

Appendix for KSCR2309001723AT-LTE-Band25

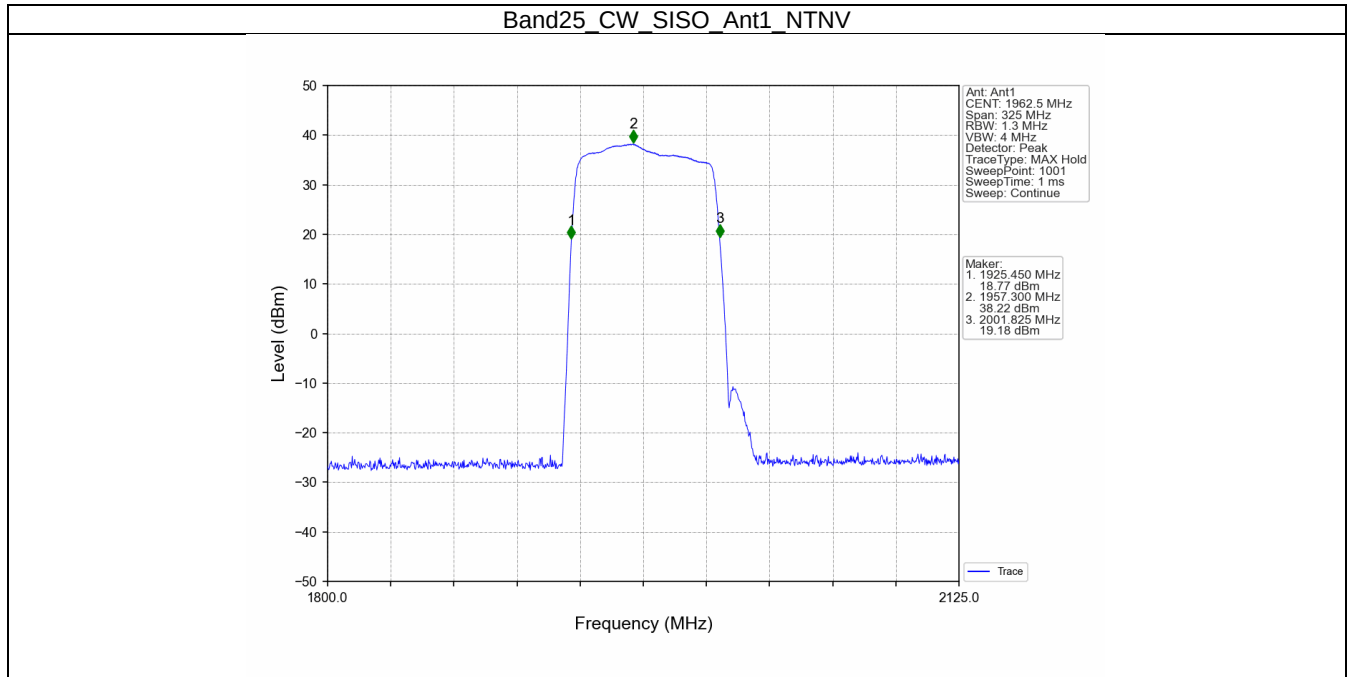
1. Out of band rejection

1.1 Band25

1.1.1 Test Result

Band: 25 / NTNV							
Signal	Sweep Frequency Range (MHz)	TX Type	ANT	F0 (MHz)	FL (MHz)	FH (MHz)	Verdict
CW	1800 - 2125	SISO	1	1957.300	1925.450	2001.825	Pass

1.1.2 Test Graph



2. AGC threshold

2.1 Band25

2.1.1 Test Result

Band: 25 / NTNV					
Signal	Frequency (MHz)	TX Type	ANT	AGC Threshold (dBm)	Verdict
GMSK 0.2MHz	1957.3	SISO	1	-3.20	Pass
AWGN 5MHz	1957.3	SISO	1	-3.20	Pass

3. Input-versus-output signal comparison

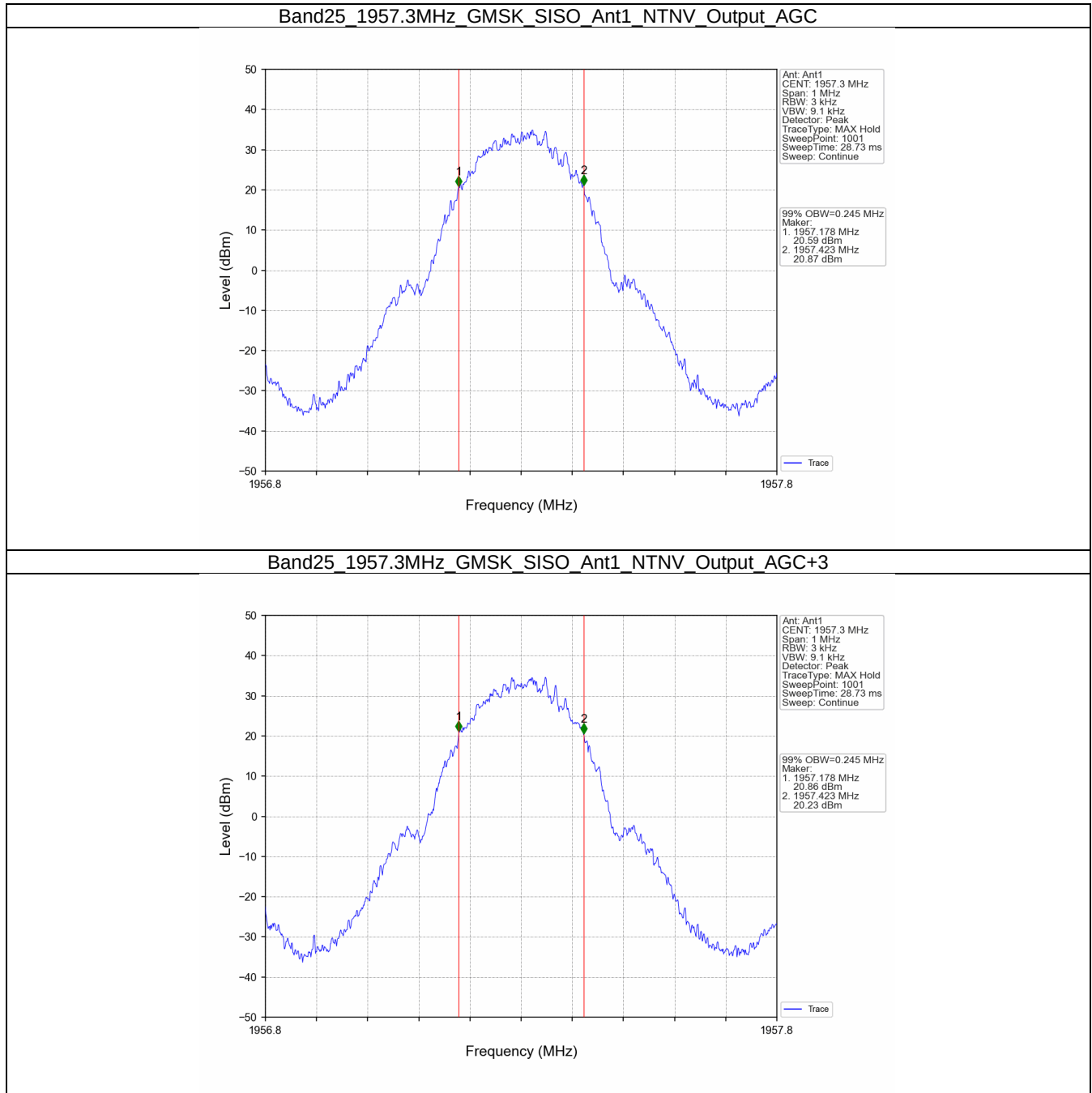
3.1 Band25_OBW

3.1.1 Test Result

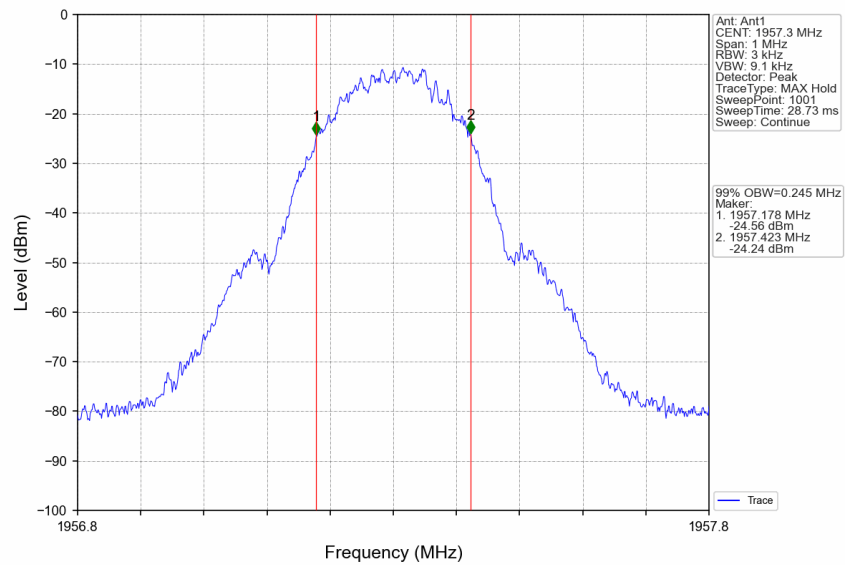
Band: 25 / NTNV									
Signal			TX Type	ANT	99% OBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK	-3.2	1957.3	SISO	1	0.245	0.245	0.00	<5.00	Pass
0.2MHz	-0.2	1957.3	SISO	1	0.245	0.245	0.00	<5.00	Pass
AWGN	-3.2	1957.3	SISO	1	4.526	4.540	0.31	<5.00	Pass
5MHz	-0.2	1957.3	SISO	1	4.526	4.543	0.37	<5.00	Pass

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

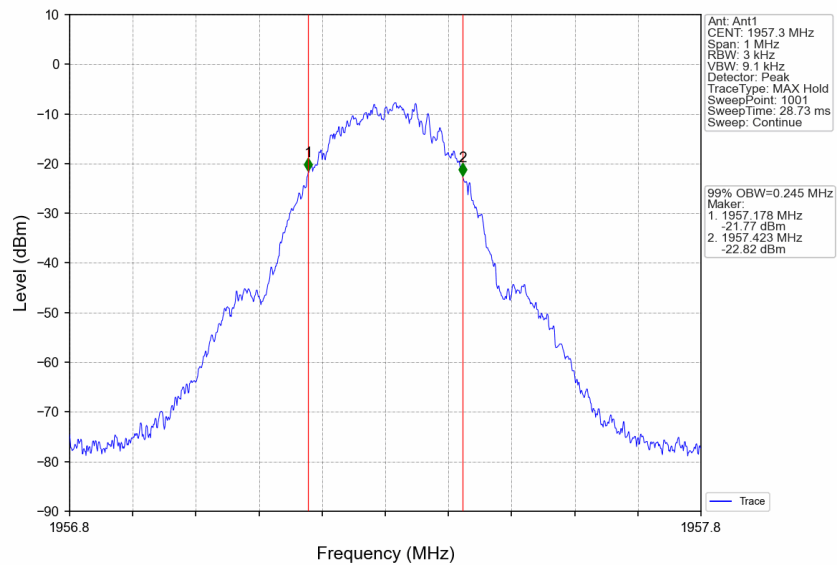
3.1.2 Test Graph



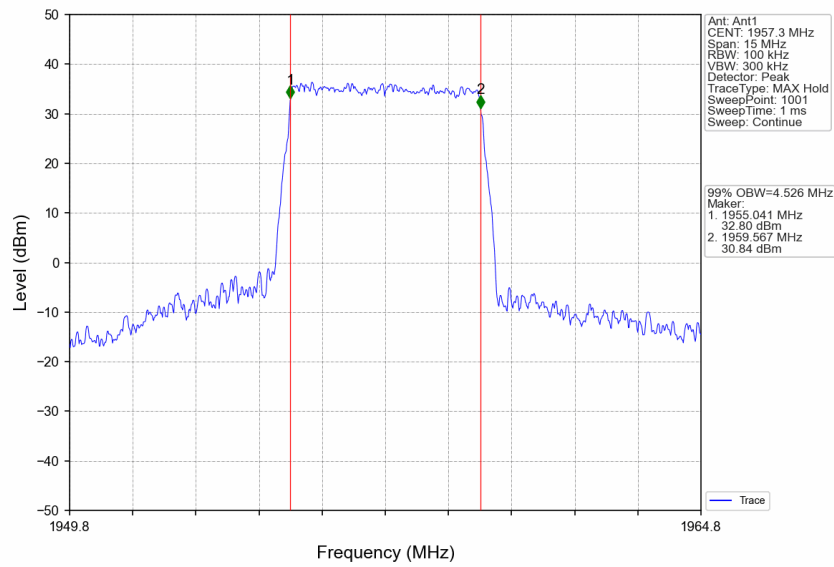
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



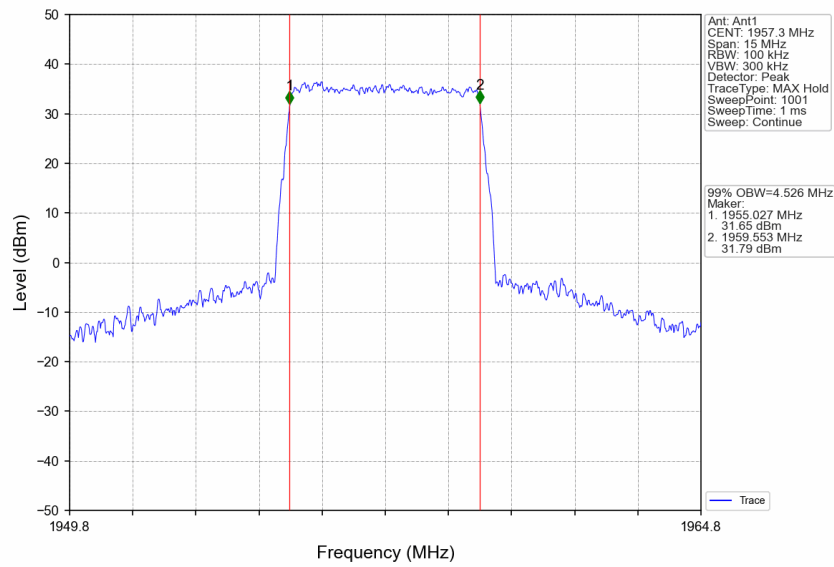
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



