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Annex for 2.4G Wi-Fi

Test Report No.: CTL2505132111-WF

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FCC ID: 2BFO4-R1

1. Duty Cycle

1.1 Test Result

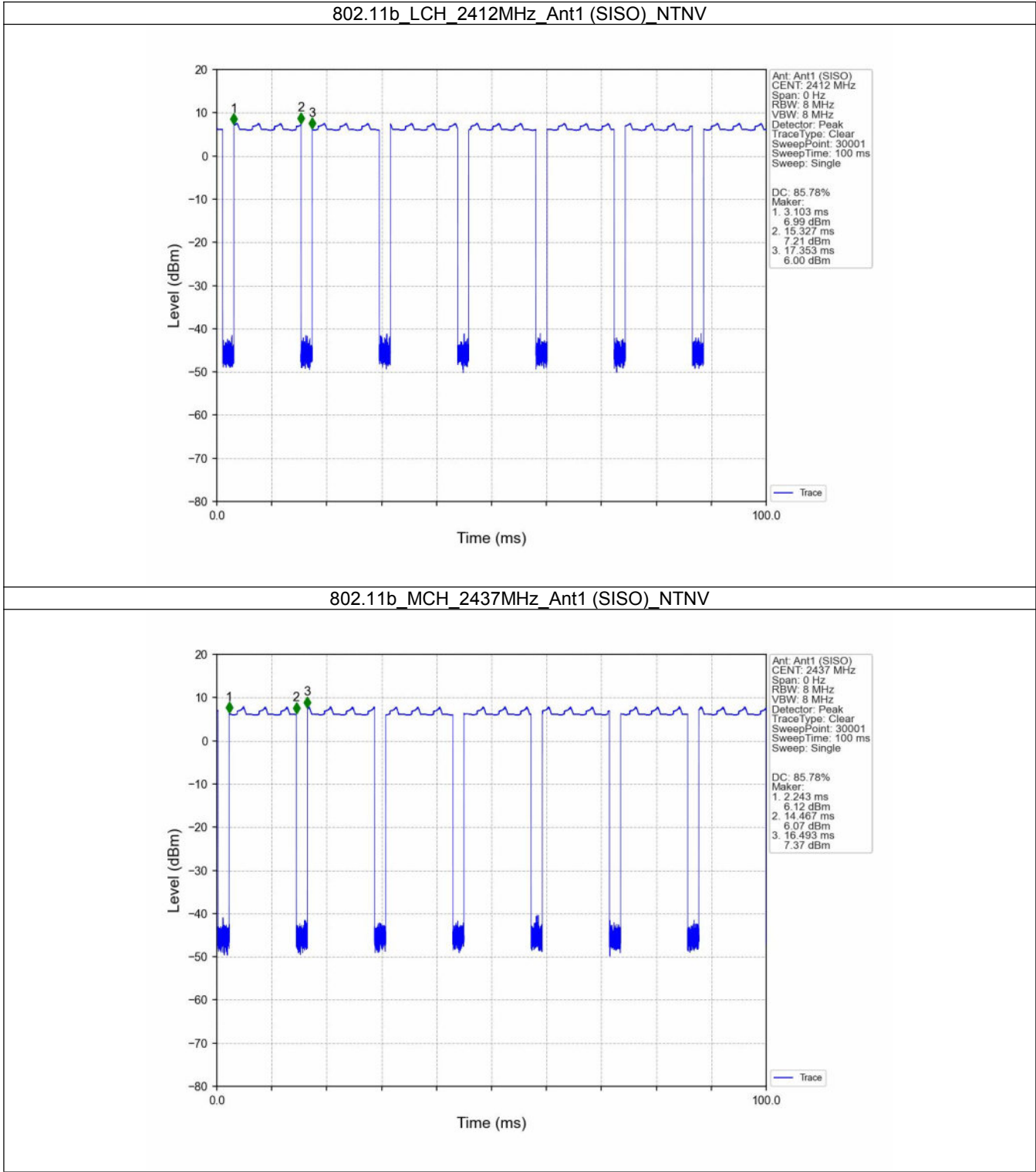
1.1.1 Ant1

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	12.224	14.250	85.78	0.67	0.02
		2437	12.224	14.250	85.78	0.67	0.02
		2462	12.223	14.250	85.78	0.67	0.02
802.11g	SISO	2412	2.033	4.058	50.10	3.00	0.04
		2437	2.033	4.058	50.10	3.00	0.04
		2462	2.031	4.057	50.06	3.00	0.03
802.11n (HT20)	SISO	2412	1.892	3.917	48.30	3.16	0.03
		2437	1.892	3.917	48.30	3.16	0.02
		2462	1.892	3.918	48.29	3.16	0.03

