Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

Annex for 2.4G WIFI

Test Report No.: CTL2402263011-WF

TABLE OF CONTENTS

1. Bandwidth 3

1.1 OBW 3

1.1.1 Test Result 3

1.1.2 Test Graph 4

1.2 6dB BW 10

1.2.1 Test Result 10

1.2.2 Test Graph 11

2. Maximum Conducted Output Power 17

2.1 Power 17

2.1.1 Test Result 17

2.1.2 Test Graph 18

3. Maximum Power Spectral Density 24

3.1 PSD 24

3.1.1 Test Result 24

3.1.2 Test Graph 25

4. Unwanted Emissions In Non-restricted Frequency Bands 31

4.1 Ref 31

4.1.1 Test Result 31

4.1.2 Test Graph 32

4.2 CSE 38

4.2.1 Test Result 38

4.2.2 Test Graph 39

1. Bandwidth

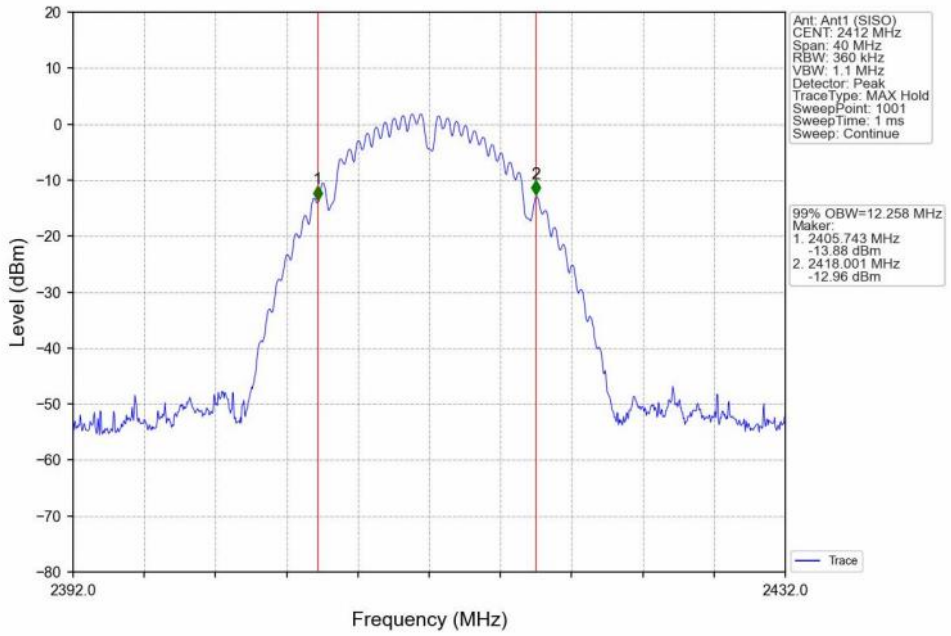
1.1 OBW

1.1.1 Test Result

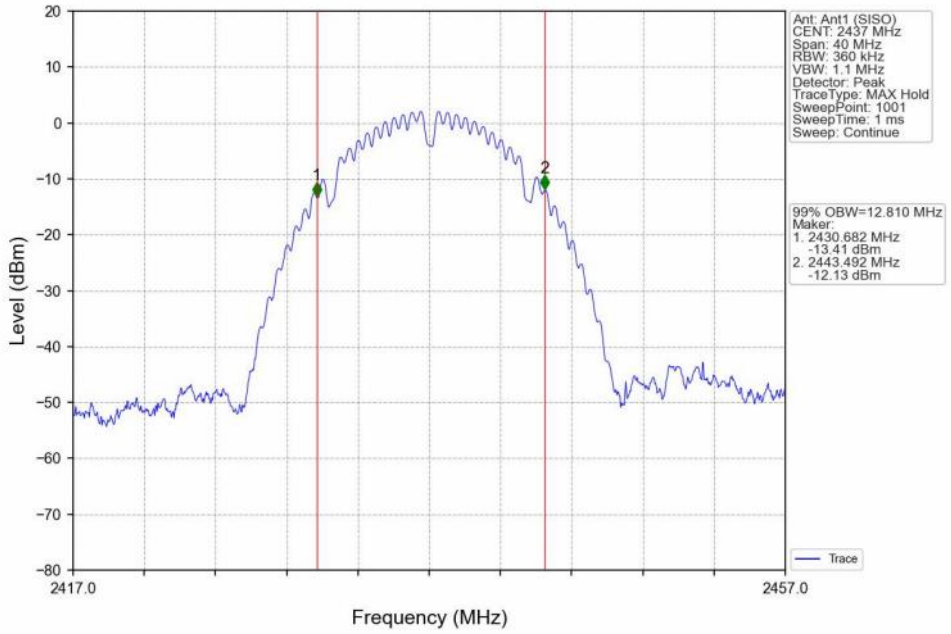
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	12.258	/	Pass
		2437	1	12.810	/	Pass
		2462	1	12.420	/	Pass
802.11g	SISO	2412	1	17.062	/	Pass
		2437	1	17.422	/	Pass
		2462	1	17.035	/	Pass
802.11n (HT20)	SISO	2412	1	17.862	/	Pass
		2437	1	18.331	/	Pass
		2462	1	17.860	/	Pass
802.11n (HT40)	SISO	2422	1	36.648	/	Pass
		2437	1	37.260	/	Pass
		2452	1	35.534	/	Pass

1.1.2 Test Graph

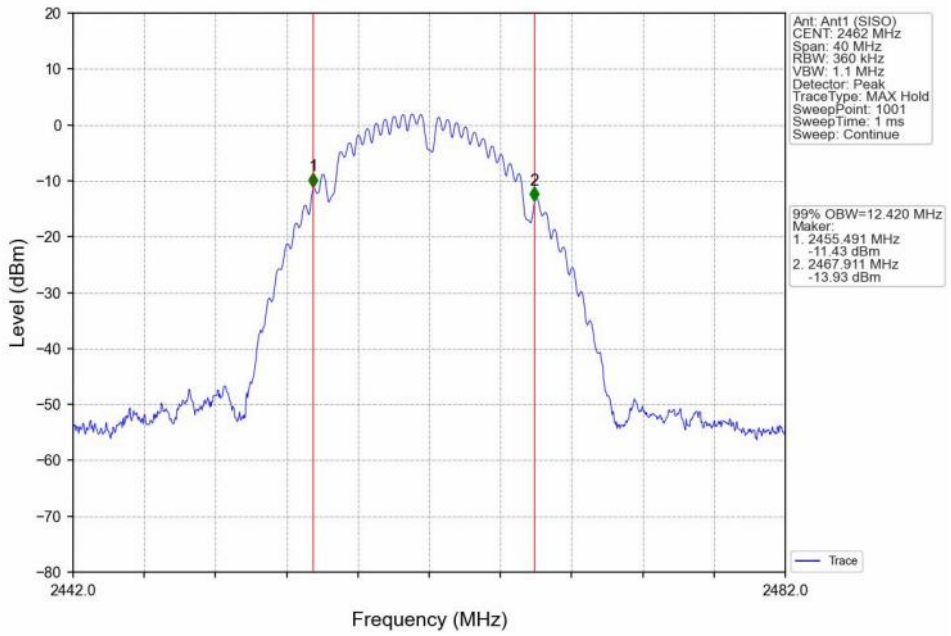
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



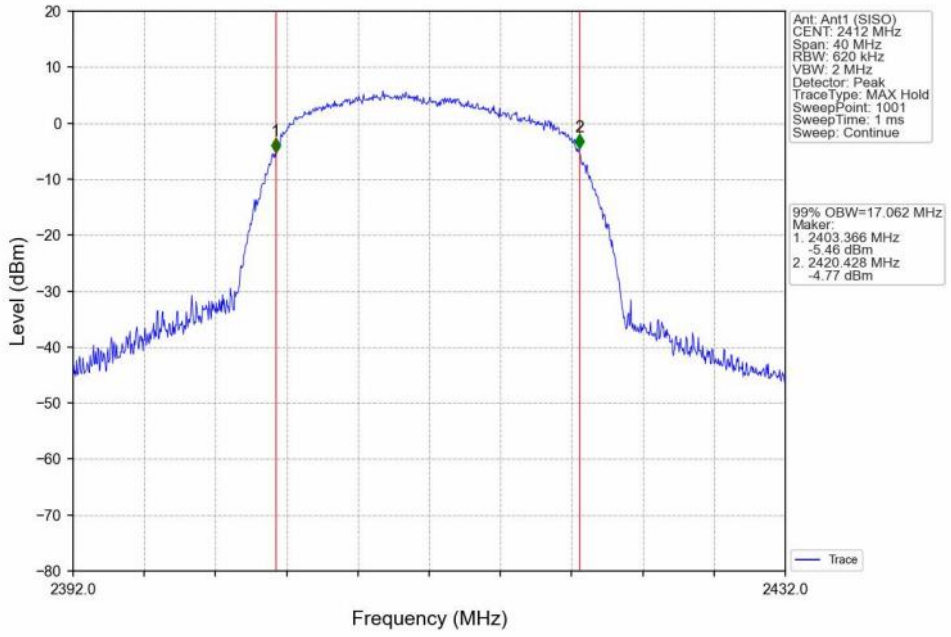
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



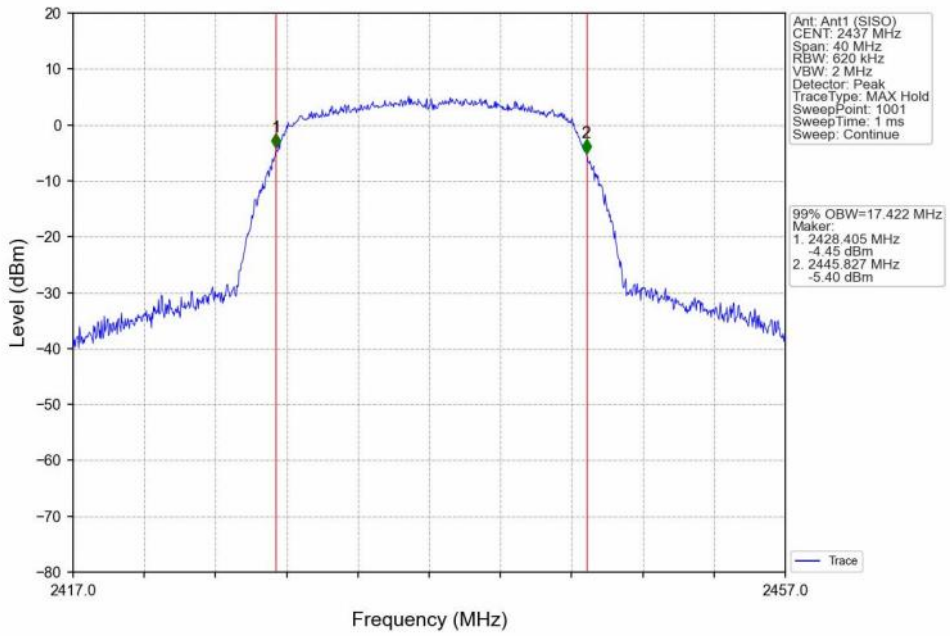
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



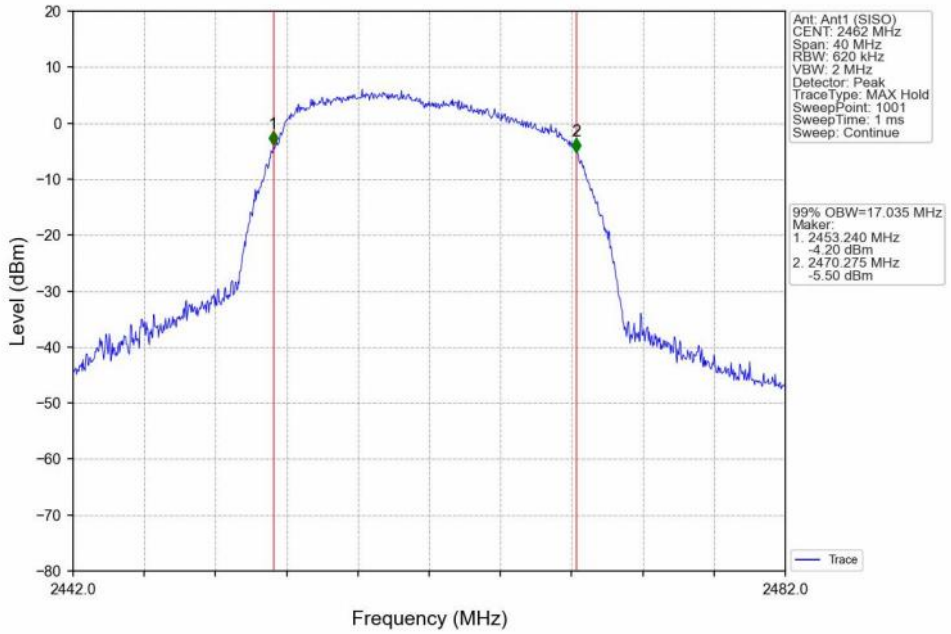
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



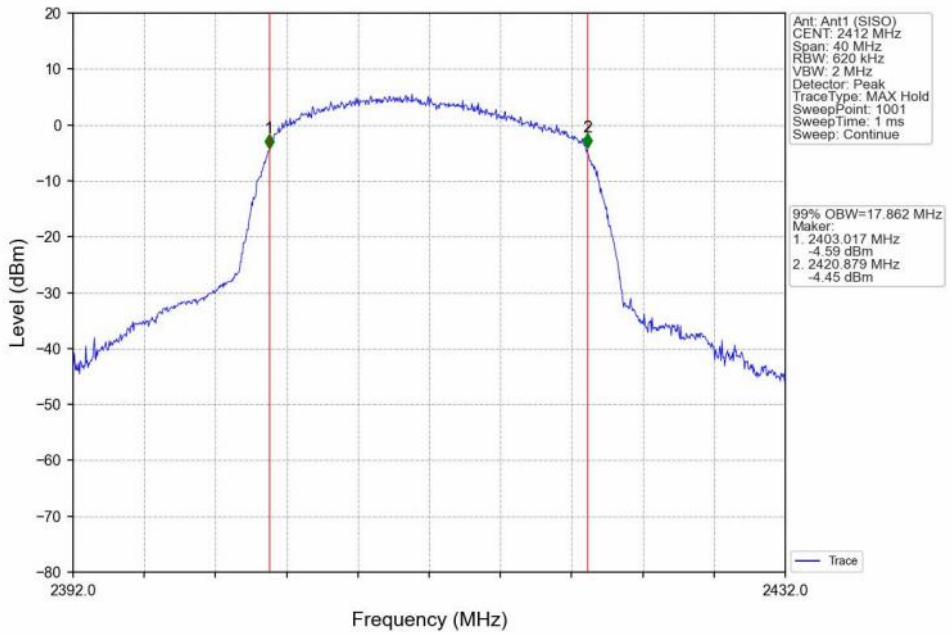
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



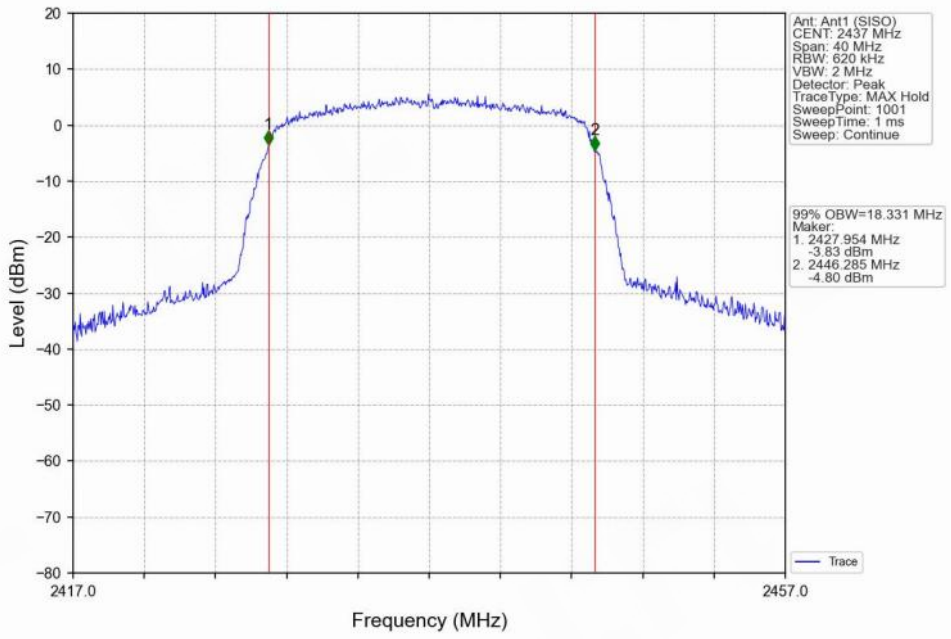
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



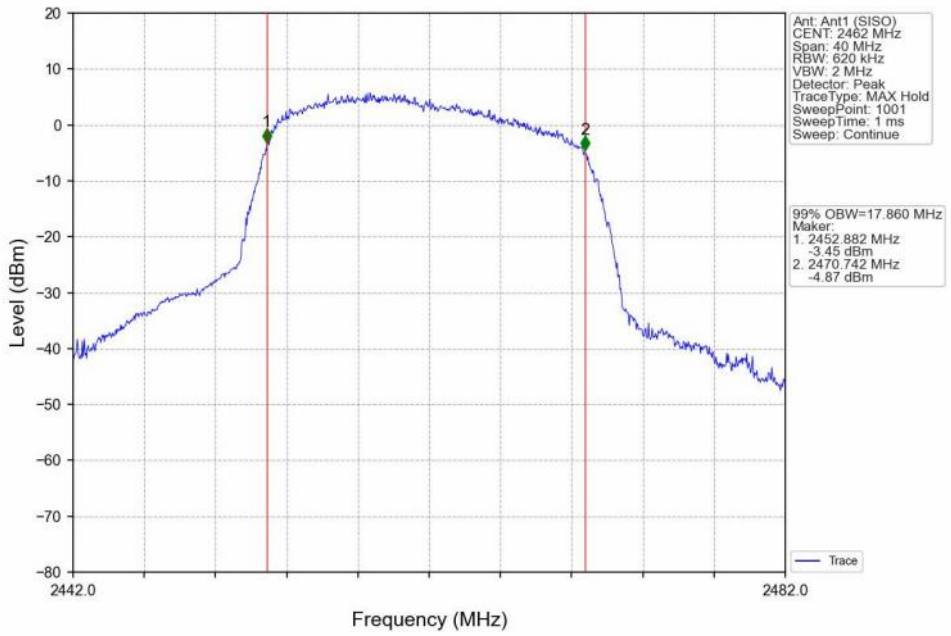
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



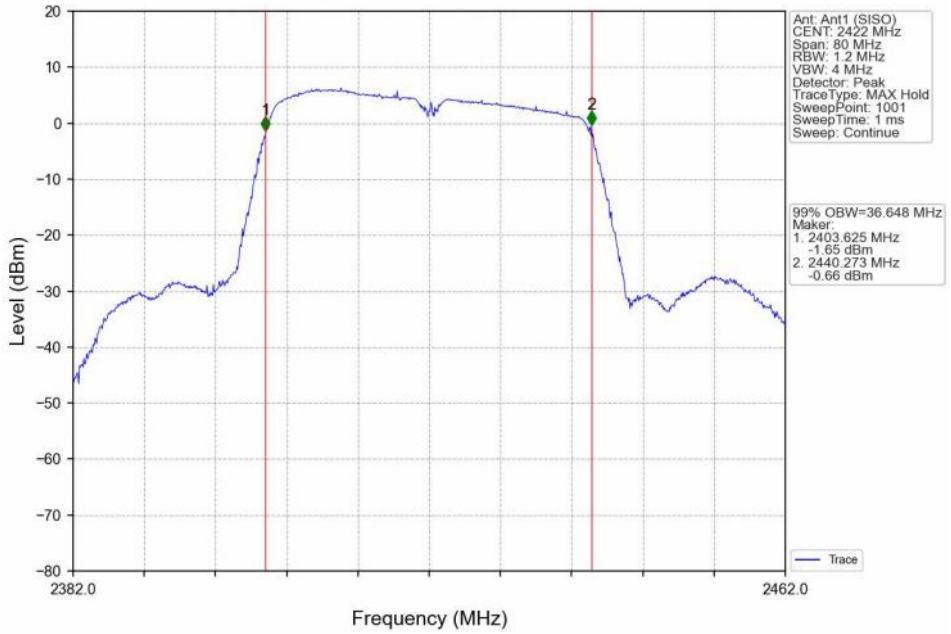
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