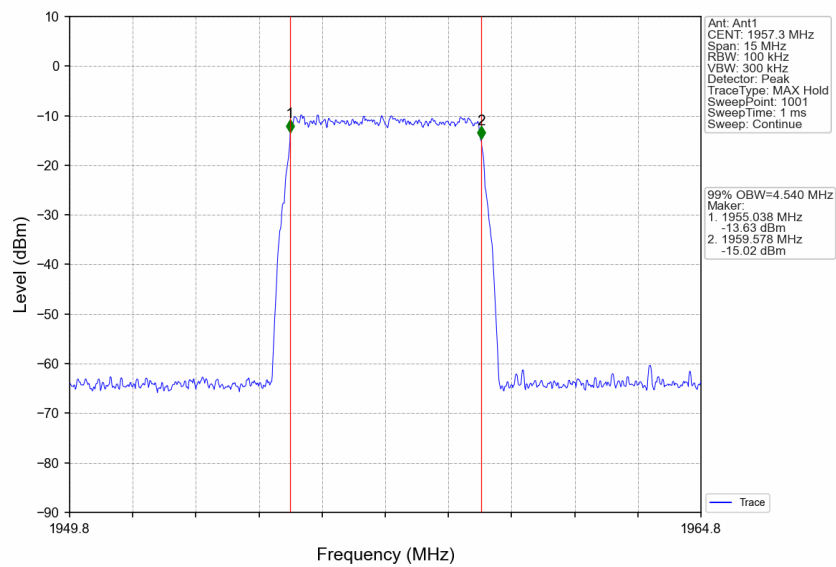
Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



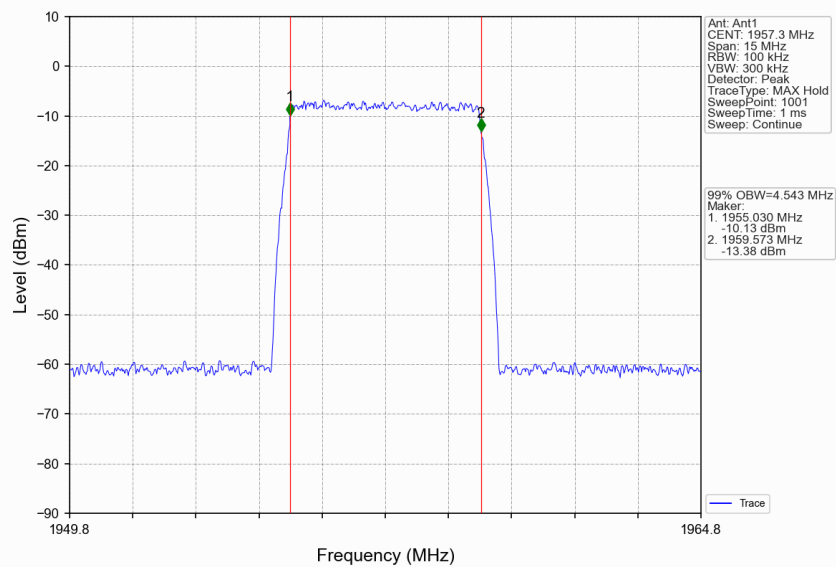
Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



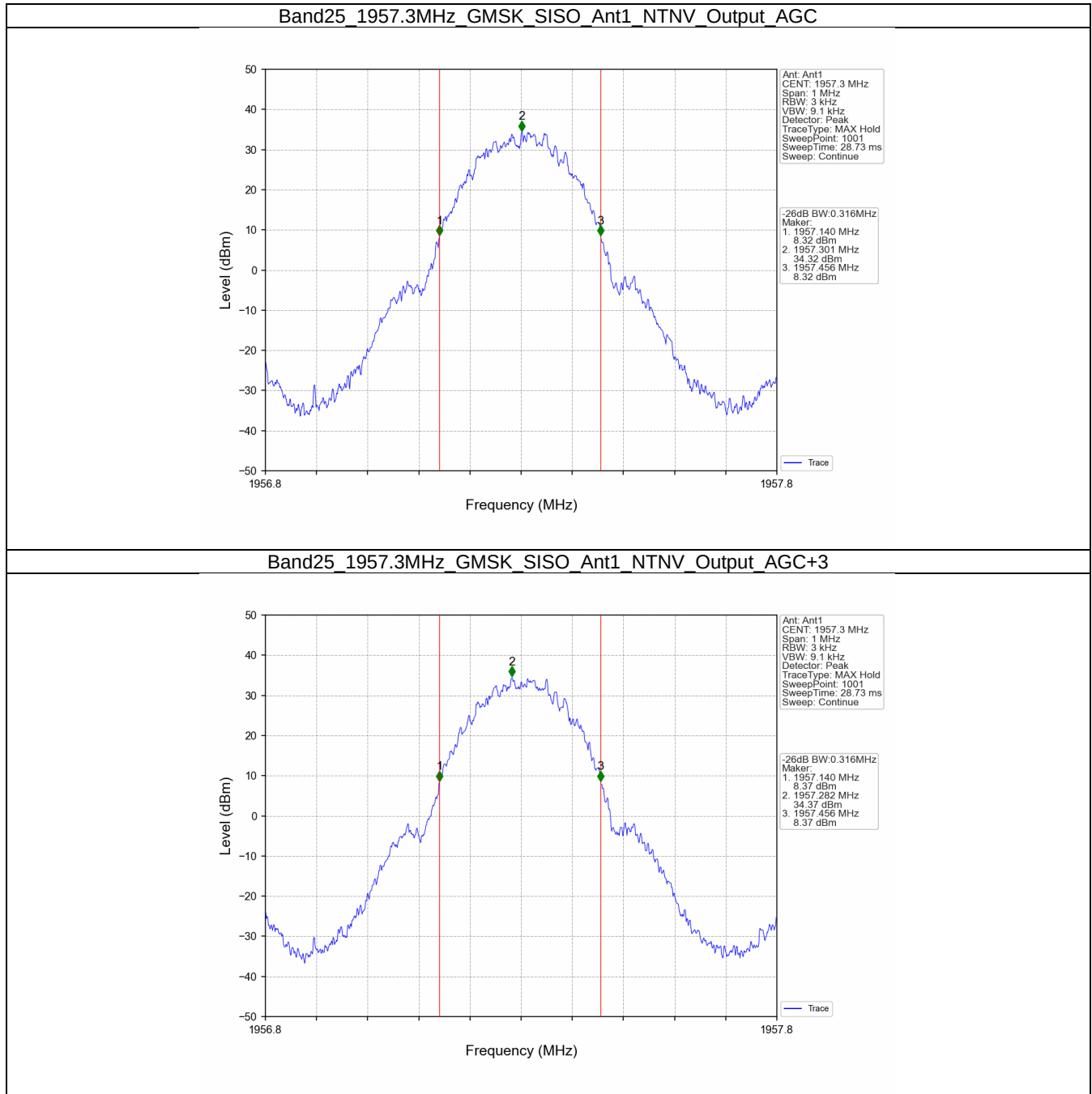
3.2 Band25_EBW

3.2.1 Test Result

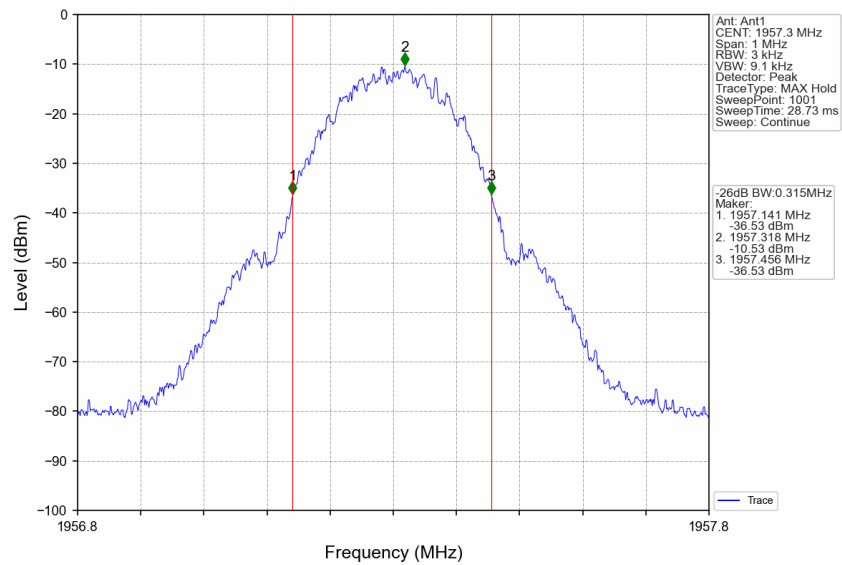
Band: 25 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK 0.2MHz	-3.2	1957.3	SISO	1	0.316	0.315	0.32	<5.00	Pass
	-0.2	1957.3	SISO	1	0.316	0.316	0.00	<5.00	Pass
AWGN 5MHz	-3.2	1957.3	SISO	1	5.062	5.068	0.12	<5.00	Pass
	-0.2	1957.3	SISO	1	5.068	5.070	0.04	<5.00	Pass

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

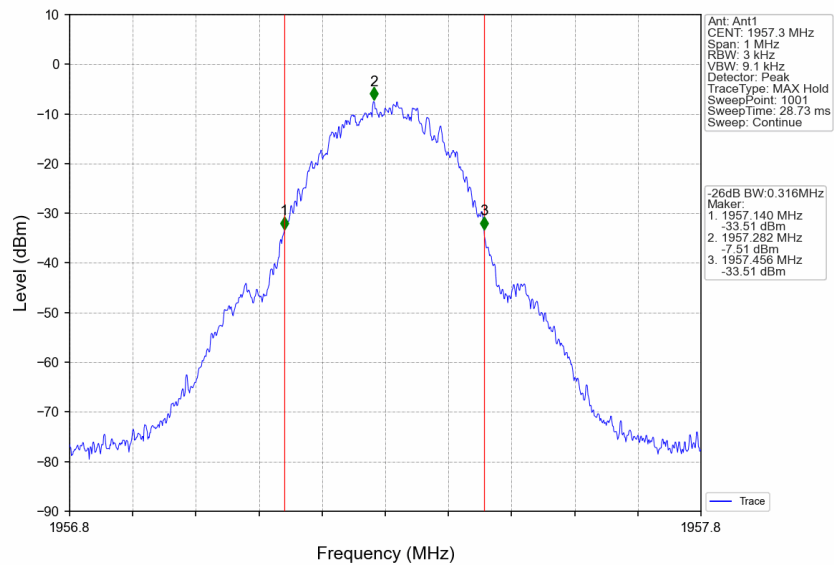
3.2.2 Test Graph



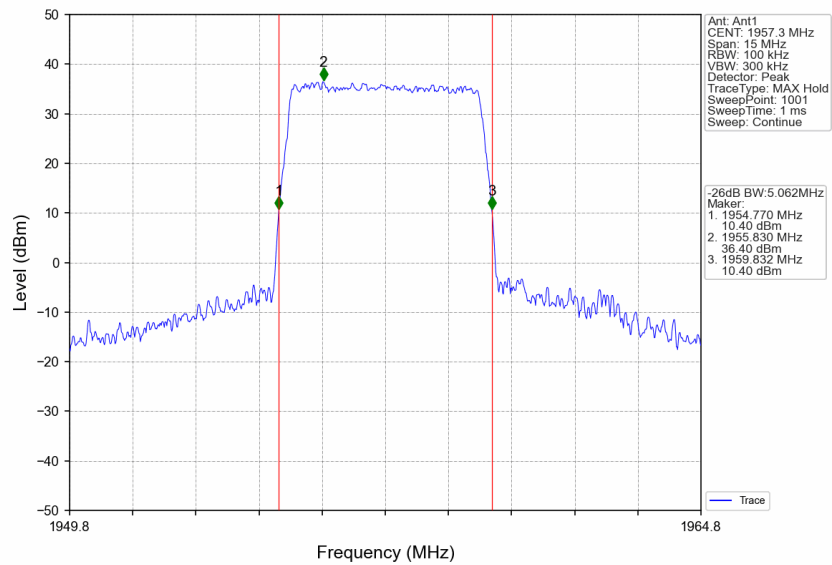
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



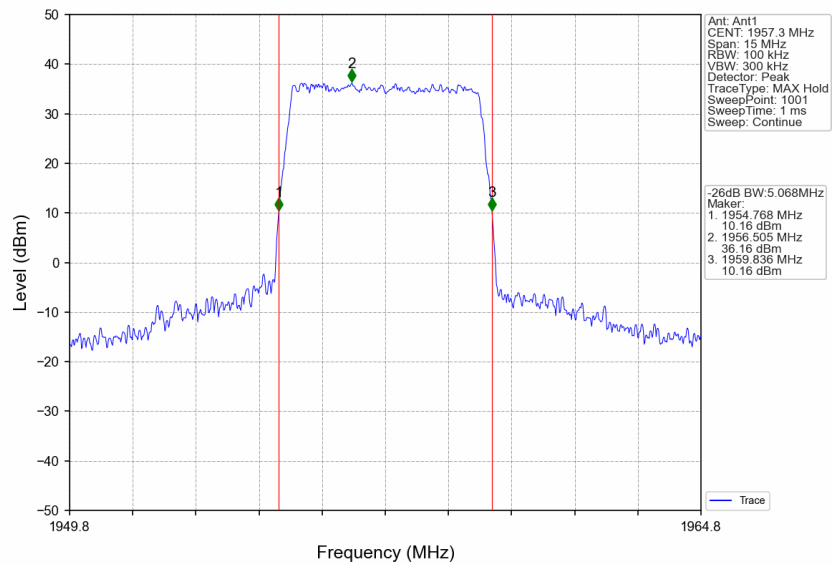
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



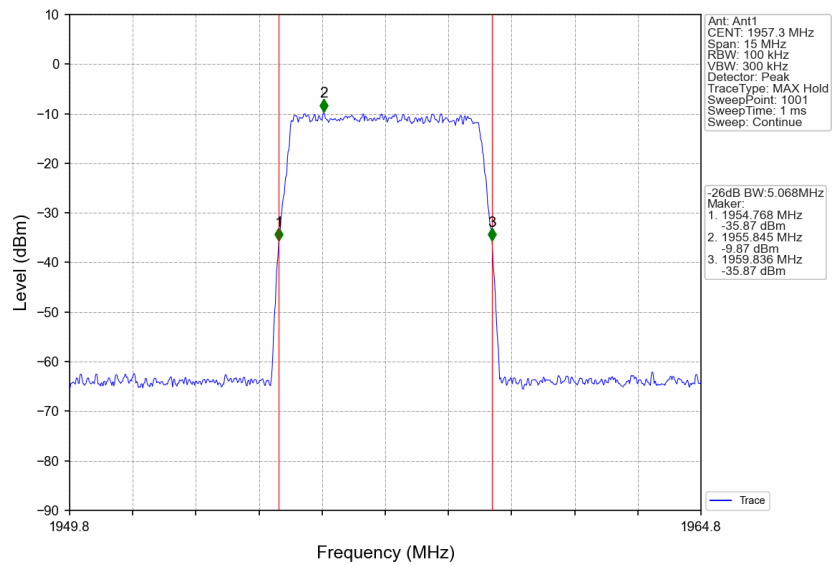
Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



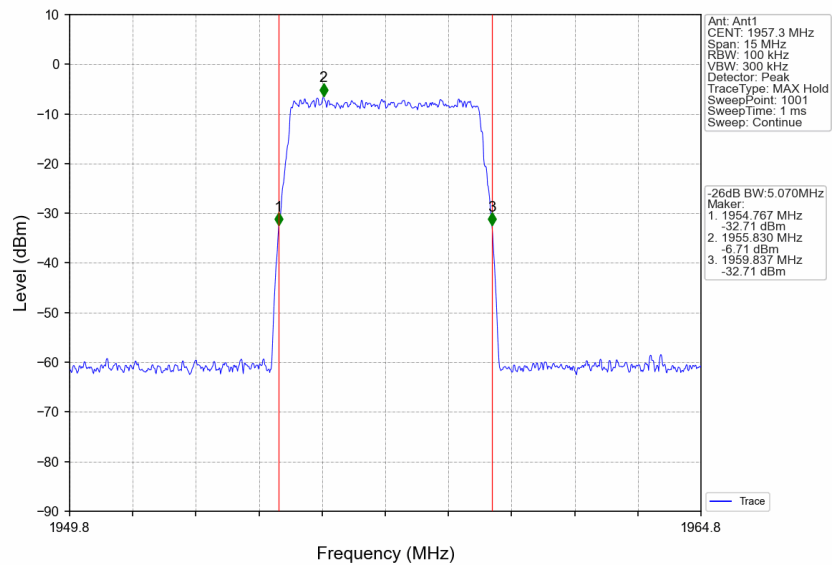
Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



4. Input/output power and amplifier/booster gain

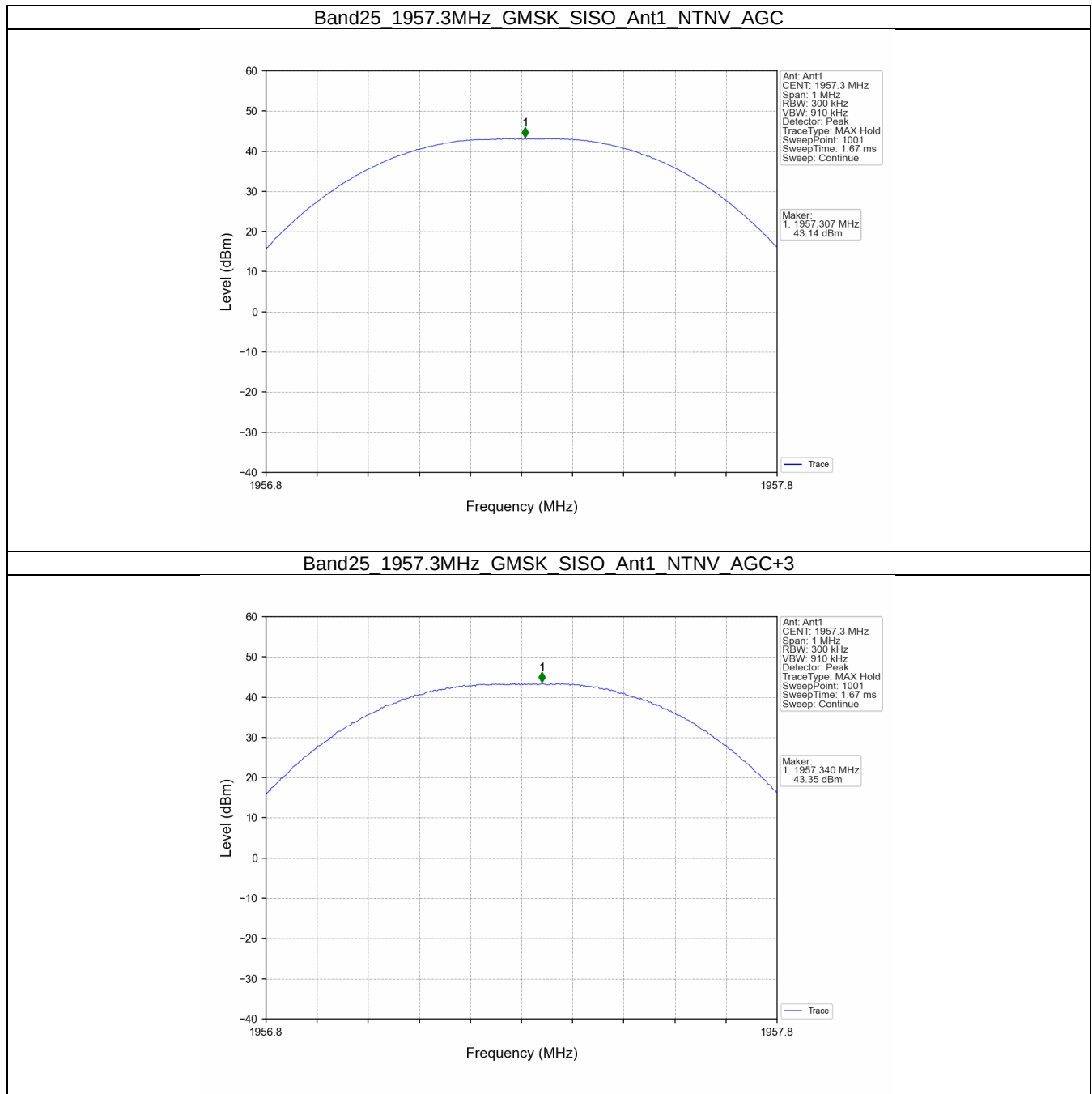
4.1 Band25_EIRP

4.1.1 Test Result

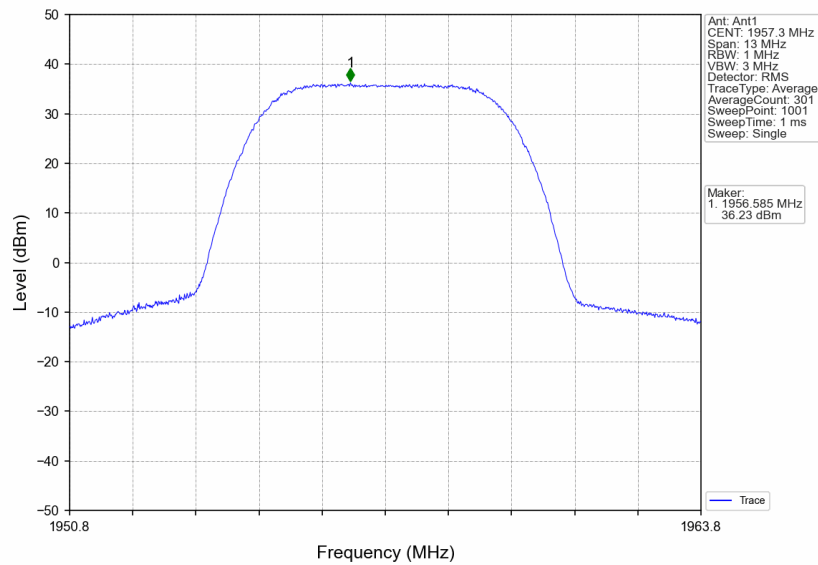
Band: 25 / NTNV										
Signal			TX Type	ANT	Conducted Power (dBm/MHz)		EIRP (dBm/MHz)		Booster Gain (dB)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	Result	Limit		
GMSK	-3.2	1957.3	SISO	1	43.14	-3.19	58.14	<=65.16	46.33	Pass
0.2MHz	-0.2	1957.3	SISO	1	43.35	-0.18	58.35	<=65.16	/	Pass
AWGN	-3.2	1957.3	SISO	1	36.23	-10.13	51.23	<=65.16	46.36	Pass
5MHz	-0.2	1957.3	SISO	1	36.56	-7.11	51.56	<=65.16	/	Pass

Band: 25 / NTNV						
Signal			Conducted Power (dBm)	EIRP (dBm)	Limit (dBm)	Verdict
Type	Level (dBm)	Frequency (MHz)	SISO	SISO		
GMSK	-3.2	1957.3	43.14	58.14	/	Pass
0.2MHz	-0.2	1957.3	43.35	58.35	/	Pass
AWGN	-3.2	1957.3	43.22	58.22	/	Pass
5MHz	-0.2	1957.3	43.55	58.55	/	Pass

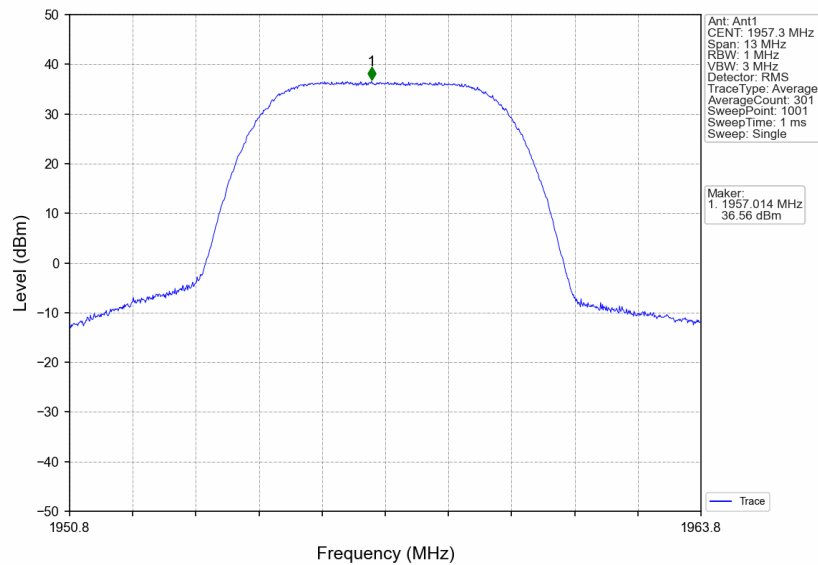
4.1.2 Test Graph



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_AGC



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_AGC+3



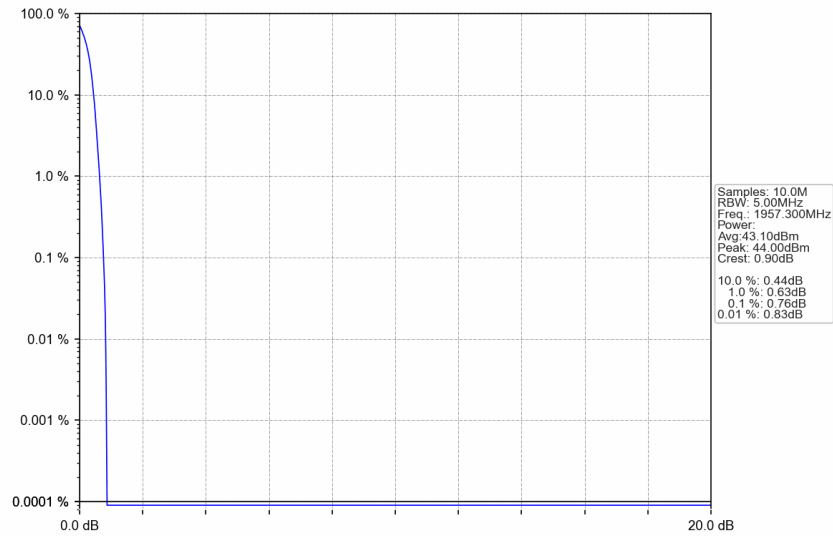
4.2 Band25_PAPR

4.2.1 Test Result

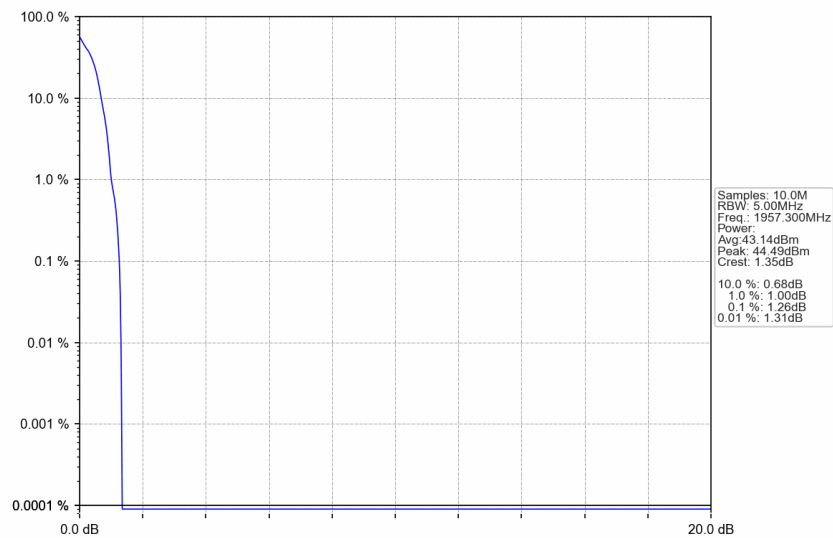
Band: 25 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
GMSK 0.2MHz	-3.2	1957.3	SISO	1	0.76	<=13	Pass
	-0.2	1957.3	SISO	1	1.26	<=13	Pass
AWGN 5MHz	-3.2	1957.3	SISO	1	8.27	<=13	Pass
	-0.2	1957.3	SISO	1	8.34	<=13	Pass

4.2.2 Test Graph

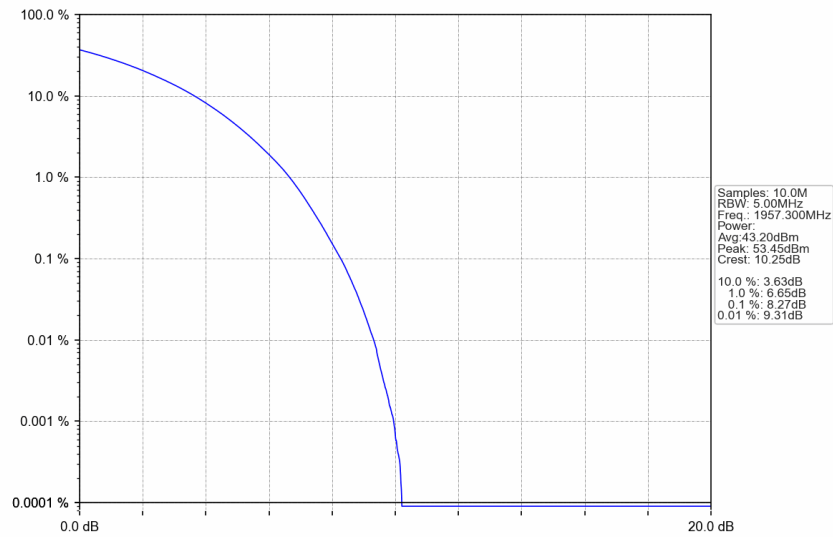
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_AGC



