Appendix A for KSEM210700113901

1. Duty Cycle

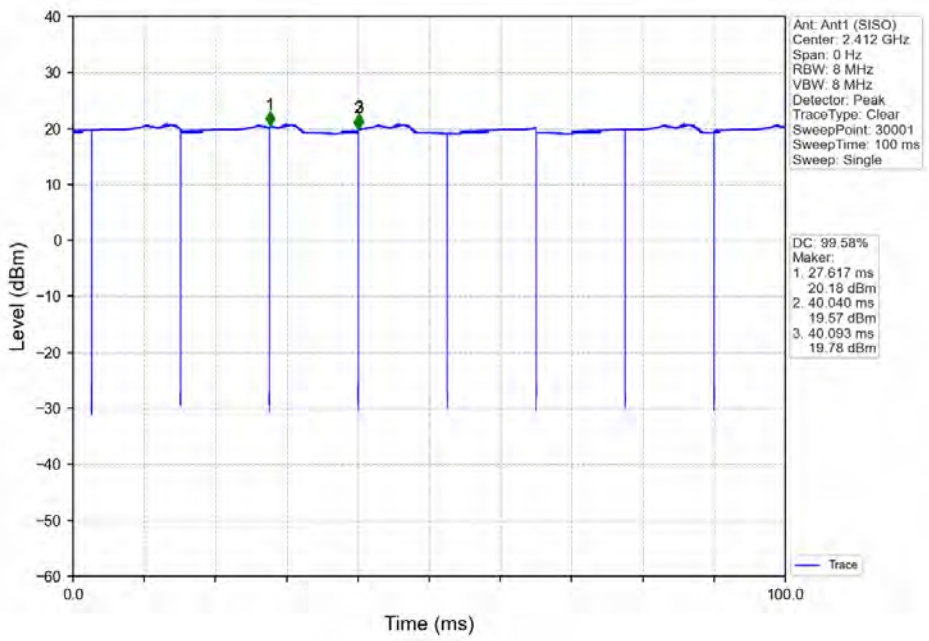
1.1 Ant1

1.1.1 Test Result

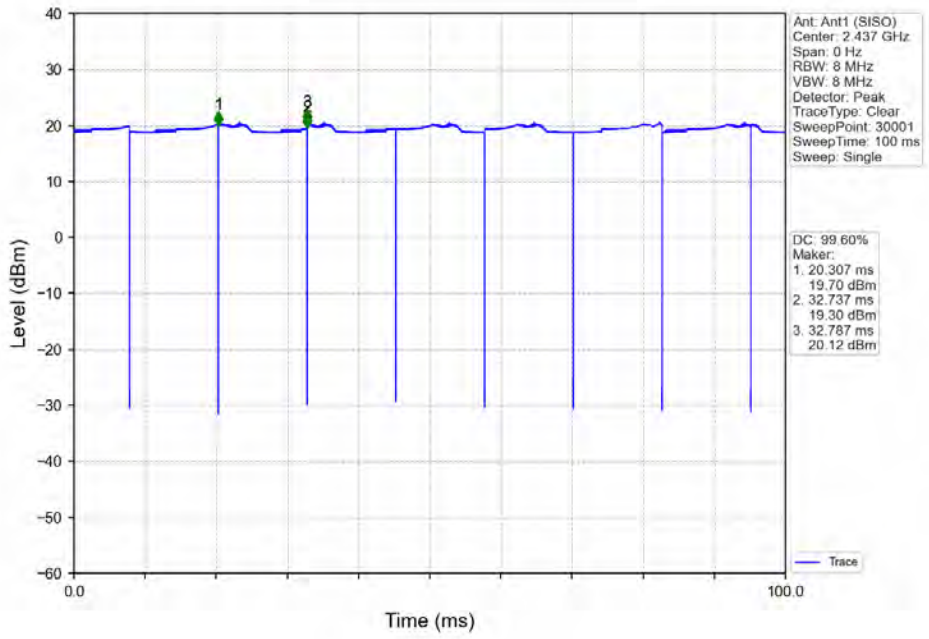
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	12.423	12.476	99.58	0.02	0.00
		2437	12.430	12.480	99.60	0.02	0.03
		2462	12.424	12.477	99.58	0.02	0.00
802.11g	SISO	2412	2.063	2.116	97.50	0.11	0.03
		2437	2.063	2.116	97.50	0.11	0.03
		2462	2.064	2.117	97.50	0.11	0.03
802.11n (HT20)	MIMO	2412	1.924	1.977	97.32	0.12	0.03
		2437	1.924	1.977	97.32	0.12	0.03
		2462	1.921	1.977	97.17	0.12	0.03
802.11n (HT40)	MIMO	2422	0.945	1.000	94.50	0.25	0.03
		2437	0.948	1.000	94.80	0.23	0.00
		2452	0.948	1.000	94.80	0.23	0.00

1.1.2 Test Graph

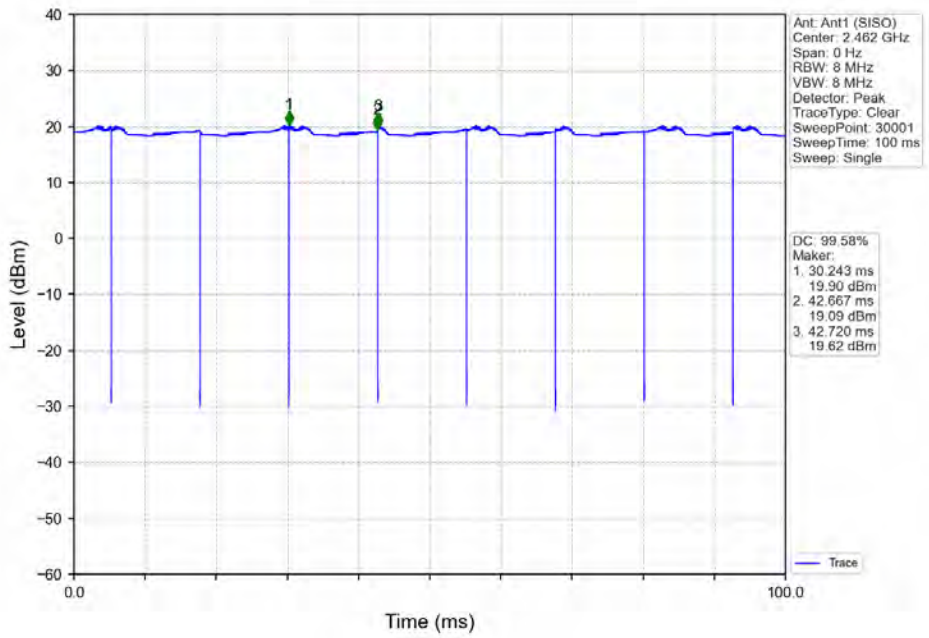
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



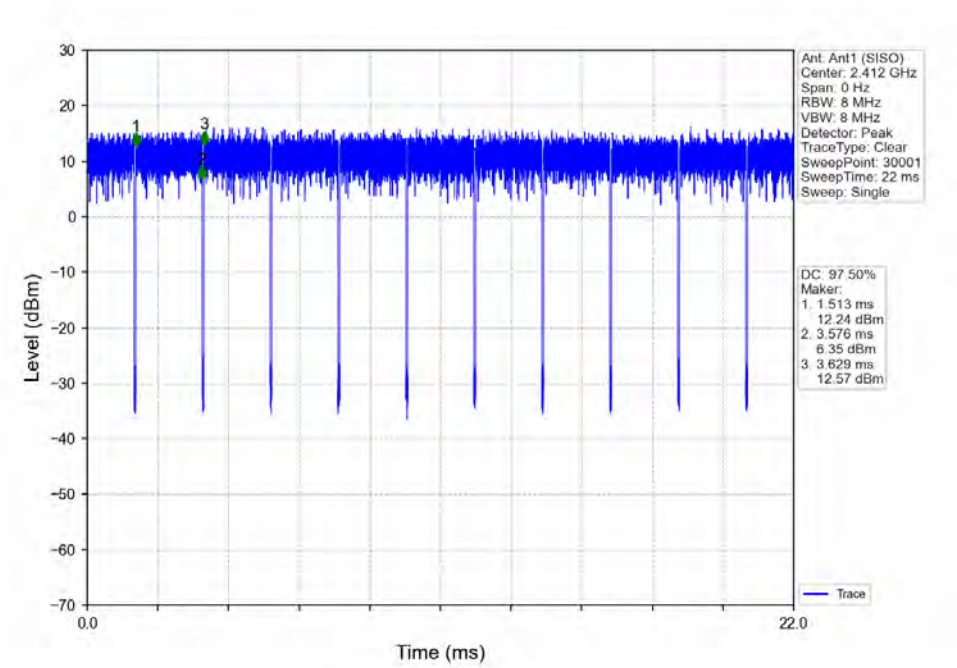
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



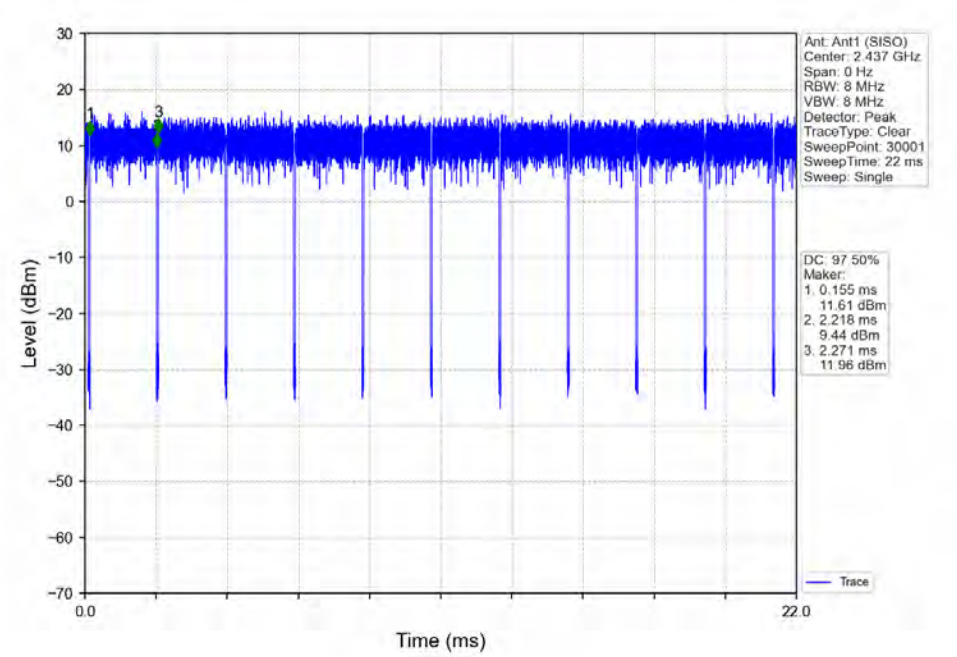
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



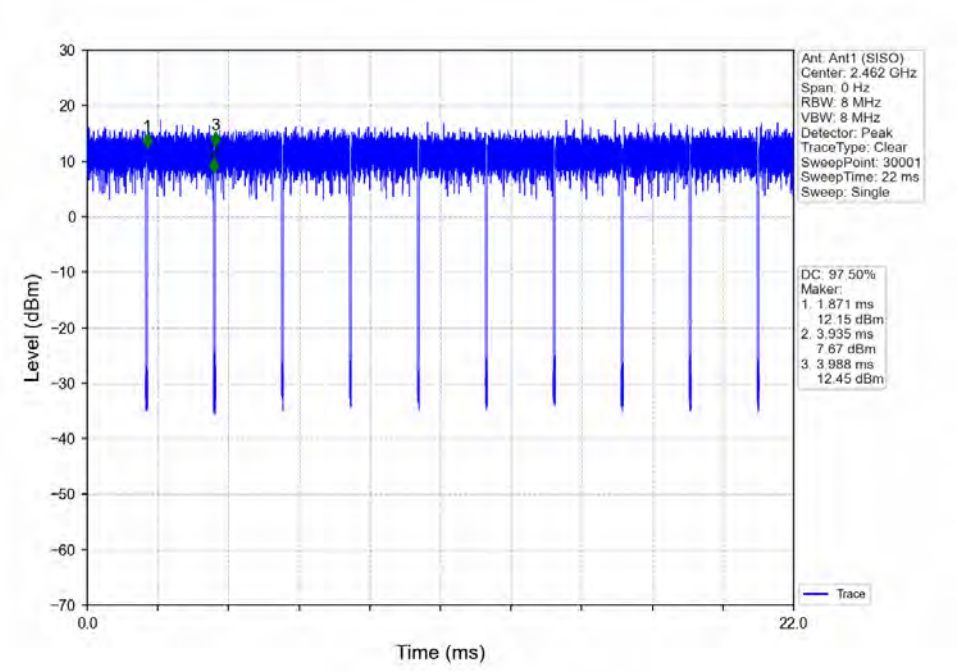
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



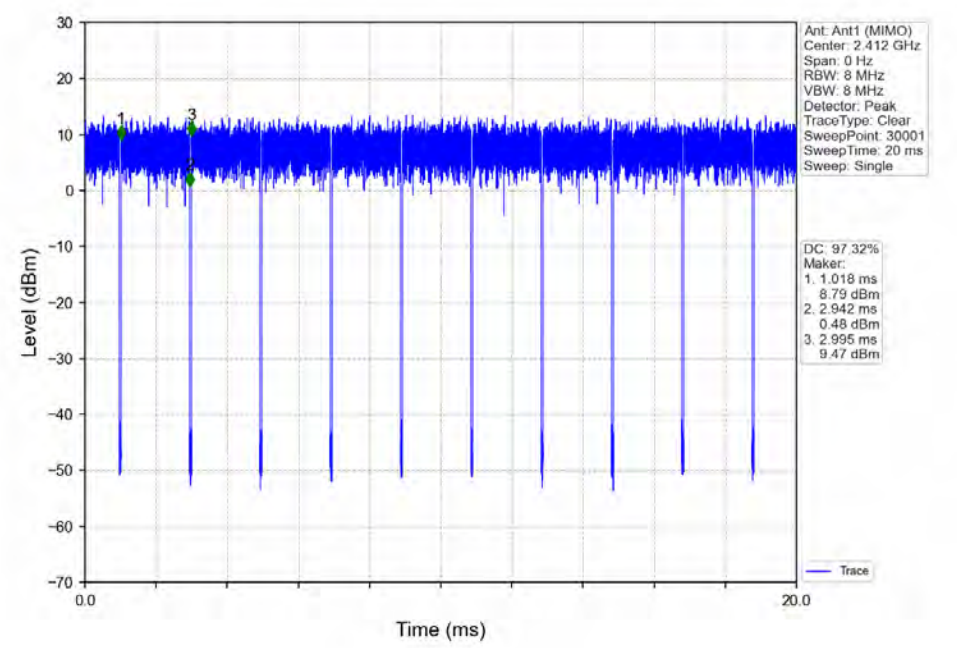
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



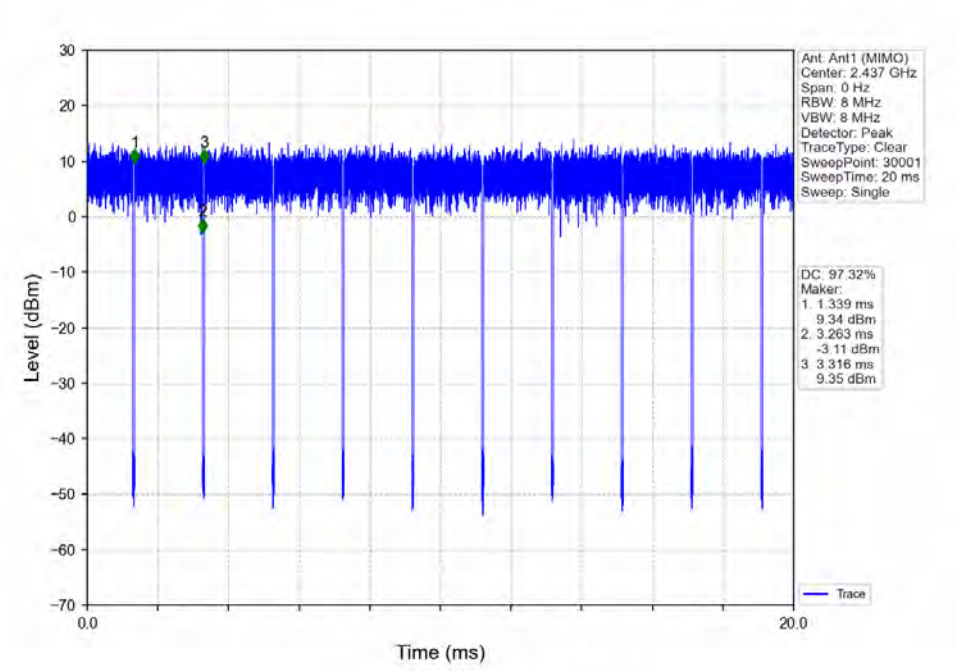
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



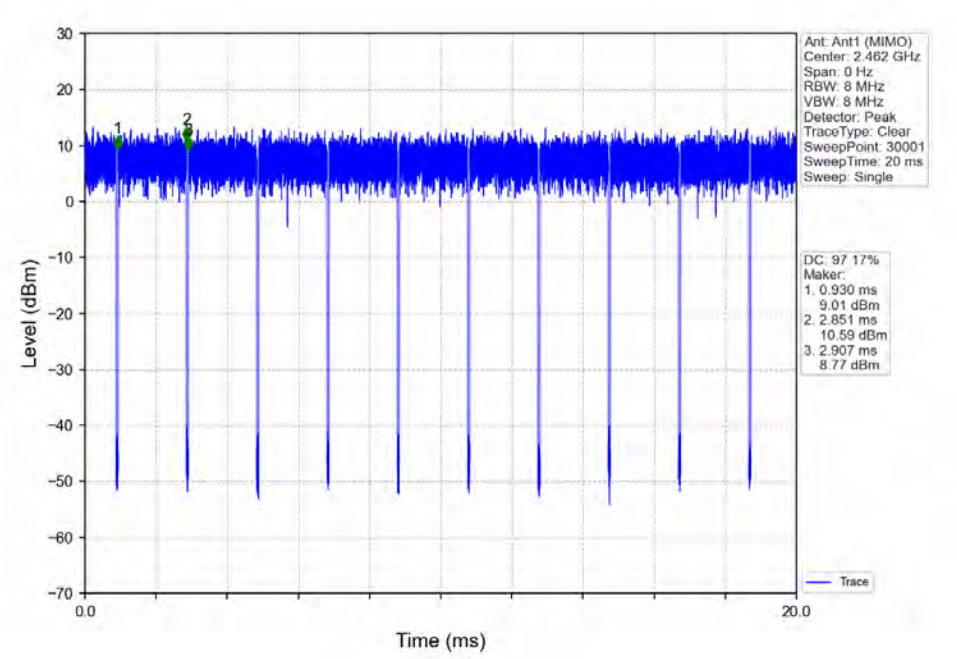
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



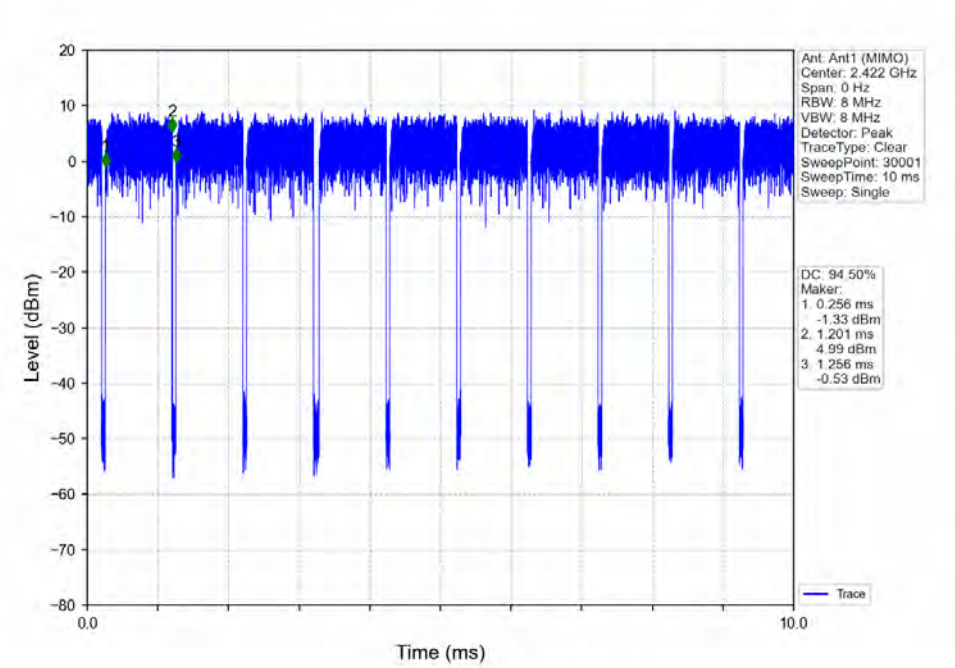
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



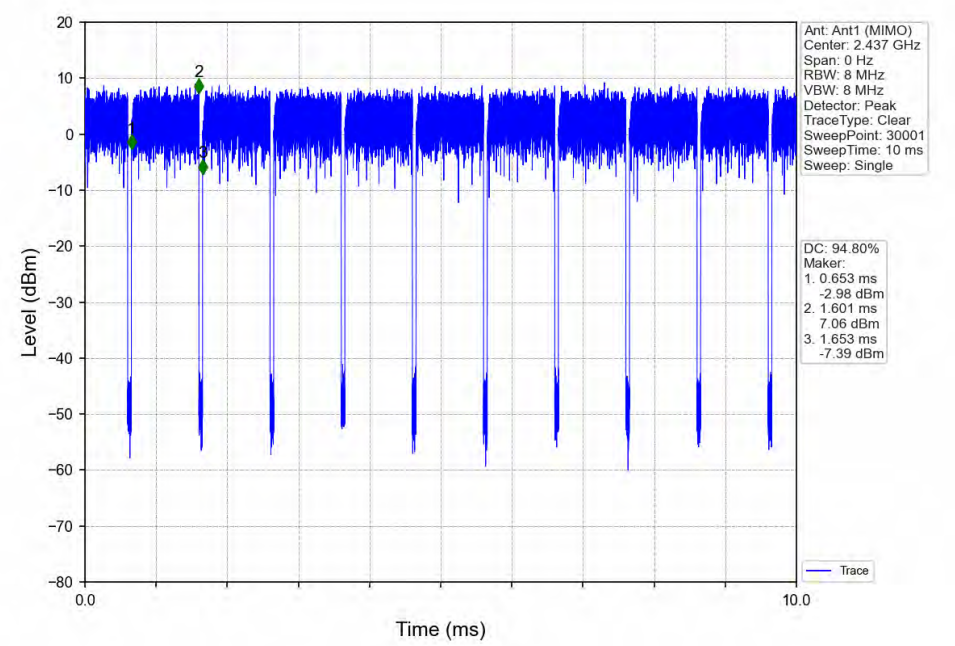
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



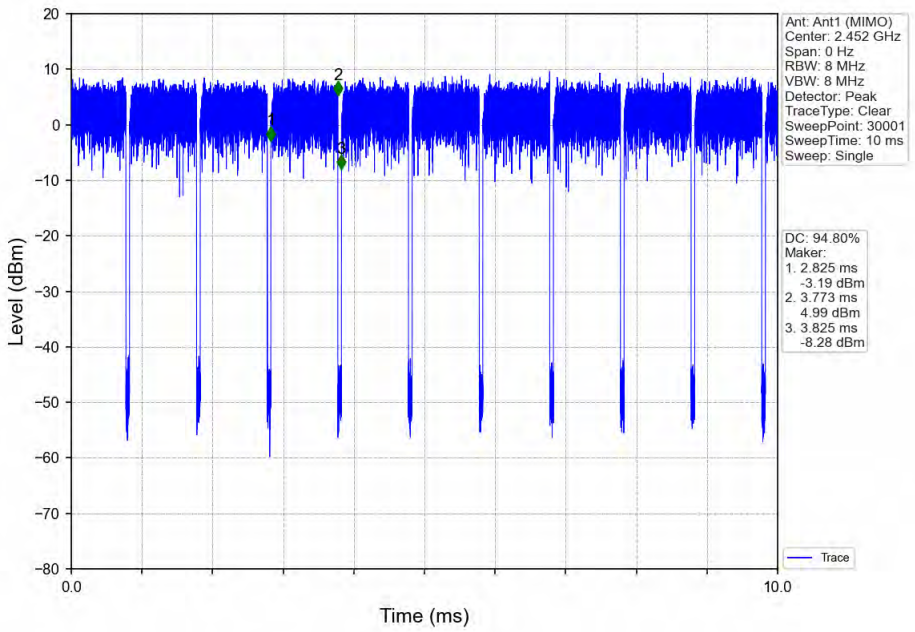
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



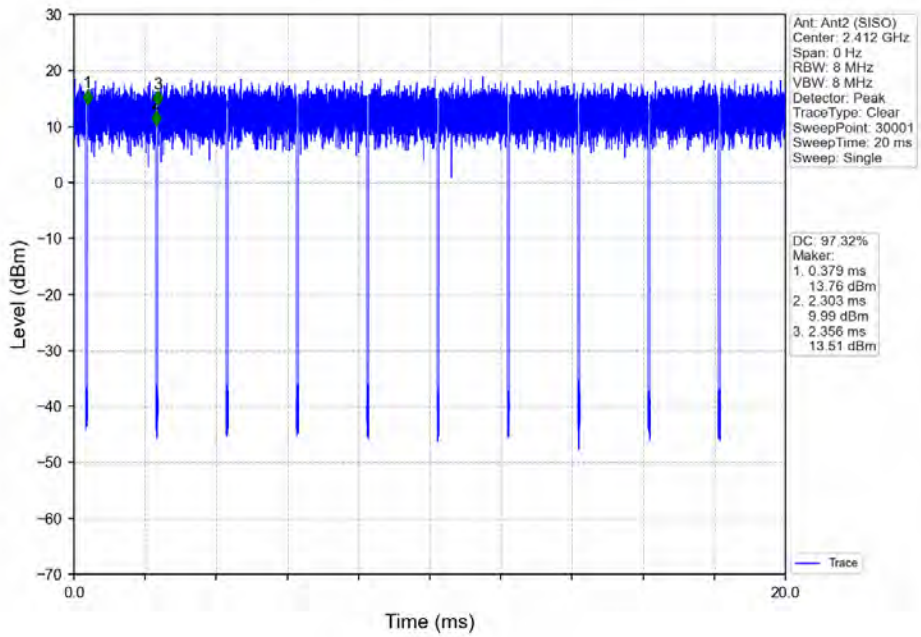
1.2 Ant2

1.2.1 Test Result

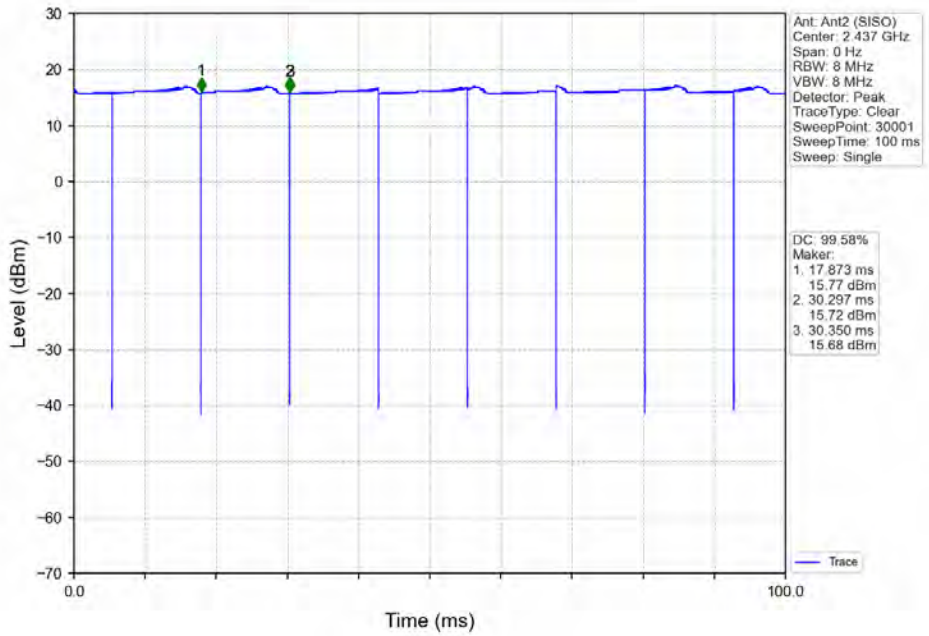
Ant2							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11b	SISO	2412	1.924	1.977	97.32	0.12	0.03
		2437	12.424	12.477	99.58	0.02	0.00
		2462	12.423	12.476	99.58	0.02	0.00
802.11g	SISO	2412	2.063	2.116	97.50	0.11	0.03
		2437	2.064	2.117	97.50	0.11	0.03
		2462	2.063	2.116	97.50	0.11	0.03
802.11n (HT20)	MIMO	2412	1.924	1.977	97.32	0.12	0.03
		2437	1.922	1.977	97.22	0.12	0.04
		2462	1.922	1.977	97.22	0.12	0.03
802.11n (HT40)	MIMO	2422	0.945	1.060	89.15	0.50	5.38
		2437	0.948	1.000	94.80	0.23	0.00
		2452	0.948	1.000	94.80	0.23	0.00

1.2.2 Test Graph

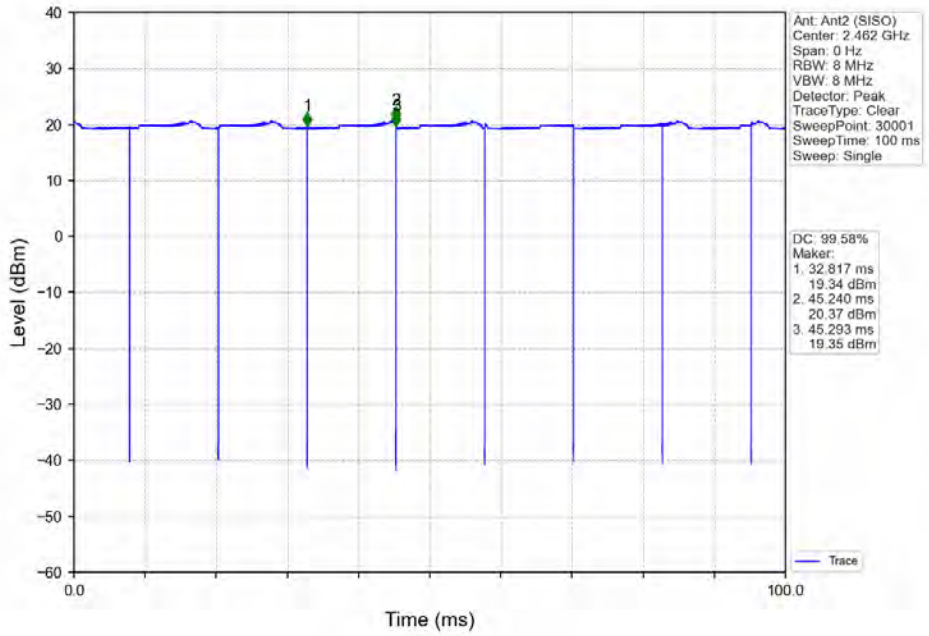
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



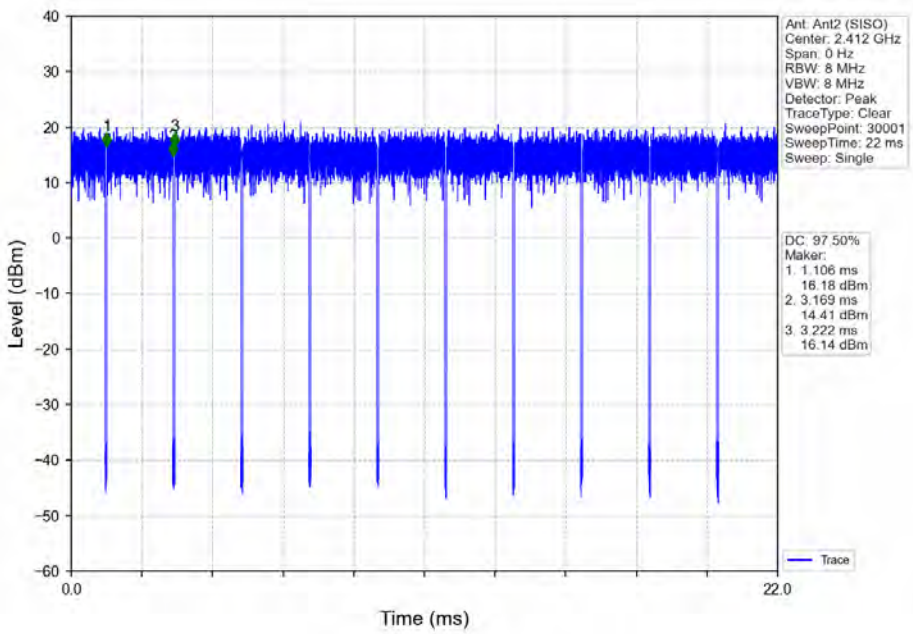
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



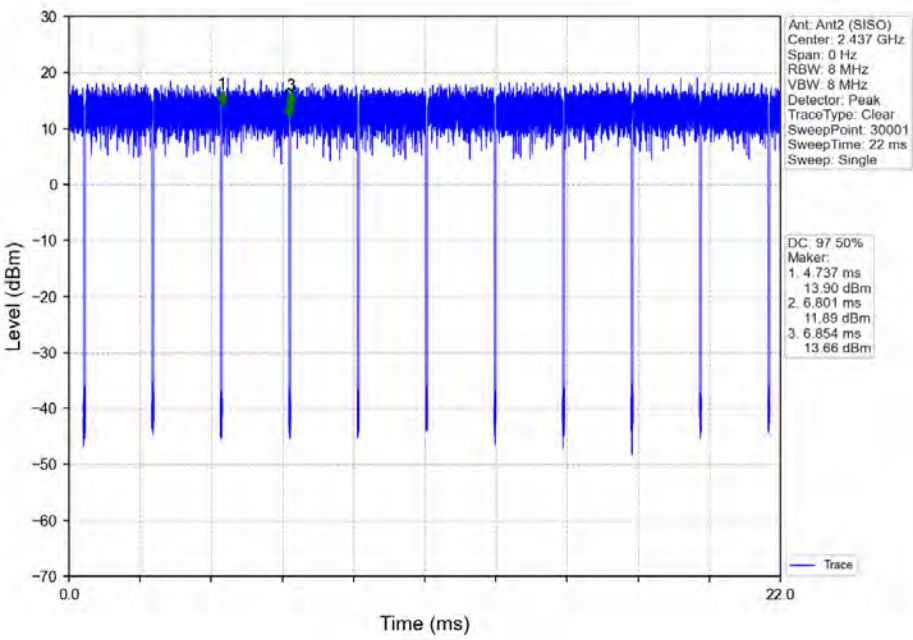
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



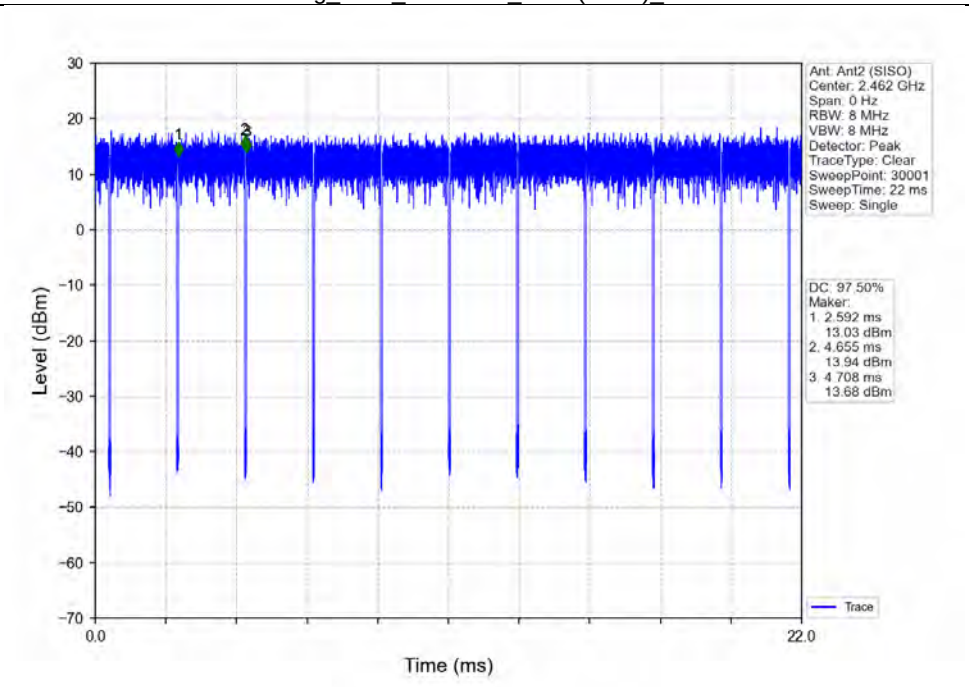
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



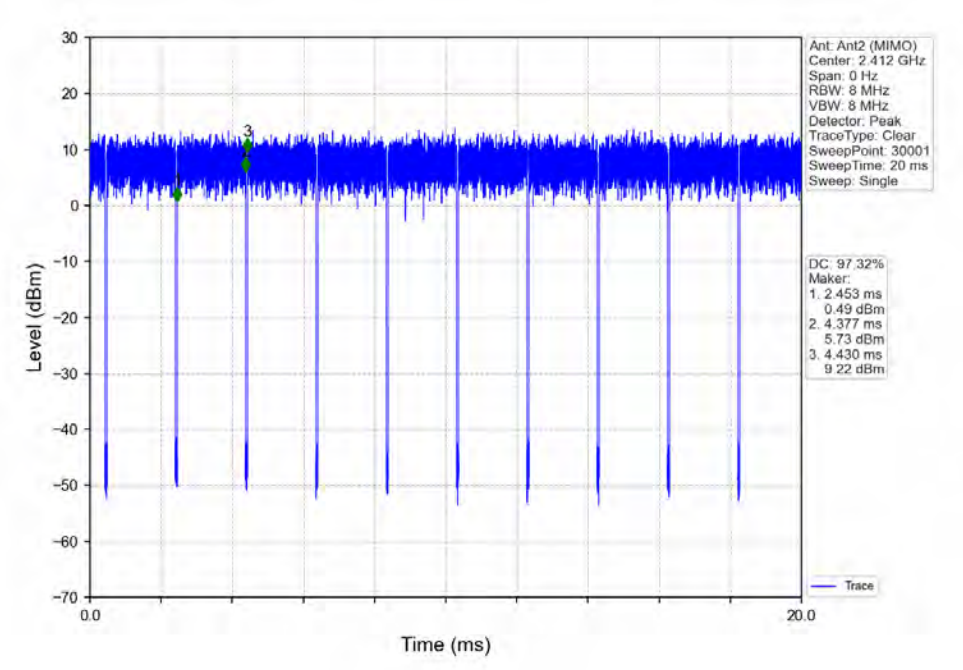
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



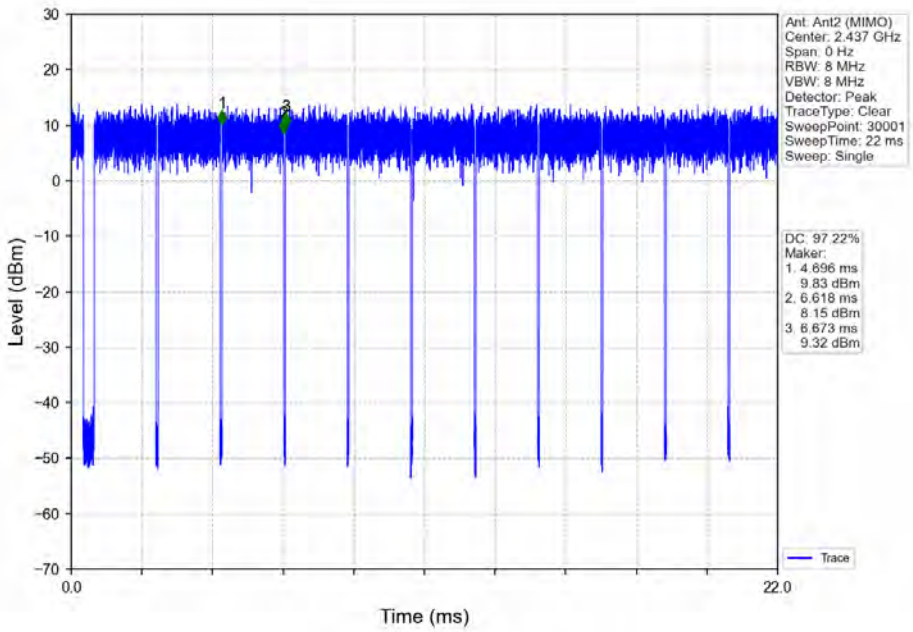
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



