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Annex for 2.4G Wi-Fi

Test Report No.: CTL2606082011-WF03

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FCC ID: 2A8T7K10ULTRA

1. Duty Cycle

1.1 Test Result

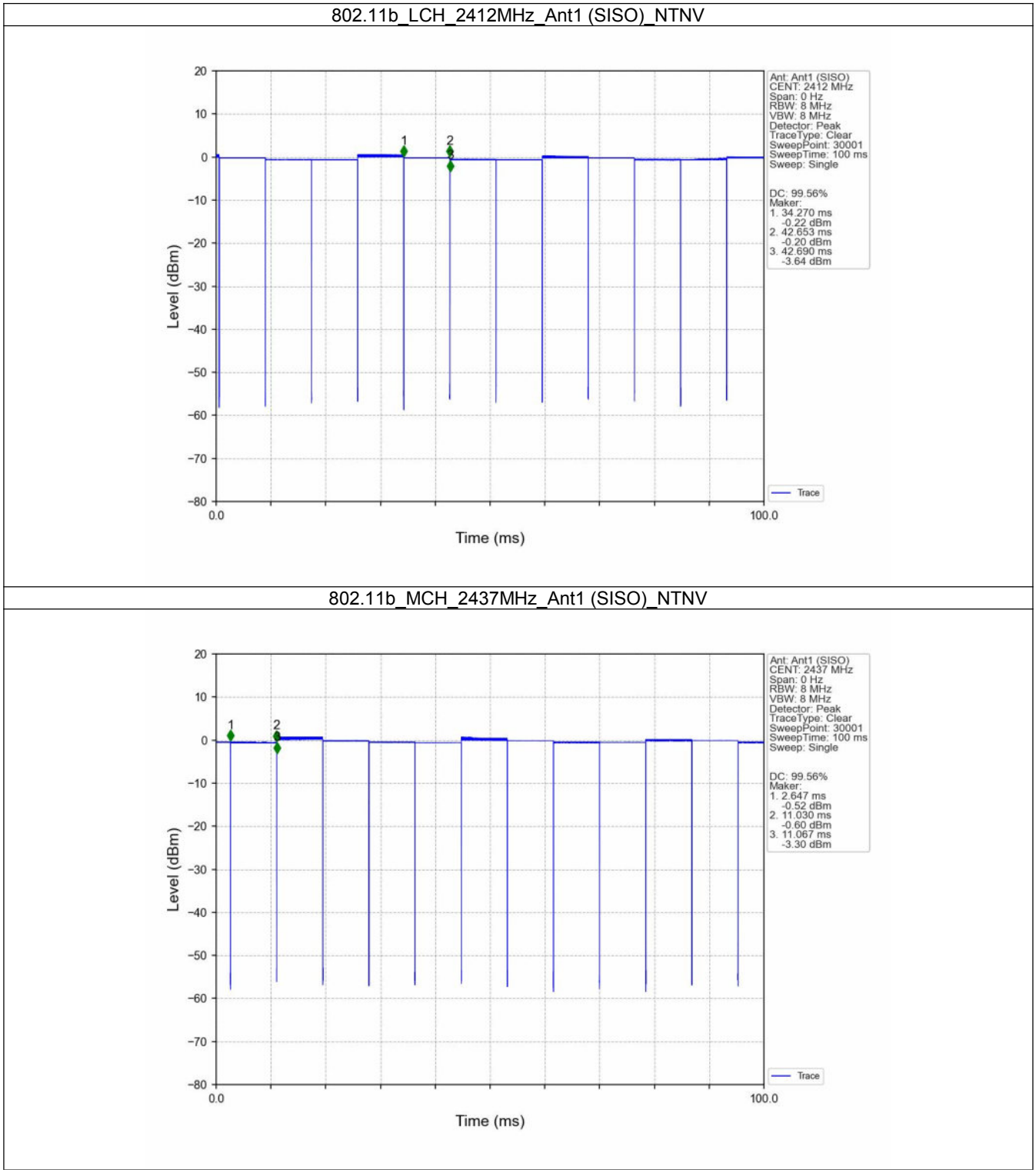
1.1.1 Ant1

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	8.383	8.420	99.56	0.02	0.04
		2437	8.383	8.420	99.56	0.02	0.04
		2462	8.383	8.420	99.56	0.02	0.04
802.11g	SISO	2412	1.394	1.437	97.01	0.13	0.03
		2437	1.395	1.437	97.08	0.13	0.03
		2462	1.394	1.436	97.08	0.13	0.03
802.11n (HT20)	SISO	2412	1.302	1.344	96.88	0.14	0.03
		2437	1.302	1.344	96.88	0.14	0.03
		2462	1.302	1.345	96.80	0.14	0.03
802.11n (HT40)	SISO	2422	0.649	0.692	93.79	0.28	0.03
		2437	0.650	0.692	93.93	0.27	0.03
		2452	0.650	0.692	93.93	0.27	0.03

