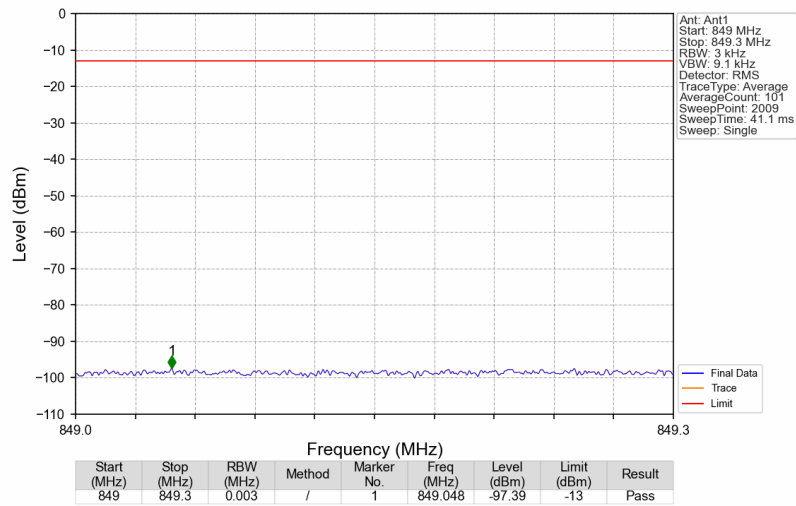
Band5 893.9MHz_GMSK_SISO_Ant1_NTNV_AGC



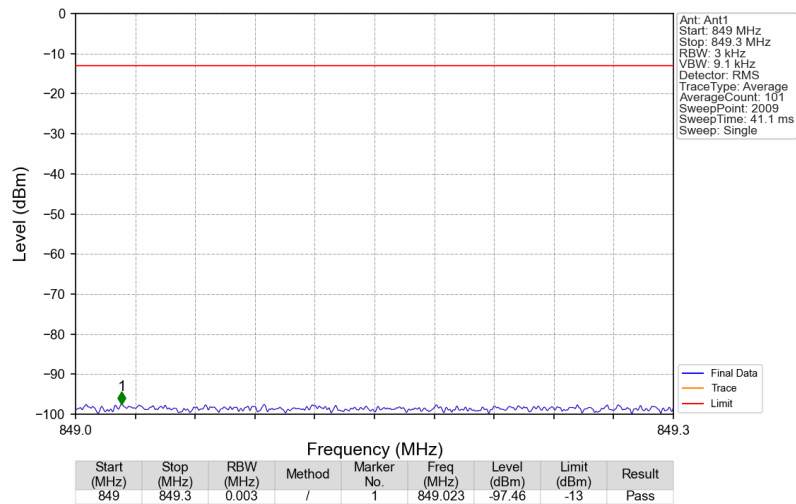
Band5 893.9MHz_GMSK_SISO_Ant1_NTNV_AGC+3



