



Annex for 2.4G Wi-Fi

Test Report No.: CTL2412133013-WF02

TABLE OF CONTENTS

1. Duty Cycle	3
1.1 Test Result	3
1.1.1 Ant1	3
1.2 Test Graph	4
1.2.1 Ant1	4
2. Bandwidth	10
2.1 Test Result	10
2.1.1 OBW	10
2.1.2 6dB BW	10
2.2 Test Graph	11
2.2.1 OBW	11
2.2.2 6dB BW	17
3. Maximum Conducted Output Power	23
3.1 Test Result	23
3.1.1 Power	23
3.2 Test Graph	24
3.2.1 Power	24
4. Maximum Power Spectral Density	30
4.1 Test Result	30
4.1.1 PSD	30

FCC ID: 2AN5D-N1804

4.2 Test Graph	31
4.2.1 PSD	31
5. Unwanted Emissions In Non-restricted Frequency Bands	37
5.1 Test Result	37
5.1.1 Ref	37
5.1.2 CSE	37
5.2 Test Graph	38
5.2.1 Ref	38
5.2.2 CSE	44

FCC ID: 2AN5D-N1804

1. Duty Cycle

1.1 Test Result

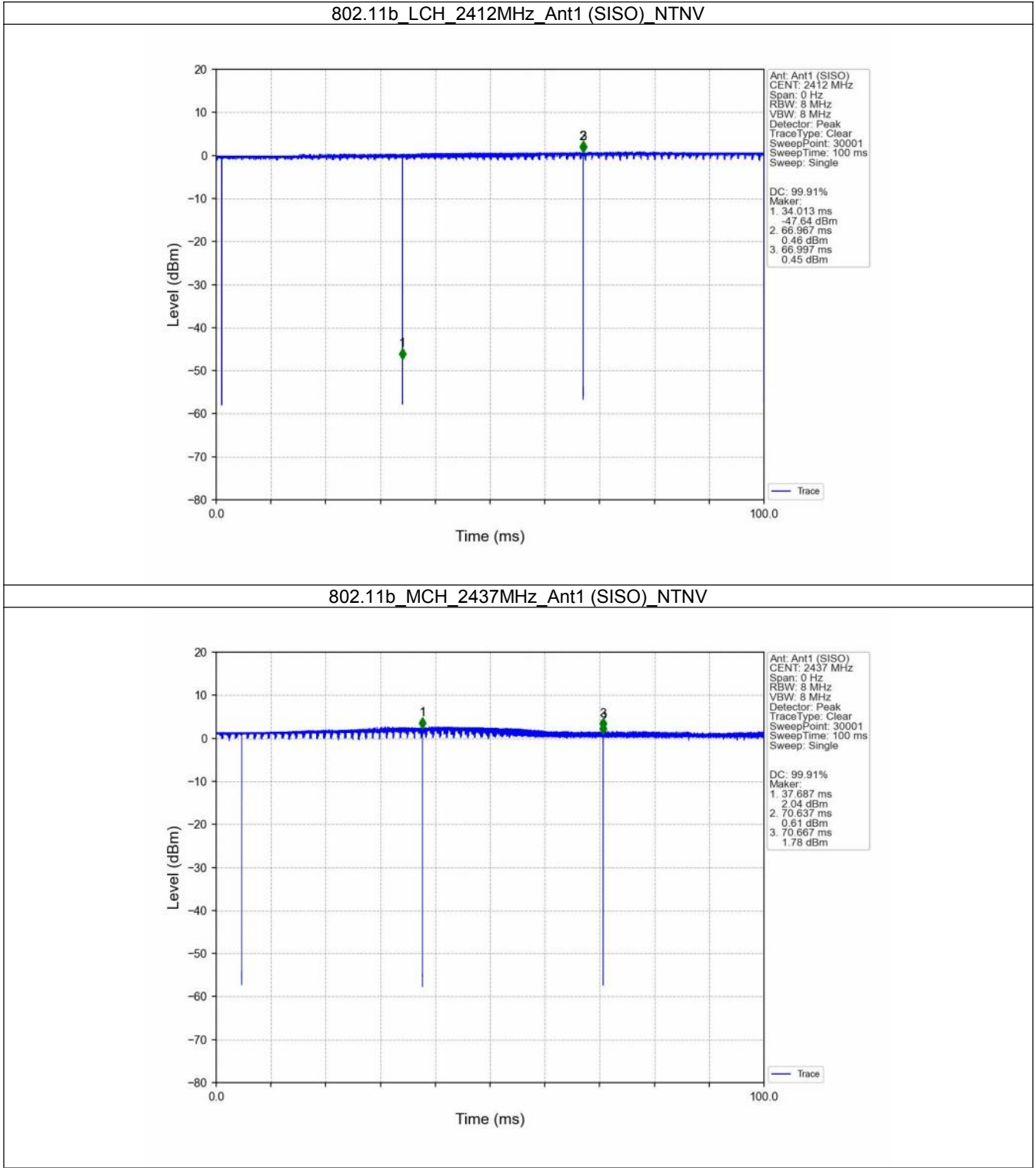
1.1.1 Ant1

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	32.954	32.984	99.91	0.00	0.01
		2437	32.950	32.980	99.91	0.00	0.00
		2462	32.950	32.980	99.91	0.00	0.00
802.11g	SISO	2412	5.484	5.542	98.95	0.05	0.57
		2437	5.484	5.510	99.53	0.02	0.00
		2462	5.484	5.511	99.51	0.02	0.03
802.11n (HT20)	SISO	2412	5.080	5.105	99.51	0.02	0.00
		2437	25.510	25.707	99.23	0.03	0.00
		2462	5.079	5.104	99.51	0.02	0.00
802.11n (HT40)	SISO	2422	2.469	2.494	99.00	0.04	0.03
		2437	2.468	2.494	98.96	0.05	0.03
		2452	2.469	2.494	99.00	0.04	0.03

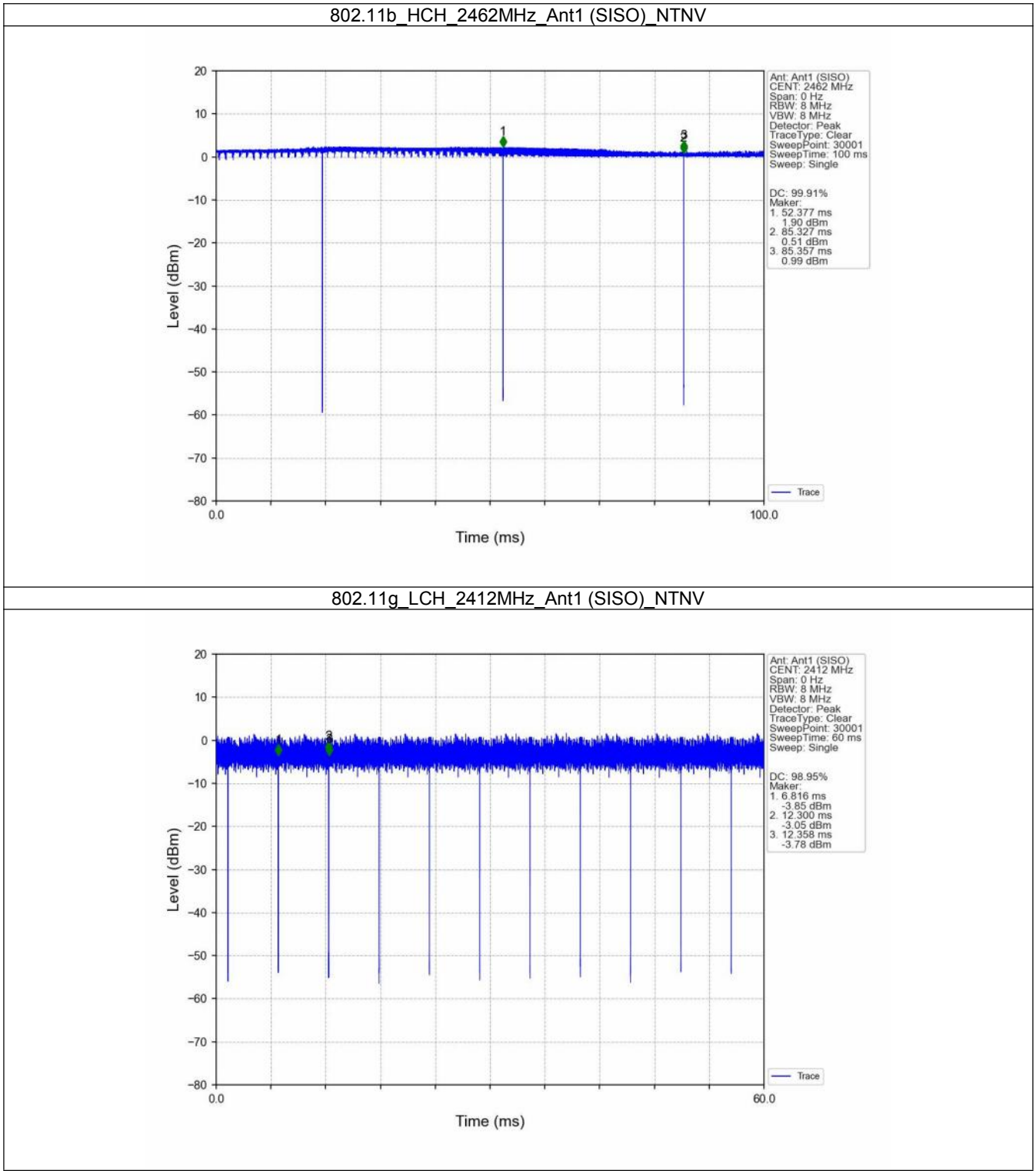
FCC ID: 2AN5D-N1804

1.2 Test Graph

1.2.1 Ant1

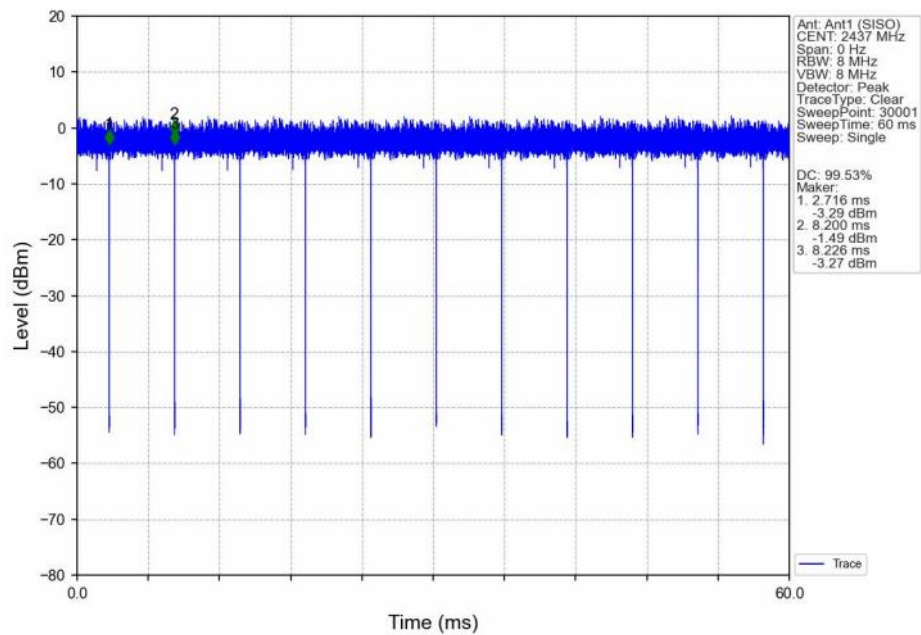


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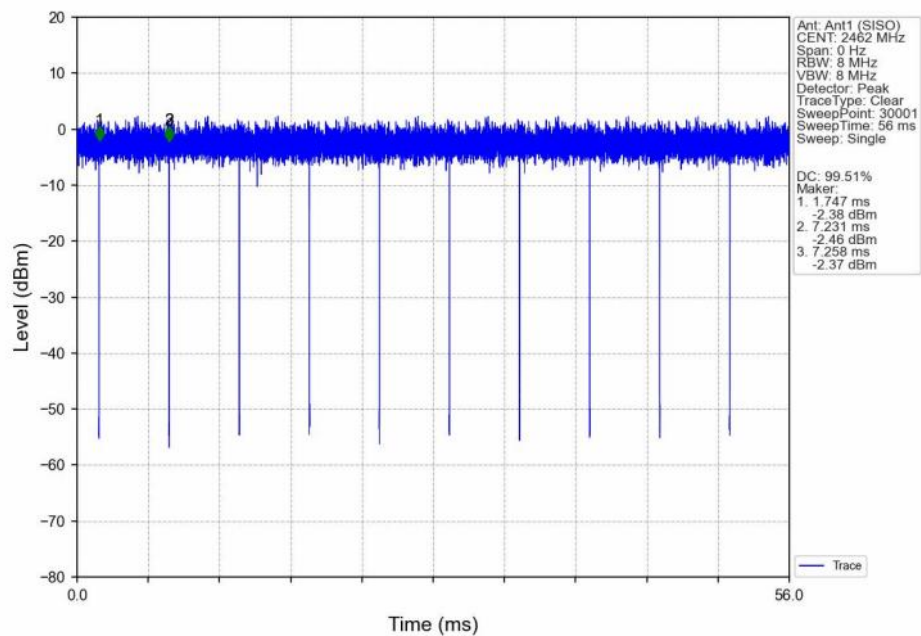


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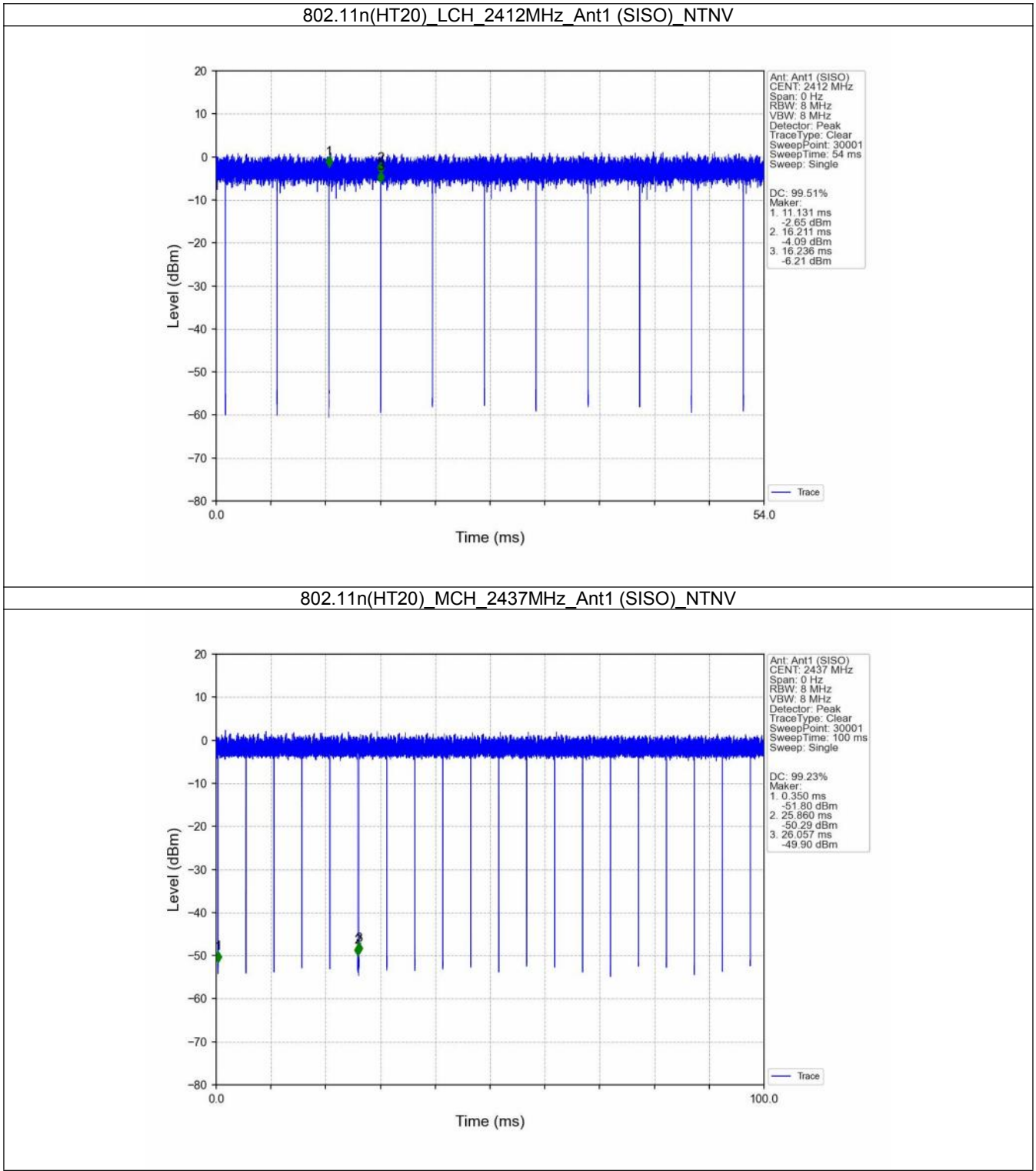
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



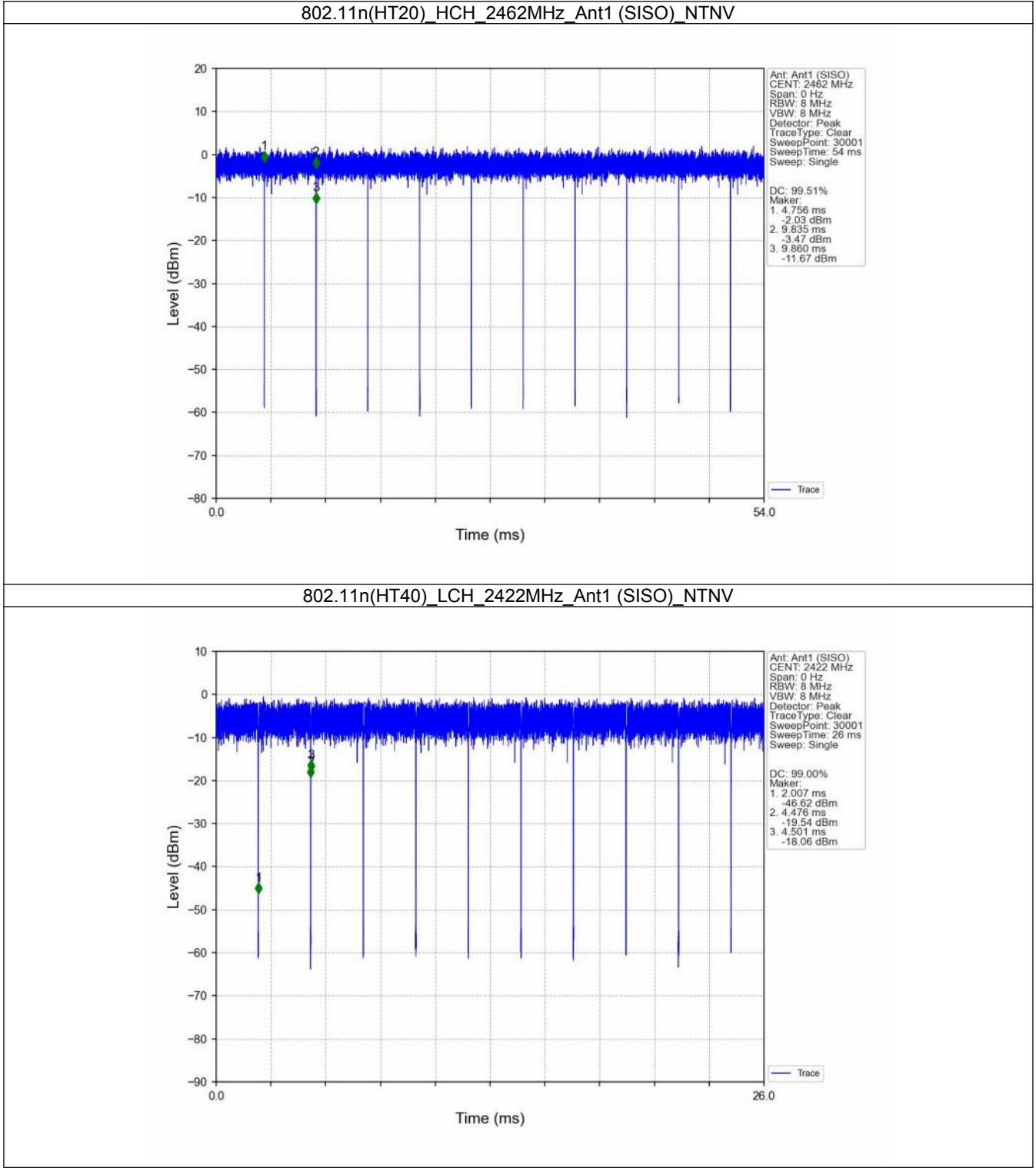
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



