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Annex for 2.4G Wi-Fi

Test Report No.: CTL2603313011-WF01

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FCC ID: 2BVL3-N5-100

1. Bandwidth

1.1 Test Result

1.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	13.932	/	Pass
		2437	1	14.067	/	Pass
		2462	1	13.929	/	Pass
802.11g	SISO	2412	1	16.252	/	Pass
		2437	1	16.290	/	Pass
		2462	1	16.249	/	Pass
802.11n (HT20)	SISO	2412	1	17.346	/	Pass
		2437	1	17.399	/	Pass
		2462	1	17.326	/	Pass
802.11n (HT40)	SISO	2422	1	35.113	/	Pass
		2437	1	35.371	/	Pass
		2452	1	35.101	/	Pass

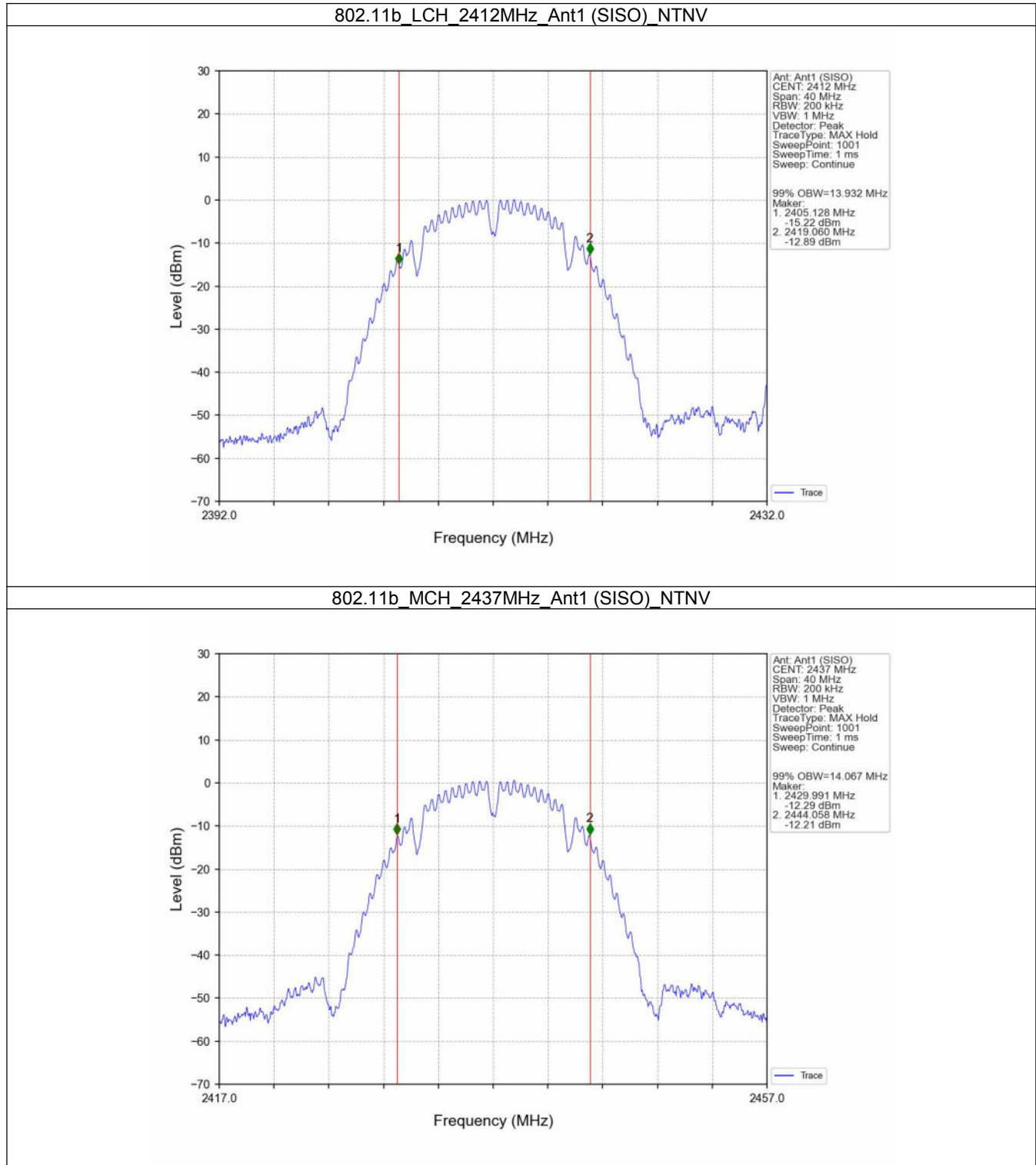
1.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.683	≥ 0.5	Pass
		2437	1	10.136	≥ 0.5	Pass
		2462	1	9.672	≥ 0.5	Pass
802.11g	SISO	2412	1	15.512	≥ 0.5	Pass
		2437	1	15.820	≥ 0.5	Pass
		2462	1	15.701	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	15.995	≥ 0.5	Pass
		2437	1	16.383	≥ 0.5	Pass
		2462	1	15.506	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	31.262	≥ 0.5	Pass
		2437	1	34.219	≥ 0.5	Pass
		2452	1	31.220	≥ 0.5	Pass

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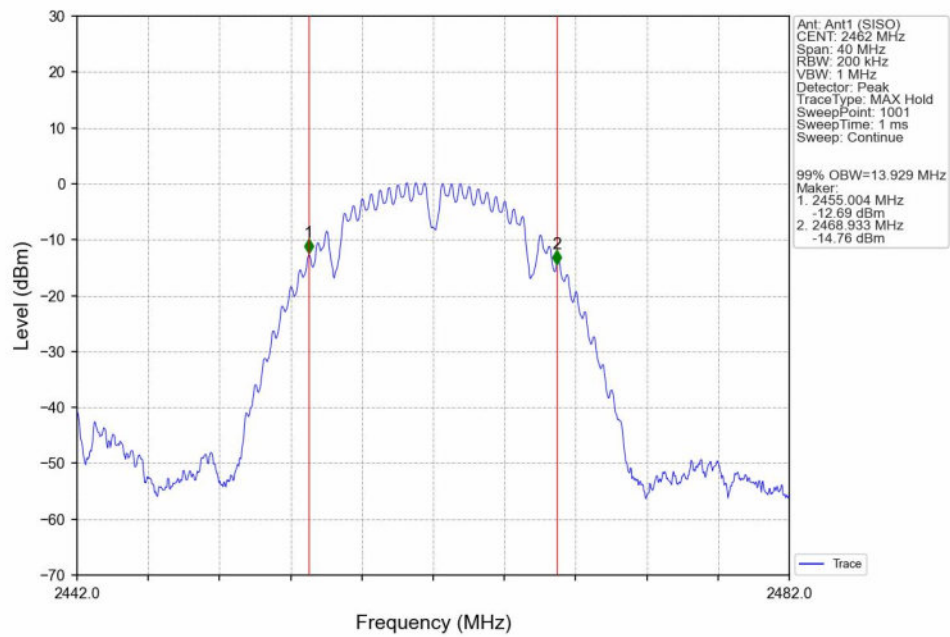
1.2 Test Graph

