

Appendix RF Test Data for BLE

Company: : Shenzhen Speediance Living Technology Co., Ltd

EUT : Interactive Multi-Media DigitalFitness Equipment

FCC ID: : 2A4WP-GMUA1120A1

Model Number : GMUA1120A1

Report No. : HTT202606664F02

Reviewed By : Heber He

1. Duty Cycle

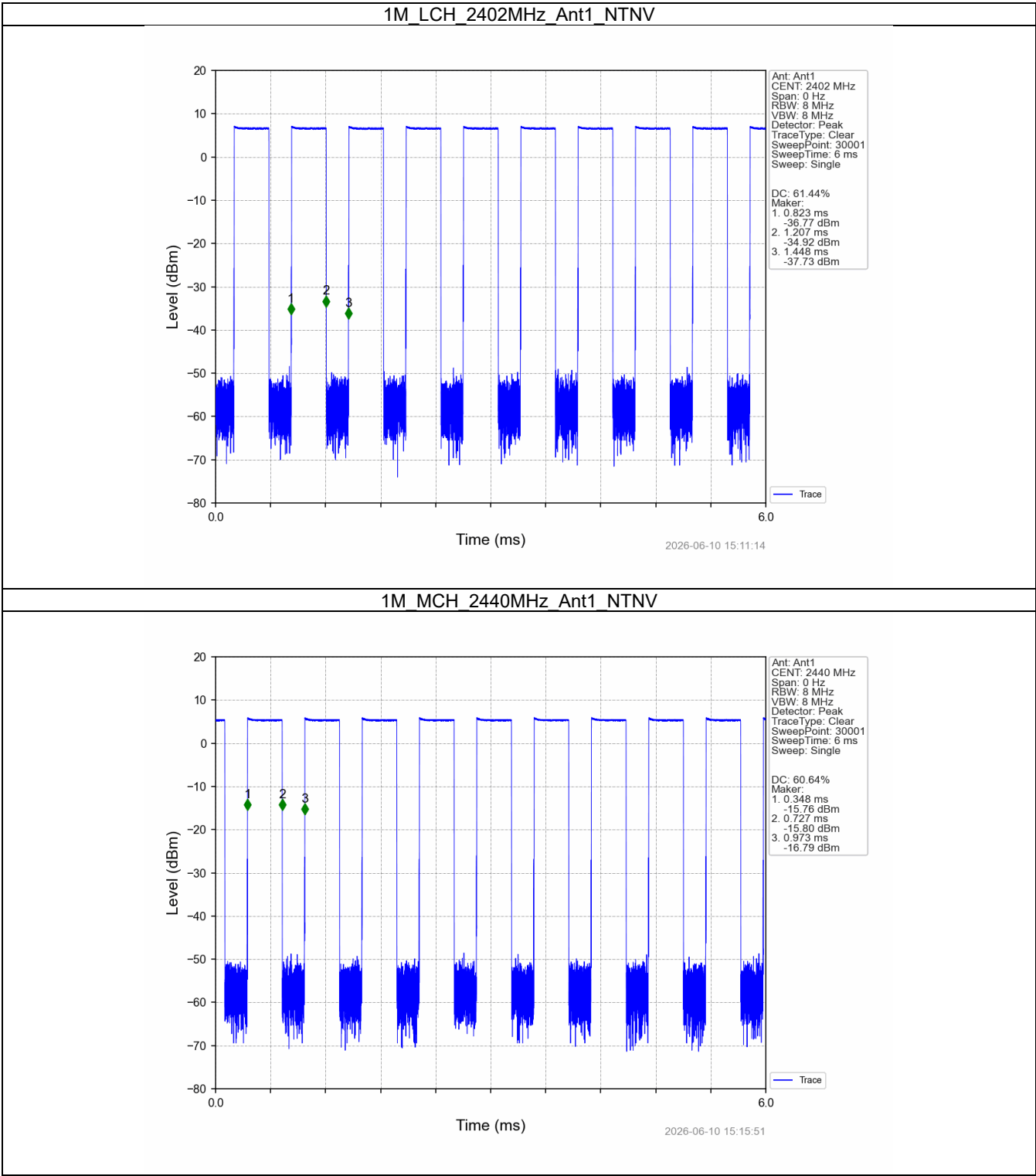
1.1 Test Result

1.1.1 Ant1

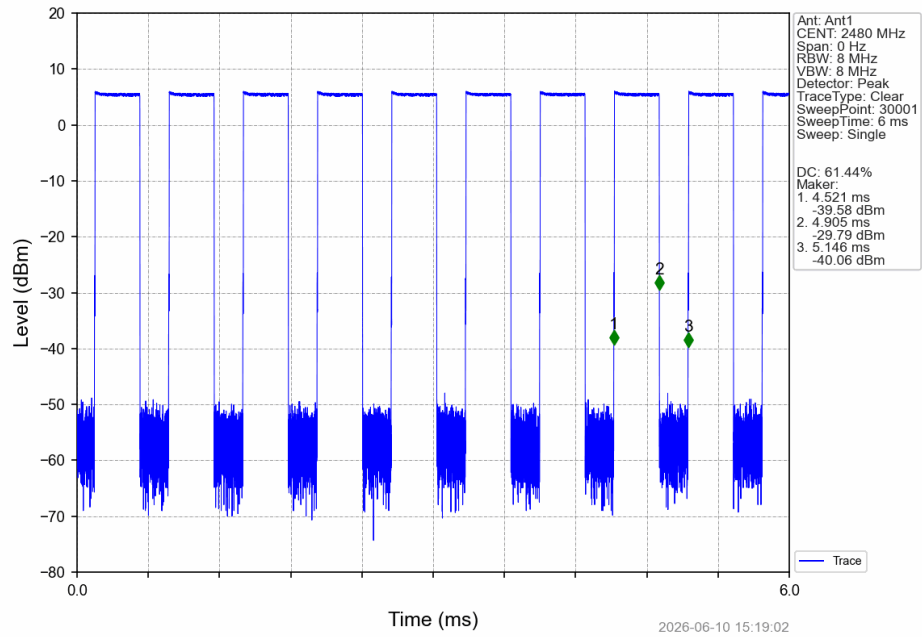
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.384	0.625	61.44	2.12	0.03
		2440	0.379	0.625	60.64	2.17	0.01
		2480	0.384	0.625	61.44	2.12	0.03
2M	SISO	2402	0.200	0.625	32.00	4.95	0.03
		2440	0.200	0.625	32.00	4.95	0.03
		2480	0.200	0.625	32.00	4.95	0.06

1.2 Test Graph

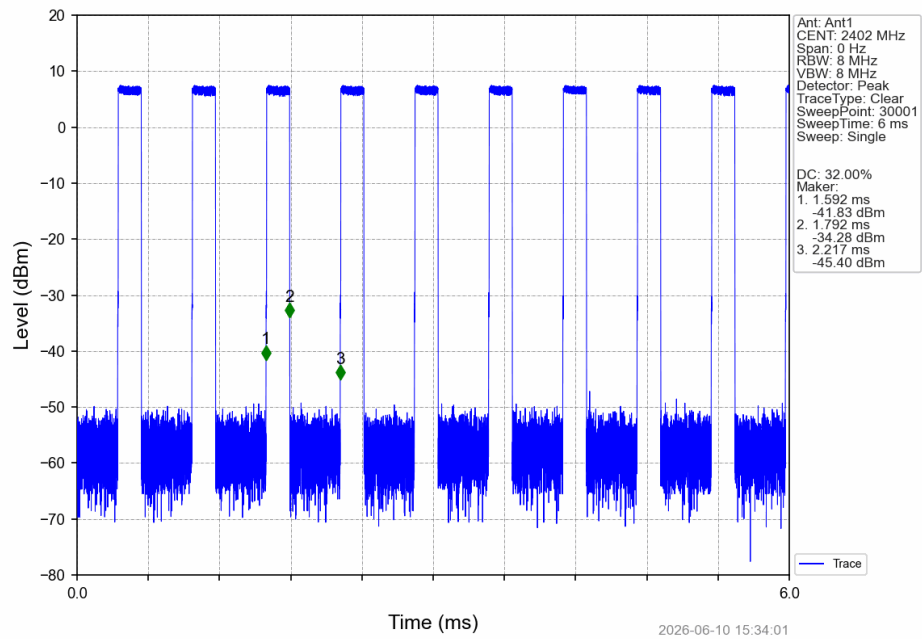
1.2.1 Ant1



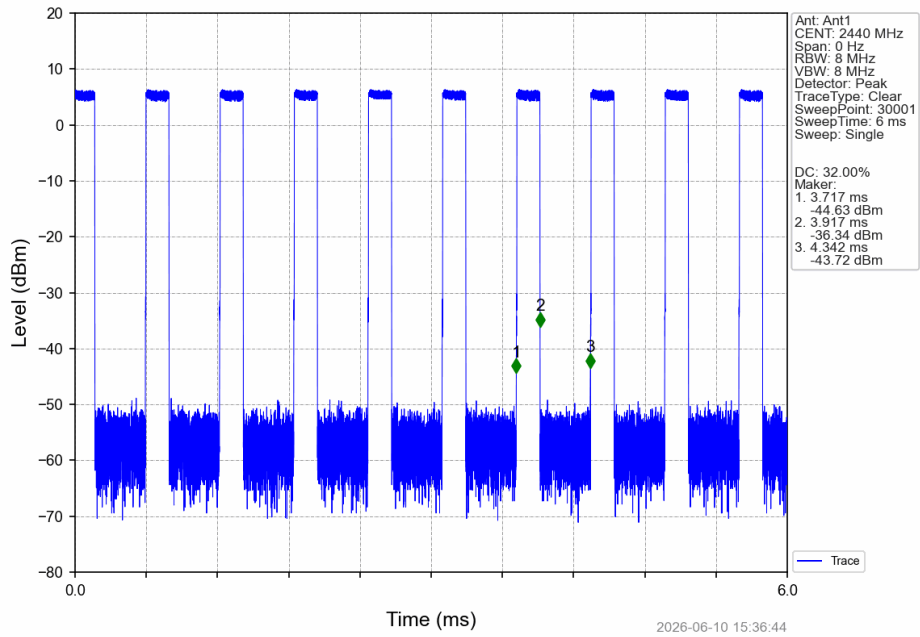
1M_HCH_2480MHz_Ant1_NTNV



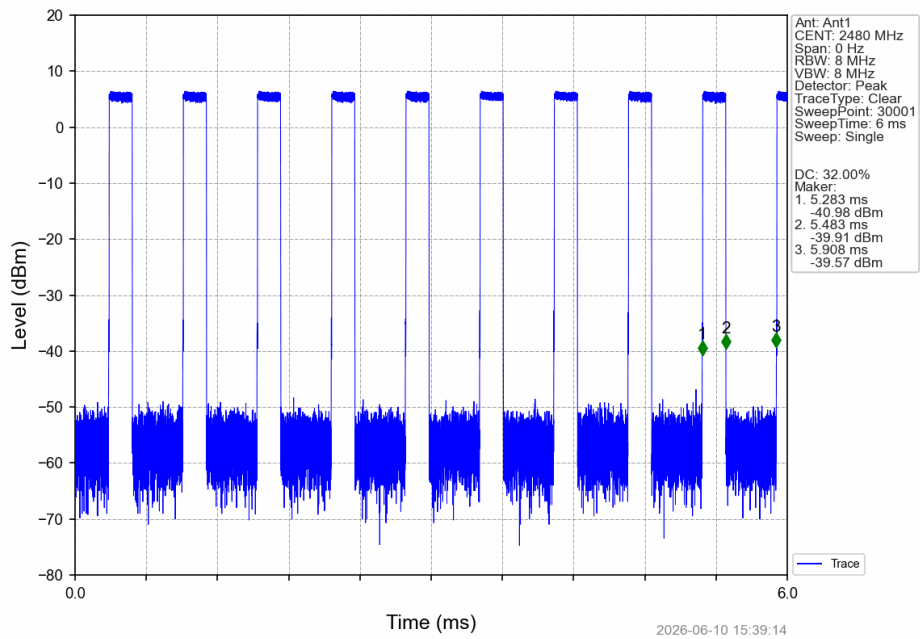
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

