

Appendix RF Test Data for WIFI 2.4G

Company: : Guangdong Lingxiao Pump Industry Co., Ltd.

EUT : Variable Speed Swimming Pool Pump

FCC ID: : 2BQZL-SFP220-VS

Model Number : SFP220-VS

Report No. : HTT202507513F01

Reviewed By : Heber He

1. Duty Cycle

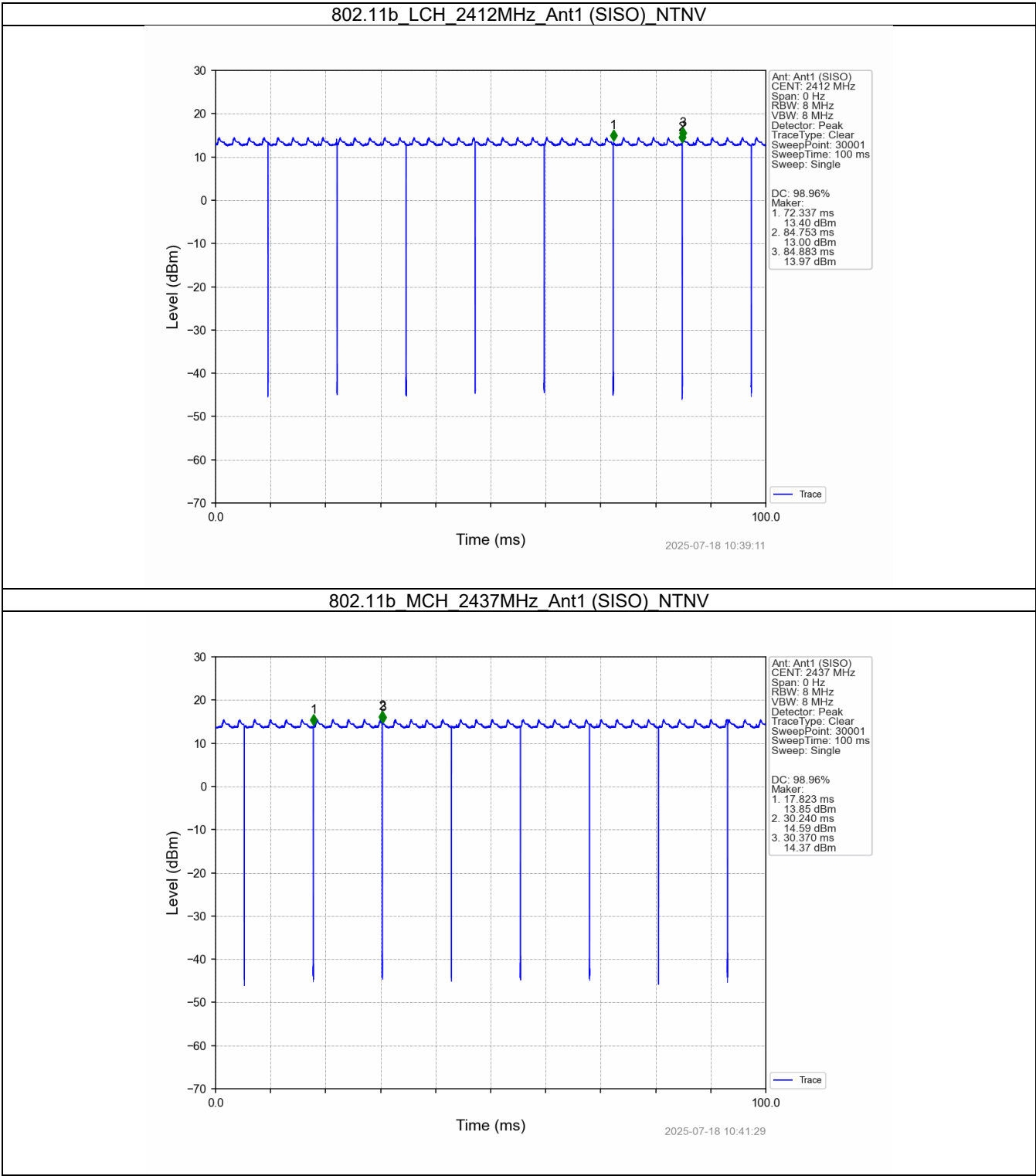
1.1 Test Result

1.1.1 Ant1

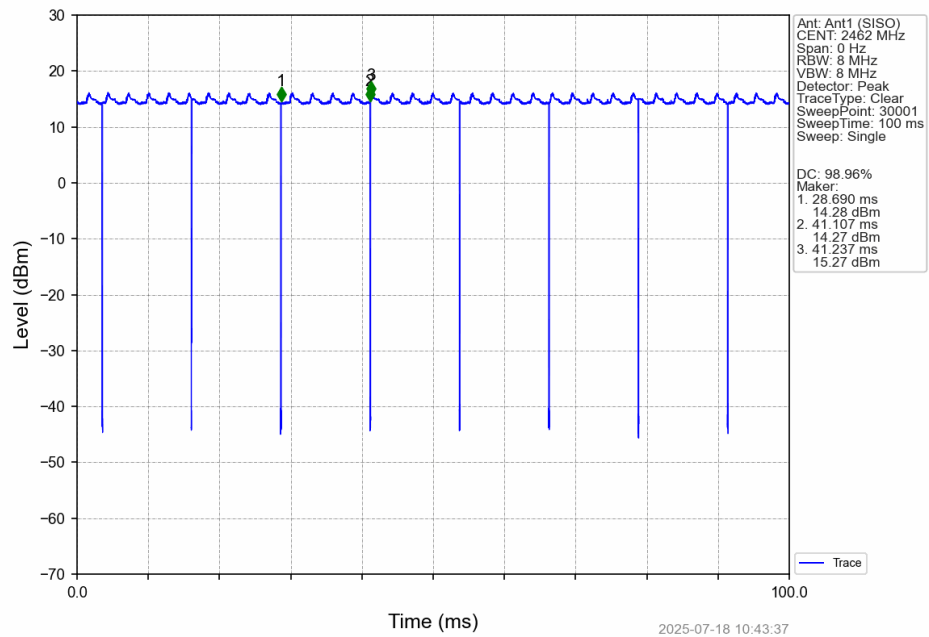
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	12.416	12.546	98.96	0.05	0.03
		2437	12.417	12.547	98.96	0.05	0.03
		2462	12.417	12.547	98.96	0.05	0.61
802.11g	SISO	2412	2.065	2.195	94.08	0.27	0.04
		2437	2.064	2.194	94.07	0.27	0.06
		2462	2.064	2.194	94.07	0.27	0.04
802.11n (HT20)	SISO	2412	1.921	2.050	93.71	0.28	0.04
		2437	1.920	2.049	93.70	0.28	0.04
		2462	1.921	2.050	93.71	0.28	0.00

1.2 Test Graph

1.2.1 Ant1

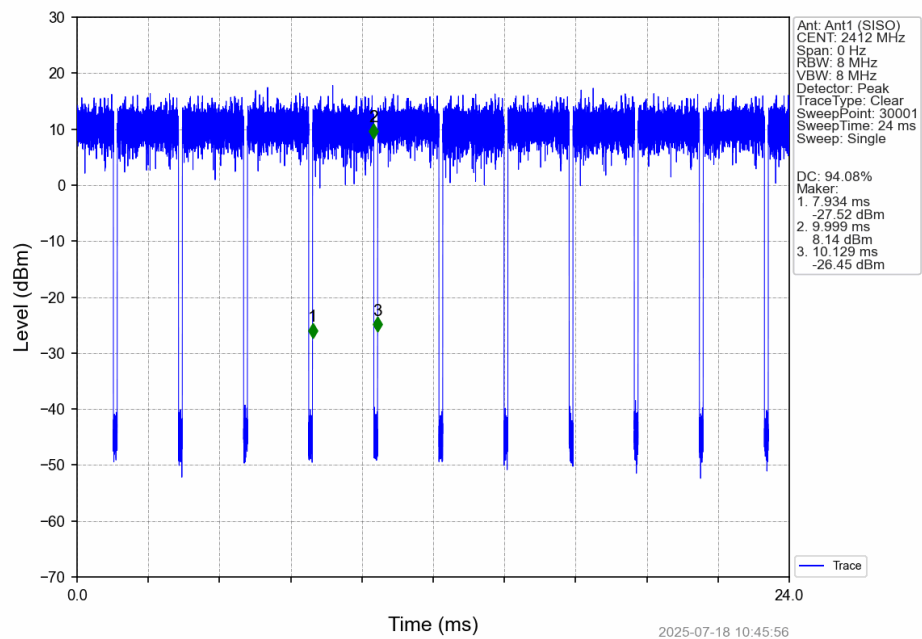


802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



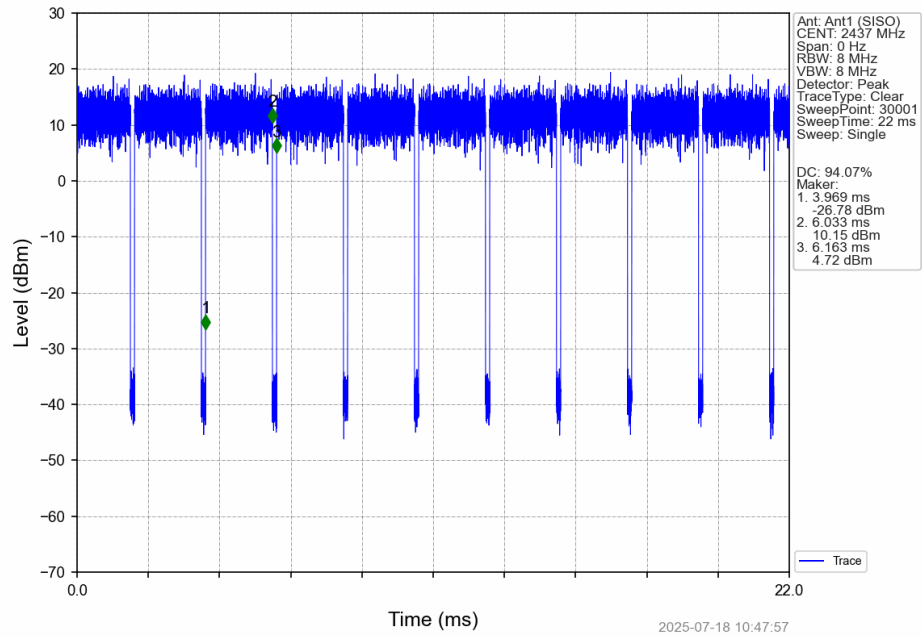
2025-07-18 10:43:37

802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

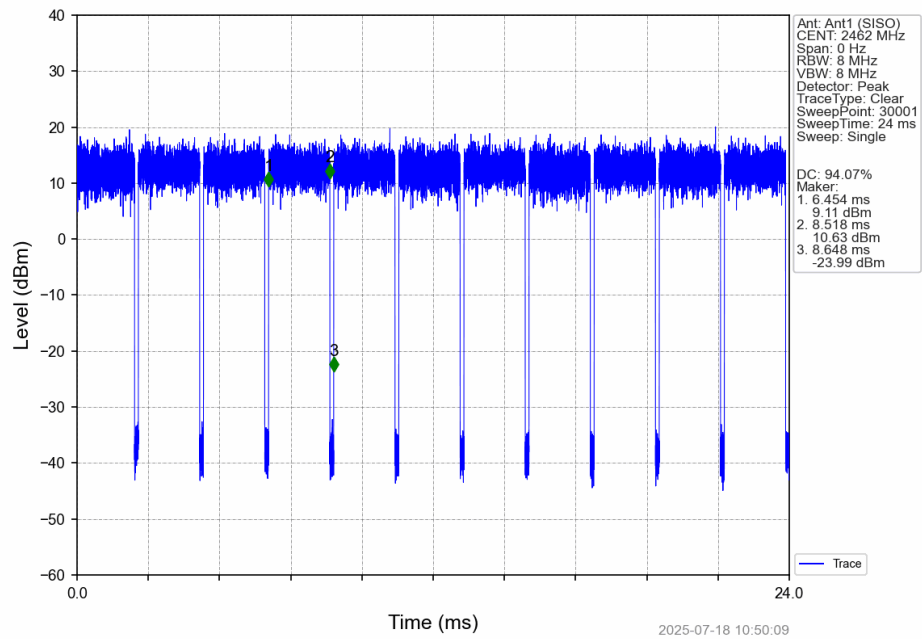


2025-07-18 10:45:56

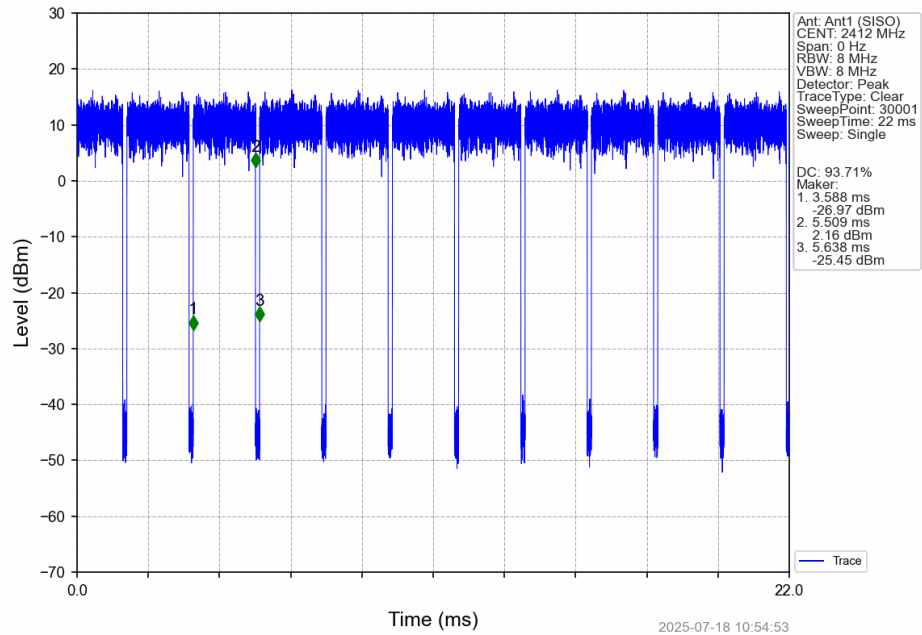
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