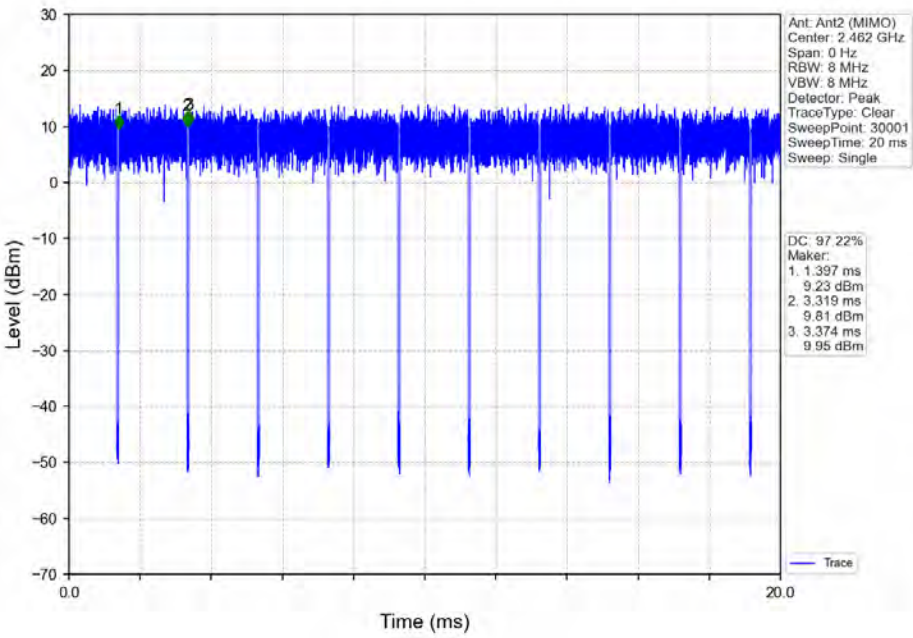
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



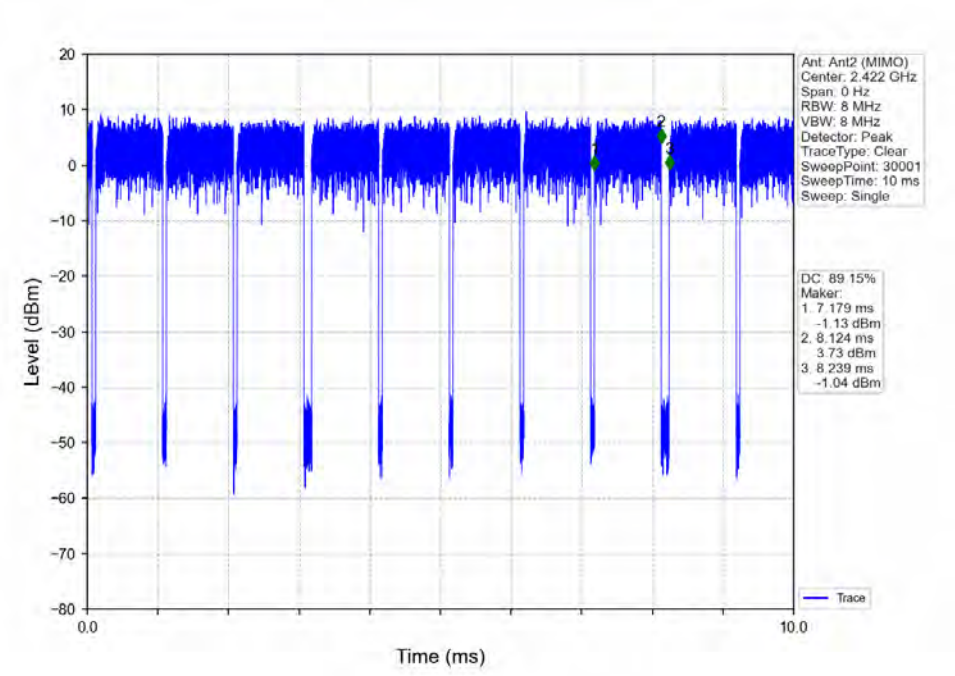
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



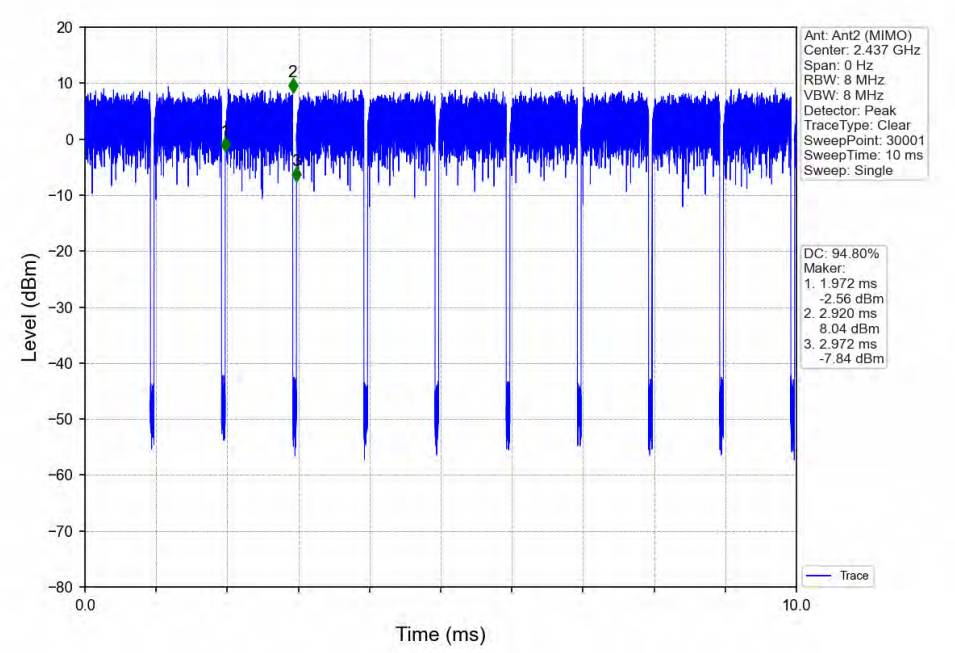
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



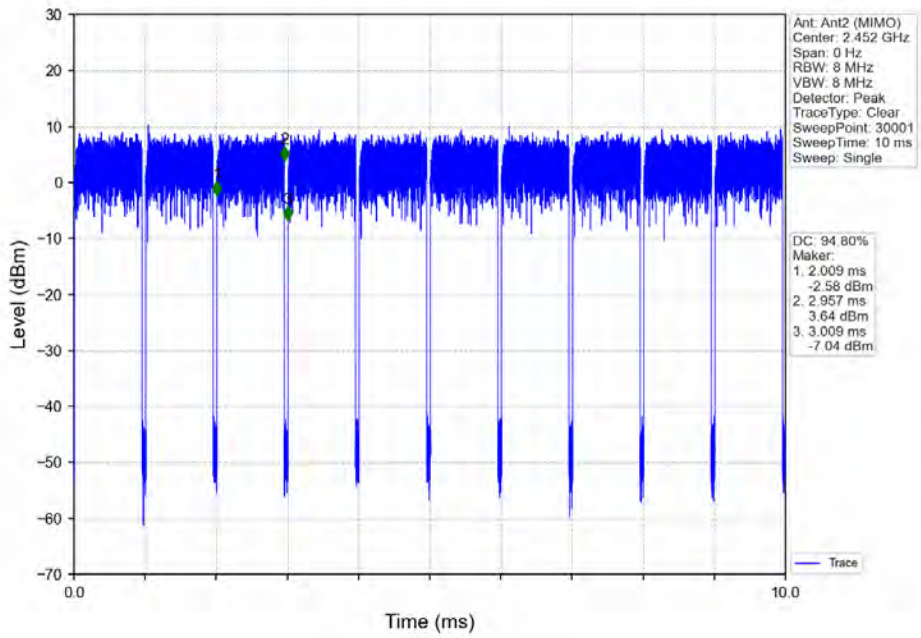
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



2. Bandwidth

2.1 OBW

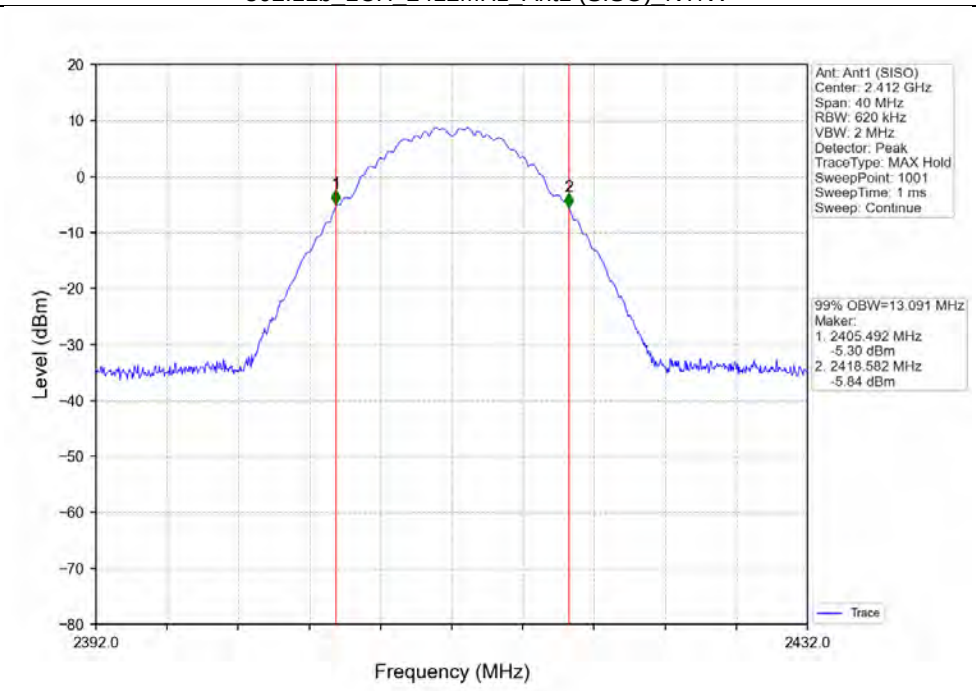
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Ant	99% Occupied Bandwidth (MHz) Result	Verdict
802.11b	SISO	2412	1	13.091	Pass
			2	12.968	Pass
		2437	1	13.101	Pass
			2	13.000	Pass
		2462	1	13.025	Pass
			2	12.942	Pass
802.11g	SISO	2412	1	16.560	Pass
			2	16.546	Pass
		2437	1	16.579	Pass
			2	16.566	Pass
		2462	1	16.573	Pass
			2	16.548	Pass
802.11n (HT20)	MIMO	2412	1	17.598	Pass
			2	17.595	Pass
		2437	1	17.592	Pass
			2	17.584	Pass

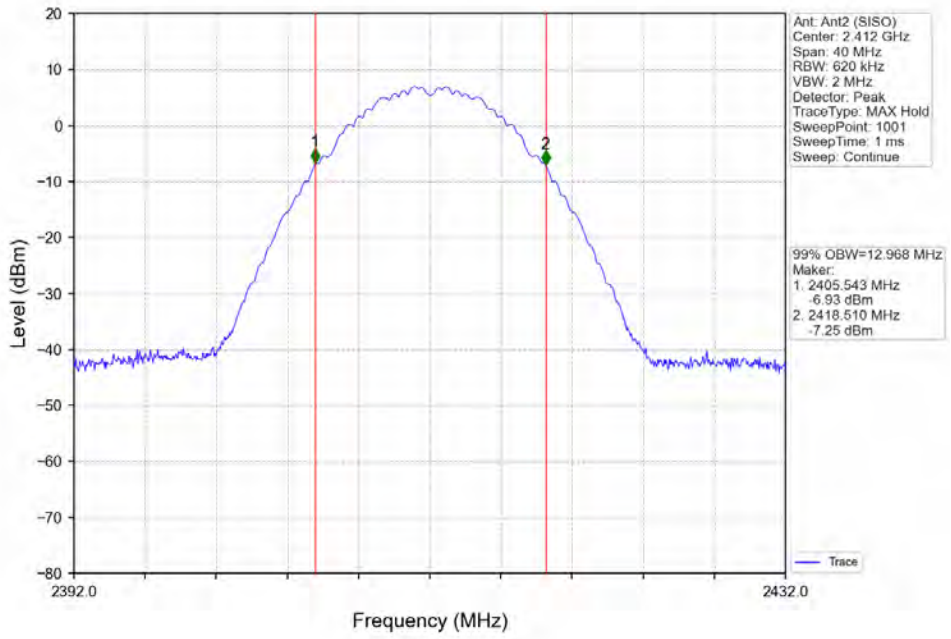
		2462	1	17.603	Pass
			2	17.591	Pass
802.11n (HT40)	MIMO	2422	1	36.202	Pass
			2	36.144	Pass
		2437	1	36.175	Pass
			2	36.162	Pass
		2452	1	36.187	Pass
			2	36.150	Pass

2.1.2 Test Graph

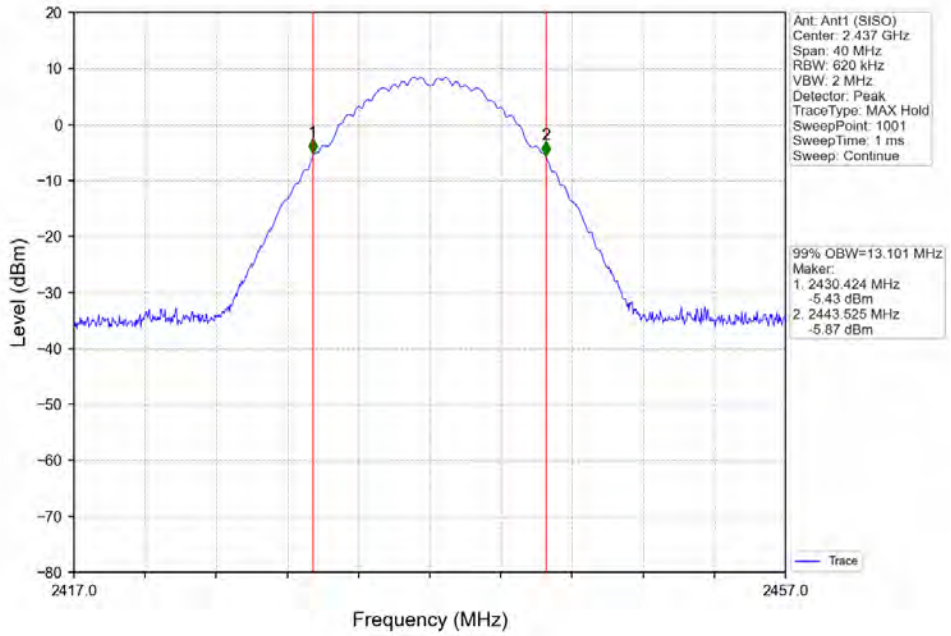
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



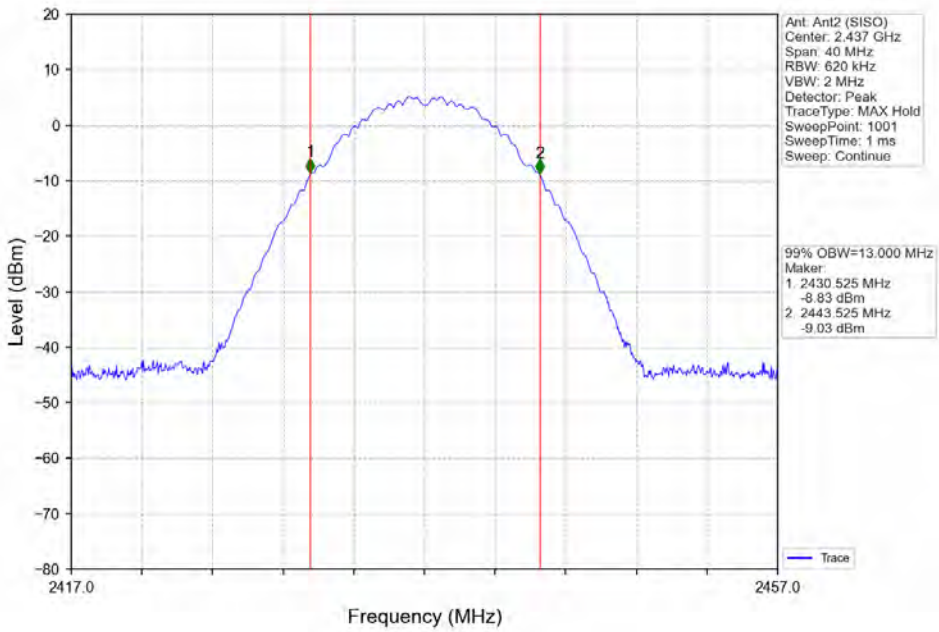
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



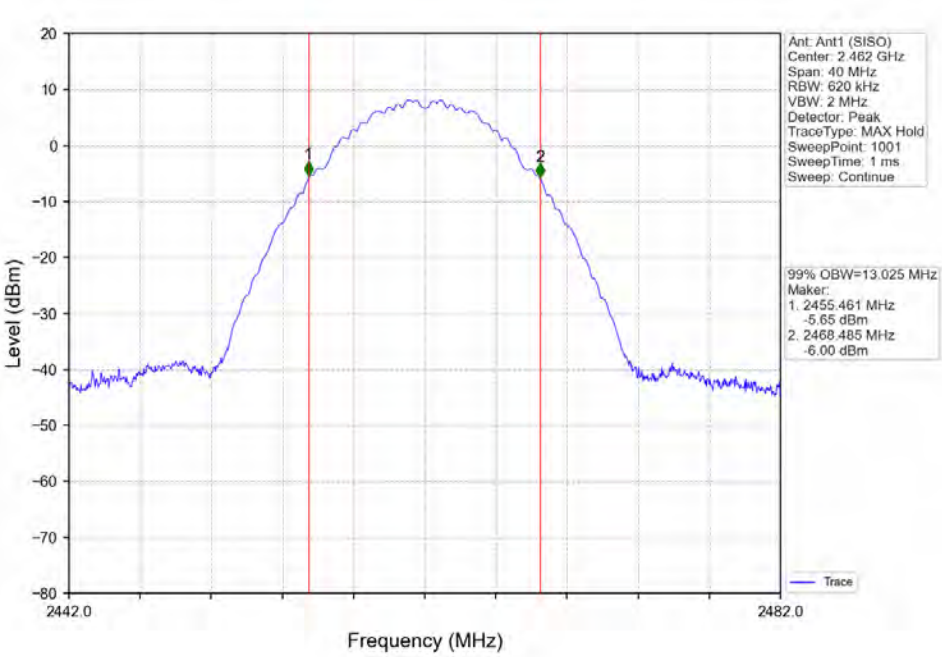
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



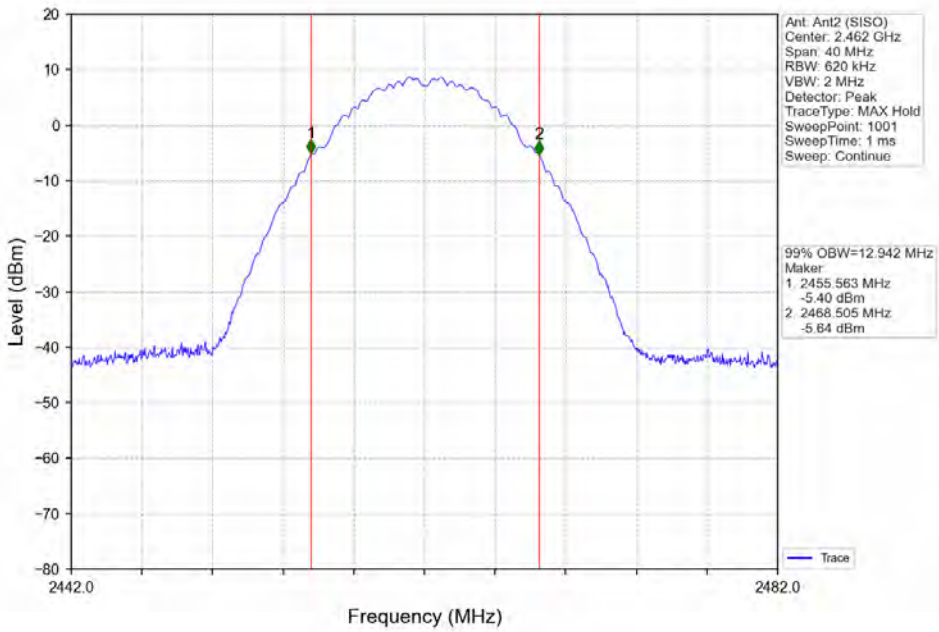
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



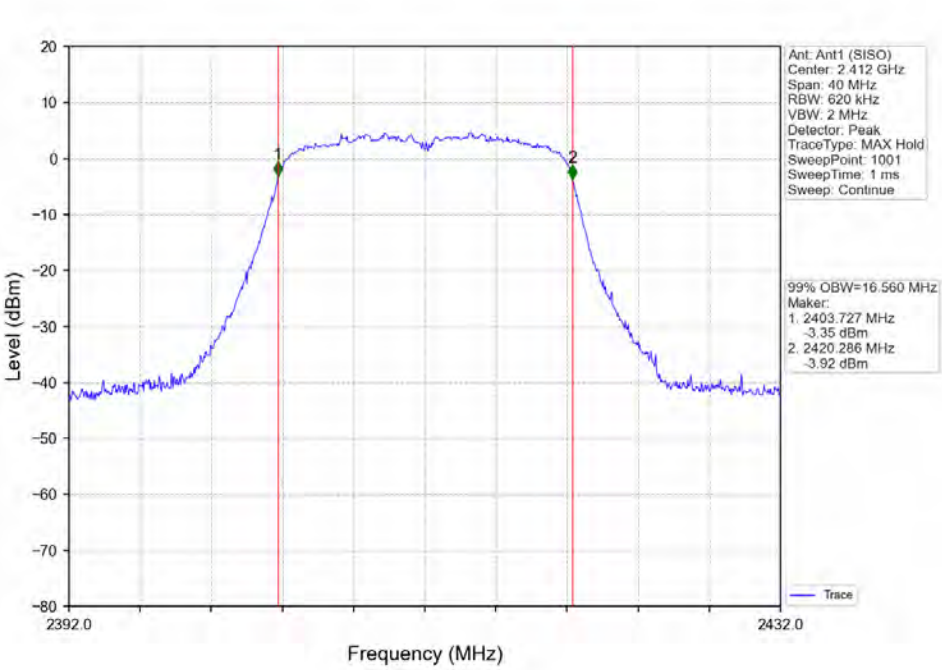
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



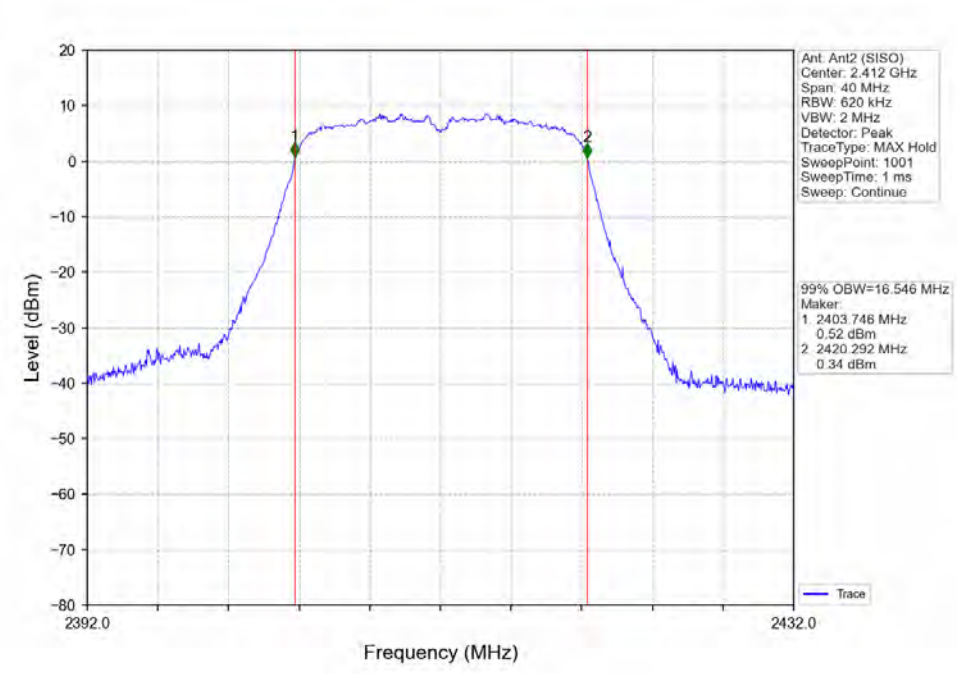
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



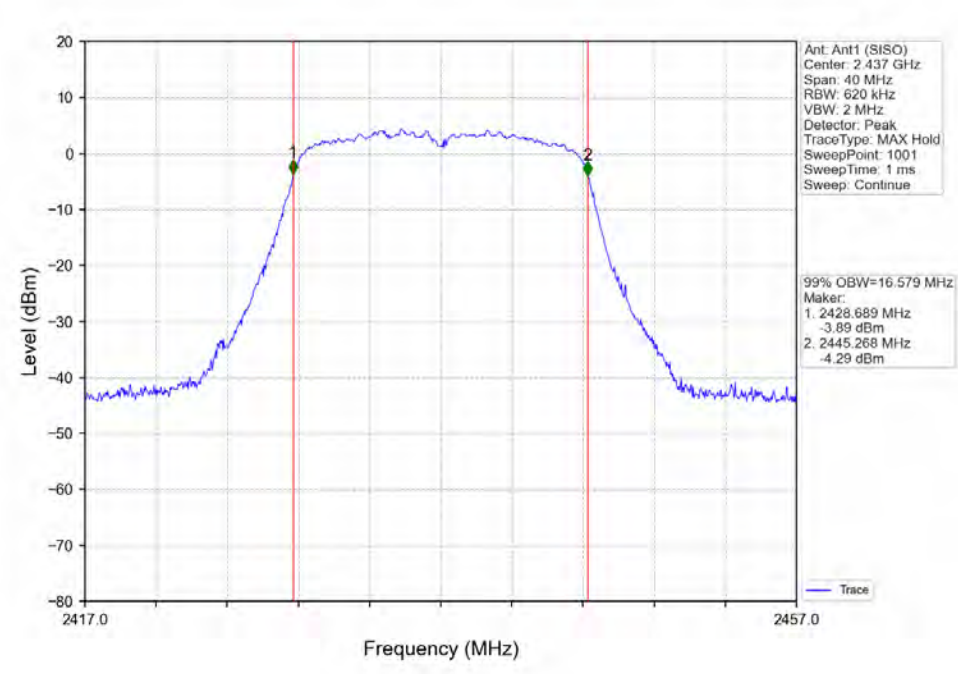
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



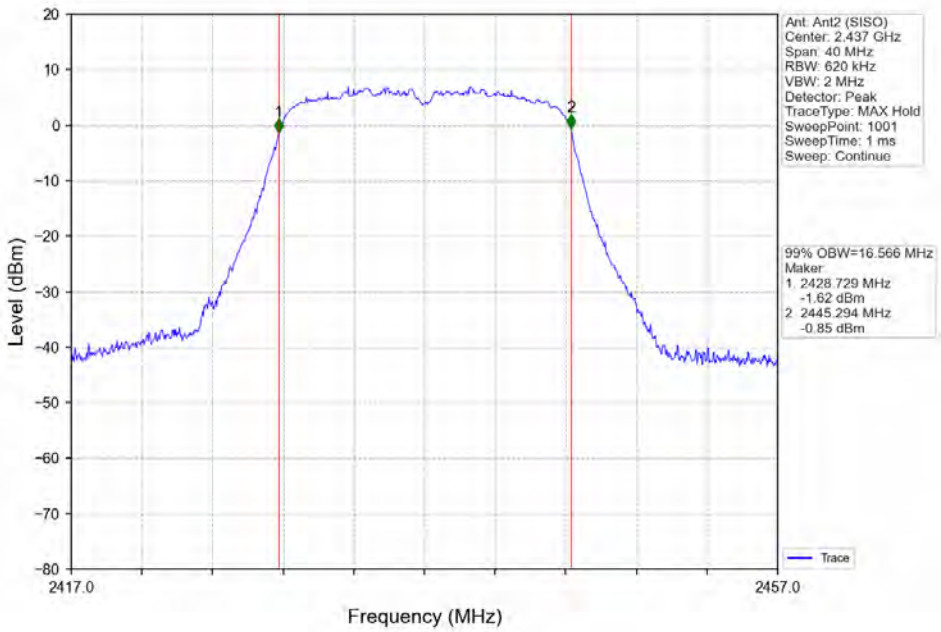
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



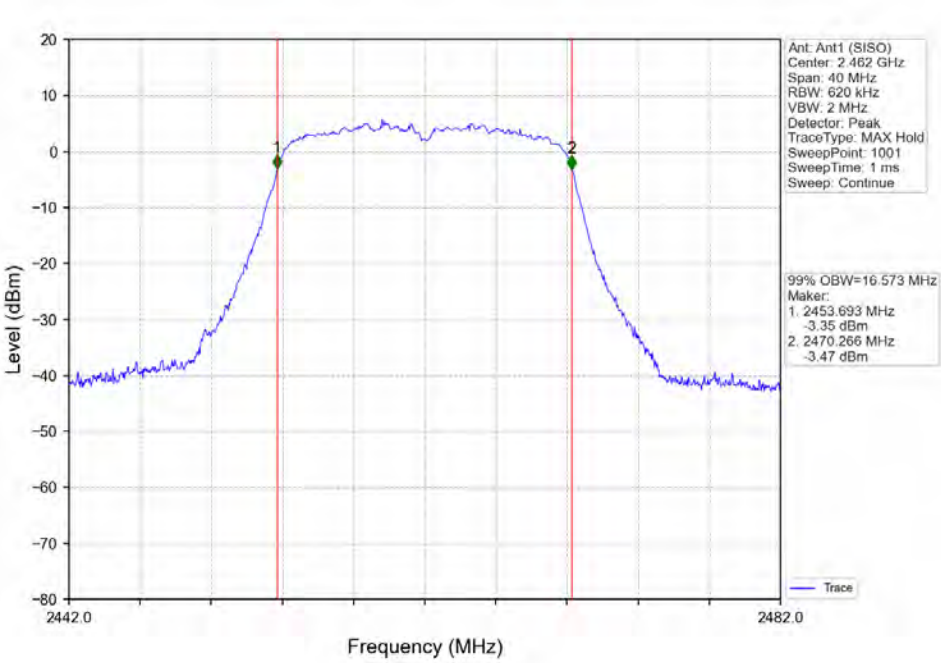
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



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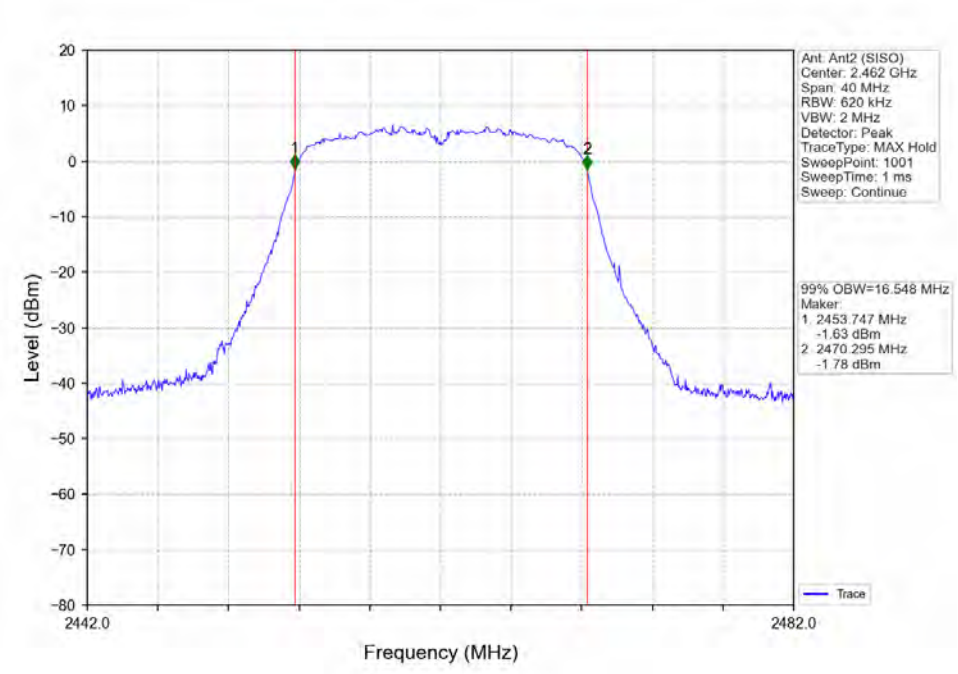
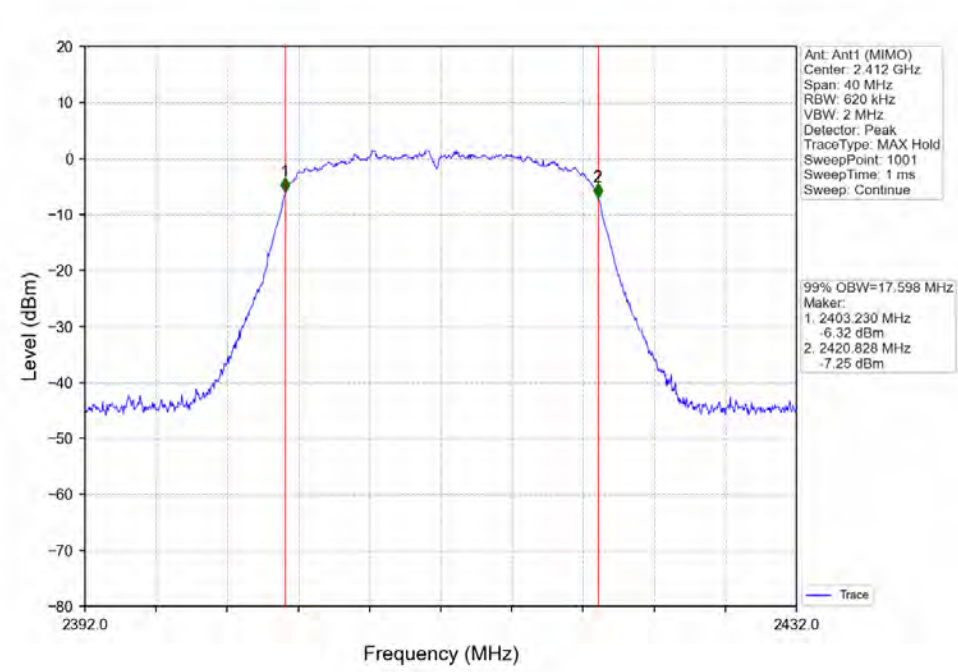
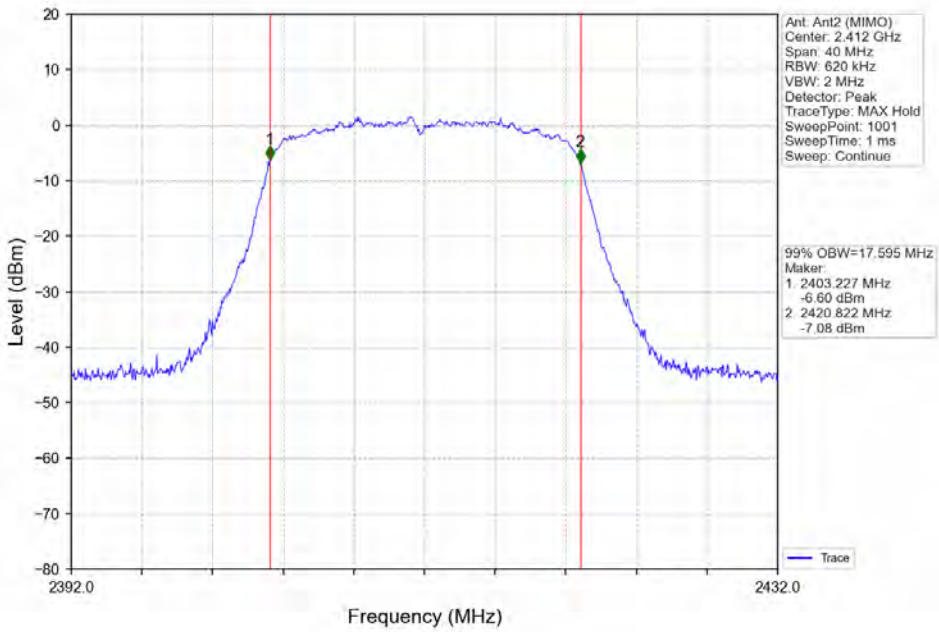


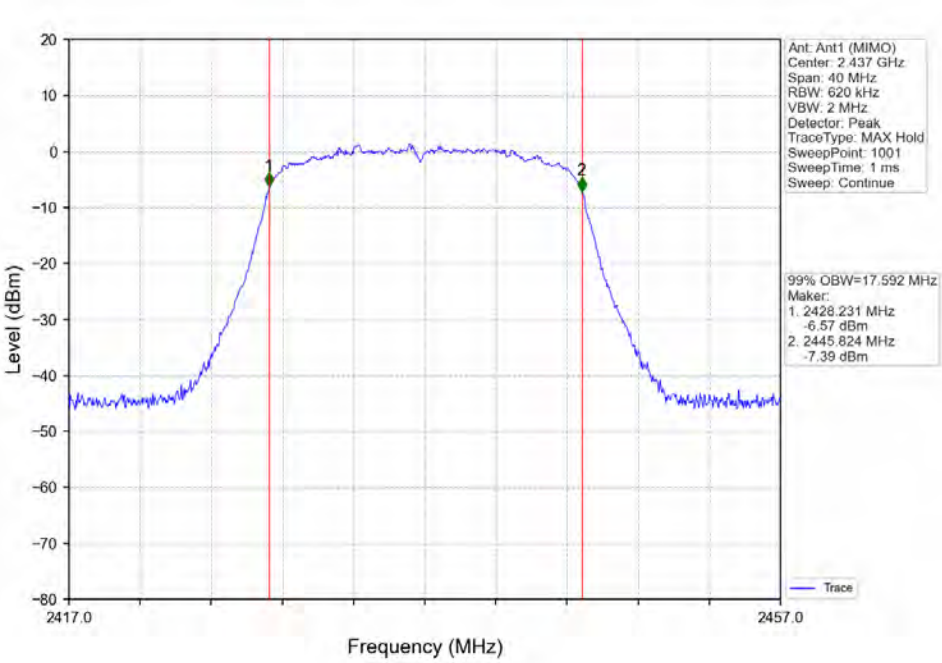
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



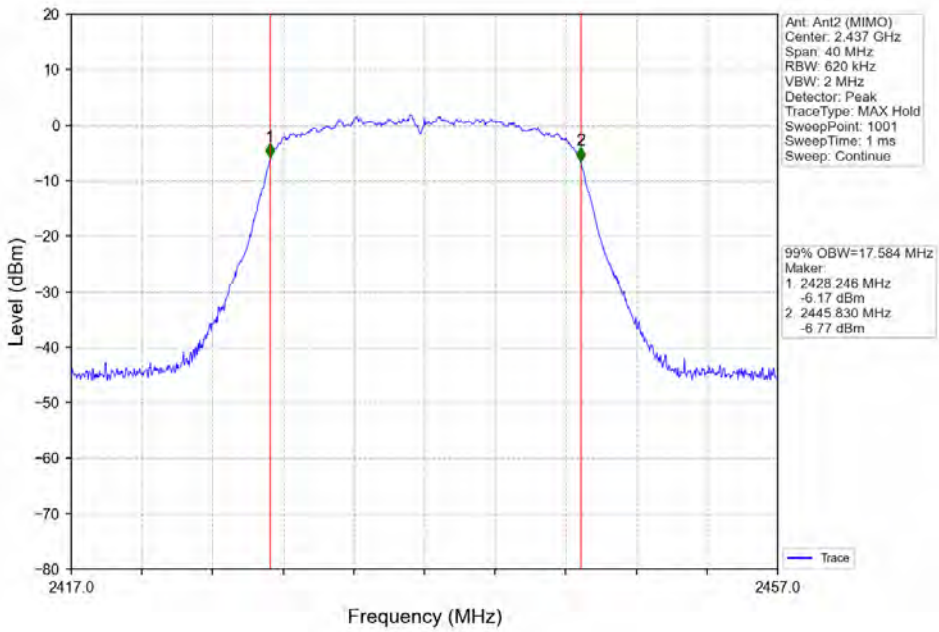
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