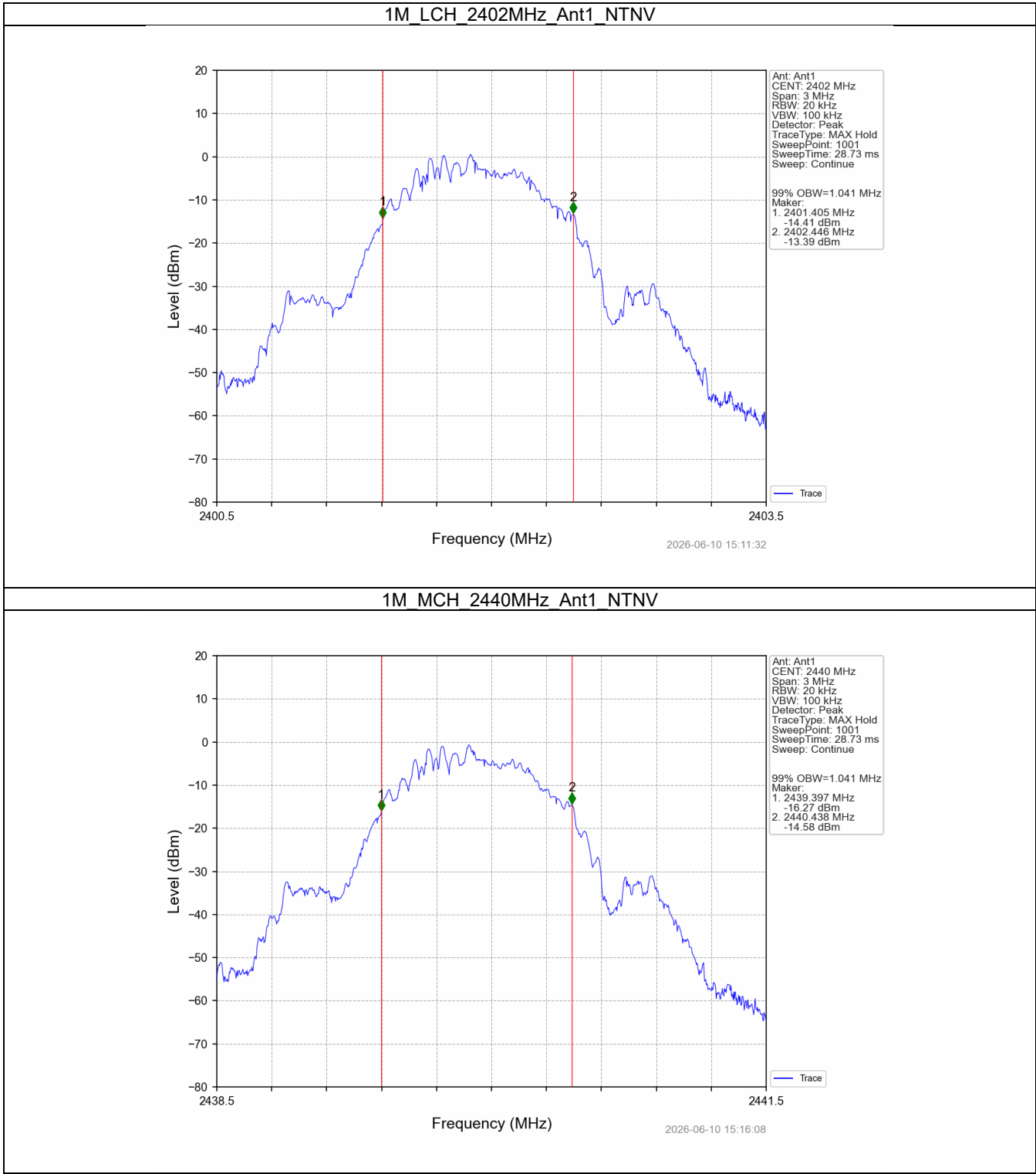
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.041	/	Pass
		2440	1	1.041	/	Pass
		2480	1	1.041	/	Pass
2M	SISO	2402	1	2.078	/	Pass
		2440	1	2.074	/	Pass
		2480	1	2.073	/	Pass

2.1.2 6dB BW

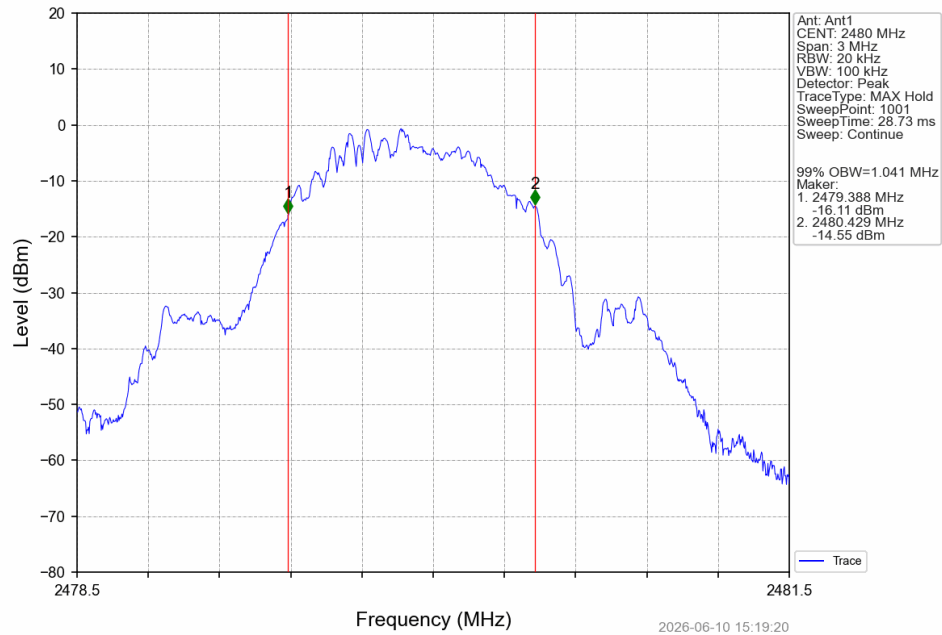
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.708	≥ 0.5	Pass
		2440	1	0.695	≥ 0.5	Pass
		2480	1	0.704	≥ 0.5	Pass
2M	SISO	2402	1	1.355	≥ 0.5	Pass
		2440	1	1.347	≥ 0.5	Pass
		2480	1	1.365	≥ 0.5	Pass