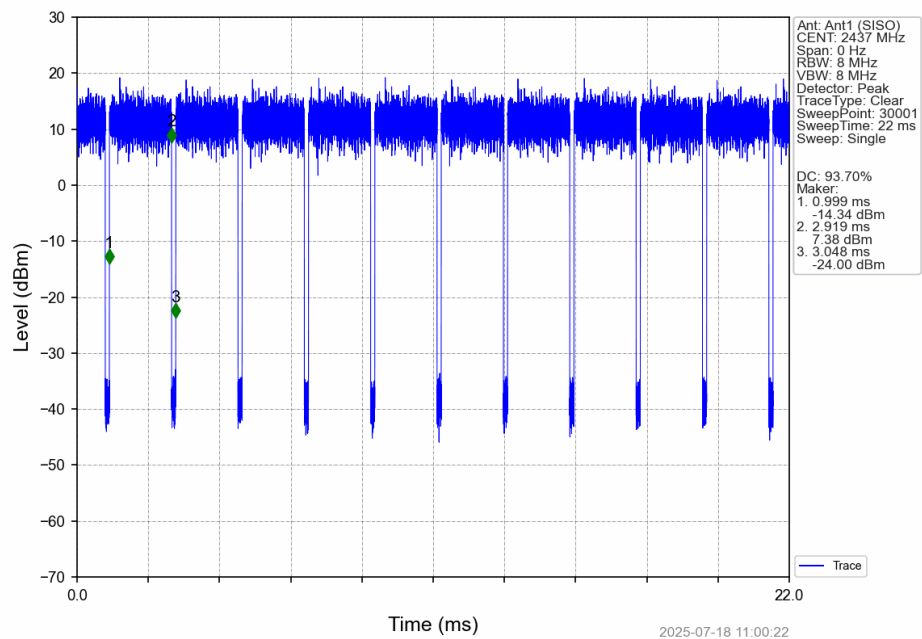
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



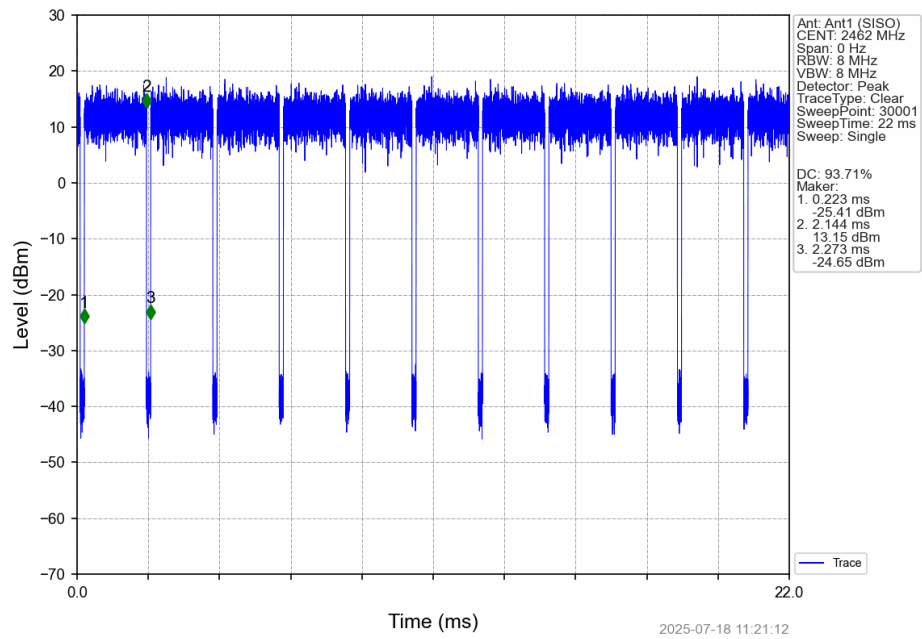
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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

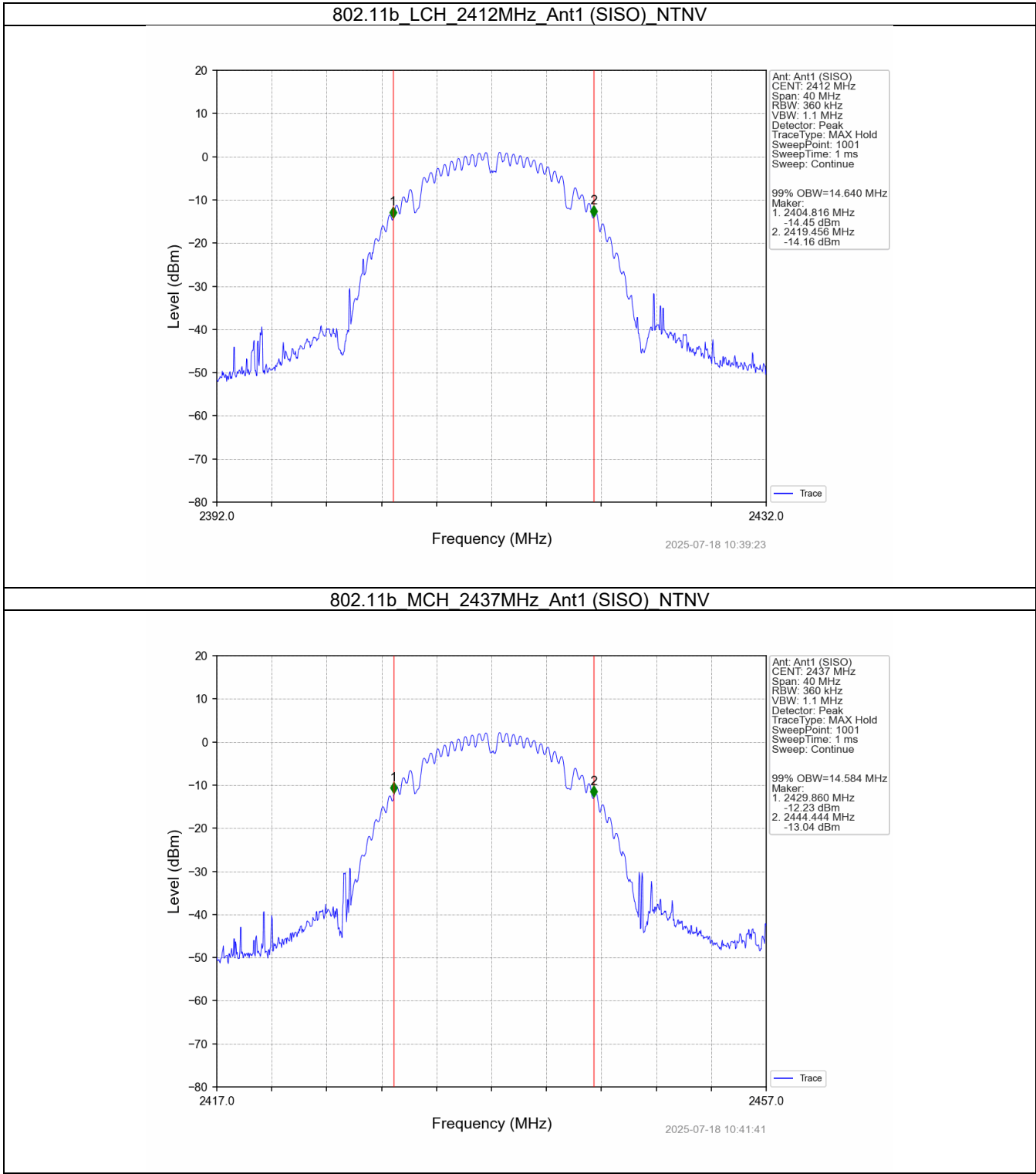
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	14.640	/	Pass
		2437	1	14.584	/	Pass
		2462	1	14.648	/	Pass
802.11g	SISO	2412	1	17.710	/	Pass
		2437	1	17.494	/	Pass
		2462	1	17.448	/	Pass
802.11n (HT20)	SISO	2412	1	18.339	/	Pass
		2437	1	18.418	/	Pass
		2462	1	18.465	/	Pass

2.1.2 6dB BW

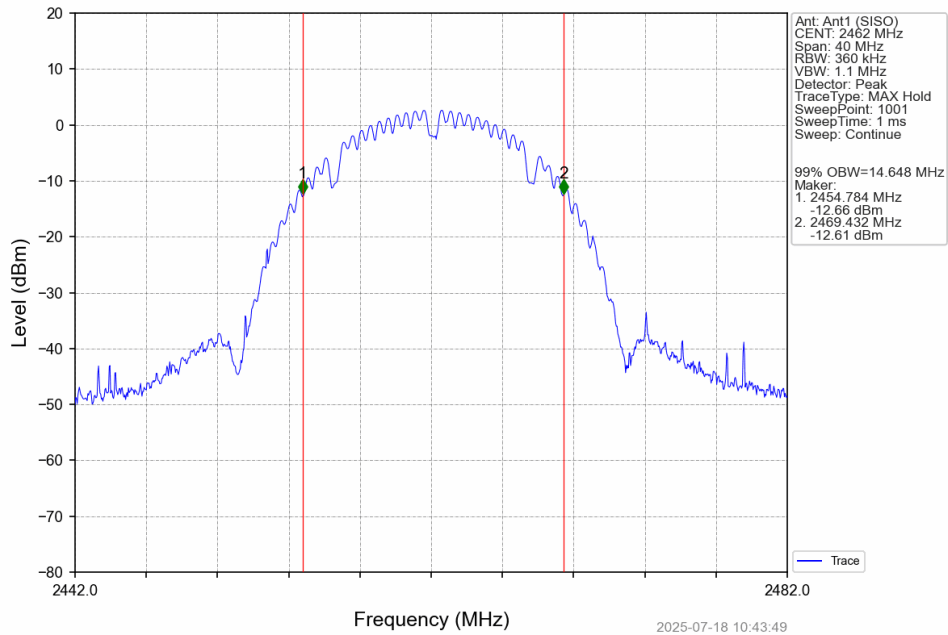
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.130	≥ 0.5	Pass
		2437	1	9.572	≥ 0.5	Pass
		2462	1	10.034	≥ 0.5	Pass
802.11g	SISO	2412	1	16.333	≥ 0.5	Pass
		2437	1	16.113	≥ 0.5	Pass
		2462	1	16.341	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.111	≥ 0.5	Pass
		2437	1	17.138	≥ 0.5	Pass
		2462	1	16.972	≥ 0.5	Pass

2.2 Test Graph

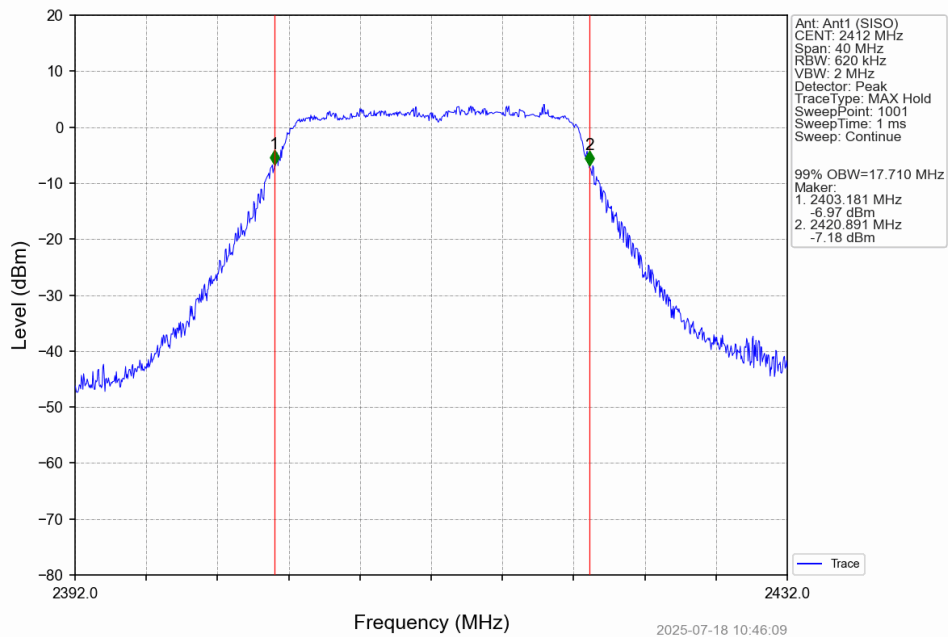
2.2.1 OBW



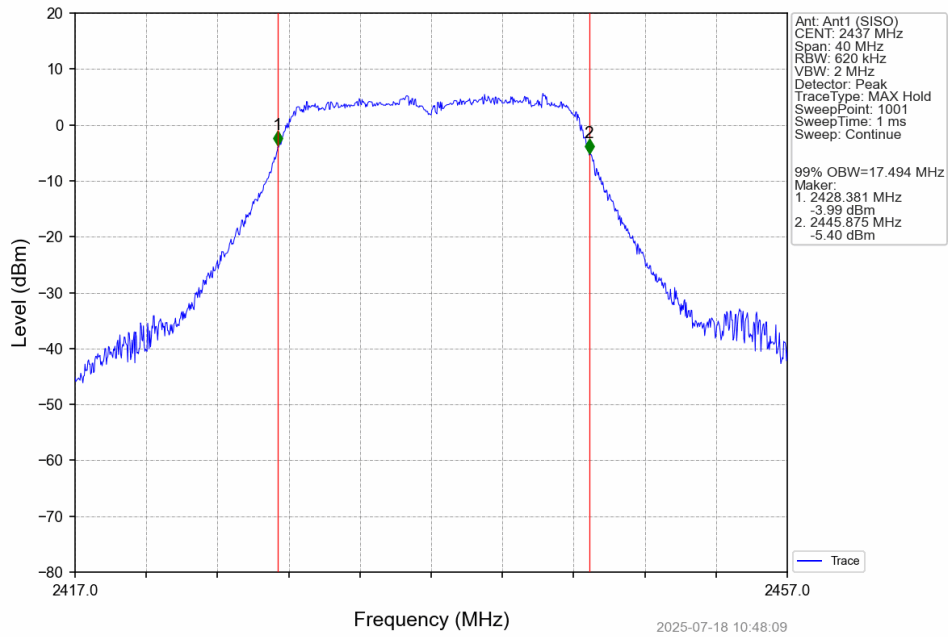
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