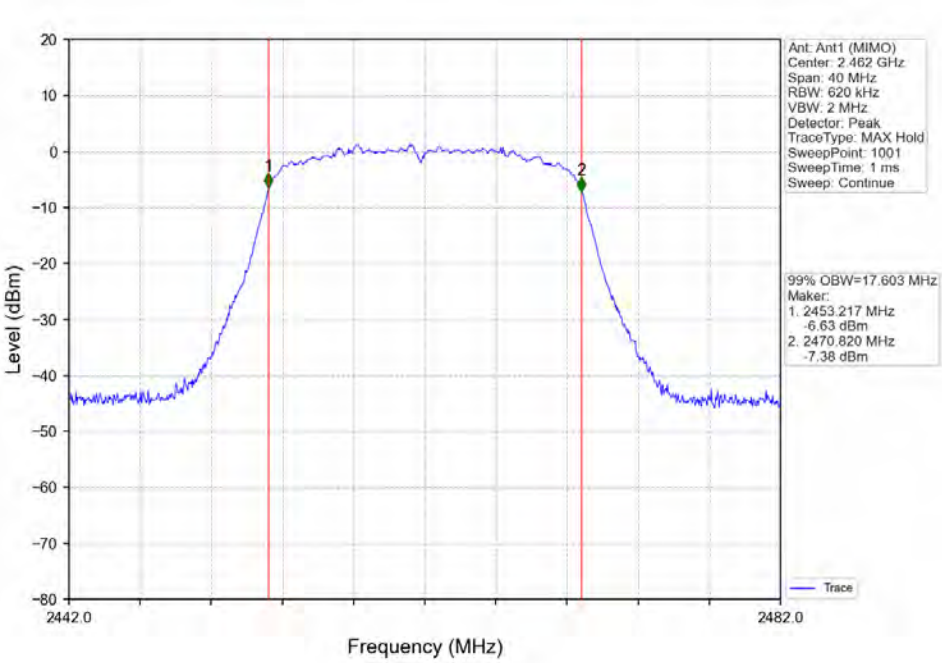
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



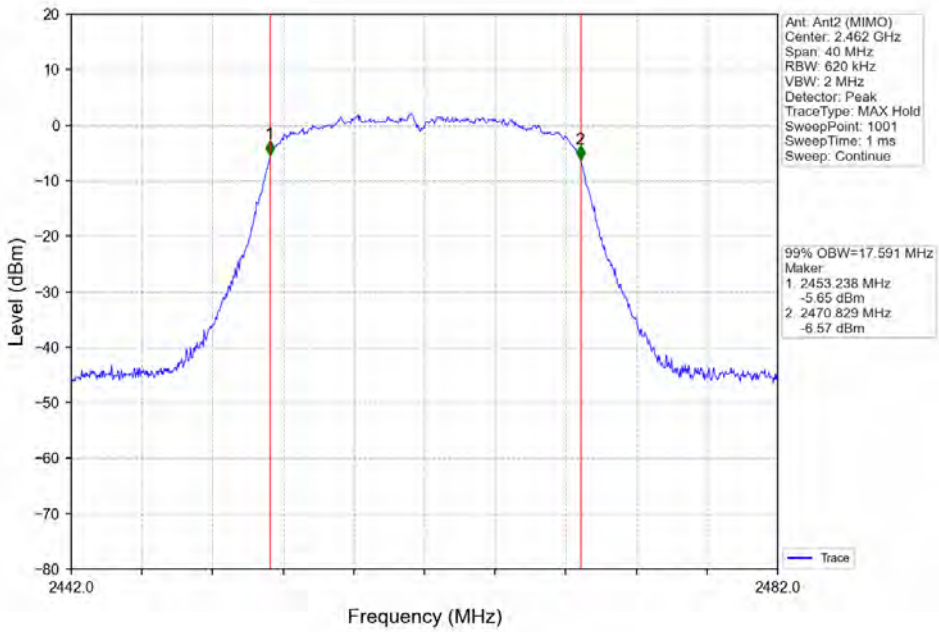
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



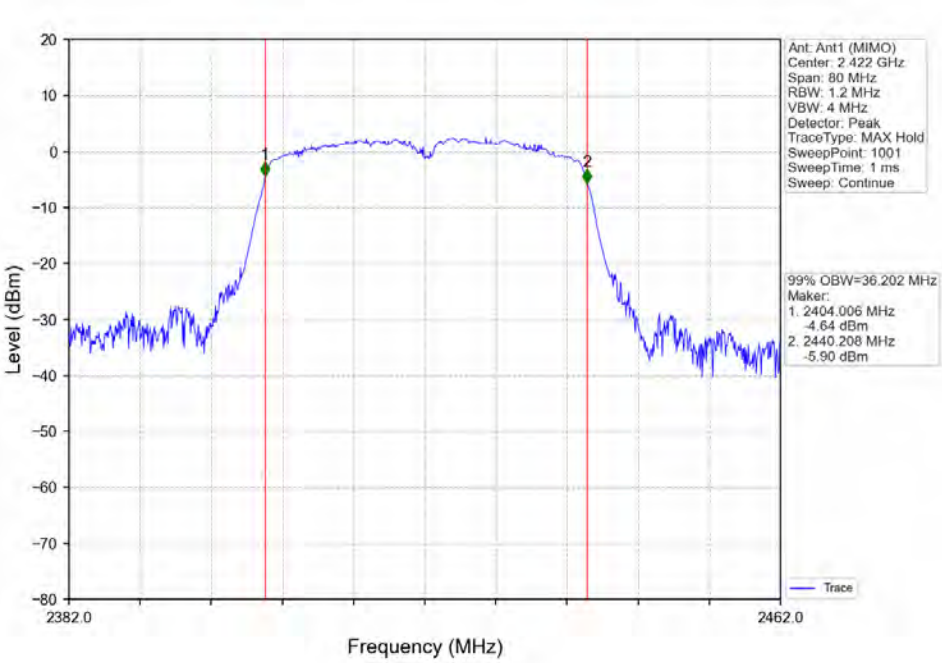
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



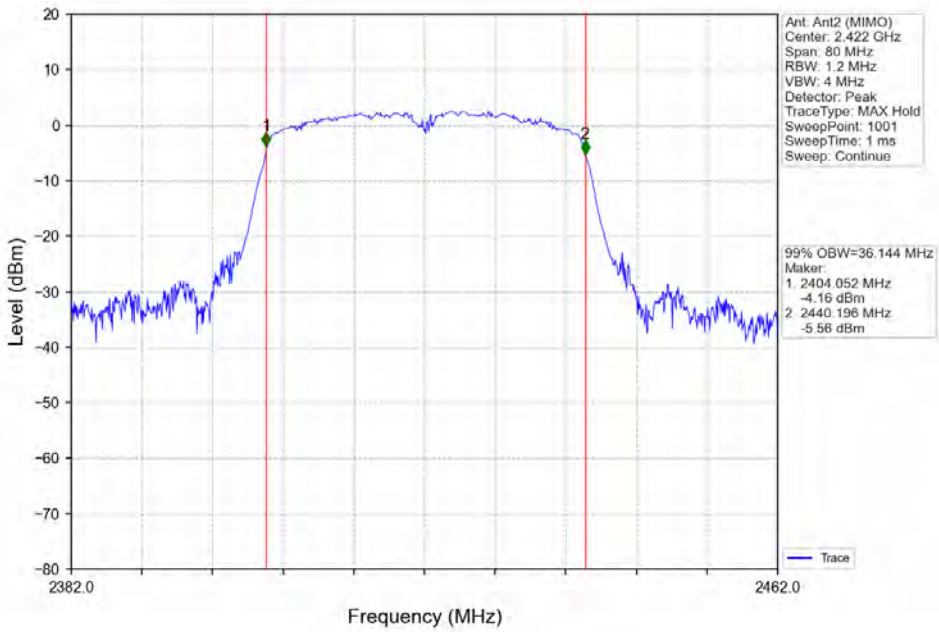
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



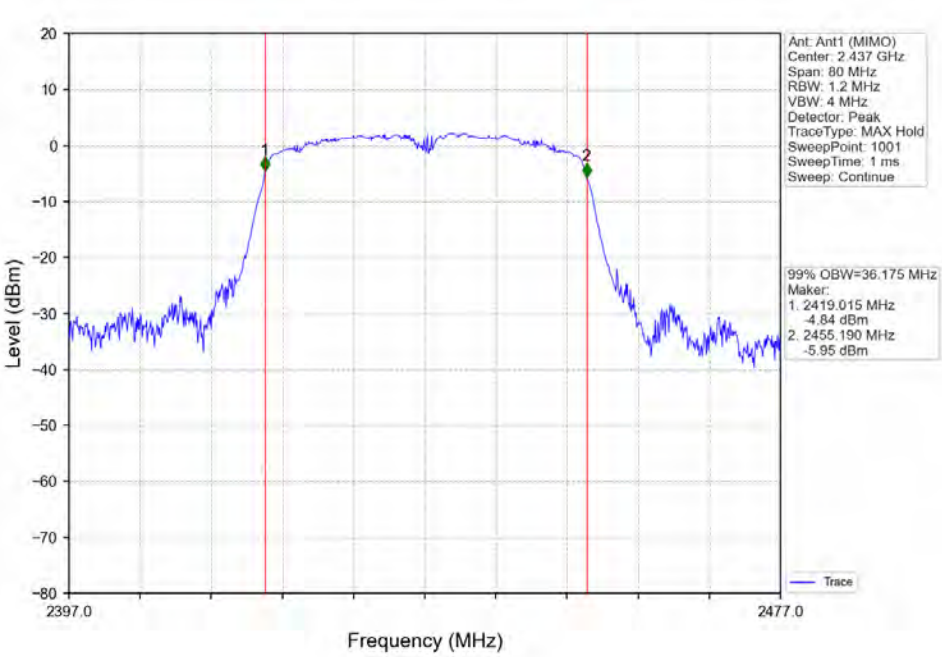
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



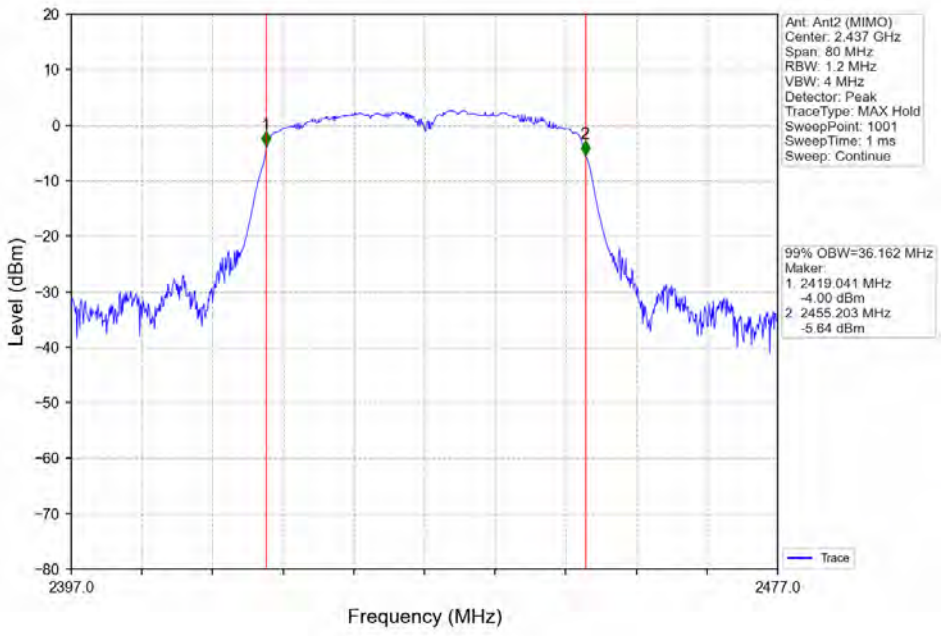
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



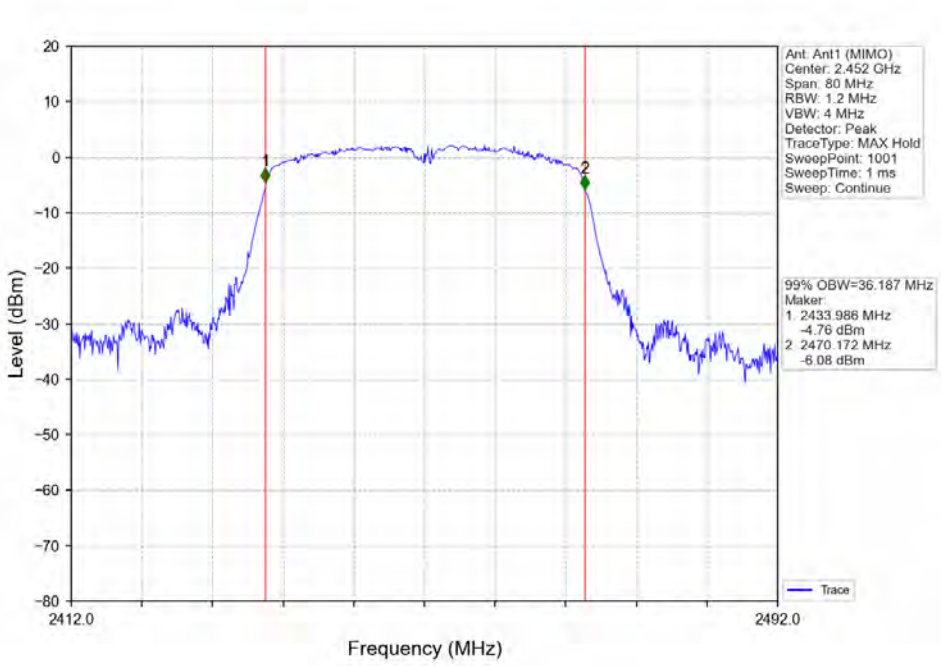
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



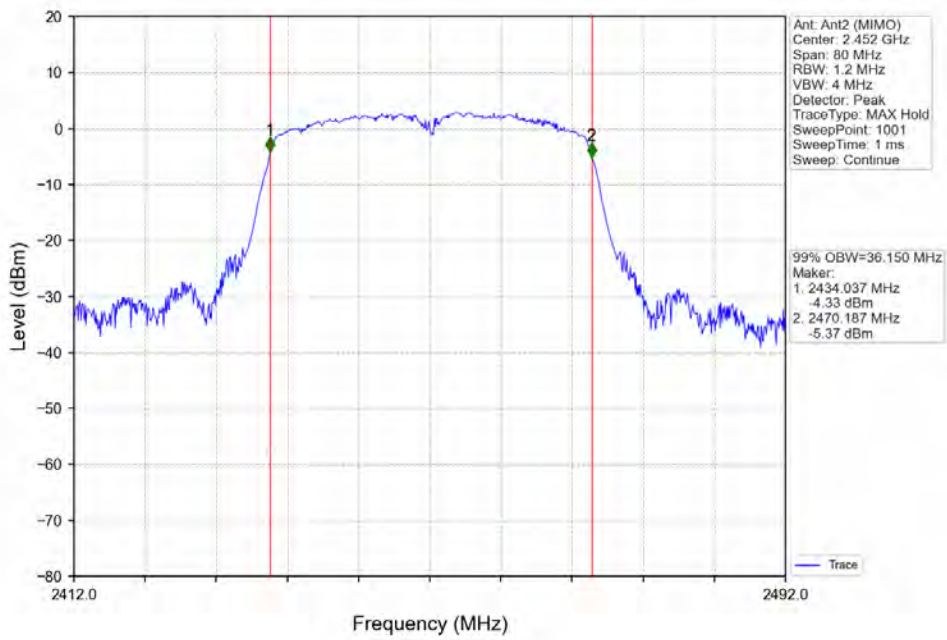
802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



2.2 6dB BW

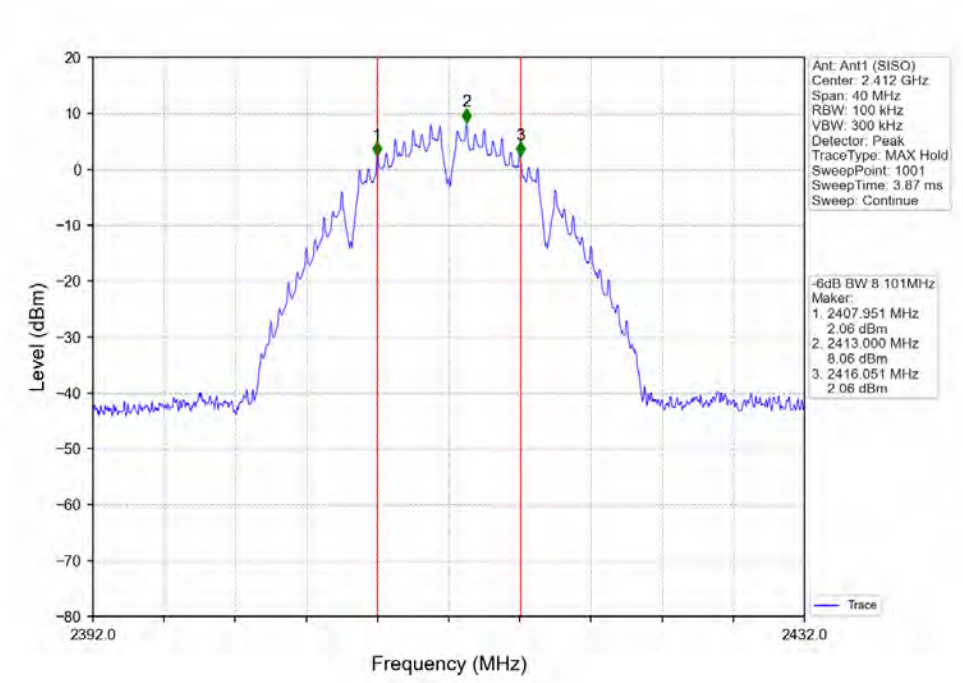
2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Ant	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	8.101	>=0.5	Pass
			2	8.100	>=0.5	Pass
		2437	1	8.101	>=0.5	Pass
			2	8.102	>=0.5	Pass
		2462	1	8.101	>=0.5	Pass
			2	8.099	>=0.5	Pass
802.11g	SISO	2412	1	15.173	>=0.5	Pass
			2	15.174	>=0.5	Pass
		2437	1	15.175	>=0.5	Pass
			2	15.175	>=0.5	Pass
		2462	1	15.176	>=0.5	Pass
			2	15.177	>=0.5	Pass
802.11n (HT20)	MIMO	2412	1	15.173	>=0.5	Pass
			2	15.177	>=0.5	Pass
		2437	1	15.185	>=0.5	Pass
			2	15.171	>=0.5	Pass
		2462	1	15.180	>=0.5	Pass
			2	15.159	>=0.5	Pass
802.11n	MIMO	2422	1	35.158	>=0.5	Pass

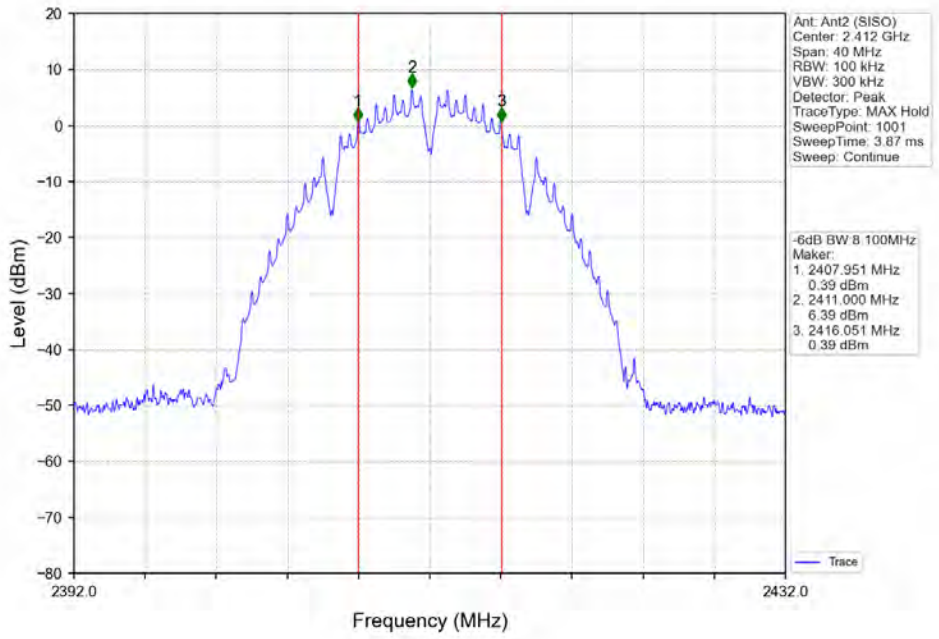
(HT40)			2	35.155	>=0.5	Pass
		2437	1	35.134	>=0.5	Pass
			2	35.155	>=0.5	Pass
		2452	1	35.153	>=0.5	Pass
			2	35.096	>=0.5	Pass

2.2.2 Test Graph

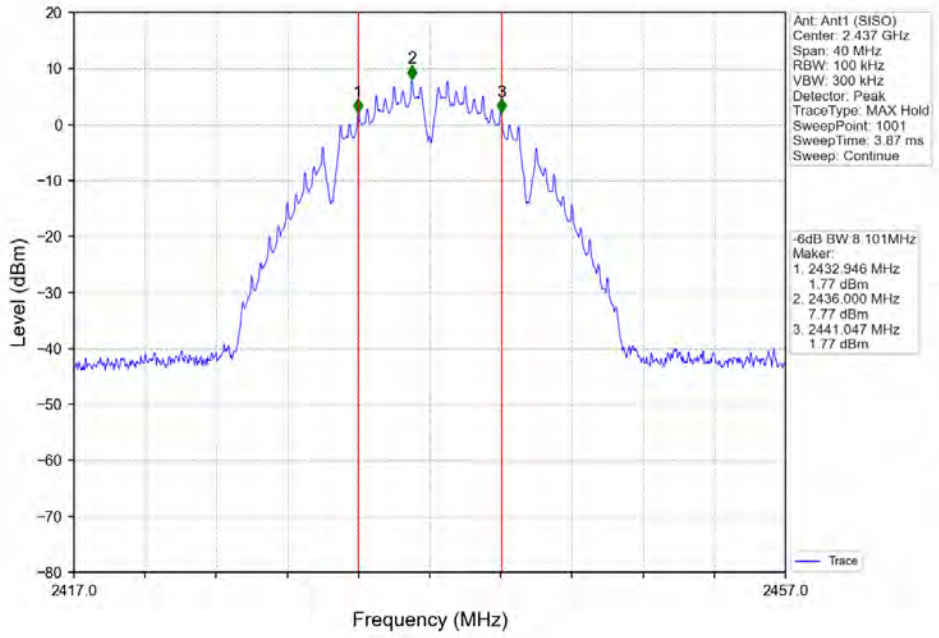
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



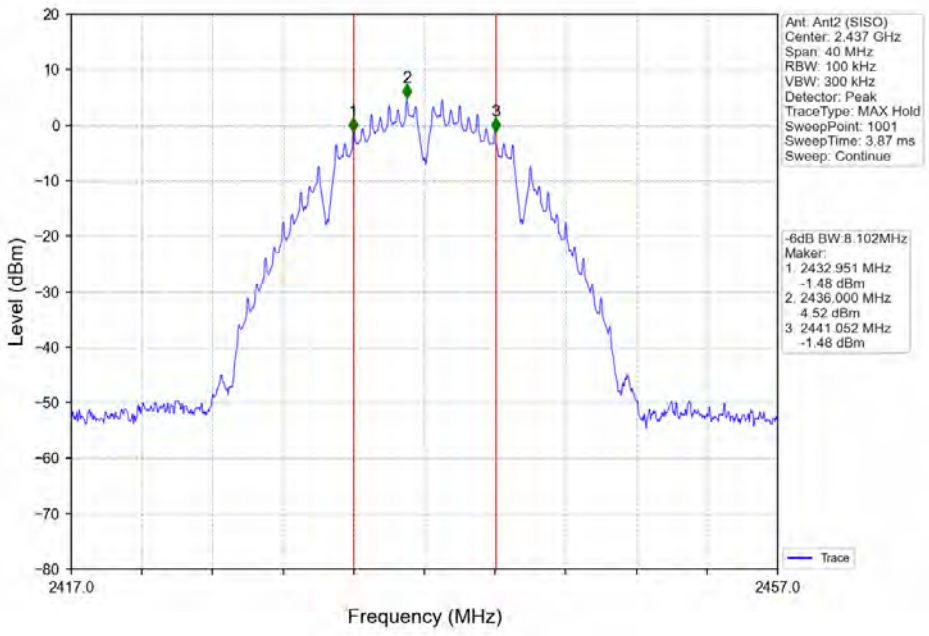
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



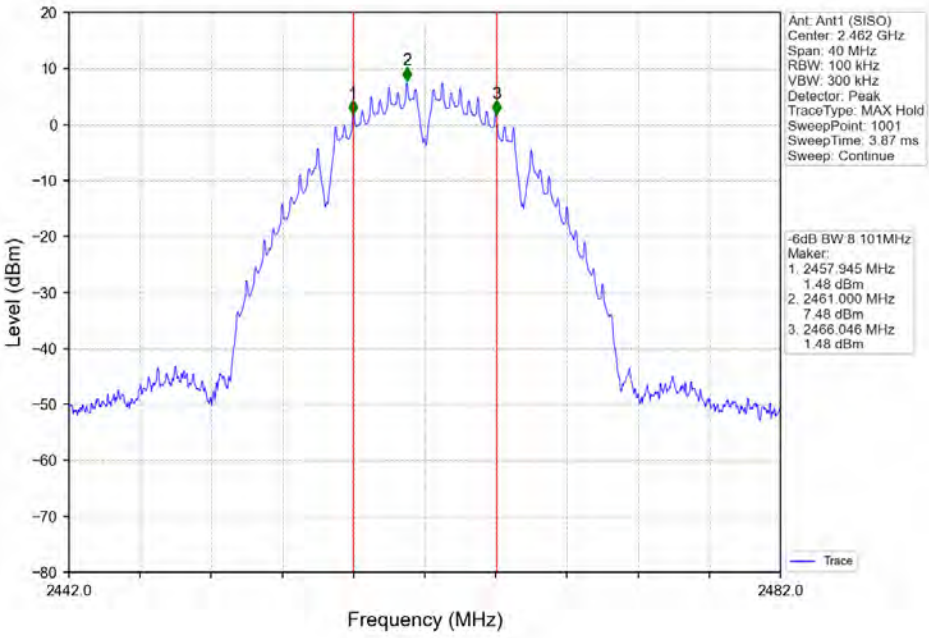
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



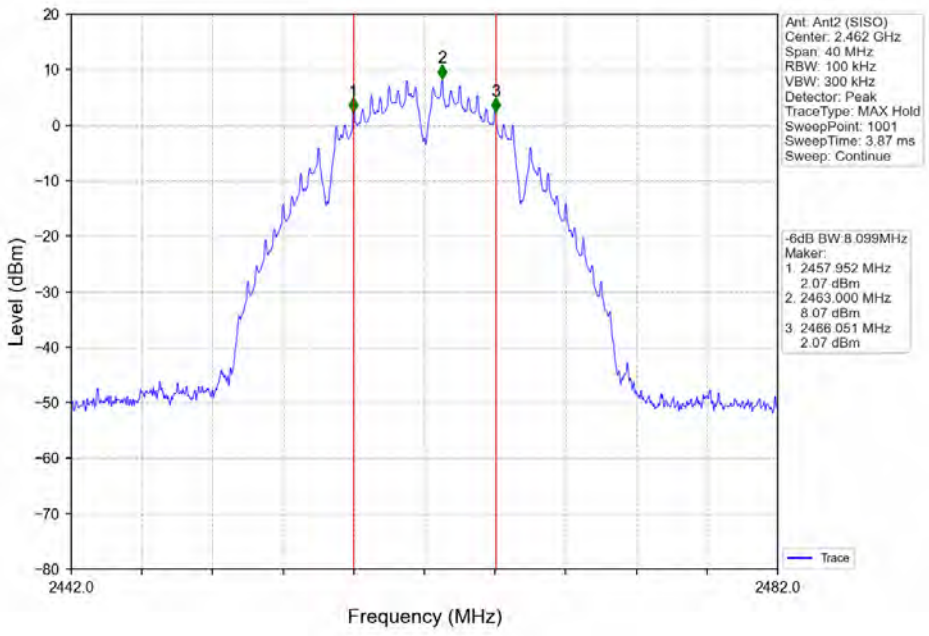
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



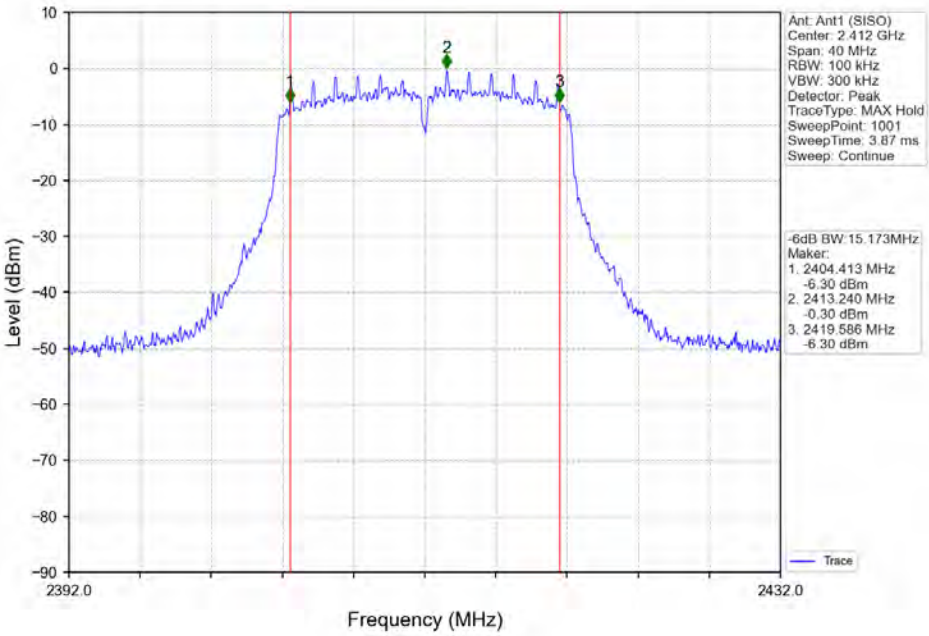
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



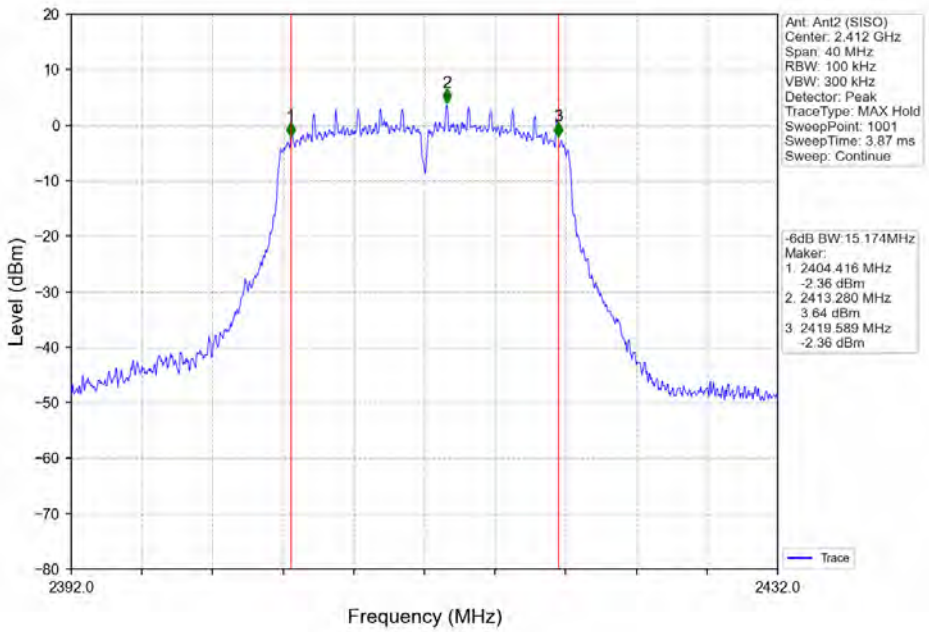
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



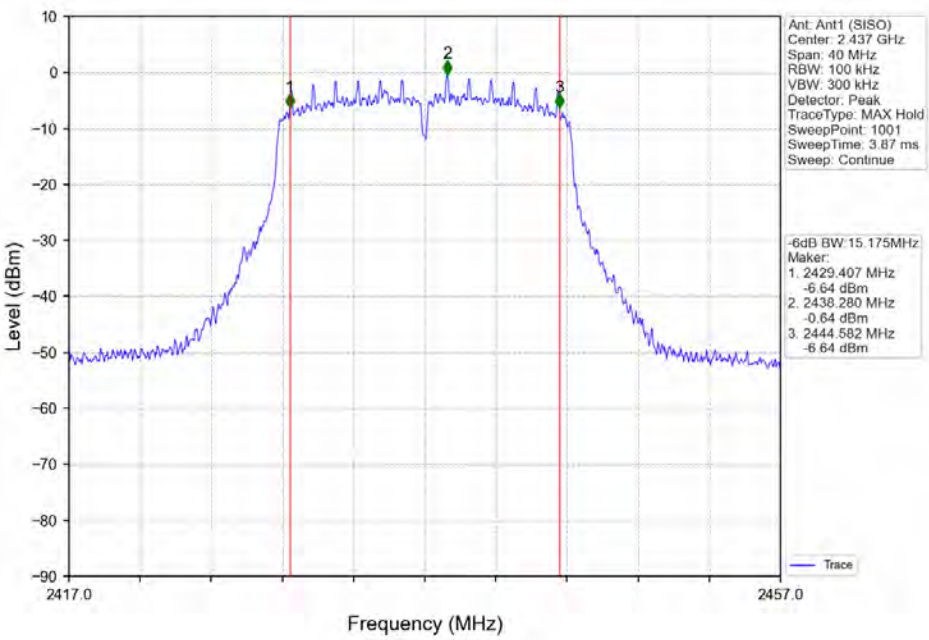
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



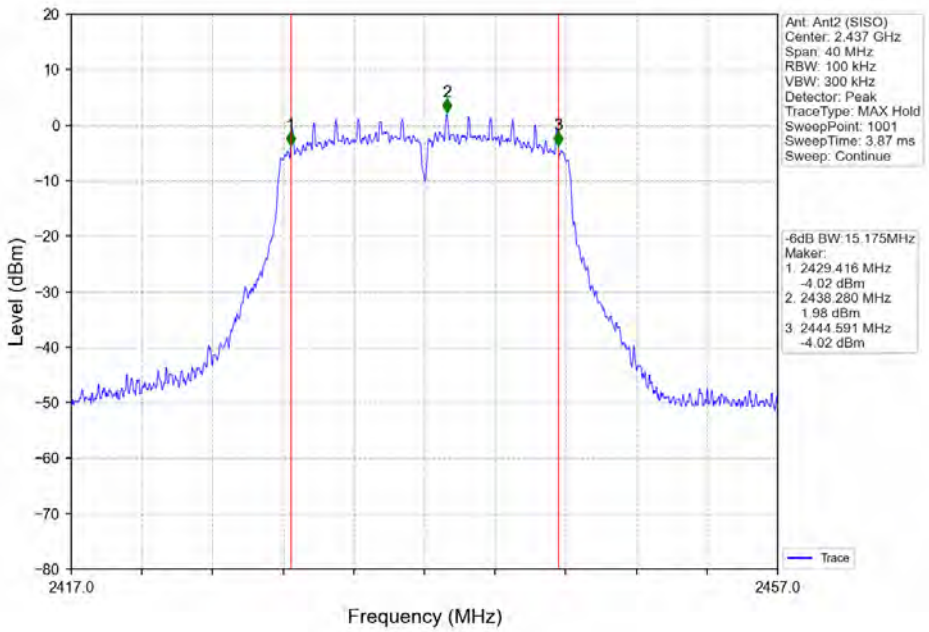
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



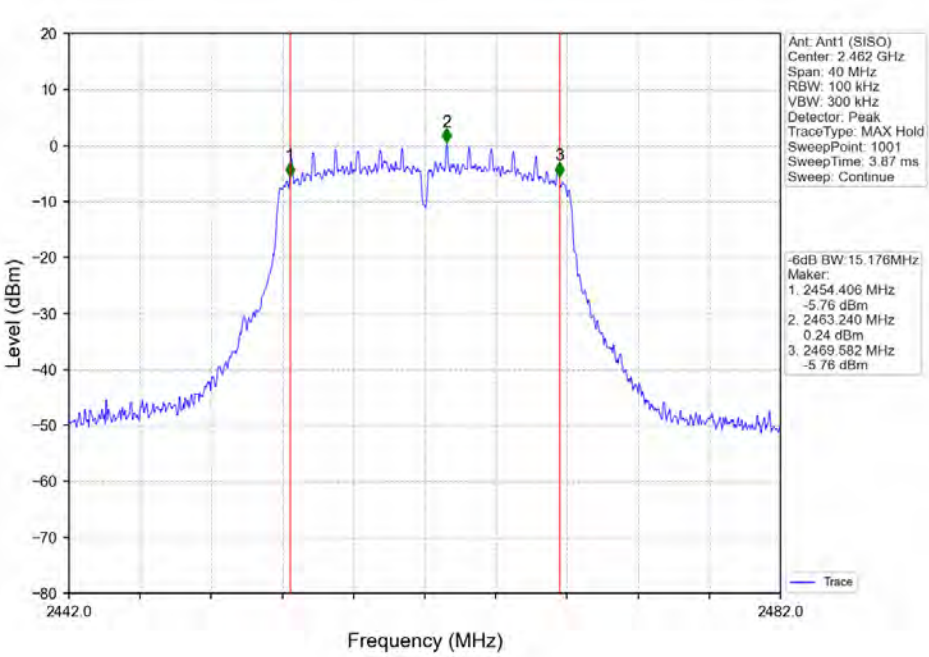
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



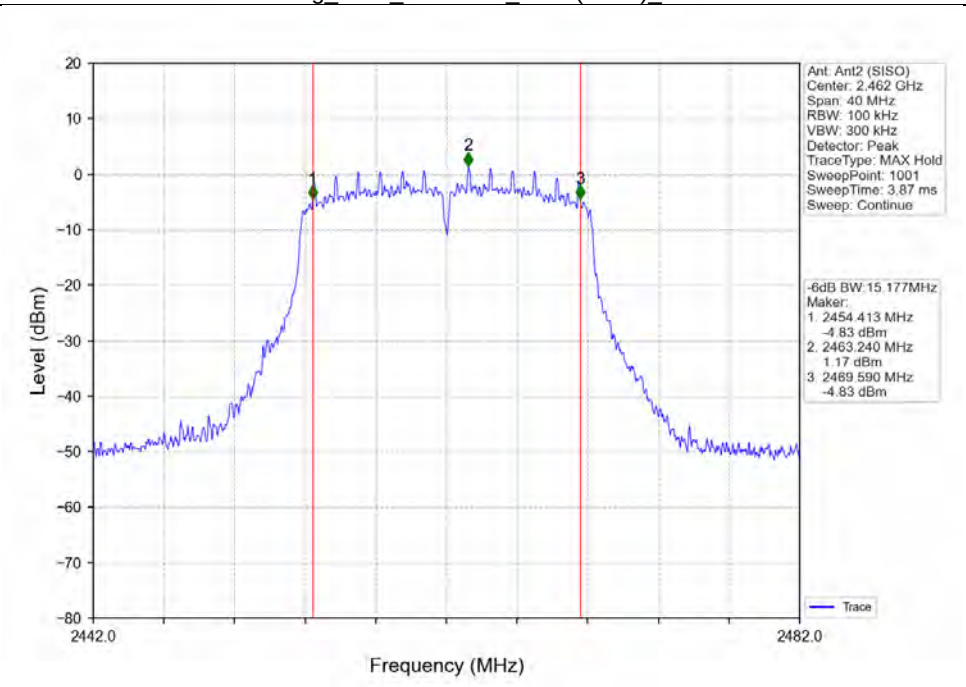
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



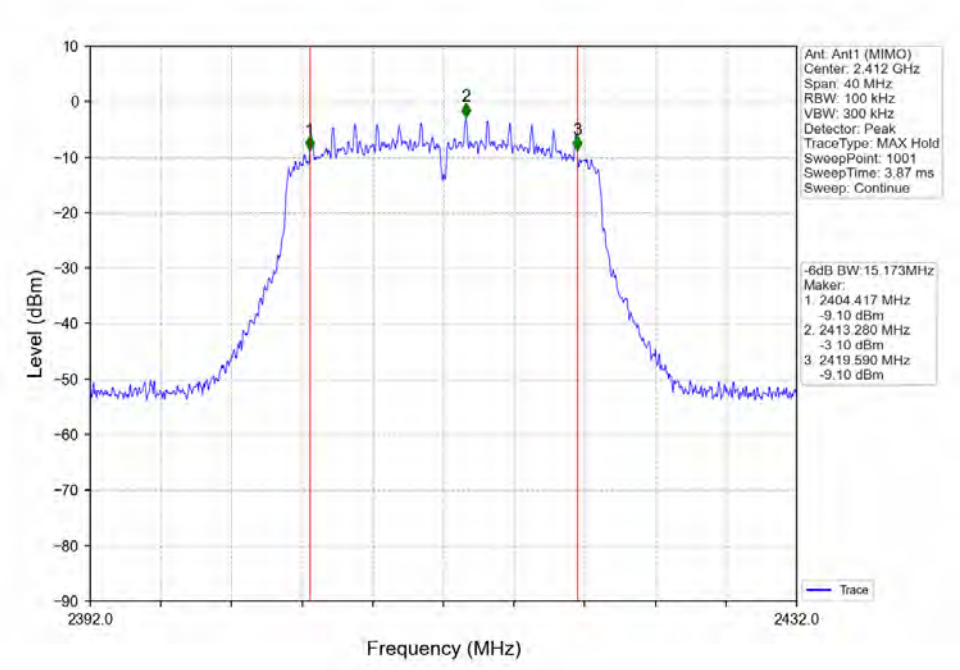
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