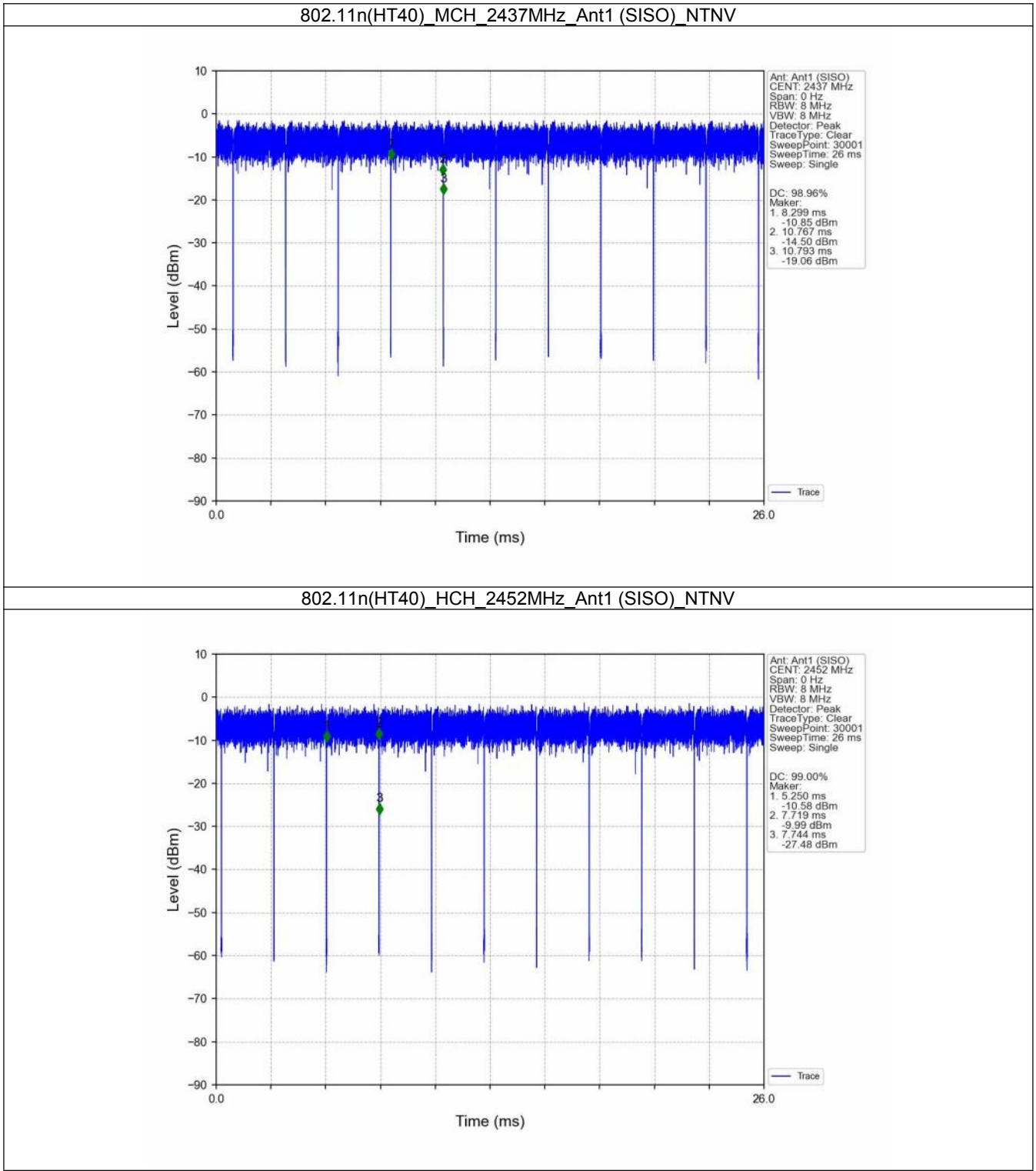
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FCC ID: 2AN5D-N1804



FCC ID: 2AN5D-N1804

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	12.927	/	Pass
		2437	1	12.974	/	Pass
		2462	1	12.799	/	Pass
802.11g	SISO	2412	1	16.923	/	Pass
		2437	1	16.942	/	Pass
		2462	1	16.829	/	Pass
802.11n (HT20)	SISO	2412	1	17.559	/	Pass
		2437	1	17.561	/	Pass
		2462	1	17.449	/	Pass
802.11n (HT40)	SISO	2422	1	35.474	/	Pass
		2437	1	35.847	/	Pass
		2452	1	35.872	/	Pass

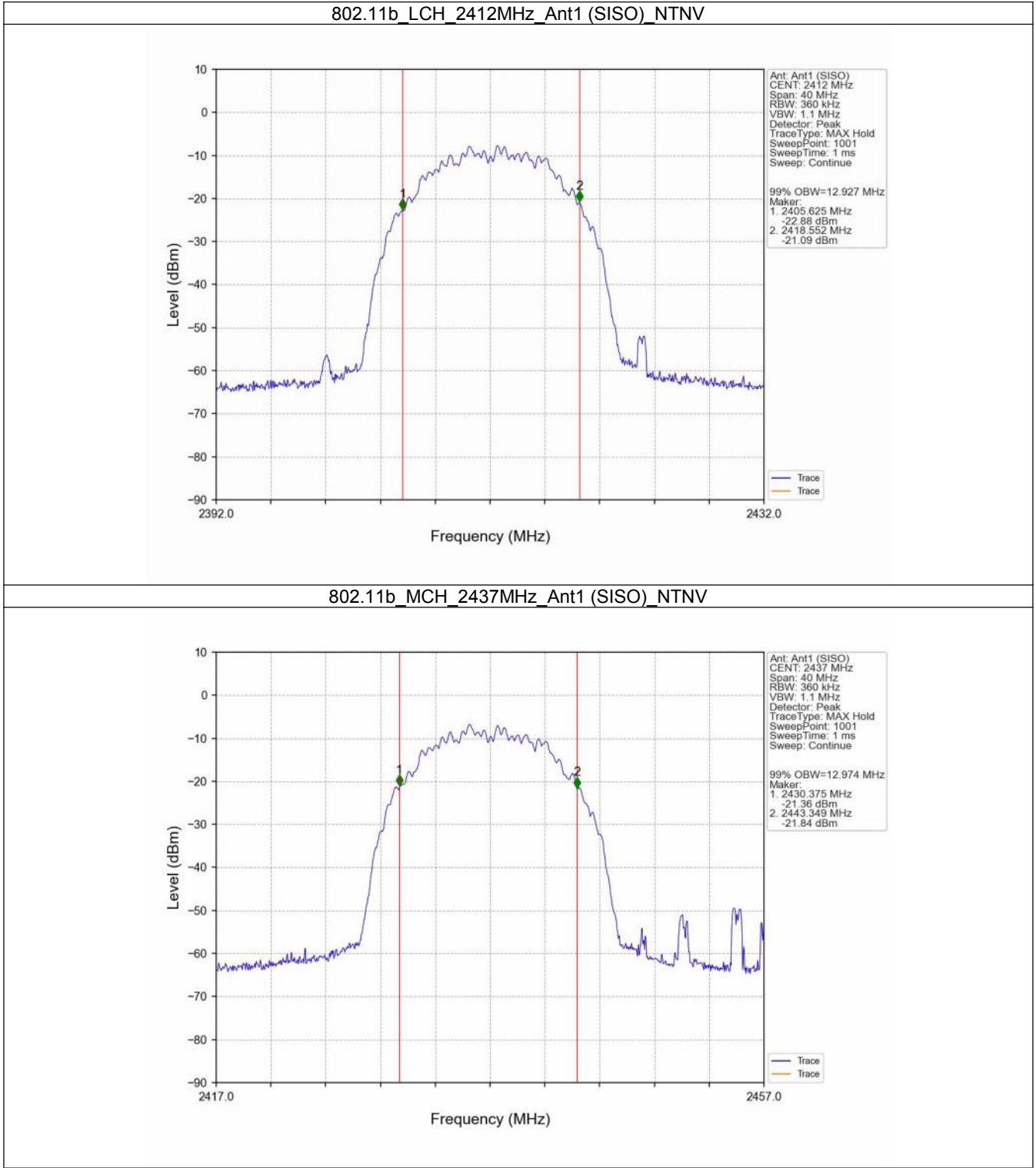
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	10.072	≥ 0.5	Pass
		2437	1	9.355	≥ 0.5	Pass
		2462	1	9.614	≥ 0.5	Pass
802.11g	SISO	2412	1	16.122	≥ 0.5	Pass
		2437	1	16.110	≥ 0.5	Pass
		2462	1	16.082	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	16.383	≥ 0.5	Pass
		2437	1	16.473	≥ 0.5	Pass
		2462	1	16.069	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	35.059	≥ 0.5	Pass
		2437	1	35.096	≥ 0.5	Pass
		2452	1	35.100	≥ 0.5	Pass

