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Annex for Bluetooth Low Energy

Test Report No.: CTL2505142051-WF

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FCC ID: 2BP4K-ES

1. Duty Cycle

1.1 Test Result

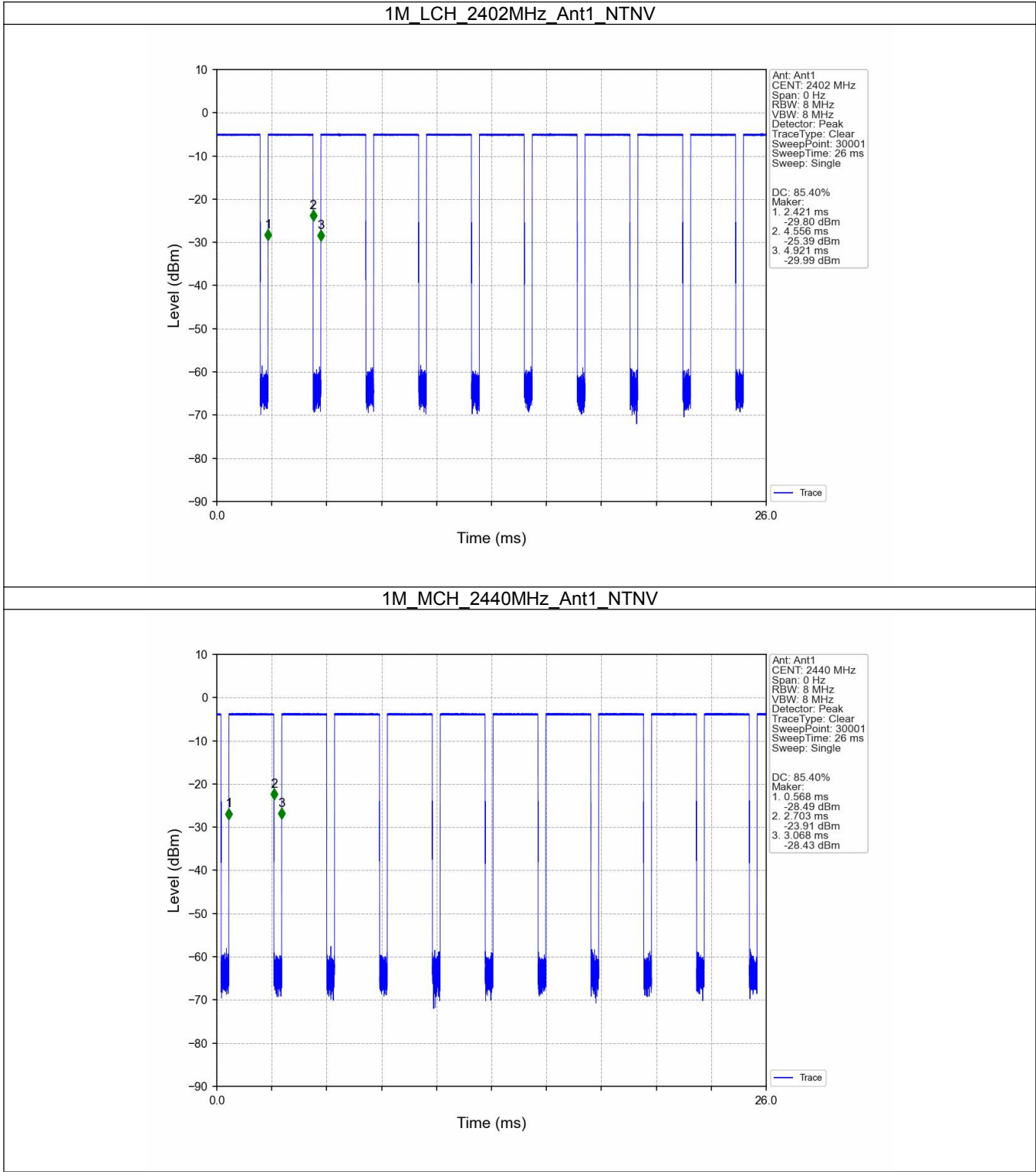
1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.135	2.500	85.40	0.69	0.03
		2440	2.135	2.500	85.40	0.69	0.03
		2480	2.135	2.500	85.40	0.69	0.03
2M	SISO	2402	1.083	2.500	43.32	3.63	0.03
		2440	1.083	2.500	43.32	3.63	0.03
		2480	1.083	2.500	43.32	3.63	0.03

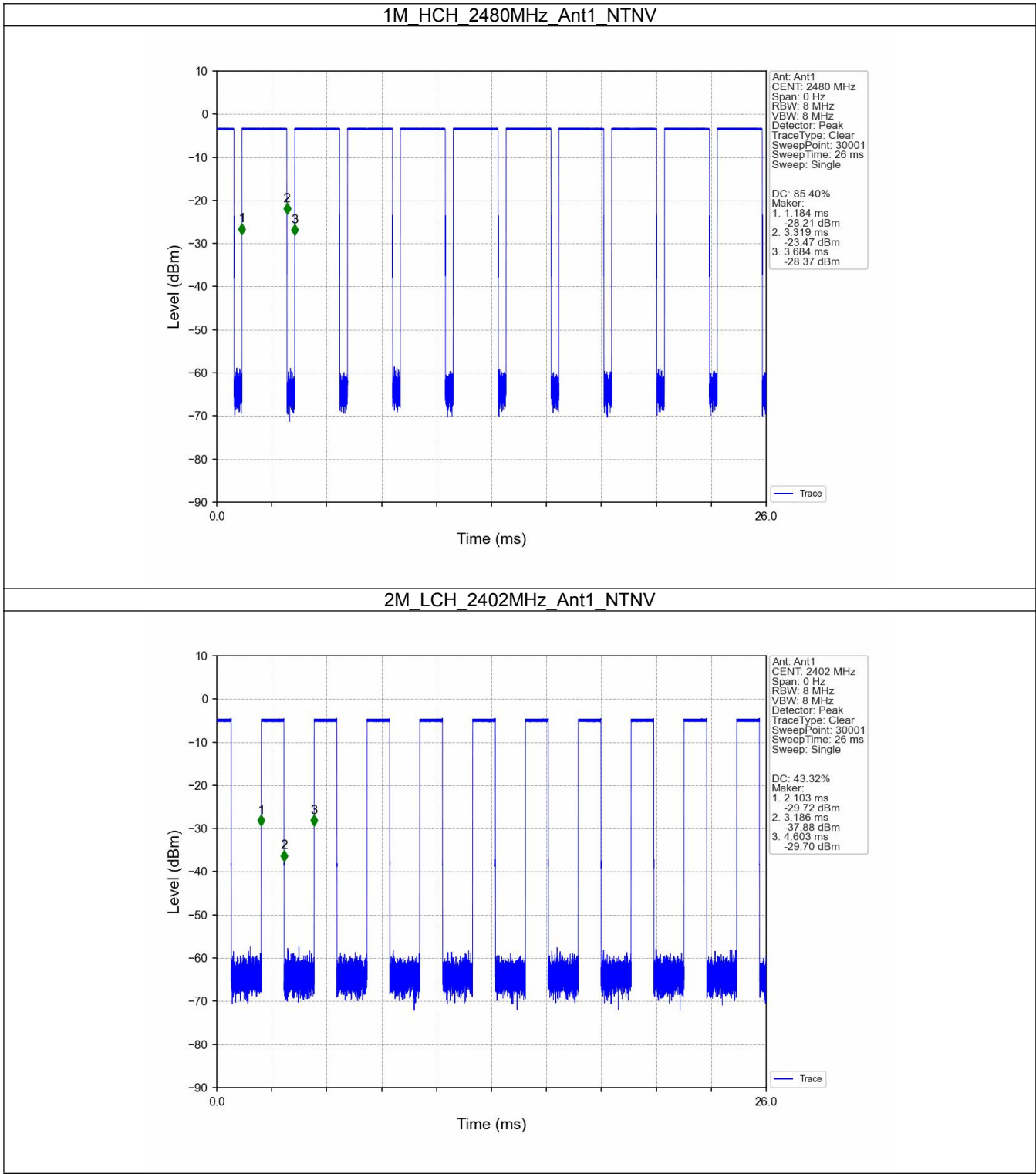
FCC ID: 2BP4K-ES

1.2 Test Graph

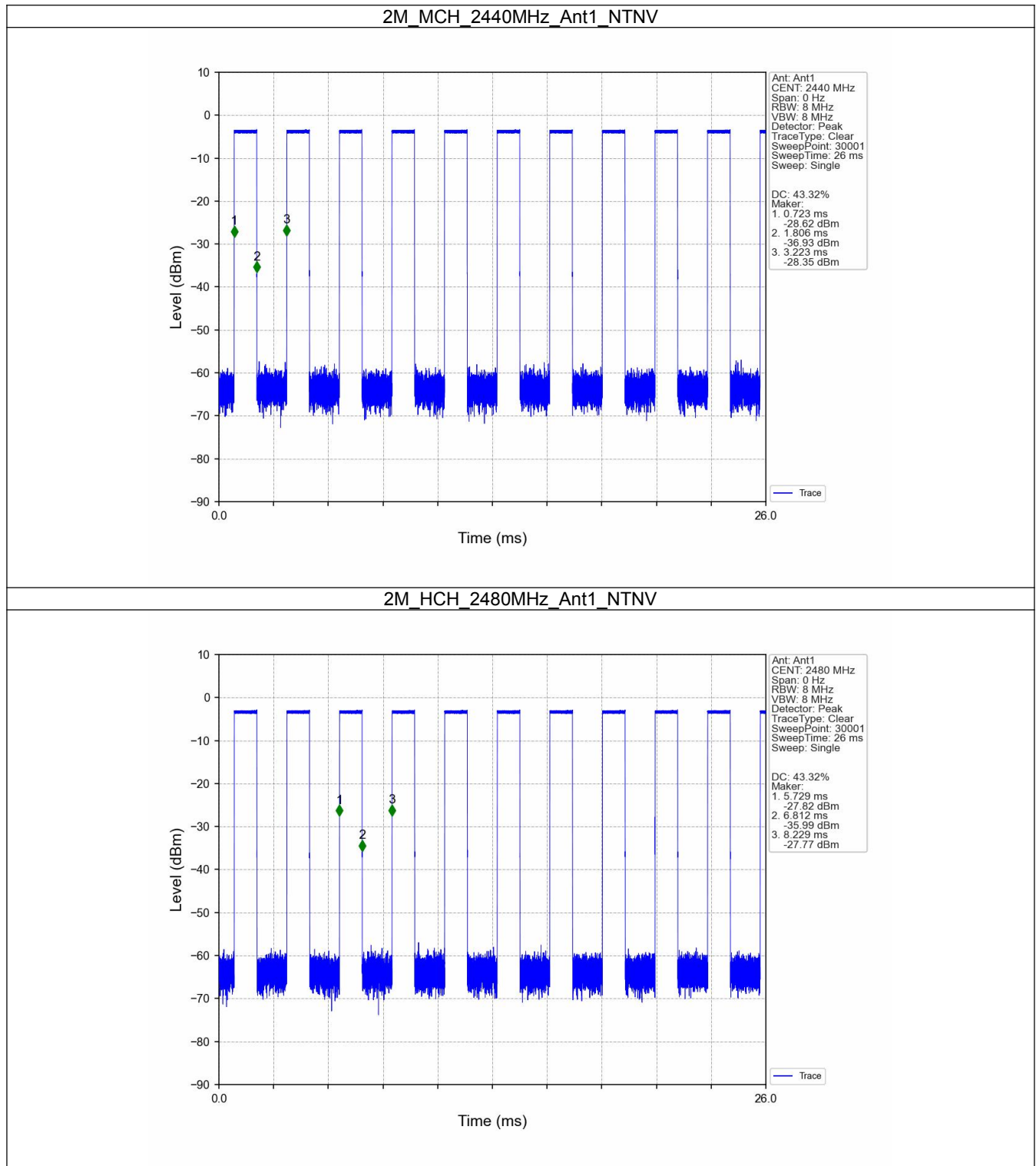
1.2.1 Ant1



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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	1.032	/	Pass
		2440	1	1.032	/	Pass
		2480	1	1.032	/	Pass
2M	SISO	2402	1	2.062	/	Pass
		2440	1	2.067	/	Pass
		2480	1	2.069	/	Pass

