



Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No.3011, Shaheji Road, Nanshan District, Shenzhen, China 518055  
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

## Annex for 2.4G Wi-Fi

Test Report No.: CTL2404222135-WF03

### TABLE OF CONTENTS

Annex for 2.4G Wi-Fi .....	1
1. Bandwidth .....	2
2. Maximum Conducted Output Power .....	15
3. Maximum Power Spectral Density .....	22
4. Unwanted Emissions In Non-restricted Frequency Bands .....	29

FCC ID: 2ASC7TAB702

## 1. Bandwidth

### 1.1 Test Result

#### 1.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	13.460	/	Pass
		2437	1	13.663	/	Pass
		2462	1	13.633	/	Pass
802.11g	SISO	2412	1	17.674	/	Pass
		2437	1	17.515	/	Pass
		2462	1	17.591	/	Pass
802.11n (HT20)	SISO	2412	1	18.376	/	Pass
		2437	1	18.949	/	Pass
		2462	1	18.321	/	Pass
802.11n (HT40)	SISO	2422	1	37.522	/	Pass
		2437	1	37.649	/	Pass
		2452	1	37.292	/	Pass

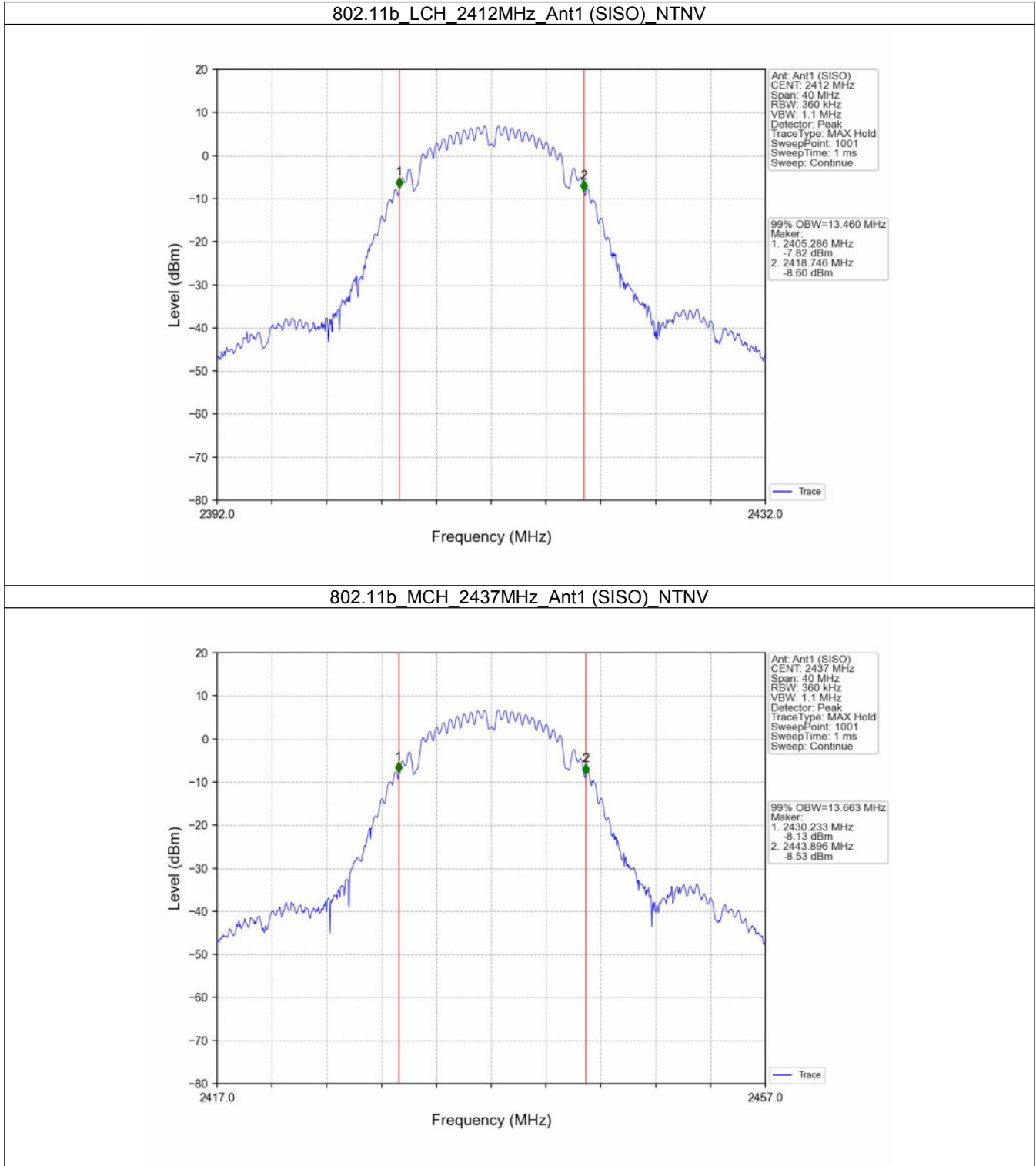
#### 1.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
802.11b	SISO	2412	1	9.117	$\geq 0.5$	Pass
		2437	1	9.549	$\geq 0.5$	Pass
		2462	1	9.574	$\geq 0.5$	Pass
802.11g	SISO	2412	1	16.360	$\geq 0.5$	Pass
		2437	1	16.366	$\geq 0.5$	Pass
		2462	1	16.131	$\geq 0.5$	Pass
802.11n (HT20)	SISO	2412	1	17.086	$\geq 0.5$	Pass
		2437	1	17.026	$\geq 0.5$	Pass
		2462	1	16.714	$\geq 0.5$	Pass
802.11n (HT40)	SISO	2422	1	36.324	$\geq 0.5$	Pass
		2437	1	35.782	$\geq 0.5$	Pass
		2452	1	36.014	$\geq 0.5$	Pass

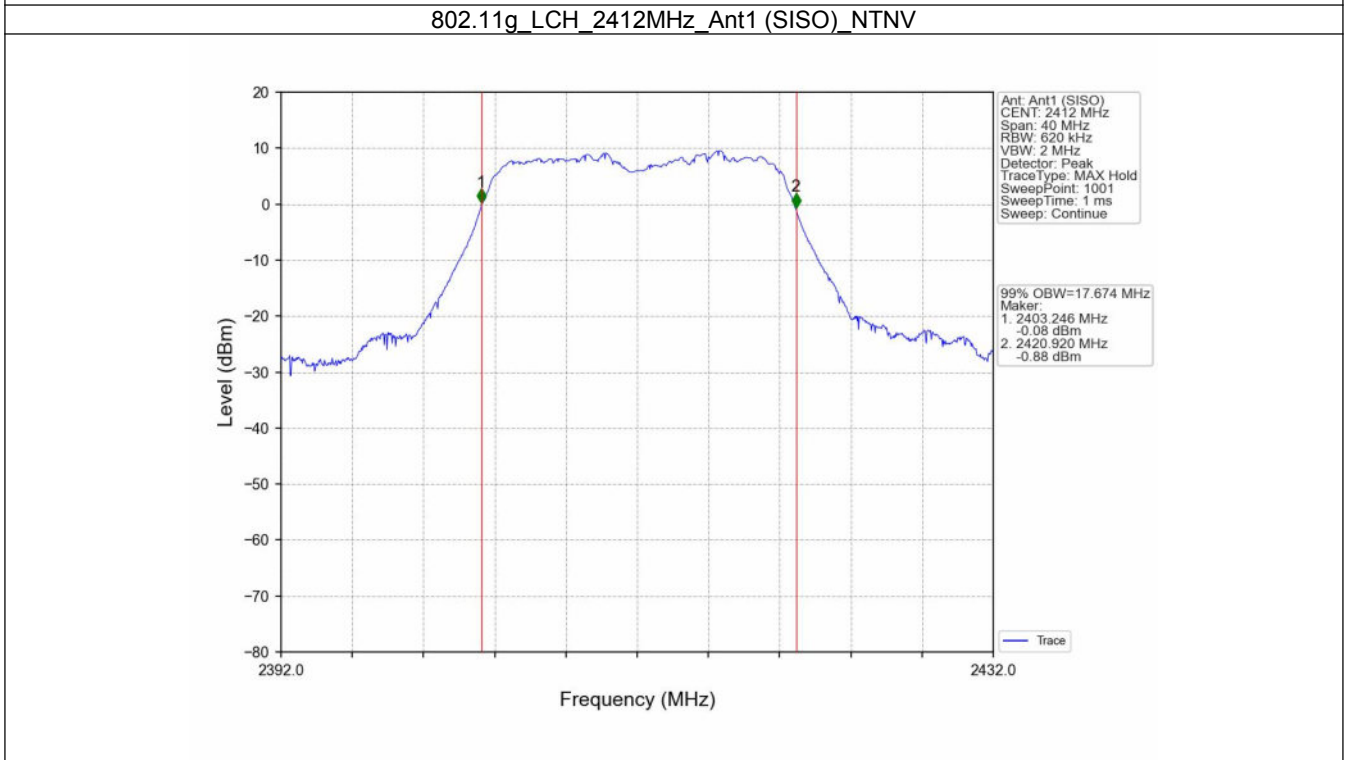
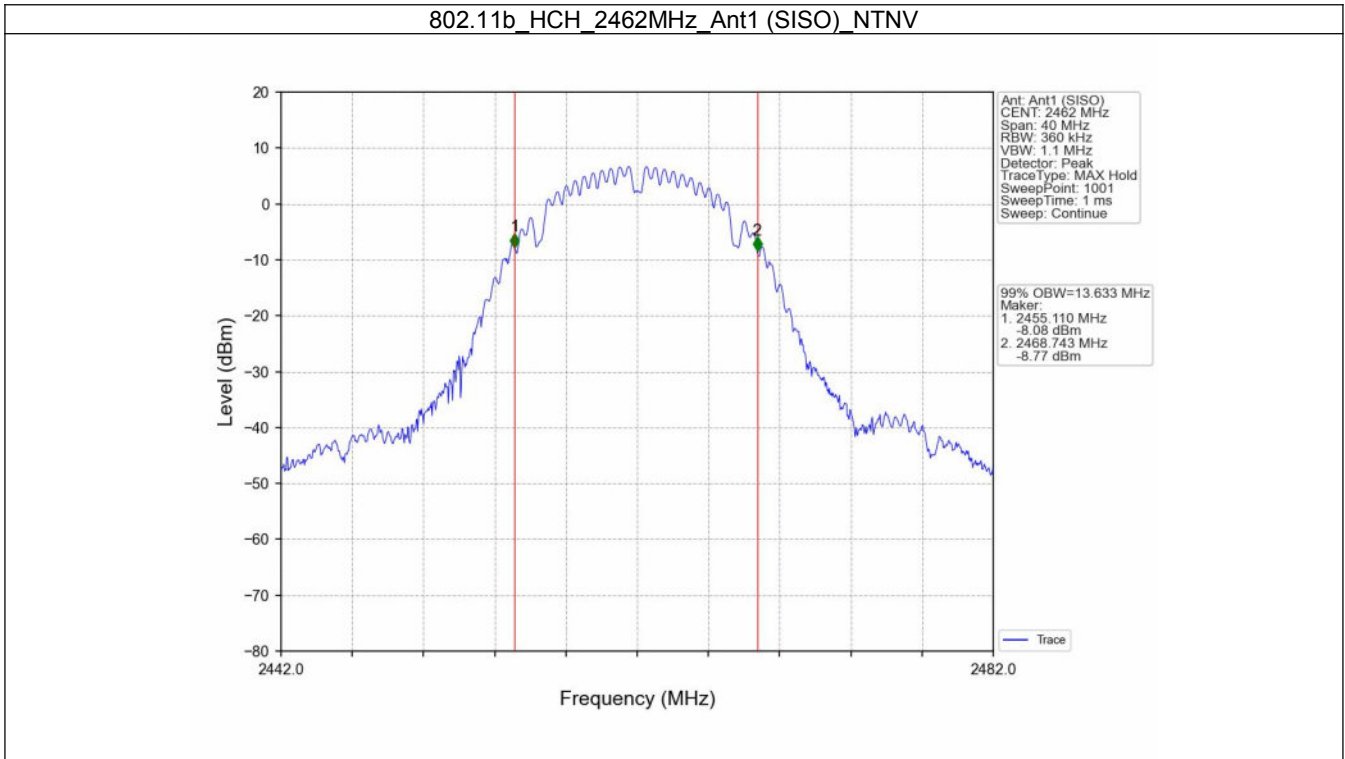
FCC ID: 2ASC7TAB702

### 1.2 Test Graph

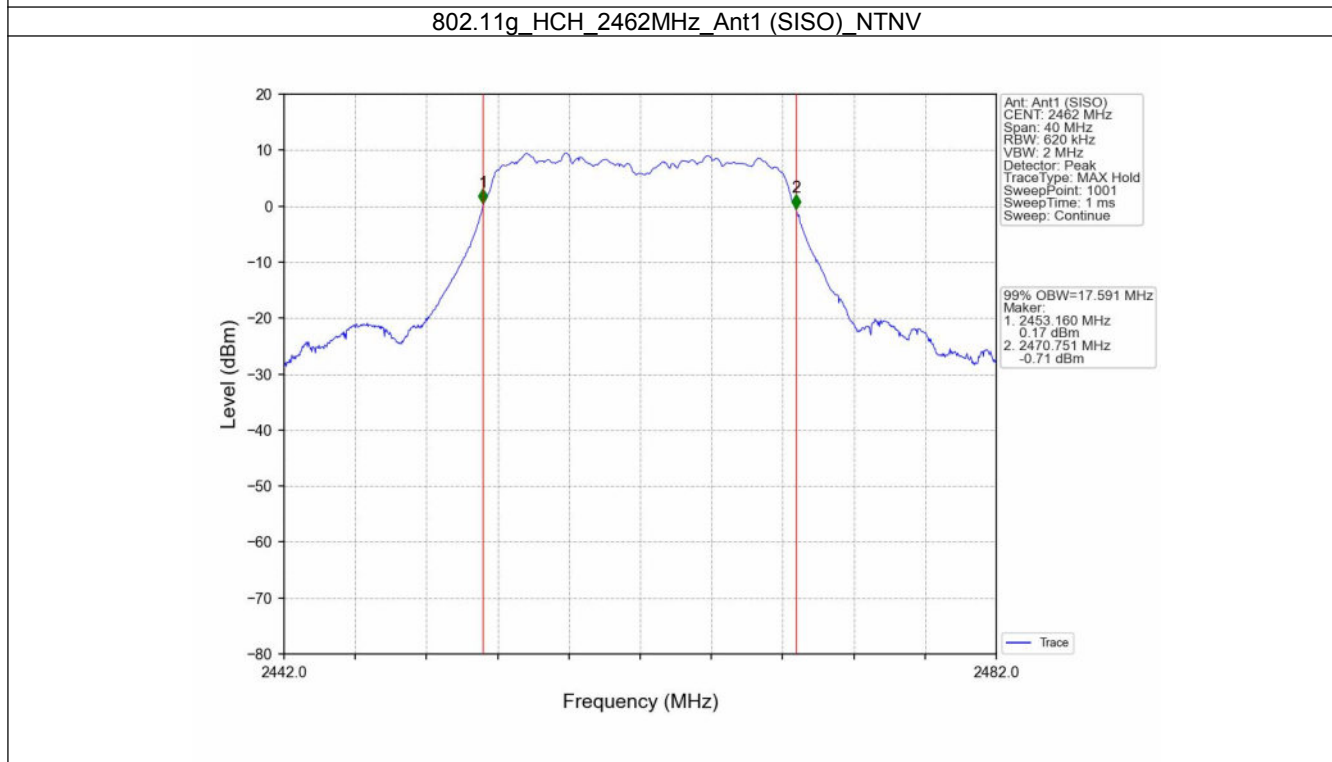
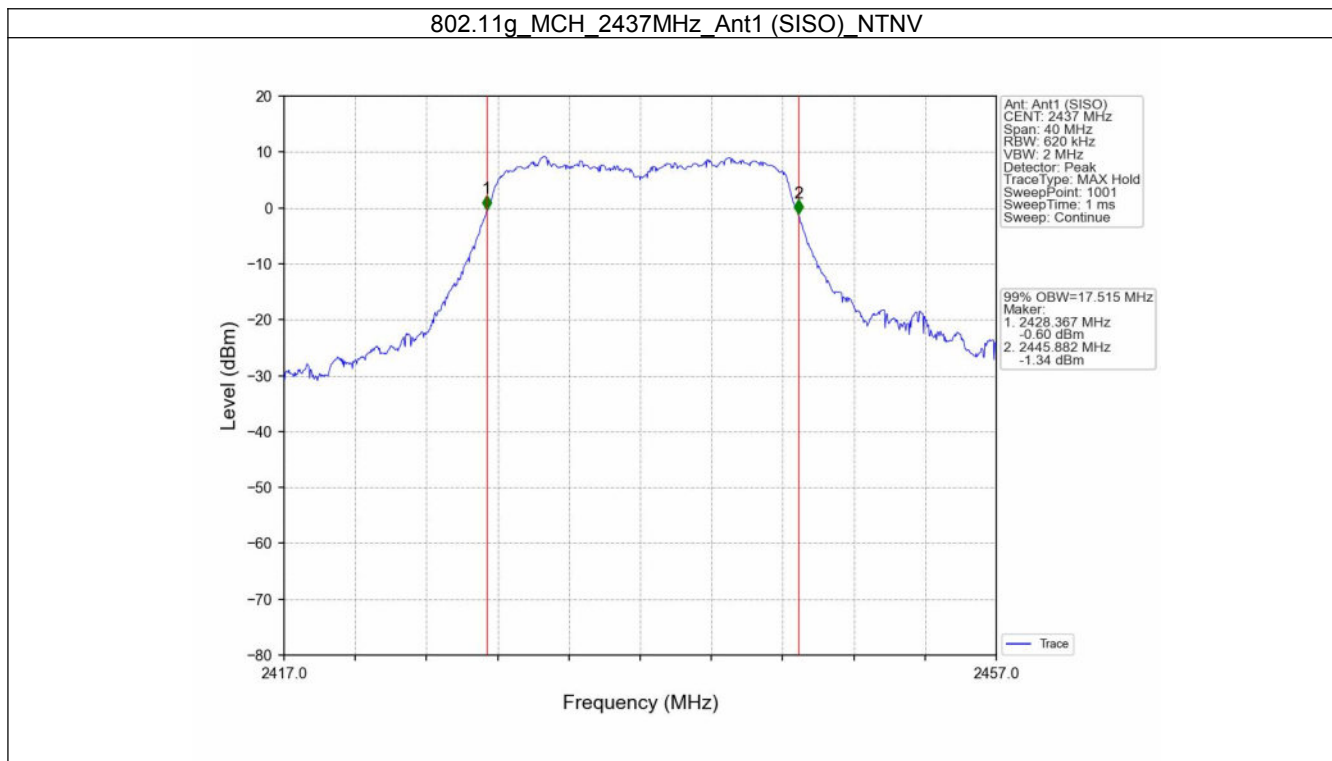
#### 1.2.1 OBW



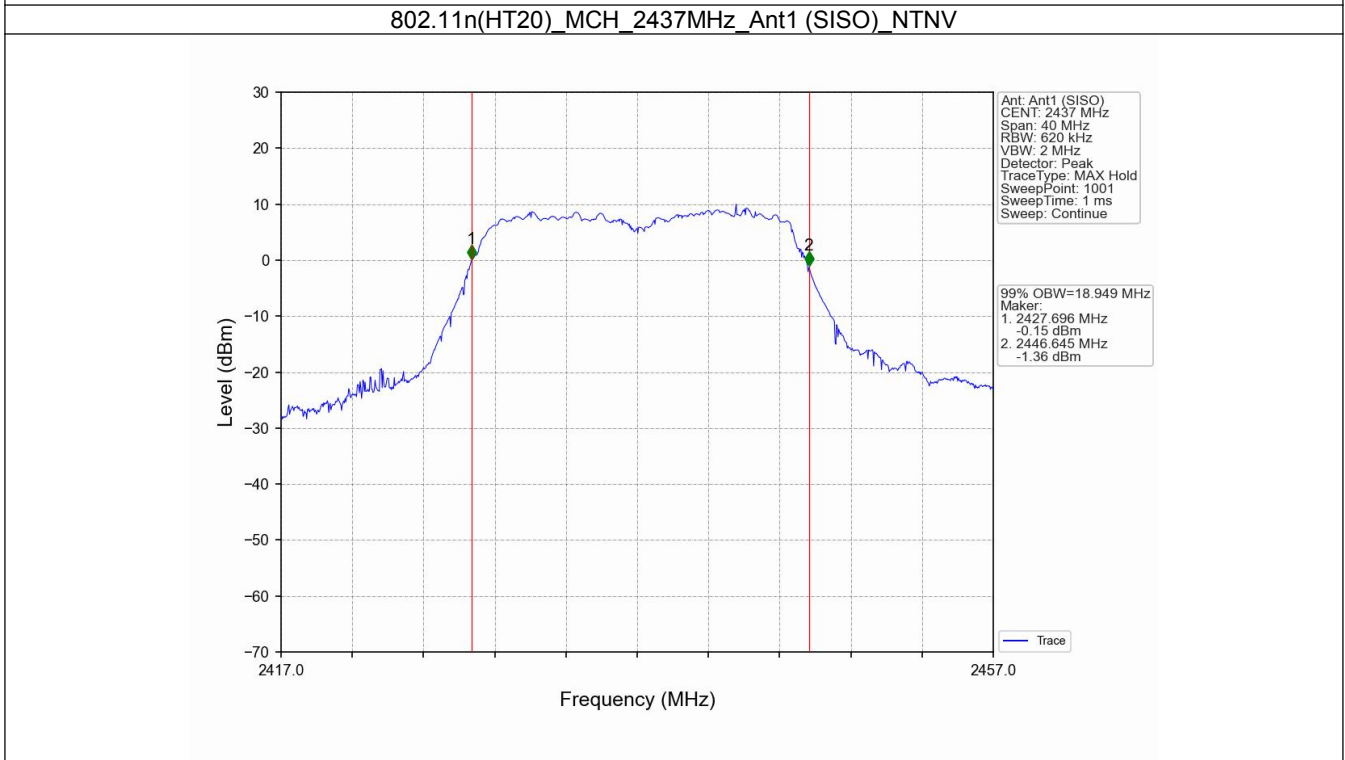
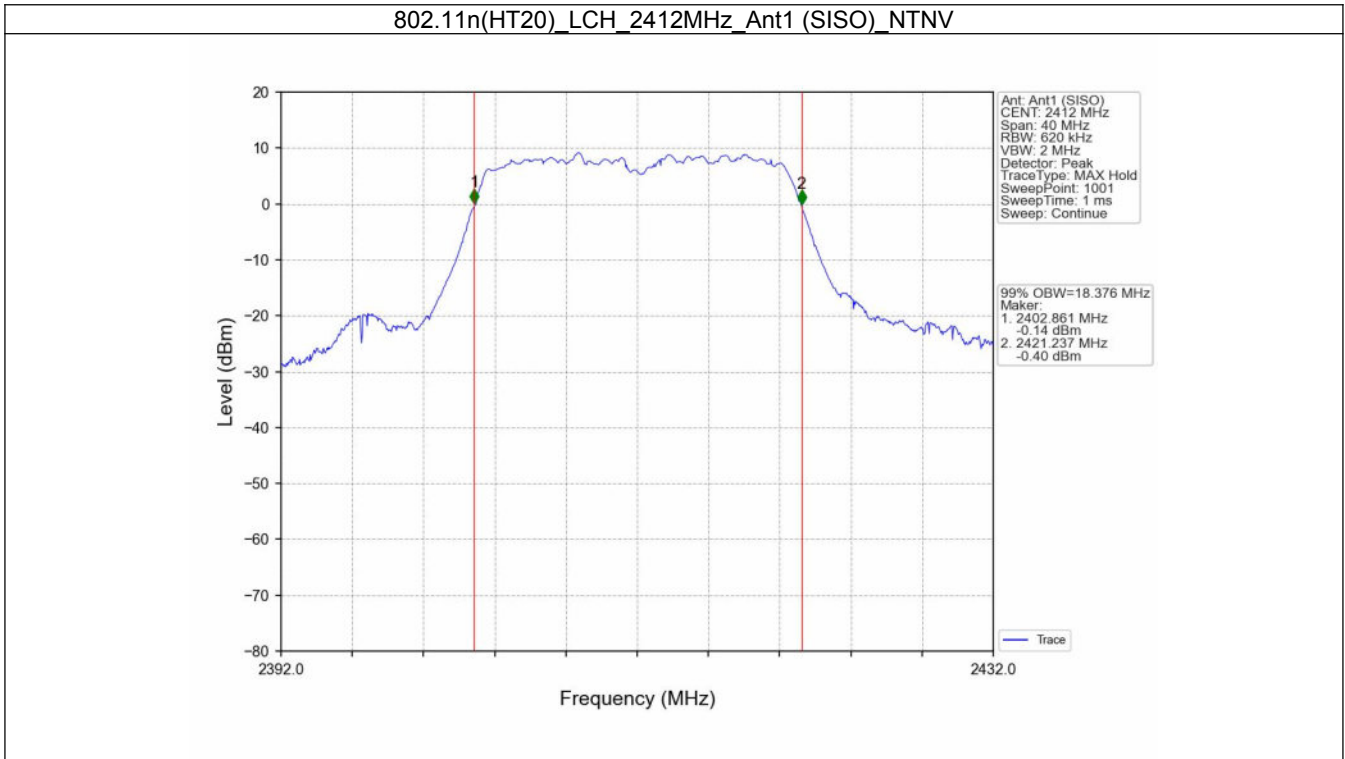
FCC ID: 2ASC7TAB702

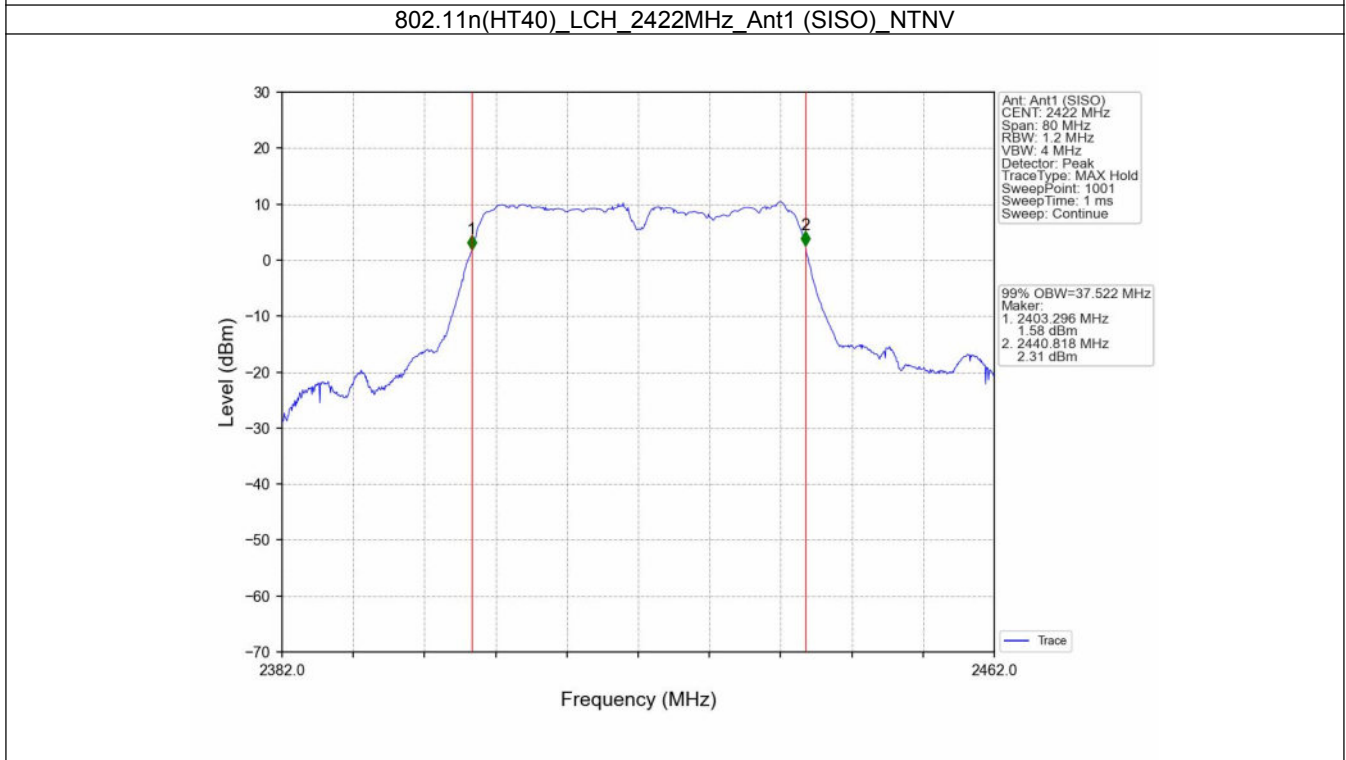
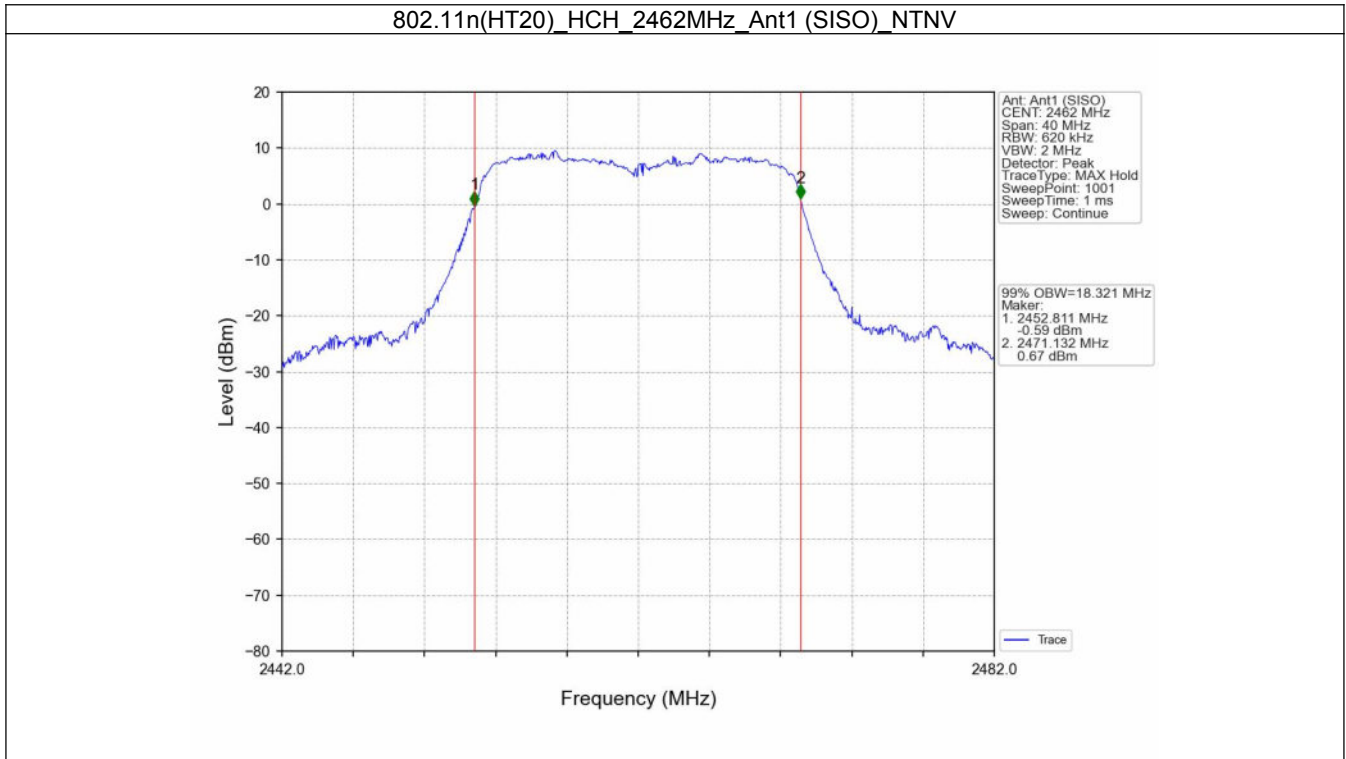


