



Shenzhen CTL Testing Technology Co., Ltd.

Fl.A1, Bldg.A3, No.2533 GuanGuang Road, Fenghuang Community

Fenghuang Street, Guangming District, Shenzhen, Guangdong, P.R.C

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

Annex for Bluetooth Low Energy

Test Report No.: CTL2601213021-WF01

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FCC ID: 2BD8N-5380

1. Duty Cycle

1.1 Test Result

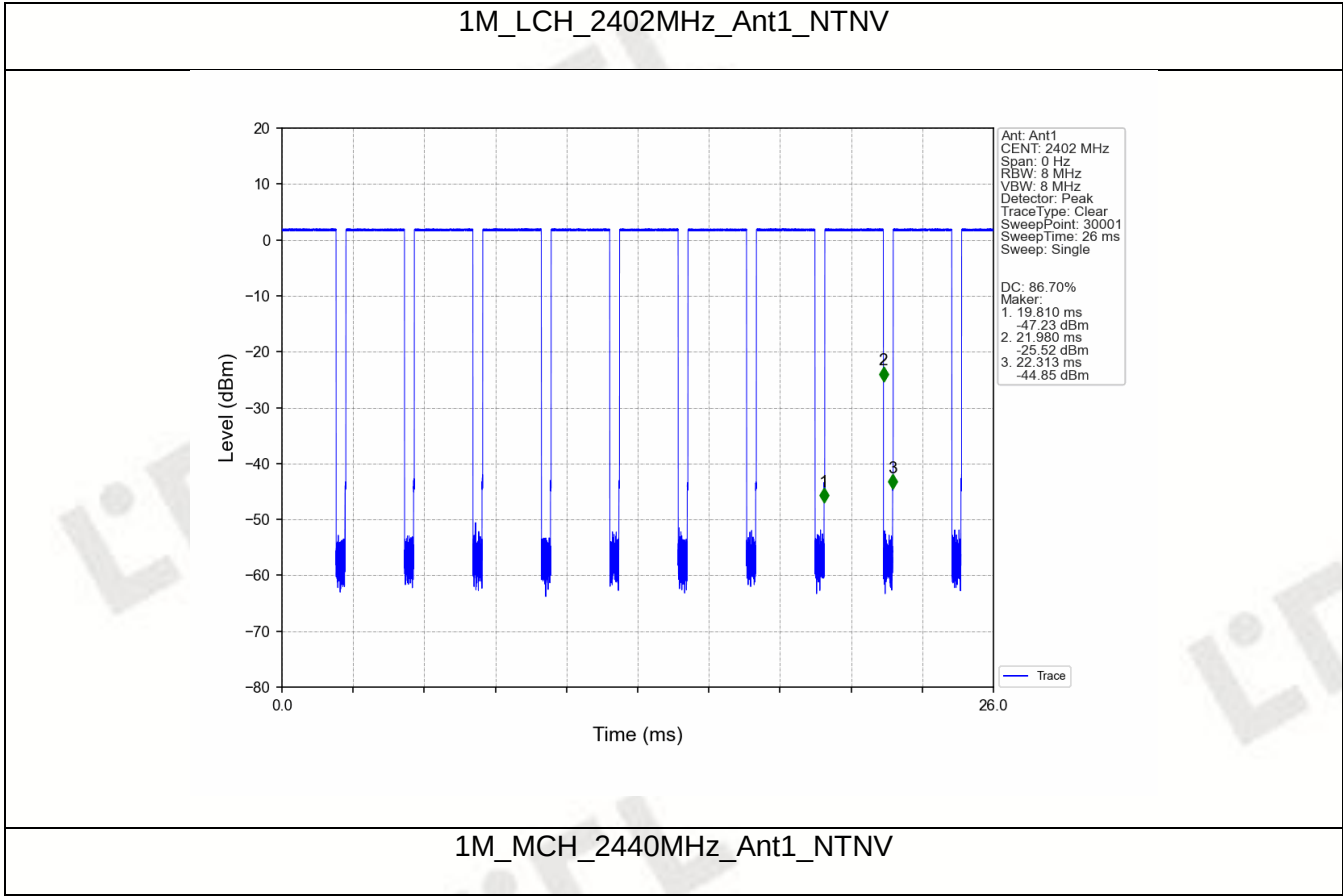
1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.170	2.503	86.70	0.62	0.11
		2440	2.167	2.500	86.68	0.62	0.03
		2480	2.165	2.500	86.60	0.62	0.21
2M	SISO	2402	1.116	1.875	59.52	2.25	0.05
		2440	1.121	1.877	59.72	2.24	26.45
		2480	1.111	1.875	59.25	2.27	0.09