2.2 Test Graph

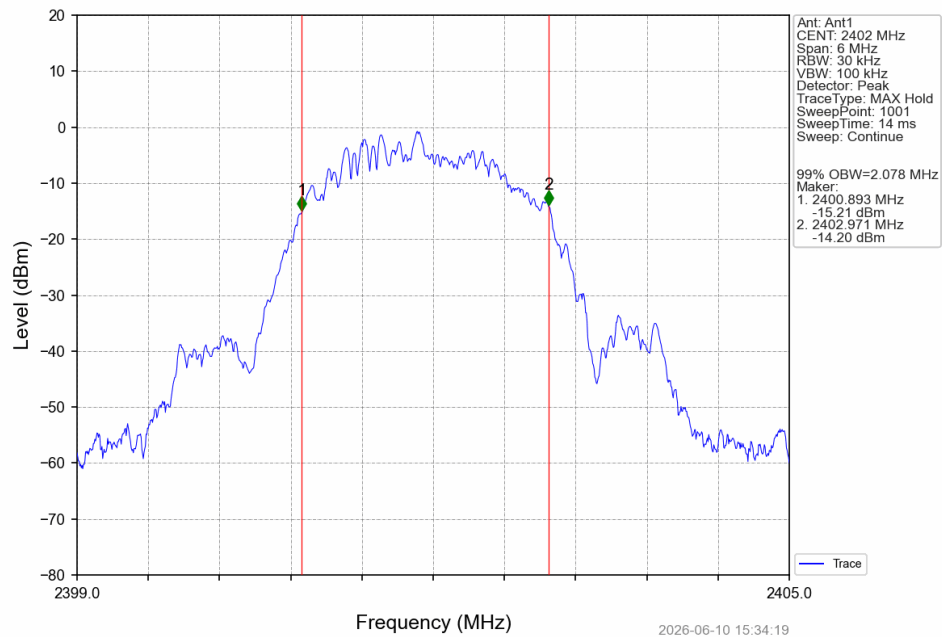
2.2.1 OBW



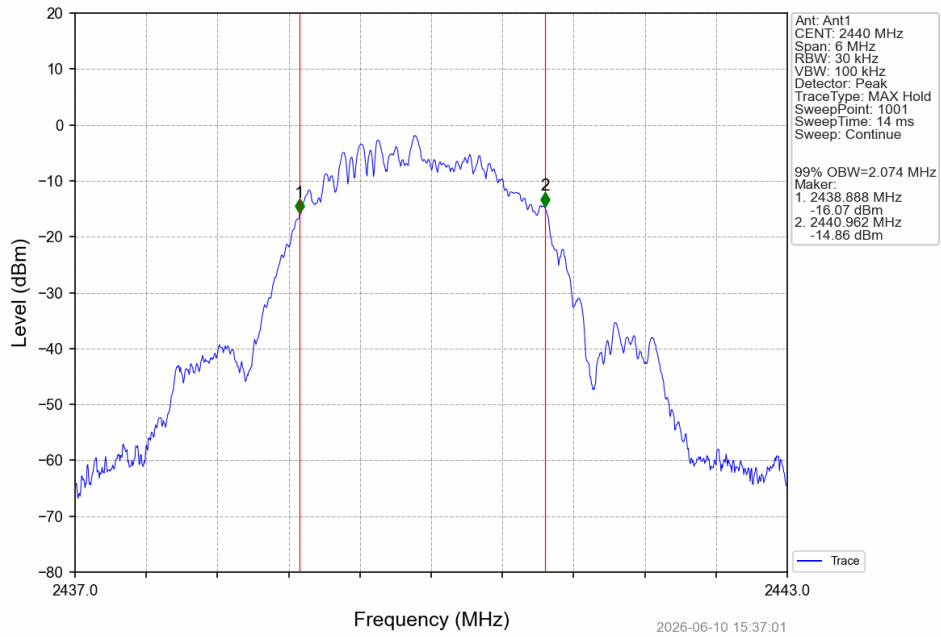
1M_HCH_2480MHz_Ant1_NTNV



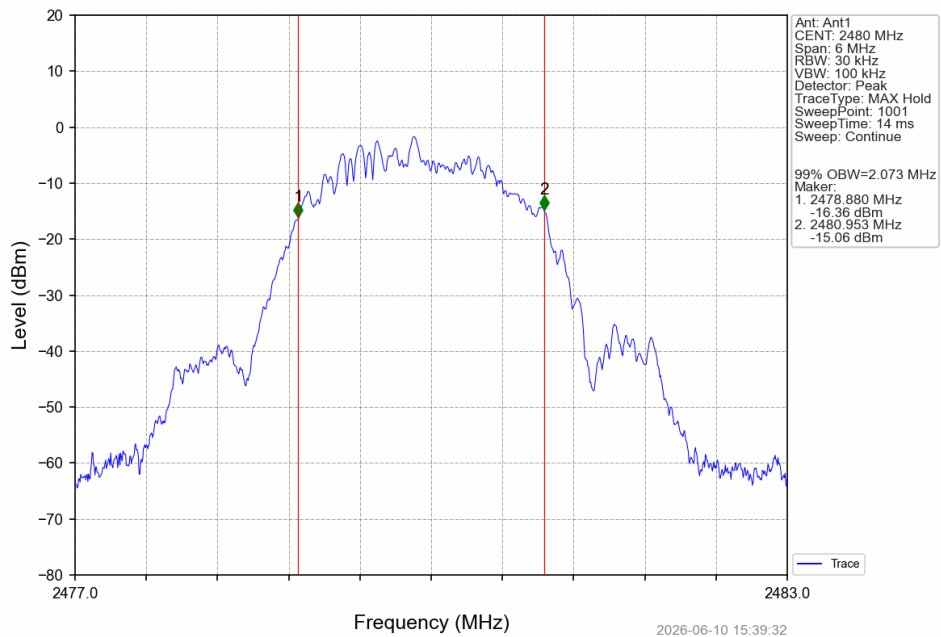
2M_LCH_2402MHz_Ant1_NTNV



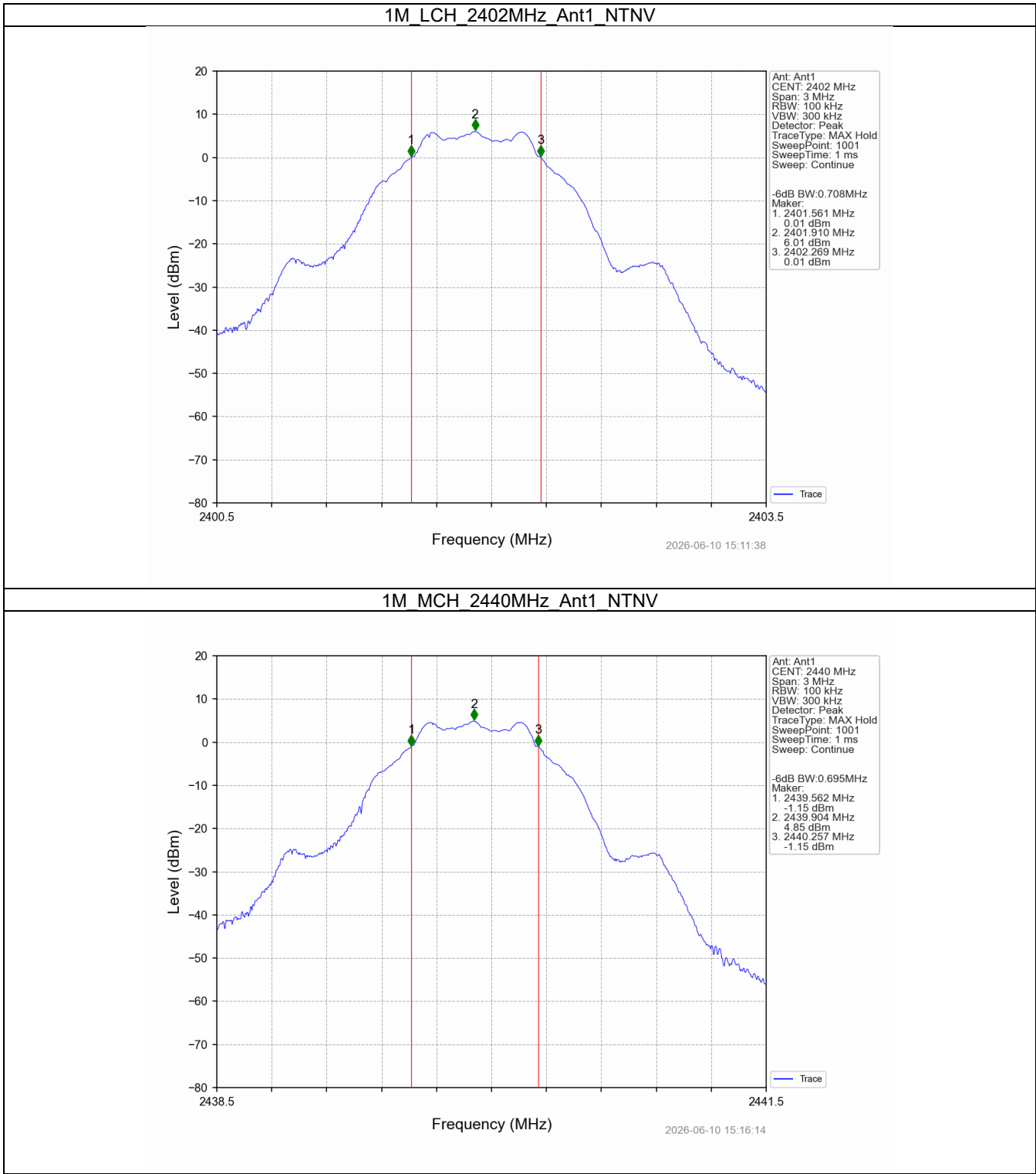
2M_MCH_2440MHz_Ant1_NTNV



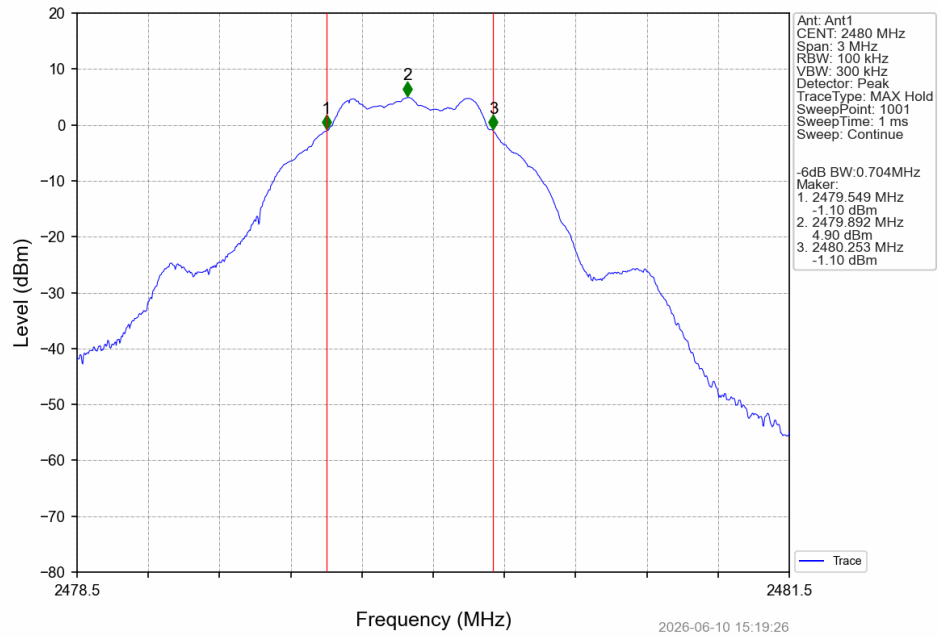
2M_HCH_2480MHz_Ant1_NTNV



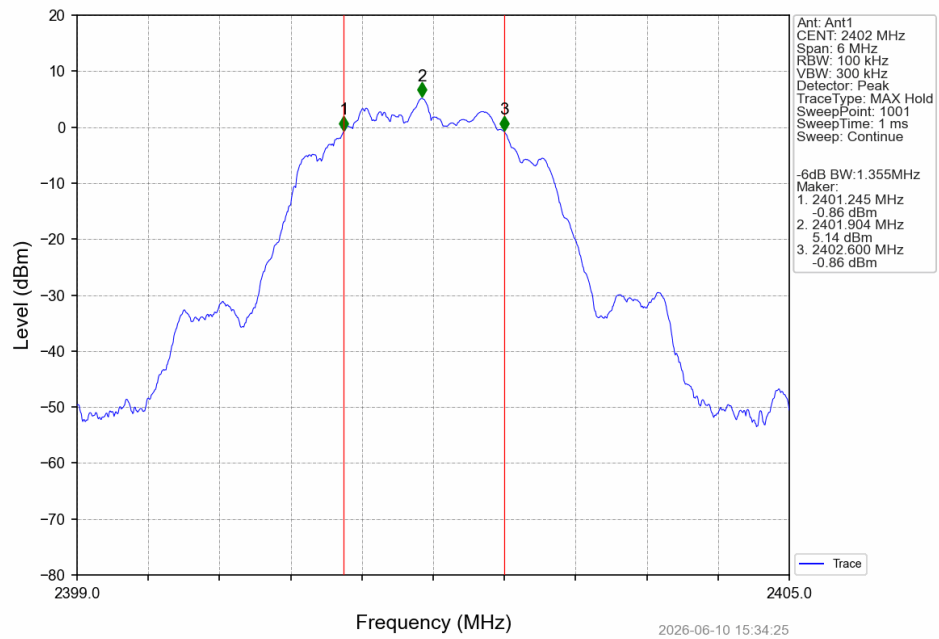
2.2.2 6dB BW



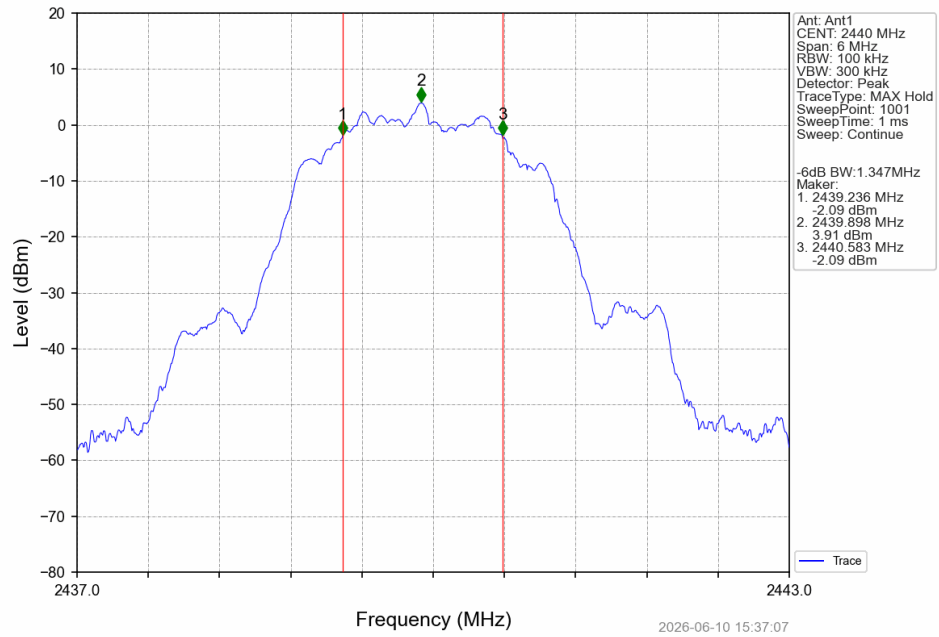
1M_HCH_2480MHz_Ant1_NTNV



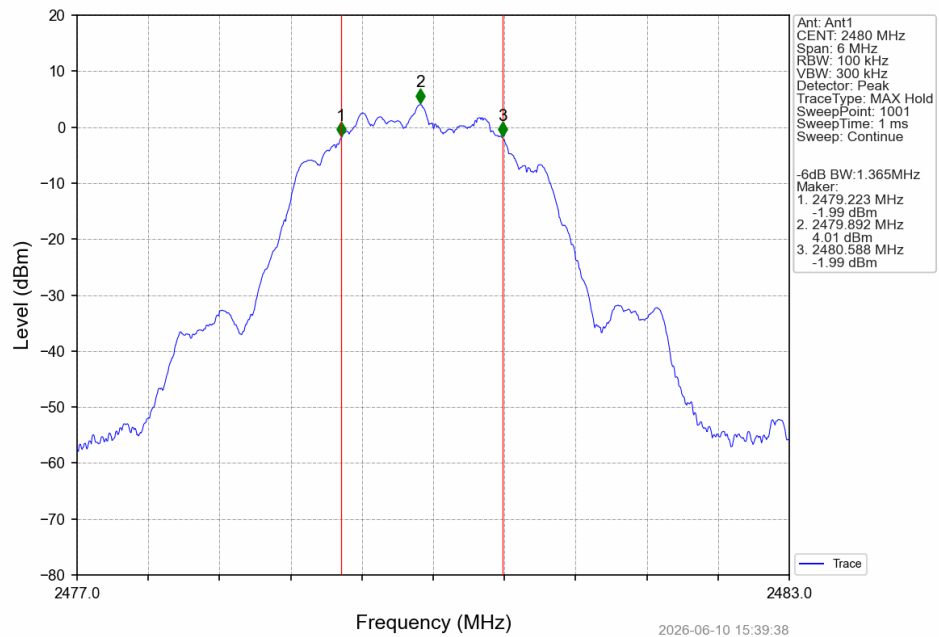
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	6.95	<=30	Pass
		2440	5.78	<=30	Pass
		2480	5.85	<=30	Pass
2M	SISO	2402	7.29	<=30	Pass
		2440	6.17	<=30	Pass
		2480	6.33	<=30	Pass

