



Shenzhen CTL Testing Technology Co., Ltd.

Zone A, 1/ F, Warehouse 2, Baisha Logistics Company, No. 3011 Shahe West Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

Appendix RF test data for BLE

TABLE OF CONTENTS

Appendix RF test data for BLE.....	1
1. Bandwidth.....	2
2. Maximum Peak Conducted Output Power	10
3. Maximum Power Spectral Density	14
4. Unwanted Emissions In Non-restricted Frequency Bands.....	18

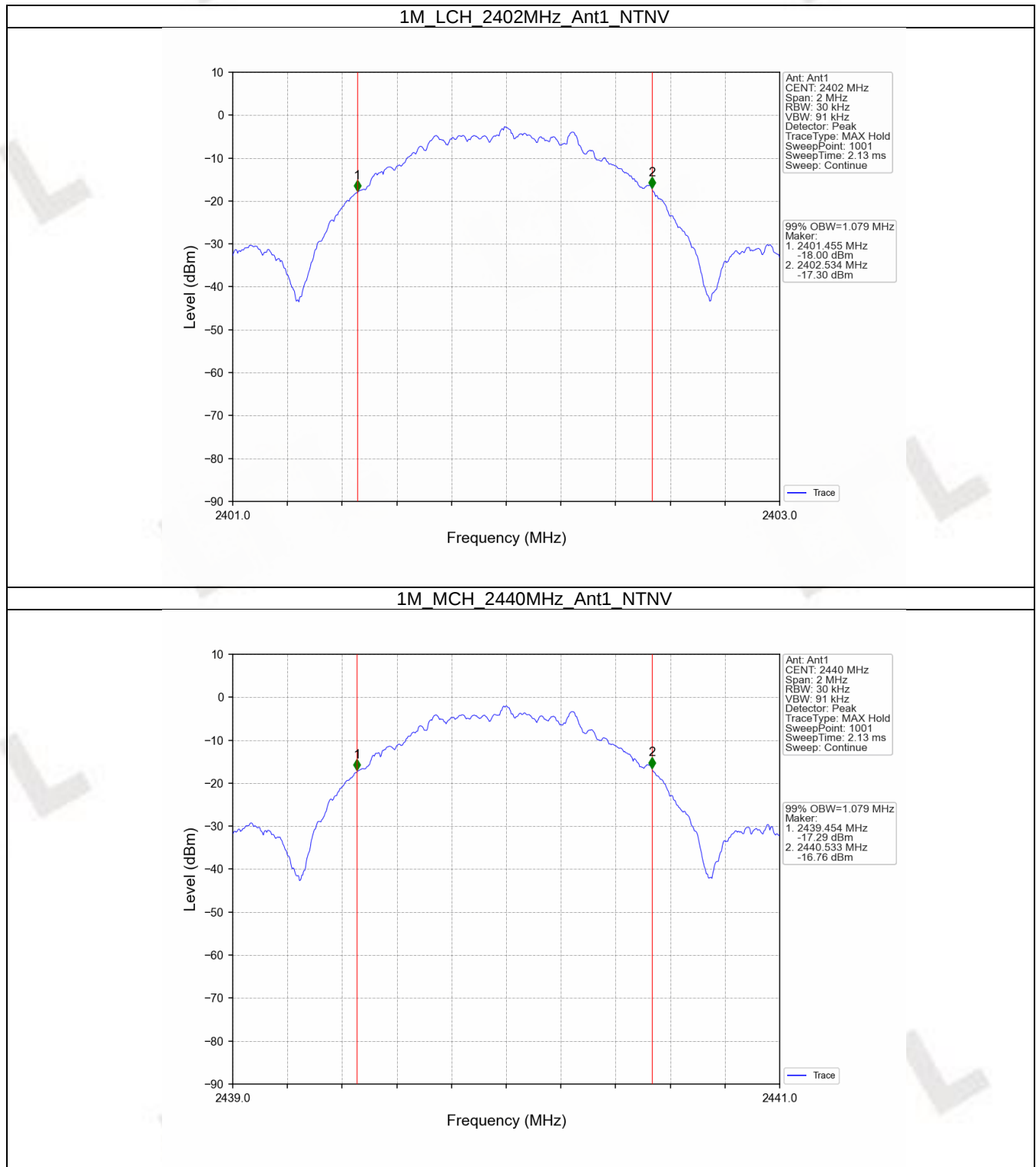
1. Bandwidth

1.1 OBW

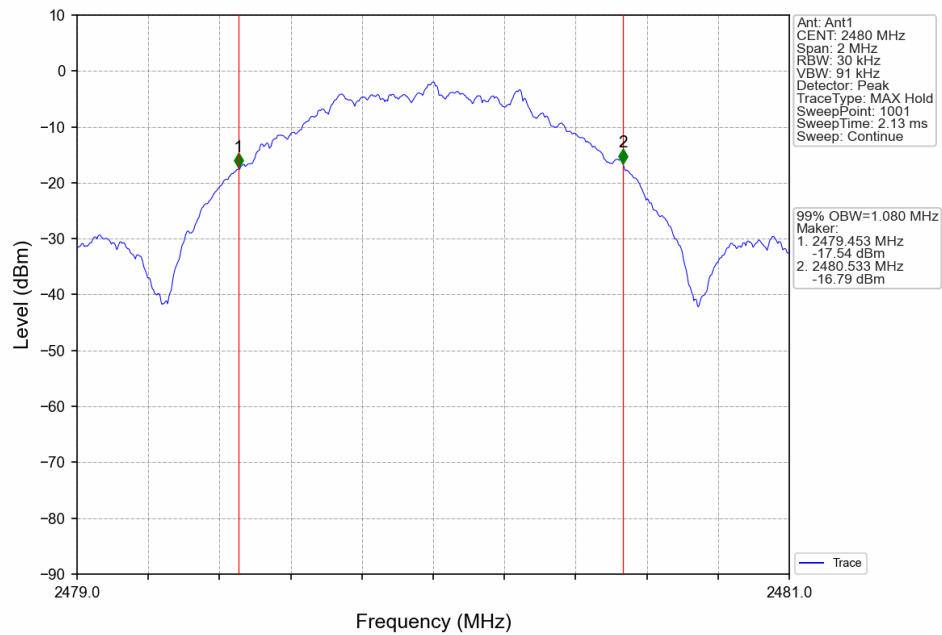
1.1.1 Test Result

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.079	/	Pass
		2440	1	1.079	/	Pass
		2480	1	1.080	/	Pass
2M	SISO	2402	1	2.079	/	Pass
		2440	1	2.082	/	Pass
		2480	1	2.082	/	Pass

