

Appendix RF Test Data for 2.4G WIFI

Company: : Hangzhou Zhilegu Technology Co., Ltd.

EUT : MIDI Devices

FCC ID: : 2BWX2-FINGERSONIC

Model Number : Fingersonic Keys

Report No. : HTT202606685F02

Reviewed By : Heber He

1. Duty Cycle

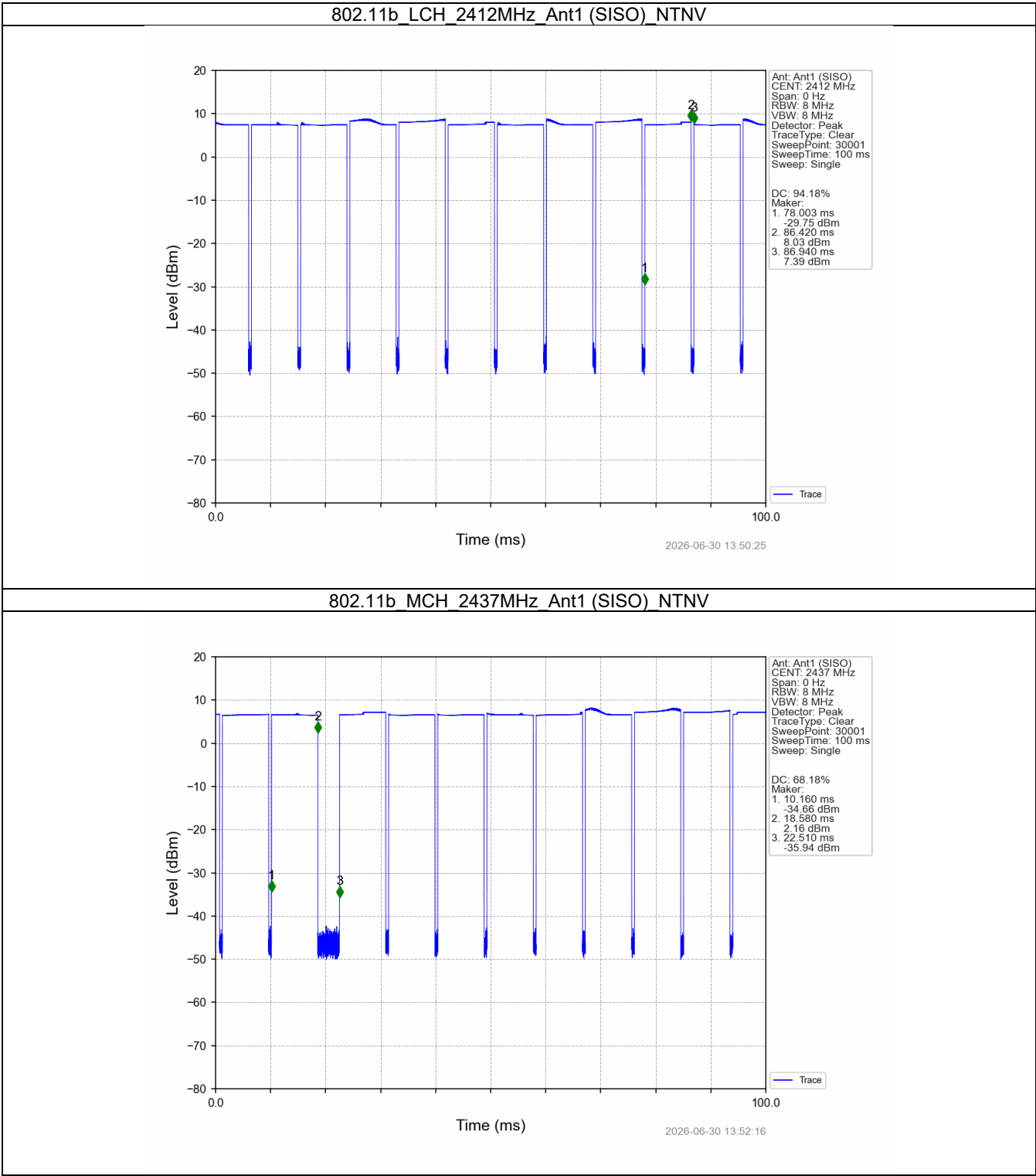
1.1 Test Result

1.1.1 Ant1

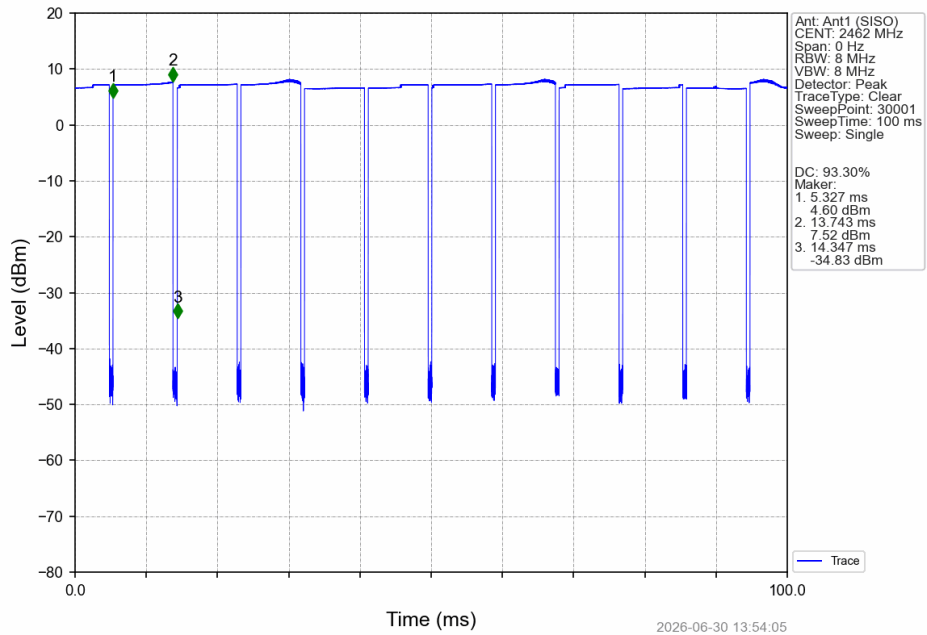
Ant1							
Mode	Tx Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	8.417	8.937	94.18	0.26	0.04
		2437	8.420	12.350	68.18	1.66	26.09
		2462	8.416	9.020	93.30	0.30	0.91
802.11g	SISO	2412	1.396	1.968	70.93	1.49	1.76
		2437	1.396	1.922	72.63	1.39	0.03
		2462	1.396	1.922	72.63	1.39	0.00
802.11n (HT20)	SISO	2412	5.090	5.619	90.59	0.43	0.17
		2437	5.090	5.616	90.63	0.43	0.00
		2462	5.090	5.614	90.67	0.43	0.00
802.11n (HT40)	SISO	2422	4.896	5.426	90.23	0.45	0.17
		2437	4.896	5.421	90.32	0.44	0.03
		2452	4.898	5.588	87.65	0.57	2.72

1.2 Test Graph

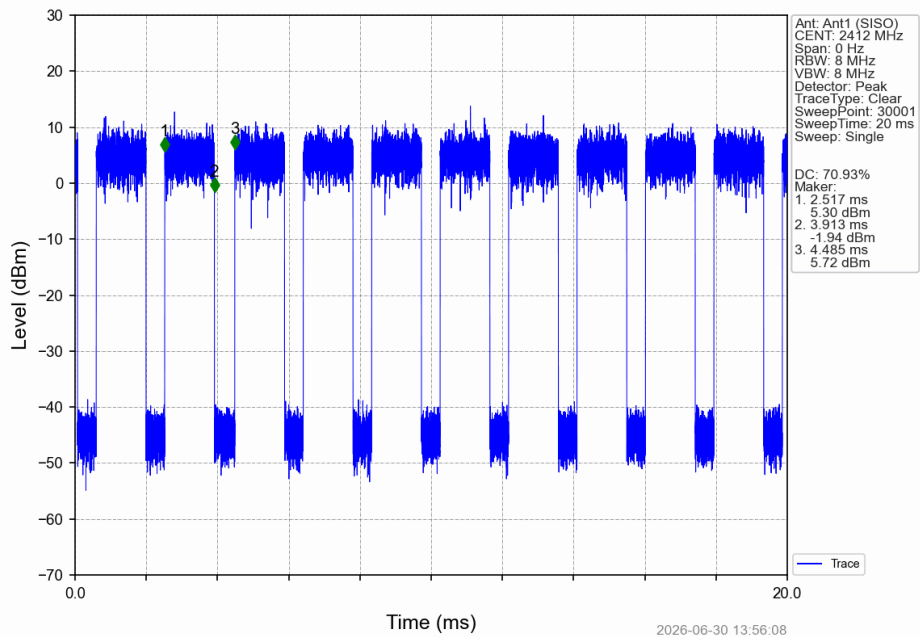
1.2.1 Ant1



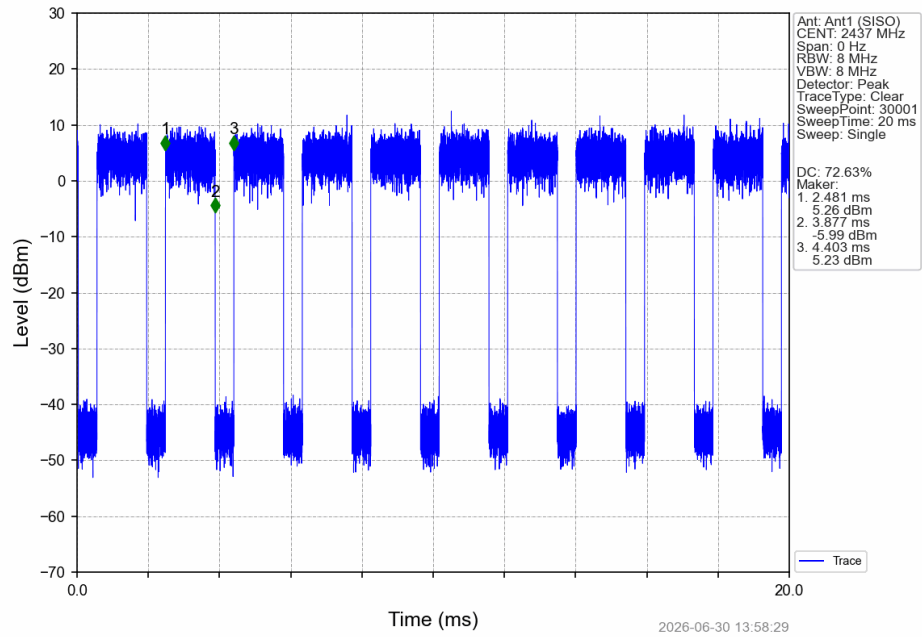
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



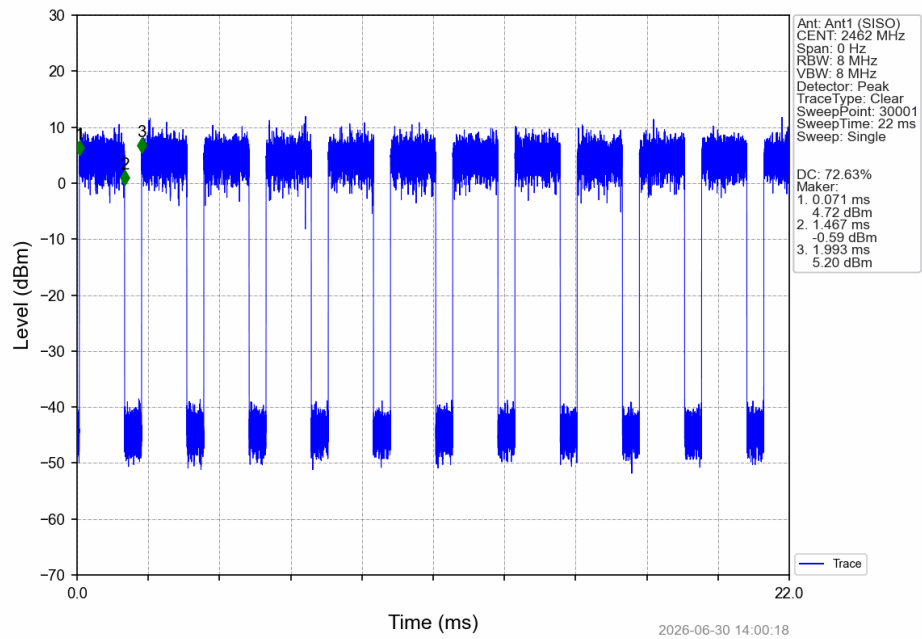
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



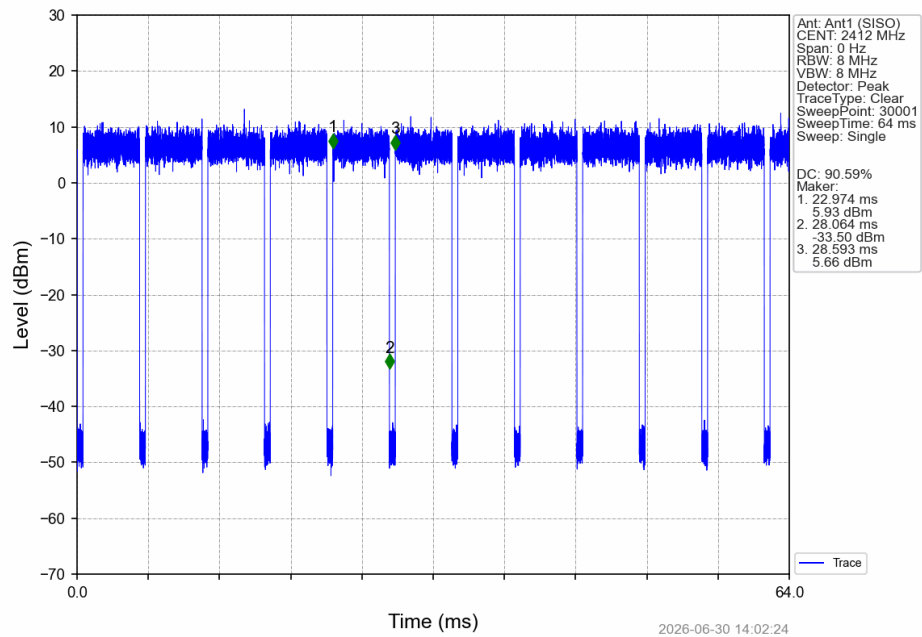
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



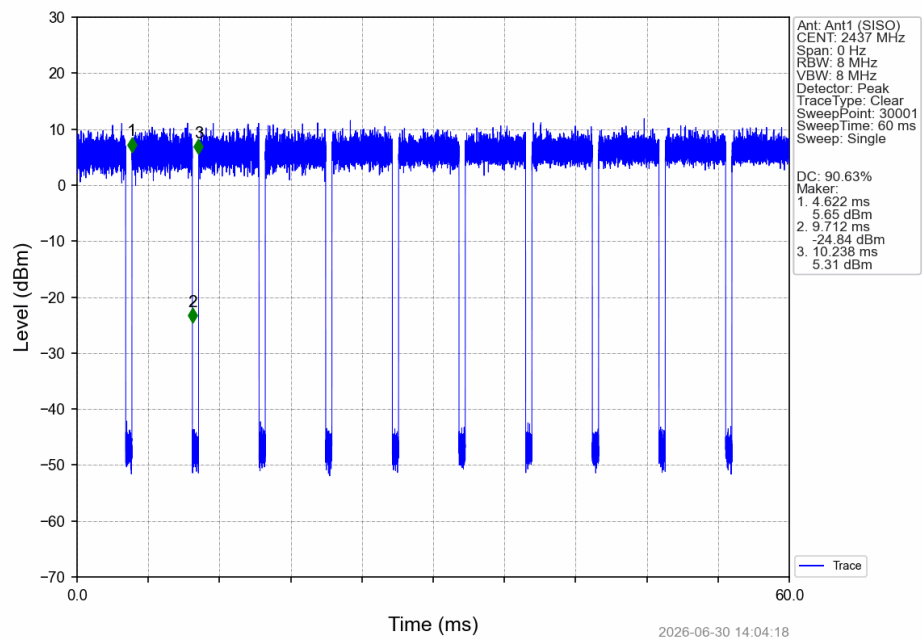
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



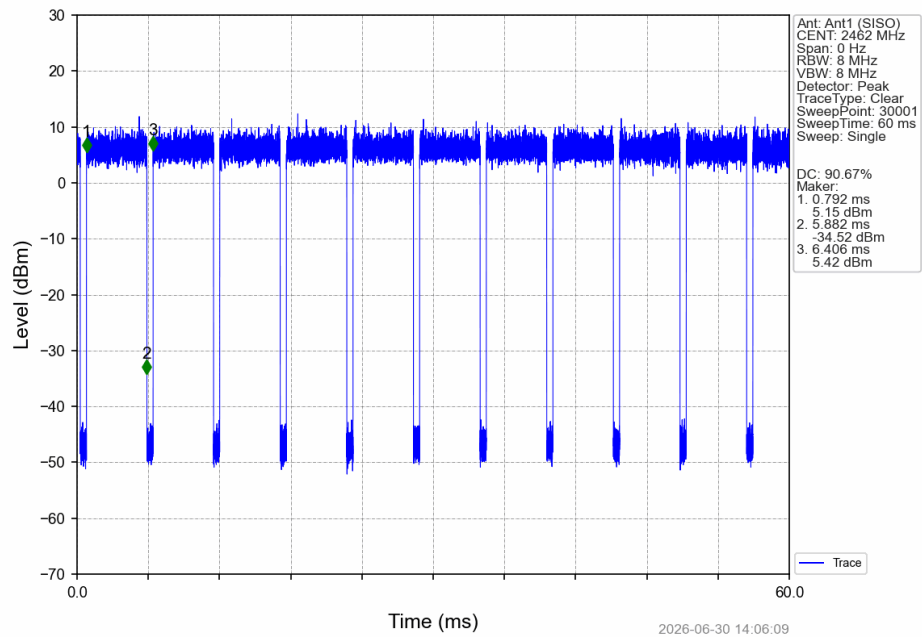
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



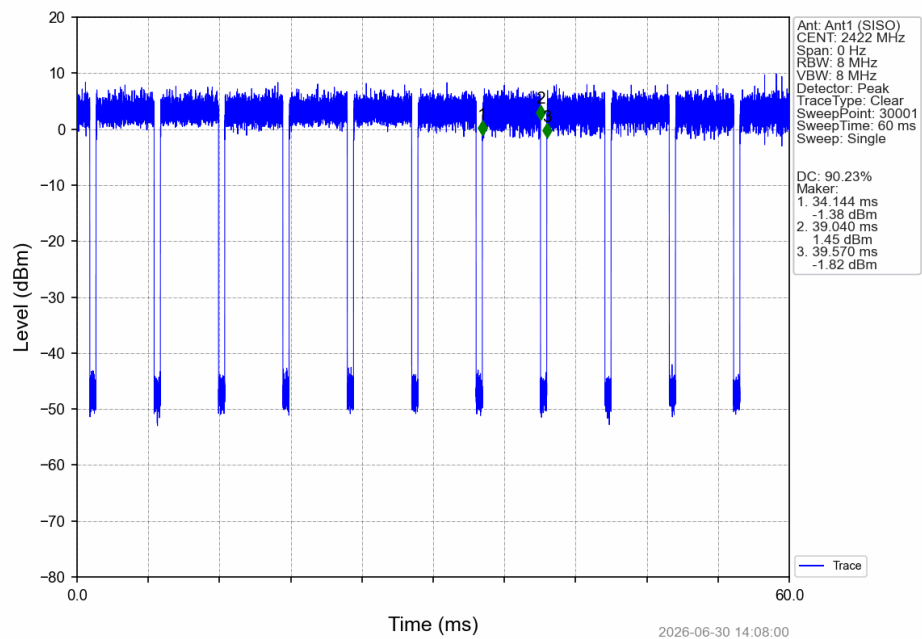
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



