

Appendix RF Test Data for BLE

Company: : Shenzhen Speediance Living Technology co., Ltd.

EUT : Portable Multimedia Digital Fitness Equipment

FCC ID: : 2A4WP-GNA1A1

Model Number : GNA1A1

Report No. : HTT202605688F02

Reviewed By : Heber He

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

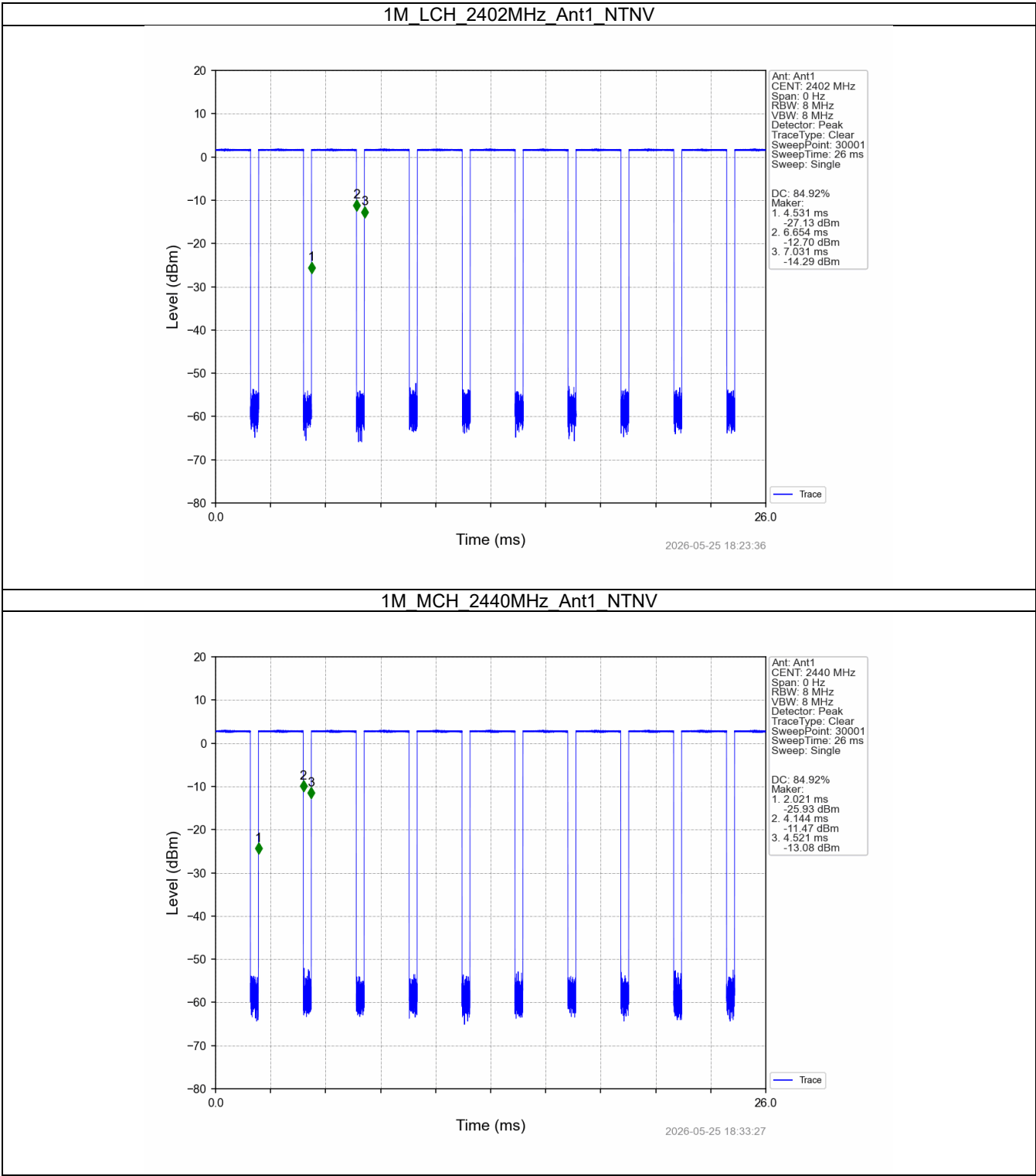
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.123	2.500	84.92	0.71	0.03
		2440	2.123	2.500	84.92	0.71	0.03
		2480	2.123	2.500	84.92	0.71	0.03
2M	SISO	2402	1.065	1.875	56.80	2.46	0.03
		2440	1.065	1.875	56.80	2.46	0.03
		2480	1.066	1.875	56.85	2.45	0.03

Ant2

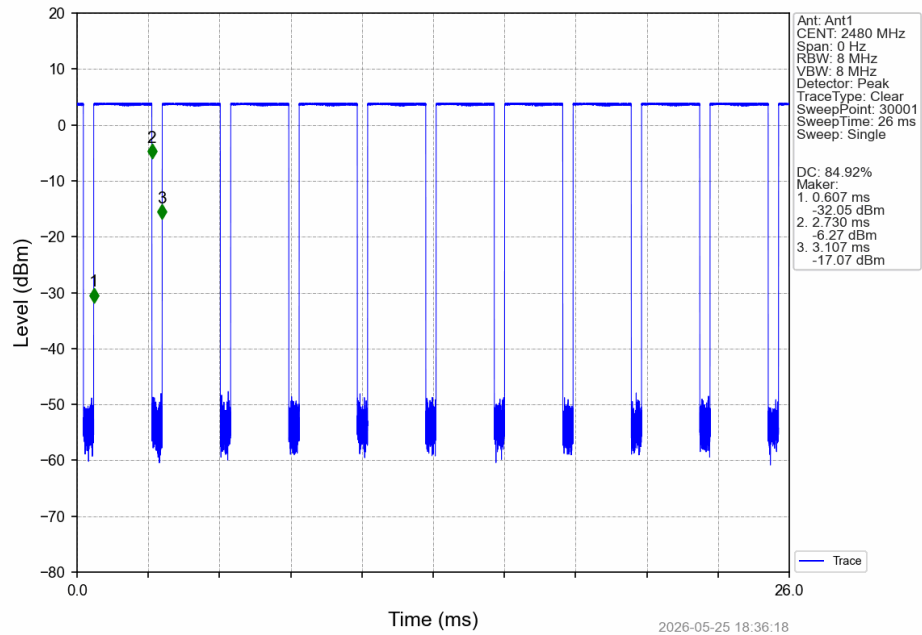
Ant2							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.392	0.625	62.72	2.03	0.03
		2440	0.393	0.625	62.88	2.01	0.03
		2480	0.393	0.625	62.88	2.01	0.03
2M	SISO	2402	0.207	0.625	33.12	4.80	0.03
		2440	0.207	0.625	33.12	4.80	0.03
		2480	0.206	0.625	32.96	4.82	0.03

1.2 Test Graph

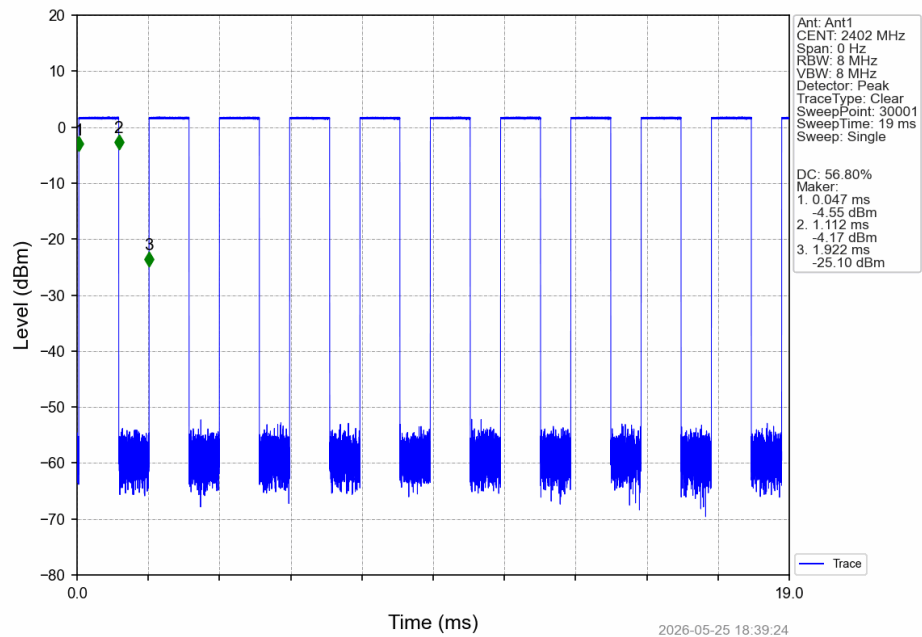
1.2.1 Ant1



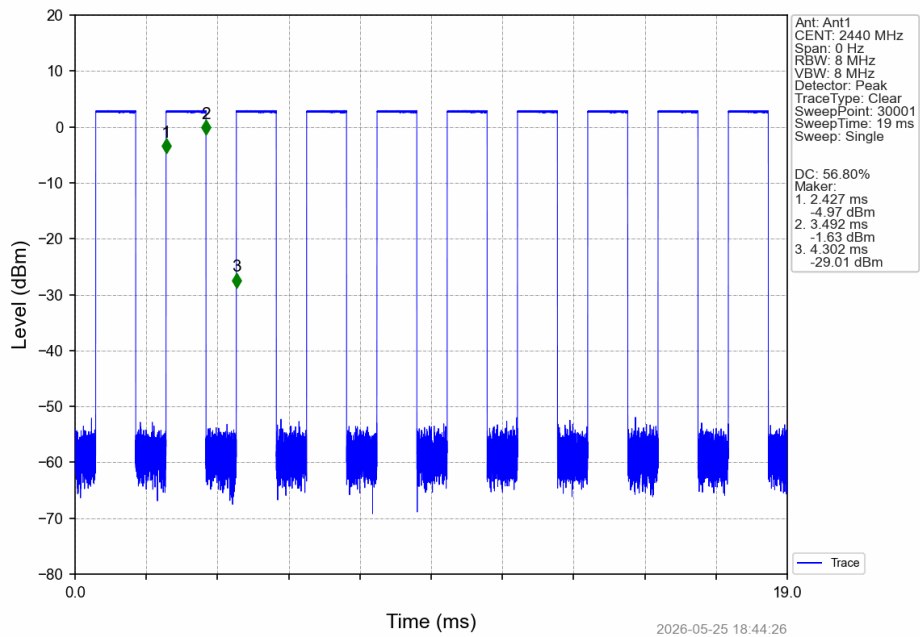
1M HCH 2480MHz Ant1 NTN



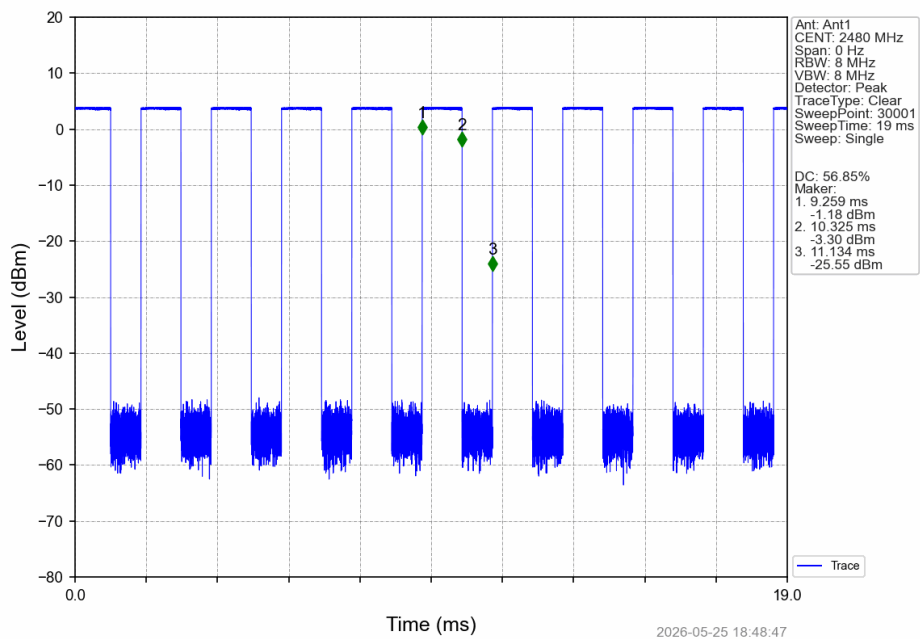
2M LCH 2402MHz Ant1 NTN



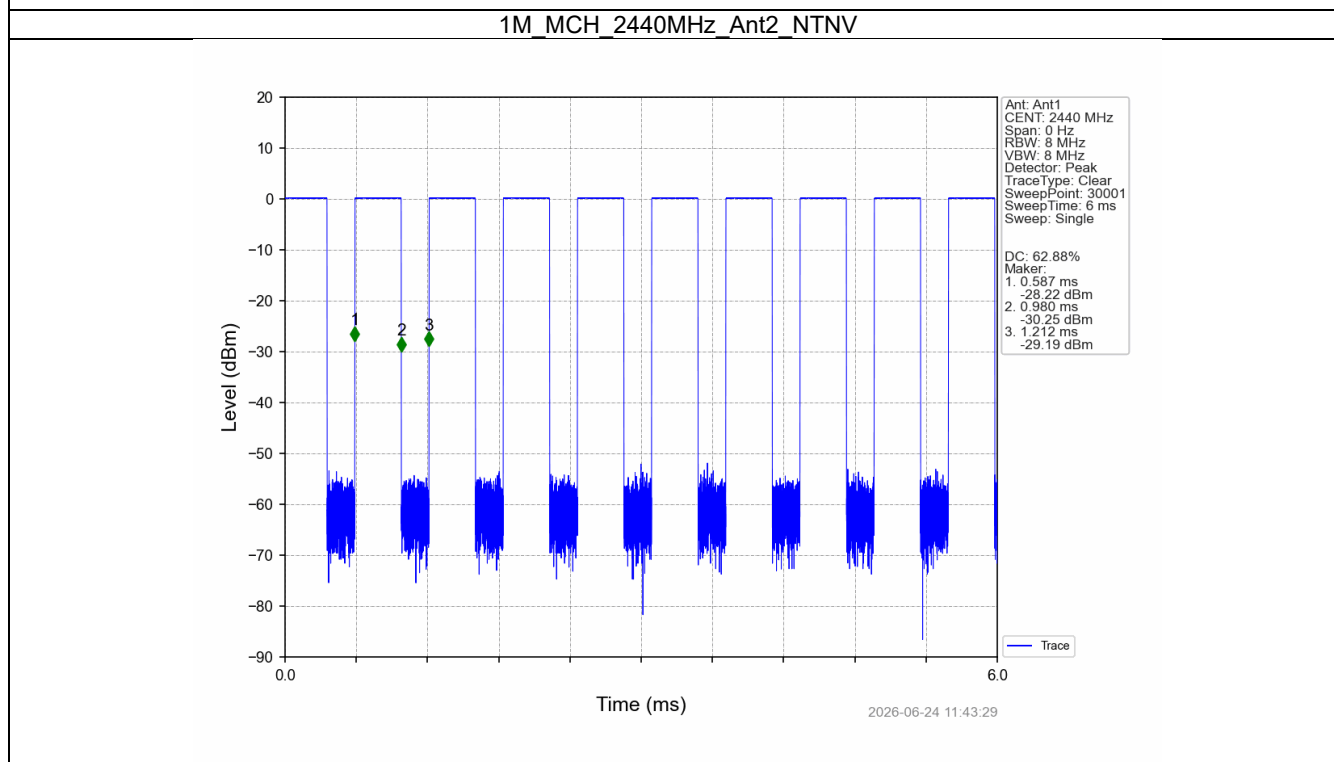
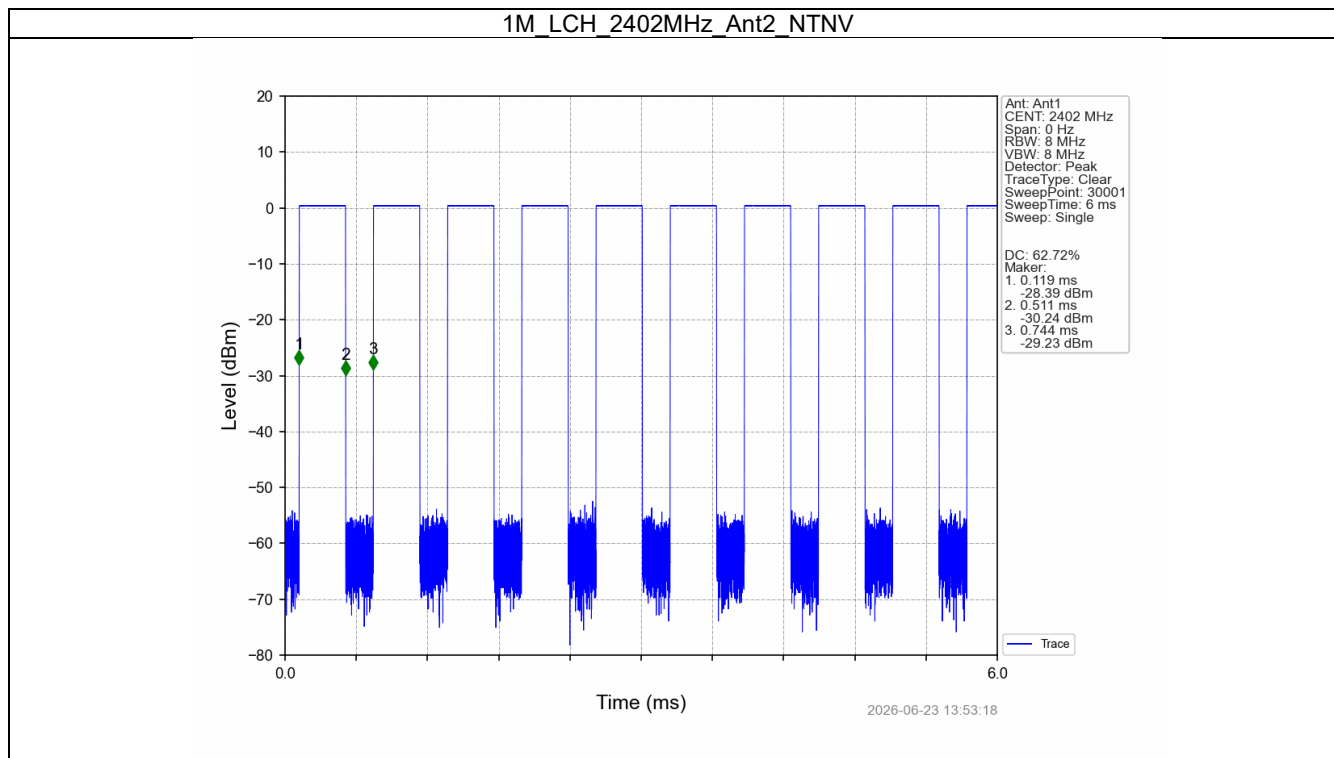
2M MCH 2440MHz Ant1 NTN