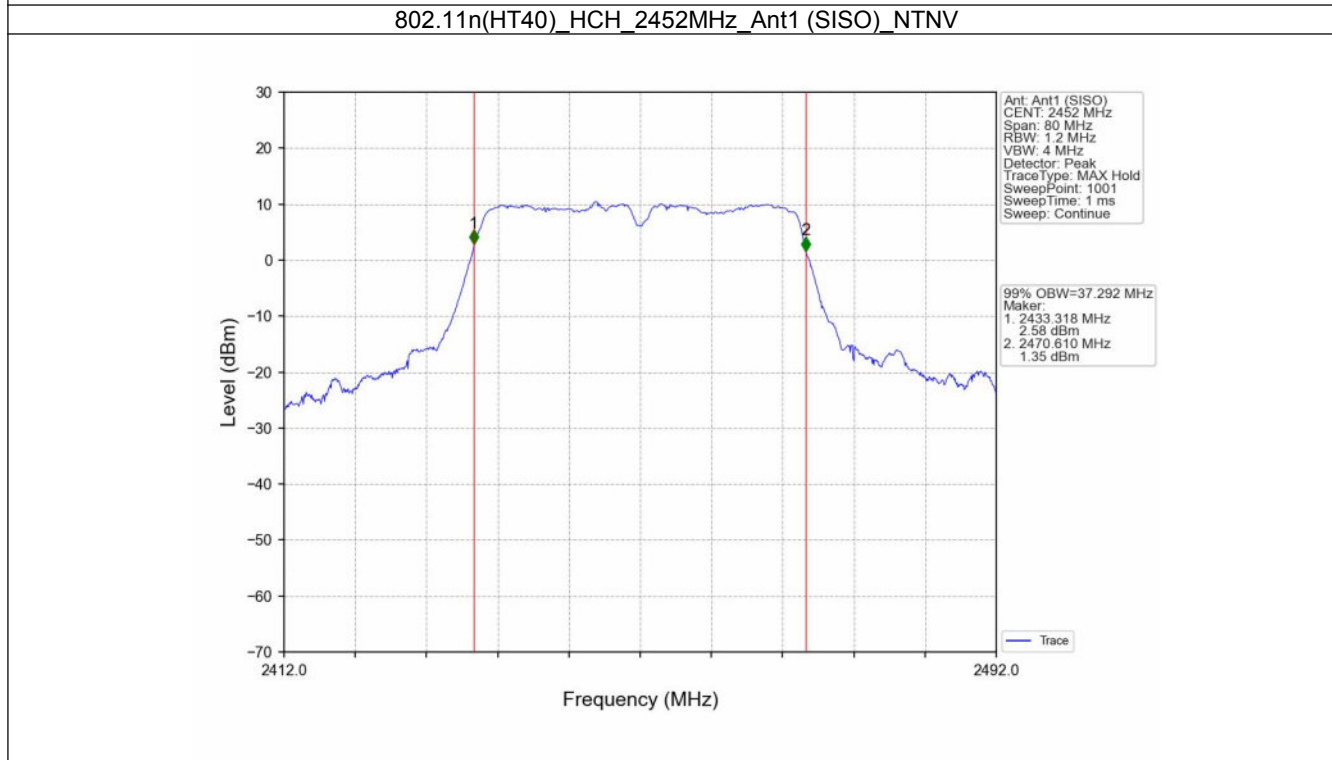
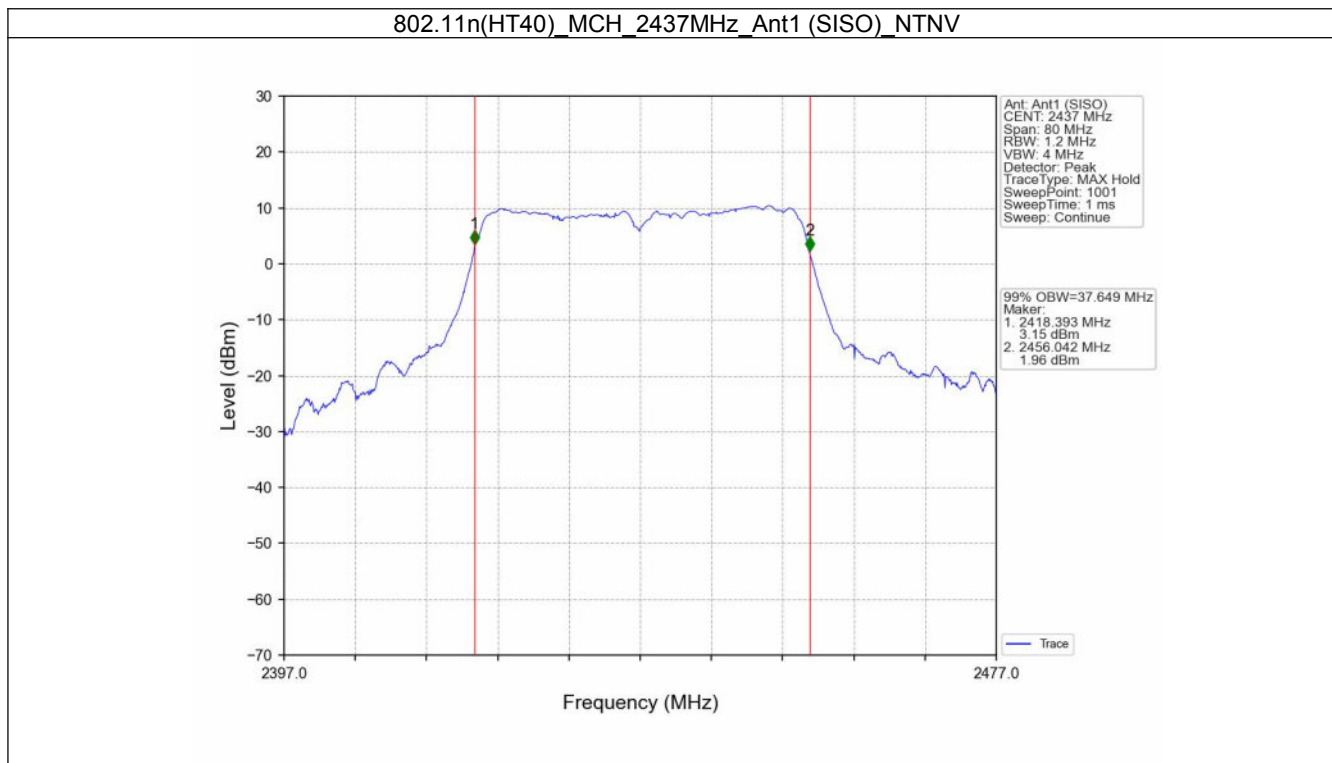
FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702

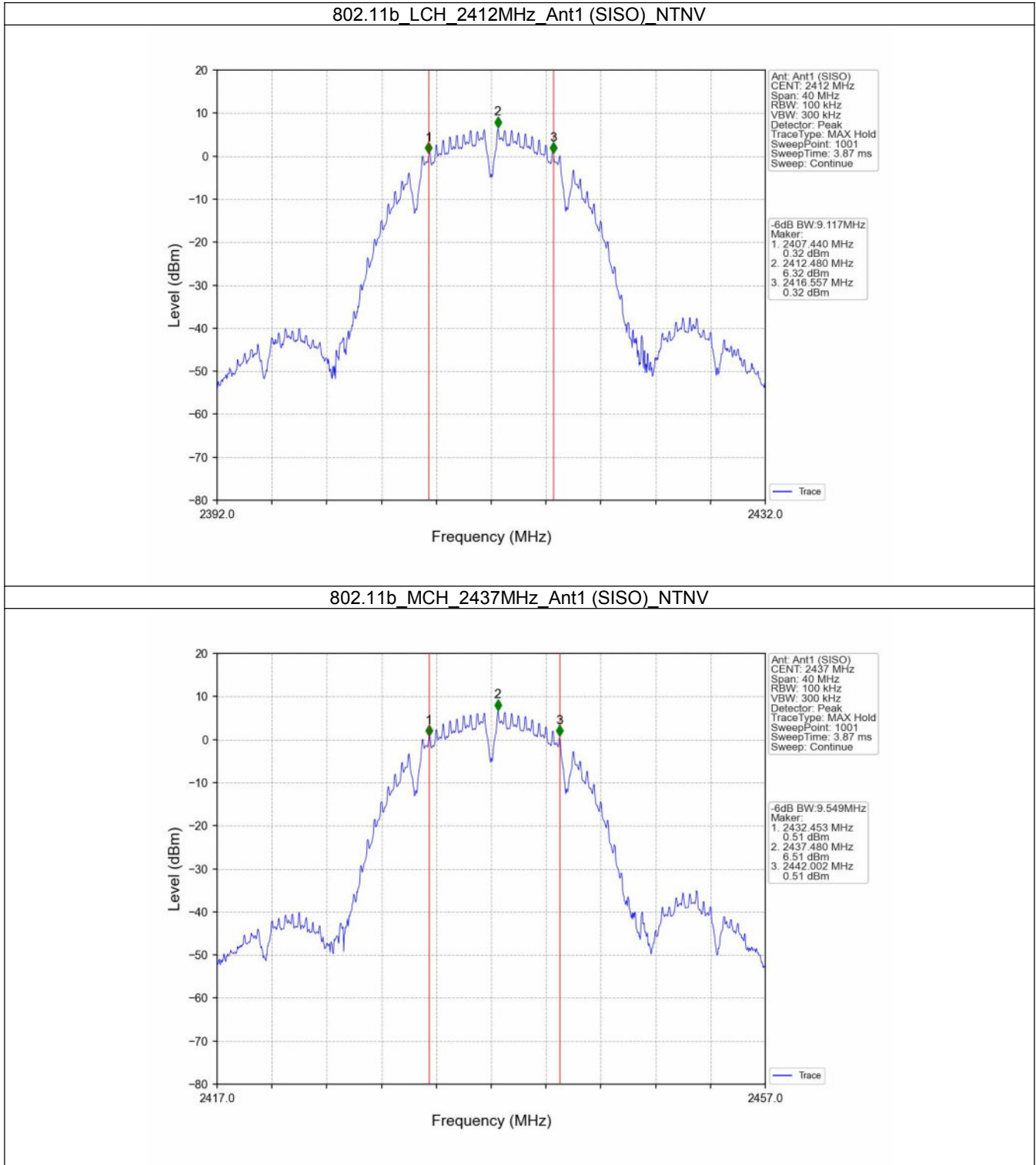




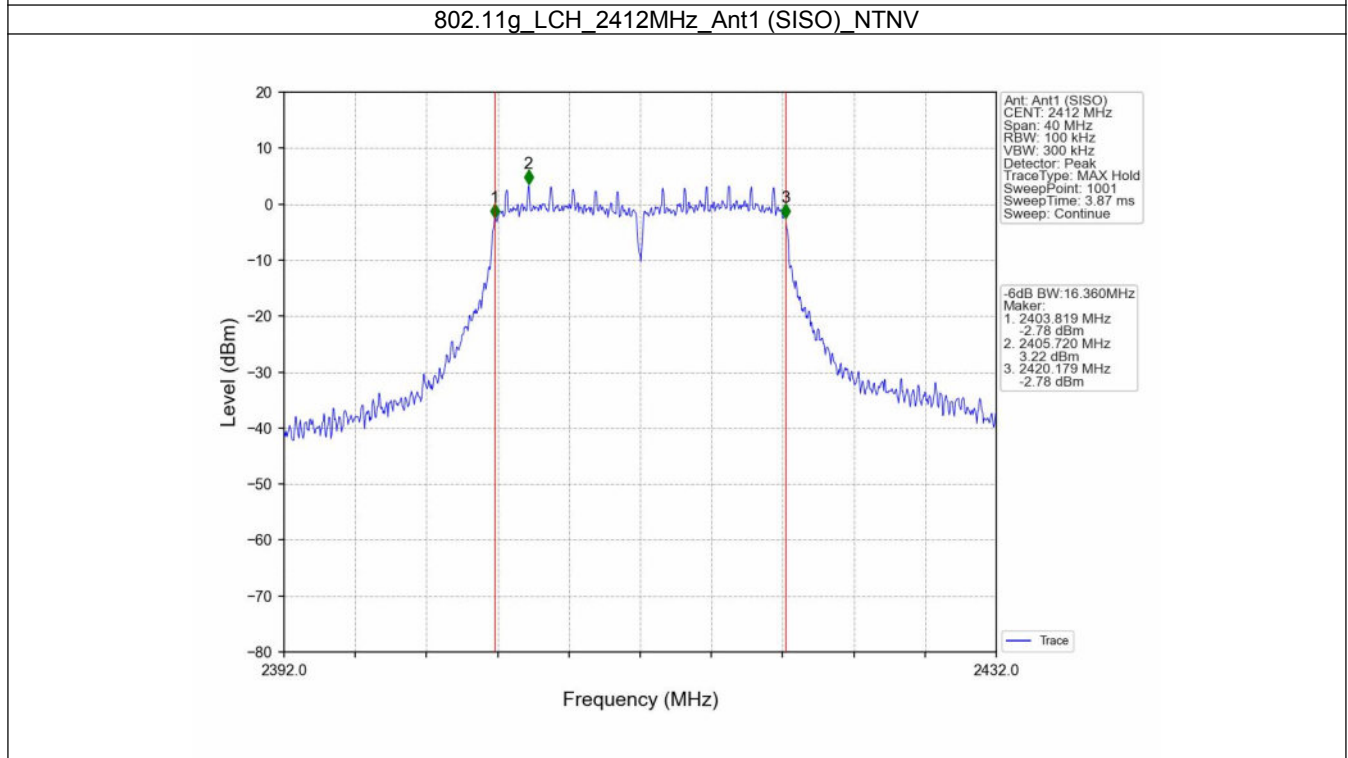
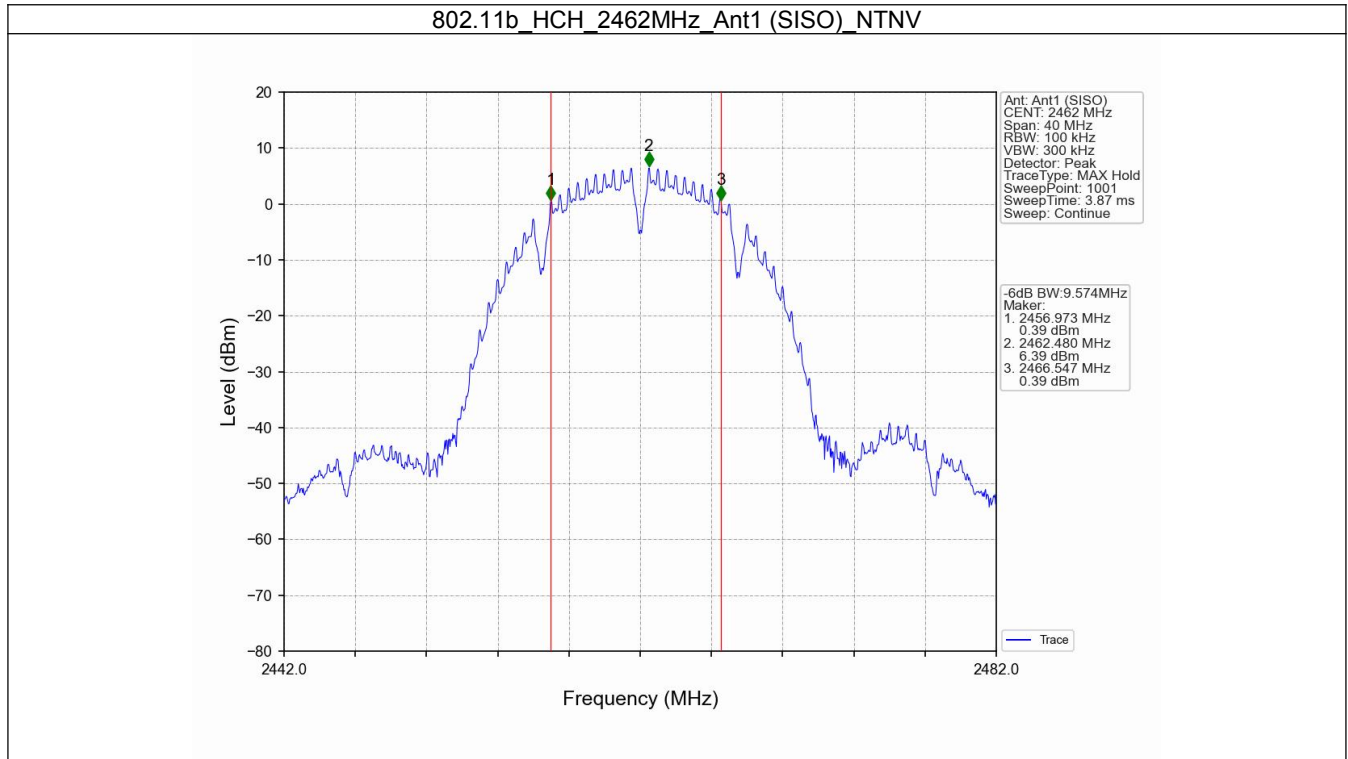




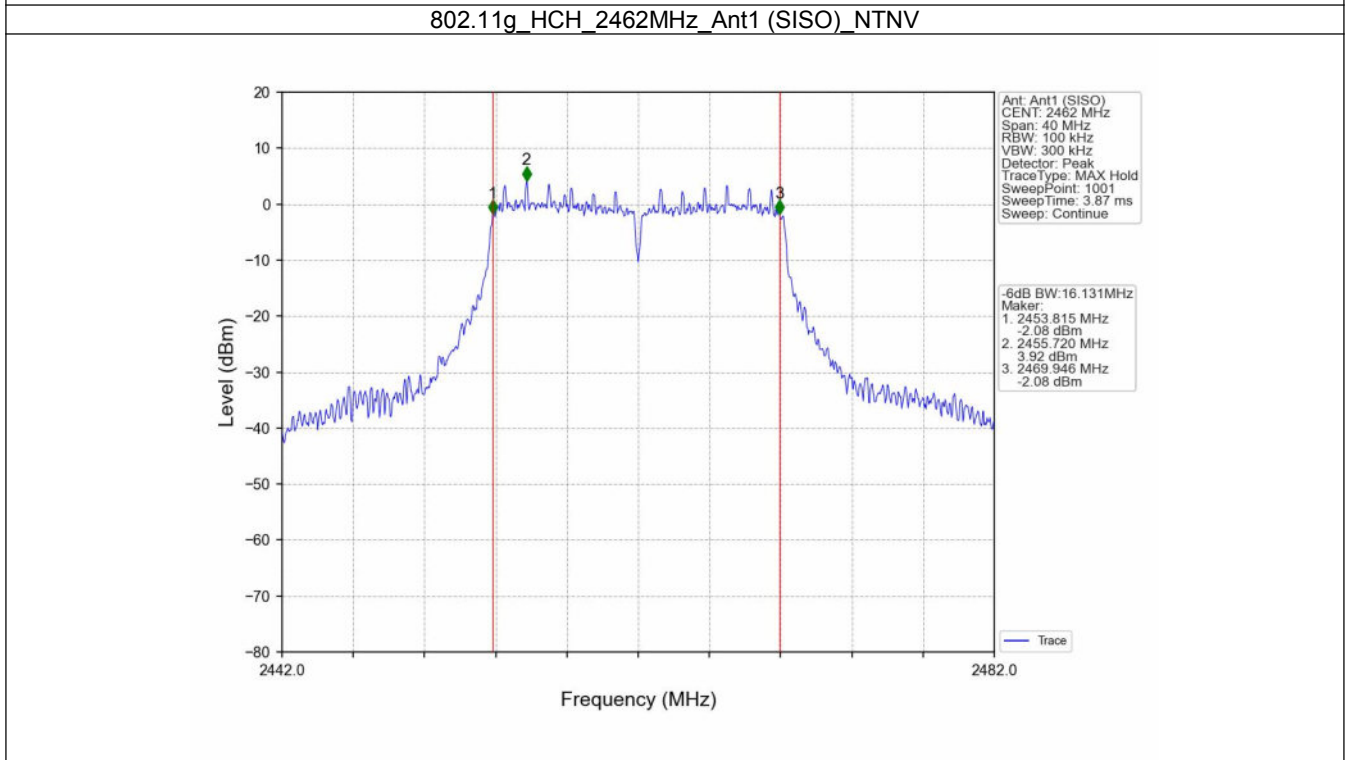
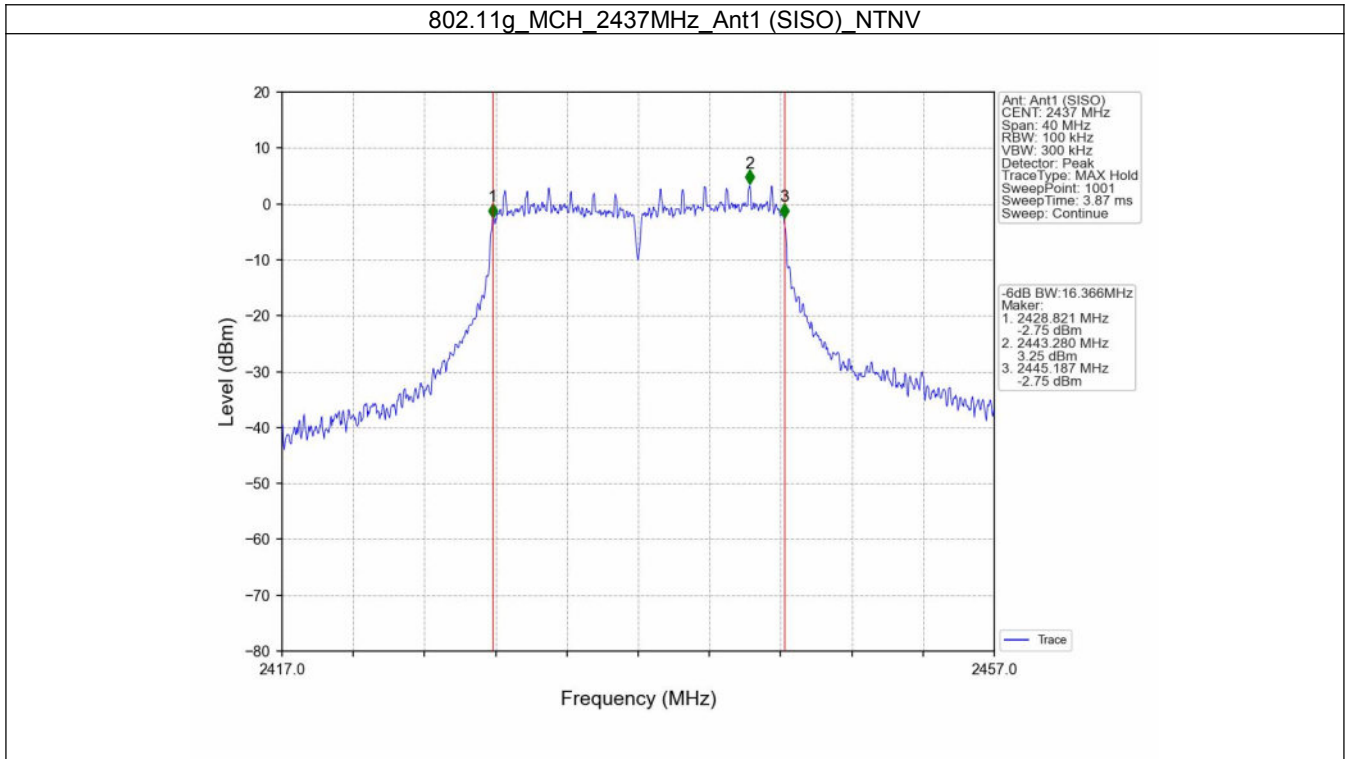
### 1.2.2 6dB BW