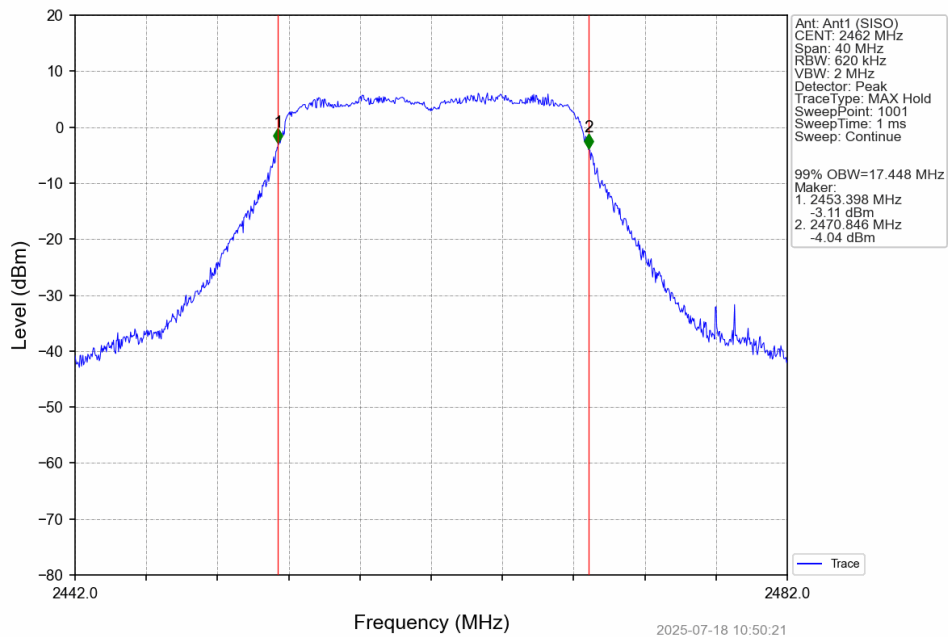
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



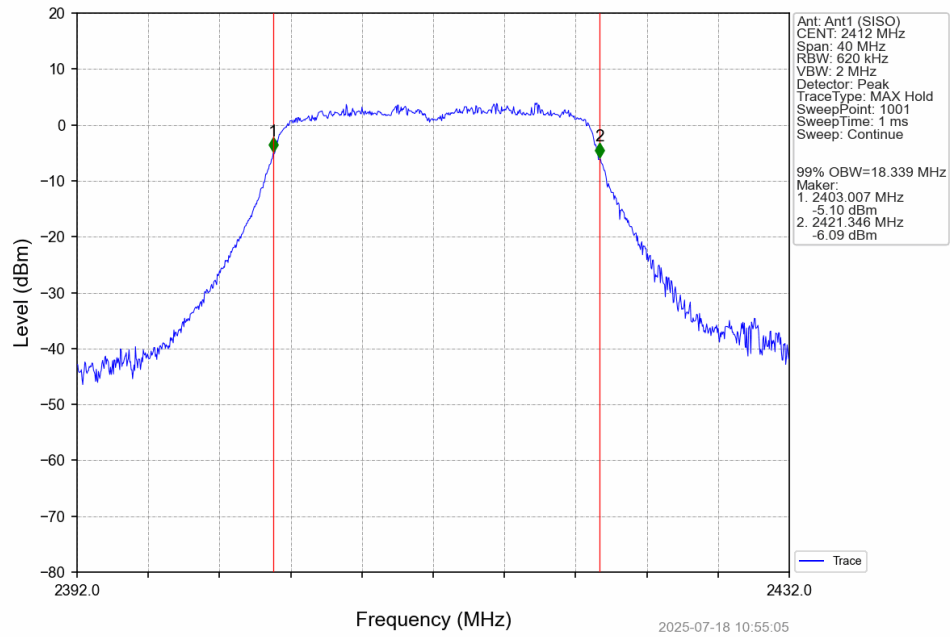
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



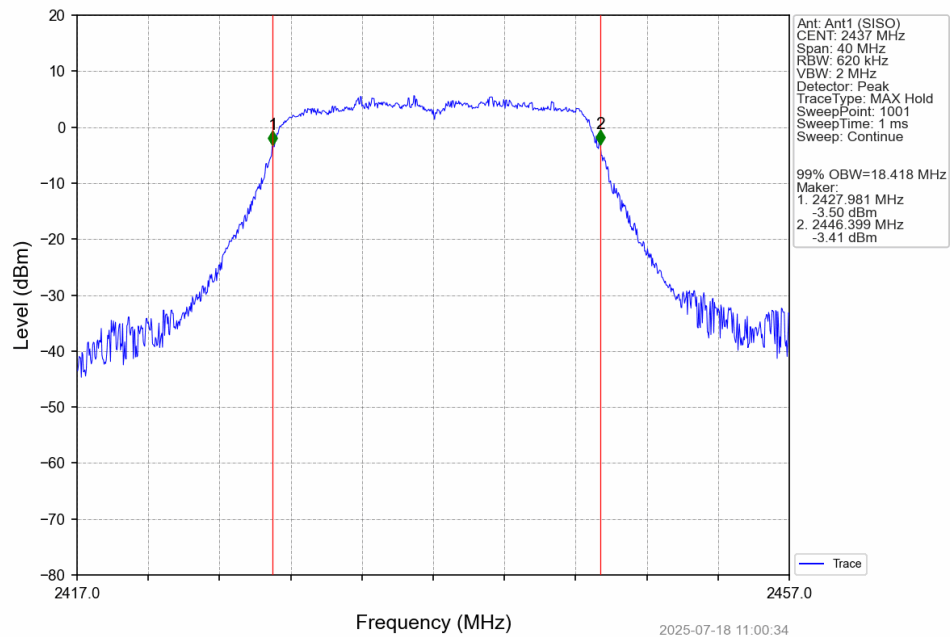
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



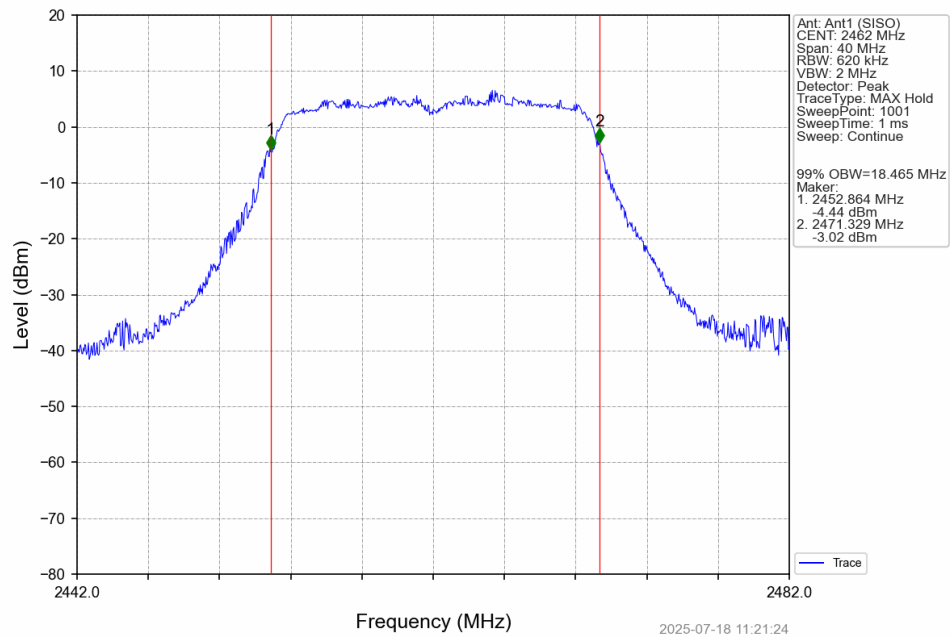
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



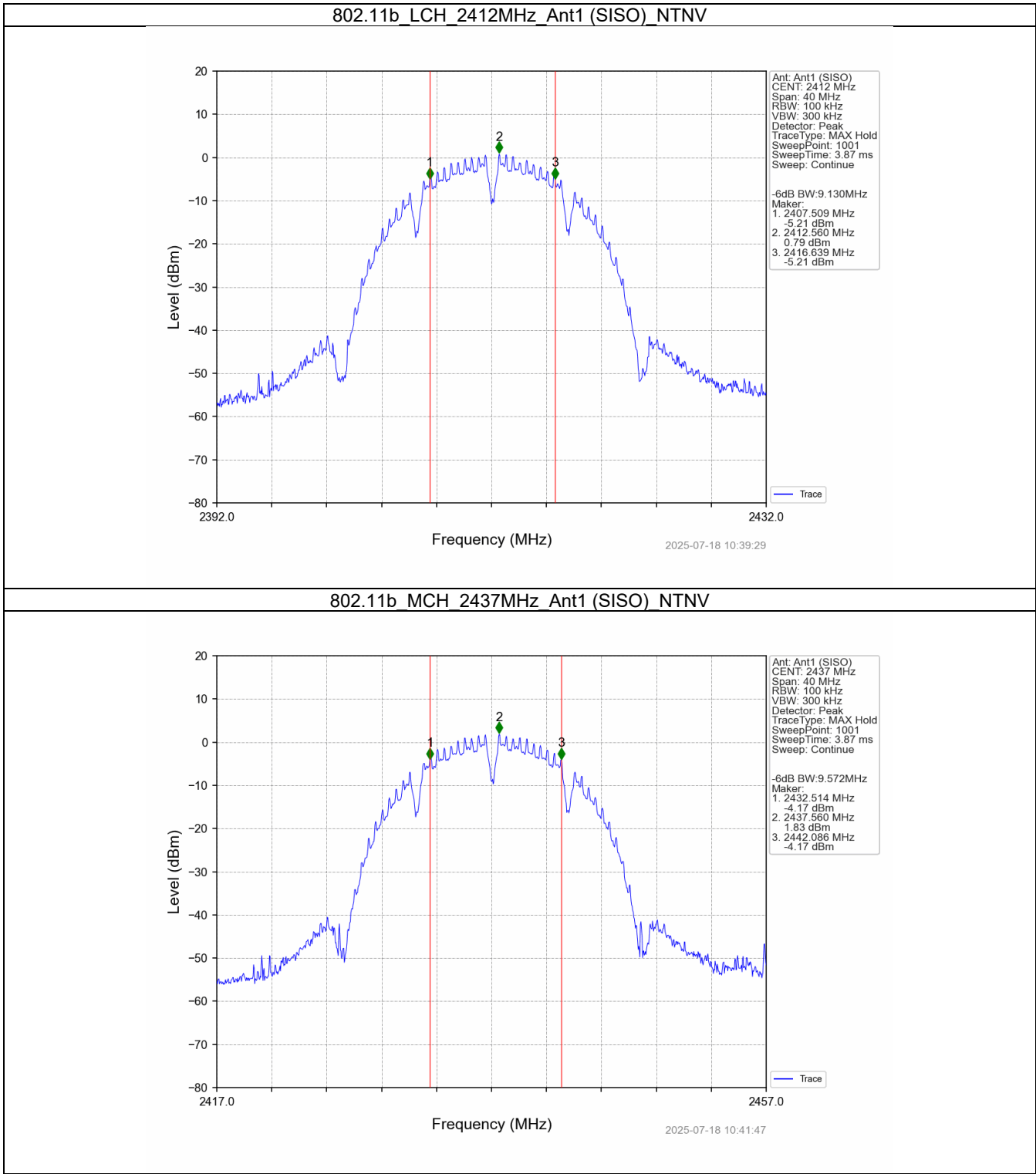
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



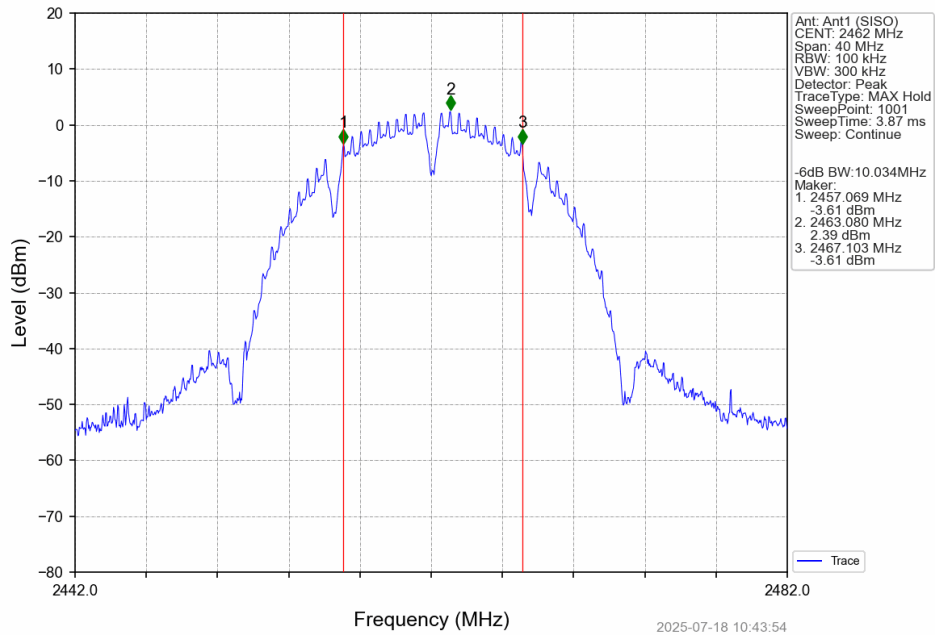
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