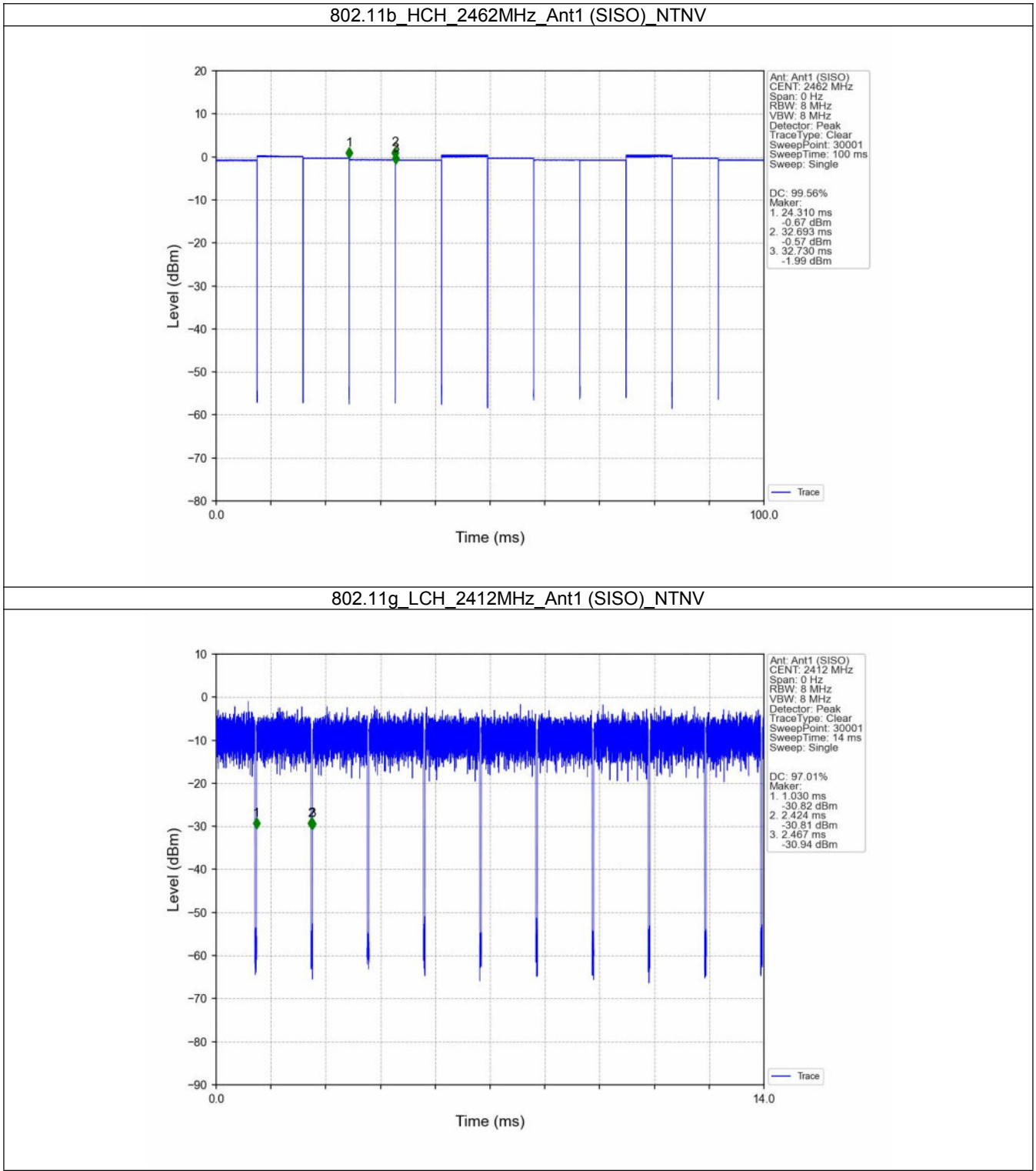
FCC ID: 2A8T7K10ULTRA

1.2 Test Graph

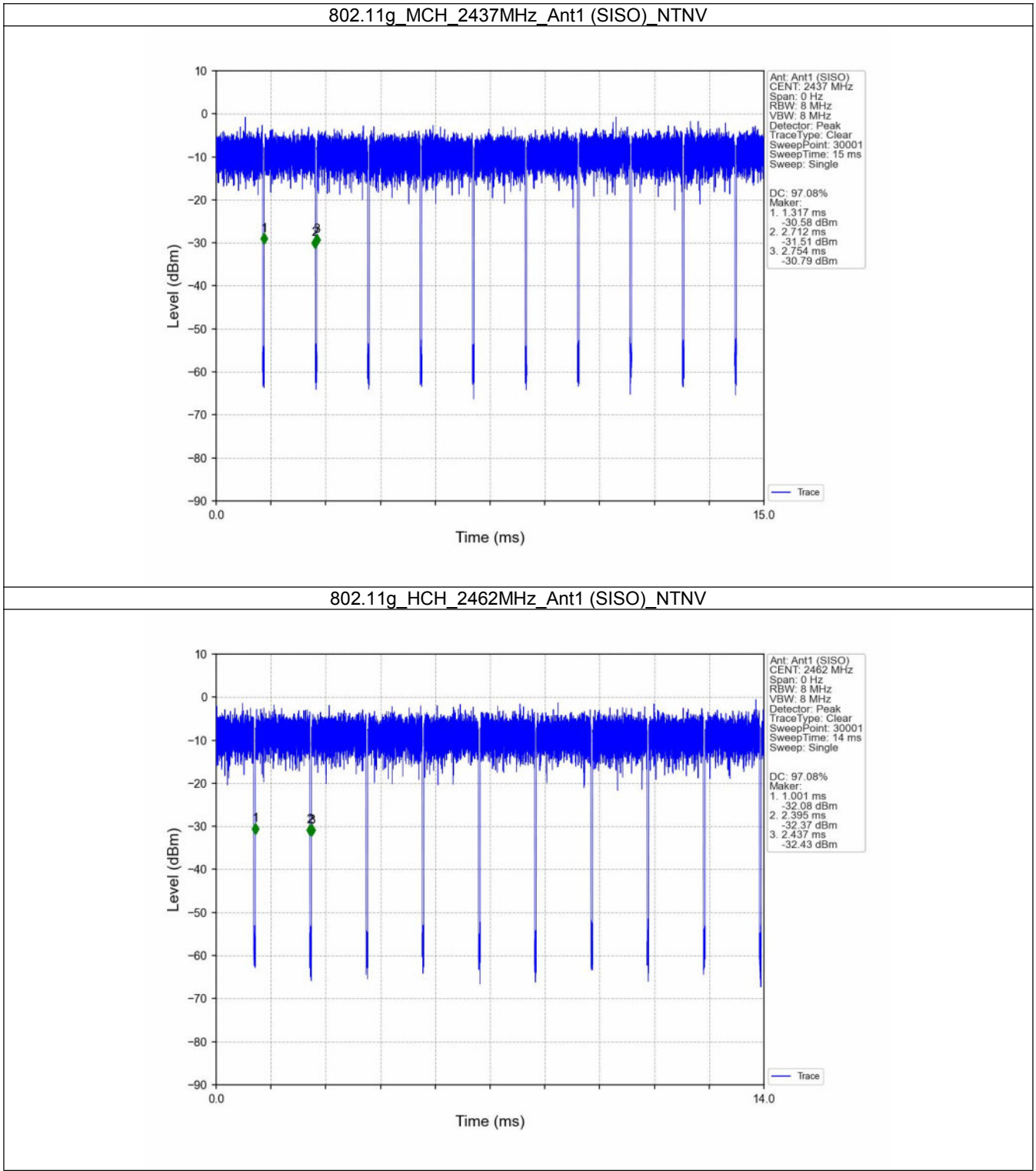
1.2.1 Ant1



FCC ID: 2A8T7K10ULTRA

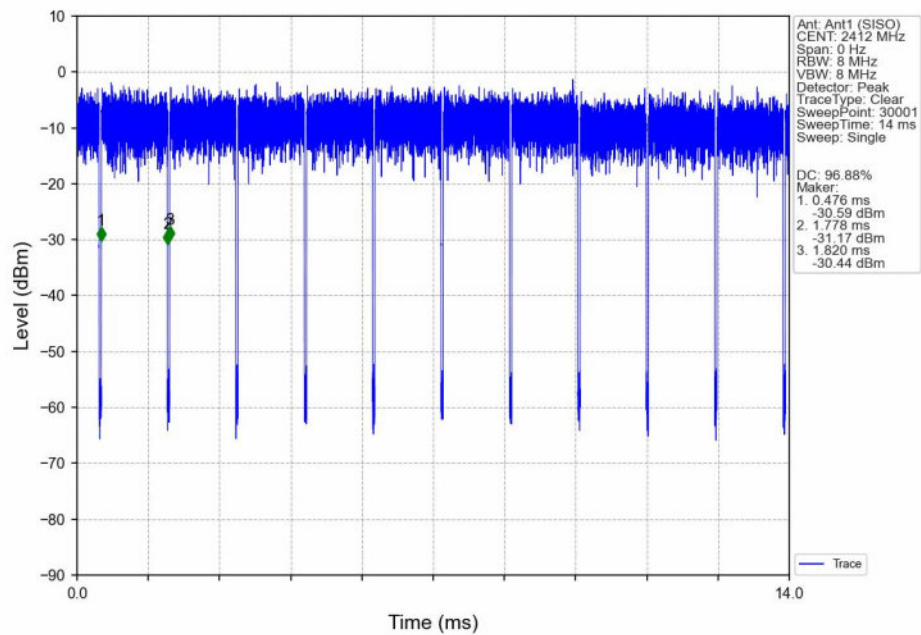


FCC ID: 2A8T7K10ULTRA

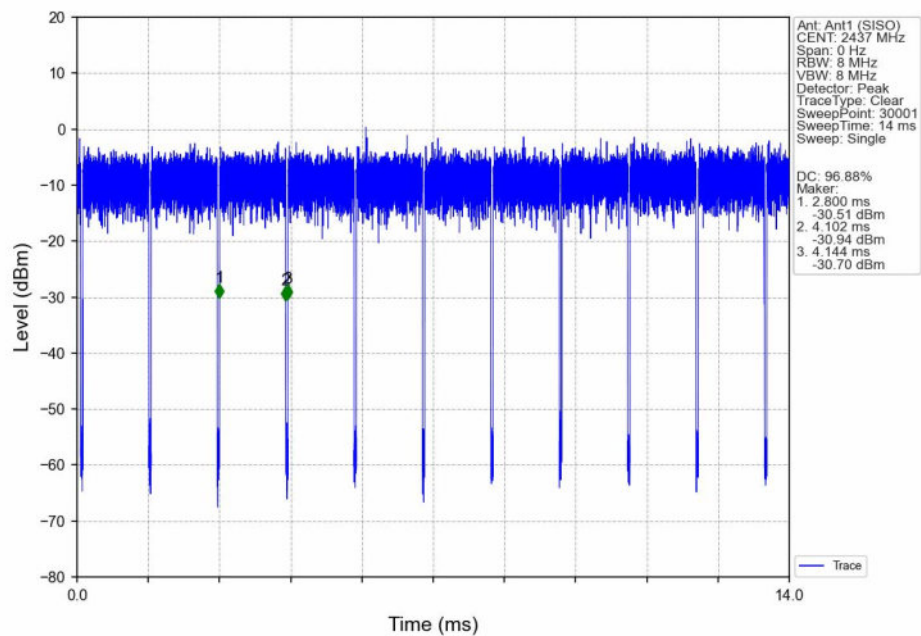


FCC ID: 2A8T7K10ULTRA

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

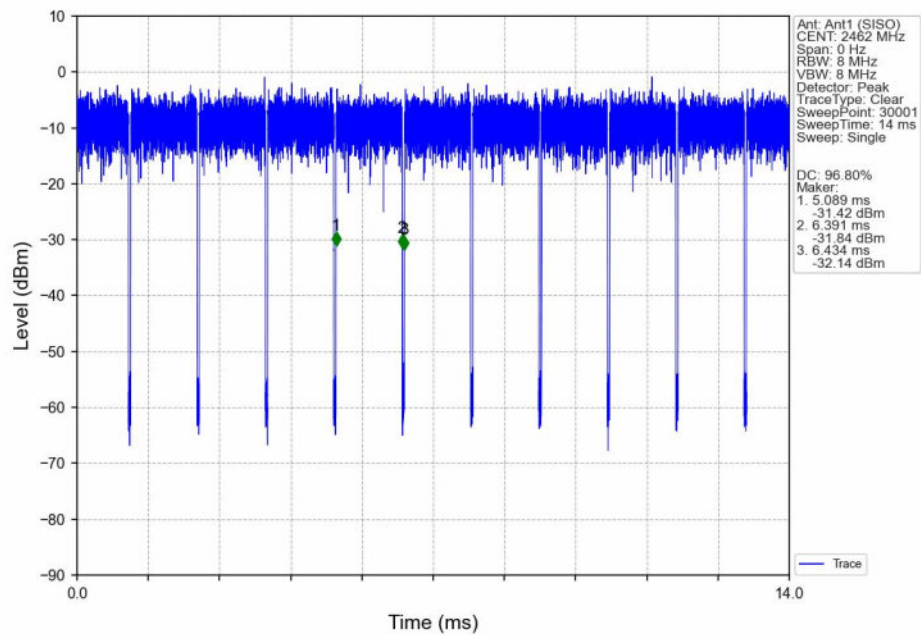


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

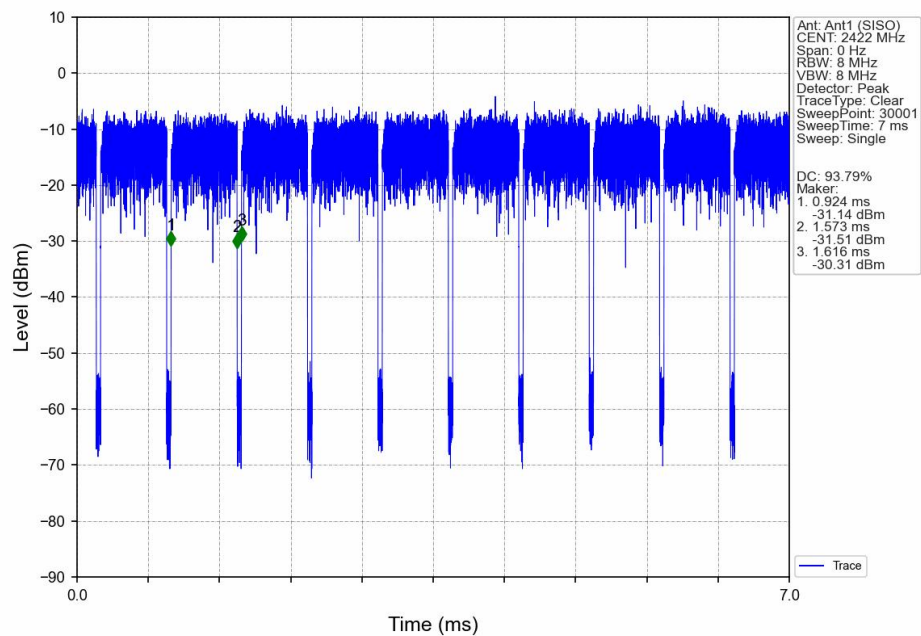


FCC ID: 2A8T7K10ULTRA

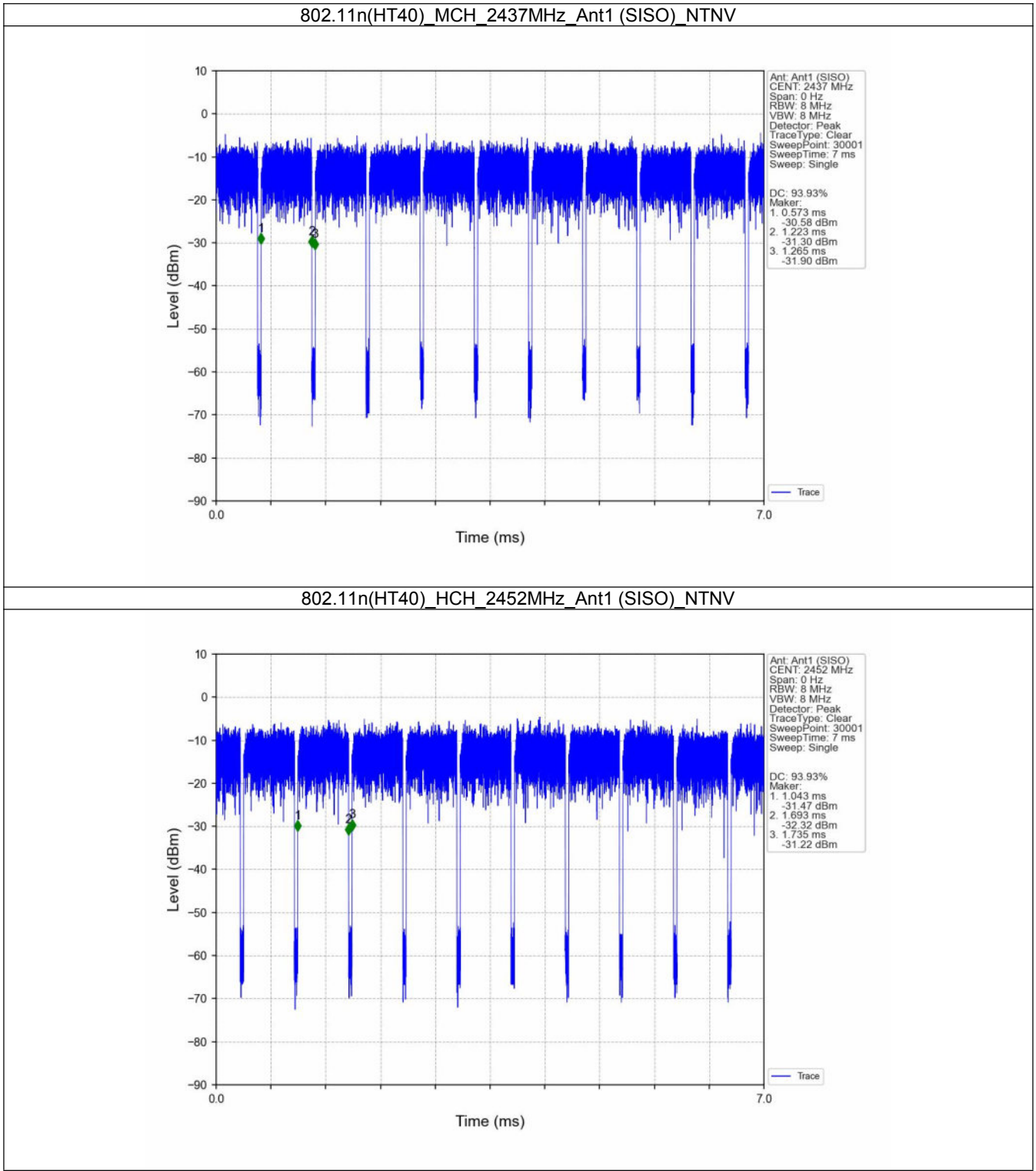
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



FCC ID: 2A8T7K10ULTRA



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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	12.658	/	Pass
		2437	1	12.651	/	Pass
		2462	1	12.668	/	Pass
802.11g	SISO	2412	1	16.453	/	Pass
		2437	1	16.417	/	Pass
		2462	1	16.466	/	Pass
802.11n (HT20)	SISO	2412	1	17.567	/	Pass
		2437	1	17.561	/	Pass
		2462	1	17.584	/	Pass
802.11n (HT40)	SISO	2422	1	36.286	/	Pass
		2437	1	36.221	/	Pass
		2452	1	36.323	/	Pass

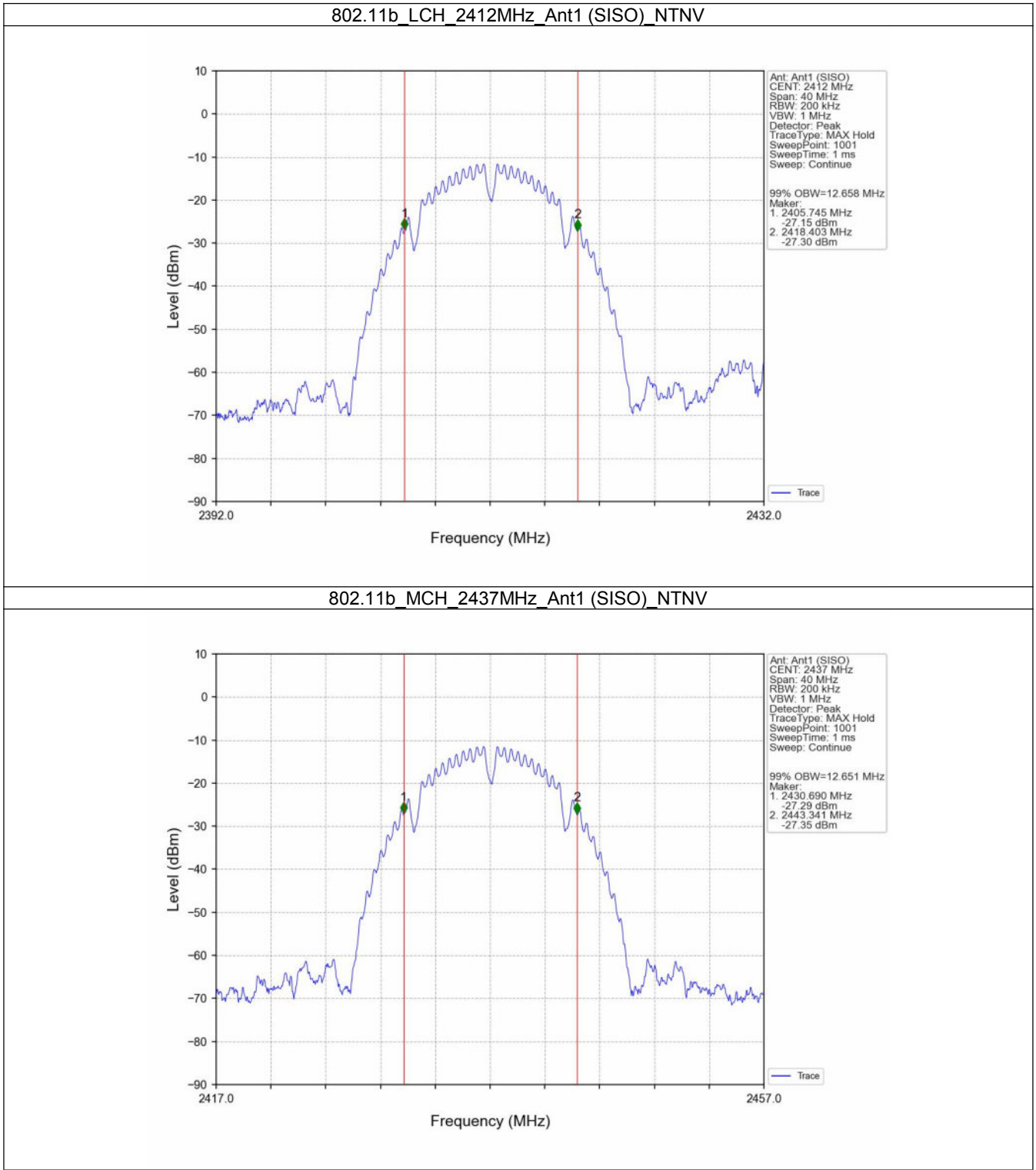
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	8.161	≥ 0.5	Pass
		2437	1	8.161	≥ 0.5	Pass
		2462	1	8.159	≥ 0.5	Pass
802.11g	SISO	2412	1	16.028	≥ 0.5	Pass
		2437	1	15.970	≥ 0.5	Pass
		2462	1	15.995	≥ 0.5	Pass
802.11n (HT20)	SISO	2412	1	17.247	≥ 0.5	Pass
		2437	1	17.236	≥ 0.5	Pass
		2462	1	17.255	≥ 0.5	Pass
802.11n (HT40)	SISO	2422	1	35.706	≥ 0.5	Pass
		2437	1	35.198	≥ 0.5	Pass
		2452	1	35.747	≥ 0.5	Pass