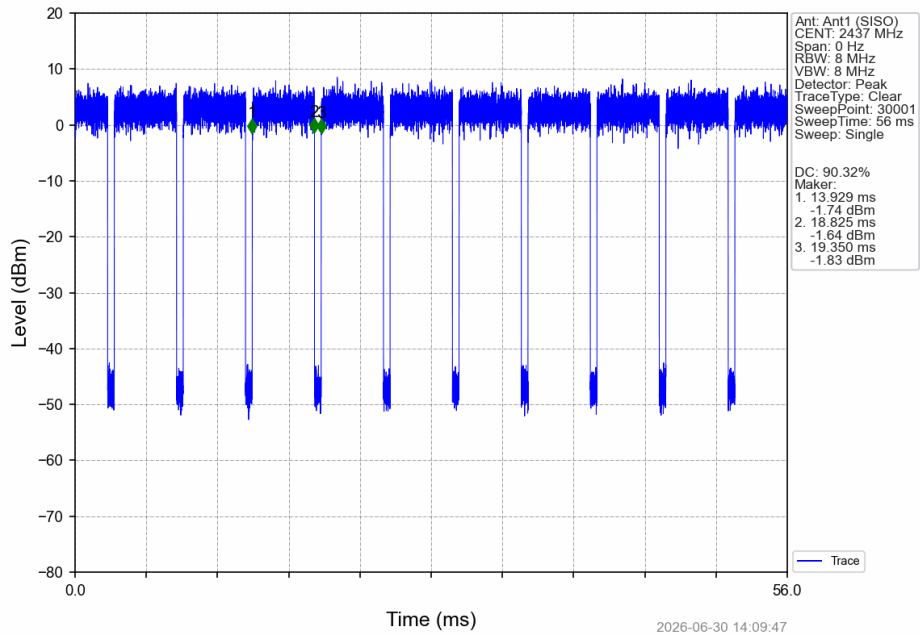
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



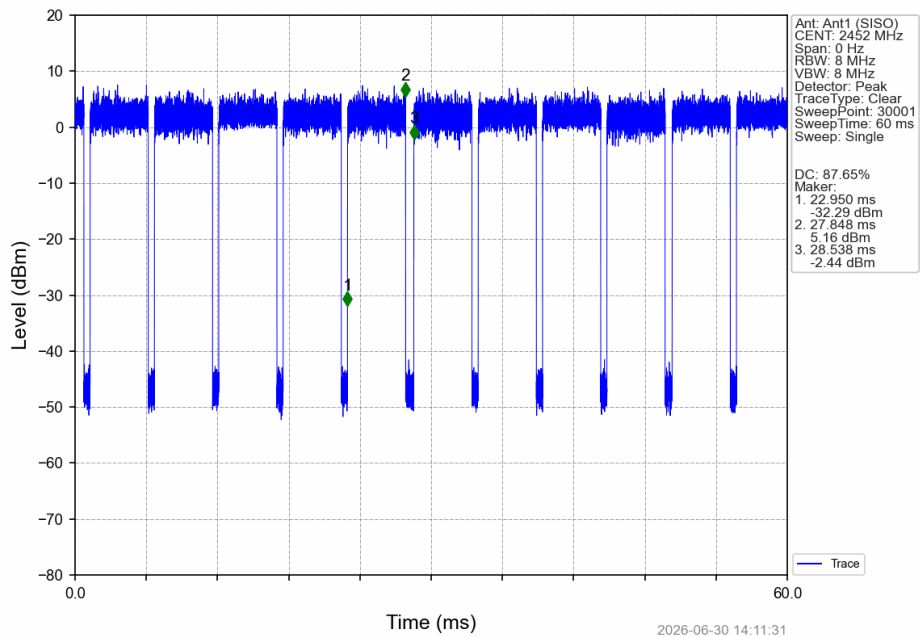
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

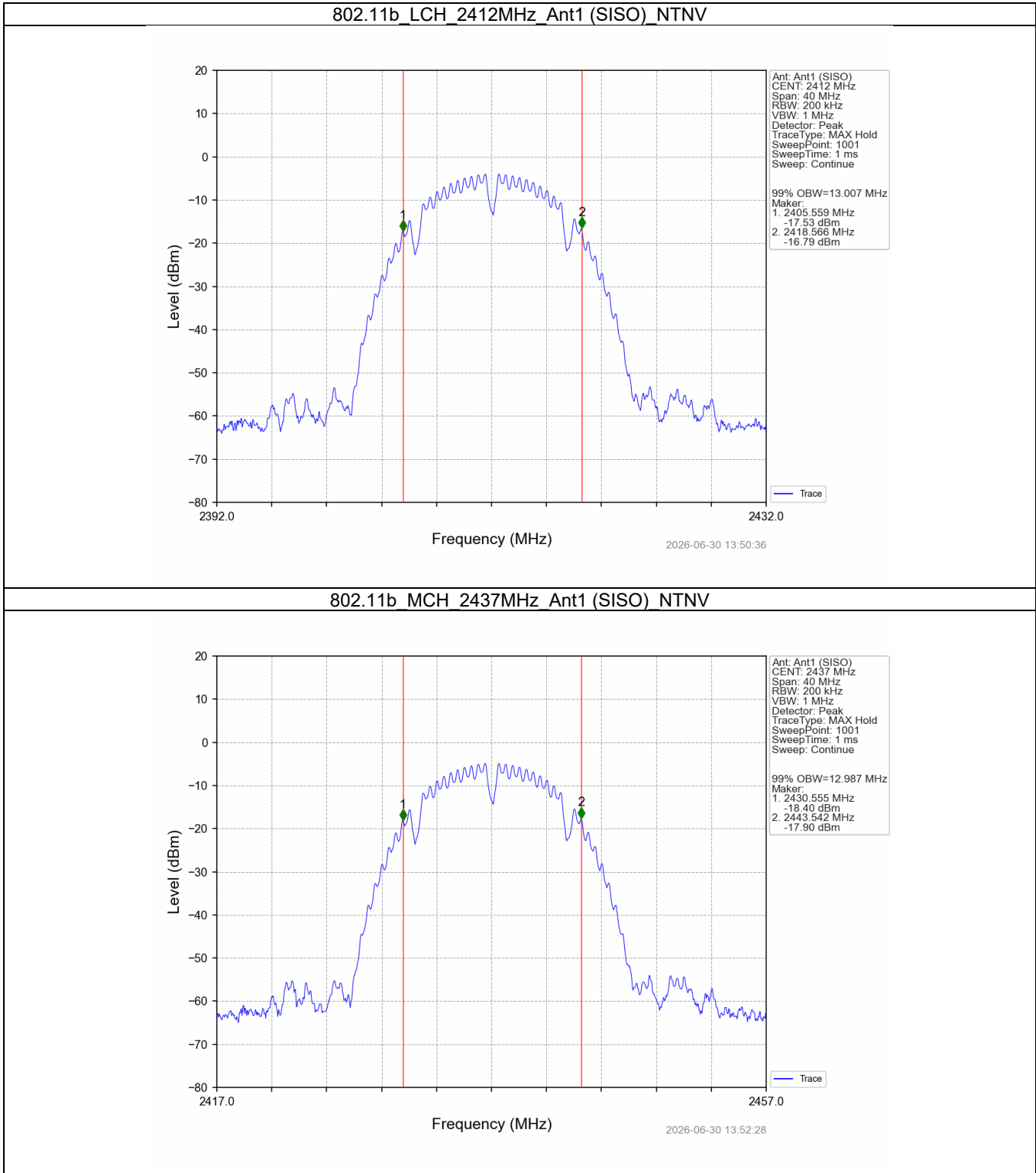
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	13.007	/	Pass
		2437	1	12.987	/	Pass
		2462	1	13.006	/	Pass
802.11g	SISO	2412	1	16.694	/	Pass
		2437	1	16.692	/	Pass
		2462	1	16.718	/	Pass
802.11n (HT20)	SISO	2412	1	17.900	/	Pass
		2437	1	17.905	/	Pass
		2462	1	17.905	/	Pass
802.11n (HT40)	SISO	2422	1	37.275	/	Pass
		2437	1	37.132	/	Pass
		2452	1	37.324	/	Pass

2.1.2 6dB BW

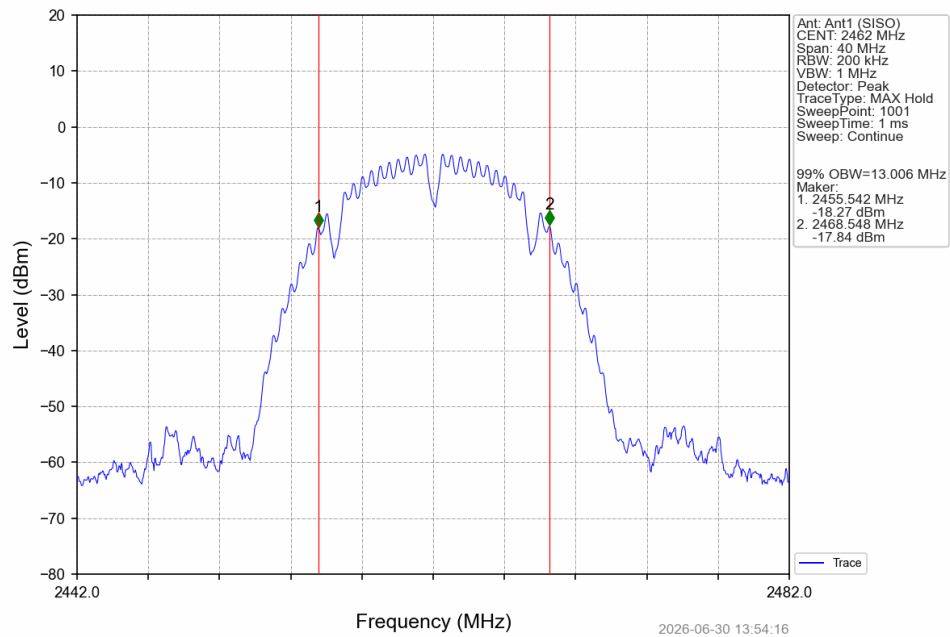
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.168	≥ 0.5	Pass
		2437	1	9.166	≥ 0.5	Pass
		2462	1	9.172	≥ 0.5	Pass
802.11g	SISO	2412	1	16.362	≥ 0.5	Pass
		2437	1	16.358	≥ 0.5	Pass
		2462	1	16.345	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.555	≥ 0.5	Pass
		2437	1	17.547	≥ 0.5	Pass
		2462	1	17.614	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	36.219	≥ 0.5	Pass
		2437	1	36.440	≥ 0.5	Pass
		2452	1	35.962	≥ 0.5	Pass

2.2 Test Graph

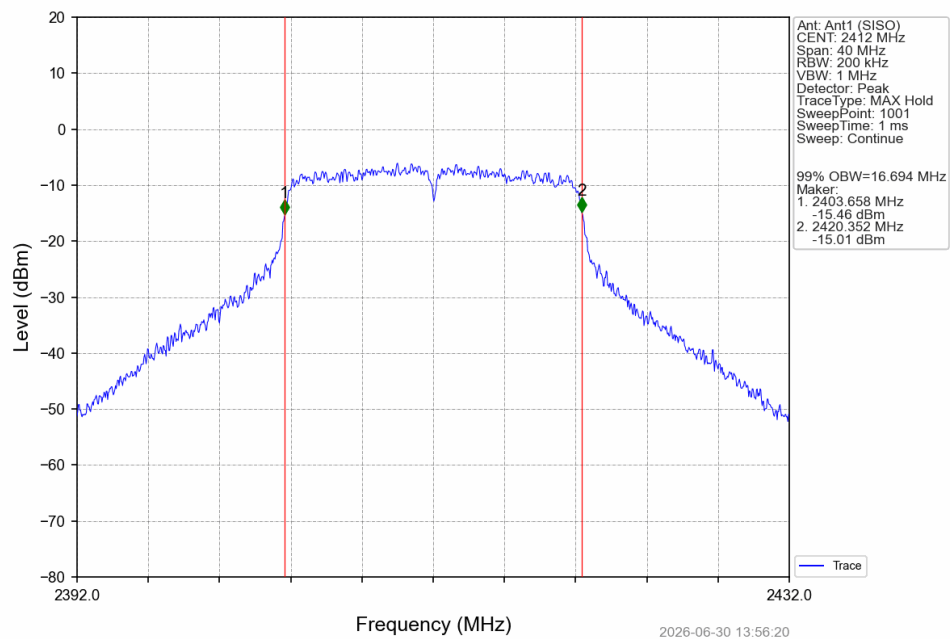
2.2.1 OBW



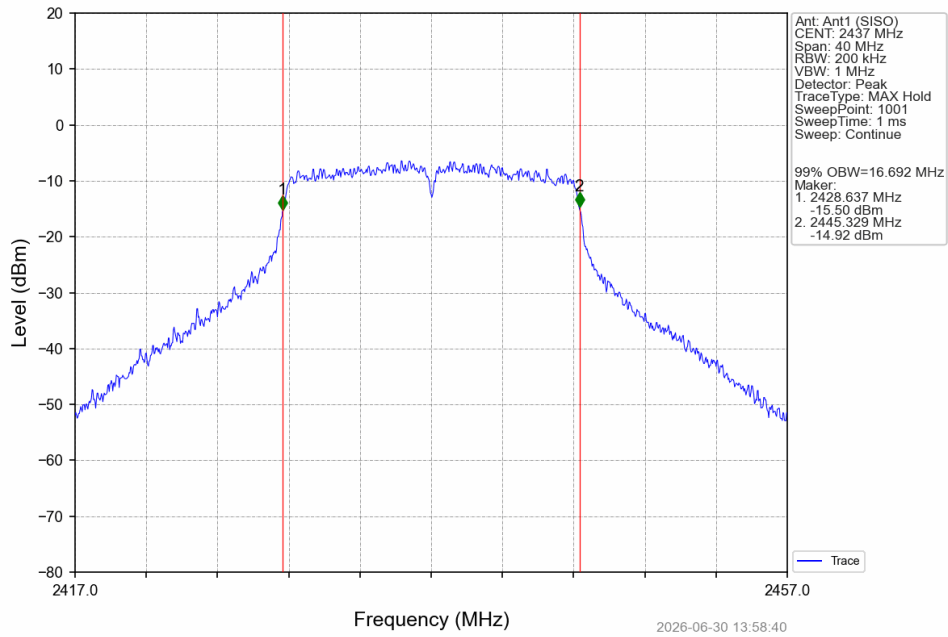
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



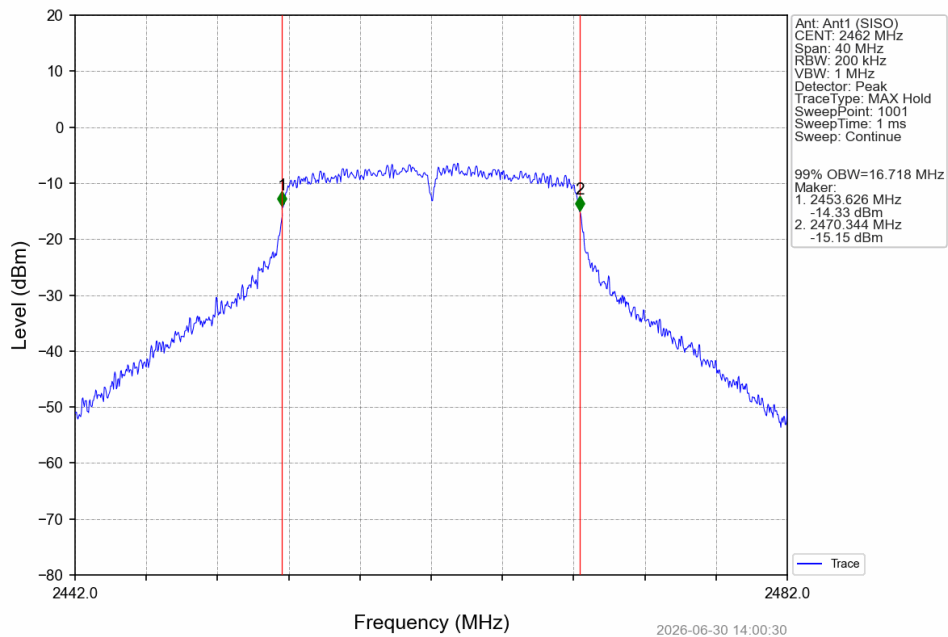
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



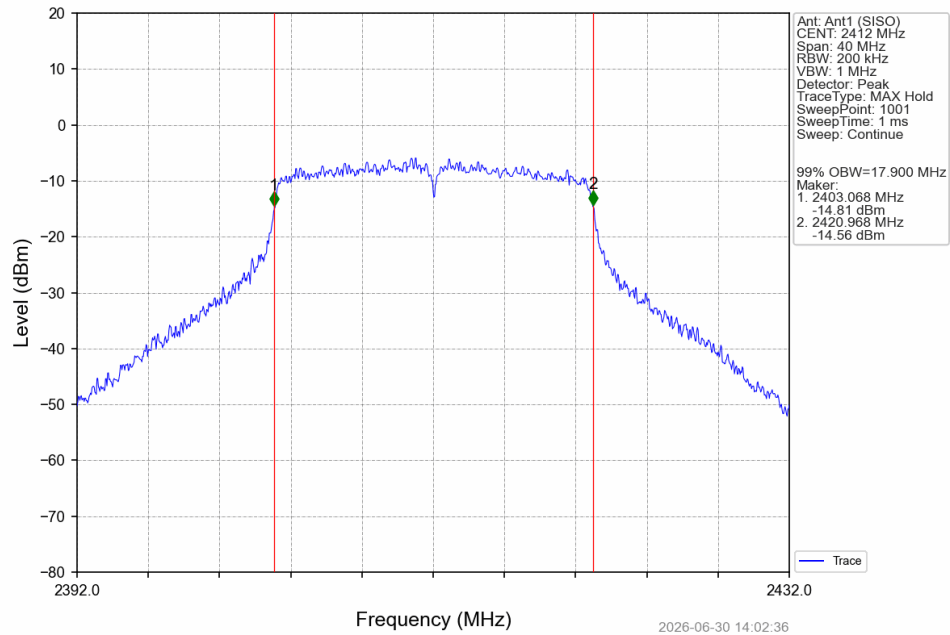
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