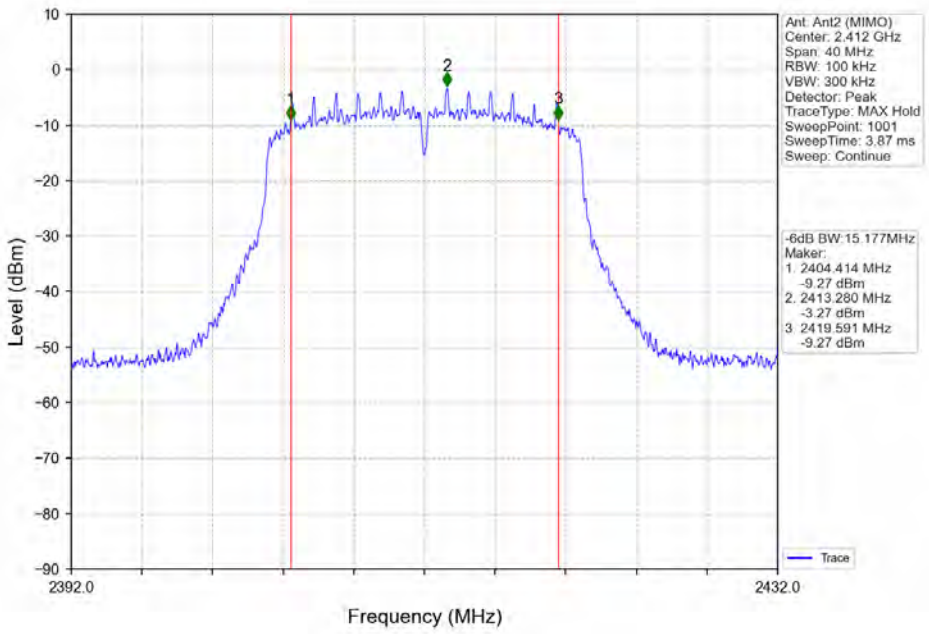
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



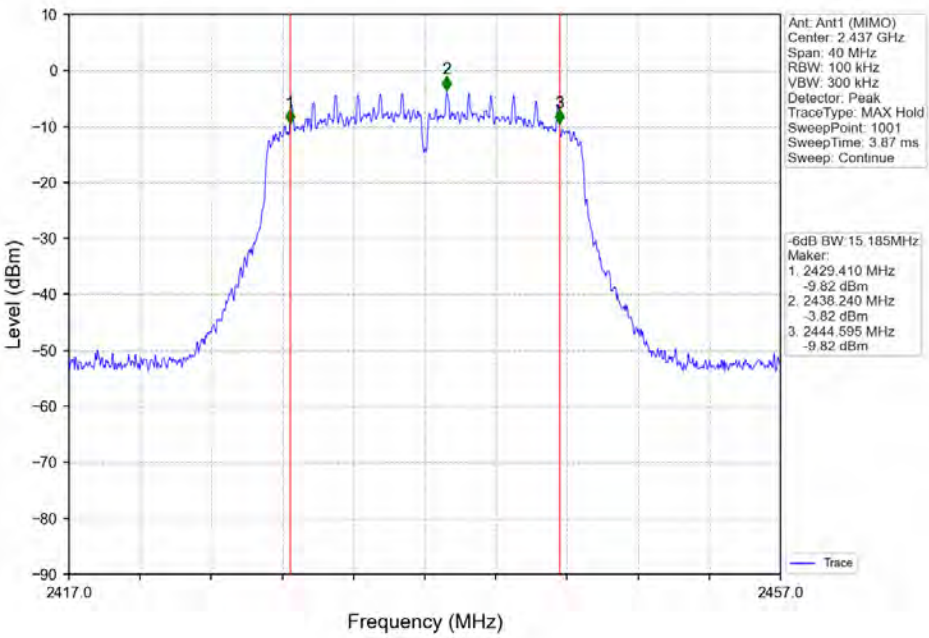
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



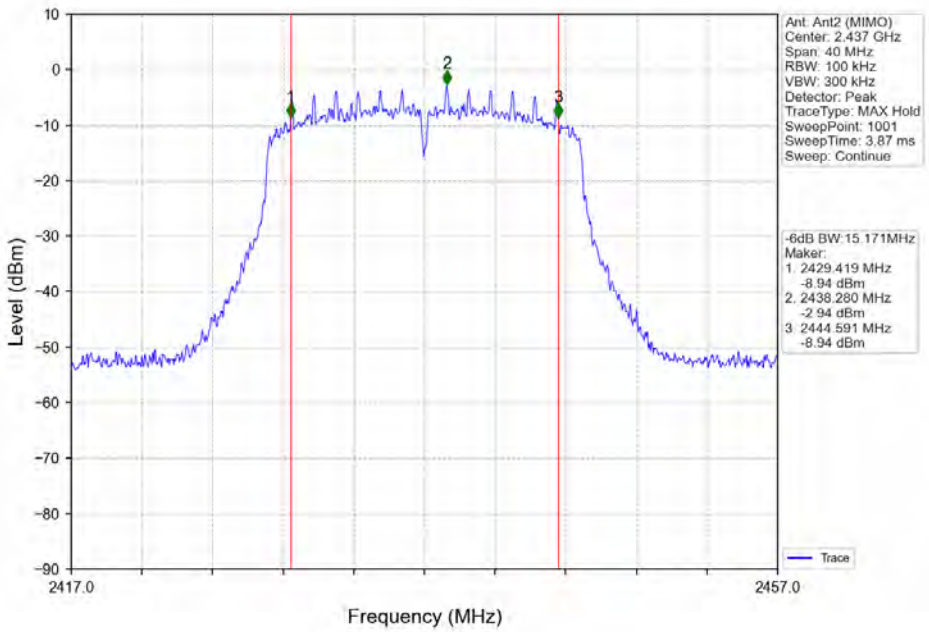
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



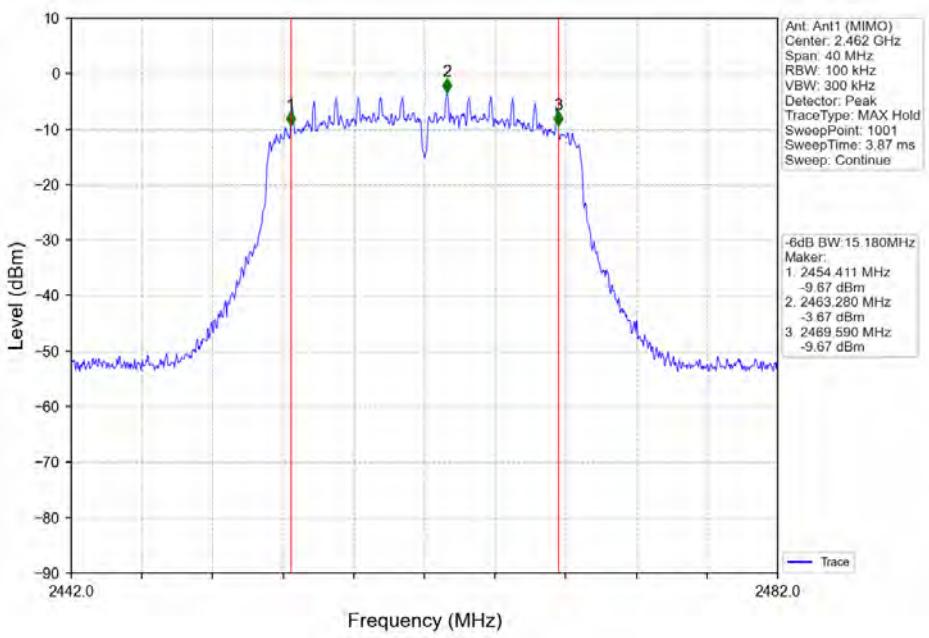
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



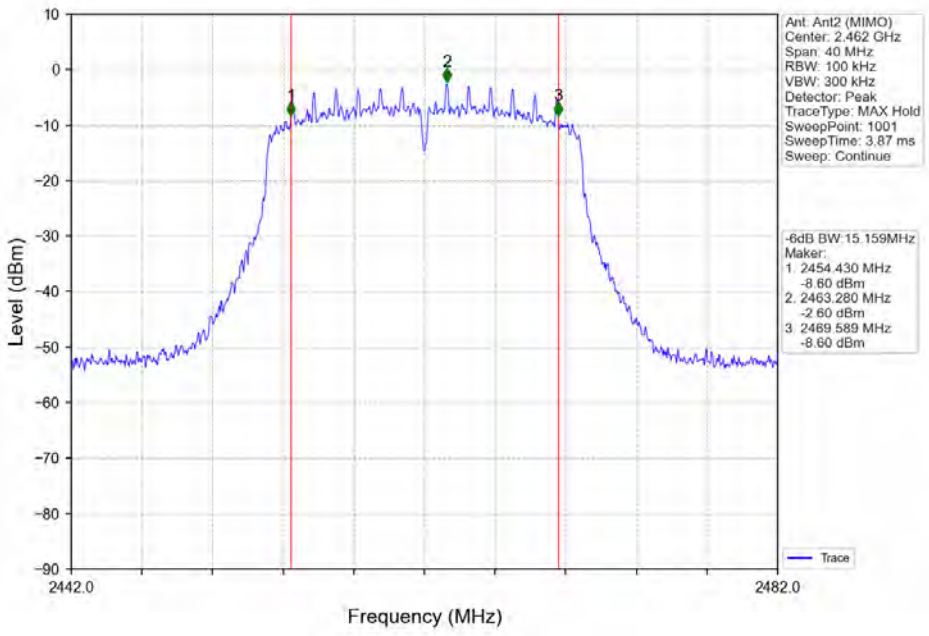
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



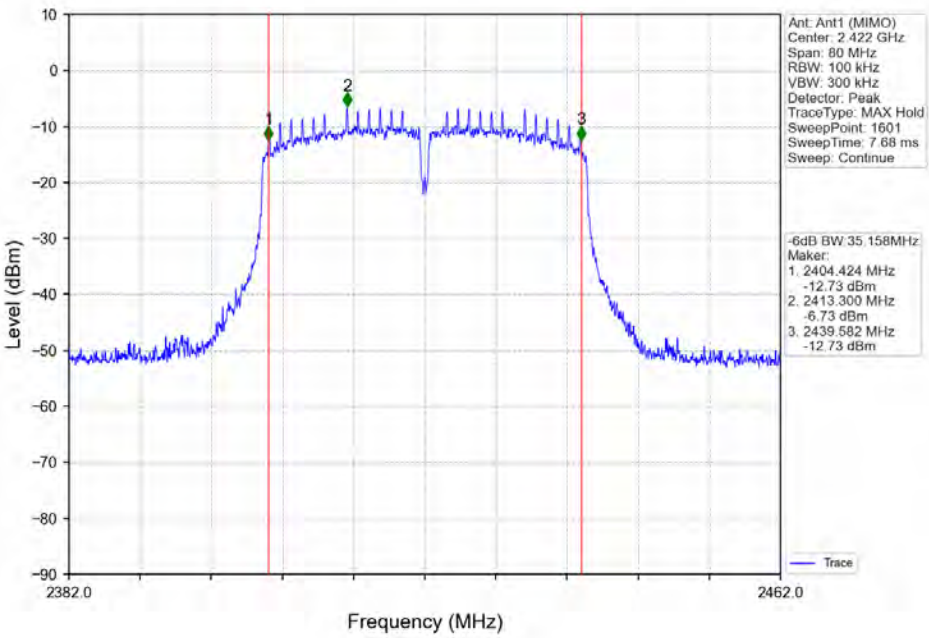
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



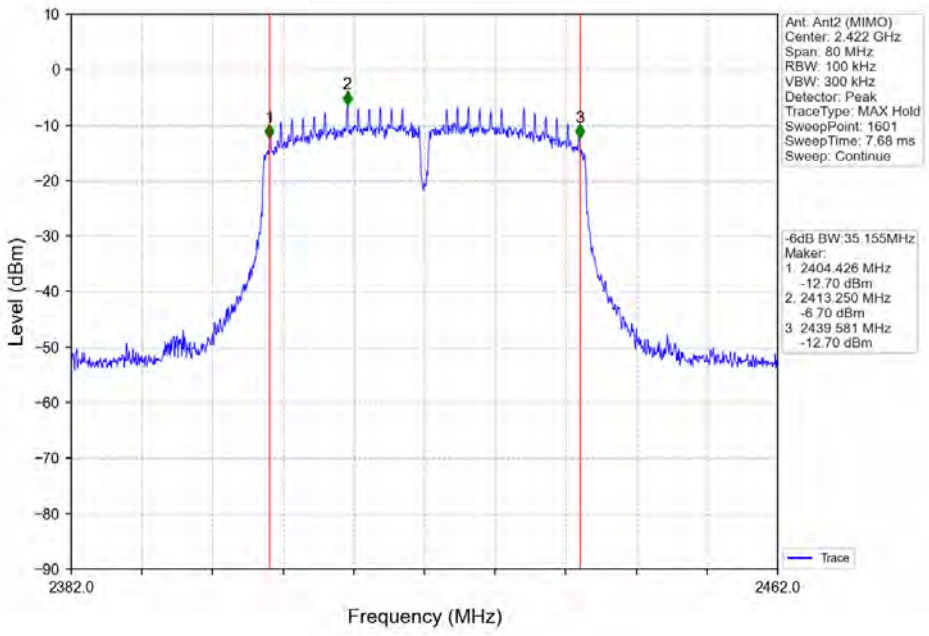
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



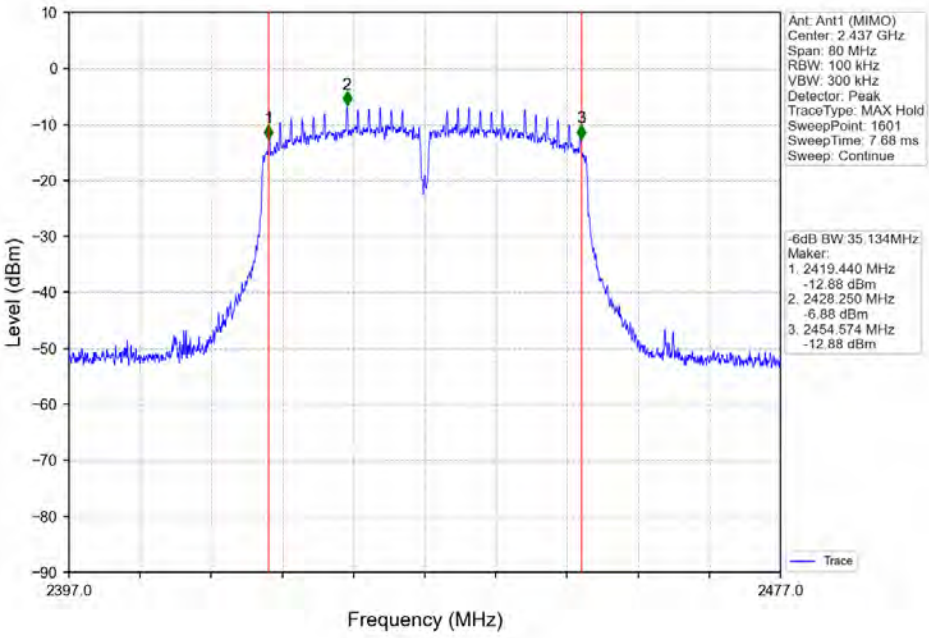
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



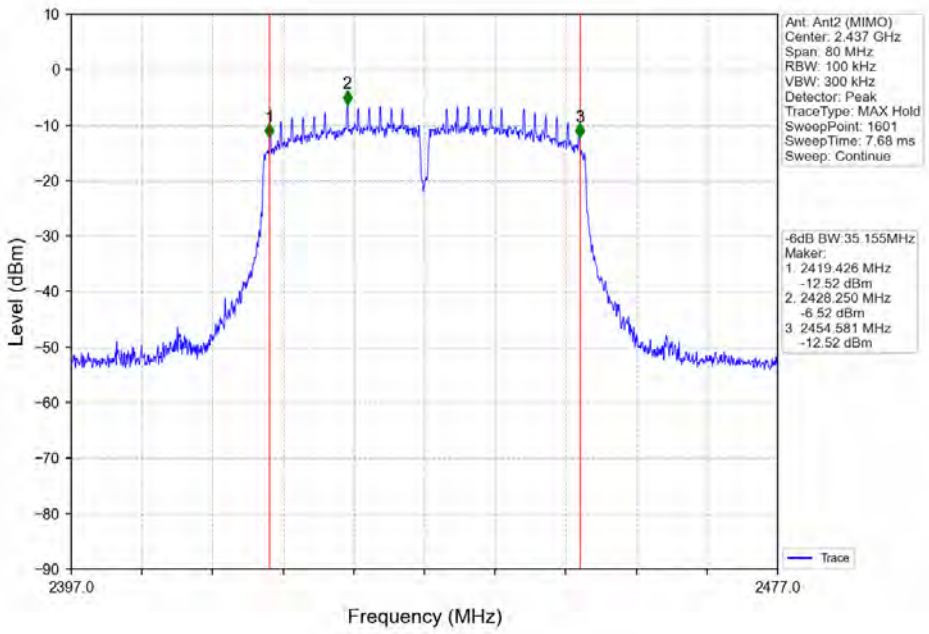
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



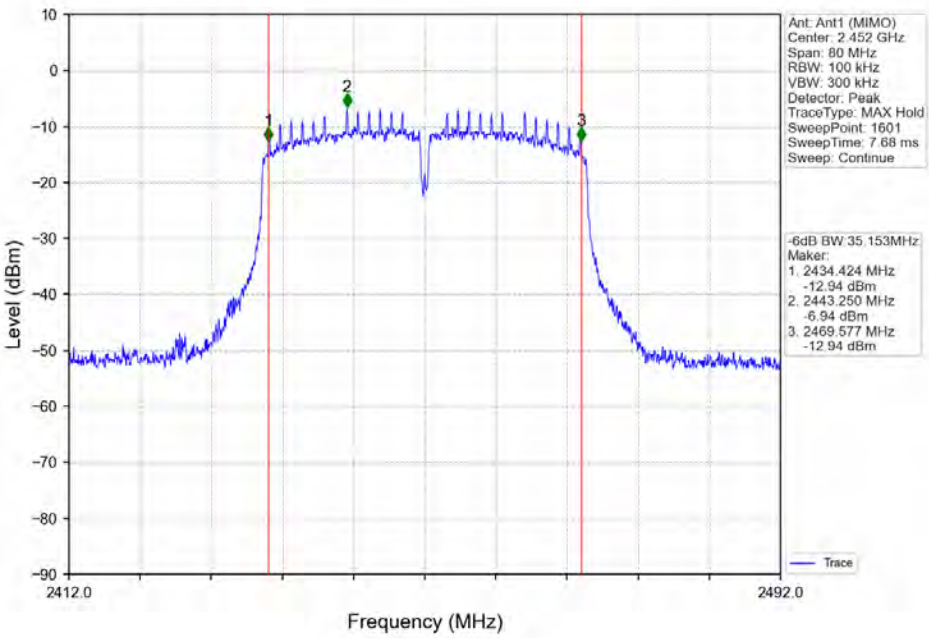
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



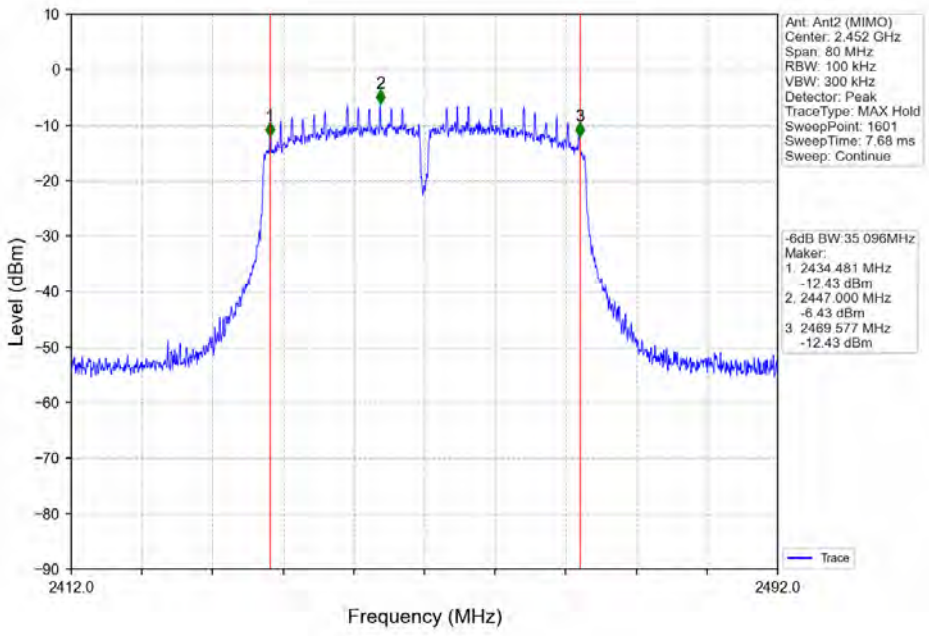
802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



3. Maximum Conducted Output Power

3.1 Power

3.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)				Verdict
			Ant1	Ant2	Sum	Limit	
802.11b	SISO	2412	17.40	18.08	/	<=30	Pass
		2437	17.27	16.84	/	<=30	Pass
		2462	17.84	18.34	/	<=30	Pass
802.11g	SISO	2412	18.29	18.29	/	<=30	Pass
		2437	18.17	18.68	/	<=30	Pass
		2462	18.27	18.04	/	<=30	Pass
802.11n (HT20)	MIMO	2412	14.45	14.30	17.39	<=28.14	Pass
		2437	14.11	14.59	17.37	<=28.14	Pass
		2462	14.04	14.93	17.52	<=28.14	Pass
802.11n (HT40)	MIMO	2422	14.83	14.76	17.81	<=28.14	Pass
		2437	14.49	14.94	17.73	<=28.14	Pass
		2452	14.44	15.14	17.81	<=28.14	Pass

Note1: Antenna Gain: Ant1: 4.85dBi; Ant2: 4.85dBi;
Note2: Directional Gain: 7.86dBi

4. Maximum Power Spectral Density

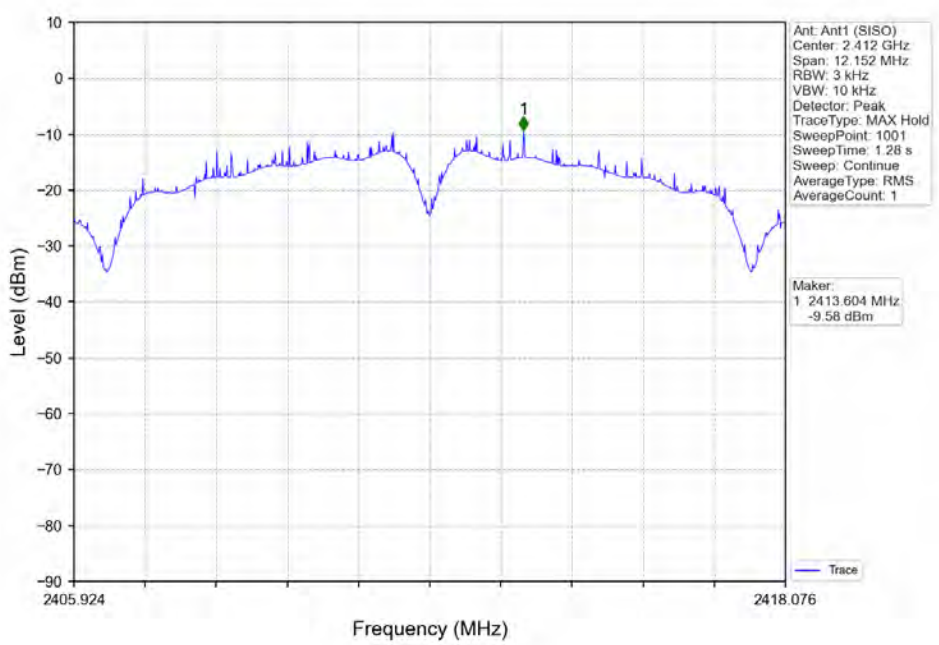
4.1 PSD

4.1.1 Test Result

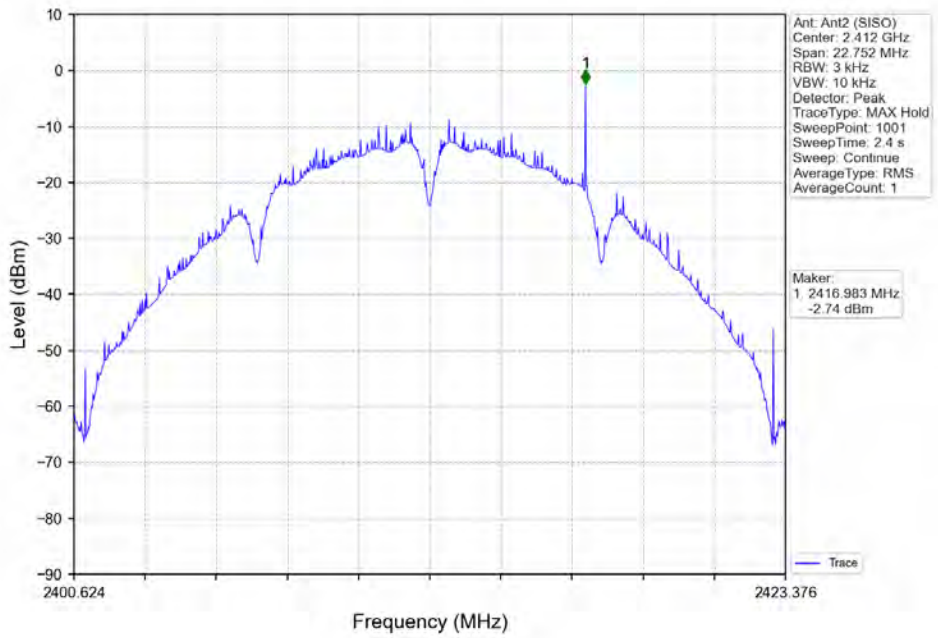
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)				Verdict
			Ant1	Ant2	Sum	Limit	
802.11b	SISO	2412	-9.58	-2.74	/	<=8	Pass
		2437	-9.24	-4.00	/	<=8	Pass
		2462	-8.82	2.91	/	<=8	Pass
802.11g	SISO	2412	-15.52	-15.83	/	<=8	Pass
		2437	-14.40	-15.55	/	<=8	Pass
		2462	-16.84	-15.02	/	<=8	Pass
802.11n (HT20)	MIMO	2412	-20.03	-19.26	-17.29	<=6.14	Pass
		2437	-20.19	-19.39	-17.64	<=6.14	Pass
		2462	-19.13	-18.51	-16.46	<=6.14	Pass
802.11n (HT40)	MIMO	2422	-22.34	-21.94	-19.60	<=6.14	Pass
		2437	-21.91	-21.74	-19.35	<=6.14	Pass
		2452	-22.04	-21.75	-19.00	<=6.14	Pass
Note1: Antenna Gain: Ant1: 4.85dBi; Ant2: 4.85dBi; Note2: Directional gain:7.86dBi							

4.1.2 Test Graph

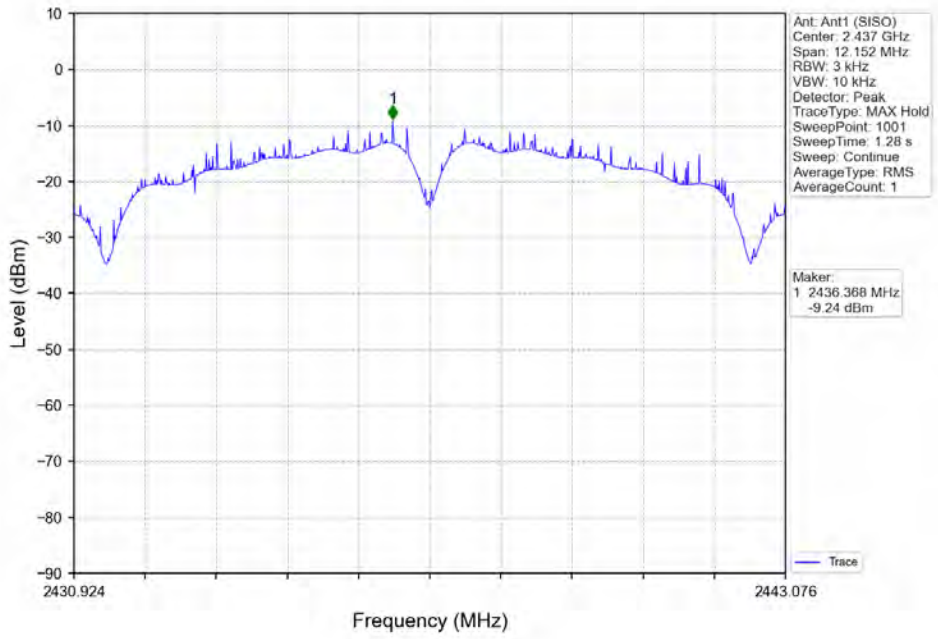
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



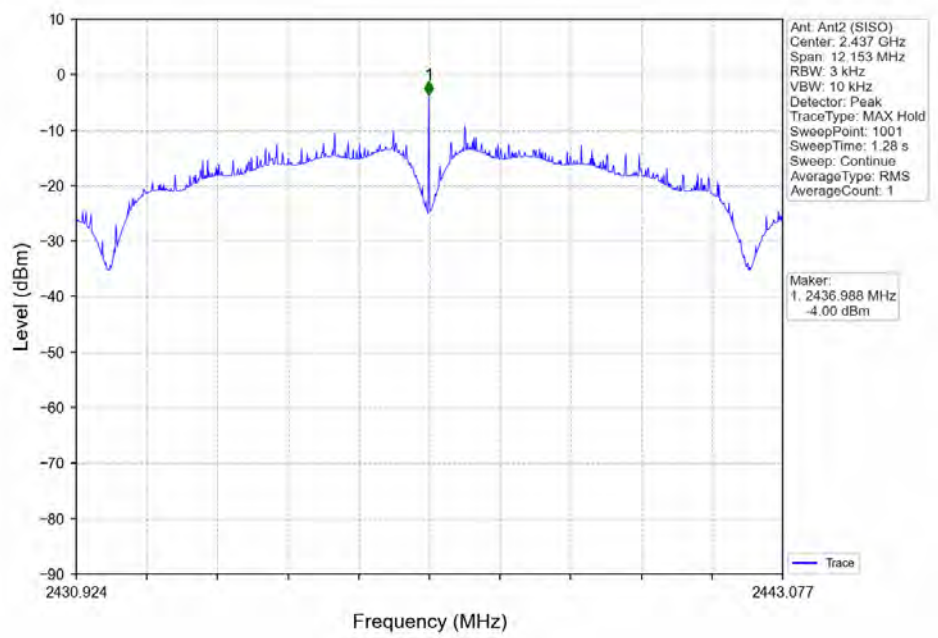
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



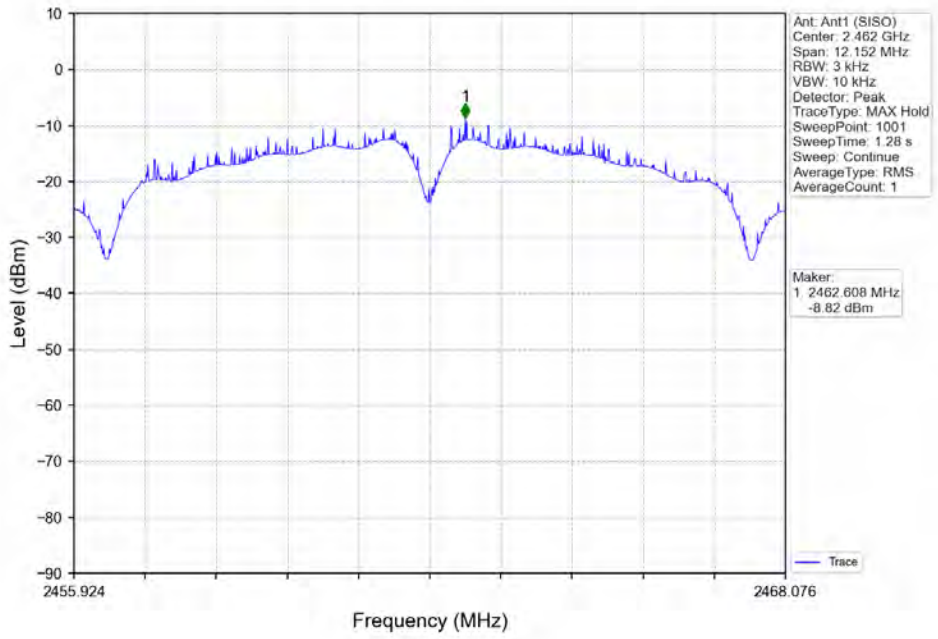
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



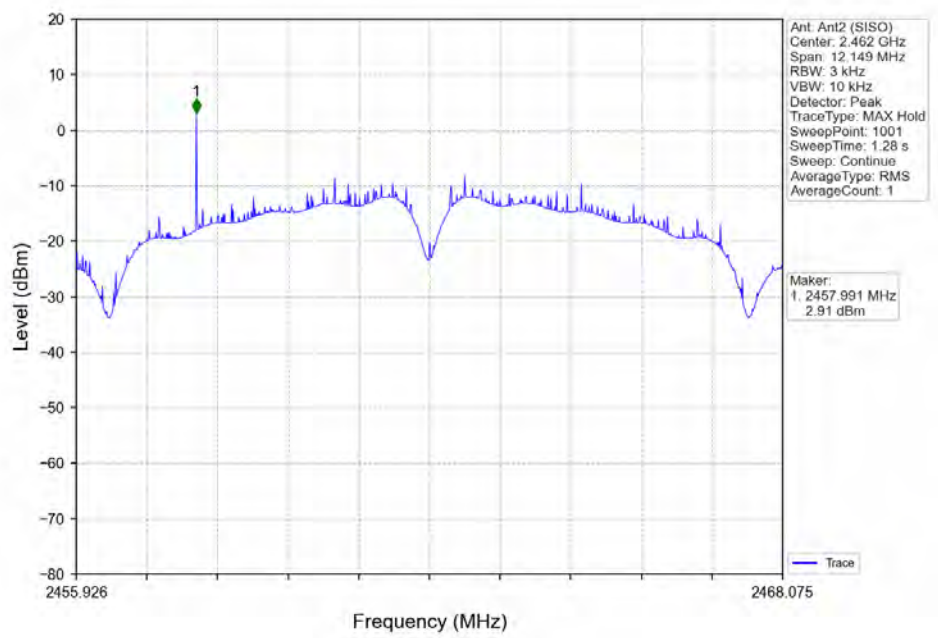
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



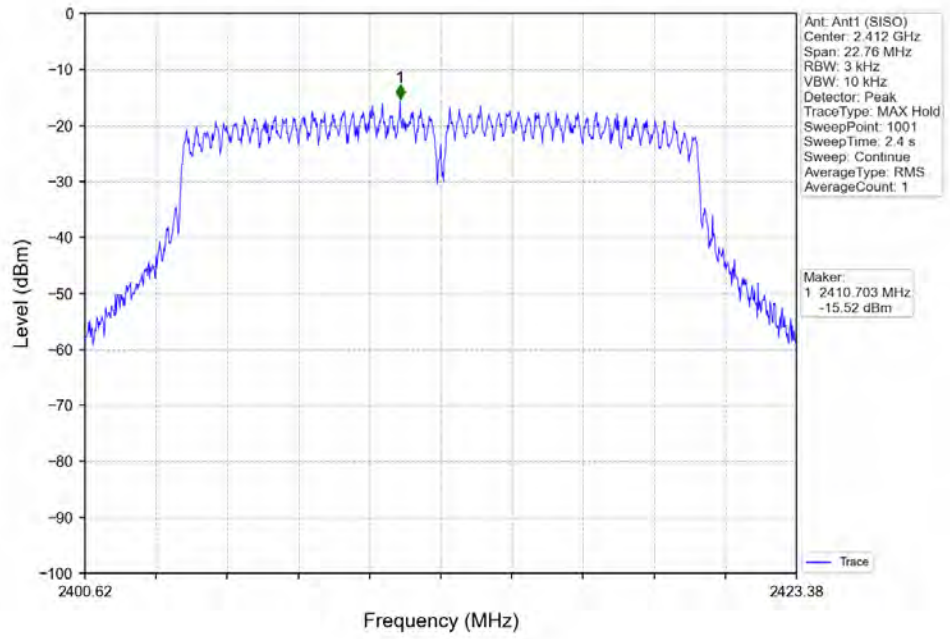
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



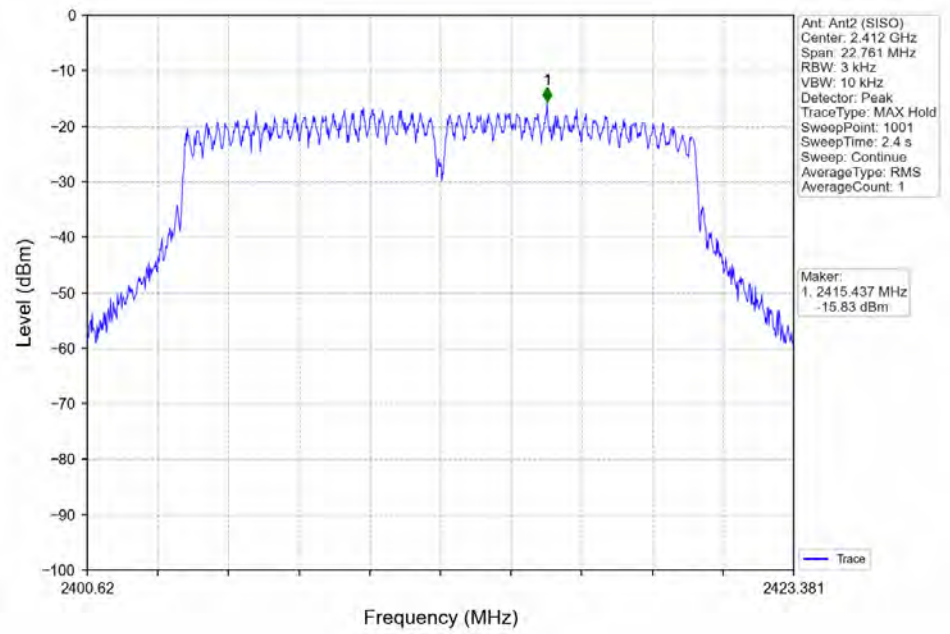
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



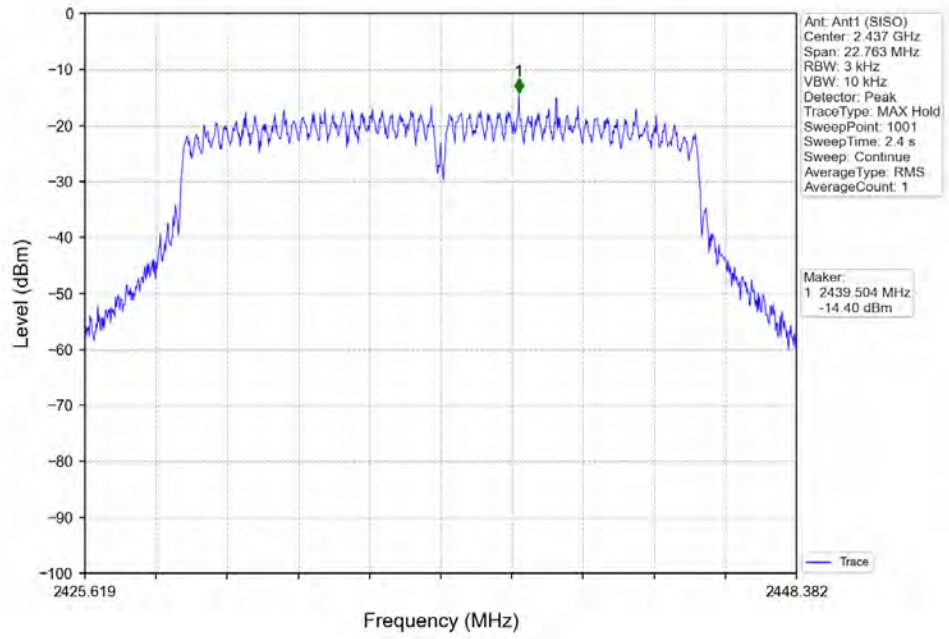
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



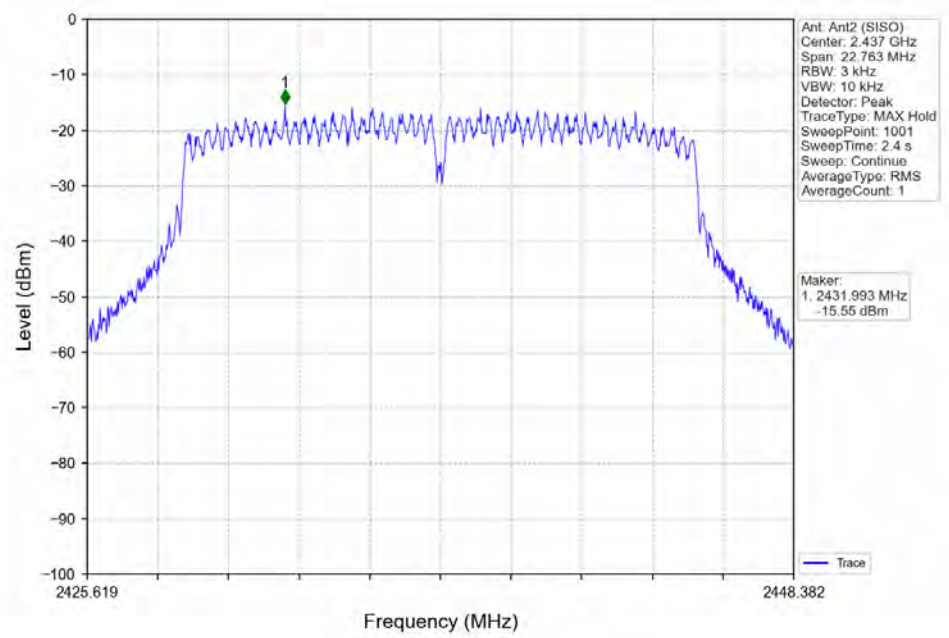
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



