

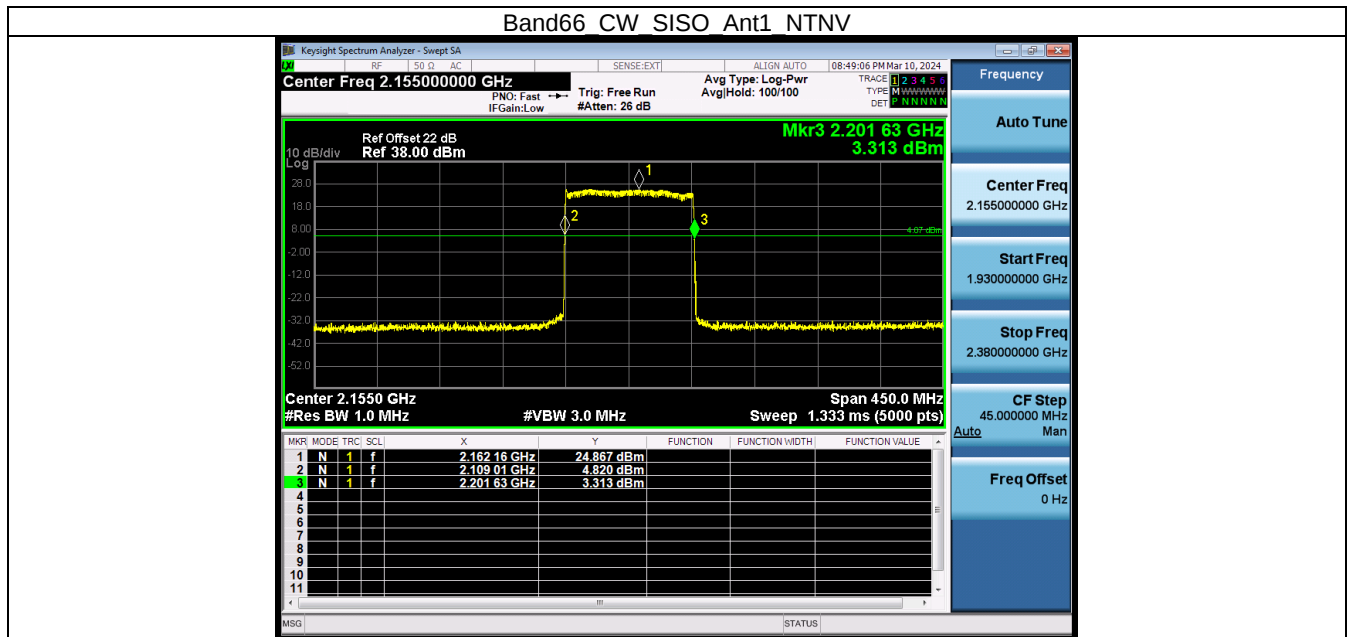
1. Out of band rejection

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	1970 - 2320	SISO	1	2162.160	2109.010	2201.630	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
GMSK 0.2MHz	2162.15	SISO	1	-3.50	Pass
AWGN 5MHz	2162.15	SISO	1	-3.50	Pass

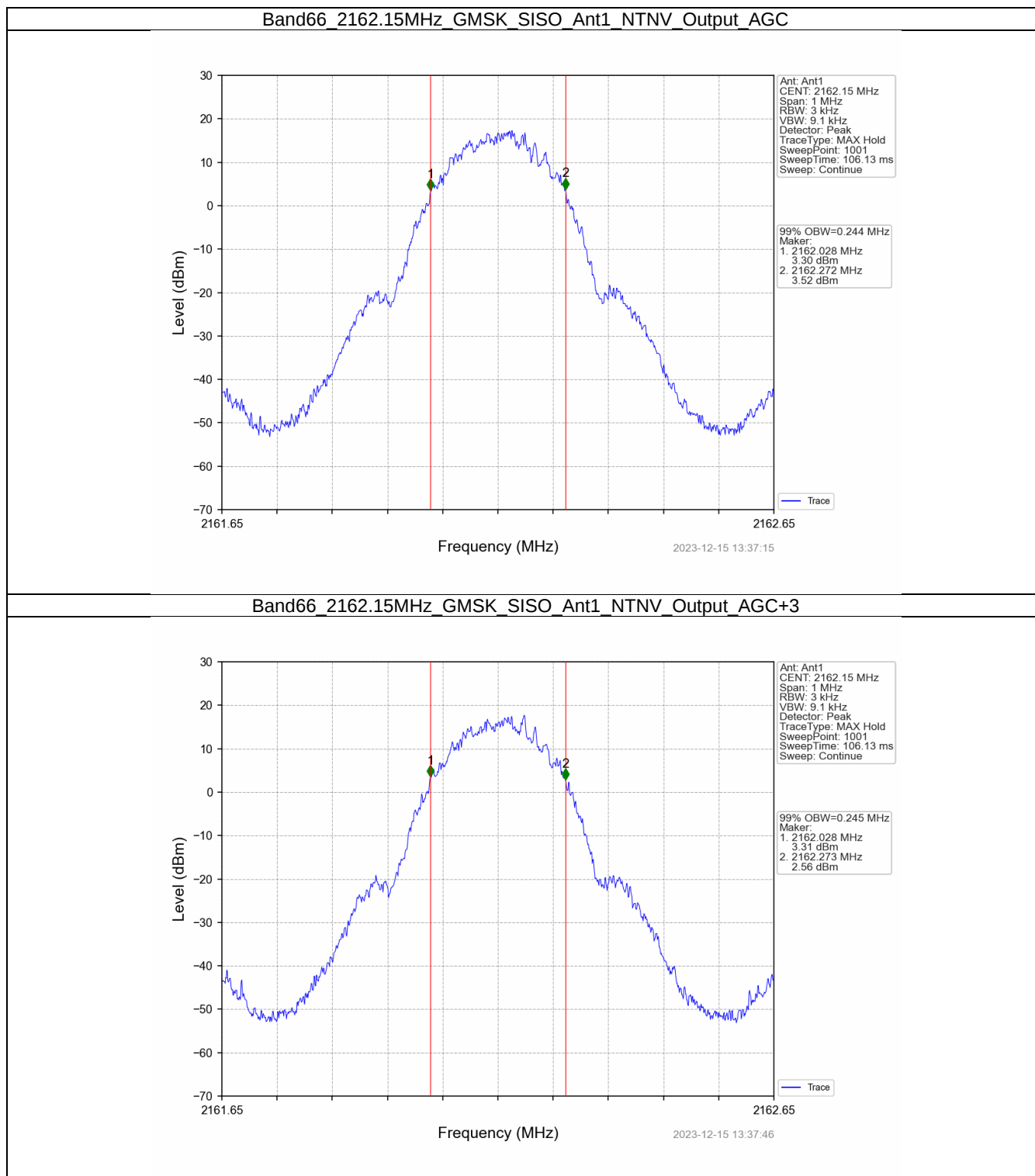
3. Input-versus-output signal comparison

3.1 Band66_OBW

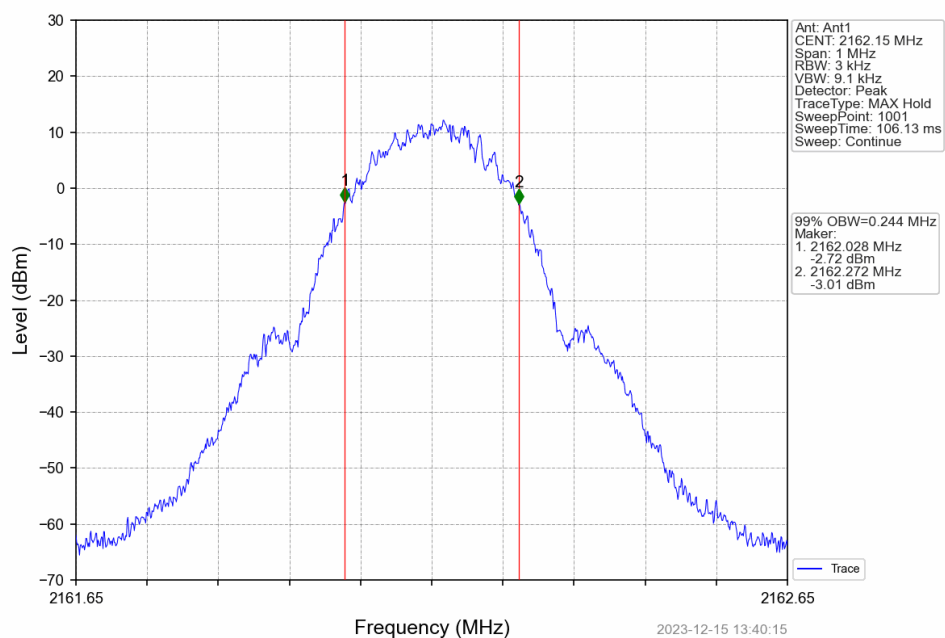
3.1.1 Test Result

Band: 66 / NTNV							
Signal			TX Type	ANT	99% OBW (MHz)		Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	
GMSK 0.2MHz	-0.5	2162.15	SISO	1	0.244	0.244	Pass
	-3.5	2162.15	SISO	1	0.245	0.244	Pass
AWGN 5MHz	-0.5	2162.15	SISO	1	4.536	4.535	Pass
	-3.5	2162.15	SISO	1	4.532	4.523	Pass

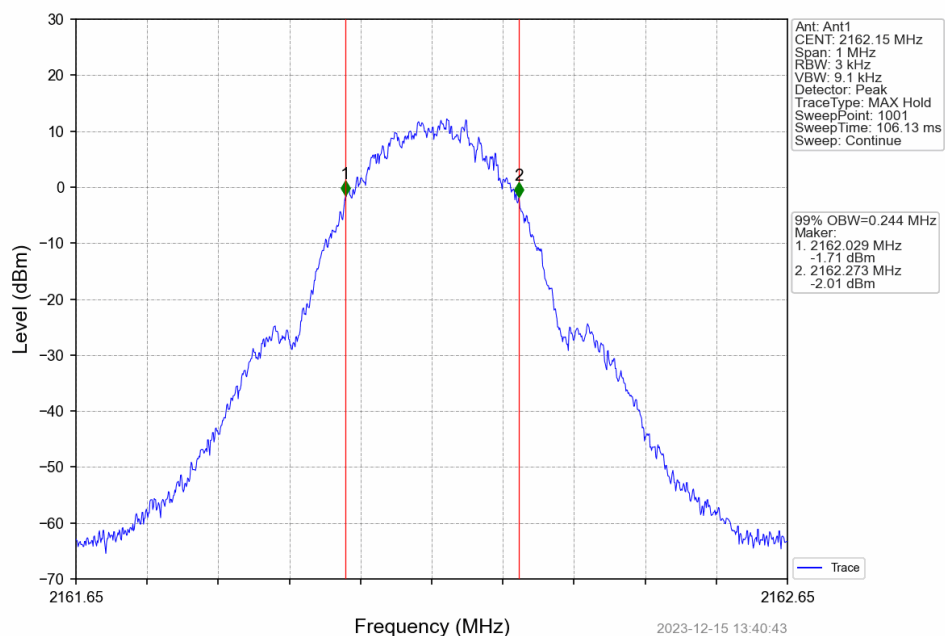
3.1.2 Test Graph



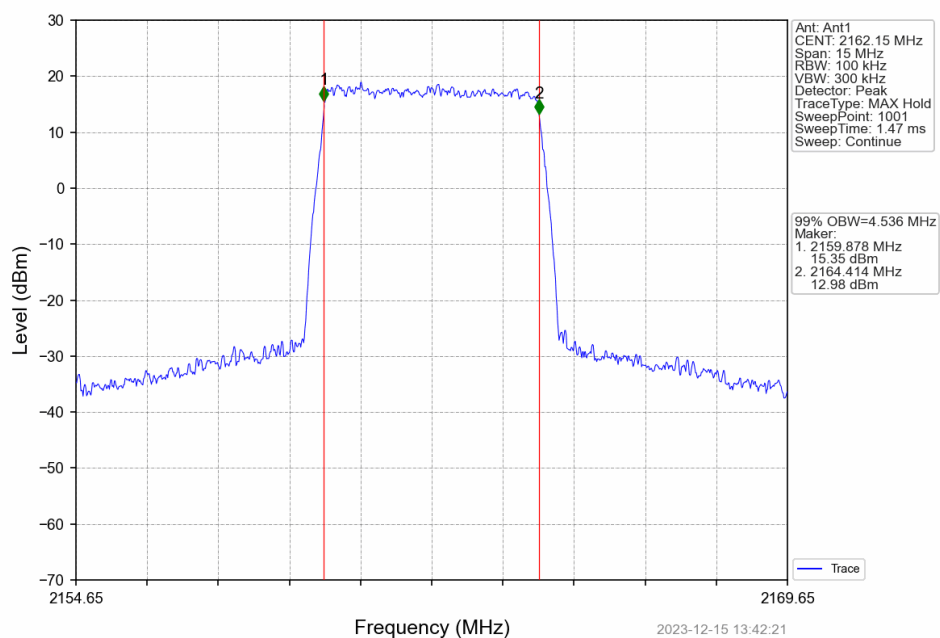
Band66_2162.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



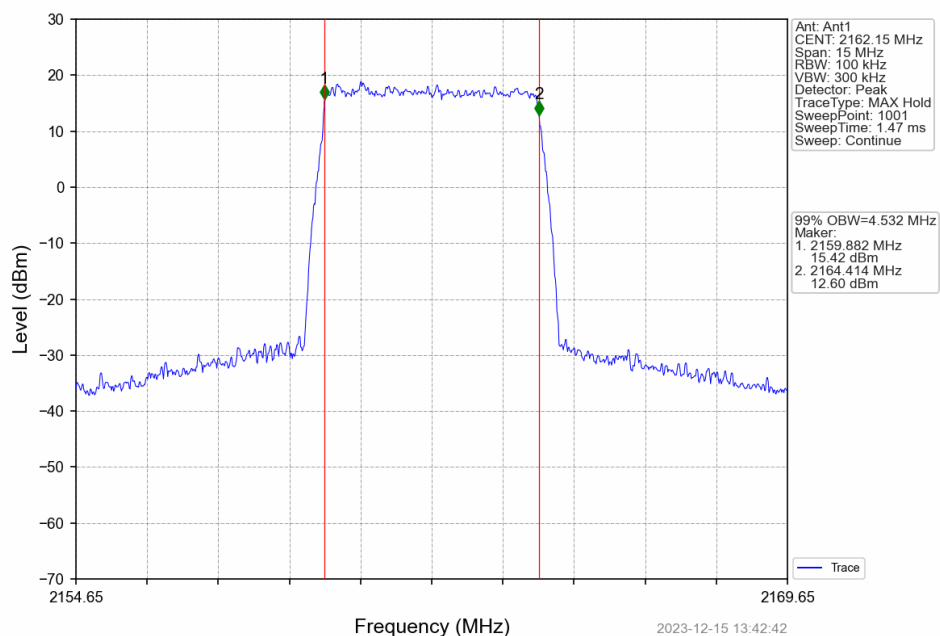
Band66_2162.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



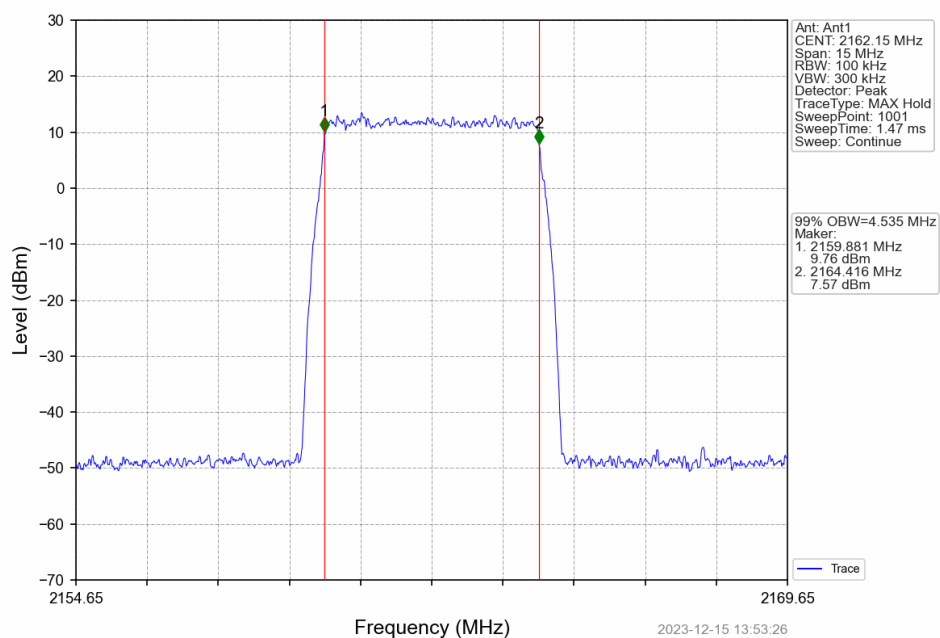
Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