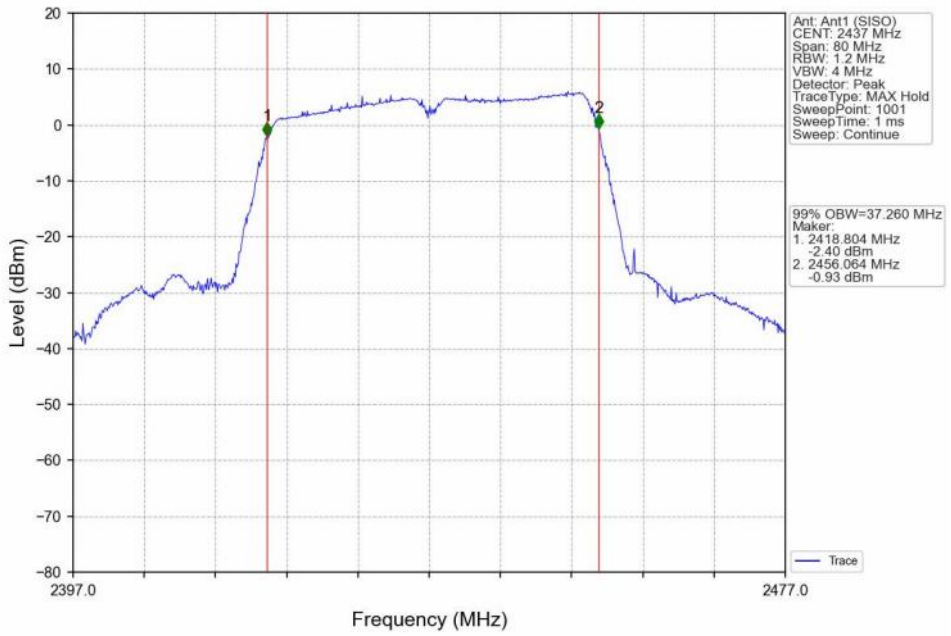
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



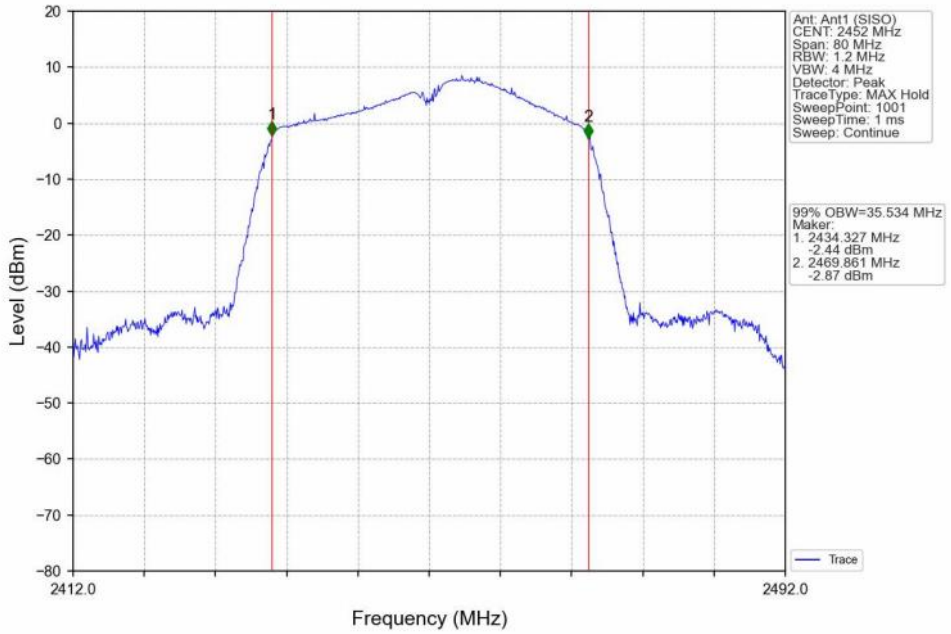
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



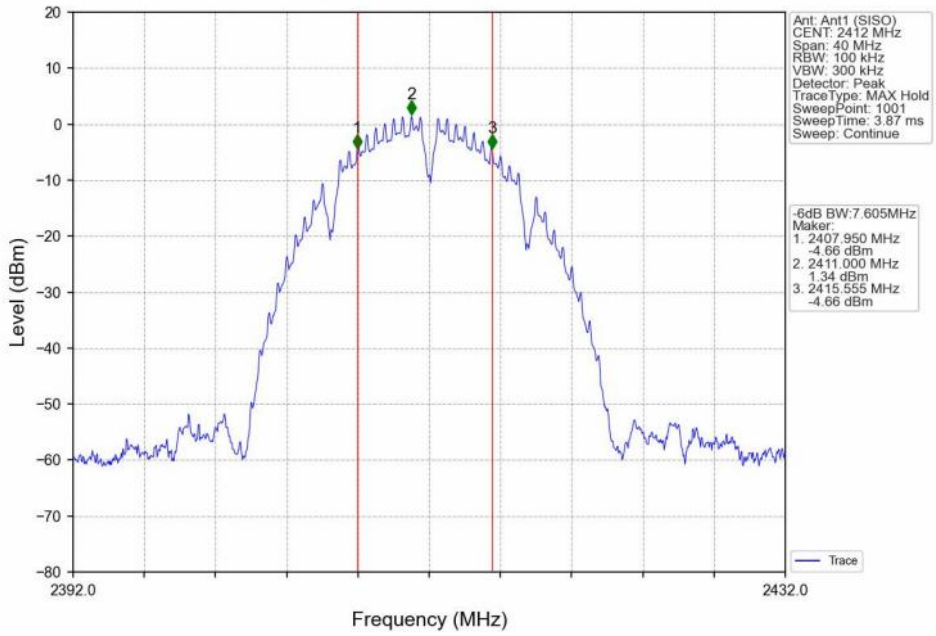
1.2 6dB BW

1.2.1 Test Result

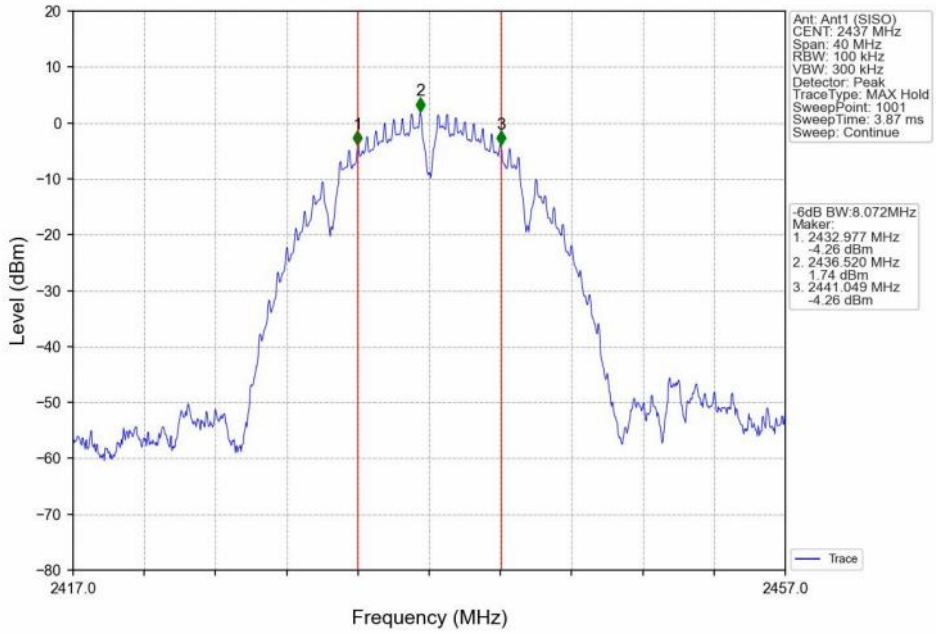
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	7.605	>=0.5	Pass
		2437	1	8.072	>=0.5	Pass
		2462	1	8.054	>=0.5	Pass
802.11g	SISO	2412	1	15.101	>=0.5	Pass
		2437	1	15.155	>=0.5	Pass
		2462	1	14.112	>=0.5	Pass
802.11n (HT20)	SISO	2412	1	15.100	>=0.5	Pass
		2437	1	15.171	>=0.5	Pass
		2462	1	12.935	>=0.5	Pass
802.11n (HT40)	SISO	2422	1	35.158	>=0.5	Pass
		2437	1	35.759	>=0.5	Pass
		2452	1	21.320	>=0.5	Pass

1.2.2 Test Graph

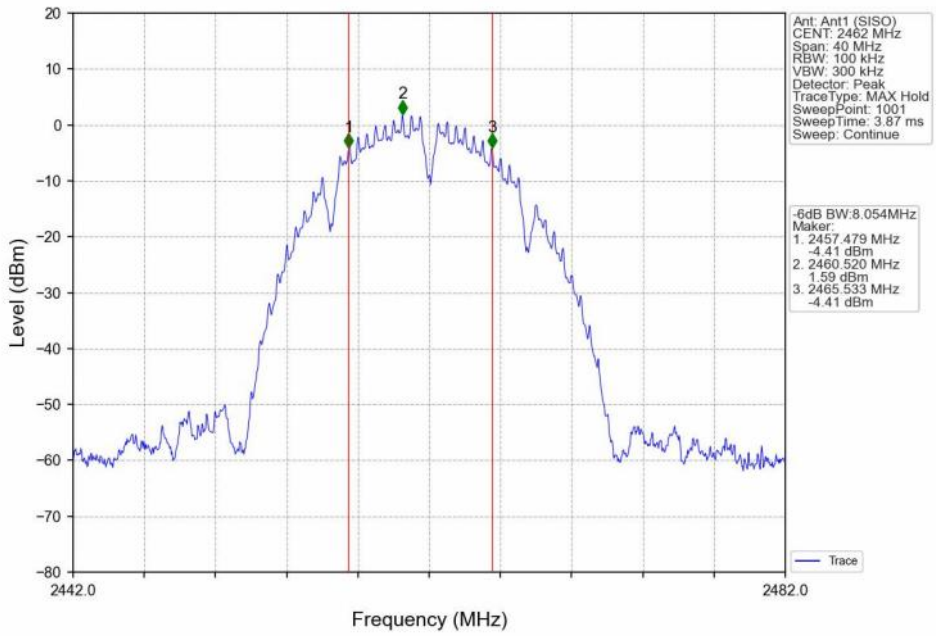
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



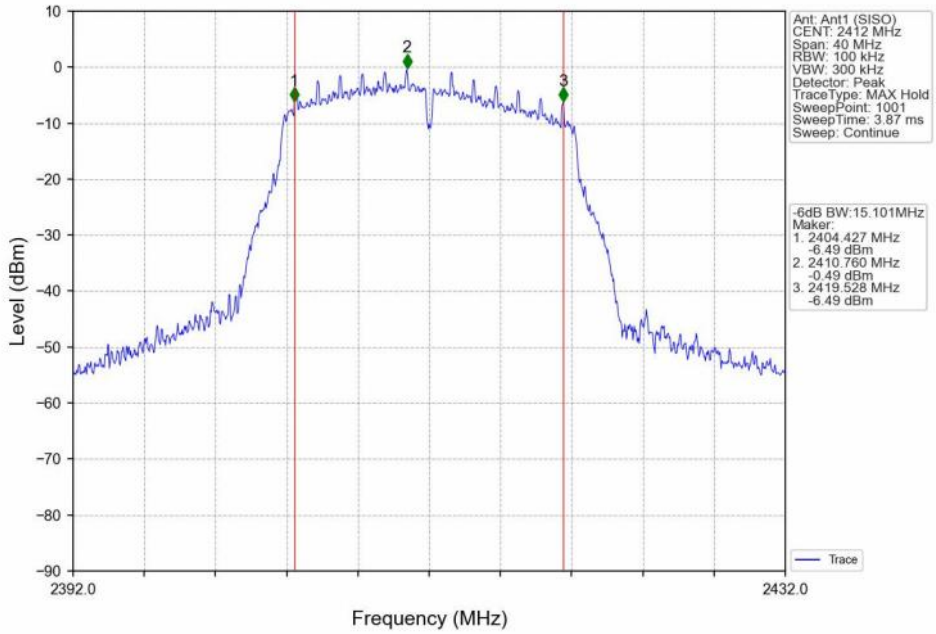
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



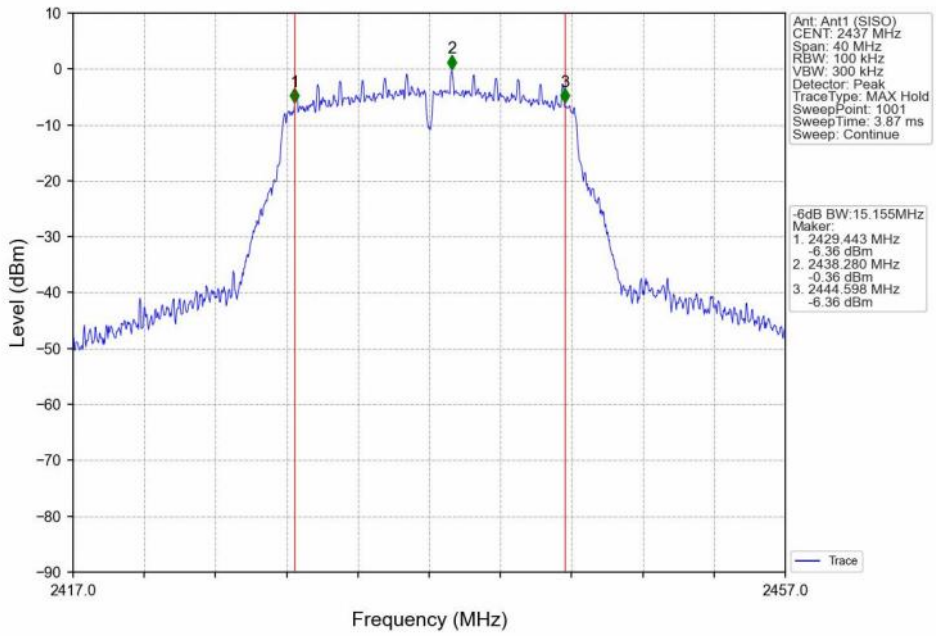
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



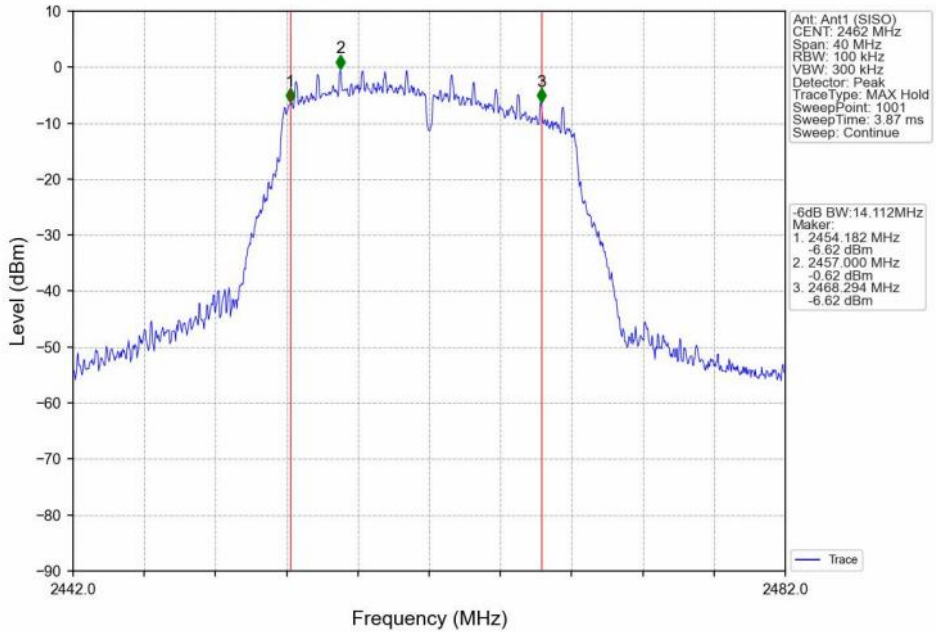
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



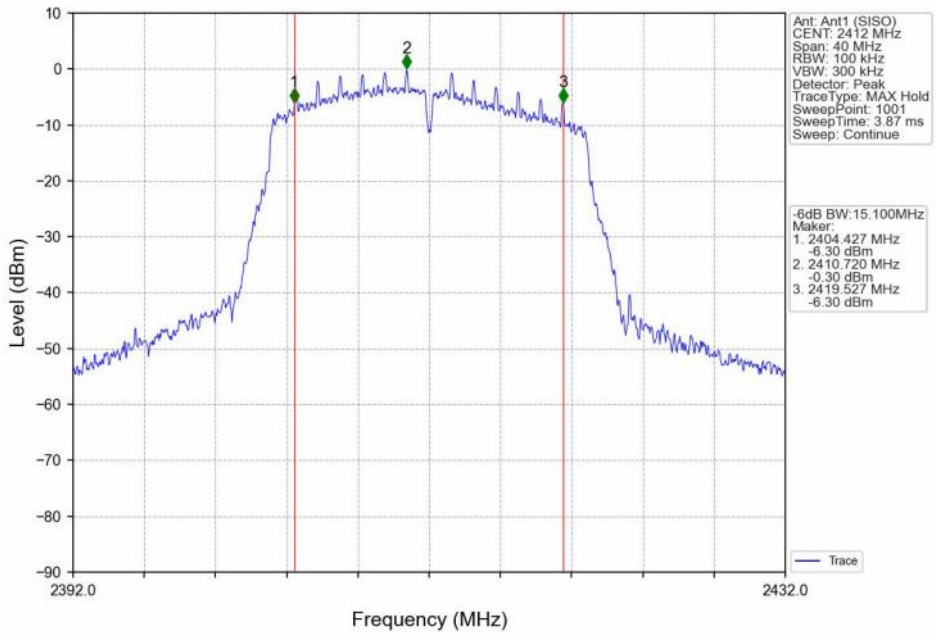
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



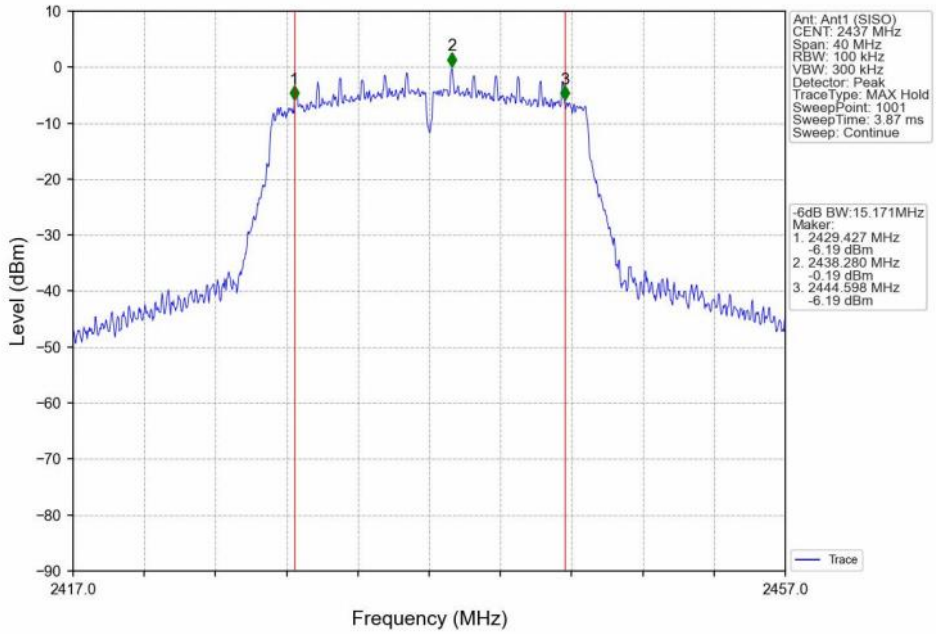
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