1.2.1 OBW

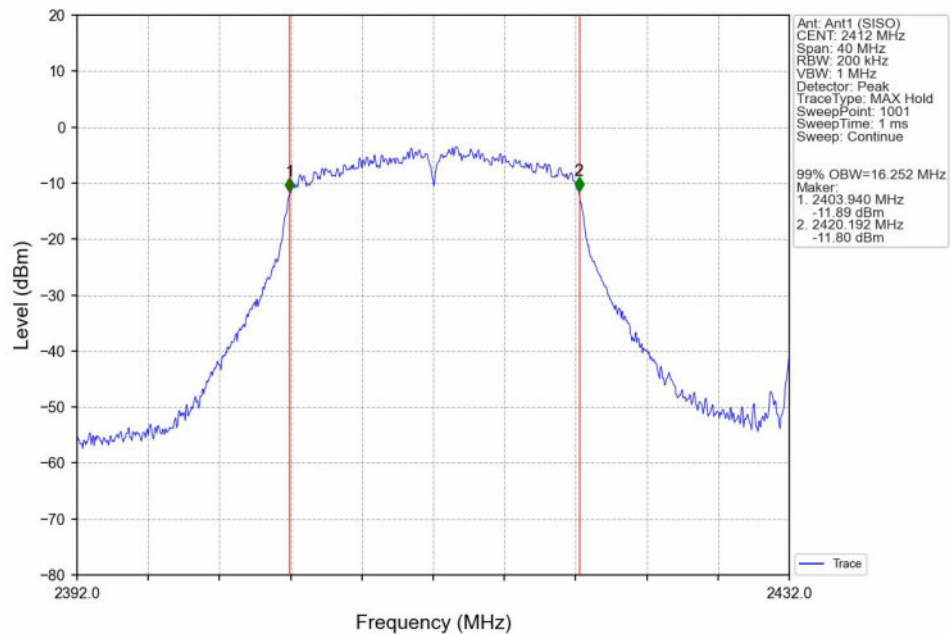


FCC ID: 2BVL3-N5-100

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

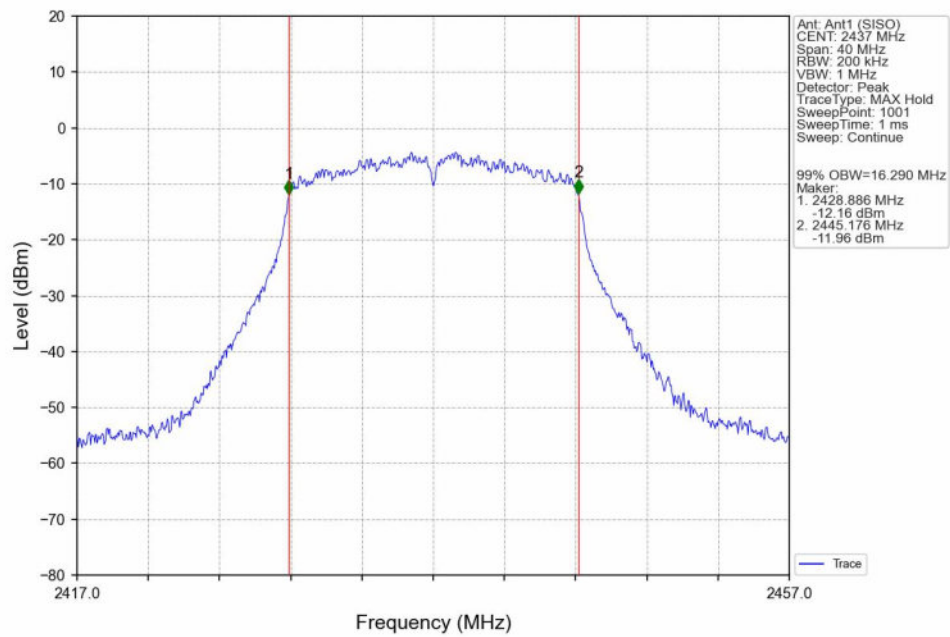


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

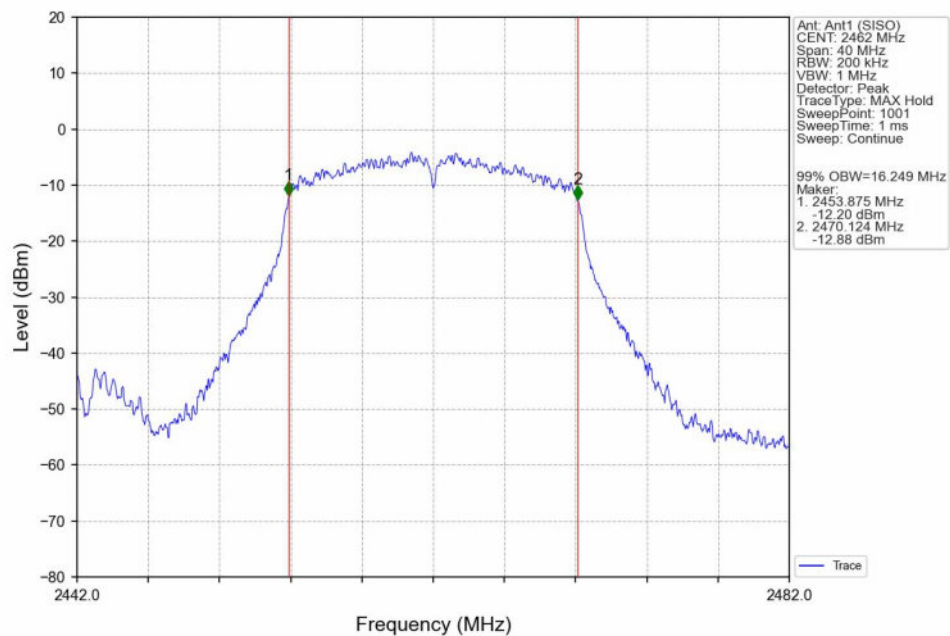


FCC ID: 2BVL3-N5-100

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

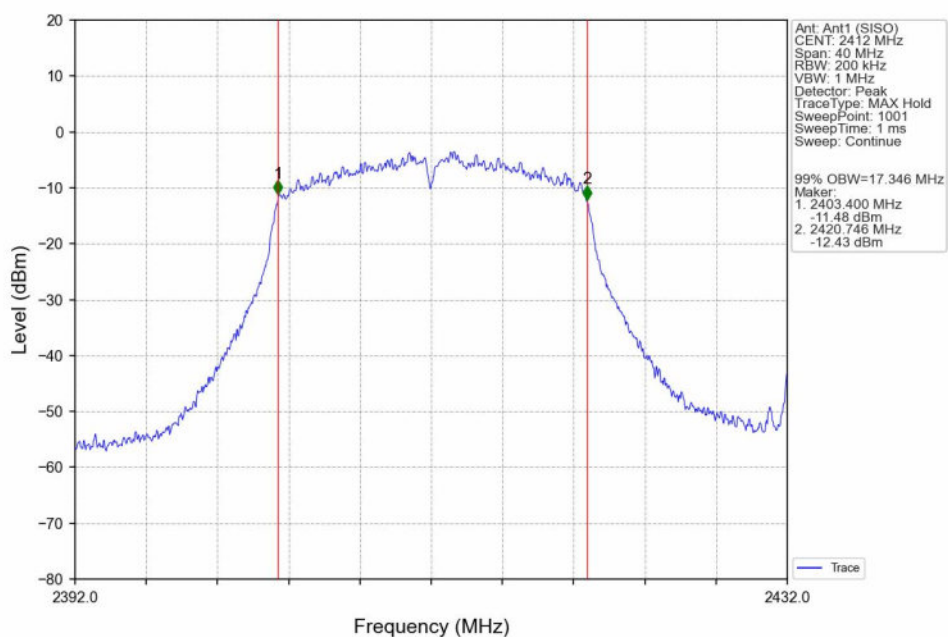


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

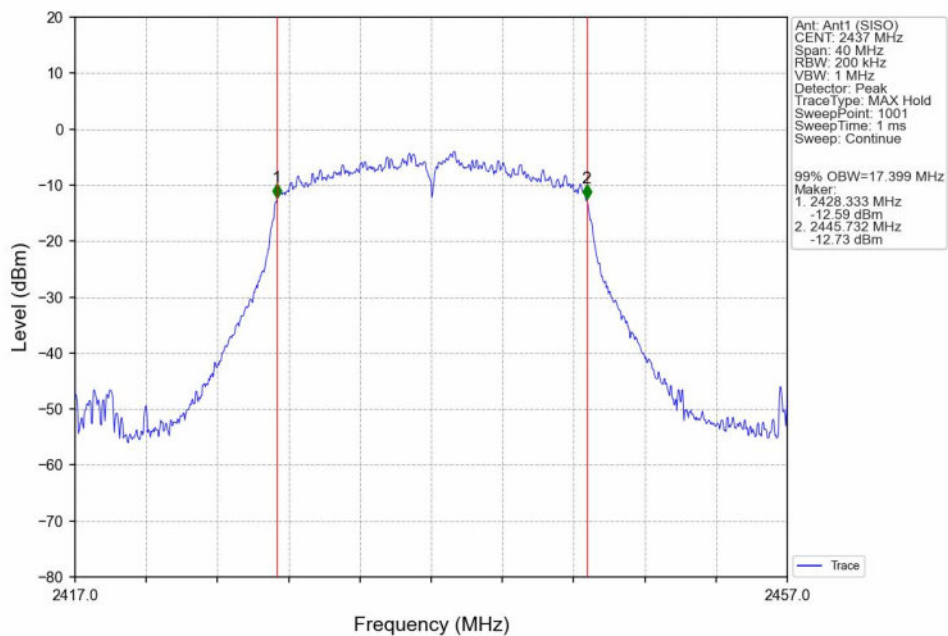


FCC ID: 2BVL3-N5-100

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

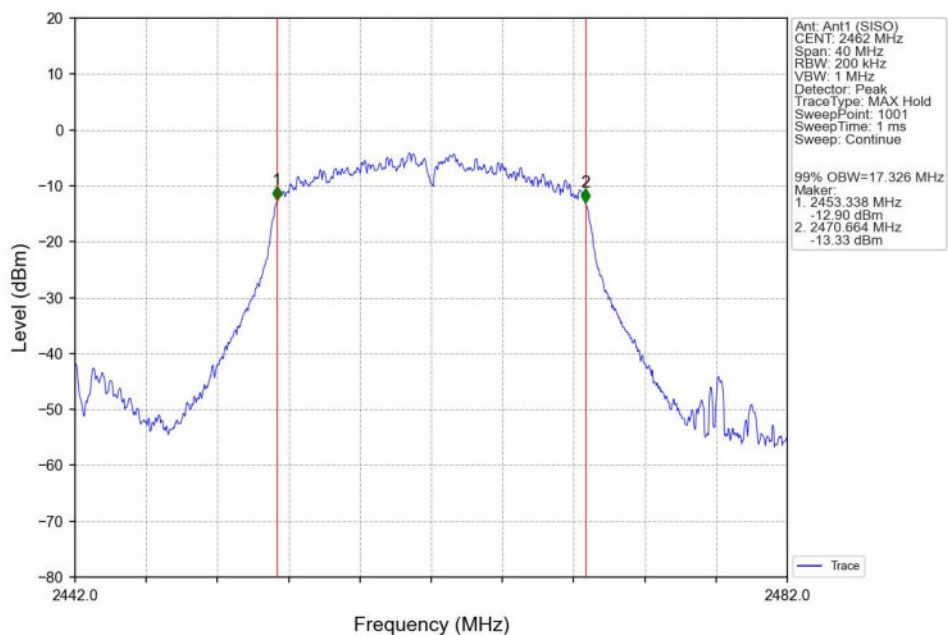


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

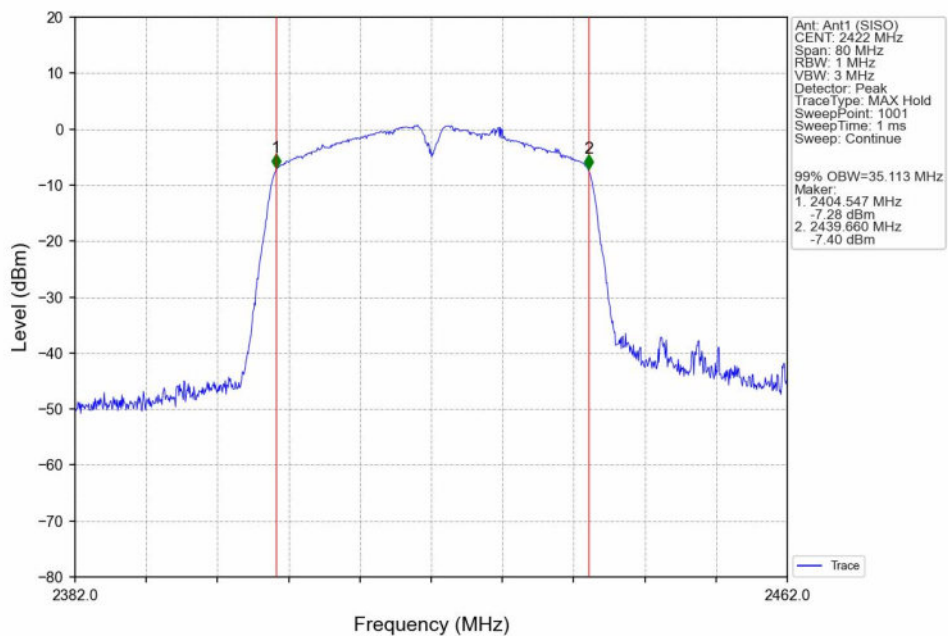


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

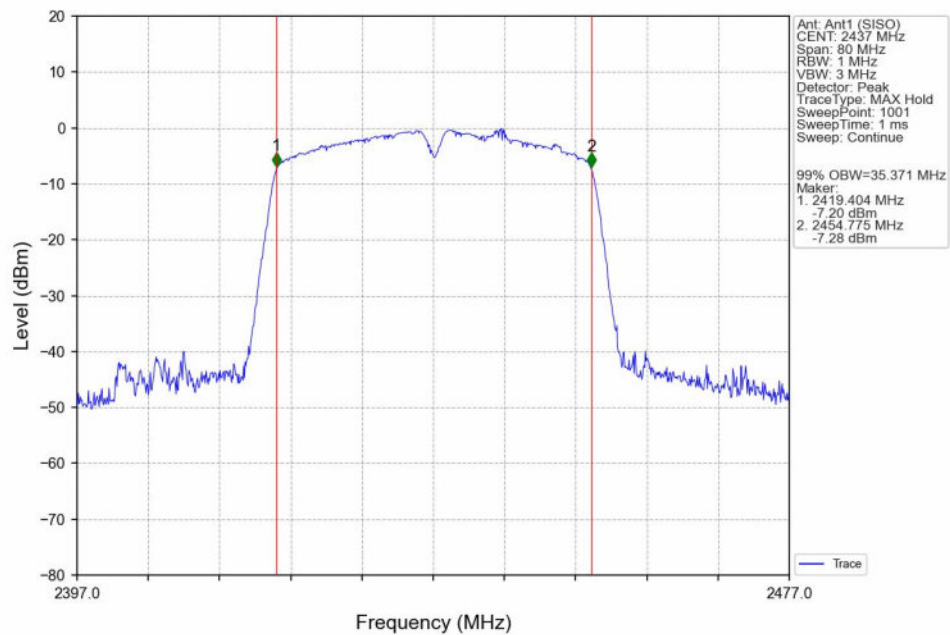


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

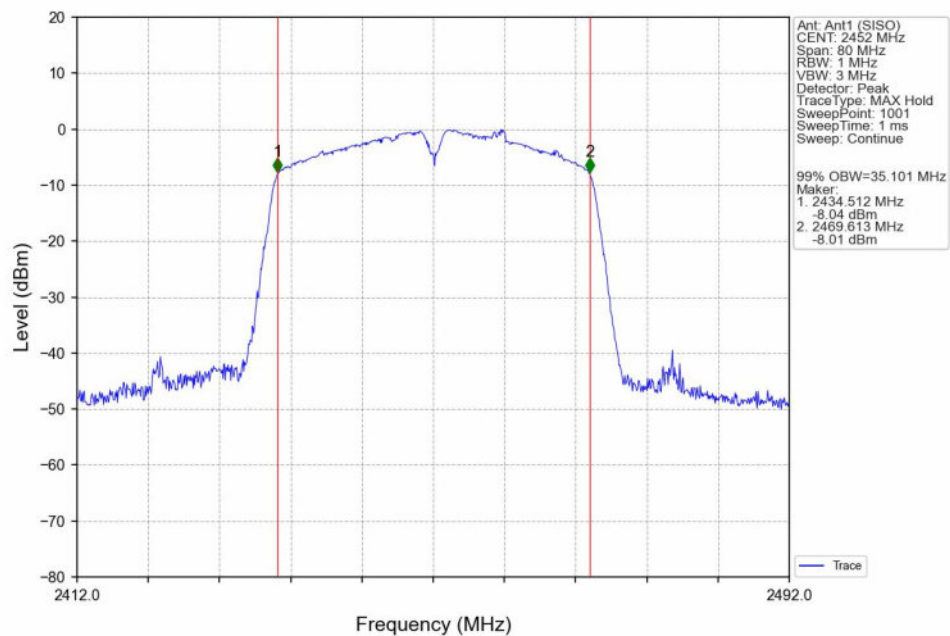


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

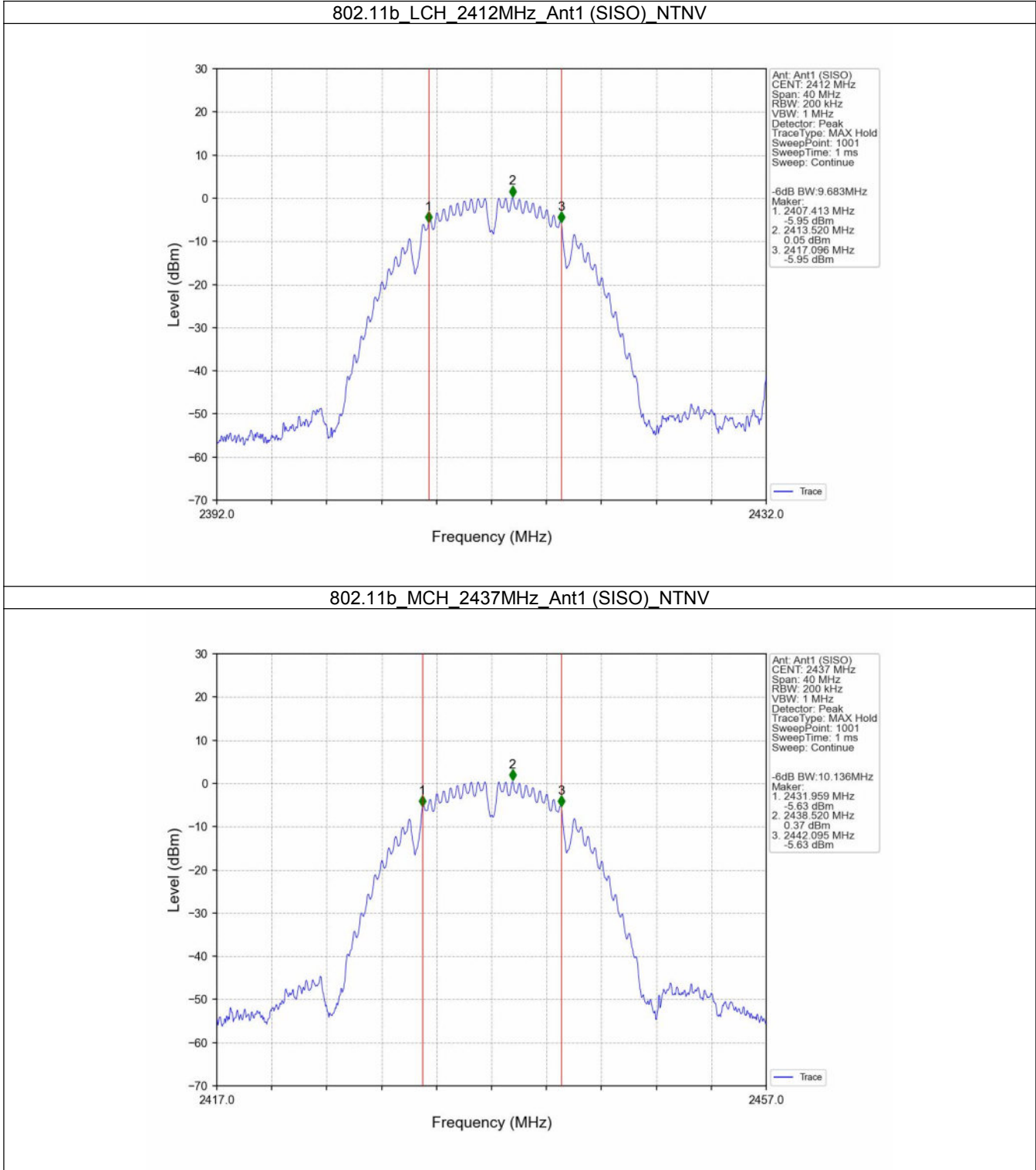


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



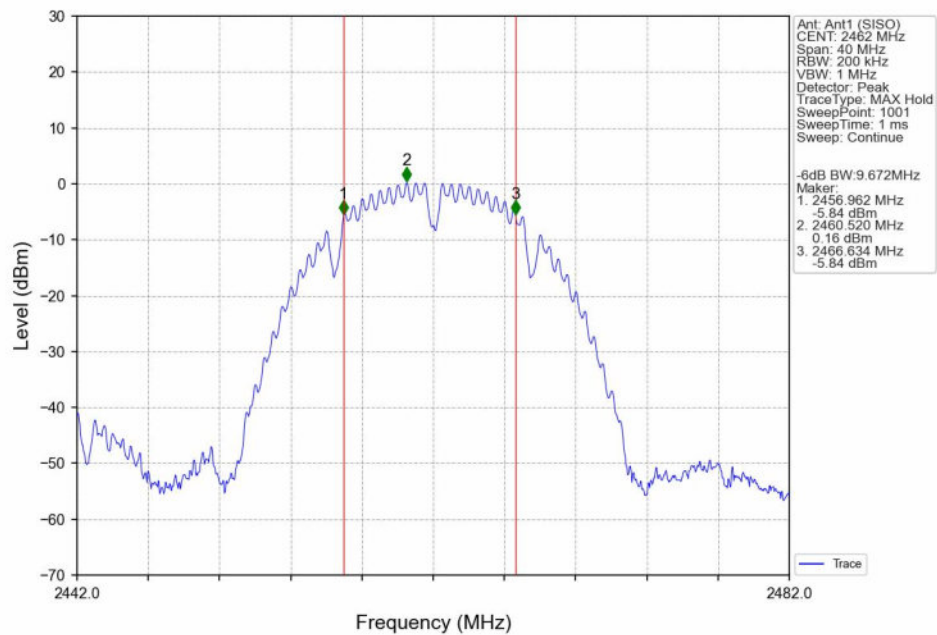
FCC ID: 2BVL3-N5-100

1.2.2 6dB BW

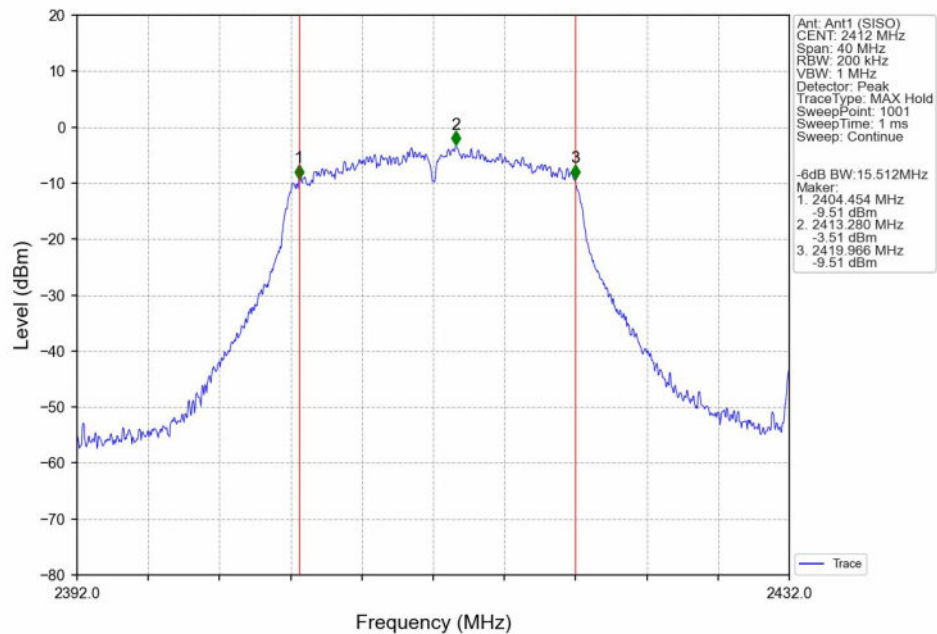


FCC ID: 2BVL3-N5-100

