

Appendix RF Test Data for 2.4GWIFI

Company: : Shen Zhen Simaru Tec Co.,Ltd

EUT : Rainwater Leakage Detection

FCC ID: : 2A87N-MG-SJ101

Model Number : MG-SJ101-W-WIF

Report No. : HTT202508939F01

Reviewed By : Heber He

1. Duty Cycle

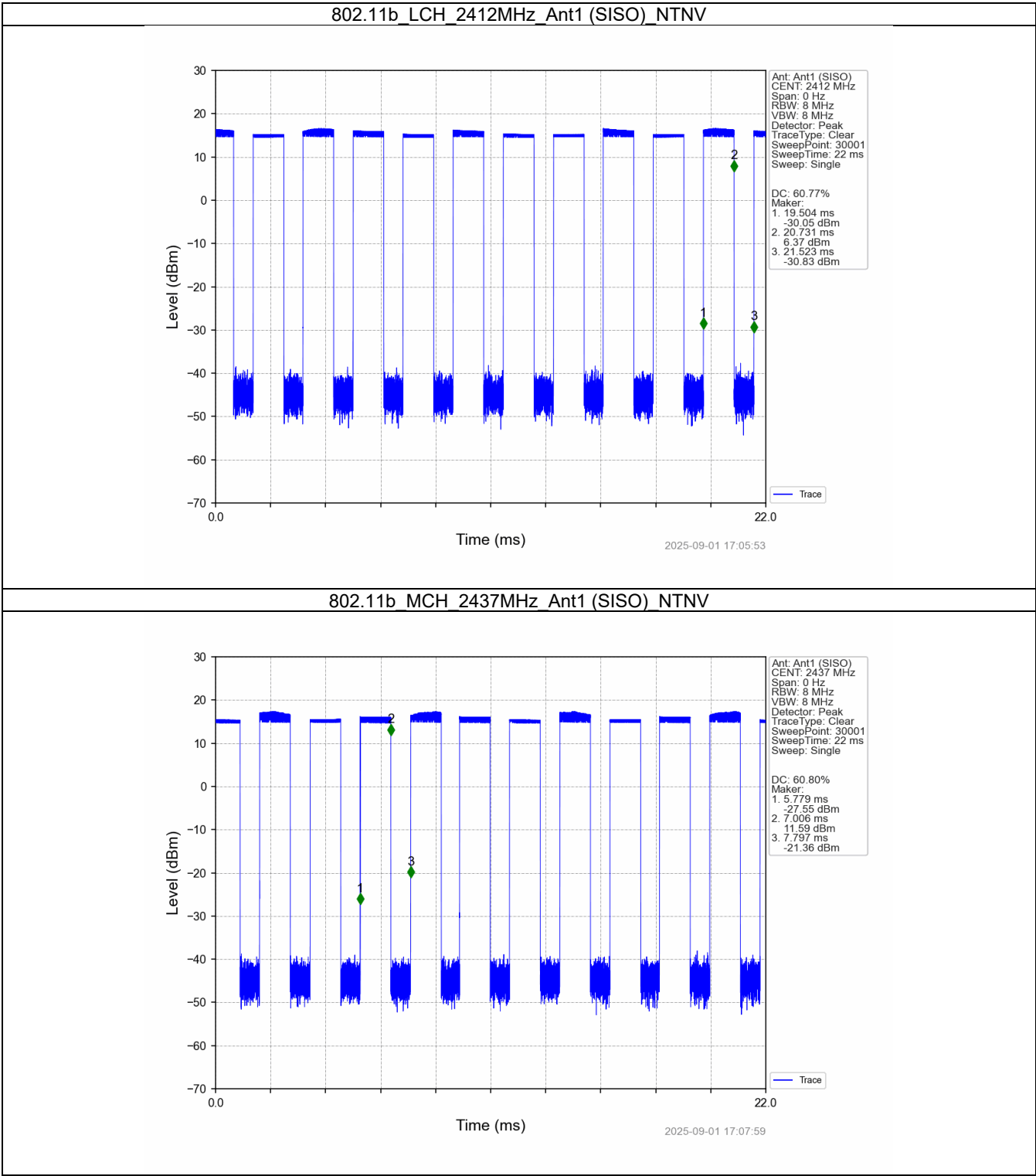
1.1 Test Result

1.1.1 Ant1

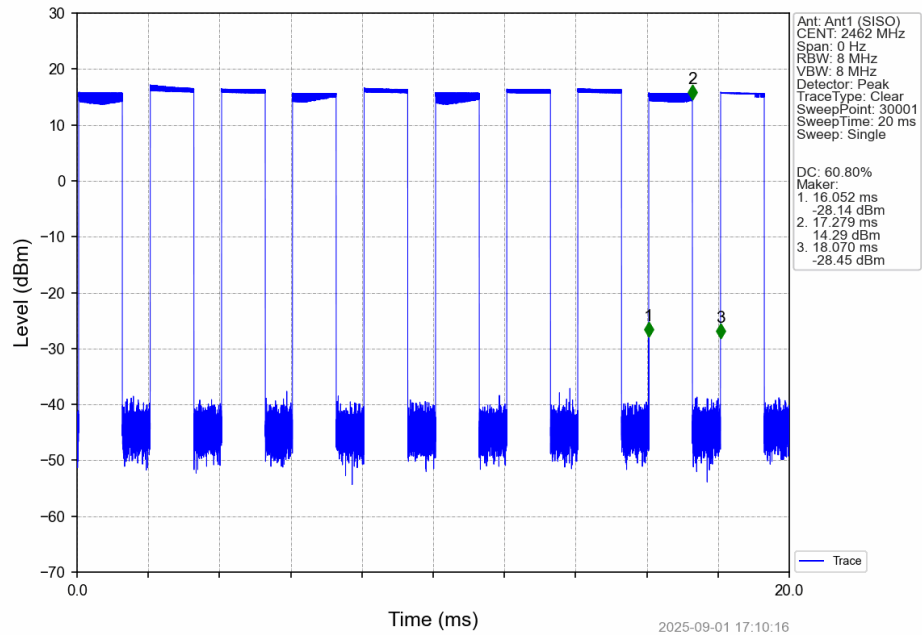
Ant1							
Mode	Tx Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	1.227	2.019	60.77	2.16	1.09
		2437	1.227	2.018	60.80	2.16	1.96
		2462	1.227	2.018	60.80	2.16	0.85
802.11g	SISO	2412	0.547	1.020	53.63	2.71	2.00
		2437	0.544	1.020	53.33	2.73	1.45
		2462	0.545	1.011	53.91	2.68	1.48
802.11n (HT20)	SISO	2412	0.551	1.019	54.07	2.67	2.00
		2437	0.548	1.024	53.52	2.72	2.45
		2462	0.548	3.371	16.26	7.89	68.71

1.2 Test Graph

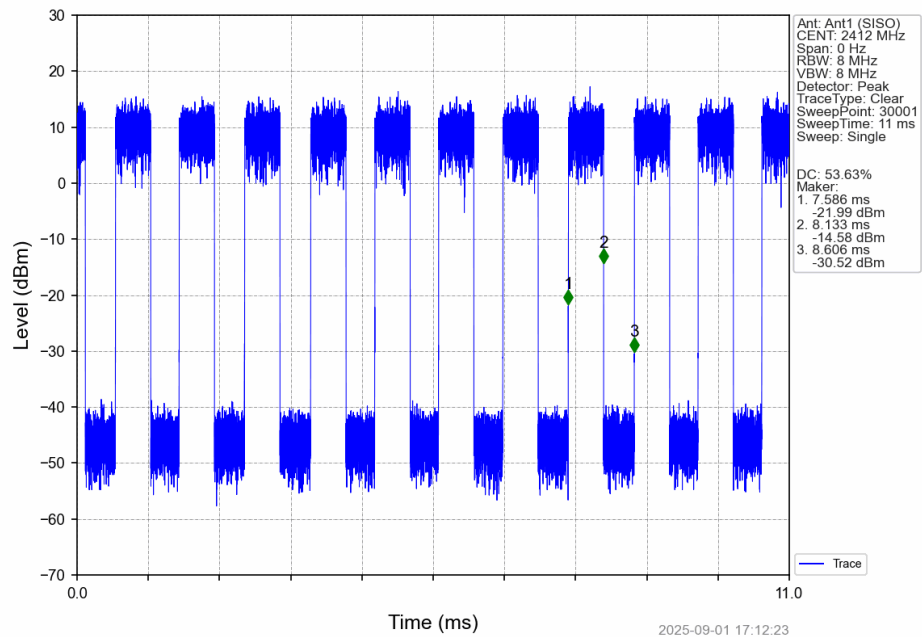
1.2.1 Ant1



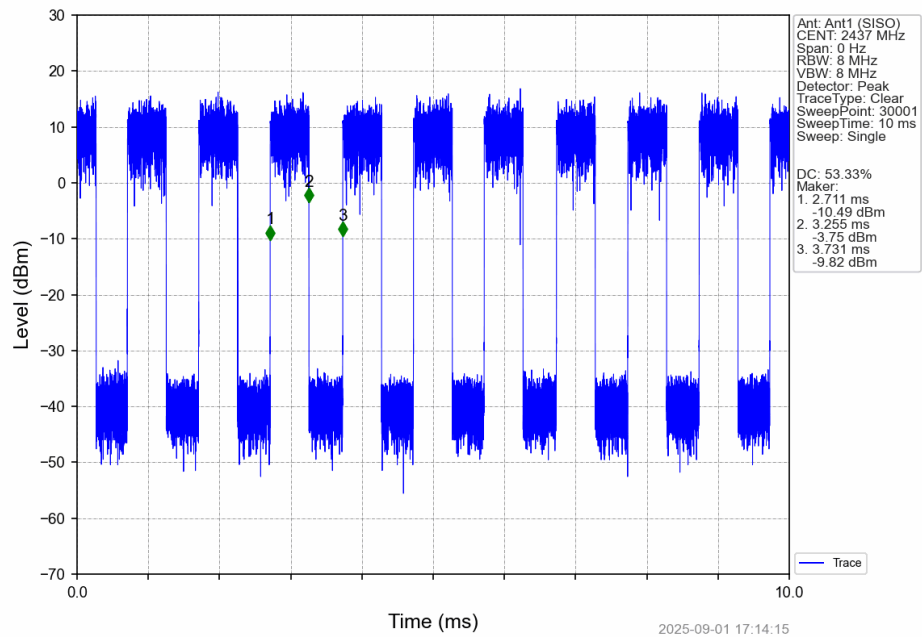
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



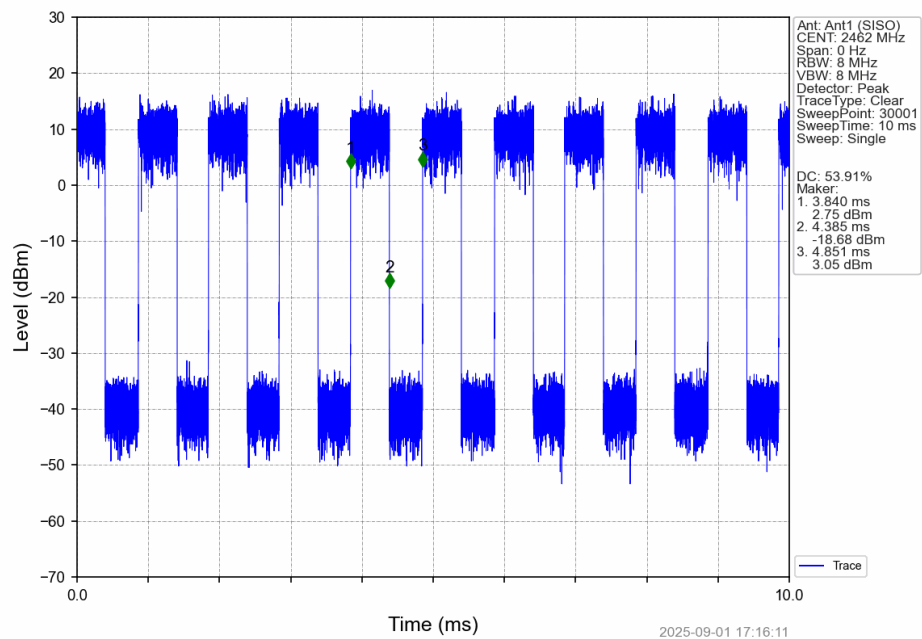
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



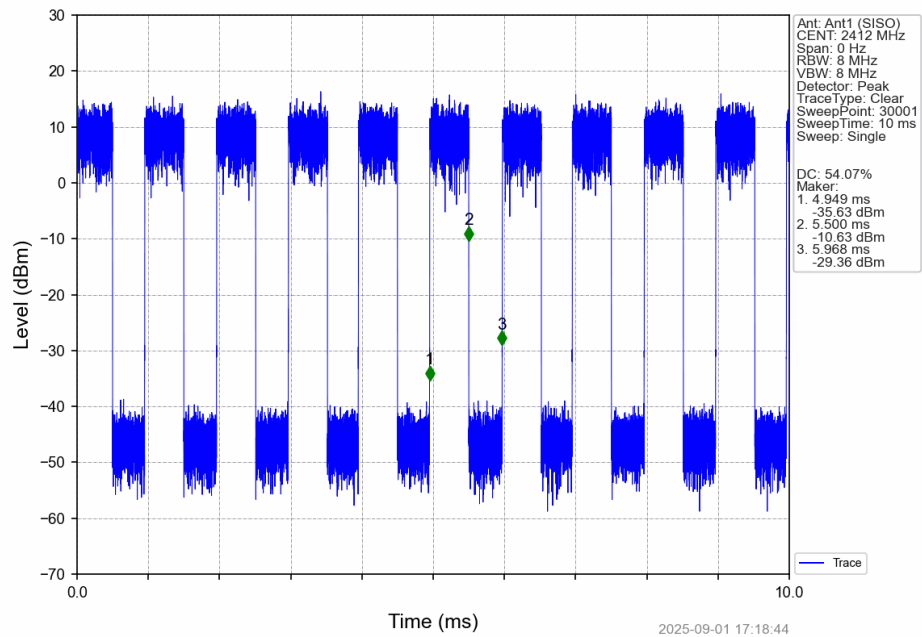
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