4. Maximum Power Spectral Density

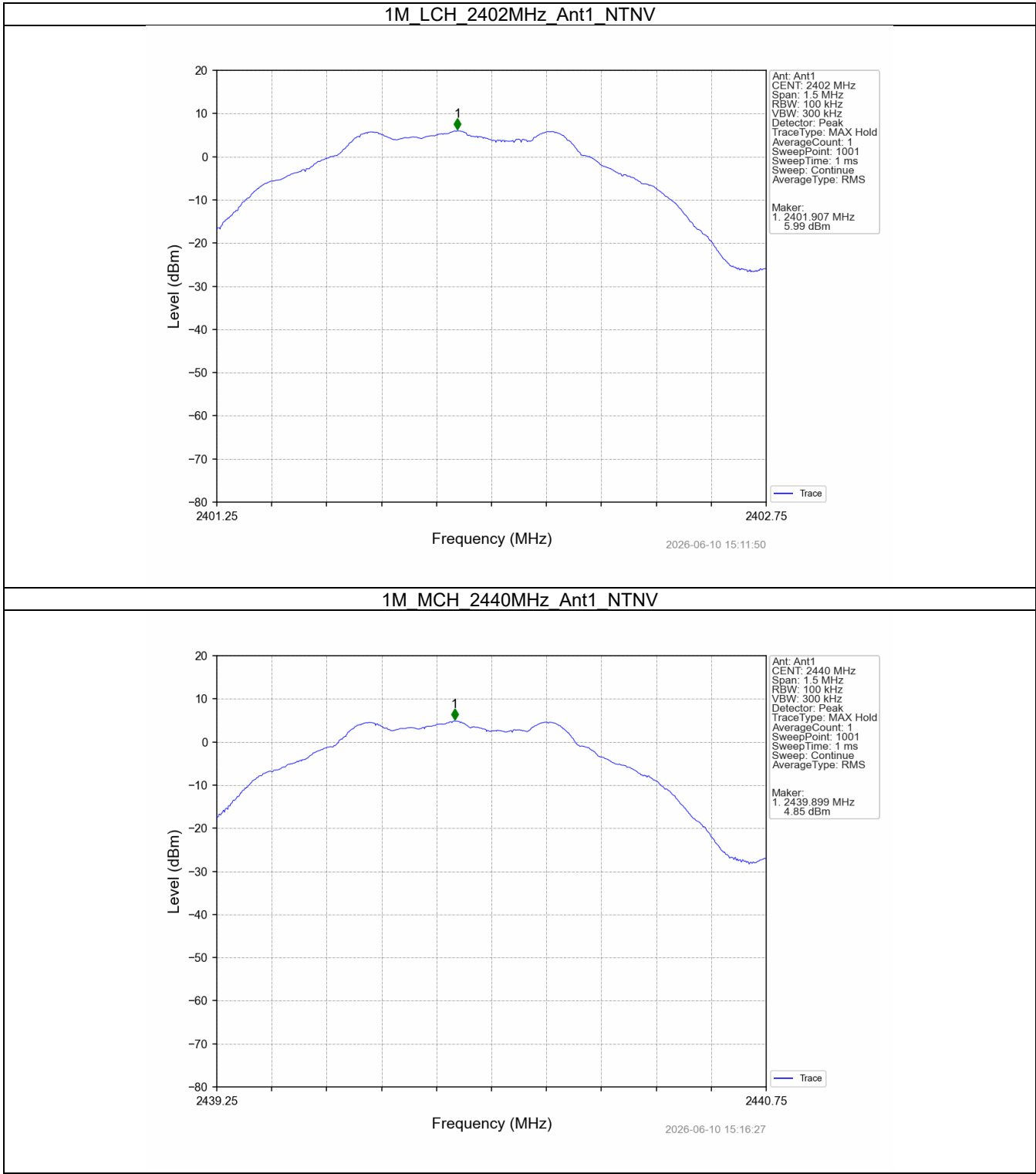
4.1 Test Result

4.1.1 PSD

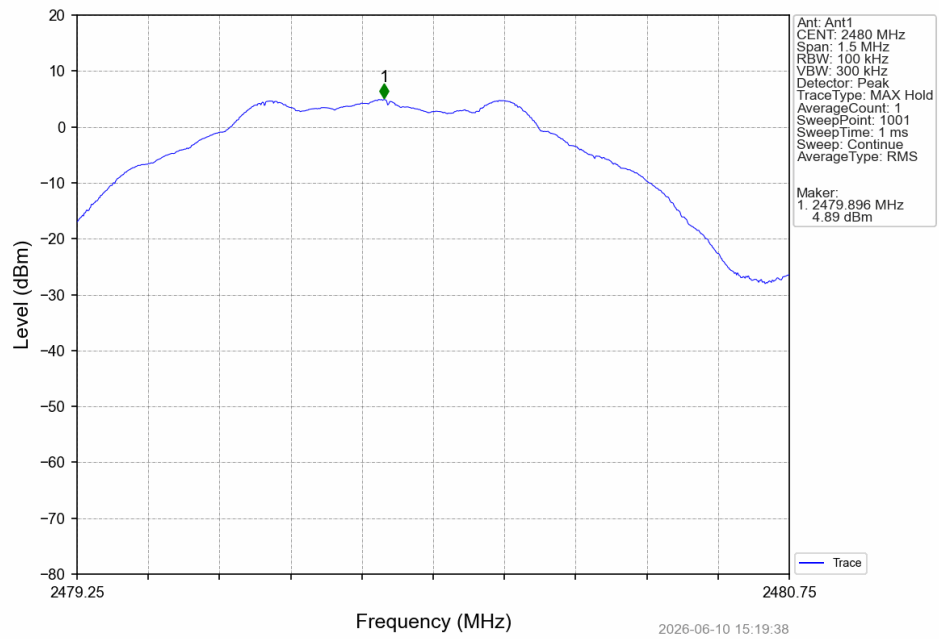
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit(dBm/3kHz)	
1M	SISO	2402	5.99dBm/100kHz	<=8	Pass
		2440	4.85dBm/100kHz	<=8	Pass
		2480	4.89dBm/100kHz	<=8	Pass
2M	SISO	2402	5.13dBm/100kHz	<=8	Pass
		2440	3.90dBm/100kHz	<=8	Pass
		2480	4.00dBm/100kHz	<=8	Pass

4.2 Test Graph

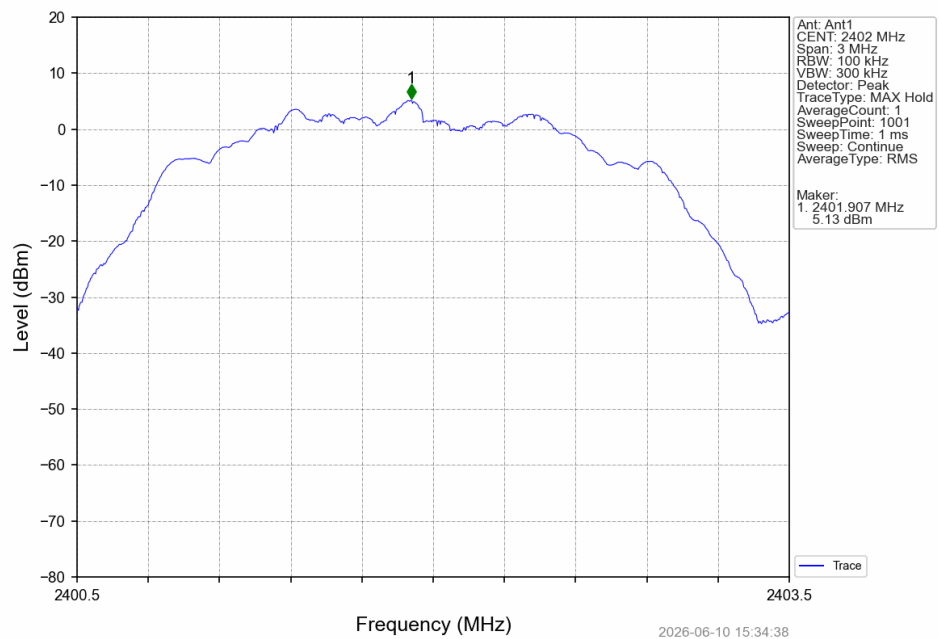
4.2.1 PSD



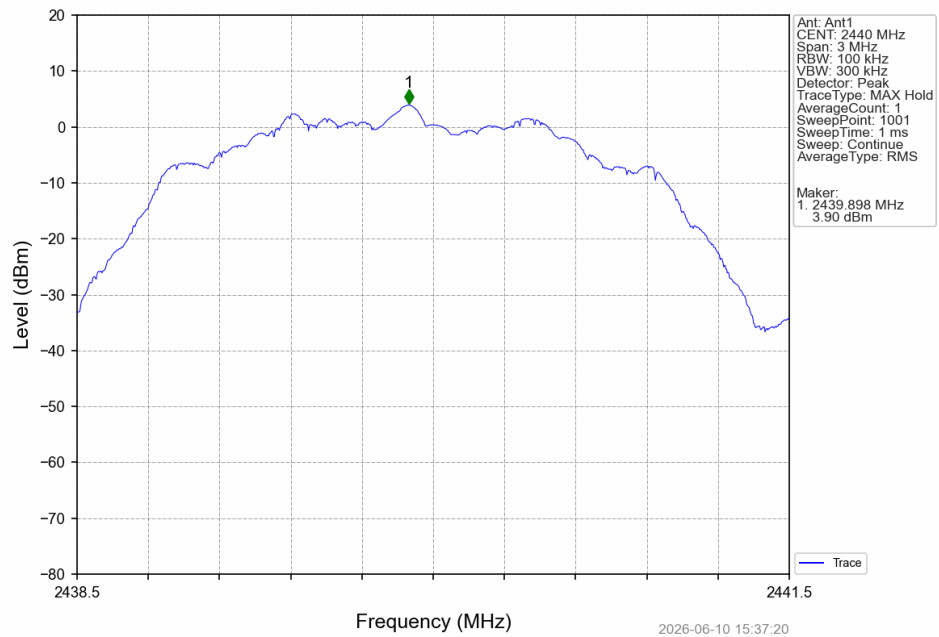
1M_HCH_2480MHz_Ant1_NTNV



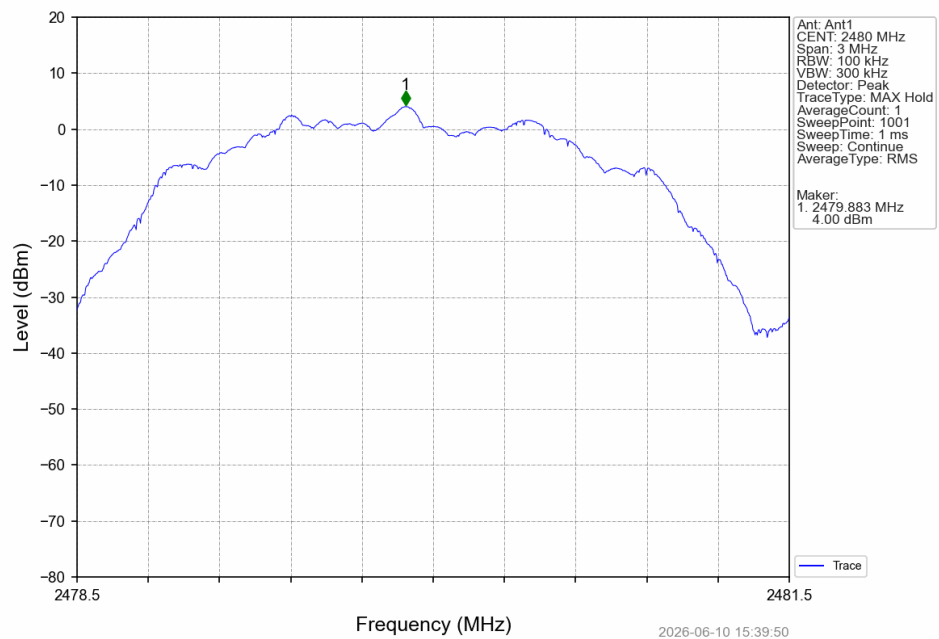
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

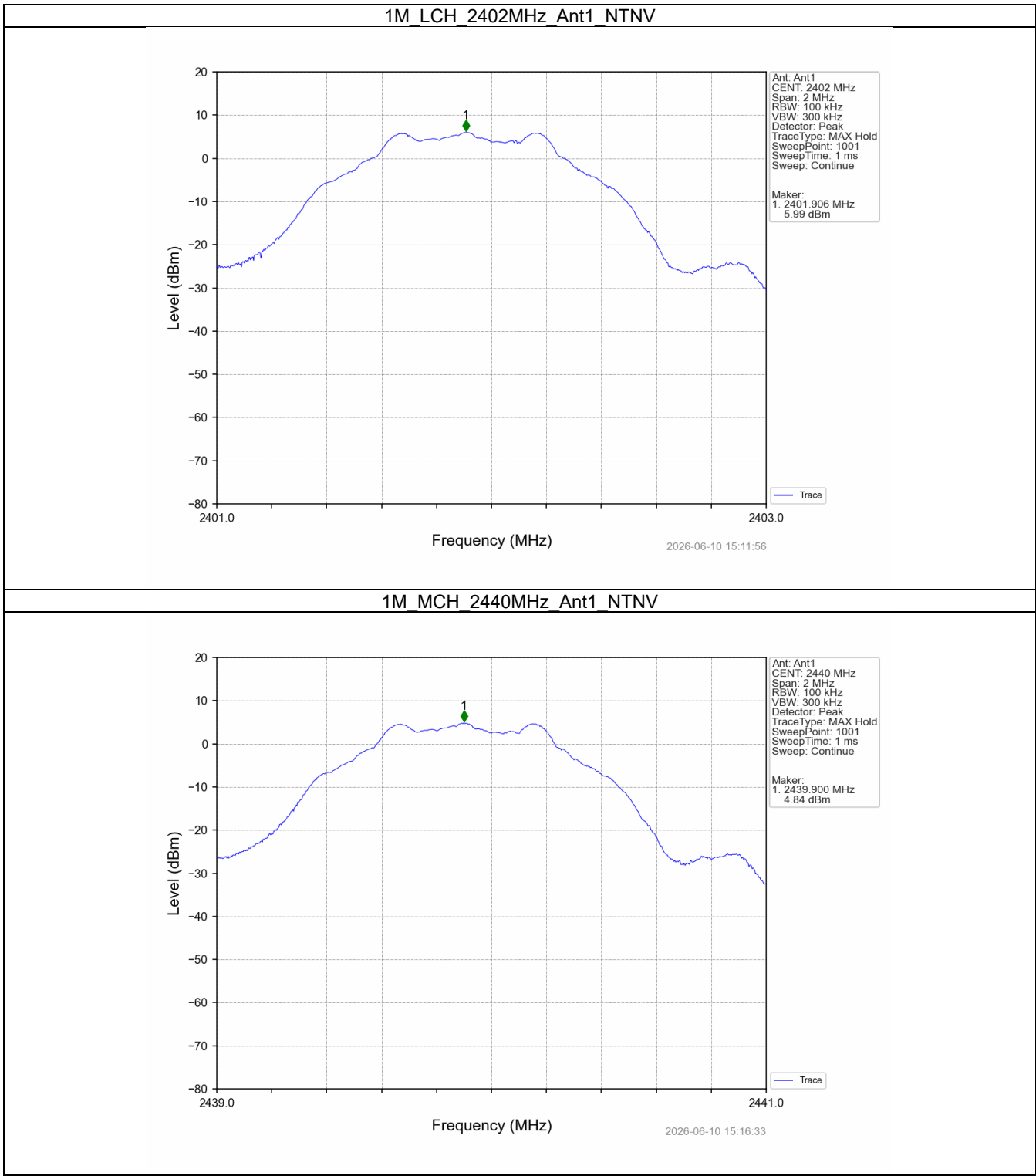
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	5.99
		2440	1	4.84
		2480	1	4.91
2M	SISO	2402	1	5.13
		2440	1	3.92
		2480	1	4.02

5.1.2 CSE

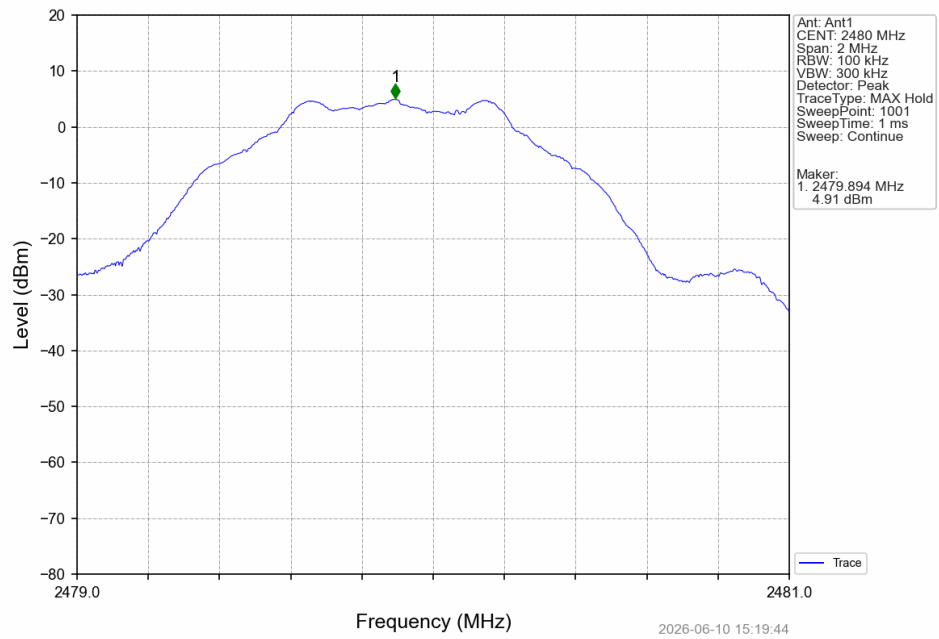
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	5.99	-14.01	Pass
		2440	1	4.84	-15.16	Pass
		2480	1	4.91	-15.09	Pass
2M	SISO	2402	1	5.13	-14.87	Pass
		2440	1	3.92	-16.08	Pass
		2480	1	4.02	-15.98	Pass