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

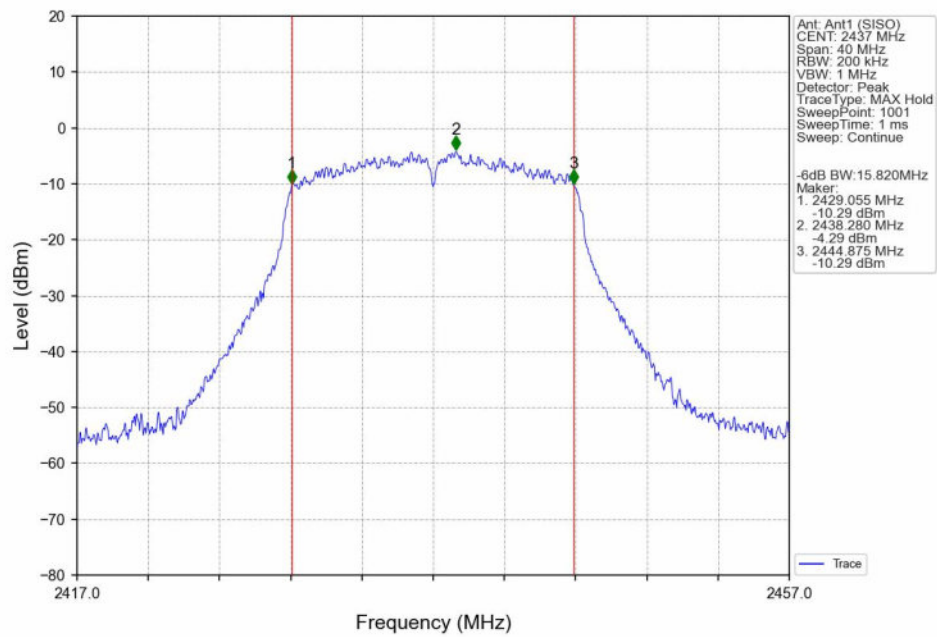


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

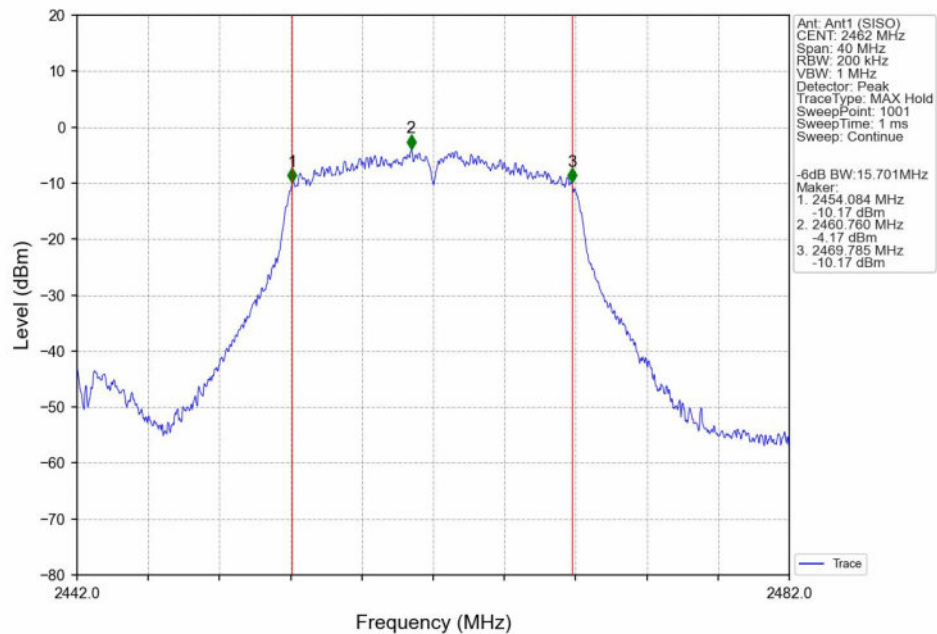


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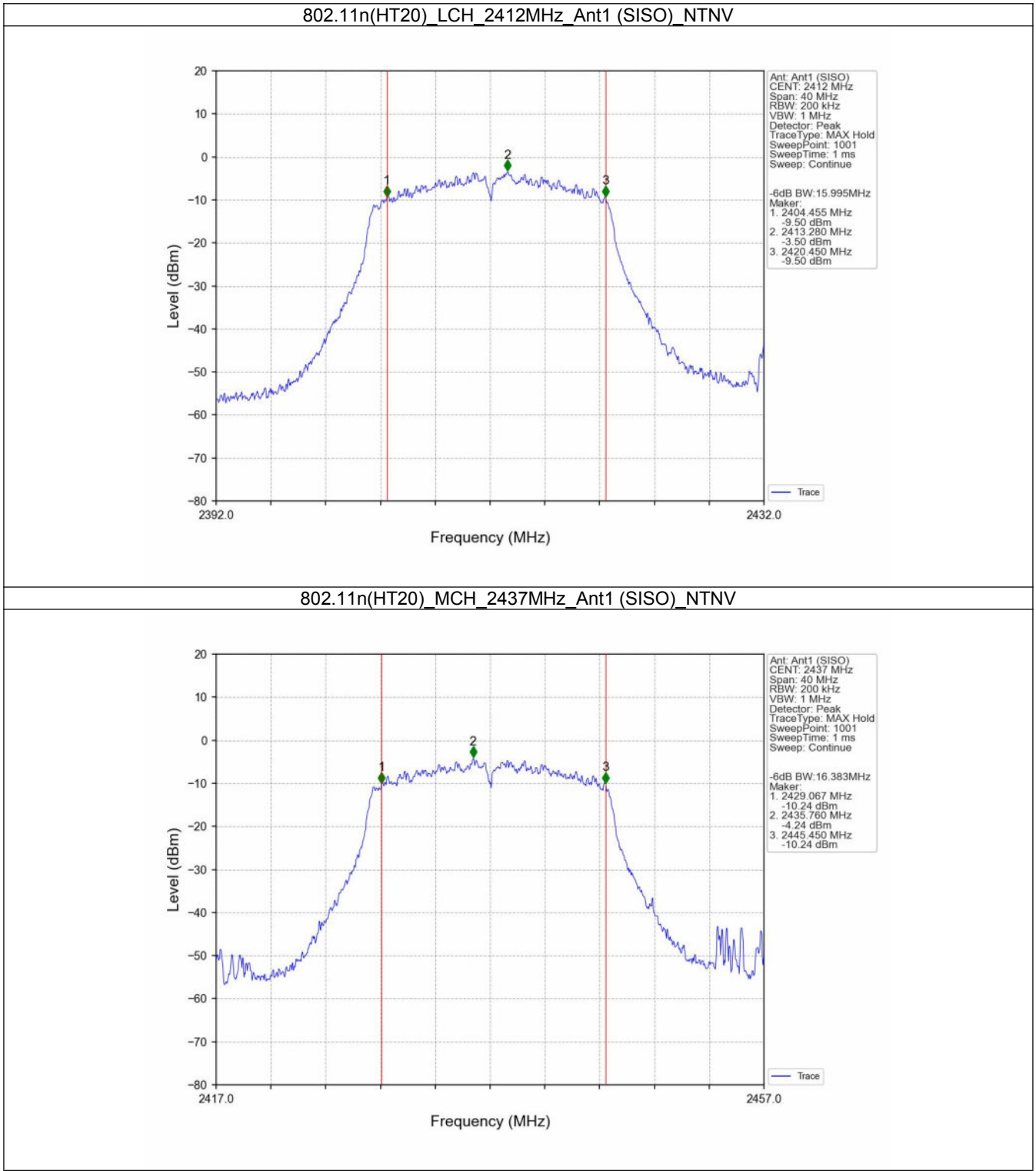
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

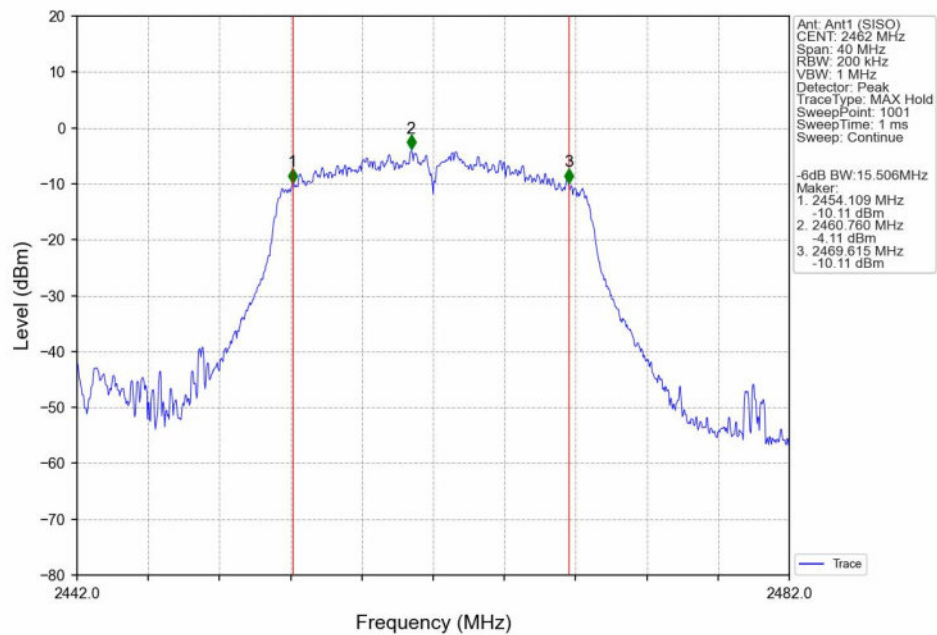


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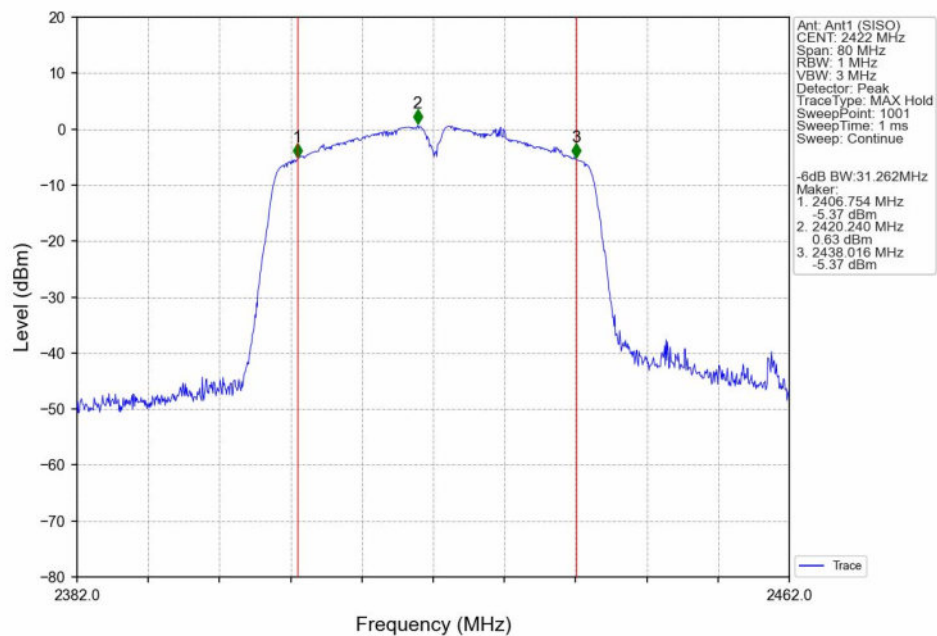


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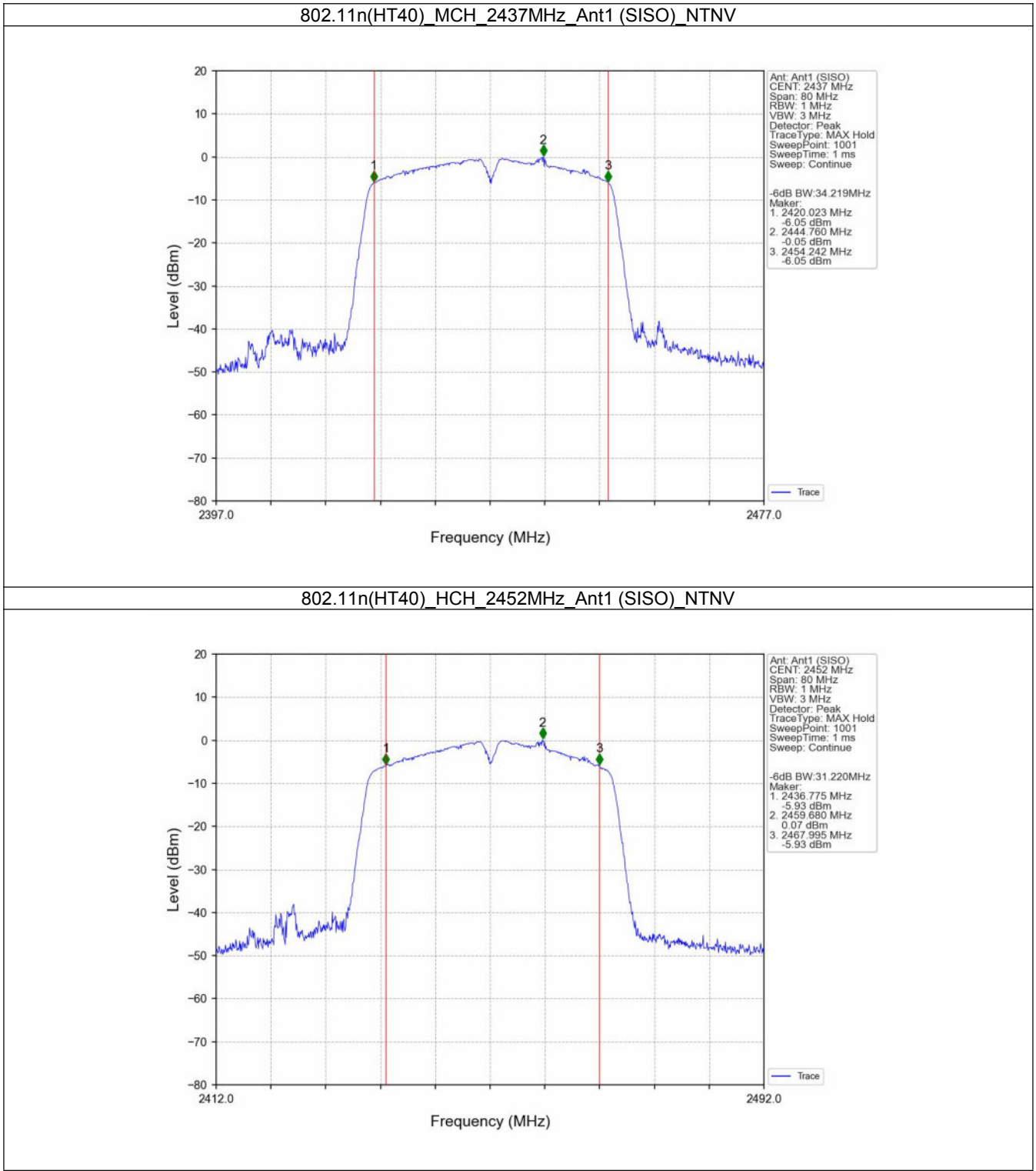
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



FCC ID: 2BVL3-N5-100



FCC ID: 2BVL3-N5-100

2. Maximum Conducted Output Power

2.1 Test Result

2.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	11.30	<=30	Pass
		2437	11.85	<=30	Pass
		2462	11.40	<=30	Pass
802.11g	SISO	2412	13.13	<=30	Pass
		2437	12.49	<=30	Pass
		2462	12.43	<=30	Pass
802.11n (HT20)	SISO	2412	12.93	<=30	Pass
		2437	12.36	<=30	Pass
		2462	12.19	<=30	Pass
802.11n (HT40)	SISO	2422	13.00	<=30	Pass
		2437	12.63	<=30	Pass
		2452	12.24	<=30	Pass

Note1: Antenna Gain: Ant1: 2.19dBi;

Note2: RF Cable loss=0.5dB

Note3: The test results include RF Cable loss.