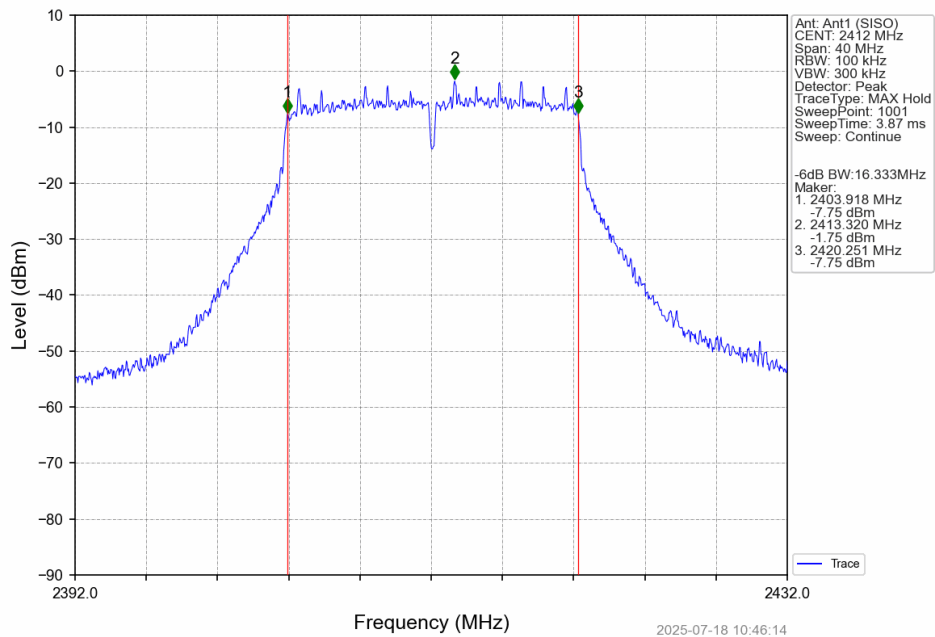
2.2.2 6dB BW



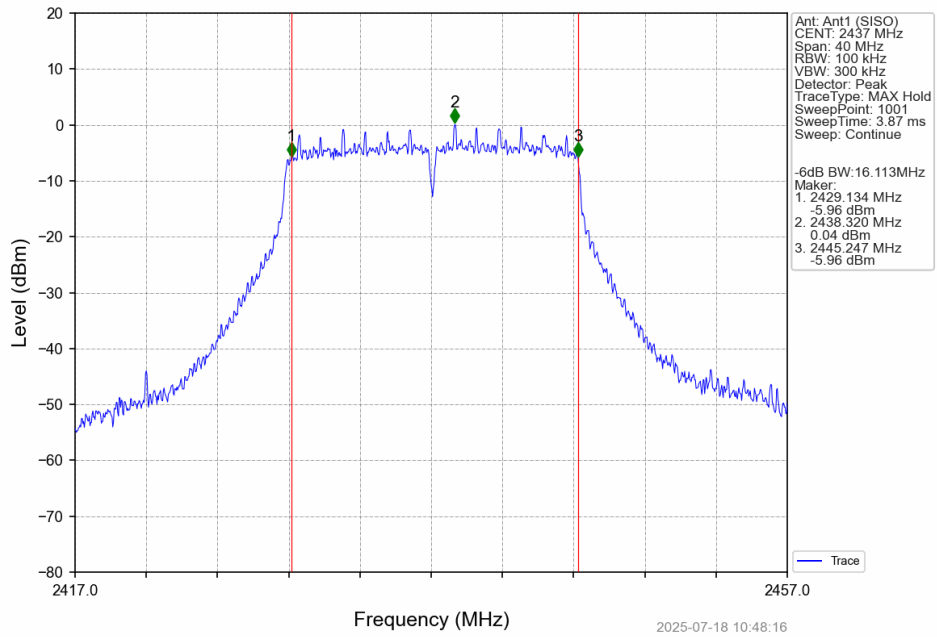
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



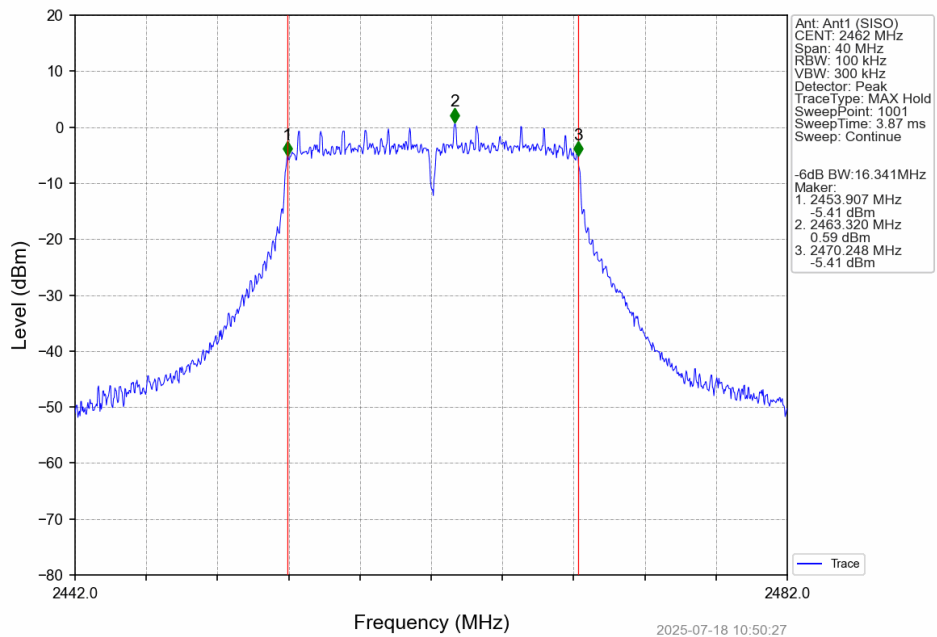
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



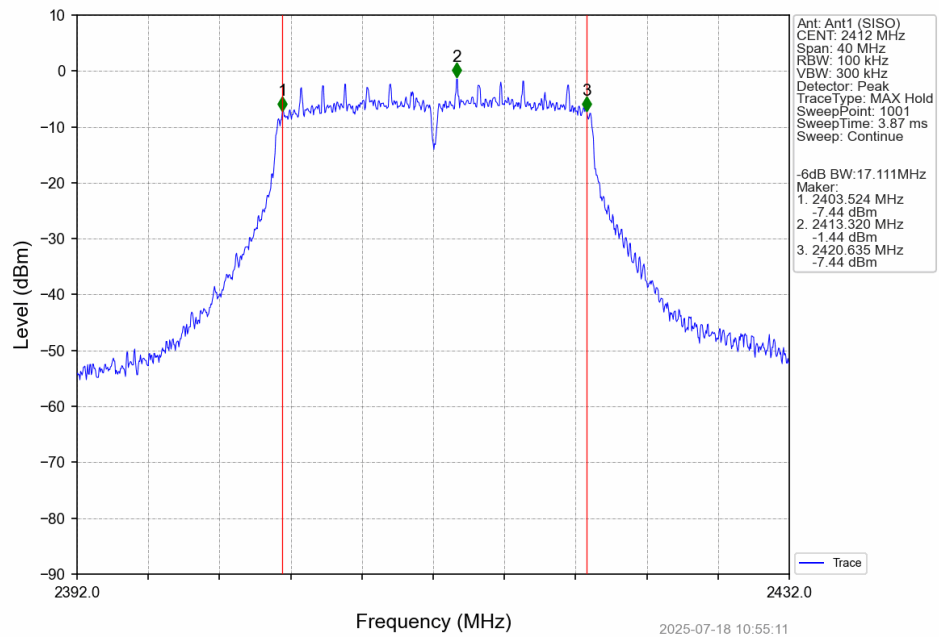
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



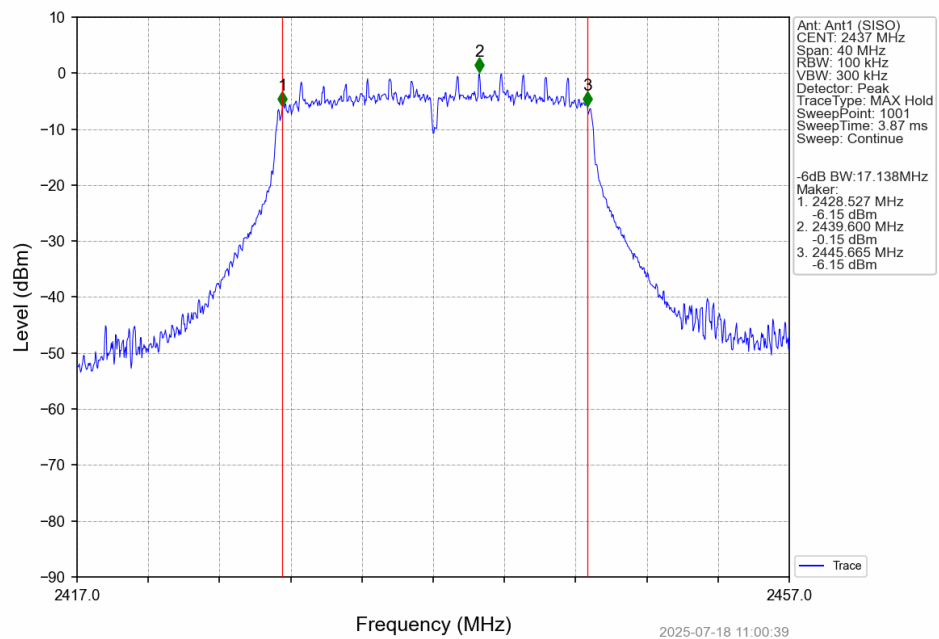
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



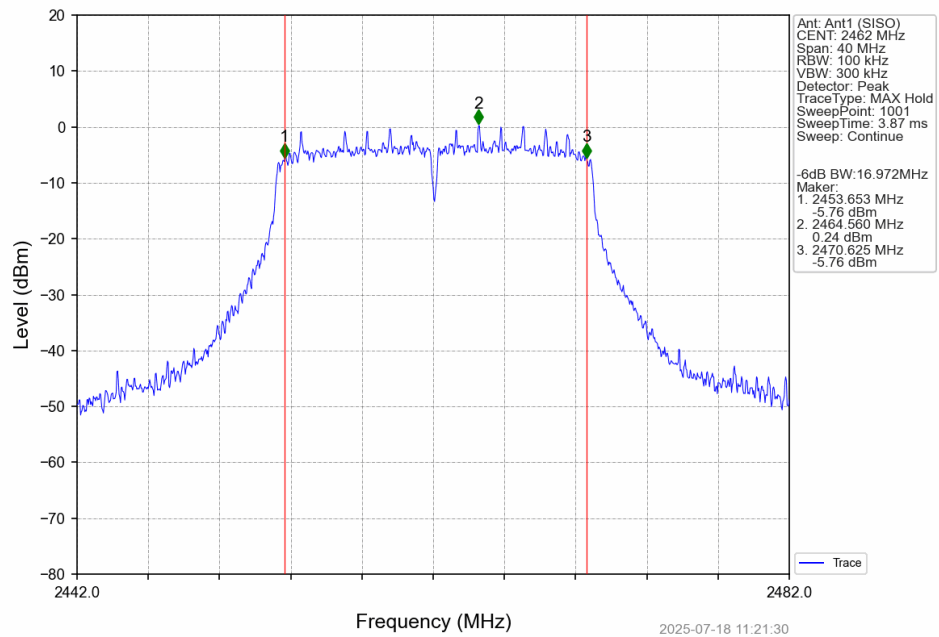
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



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	11.81	<=30	Pass
		2437	13.10	<=30	Pass
		2462	13.76	<=30	Pass
802.11g	SISO	2412	17.02	<=30	Pass
		2437	18.54	<=30	Pass
		2462	19.12	<=30	Pass
802.11n (HT20)	SISO	2412	16.97	<=30	Pass
		2437	18.60	<=30	Pass
		2462	19.01	<=30	Pass

4. Maximum Power Spectral Density

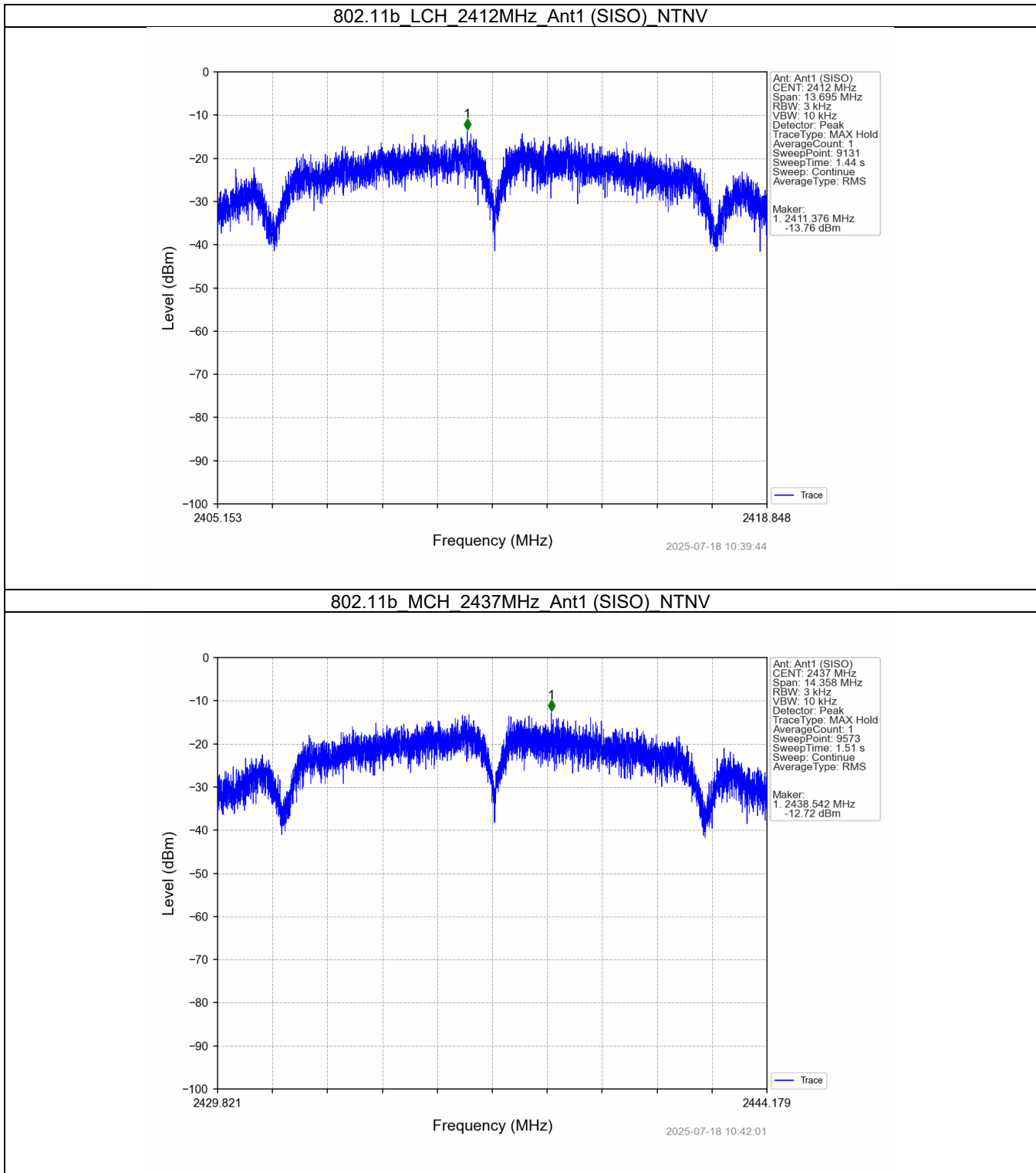
4.1 Test Result

4.1.1 PSD

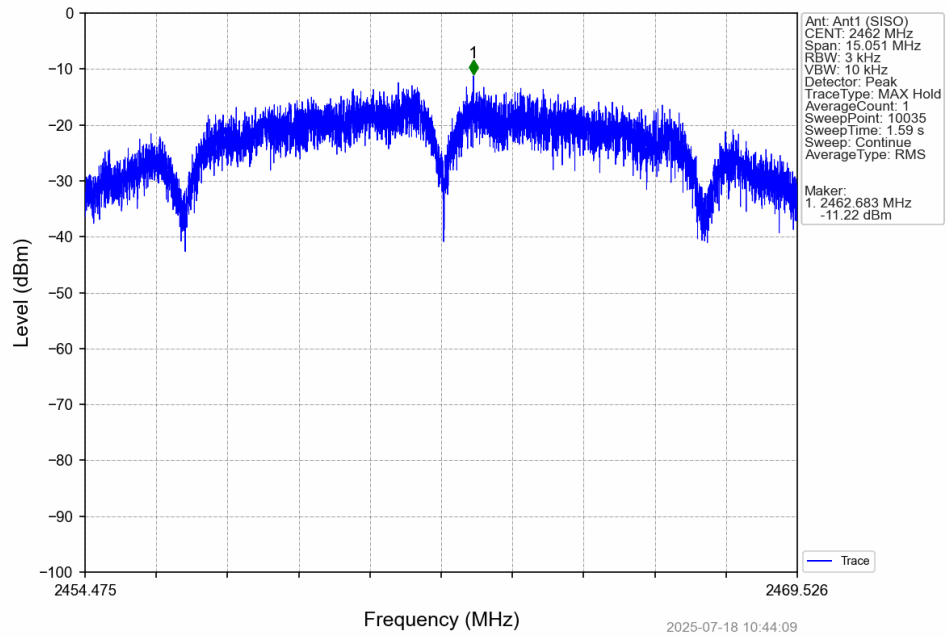
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-13.76	<=8	Pass
		2437	-12.72	<=8	Pass
		2462	-11.22	<=8	Pass
802.11g	SISO	2412	-15.45	<=8	Pass
		2437	-14.63	<=8	Pass
		2462	-13.55	<=8	Pass
802.11n (HT20)	SISO	2412	-16.47	<=8	Pass
		2437	-14.64	<=8	Pass
		2462	-14.15	<=8	Pass

