



Annex for 2.4G Wi-Fi

Test Report No.: CTL2501029021-WF

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1. Duty Cycle

1.1 Test Result

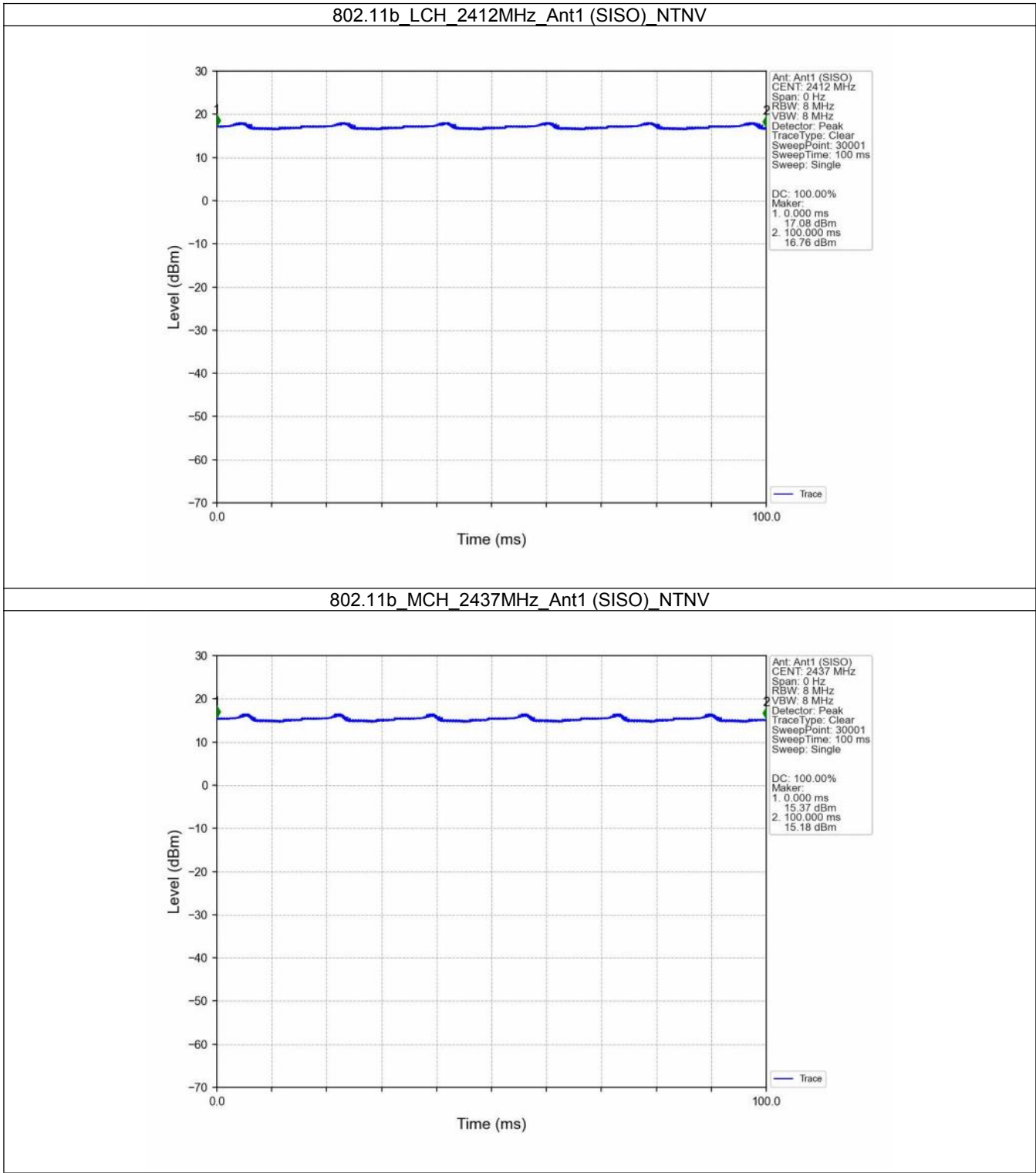
1.1.1 Ant1

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	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11g	SISO	2412	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11n (HT20)	SISO	2412	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2462	100.000	100.000	100.00	0.00	0.00
802.11n (HT40)	SISO	2422	100.000	100.000	100.00	0.00	0.00
		2437	100.000	100.000	100.00	0.00	0.00
		2452	100.000	100.000	100.00	0.00	0.00

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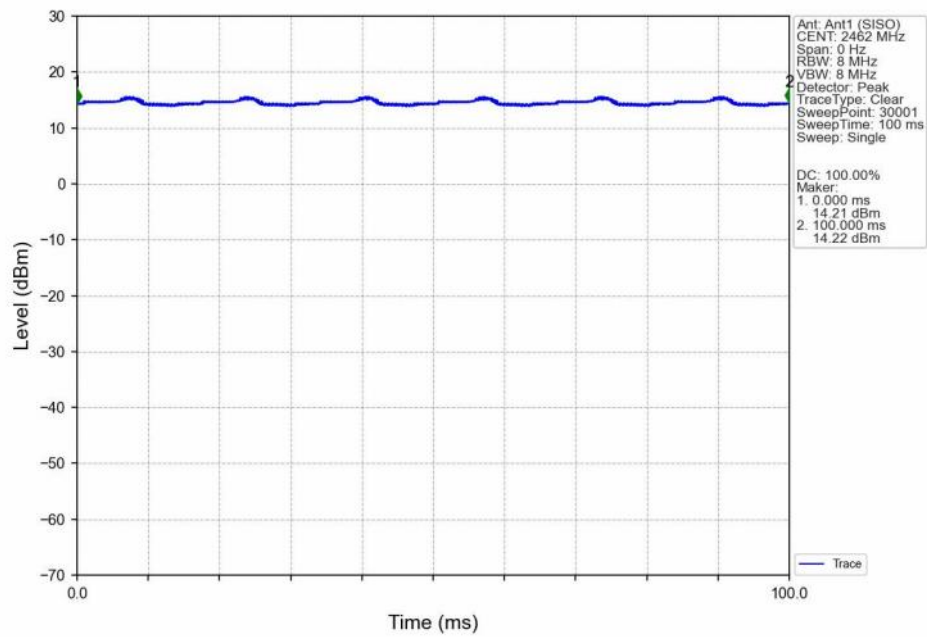
1.2 Test Graph

1.2.1 Ant1

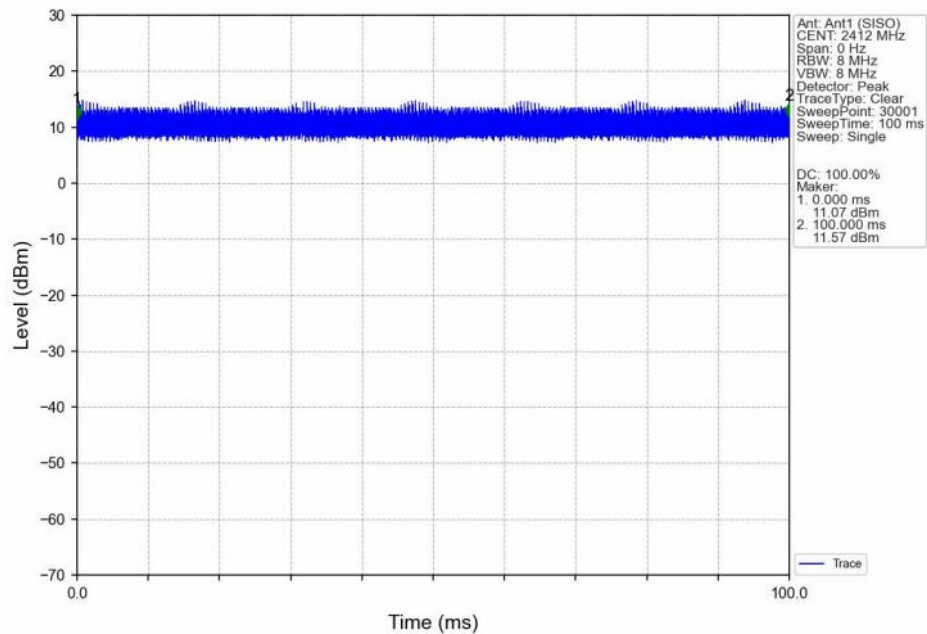


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

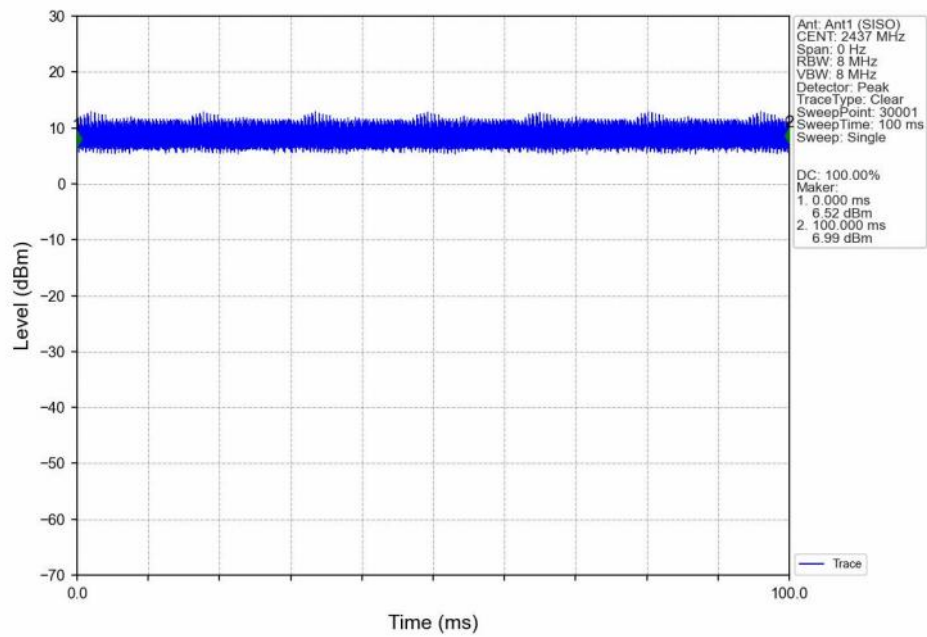


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

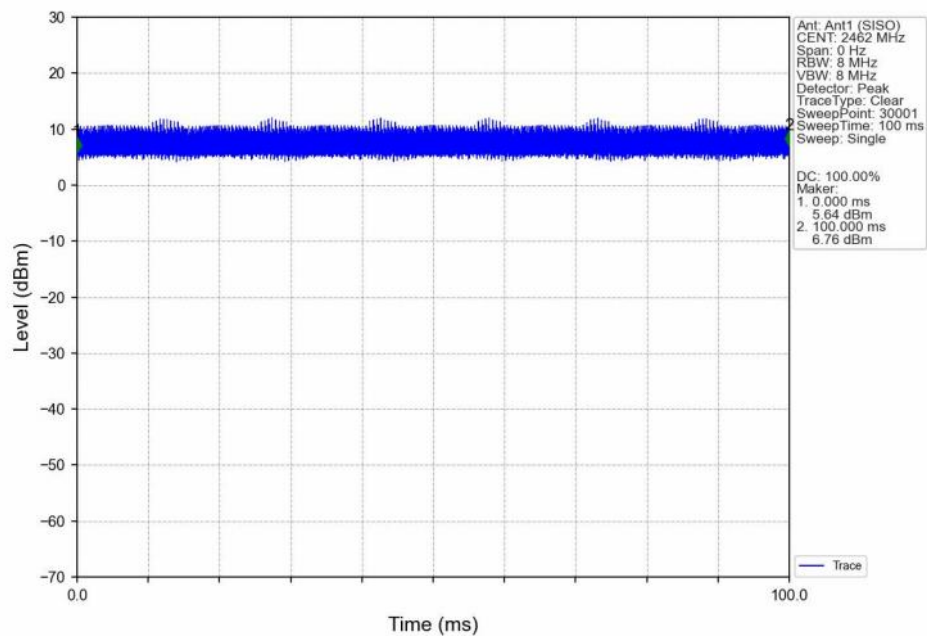


FCC ID: 2BNOWC3

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

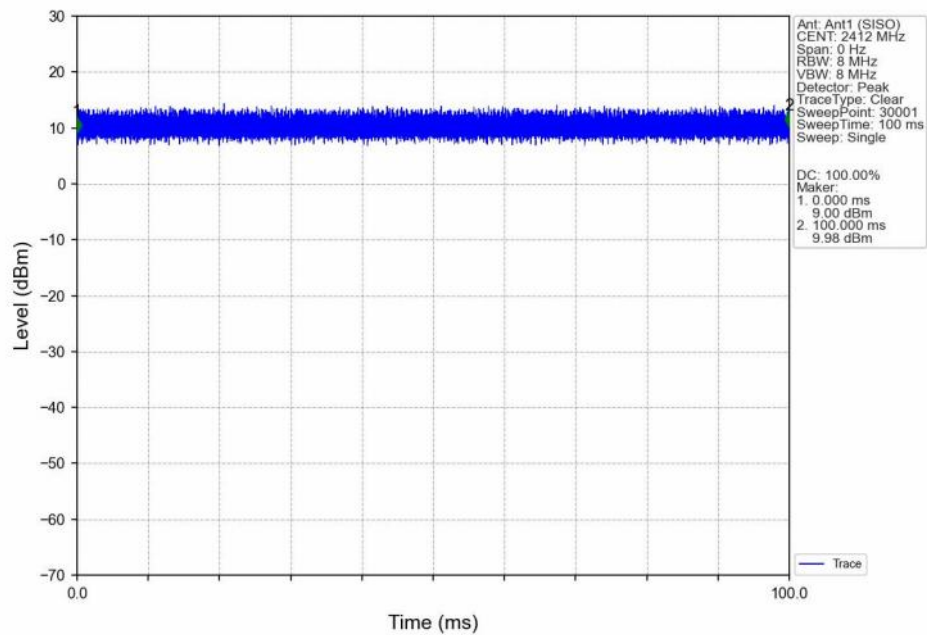


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

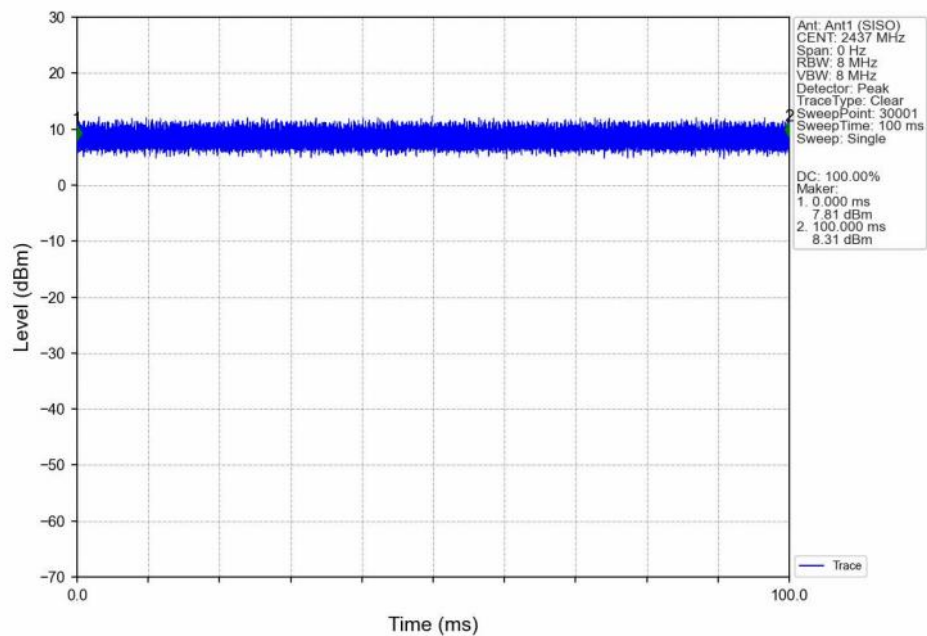


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

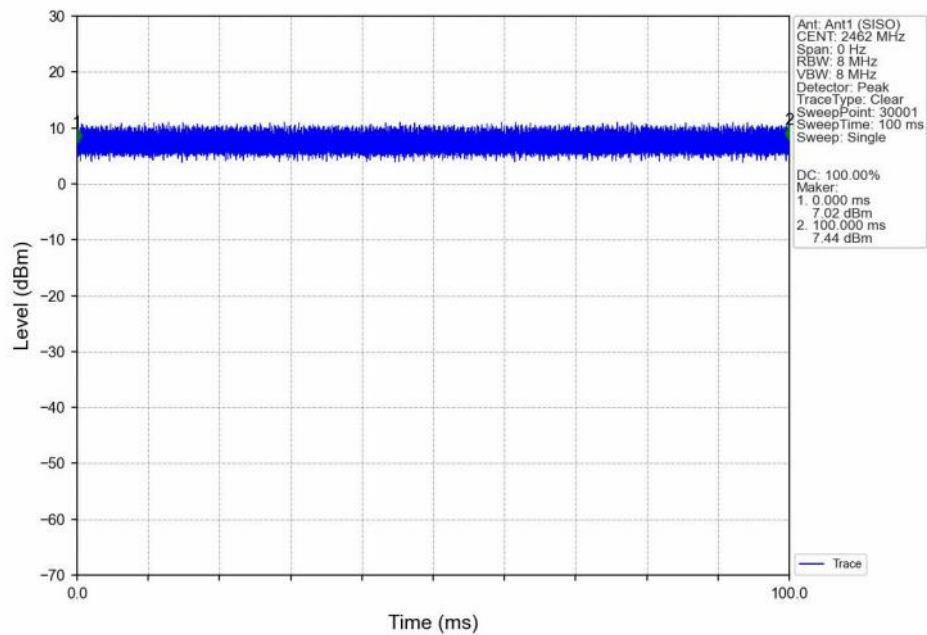


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

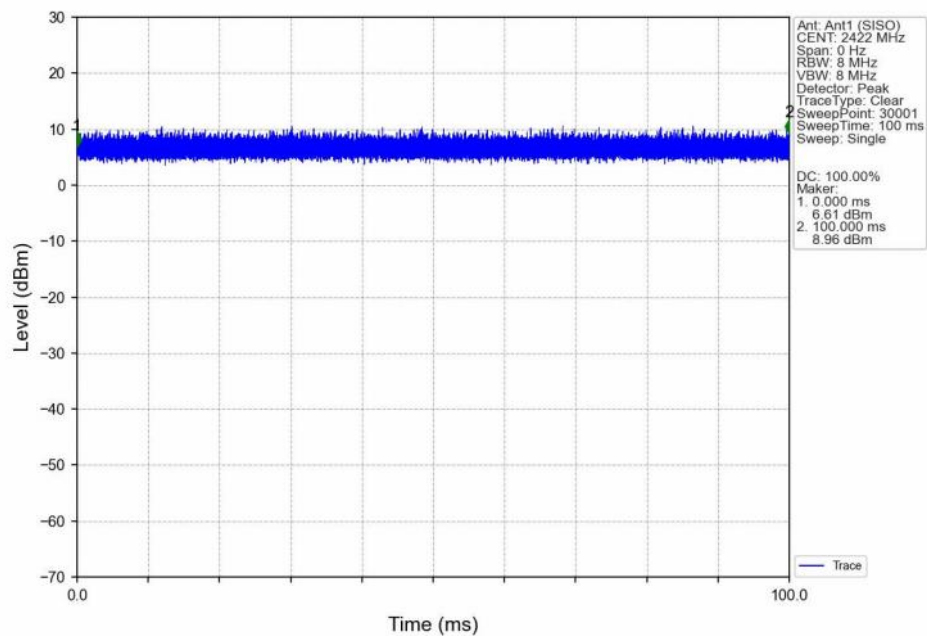


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

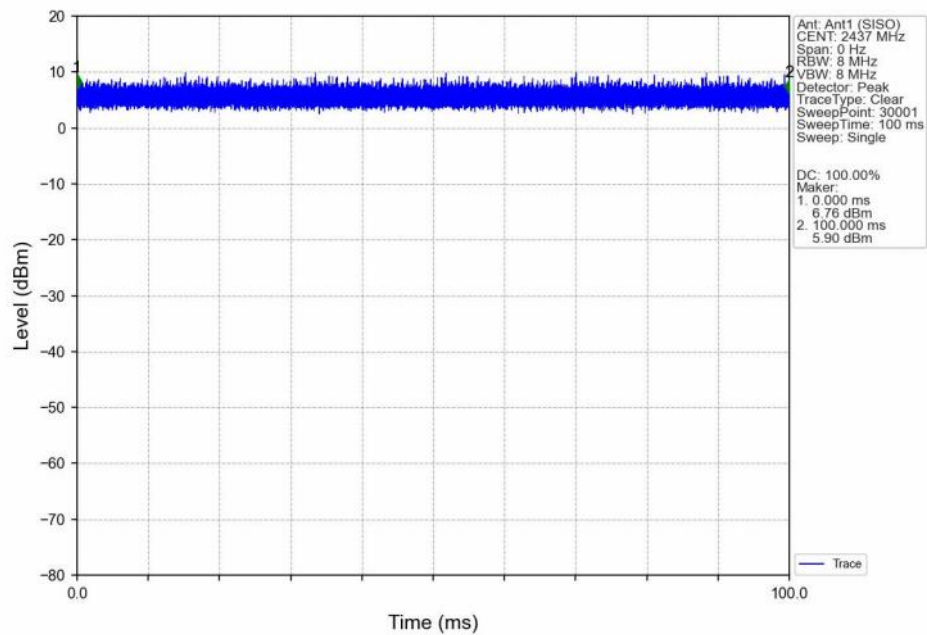


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

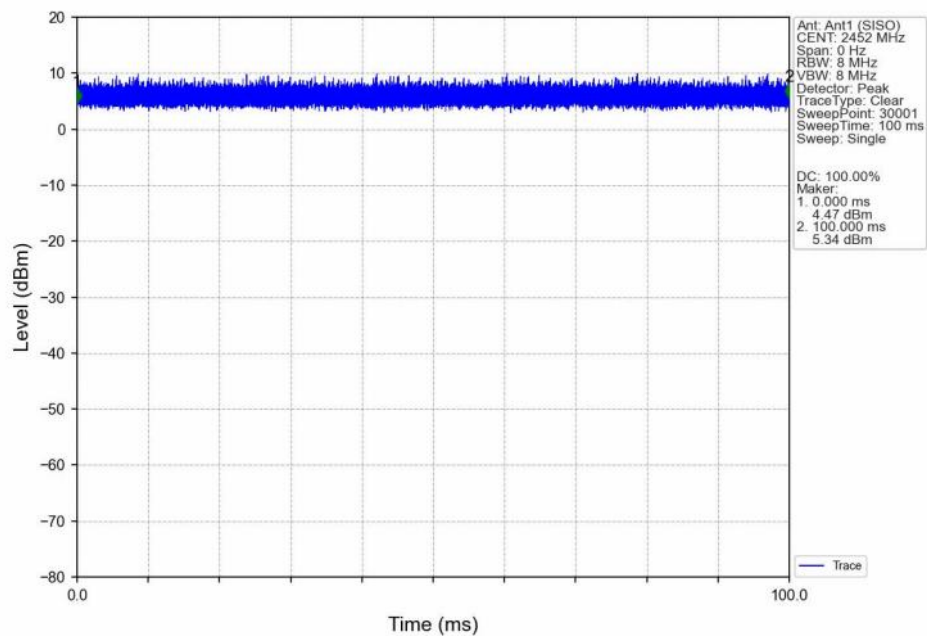


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



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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	13.347	/	Pass
		2437	1	13.618	/	Pass
		2462	1	13.542	/	Pass
802.11g	SISO	2412	1	17.479	/	Pass
		2437	1	17.675	/	Pass
		2462	1	17.653	/	Pass
802.11n (HT20)	SISO	2412	1	18.335	/	Pass
		2437	1	18.507	/	Pass
		2462	1	18.438	/	Pass
802.11n (HT40)	SISO	2422	1	36.695	/	Pass
		2437	1	36.997	/	Pass
		2452	1	36.563	/	Pass