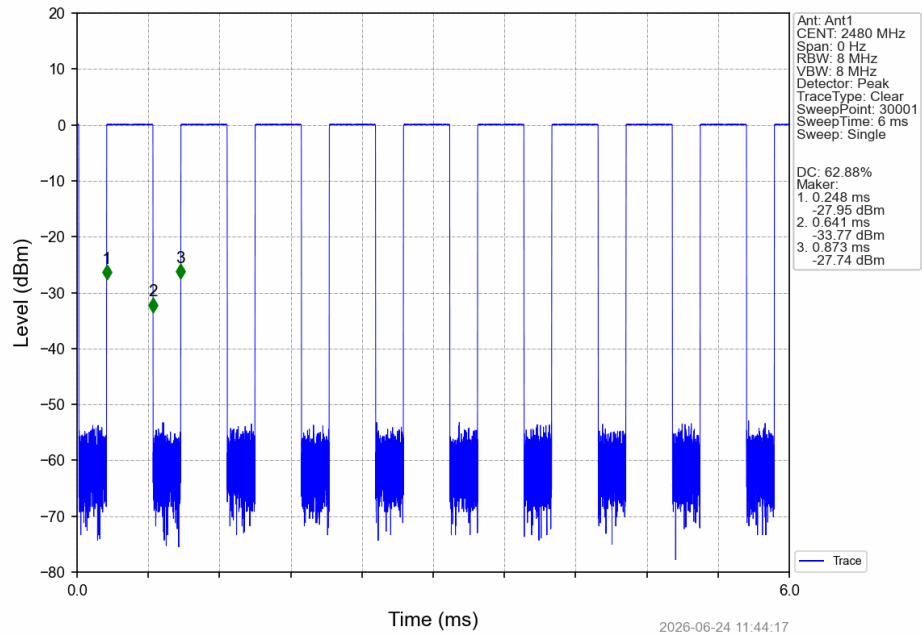
2M_HCH_2480MHz_Ant1 NTN



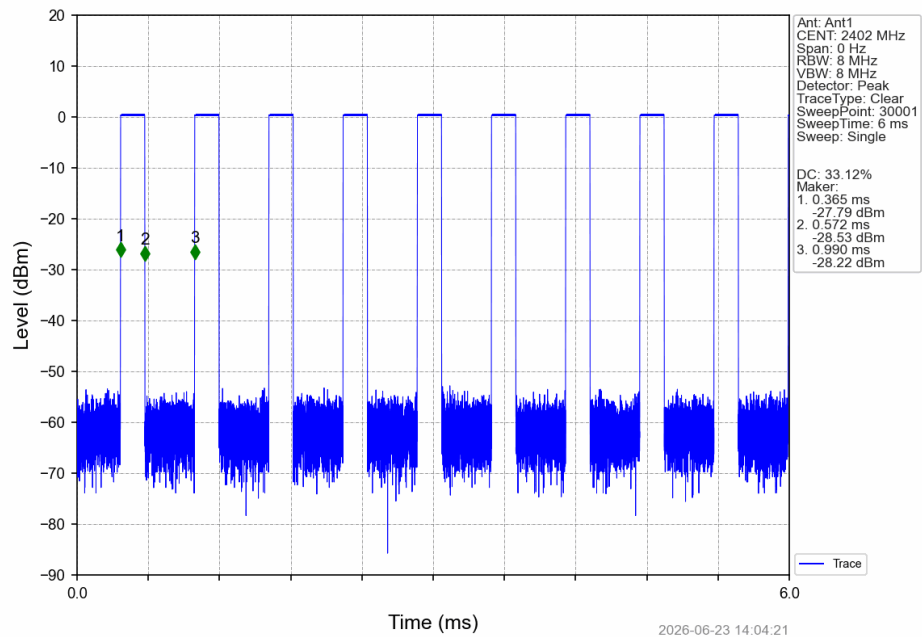
Ant2



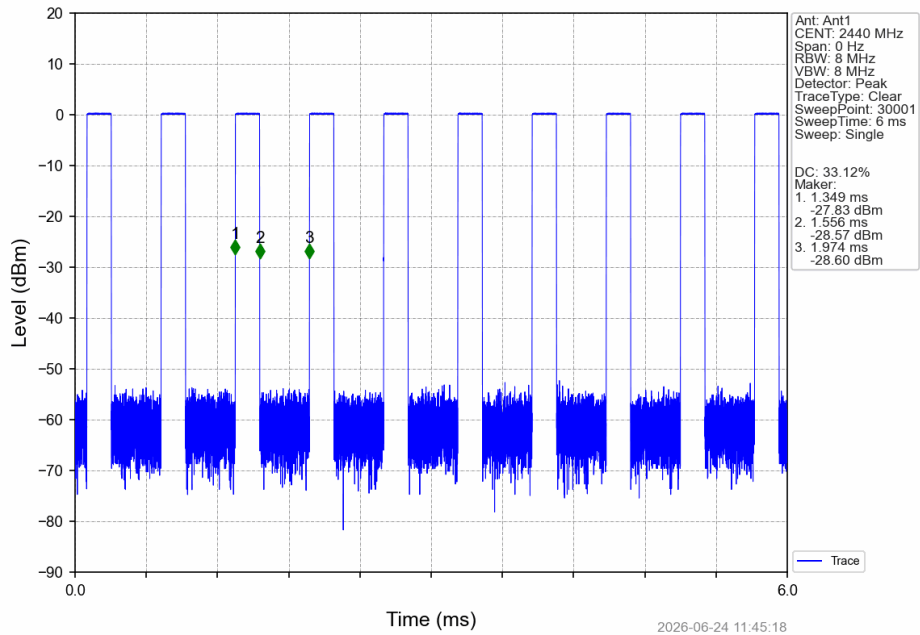
1M HCH 2480MHz Ant2 NTN



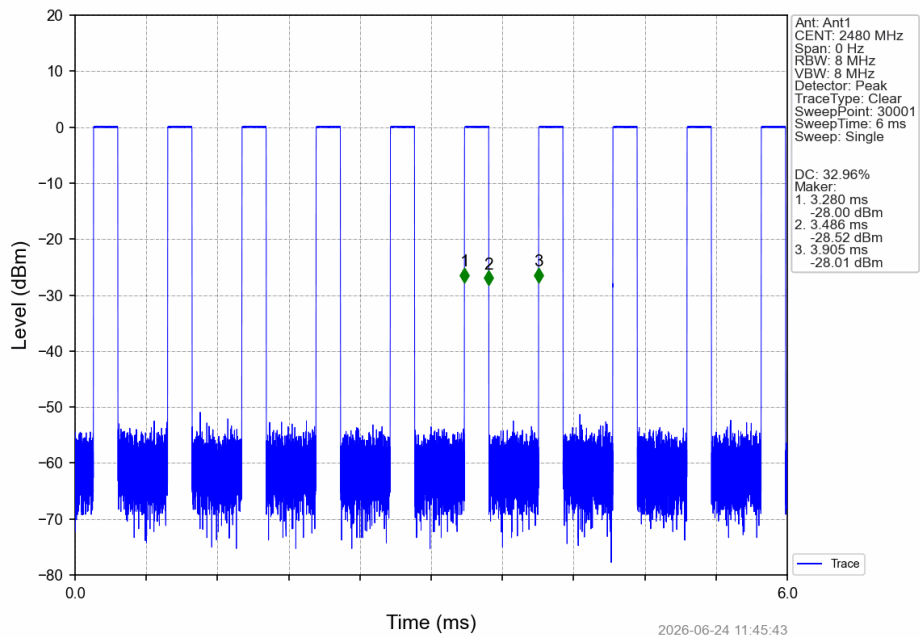
2M LCH 2402MHz Ant2 NTN



2M MCH 2440MHz Ant2 NTN



2M_HCH_2480MHz_Ant2 NTN



2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.044	/	Pass
		2440	1	1.051	/	Pass
		2480	1	1.059	/	Pass
2M	SISO	2402	1	2.084	/	Pass
		2440	1	2.099	/	Pass
		2480	1	2.109	/	Pass

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	2	1.054	/	Pass
		2440	2	1.054	/	Pass
		2480	2	1.055	/	Pass
2M	SISO	2402	2	2.083	/	Pass
		2440	2	2.082	/	Pass
		2480	2	2.090	/	Pass

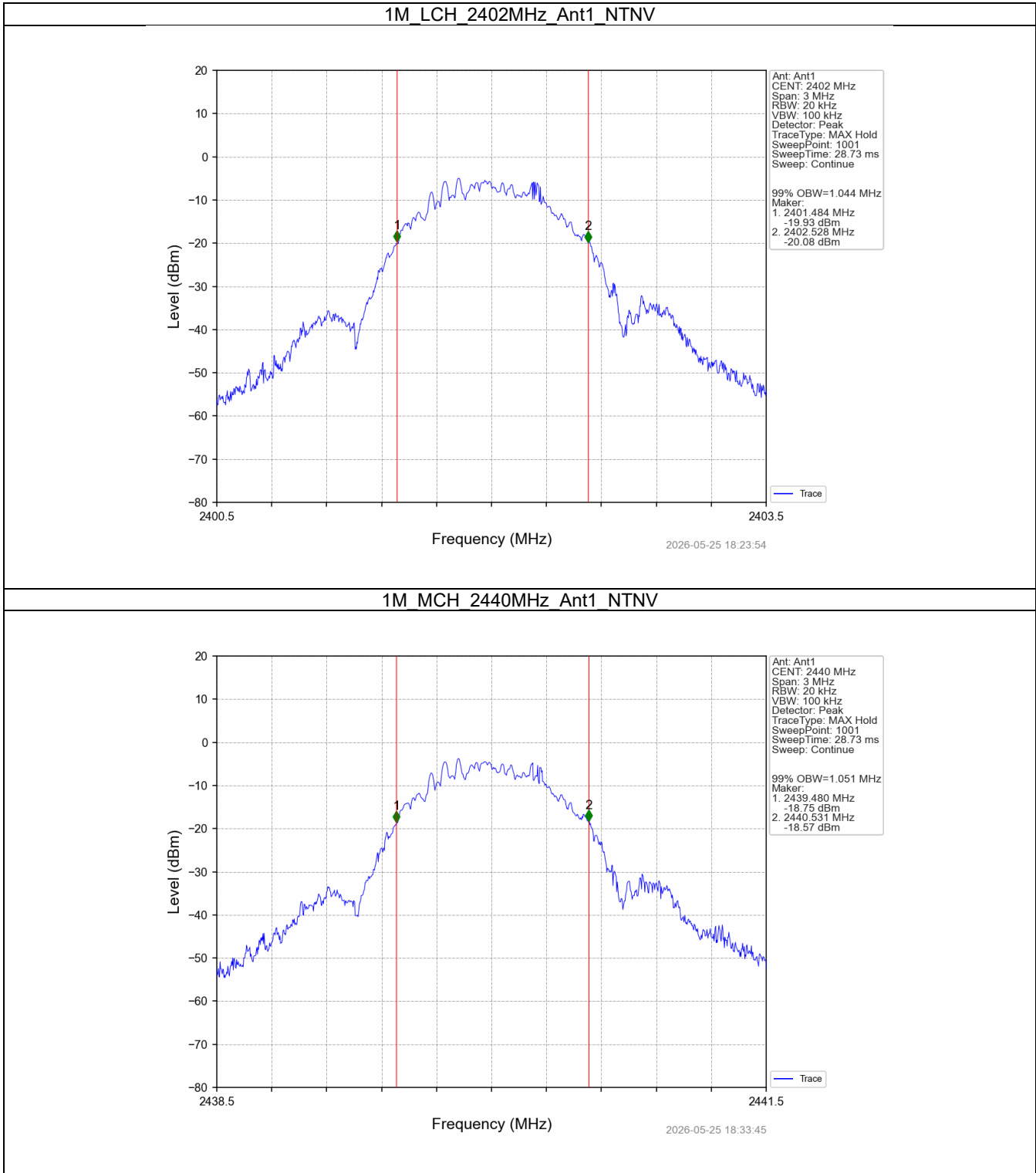
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.671	≥ 0.5	Pass
		2440	1	0.669	≥ 0.5	Pass
		2480	1	0.710	≥ 0.5	Pass
2M	SISO	2402	1	1.245	≥ 0.5	Pass
		2440	1	1.266	≥ 0.5	Pass
		2480	1	1.173	≥ 0.5	Pass

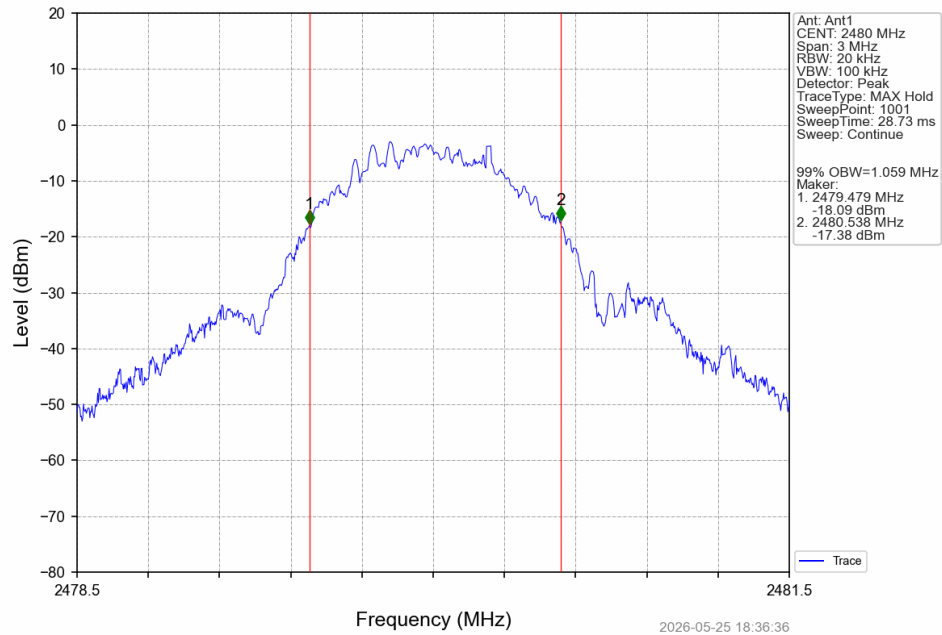
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	2	0.677	≥ 0.5	Pass
		2440	2	0.676	≥ 0.5	Pass
		2480	2	0.670	≥ 0.5	Pass
2M	SISO	2402	2	1.149	≥ 0.5	Pass
		2440	2	1.151	≥ 0.5	Pass
		2480	2	1.150	≥ 0.5	Pass