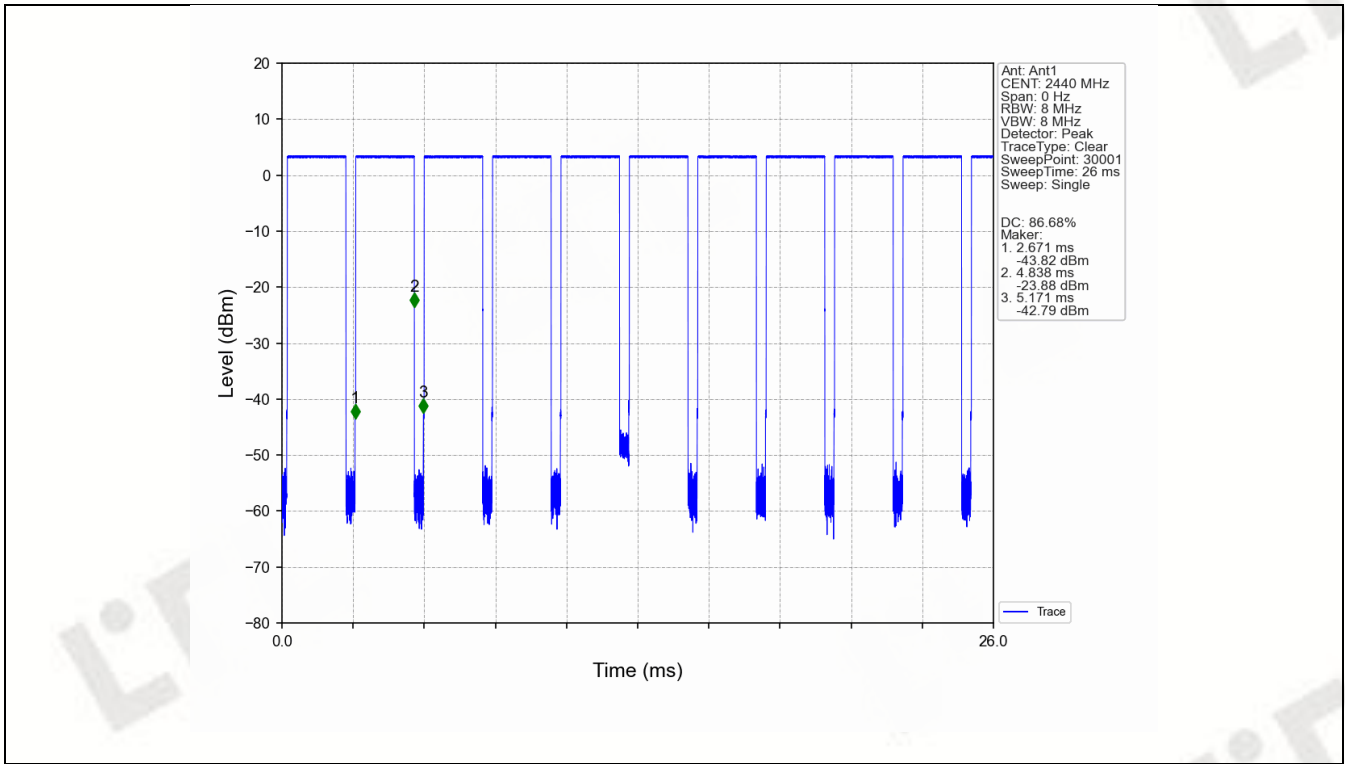
FCC ID: 2BD8N-5380

1.2 Test Graph

1.2.1 Ant1

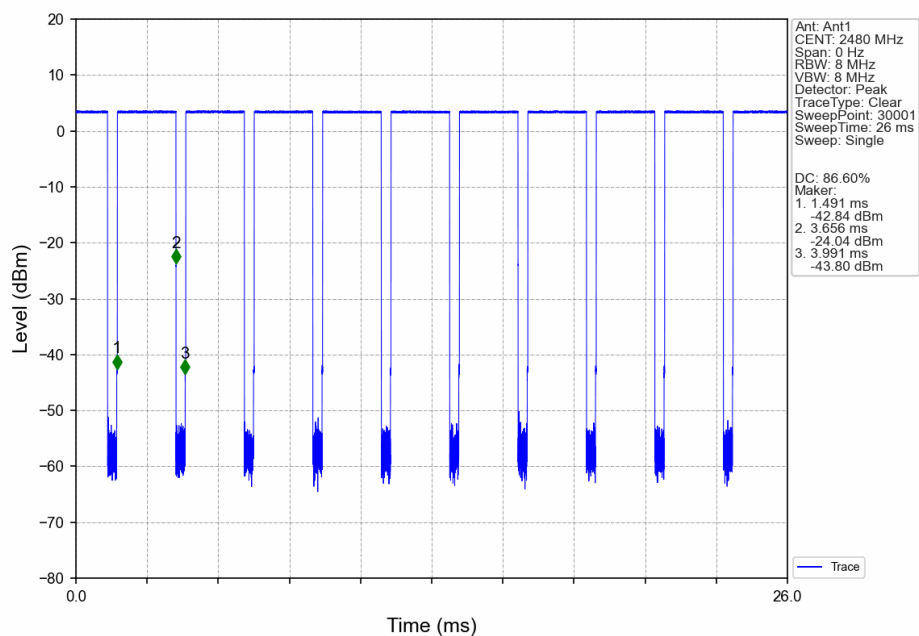


FCC ID: 2BD8N-5380

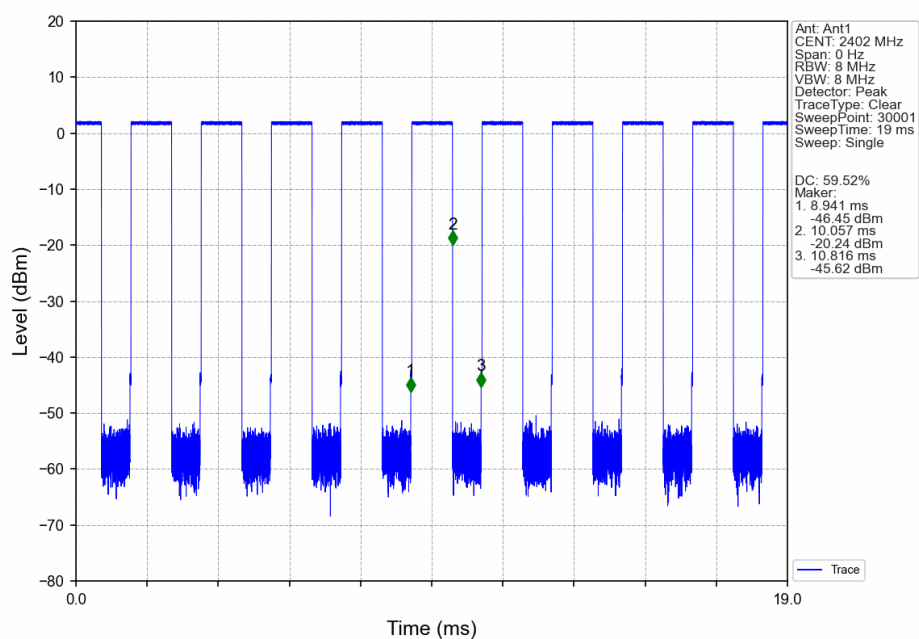


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1M_HCH_2480MHz_Ant1_NTNV

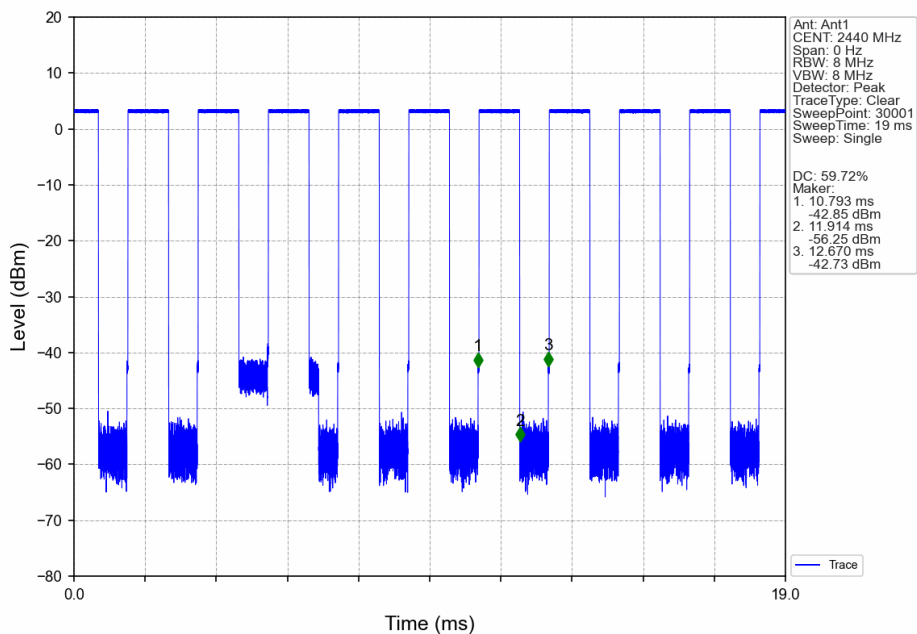


2M_LCH_2402MHz_Ant1_NTNV

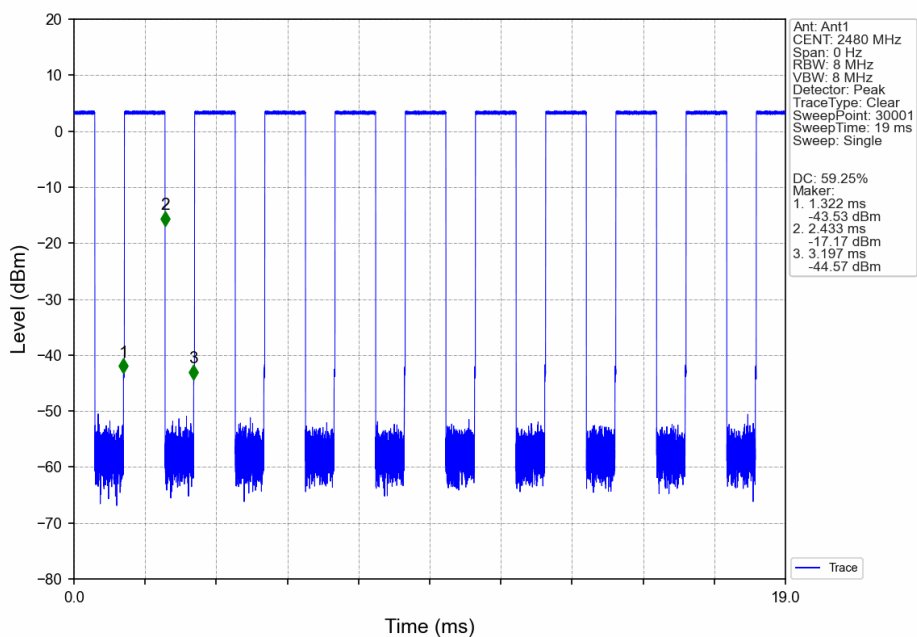


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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



FCC ID: 2BD8N-5380

2. Bandwidth

2.1 Test Result

2.1.1 OBW

Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.018	/	Pass
		2440	1	1.016	/	Pass
		2480	1	1.017	/	Pass
2M	SISO	2402	1	1.996	/	Pass
		2440	1	1.993	/	Pass
		2480	1	1.997	/	Pass

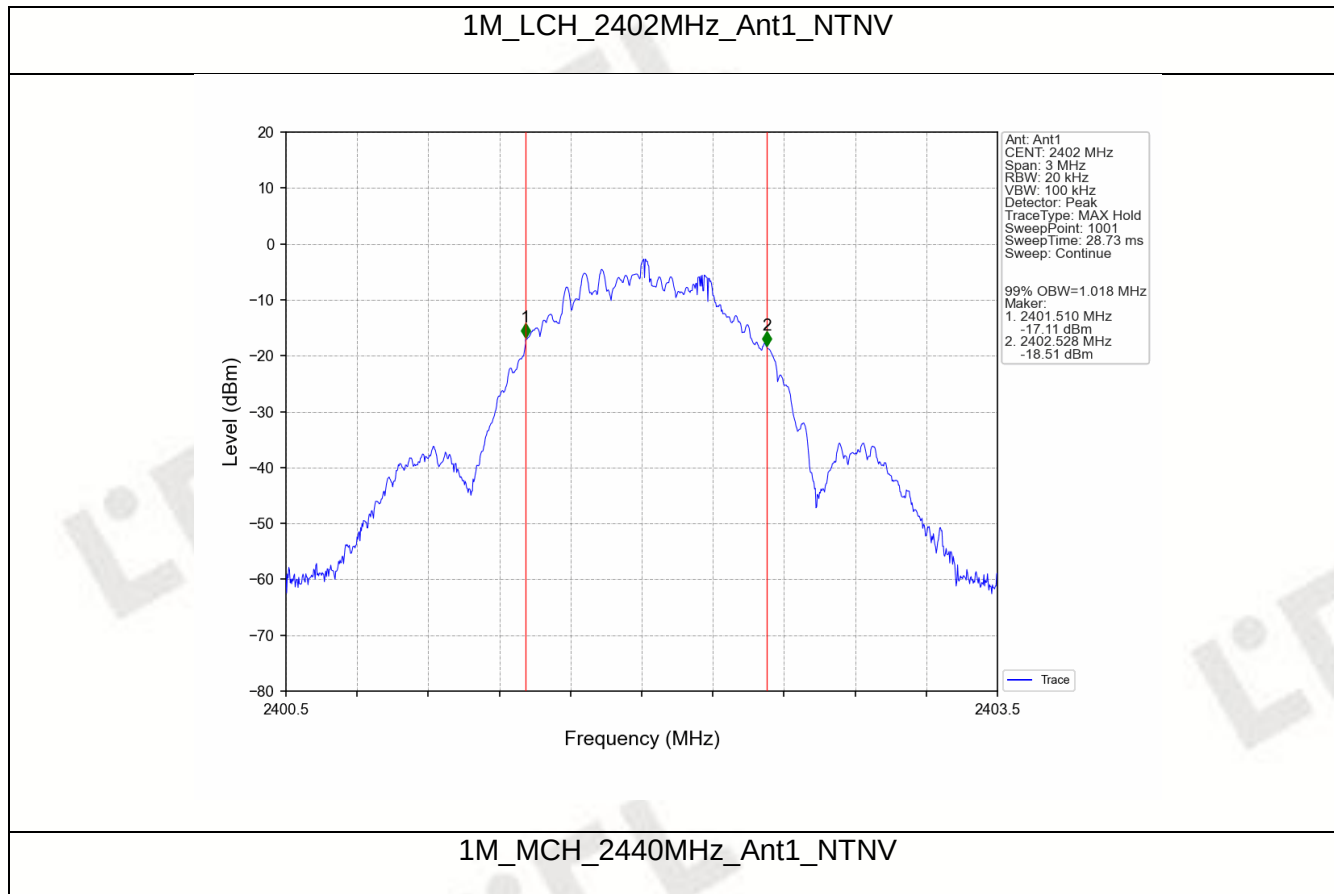
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.672	≥ 0.5	Pass
		2440	1	0.671	≥ 0.5	Pass
		2480	1	0.670	≥ 0.5	Pass
2M	SISO	2402	1	1.150	≥ 0.5	Pass
		2440	1	1.151	≥ 0.5	Pass
		2480	1	1.149	≥ 0.5	Pass