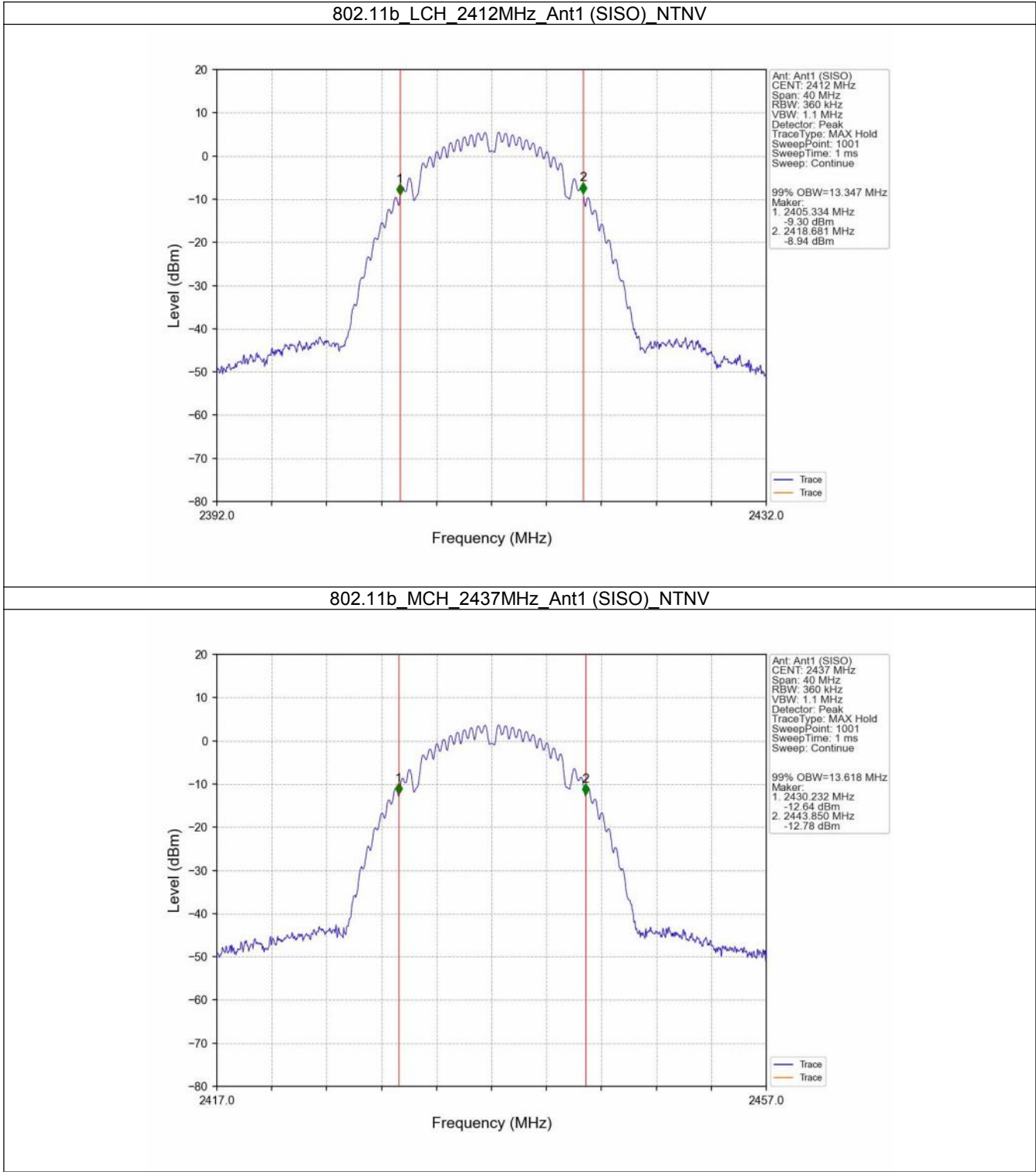
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.081	≥ 0.5	Pass
		2437	1	9.113	≥ 0.5	Pass
		2462	1	8.642	≥ 0.5	Pass
802.11g	SISO	2412	1	16.575	≥ 0.5	Pass
		2437	1	16.612	≥ 0.5	Pass
		2462	1	16.559	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.742	≥ 0.5	Pass
		2437	1	17.832	≥ 0.5	Pass
		2462	1	17.761	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	36.438	≥ 0.5	Pass
		2437	1	36.494	≥ 0.5	Pass
		2452	1	36.438	≥ 0.5	Pass

FCC ID: 2BNOWC3

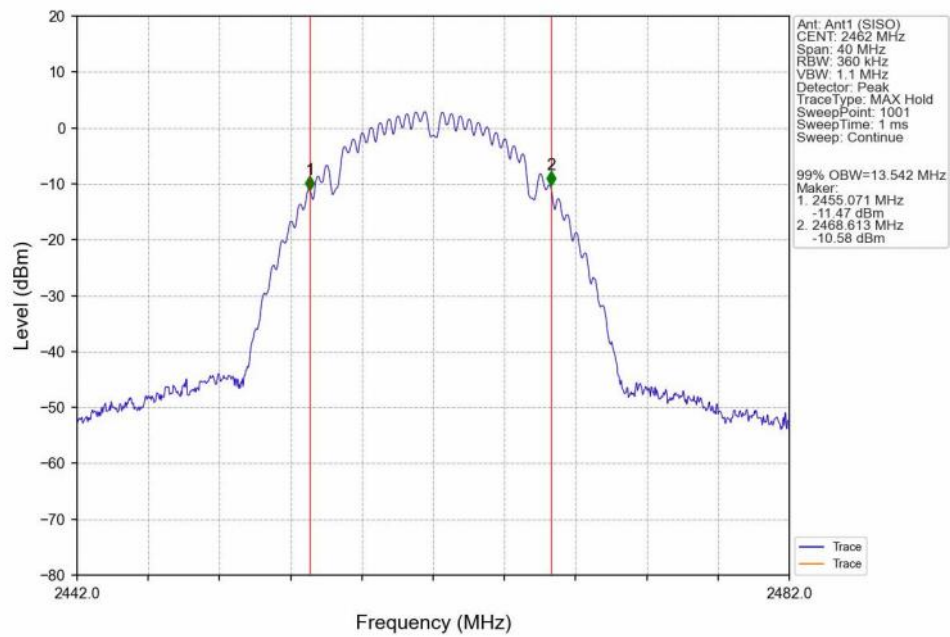
2.2 Test Graph

2.2.1 OBW

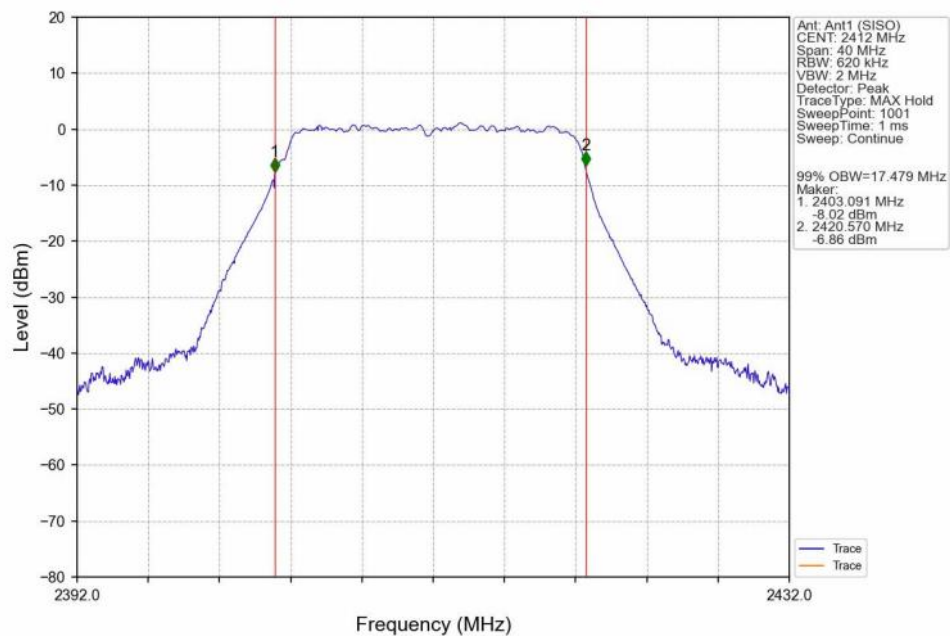


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

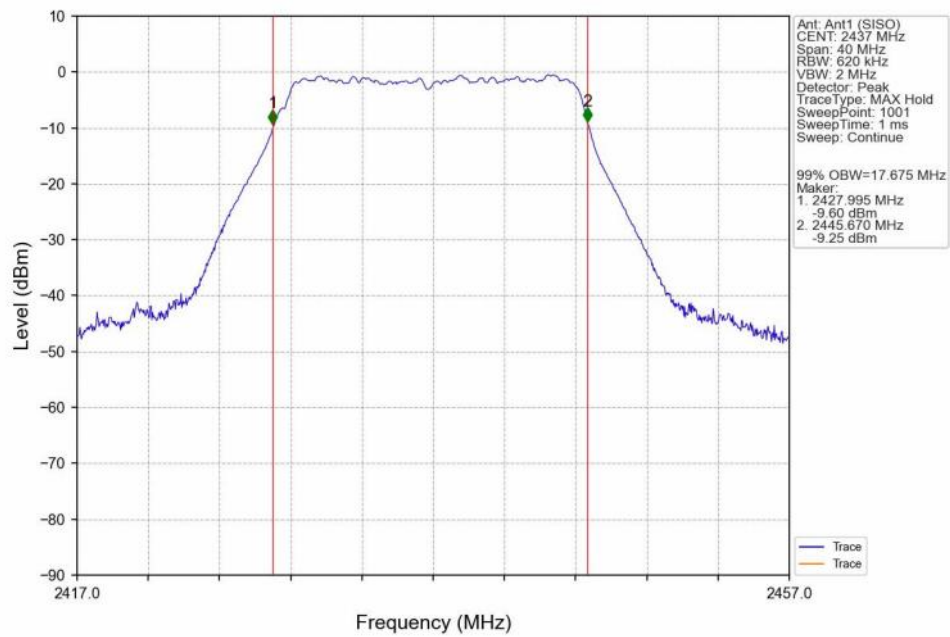


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

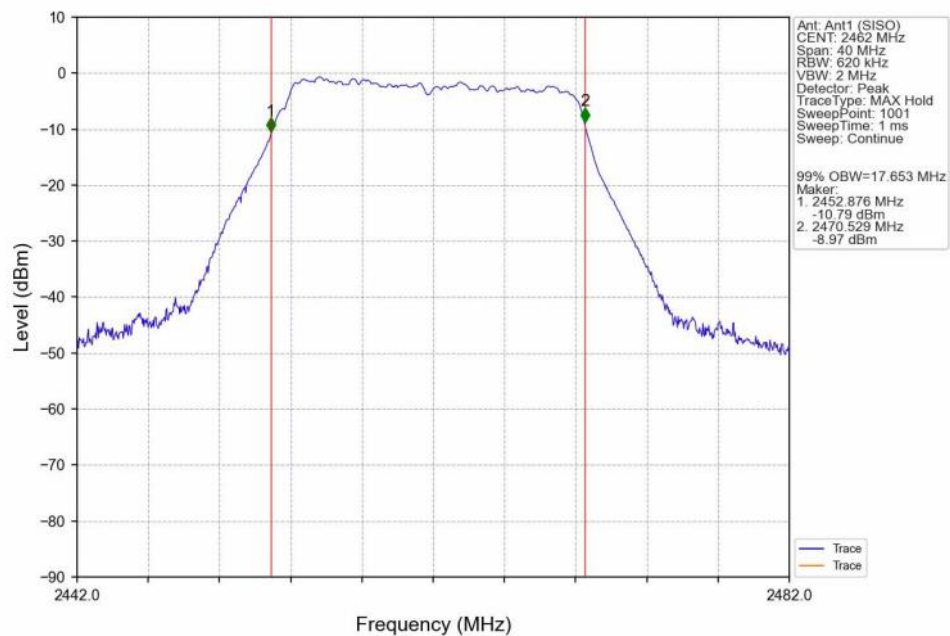


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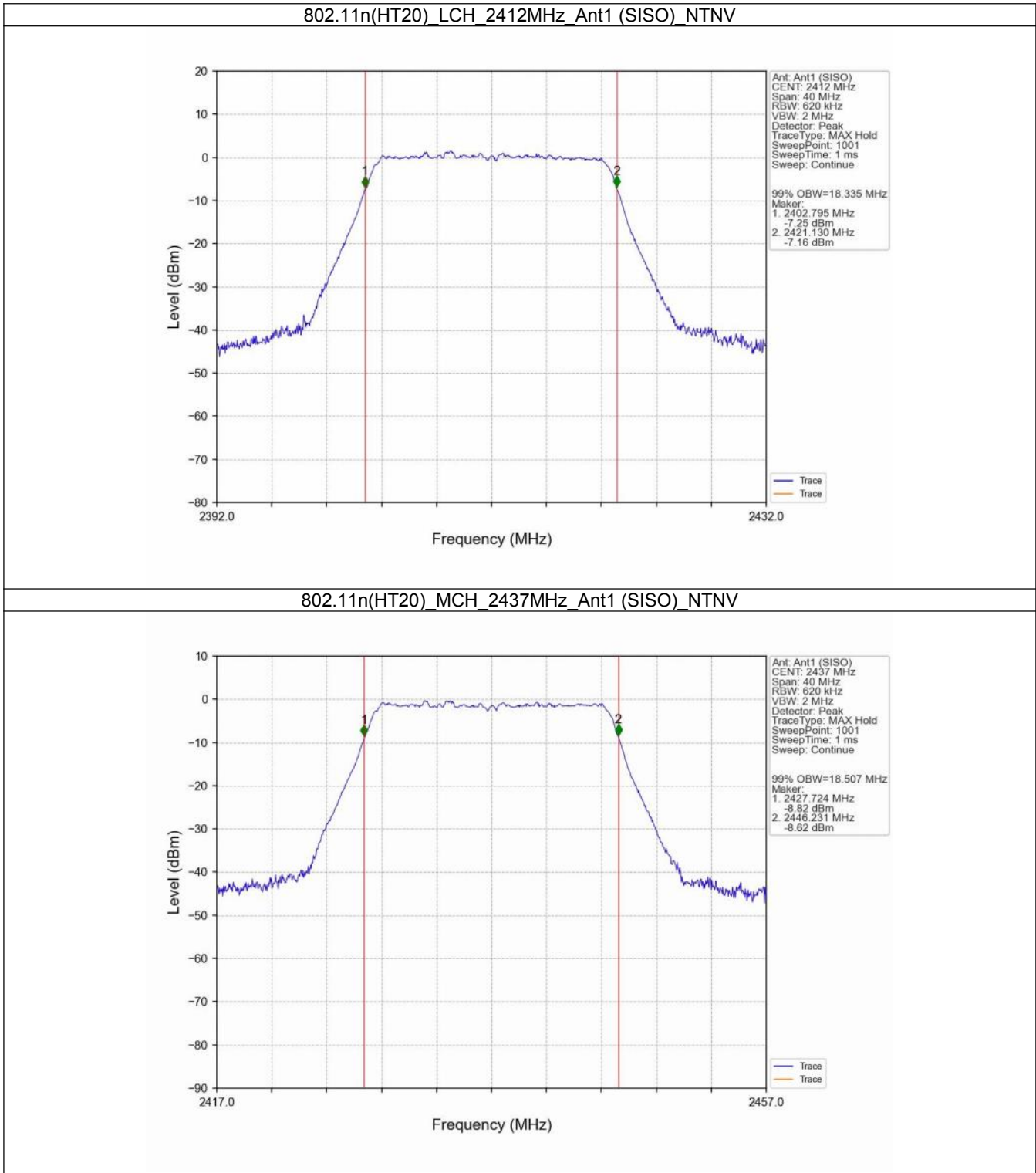
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

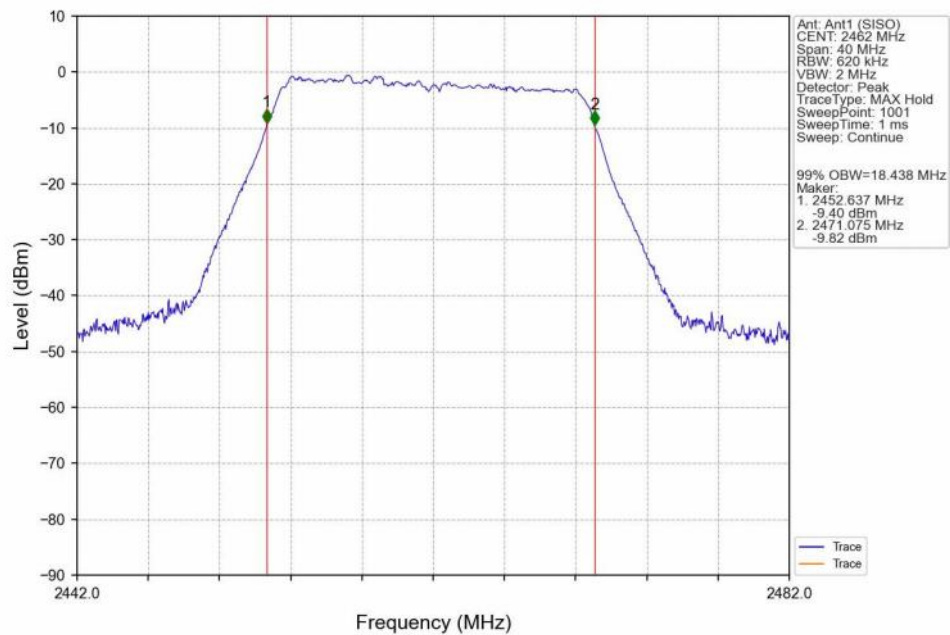


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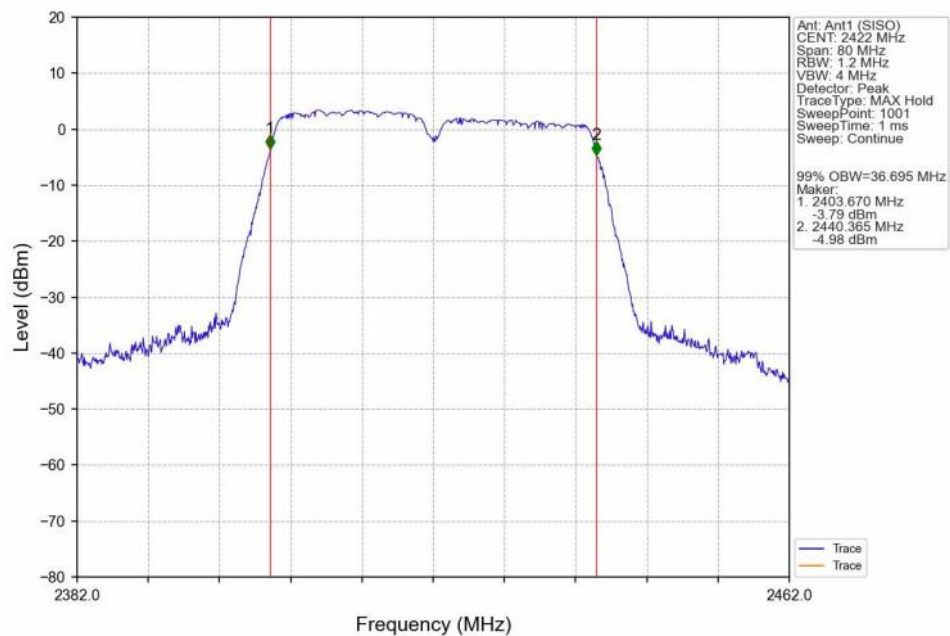