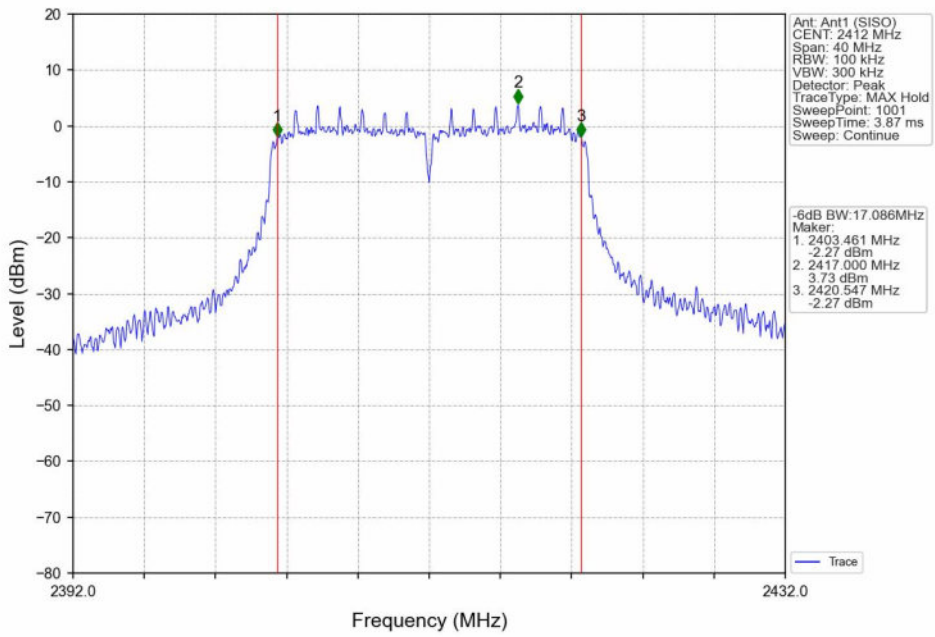
FCC ID: 2ASC7TAB702



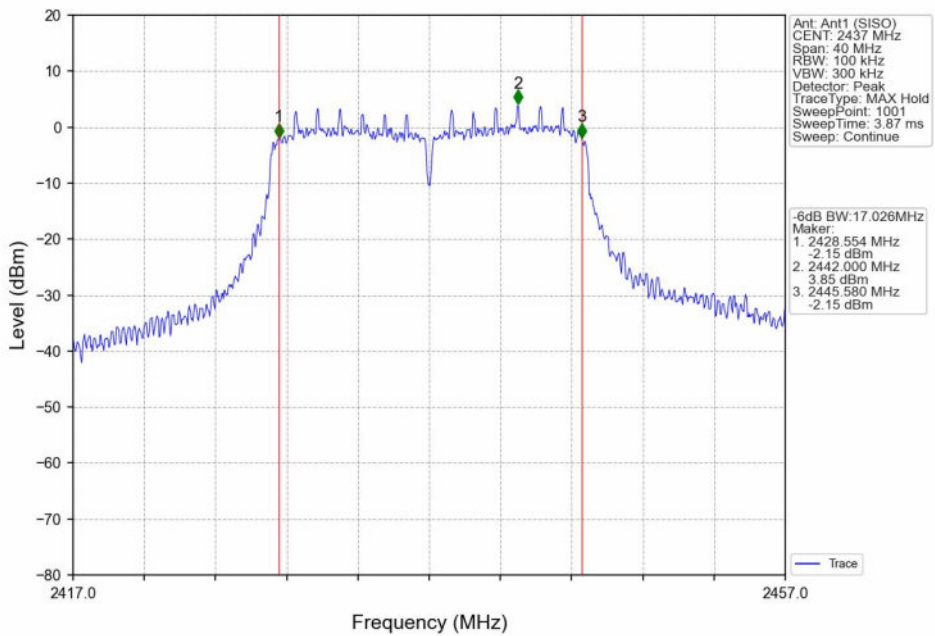
FCC ID: 2ASC7TAB702



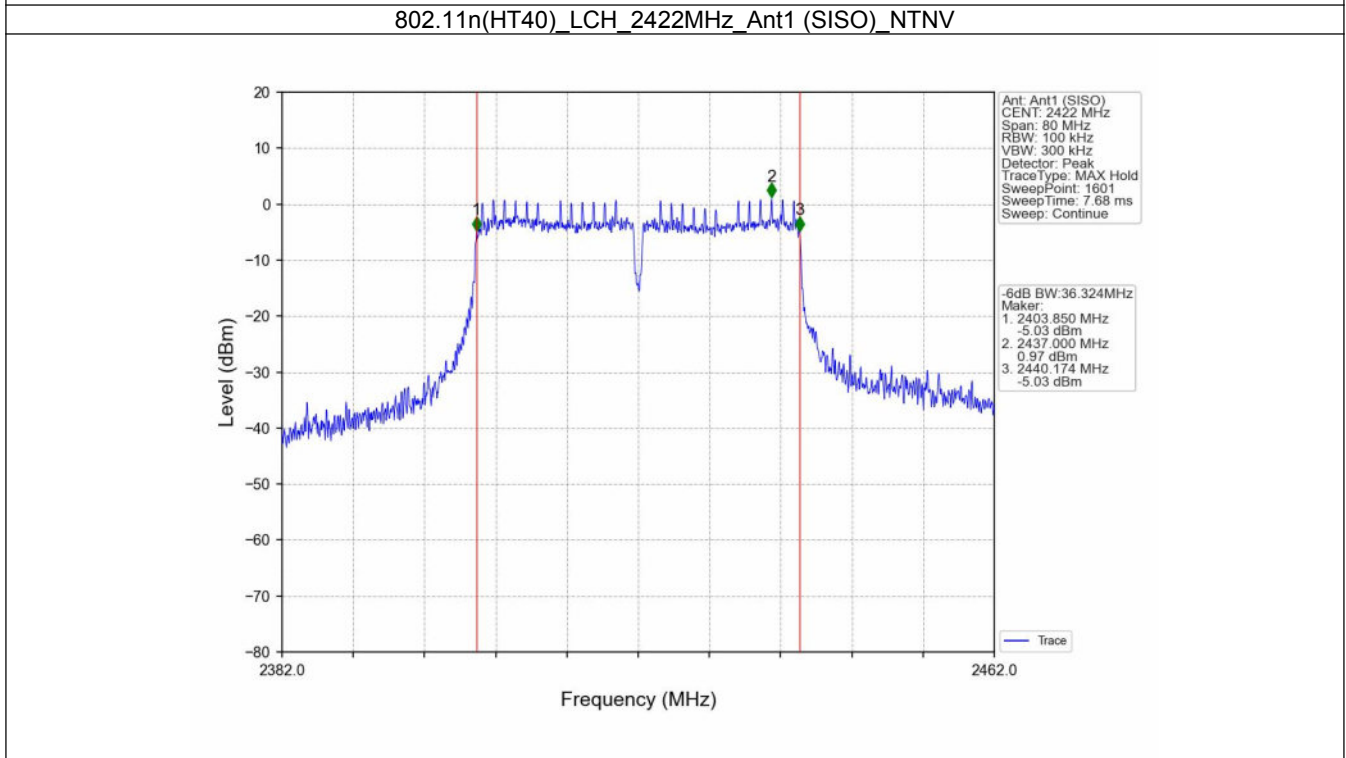
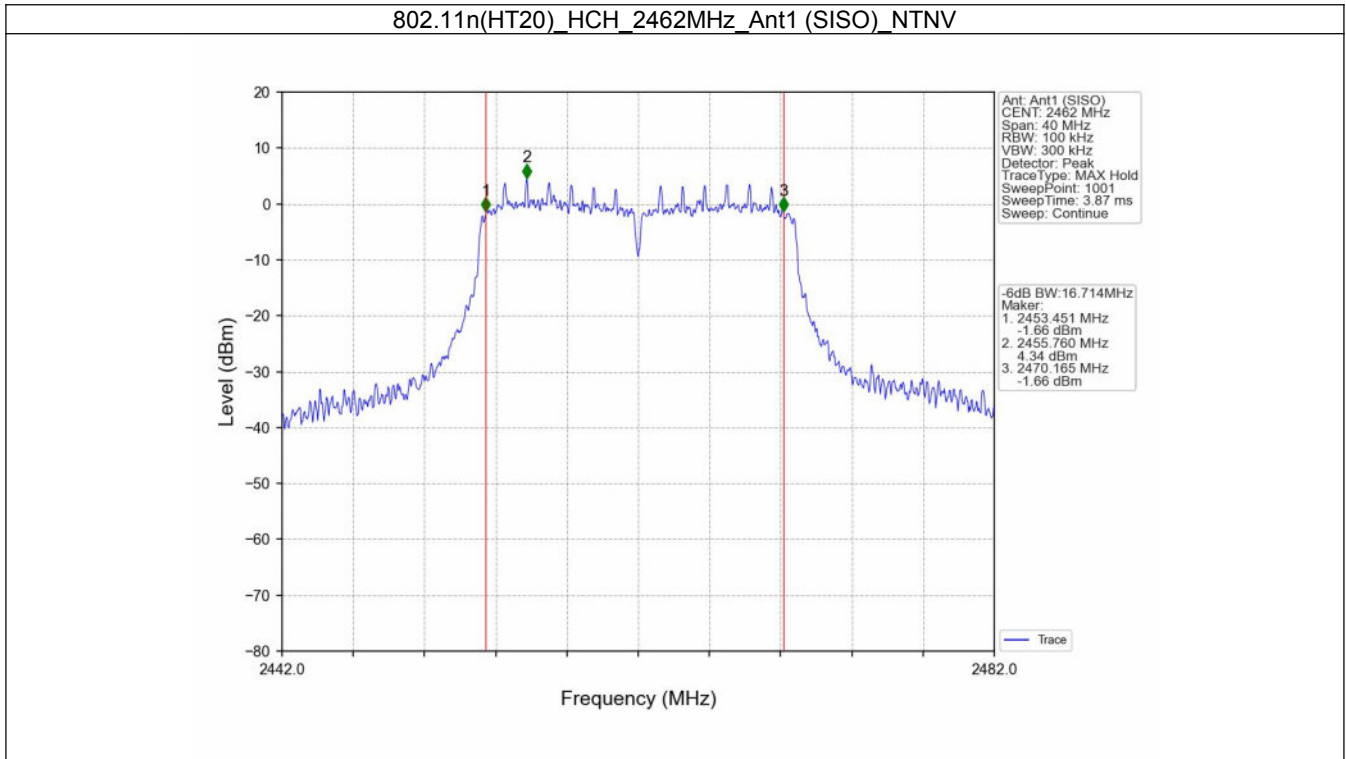
802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



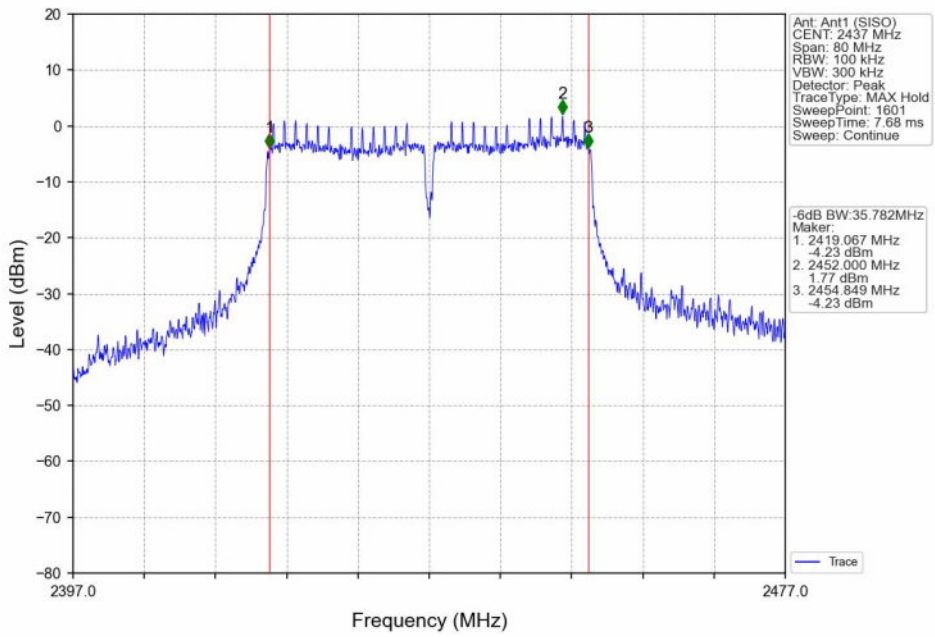
802.11n(HT20)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



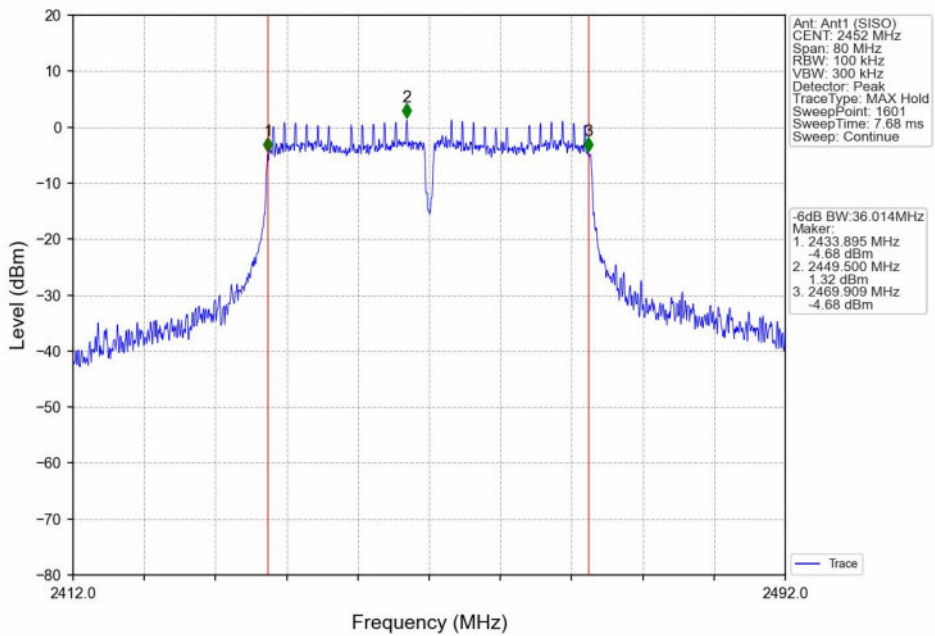
FCC ID: 2ASC7TAB702



802.11n(HT40)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



802.11n(HT40)\_HCH\_2452MHz\_Ant1 (SISO)\_NTNV



FCC ID: 2ASC7TAB702

## 2. Maximum Conducted Output Power

### 2.1 Test Result

#### 2.1.1 Power

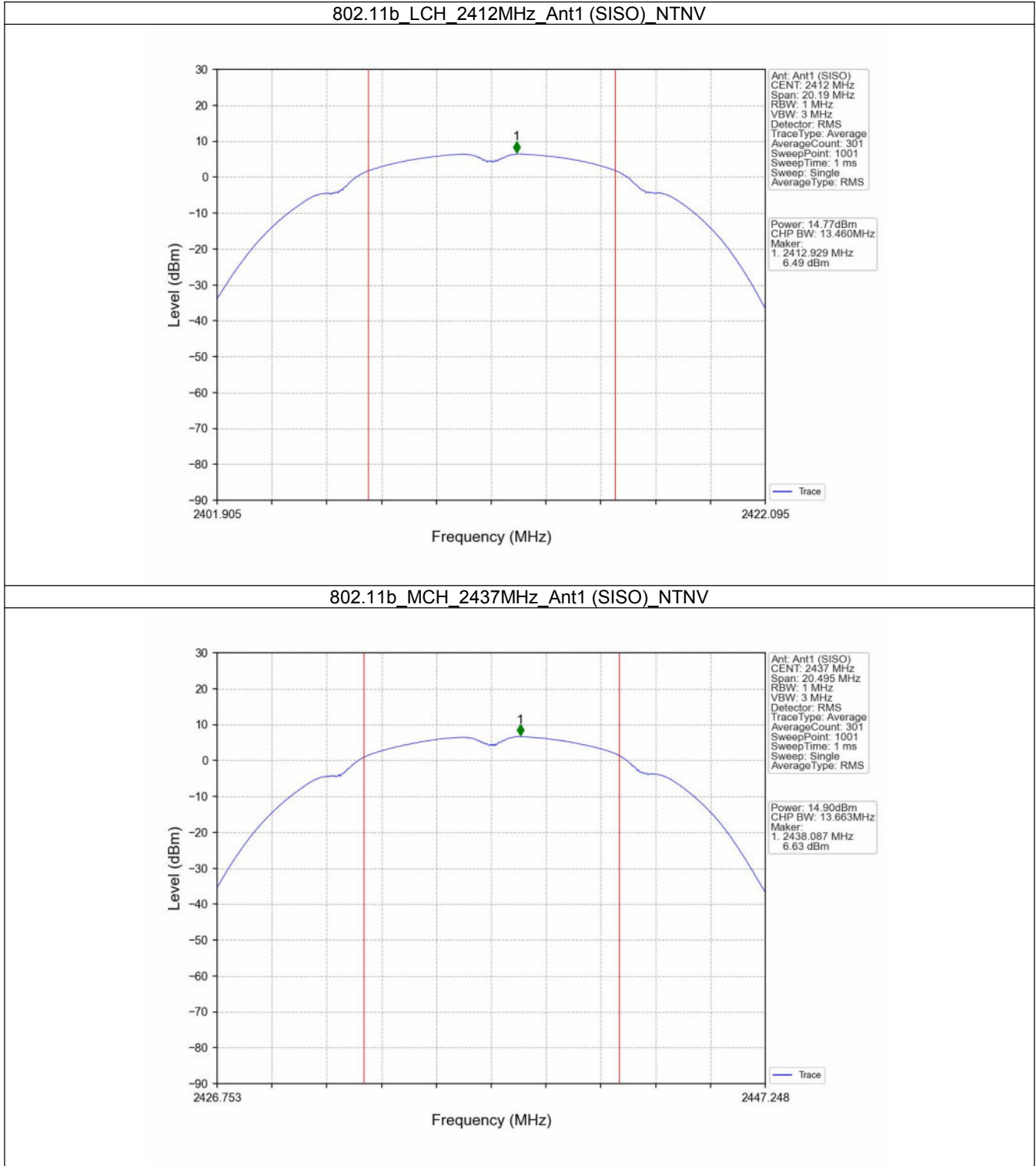
Mode	TX Type	Frequency (MHz)	Maximum Average Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	14.77	<=30	Pass
		2437	14.90	<=30	Pass
		2462	14.97	<=30	Pass
802.11g	SISO	2412	14.38	<=30	Pass
		2437	14.26	<=30	Pass
		2462	14.49	<=30	Pass
802.11n (HT20)	SISO	2412	14.60	<=30	Pass
		2437	14.60	<=30	Pass
		2462	14.82	<=30	Pass
802.11n (HT40)	SISO	2422	14.99	<=30	Pass
		2437	15.15	<=30	Pass
		2452	15.27	<=30	Pass

Note1: Antenna Gain: Ant1: 1.89dBi;

FCC ID: 2ASC7TAB702

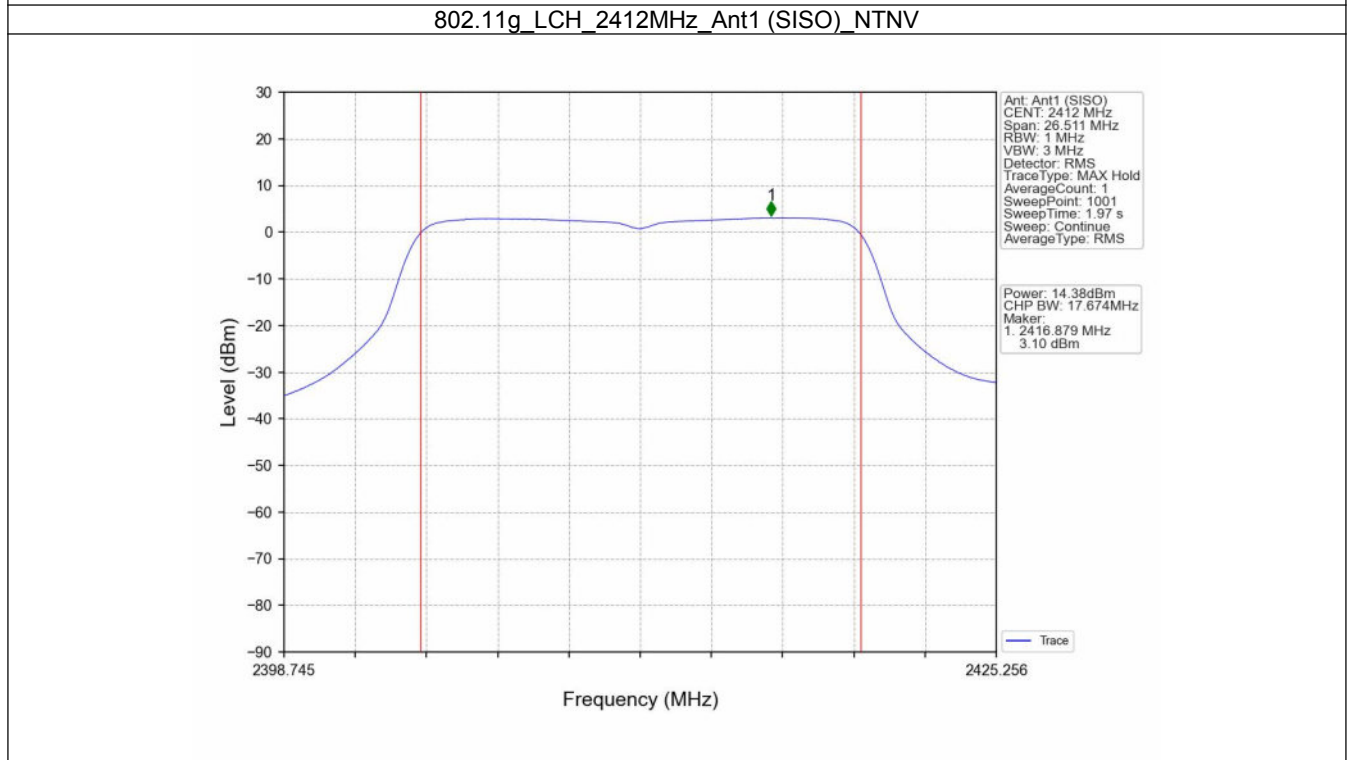
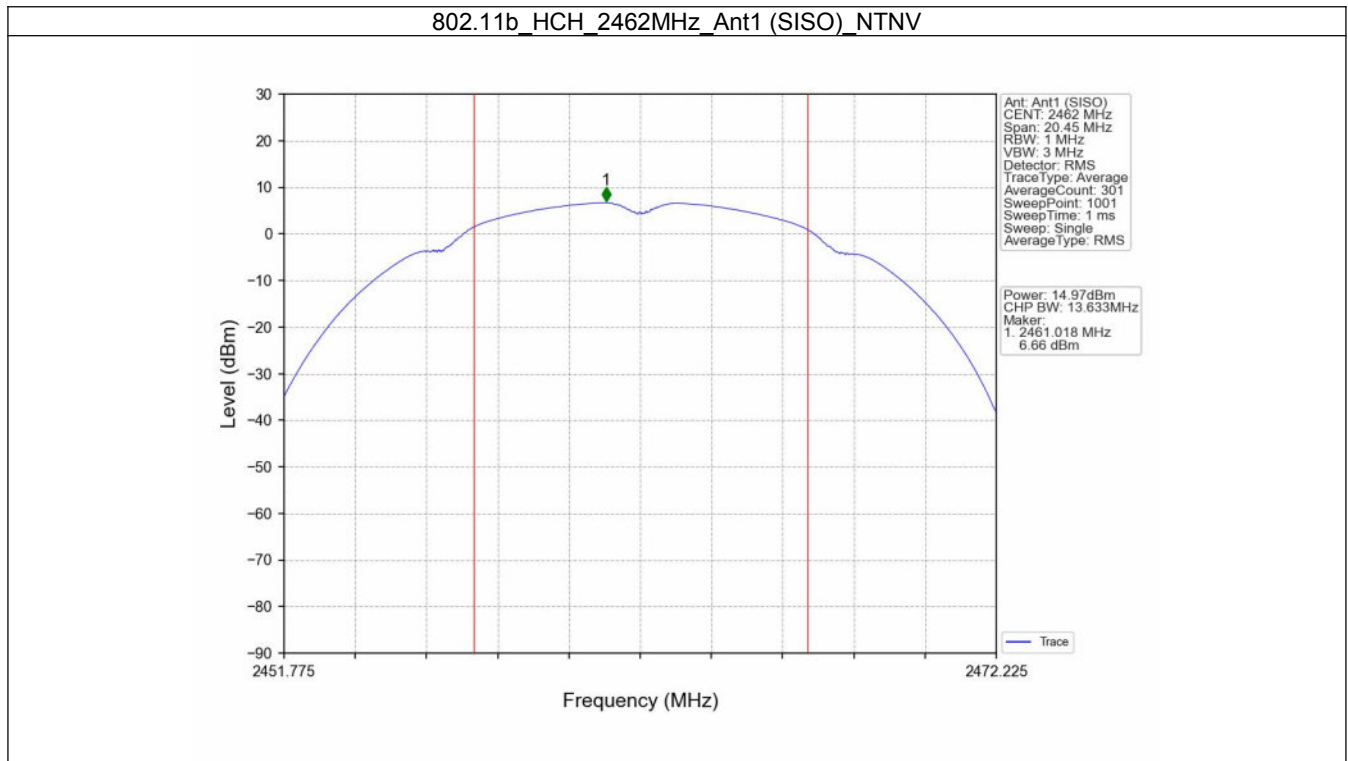
## 2.2 Test Graph

### 2.2.1 Power

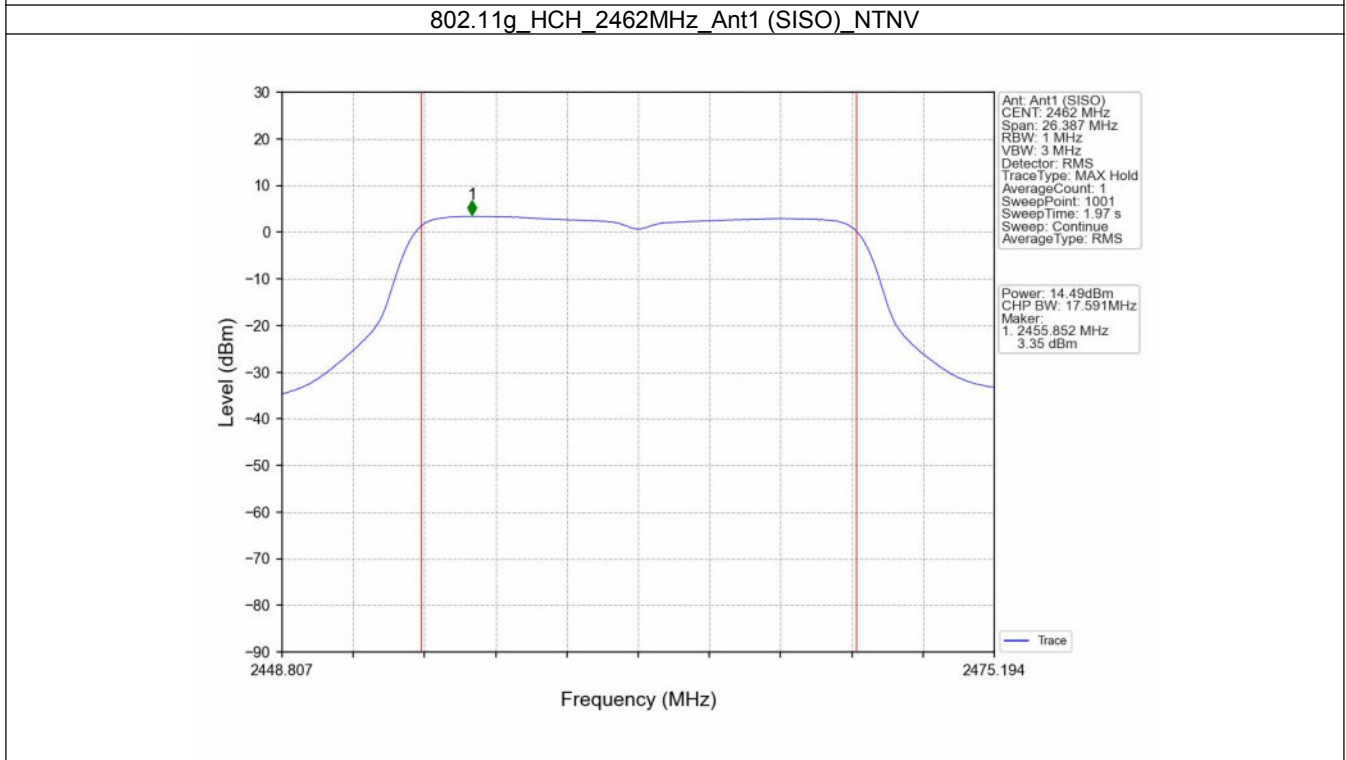
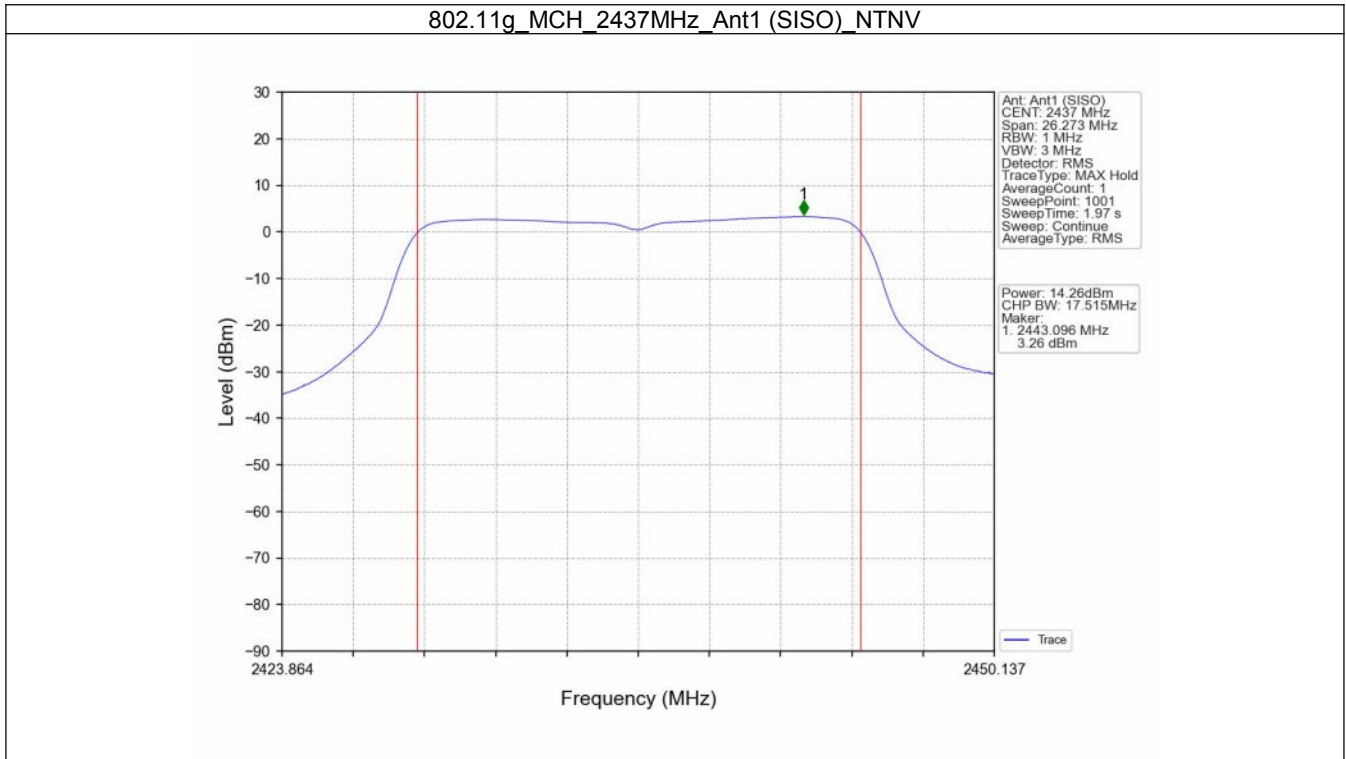




