

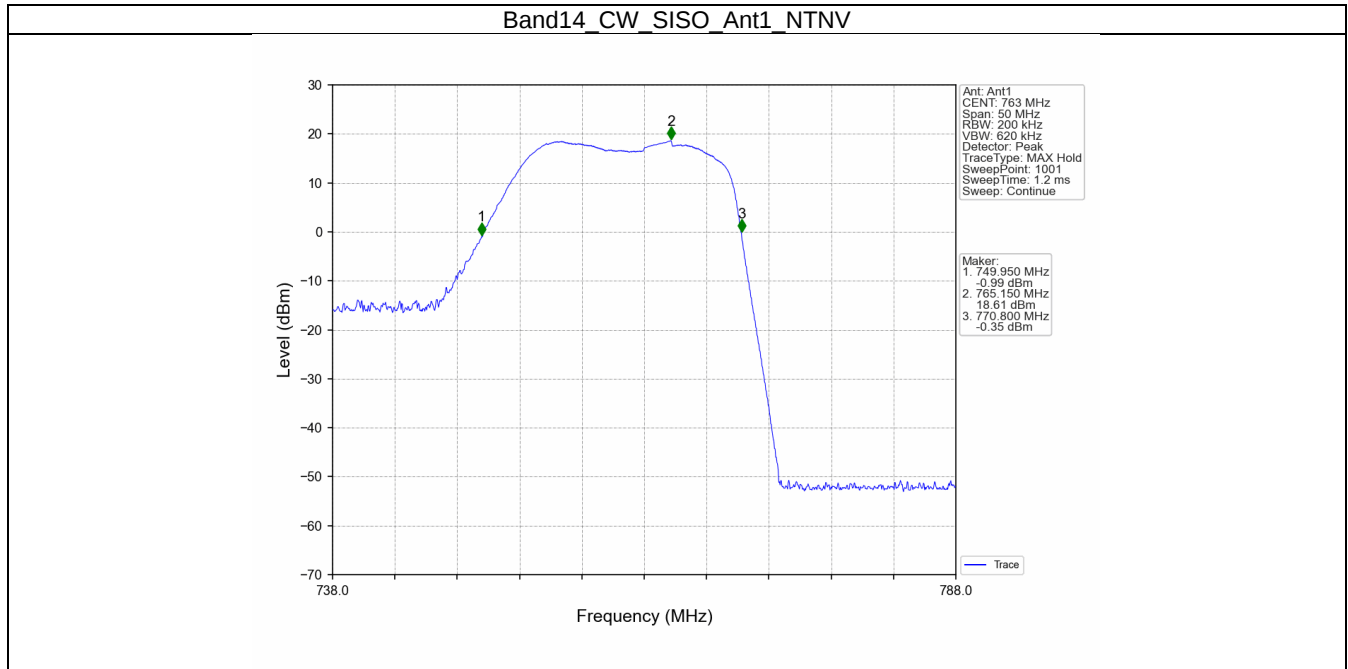
1. Out of band rejection

1.1 Band14

1.1.1 Test Result

Band: 14 / NTNV							
Signal	Sweep Frequency Range (MHz)	TX Type	ANT	F0 (MHz)	FL (MHz)	FH (MHz)	Verdict
CW	738 - 788	SISO	1	765.150	749.950	770.800	Pass

1.1.2 Test Graph



2. AGC threshold

2.1 Band14

2.1.1 Test Result

Band: 14 / NTNV					
Signal	Frequency (MHz)	TX Type	ANT	AGC Threshold (dBm)	Verdict
GMSK 0.2MHz	765.15	SISO	1	-3.40	Pass
AWGN 5MHz	765.15	SISO	1	-3.40	Pass

3. Input-versus-output signal comparison

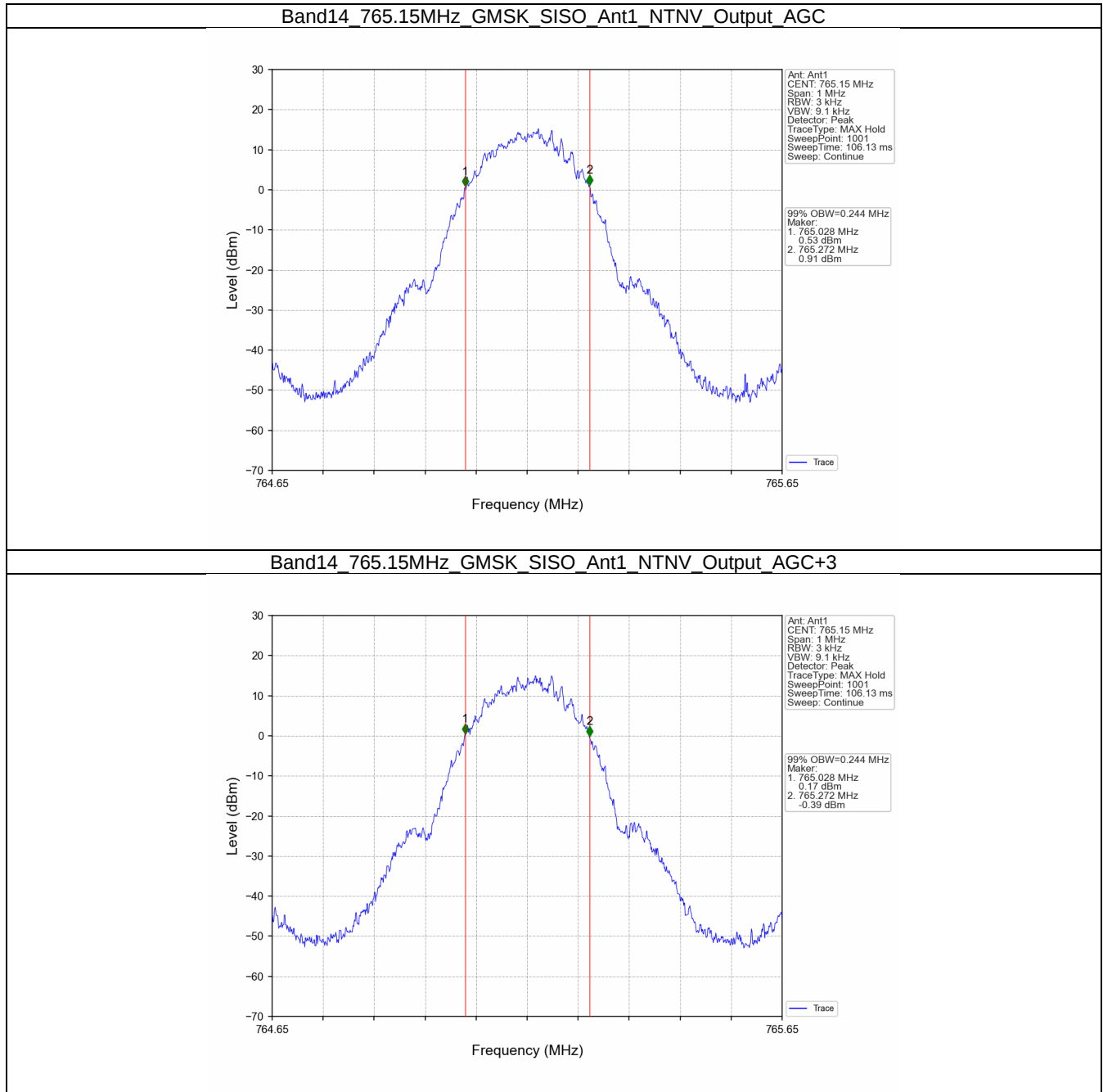
3.1 Band14_OBW

3.1.1 Test Result

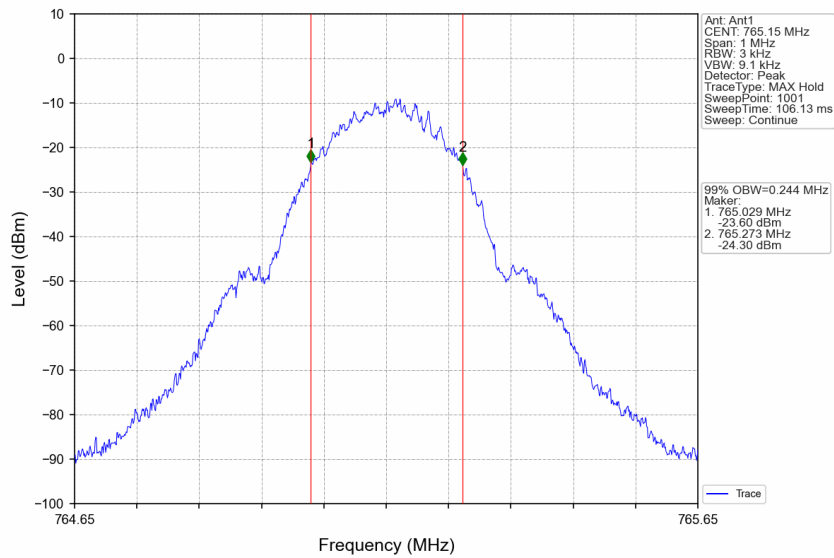
Band: 14 / NTNV									
Signal			TX Type	ANT	99% OBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK	-3.4	765.15	SISO	1	0.244	0.244	0.00	<5.00	Pass
0.2MHz	-0.4	765.15	SISO	1	0.244	0.245	0.41	<5.00	Pass
AWGN	-3.4	765.15	SISO	1	4.516	4.539	0.51	<5.00	Pass
5MHz	-0.4	765.15	SISO	1	4.517	4.532	0.33	<5.00	Pass

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

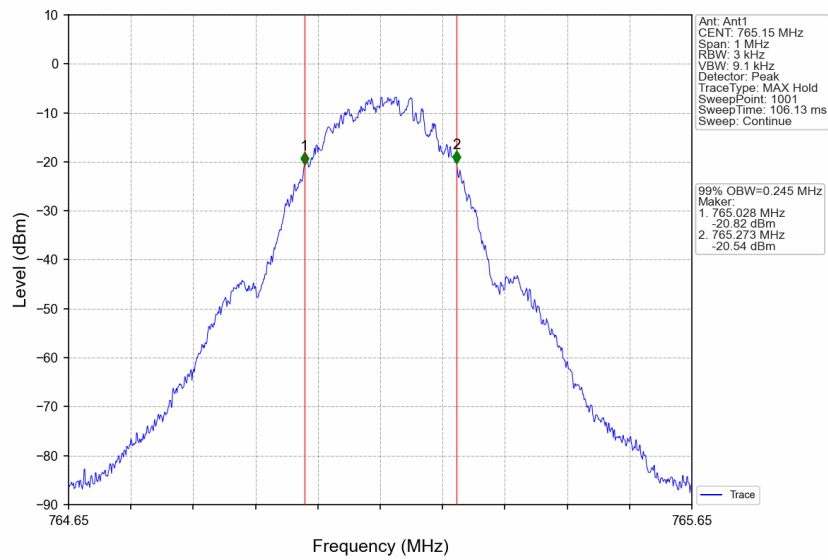
3.1.2 Test Graph



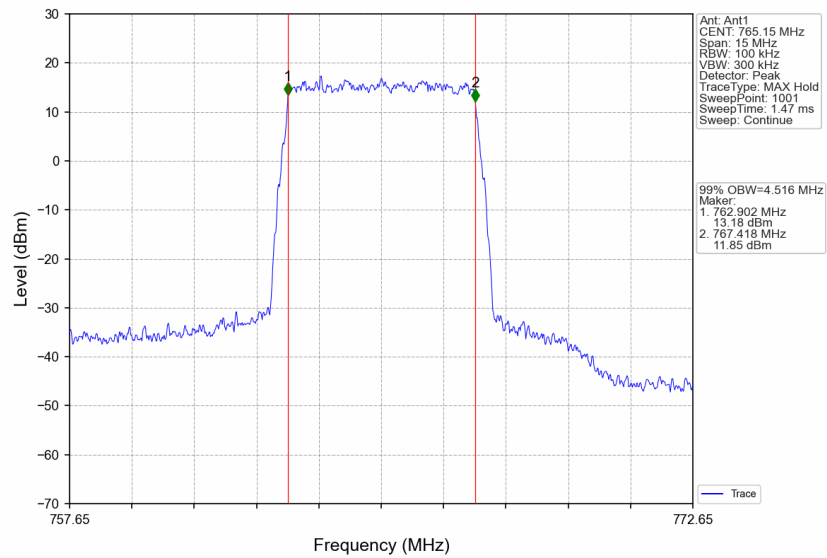
Band14_765.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



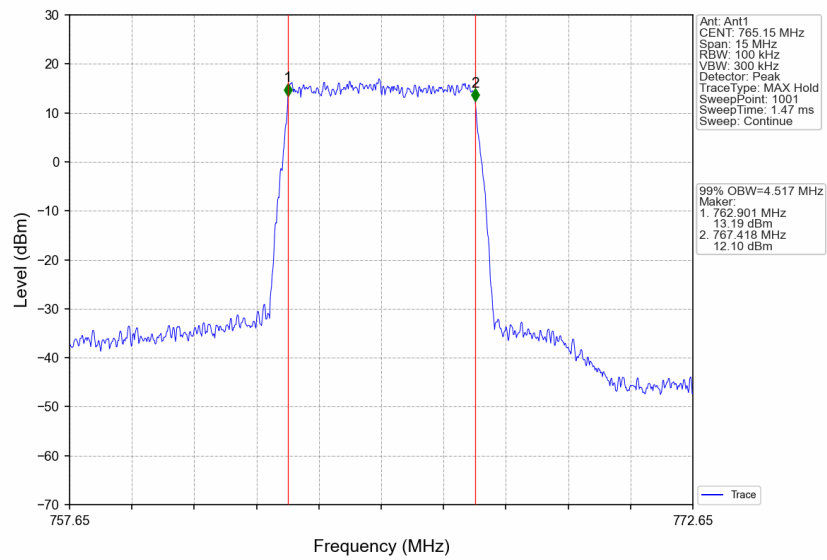
Band14_765.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



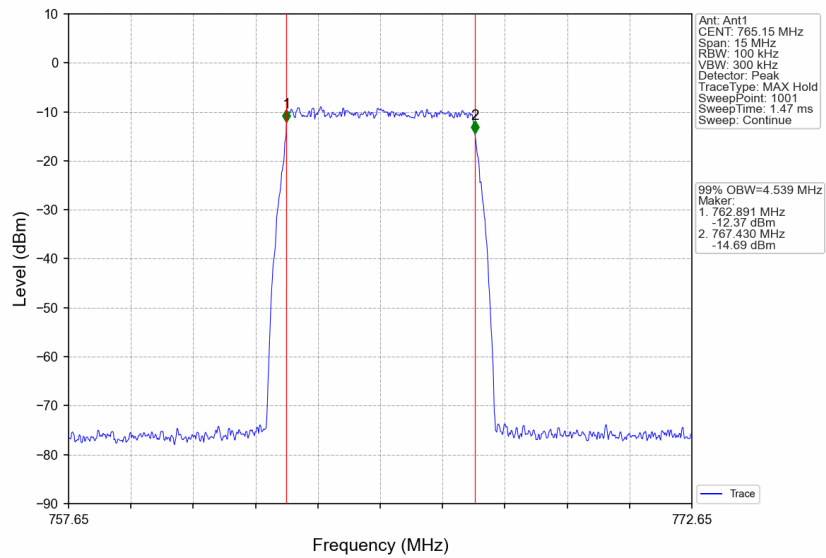
Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