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

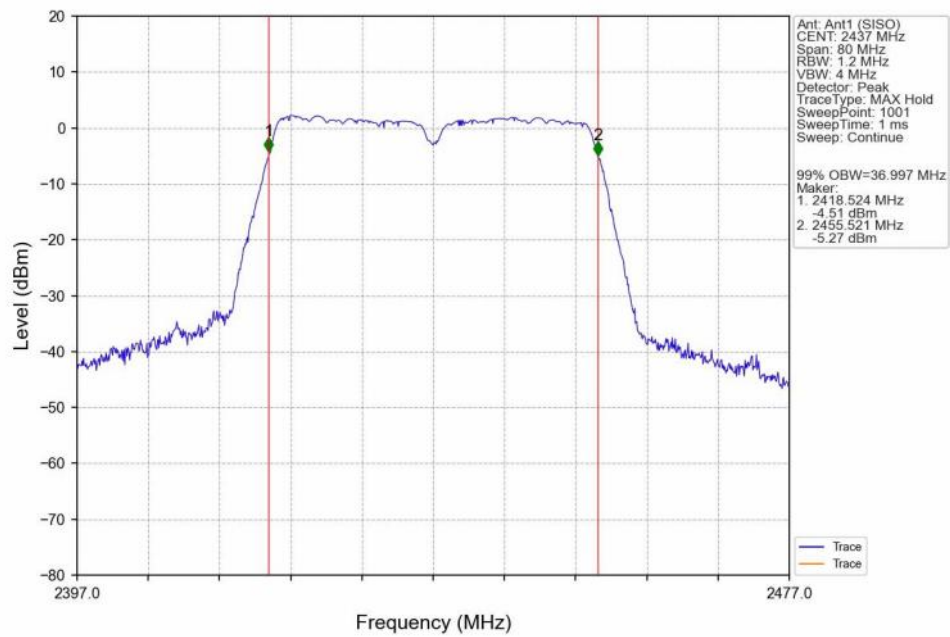


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

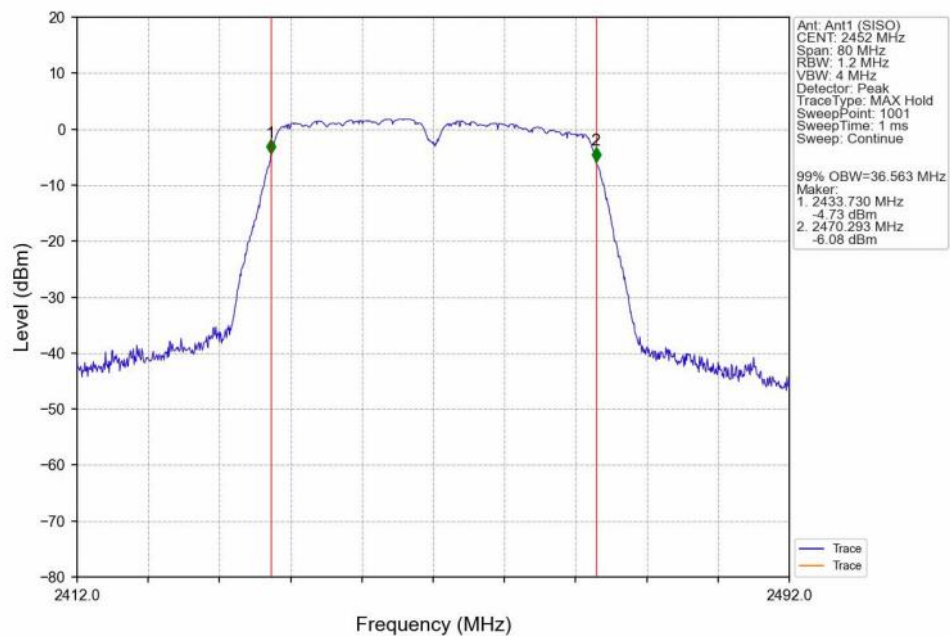


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

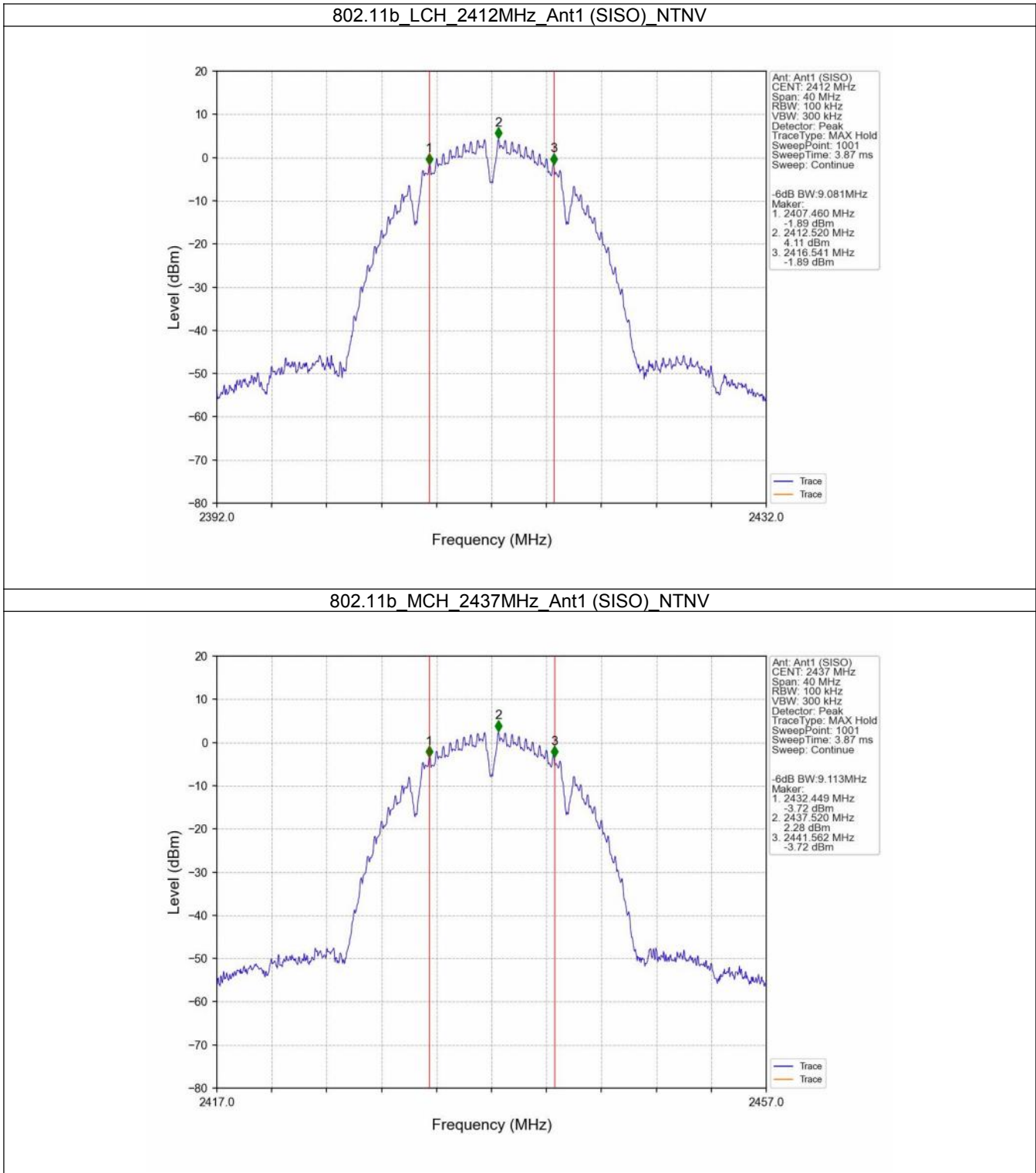


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



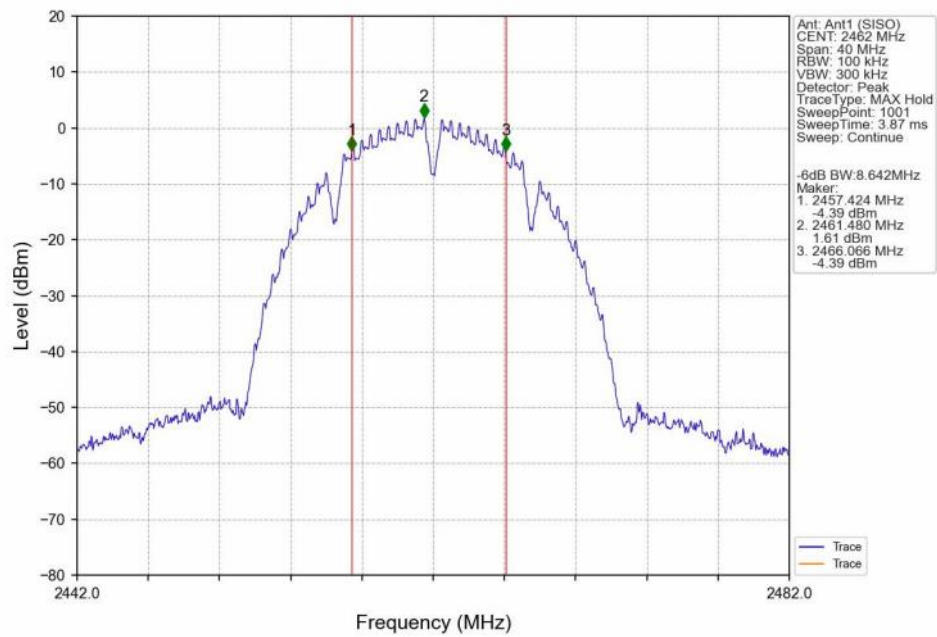
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2.2.2 6dB BW

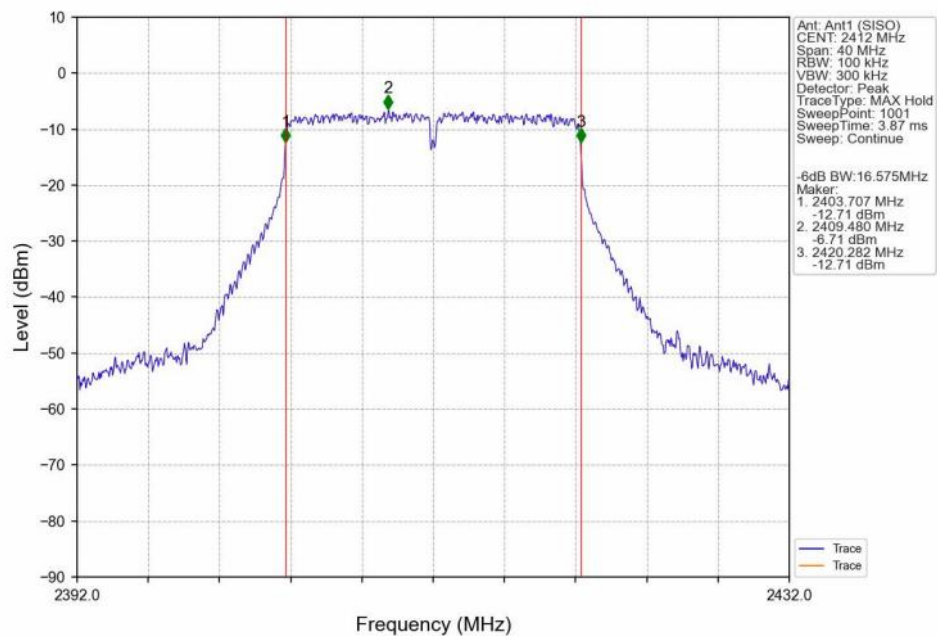


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

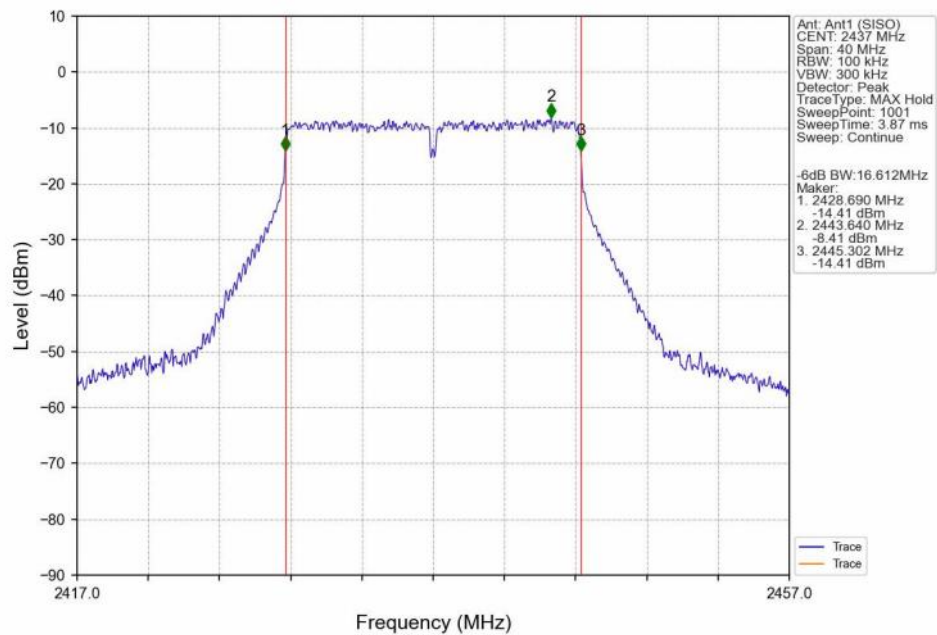


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

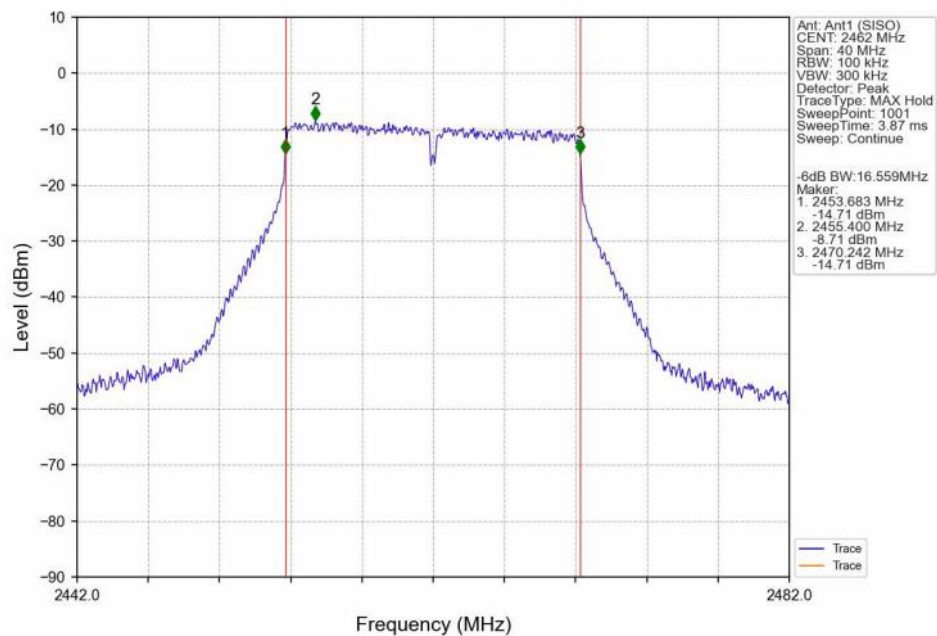


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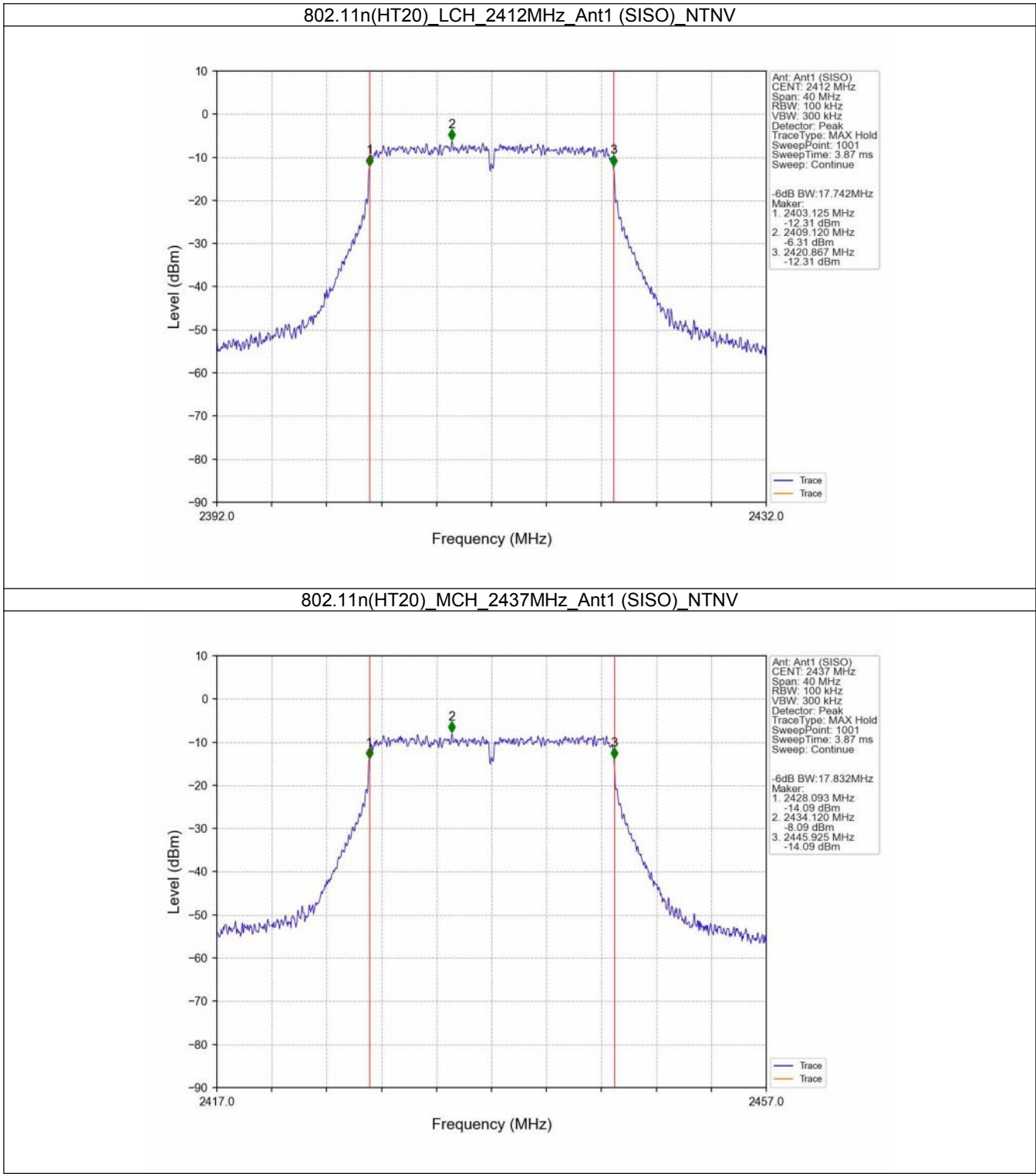
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



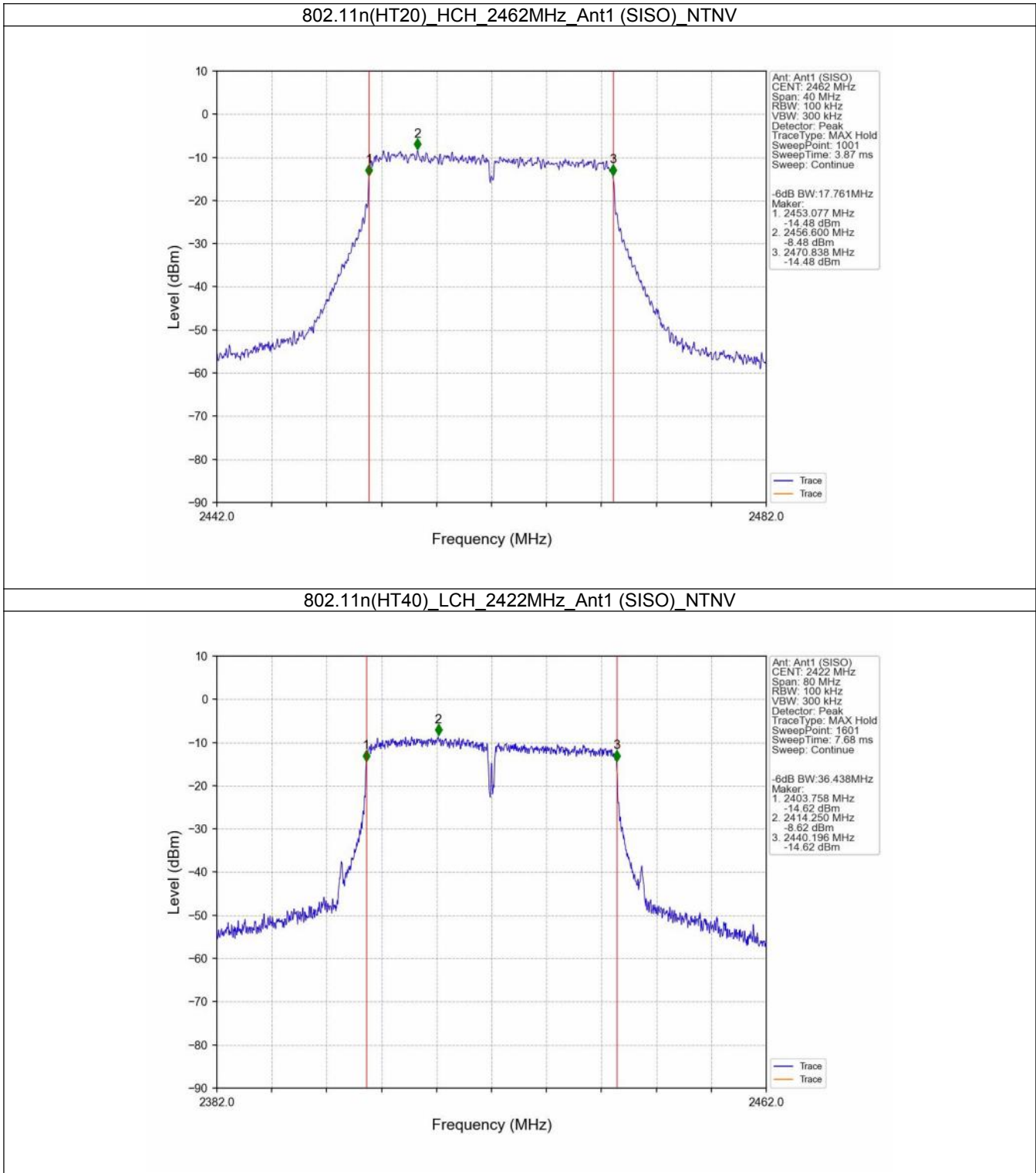
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