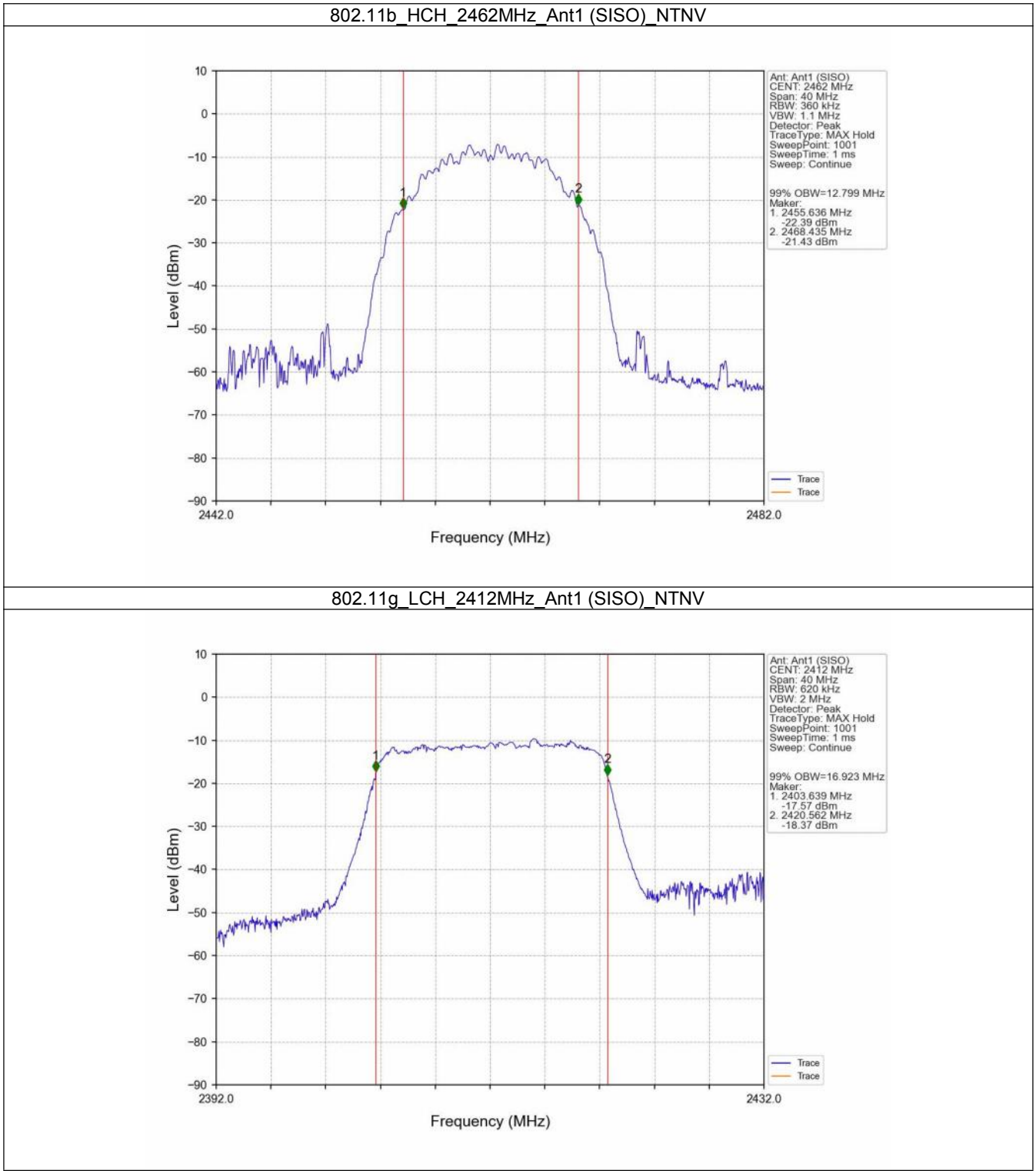
FCC ID: 2AN5D-N1804

2.2 Test Graph

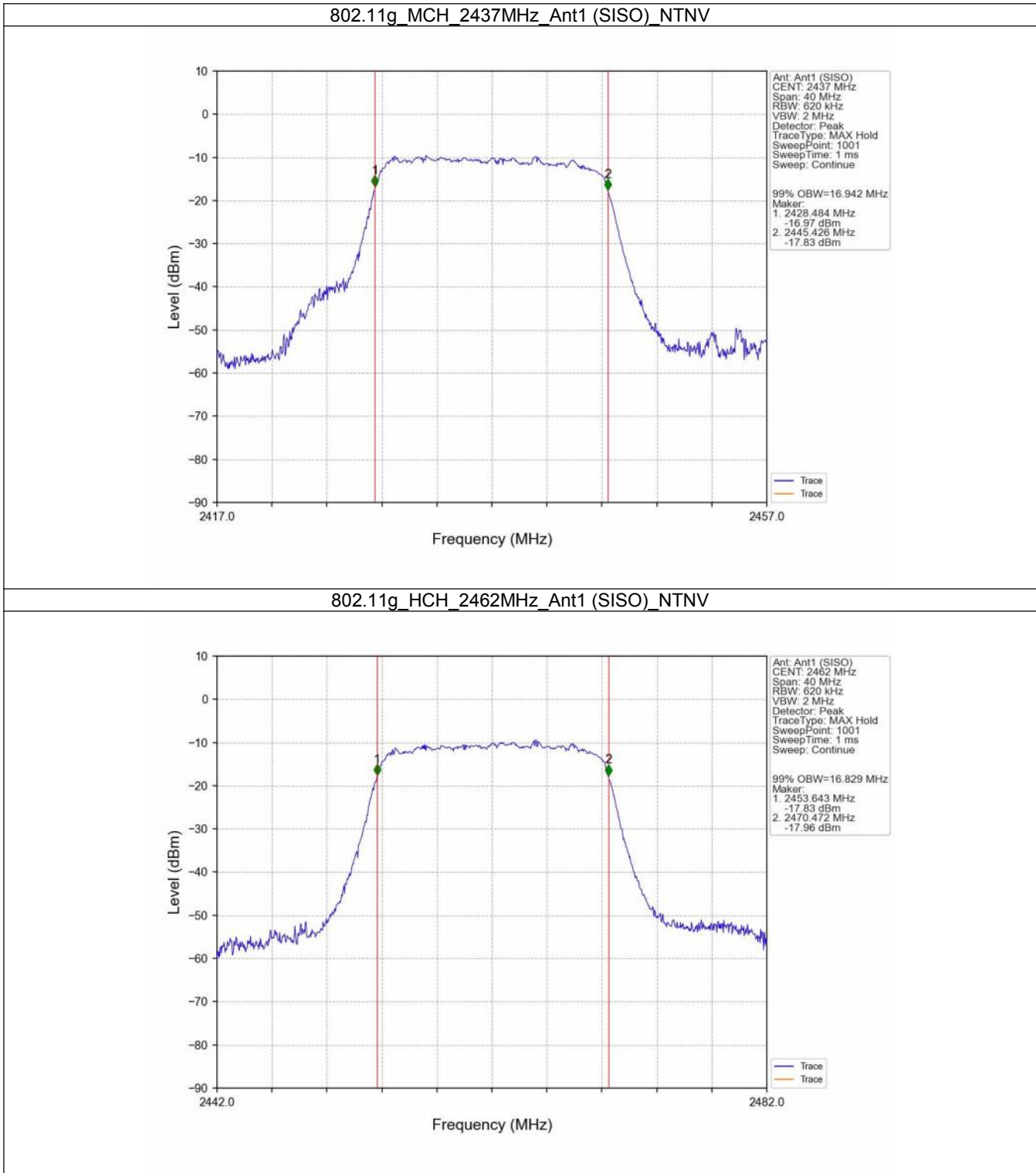
2.2.1 OBW



FCC ID: 2AN5D-N1804

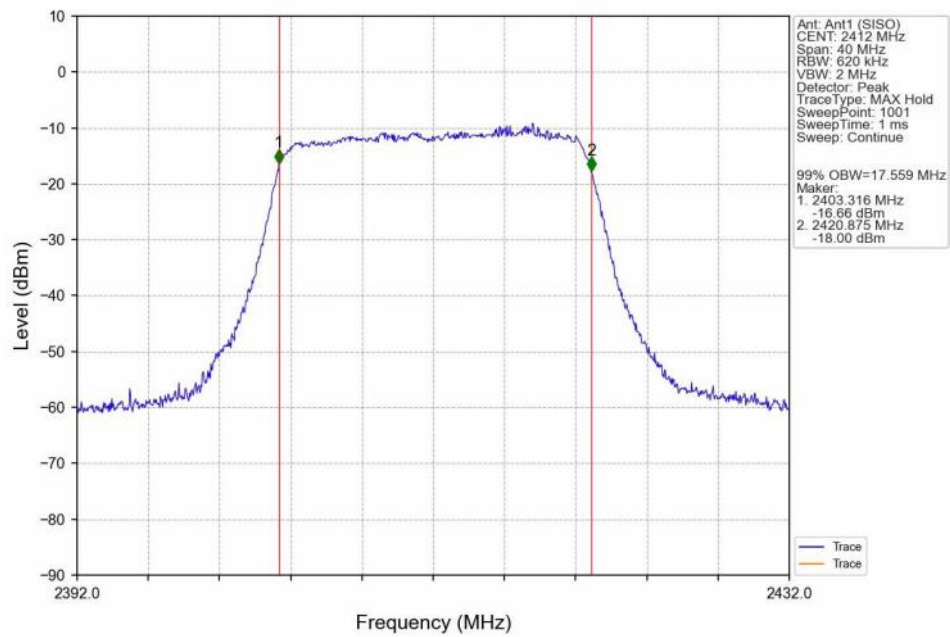


FCC ID: 2AN5D-N1804

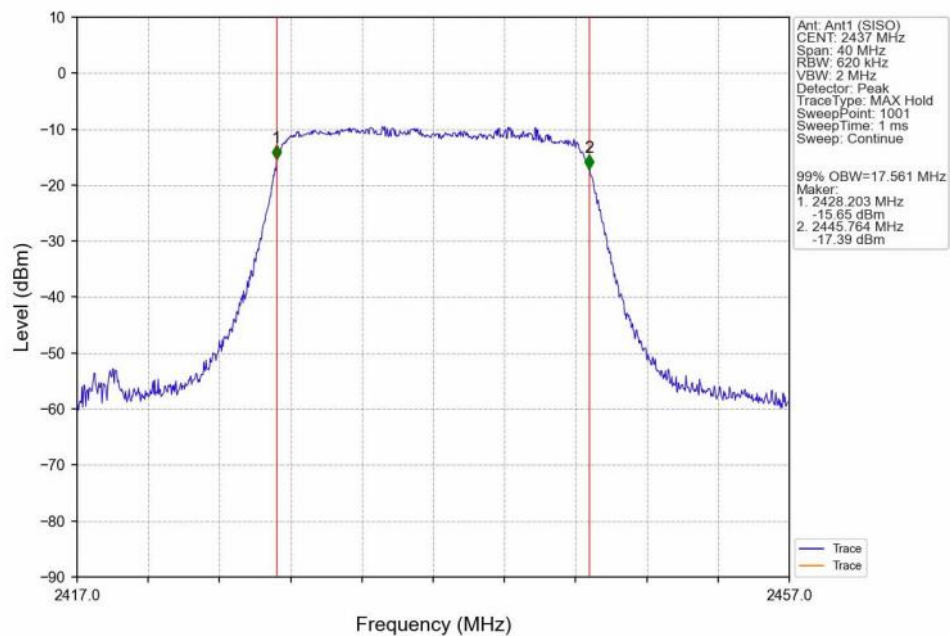


FCC ID: 2AN5D-N1804

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

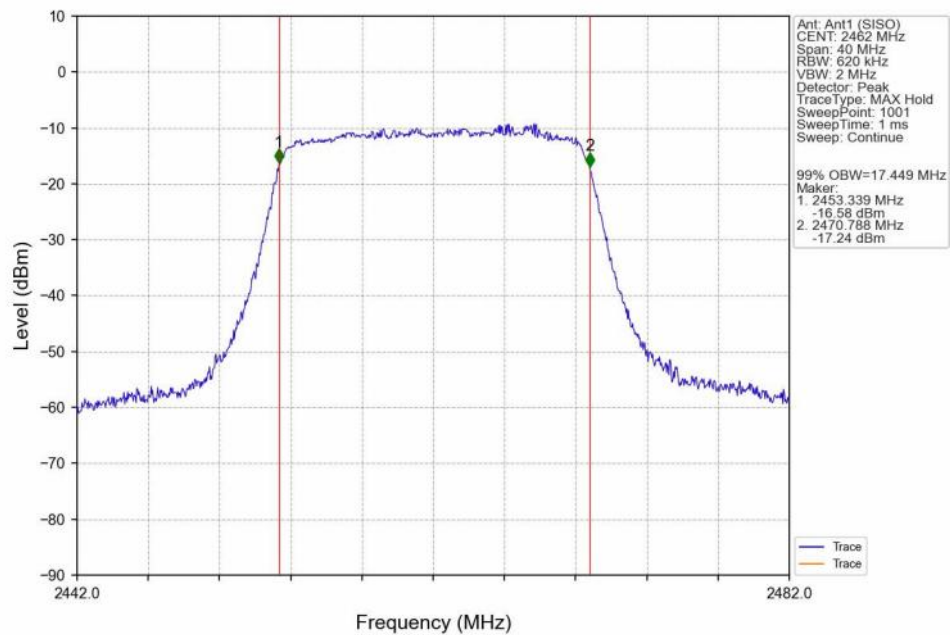


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

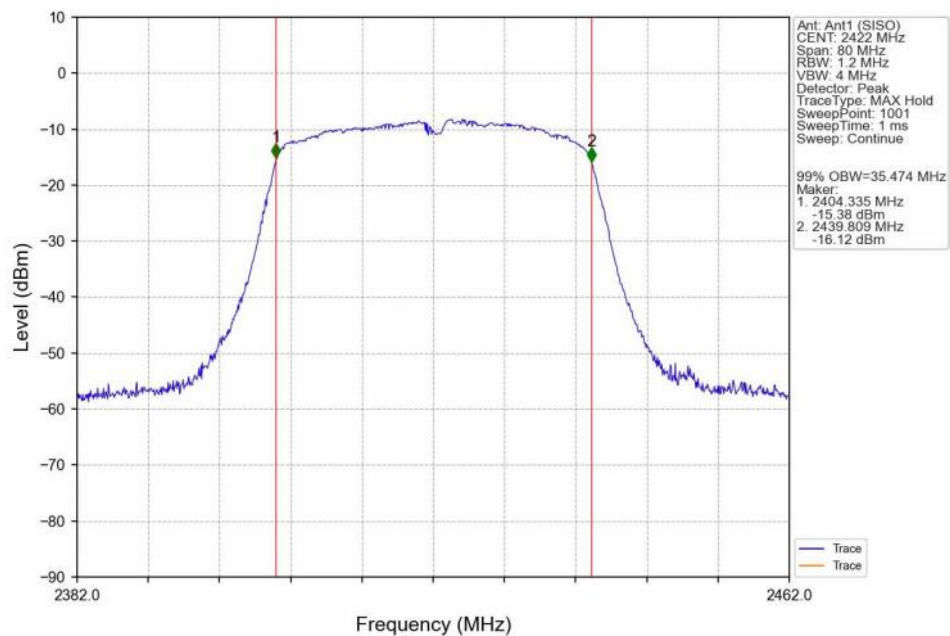


FCC ID: 2AN5D-N1804

802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

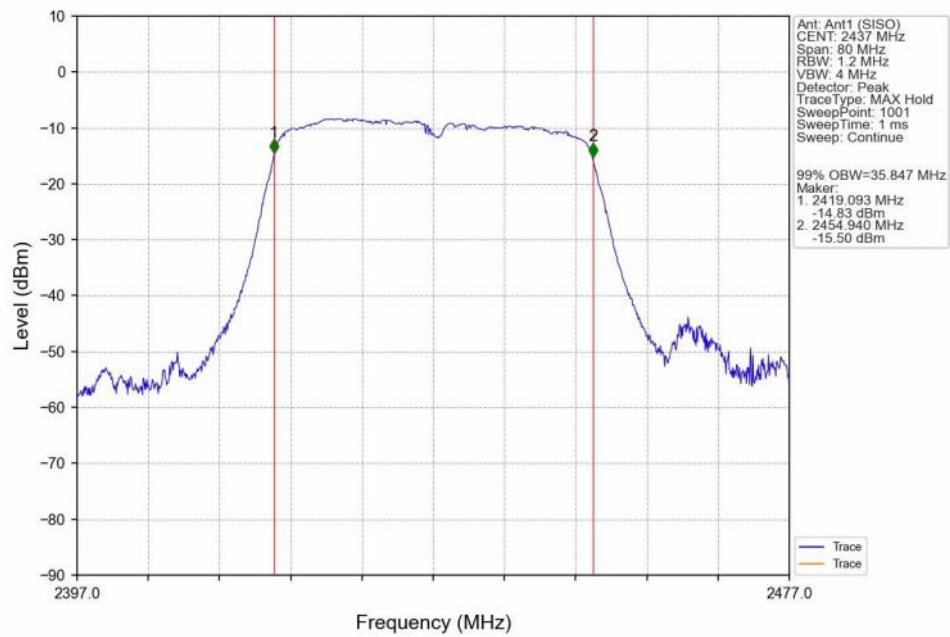


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

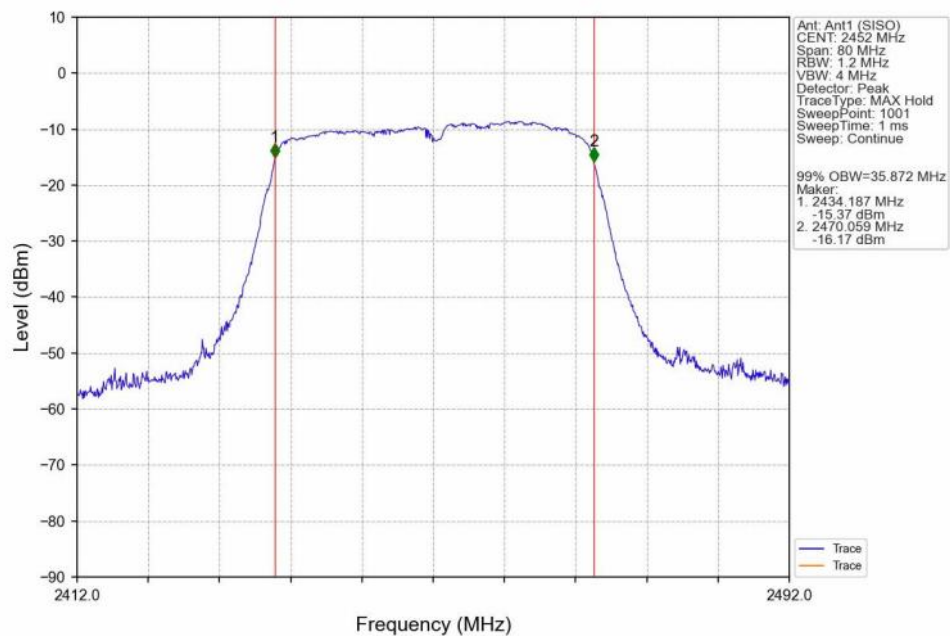


FCC ID: 2AN5D-N1804

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

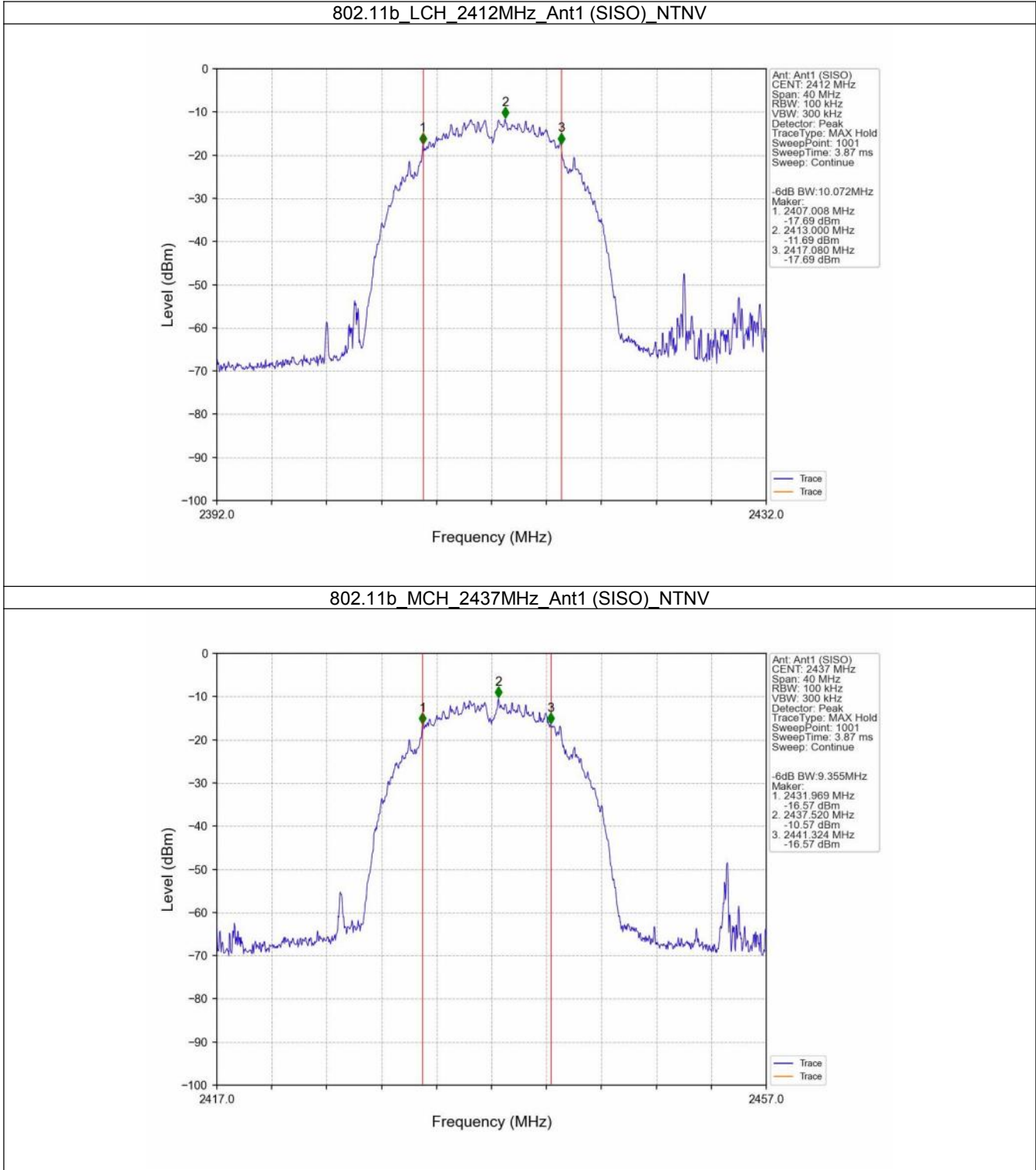


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

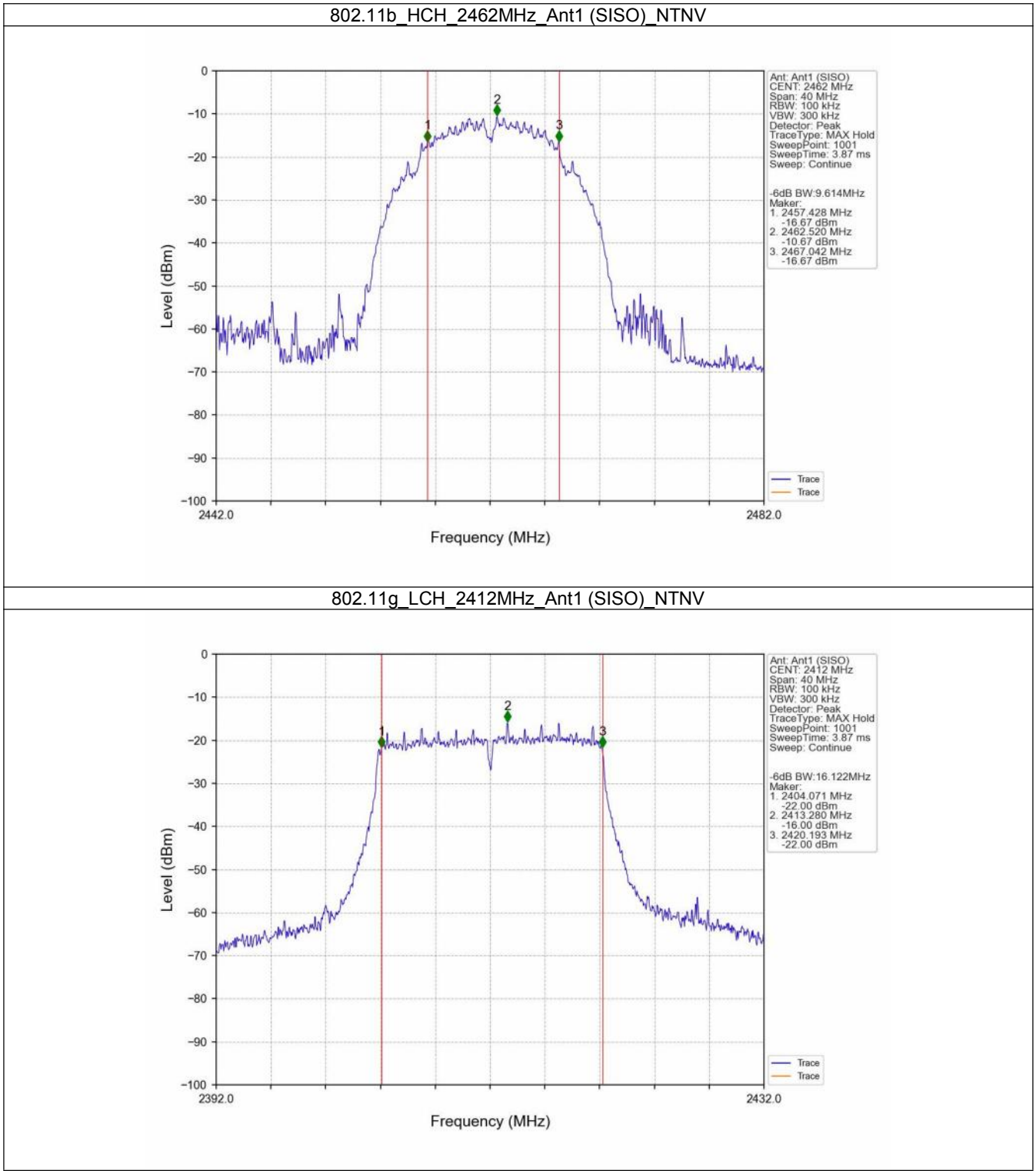


FCC ID: 2AN5D-N1804

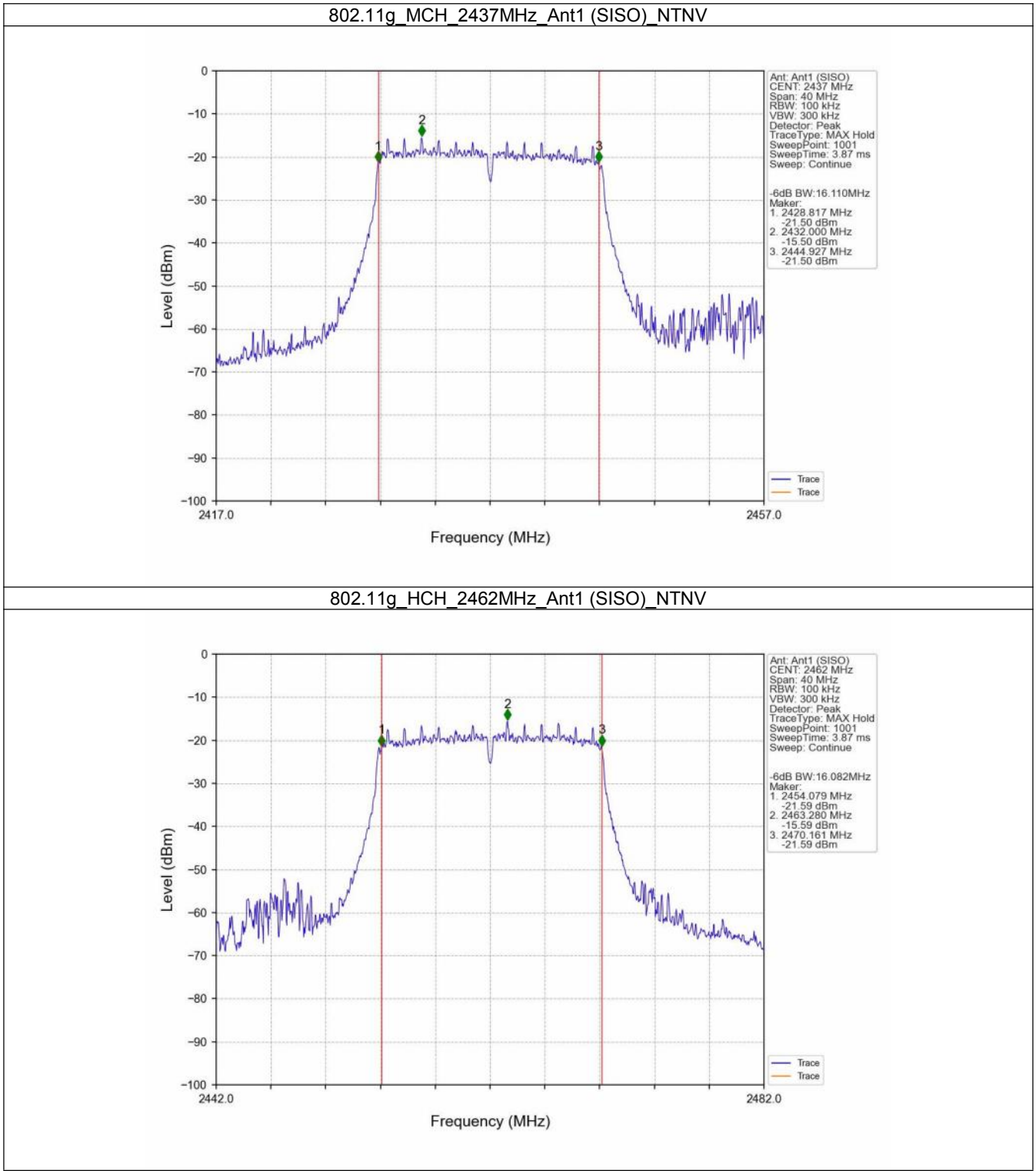
2.2.2 6dB BW



FCC ID: 2AN5D-N1804

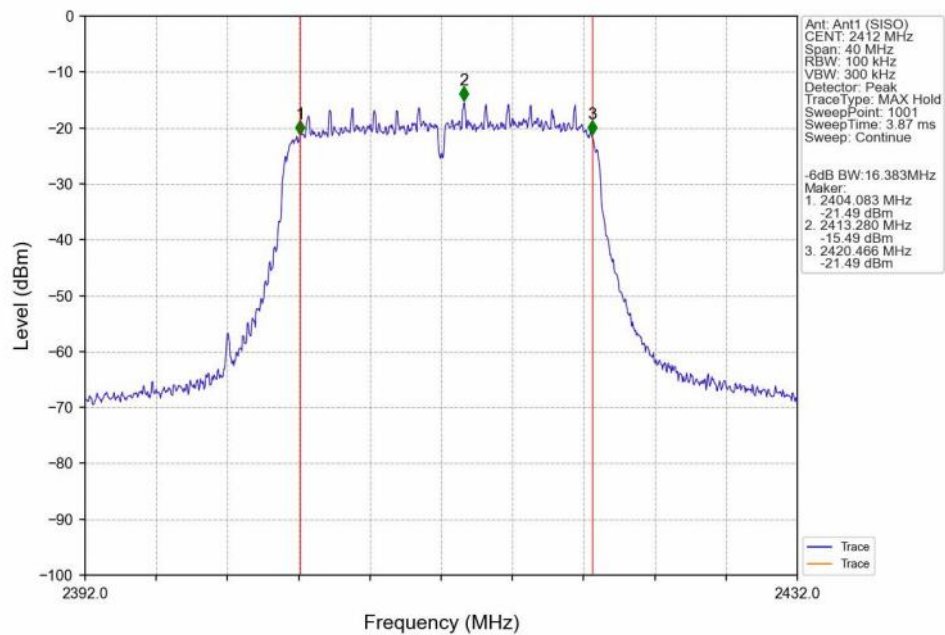