2.2 Test Graph

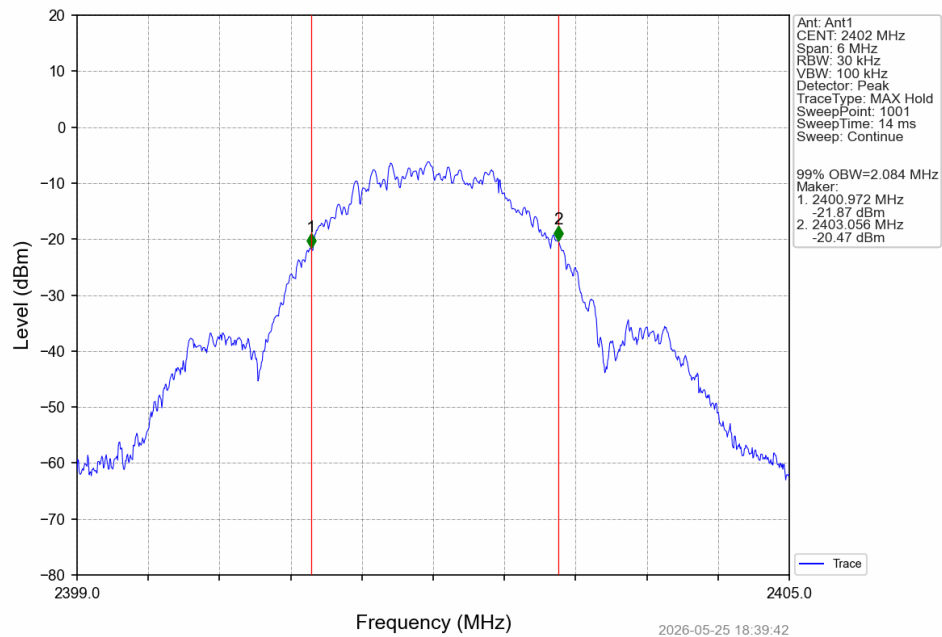
2.2.1 OBW



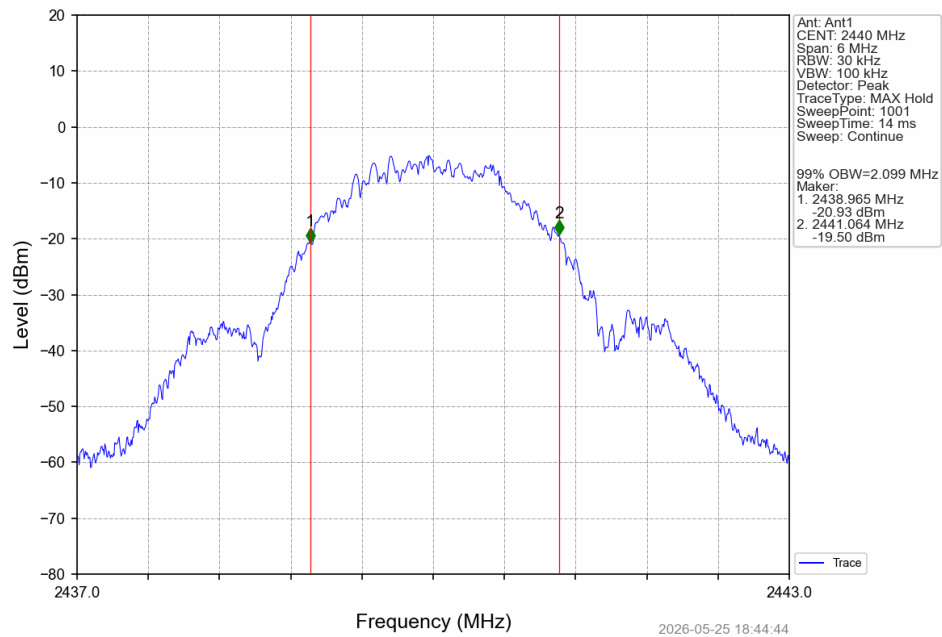
1M HCH 2480MHz Ant1 NTN



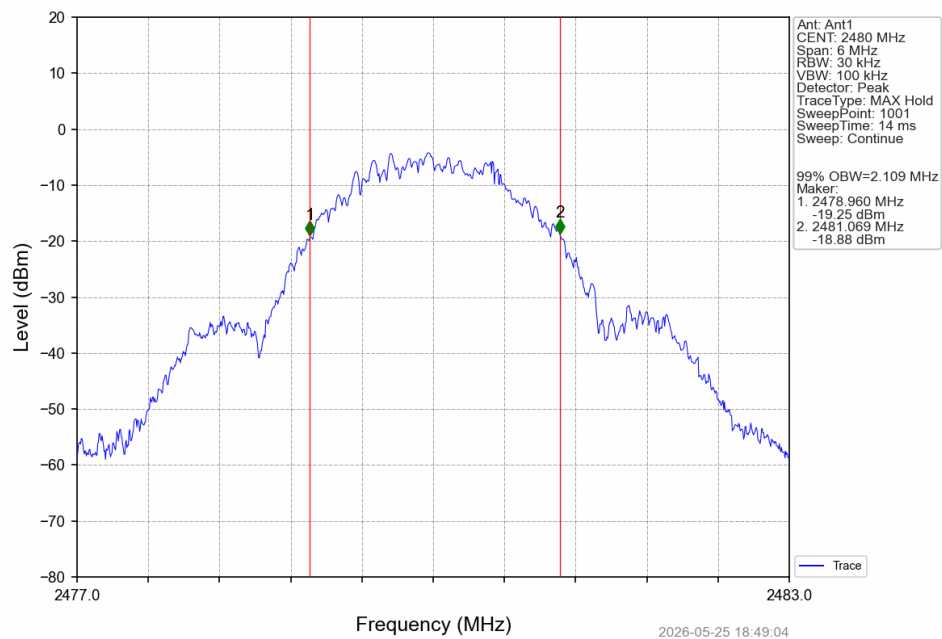
2M LCH 2402MHz Ant1 NTN



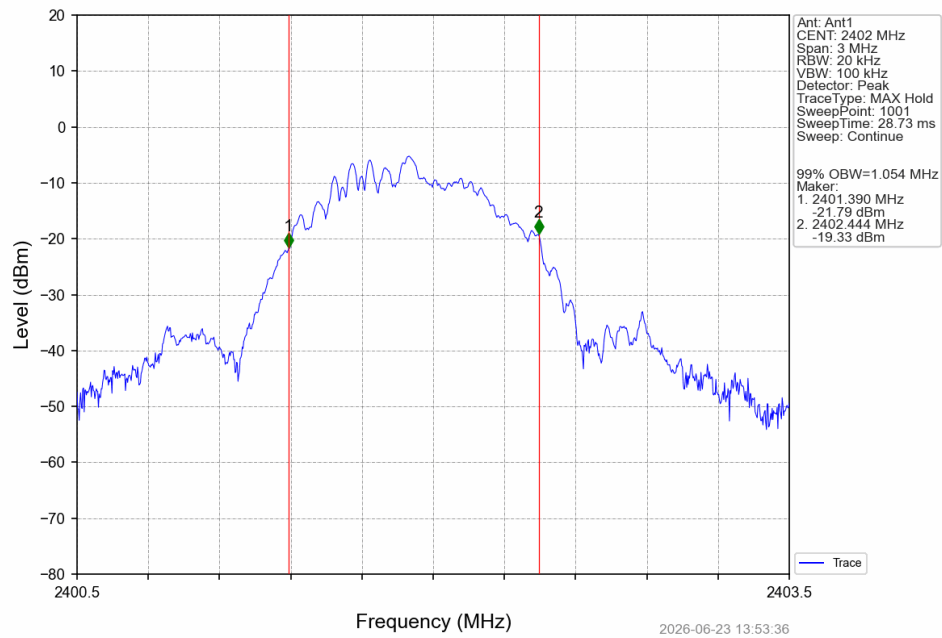
2M MCH 2440MHz Ant1 NTN



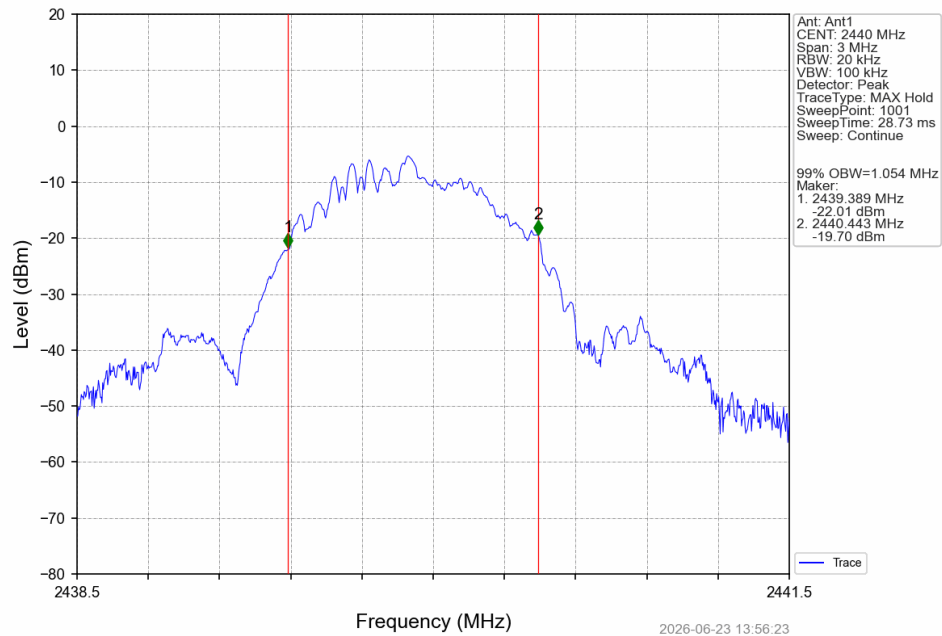
2M_HCH_2480MHz_Ant1 NTN



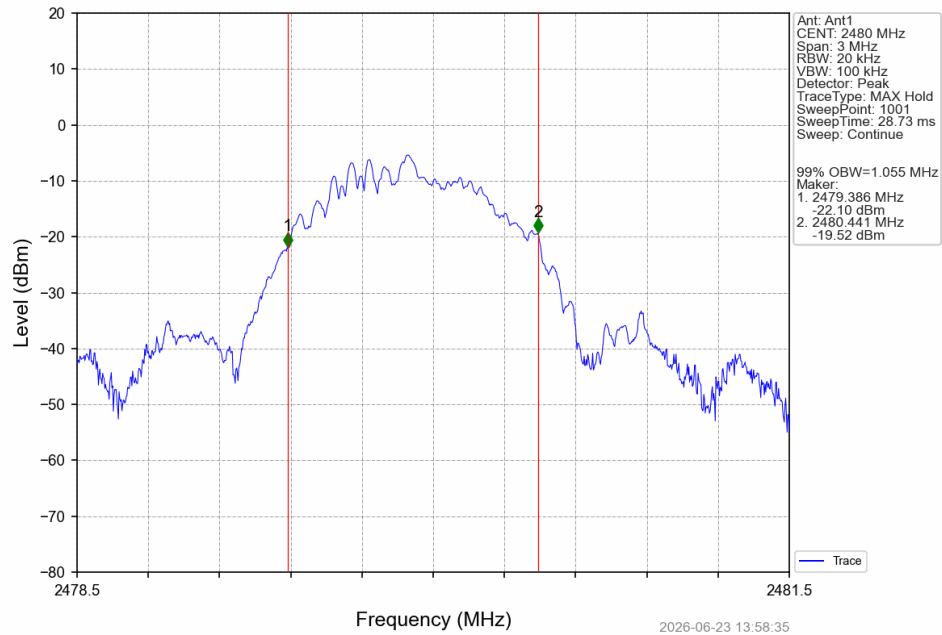
1M_LCH_2402MHz_Ant2_NTNV



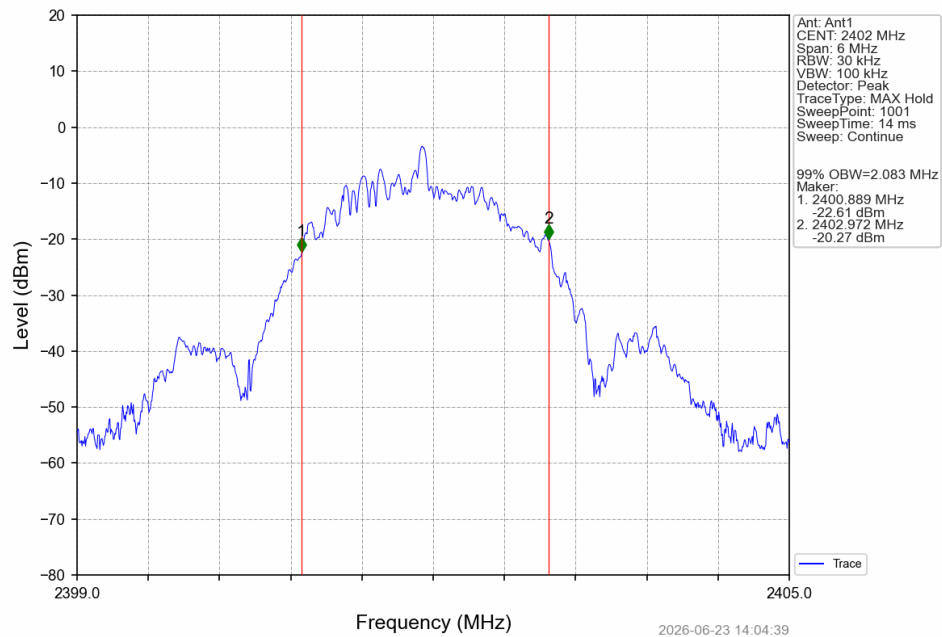
1M_MCH_2440MHz_Ant2_NTNV



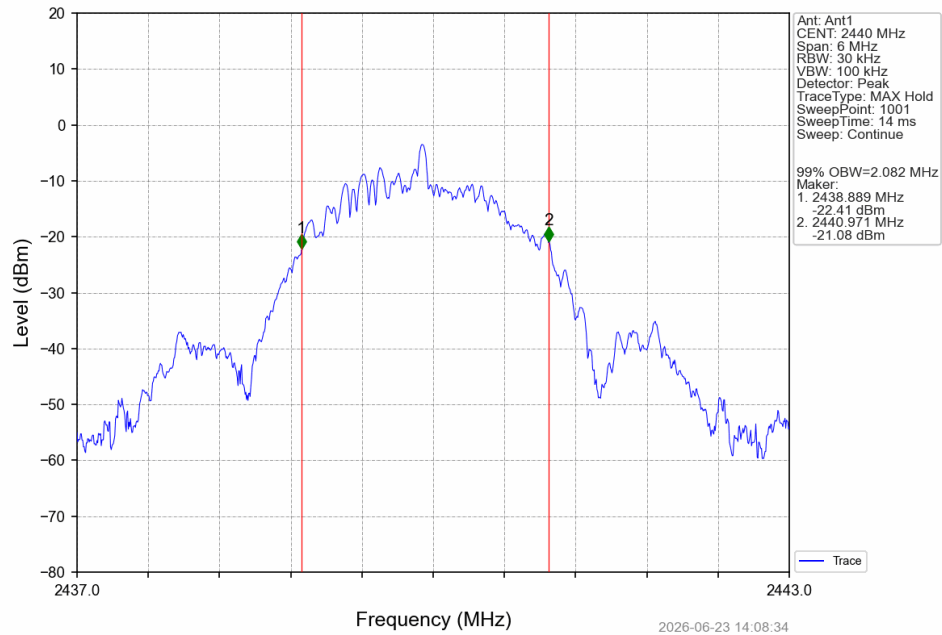
1M HCH 2480MHz Ant2 NTN



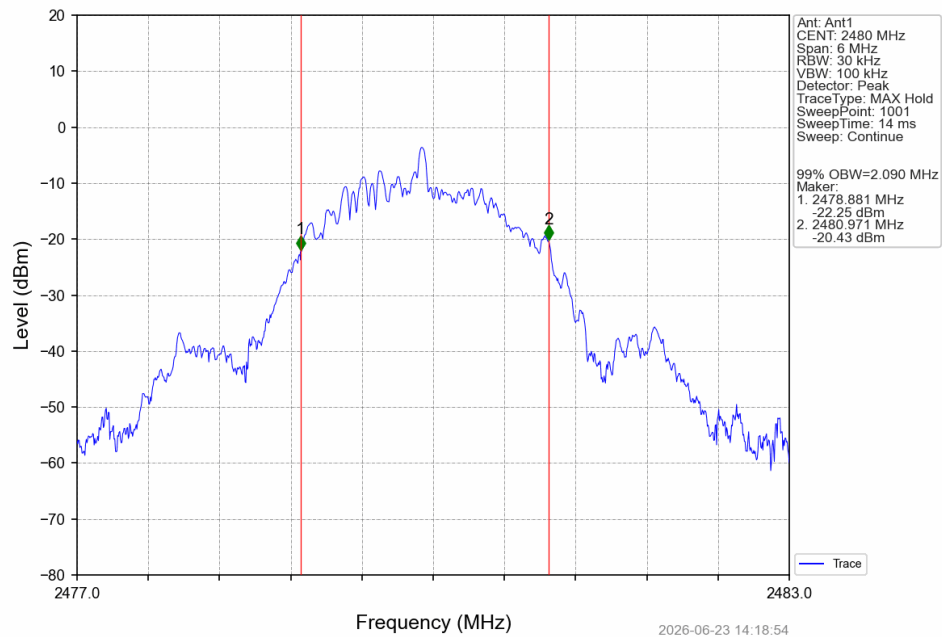
2M LCH 2402MHz Ant2 NTN



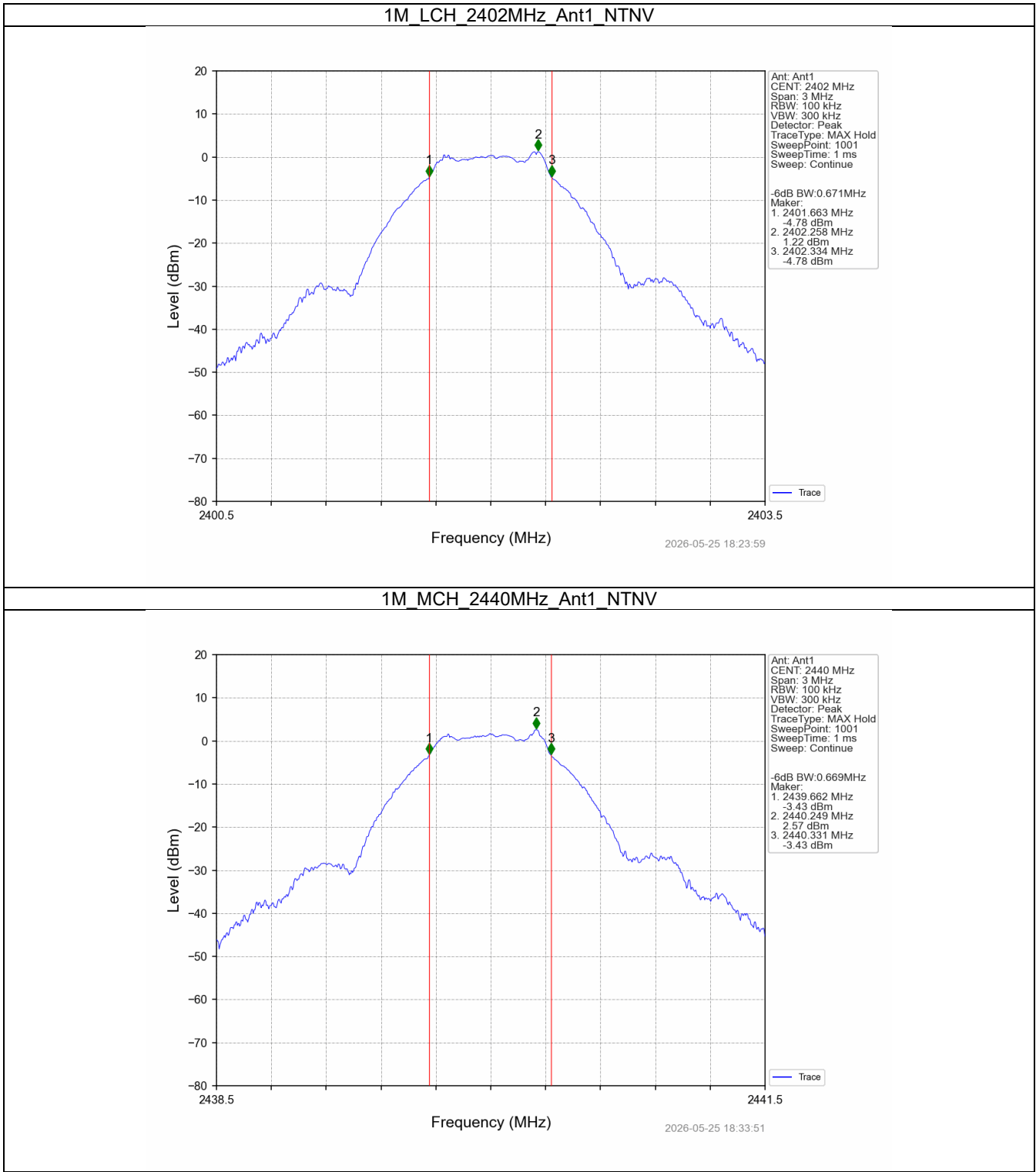
2M MCH 2440MHz Ant2 NTN



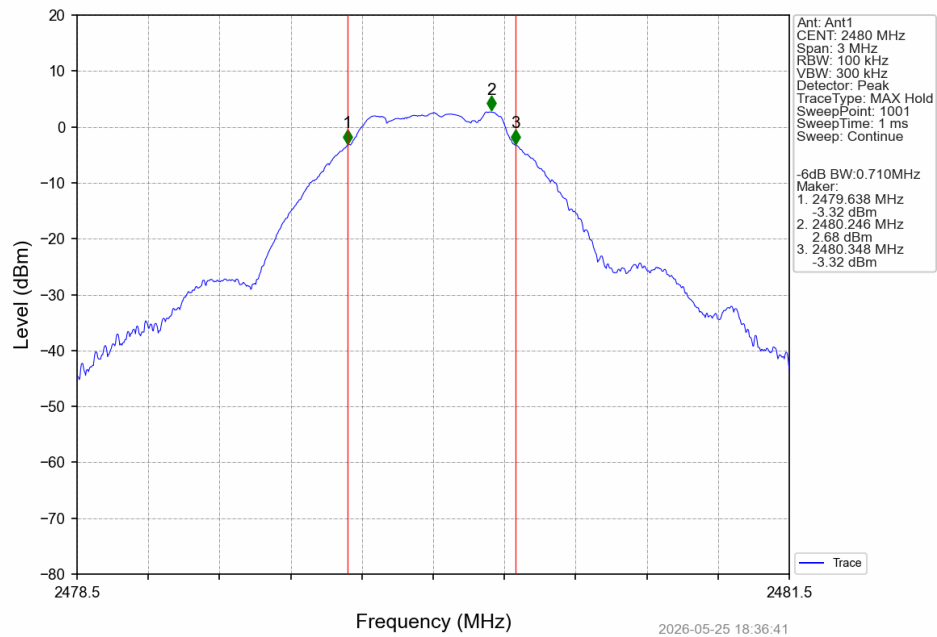
2M_HCH_2480MHz_Ant2_NTNV



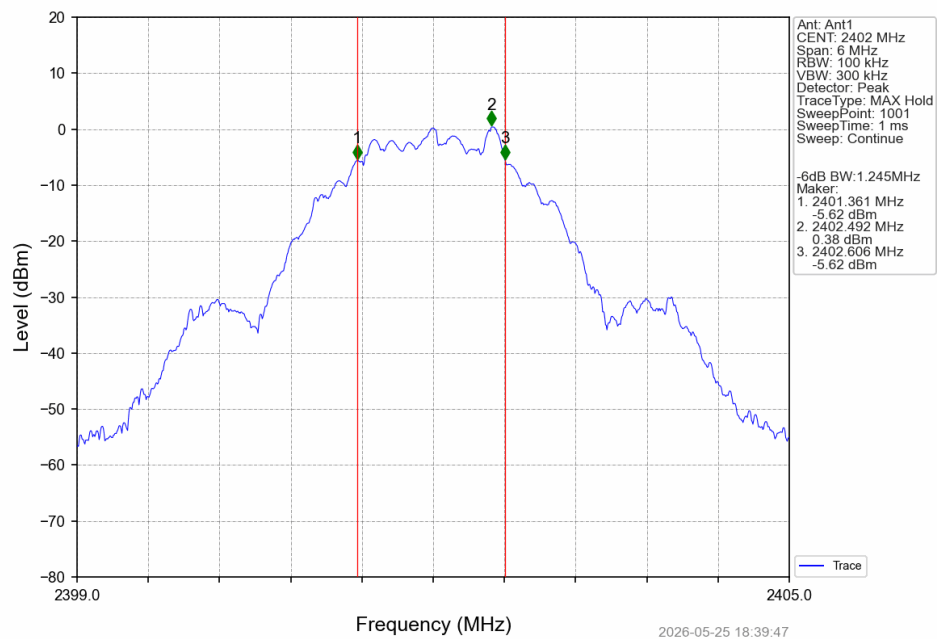
2.2.2 6dB BW



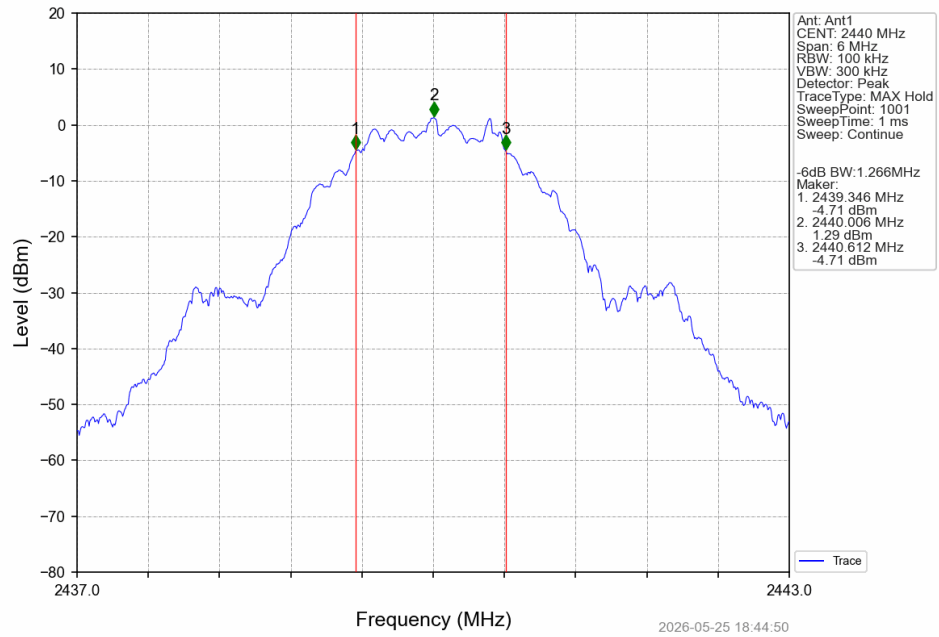
1M HCH 2480MHz Ant1 NTN



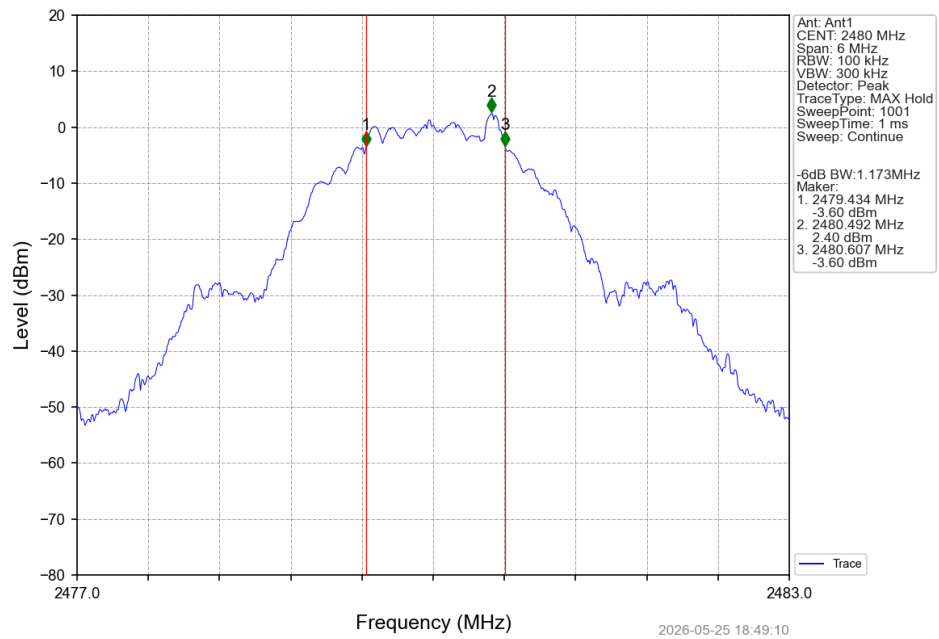
2M_LCH_2402MHz_Ant1_NTN



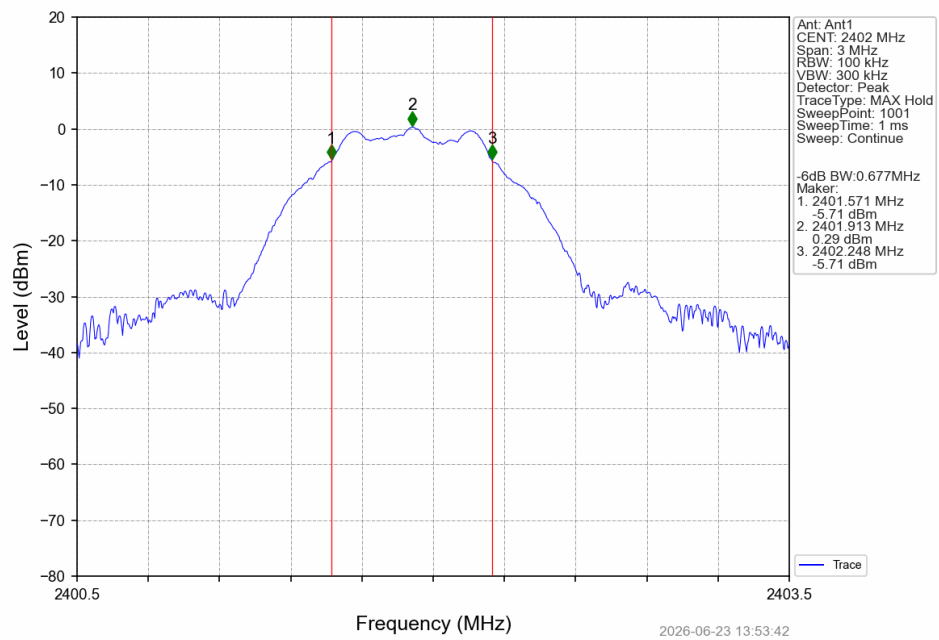
2M MCH 2440MHz Ant1 NTN



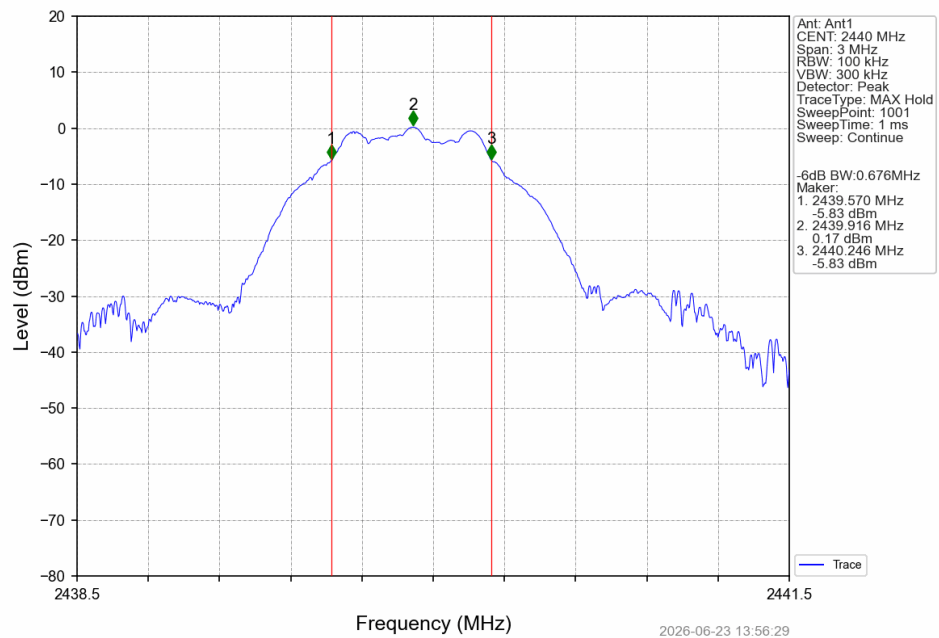
2M_HCH_2480MHz_Ant1_NTNV



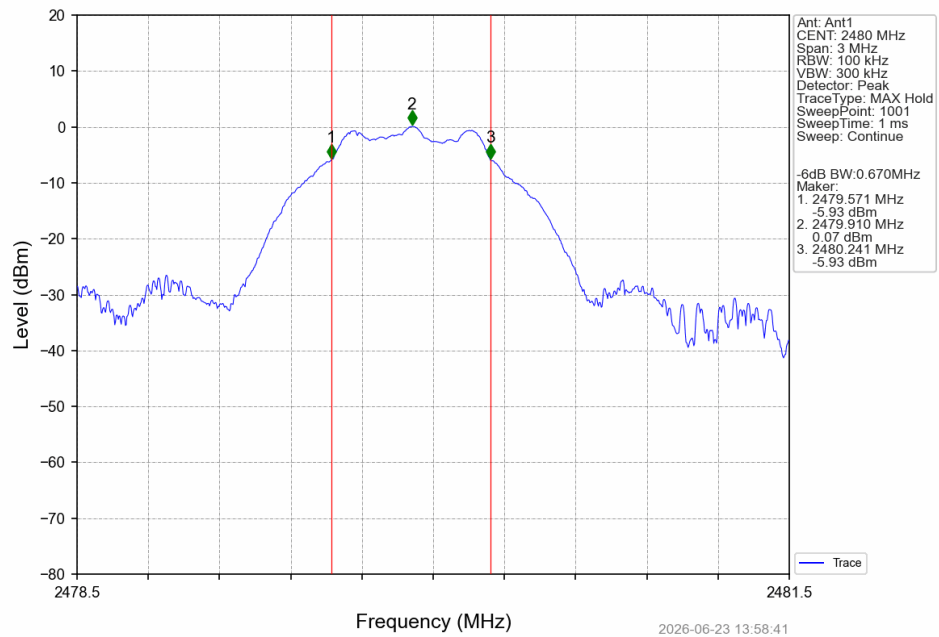
1M_LCH_2402MHz_Ant2_NTNV



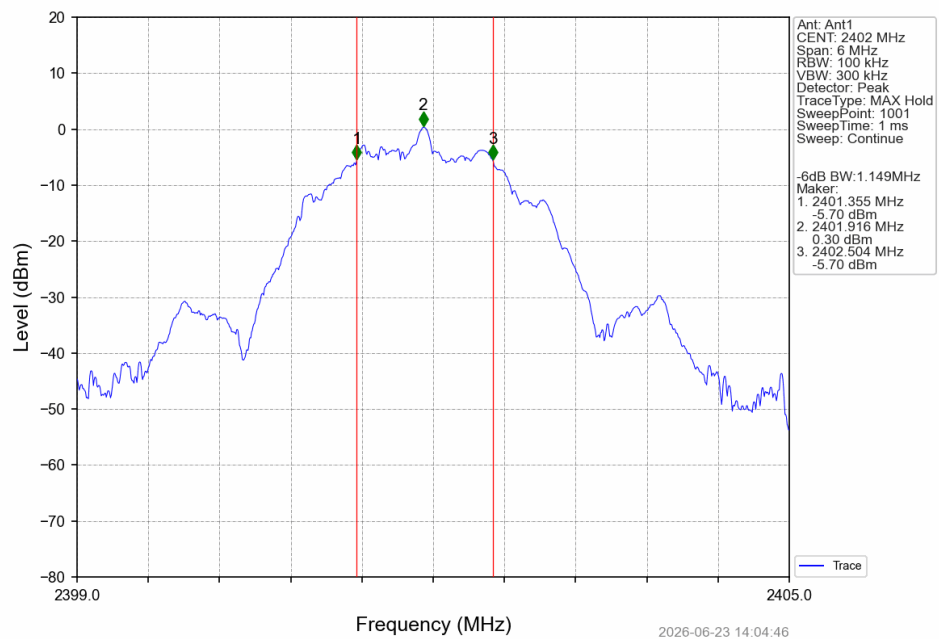
1M_MCH_2440MHz_Ant2_NTNV



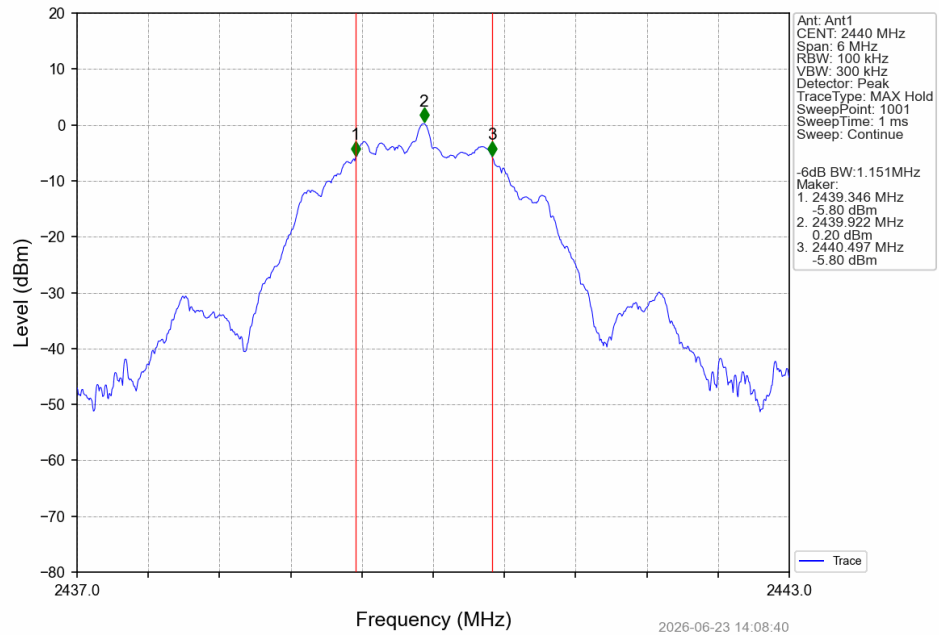
1M HCH 2480MHz Ant2 NTN