FCC ID: 2BNOWC3

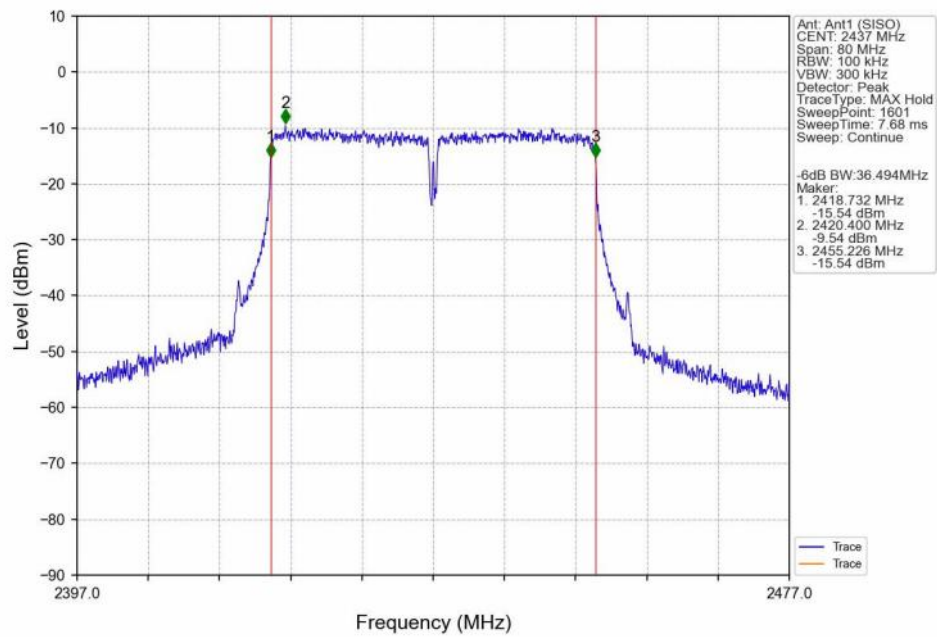


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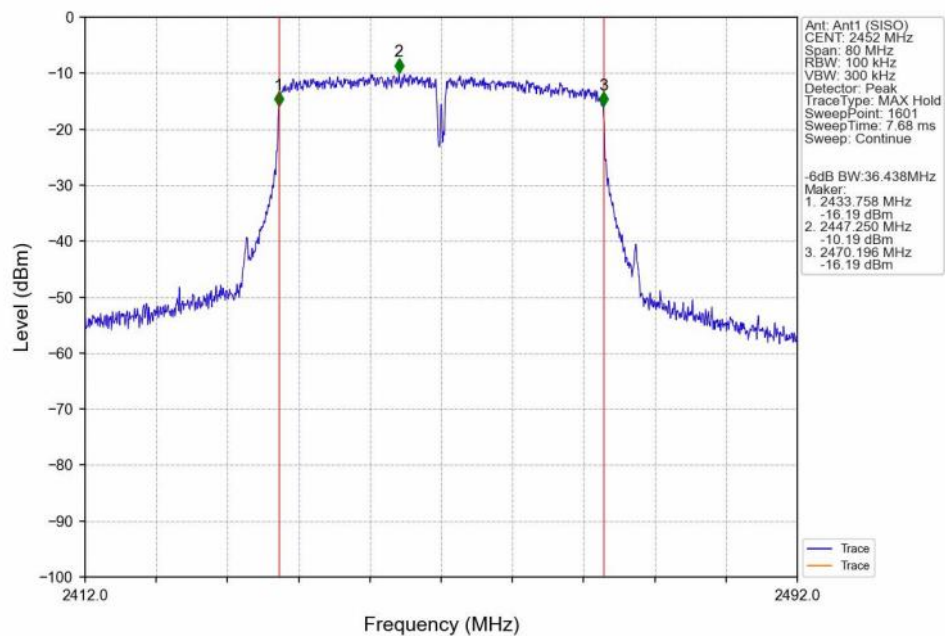


FCC ID: 2BNOWC3

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2BNOWC3

3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

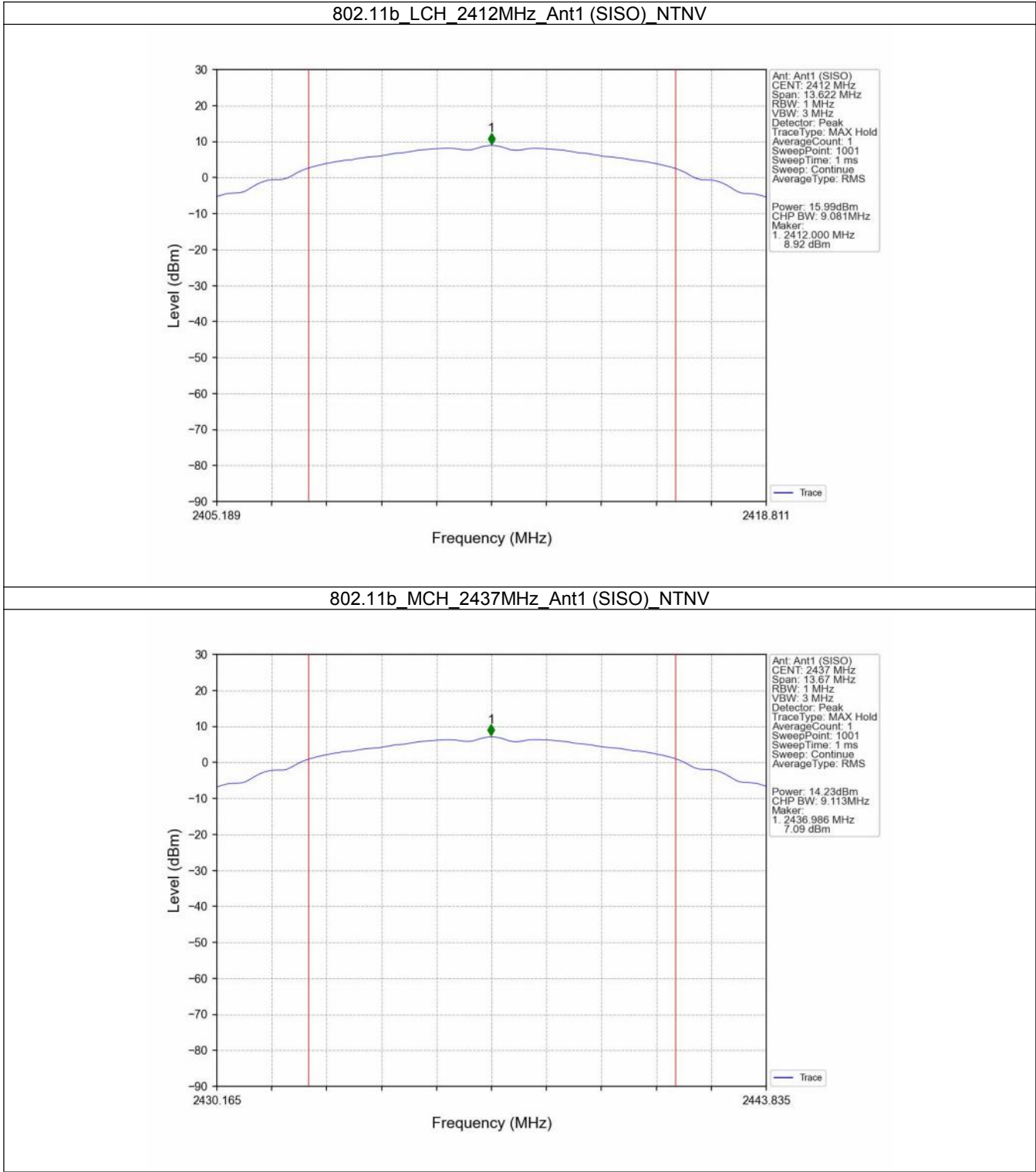
Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	15.99	<=30	Pass
		2437	14.23	<=30	Pass
		2462	13.39	<=30	Pass
802.11g	SISO	2412	15.04	<=30	Pass
		2437	13.53	<=30	Pass
		2462	12.71	<=30	Pass
802.11n (HT20)	SISO	2412	15.28	<=30	Pass
		2437	13.72	<=30	Pass
		2462	12.90	<=30	Pass
802.11n (HT40)	SISO	2422	15.72	<=30	Pass
		2437	15.00	<=30	Pass
		2452	14.47	<=30	Pass

Note1: Antenna Gain: Ant1: 2.71dBi;

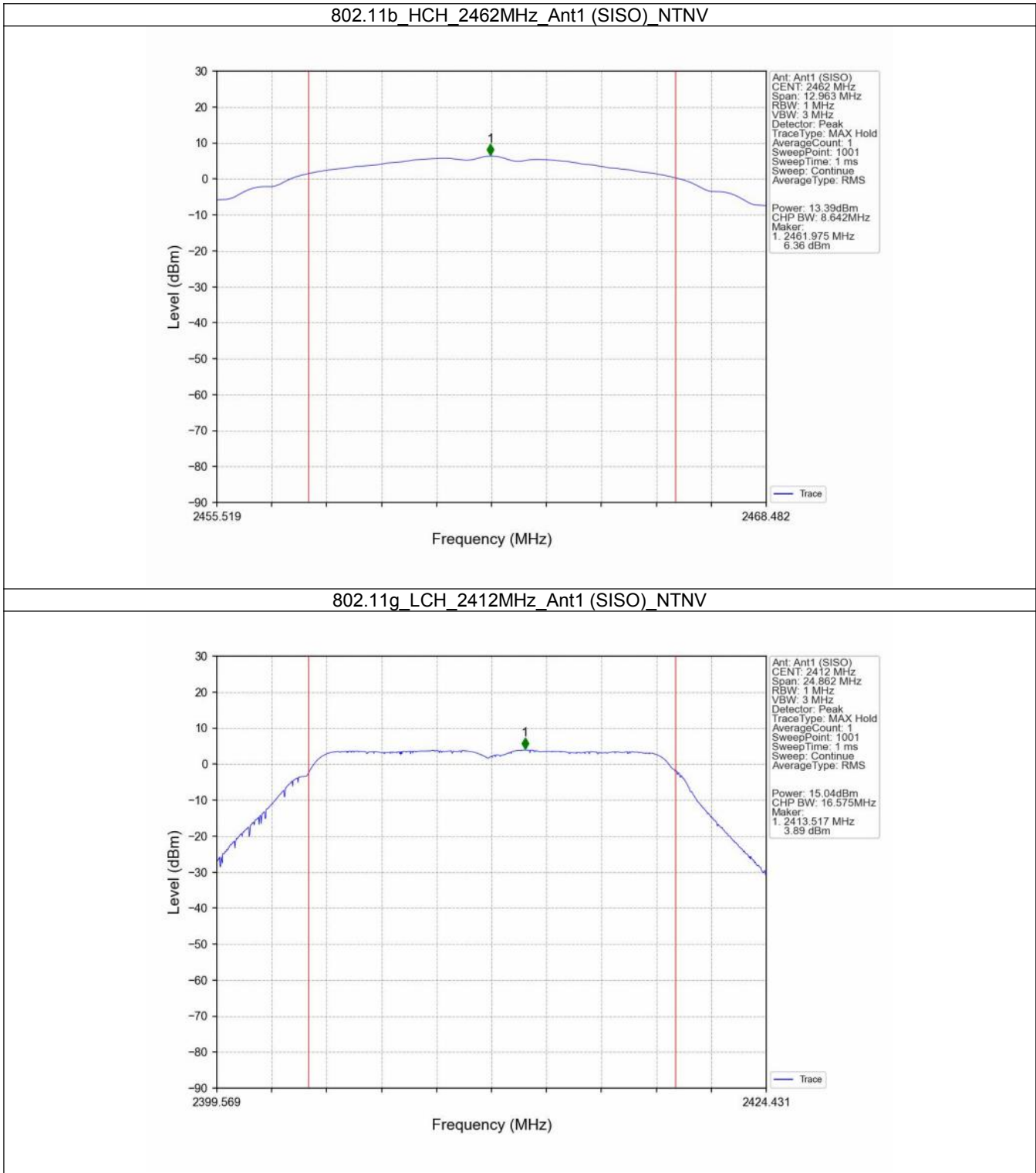
FCC ID: 2BNOWC3

3.2 Test Graph

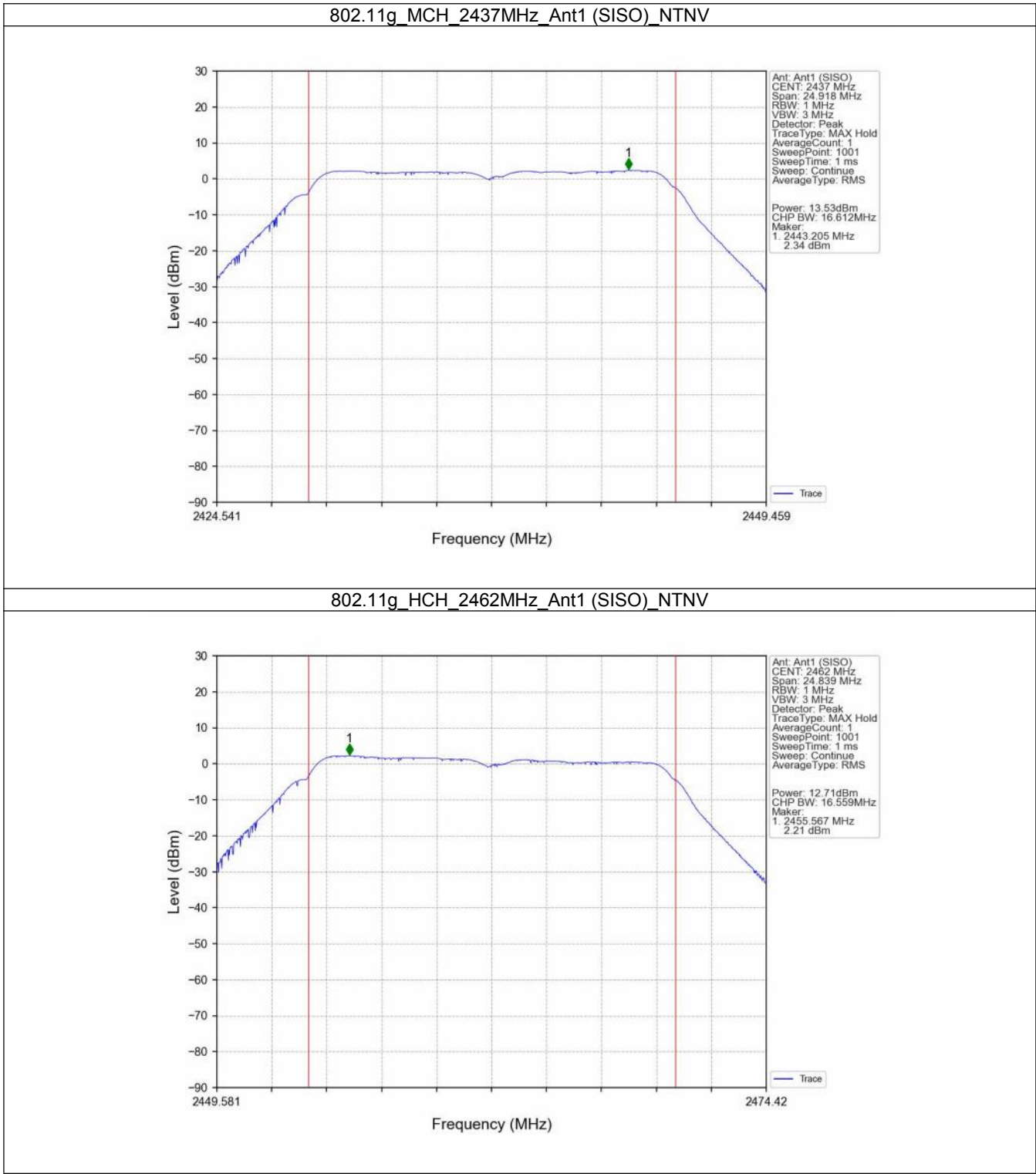
3.2.1 Power



FCC ID: 2BNOWC3

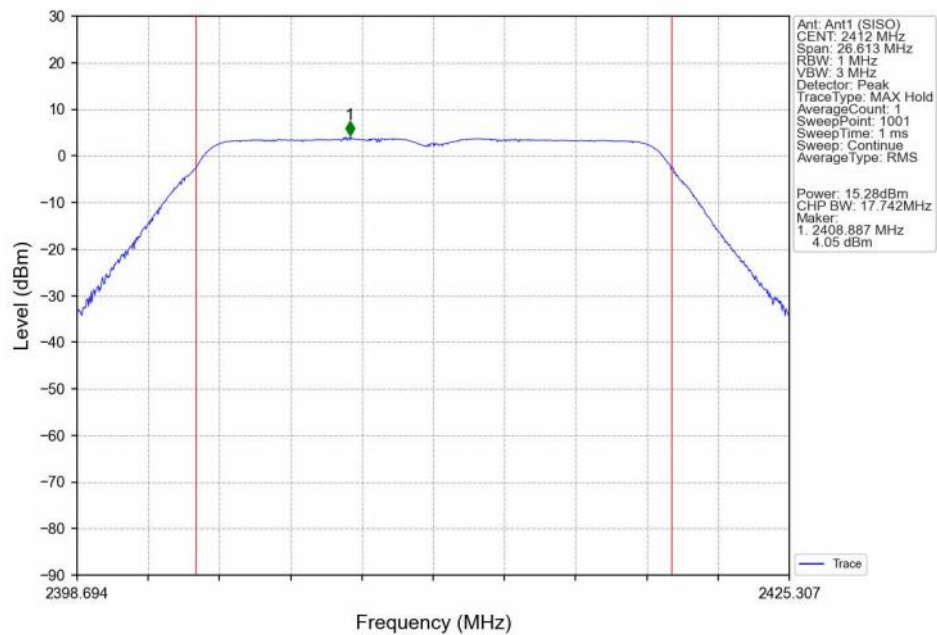


FCC ID: 2BNOWC3

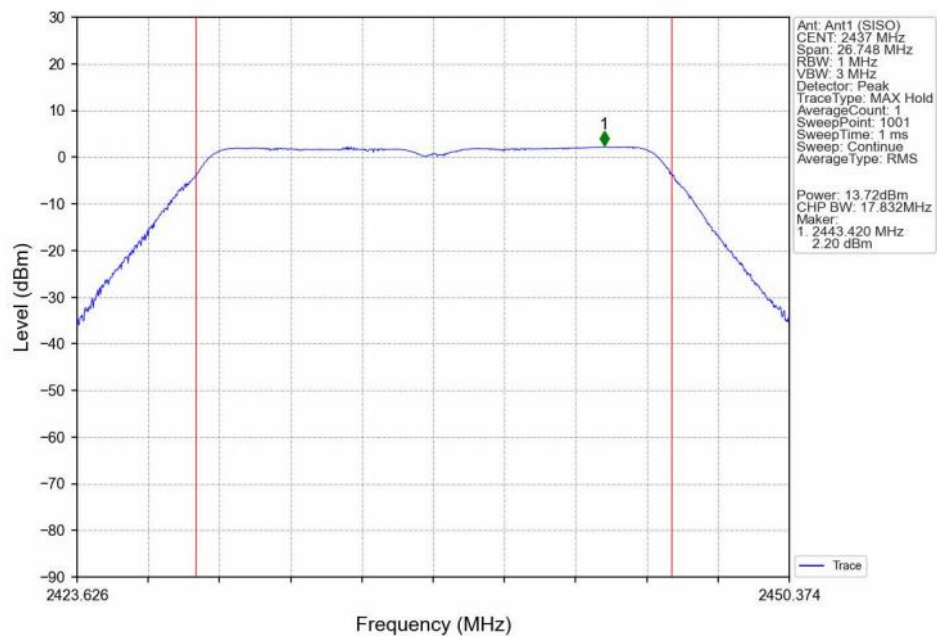


FCC ID: 2BNOWC3

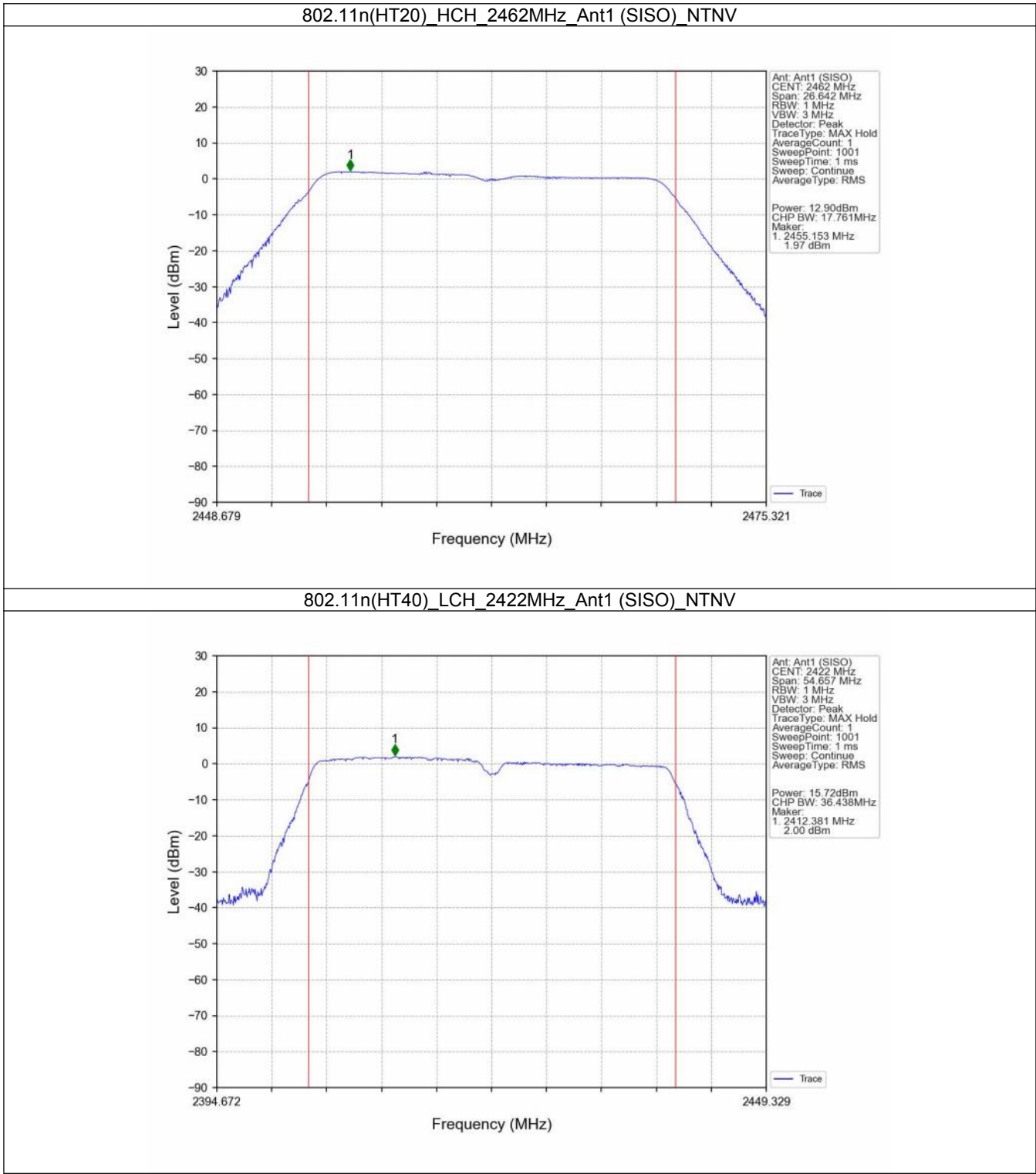
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