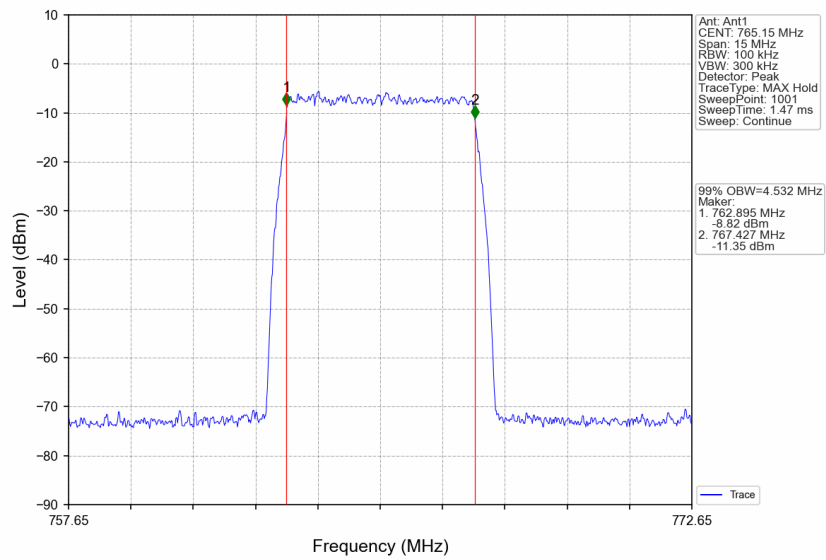
Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



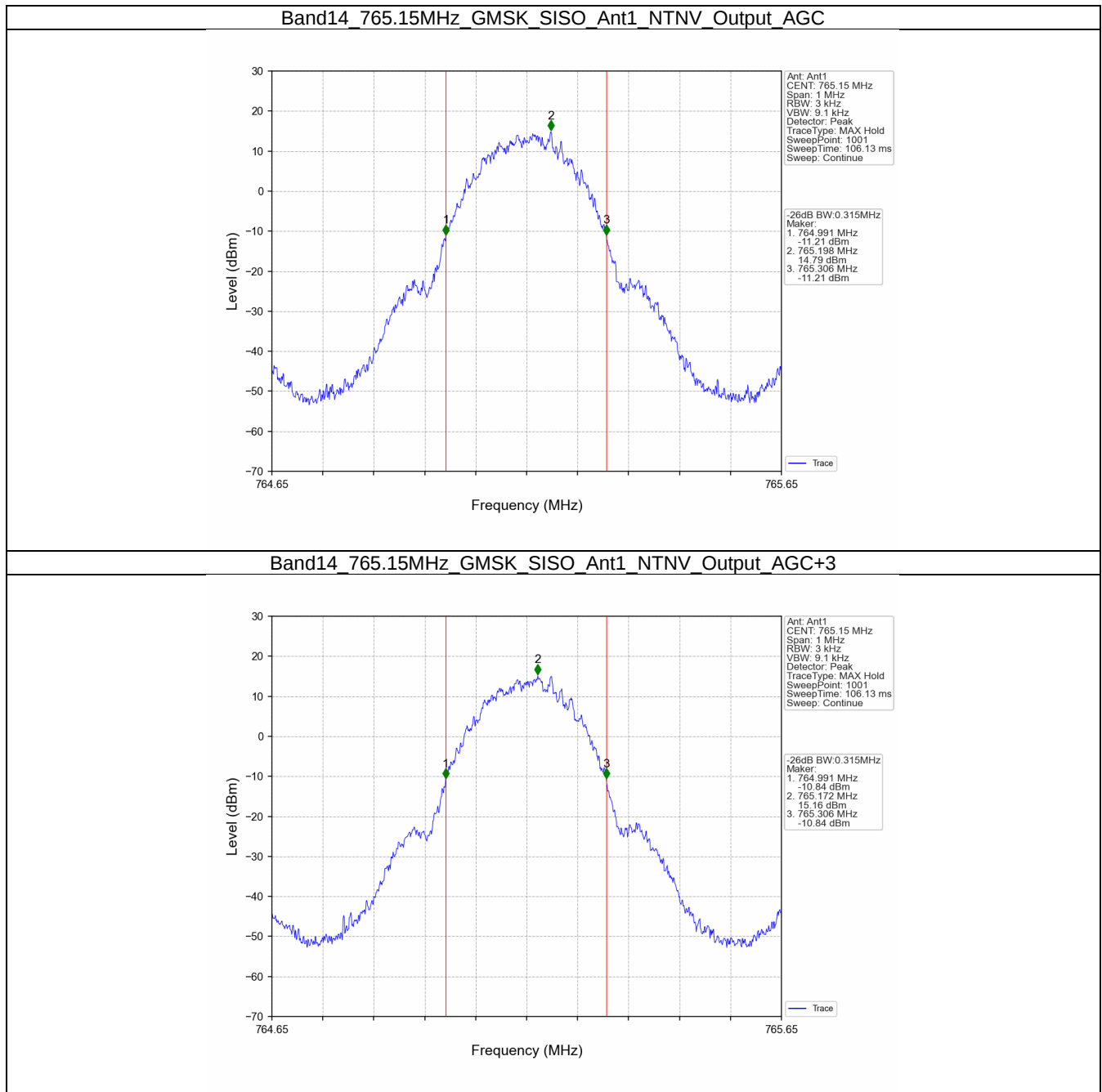
3.2 Band14_EBW

3.2.1 Test Result

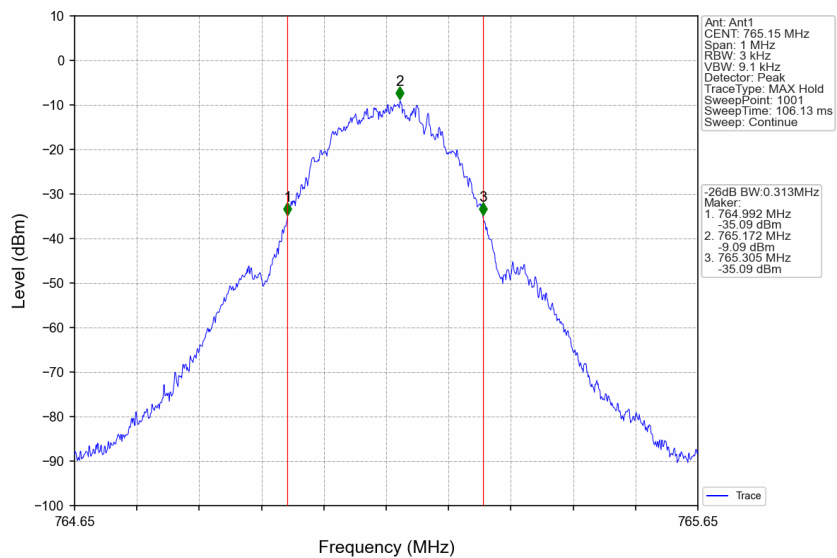
Band: 14 / NTNV									
Signal			TX Type	ANT	26dB EBW (MHz)		Deviation (%)	Limit (%)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input			
GMSK 0.2MHz	-3.4	765.15	SISO	1	0.315	0.313	0.64	<5.00	Pass
	-0.4	765.15	SISO	1	0.315	0.315	0.00	<5.00	Pass
AWGN 5MHz	-3.4	765.15	SISO	1	5.038	5.034	0.08	<5.00	Pass
	-0.4	765.15	SISO	1	5.032	5.056	0.47	<5.00	Pass

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

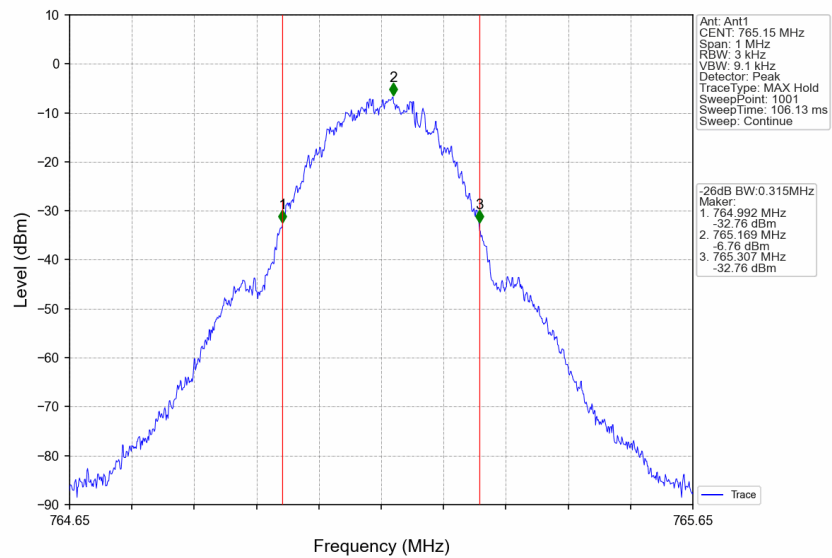
3.2.2 Test Graph



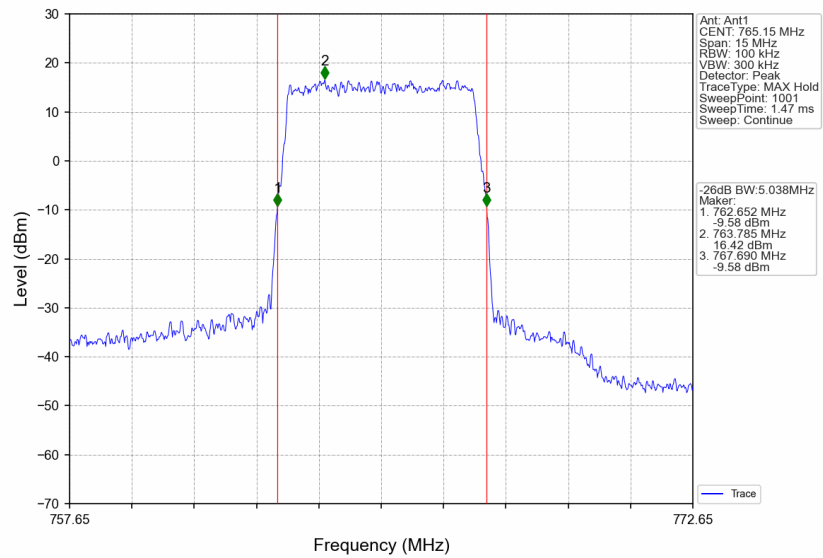
Band14_765.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC



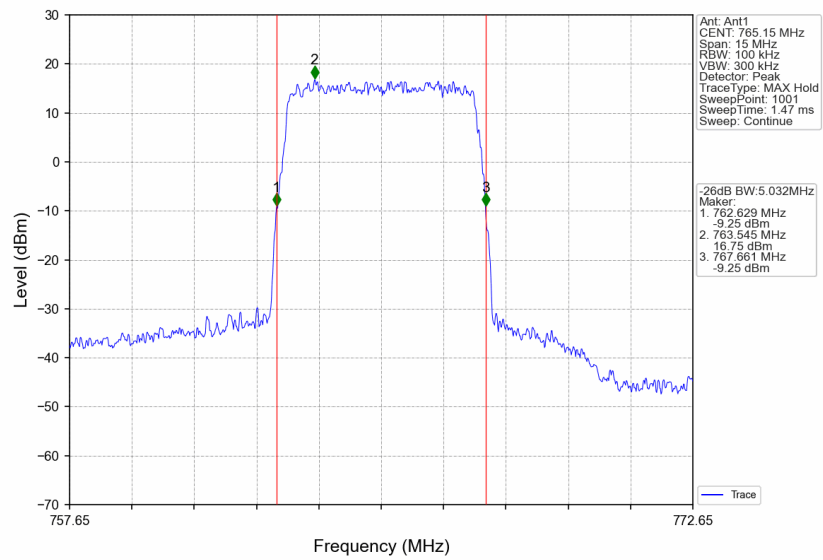
Band14_765.15MHz_GMSK_SISO_Ant1_NTNV_Input_AGC+3



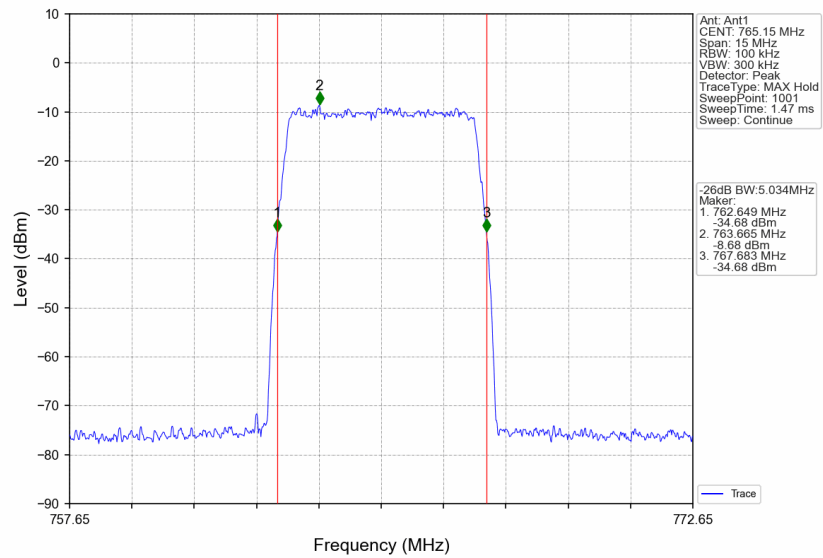
Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC



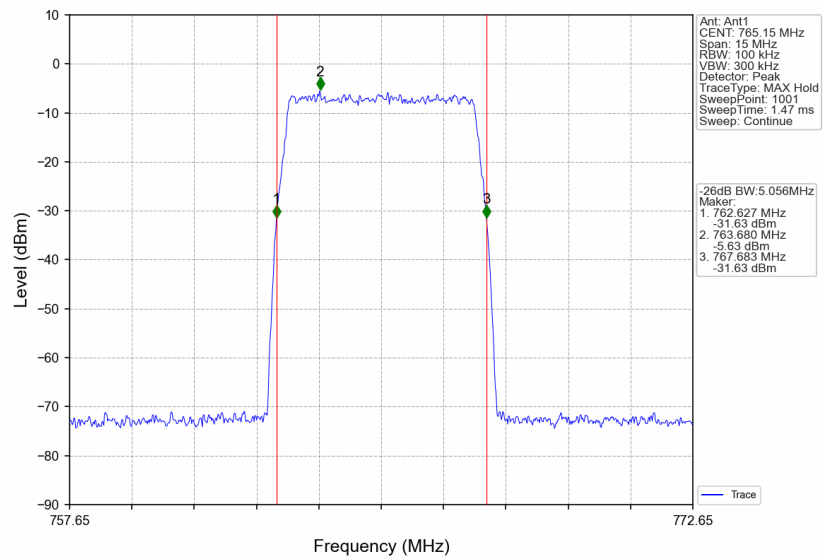
Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Output_AGC+3