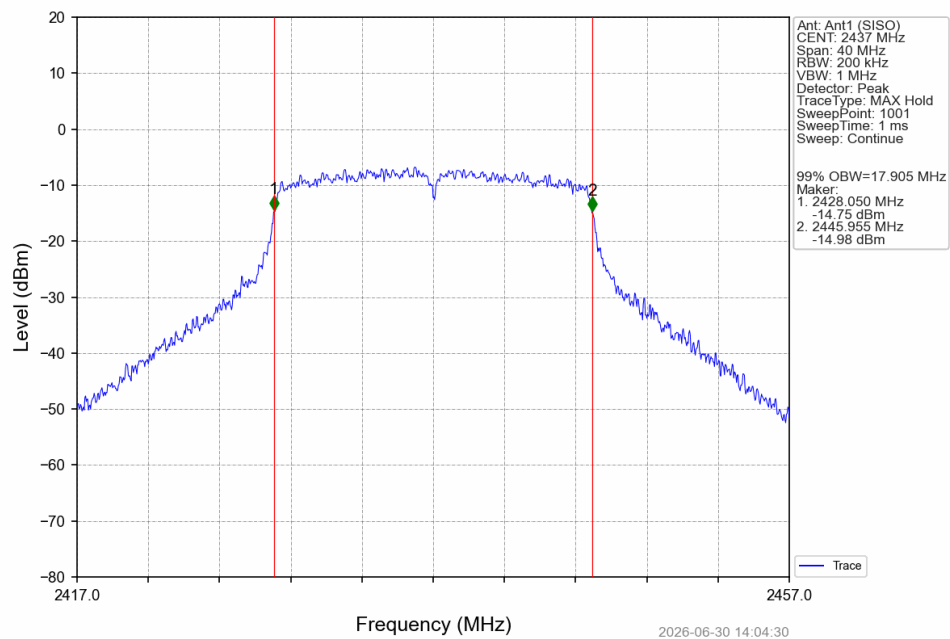
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



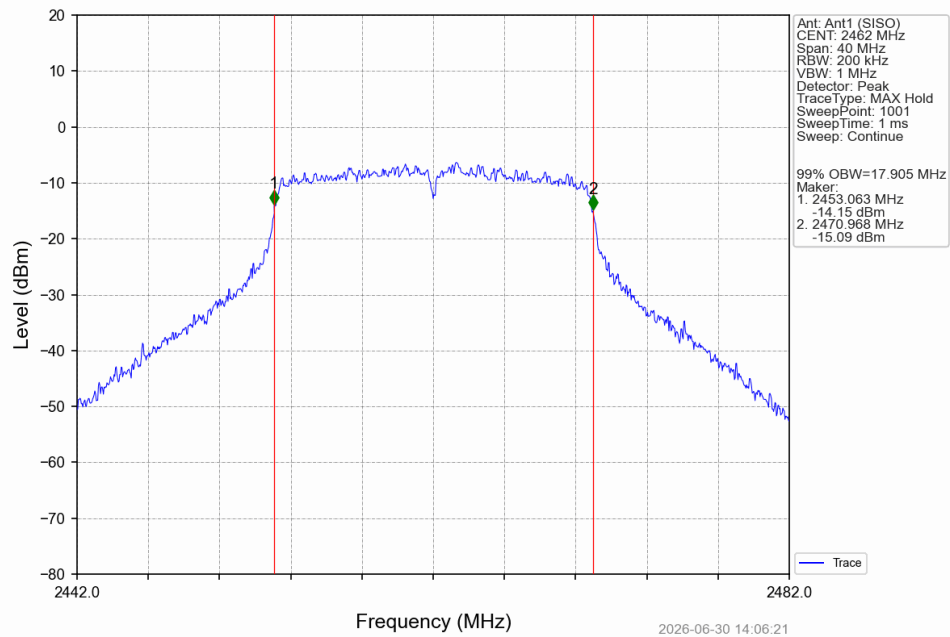
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



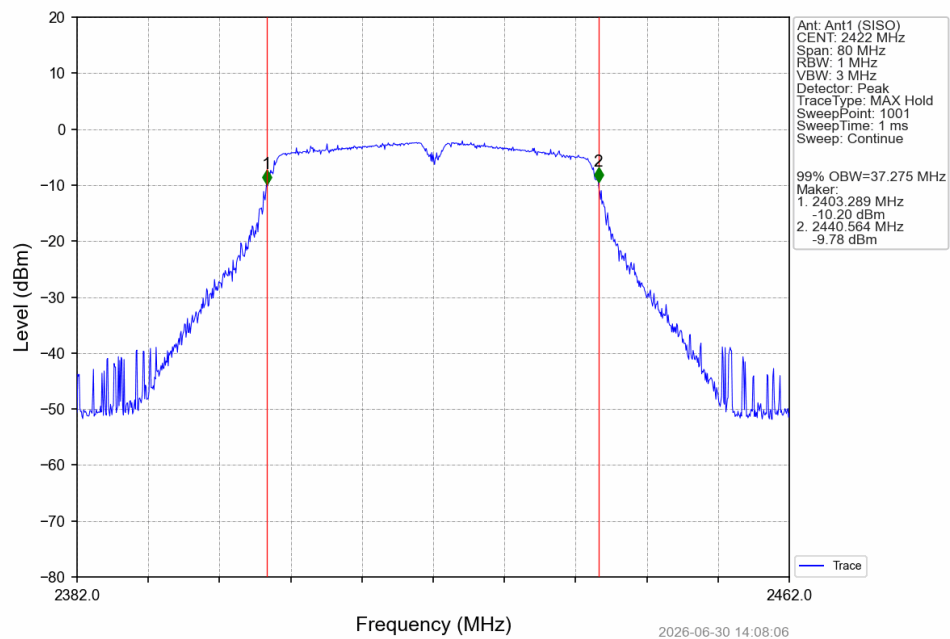
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



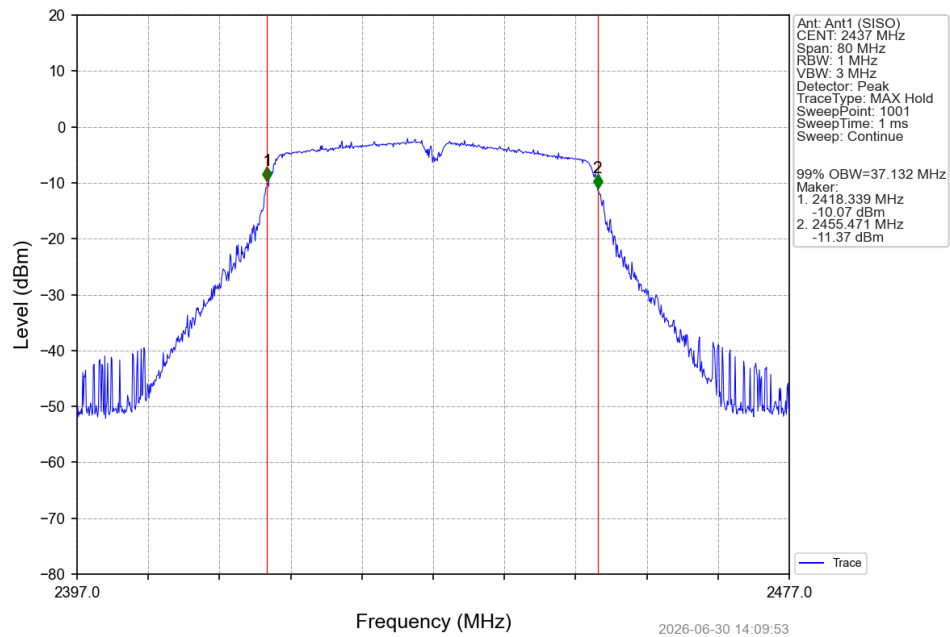
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



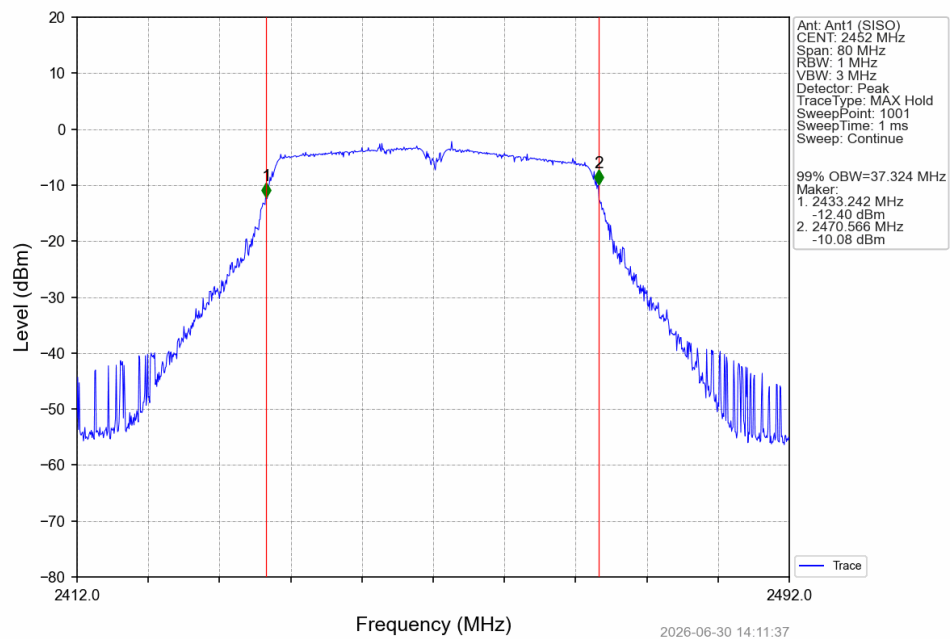
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



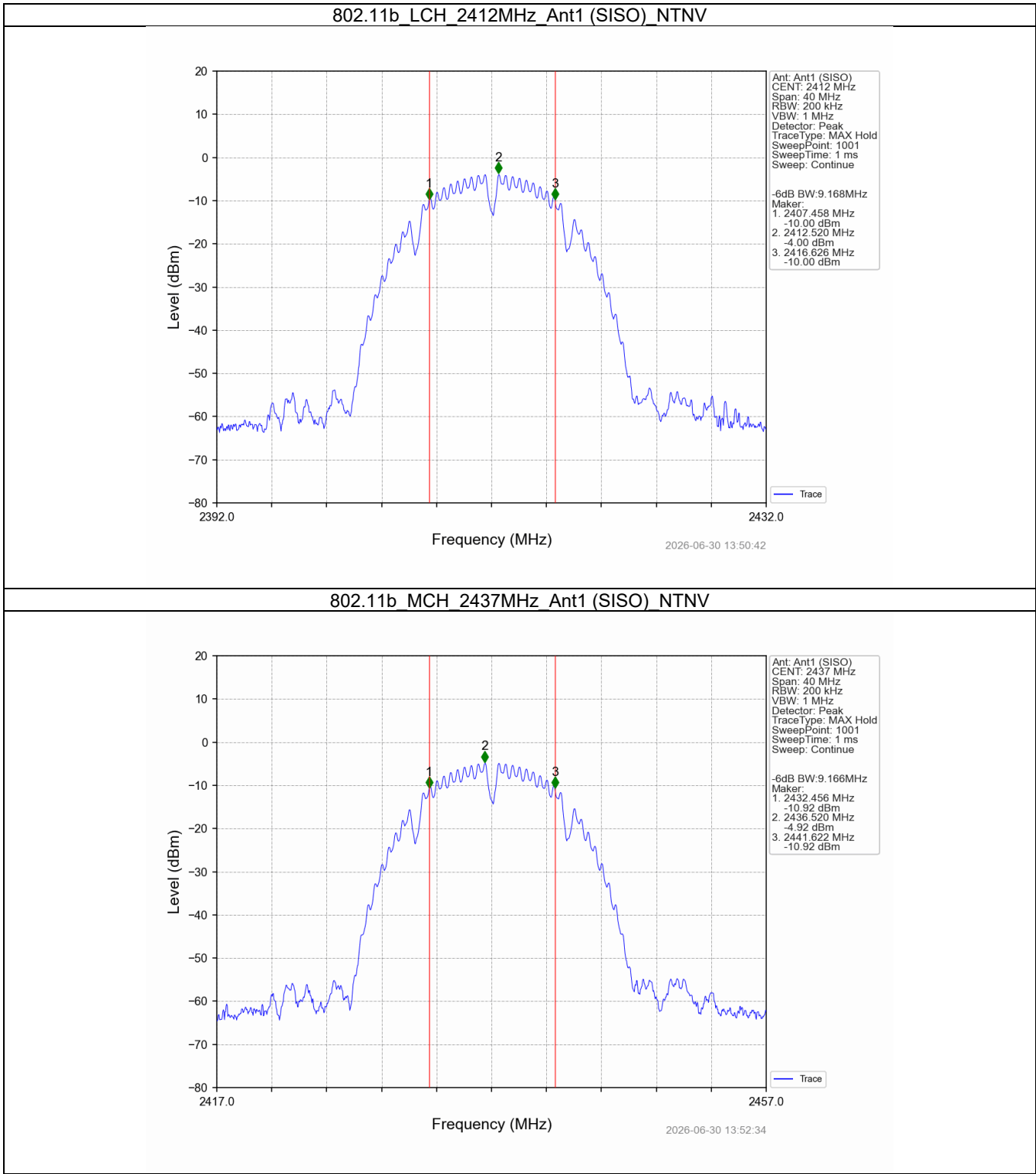
802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



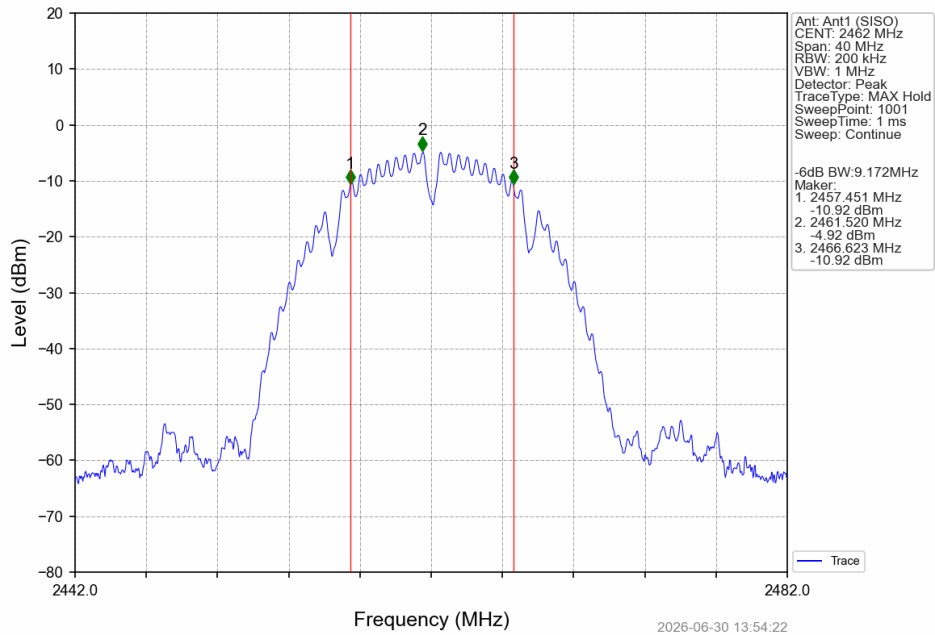
802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



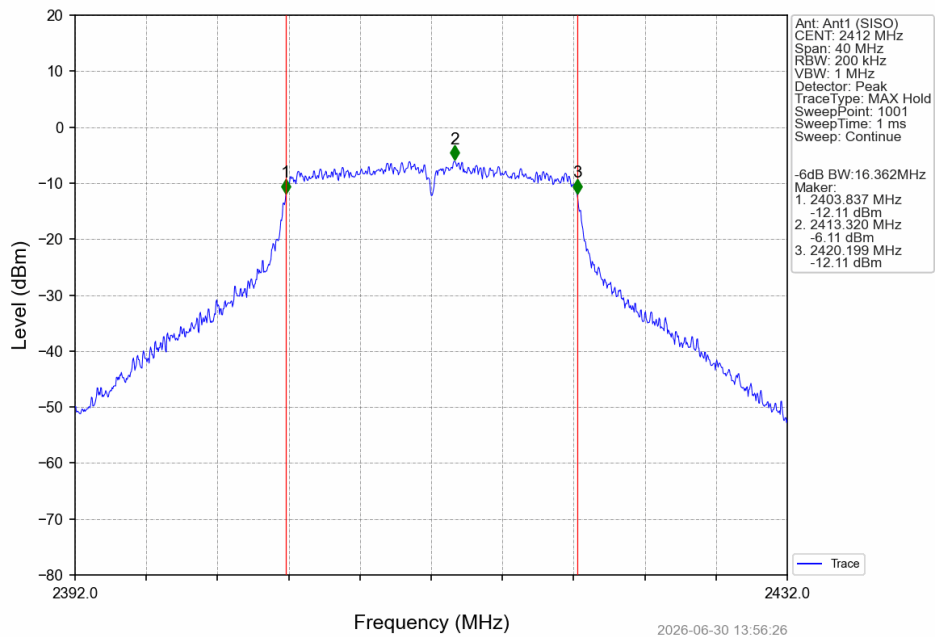
2.2.2 6dB BW



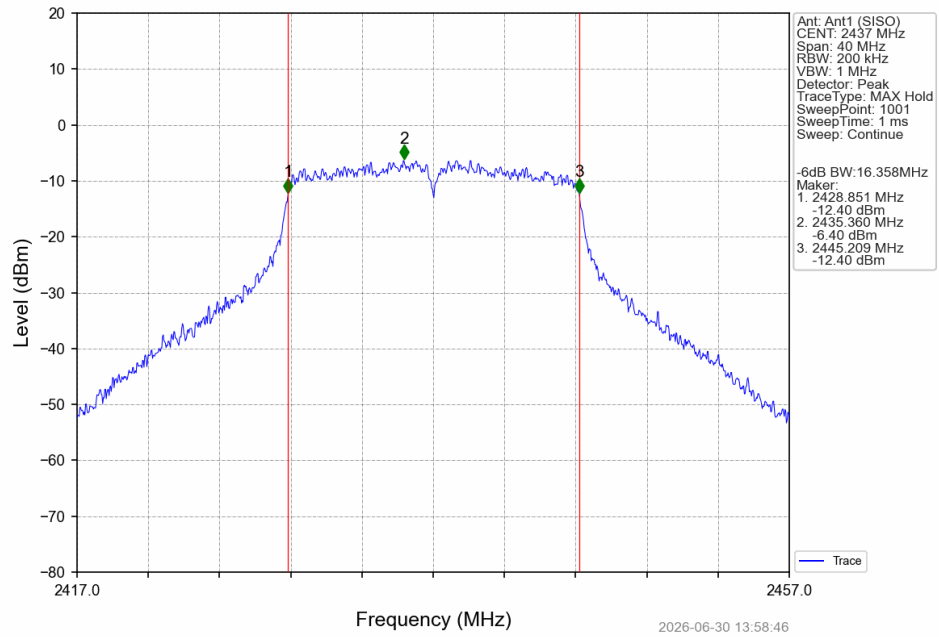
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



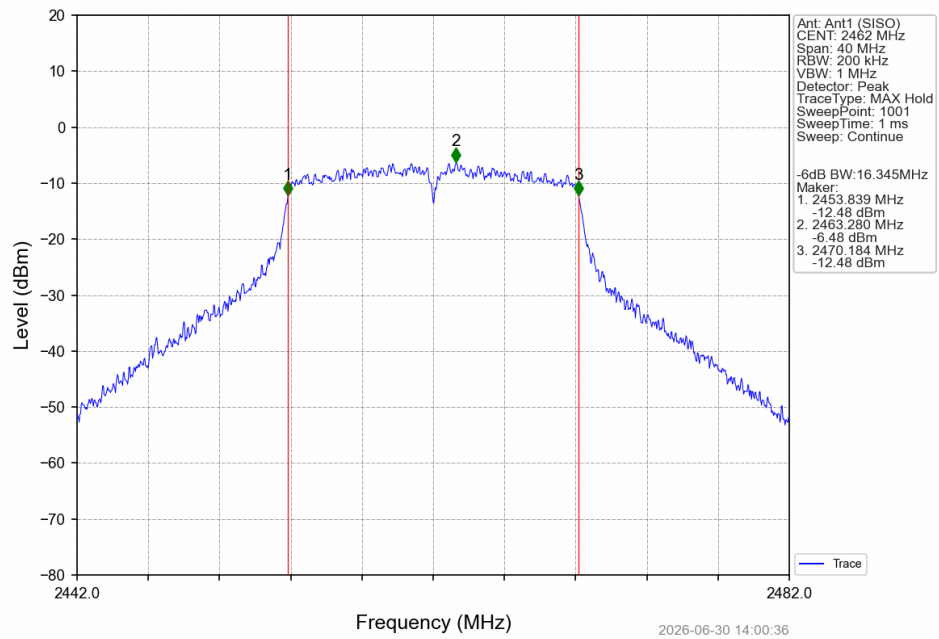
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