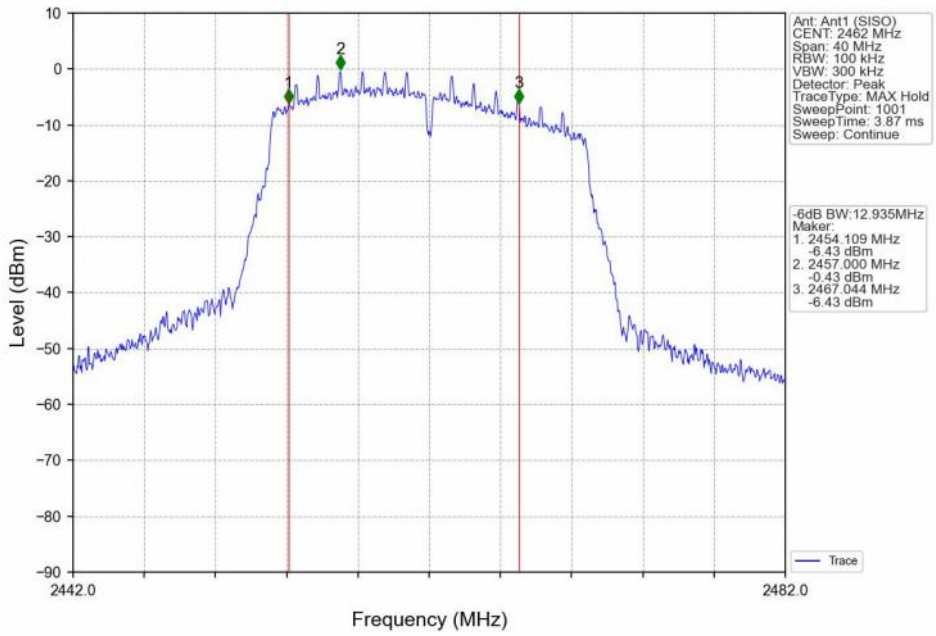
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



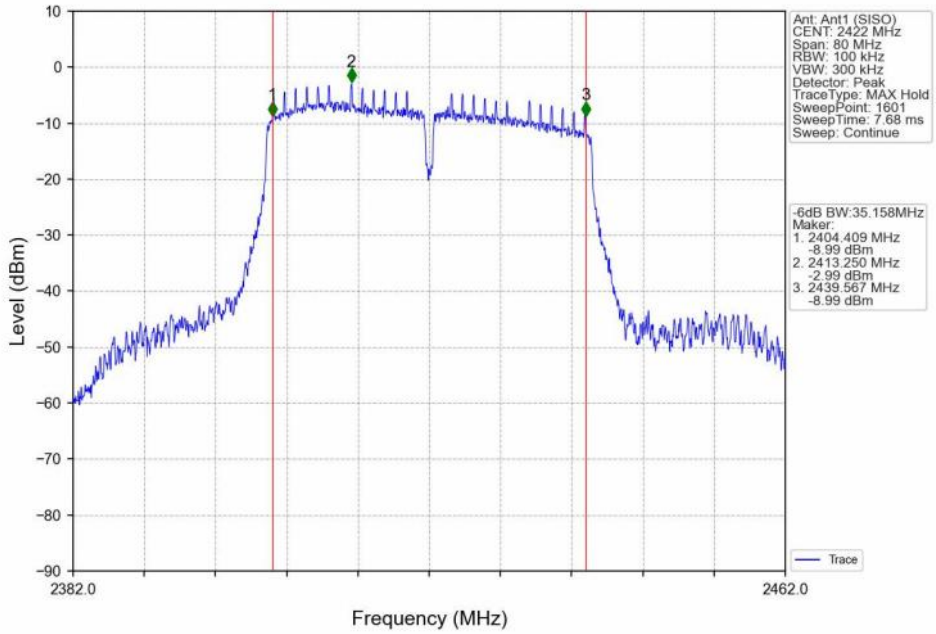
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



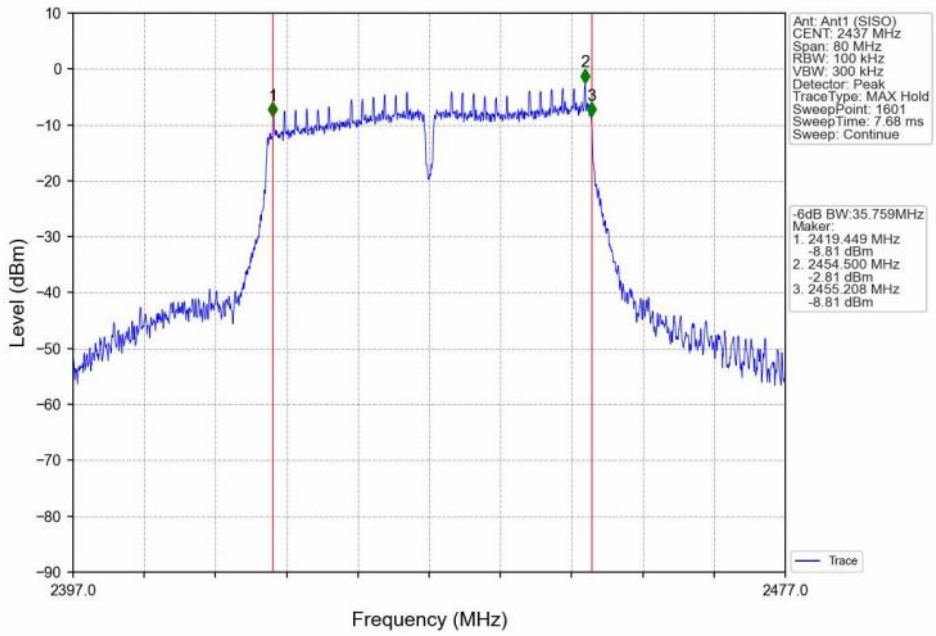
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



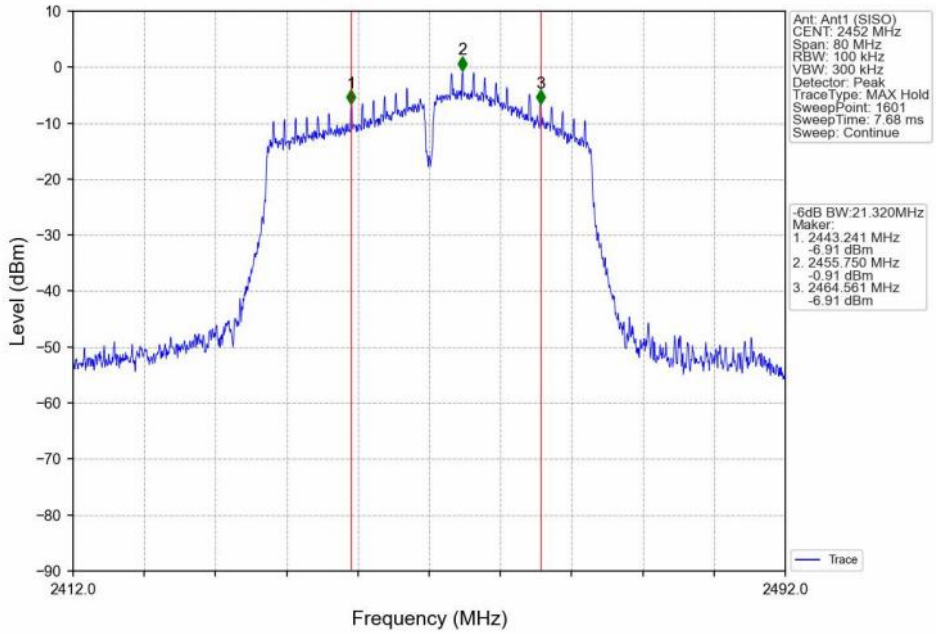
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



2. Maximum Conducted Output Power

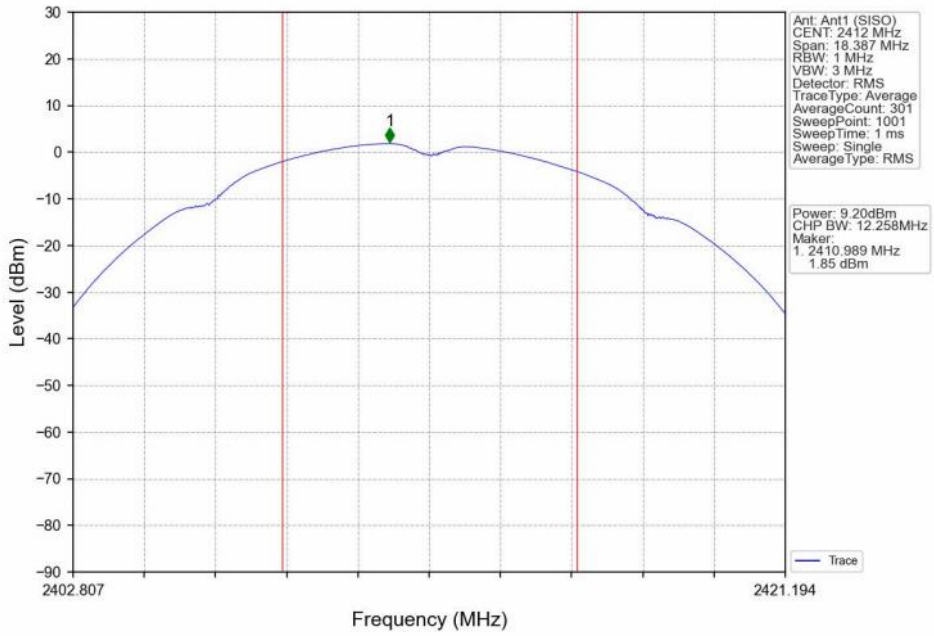
2.1 Power

2.1.1 Test Result

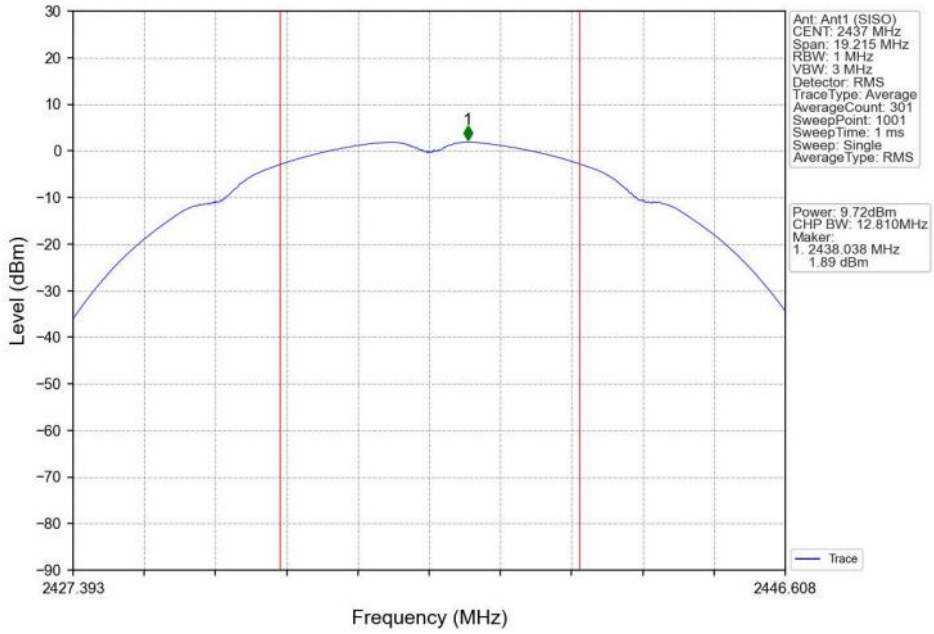
Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	9.20	<=30	Pass
		2437	9.72	<=30	Pass
		2462	9.29	<=30	Pass
802.11g	SISO	2412	9.25	<=30	Pass
		2437	9.67	<=30	Pass
		2462	9.29	<=30	Pass
802.11n (HT20)	SISO	2412	9.23	<=30	Pass
		2437	9.73	<=30	Pass
		2462	9.24	<=30	Pass
802.11n (HT40)	SISO	2422	9.72	<=30	Pass
		2437	9.73	<=30	Pass
		2452	9.74	<=30	Pass
Note1: Antenna Gain: Ant1: 2.50dBi;					

2.1.2 Test Graph

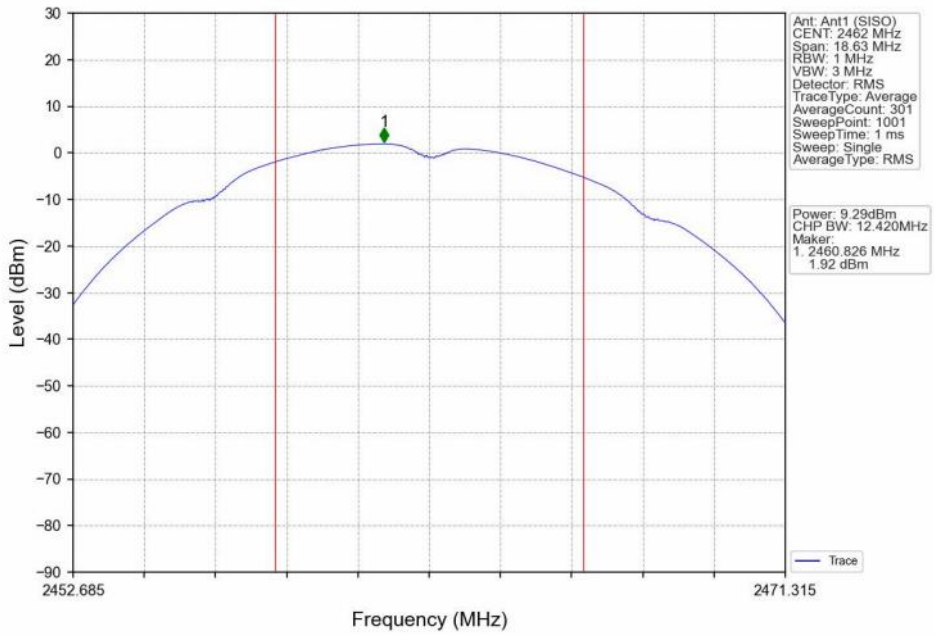
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



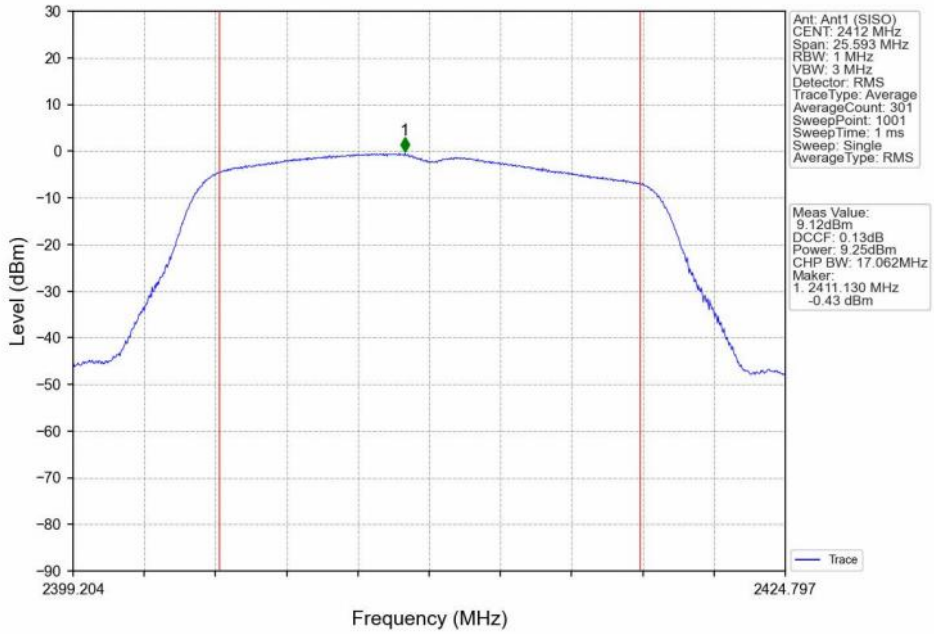
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



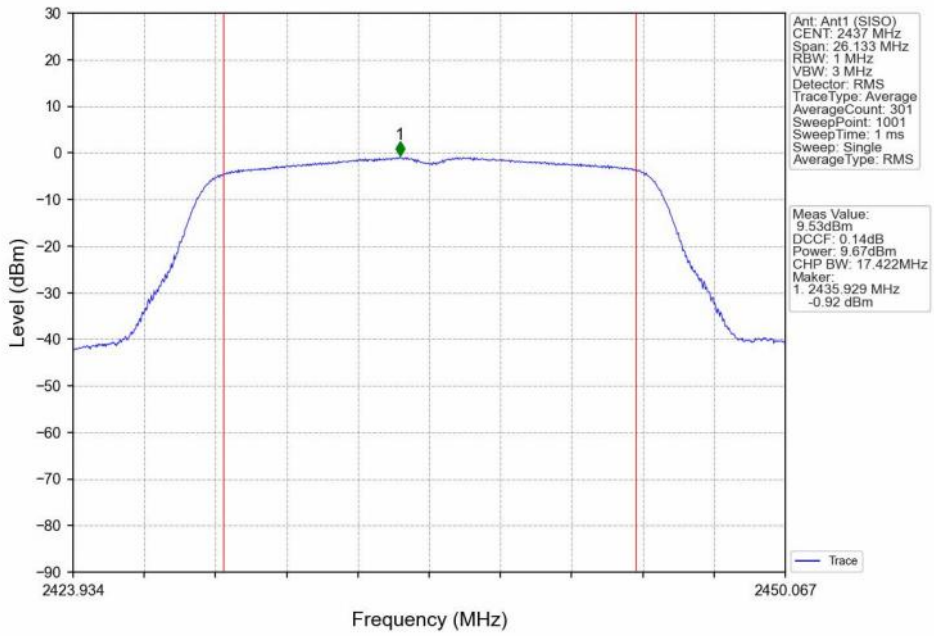
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



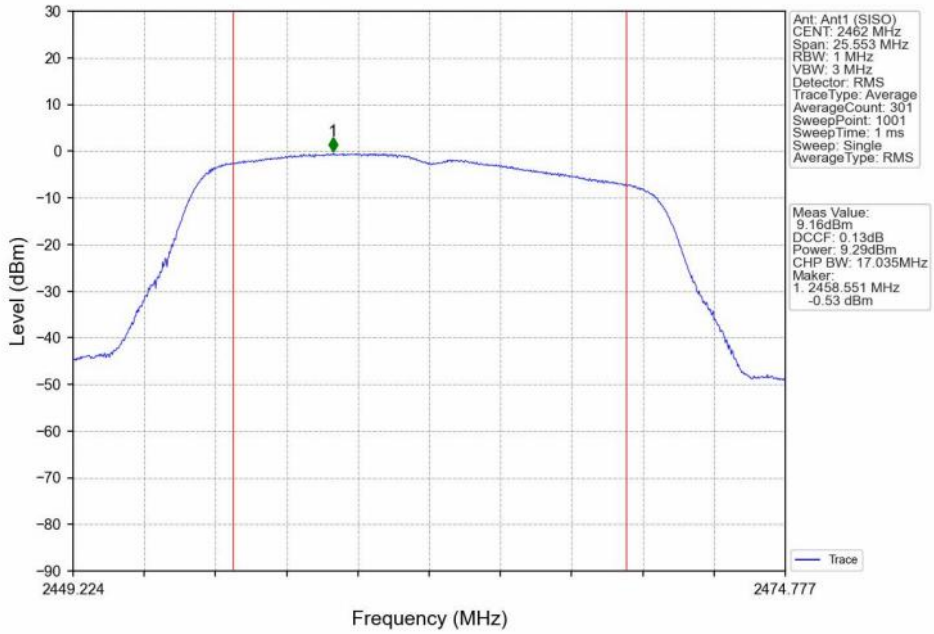
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