FCC ID: 2AN5D-N1804

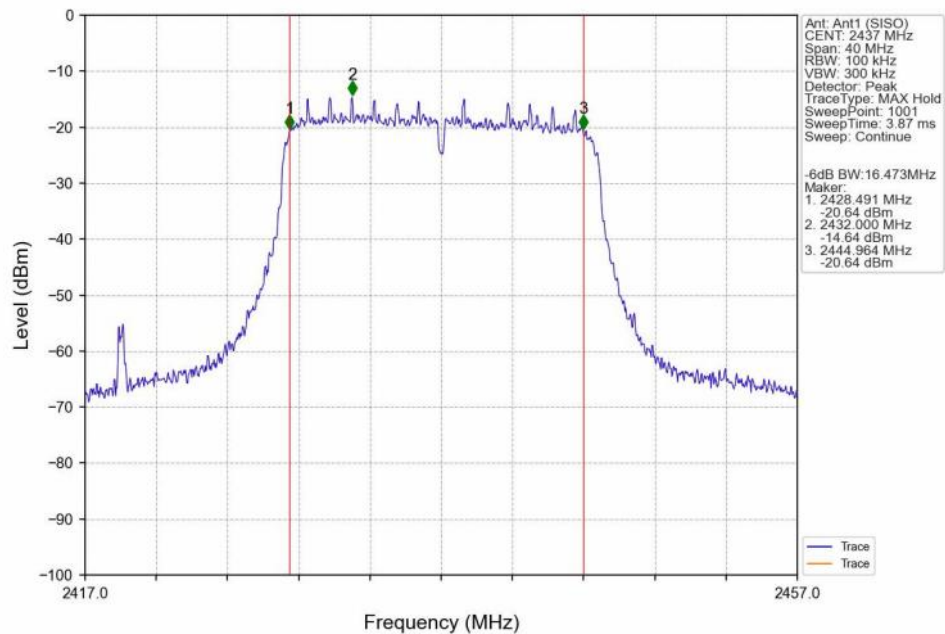


FCC ID: 2AN5D-N1804

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

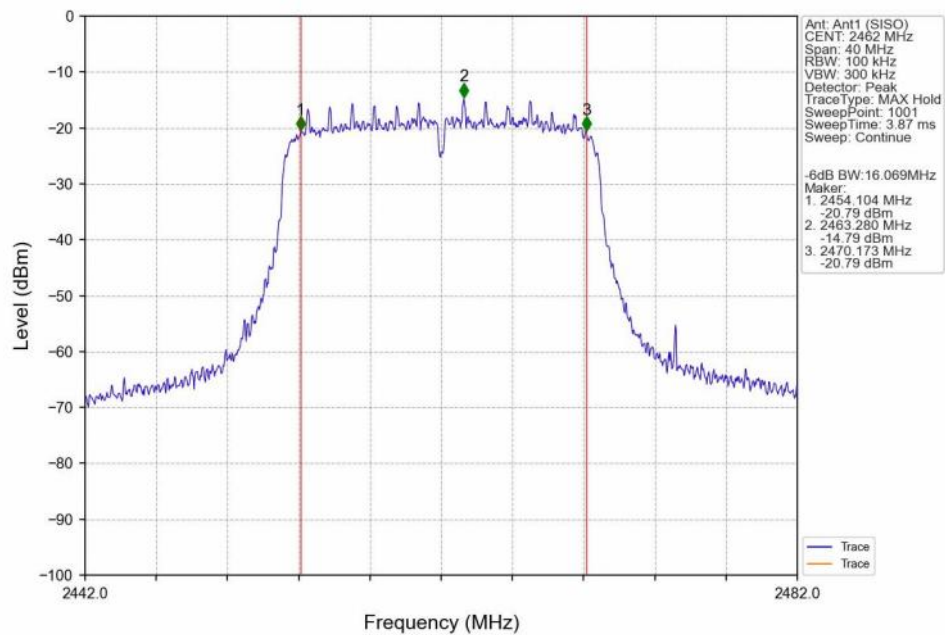


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

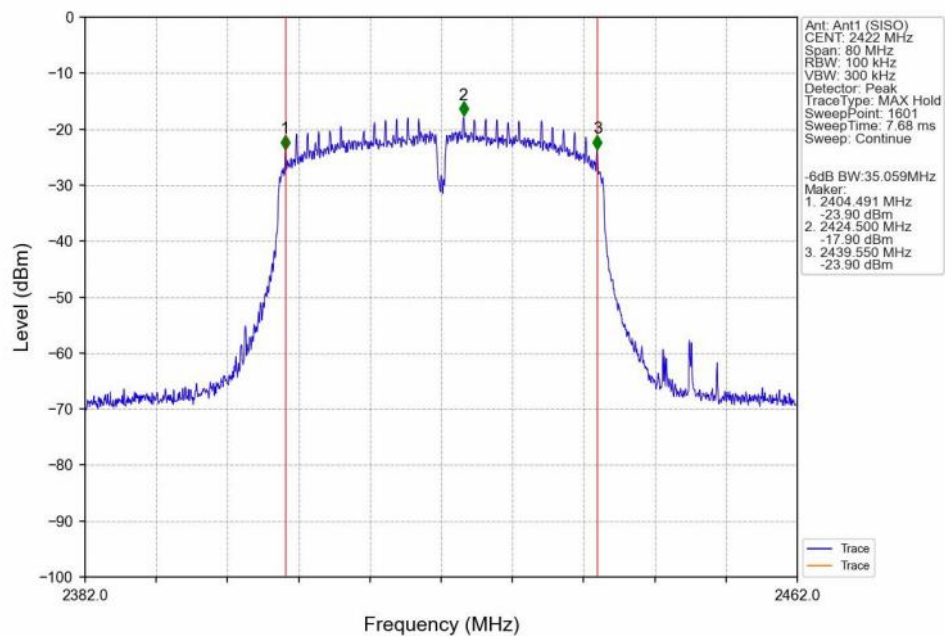


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

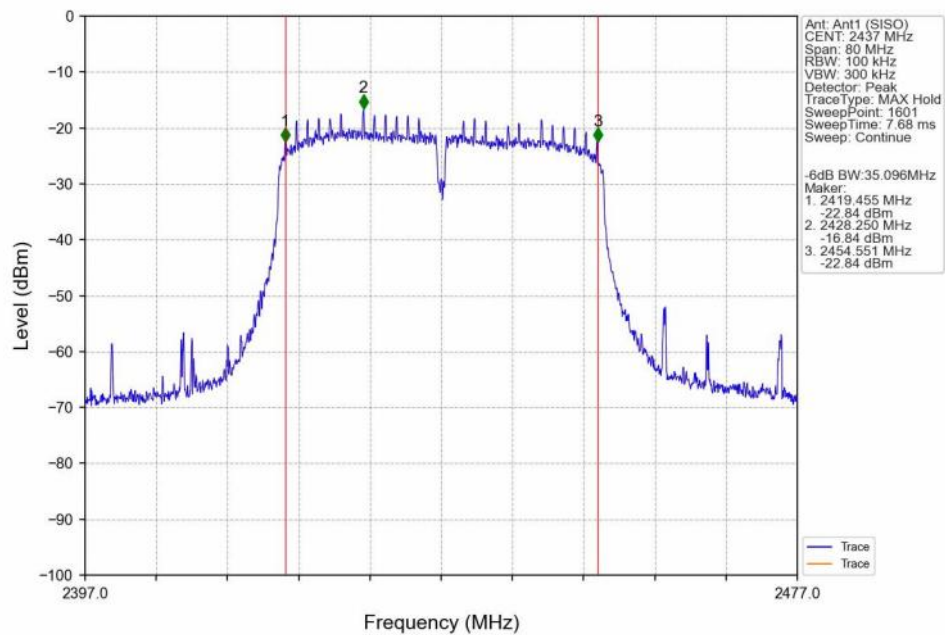


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

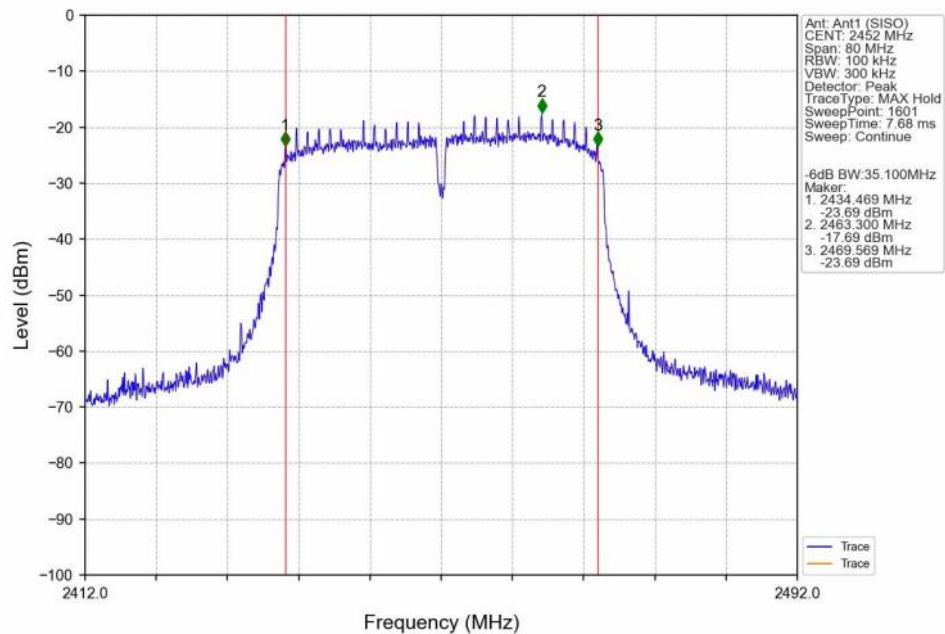


FCC ID: 2AN5D-N1804

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2AN5D-N1804

3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

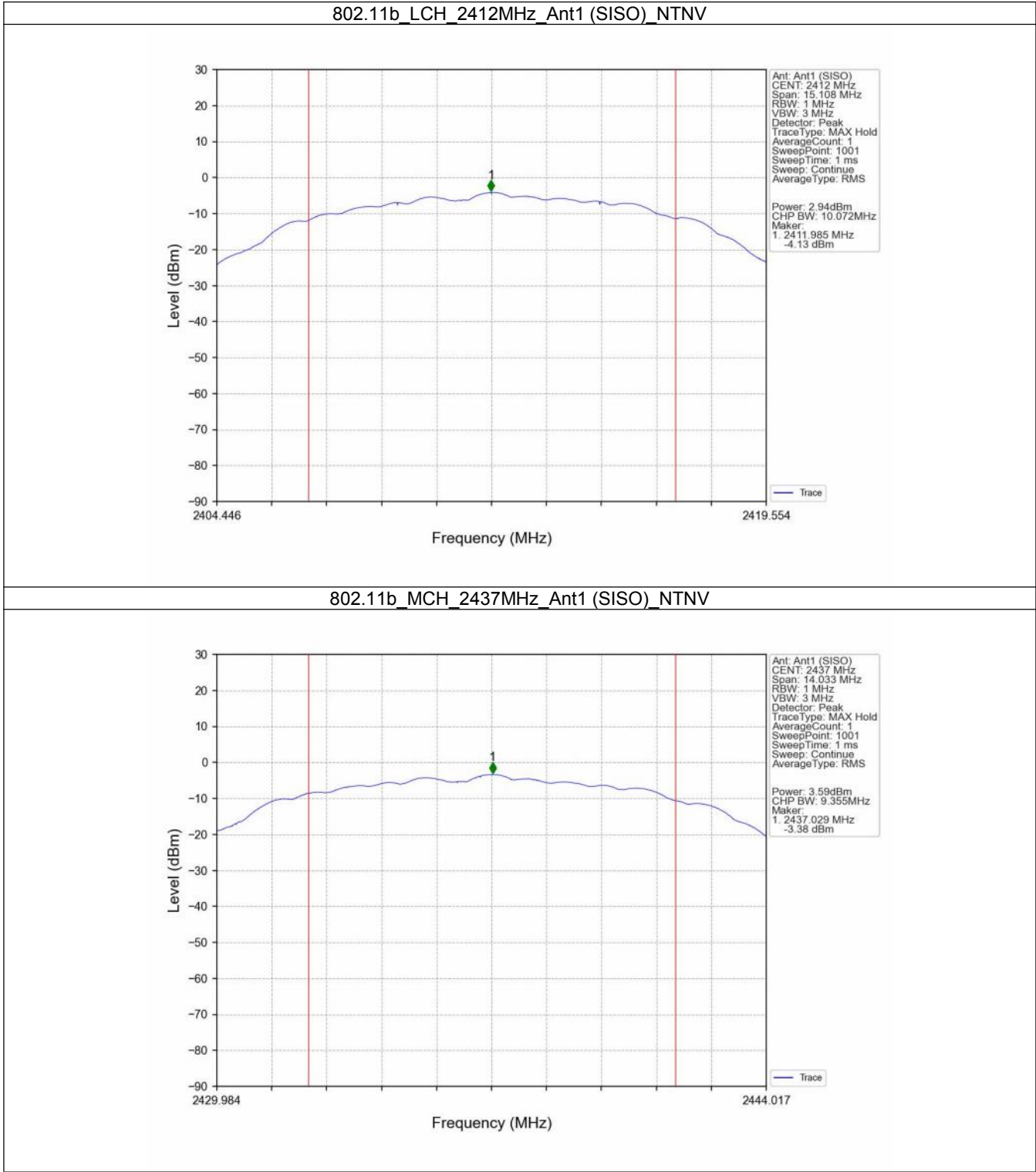
Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	2.94	<=30	Pass
		2437	3.59	<=30	Pass
		2462	3.39	<=30	Pass
802.11g	SISO	2412	2.68	<=30	Pass
		2437	3.09	<=30	Pass
		2462	2.86	<=30	Pass
802.11n (HT20)	SISO	2412	2.90	<=30	Pass
		2437	3.72	<=30	Pass
		2462	3.29	<=30	Pass
802.11n (HT40)	SISO	2422	3.70	<=30	Pass
		2437	3.90	<=30	Pass
		2452	3.48	<=30	Pass

Note1: Antenna Gain: Ant1: -3.35dBi;

FCC ID: 2AN5D-N1804

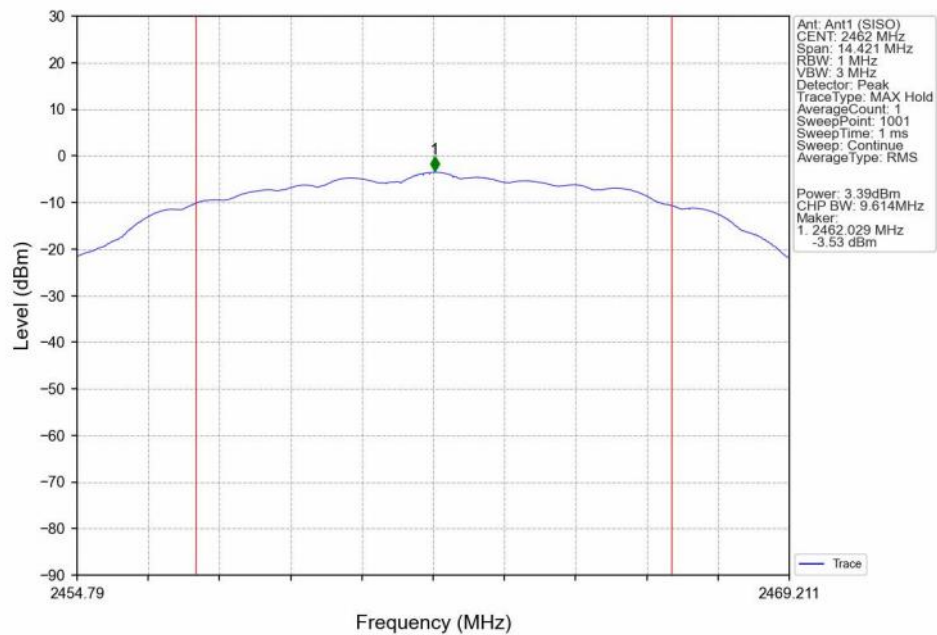
3.2 Test Graph

3.2.1 Power

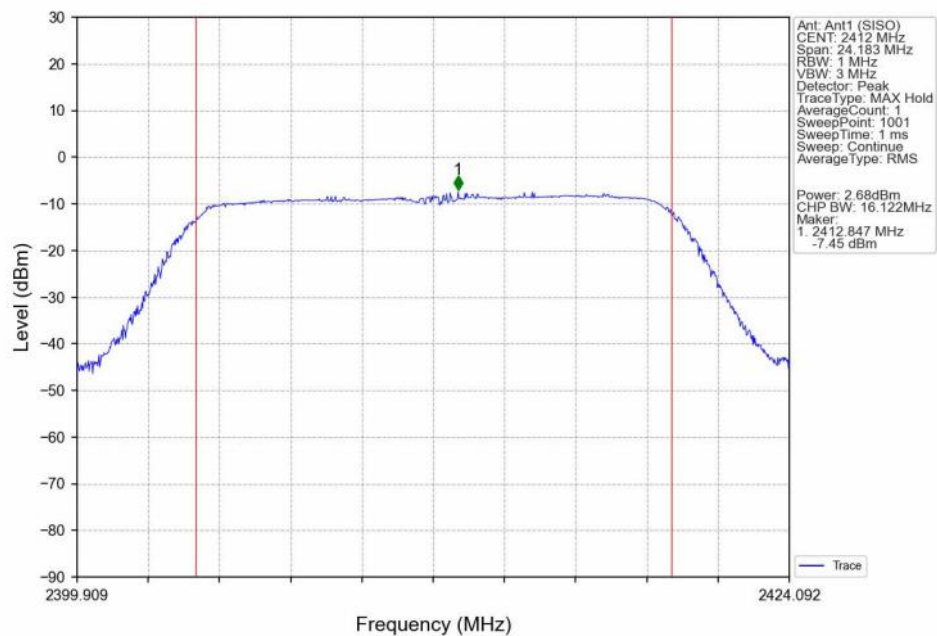


FCC ID: 2AN5D-N1804

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

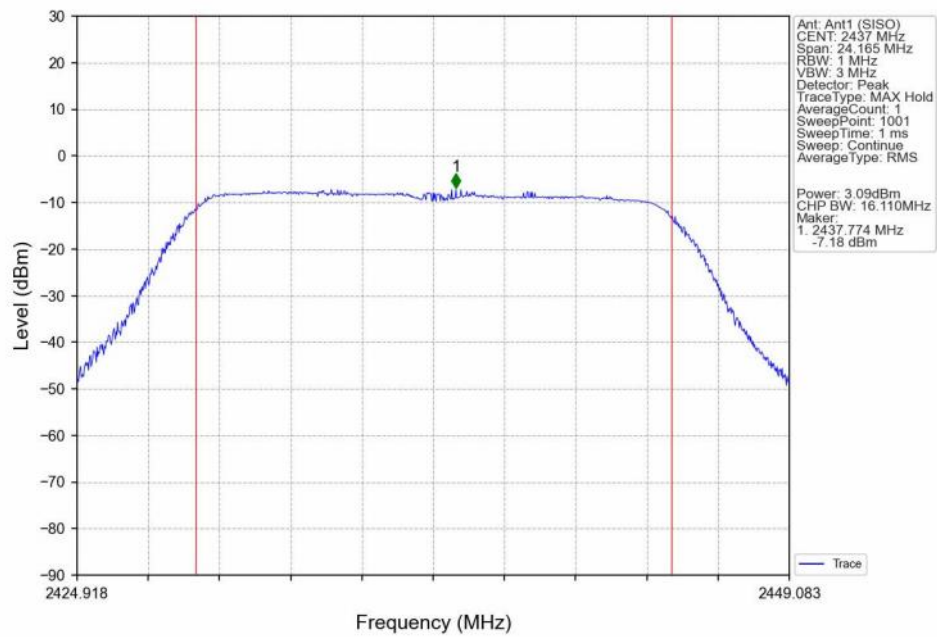


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

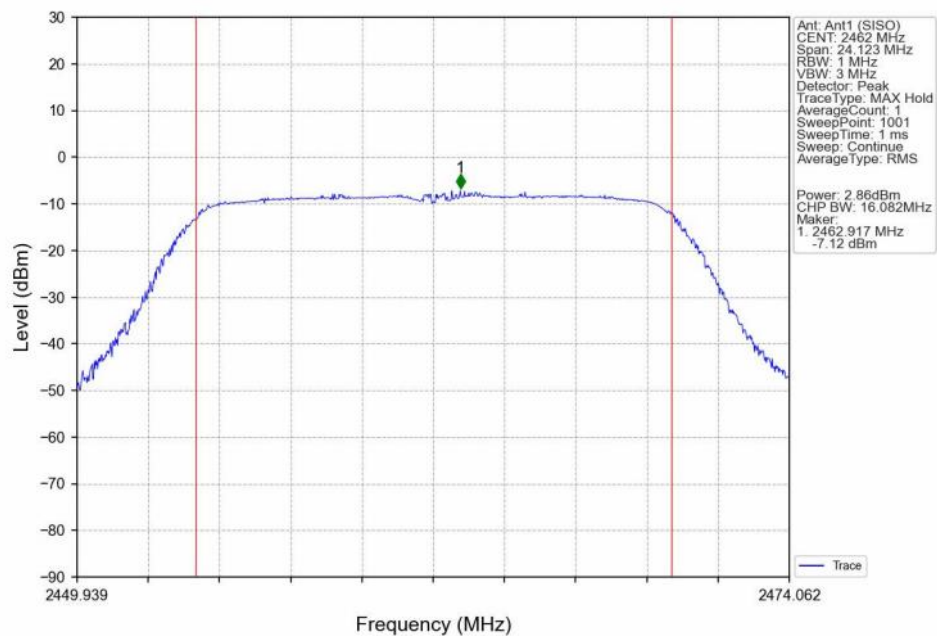


FCC ID: 2AN5D-N1804

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

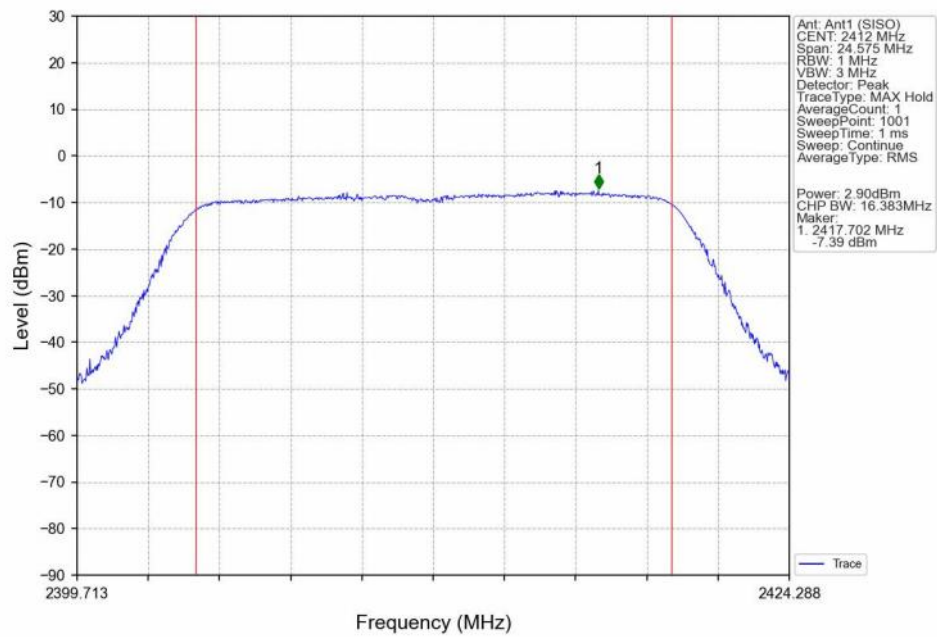


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

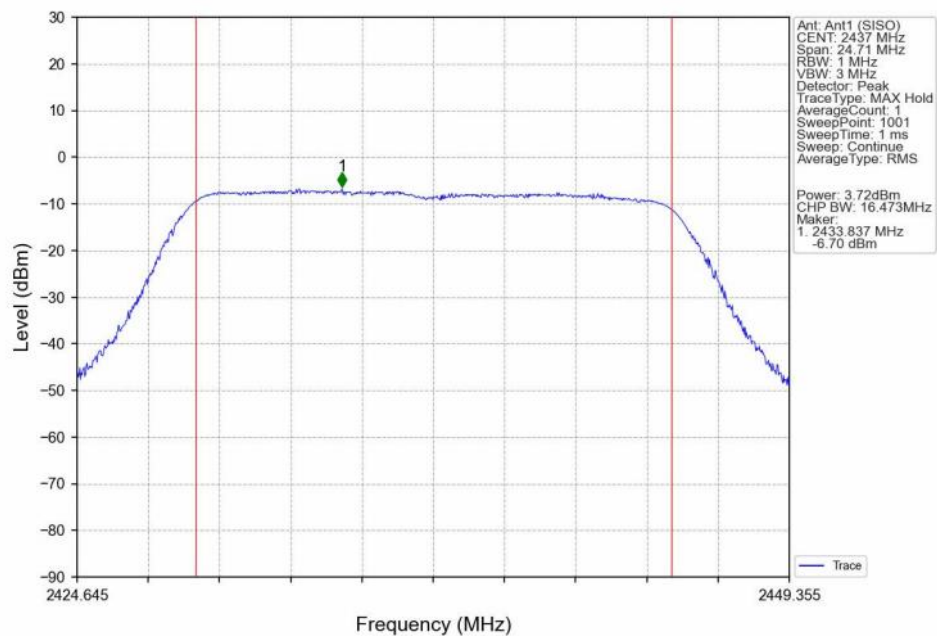


FCC ID: 2AN5D-N1804

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

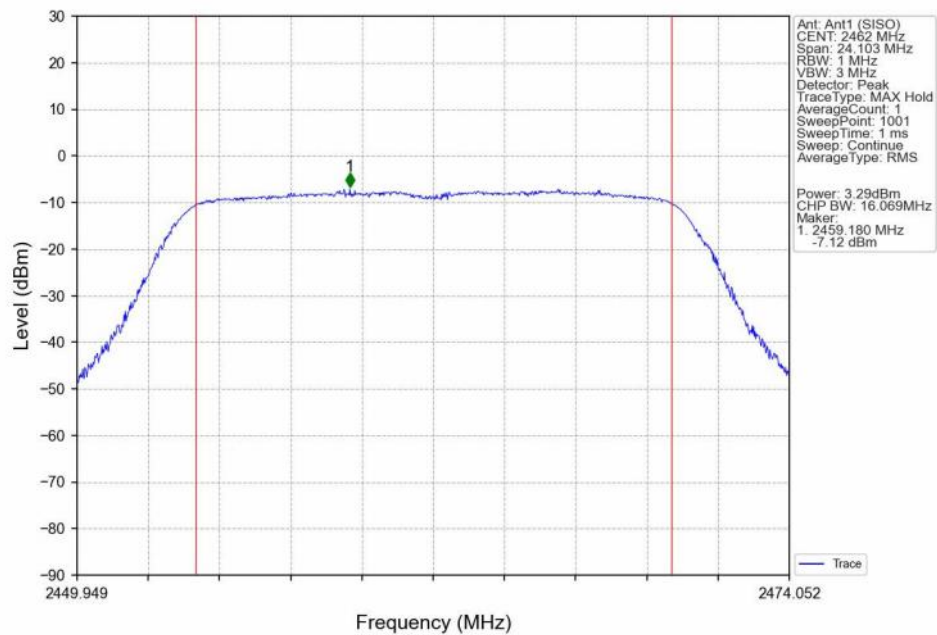


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

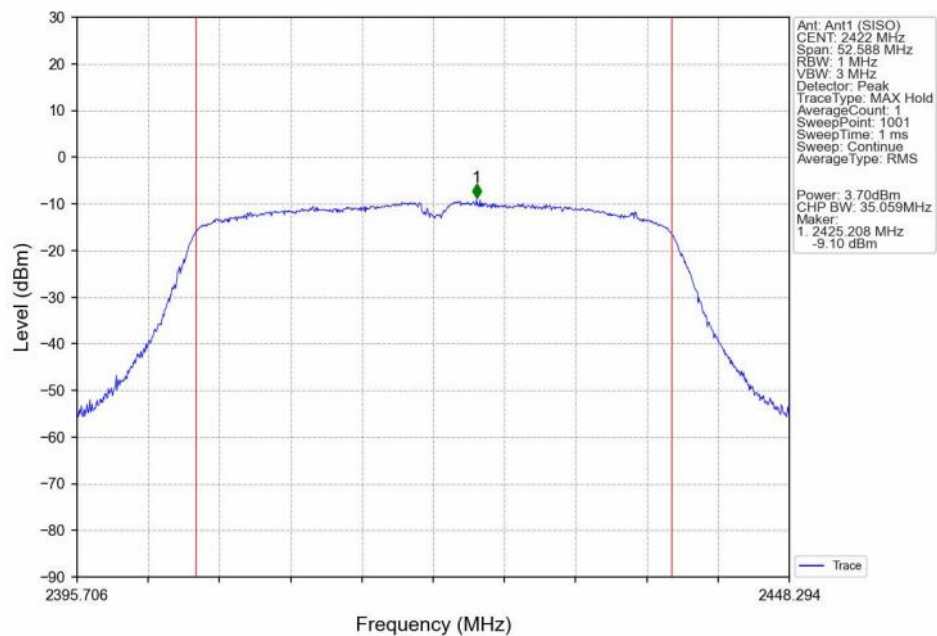


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

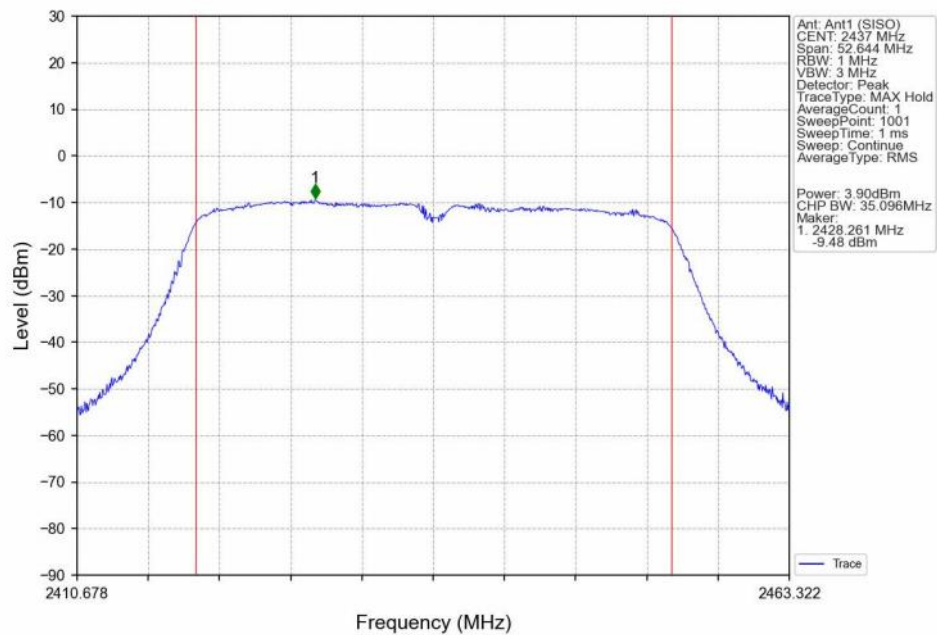


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

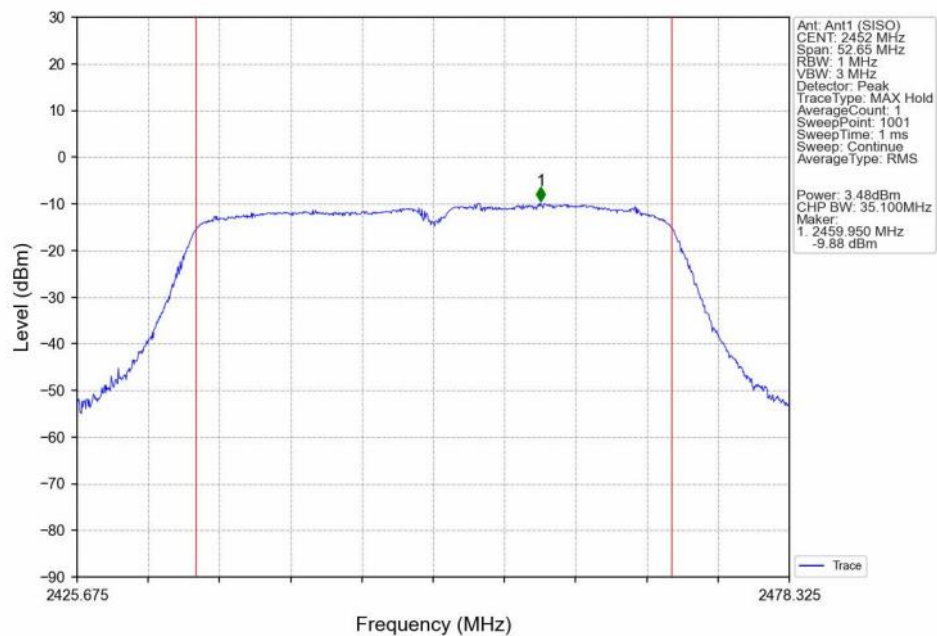


FCC ID: 2AN5D-N1804

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2AN5D-N1804

4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

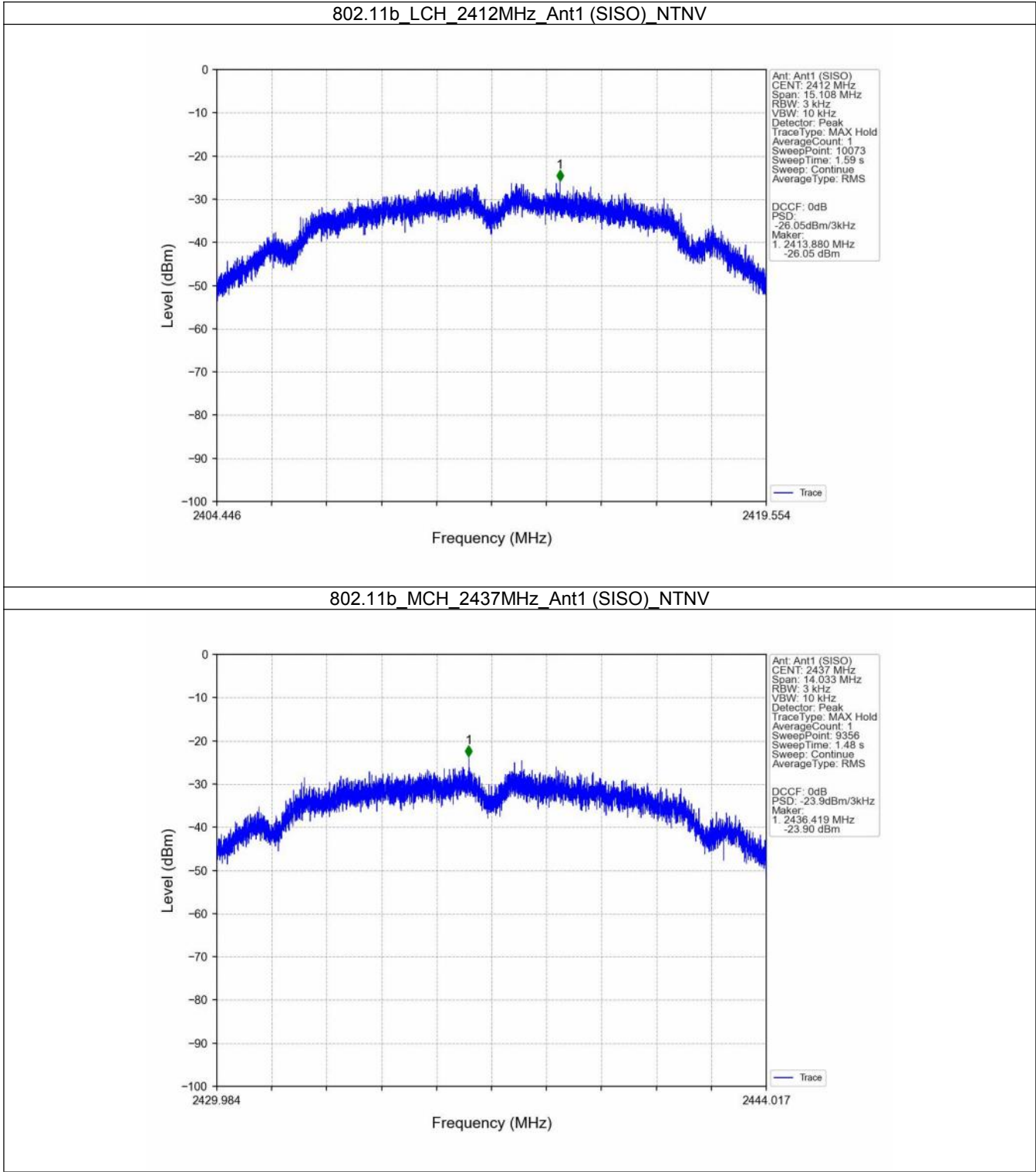
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-26.05	<=8	Pass
		2437	-23.90	<=8	Pass
		2462	-25.36	<=8	Pass
802.11g	SISO	2412	-30.05	<=8	Pass
		2437	-29.54	<=8	Pass
		2462	-29.53	<=8	Pass
802.11n (HT20)	SISO	2412	-29.41	<=8	Pass
		2437	-28.16	<=8	Pass
		2462	-28.72	<=8	Pass
802.11n (HT40)	SISO	2422	-30.42	<=8	Pass
		2437	-30.45	<=8	Pass
		2452	-31.56	<=8	Pass

Note1: Antenna Gain: Ant1: -3.35dBi;