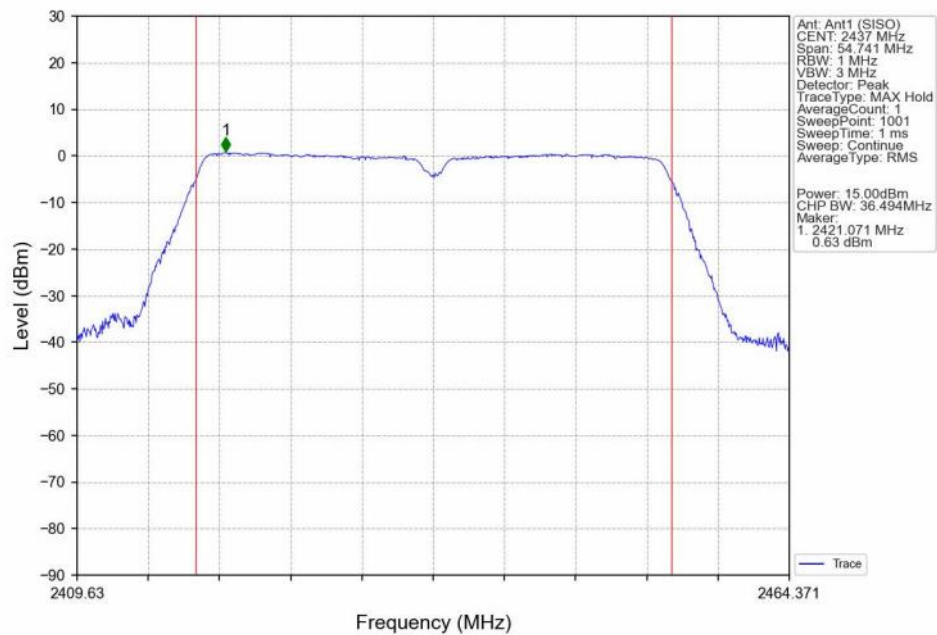


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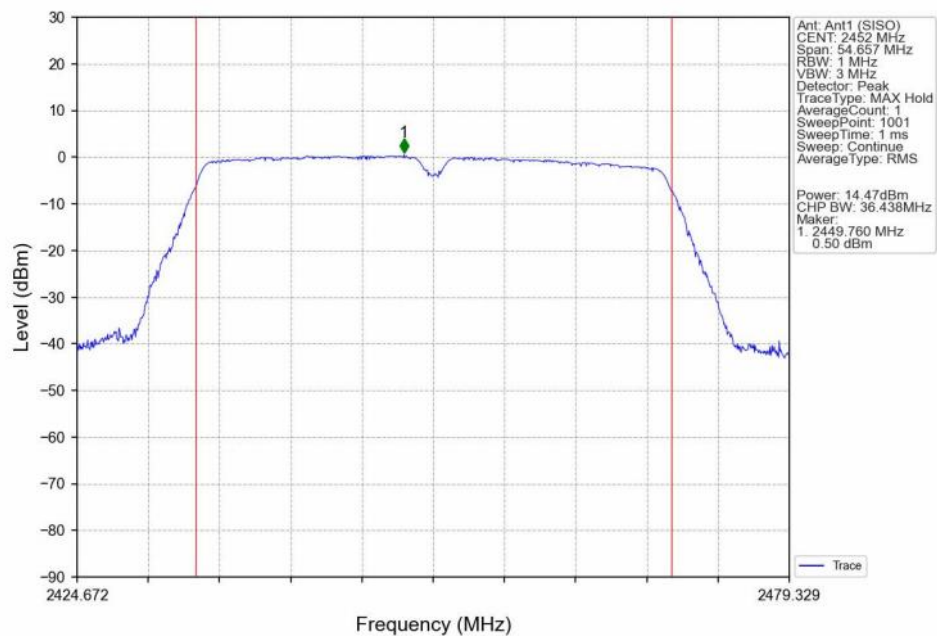


FCC ID: 2BNOWC3

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2BNOWC3

4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

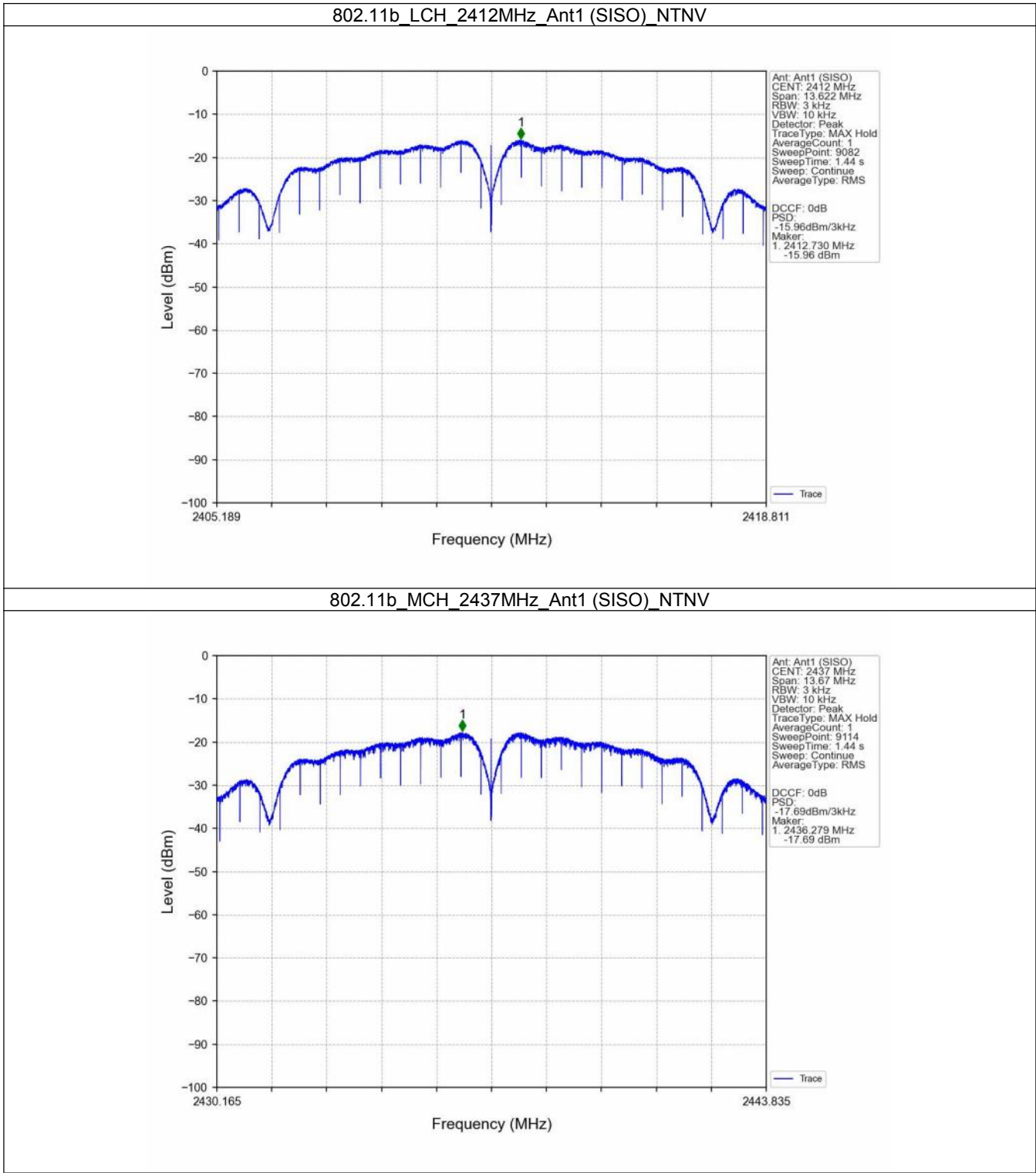
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-15.96	<=8	Pass
		2437	-17.69	<=8	Pass
		2462	-18.41	<=8	Pass
802.11g	SISO	2412	-17.09	<=8	Pass
		2437	-18.99	<=8	Pass
		2462	-19.79	<=8	Pass
802.11n (HT20)	SISO	2412	-16.82	<=8	Pass
		2437	-18.85	<=8	Pass
		2462	-19.65	<=8	Pass
802.11n (HT40)	SISO	2422	-17.72	<=8	Pass
		2437	-18.95	<=8	Pass
		2452	-18.48	<=8	Pass

Note1: Antenna Gain: Ant1: 2.71dBi;

FCC ID: 2BNOWC3

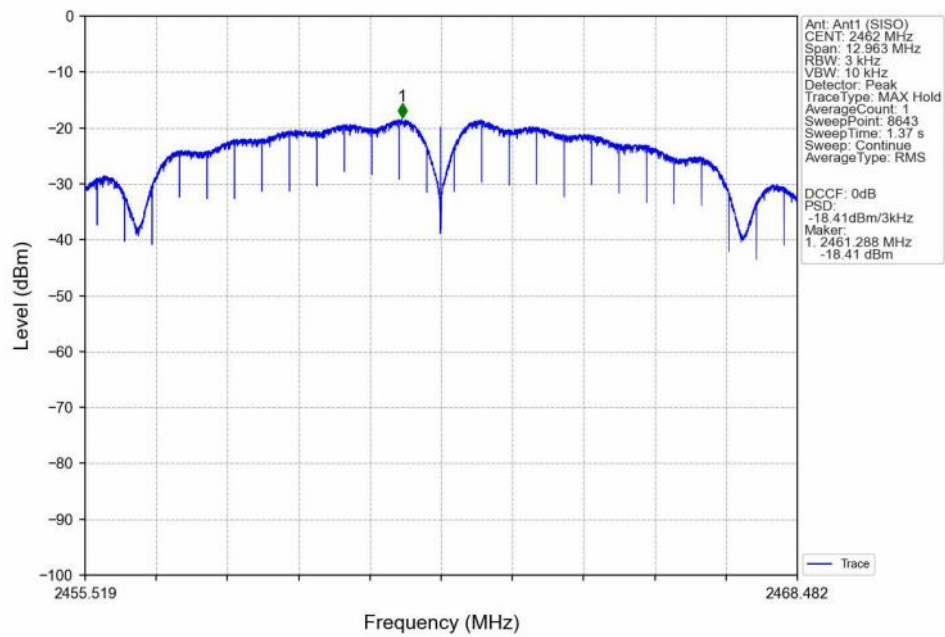
4.2 Test Graph

4.2.1 PSD

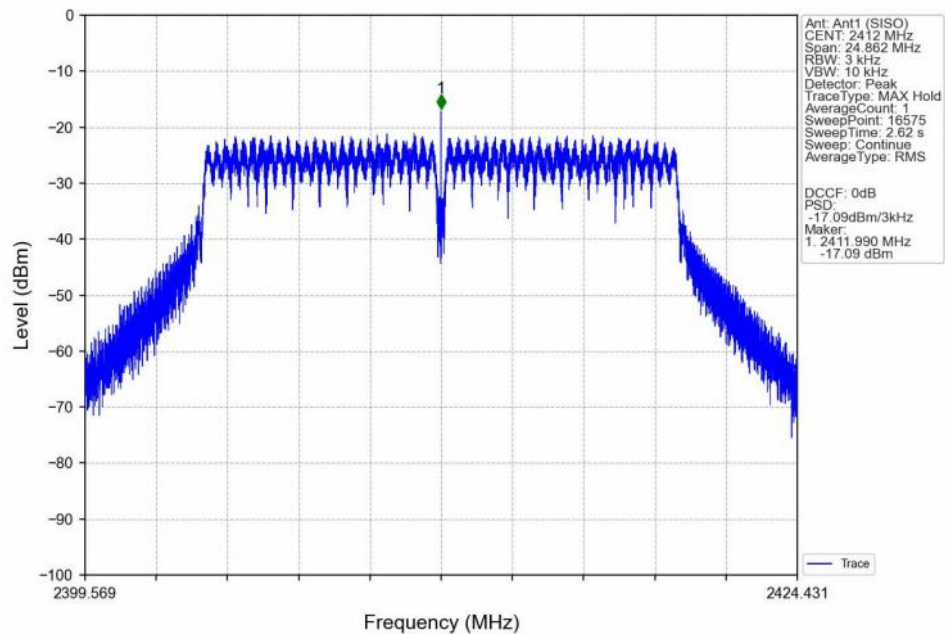


FCC ID: 2BNOWC3

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

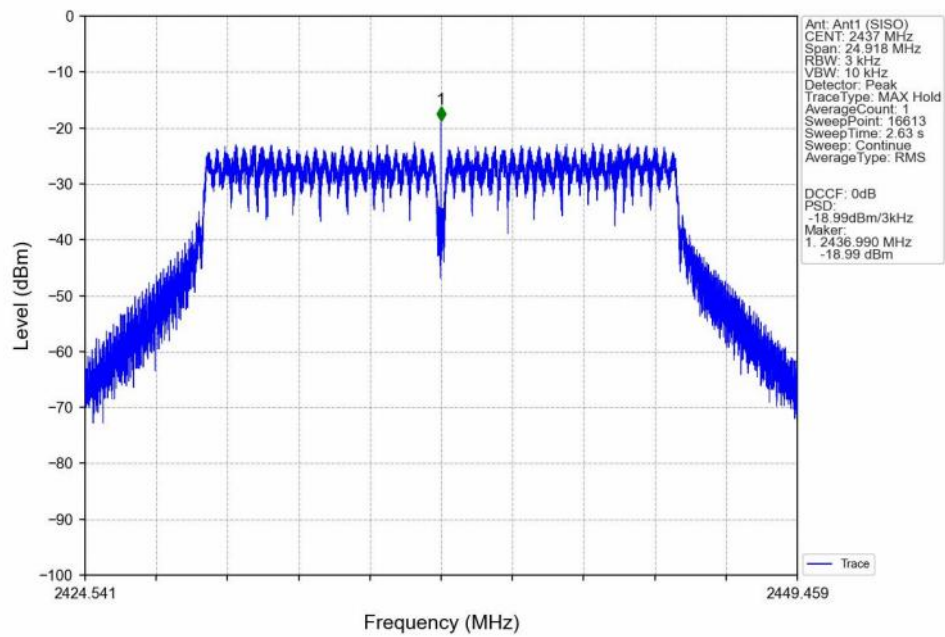


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

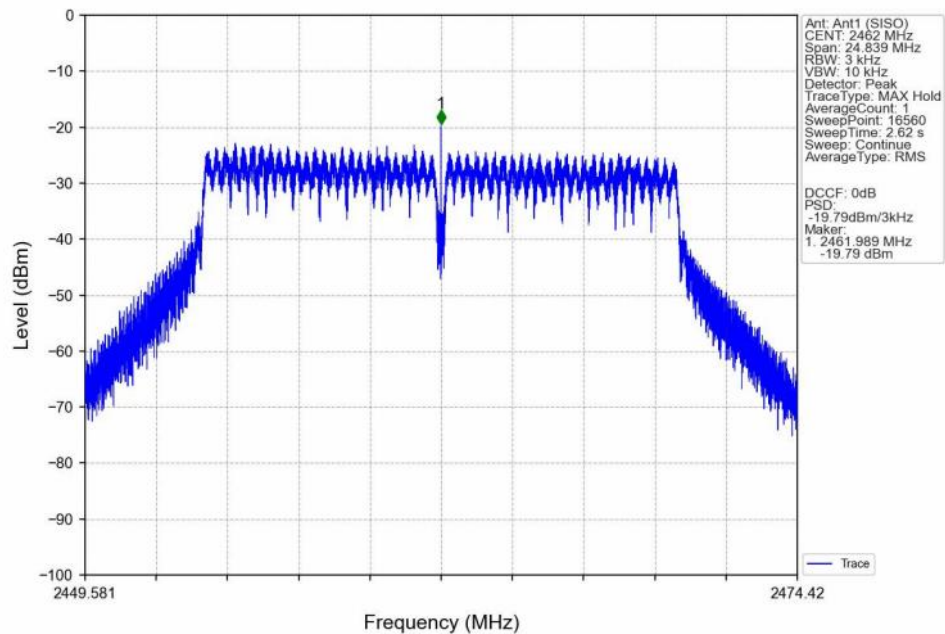


FCC ID: 2BNOWC3

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

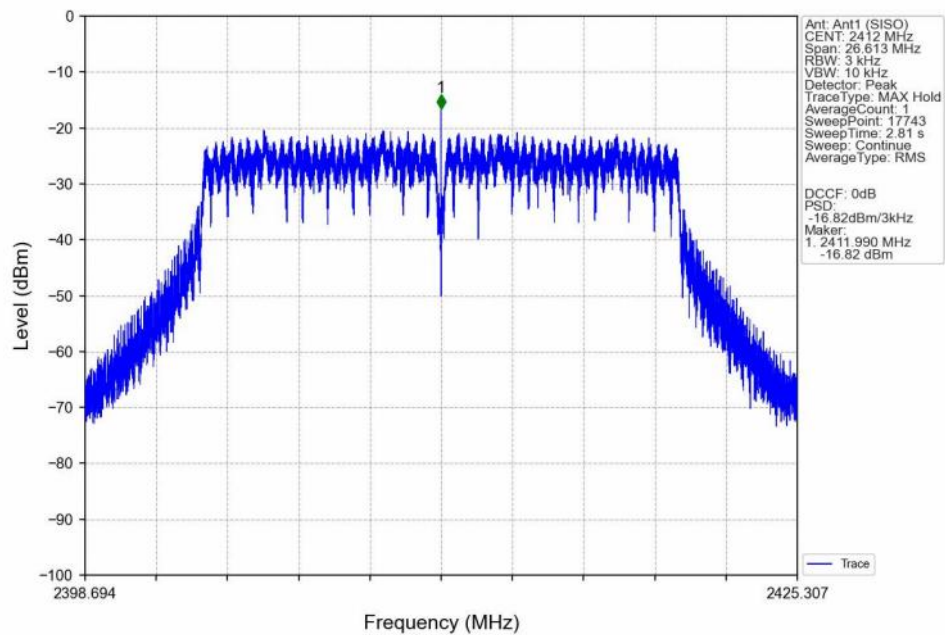


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

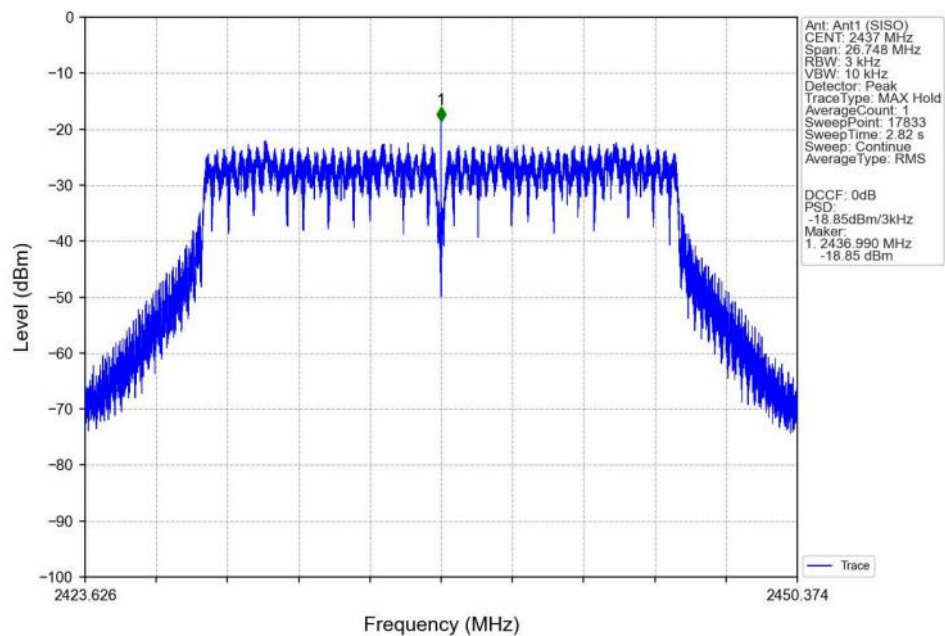


FCC ID: 2BNOWC3

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

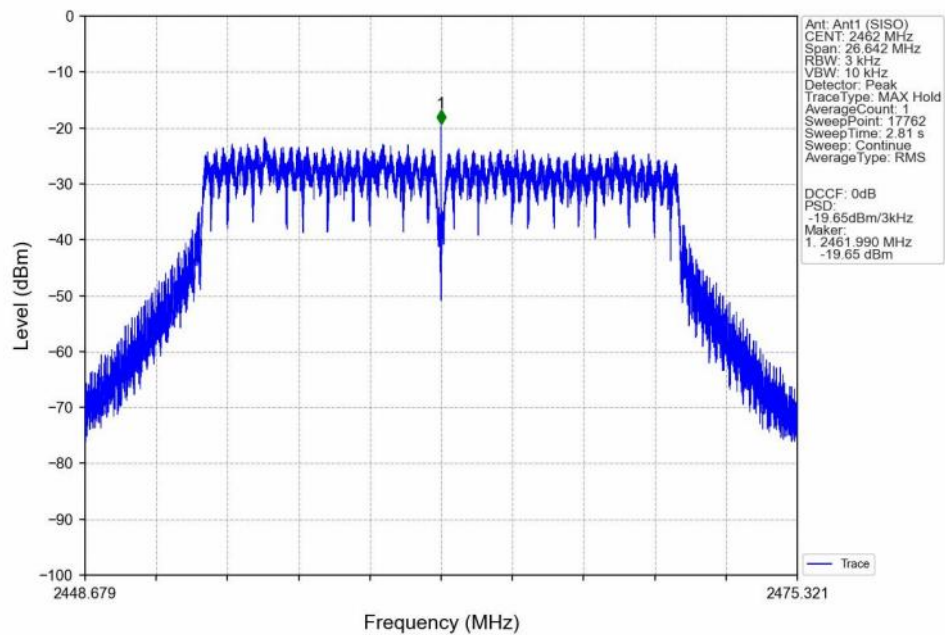


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

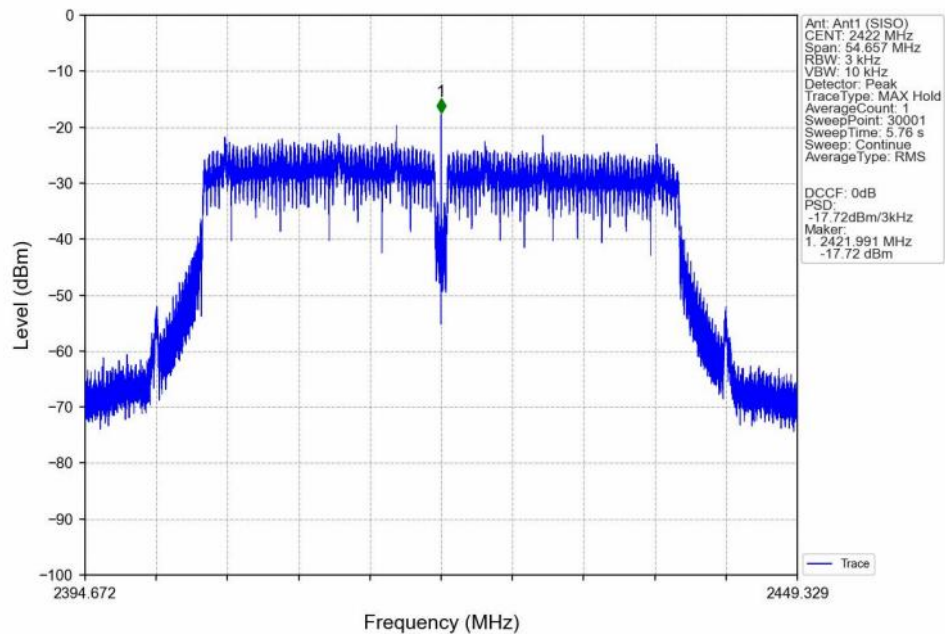


FCC ID: 2BNOWC3

802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

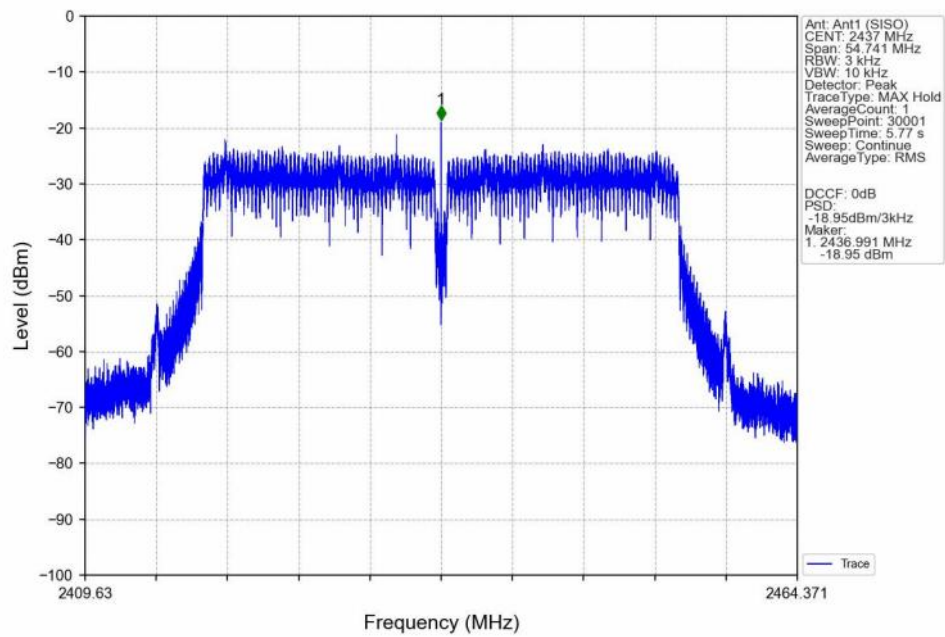


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

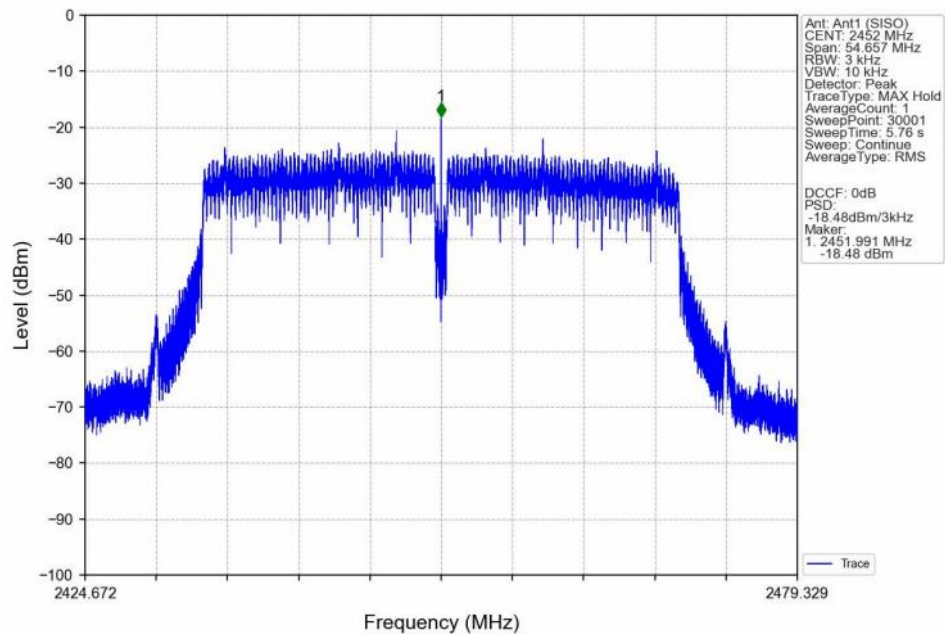


FCC ID: 2BNOWC3

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2BNOWC3

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	4.11
		2437	1	2.28
		2462	1	1.63
802.11g	SISO	2412	1	-6.67
		2437	1	-8.31
		2462	1	-8.75
802.11n (HT20)	SISO	2412	1	-6.20
		2437	1	-8.22
		2462	1	-8.32
802.11n (HT40)	SISO	2422	1	-8.66
		2437	1	-9.50
		2452	1	-10.19

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

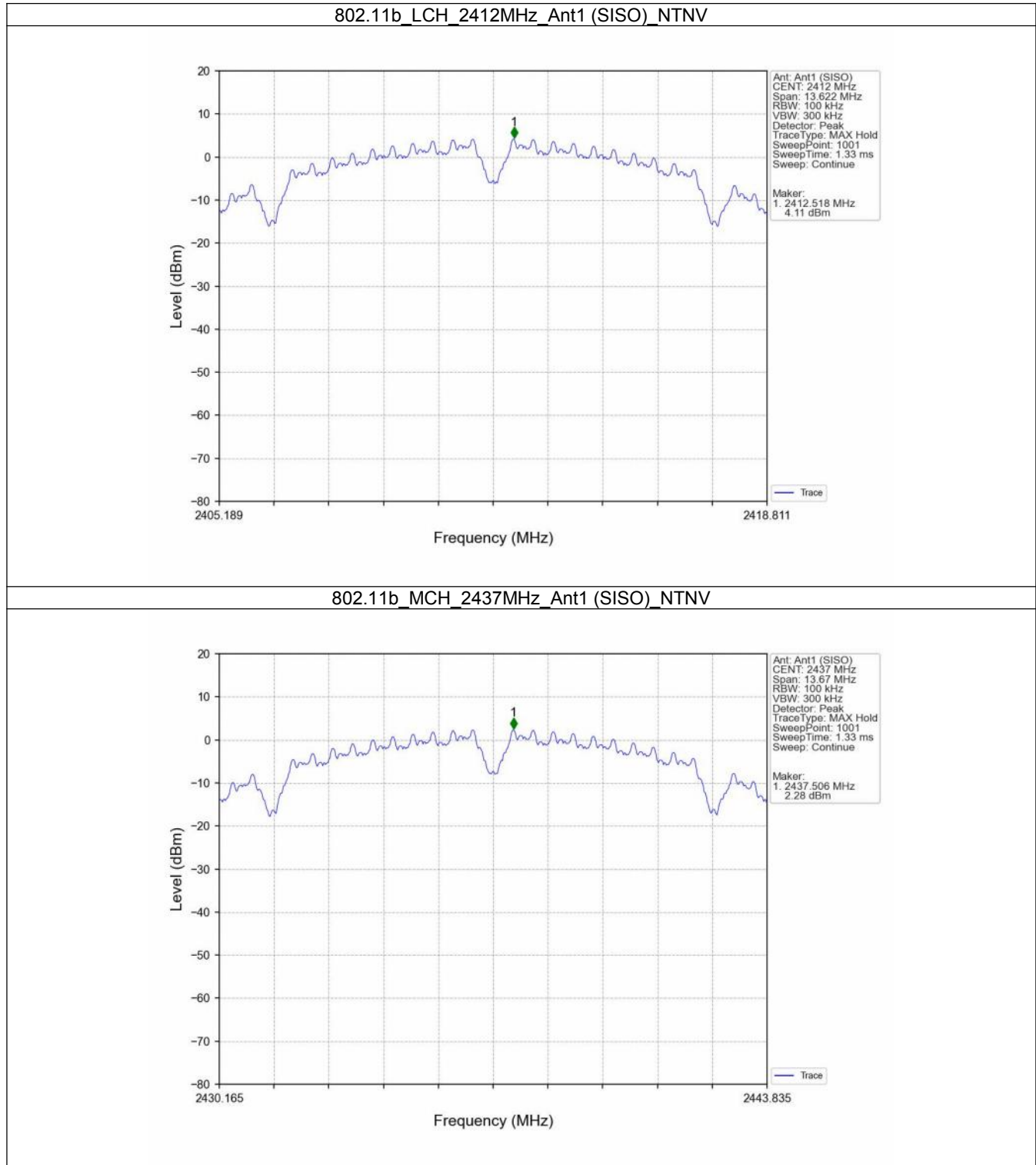
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	4.11	-15.89	Pass
		2437	1	4.11	-15.89	Pass
		2462	1	4.11	-15.89	Pass
802.11g	SISO	2412	1	-6.67	-26.67	Pass
		2437	1	-6.67	-26.67	Pass
		2462	1	-6.67	-26.67	Pass
802.11n (HT20)	SISO	2412	1	-6.20	-26.20	Pass
		2437	1	-6.20	-26.20	Pass
		2462	1	-6.20	-26.20	Pass
802.11n (HT40)	SISO	2422	1	-8.66	-28.66	Pass
		2437	1	-8.66	-28.66	Pass
		2452	1	-8.66	-28.66	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: 2BNOWC3

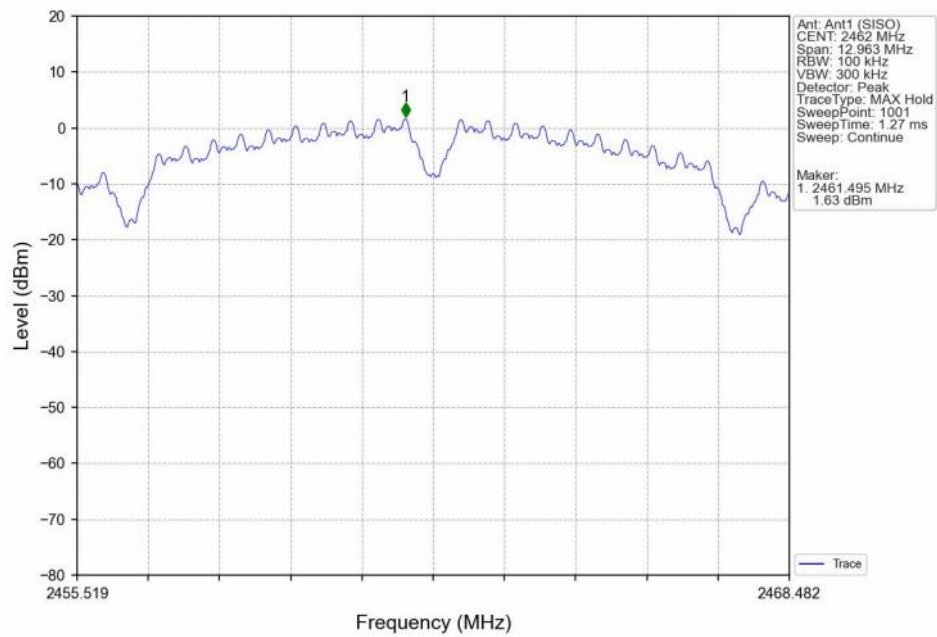
5.2 Test Graph

5.2.1 Ref

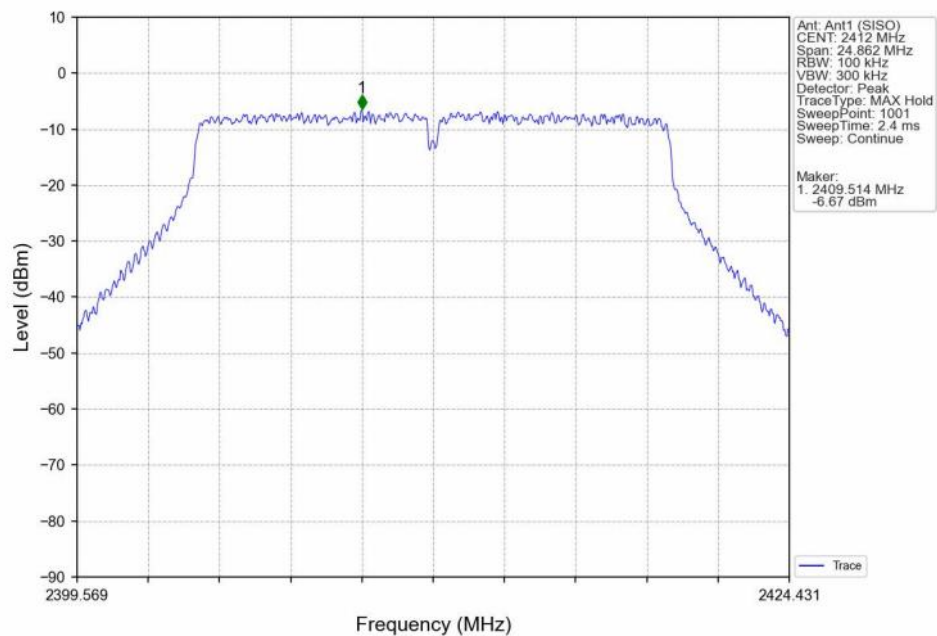


FCC ID: 2BNOWC3

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

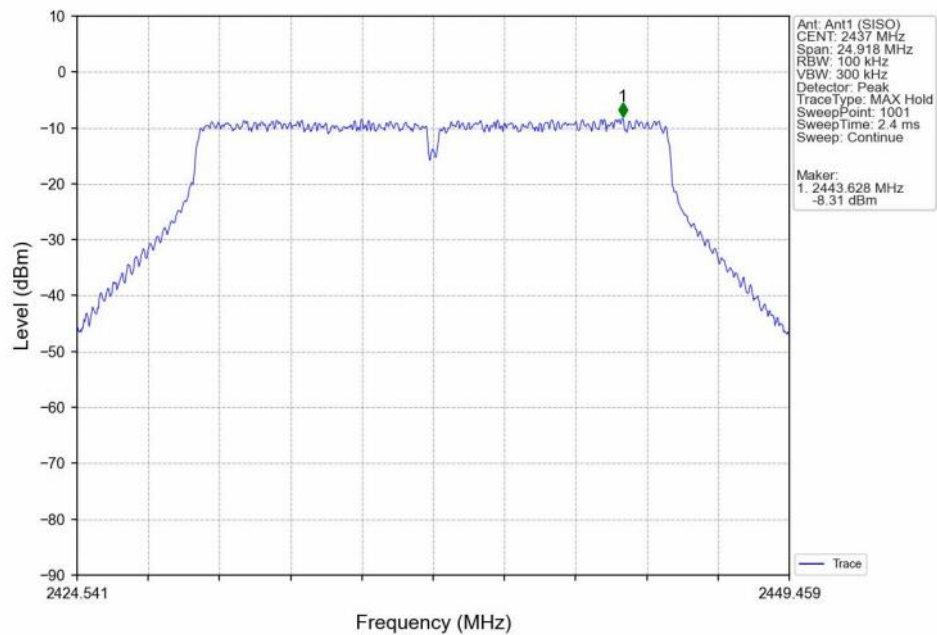


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

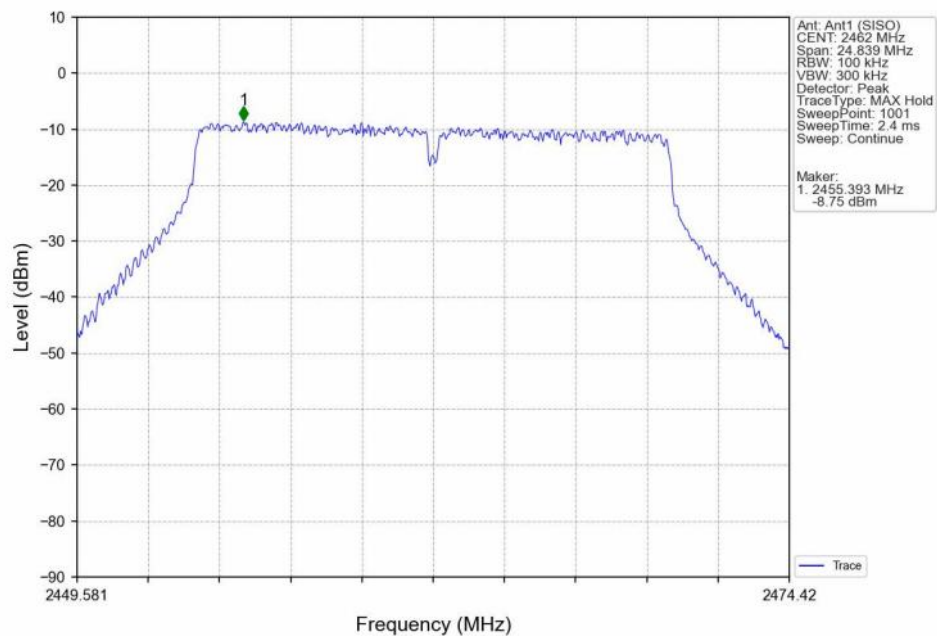


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802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

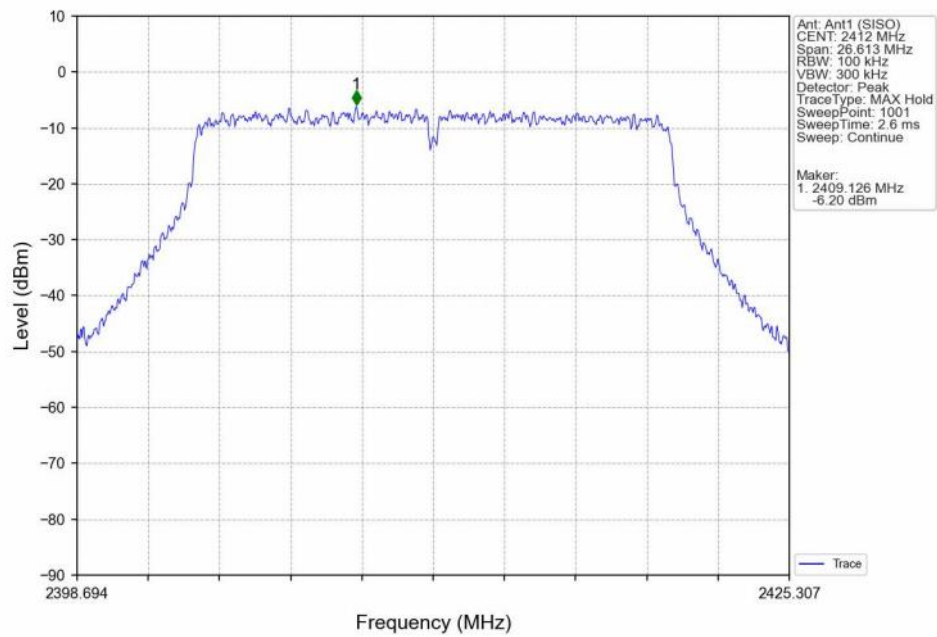


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

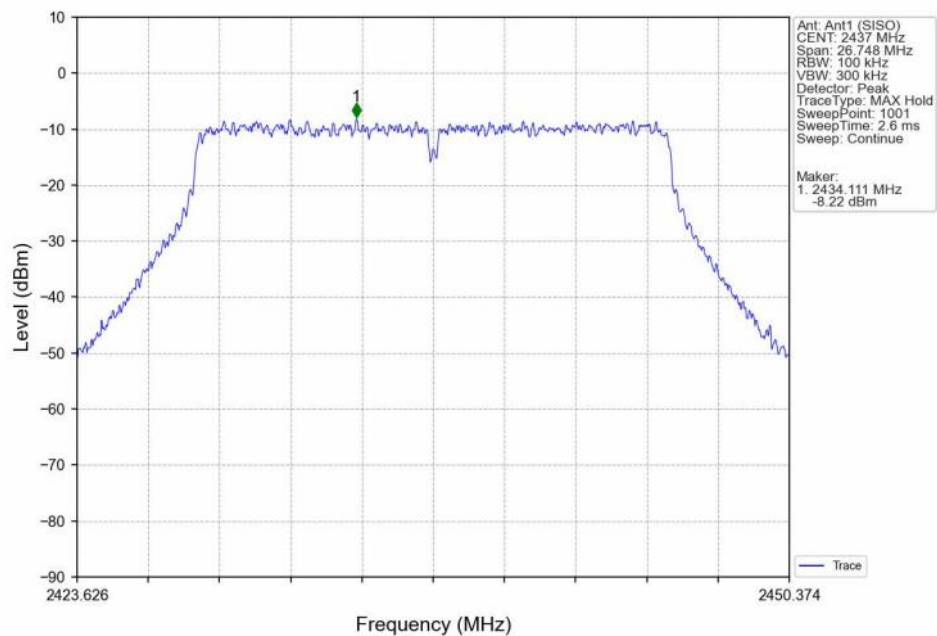


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

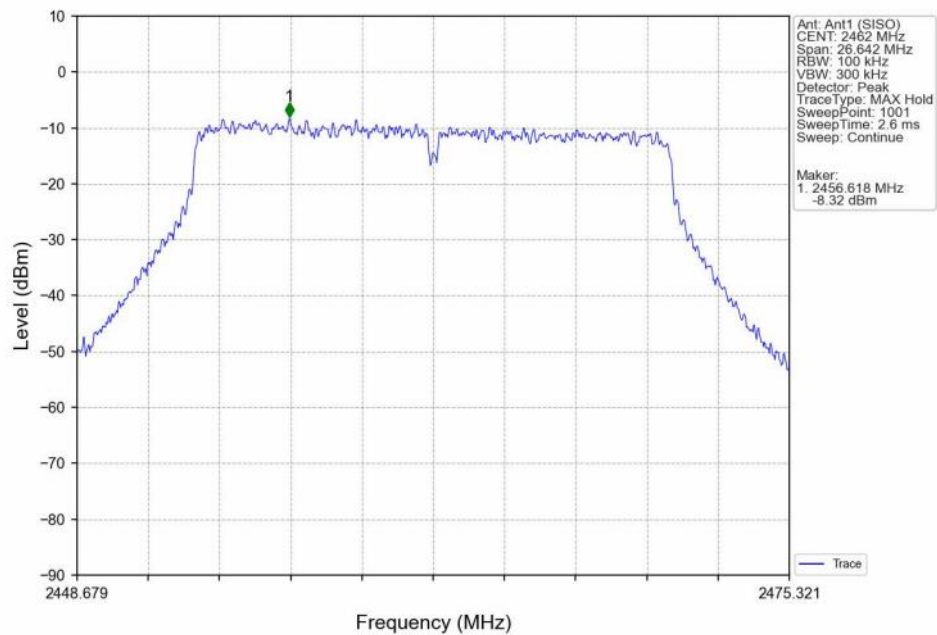


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

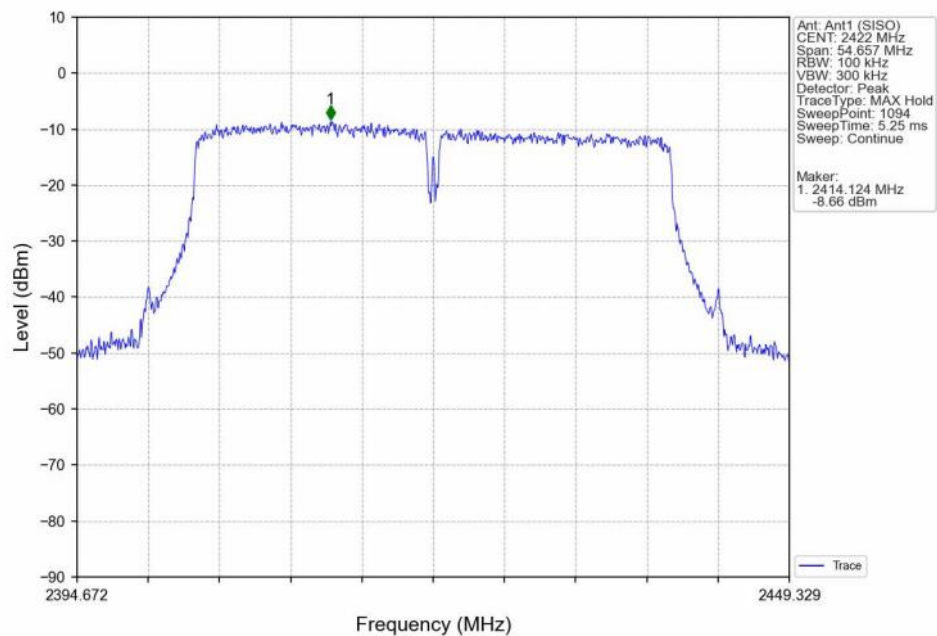


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

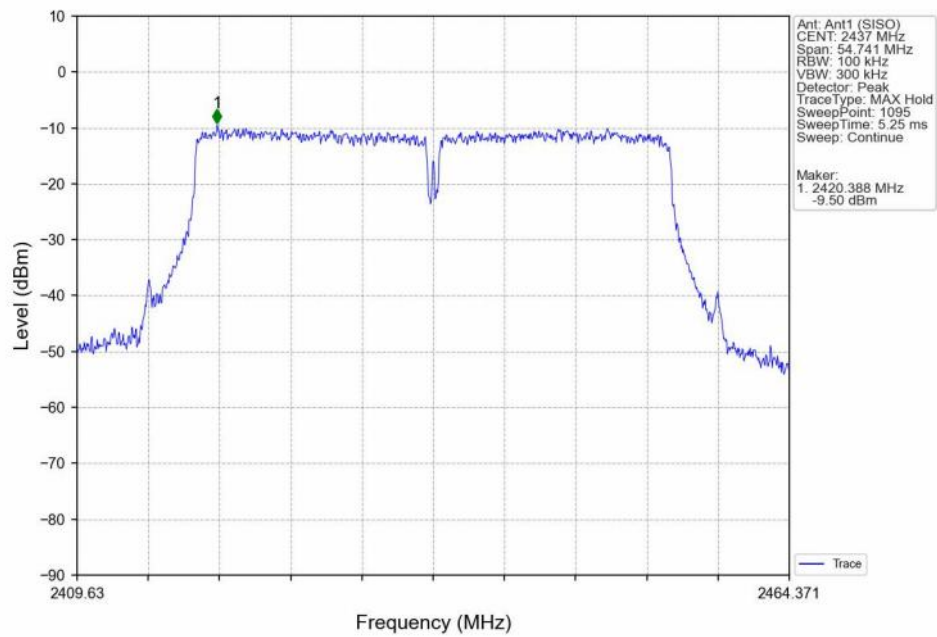


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

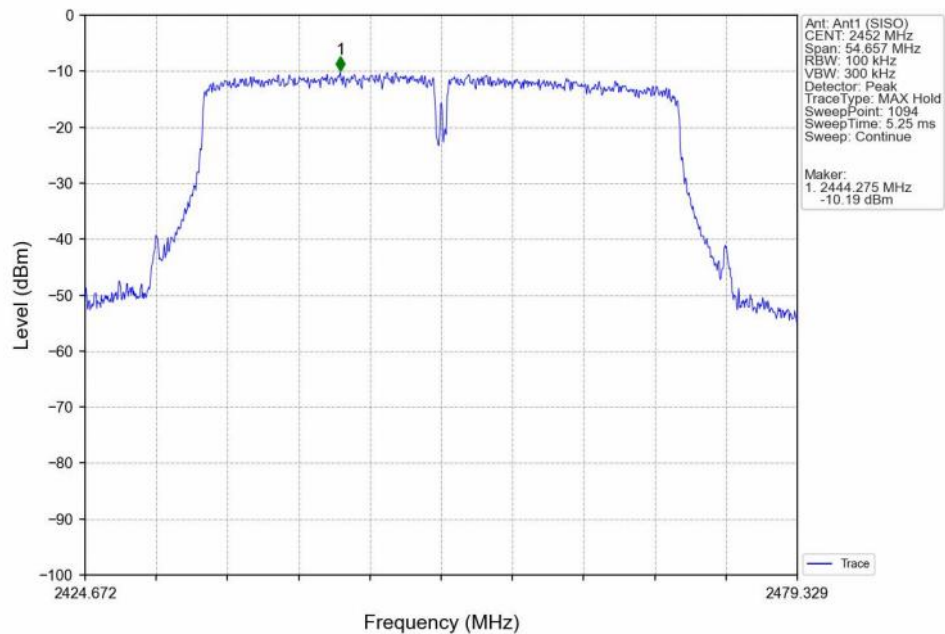


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

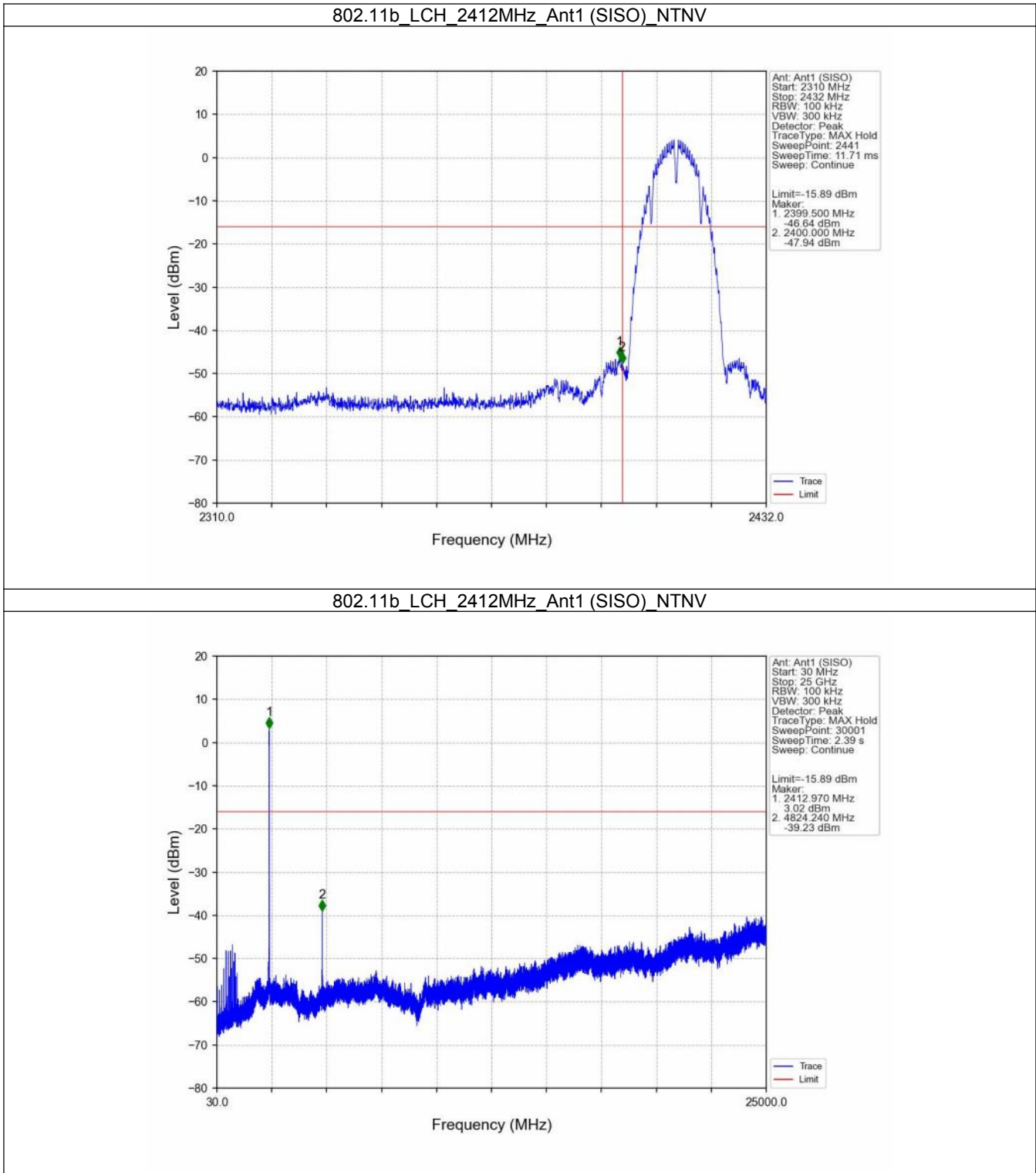


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

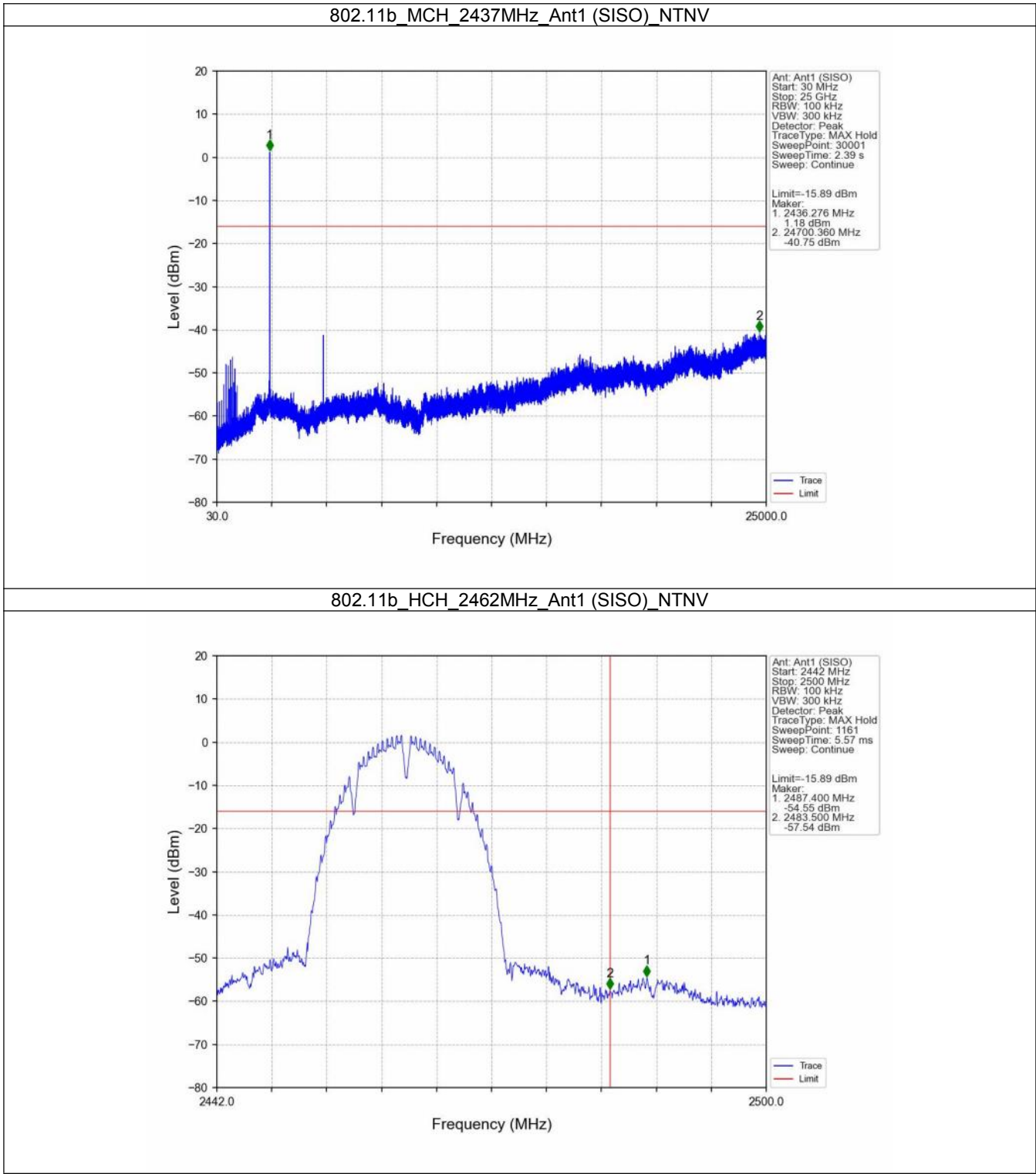


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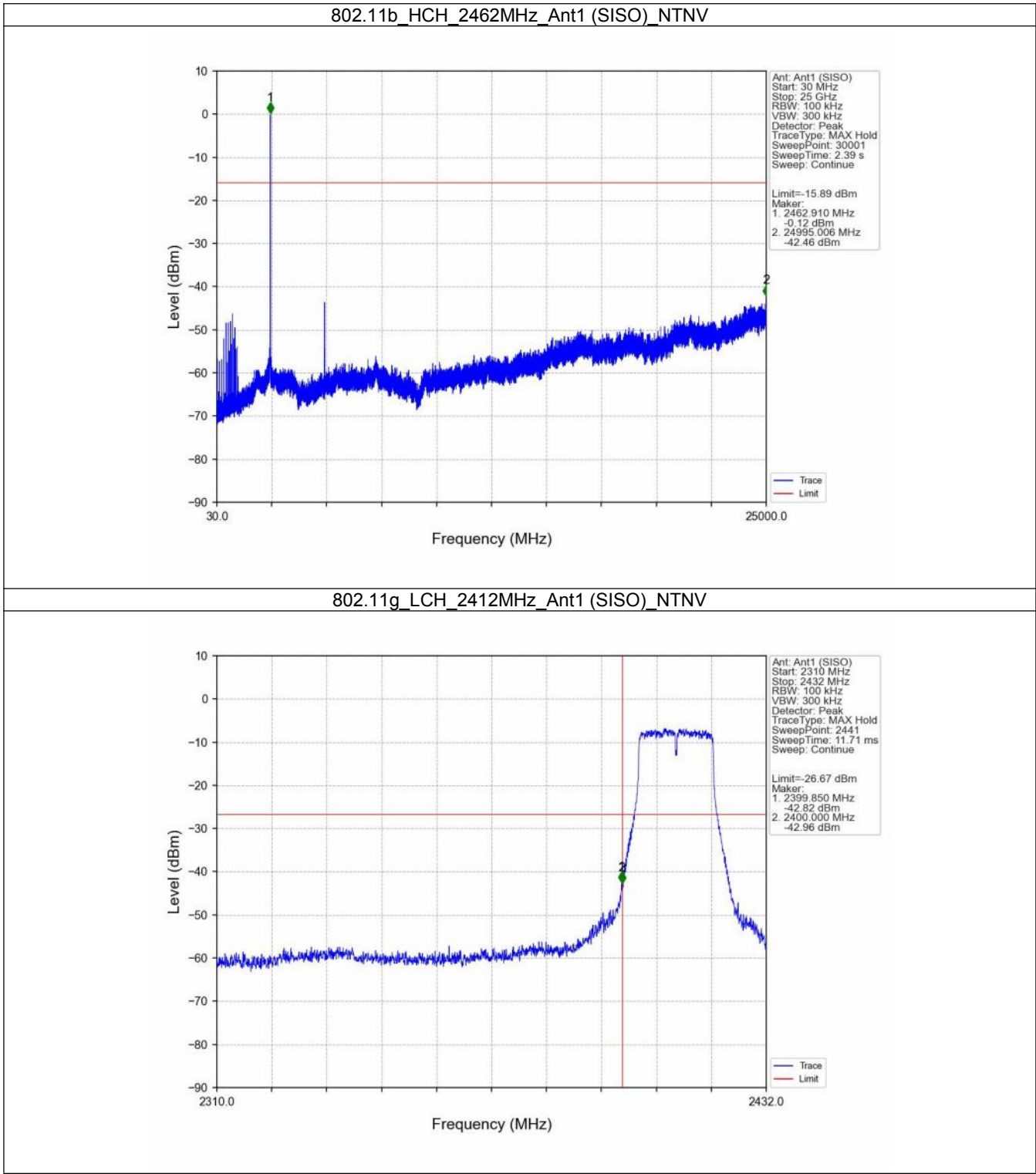
5.2.2 CSE