Band5 893.9MHz GMSK SISO Ant1 NTN AGC



Band5 893.9MHz GMSK SISO Ant1 NTN AGC+3



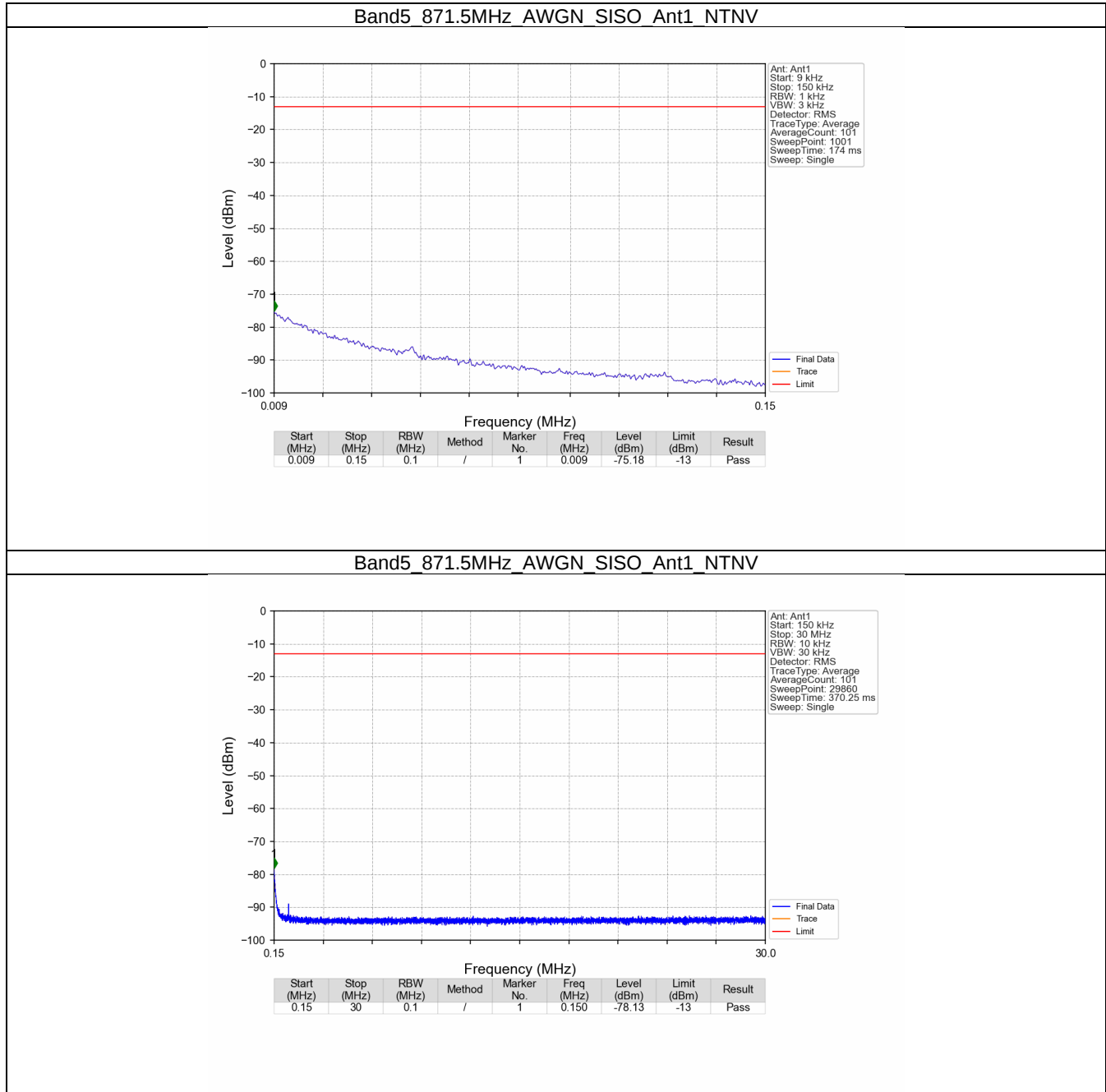
6. Spurious emissions

6.1 Band5

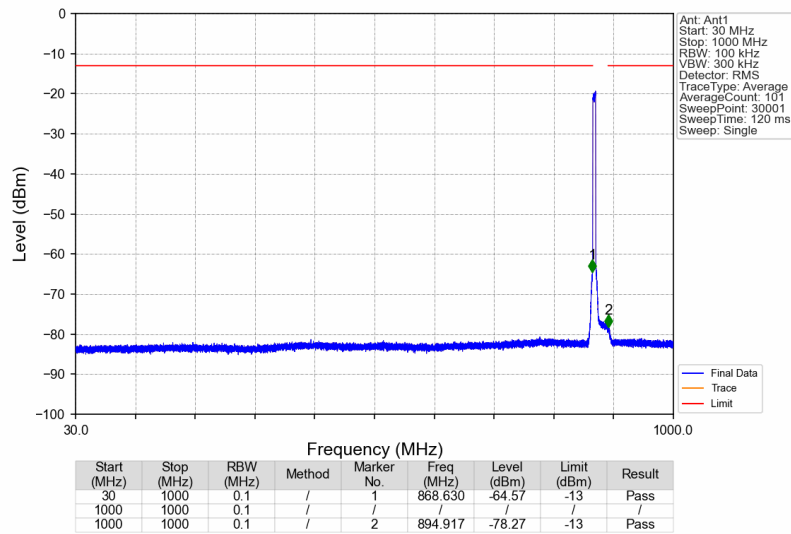
6.1.1 Test Result

Band: 5 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
AWGN	-5	871.5	LCH	SISO	1	Refer To Test Graph		Pass
		881.5	MCH	SISO	1	Refer To Test Graph		Pass
		891.5	HCH	SISO	1	Refer To Test Graph		Pass
GMSK	-5	869.1	LCH	SISO	1	Refer To Test Graph		Pass
		881.5	MCH	SISO	1	Refer To Test Graph		Pass
		893.9	HCH	SISO	1	Refer To Test Graph		Pass

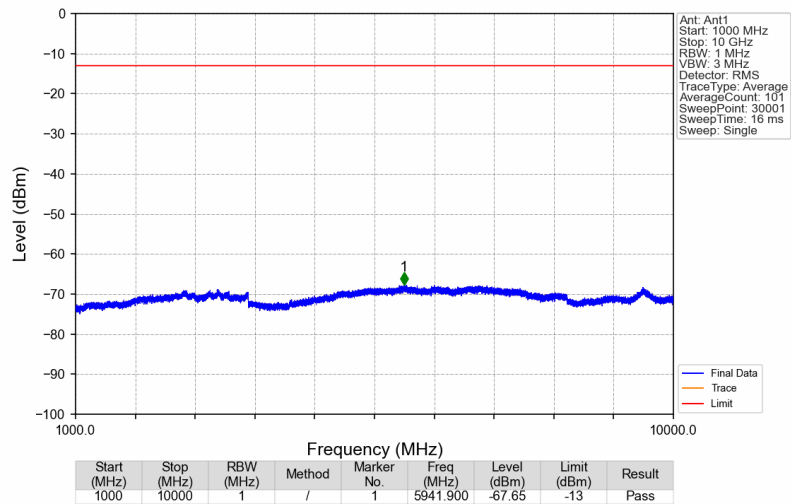
6.1.2 Test Graph



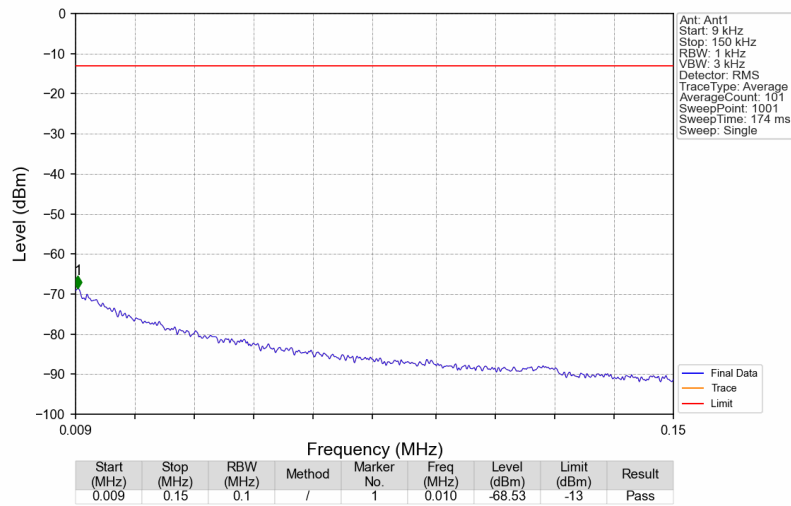
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV



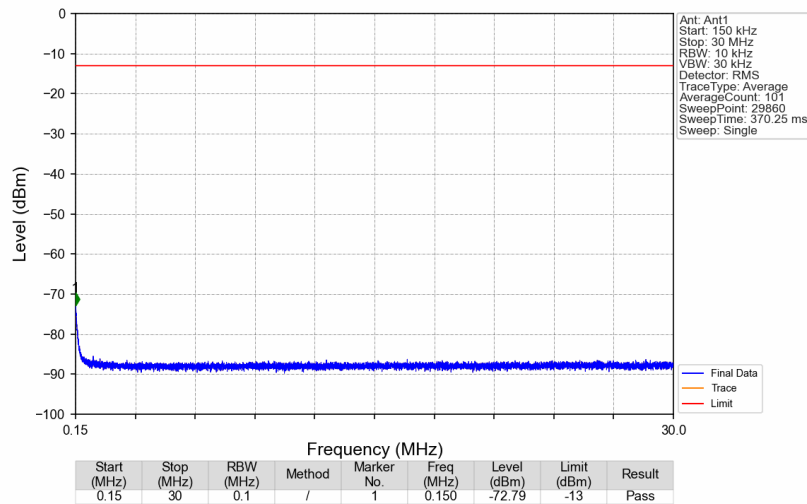
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV



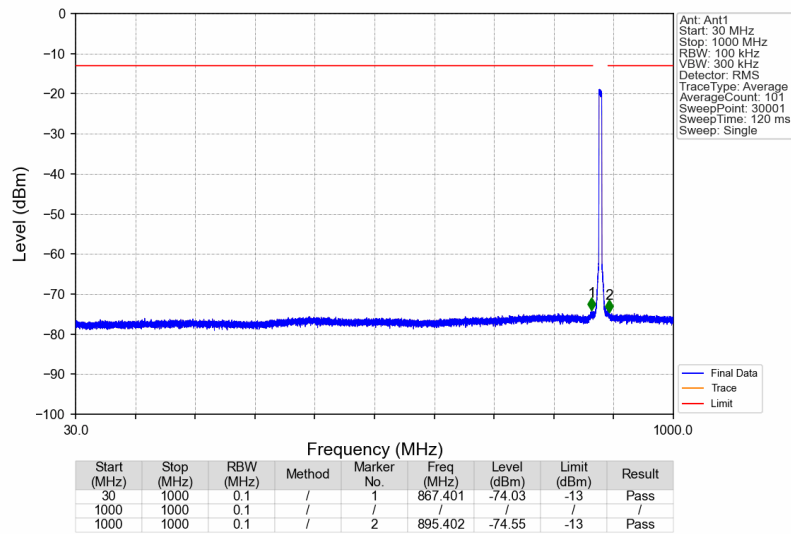
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



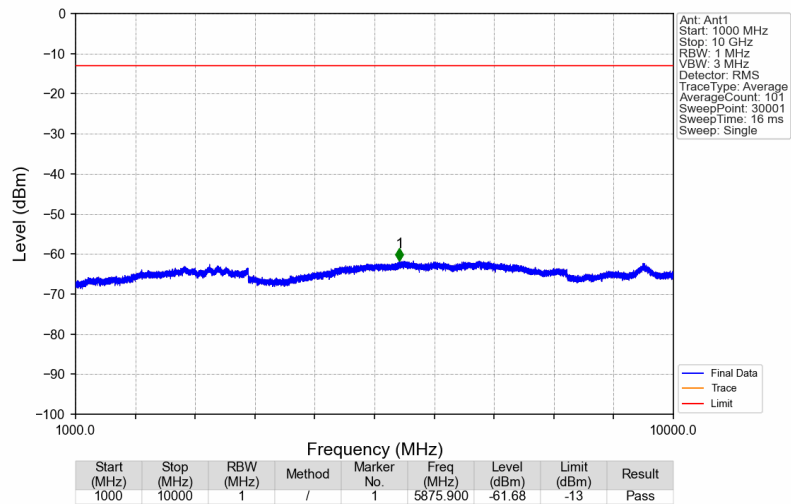
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



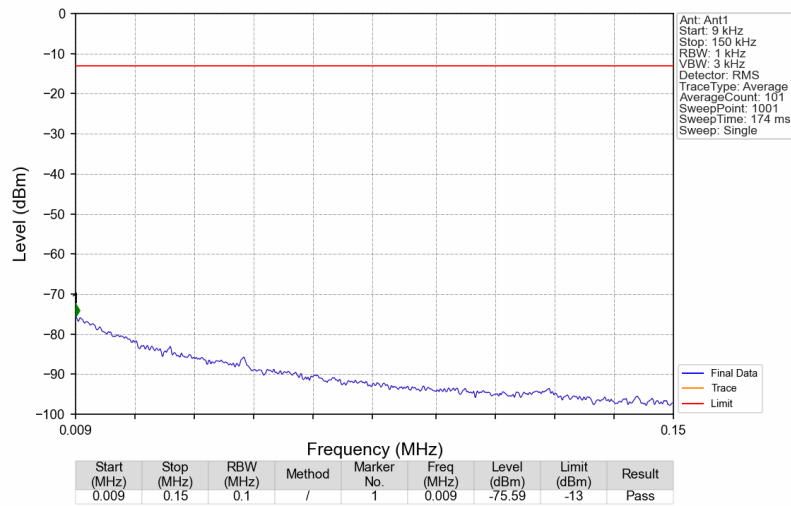
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



