

Appendix RF Test Data for 2.4G WIFI

Company: : GREEN HYDRO ENVIRONMENTAL TECHNOLOGY(NINGBO) CO.,LTD

EUT : CONTROLLER

FCC ID: : 2BX5B-GBAPDA01

Model Number : GB-APD-A01

Report No. : HTT202608965F01

Reviewed By : Heber He

1. Duty Cycle

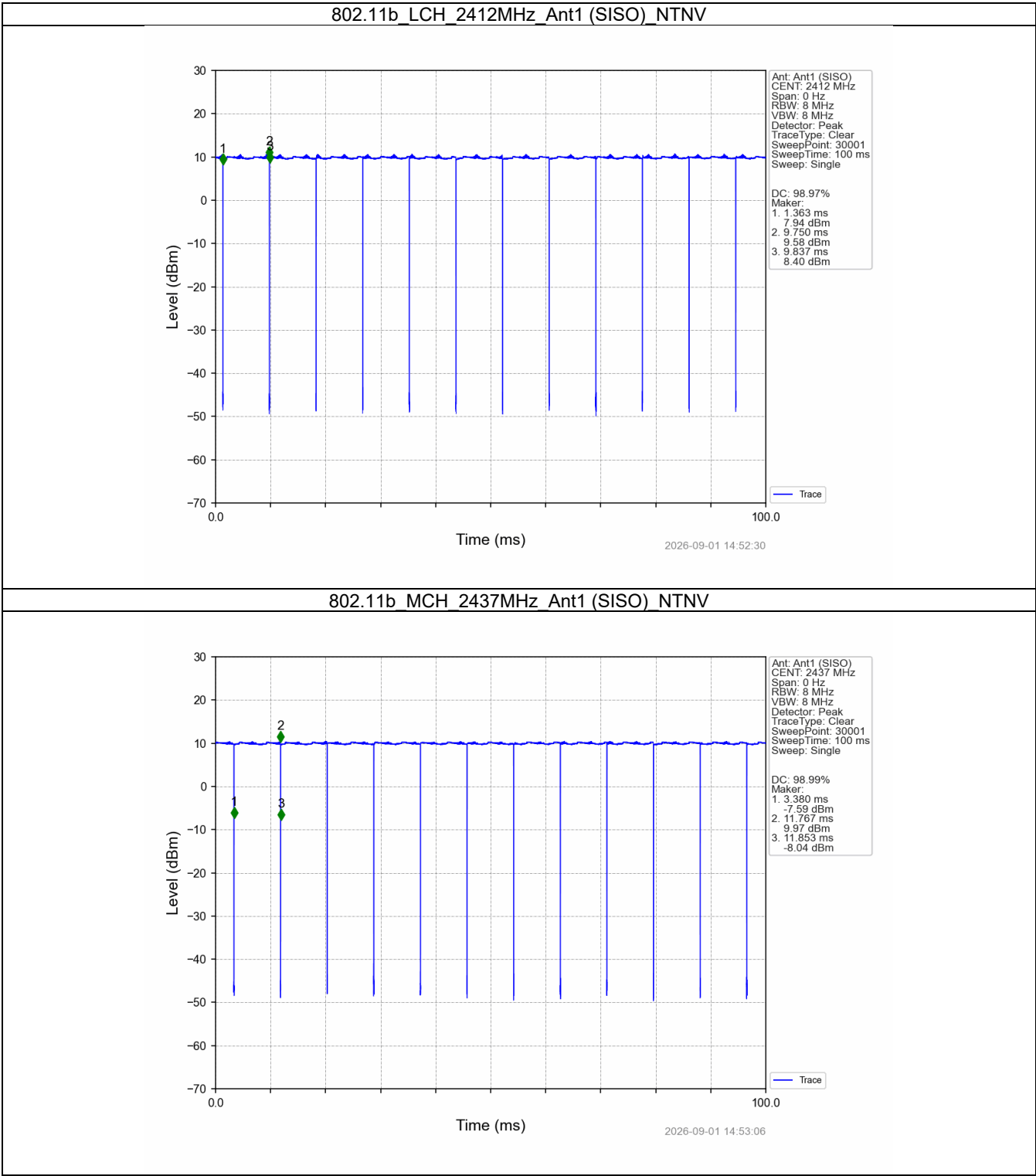
1.1 Test Result

1.1.1 Ant1

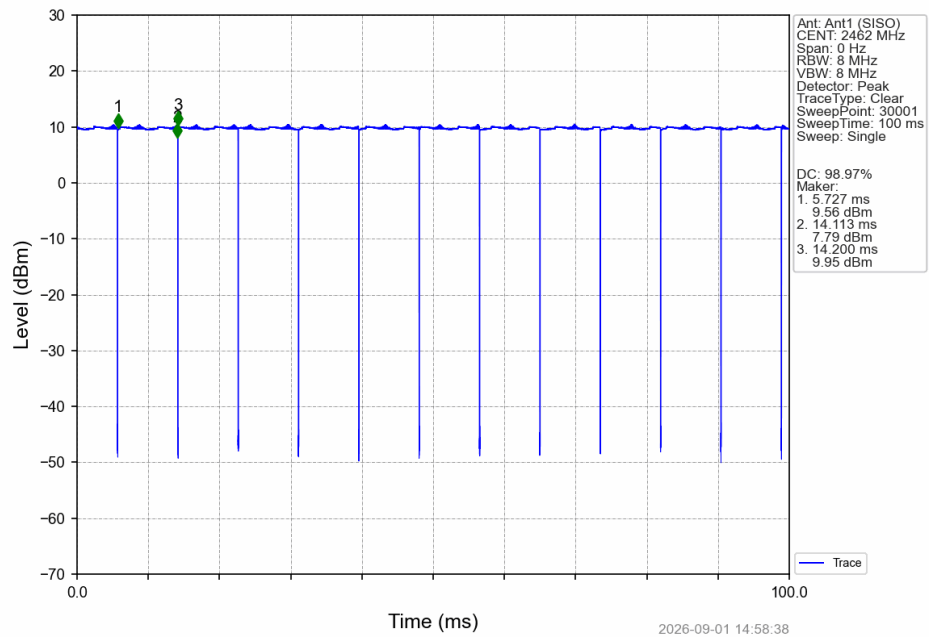
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	8.387	8.474	98.97	0.04	0.04
		2437	8.387	8.473	98.99	0.04	0.00
		2462	8.386	8.473	98.97	0.04	0.04
802.11g	SISO	2412	5.486	5.544	98.95	0.05	0.04
		2437	5.486	5.544	98.95	0.05	0.04
		2462	5.486	5.544	98.95	0.05	0.03
802.11n (HT20)	SISO	2412	0.166	0.169	98.22	0.08	0.04
		2437	0.166	0.169	98.22	0.08	0.04
		2462	0.167	0.170	98.24	0.08	0.08

1.2 Test Graph

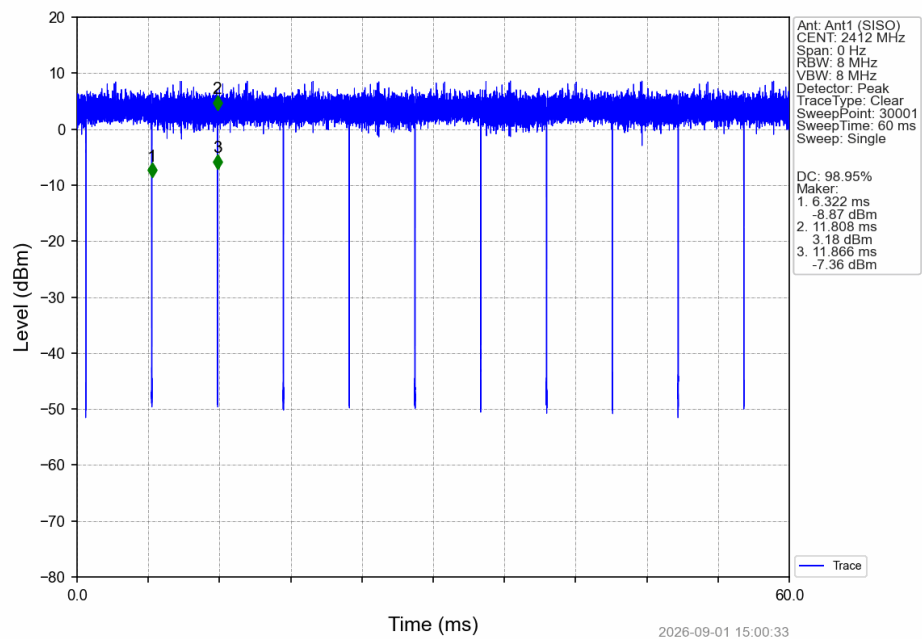
1.2.1 Ant1



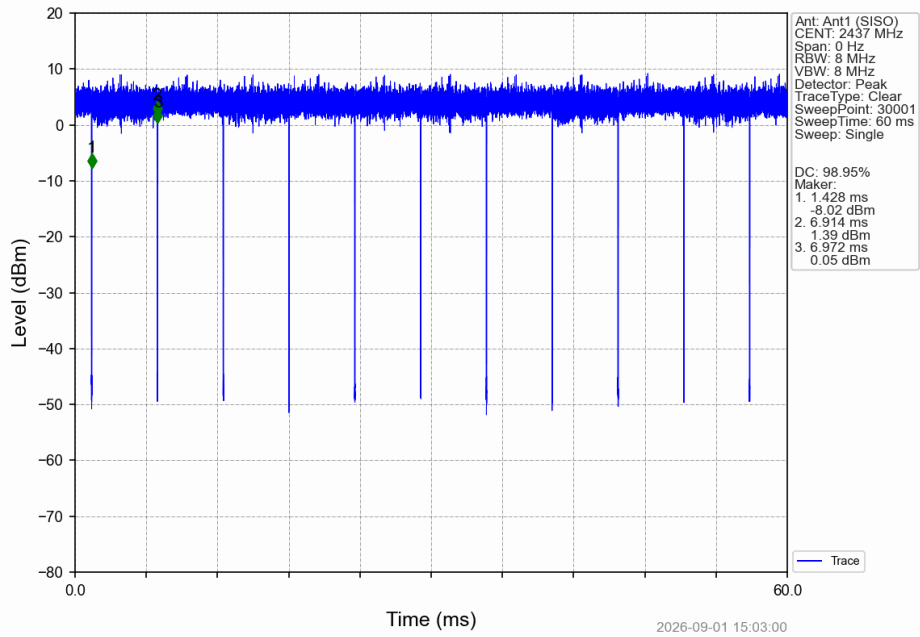
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



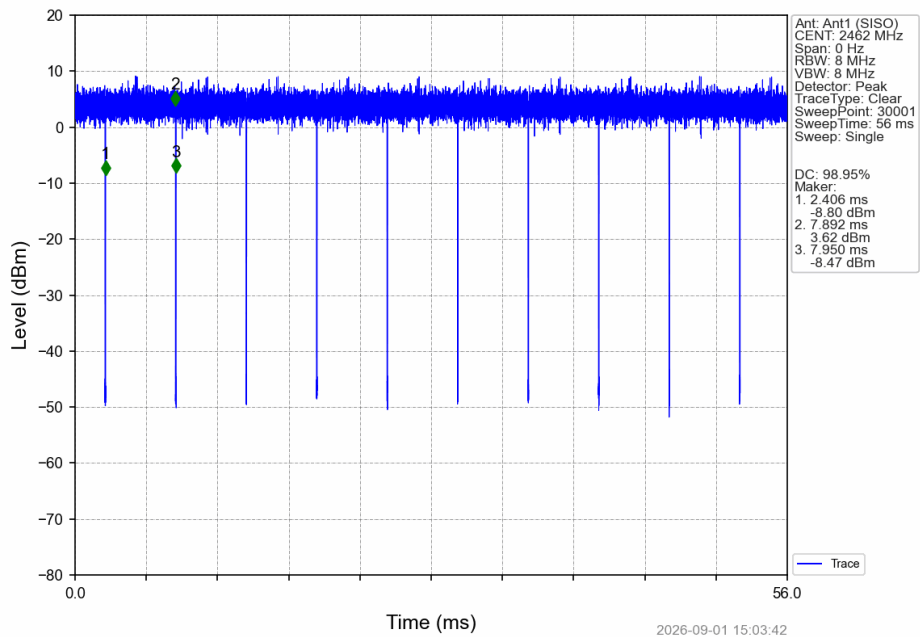
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



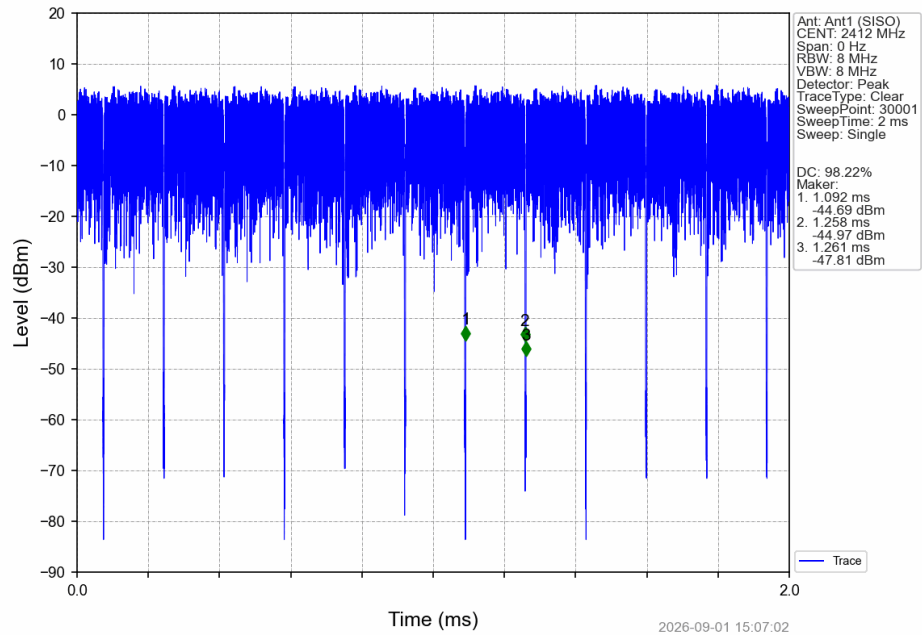
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