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_Input_AGC+3



4. Input/output power and amplifier/booster gain

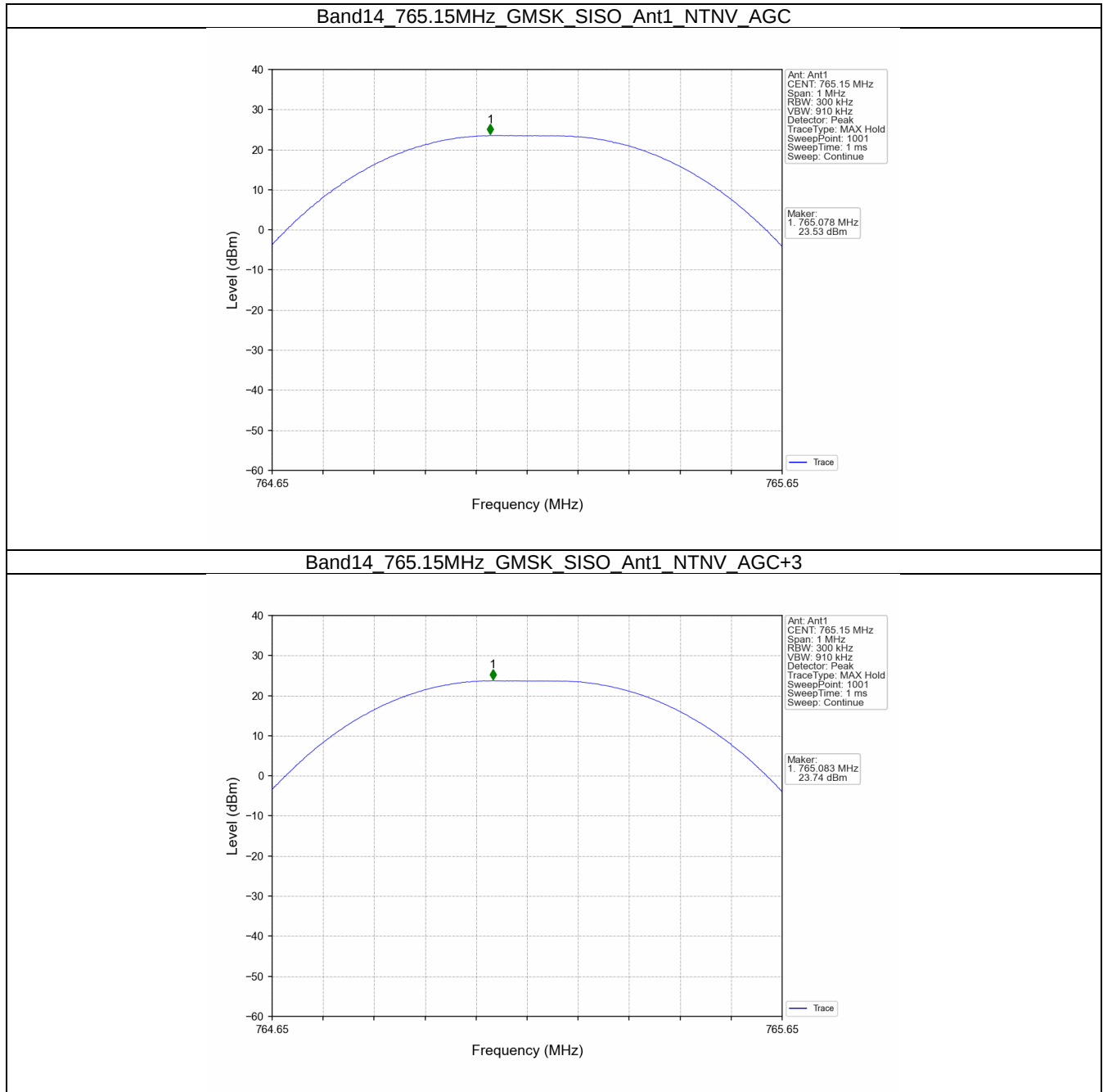
4.1 Band14_ERP

4.1.1 Test Result

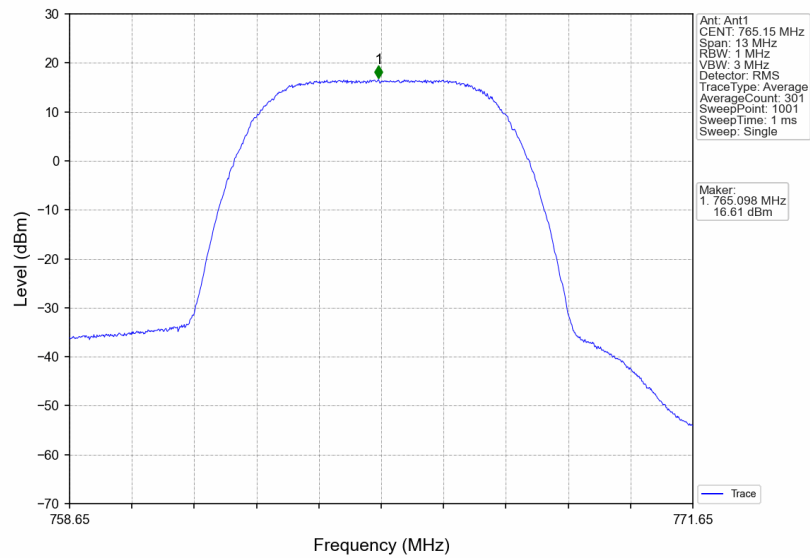
Band: 14 / NTNV										
Signal			TX Type	ANT	Conducted Power (dBm/MHz)		ERP (dBm/MHz)		Booster Gain (dB)	Verdict
Type	Level (dBm)	Frequency (MHz)			Output	Input	Result	Limit		
GMSK	-3.4	765.15	SISO	1	23.53	-3.35	36.38	<=63.01	26.88	Pass
0.2MHz	-0.4	765.15	SISO	1	23.74	-0.38	36.59	<=63.01	/	Pass
AWGN	-3.4	765.15	SISO	1	16.61	-10.36	29.46	<=63.01	26.97	Pass
5MHz	-0.4	765.15	SISO	1	16.72	-7.39	29.57	<=63.01	/	Pass

Band: 14 / NTNV						
Signal			Conducted Power (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Type	Level (dBm)	Frequency (MHz)	SISO	SISO		
GMSK	-3.4	765.15	23.53	36.38	36.99	Pass
0.2MHz	-0.4	765.15	23.74	36.59	36.99	Pass
AWGN	-3.4	765.15	23.60	36.45	36.99	Pass
5MHz	-0.4	765.15	23.71	36.56	36.99	Pass

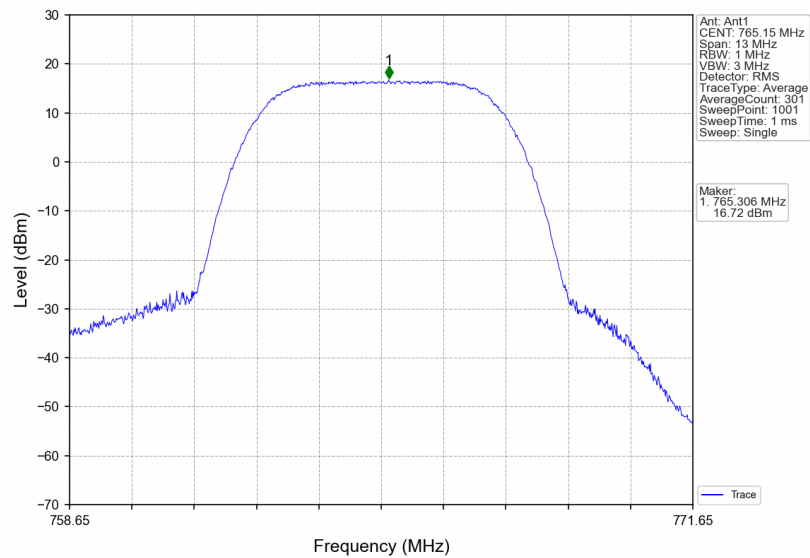
4.1.2 Test Graph



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_AGC



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_AGC+3

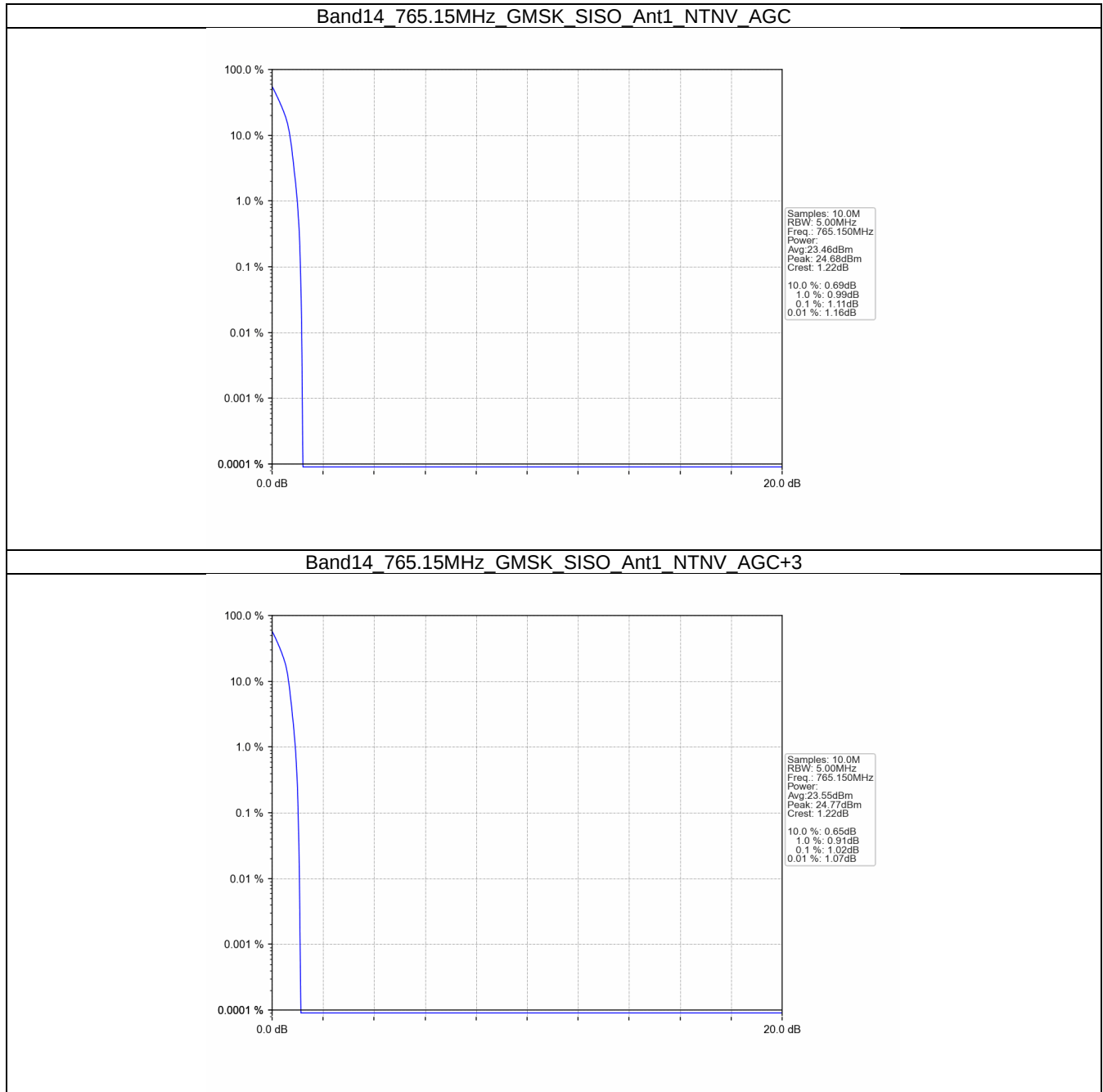


4.2 Band14_PAPR

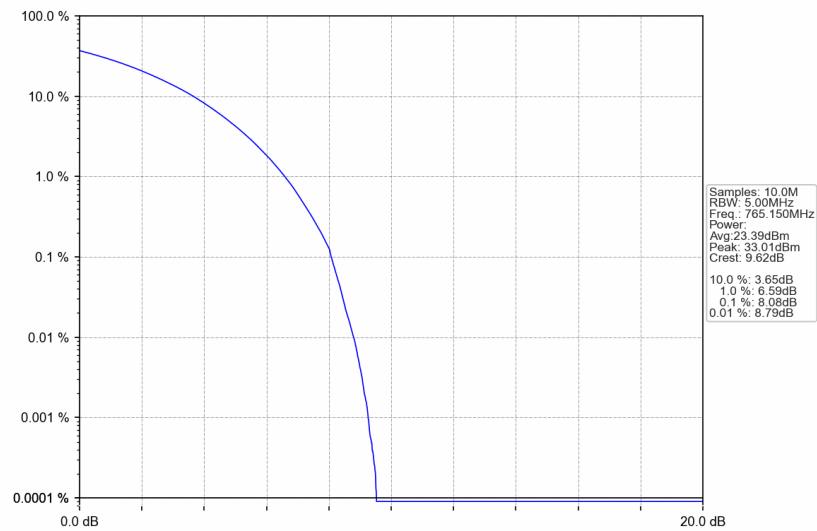
4.2.1 Test Result

Band: 14 / NTNV							
Signal			TX Type	ANT	PAPR (dB)		Verdict
Type	Level (dBm)	Frequency (MHz)			Result	Limit	
GMSK	-3.4	765.15	SISO	1	1.11	<=13	Pass
0.2MHz	-0.4	765.15	SISO	1	1.02	<=13	Pass
AWGN	-3.4	765.15	SISO	1	8.08	<=13	Pass
5MHz	-0.4	765.15	SISO	1	8.00	<=13	Pass