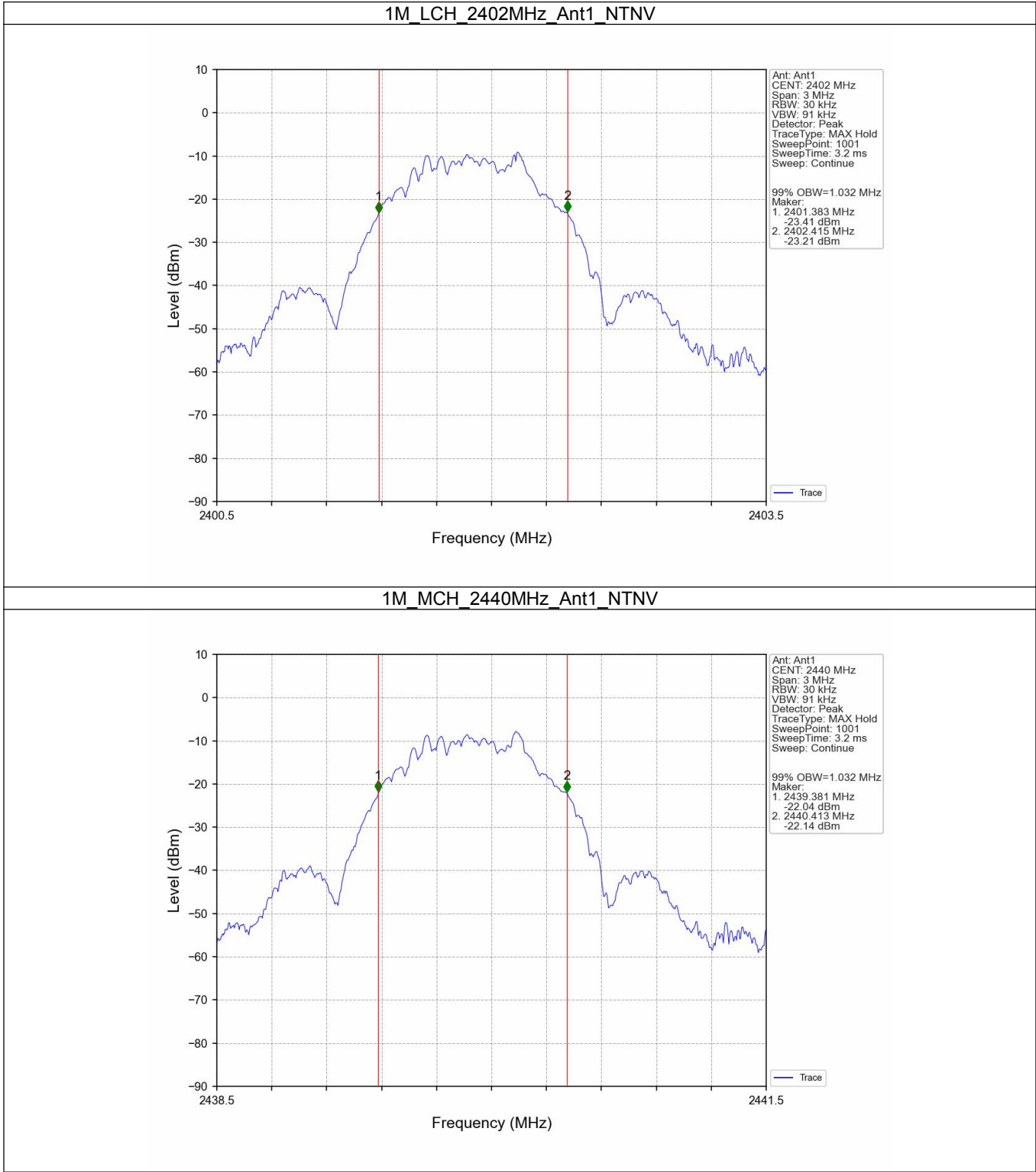
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.665	≥ 0.5	Pass
		2440	1	0.673	≥ 0.5	Pass
		2480	1	0.665	≥ 0.5	Pass
2M	SISO	2402	1	1.235	≥ 0.5	Pass
		2440	1	1.186	≥ 0.5	Pass
		2480	1	1.238	≥ 0.5	Pass

