

Appendix D for KSCR2401000129AT-B25

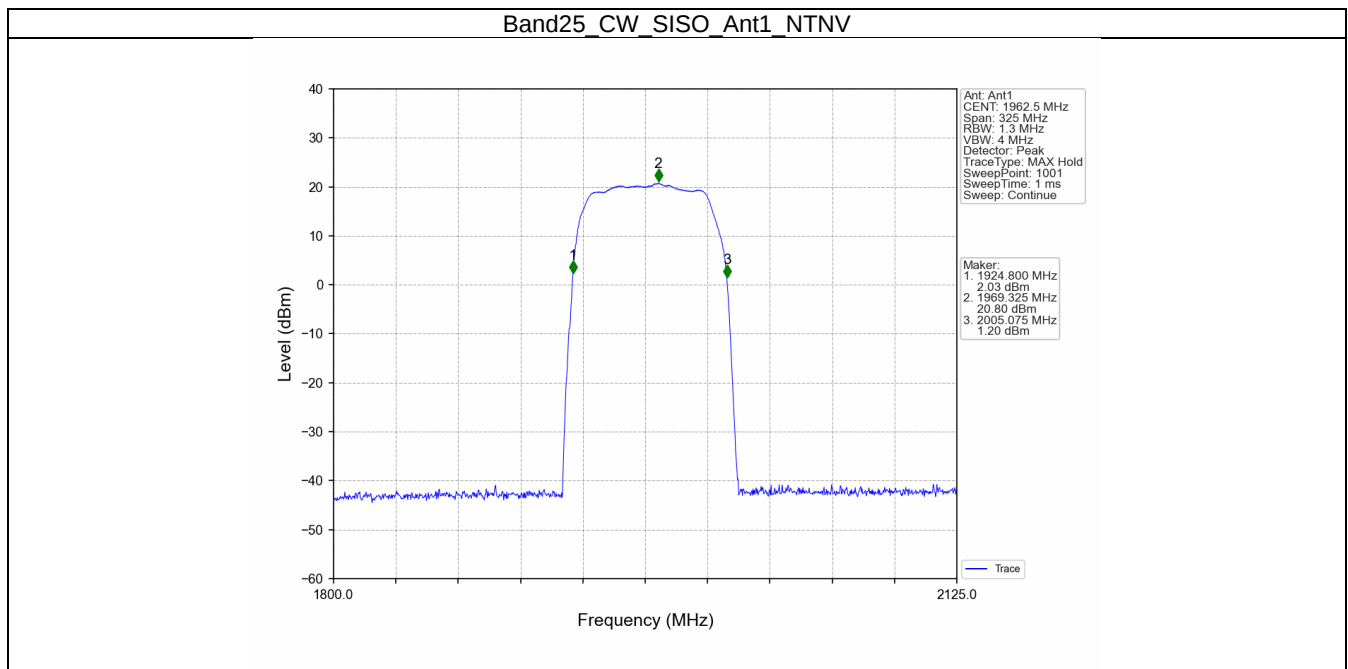
1. Out of band rejection

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	1969.325	1924.800	2005.075	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
AWGN	1969.325	SISO	1	-4.00	Pass
GMSK	1969.325	SISO	1	-4.00	Pass

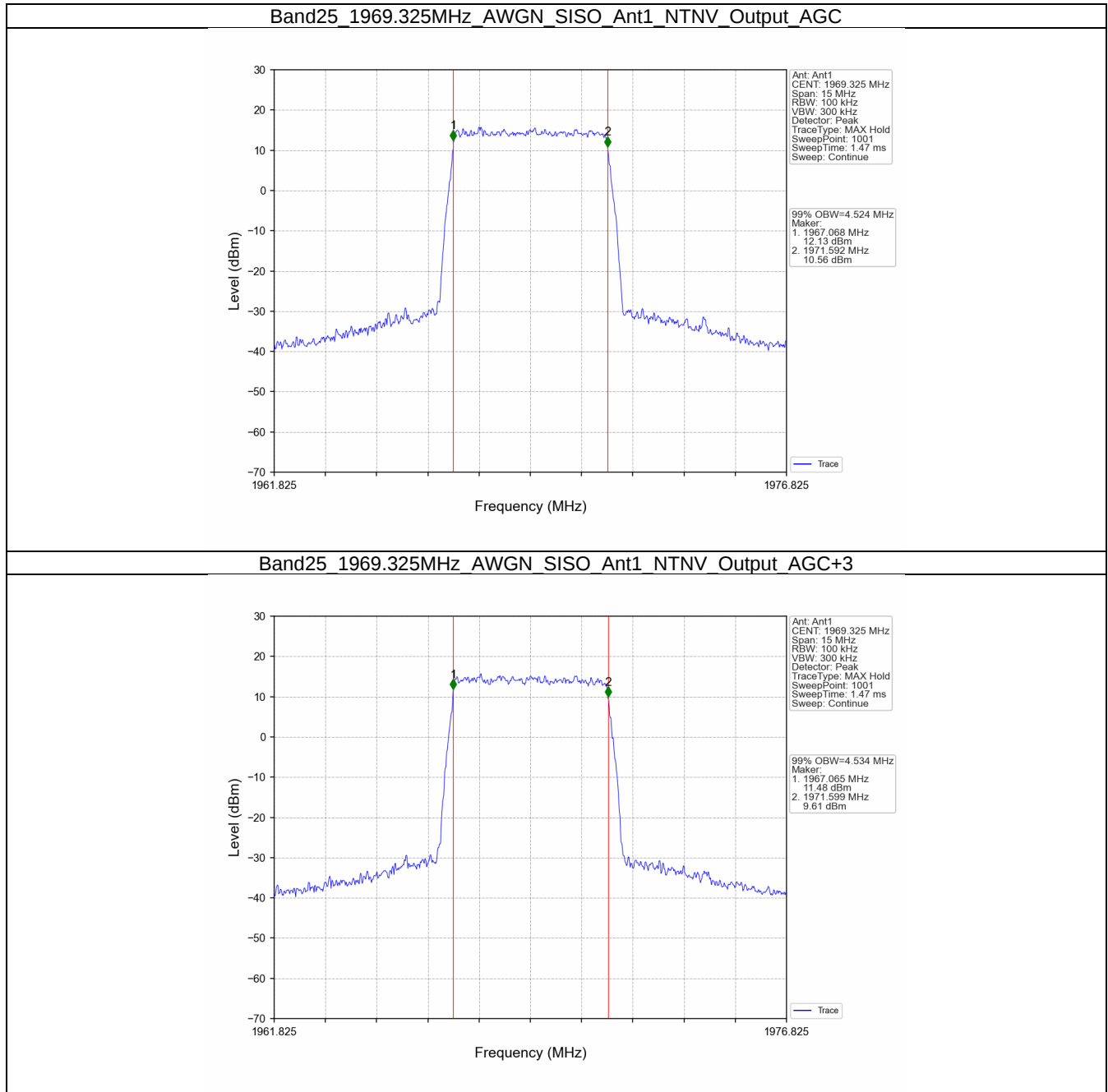
3. Input-versus-output signal comparison

3.1 Band25_OBW

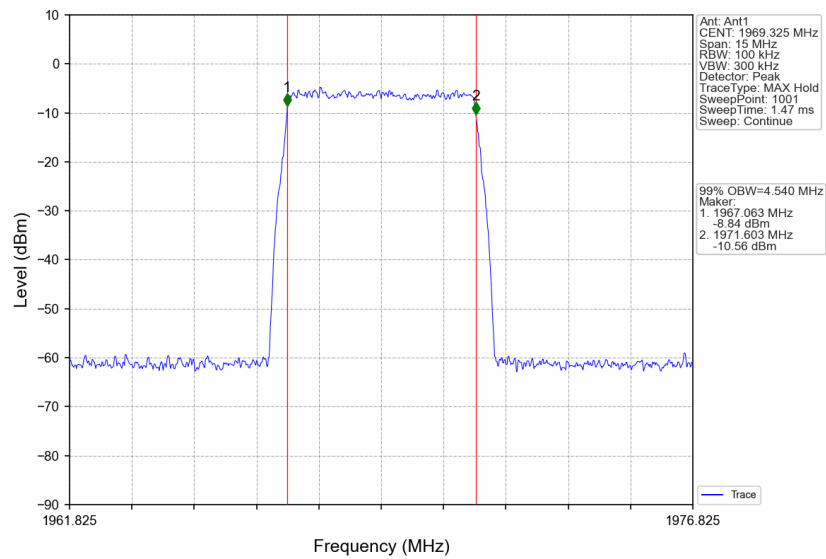
3.1.1 Test Result

Band: 25 / NTV									
Signal			TX Type	ANT	99% OBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-4	1969.325	SISO	1	4.524	4.540	-0.352	5	Pass
	-1	1969.325	SISO	1	4.534	4.545	-0.242	5	Pass
GMSK	-4	1969.325	SISO	1	0.245	0.245	0.000	5	Pass
	-1	1969.325	SISO	1	0.244	0.245	-0.408	5	Pass

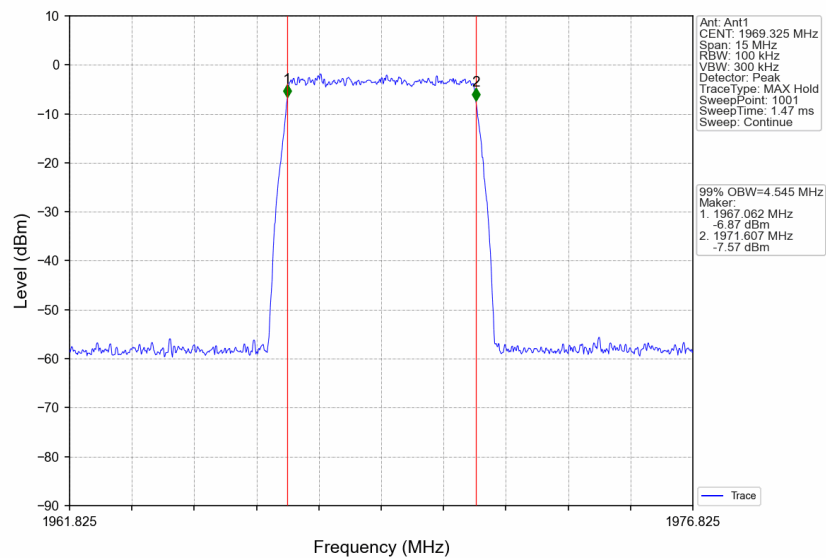
3.1.2 Test Graph



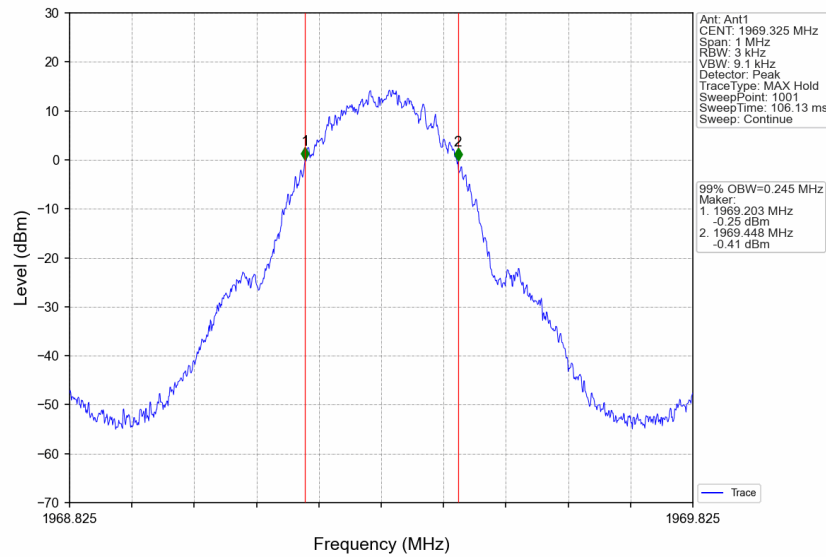
Band25_1969.325MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



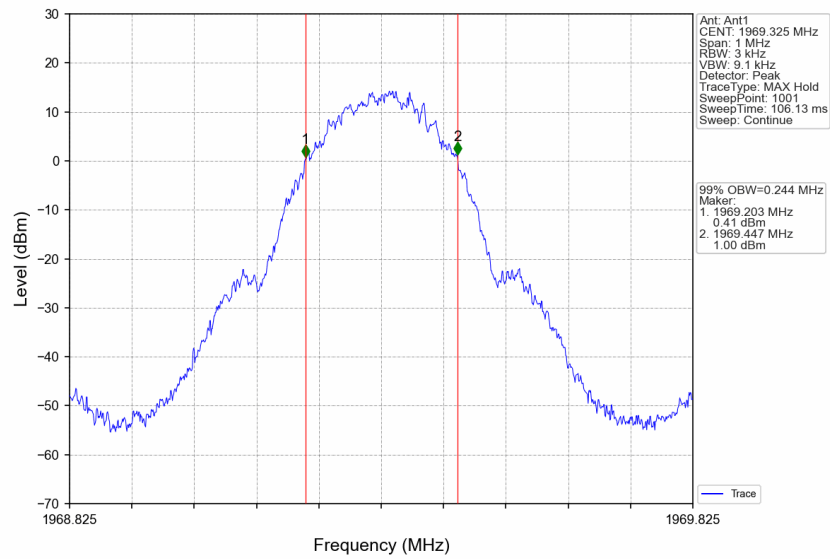
Band25_1969.325MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



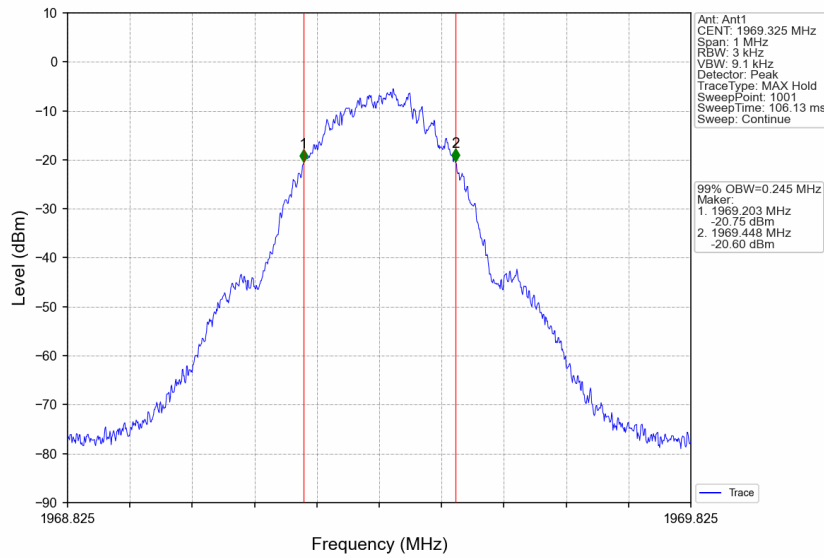
Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Output_AGC