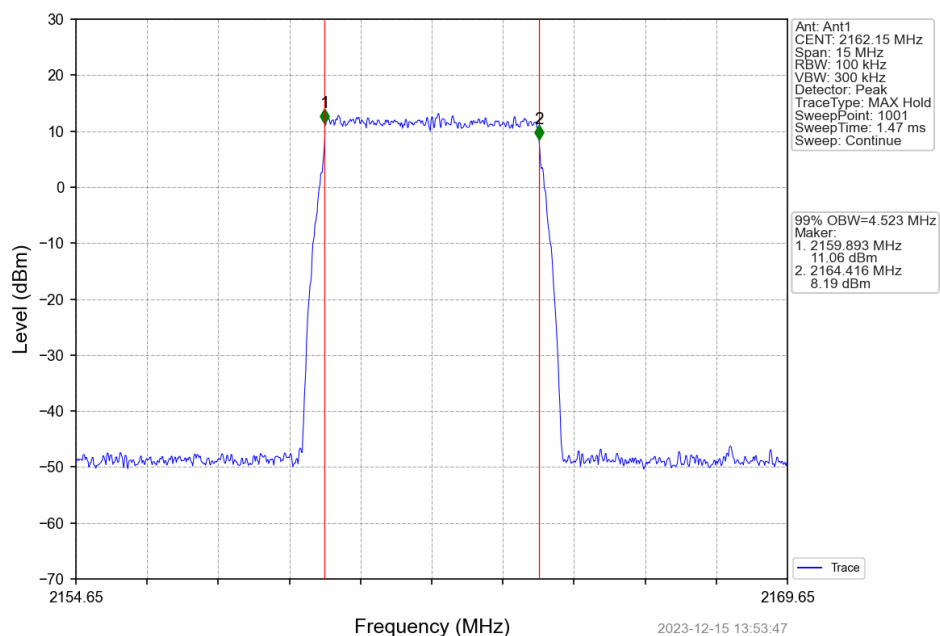
Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3

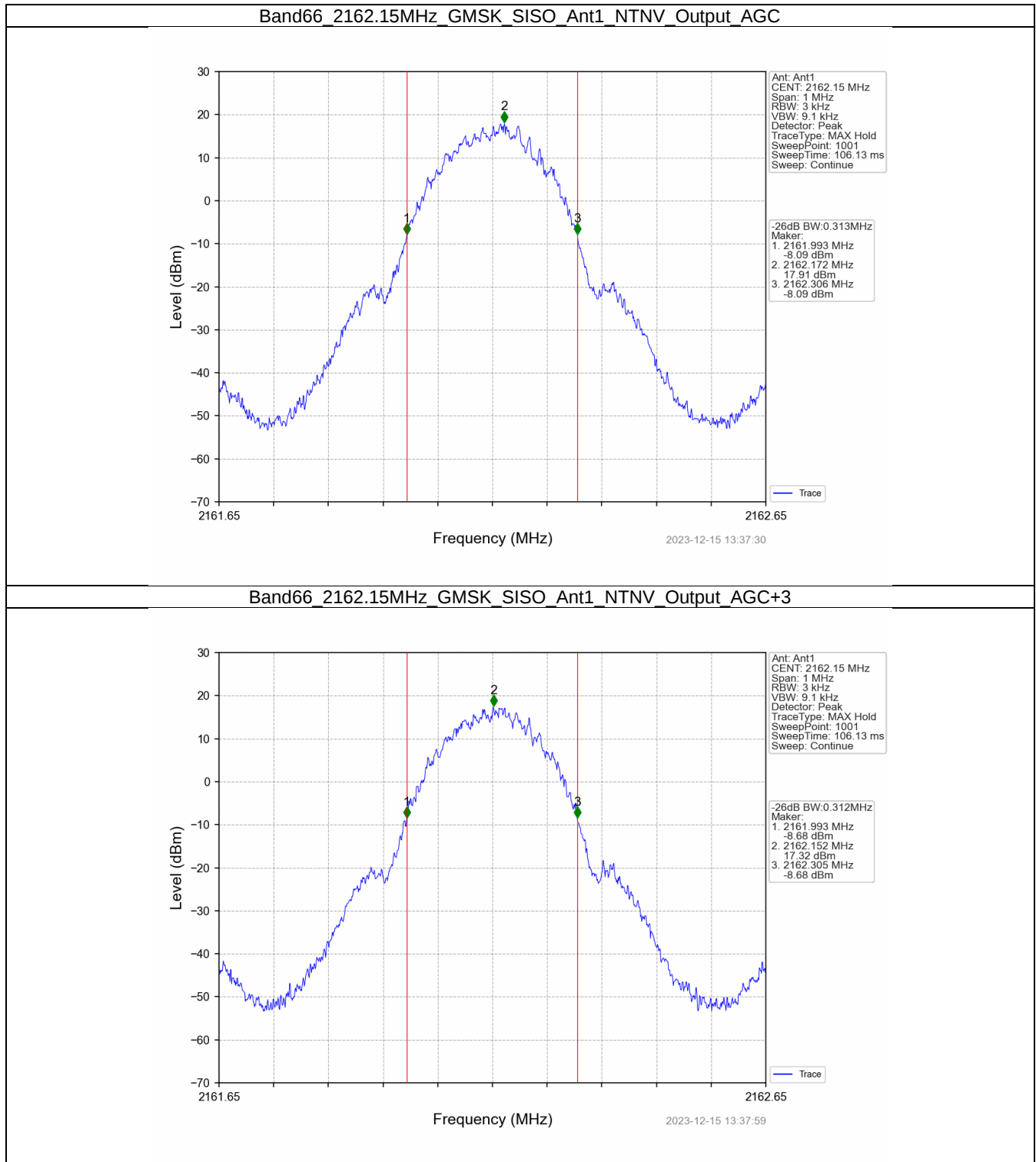


3.2 Band66_EBW

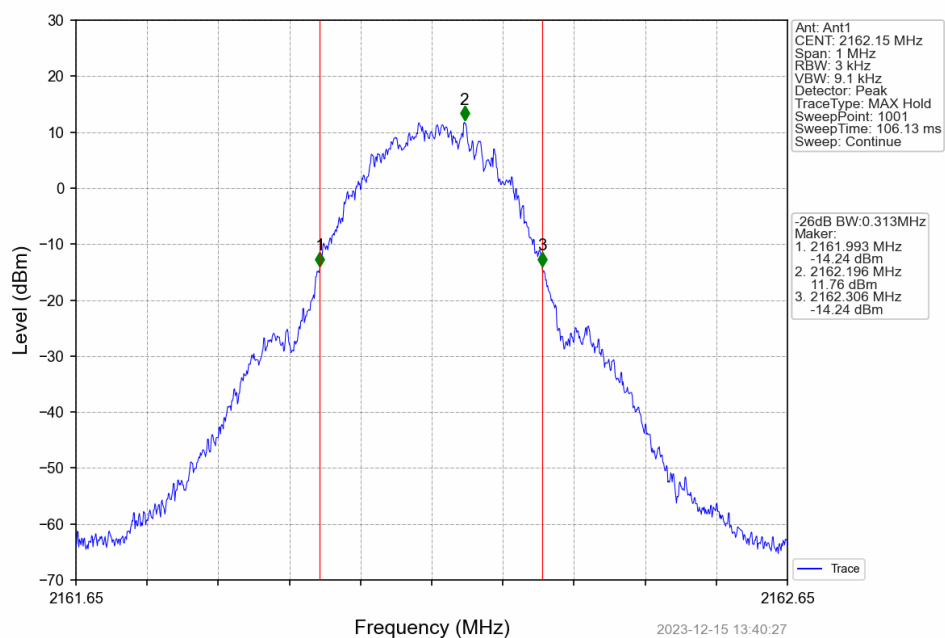
3.2.1 Test Result

Band: 66 / NTNV							
Signal			TX Type	ANT	26dB EBW (MHz)		Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	
GMSK 0.2MHz	-0.5	2162.15	SISO	1	0.313	0.313	Pass
	-3.5	2162.15	SISO	1	0.312	0.316	Pass
AWGN 5MHz	-0.5	2162.15	SISO	1	5.051	5.067	Pass
	-3.5	2162.15	SISO	1	5.054	5.024	Pass

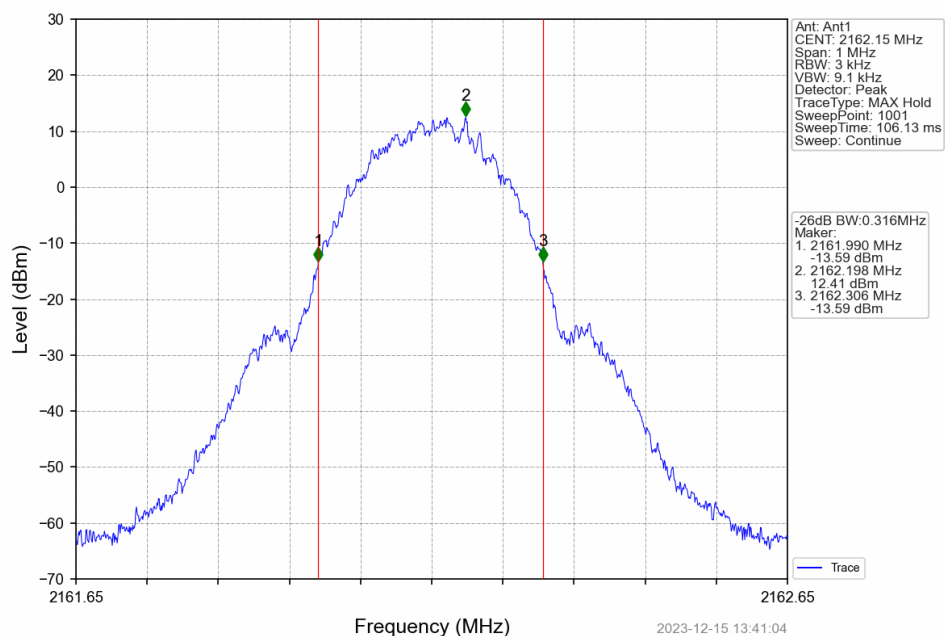
3.2.2 Test Graph



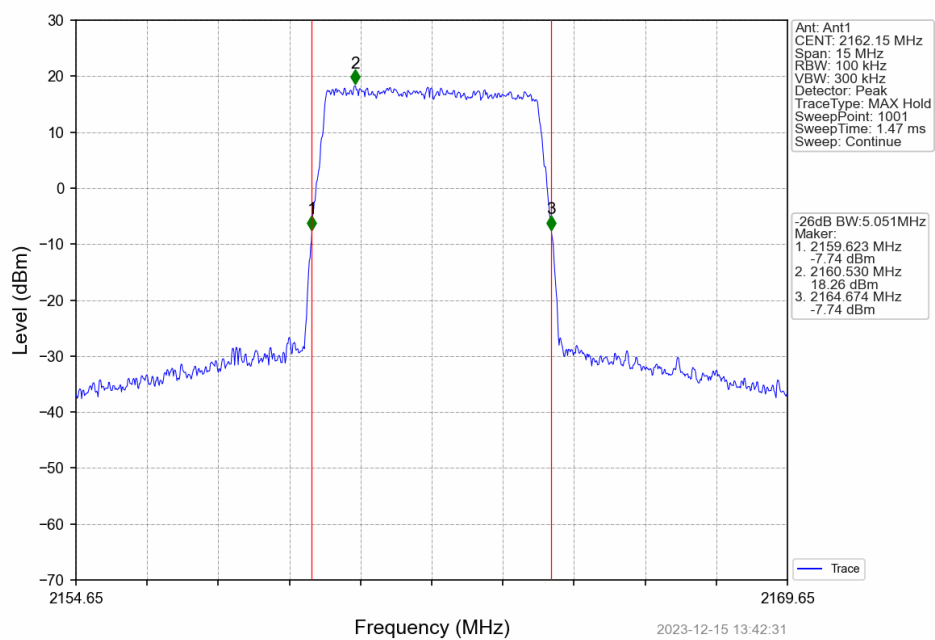
Band66_2162.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



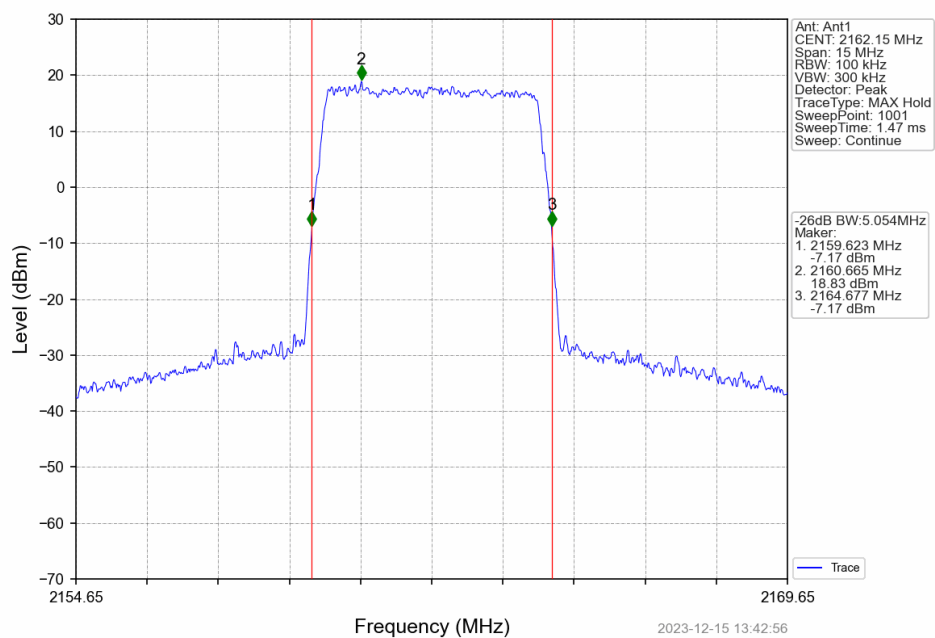
Band66_2162.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



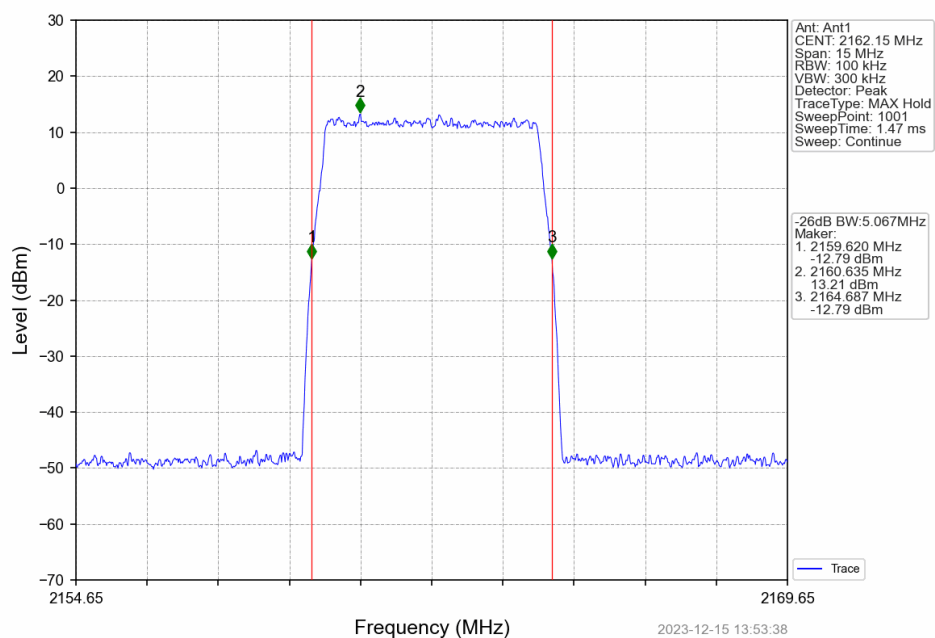
Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



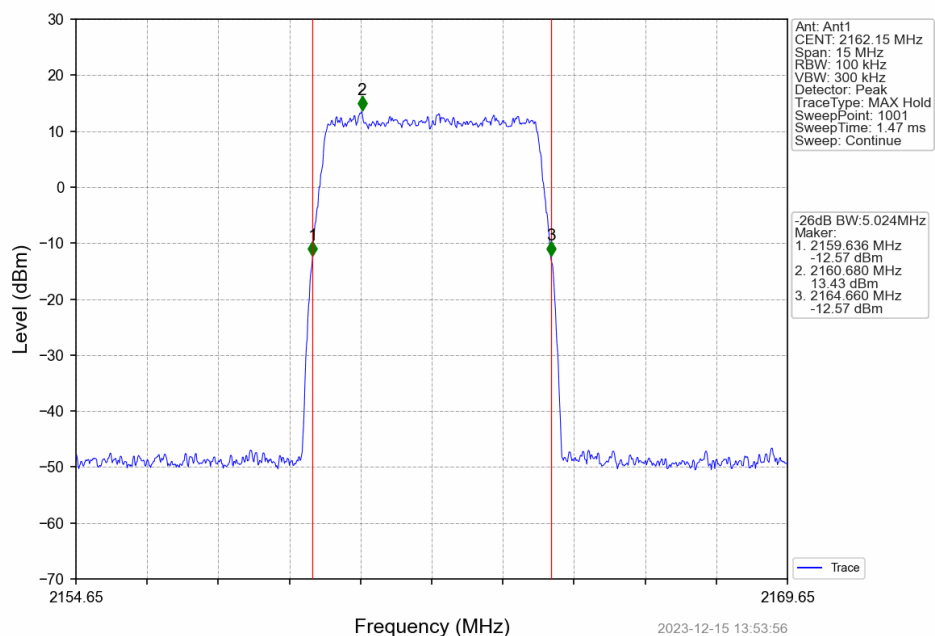
Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