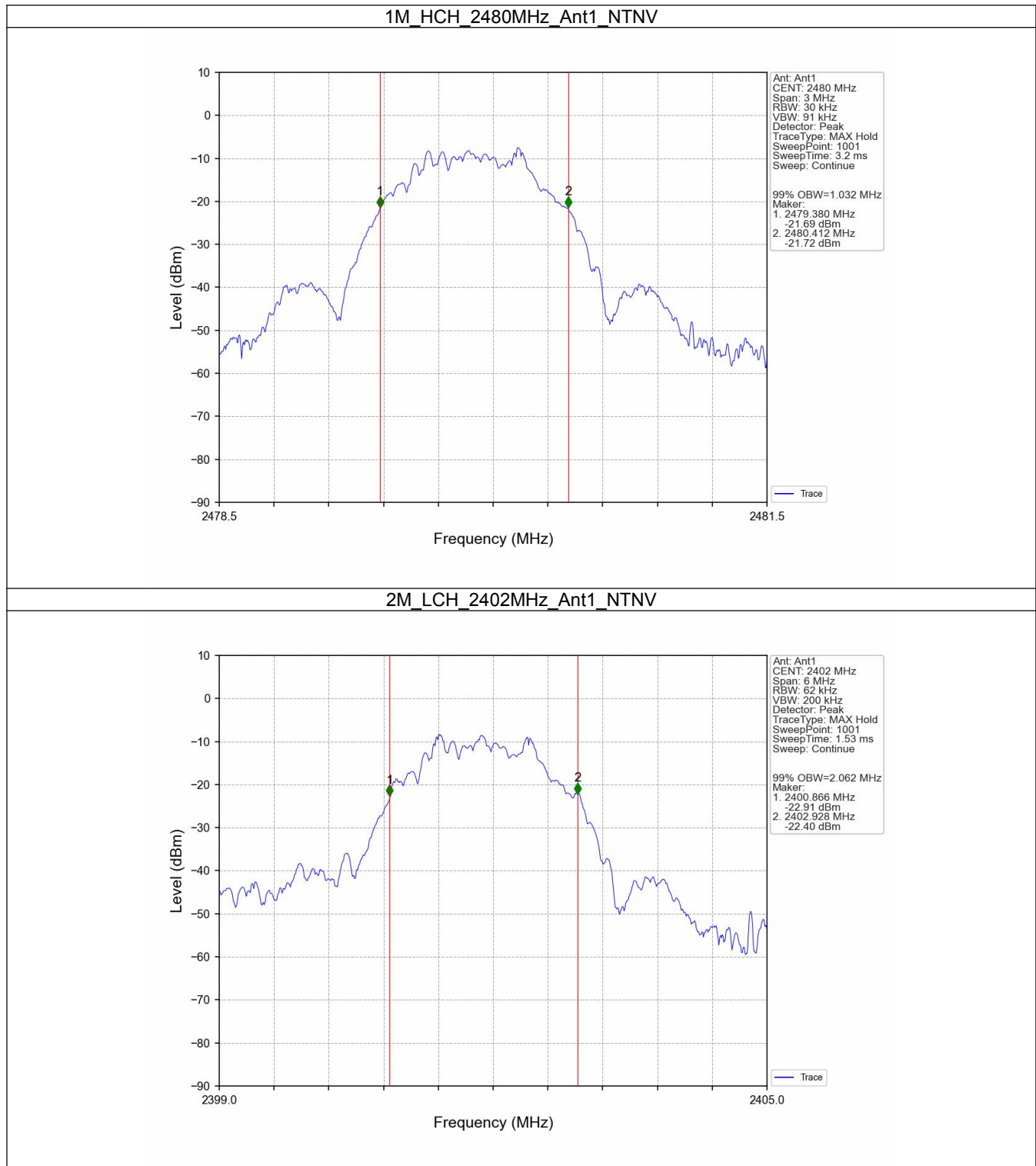
FCC ID: 2BP4K-ES

2.2 Test Graph

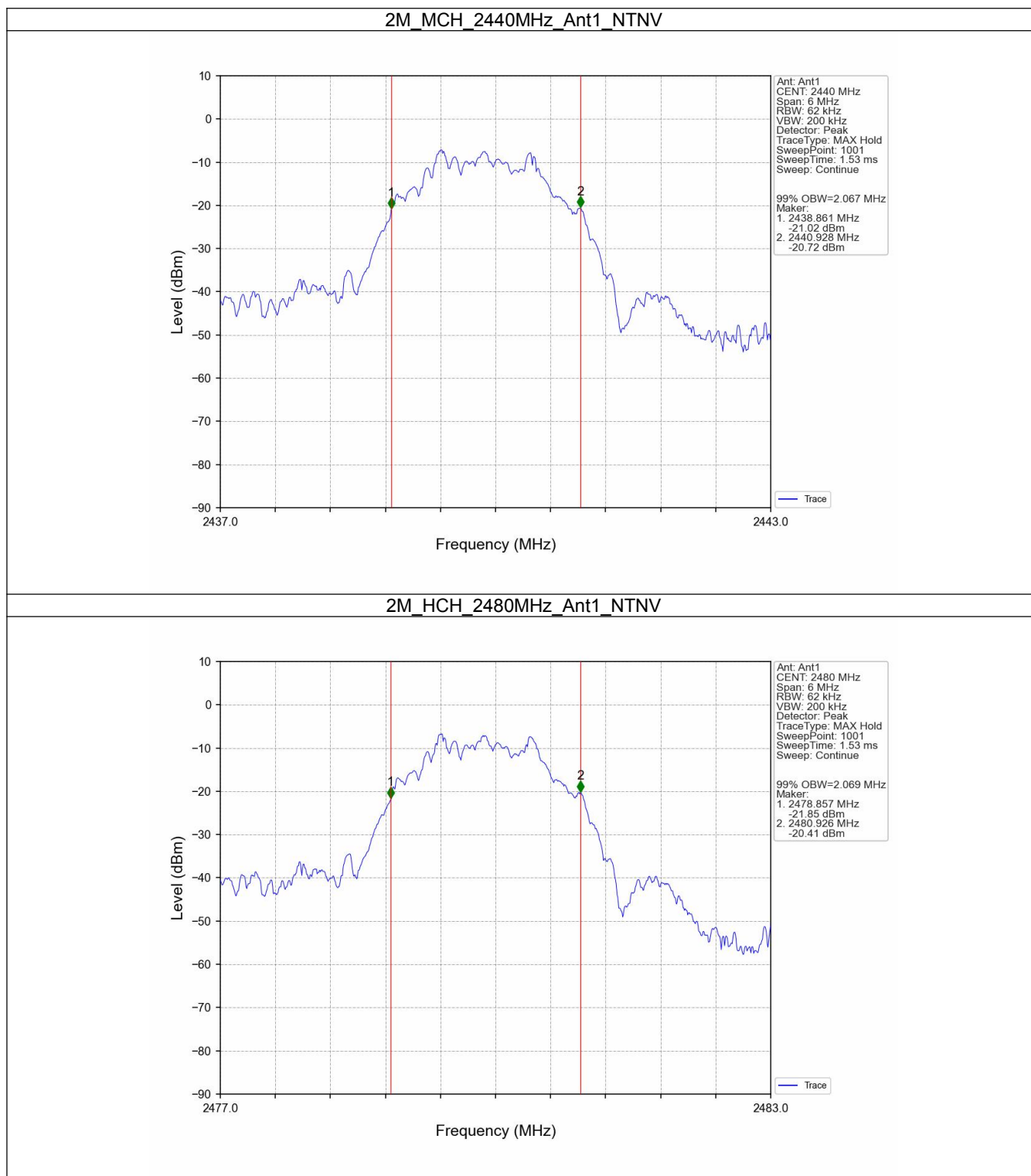
2.2.1 OBW



FCC ID: 2BP4K-ES

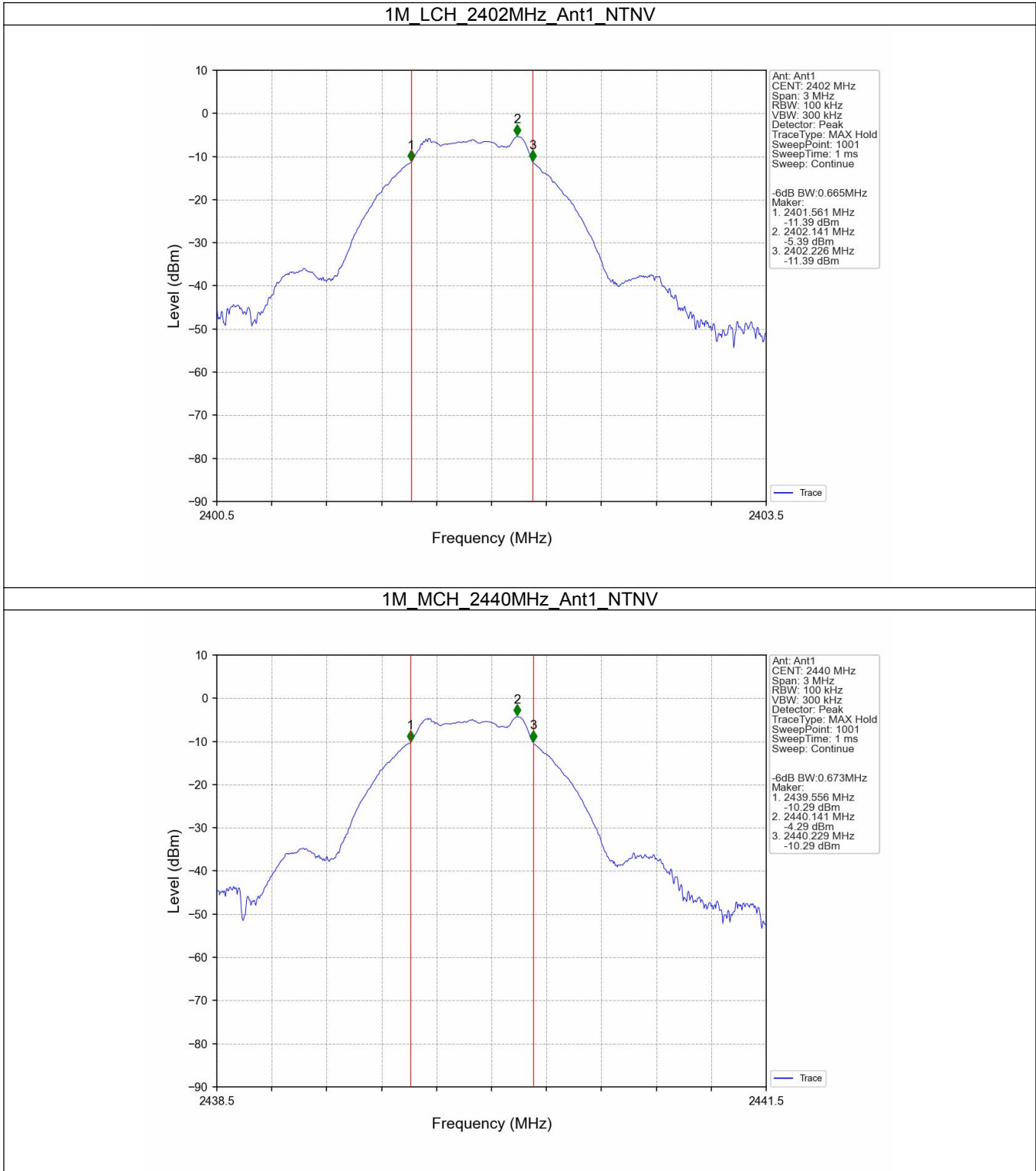


FCC ID: 2BP4K-ES

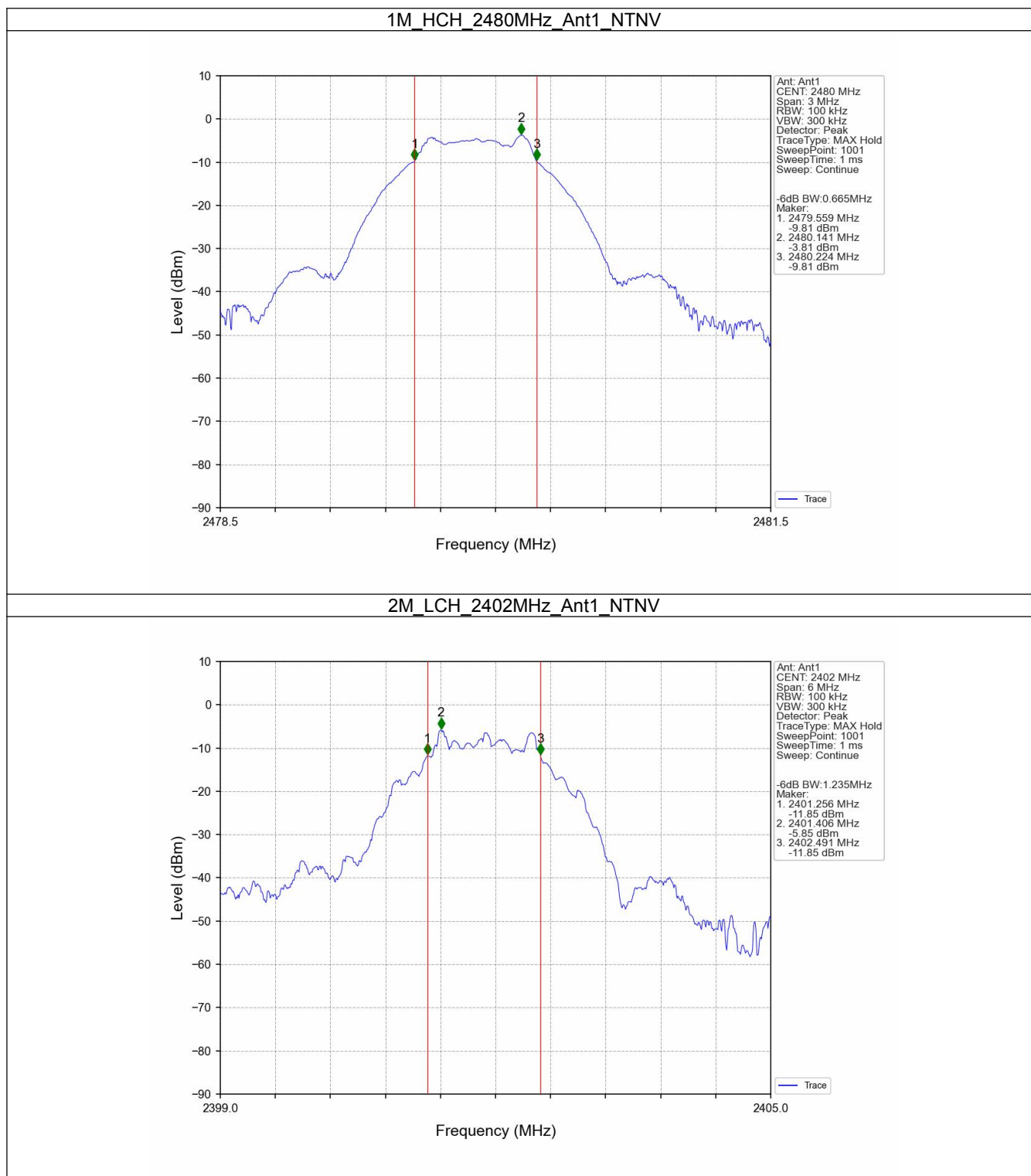


FCC ID: 2BP4K-ES

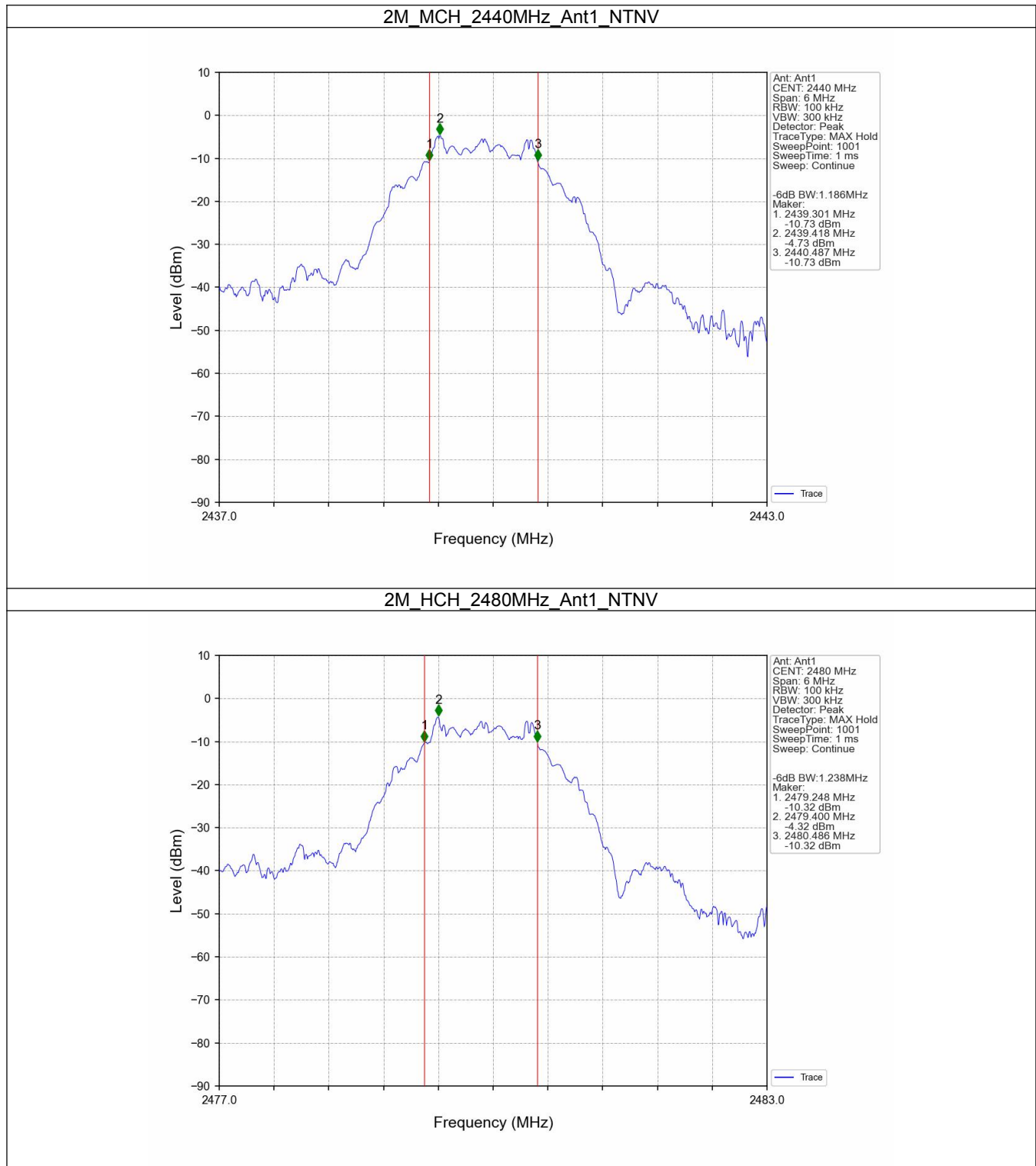
2.2.2 6dB BW