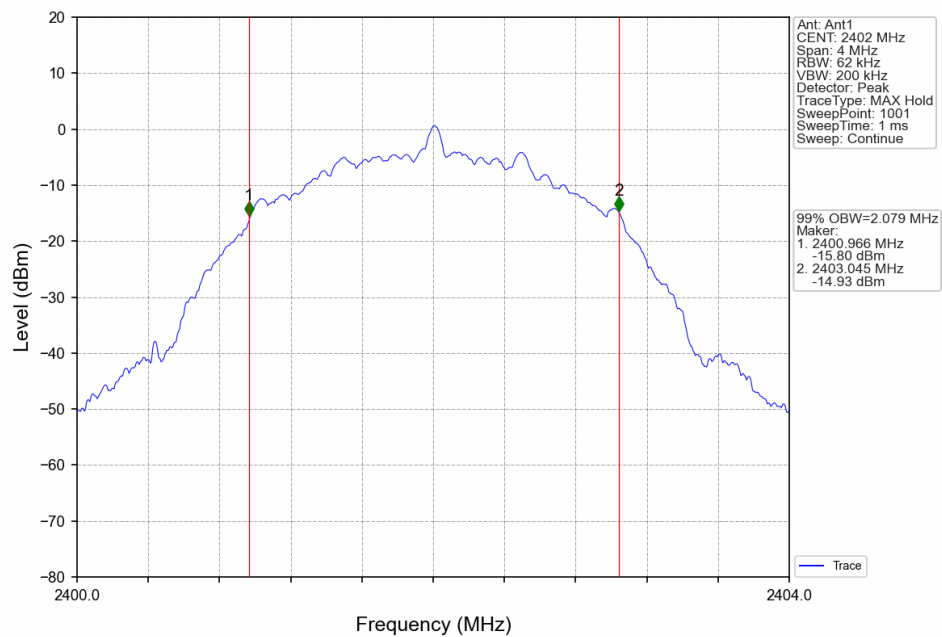
1.1.2 Test Graph



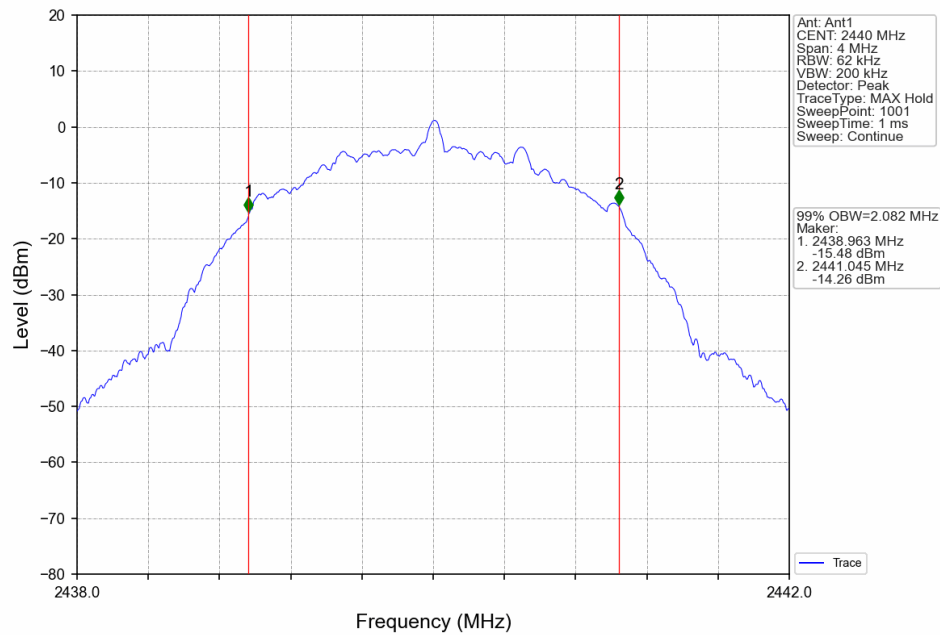
1M_HCH_2480MHz_Ant1_NTNV



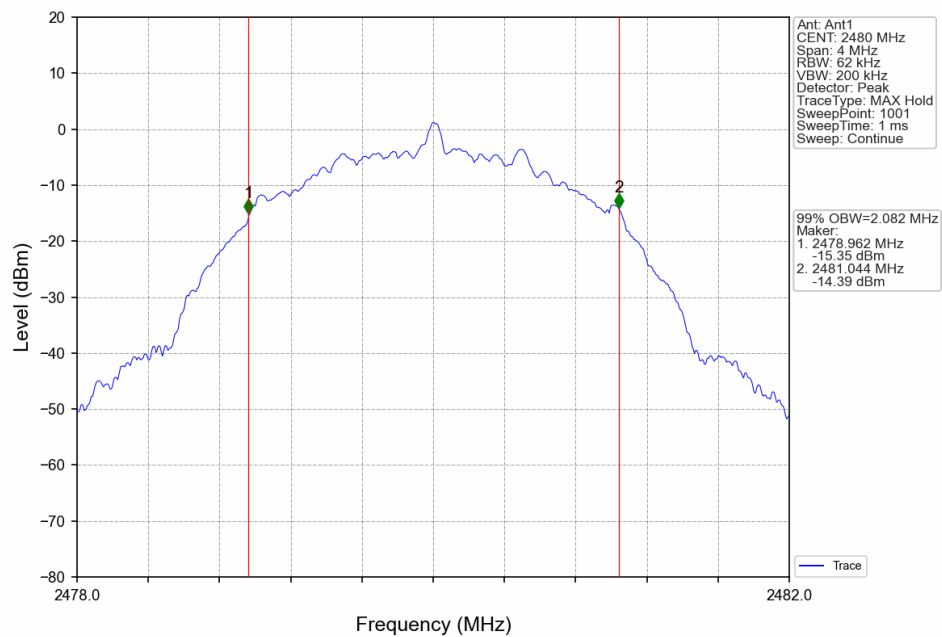
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



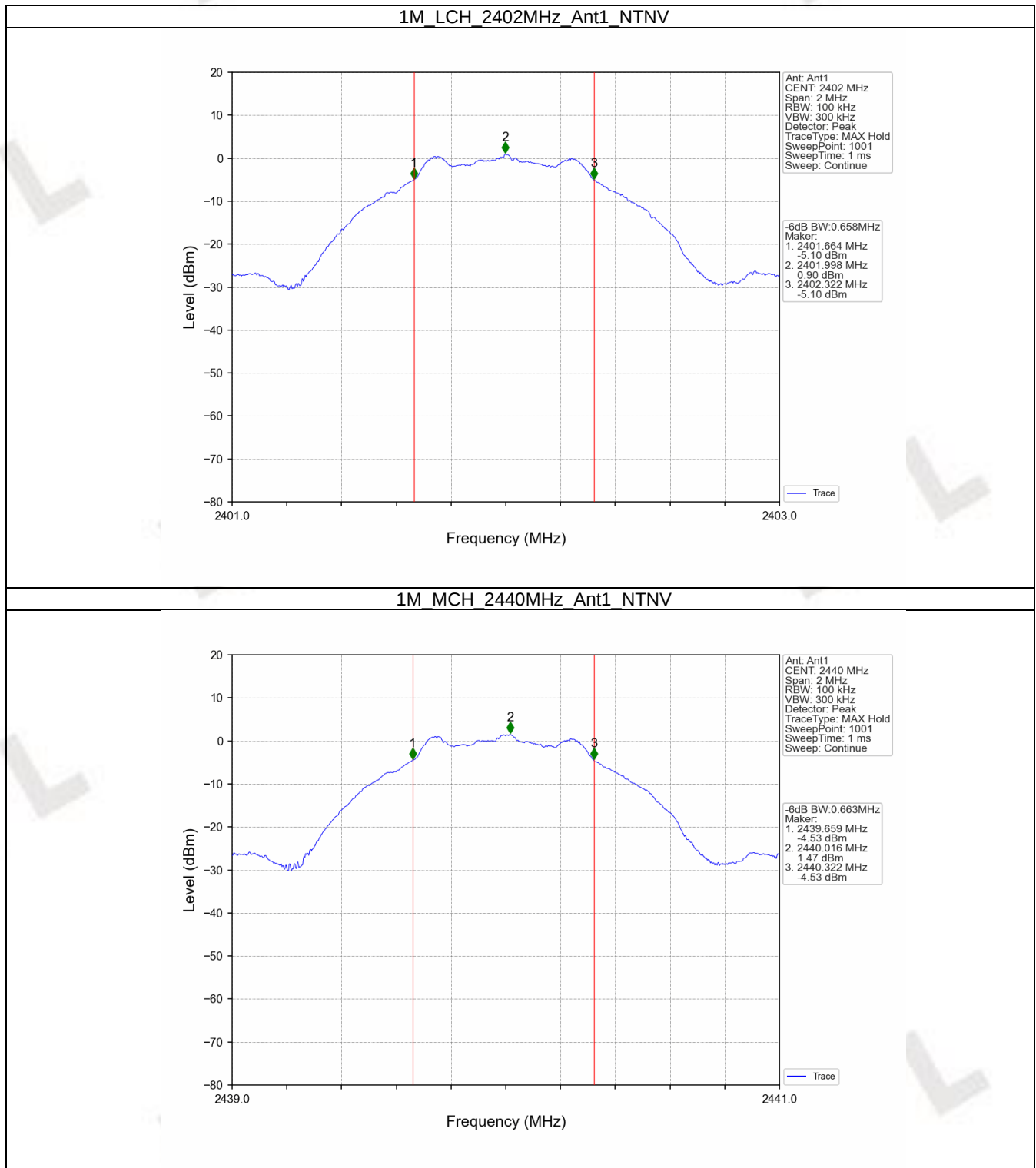
2M_HCH_2480MHz_Ant1_NTNV



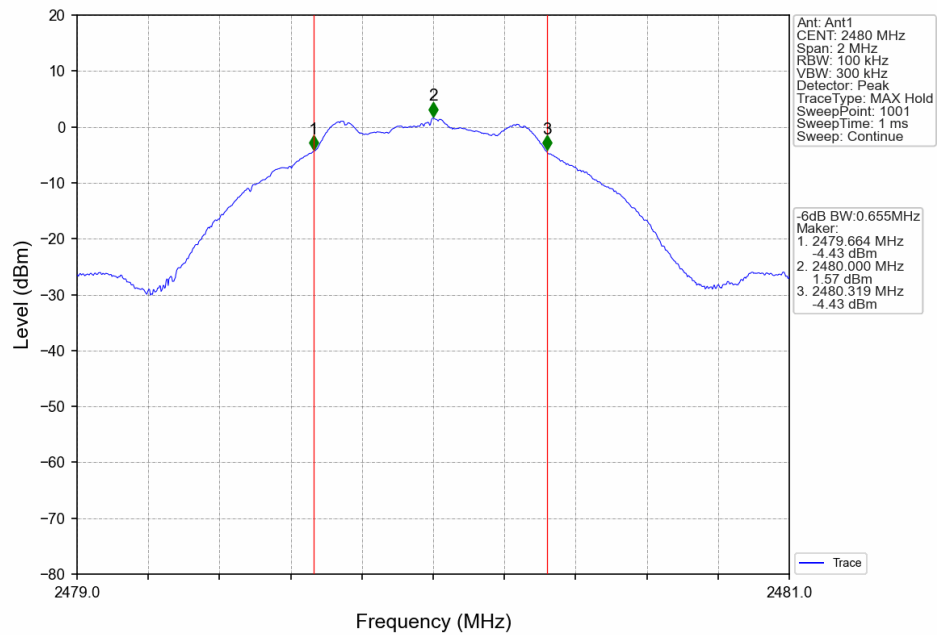
1.2 6dB BW**1.2.1 Test Result**

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.658	≥ 0.5	Pass
		2440	1	0.663	≥ 0.5	Pass
		2480	1	0.655	≥ 0.5	Pass
2M	SISO	2402	1	1.119	≥ 0.5	Pass
		2440	1	1.115	≥ 0.5	Pass
		2480	1	1.123	≥ 0.5	Pass