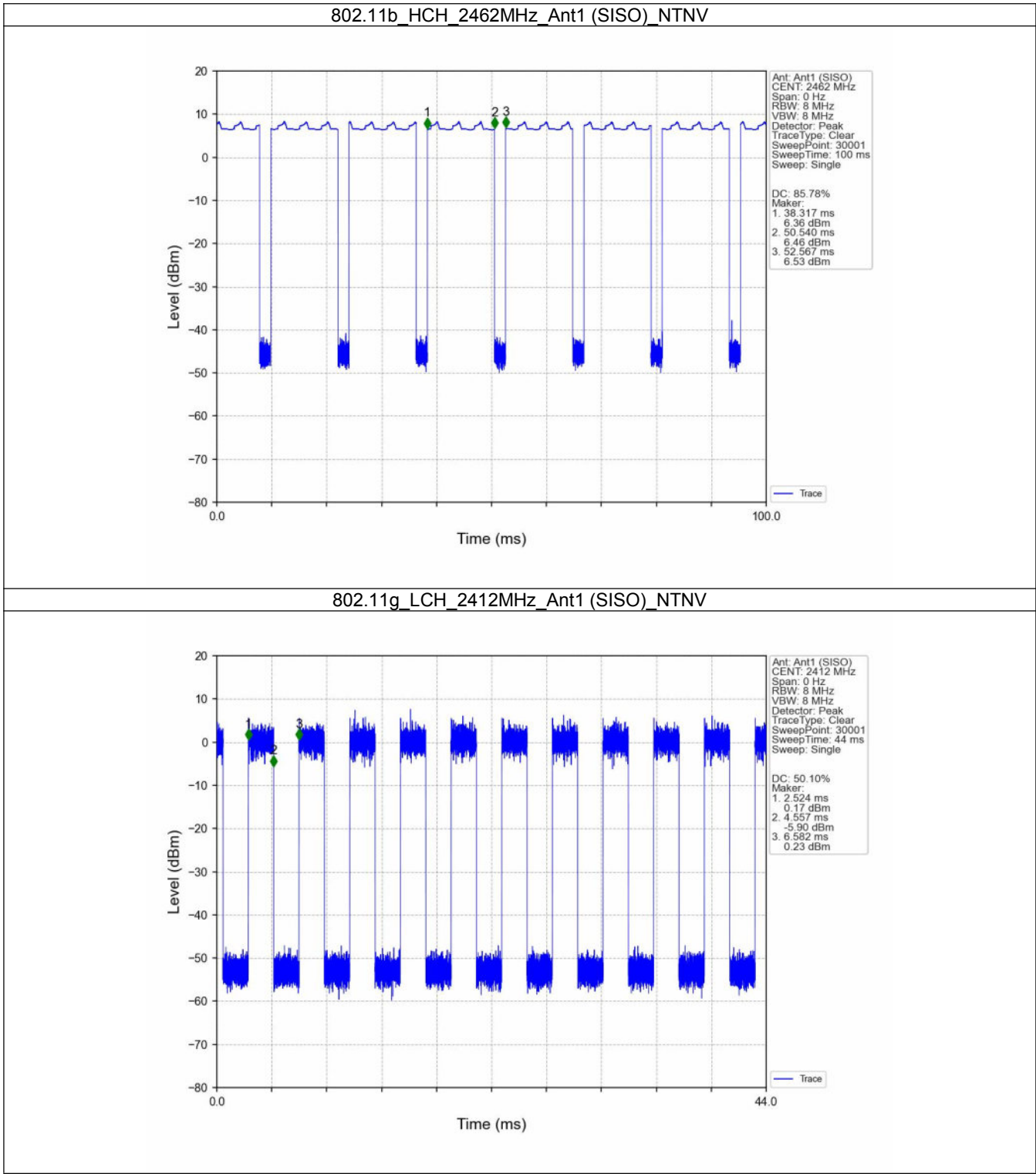
FCC ID: 2BFO4-R1

1.2 Test Graph

1.2.1 Ant1

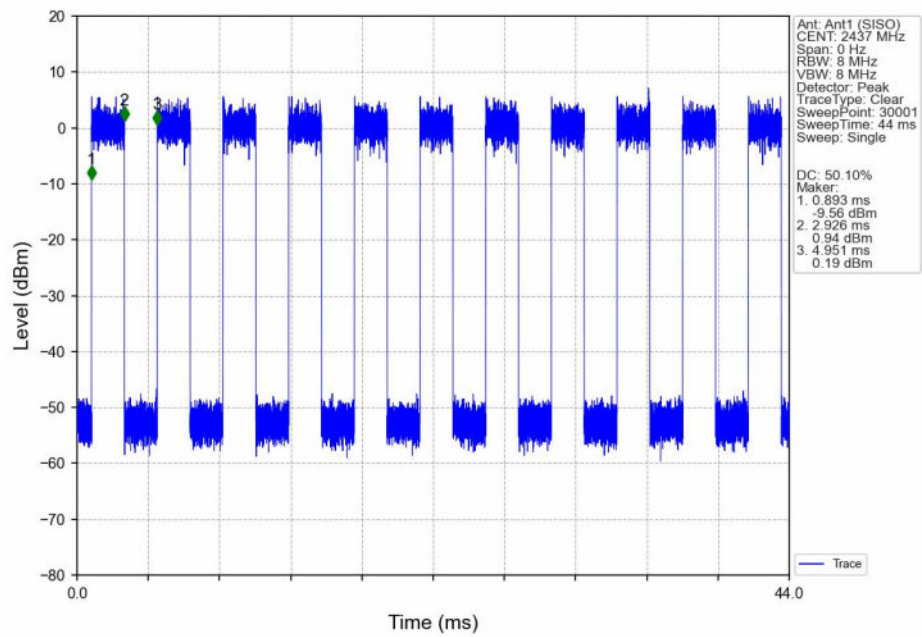


FCC ID: 2BFO4-R1

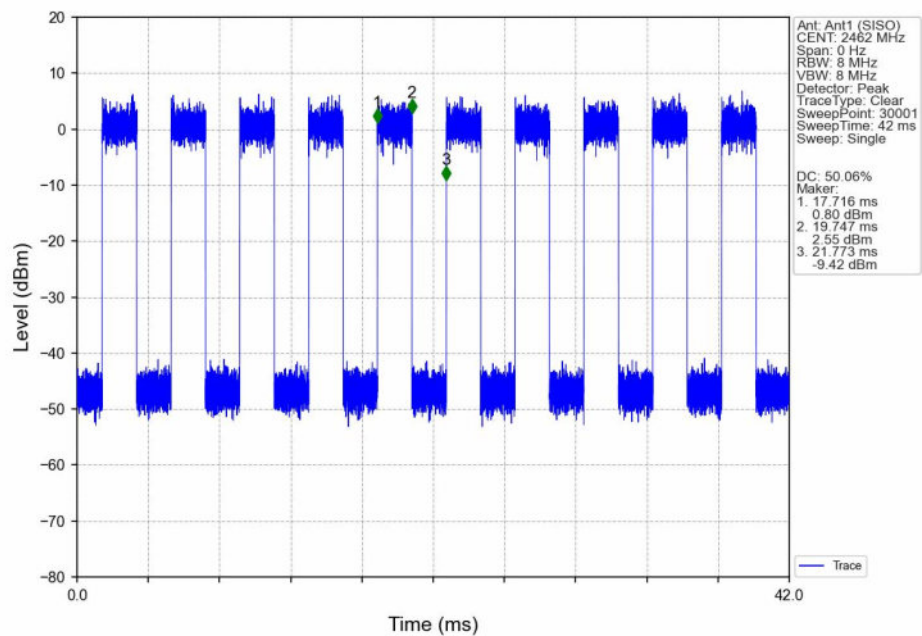


FCC ID: 2BFO4-R1

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

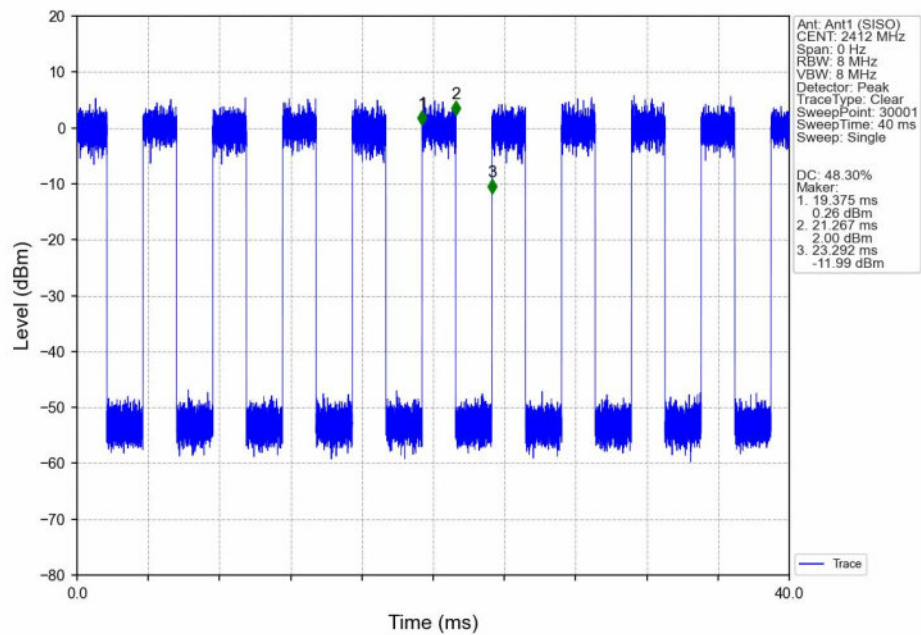


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

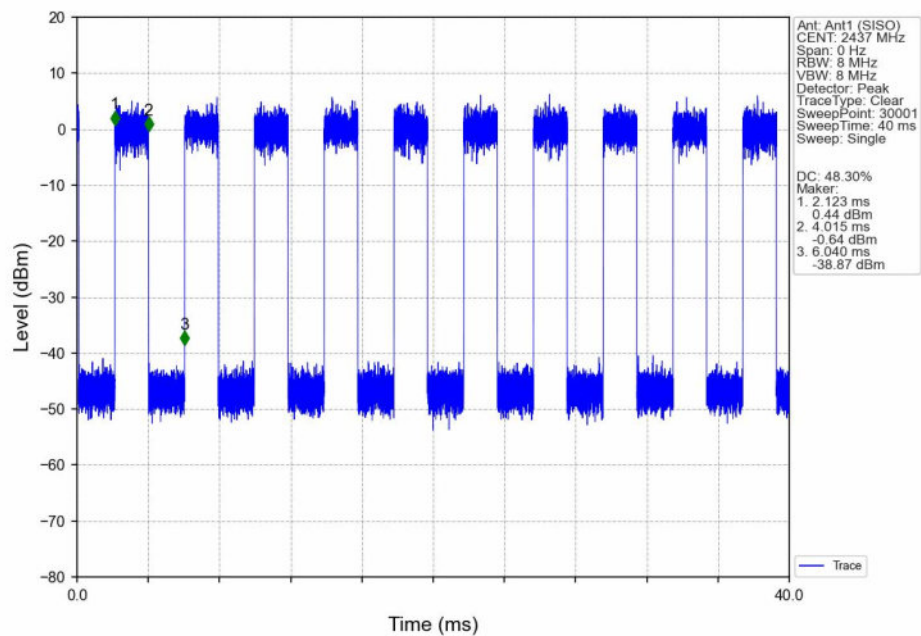


FCC ID: 2BFO4-R1

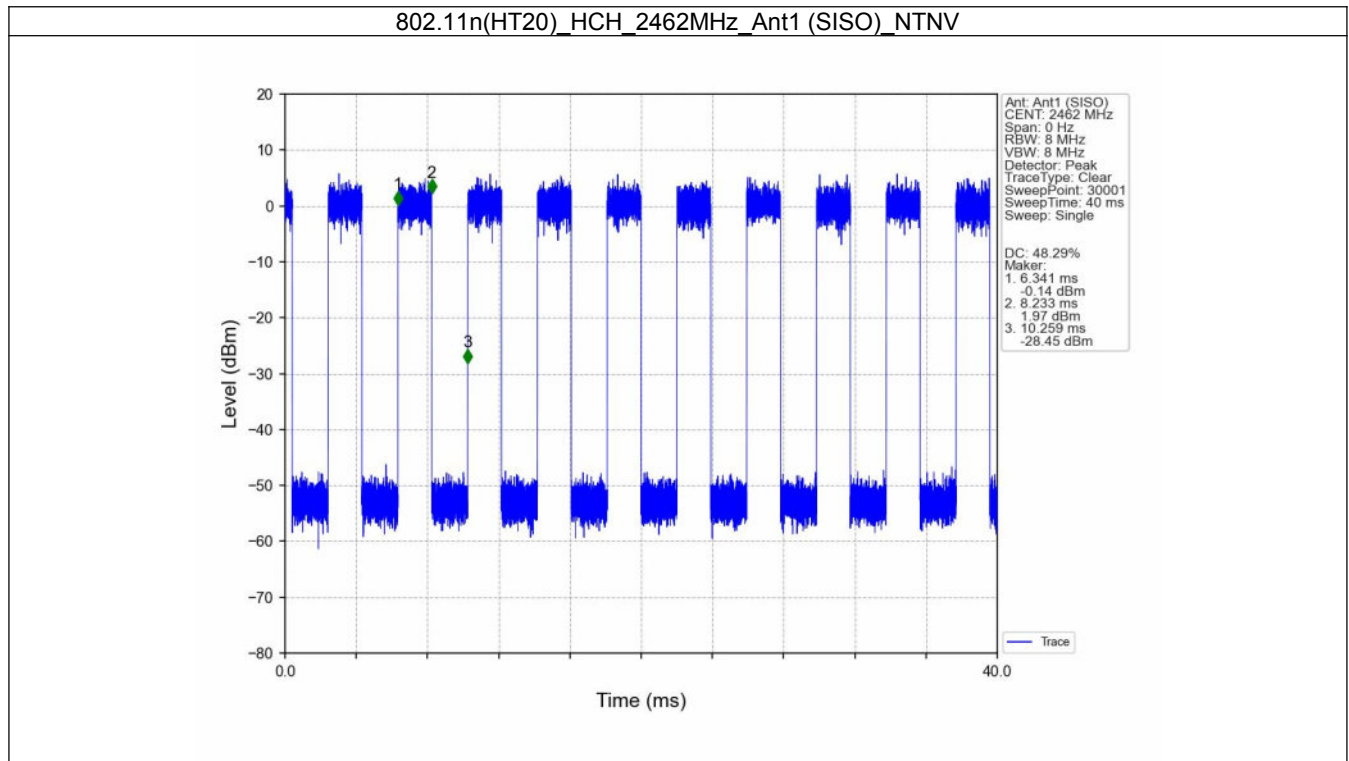
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



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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	15.785	/	Pass
		2437	1	15.908	/	Pass
		2462	1	15.825	/	Pass
802.11g	SISO	2412	1	17.783	/	Pass
		2437	1	17.857	/	Pass
		2462	1	17.776	/	Pass
802.11n (HT20)	SISO	2412	1	18.521	/	Pass
		2437	1	18.520	/	Pass
		2462	1	18.482	/	Pass

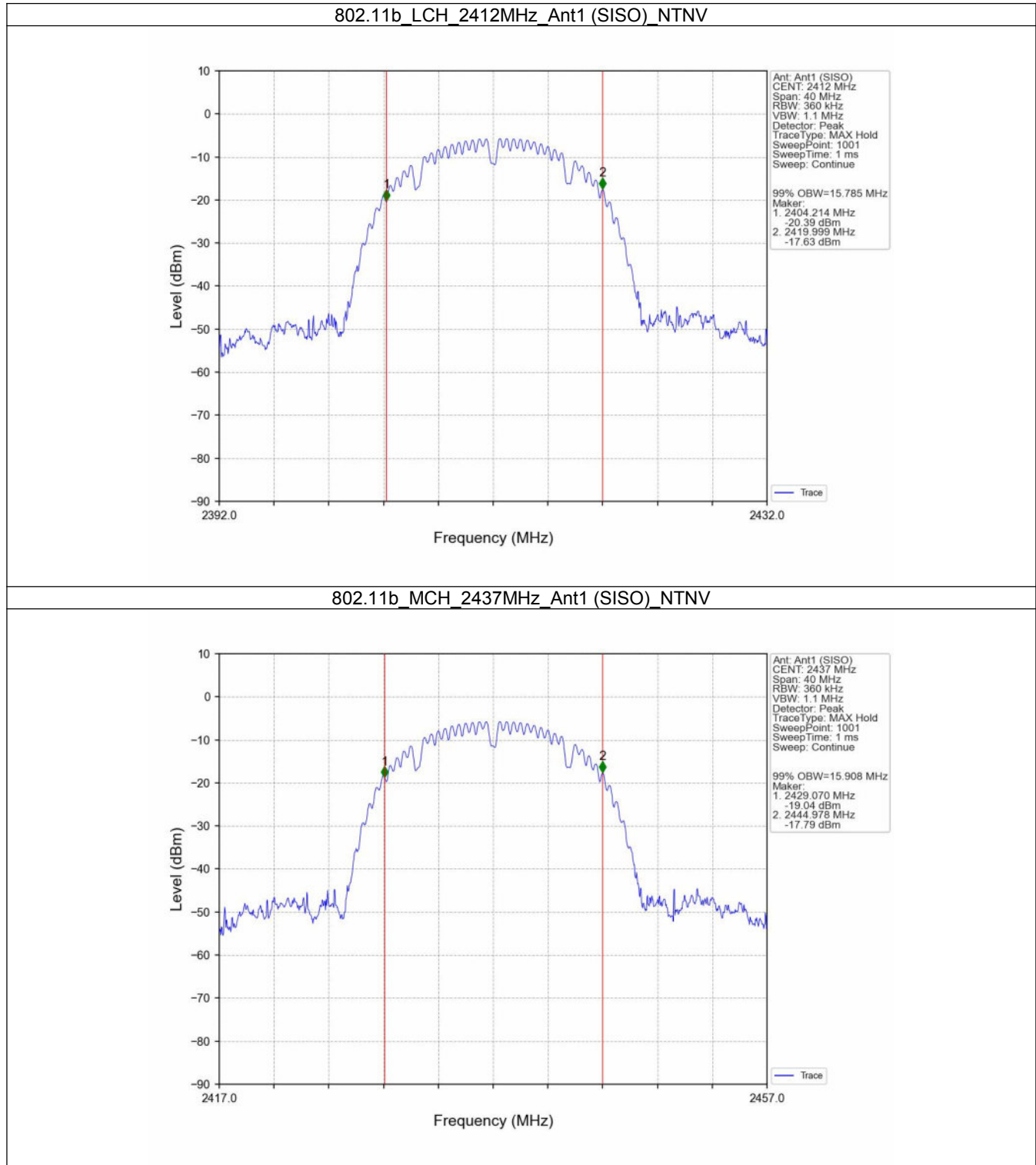
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	11.109	≥ 0.5	Pass
		2437	1	12.069	≥ 0.5	Pass
		2462	1	11.091	≥ 0.5	Pass
802.11g	SISO	2412	1	16.391	≥ 0.5	Pass
		2437	1	16.417	≥ 0.5	Pass
		2462	1	16.389	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.380	≥ 0.5	Pass
		2437	1	17.639	≥ 0.5	Pass
		2462	1	17.622	≥ 0.5	Pass

FCC ID: 2BFO4-R1

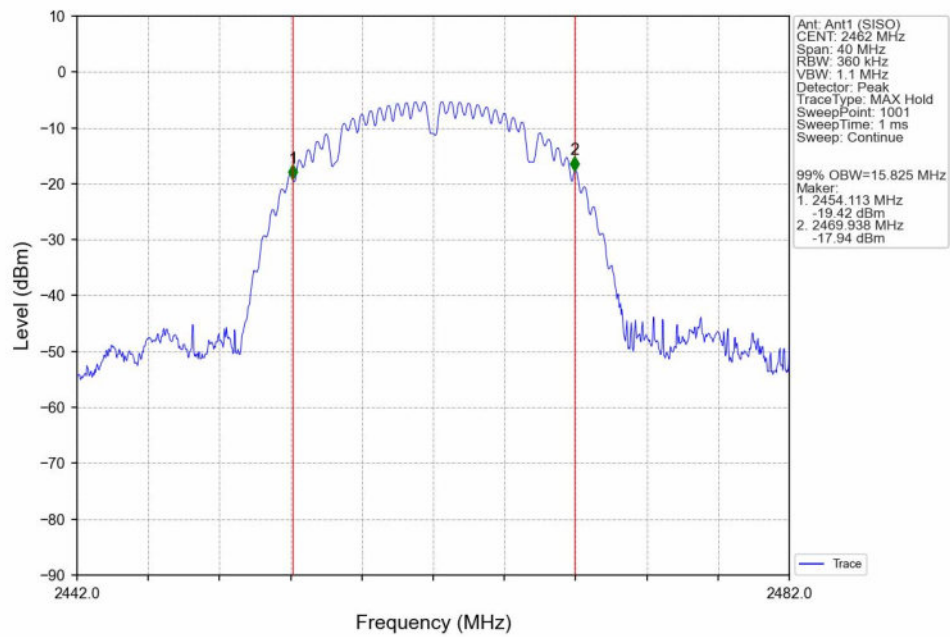
2.2 Test Graph

2.2.1 OBW

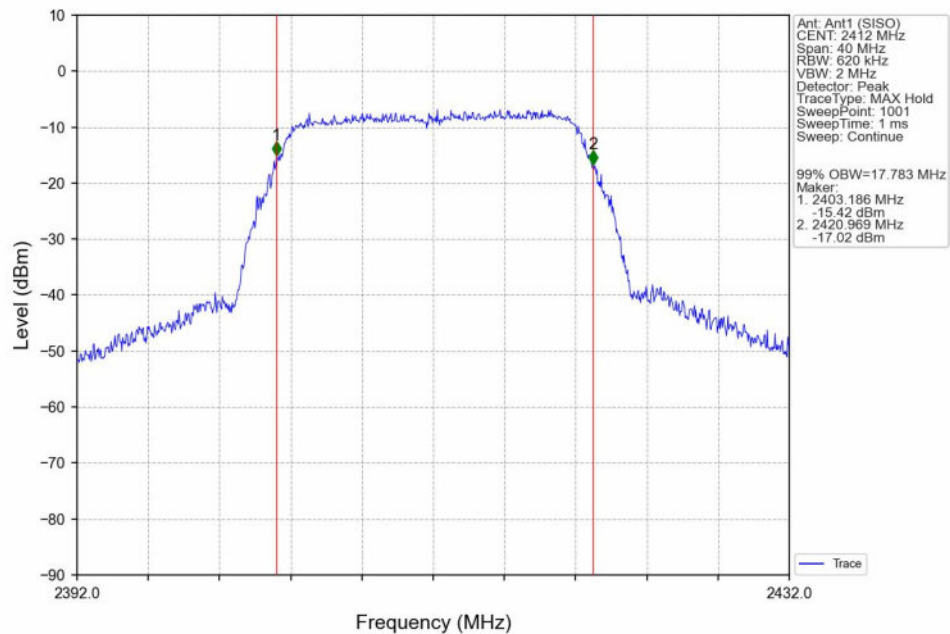


FCC ID: 2BFO4-R1

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

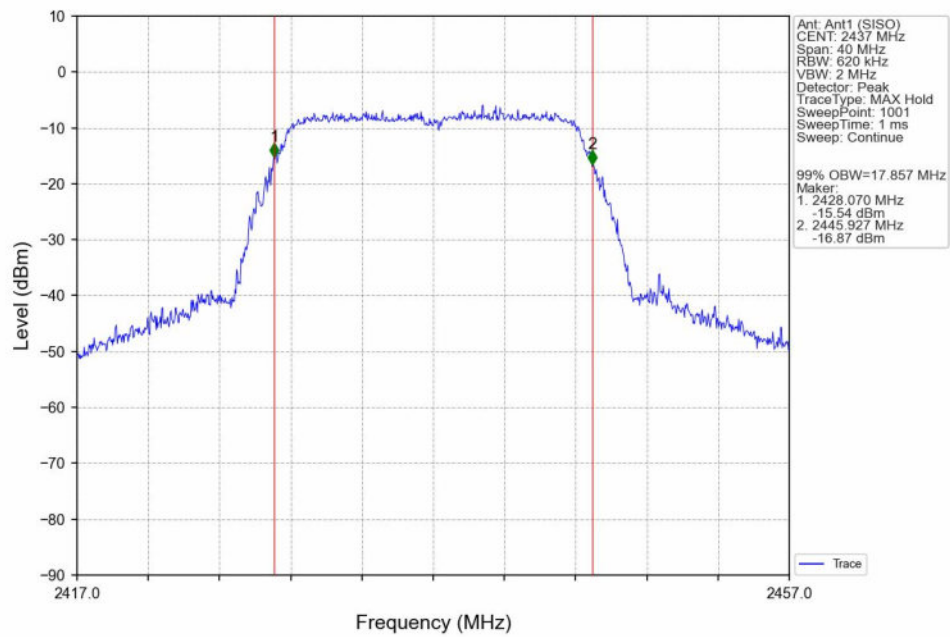


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

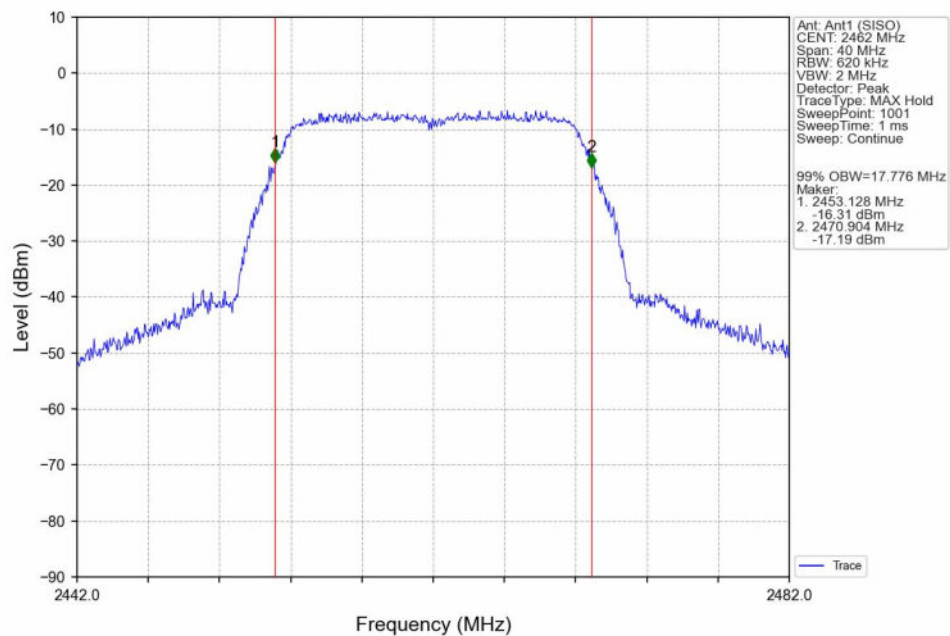


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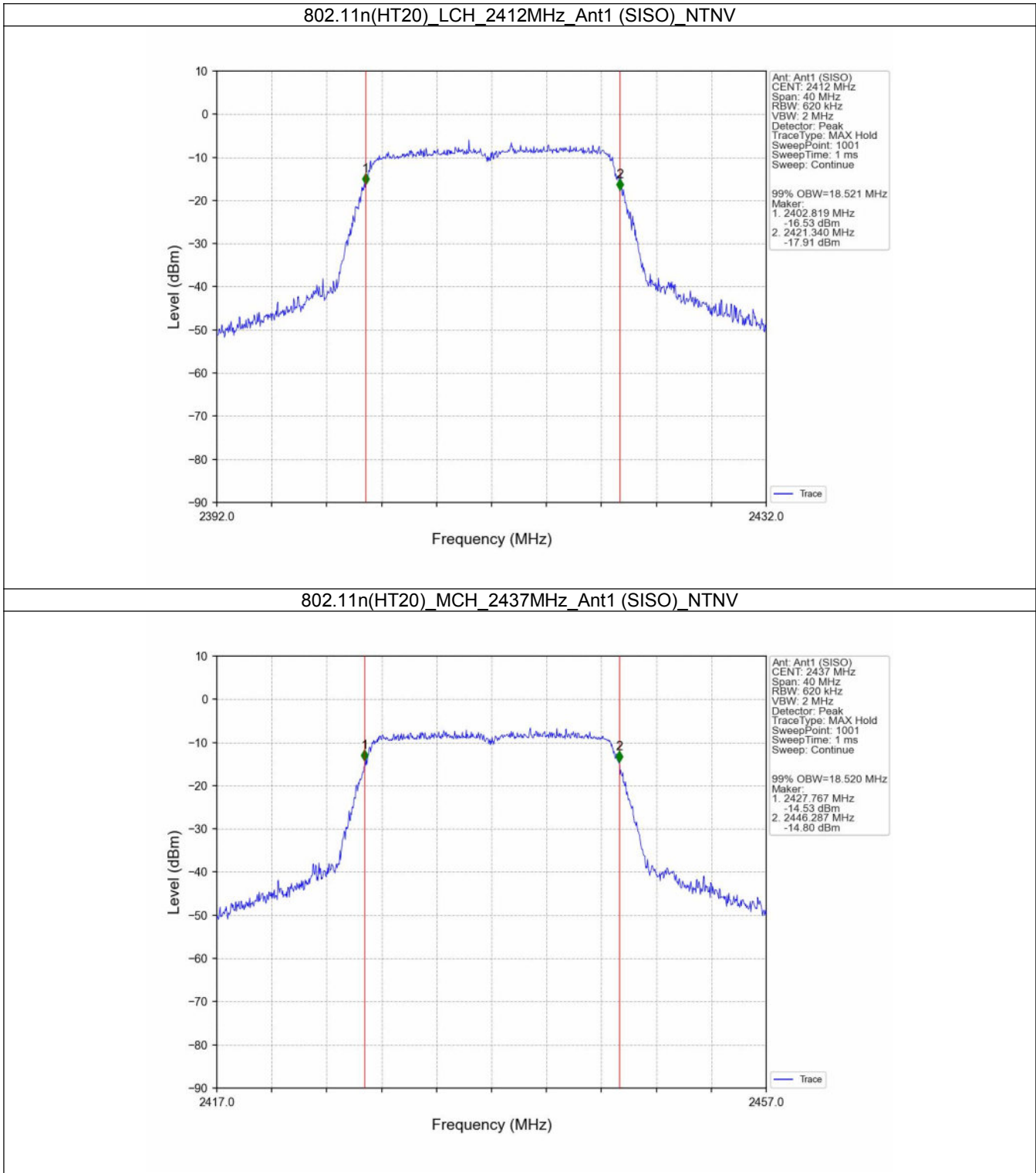
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



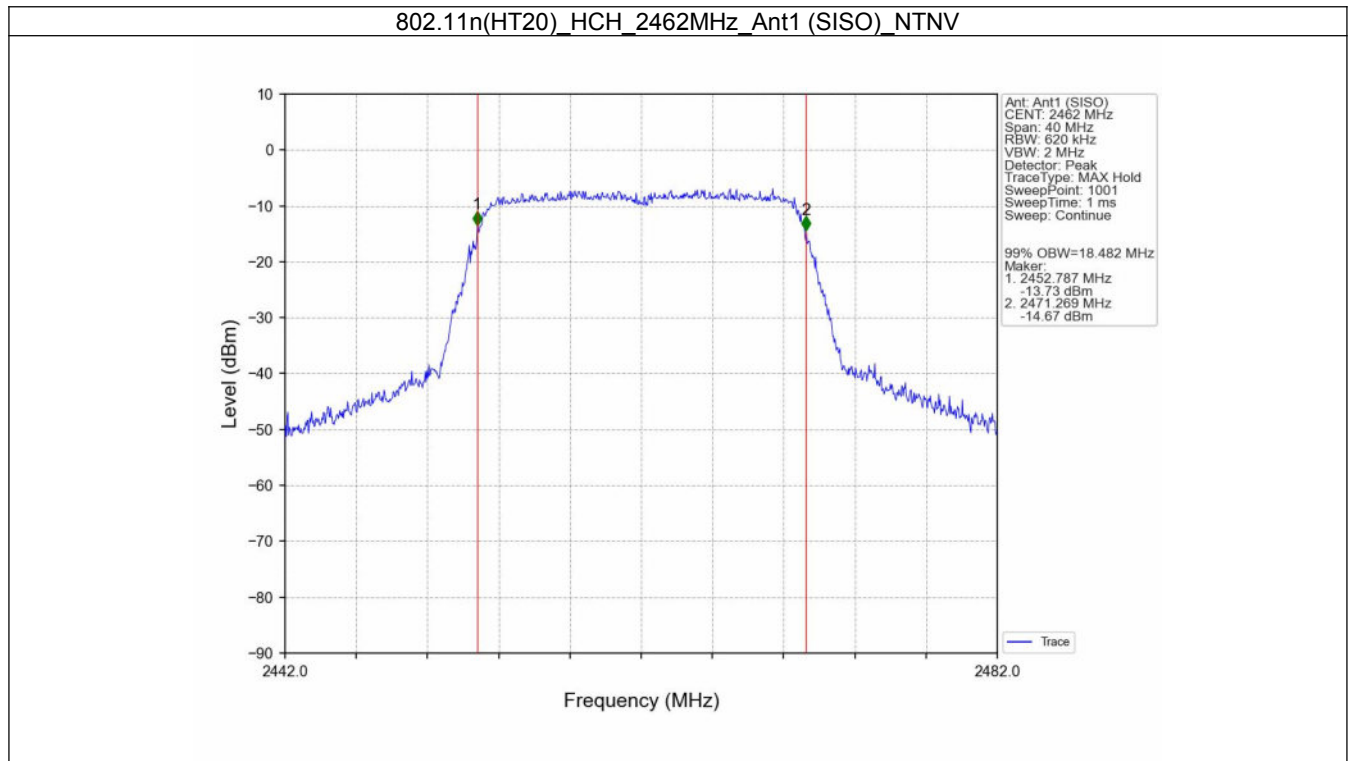
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



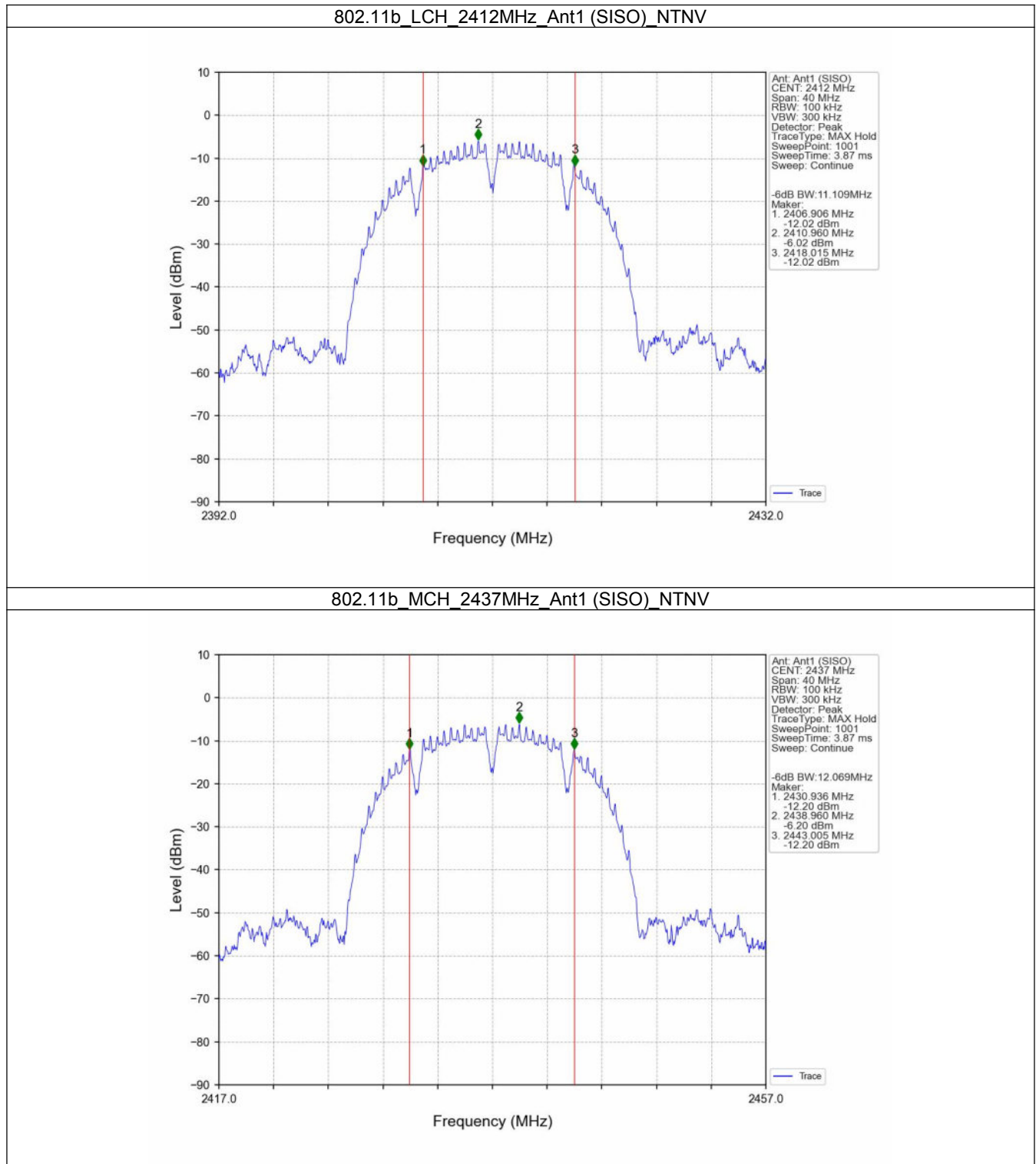
FCC ID: 2BFO4-R1



FCC ID: 2BFO4-R1

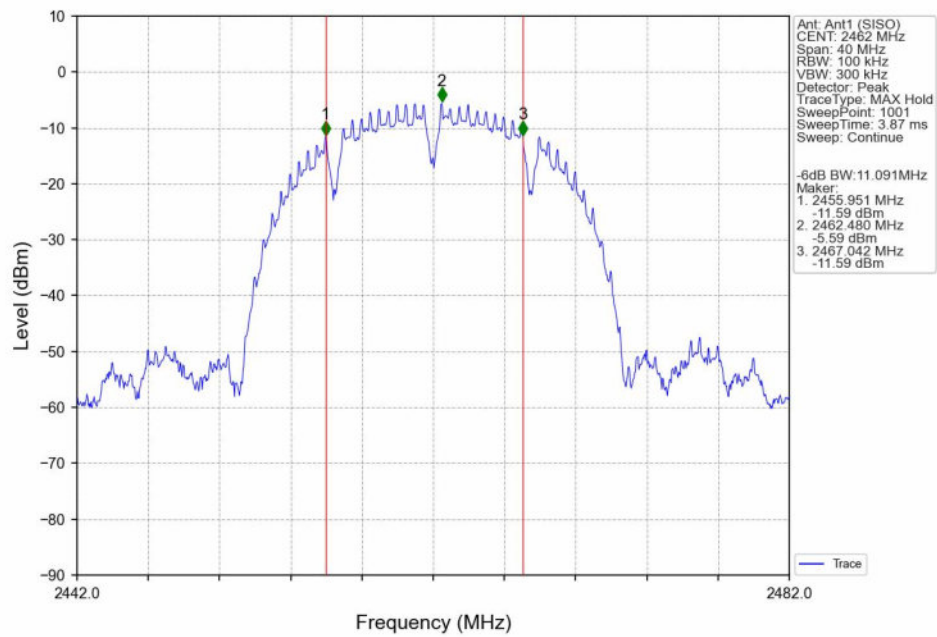


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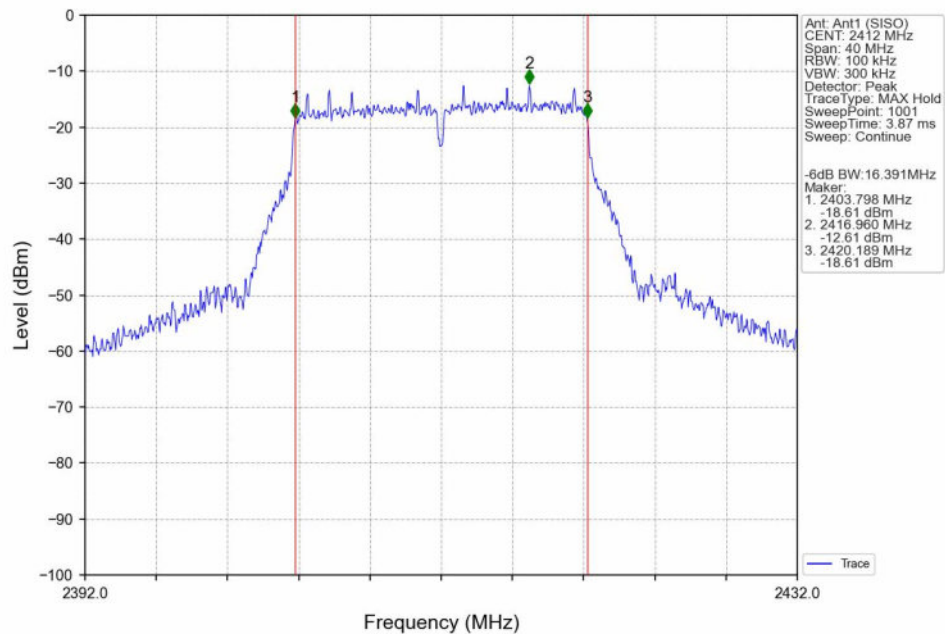
2.2.2 6dB BW