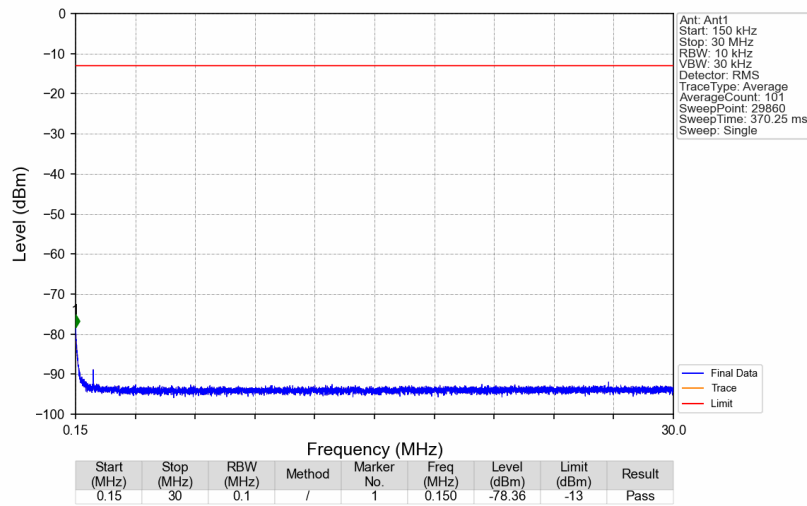
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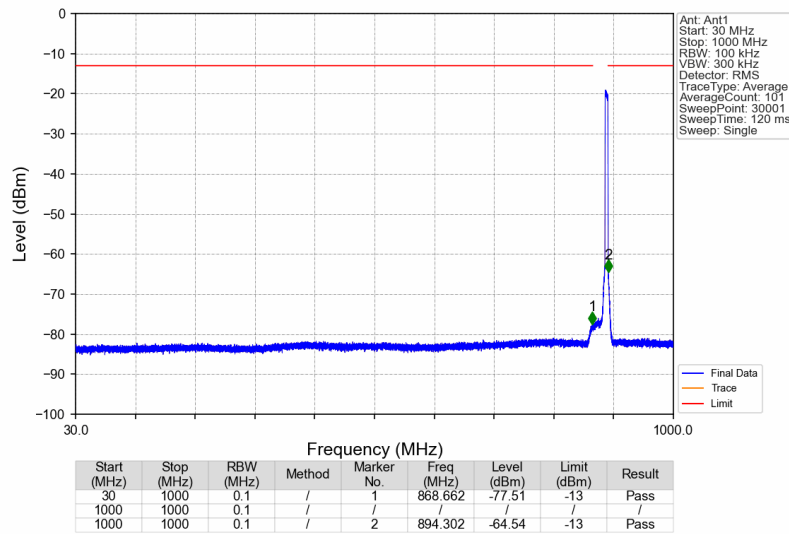
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



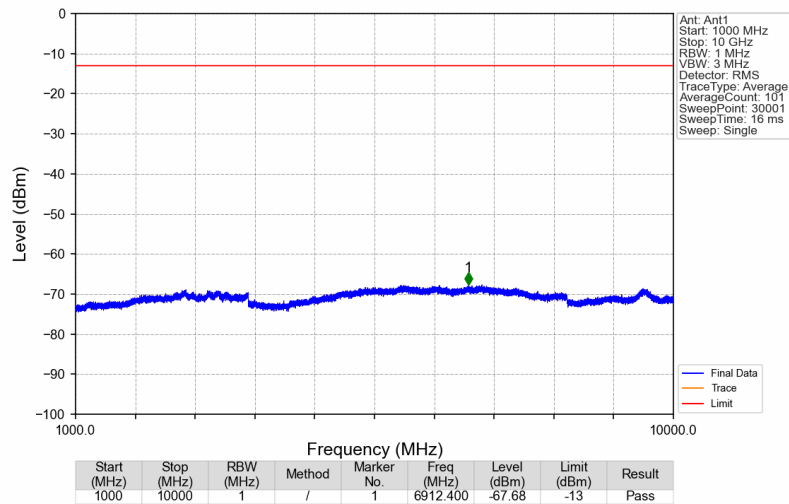
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



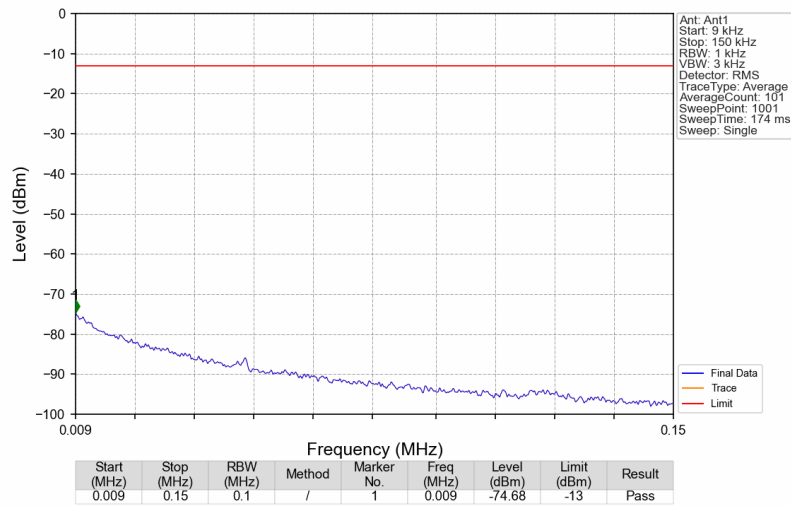
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