4.2 Test Graph

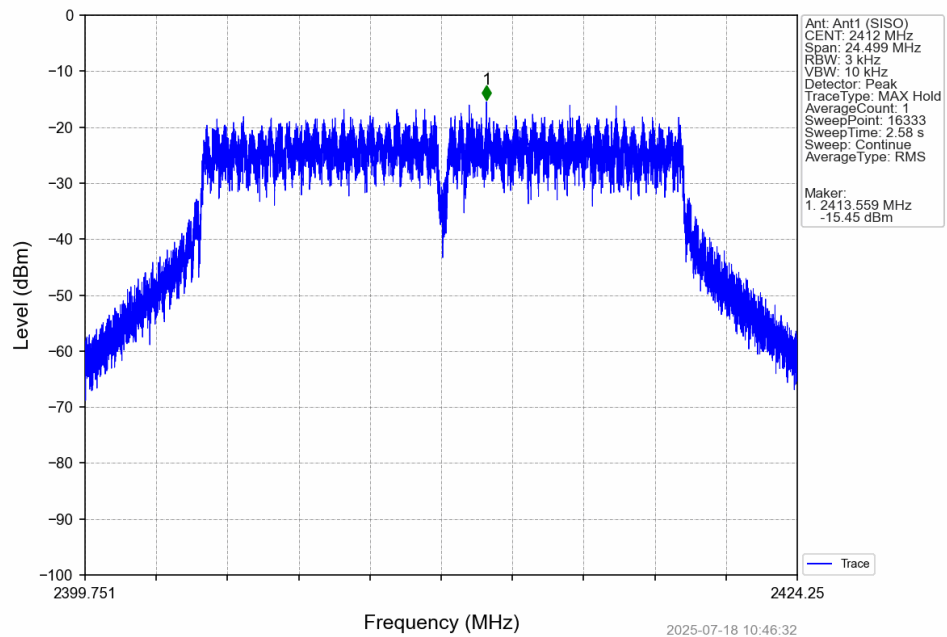
4.2.1 PSD



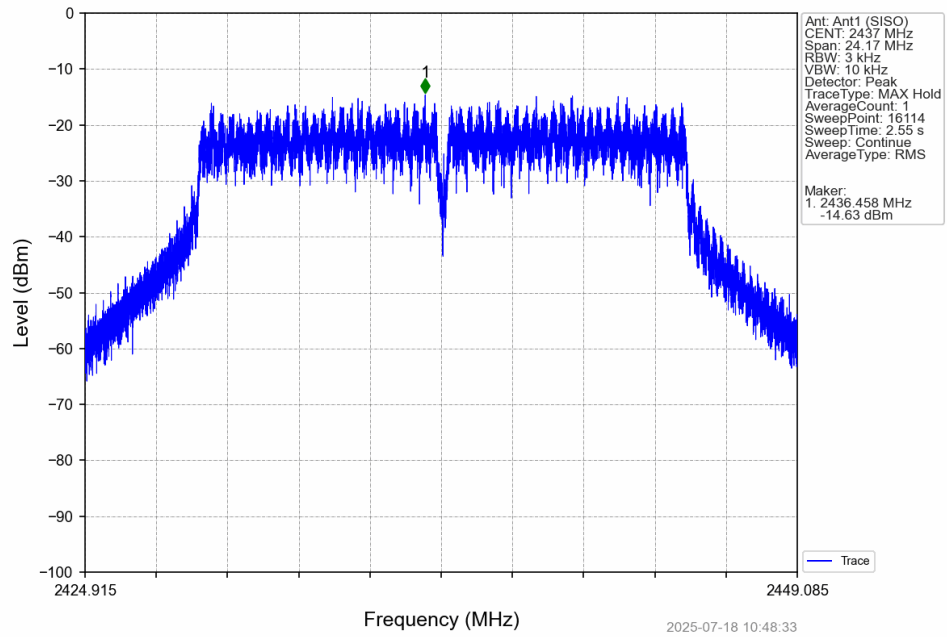
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



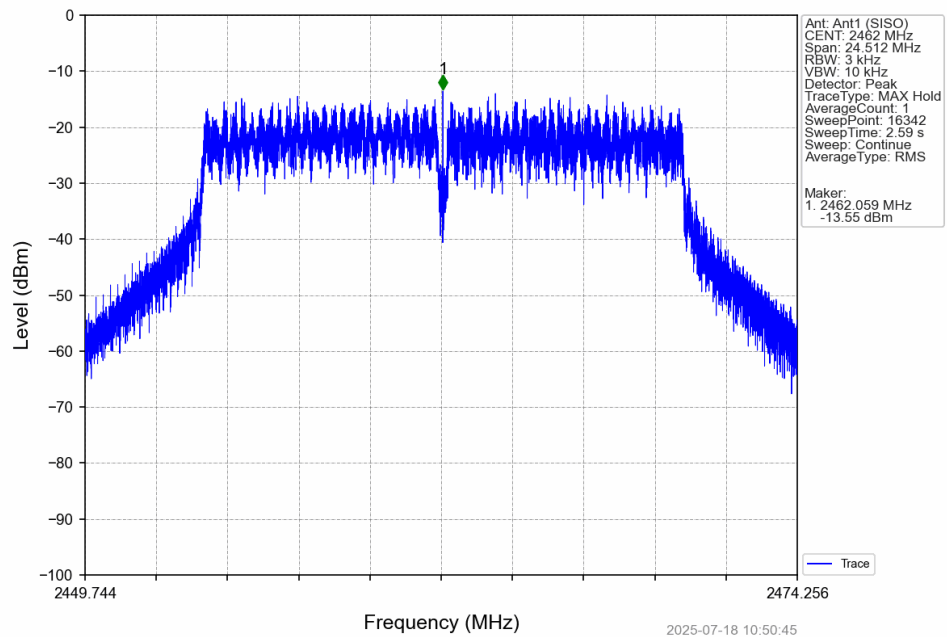
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



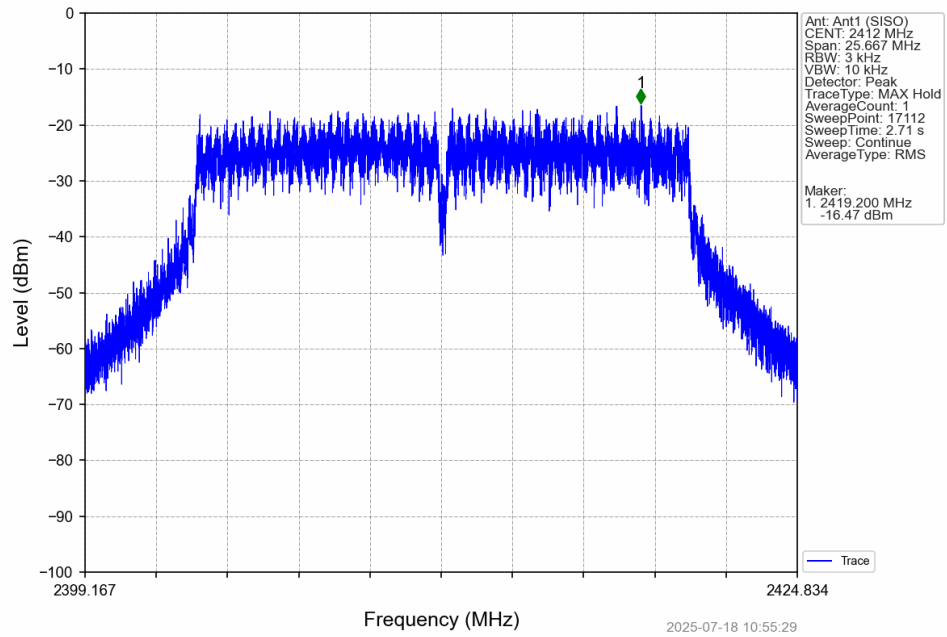
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



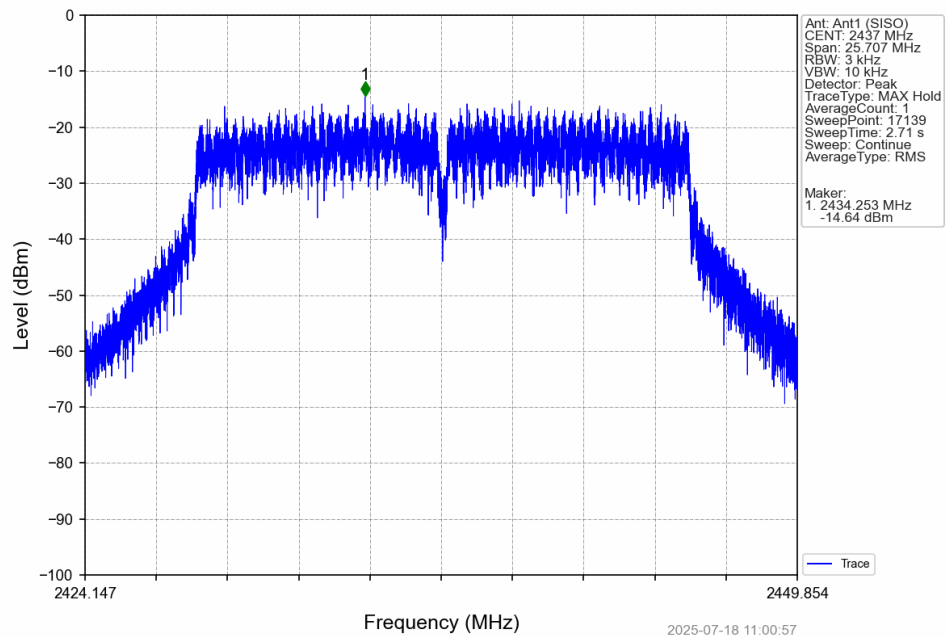
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



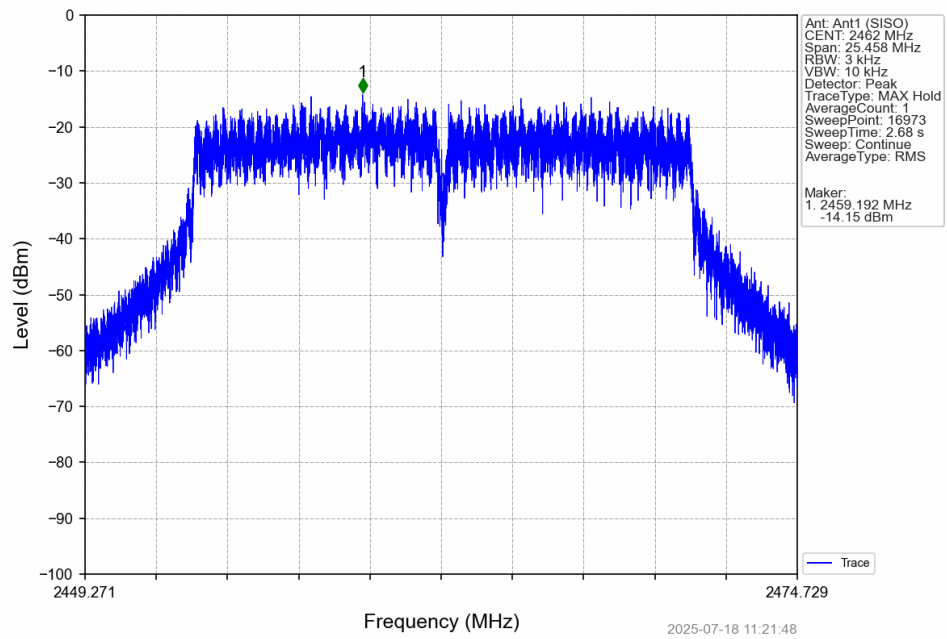
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