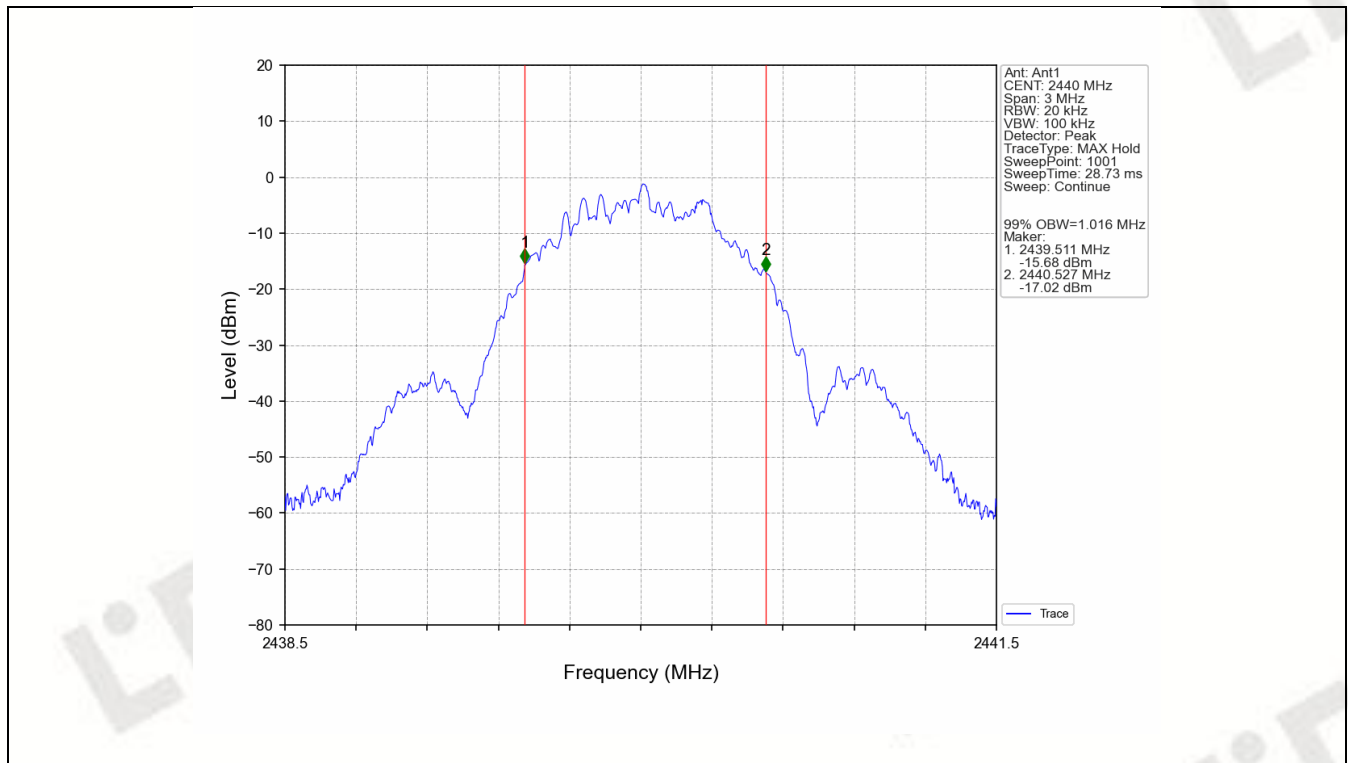
FCC ID: 2BD8N-5380

2.2 Test Graph

2.2.1 OBW

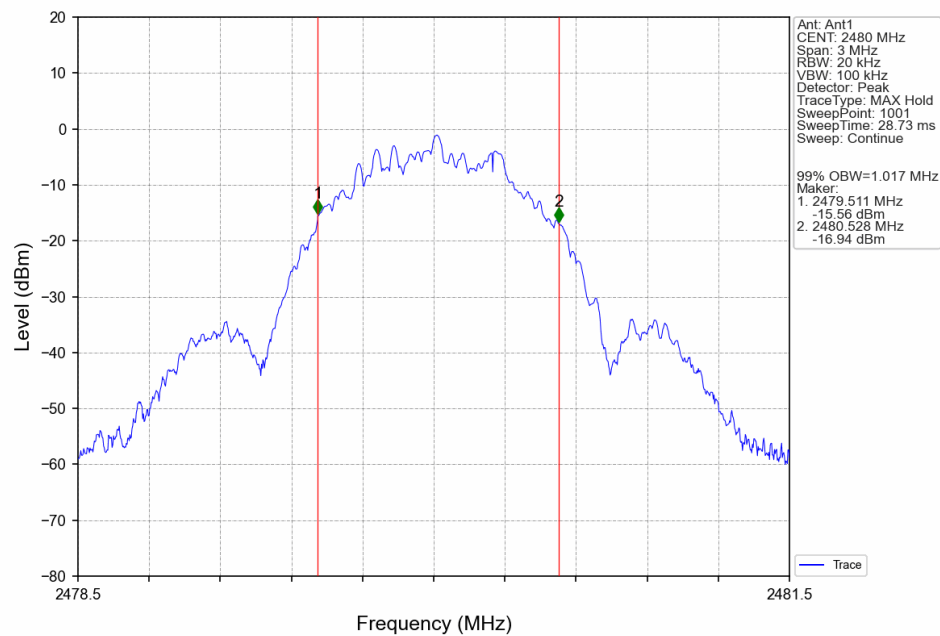


FCC ID: 2BD8N-5380

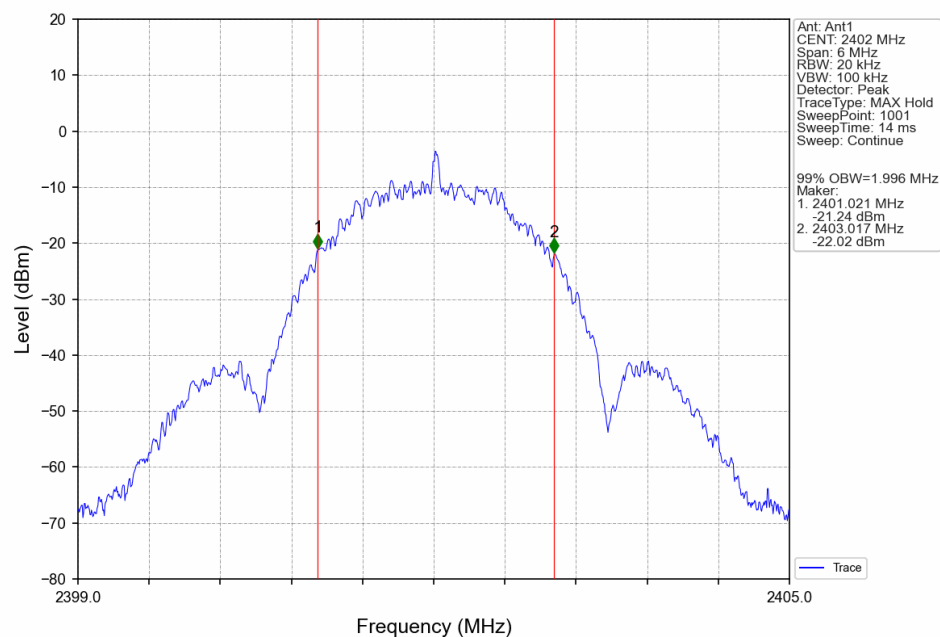


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1M_HCH_2480MHz_Ant1_NTNV

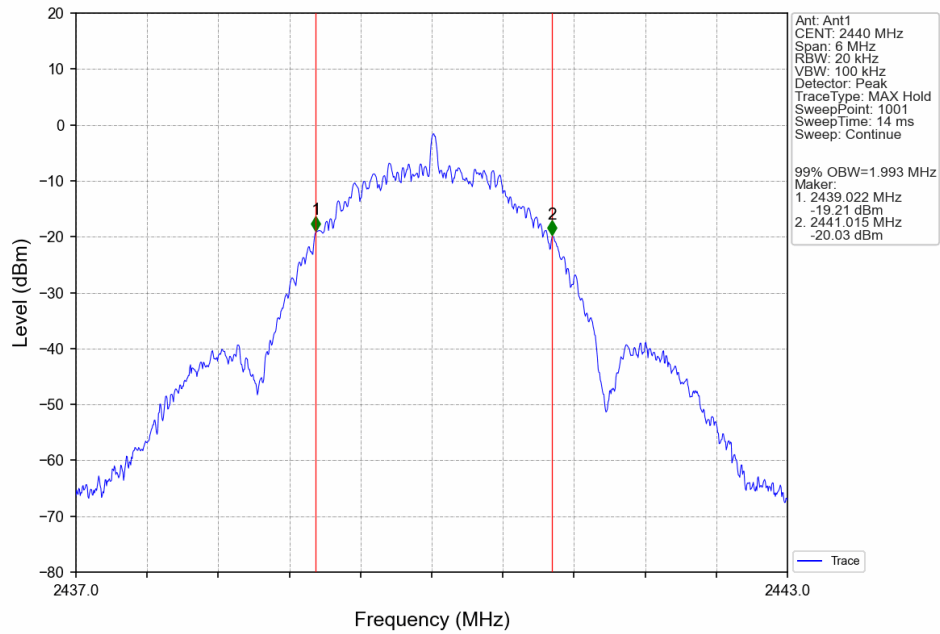


2M_LCH_2402MHz_Ant1_NTNV

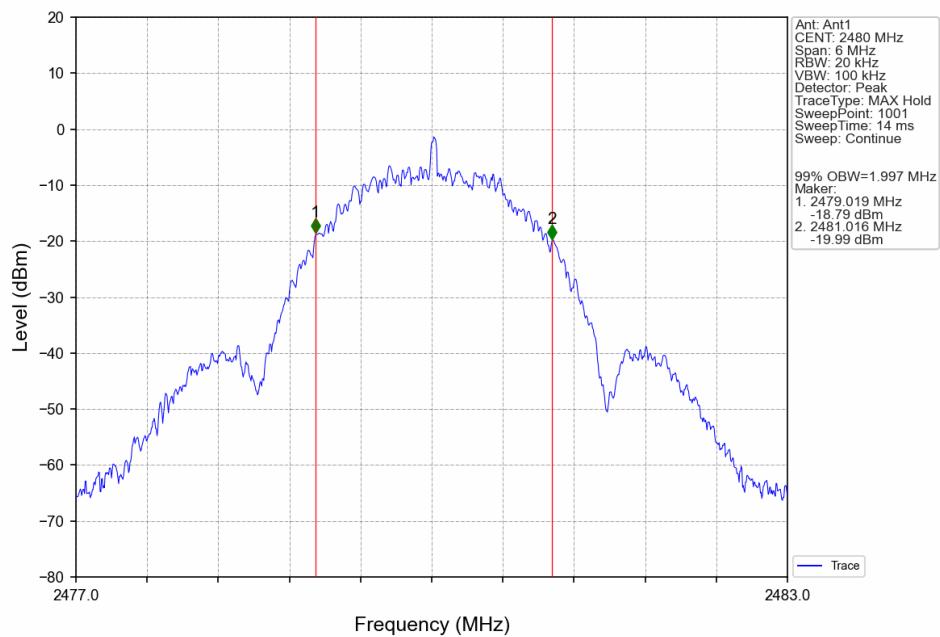


FCC ID: 2BD8N-5380

2M_MCH_2440MHz_Ant1_NTNV

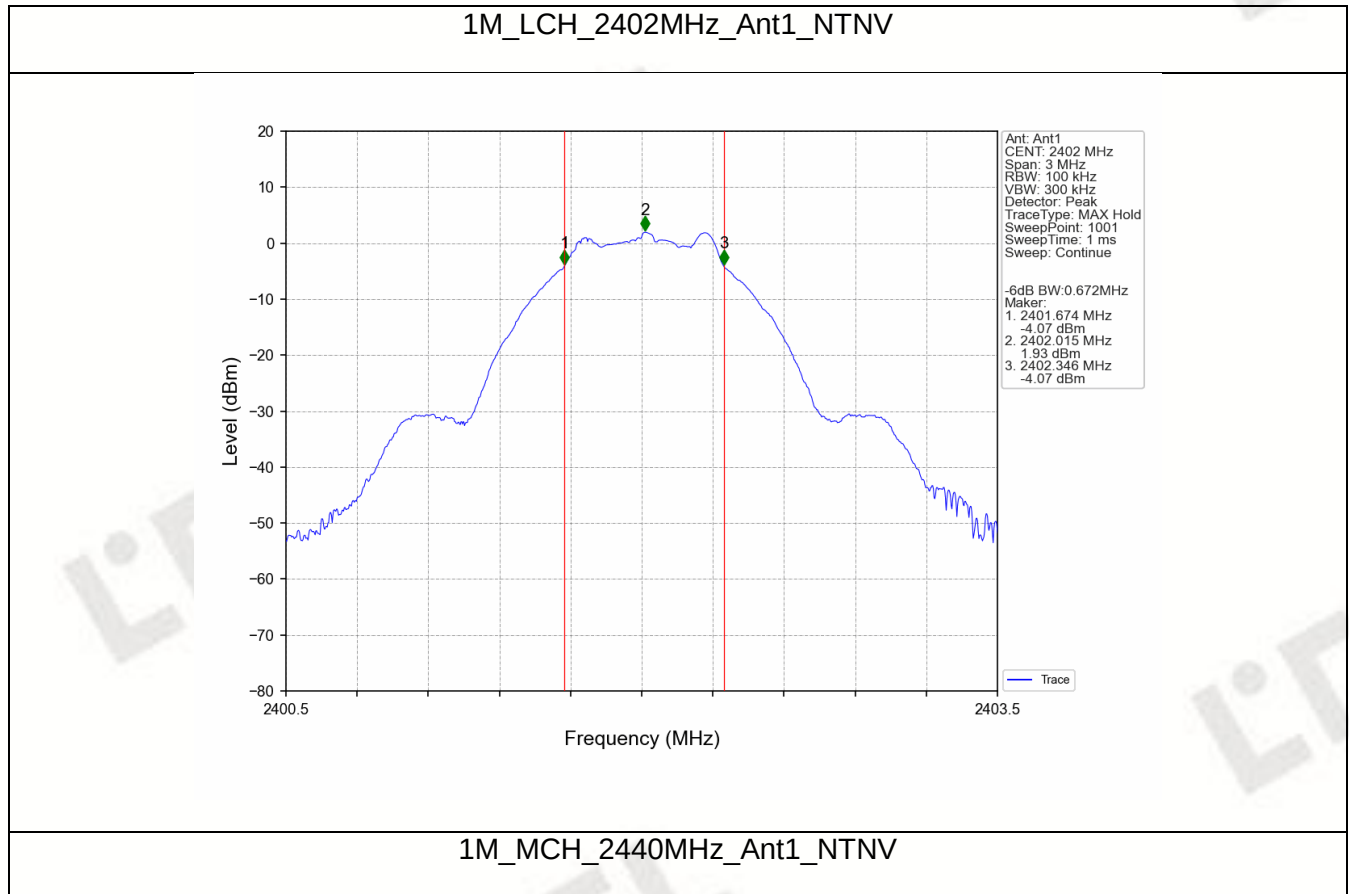


2M_HCH_2480MHz_Ant1_NTNV

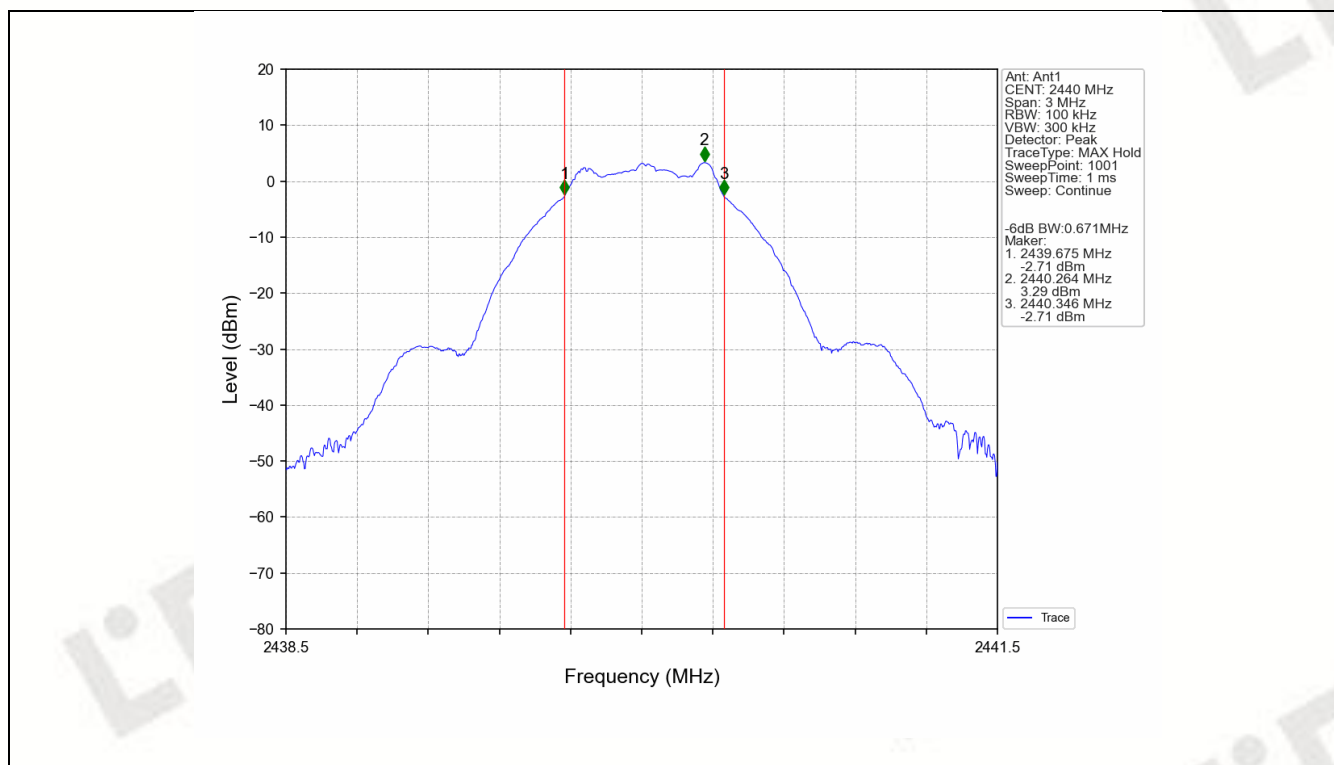


FCC ID: 2BD8N-5380

2.2.2 6dB BW

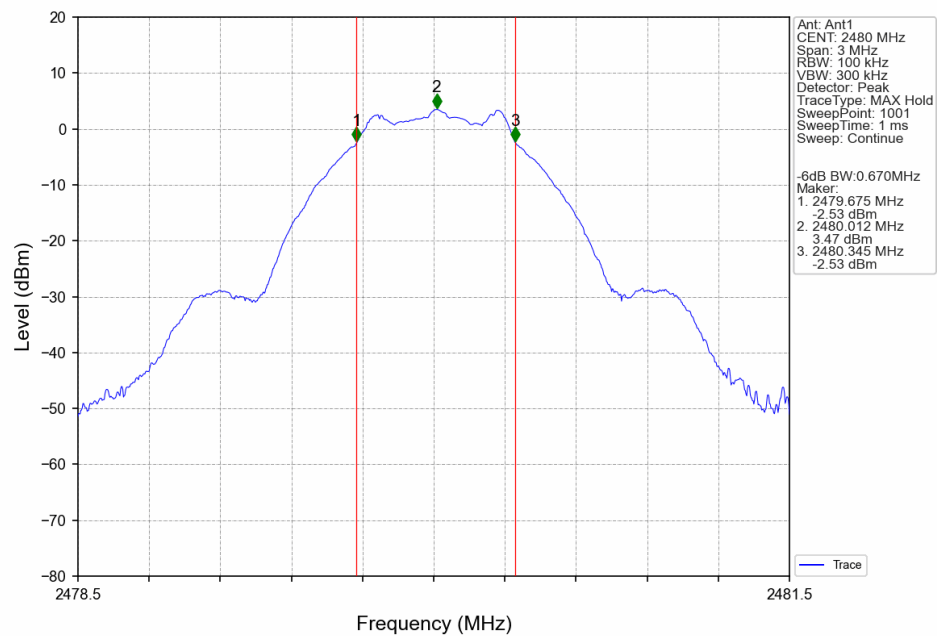


FCC ID: 2BD8N-5380

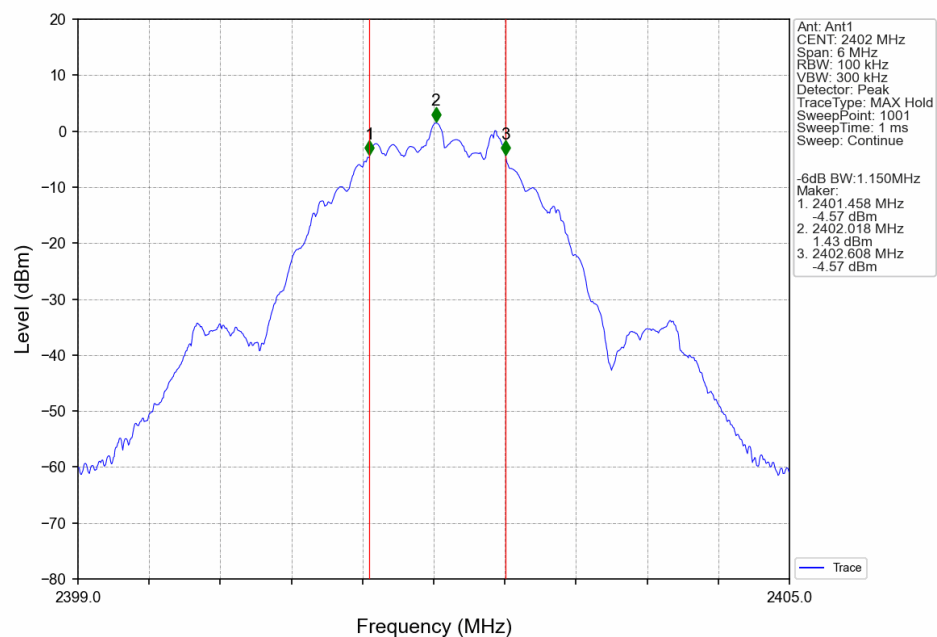


FCC ID: 2BD8N-5380

1M_HCH_2480MHz_Ant1_NTNV

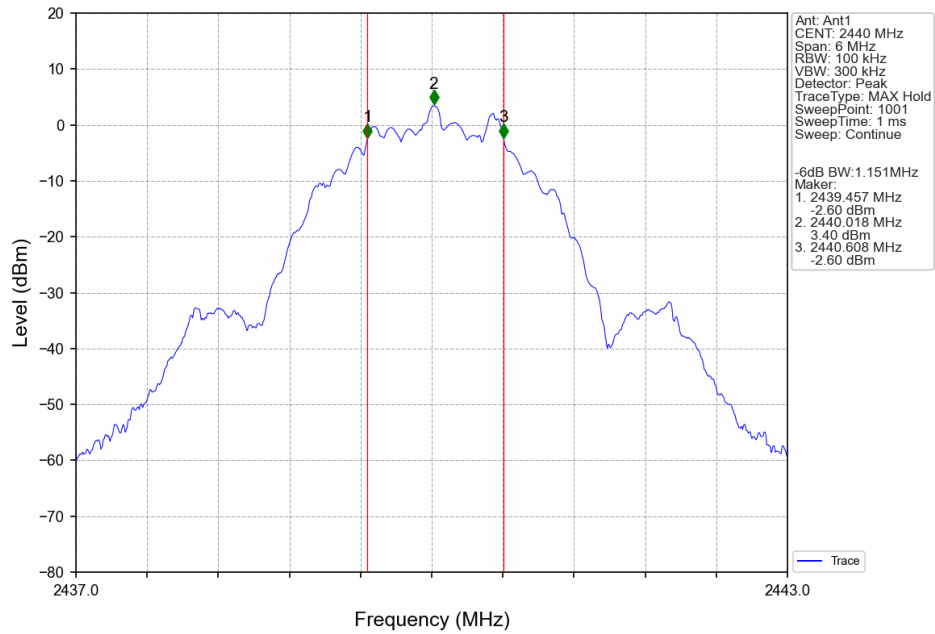


2M_LCH_2402MHz_Ant1_NTNV