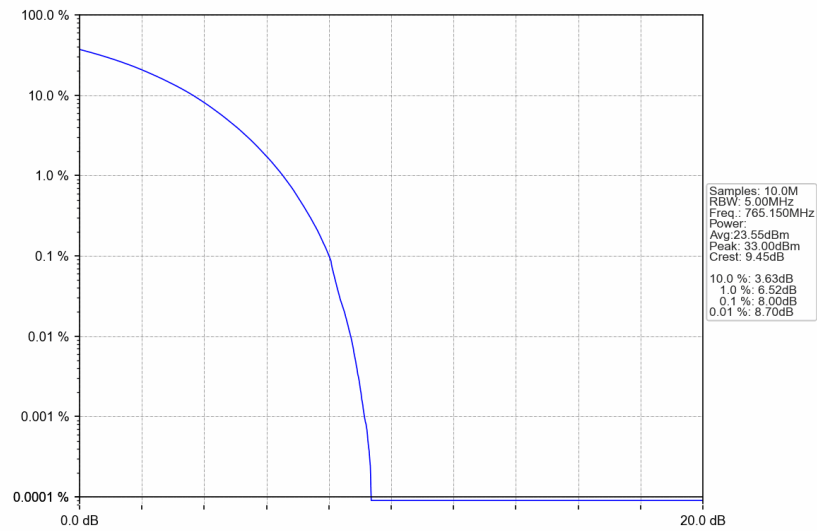
4.2.2 Test Graph



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_AGC



Band14_765.15MHz_AWGN_SISO_Ant1_NTNV_AGC+3



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

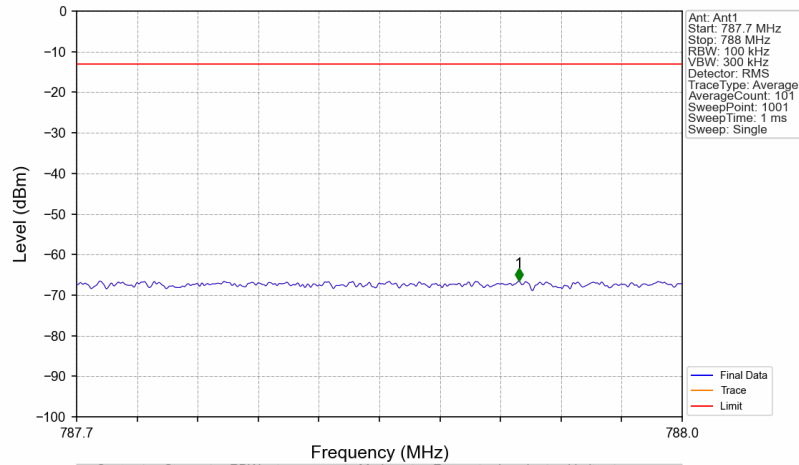
5.1 Band14

5.1.1 Test Result

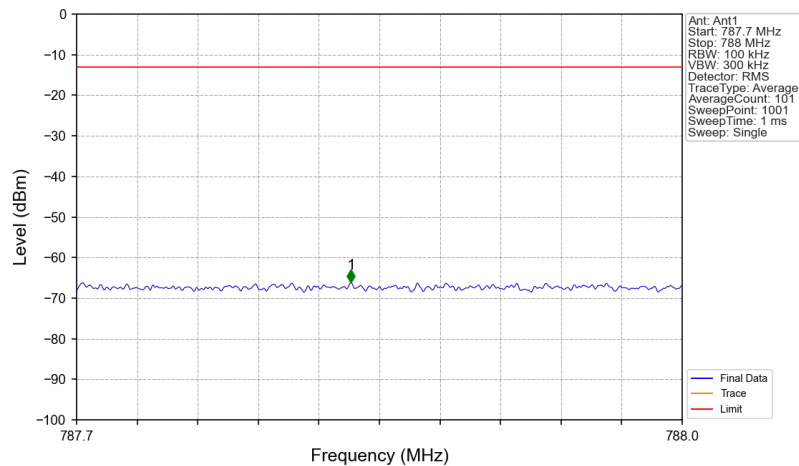
Band: 14 / NTNV									
Signal				Channel	TX Type	ANT	OOB (dBm)		Verdict
Input	Type	Level (dBm)	Frequency (MHz)				Result	Limit	
Two	GMSK 0.2MHz	-3.4	758.2	LCH	SISO	1	-66.53	Refer To Test Graph	Pass
		-0.4	758.2	LCH	SISO	1	-66.17	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.4	758.2	LCH	SISO	1	-66.50	Refer To Test Graph	Pass
		-0.4	758.2	LCH	SISO	1	-66.21	Refer To Test Graph	Pass
Two	GMSK 0.2MHz	-3.4	767.8	HCH	SISO	1	-75.97	Refer To Test Graph	Pass
		-0.4	767.8	HCH	SISO	1	-75.84	Refer To Test Graph	Pass
One	GMSK 0.2MHz	-3.4	767.8	HCH	SISO	1	-75.77	Refer To Test Graph	Pass
		-0.4	767.8	HCH	SISO	1	-76.10	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.4	760.5	LCH	SISO	1	-66.20	Refer To Test Graph	Pass
		-0.4	760.5	LCH	SISO	1	-66.27	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.4	760.5	LCH	SISO	1	-66.43	Refer To Test Graph	Pass
		-0.4	760.5	LCH	SISO	1	-66.33	Refer To Test Graph	Pass
Two	AWGN 5MHz	-3.4	765.5	HCH	SISO	1	-75.81	Refer To Test Graph	Pass
		-0.4	765.5	HCH	SISO	1	-75.25	Refer To Test Graph	Pass
One	AWGN 5MHz	-3.4	765.5	HCH	SISO	1	-75.95	Refer To Test Graph	Pass
		-0.4	765.5	HCH	SISO	1	-75.94	Refer To Test Graph	Pass

5.1.2 Test Graph

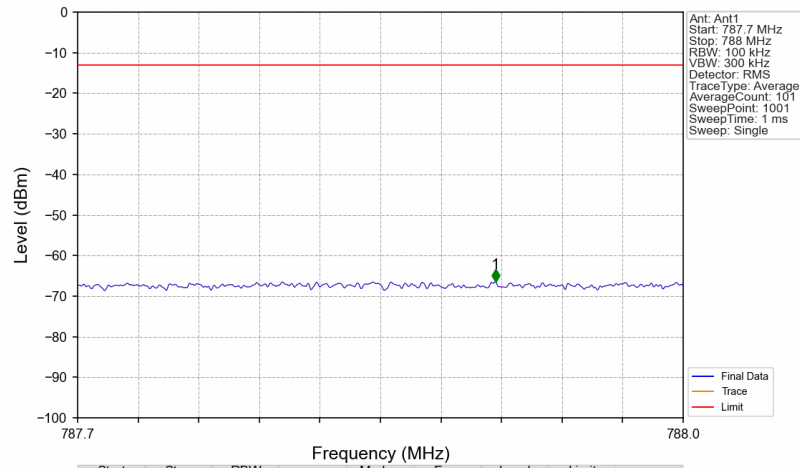
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV_AGC



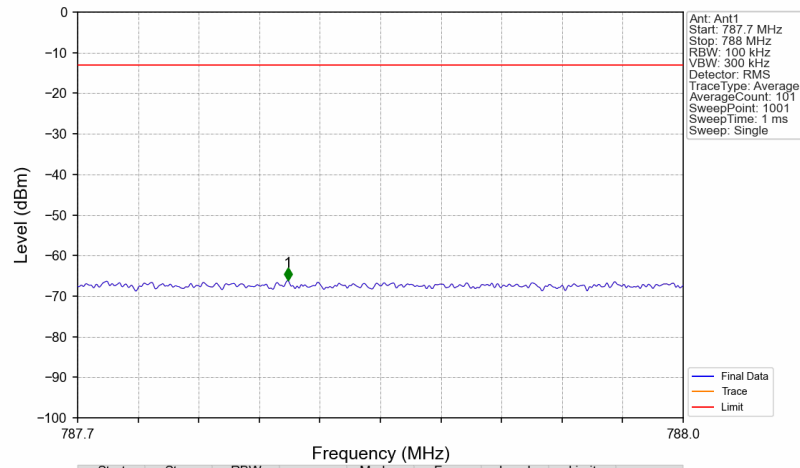
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV_AGC+3



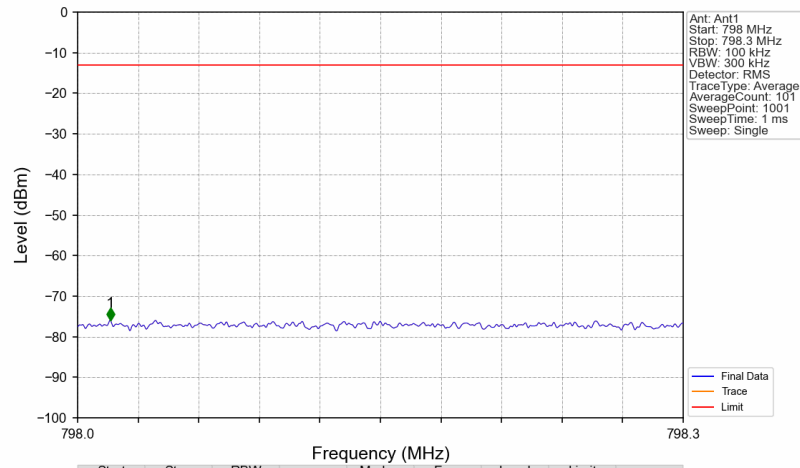
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV_AGC



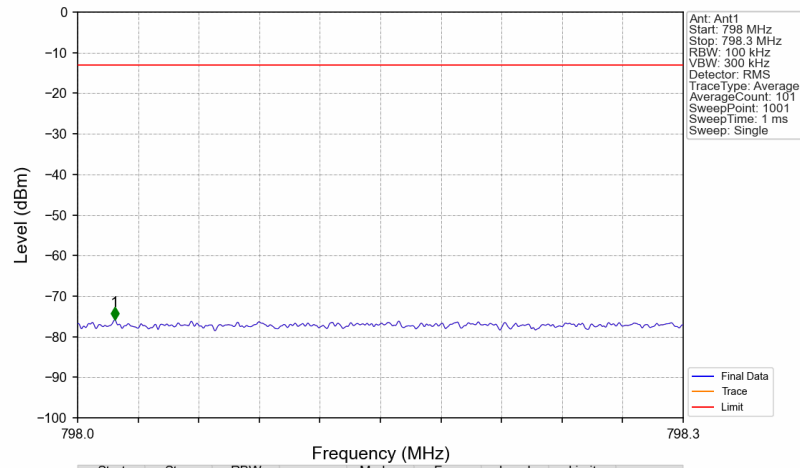
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV_AGC+3



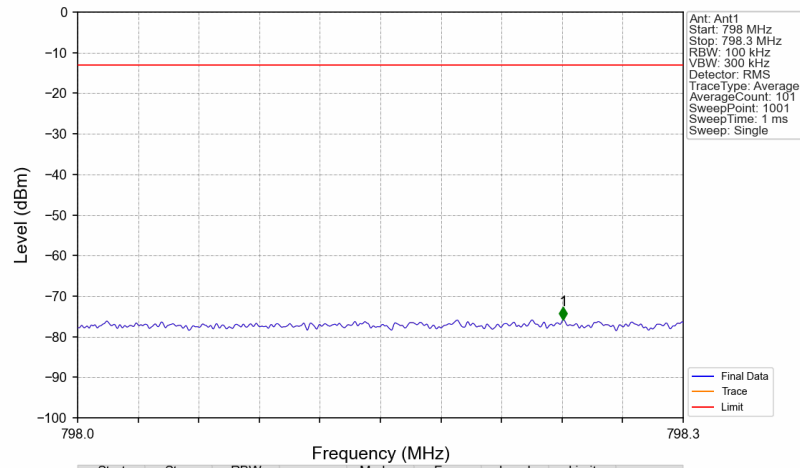
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV_AGC



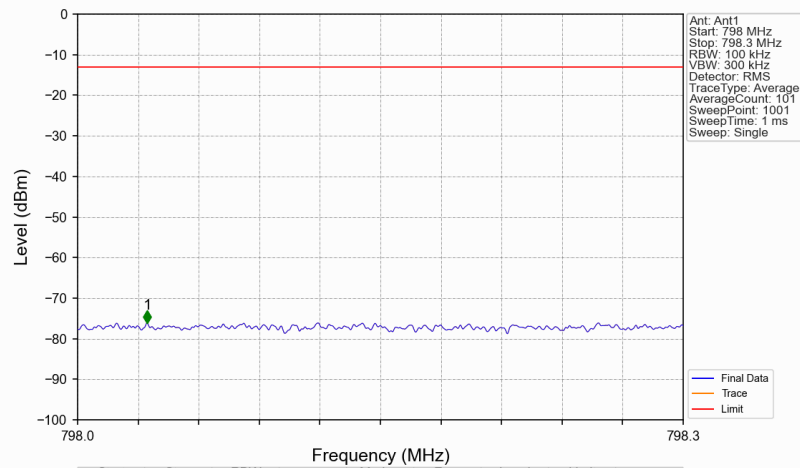
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



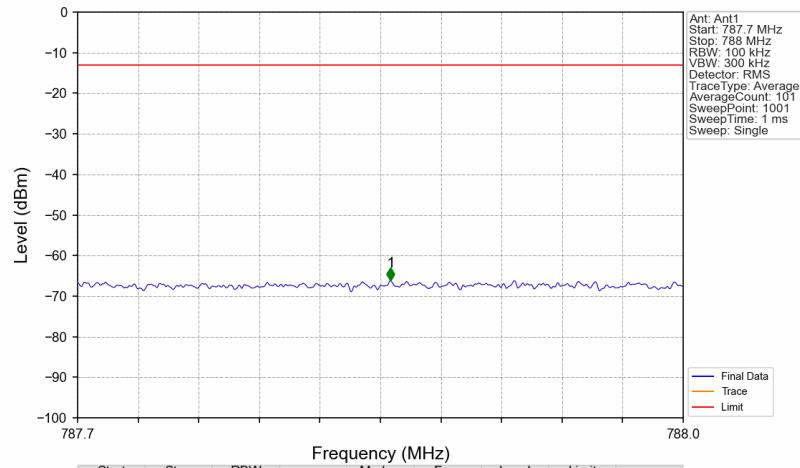
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV_AGC



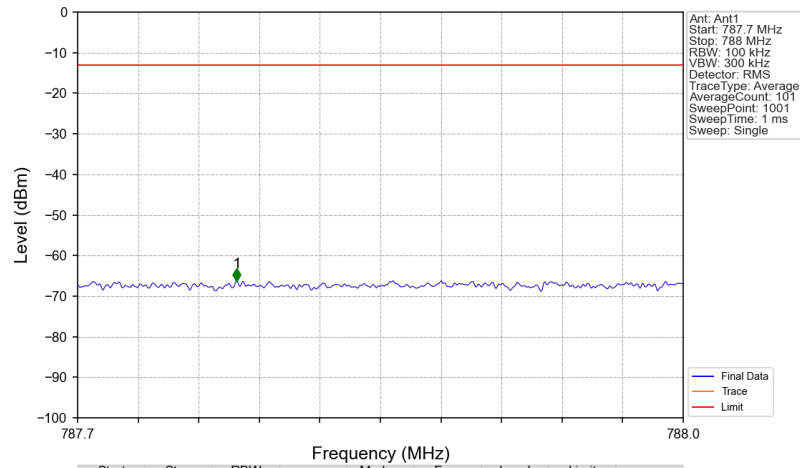
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV_AGC+3



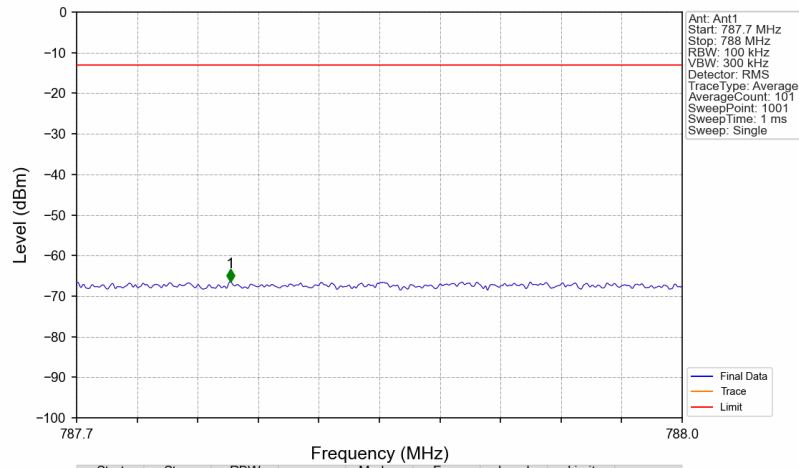
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV_AGC



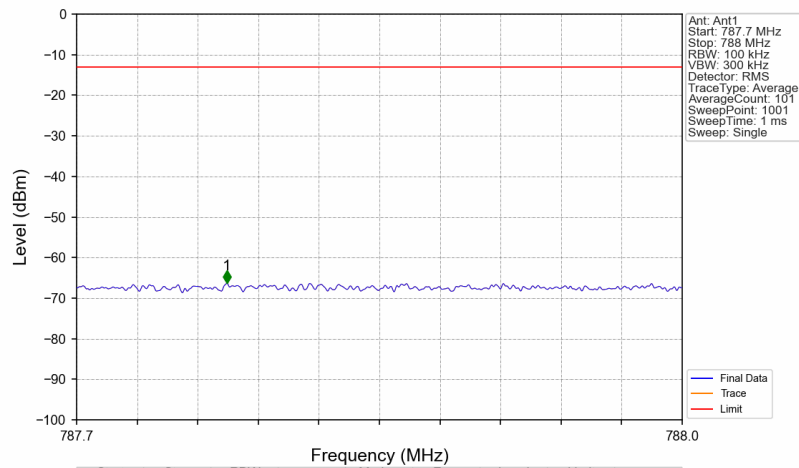
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



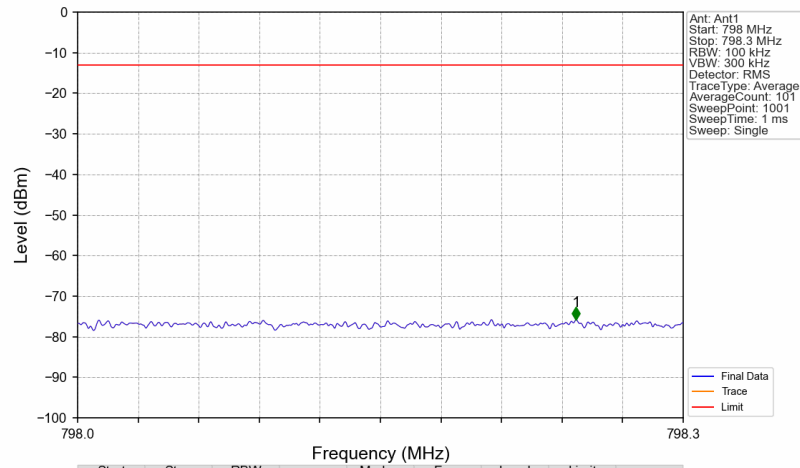
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV_AGC