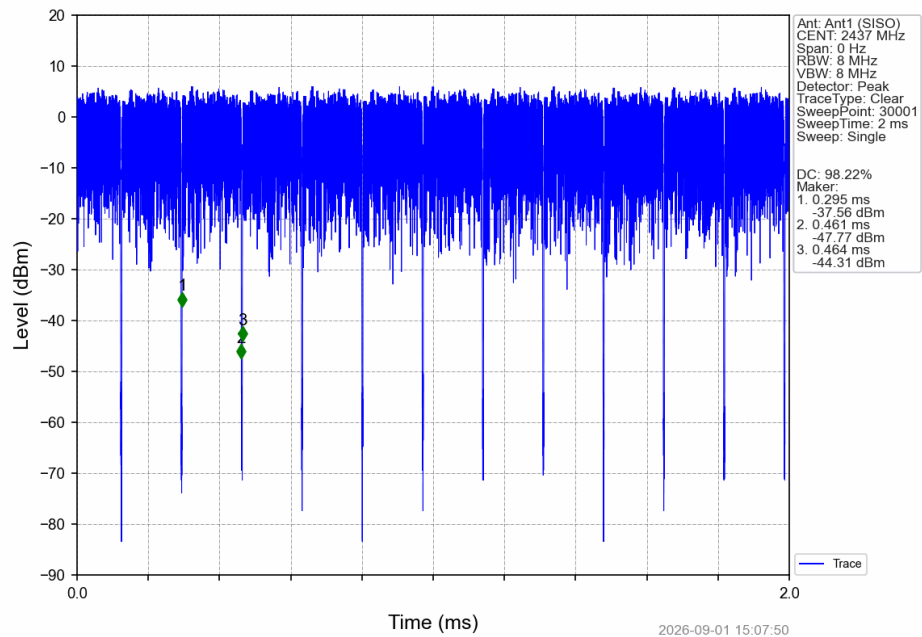
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



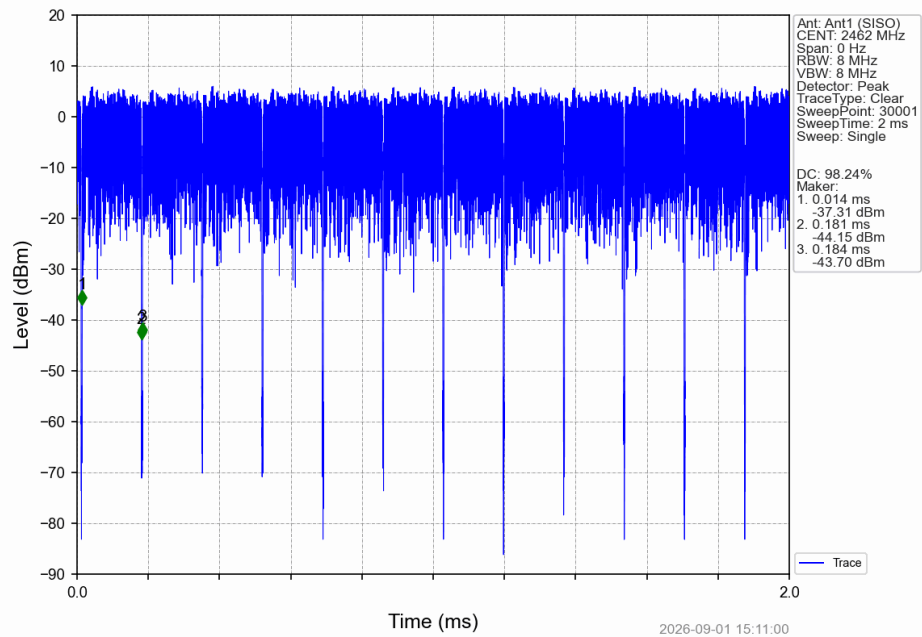
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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

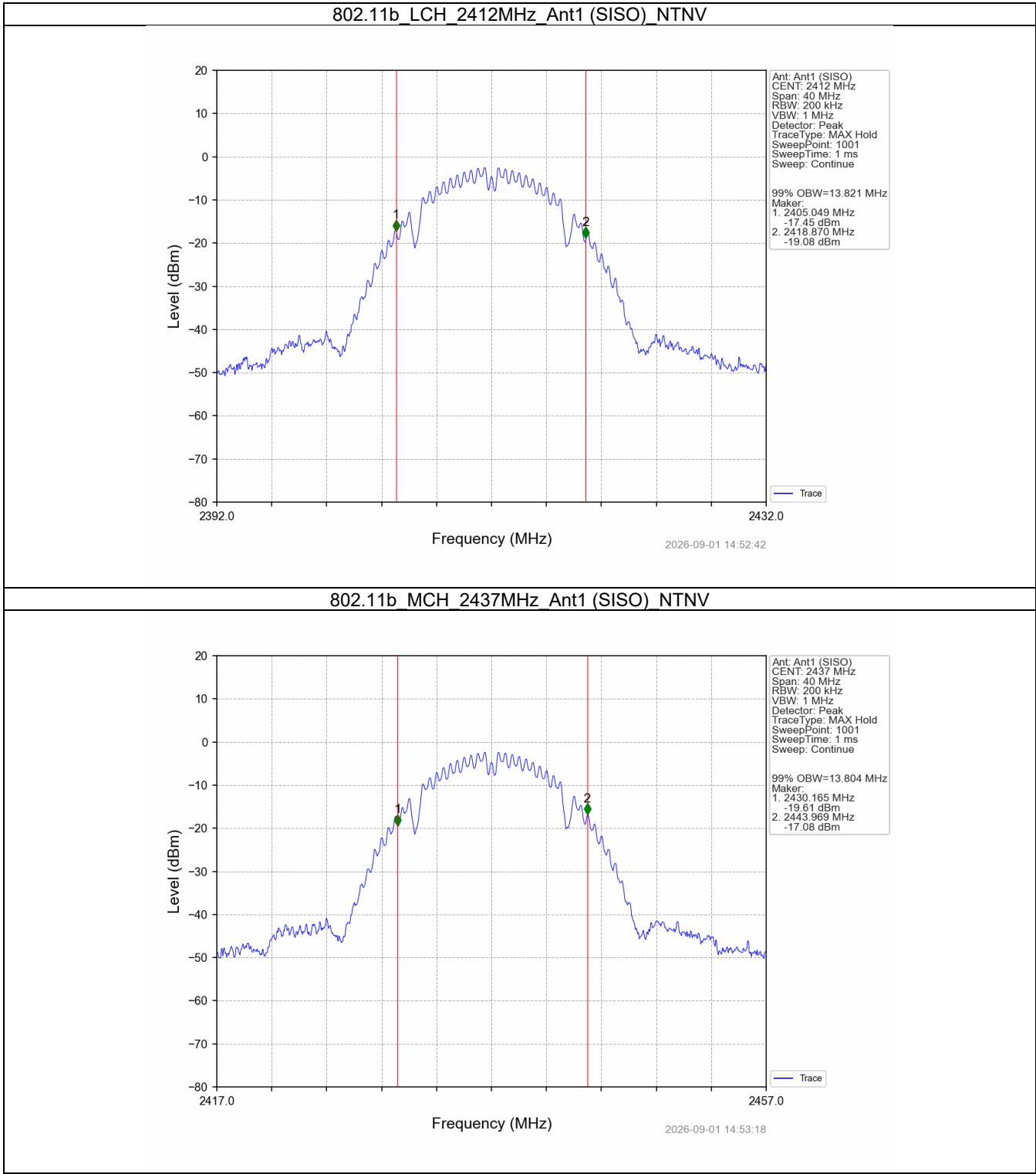
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	13.821	/	Pass
		2437	1	13.804	/	Pass
		2462	1	13.895	/	Pass
802.11g	SISO	2412	1	17.464	/	Pass
		2437	1	17.401	/	Pass
		2462	1	17.315	/	Pass
802.11n (HT20)	SISO	2412	1	17.880	/	Pass
		2437	1	17.860	/	Pass
		2462	1	17.905	/	Pass

2.1.2 6dB BW

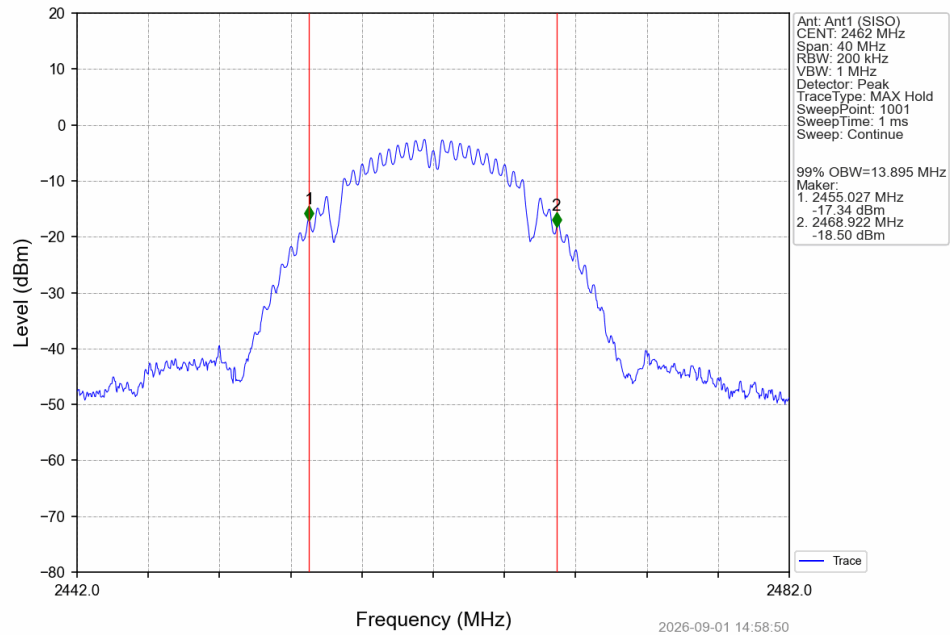
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.109	≥ 0.5	Pass
		2437	1	9.106	≥ 0.5	Pass
		2462	1	9.132	≥ 0.5	Pass
802.11g	SISO	2412	1	9.923	≥ 0.5	Pass
		2437	1	13.307	≥ 0.5	Pass
		2462	1	12.203	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	11.341	≥ 0.5	Pass
		2437	1	10.146	≥ 0.5	Pass
		2462	1	12.570	≥ 0.5	Pass

2.2 Test Graph

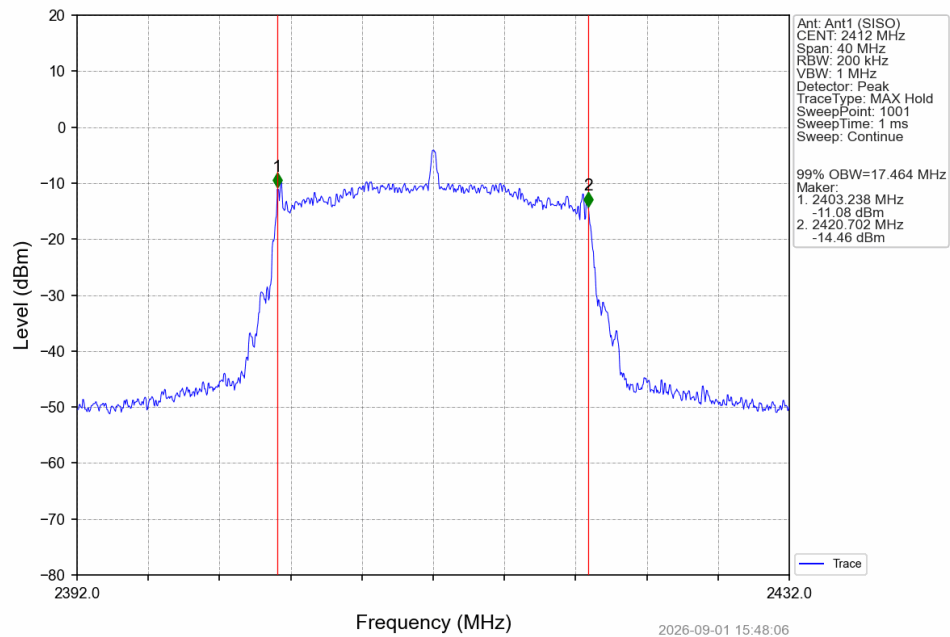
2.2.1 OBW



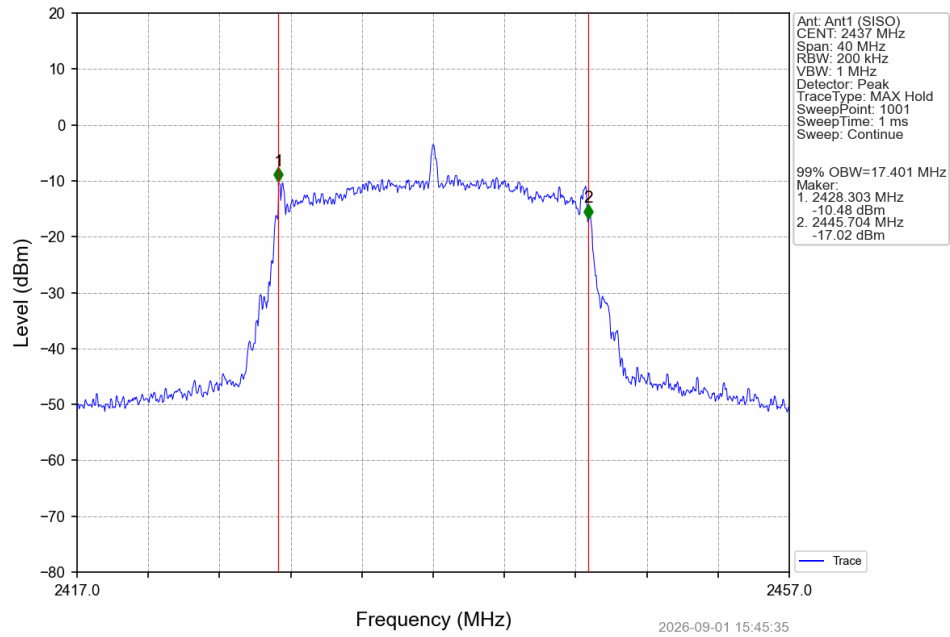
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