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FCC ID: 2BP4K-ES

3. Maximum Conducted Output Power

3.1 Test Result

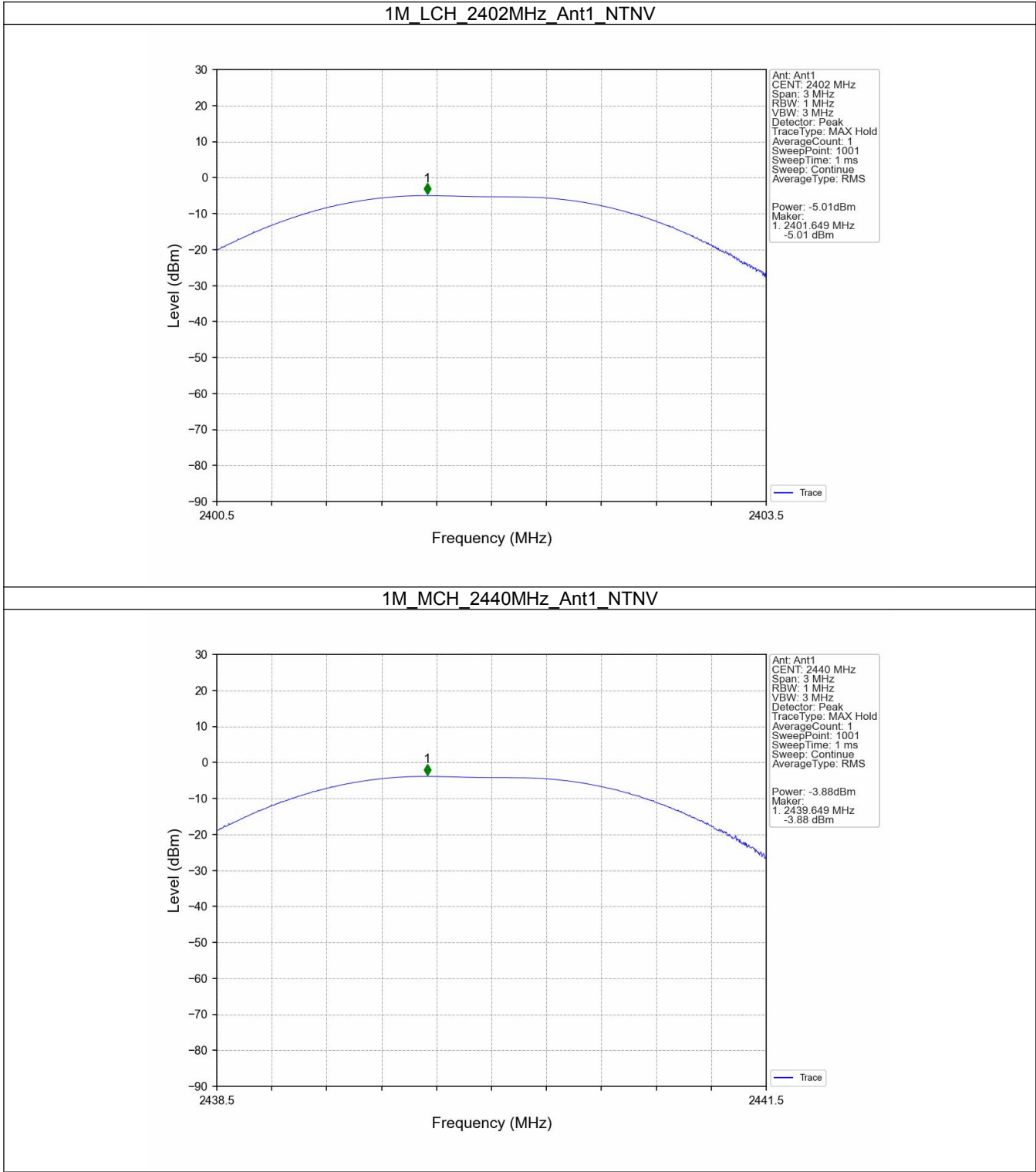
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-5.01	<=30	Pass
		2440	-3.88	<=30	Pass
		2480	-3.43	<=30	Pass
2M	SISO	2402	-4.63	<=30	Pass
		2440	-3.47	<=30	Pass
		2480	-3.02	<=30	Pass
Note1: Antenna Gain: Ant1: -0.58dBi:					