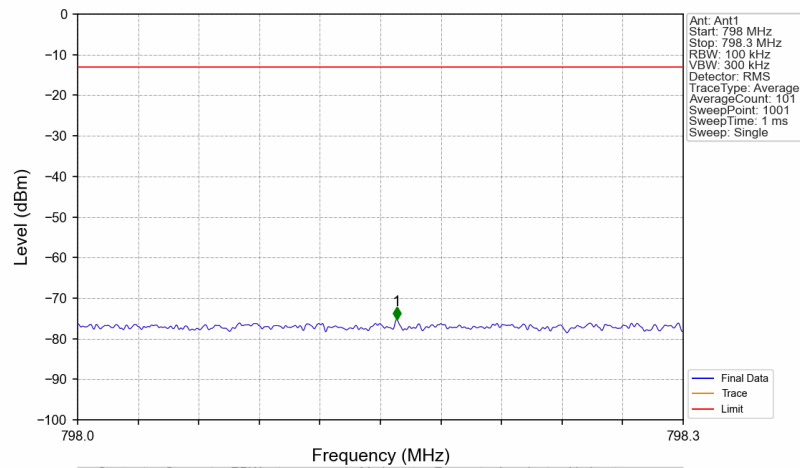
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



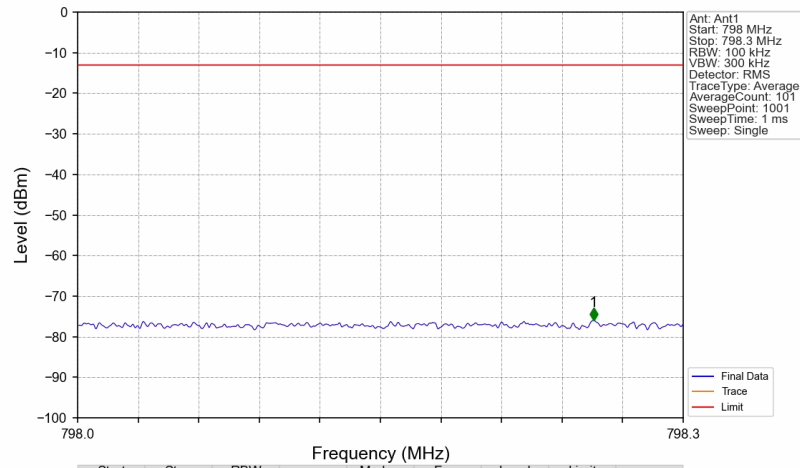
Band14_765.5MHz_AWGN_SISO_Ant1_NTNV_AGC



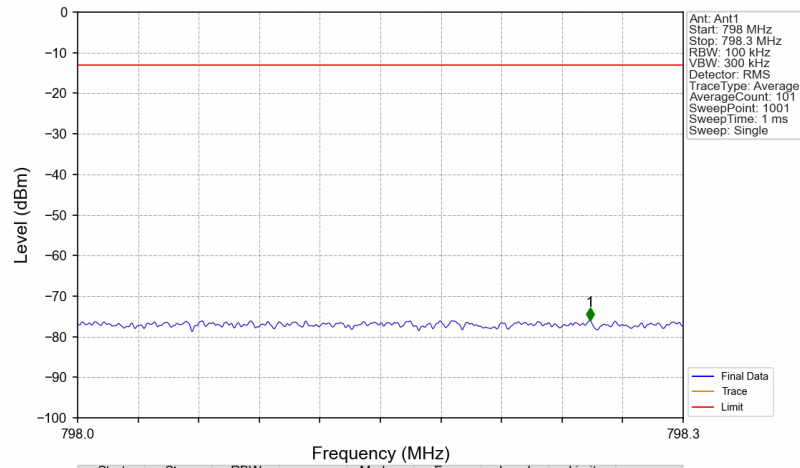
Band14_765.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



Band14_765.5MHz_AWGN_SISO_Ant1_NTNV_AGC



Band14_765.5MHz_AWGN_SISO_Ant1_NTNV_AGC+3



6. Spurious emissions

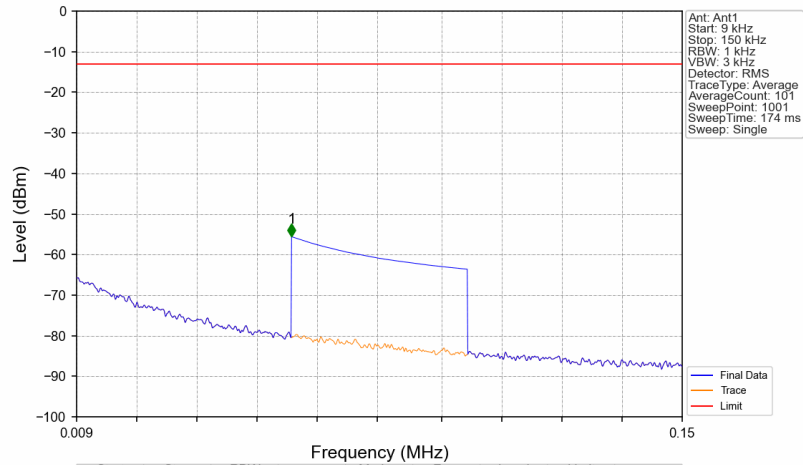
6.1 Band14

6.1.1 Test Result

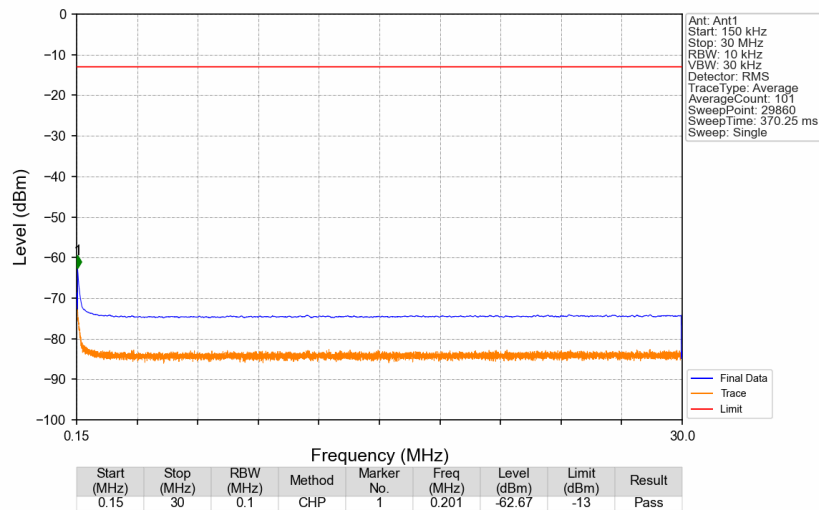
Band: 14 / NTNV								
Signal			Channel	TX Type	ANT	SE (dBm)		Verdict
Type	Level (dBm)	Frequency (MHz)				Result	Limit	
GMSK 0.2MHz	-3.4	758.2	LCH	SISO	1	Refer To Test Graph		Pass
		763	MCH	SISO	1	Refer To Test Graph		Pass
		767.8	HCH	SISO	1	Refer To Test Graph		Pass
AWGN 5MHz	-3.4	760.5	LCH	SISO	1	Refer To Test Graph		Pass
		763	MCH	SISO	1	Refer To Test Graph		Pass
		765.5	HCH	SISO	1	Refer To Test Graph		Pass

6.1.2 Test Graph

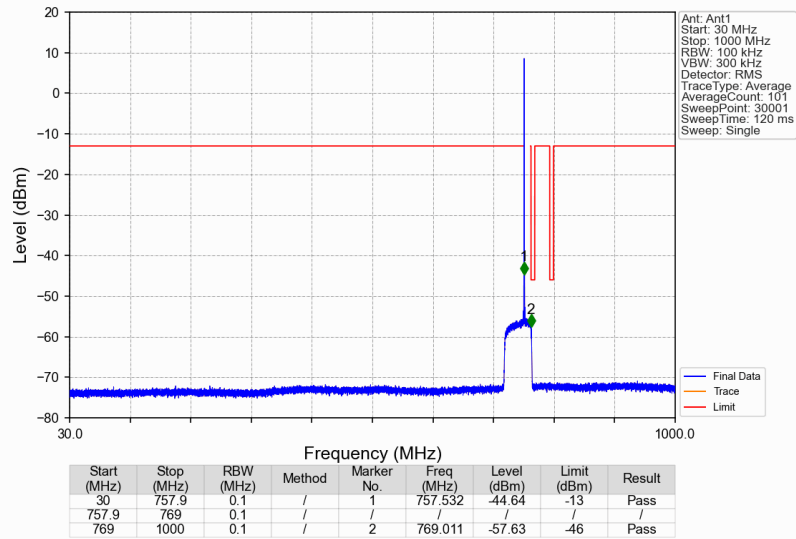
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV



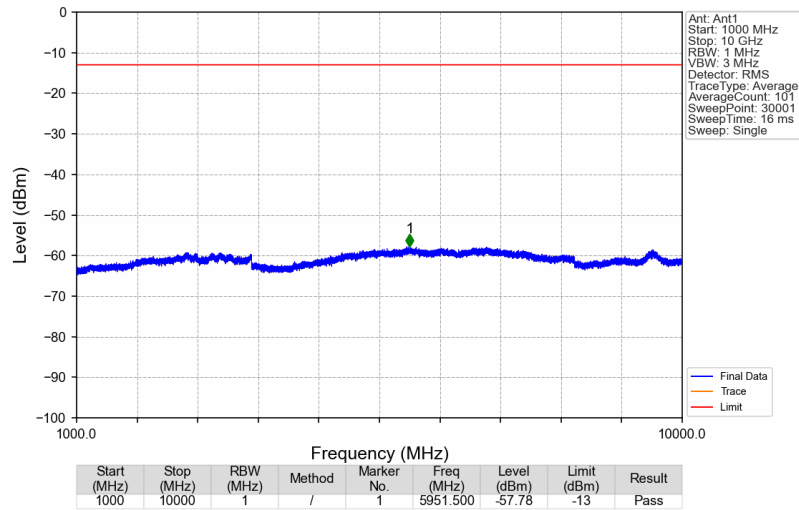
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV



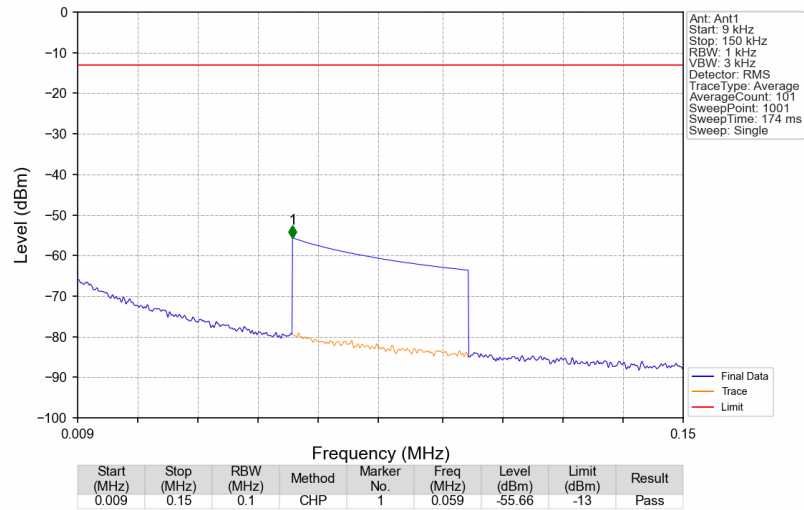
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV



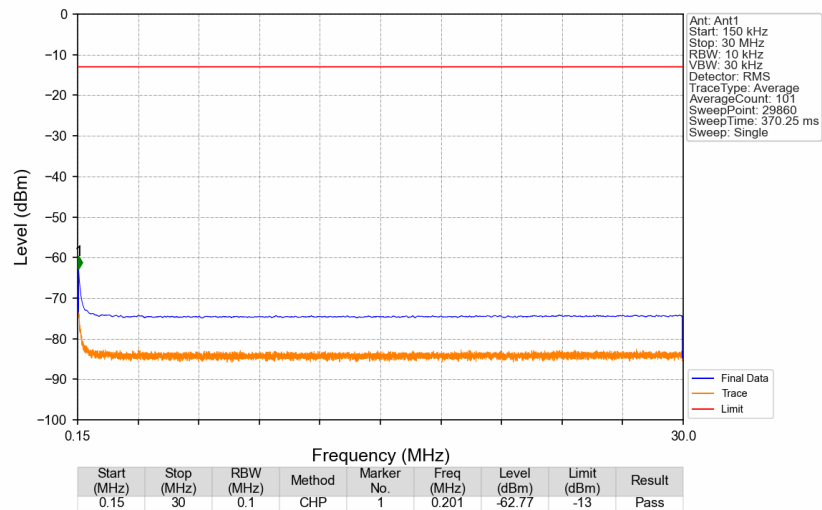
Band14_758.2MHz_GMSK_SISO_Ant1_NTNV



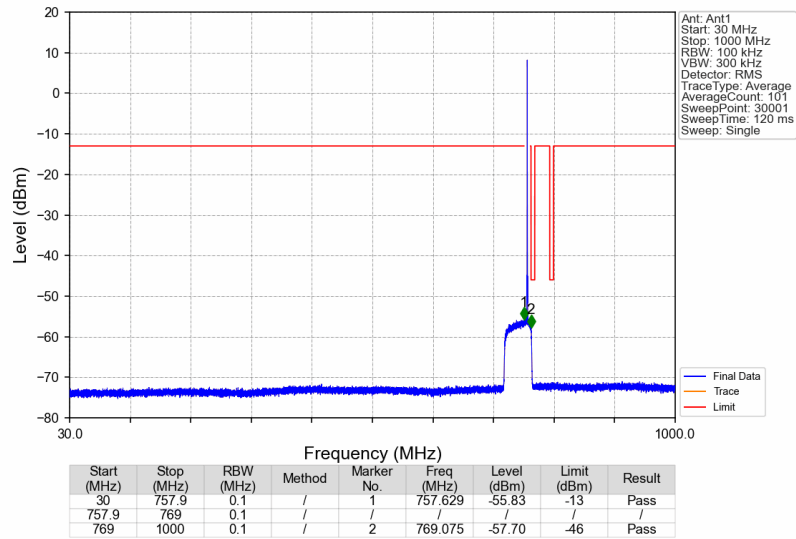
Band14_763MHz_GMSK_SISO_Ant1_NTNV



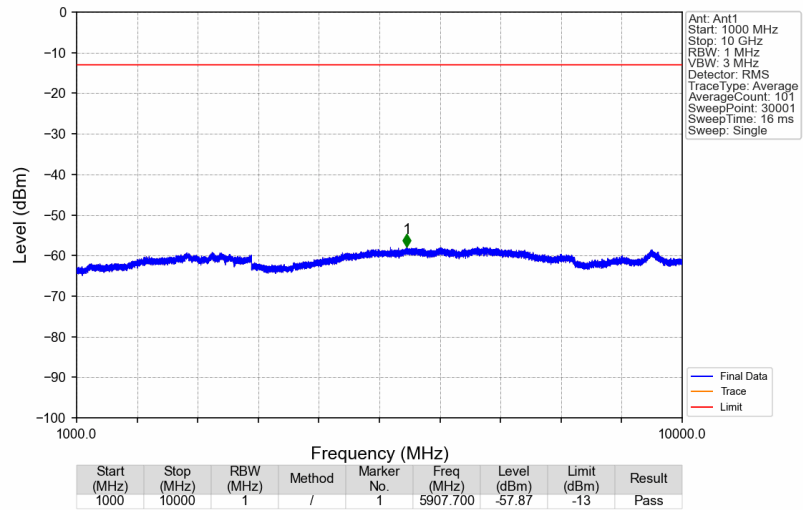
Band14_763MHz_GMSK_SISO_Ant1_NTNV



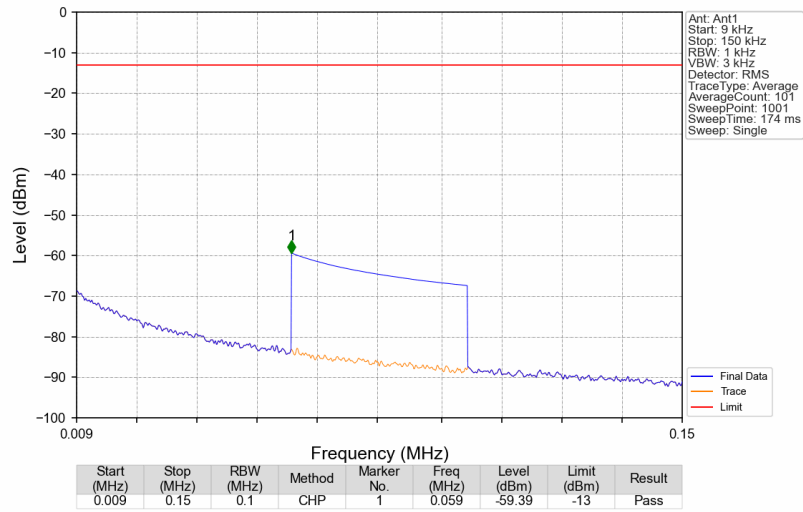
Band14_763MHz_GMSK_SISO_Ant1_NTNV



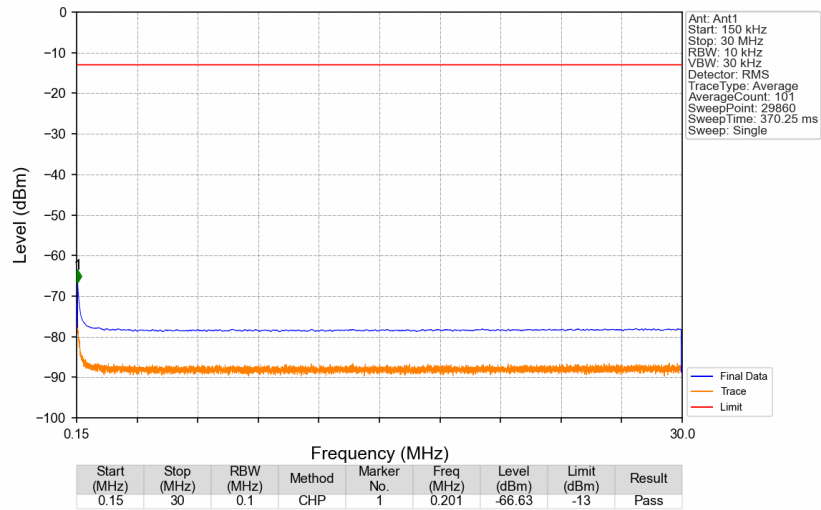
Band14_763MHz_GMSK_SISO_Ant1_NTNV



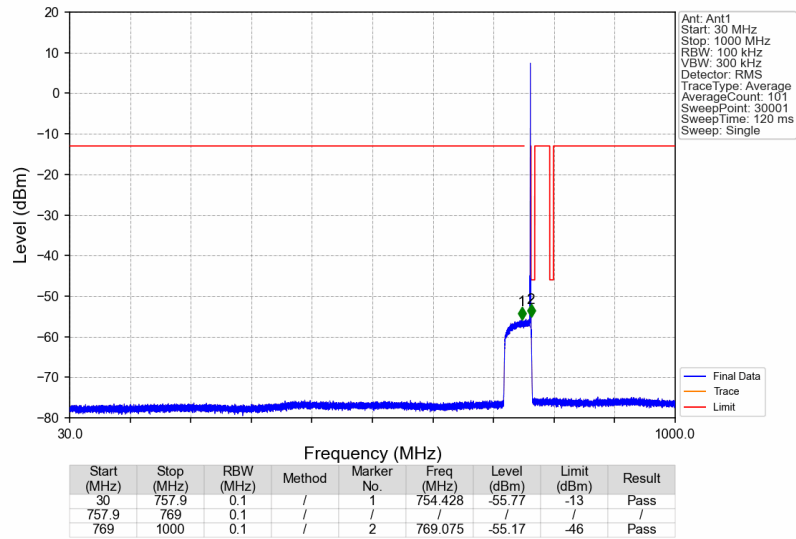
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV



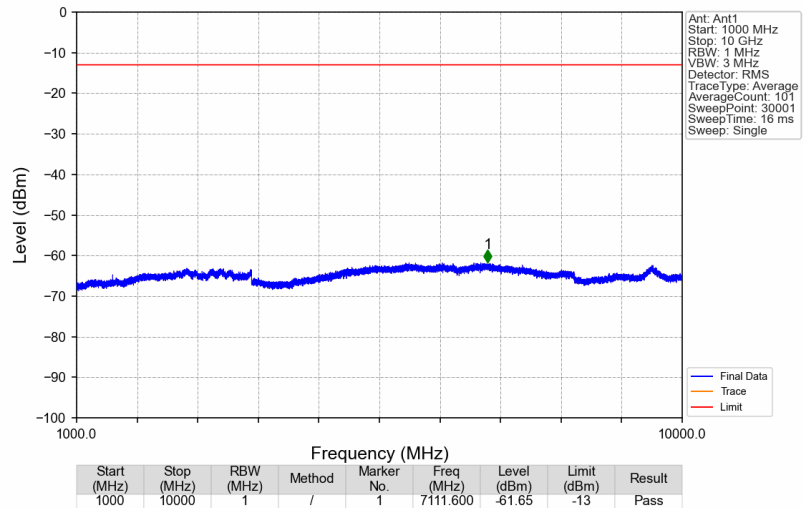
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV



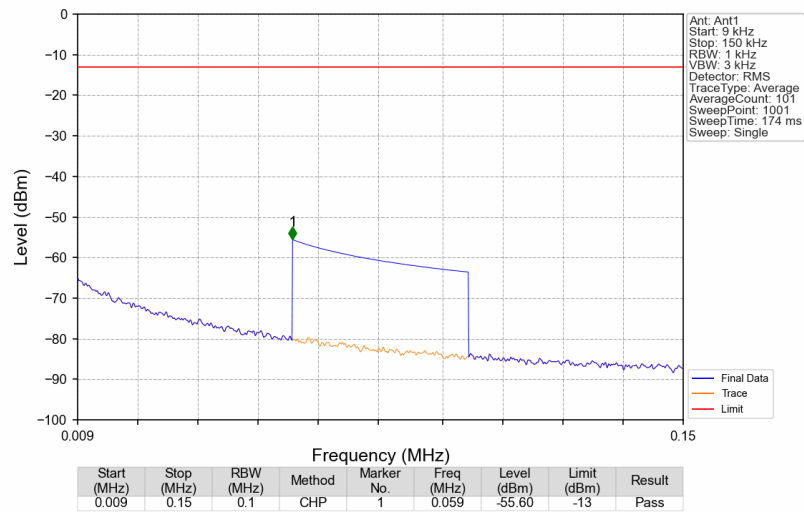
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV



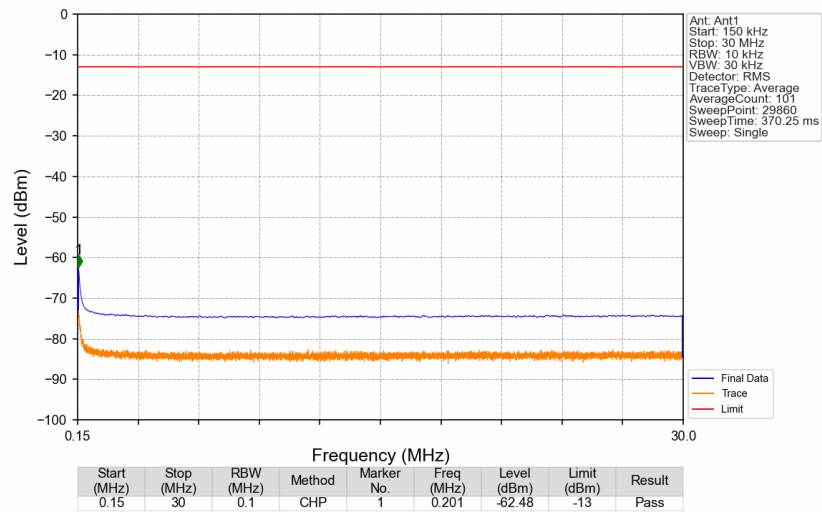
Band14_767.8MHz_GMSK_SISO_Ant1_NTNV



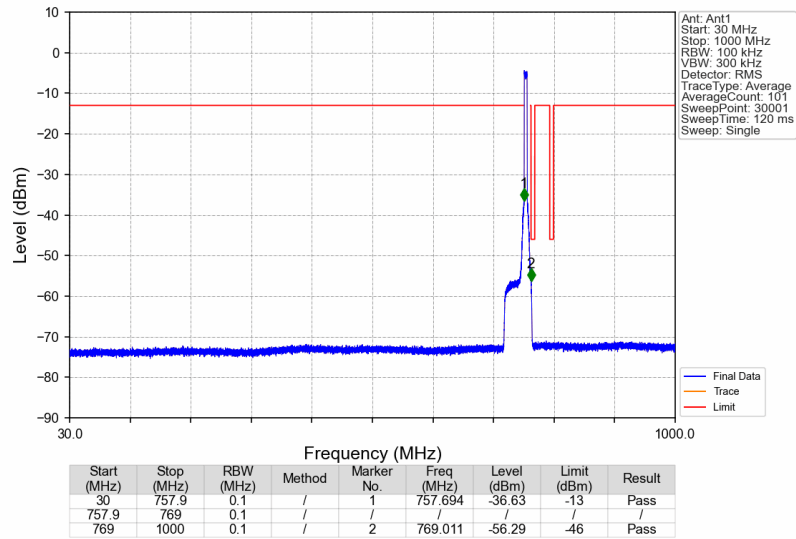
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV



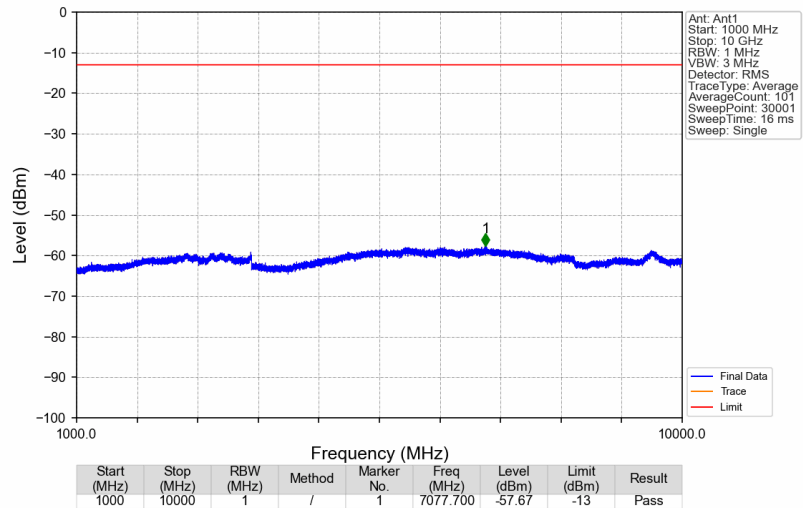
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV



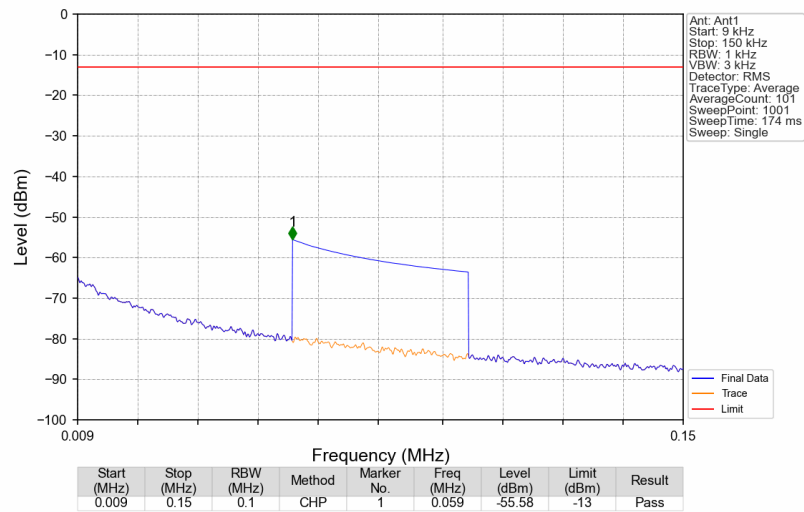
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV



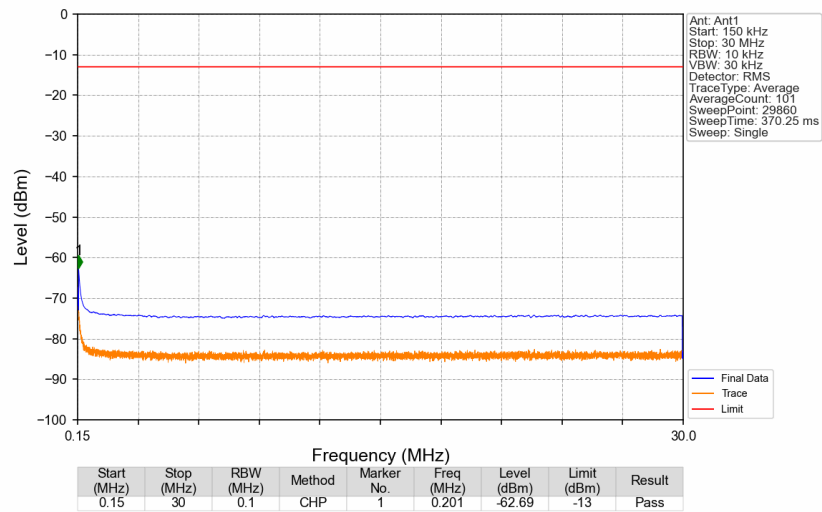
Band14_760.5MHz_AWGN_SISO_Ant1_NTNV



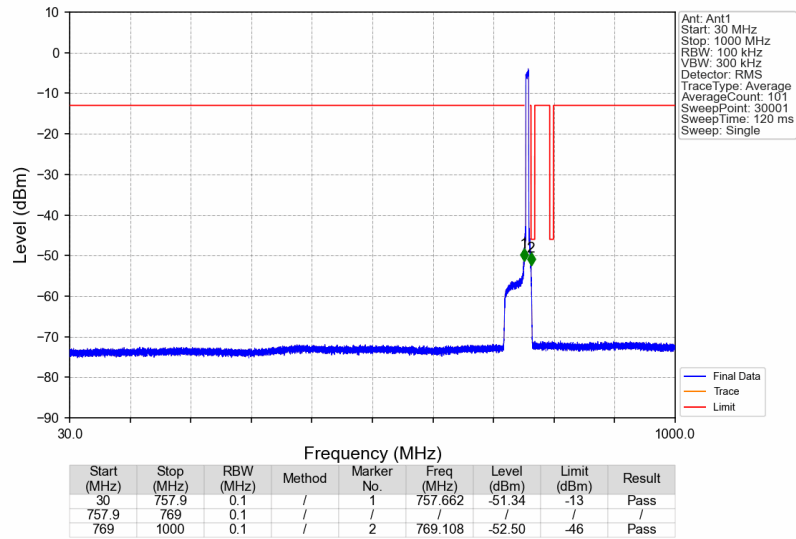
Band14_763MHz_AWGN_SISO_Ant1_NTNV



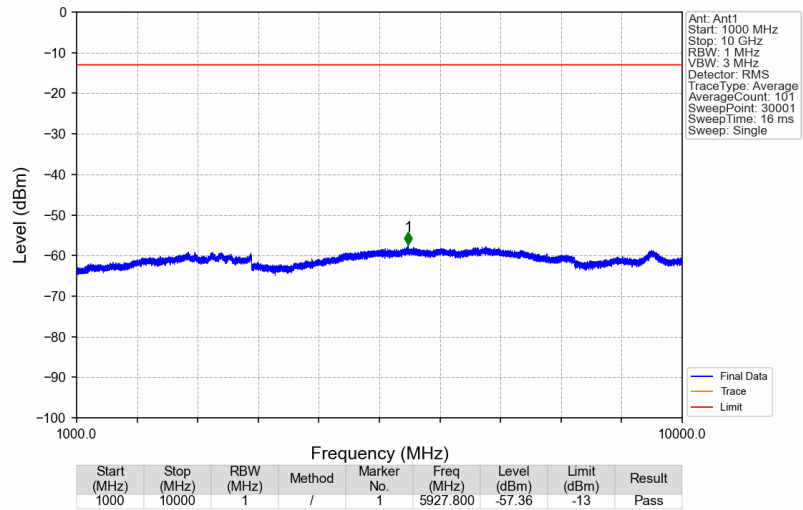
Band14_763MHz_AWGN_SISO_Ant1_NTNV



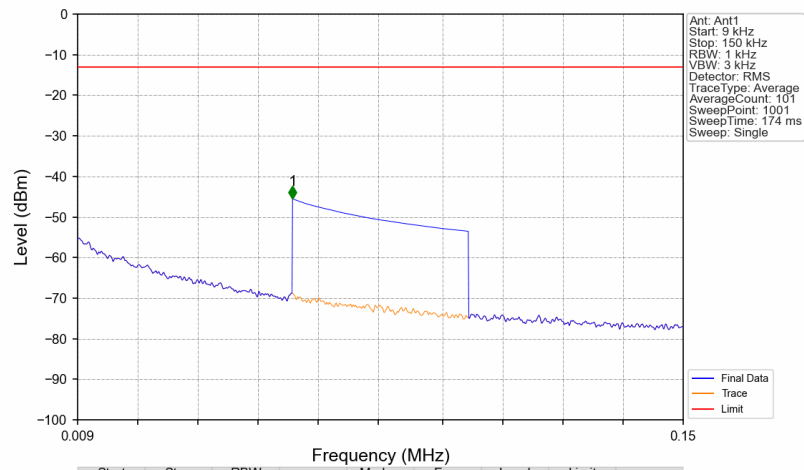
Band14_763MHz_AWGN_SISO_Ant1_NTNV



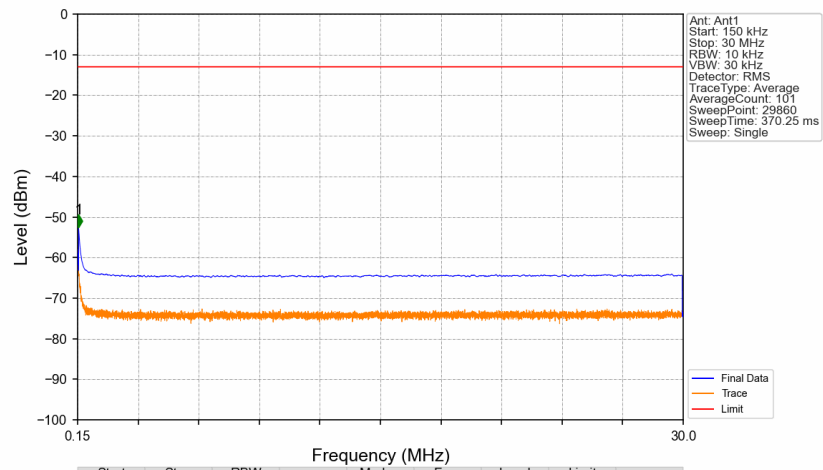
Band14_763MHz_AWGN_SISO_Ant1_NTNV



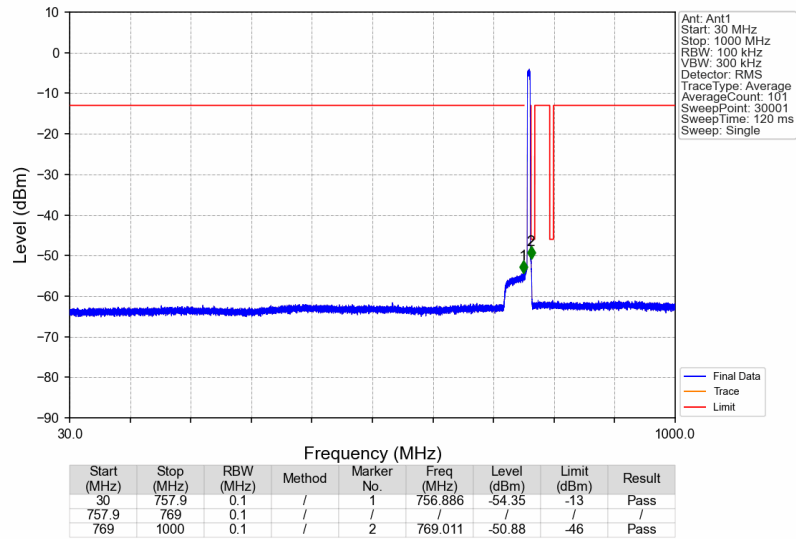
Band14_765.5MHz_AWGN_SISO_Ant1_NTNV



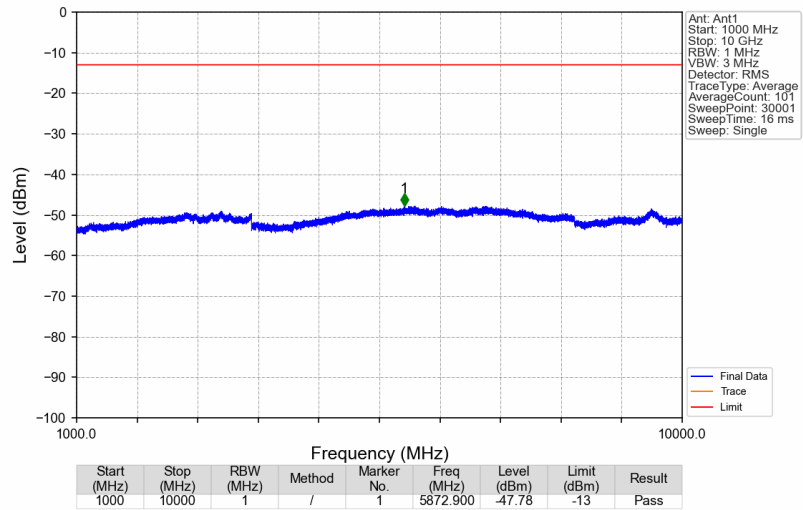
Band14_765.5MHz_AWGN_SISO_Ant1_NTNV



Band14_765.5MHz_AWGN_SISO_Ant1_NTNV



Band14_765.5MHz_AWGN_SISO_Ant1_NTNV



7. Frequency stability measurements

7.1 Band14_Ant1

7.1.1 Test Result

Band: 14 / NTNV							
Signal			Temp (°C)	Voltage (VDC)	Freq. Error (Hz)	Tolerance (ppm)	Verdict
Type	Level (dBm)	Frequency (MHz)					
CW	-3.4	758.1	20	27.5	10	0.0132	Pass
				28.0	12	0.0158	Pass
				28.5	13	0.0171	Pass
			-40	28.0	10	0.0132	Pass
			-30	28.0	14	0.0185	Pass
			-20	28.0	9	0.0119	Pass
			-10	28.0	7	0.0092	Pass
			0	28.0	8	0.0106	Pass
			10	28.0	10	0.0132	Pass
			30	28.0	11	0.0145	Pass
			40	28.0	12	0.0158	Pass
			55	28.0	13	0.0171	Pass
		763	20	27.5	9	0.0118	Pass
				28.0	7	0.0092	Pass
				28.5	12	0.0157	Pass
			-40	28.0	9	0.0118	Pass
			-30	28.0	13	0.0170	Pass
			-20	28.0	10	0.0131	Pass
			-10	28.0	14	0.0183	Pass
			0	28.0	9	0.0118	Pass
			10	28.0	8	0.0105	Pass
			30	28.0	11	0.0144	Pass
			40	28.0	13	0.0170	Pass
			55	28.0	12	0.0157	Pass
		767.9	20	27.5	10	0.0130	Pass
				28.0	11	0.0143	Pass
				28.5	13	0.0169	Pass
			-40	28.0	10	0.0130	Pass
			-30	28.0	14	0.0182	Pass
			-20	28.0	10	0.0130	Pass
			-10	28.0	9	0.0117	Pass
			0	28.0	8	0.0104	Pass
			10	28.0	9	0.0117	Pass
			30	28.0	11	0.0143	Pass
			40	28.0	10	0.0130	Pass
			55	28.0	13	0.0169	Pass

8. Radiated Spurious Emissions

8.1 Band14_Ant1

8.1.1 Test Result

GMSK 758.2MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
404.9	Horizontal	-71.23	-13	-58.23	Pass
566.0	Horizontal	-63.60	-13	-50.60	Pass
932.0	Horizontal	-58.17	-13	-45.17	Pass
1326.2	Horizontal	-60.27	-13	-47.27	Pass
2762.5	Horizontal	-54.08	-13	-41.08	Pass
6490.1	Horizontal	-46.58	-13	-33.58	Pass
385.1	Vertical	-70.12	-13	-57.12	Pass
583.1	Vertical	-66.24	-13	-53.24	Pass
938.2	Vertical	-61.06	-13	-48.06	Pass
1340.1	Vertical	-60.70	-13	-47.70	Pass
2739.5	Vertical	-53.84	-13	-40.84	Pass
6506.2	Vertical	-47.84	-13	-34.84	Pass

GMSK 763MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
362.7	Horizontal	-66.32	-13	-53.32	Pass
604.5	Horizontal	-63.59	-13	-50.59	Pass
967.6	Horizontal	-60.36	-13	-47.36	Pass
1356.1	Horizontal	-56.21	-13	-43.21	Pass
2759.6	Horizontal	-54.49	-13	-41.49	Pass
6518.7	Horizontal	-46.70	-13	-33.70	Pass
392.5	Vertical	-69.50	-13	-56.50	Pass
577.4	Vertical	-66.71	-13	-53.71	Pass
947.5	Vertical	-59.35	-13	-46.35	Pass
1326.5	Vertical	-56.22	-13	-43.22	Pass
2729.4	Vertical	-53.94	-13	-40.94	Pass
6517.7	Vertical	-49.08	-13	-36.08	Pass

GMSK 767.8MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
370.5	Horizontal	-68.92	-13	-55.92	Pass
590.6	Horizontal	-66.83	-13	-53.83	Pass
927.6	Horizontal	-57.12	-13	-44.12	Pass
1339.1	Horizontal	-58.80	-13	-45.80	Pass
2741.9	Horizontal	-54.87	-13	-41.87	Pass
6491.5	Horizontal	-49.97	-13	-36.97	Pass
367.3	Vertical	-67.43	-13	-54.43	Pass
598.5	Vertical	-64.11	-13	-51.11	Pass
937.8	Vertical	-56.66	-13	-43.66	Pass
1359.5	Vertical	-60.26	-13	-47.26	Pass
2767.4	Vertical	-51.44	-13	-38.44	Pass
6483.3	Vertical	-48.82	-13	-35.82	Pass

AWGN 760.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
381.6	Horizontal	-68.16	-13	-55.16	Pass
582.7	Horizontal	-63.31	-13	-50.31	Pass
952.8	Horizontal	-58.91	-13	-45.91	Pass
1363.9	Horizontal	-57.04	-13	-44.04	Pass
2731.9	Horizontal	-51.33	-13	-38.33	Pass
6500.3	Horizontal	-46.19	-13	-33.19	Pass
398.8	Vertical	-69.55	-13	-56.55	Pass
601.5	Vertical	-65.79	-13	-52.79	Pass
955.2	Vertical	-61.75	-13	-48.75	Pass
1342.2	Vertical	-58.68	-13	-45.68	Pass
2756.4	Vertical	-54.93	-13	-41.93	Pass
6494.6	Vertical	-50.55	-13	-37.55	Pass

AWGN 763MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
377.4	Horizontal	-68.64	-13	-55.64	Pass
569.4	Horizontal	-63.48	-13	-50.48	Pass
954.0	Horizontal	-59.47	-13	-46.47	Pass
1339.1	Horizontal	-61.33	-13	-48.33	Pass
2767.2	Horizontal	-54.71	-13	-41.71	Pass
6506.3	Horizontal	-51.19	-13	-38.19	Pass
393.1	Vertical	-71.87	-13	-58.87	Pass
607.2	Vertical	-62.19	-13	-49.19	Pass
958.7	Vertical	-59.77	-13	-46.77	Pass
1369.8	Vertical	-60.94	-13	-47.94	Pass
2764.9	Vertical	-57.00	-13	-44.00	Pass
6477.2	Vertical	-48.33	-13	-35.33	Pass

AWGN 765.5MHz					
Frequency	Spurious Emission Polarization and Level		Limit	Over Limit	Verdict
MHz	Polarization	dBm	dBm	dB	
370.5	Horizontal	-68.50	-13	-55.50	Pass
590.9	Horizontal	-64.77	-13	-51.77	Pass
956.6	Horizontal	-61.80	-13	-48.80	Pass
1371.7	Horizontal	-59.77	-13	-46.77	Pass
2772.8	Horizontal	-52.11	-13	-39.11	Pass
6509.7	Horizontal	-47.76	-13	-34.76	Pass
394.4	Vertical	-69.66	-13	-56.66	Pass
569.7	Vertical	-65.17	-13	-52.17	Pass
971.6	Vertical	-58.22	-13	-45.22	Pass
1328.0	Vertical	-59.79	-13	-46.79	Pass
2730.1	Vertical	-55.42	-13	-42.42	Pass
6480.5	Vertical	-49.49	-13	-36.49	Pass

9. Emission Mask

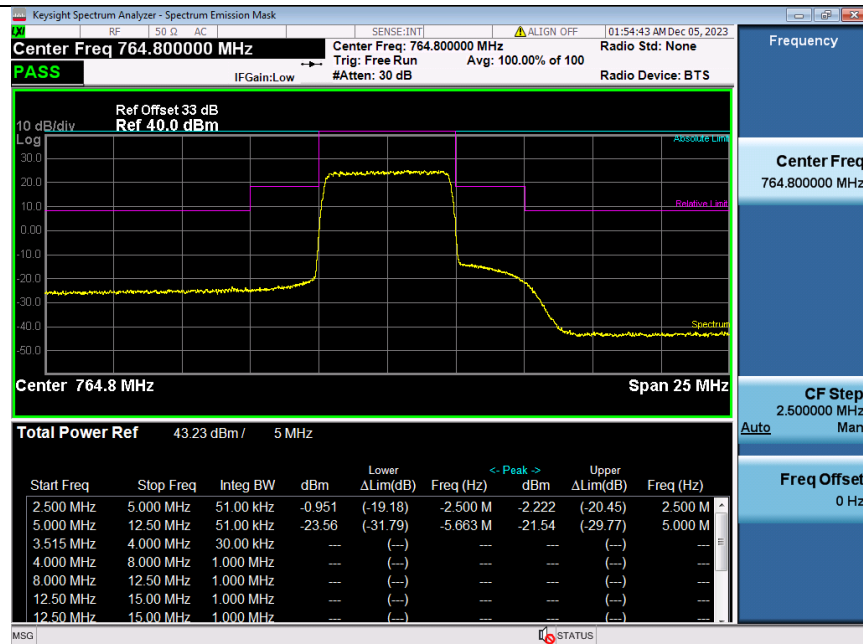
9.1 Band14_Ant1

9.1.1 Test Result

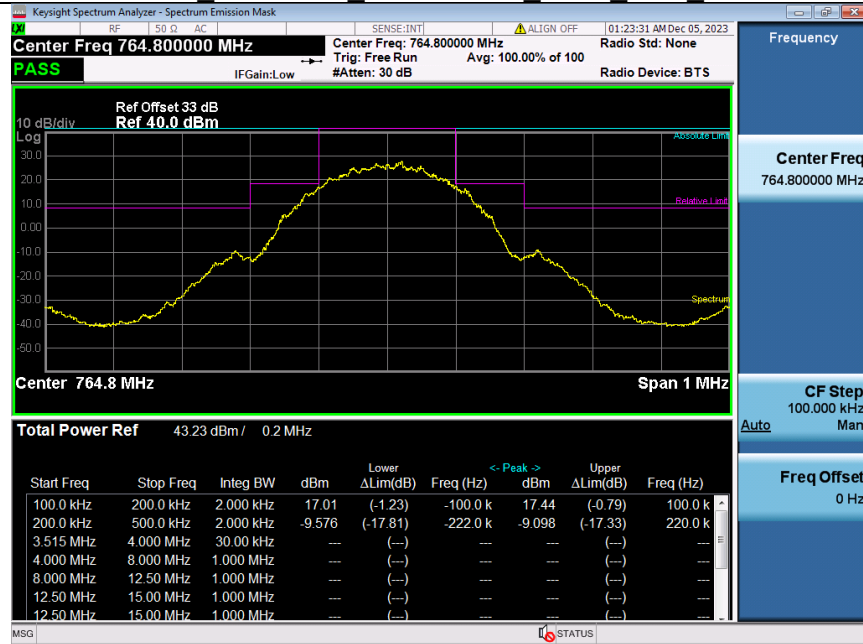
Band14_764.8MHz_AWGN-AGC_SISO_Ant1_NTNV



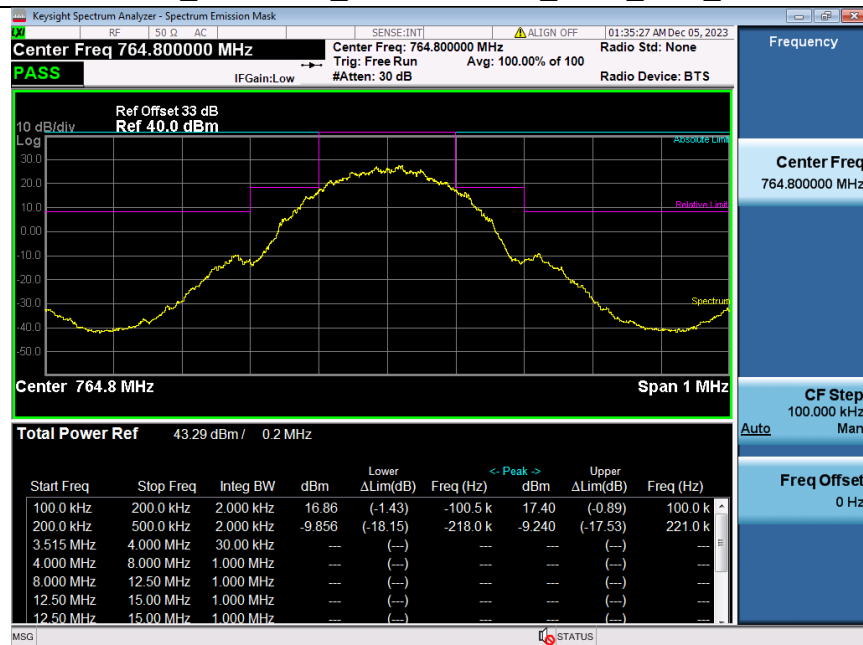
Band14_764.8MHz_AWGN-AGC+3_SISO_Ant1_NTNV



Band14_764.8MHz_GMSK-AGC_SISO_Ant1_NTNV



Band14_764.8MHz_GMSK-AGC+3_SISO_Ant1_NTNV

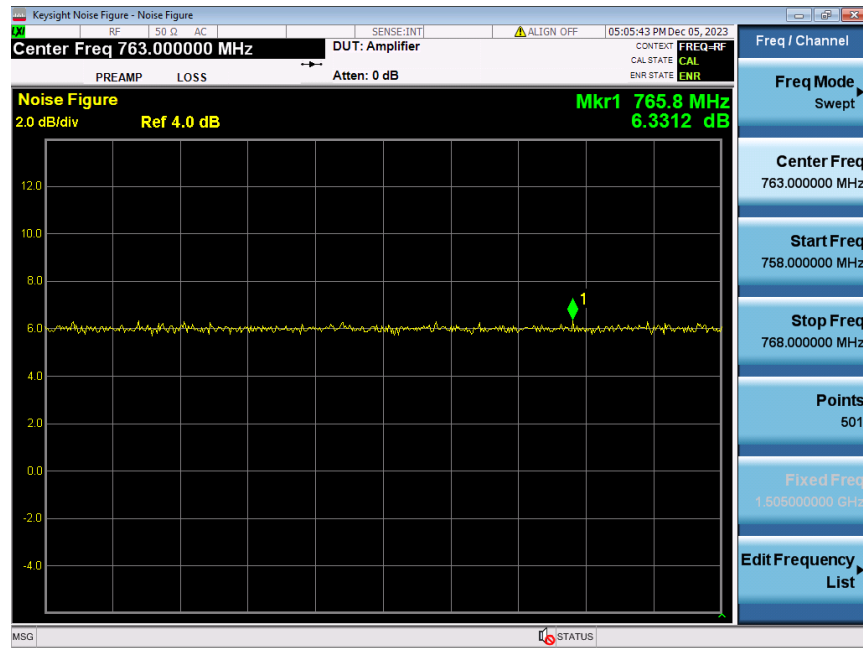


10. Noise Figure

10.1 Band14_Ant1

10.1.1 Test Result

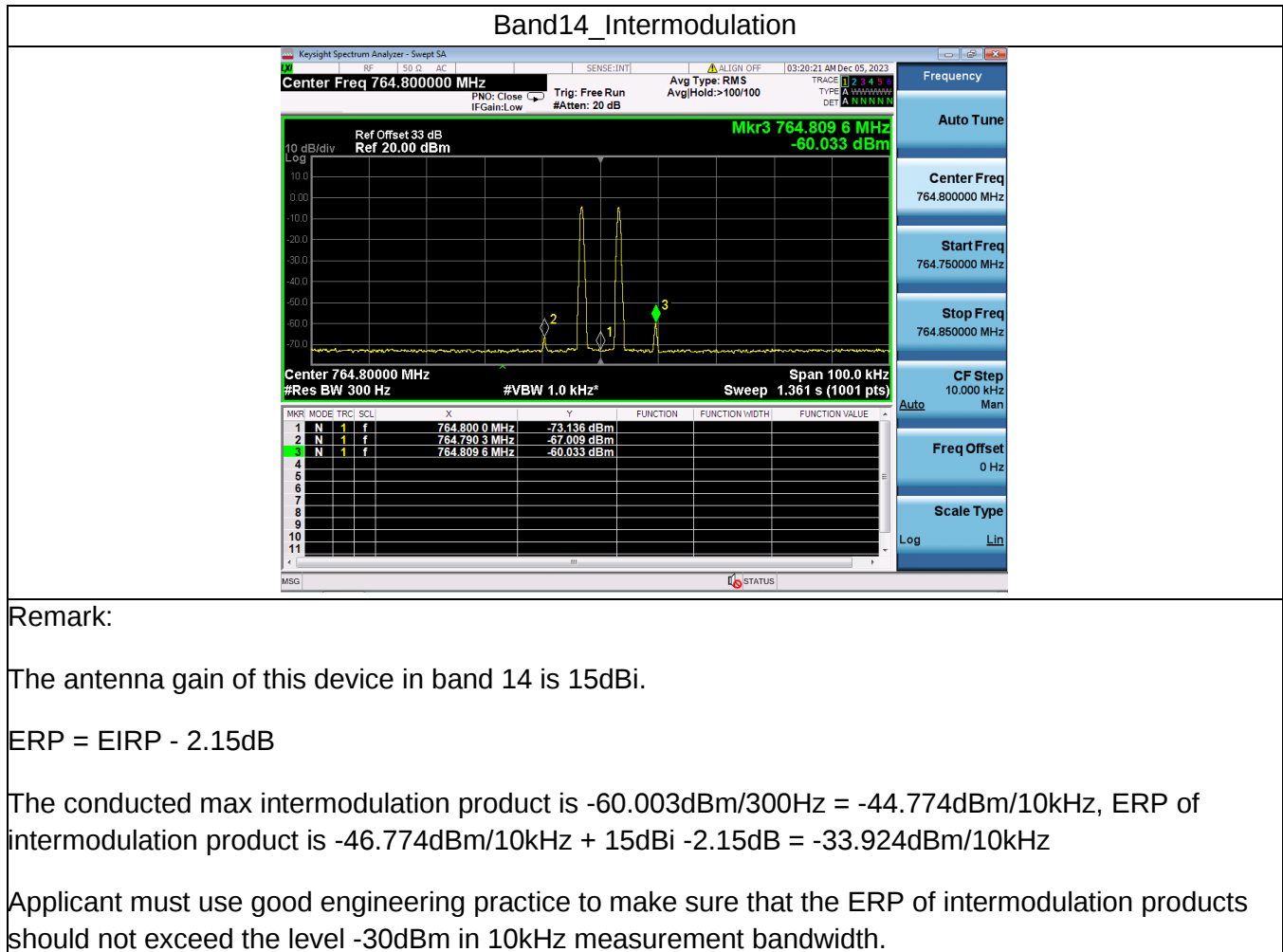
Test Conf.	Test Freq. (MHz)	Test Signal	Remark	Noise Figure (dB)	Limit (dB)	Result
DL_1S_B_AWG N	758-768	AWGN (99% OBW of 4.1MHz)	a single test signal	6.33	9	Pass



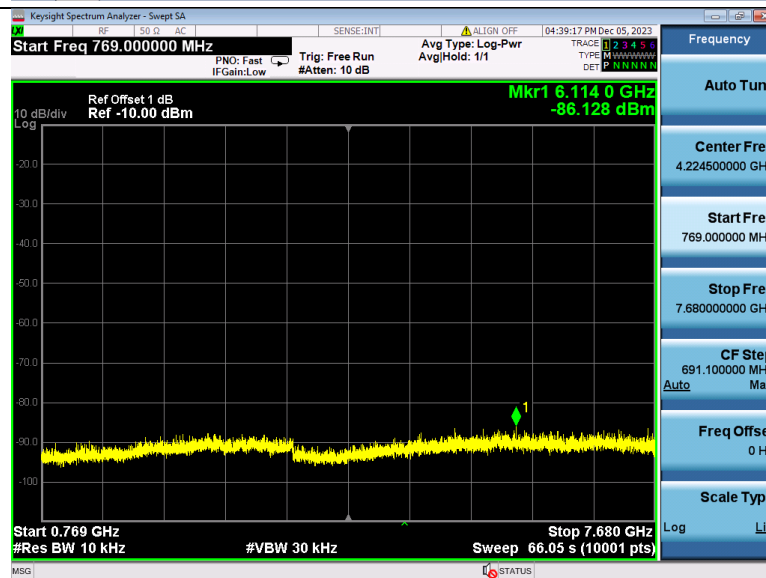
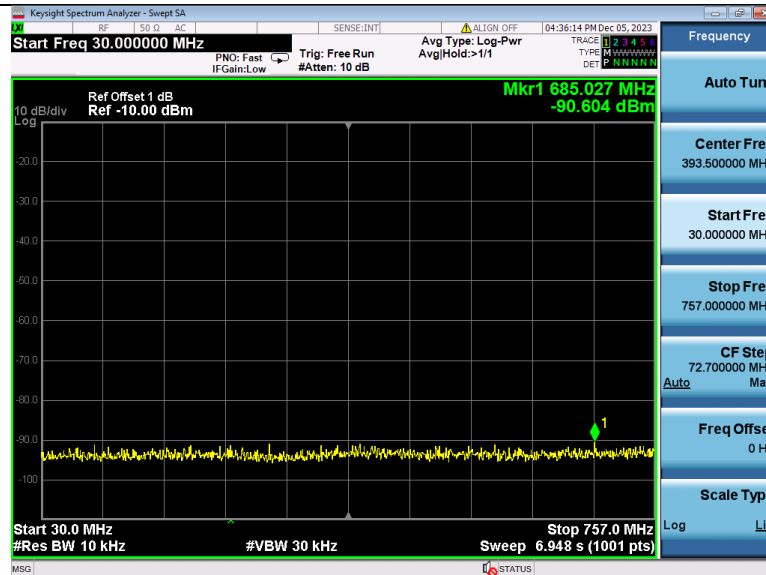
11.Noise/emission at Antenna Terminal

11.1 Band14_Ant1

11.1.1 Test Result



Band14_ Noise outside of the passband



Remark:

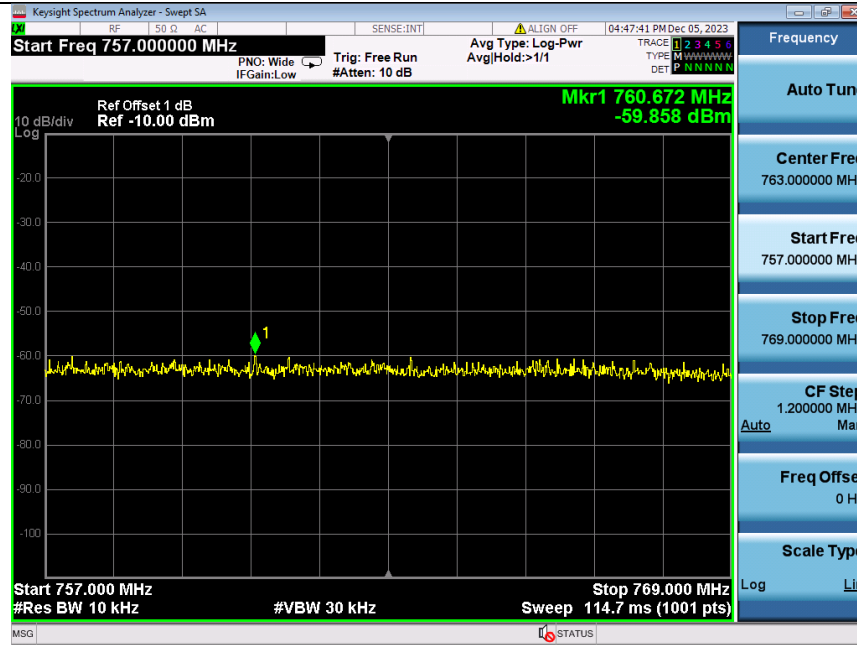
The antenna gain of this device in band 14 is 15dBi.

ERP = EIRP - 2.15dB

The conducted max. noise on spectrum more than 1MHz outside of the passband is - 86.128dBm/10Hz, ERP of noise on spectrum more than 1MHz outside of the passband is - 86.128dBm/10kHz + 15dBi - 2.15dB = -73.278dBm/10kHz.

Applicant must use good engineering practice to make sure that the ERP of noise on spectrum more than 1MHz outside of the passband should not exceed the level -70dBm in 10kHz measurement bandwidth.

Band14_ Noise within of the passband



Remark:

The antenna gain of this device in band 14 is 15dBi.

ERP = EIRP - 2.15dB

The conducted max. noise on spectrum within the passband is -59.858dBm/10Hz, ERP of noise on spectrum within the passband is -59.858dBm/10kHz + 15dBi -2.15dB = -47.008 dBm/10kHz.

Applicant must use good engineering practice to make sure that the ERP of noise within of the passband should not exceed the level -43dBm in 10kHz measurement bandwidth