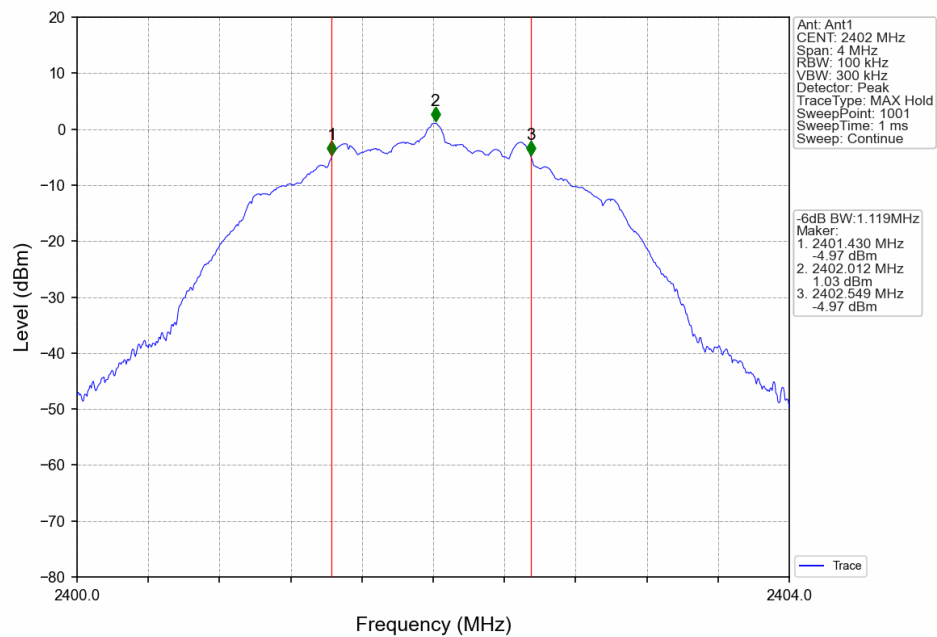
1.2.2 Test Graph



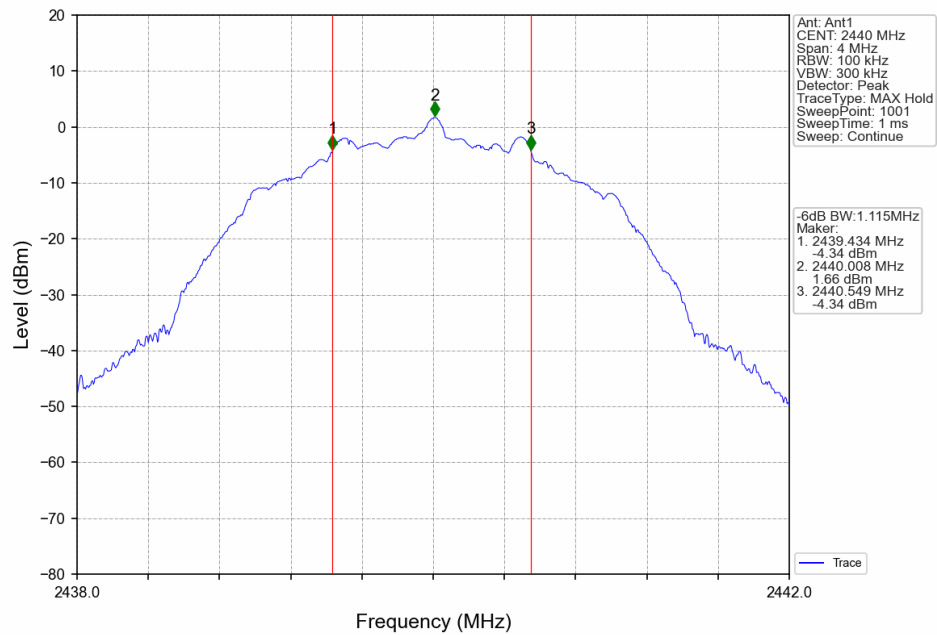
1M HCH 2480MHz Ant1 NTN



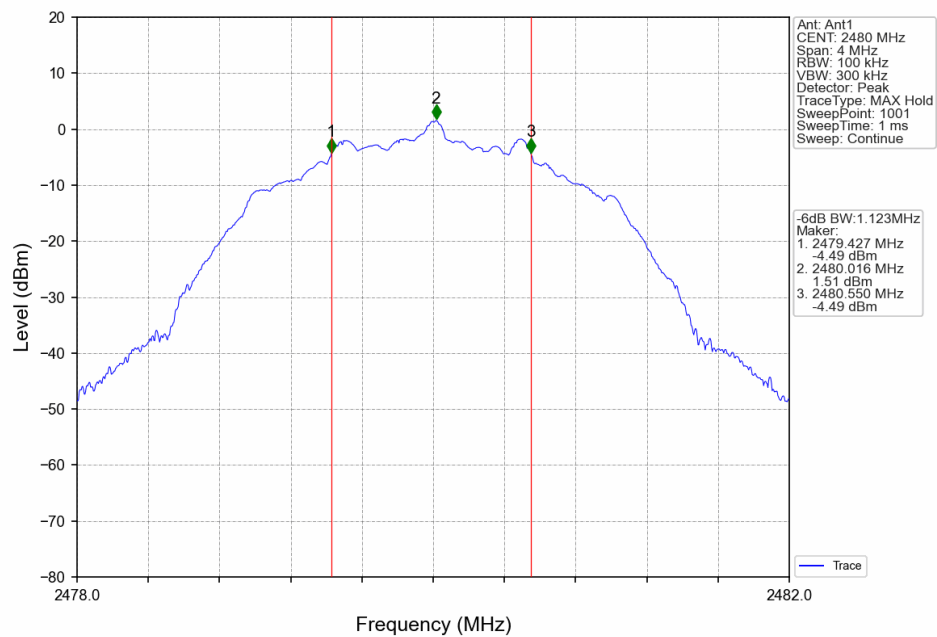
2M LCH 2402MHz Ant1 NTN



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



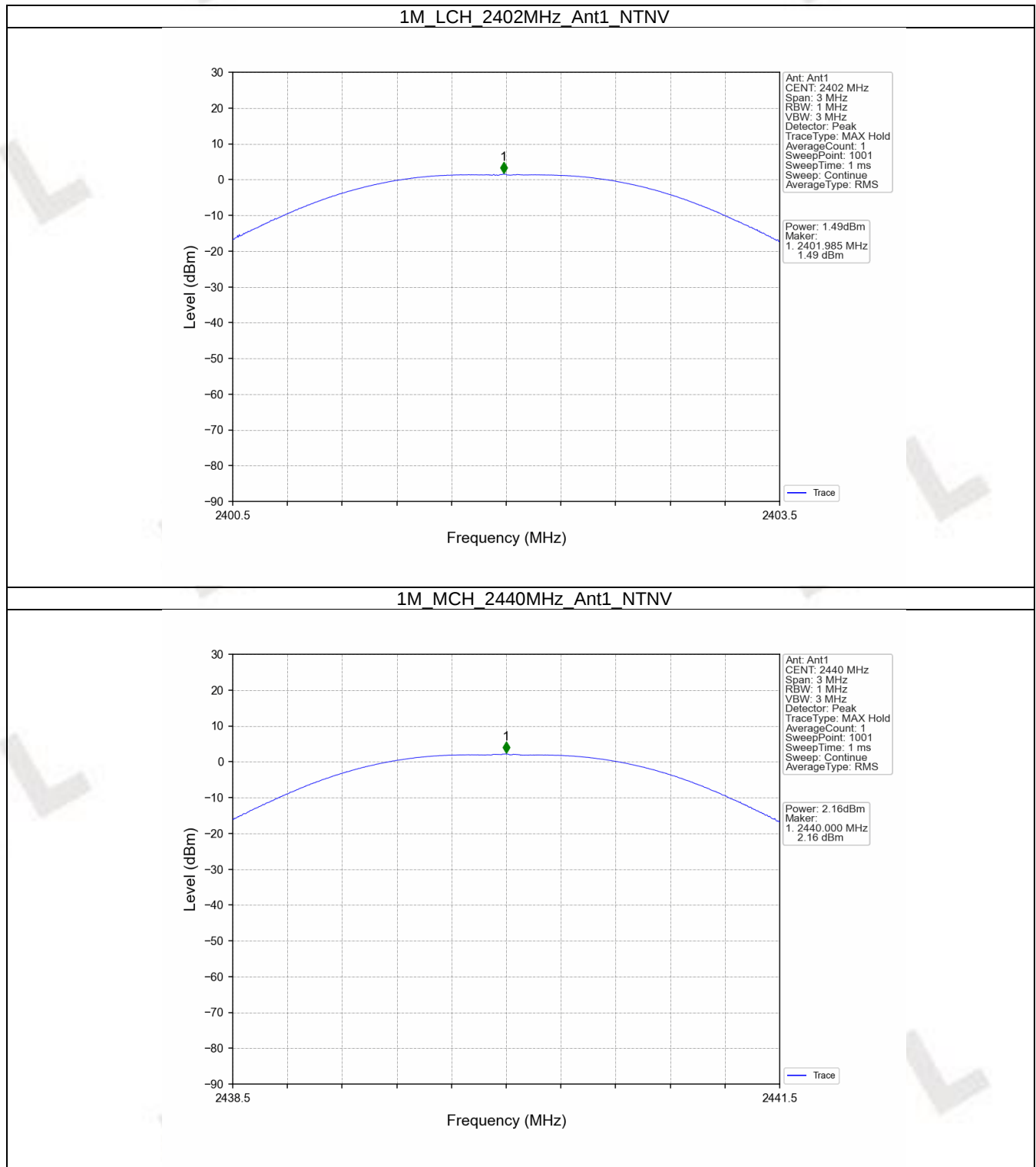
2. Maximum Peak Conducted Output Power

2.1 Power

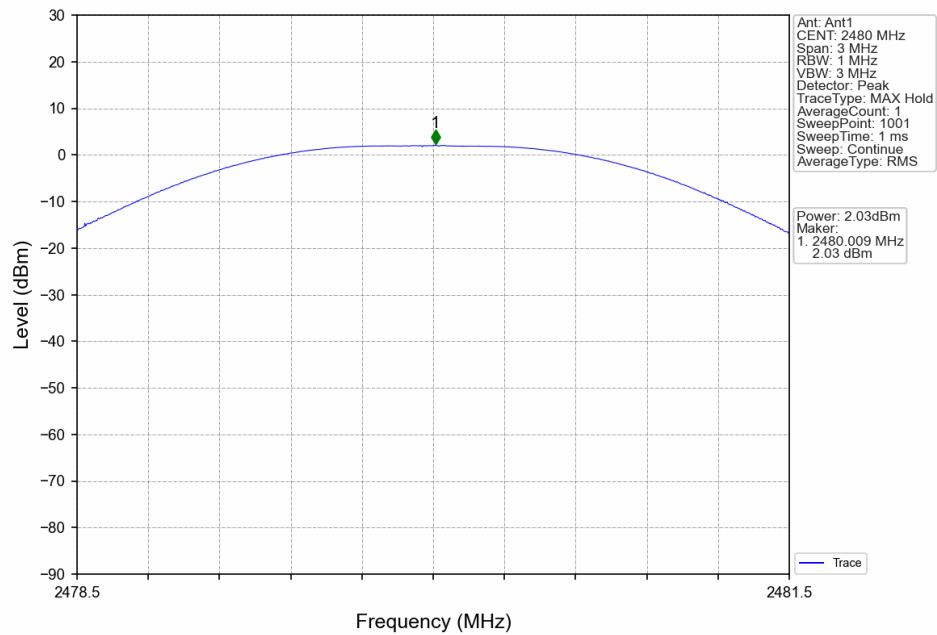
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	1.49	<=30	Pass
		2440	2.16	<=30	Pass
		2480	2.03	<=30	Pass
2M	SISO	2402	1.56	<=30	Pass
		2440	2.18	<=30	Pass
		2480	2.20	<=30	Pass
Note1: Antenna Gain: Ant1: 4.16dBi;					