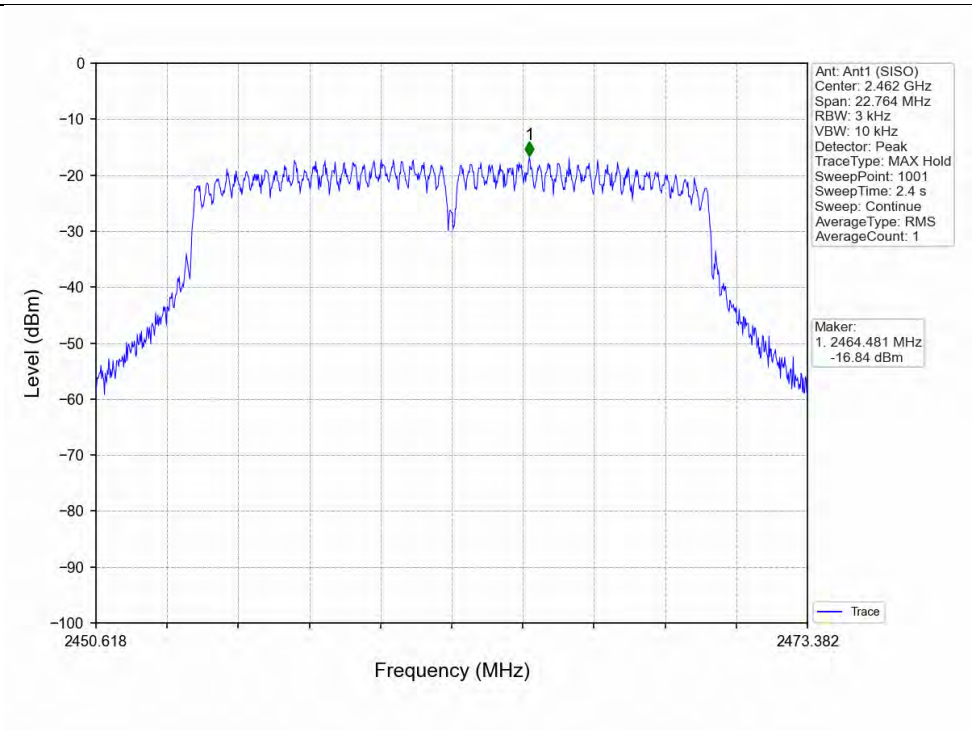
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



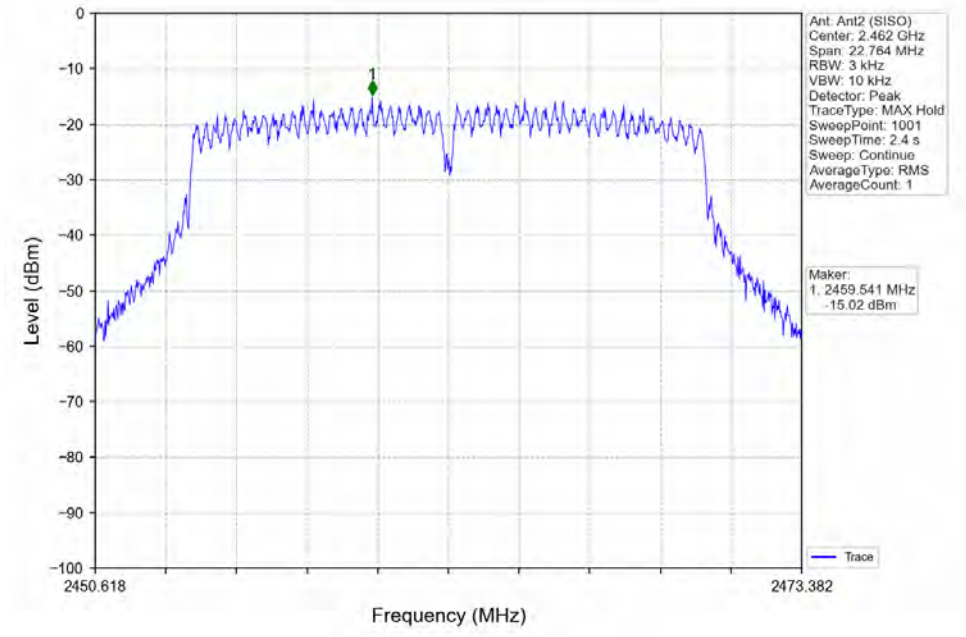
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



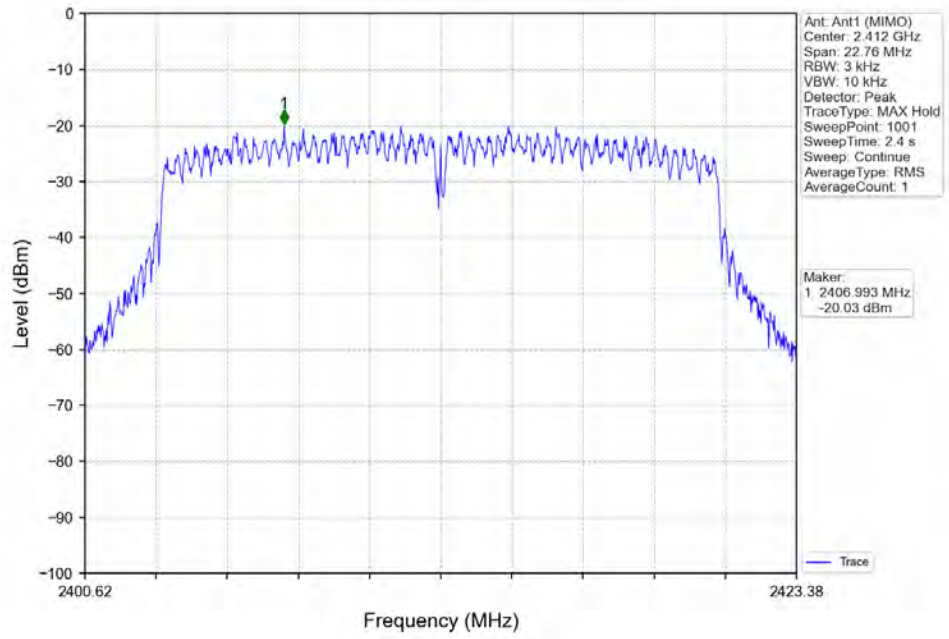
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



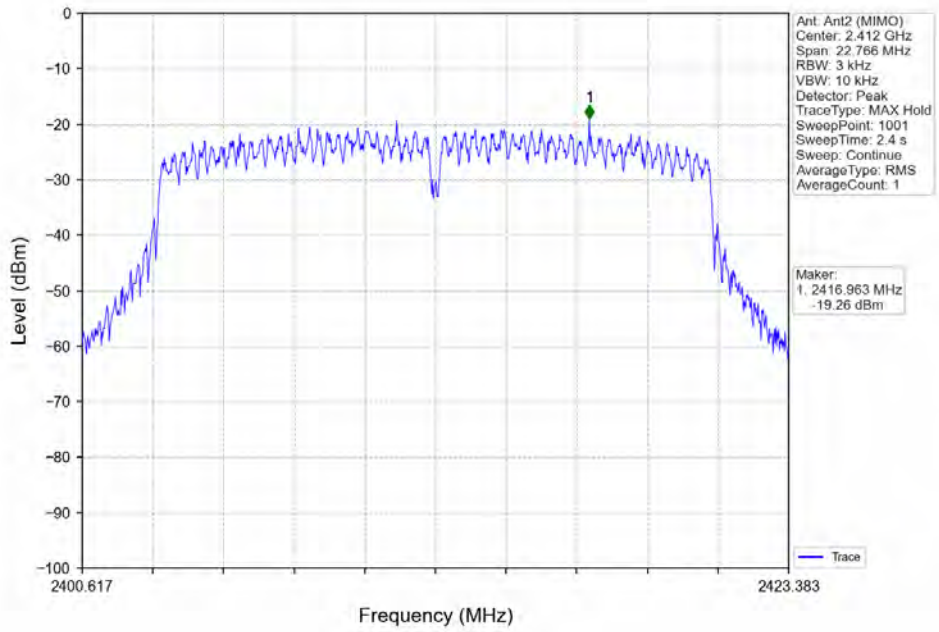
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



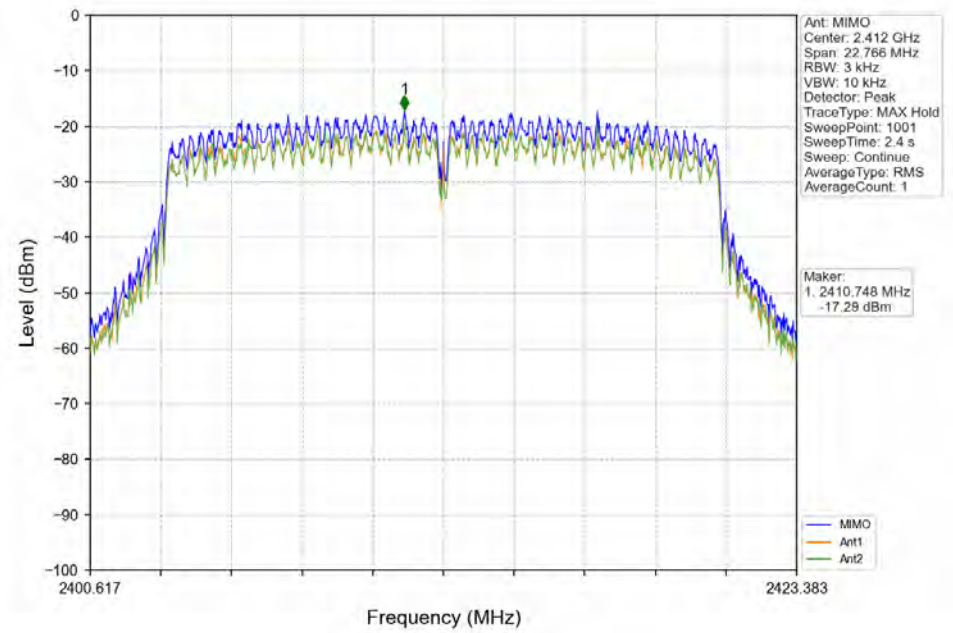
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



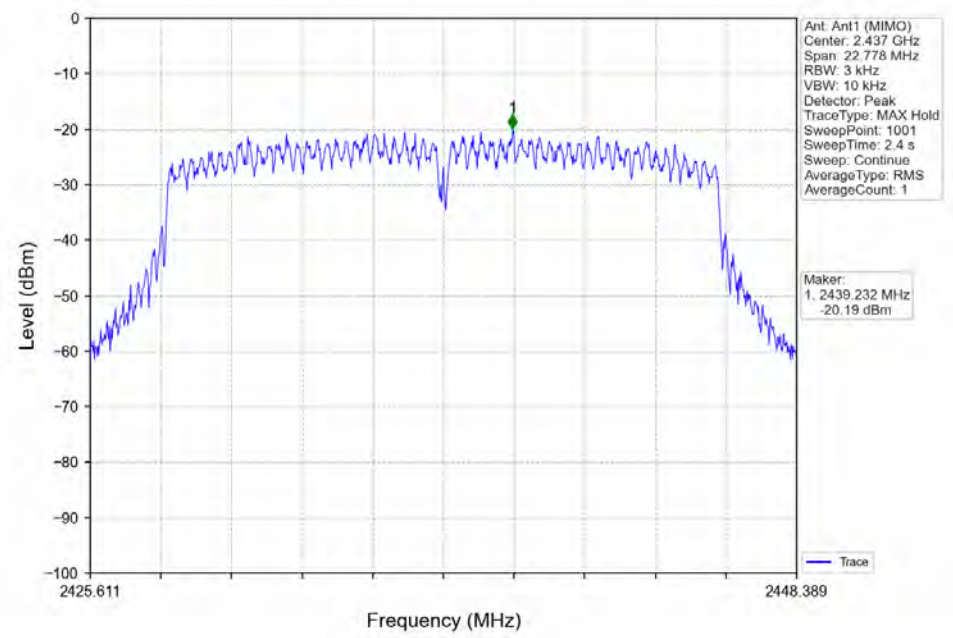
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



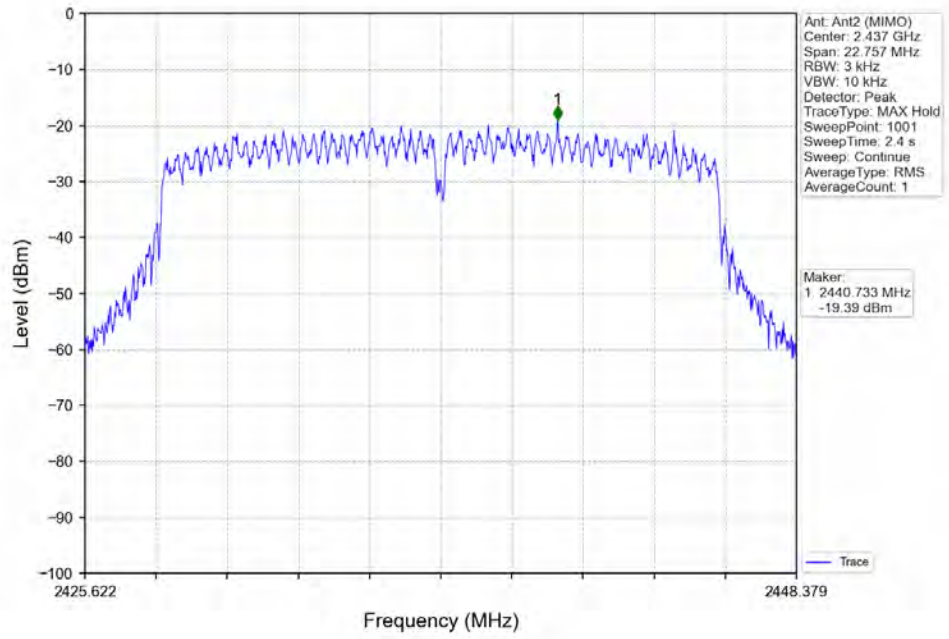
802.11n(HT20)_LCH_2412MHz_MIMO_NTNV



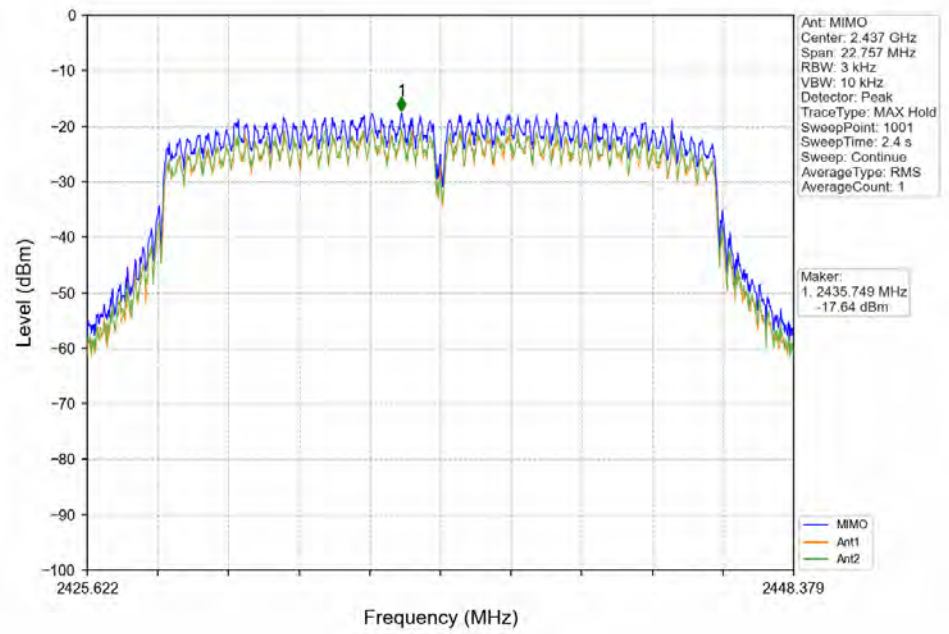
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



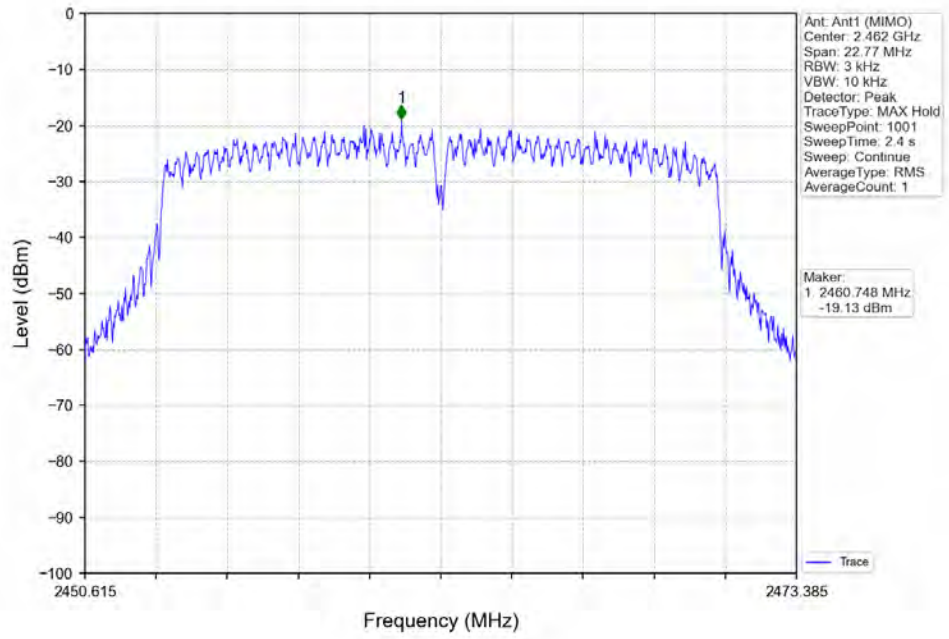
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



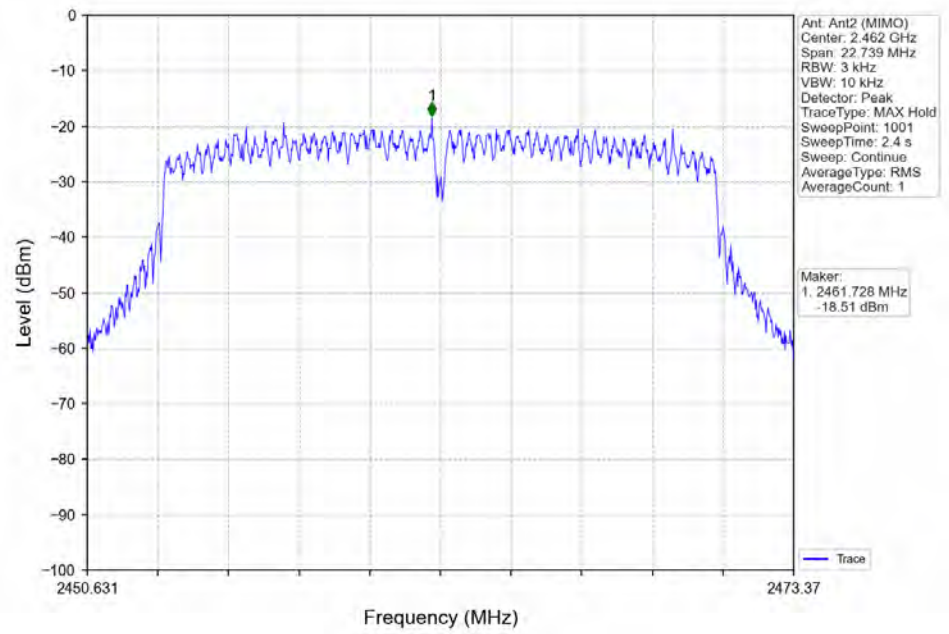
802.11n(HT20)_MCH_2437MHz_MIMO_NTNV



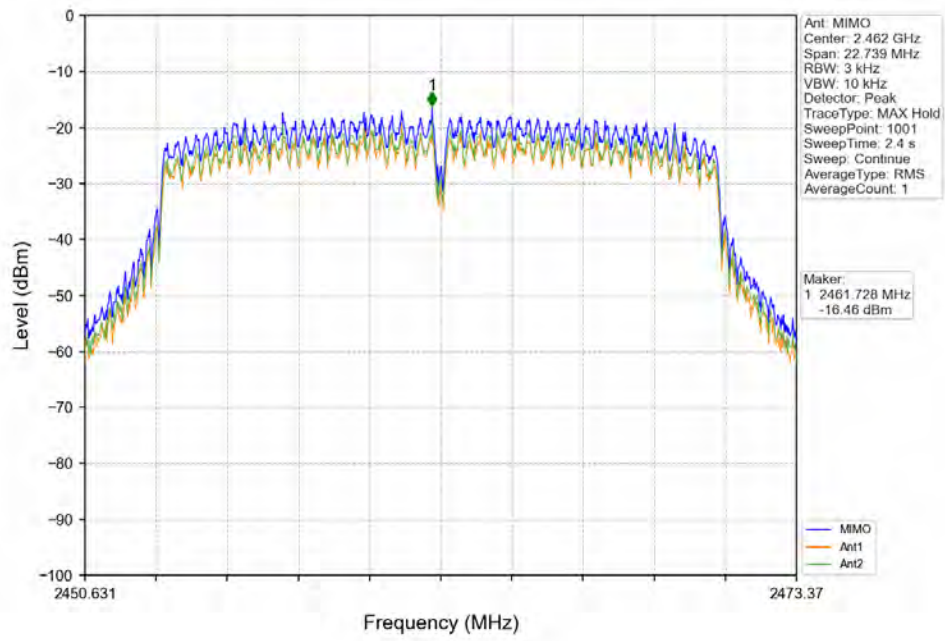
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



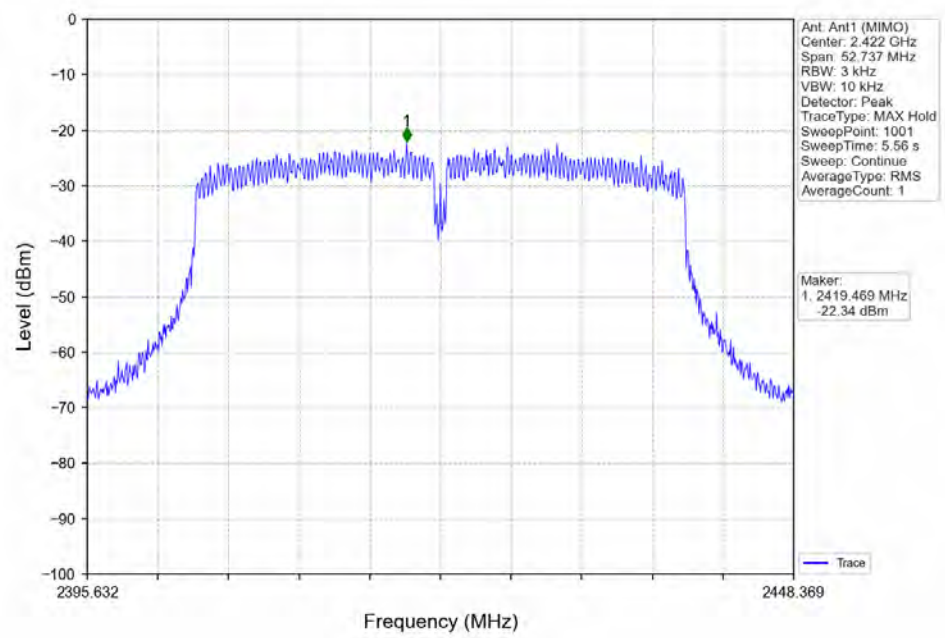
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



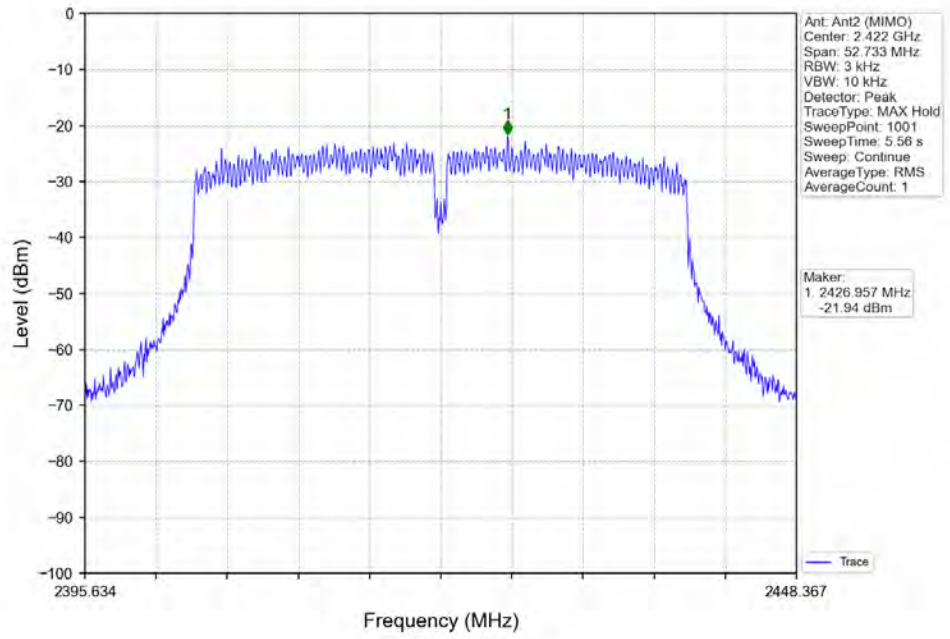
802.11n(HT20)_HCH_2462MHz_MIMO_NTNV



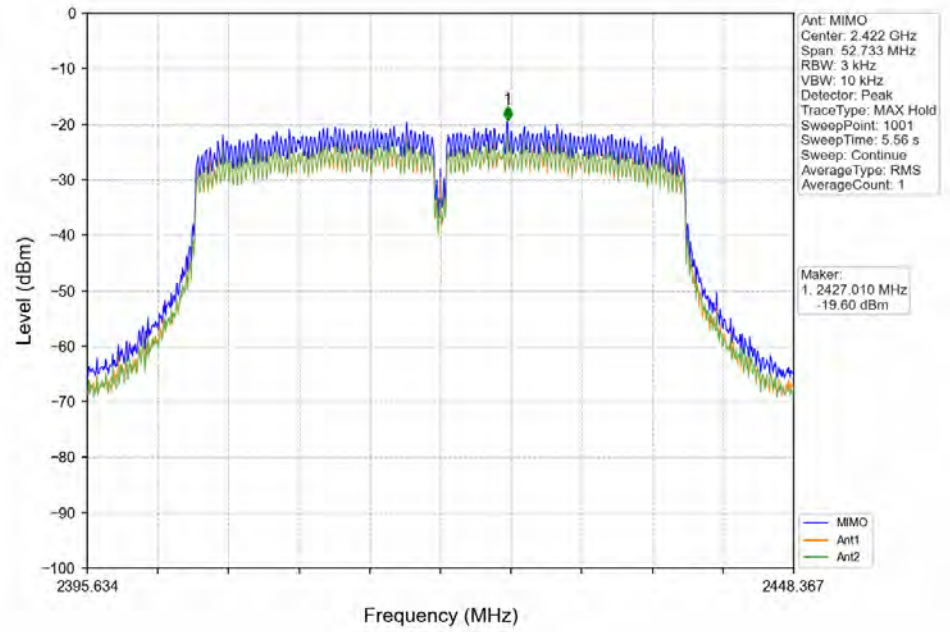
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



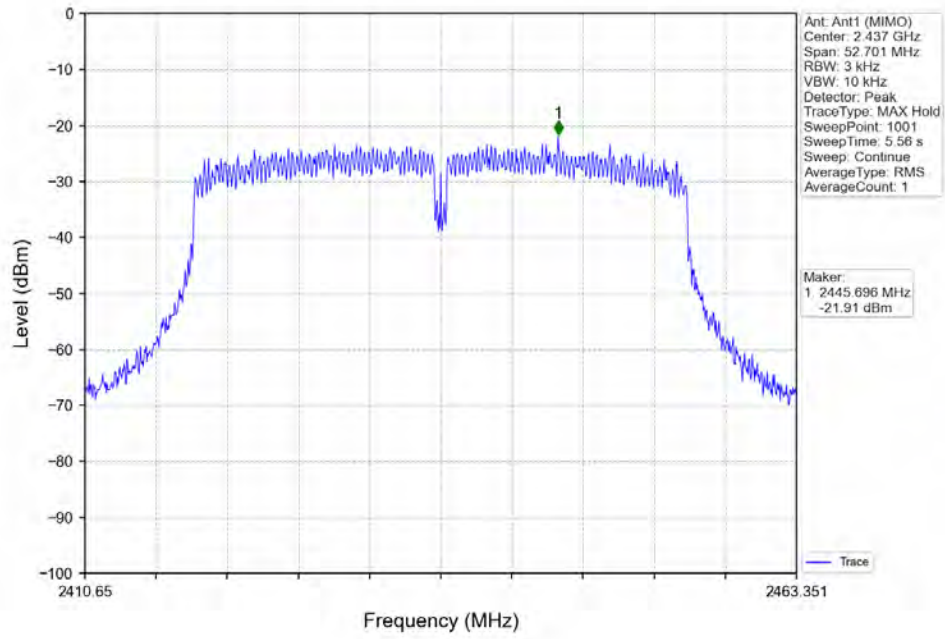
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



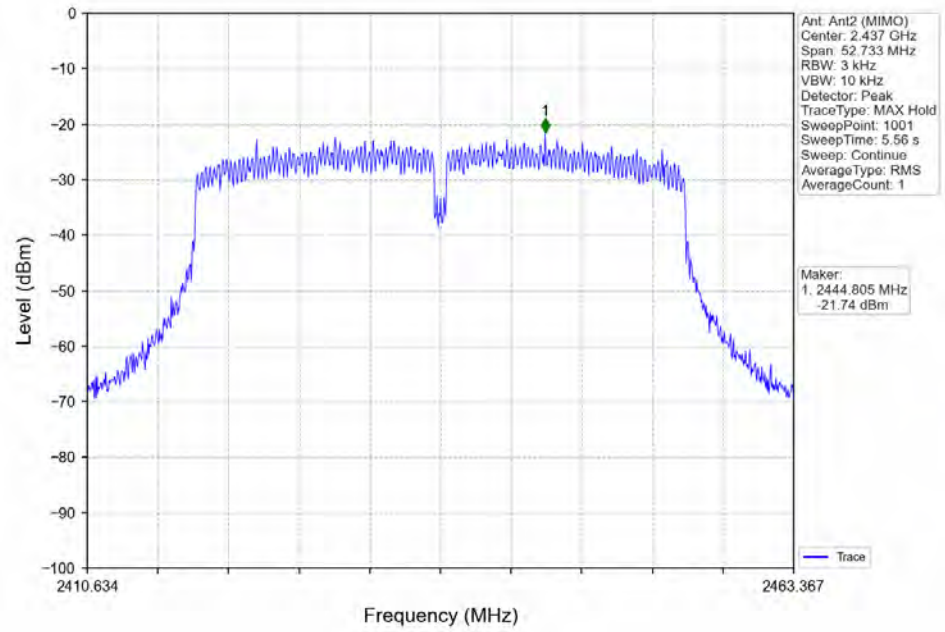
802.11n(HT40)_LCH_2422MHz_MIMO_NTNV



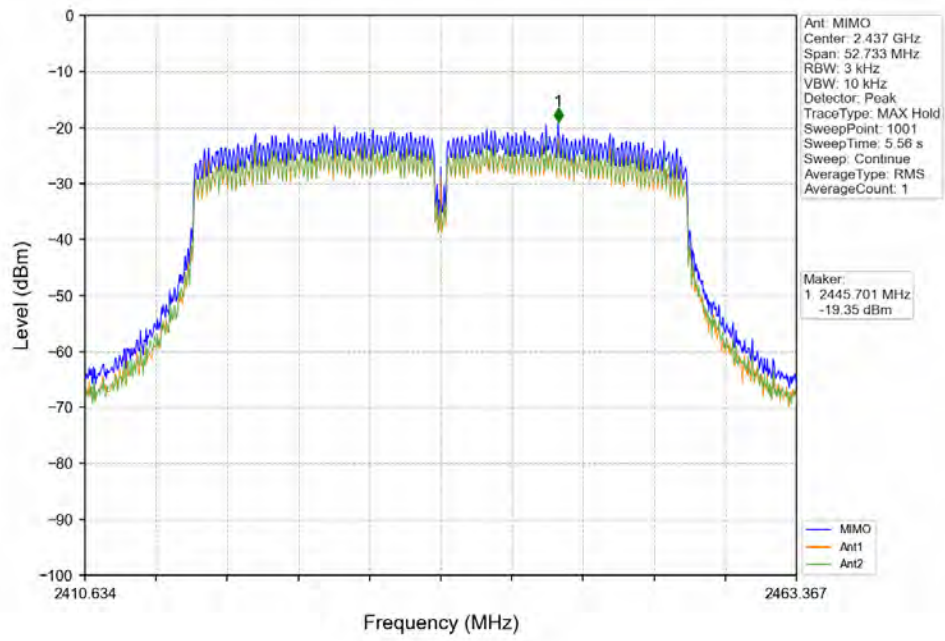
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



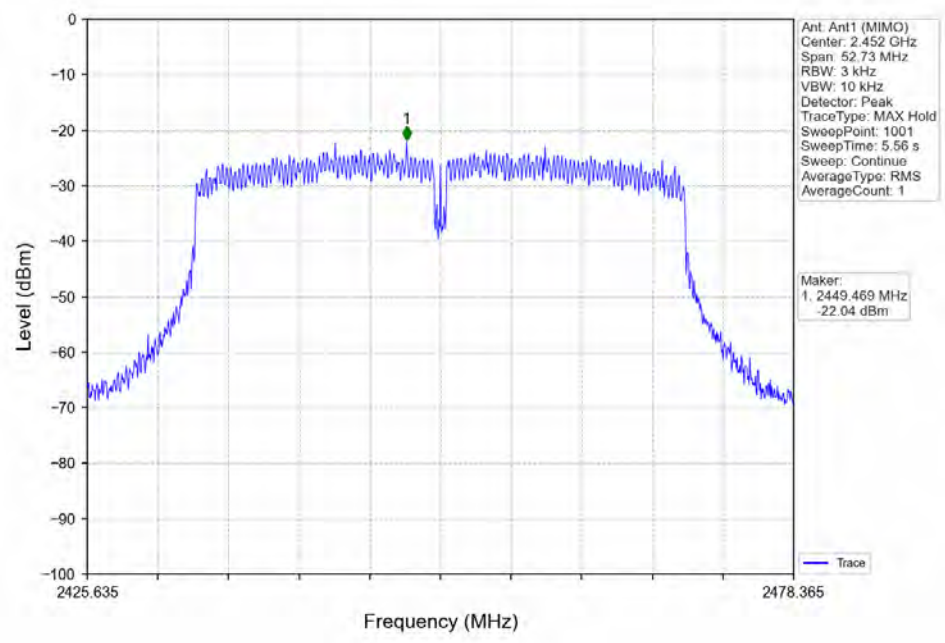
802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



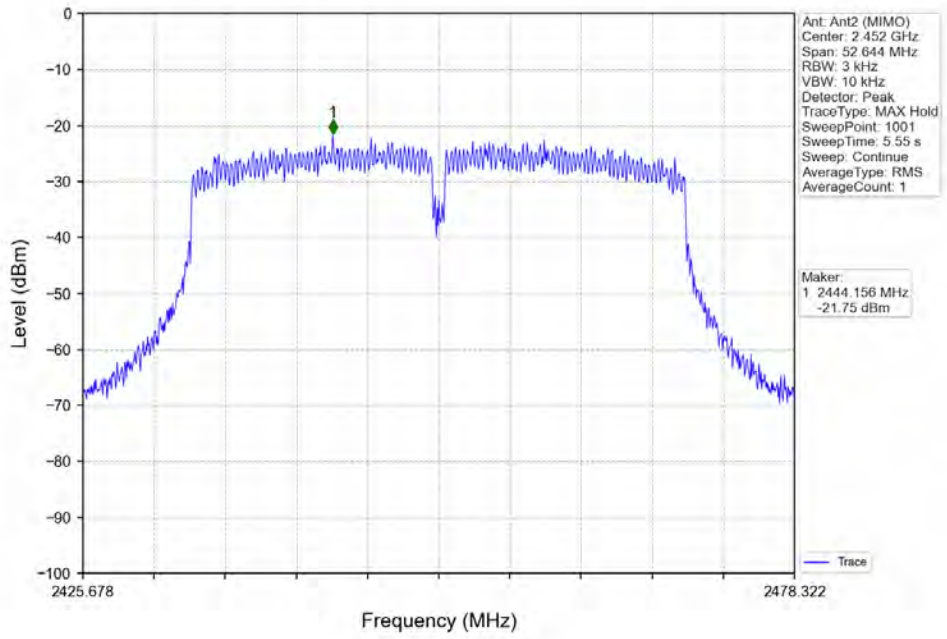
802.11n(HT40)_MCH_2437MHz_MIMO_NTNV



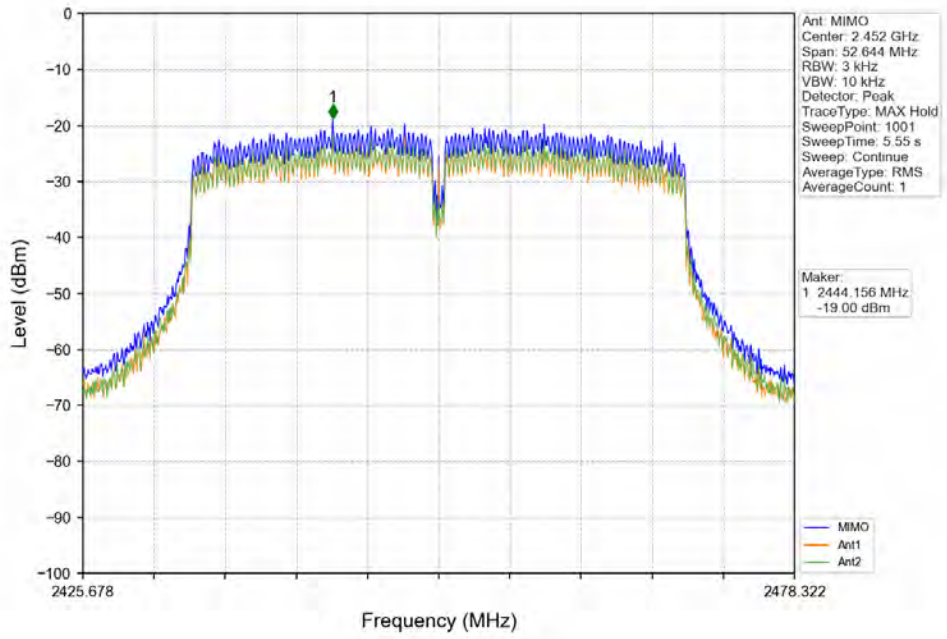
802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_MIMO_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