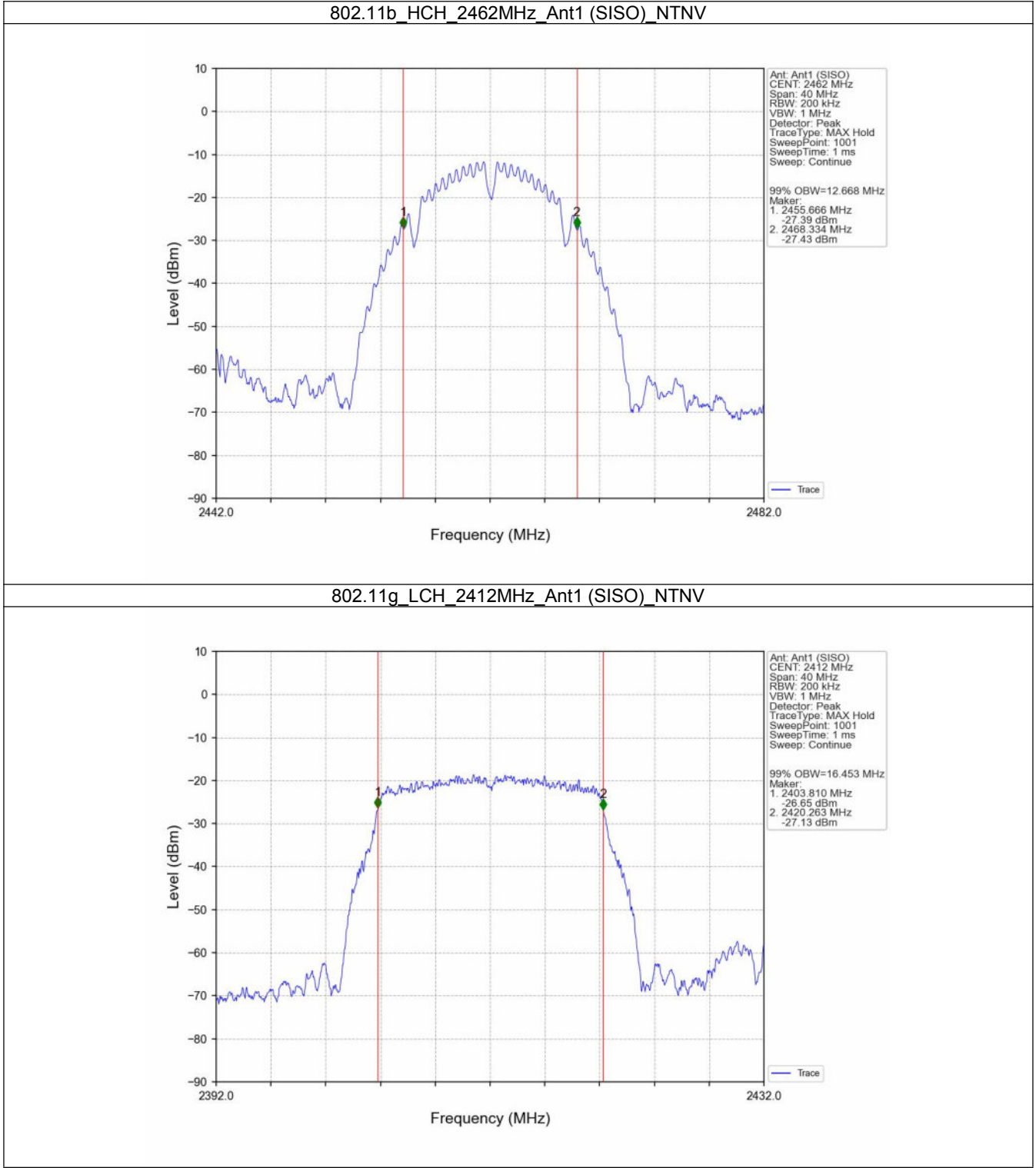
FCC ID: 2A8T7K10ULTRA

2.2 Test Graph

2.2.1 OBW

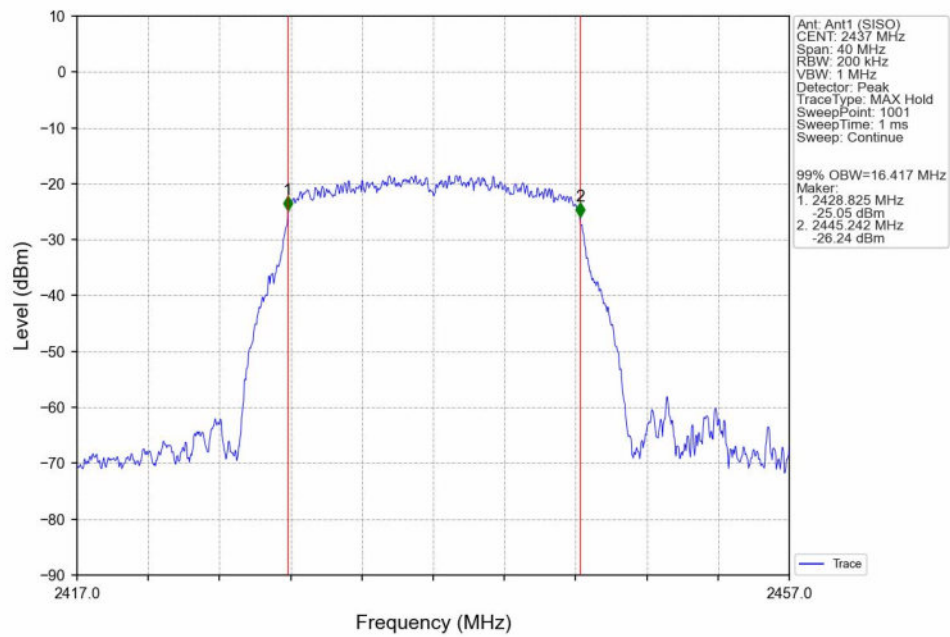


FCC ID: 2A8T7K10ULTRA

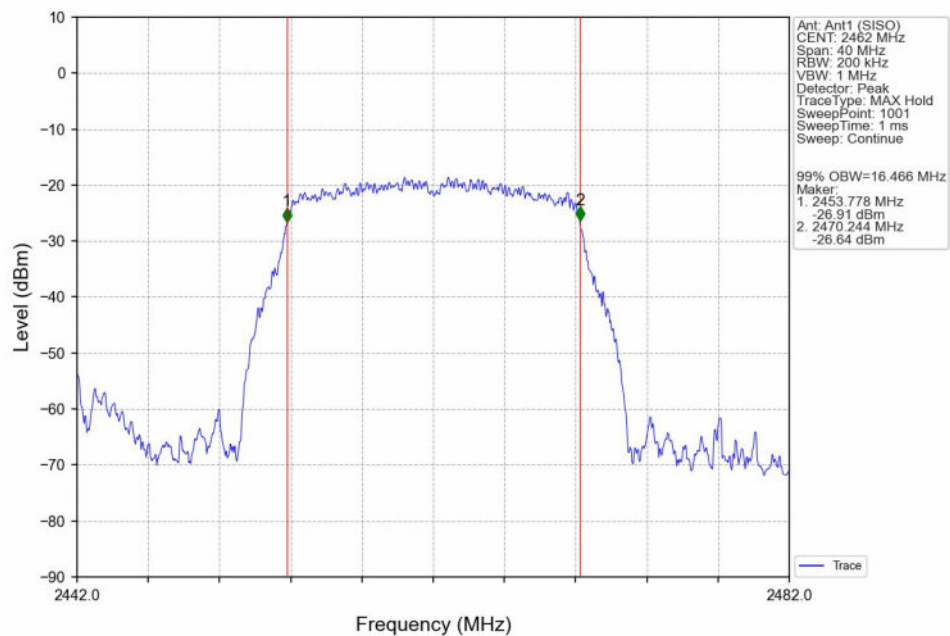


FCC ID: 2A8T7K10ULTRA

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

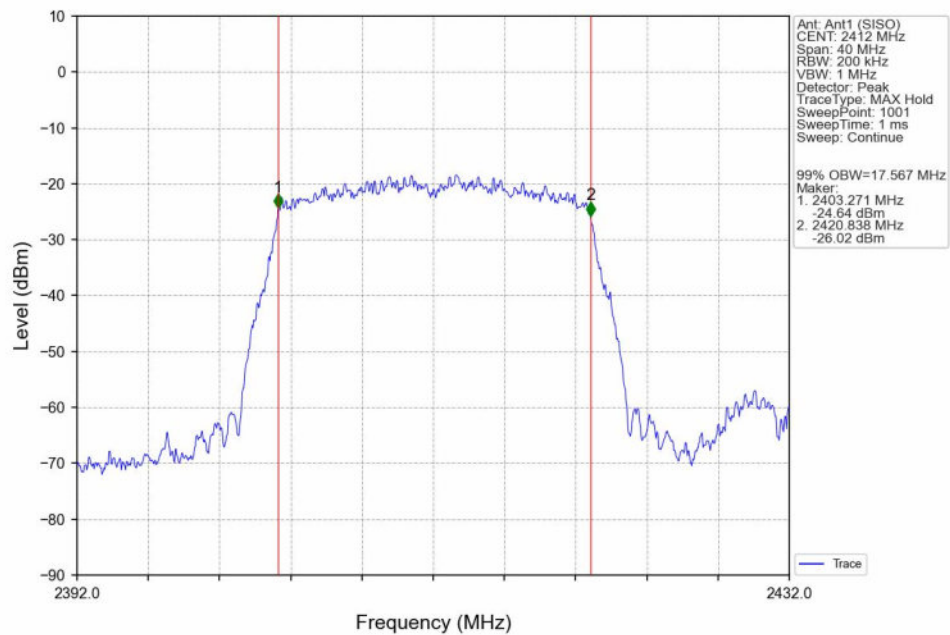


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

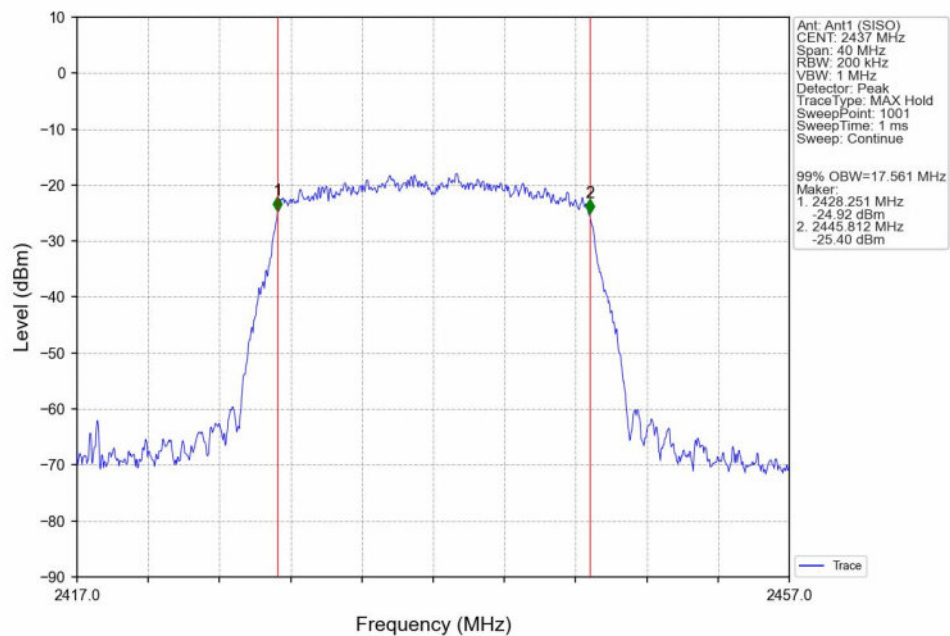


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

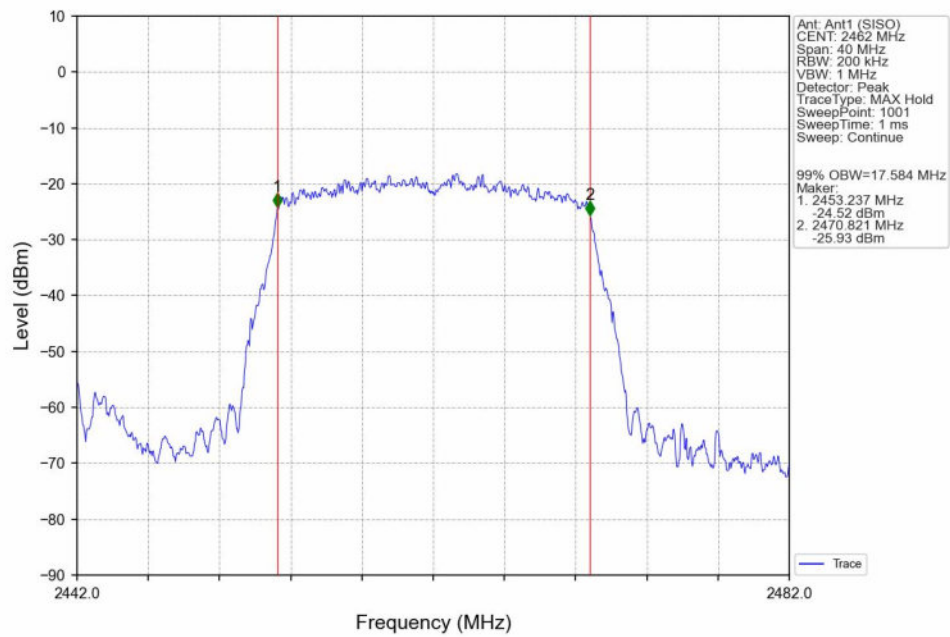


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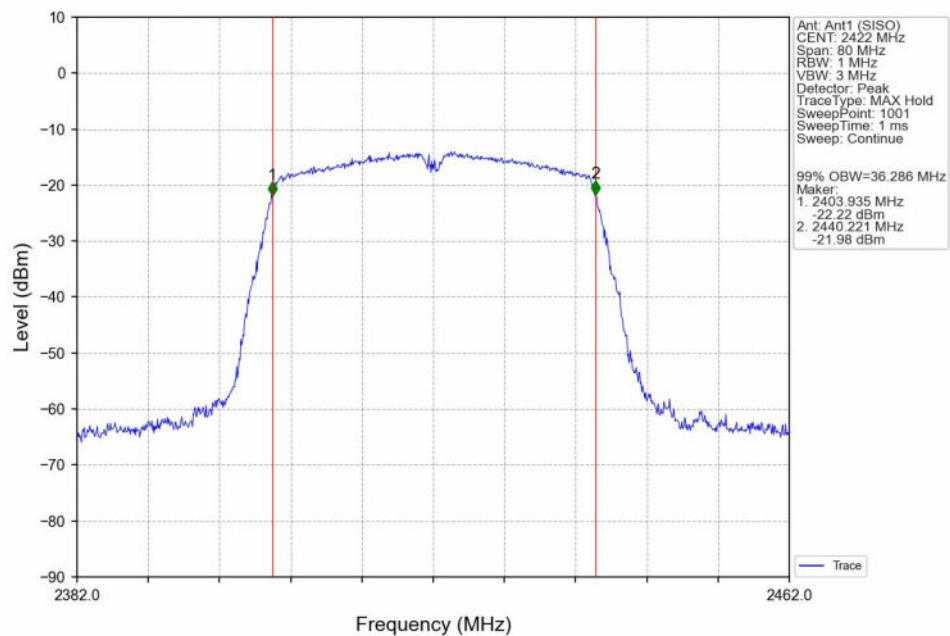


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

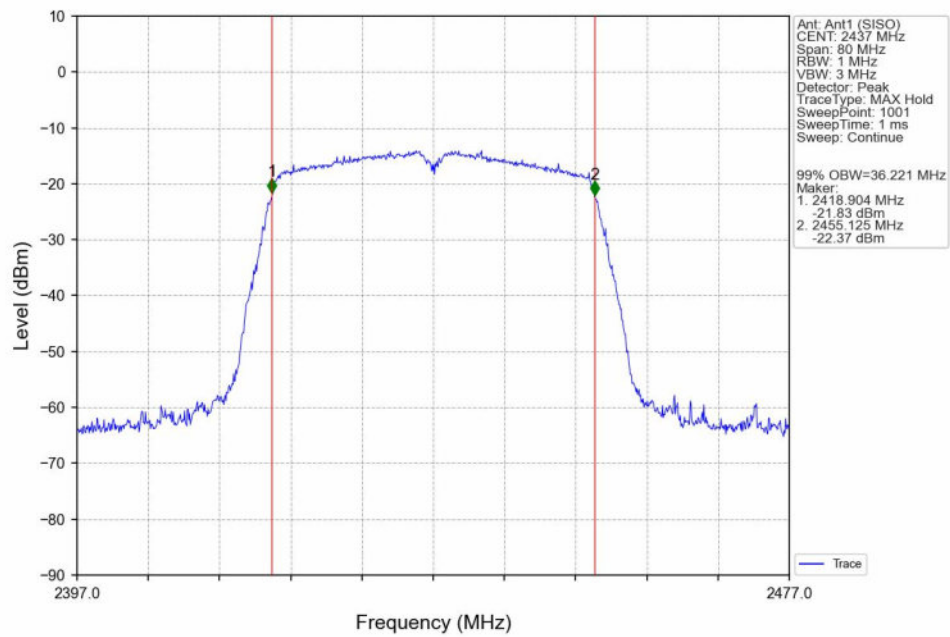


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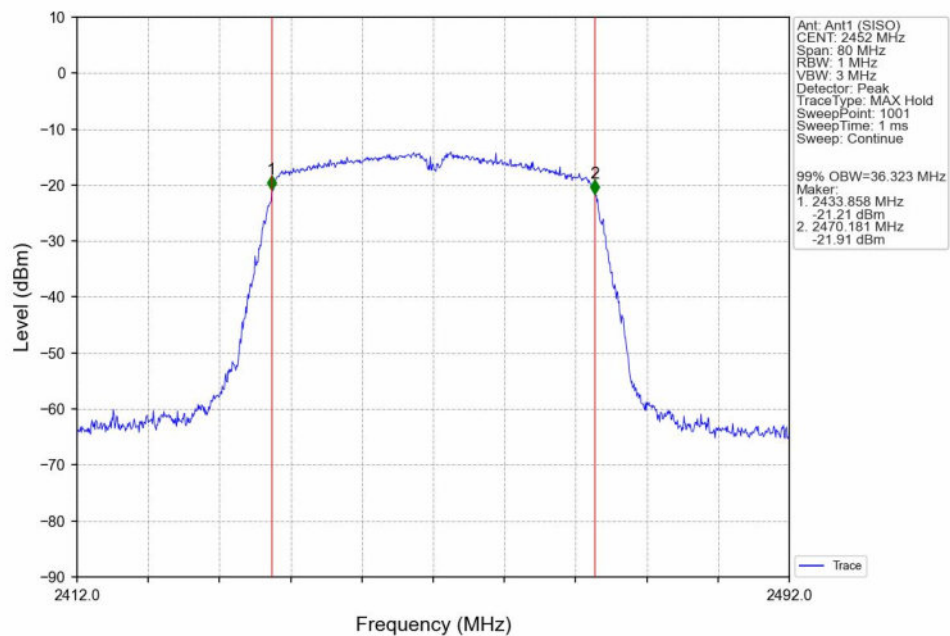


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

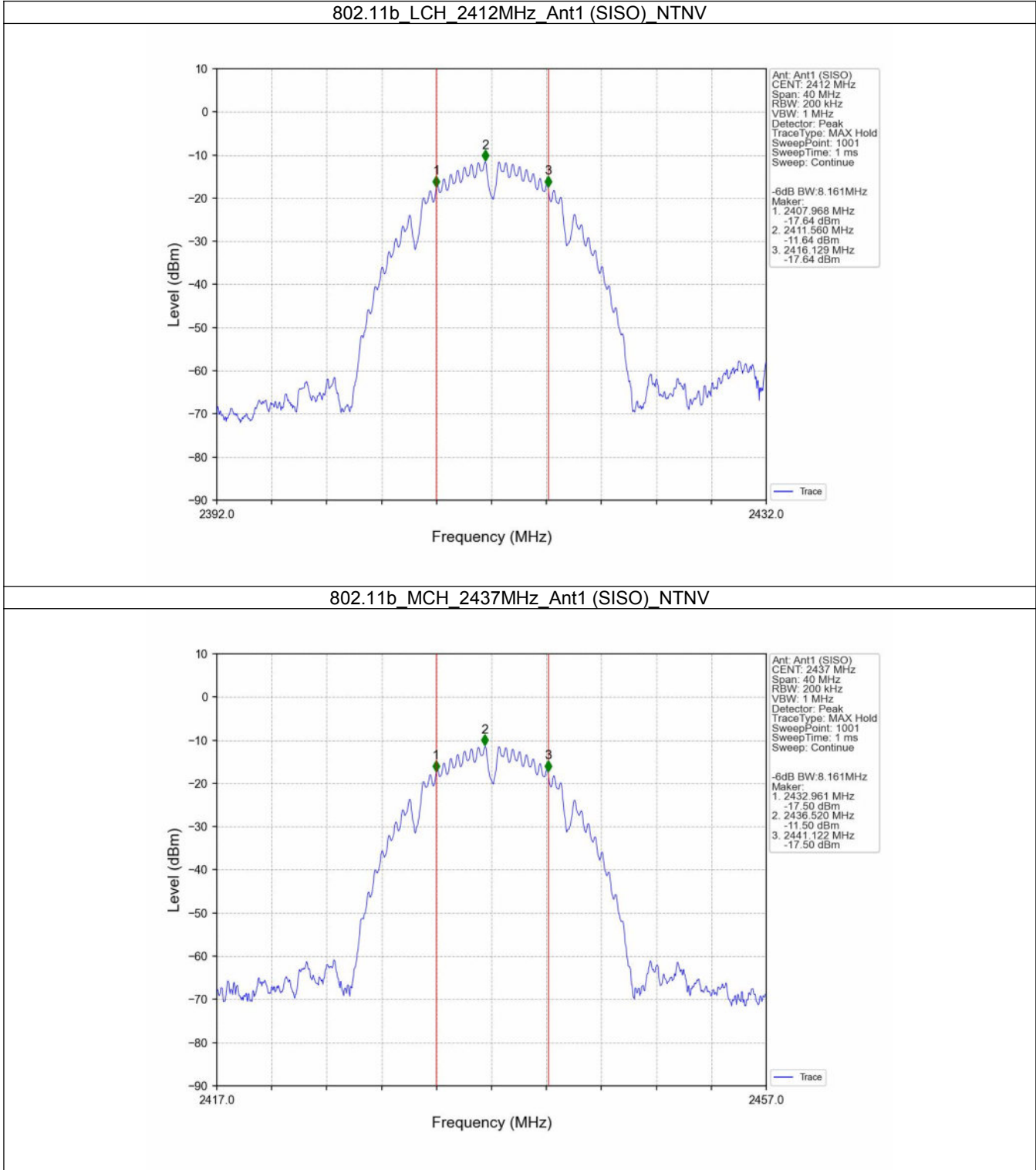


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

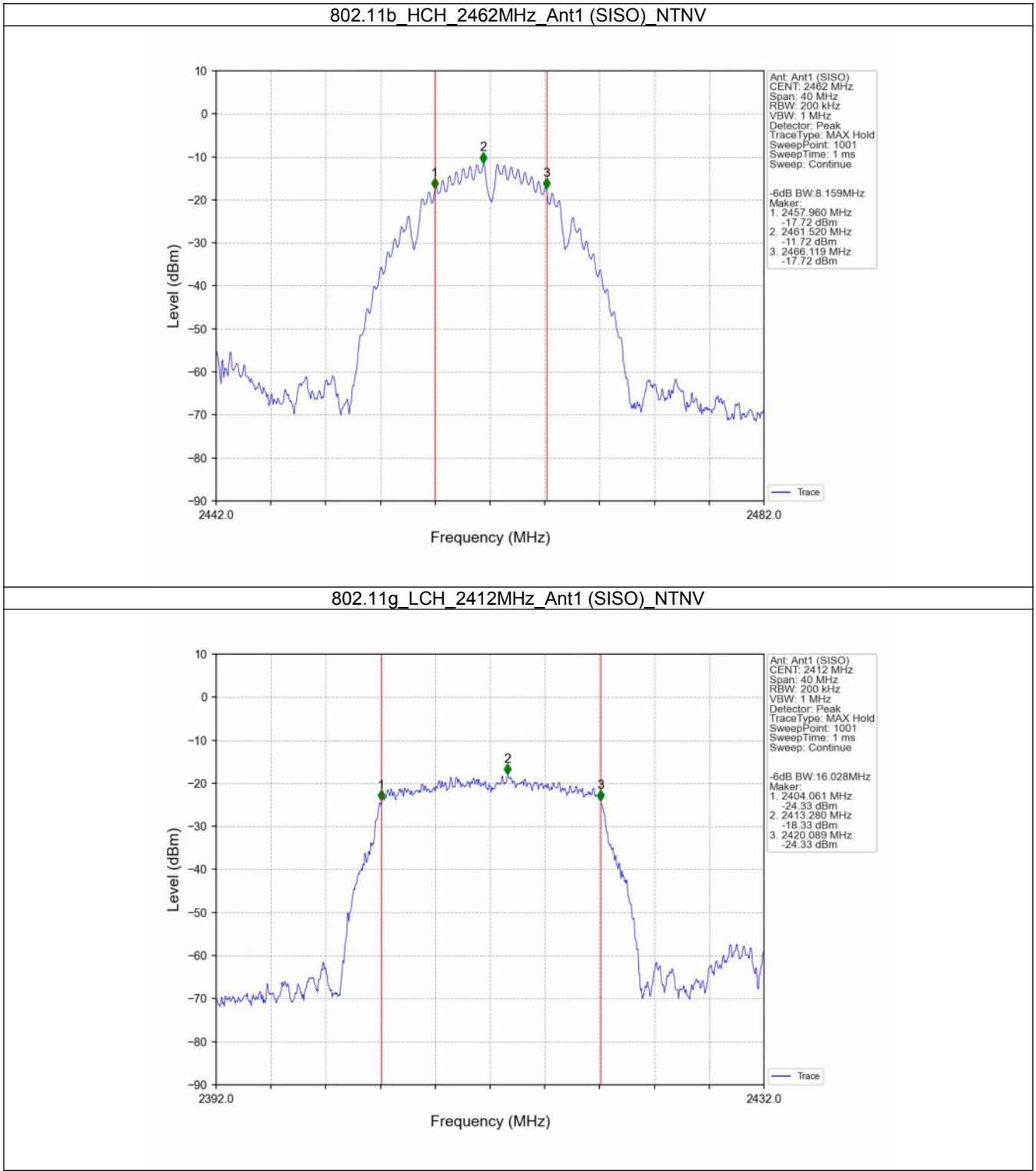


FCC ID: 2A8T7K10ULTRA

2.2.2 6dB BW

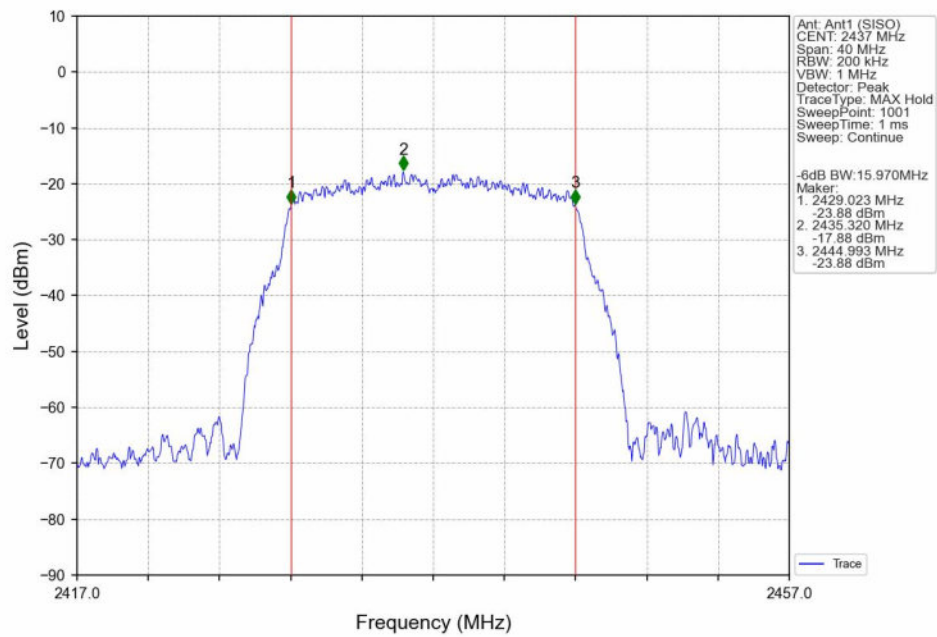


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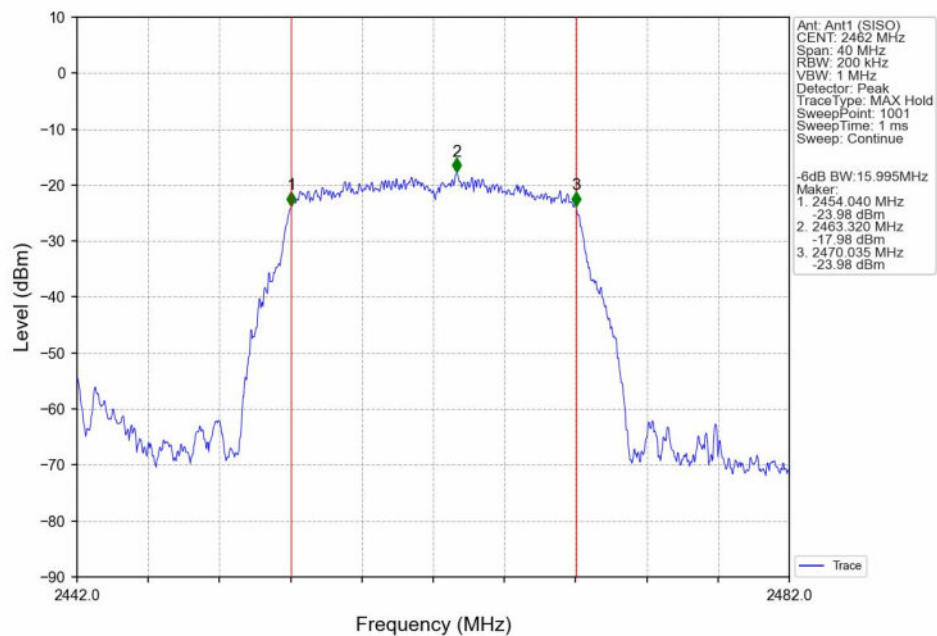