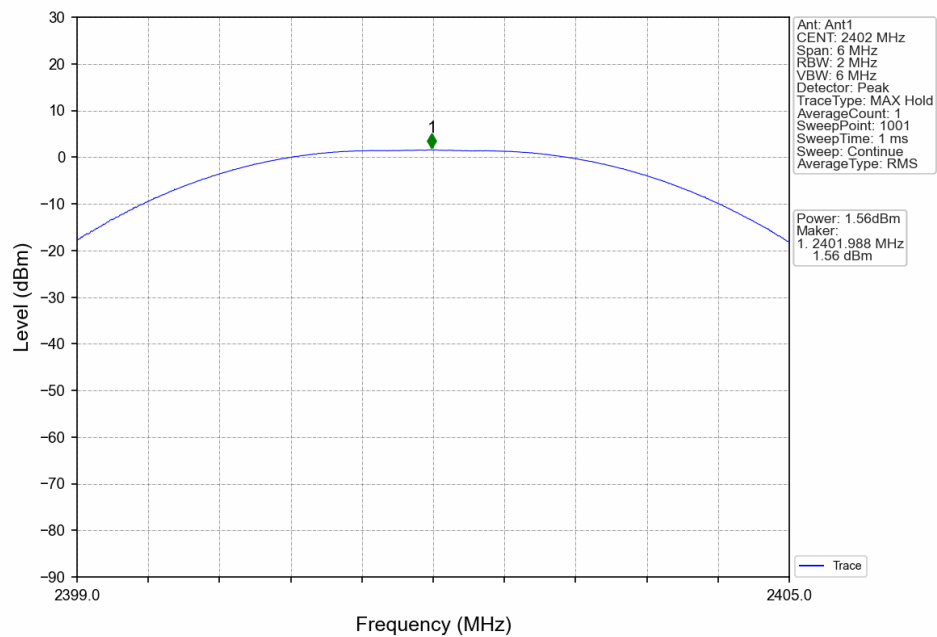
2.1.1.2 Test Graph



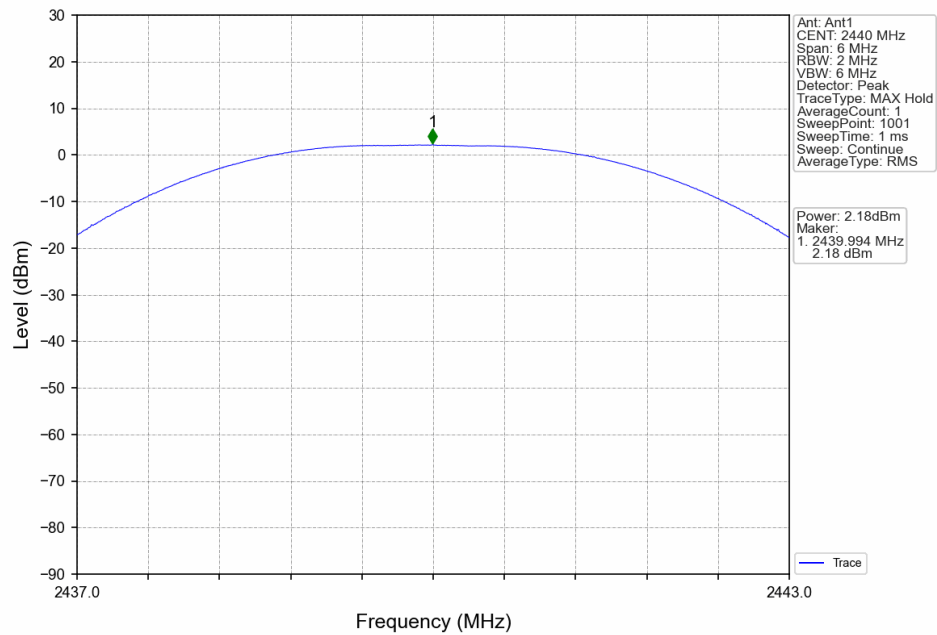
1M HCH 2480MHz Ant1 NTN



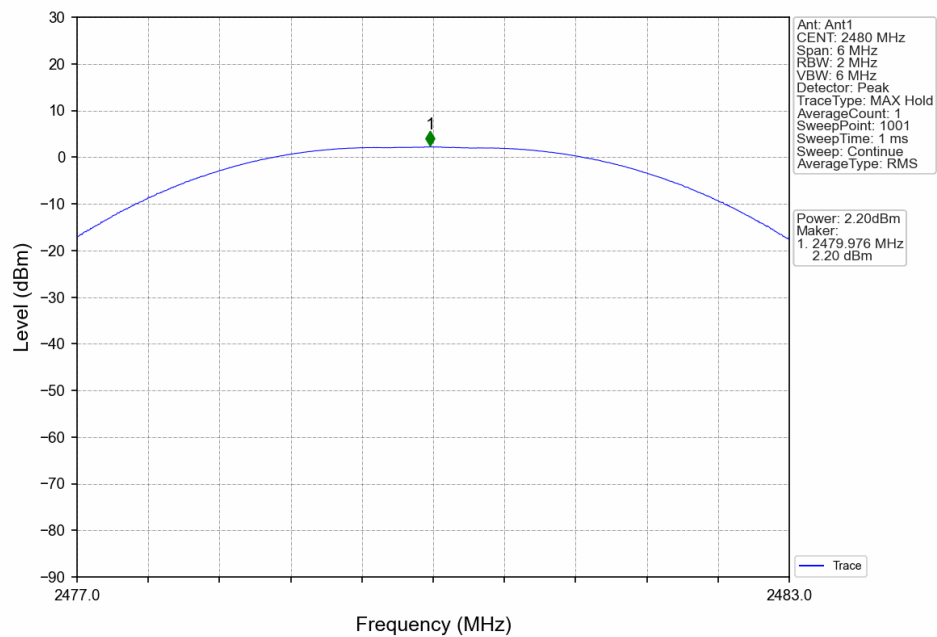
2M_LCH_2402MHz_Ant1_NTN



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2.2 EIRP

2.2.1 Test Result

Mode	TX Type	Frequency (MHz)	E.I.R.P (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	5.65	<=36.02	Pass
		2440	6.32	<=36.02	Pass
		2480	6.19	<=36.02	Pass
2M	SISO	2402	5.72	<=36.02	Pass
		2440	6.34	<=36.02	Pass
		2480	6.36	<=36.02	Pass
Note1: Antenna Gain: Ant1: 4.16dBi; Note2: E.I.R.P = Measured Power + Antenna Gain					