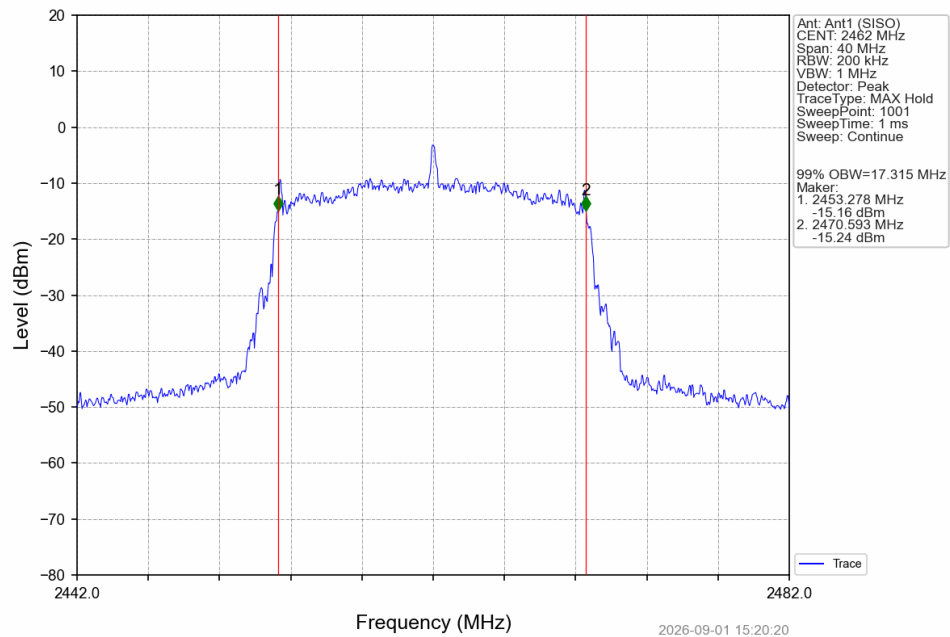
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



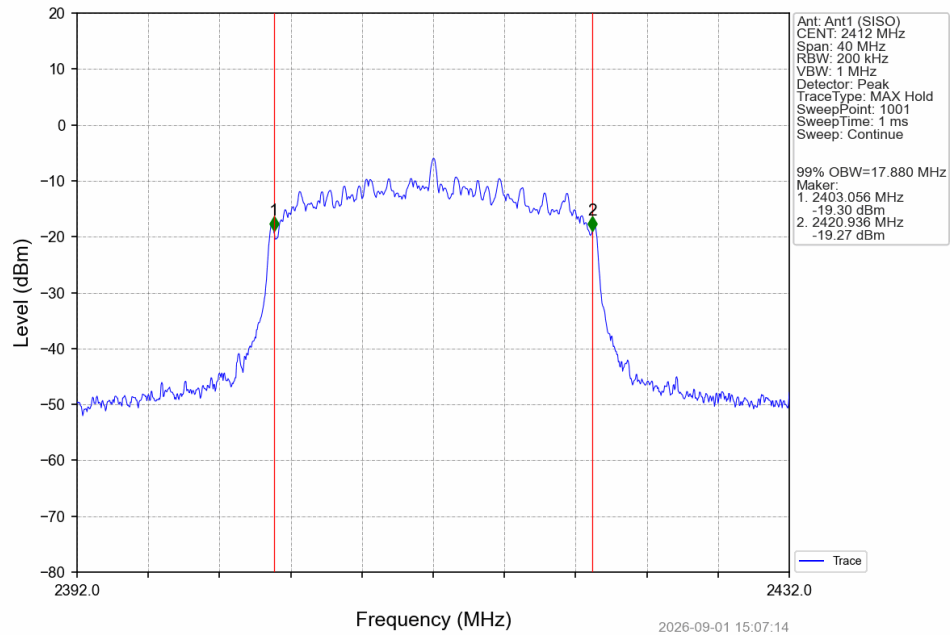
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



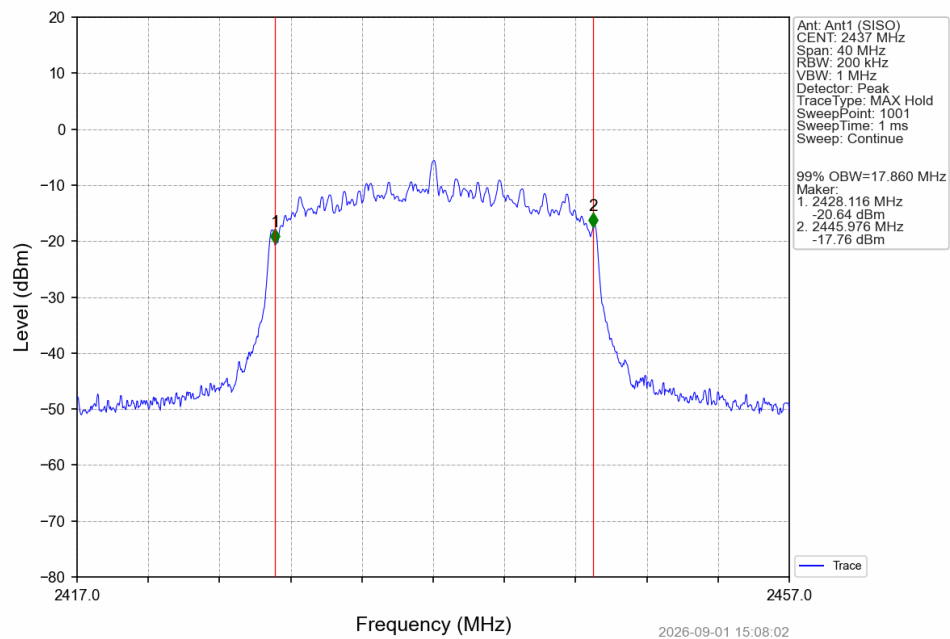
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



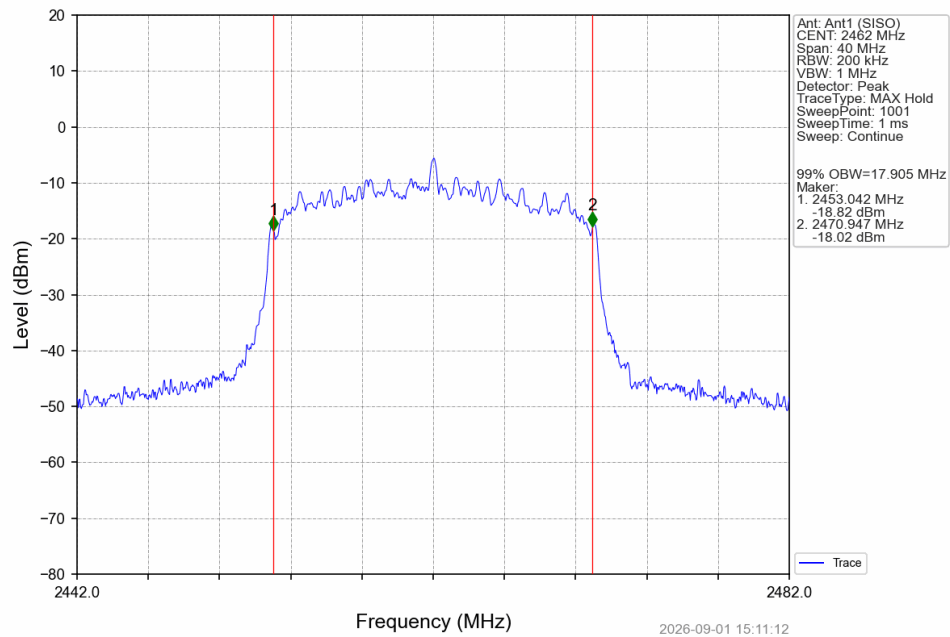
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



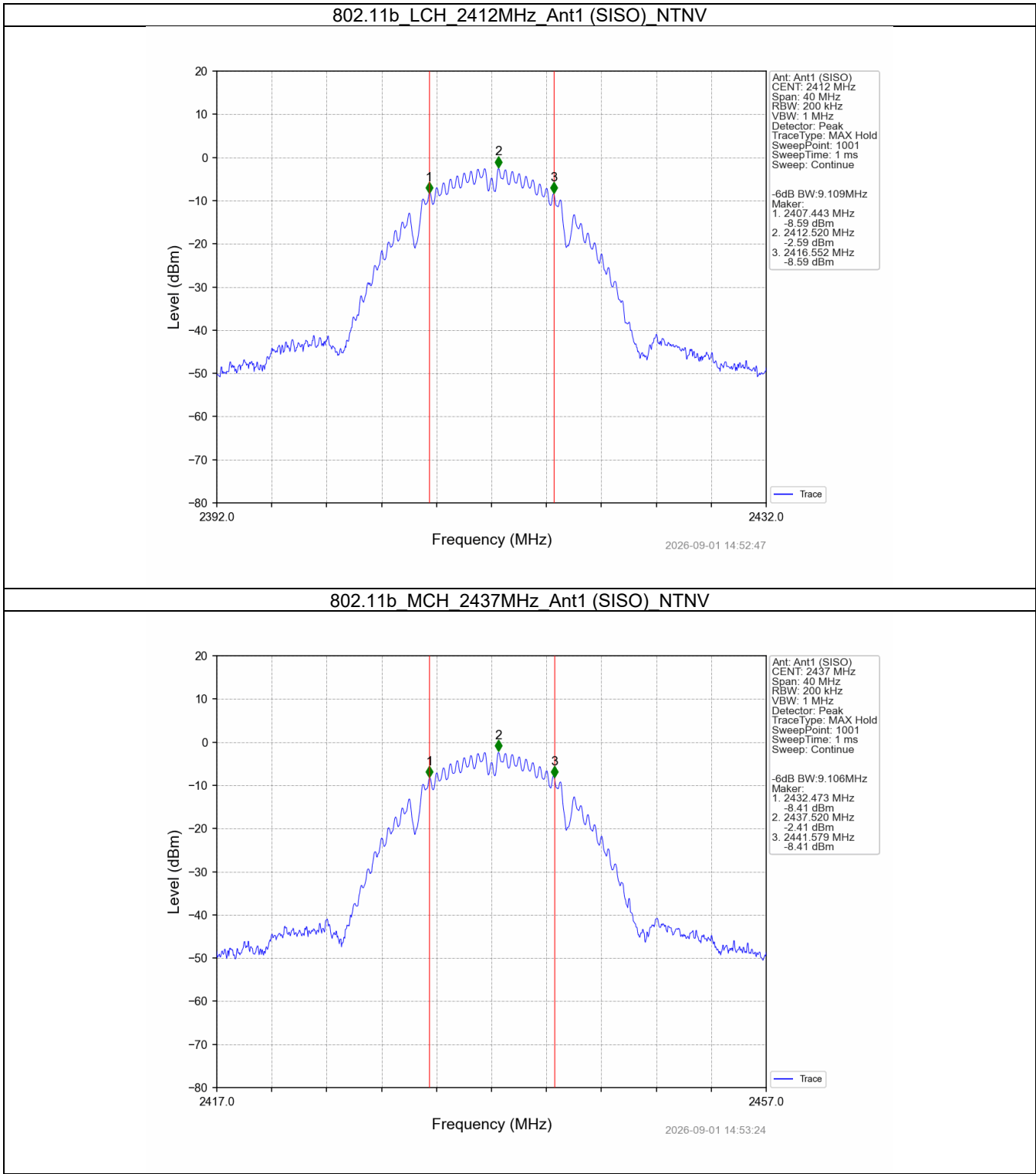
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



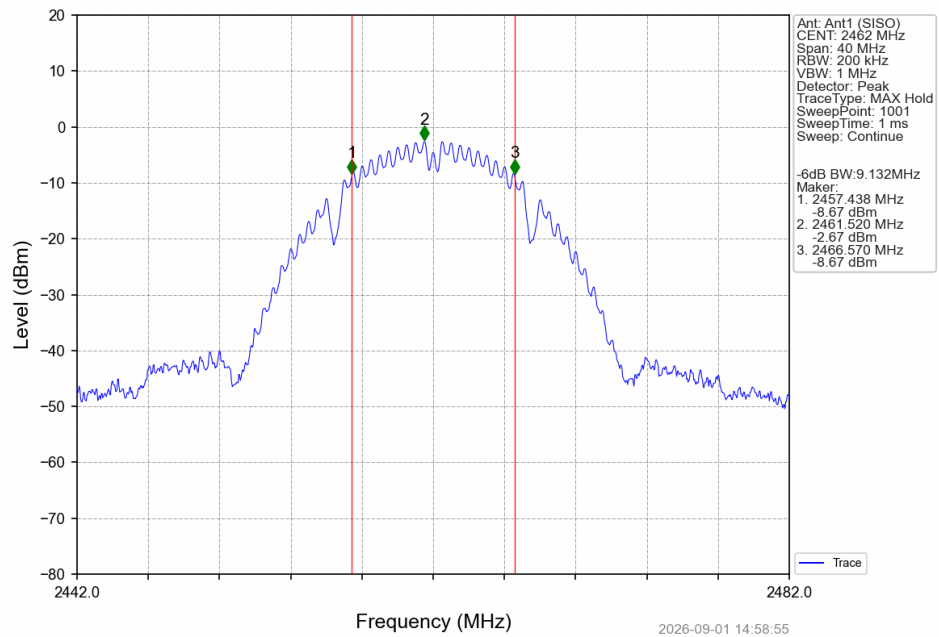
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



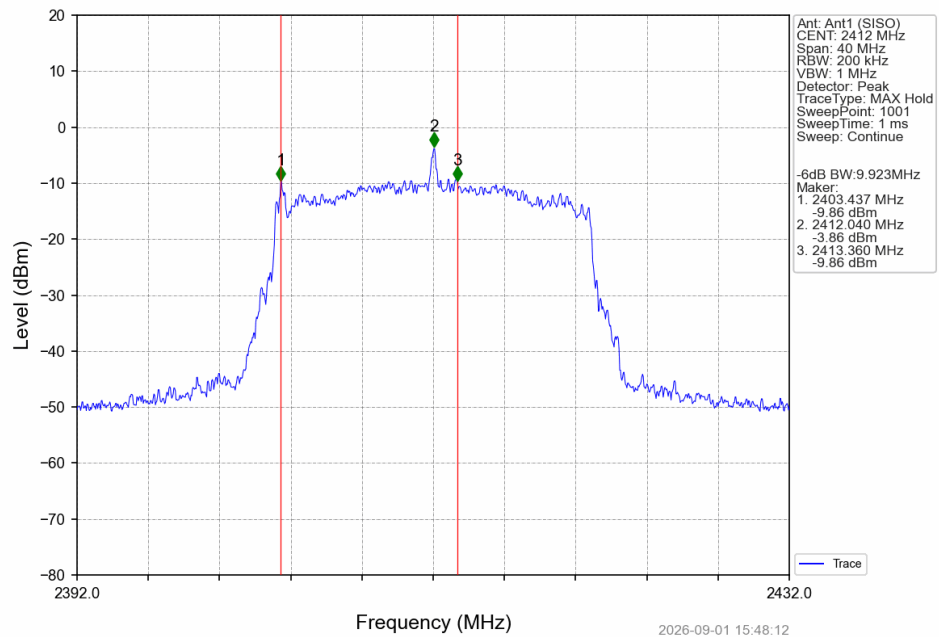
2.2.2 6dB BW



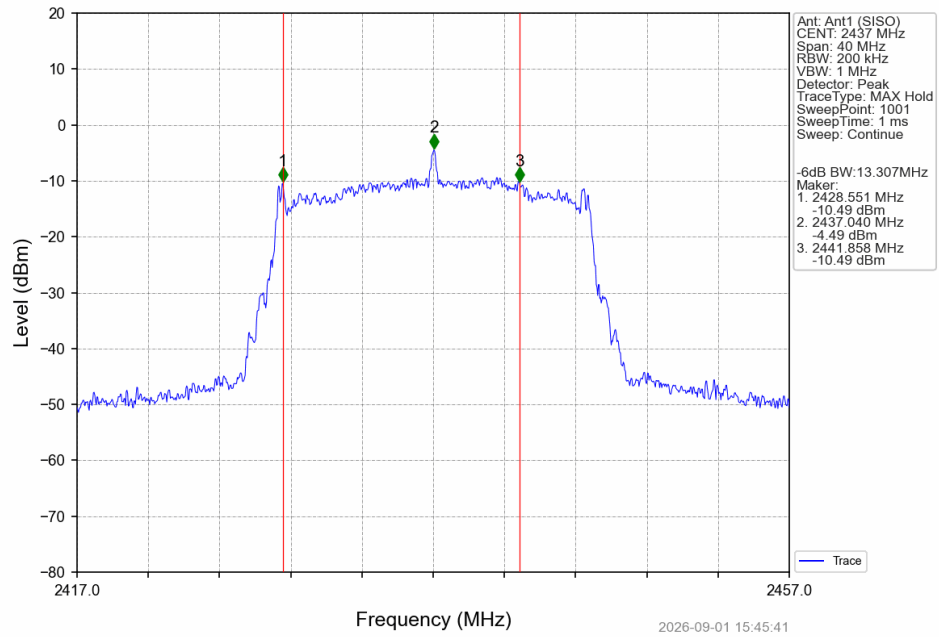
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