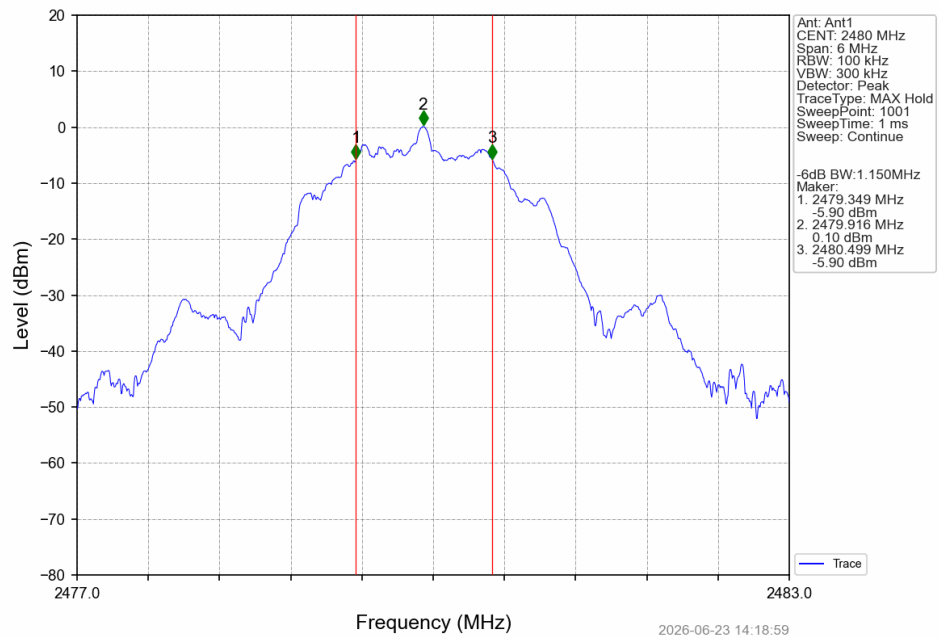
2M LCH 2402MHz Ant2 NTN



2M MCH 2440MHz Ant2 NTN



2M_HCH_2480MHz_Ant2 NTN



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Ant1

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	1.64	<=30	Pass
		2440	2.81	<=30	Pass
		2480	3.73	<=30	Pass
2M	SISO	2402	1.63	<=30	Pass
		2440	2.77	<=30	Pass
		2480	3.70	<=30	Pass

Ant2

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT2	Limit	
1M	SISO	2402	0.45	<=30	Pass
		2440	0.32	<=30	Pass
		2480	0.22	<=30	Pass
2M	SISO	2402	0.44	<=30	Pass
		2440	0.31	<=30	Pass
		2480	0.23	<=30	Pass

4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

Ant1

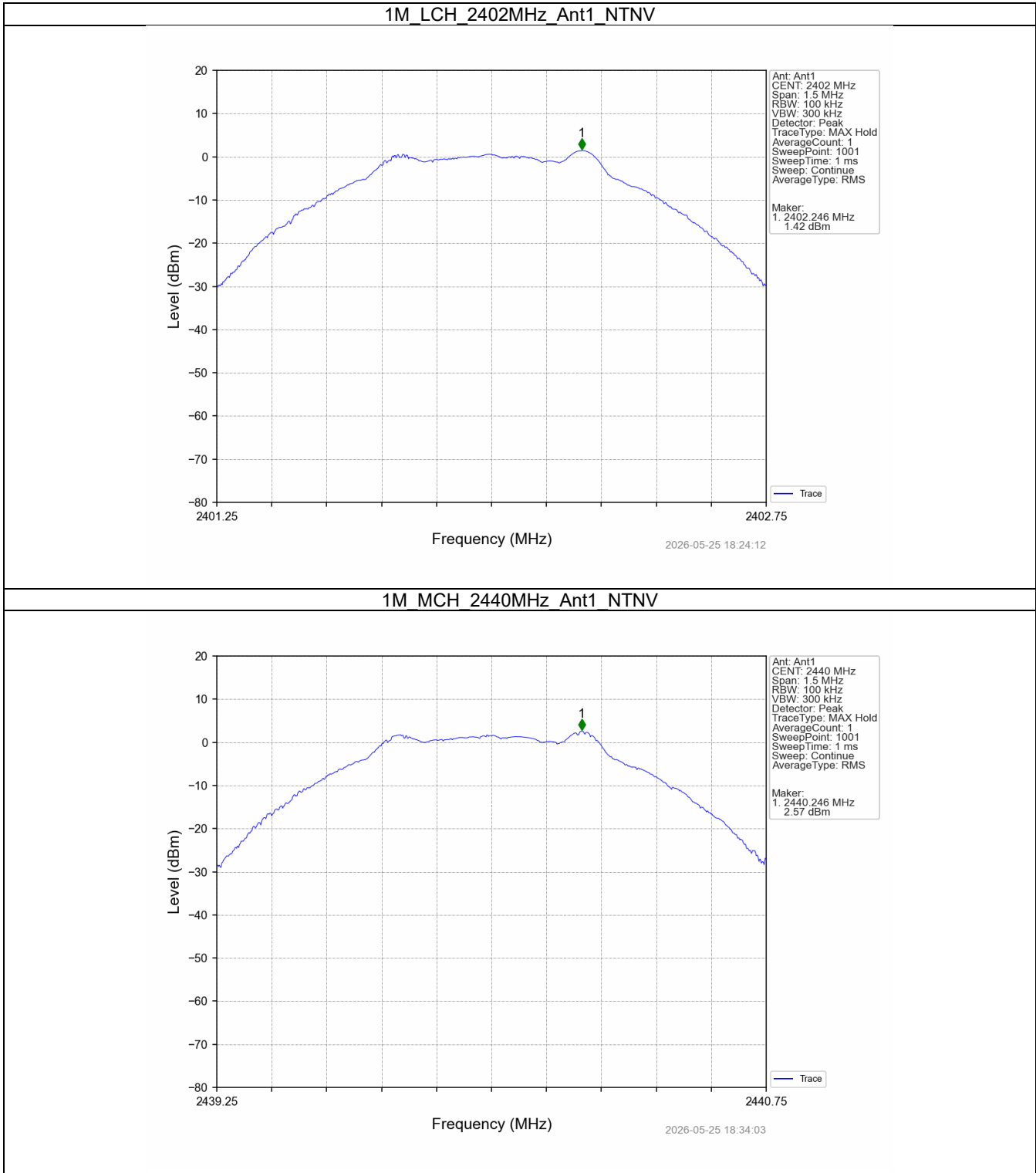
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit(dBm/3kHz)	
1M	SISO	2402	1.42dBm/100kHz	<=8	Pass
		2440	2.57dBm/100kHz	<=8	Pass
		2480	3.47dBm/100kHz	<=8	Pass
2M	SISO	2402	0.32dBm/100kHz	<=8	Pass
		2440	1.45dBm/100kHz	<=8	Pass
		2480	2.32dBm/100kHz	<=8	Pass

Ant2

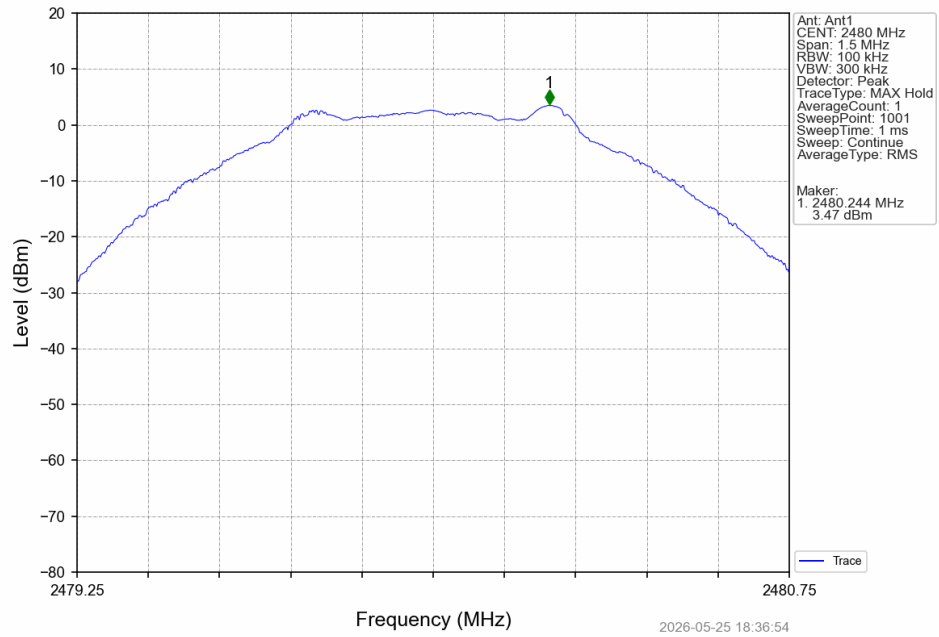
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT2	Limit(dBm/3kHz)	
1M	SISO	2402	0.27dBm/100kHz	<=8	Pass
		2440	0.13dBm/100kHz	<=8	Pass
		2480	0.04dBm/100kHz	<=8	Pass
2M	SISO	2402	0.20dBm/100kHz	<=8	Pass
		2440	0.13dBm/100kHz	<=8	Pass
		2480	0.04dBm/100kHz	<=8	Pass