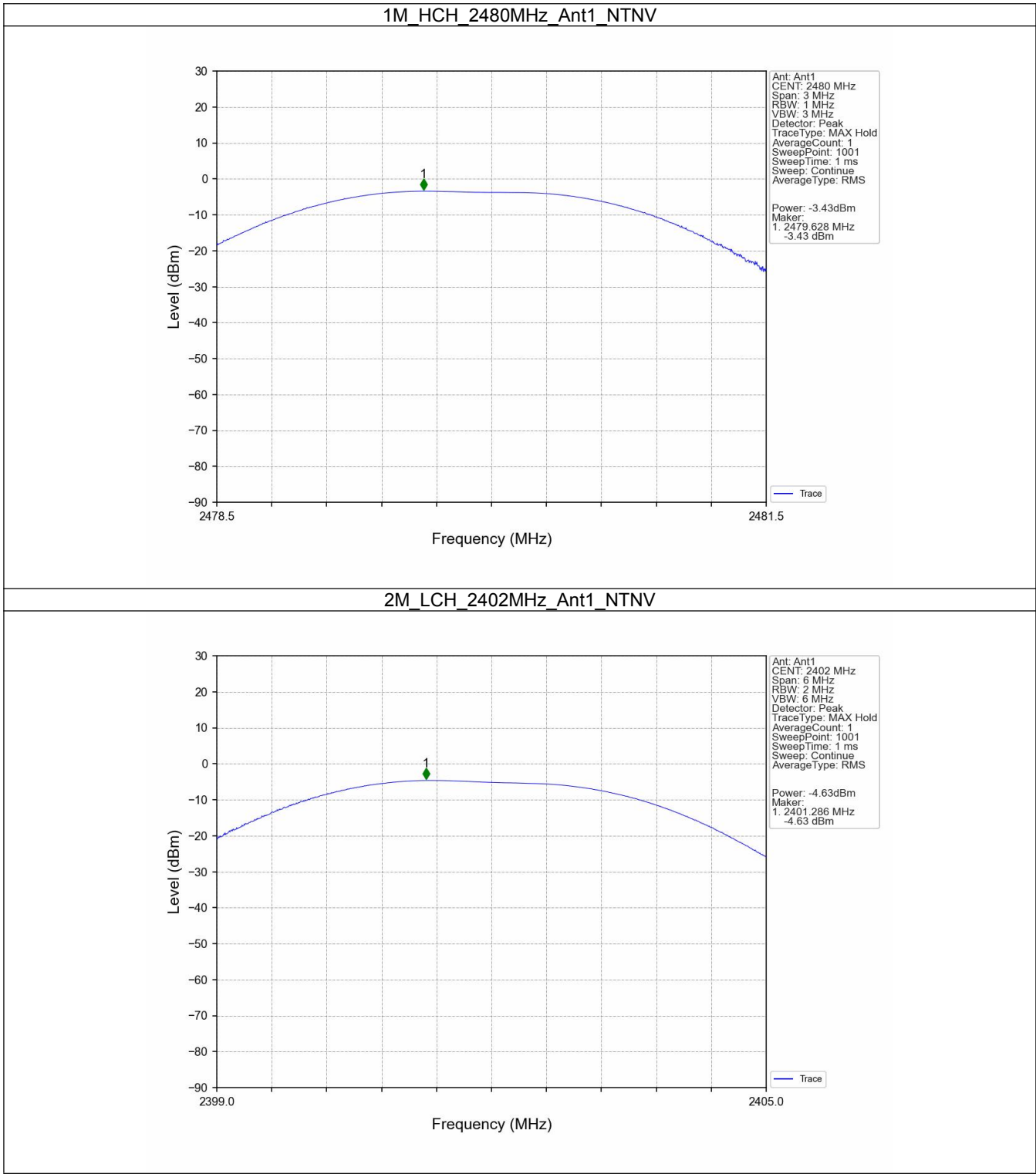
FCC ID: 2BP4K-ES

3.2 Test Graph

3.2.1 Power

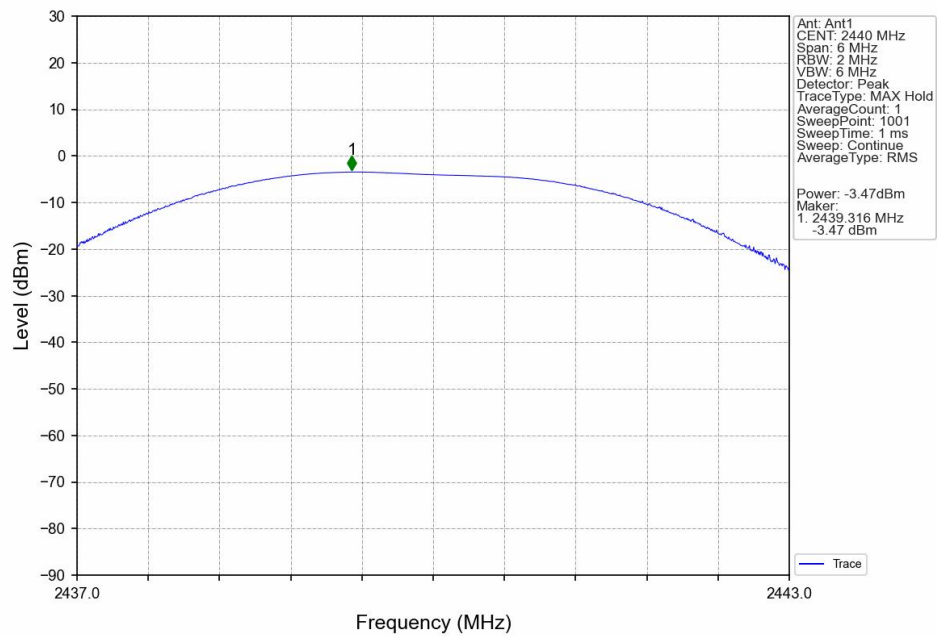


FCC ID: 2BP4K-ES

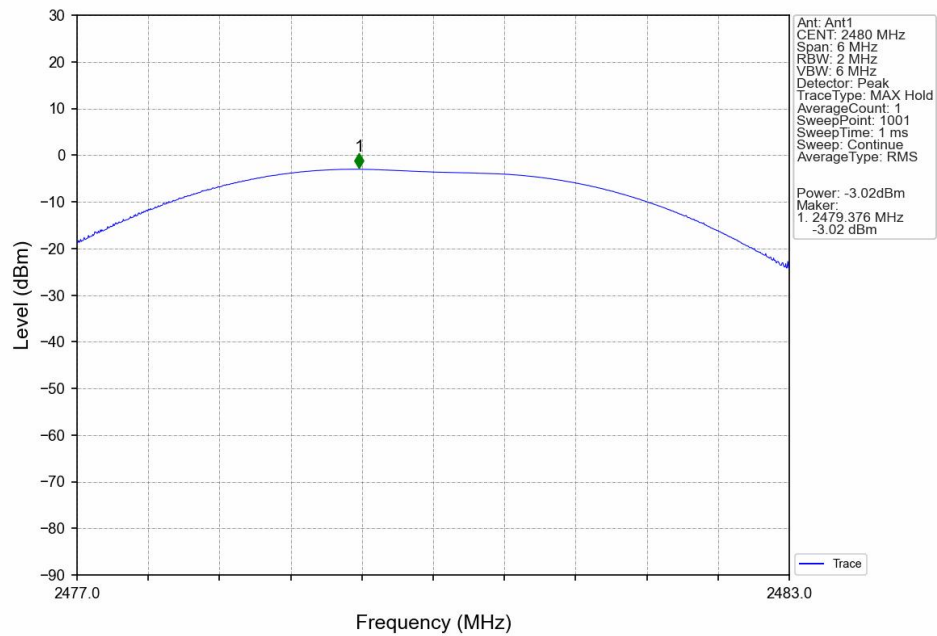


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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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4. Maximum Power Spectral Density

4.1 Test Result

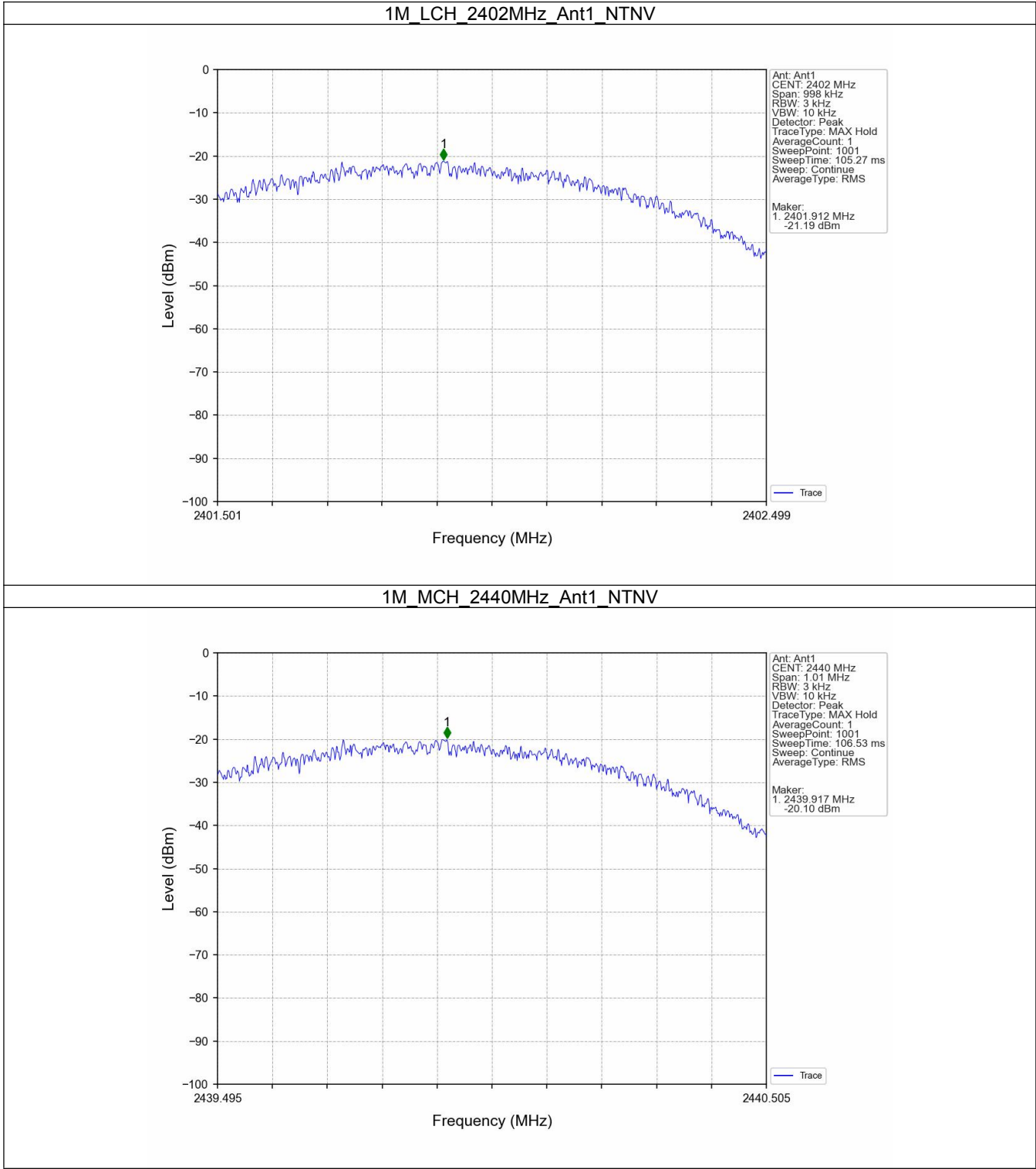
4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-21.19	<=8	Pass
		2440	-20.10	<=8	Pass
		2480	-19.56	<=8	Pass
2M	SISO	2402	-24.60	<=8	Pass
		2440	-23.54	<=8	Pass
		2480	-23.37	<=8	Pass
Note1: Antenna Gain: Ant1: -0.58dBi;					

