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 BLE

Test Report No.: CTL2502242101-WF

TABLE OF CONTENTS

1. Bandwidth 3

1.1 Test Result 3

1.1.1 OBW 3

1.1.2 6dB BW 3

1.2 Test Graph 4

1.2.1 OBW 4

1.2.2 6dB BW 7

2. Maximum Conducted Output Power 10

2.1 Test Result 10

2.1.1 Power 10

2.2 Test Graph 11

2.2.1 Power 11

3. Maximum Power Spectral Density 14

3.1 Test Result 14

3.1.1 PSD 14

3.2 Test Graph 15

3.2.1 PSD 15

4. Unwanted Emissions In Non-restricted Frequency Bands 18

4.1 Test Result 18

4.1.1 Ref 18

4.1.2 CSE 18

4.2 Test Graph 19

4.2.1 Ref 19

4.2.2 CSE 22

1. Bandwidth

1.1 Test Result

1.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.031	/	Pass
		2440	1	1.062	/	Pass
		2480	1	1.057	/	Pass
2M	SISO	2402	1	2.036	/	Pass
		2440	1	2.041	/	Pass
		2480	1	2.051	/	Pass

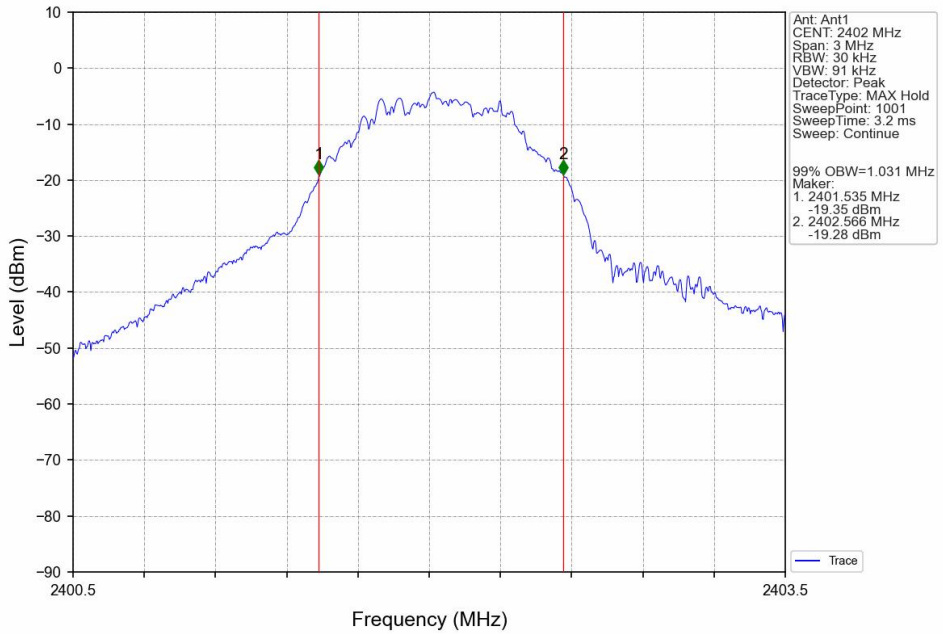
1.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.664	>=0.5	Pass
		2440	1	0.677	>=0.5	Pass
		2480	1	0.675	>=0.5	Pass
2M	SISO	2402	1	1.175	>=0.5	Pass
		2440	1	1.185	>=0.5	Pass
		2480	1	1.163	>=0.5	Pass