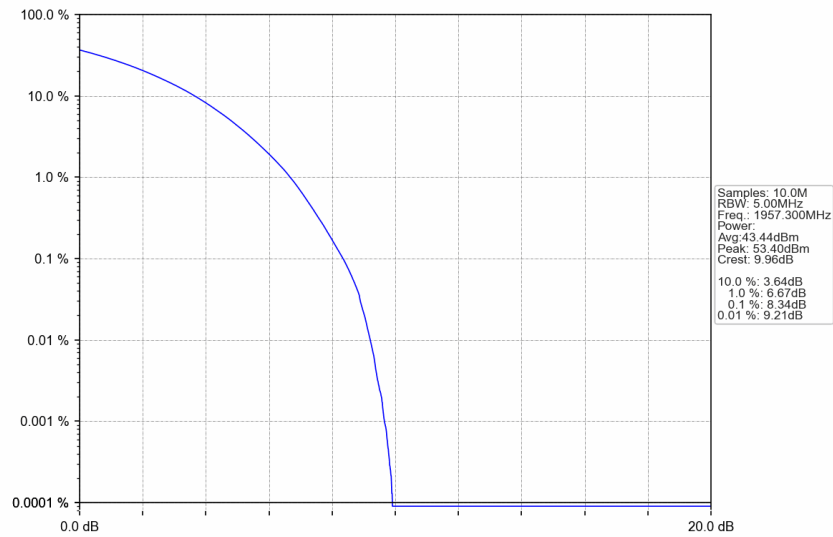
Band25_1957.3MHz_GMSK_SISO_Ant1_NTNV_AGC+3



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_AGC



Band25_1957.3MHz_AWGN_SISO_Ant1_NTNV_AGC+3



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

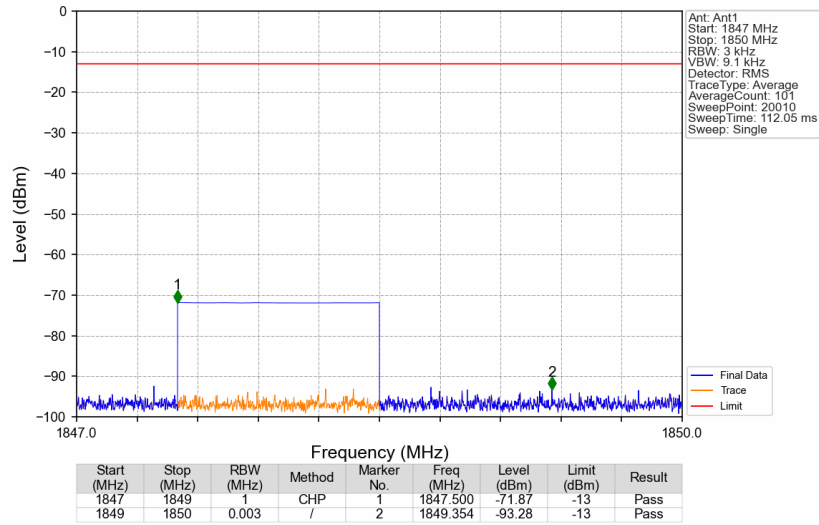
5.1 Band25

5.1.1 Test Result

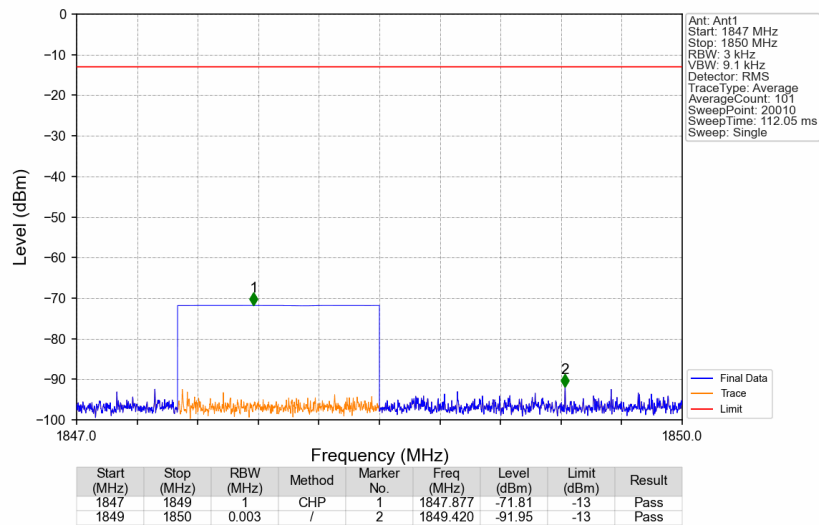
Band: 25 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	GMSK 0.2MHz	-3.2	1930.2	LCH	SISO	1	-71.87	Refer To Test Graph	Pass
		-0.2	1930.2	LCH	SISO	1	-71.81	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.2	1930.2	LCH	SISO	1	-71.82	Refer To Test Graph	Pass
		-0.2	1930.2	LCH	SISO	1	-71.82	Refer To Test Graph	Pass
Two	GMSK 0.2MHz	-3.2	1994.8	HCH	SISO	1	-71.65	Refer To Test Graph	Pass
		-0.2	1994.8	HCH	SISO	1	-71.64	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.2	1994.8	HCH	SISO	1	-71.60	Refer To Test Graph	Pass
		-0.2	1994.8	HCH	SISO	1	-71.62	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.2	1932.5	LCH	SISO	1	-71.70	Refer To Test Graph	Pass
		-0.2	1932.5	LCH	SISO	1	-71.77	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.2	1932.5	LCH	SISO	1	-71.82	Refer To Test Graph	Pass
		-0.2	1932.5	LCH	SISO	1	-71.66	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.2	1992.5	HCH	SISO	1	-71.60	Refer To Test Graph	Pass
		-0.2	1992.5	HCH	SISO	1	-71.44	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.2	1992.5	HCH	SISO	1	-71.64	Refer To Test Graph	Pass
		-0.2	1992.5	HCH	SISO	1	-71.54	Refer To Test Graph	Pass

5.1.2 Test Graph

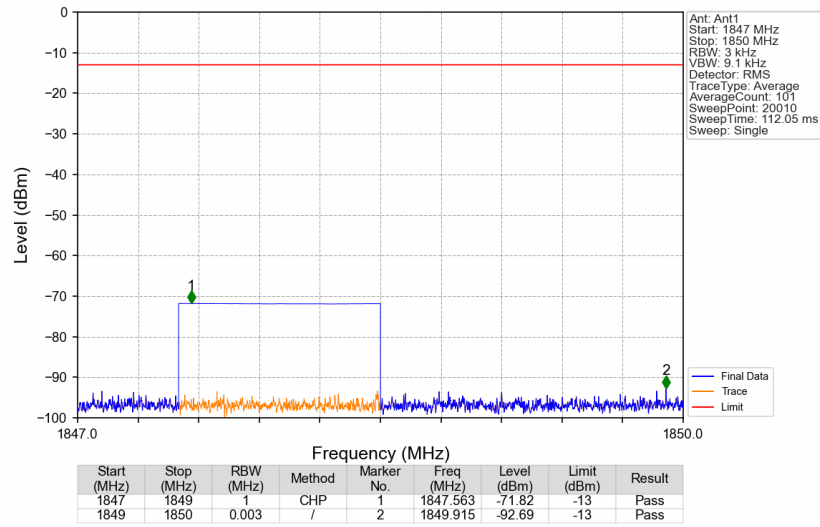
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV_AGC



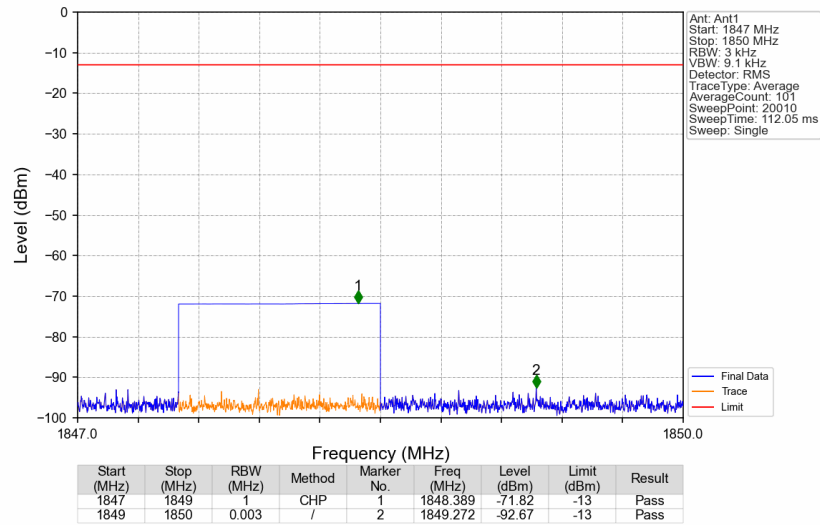
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV_AGC+3



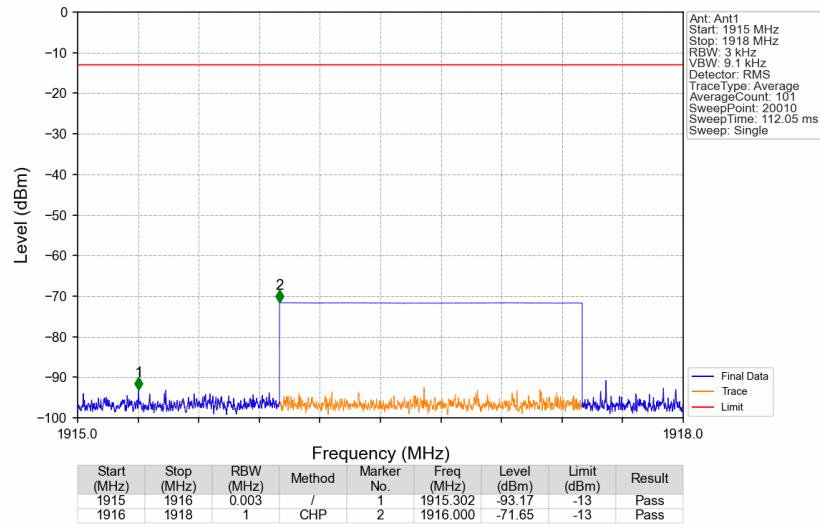
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV_AGC



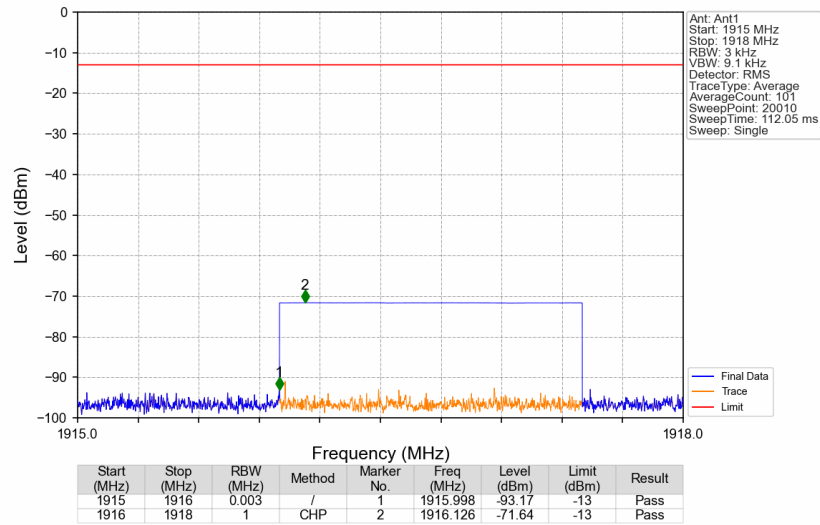
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV_AGC+3



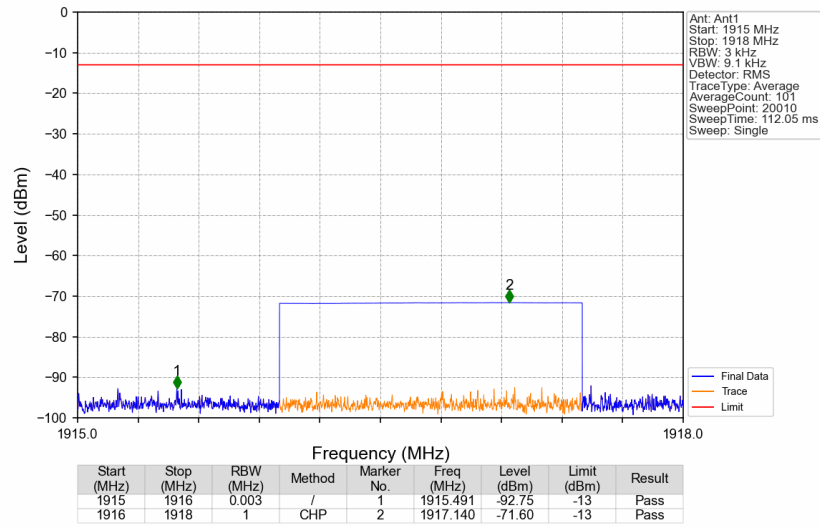
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV_AGC



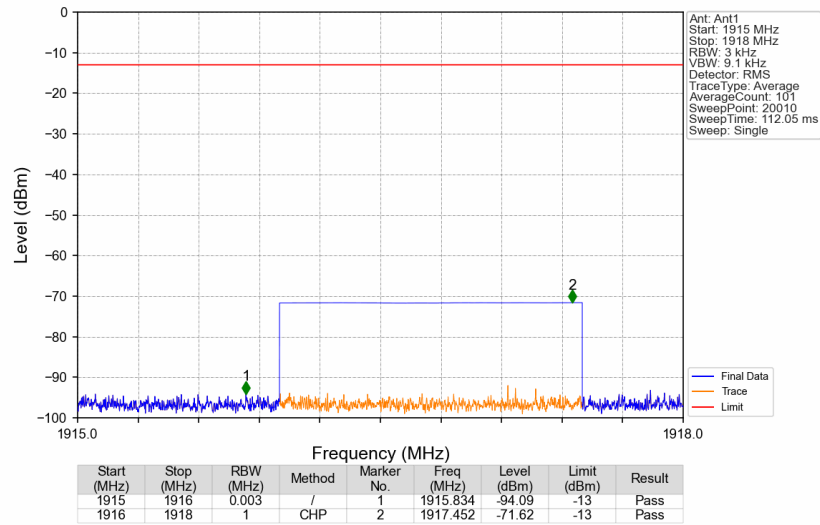
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