3. Maximum Power Spectral Density

3.1 Test Result

3.1.1 PSD

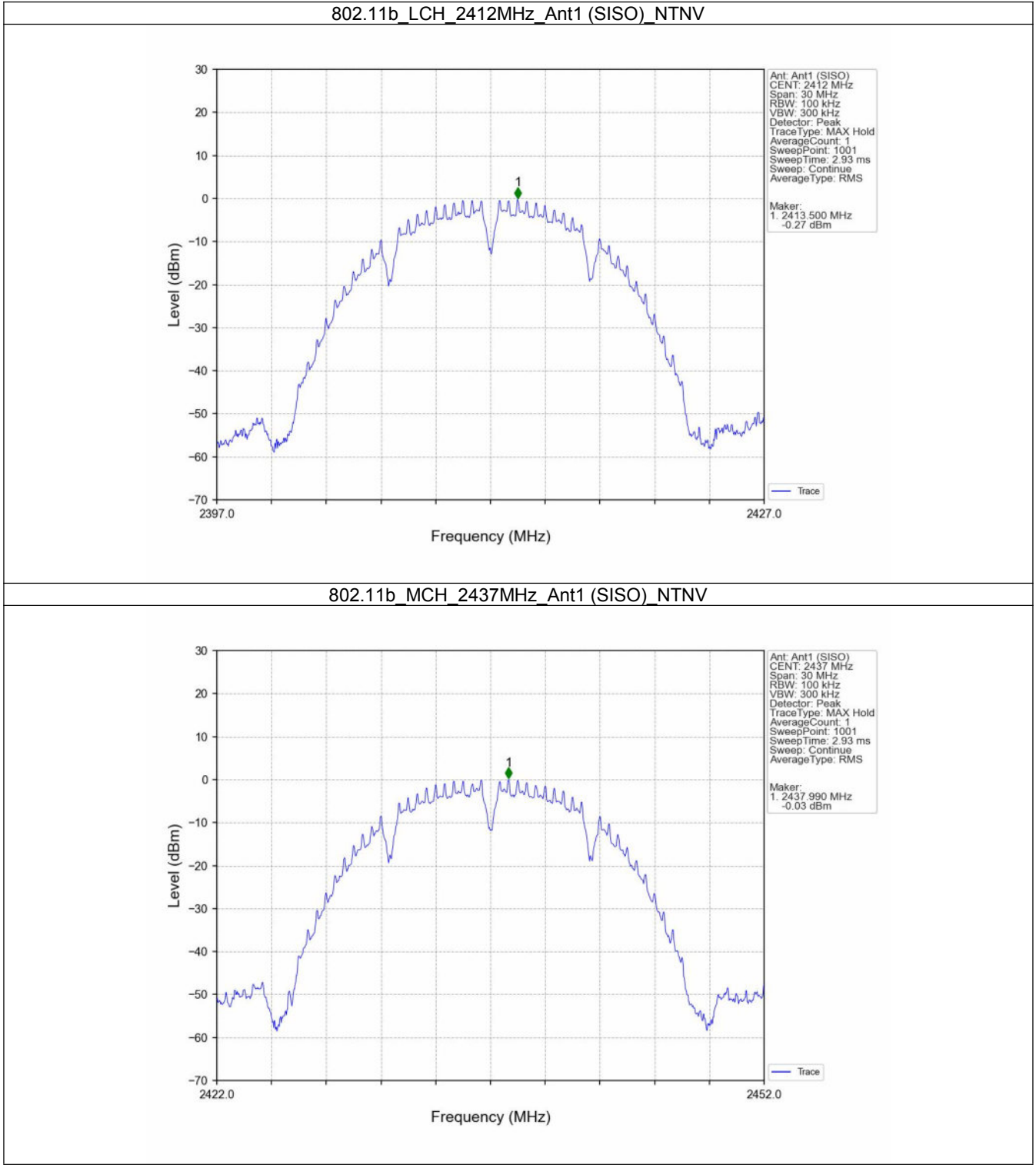
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-0.27	<=8	Pass
		2437	-0.03	<=8	Pass
		2462	-0.14	<=8	Pass
802.11g	SISO	2412	-4.26	<=8	Pass
		2437	-5.06	<=8	Pass
		2462	-5.45	<=8	Pass
802.11n (HT20)	SISO	2412	-4.25	<=8	Pass
		2437	-5.02	<=8	Pass
		2462	-5.00	<=8	Pass
802.11n (HT40)	SISO	2422	-6.98	<=8	Pass
		2437	-7.98	<=8	Pass
		2452	-7.56	<=8	Pass

Note1: Antenna Gain: Ant1: 2.19dBi;
Note2: RF Cable loss=0.5dB
Note3: The test results include RF Cable loss.

FCC ID: 2BVL3-N5-100

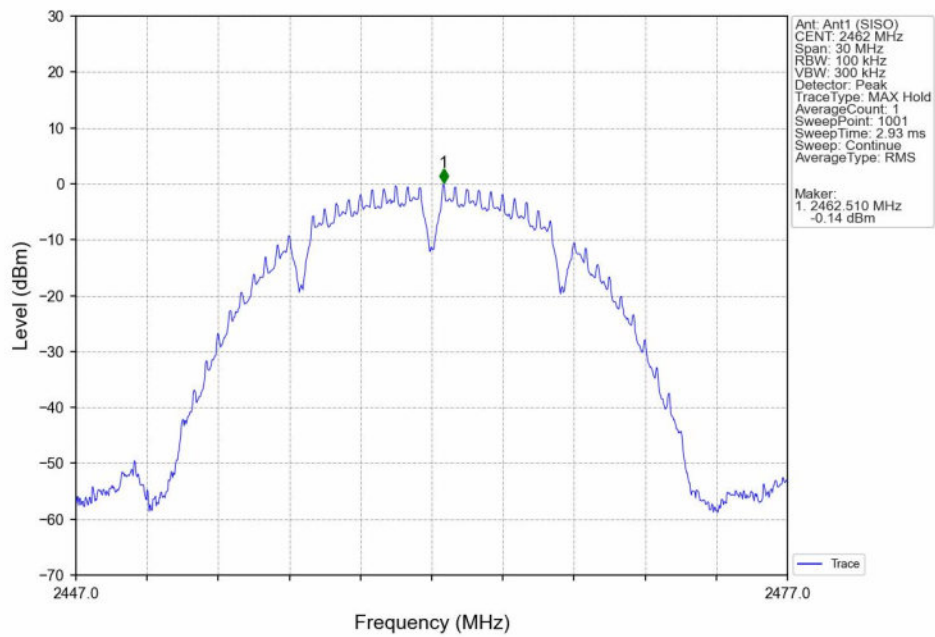
3.2 Test Graph

3.2.1 PSD

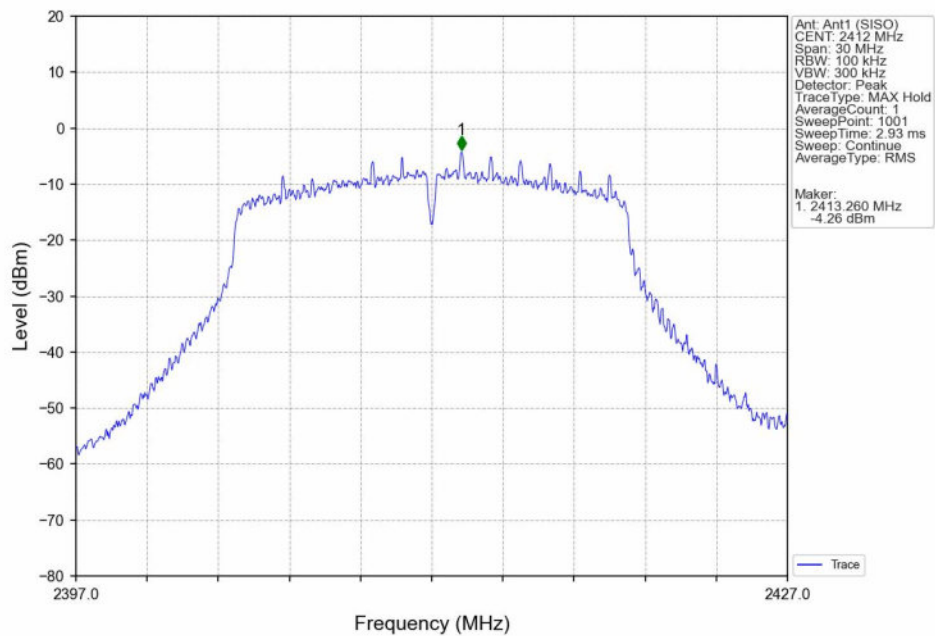


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

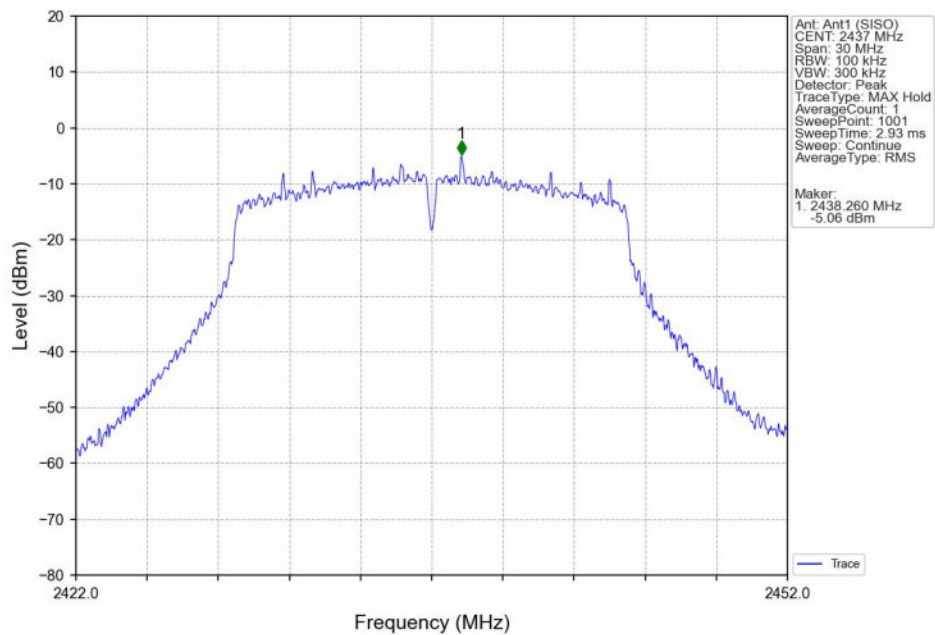


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

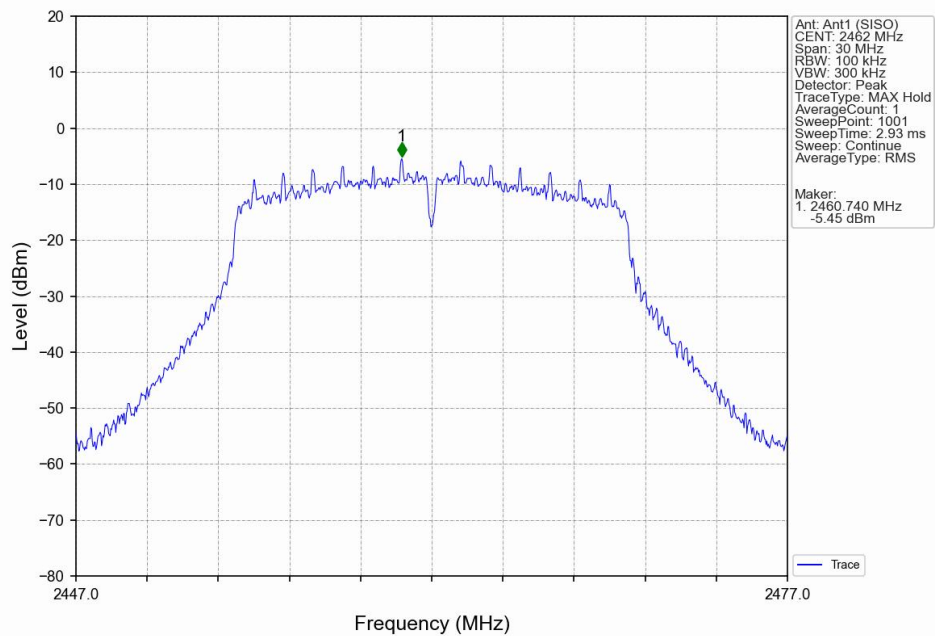


FCC ID: 2BVL3-N5-100

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

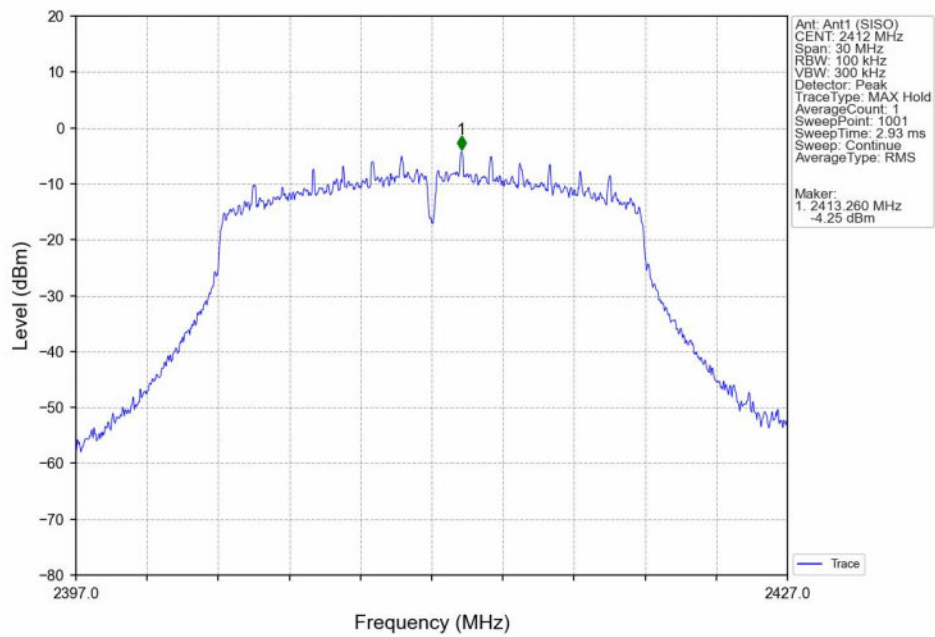


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

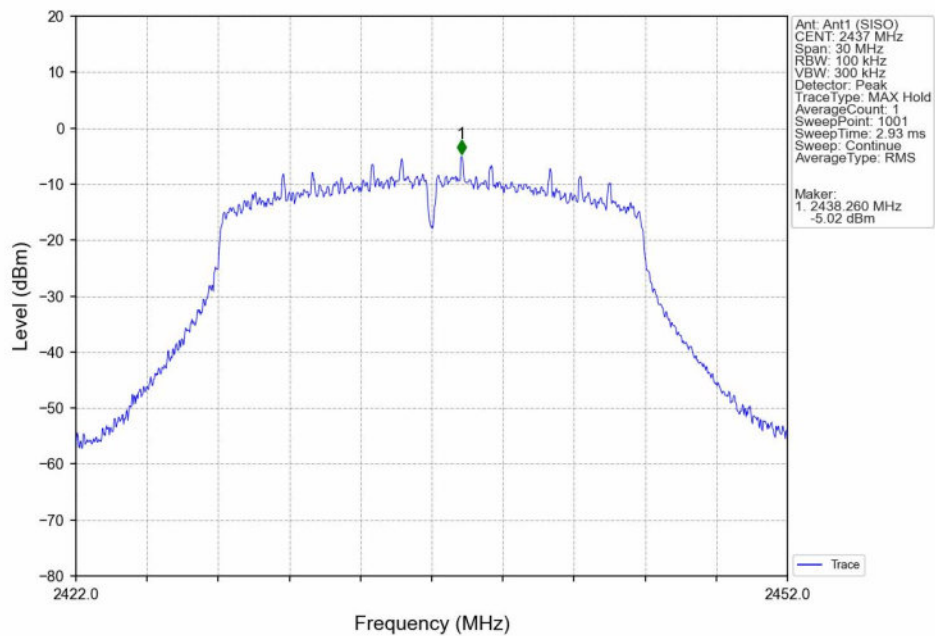


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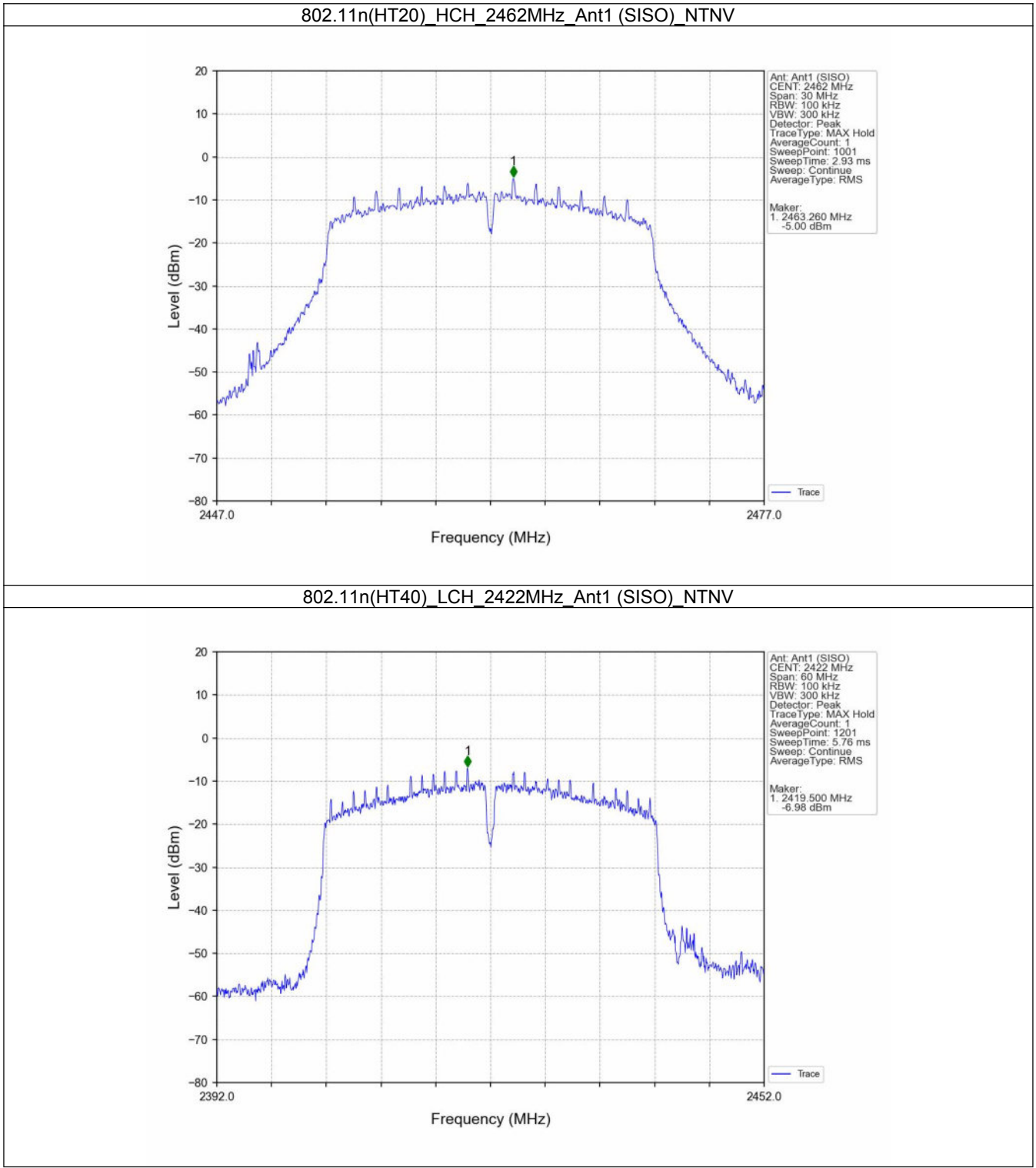
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