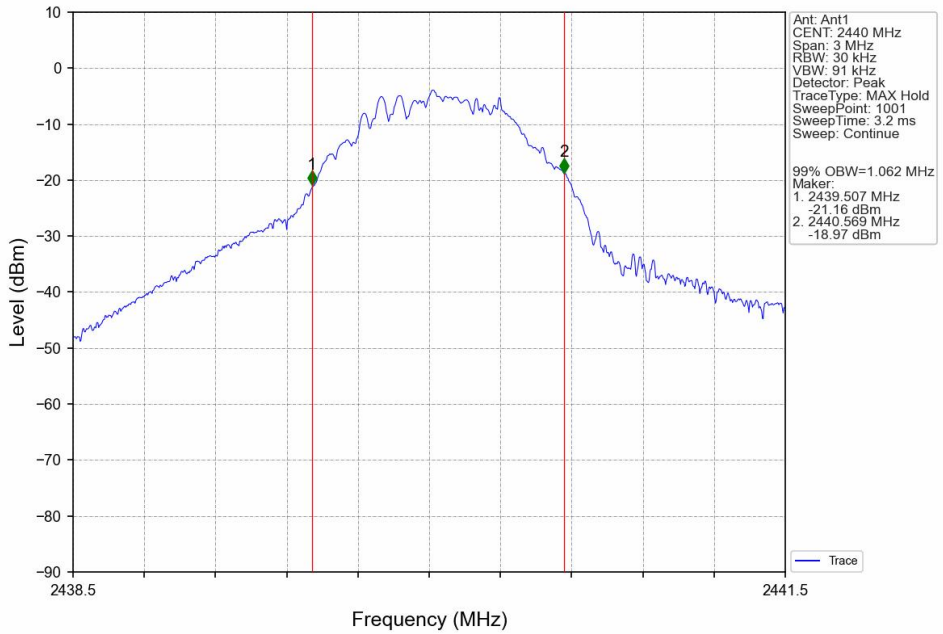
1.2 Test Graph

1.2.1 OBW

1M_LCH_2402MHz_Ant1_NTNV

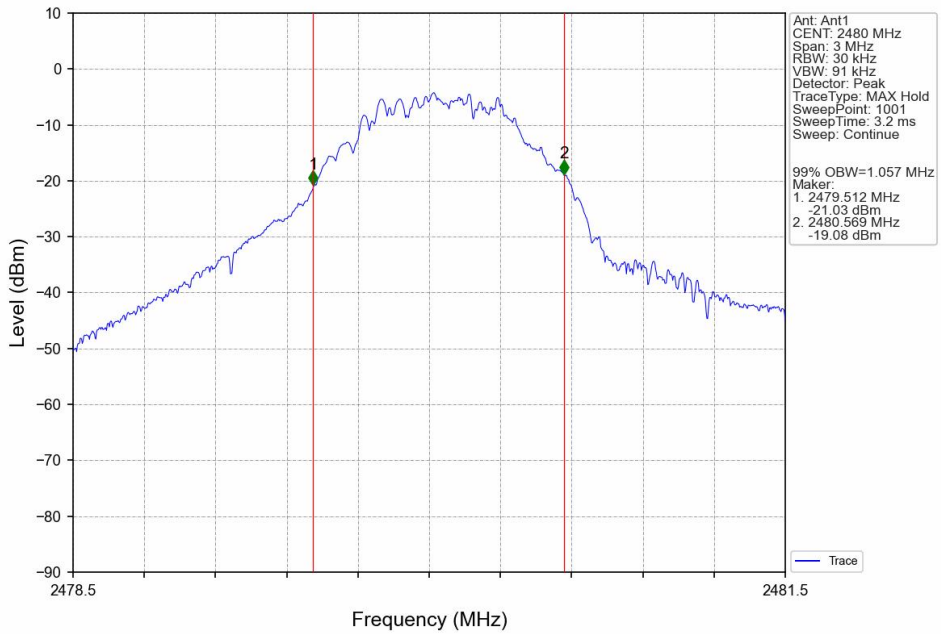


1M_MCH_2440MHz_Ant1_NTNV

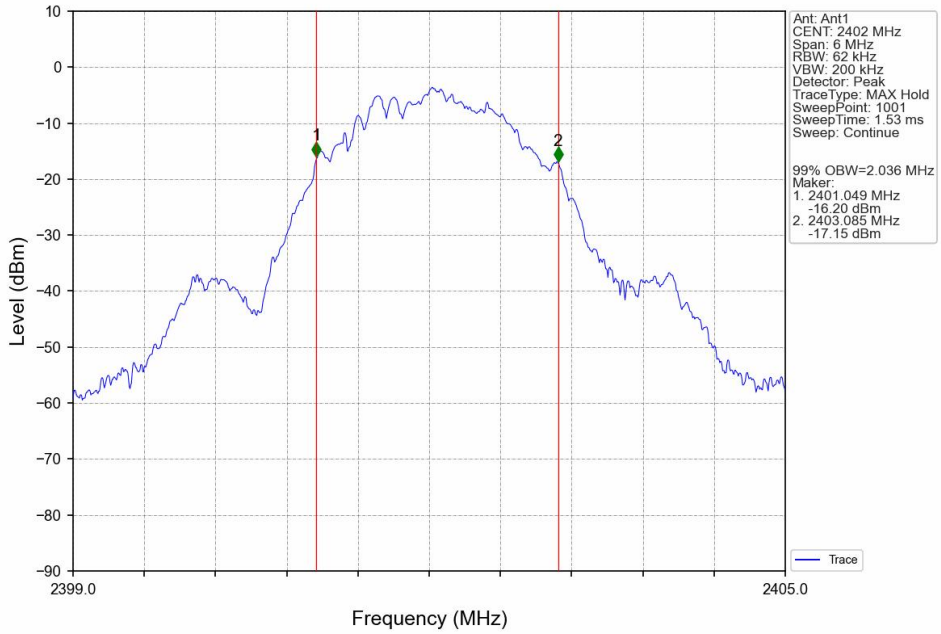


FCCID: 2BN6I-CSR-68

1M_HCH_2480MHz_Ant1_NTNV

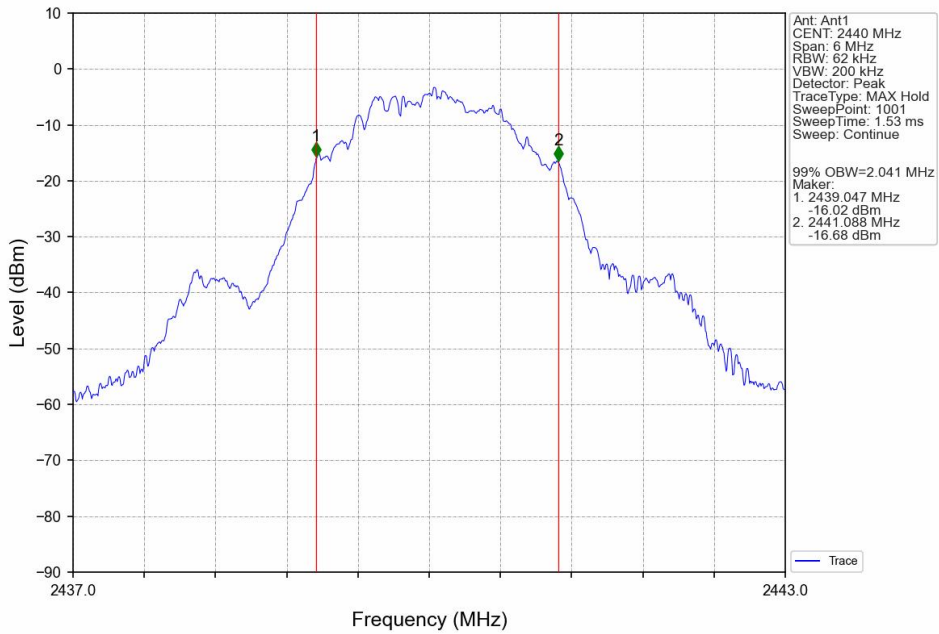


2M_LCH_2402MHz_Ant1_NTNV

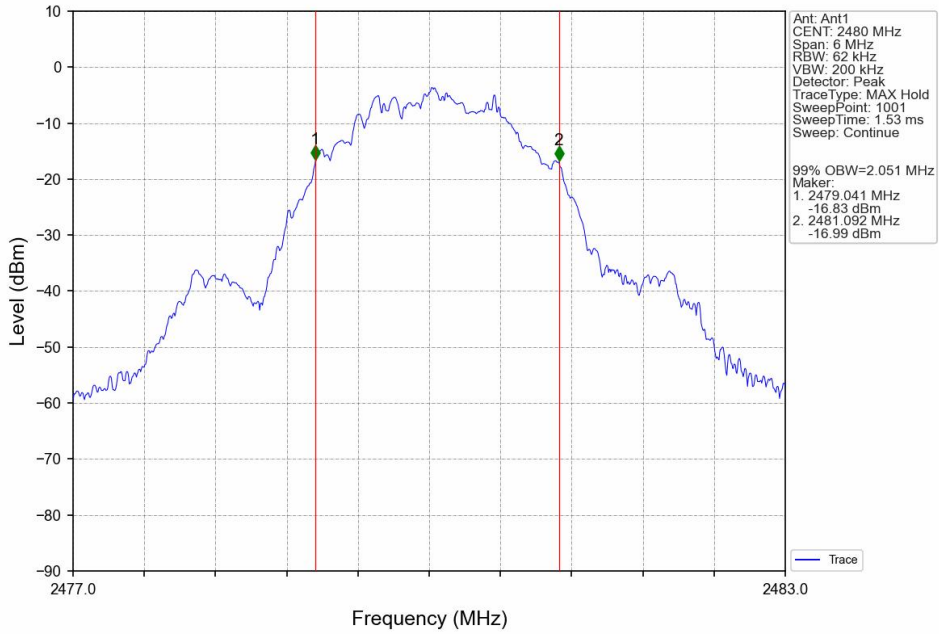


FCCID: 2BN6I-CSR-68

2M_MCH_2440MHz_Ant1_NTNV

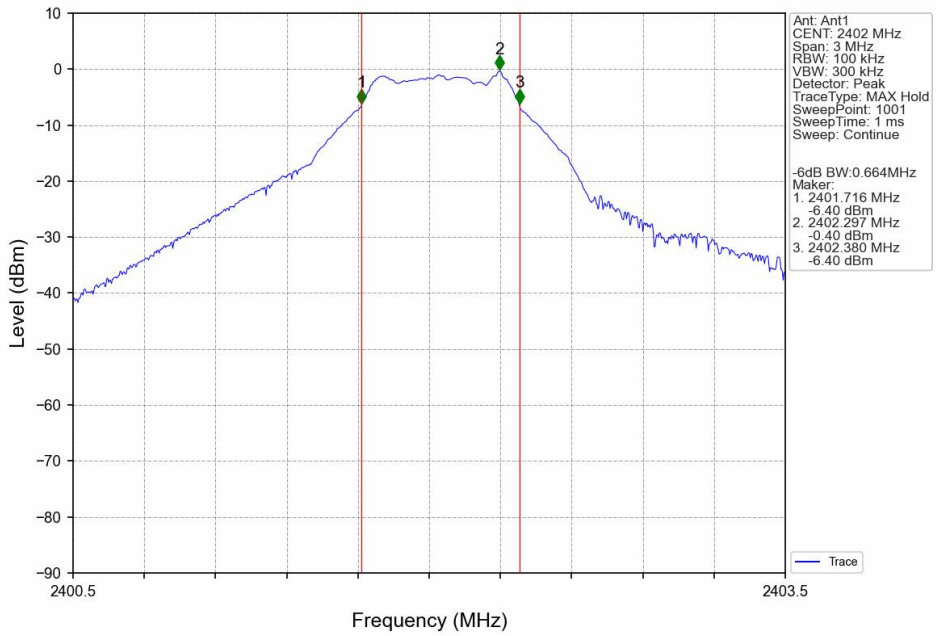


2M_HCH_2480MHz_Ant1_NTNV

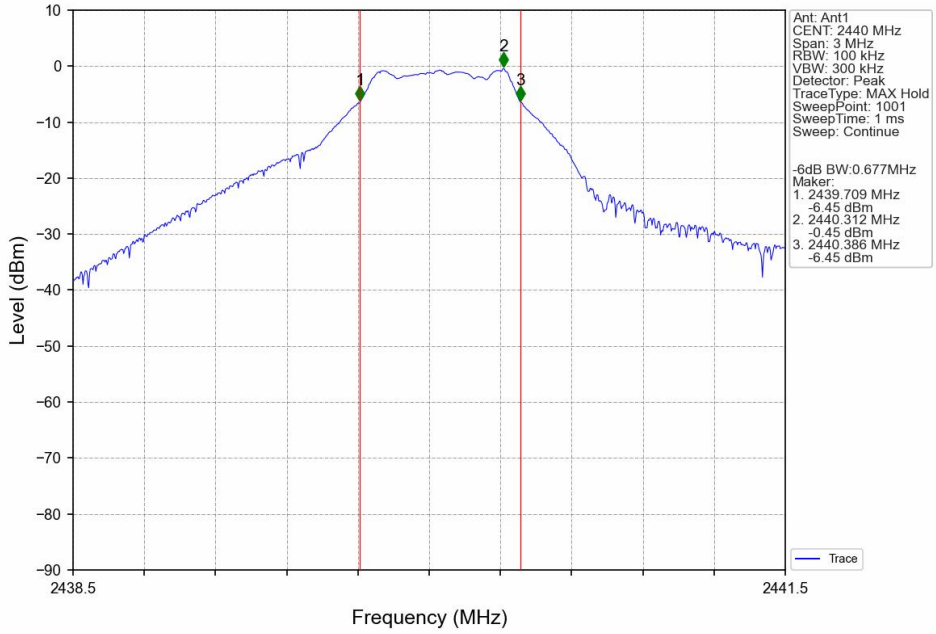


1.2.2 6dB BW

1M_LCH_2402MHz_Ant1_NTNV

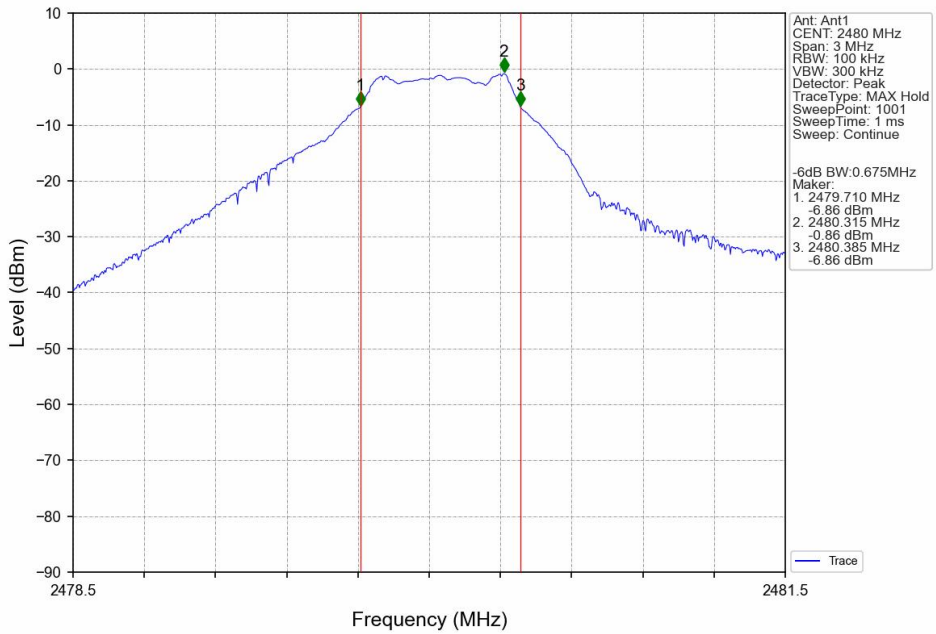