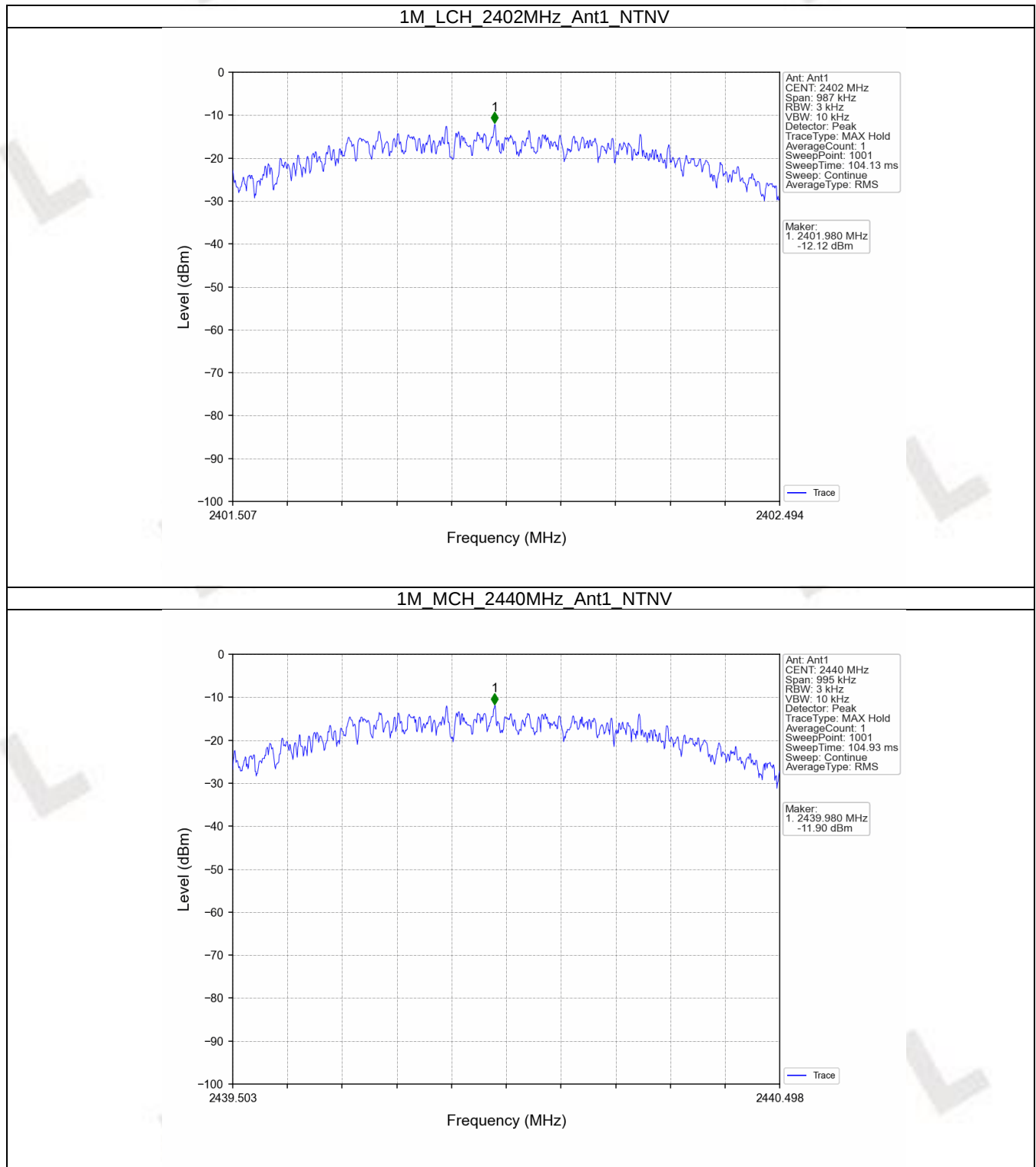
3. Maximum Power Spectral Density

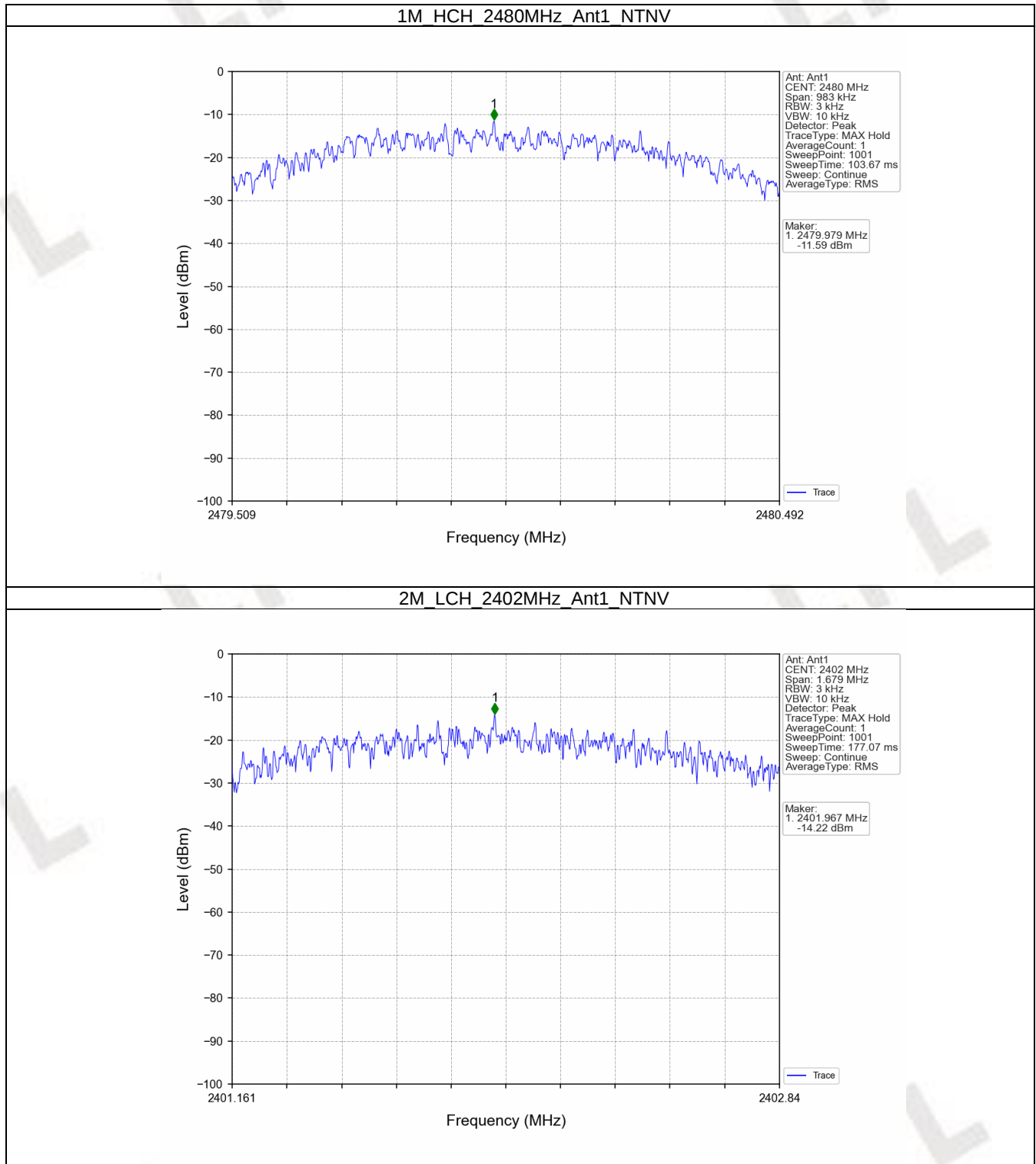
3.1 PSD

3.1.1 Test Result

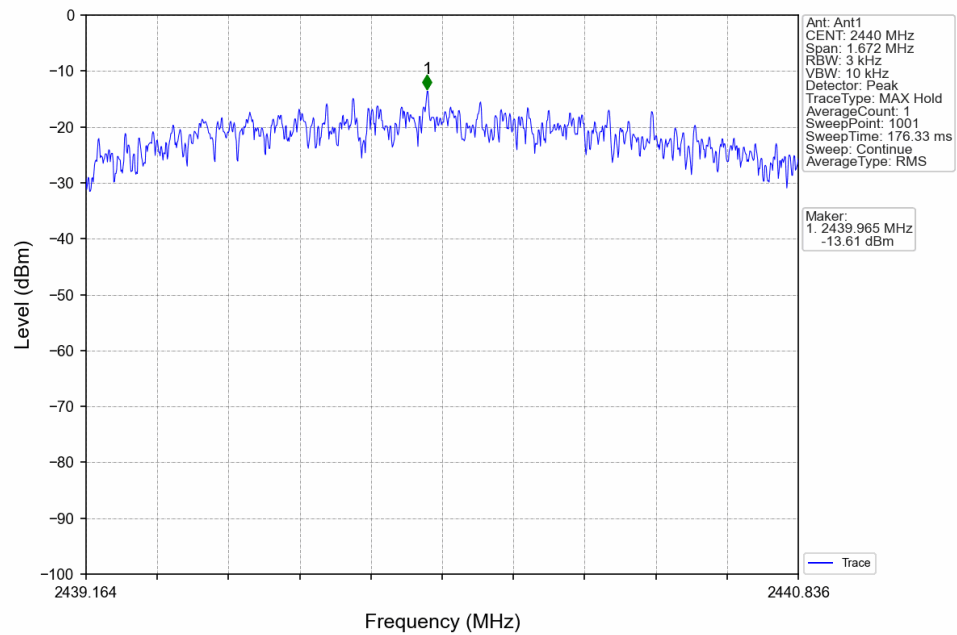
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-12.12	<=8	Pass
		2440	-11.90	<=8	Pass
		2480	-11.59	<=8	Pass
2M	SISO	2402	-14.22	<=8	Pass
		2440	-13.61	<=8	Pass
		2480	-13.66	<=8	Pass
Note1: Antenna Gain: Ant1: 4.16dBi;					