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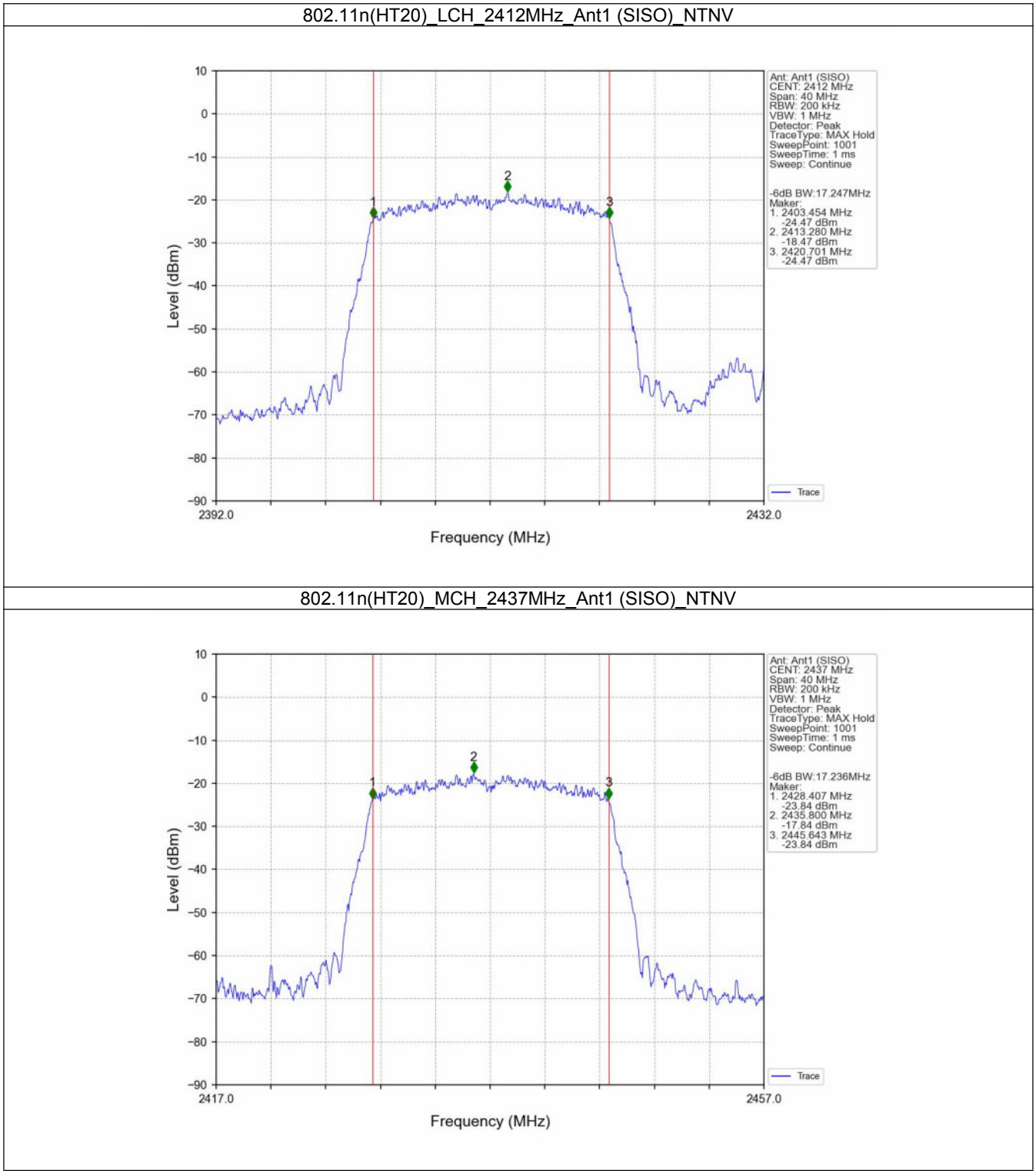
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

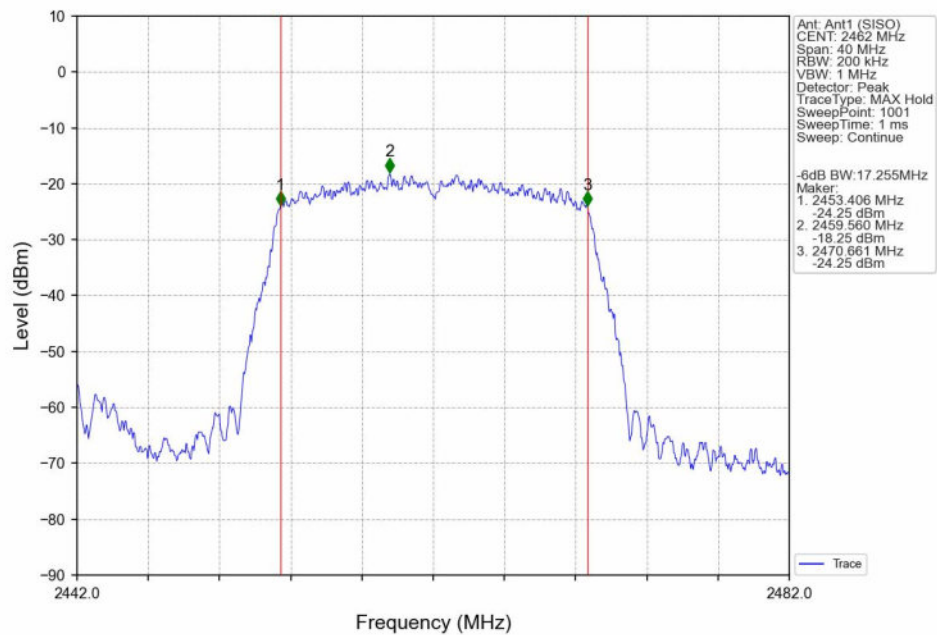


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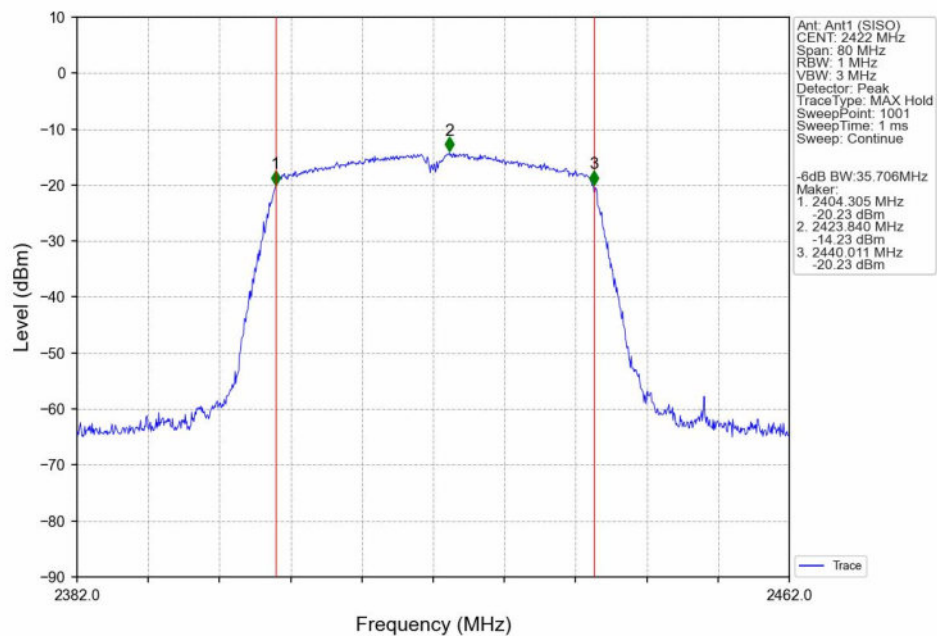


FCC ID: 2A8T7K10ULTRA

802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

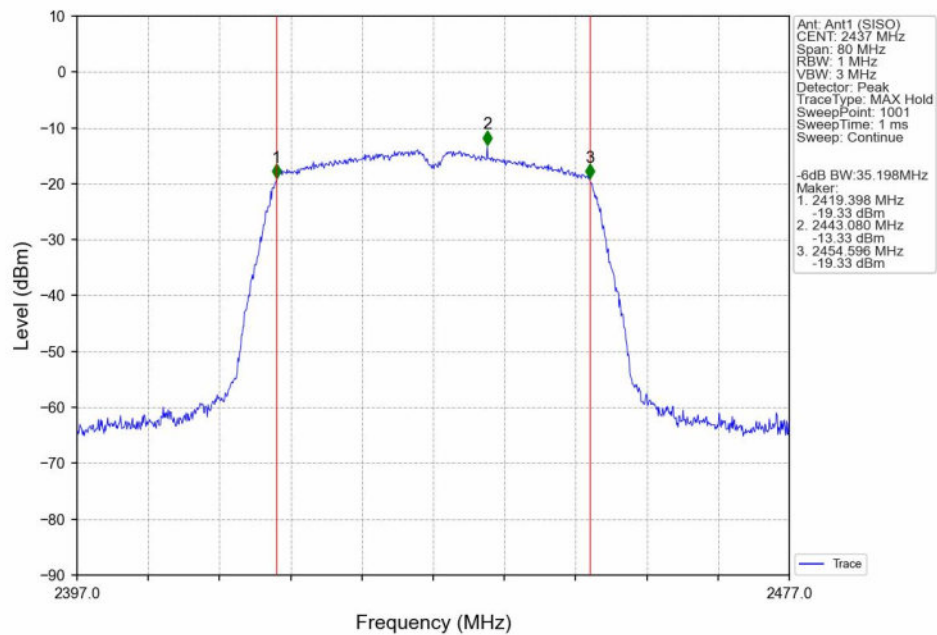


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

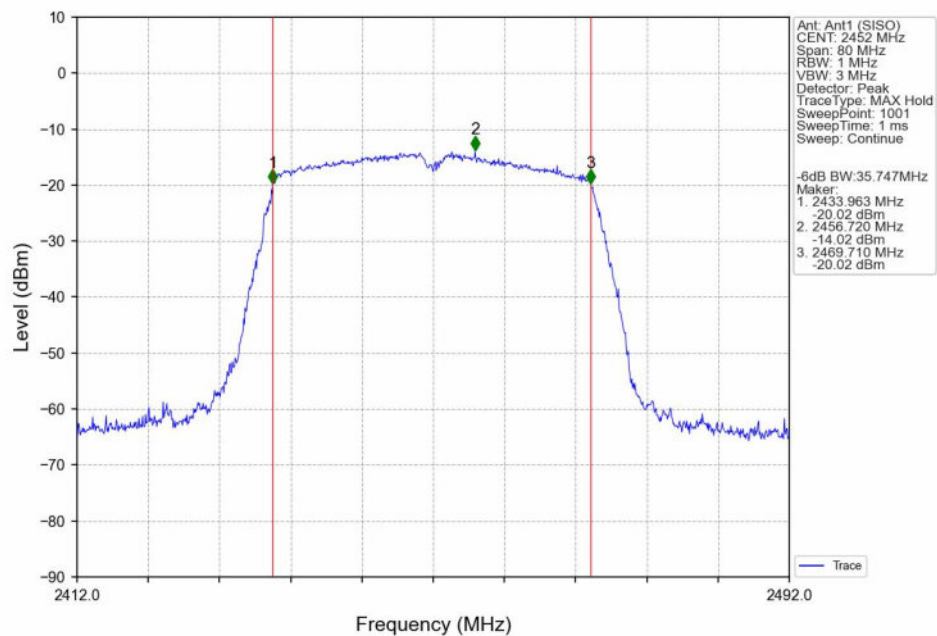


FCC ID: 2A8T7K10ULTRA

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2A8T7K10ULTRA

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	-1.51	<=30	Pass
		2437	-1.35	<=30	Pass
		2462	-1.63	<=30	Pass
802.11g	SISO	2412	-1.26	<=30	Pass
		2437	-1.10	<=30	Pass
		2462	-1.21	<=30	Pass
802.11n (HT20)	SISO	2412	-1.31	<=30	Pass
		2437	-0.98	<=30	Pass
		2462	-1.15	<=30	Pass
802.11n (HT40)	SISO	2422	-0.87	<=30	Pass
		2437	-1.03	<=30	Pass
		2452	-0.87	<=30	Pass

Note1: Antenna Gain: Ant1: 3.09dBi;

Note2: RF Cable loss=0.5dB

Note3: The test results include RF Cable loss.

FCC ID: 2A8T7K10ULTRA

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	-12.14dBm/100kHz	<=8	Pass
		2437	-11.64dBm/100kHz	<=8	Pass
		2462	-12.04dBm/100kHz	<=8	Pass
802.11g	SISO	2412	-19.78dBm/100kHz	<=8	Pass
		2437	-19.06dBm/100kHz	<=8	Pass
		2462	-19.86dBm/100kHz	<=8	Pass
802.11n (HT20)	SISO	2412	-19.79dBm/100kHz	<=8	Pass
		2437	-19.12dBm/100kHz	<=8	Pass
		2462	-19.47dBm/100kHz	<=8	Pass
802.11n (HT40)	SISO	2422	-21.78dBm/100kHz	<=8	Pass
		2437	-21.76dBm/100kHz	<=8	Pass
		2452	-22.06dBm/100kHz	<=8	Pass

Note1: Antenna Gain: Ant1: 3.09dBi;

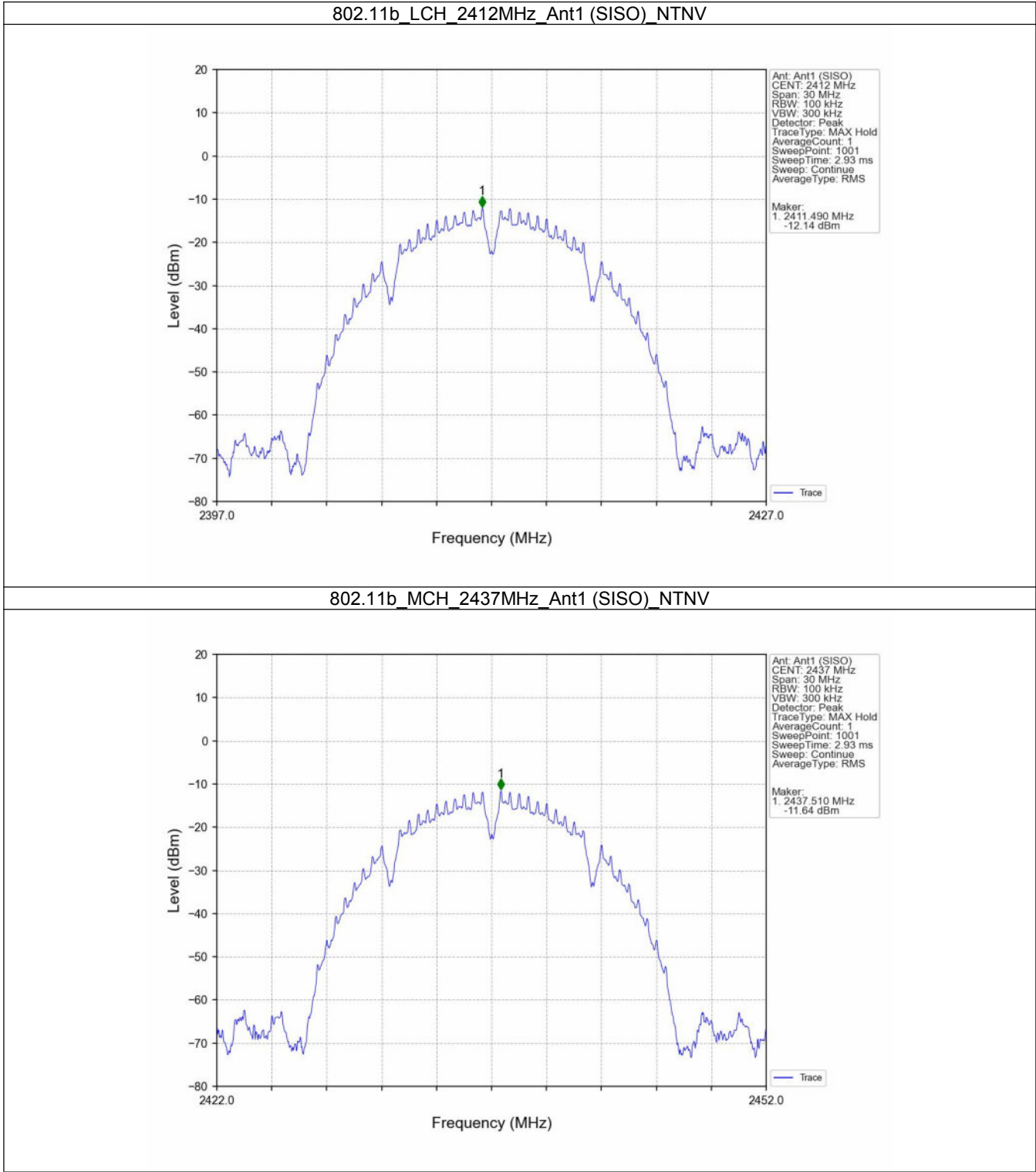
Note2: RF Cable loss=0.5dB

Note3: The test results include RF Cable loss.