1M_MCH_2440MHz_Ant1_NTNV

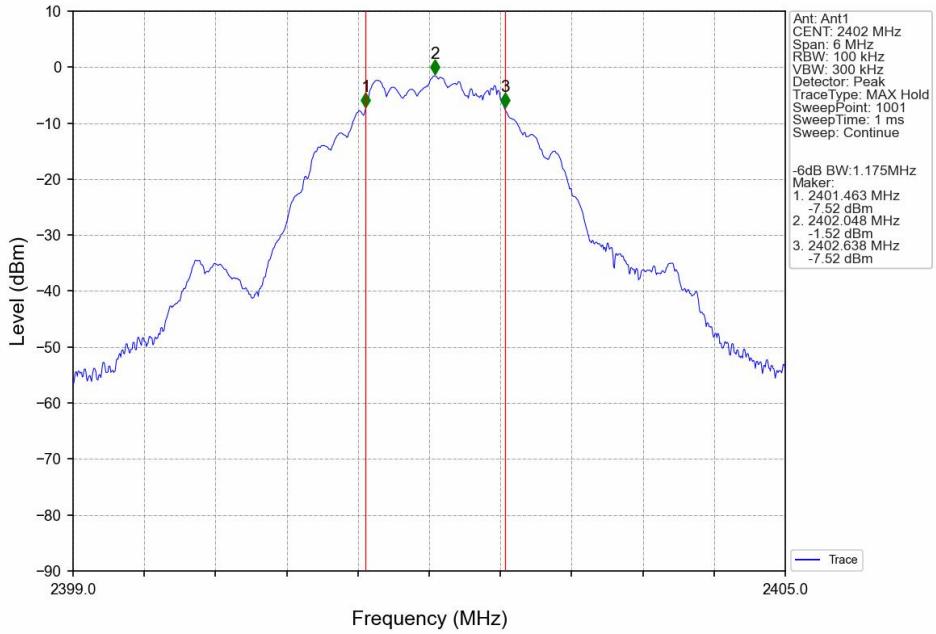


FCCID: 2BN6I-CSR-68

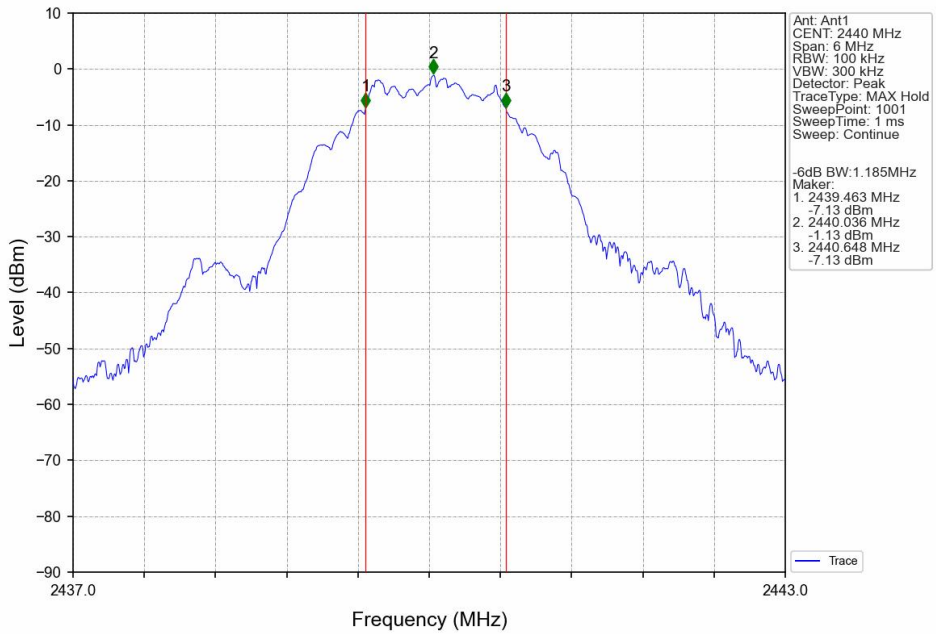
1M_HCH_2480MHz_Ant1_NTNV



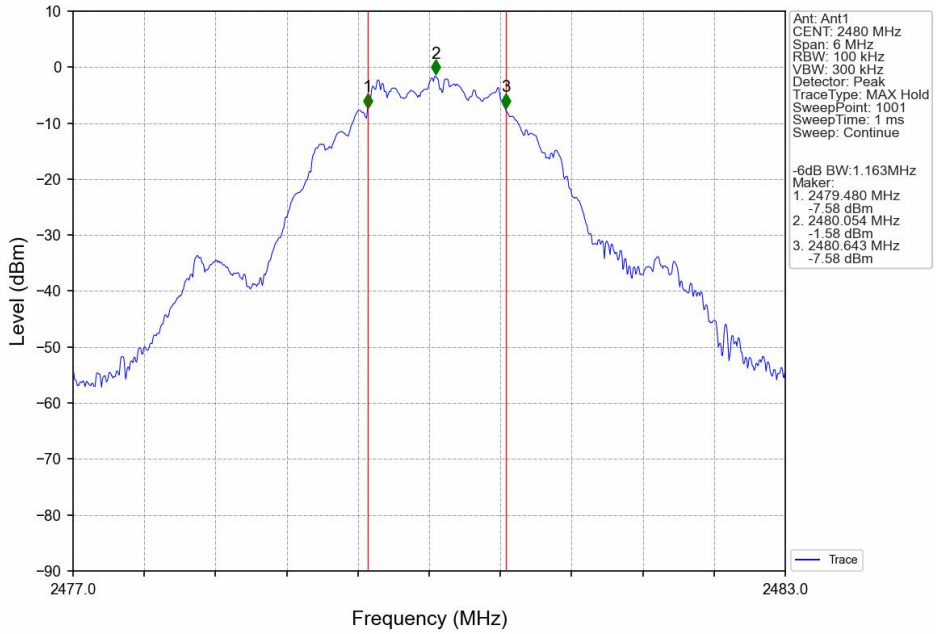
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2. Maximum Conducted Output Power

2.1 Test Result

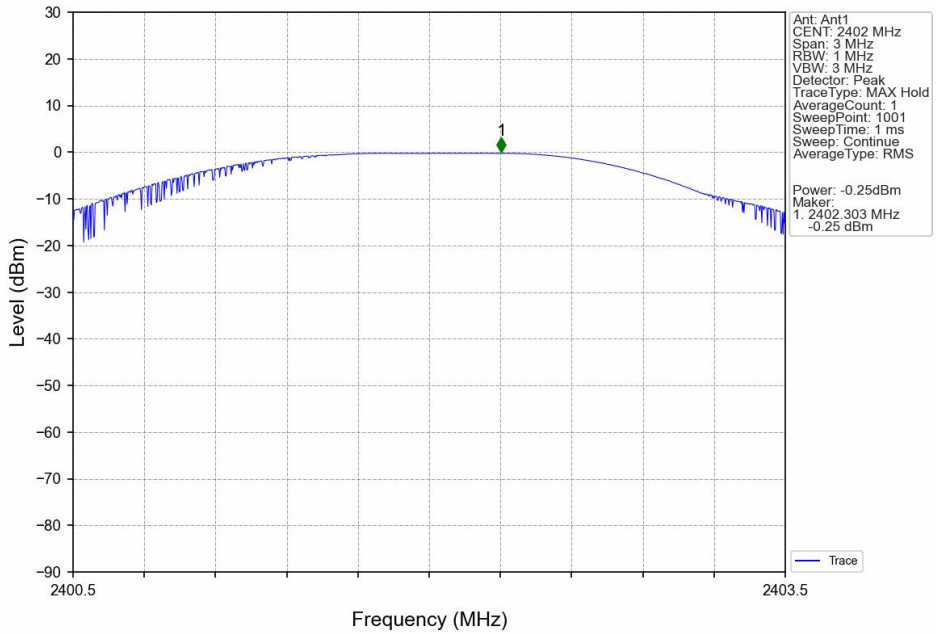
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-0.25	<=30	Pass
		2440	0.17	<=30	Pass
		2480	-0.25	<=30	Pass
2M	SISO	2402	-0.26	<=30	Pass
		2440	0.15	<=30	Pass
		2480	-0.24	<=30	Pass
Note1: Antenna Gain: Ant1: 5.05dBi;					