4.2 Test Graph

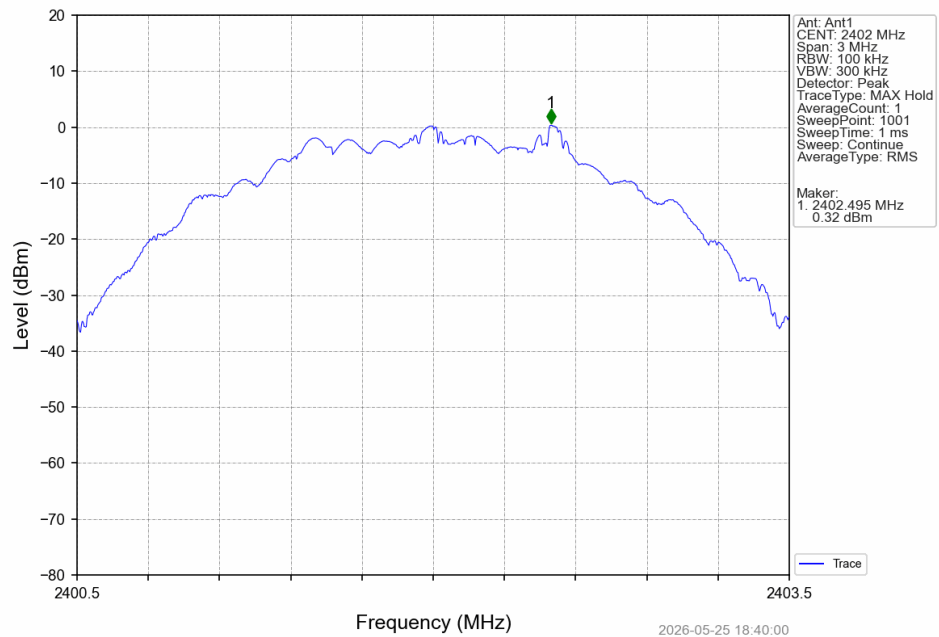
4.2.1 PSD



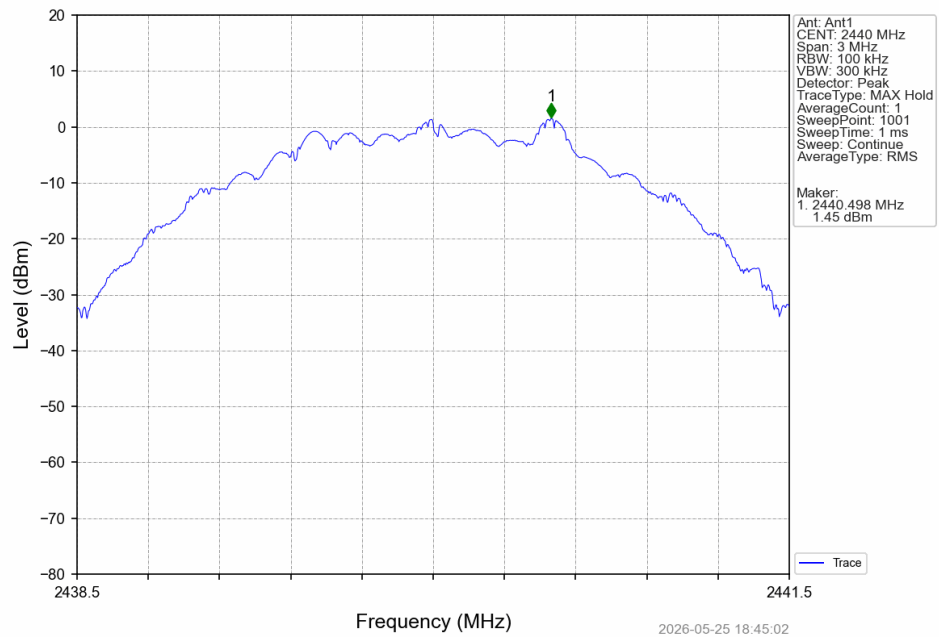
1M HCH 2480MHz Ant1 NTN



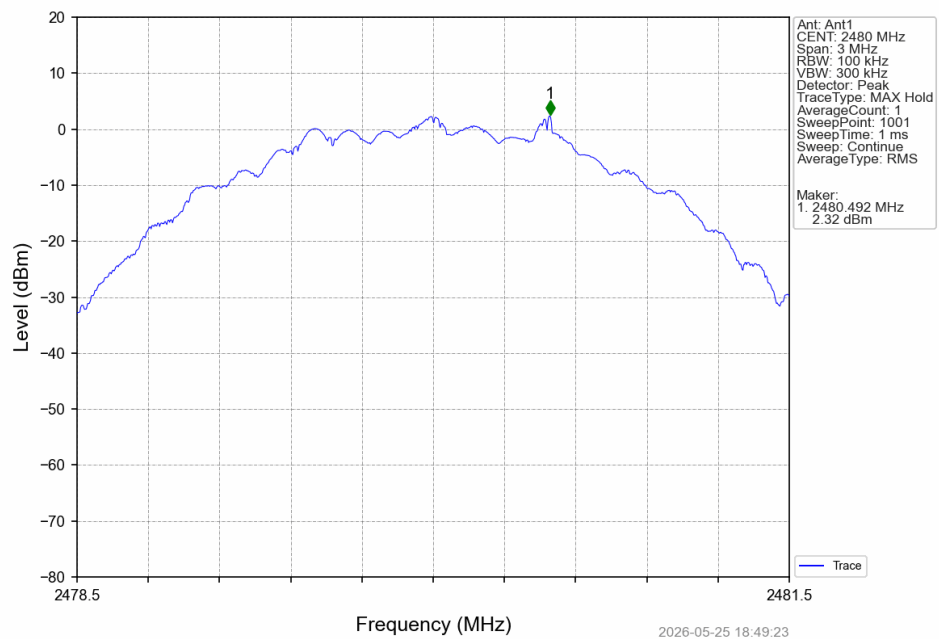
2M LCH 2402MHz Ant1 NTN



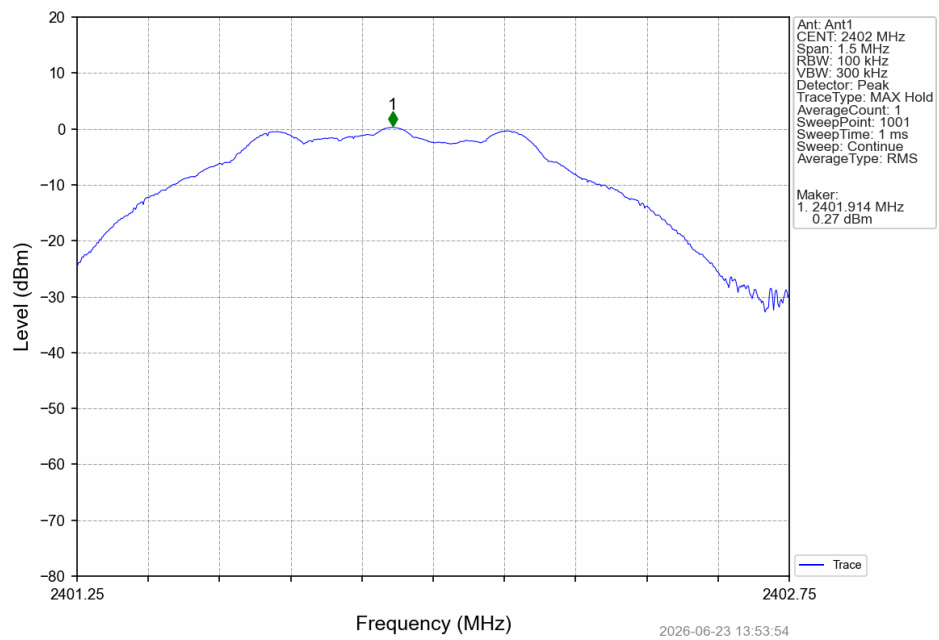
2M MCH 2440MHz Ant1 NTN



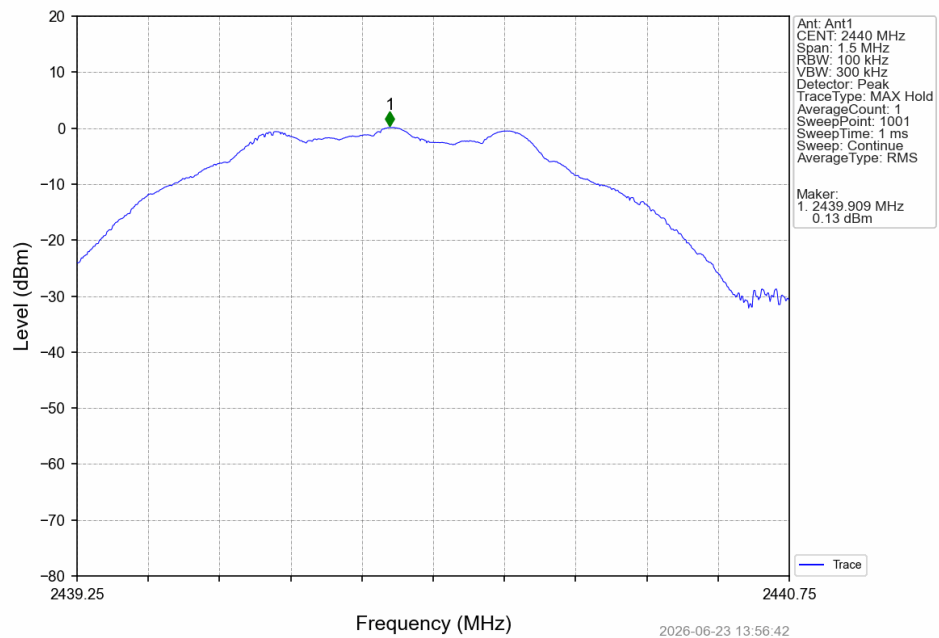
2M_HCH_2480MHz_Ant1_NTNV



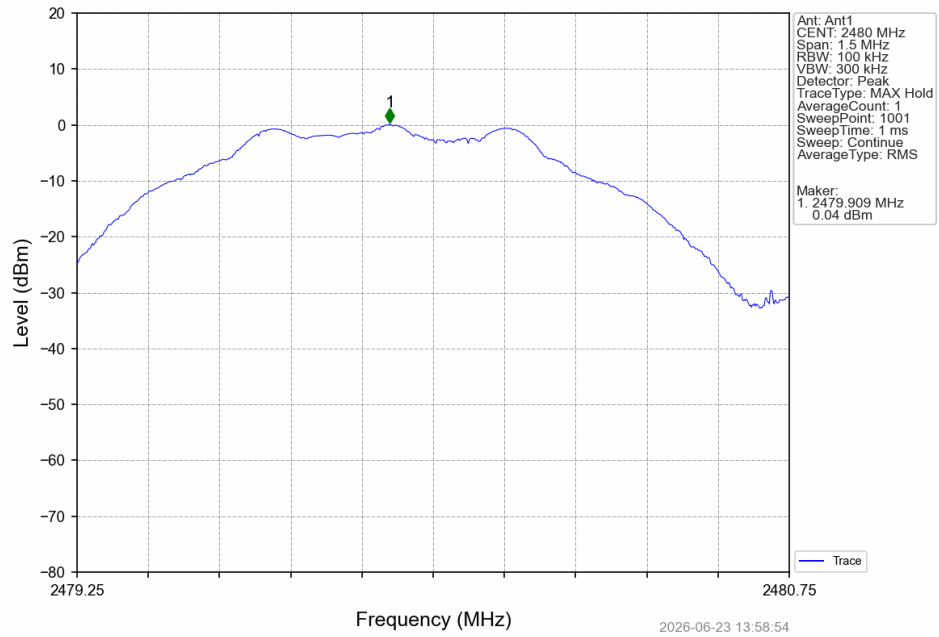
1M_LCH_2402MHz_Ant2_NTNV



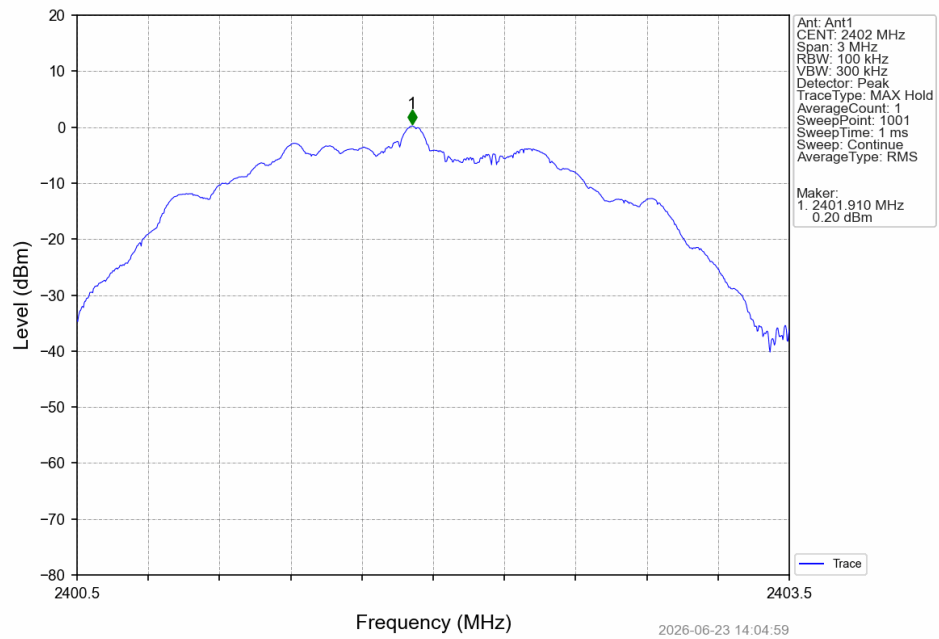
1M_MCH_2440MHz_Ant2_NTNV



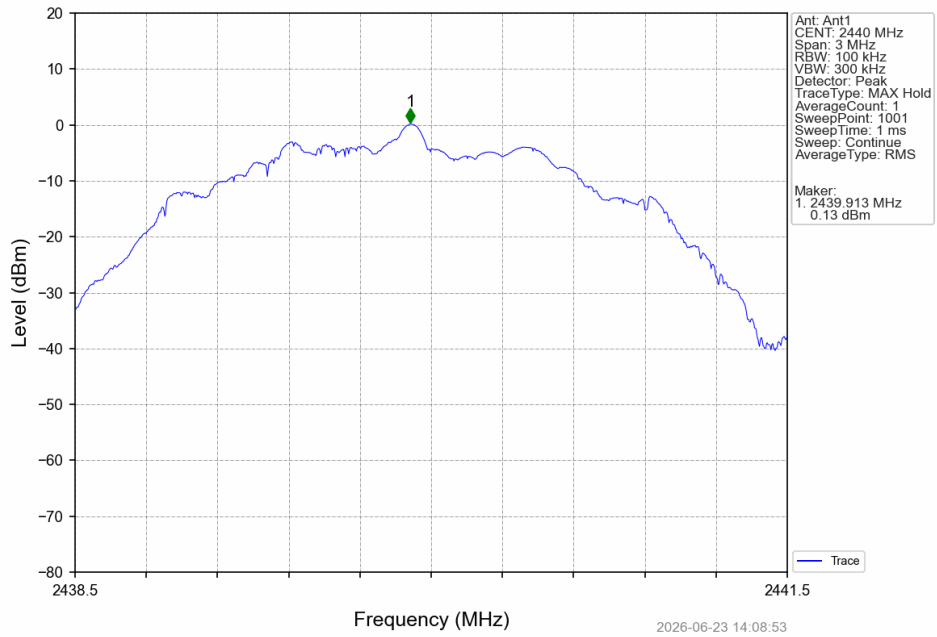
1M HCH 2480MHz Ant2 NTN



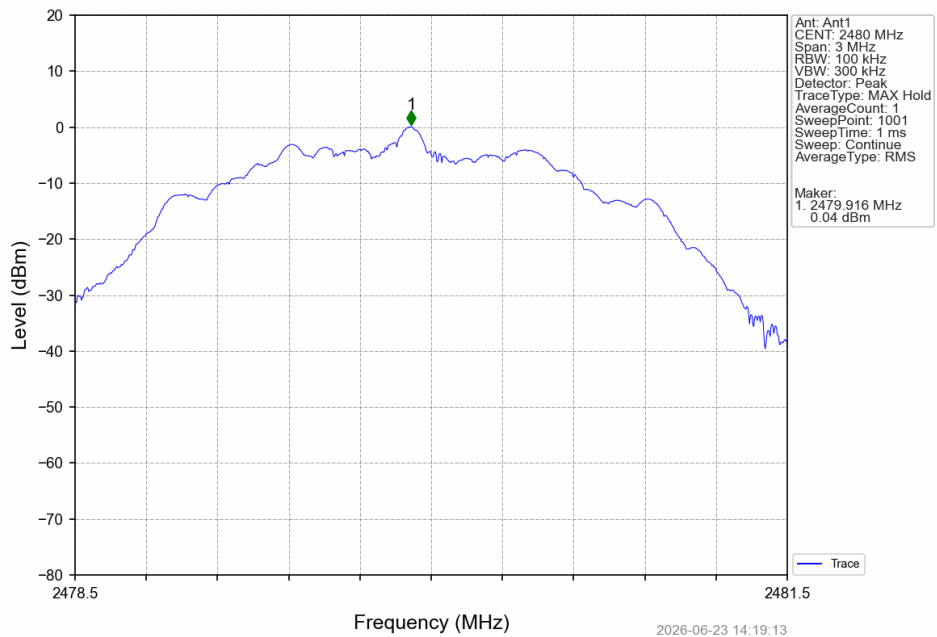
2M LCH 2402MHz Ant2 NTN



2M MCH 2440MHz Ant2 NTN



2M_HCH_2480MHz_Ant2 NTN



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	1.43
		2440	1	2.58
		2480	1	3.44
2M	SISO	2402	1	0.29
		2440	1	1.38
		2480	1	2.33

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	2	0.27
		2440	2	0.15
		2480	2	0.03
2M	SISO	2402	2	0.09
		2440	2	0.14
		2480	2	-0.02

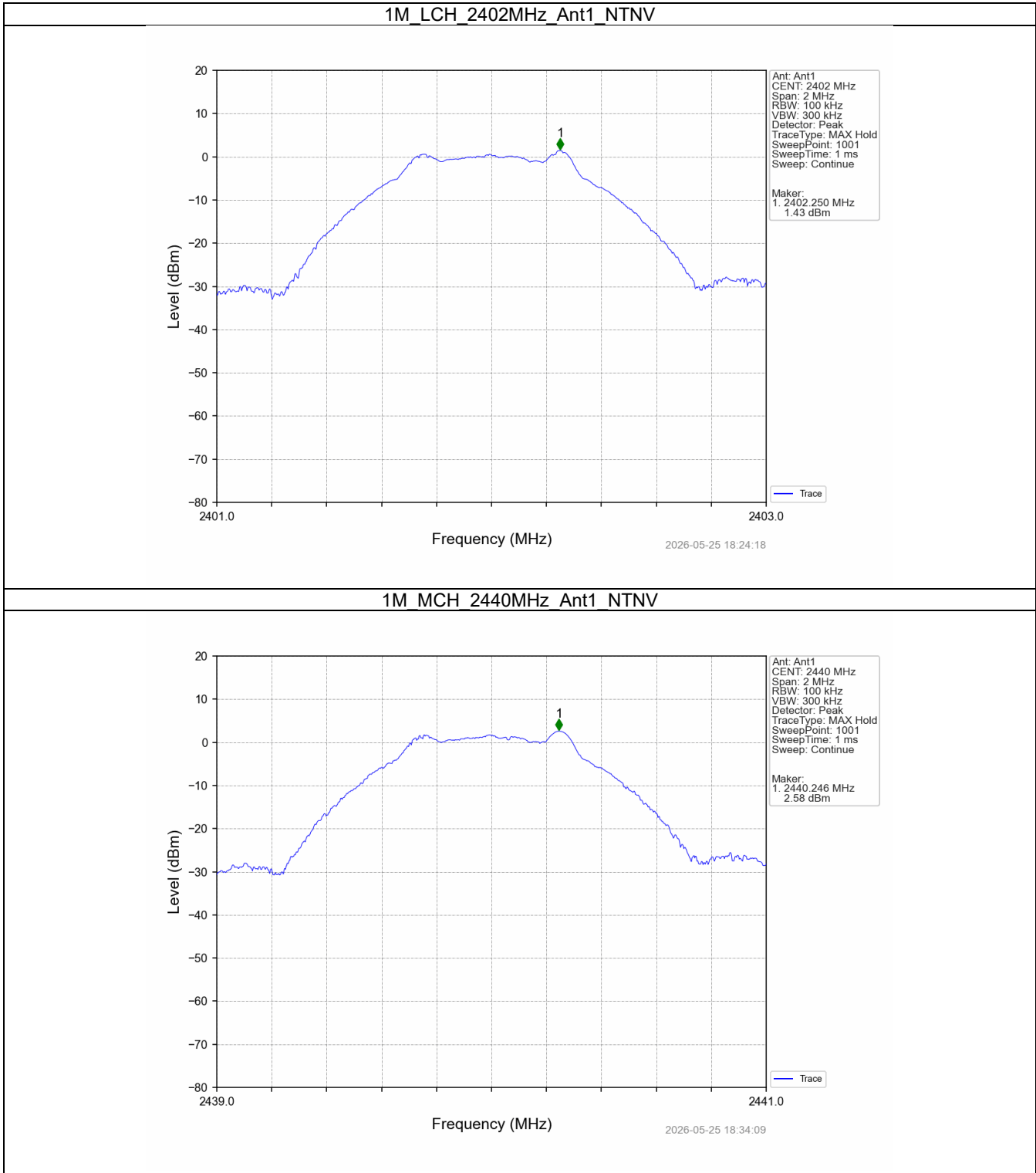
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	1.43	-18.57	Pass
		2440	1	2.58	-17.42	Pass
		2480	1	3.44	-16.56	Pass
2M	SISO	2402	1	0.29	-19.71	Pass
		2440	1	1.38	-18.62	Pass
		2480	1	2.33	-17.67	Pass

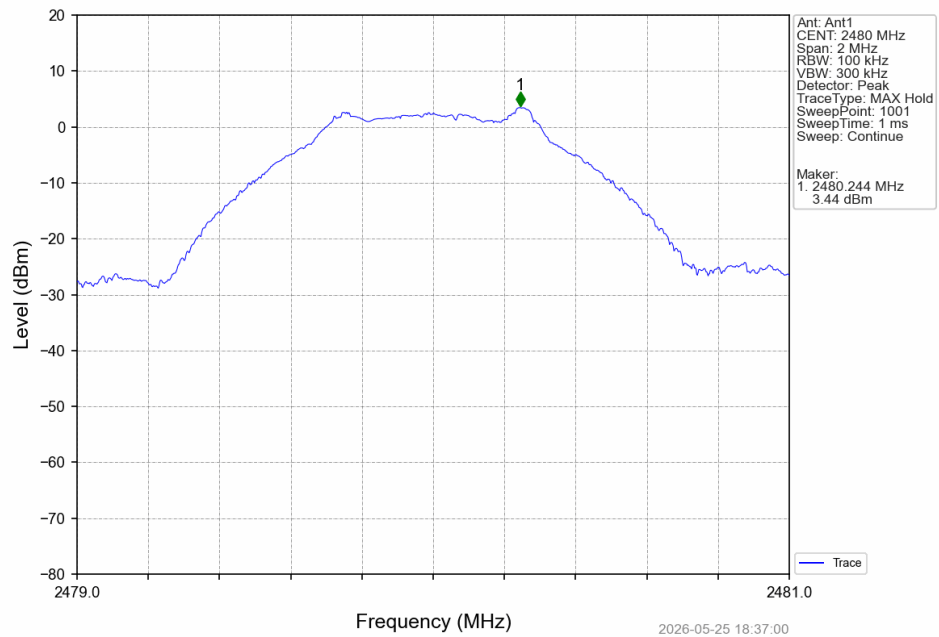
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	2	0.27	-19.73	Pass
		2440	2	0.15	-19.85	Pass
		2480	2	0.03	-19.97	Pass
2M	SISO	2402	2	0.09	-19.91	Pass
		2440	2	0.14	-19.86	Pass
		2480	2	-0.02	-20.02	Pass