4. Input/output power and amplifier/booster gain

4.1 Band66_EIRP

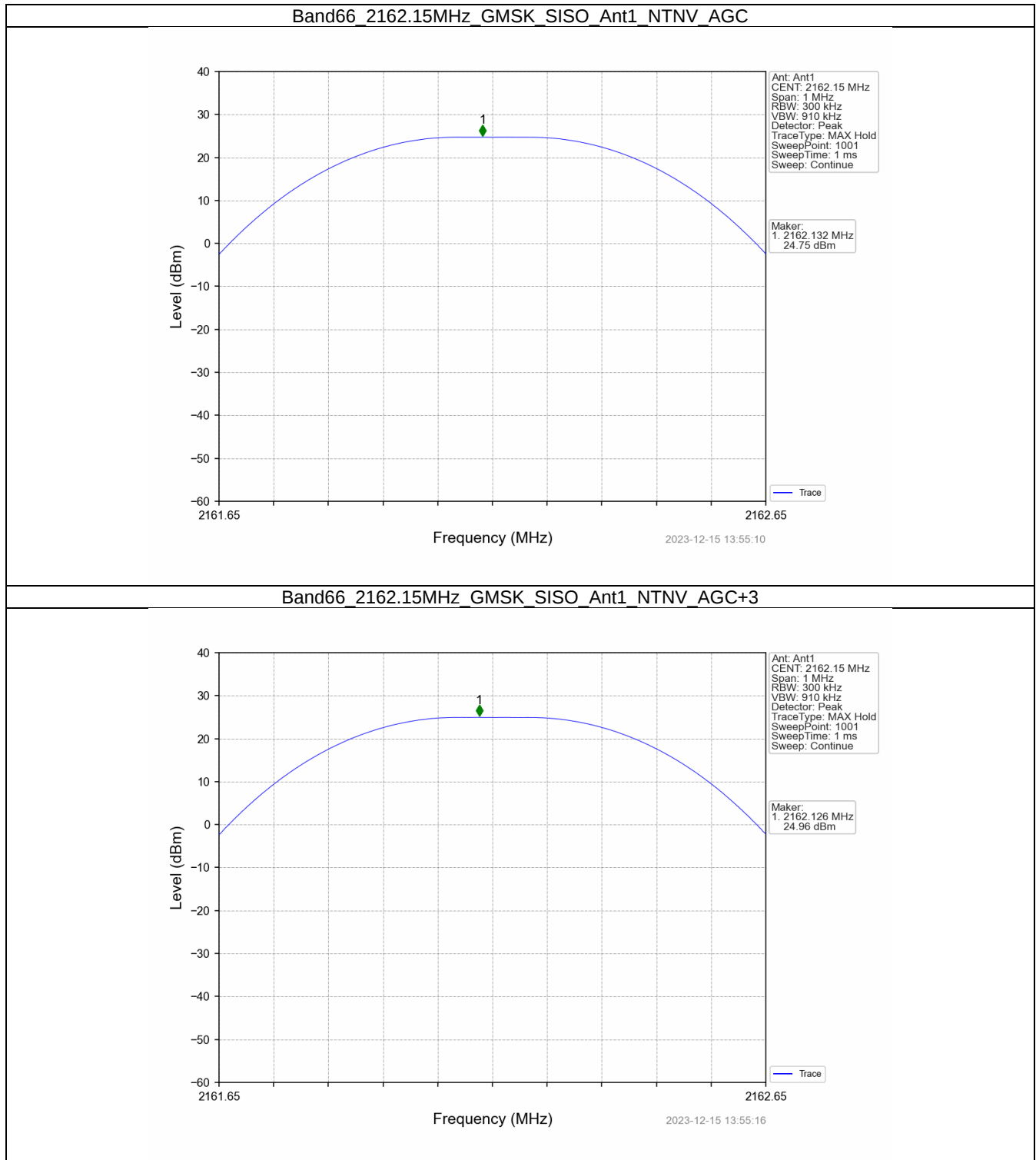
4.1.1 Test Result

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		
GMSK 0.2MHz	-3.5	2162.15	SISO	1	24.75	-2.69	27.75	<=62.15	27.45	Pass
	-0.5	2162.15	SISO	1	24.96	0.31	27.96	<=62.15	/	Pass
AWGN 5MHz	-3.5	2162.15	SISO	1	18.81	-8.57	21.81	<=62.15	27.38	Pass
	-0.5	2162.15	SISO	1	19.29	-5.60	22.29	<=62.15	/	Pass

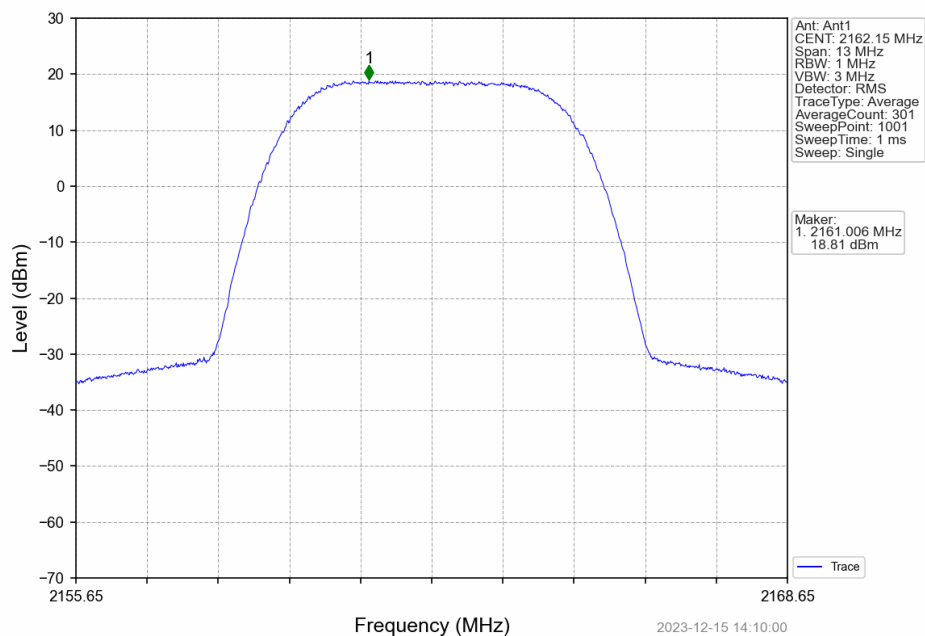
Band: B66 / NTNV							
Signal			Conducted Power (dBm/MHz)		EIRP (dBm/MHz)		Booster Gain (dB)
Type	Level (dBm)	Frequency (MHz)	SISO	2*2MIMO	SISO	2*2MIMO	
GMSK 0.2MHz	-3.5	2162.15	24.75	27.77	27.75	30.77	/
	-0.5	2162.15	24.96	27.98	27.96	30.98	/
AWGN 5MHz	-3.5	2162.15	18.81	21.83	21.81	24.83	/
	-0.5	2162.15	19.29	22.31	22.29	25.31	/

Band: B66 / NTNV									
Operation Band	Frequency (MHz)	Signal	Signal Level	Input Power (dBm)	Total Output Power (dBm)		EIRP(dBm)		Booster Gain (dB)
					SISO	2*2MIMO	SISO	2*2MIMO	
2110MHz- 2180MHz	2162.15	AWGN	Pre-AGC	-3.5	24.13	27.15	27.13	30.15	/
			3dB Above AGC	-0.5	24.16	27.18	27.16	30.18	/
	2162.15	GMSK	Pre-AGC	-3.5	24.21	27.23	27.21	30.23	/
			3dB Above AGC	-0.5	24.25	27.27	27.25	30.27	/

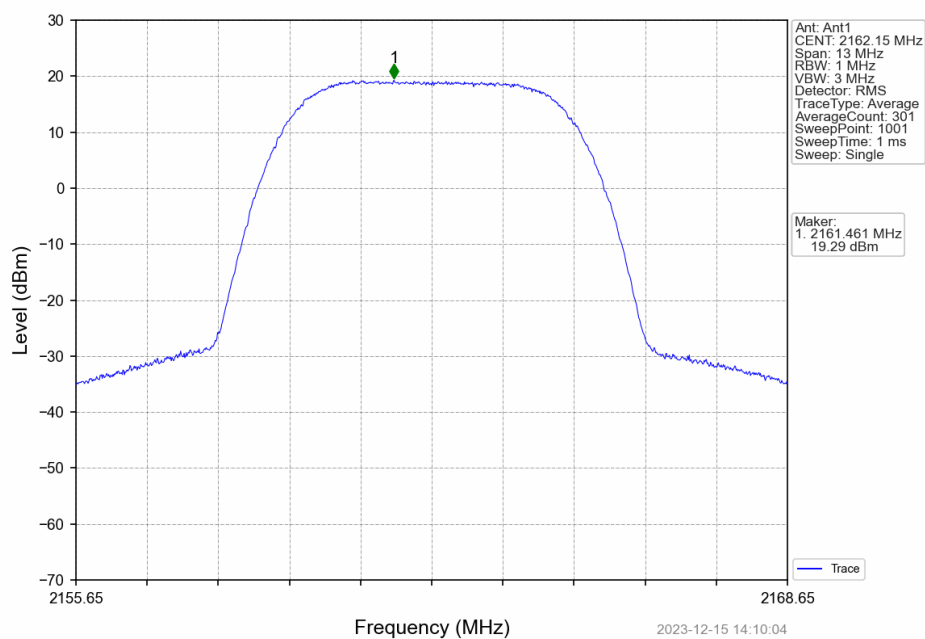
4.1.2 Test Graph



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_AGC



Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_AGC+3

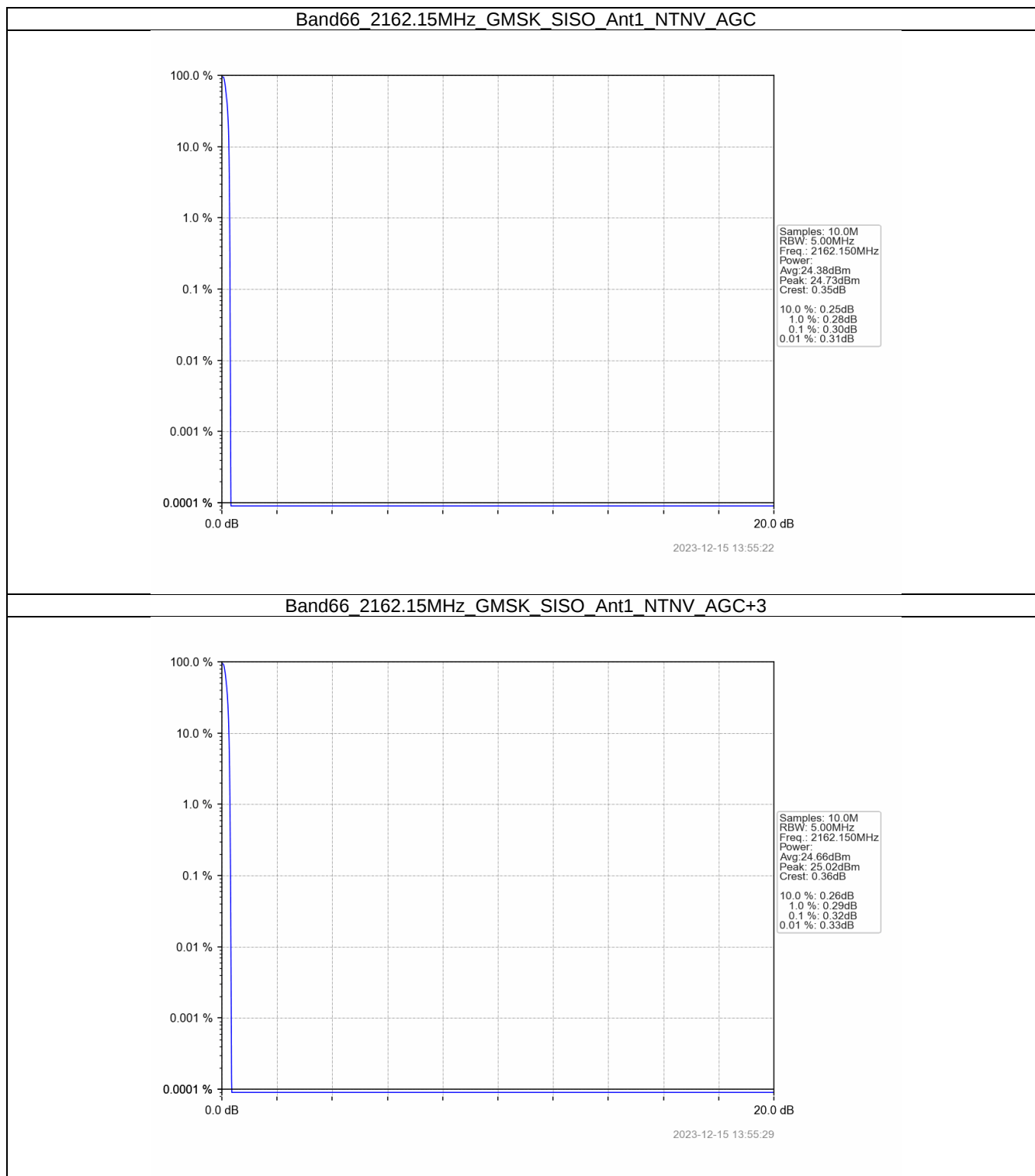


4.2 Band66_PAPR

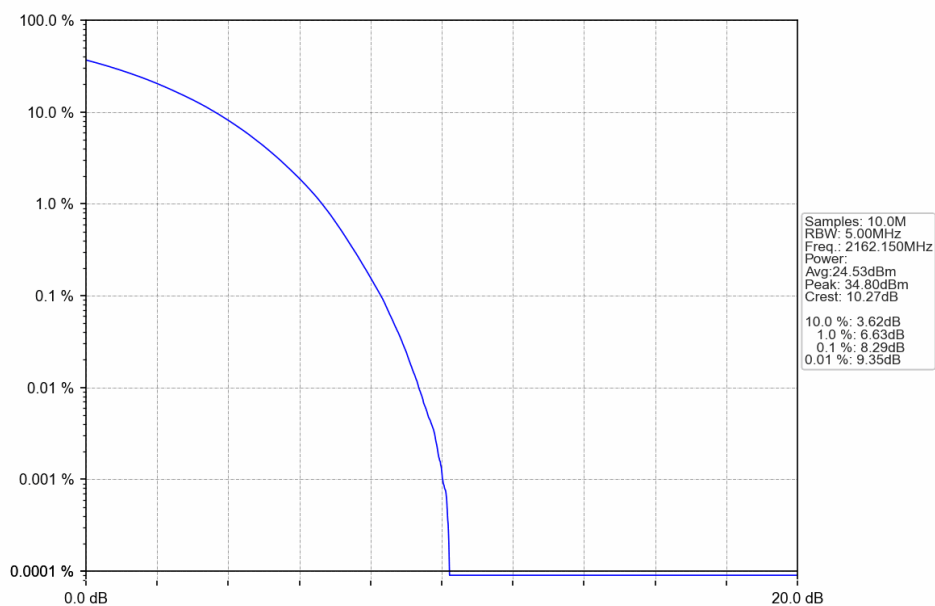
4.2.1 Test Result

Band: 66 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
GMSK 0.2MHz	-3.5	2162.15	SISO	1	0.30	<=13	Pass
	-0.5	2162.15	SISO	1	0.32	<=13	Pass
AWGN 5MHz	-3.5	2162.15	SISO	1	8.29	<=13	Pass
	-0.5	2162.15	SISO	1	8.20	<=13	Pass