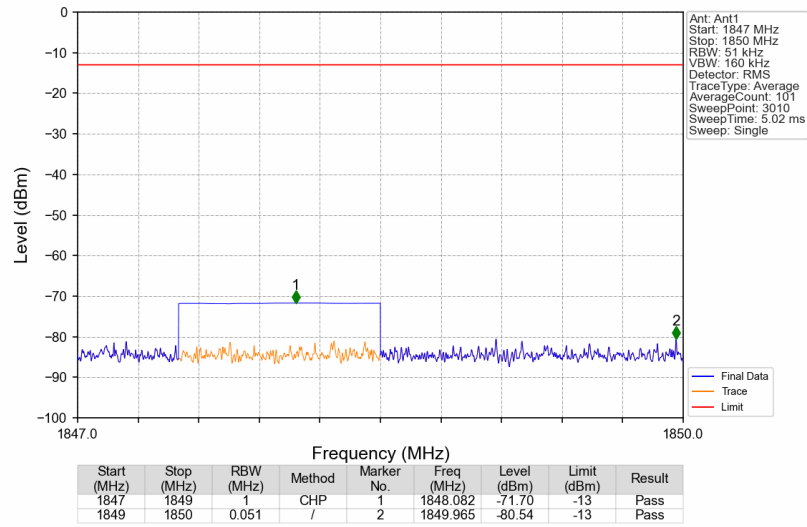
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV_AGC



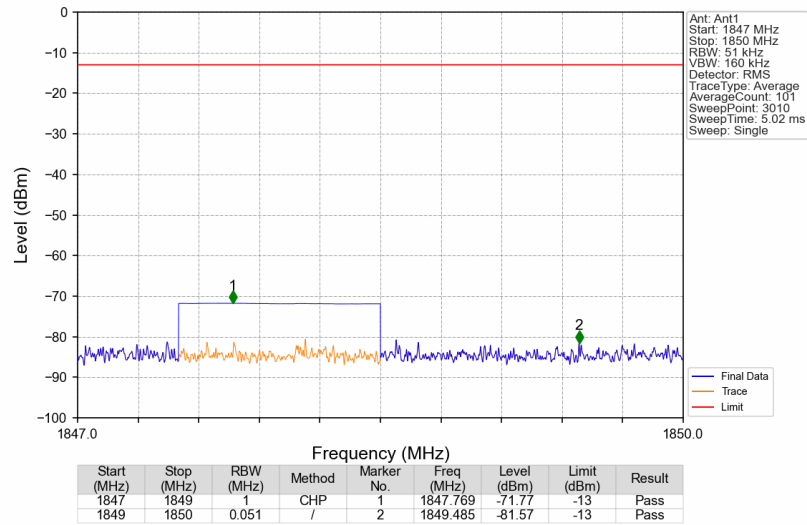
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



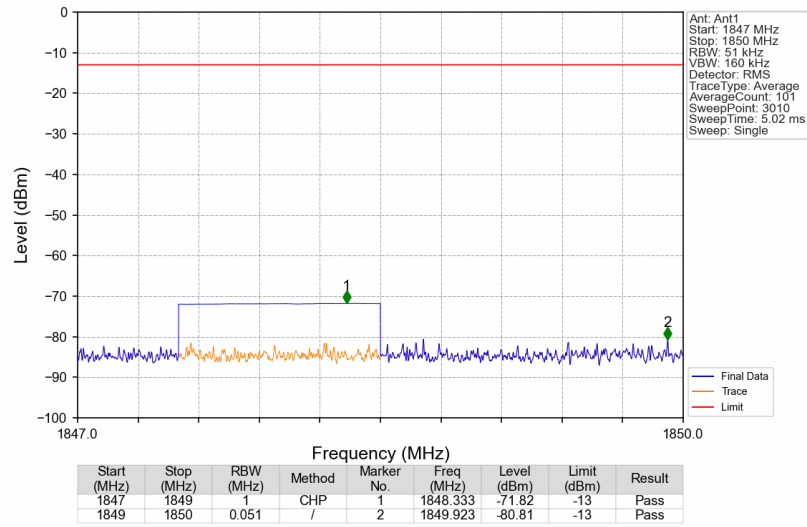
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC



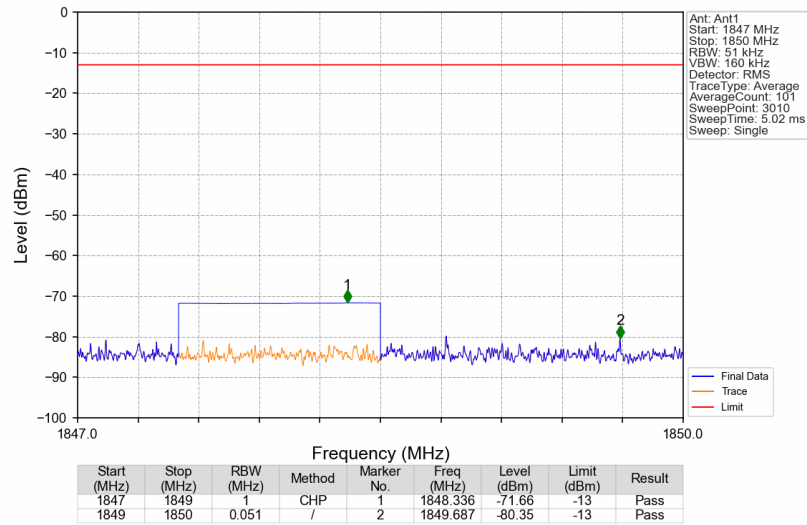
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



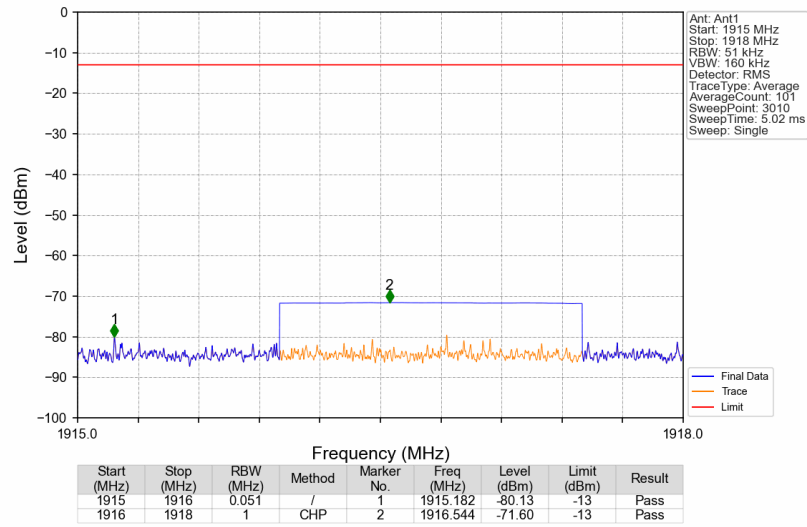
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC



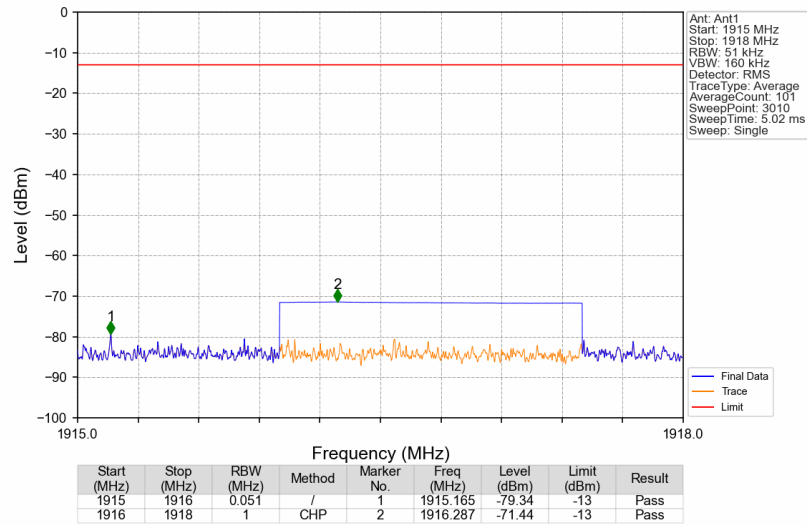
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



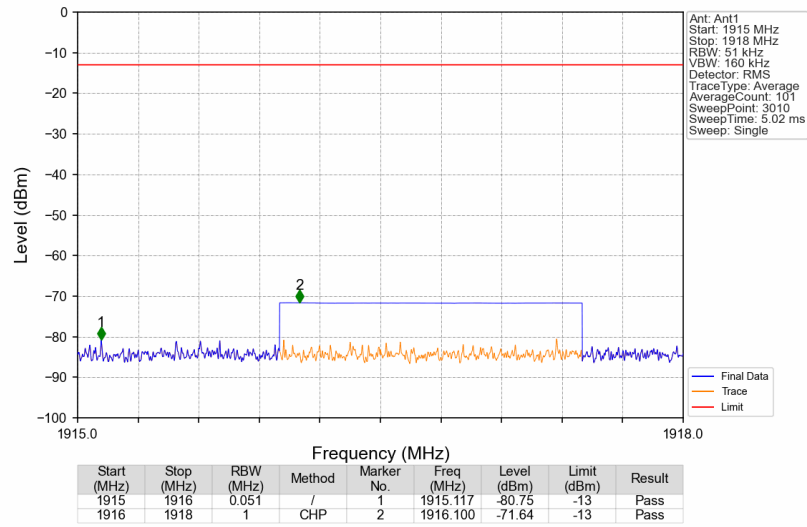
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC



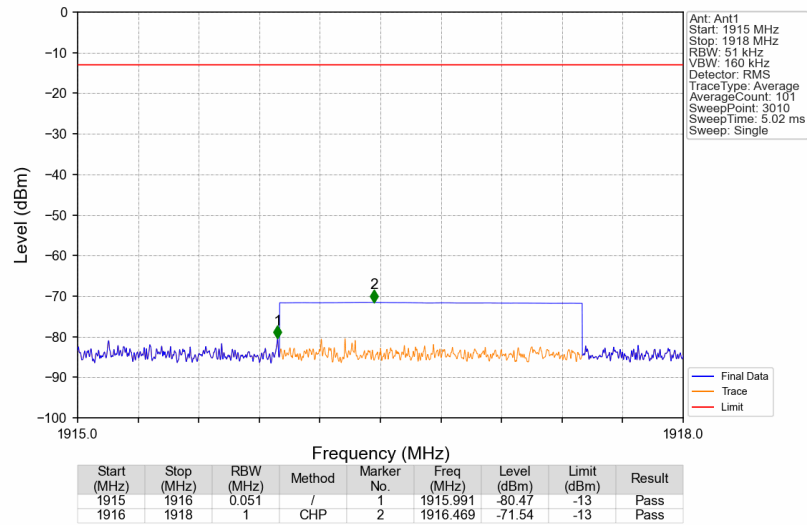
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC



Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



6. Spurious emissions

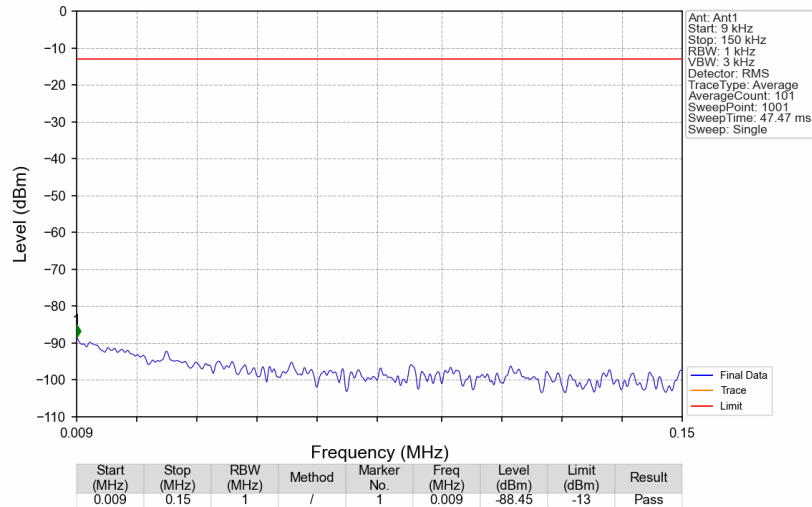
6.1 Band25

6.1.1 Test Result

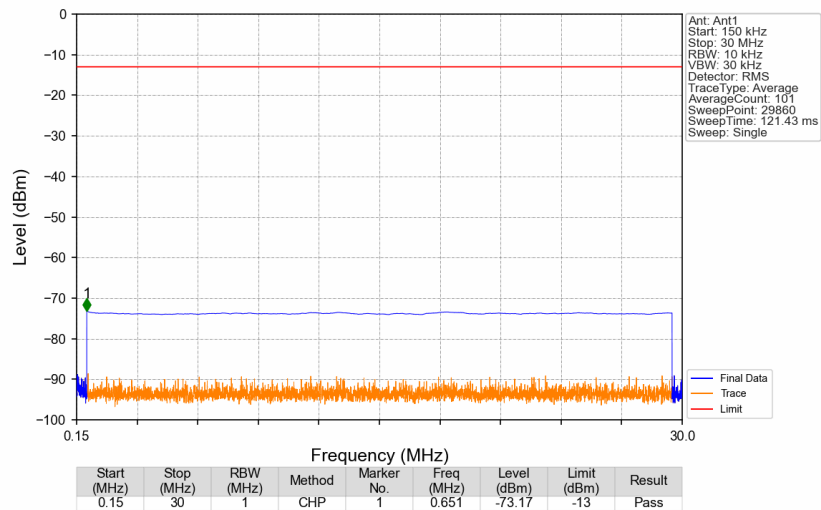
Band: 25 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
GMSK 0.2MHz	-3.2	1930.2	LCH	SISO	1	Refer To Test Graph		Pass
		1962.5	MCH	SISO	1	Refer To Test Graph		Pass
		1994.8	HCH	SISO	1	Refer To Test Graph		Pass
AWGN 5MHz	-3.2	1932.5	LCH	SISO	1	Refer To Test Graph		Pass
		1962.5	MCH	SISO	1	Refer To Test Graph		Pass
		1992.5	HCH	SISO	1	Refer To Test Graph		Pass

6.1.2 Test Graph

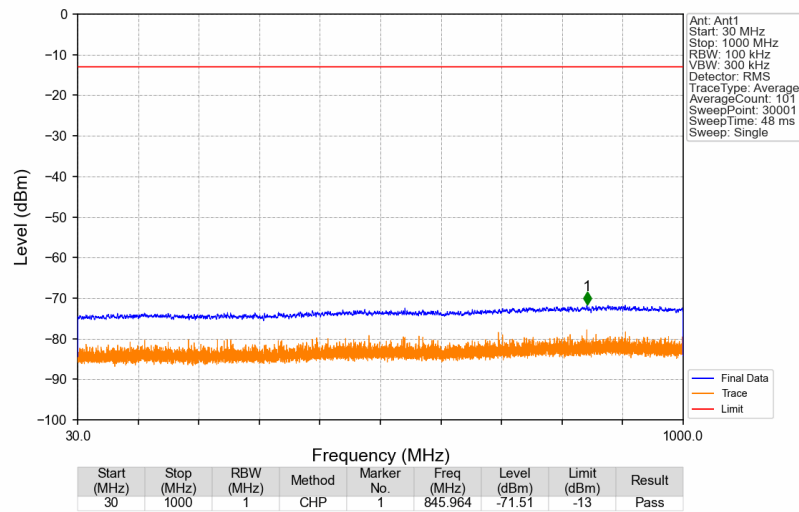
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV



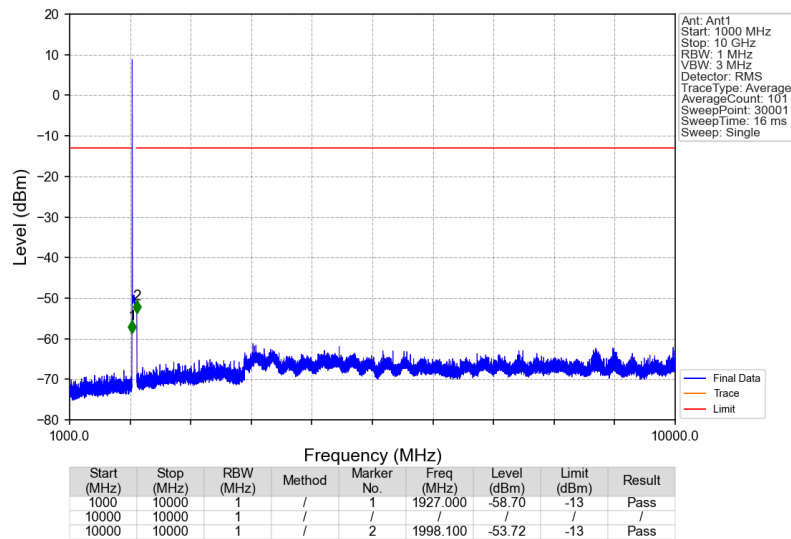
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV



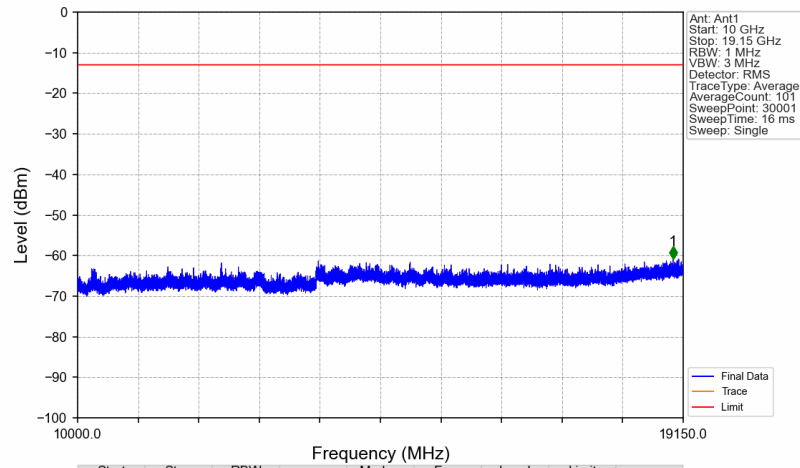
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV



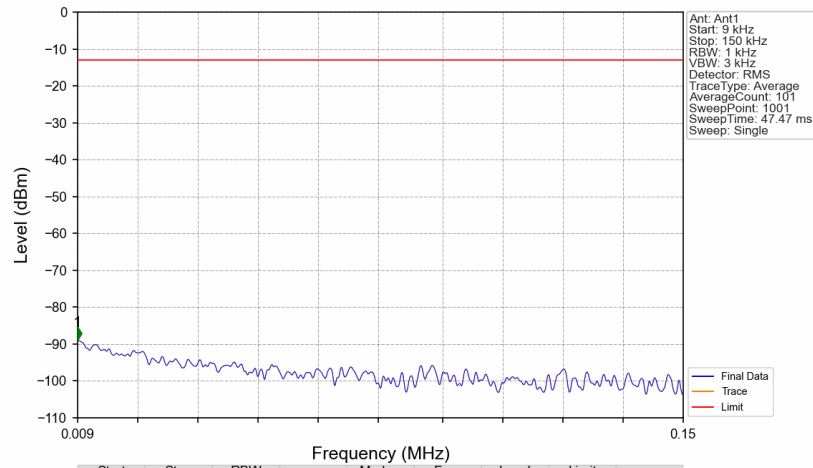
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV



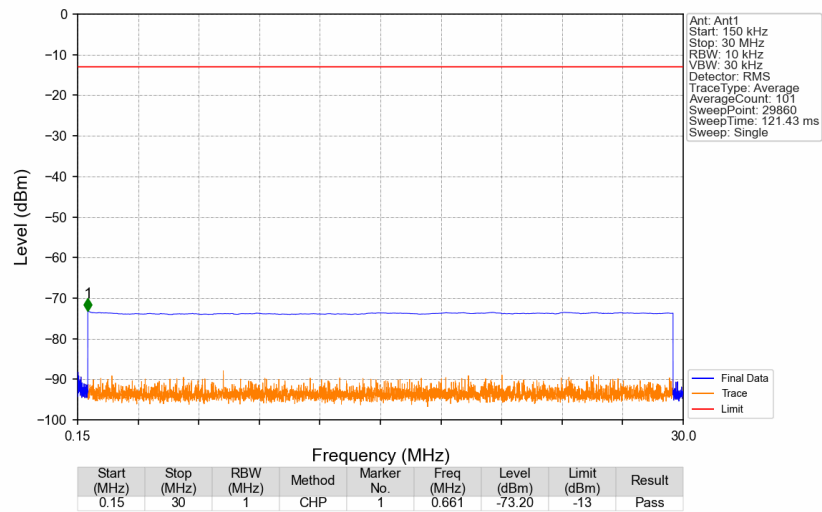
Band25_1930.2MHz_GMSK_SISO_Ant1_NTNV



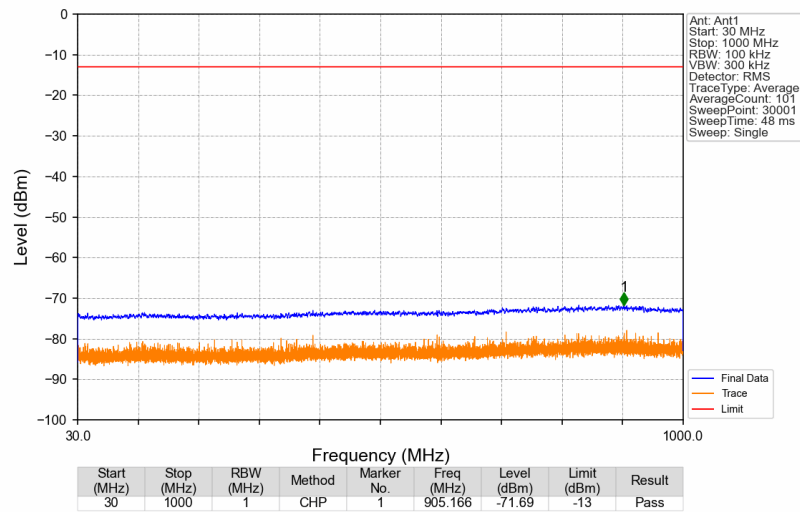
Band25_1962.5MHz_GMSK_SISO_Ant1_NTNV



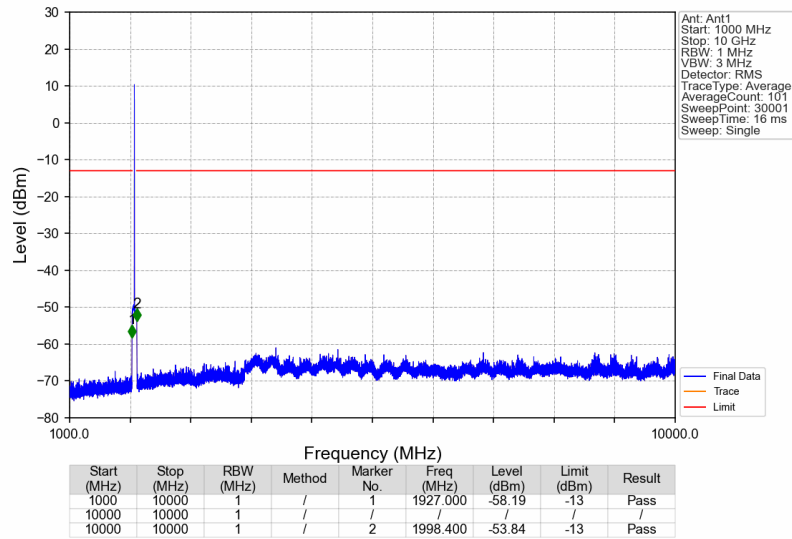
Band25_1962.5MHz_GMSK_SISO_Ant1_NTNV



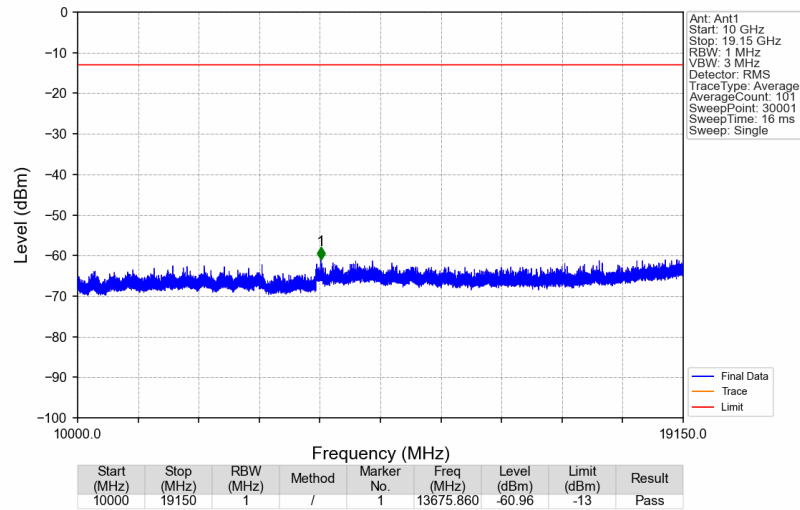
Band25_1962.5MHz_GMSK_SISO_Ant1_NTNV



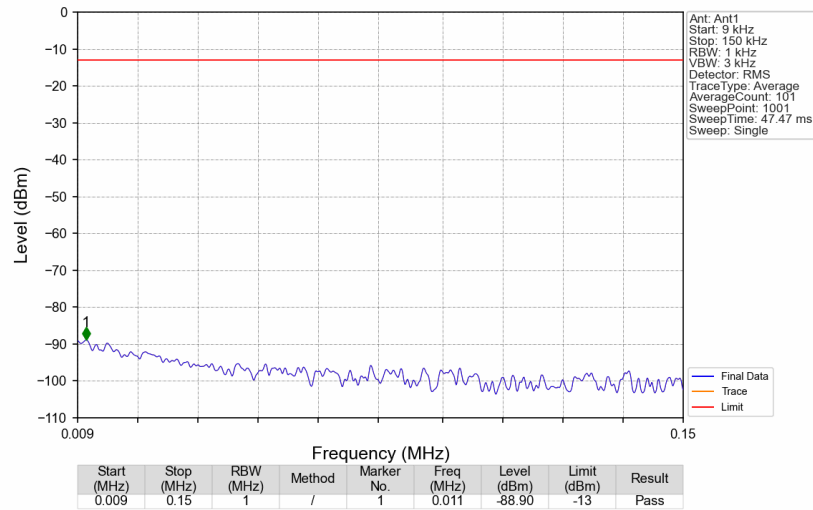
Band25_1962.5MHz_GMSK_SISO_Ant1_NTNV



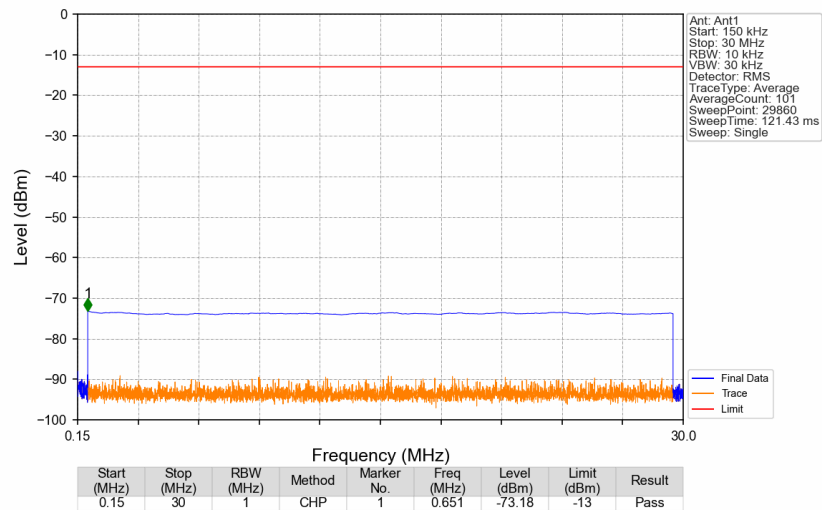
Band25_1962.5MHz_GMSK_SISO_Ant1_NTNV



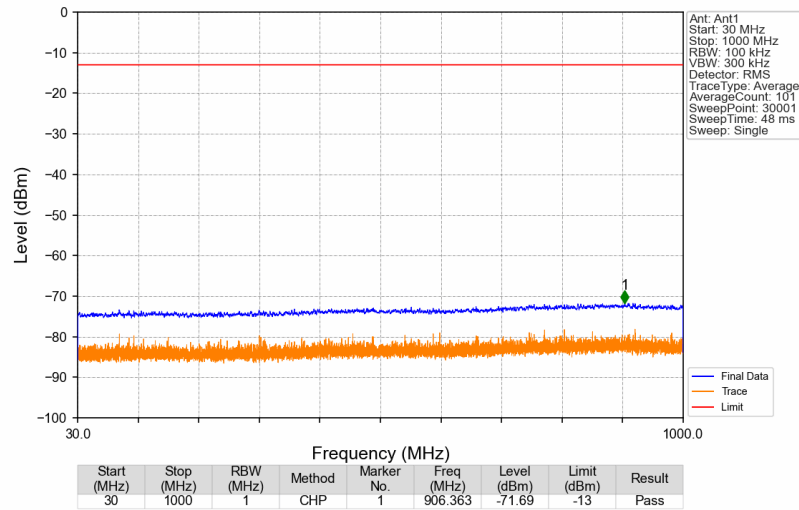
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV



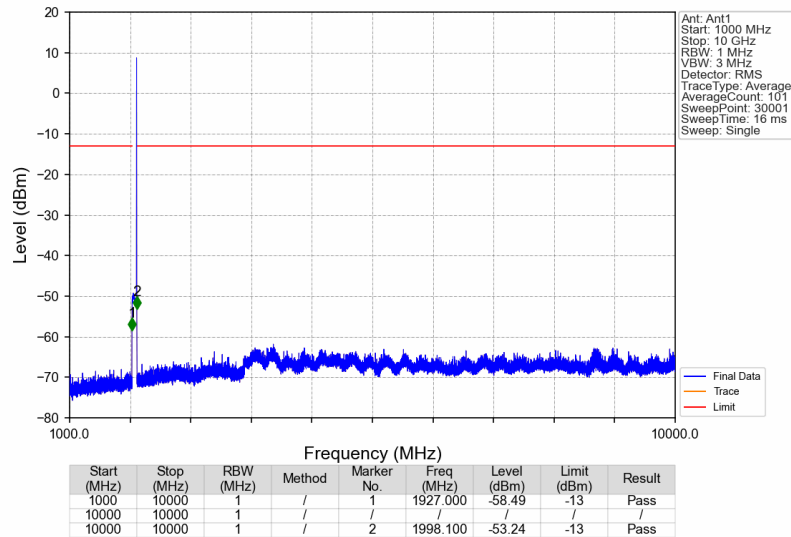
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV



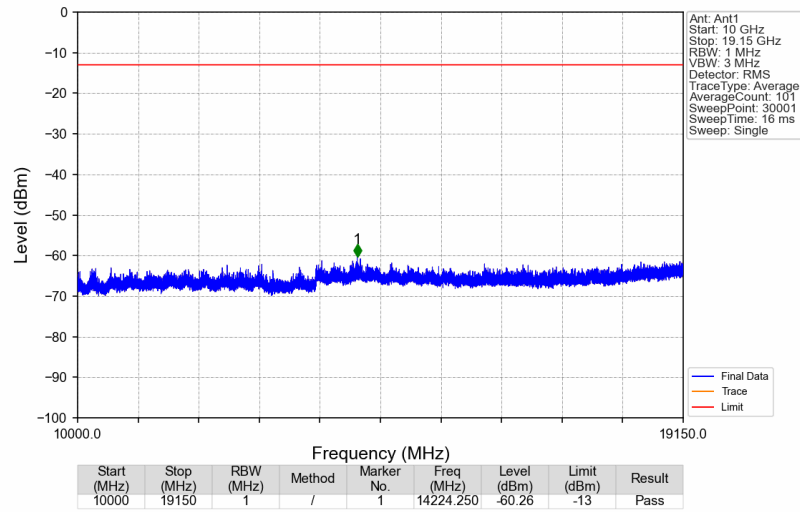
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV



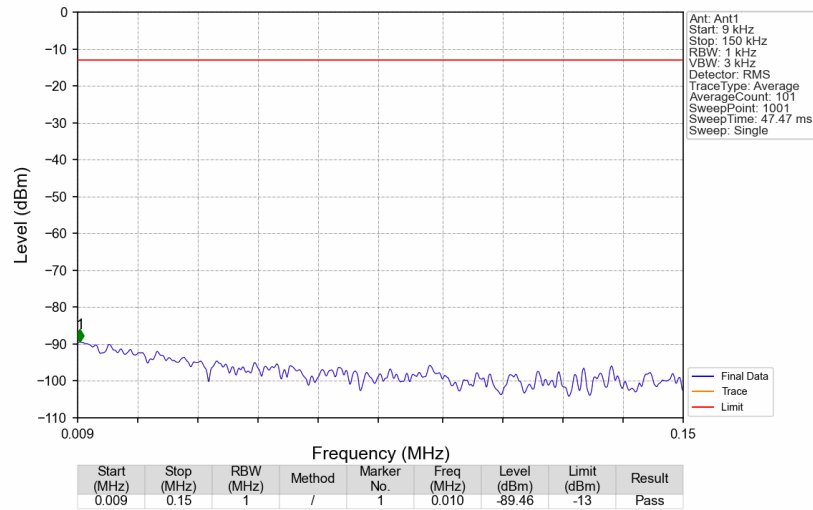
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV



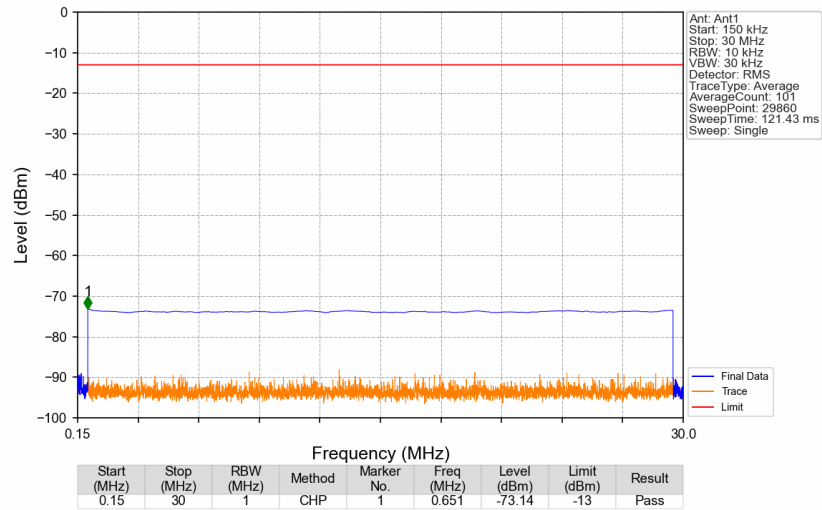
Band25_1994.8MHz_GMSK_SISO_Ant1_NTNV



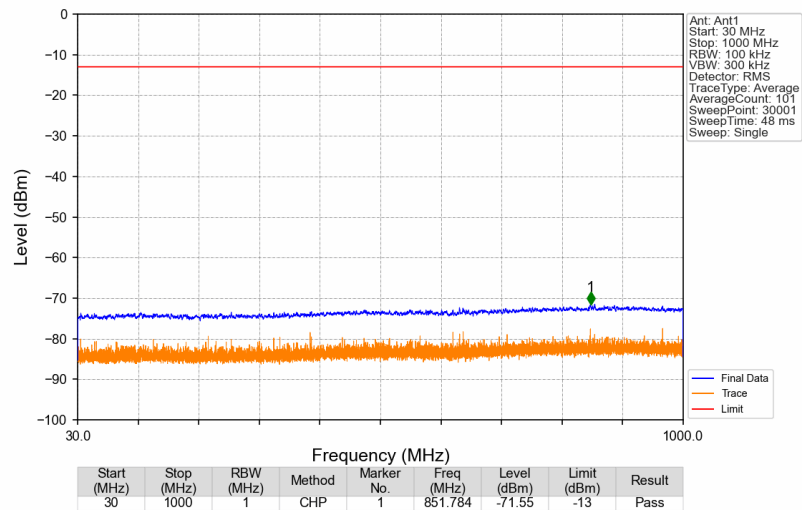
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV



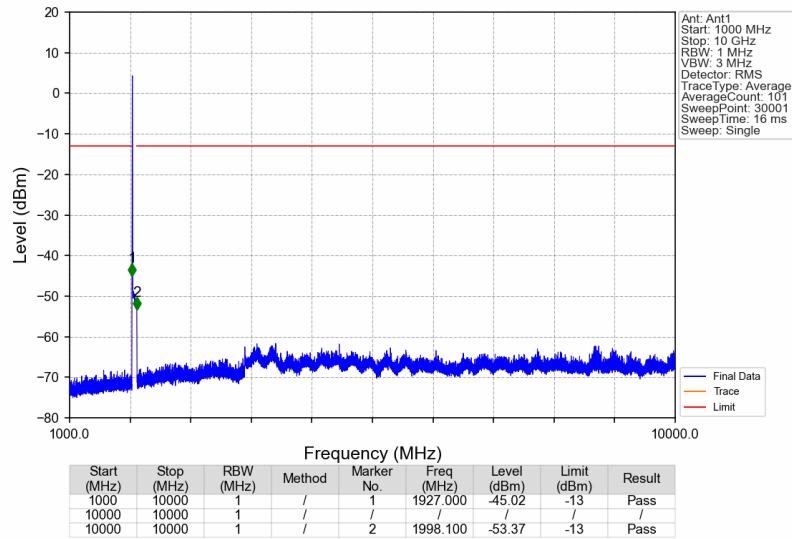
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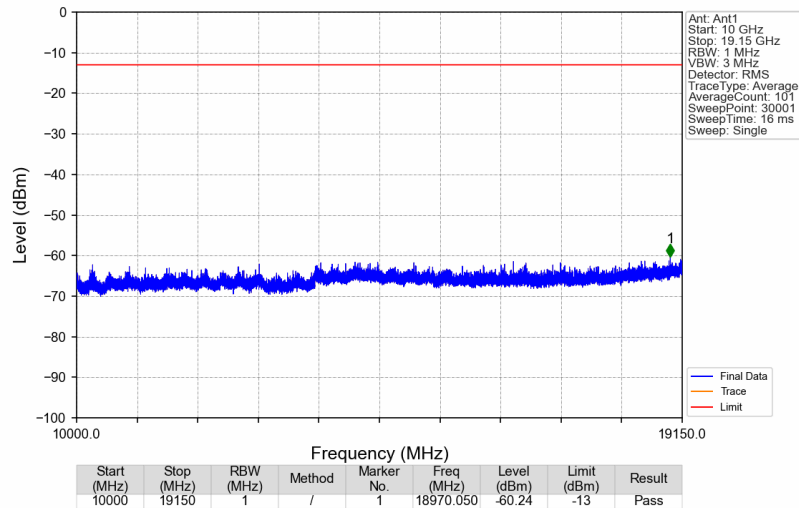
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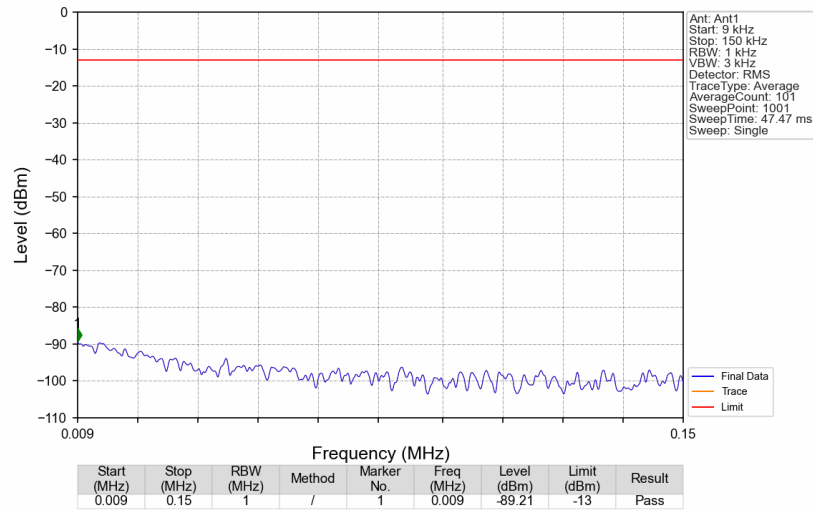
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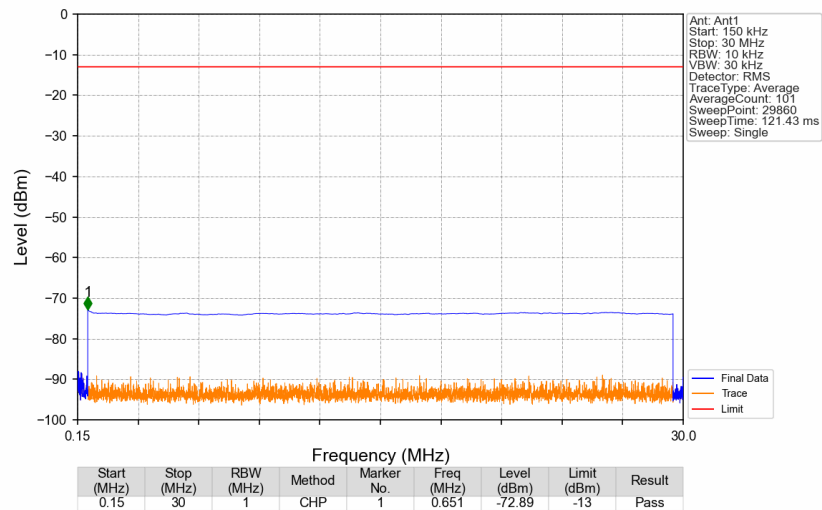
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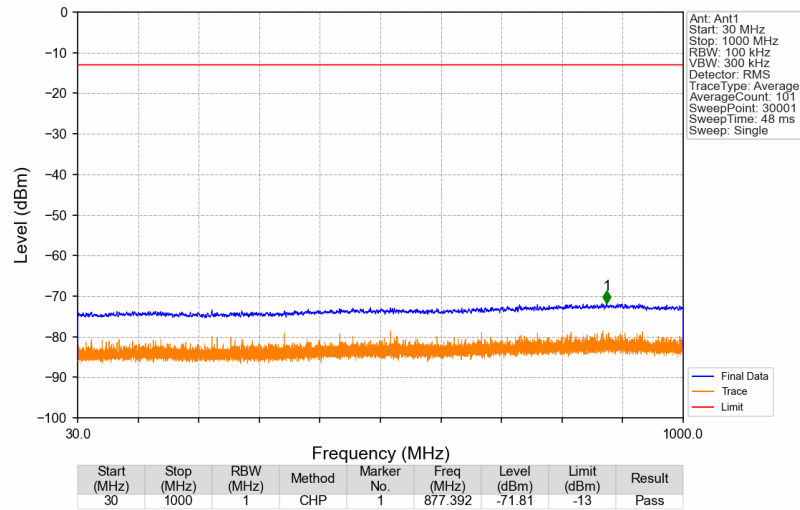
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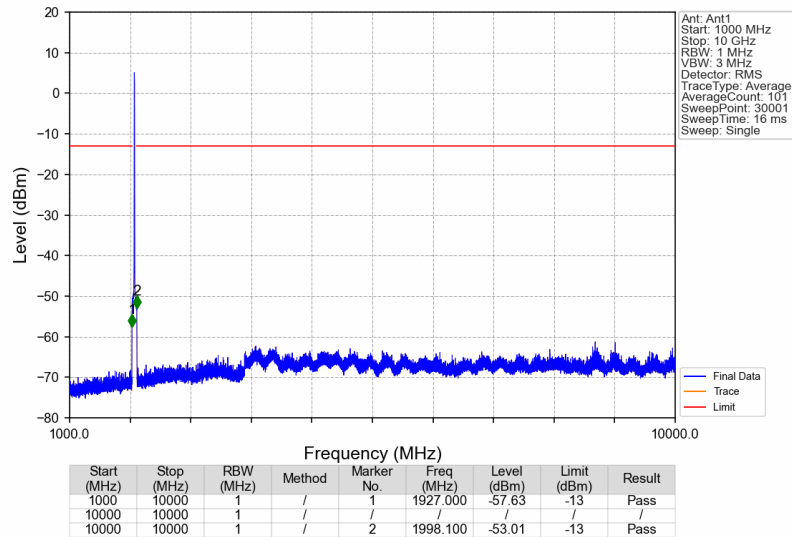
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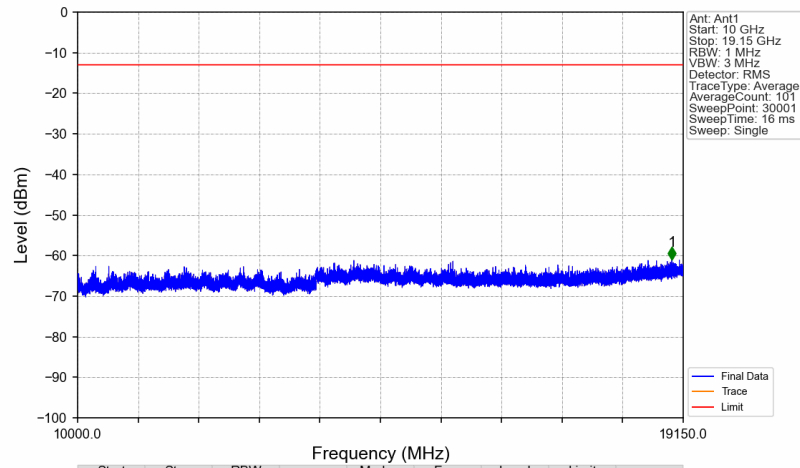
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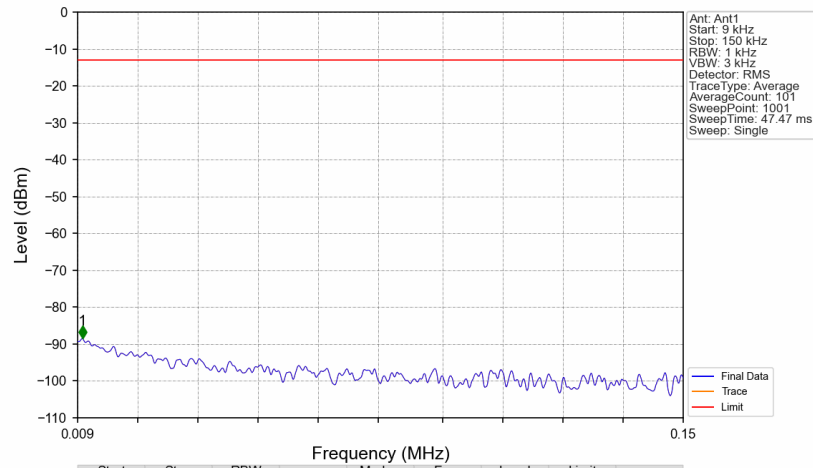
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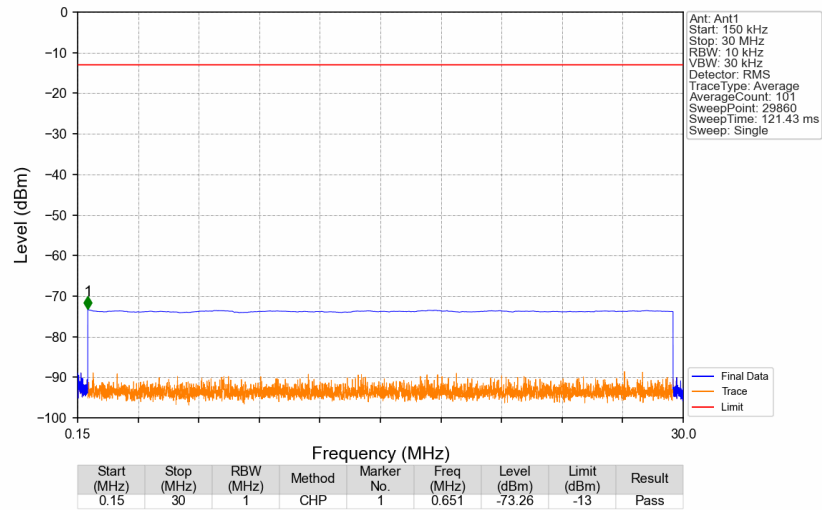
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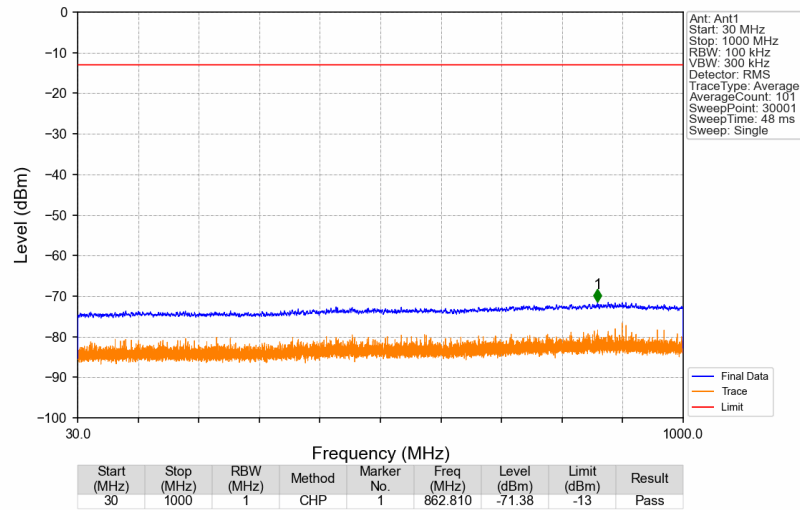
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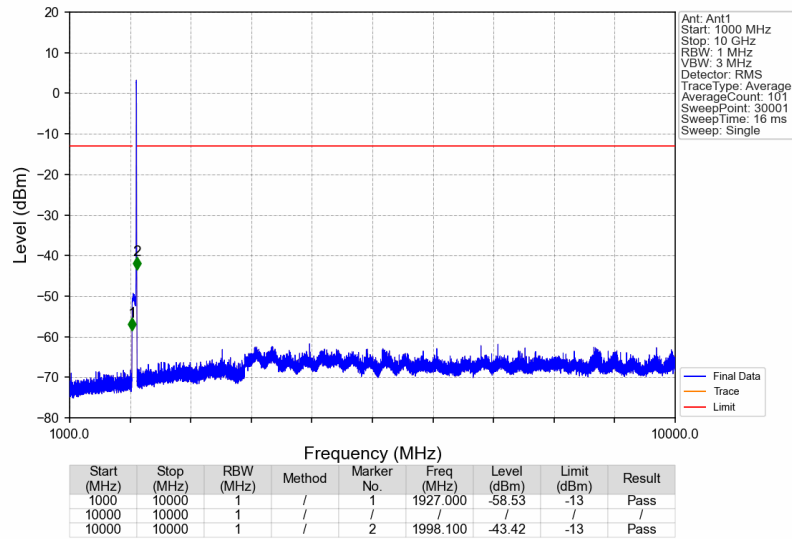
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