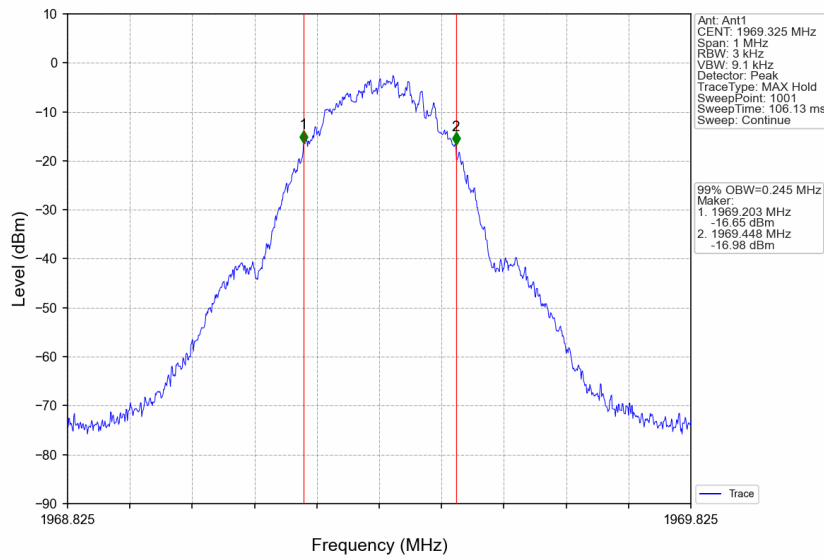
Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Output_AGC+3



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3

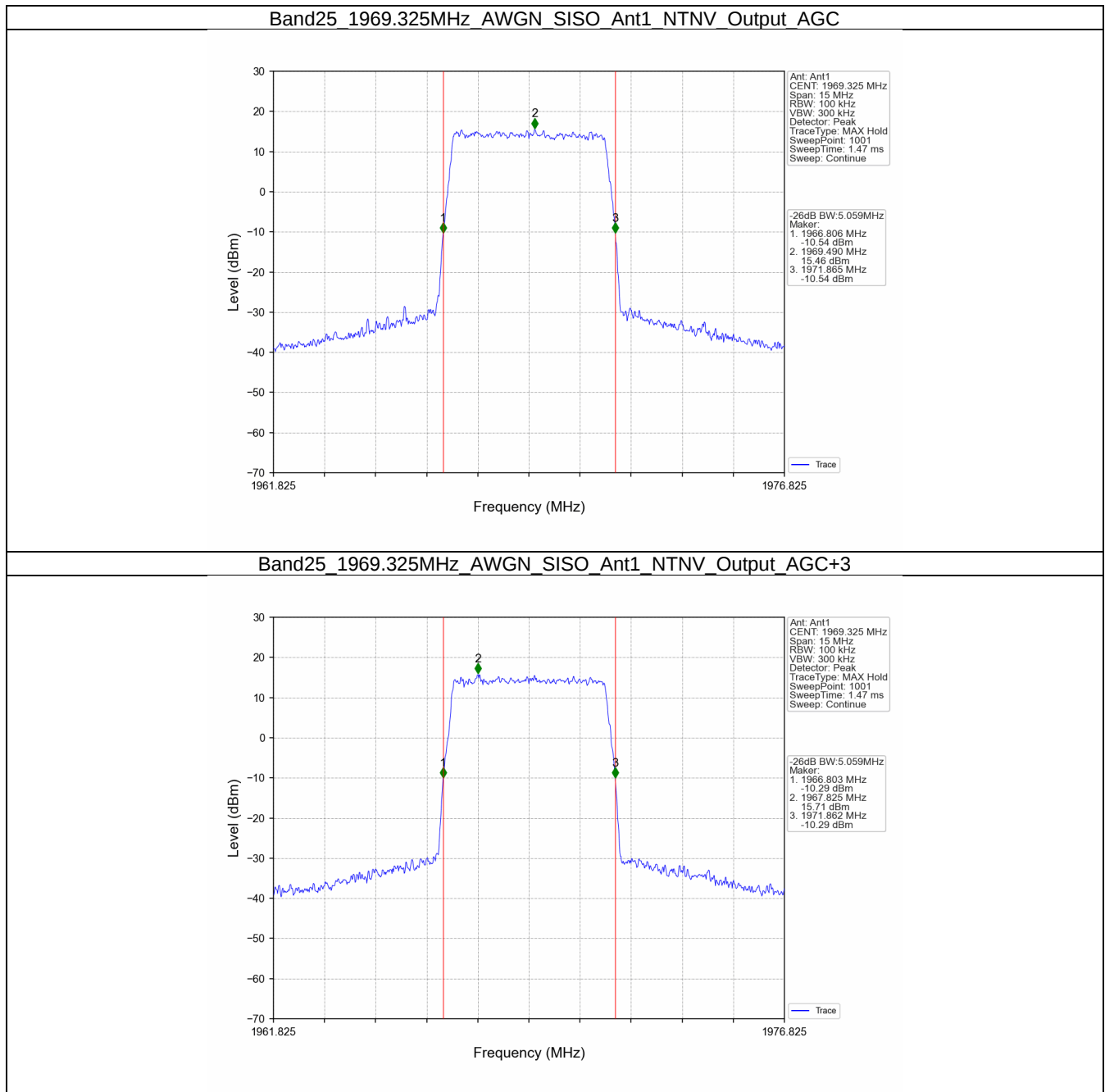


3.2 Band25_EBW

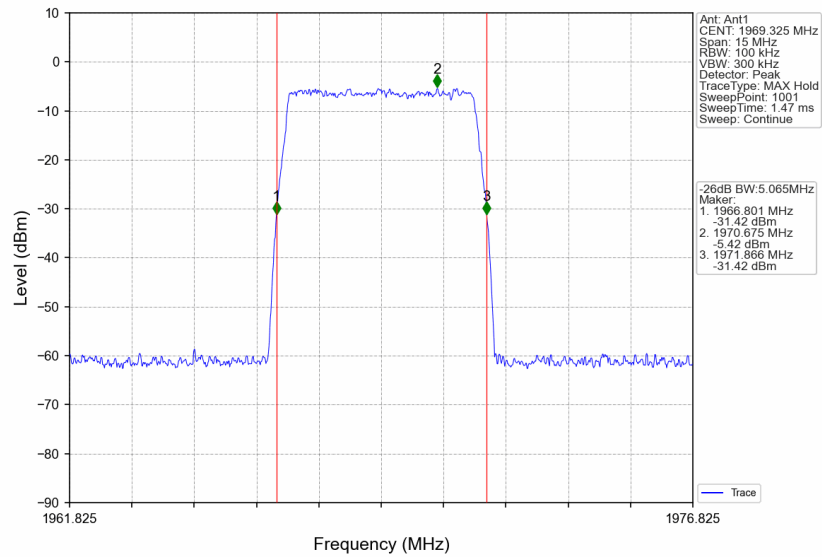
3.2.1 Test Result

Band: 25 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Discrepancy (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
AWGN	-4	1969.325	SISO	1	5.059	5.065	-0.11846	5	Pass
	-1	1969.325	SISO	1	5.059	5.036	0.45671	5	Pass
GMSK	-4	1969.325	SISO	1	0.314	0.315	-0.31746	5	Pass
	-1	1969.325	SISO	1	0.315	0.315	0.00000	5	Pass

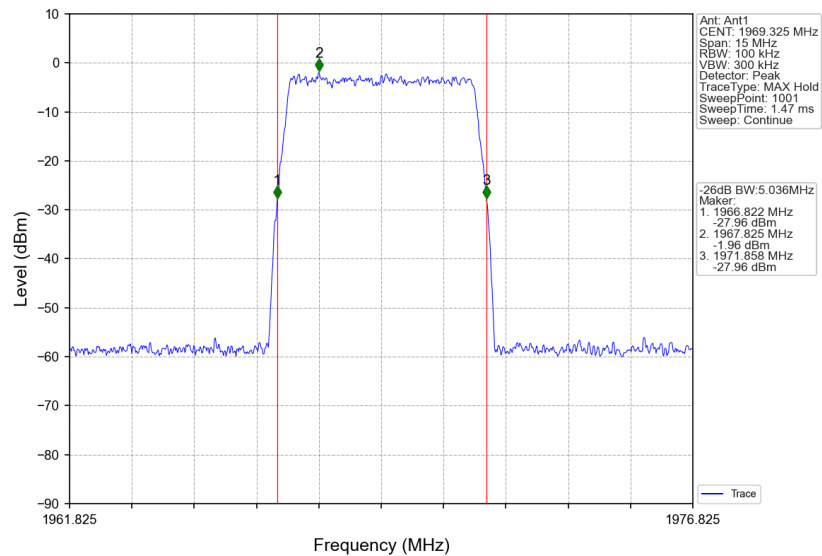
3.2.2 Test Graph



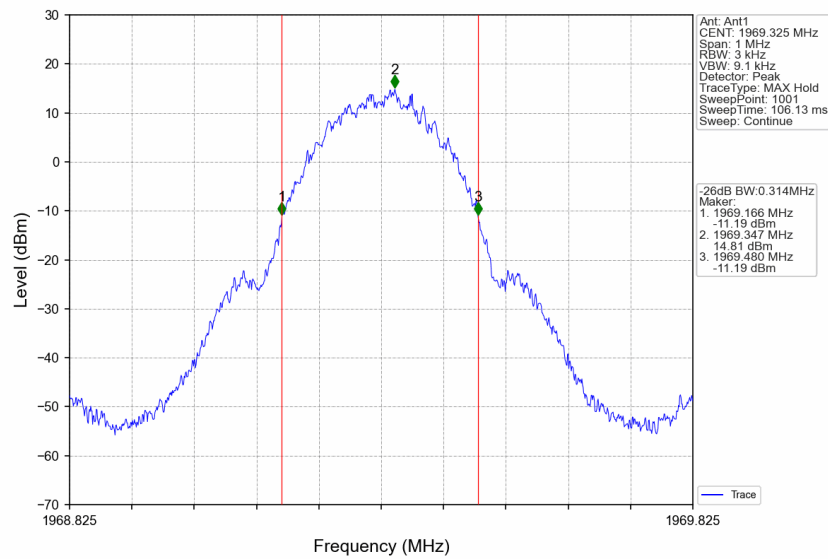
Band25_1969.325MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



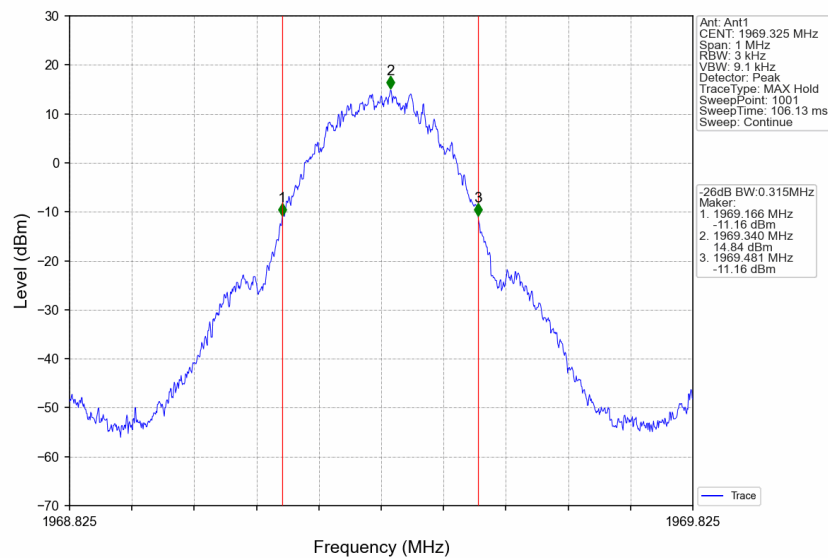
Band25_1969.325MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



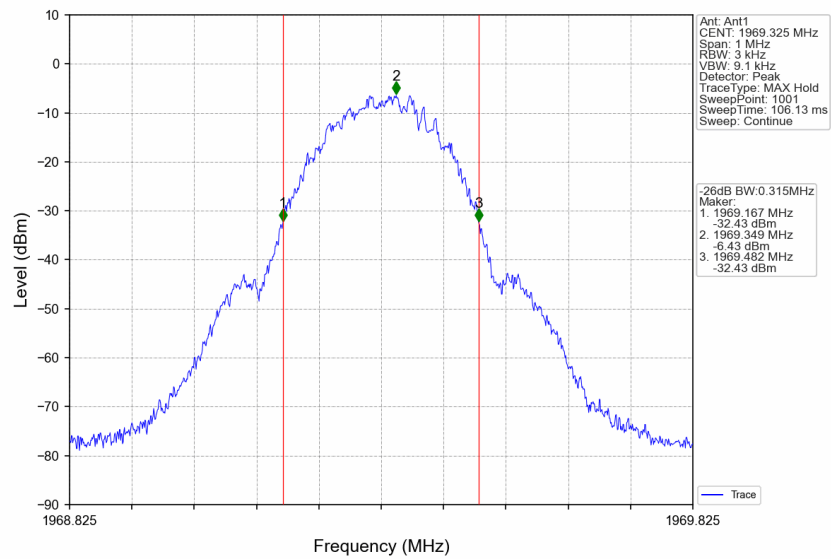
Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Output_AGC



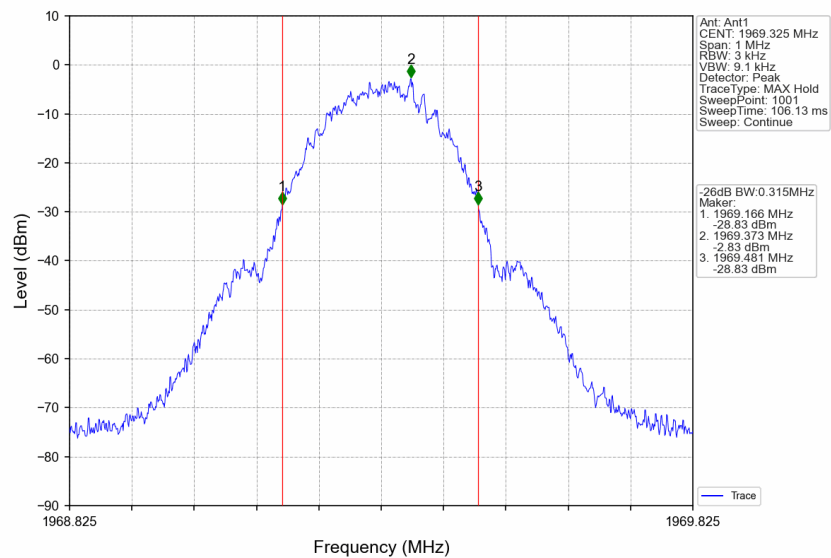
Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Output_AGC+3