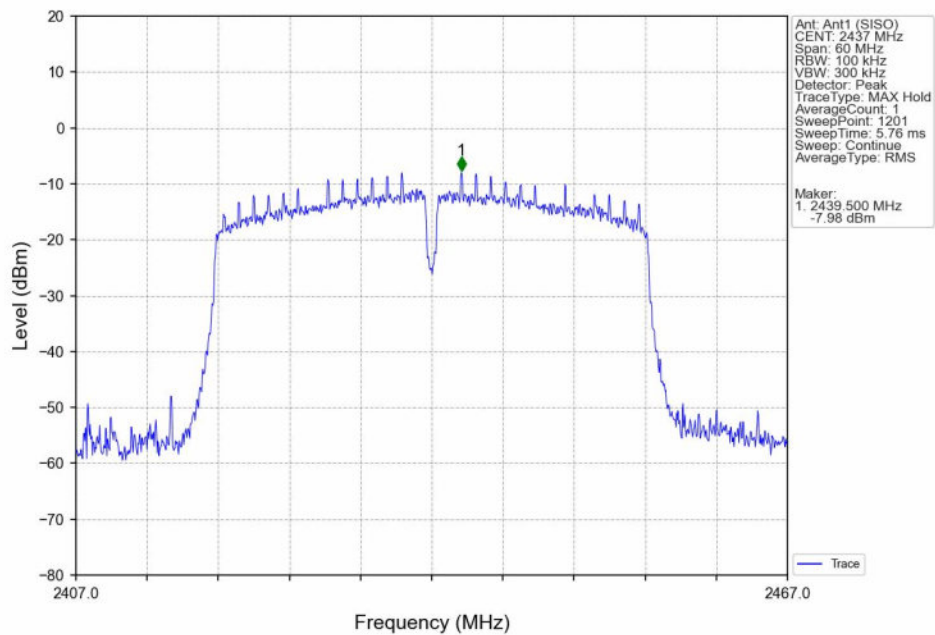


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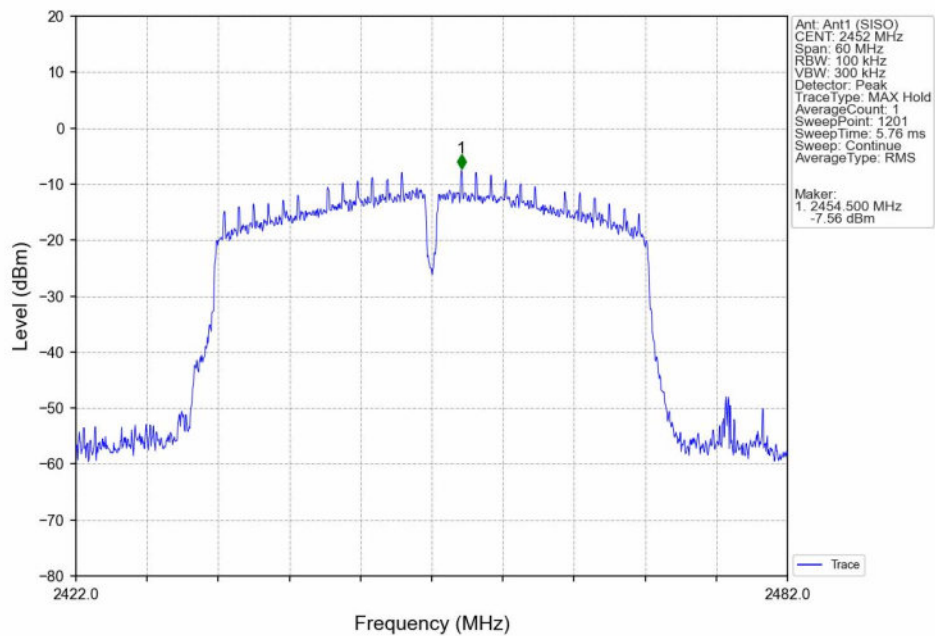


FCC ID: 2BVL3-N5-100

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



4. Unwanted Emissions In Non-restricted Frequency Bands

4.1 Test Result

4.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	-0.07
		2437	1	0.10
		2462	1	-0.19
802.11g	SISO	2412	1	-4.44
		2437	1	-5.52
		2462	1	-5.56
802.11n (HT20)	SISO	2412	1	-4.43
		2437	1	-5.20
		2462	1	-5.23
802.11n (HT40)	SISO	2422	1	-6.93
		2437	1	-8.03
		2452	1	-7.56

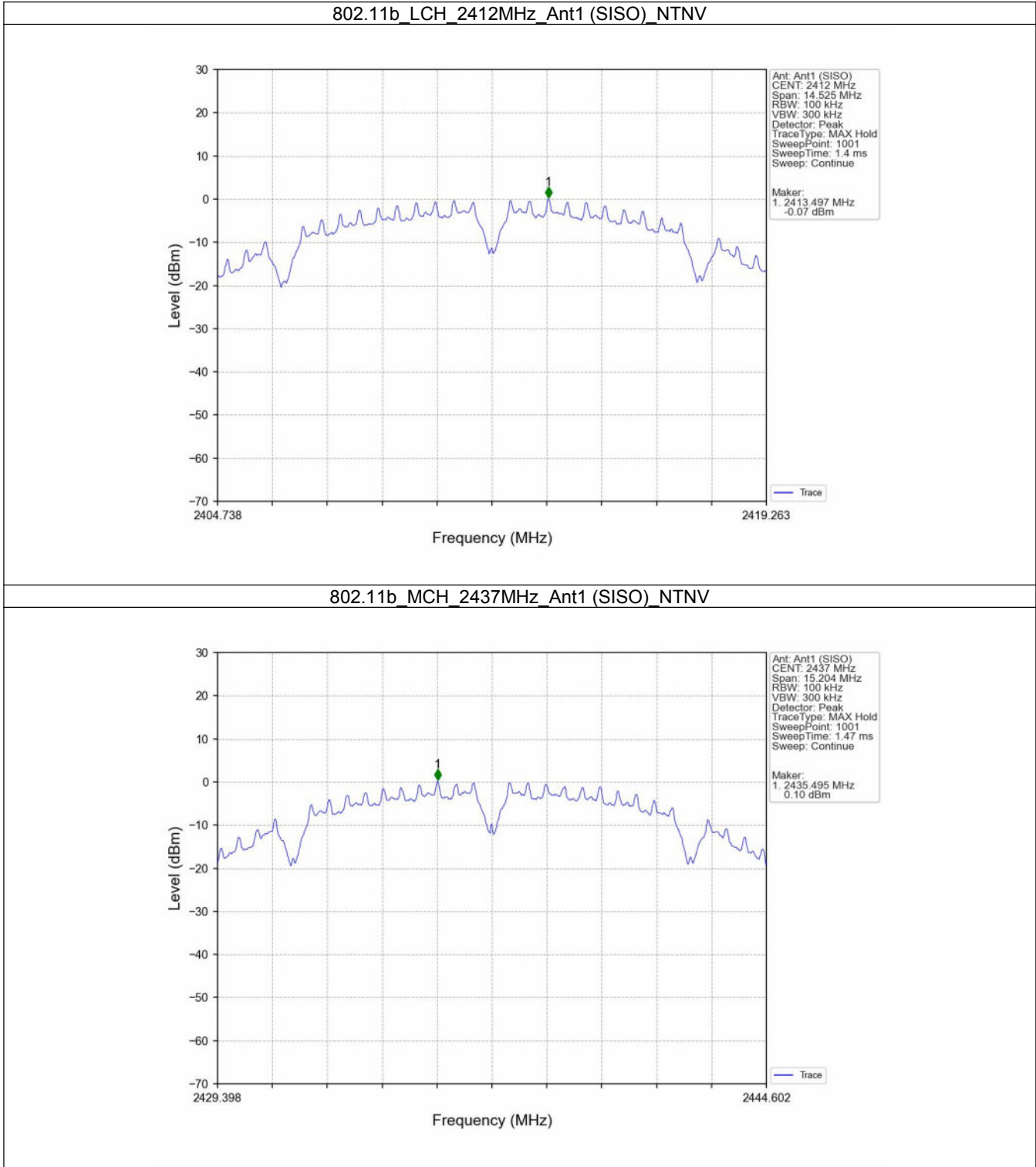
4.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	0.10	-19.90	Pass
		2437	1	0.10	-19.90	Pass
		2462	1	0.10	-19.90	Pass
802.11g	SISO	2412	1	-4.44	-24.44	Pass
		2437	1	-4.44	-24.44	Pass
		2462	1	-4.44	-24.44	Pass
802.11n (HT20)	SISO	2412	1	-4.43	-24.43	Pass
		2437	1	-4.43	-24.43	Pass
		2462	1	-4.43	-24.43	Pass
802.11n (HT40)	SISO	2422	1	-6.93	-26.93	Pass
		2437	1	-6.93	-26.93	Pass
		2452	1	-6.93	-26.93	Pass

FCC ID: 2BVL3-N5-100

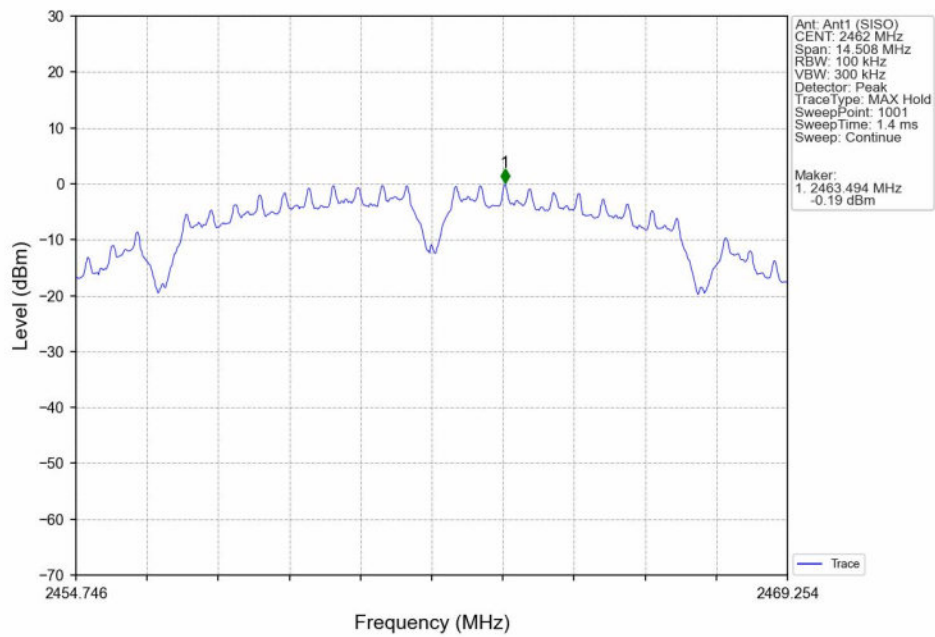
4.2 Test Graph

4.2.1 Ref

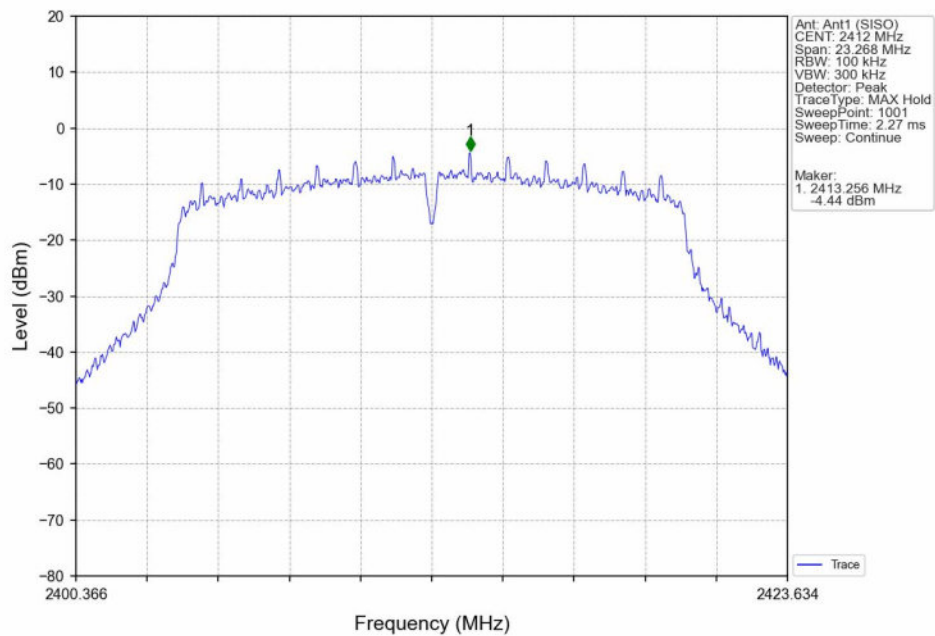


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

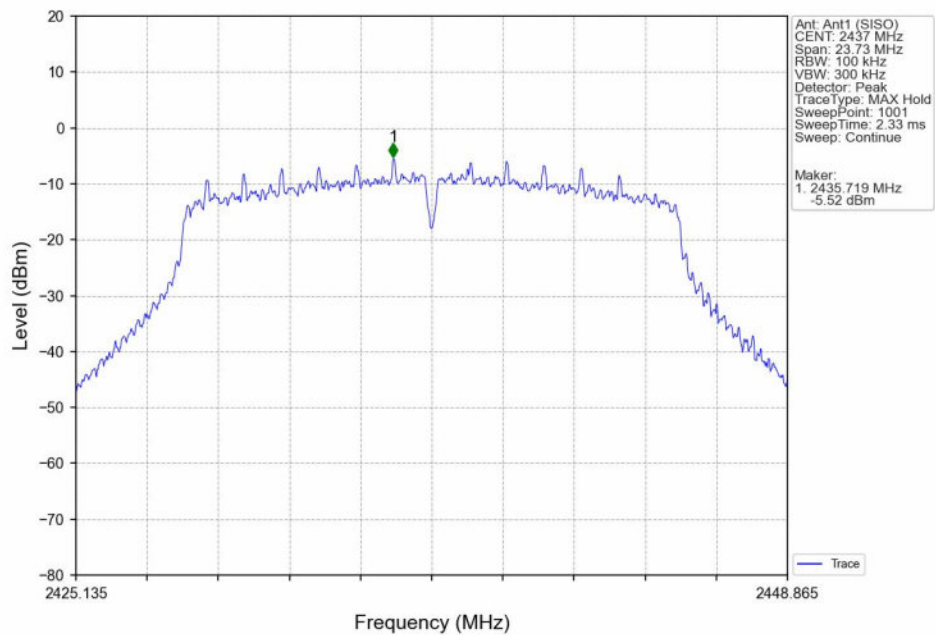


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

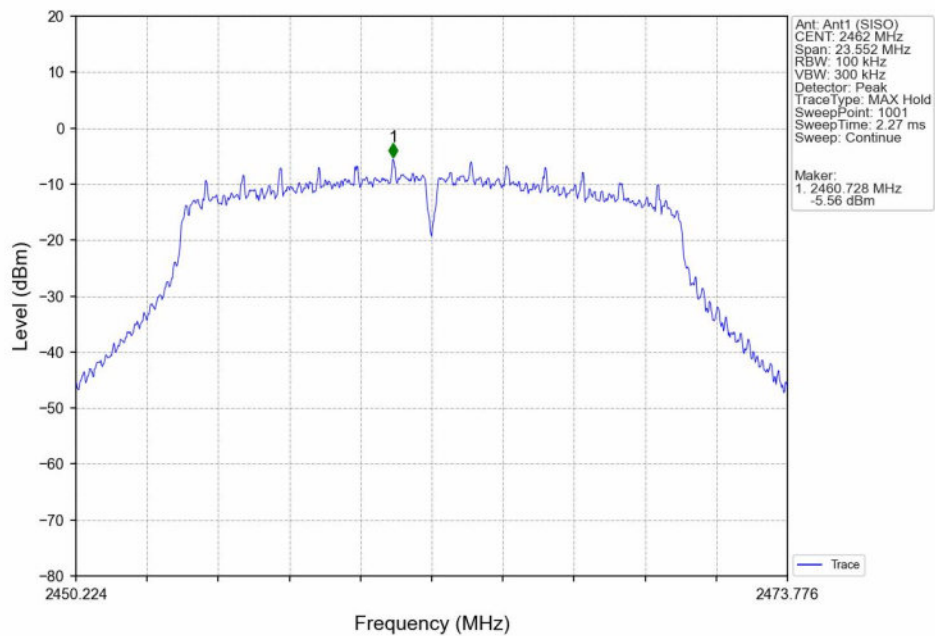


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802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