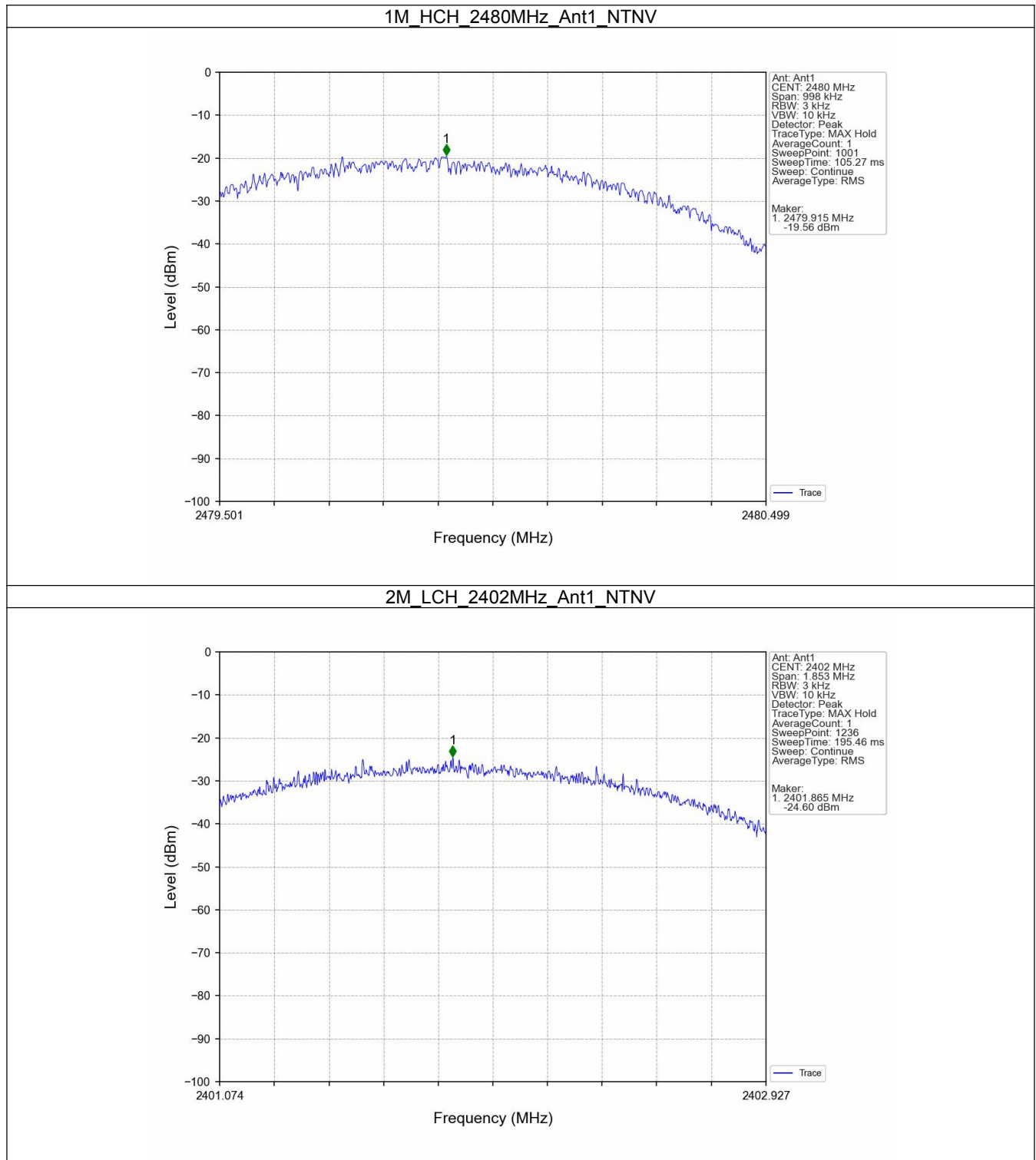
FCC ID: 2BP4K-ES

4.2 Test Graph

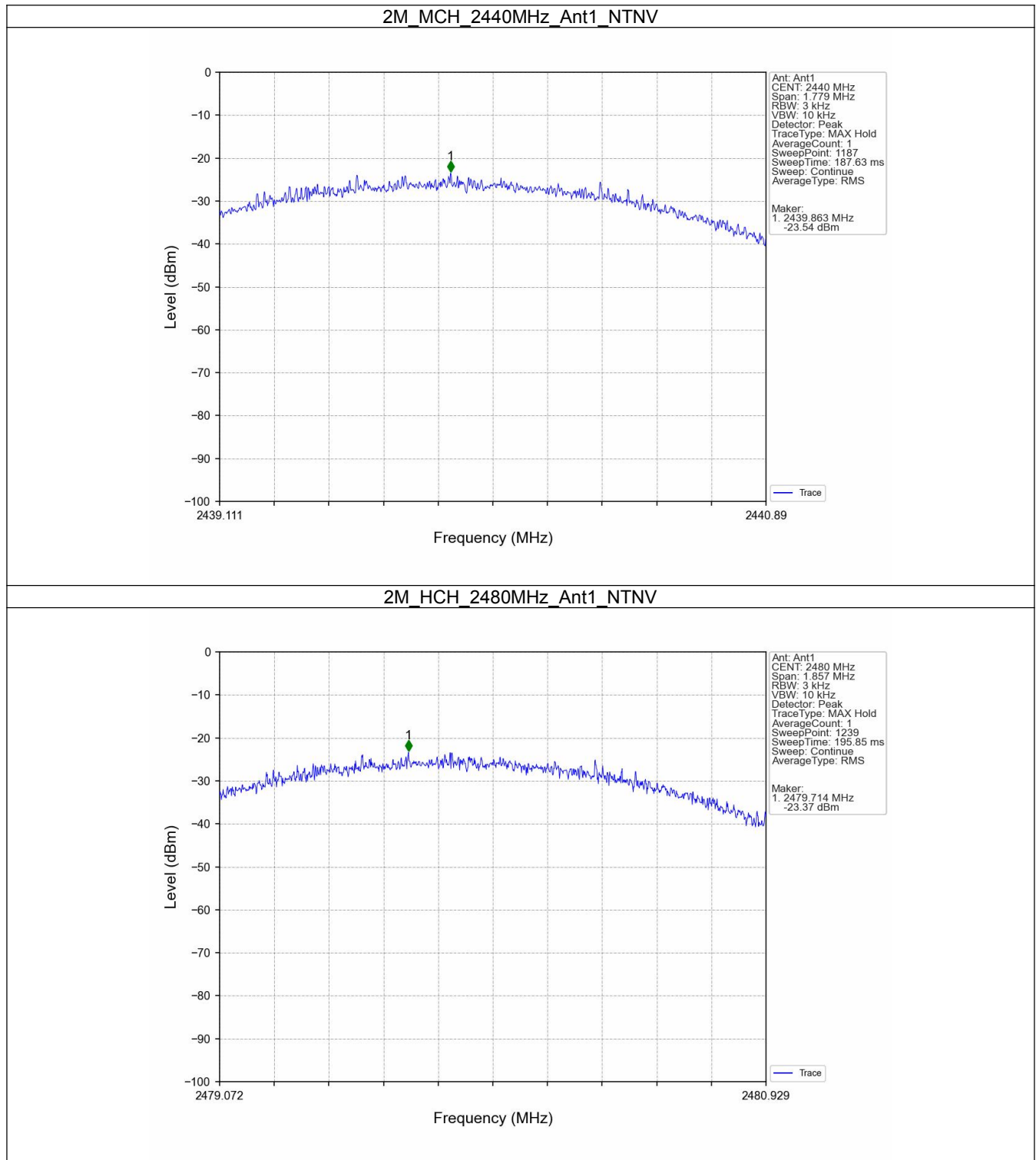
4.2.1 PSD



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FCC ID: 2BP4K-ES

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	-5.36
		2440	1	-4.25
		2480	1	-3.80
2M	SISO	2402	1	-5.94
		2440	1	-4.79
		2480	1	-4.37

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.

5.1.2 CSE

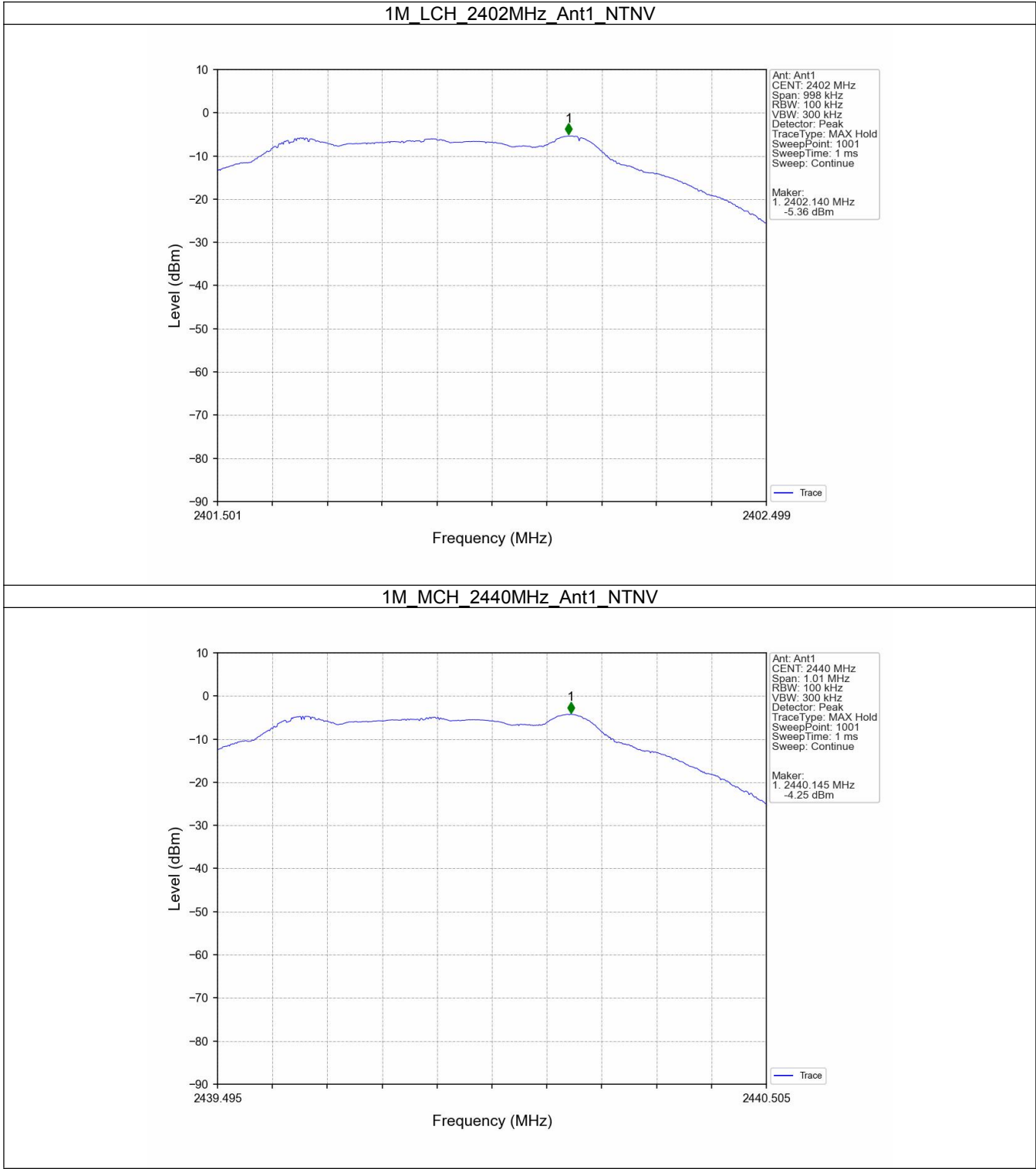
Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-3.80	-23.80	Pass
		2440	1	-3.80	-23.80	Pass
		2480	1	-3.80	-23.80	Pass
2M	SISO	2402	1	-4.37	-24.37	Pass
		2440	1	-4.37	-24.37	Pass
		2480	1	-4.37	-24.37	Pass

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.