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



4. Input/output power and amplifier/booster gain

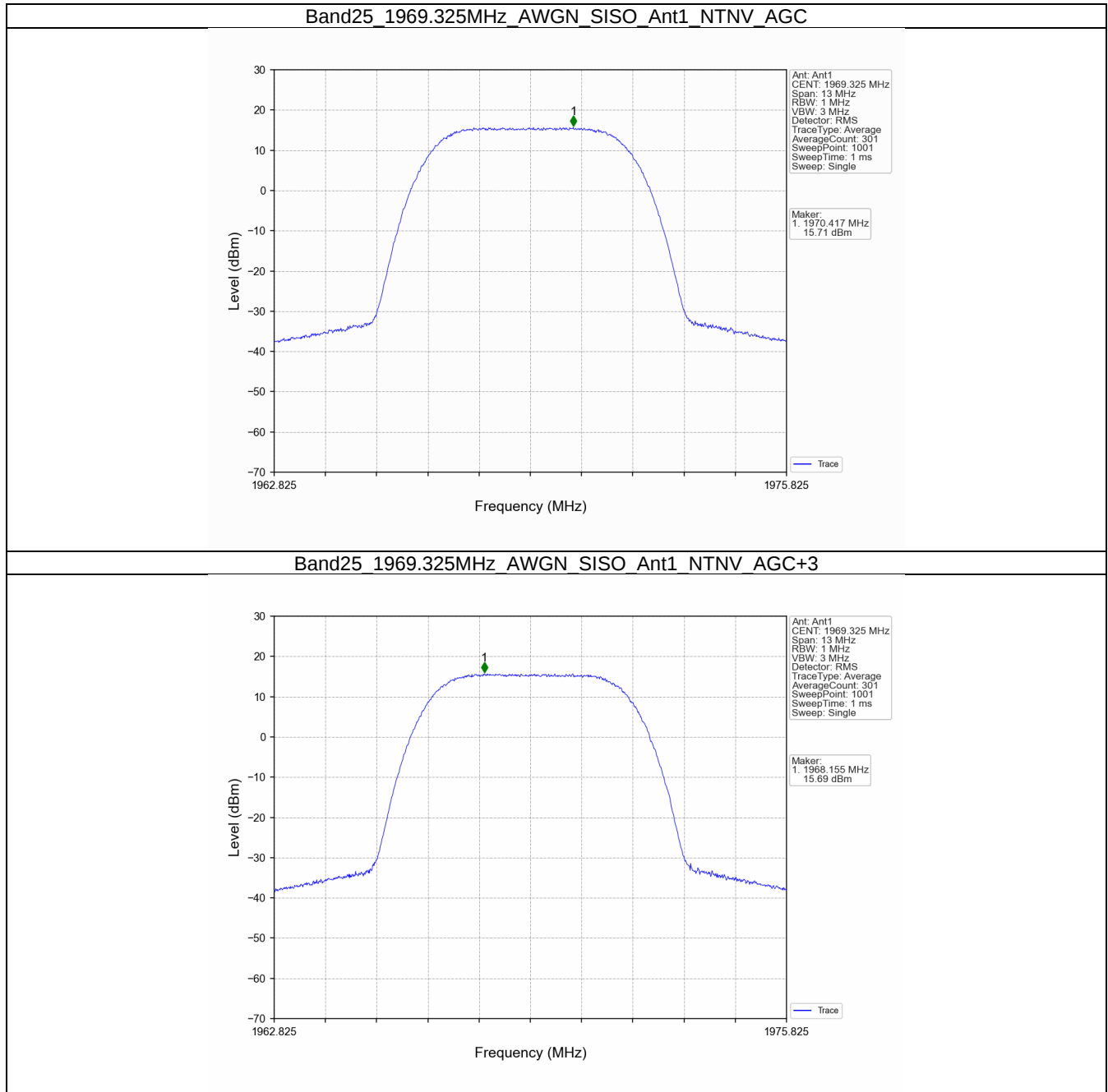
4.1 Band25_EIRP

4.1.1 Test Result

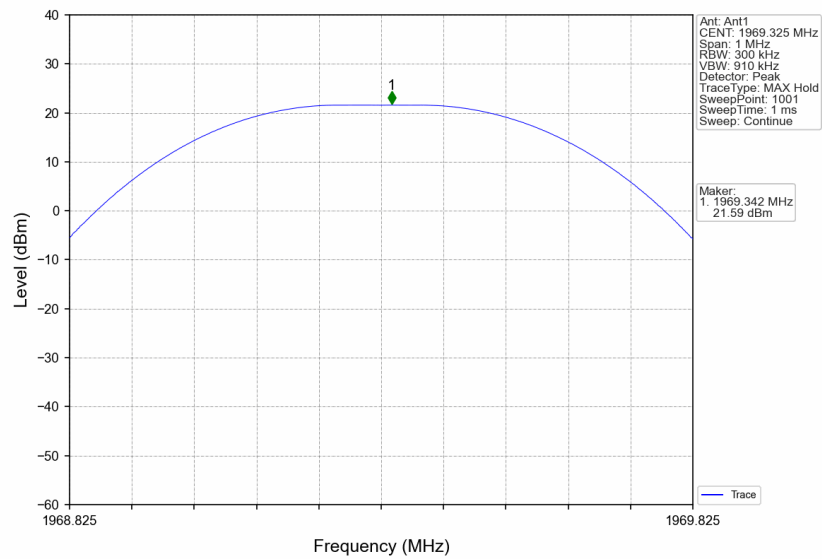
Band: 25 / NTNV											
Signal			TX Type	ANT	Conducted Power (dBm/MHz)		EIRP (dBm/MHz)		Booster Gain (dB)	Nominal gain (dB)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	Result	Limit			
AWGN	-4	1969.325	SISO	1	15.71	-9.94	17.21	<=62.15	25.66	24±2	Pass
	-1	1969.325	SISO	1	15.69	-6.90	17.19	<=62.15	/	/	Pass
GMSK	-4	1969.325	SISO	1	21.59	-3.91	23.09	<=62.15	25.50	24±2	Pass
	-1	1969.325	SISO	1	21.65	-0.95	23.15	<=62.15	/	/	Pass

1930MHz-1995MHz / NTNV							
Operation Band	Frequency (MHz)	Signal Type	Signal Level	Input Power (dBm)	Total Output Power (dBm)	EIRP (dBm)	Gain (dB)
1930MHz-1995MHz	1969.325	AWGN	Pre-AGC	-4	21.75	23.25	/
			3dB Above AGC	-1	21.79	23.29	/
	1969.325	GMSK	Pre-AGC	-4	21.82	23.32	/
			3dB Above AGC	-1	21.86	23.36	/

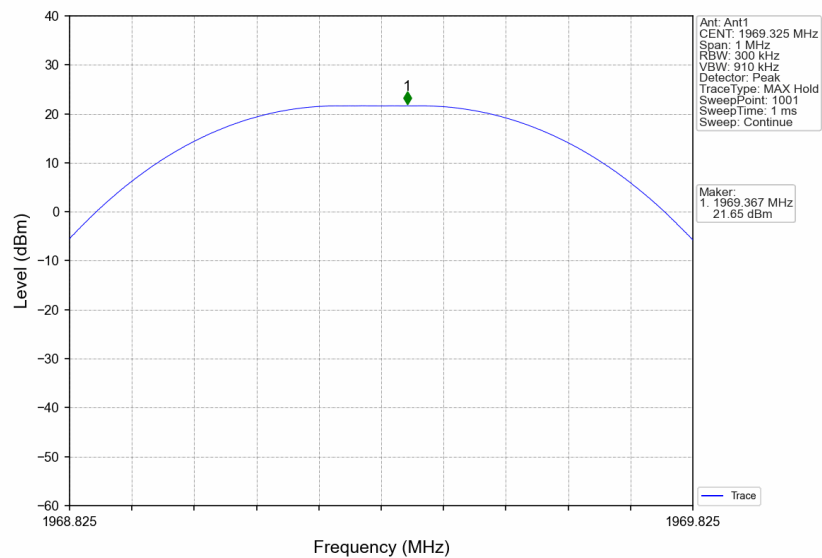
4.1.2 Test Graph



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_AGC



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_AGC+3

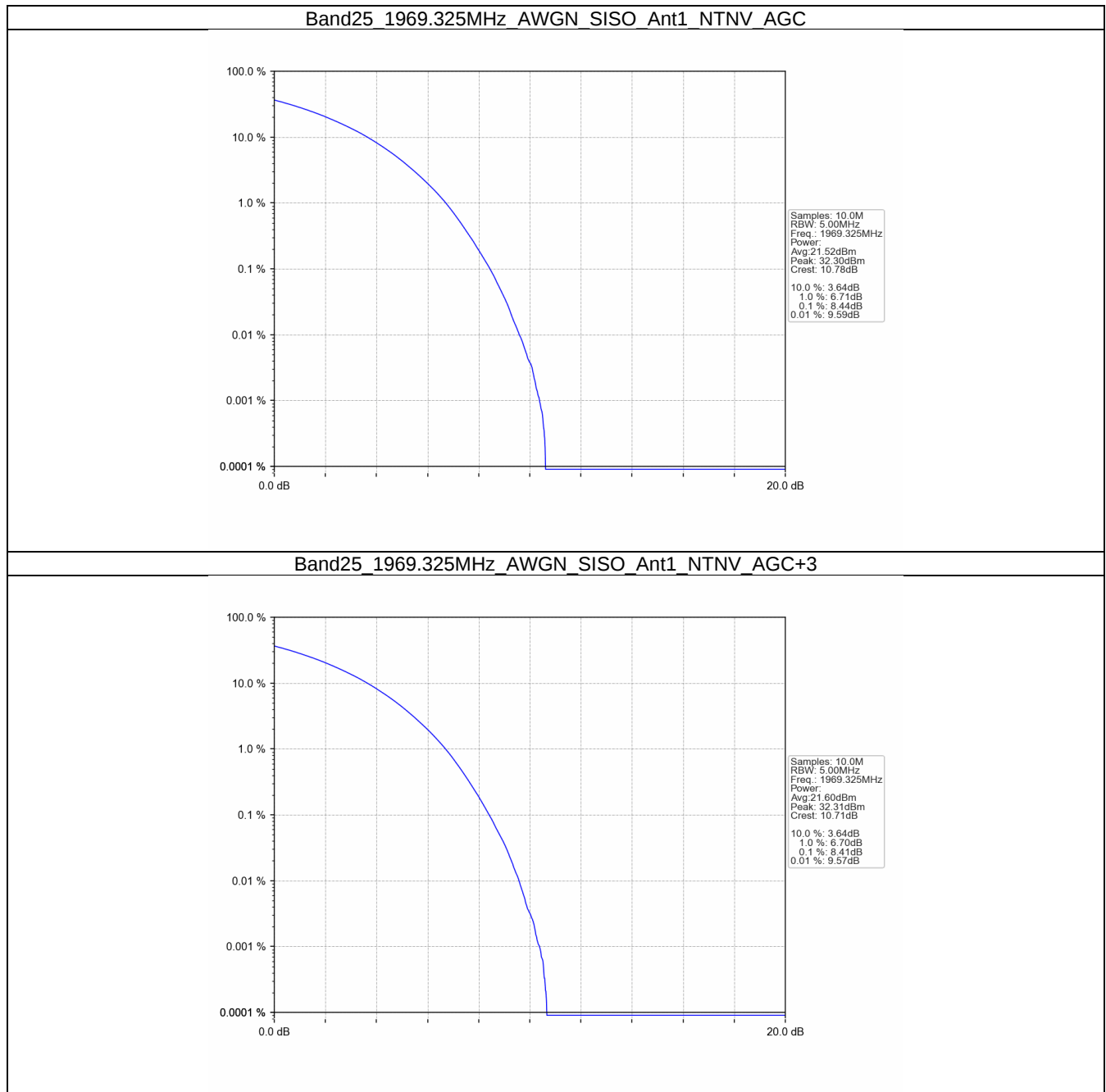


4.2 Band25_PAPR

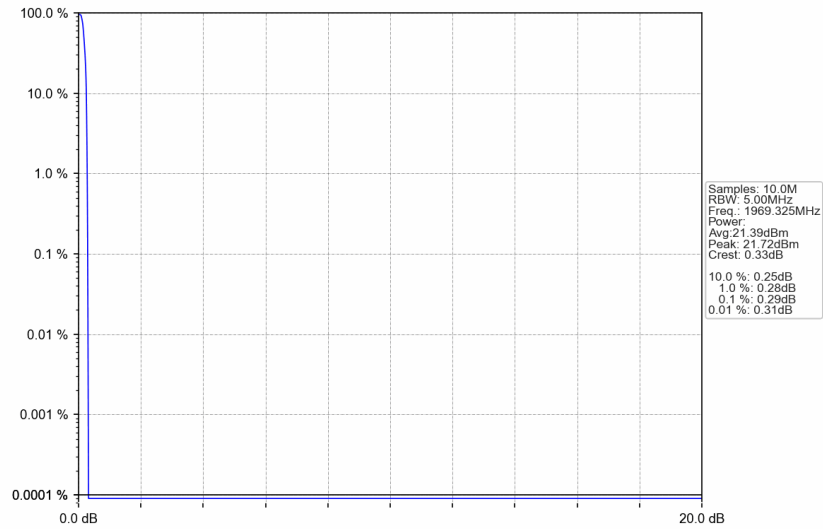
4.2.1 Test Result

Band: 25 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
AWGN	-4	1969.325	SISO	1	8.44	<=13	Pass
	-1	1969.325	SISO	1	8.41	<=13	Pass
GMSK	-4	1969.325	SISO	1	0.29	<=13	Pass
	-1	1969.325	SISO	1	0.31	<=13	Pass

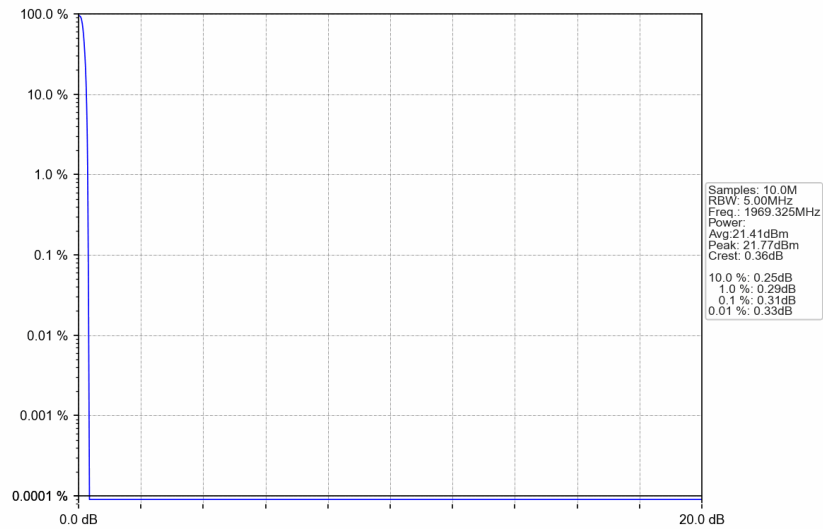
4.2.2 Test Graph



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_AGC



Band25_1969.325MHz_GMSK_SISO_Ant1_NTNV_AGC+3



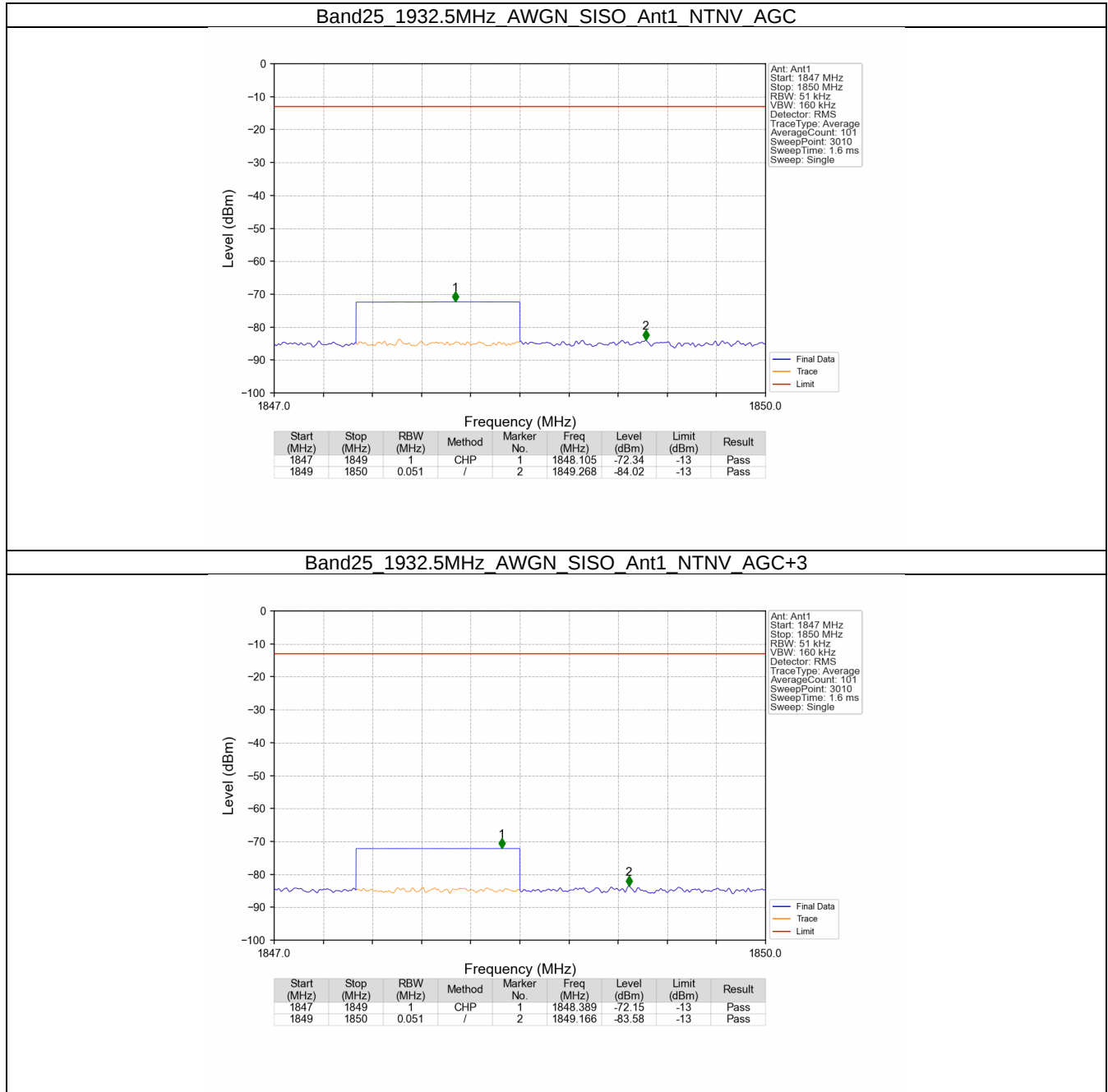
5. Out-of-band/out-of-block (including intermodulation) emissions

5.1 Band25

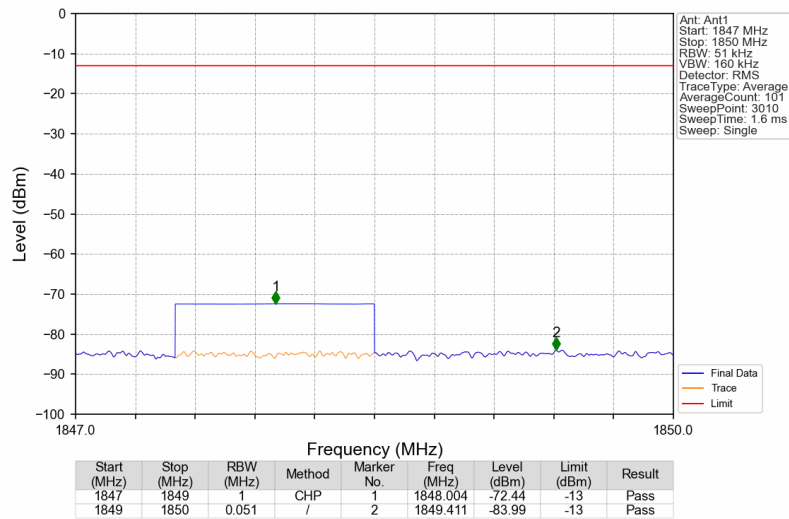
5.1.1 Test Result

Band: 25 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	AWGN	-4	1932.5	LCH	SISO	1	-72.34	Refer To Test Graph	Pass
		-1	1932.5	LCH	SISO	1	-72.15	Refer To Test Graph	Pass
One	AWGN	-4	1932.5	LCH	SISO	1	-72.44	Refer To Test Graph	Pass
		-1	1932.5	LCH	SISO	1	-72.05	Refer To Test Graph	Pass
Two	AWGN	-4	1992.5	HCH	SISO	1	-72.27	Refer To Test Graph	Pass
		-1	1992.5	HCH	SISO	1	-72.11	Refer To Test Graph	Pass
One	AWGN	-4	1992.5	HCH	SISO	1	-72.36	Refer To Test Graph	Pass
		-1	1992.5	HCH	SISO	1	-72.02	Refer To Test Graph	Pass
Two	GMSK	-4	1930.1	LCH	SISO	1	-72.28	Refer To Test Graph	Pass
		-1	1930.1	LCH	SISO	1	-72.07	Refer To Test Graph	Pass
One	GMSK	-4	1930.1	LCH	SISO	1	-72.28	Refer To Test Graph	Pass
		-1	1930.1	LCH	SISO	1	-72.07	Refer To Test Graph	Pass
Two	GMSK	-4	1994.9	HCH	SISO	1	-72.23	Refer To Test Graph	Pass
		-1	1994.9	HCH	SISO	1	-72.02	Refer To Test Graph	Pass
One	GMSK	-4	1994.9	HCH	SISO	1	-72.22	Refer To Test Graph	Pass
		-1	1994.9	HCH	SISO	1	-72.00	Refer To Test Graph	Pass

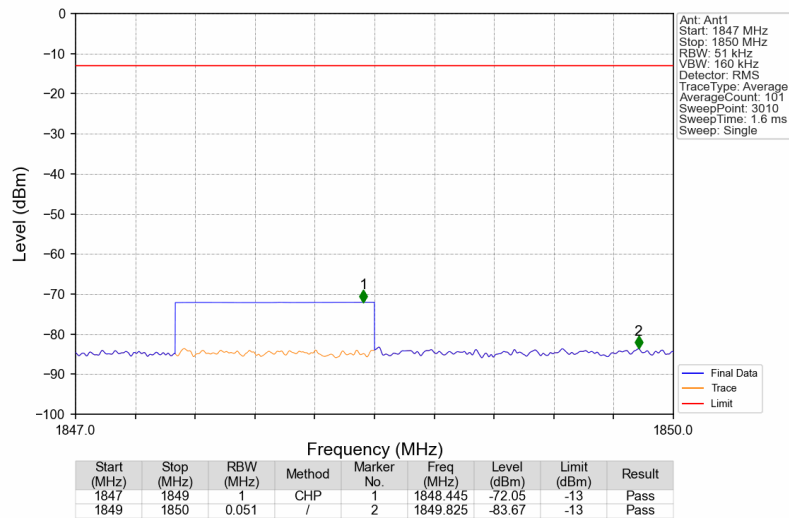
5.1.2 Test Graph



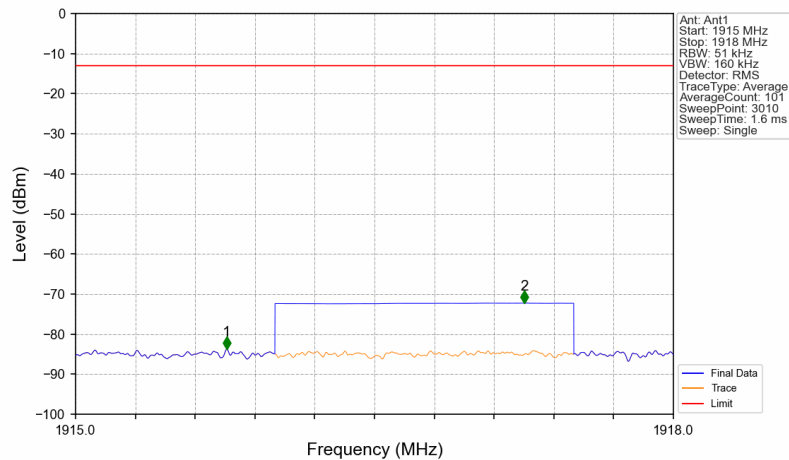
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC



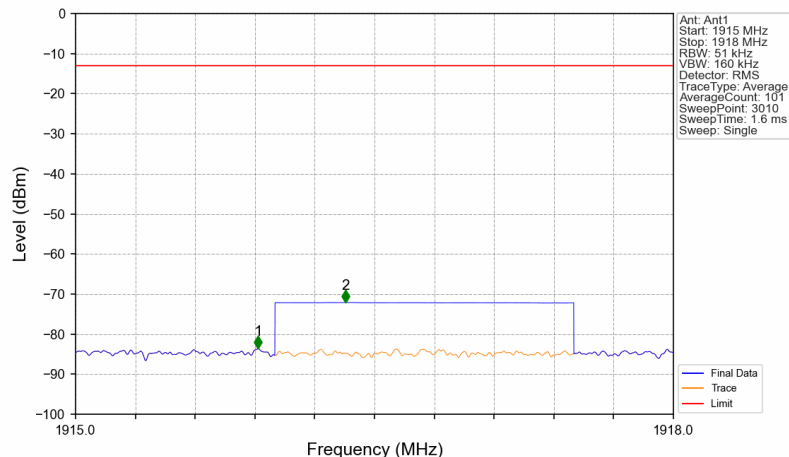
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



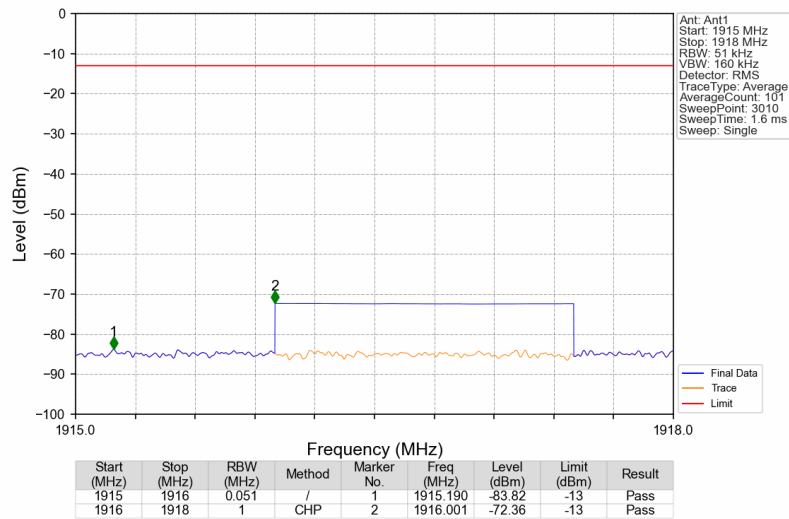
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC



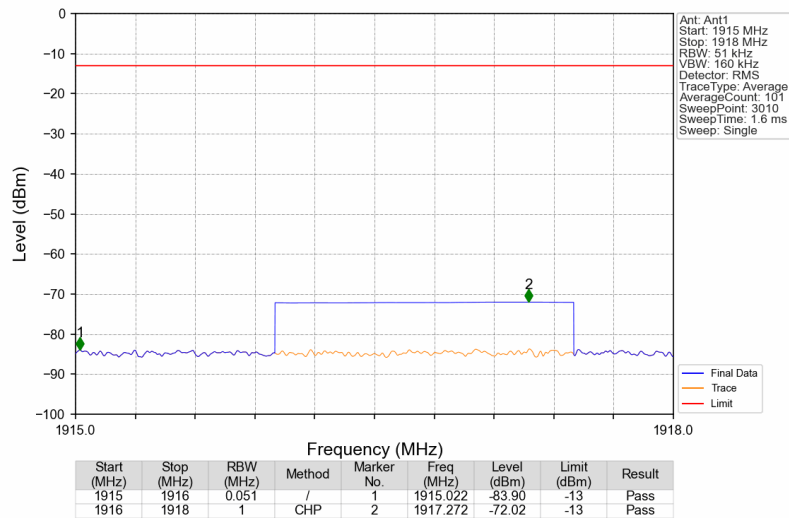
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



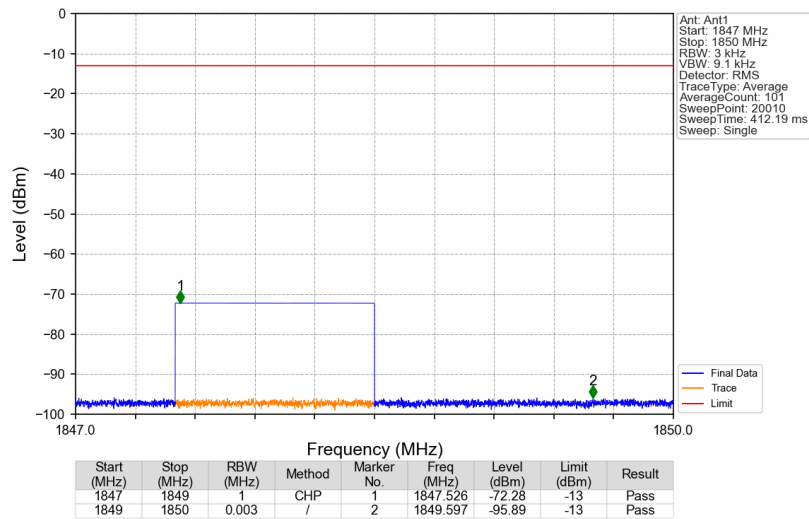
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC



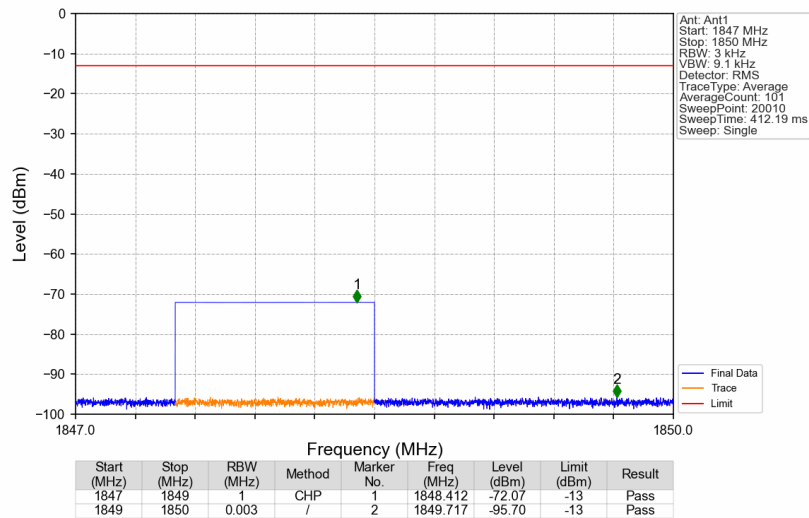
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



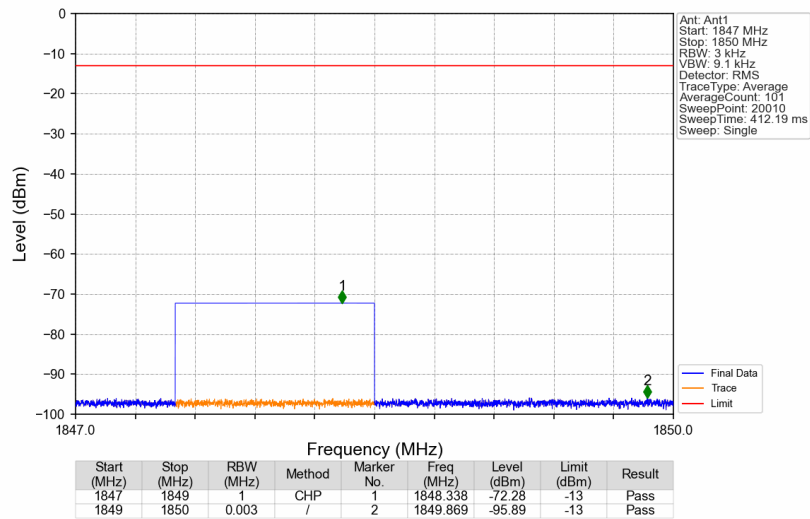
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV_AGC



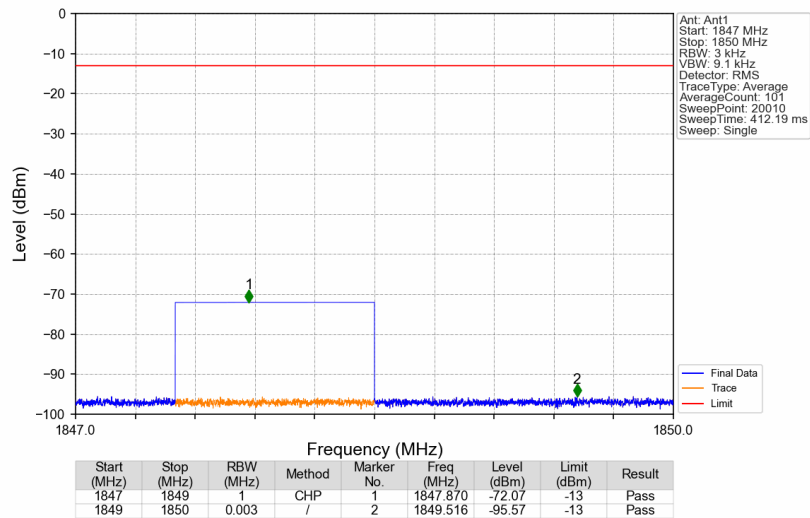
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV_AGC+3



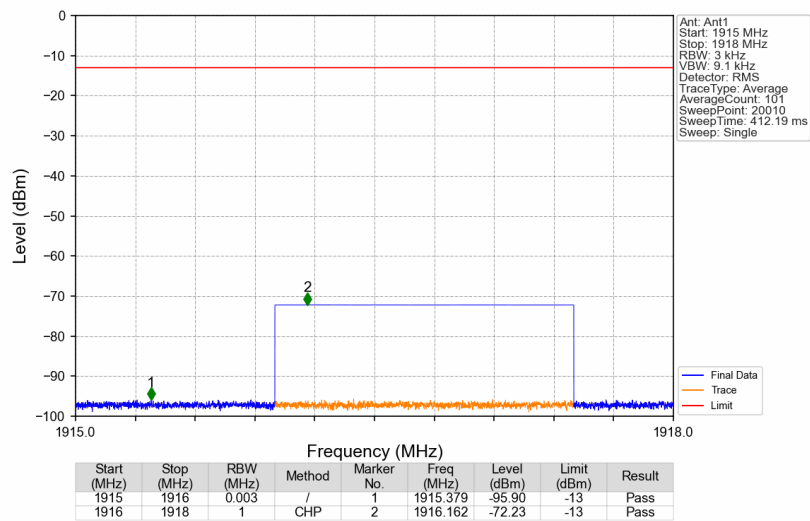
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV_AGC



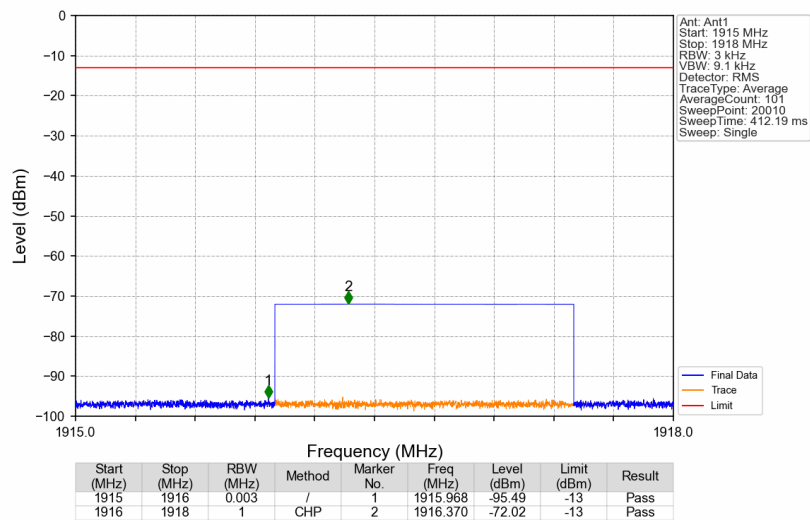
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV_AGC+3



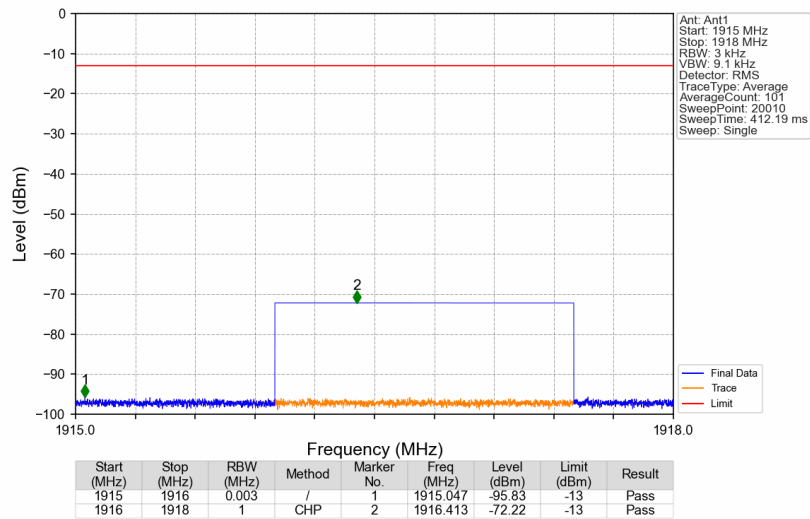
Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV_AGC



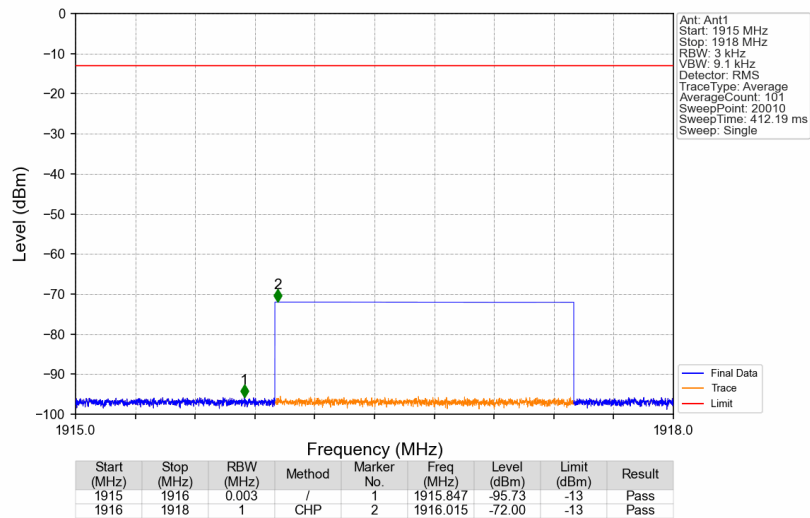
Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV_AGC+3



Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV_AGC



Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV_AGC+3



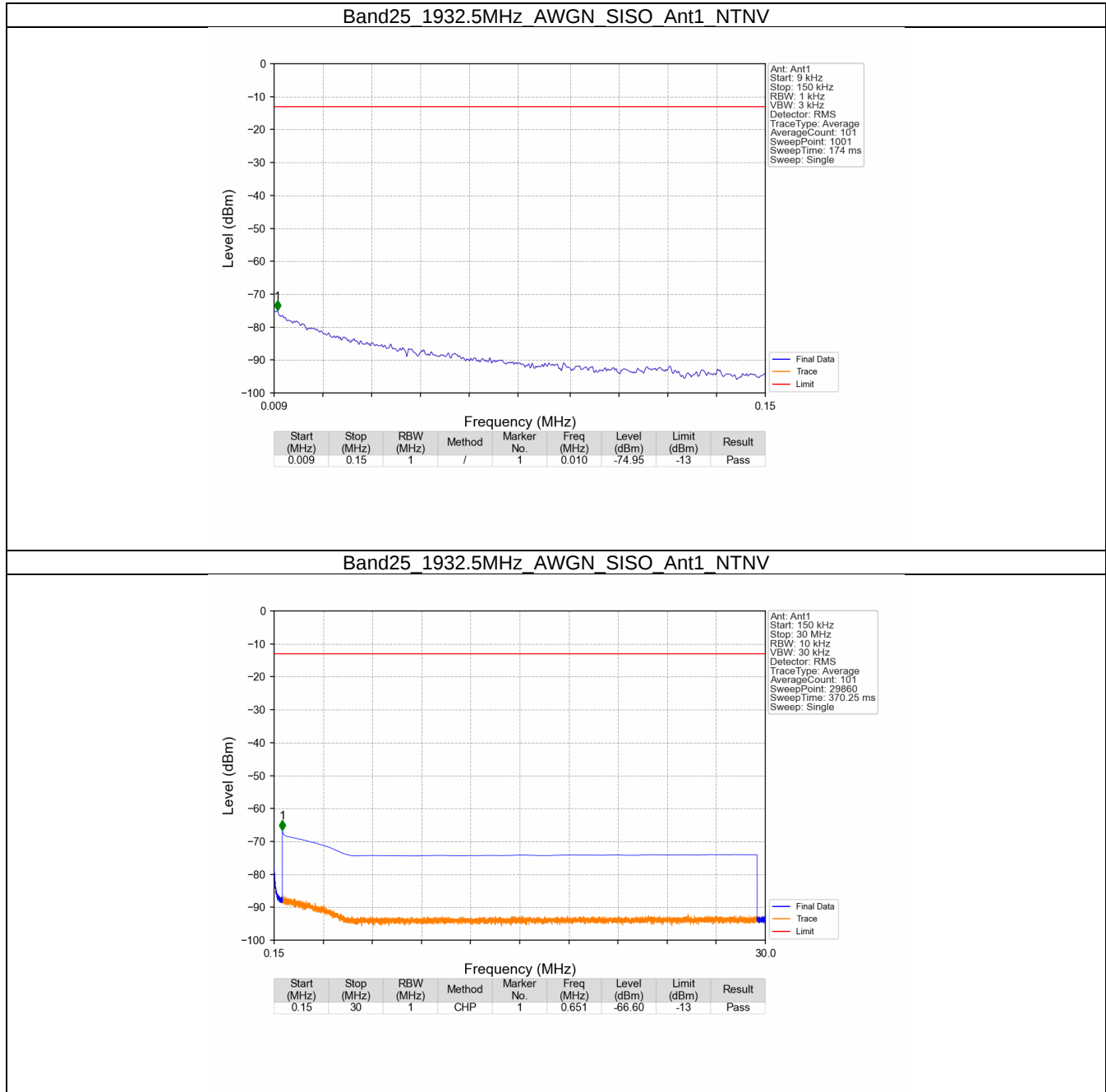
6. Spurious emissions

6.1 Band25

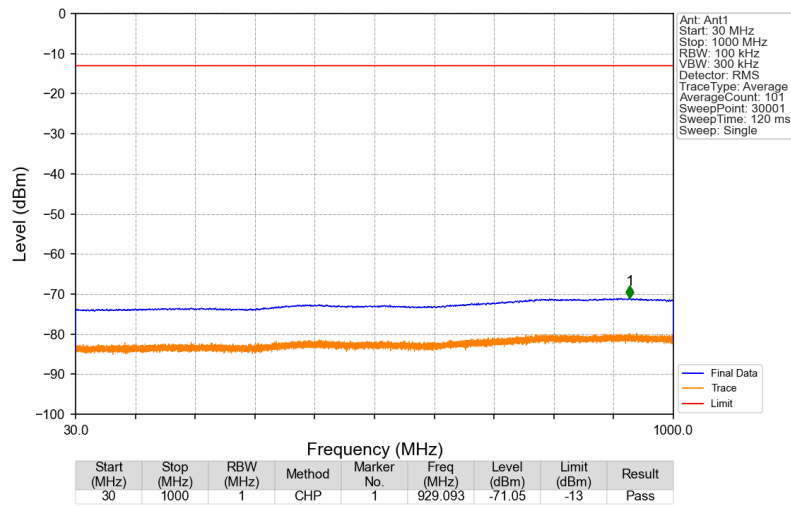
6.1.1 Test Result

Band: 25 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
AWGN	-4	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
GMSK	-4	1930.1	LCH	SISO	1	Refer To Test Graph		Pass
		1962.5	MCH	SISO	1	Refer To Test Graph		Pass
		1994.9	HCH	SISO	1	Refer To Test Graph		Pass

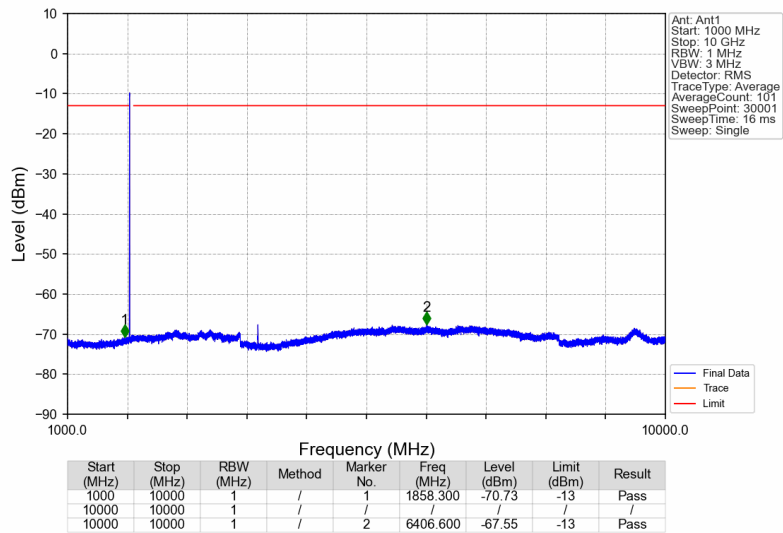
6.1.2 Test Graph



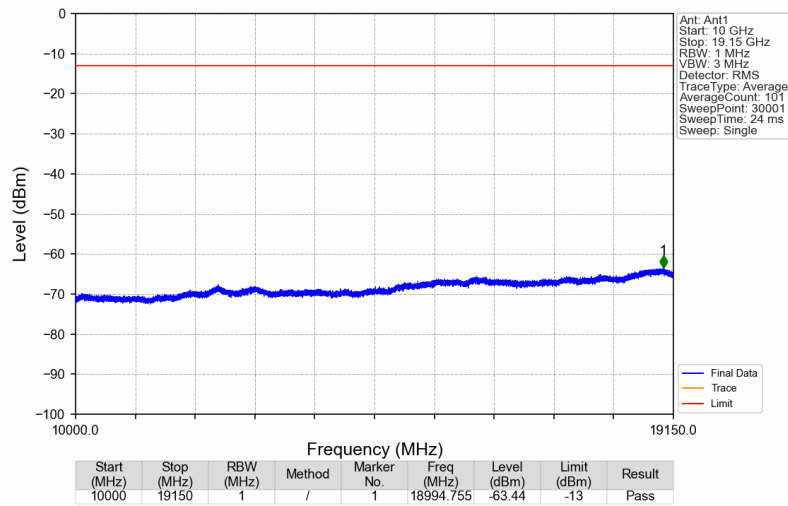
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV



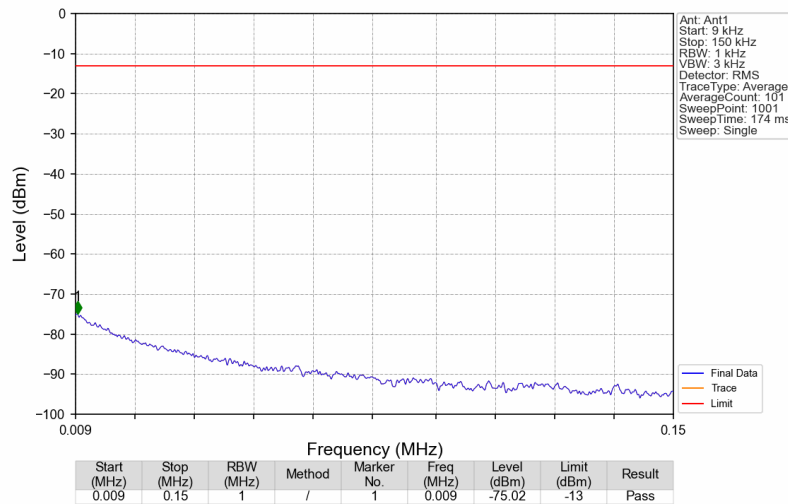
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV



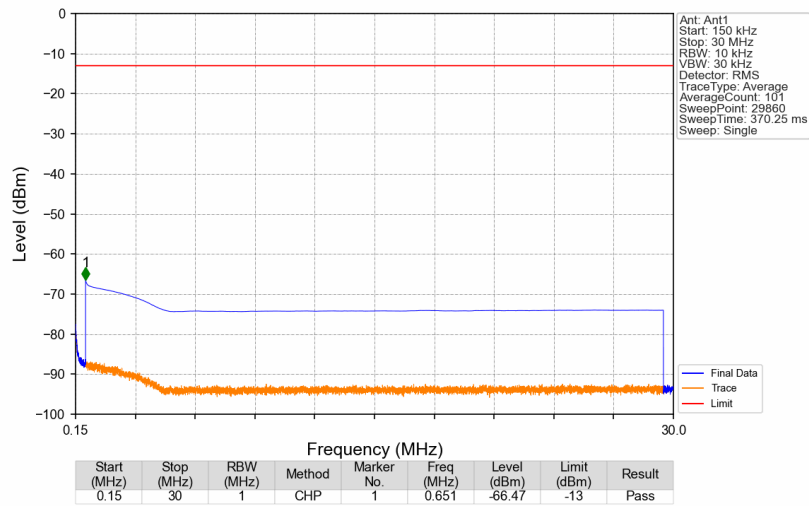
Band25_1932.5MHz_AWGN_SISO_Ant1_NTNV



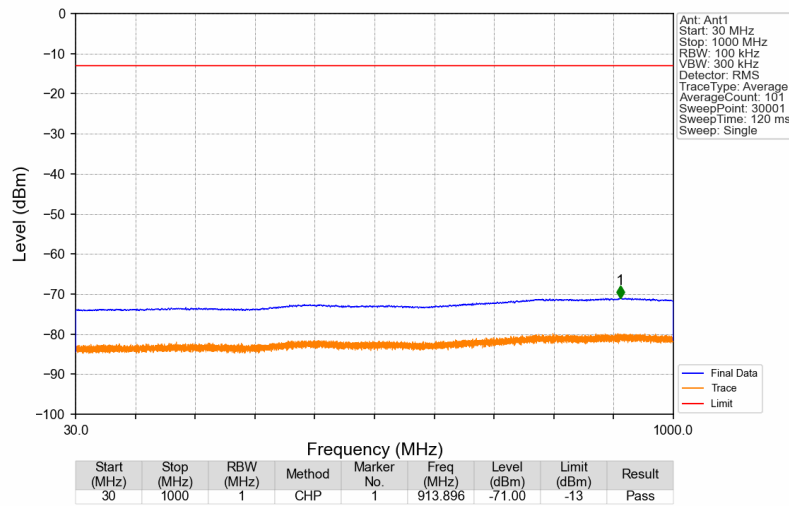
Band25_1962.5MHz_AWGN_SISO_Ant1_NTNV



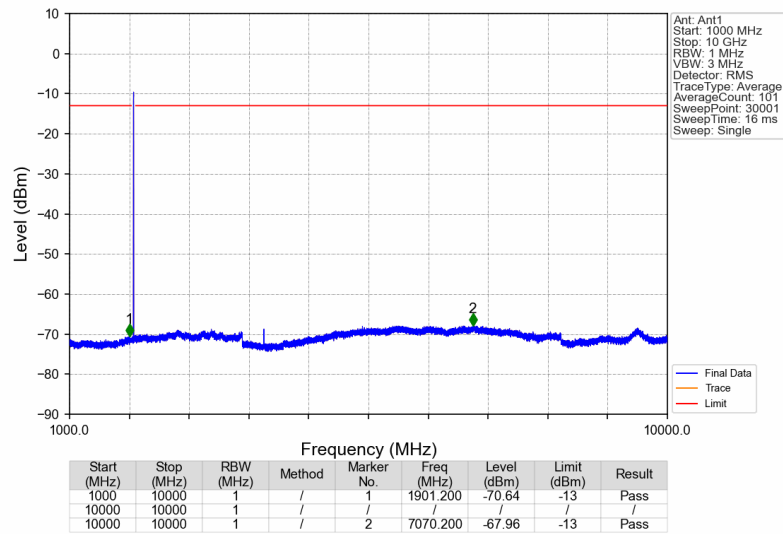
Band25_1962.5MHz_AWGN_SISO_Ant1_NTNV



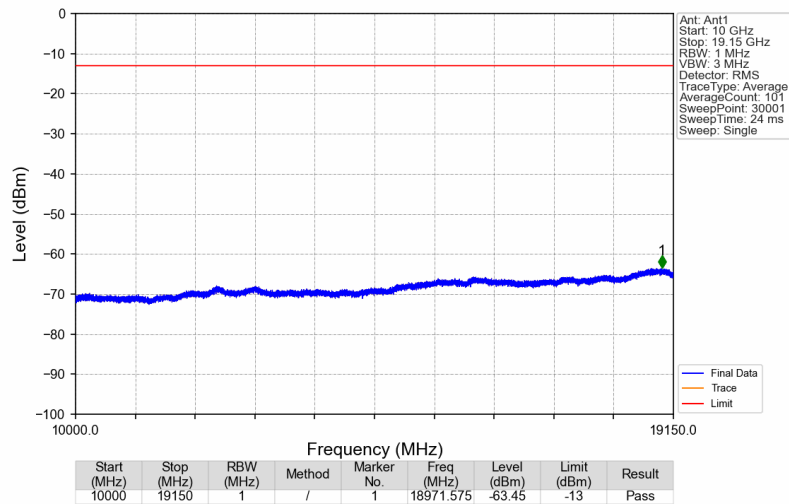
Band25_1962.5MHz_AWGN_SISO_Ant1_NTNV



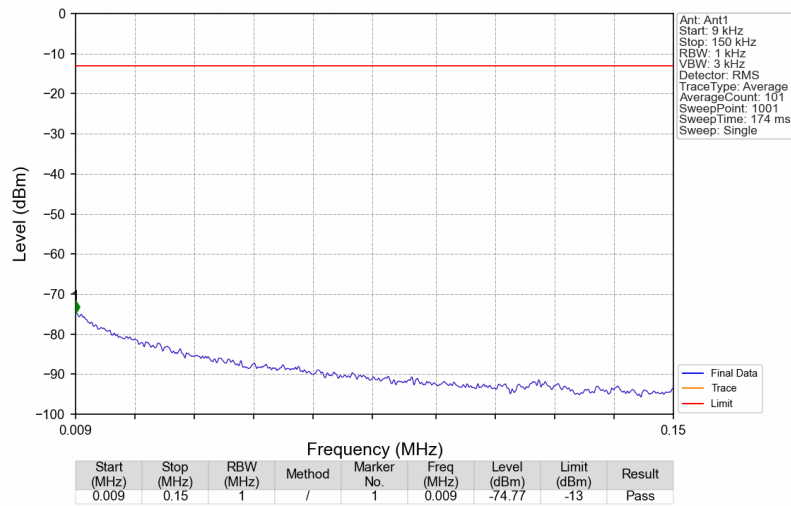
Band25_1962.5MHz_AWGN_SISO_Ant1_NTNV



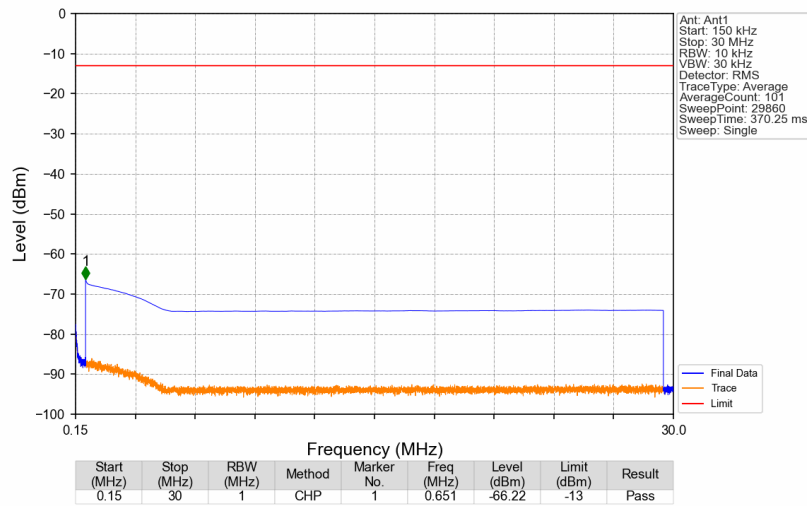
Band25_1962.5MHz_AWGN_SISO_Ant1_NTNV



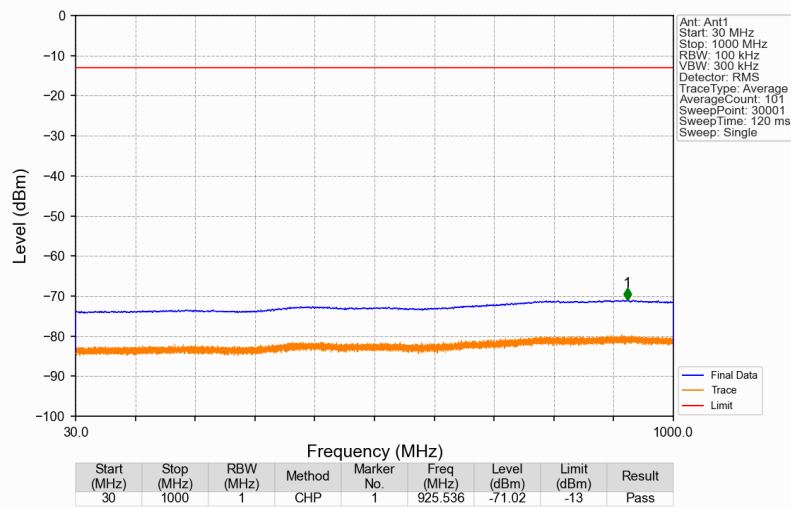
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