2025-07-18 11:21:48

5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

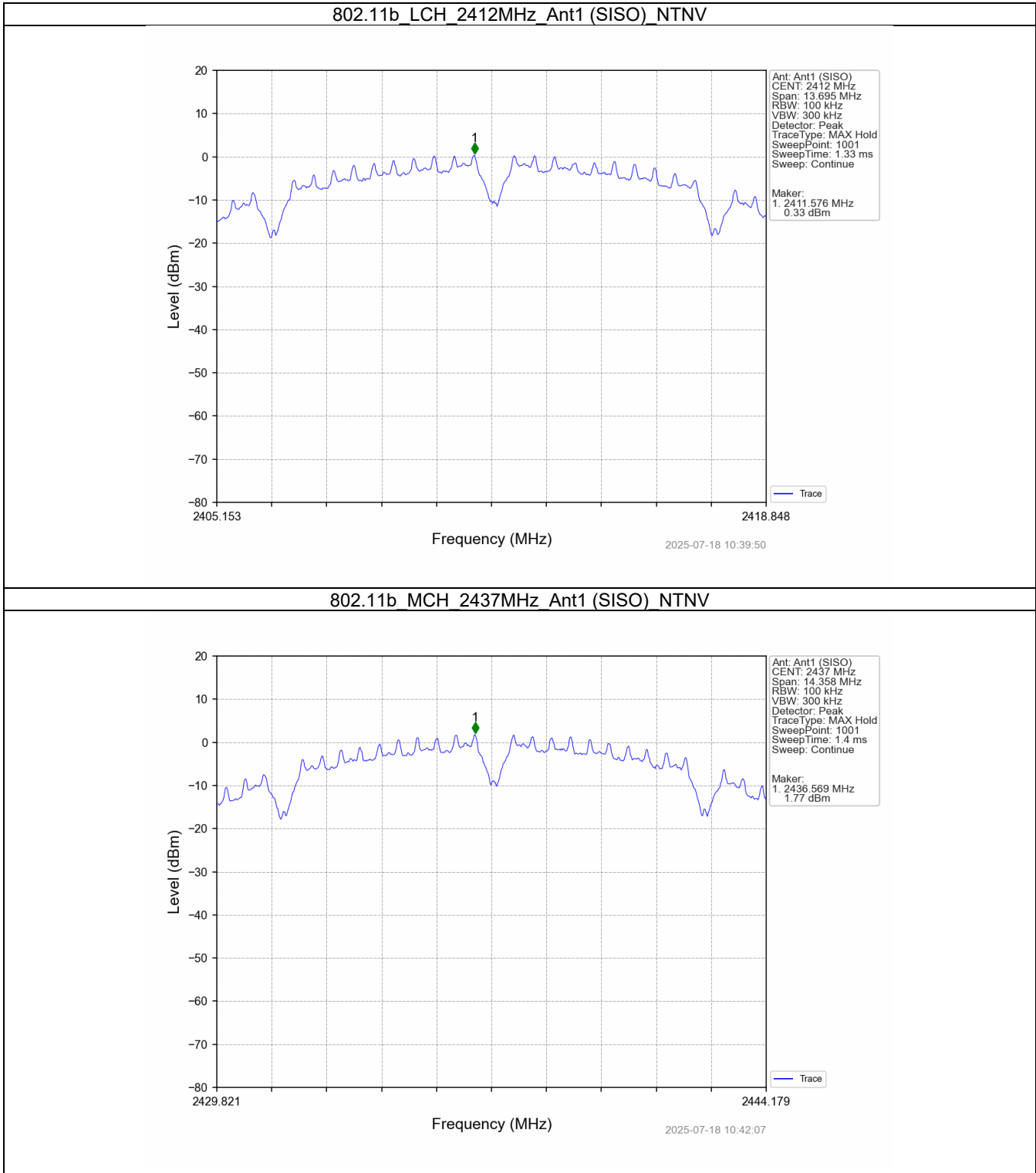
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	0.33
		2437	1	1.77
		2462	1	2.51
802.11g	SISO	2412	1	-1.68
		2437	1	-0.04
		2462	1	0.31
802.11n (HT20)	SISO	2412	1	-1.68
		2437	1	0.19
		2462	1	0.52
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.				

5.1.2 CSE

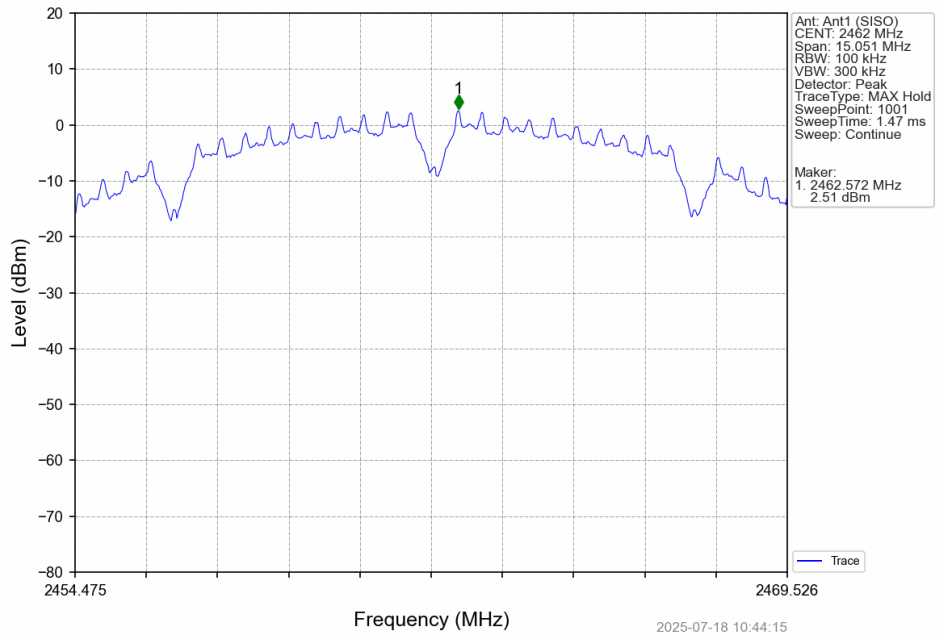
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	2.51	-17.49	Pass
		2437	1	2.51	-17.49	Pass
		2462	1	2.51	-17.49	Pass
802.11g	SISO	2412	1	0.31	-19.69	Pass
		2437	1	0.31	-19.69	Pass
		2462	1	0.31	-19.69	Pass
802.11n (HT20)	SISO	2412	1	0.52	-19.48	Pass
		2437	1	0.52	-19.48	Pass
		2462	1	0.52	-19.48	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

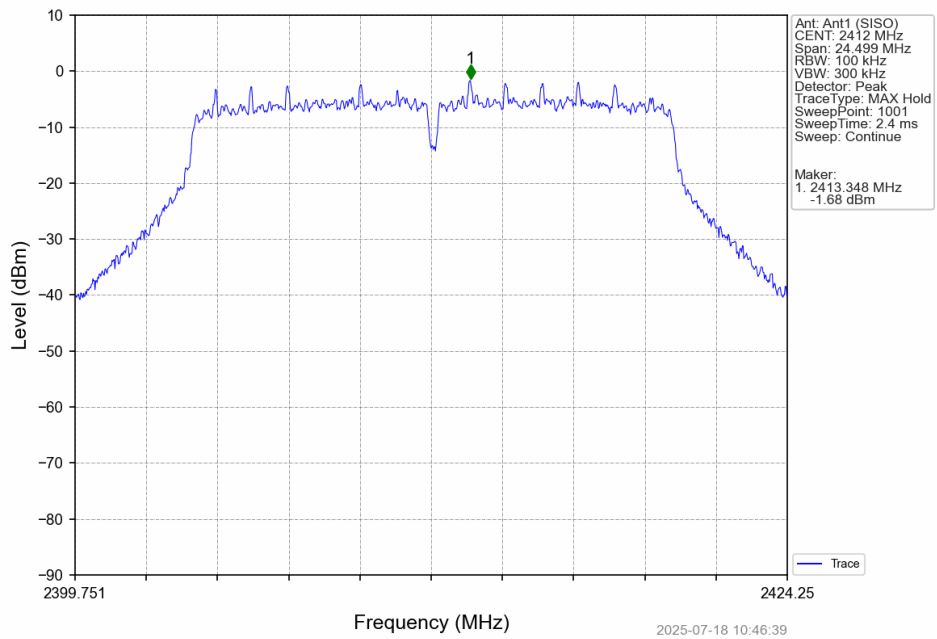
5.2.1 Ref



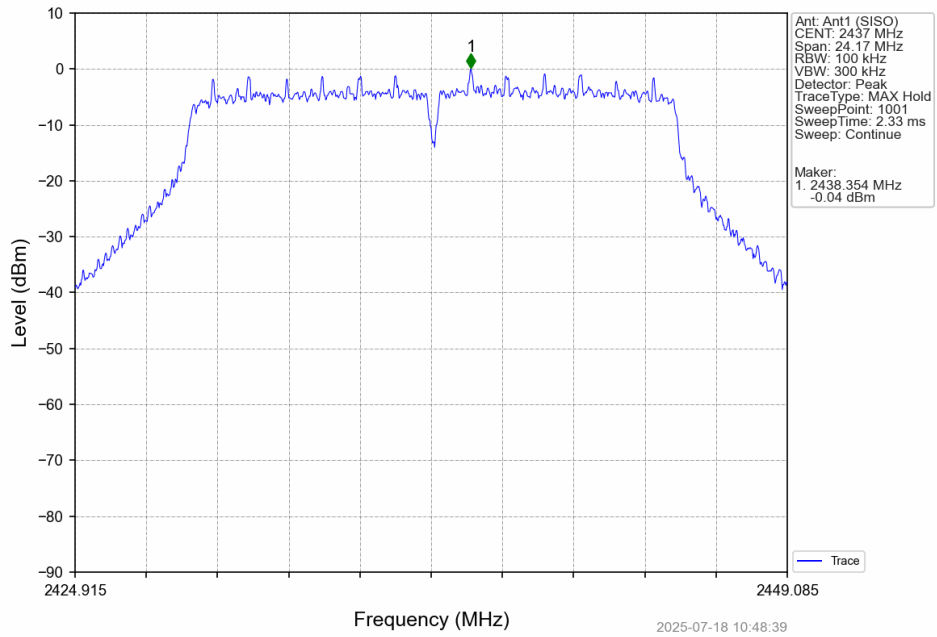
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



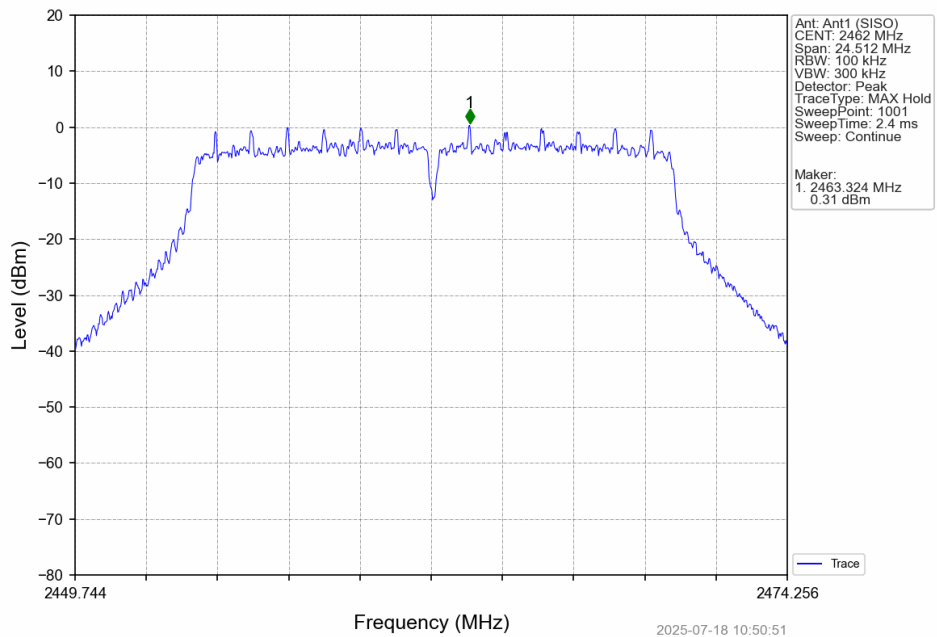
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



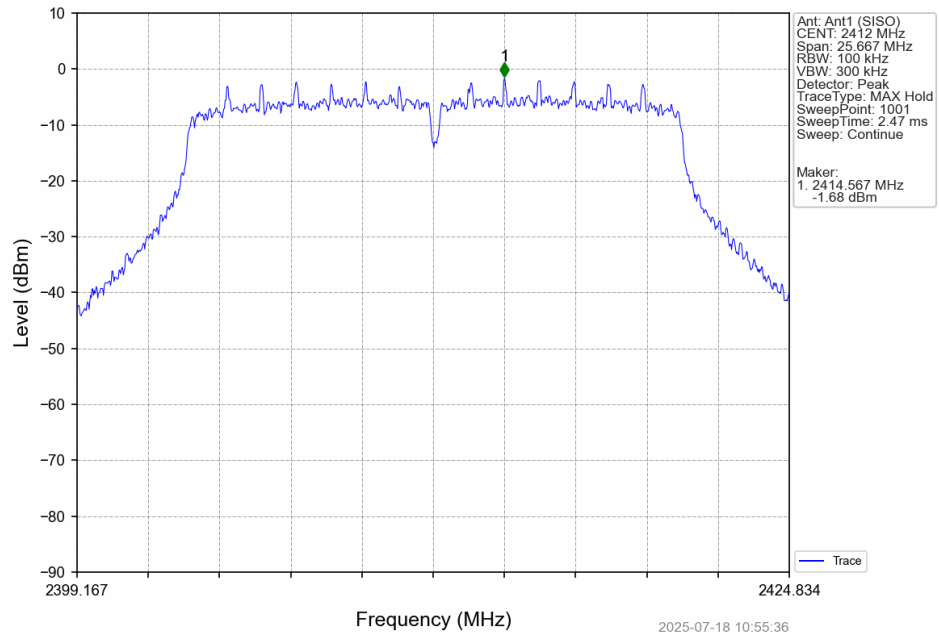
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



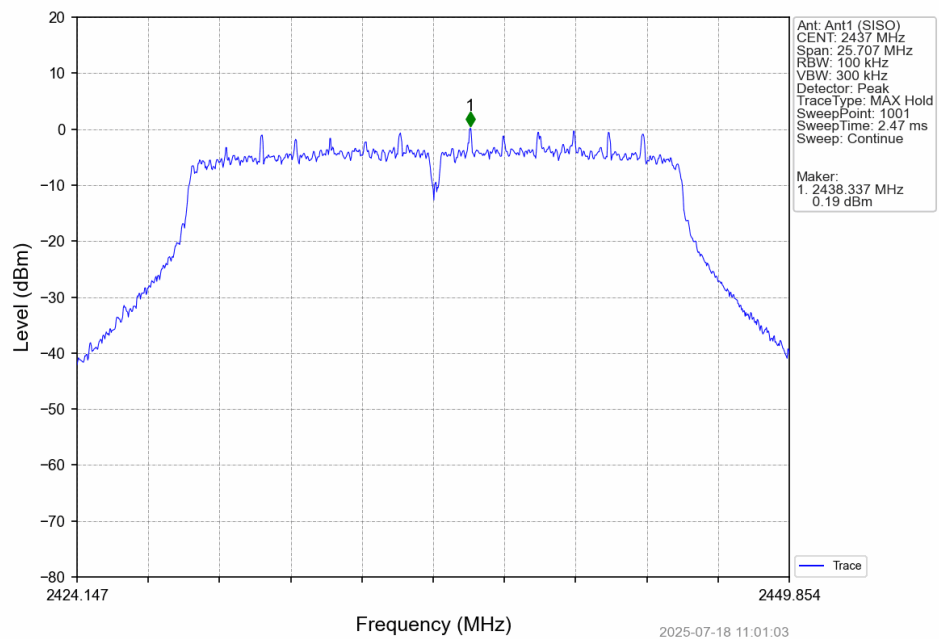
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