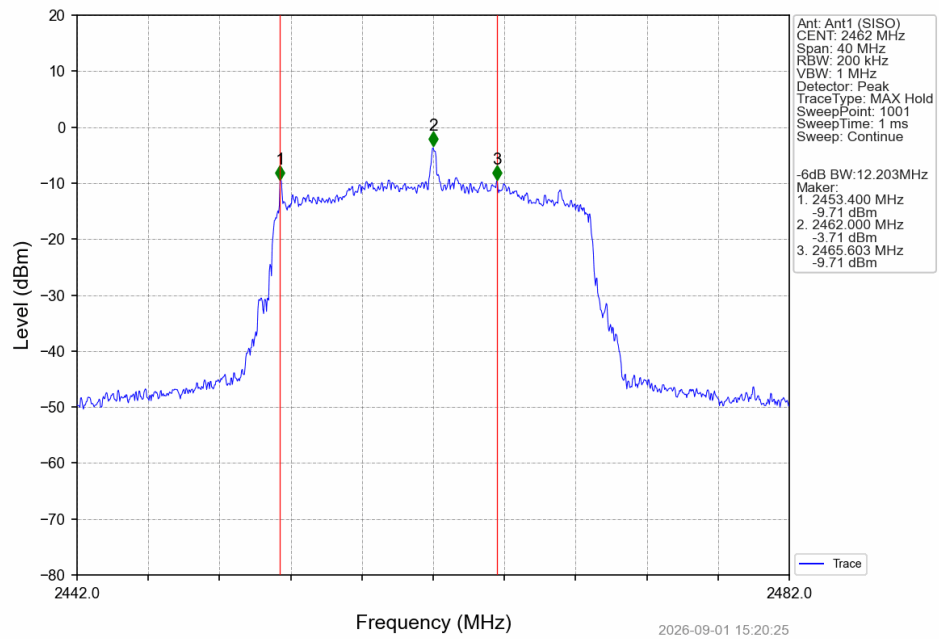
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



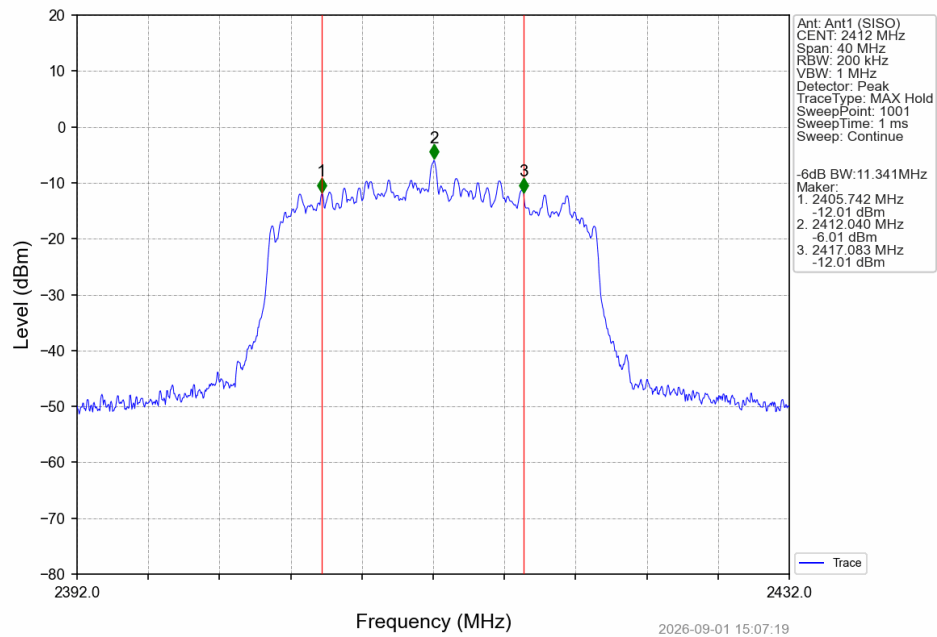
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



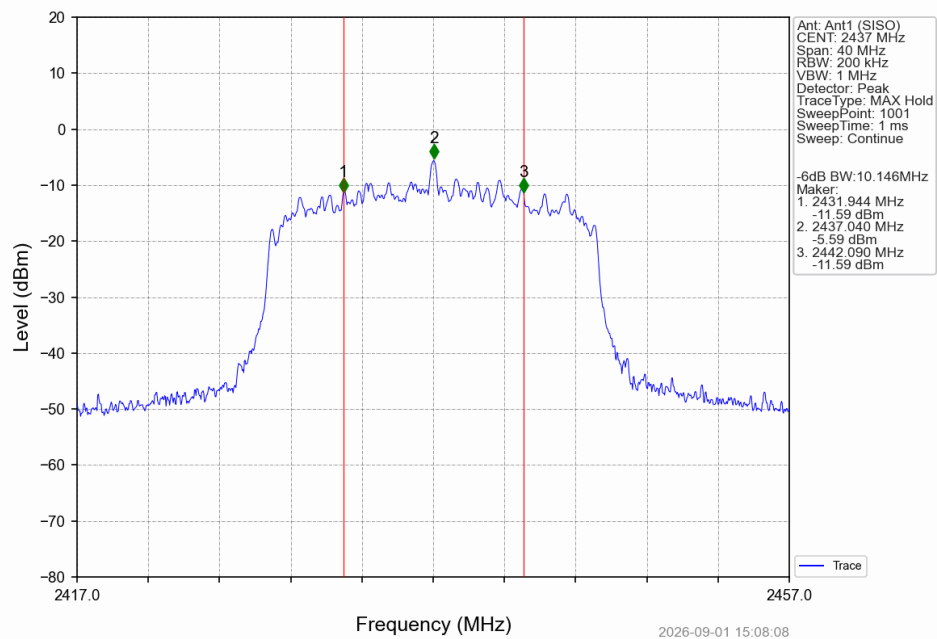
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



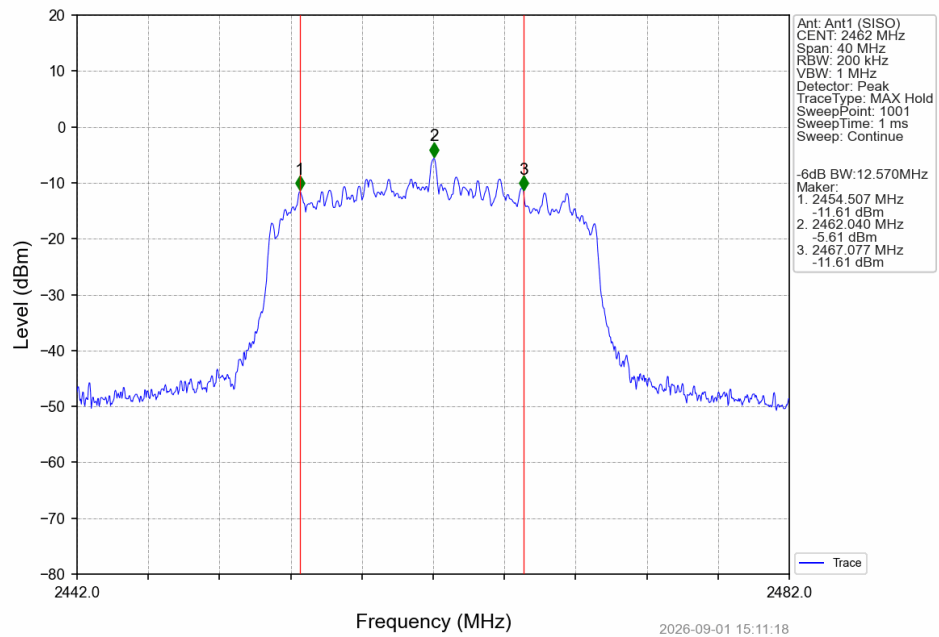
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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	8.72	<=30	Pass
		2437	8.68	<=30	Pass
		2462	8.55	<=30	Pass
802.11g	SISO	2412	6.87	<=30	Pass
		2437	8.10	<=30	Pass
		2462	7.90	<=30	Pass
802.11n (HT20)	SISO	2412	6.44	<=30	Pass
		2437	6.43	<=30	Pass
		2462	7.04	<=30	Pass

4. Maximum Power Spectral Density

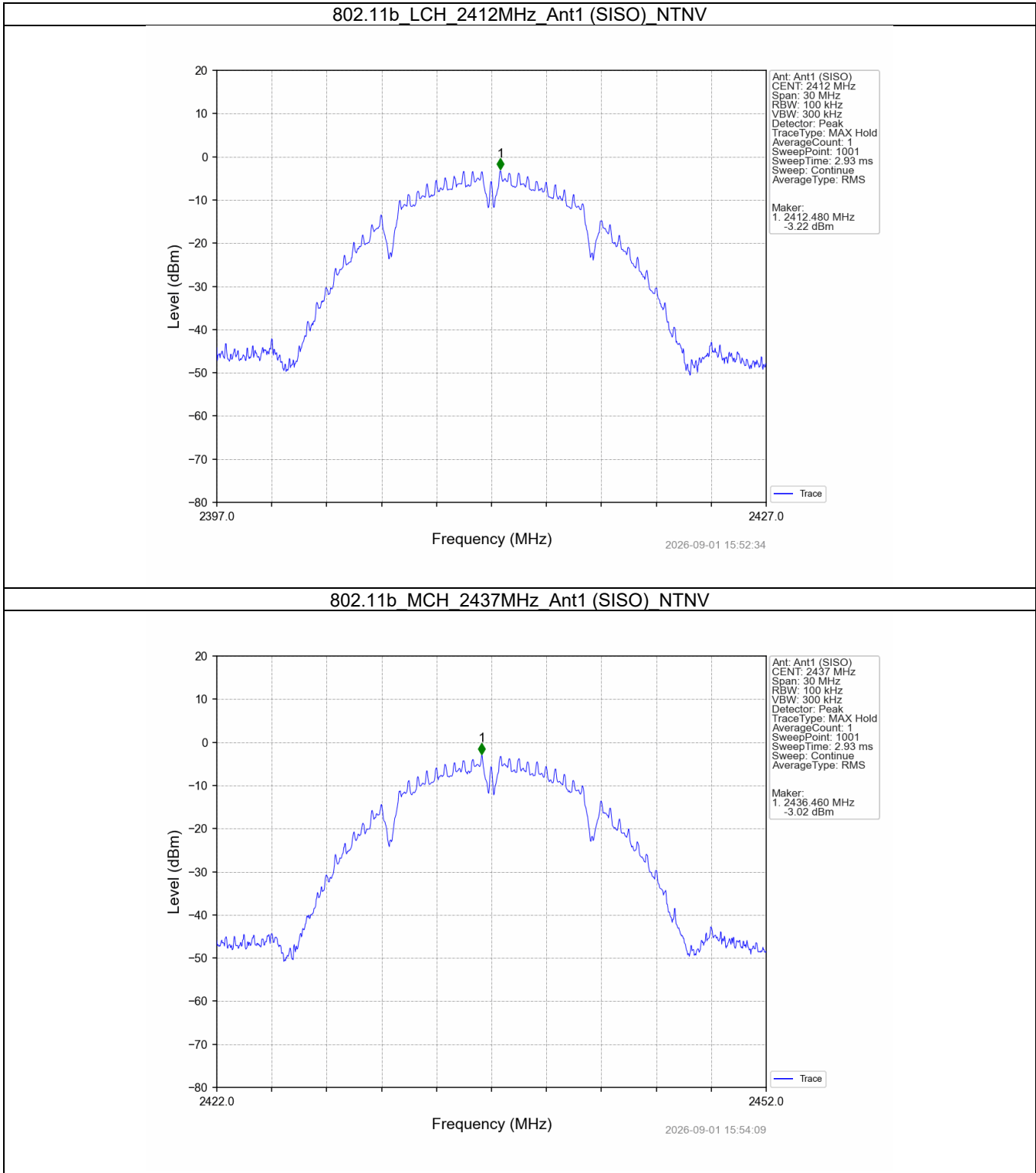
4.1 Test Result

4.1.1 PSD

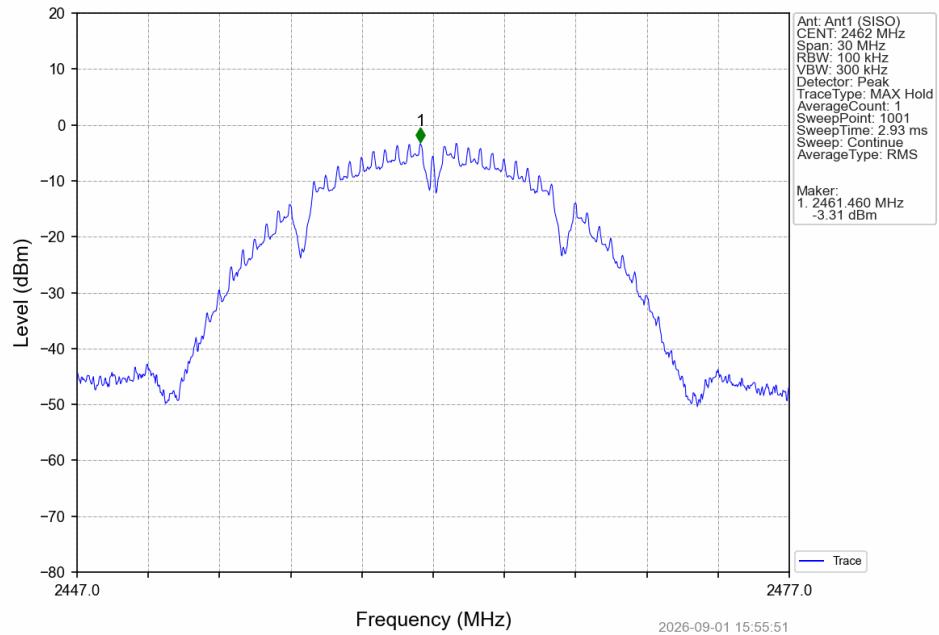
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit(dBm/3kHz)	
802.11b	SISO	2412	-3.22dBm/100kHz	<=8	Pass
		2437	-3.02dBm/100kHz	<=8	Pass
		2462	-3.31dBm/100kHz	<=8	Pass
802.11g	SISO	2412	-5.43dBm/100kHz	<=8	Pass
		2437	-4.95dBm/100kHz	<=8	Pass
		2462	-5.23dBm/100kHz	<=8	Pass
802.11n (HT20)	SISO	2412	-7.57dBm/100kHz	<=8	Pass
		2437	-7.43dBm/100kHz	<=8	Pass
		2462	-7.19dBm/100kHz	<=8	Pass