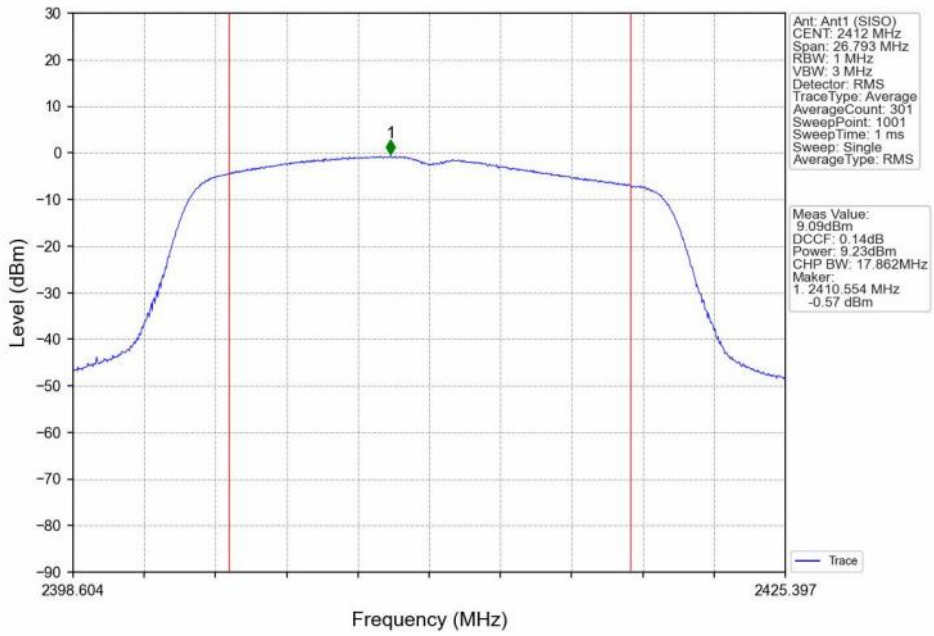
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



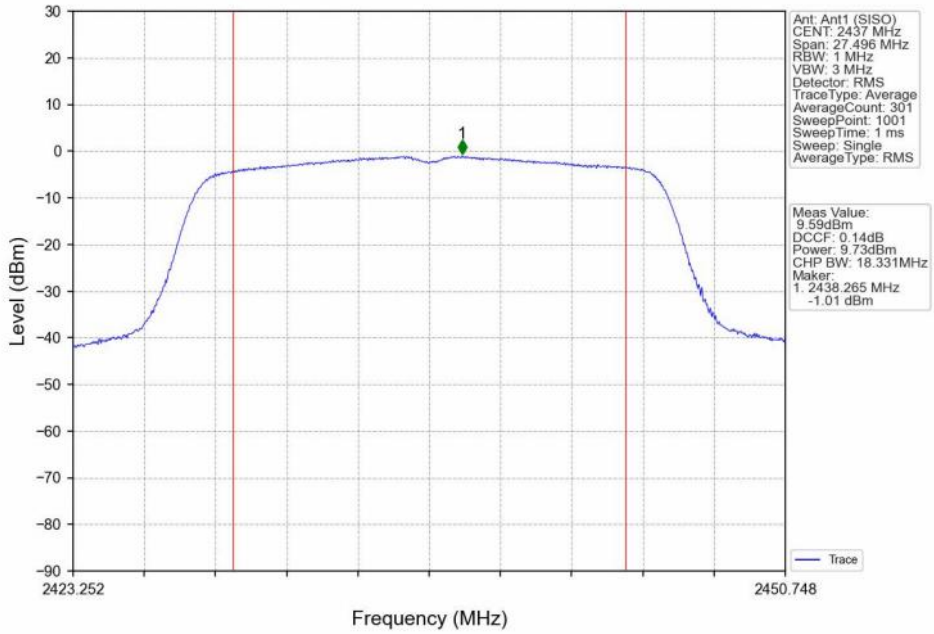
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



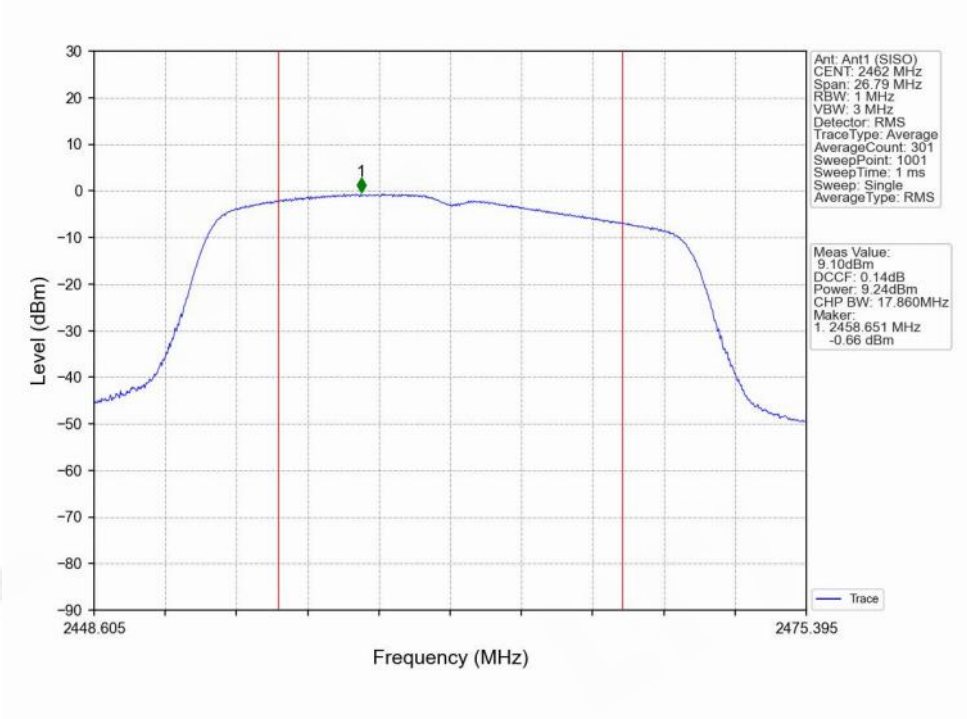
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



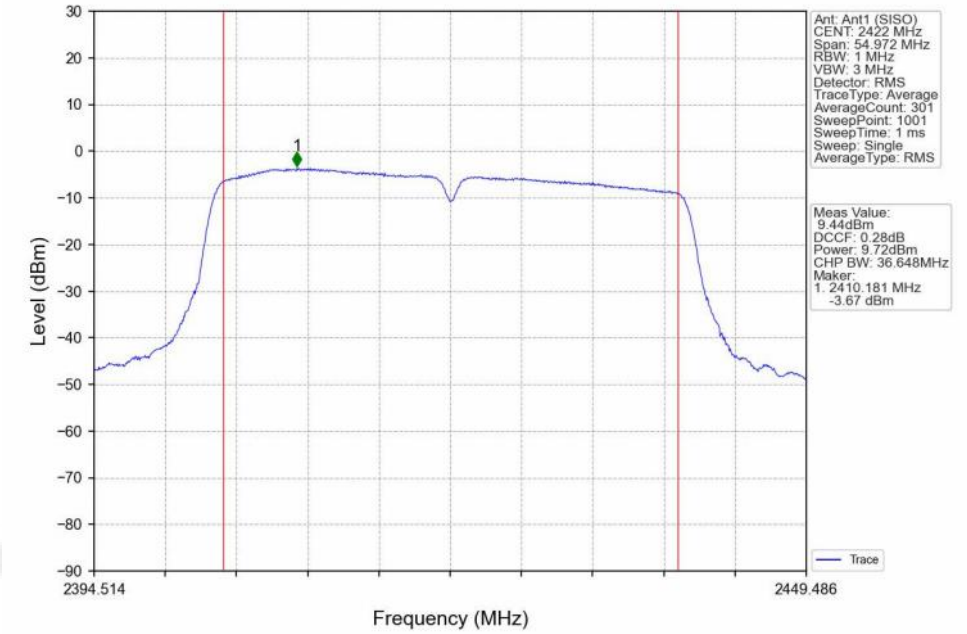
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



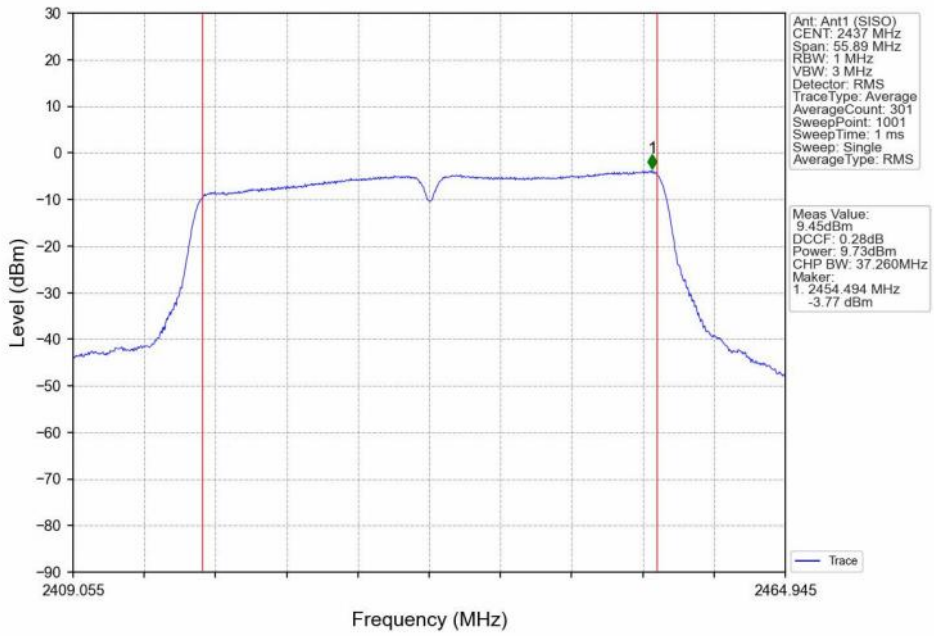
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



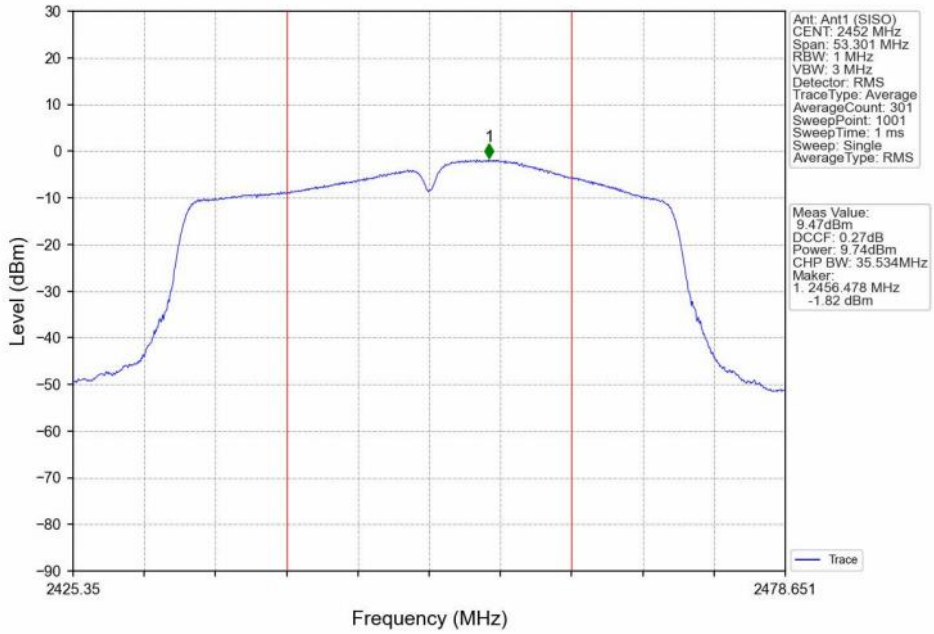
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



3. Maximum Power Spectral Density

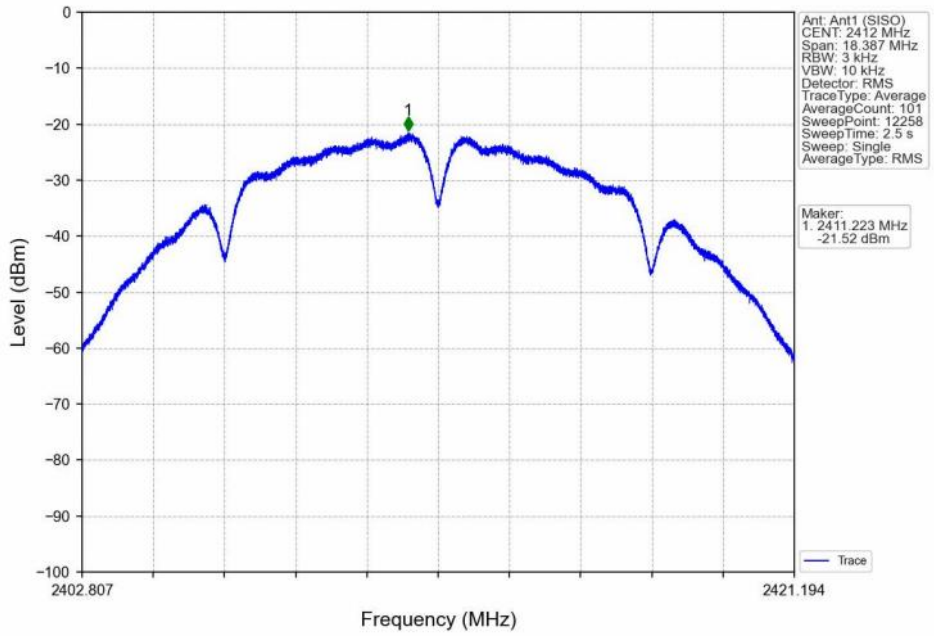
3.1 PSD

3.1.1 Test Result

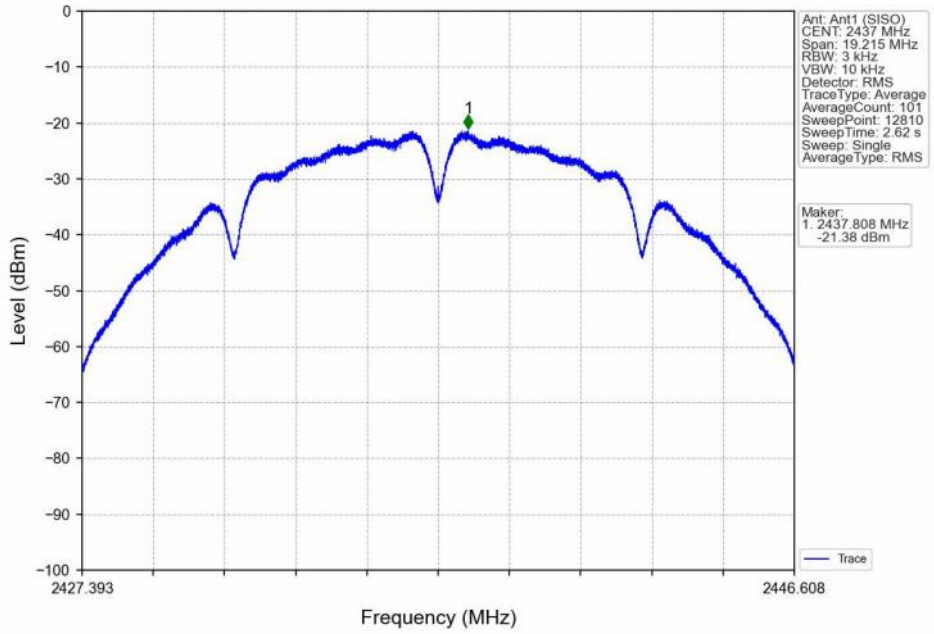
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-21.52	<=8	Pass
		2437	-21.38	<=8	Pass
		2462	-21.68	<=8	Pass
802.11g	SISO	2412	-23.24	<=8	Pass
		2437	-23.87	<=8	Pass
		2462	-23.53	<=8	Pass
802.11n (HT20)	SISO	2412	-23.07	<=8	Pass
		2437	-23.19	<=8	Pass
		2462	-23.26	<=8	Pass
802.11n (HT40)	SISO	2422	-24.96	<=8	Pass
		2437	-24.60	<=8	Pass
		2452	-22.20	<=8	Pass
Note1: Antenna Gain: Ant1: 2.50dBi;					

3.1.2 Test Graph

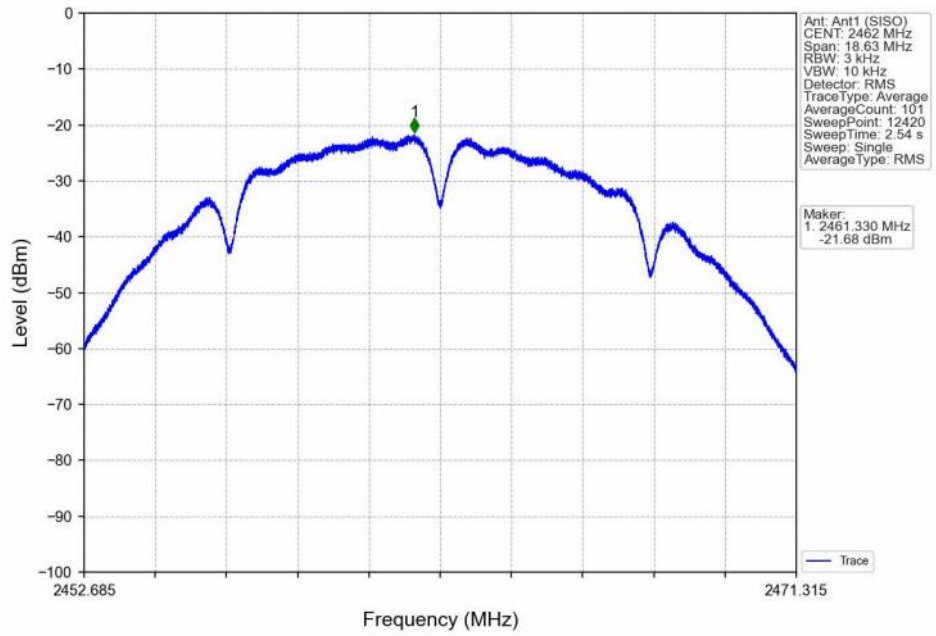
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



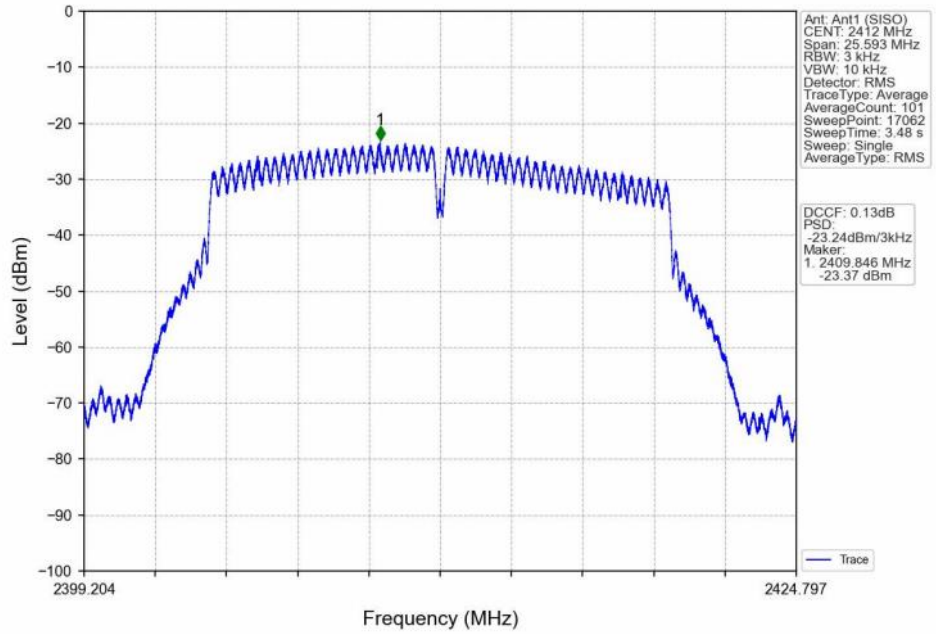
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