5.2 Test Graph

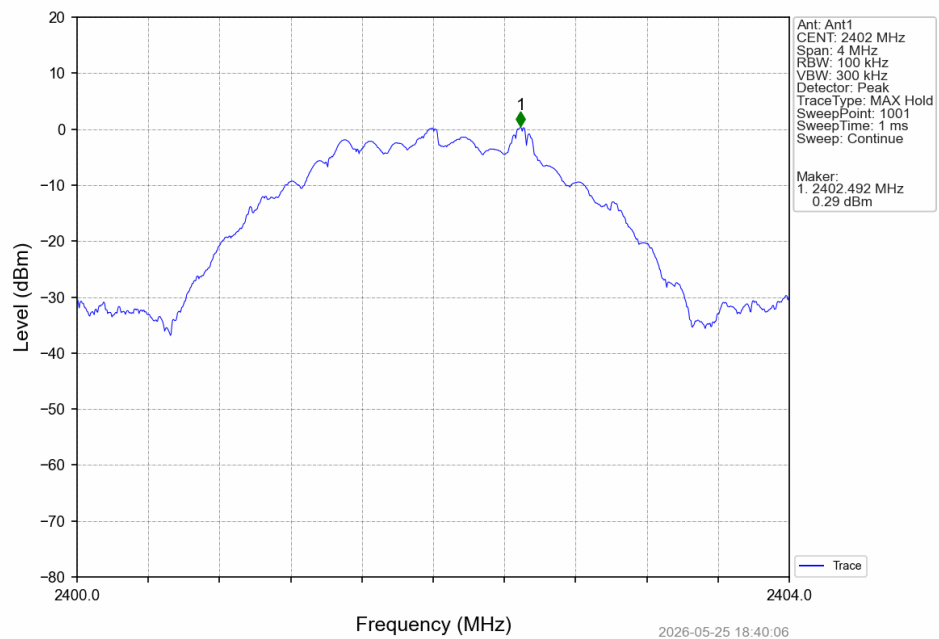
5.2.1 Ref



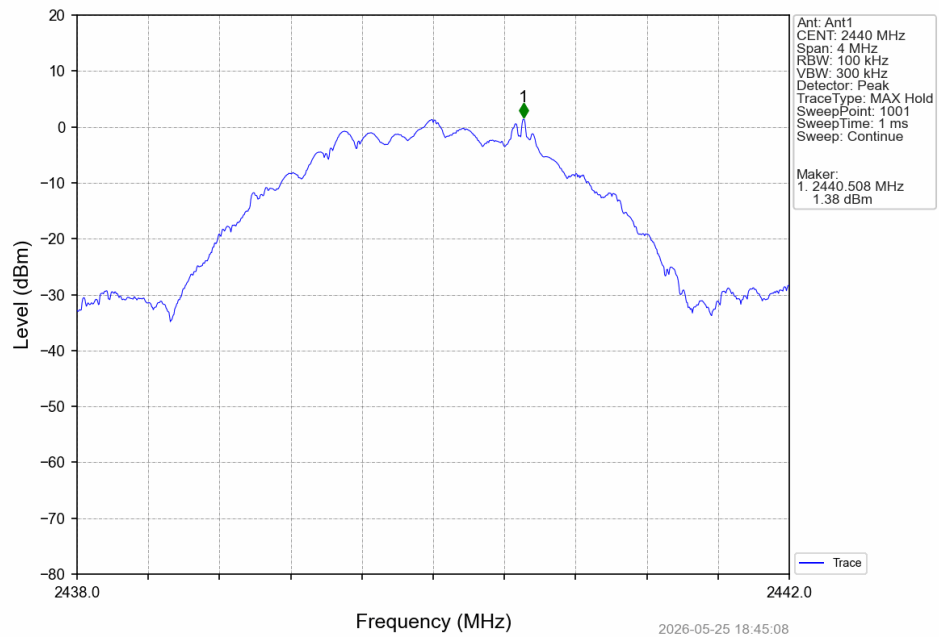
1M HCH 2480MHz Ant1 NTN



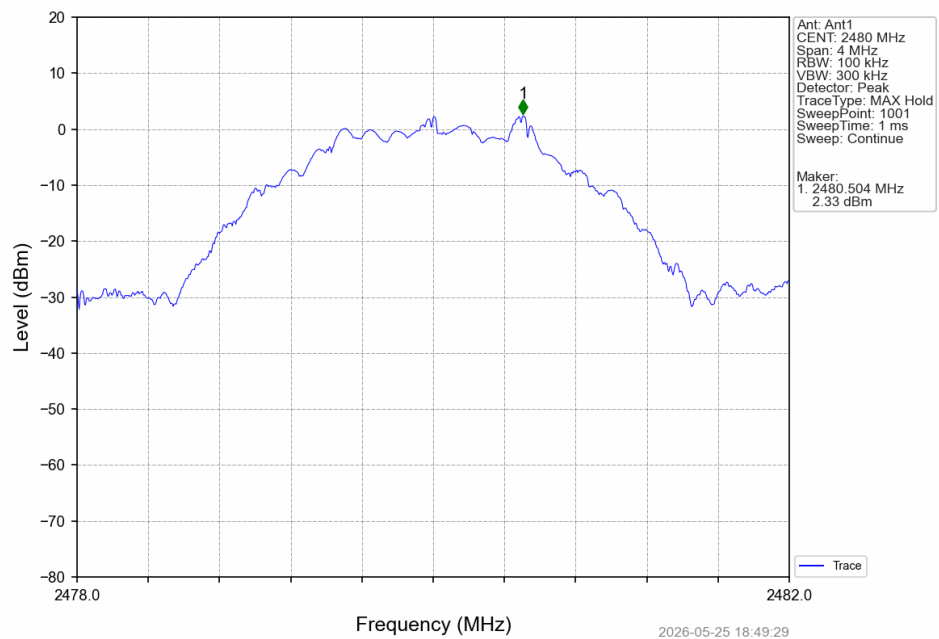
2M LCH 2402MHz Ant1 NTN



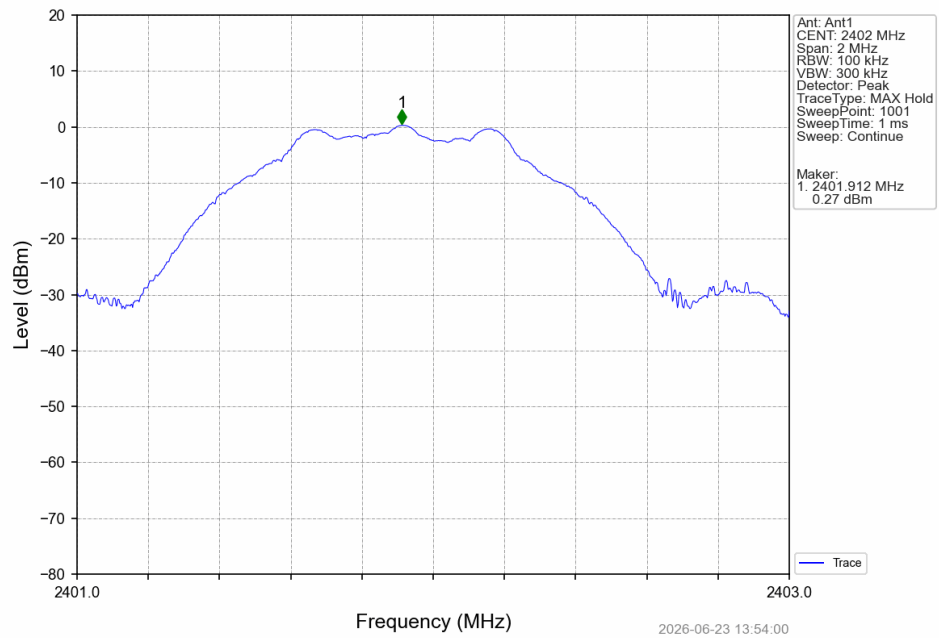
2M MCH 2440MHz Ant1 NTN



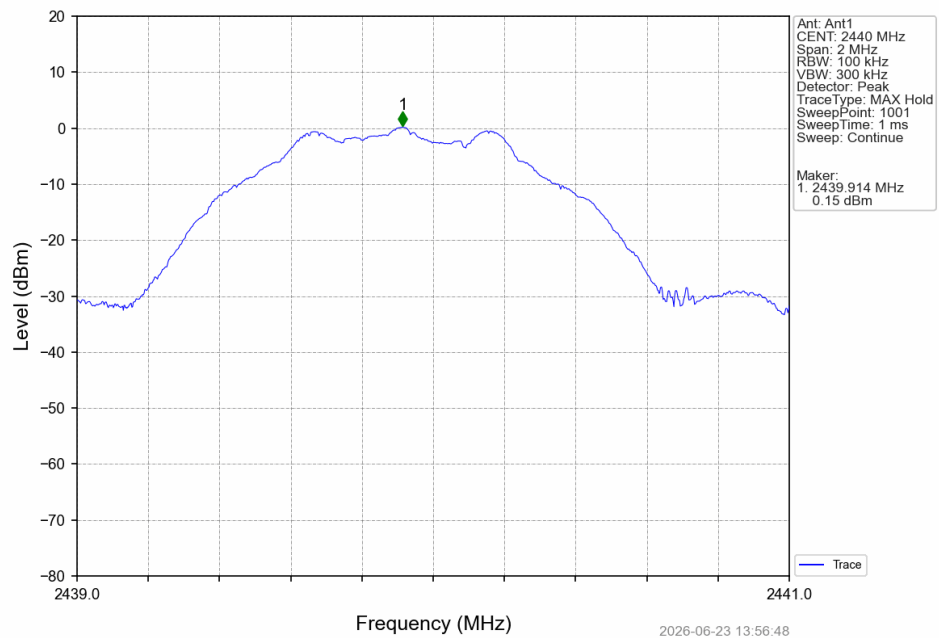
2M_HCH_2480MHz_Ant1_NTNV



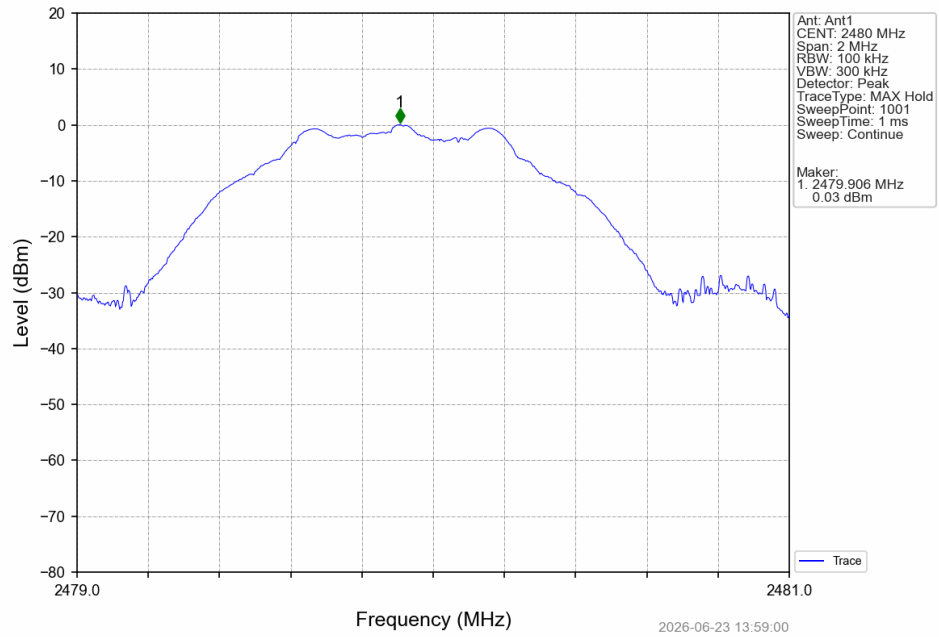
1M_LCH_2402MHz_Ant2_NTNV



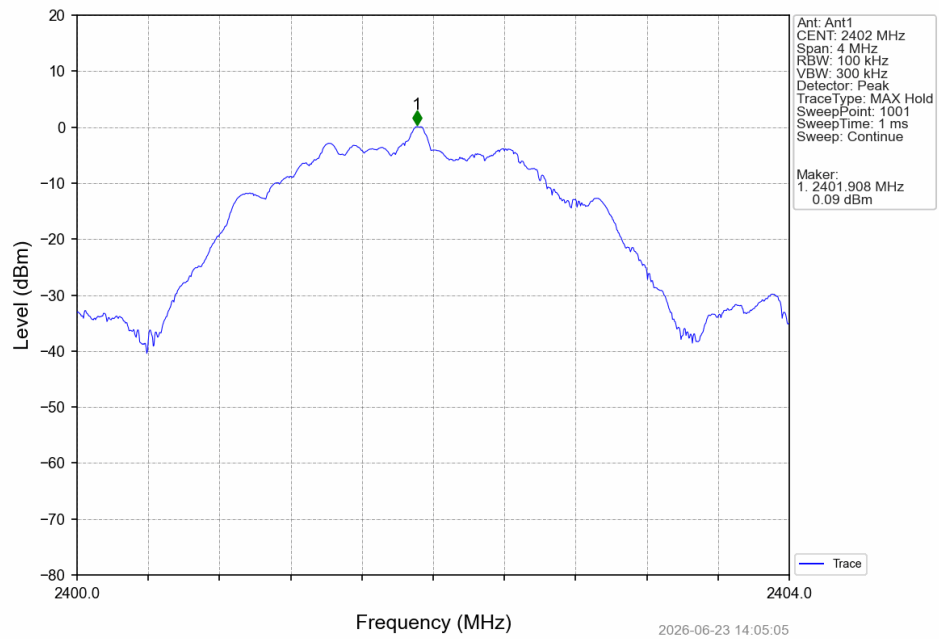
1M_MCH_2440MHz_Ant2_NTNV



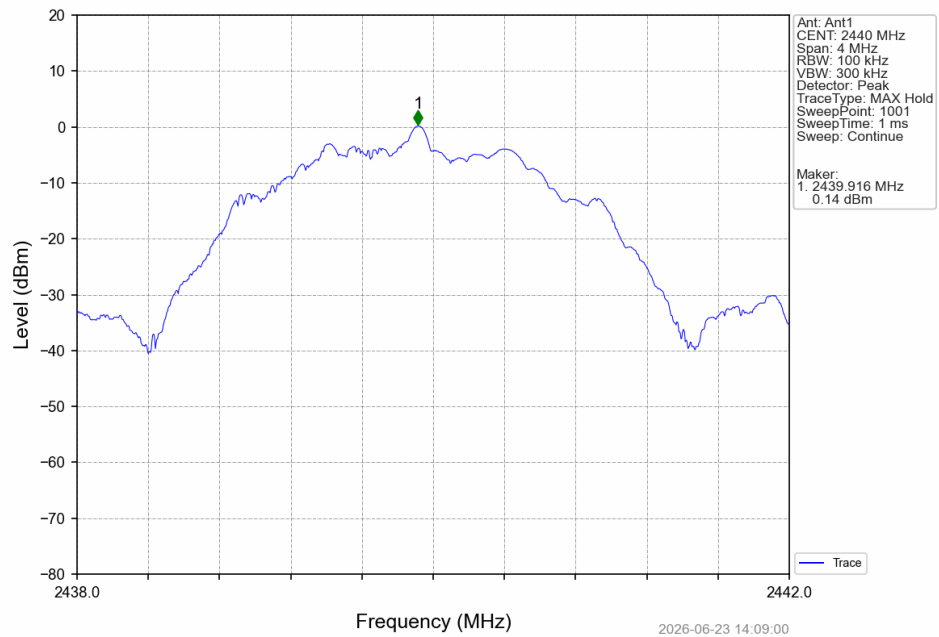
1M HCH 2480MHz Ant2 NTN



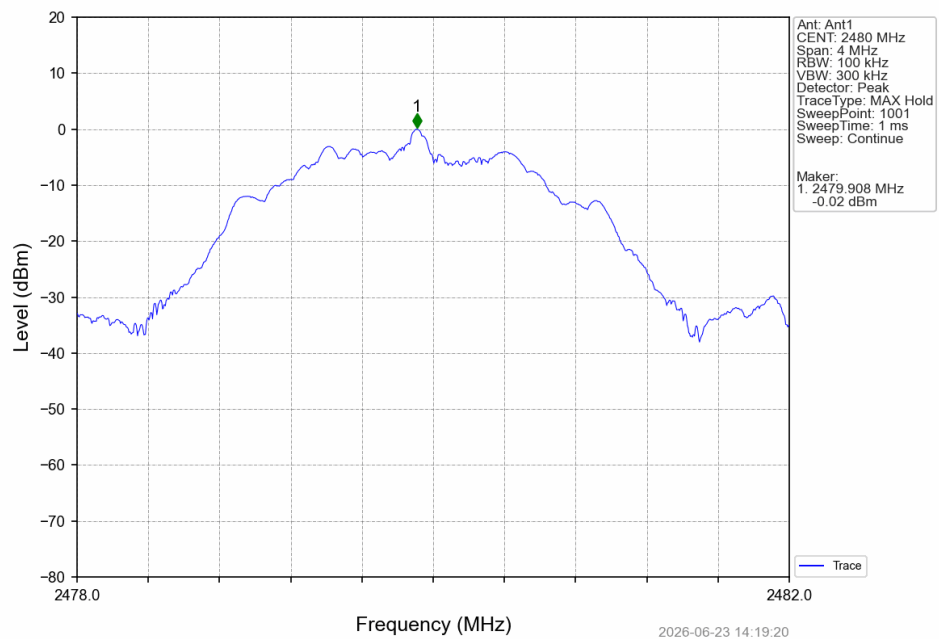
2M LCH 2402MHz Ant2 NTN



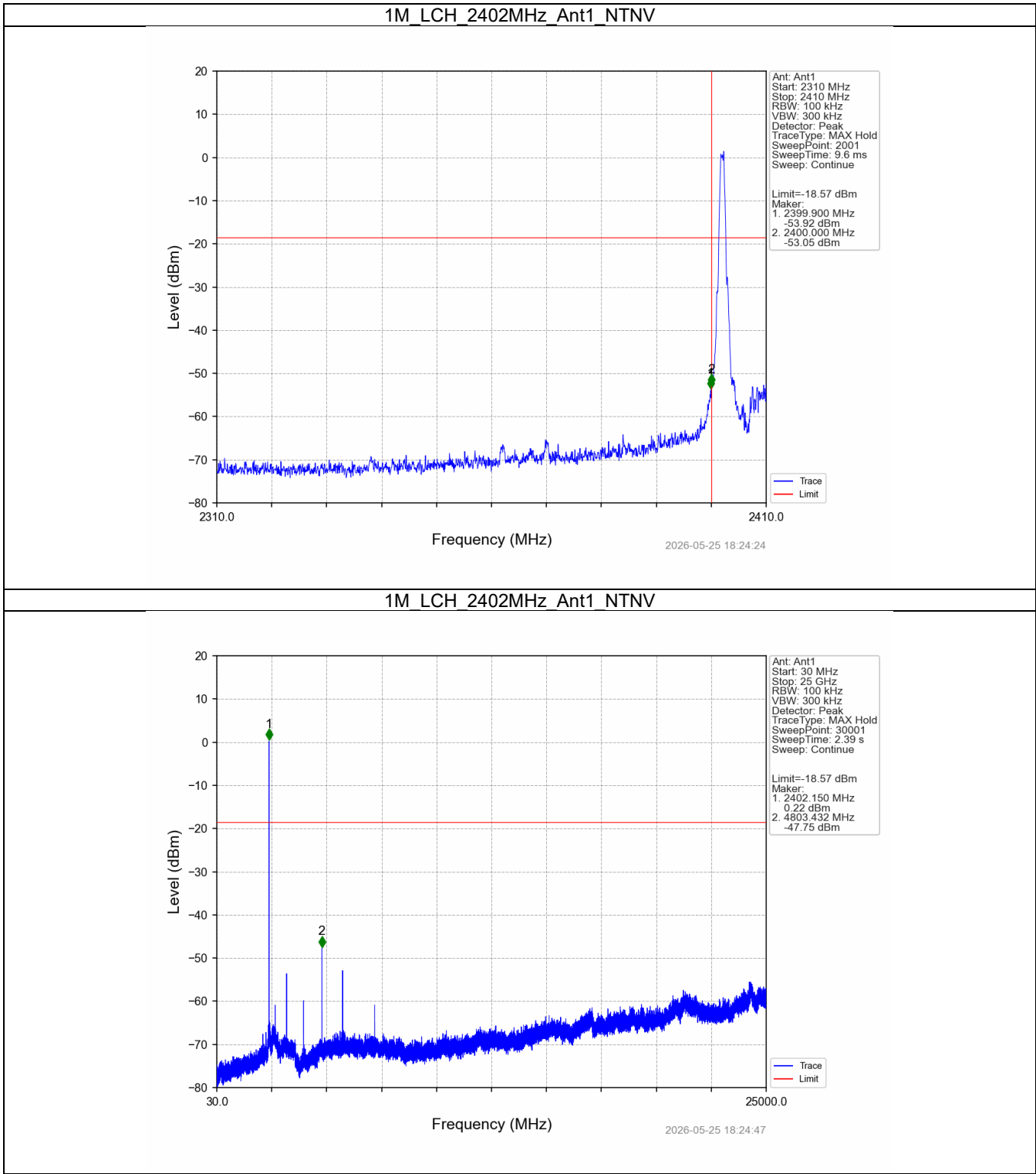
2M MCH 2440MHz Ant2 NTN



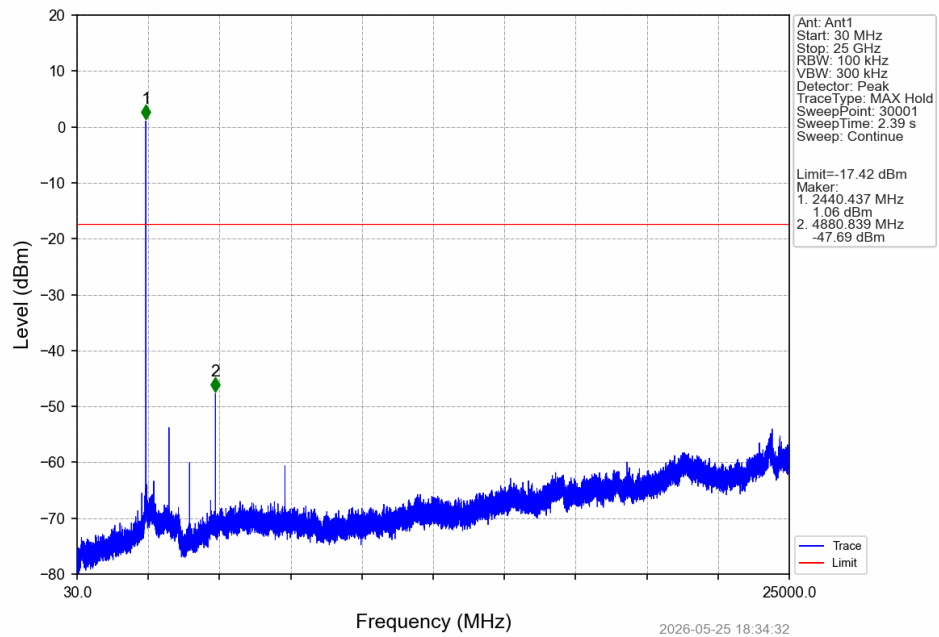
2M_HCH_2480MHz_Ant2 NTN



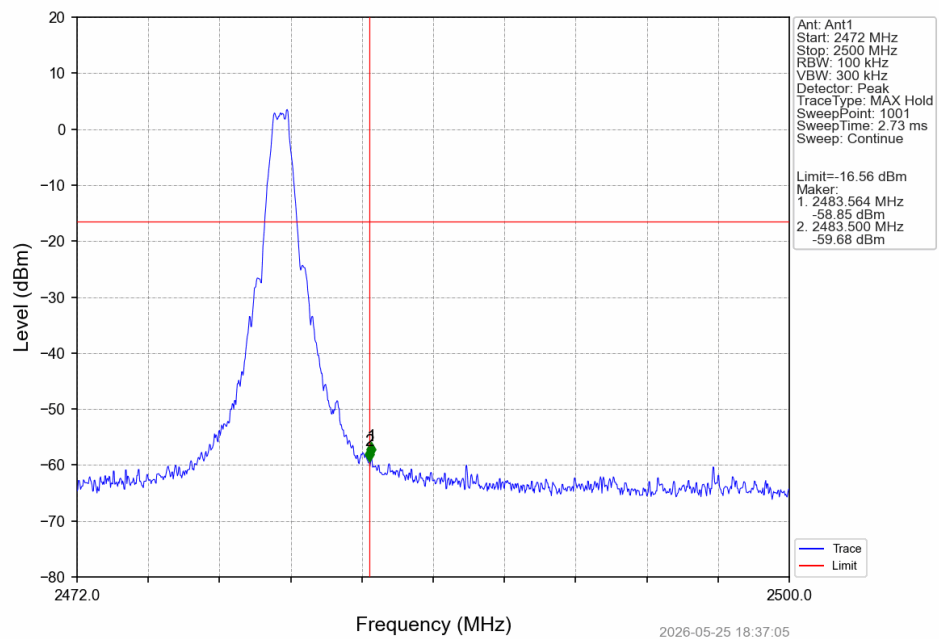
5.2.2 CSE



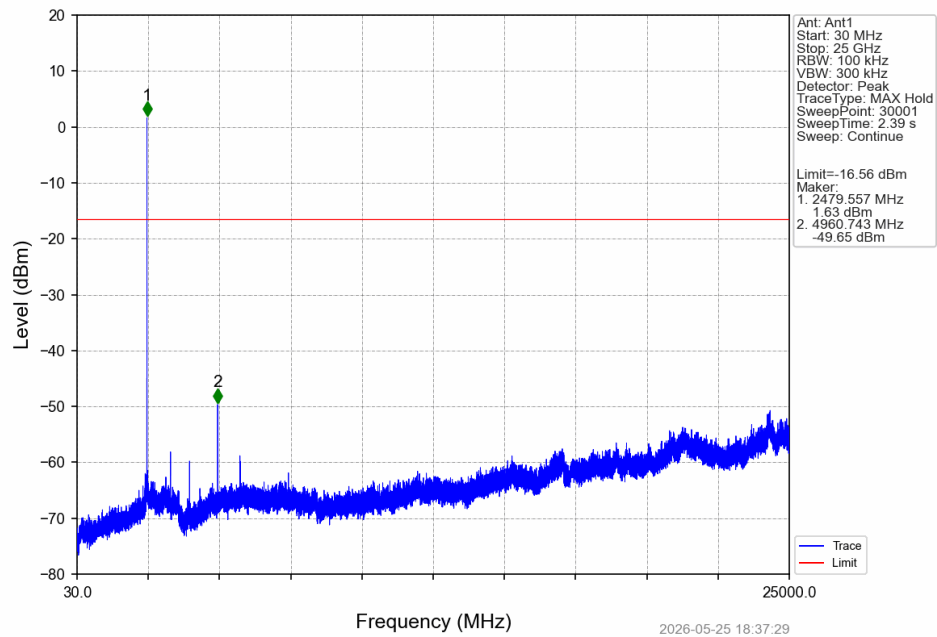
1M MCH 2440MHz Ant1 NTN



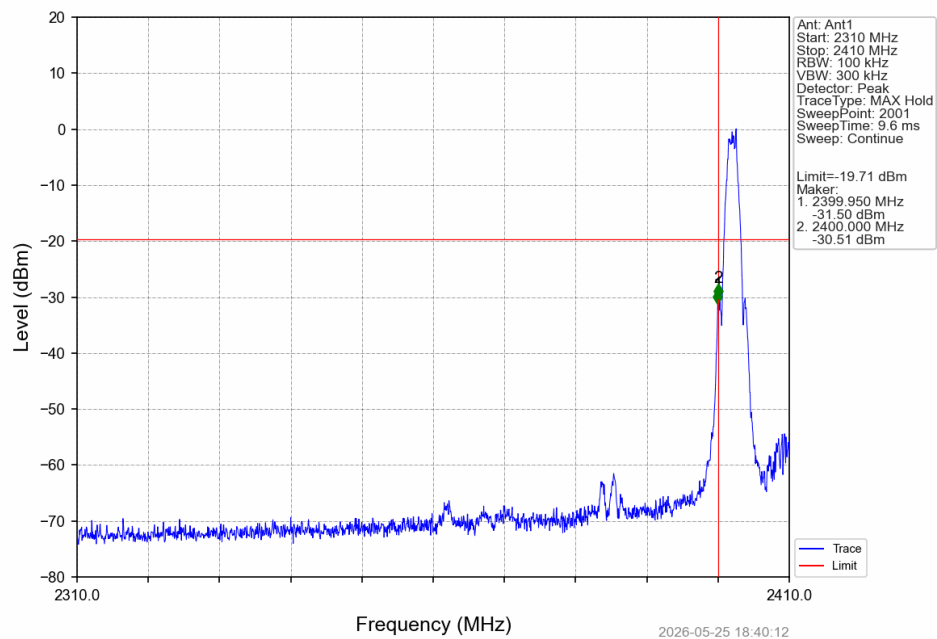
1M_HCH_2480MHz_Ant1_NTN



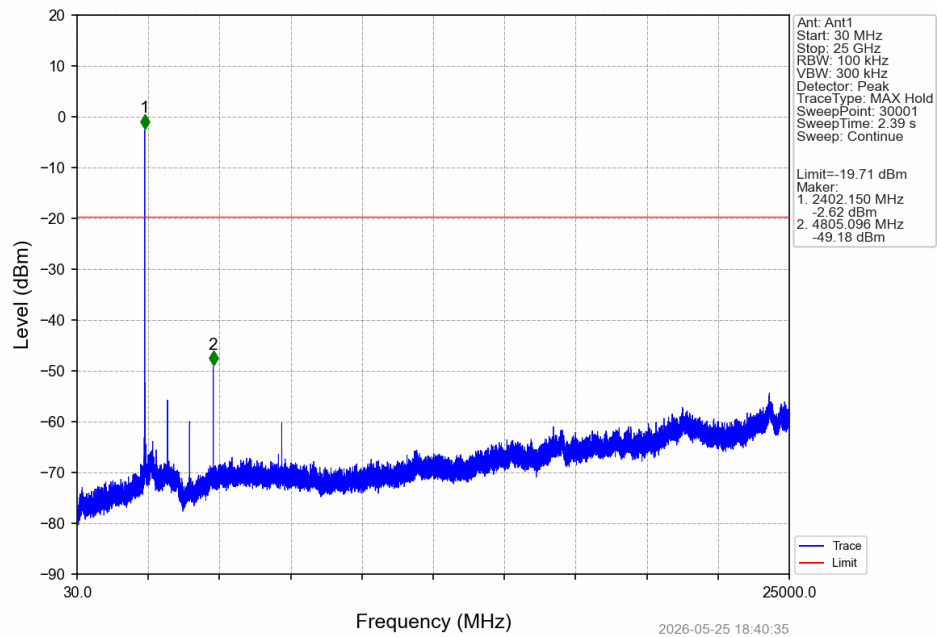
1M HCH 2480MHz Ant1 NTN



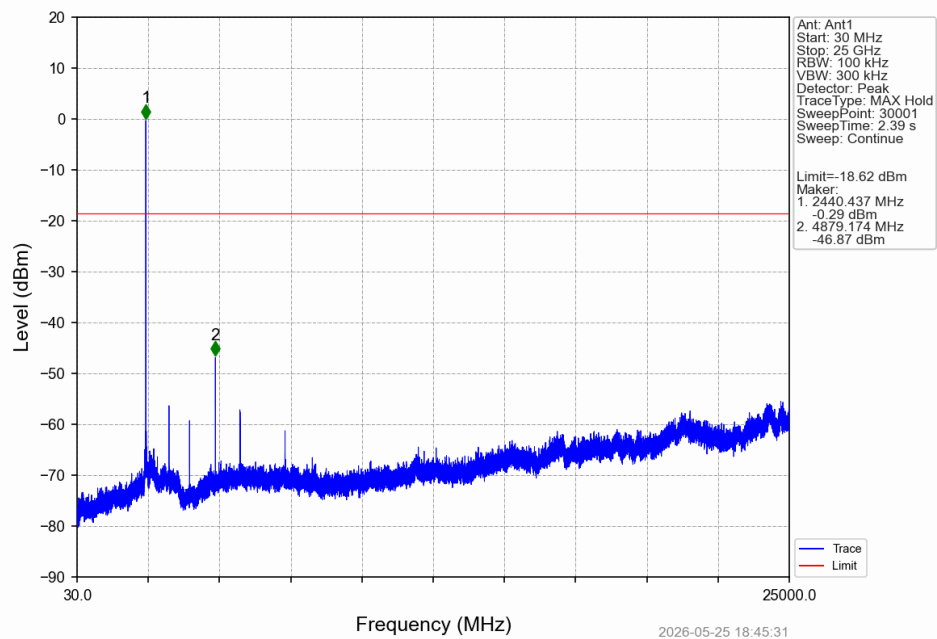
2M_LCH_2402MHz_Ant1_NTN



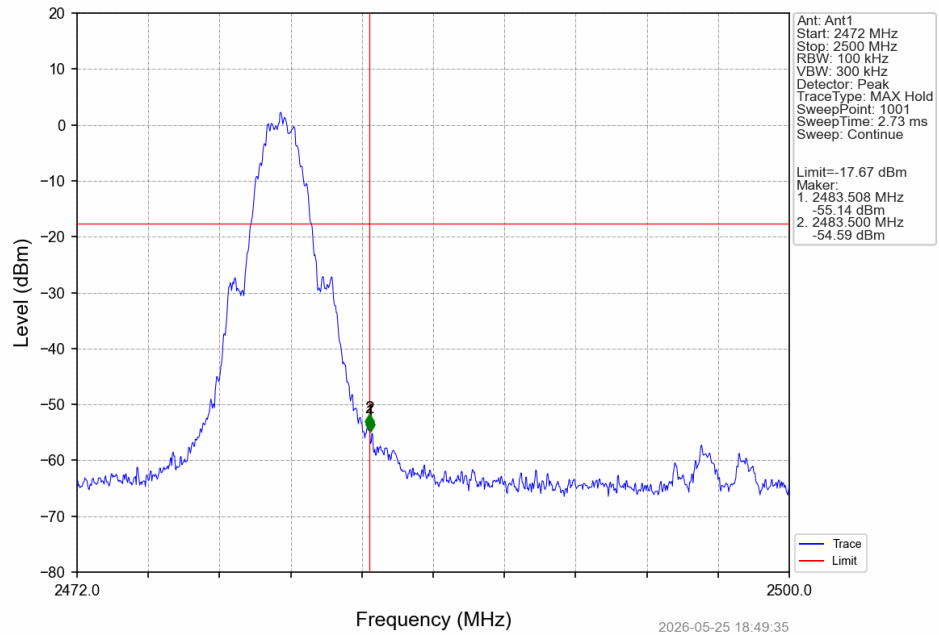
2M LCH 2402MHz Ant1 NTN



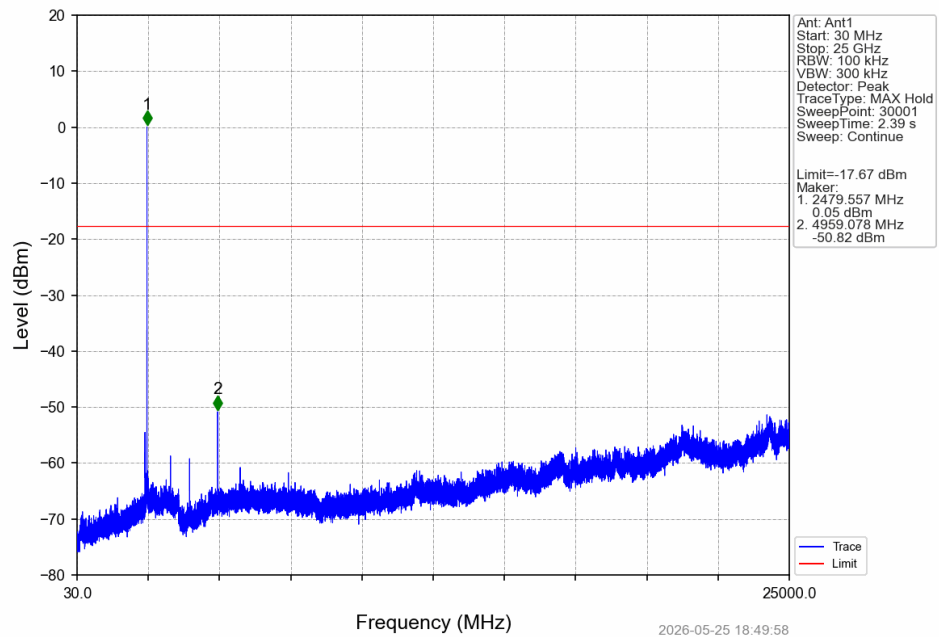
2M_MCH 2440MHz Ant1 NTN



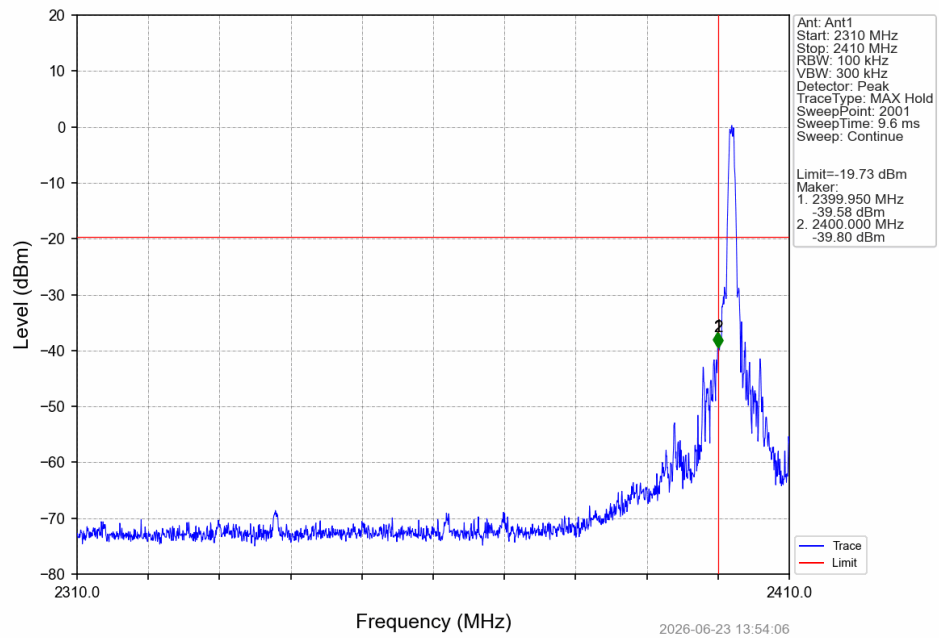
2M HCH 2480MHz Ant1 NTN



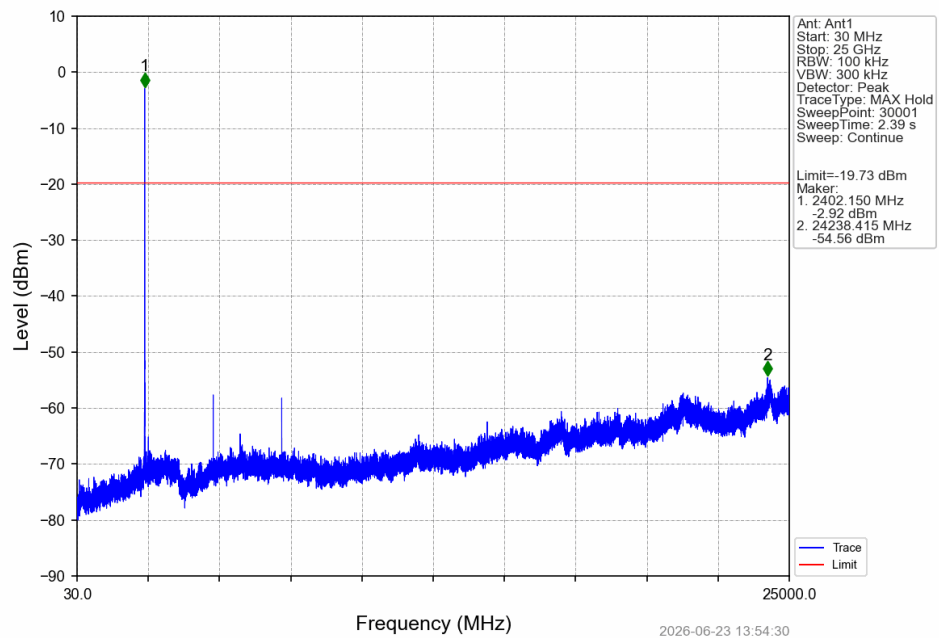
2M_HCH_2480MHz_Ant1_NTNV



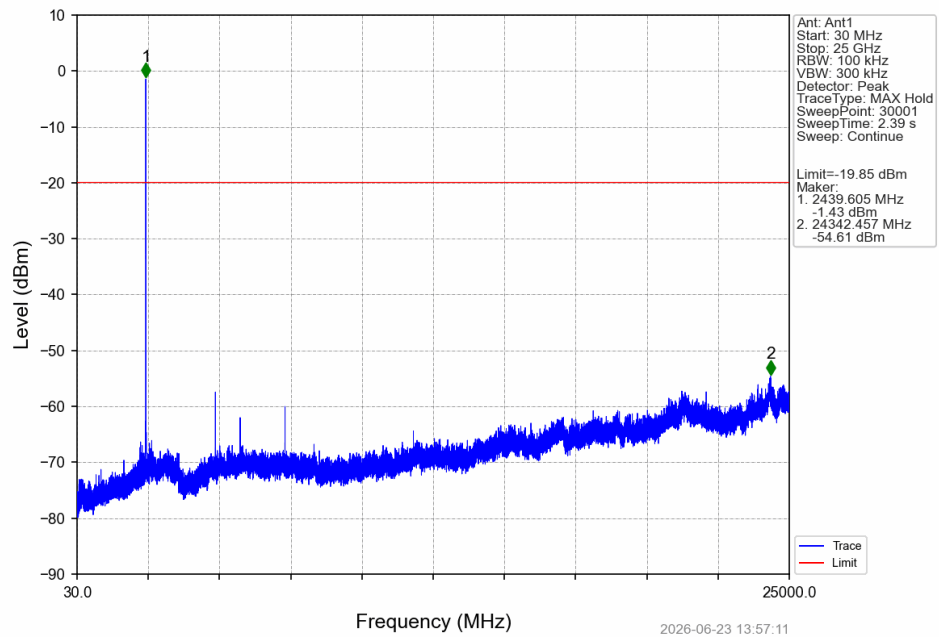
1M_LCH_2402MHz_Ant2_NTNV



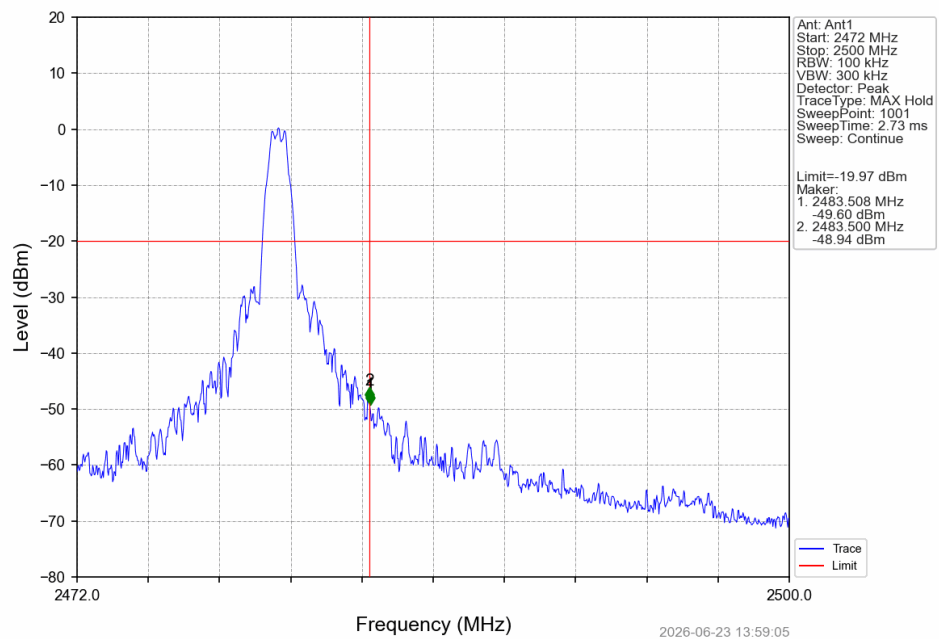
1M_LCH_2402MHz_Ant2_NTNV



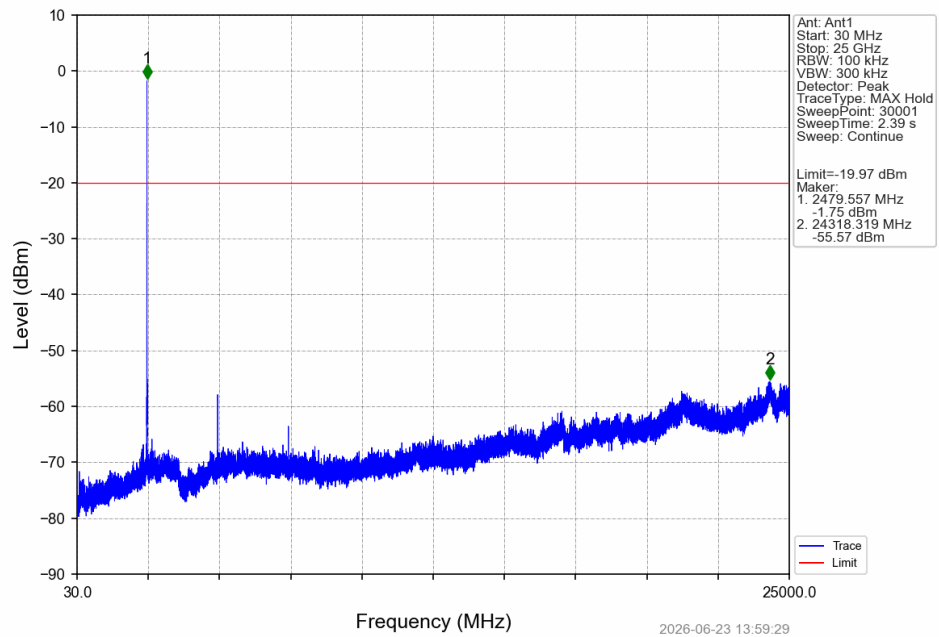
1M MCH 2440MHz Ant2 NTN



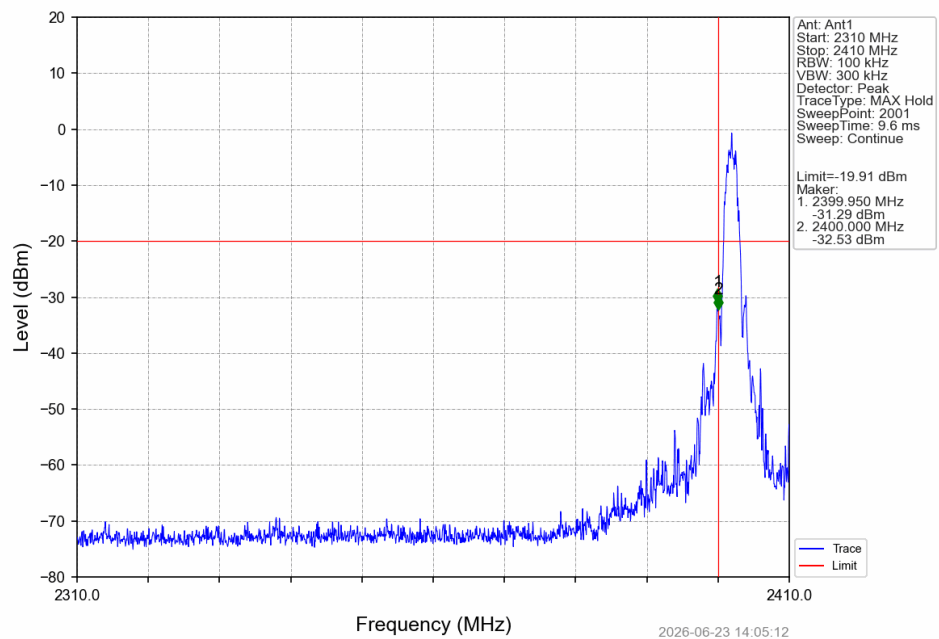
1M_HCH_2480MHz_Ant2 NTN



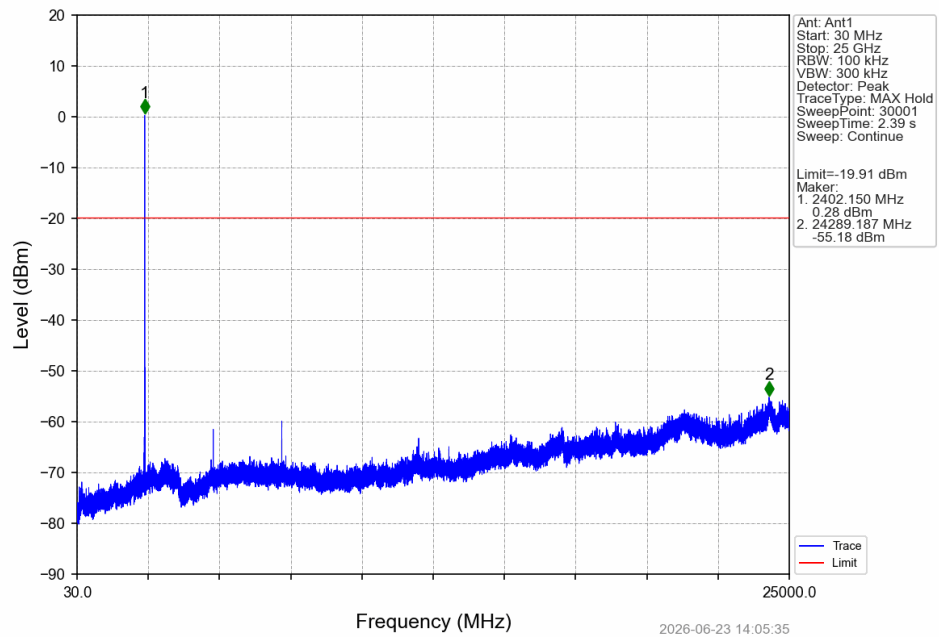
1M HCH 2480MHz Ant2 NTN



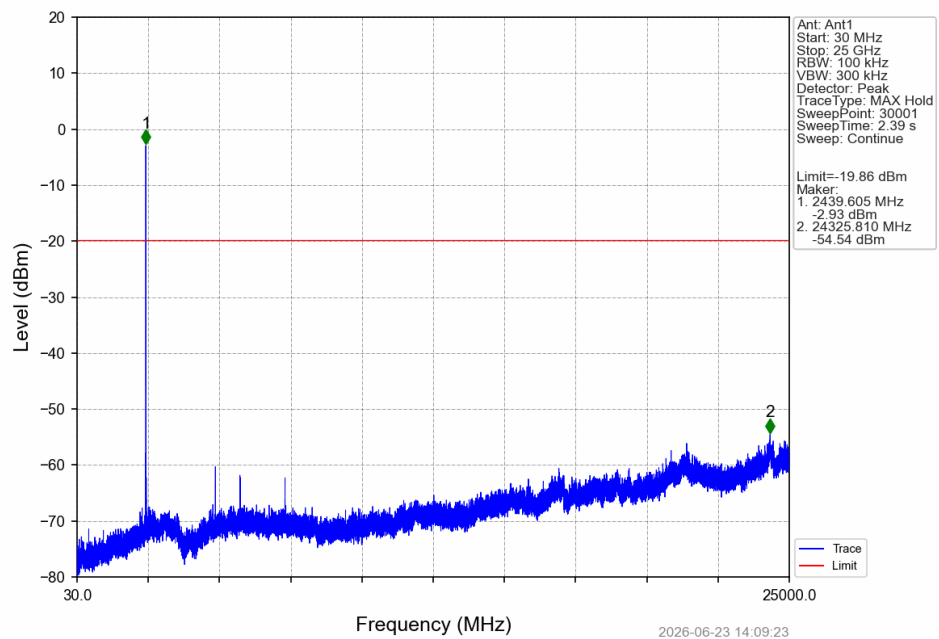
2M LCH 2402MHz Ant2 NTN



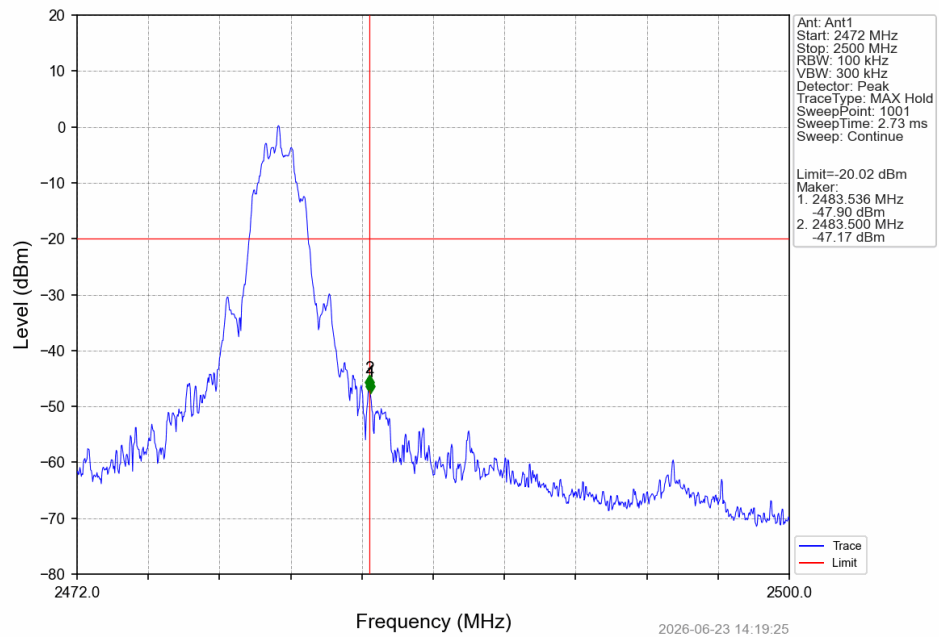
2M LCH 2402MHz Ant2 NTN



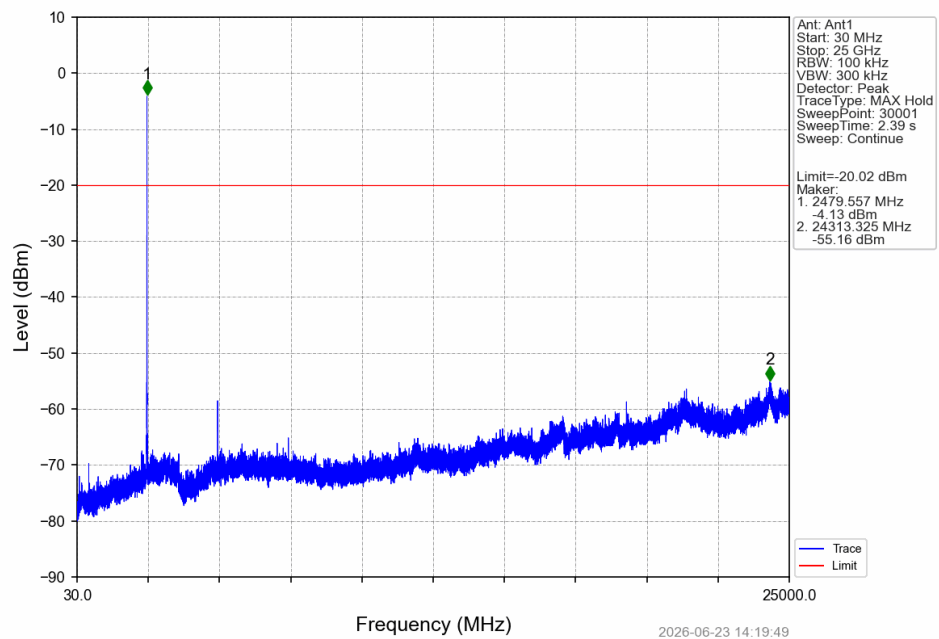
2M_MCH 2440MHz Ant2 NTN



2M HCH 2480MHz Ant2 NTN



2M_HCH_2480MHz_Ant2_NTNV



6. Unwanted Emissions In Restricted Frequency Bands

6.1 Test Result

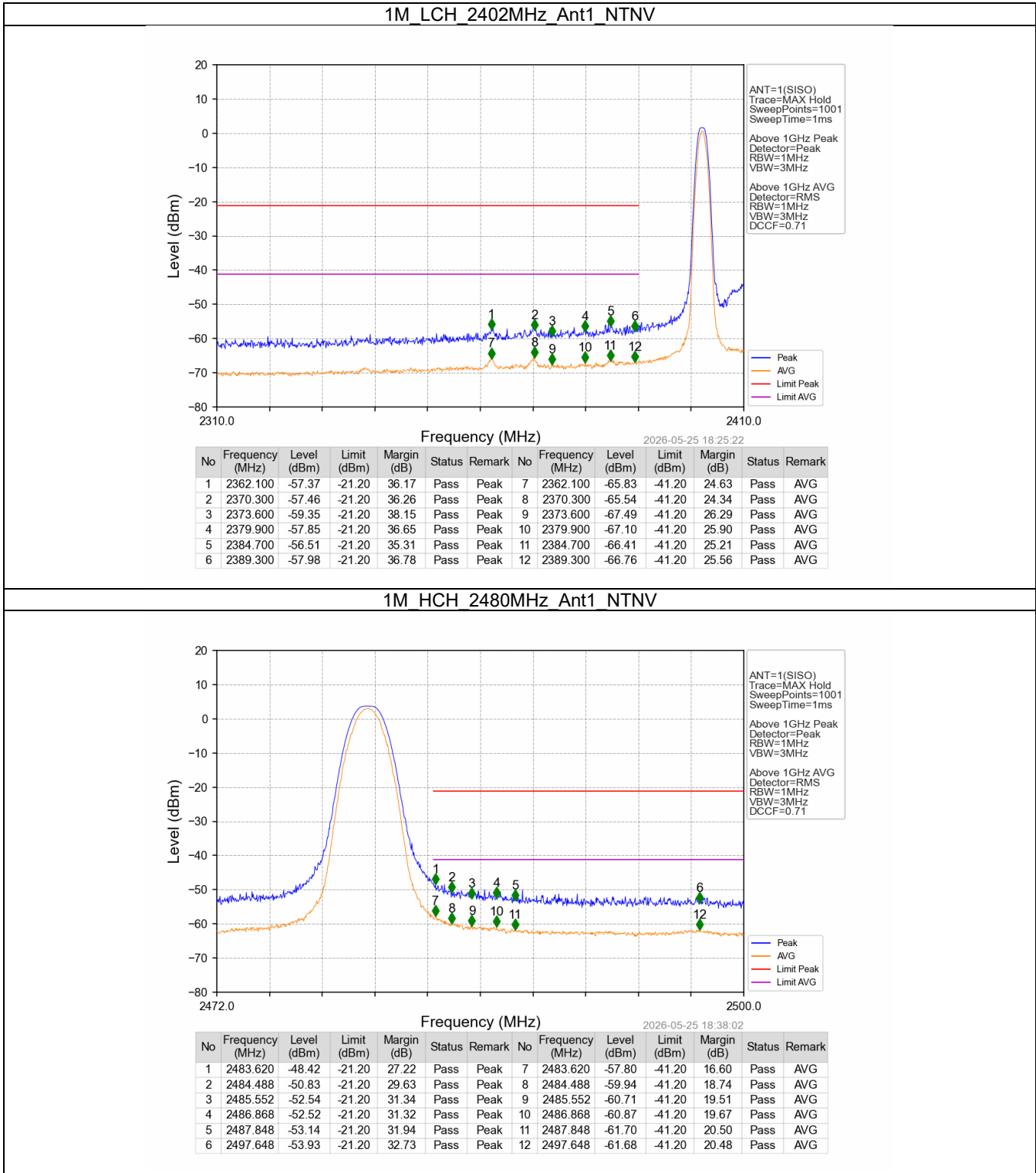