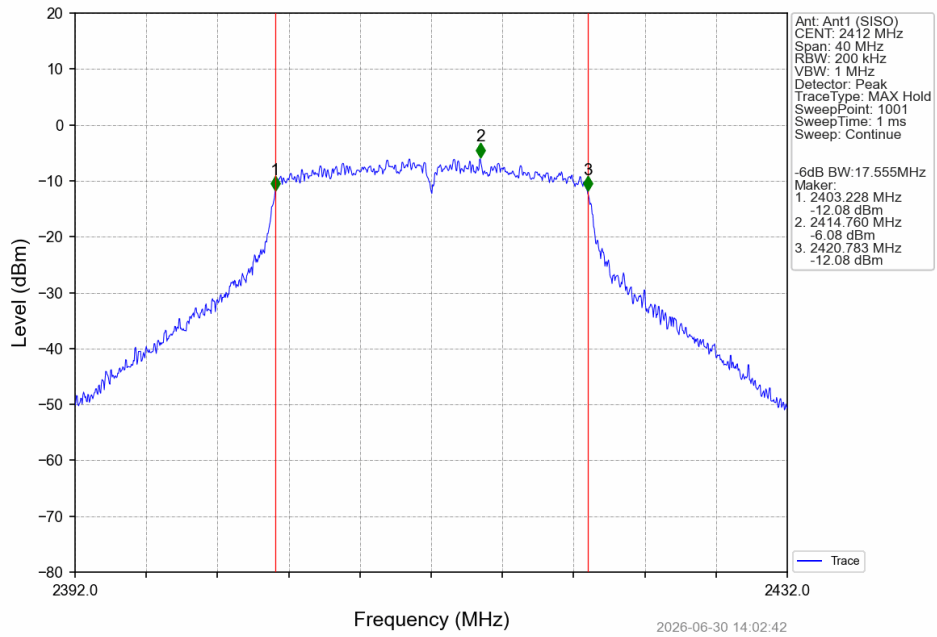
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



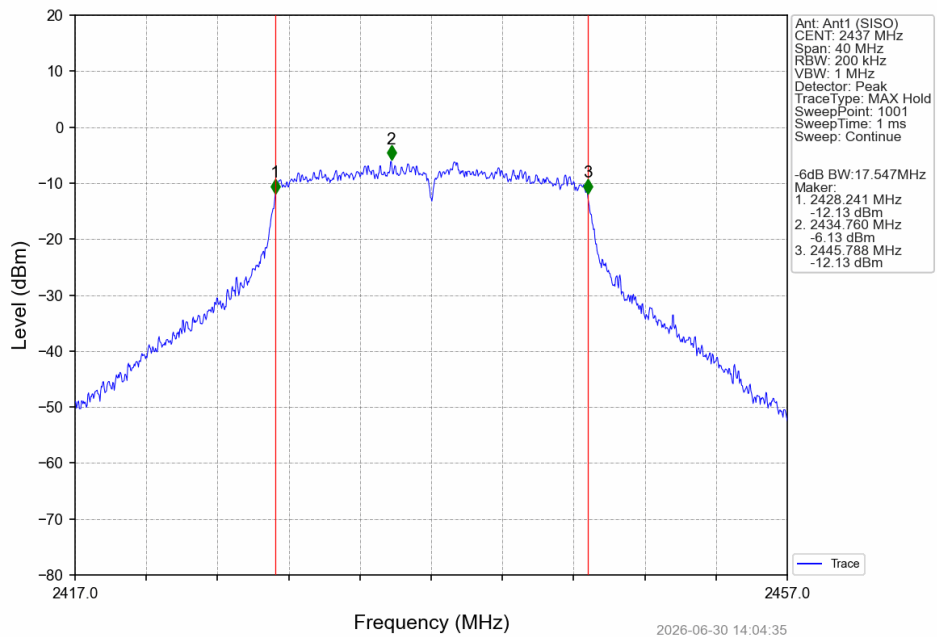
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



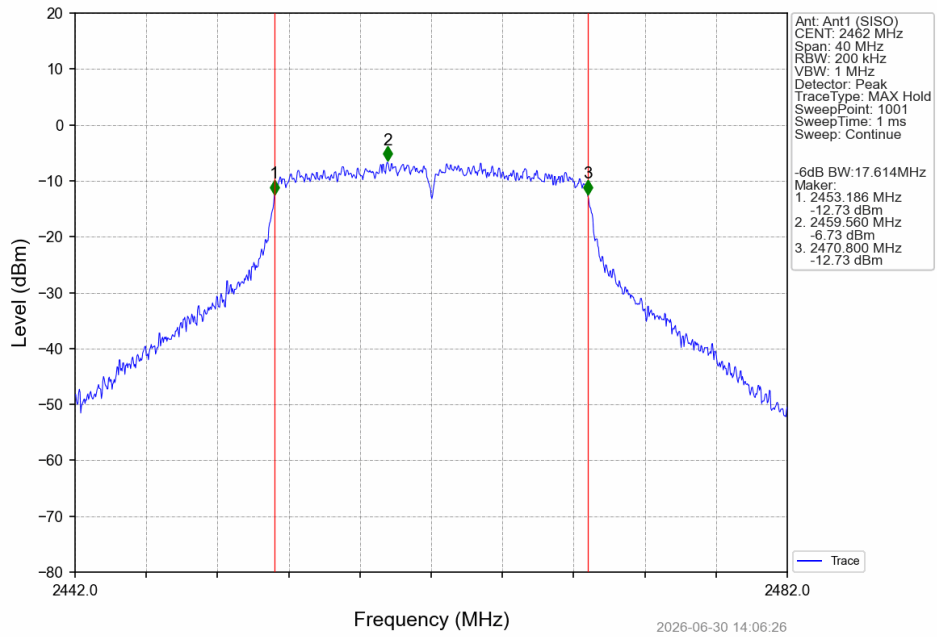
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



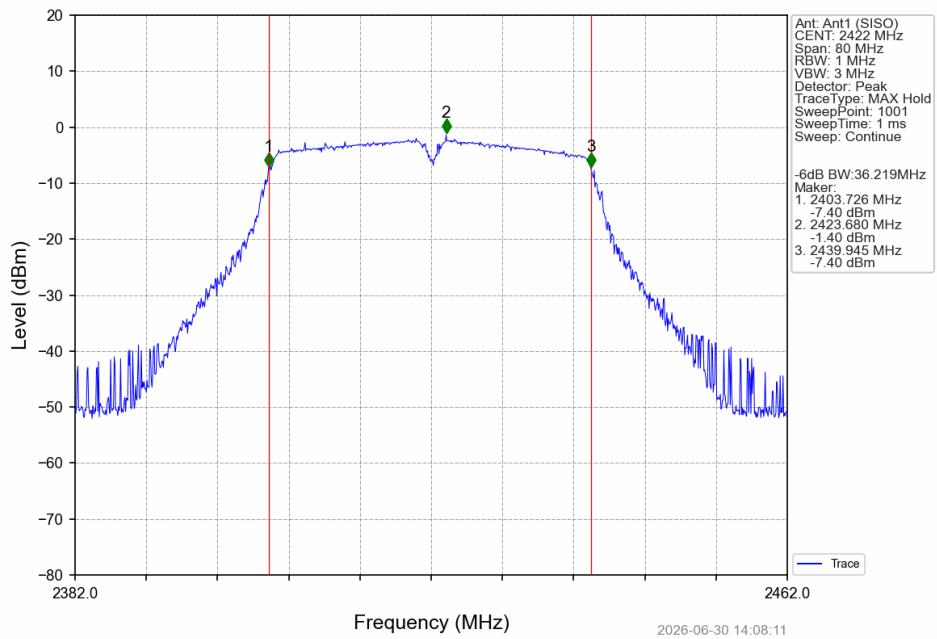
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



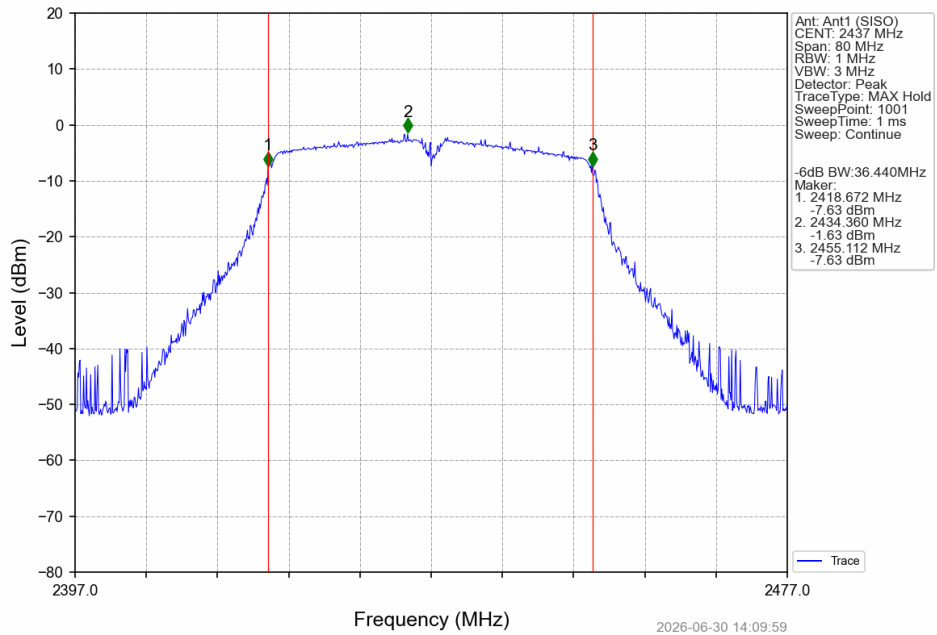
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



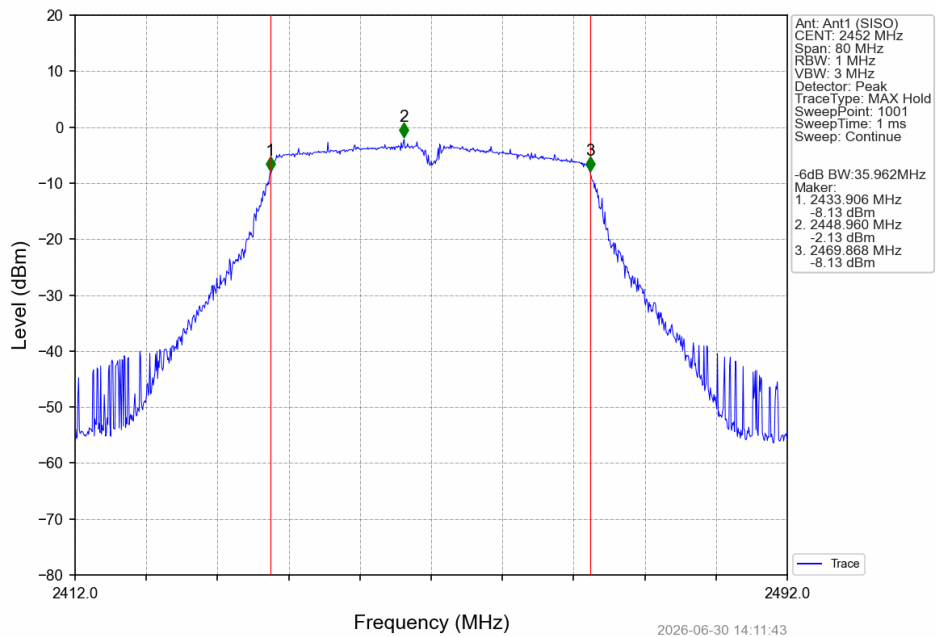
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_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	8.68	<=30	Pass
		2437	8.72	<=30	Pass
		2462	8.71	<=30	Pass
802.11g	SISO	2412	8.46	<=30	Pass
		2437	8.09	<=30	Pass
		2462	8.05	<=30	Pass
802.11n (HT20)	SISO	2412	8.32	<=30	Pass
		2437	8.22	<=30	Pass
		2462	8.02	<=30	Pass
802.11n (HT40)	SISO	2422	8.05	<=30	Pass
		2437	8.28	<=30	Pass
		2452	8.12	<=30	Pass

4. Maximum Power Spectral Density

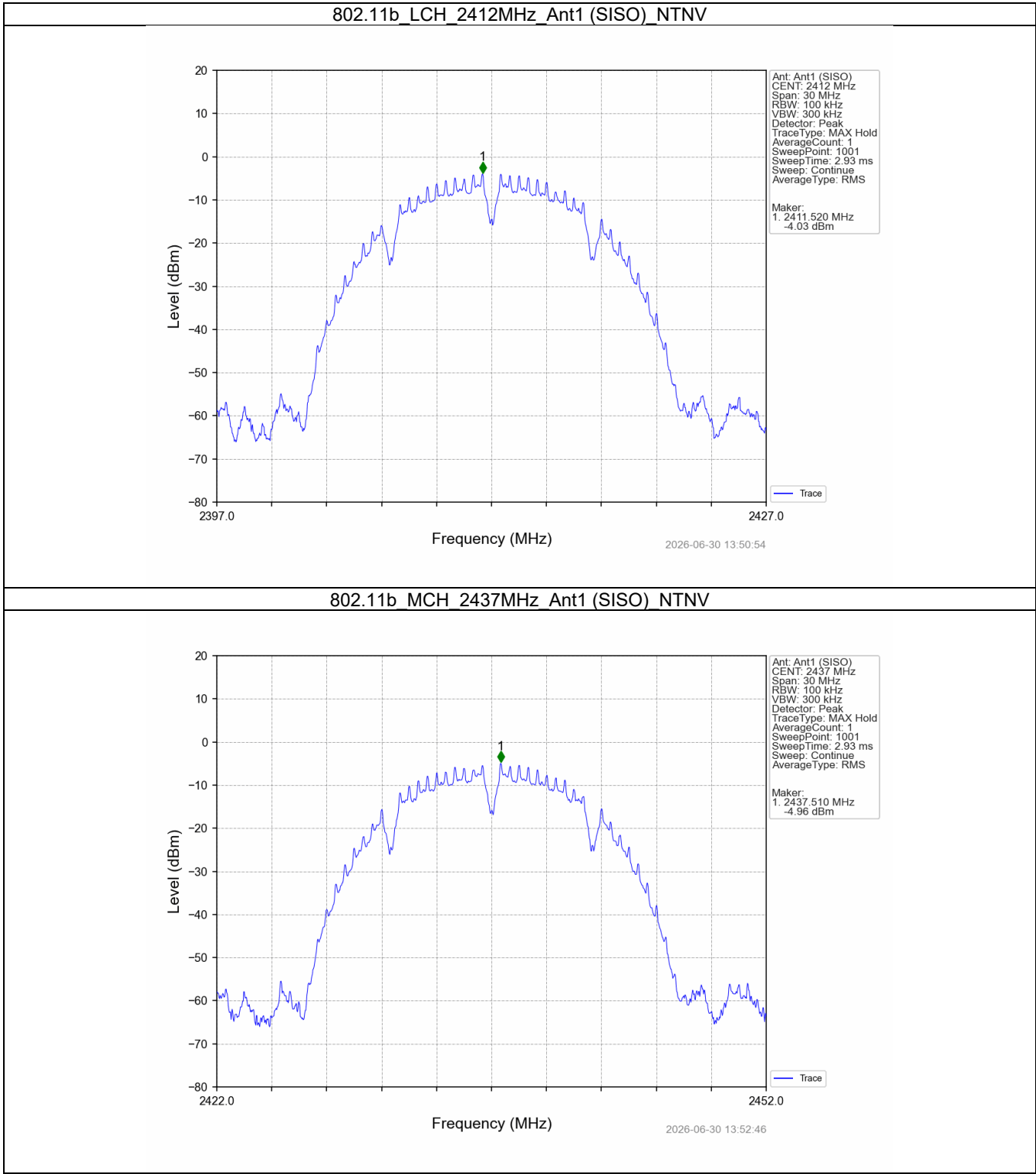
4.1 Test Result

4.1.1 PSD

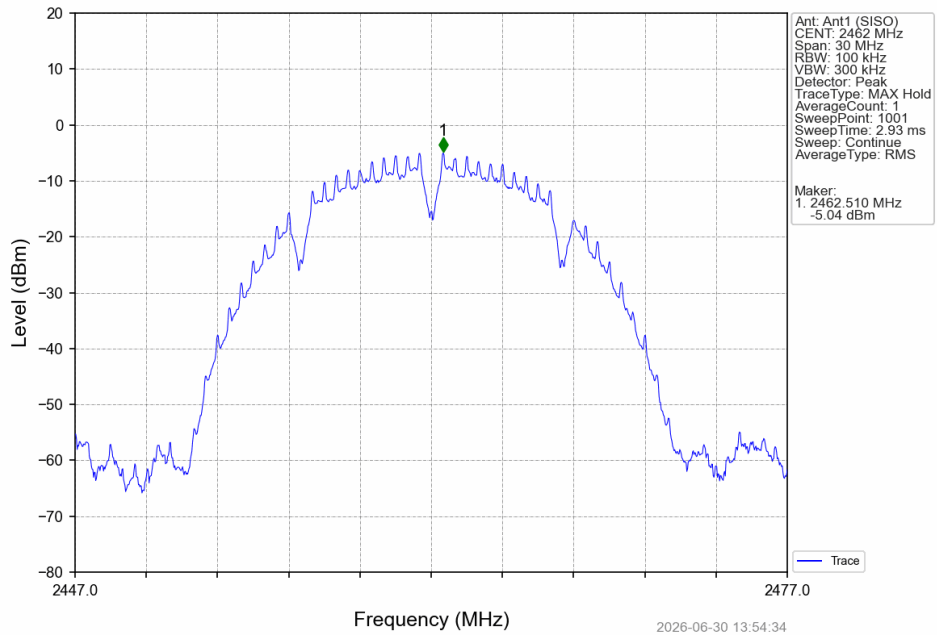
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit(dBm/3kHz)	
802.11b	SISO	2412	-4.03dBm/100kHz	<=8	Pass
		2437	-4.96dBm/100kHz	<=8	Pass
		2462	-5.04dBm/100kHz	<=8	Pass
802.11g	SISO	2412	-7.34dBm/100kHz	<=8	Pass
		2437	-7.42dBm/100kHz	<=8	Pass
		2462	-7.40dBm/100kHz	<=8	Pass
802.11n (HT20)	SISO	2412	-6.69dBm/100kHz	<=8	Pass
		2437	-7.02dBm/100kHz	<=8	Pass
		2462	-8.05dBm/100kHz	<=8	Pass
802.11n (HT40)	SISO	2422	-9.98dBm/100kHz	<=8	Pass
		2437	-10.00dBm/100kHz	<=8	Pass
		2452	-11.03dBm/100kHz	<=8	Pass