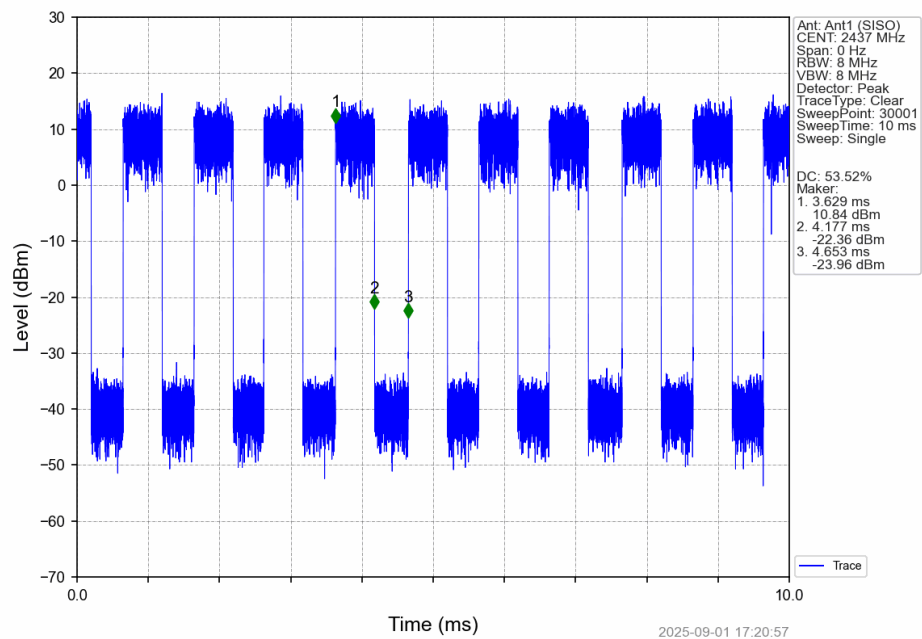
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



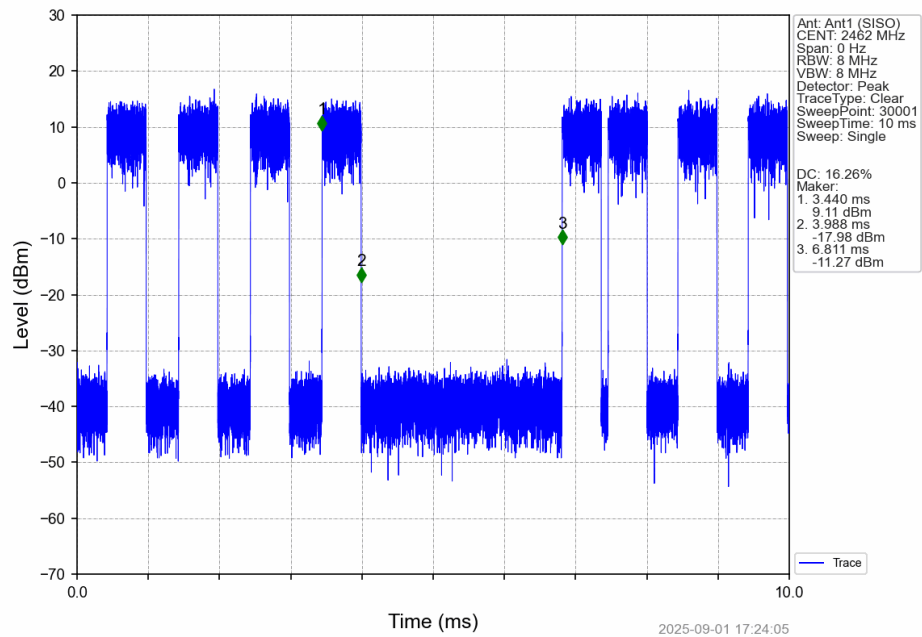
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

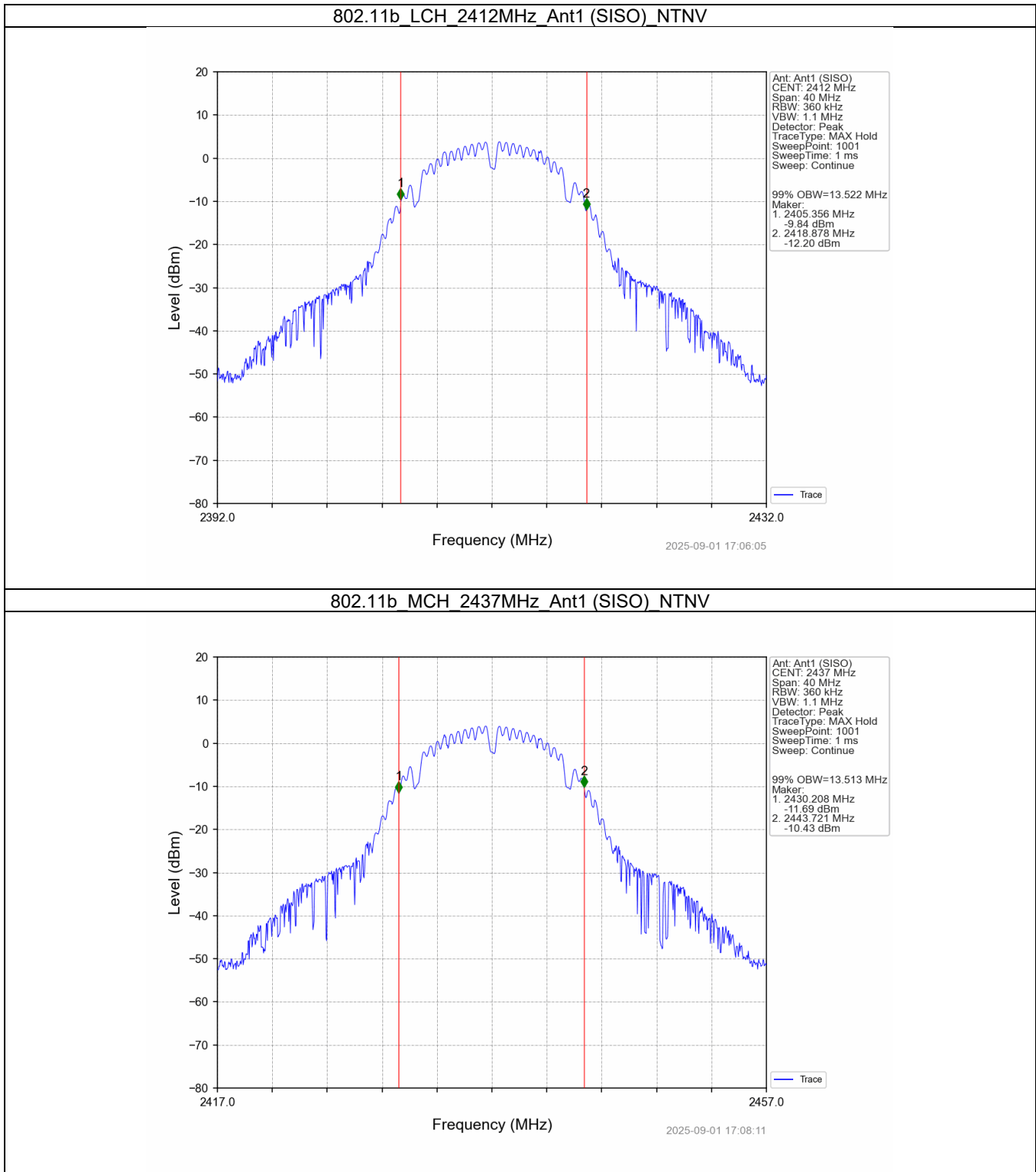
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	13.522	/	Pass
		2437	1	13.513	/	Pass
		2462	1	13.438	/	Pass
802.11g	SISO	2412	1	17.675	/	Pass
		2437	1	17.624	/	Pass
		2462	1	17.476	/	Pass
802.11n (HT20)	SISO	2412	1	18.070	/	Pass
		2437	1	18.044	/	Pass
		2462	1	18.015	/	Pass

2.1.2 6dB BW

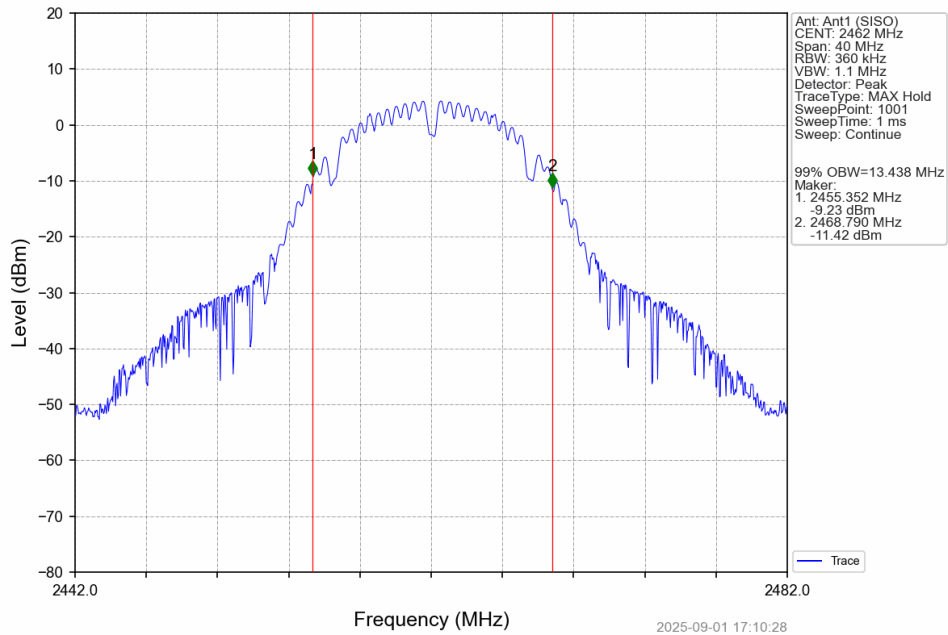
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.591	≥ 0.5	Pass
		2437	1	9.150	≥ 0.5	Pass
		2462	1	9.143	≥ 0.5	Pass
802.11g	SISO	2412	1	16.398	≥ 0.5	Pass
		2437	1	16.390	≥ 0.5	Pass
		2462	1	16.387	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.052	≥ 0.5	Pass
		2437	1	17.016	≥ 0.5	Pass
		2462	1	16.946	≥ 0.5	Pass

2.2 Test Graph

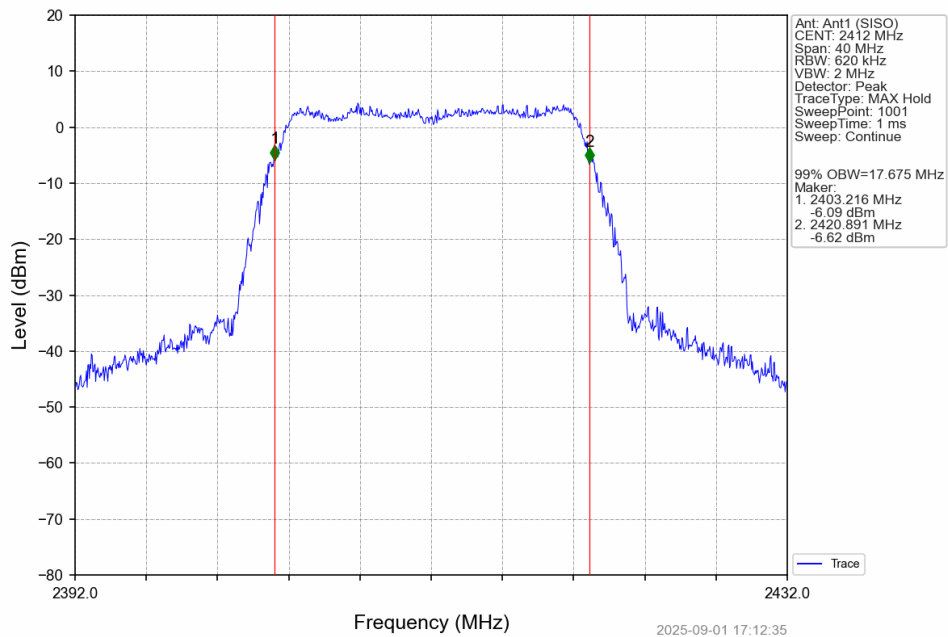
2.2.1 OBW



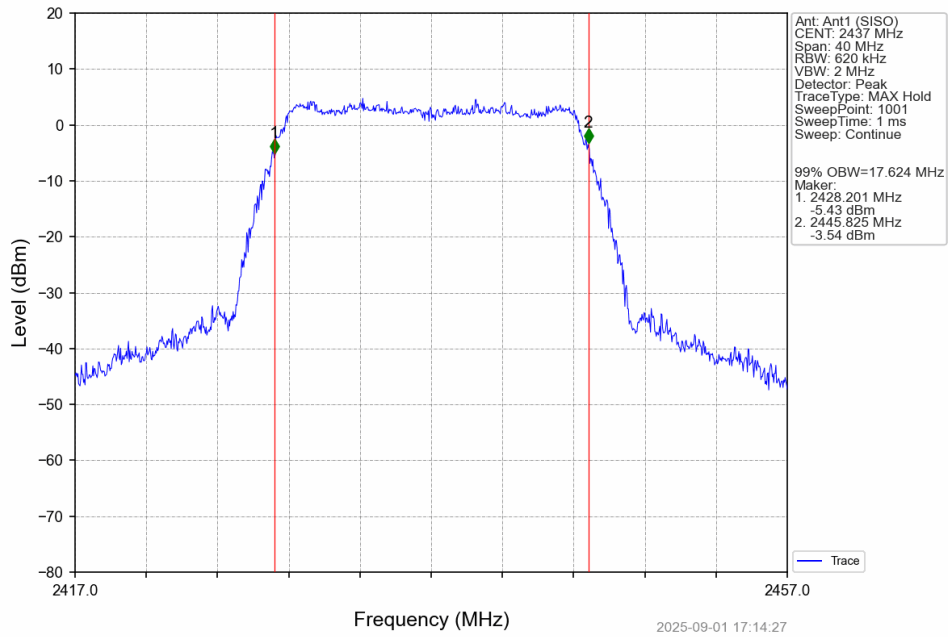
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