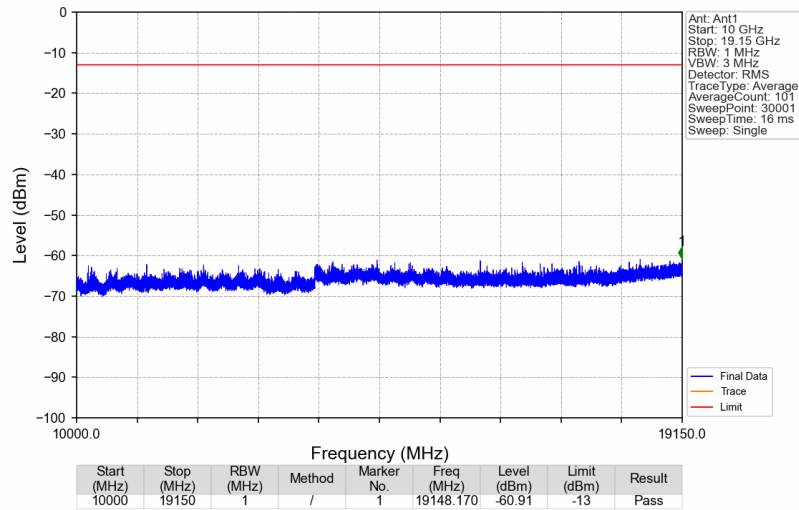
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



7. Frequency stability measurements

7.1 Band25_Ant1

7.1.1 Test Result

Band: 25 / NTNV							
Signal			Temp (°C)	Voltage (VDC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-3.2	1930.1	20	27.5	7	0.0036	Pass
				28.0	9	0.0047	Pass
				28.5	8	0.0041	Pass
			-40	28.0	7	0.0036	Pass
			-30	28.0	11	0.0057	Pass
			-20	28.0	9	0.0047	Pass
			-10	28.0	10	0.0052	Pass
			0	28.0	6	0.0031	Pass
			10	28.0	8	0.0041	Pass
			30	28.0	9	0.0047	Pass
			40	28.0	10	0.0052	Pass
			55	28.0	8	0.0041	Pass
		1962.5	20	27.5	9	0.0046	Pass
				28.0	7	0.0036	Pass
				28.5	8	0.0041	Pass
			-40	28.0	9	0.0047	Pass
			-30	28.0	10	0.0051	Pass
			-20	28.0	7	0.0036	Pass
			-10	28.0	6	0.0031	Pass
			0	28.0	8	0.0041	Pass
			10	28.0	9	0.0046	Pass
			30	28.0	11	0.0056	Pass
			40	28.0	10	0.0051	Pass
			55	28.0	7	0.0036	Pass
		1994.9	20	27.5	10	0.0050	Pass
				28.0	8	0.0040	Pass
				28.5	7	0.0035	Pass
			-40	28.0	9	0.0045	Pass
			-30	28.0	9	0.0045	Pass
			-20	28.0	6	0.0030	Pass
			-10	28.0	7	0.0035	Pass
			0	28.0	8	0.0040	Pass
			10	28.0	10	0.0050	Pass
			30	28.0	11	0.0055	Pass
			40	28.0	9	0.0045	Pass
			55	28.0	8	0.0040	Pass

8. Radiated Spurious Emissions

8.1 Band25_Ant1

8.1.1 Test Result

GMSK 1930.2MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
374.2	Horizontal	-69.45	-13	-56.45	Pass
601.1	Horizontal	-63.34	-13	-50.34	Pass
946.8	Horizontal	-57.90	-13	-44.90	Pass
1372.0	Horizontal	-60.46	-13	-47.46	Pass
2759.0	Horizontal	-52.45	-13	-39.45	Pass
6516.8	Horizontal	-47.90	-13	-34.90	Pass
368.4	Vertical	-69.68	-13	-56.68	Pass
570.6	Vertical	-64.66	-13	-51.66	Pass
948.0	Vertical	-56.92	-13	-43.92	Pass
1339.8	Vertical	-58.75	-13	-45.75	Pass
2751.2	Vertical	-53.40	-13	-40.40	Pass
6476.1	Vertical	-47.06	-13	-34.06	Pass

GMSK 1962.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
371.9	Horizontal	-71.64	-13	-58.64	Pass
560.9	Horizontal	-64.85	-13	-51.85	Pass
967.0	Horizontal	-59.77	-13	-46.77	Pass
1333.1	Horizontal	-60.45	-13	-47.45	Pass
2764.4	Horizontal	-56.32	-13	-43.32	Pass
6484.5	Horizontal	-46.33	-13	-33.33	Pass
384.4	Vertical	-68.70	-13	-55.70	Pass
577.6	Vertical	-64.57	-13	-51.57	Pass
976.0	Vertical	-61.68	-13	-48.68	Pass
1338.4	Vertical	-56.16	-13	-43.16	Pass
2764.5	Vertical	-52.59	-13	-39.59	Pass
6517.4	Vertical	-49.08	-13	-36.08	Pass

GMSK 1994.8MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
397.1	Horizontal	-71.85	-13	-58.85	Pass
601.4	Horizontal	-65.21	-13	-52.21	Pass
953.6	Horizontal	-60.35	-13	-47.35	Pass
1351.2	Horizontal	-56.93	-13	-43.93	Pass
2737.0	Horizontal	-51.23	-13	-38.23	Pass
6486.3	Horizontal	-48.09	-13	-35.09	Pass
376.5	Vertical	-70.42	-13	-57.42	Pass
604.8	Vertical	-65.17	-13	-52.17	Pass
974.8	Vertical	-60.60	-13	-47.60	Pass
1364.2	Vertical	-59.57	-13	-46.57	Pass
2725.6	Vertical	-51.04	-13	-38.04	Pass
6508.0	Vertical	-48.63	-13	-35.63	Pass

AWGN 1932.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
394.3	Horizontal	-71.67	-13	-58.67	Pass
587.5	Horizontal	-66.71	-13	-53.71	Pass
969.0	Horizontal	-59.10	-13	-46.10	Pass
1330.4	Horizontal	-60.48	-13	-47.48	Pass
2739.4	Horizontal	-56.40	-13	-43.40	Pass
6504.4	Horizontal	-50.91	-13	-37.91	Pass
390.1	Vertical	-66.65	-13	-53.65	Pass
588.8	Vertical	-65.80	-13	-52.80	Pass
948.8	Vertical	-60.02	-13	-47.02	Pass
1349.3	Vertical	-57.41	-13	-44.41	Pass
2736.5	Vertical	-56.07	-13	-43.07	Pass
6508.4	Vertical	-46.09	-13	-33.09	Pass

AWGN 1962.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
396.6	Horizontal	-69.11	-13	-56.11	Pass
588.3	Horizontal	-63.54	-13	-50.54	Pass
957.9	Horizontal	-61.72	-13	-48.72	Pass
1359.4	Horizontal	-56.40	-13	-43.40	Pass
2748.6	Horizontal	-53.29	-13	-40.29	Pass
6506.1	Horizontal	-46.91	-13	-33.91	Pass
383.6	Vertical	-66.98	-13	-53.98	Pass
570.8	Vertical	-63.80	-13	-50.80	Pass
965.3	Vertical	-61.66	-13	-48.66	Pass
1326.7	Vertical	-59.06	-13	-46.06	Pass
2758.4	Vertical	-56.33	-13	-43.33	Pass
6508.7	Vertical	-49.23	-13	-36.23	Pass

AWGN 1992.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
378.3	Horizontal	-68.90	-13	-55.90	Pass
607.3	Horizontal	-66.60	-13	-53.60	Pass
967.7	Horizontal	-57.09	-13	-44.09	Pass
1359.4	Horizontal	-56.85	-13	-43.85	Pass
2756.0	Horizontal	-54.29	-13	-41.29	Pass
6502.1	Horizontal	-50.17	-13	-37.17	Pass
374.7	Vertical	-66.90	-13	-53.90	Pass
578.3	Vertical	-61.39	-13	-48.39	Pass
946.4	Vertical	-56.63	-13	-43.63	Pass
1363.8	Vertical	-58.54	-13	-45.54	Pass
2746.7	Vertical	-55.33	-13	-42.33	Pass
6490.3	Vertical	-50.62	-13	-37.62	Pass