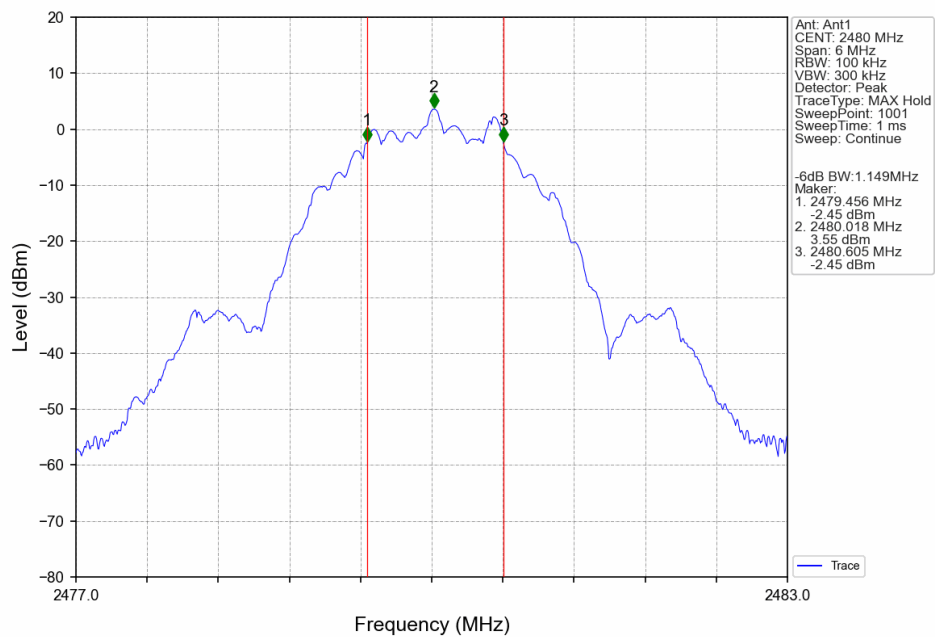


FCC ID: 2BD8N-5380

2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	1.93	<=30	Pass
		2440	3.38	<=30	Pass
		2480	3.47	<=30	Pass
2M	SISO	2402	1.41	<=30	Pass
		2440	3.37	<=30	Pass
		2480	3.54	<=30	Pass
Note1: Antenna Gain: Ant1: 5.30dBi;					
Note2: RF Cable loss=0.5dB					
Note3: The test results include RF Cable loss.					

FCC ID: 2BD8N-5380

4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit(dBm/3kHz)	
1M	SISO	2402	1.93dBm/100kHz	<=8	Pass
		2440	3.38dBm/100kHz	<=8	Pass
		2480	3.46dBm/100kHz	<=8	Pass
2M	SISO	2402	1.38dBm/100kHz	<=8	Pass
		2440	3.20dBm/100kHz	<=8	Pass
		2480	3.53dBm/100kHz	<=8	Pass

Note1: Antenna Gain: Ant1: 5.30dBi;

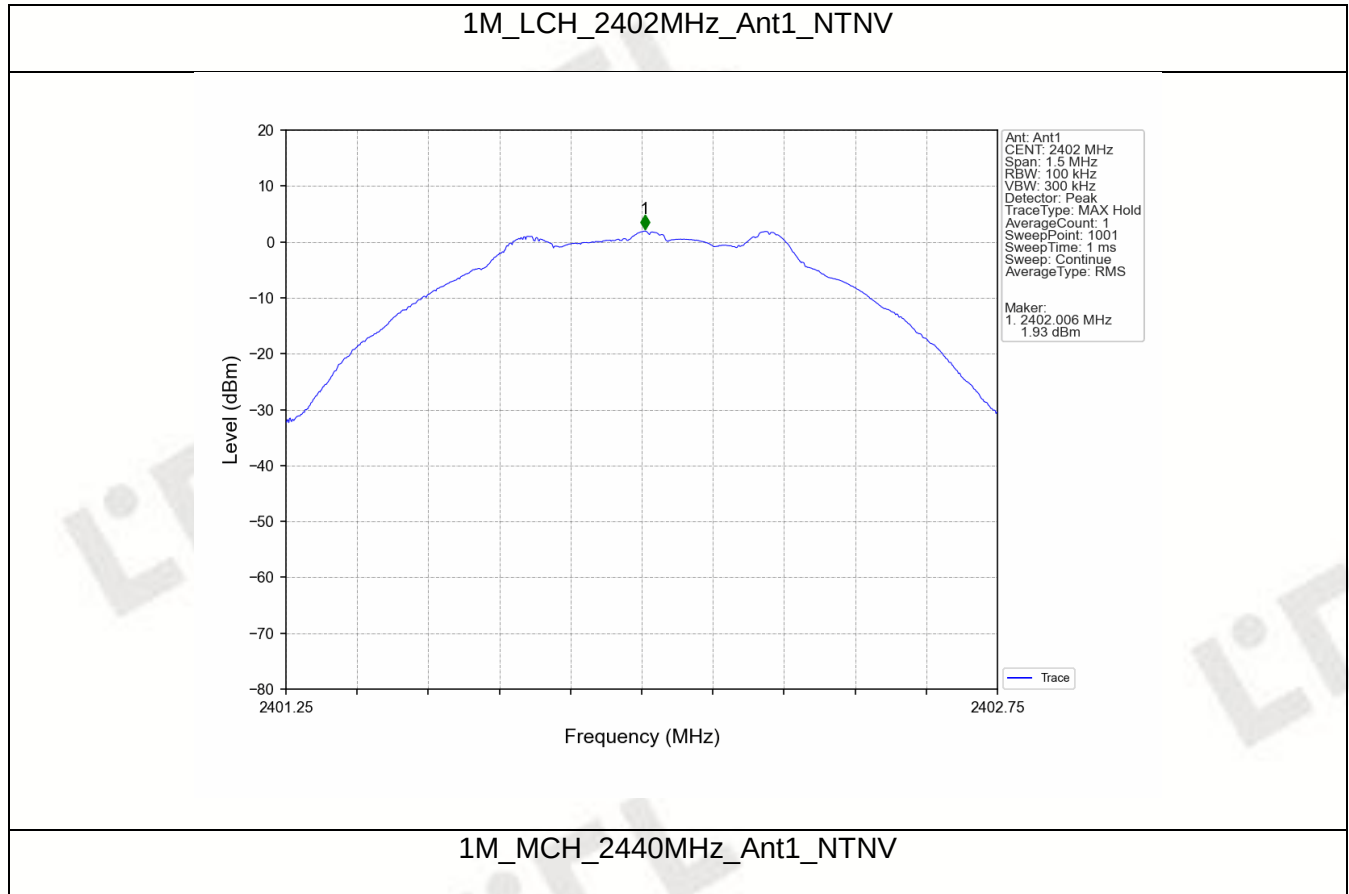
Note2: RF Cable loss=0.5dB

Note3: The test results include RF Cable loss.