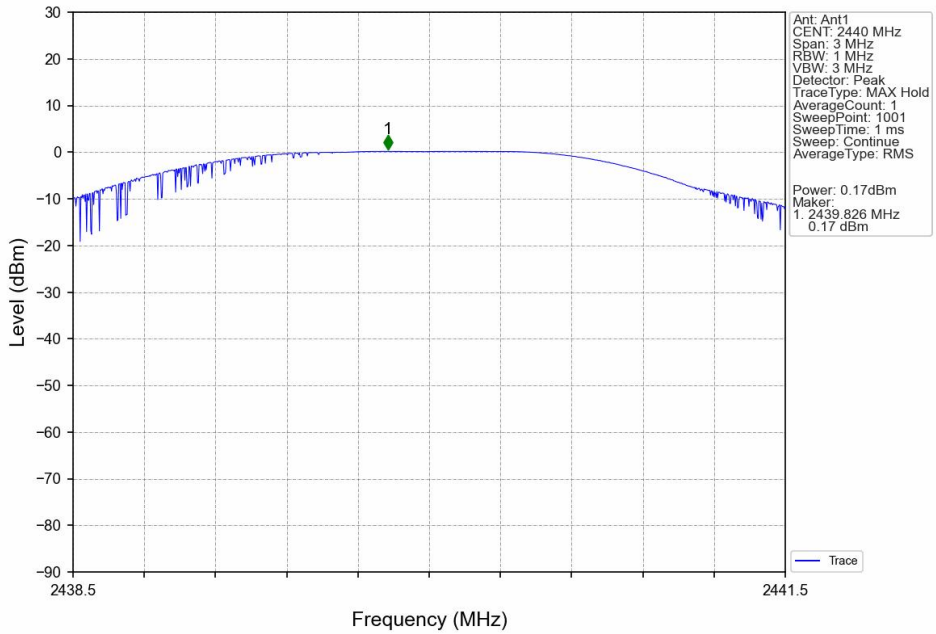
2.2 Test Graph

2.2.1 Power

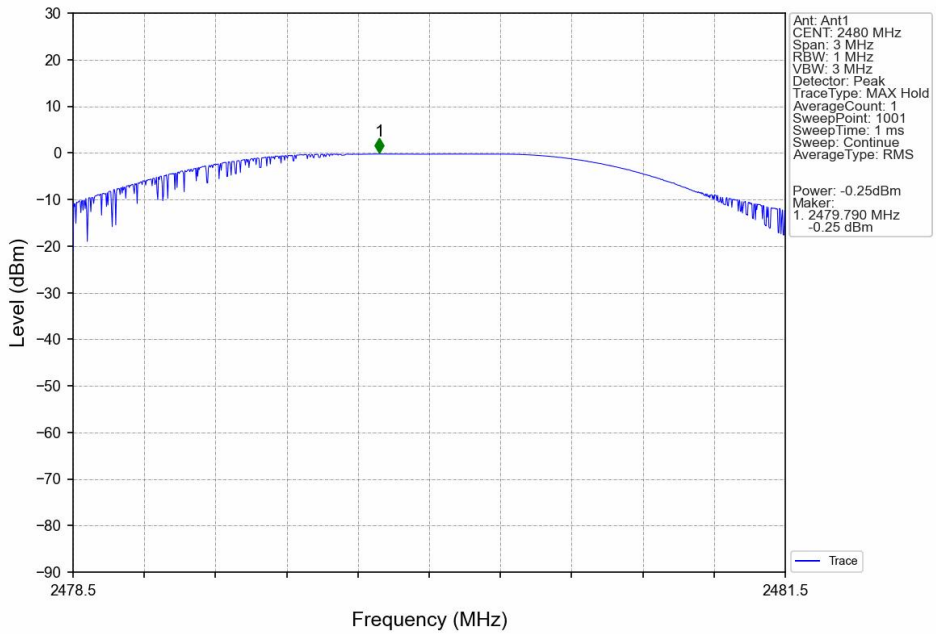
1M_LCH_2402MHz_Ant1_NTNV



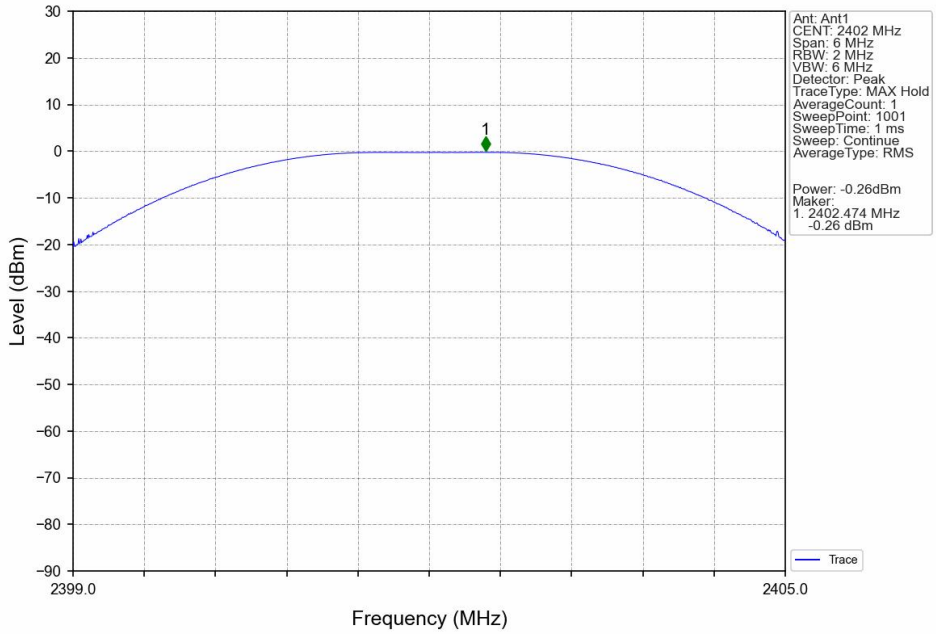
1M_MCH_2440MHz_Ant1_NTNV



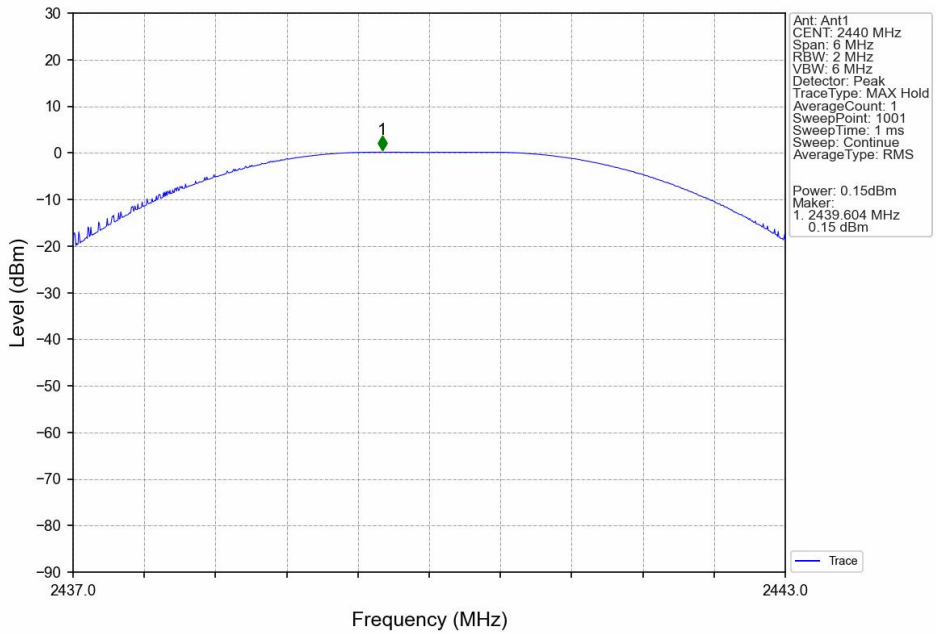
1M_HCH_2480MHz_Ant1_NTNV



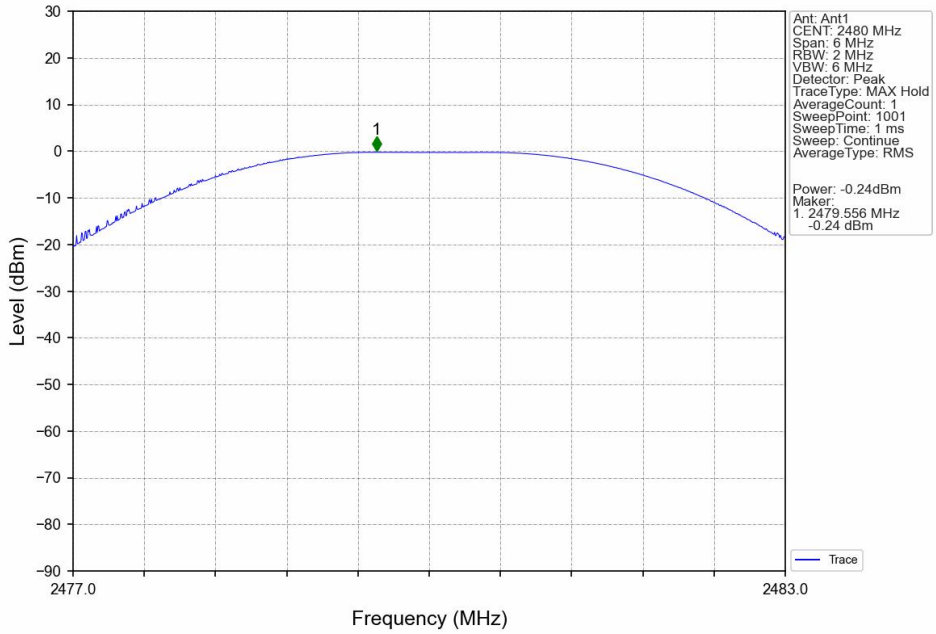
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Power Spectral Density

3.1 Test Result

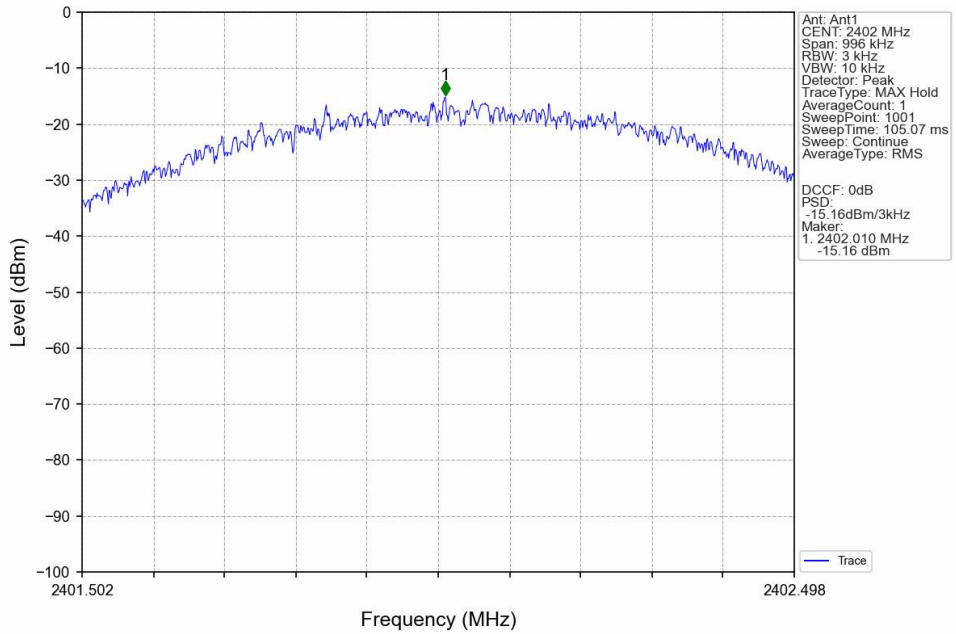
3.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-15.16	<=8	Pass
		2440	-15.11	<=8	Pass
		2480	-15.74	<=8	Pass
2M	SISO	2402	-18.29	<=8	Pass
		2440	-18.12	<=8	Pass
		2480	-19.52	<=8	Pass
Note1: Antenna Gain: Ant1: 5.05dBi;					