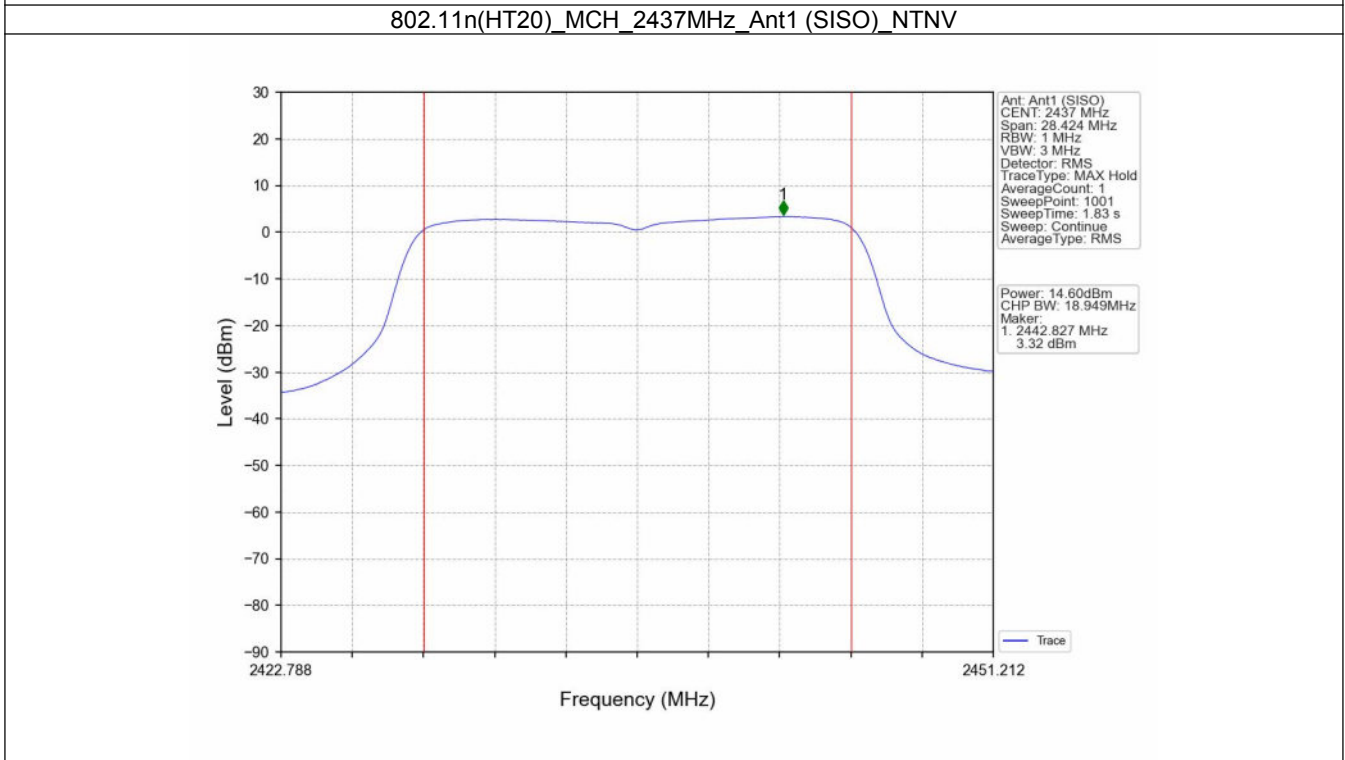
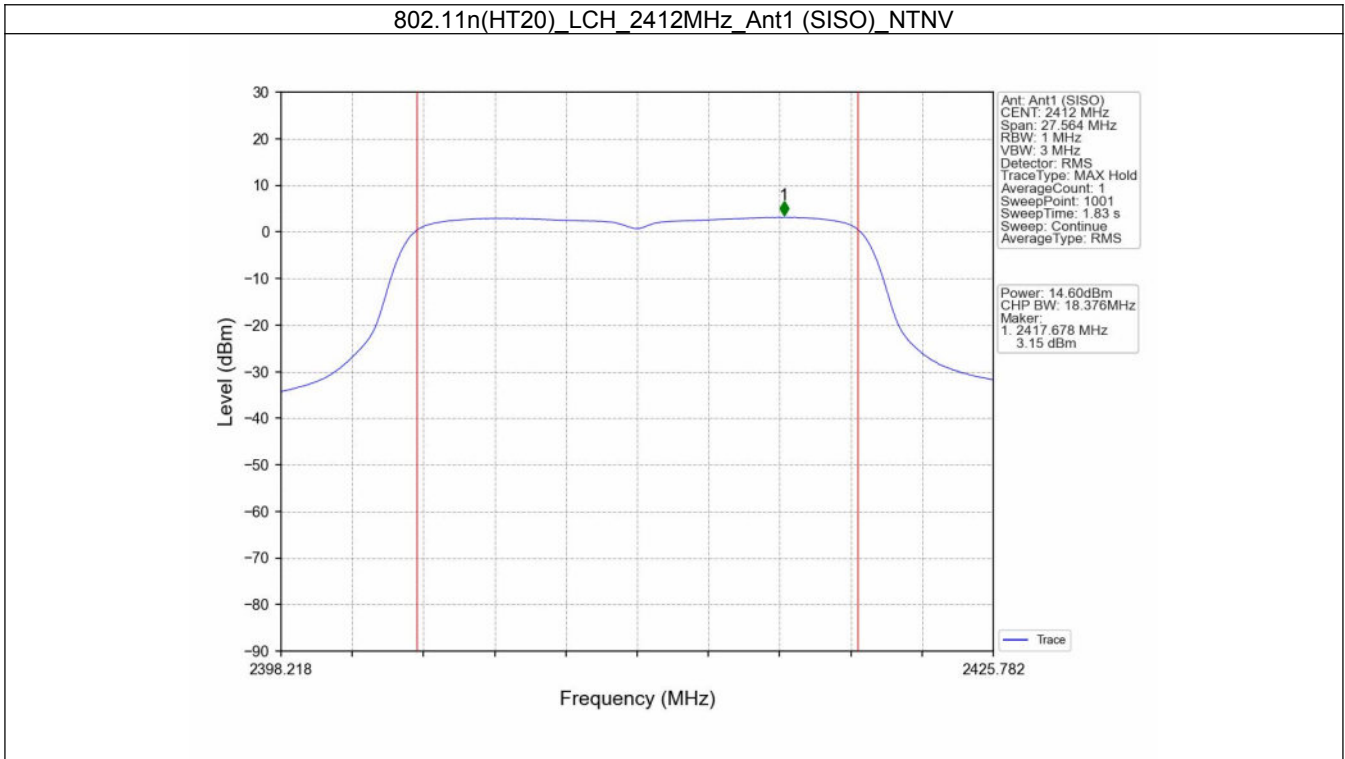
FCC ID: 2ASC7TAB702



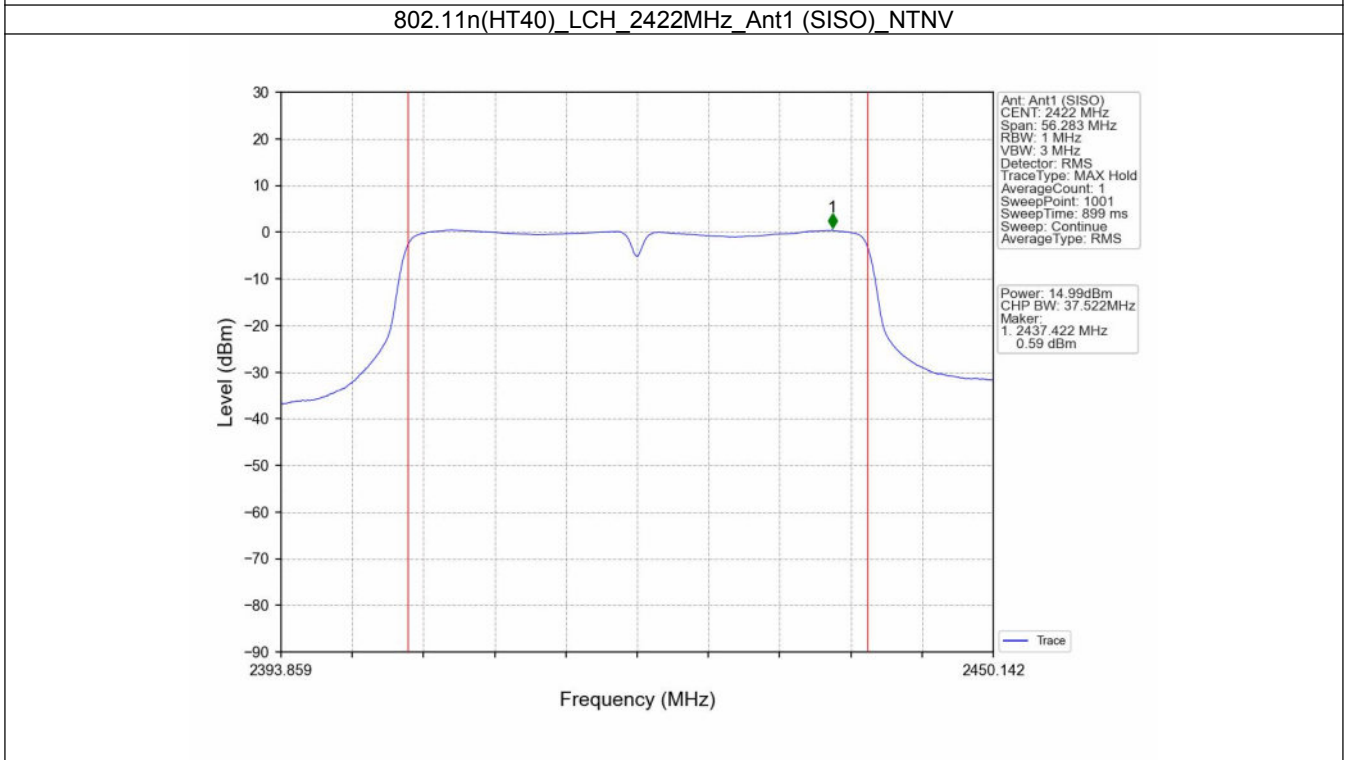
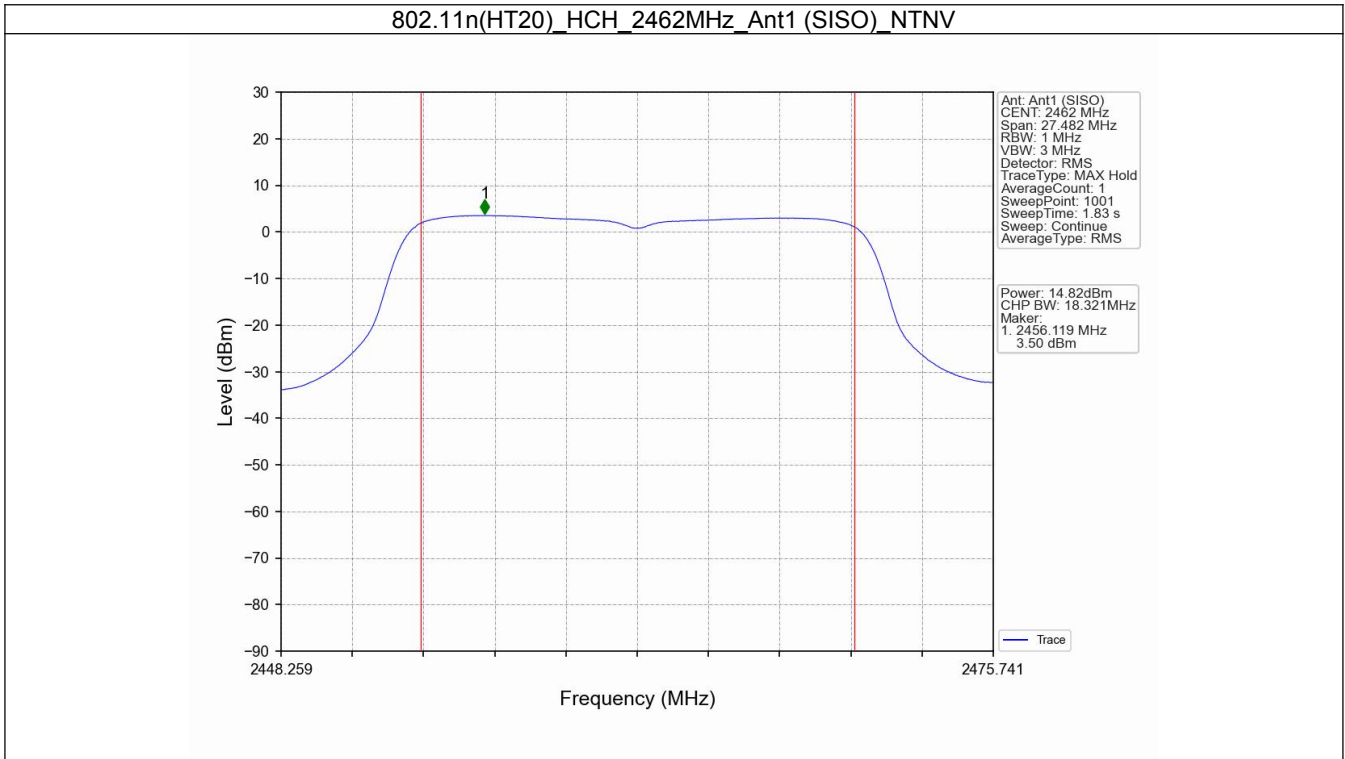
FCC ID: 2ASC7TAB702



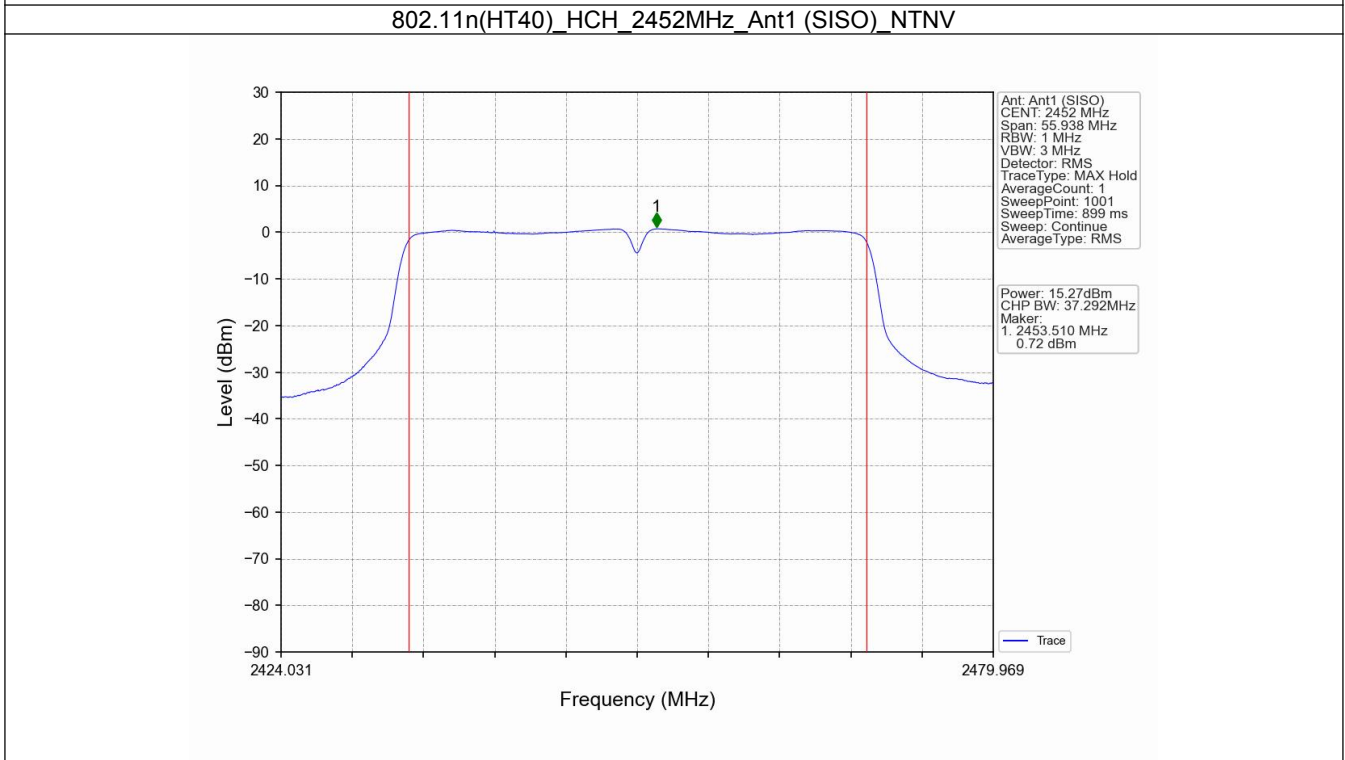
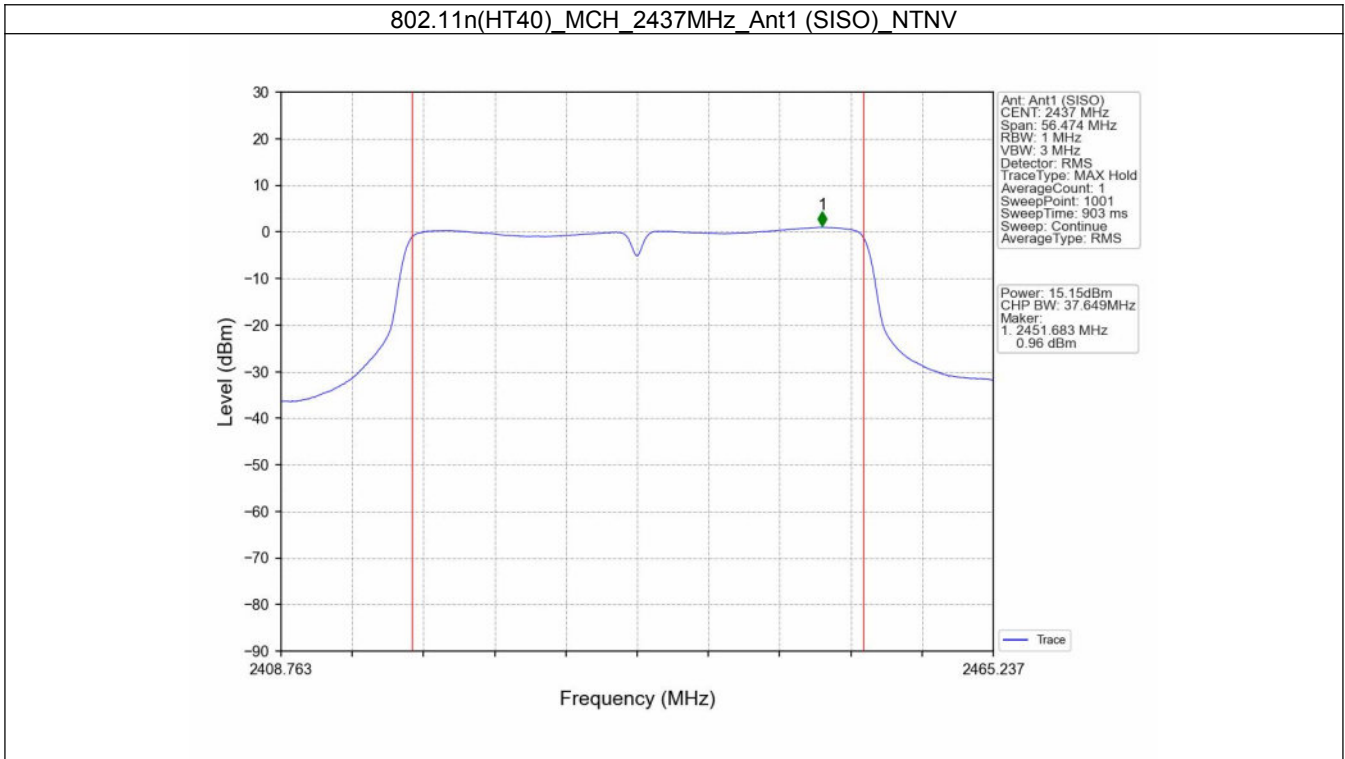
FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702

### 3. Maximum Power Spectral Density

#### 3.1 Test Result

##### 3.1.1 PSD

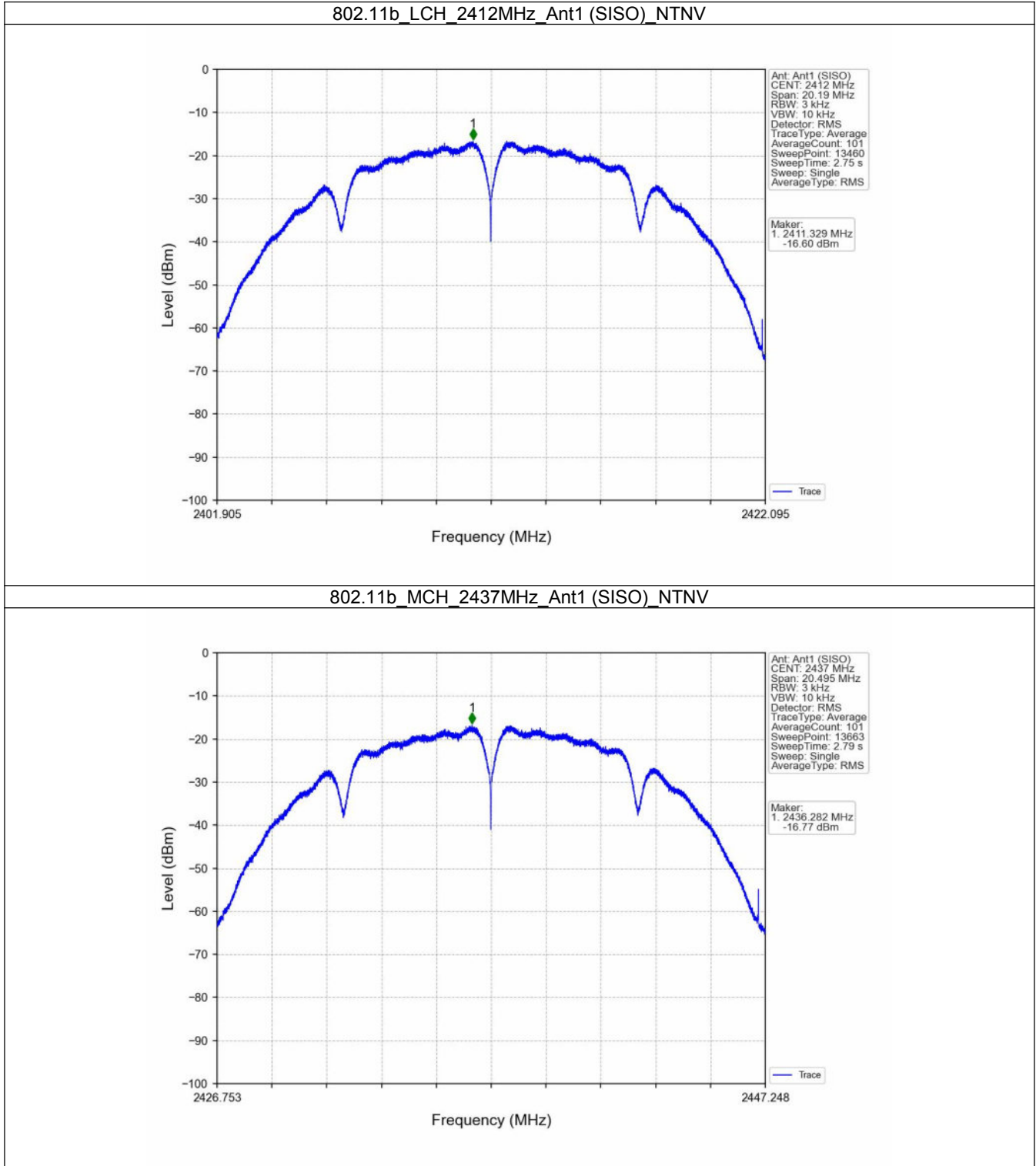
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
802.11b	SISO	2412	-16.60	<=8	Pass
		2437	-16.77	<=8	Pass
		2462	-16.61	<=8	Pass
802.11g	SISO	2412	-17.08	<=8	Pass
		2437	-16.67	<=8	Pass
		2462	-16.79	<=8	Pass
802.11n (HT20)	SISO	2412	-15.77	<=8	Pass
		2437	-16.98	<=8	Pass
		2462	-15.93	<=8	Pass
802.11n (HT40)	SISO	2422	-18.14	<=8	Pass
		2437	-18.30	<=8	Pass
		2452	-18.10	<=8	Pass

Note1: Antenna Gain: Ant1: 1.89dBi;

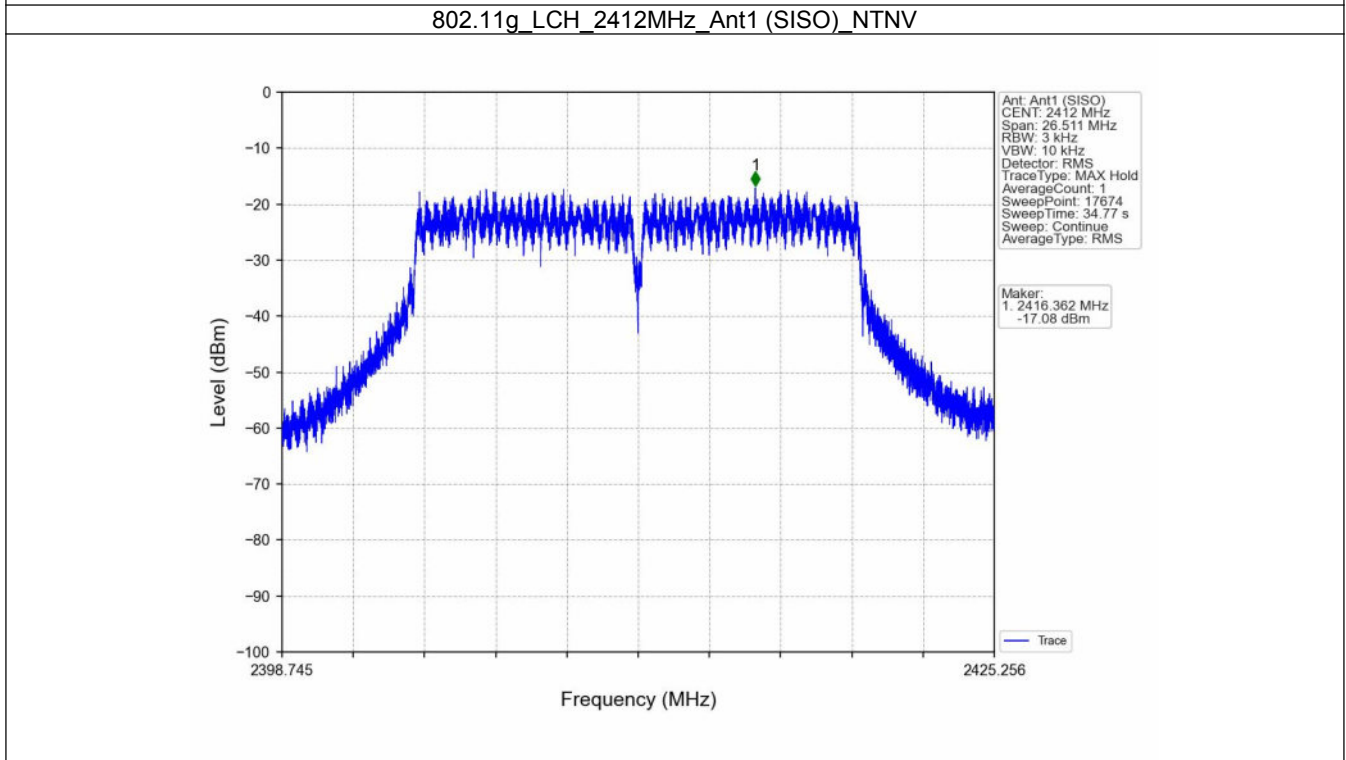
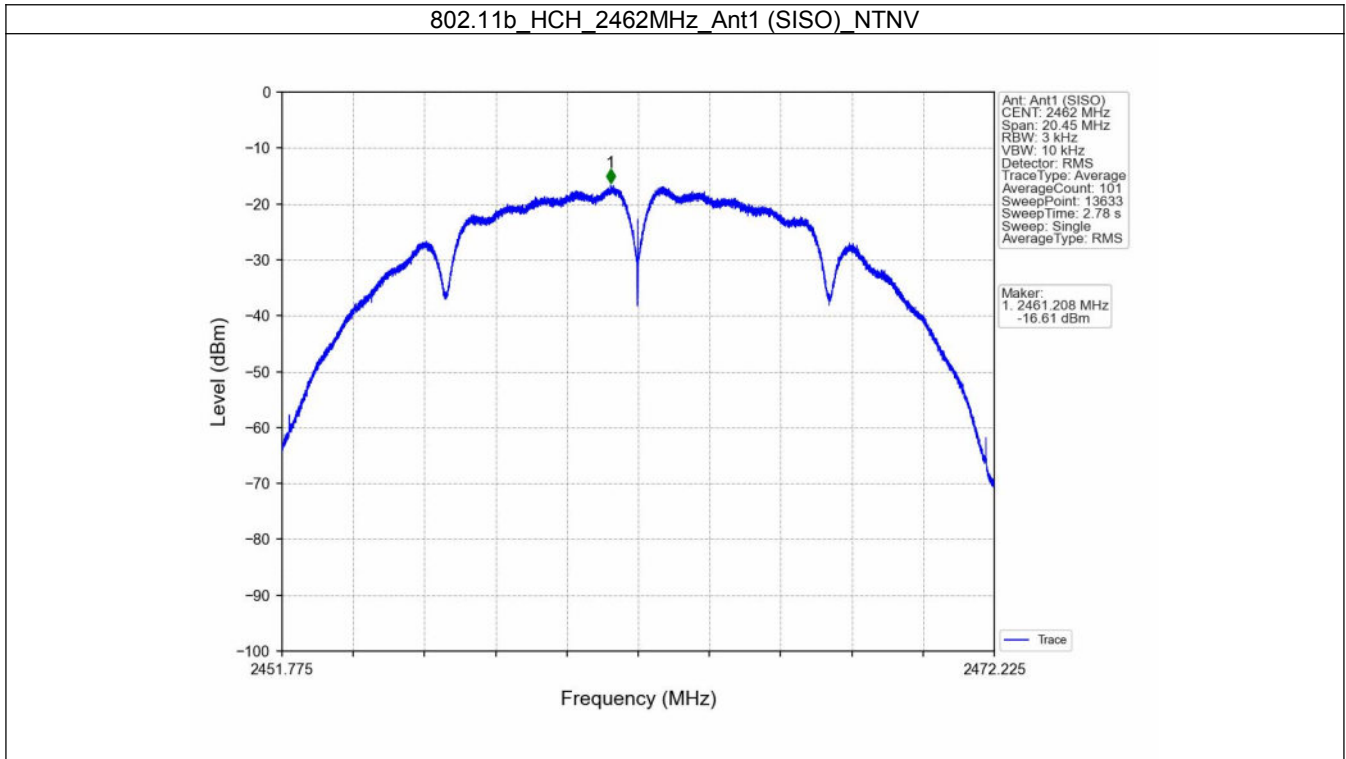
FCC ID: 2ASC7TAB702