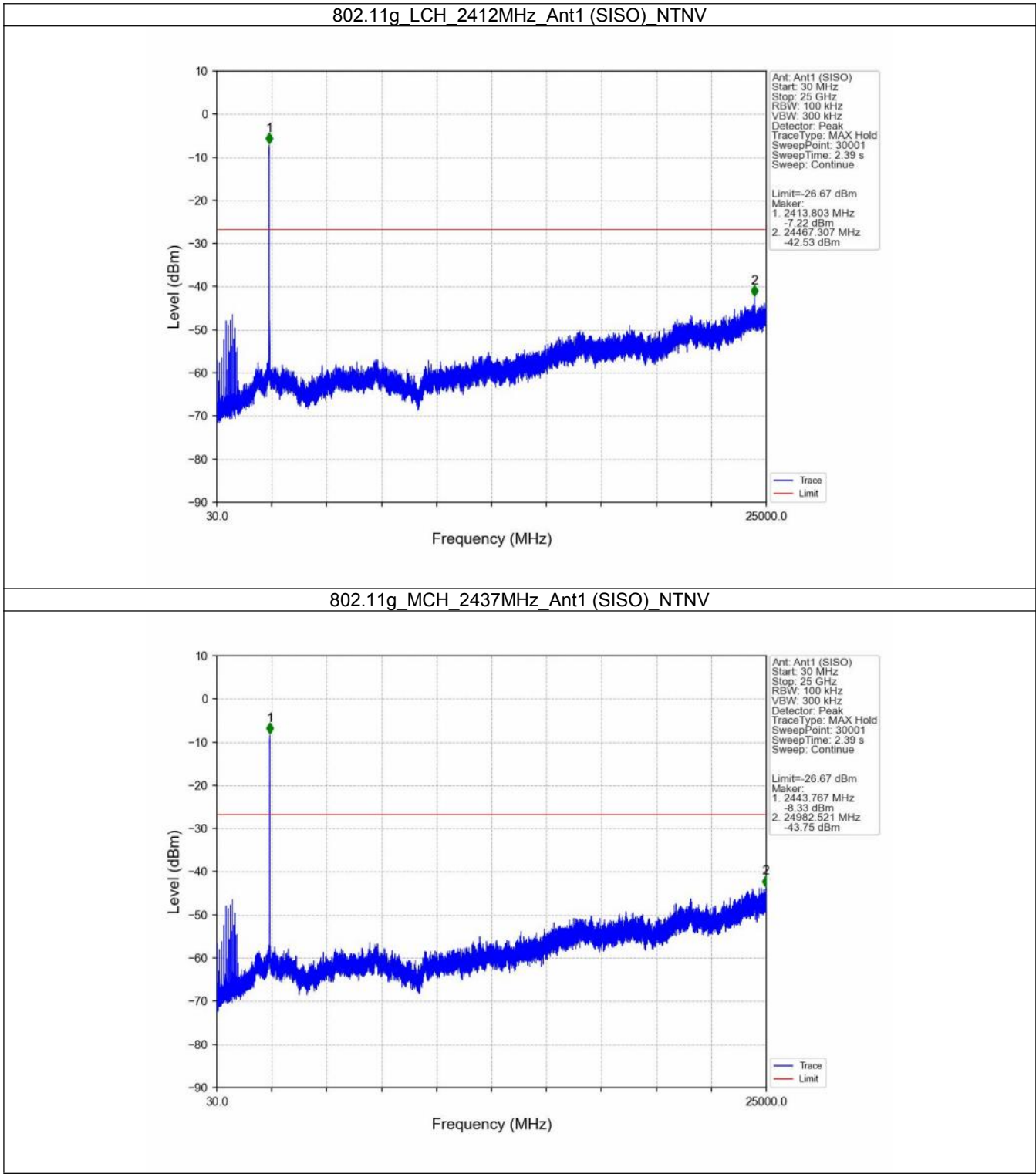
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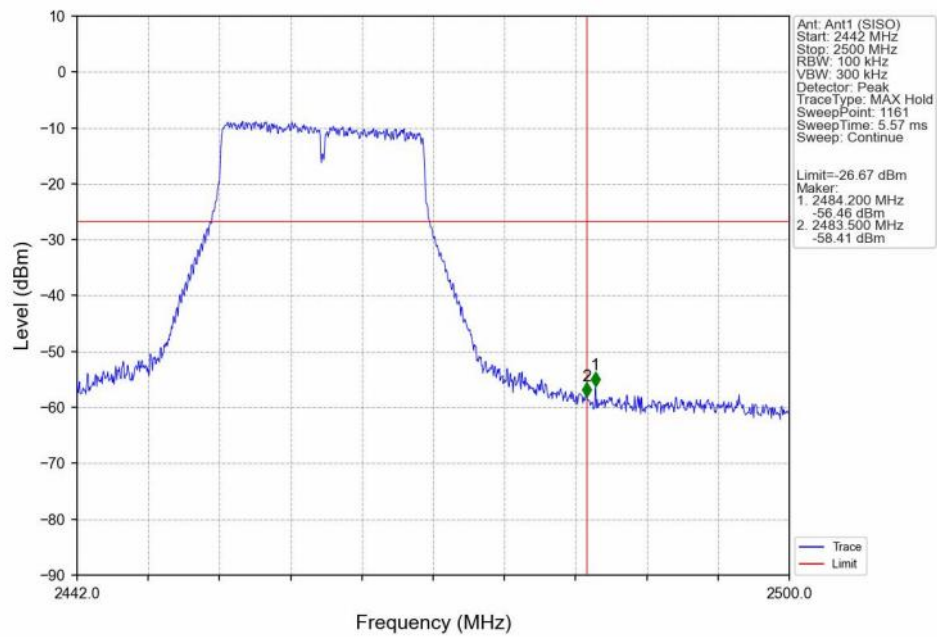


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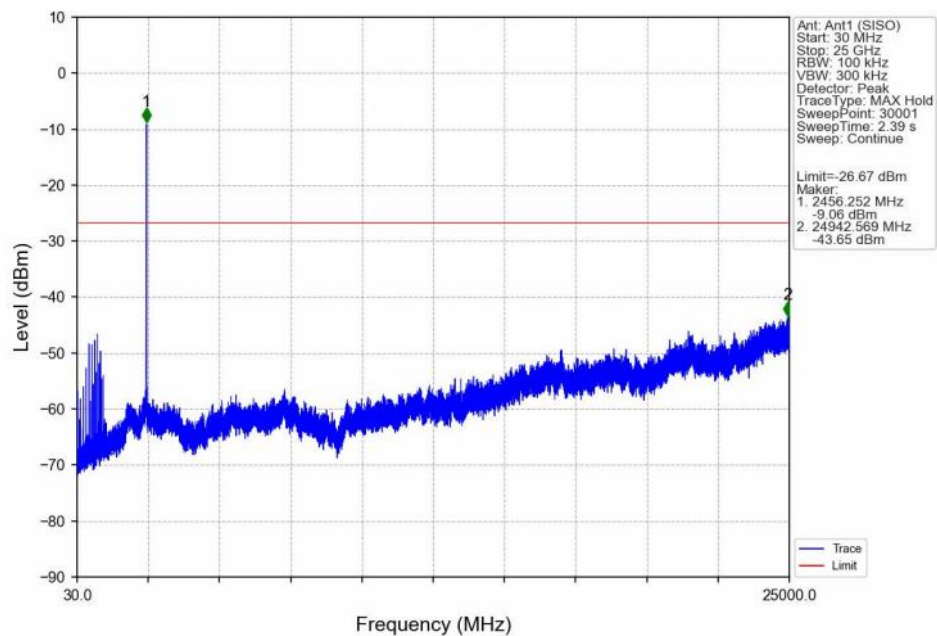


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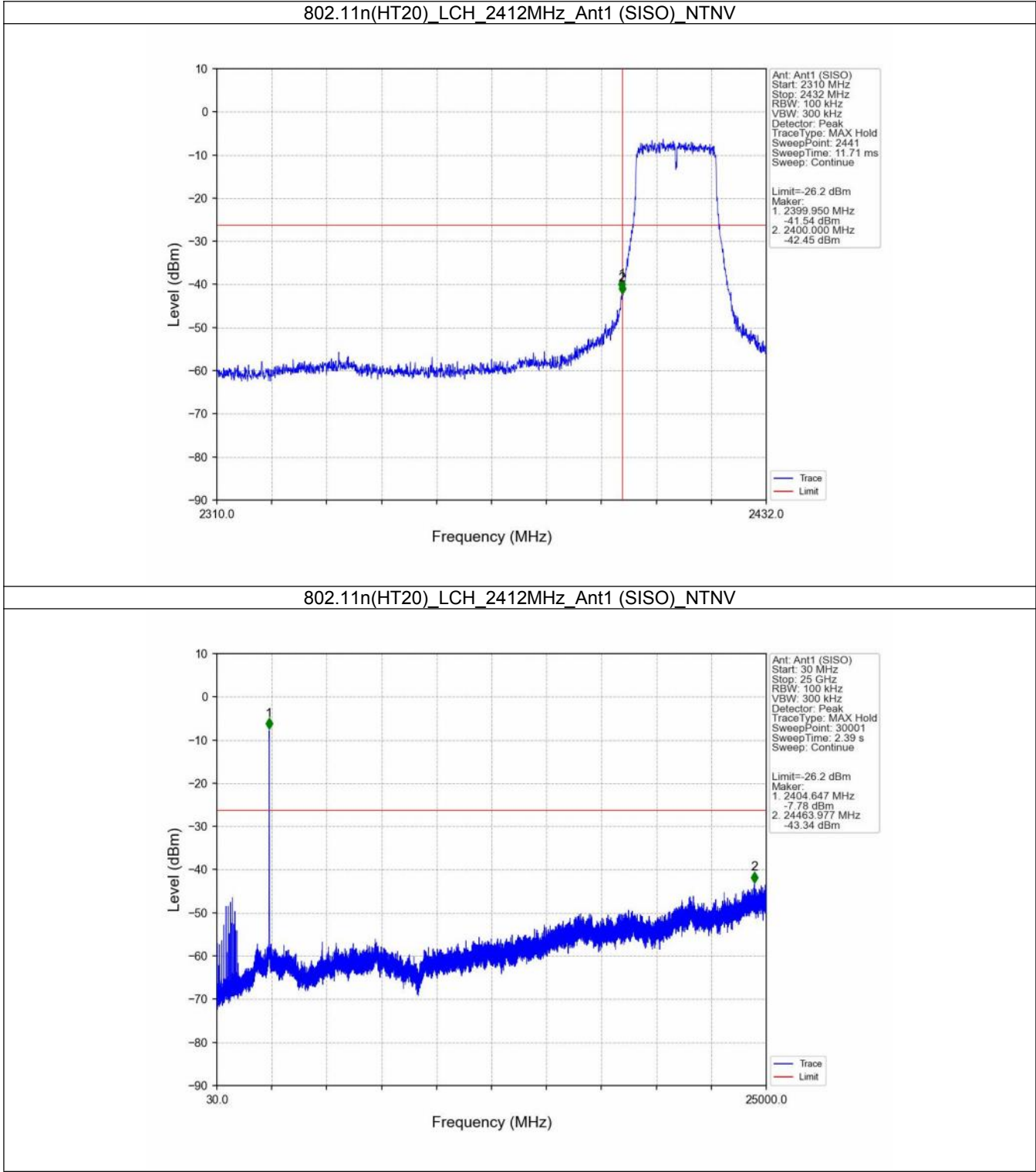
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



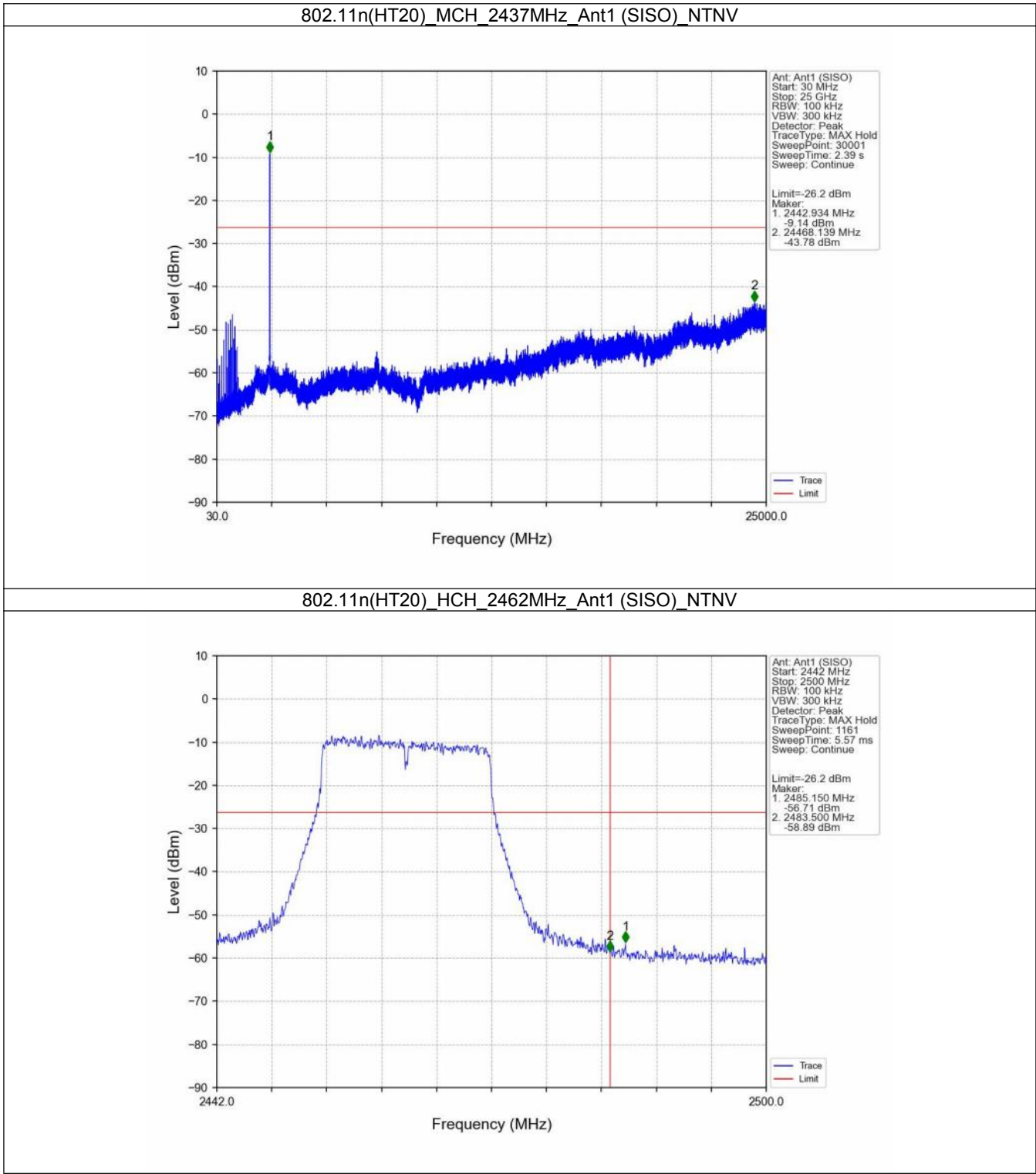
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



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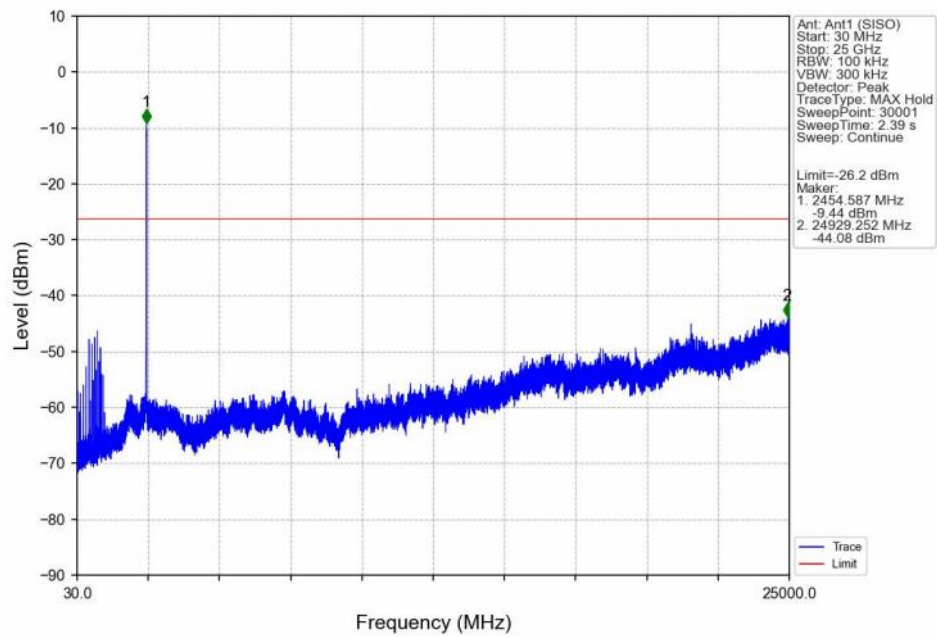


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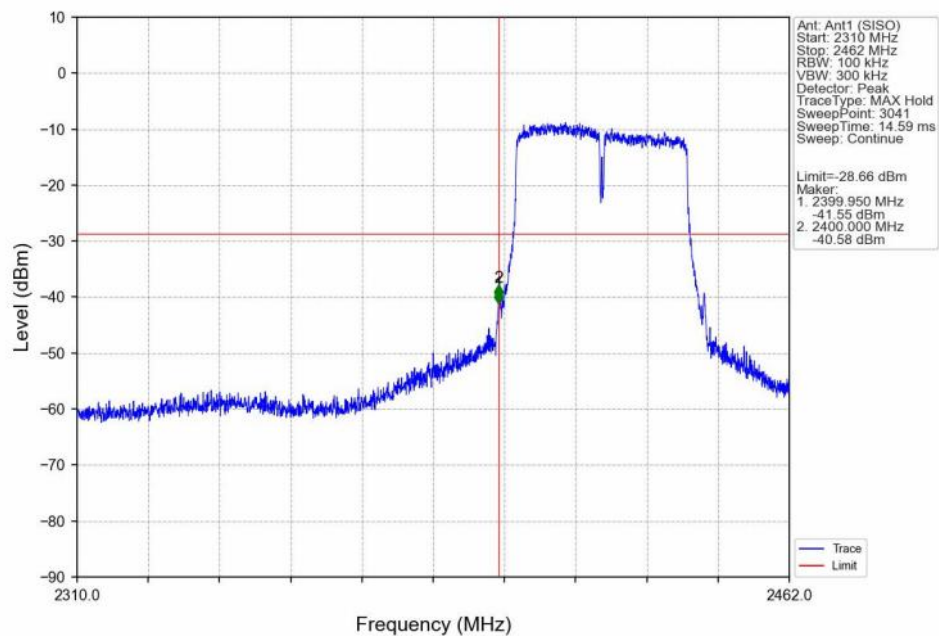


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

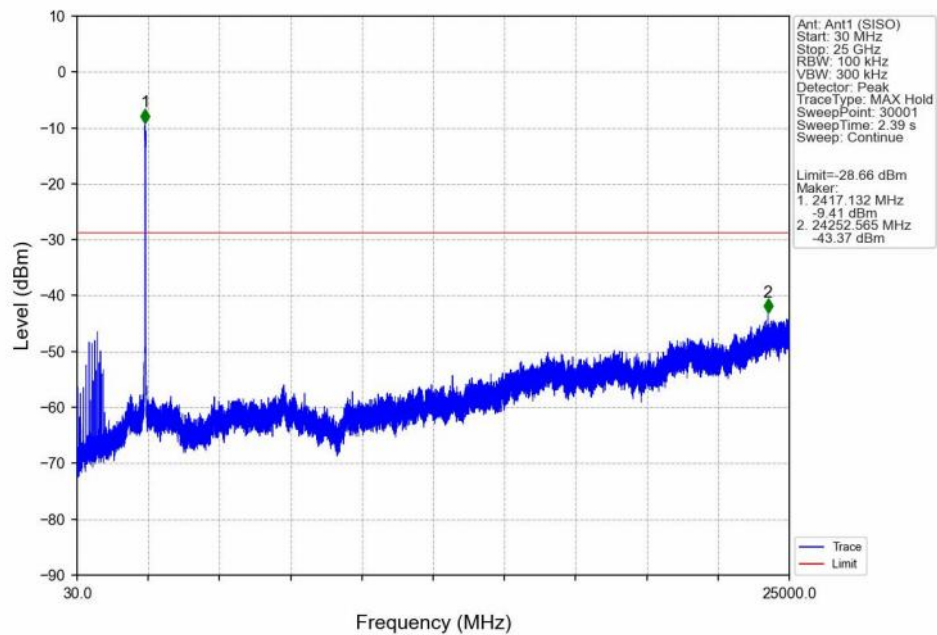


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

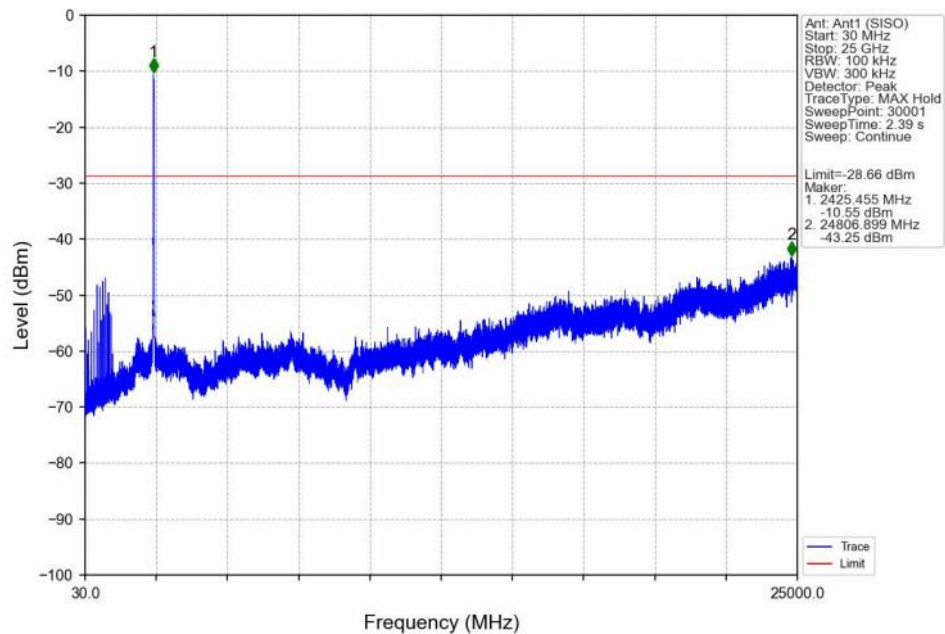


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802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



FCC ID: 2BNOWC3