4.2 Test Graph

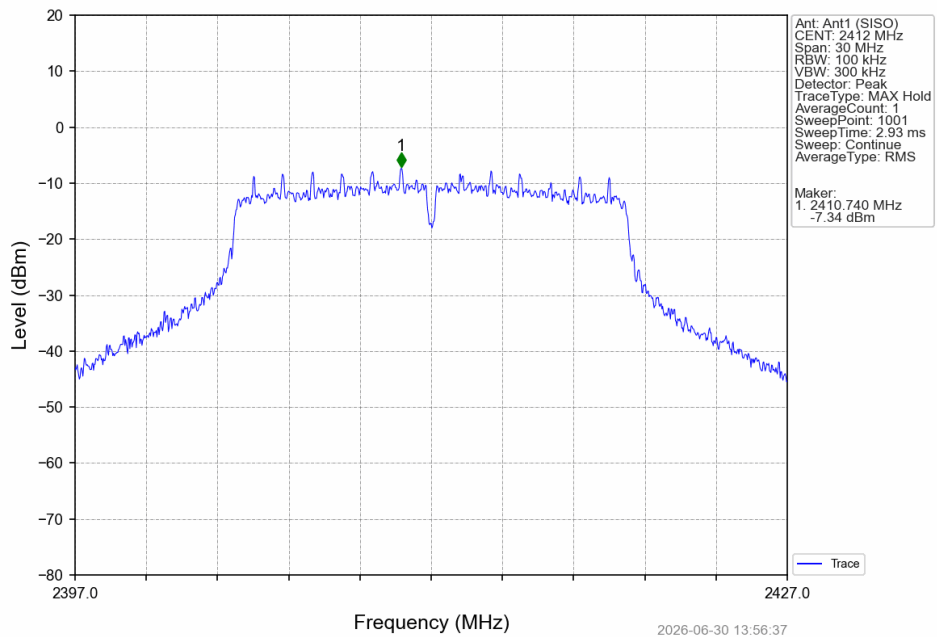
4.2.1 PSD



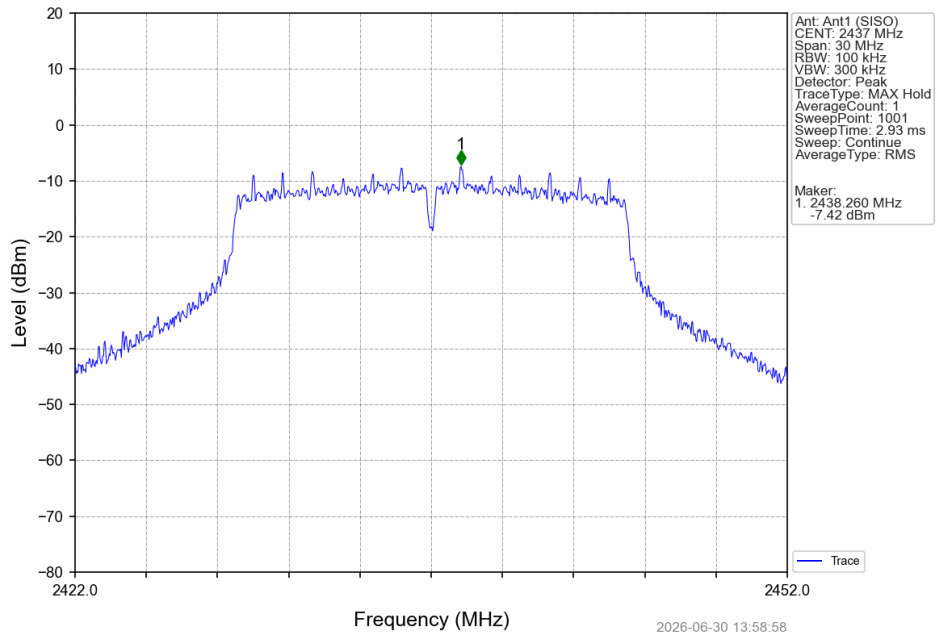
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



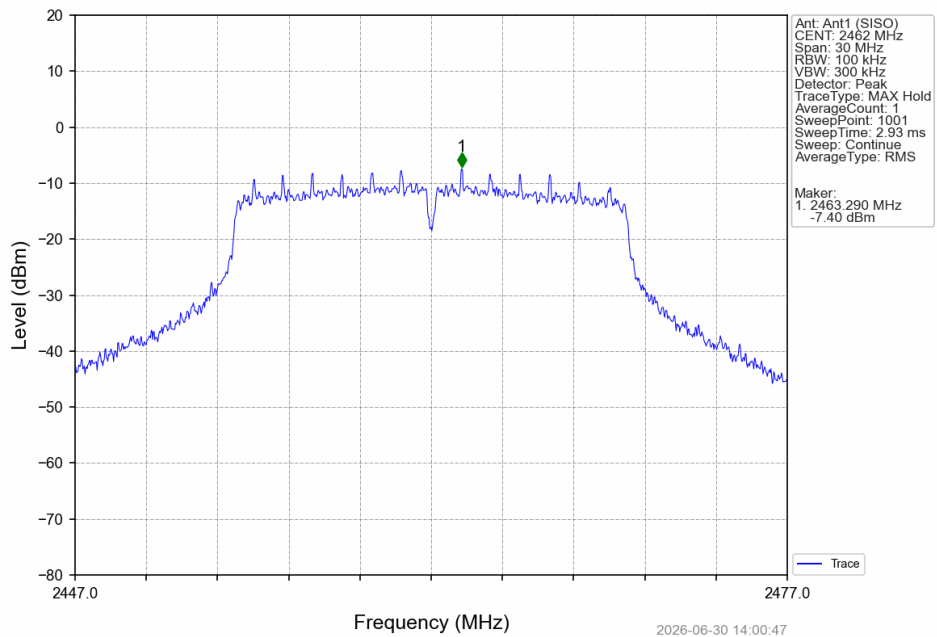
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



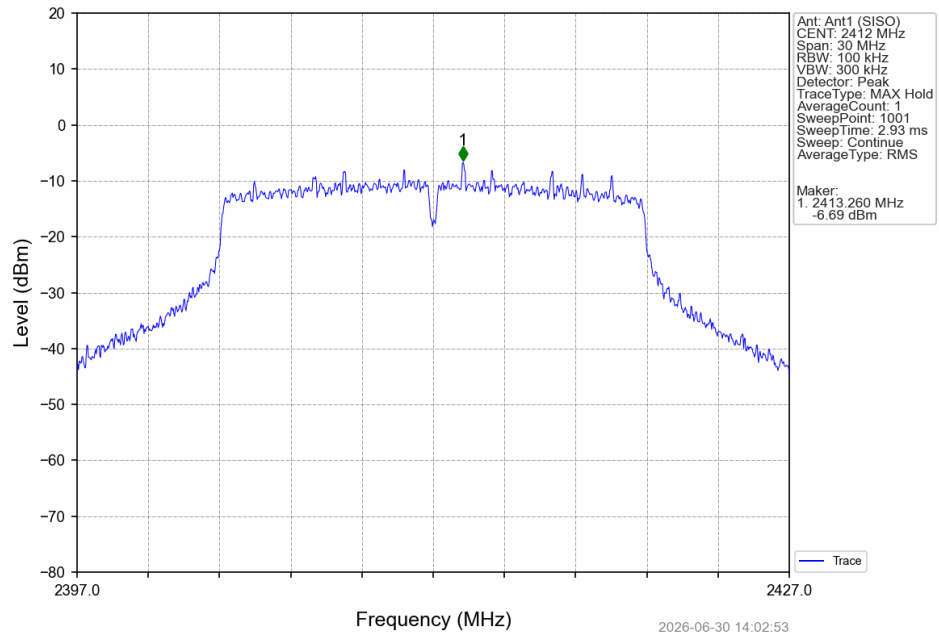
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



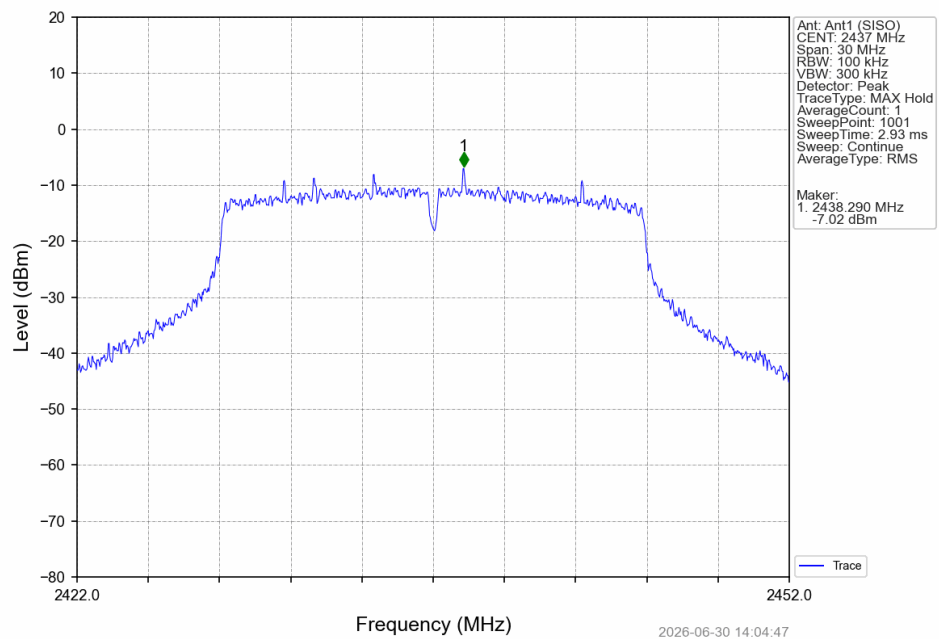
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



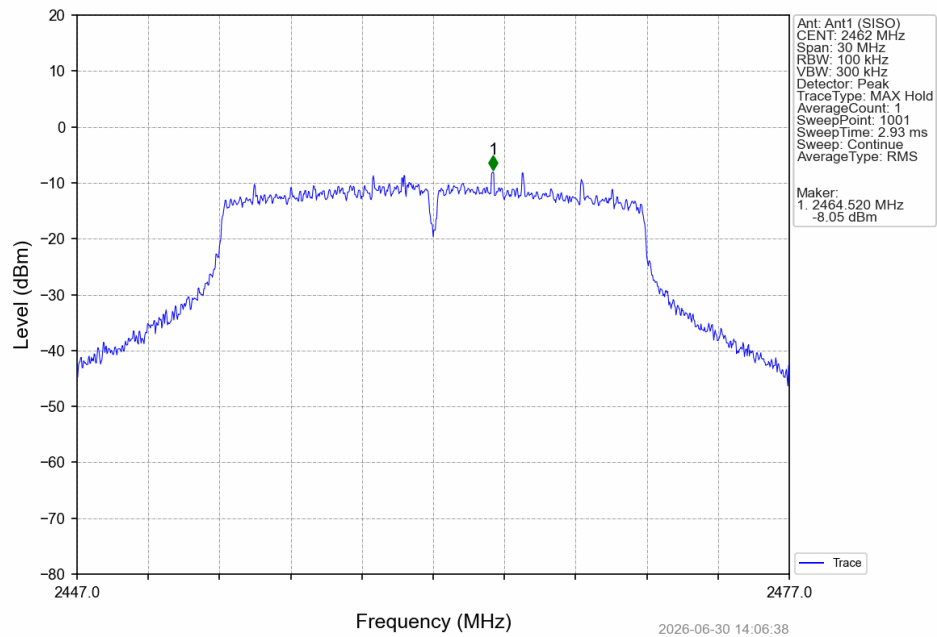
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



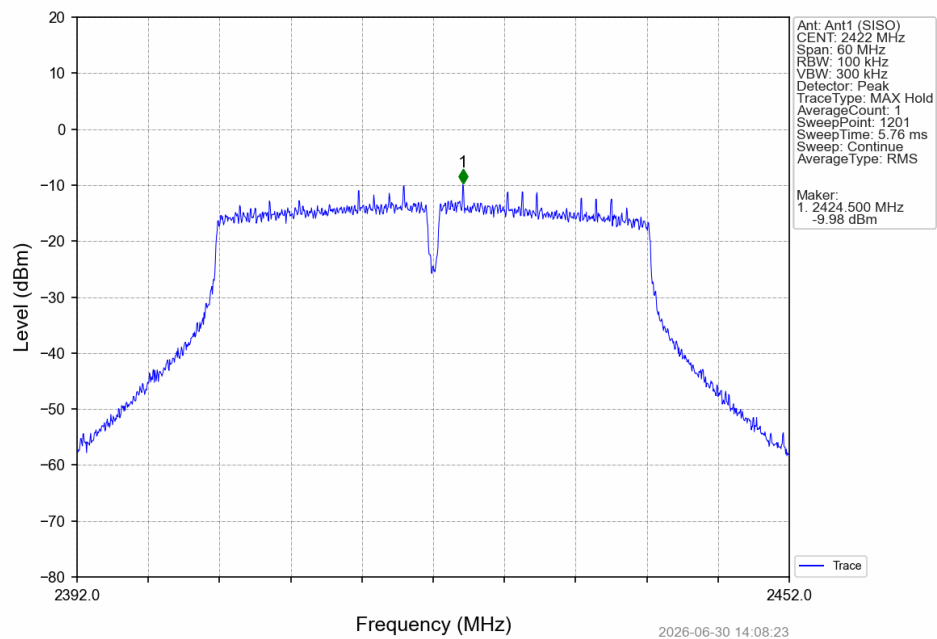
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



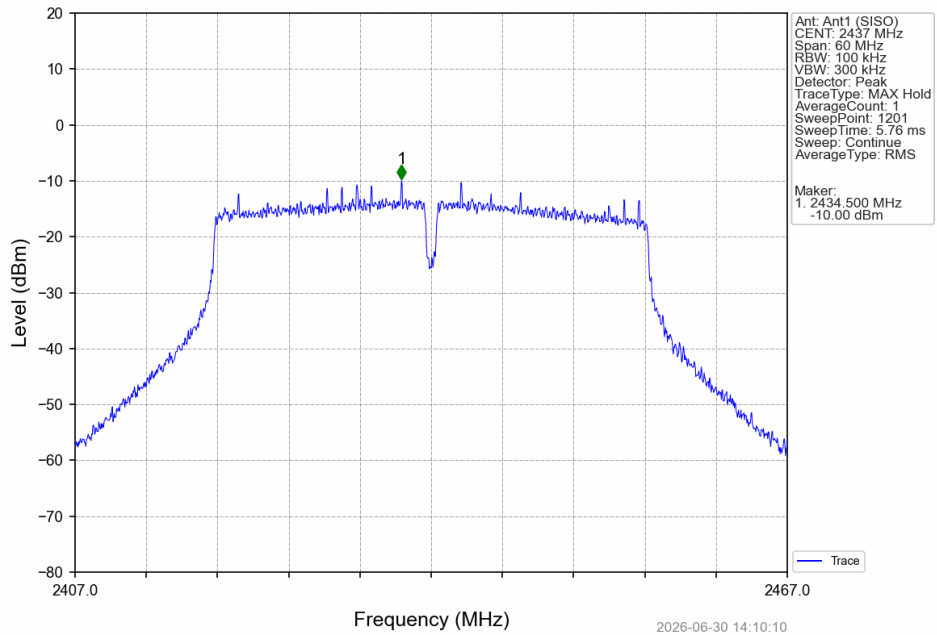
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



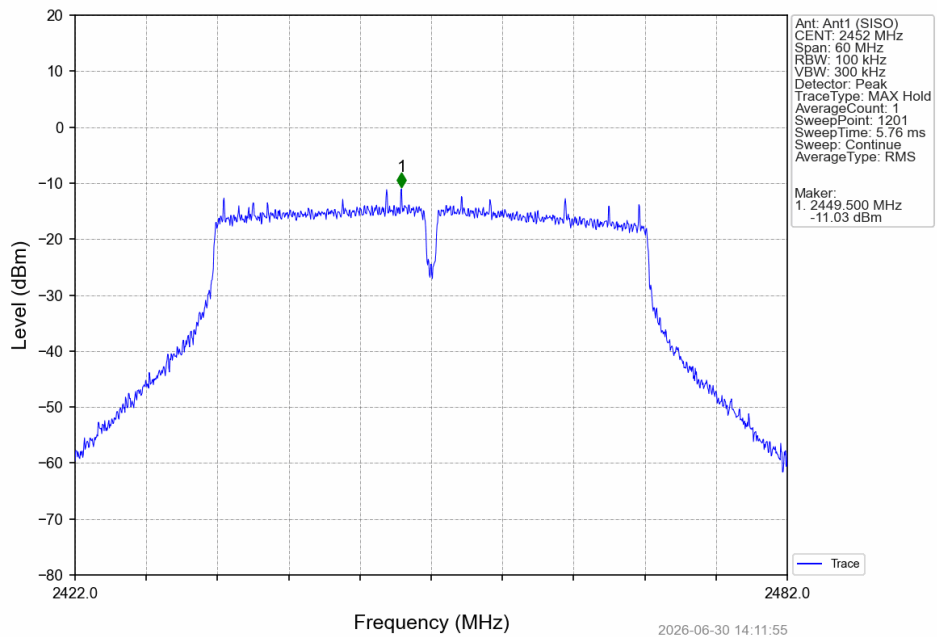
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