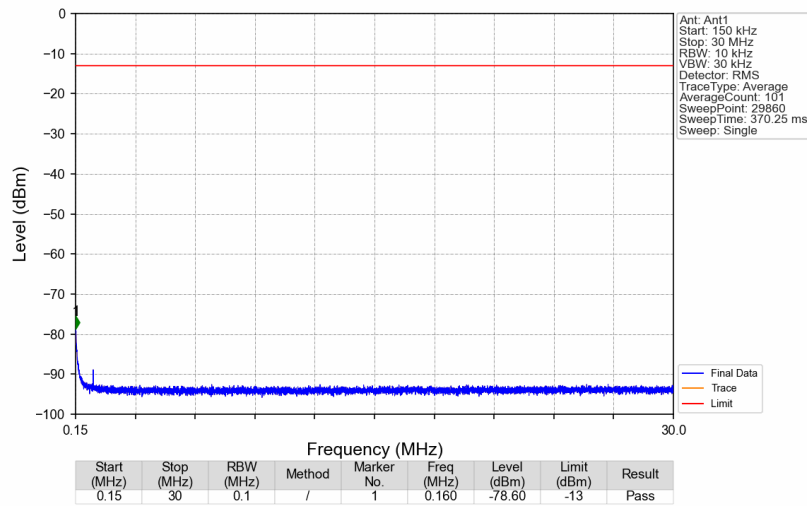
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



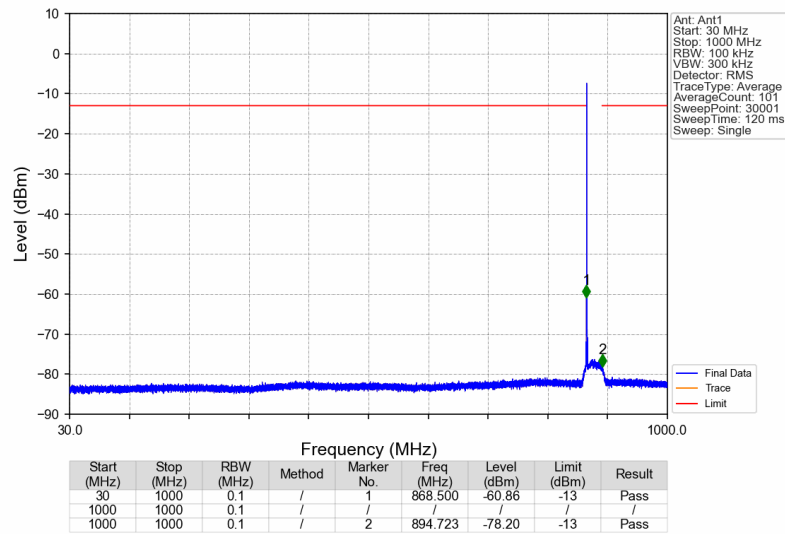
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV



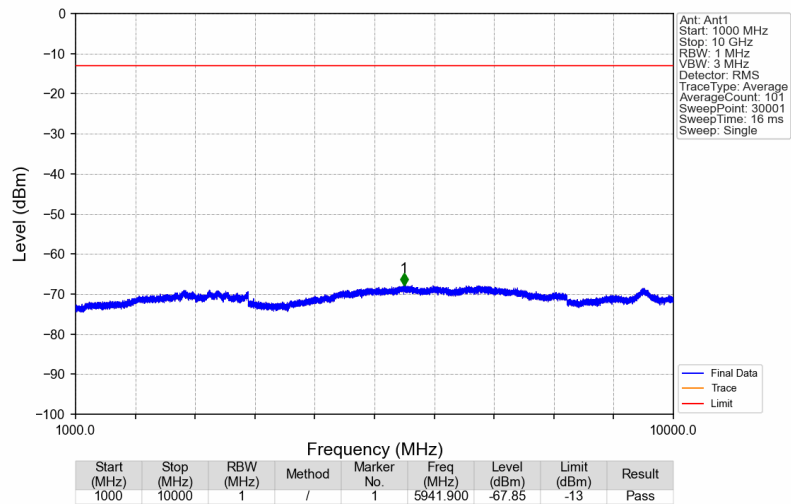
Band5_869.1MHz_GMSK_SISO_Ant1_NTNV



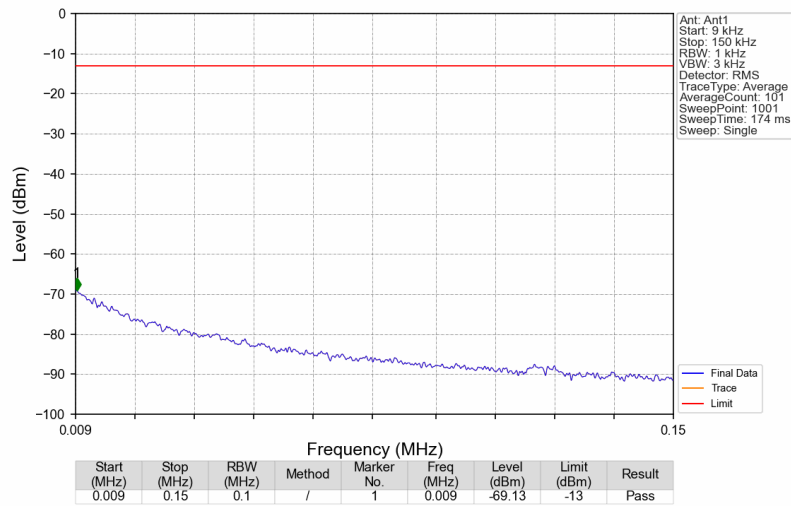
Band5 869.1MHz GMSK SISO Ant1 NTN



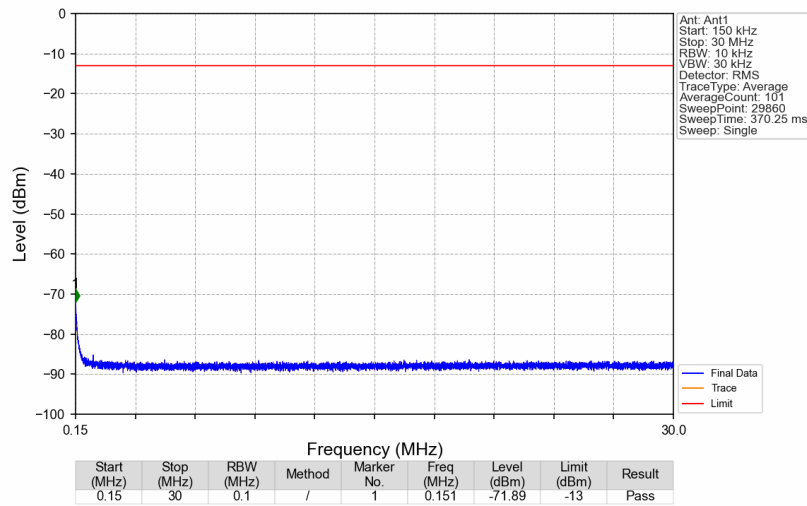
Band5 869.1MHz GMSK SISO Ant1 NTN



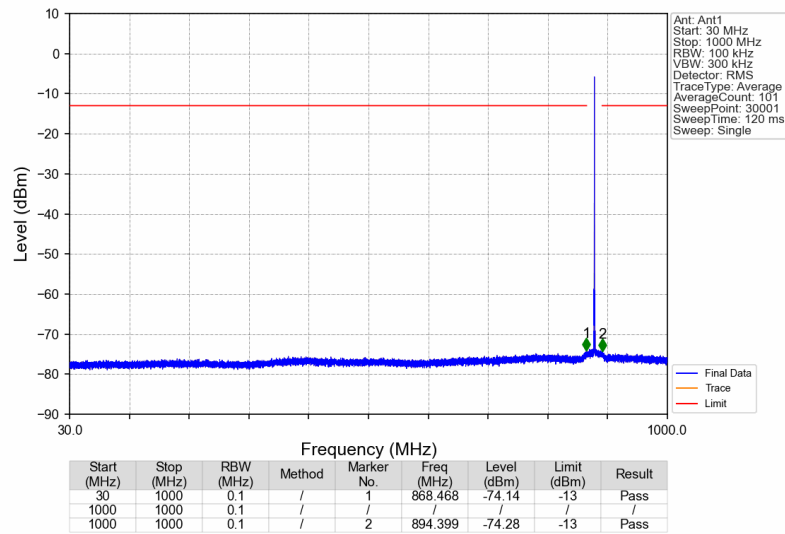
Band5 881.5MHz GMSK SISO Ant1_NTNV



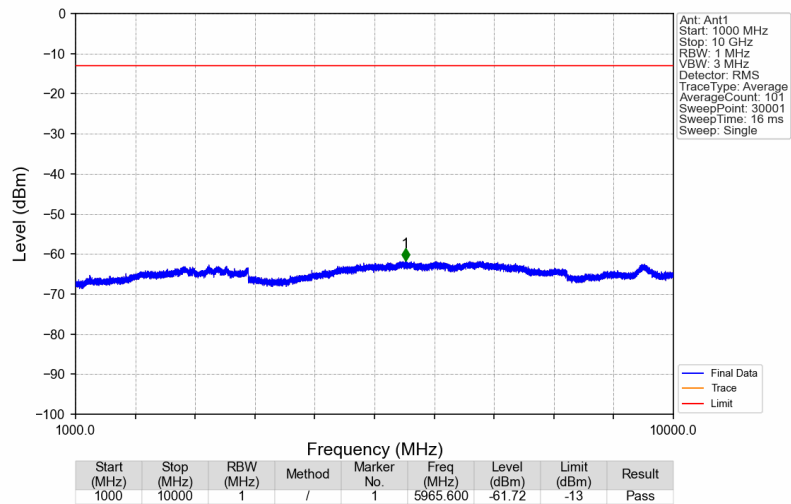
Band5 881.5MHz GMSK SISO Ant1_NTNV



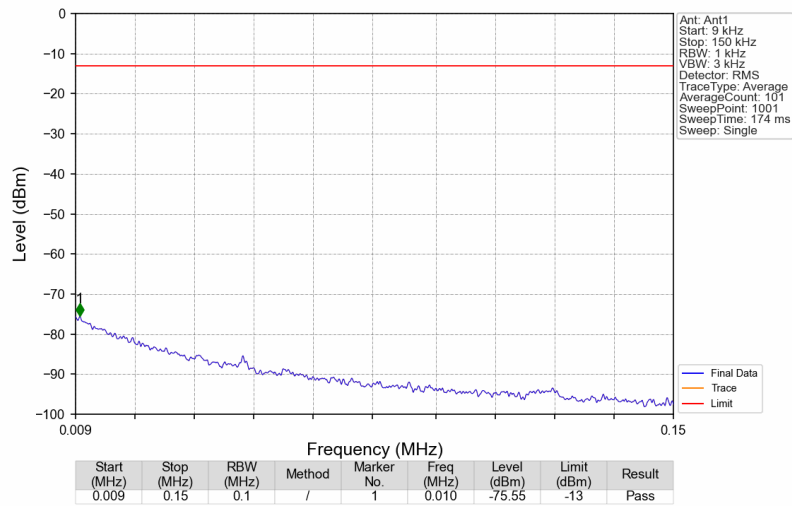
Band5 881.5MHz GSMK SISO Ant1 NTN



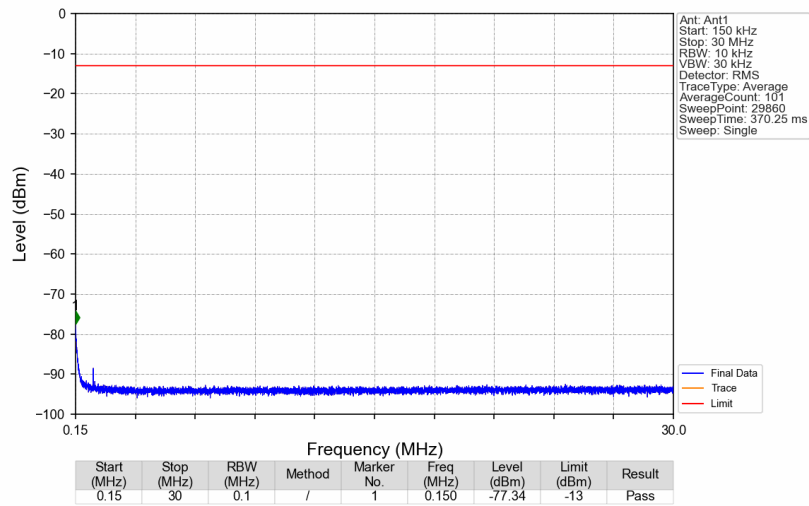
Band5 881.5MHz GSMK SISO Ant1 NTN



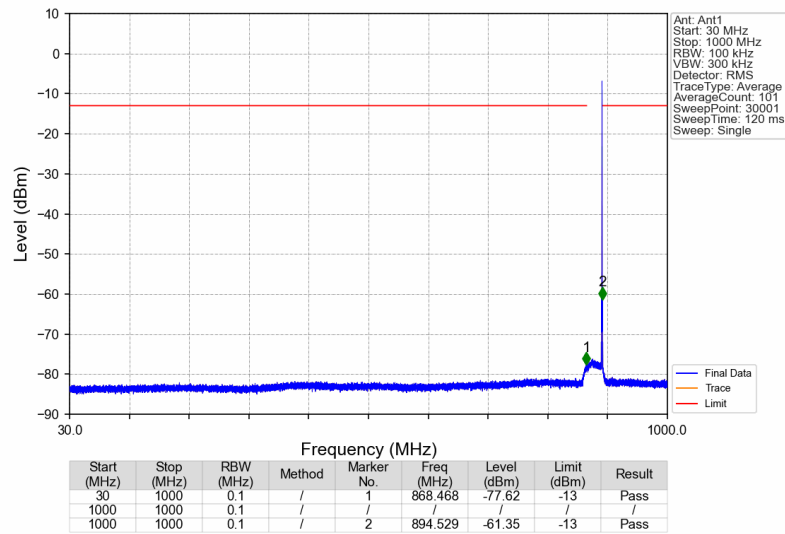
Band5_893.9MHz_GMSK_SISO_Ant1_NTNV



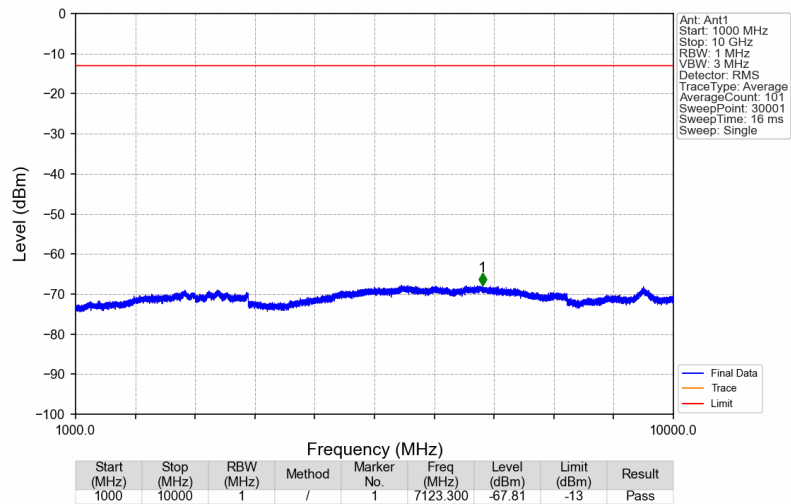
Band5_893.9MHz_GMSK_SISO_Ant1_NTNV



Band5 893.9MHz GMSK SISO Ant1 NTN



Band5 893.9MHz GMSK SISO Ant1 NTN



7. Frequency stability measurements

7.1 Band5_Ant1

7.1.1 Test Result

Band: 5 / NTNV							