FCC ID: 2AN5D-N1804

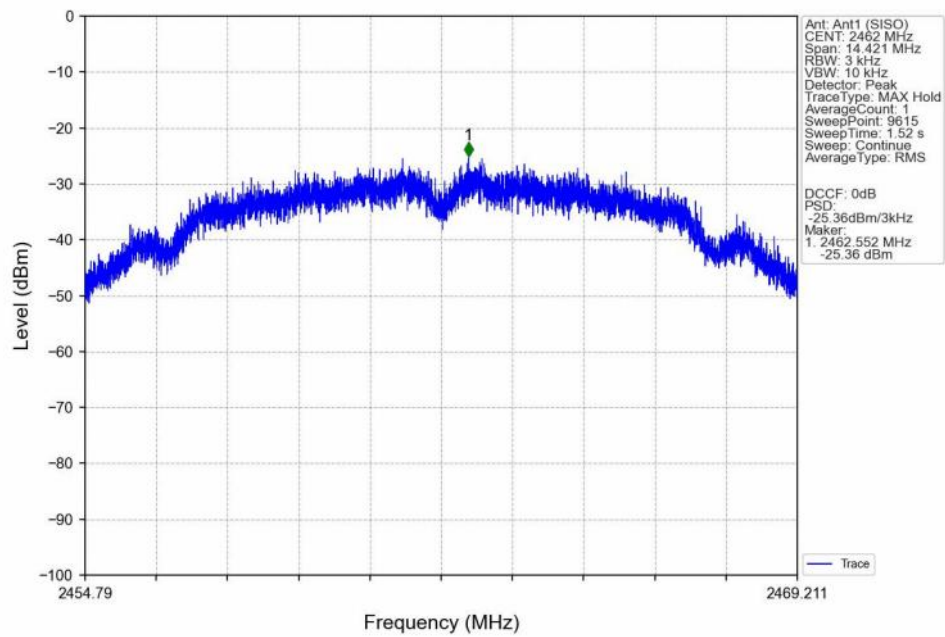
4.2 Test Graph

4.2.1 PSD

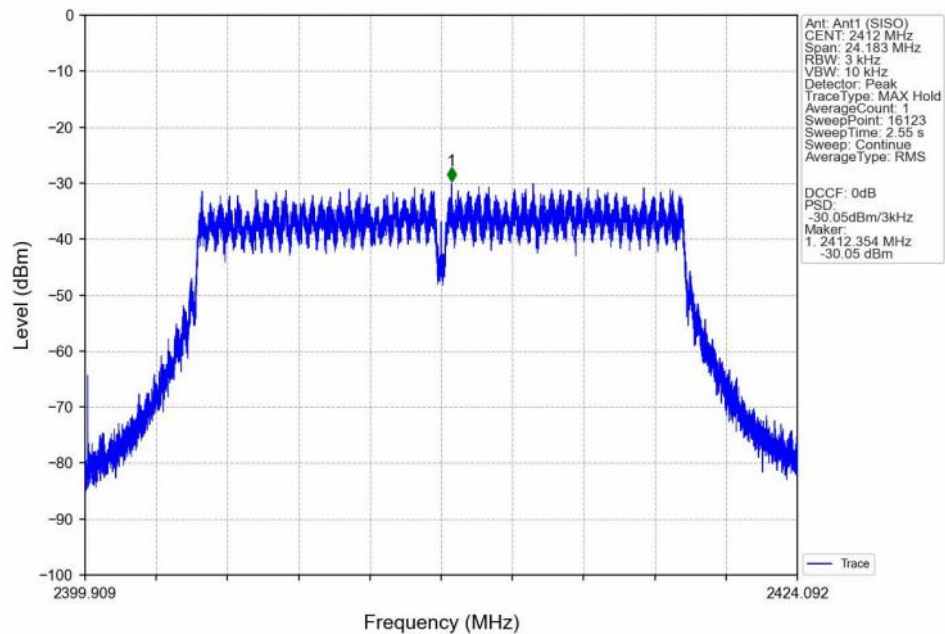


FCC ID: 2AN5D-N1804

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

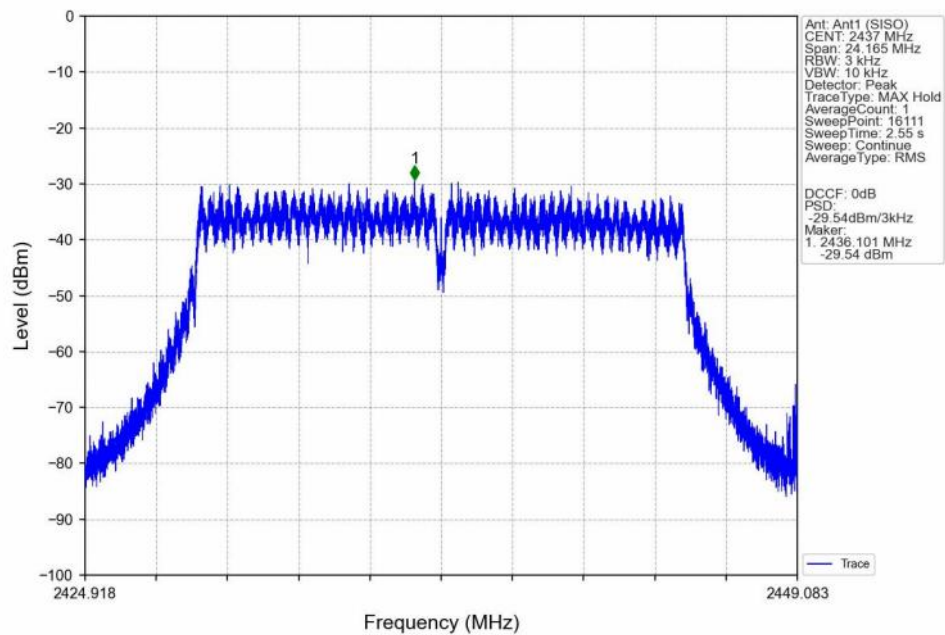


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

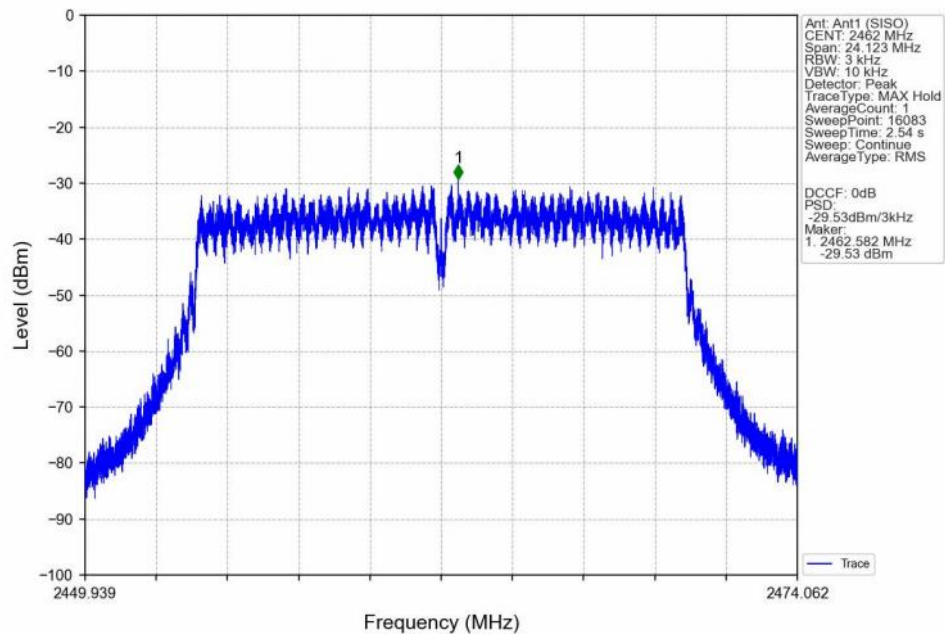


FCC ID: 2AN5D-N1804

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

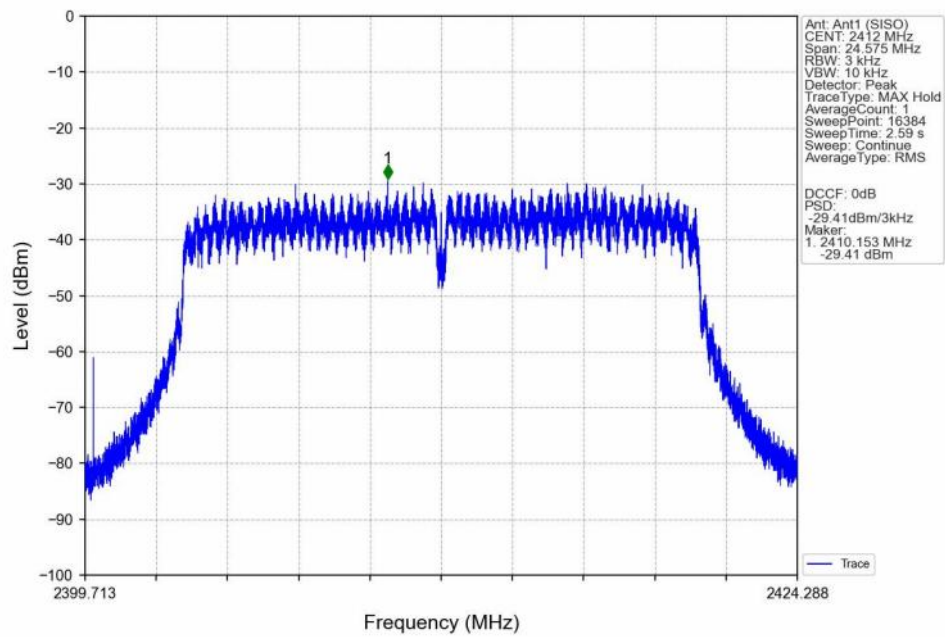


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

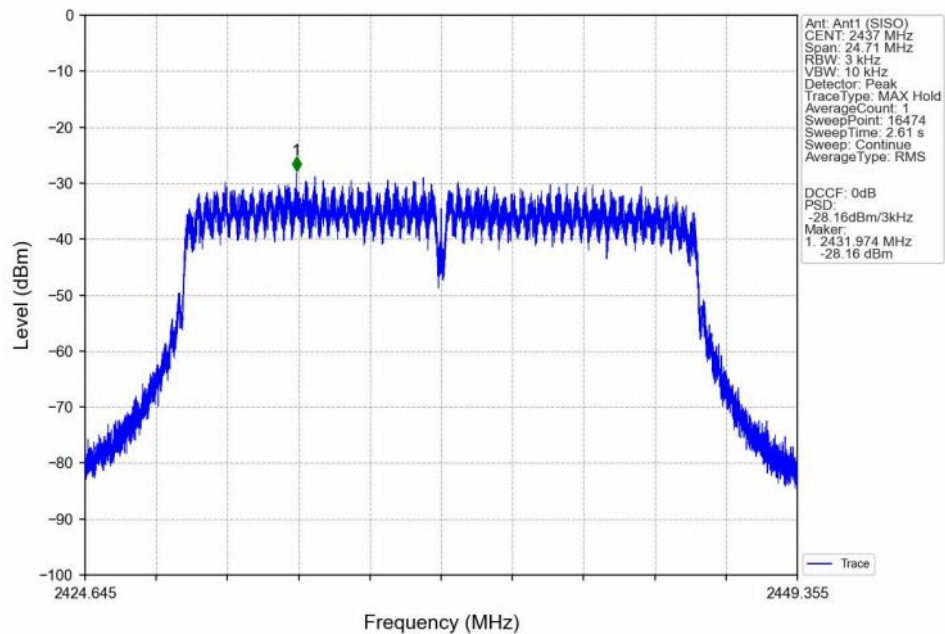


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

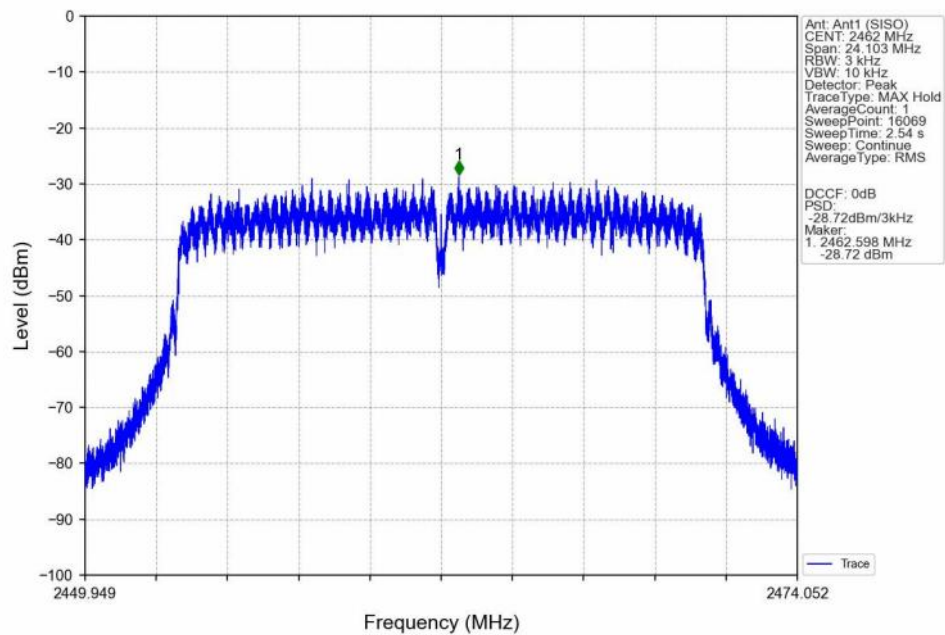


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

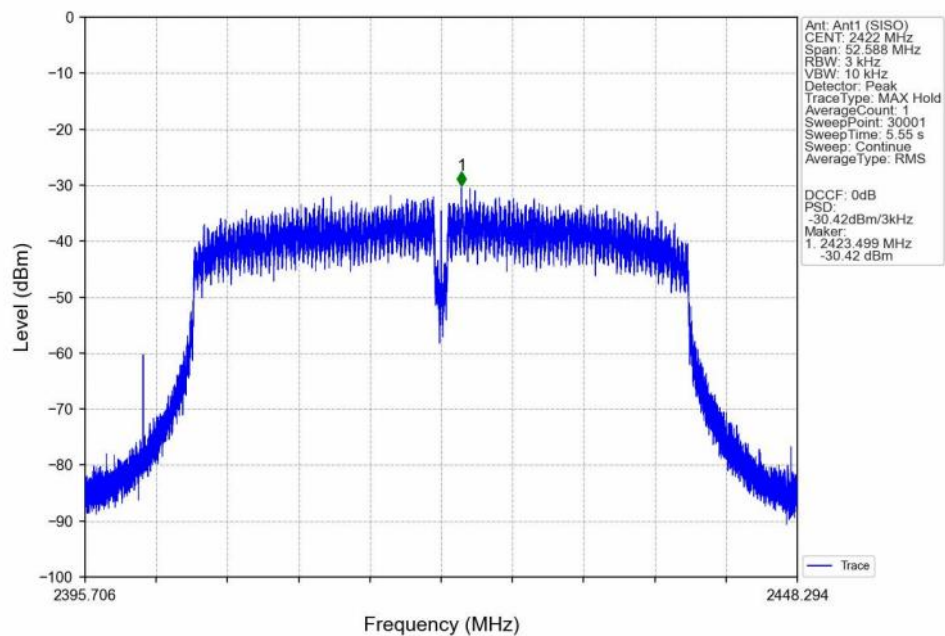


FCC ID: 2AN5D-N1804

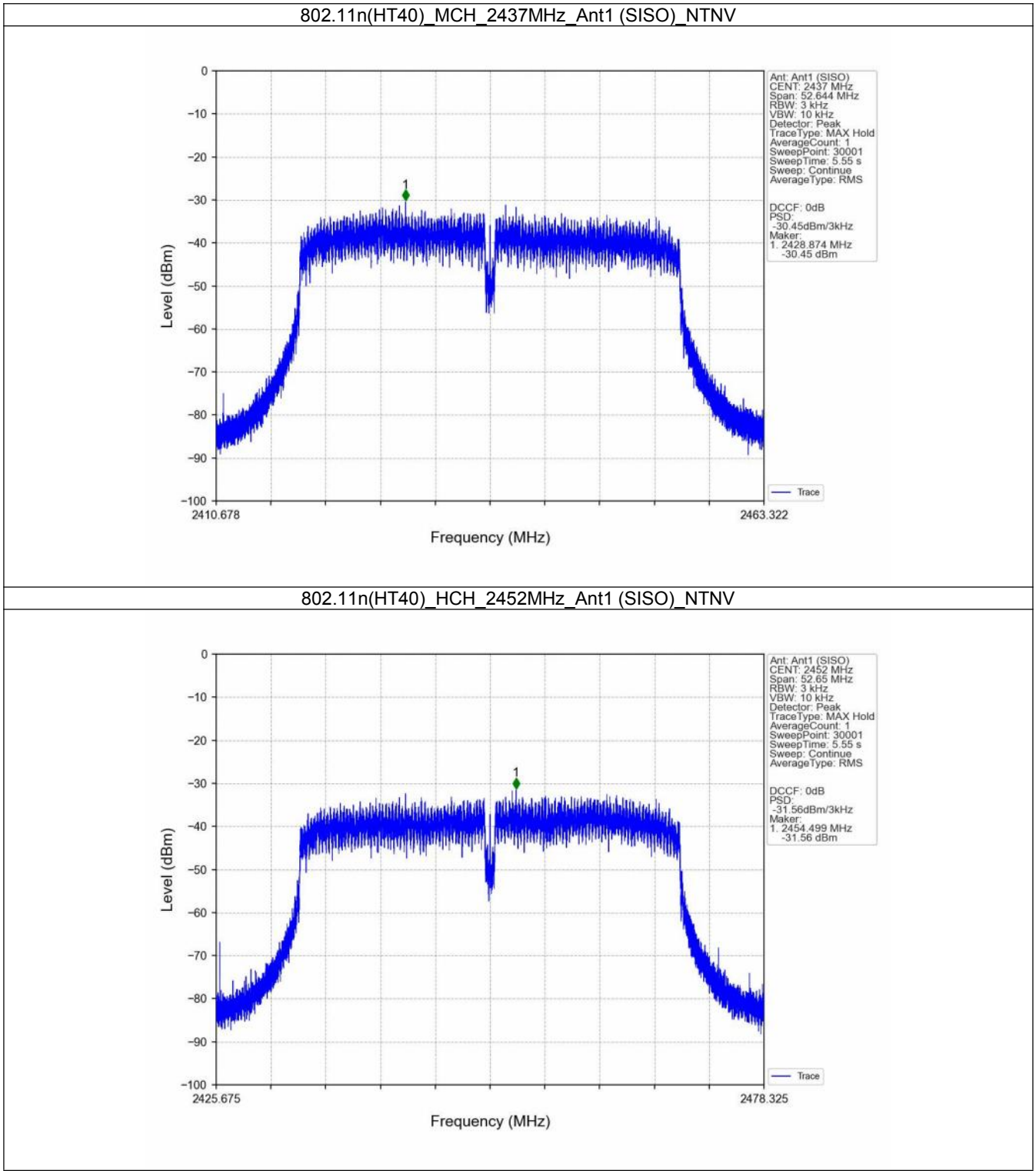
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



FCC ID: 2AN5D-N1804



FCC ID: 2AN5D-N1804

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	-11.95
		2437	1	-11.19
		2462	1	-11.58
802.11g	SISO	2412	1	-16.17
		2437	1	-15.80
		2462	1	-15.68
802.11n (HT20)	SISO	2412	1	-16.07
		2437	1	-14.54
		2462	1	-14.75
802.11n (HT40)	SISO	2422	1	-17.67
		2437	1	-17.15
		2452	1	-17.55

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

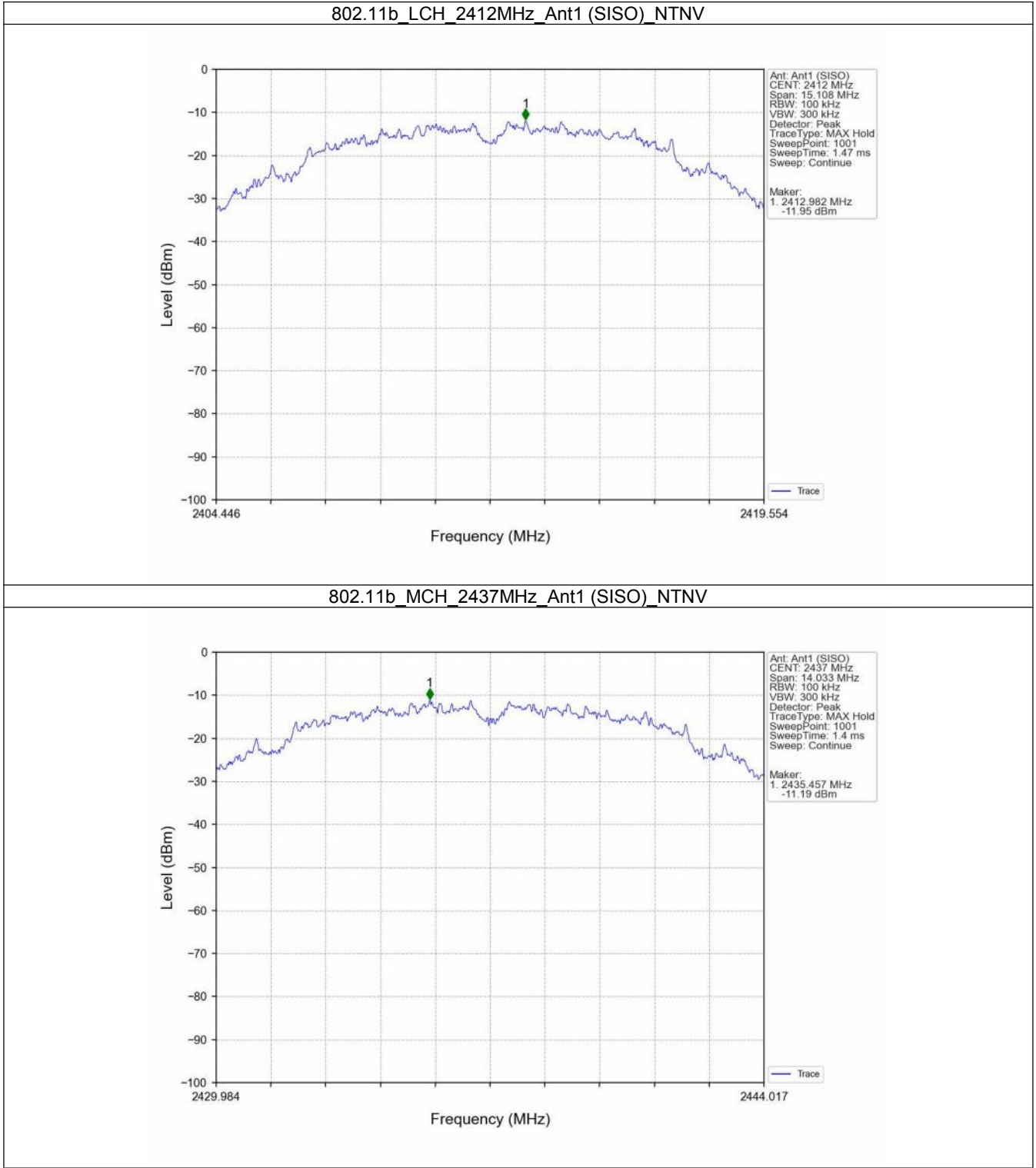
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-11.19	-31.19	Pass
		2437	1	-11.19	-31.19	Pass
		2462	1	-11.19	-31.19	Pass
802.11g	SISO	2412	1	-15.68	-35.68	Pass
		2437	1	-15.68	-35.68	Pass
		2462	1	-15.68	-35.68	Pass
802.11n (HT20)	SISO	2412	1	-14.54	-34.54	Pass
		2437	1	-14.54	-34.54	Pass
		2462	1	-14.54	-34.54	Pass
802.11n (HT40)	SISO	2422	1	-17.15	-37.15	Pass
		2437	1	-17.15	-37.15	Pass
		2452	1	-17.15	-37.15	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: 2AN5D-N1804

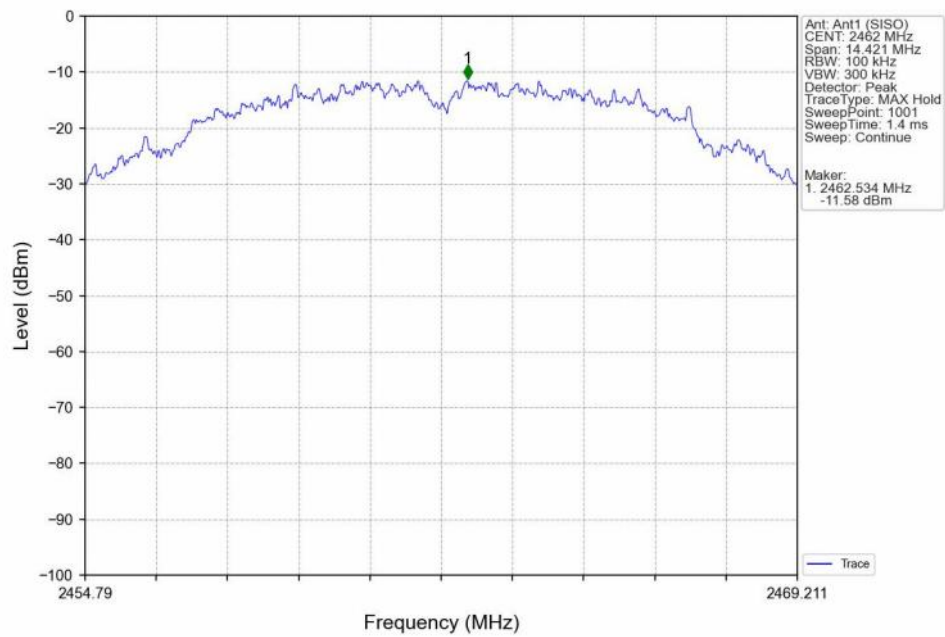
5.2 Test Graph

5.2.1 Ref

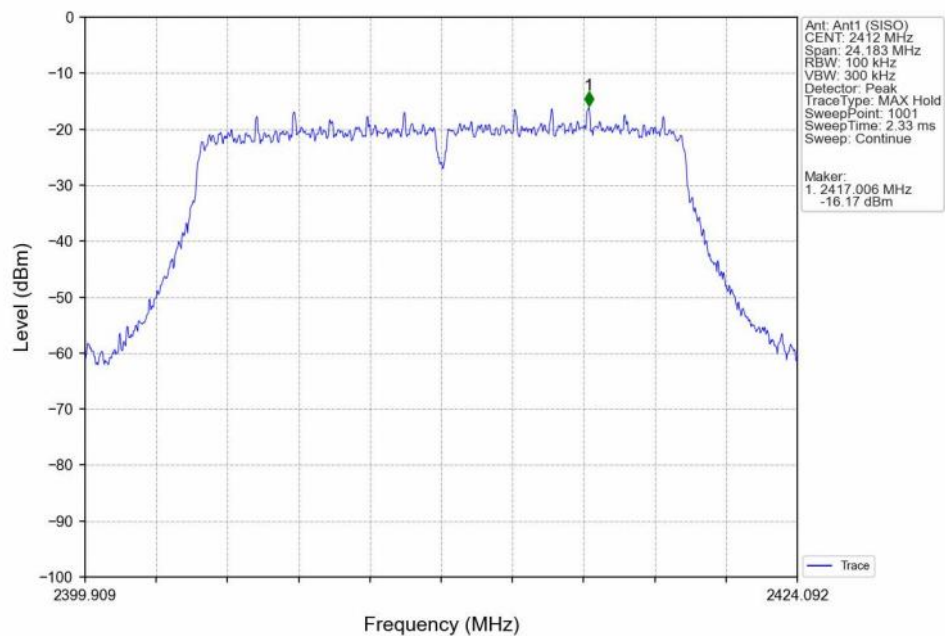


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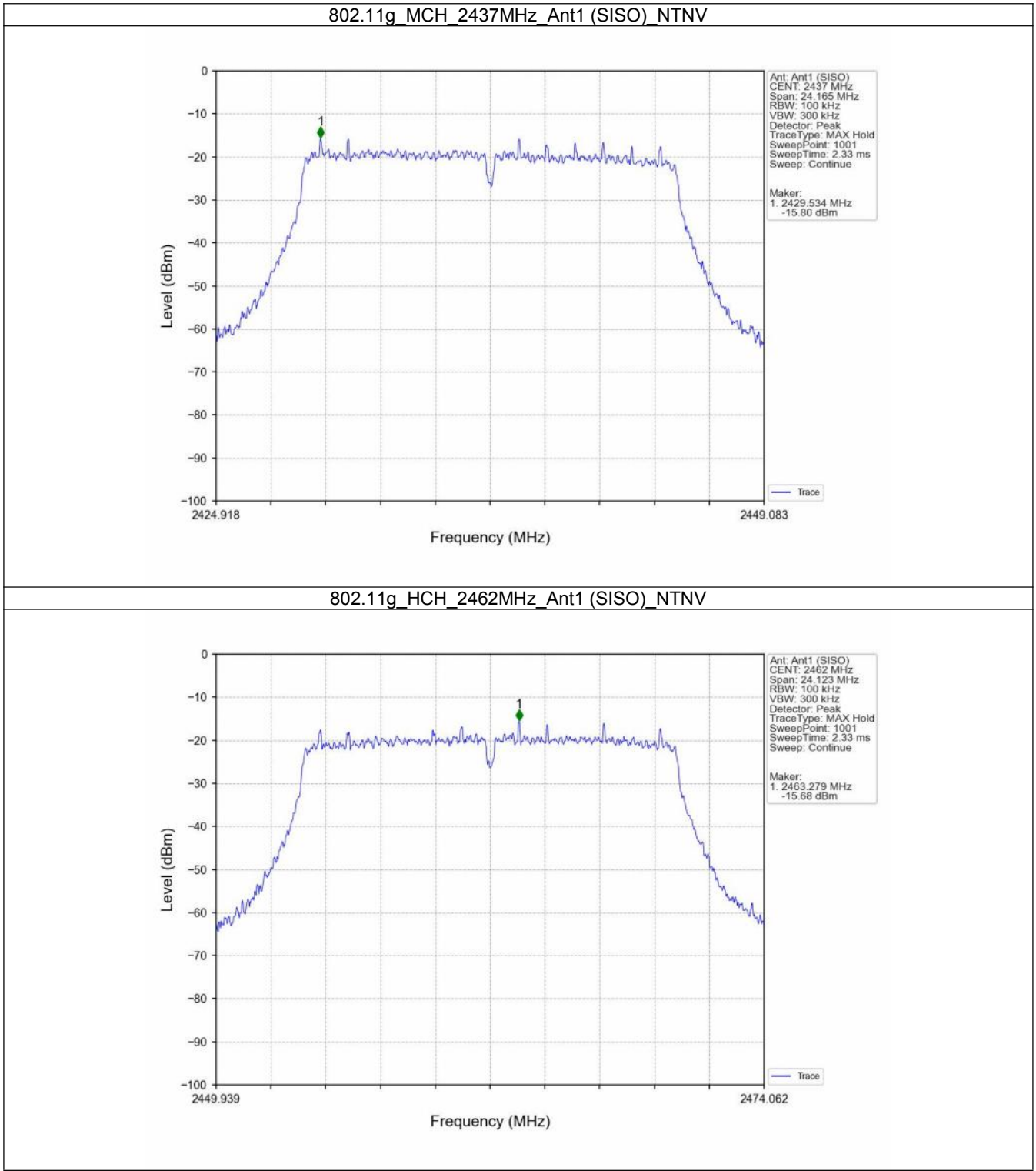
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