FCC ID: 2A8T7K10ULTRA

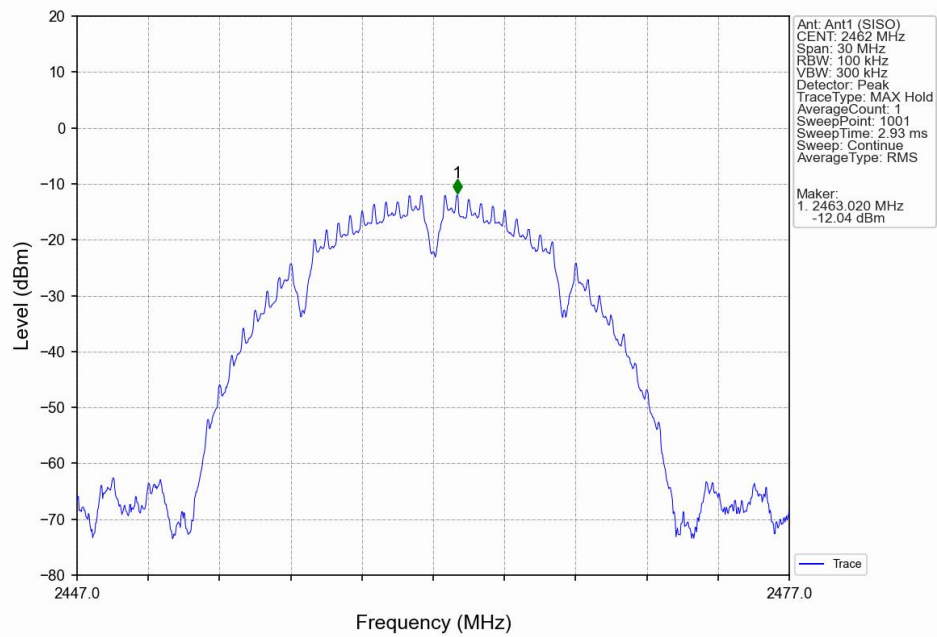
4.2 Test Graph

4.2.1 PSD

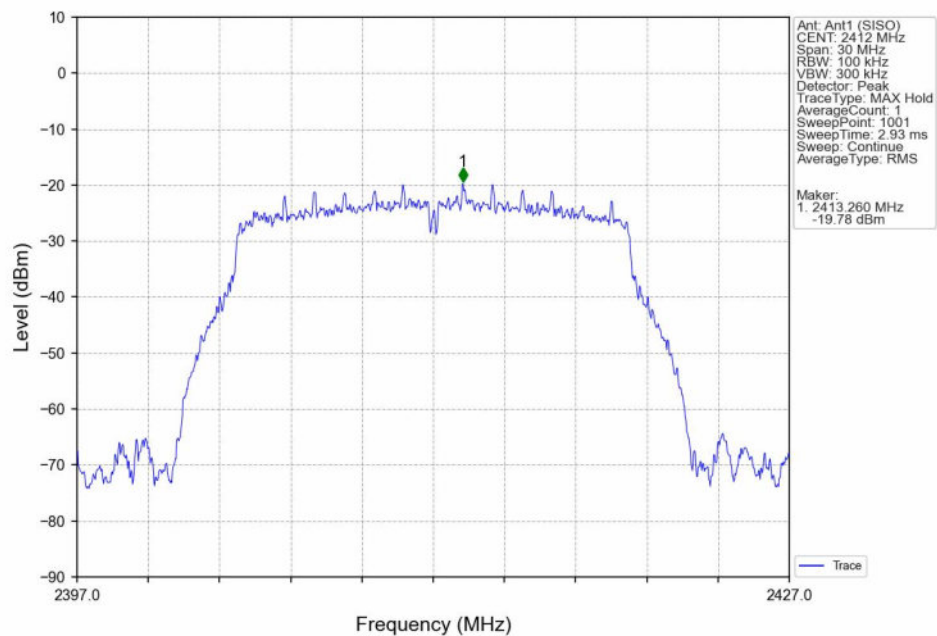


FCC ID: 2A8T7K10ULTRA

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

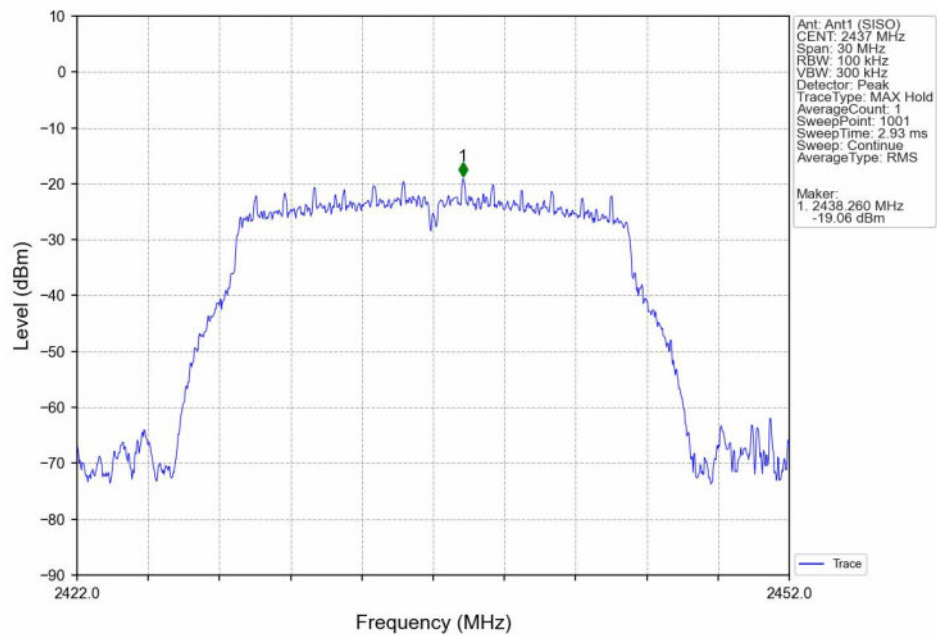


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

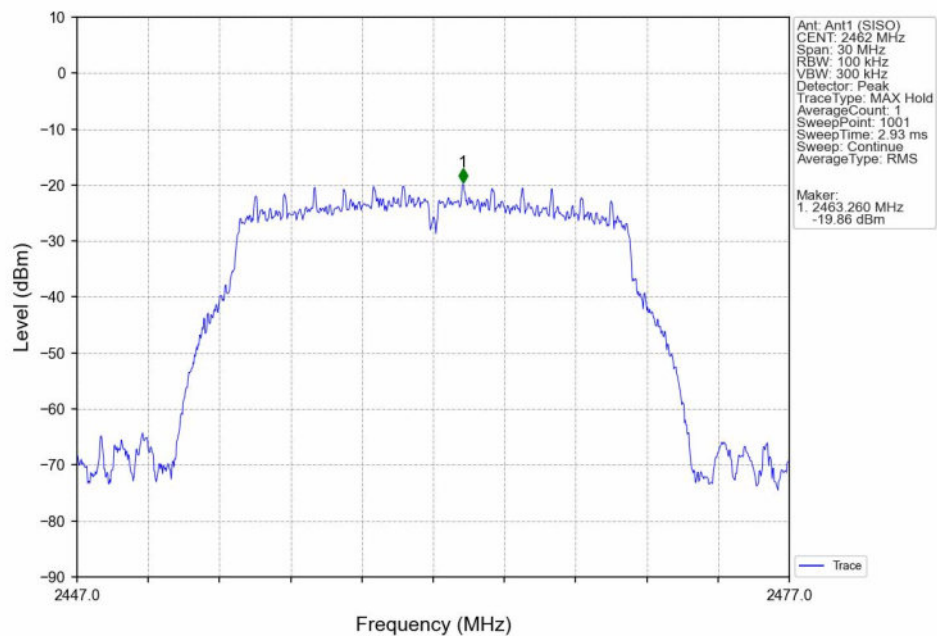


FCC ID: 2A8T7K10ULTRA

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

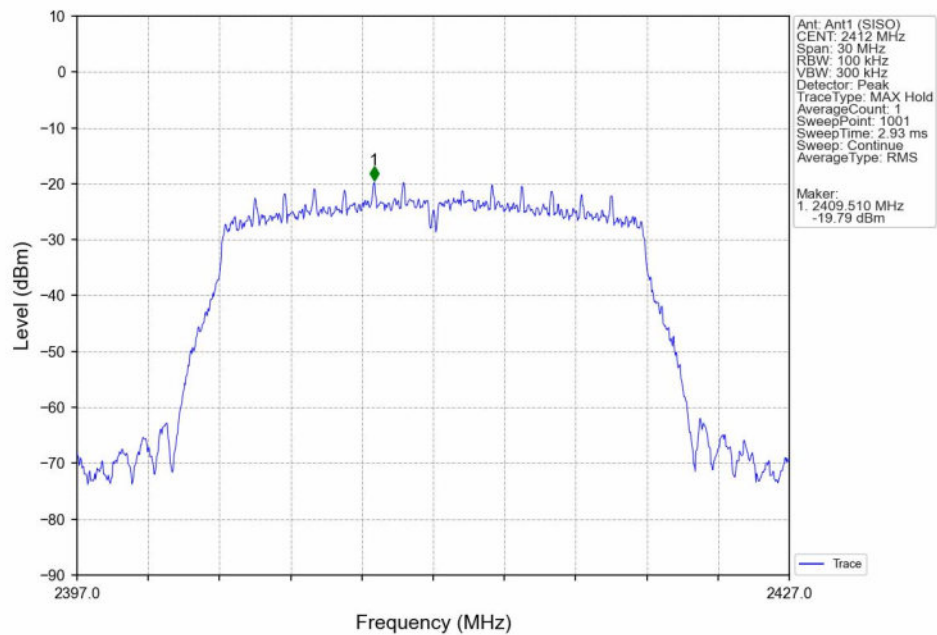


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

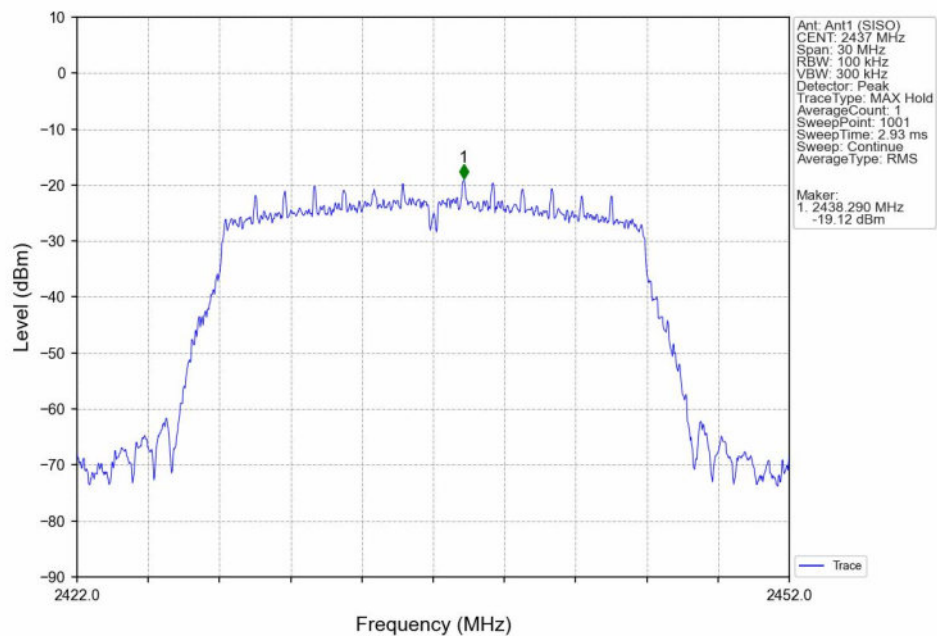


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

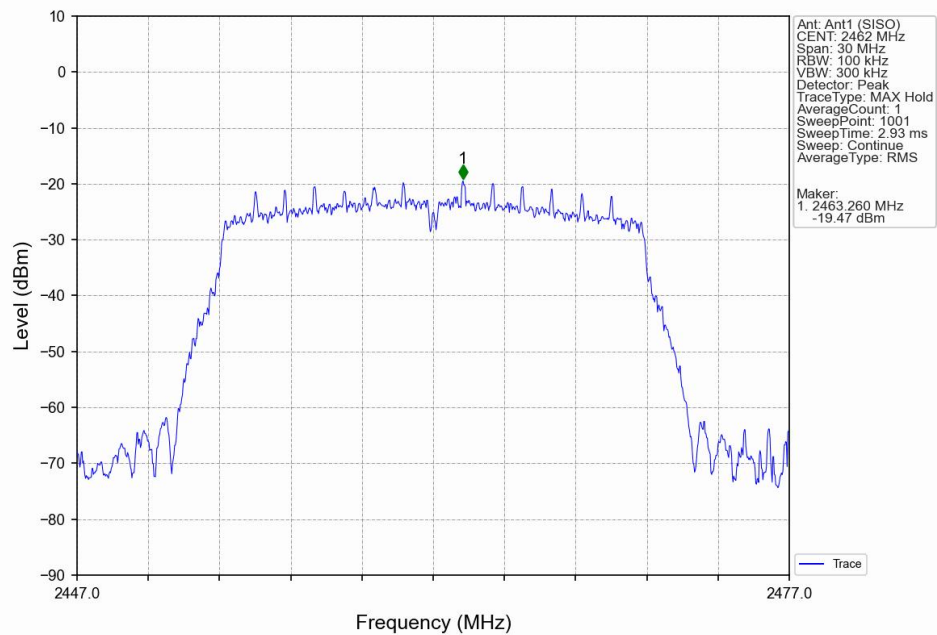


802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

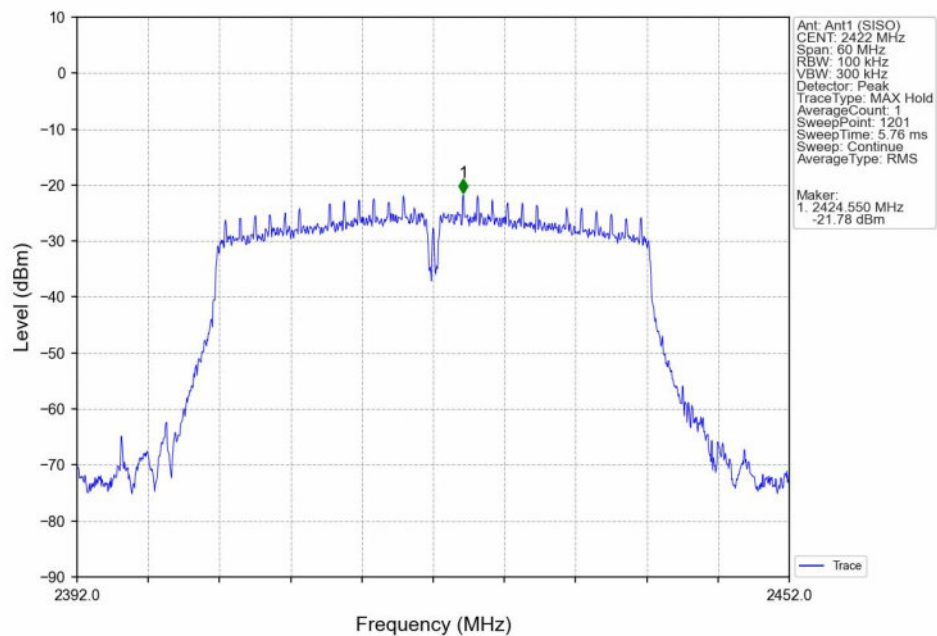


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

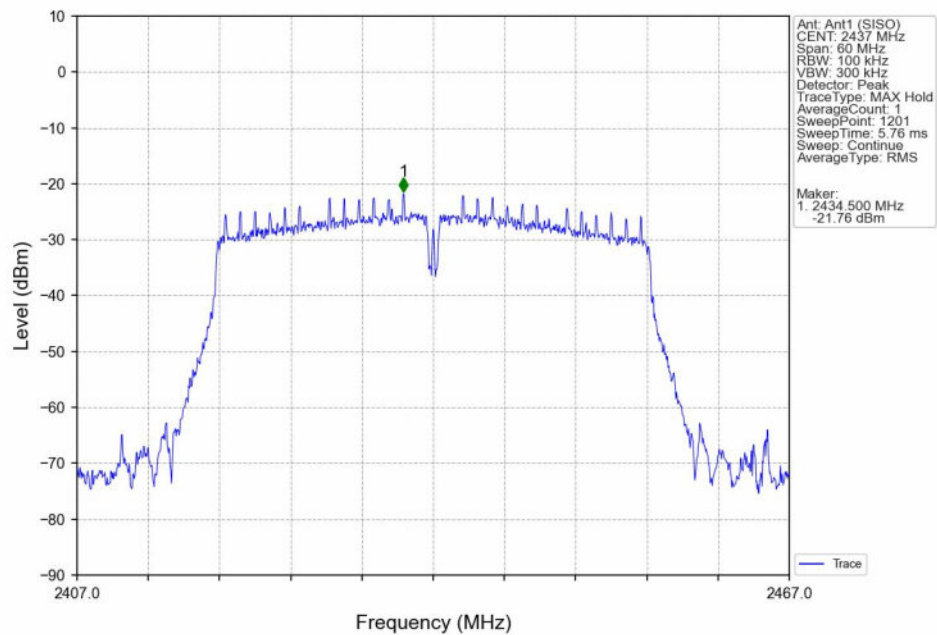


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

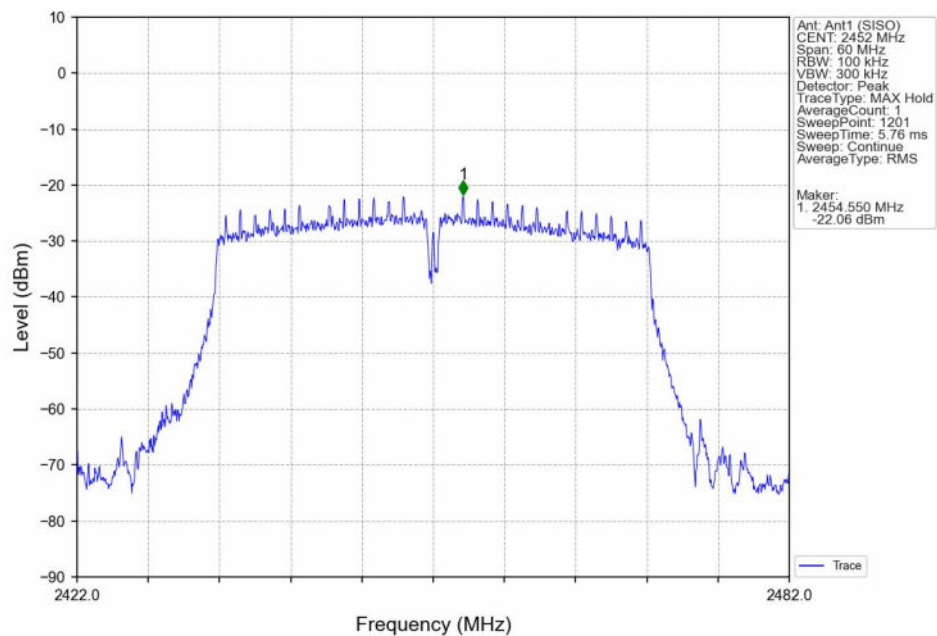


FCC ID: 2A8T7K10ULTRA

802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



FCC ID: 2A8T7K10ULTRA

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	-12.13
		2437	1	-11.89
		2462	1	-12.04
802.11g	SISO	2412	1	-19.72
		2437	1	-19.58
		2462	1	-19.93
802.11n (HT20)	SISO	2412	1	-19.74
		2437	1	-19.36
		2462	1	-19.27
802.11n (HT40)	SISO	2422	1	-22.00
		2437	1	-21.81
		2452	1	-22.28