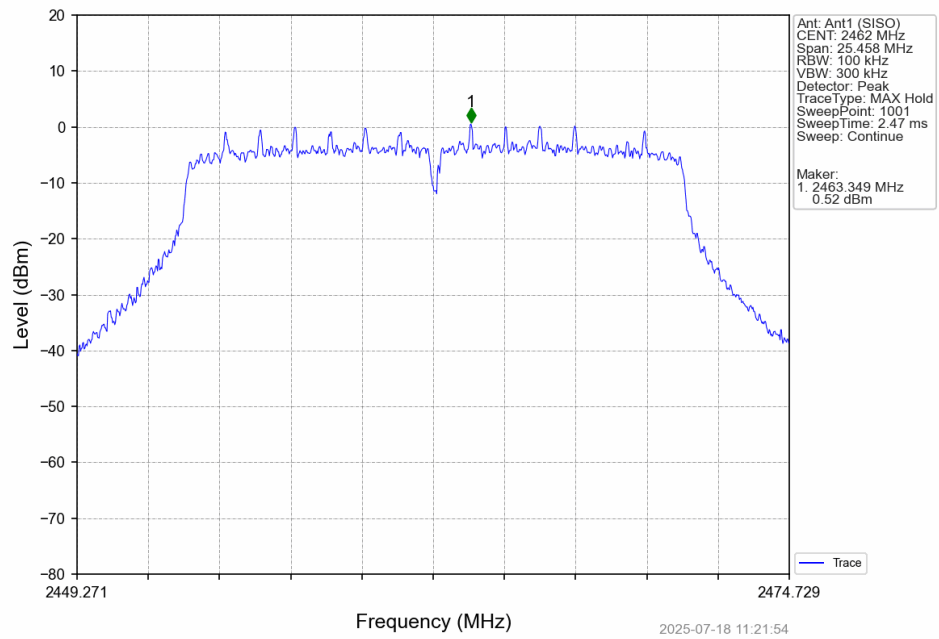
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



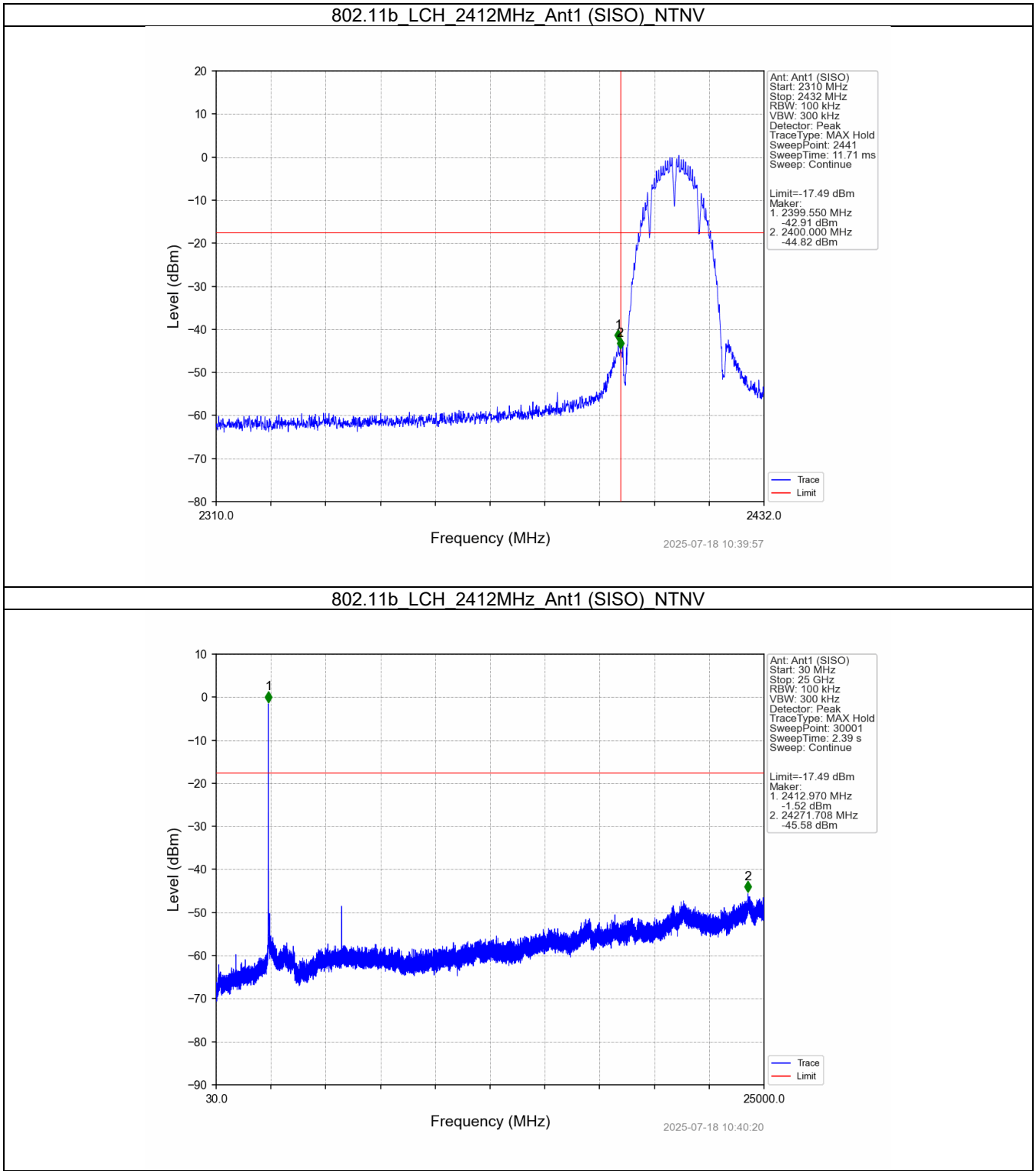
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



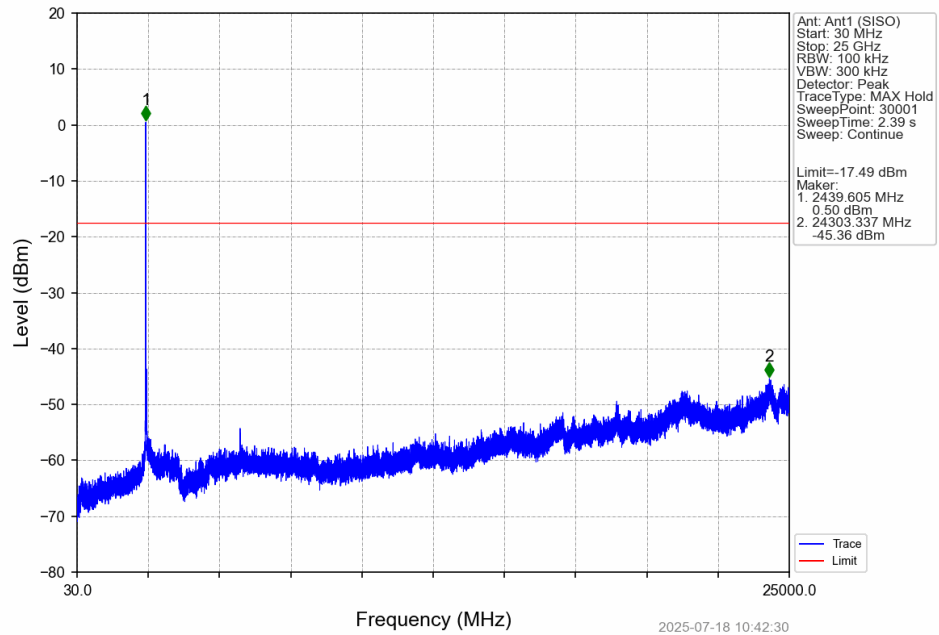
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



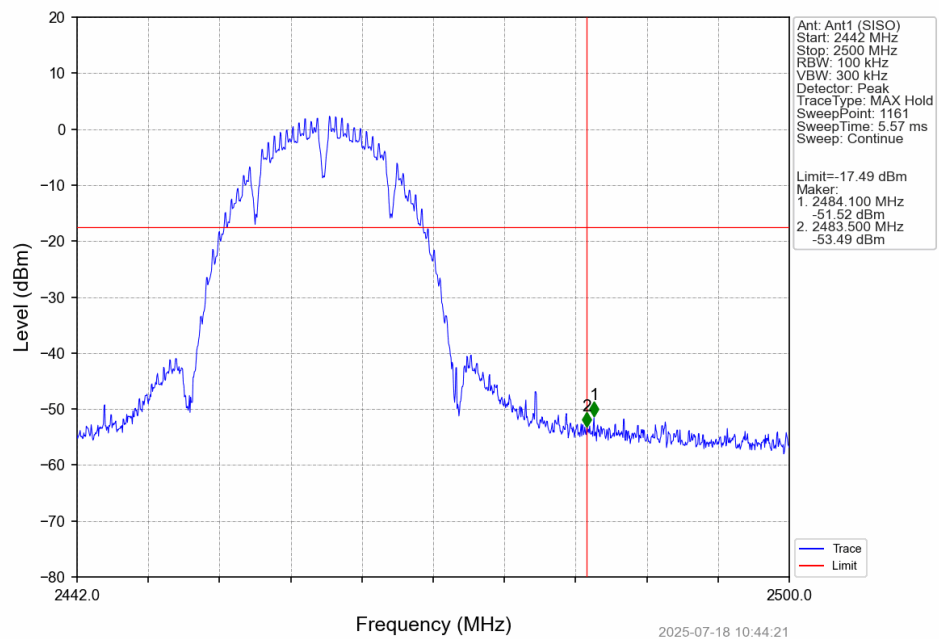
5.2.2 CSE



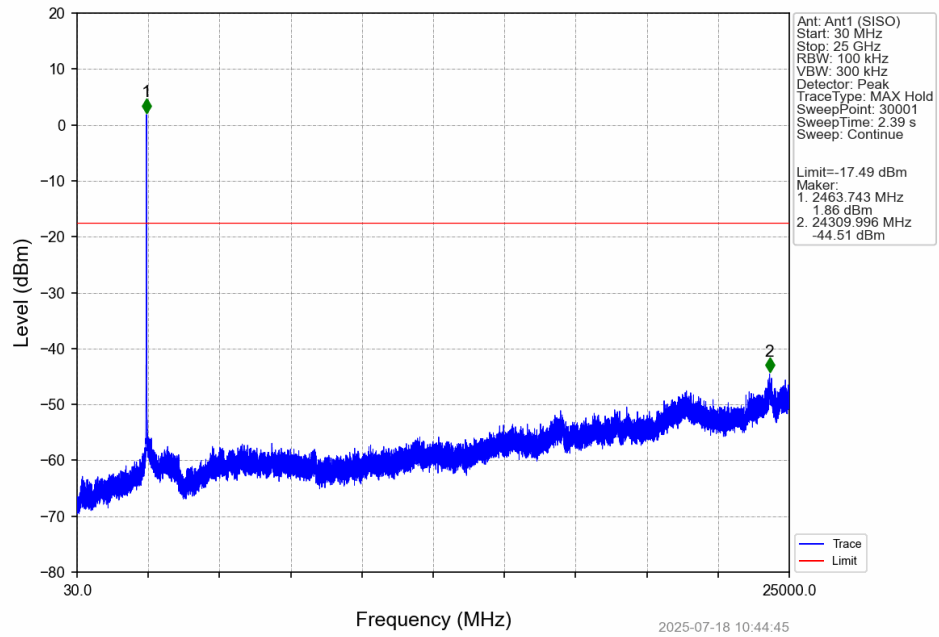
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



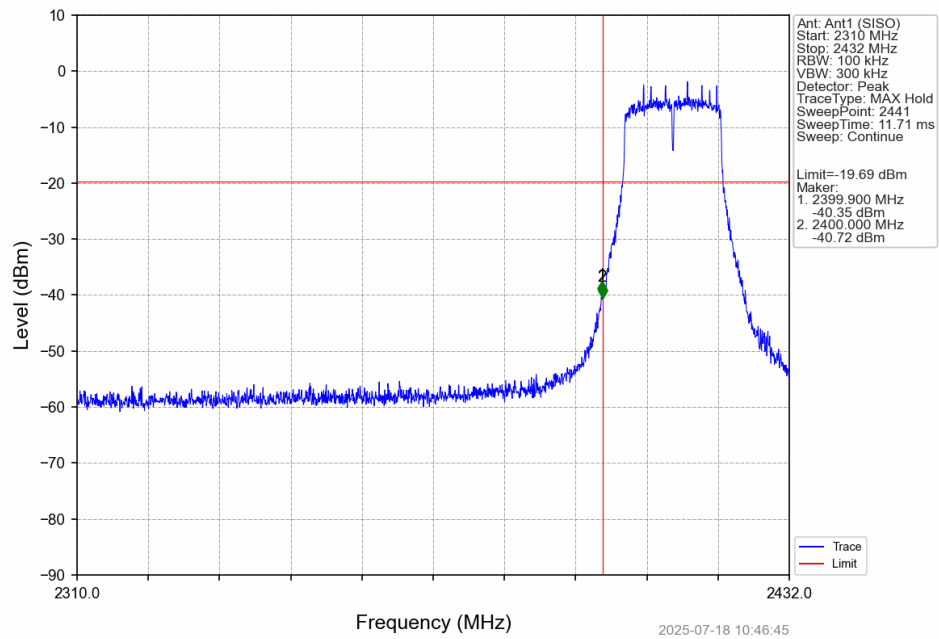
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