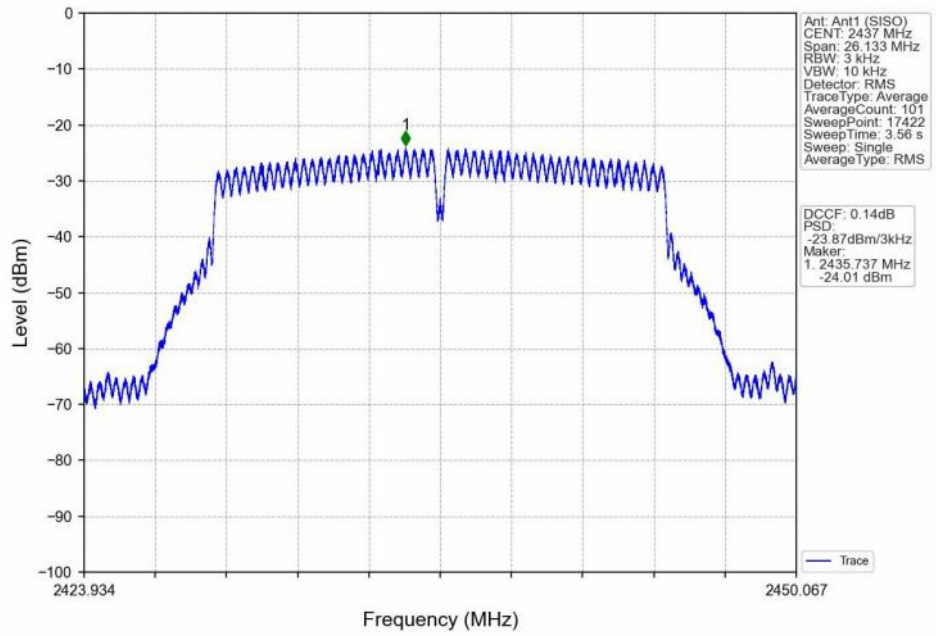
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



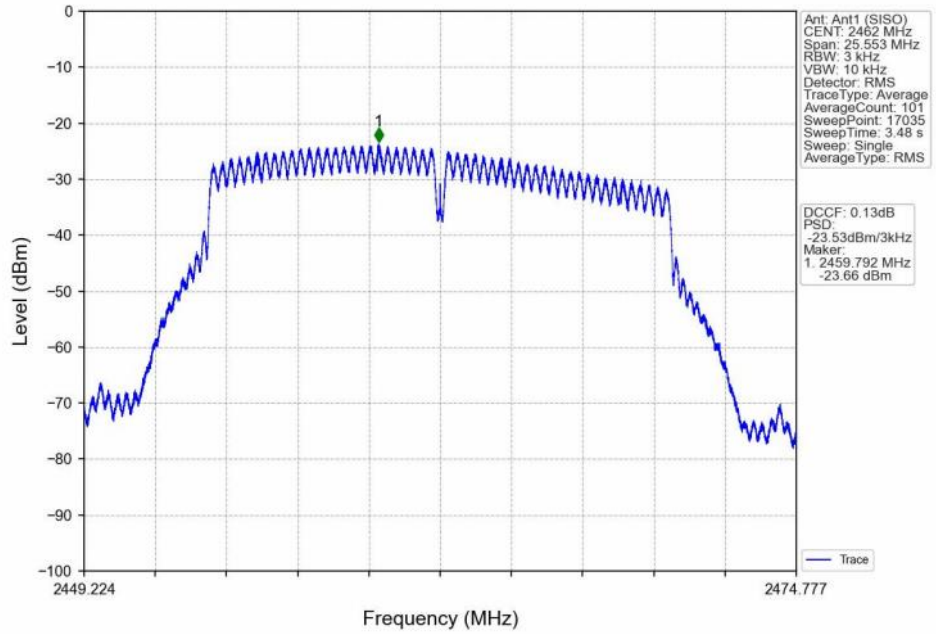
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



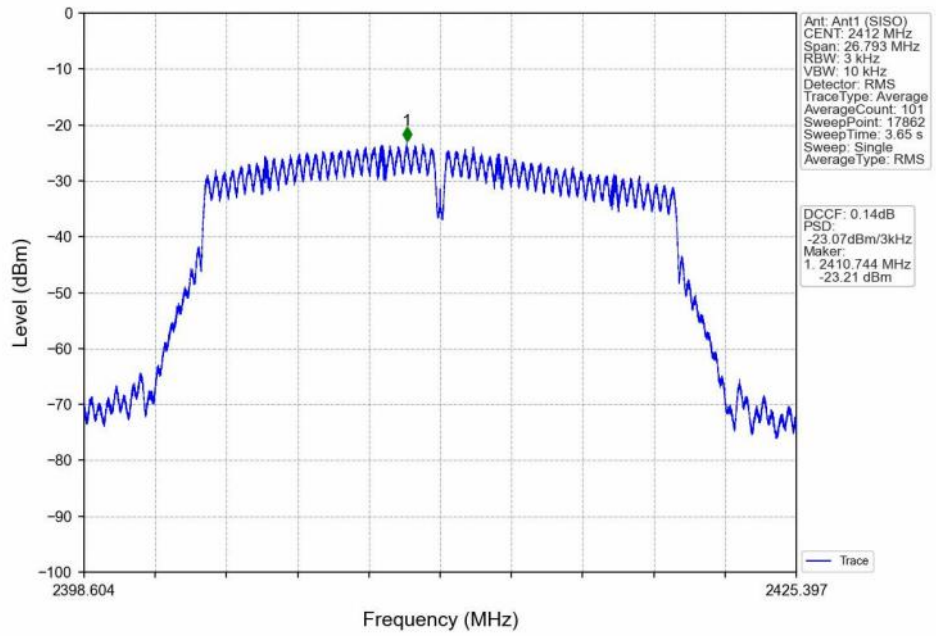
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



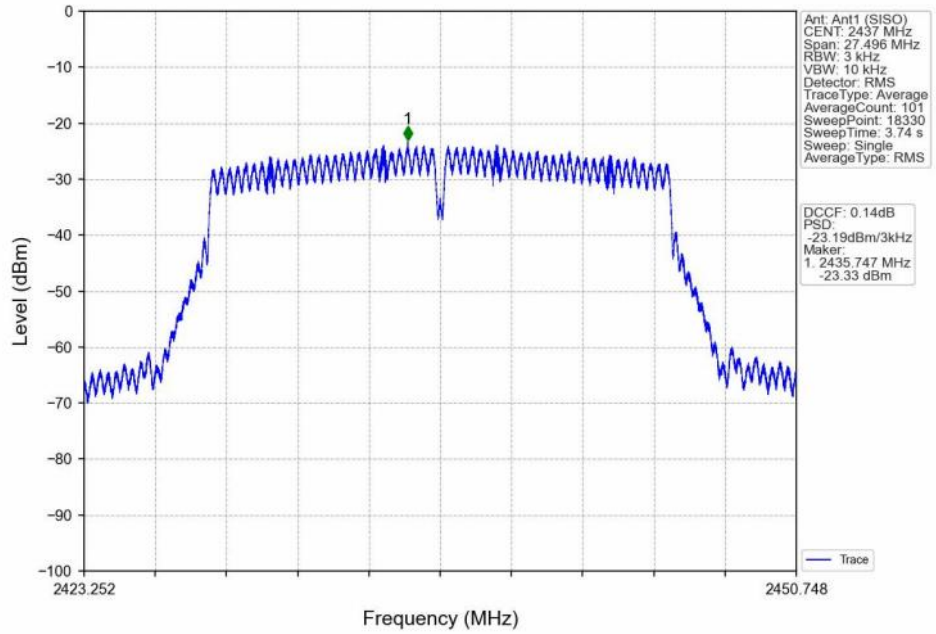
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



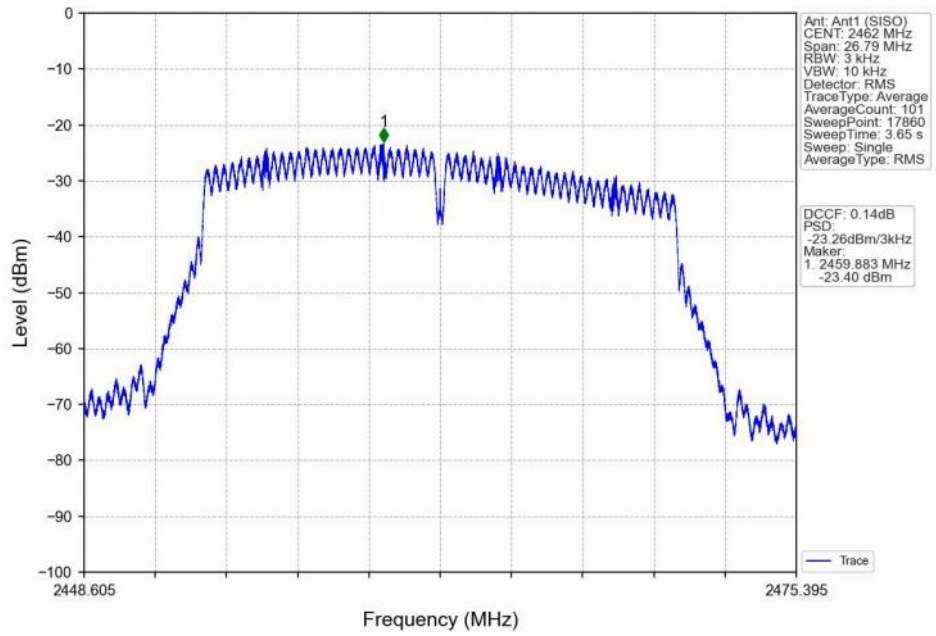
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



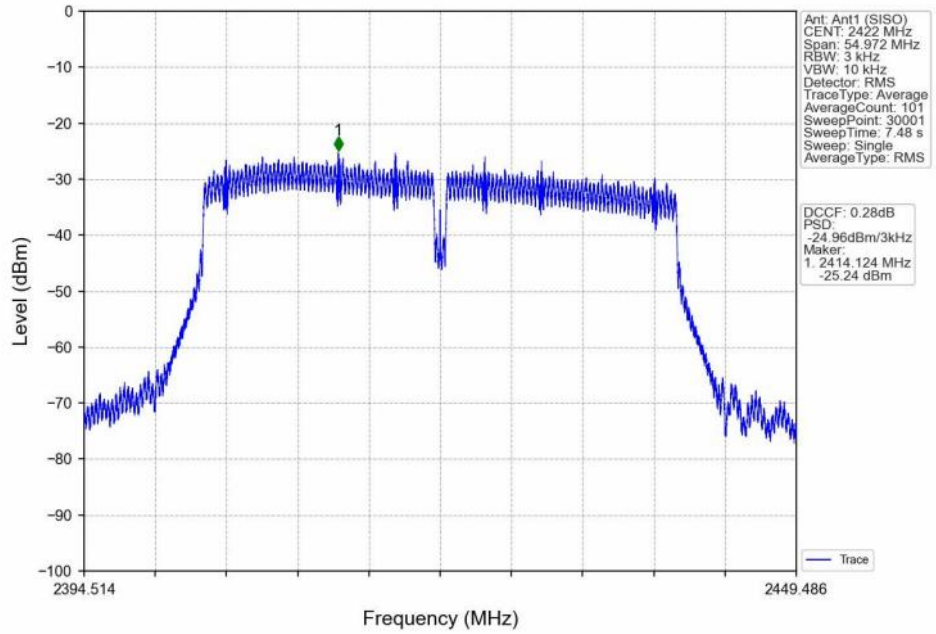
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



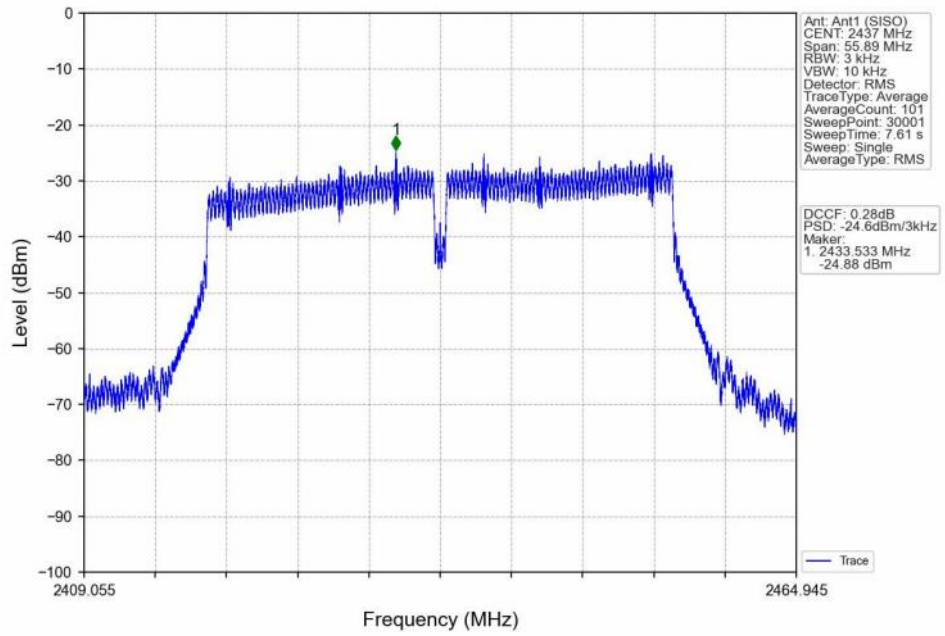
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



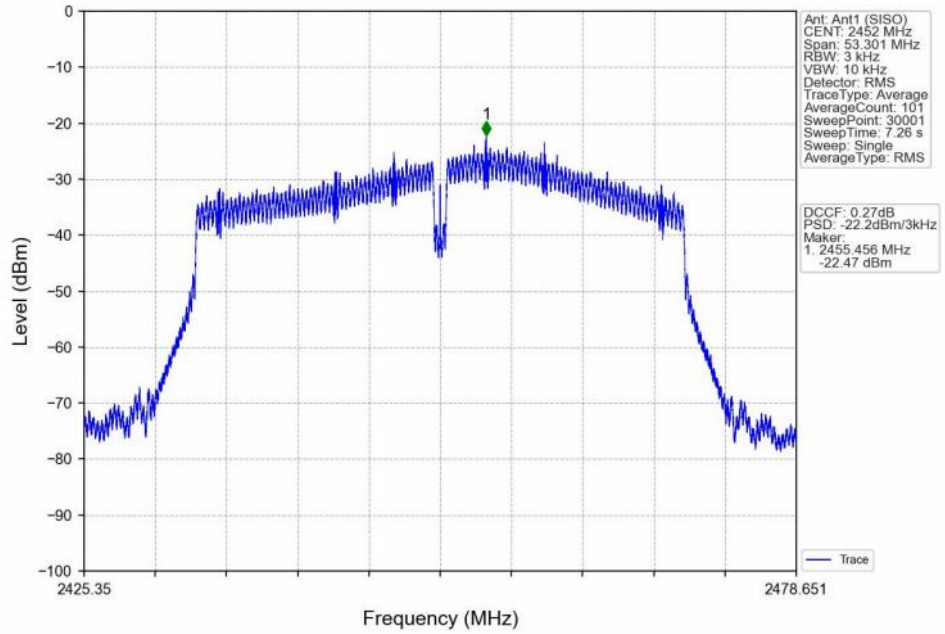
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



4. Unwanted Emissions In Non-restricted Frequency Bands

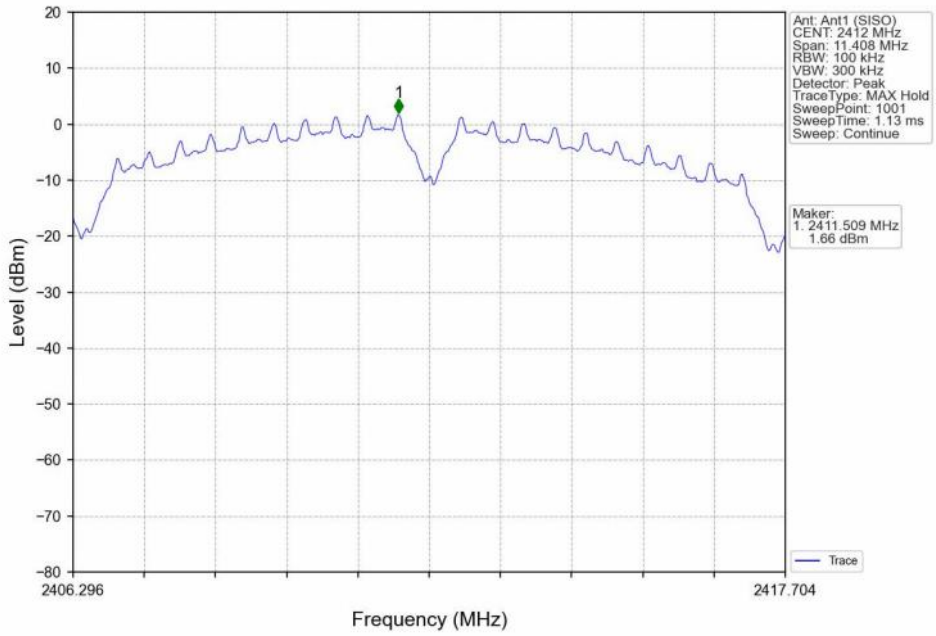
4.1 Ref

4.1.1 Test Result

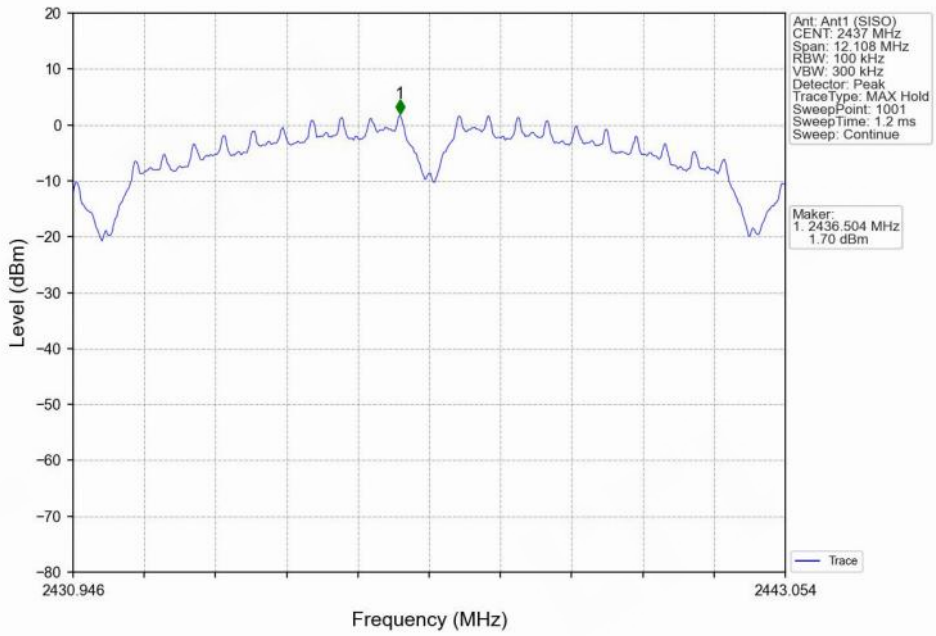
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	1.66
		2437	1	1.70
		2462	1	1.77
802.11g	SISO	2412	1	-0.55
		2437	1	-0.62
		2462	1	-0.91
802.11n (HT20)	SISO	2412	1	-0.34
		2437	1	-0.20
		2462	1	-0.38
802.11n (HT40)	SISO	2422	1	-3.04
		2437	1	-2.61
		2452	1	-0.90
Note1: Refer 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.				