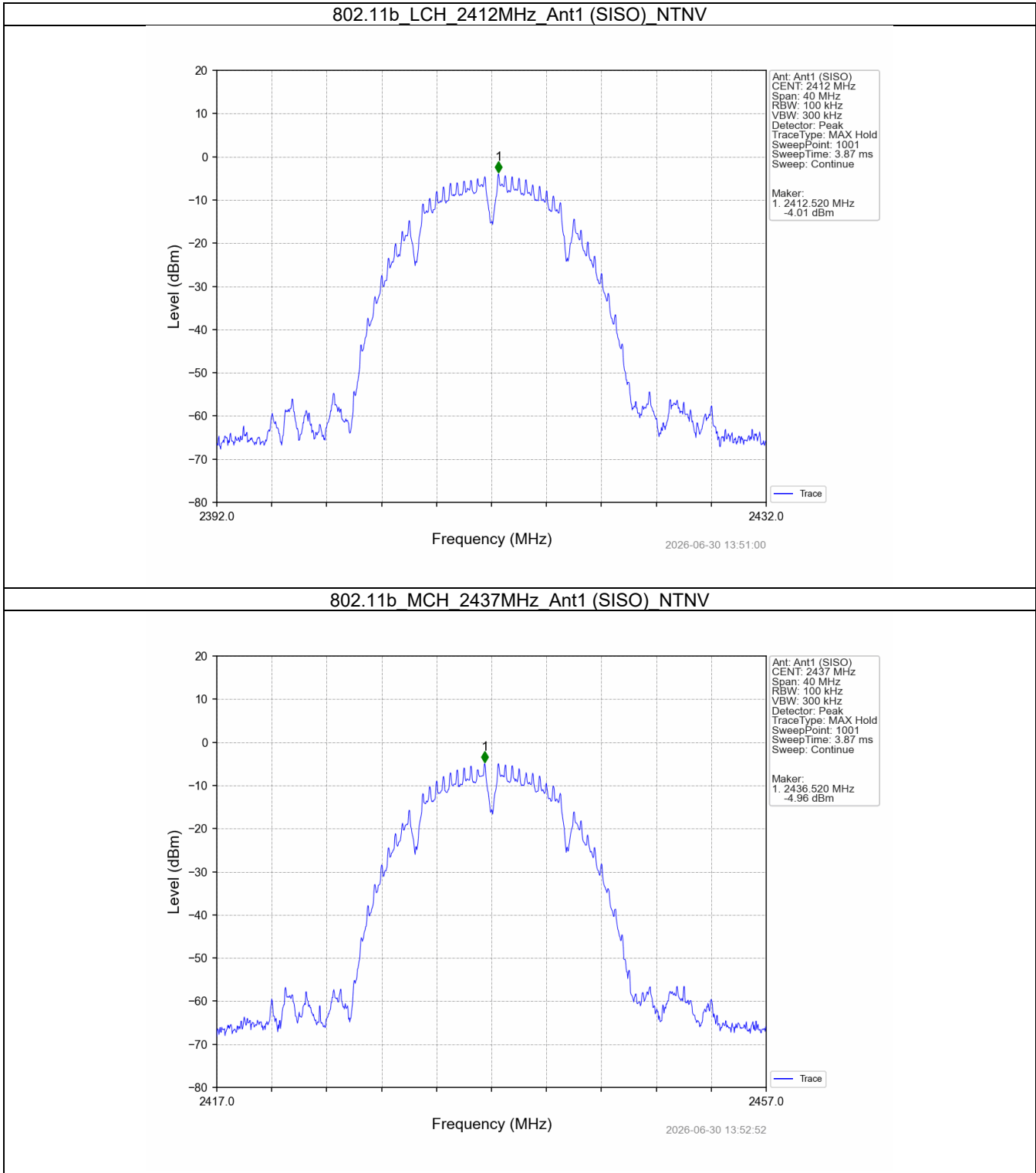
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	-4.01
		2437	1	-4.96
		2462	1	-5.02
802.11g	SISO	2412	1	-6.86
		2437	1	-7.12
		2462	1	-7.24
802.11n (HT20)	SISO	2412	1	-7.91
		2437	1	-7.72
		2462	1	-7.75
802.11n (HT40)	SISO	2422	1	-9.99
		2437	1	-10.68
		2452	1	-11.12

5.1.2 CSE

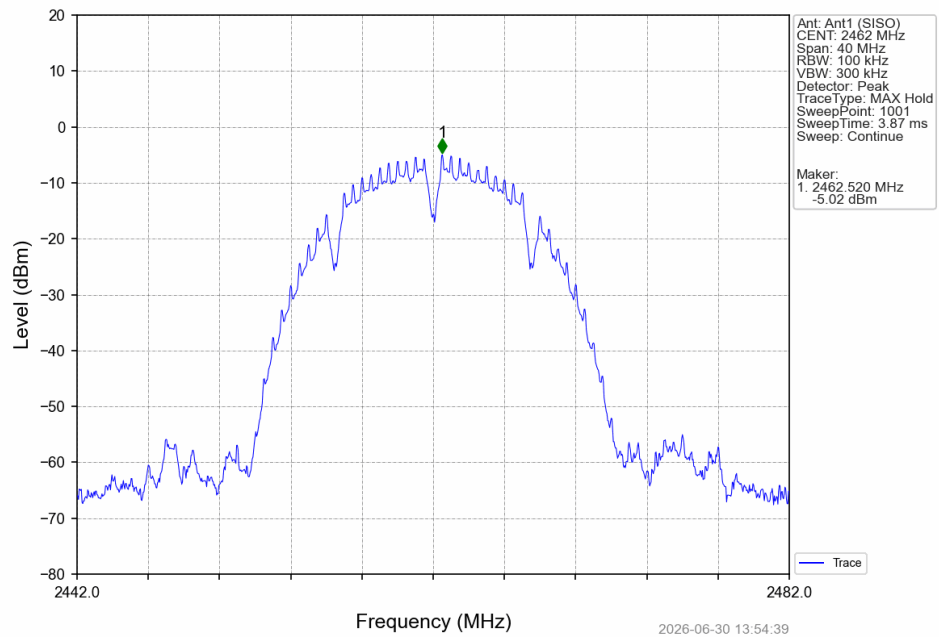
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-4.01	-24.01	Pass
		2437	1	-4.96	-24.96	Pass
		2462	1	-5.02	-25.02	Pass
802.11g	SISO	2412	1	-6.86	-26.86	Pass
		2437	1	-7.12	-27.12	Pass
		2462	1	-7.24	-27.24	Pass
802.11n (HT20)	SISO	2412	1	-7.91	-27.91	Pass
		2437	1	-7.72	-27.72	Pass
		2462	1	-7.75	-27.75	Pass
802.11n (HT40)	SISO	2422	1	-9.99	-29.99	Pass
		2437	1	-10.68	-30.68	Pass
		2452	1	-11.12	-31.12	Pass

5.2 Test Graph

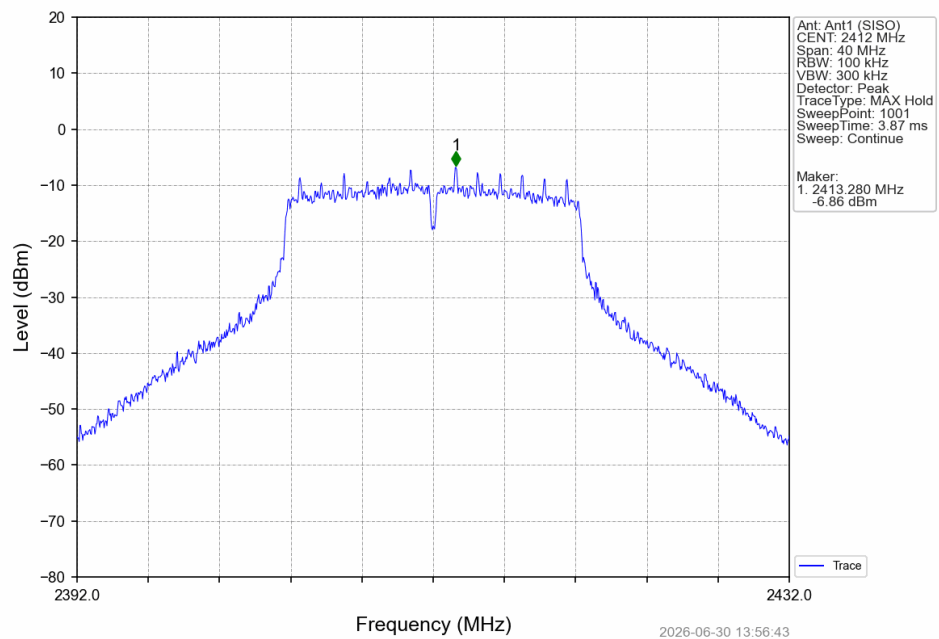
5.2.1 Ref



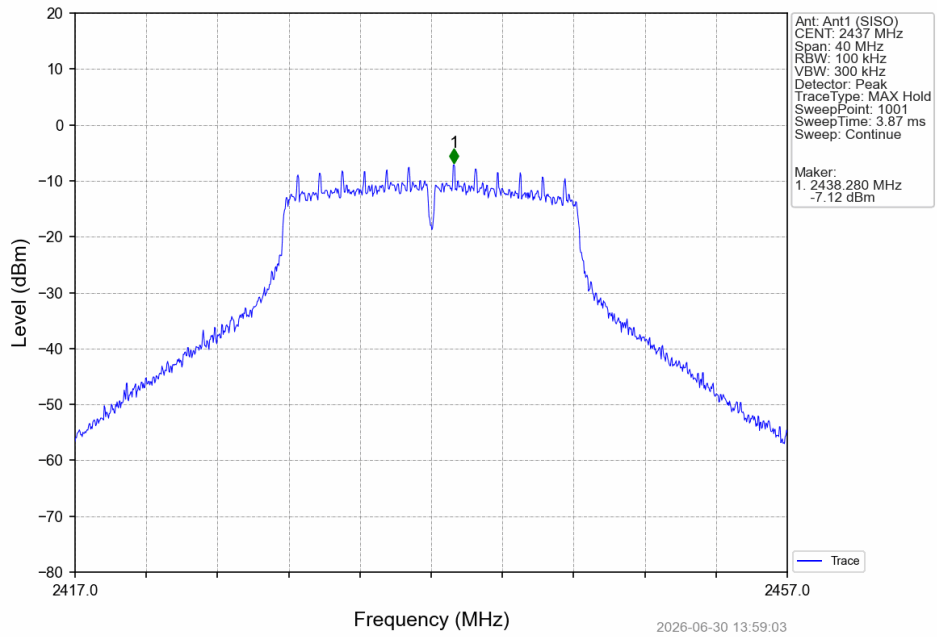
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



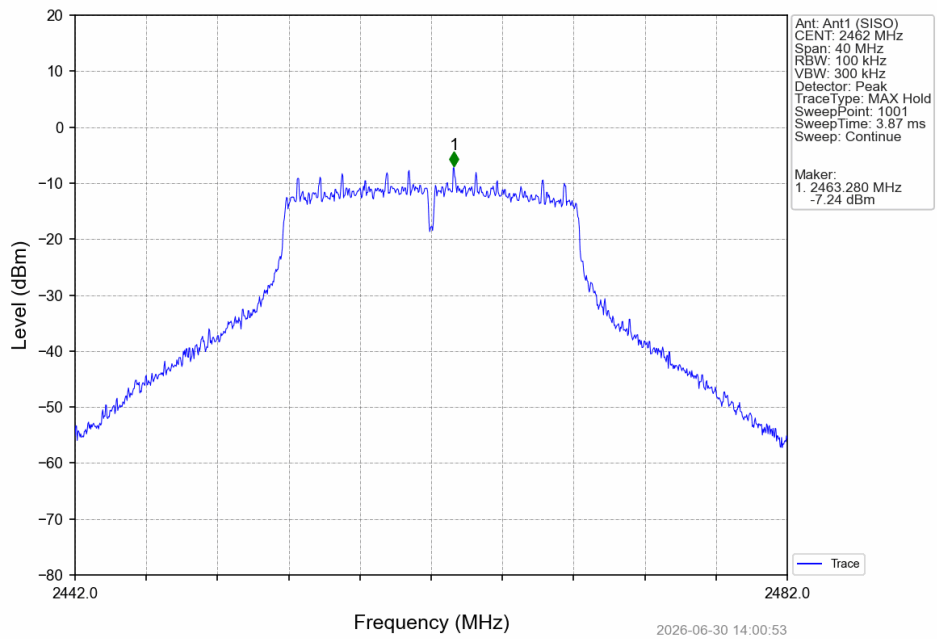
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



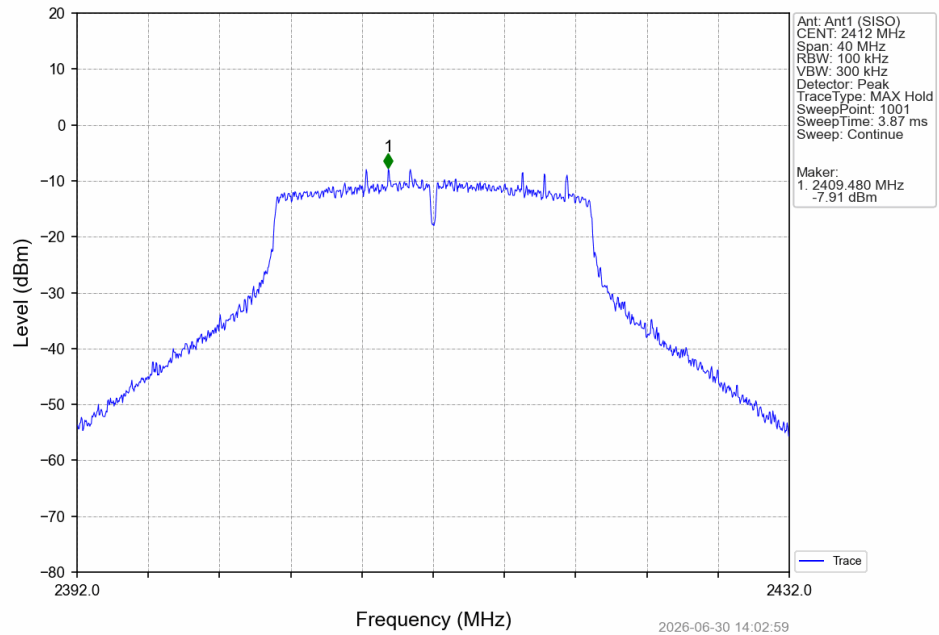
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



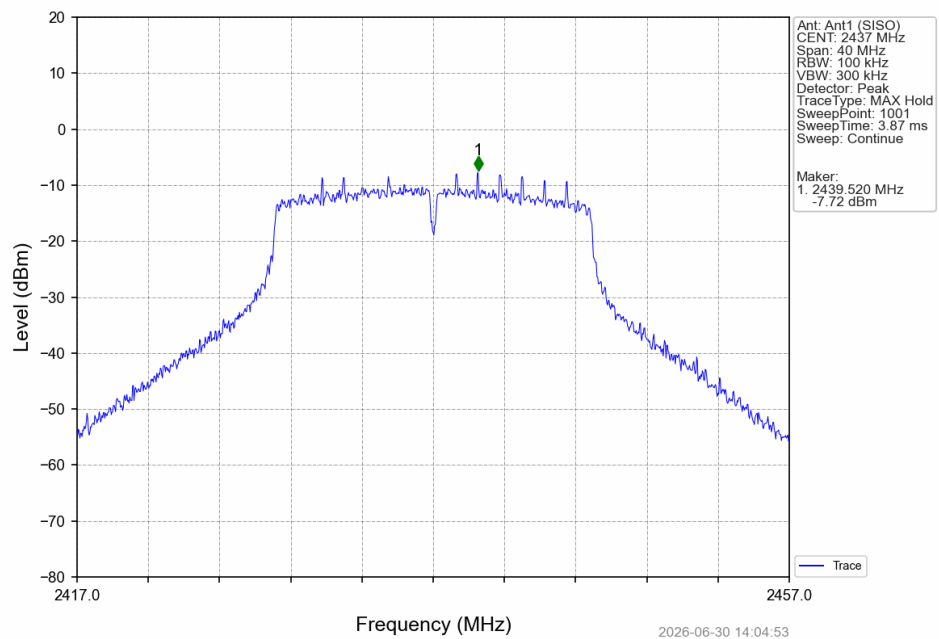
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



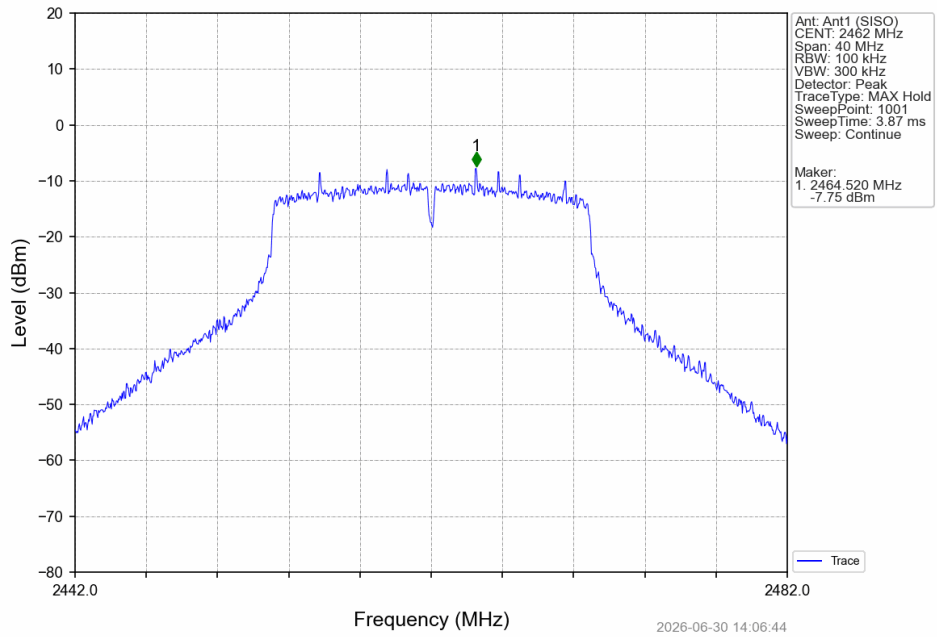
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



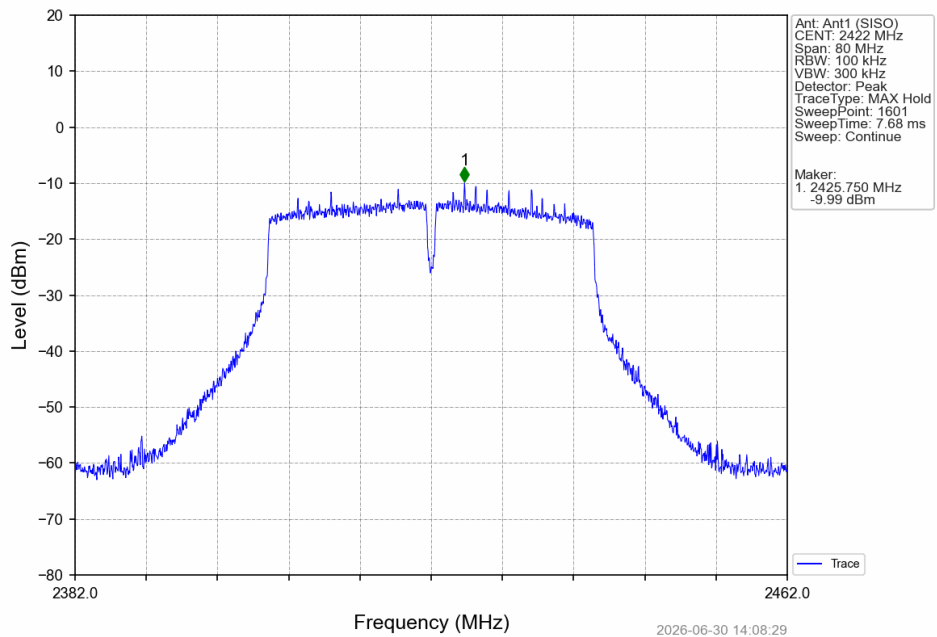
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



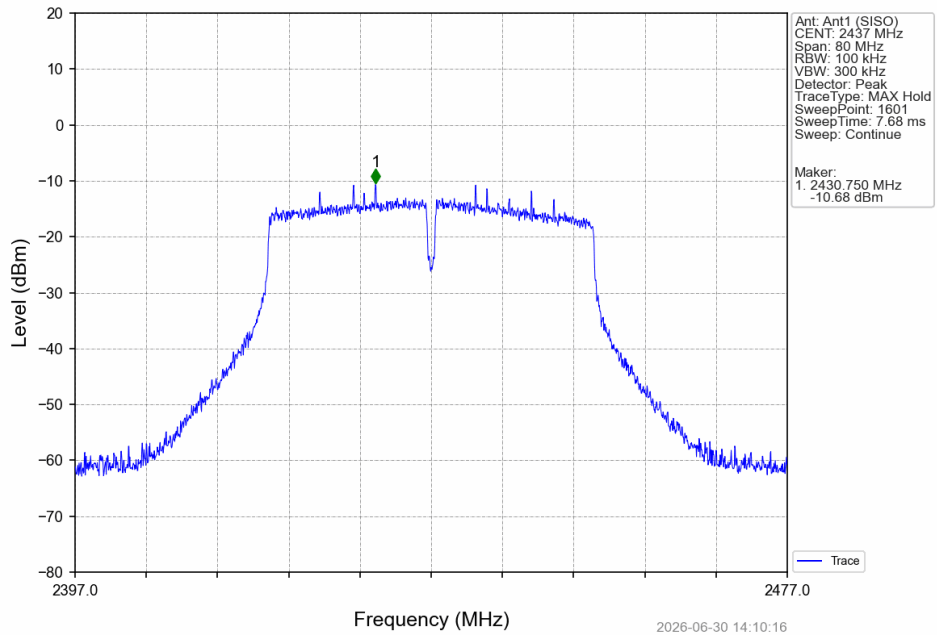
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