### 3.2 Test Graph

#### 3.2.1 PSD

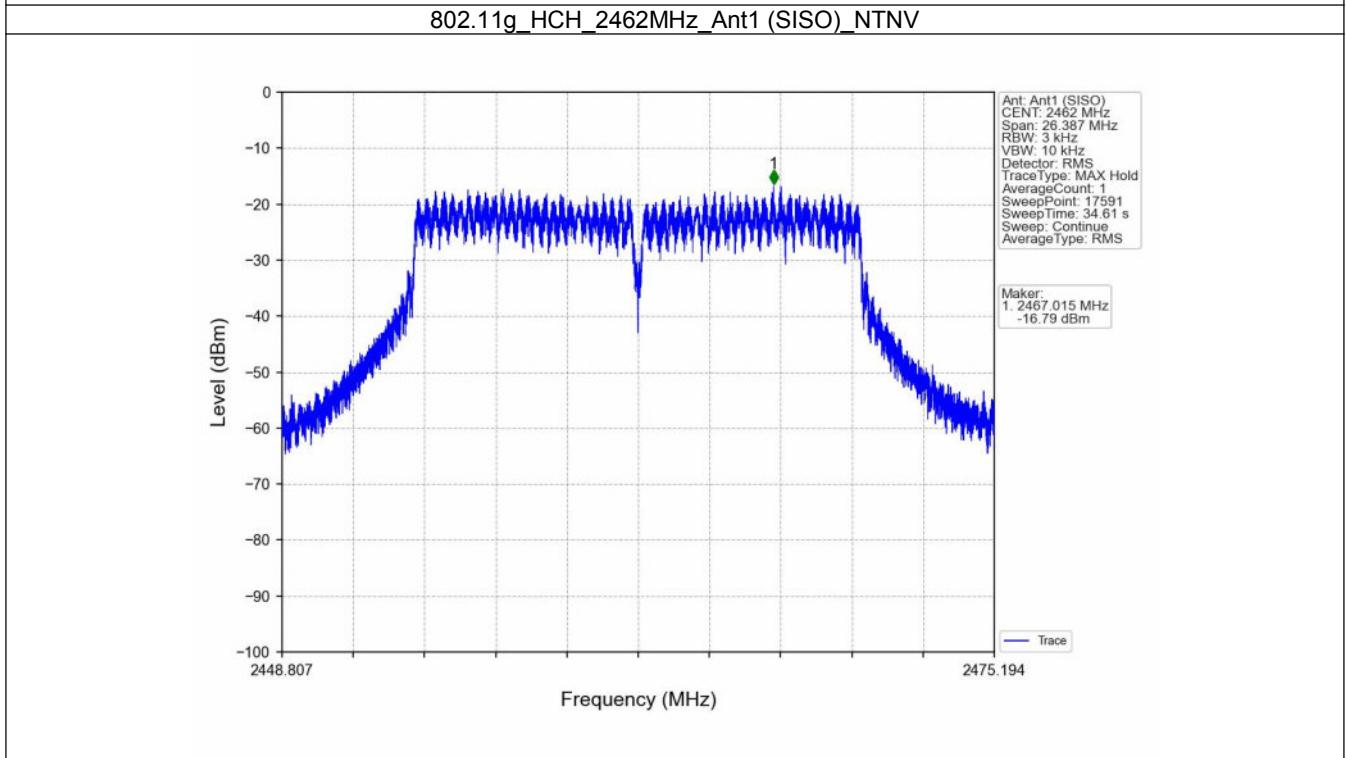
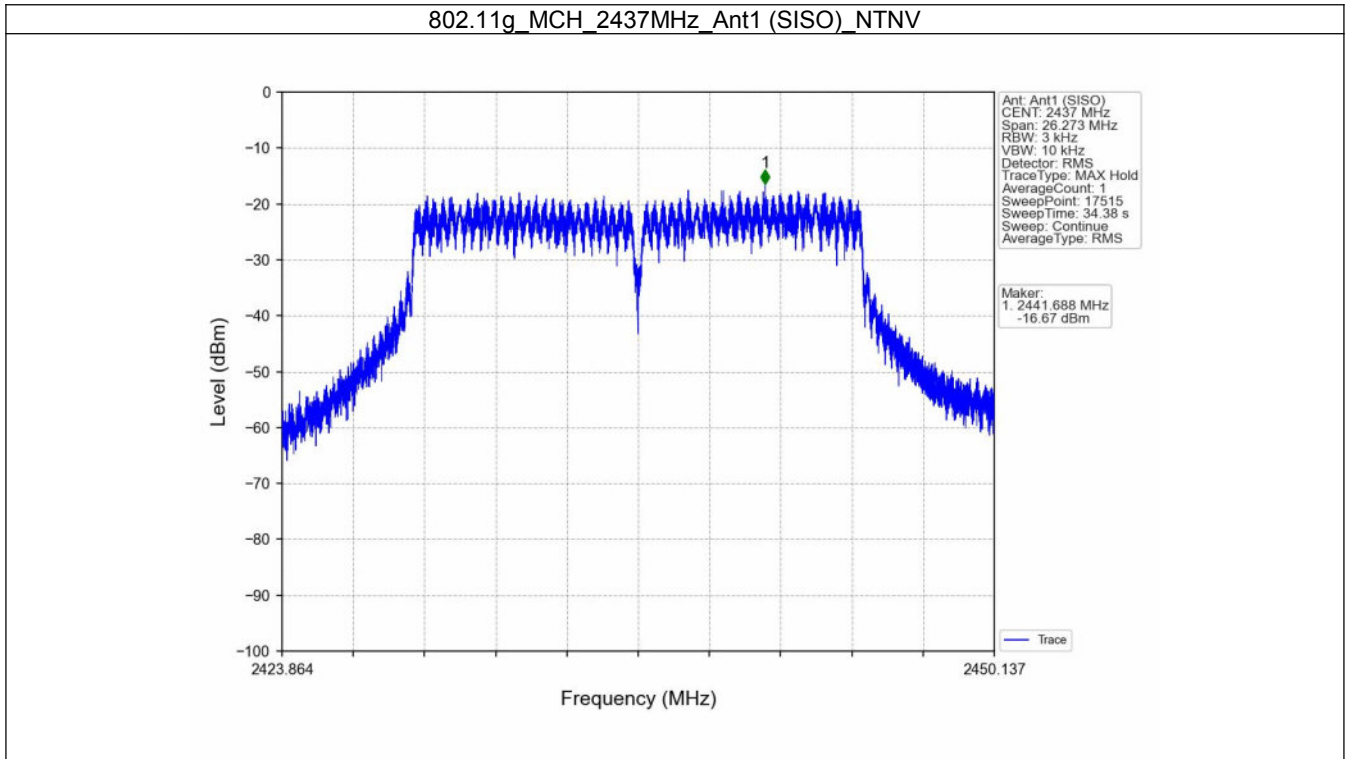


FCC ID: 2ASC7TAB702

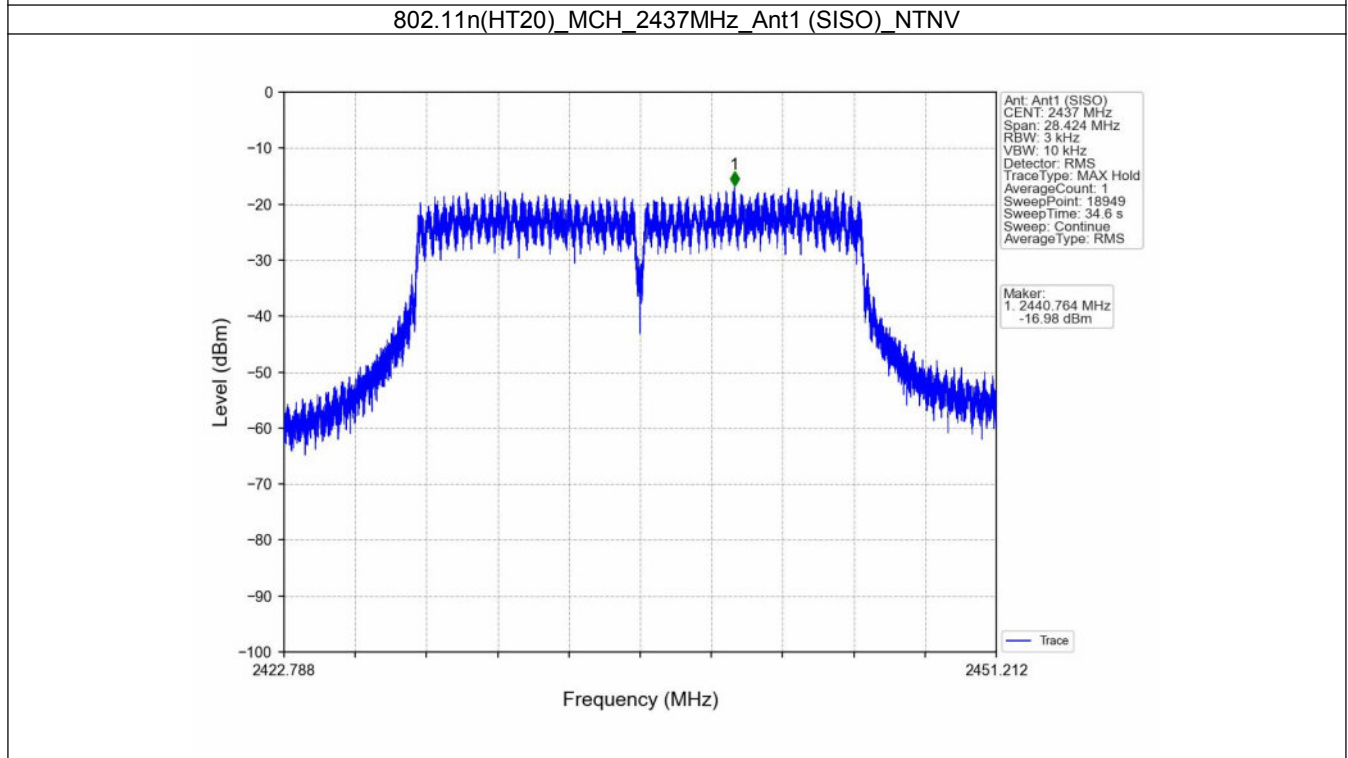
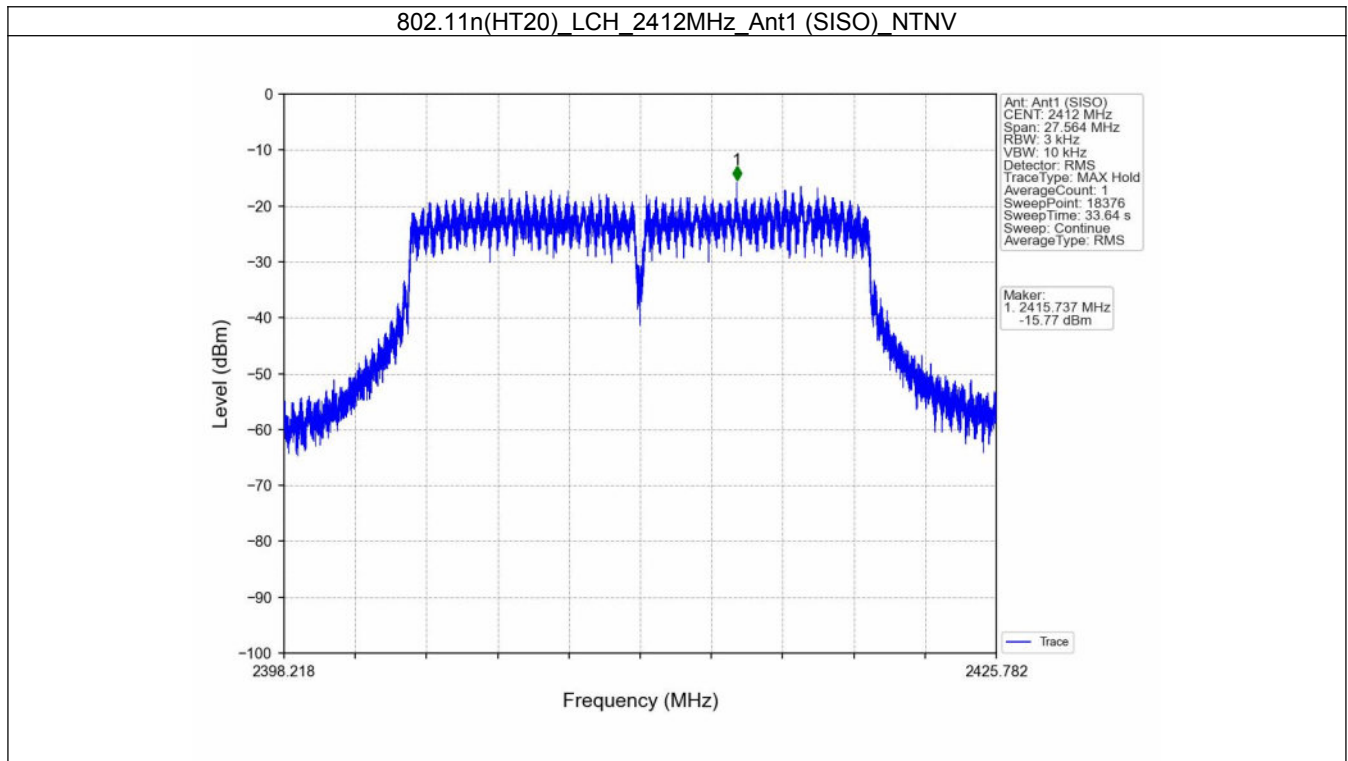




FCC ID: 2ASC7TAB702

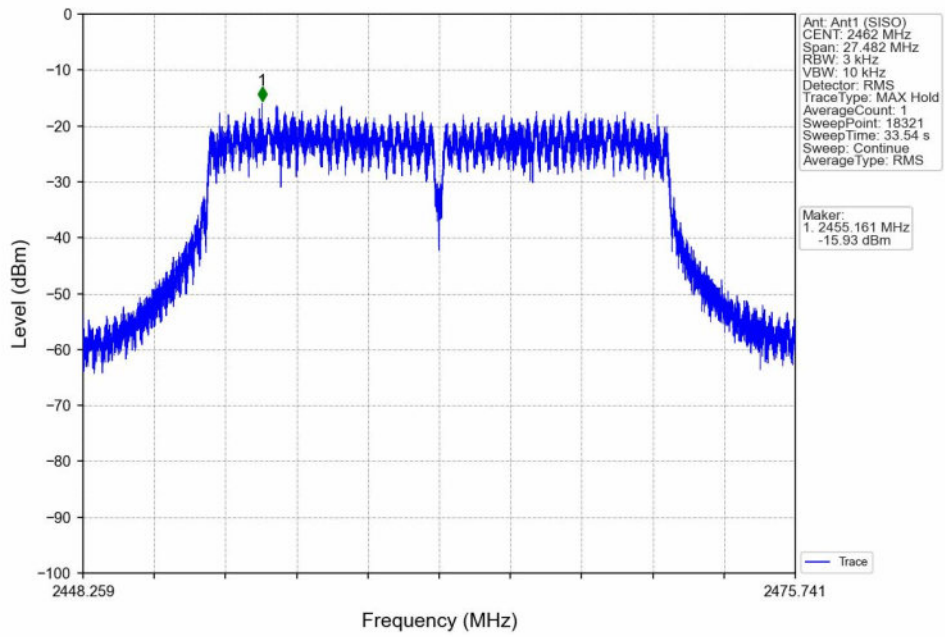


FCC ID: 2ASC7TAB702

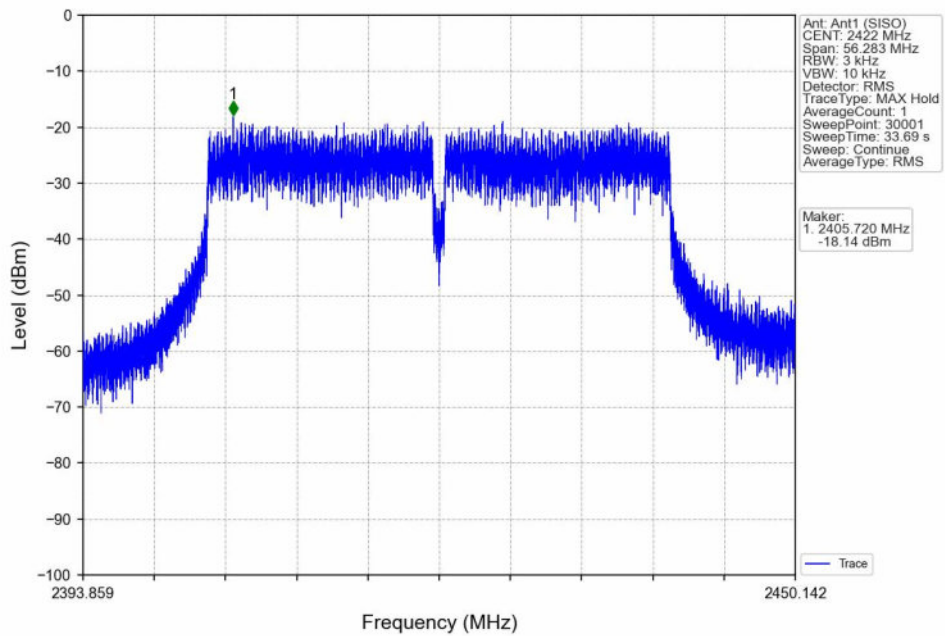


FCC ID: 2ASC7TAB702

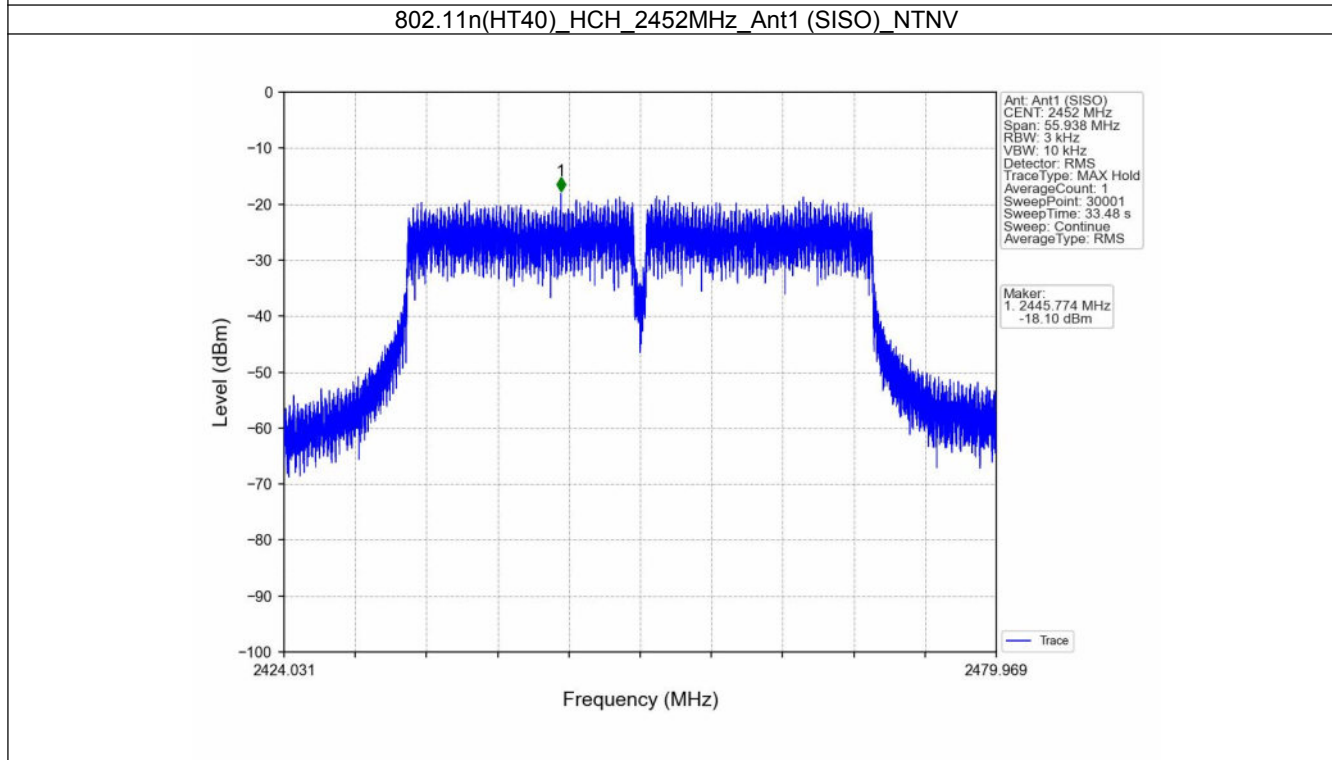
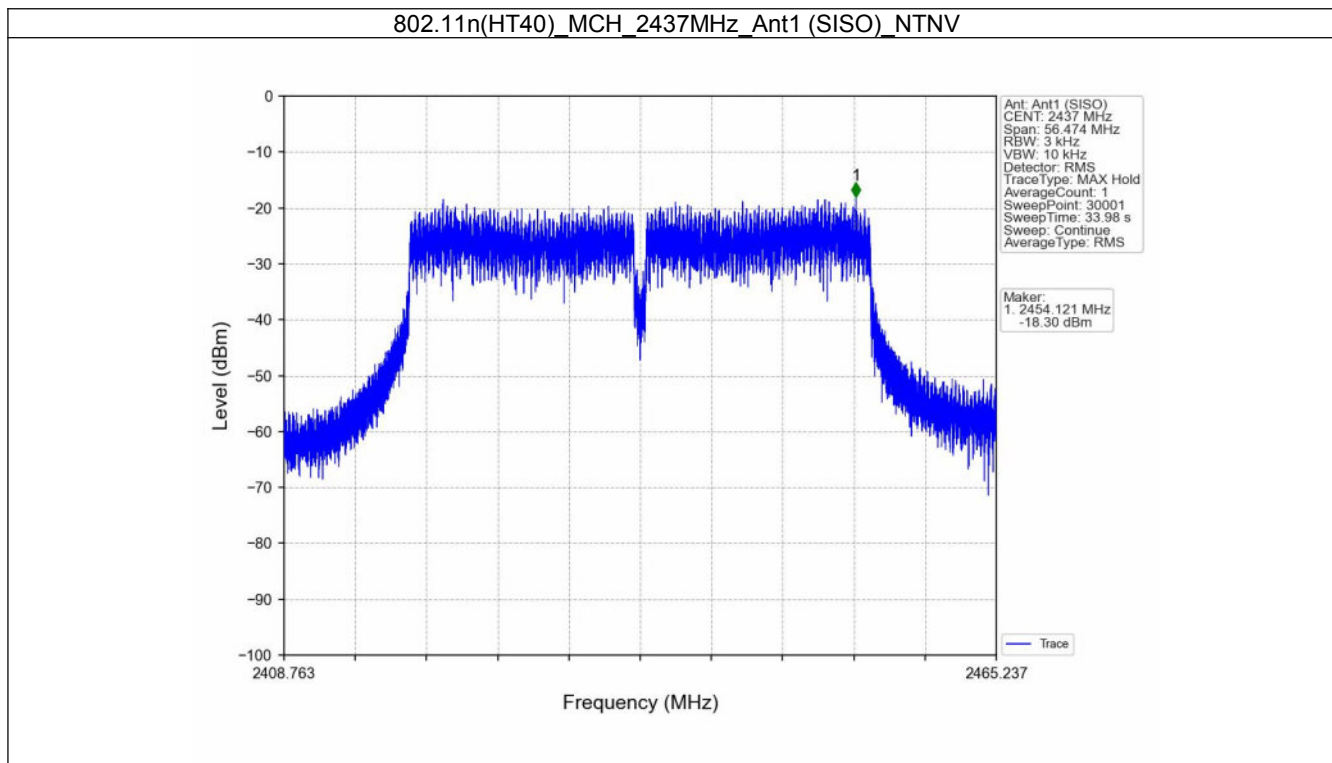
802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



802.11n(HT40)\_LCH\_2422MHz\_Ant1 (SISO)\_NTNV



FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702

## 4. Unwanted Emissions In Non-restricted Frequency Bands

### 4.1 Test Result

#### 4.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
802.11b	SISO	2412	1	6.70
		2437	1	6.22
		2462	1	6.21
802.11g	SISO	2412	1	3.39
		2437	1	3.31
		2462	1	3.78
802.11n (HT20)	SISO	2412	1	3.73
		2437	1	3.80
		2462	1	4.29
802.11n (HT40)	SISO	2422	1	0.96
		2437	1	1.70
		2452	1	1.22

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 CSE

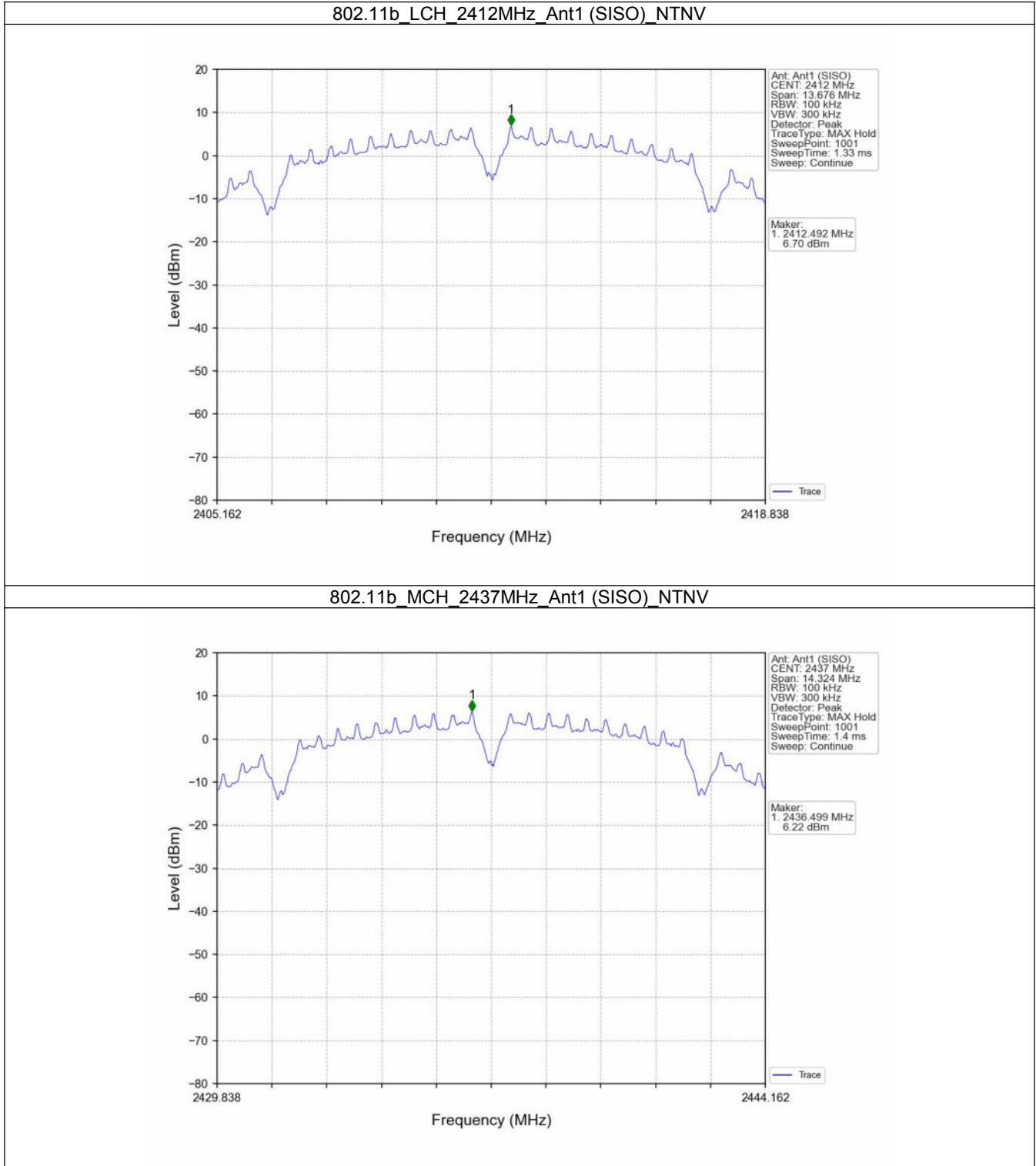
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
802.11b	SISO	2412	1	6.70	-23.30	Pass
		2437	1	6.70	-23.30	Pass
		2462	1	6.70	-23.30	Pass
802.11g	SISO	2412	1	3.78	-26.22	Pass
		2437	1	3.78	-26.22	Pass
		2462	1	3.78	-26.22	Pass
802.11n (HT20)	SISO	2412	1	4.29	-25.71	Pass
		2437	1	4.29	-25.71	Pass
		2462	1	4.29	-25.71	Pass
802.11n (HT40)	SISO	2422	1	1.70	-28.30	Pass
		2437	1	1.70	-28.30	Pass
		2452	1	1.70	-28.30	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