3.1.2 Test Graph

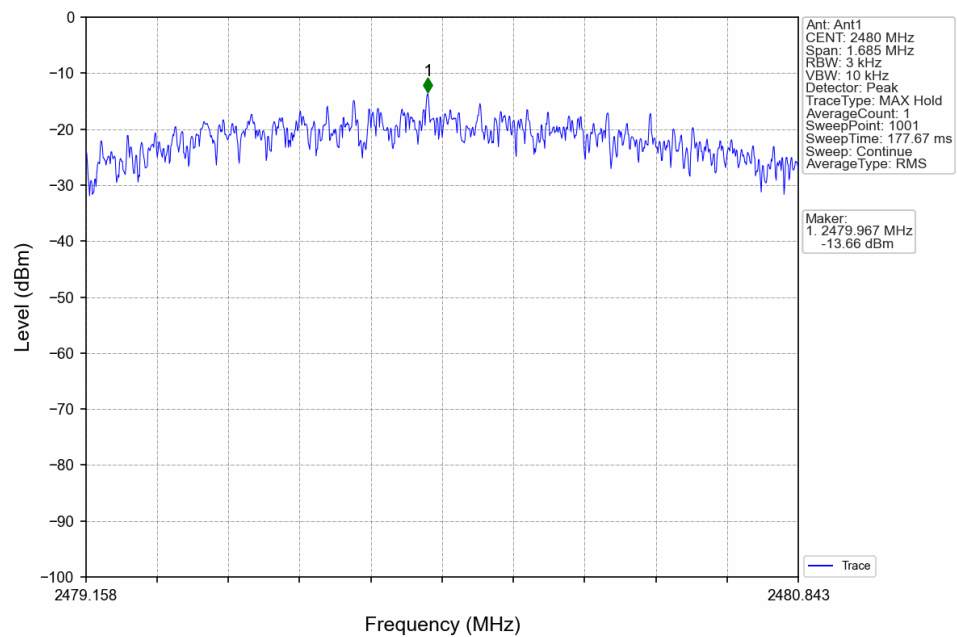




2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



4. Unwanted Emissions In Non-restricted Frequency Bands

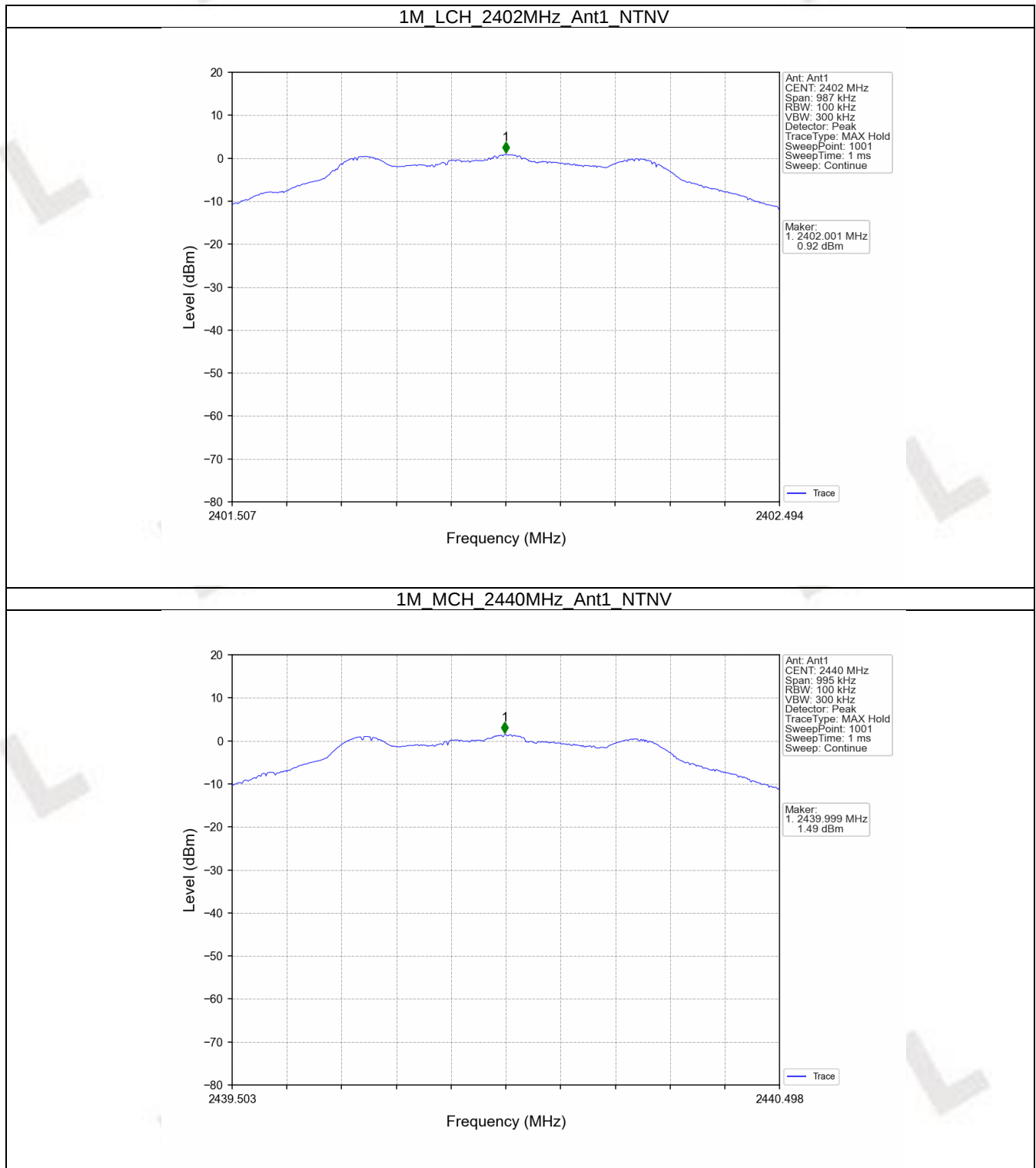
4.1 Ref

4.1.1 Test Result

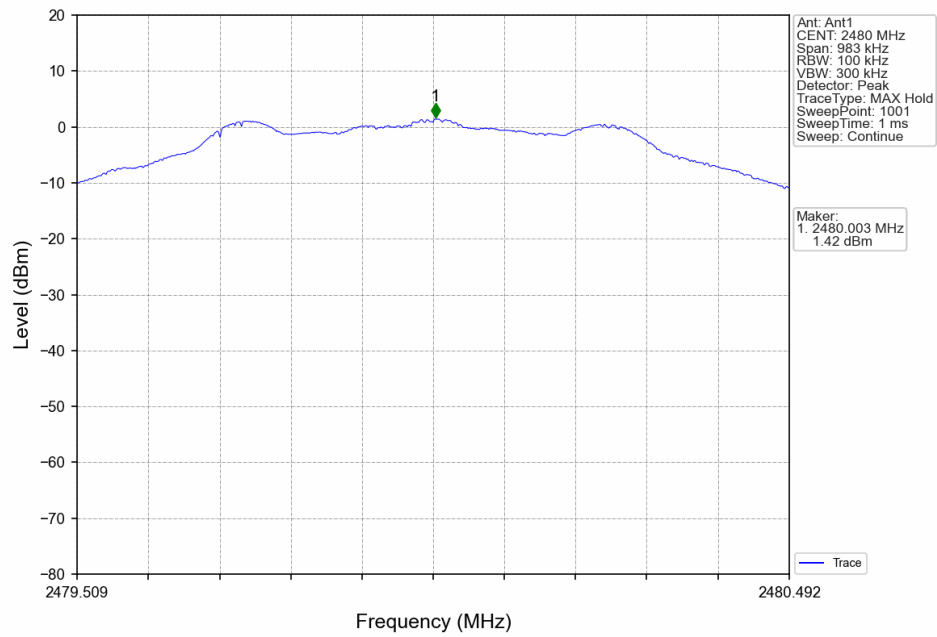
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	0.92
		2440	1	1.49
		2480	1	1.42
2M	SISO	2402	1	0.99
		2440	1	1.56
		2480	1	1.57

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.

