

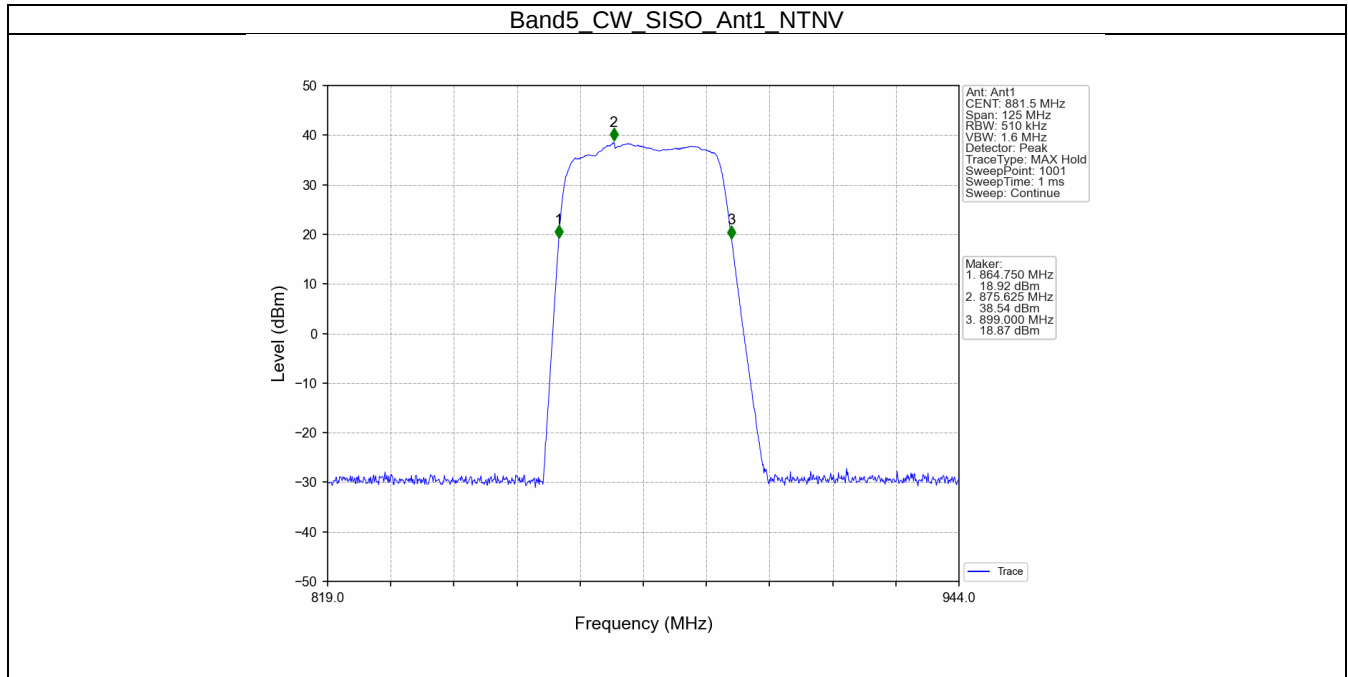
1. Out of band rejection

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	875.625	864.750	899.000	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
GMSK 0.2MHz	875.625	SISO	1	-3.40	Pass
AWGN 5MHz	875.625	SISO	1	-3.40	Pass

3. Input-versus-output signal comparison

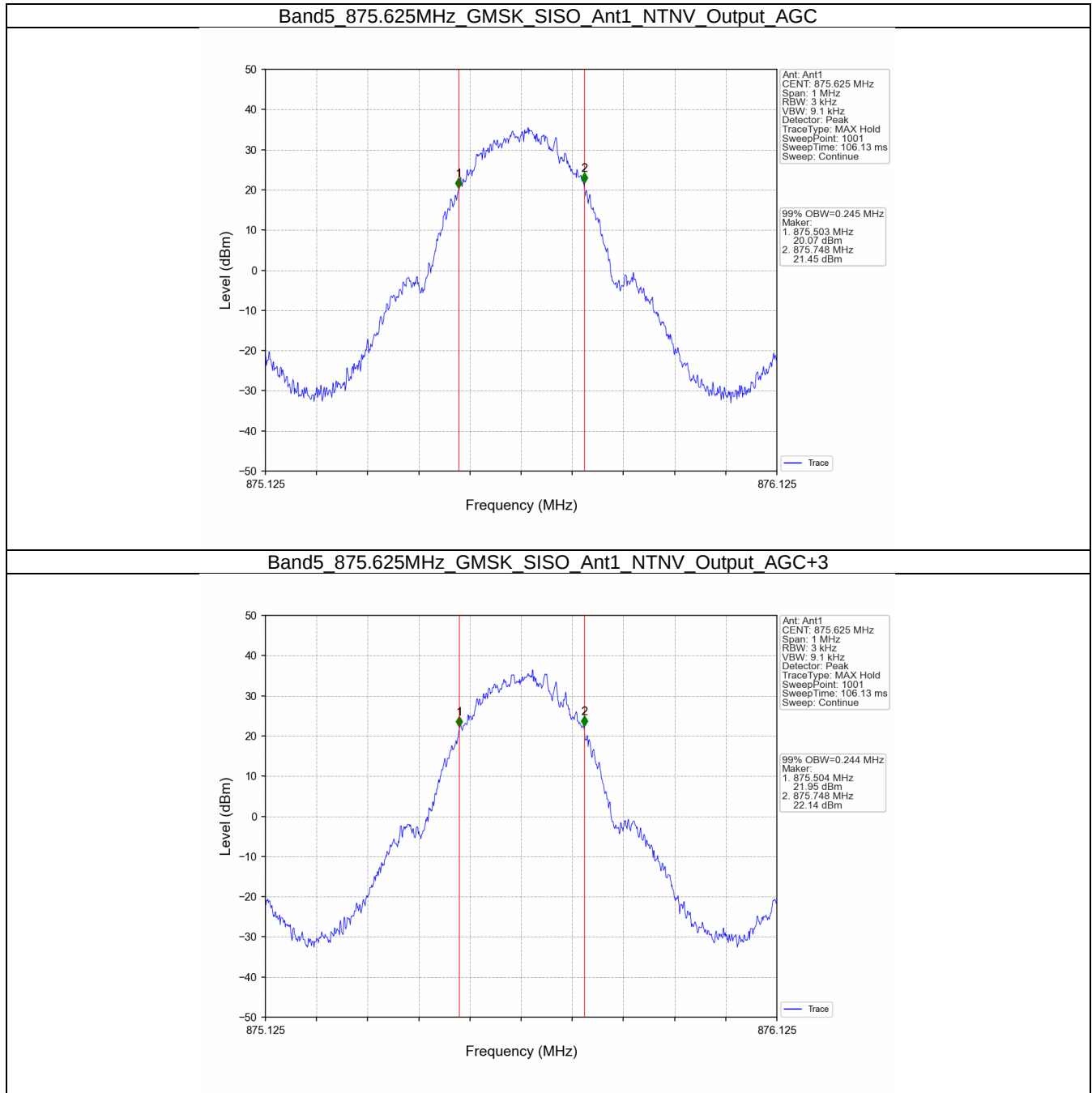
3.1 Band5_OBW

3.1.1 Test Result

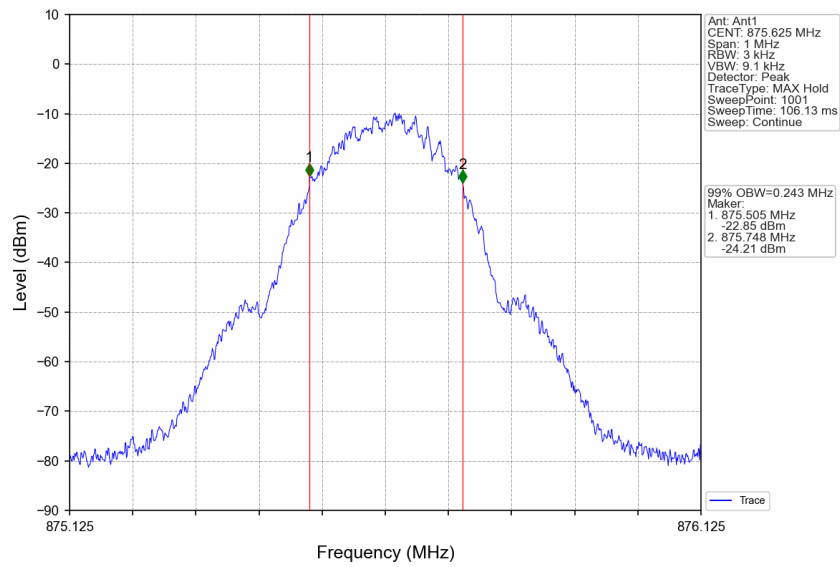
Band: 5 / NTNV									
Signal			TX Type	ANT	99% OBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK 0.2MHz	-3.4	875.625	SISO	1	0.245	0.243	0.82	<5.00	Pass
	-0.4	875.625	SISO	1	0.244	0.243	0.41	<5.00	Pass
AWGN 5MHz	-3.4	875.625	SISO	1	4.541	4.528	0.29	<5.00	Pass
	-0.4	875.625	SISO	1	4.535	4.541	0.13	<5.00	Pass

Deviation= [(Output - Input)/ Input] * 100

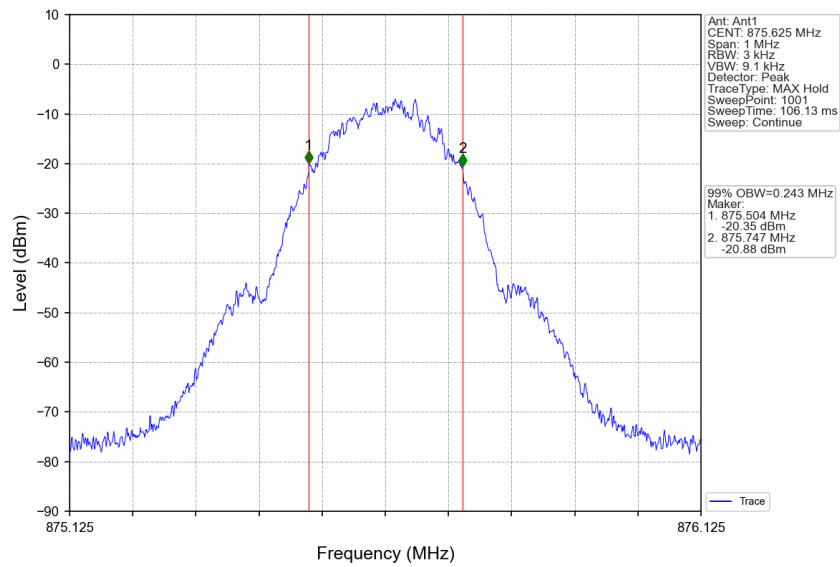
3.1.2 Test Graph



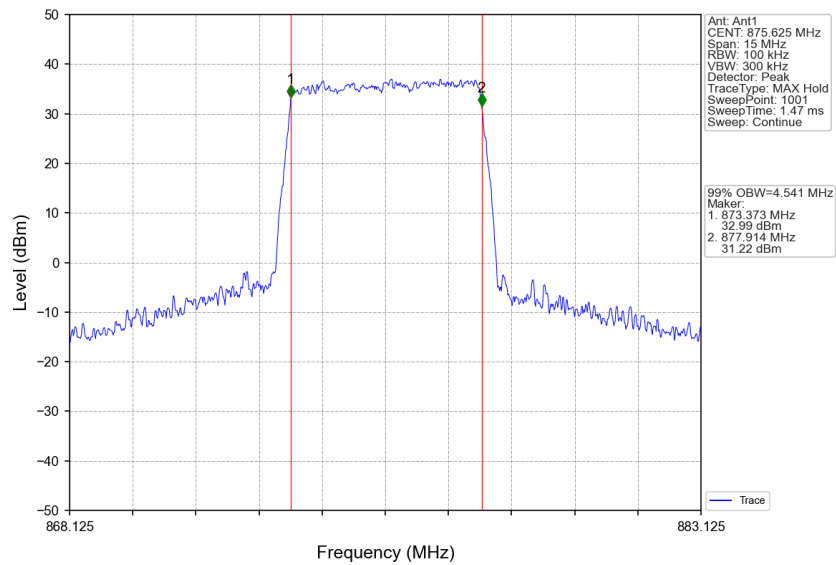
Band5_875.625MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



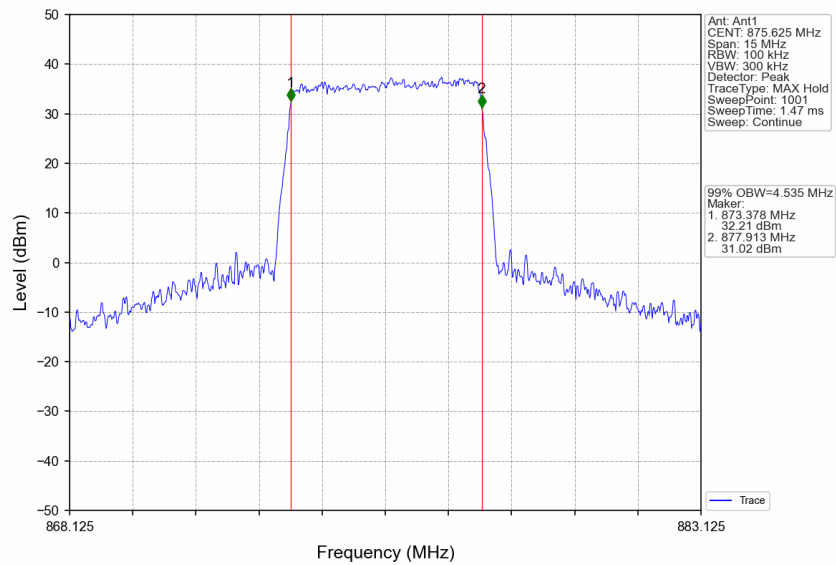
Band5_875.625MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