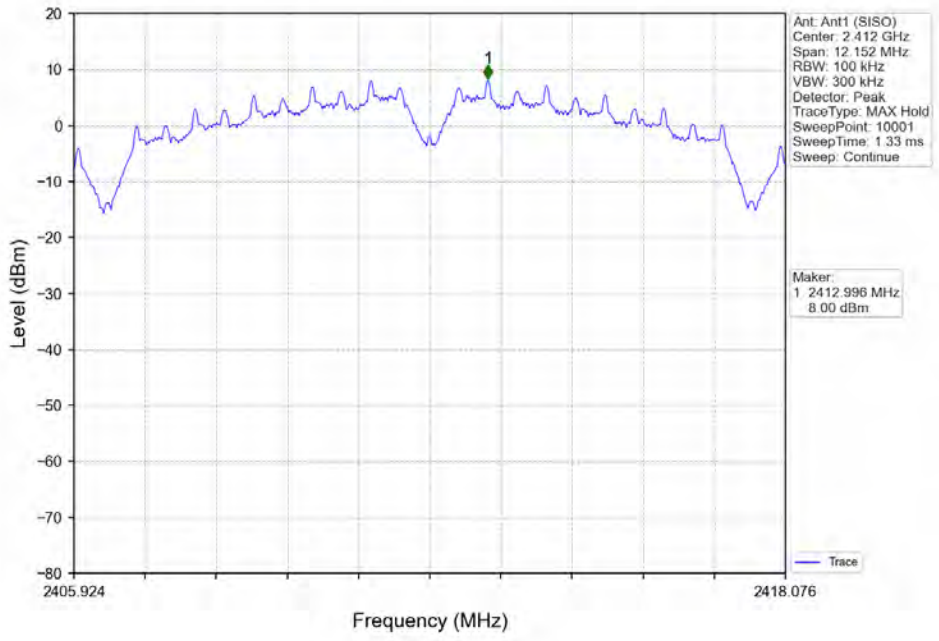
5.1 Ref

5.1.1 Test Result

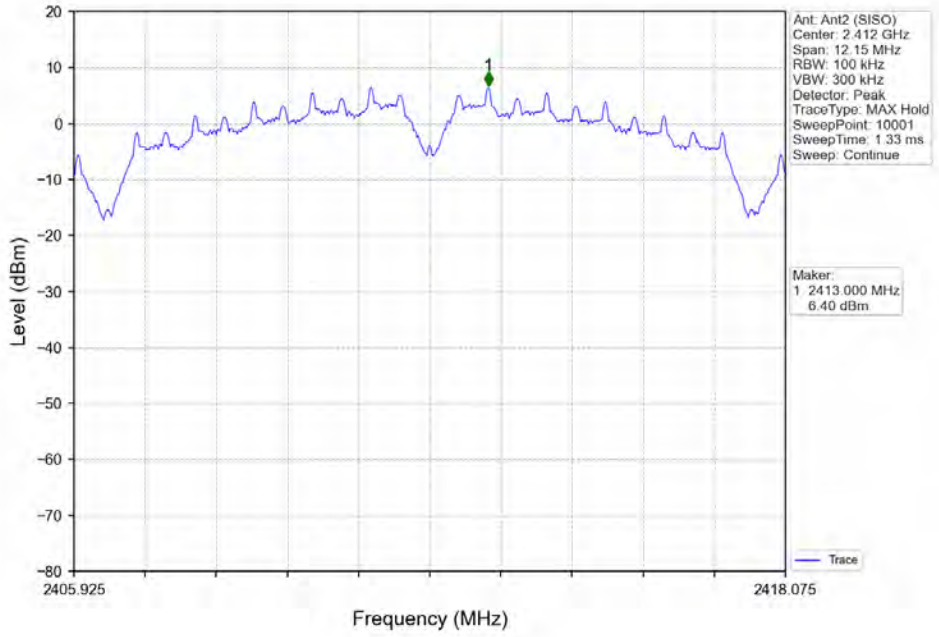
Mode	TX Type	Frequency (MHz)	Ant	Level of Reference (dBm)
802.11b	SISO	2412	1	8.00
			2	6.40
		2437	1	7.75
			2	6.50
		2462	1	7.49
			2	8.04
802.11g	SISO	2412	1	-0.46
			2	3.46
		2437	1	-0.89
			2	0.41
		2462	1	-0.25
			2	1.17
802.11n (HT20)	MIMO	2412	1	-3.68
			2	-3.43
		2437	1	-3.60
			2	-3.27
		2462	1	-3.75
			2	-3.01
802.11n (HT40)	MIMO	2422	1	-6.80
			2	-6.75
		2437	1	-6.97
			2	-6.56
		2452	1	-7.20
			2	-6.44
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 Test Graph

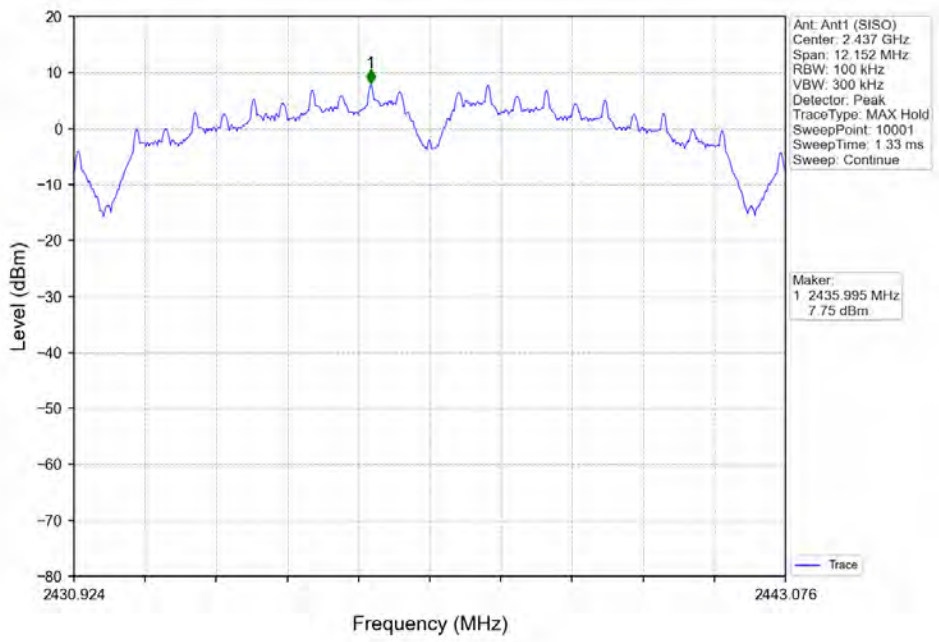
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



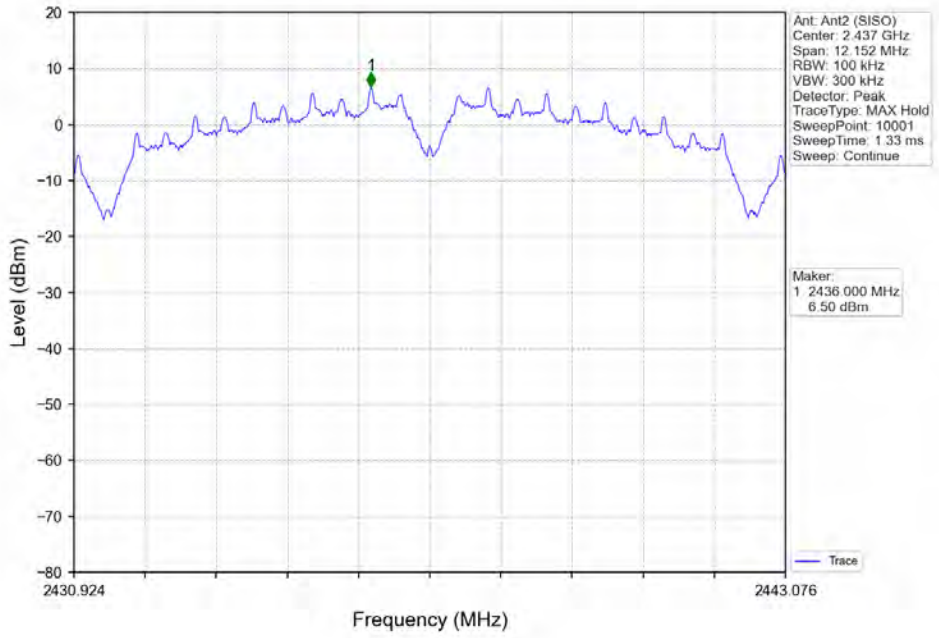
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



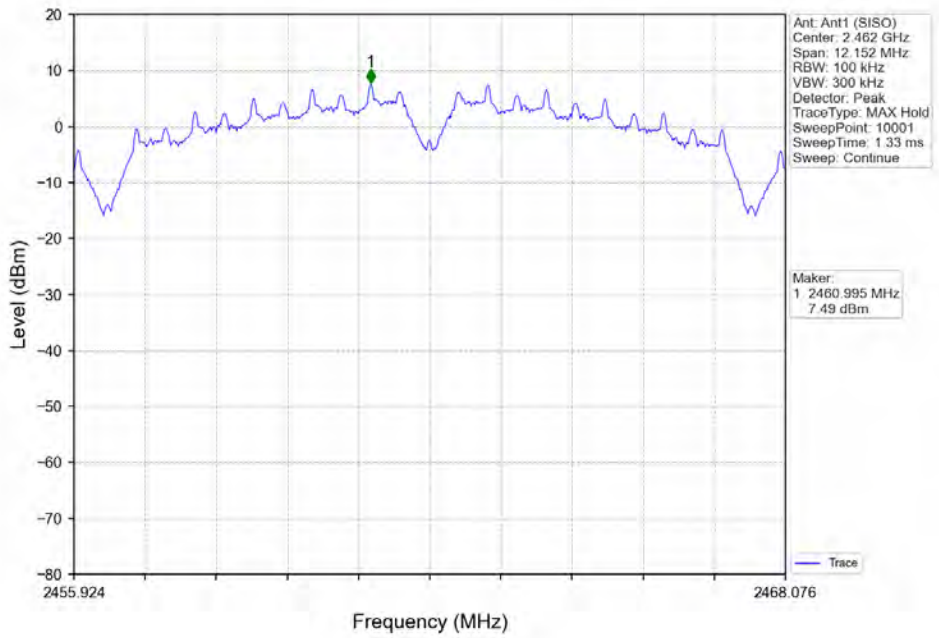
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



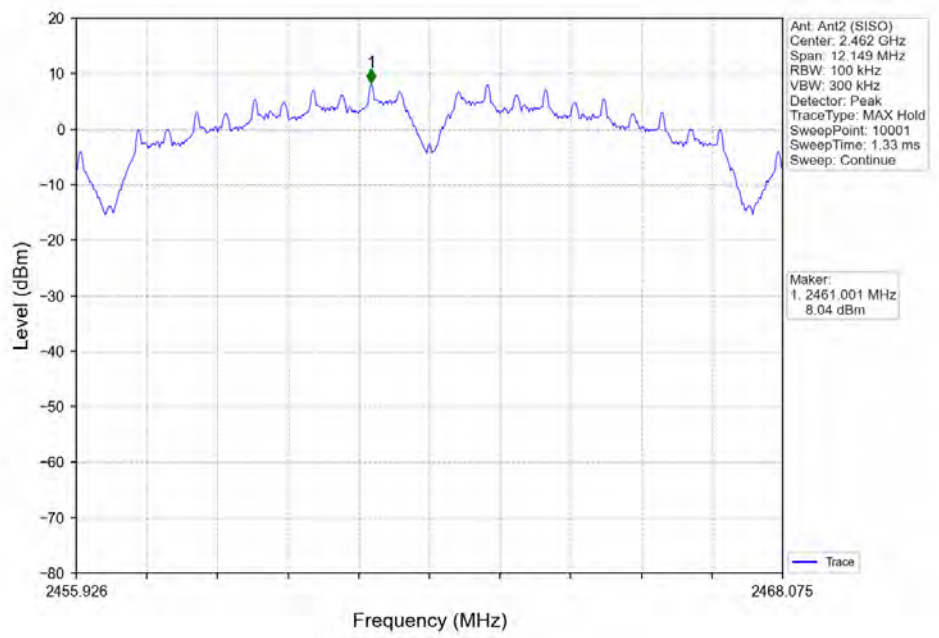
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



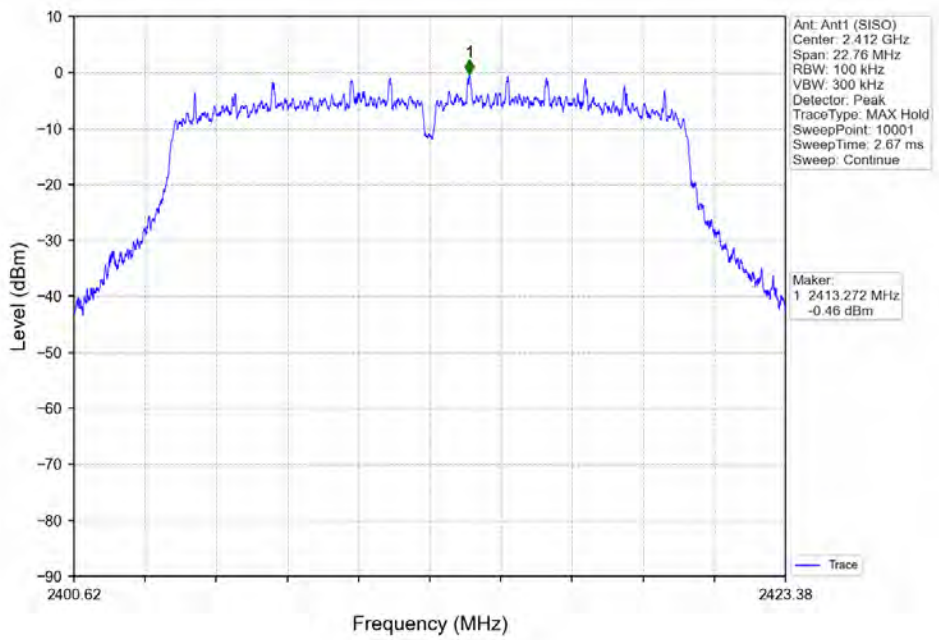
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



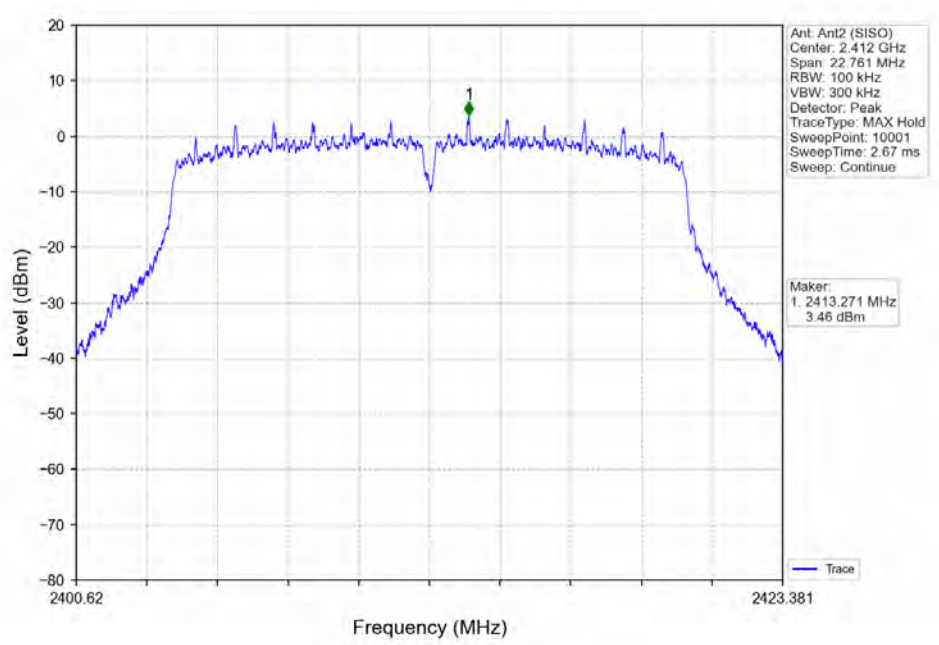
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



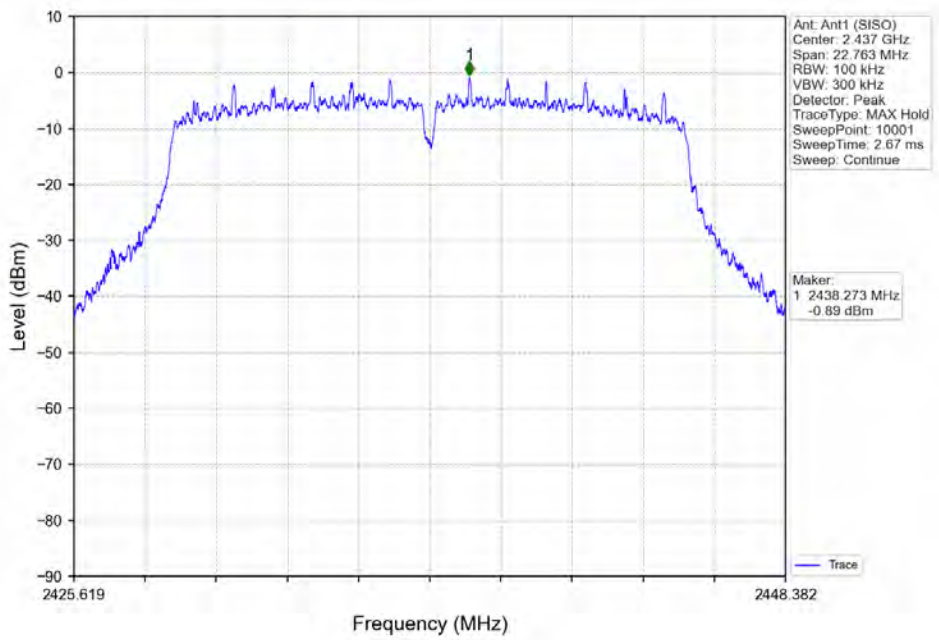
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



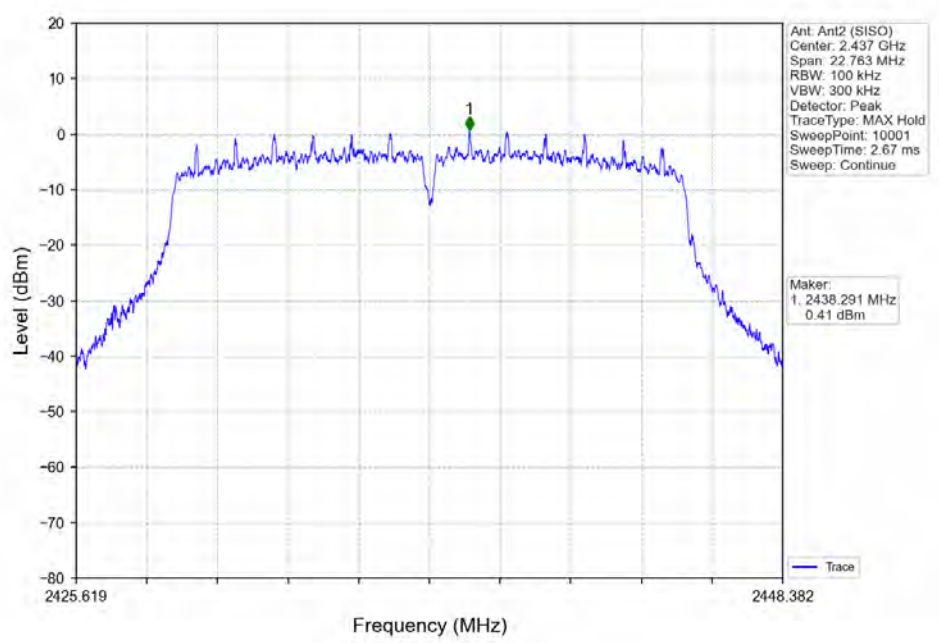
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



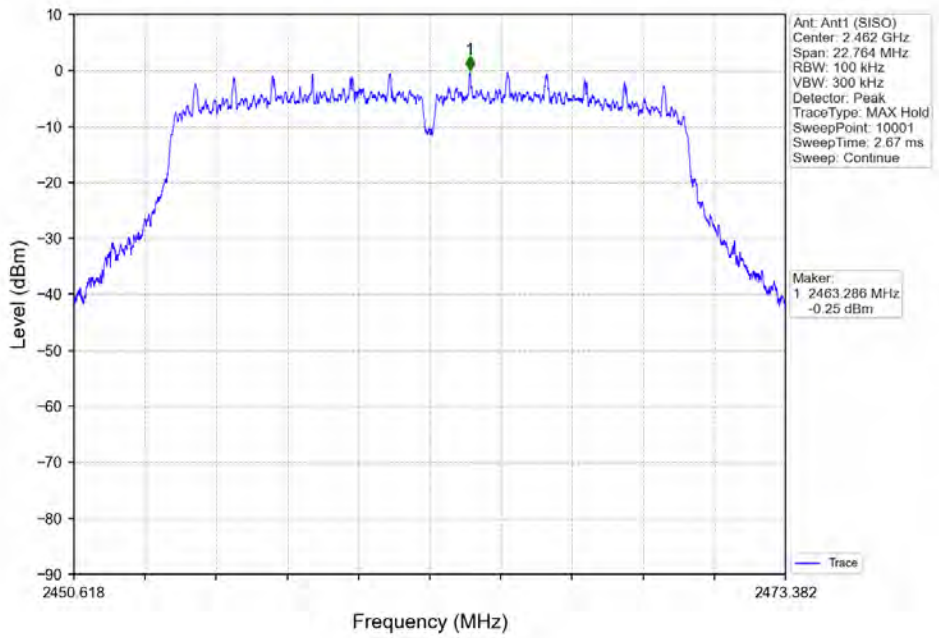
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



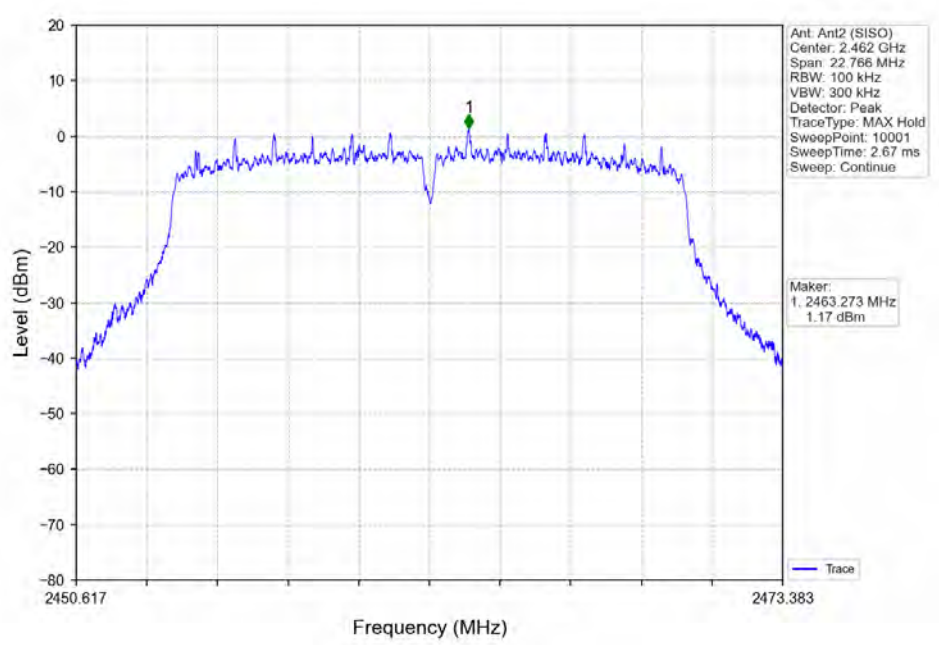
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



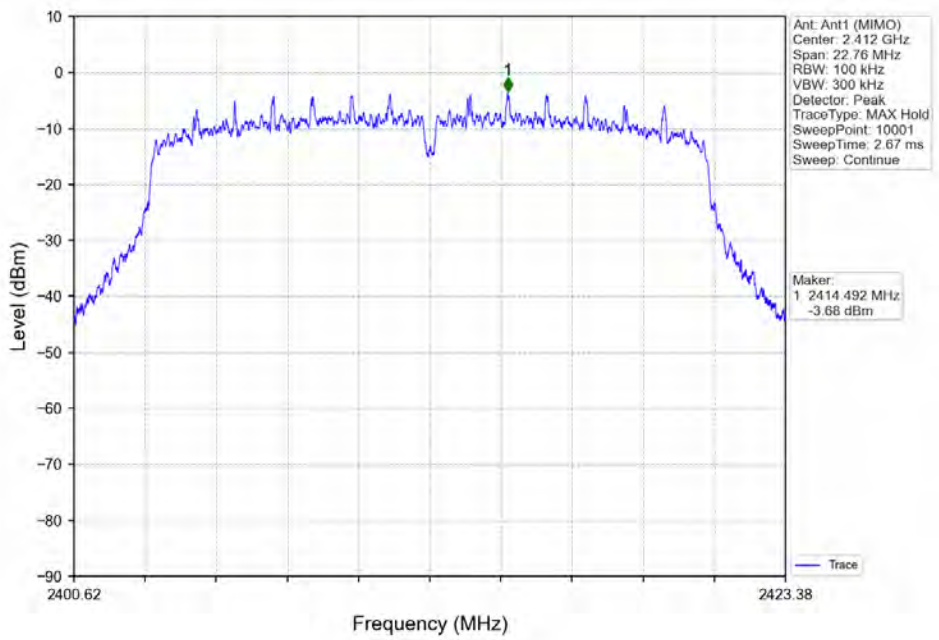
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



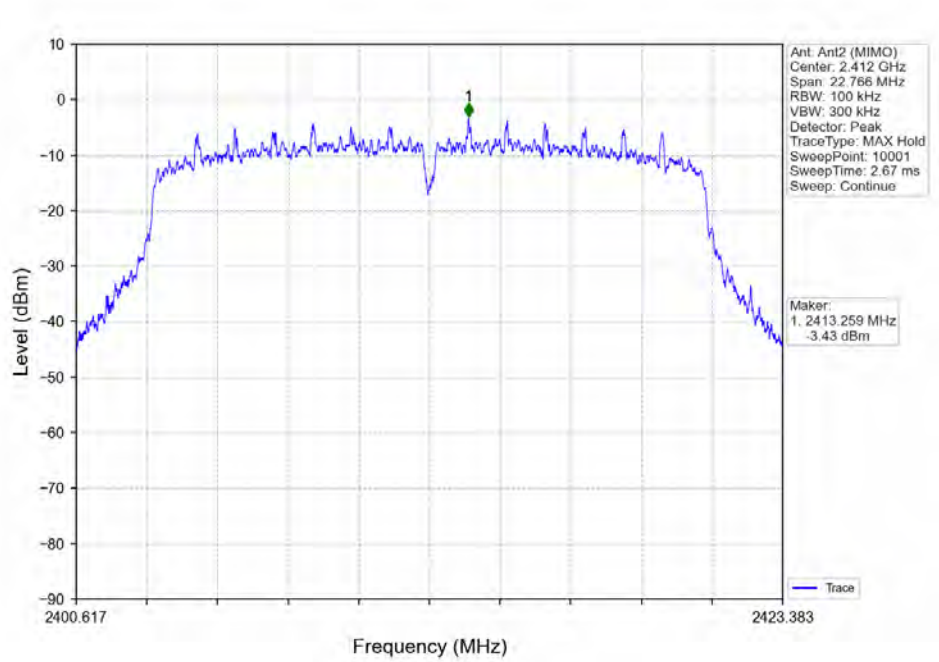
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



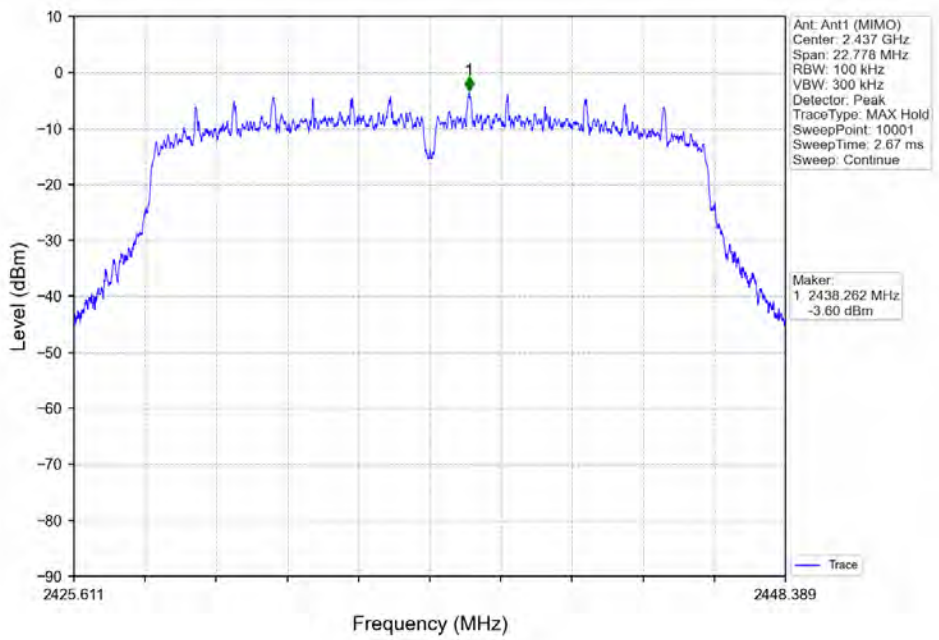
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



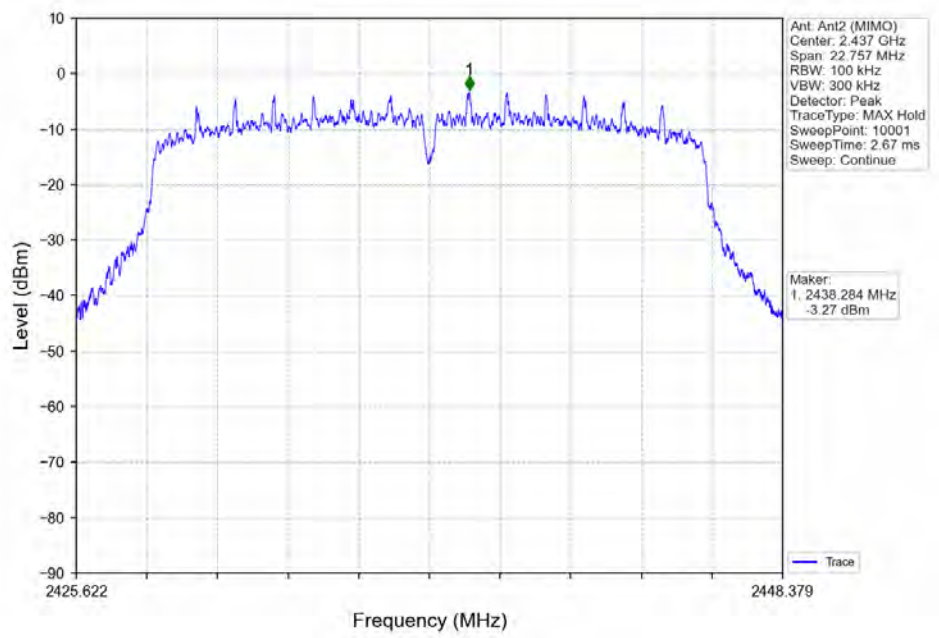
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



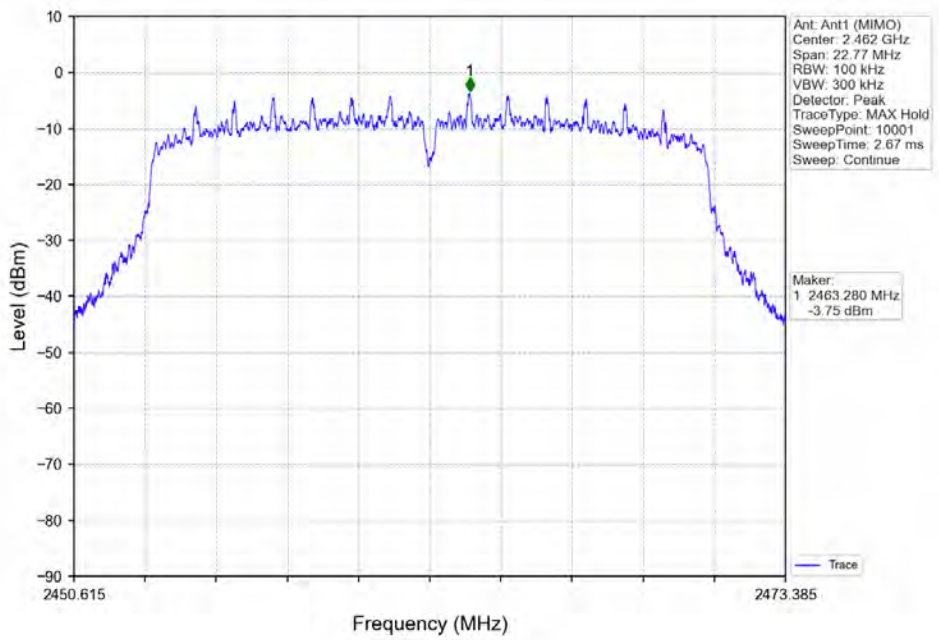
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



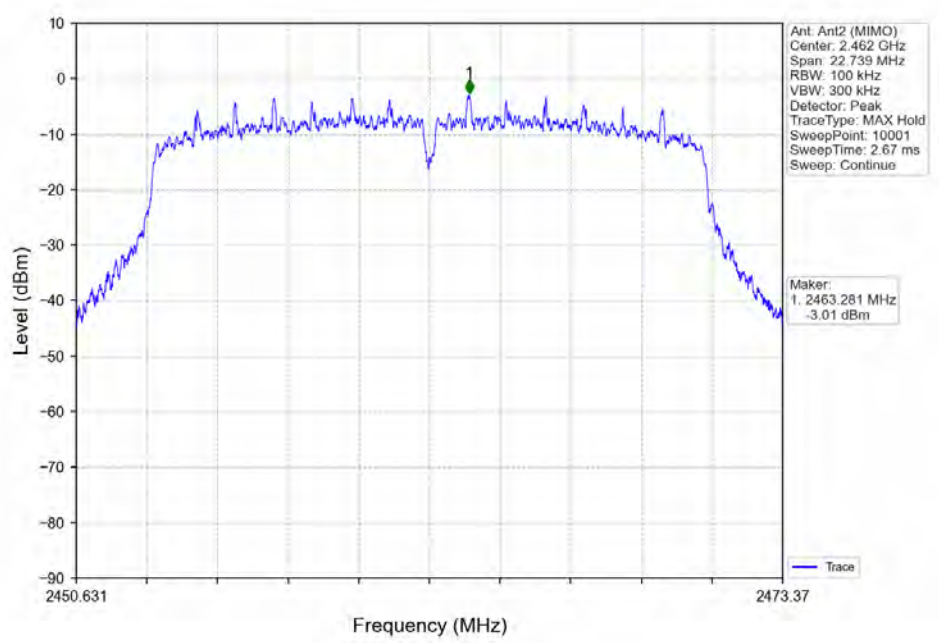
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



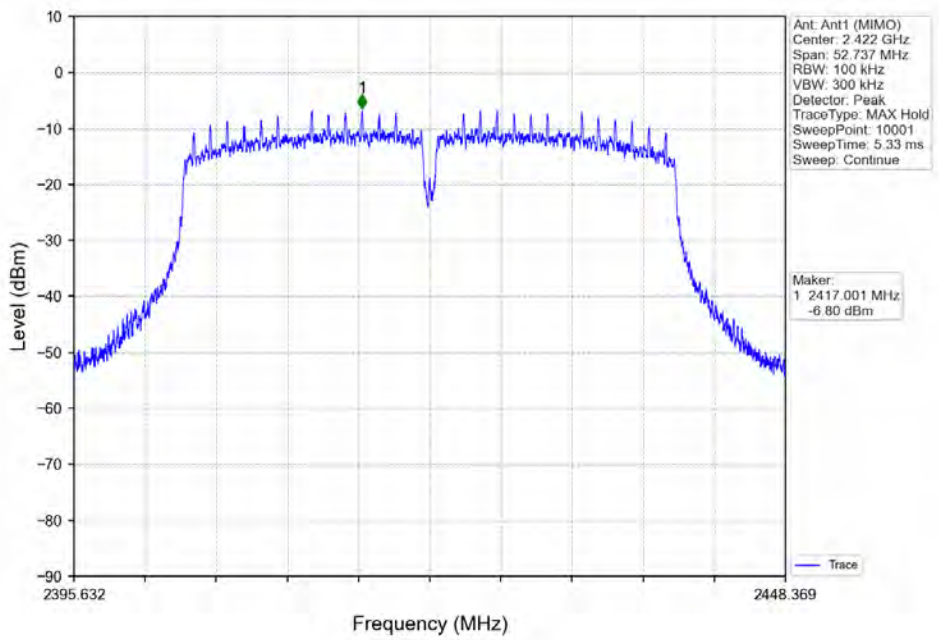
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



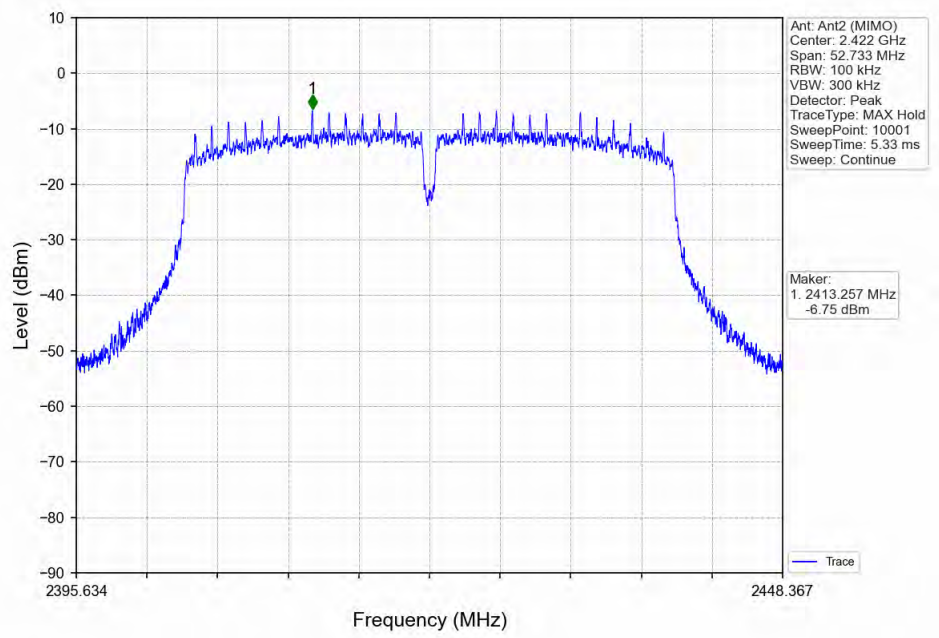
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



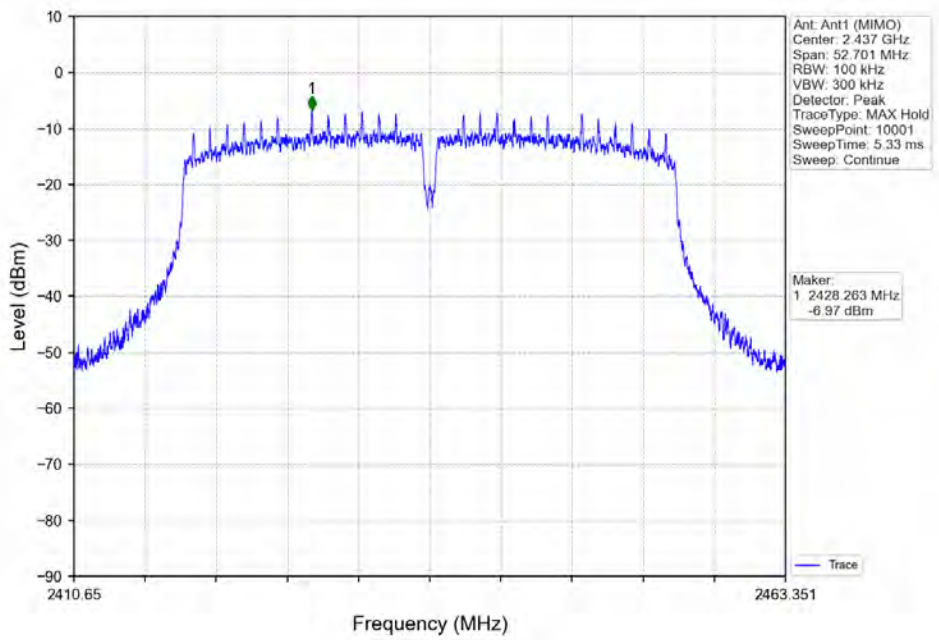
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



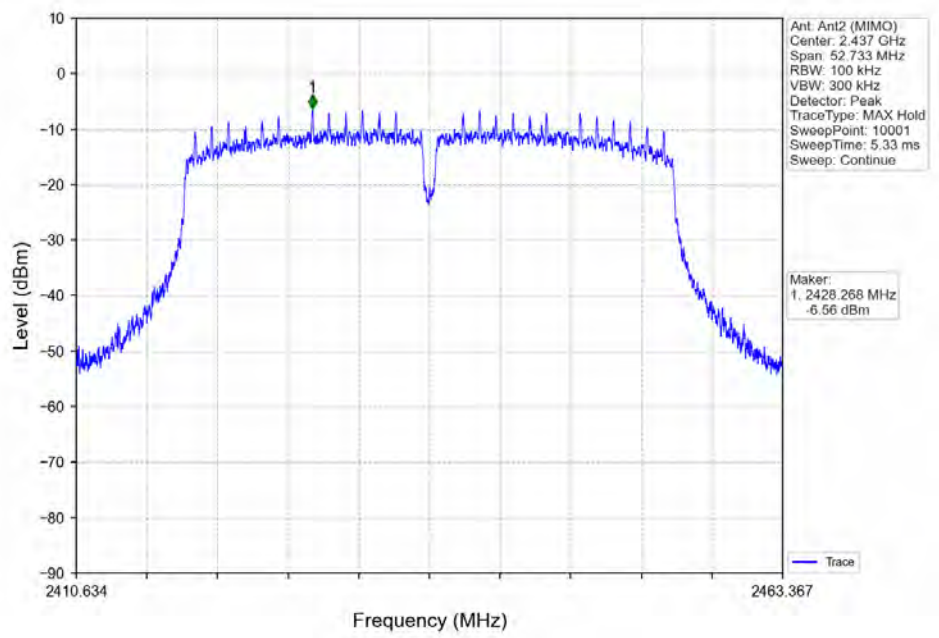
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