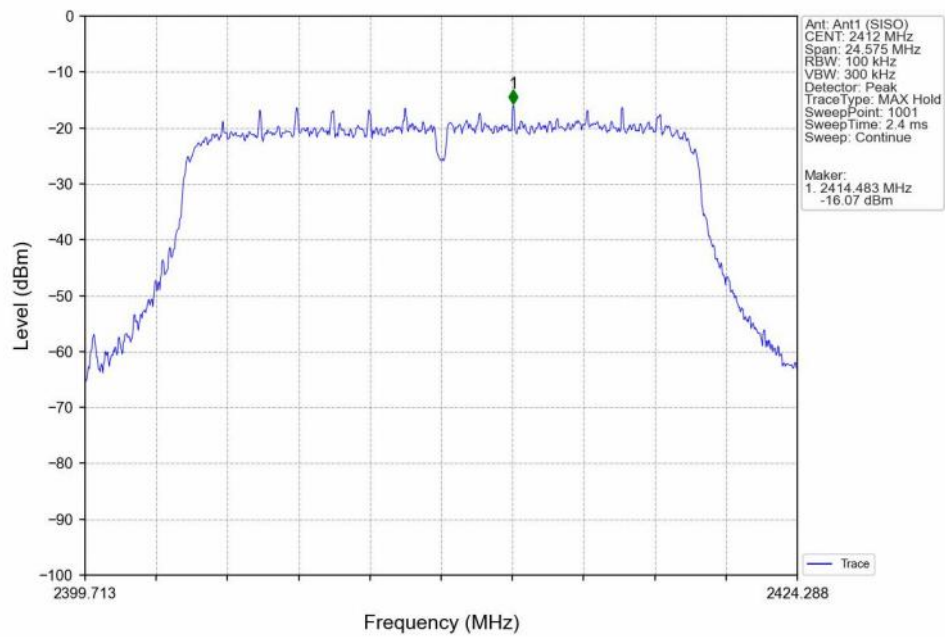


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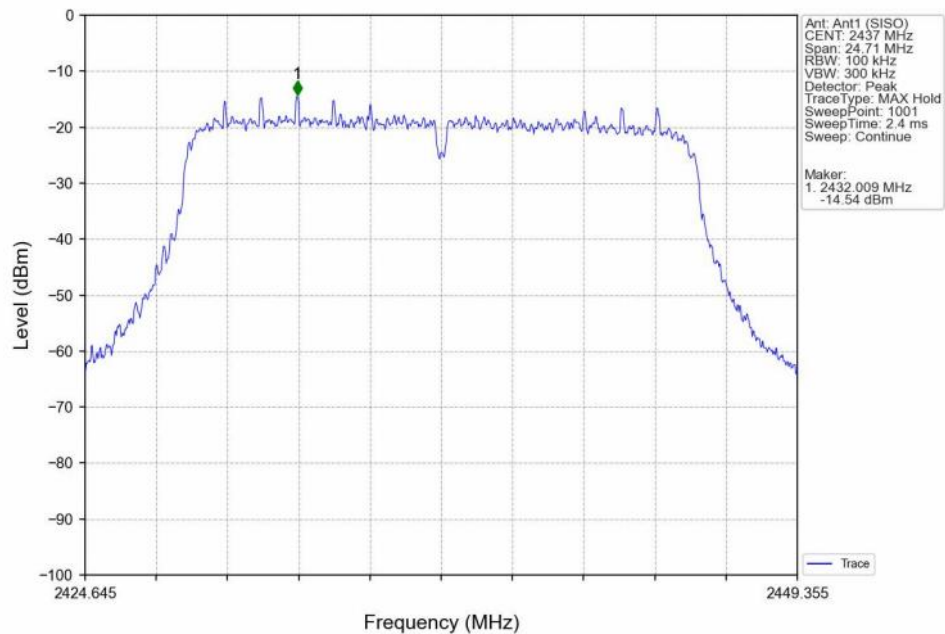


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

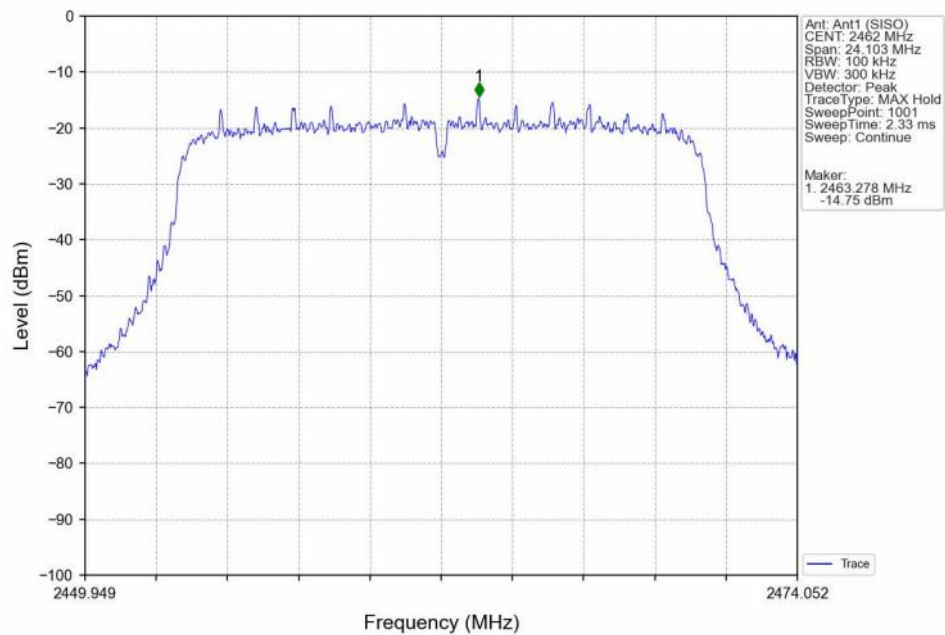


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

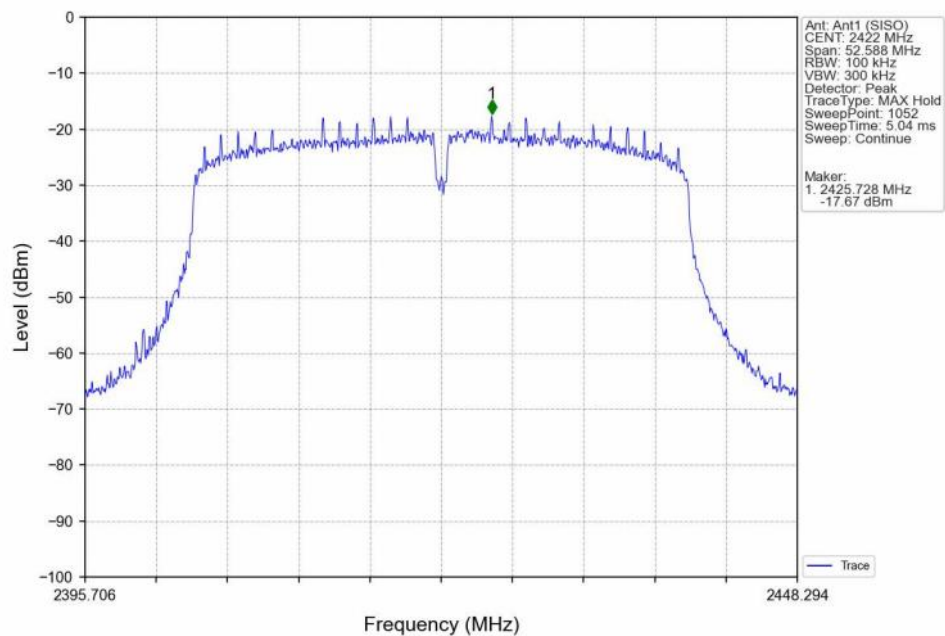


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

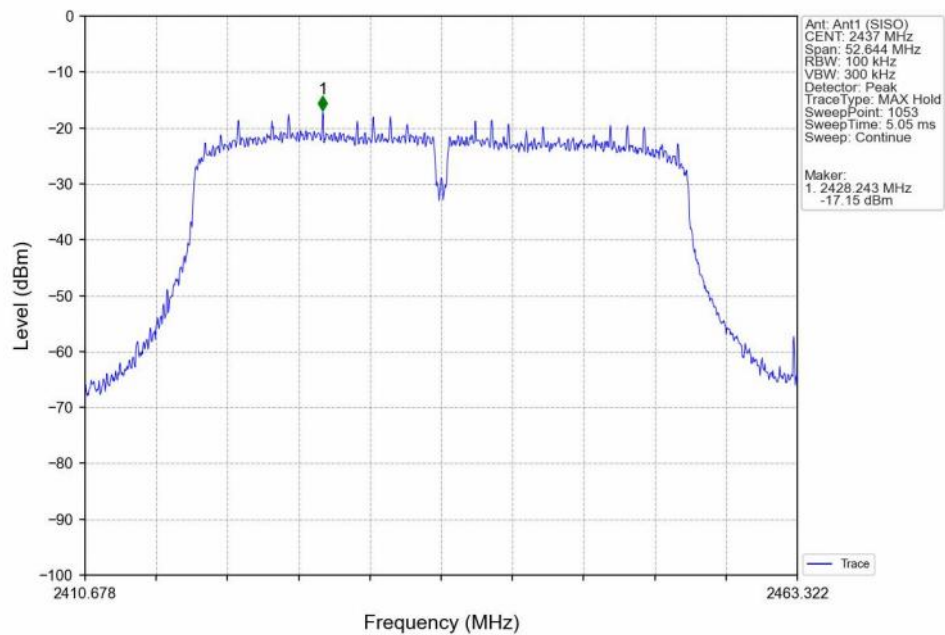


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

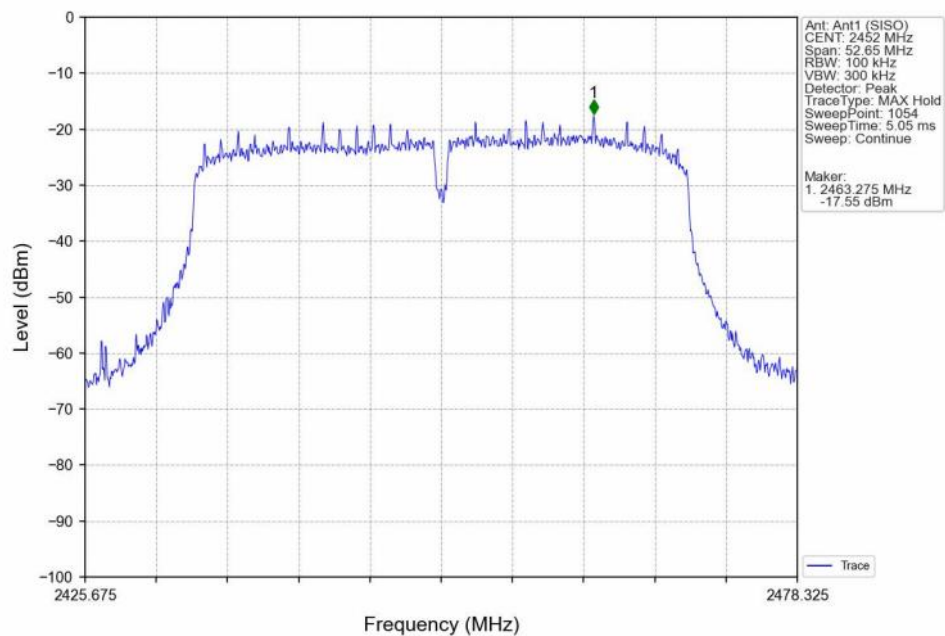


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

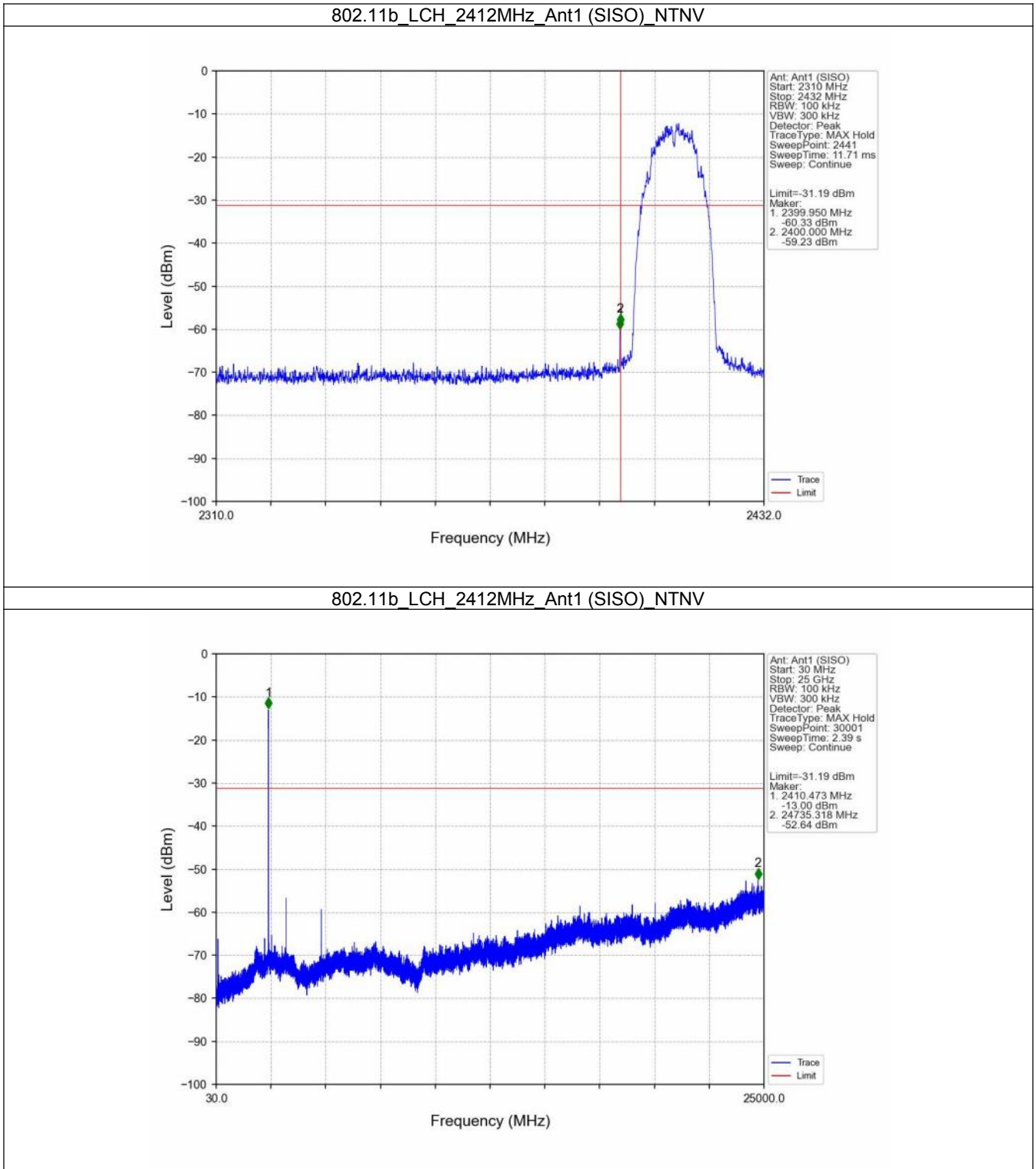


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



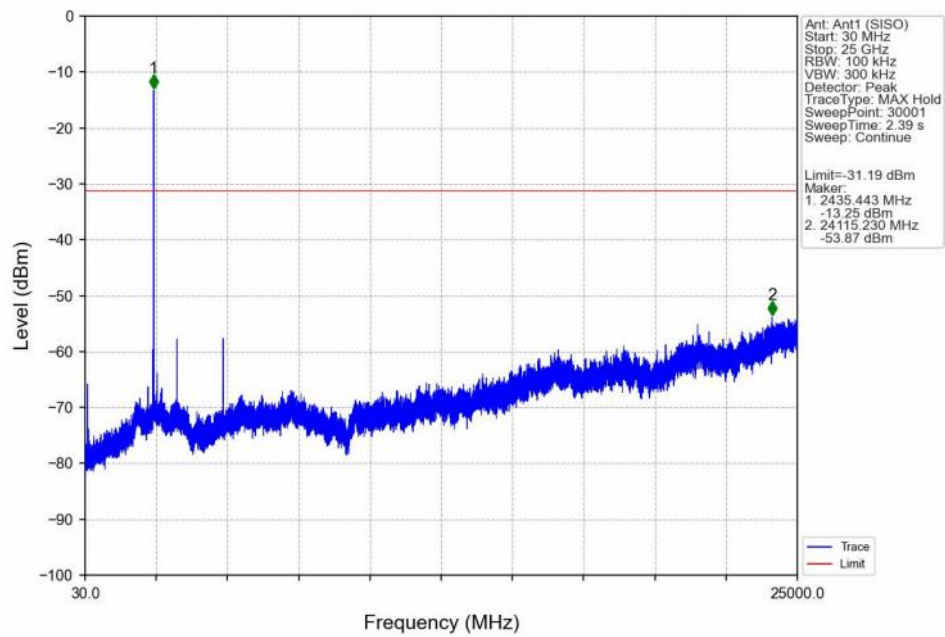
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5.2.2 CSE

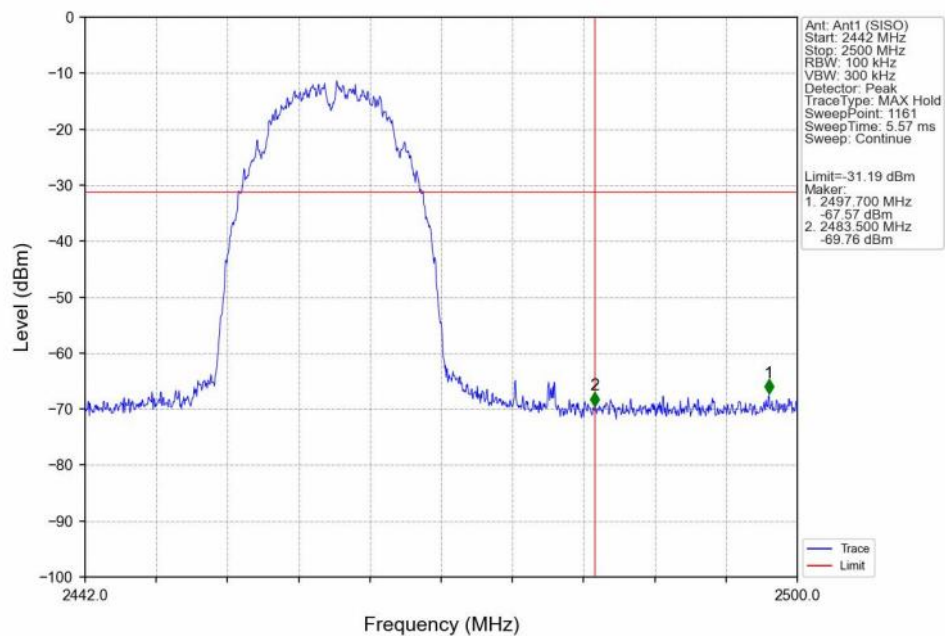


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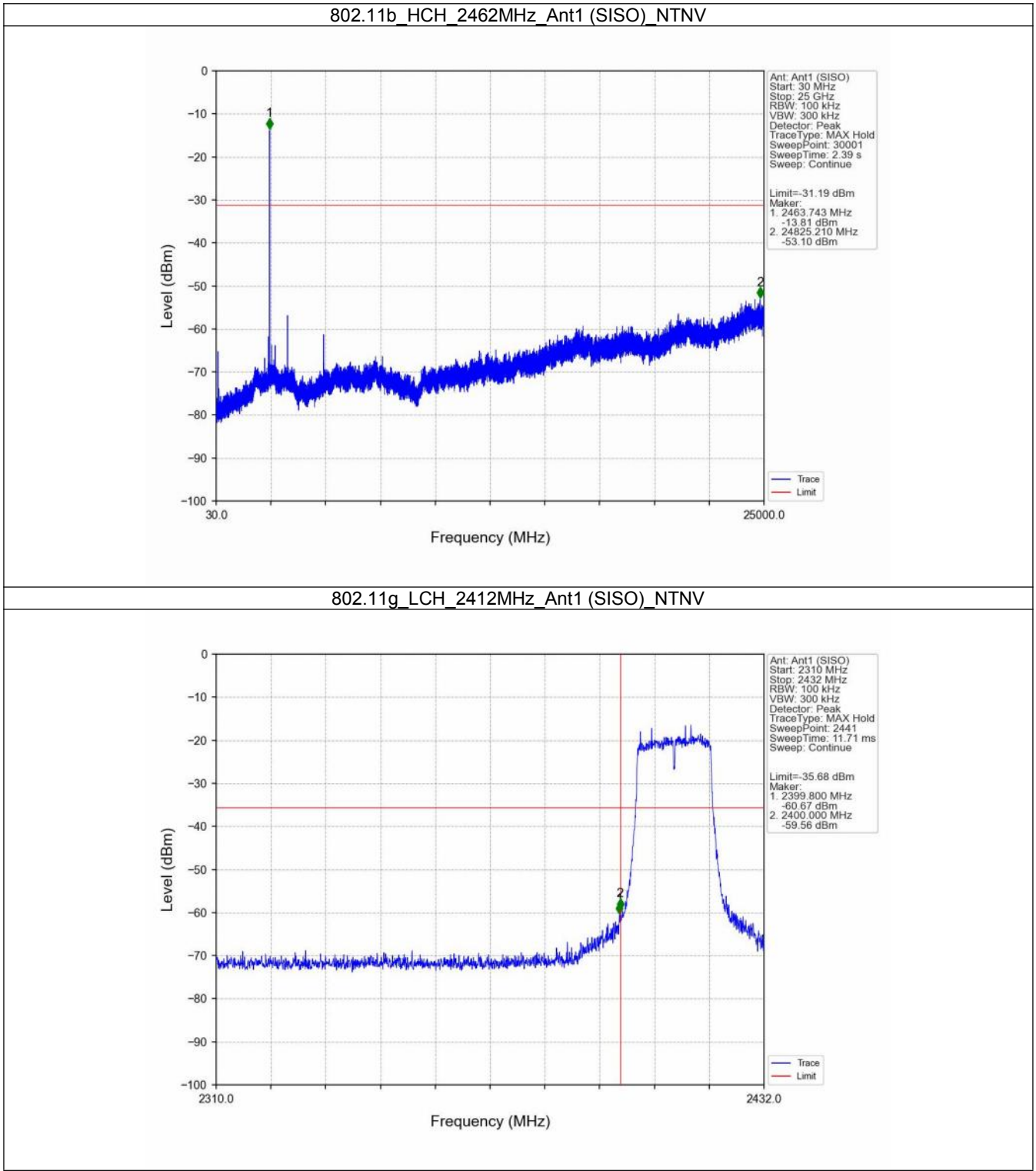
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