6.1.1 RSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Unwanted Emissions (dBm)		Verdict
				Result	Limit	
1M	SISO	2402	1	Refer To Test Graph		Pass
		2480	1	Refer To Test Graph		Pass
2M	SISO	2402	1	Refer To Test Graph		Pass
		2480	1	Refer To Test Graph		Pass

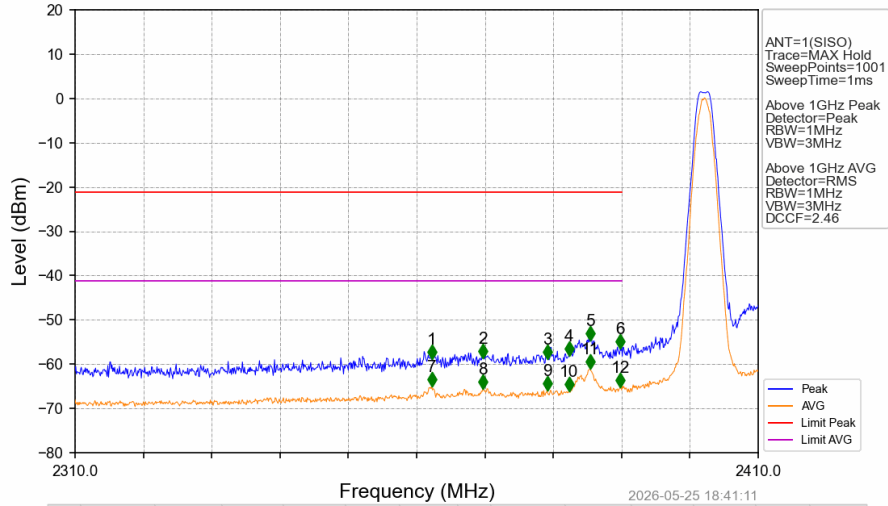
Mode	TX Type	Frequency (MHz)	ANT	Level of Unwanted Emissions (dBm)		Verdict
				Result	Limit	
1M	SISO	2402	2	Refer To Test Graph		Pass
		2480	2	Refer To Test Graph		Pass
2M	SISO	2402	2	Refer To Test Graph		Pass
		2480	2	Refer To Test Graph		Pass

6.2 Test Graph

6.2.1 RSE

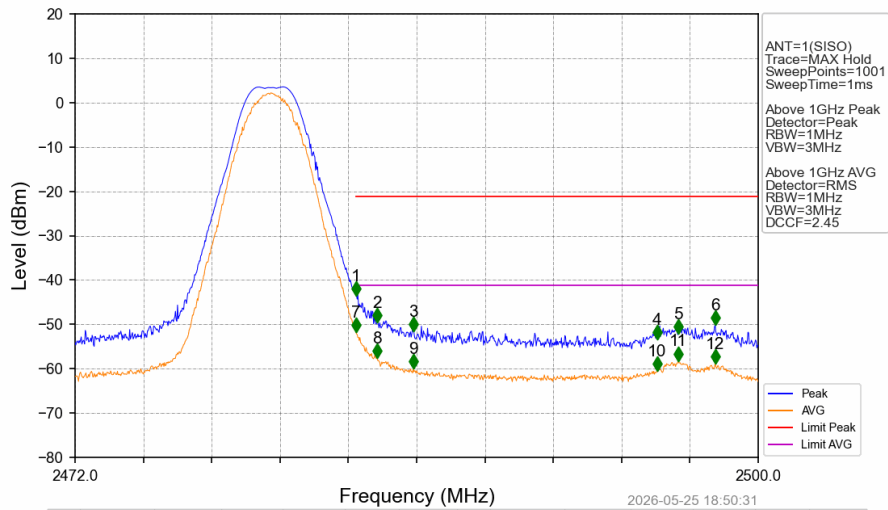


2M LCH 2402MHz Ant1 NTV



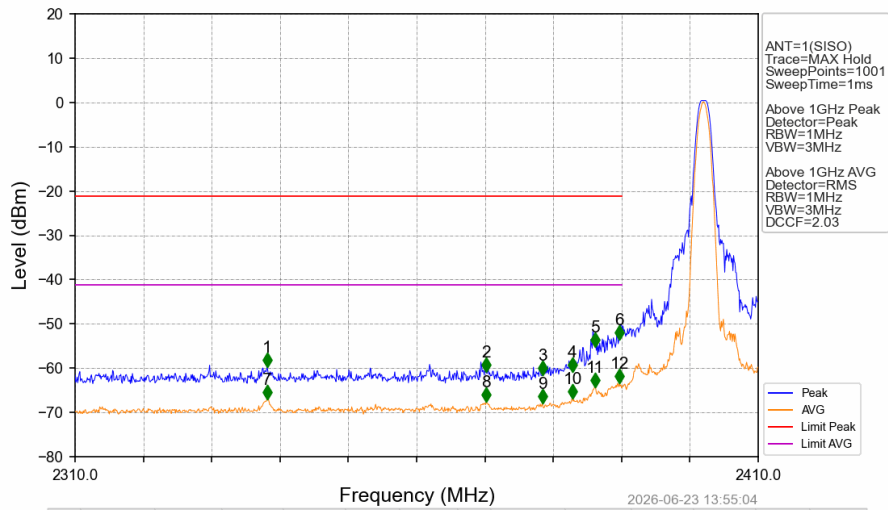
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2362.200	-58.83	-21.20	37.63	Pass	Peak	7	2362.200	-64.96	-41.20	23.76	Pass	AVG
2	2369.700	-58.69	-21.20	37.49	Pass	Peak	8	2369.700	-65.51	-41.20	24.31	Pass	AVG
3	2379.100	-58.78	-21.20	37.58	Pass	Peak	9	2379.100	-65.84	-41.20	24.64	Pass	AVG
4	2382.300	-58.02	-21.20	36.82	Pass	Peak	10	2382.300	-66.13	-41.20	24.93	Pass	AVG
5	2385.400	-54.60	-21.20	33.40	Pass	Peak	11	2385.400	-60.94	-41.20	19.74	Pass	AVG
6	2389.800	-56.48	-21.20	35.28	Pass	Peak	12	2389.800	-65.24	-41.20	24.04	Pass	AVG

2M_HCH_2480MHz_Ant1_NTV



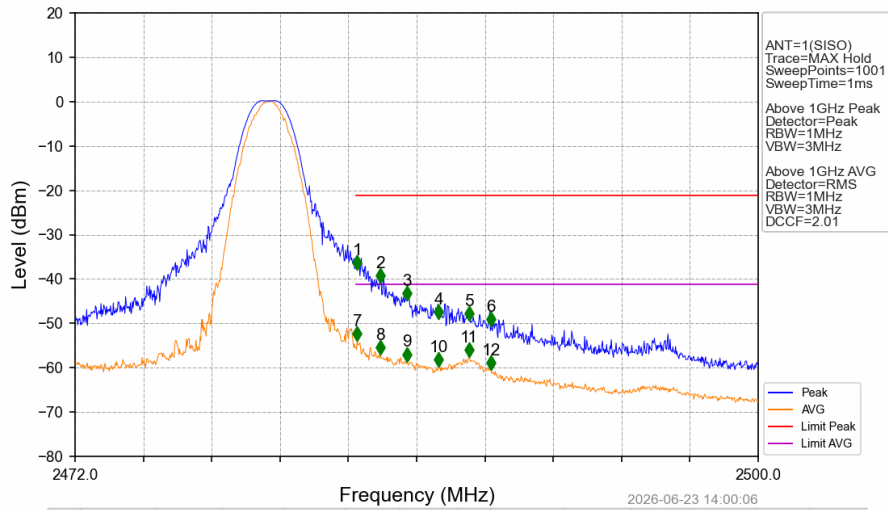
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2483.508	-43.54	-21.20	22.34	Pass	Peak	7	2483.508	-51.75	-41.20	10.55	Pass	AVG
2	2484.376	-49.47	-21.20	28.27	Pass	Peak	8	2484.376	-57.50	-41.20	16.30	Pass	AVG
3	2485.860	-51.51	-21.20	30.31	Pass	Peak	9	2485.860	-59.82	-41.20	18.62	Pass	AVG
4	2495.856	-53.36	-21.20	32.16	Pass	Peak	10	2495.856	-60.54	-41.20	19.34	Pass	AVG
5	2496.724	-52.02	-21.20	30.82	Pass	Peak	11	2496.724	-58.18	-41.20	16.98	Pass	AVG
6	2498.236	-50.10	-21.20	28.90	Pass	Peak	12	2498.236	-58.85	-41.20	17.65	Pass	AVG

1M_LCH_2402MHz_Ant2_NTNV



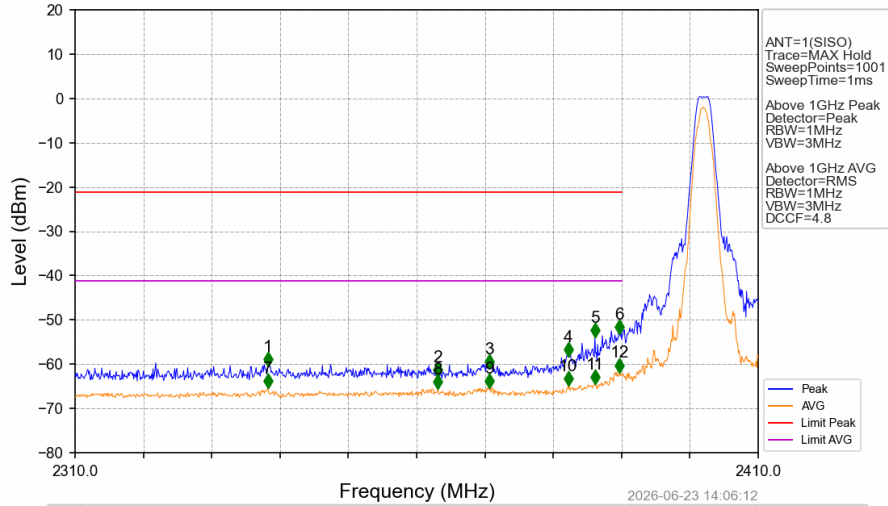
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2338.100	-59.68	-21.20	38.48	Pass	Peak	7	2338.100	-66.95	-41.20	25.75	Pass	AVG
2	2370.200	-60.82	-21.20	39.62	Pass	Peak	8	2370.200	-67.64	-41.20	26.44	Pass	AVG