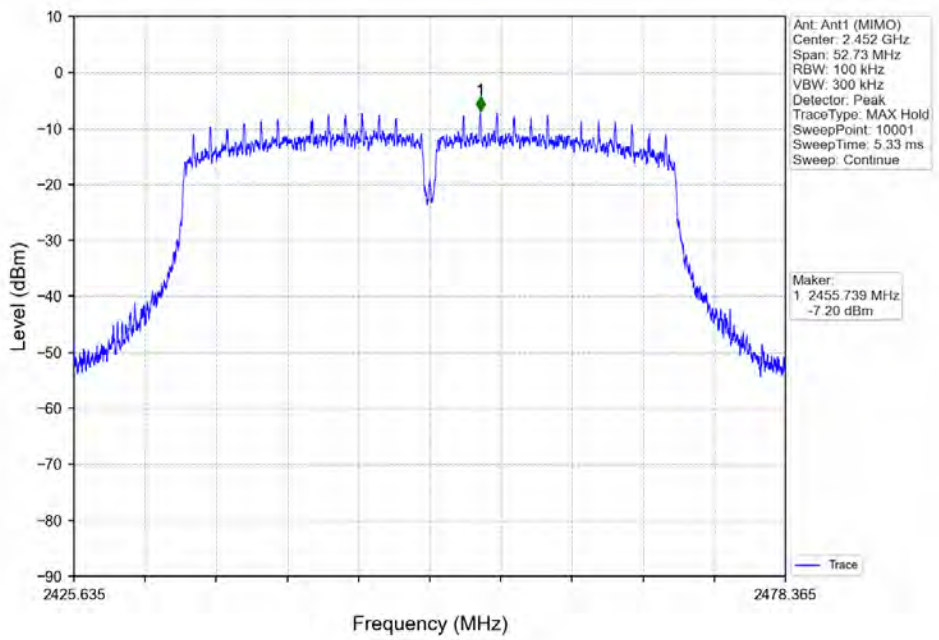
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



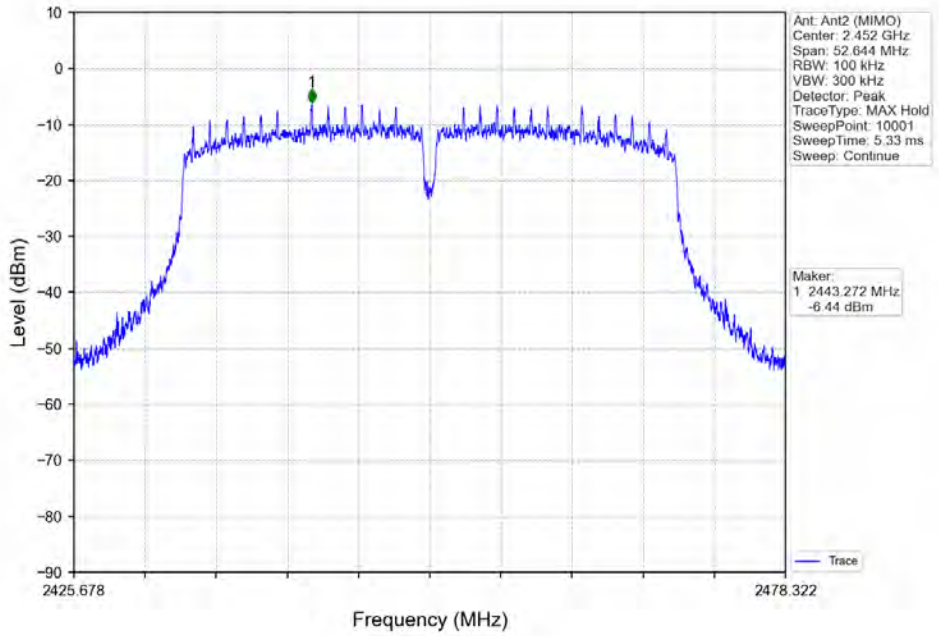
802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



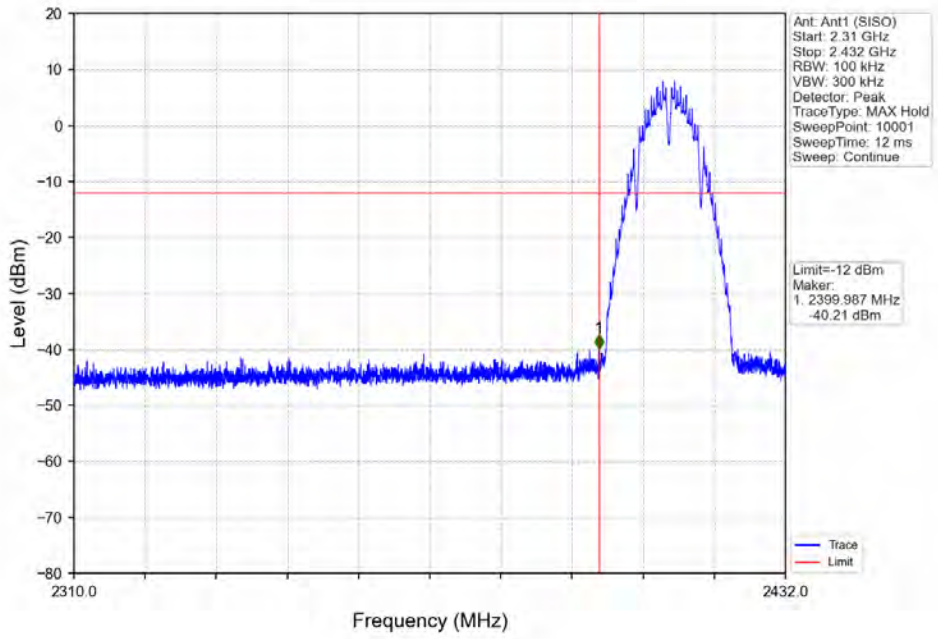
5.2 CSE

5.2.1 Test Result

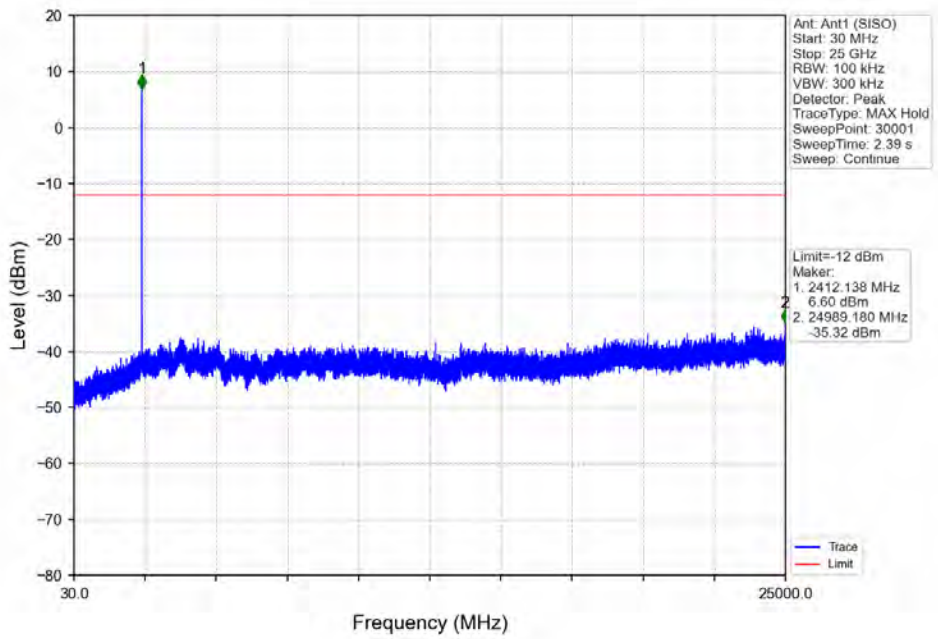
Mode	TX Type	Frequency (MHz)	Ant	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	8.00	-12.00	Pass
			2	8.04	-11.96	Pass
		2437	1	8.00	-12.00	Pass
			2	8.04	-11.96	Pass
		2462	1	8.00	-12.00	Pass
			2	8.04	-11.96	Pass
802.11g	SISO	2412	1	-0.25	-20.25	Pass
			2	3.46	-16.54	Pass
		2437	1	-0.25	-20.25	Pass
			2	3.46	-16.54	Pass
		2462	1	-0.25	-20.25	Pass
			2	3.46	-16.54	Pass
802.11n (HT20)	MIMO	2412	1	-3.60	-23.60	Pass
			2	-3.01	-23.01	Pass
		2437	1	-3.60	-23.60	Pass
			2	-3.01	-23.01	Pass
		2462	1	-3.60	-23.60	Pass
			2	-3.01	-23.01	Pass
802.11n (HT40)	MIMO	2422	1	-6.80	-26.80	Pass
			2	-6.44	-26.44	Pass
		2437	1	-6.80	-26.80	Pass
			2	-6.44	-26.44	Pass
		2452	1	-6.80	-26.80	Pass
			2	-6.44	-26.44	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.						

5.2.2 Test Graph

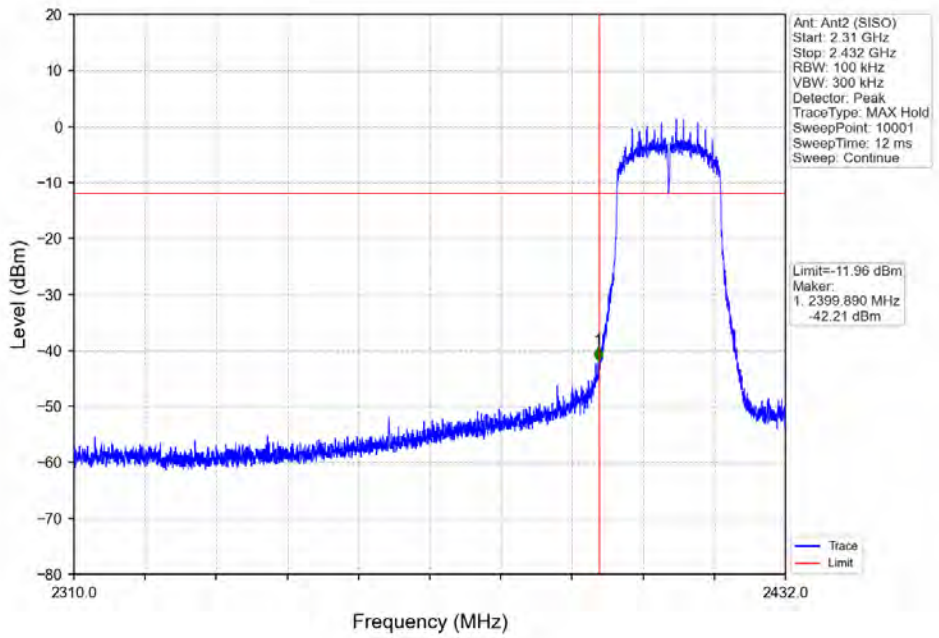
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



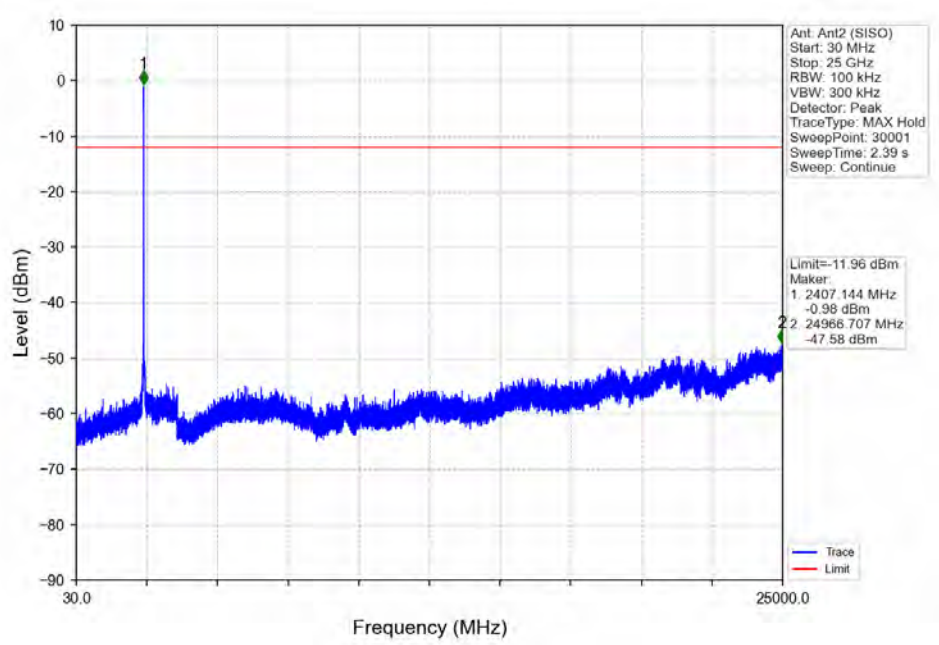
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



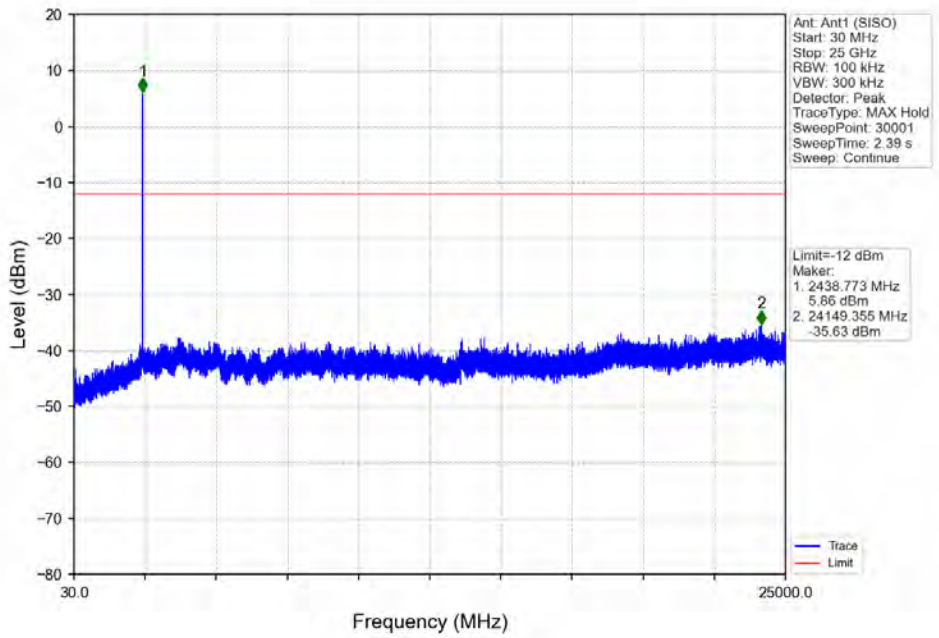
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



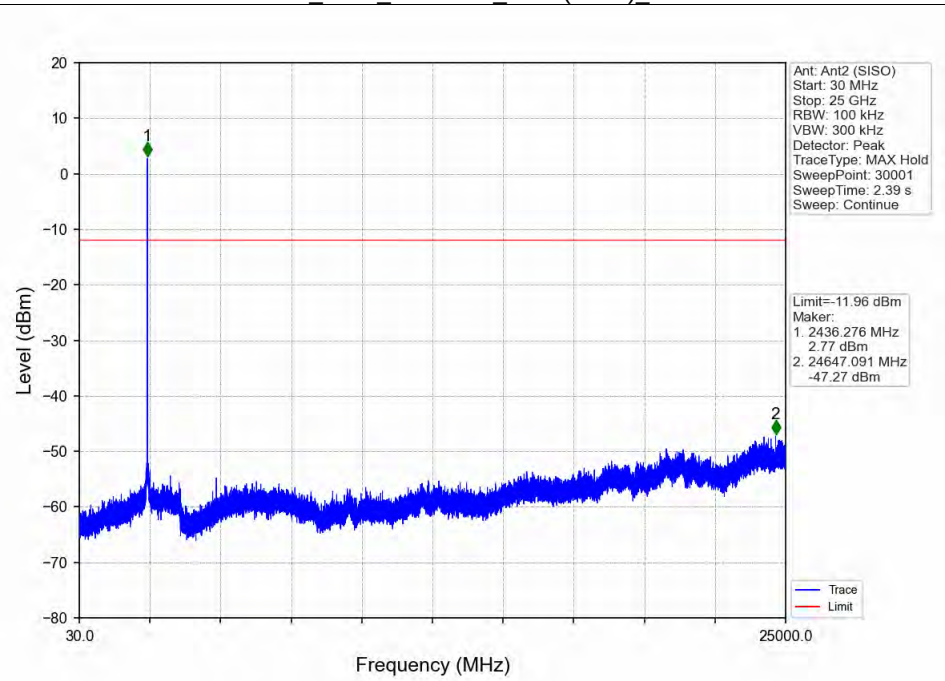
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



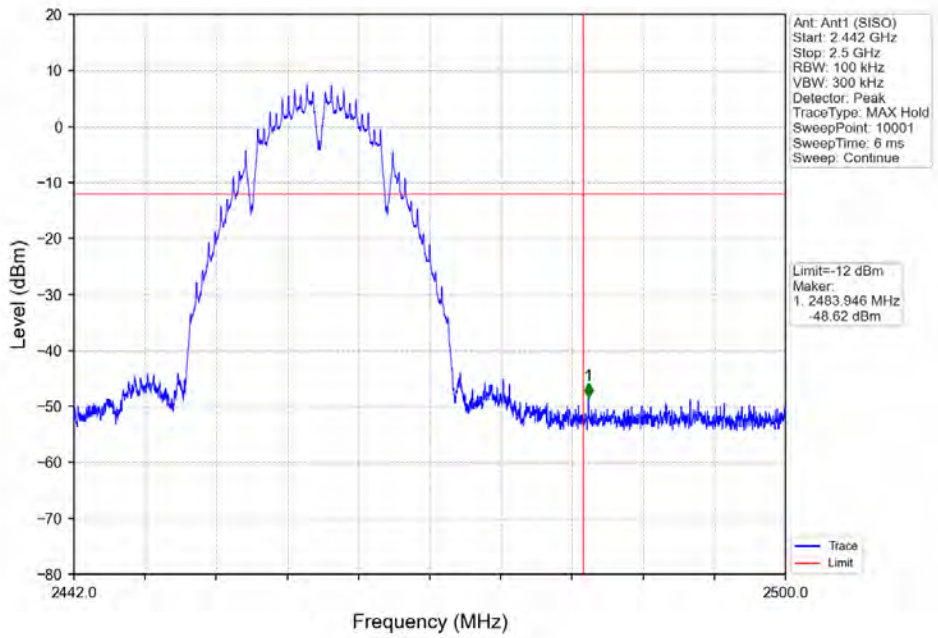
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



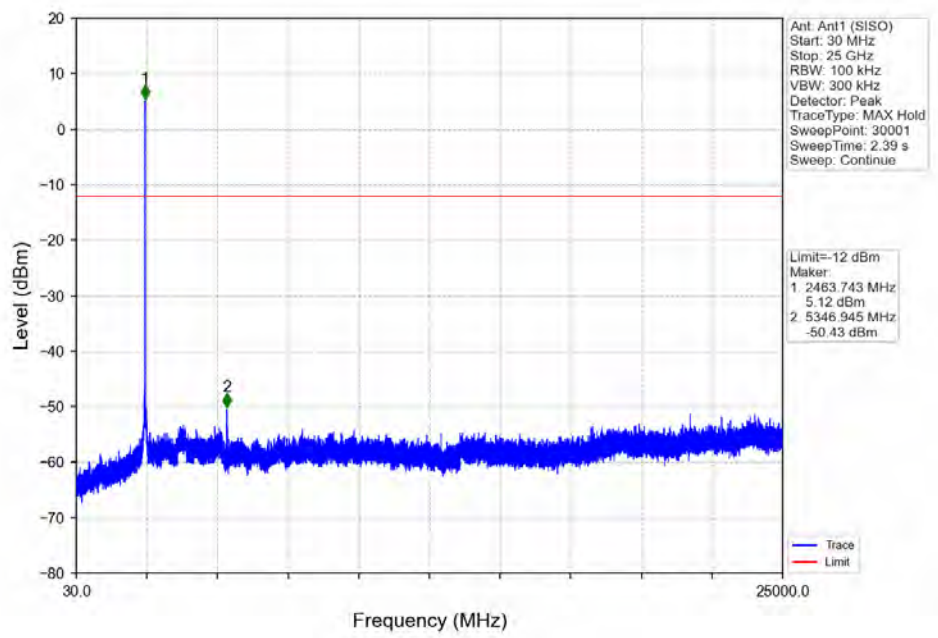
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



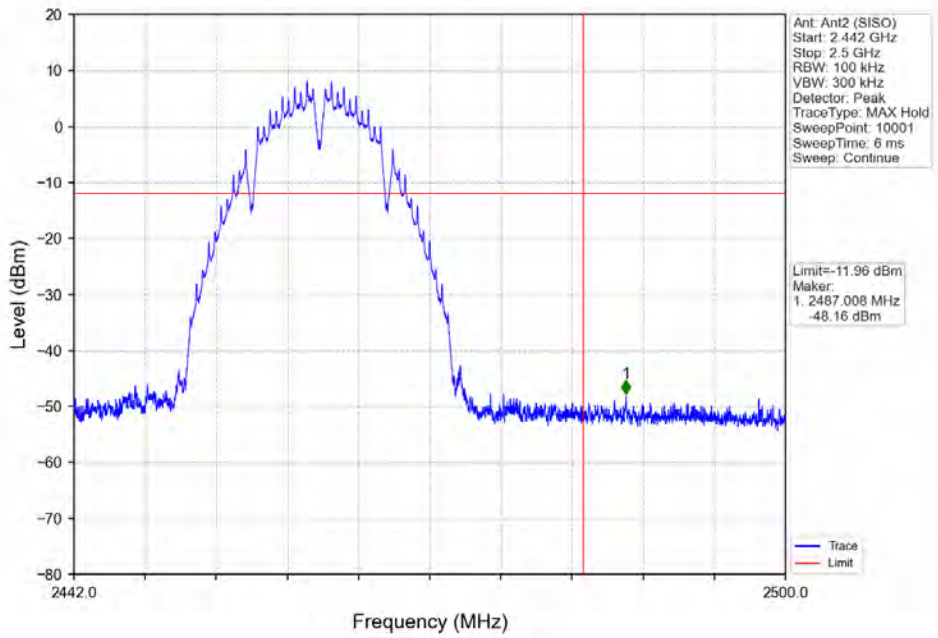
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



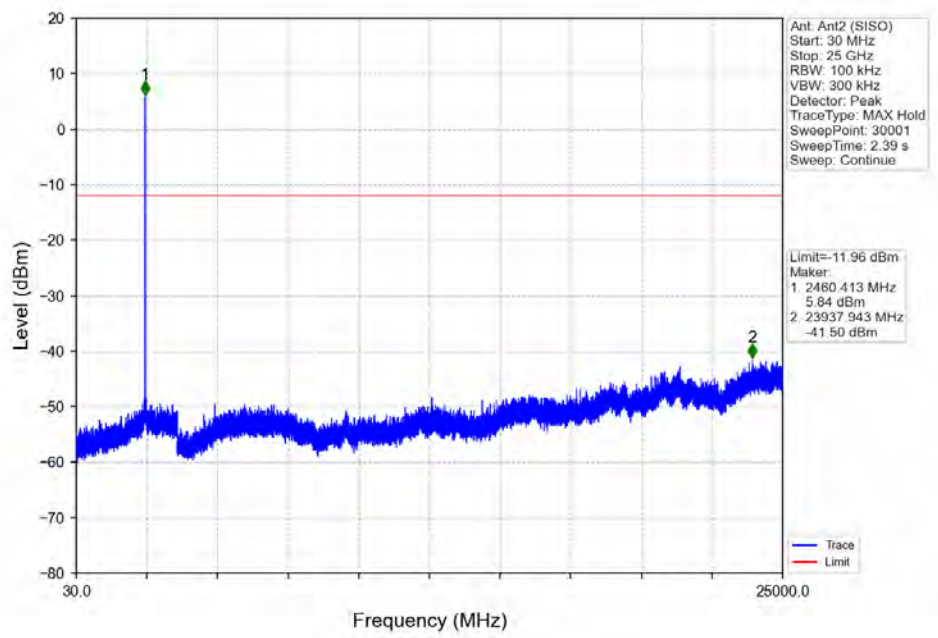
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



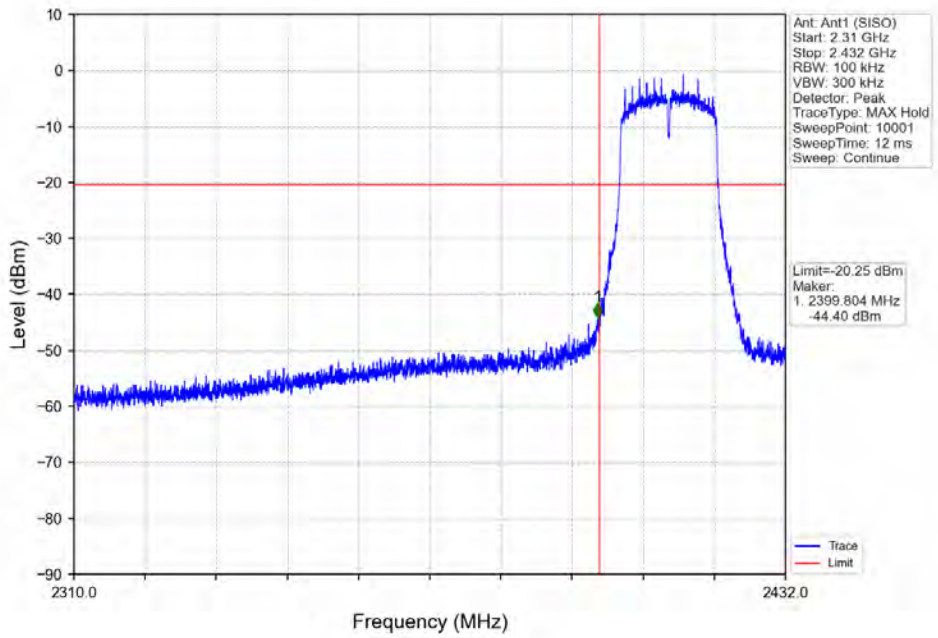
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



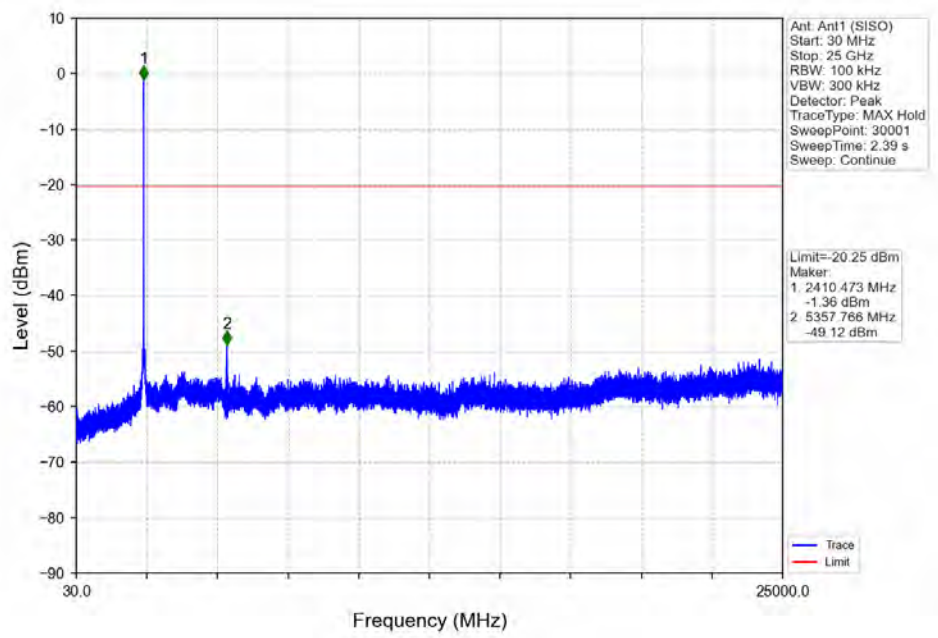
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



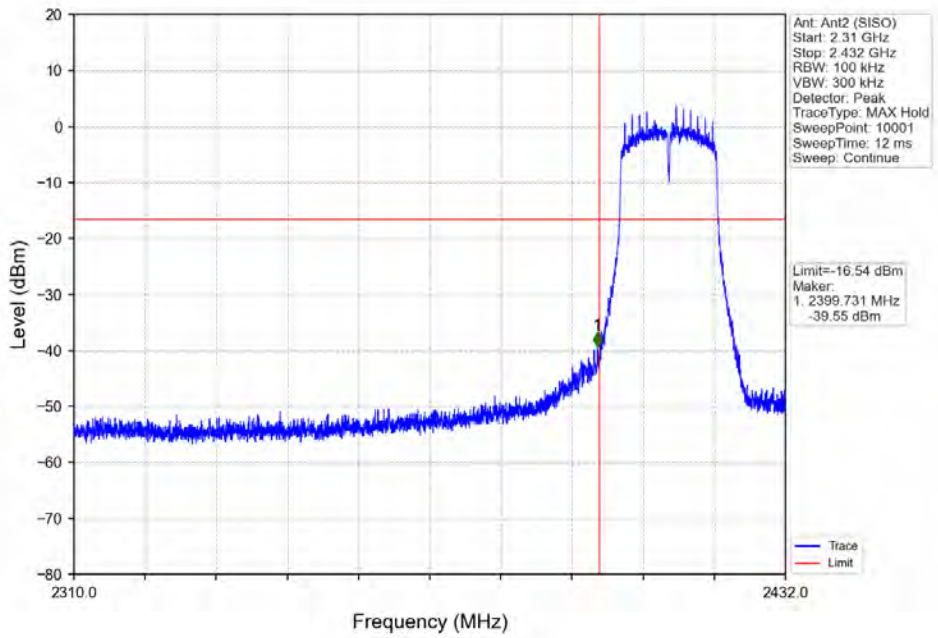
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



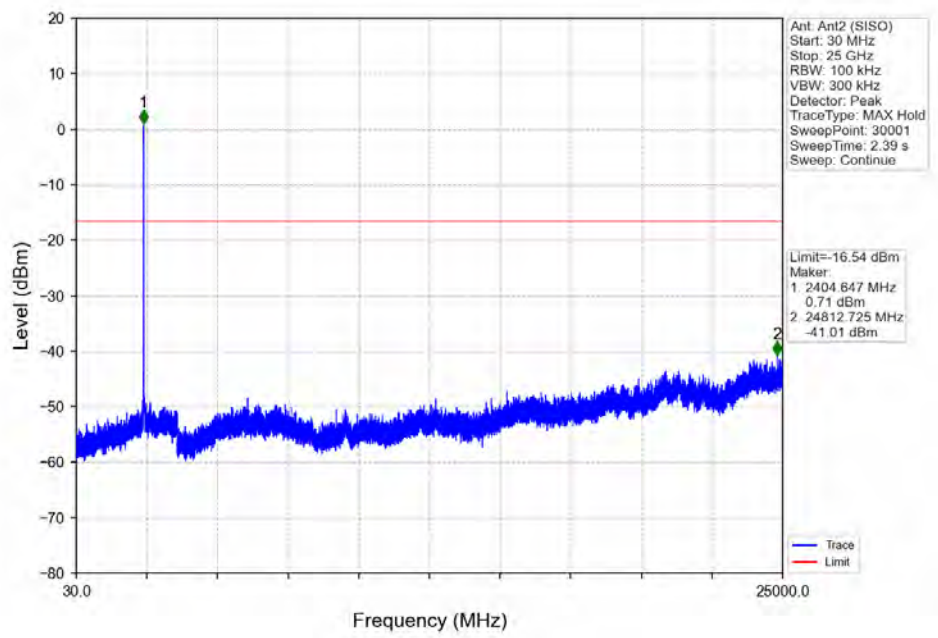
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



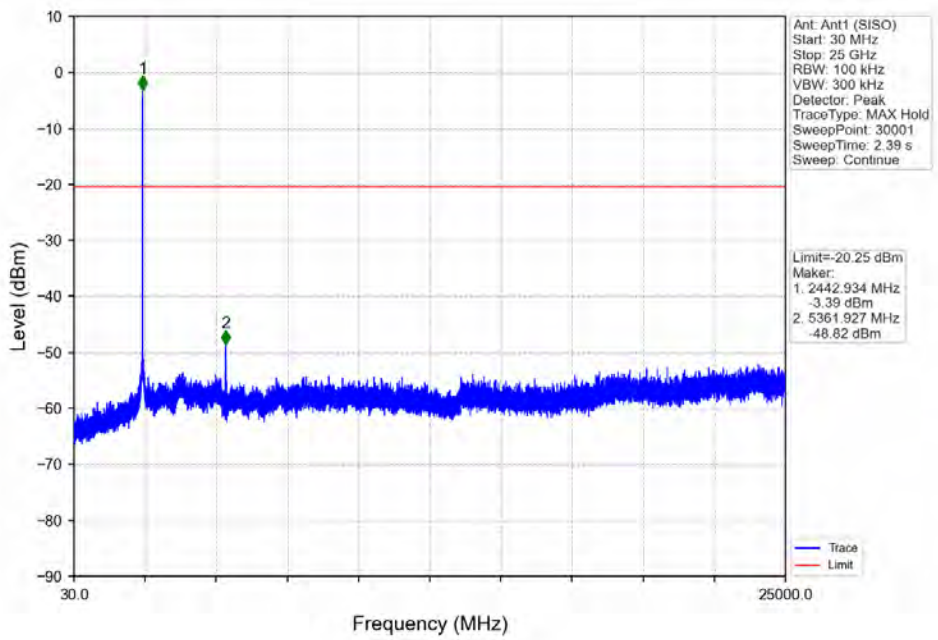
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



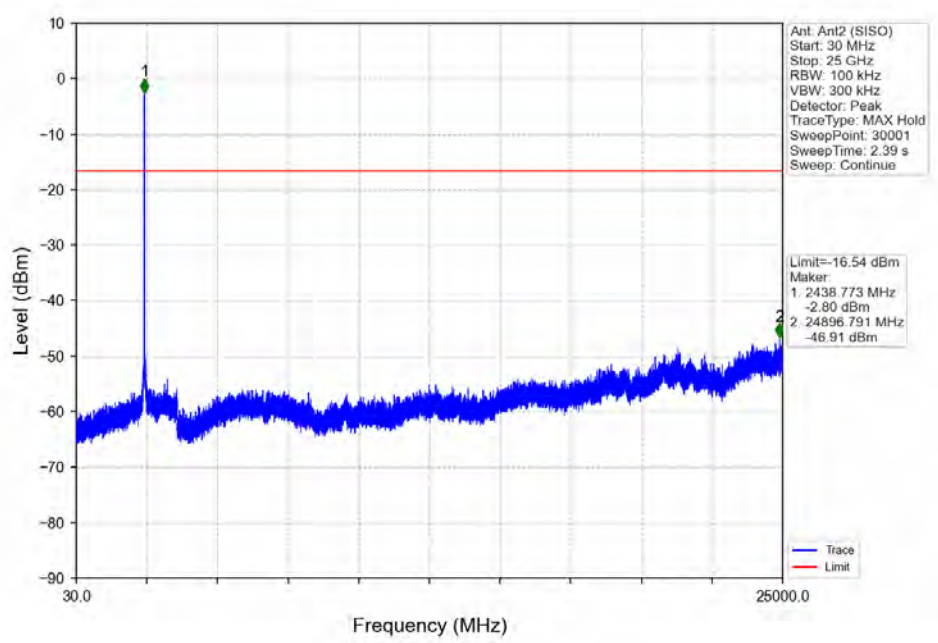
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



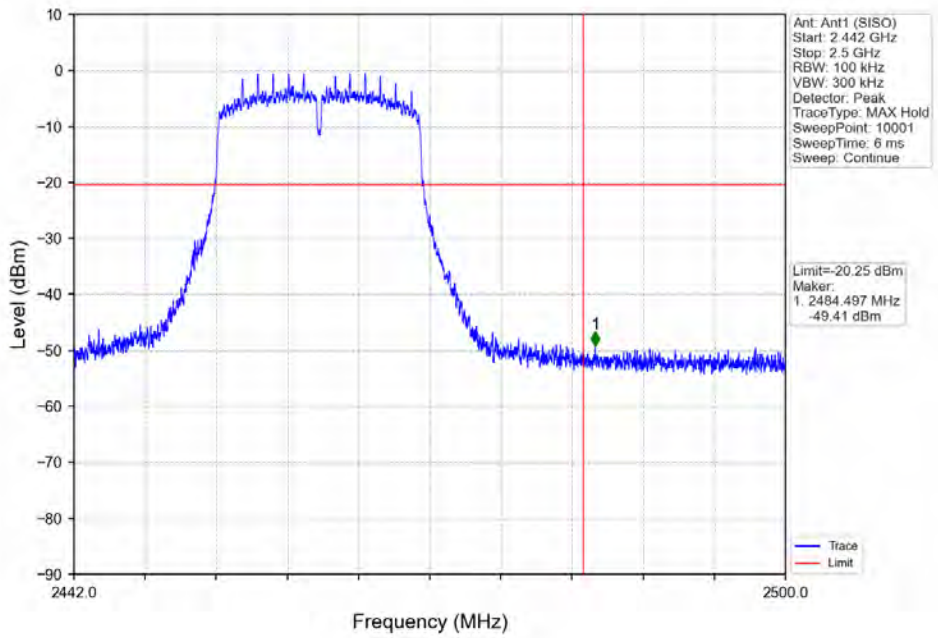
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



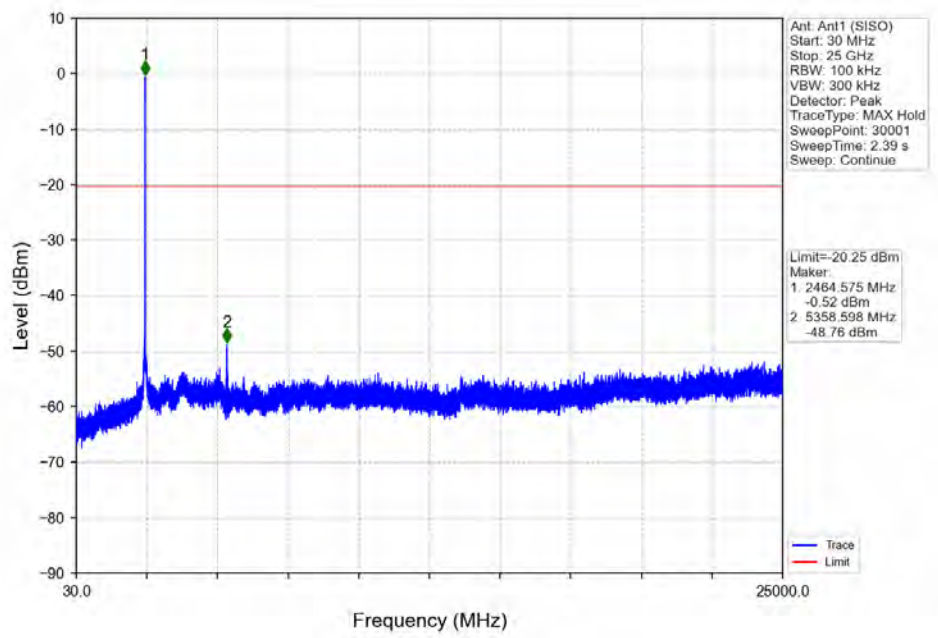
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



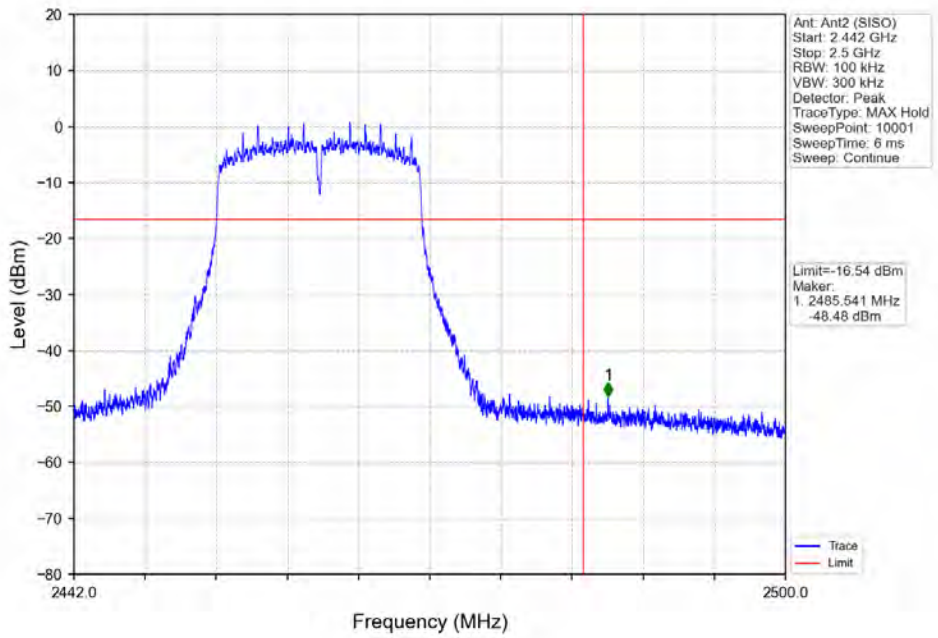
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