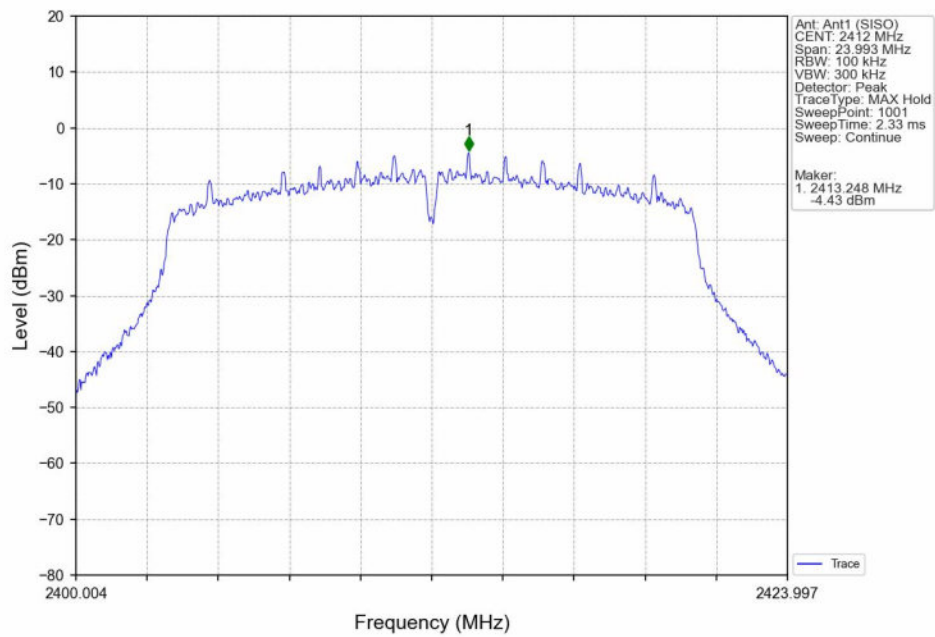


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

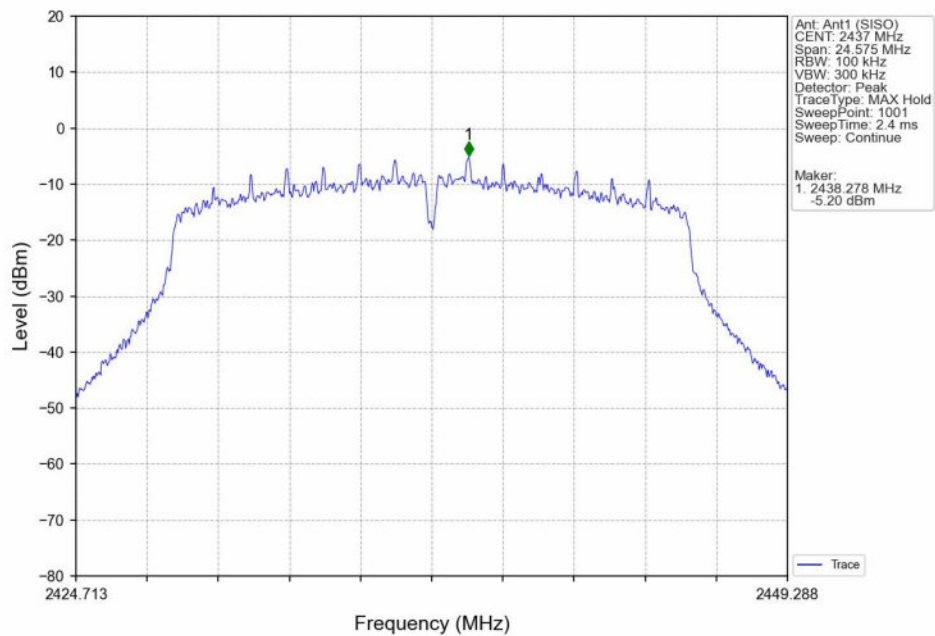


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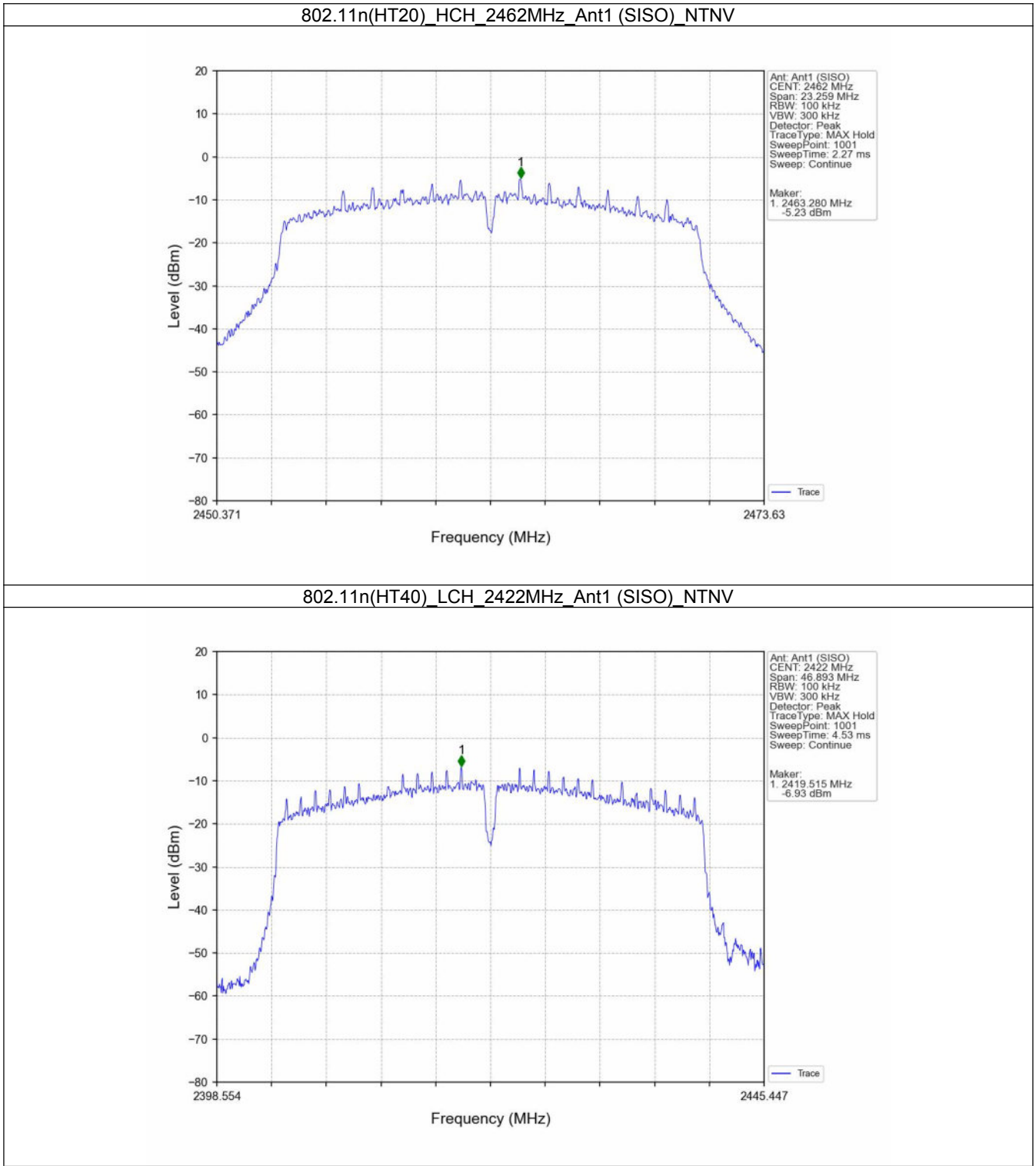
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

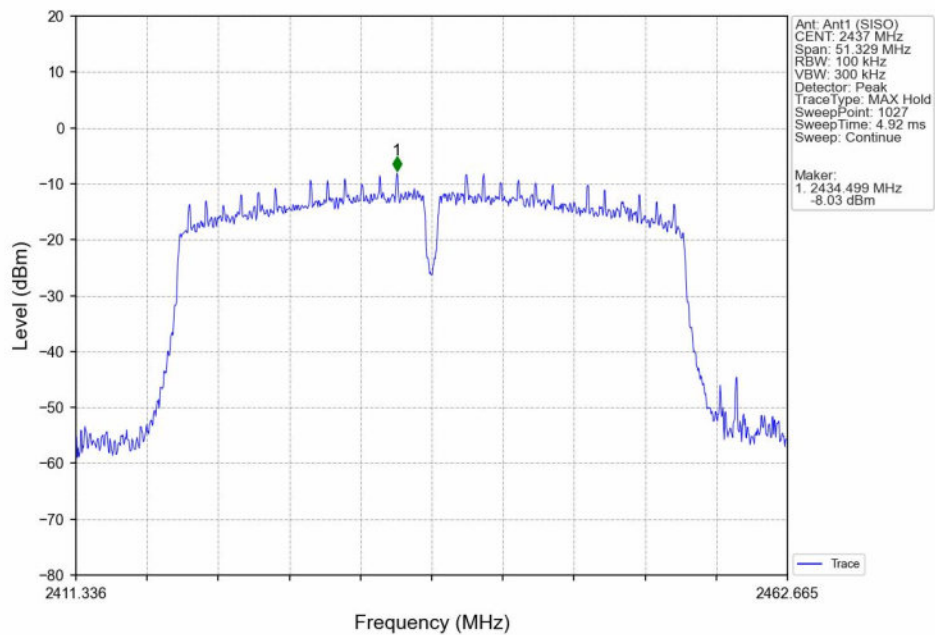


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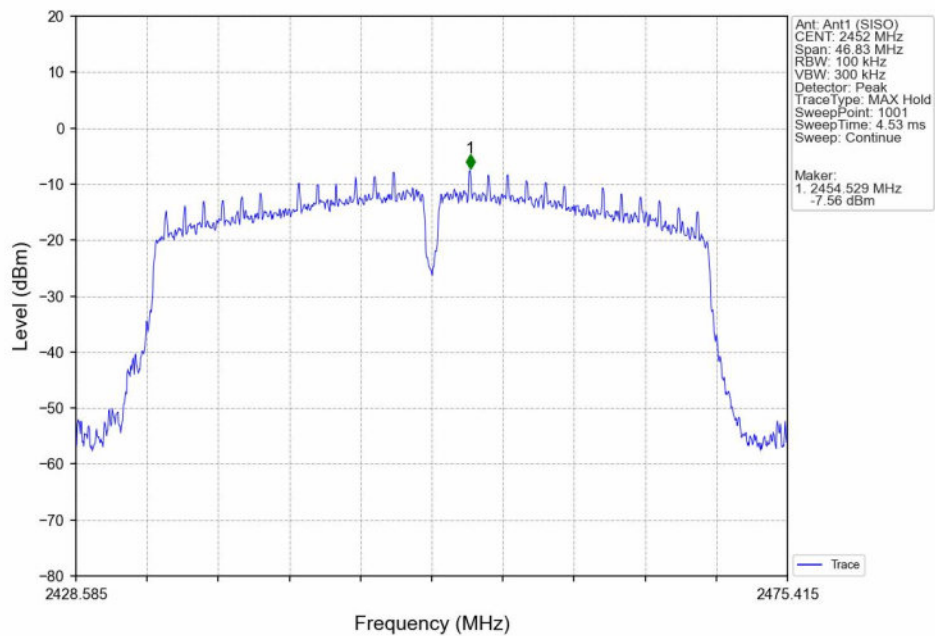


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

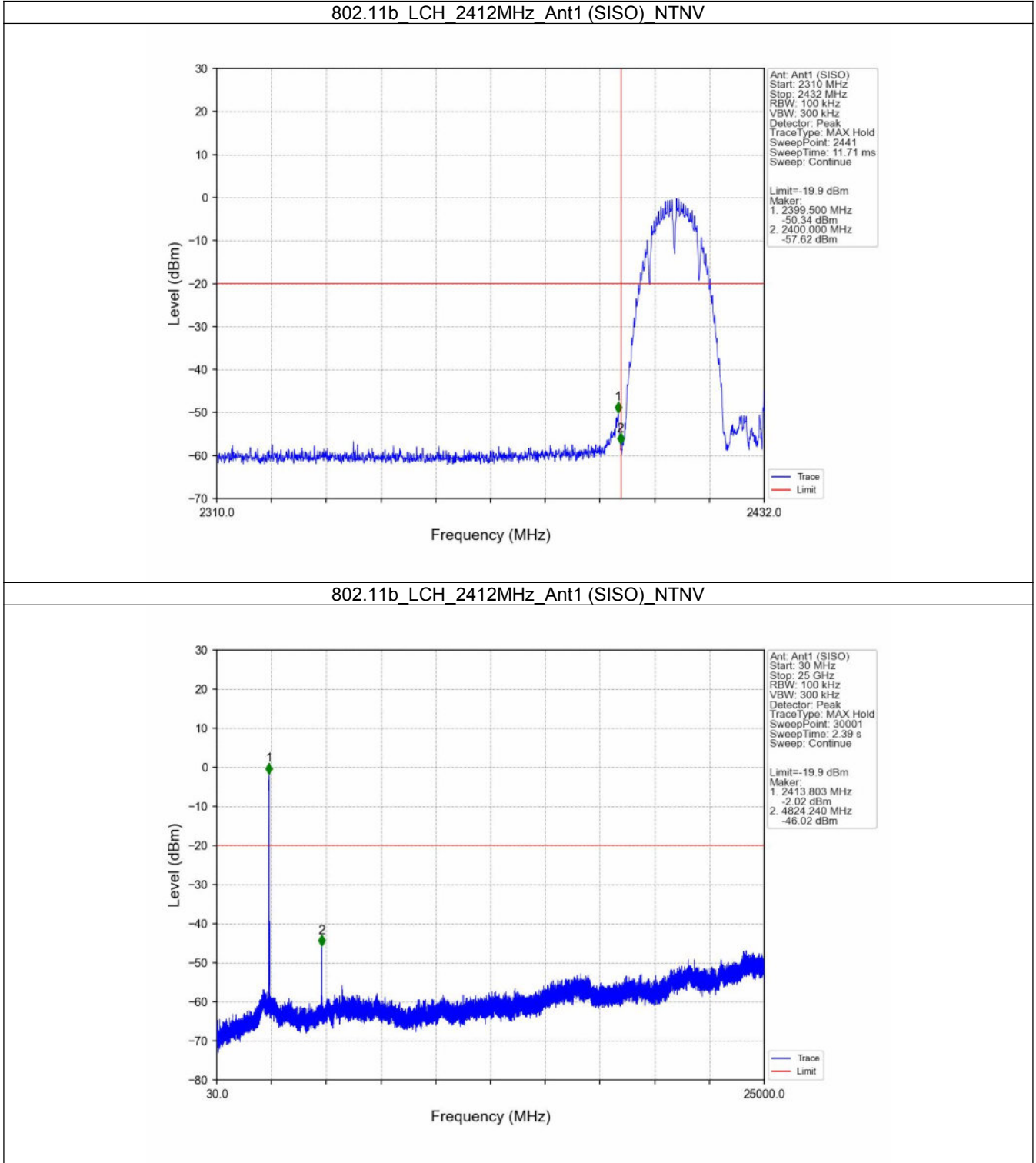


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



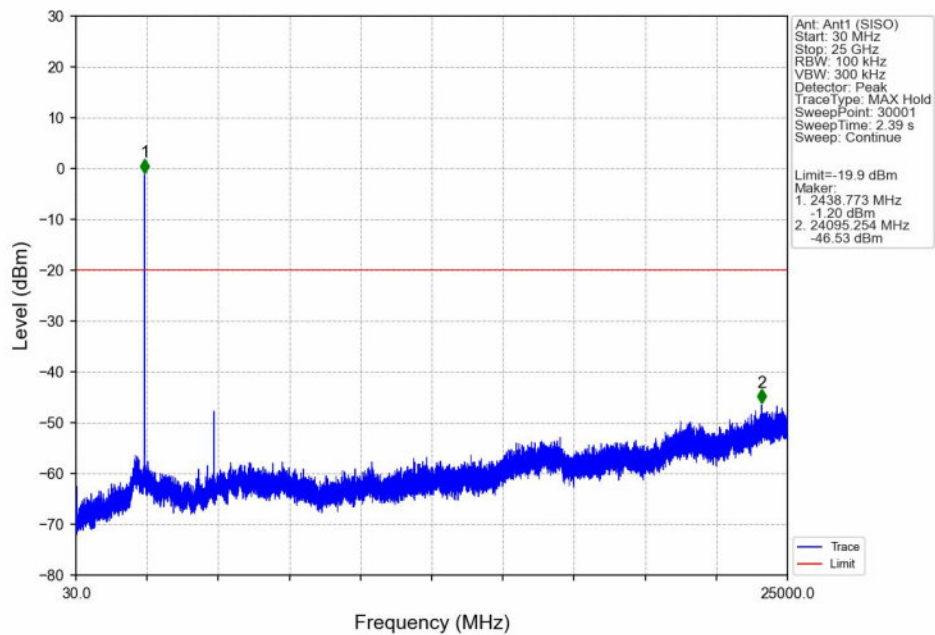
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4.2.2 CSE