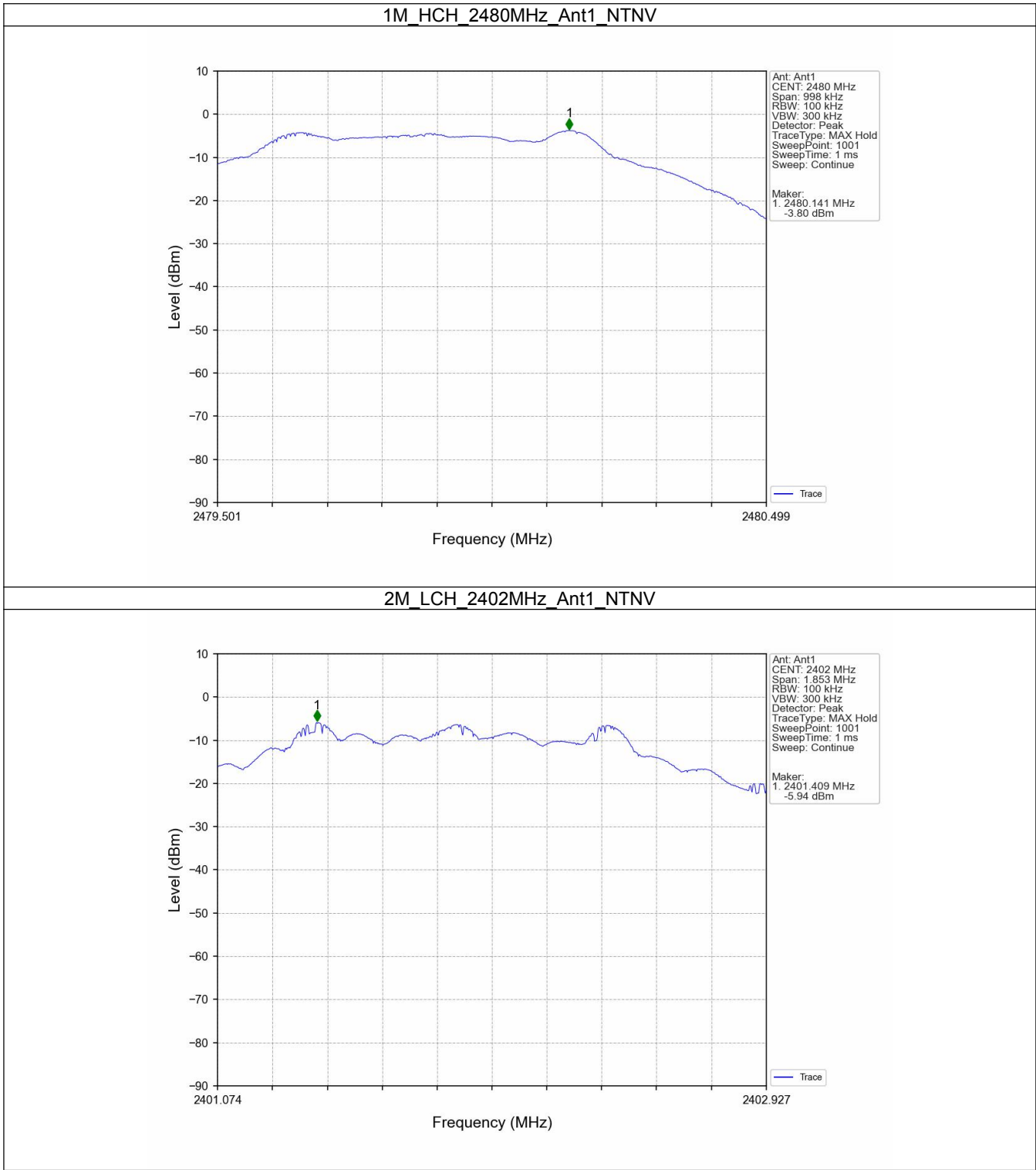
FCC ID: 2BP4K-ES

5.2 Test Graph

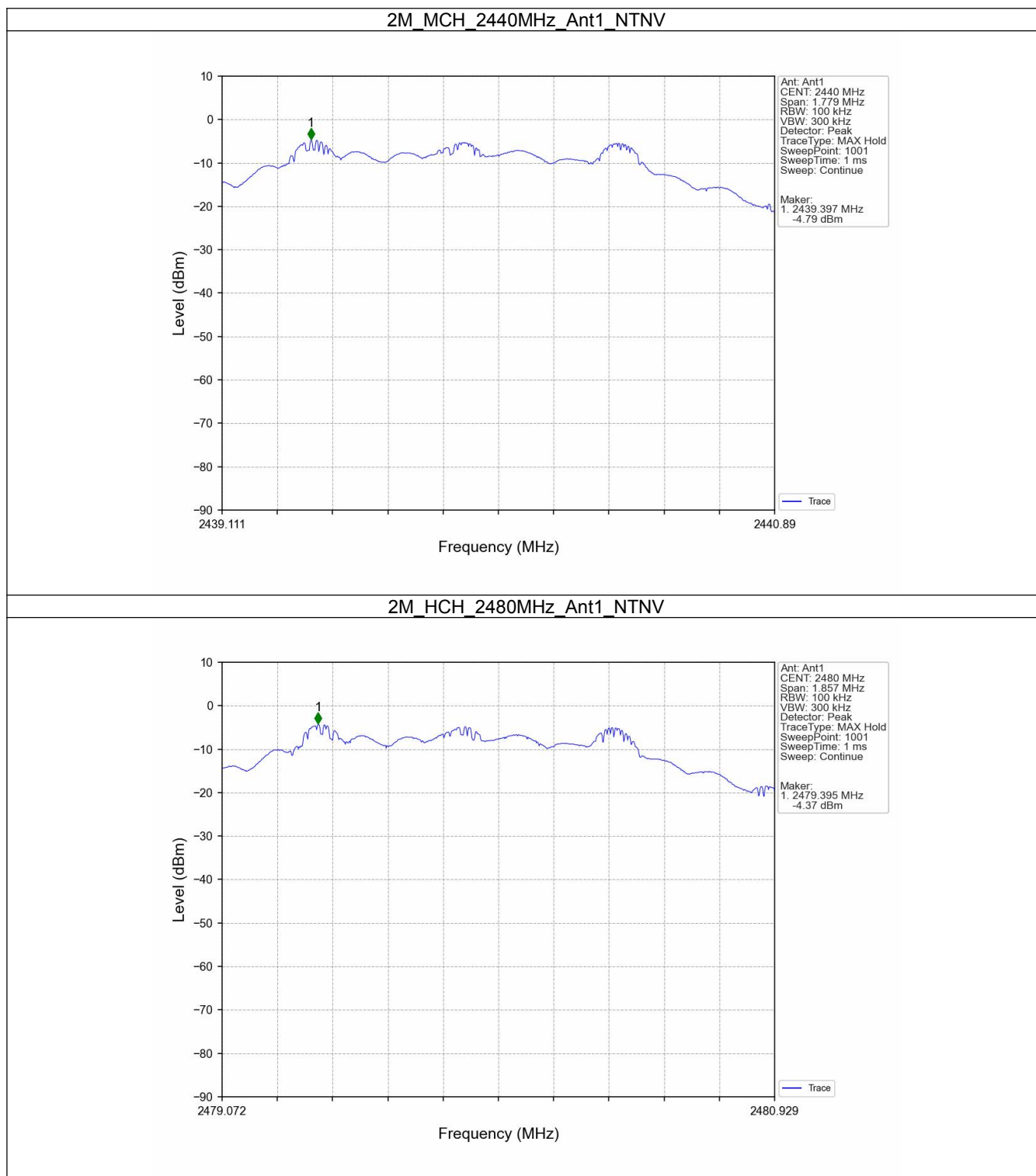
5.2.1 Ref



FCC ID: 2BP4K-ES

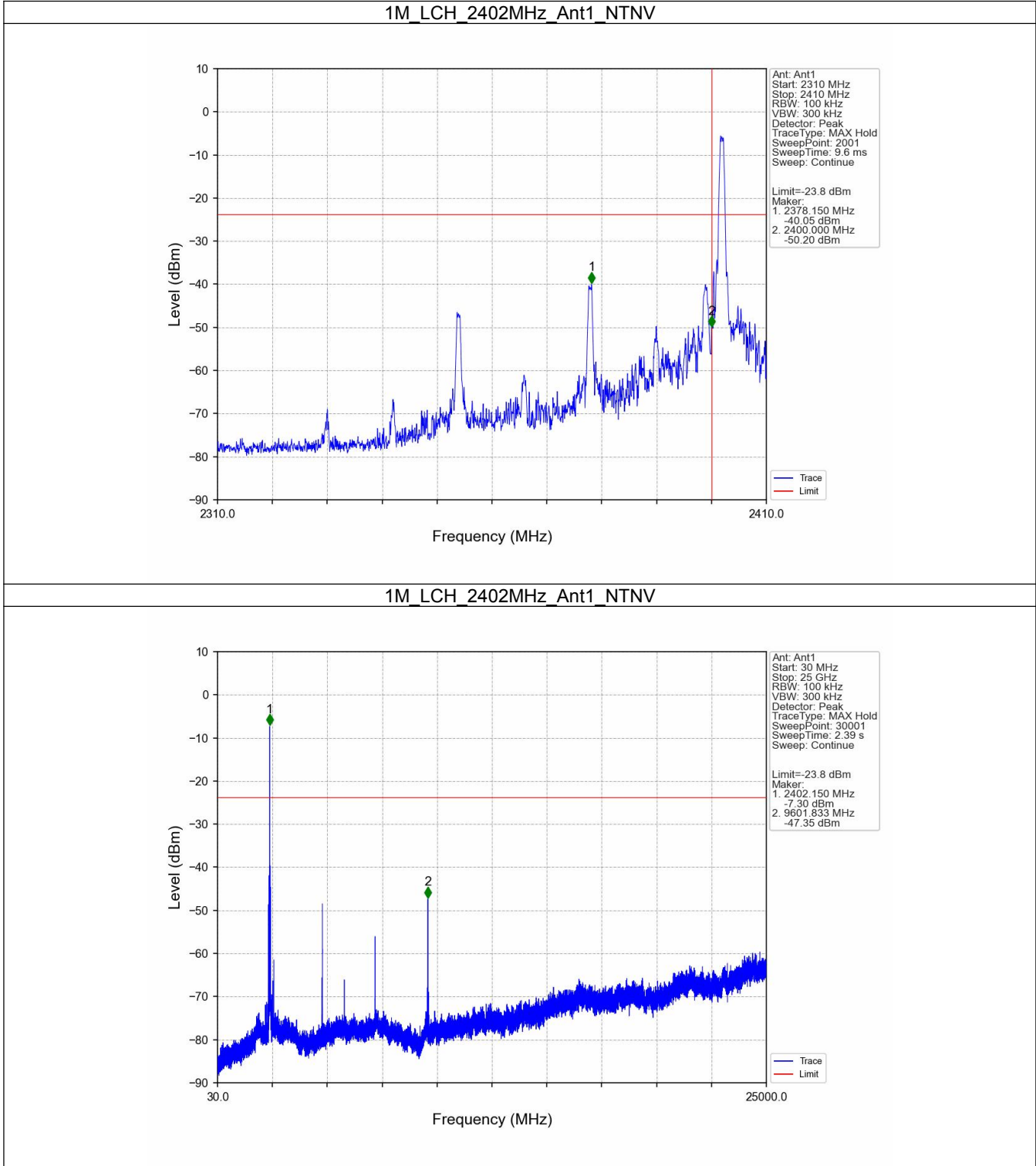


FCC ID: 2BP4K-ES

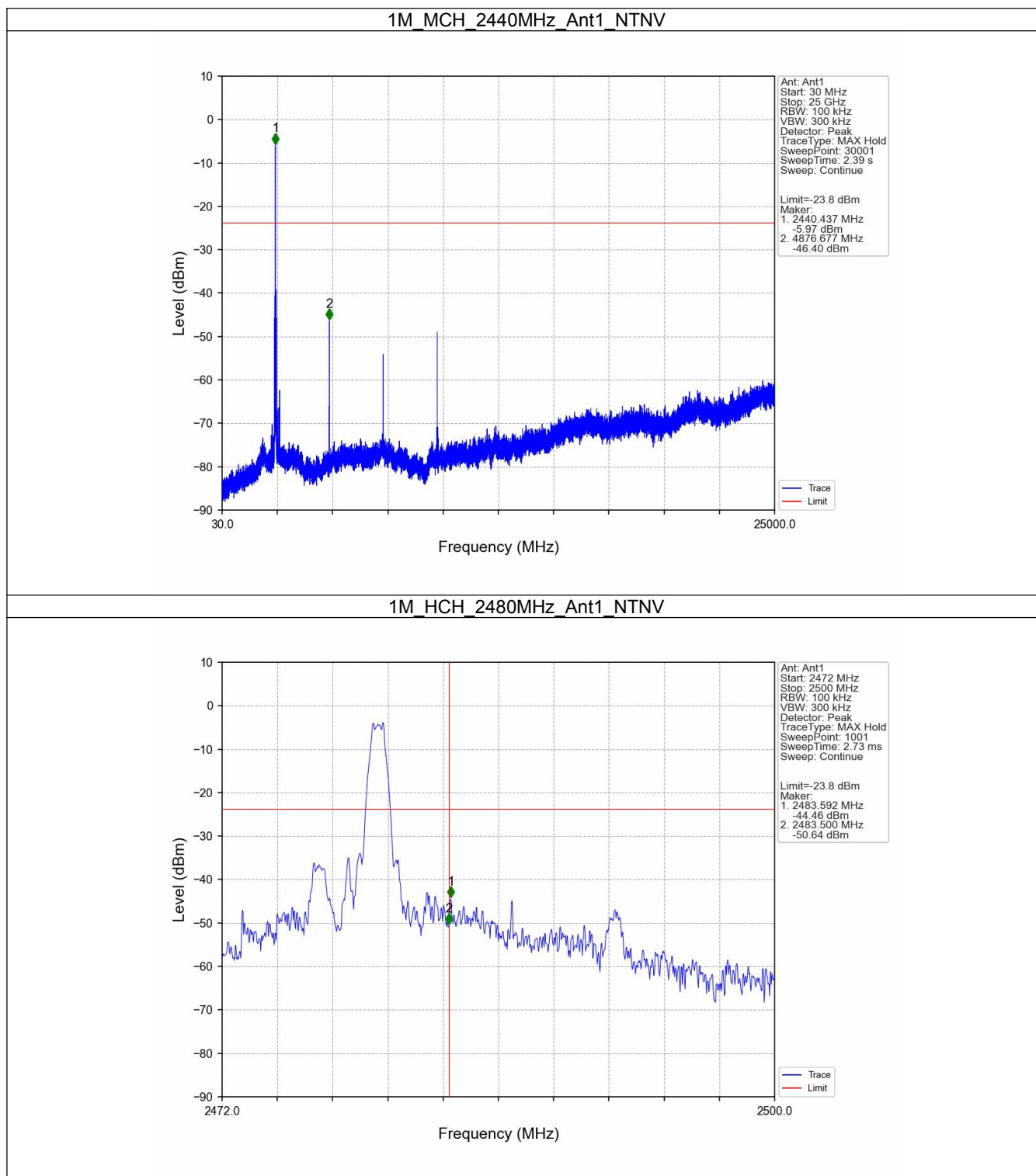


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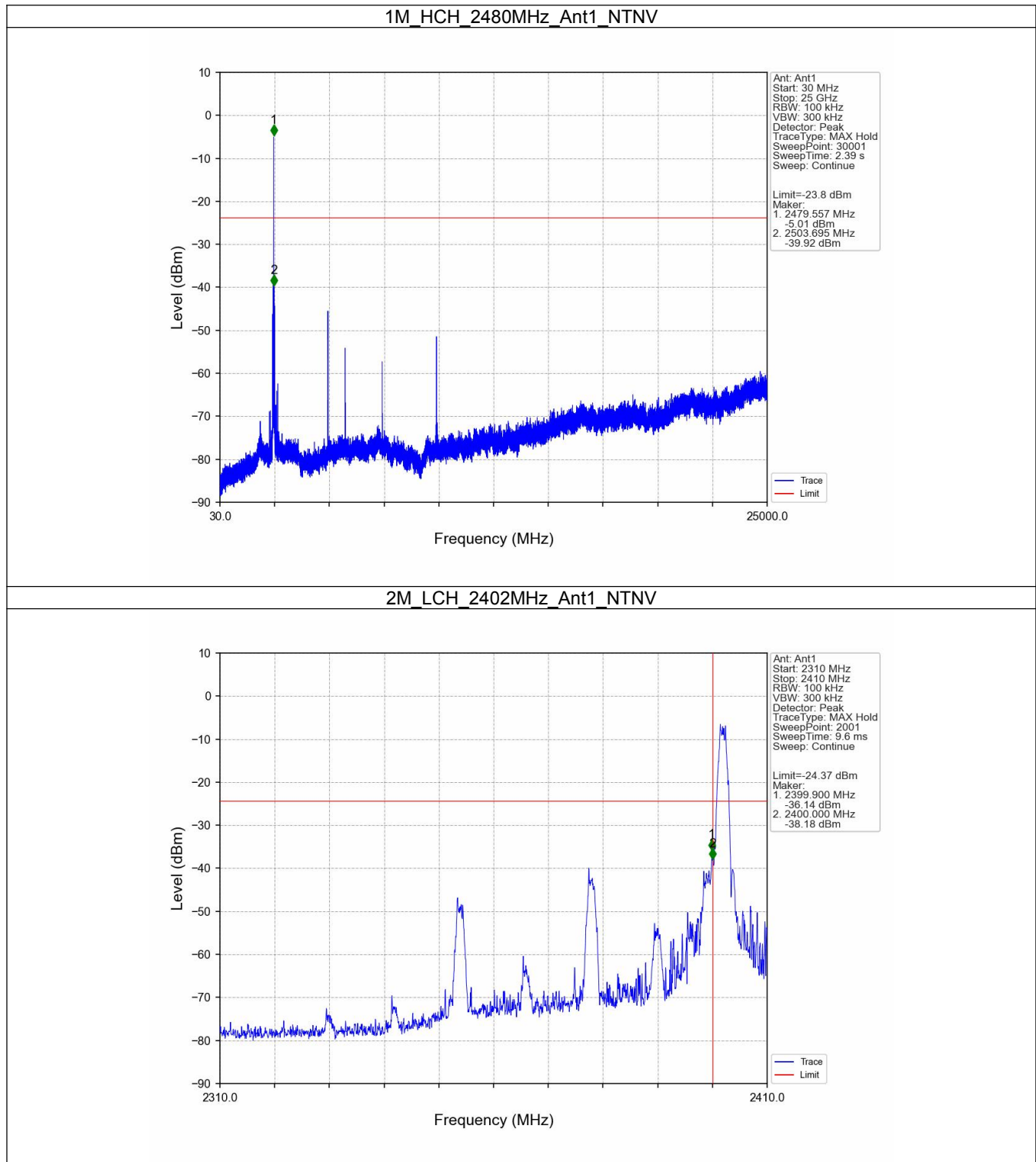
5.2.2 CSE



FCC ID: 2BP4K-ES

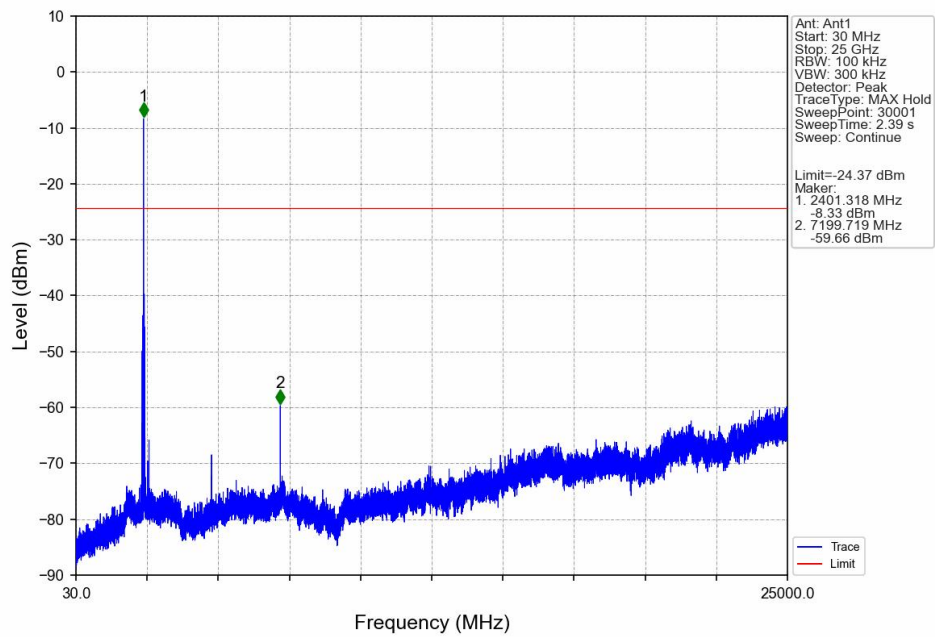


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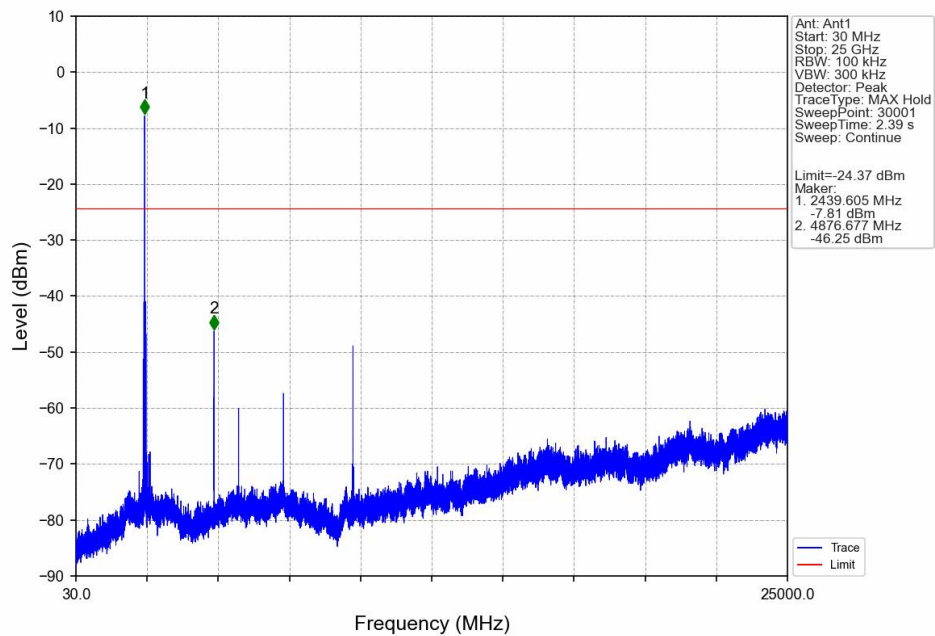


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2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



FCC ID: 2BP4K-ES