FCC ID: 2BFO4-R1

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

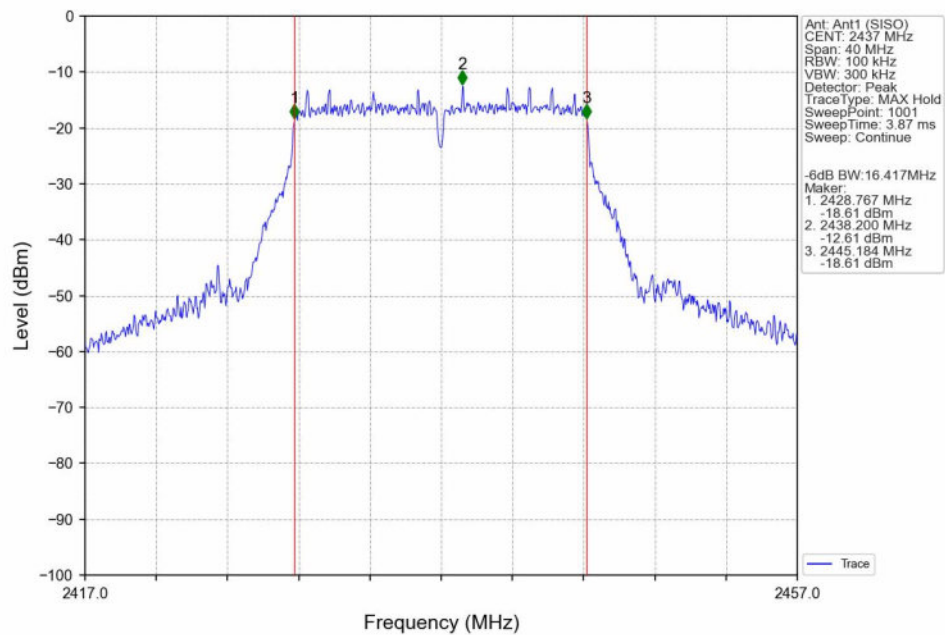


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

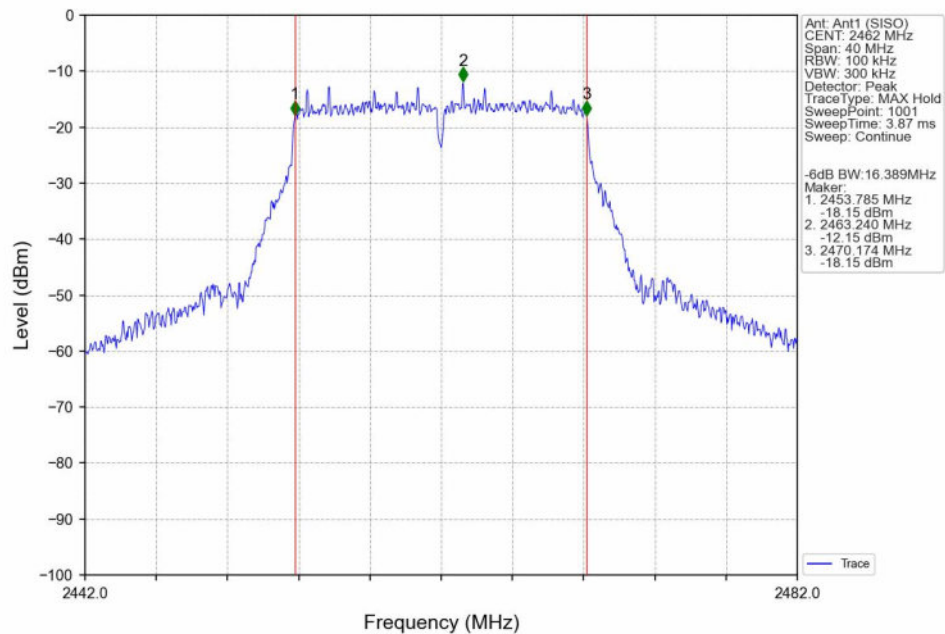


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802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

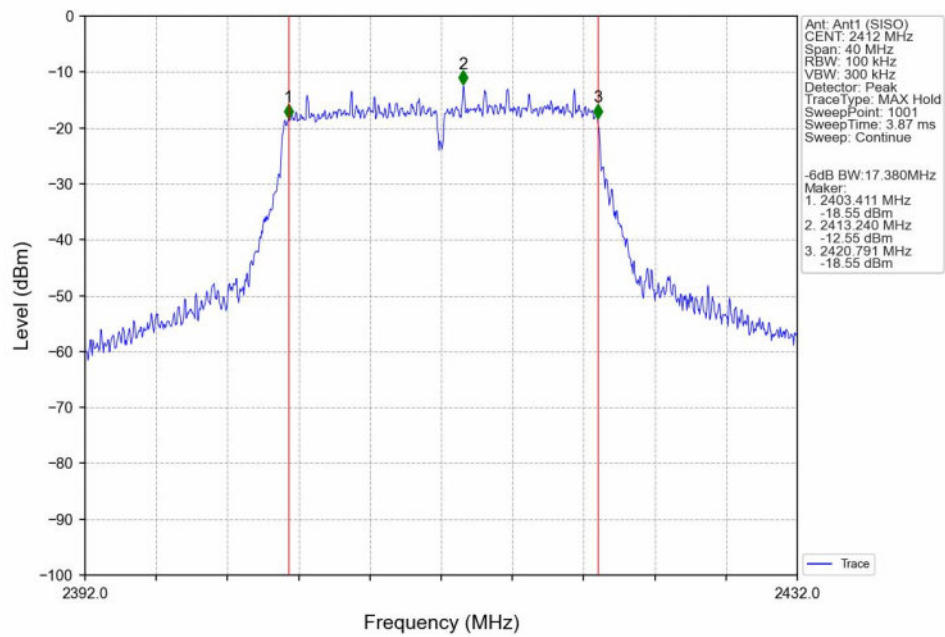


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

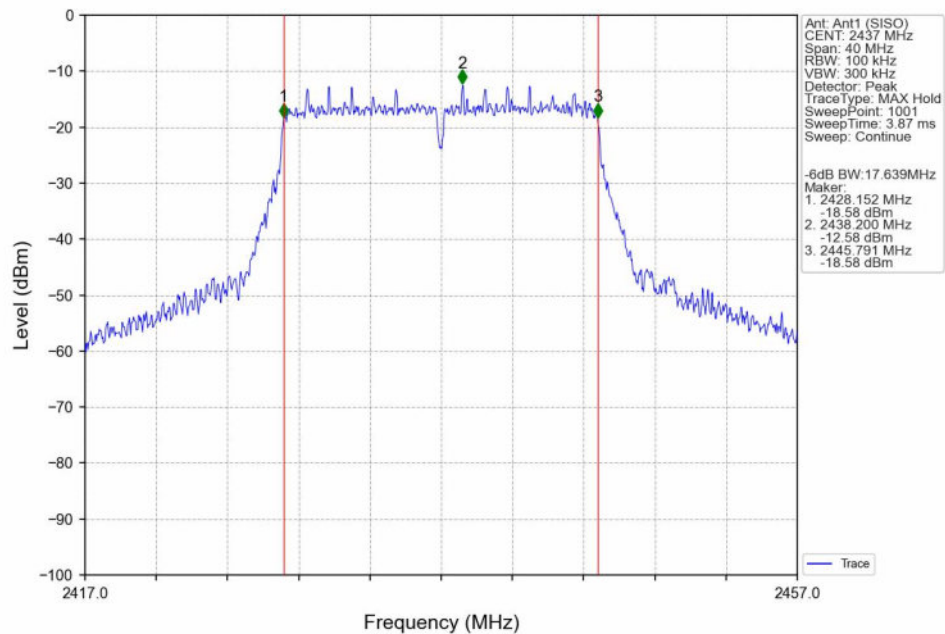


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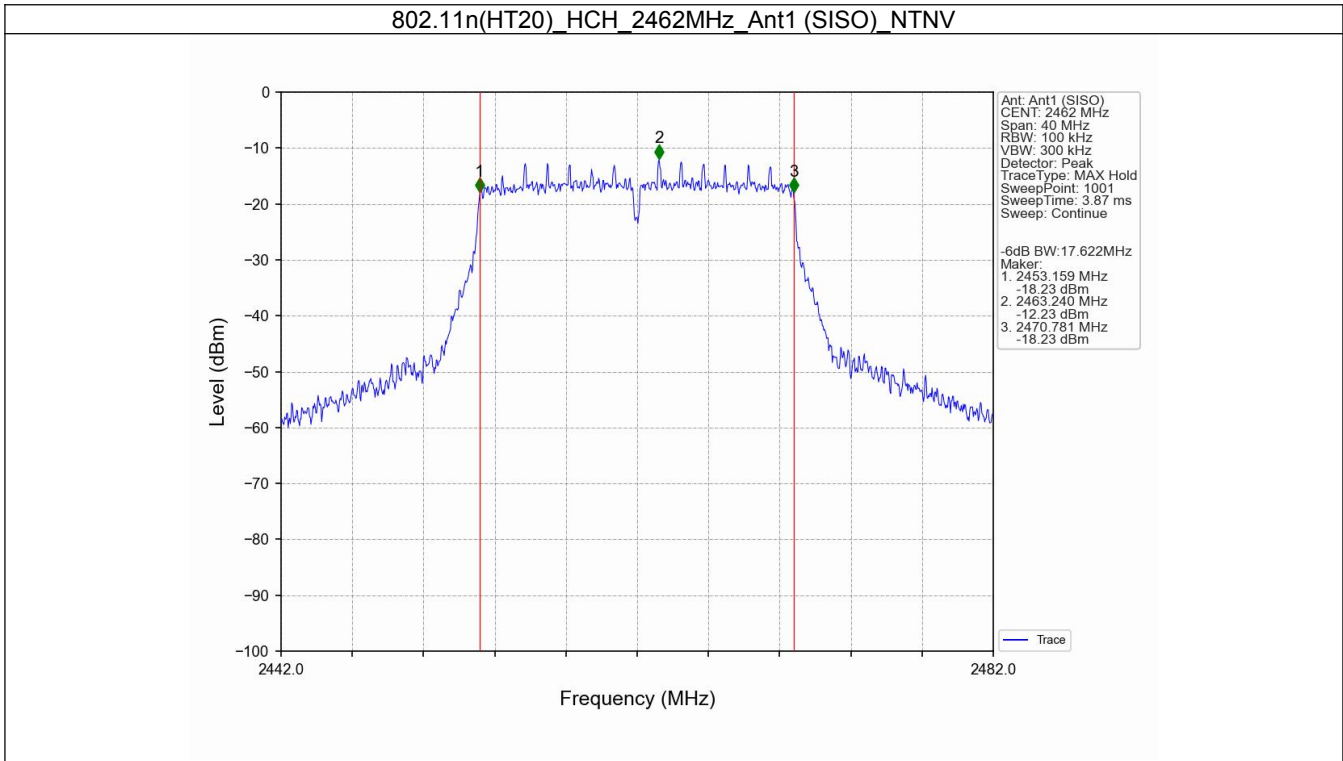
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



FCC ID: 2BFO4-R1



FCC ID: 2BFO4-R1

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	6.00	<=30	Pass
		2437	6.19	<=30	Pass
		2462	6.44	<=30	Pass
802.11g	SISO	2412	6.32	<=30	Pass
		2437	6.54	<=30	Pass
		2462	6.64	<=30	Pass
802.11n (HT20)	SISO	2412	6.30	<=30	Pass
		2437	6.61	<=30	Pass
		2462	6.67	<=30	Pass
Note1: Antenna Gain: Ant1: 2.00dBi;					

FCC ID: 2BFO4-R1

4. Maximum Power Spectral Density

4.1 Test Result

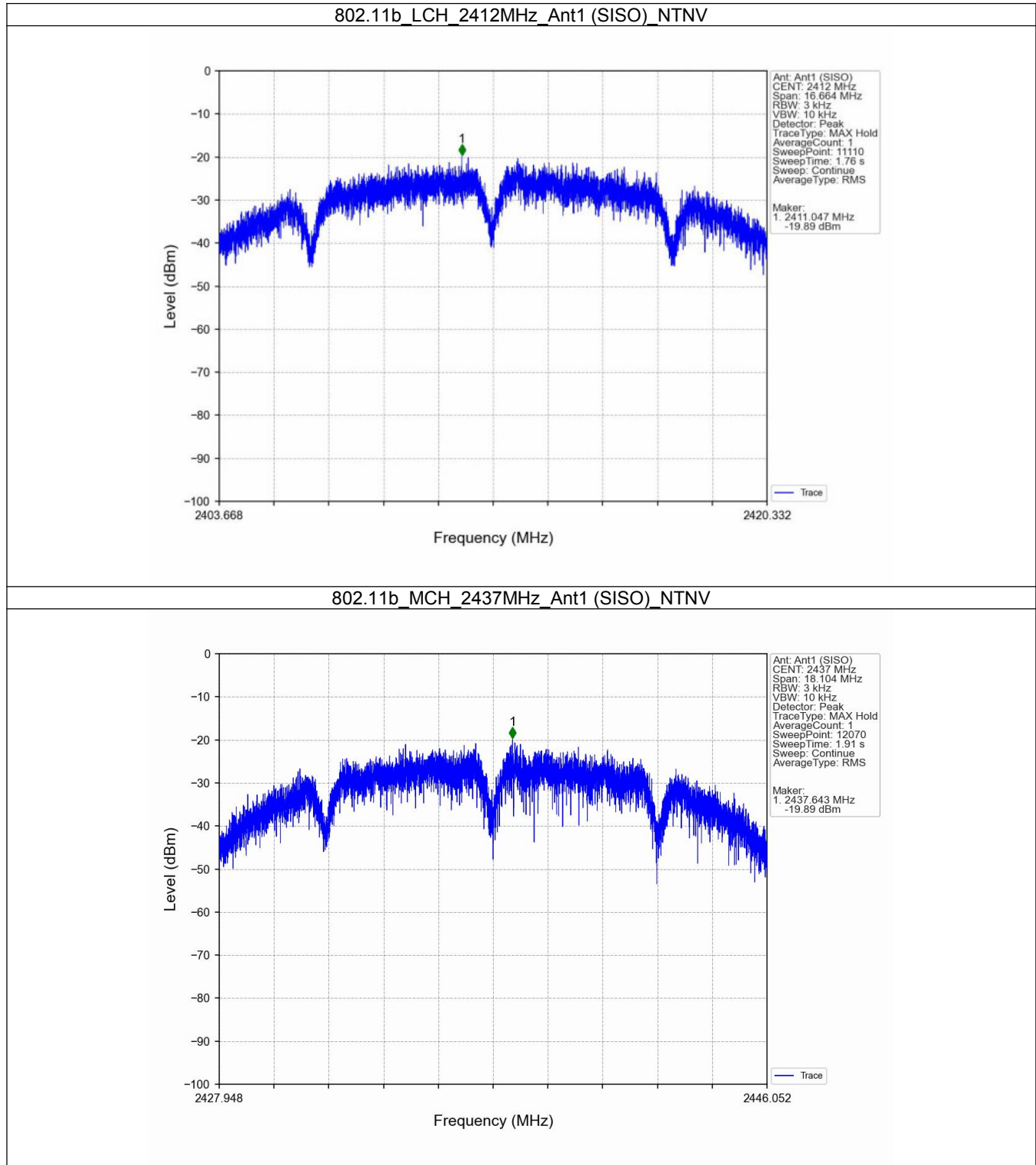
4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-19.89	<=8	Pass
		2437	-19.89	<=8	Pass
		2462	-20.35	<=8	Pass
802.11g	SISO	2412	-24.55	<=8	Pass
		2437	-25.05	<=8	Pass
		2462	-24.49	<=8	Pass
802.11n (HT20)	SISO	2412	-26.89	<=8	Pass
		2437	-25.63	<=8	Pass
		2462	-26.10	<=8	Pass
Note1: Antenna Gain: Ant1: 2.00dBi;					