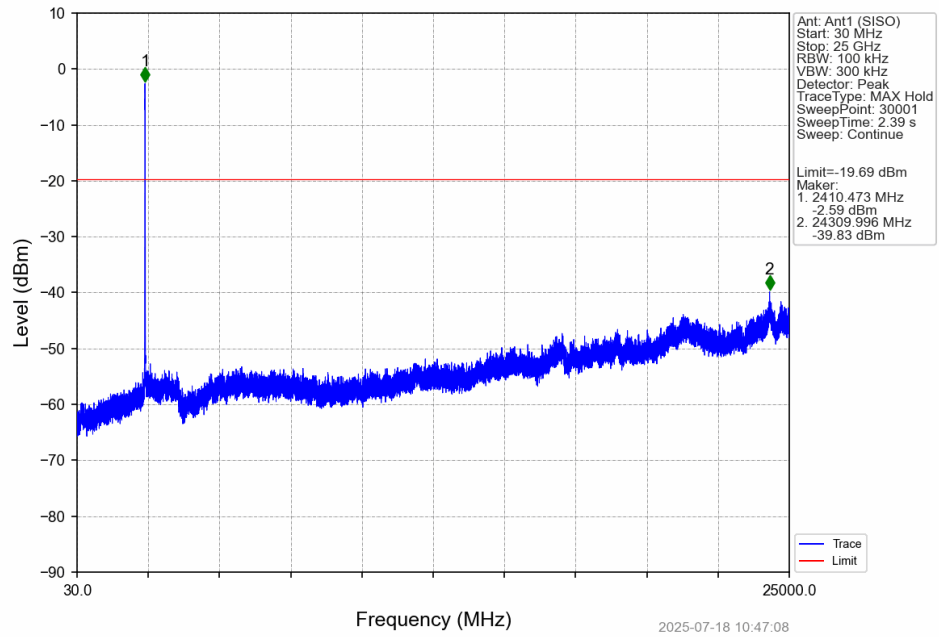
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



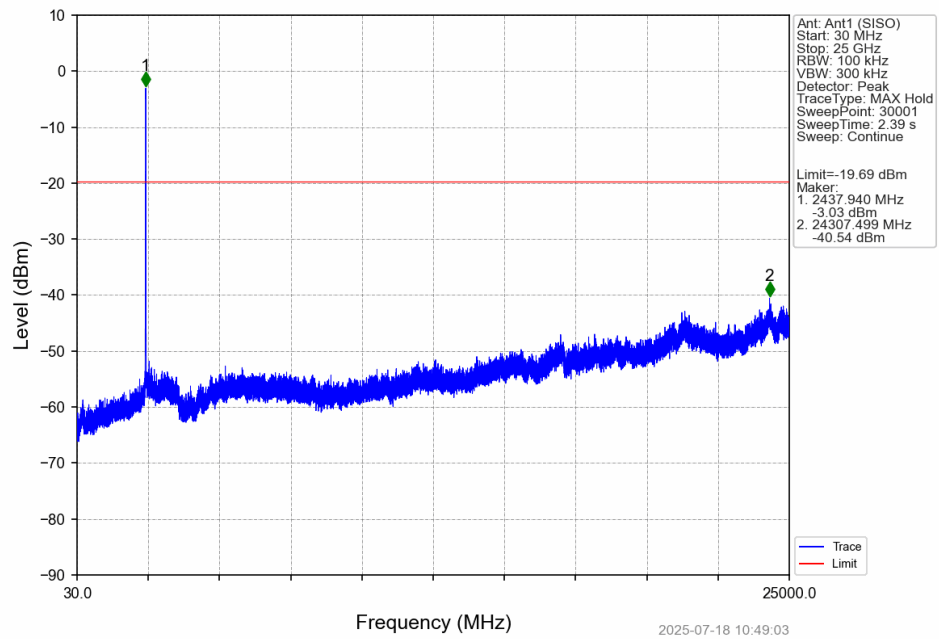
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



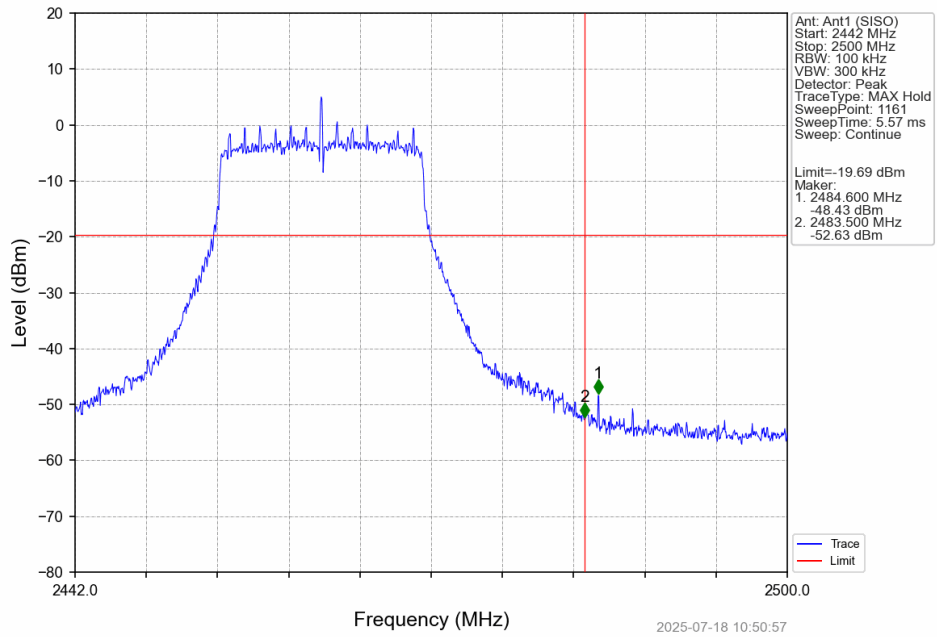
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



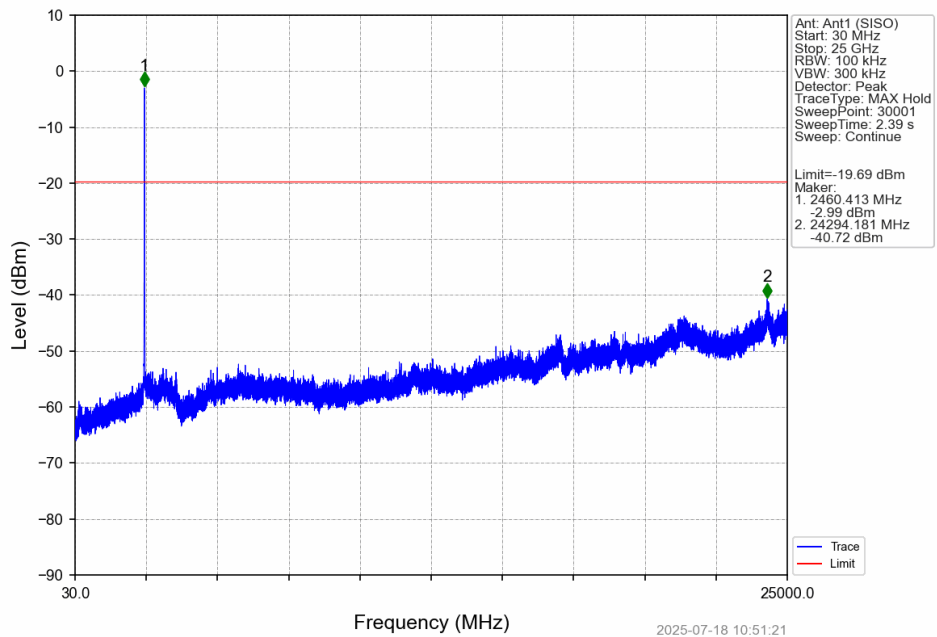
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



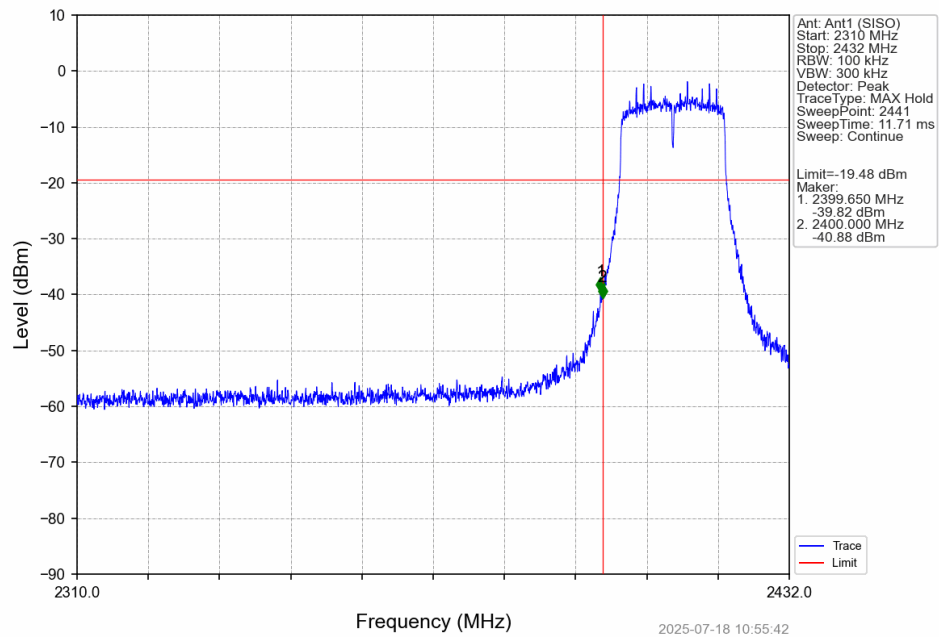
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



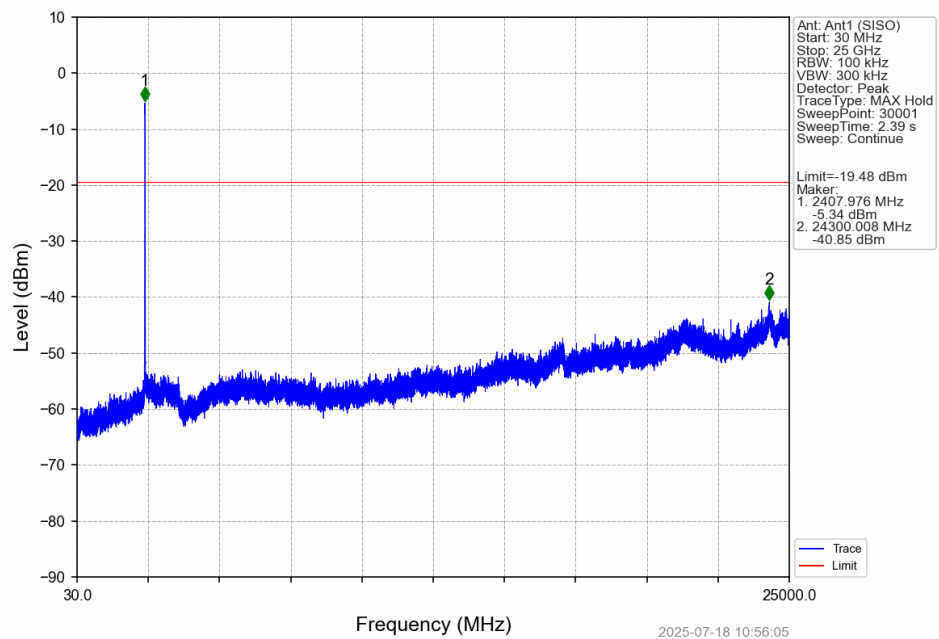
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



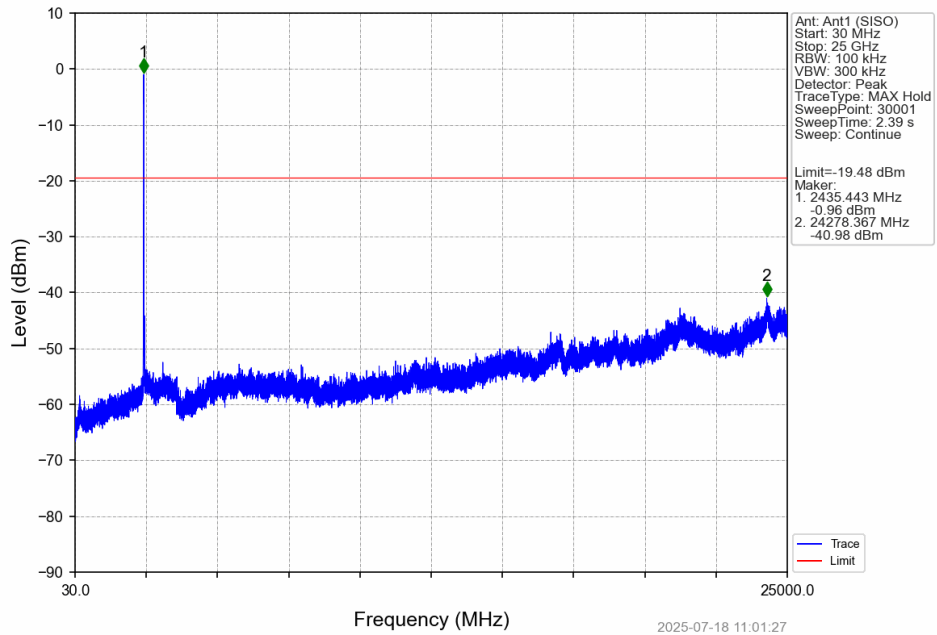
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



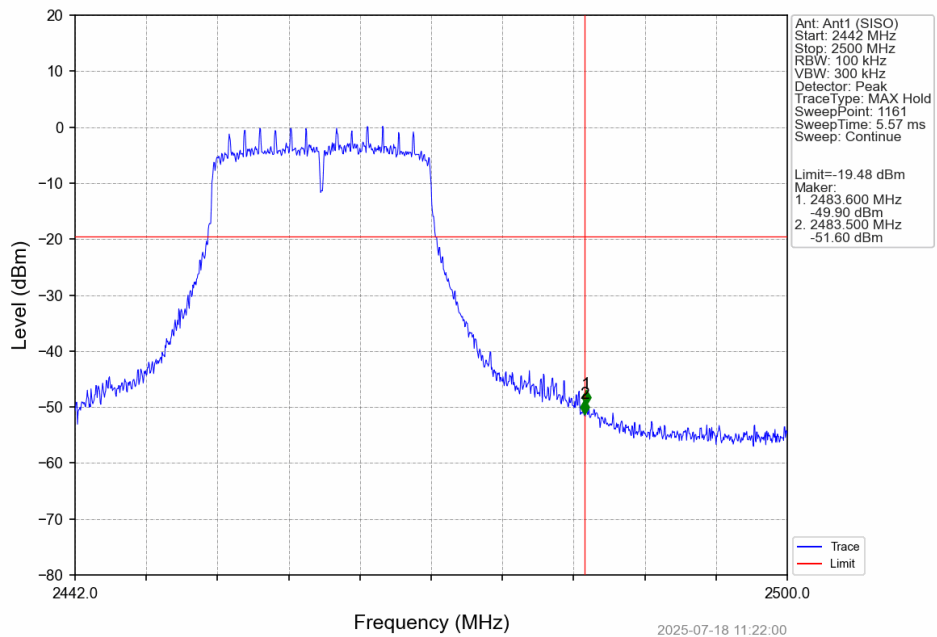
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