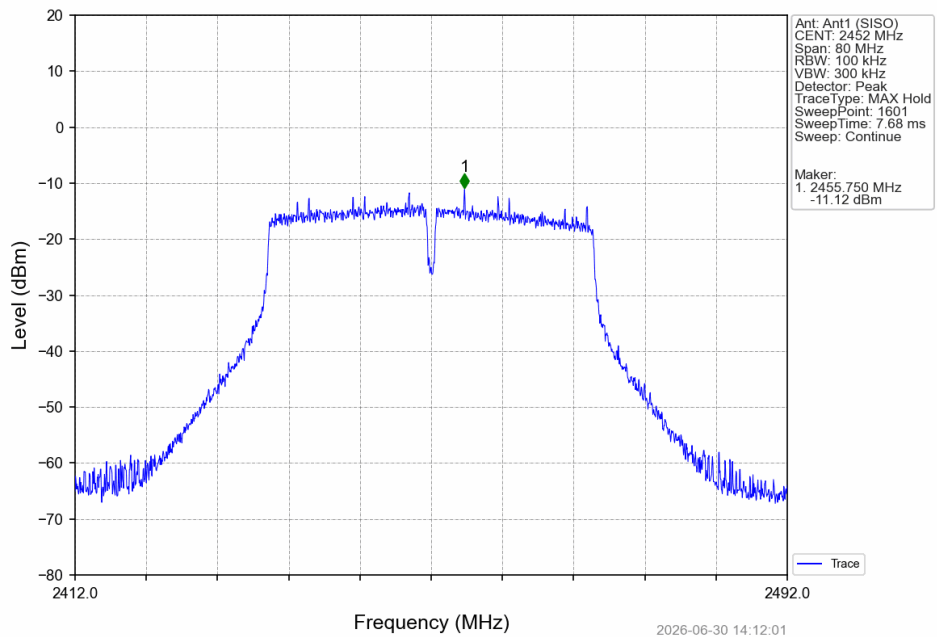
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



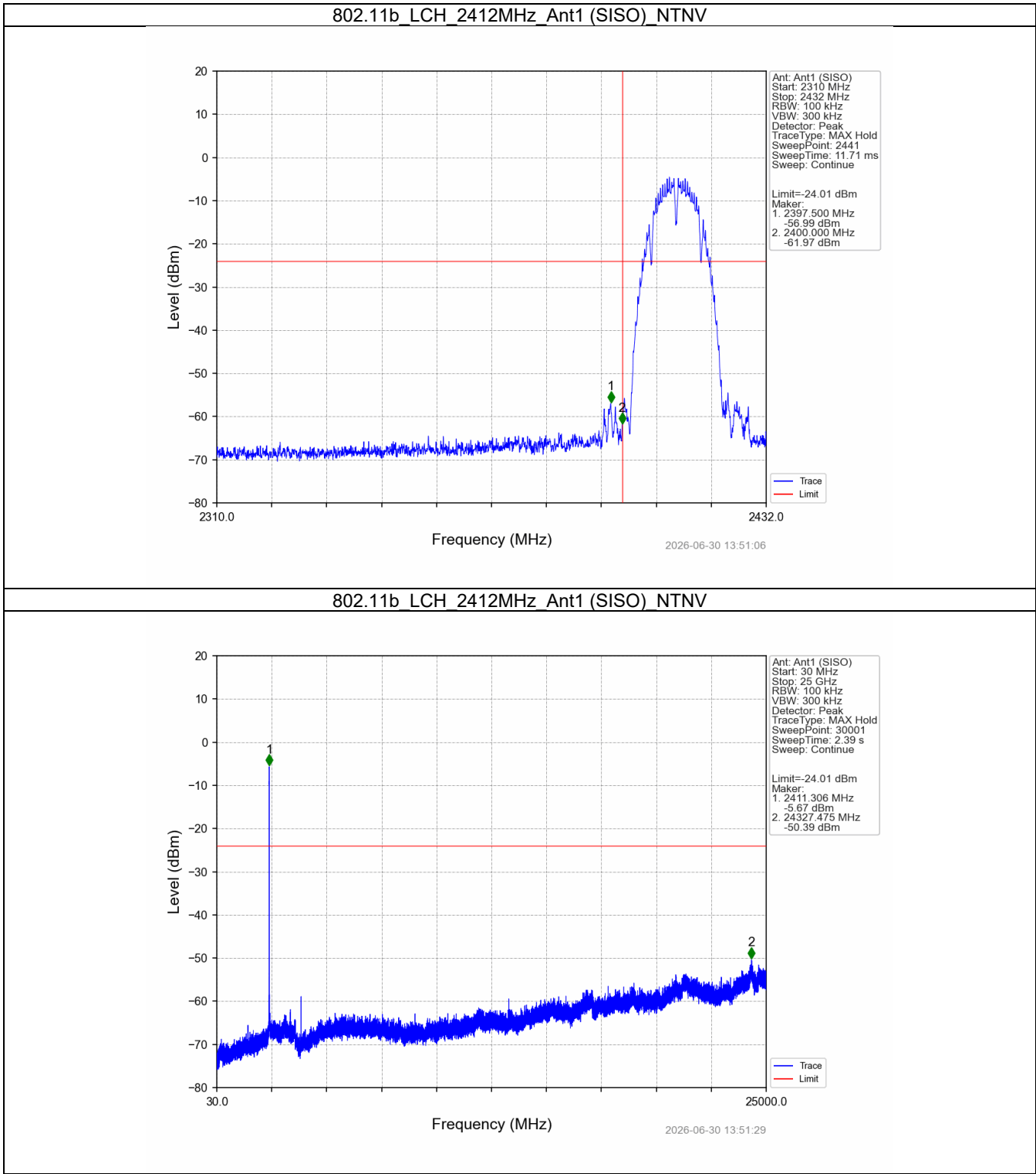
802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



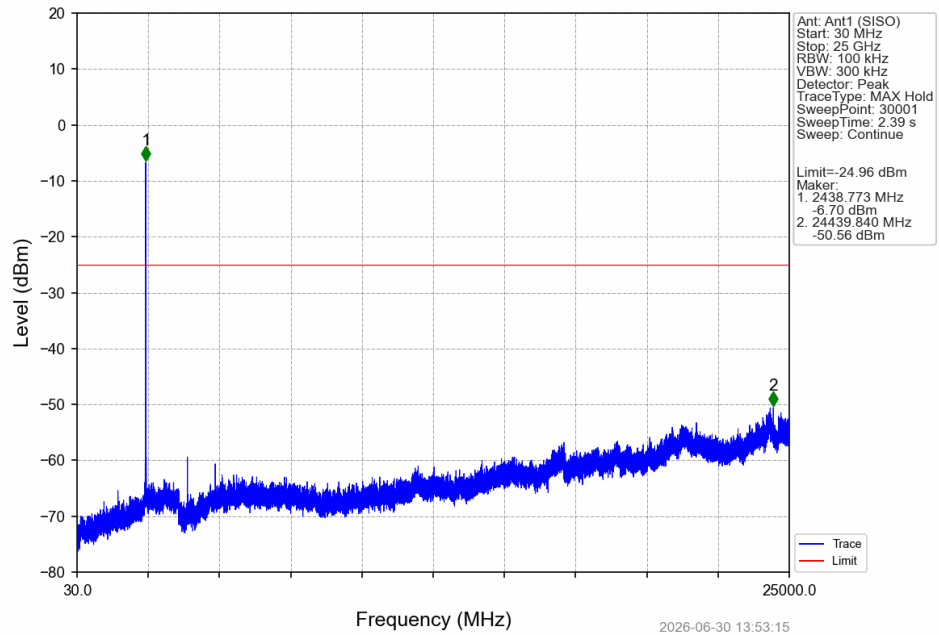
802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



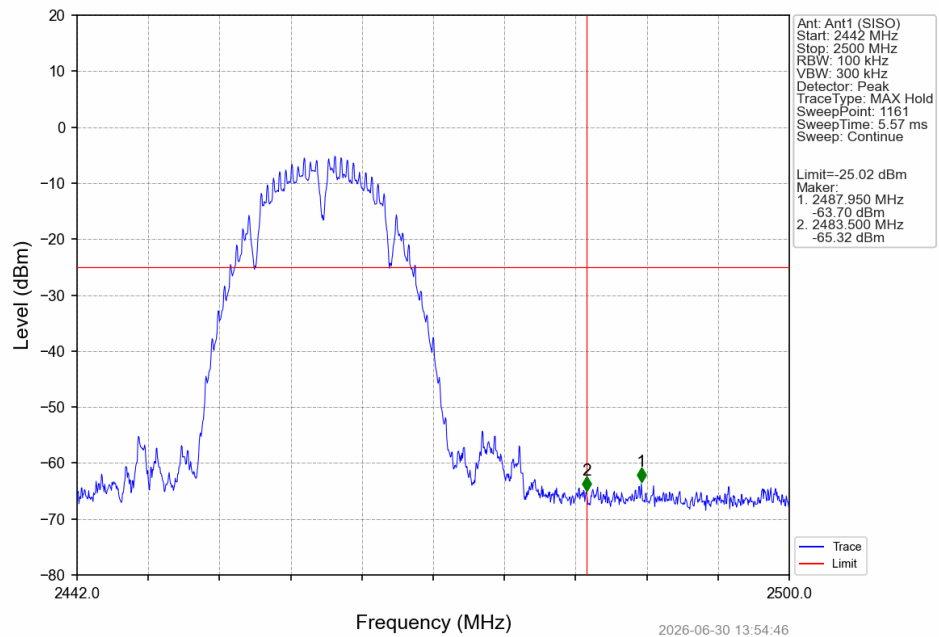
5.2.2 CSE



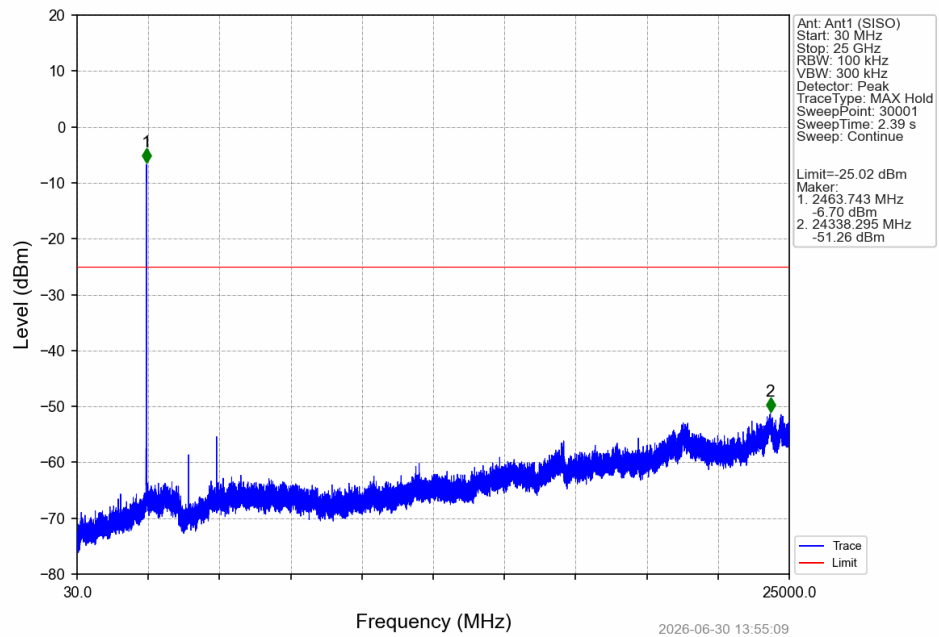
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



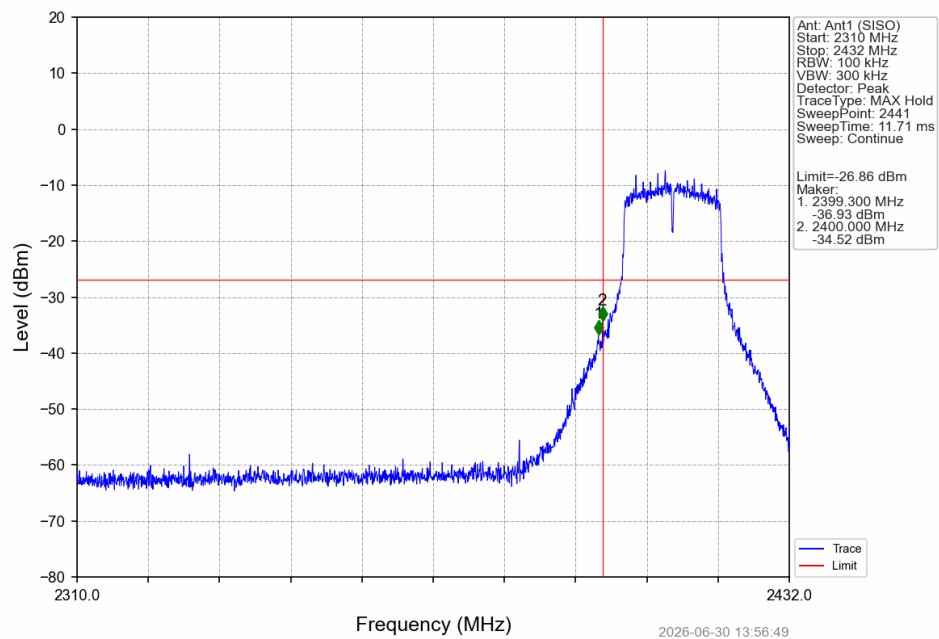
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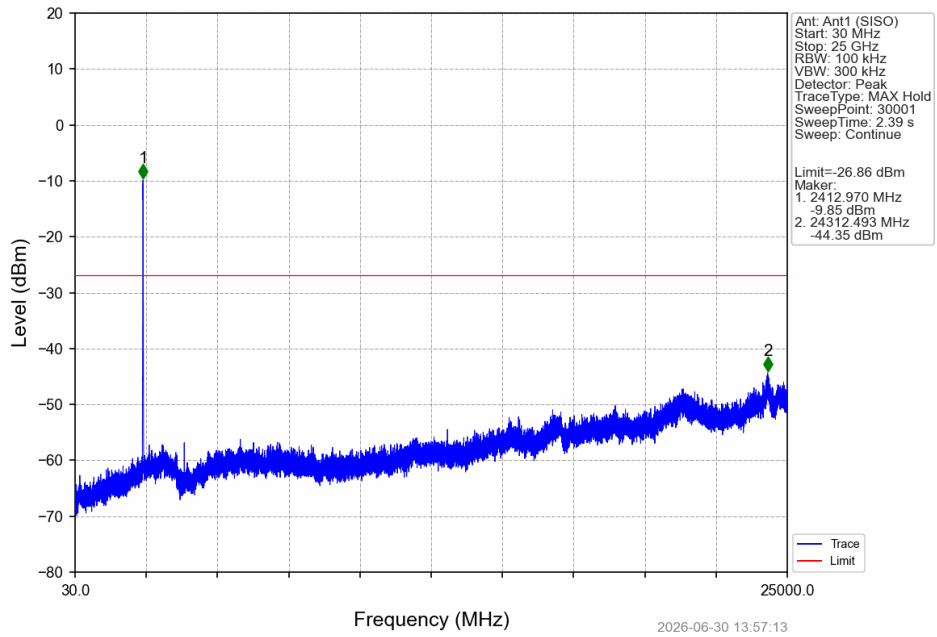
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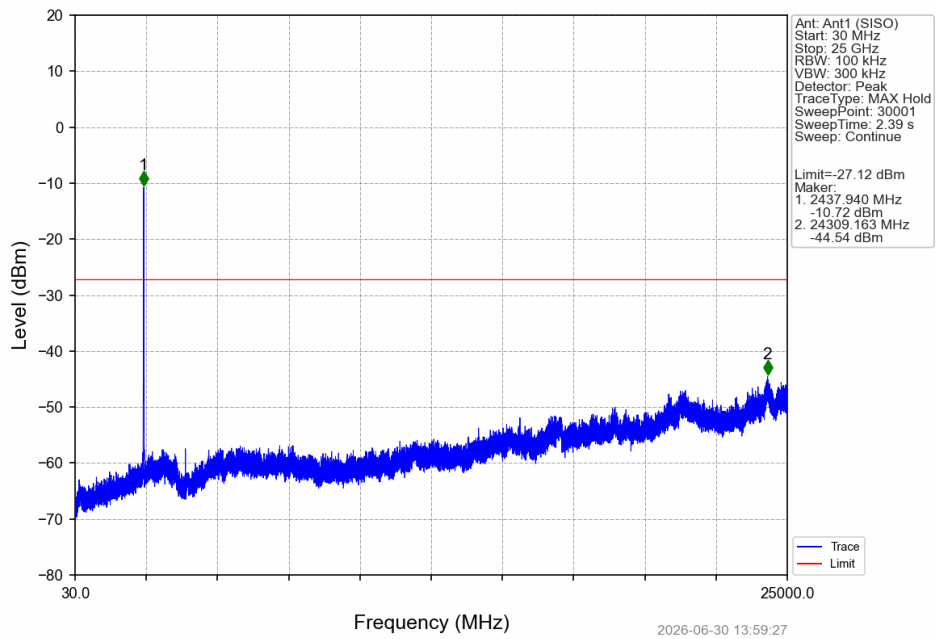
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