FCC ID: 2BFO4-R1

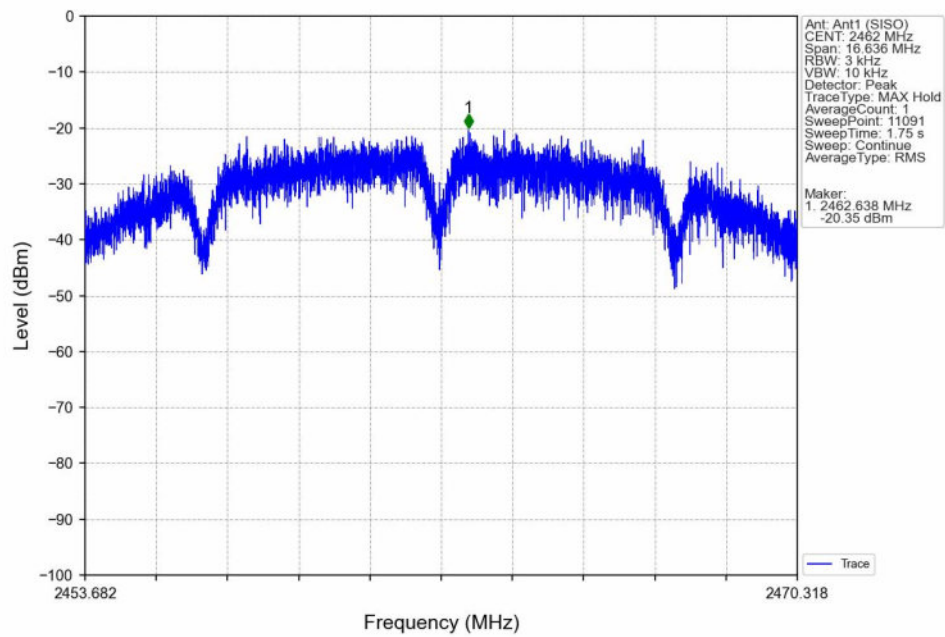
4.2 Test Graph

4.2.1 PSD

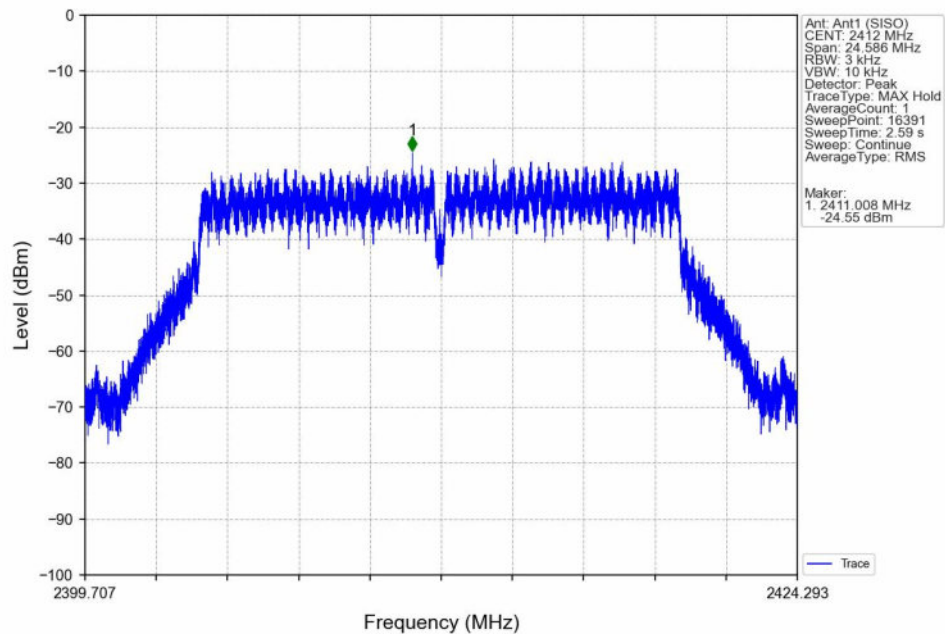


FCC ID: 2BFO4-R1

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

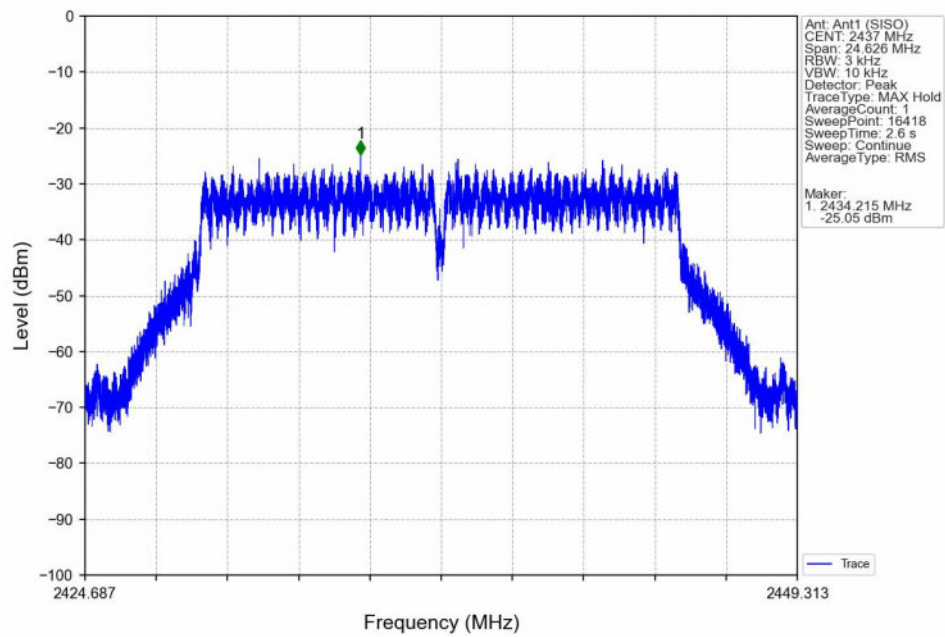


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

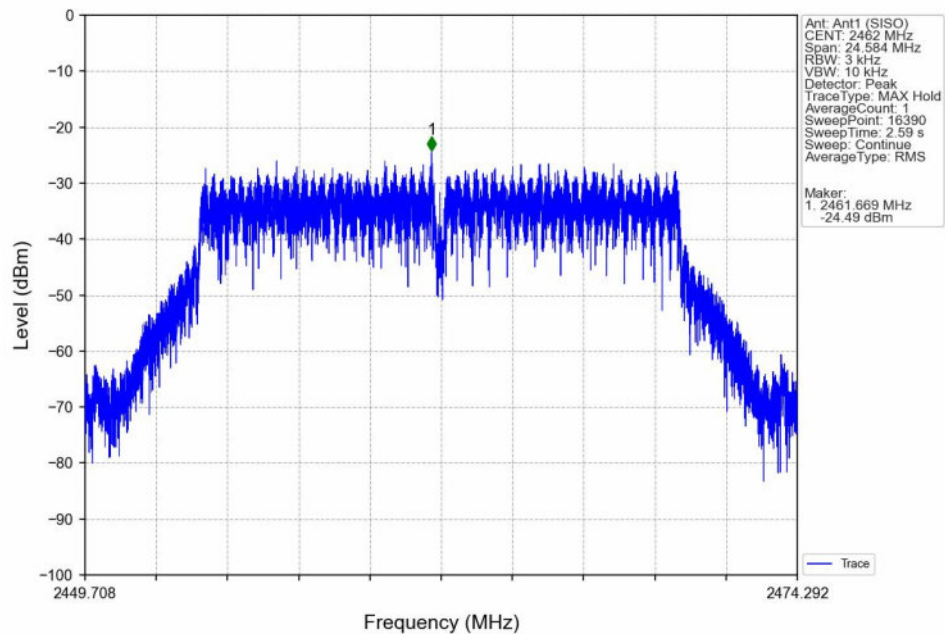


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802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

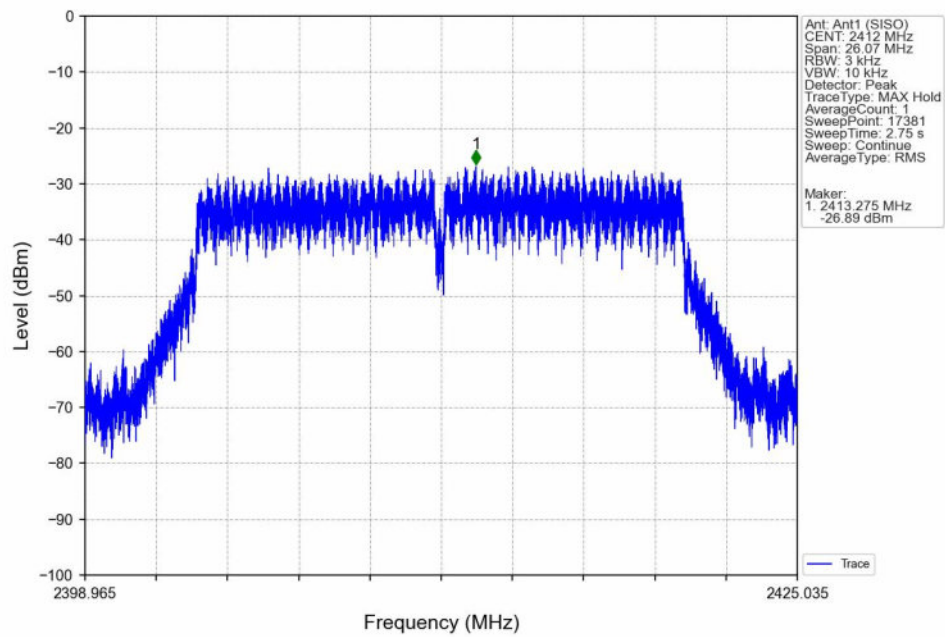


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

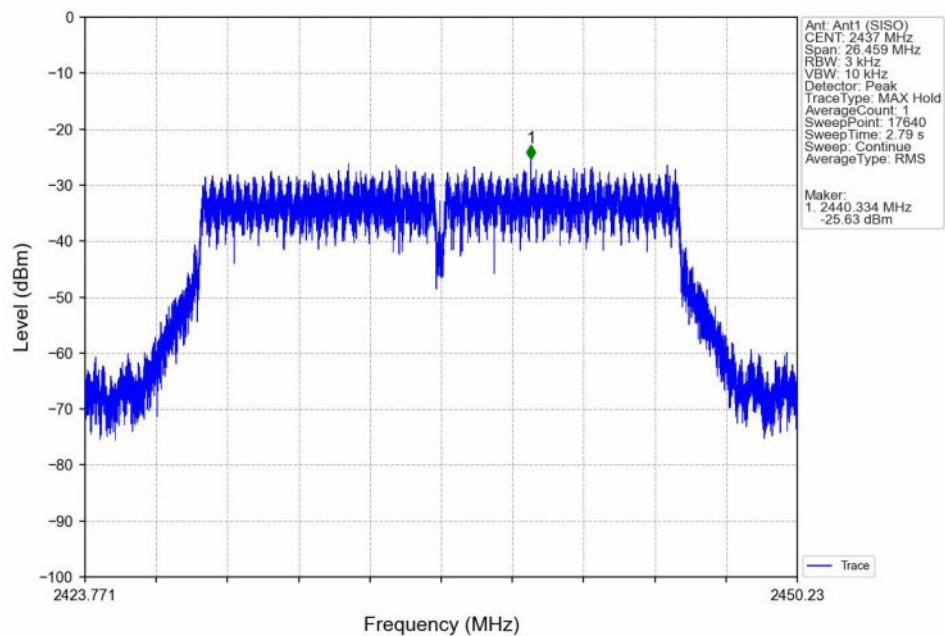


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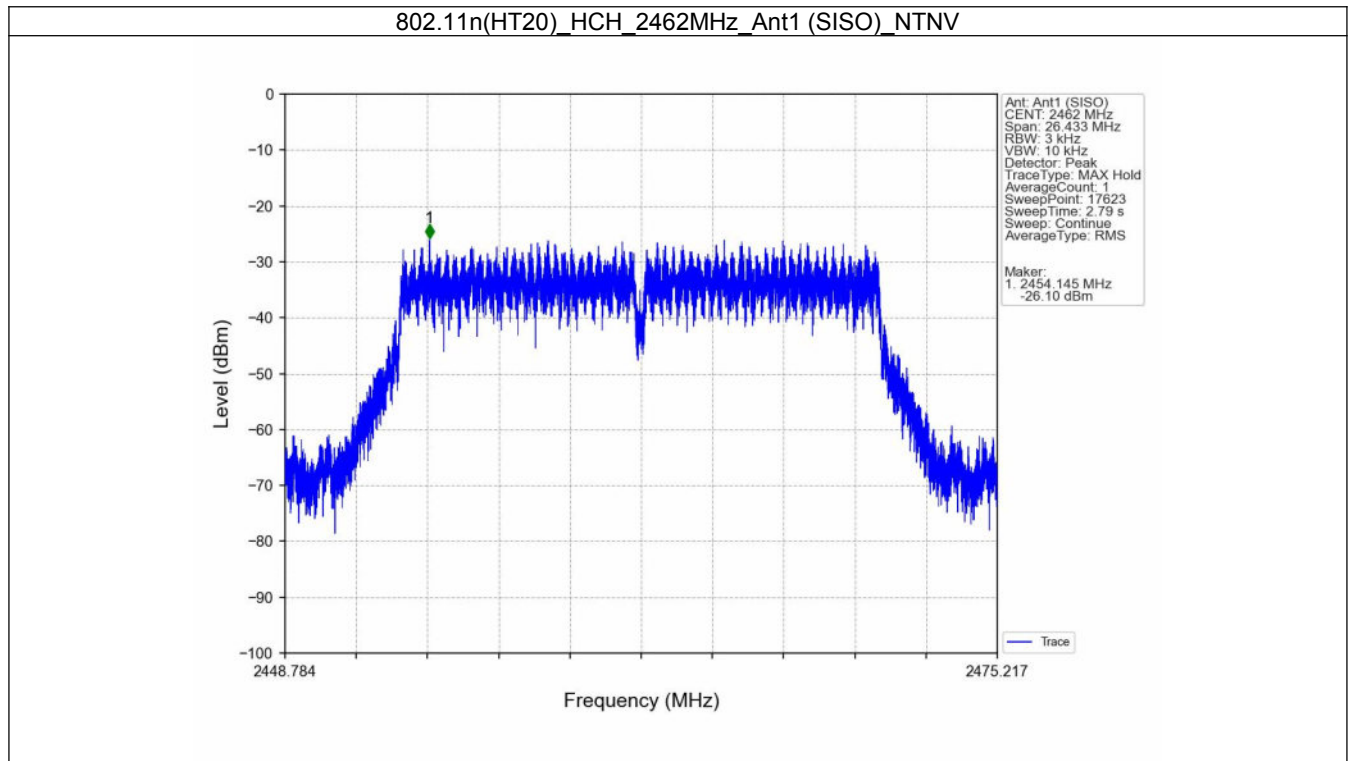
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