4.2.2 Test Graph

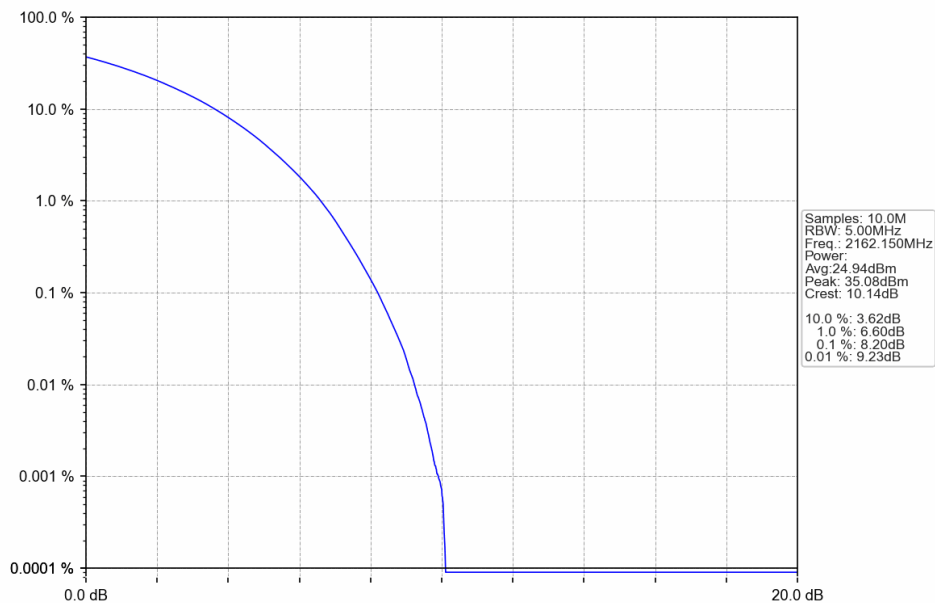


Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_AGC



2023-12-15 14:10:17

Band66_2162.15MHz_AWGN_SISO_Ant1_NTNV_AGC+3



2023-12-15 14:10:30

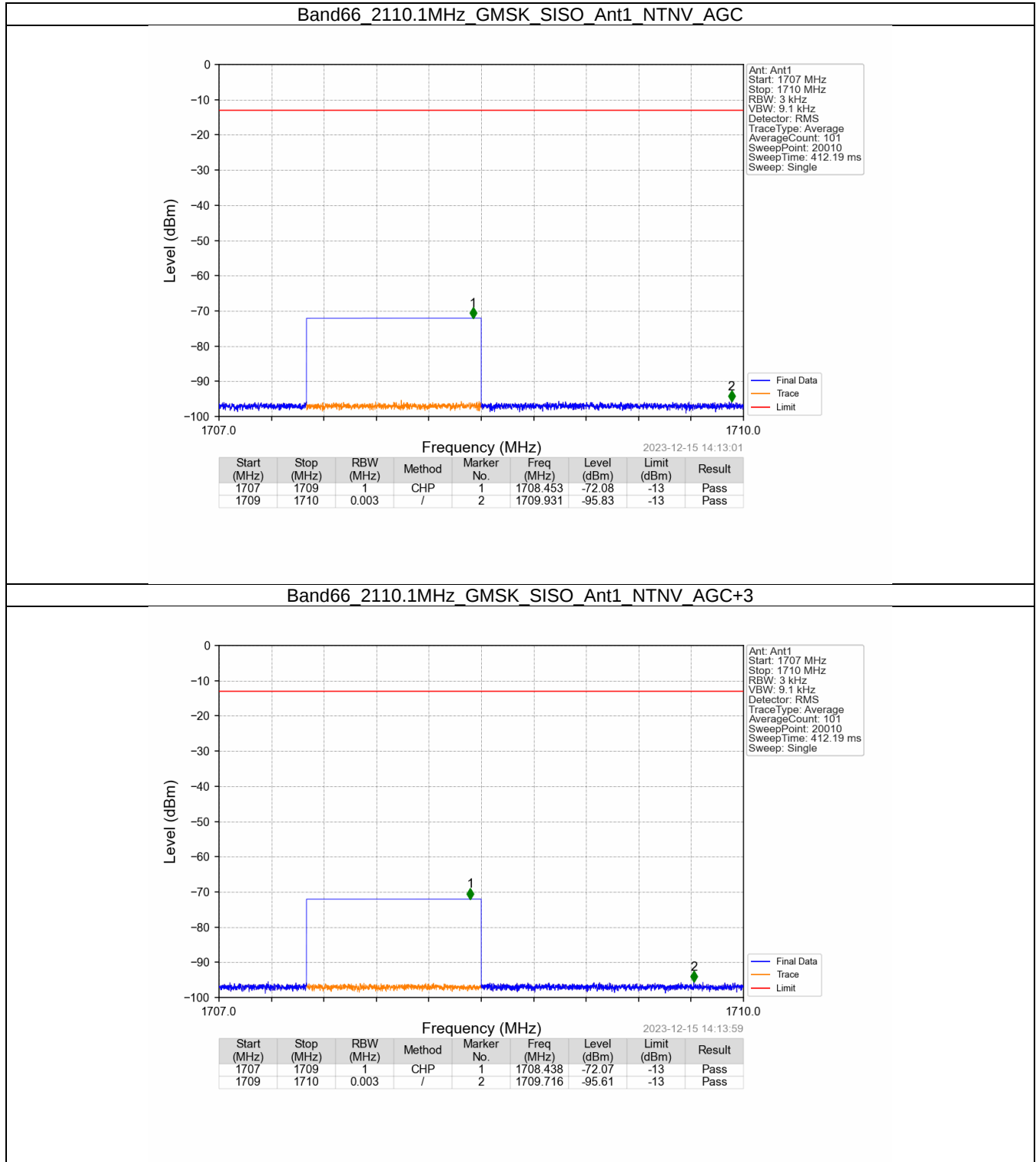
5. Out-of-band/out-of-block (including intermodulation) emissions

5.1 Band66

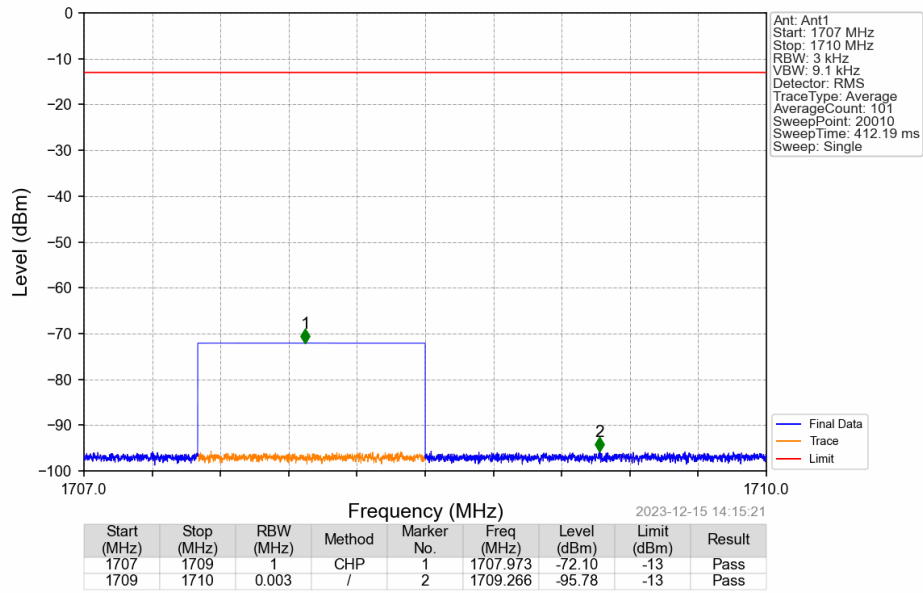
5.1.1 Test Result

Band: 66 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	GMSK 0.2MHz	-3.5	2110.1	LCH	SISO	1	-72.08	Refer To Test Graph	Pass
		-0.5	2110.1	LCH	SISO	1	-72.07	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.5	2110.1	LCH	SISO	1	-72.10	Refer To Test Graph	Pass
		-0.5	2110.1	LCH	SISO	1	-72.08	Refer To Test Graph	Pass
Two	GMSK 0.2MHz	-3.5	2179.9	HCH	SISO	1	-75.78	Refer To Test Graph	Pass
		-0.5	2179.9	HCH	SISO	1	-75.72	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.5	2179.9	HCH	SISO	1	-75.81	Refer To Test Graph	Pass
		-0.5	2179.9	HCH	SISO	1	-75.73	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.5	2112.5	LCH	SISO	1	-72.17	Refer To Test Graph	Pass
		-0.5	2112.5	LCH	SISO	1	-72.23	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.5	2112.5	LCH	SISO	1	-72.25	Refer To Test Graph	Pass
		-0.5	2112.5	LCH	SISO	1	-72.21	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.5	2177.5	HCH	SISO	1	-75.78	Refer To Test Graph	Pass
		-0.5	2177.5	HCH	SISO	1	-75.80	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.5	2177.5	HCH	SISO	1	-75.87	Refer To Test Graph	Pass
		-0.5	2177.5	HCH	SISO	1	-75.89	Refer To Test Graph	Pass

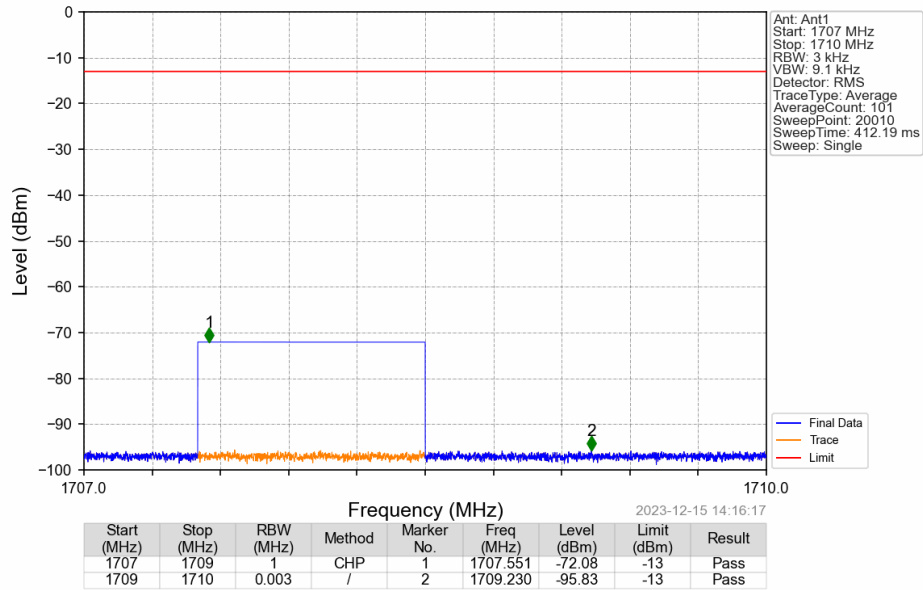
5.1.2 Test Graph



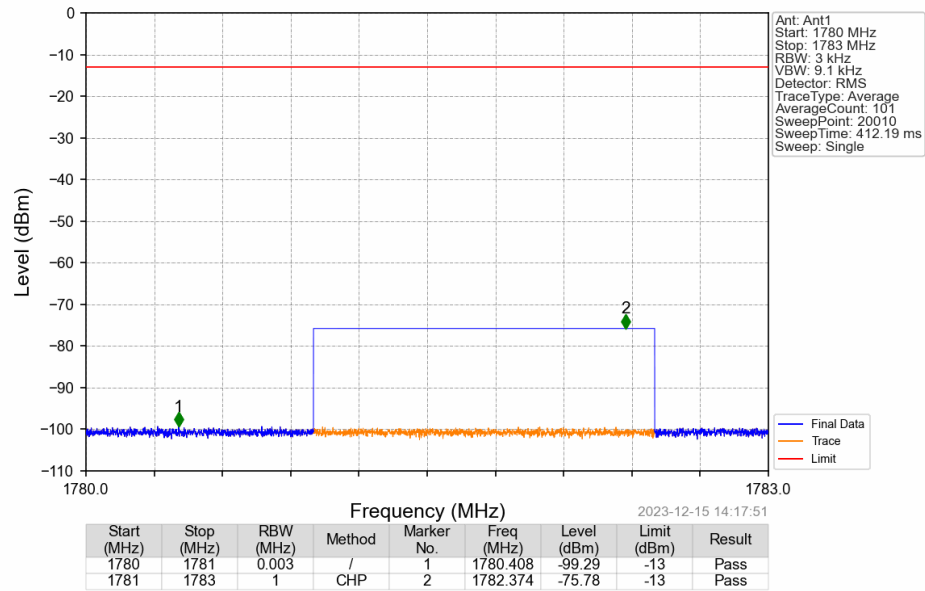
Band66_2110.1MHz_GMSK_SISO_Ant1_NTNV_AGC



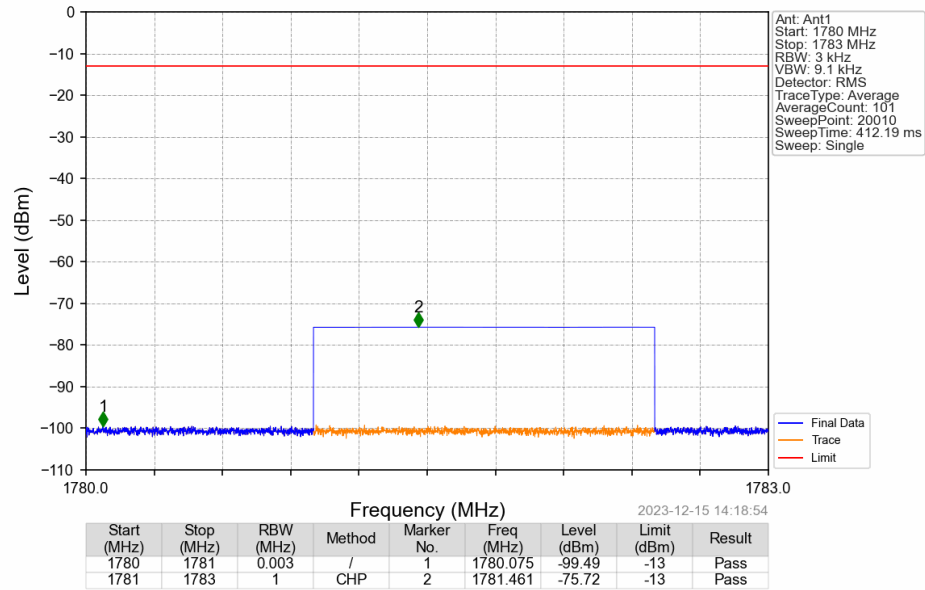
Band66_2110.1MHz_GMSK_SISO_Ant1_NTNV_AGC+3



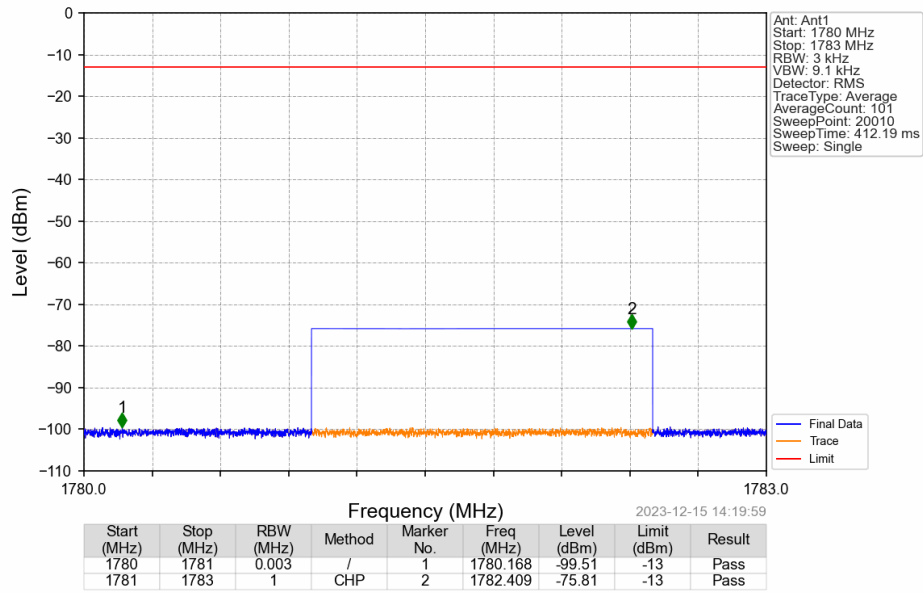
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV_AGC



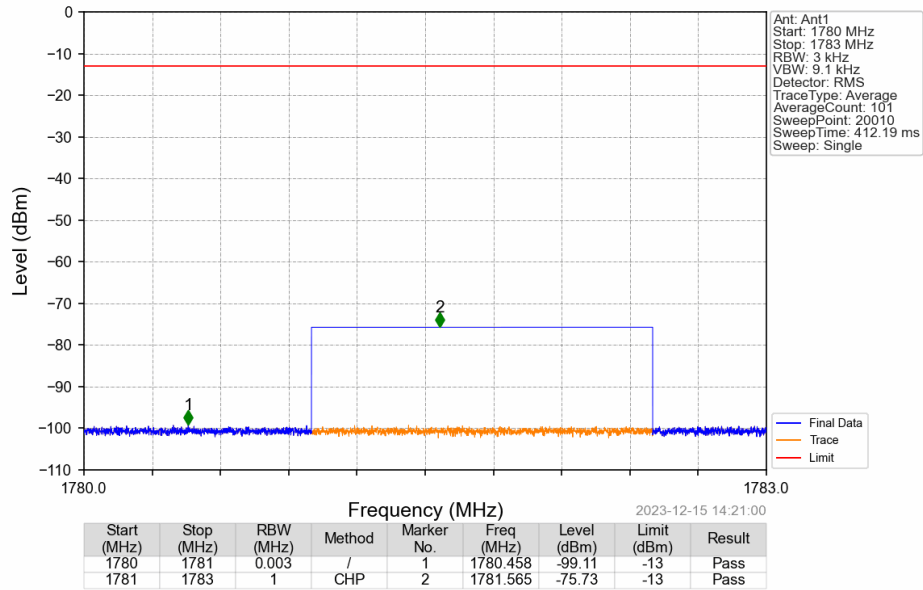
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV_AGC+3



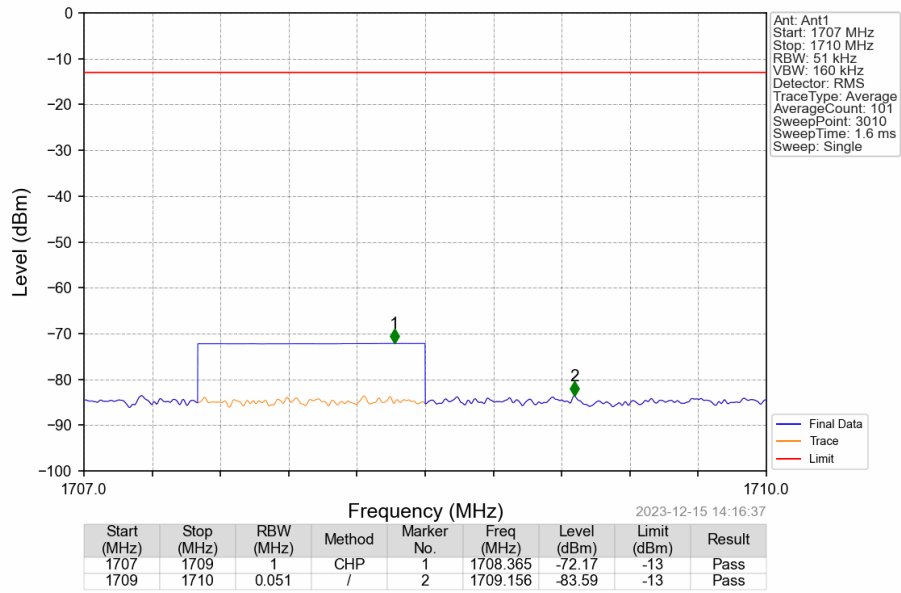
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV_AGC