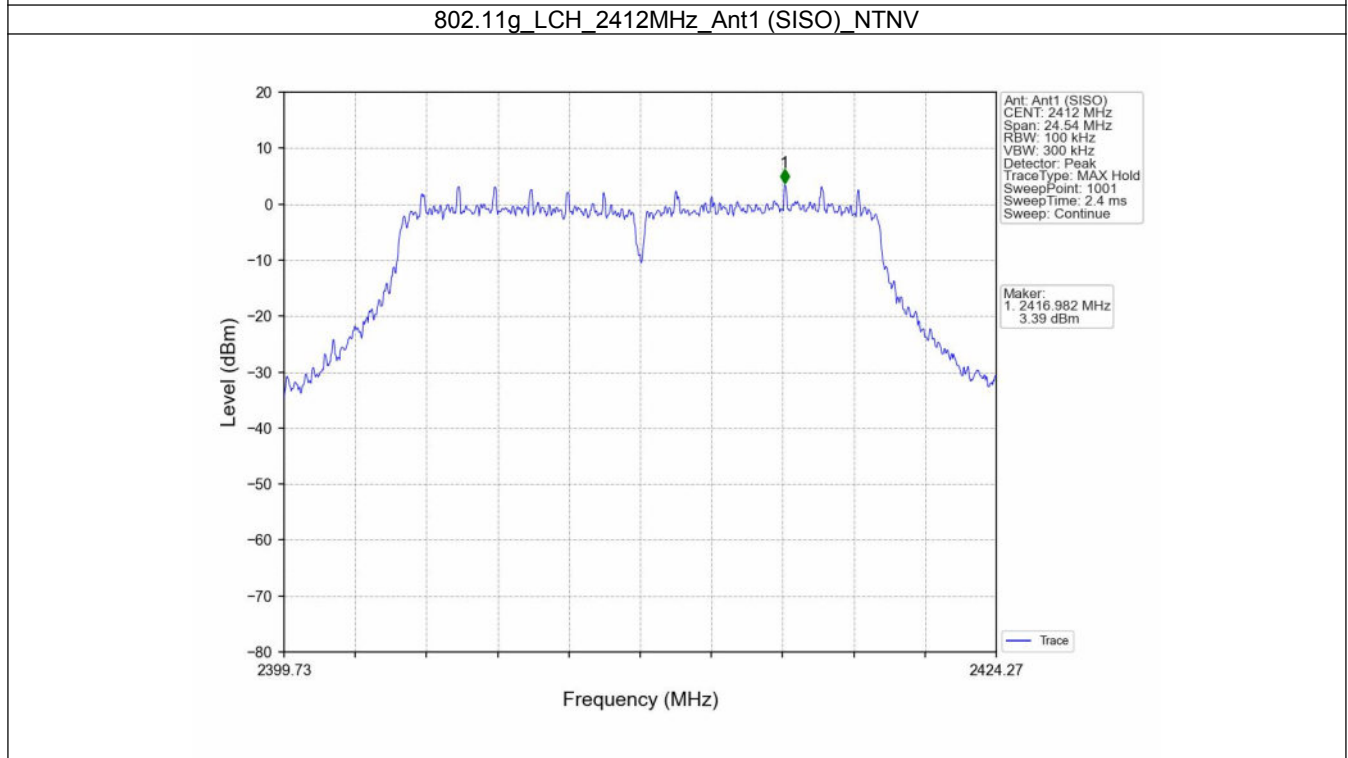
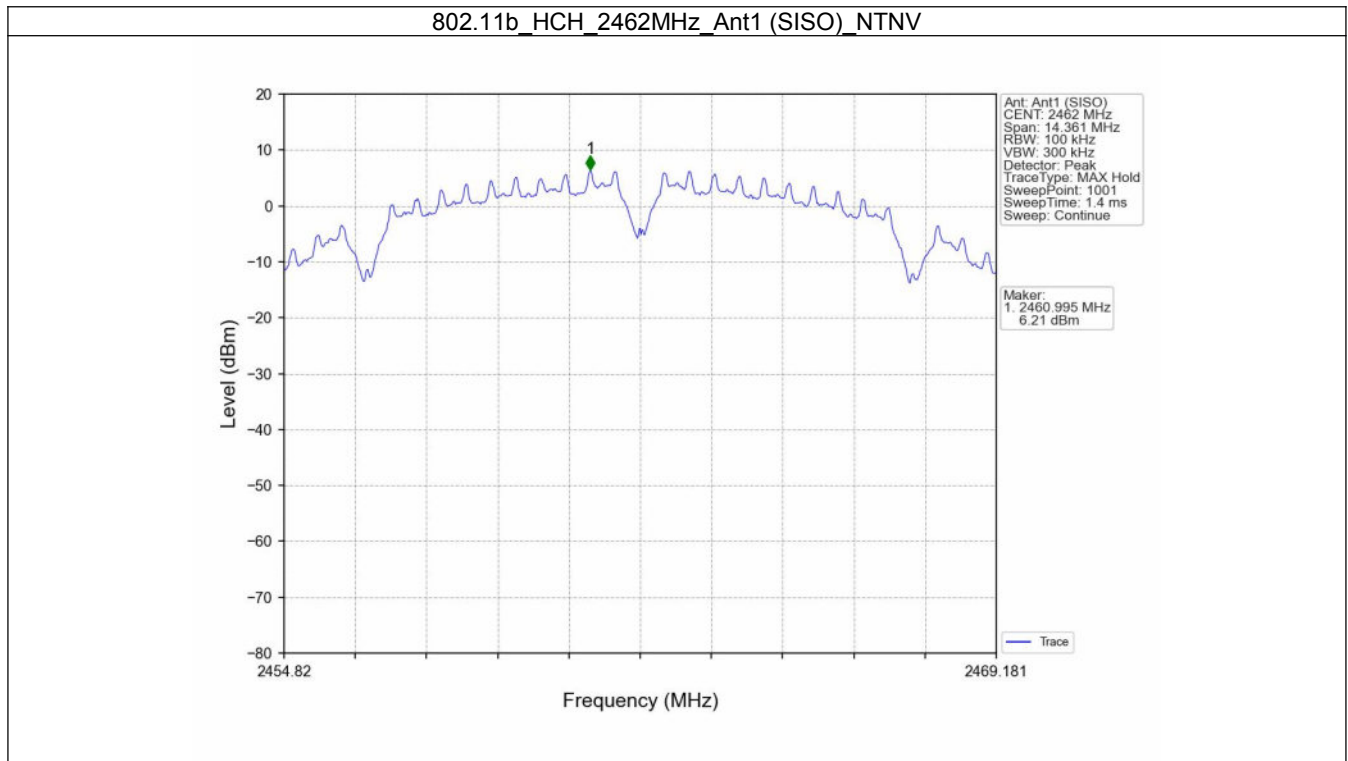
FCC ID: 2ASC7TAB702

### 4.2 Test Graph

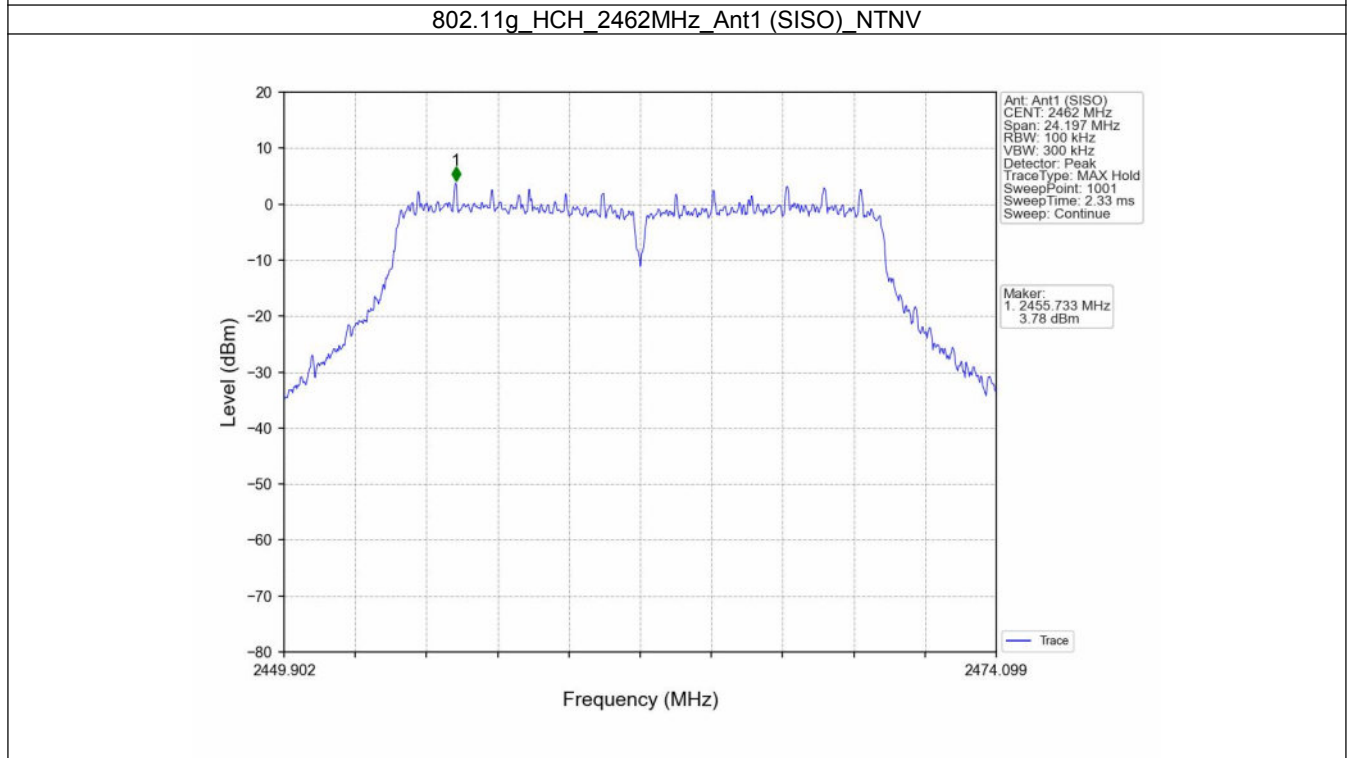
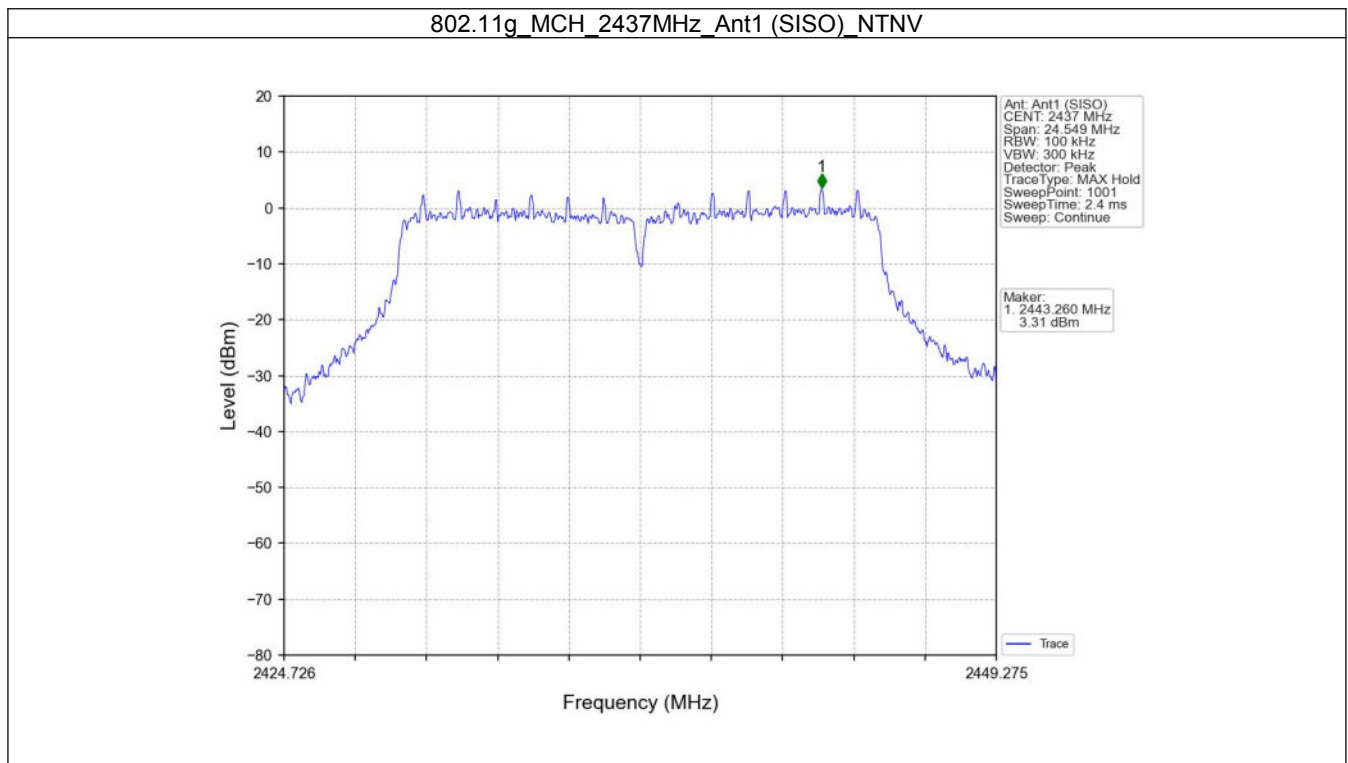
#### 4.2.1 Ref



FCC ID: 2ASC7TAB702

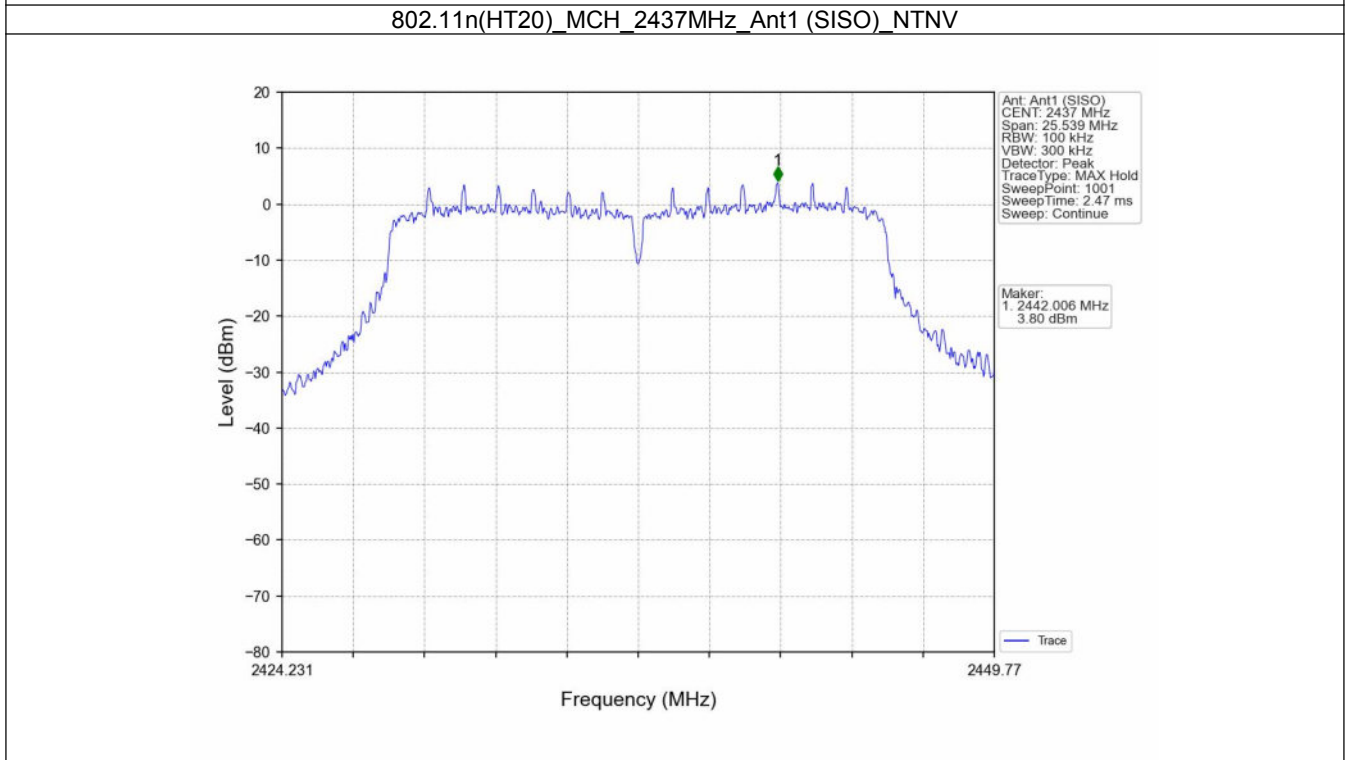
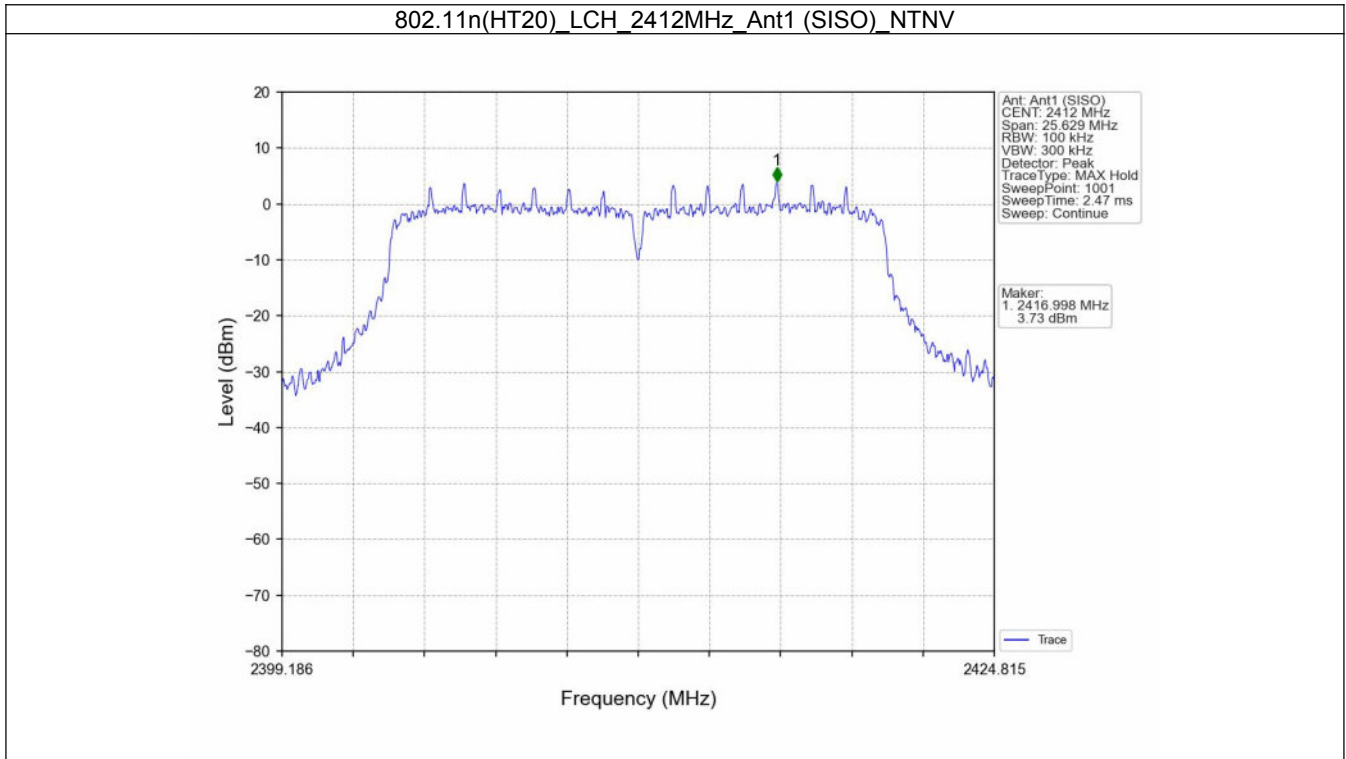


FCC ID: 2ASC7TAB702

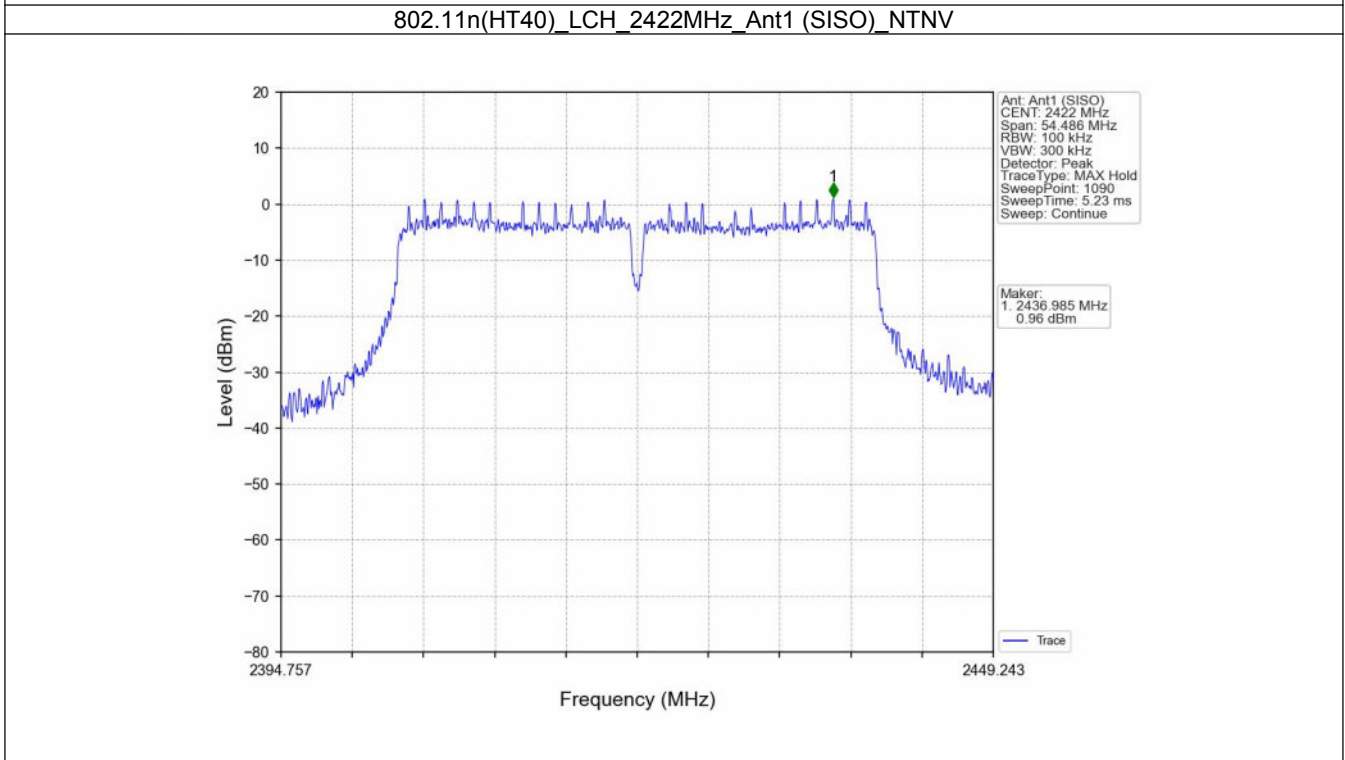
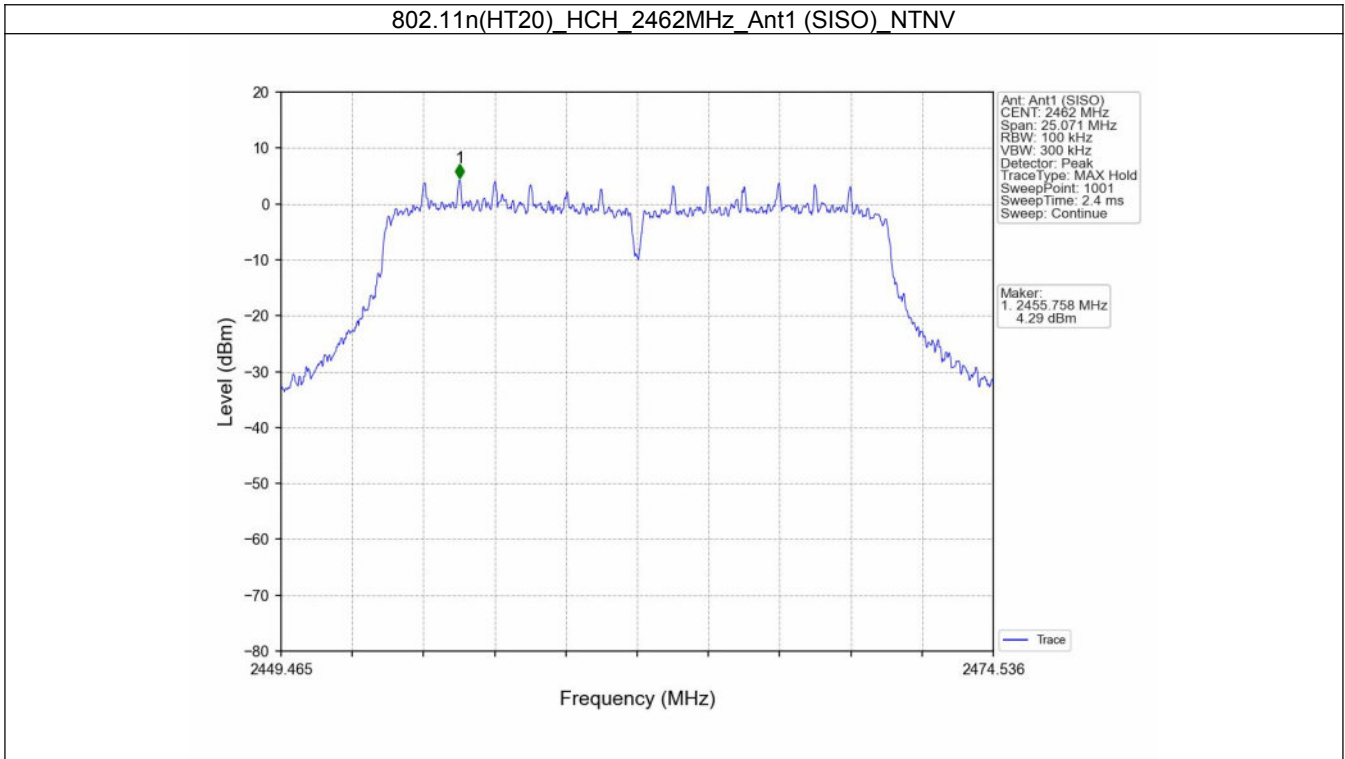




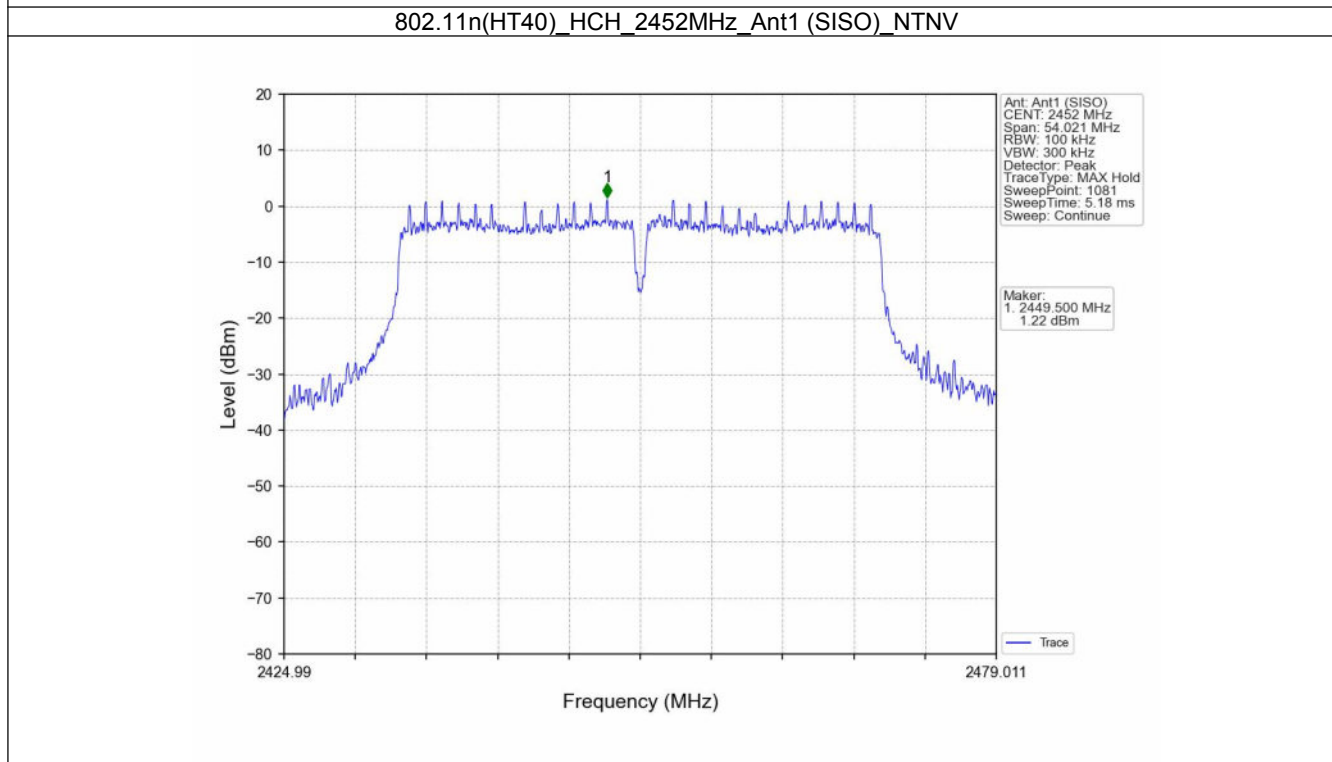
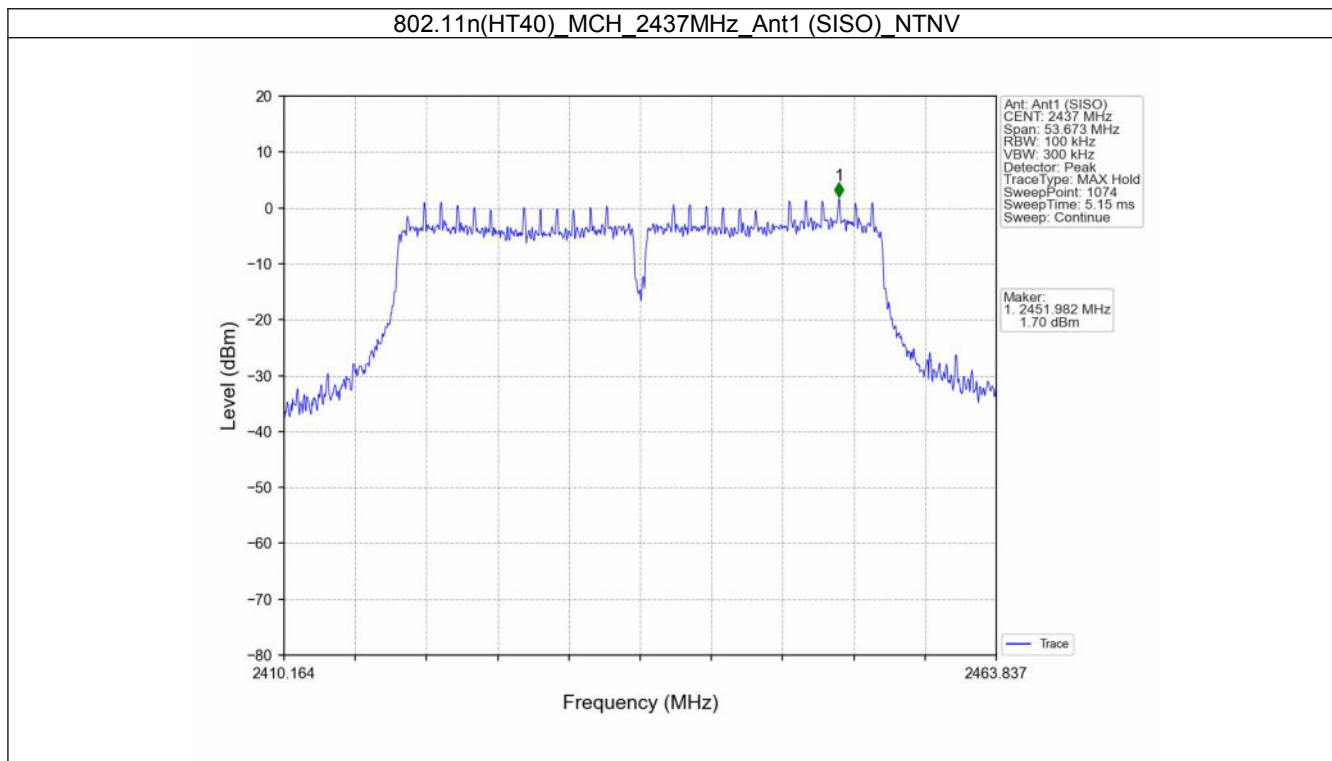
FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702