3	2378.400	-61.60	-21.20	40.40	Pass	Peak	9	2378.400	-67.92	-41.20	26.72	Pass	AVG
4	2382.800	-60.78	-21.20	39.58	Pass	Peak	10	2382.800	-66.84	-41.20	25.64	Pass	AVG
5	2386.100	-55.19	-21.20	33.99	Pass	Peak	11	2386.100	-64.20	-41.20	23.00	Pass	AVG
6	2389.700	-53.62	-21.20	32.42	Pass	Peak	12	2389.700	-63.37	-41.20	22.17	Pass	AVG

1M_HCH_2480MHz_Ant2_NTNV



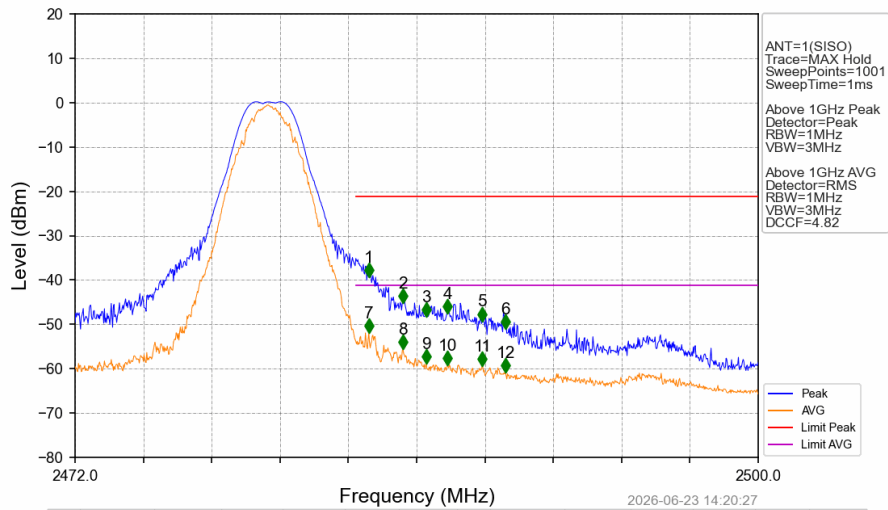
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2483.564	-37.81	-21.20	16.61	Pass	Peak	7	2483.564	-53.92	-41.20	12.72	Pass	AVG
2	2484.516	-40.83	-21.20	19.63	Pass	Peak	8	2484.516	-57.00	-41.20	15.80	Pass	AVG
3	2485.608	-44.75	-21.20	23.55	Pass	Peak	9	2485.608	-58.54	-41.20	17.34	Pass	AVG
4	2486.896	-48.99	-21.20	27.79	Pass	Peak	10	2486.896	-59.76	-41.20	18.56	Pass	AVG
5	2488.156	-49.35	-21.20	28.15	Pass	Peak	11	2488.156	-57.62	-41.20	16.42	Pass	AVG
6	2489.052	-50.57	-21.20	29.37	Pass	Peak	12	2489.052	-60.40	-41.20	19.20	Pass	AVG

2M LCH 2402MHz Ant2 NTV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2338.200	-60.51	-21.20	39.31	Pass	Peak	7	2338.200	-65.36	-41.20	24.16	Pass	AVG
2	2363.100	-62.79	-21.20	41.59	Pass	Peak	8	2363.100	-65.59	-41.20	24.39	Pass	AVG
3	2370.600	-60.92	-21.20	39.72	Pass	Peak	9	2370.600	-65.35	-41.20	24.15	Pass	AVG
4	2382.200	-58.28	-21.20	37.08	Pass	Peak	10	2382.200	-64.77	-41.20	23.57	Pass	AVG
5	2386.100	-53.92	-21.20	32.72	Pass	Peak	11	2386.100	-64.49	-41.20	23.29	Pass	AVG
6	2389.700	-53.17	-21.20	31.97	Pass	Peak	12	2389.700	-61.82	-41.20	20.62	Pass	AVG

2M_HCH_2480MHz_Ant2_NTV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2484.040	-39.24	-21.20	18.04	Pass	Peak	7	2484.040	-51.90	-41.20	10.70	Pass	AVG
2	2485.440	-45.10	-21.20	23.90	Pass	Peak	8	2485.440	-55.61	-41.20	14.41	Pass	AVG
3	2486.392	-48.21	-21.20	27.01	Pass	Peak	9	2486.392	-58.73	-41.20	17.53	Pass	AVG
4	2487.260	-47.55	-21.20	26.35	Pass	Peak	10	2487.260	-59.10	-41.20	17.90	Pass	AVG
5	2488.688	-49.26	-21.20	28.06	Pass	Peak	11	2488.688	-59.35	-41.20	18.15	Pass	AVG
6	2489.640	-51.01	-21.20	29.81	Pass	Peak	12	2489.640	-60.87	-41.20	19.67	Pass	AVG