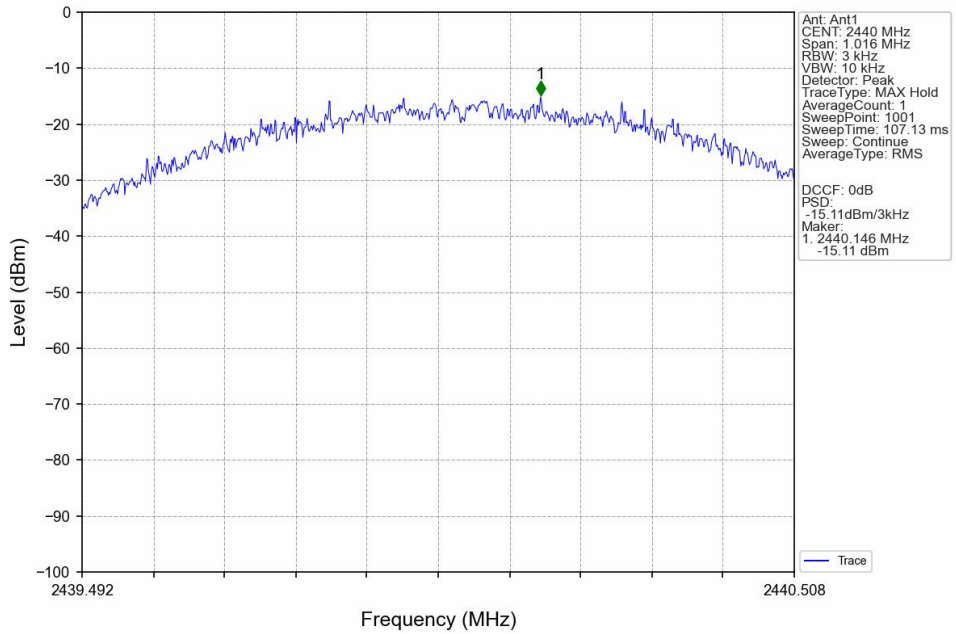
3.2 Test Graph

3.2.1 PSD

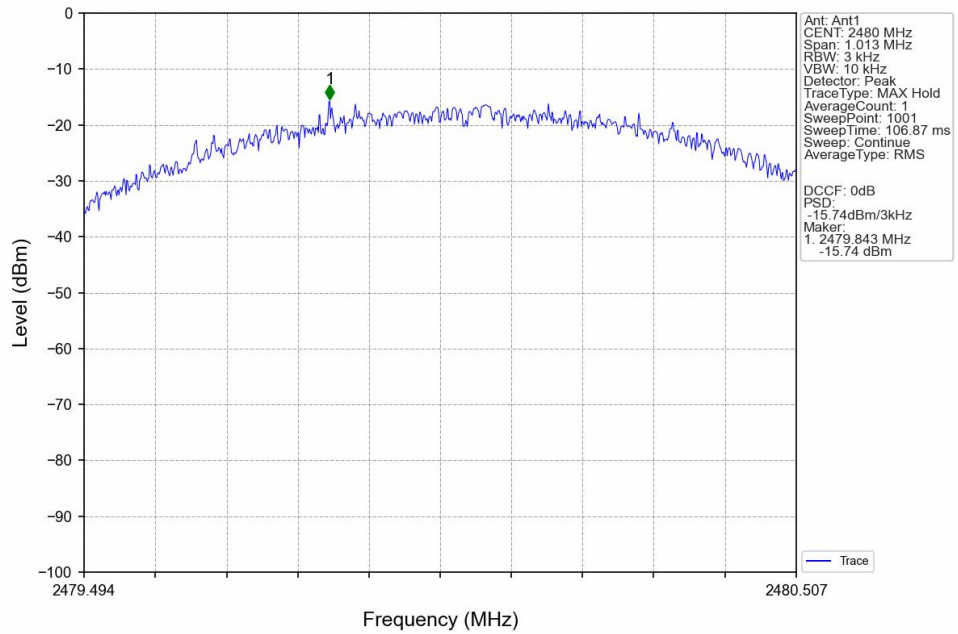
1M_LCH_2402MHz_Ant1_NTNV



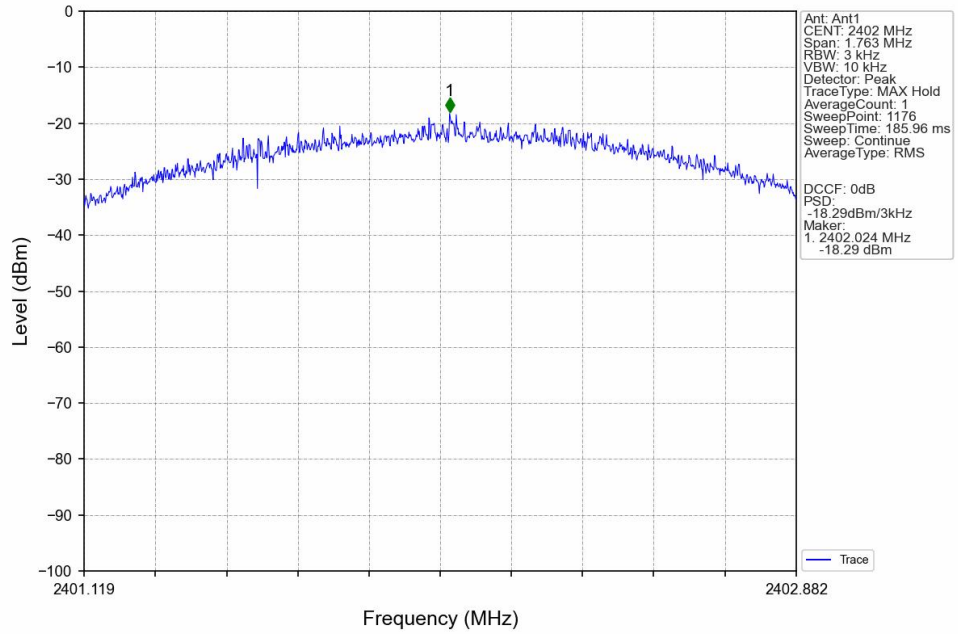
1M_MCH_2440MHz_Ant1_NTNV



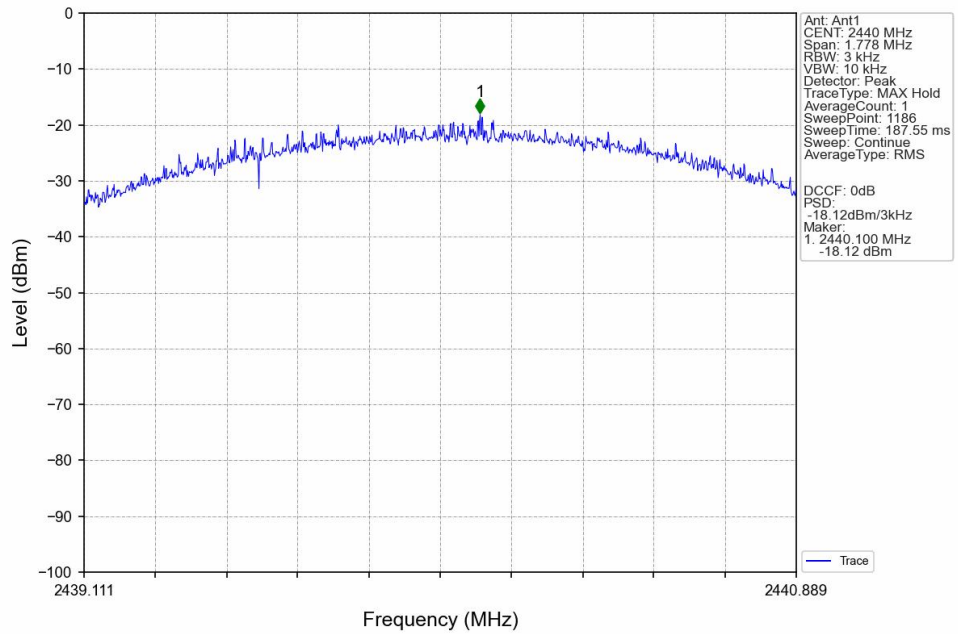
1M_HCH_2480MHz_Ant1_NTNV



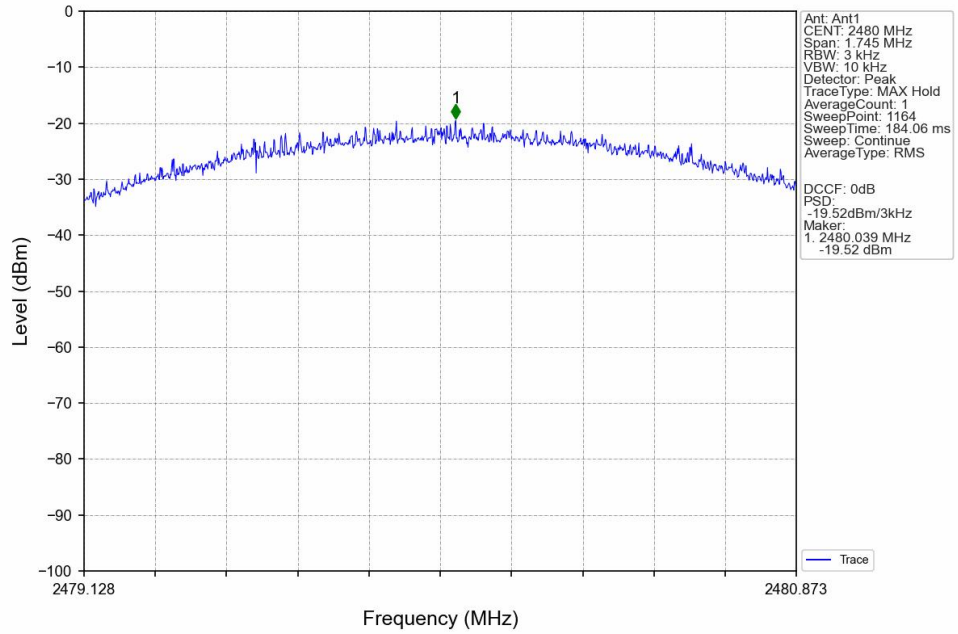
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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)
1M	SISO	2402	1	-1.12
		2440	1	-0.34
		2480	1	-0.81
2M	SISO	2402	1	-1.51
		2440	1	-1.10
		2480	1	-1.58
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.				