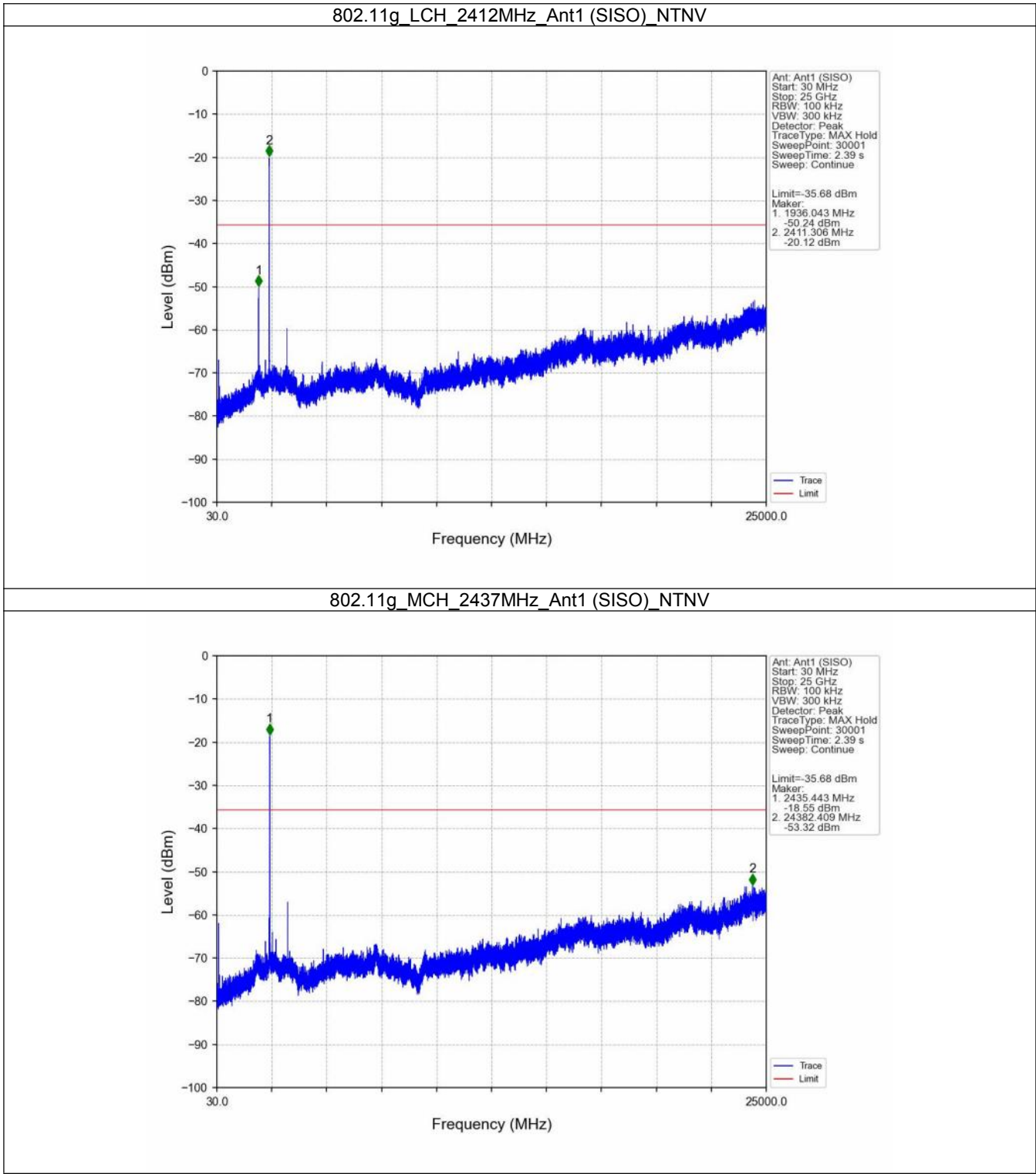
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



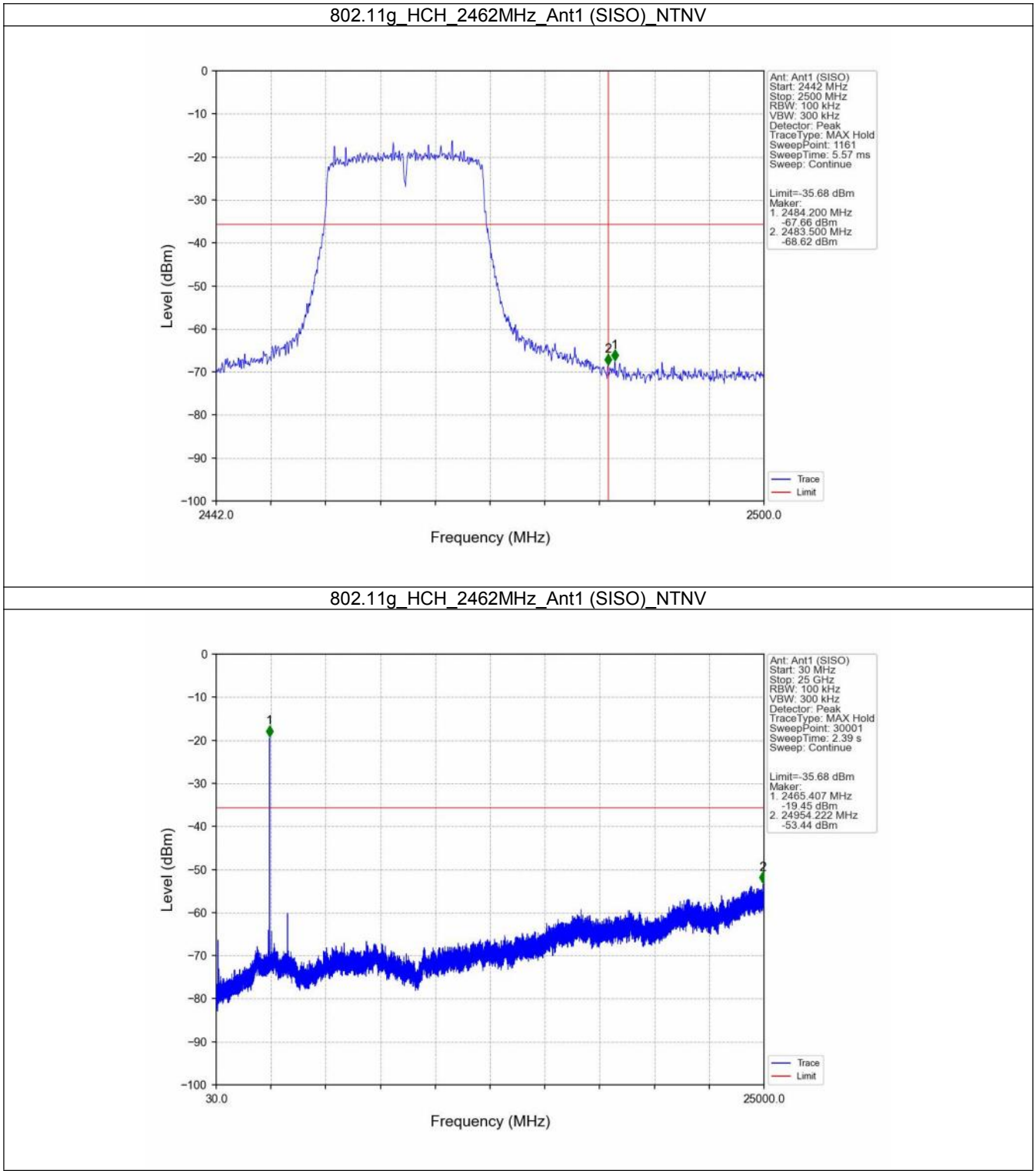
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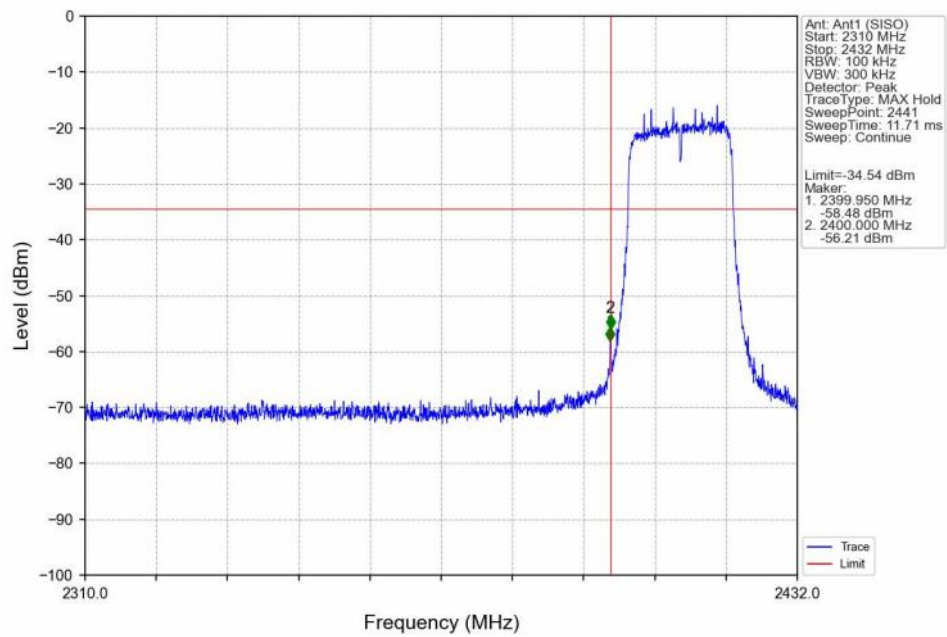


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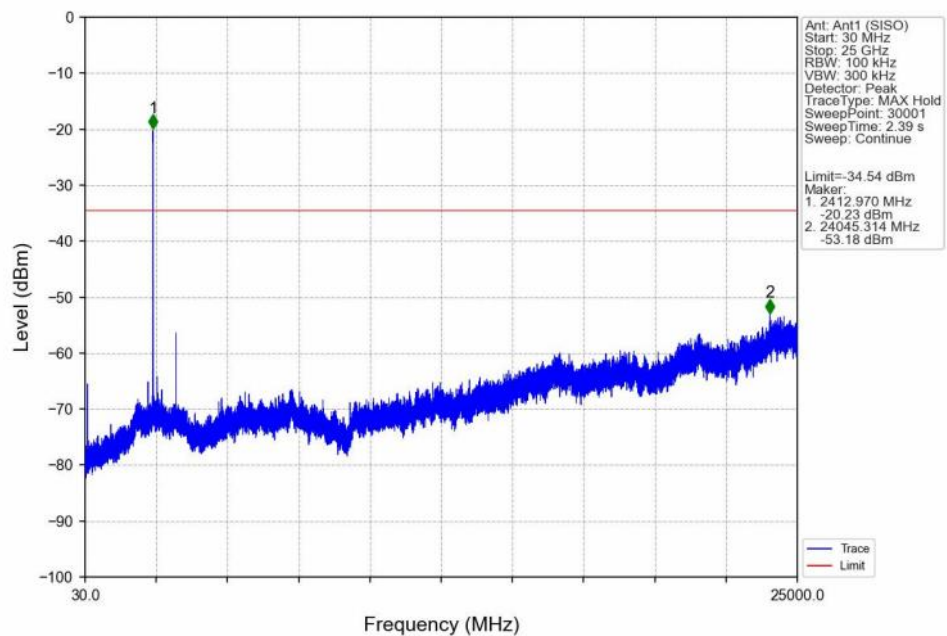


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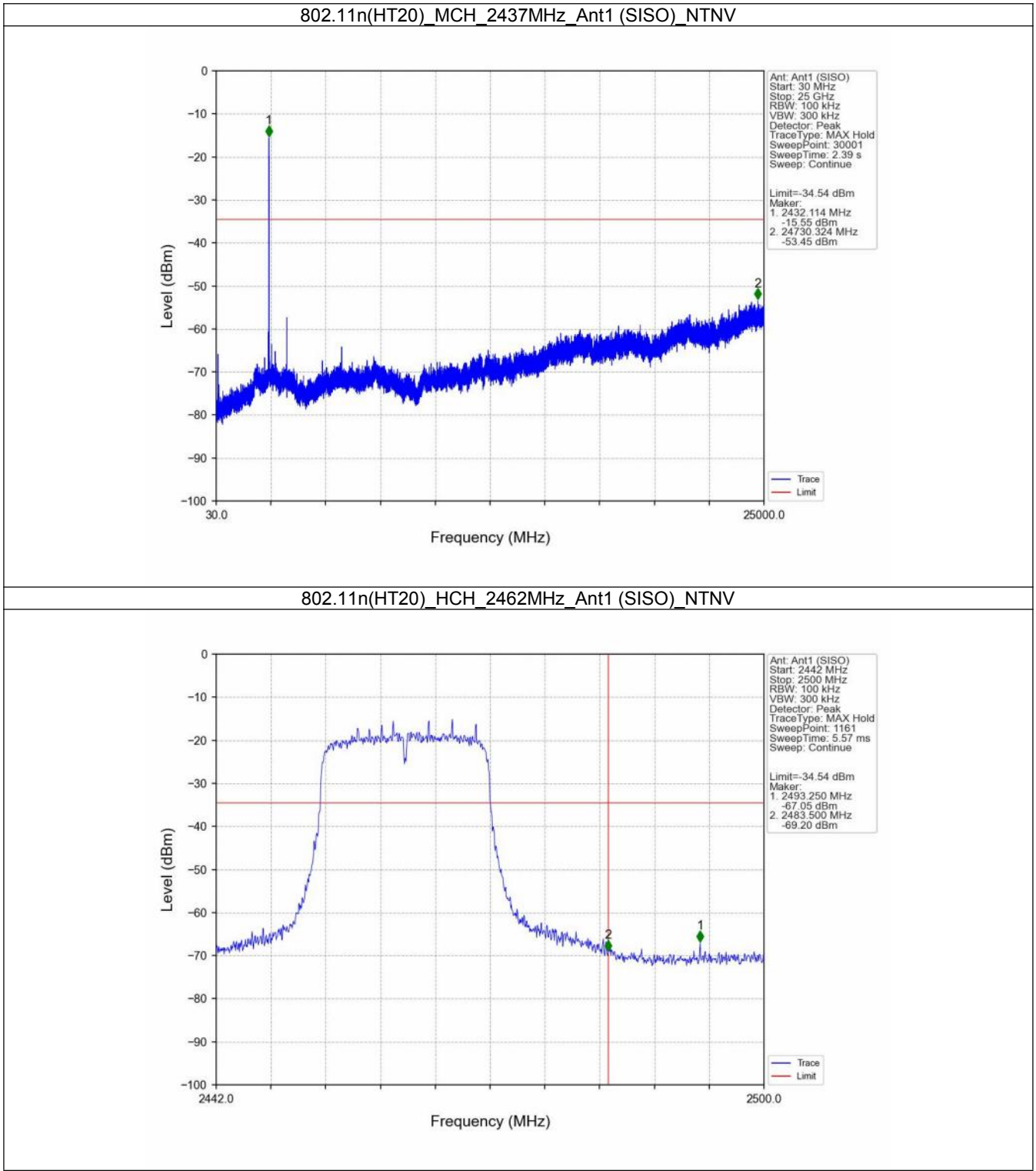
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

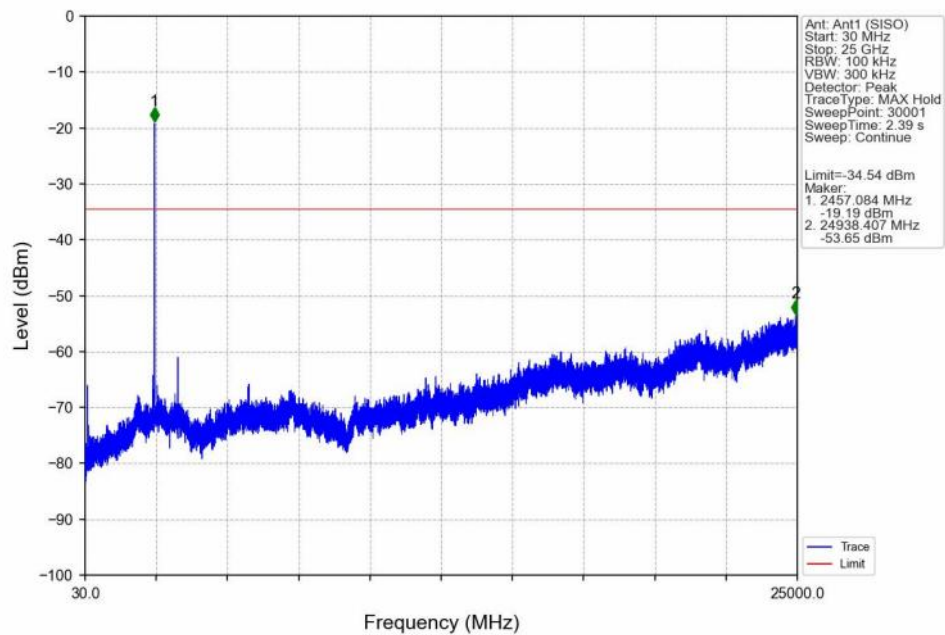


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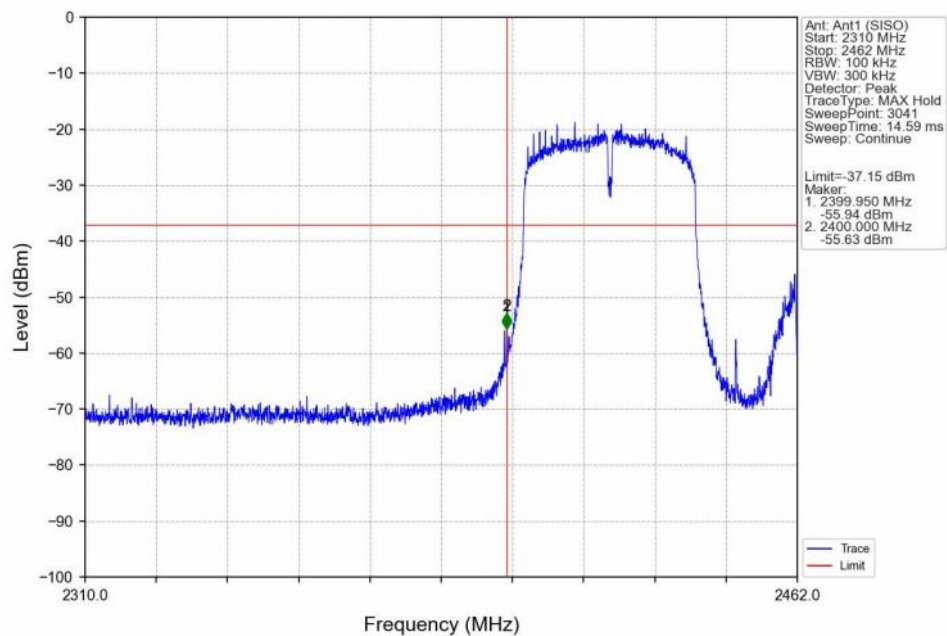


FCC ID: 2AN5D-N1804

802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

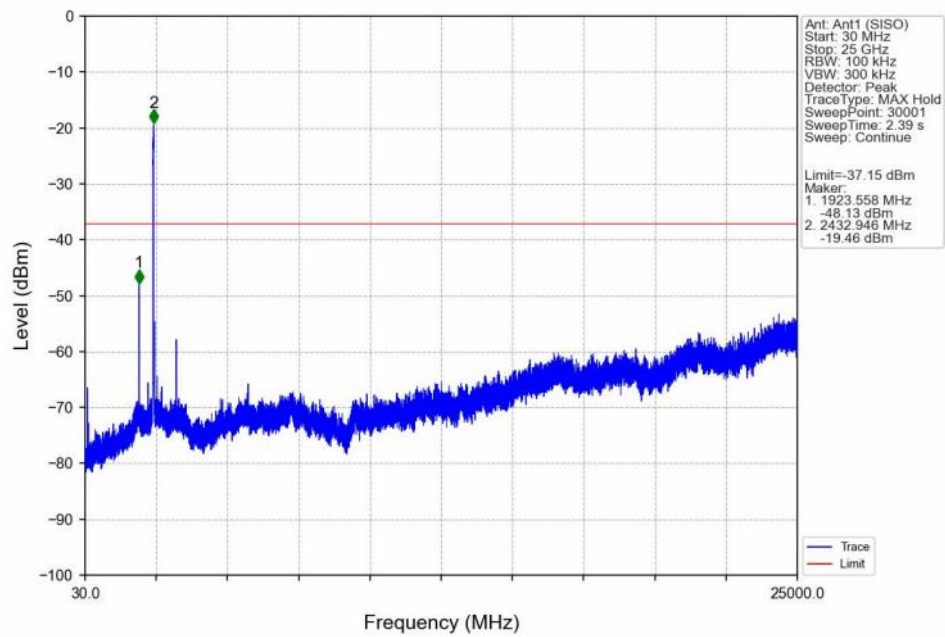


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

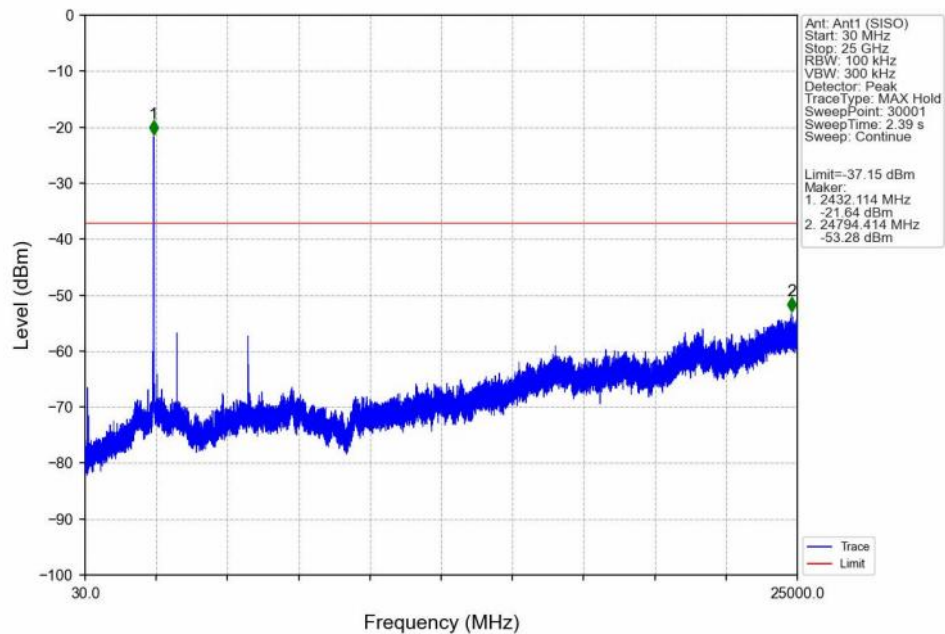


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802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



FCC ID: 2AN5D-N1804