4.2 Test Graph

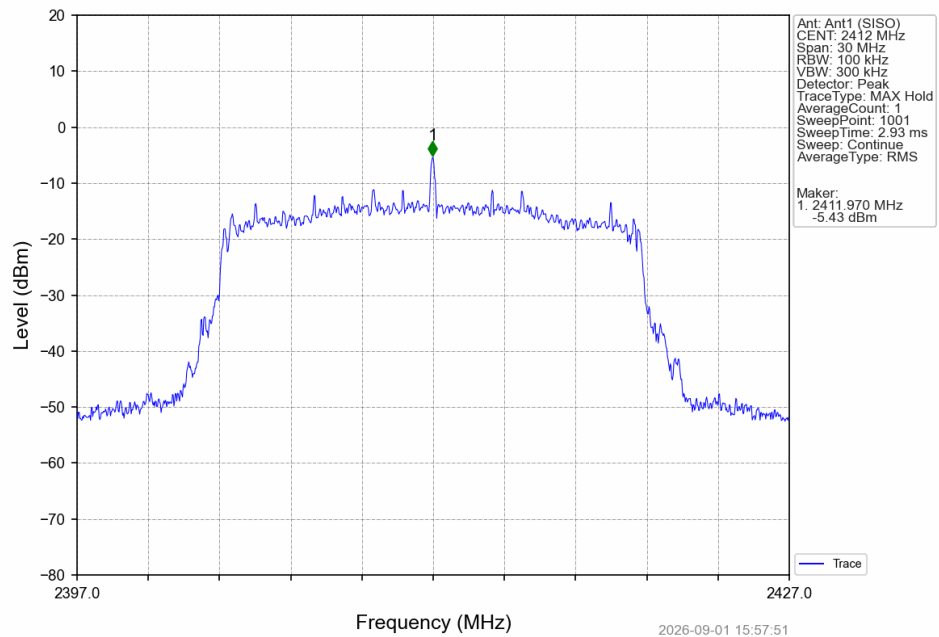
4.2.1 PSD



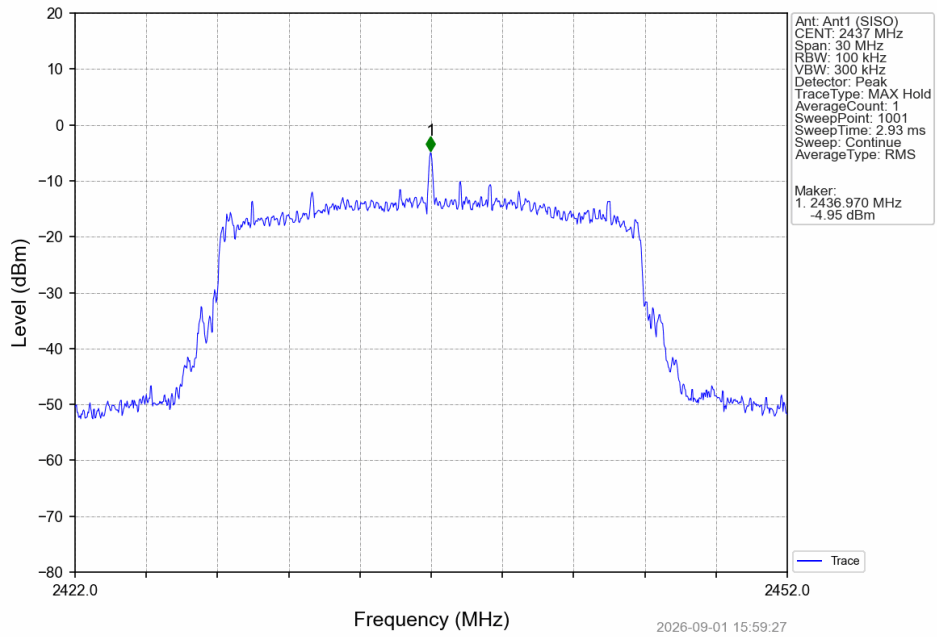
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



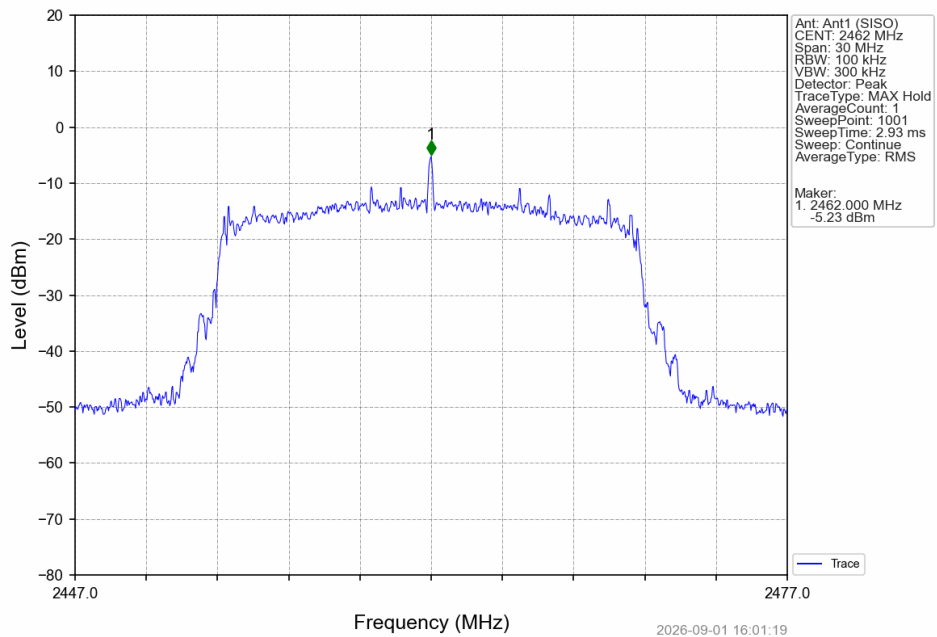
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



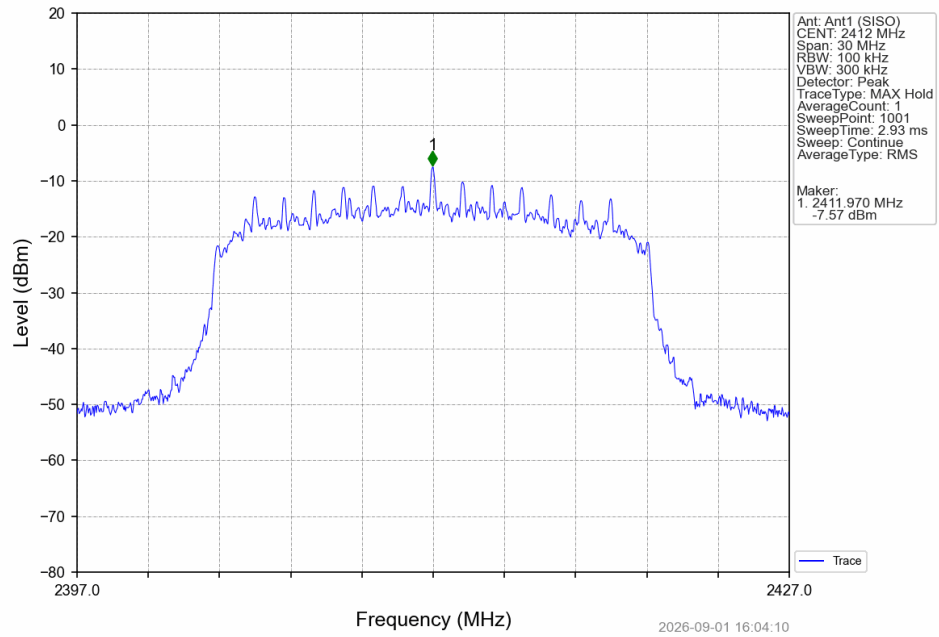
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



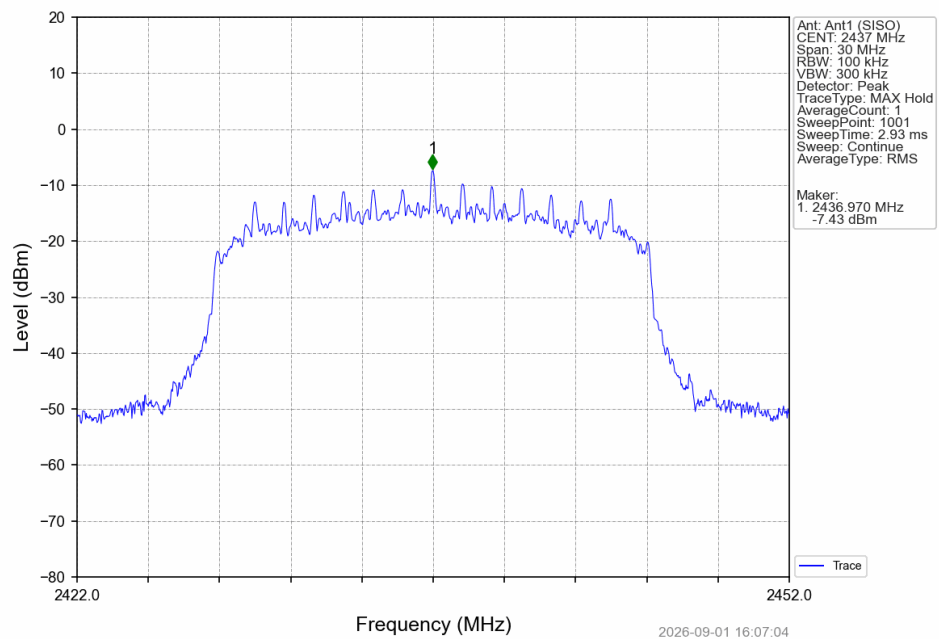
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



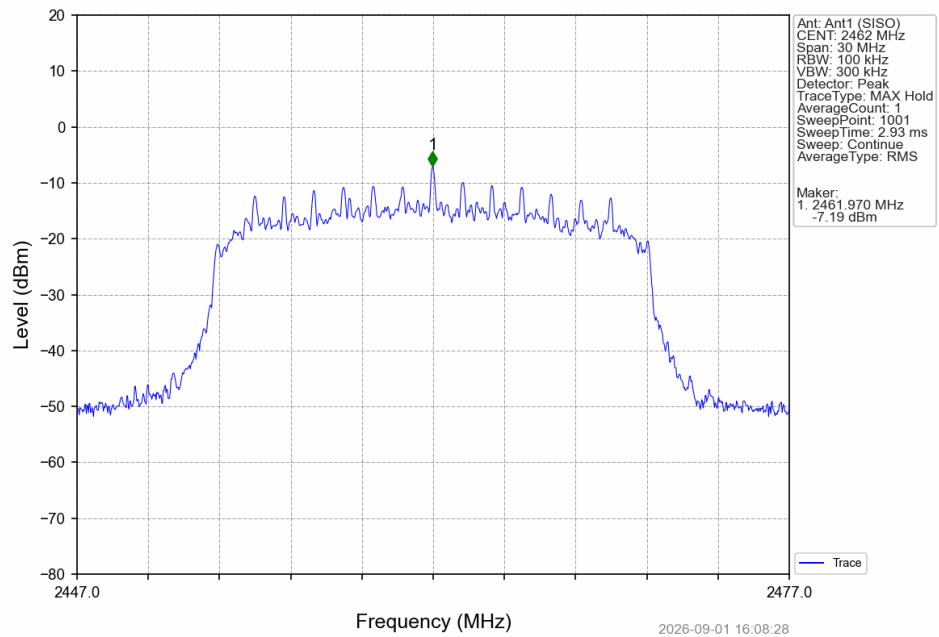
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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