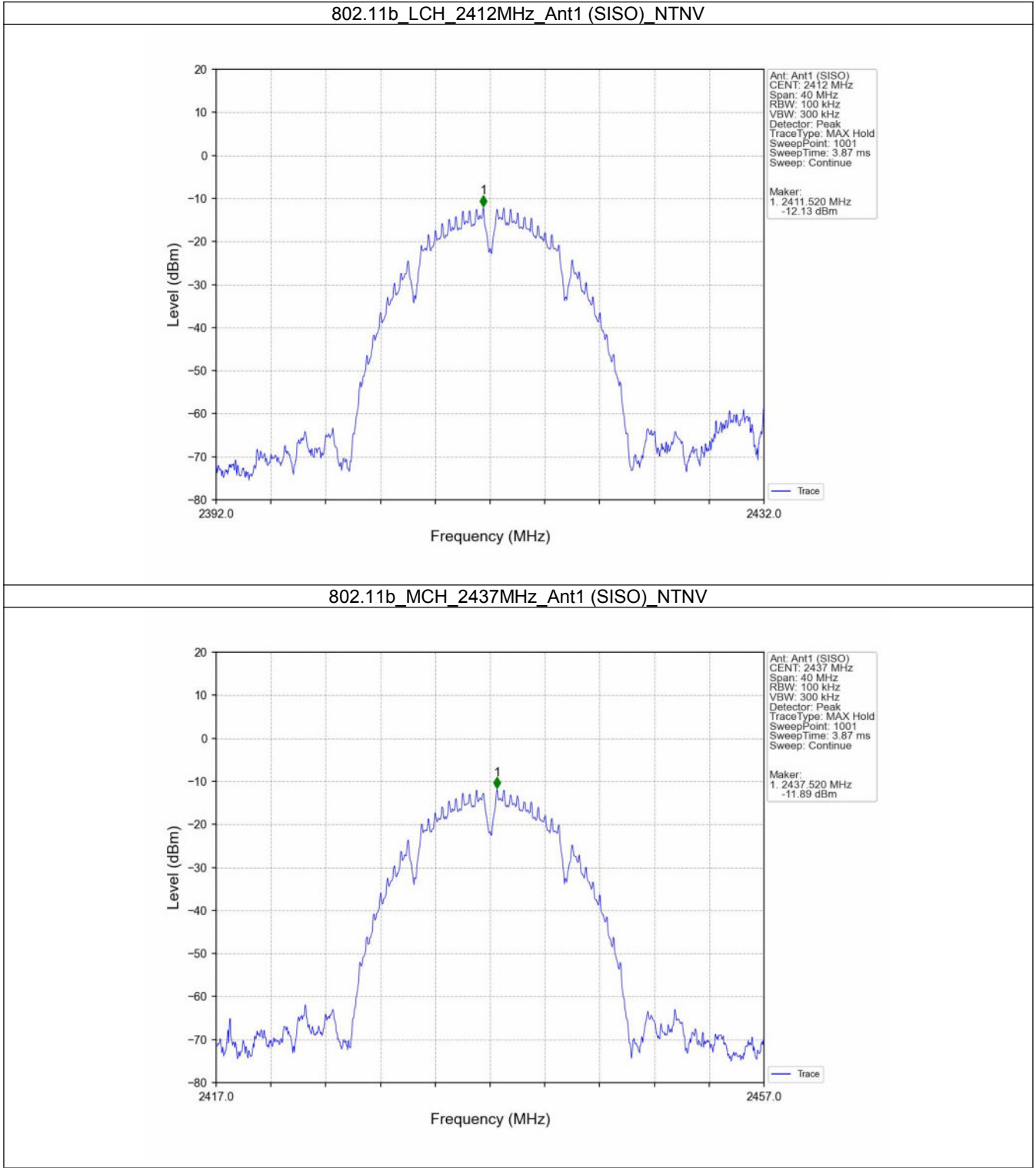
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	-12.13	-32.13	Pass
		2437	1	-11.89	-31.89	Pass
		2462	1	-12.04	-32.04	Pass
802.11g	SISO	2412	1	-19.72	-39.72	Pass
		2437	1	-19.58	-39.58	Pass
		2462	1	-19.93	-39.93	Pass
802.11n (HT20)	SISO	2412	1	-19.74	-39.74	Pass
		2437	1	-19.36	-39.36	Pass
		2462	1	-19.27	-39.27	Pass
802.11n (HT40)	SISO	2422	1	-22.00	-42.00	Pass
		2437	1	-21.81	-41.81	Pass
		2452	1	-22.28	-42.28	Pass

FCC ID: 2A8T7K10ULTRA

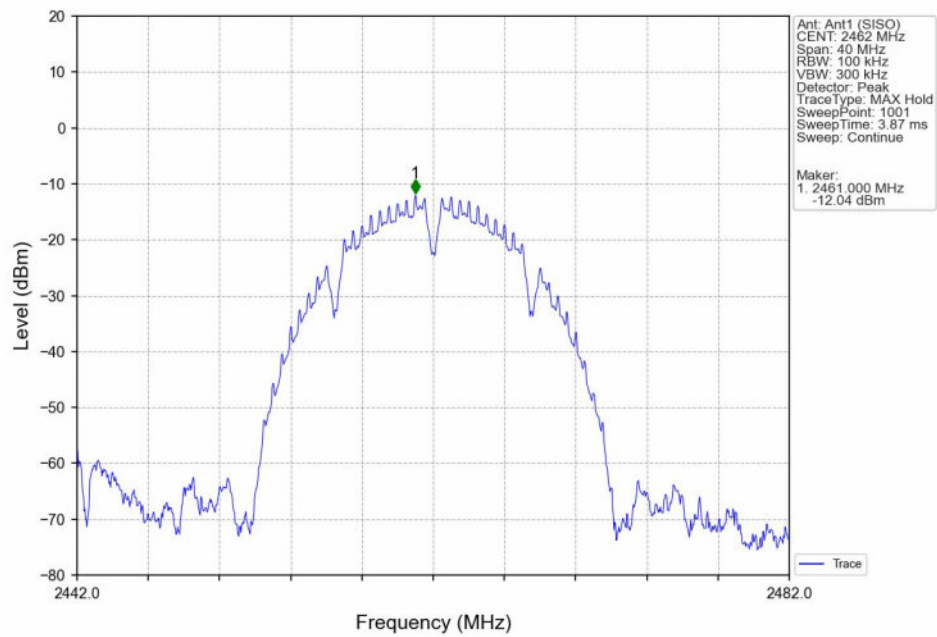
5.2 Test Graph

5.2.1 Ref

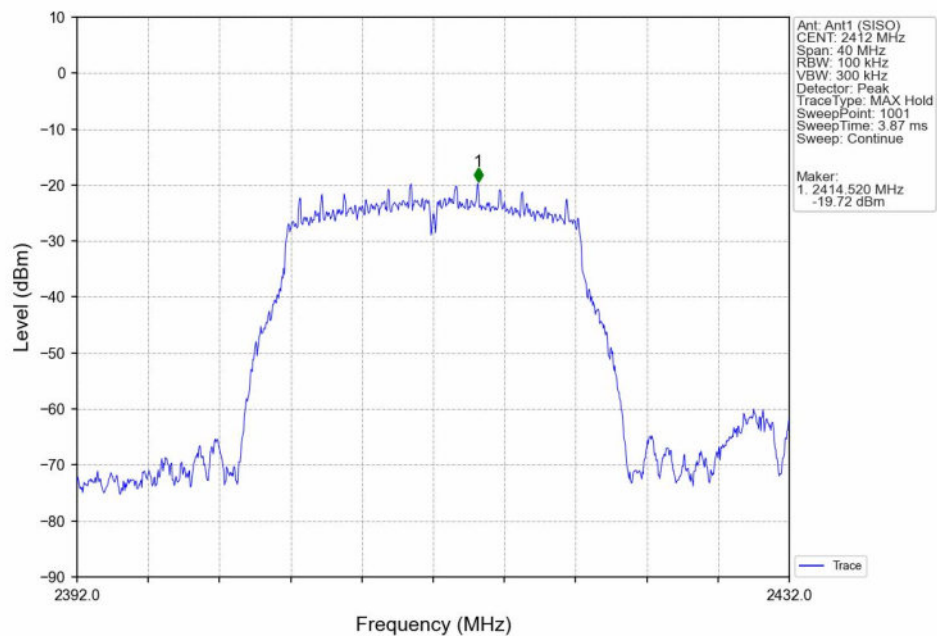


FCC ID: 2A8T7K10ULTRA

802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

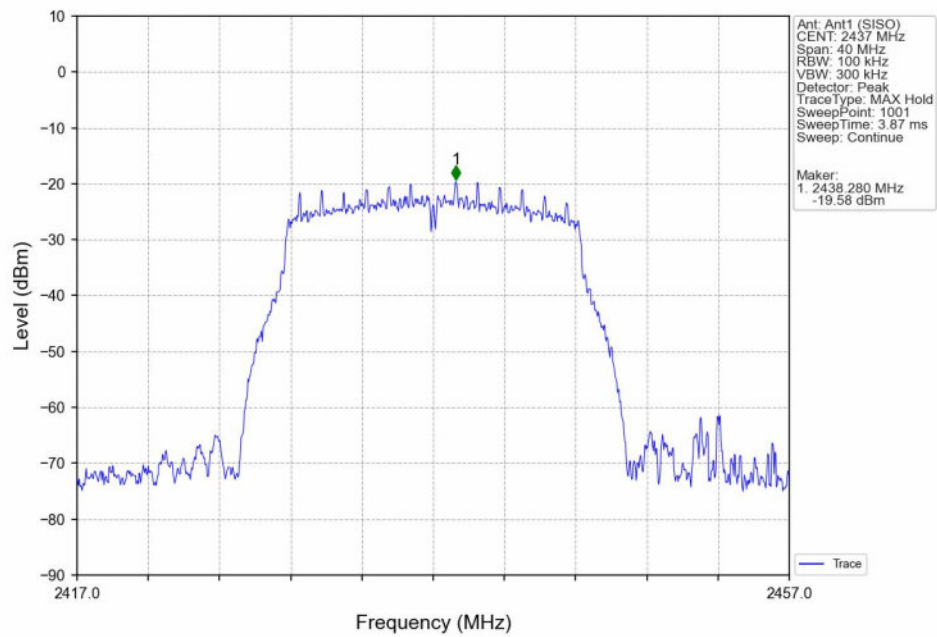


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

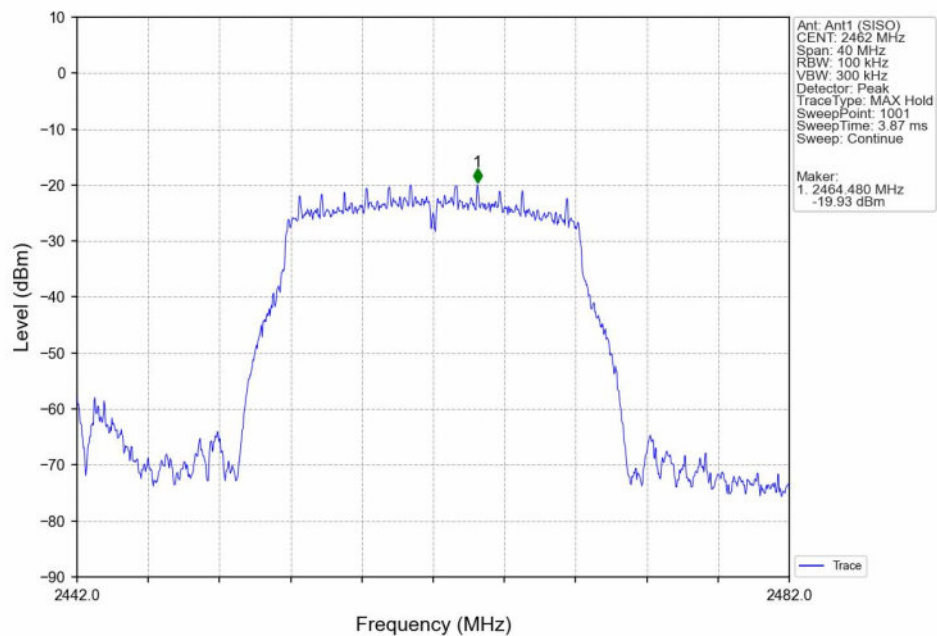


FCC ID: 2A8T7K10ULTRA

802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV

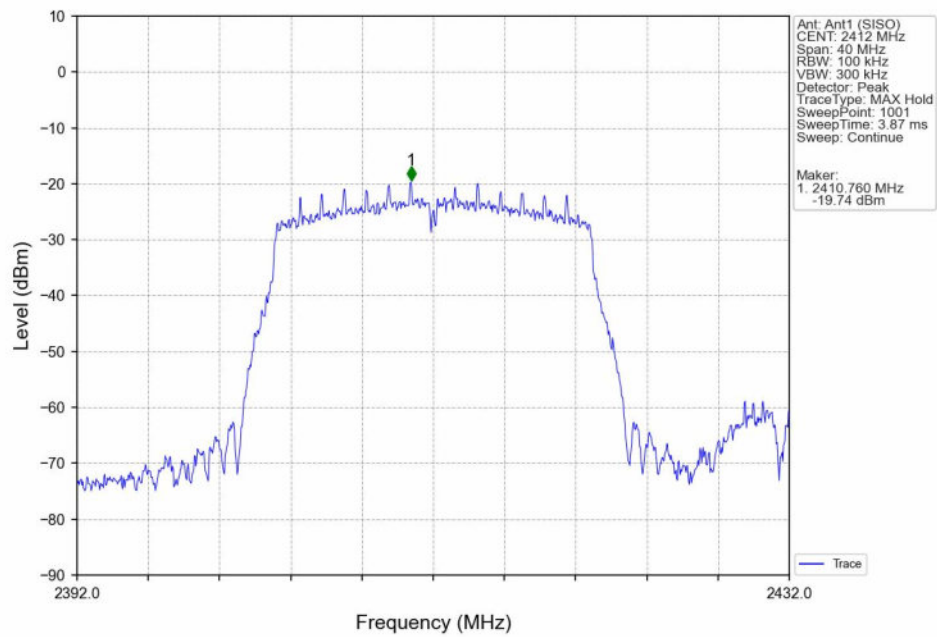


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

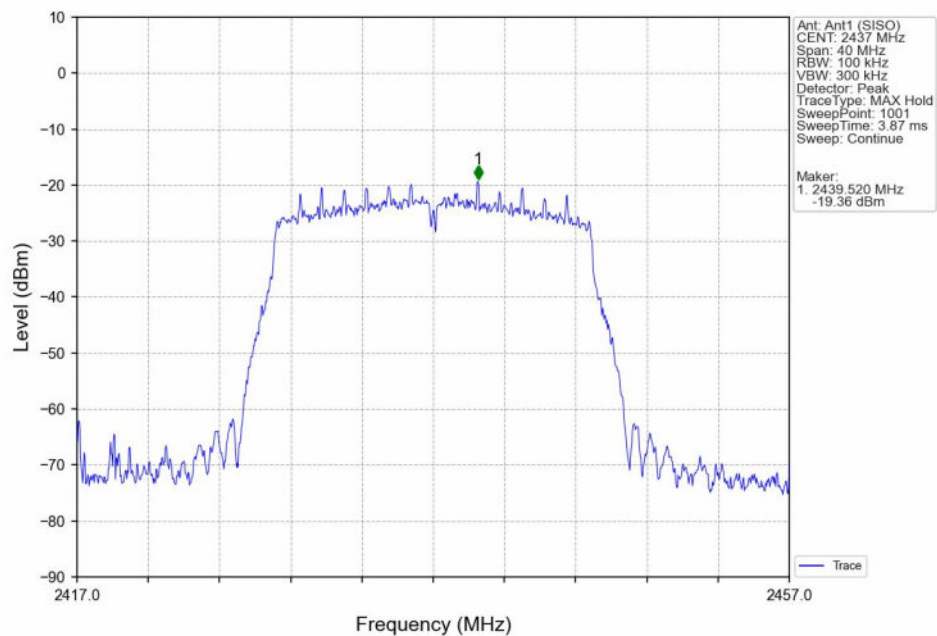


FCC ID: 2A8T7K10ULTRA

802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

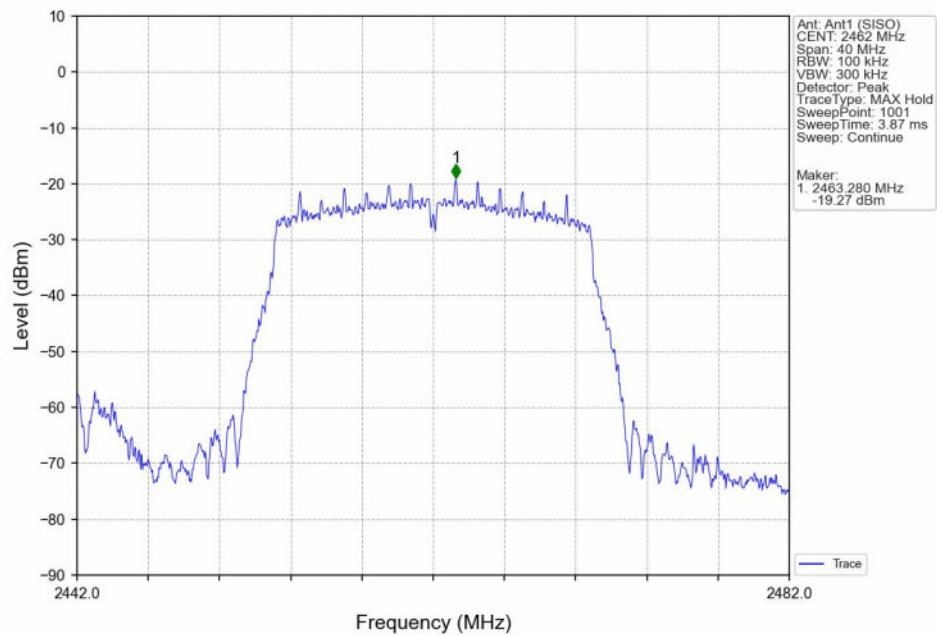


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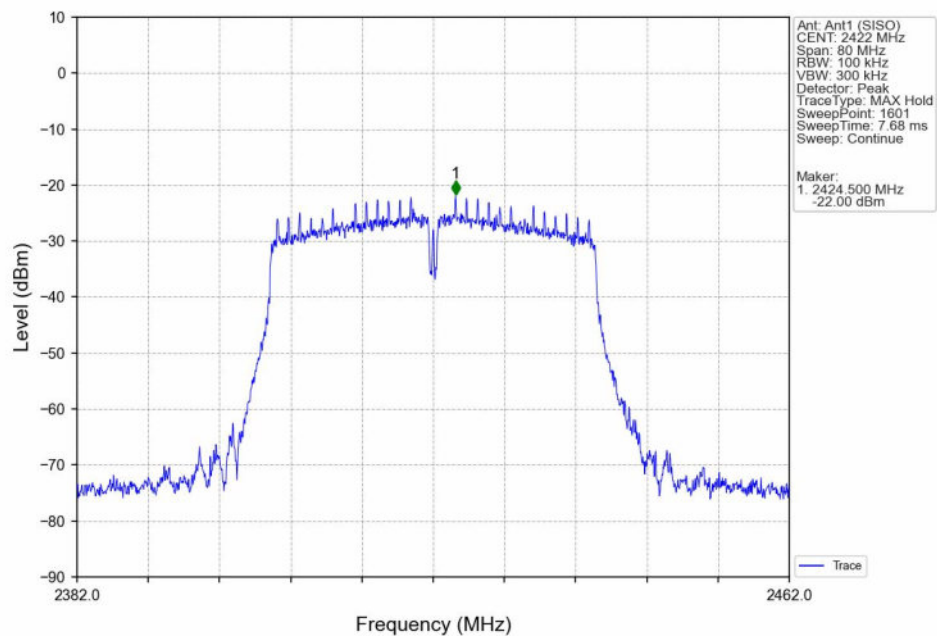