4.1.2 Test Graph

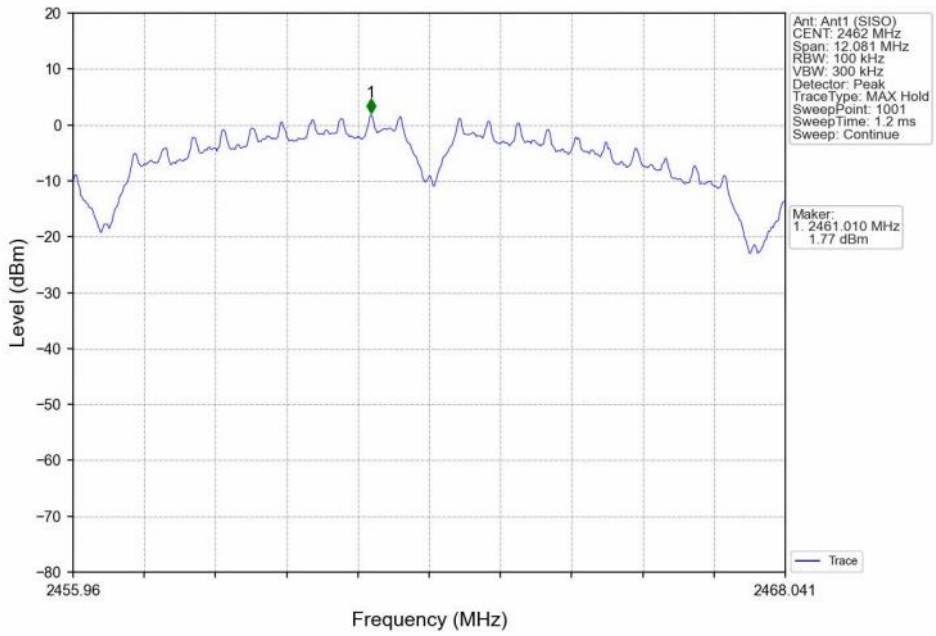
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



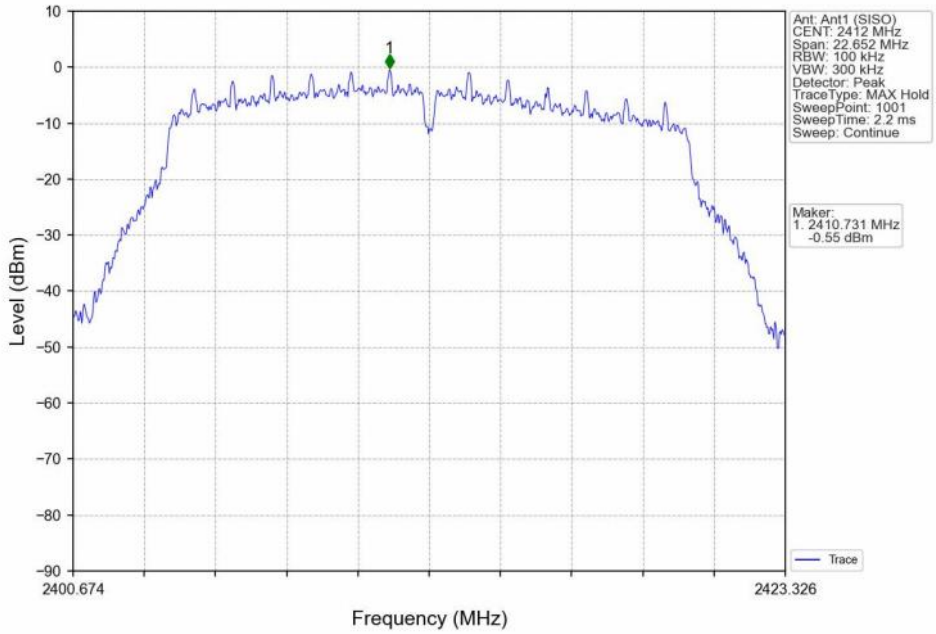
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



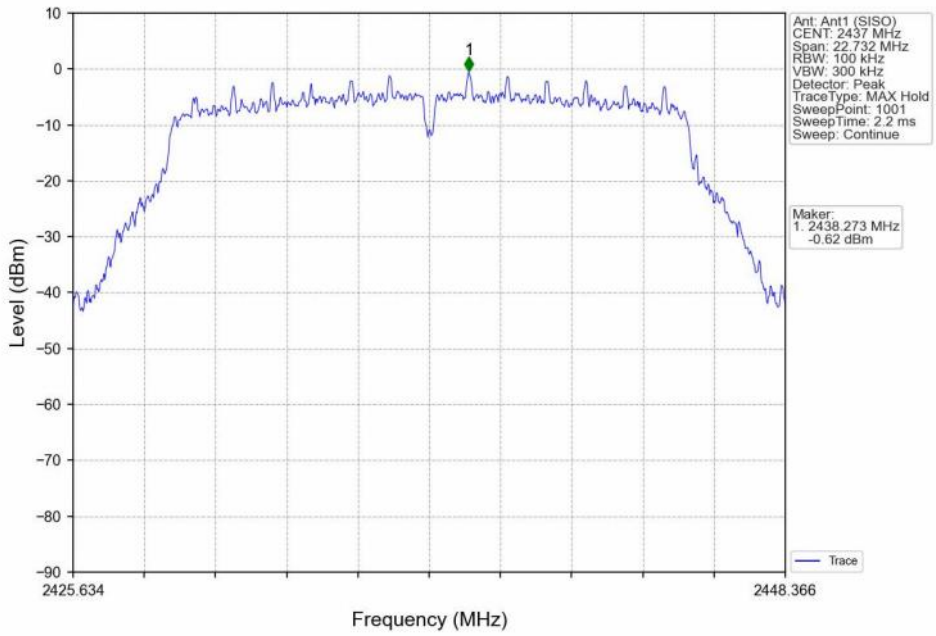
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



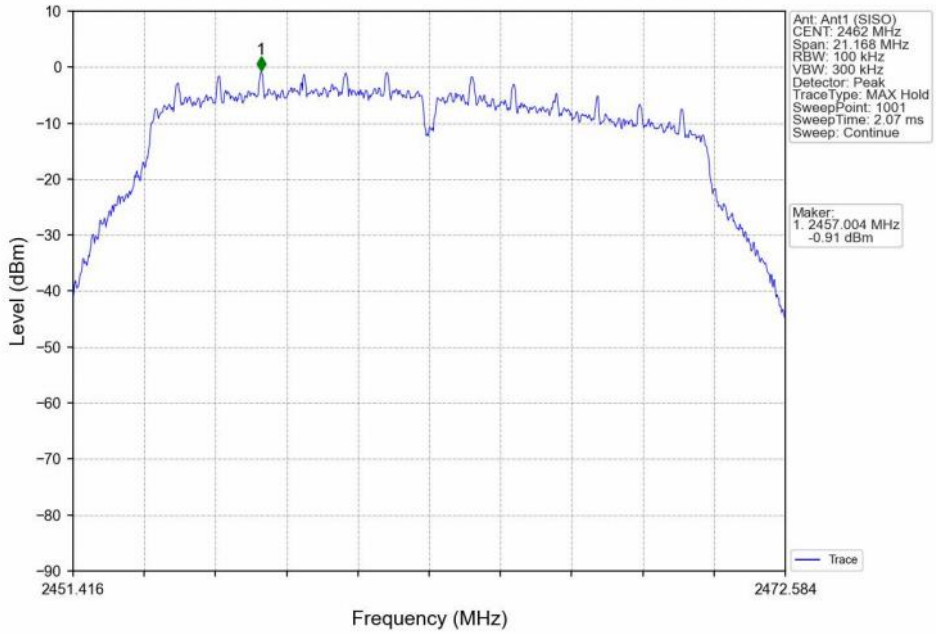
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



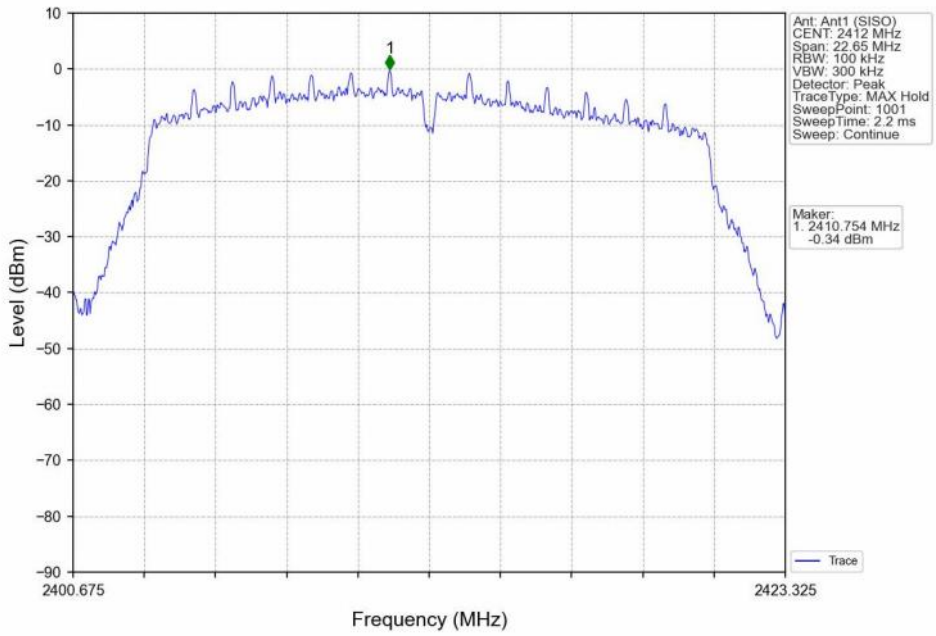
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



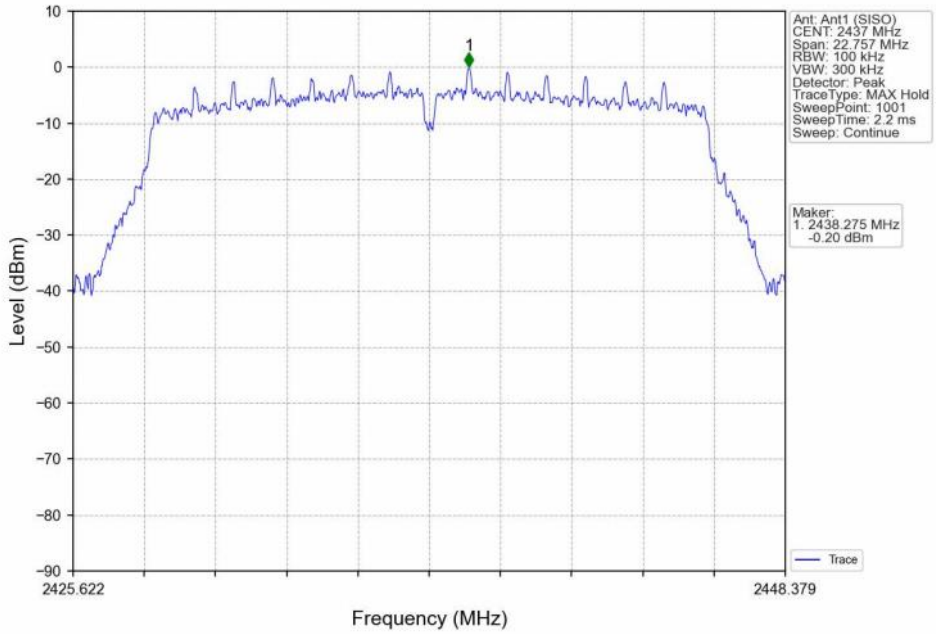
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



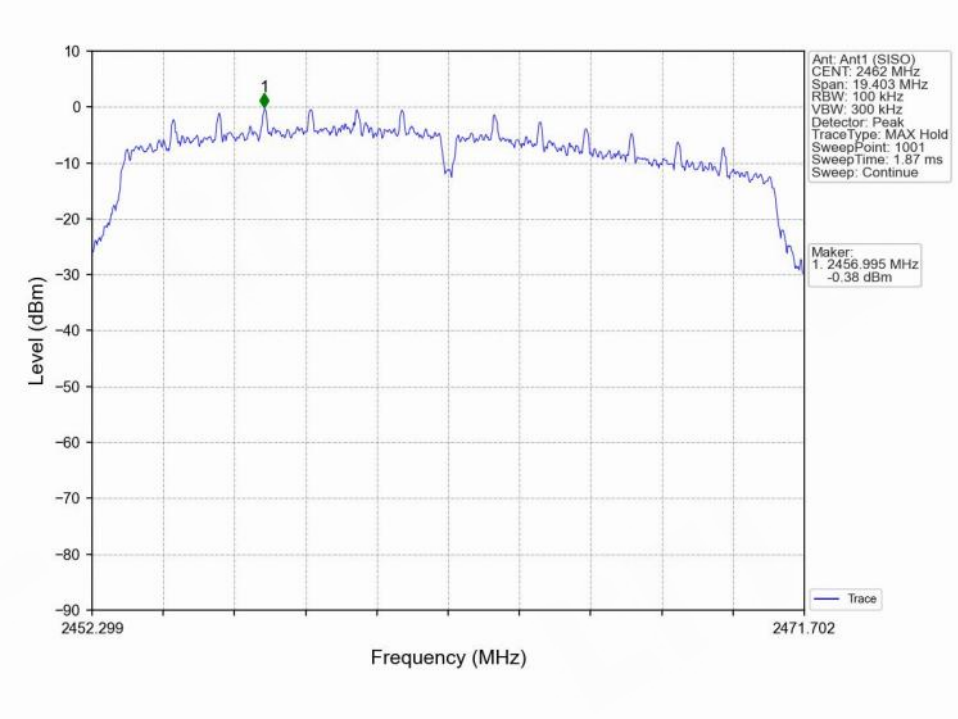
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



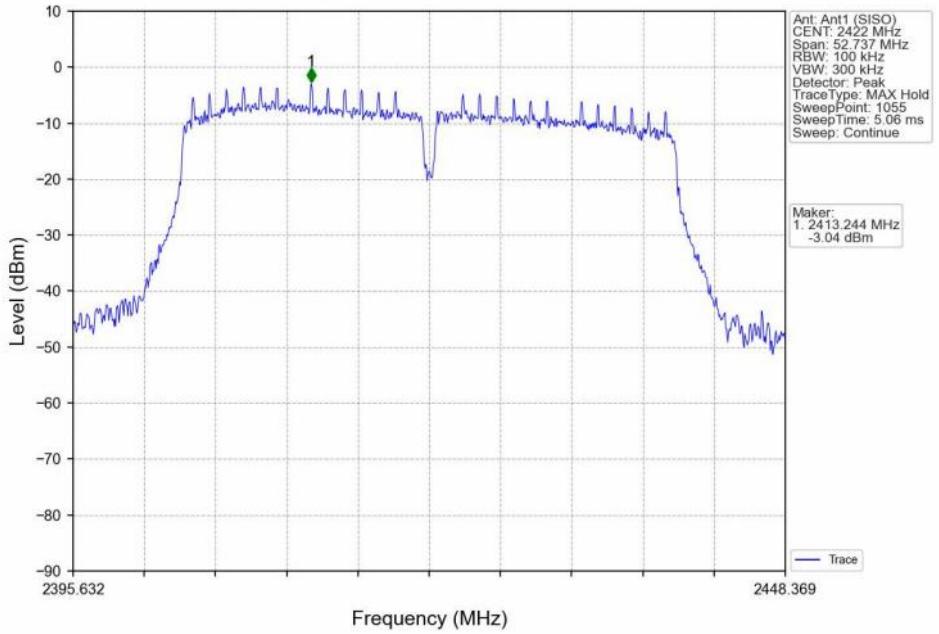
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



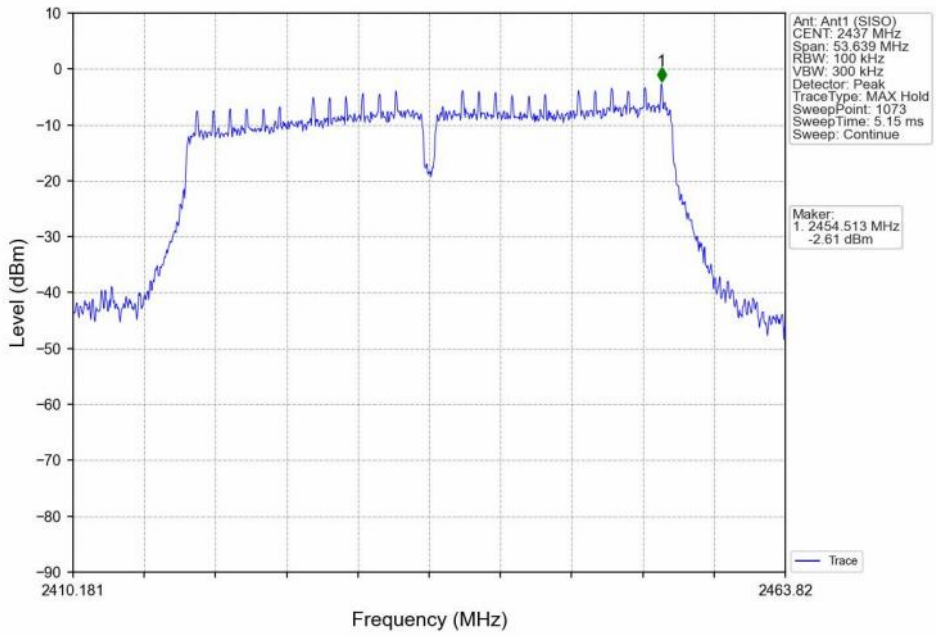
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



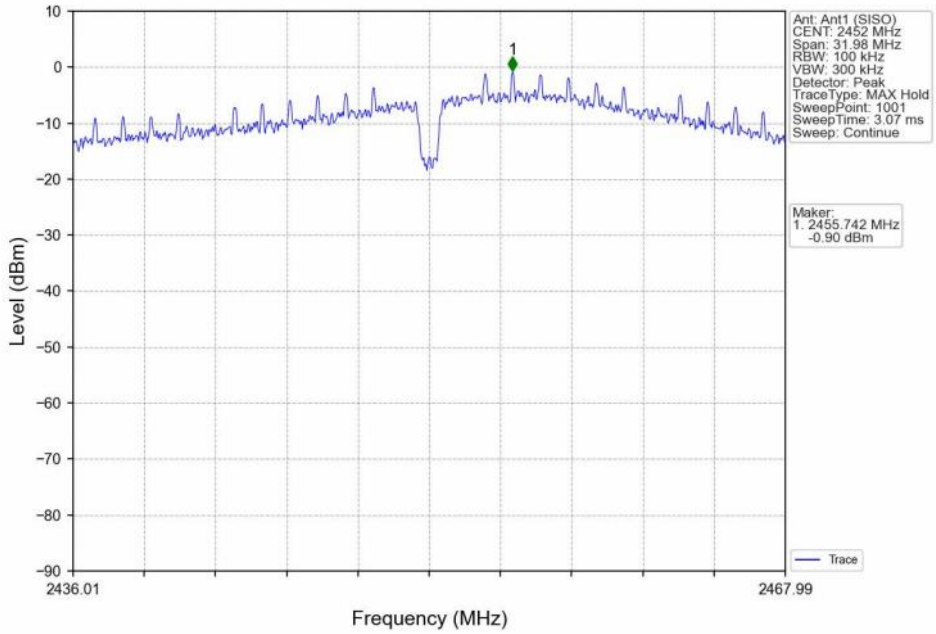
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV



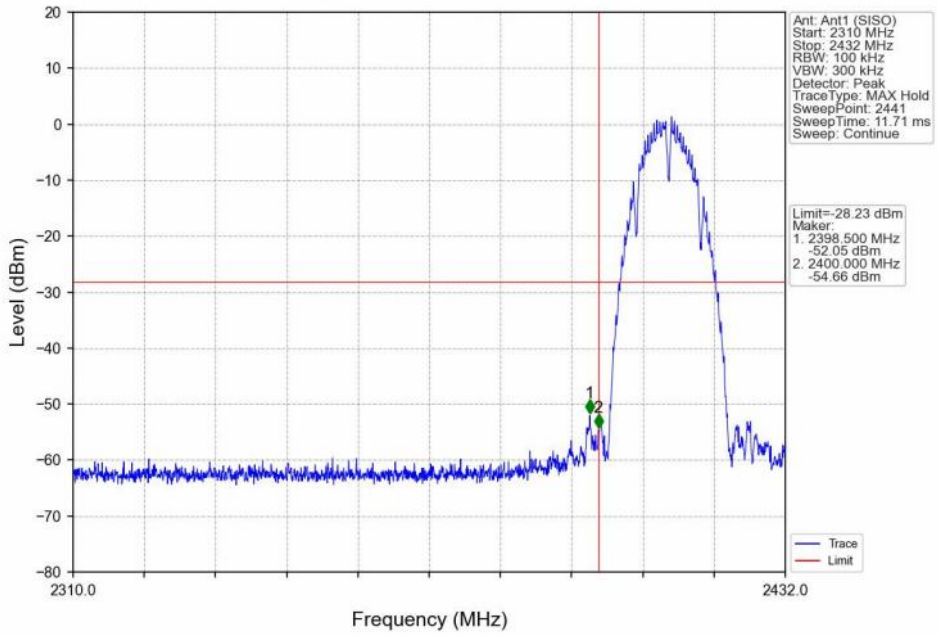
4.2 CSE

4.2.1 Test Result

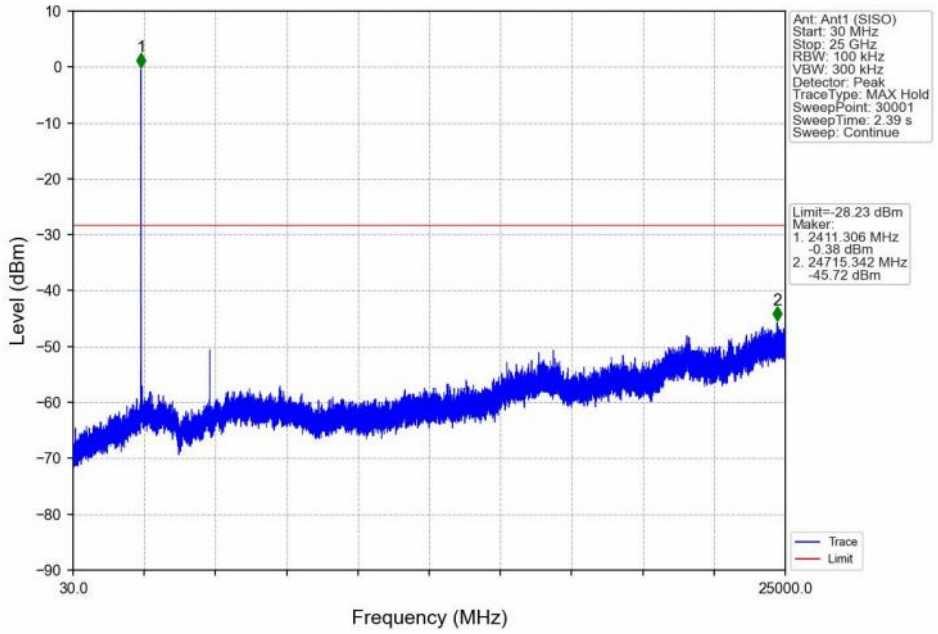
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	1.77	-28.23	Pass
		2437	1	1.77	-28.23	Pass
		2462	1	1.77	-28.23	Pass
802.11g	SISO	2412	1	-0.55	-30.55	Pass
		2437	1	-0.55	-30.55	Pass
		2462	1	-0.55	-30.55	Pass
802.11n (HT20)	SISO	2412	1	-0.20	-30.20	Pass
		2437	1	-0.20	-30.20	Pass
		2462	1	-0.20	-30.20	Pass
802.11n (HT40)	SISO	2422	1	-0.90	-30.90	Pass
		2437	1	-0.90	-30.90	Pass
		2452	1	-0.90	-30.90	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.						

4.2.2 Test Graph

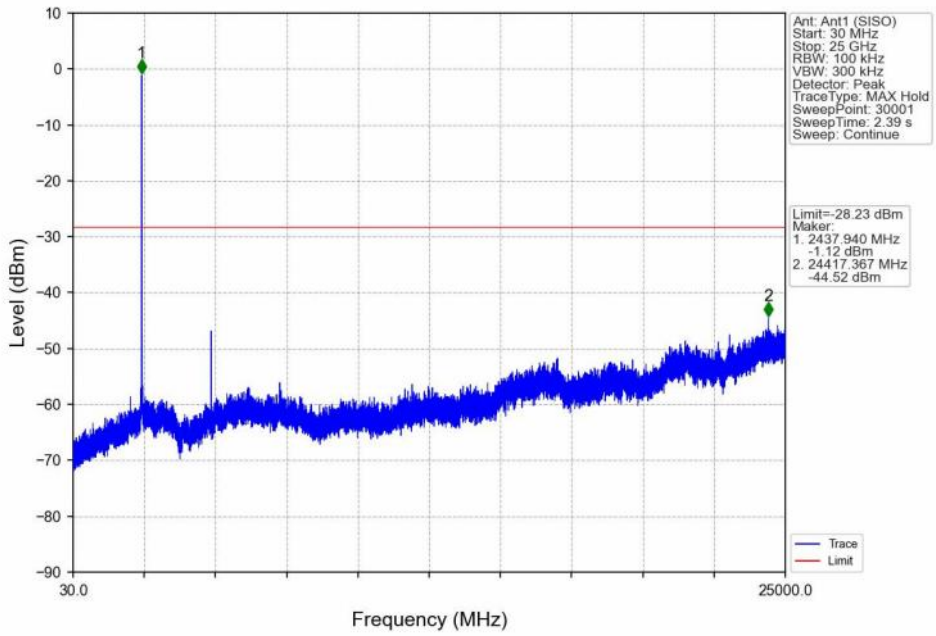
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



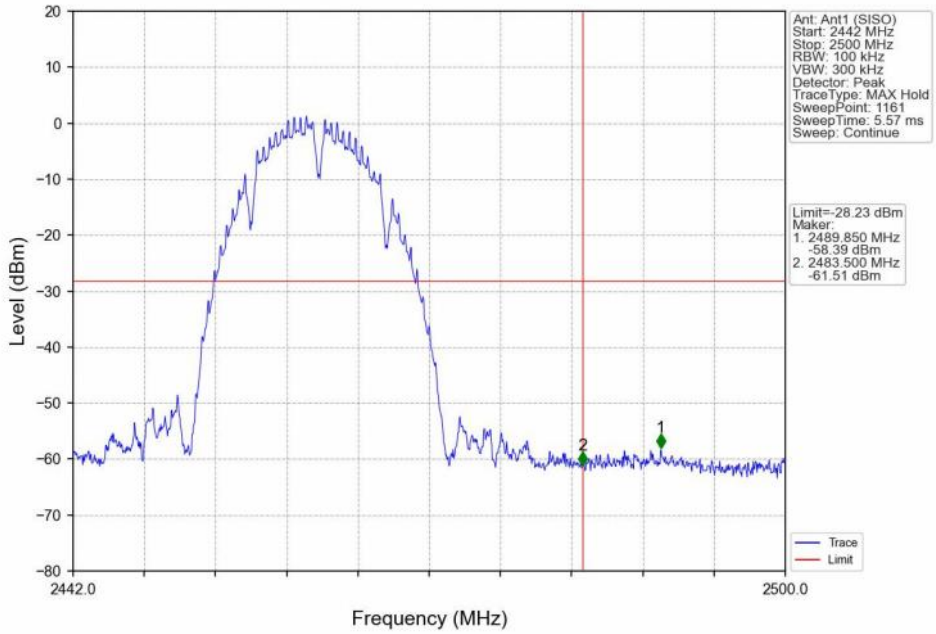
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



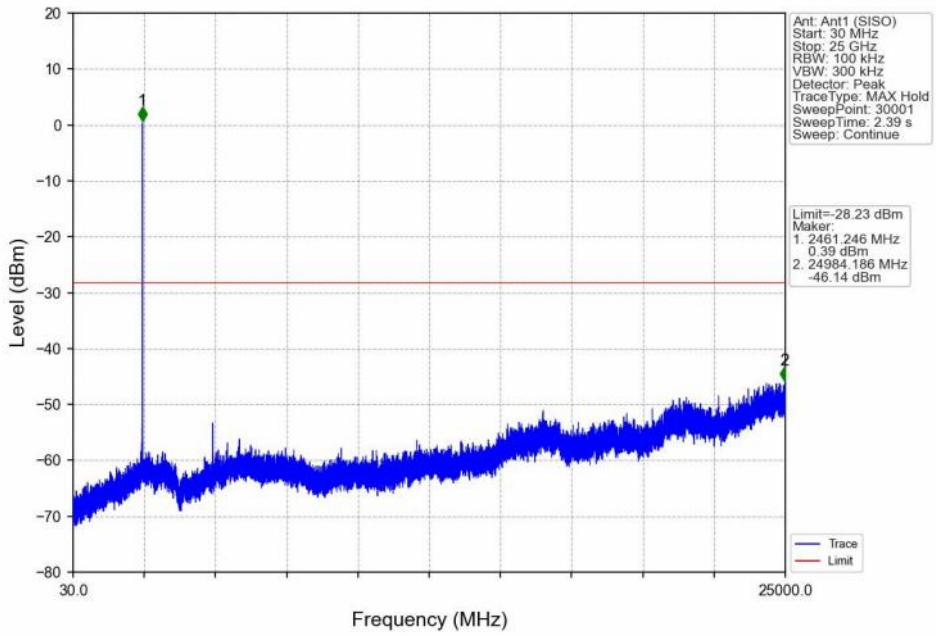
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



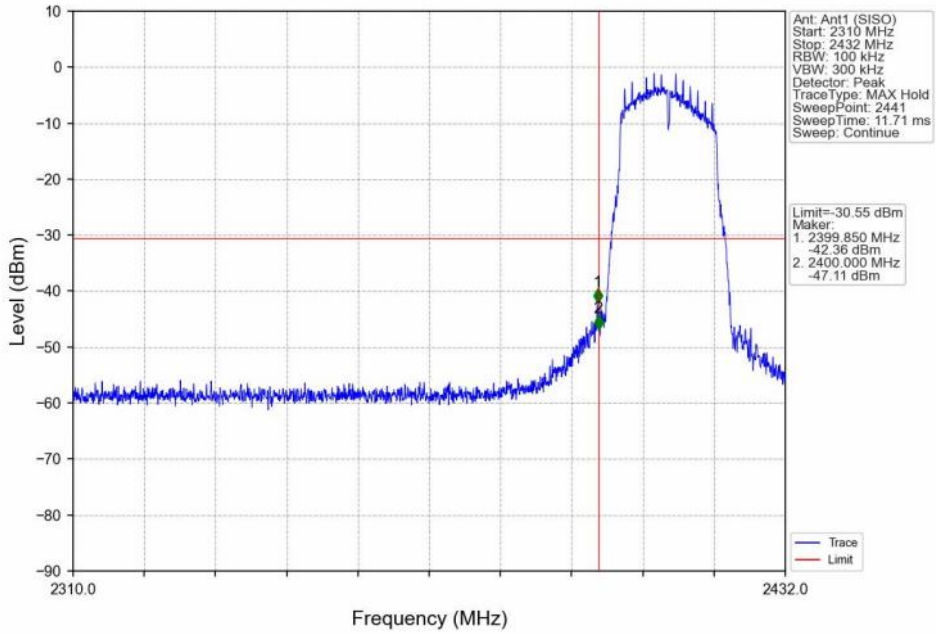
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



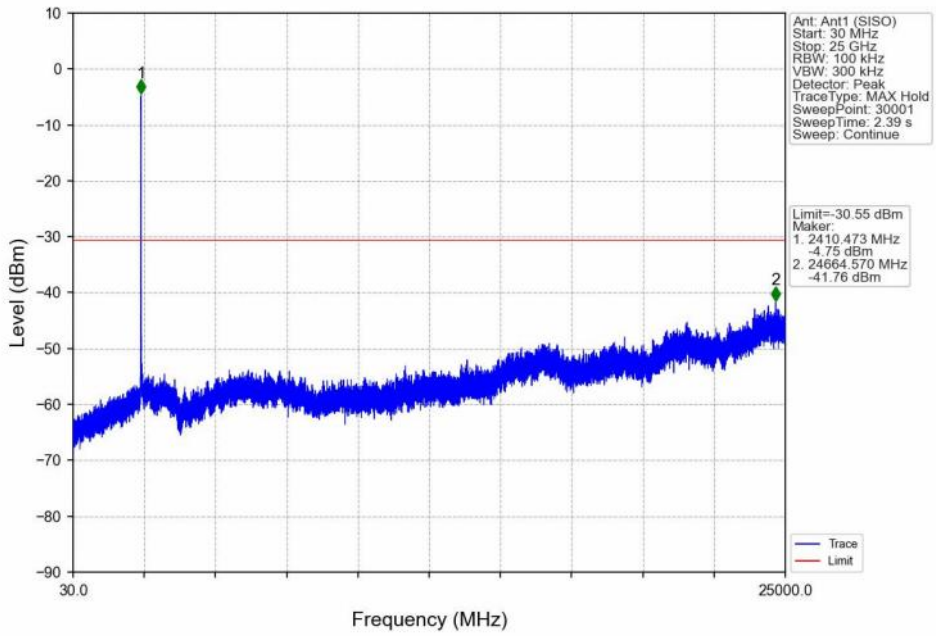
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



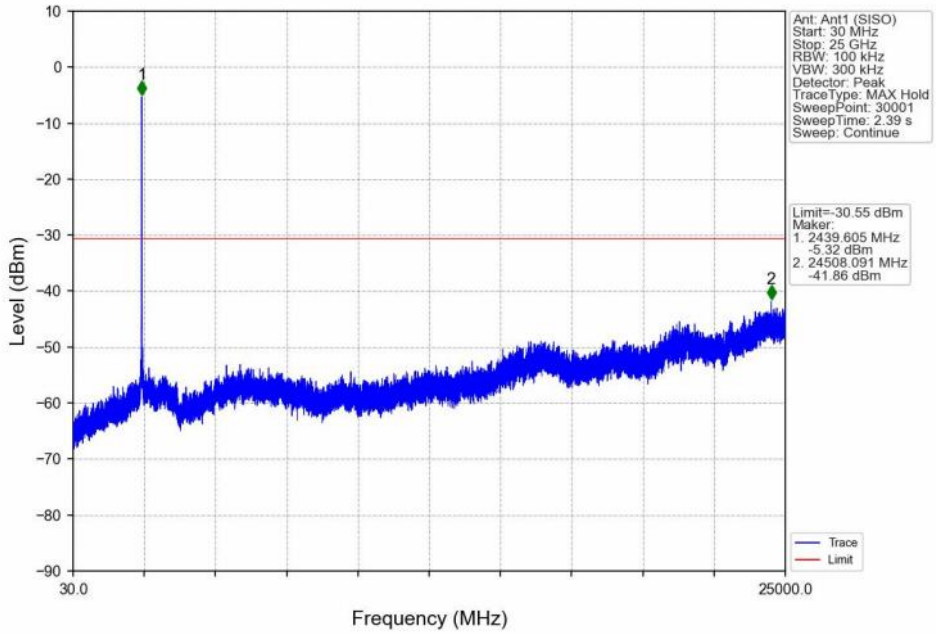
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



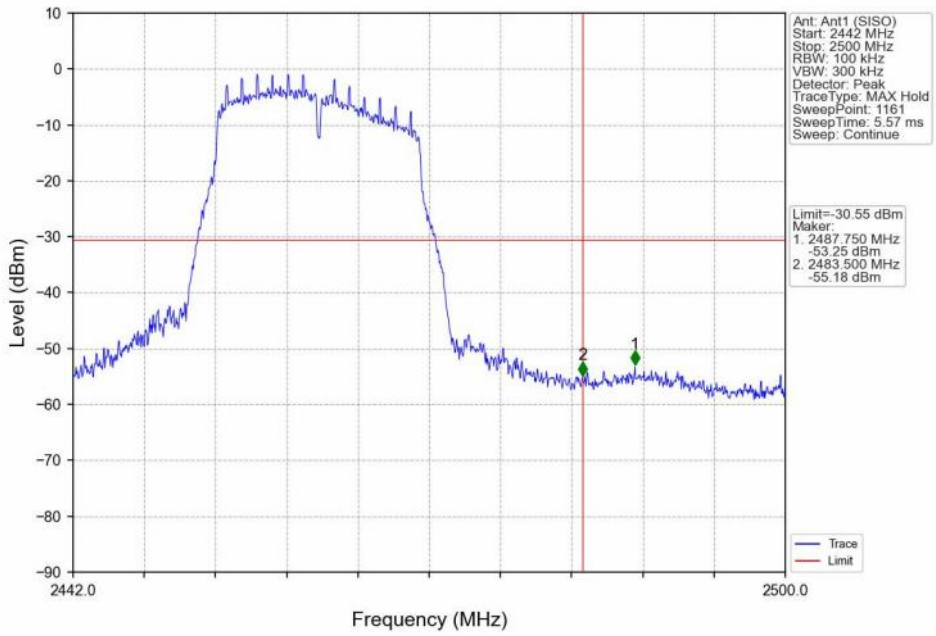
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



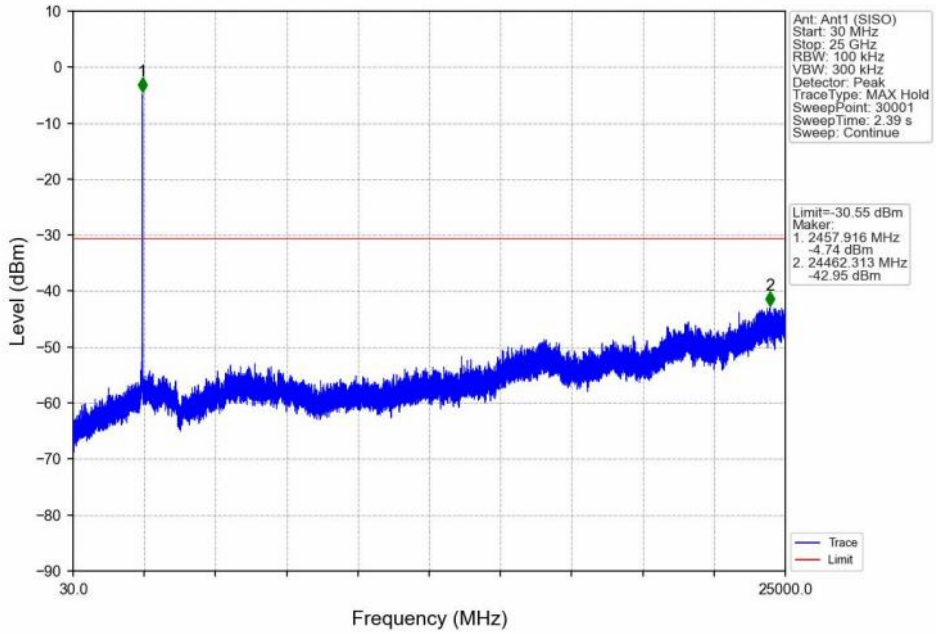
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