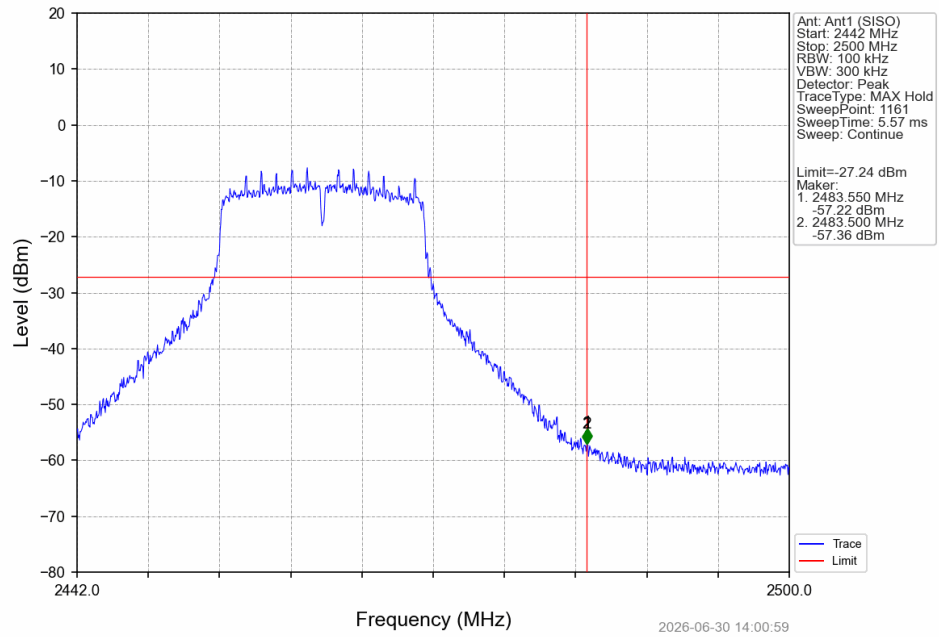
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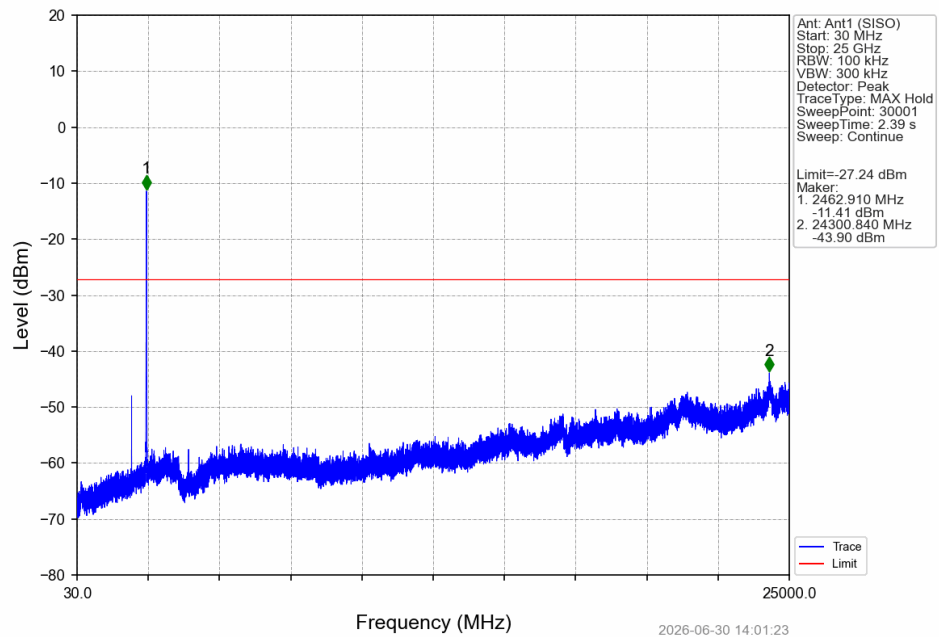
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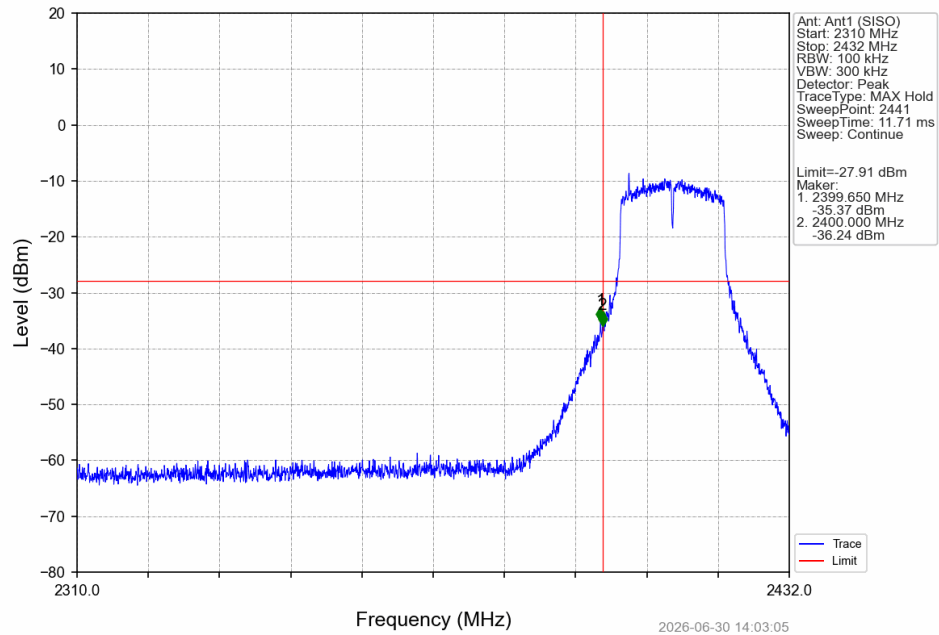
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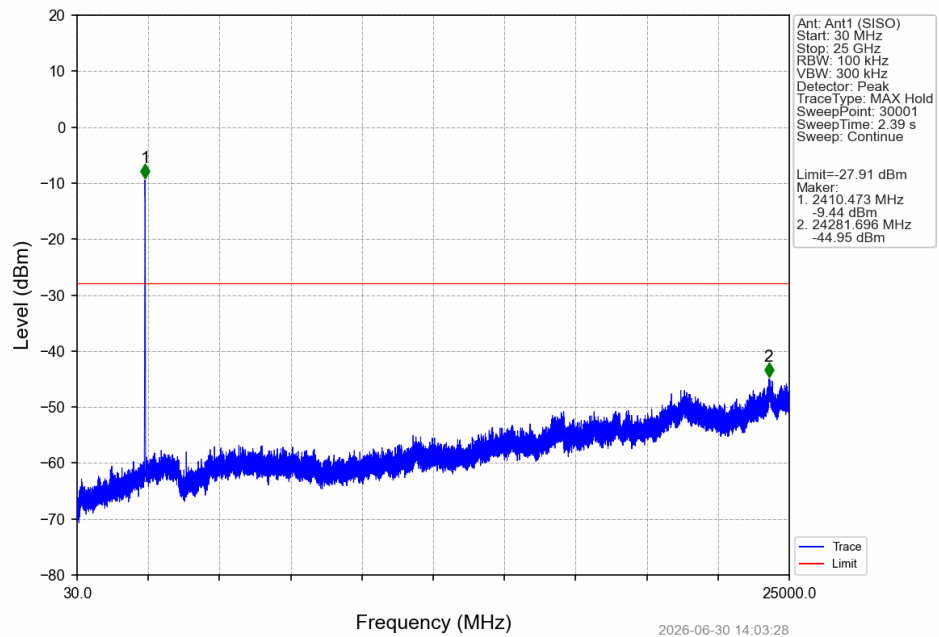
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



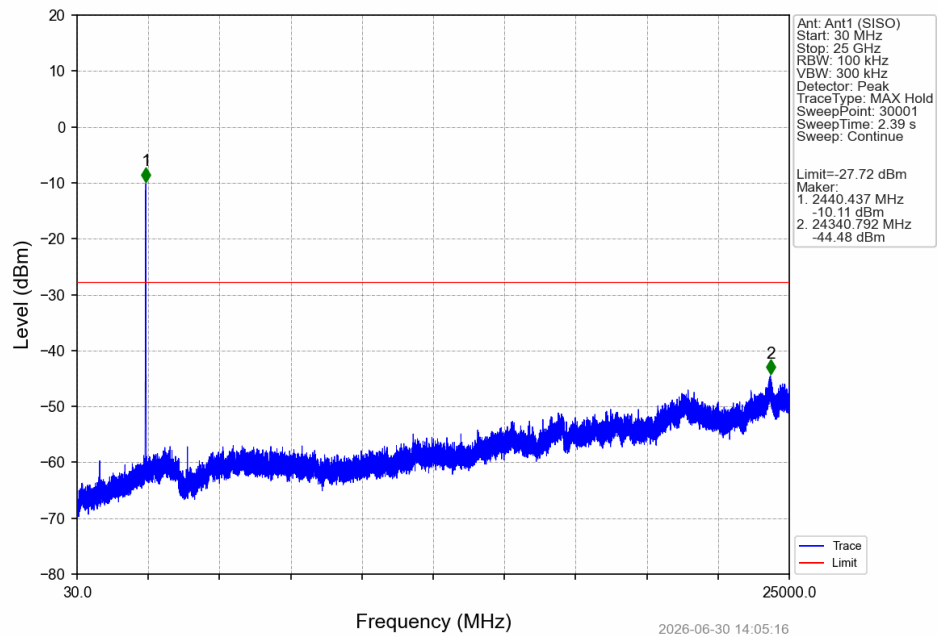
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



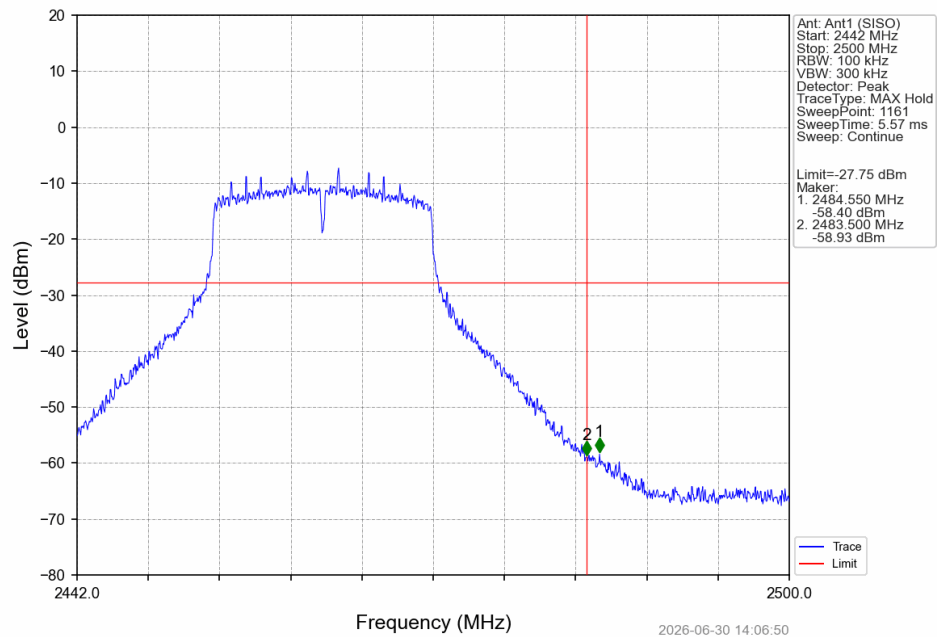
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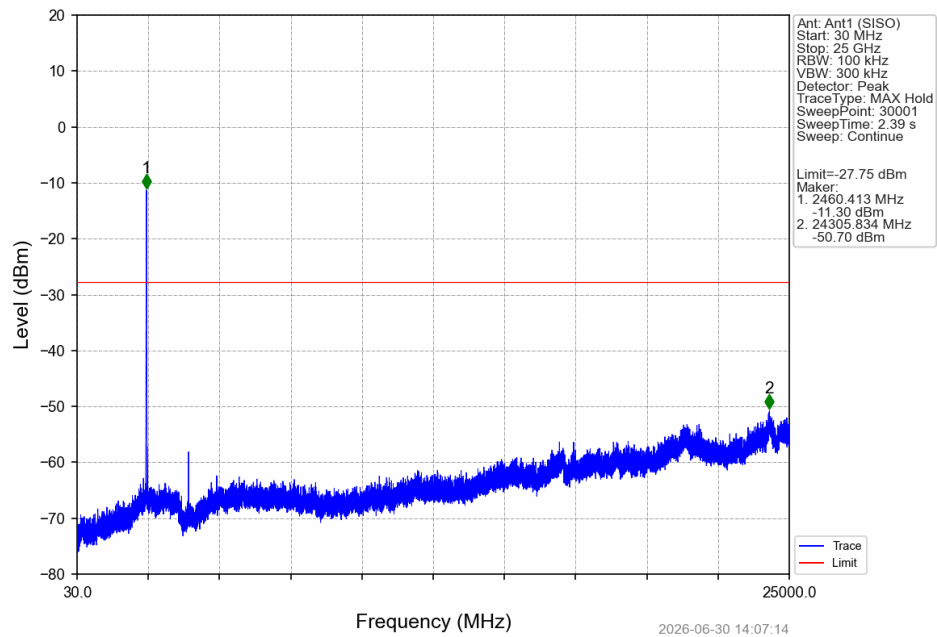
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



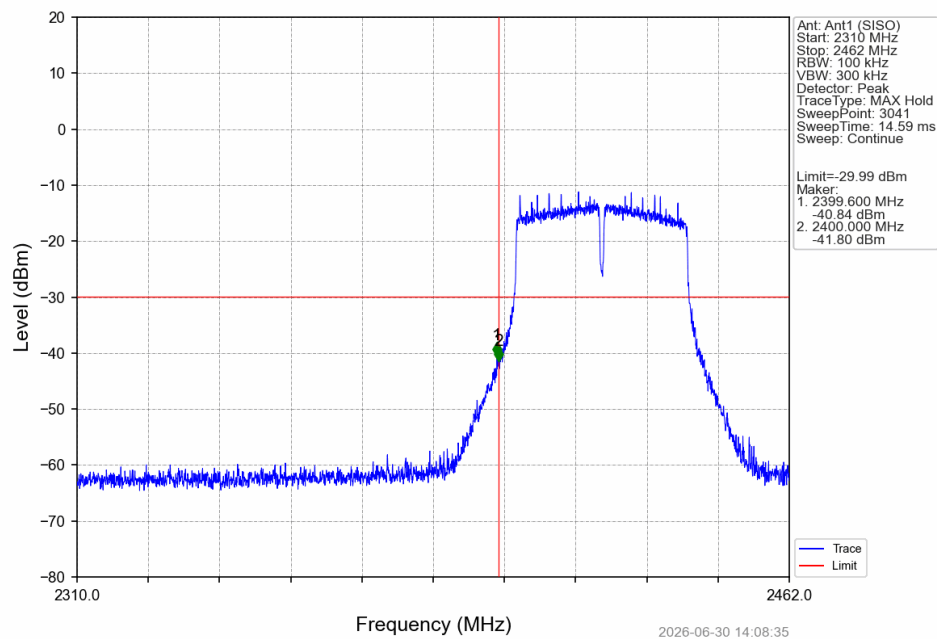
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



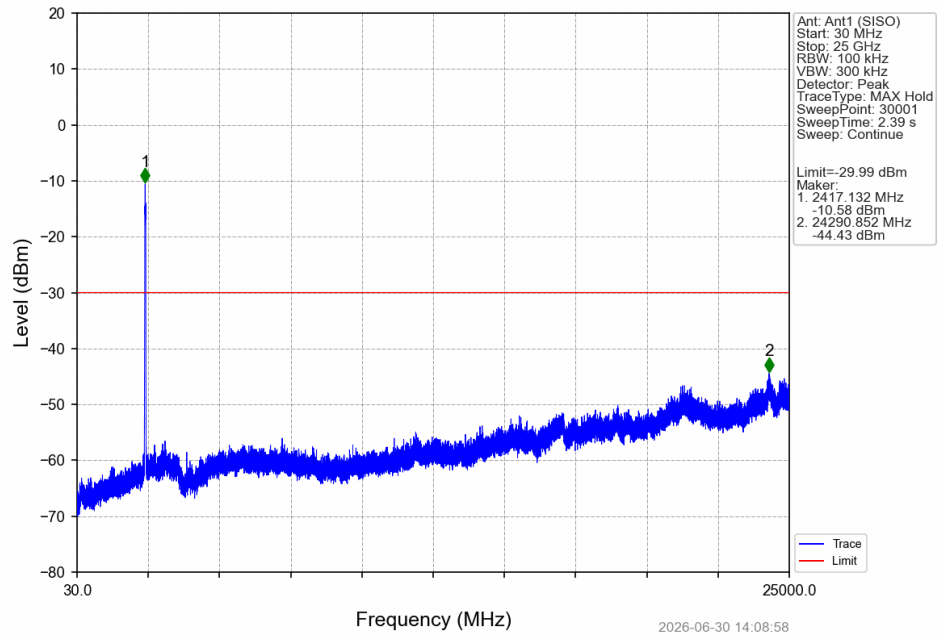
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



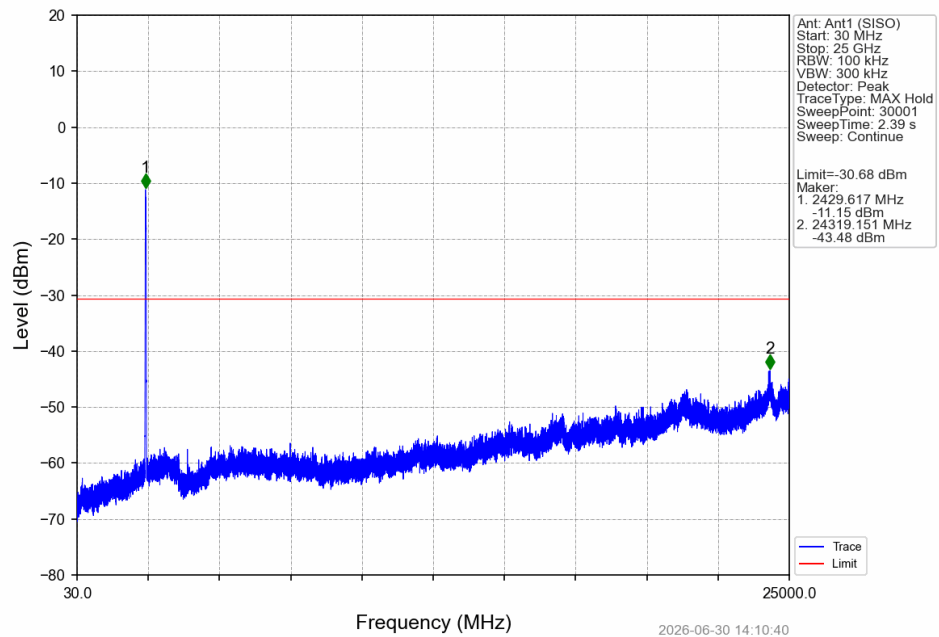
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



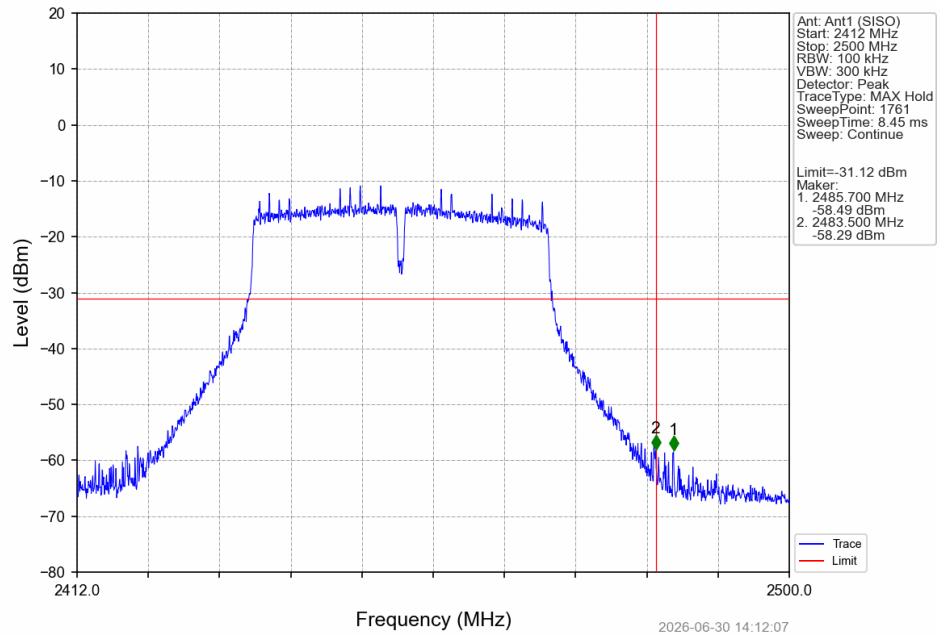
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