FCC ID: 2BFO4-R1



FCC ID: 2BFO4-R1

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	-5.84
		2437	1	-5.95
		2462	1	-5.44
802.11g	SISO	2412	1	-12.42
		2437	1	-12.79
		2462	1	-12.62
802.11n (HT20)	SISO	2412	1	-12.72
		2437	1	-12.67
		2462	1	-12.47

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

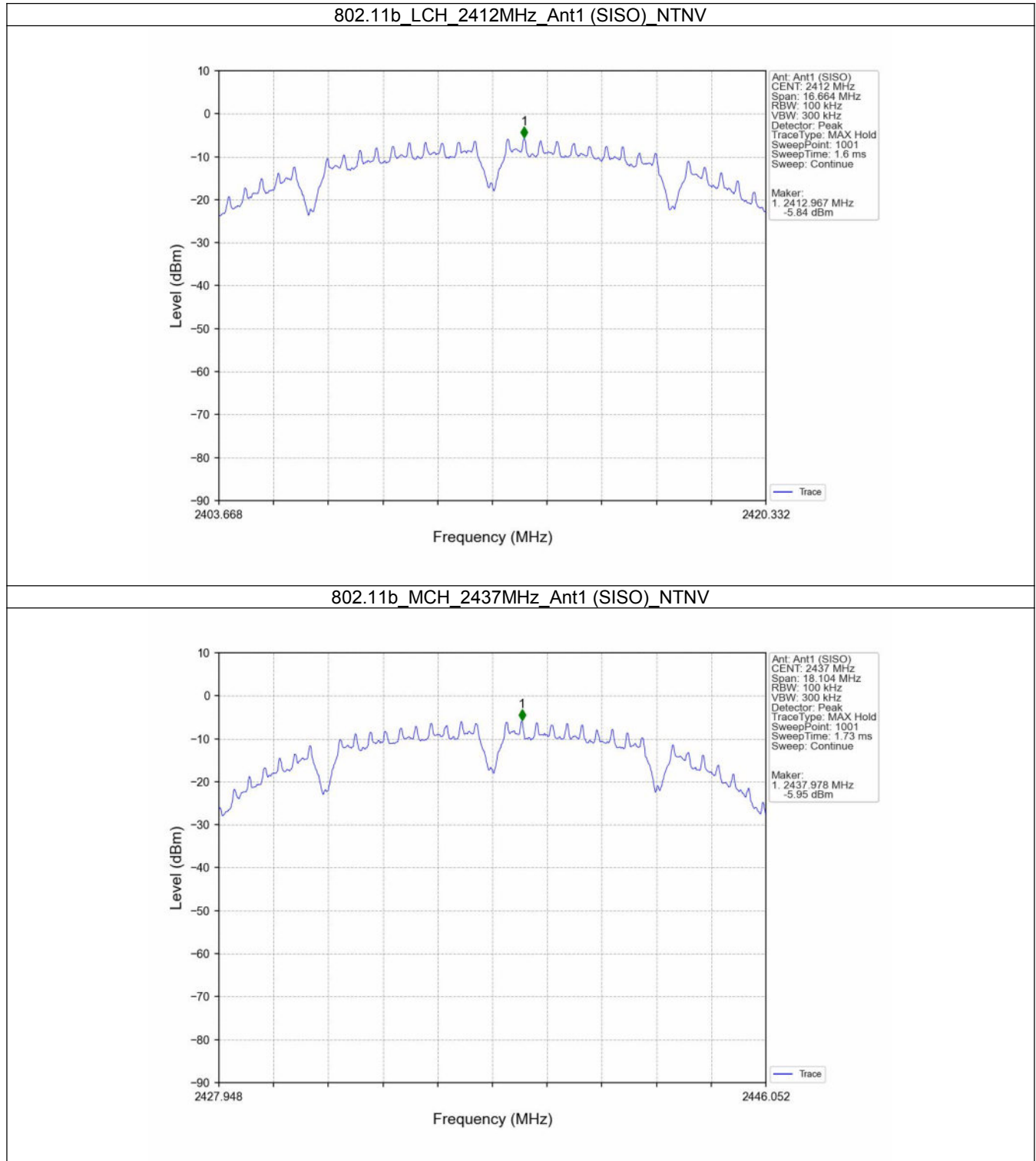
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-5.44	-25.44	Pass
		2437	1	-5.44	-25.44	Pass
		2462	1	-5.44	-25.44	Pass
802.11g	SISO	2412	1	-12.42	-32.42	Pass
		2437	1	-12.42	-32.42	Pass
		2462	1	-12.42	-32.42	Pass
802.11n (HT20)	SISO	2412	1	-12.47	-32.47	Pass
		2437	1	-12.47	-32.47	Pass
		2462	1	-12.47	-32.47	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.

FCC ID: 2BFO4-R1

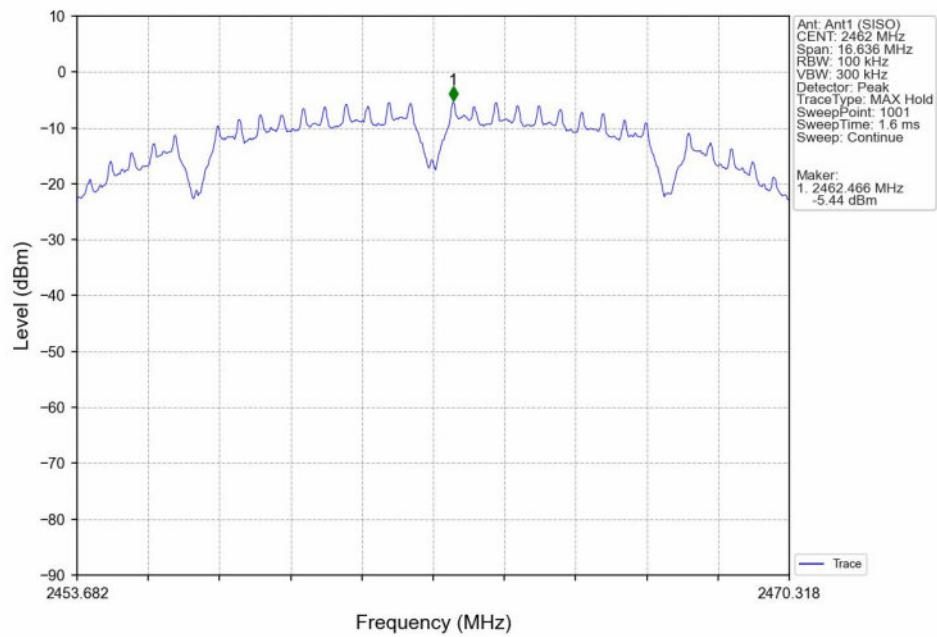
5.2 Test Graph

5.2.1 Ref

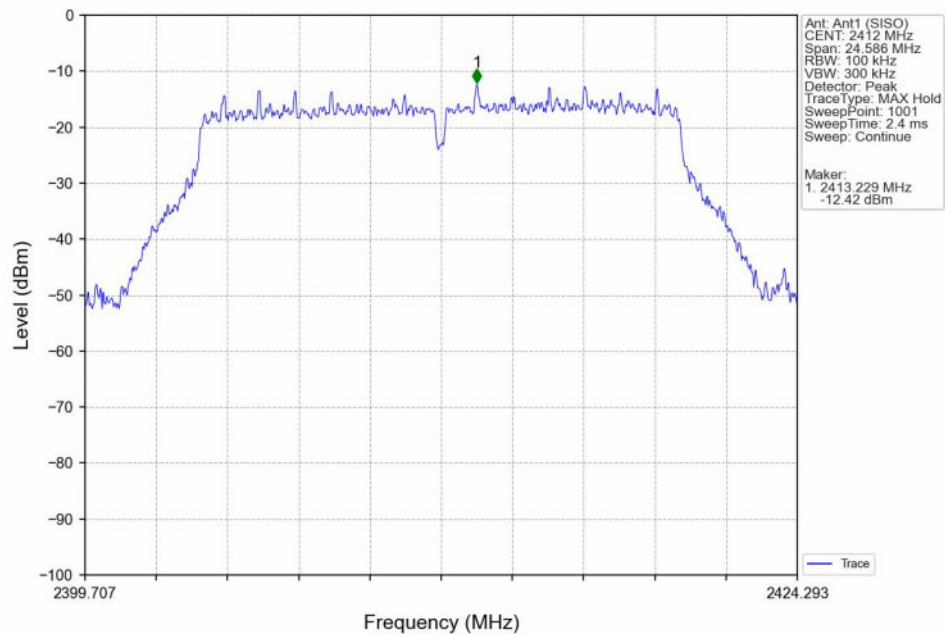


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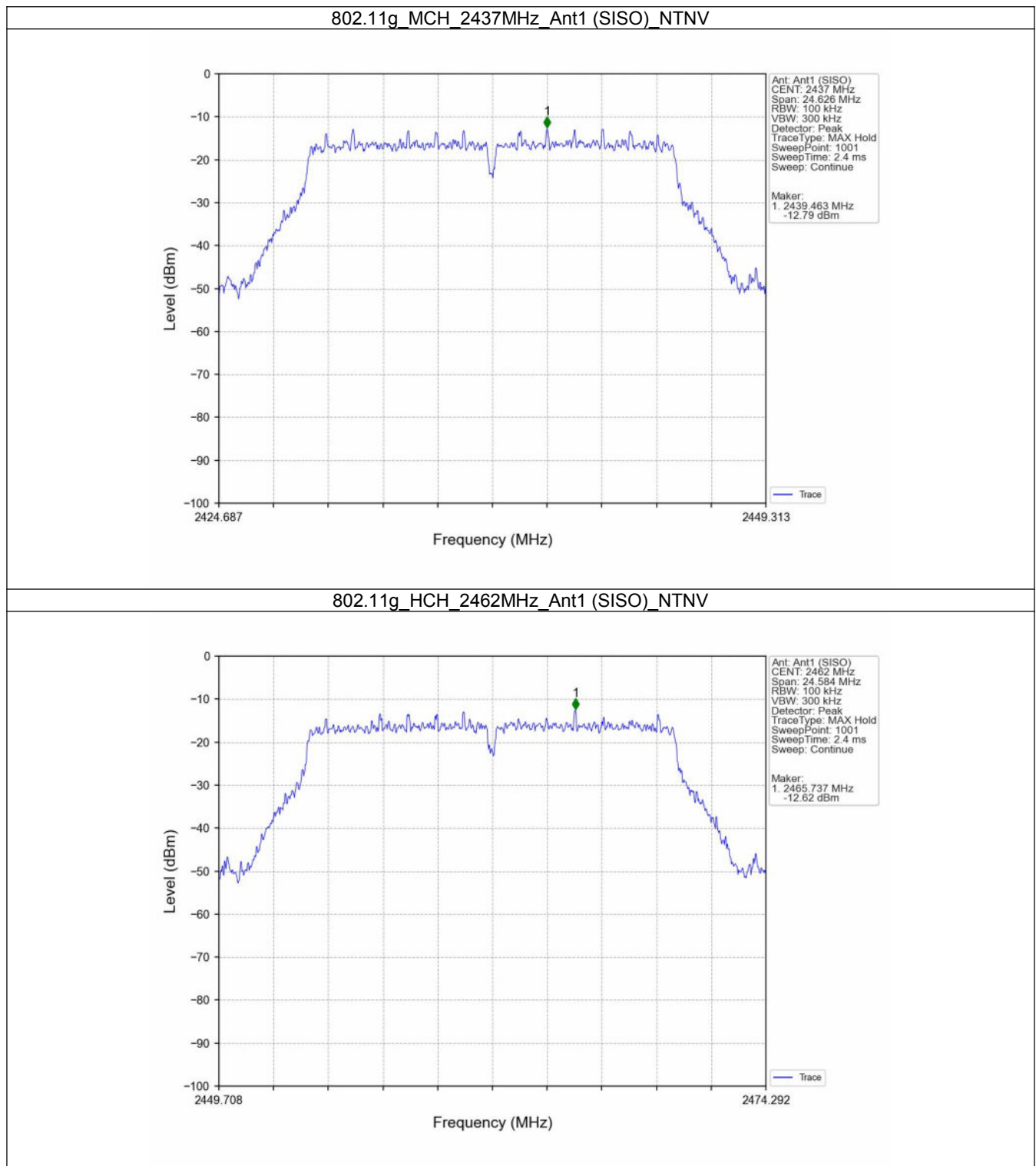
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

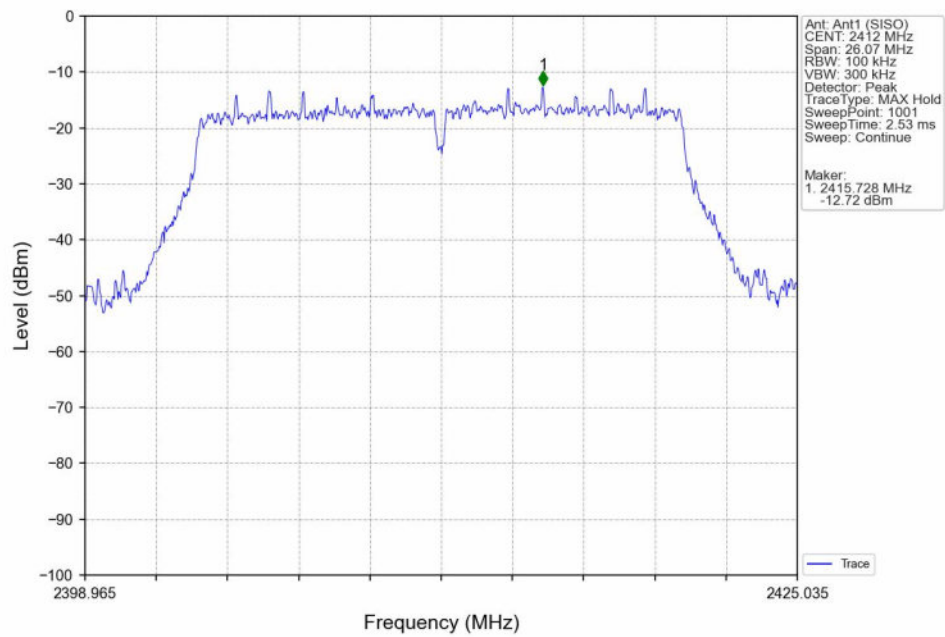


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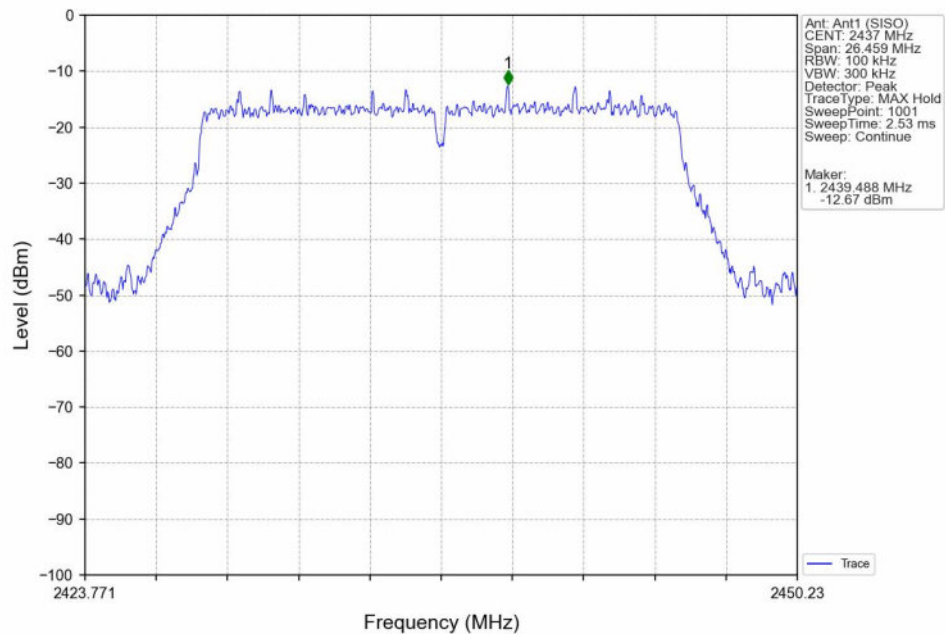