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

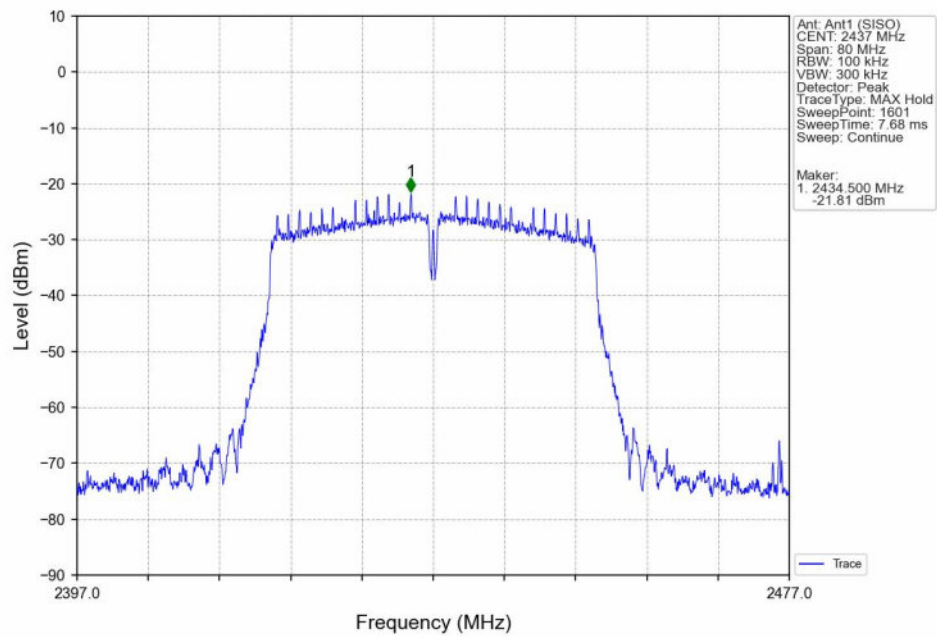


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

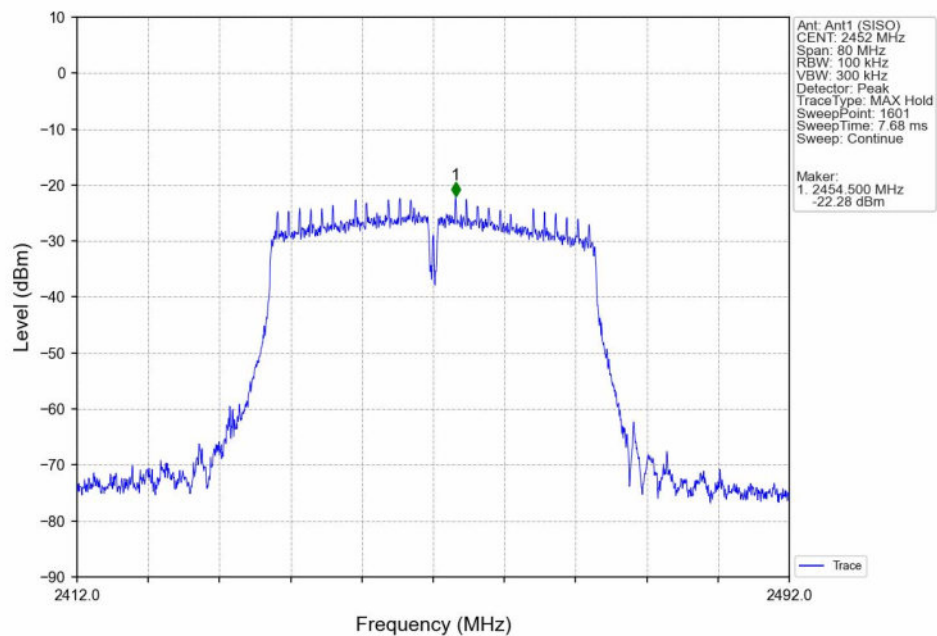


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802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV

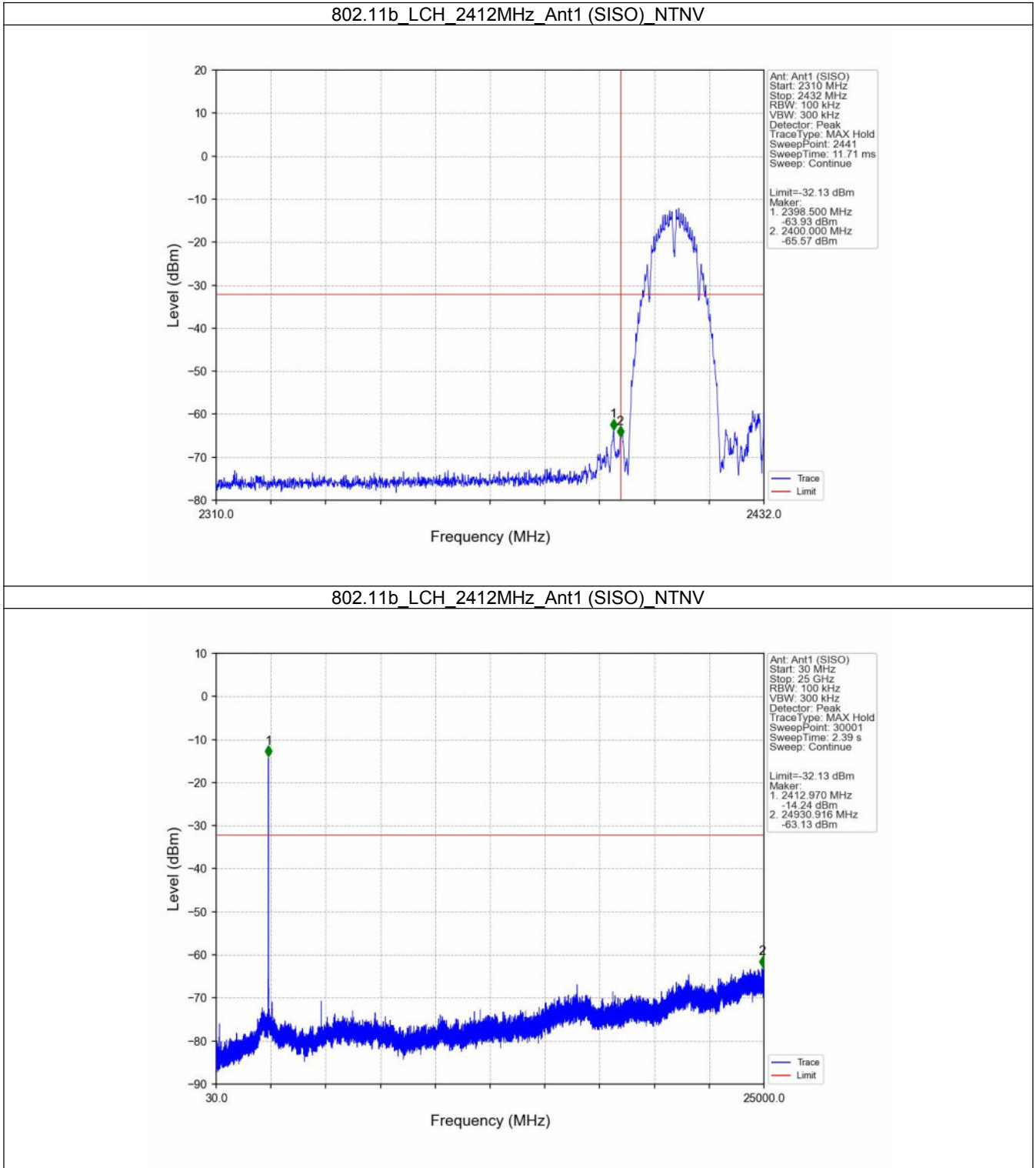


802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



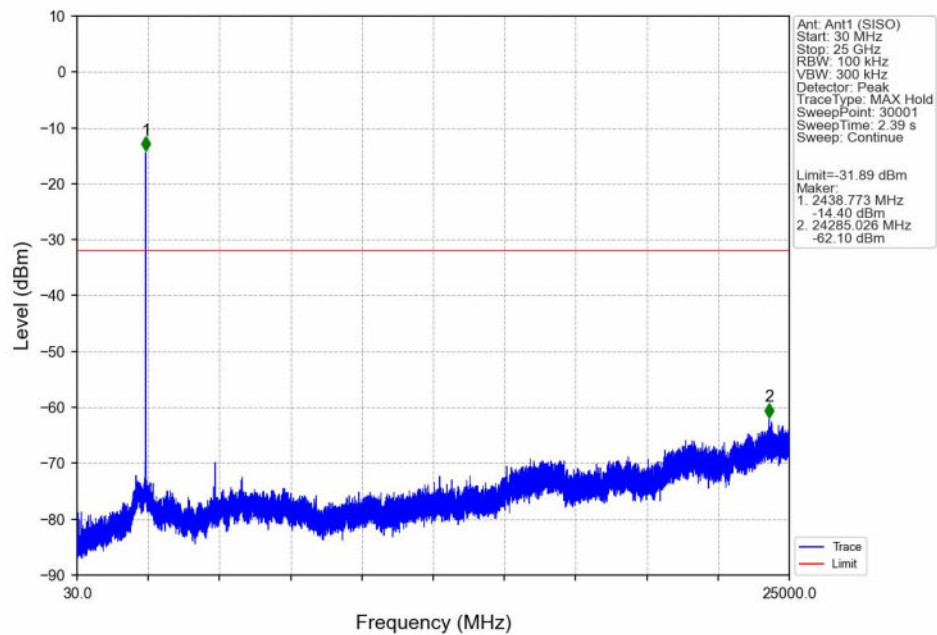
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5.2.2 CSE

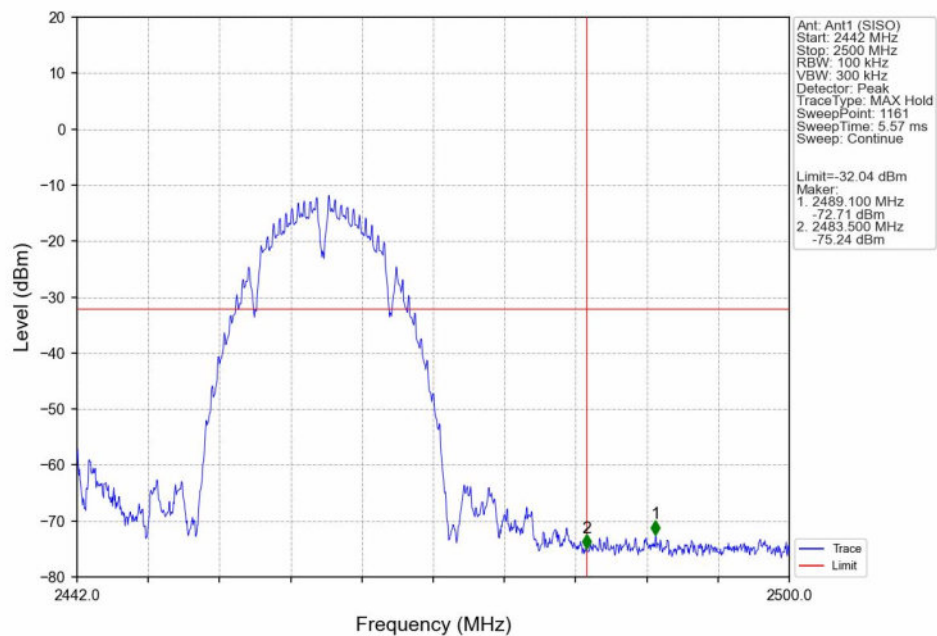


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802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV

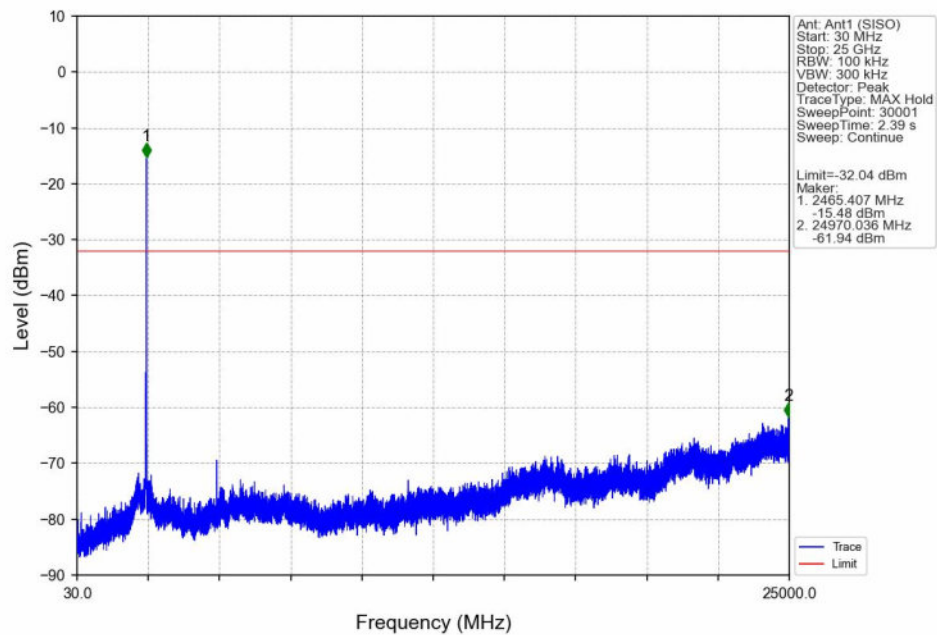


802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

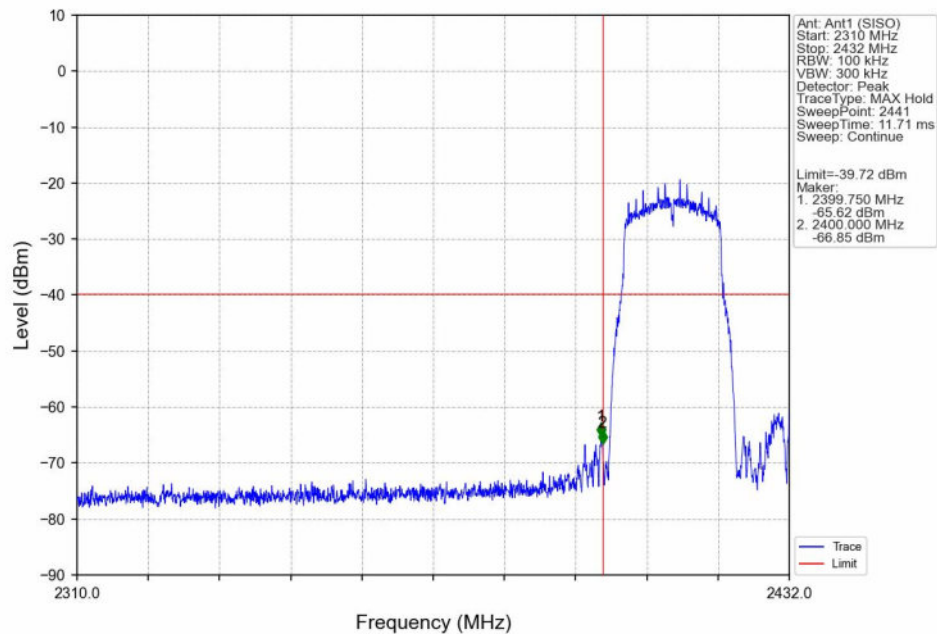


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802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

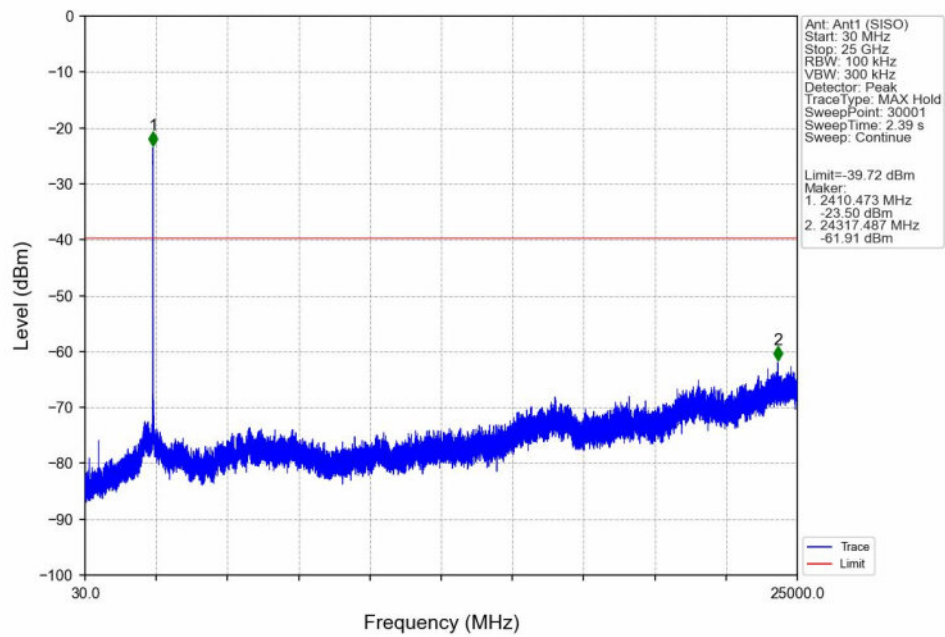


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

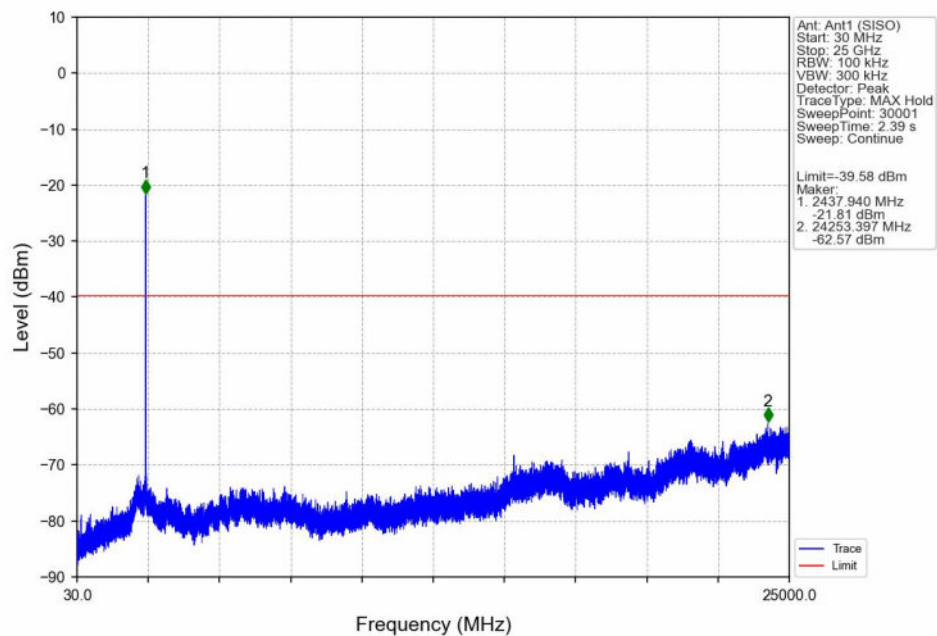


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802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