5.2 Test Graph

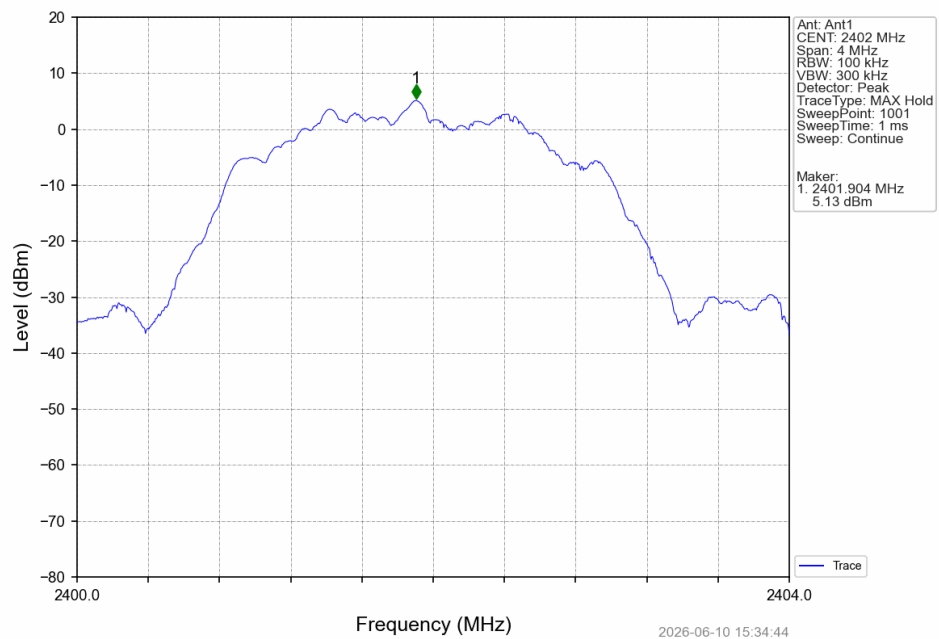
5.2.1 Ref



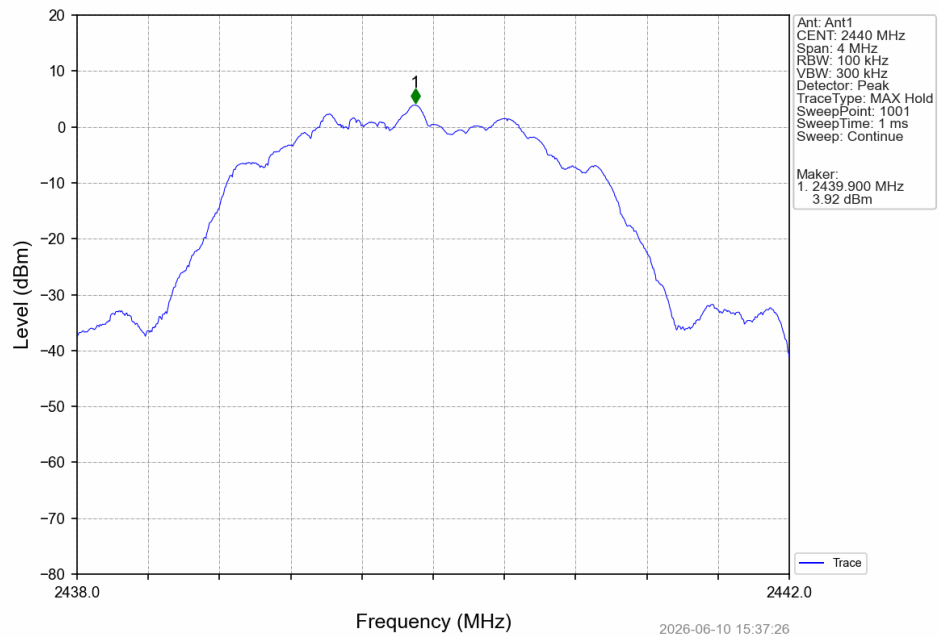
1M_HCH_2480MHz_Ant1_NTNV



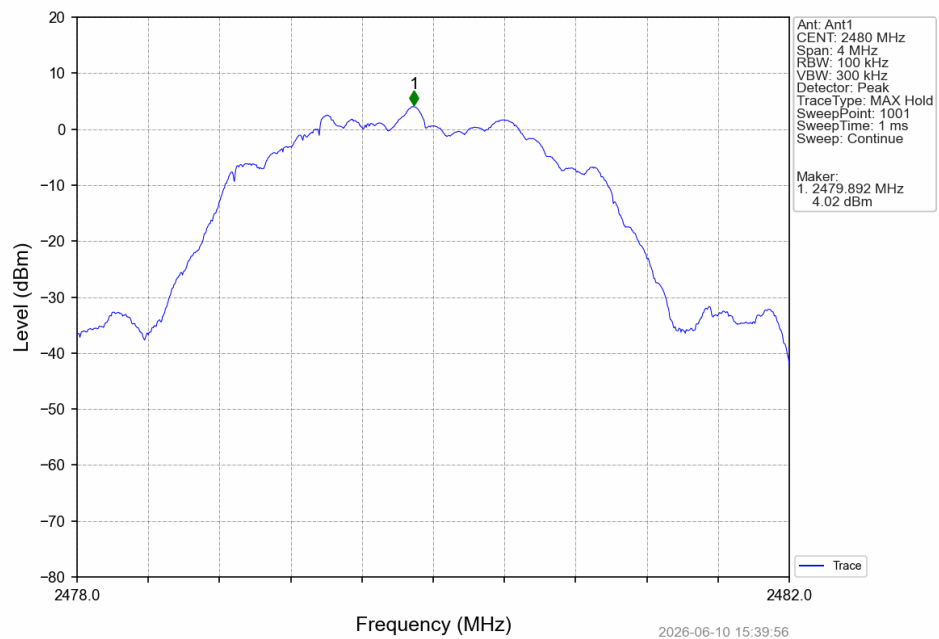
2M_LCH_2402MHz_Ant1_NTNV



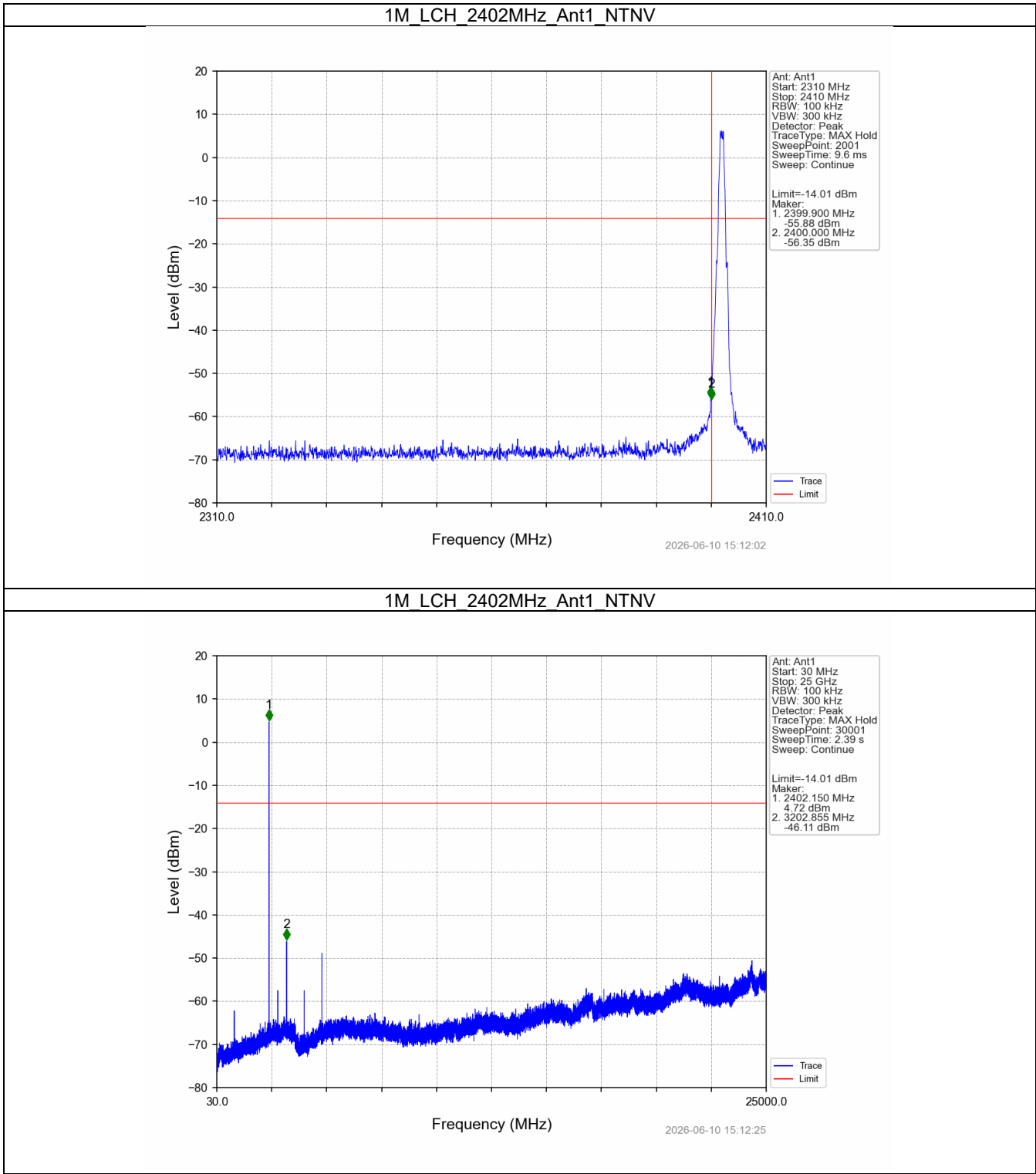
2M_MCH_2440MHz_Ant1_NTNV



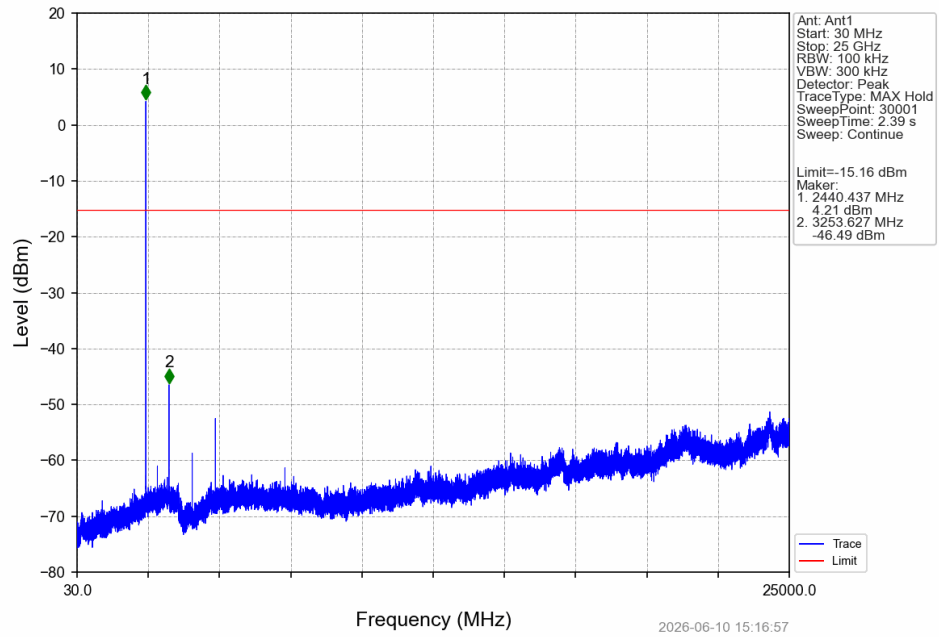
2M_HCH_2480MHz_Ant1_NTNV



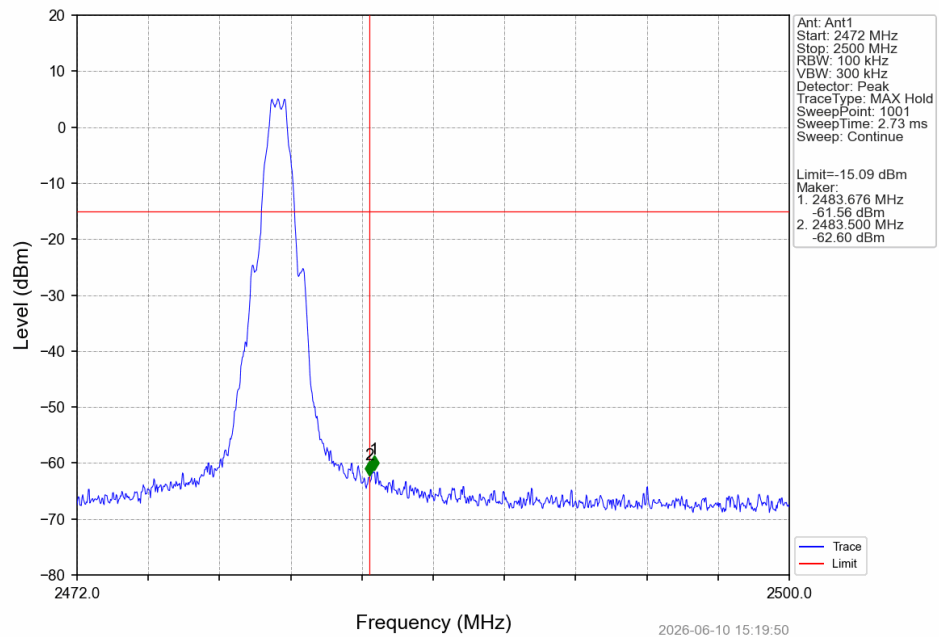
5.2.2 CSE



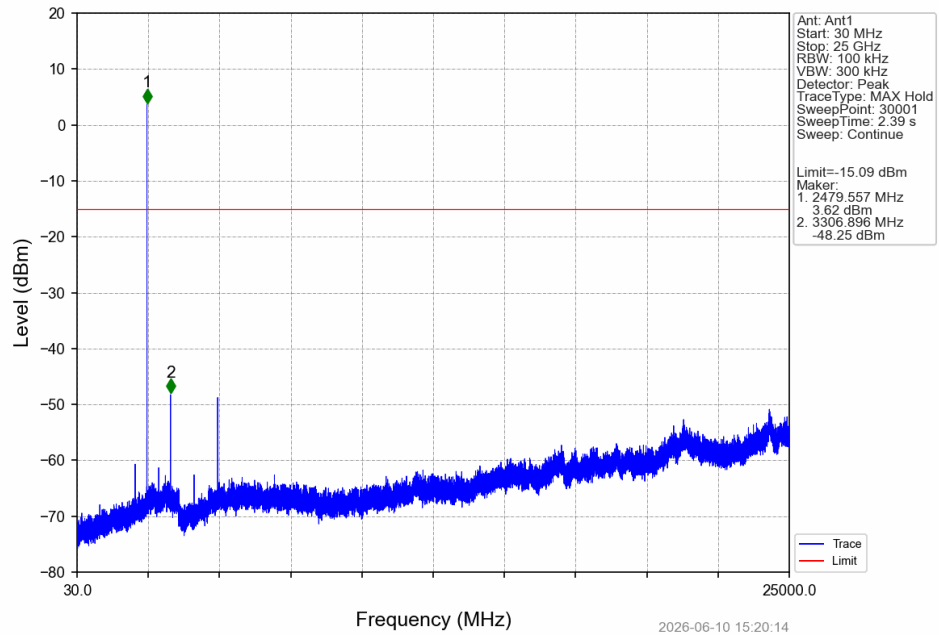
1M_MCH_2440MHz_Ant1_NTNV



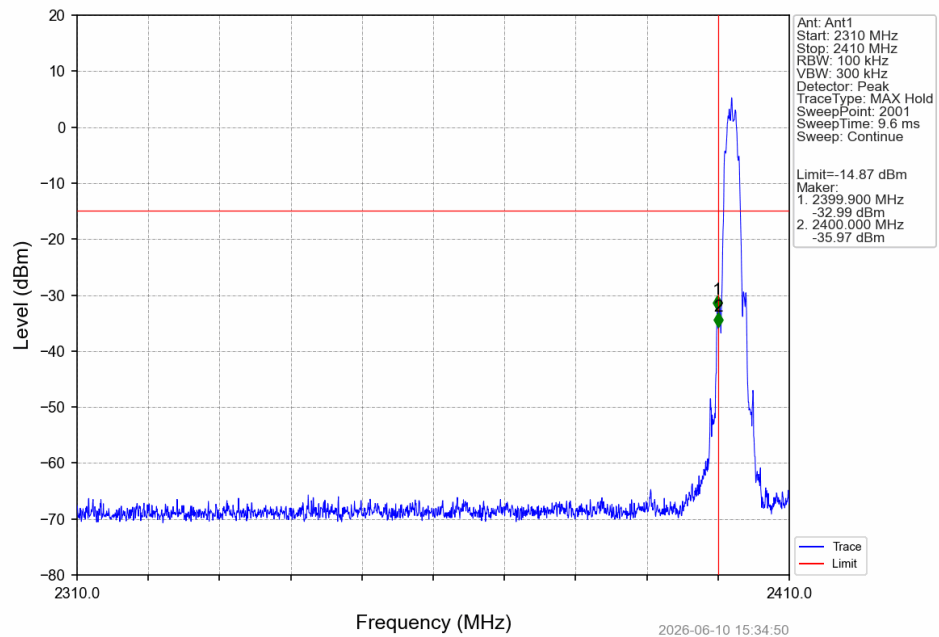
1M_HCH_2480MHz_Ant1_NTNV



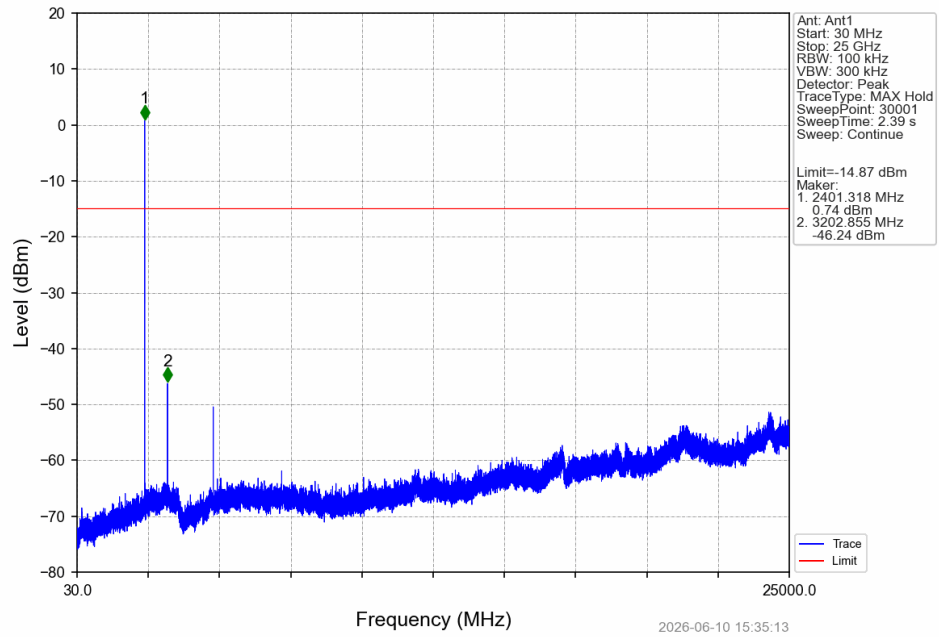
1M_HCH_2480MHz_Ant1_NTNV



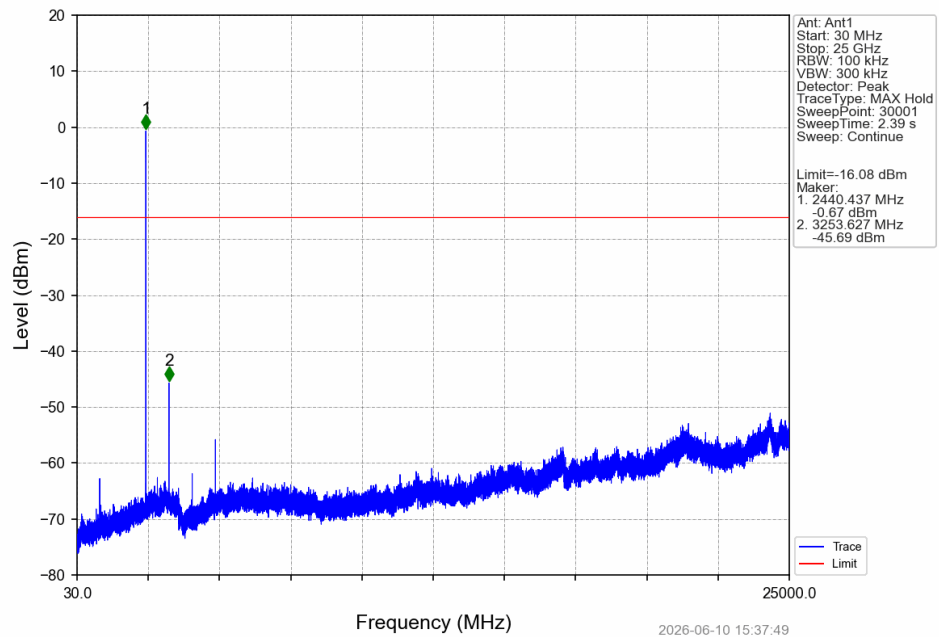
2M_LCH_2402MHz_Ant1_NTNV



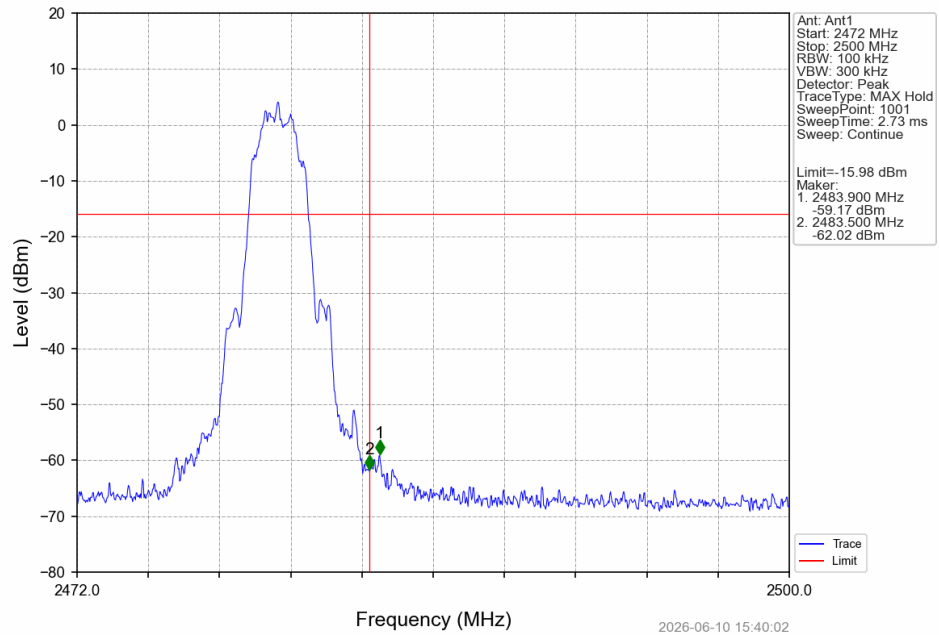
2M_LCH_2402MHz_Ant1_NTNV



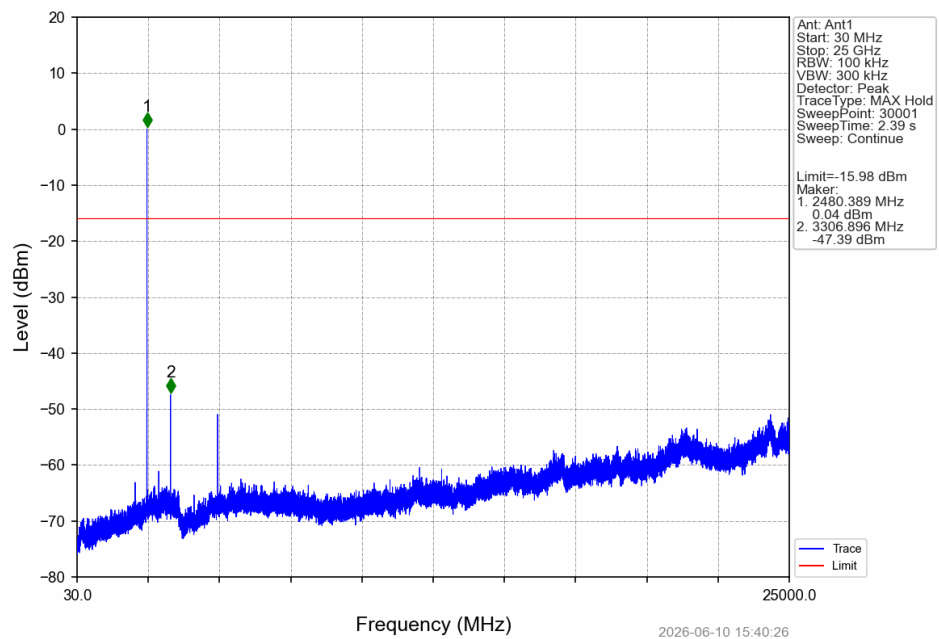
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



6. Unwanted Emissions In Restricted Frequency Bands

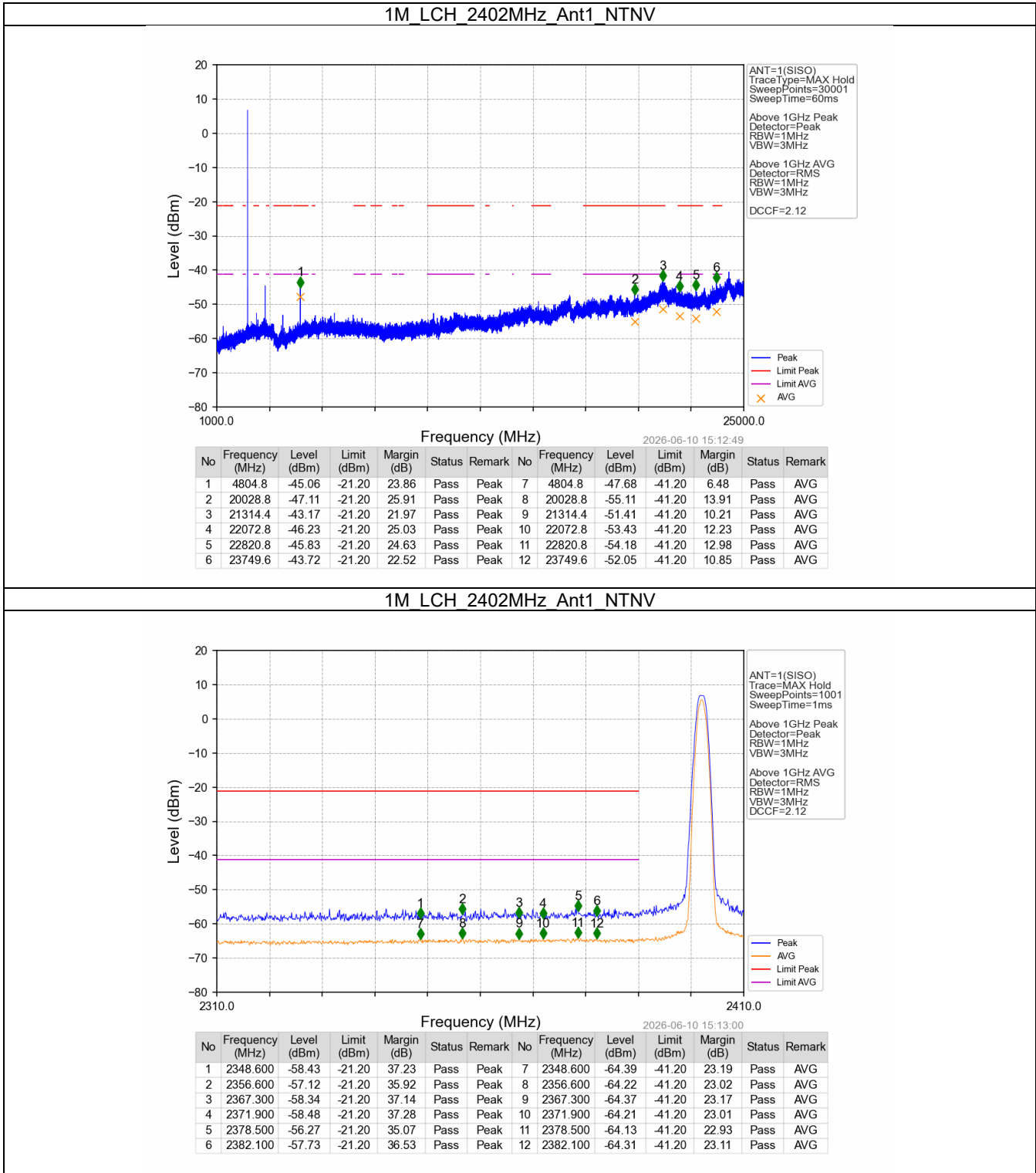
6.1 Test Result

6.1.1 RSE

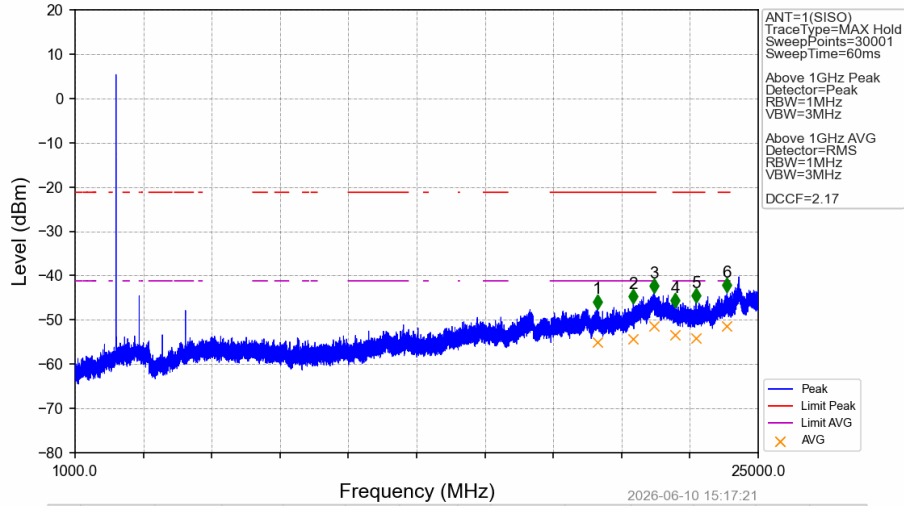
Mode	TX Type	Frequency (MHz)	ANT	Level of Unwanted Emissions (dBm)		Verdict
				Result	Limit	
1M	SISO	2402	1	Refer To Test Graph		Pass
		2440	1	Refer To Test Graph		Pass
		2480	1	Refer To Test Graph		Pass
2M	SISO	2402	1	Refer To Test Graph		Pass
		2440	1	Refer To Test Graph		Pass
		2480	1	Refer To Test Graph		Pass

6.2 Test Graph

6.2.1 RSE

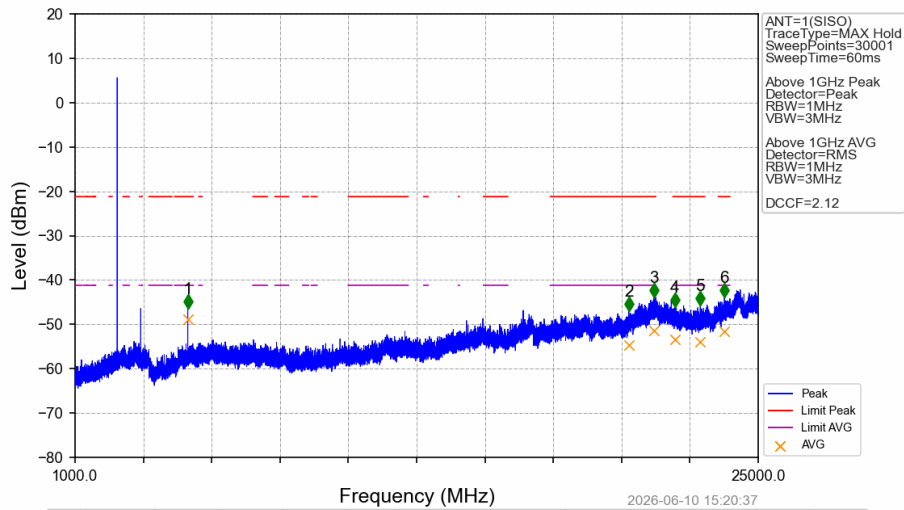


1M_MCH_2440MHz_Ant1_NTNV



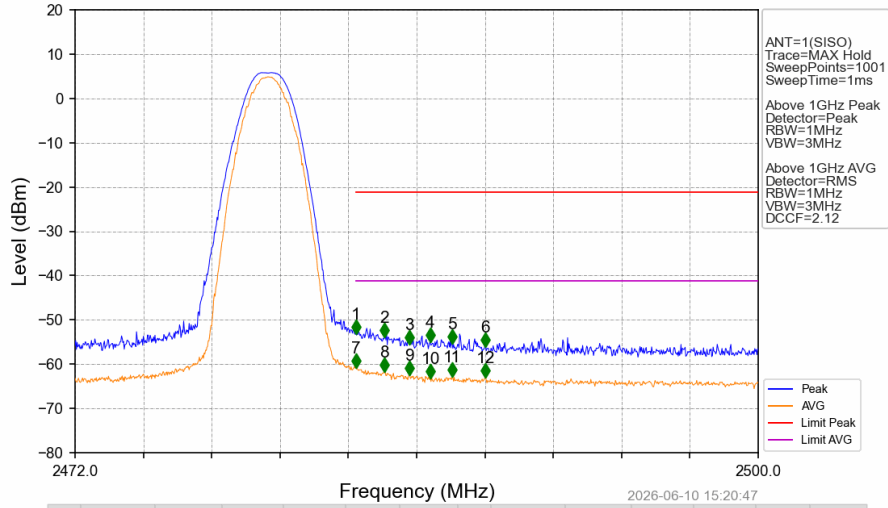
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	19351.2	-47.44	-21.20	26.24	Pass	Peak	7	19351.2	-54.97	-41.20	13.77	Pass	AVG
2	20611.2	-46.17	-21.20	24.97	Pass	Peak	8	20611.2	-54.28	-41.20	13.08	Pass	AVG
3	21352.8	-43.92	-21.20	22.72	Pass	Peak	9	21352.8	-51.37	-41.20	10.17	Pass	AVG
4	22081.6	-47.21	-21.20	26.01	Pass	Peak	10	22081.6	-53.44	-41.20	12.24	Pass	AVG
5	22802.4	-46.05	-21.20	24.85	Pass	Peak	11	22802.4	-54.05	-41.20	12.85	Pass	AVG
6	23904.8	-43.72	-21.20	22.52	Pass	Peak	12	23904.8	-51.32	-41.20	10.12	Pass	AVG