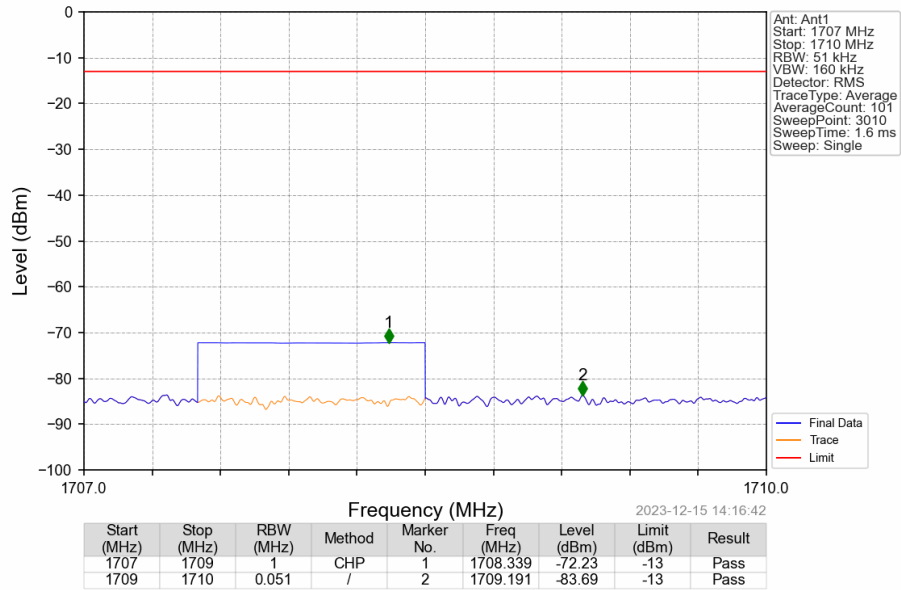
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV_AGC+3



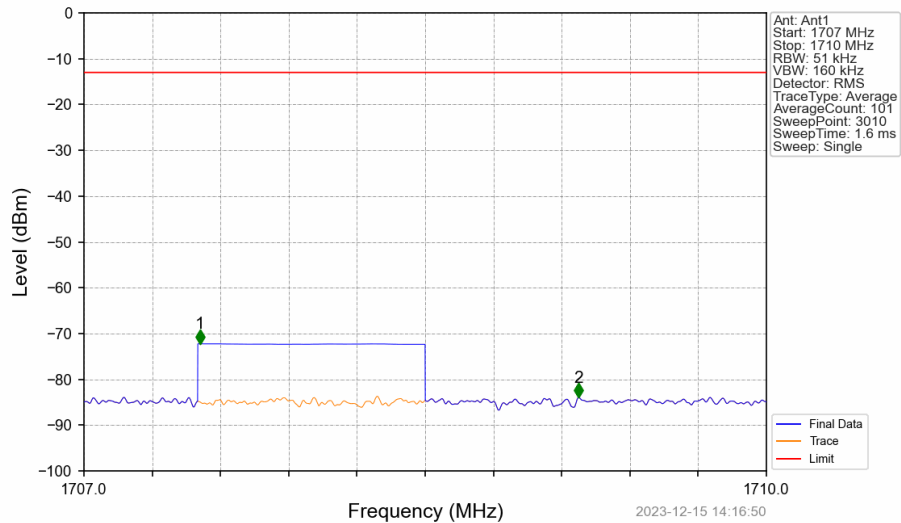
Band66_2112.5MHz_AWGN_SISO_Ant1_NTNV_AGC



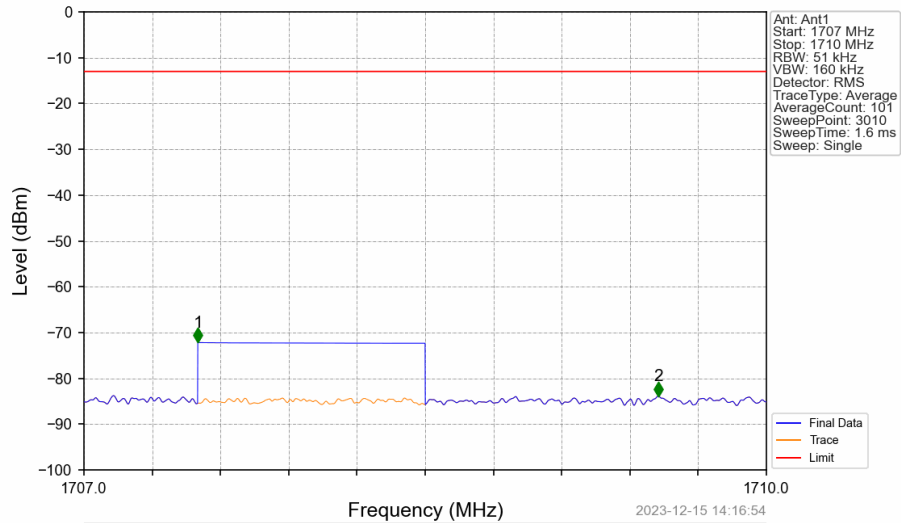
Band66_2112.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



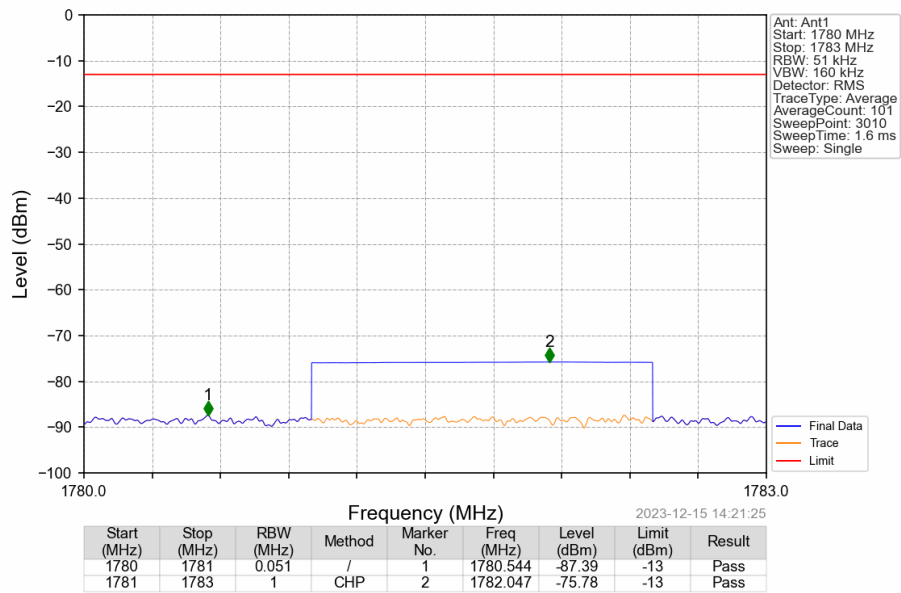
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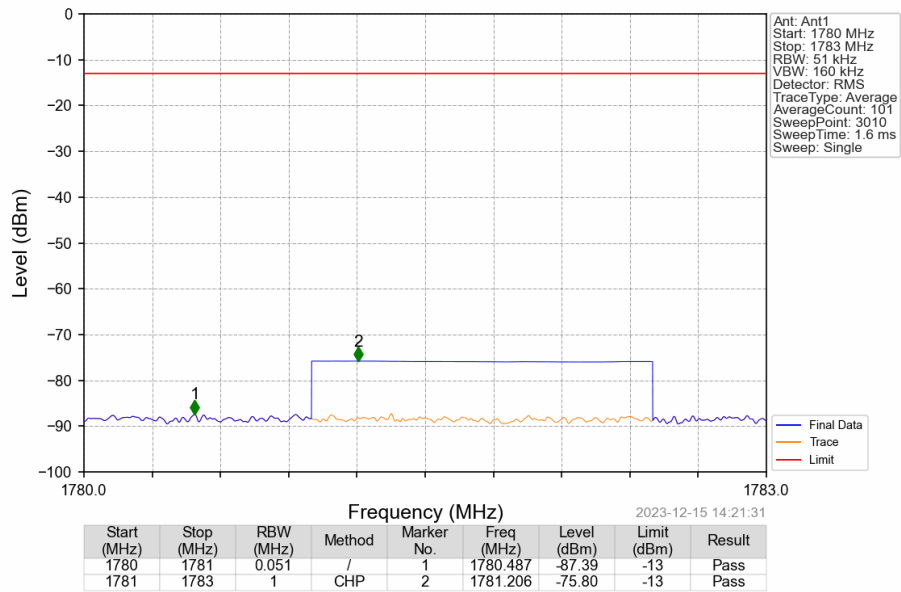
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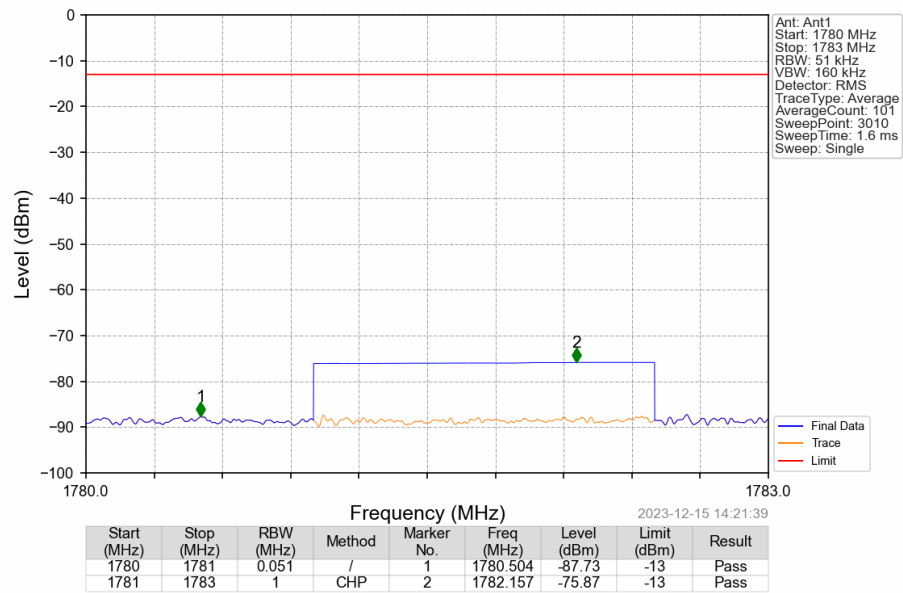
Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV_AGC



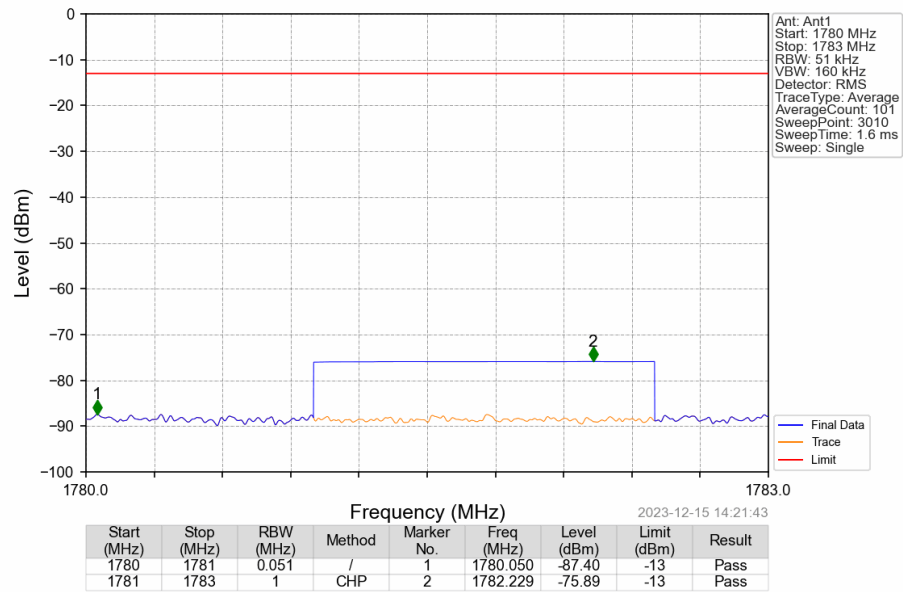
Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV_AGC



Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



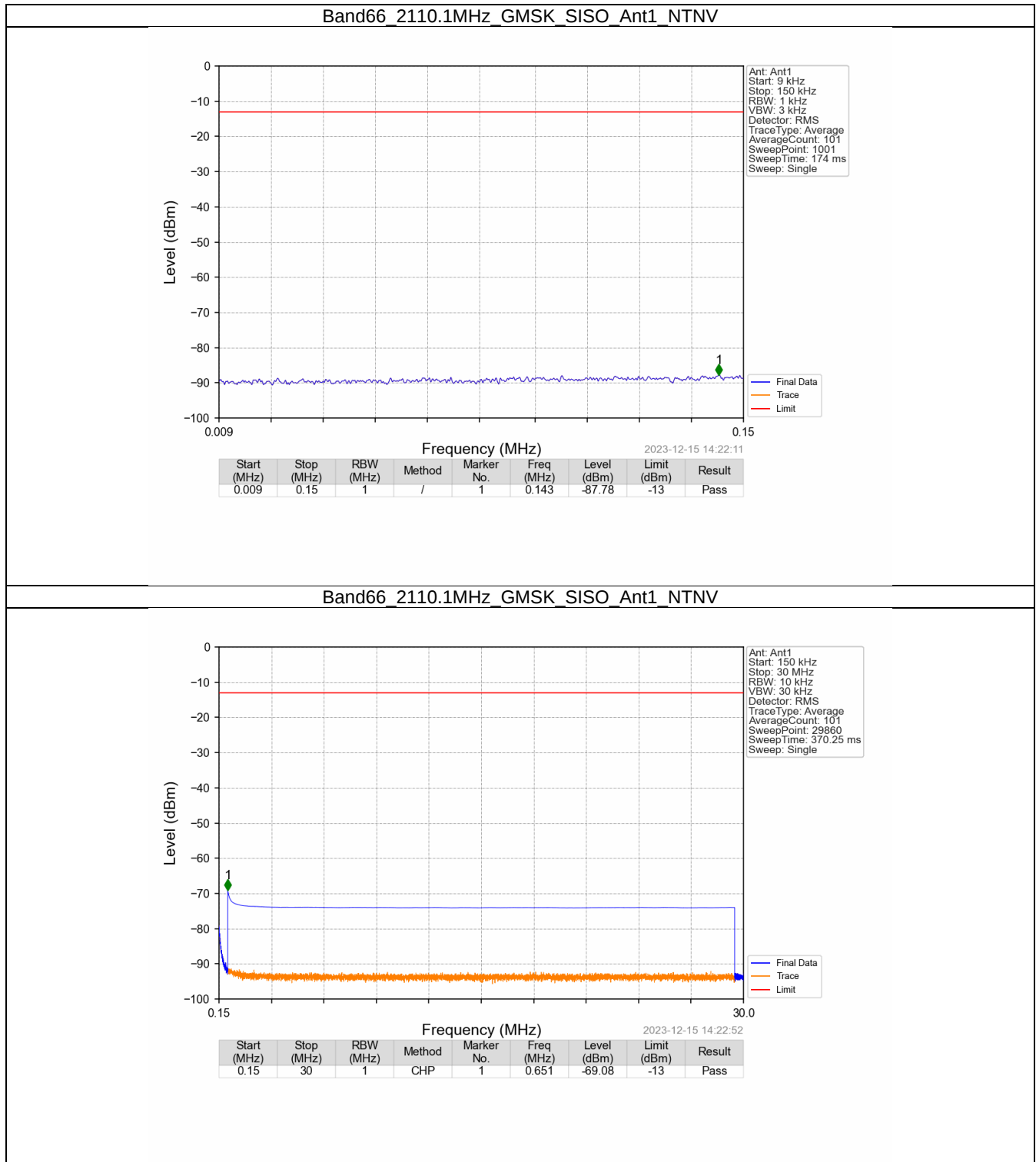
6. Spurious emissions

6.1 Band66

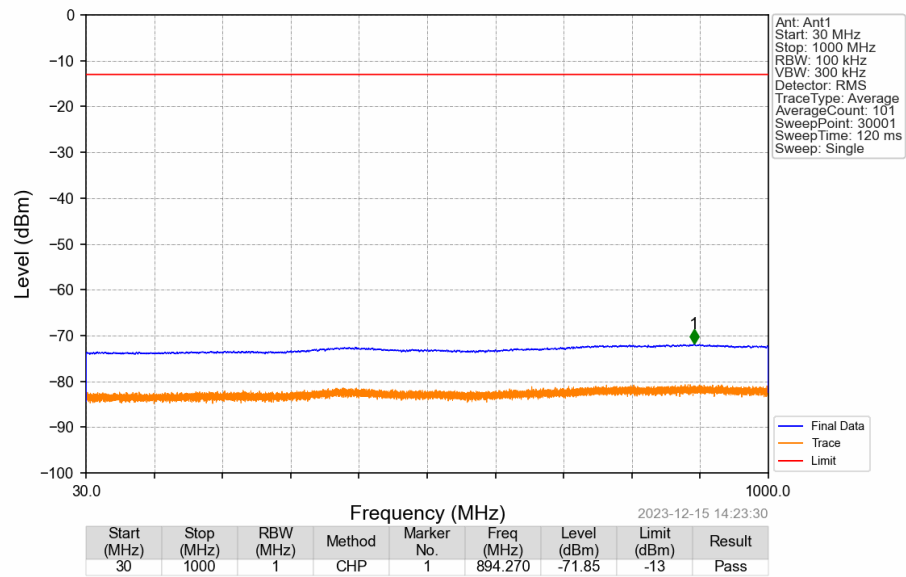
6.1.1 Test Result

Band: 66 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
GMSK 0.2MHz	-3.5	2110.1	LCH	SISO	1	Refer To Test Graph		Pass
		2145	MCH	SISO	1	Refer To Test Graph		Pass
		2179.9	HCH	SISO	1	Refer To Test Graph		Pass
AWGN 5MHz	-3.5	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