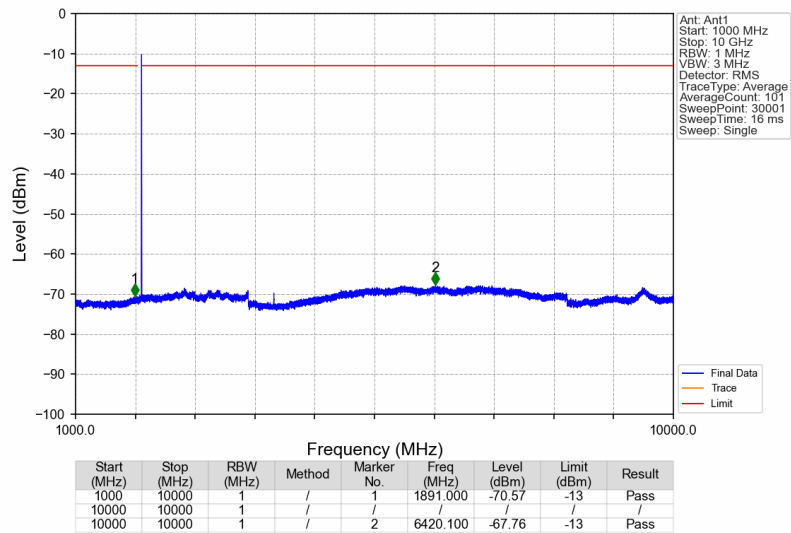
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



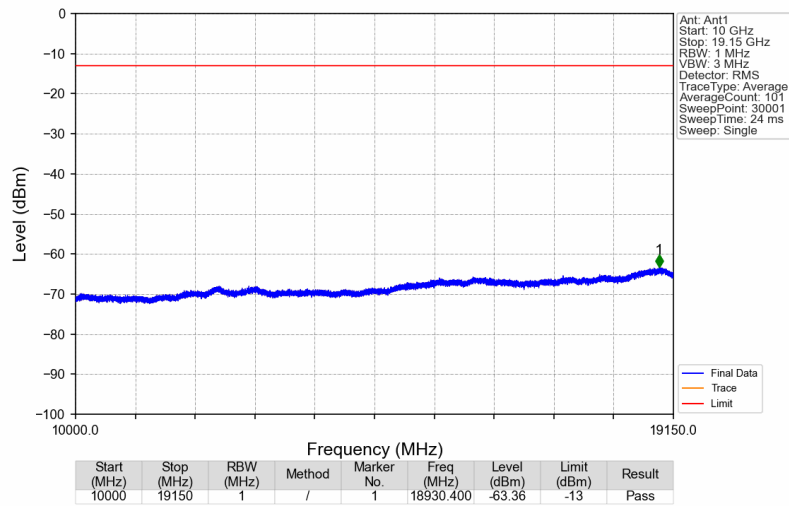
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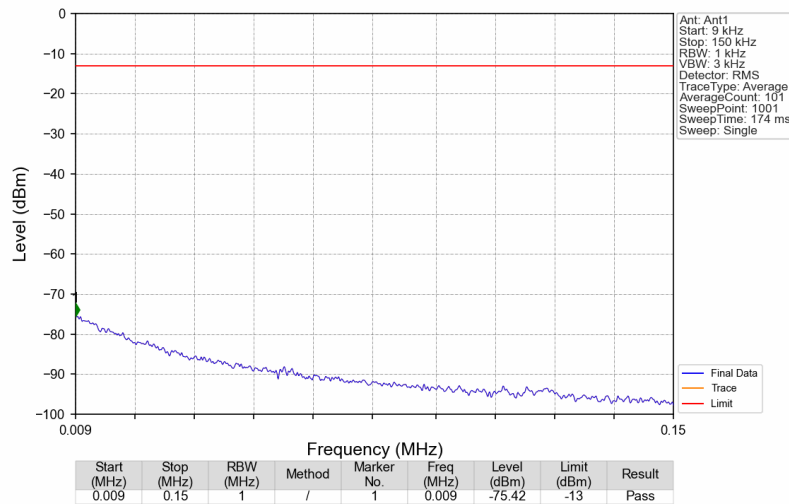
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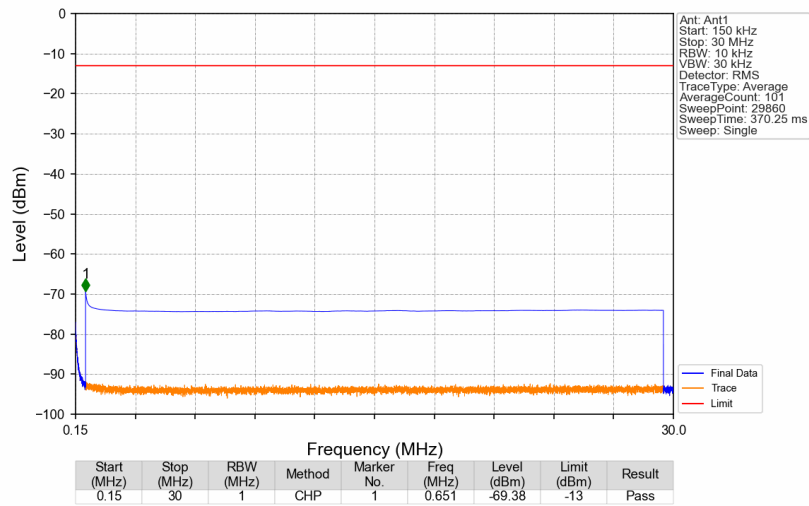
Band25_1992.5MHz_AWGN_SISO_Ant1_NTNV



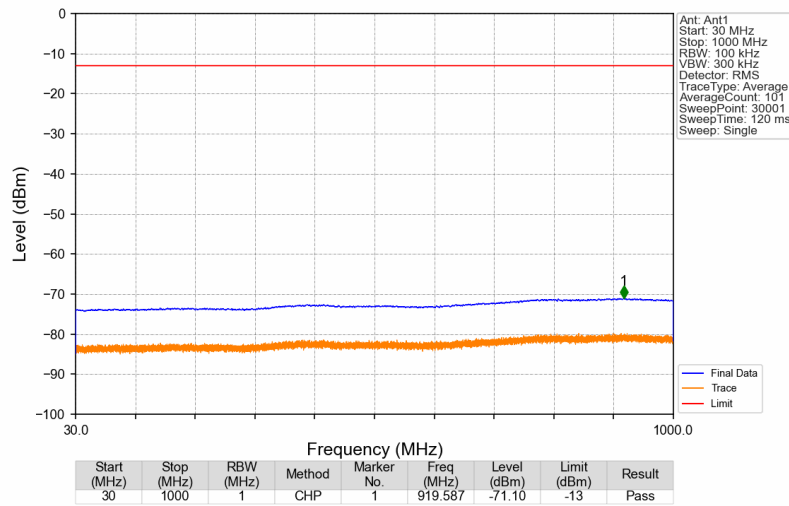
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV



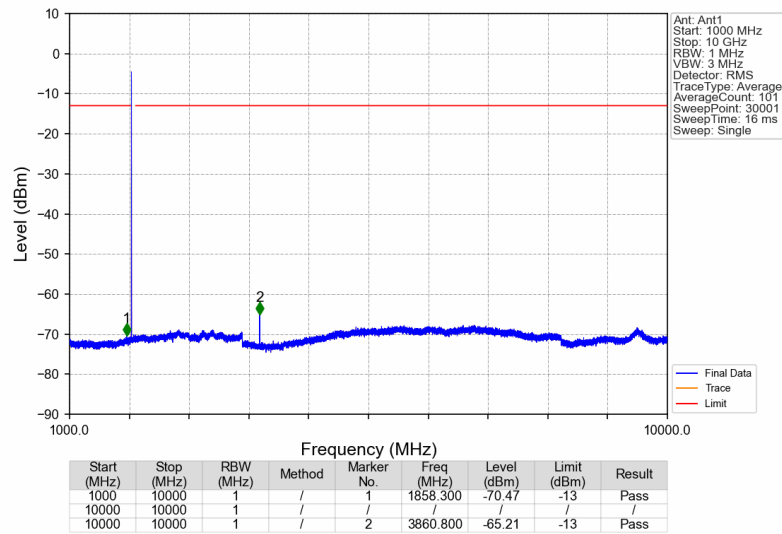
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV



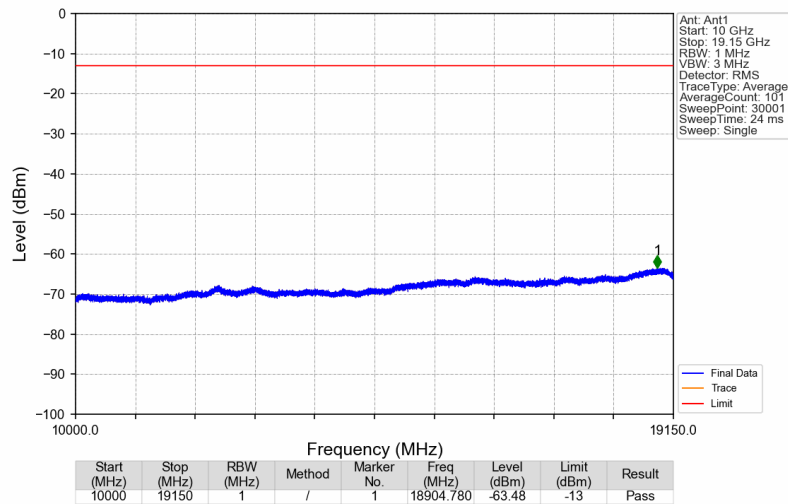
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV



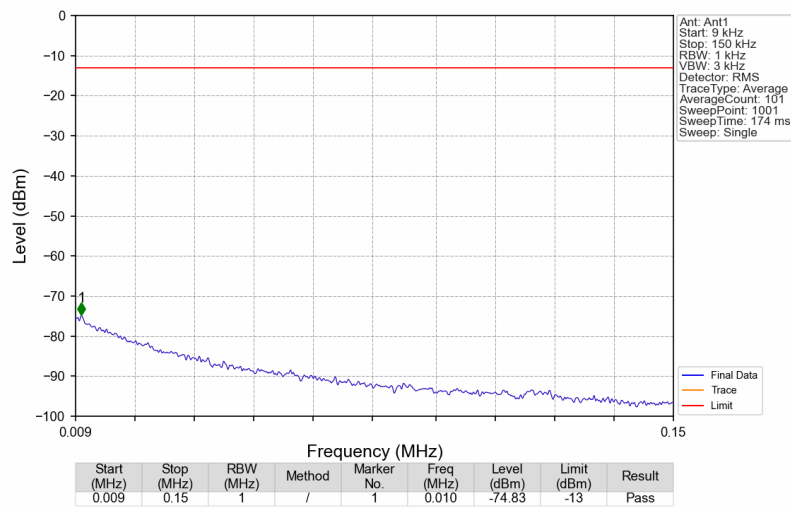
Band25_1930.1MHz_GMSK_SISO_Ant1_NTNV



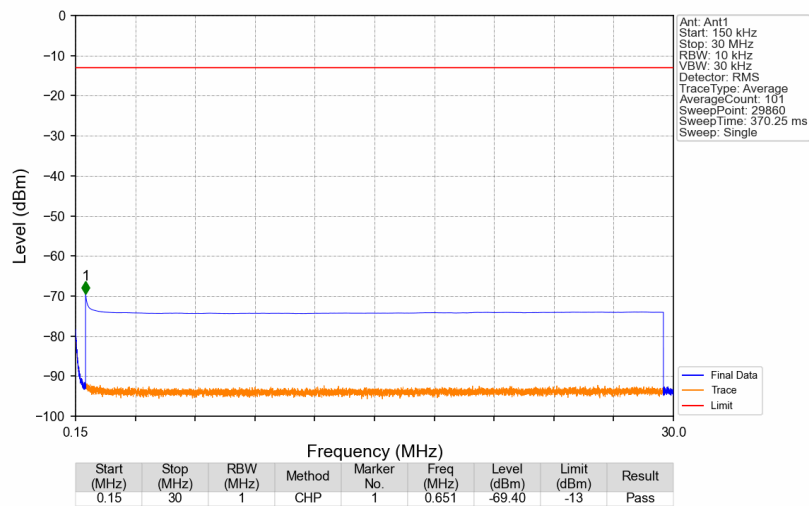
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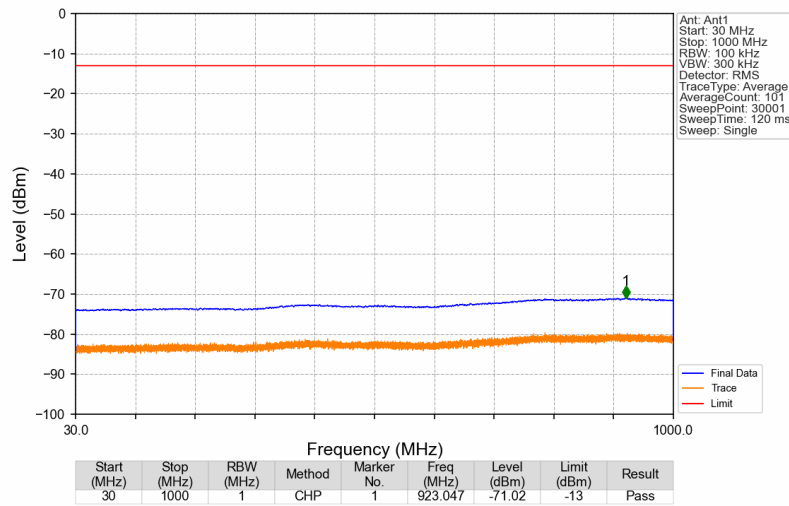
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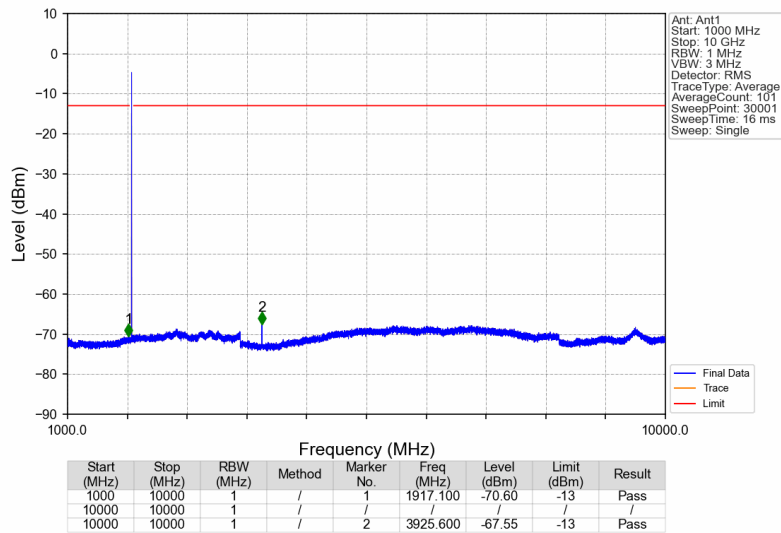
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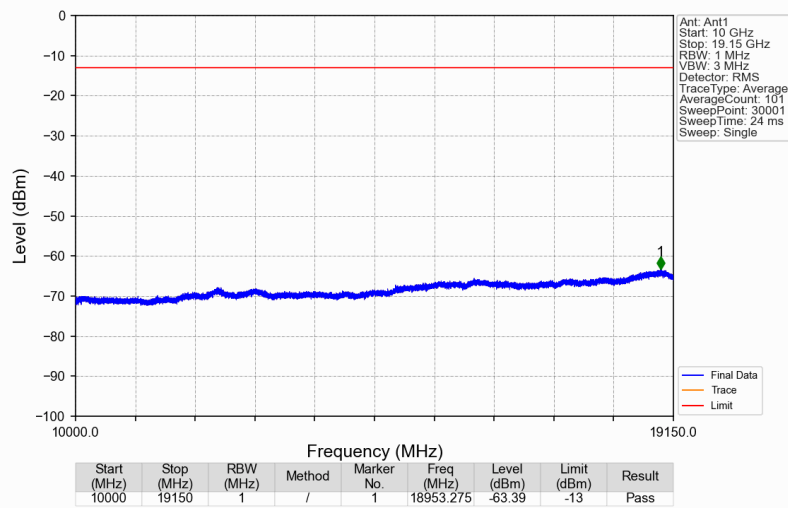
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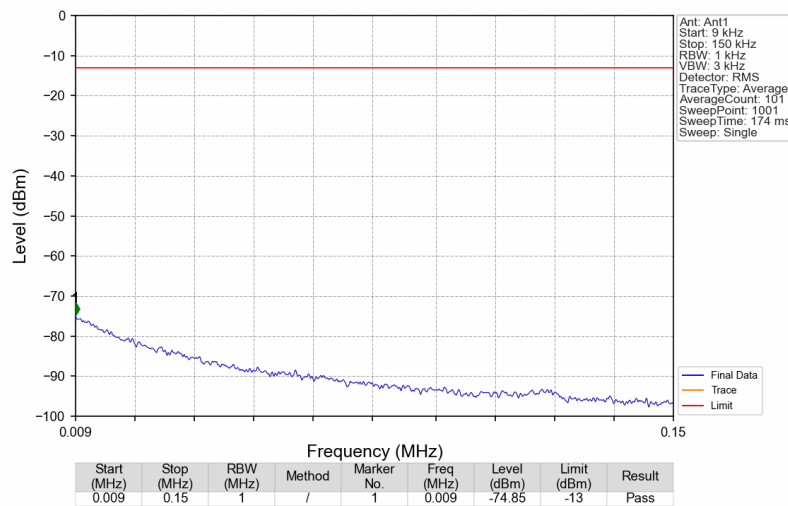
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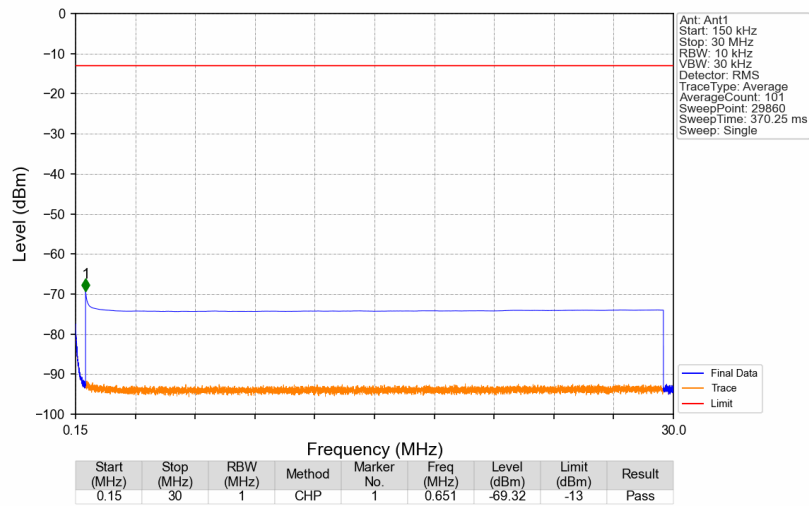
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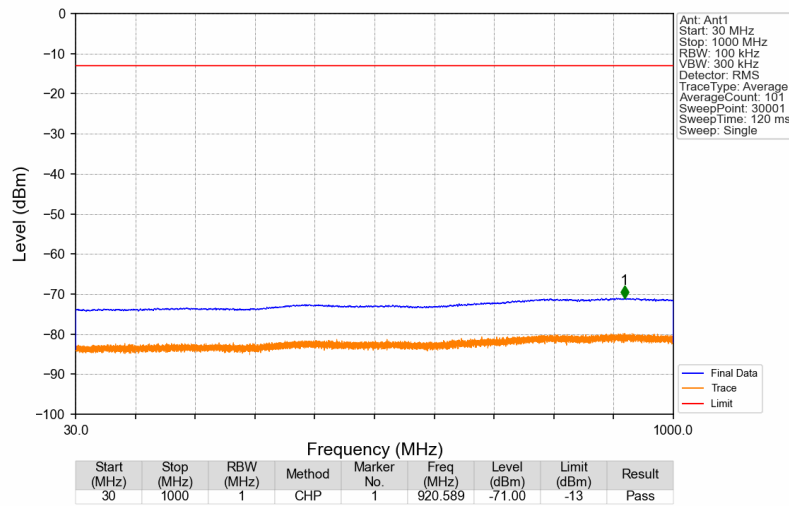
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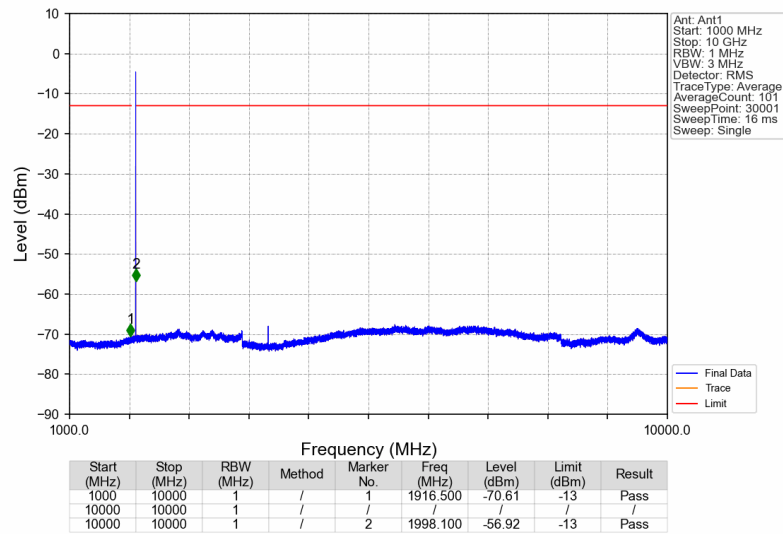
Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV



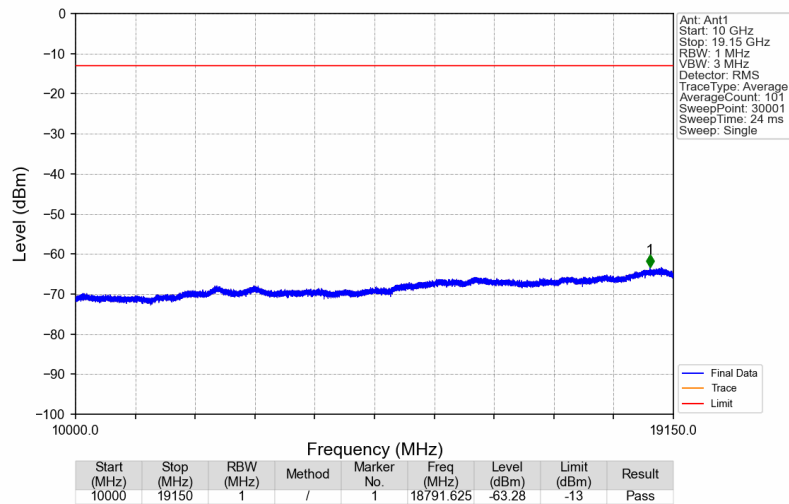
Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV



Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV



Band25_1994.9MHz_GMSK_SISO_Ant1_NTNV



7. Frequency stability measurements

7.1 Band25_Ant1

7.1.1 Test Result

Band: 25 / NTNV							
Signal			Temp (°C)	Voltage (VAC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-4	1930.1	20	102	-163	-0.084	Pass
				120	-163	-0.084	Pass
				138	-162	-0.084	Pass
			-30	120	-166	-0.086	Pass
			-20	120	-163	-0.084	Pass
			-10	120	-167	-0.087	Pass
			0	120	-168	-0.087	Pass
			10	120	-165	-0.085	Pass
			30	120	-158	-0.082	Pass
			40	120	-162	-0.084	Pass
			50	120	-167	-0.087	Pass
		1962.5	20	102	-164	-0.085	Pass
				120	-162	-0.083	Pass
				138	-159	-0.081	Pass
			-30	120	-168	-0.086	Pass
			-20	120	-166	-0.085	Pass
			-10	120	-166	-0.085	Pass
			0	120	-162	-0.083	Pass
			10	120	-168	-0.086	Pass
			30	120	-165	-0.084	Pass
			40	120	-164	-0.084	Pass
			50	120	-169	-0.086	Pass
		1994.9	20	102	-163	-0.081	Pass
				120	-167	-0.085	Pass
				138	-166	-0.083	Pass
			-30	120	-162	-0.081	Pass
			-20	120	-161	-0.081	Pass
			-10	120	-163	-0.082	Pass
			0	120	-157	-0.079	Pass
			10	120	-167	-0.084	Pass
			30	120	-173	-0.087	Pass
			40	120	-169	-0.085	Pass



			50	120	-167	-0.084	Pass
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8. Radiated Spurious Emissions

8.1 Band25_Ant1

8.1.1 Test Result

AWGN_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
92.504	Horizontal	-63.04	-13	-50.04	pass
169.968	Horizontal	-64.83	-13	-51.83	pass
496.342	Horizontal	-56.24	-13	-43.24	pass
2099.02	Horizontal	-47.44	-13	-34.44	pass
6130.53	Horizontal	-48.02	-13	-35.02	pass
9766.15	Horizontal	-39.68	-13	-26.68	pass
46.660	Vertical	-64.21	-13	-51.21	pass
179.275	Vertical	-64.09	-13	-51.09	pass
568.389	Vertical	-61.97	-13	-48.97	pass
2106.10	Vertical	-52.76	-13	-39.76	pass
6114.12	Vertical	-53.98	-13	-40.98	pass
9751.12	Vertical	-40.88	-13	-27.88	pass

AWGN_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
54.200	Horizontal	-64.21	-13	-51.21	pass
144.165	Horizontal	-62.16	-13	-49.16	pass
559.959	Horizontal	-60.77	-13	-47.77	pass
2012.17	Horizontal	-52.27	-13	-39.27	pass
6092.46	Horizontal	-53.07	-13	-40.07	pass
10010.46	Horizontal	-38.89	-13	-25.89	pass
84.590	Vertical	-64.79	-13	-51.79	pass
156.255	Vertical	-63.16	-13	-50.16	pass
706.639	Vertical	-62.59	-13	-49.59	pass
2034.99	Vertical	-48.04	-13	-35.04	pass
6091.50	Vertical	-51.28	-13	-38.28	pass
9995.00	Vertical	-40.43	-13	-27.43	pass

AWGN_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
74.475	Horizontal	-69.58	-13	-56.58	pass
267.059	Horizontal	-58.87	-13	-45.87	pass
688.576	Horizontal	-62.48	-13	-49.48	pass
1934.51	Horizontal	-54.64	-13	-41.64	pass
5970.00	Horizontal	-52.73	-13	-39.73	pass
9093.53	Horizontal	-40.25	-13	-27.25	pass
99.324	Vertical	-63.09	-13	-50.09	pass
201.208	Vertical	-61.43	-13	-48.43	pass
563.762	Vertical	-58.85	-13	-45.85	pass
1921.57	Vertical	-48.56	-13	-35.56	pass
5975.22	Vertical	-50.91	-13	-37.91	pass
9095.49	Vertical	-41.84	-13	-28.84	pass

GMSK_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
77.020	Horizontal	-66.59	-13	-53.59	pass
179.075	Horizontal	-63.91	-13	-50.91	pass
643.639	Horizontal	-59.85	-13	-46.85	pass
1914.83	Horizontal	-47.11	-13	-34.11	pass
5965.87	Horizontal	-52.38	-13	-39.38	pass
9089.32	Horizontal	-40.60	-13	-27.60	pass
84.910	Vertical	-69.84	-13	-56.84	pass
171.715	Vertical	-57.92	-13	-44.92	pass
733.699	Vertical	-58.04	-13	-45.04	pass
1922.17	Vertical	-48.74	-13	-35.74	pass
5969.58	Vertical	-50.90	-13	-37.90	pass
9104.59	Vertical	-40.94	-13	-27.94	pass

GMSK_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
103.014	Horizontal	-63.74	-13	-50.74	pass
184.408	Horizontal	-62.33	-13	-49.33	pass
677.732	Horizontal	-56.21	-13	-43.21	pass
1779.18	Horizontal	-51.62	-13	-38.62	pass
5576.52	Horizontal	-49.44	-13	-36.44	pass
9225.48	Horizontal	-39.91	-13	-26.91	pass
88.940	Vertical	-65.42	-13	-52.42	pass
142.625	Vertical	-57.98	-13	-44.98	pass
724.579	Vertical	-59.37	-13	-46.37	pass
1780.52	Vertical	-51.50	-13	-38.50	pass
5555.45	Vertical	-49.82	-13	-36.82	pass
9236.41	Vertical	-36.87	-13	-23.87	pass

GMSK_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
93.860	Horizontal	-69.94	-13	-56.94	pass
148.965	Horizontal	-56.96	-13	-43.96	pass
665.249	Horizontal	-63.18	-13	-50.18	pass
1789.81	Horizontal	-49.22	-13	-36.22	pass
5553.87	Horizontal	-48.34	-13	-35.34	pass
9235.86	Horizontal	-39.84	-13	-26.84	pass
72.070	Vertical	-69.92	-13	-56.92	pass
161.445	Vertical	-63.14	-13	-50.14	pass
523.309	Vertical	-59.17	-13	-46.17	pass
1794.51	Vertical	-50.36	-13	-37.36	pass
5559.00	Vertical	-49.85	-13	-36.85	pass
9257.46	Vertical	-38.42	-13	-25.42	pass