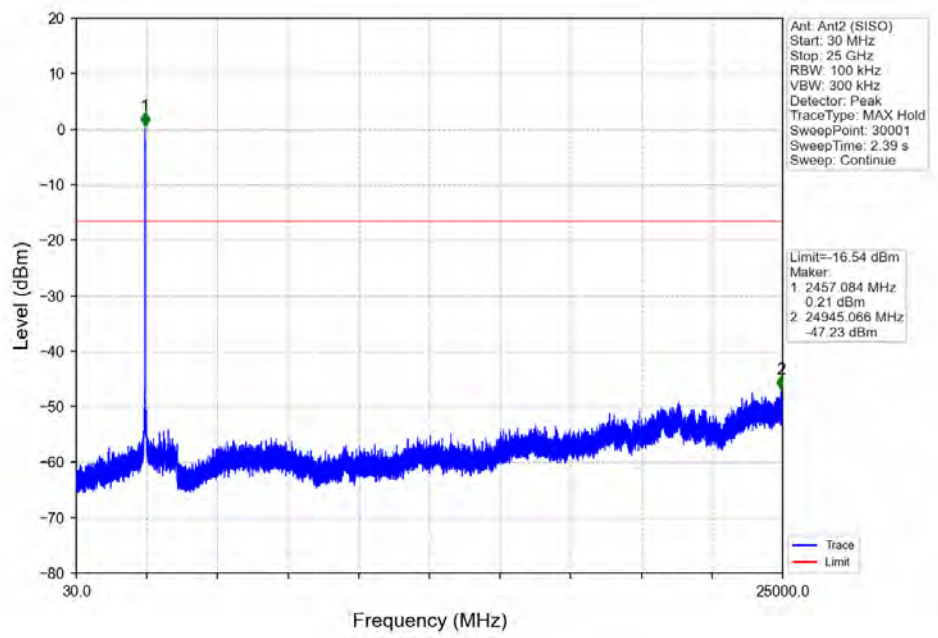
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



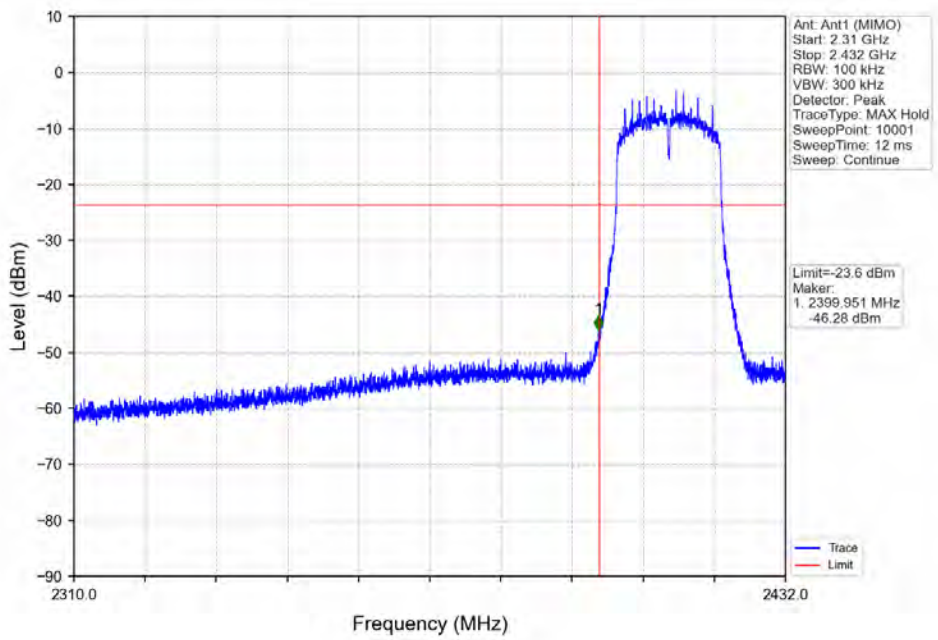
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



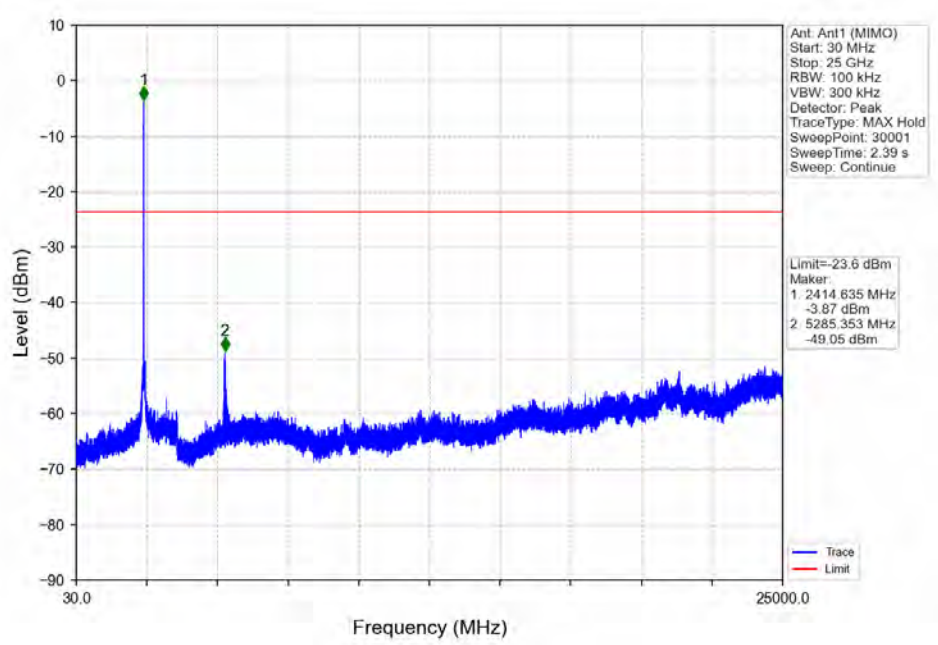
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



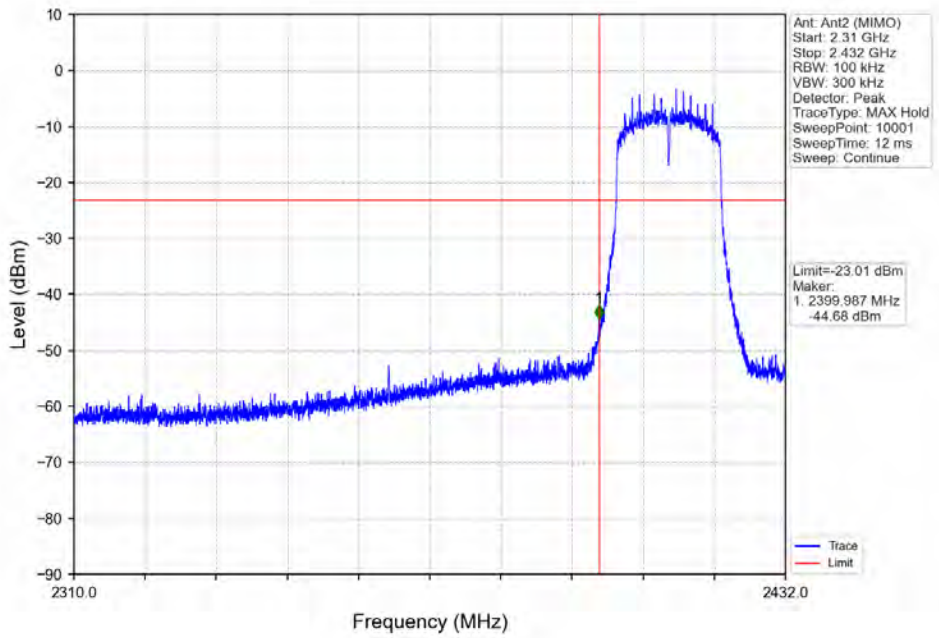
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



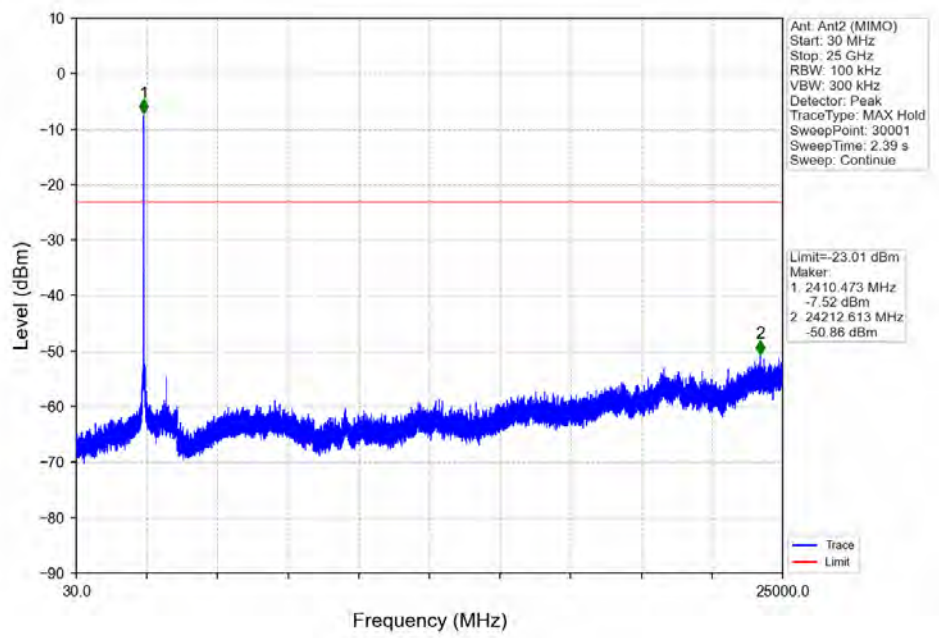
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



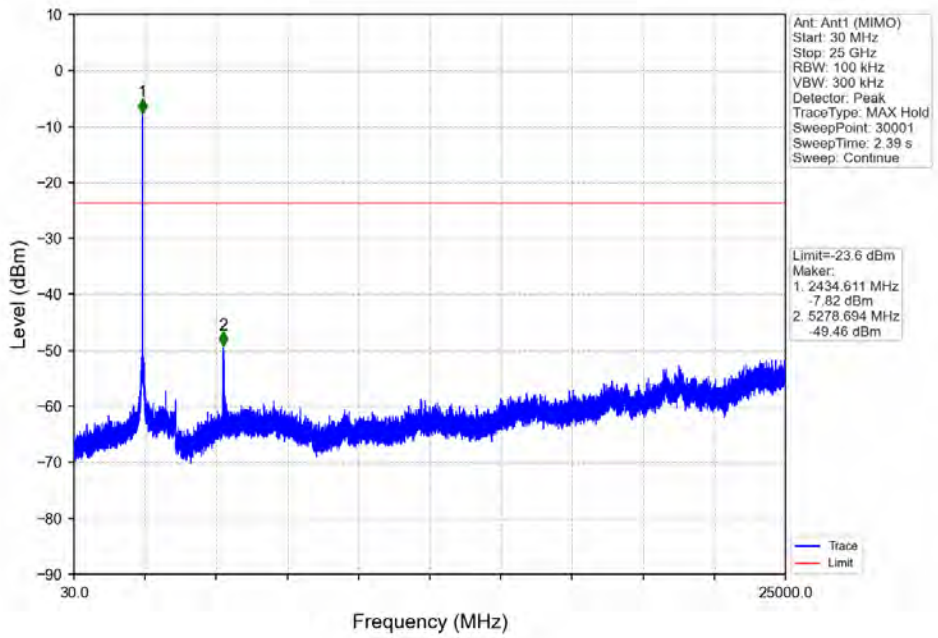
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



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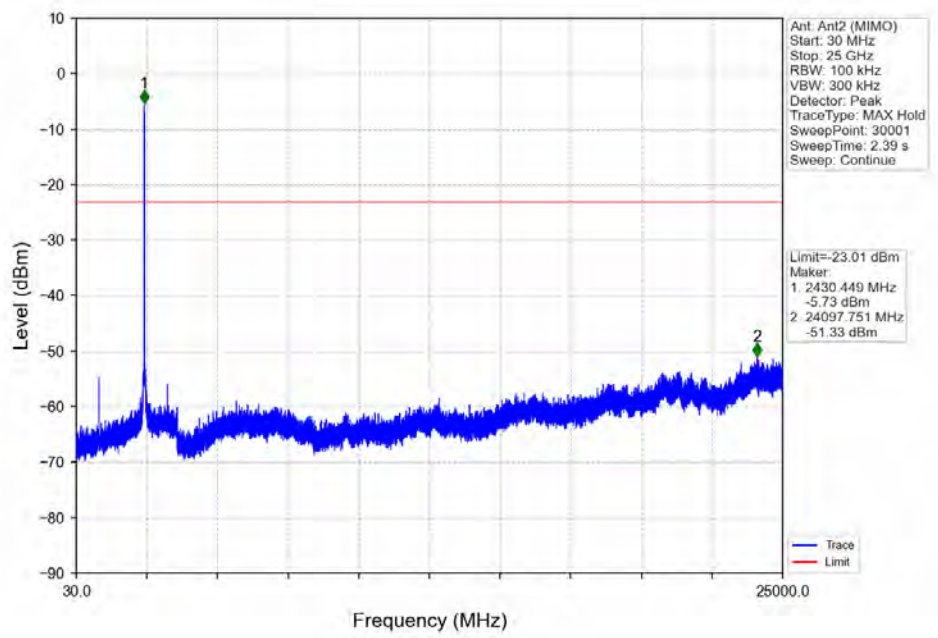
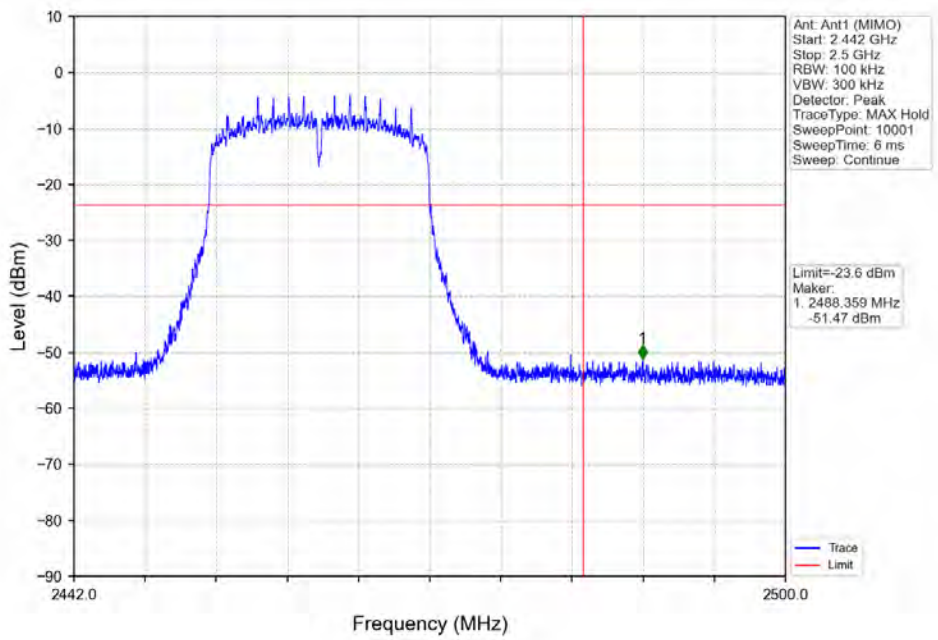
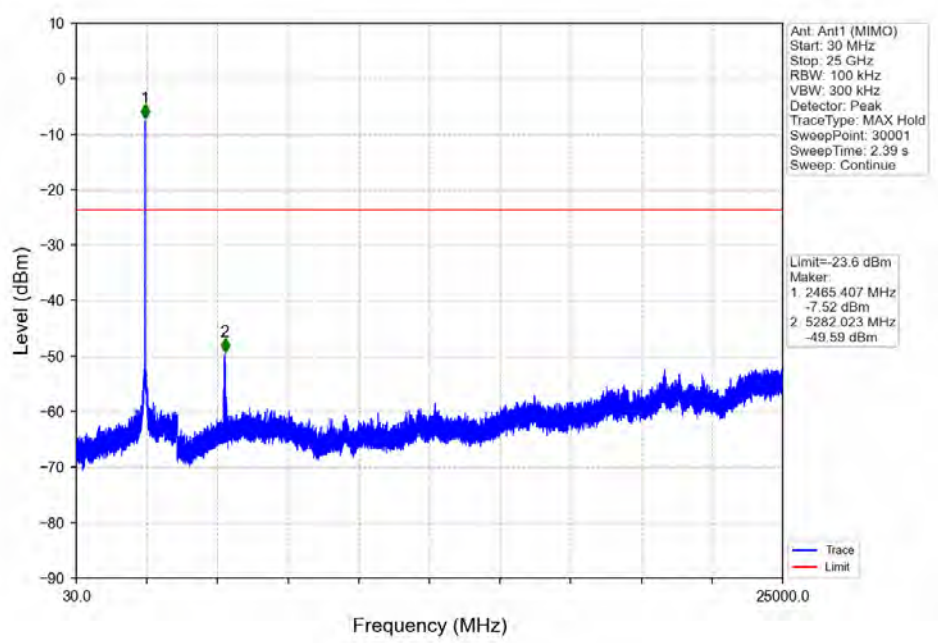


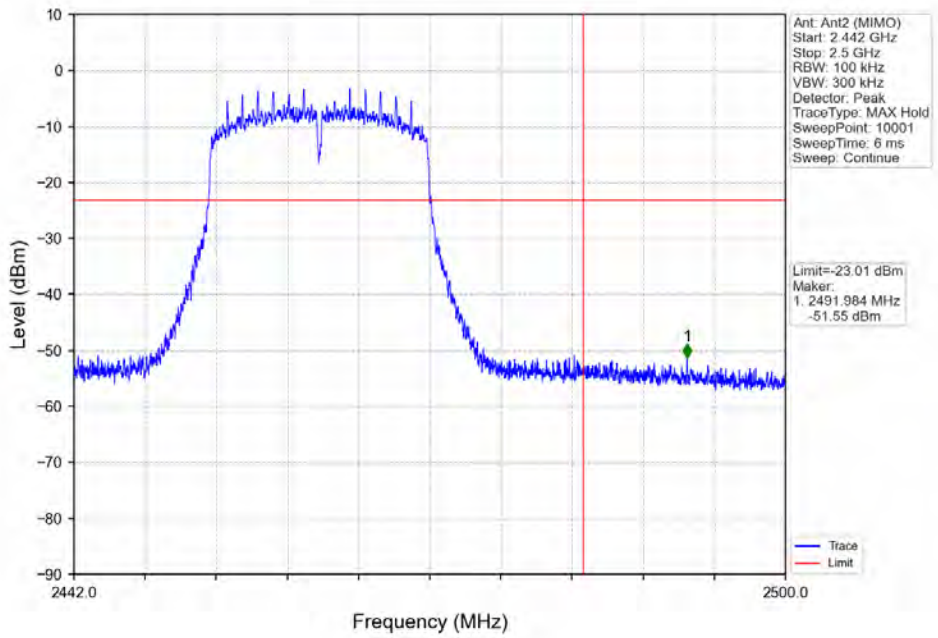
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



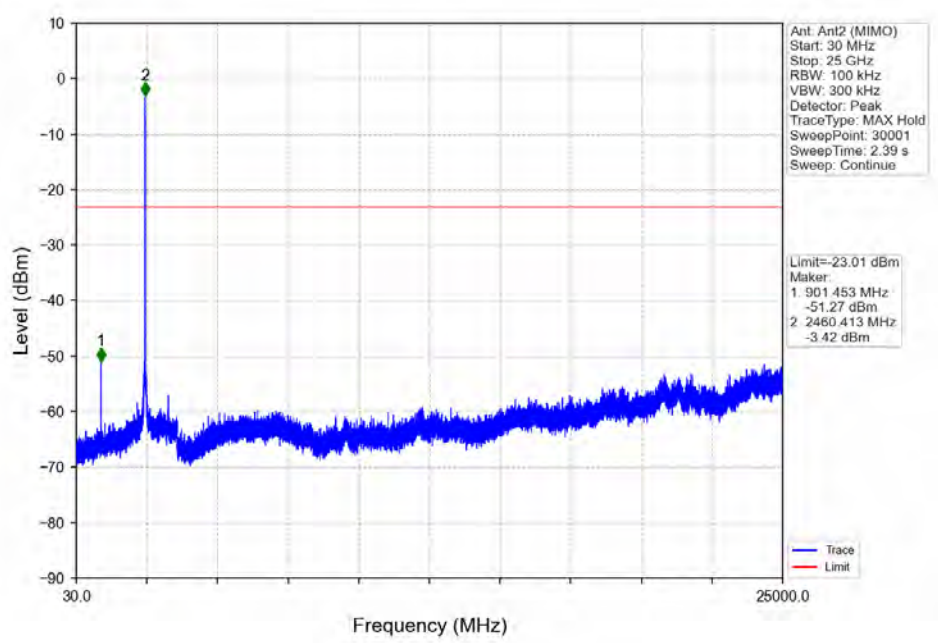
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



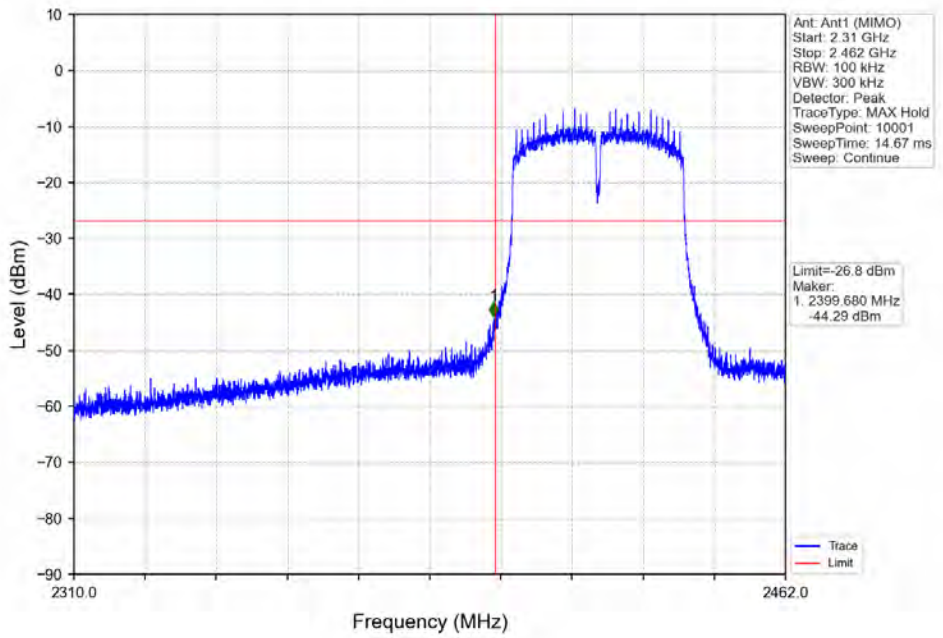
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



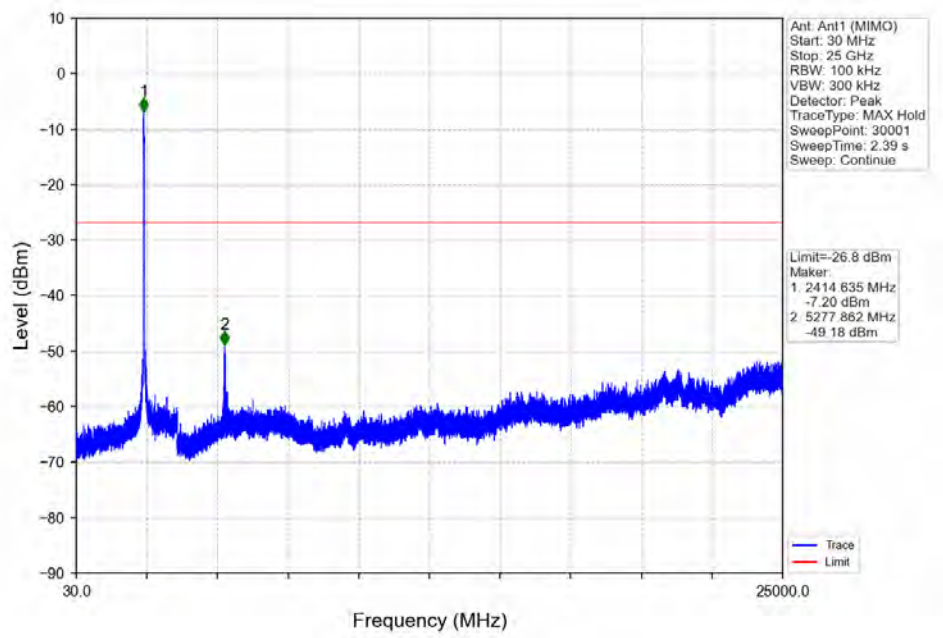
802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



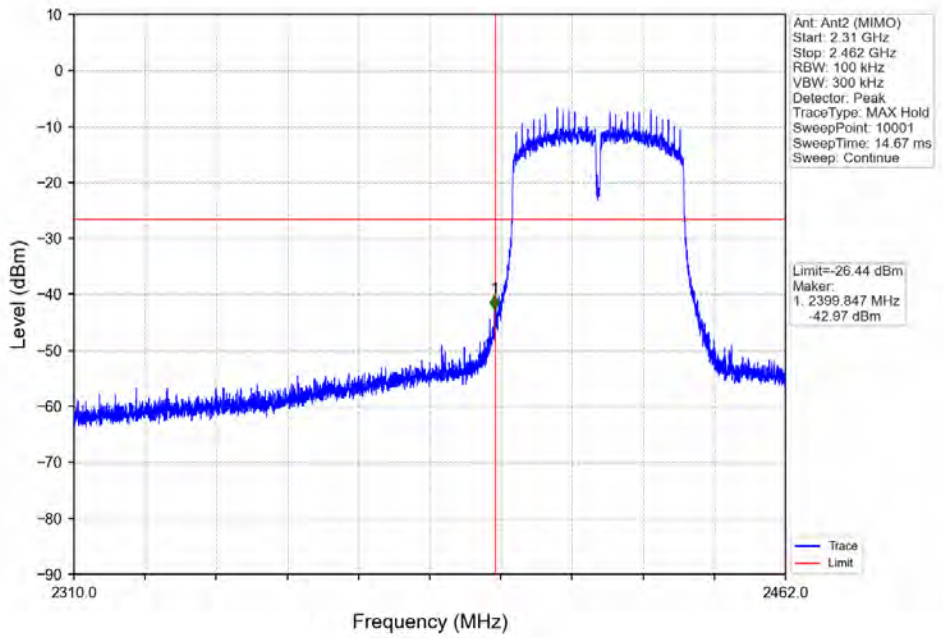
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



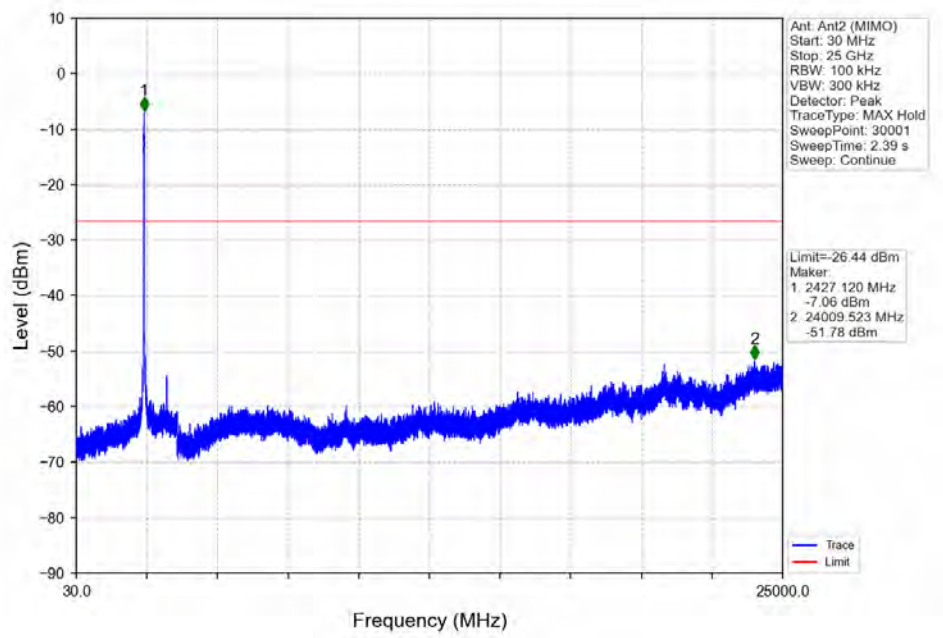
802.11n(HT40)_LCH_2422MHz_Ant1 (MIMO)_NTNV



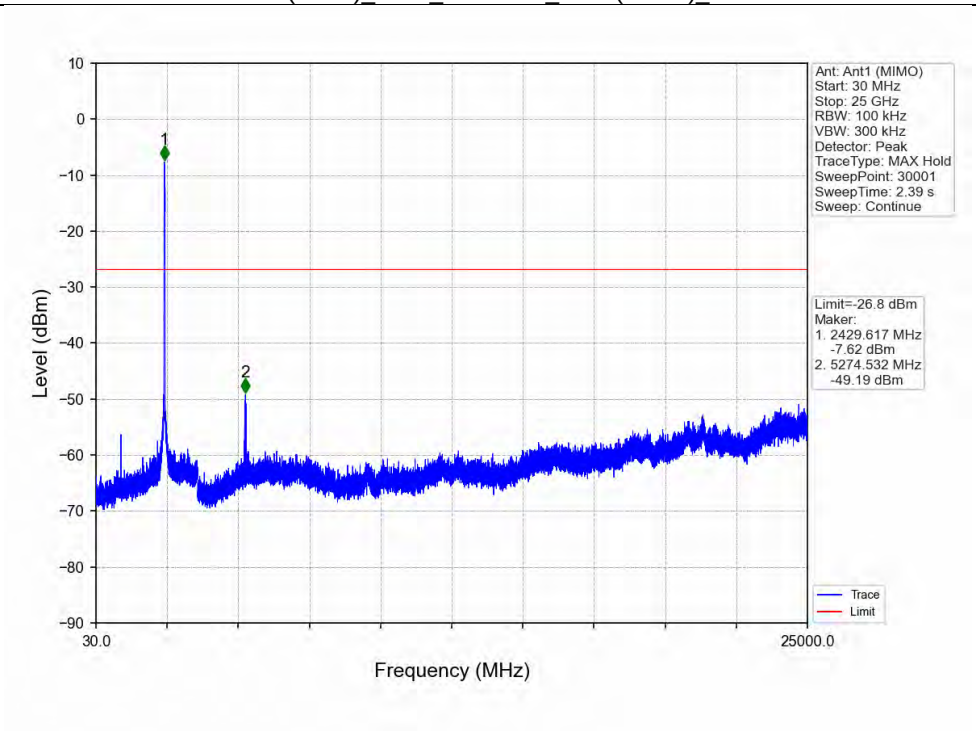
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



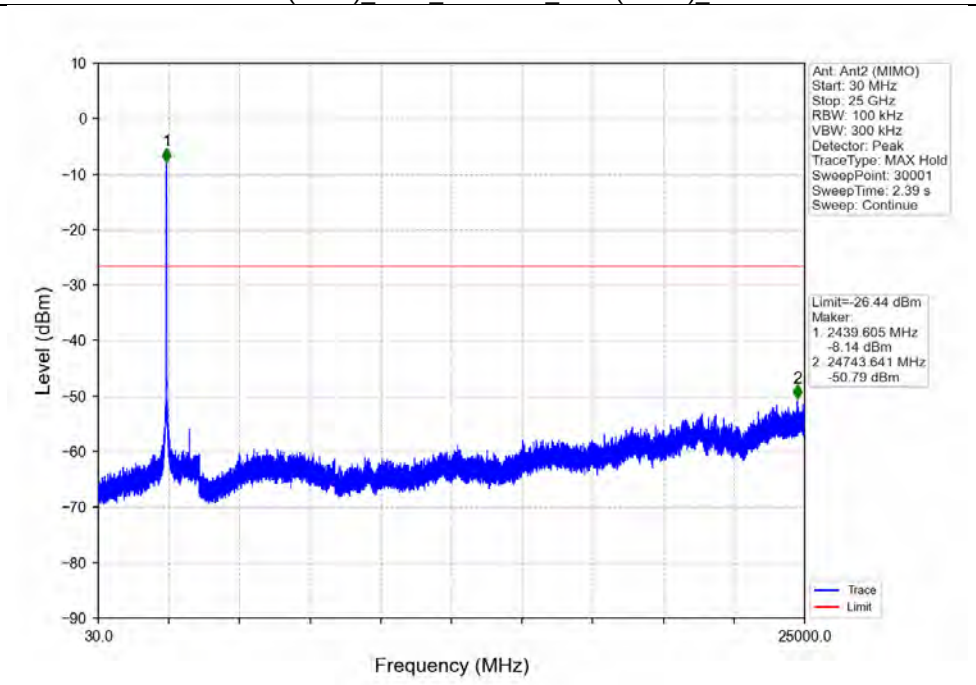
802.11n(HT40)_LCH_2422MHz_Ant2 (MIMO)_NTNV



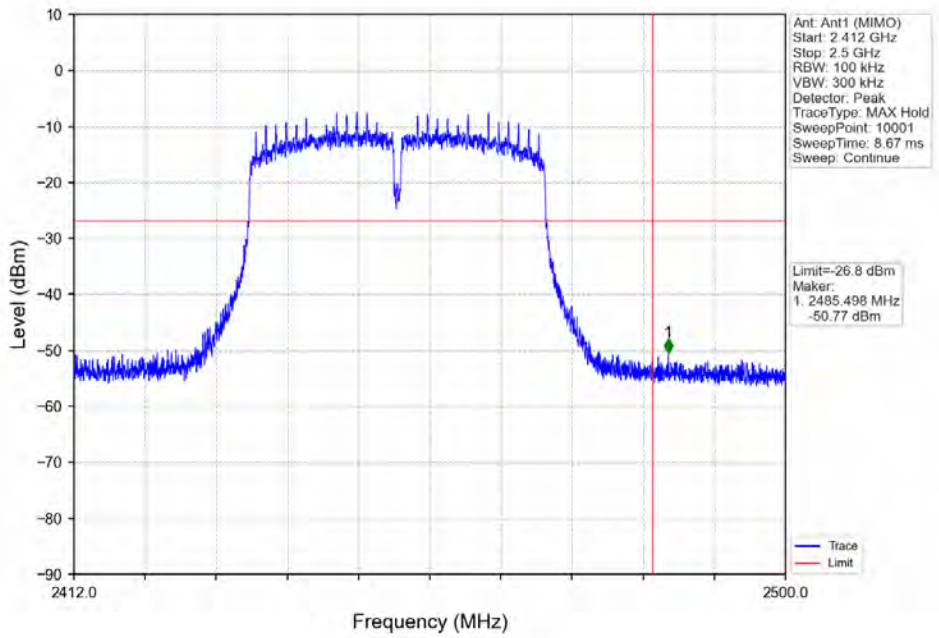
802.11n(HT40)_MCH_2437MHz_Ant1 (MIMO)_NTNV



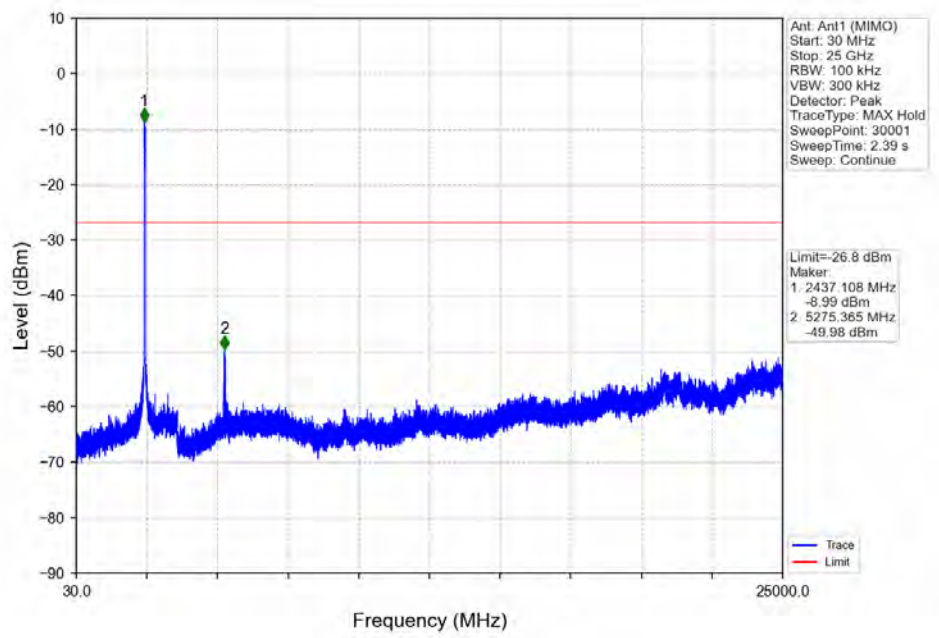
802.11n(HT40)_MCH_2437MHz_Ant2 (MIMO)_NTNV



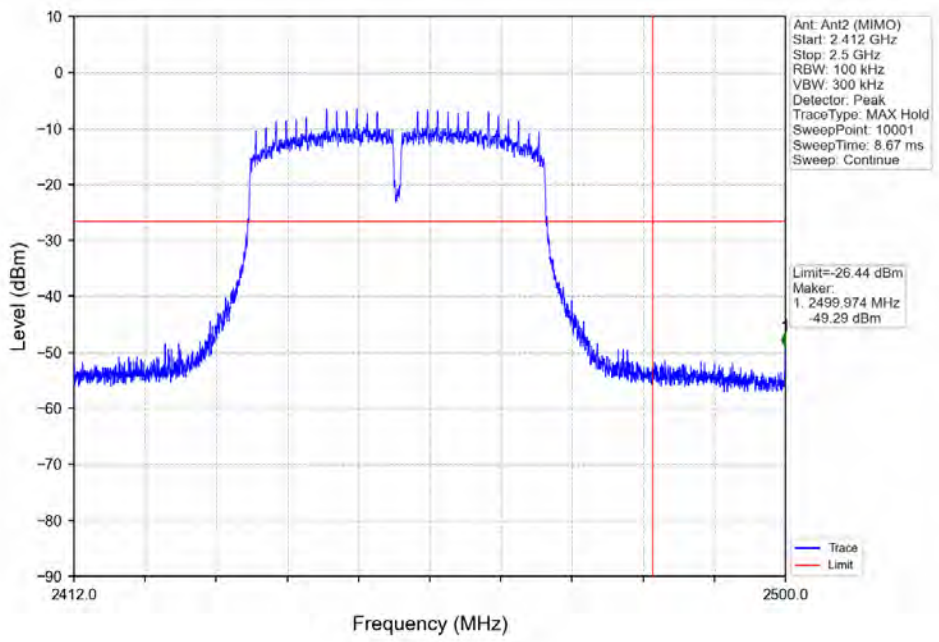
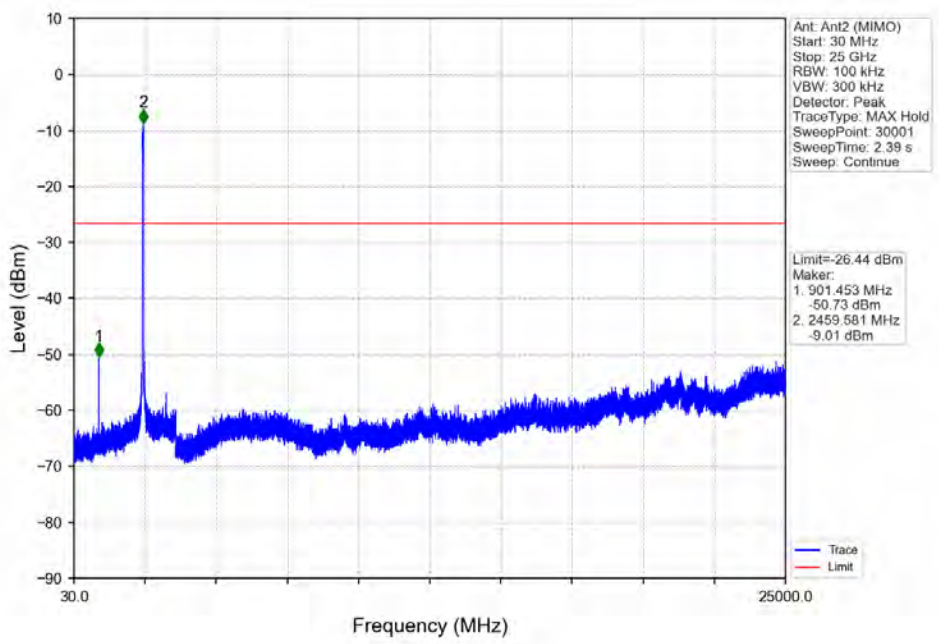
802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant2 (MIMO)_NTNV