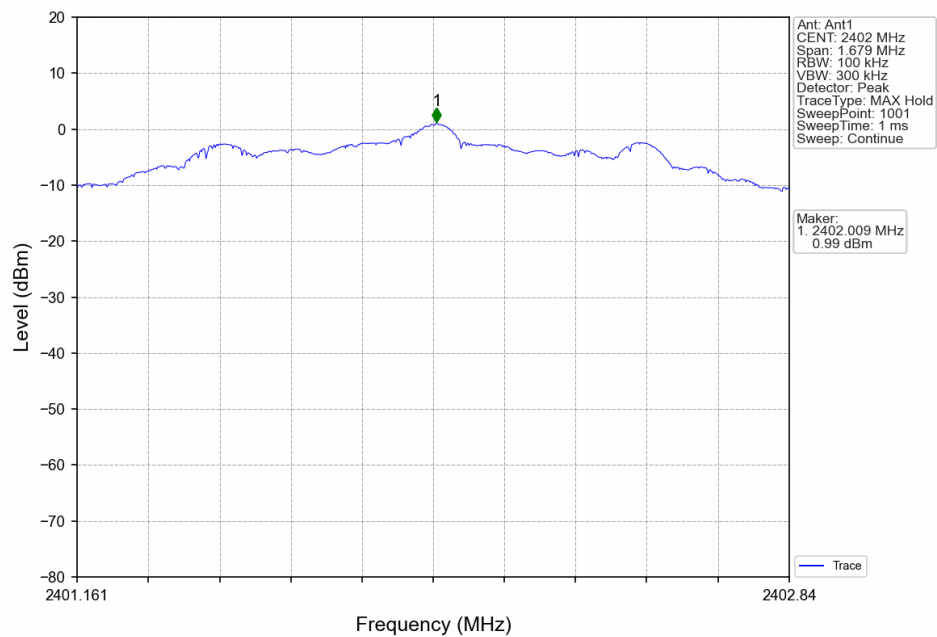
4.1.2 Test Graph



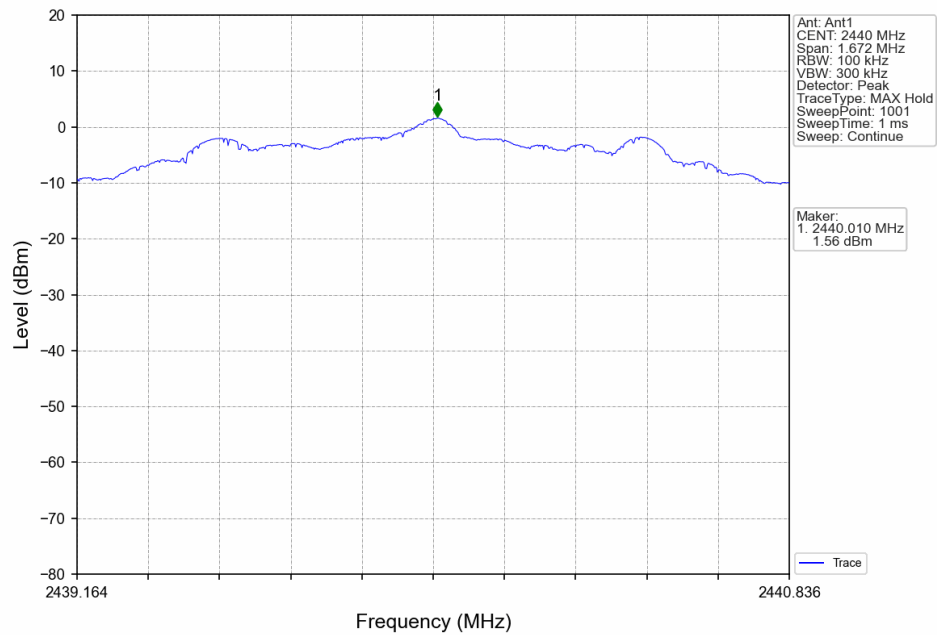
1M_HCH_2480MHz_Ant1_NTNV



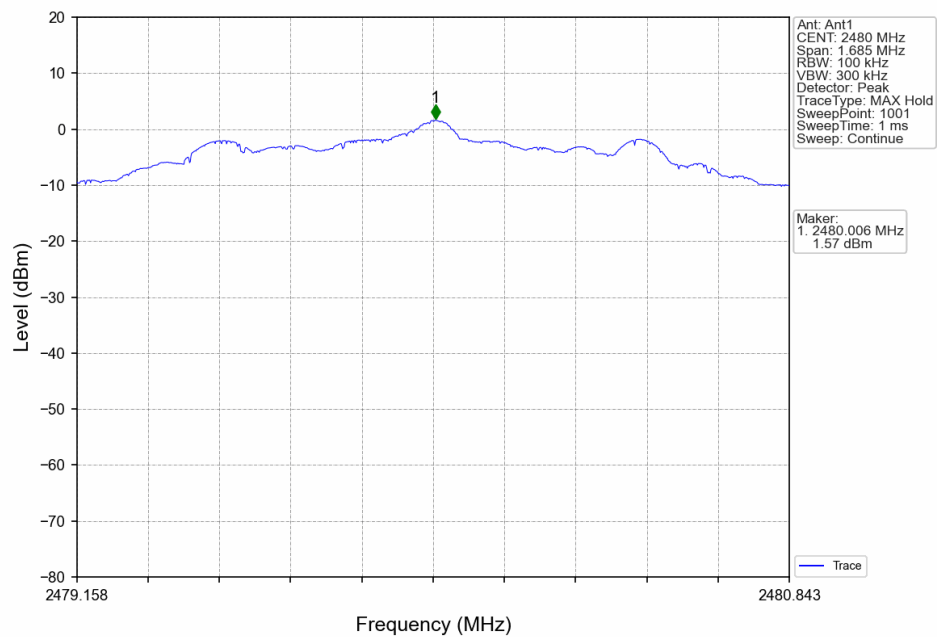
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



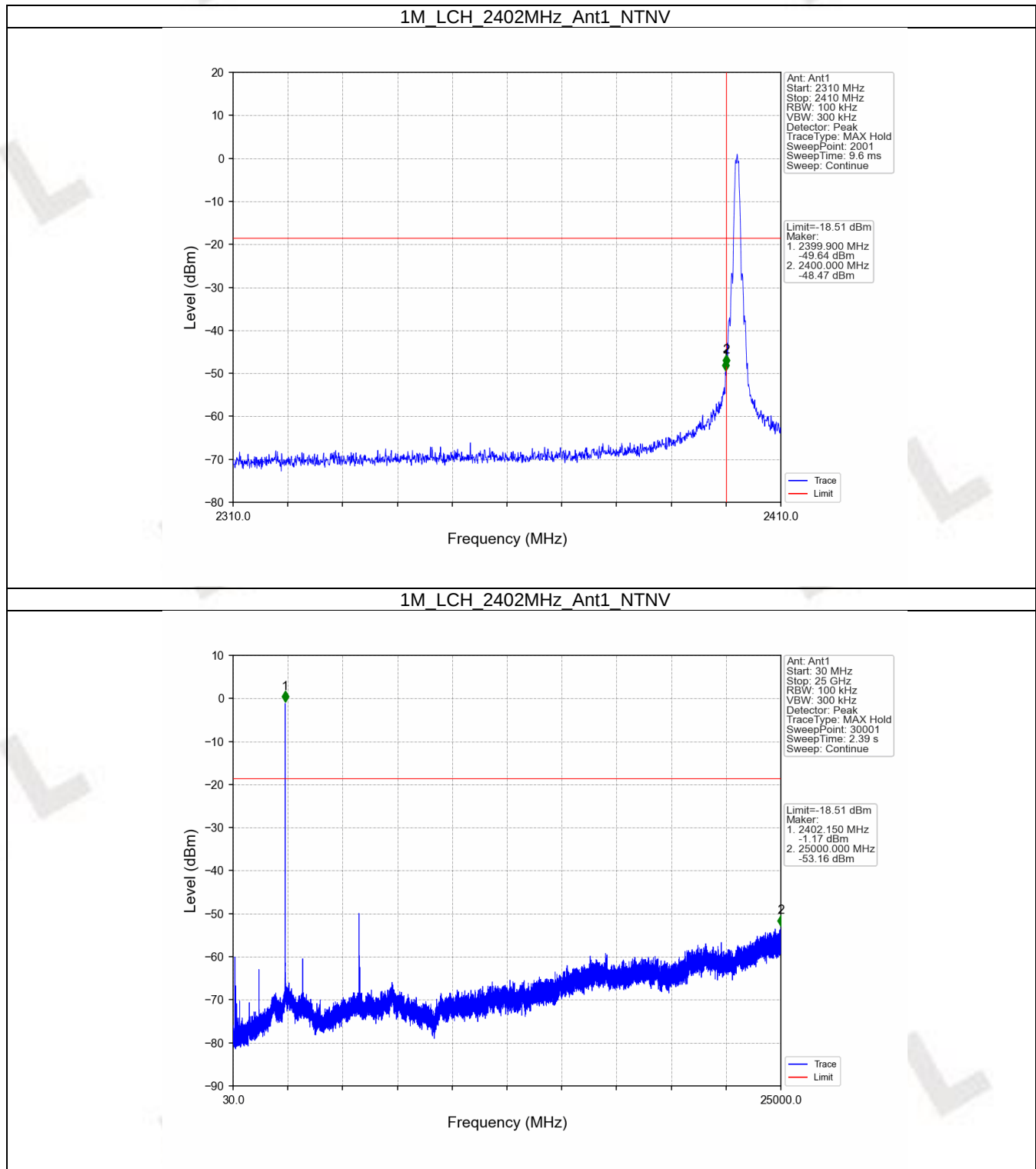
4.2 CSE

4.2.1 Test Result

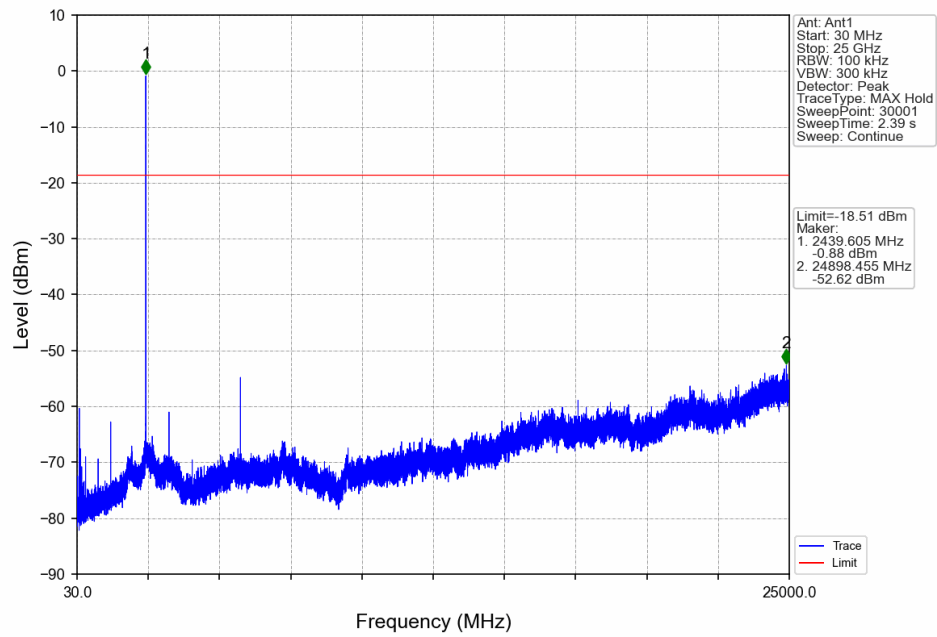
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	1.49	-18.51	Pass
		2440	1	1.49	-18.51	Pass
		2480	1	1.49	-18.51	Pass
2M	SISO	2402	1	1.57	-18.43	Pass
		2440	1	1.57	-18.43	Pass
		2480	1	1.57	-18.43	Pass

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.