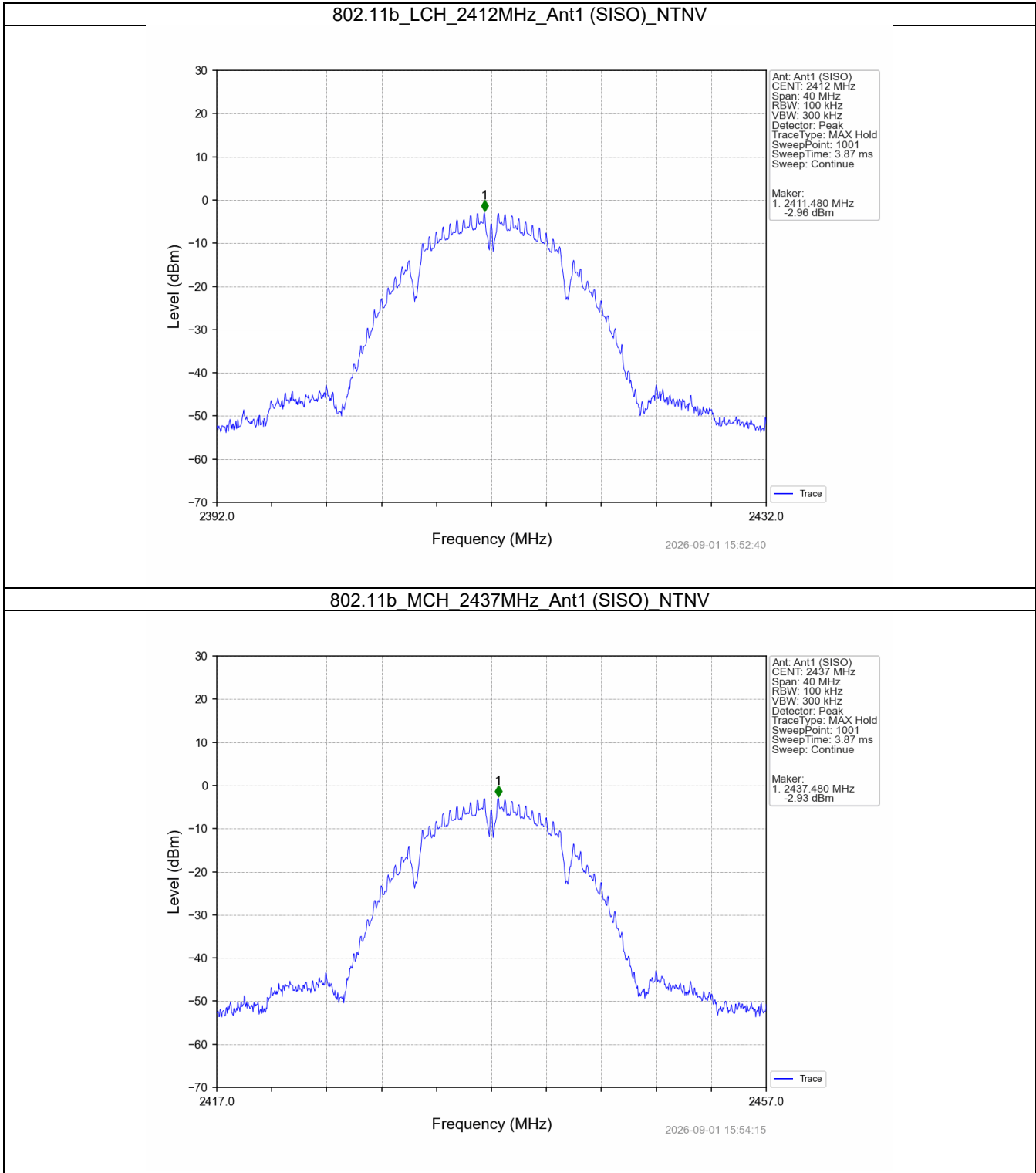
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	-2.96
		2437	1	-2.93
		2462	1	-3.06
802.11g	SISO	2412	1	-5.39
		2437	1	-4.72
		2462	1	-5.35
802.11n (HT20)	SISO	2412	1	-7.41
		2437	1	-6.95
		2462	1	-7.03

5.1.2 CSE

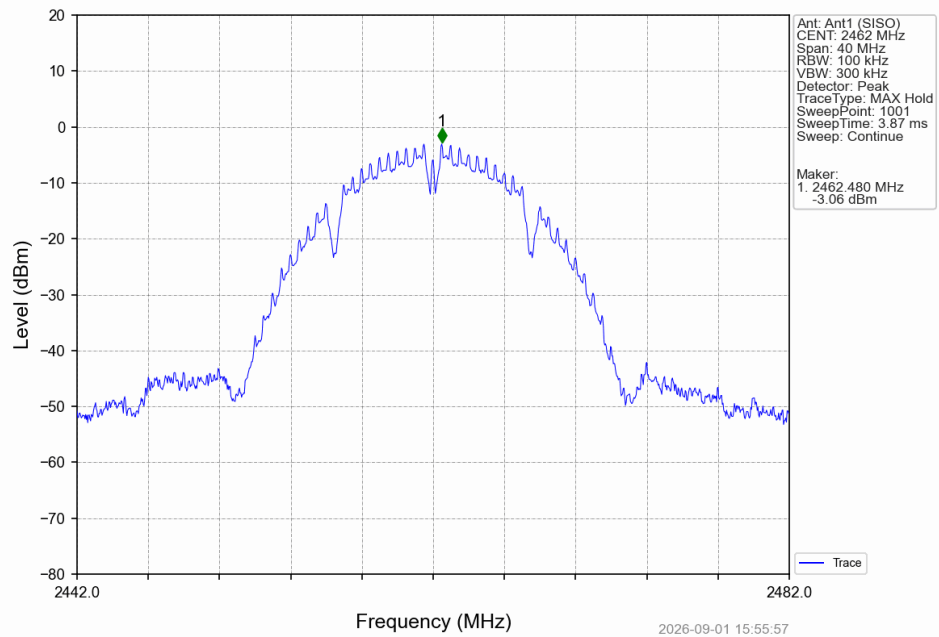
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-2.96	-22.96	Pass
		2437	1	-2.93	-22.93	Pass
		2462	1	-3.06	-23.06	Pass
802.11g	SISO	2412	1	-5.39	-25.39	Pass
		2437	1	-4.72	-24.72	Pass
		2462	1	-5.35	-25.35	Pass
802.11n (HT20)	SISO	2412	1	-7.41	-27.41	Pass
		2437	1	-6.95	-26.95	Pass
		2462	1	-7.03	-27.03	Pass

5.2 Test Graph

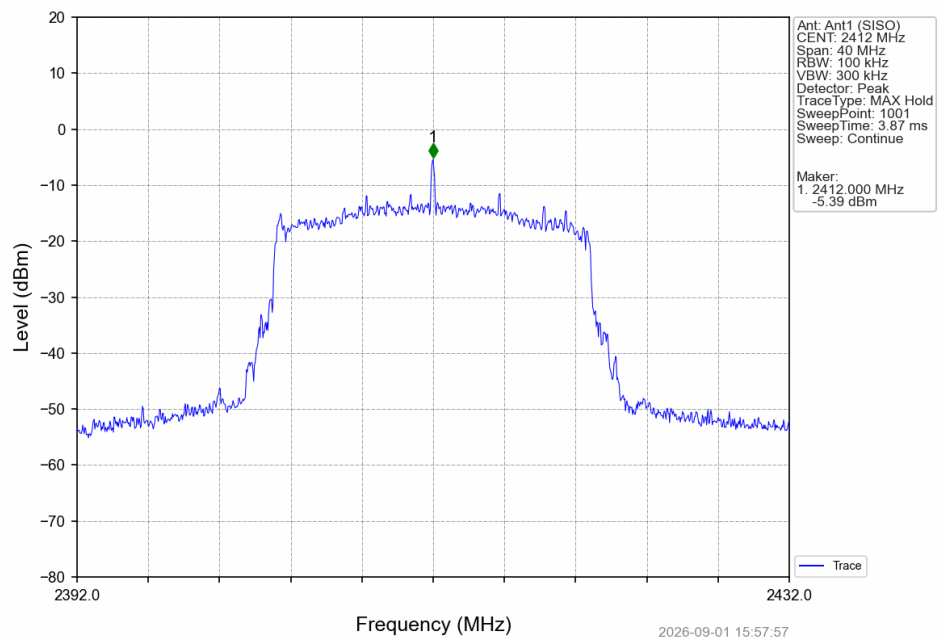
5.2.1 Ref



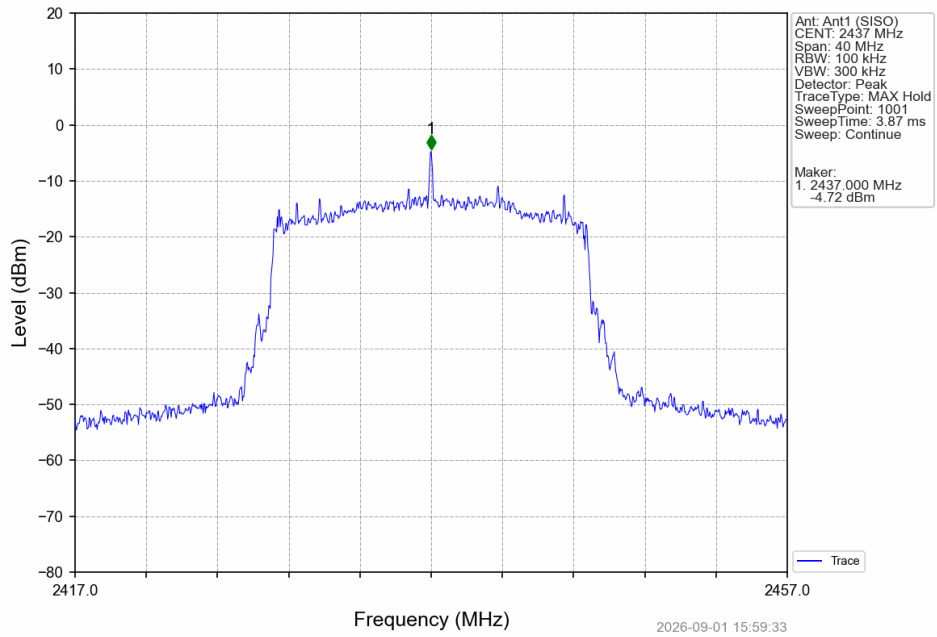
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



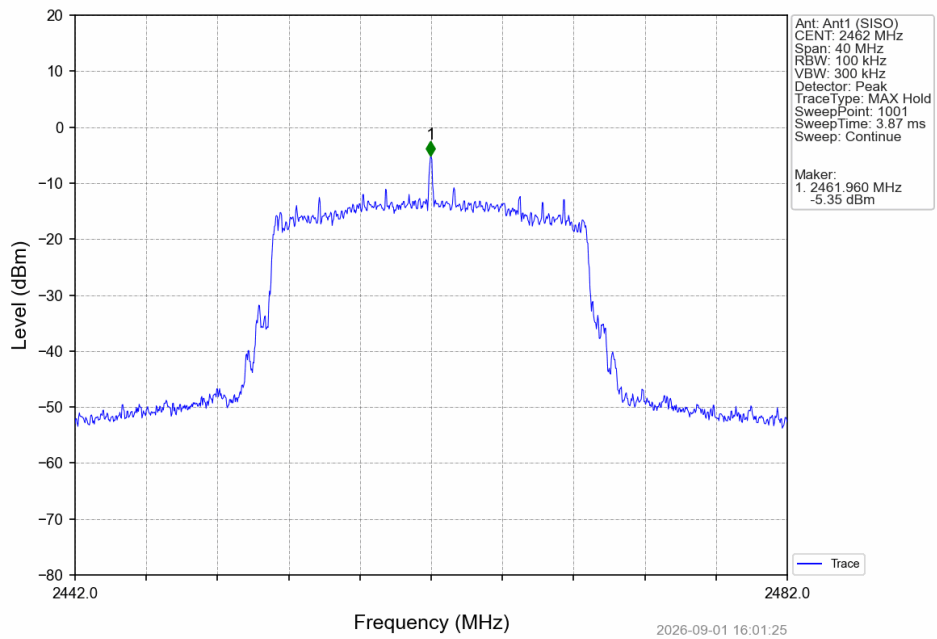
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



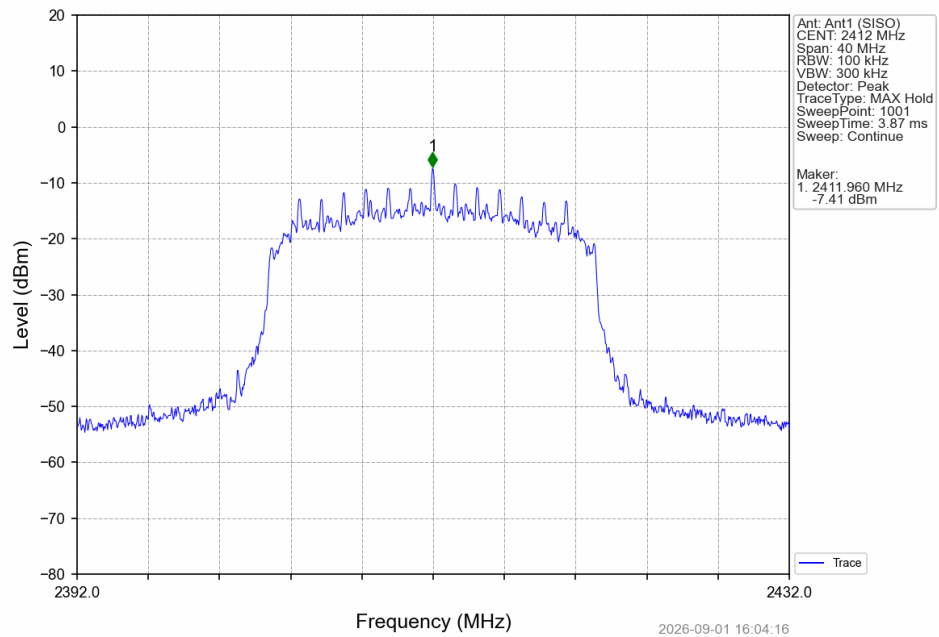
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



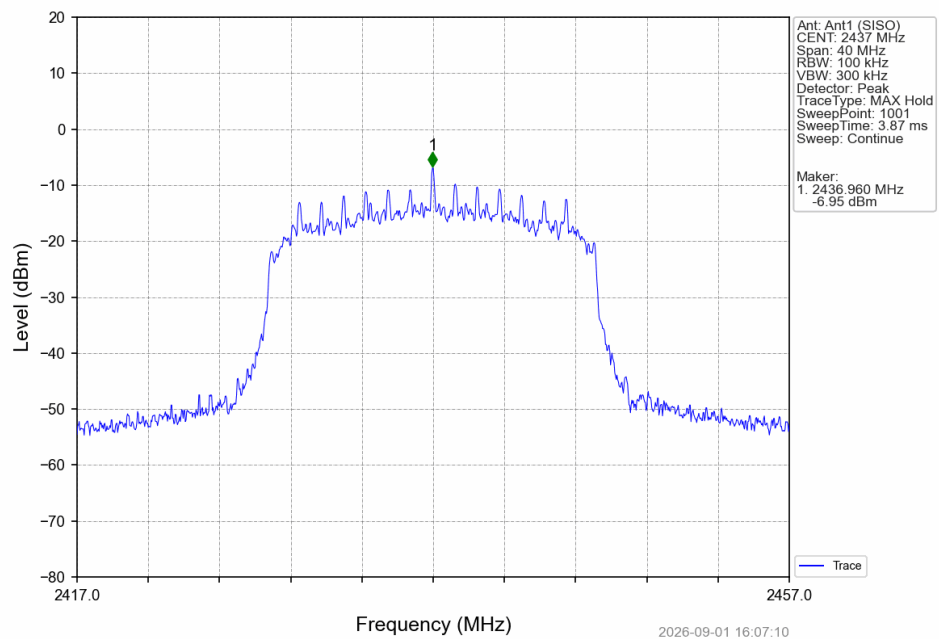
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