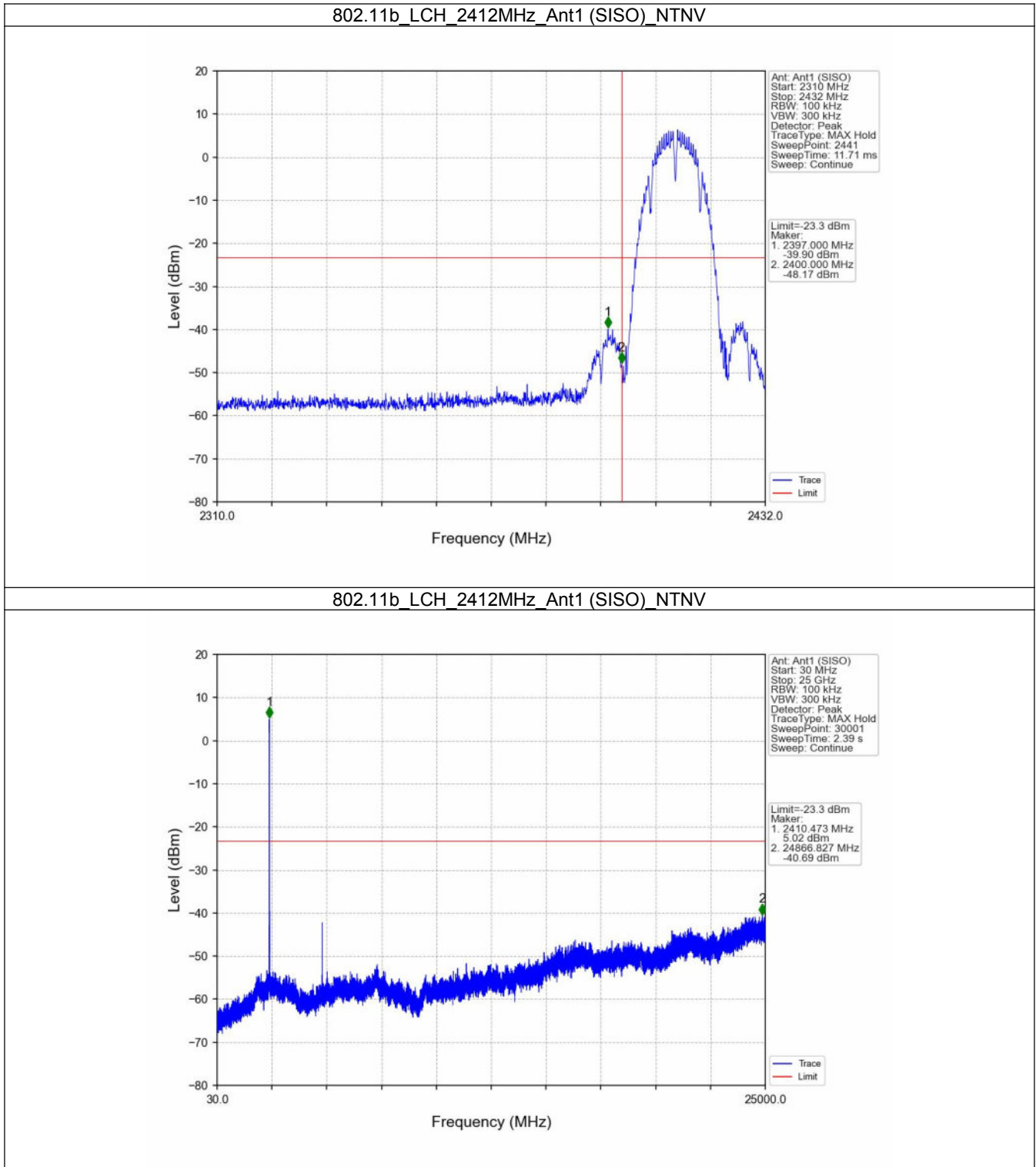


FCC ID: 2ASC7TAB702

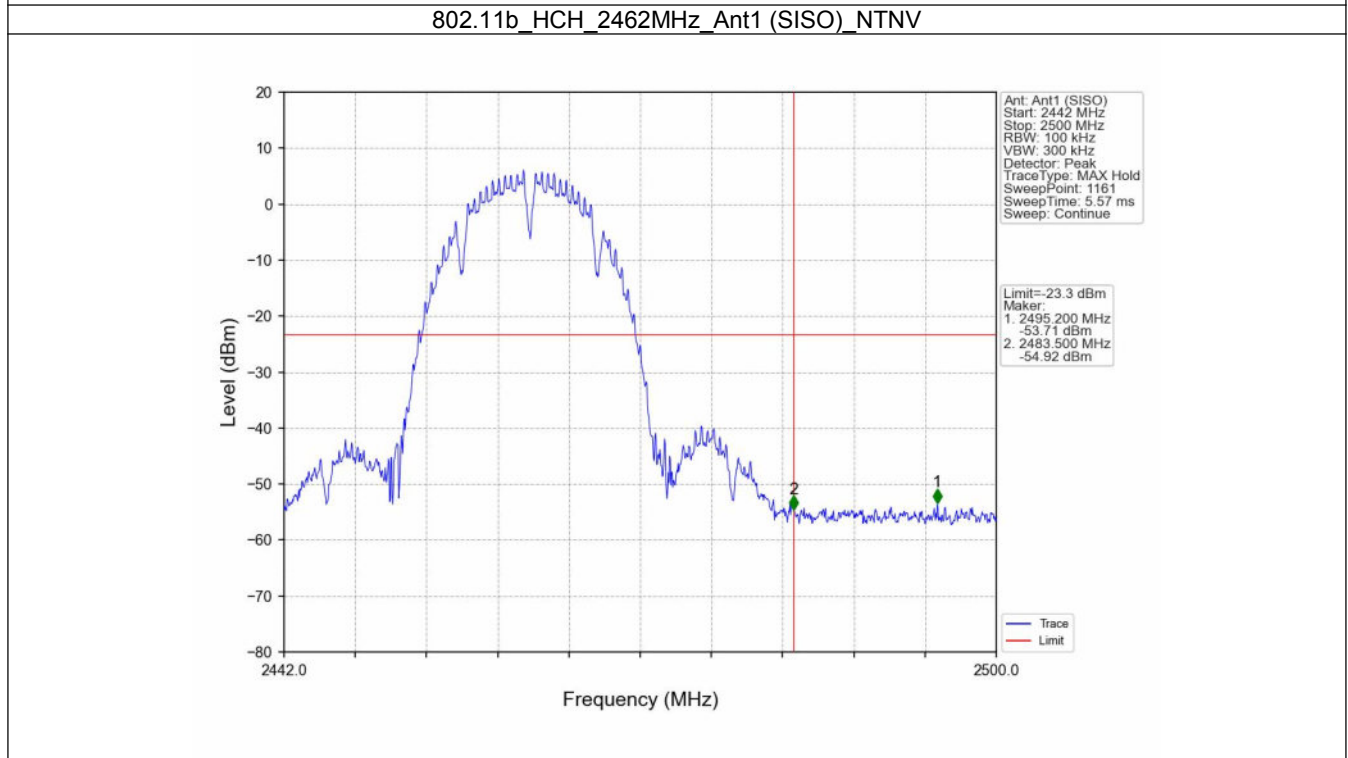
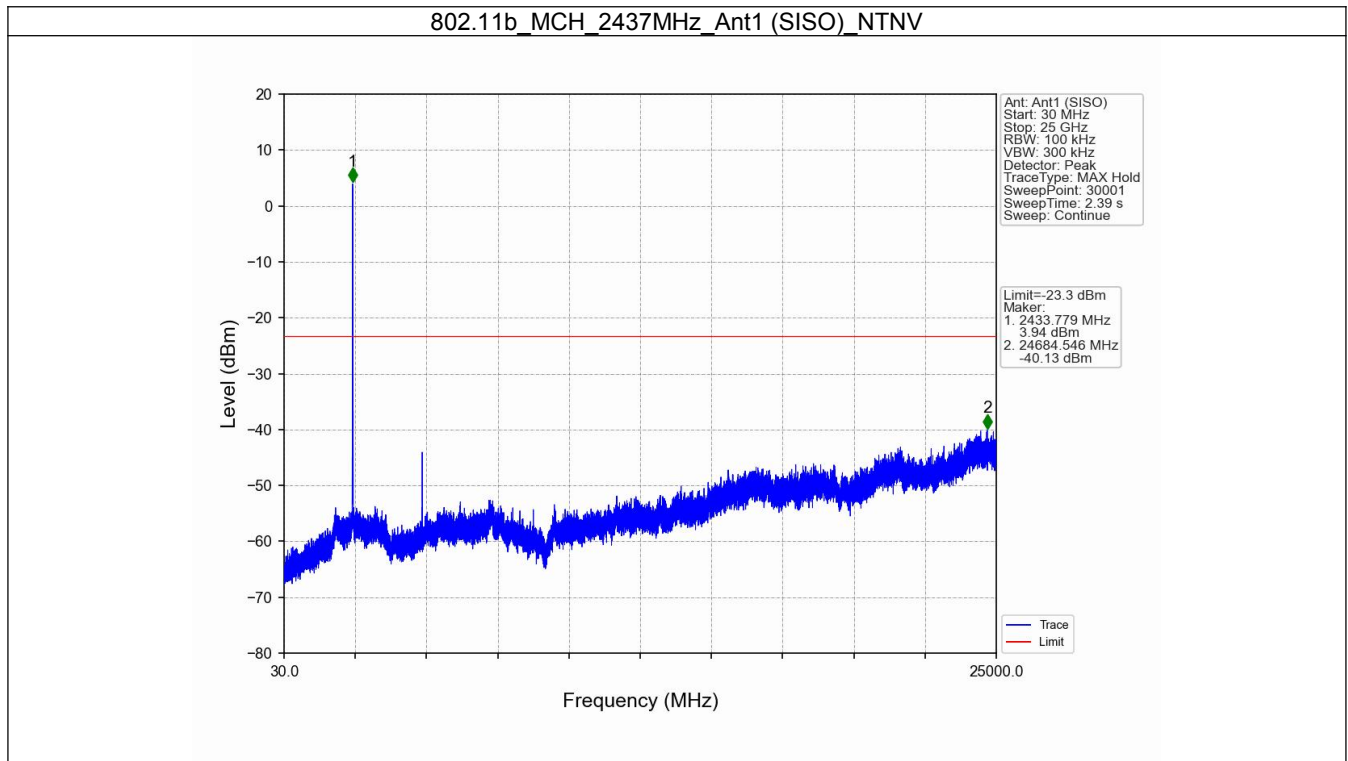


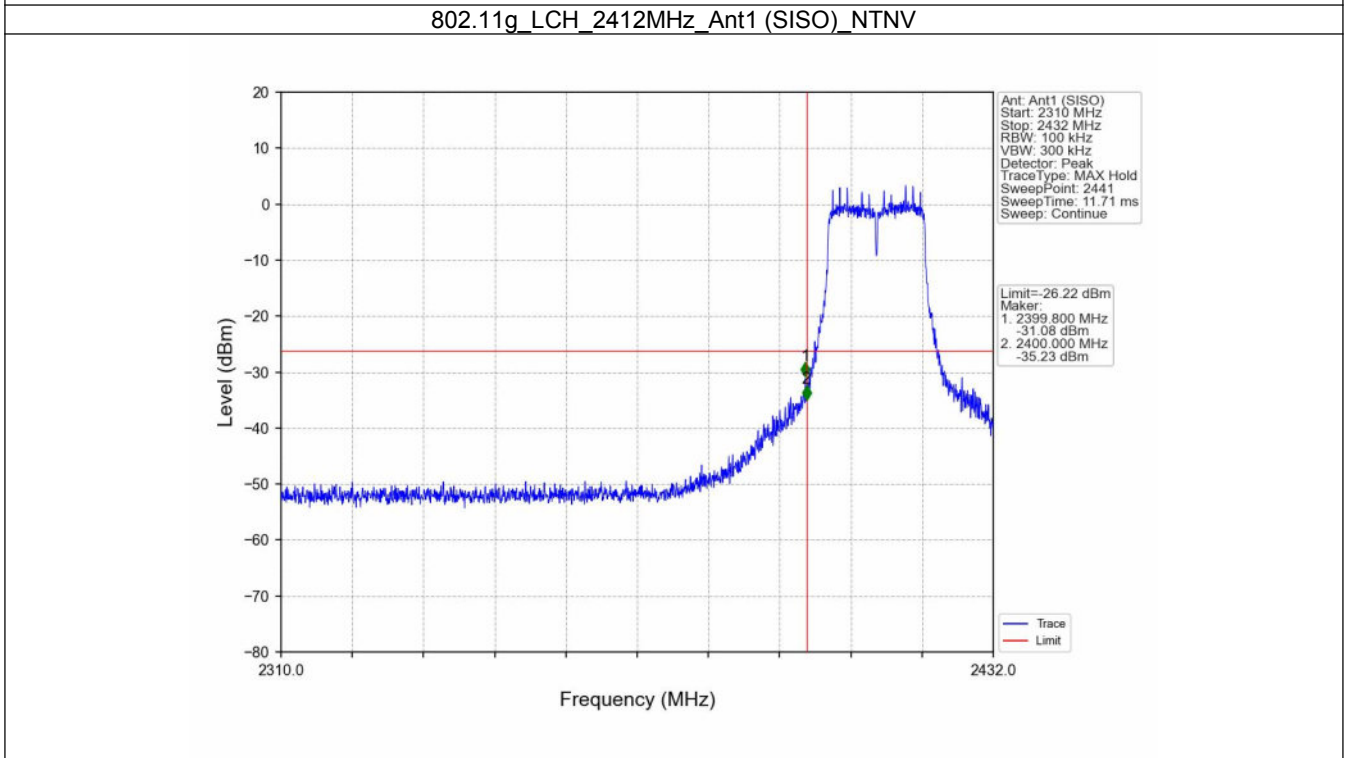
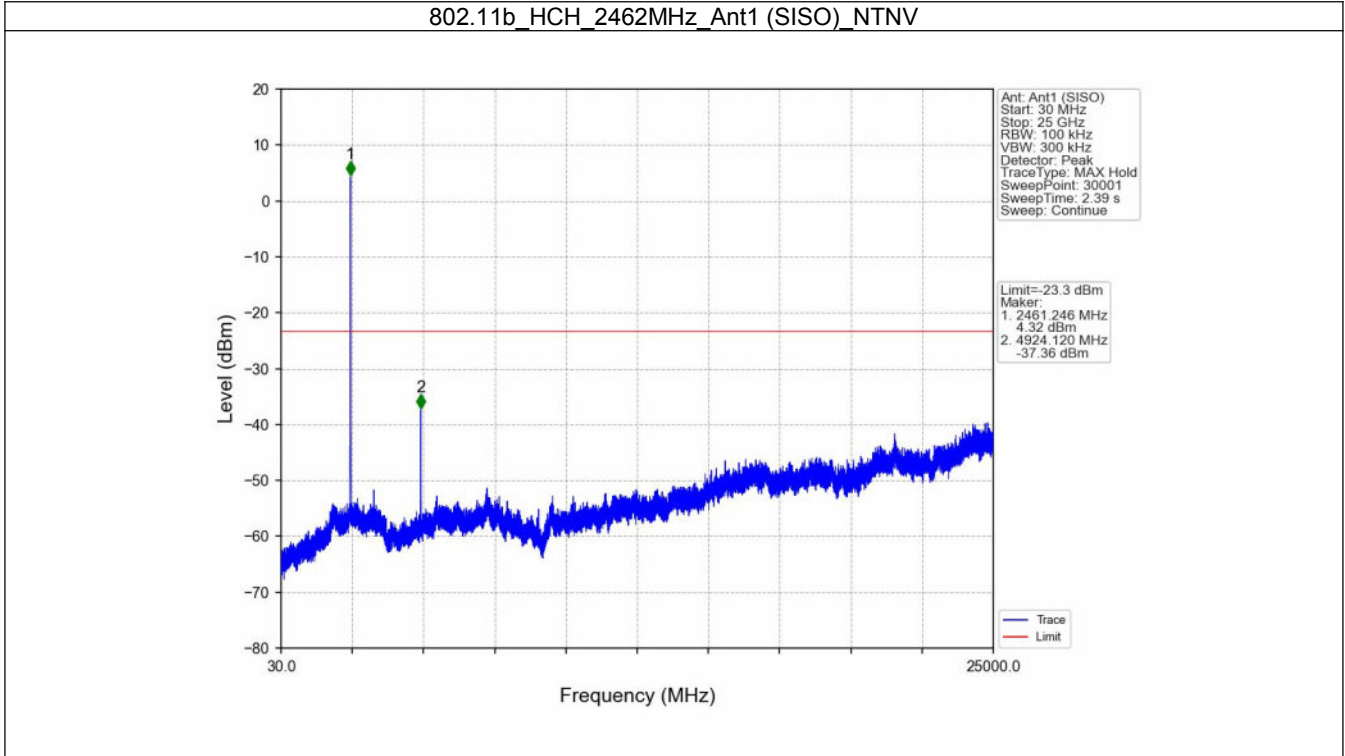
FCC ID: 2ASC7TAB702

### 4.2.2 CSE

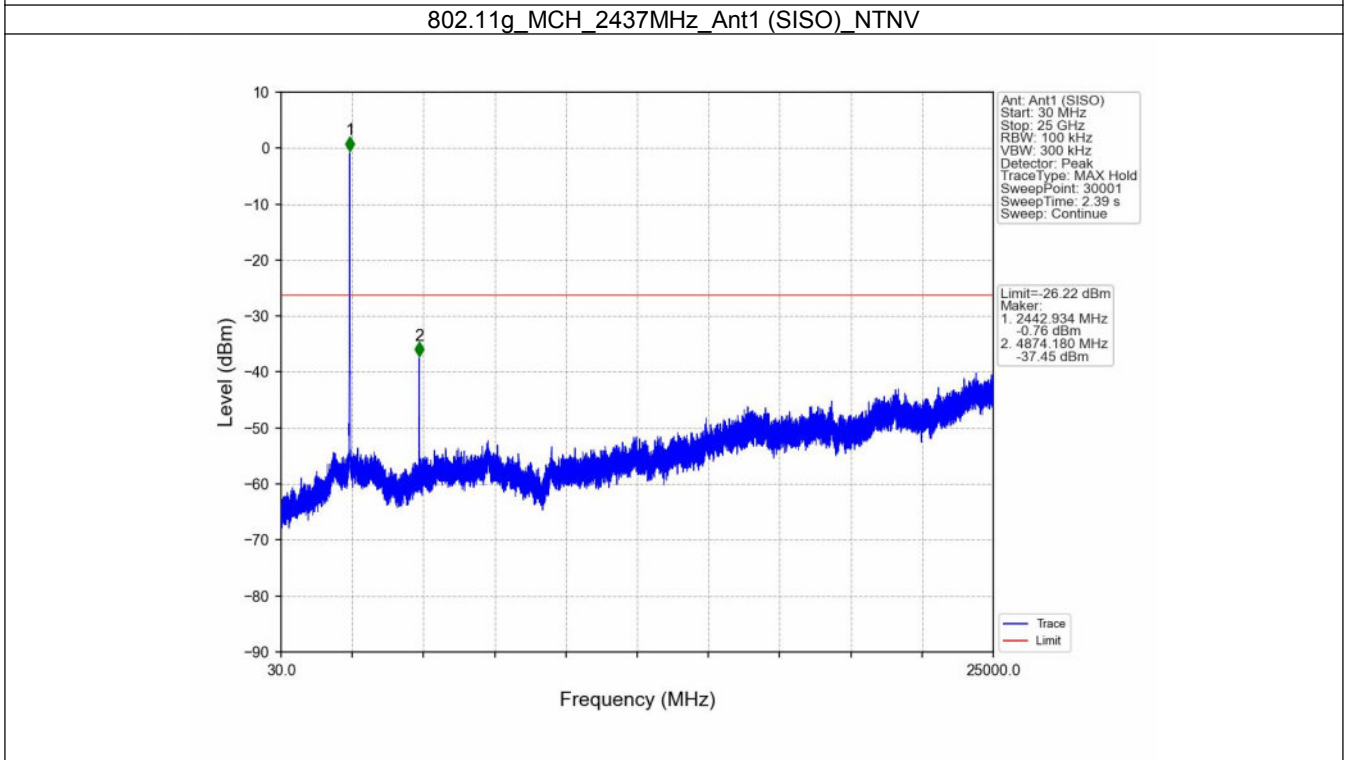
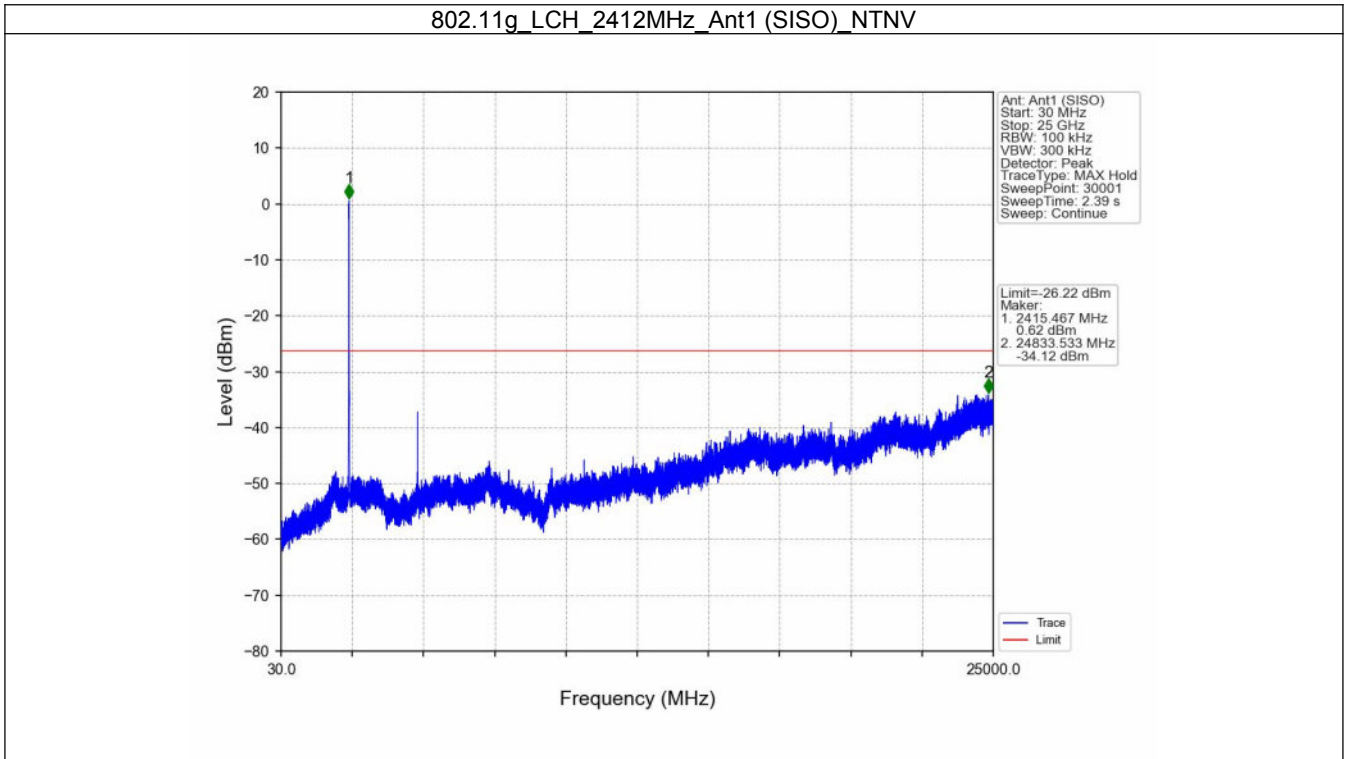


FCC ID: 2ASC7TAB702

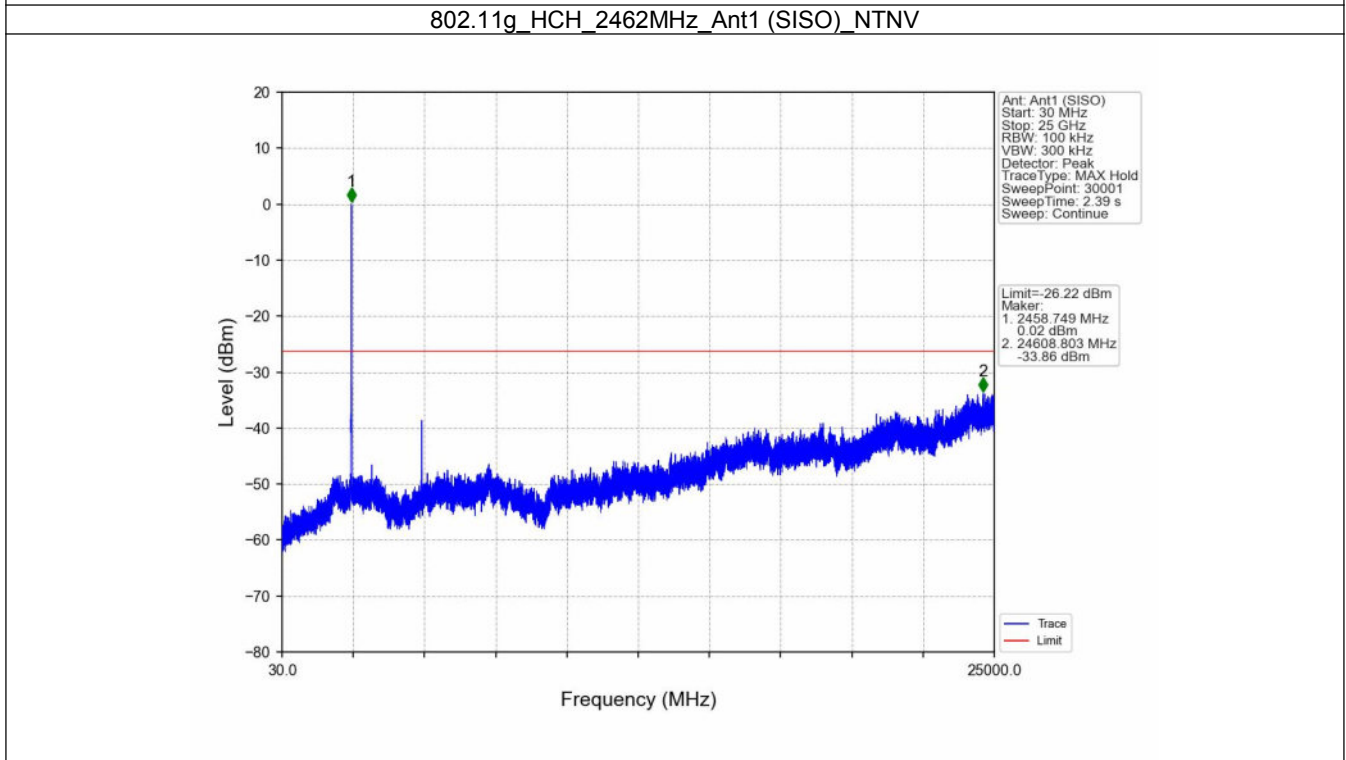
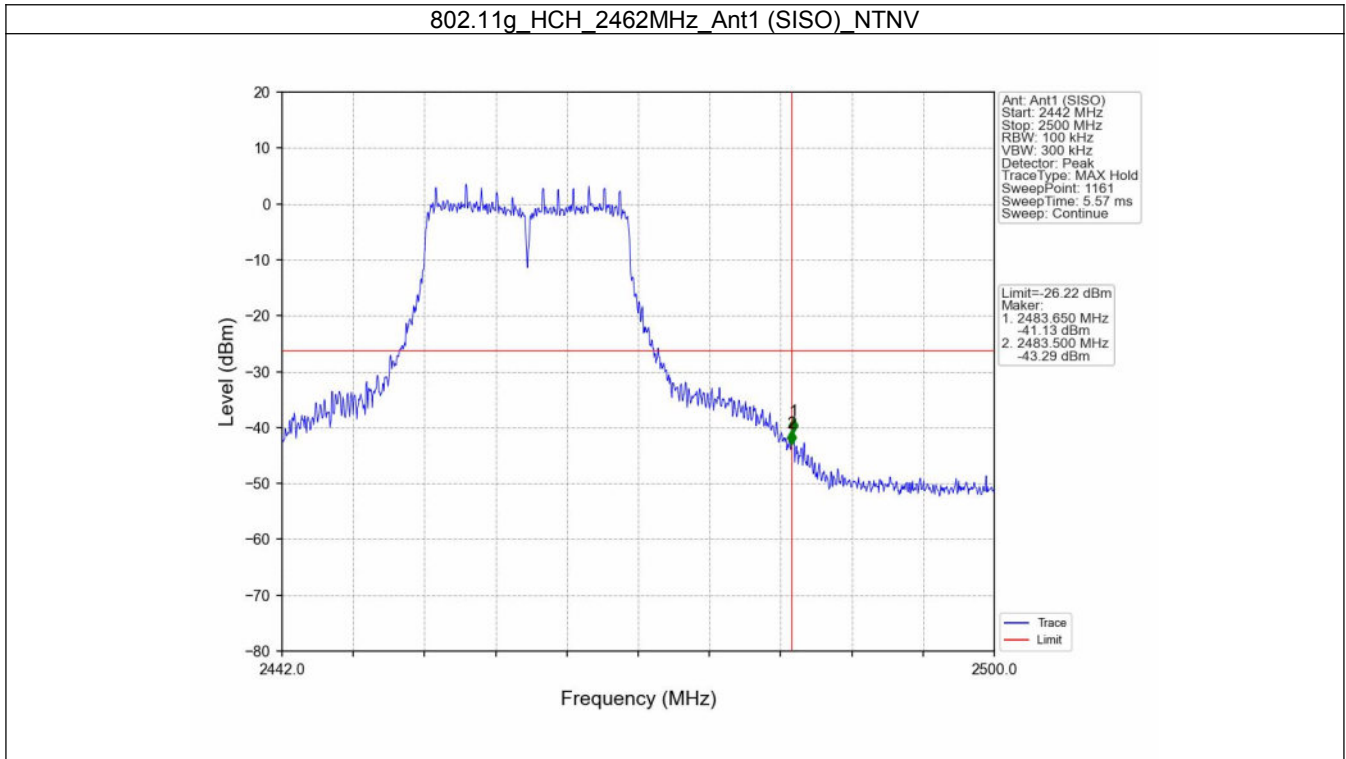




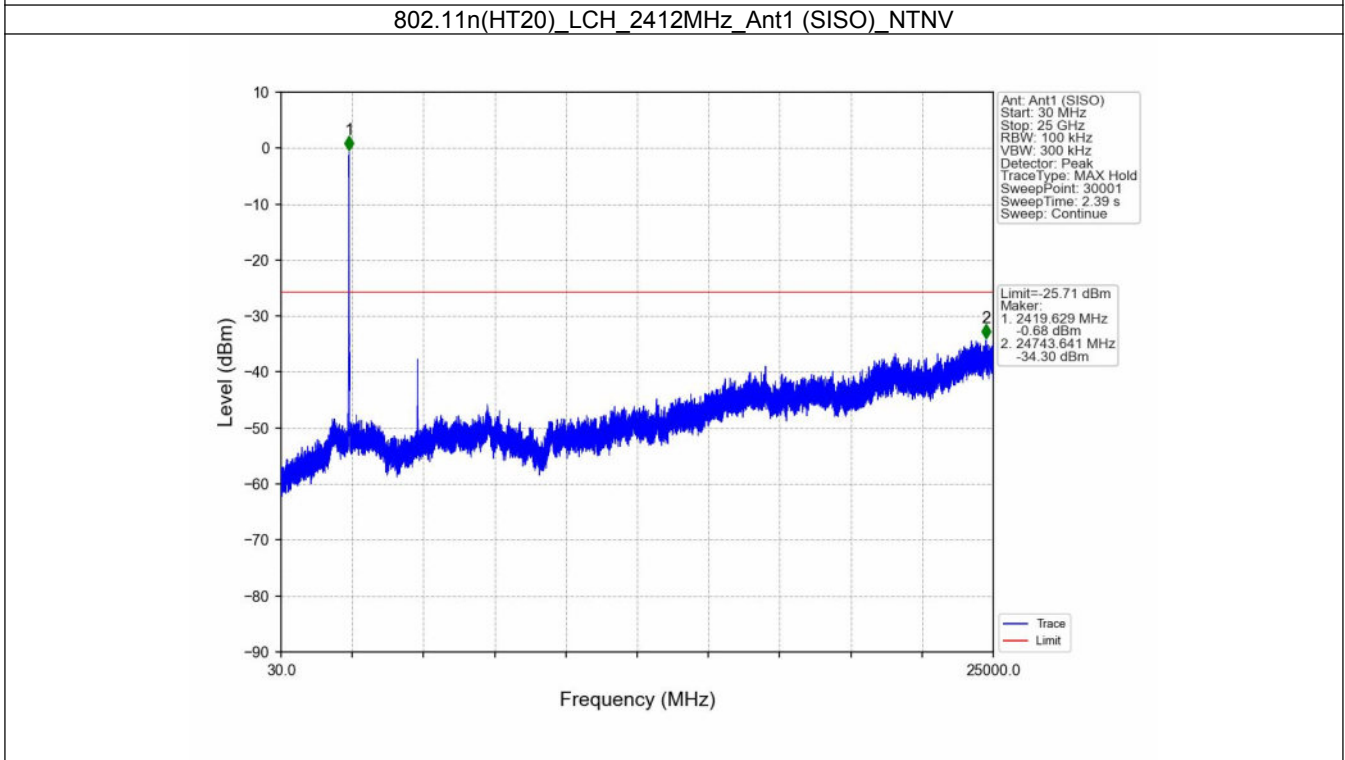
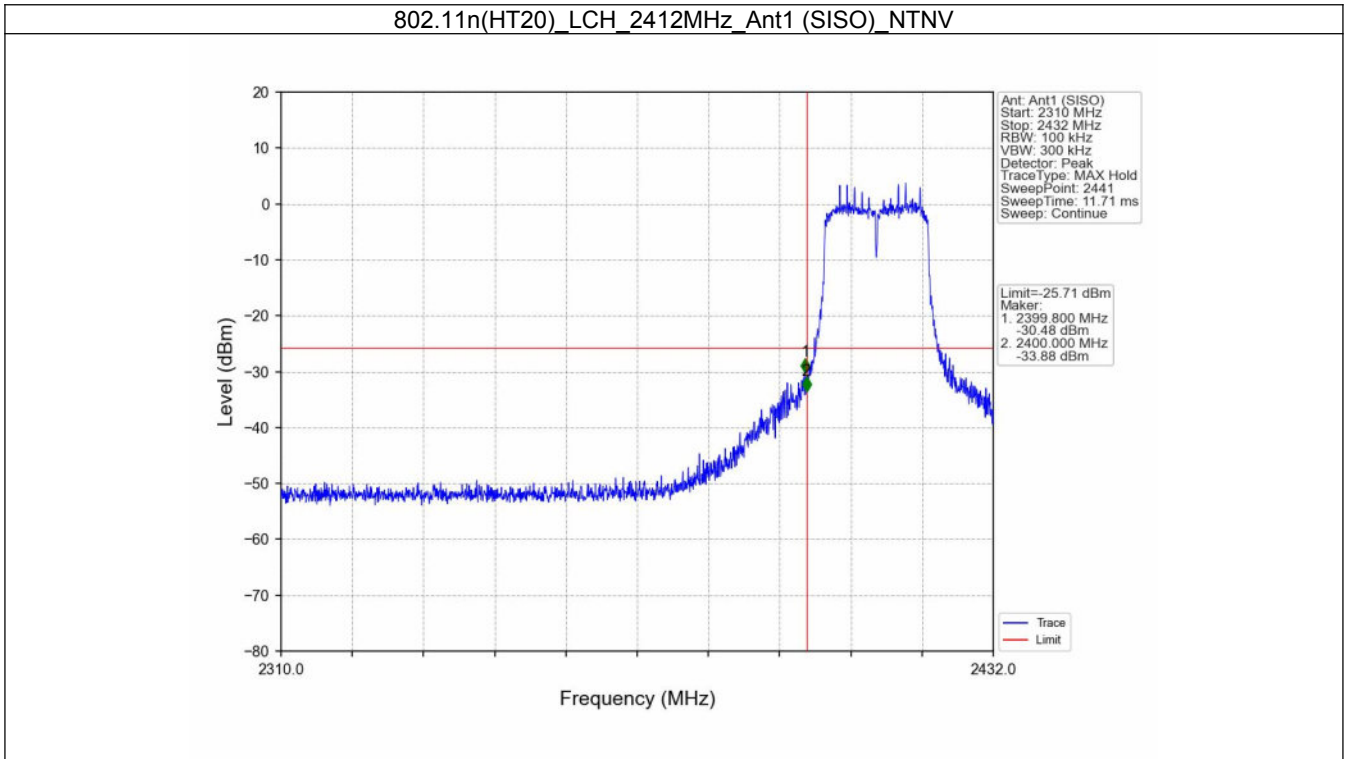
FCC ID: 2ASC7TAB702

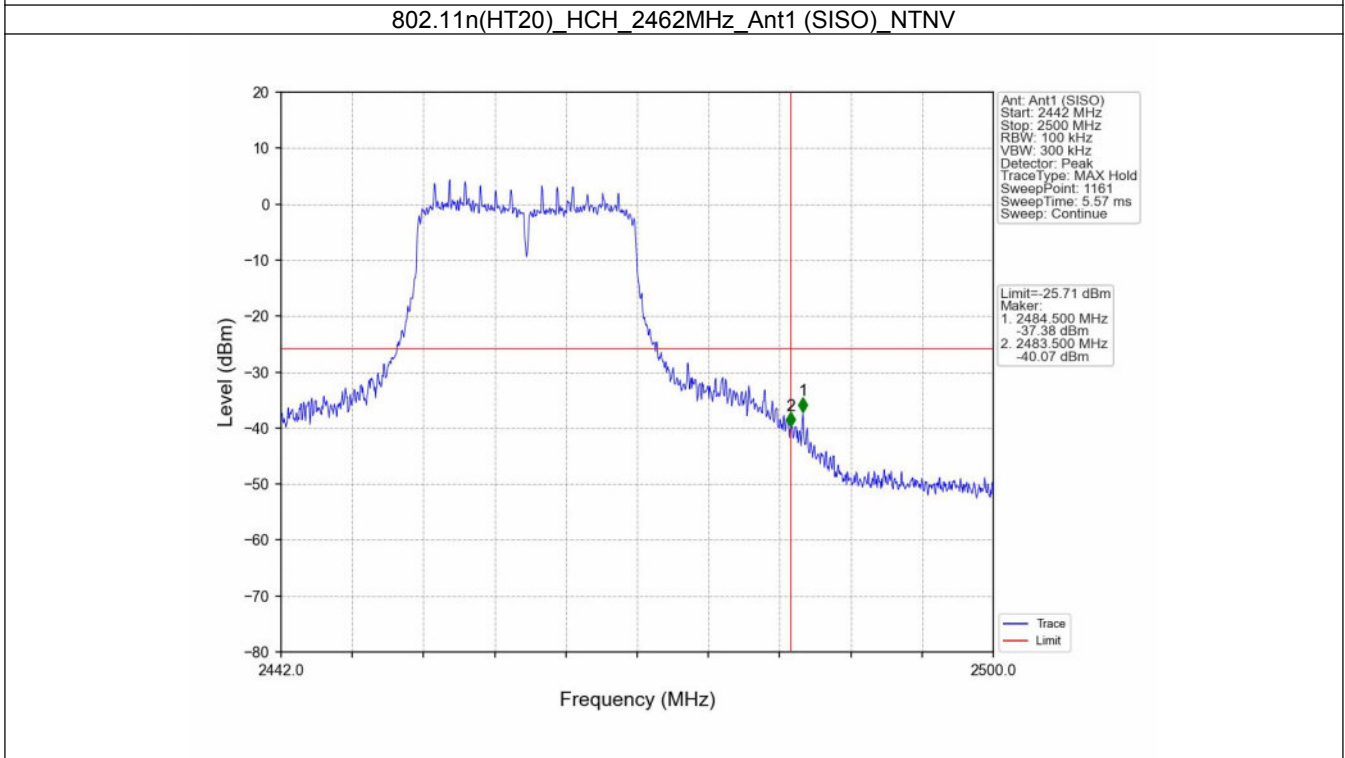
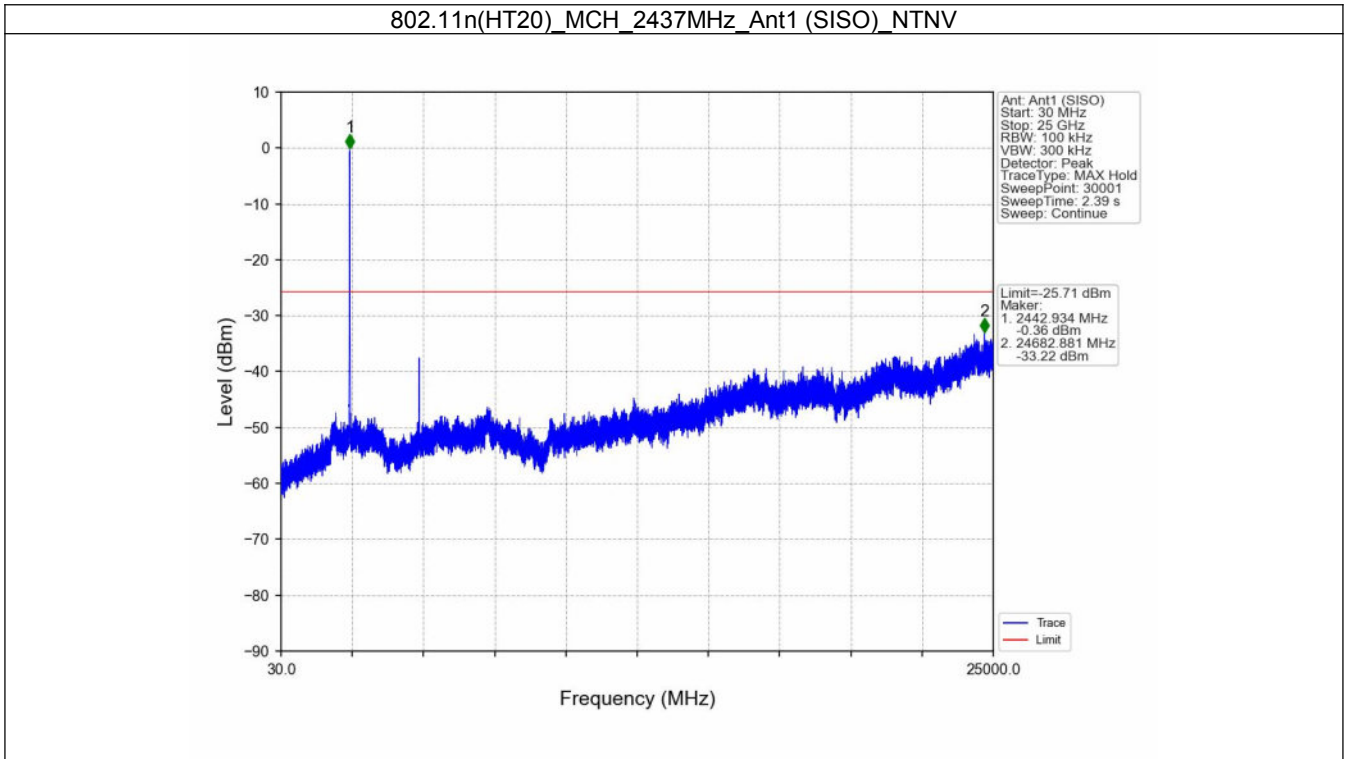


FCC ID: 2ASC7TAB702

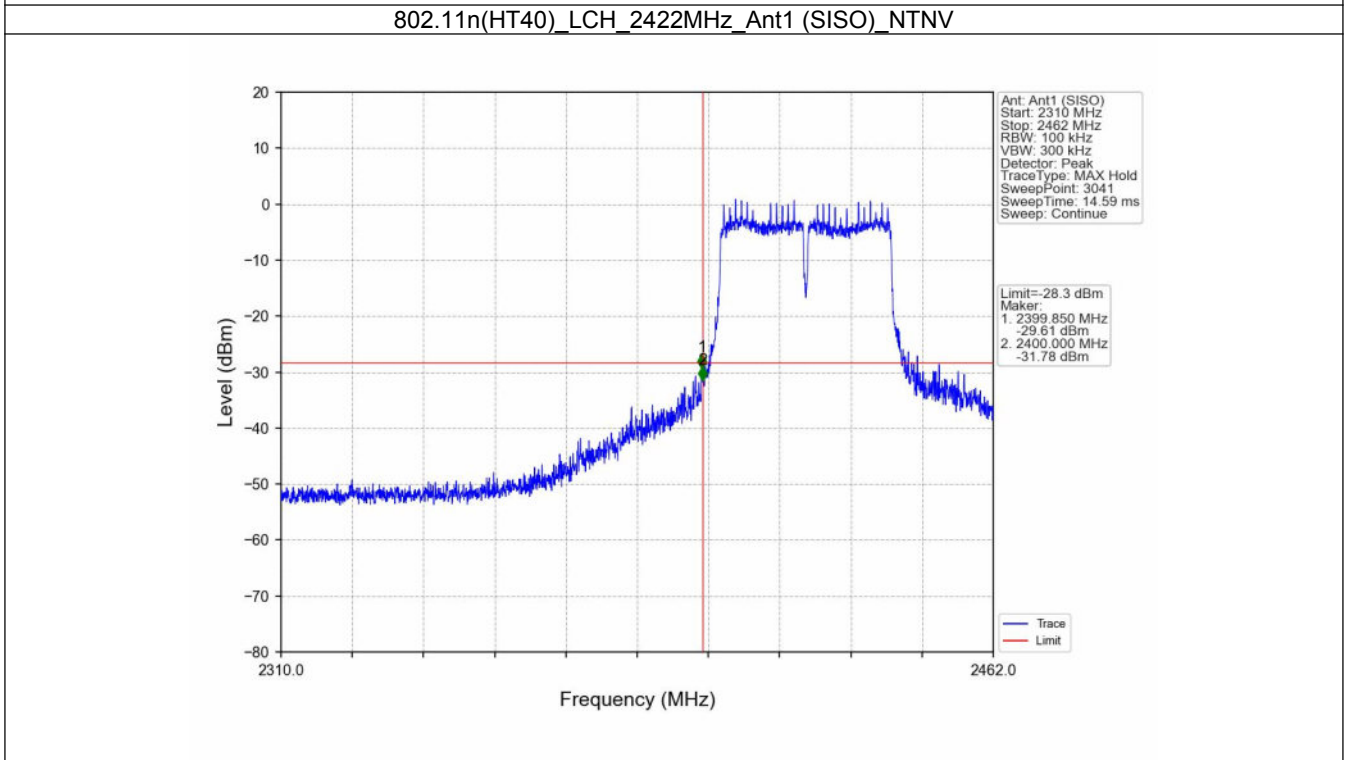
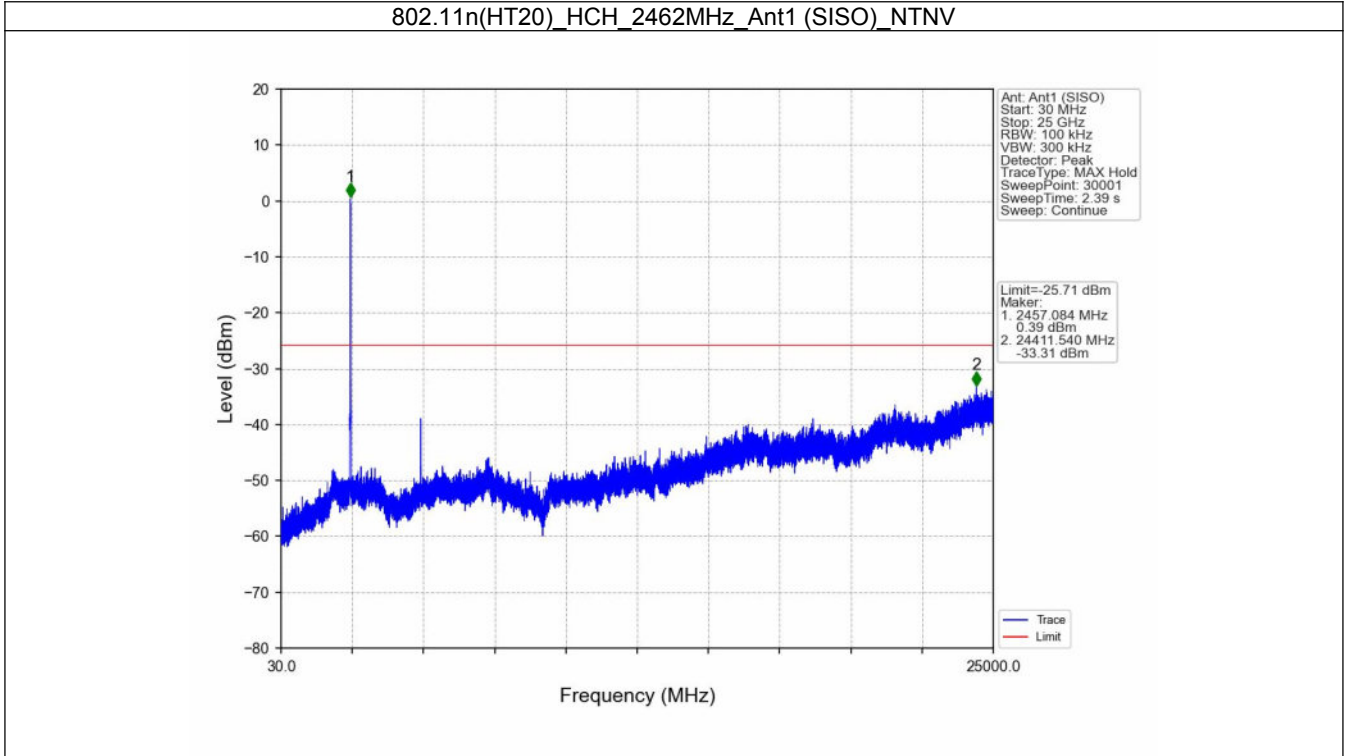




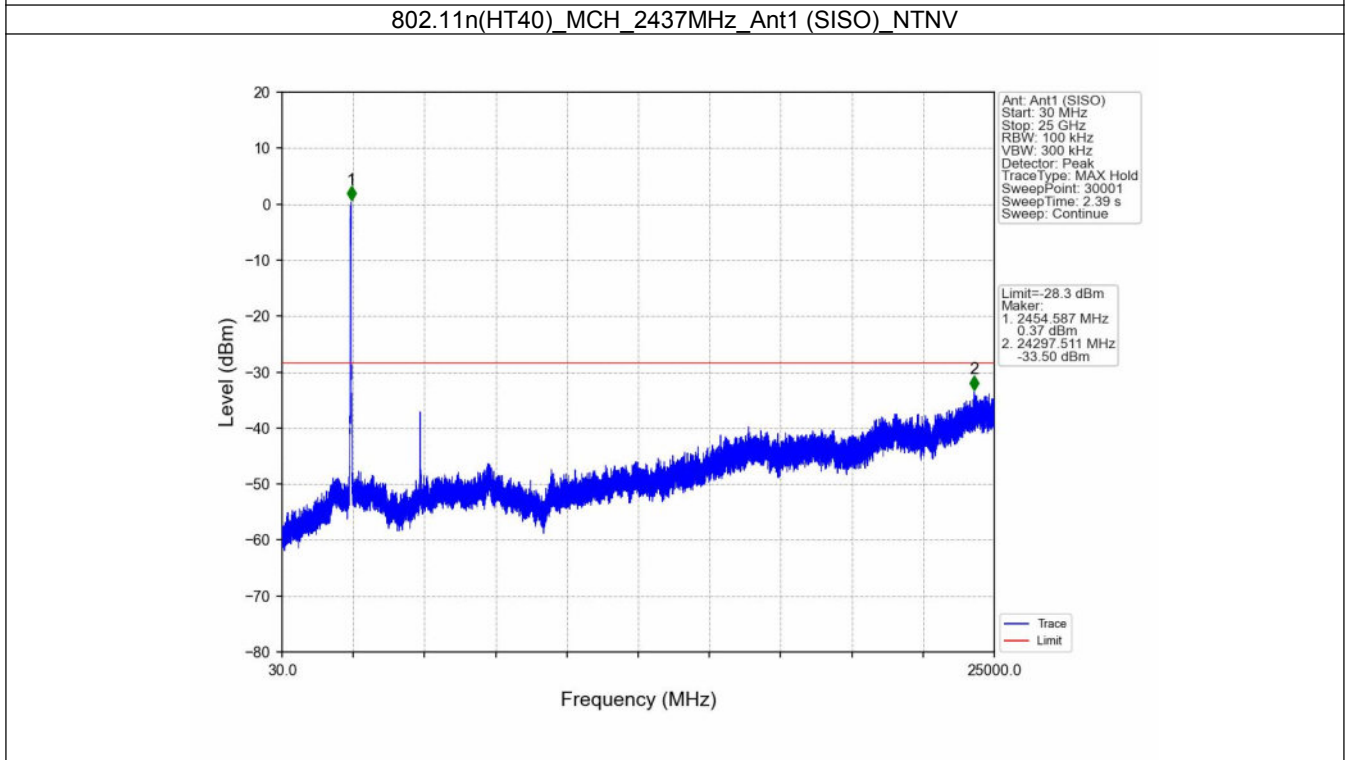
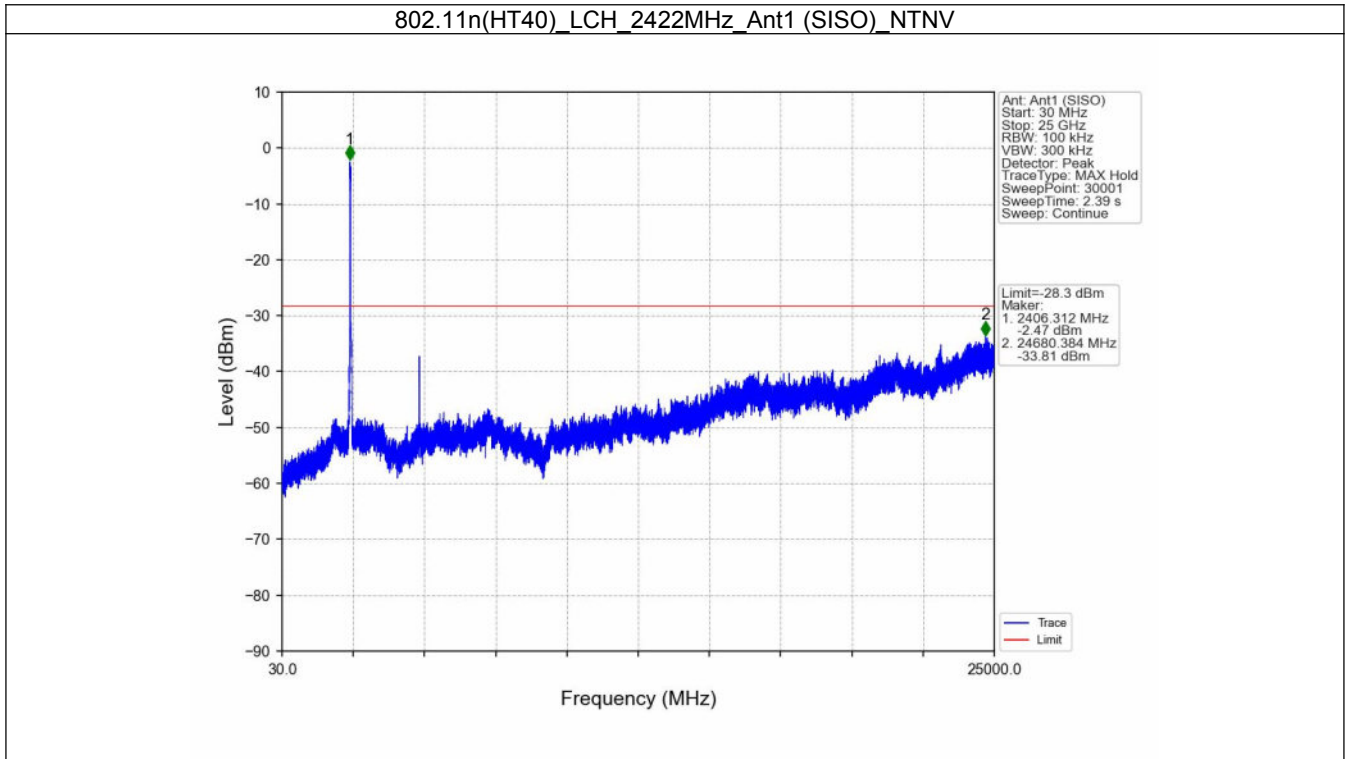




FCC ID: 2ASC7TAB702

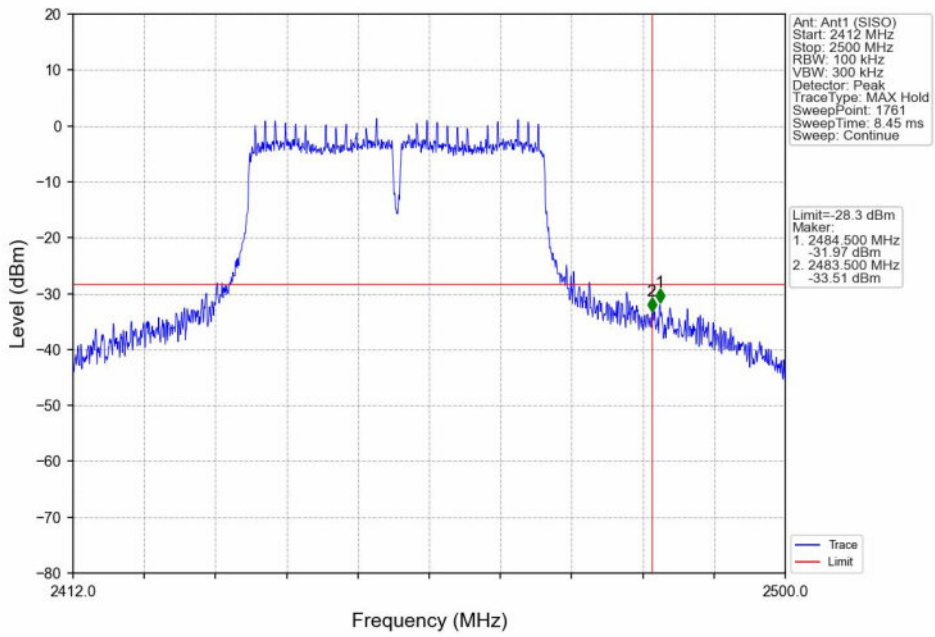


FCC ID: 2ASC7TAB702



FCC ID: 2ASC7TAB702

802.11n(HT40)\_HCH\_2452MHz\_Ant1 (SISO)\_NTNV



802.11n(HT40)\_HCH\_2452MHz\_Ant1 (SISO)\_NTNV