1M_HCH_2480MHz_Ant1_NTNV



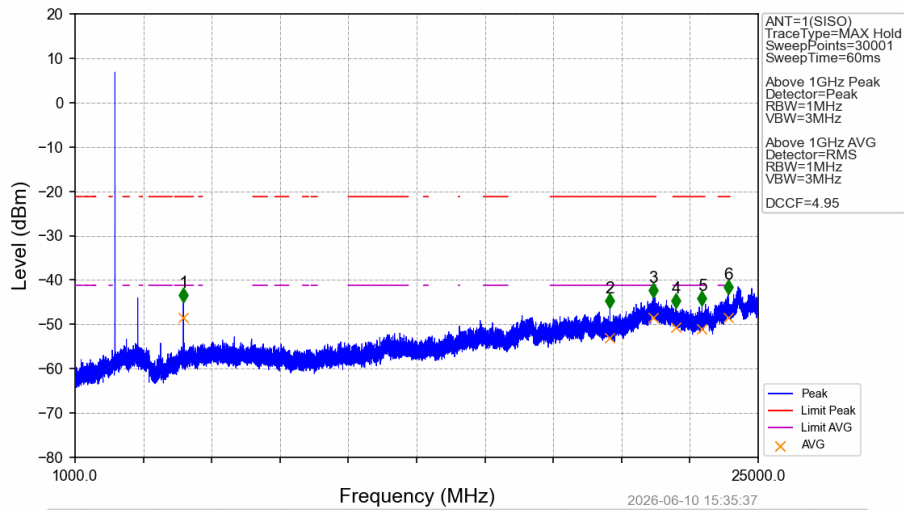
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	4960	-46.51	-21.20	25.31	Pass	Peak	7	4960	-48.88	-41.20	7.68	Pass	AVG
2	20456	-46.96	-21.20	25.76	Pass	Peak	8	20456	-54.74	-41.20	13.54	Pass	AVG
3	21336	-43.92	-21.20	22.72	Pass	Peak	9	21336	-51.44	-41.20	10.24	Pass	AVG
4	22075.2	-46.09	-21.20	24.89	Pass	Peak	10	22075.2	-53.34	-41.20	12.14	Pass	AVG
5	22965.6	-45.73	-21.20	24.53	Pass	Peak	11	22965.6	-53.98	-41.20	12.78	Pass	AVG
6	23813.6	-43.83	-21.20	22.63	Pass	Peak	12	23813.6	-51.53	-41.20	10.33	Pass	AVG

1M_HCH_2480MHz_Ant1_NTNV



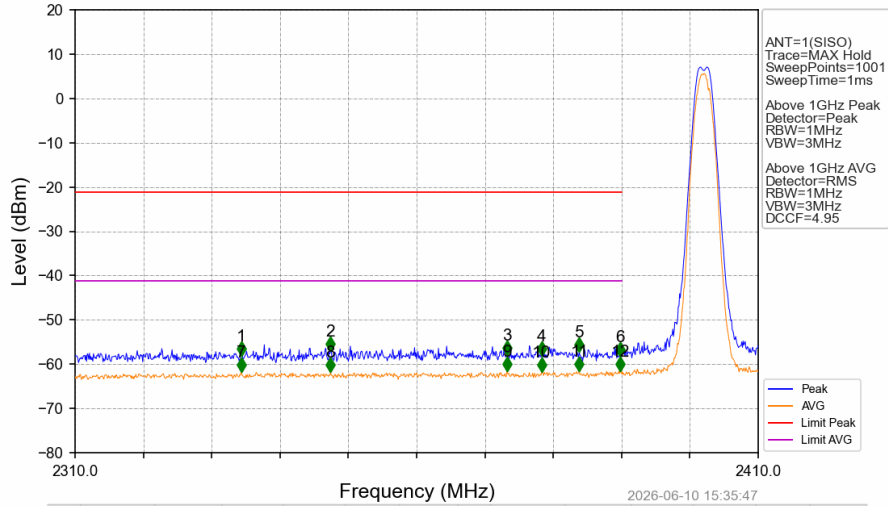
No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2483.508	-53.16	-21.20	31.96	Pass	Peak	7	2483.508	-60.88	-41.20	19.68	Pass	AVG
2	2484.684	-53.97	-21.20	32.77	Pass	Peak	8	2484.684	-61.67	-41.20	20.47	Pass	AVG
3	2485.692	-55.46	-21.20	34.26	Pass	Peak	9	2485.692	-62.51	-41.20	21.31	Pass	AVG
4	2486.560	-55.08	-21.20	33.88	Pass	Peak	10	2486.560	-63.19	-41.20	21.99	Pass	AVG
5	2487.456	-55.35	-21.20	34.15	Pass	Peak	11	2487.456	-62.78	-41.20	21.58	Pass	AVG
6	2488.828	-56.12	-21.20	34.92	Pass	Peak	12	2488.828	-63.00	-41.20	21.80	Pass	AVG

2M_LCH_2402MHz_Ant1_NTNV

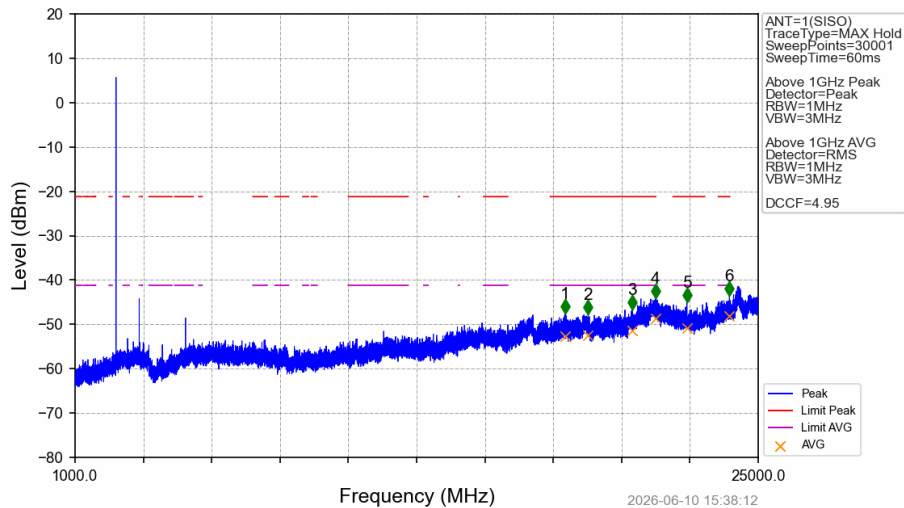


No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	4804.8	-45.03	-21.20	23.83	Pass	Peak	7	4804.8	-48.52	-41.20	7.32	Pass	AVG
2	19792.8	-46.33	-21.20	25.13	Pass	Peak	8	19792.8	-53.05	-41.20	11.85	Pass	AVG
3	21305.6	-43.85	-21.20	22.65	Pass	Peak	9	21305.6	-48.50	-41.20	7.30	Pass	AVG
4	22117.6	-46.24	-21.20	25.04	Pass	Peak	10	22117.6	-50.68	-41.20	9.48	Pass	AVG
5	23027.2	-45.67	-21.20	24.47	Pass	Peak	11	23027.2	-50.99	-41.20	9.79	Pass	AVG
6	23945.6	-43.12	-21.20	21.92	Pass	Peak	12	23945.6	-48.40	-41.20	7.20	Pass	AVG

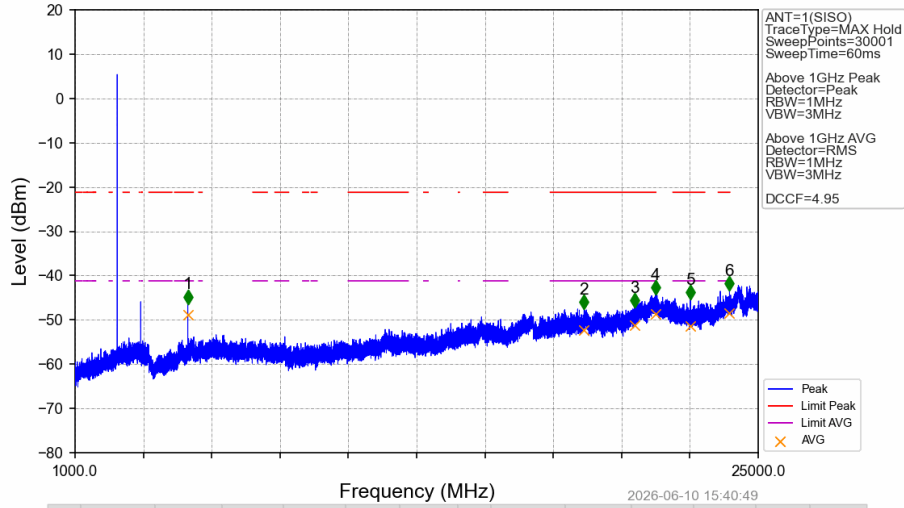
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV

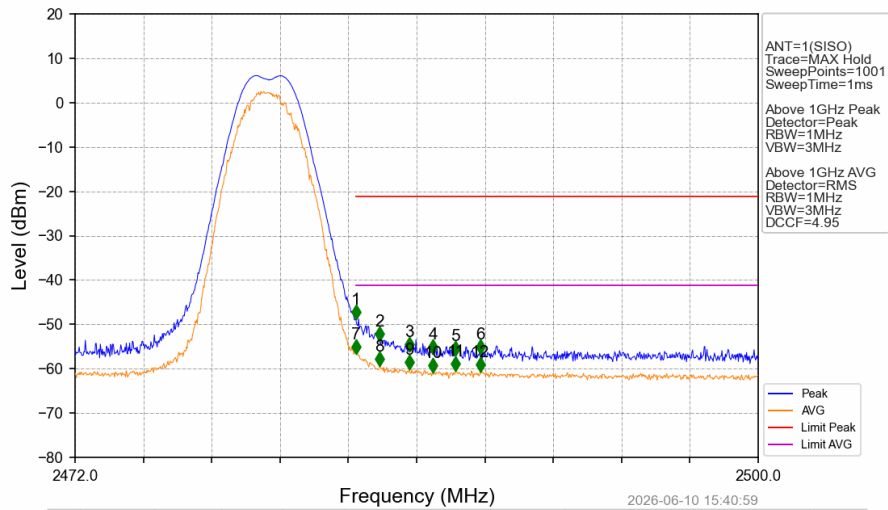


2M_HCH_2480MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	4959.2	-46.34	-21.20	25.14	Pass	Peak	7	4959.2	-48.91	-41.20	7.71	Pass	AVG
2	18884	-47.48	-21.20	26.28	Pass	Peak	8	18884	-52.35	-41.20	11.15	Pass	AVG
3	20648.8	-47.16	-21.20	25.96	Pass	Peak	9	20648.8	-51.30	-41.20	10.10	Pass	AVG
4	21384	-44.23	-21.20	23.03	Pass	Peak	10	21384	-48.75	-41.20	7.55	Pass	AVG
5	22616.8	-45.42	-21.20	24.22	Pass	Peak	11	22616.8	-51.34	-41.20	10.14	Pass	AVG
6	23992	-43.27	-21.20	22.07	Pass	Peak	12	23992	-48.48	-41.20	7.28	Pass	AVG

2M_HCH_2480MHz_Ant1_NTNV



No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark	No	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Status	Remark
1	2483.508	-48.77	-21.20	27.57	Pass	Peak	7	2483.508	-56.63	-41.20	15.43	Pass	AVG
2	2484.488	-53.66	-21.20	32.46	Pass	Peak	8	2484.488	-59.37	-41.20	18.17	Pass	AVG
3	2485.692	-56.15	-21.20	34.95	Pass	Peak	9	2485.692	-60.05	-41.20	18.85	Pass	AVG
4	2486.672	-56.62	-21.20	35.42	Pass	Peak	10	2486.672	-60.75	-41.20	19.55	Pass	AVG
5	2487.596	-57.07	-21.20	35.87	Pass	Peak	11	2487.596	-60.54	-41.20	19.34	Pass	AVG
6	2488.604	-56.64	-21.20	35.44	Pass	Peak	12	2488.604	-60.68	-41.20	19.48	Pass	AVG