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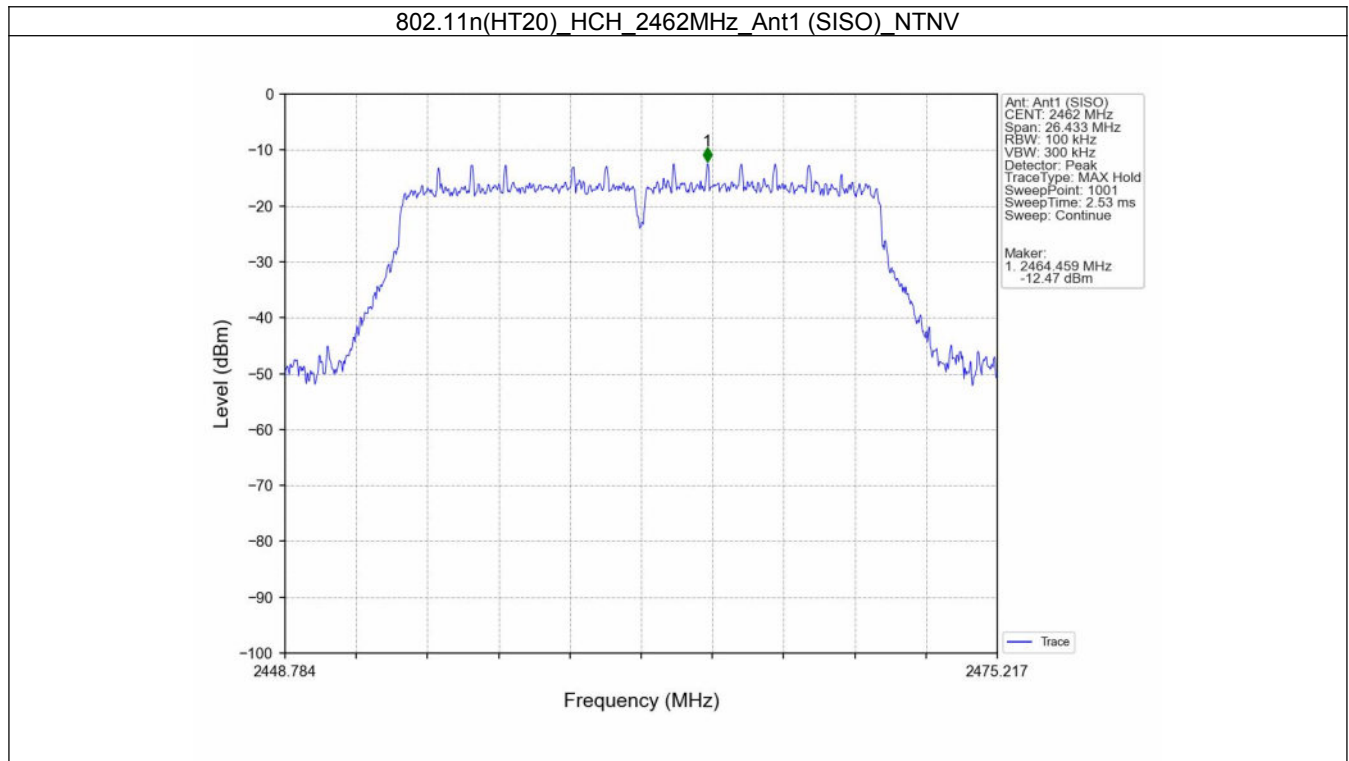
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

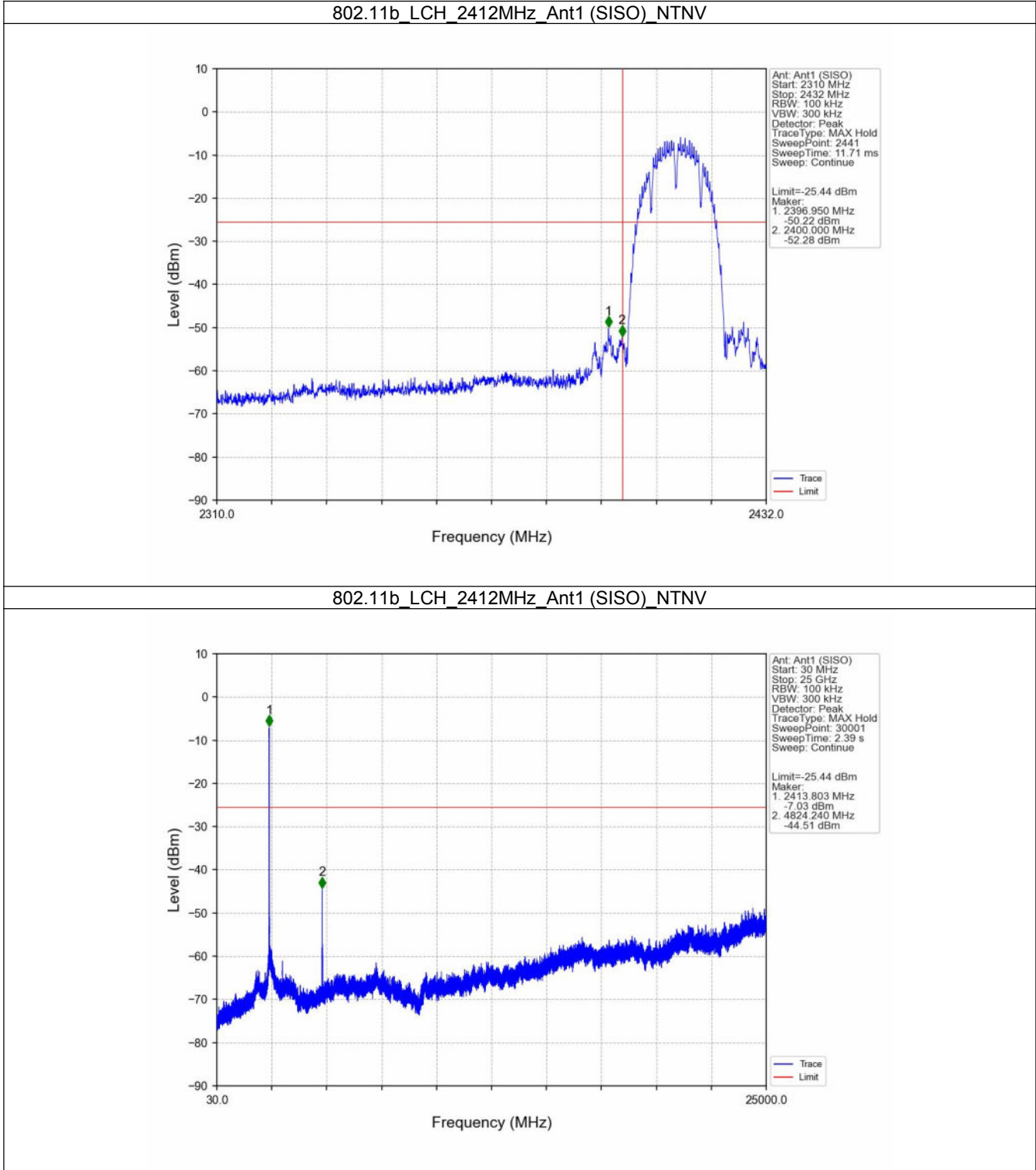


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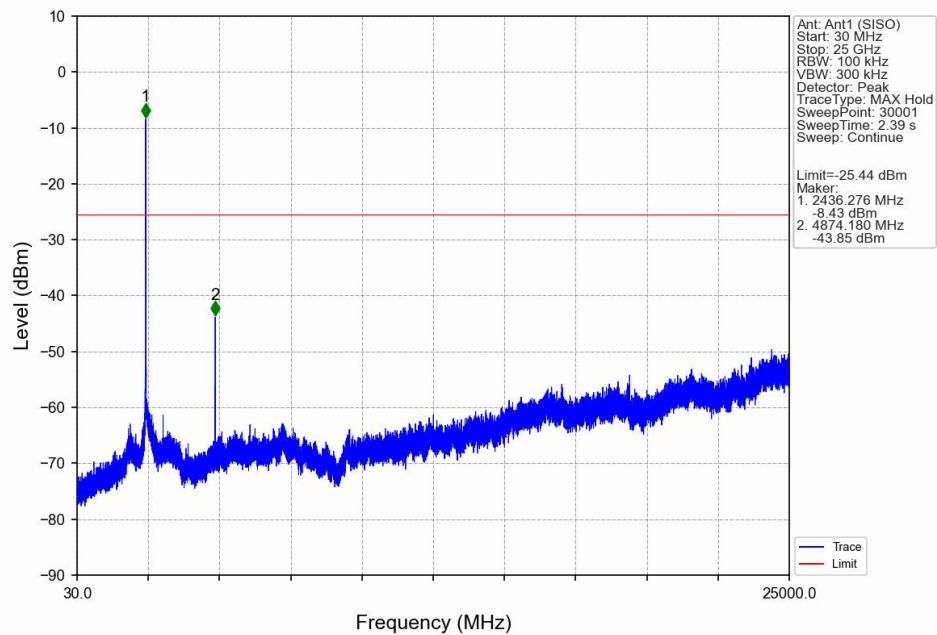
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5.2.2 CSE

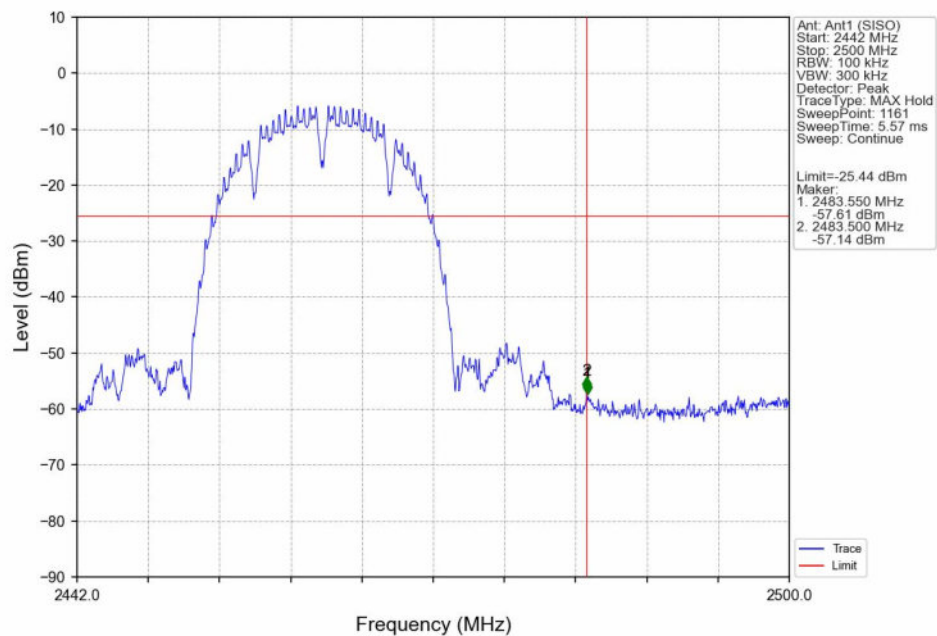


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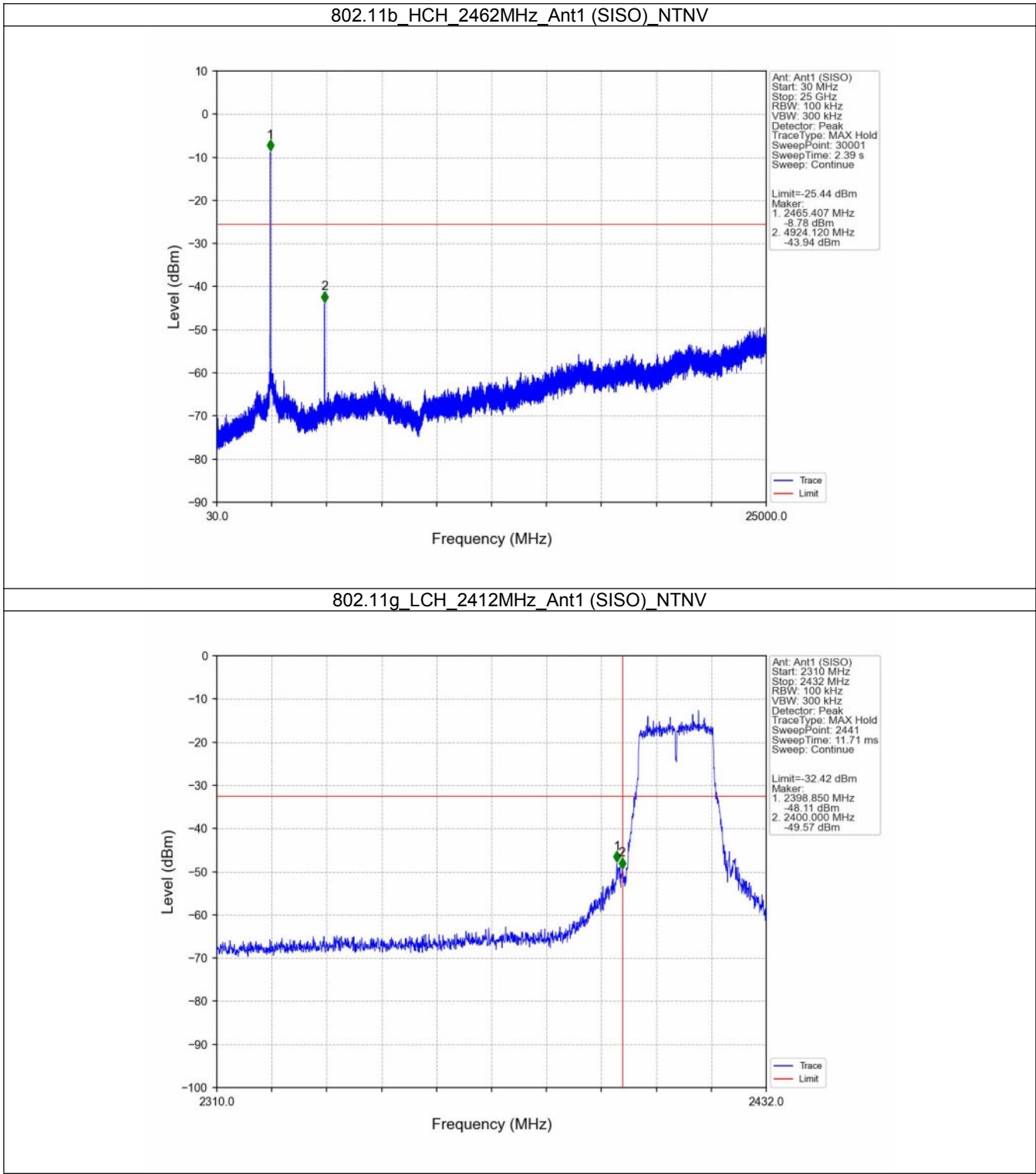
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