Signal			Temp (°C)	Voltage (VAC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-5	869.1	20	102	-197	-0.227	Pass
				120	-198	-0.228	Pass
				138	-192	-0.221	Pass
			-30	120	-194	-0.223	Pass
			-20	120	-193	-0.222	Pass
			-10	120	-190	-0.219	Pass
			0	120	-189	-0.217	Pass
			10	120	-188	-0.216	Pass
			30	120	-191	-0.220	Pass
			40	120	-193	-0.222	Pass
			50	120	-194	-0.223	Pass
		881.5	20	102	-189	-0.217	Pass
				120	-188	-0.213	Pass
				138	-187	-0.212	Pass
			-30	120	-196	-0.222	Pass
			-20	120	-193	-0.219	Pass
			-10	120	-197	-0.223	Pass
			0	120	-192	-0.218	Pass
			10	120	-193	-0.219	Pass
			30	120	-199	-0.226	Pass
			40	120	-195	-0.221	Pass
			50	120	-191	-0.217	Pass
		893.9	20	102	-189	-0.214	Pass
				120	-187	-0.212	Pass
				138	-193	-0.216	Pass
			-30	120	-195	-0.218	Pass
			-20	120	-195	-0.218	Pass
			-10	120	-198	-0.222	Pass
			0	120	-193	-0.216	Pass
			10	120	-197	-0.220	Pass
			30	120	-195	-0.218	Pass



			40	120	-189	-0.211	Pass
			50	120	-188	-0.210	Pass

8. Radiated Spurious Emissions

8.1 Band5_Ant1

8.1.1 Test Result

AWGN_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
90.524	Horizontal	-67.81	-13	-54.81	pass
209.208	Horizontal	-59.05	-13	-46.05	pass
626.752	Horizontal	-61.40	-13	-48.40	pass
1411.650	Horizontal	-49.43	-13	-36.43	pass
1994.660	Horizontal	-48.57	-13	-35.57	pass
6315.110	Horizontal	-38.99	-13	-25.99	pass
92.310	Vertical	-68.97	-13	-55.97	pass
160.825	Vertical	-56.36	-13	-43.36	pass
610.919	Vertical	-60.33	-13	-47.33	pass
1408.210	Vertical	-48.13	-13	-35.13	pass
2031.950	Vertical	-54.89	-13	-41.89	pass
6322.680	Vertical	-38.48	-13	-25.48	pass

AWGN_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
101.004	Horizontal	-69.64	-13	-56.64	pass
199.598	Horizontal	-62.95	-13	-49.95	pass
629.302	Horizontal	-62.23	-13	-49.23	pass
1397.570	Horizontal	-53.49	-13	-40.49	pass
2014.560	Horizontal	-50.42	-13	-37.42	pass
6357.780	Horizontal	-36.45	-13	-23.45	pass
104.910	Vertical	-66.72	-13	-53.72	pass
163.325	Vertical	-60.00	-13	-47.00	pass
592.709	Vertical	-57.07	-13	-44.07	pass
1418.160	Vertical	-50.71	-13	-37.71	pass
2028.300	Vertical	-47.51	-13	-34.51	pass
6330.080	Vertical	-36.93	-13	-23.93	pass

AWGN_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
121.640	Horizontal	-69.89	-13	-56.89	pass
156.275	Horizontal	-62.97	-13	-49.97	pass
550.959	Horizontal	-63.28	-13	-50.28	pass
1411.390	Horizontal	-47.45	-13	-34.45	pass
2040.330	Horizontal	-47.58	-13	-34.58	pass
6362.880	Horizontal	-39.98	-13	-26.98	pass
70.534	Vertical	-63.48	-13	-50.48	pass
137.538	Vertical	-61.50	-13	-48.50	pass
485.622	Vertical	-64.12	-13	-51.12	pass
1418.120	Vertical	-53.70	-13	-40.70	pass
1998.490	Vertical	-53.94	-13	-40.94	pass
6317.280	Vertical	-37.05	-13	-24.05	pass

GMSK_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
108.104	Horizontal	-62.68	-13	-49.68	pass
119.648	Horizontal	-59.38	-13	-46.38	pass
486.742	Horizontal	-63.39	-13	-50.39	pass
1382.150	Horizontal	-53.95	-13	-40.95	pass
2165.880	Horizontal	-50.87	-13	-37.87	pass
6208.340	Horizontal	-39.69	-13	-26.69	pass
87.130	Vertical	-66.41	-13	-53.41	pass
173.685	Vertical	-61.26	-13	-48.26	pass
504.709	Vertical	-59.04	-13	-46.04	pass
1373.730	Vertical	-52.79	-13	-39.79	pass
2161.970	Vertical	-48.47	-13	-35.47	pass
6229.340	Vertical	-38.08	-13	-25.08	pass

GMSK_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
137.686	Horizontal	-65.14	-13	-52.14	pass
302.425	Horizontal	-59.80	-13	-46.80	pass
463.749	Horizontal	-58.12	-13	-45.12	pass
1390.610	Horizontal	-50.26	-13	-37.26	pass
2176.170	Horizontal	-53.07	-13	-40.07	pass
6202.750	Horizontal	-39.70	-13	-26.70	pass
142.325	Vertical	-62.09	-13	-49.09	pass
508.789	Vertical	-57.30	-13	-44.30	pass
527.396	Vertical	-60.02	-13	-47.02	pass
1401.450	Vertical	-54.75	-13	-41.75	pass
2166.480	Vertical	-55.19	-13	-42.19	pass
6193.000	Vertical	-38.21	-13	-25.21	pass

GMSK_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
119.146	Horizontal	-67.54	-13	-54.54	pass
312.205	Horizontal	-59.30	-13	-46.30	pass
478.669	Horizontal	-57.72	-13	-44.72	pass
1494.920	Horizontal	-51.10	-13	-38.10	pass
2199.190	Horizontal	-50.61	-13	-37.61	pass
6263.560	Horizontal	-37.55	-13	-24.55	pass
86.840	Vertical	-67.17	-13	-54.17	pass
158.135	Vertical	-58.34	-13	-45.34	pass
532.419	Vertical	-62.74	-13	-49.74	pass
1493.150	Vertical	-53.20	-13	-40.20	pass
2218.750	Vertical	-54.59	-13	-41.59	pass
6240.930	Vertical	-36.74	-13	-23.74	pass