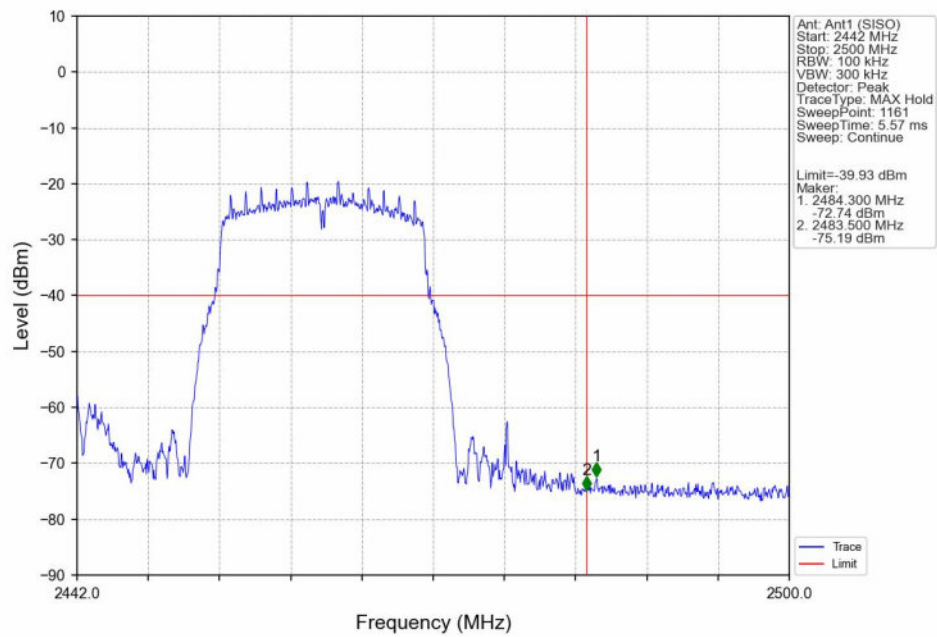


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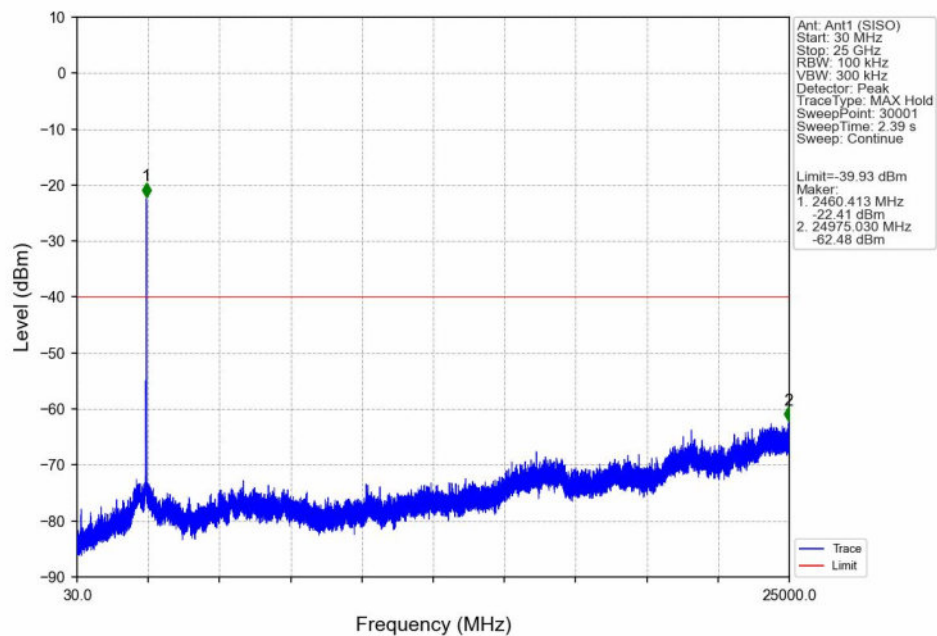


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802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

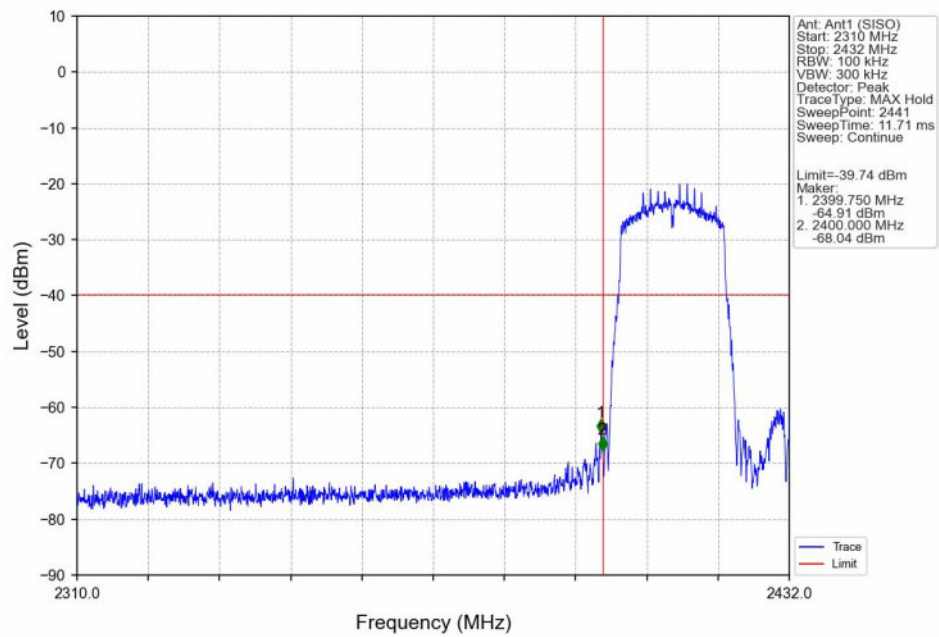


802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV

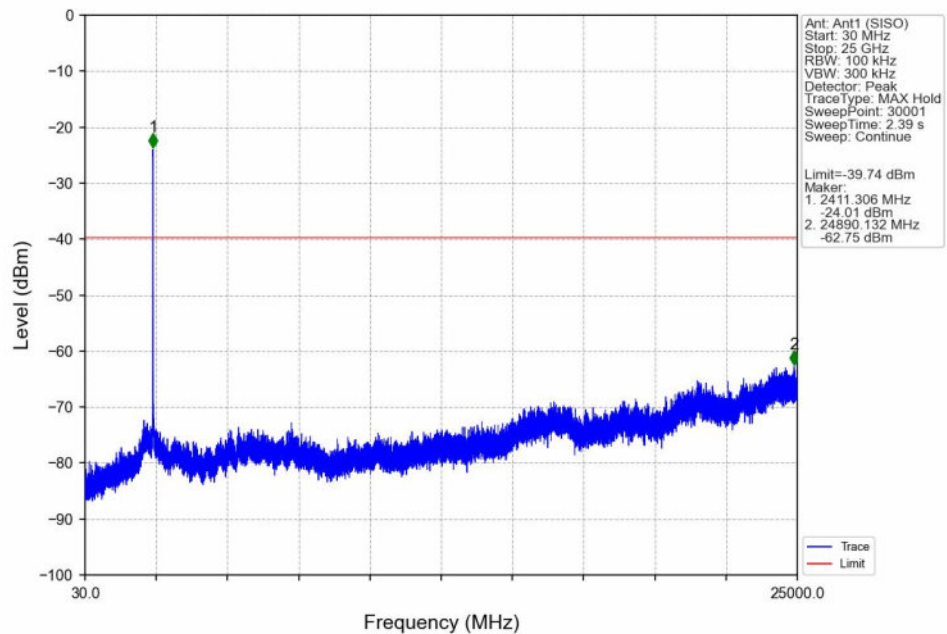


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802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV

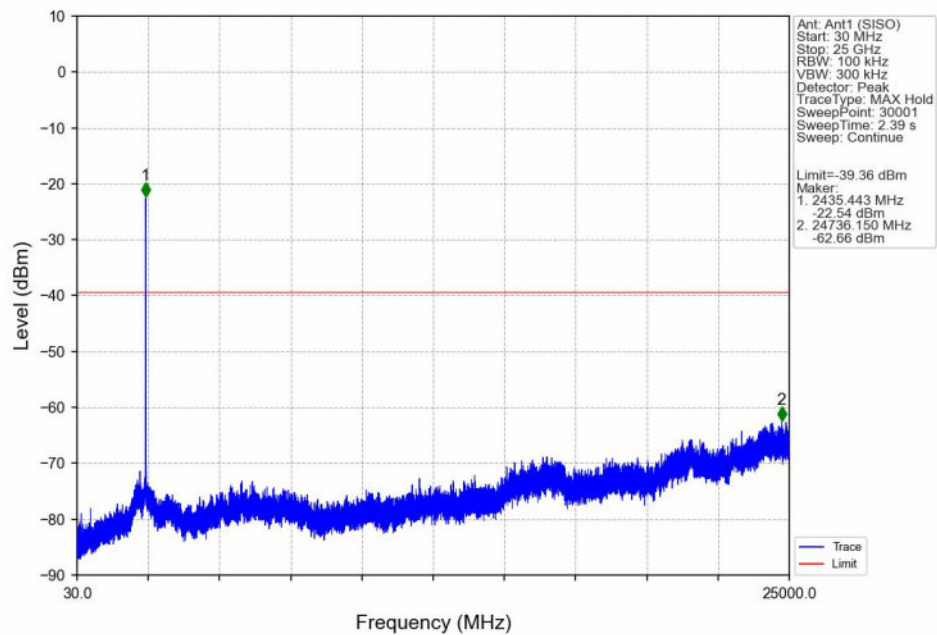


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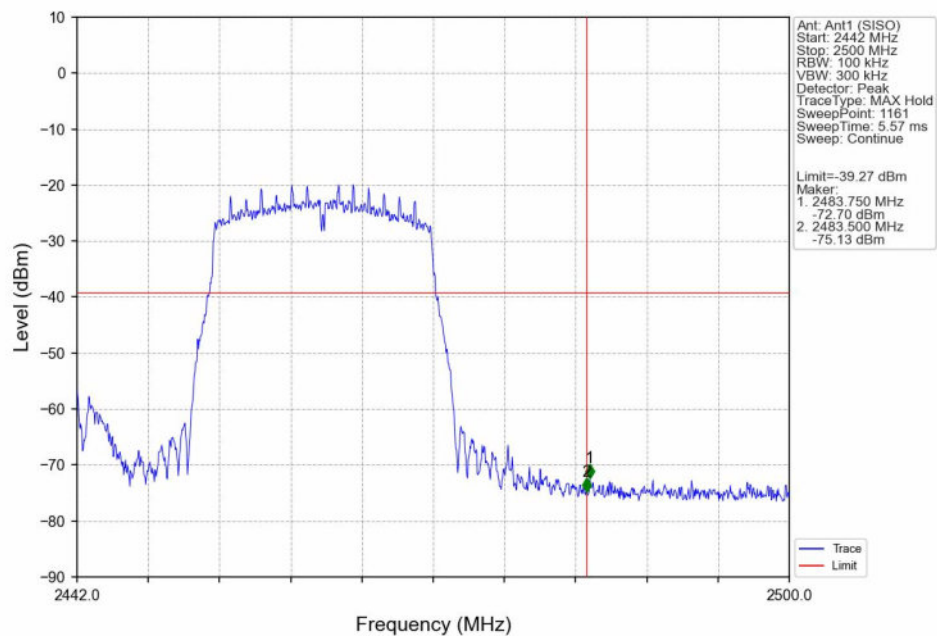


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802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV

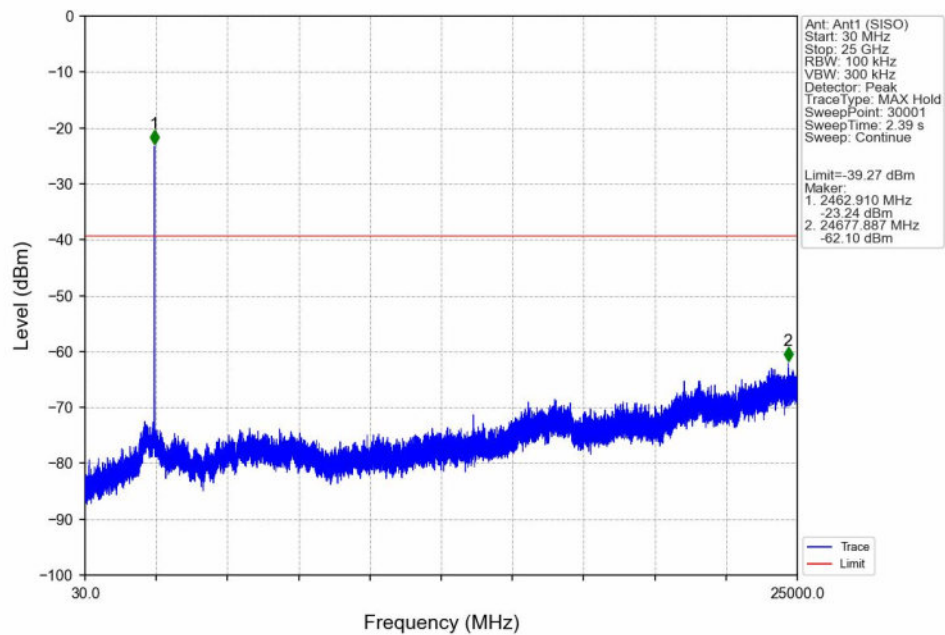


802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

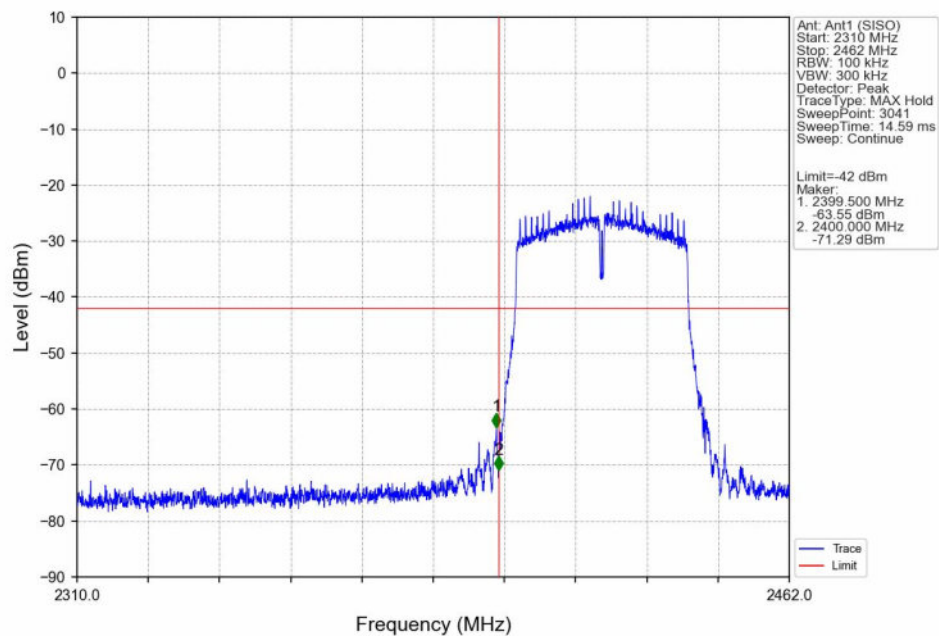


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802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV

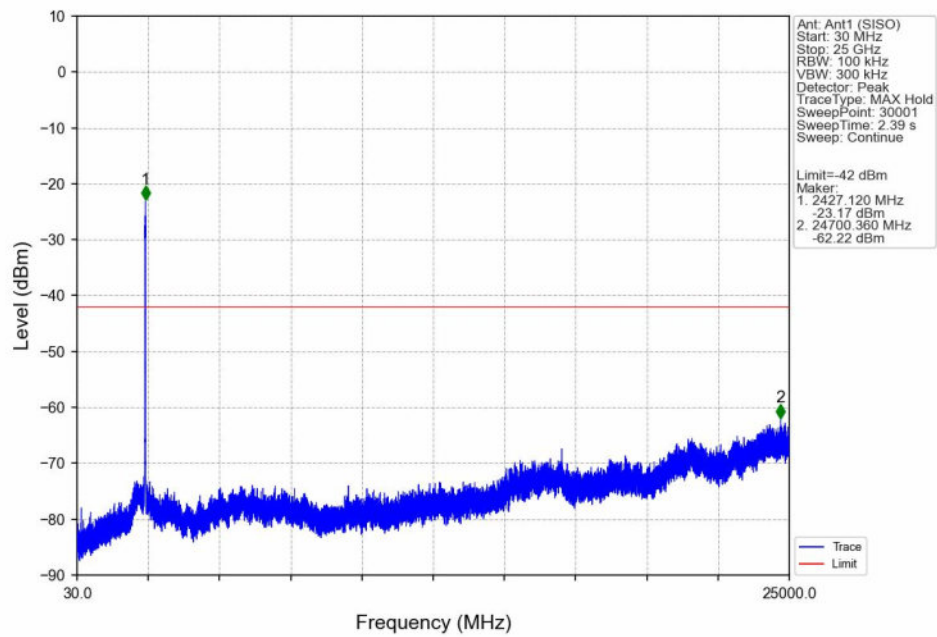


802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

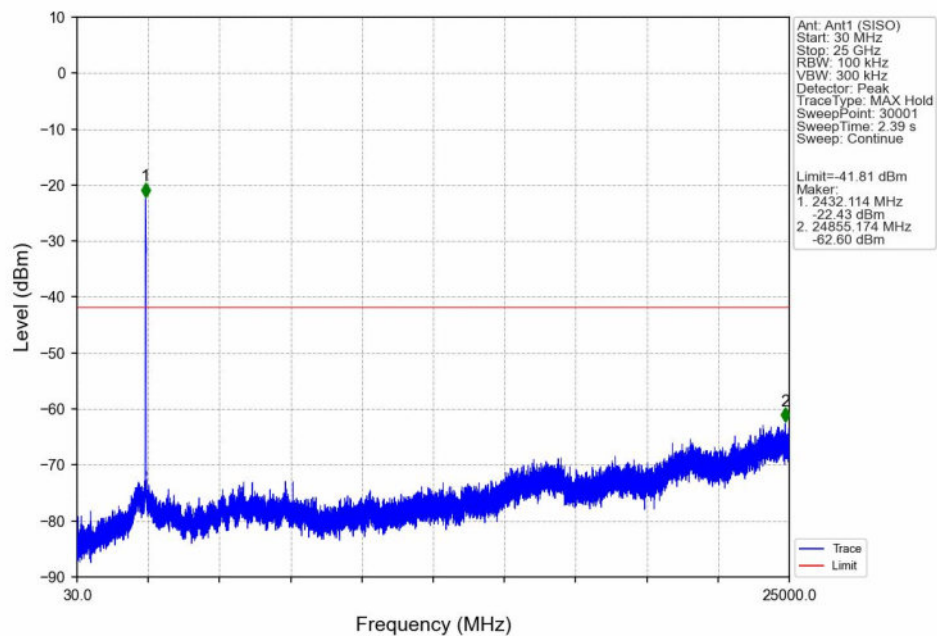


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802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV

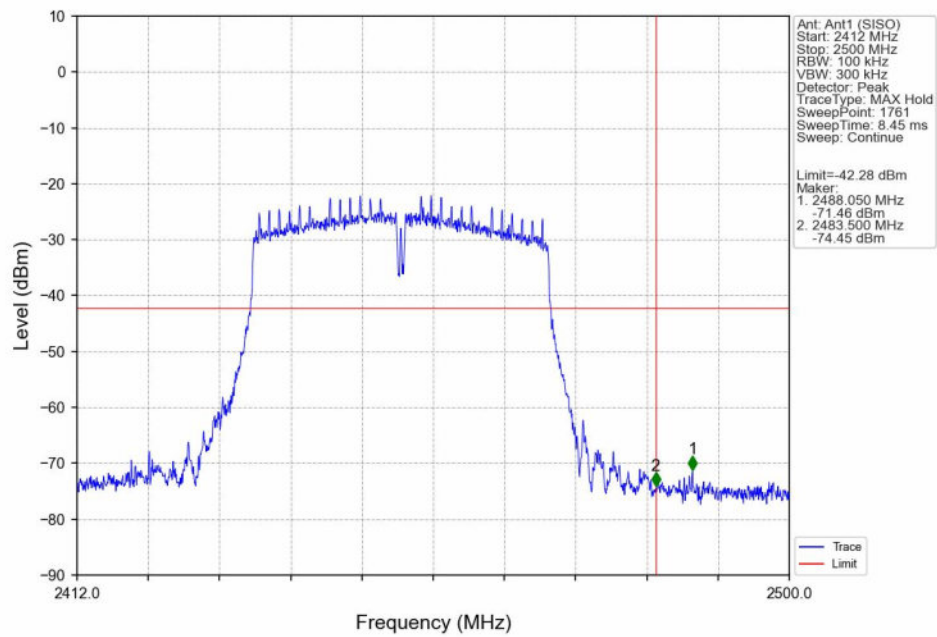


802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



FCC ID: 2A8T7K10ULTRA

802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV