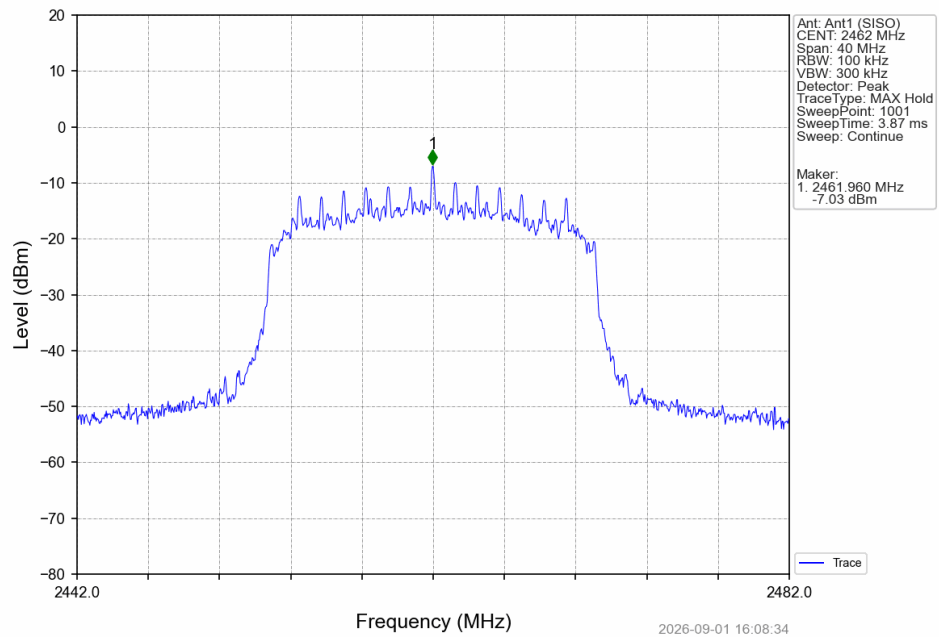
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



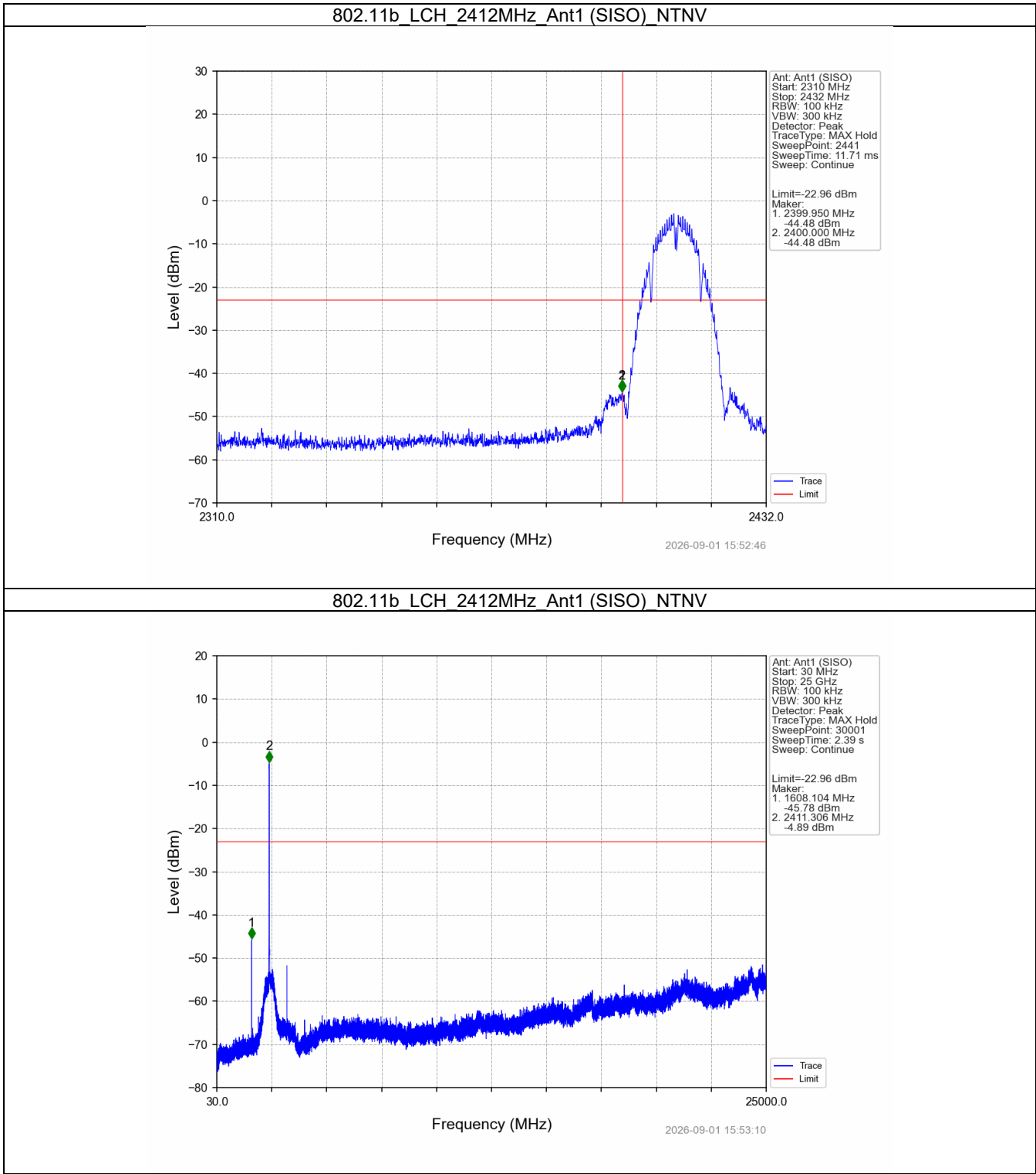
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



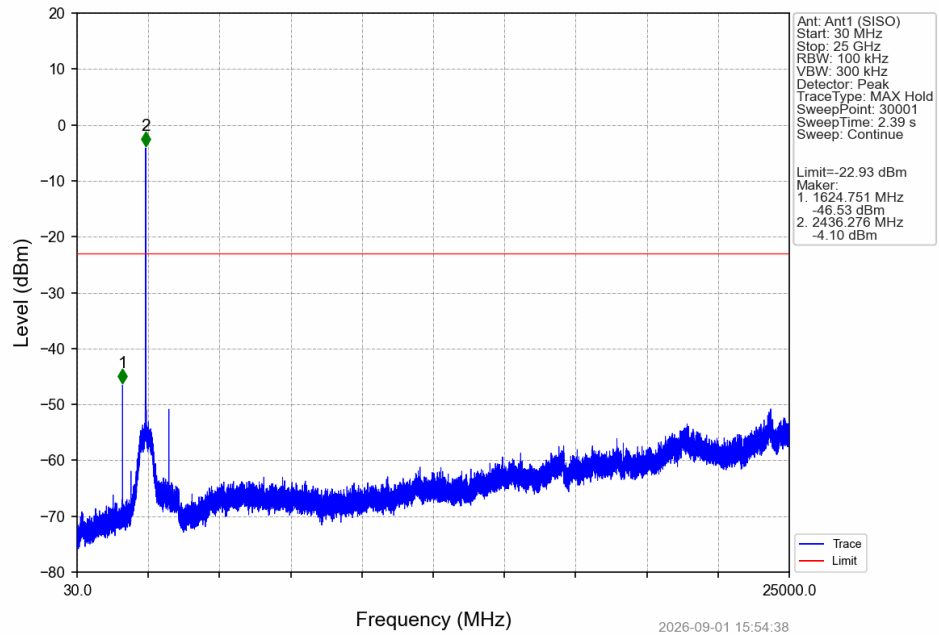
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



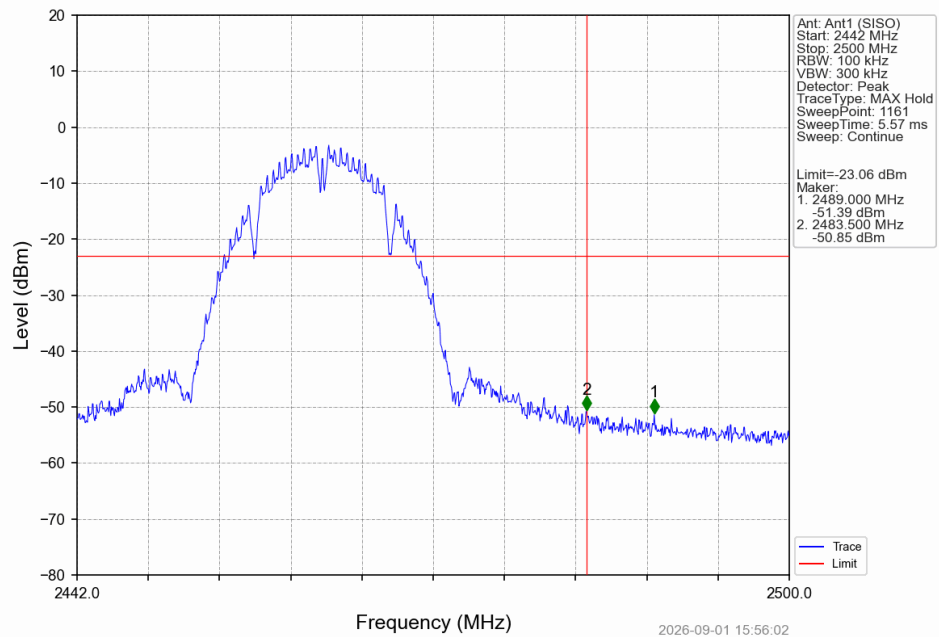
5.2.2 CSE



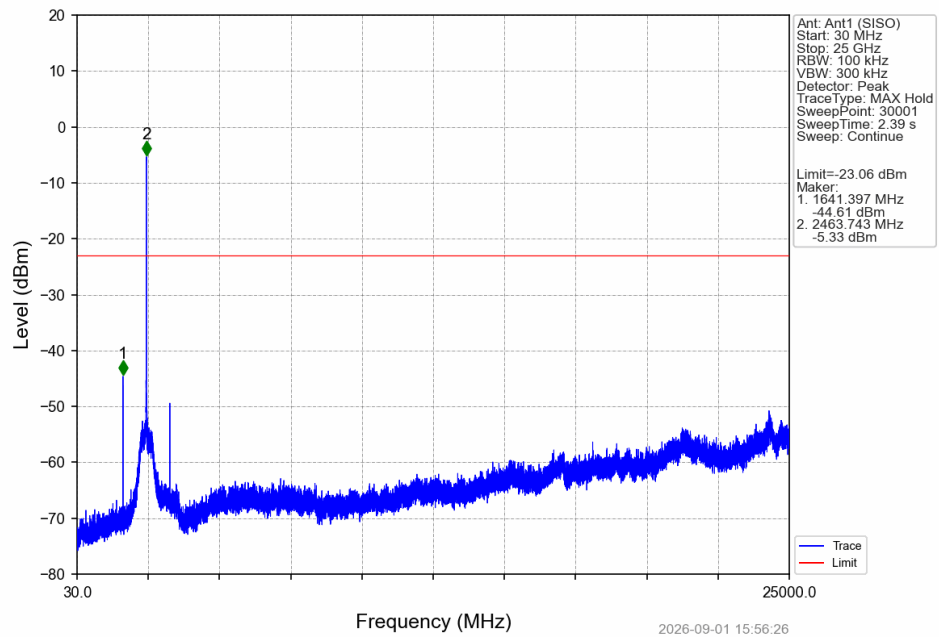
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



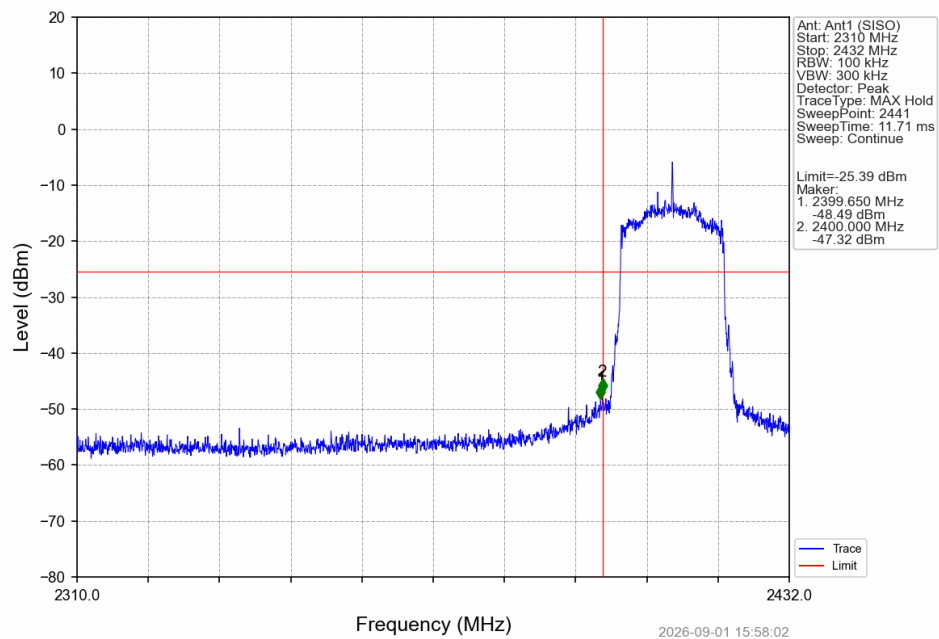
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