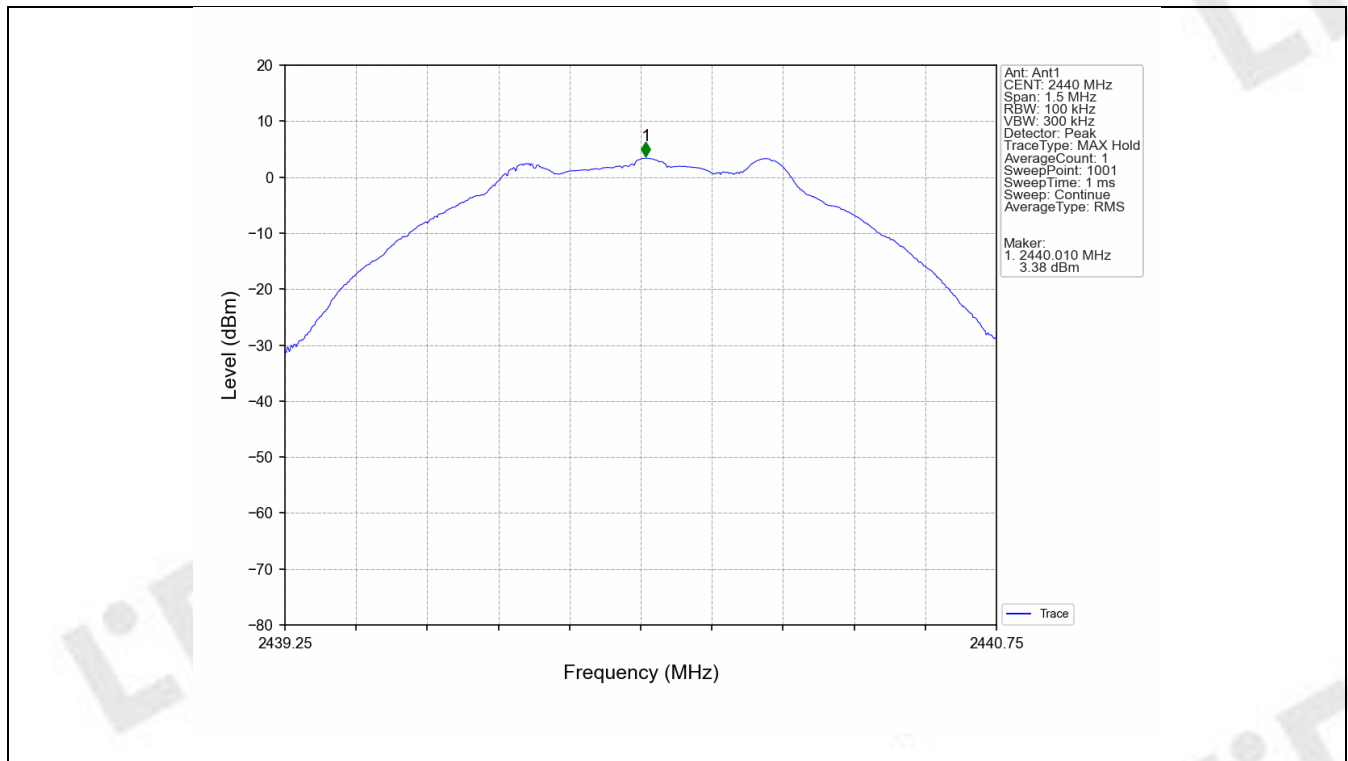
FCC ID: 2BD8N-5380

4.2 Test Graph

4.2.1 PSD

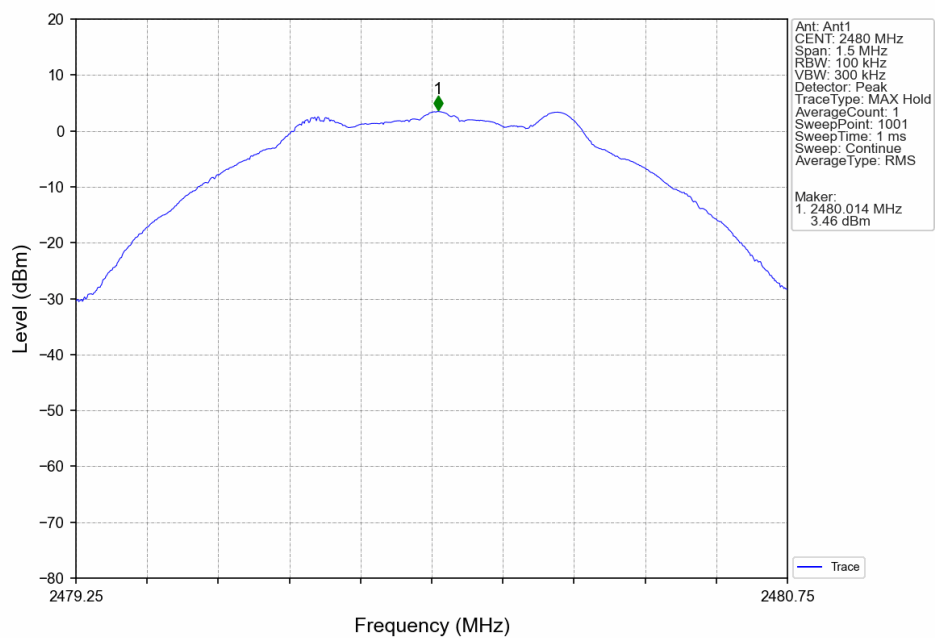


FCC ID: 2BD8N-5380

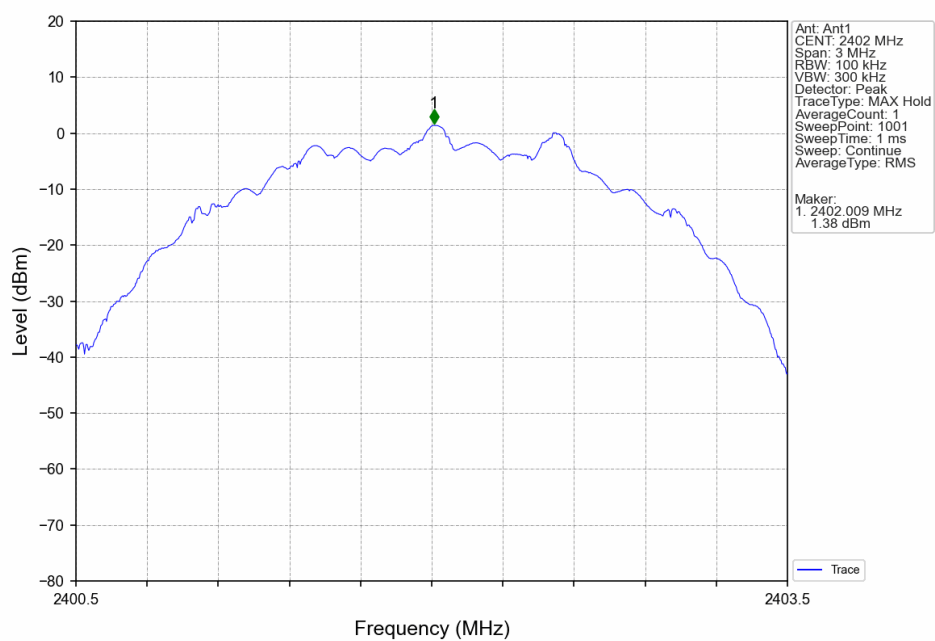


FCC ID: 2BD8N-5380

1M_HCH_2480MHz_Ant1_NTNV

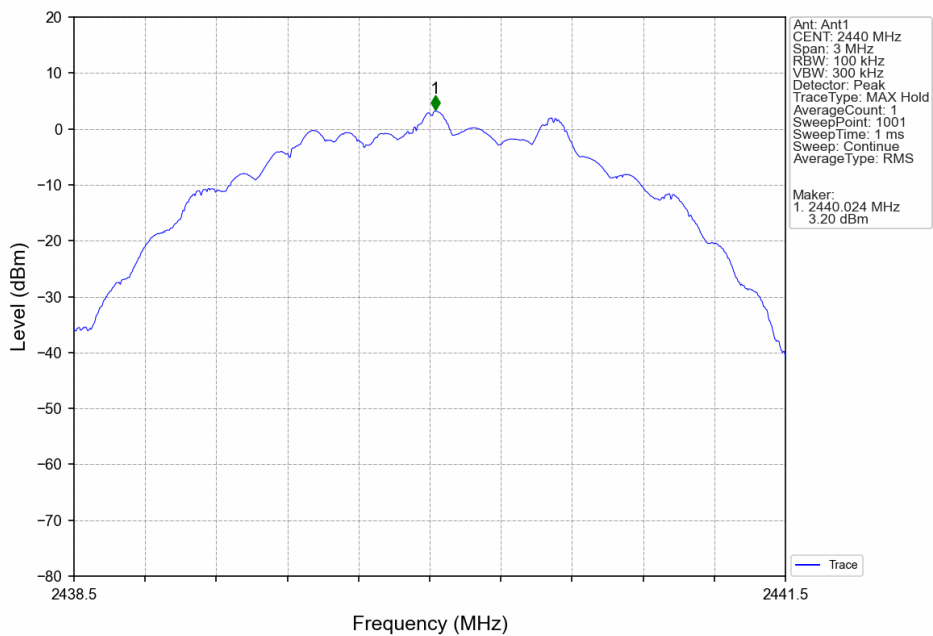


2M_LCH_2402MHz_Ant1_NTNV

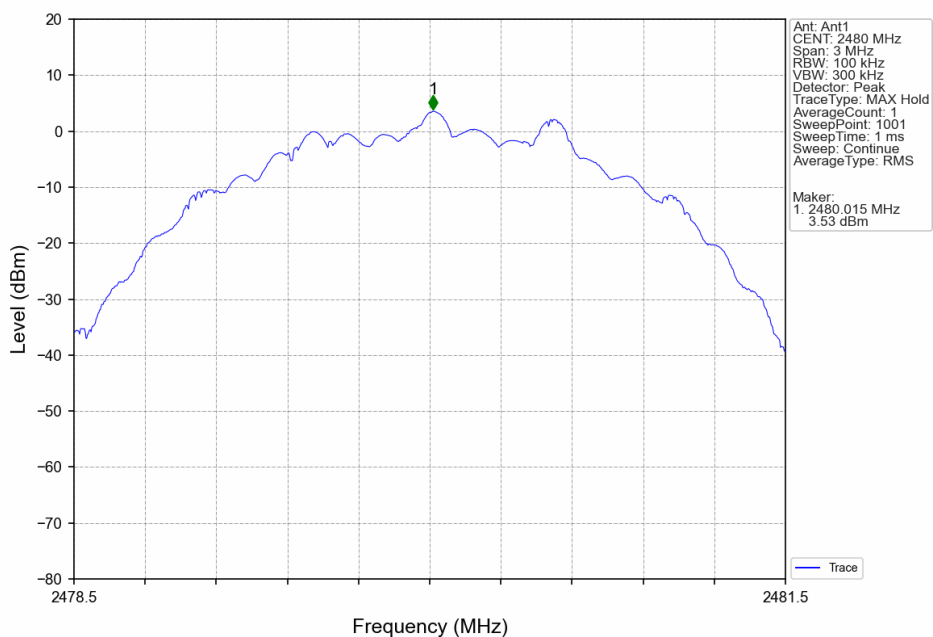


FCC ID: 2BD8N-5380

2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



FCC ID: 2BD8N-5380

5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	1.94
		2440	1	3.39
		2480	1	3.49
2M	SISO	2402	1	1.44
		2440	1	3.36
		2480	1	3.50

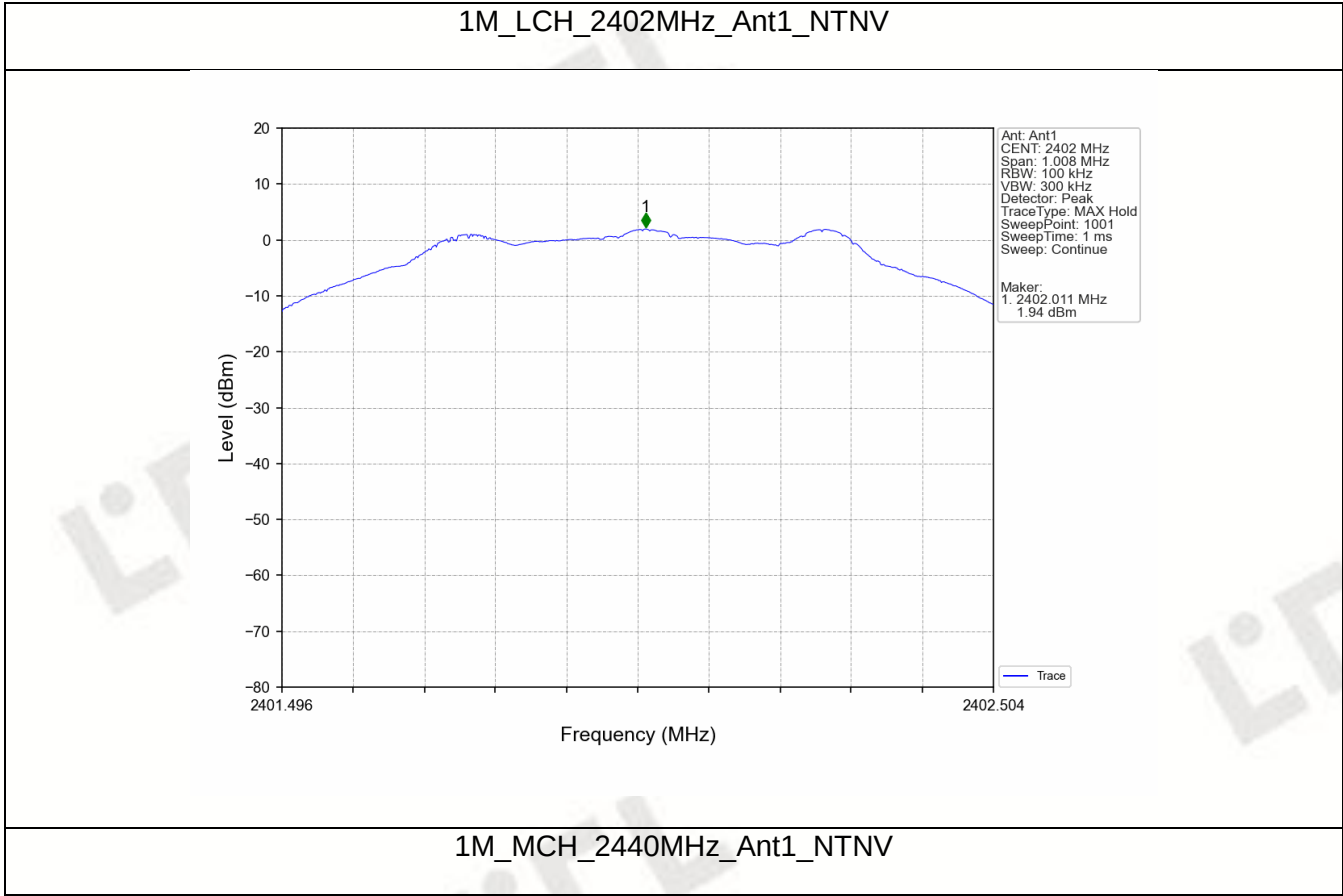
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	3.49	-16.51	Pass
		2440	1	3.49	-16.51	Pass
		2480	1	3.49	-16.51	Pass
2M	SISO	2402	1	3.50	-16.50	Pass
		2440	1	3.50	-16.50	Pass
		2480	1	3.50	-16.50	Pass

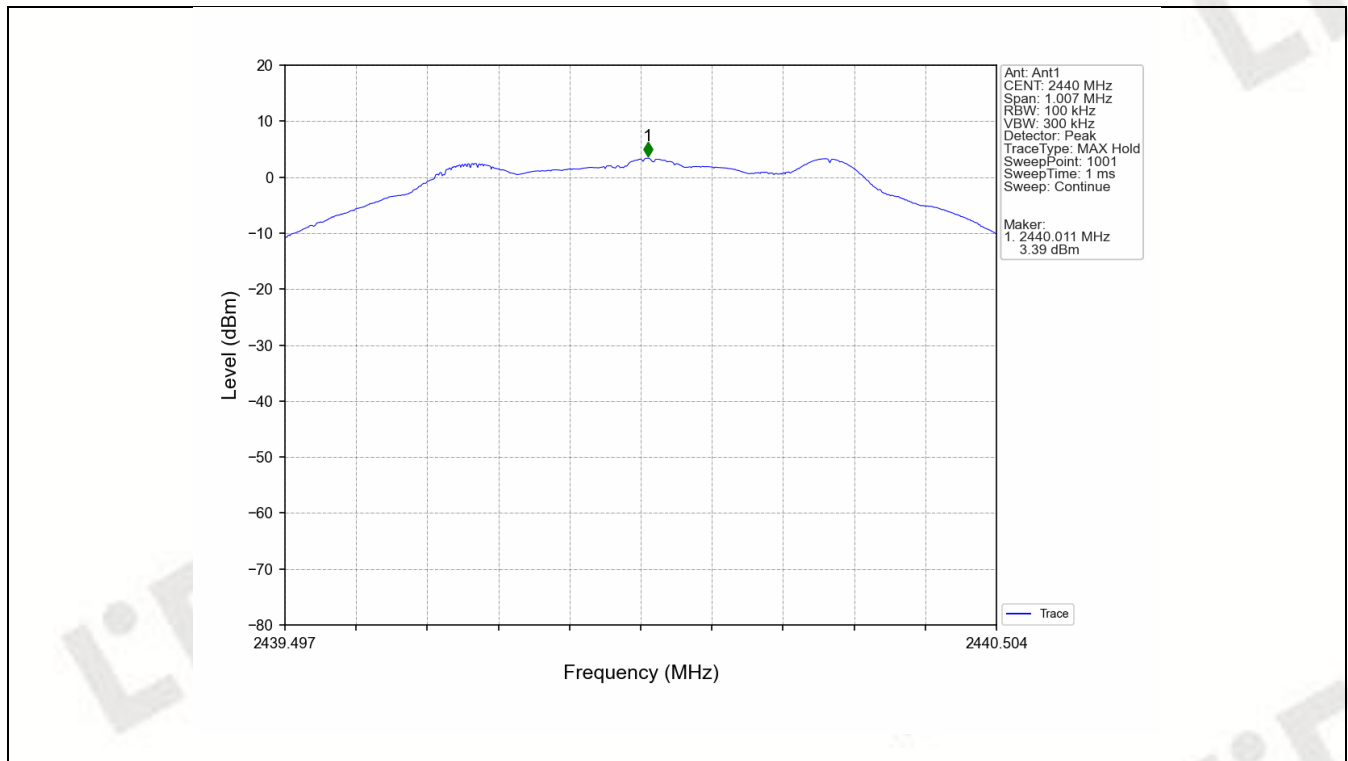
FCC ID: 2BD8N-5380

5.2 Test Graph

5.2.1 Ref

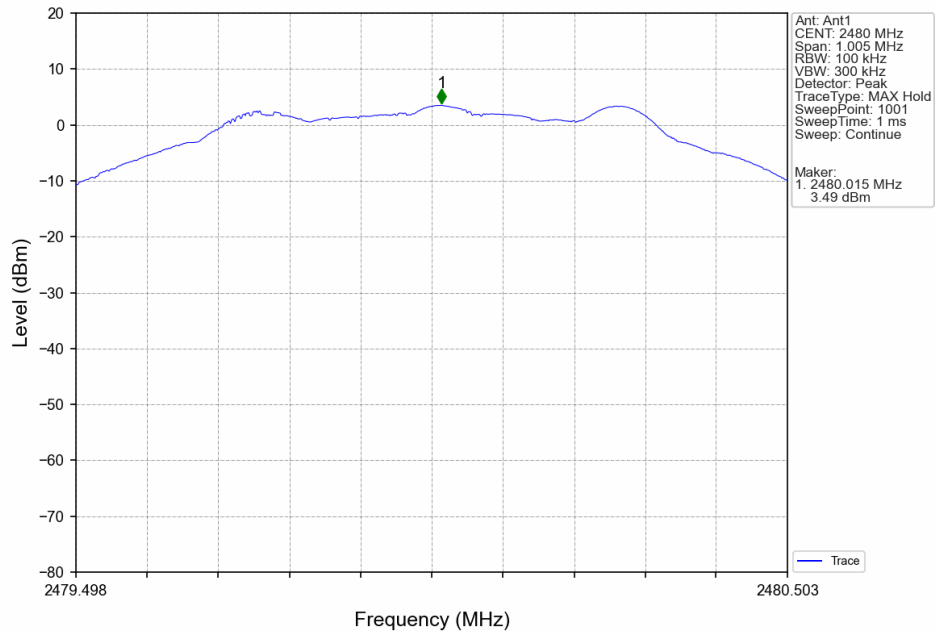


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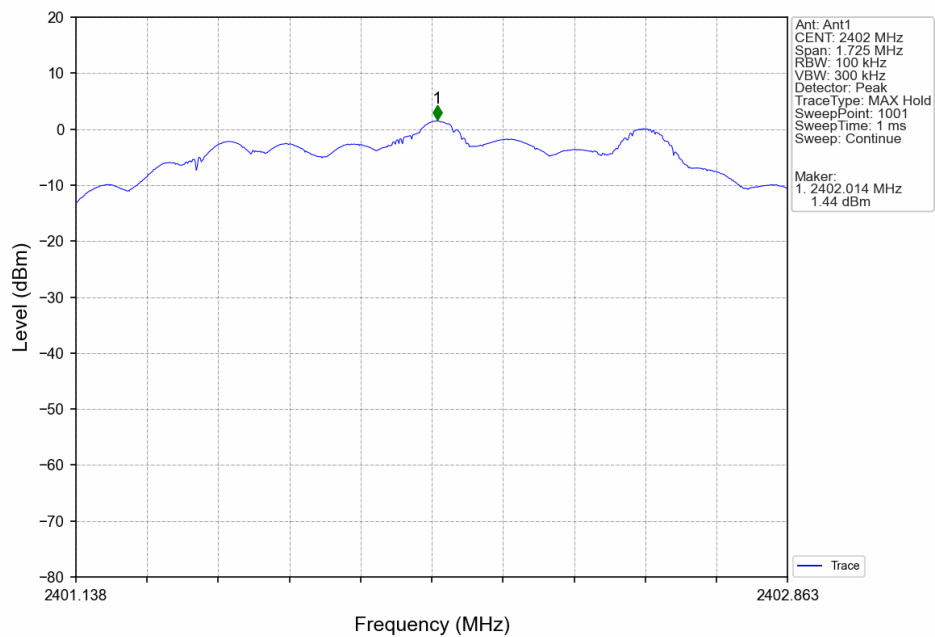


FCC ID: 2BD8N-5380

1M_HCH_2480MHz_Ant1_NTNV

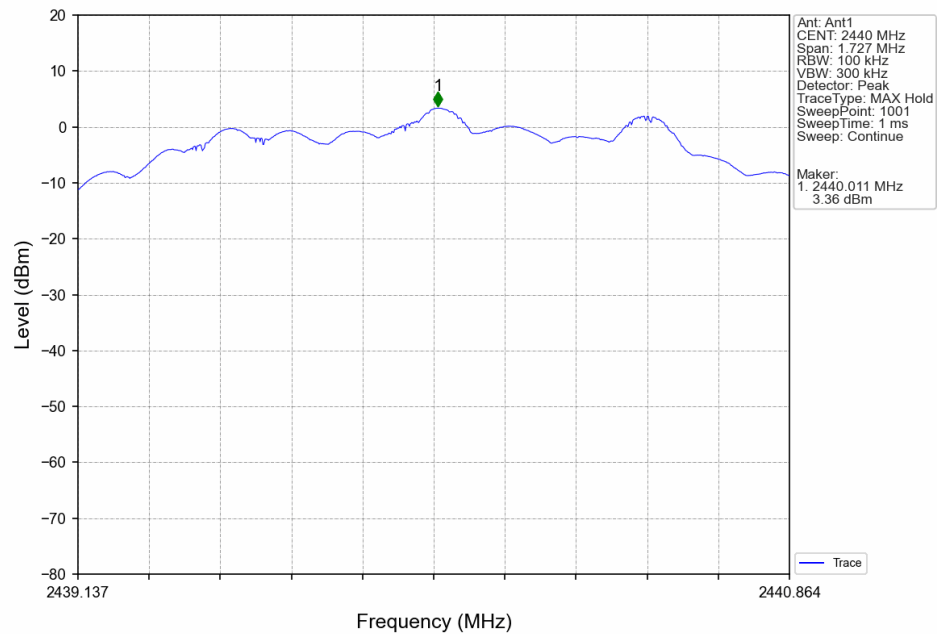


2M_LCH_2402MHz_Ant1_NTNV

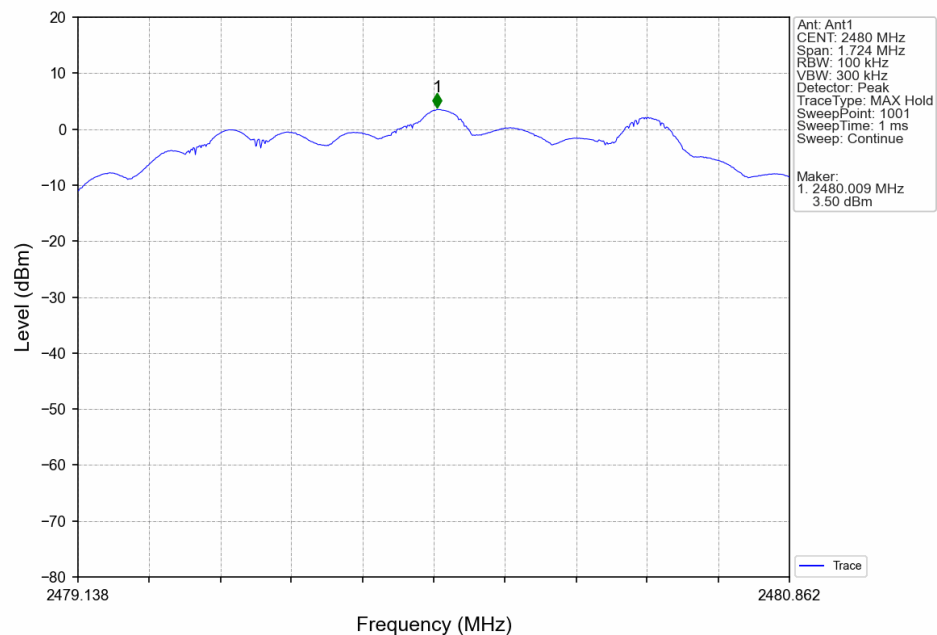


FCC ID: 2BD8N-5380

2M_MCH_2440MHz_Ant1_NTNV

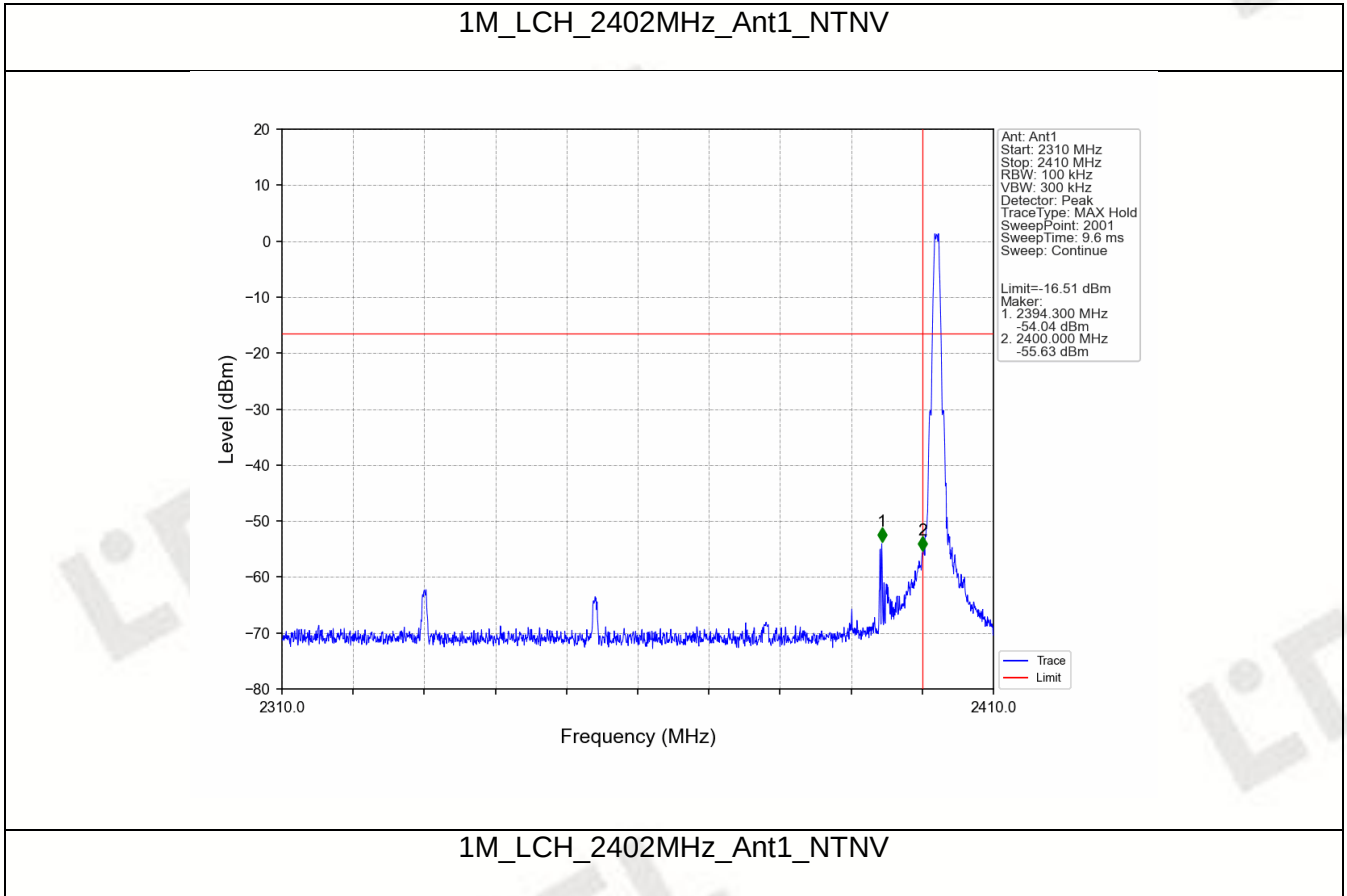


2M_HCH_2480MHz_Ant1_NTNV

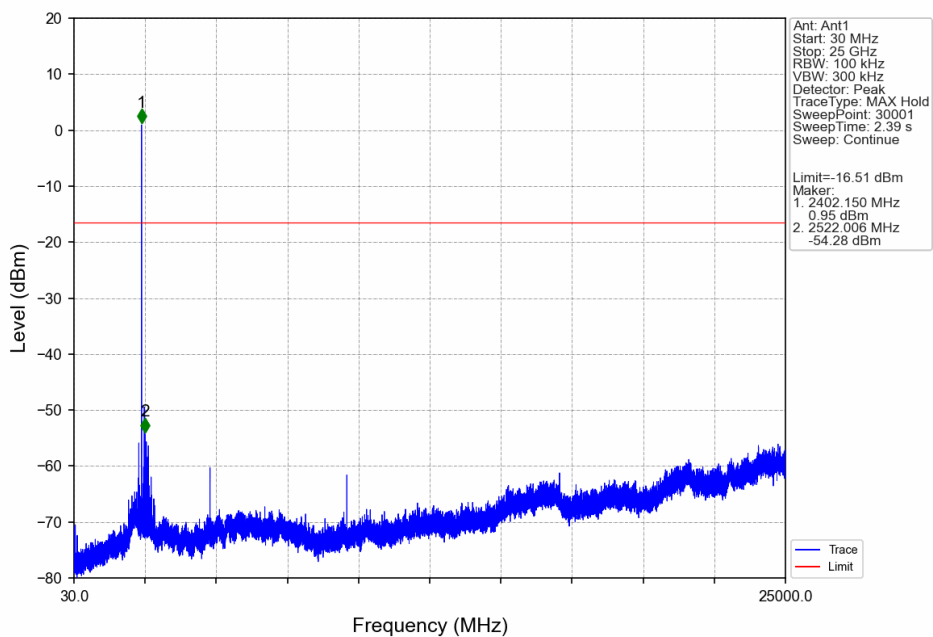


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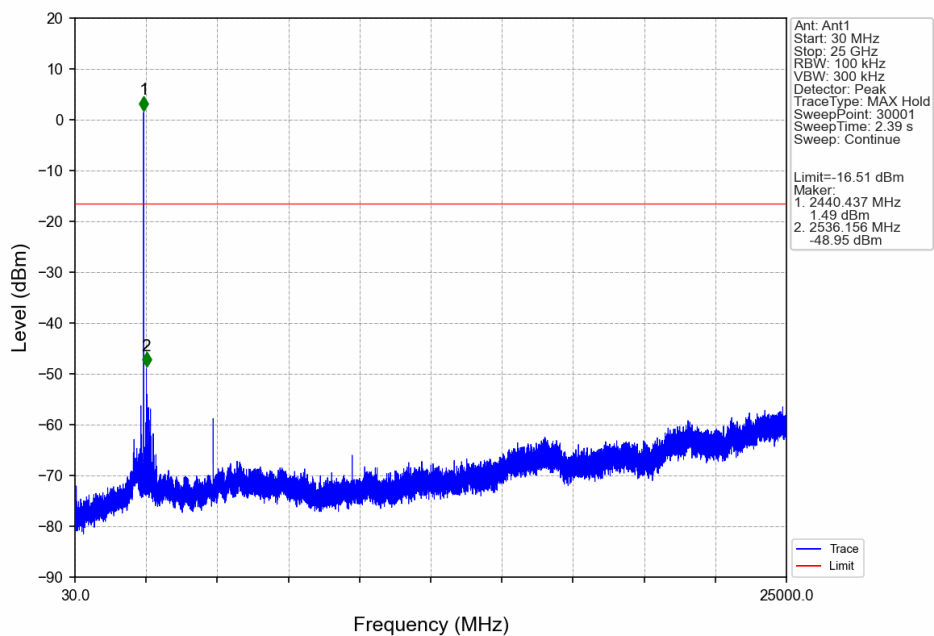
5.2.2 CSE



FCC ID: 2BD8N-5380

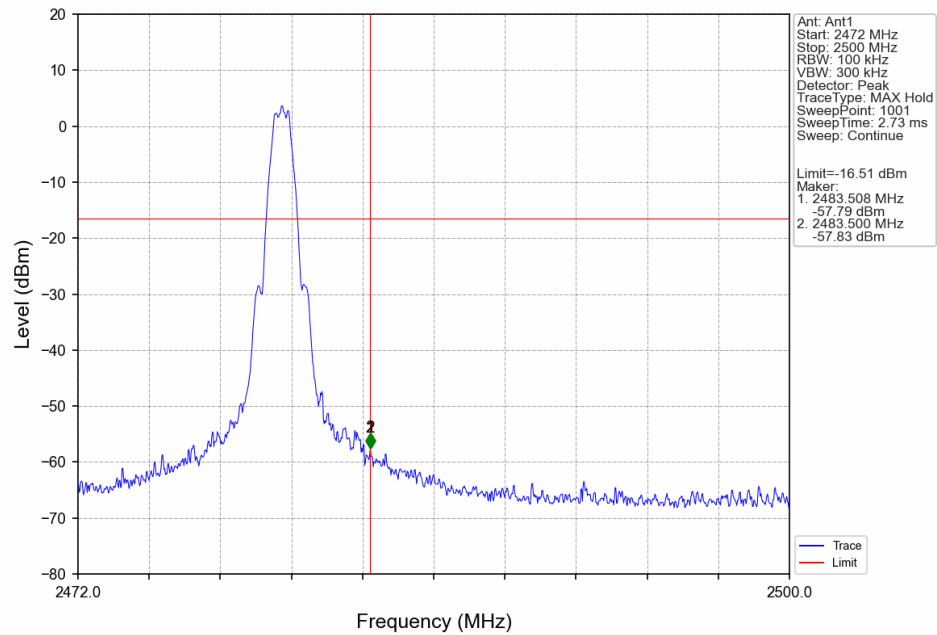


1M_MCH_2440MHz_Ant1_NTNV

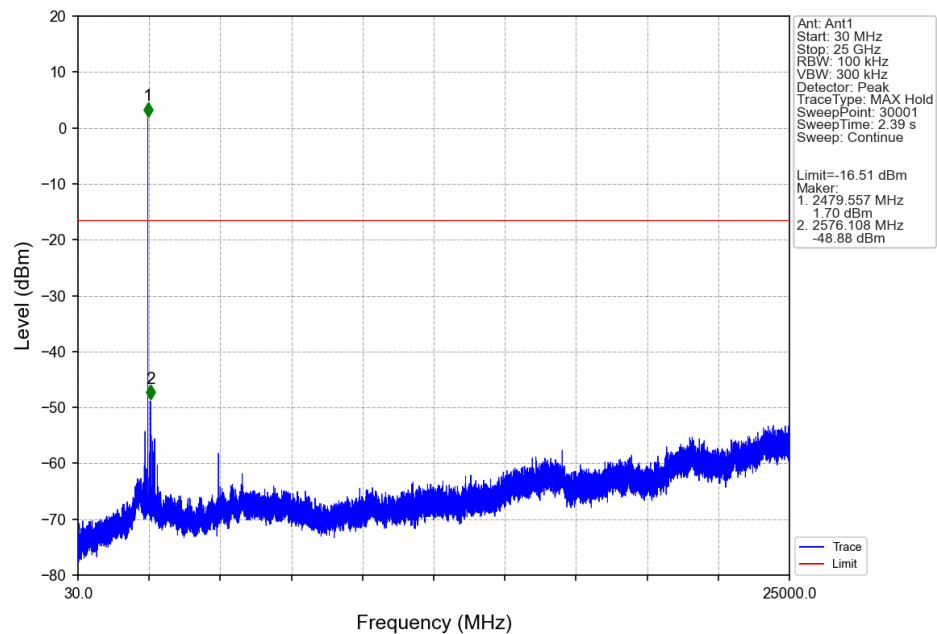


1M_HCH_2480MHz_Ant1_NTNV

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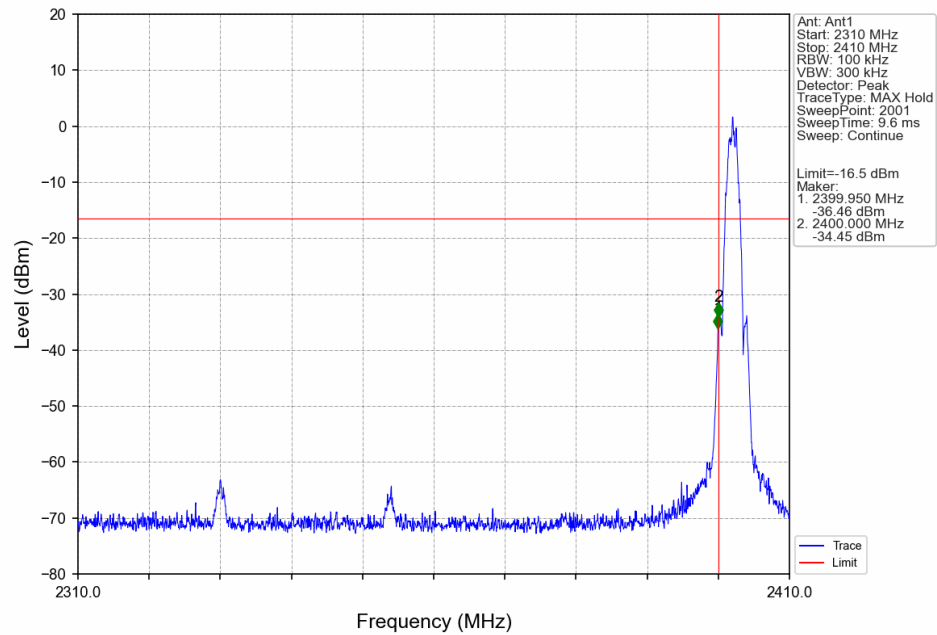


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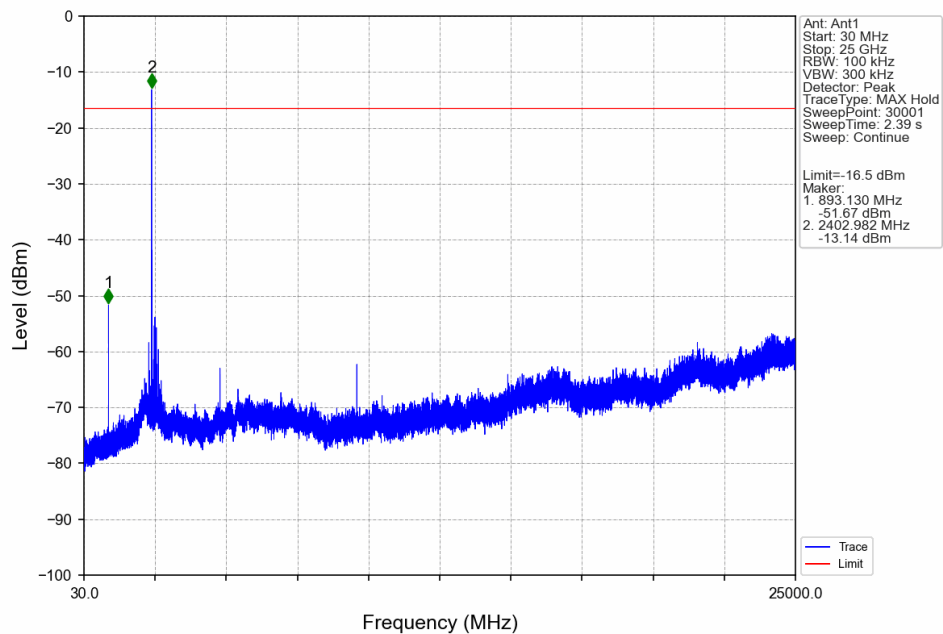


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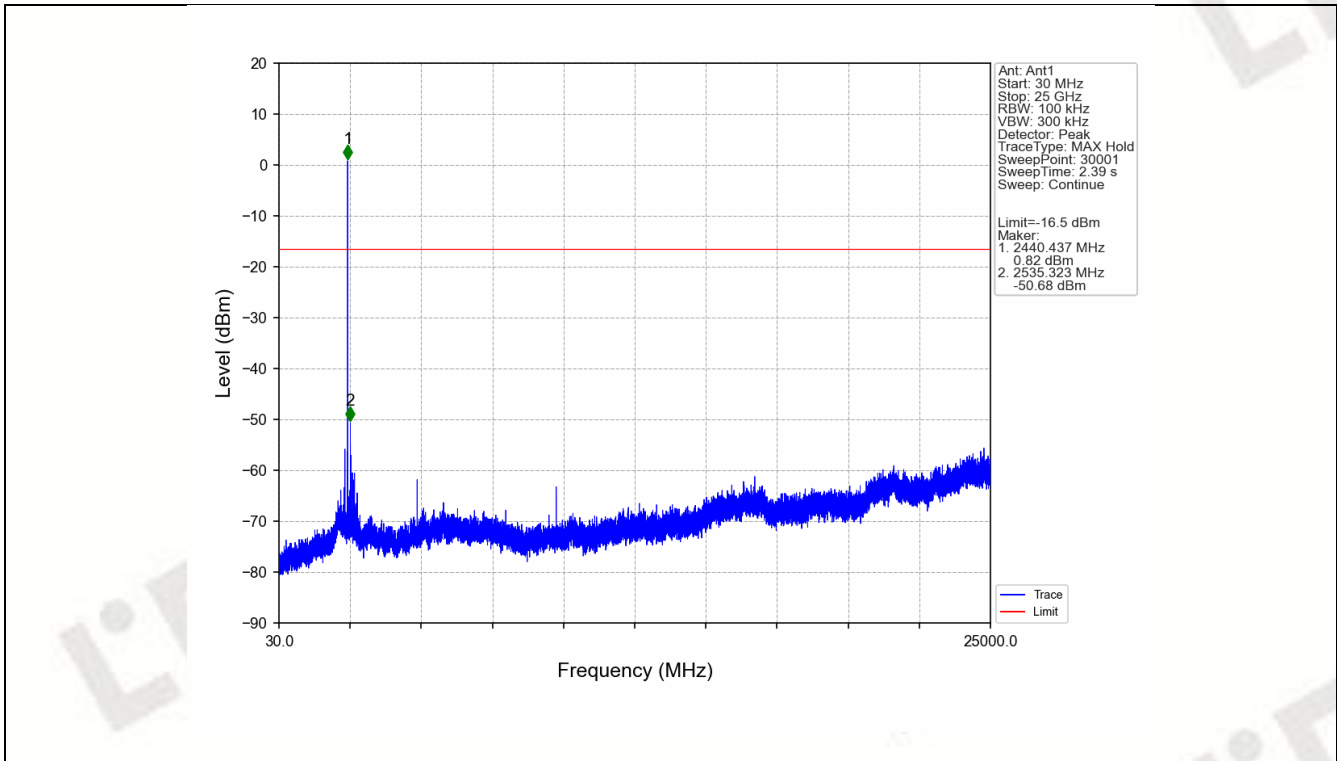


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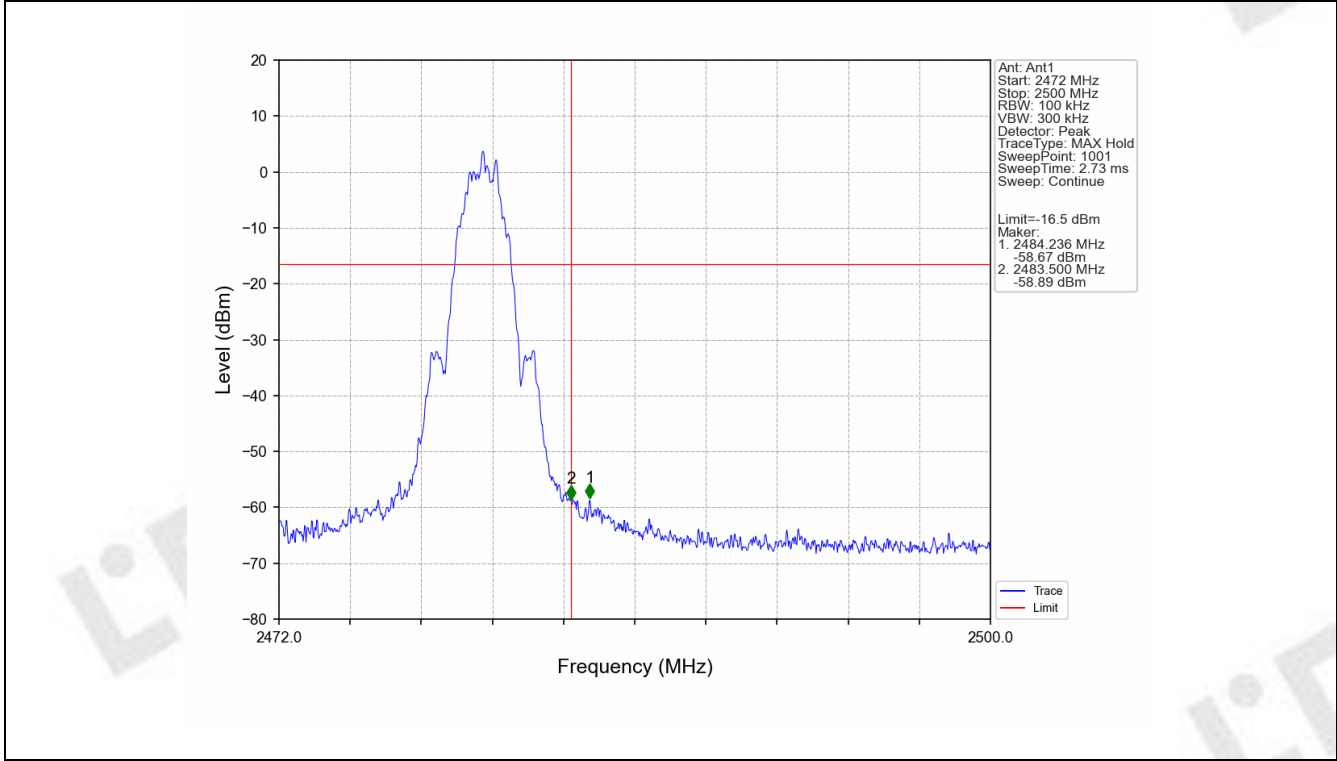


2M_MCH_2440MHz_Ant1_NTNV

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2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV

FCC ID: 2BD8N-5380