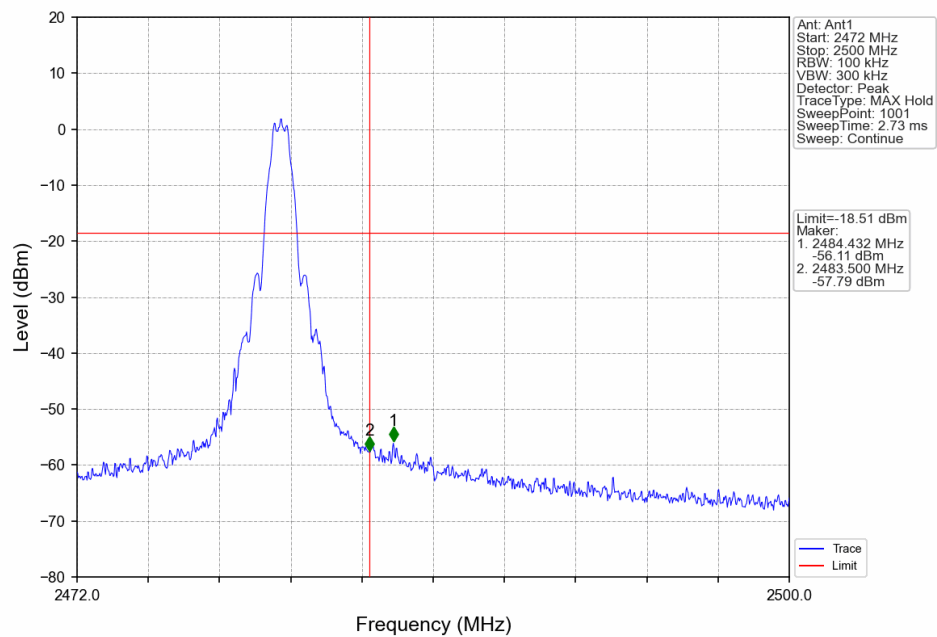
4.2.2 Test Graph



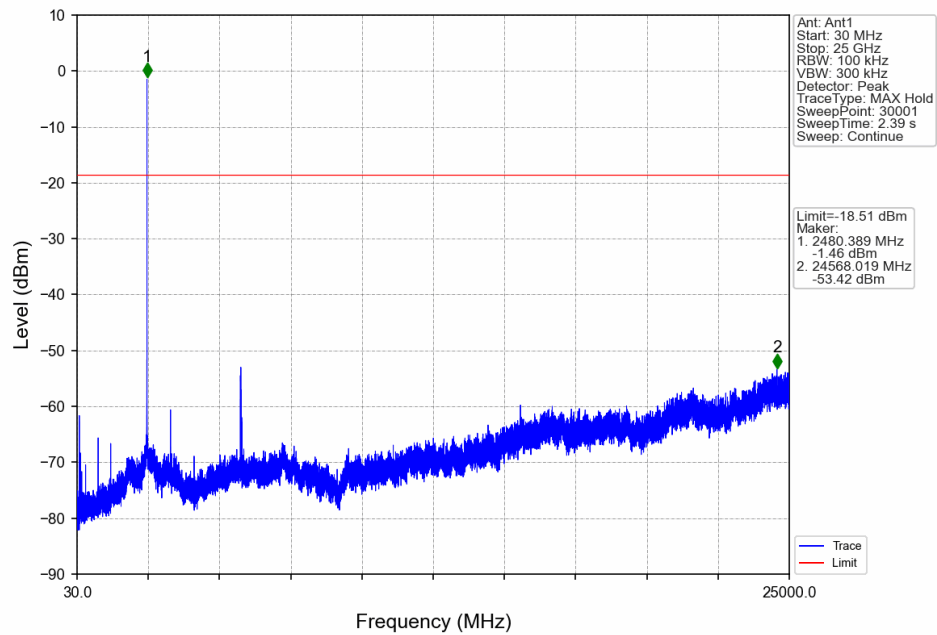
1M_MCH_2440MHz_Ant1_NTNV



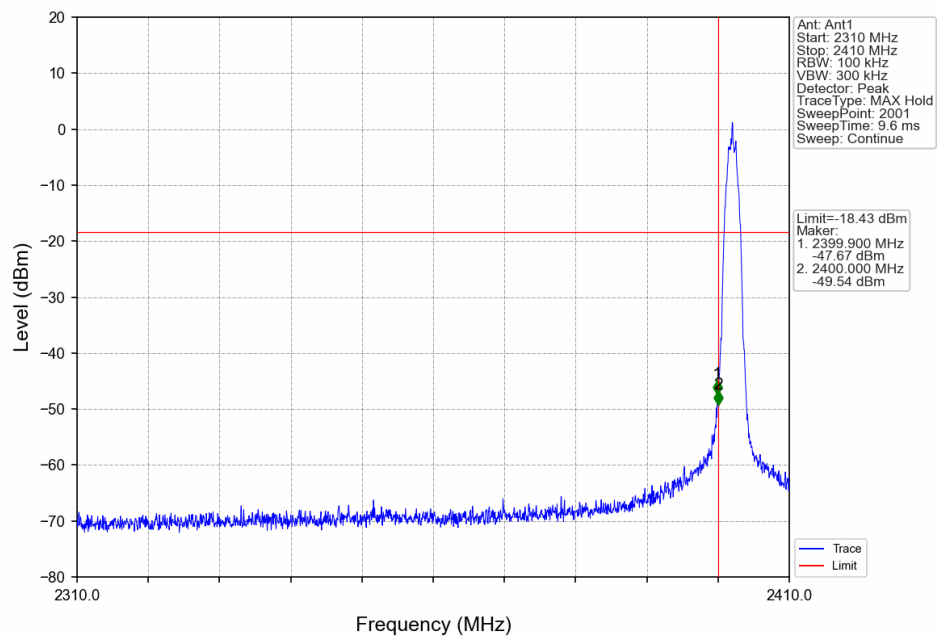
1M_HCH_2480MHz_Ant1_NTNV



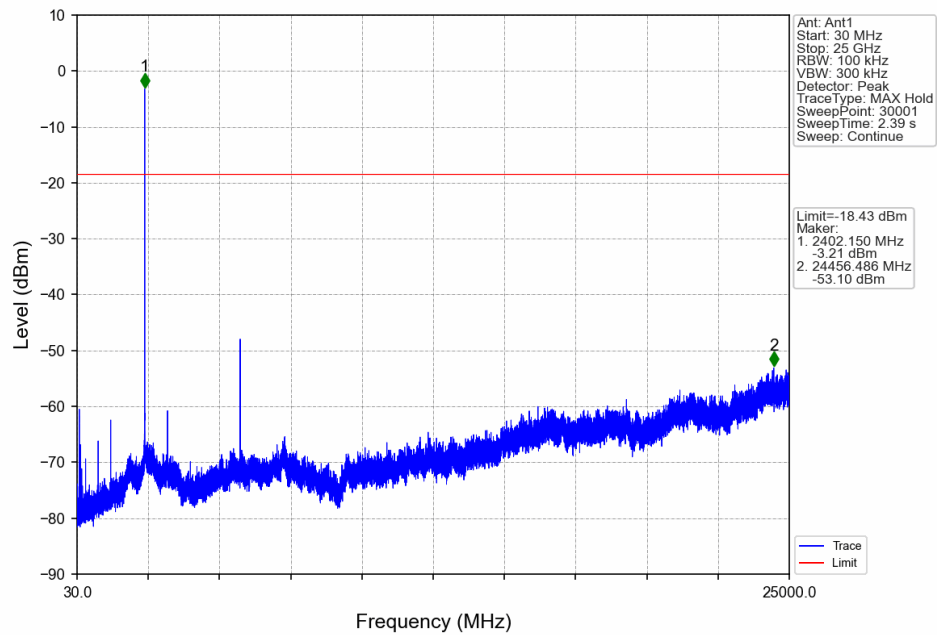
1M_HCH_2480MHz_Ant1_NTNV



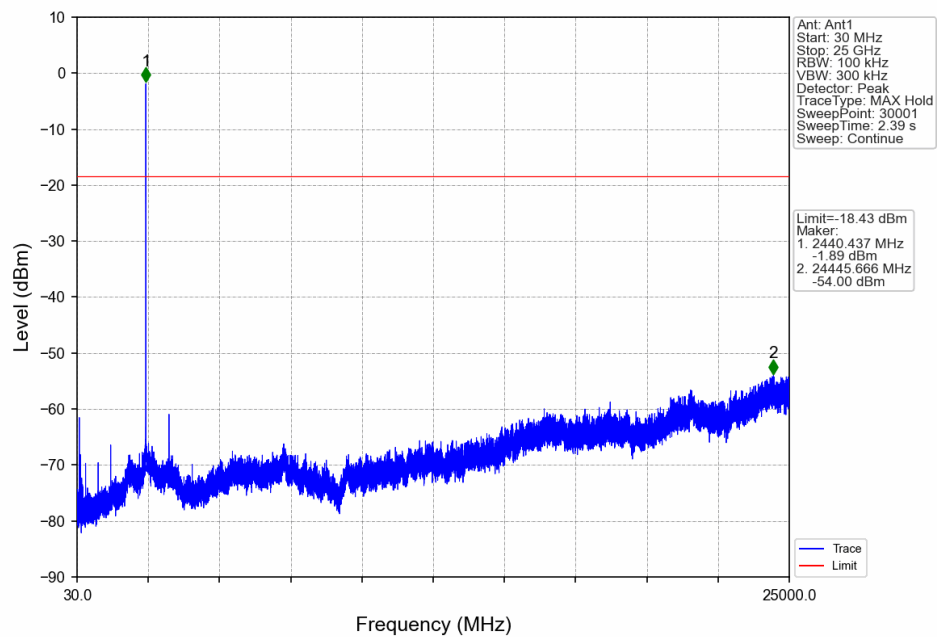
2M_LCH_2402MHz_Ant1_NTNV



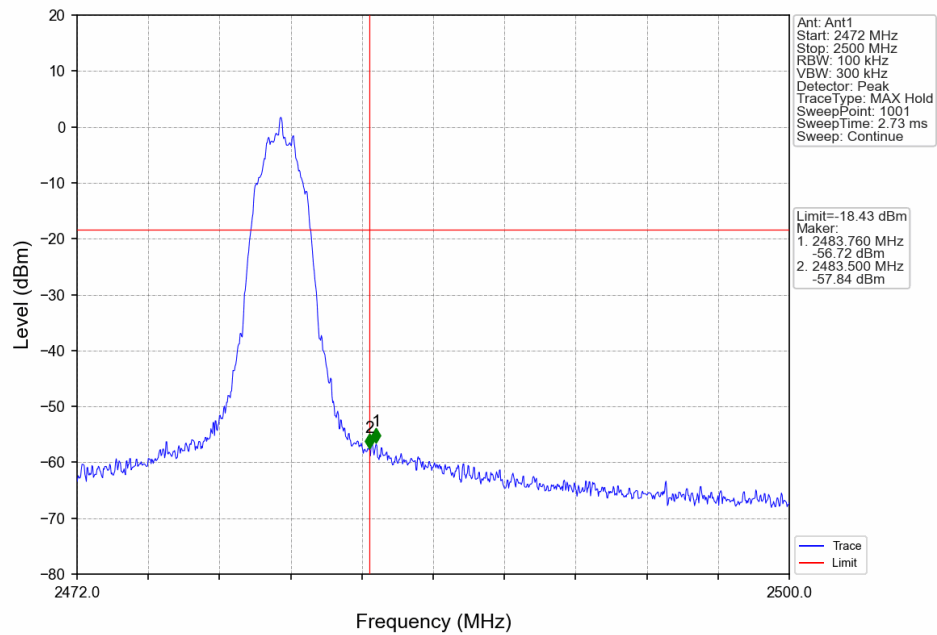
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV