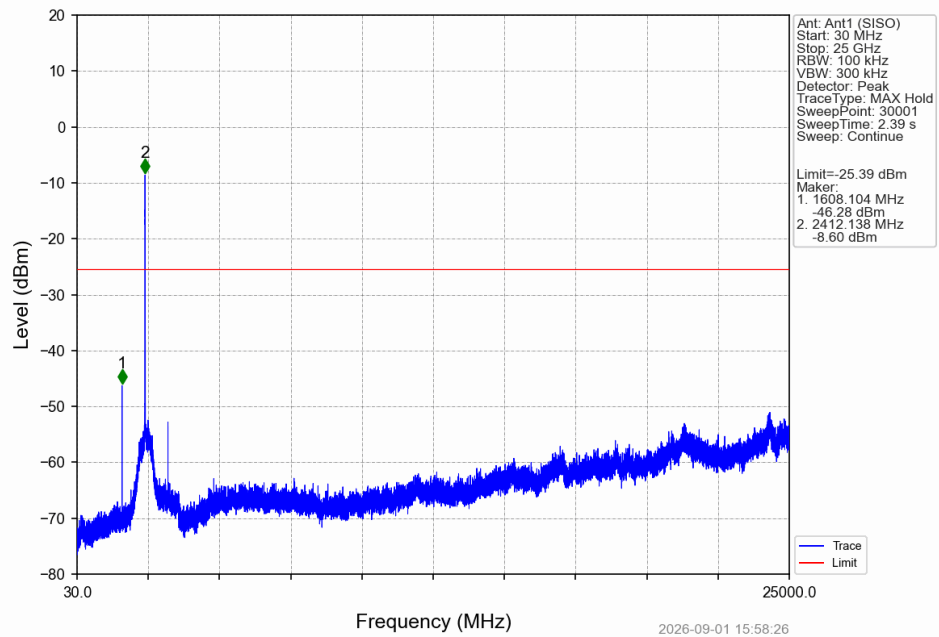
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



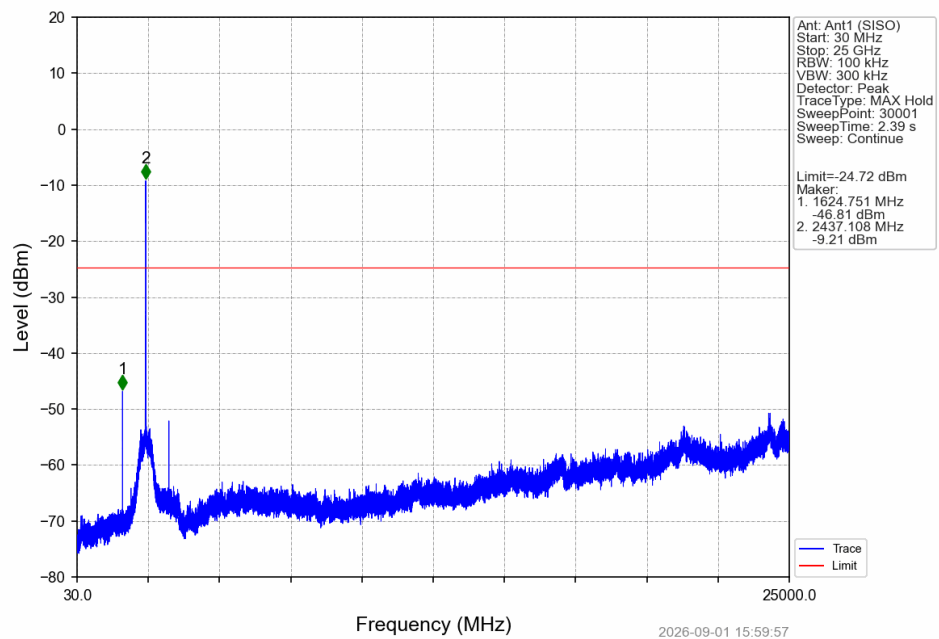
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



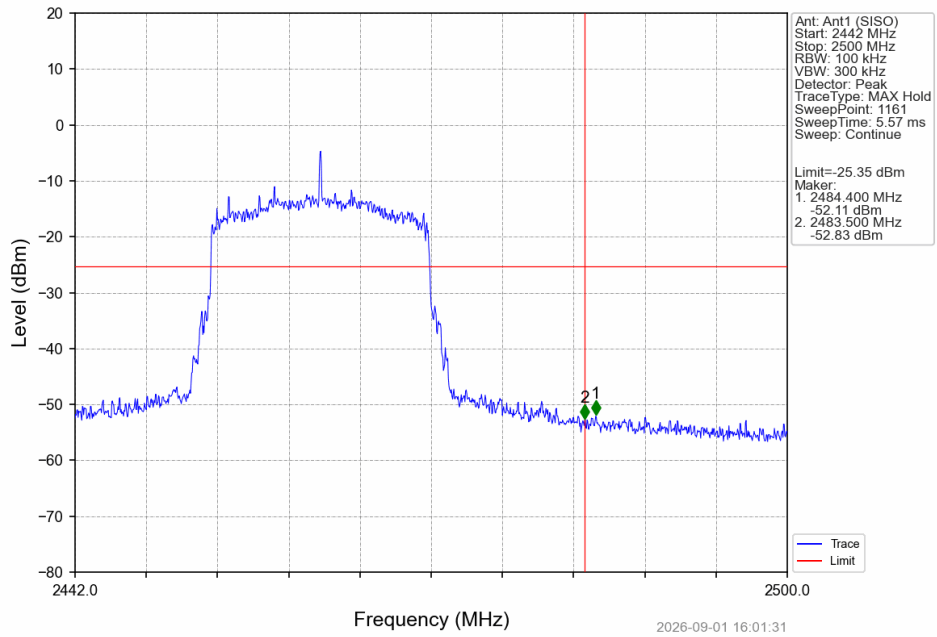
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



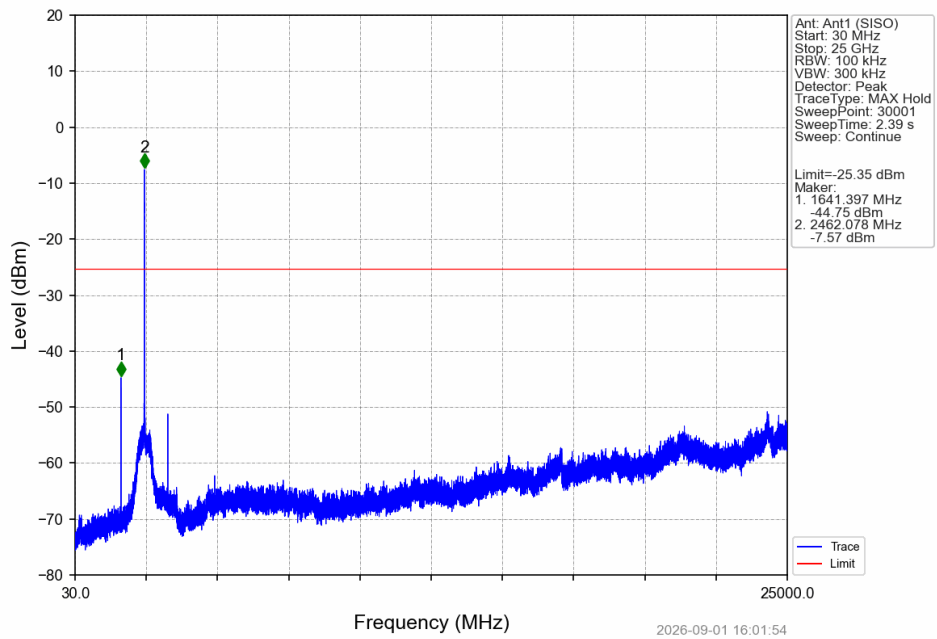
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



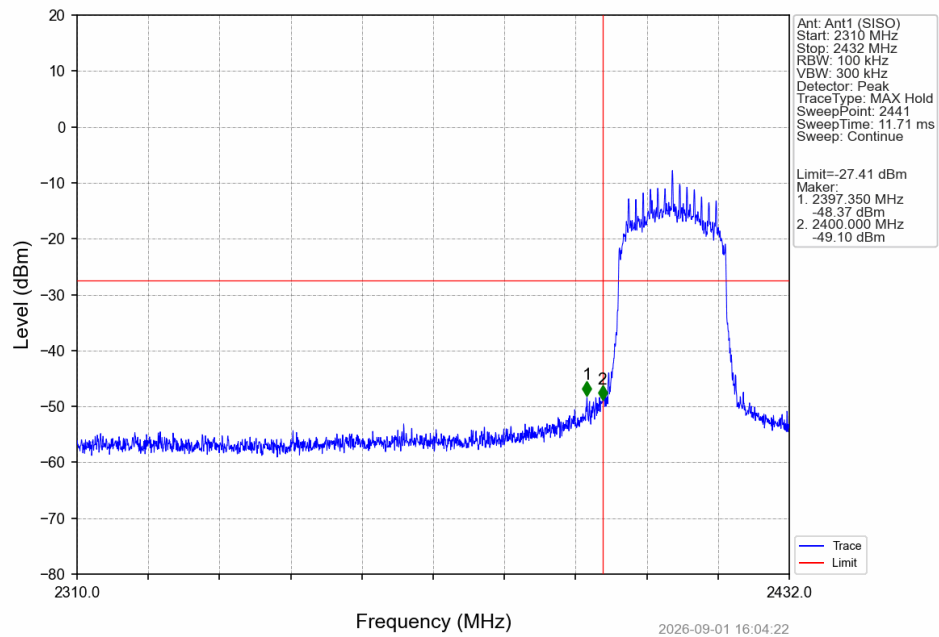
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



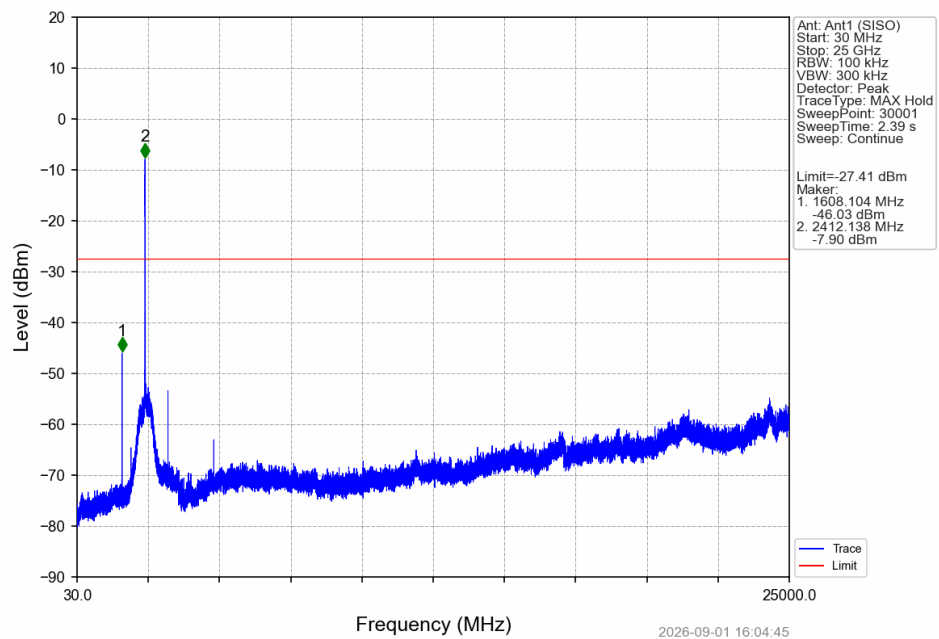
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



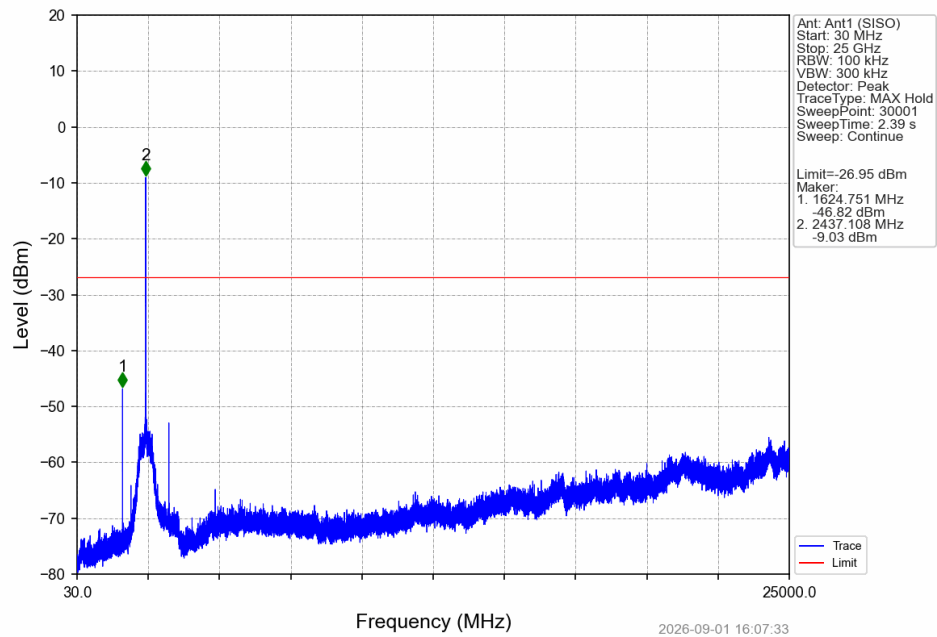
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



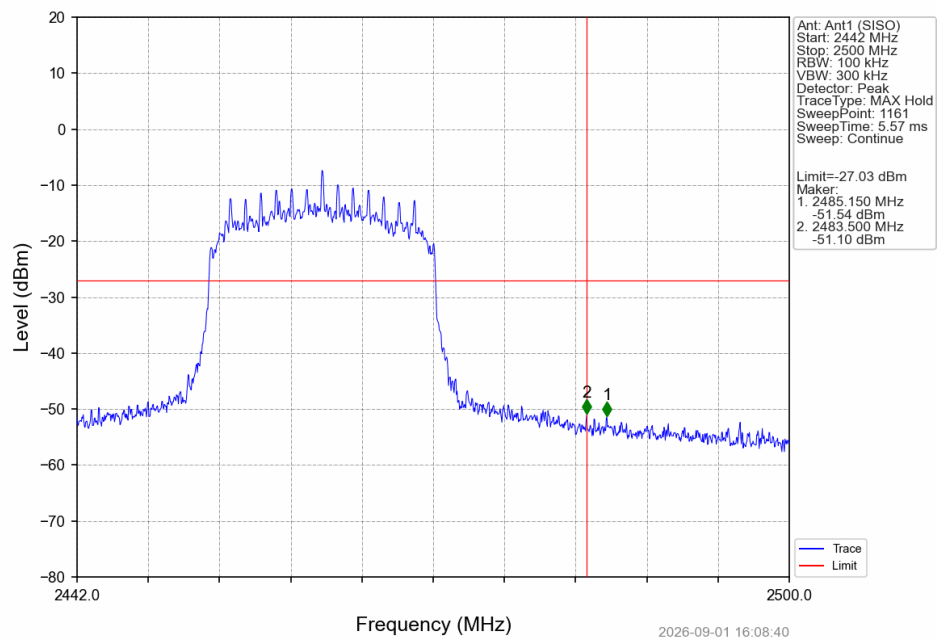
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