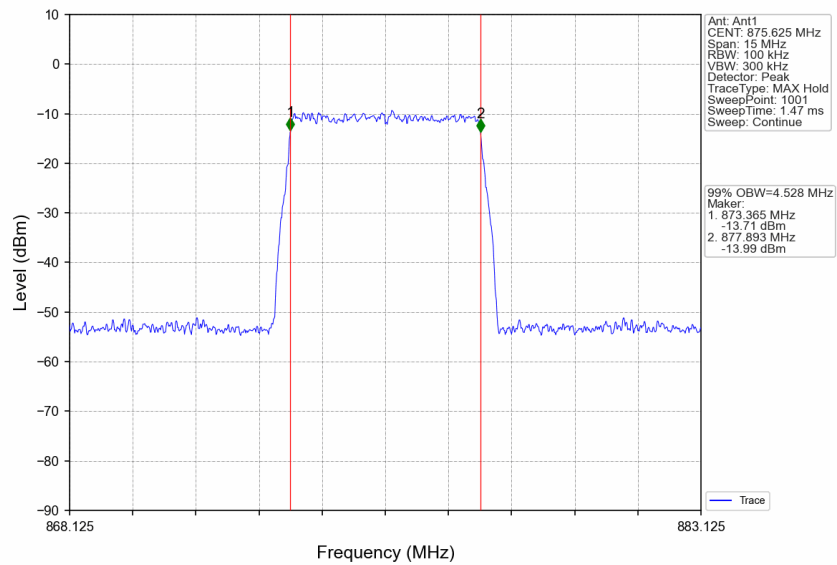
Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



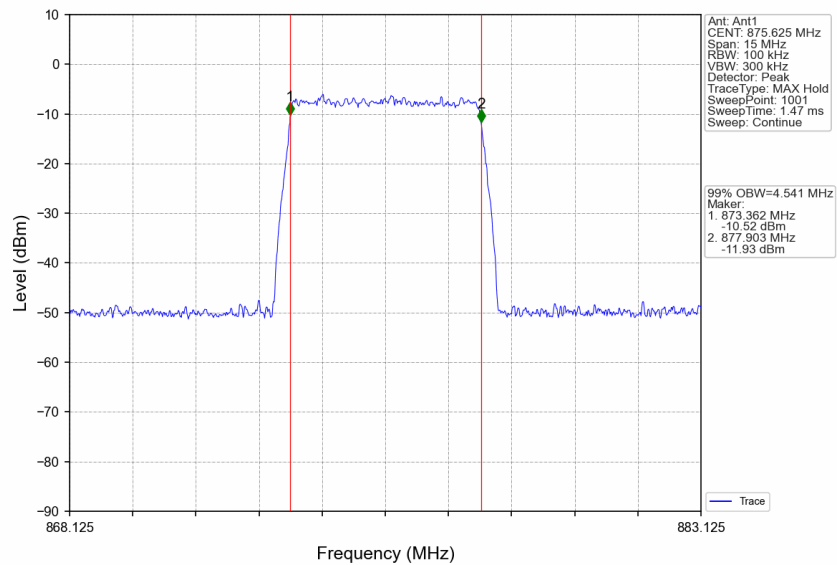
Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



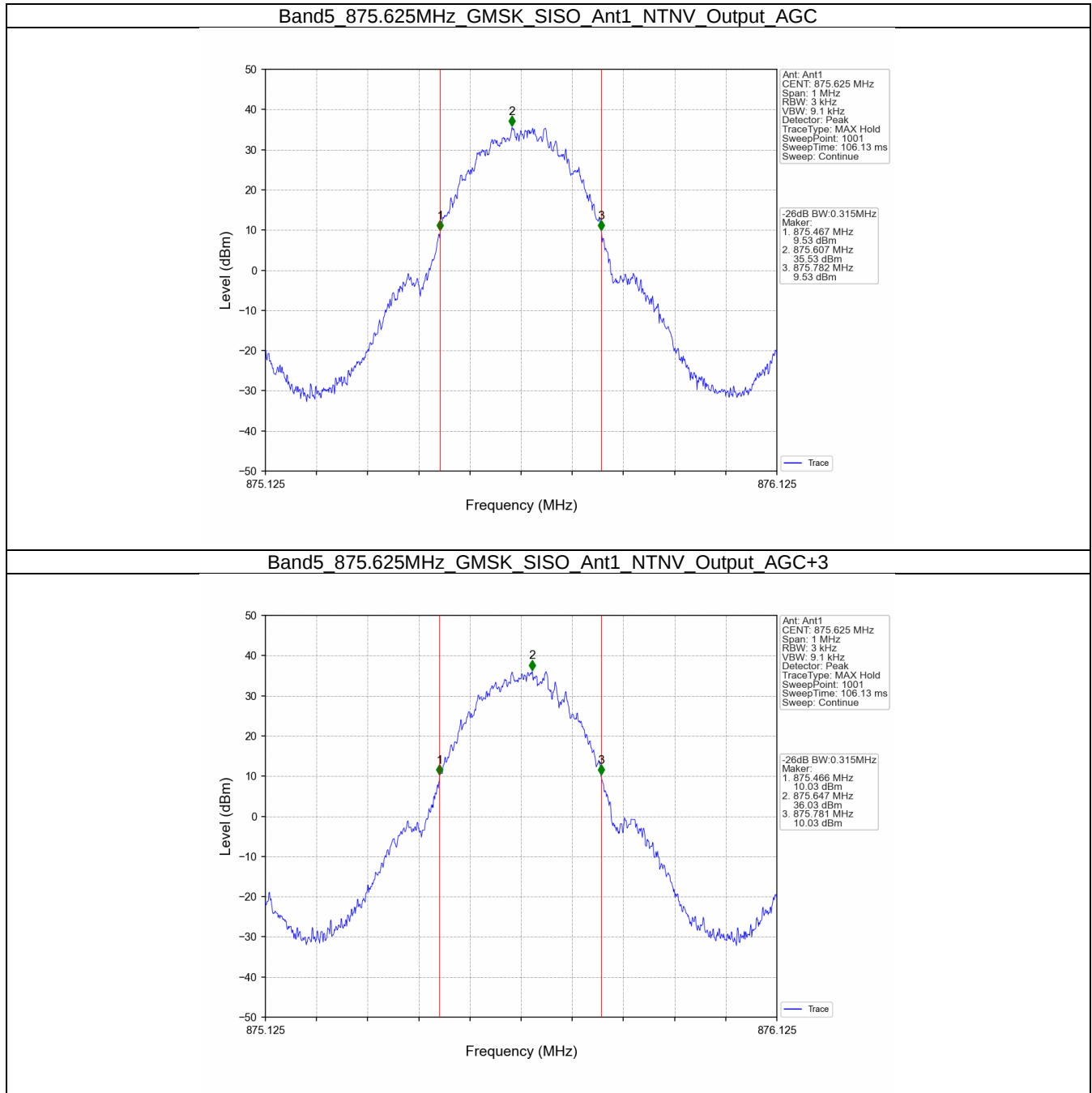
3.2 Band5_EBW

3.2.1 Test Result

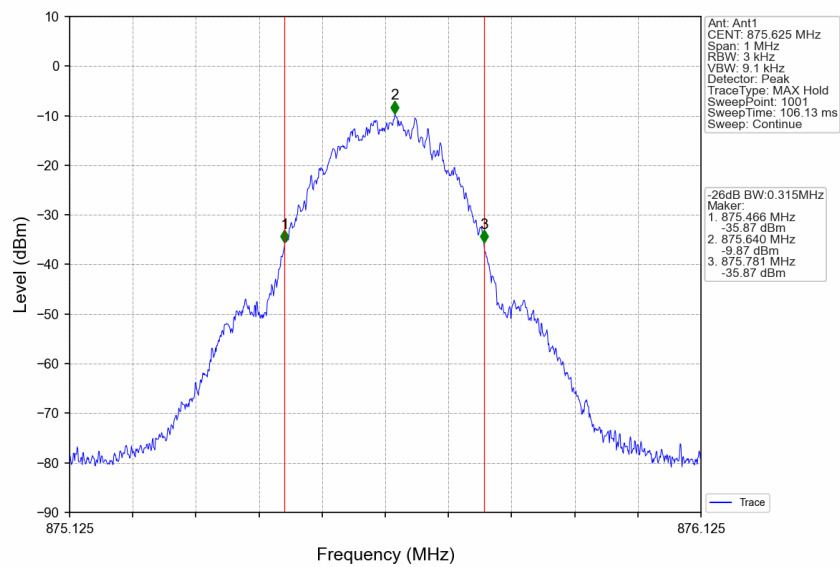
Band: 5 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK 0.2MHz	-3.4	875.625	SISO	1	0.315	0.315	0.00	<5.00	Pass
	-0.4	875.625	SISO	1	0.315	0.313	0.64	<5.00	Pass
AWGN 5MHz	-3.4	875.625	SISO	1	5.050	5.075	0.49	<5.00	Pass
	-0.4	875.625	SISO	1	5.067	5.063	0.08	<5.00	Pass

Deviation= [(Output - Input)/ Input] * 100

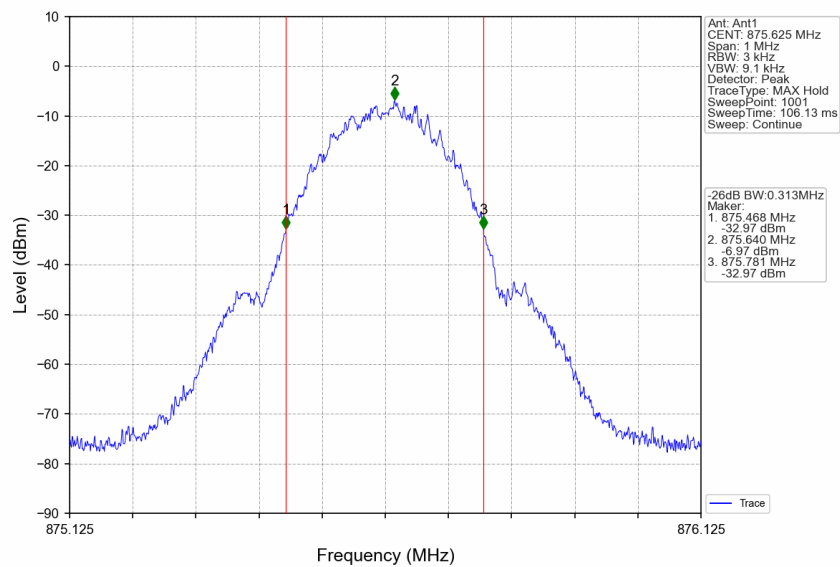
3.2.2 Test Graph



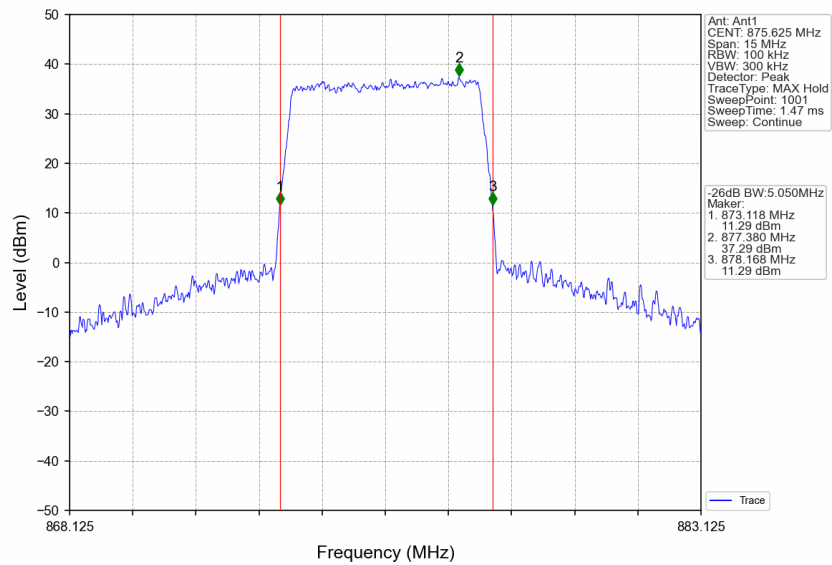
Band5_875.625MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



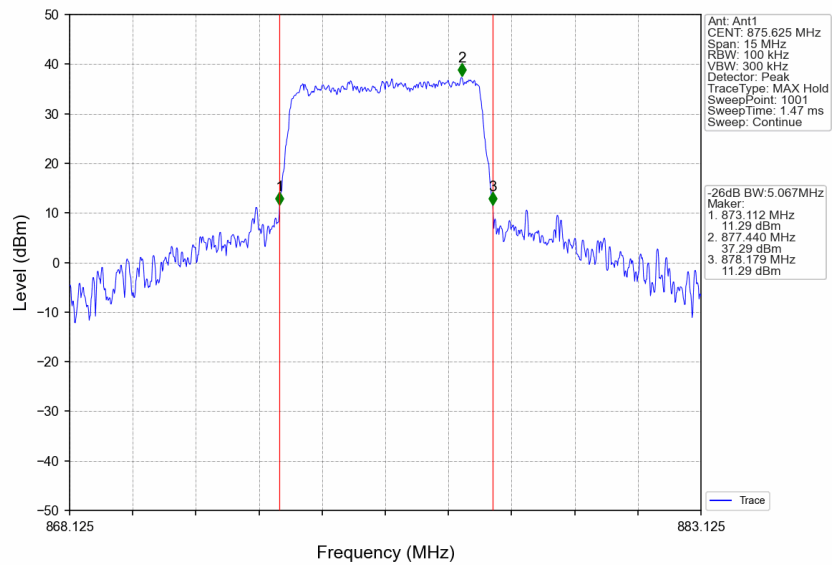
Band5_875.625MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



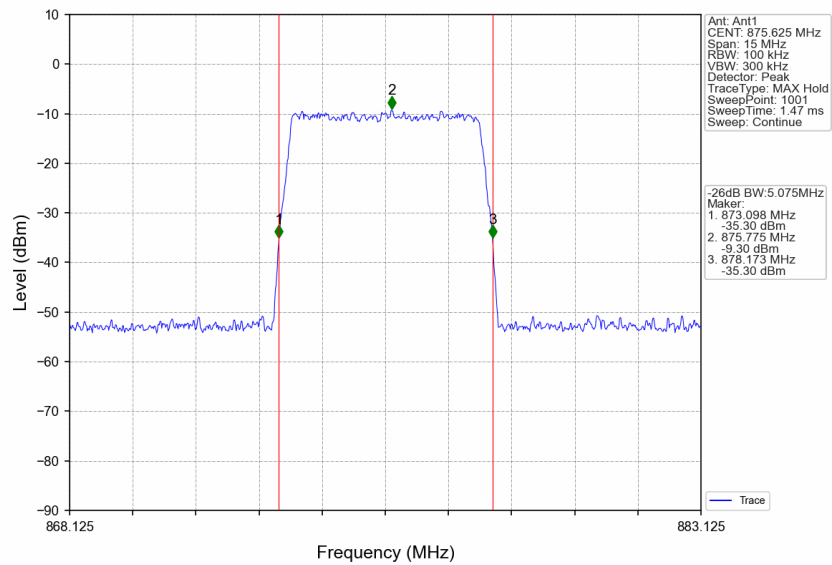
Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



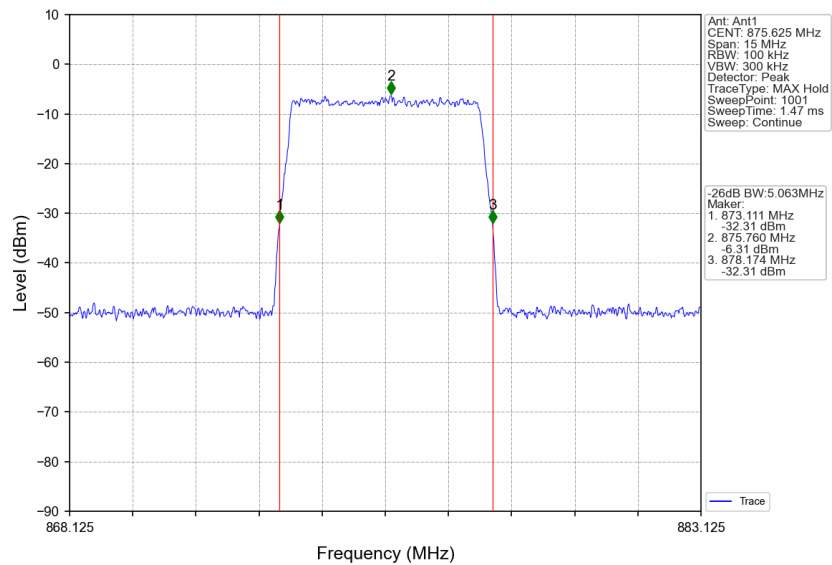
Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



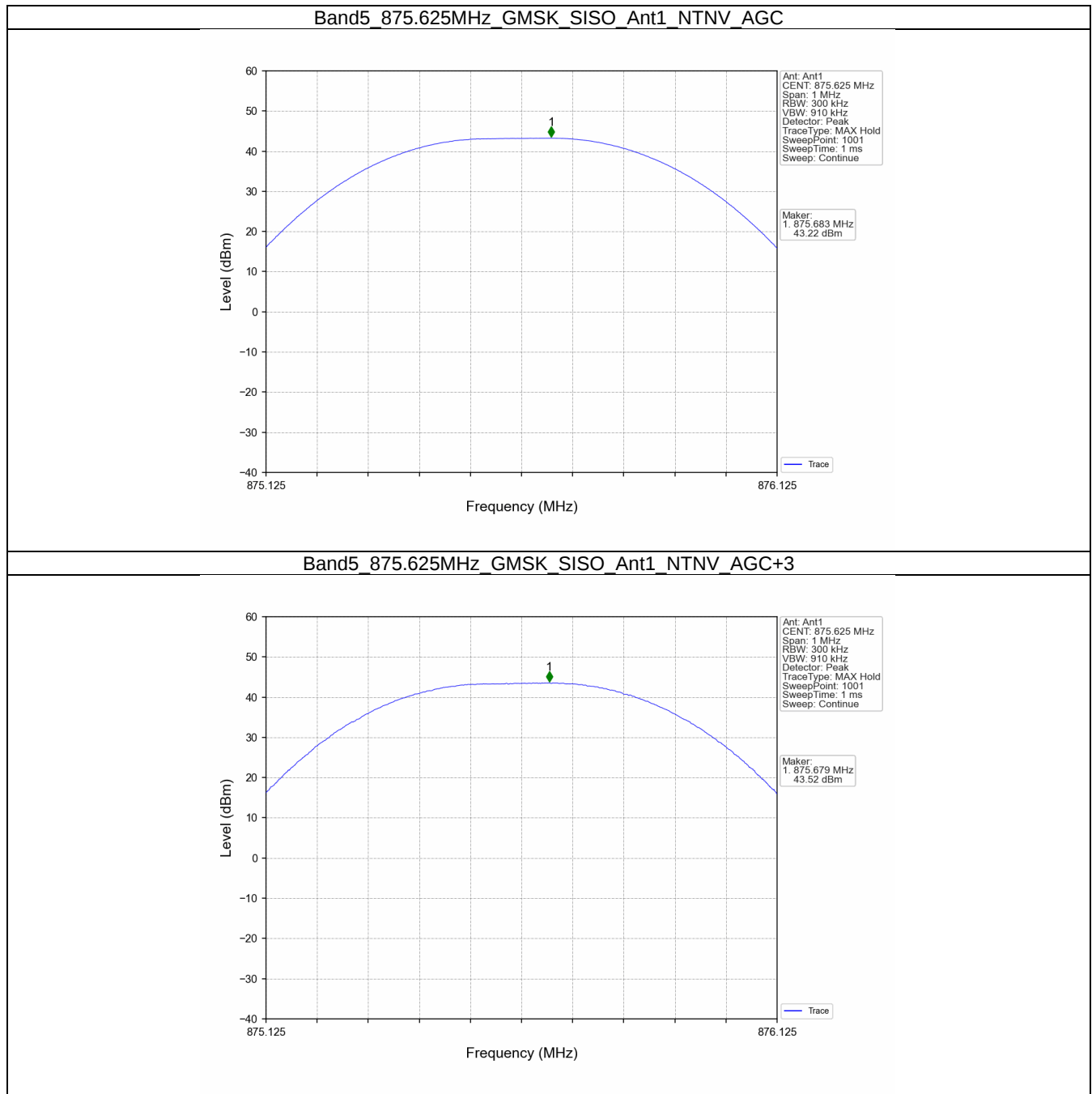
4. Input/output power and amplifier/booster gain

4.1 Band5_ERP

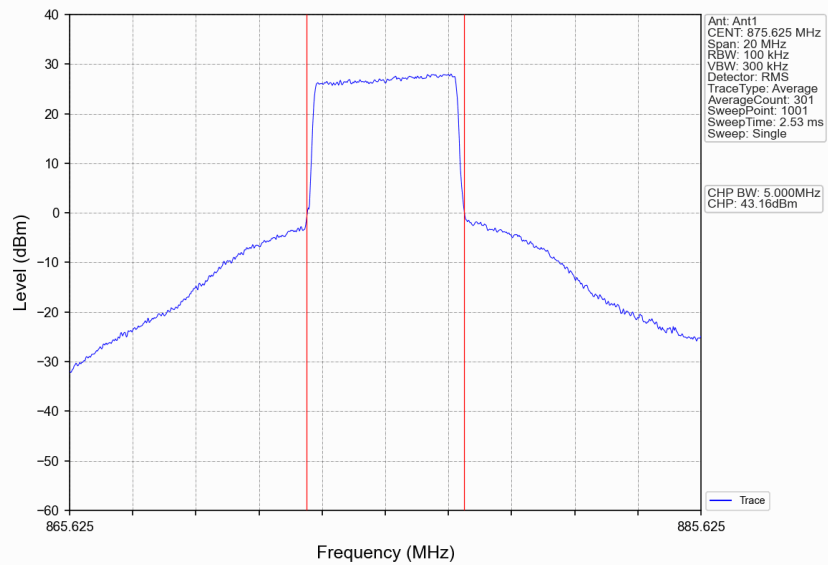
4.1.1 Test Result

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		
GMSK	-3.4	875.625	SISO	1	43.22	-3.33	56.07	<=56.99	46.55	Pass
0.2MHz	-0.4	875.625	SISO	1	43.52	-0.35	56.37	<=56.99	/	Pass
AWGN	-3.4	875.625	SISO	1	43.16	-3.37	56.01	<=56.99	46.53	Pass
5MHz	-0.4	875.625	SISO	1	43.41	-0.36	56.26	<=56.99	/	Pass

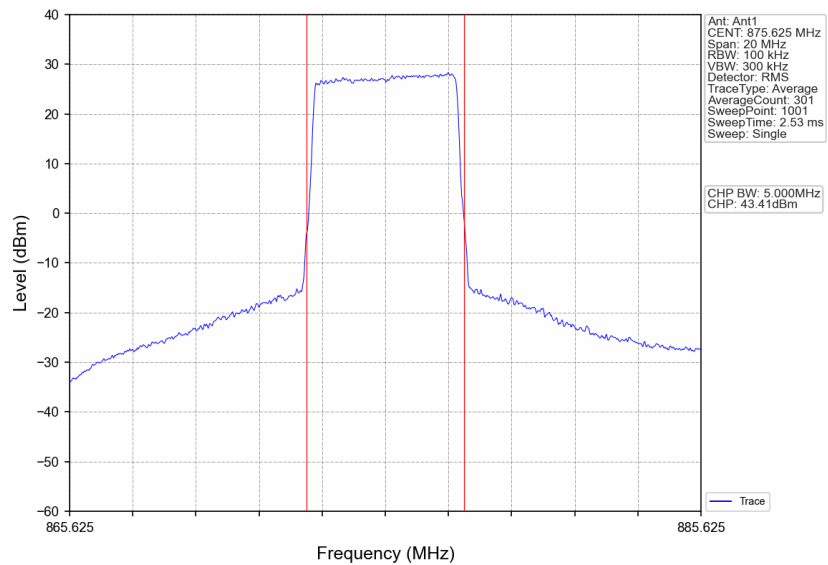
4.1.2 Test Graph



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_AGC



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_AGC+3

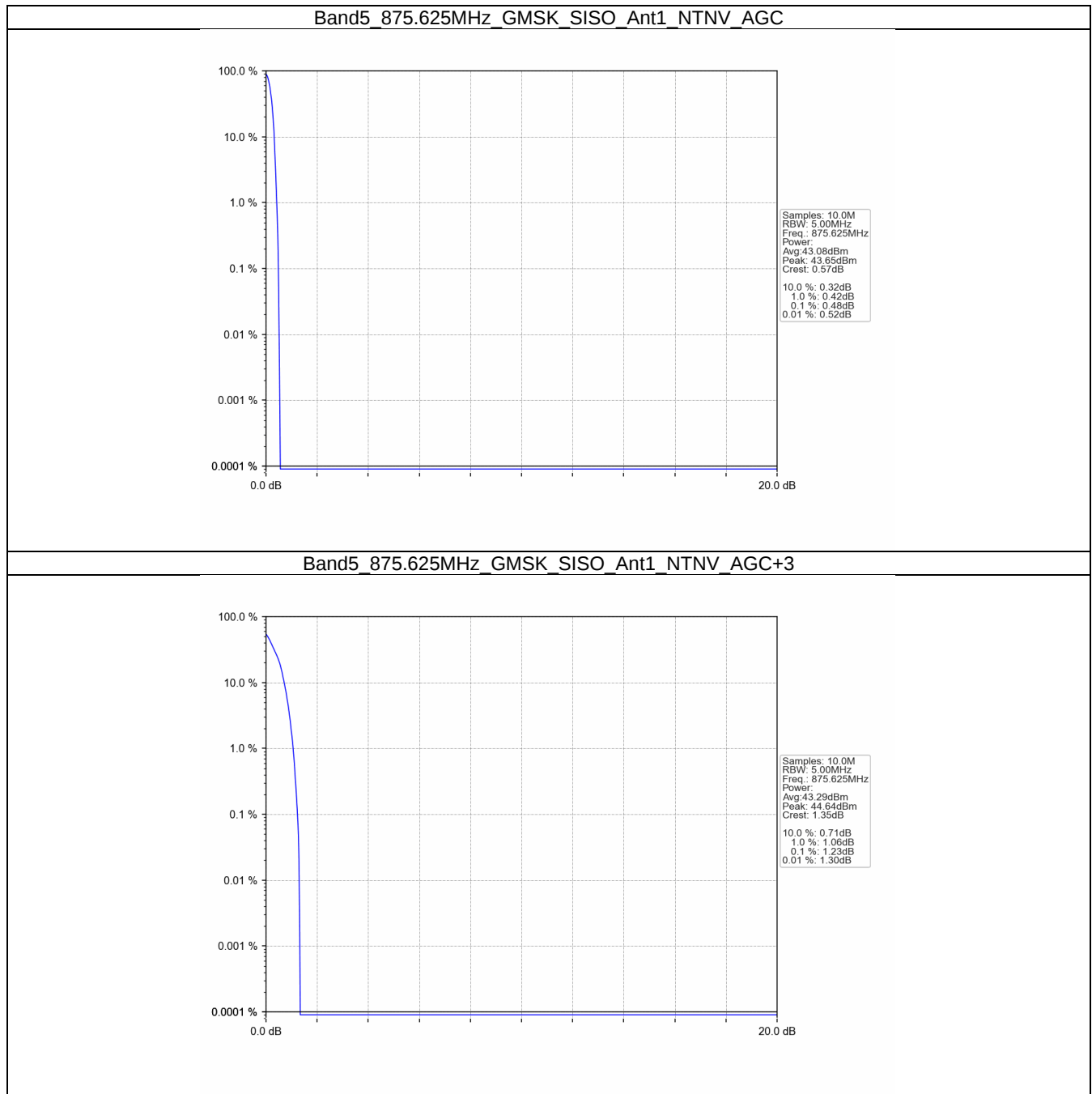


4.2 Band5_PAPR

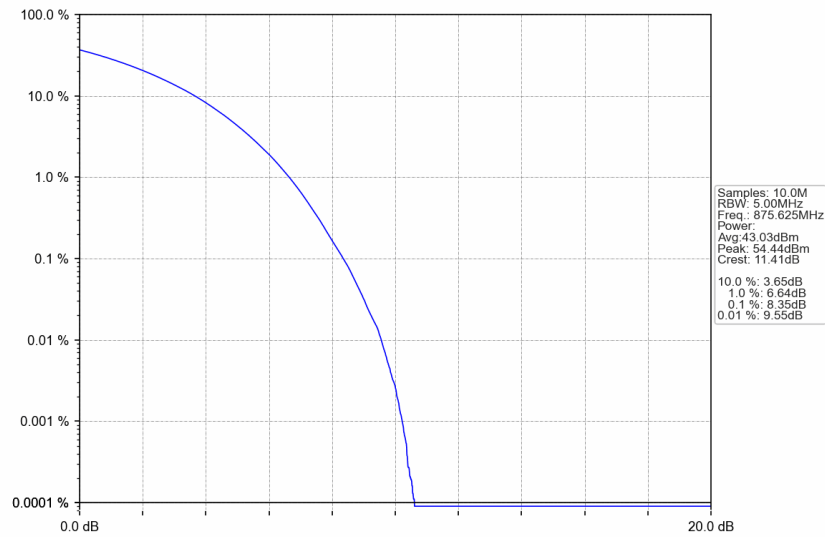
4.2.1 Test Result

Band: 5 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
GMSK	-3.4	875.625	SISO	1	0.48	<=13	Pass
0.2MHz	-0.4	875.625	SISO	1	1.23	<=13	Pass
AWGN	-3.4	875.625	SISO	1	8.35	<=13	Pass
5MHz	-0.4	875.625	SISO	1	8.15	<=13	Pass

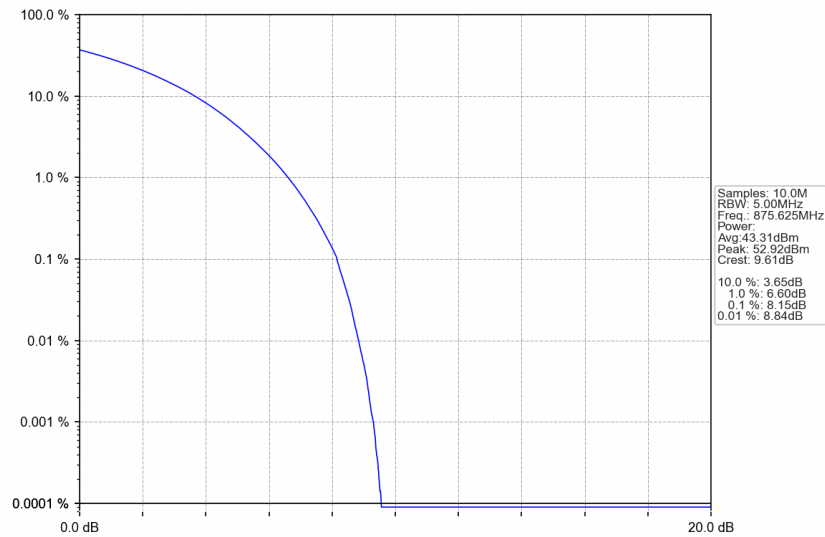
4.2.2 Test Graph



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_AGC



Band5_875.625MHz_AWGN_SISO_Ant1_NTNV_AGC+3



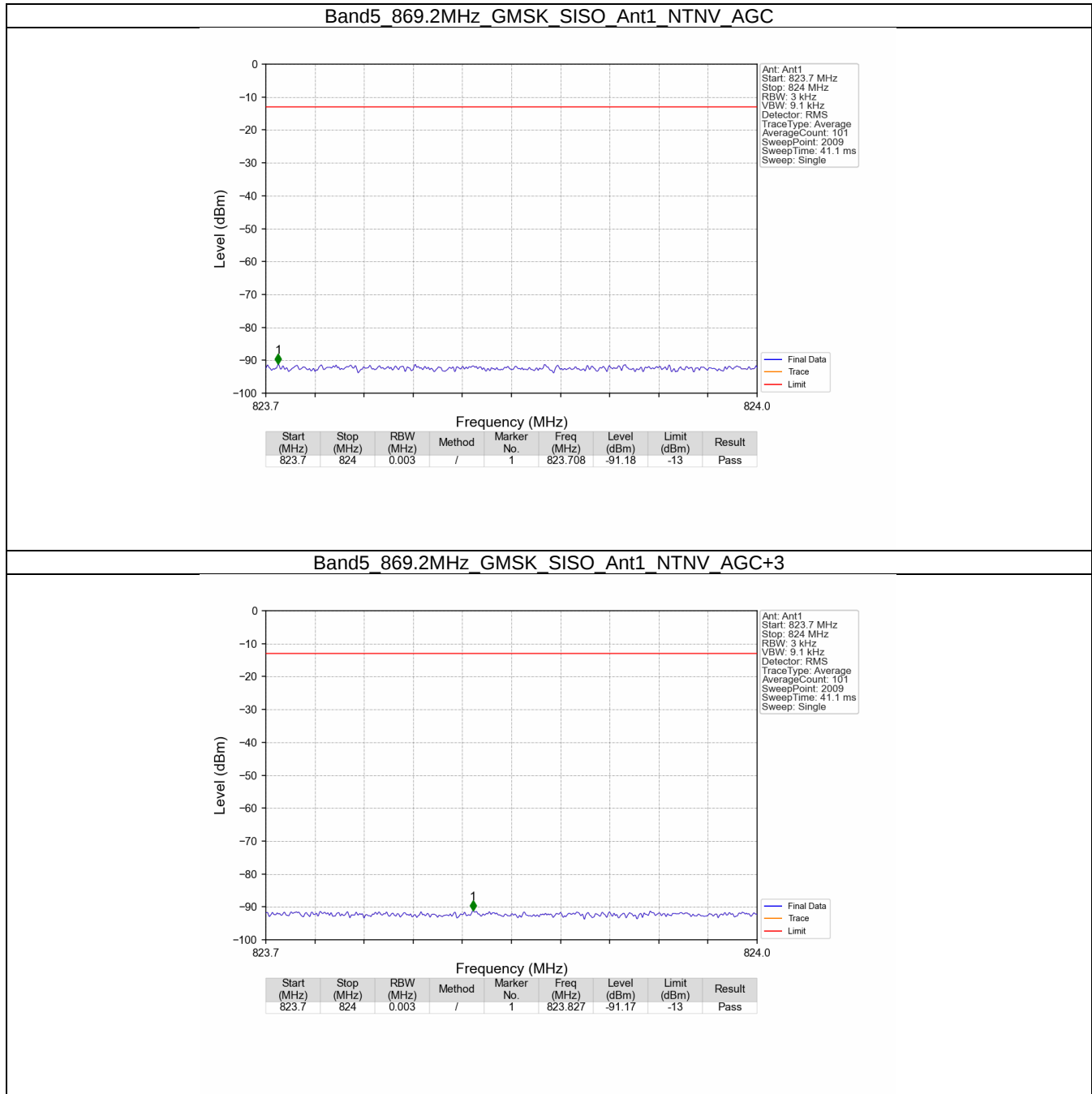
5. Out-of-band/out-of-block (including intermodulation) emissions

5.1 Band5

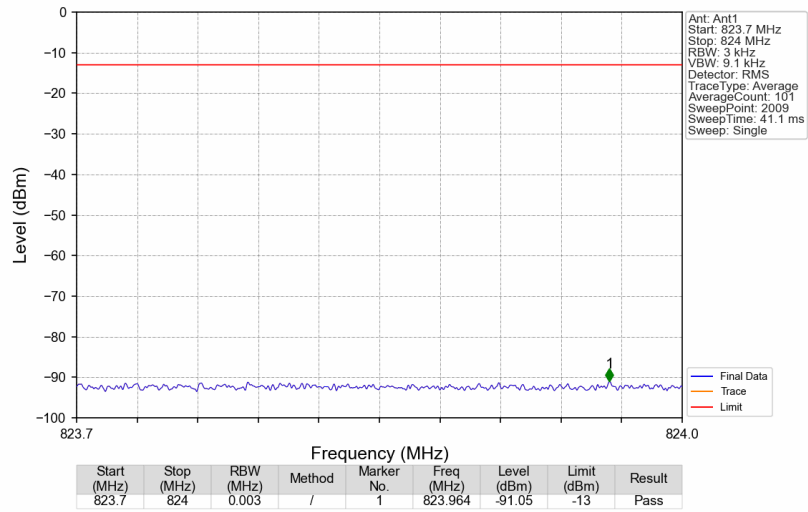
5.1.1 Test Result

Band: 5 / NTN									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	GMSK 0.2MHz	-3.4	869.2	LCH	SISO	1	-91.18	Refer To Test Graph	Pass
		-0.4	869.2	LCH	SISO	1	-91.17	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.4	869.2	LCH	SISO	1	-91.05	Refer To Test Graph	Pass
		-0.4	869.2	LCH	SISO	1	-90.63	Refer To Test Graph	Pass
Two	GMSK 0.2MHz	-3.4	893.8	HCH	SISO	1	-87.79	Refer To Test Graph	Pass
		-0.4	893.8	HCH	SISO	1	-87.68	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.4	893.8	HCH	SISO	1	-87.42	Refer To Test Graph	Pass
		-0.4	893.8	HCH	SISO	1	-87.28	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.4	871.5	LCH	SISO	1	-79.18	Refer To Test Graph	Pass
		-0.4	871.5	LCH	SISO	1	-78.77	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.4	871.5	LCH	SISO	1	-79.38	Refer To Test Graph	Pass
		-0.4	871.5	LCH	SISO	1	-78.76	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.4	891.5	HCH	SISO	1	-75.47	Refer To Test Graph	Pass
		-0.4	891.5	HCH	SISO	1	-75.67	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.4	891.5	HCH	SISO	1	-75.79	Refer To Test Graph	Pass
		-0.4	891.5	HCH	SISO	1	-75.22	Refer To Test Graph	Pass

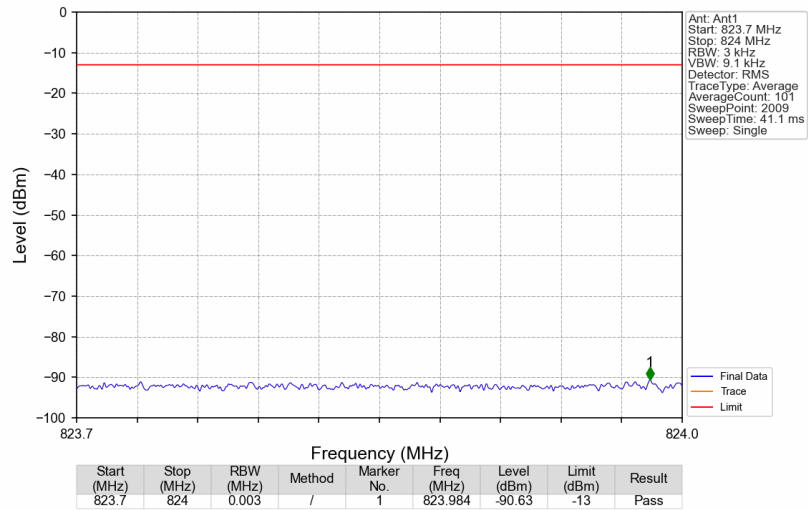
5.1.2 Test Graph



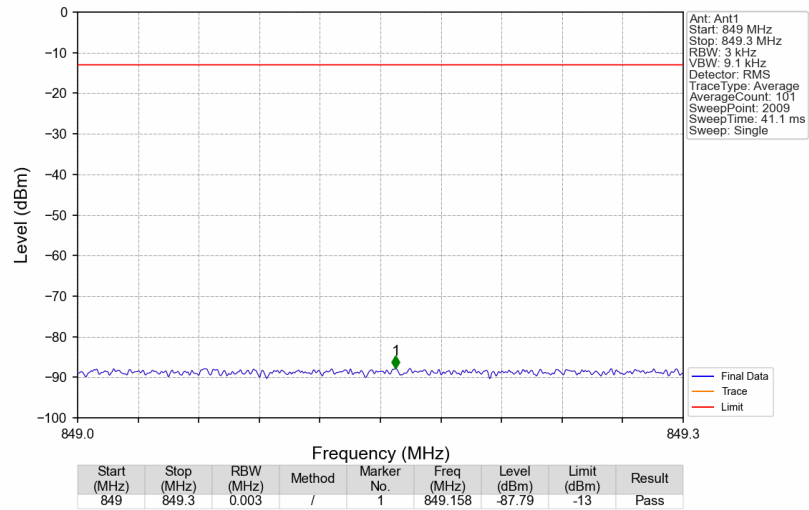
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV_AGC



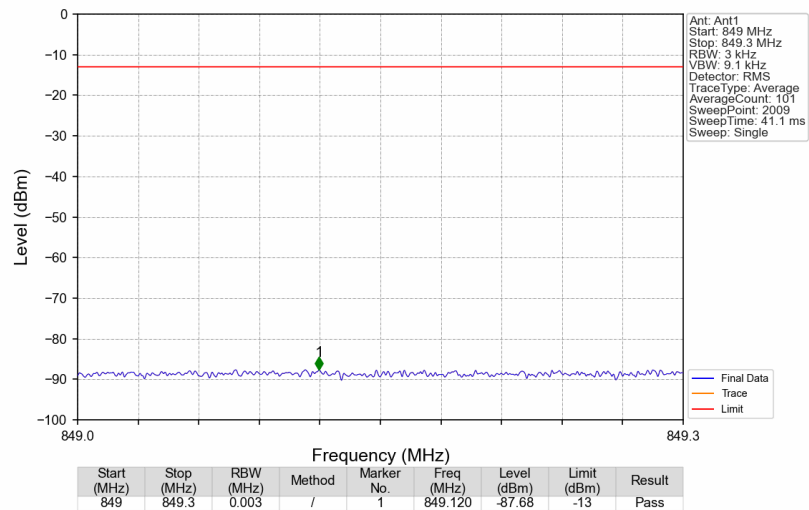
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV_AGC+3



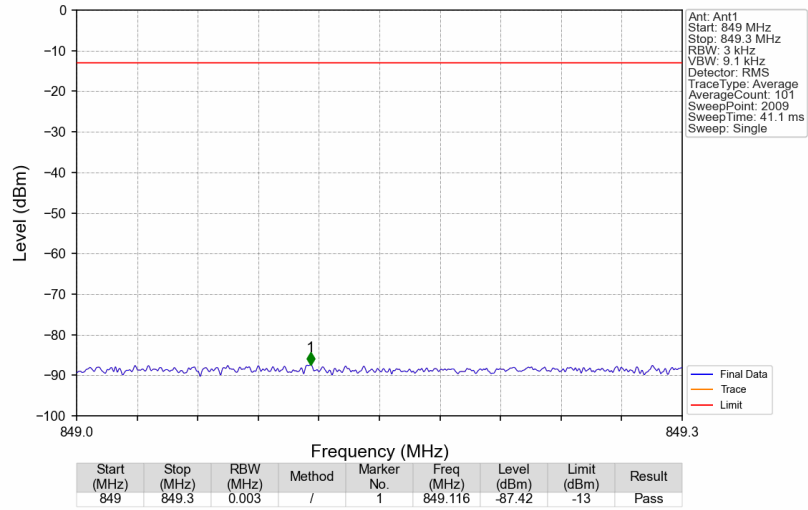
Band5_893.8MHz_GMSK_SISO_Ant1_NTNV_AGC



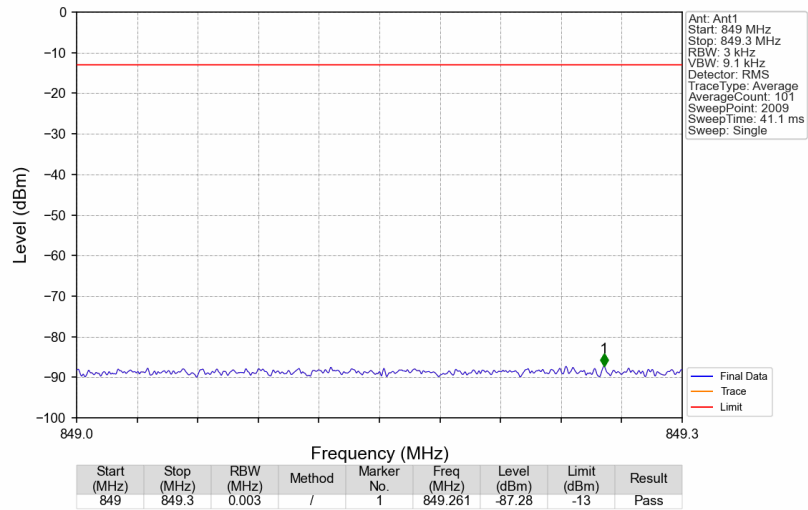
Band5_893.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



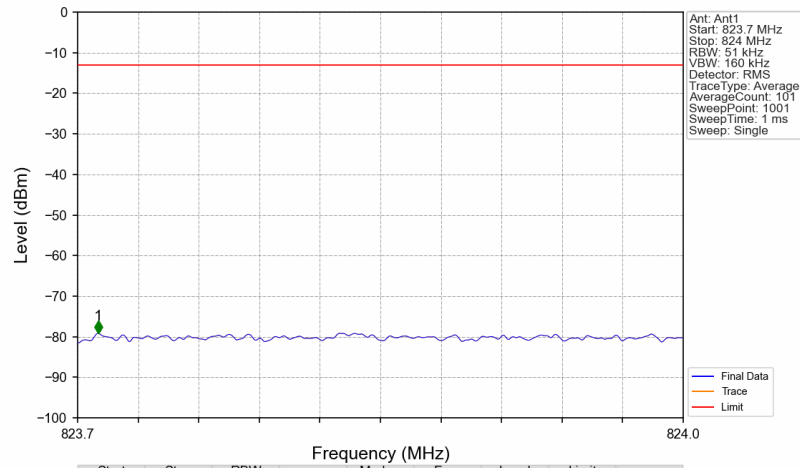
Band5_893.8MHz_GMSK_SISO_Ant1_NTNV_AGC



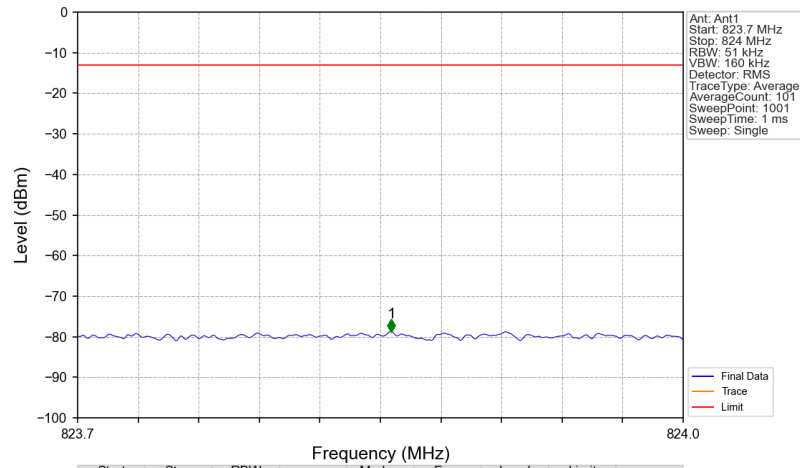
Band5_893.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



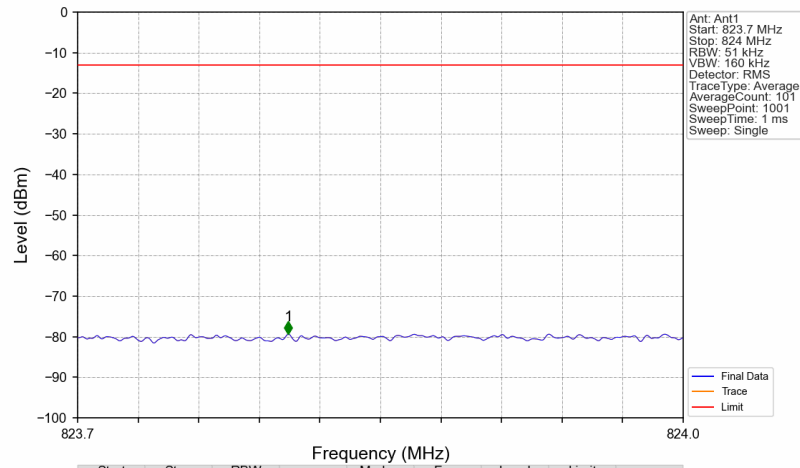
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC



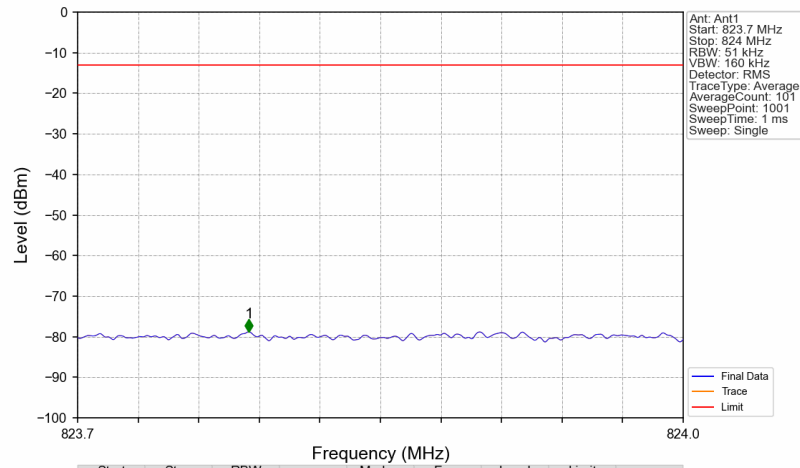
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



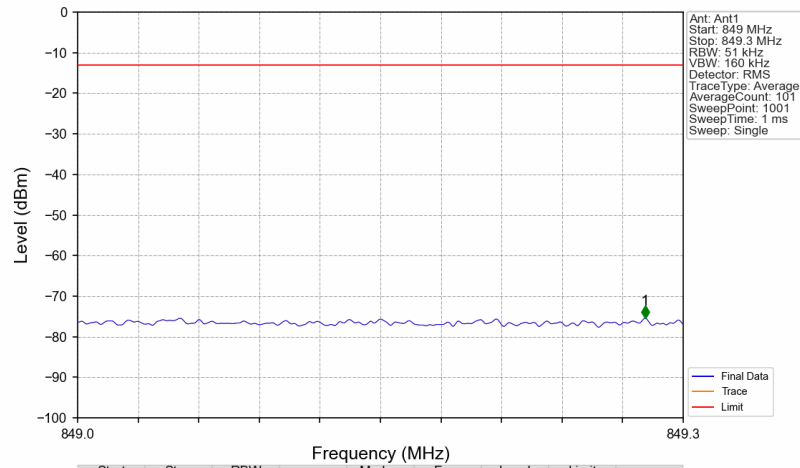
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC



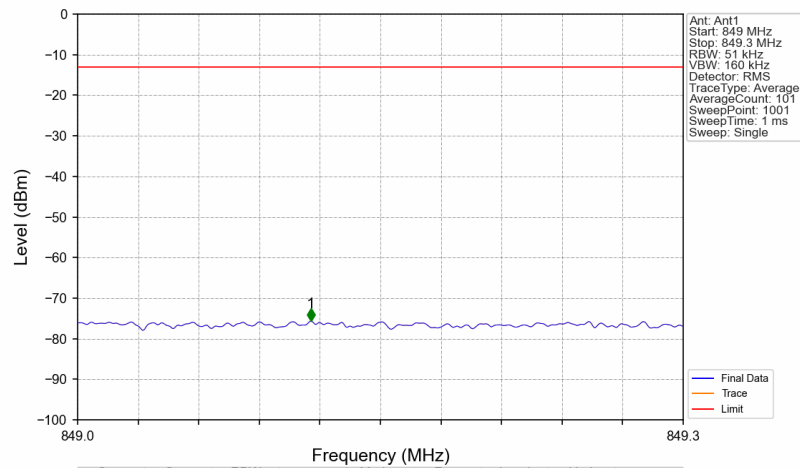
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



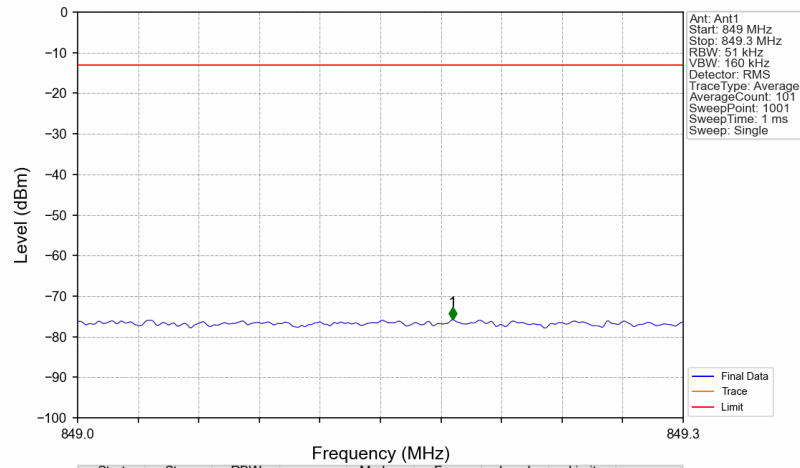
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC



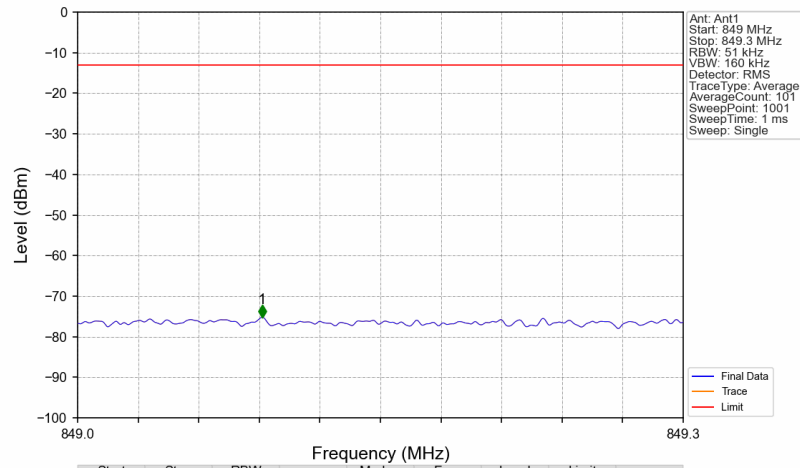
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC



Band5_891.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



6. Spurious emissions

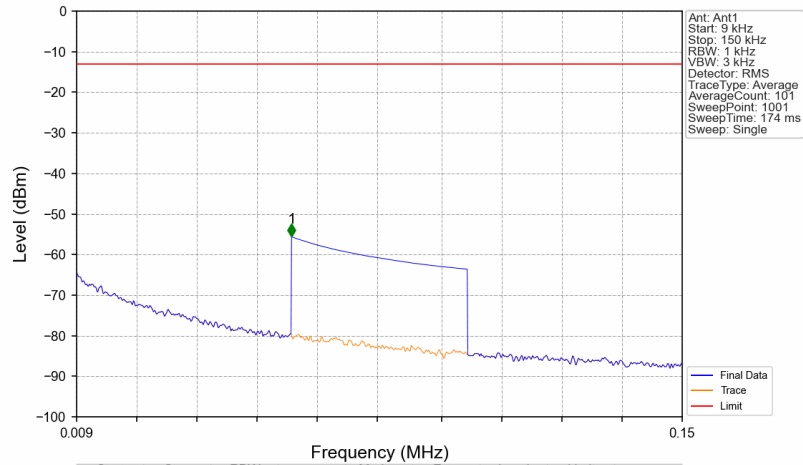
6.1 Band5

6.1.1 Test Result

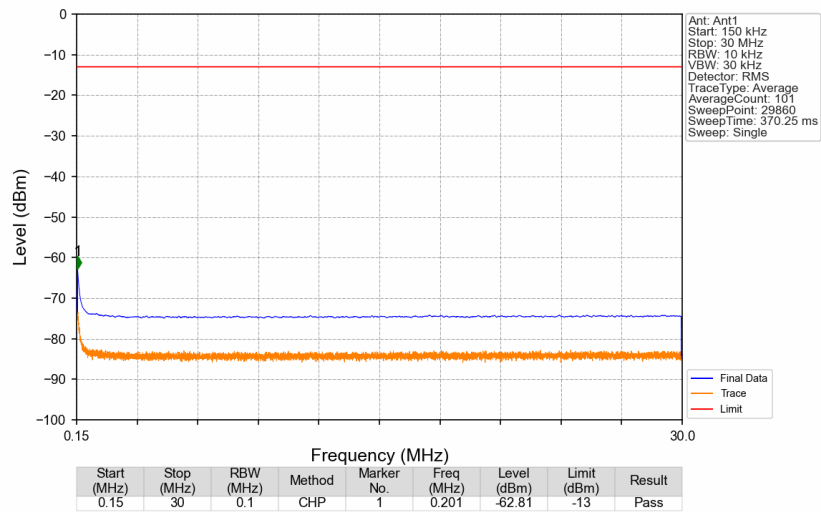
Band: 5 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
GMSK 0.2MHz	-3.4	869.2	LCH	SISO	1	Refer To Test Graph		Pass
		881.5	MCH	SISO	1	Refer To Test Graph		Pass
		893.8	HCH	SISO	1	Refer To Test Graph		Pass
AWGN 5MHz	-3.4	871.5	LCH	SISO	1	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

6.1.2 Test Graph

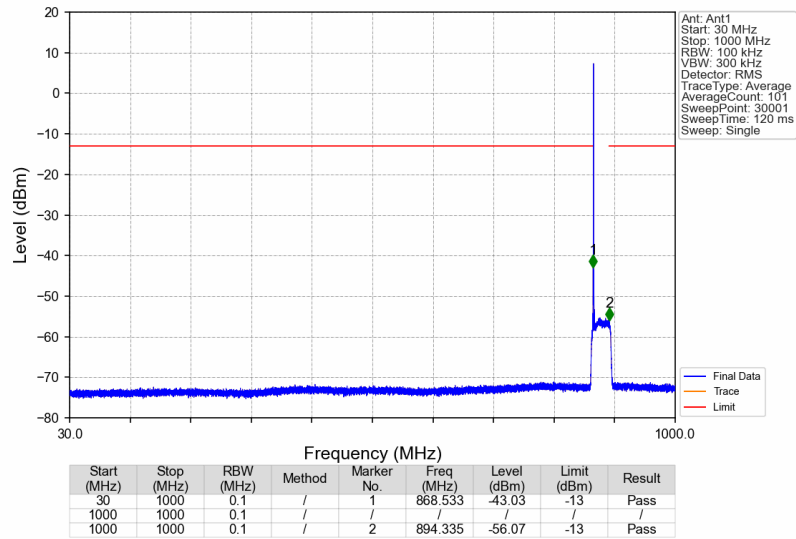
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV



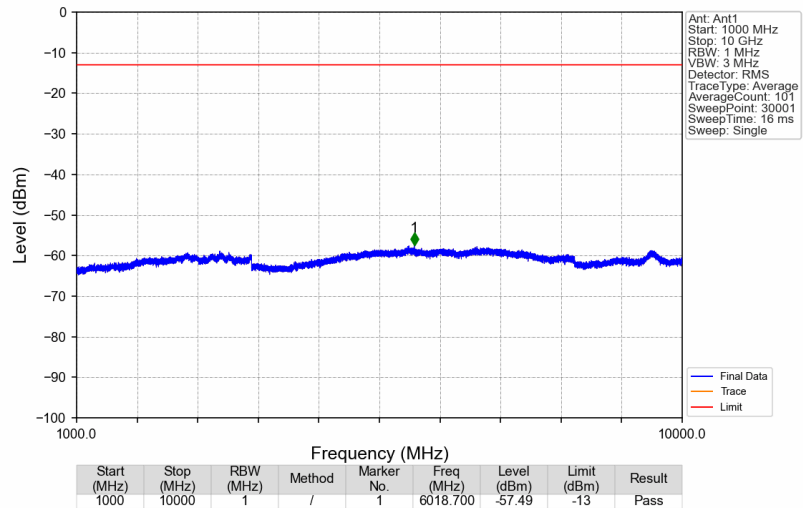
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV



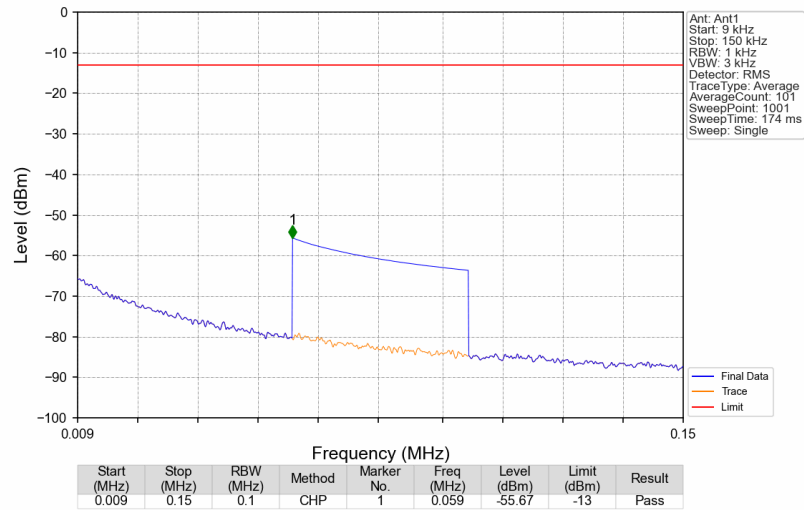
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV



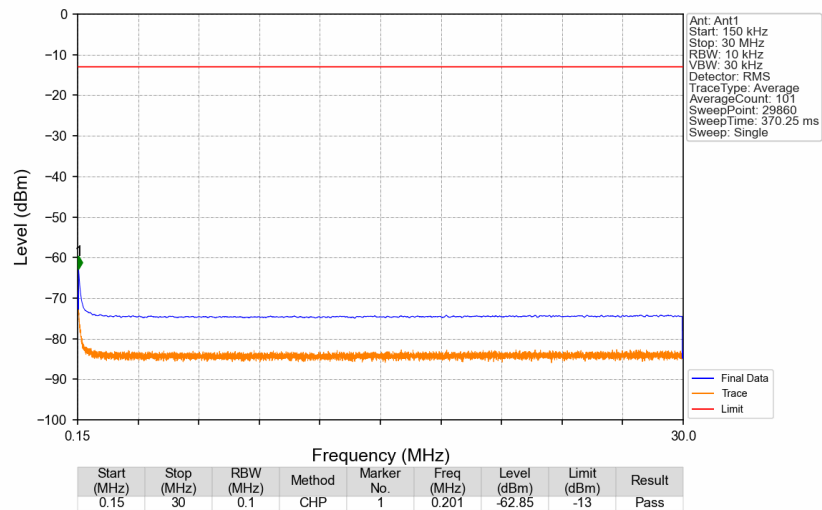
Band5_869.2MHz_GMSK_SISO_Ant1_NTNV



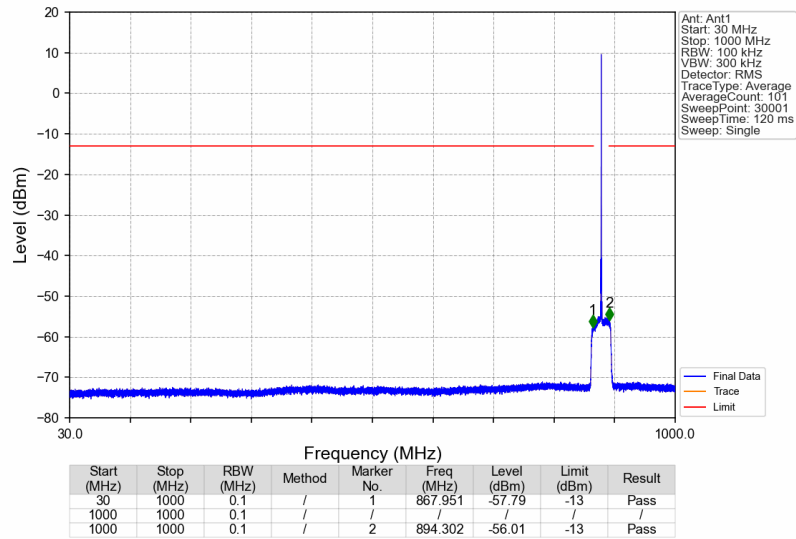
Band5_881.5MHz_GMSK_SISO_Ant1_NTNV



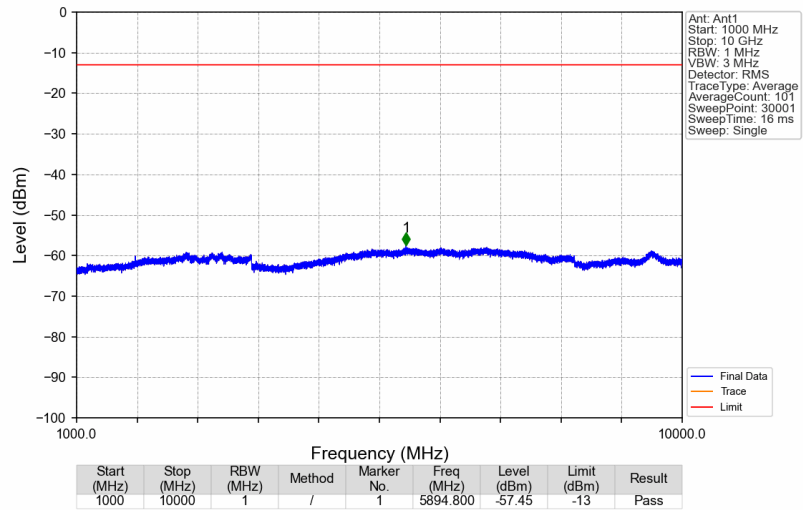
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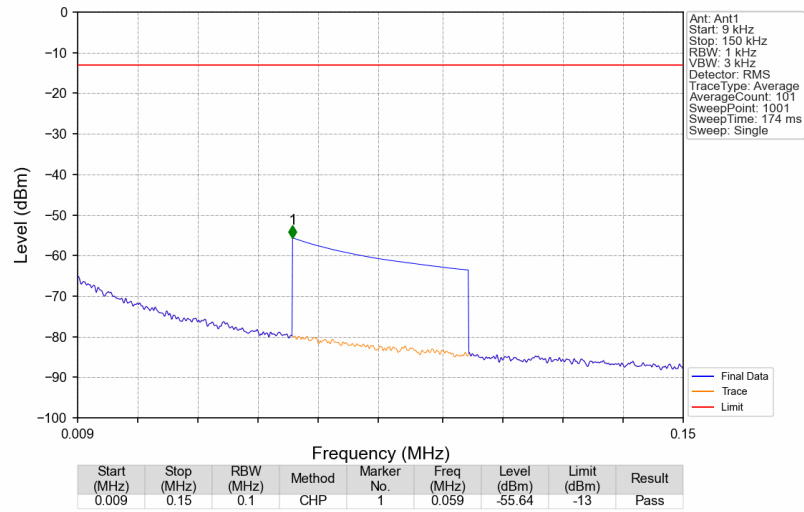
Band5_881.5MHz_GMSK_SISO_Ant1_NTNV



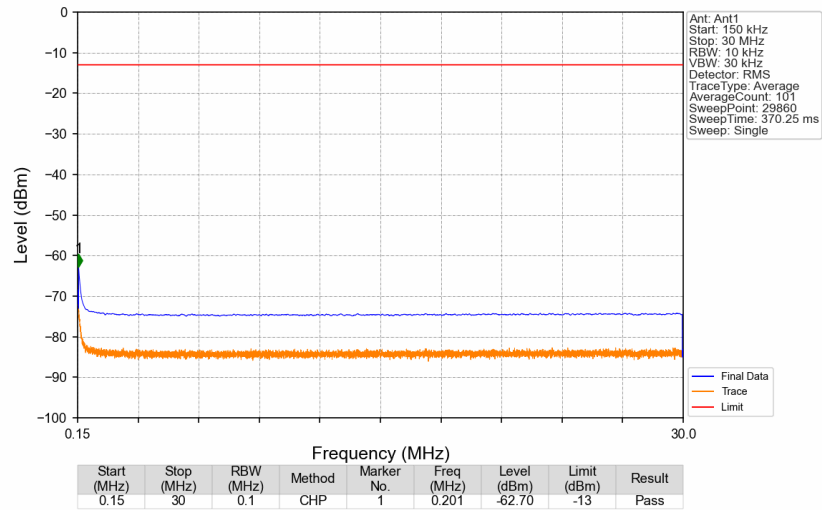
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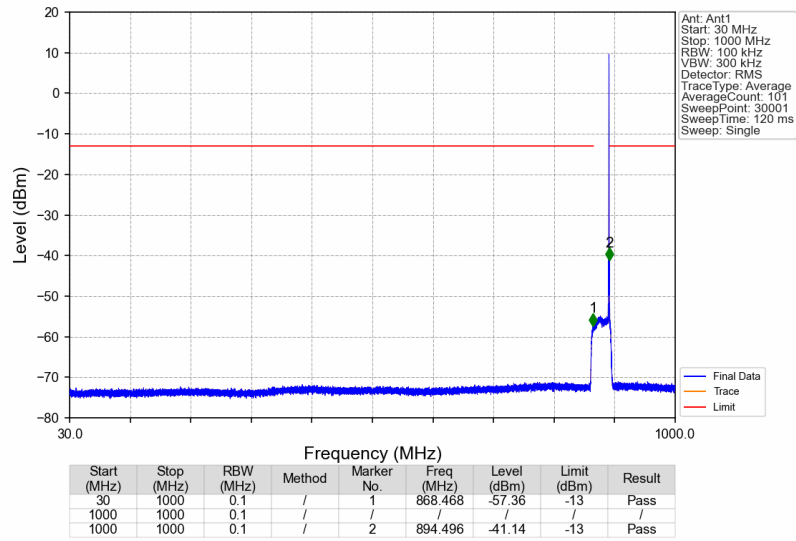
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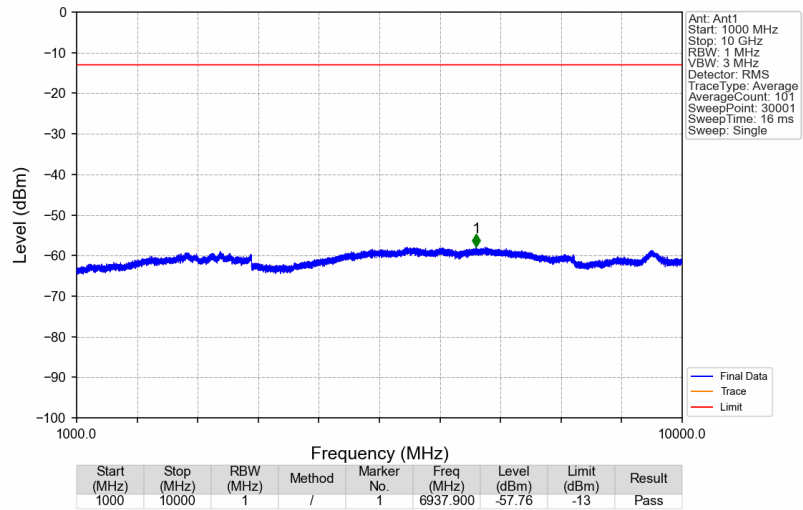
Band5_893.8MHz_GMSK_SISO_Ant1_NTNV



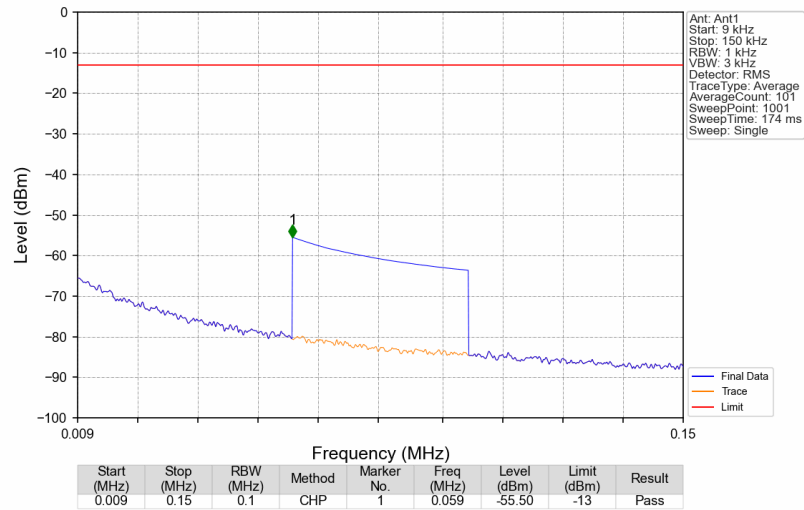
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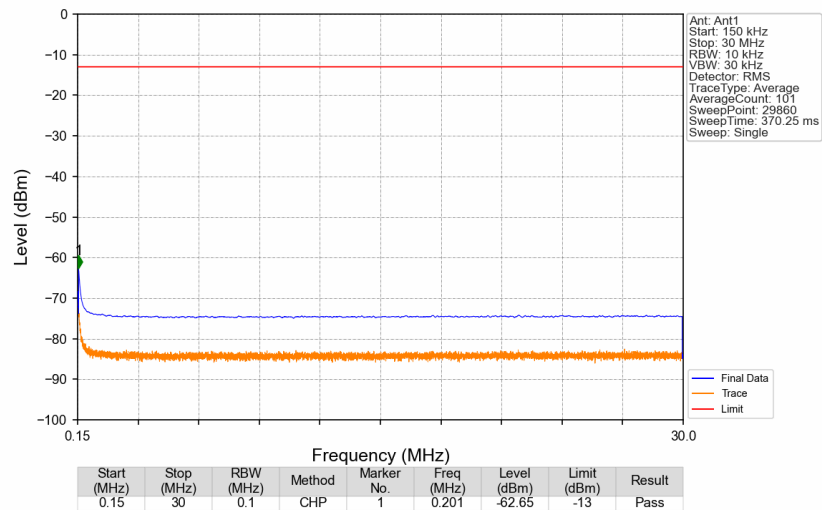
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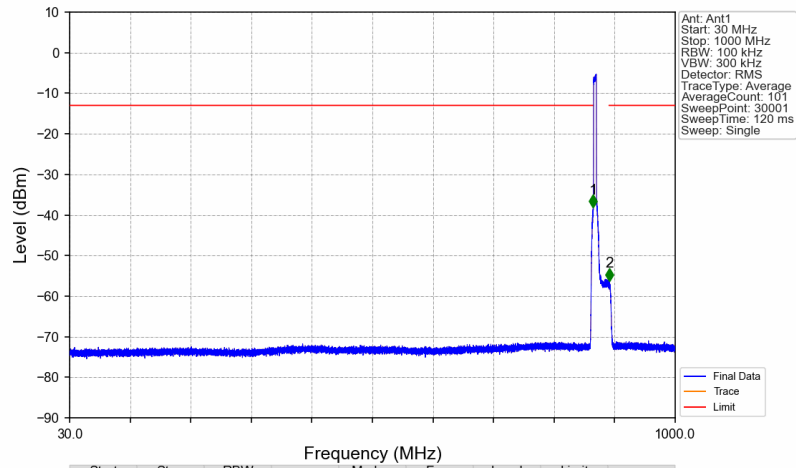
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV



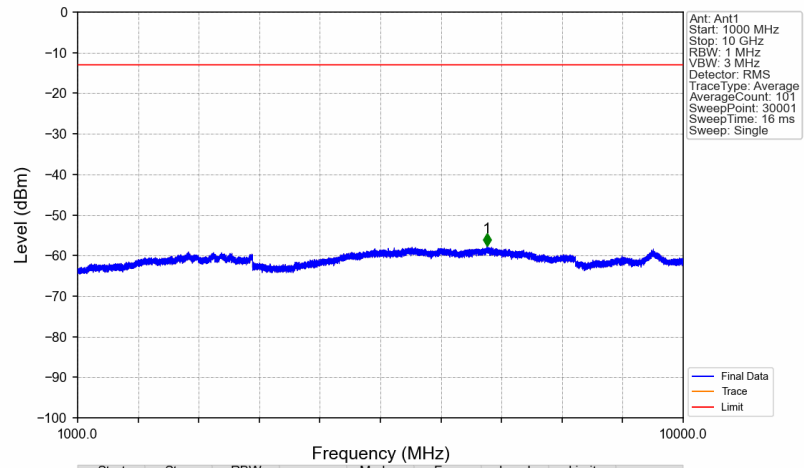
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV



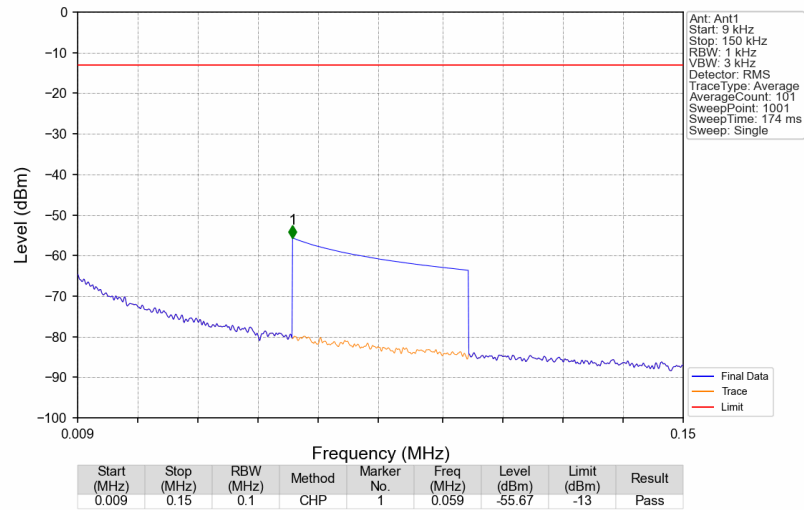
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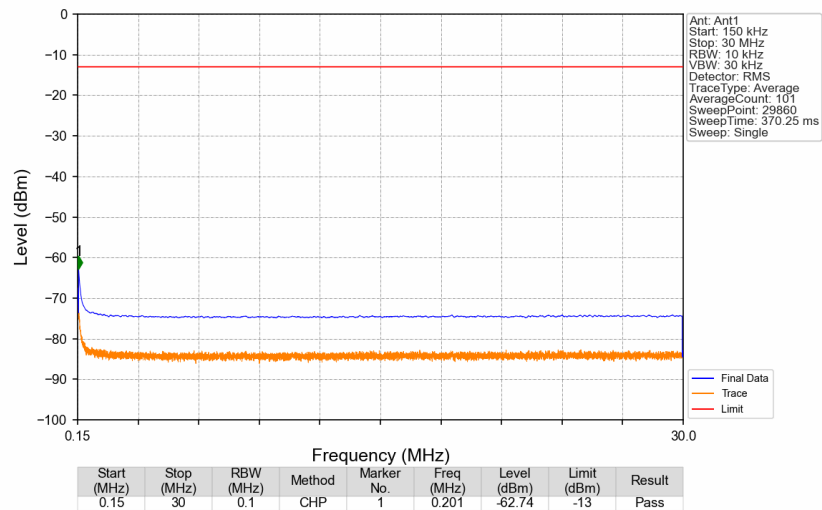
Band5_871.5MHz_AWGN_SISO_Ant1_NTNV



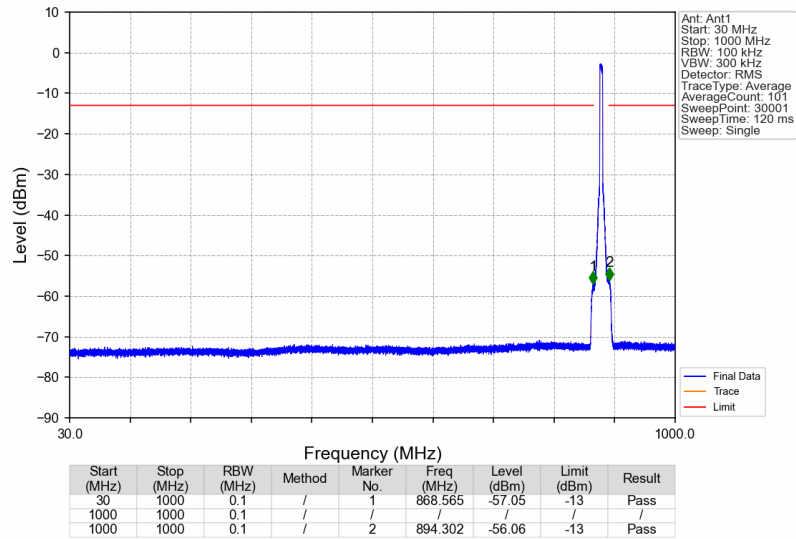
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



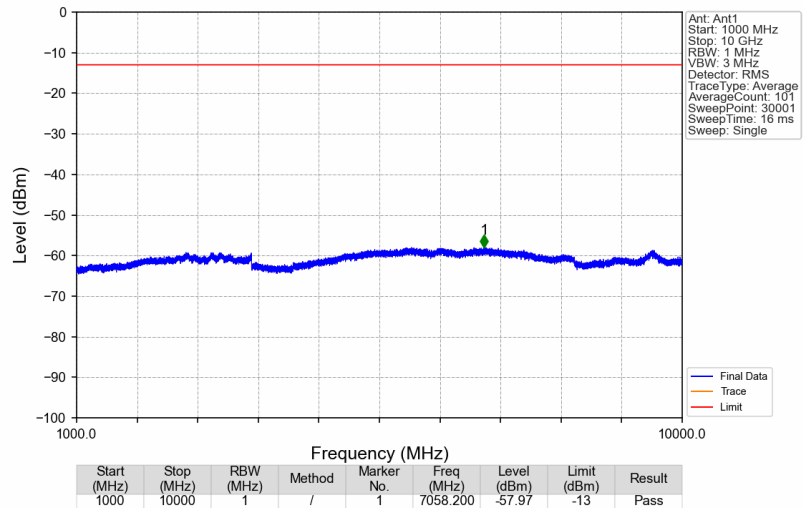
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



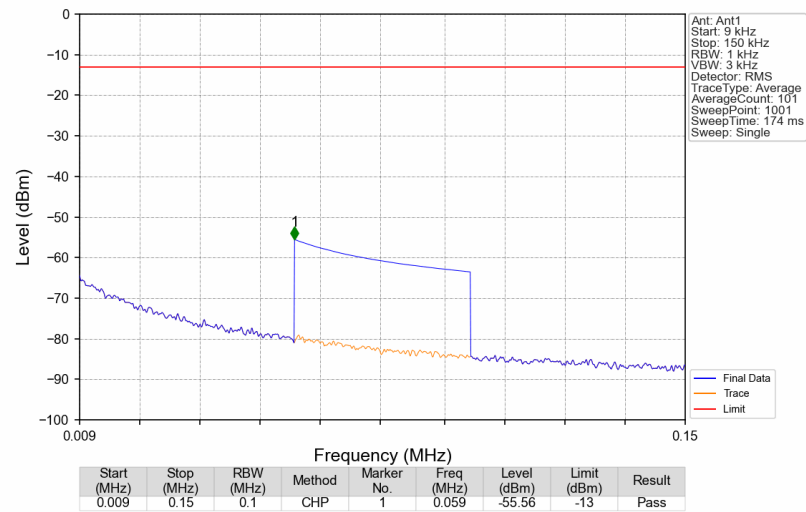
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



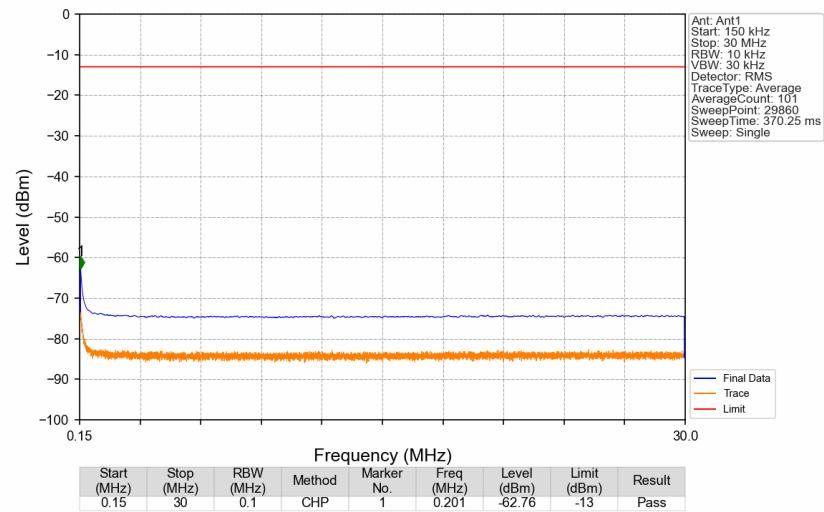
Band5_881.5MHz_AWGN_SISO_Ant1_NTNV



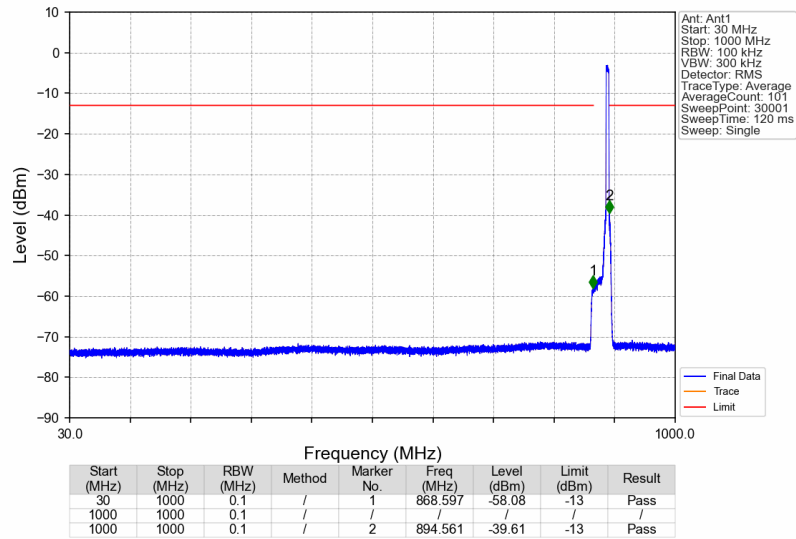
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



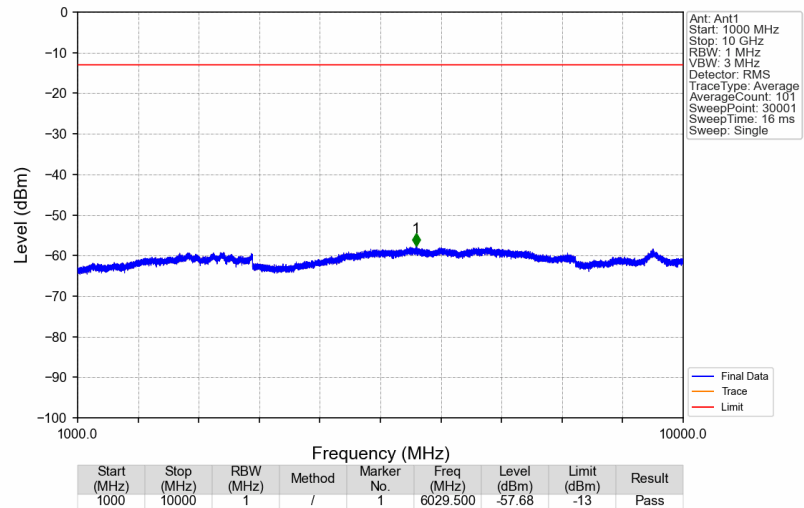
Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



Band5_891.5MHz_AWGN_SISO_Ant1_NTNV



7. Frequency stability measurements

7.1 Band5_Ant1

7.1.1 Test Result

Band: 5 / NTNV							
Signal			Temp (°C)	Voltage (VDC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-3.4	869.1	20	27.5	10	0.0112	Pass
				28.0	12	0.0138	Pass
				28.5	9	0.0104	Pass
			-40	28.0	10	0.0115	Pass
			-30	28.0	11	0.0127	Pass
			-20	28.0	13	0.0150	Pass
			-10	28.0	11	0.0127	Pass
			0	28.0	8	0.0092	Pass
			10	28.0	12	0.0138	Pass
			30	28.0	14	0.0161	Pass
			40	28.0	10	0.0115	Pass
			55	28.0	7	0.0081	Pass
		881.5	20	27.5	12	0.0136	Pass
				28.0	11	0.0125	Pass
				28.5	10	0.0113	Pass
			-40	28.0	12	0.0136	Pass
			-30	28.0	8	0.0091	Pass
			-20	28.0	11	0.0125	Pass
			-10	28.0	9	0.0102	Pass
			0	28.0	11	0.0125	Pass
			10	28.0	13	0.0147	Pass
			30	28.0	12	0.0136	Pass
			40	28.0	10	0.0113	Pass
			55	28.0	8	0.0091	Pass
		893.9	20	27.5	12	0.0134	Pass
				28.0	14	0.0157	Pass
				28.5	11	0.0123	Pass
			-40	28.0	9	0.0101	Pass
			-30	28.0	10	0.0112	Pass
			-20	28.0	13	0.0145	Pass
			-10	28.0	8	0.0089	Pass
			0	28.0	9	0.0101	Pass
			10	28.0	11	0.0123	Pass
			30	28.0	13	0.0145	Pass
			40	28.0	10	0.0112	Pass
			55	28.0	12	0.0134	Pass

8. Radiated Spurious Emissions

8.1 Band5_Ant1

8.1.1 Test Result

GMSK 869.2MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
385.0	Horizontal	-69.05	-13	-56.05	Pass
584.8	Horizontal	-65.76	-13	-52.76	Pass
943.9	Horizontal	-59.57	-13	-46.57	Pass
1346.4	Horizontal	-58.84	-13	-45.84	Pass
2748.1	Horizontal	-51.86	-13	-38.86	Pass
6488.3	Horizontal	-48.29	-13	-35.29	Pass
403.9	Vertical	-68.85	-13	-55.85	Pass
591.6	Vertical	-62.04	-13	-49.04	Pass
969.3	Vertical	-58.19	-13	-45.19	Pass
1355.1	Vertical	-60.20	-13	-47.20	Pass
2729.9	Vertical	-51.56	-13	-38.56	Pass
6489.1	Vertical	-49.82	-13	-36.82	Pass

GMSK 881.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
385.8	Horizontal	-70.66	-13	-57.66	Pass
565.7	Horizontal	-63.74	-13	-50.74	Pass
968.6	Horizontal	-61.48	-13	-48.48	Pass
1336.5	Horizontal	-58.71	-13	-45.71	Pass
2766.2	Horizontal	-53.89	-13	-40.89	Pass
6475.1	Horizontal	-47.76	-13	-34.76	Pass
383.9	Vertical	-67.32	-13	-54.32	Pass
609.7	Vertical	-64.28	-13	-51.28	Pass
958.1	Vertical	-60.19	-13	-47.19	Pass
1348.4	Vertical	-60.53	-13	-47.53	Pass
2740.2	Vertical	-54.07	-13	-41.07	Pass
6494.5	Vertical	-49.16	-13	-36.16	Pass

GMSK 893.8MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
390.7	Horizontal	-70.26	-13	-57.26	Pass
599.8	Horizontal	-66.32	-13	-53.32	Pass
959.4	Horizontal	-59.04	-13	-46.04	Pass
1351.7	Horizontal	-58.44	-13	-45.44	Pass
2751.2	Horizontal	-53.43	-13	-40.43	Pass
6510.9	Horizontal	-49.01	-13	-36.01	Pass
387.8	Vertical	-70.08	-13	-57.08	Pass
570.7	Vertical	-65.50	-13	-52.50	Pass
943.1	Vertical	-59.06	-13	-46.06	Pass
1332.9	Vertical	-60.71	-13	-47.71	Pass
2742.8	Vertical	-53.02	-13	-40.02	Pass
6497.1	Vertical	-49.87	-13	-36.87	Pass

AWGN 871.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
402.1	Horizontal	-68.78	-13	-55.78	Pass
570.4	Horizontal	-63.98	-13	-50.98	Pass
966.8	Horizontal	-59.46	-13	-46.46	Pass
1357.7	Horizontal	-56.74	-13	-43.74	Pass
2741.8	Horizontal	-53.13	-13	-40.13	Pass
6523.8	Horizontal	-46.74	-13	-33.74	Pass
377.5	Vertical	-69.71	-13	-56.71	Pass
589.8	Vertical	-66.34	-13	-53.34	Pass
947.5	Vertical	-61.21	-13	-48.21	Pass
1328.8	Vertical	-60.11	-13	-47.11	Pass
2754.2	Vertical	-51.62	-13	-38.62	Pass
6509.9	Vertical	-49.42	-13	-36.42	Pass

AWGN 881.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
388.0	Horizontal	-70.43	-13	-57.43	Pass
579.1	Horizontal	-61.58	-13	-48.58	Pass
936.2	Horizontal	-57.58	-13	-44.58	Pass
1336.0	Horizontal	-60.23	-13	-47.23	Pass
2726.6	Horizontal	-55.20	-13	-42.20	Pass
6514.4	Horizontal	-46.74	-13	-33.74	Pass
391.8	Vertical	-68.73	-13	-55.73	Pass
597.1	Vertical	-64.33	-13	-51.33	Pass
944.7	Vertical	-59.36	-13	-46.36	Pass
1331.3	Vertical	-58.36	-13	-45.36	Pass
2751.7	Vertical	-51.09	-13	-38.09	Pass
6488.2	Vertical	-48.20	-13	-35.20	Pass

AWGN 891.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
381.1	Horizontal	-66.03	-13	-53.03	Pass
588.1	Horizontal	-62.75	-13	-49.75	Pass
943.6	Horizontal	-56.63	-13	-43.63	Pass
1344.7	Horizontal	-56.89	-13	-43.89	Pass
2734.8	Horizontal	-52.74	-13	-39.74	Pass
6497.6	Horizontal	-50.58	-13	-37.58	Pass
362.9	Vertical	-70.84	-13	-57.84	Pass
599.0	Vertical	-65.19	-13	-52.19	Pass
926.2	Vertical	-58.51	-13	-45.51	Pass
1347.0	Vertical	-60.77	-13	-47.77	Pass
2727.3	Vertical	-53.26	-13	-40.26	Pass
6493.8	Vertical	-47.66	-13	-34.66	Pass