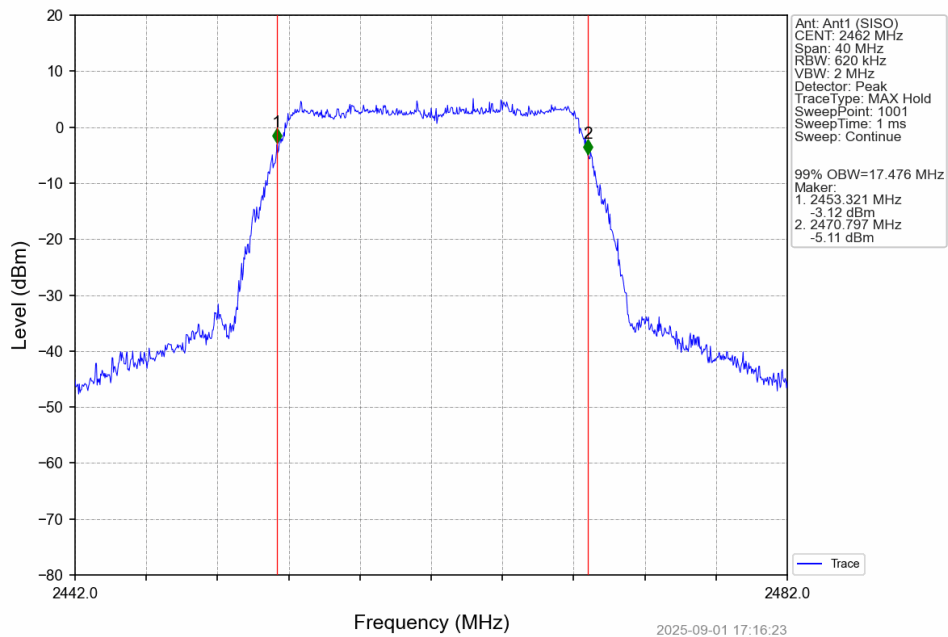
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



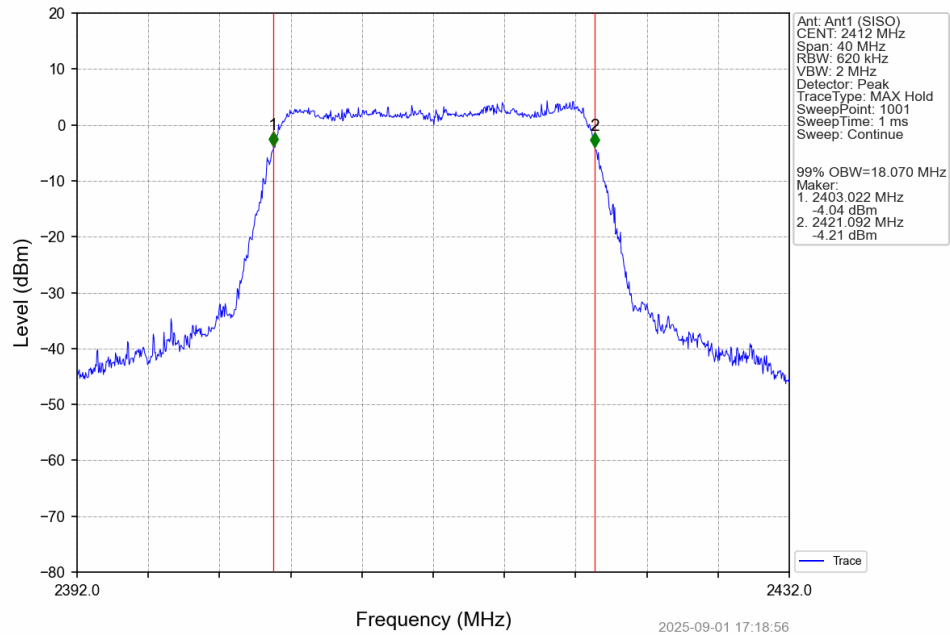
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



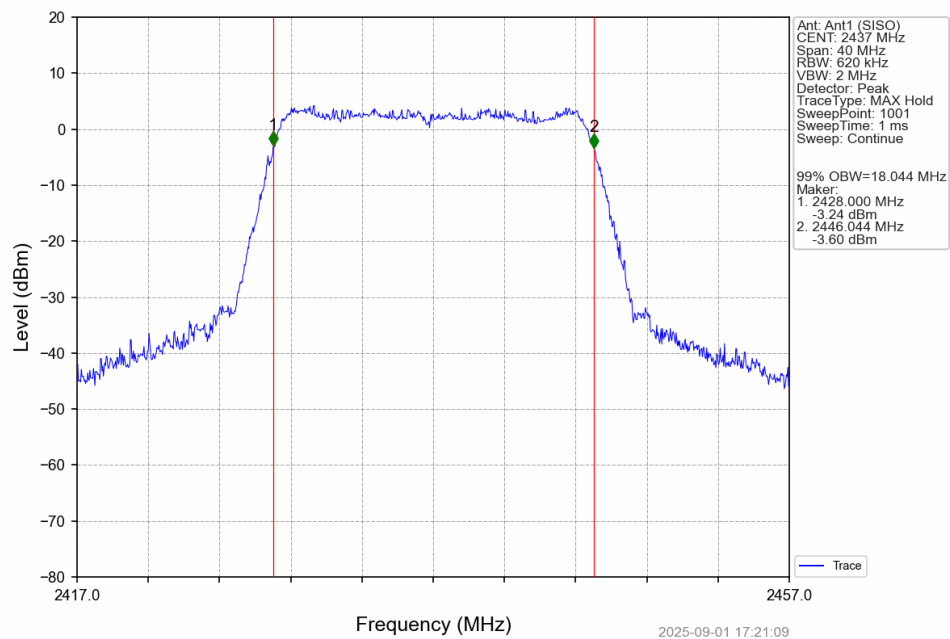
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



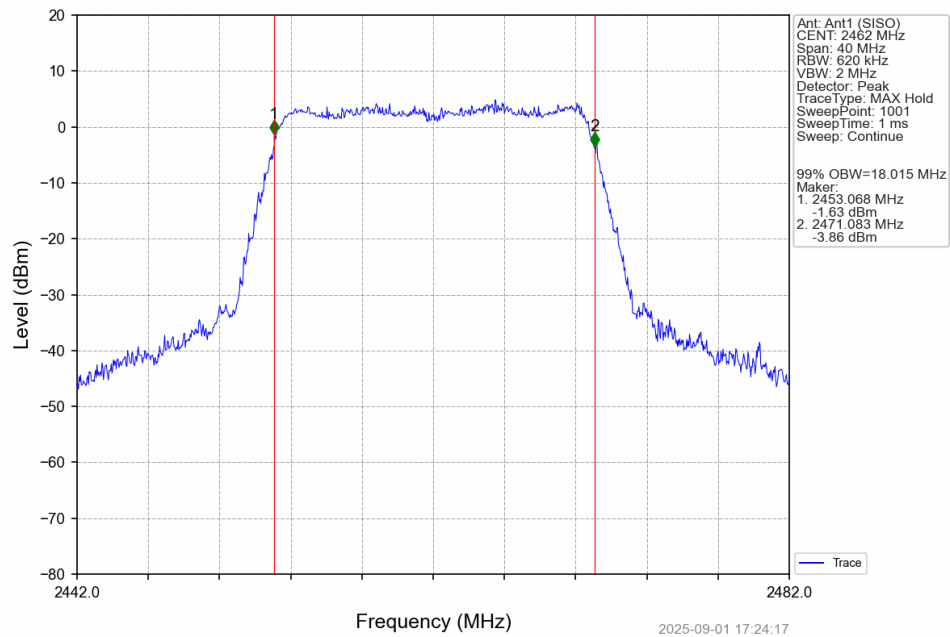
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



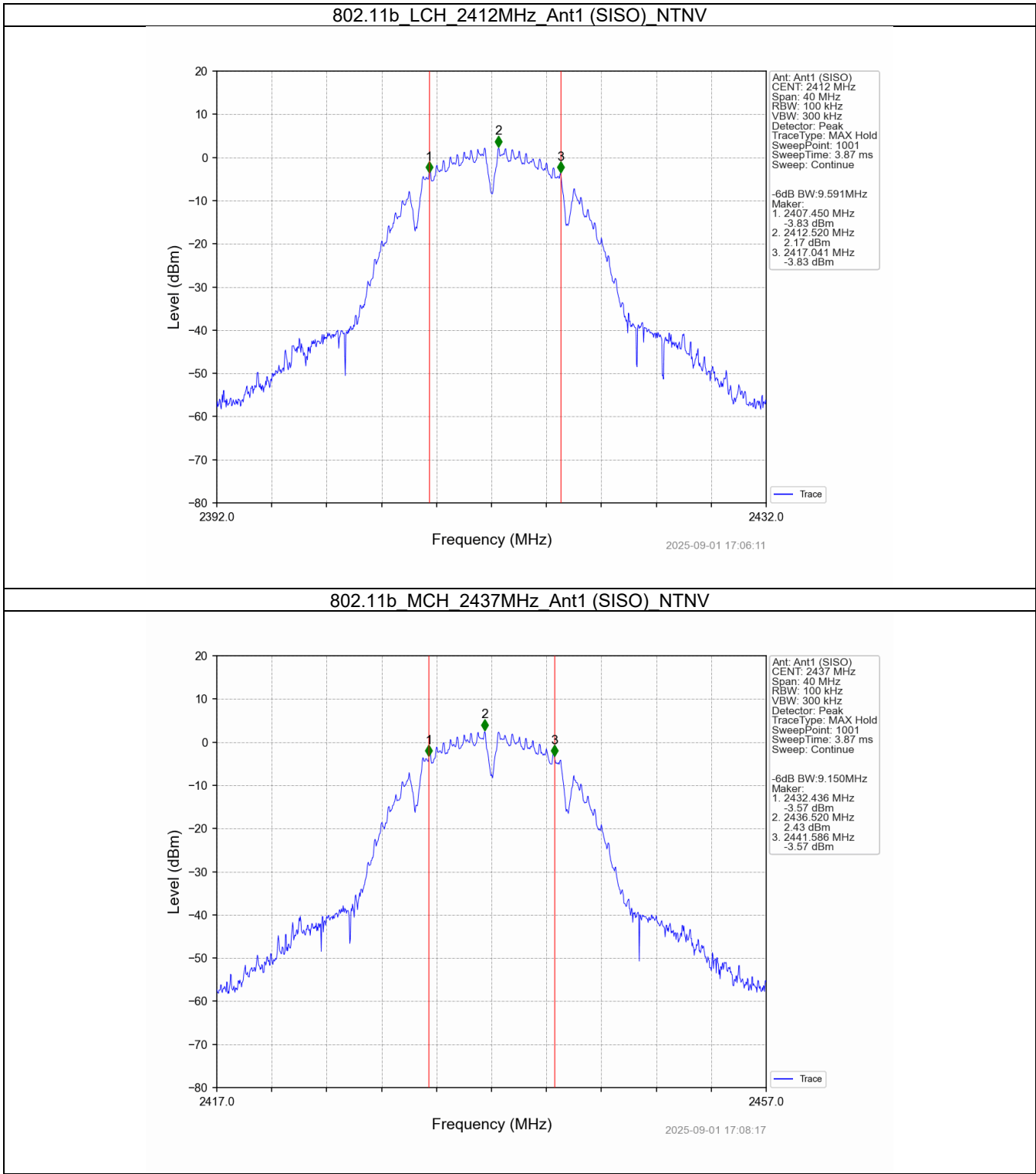
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



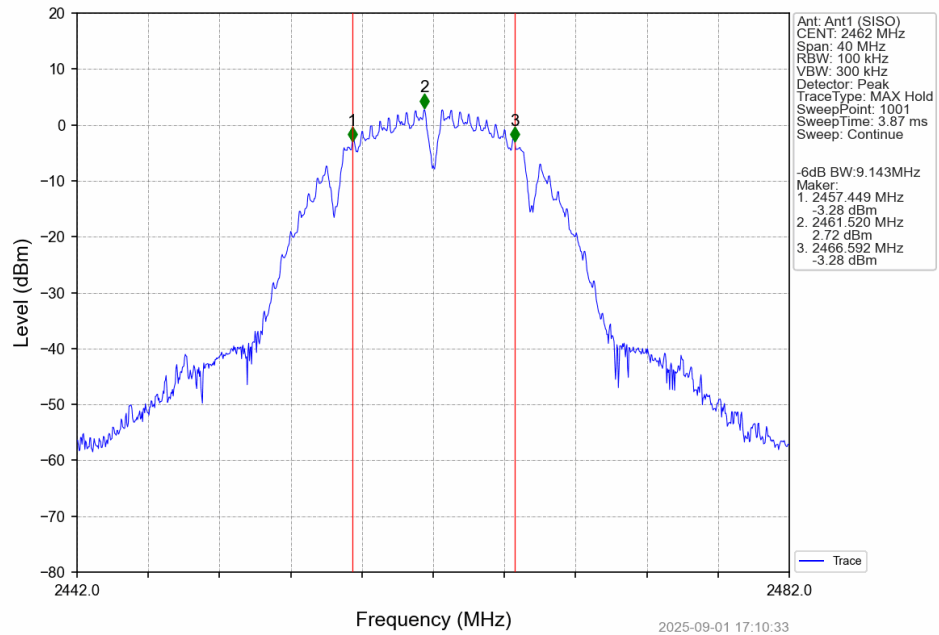
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



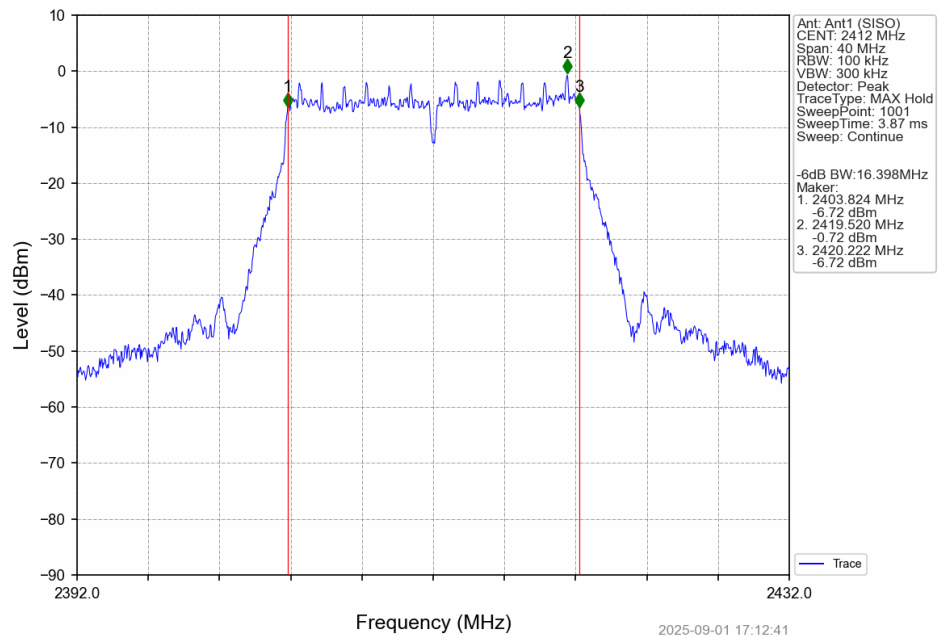
2.2.2 6dB BW



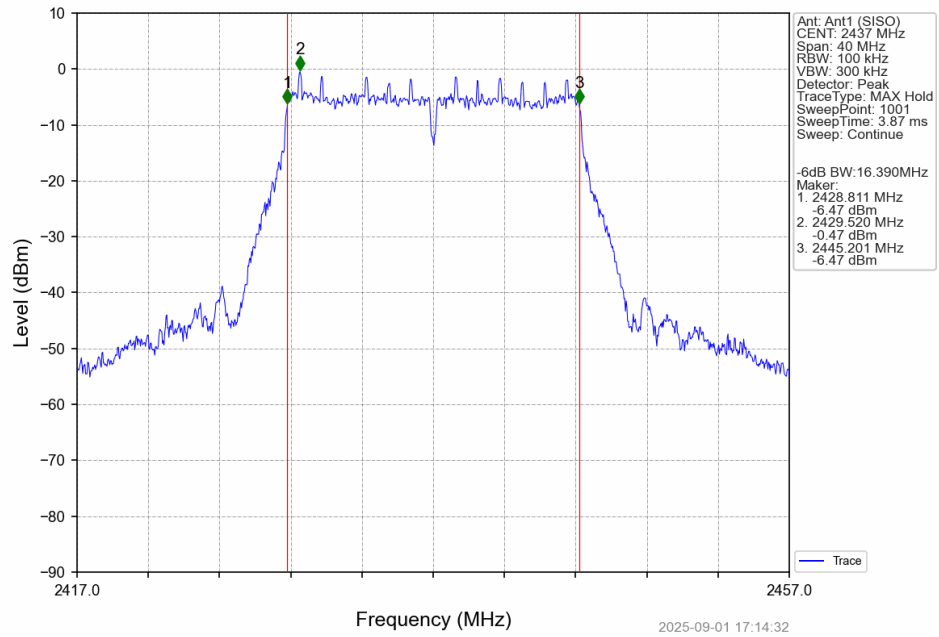
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



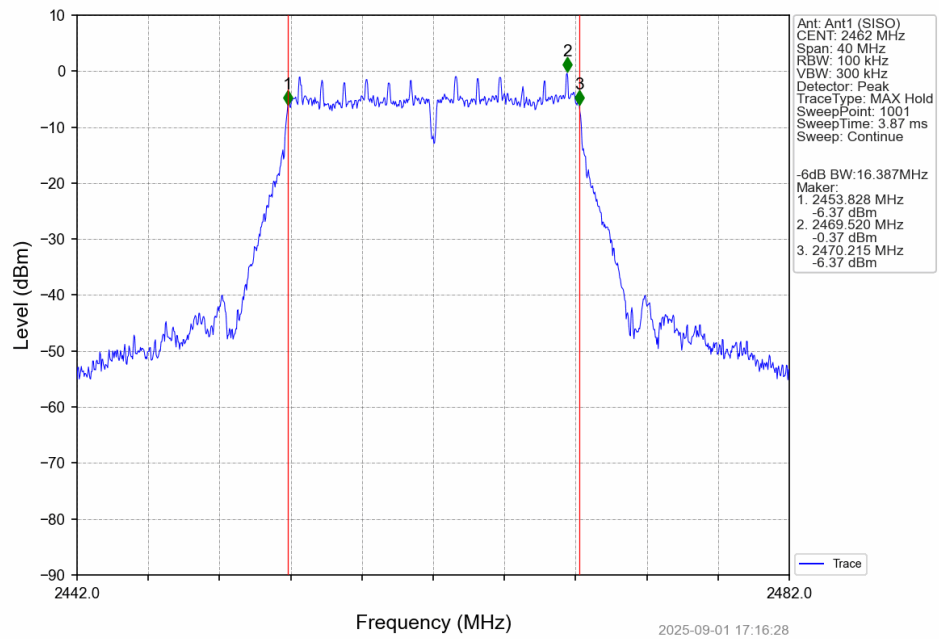
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



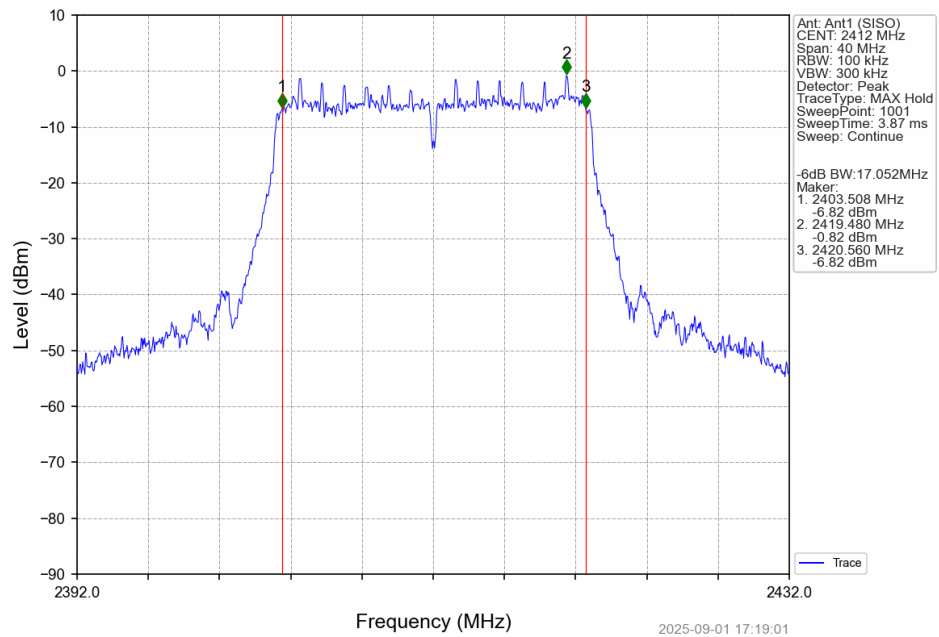
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



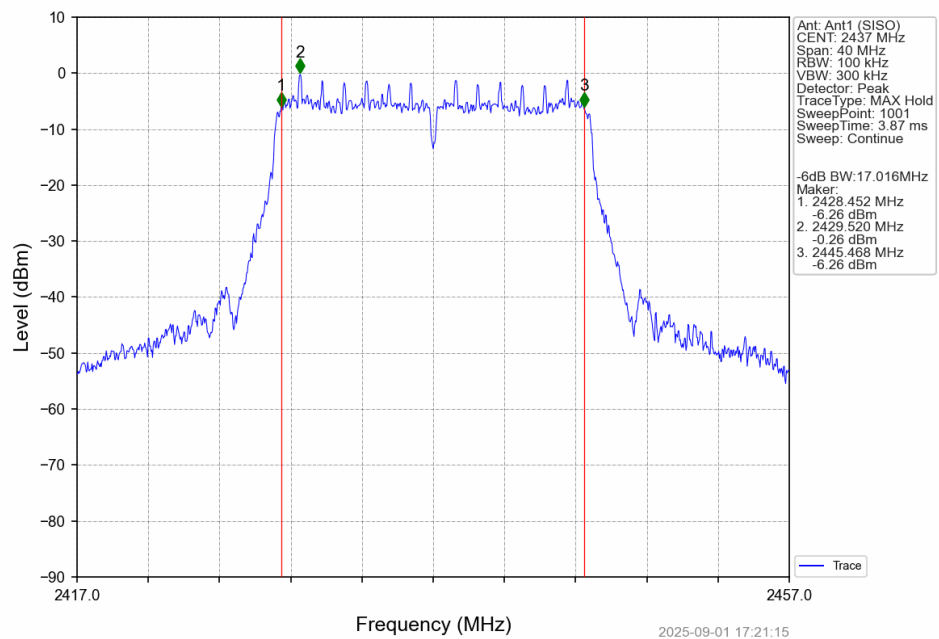
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



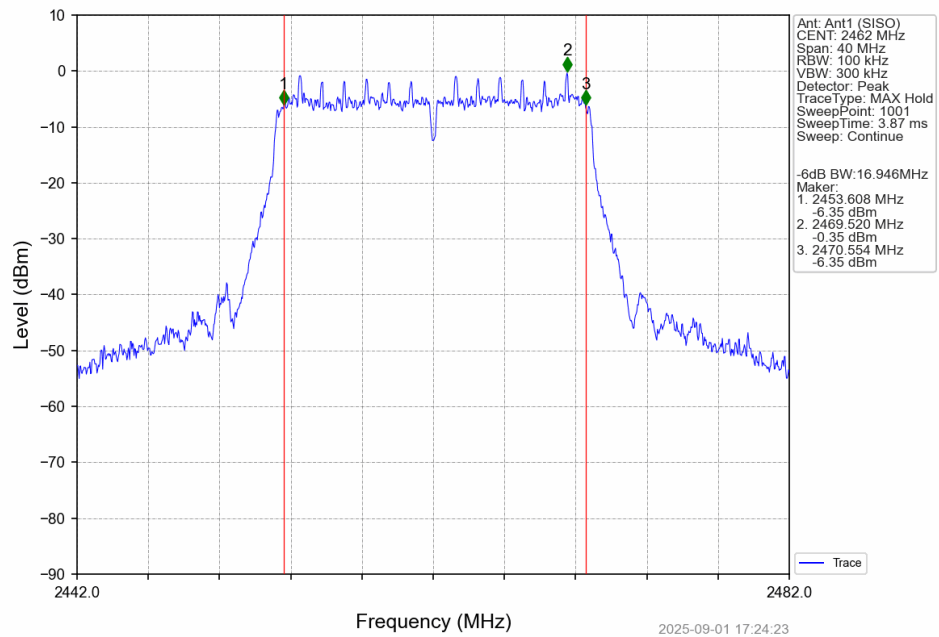
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_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	
802.11b	SISO	2412	14.67	<=30	Pass
		2437	14.79	<=30	Pass
		2462	15.11	<=30	Pass
802.11g	SISO	2412	17.27	<=30	Pass
		2437	17.44	<=30	Pass
		2462	17.61	<=30	Pass
802.11n (HT20)	SISO	2412	17.30	<=30	Pass
		2437	17.53	<=30	Pass
		2462	17.80	<=30	Pass

4. Maximum Power Spectral Density

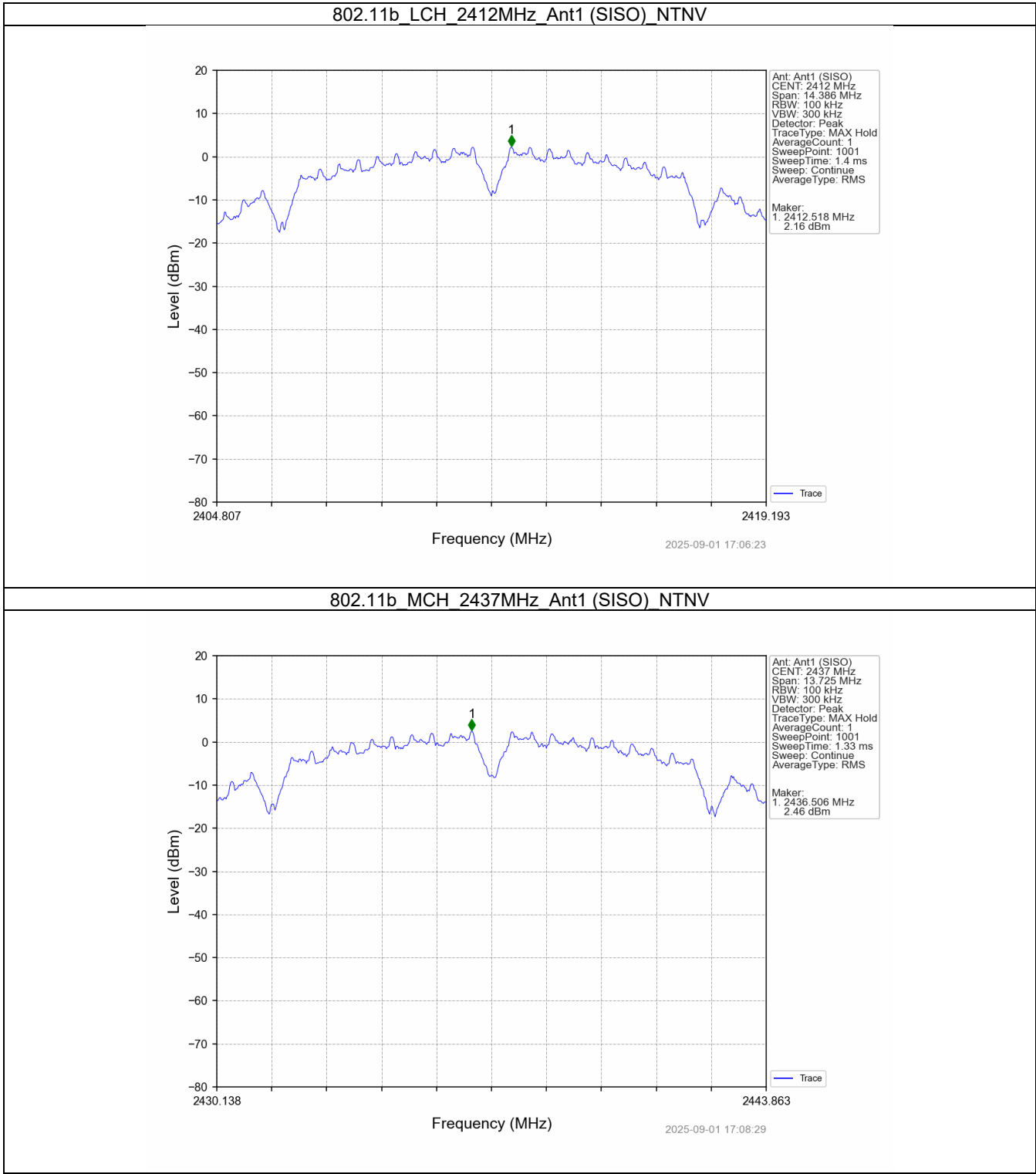
4.1 Test Result

4.1.1 PSD

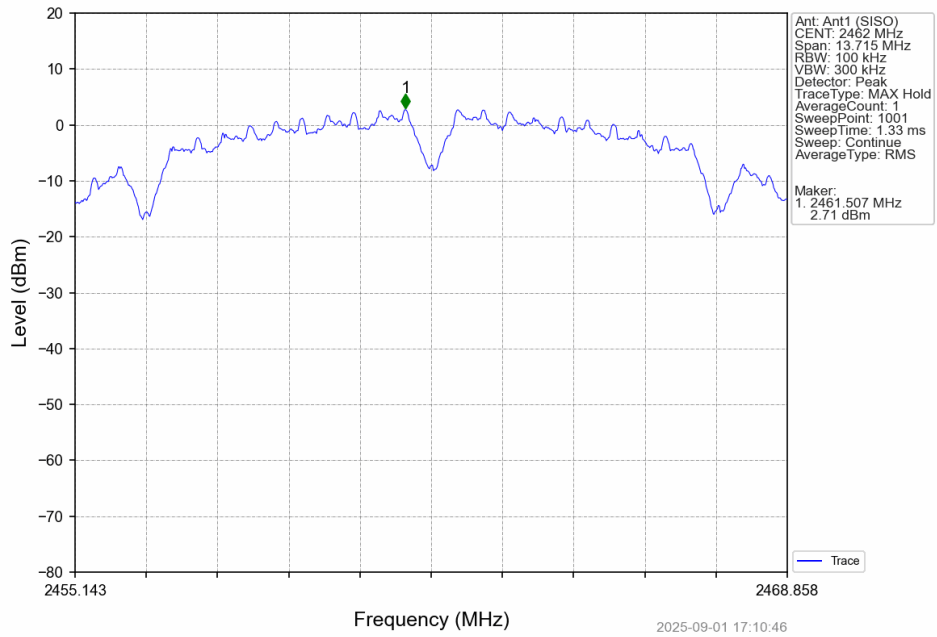
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	2.16	<=8	Pass
		2437	2.46	<=8	Pass
		2462	2.71	<=8	Pass
802.11g	SISO	2412	-0.54	<=8	Pass
		2437	-0.44	<=8	Pass
		2462	-0.40	<=8	Pass
802.11n (HT20)	SISO	2412	-0.51	<=8	Pass
		2437	-0.27	<=8	Pass
		2462	-0.27	<=8	Pass

4.2 Test Graph

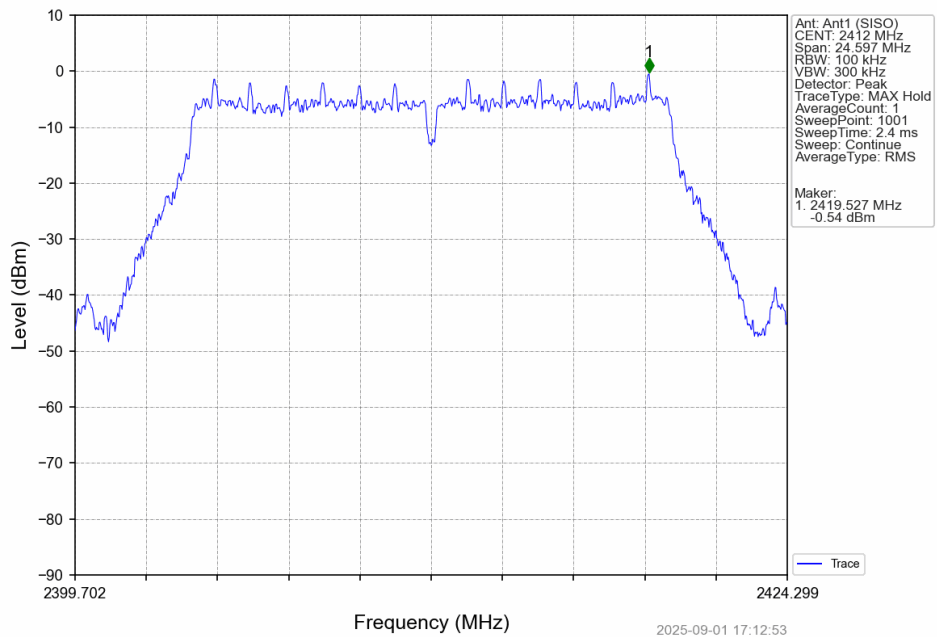
4.2.1 PSD



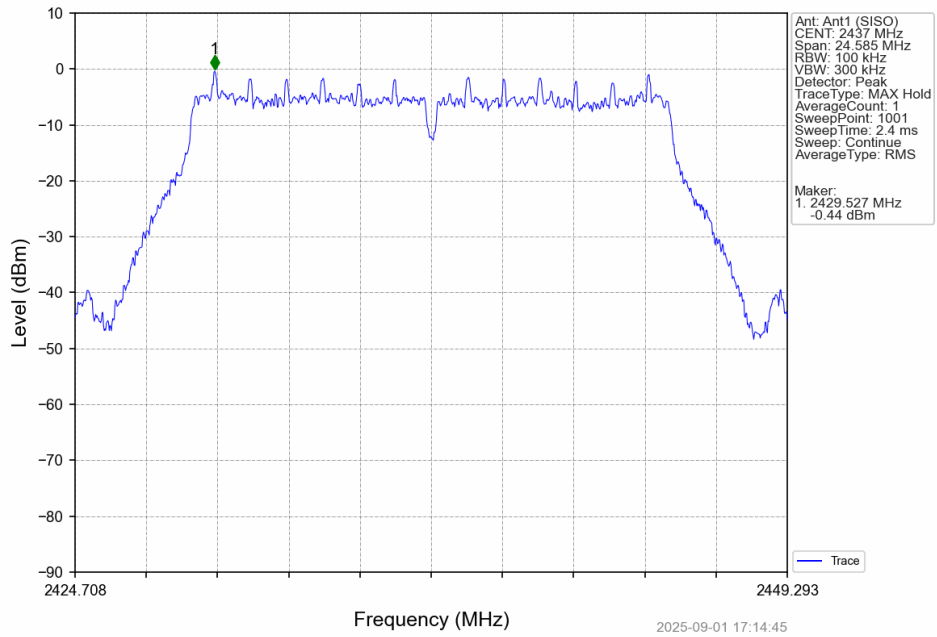
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



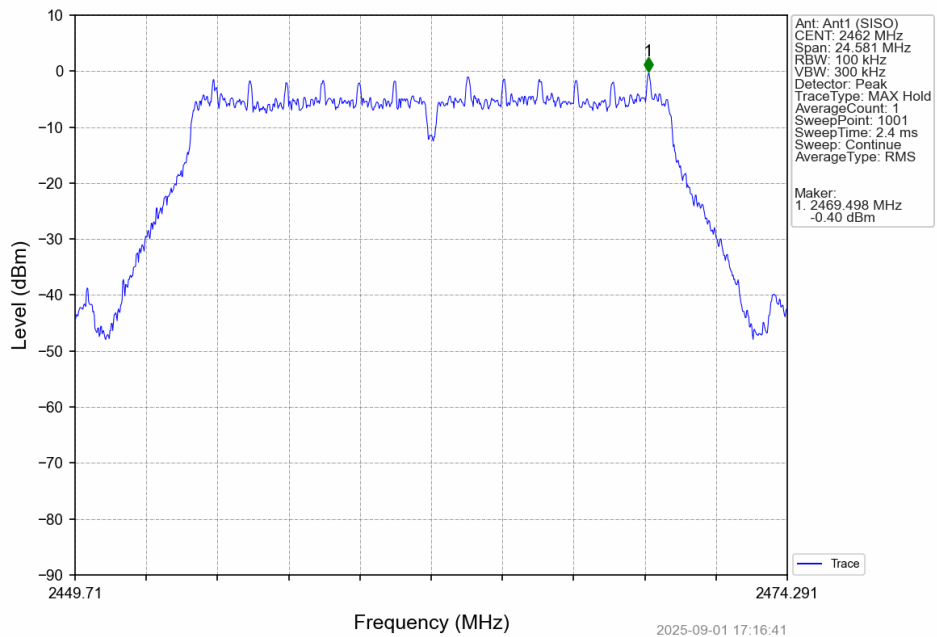
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



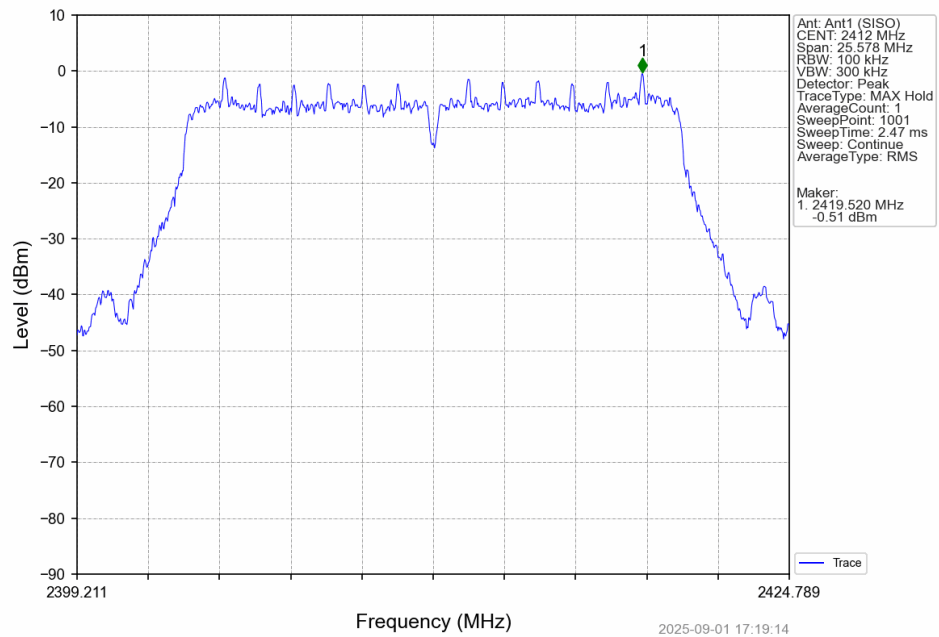
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



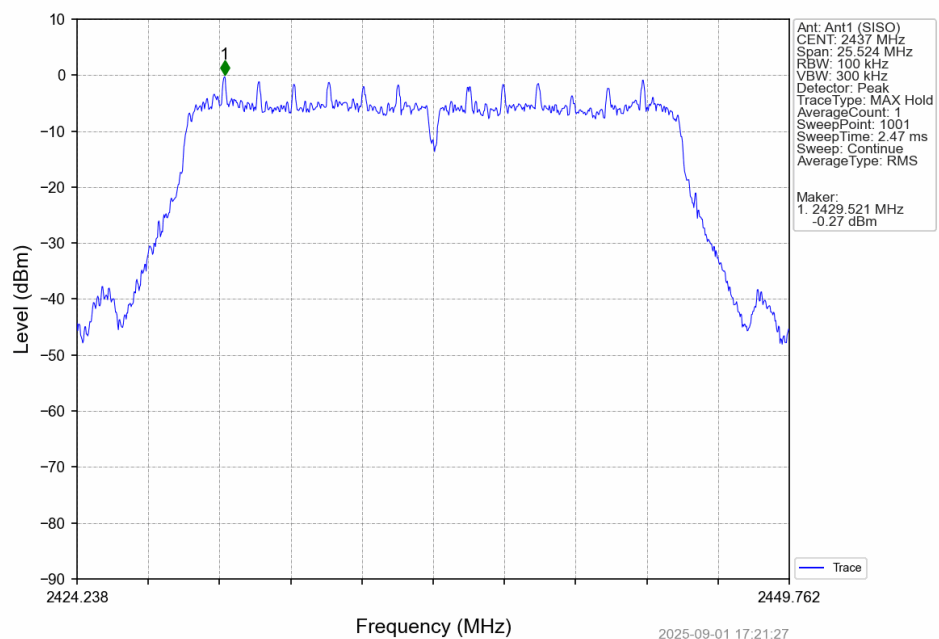
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



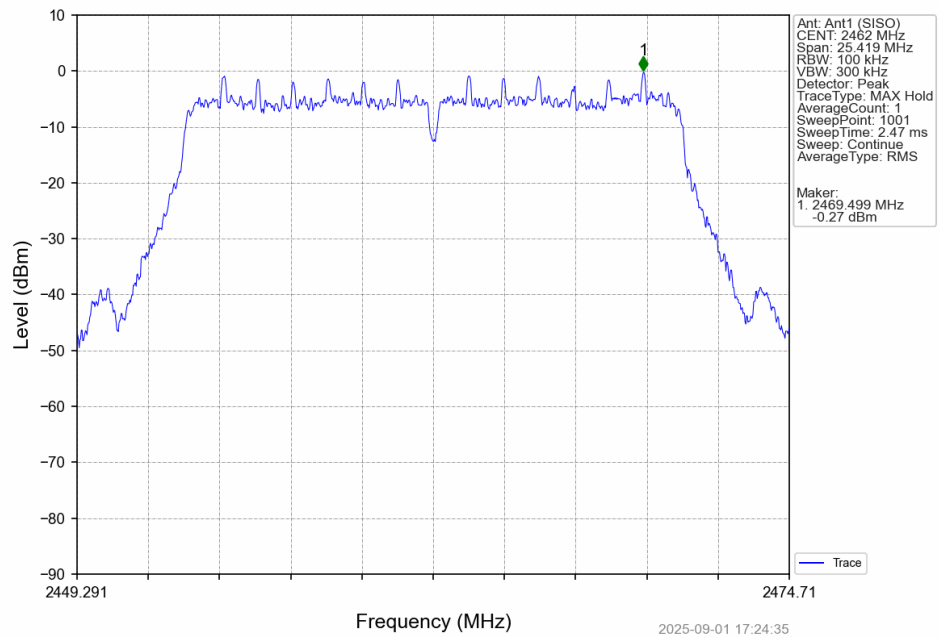
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_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)
802.11b	SISO	2412	1	2.16
		2437	1	2.43
		2462	1	2.72
802.11g	SISO	2412	1	-0.58
		2437	1	-0.49
		2462	1	-0.40
802.11n (HT20)	SISO	2412	1	-1.39
		2437	1	-0.60
		2462	1	-0.24

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

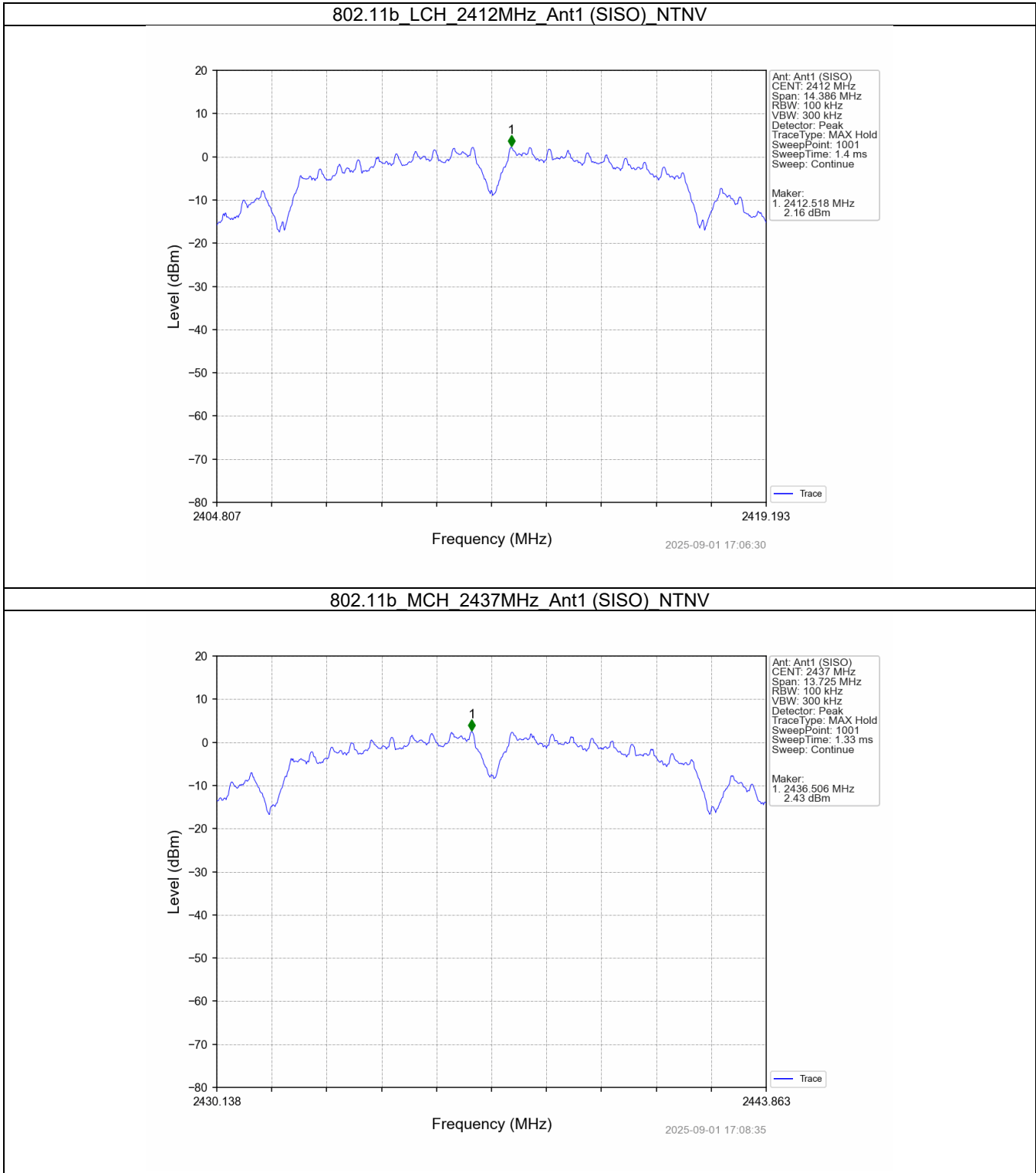
5.1.2 CSE

Mode	Tx Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	2.72	-17.28	Pass
		2437	1	2.72	-17.28	Pass
		2462	1	2.72	-17.28	Pass
802.11g	SISO	2412	1	-0.40	-20.40	Pass
		2437	1	-0.40	-20.40	Pass
		2462	1	-0.40	-20.40	Pass
802.11n (HT20)	SISO	2412	1	-0.24	-20.24	Pass
		2437	1	-0.24	-20.24	Pass
		2462	1	-0.24	-20.24	Pass

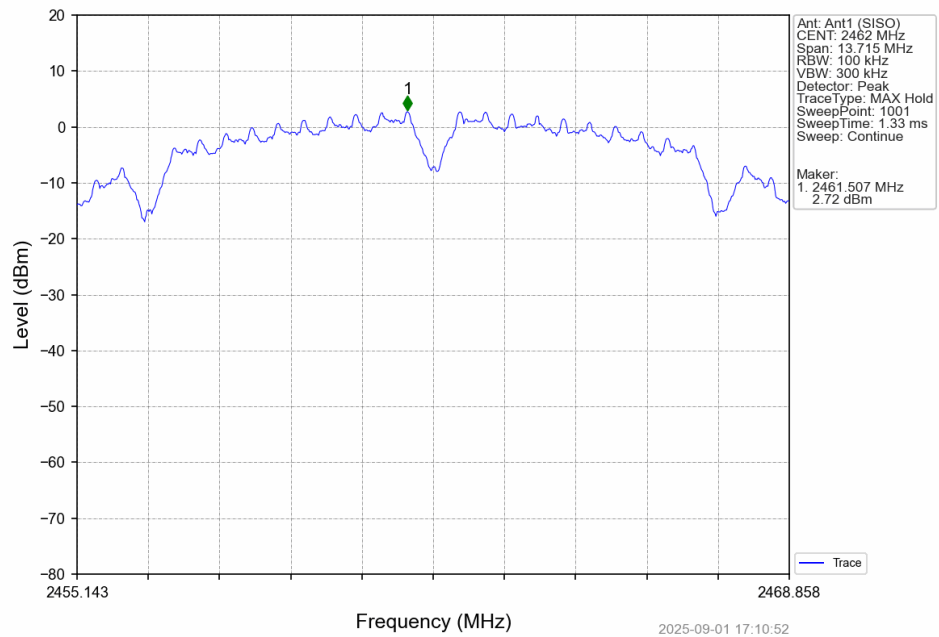
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

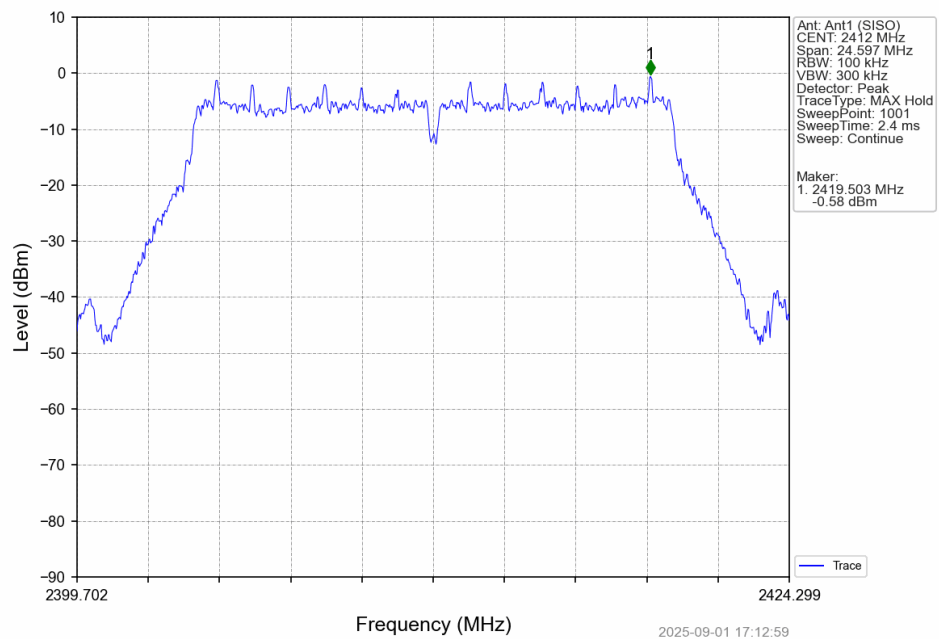
5.2.1 Ref



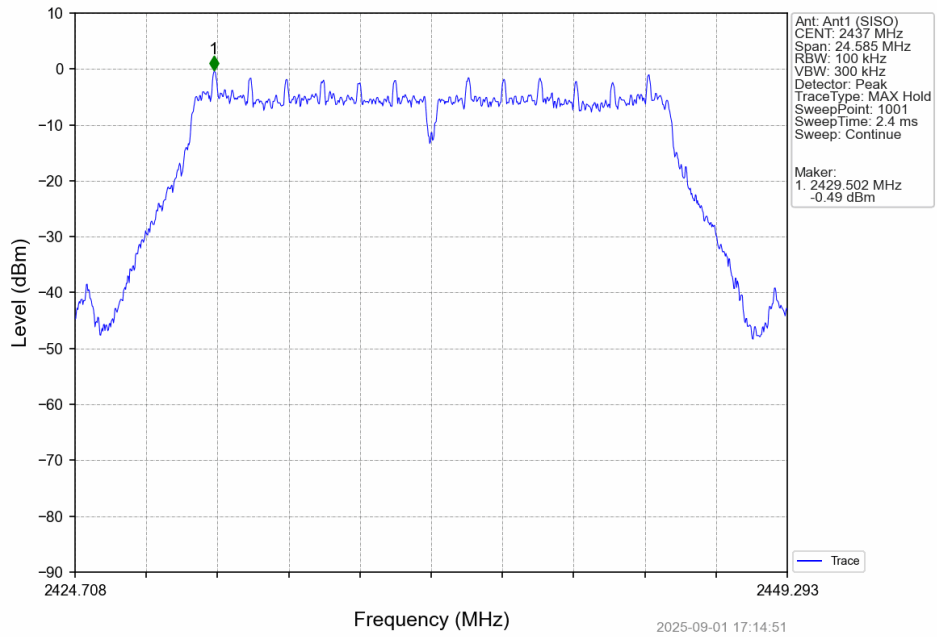
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



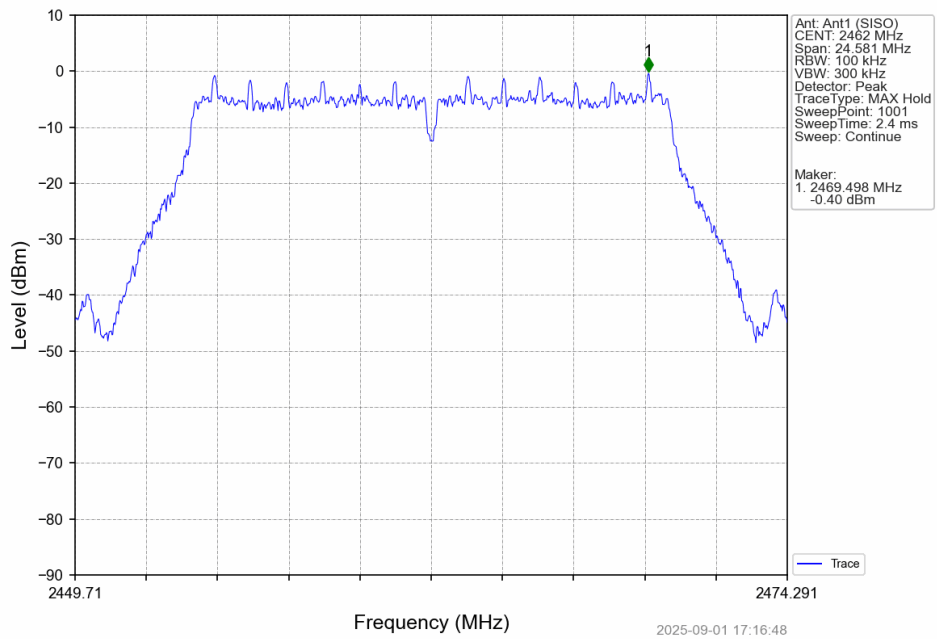
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



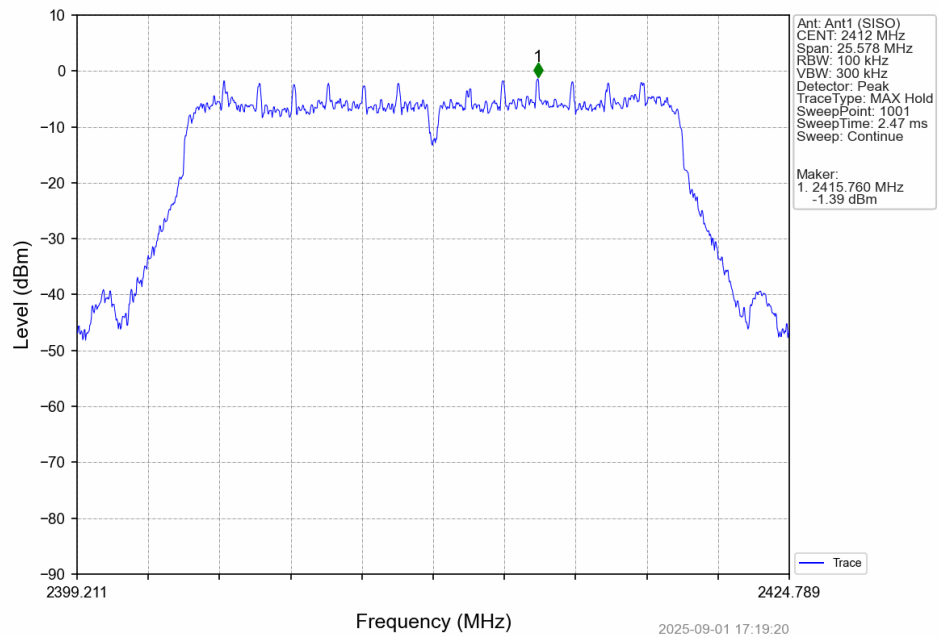
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



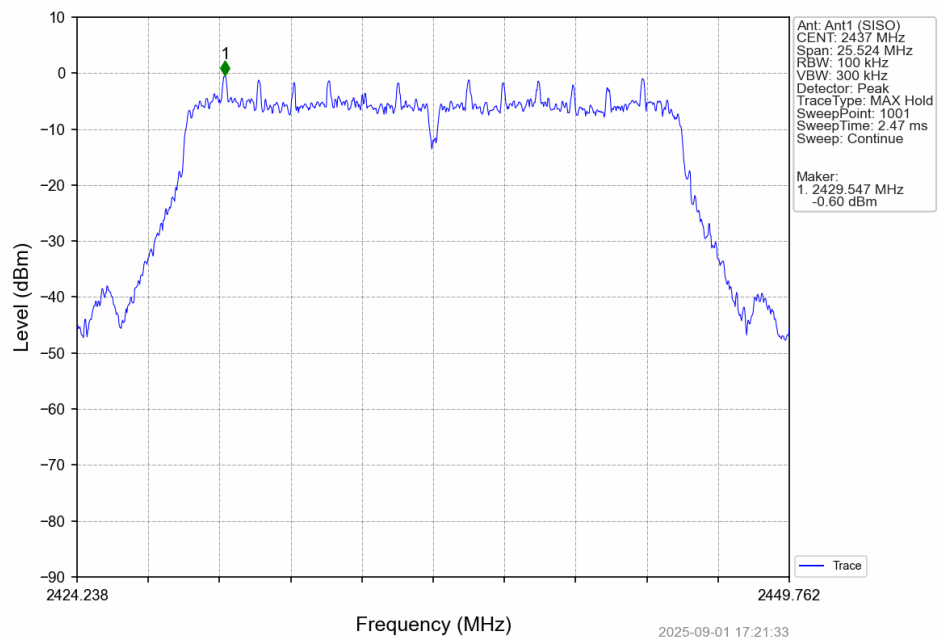
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



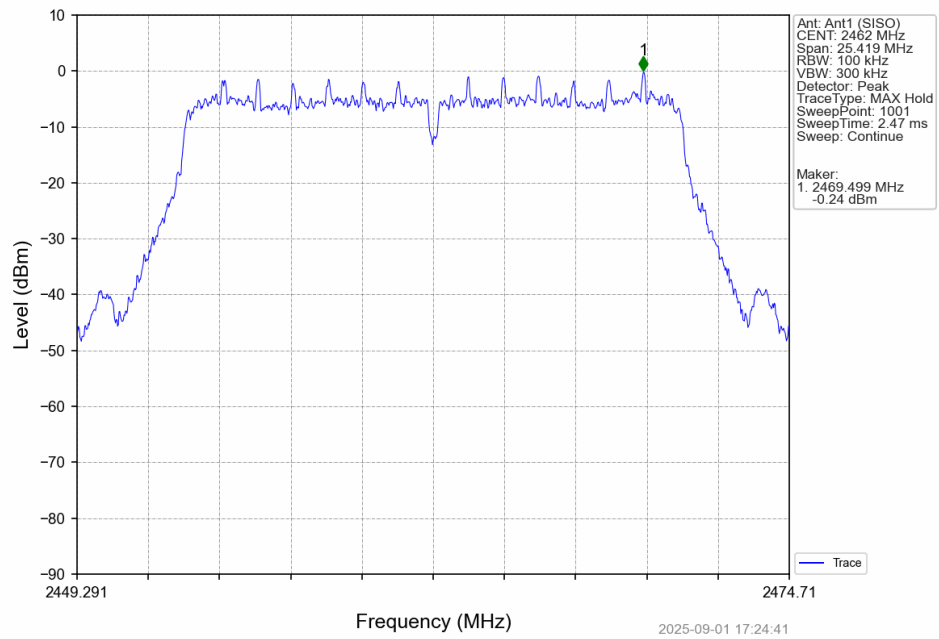
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



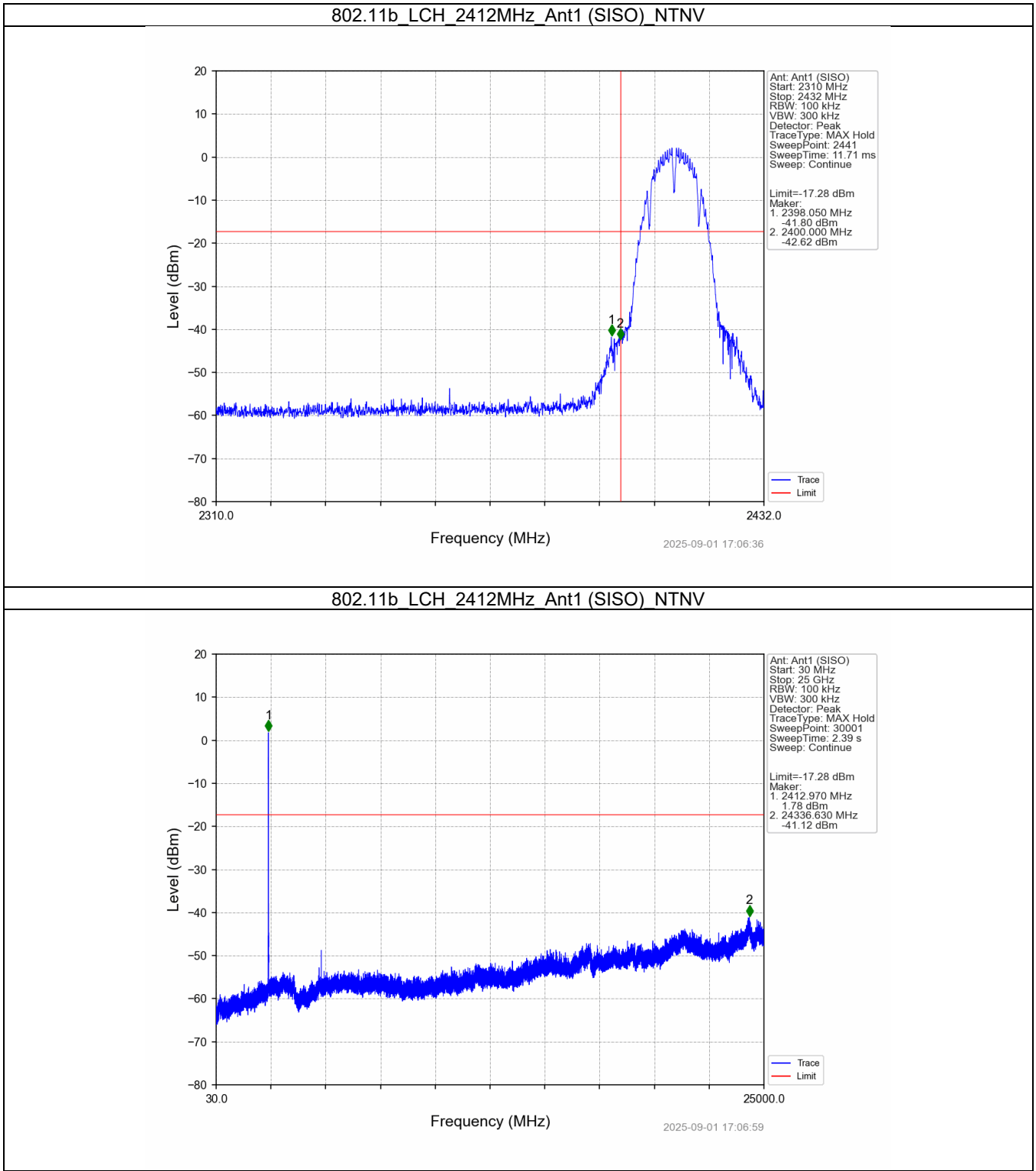
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



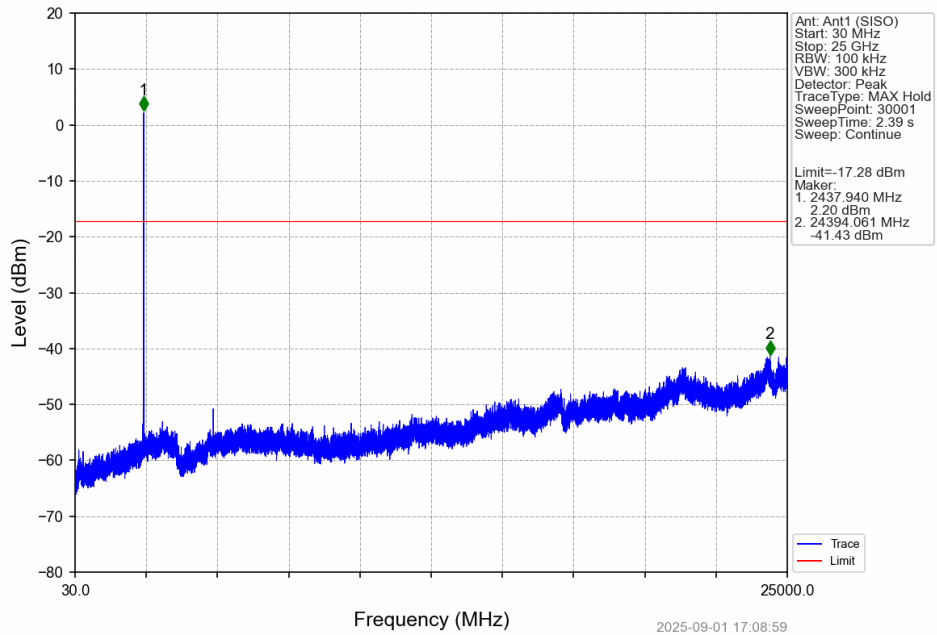
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



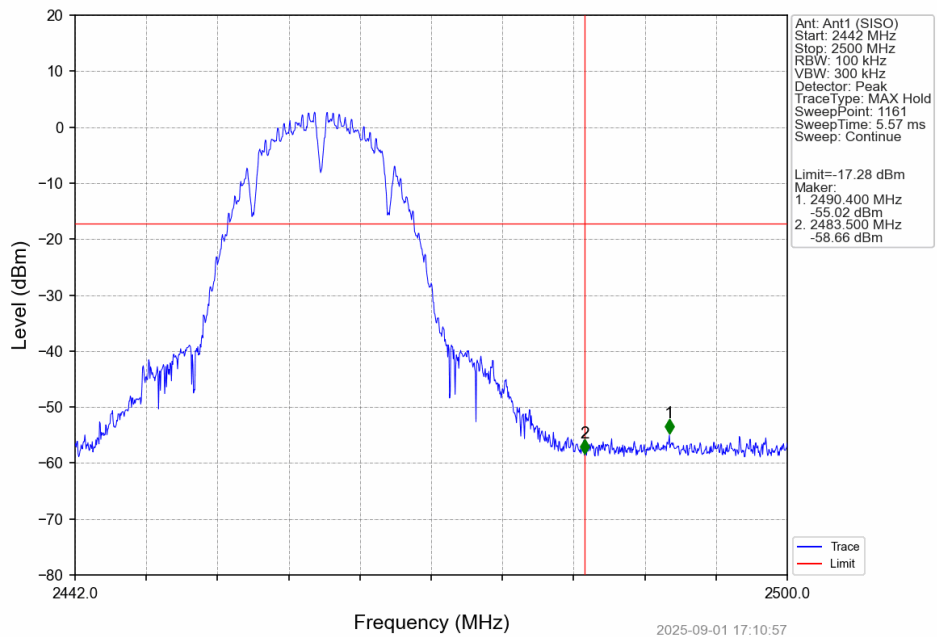
5.2.2 CSE



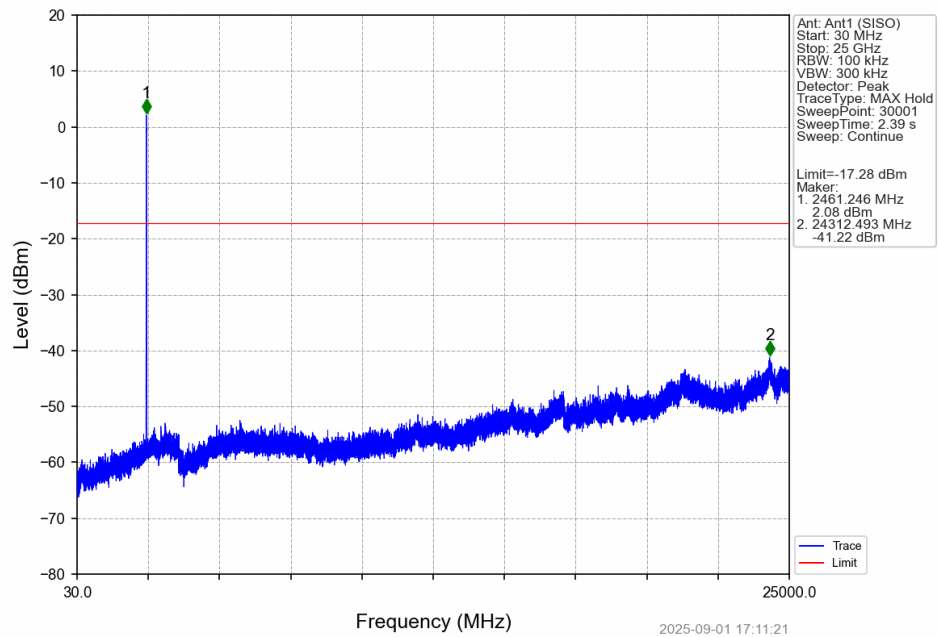
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



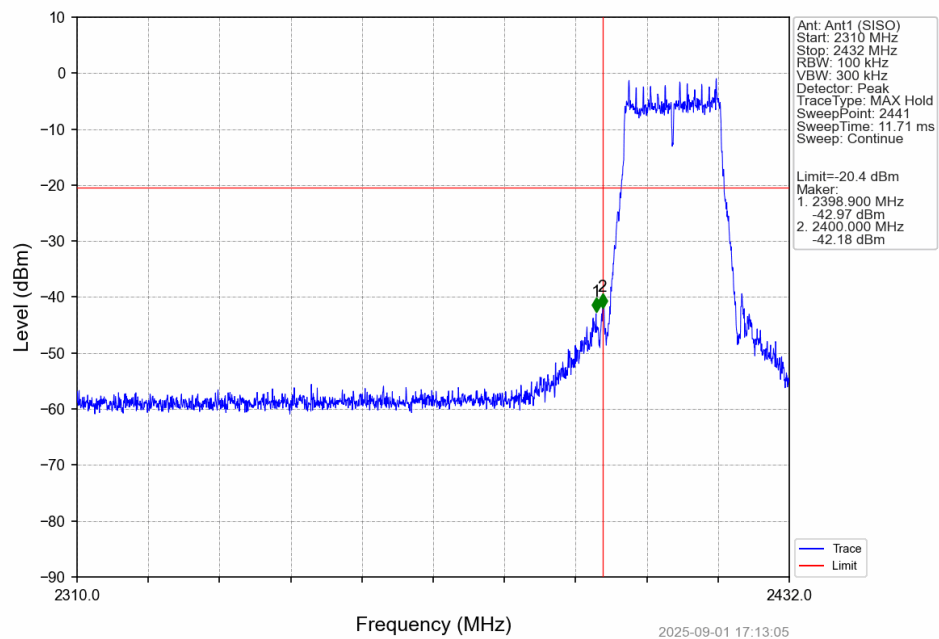
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



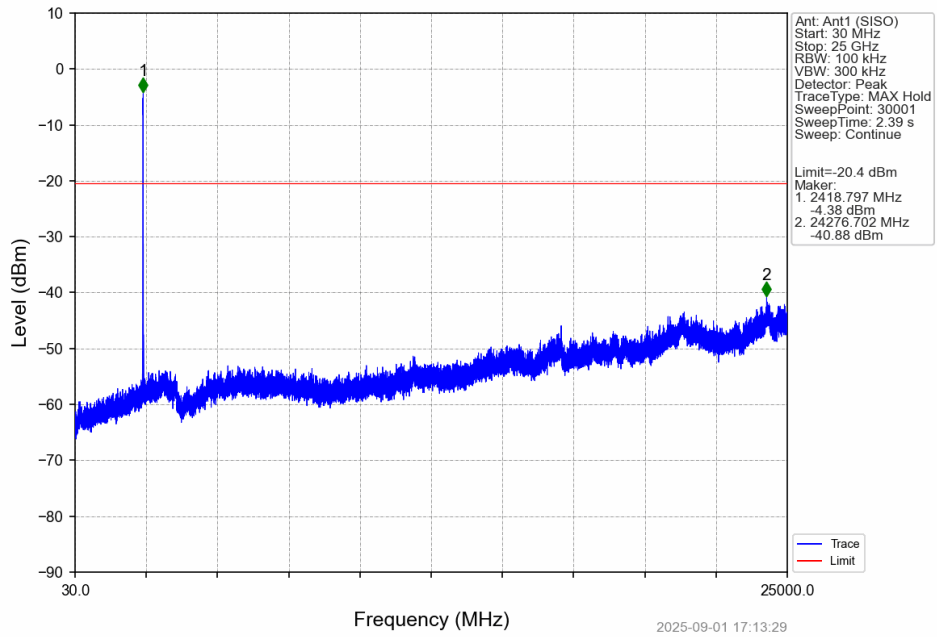
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



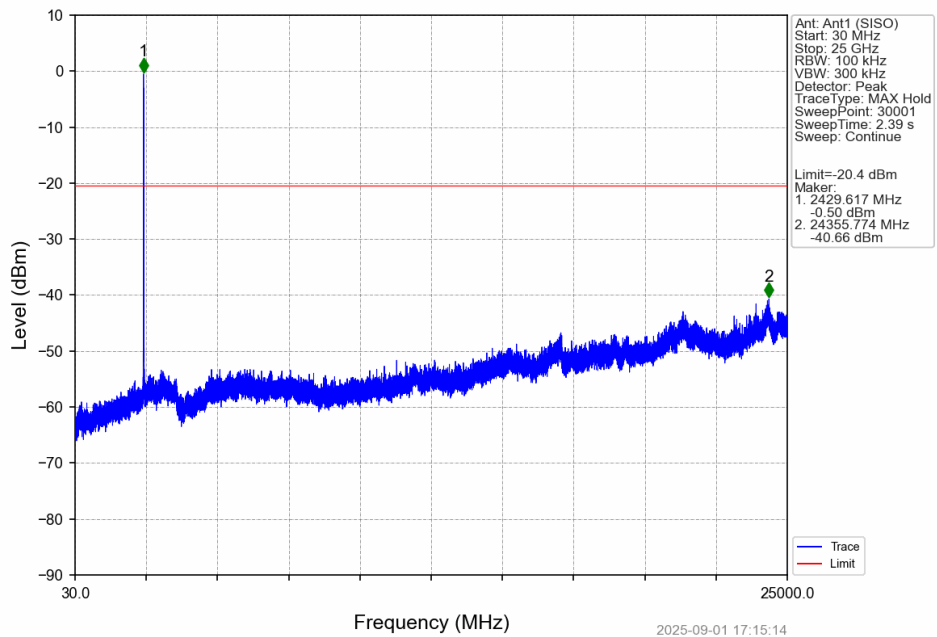
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



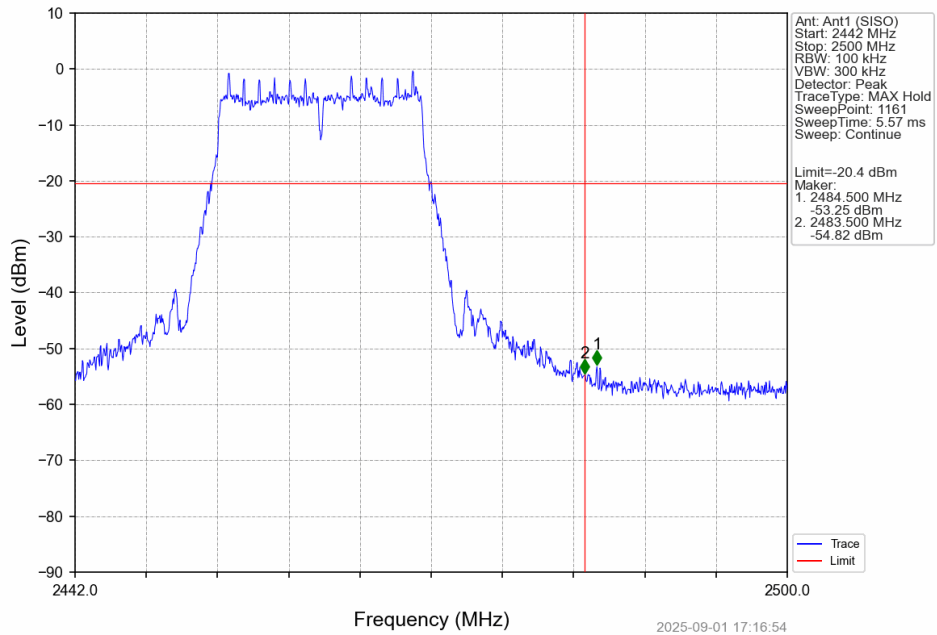
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



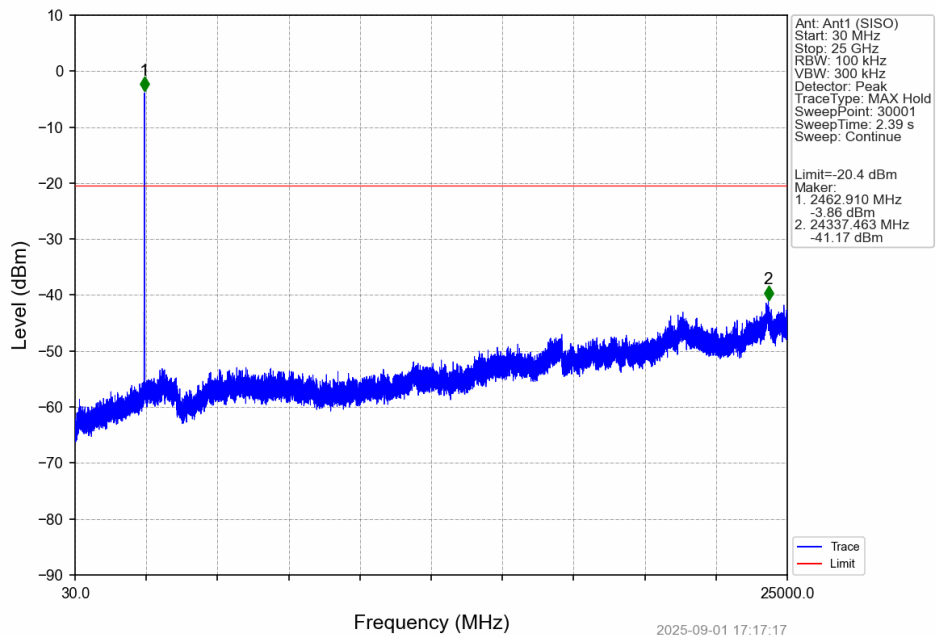
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



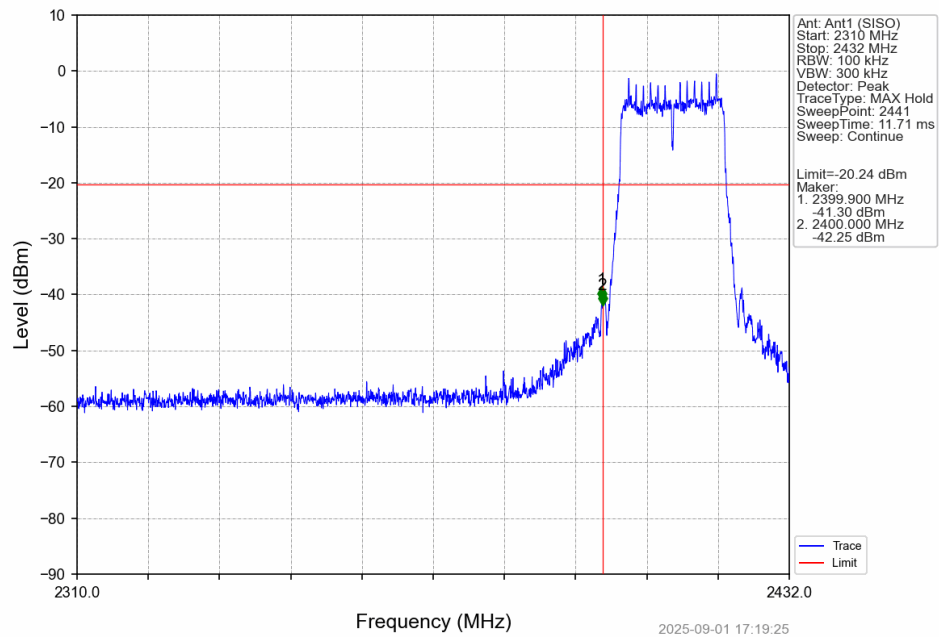
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



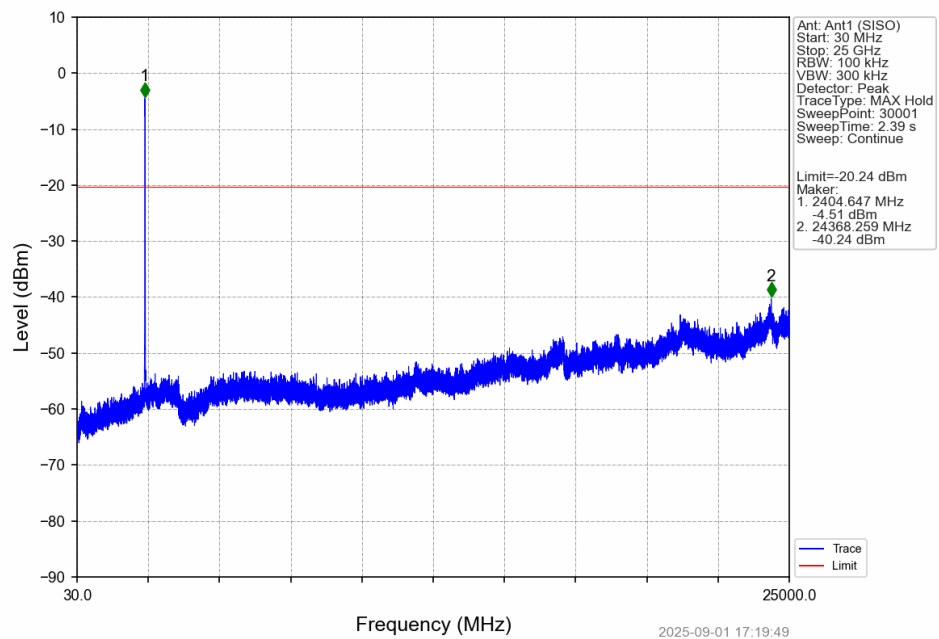
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



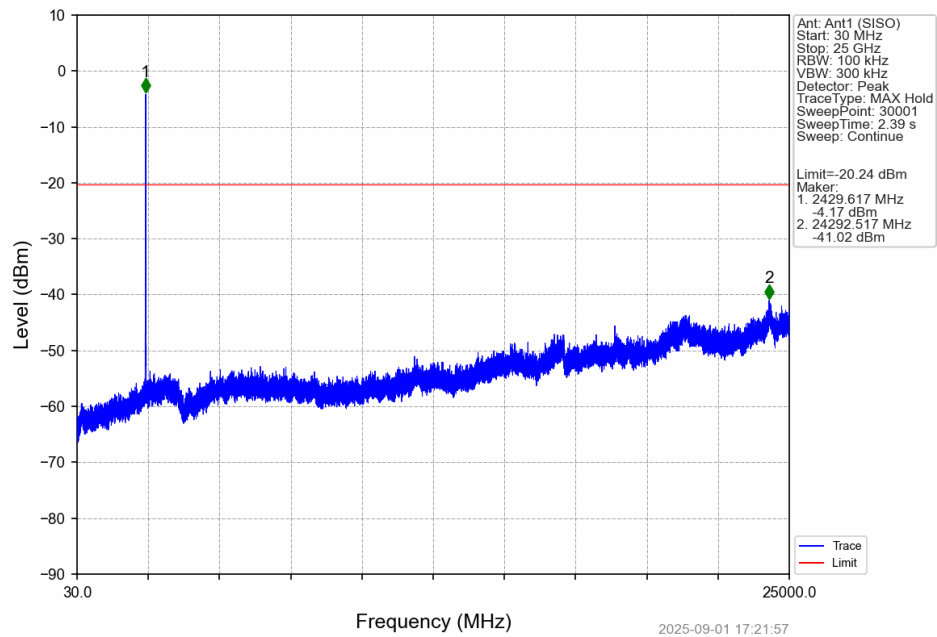
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



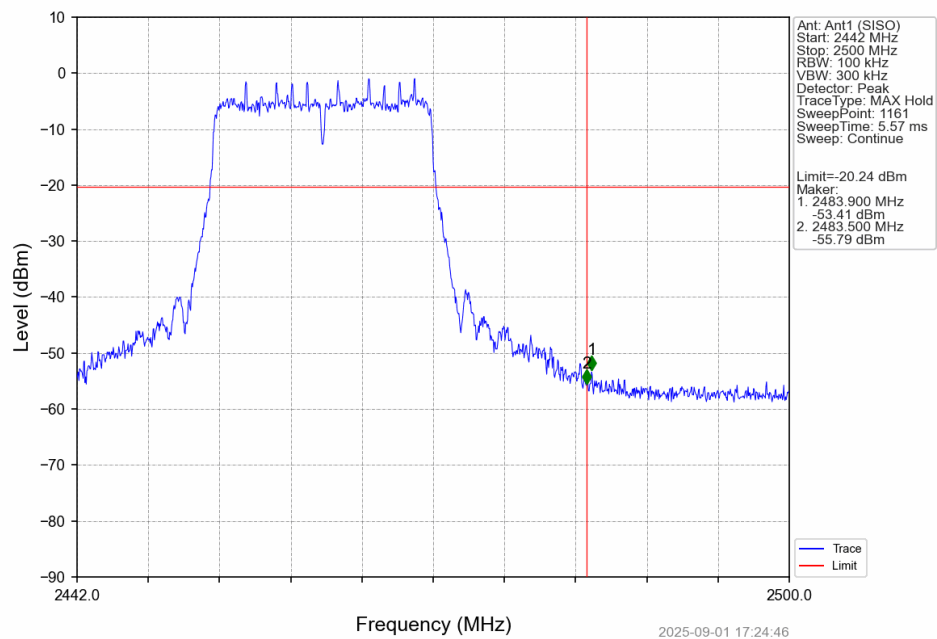
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