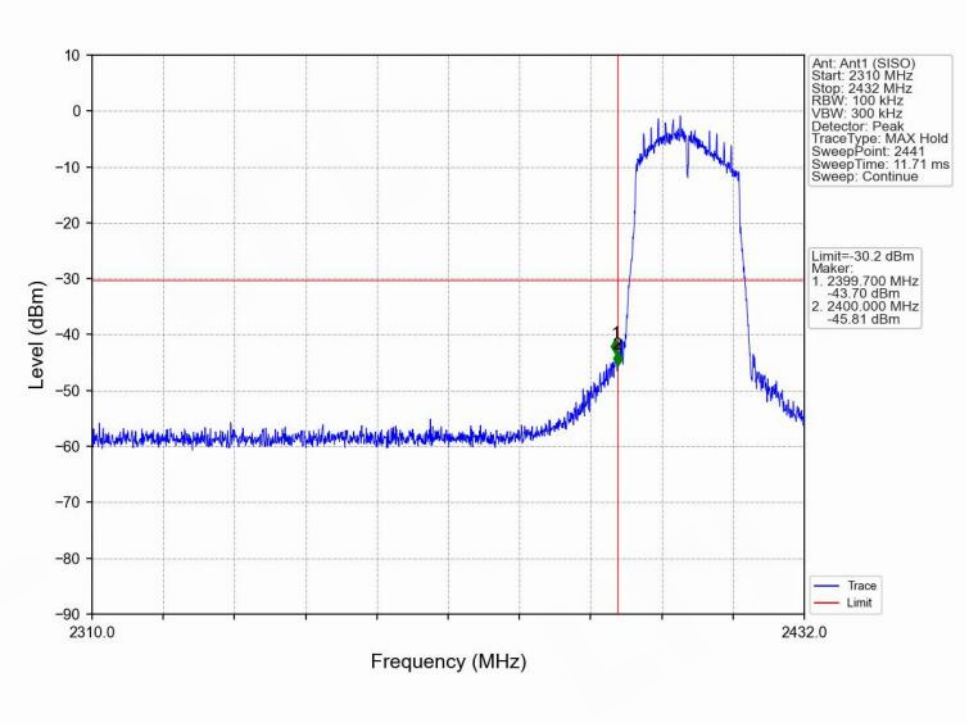
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



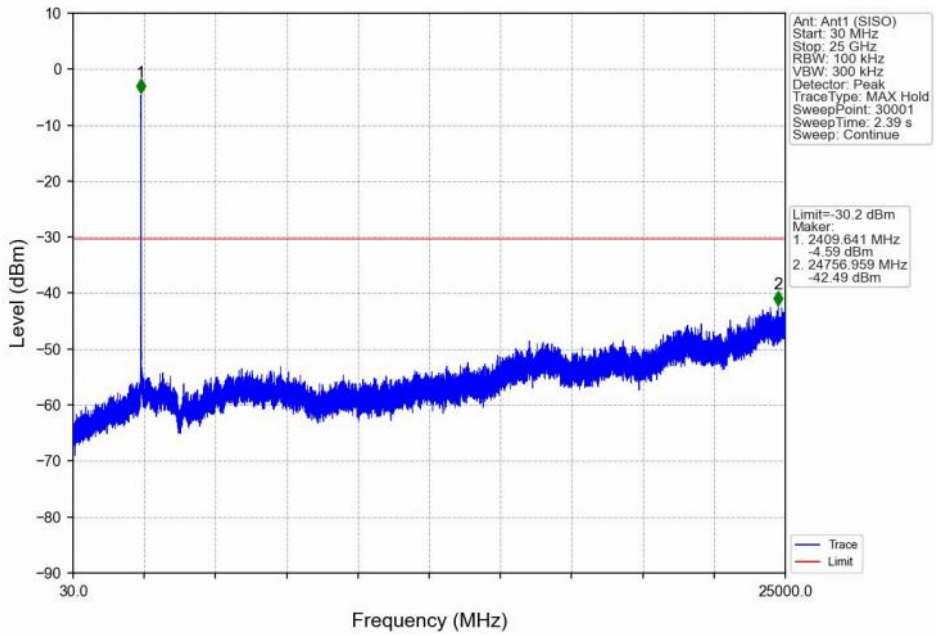
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



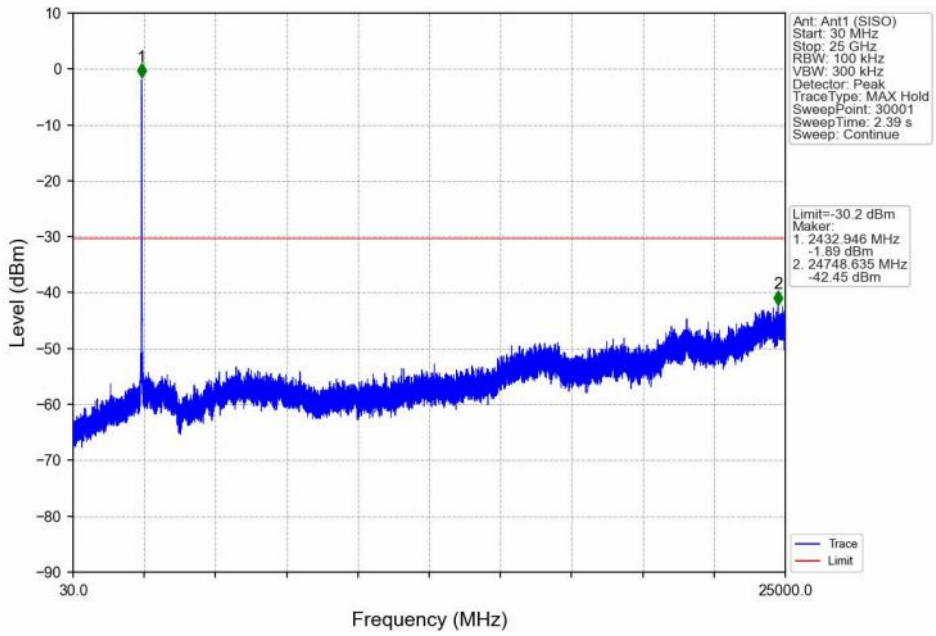
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



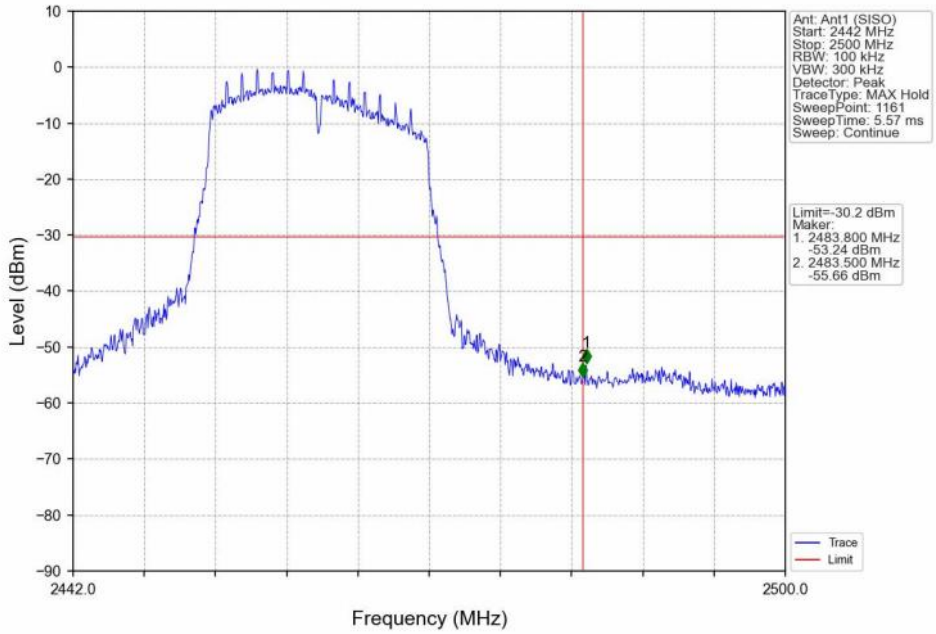
802.11n(HT20)_LCH_2412MHz_Ant1 (SISO)_NTNV



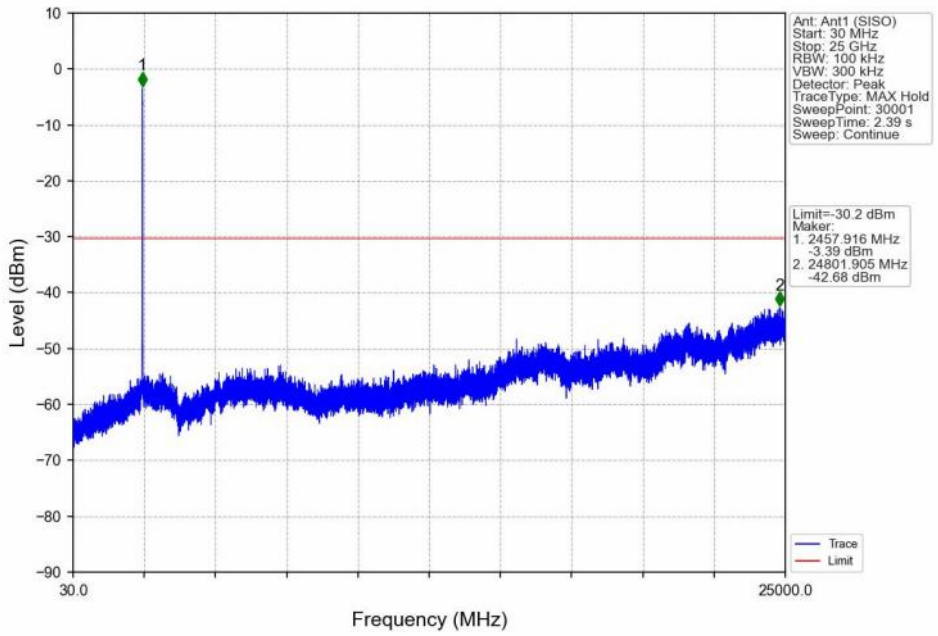
802.11n(HT20)_MCH_2437MHz_Ant1 (SISO)_NTNV



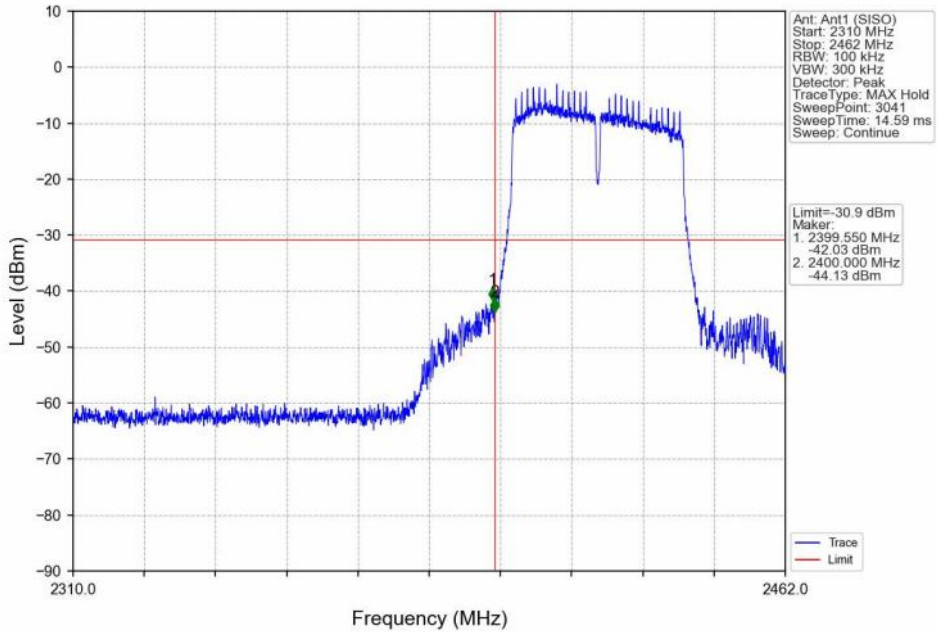
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



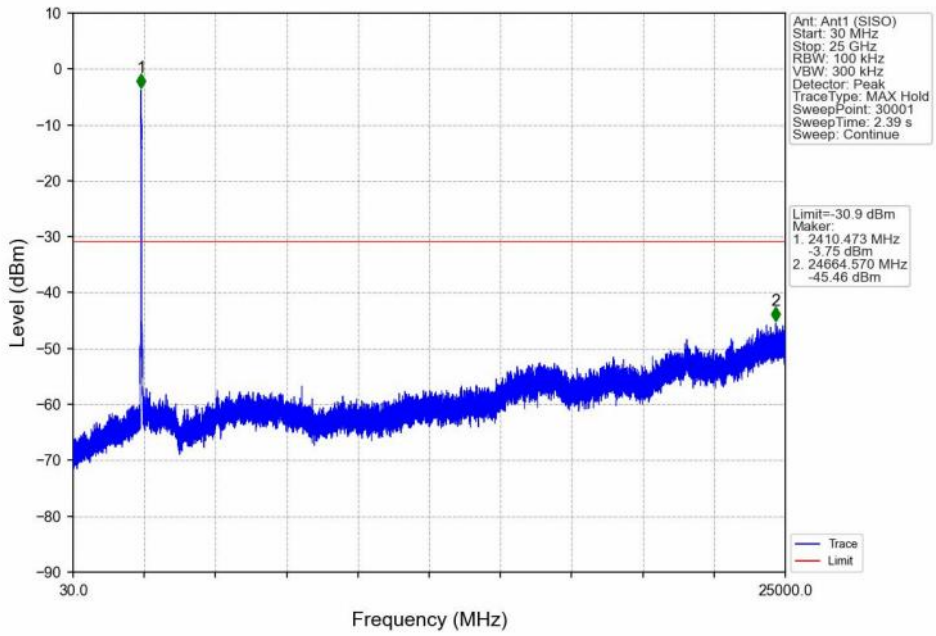
802.11n(HT20)_HCH_2462MHz_Ant1 (SISO)_NTNV



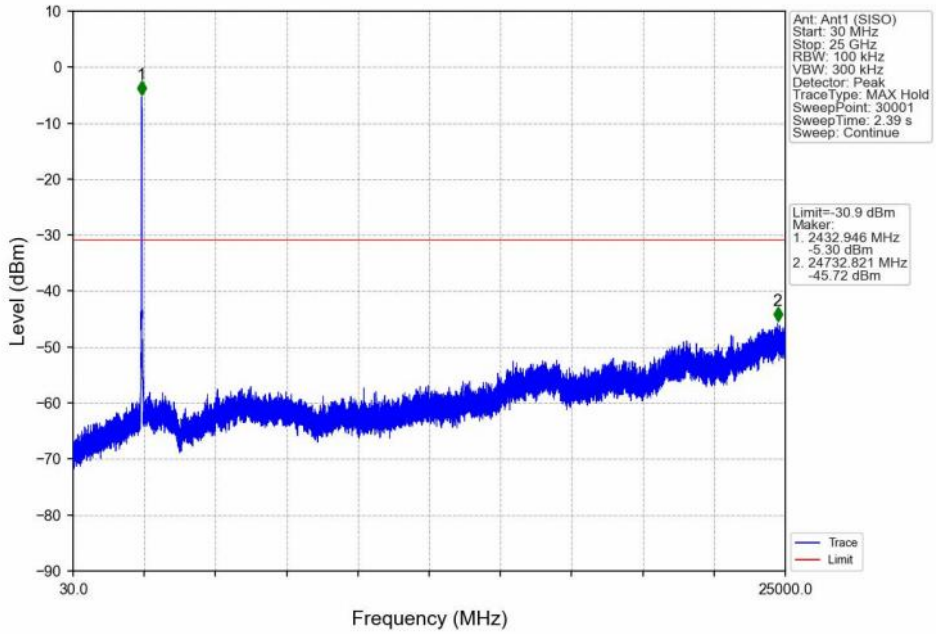
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



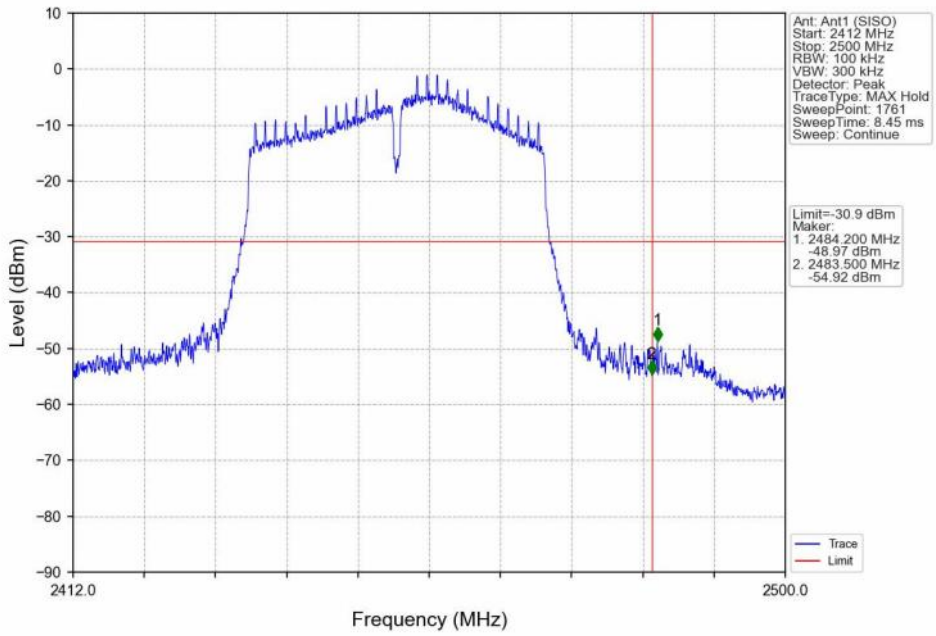
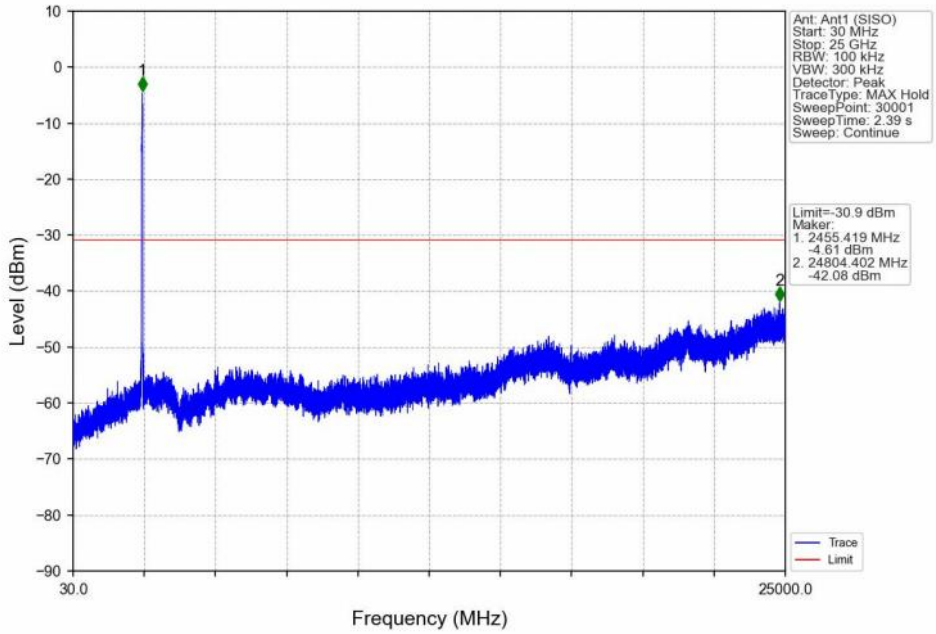
802.11n(HT40)_LCH_2422MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_MCH_2437MHz_Ant1 (SISO)_NTNV



802.11n(HT40)_HCH_2452MHz_Ant1 (SISO)_NTNV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