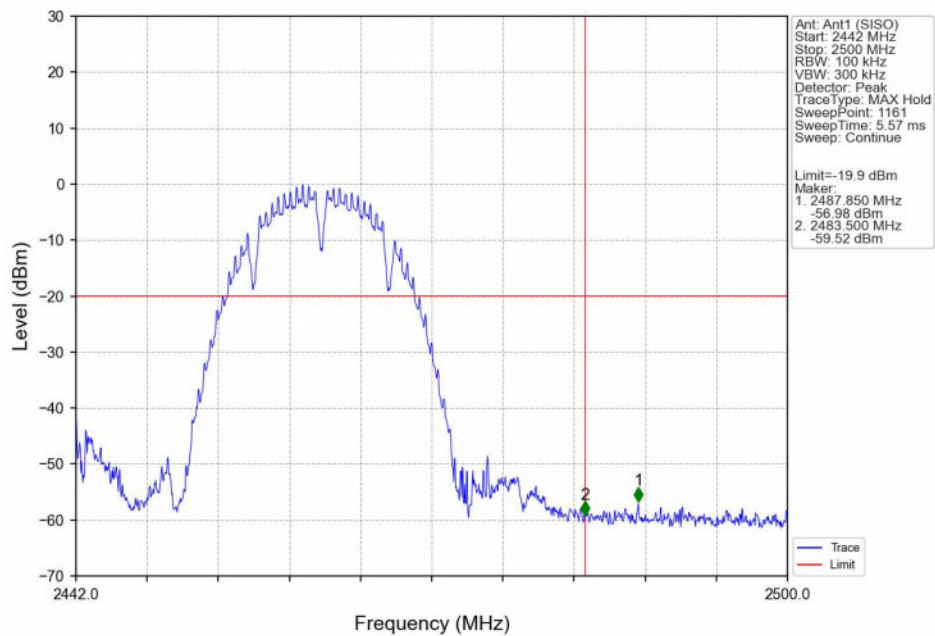


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802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV

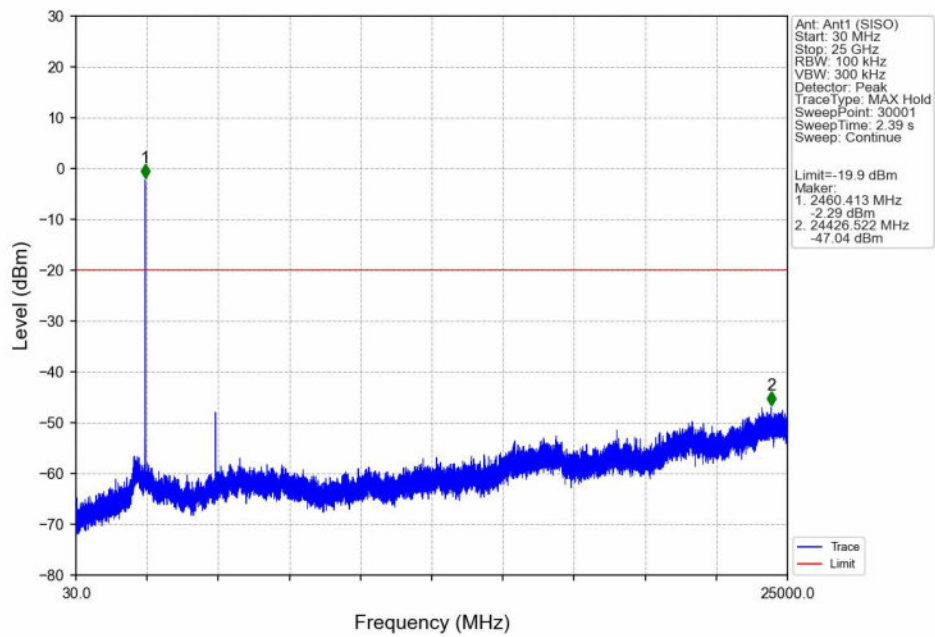


802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

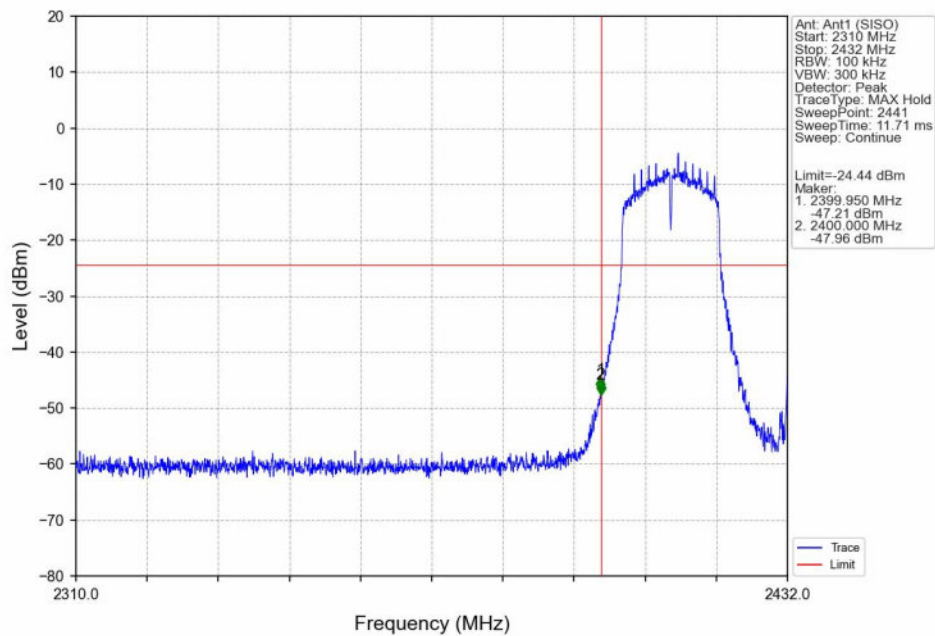


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

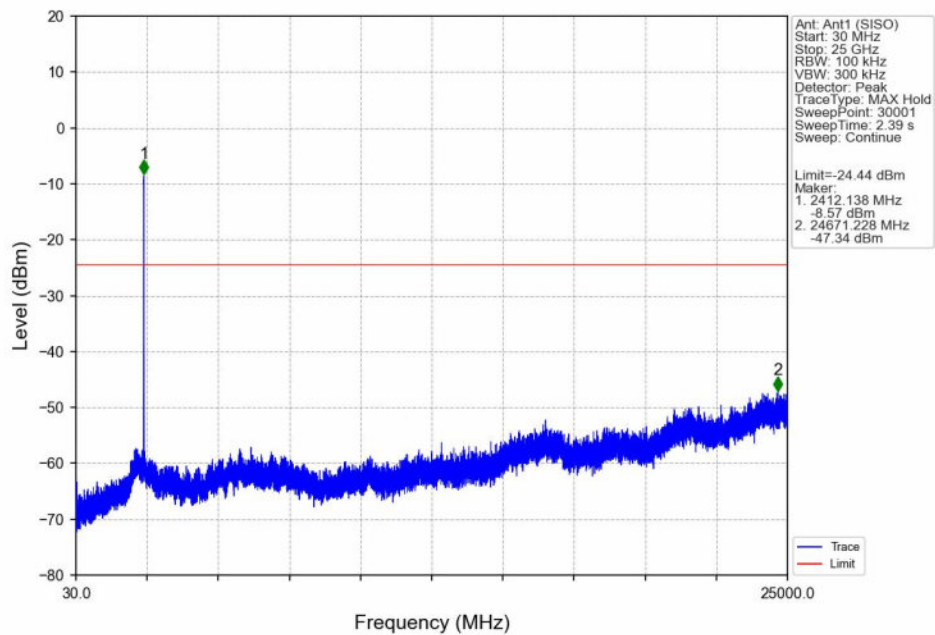


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

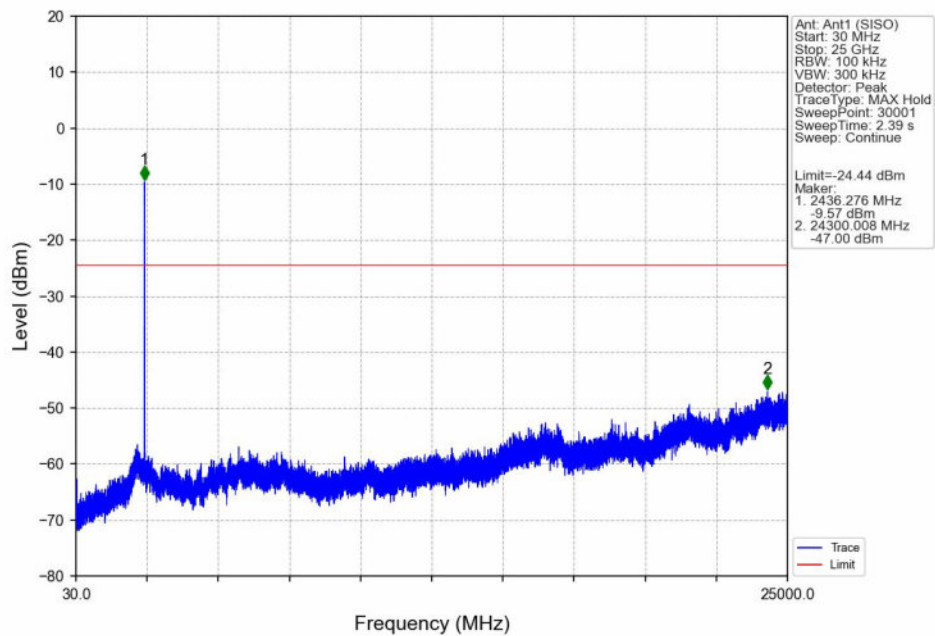


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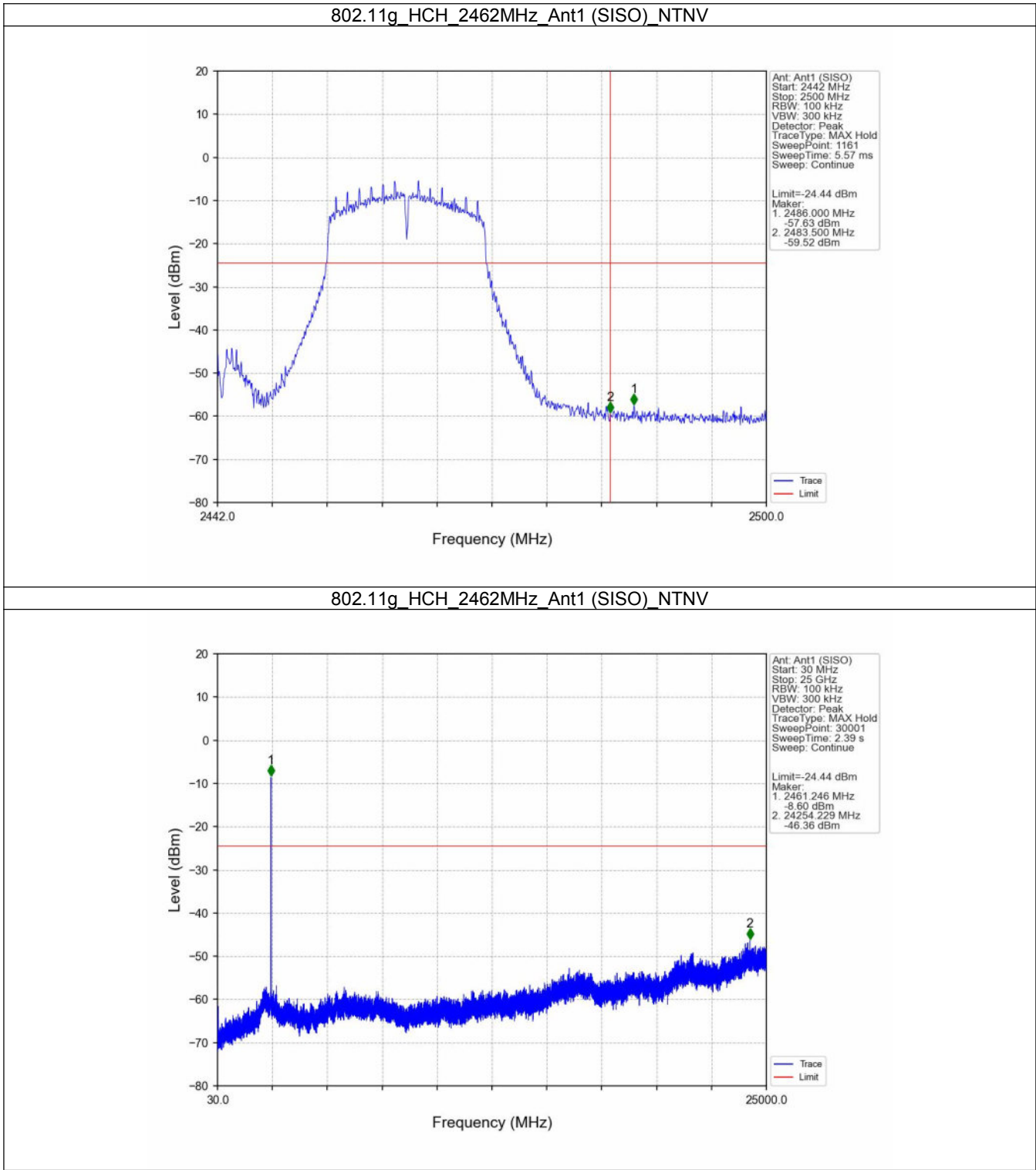
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

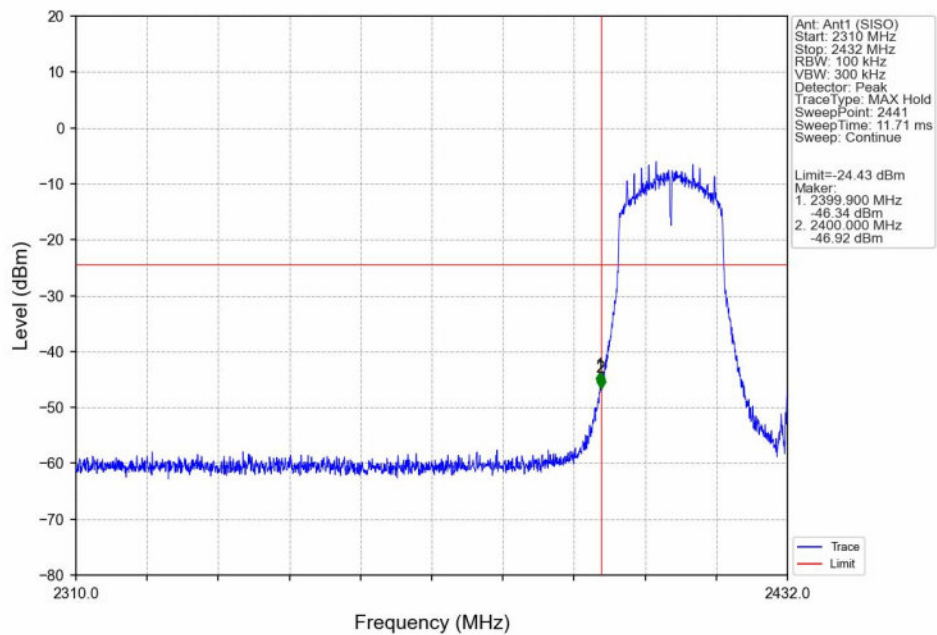


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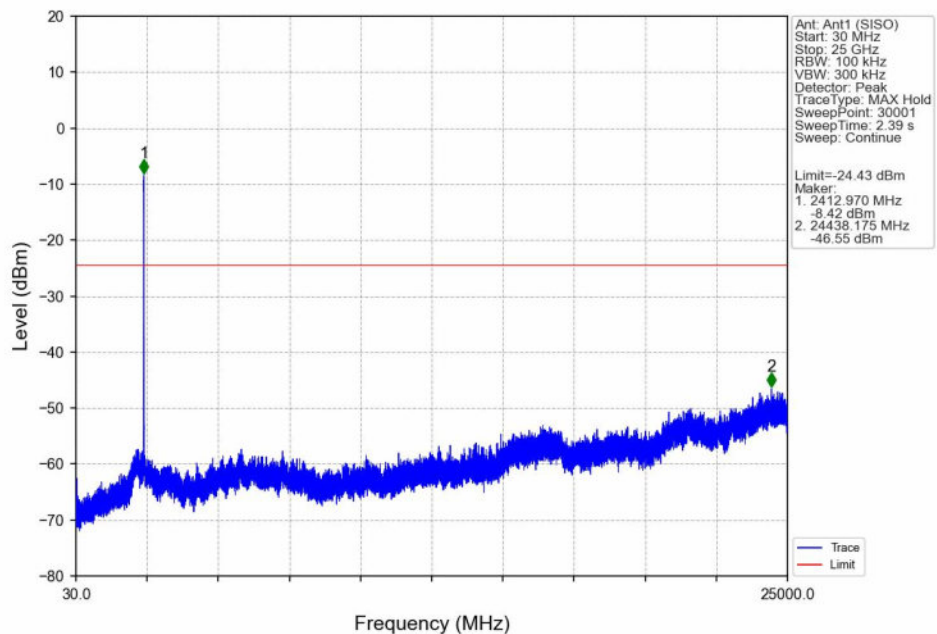


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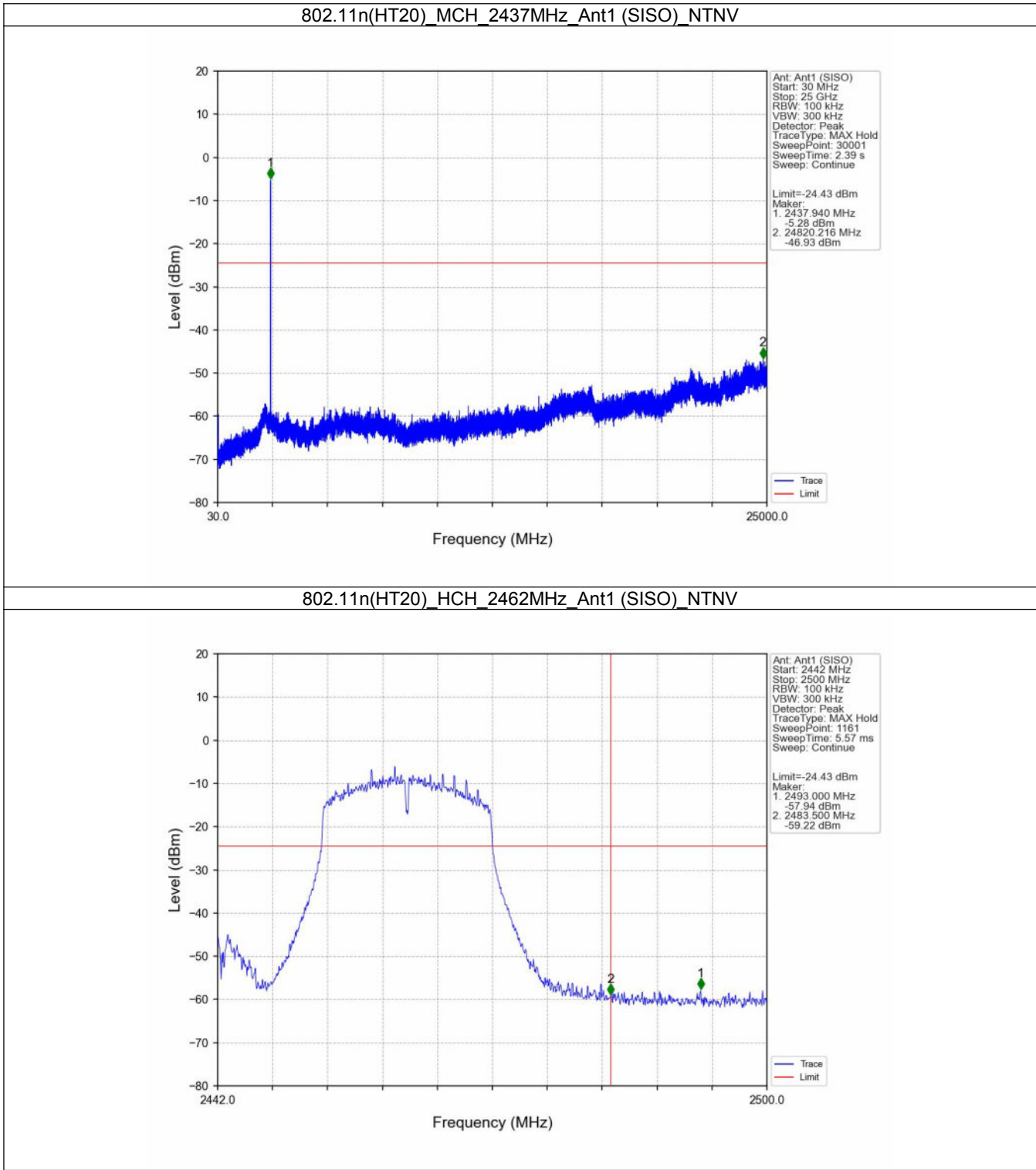
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

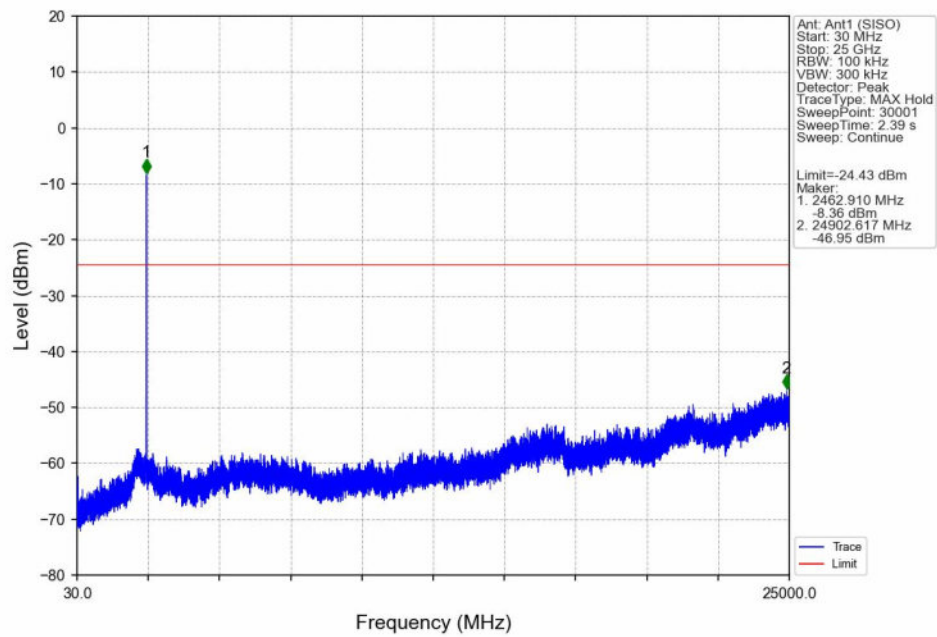


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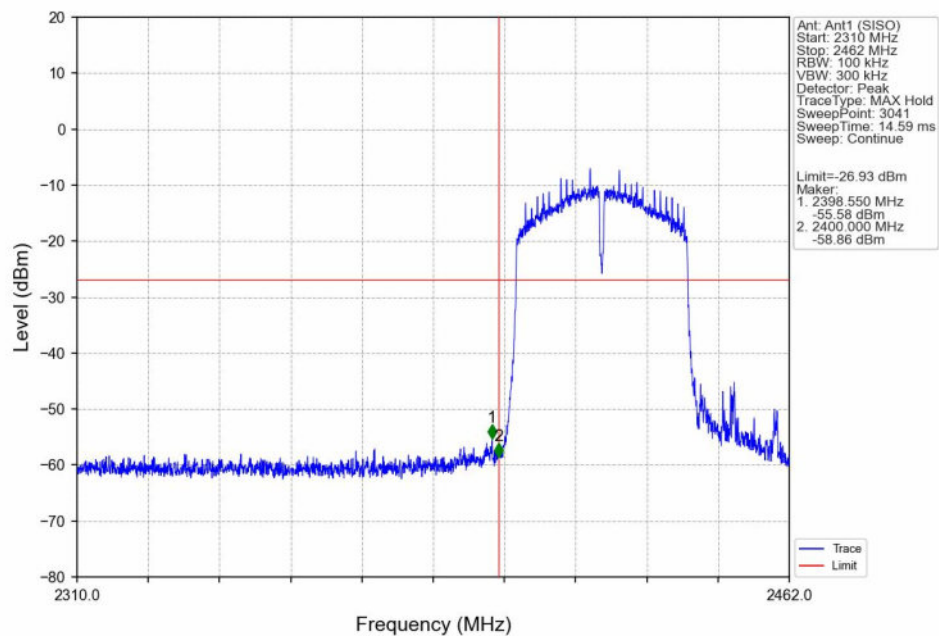


FCC ID: 2BVL3-N5-100

802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

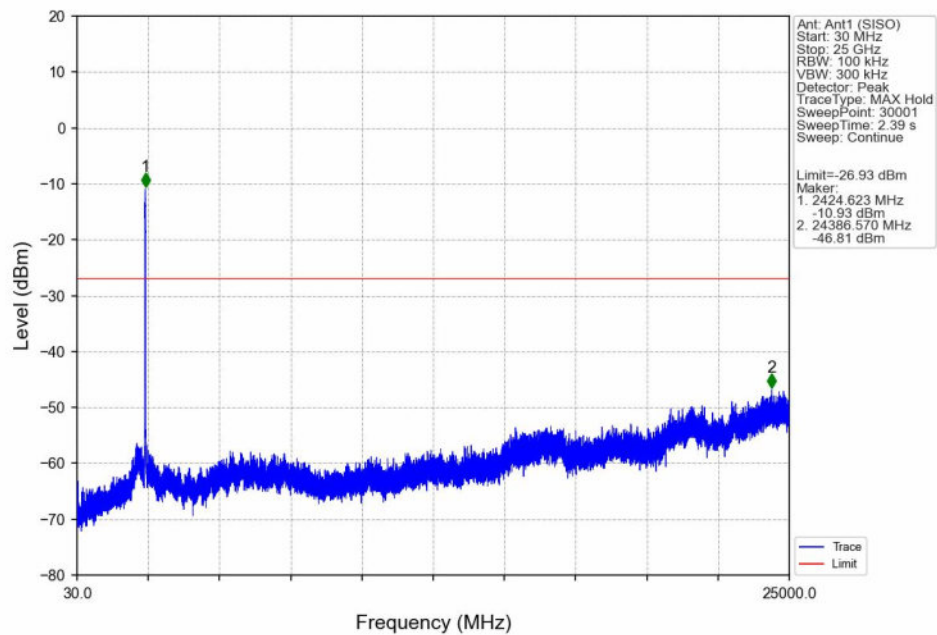


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

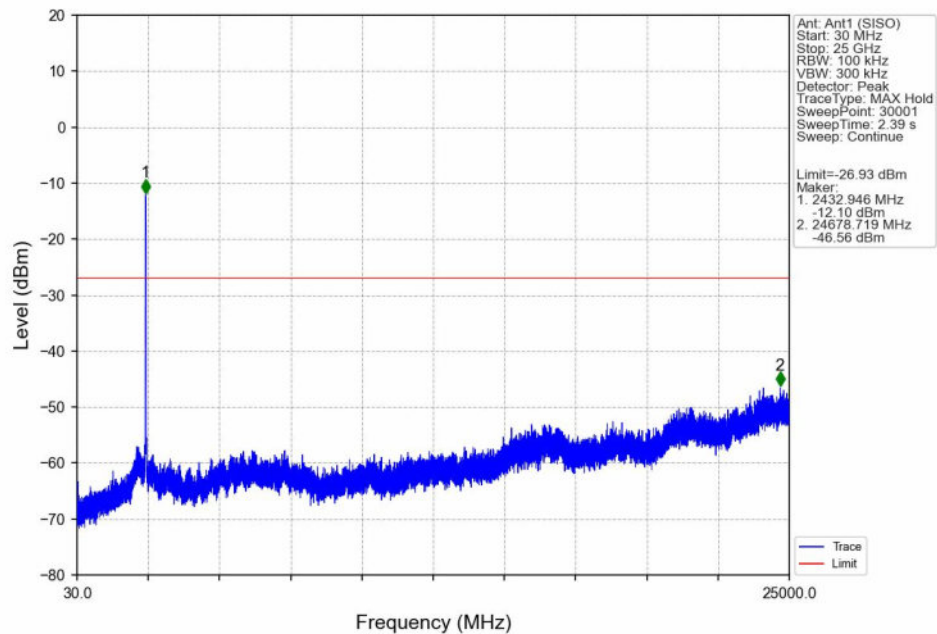


FCC ID: 2BVL3-N5-100

802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

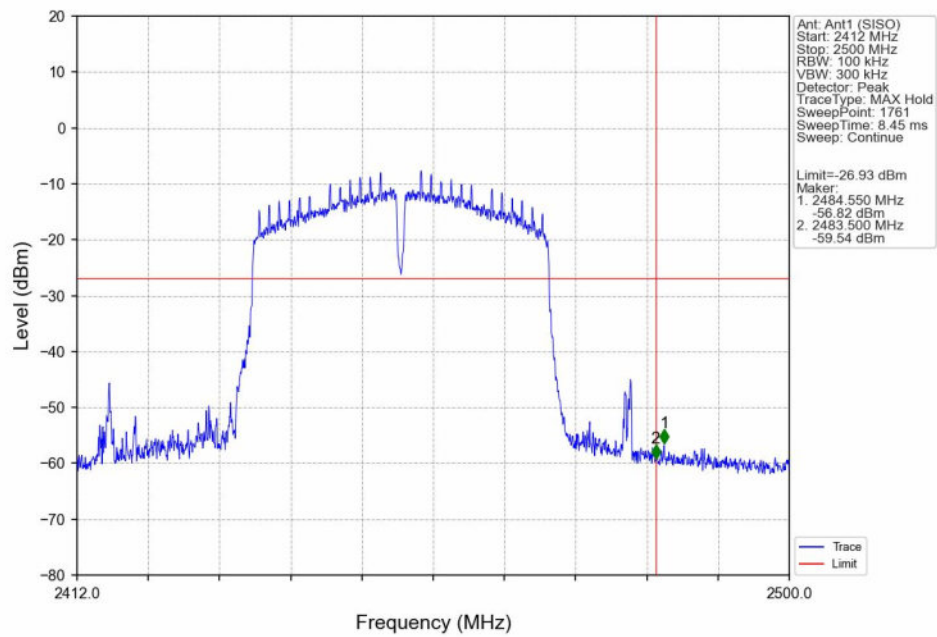


802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

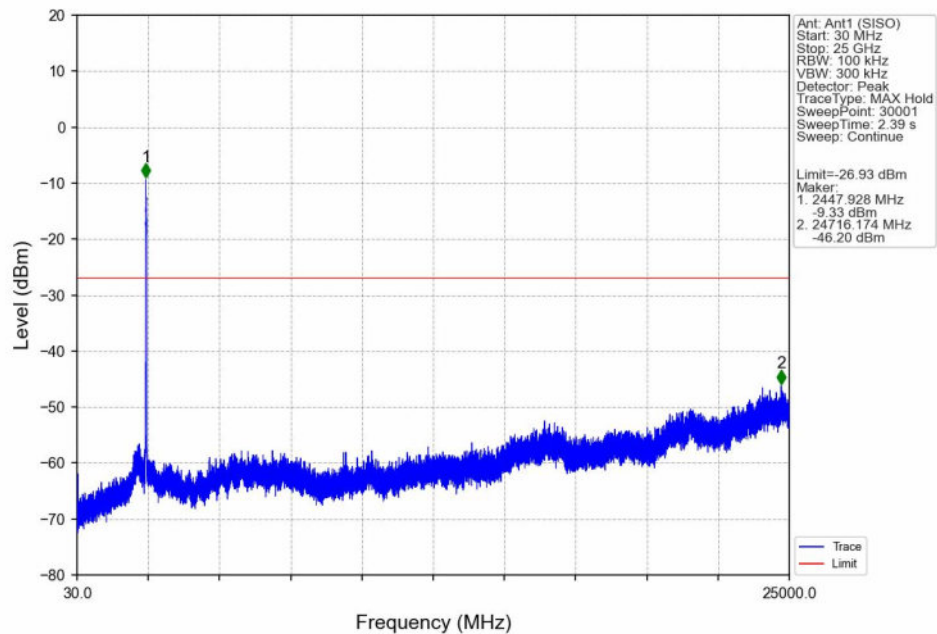


FCC ID: 2BVL3-N5-100

802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2BVL3-N5-100

5. Form731

5.1 Test Result

5.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2412	2462	0.0206	13.13
2422	2452	0.0200	13.00