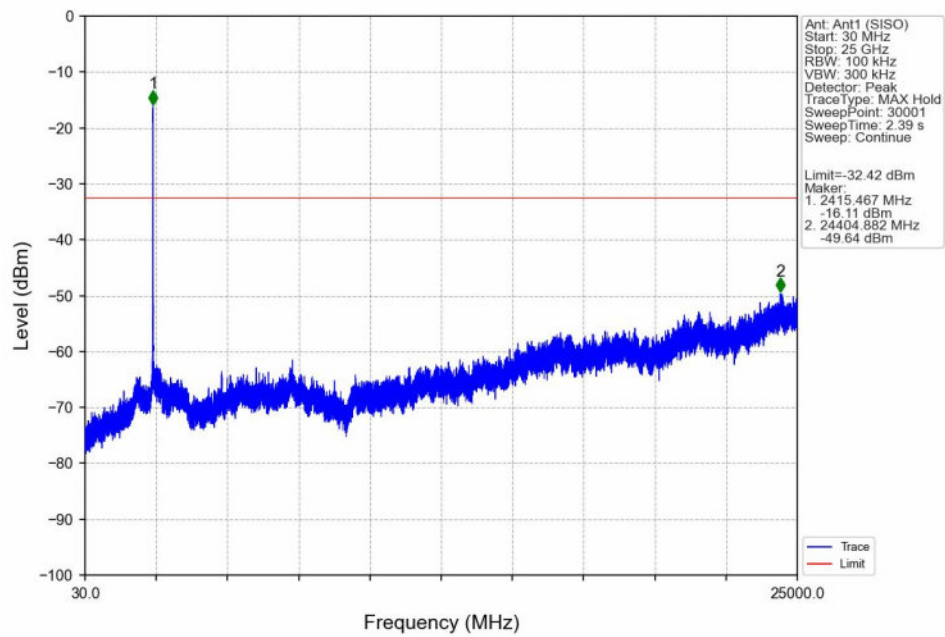


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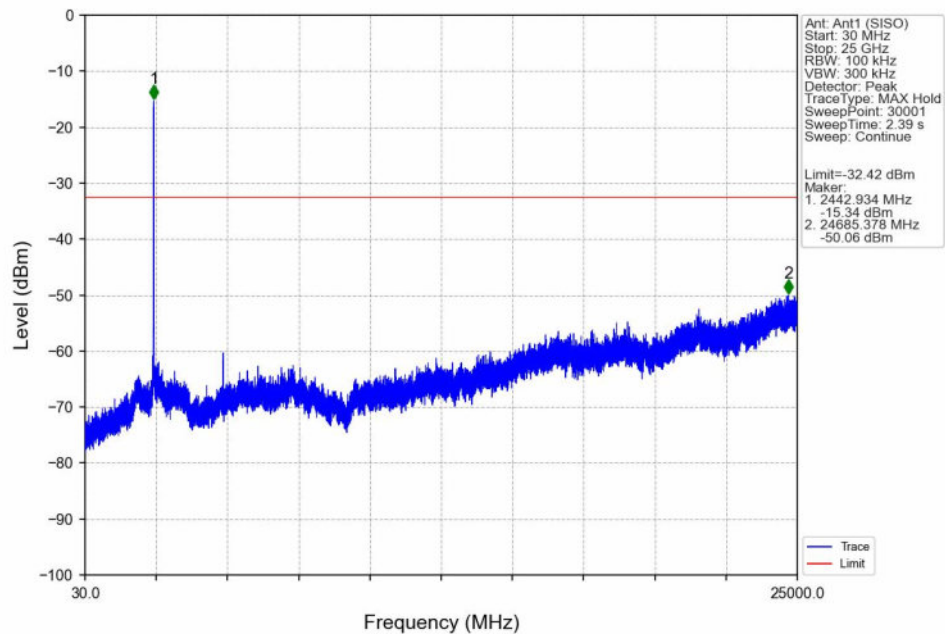


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802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

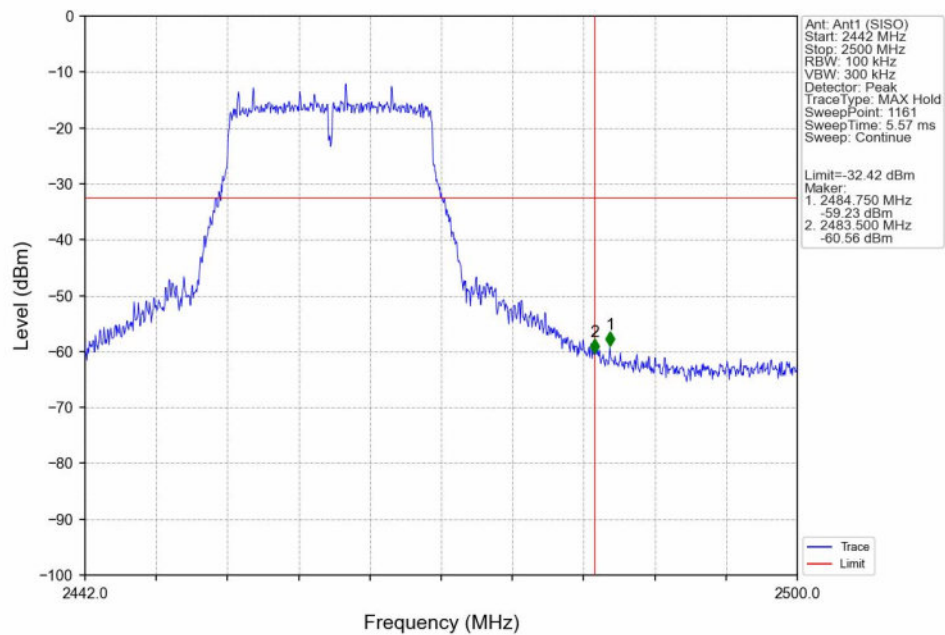


802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

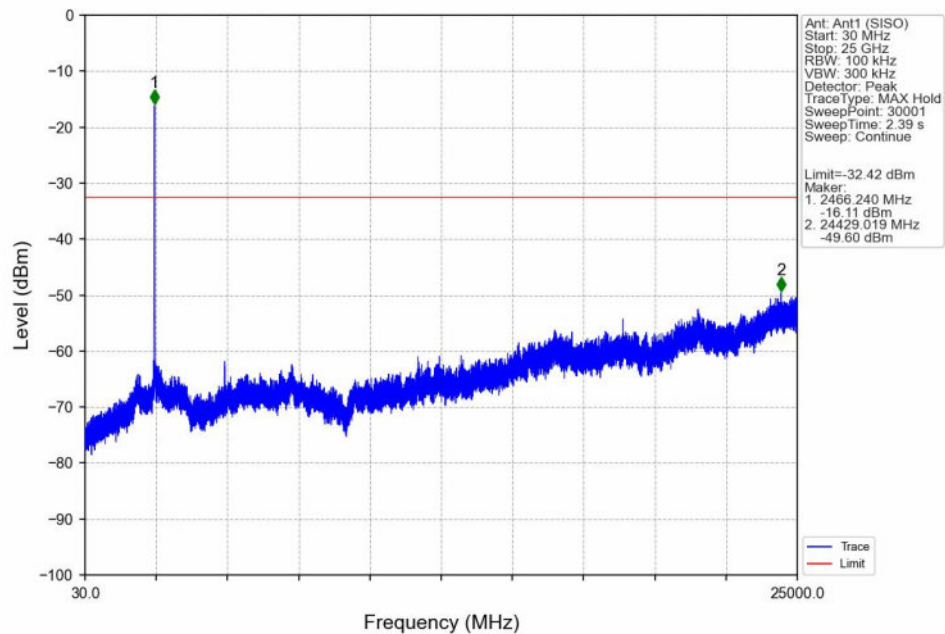


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802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

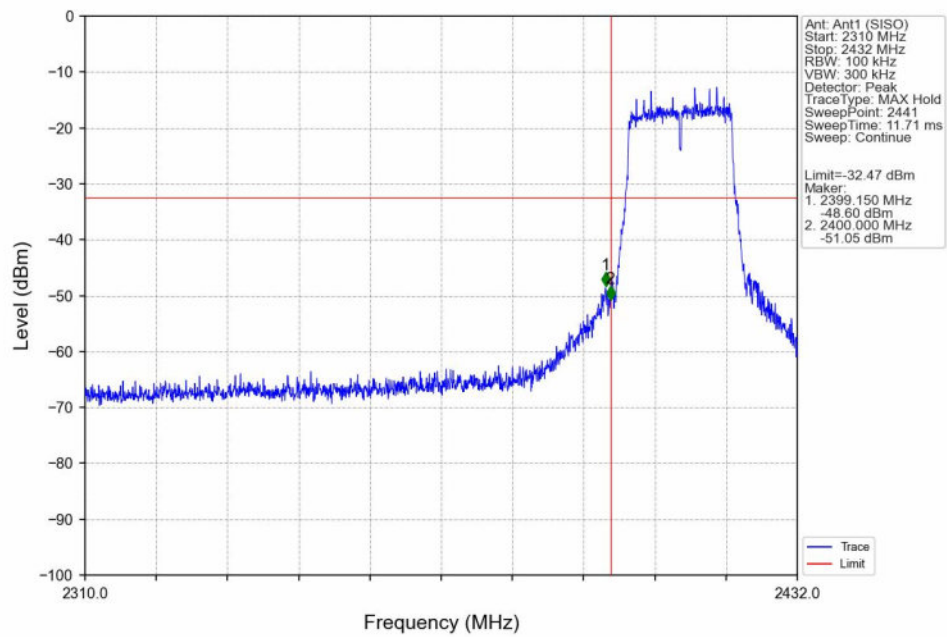


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

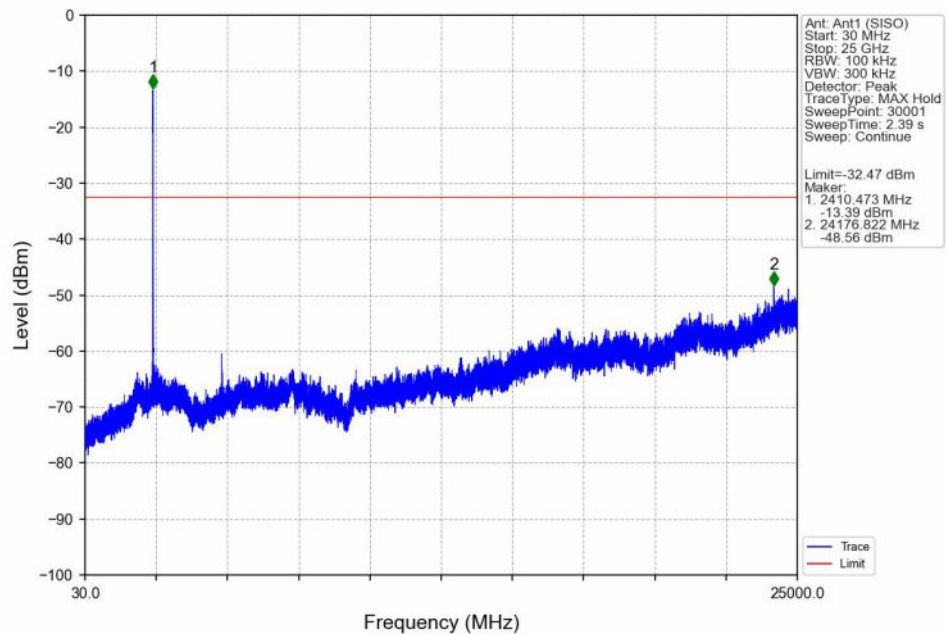


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

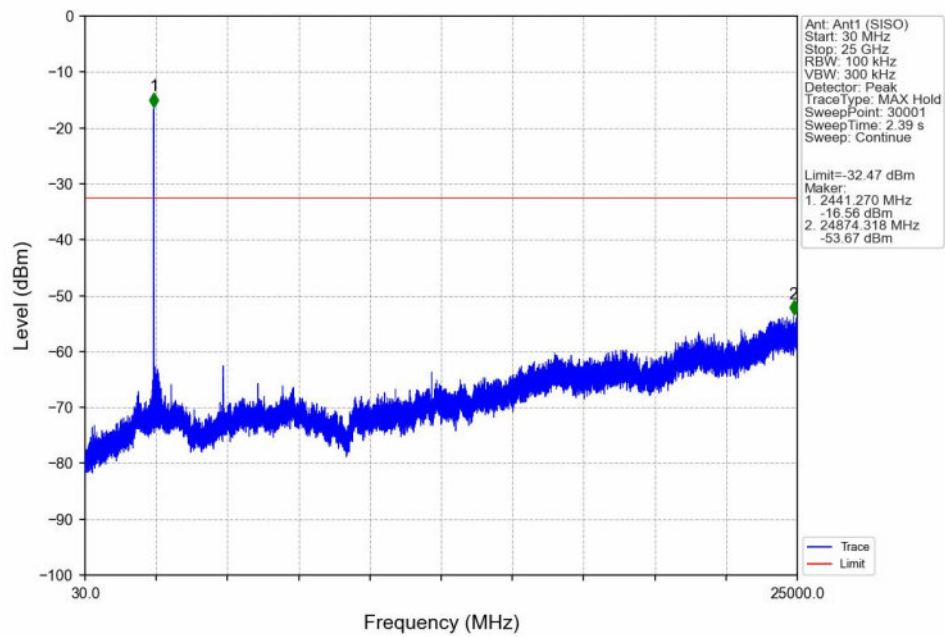


802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

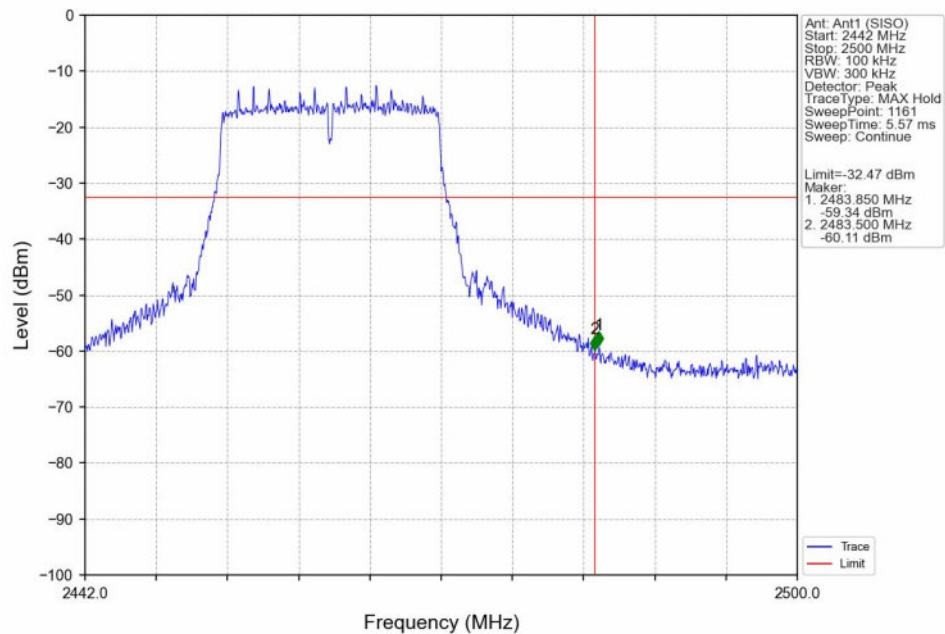


FCC ID: 2BFO4-R1

802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



FCC ID: 2BFO4-R1