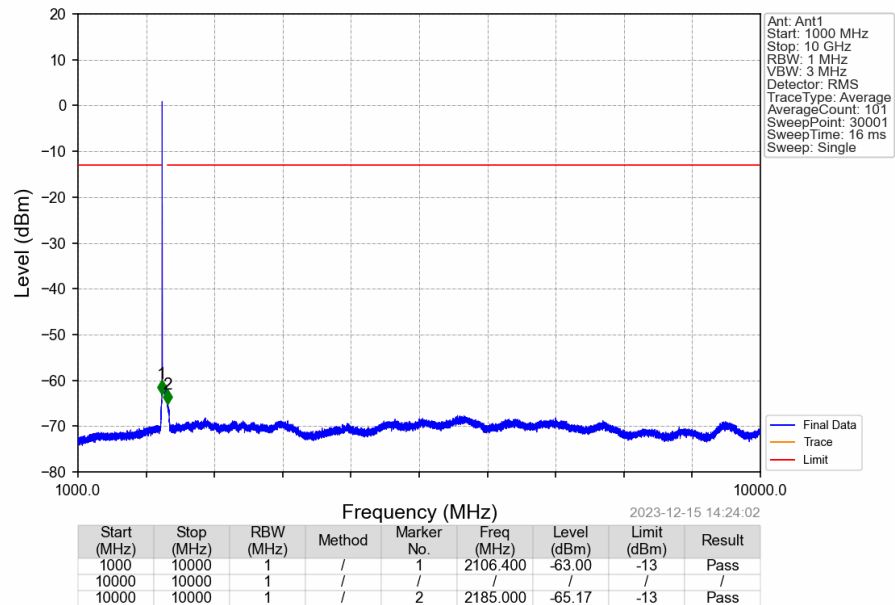
6.1.2 Test Graph



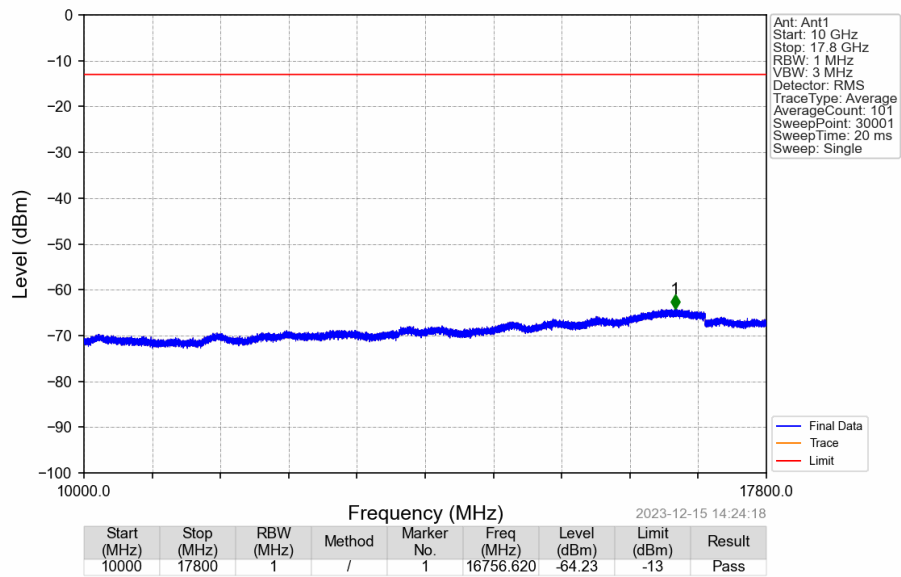
Band66_2110.1MHz_GMSK_SISO_Ant1_NTNV



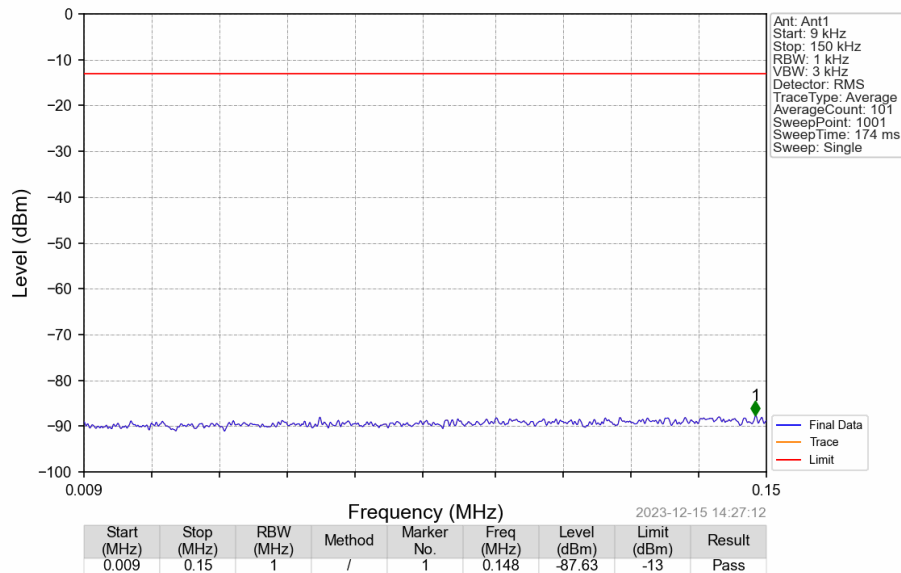
Band66_2110.1MHz_GMSK_SISO_Ant1_NTNV



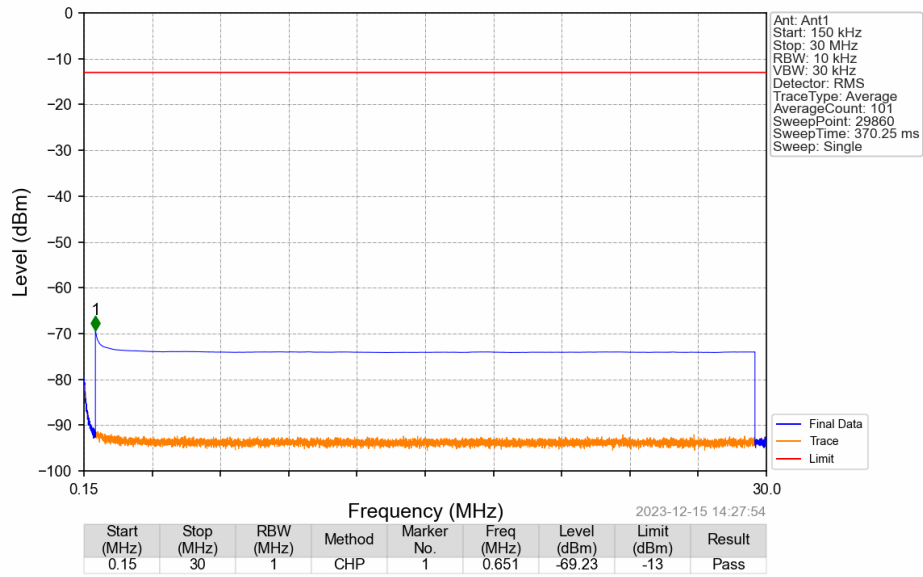
Band66_2110.1MHz_GMSK_SISO_Ant1_NTNV



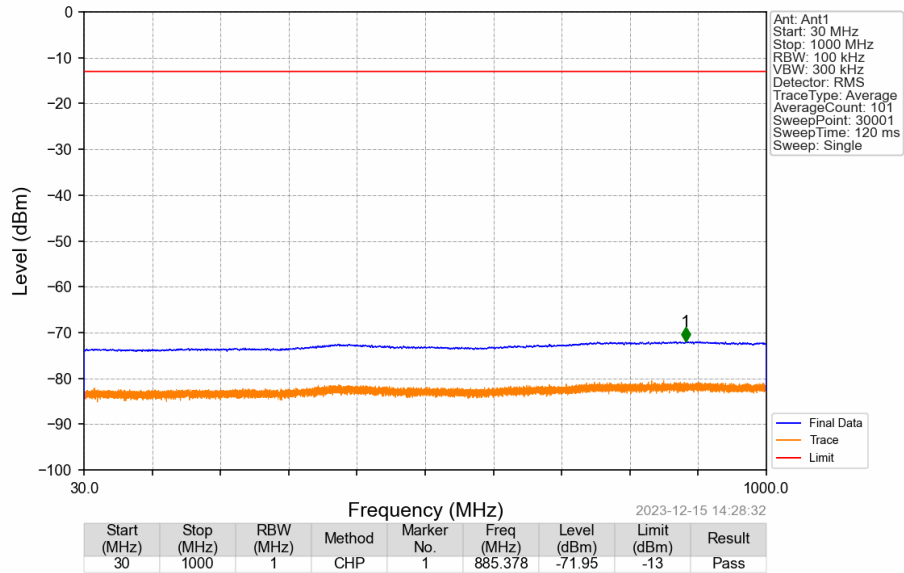
Band66_2145MHz_GMSK_SISO_Ant1_NTNV



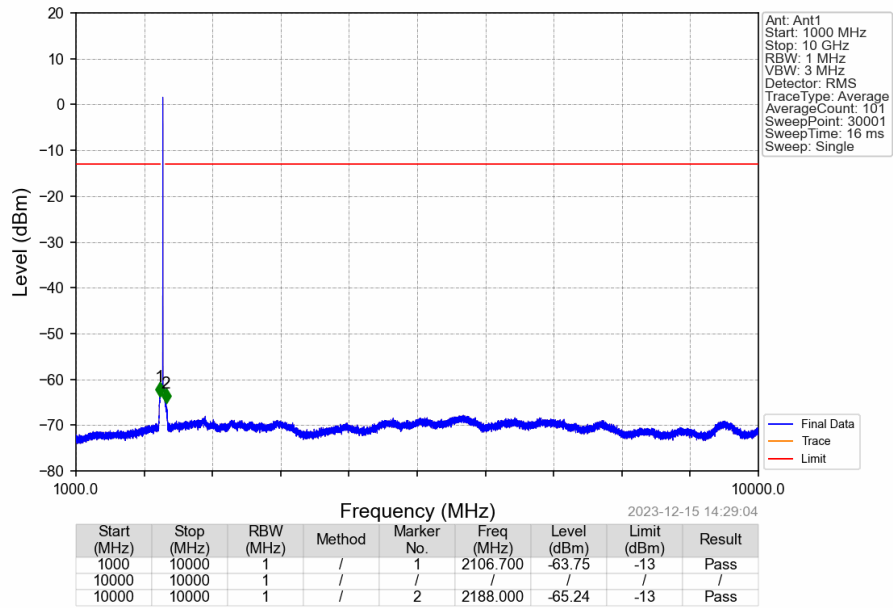
Band66_2145MHz_GMSK_SISO_Ant1_NTNV



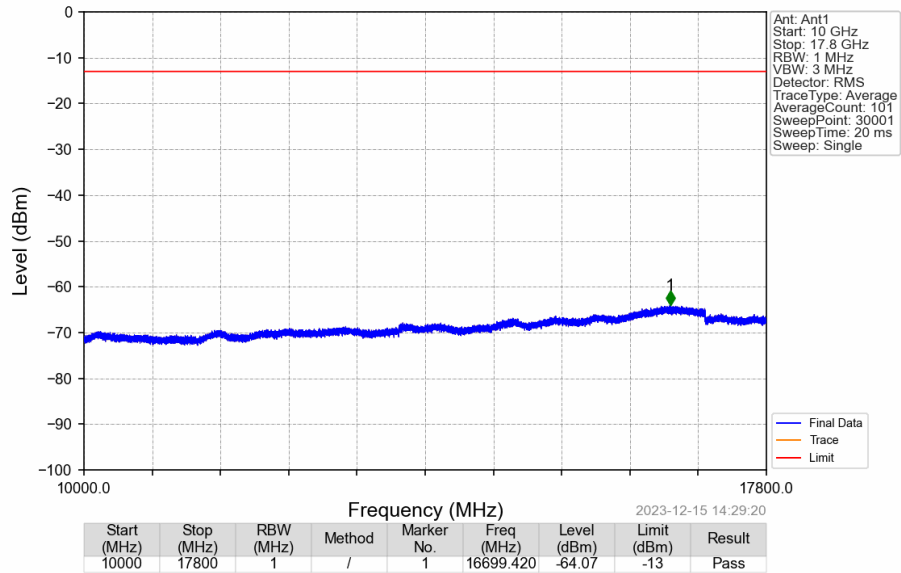
Band66_2145MHz_GMSK_SISO_Ant1_NTNV



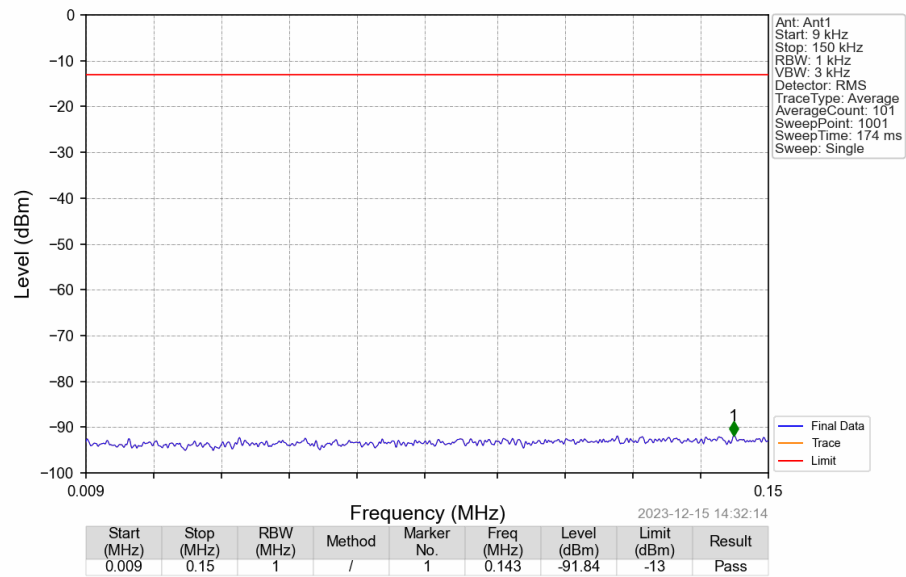
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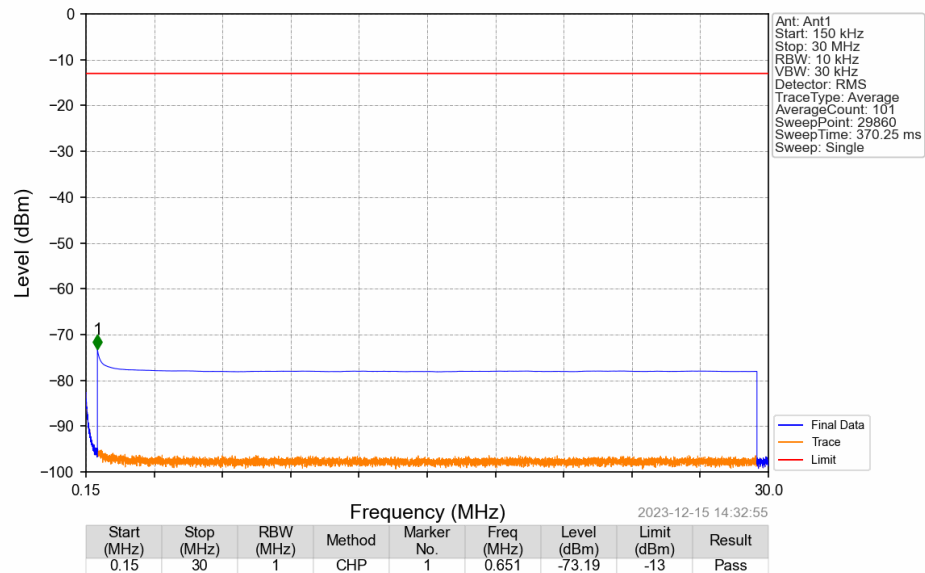
Band66_2145MHz_GMSK_SISO_Ant1_NTNV



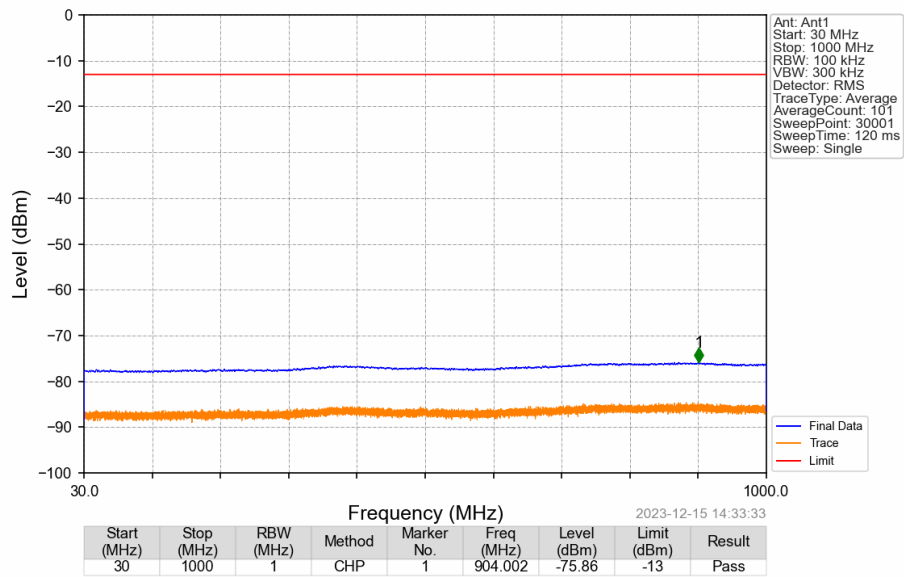
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV



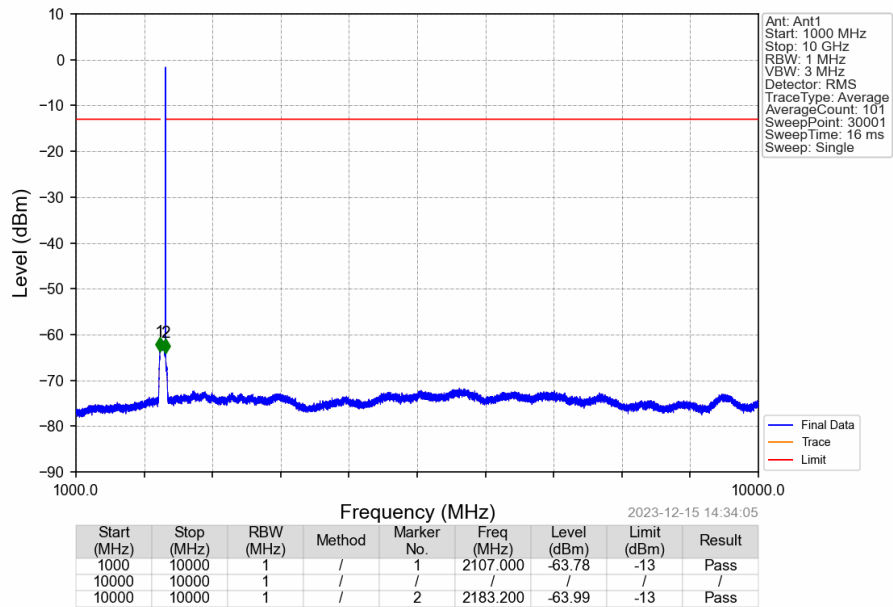
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV



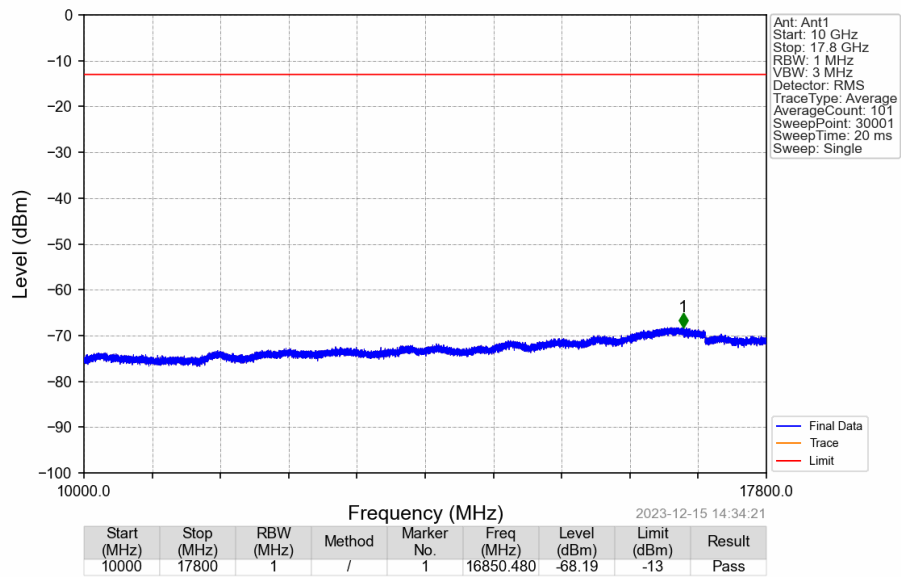
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV



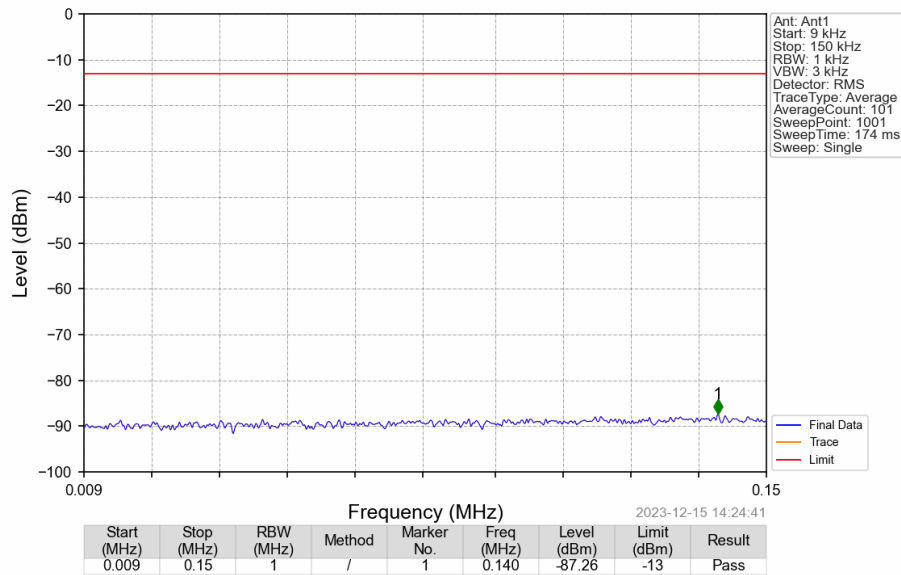
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV



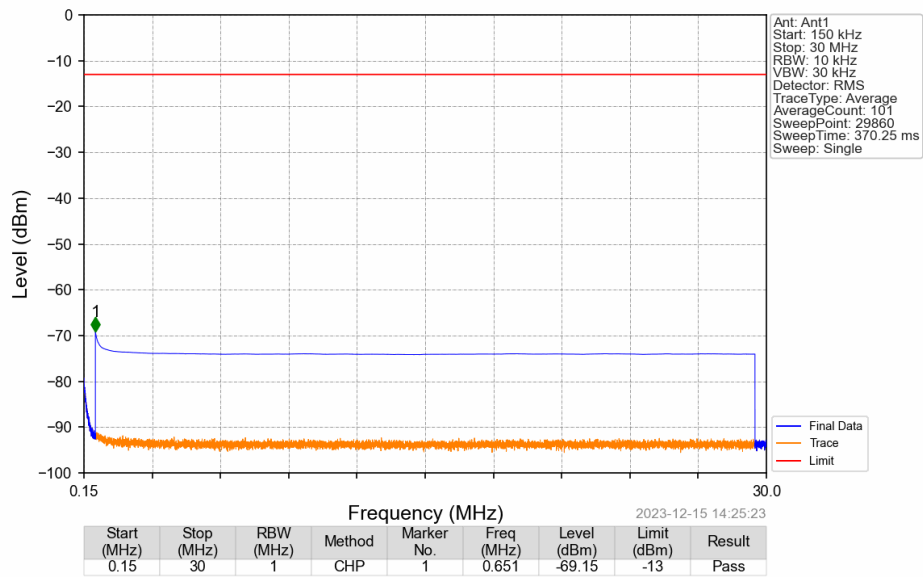
Band66_2179.9MHz_GMSK_SISO_Ant1_NTNV



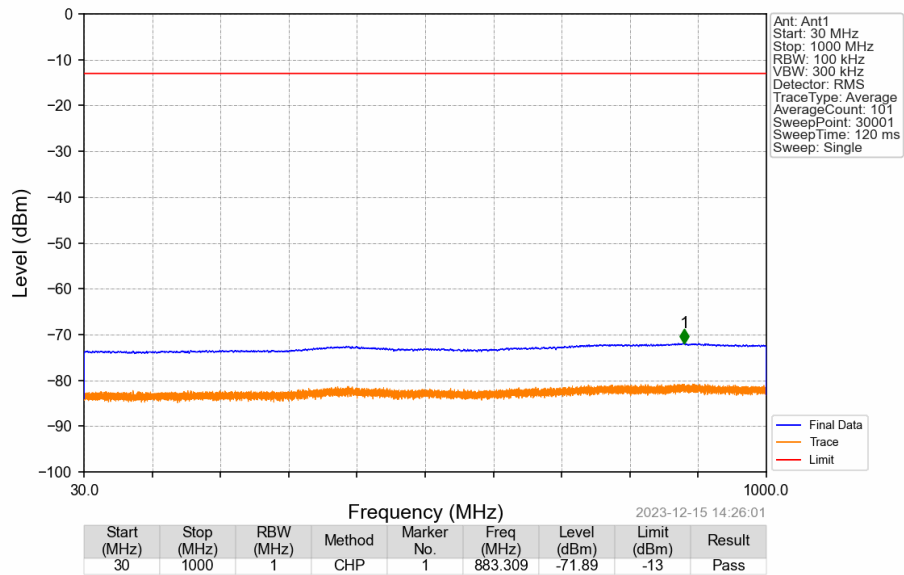
Band66_2112.5MHz_AWGN_SISO_Ant1_NTNV



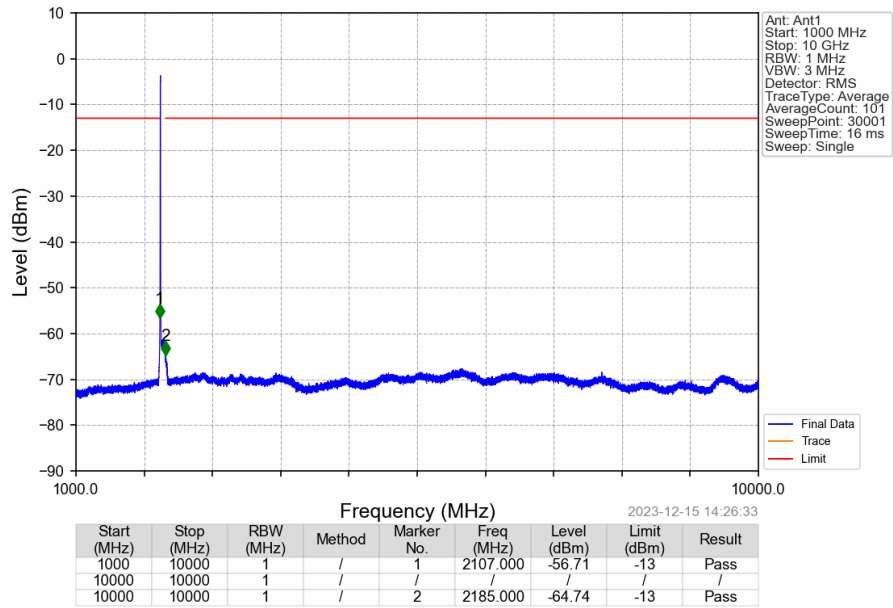
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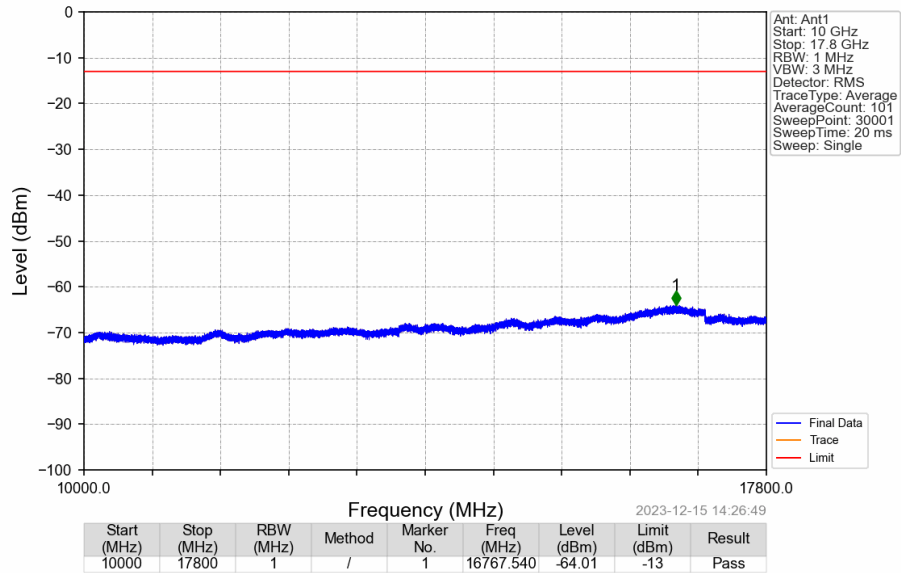
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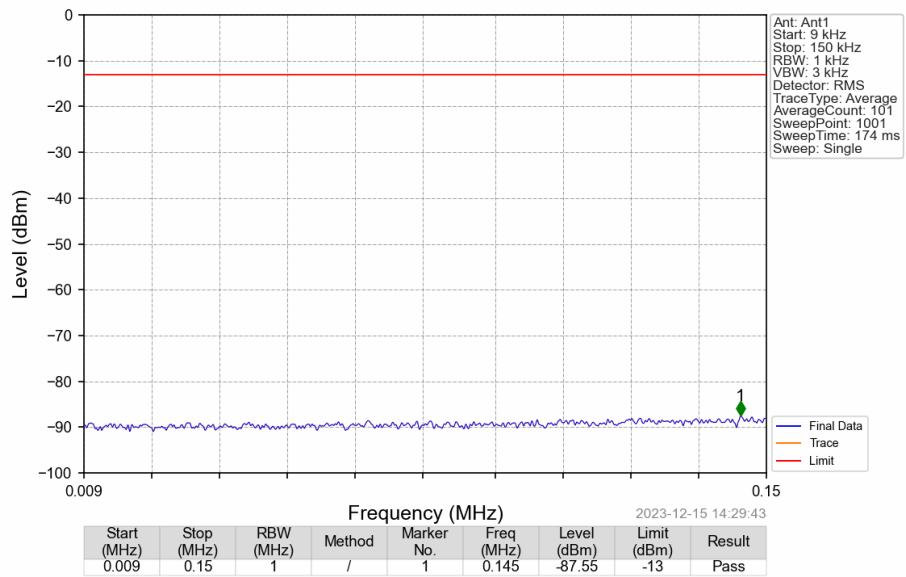
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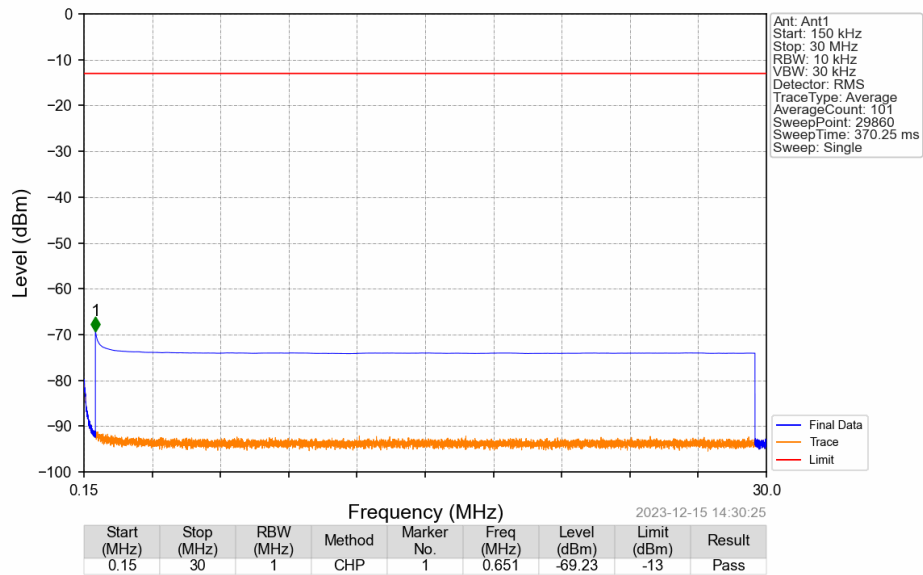
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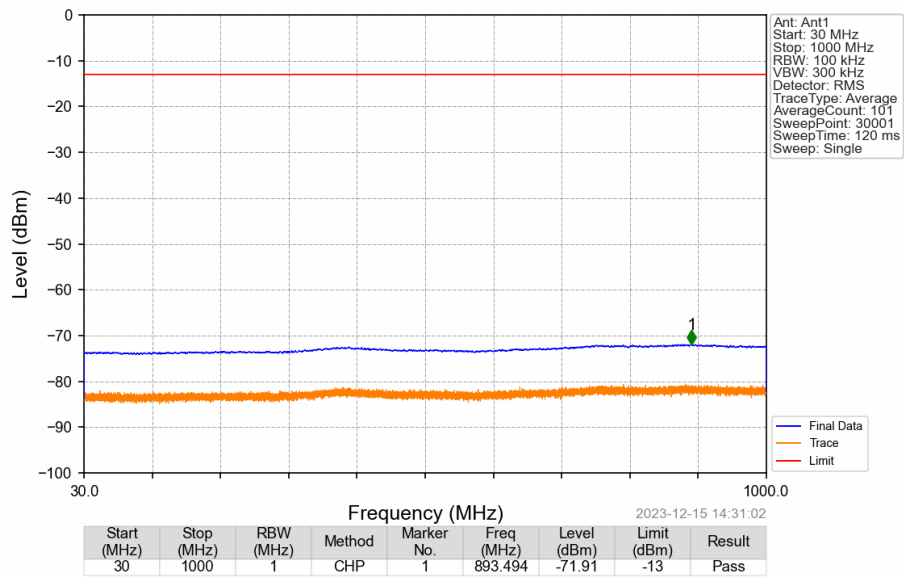
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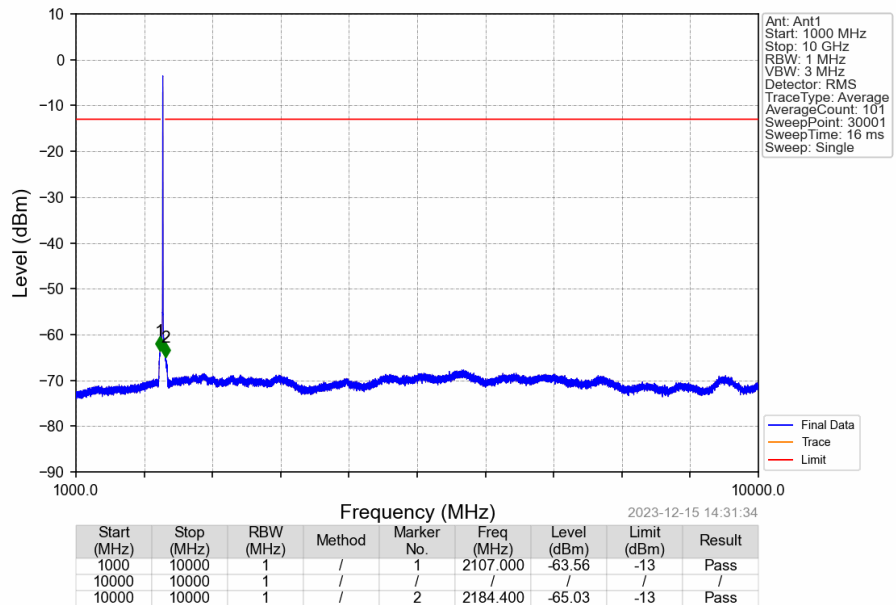
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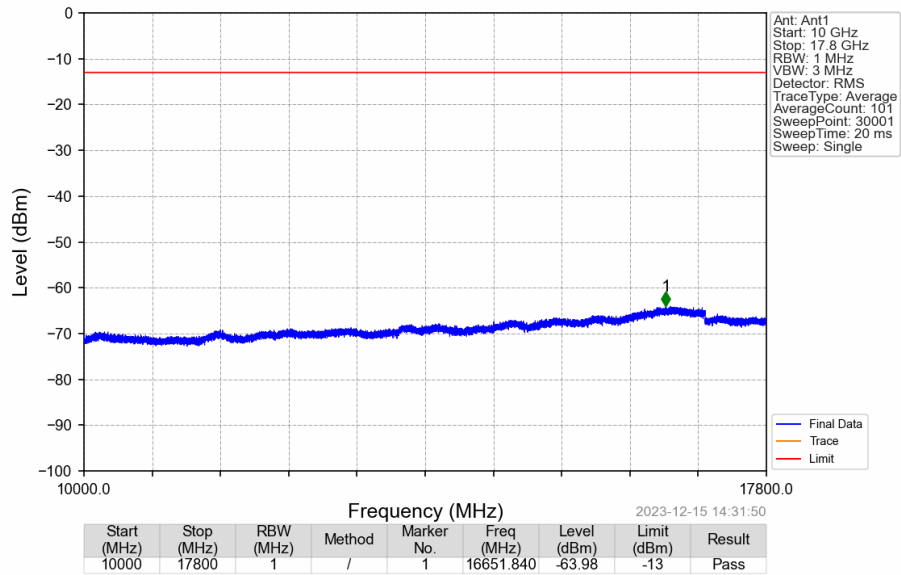
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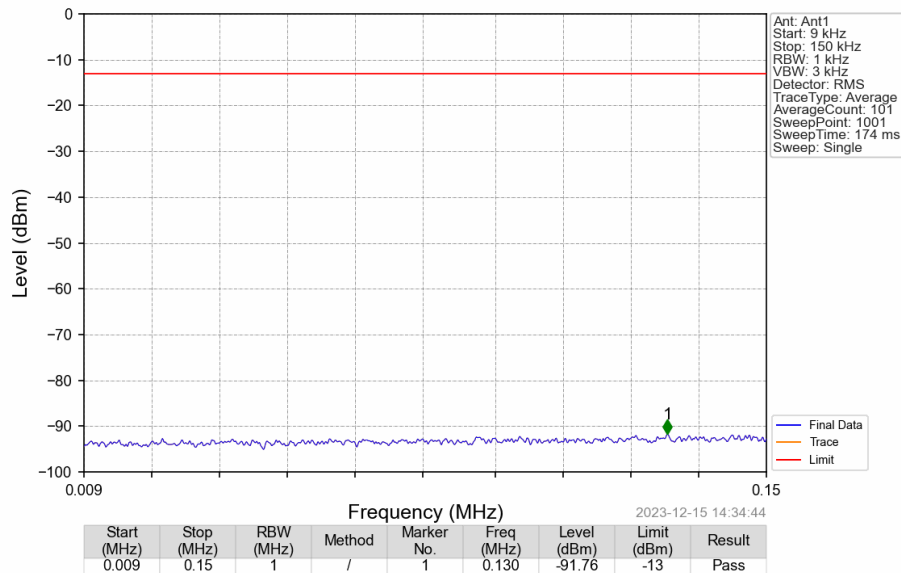
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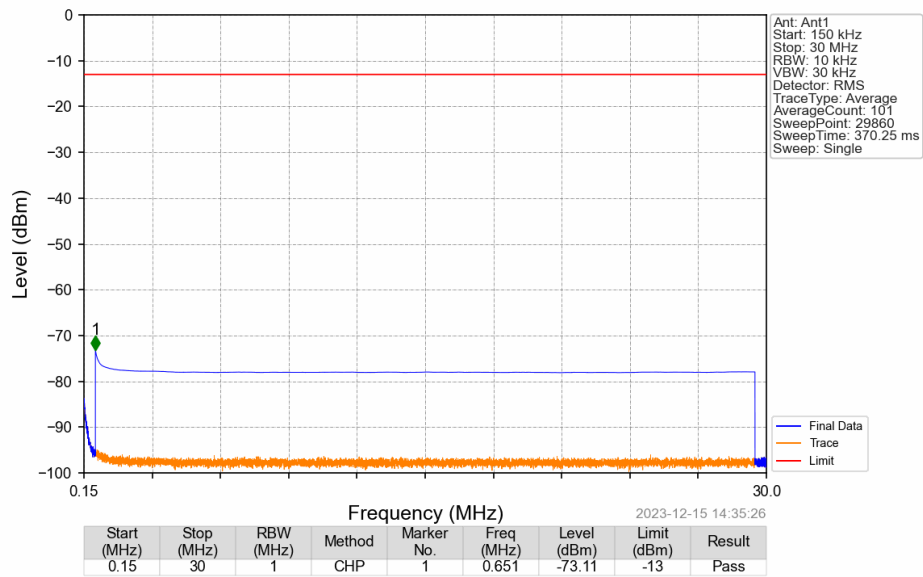
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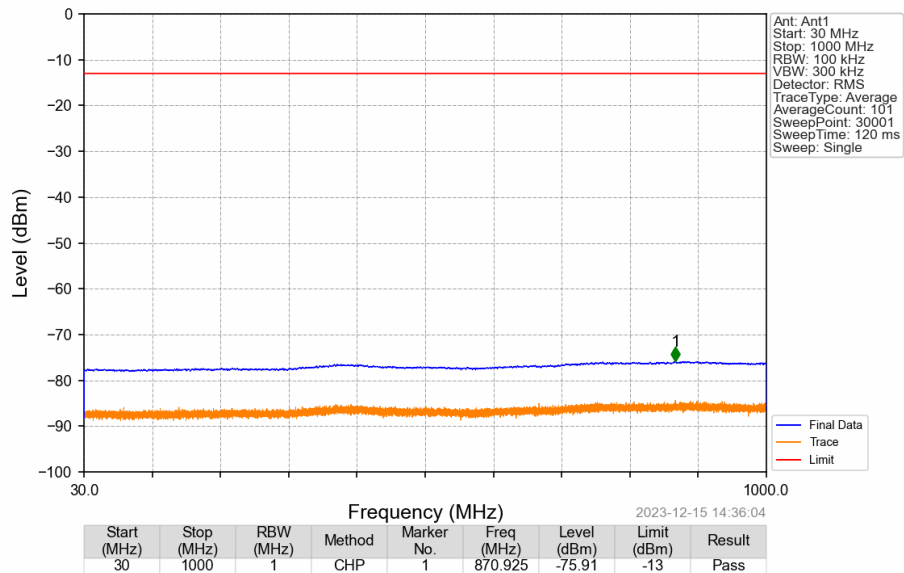
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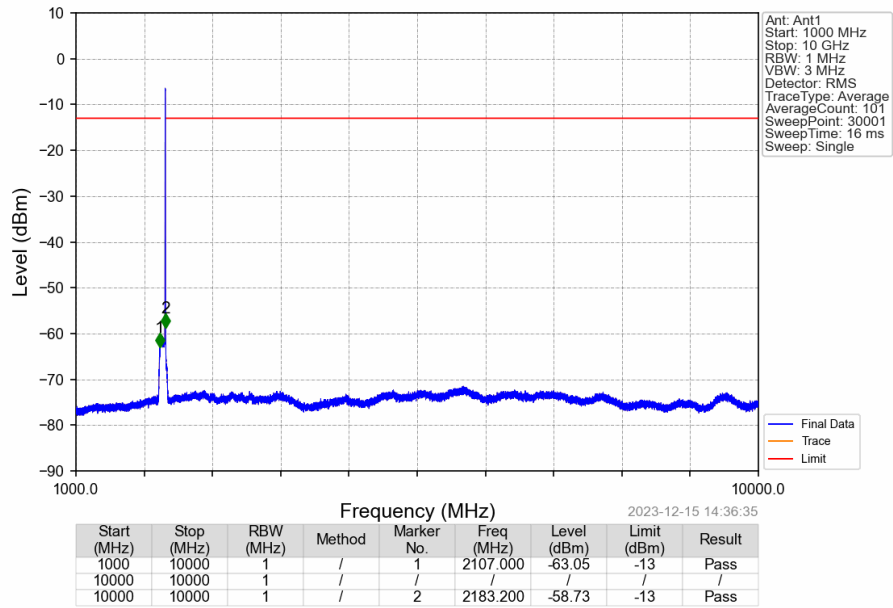
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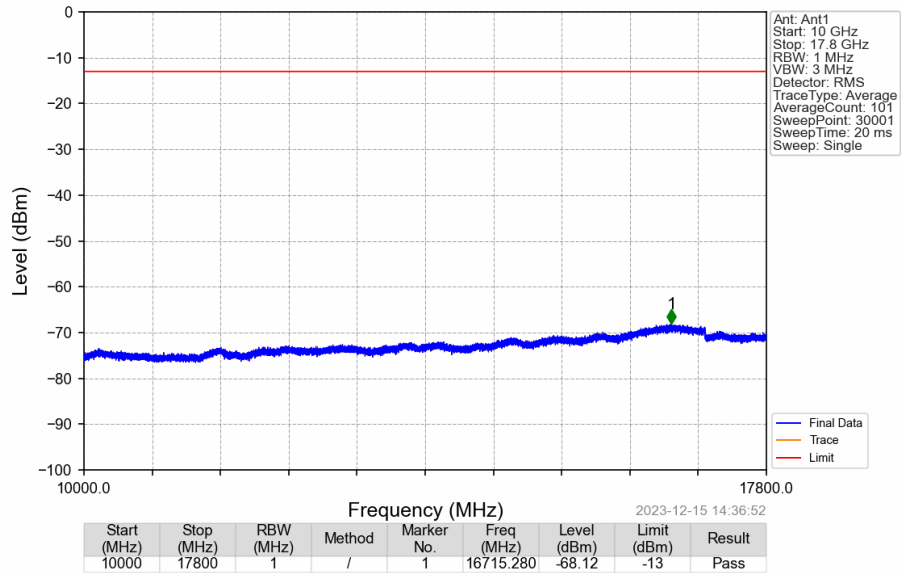
Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV



Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV



Band66_2177.5MHz_AWGN_SISO_Ant1_NTNV



7. Frequency stability measurements

7.1 Band66_Ant1

7.1.1 Test Result

Band: 66 / NTNV							
Signal			Temp (°C)	Voltage (VAC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-3.5	2110	20	102	-162	-0.0768	Pass
				120	-168	-0.0796	Pass
				138	-167	-0.0791	Pass
			-40	120	-166	-0.0787	Pass
			-30	120	-165	-0.0782	Pass
			-20	120	-161	-0.0763	Pass
			-10	120	-165	-0.0782	Pass
			0	120	-166	-0.0787	Pass
			10	120	-167	-0.0791	Pass
			30	120	-164	-0.0777	Pass
			40	120	-161	-0.0763	Pass
			55	120	-165	-0.0782	Pass
		2145	20	102	-170	-0.0793	Pass
				120	-172	-0.0802	Pass
				138	-175	-0.0816	Pass
			-40	120	-185	-0.0862	Pass
			-30	120	-180	-0.0839	Pass
			-20	120	-174	-0.0811	Pass
			-10	120	-175	-0.0816	Pass
			0	120	-179	-0.0834	Pass
			10	120	-180	-0.0839	Pass
			30	120	-176	-0.0821	Pass

			40	120	-185	-0.0862	Pass
			55	120	-179	-0.0834	Pass
		2180	20	102	-177	-0.0812	Pass
				120	-174	-0.0798	Pass
				138	-170	-0.0780	Pass
			-40	120	-171	-0.0784	Pass
			-30	120	-179	-0.0821	Pass
			-20	120	-177	-0.0812	Pass
			-10	120	-174	-0.0798	Pass
			0	120	-178	-0.0817	Pass
			10	120	-171	-0.0784	Pass
			30	120	-175	-0.0803	Pass
			40	120	-179	-0.0821	Pass
			55	120	-169	-0.0775	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	
100.05	Horizontal	-66.04	-13	-53.04	pass
264.92	Horizontal	-62.59	-13	-49.59	pass
556.00	Horizontal	-63.87	-13	-50.87	pass
1602.58	Horizontal	-49.83	-13	-36.83	pass
8231.05	Horizontal	-47.76	-13	-34.76	pass
10946.39	Horizontal	-36.61	-13	-23.61	pass
88.79	Vertical	-68.08	-13	-55.08	pass
218.32	Vertical	-60.60	-13	-47.6	pass
621.91	Vertical	-57.90	-13	-44.9	pass
1569.31	Vertical	-54.36	-13	-41.36	pass
8184.09	Vertical	-48.96	-13	-35.96	pass
10931.78	Vertical	-37.35	-13	-24.35	pass

AWGN_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
98.614	Horizontal	-64.32	-13	-51.32	pass
168.598	Horizontal	-58.90	-13	-45.9	pass
688.162	Horizontal	-57.37	-13	-44.37	pass
1355.380	Horizontal	-50.74	-13	-37.74	pass
7940.190	Horizontal	-50.39	-13	-37.39	pass
12595.190	Horizontal	-42.32	-13	-29.32	pass
76.295	Vertical	-65.97	-13	-52.97	pass
256.059	Vertical	-58.74	-13	-45.74	pass
523.046	Vertical	-56.30	-13	-43.3	pass
1352.69	Vertical	-50.48	-13	-37.48	pass
7910.42	Vertical	-50.46	-13	-37.46	pass
12639.12	Vertical	-39.20	-13	-26.2	pass

AWGN_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
105.21	Horizontal	-69.81	-13	-56.81	pass
282.28	Horizontal	-65.75	-13	-52.75	pass
561.79	Horizontal	-62.93	-13	-49.93	pass
1583.42	Horizontal	-47.82	-13	-34.82	pass
8220.78	Horizontal	-42.23	-13	-29.23	pass
10924.65	Horizontal	-36.62	-13	-23.62	pass
97.29	Vertical	-63.56	-13	-50.56	pass
226.175	Vertical	-62.11	-13	-49.11	pass
607.879	Vertical	-58.48	-13	-45.48	pass
1853.89	Vertical	-56.17	-13	-43.17	pass
7677.29	Vertical	-51.06	-13	-38.06	pass
11895.65	Vertical	-37.92	-13	-24.92	pass

GMSK_Low channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
105.88	Horizontal	-69.84	-13	-56.84	pass
282.91	Horizontal	-65.92	-13	-52.92	pass
791.06	Horizontal	-62.96	-13	-49.96	pass
1704.75	Horizontal	-46.74	-13	-33.74	pass
8516.28	Horizontal	-42.59	-13	-29.59	pass
11014.30	Horizontal	-36.57	-13	-23.57	pass
96.46	Vertical	-63.81	-13	-50.81	pass
231.30	Vertical	-61.99	-13	-48.99	pass
729.05	Vertical	-58.32	-13	-45.32	pass
2055.44	Vertical	-56.15	-13	-43.15	pass
7100.67	Vertical	-50.70	-13	-37.7	pass
11240.25	Vertical	-38.92	-13	-25.92	pass

GMSK_Middle channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
122.36	Horizontal	-69.79	-13	-56.79	pass
275.87	Horizontal	-64.97	-13	-51.97	pass
772.57	Horizontal	-62.18	-13	-49.18	pass
1696.50	Horizontal	-47.17	-13	-34.17	pass
8548.51	Horizontal	-42.42	-13	-29.42	pass
11025.90	Horizontal	-36.76	-13	-23.76	pass
87.27	Vertical	-64.97	-13	-51.97	pass
210.51	Vertical	-61.13	-13	-48.13	pass
695.00	Vertical	-58.15	-13	-45.15	pass
2038.32	Vertical	-56.43	-13	-43.43	pass
7102.11	Vertical	-51.57	-13	-38.57	pass
11216.67	Vertical	-38.85	-13	-25.85	pass

GMSK_High channel					
Frequency	Spurious Emission Polarization and Level		Limit	Over limit	Result
MHz	polarization	dBm	dBm	dB	
85.89	Horizontal	-64.64	-13	-51.64	pass
246.79	Horizontal	-61.36	-13	-48.36	pass
705.03	Horizontal	-58.01	-13	-45.01	pass
2043.86	Horizontal	-55.63	-13	-42.63	pass
7127.99	Horizontal	-50.94	-13	-37.94	pass
11221.00	Horizontal	-38.80	-13	-25.8	pass
102.88	Vertical	-64.56	-13	-51.56	pass
233.26	Vertical	-61.66	-13	-48.66	pass
719.32	Vertical	-57.20	-13	-44.2	pass
2050.19	Vertical	-55.54	-13	-42.54	pass
7119.88	Vertical	-50.69	-13	-37.69	pass
12219.87	Vertical	-40.10	-13	-27.1	pass