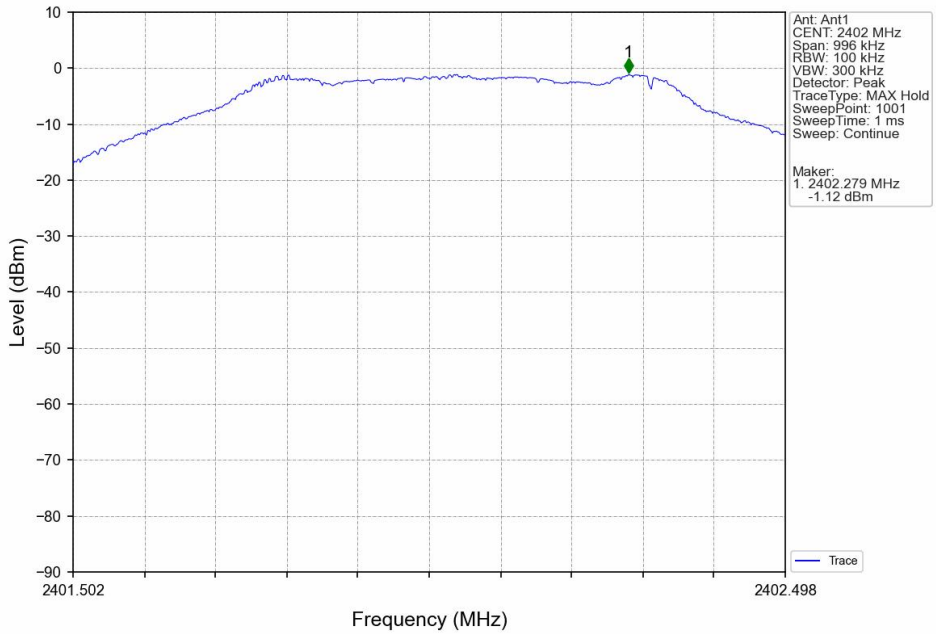
4.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-0.34	-20.34	Pass
		2440	1	-0.34	-20.34	Pass
		2480	1	-0.34	-20.34	Pass
2M	SISO	2402	1	-1.10	-21.10	Pass
		2440	1	-1.10	-21.10	Pass
		2480	1	-1.10	-21.10	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.						

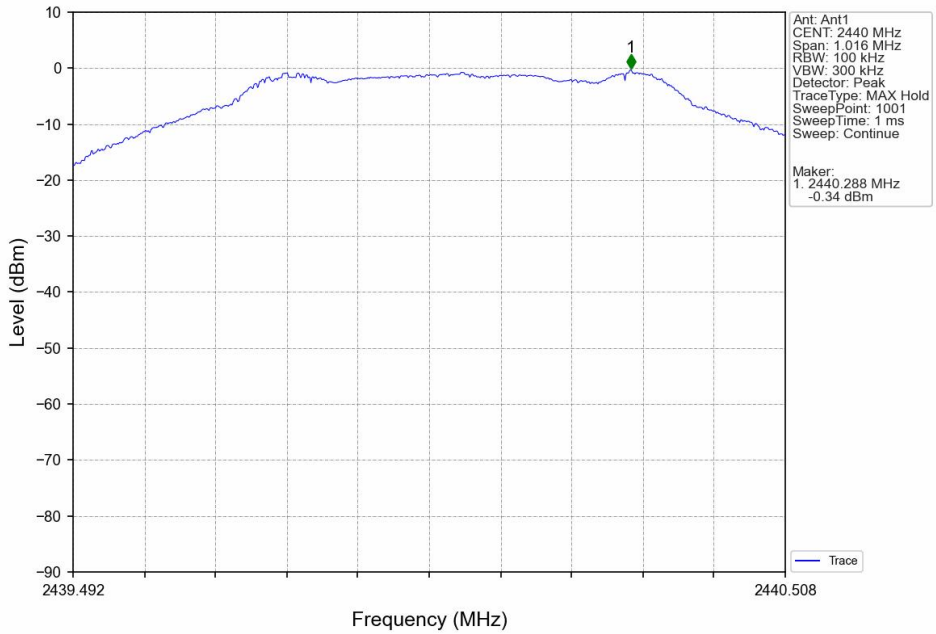
4.2 Test Graph

4.2.1 Ref

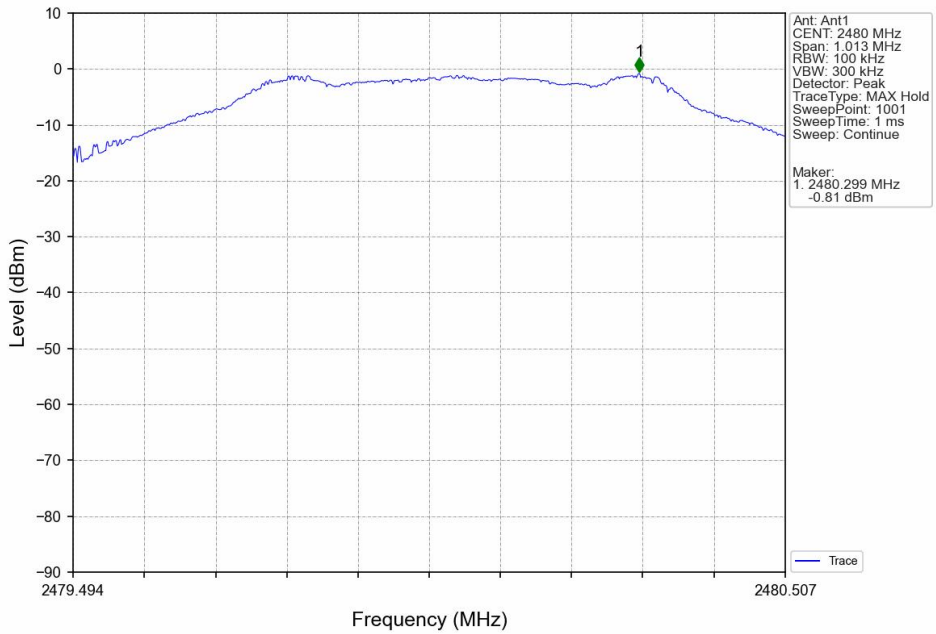
1M_LCH_2402MHz_Ant1_NTNV



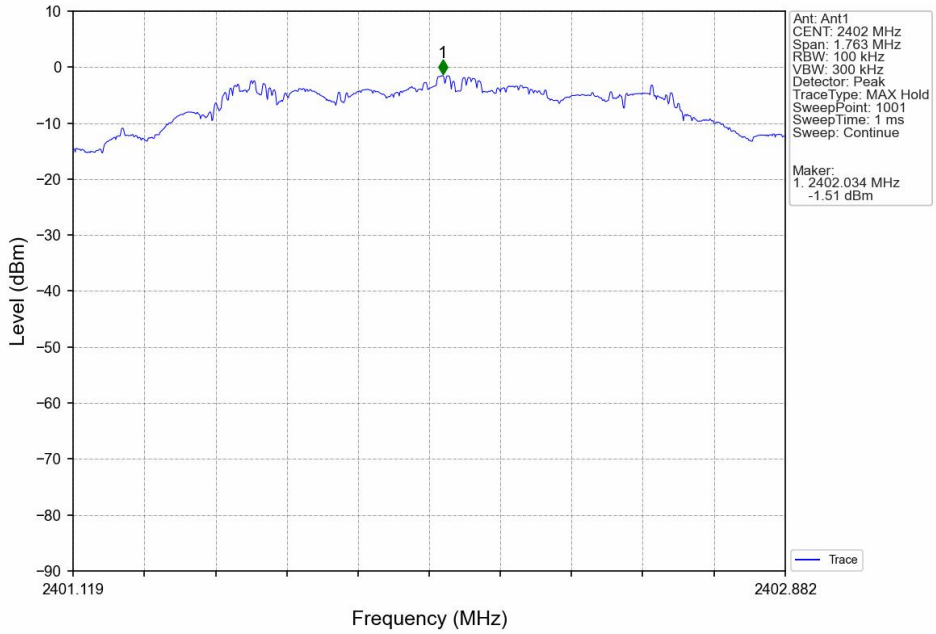
1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV

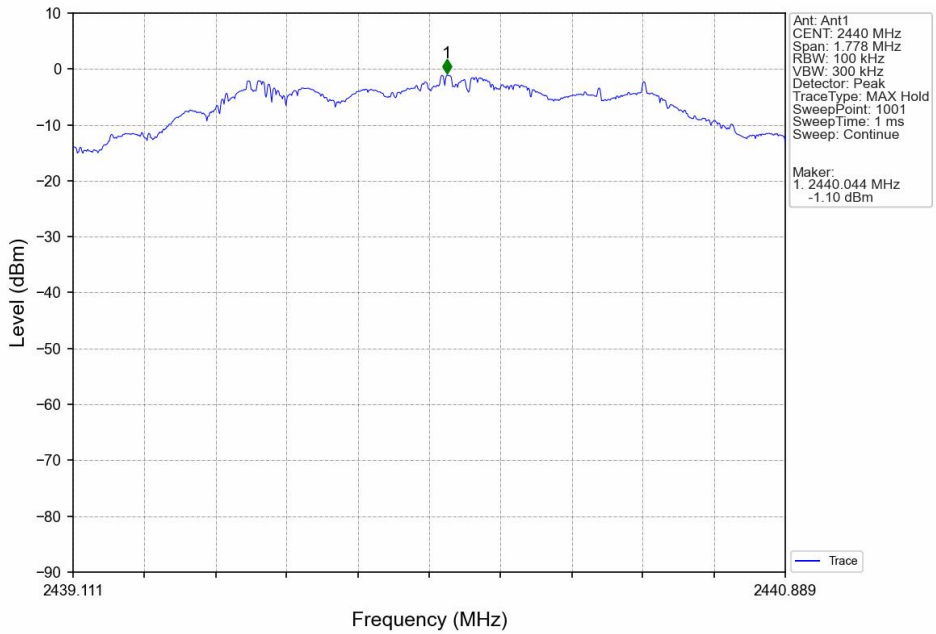


2M_LCH_2402MHz_Ant1_NTNV

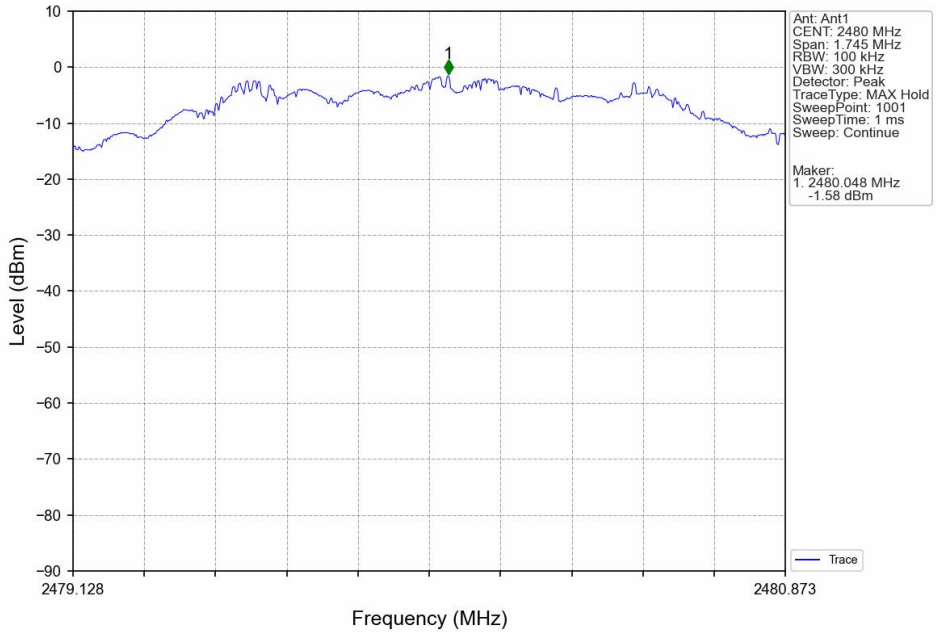


FCCID: 2BN6I-CSR-68

2M_MCH_2440MHz_Ant1_NTNV

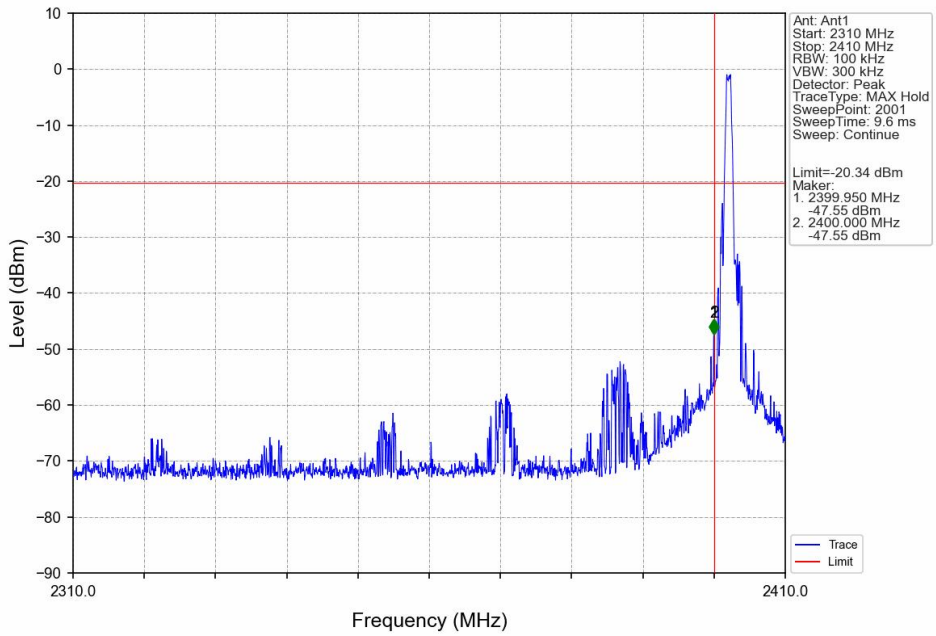


2M_HCH_2480MHz_Ant1_NTNV

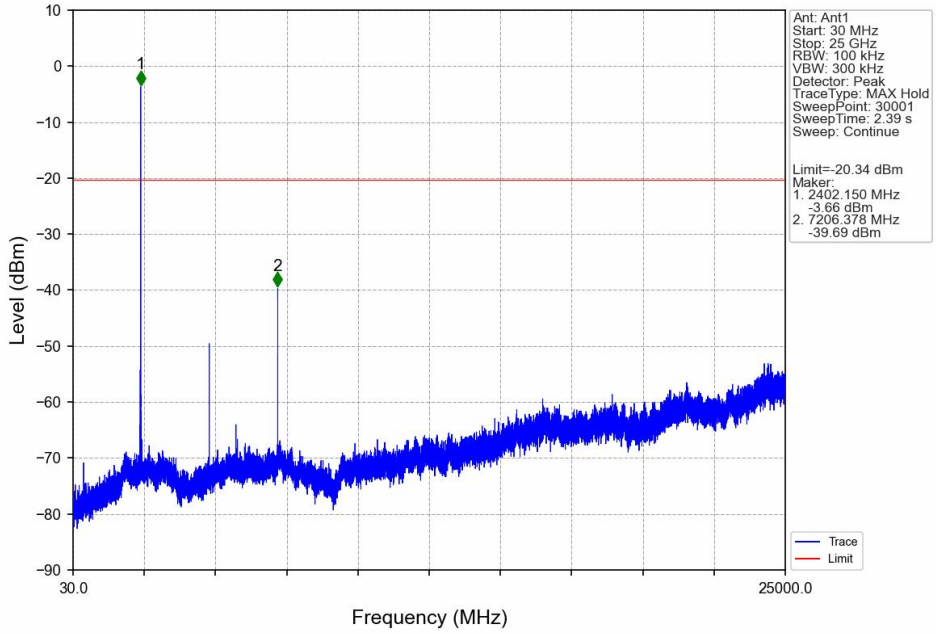


4.2.2 CSE

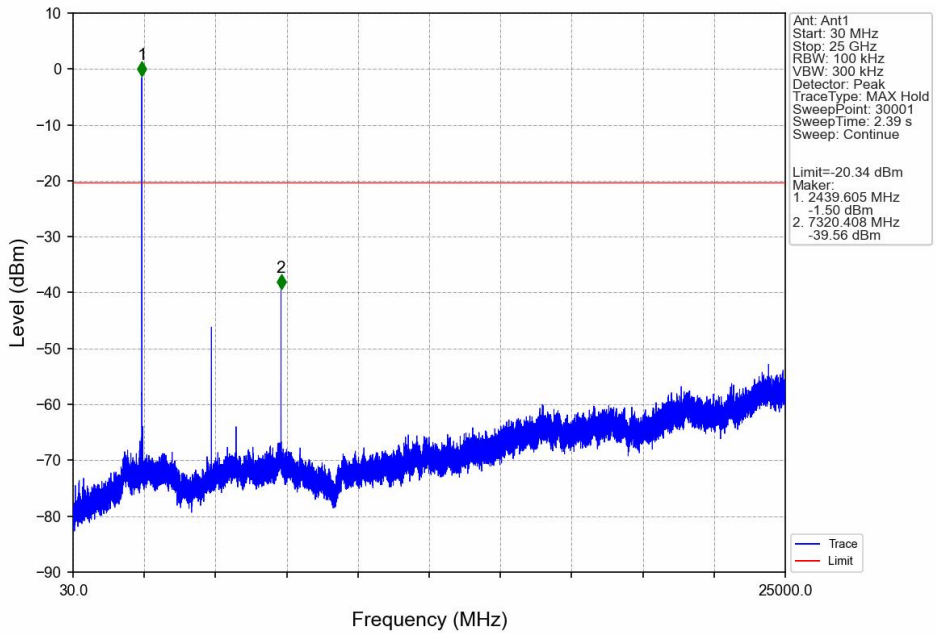
1M_LCH_2402MHz_Ant1_NTNV



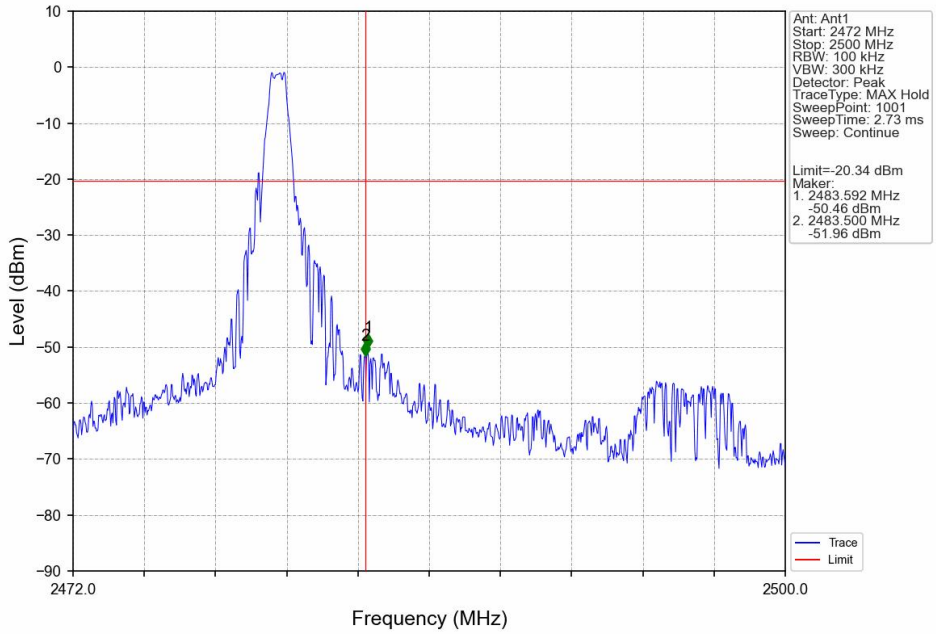
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV

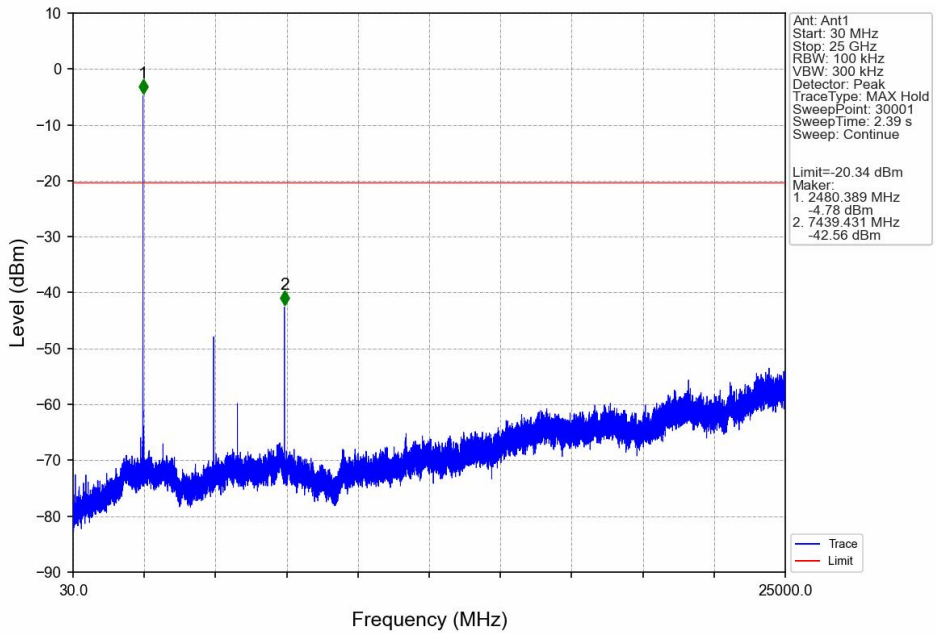


1M_HCH_2480MHz_Ant1_NTNV

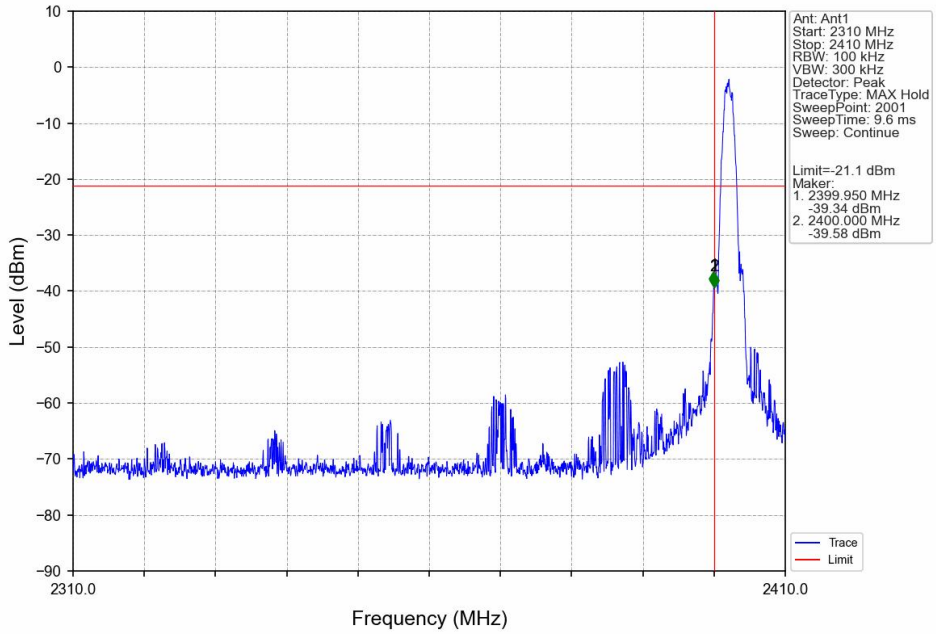


FCCID: 2BN6I-CSR-68

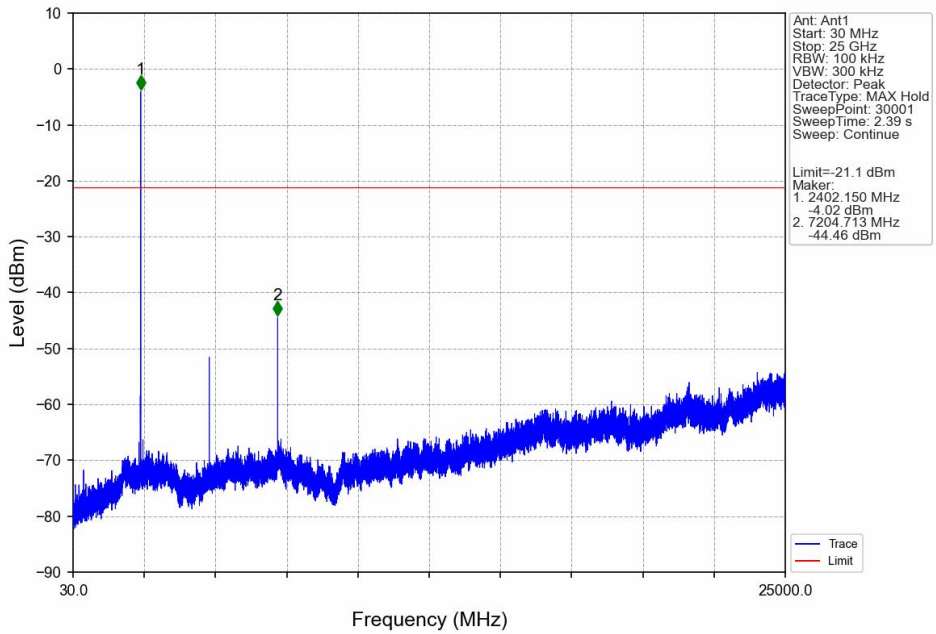
1M_HCH_2480MHz_Ant1_NTNV



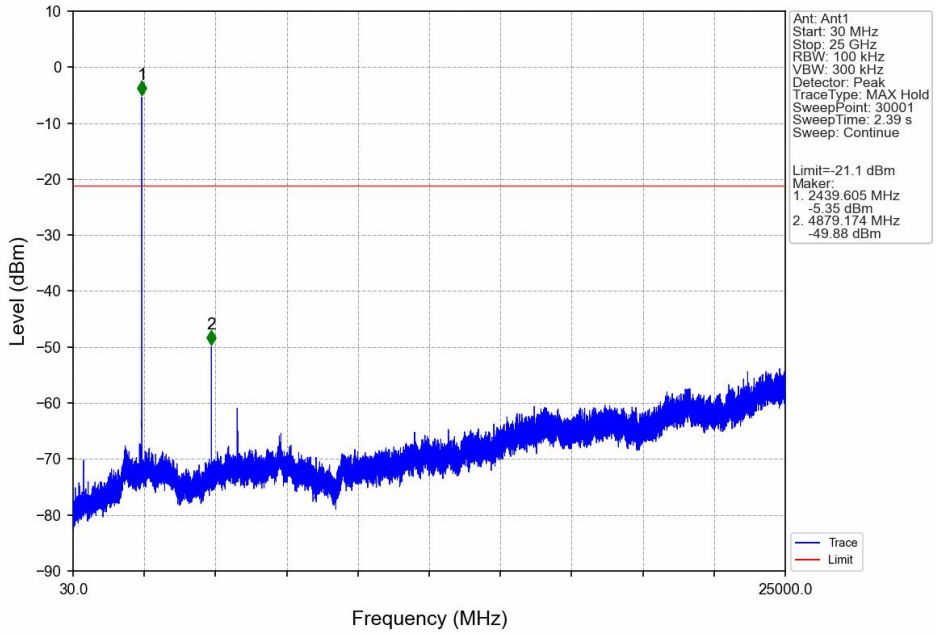
2M_LCH_2402MHz_Ant1_NTNV



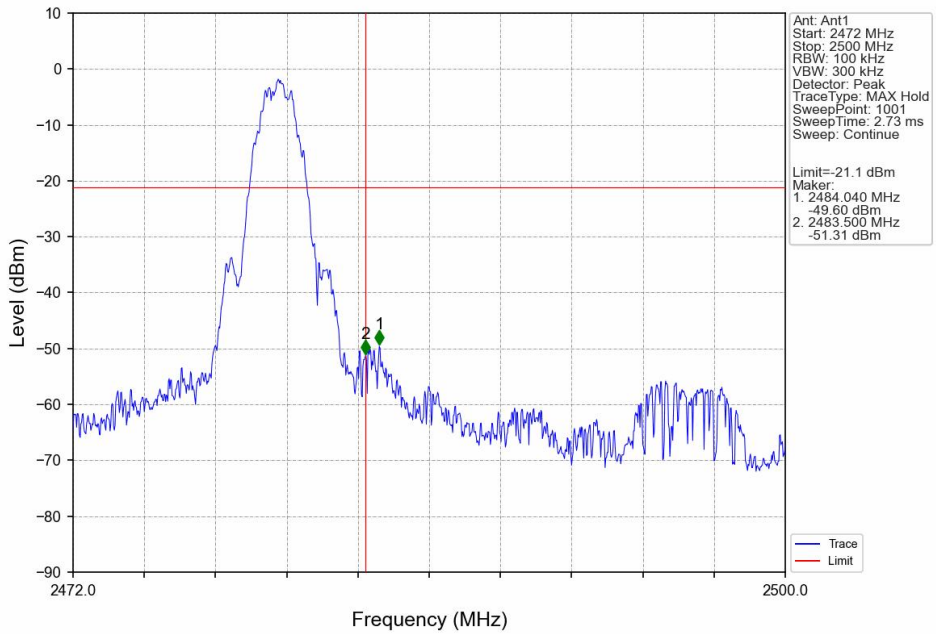
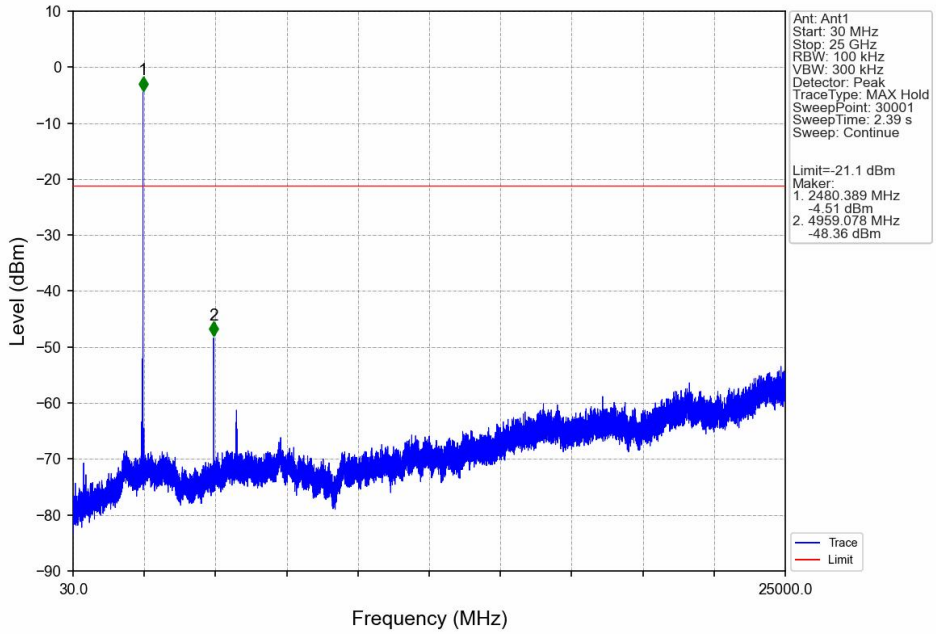
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV