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Annex for BT

Test Report No.: CTL2409267024-WF

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FCCID: 2BKO4-SPKRPUCK

1. Bandwidth

1.1 Test Result

1.1.1 OBW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.945	/	Pass
		2441	DH5	1	0.956	/	Pass
		2480	DH5	1	0.957	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.220	/	Pass
		2441	2DH5	1	1.228	/	Pass
		2480	2DH5	1	1.226	/	Pass
8DPSK	SISO	2402	3DH5	1	1.208	/	Pass
		2441	3DH5	1	1.206	/	Pass
		2480	3DH5	1	1.203	/	Pass

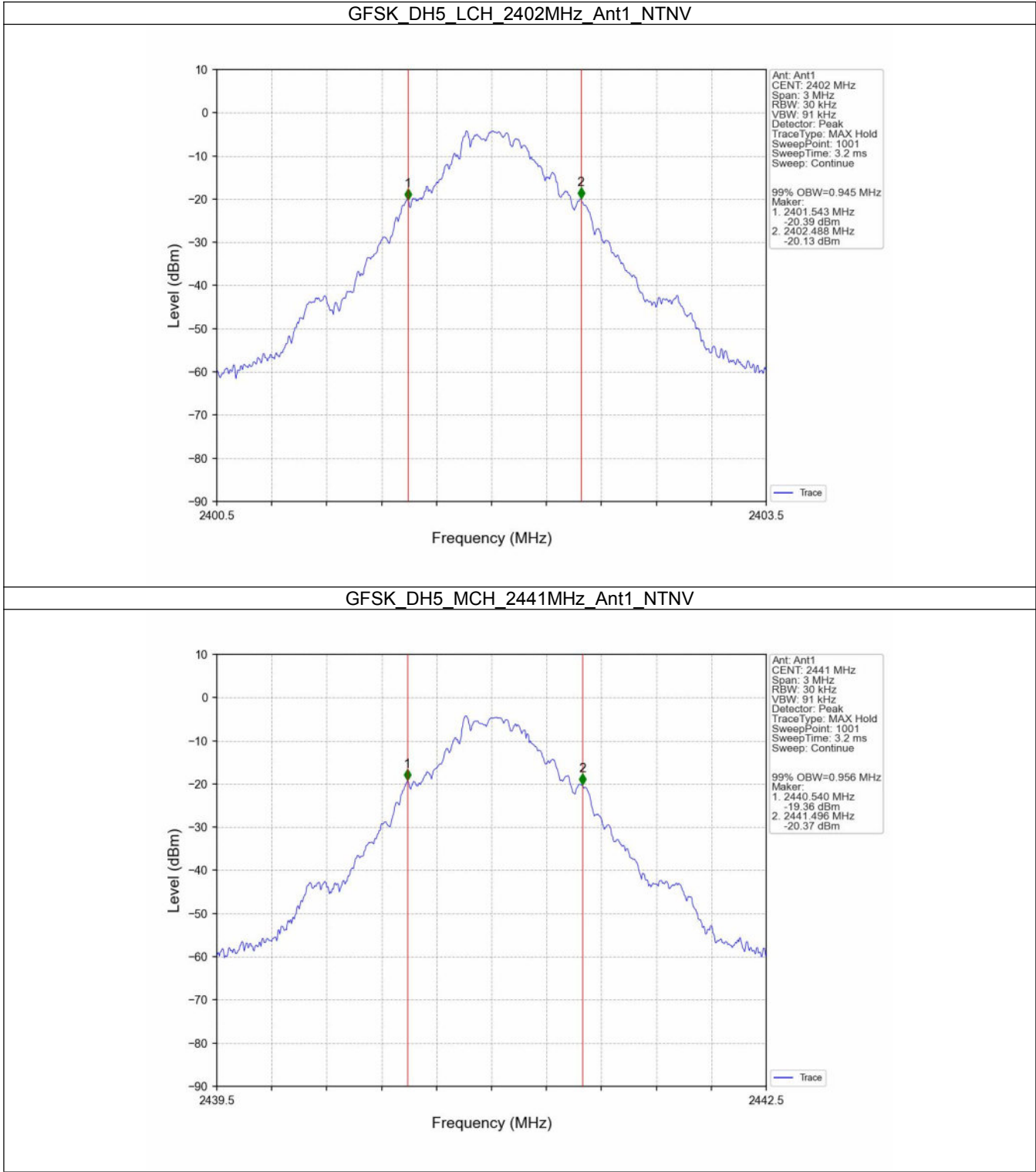
1.1.2 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	1.039	/	Pass
		2441	DH5	1	1.051	/	Pass
		2480	DH5	1	1.067	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.338	/	Pass
		2441	2DH5	1	1.341	/	Pass
		2480	2DH5	1	1.341	/	Pass
8DPSK	SISO	2402	3DH5	1	1.304	/	Pass
		2441	3DH5	1	1.304	/	Pass
		2480	3DH5	1	1.301	/	Pass

FCCID: 2BKO4-SPKRPUCK

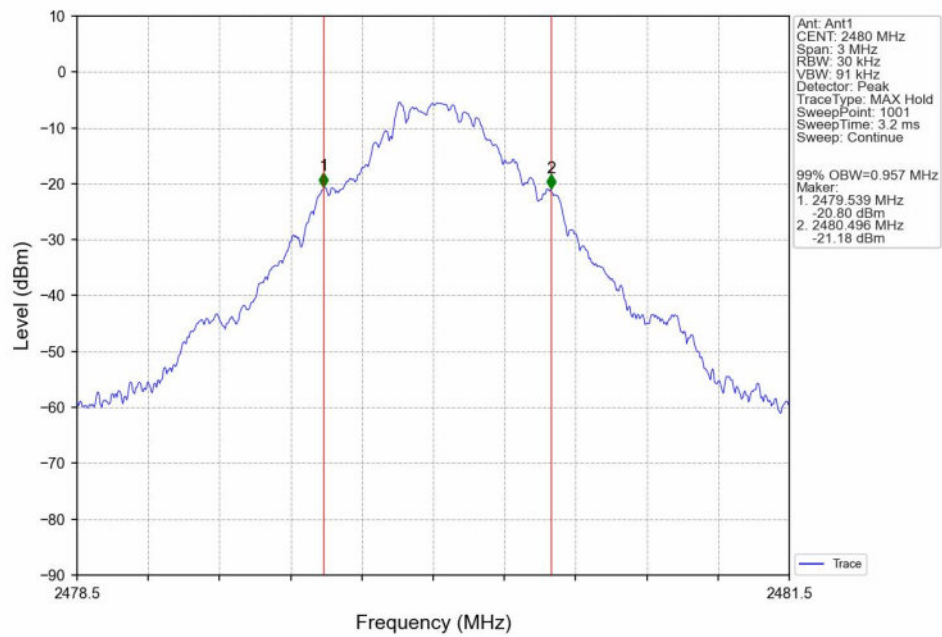
1.2 Test Graph

1.2.1 OBW

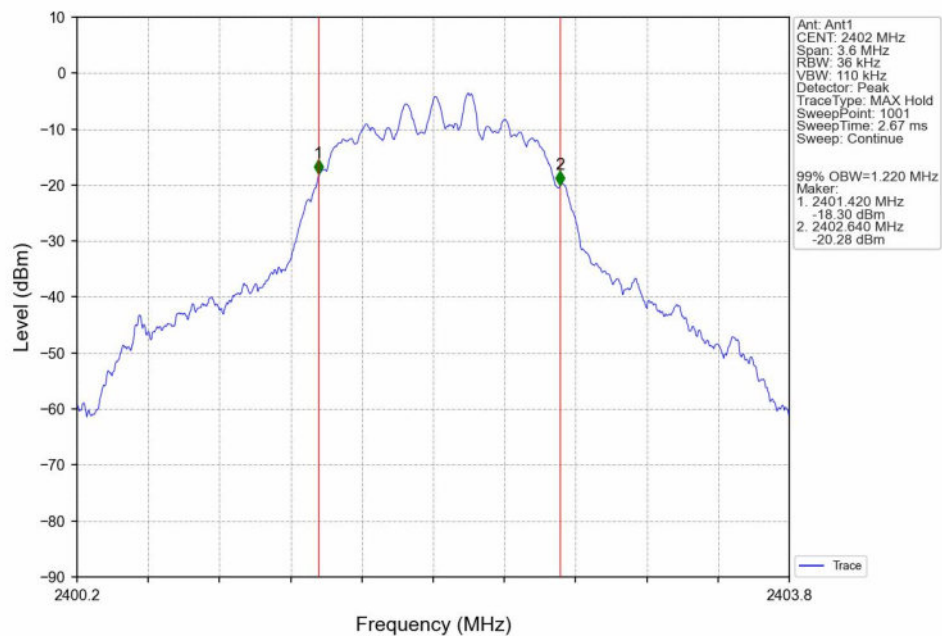


FCCID: 2BKO4-SPKRPUCK

GFSK_DH5_HCH_2480MHz_Ant1_NTNV

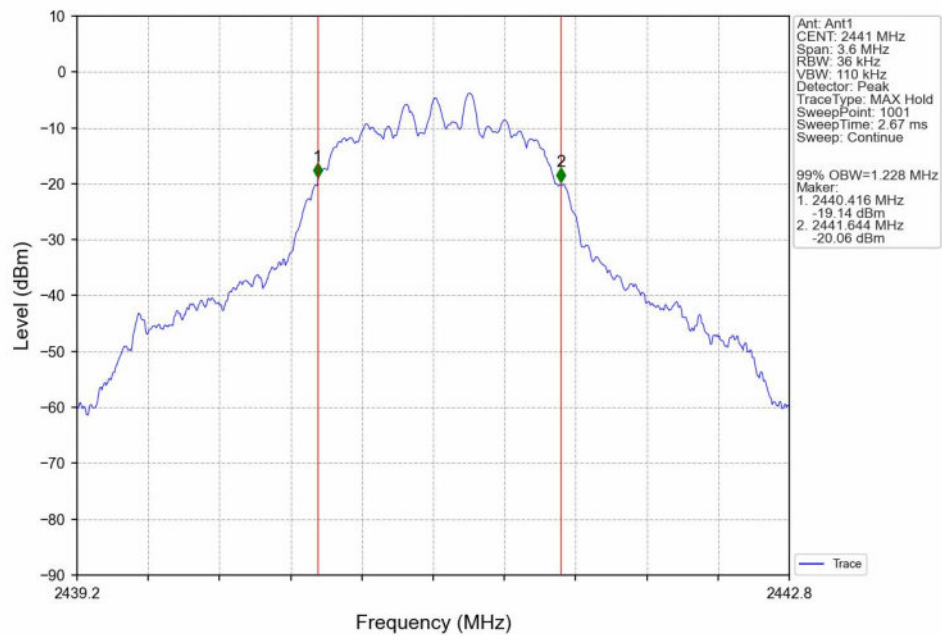


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

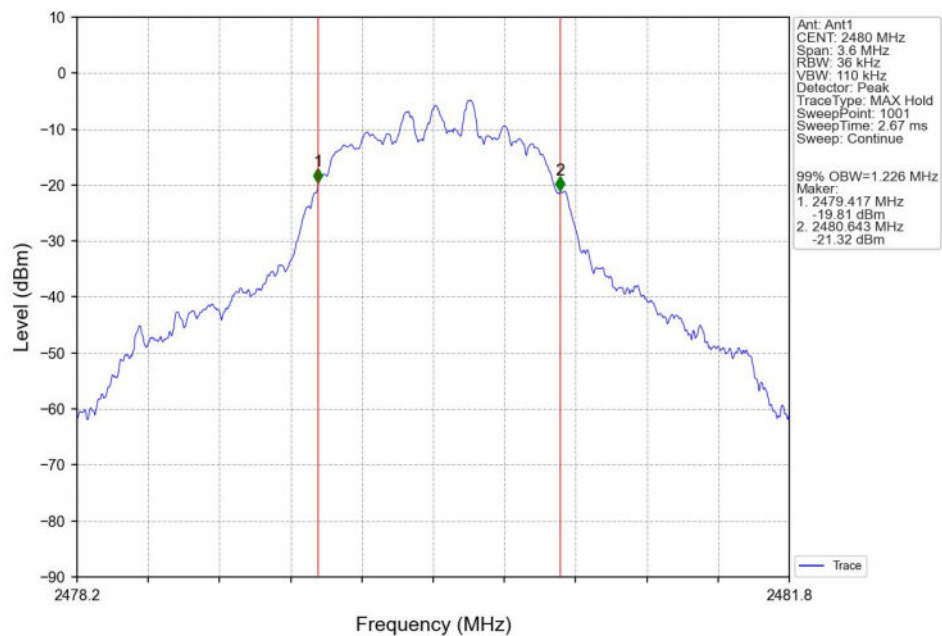


FCCID: 2BKO4-SPKRPUCK

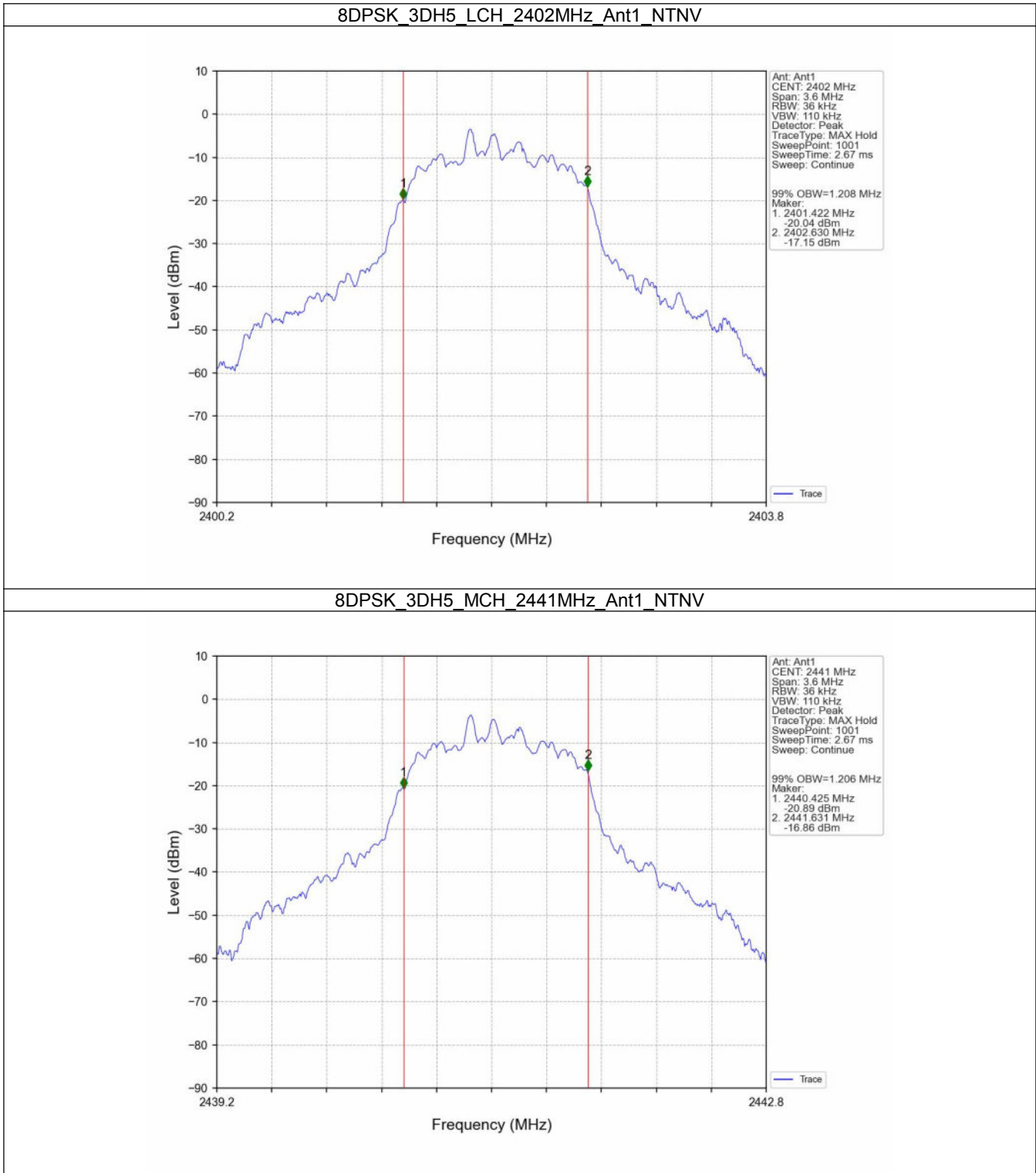
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



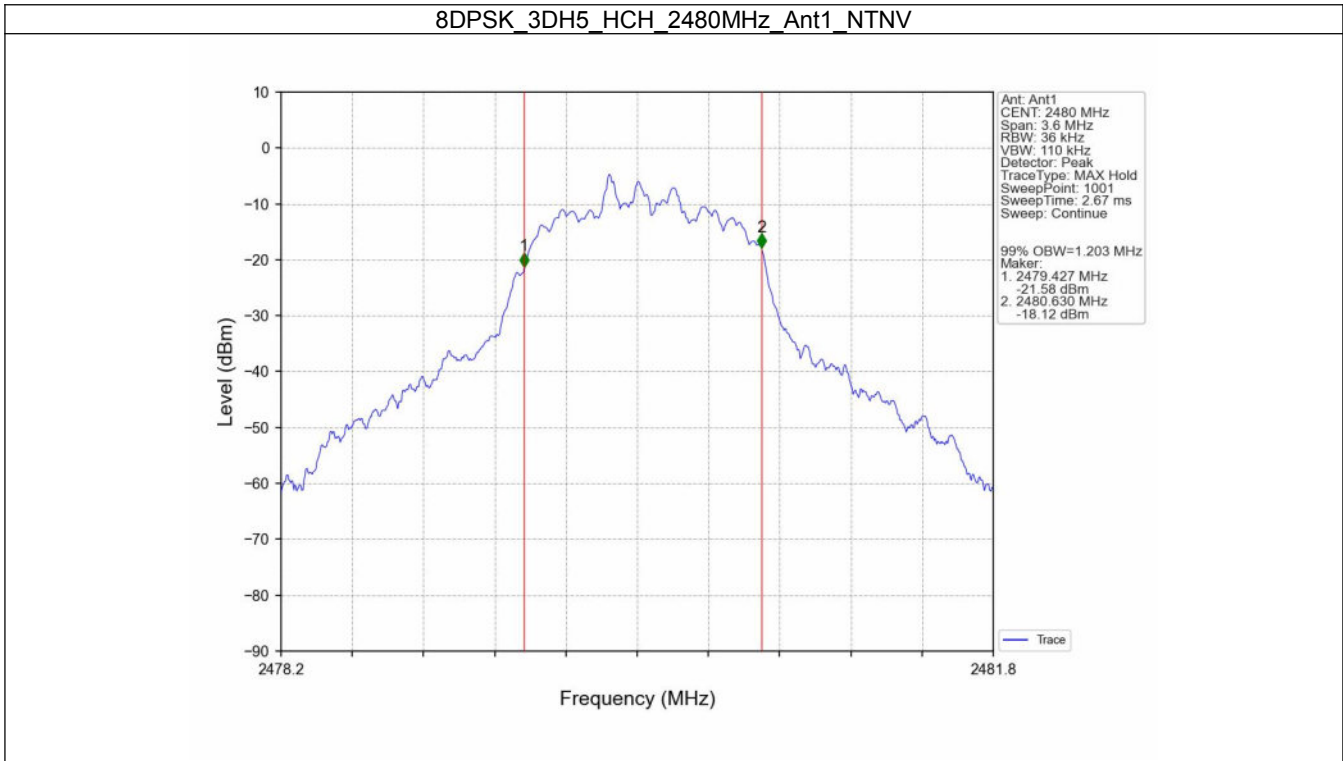
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



FCCID: 2BKO4-SPKRPUCK

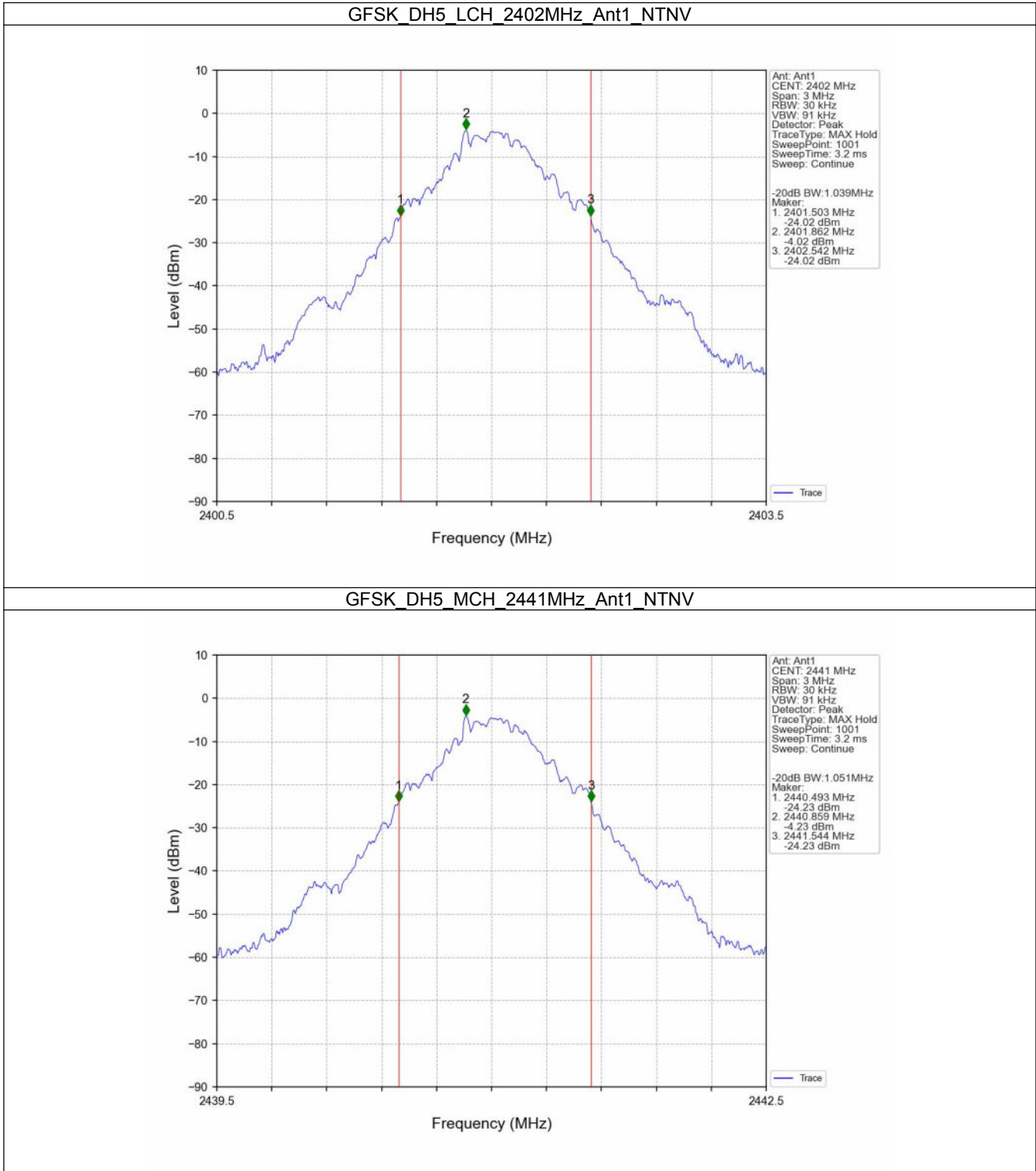


FCCID: 2BKO4-SPKRPUCK



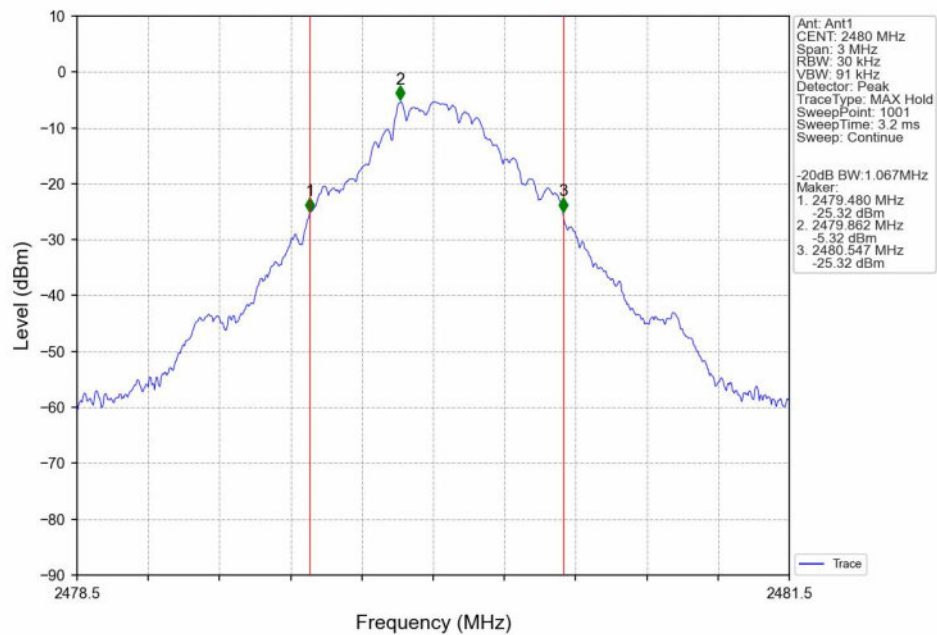
FCCID: 2BKO4-SPKRPUCK

1.2.2 20dB BW

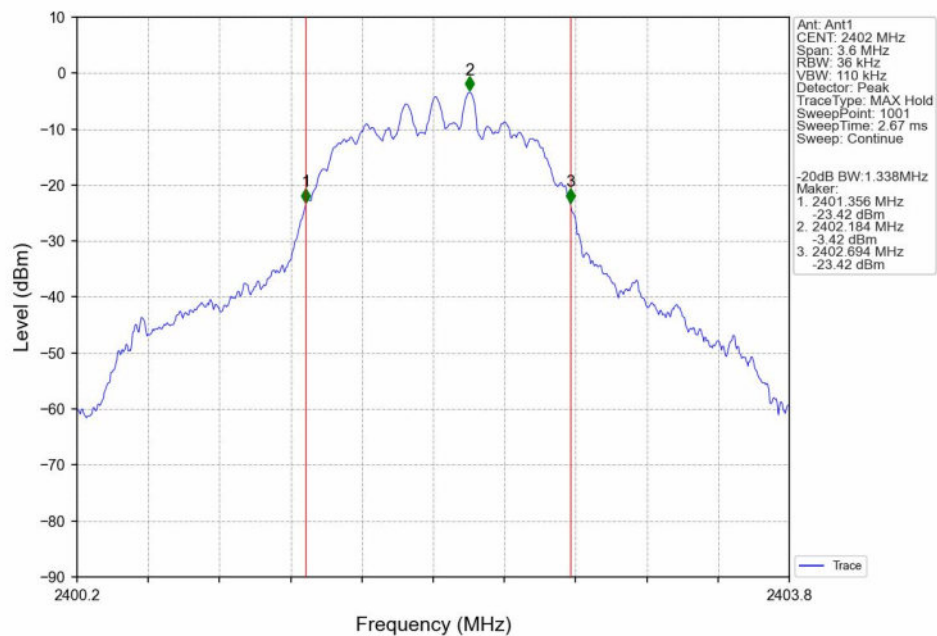


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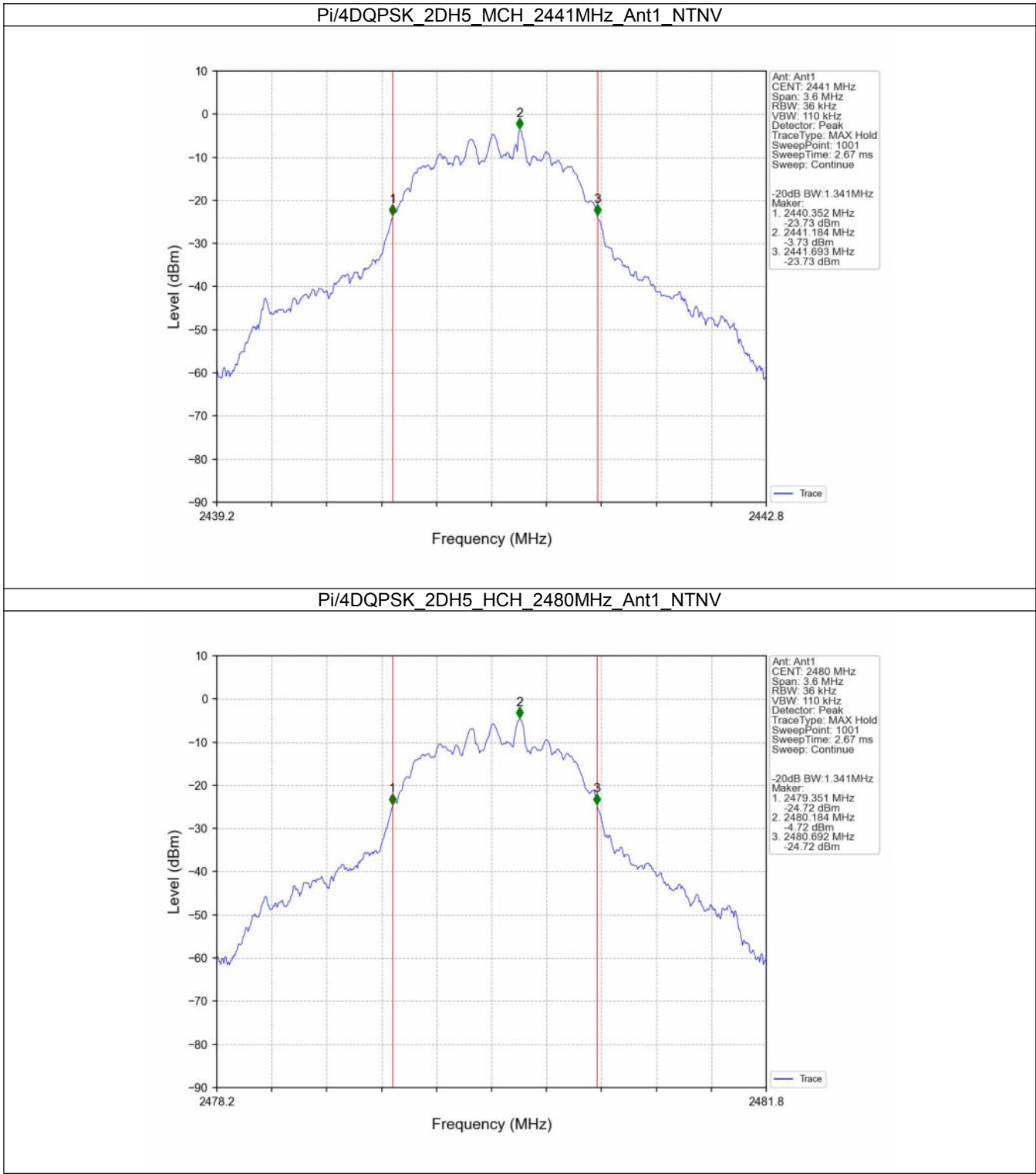
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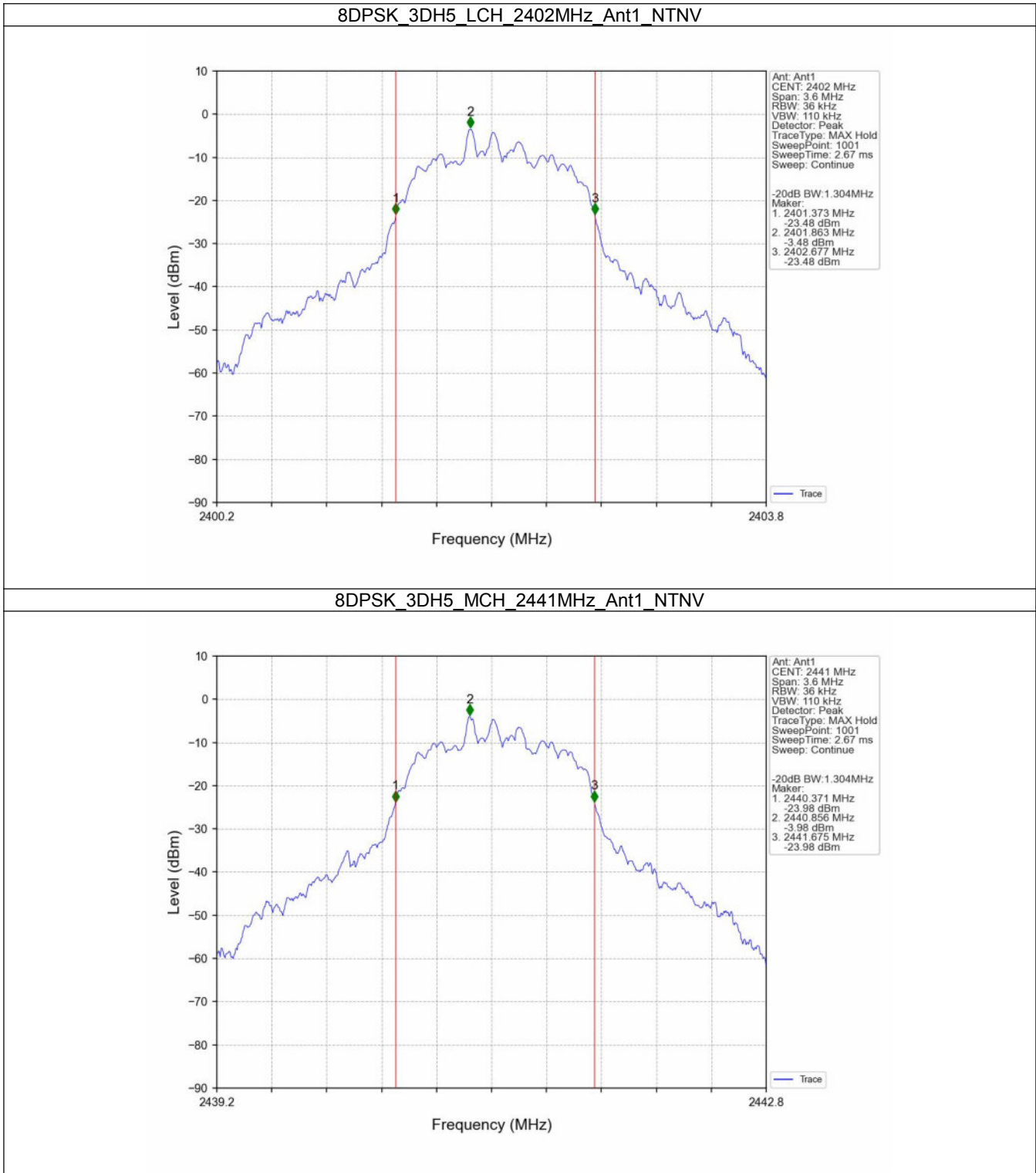
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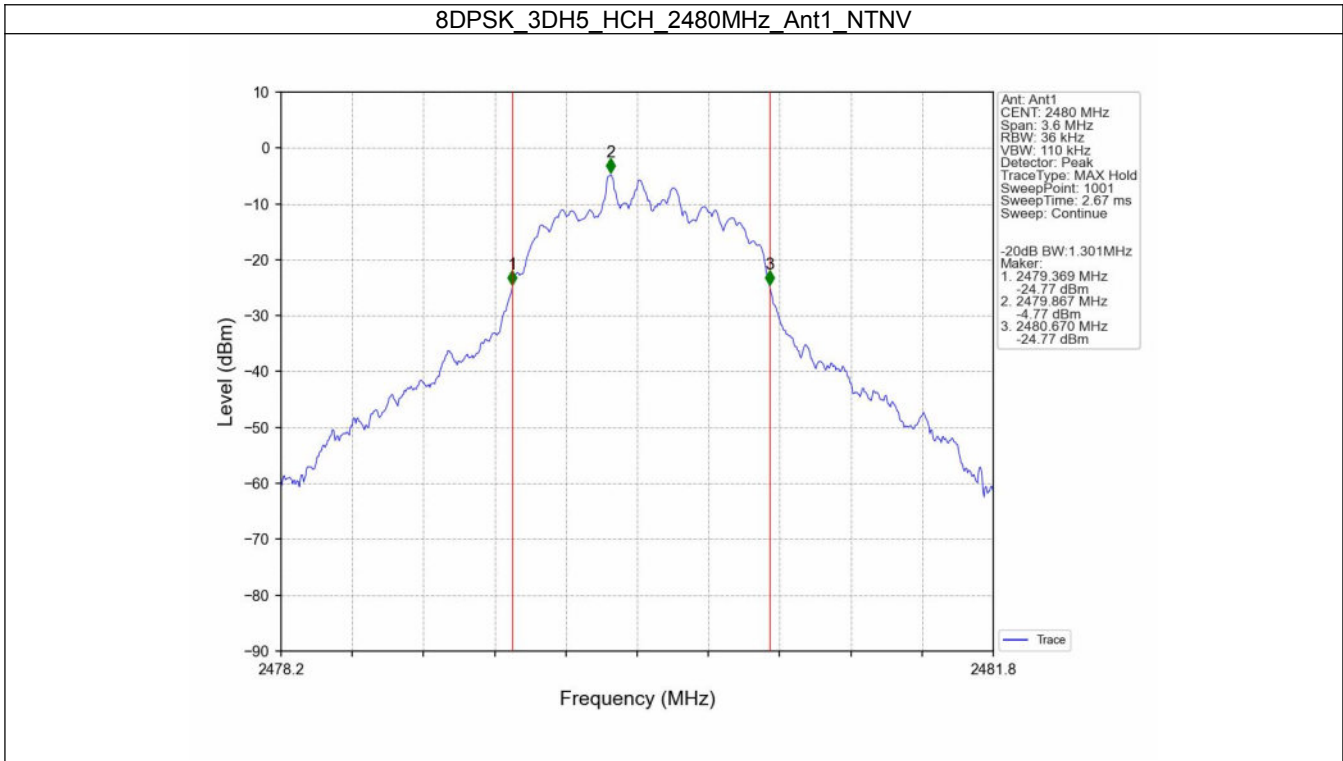
FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUC

2. Maximum Conducted Output Power

2.1 Test Result

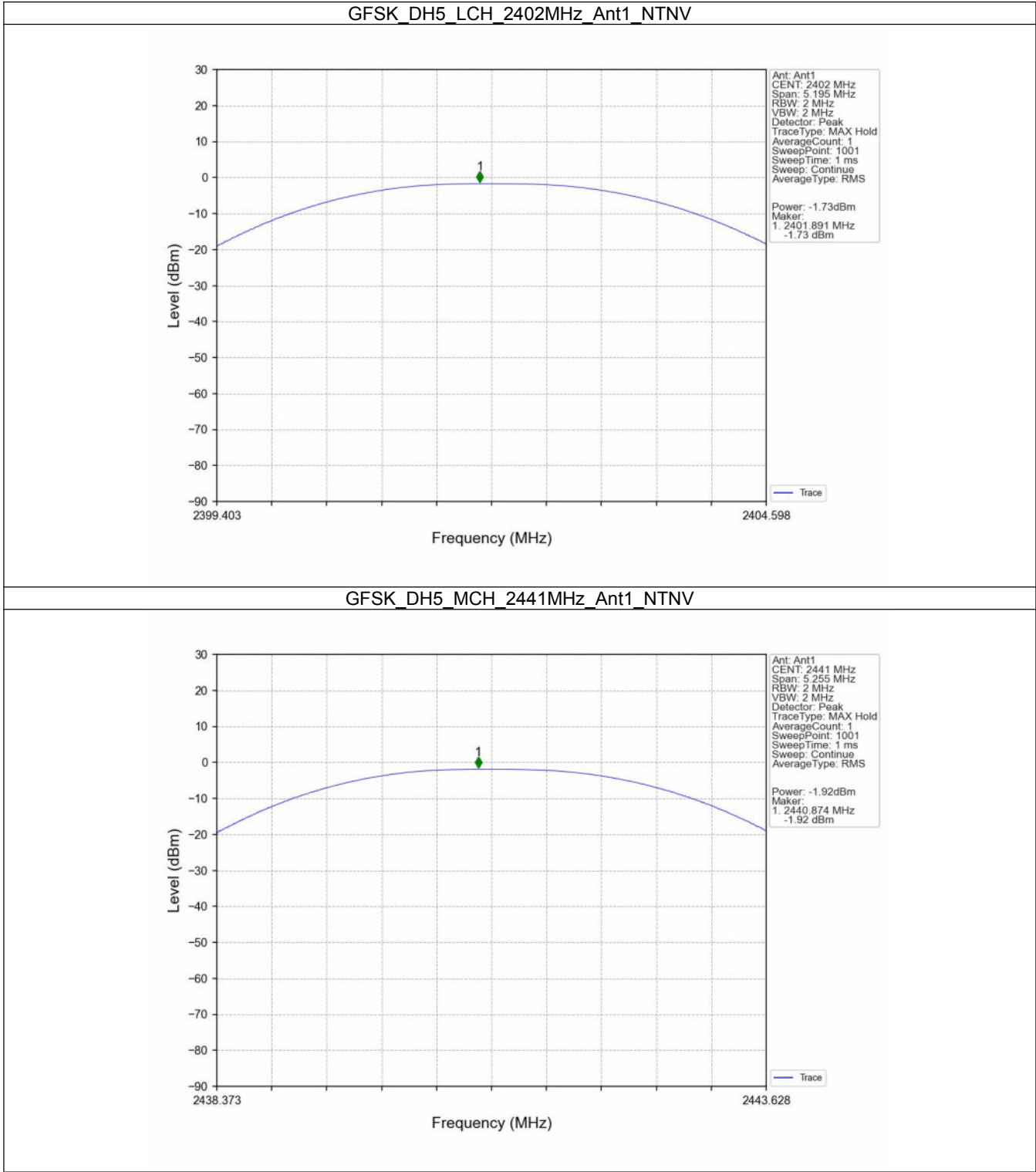
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.73	<=20.97	Pass
		2441	DH5	-1.92	<=20.97	Pass
		2480	DH5	-2.88	<=20.97	Pass
Pi/4DQPSK	SISO	2402	2DH5	-0.89	<=20.97	Pass
		2441	2DH5	-1.06	<=20.97	Pass
		2480	2DH5	-1.96	<=20.97	Pass
8DPSK	SISO	2402	3DH5	-0.46	<=20.97	Pass
		2441	3DH5	-0.67	<=20.97	Pass
		2480	3DH5	-1.60	<=20.97	Pass
Note1: Antenna Gain: Ant1: -0.58dBi;						

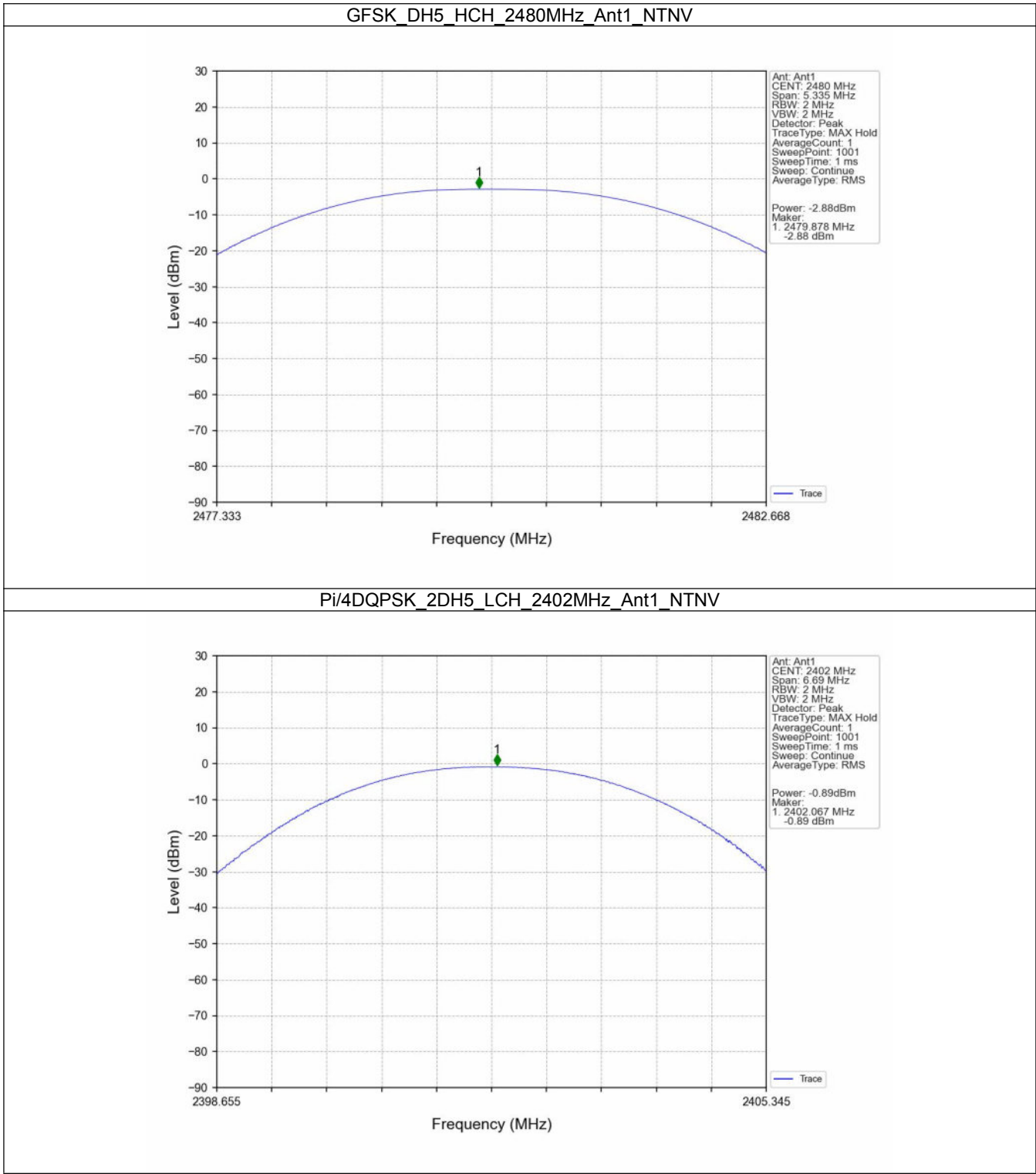
FCCID: 2BKO4-SPKRPUCK

2.2 Test Graph

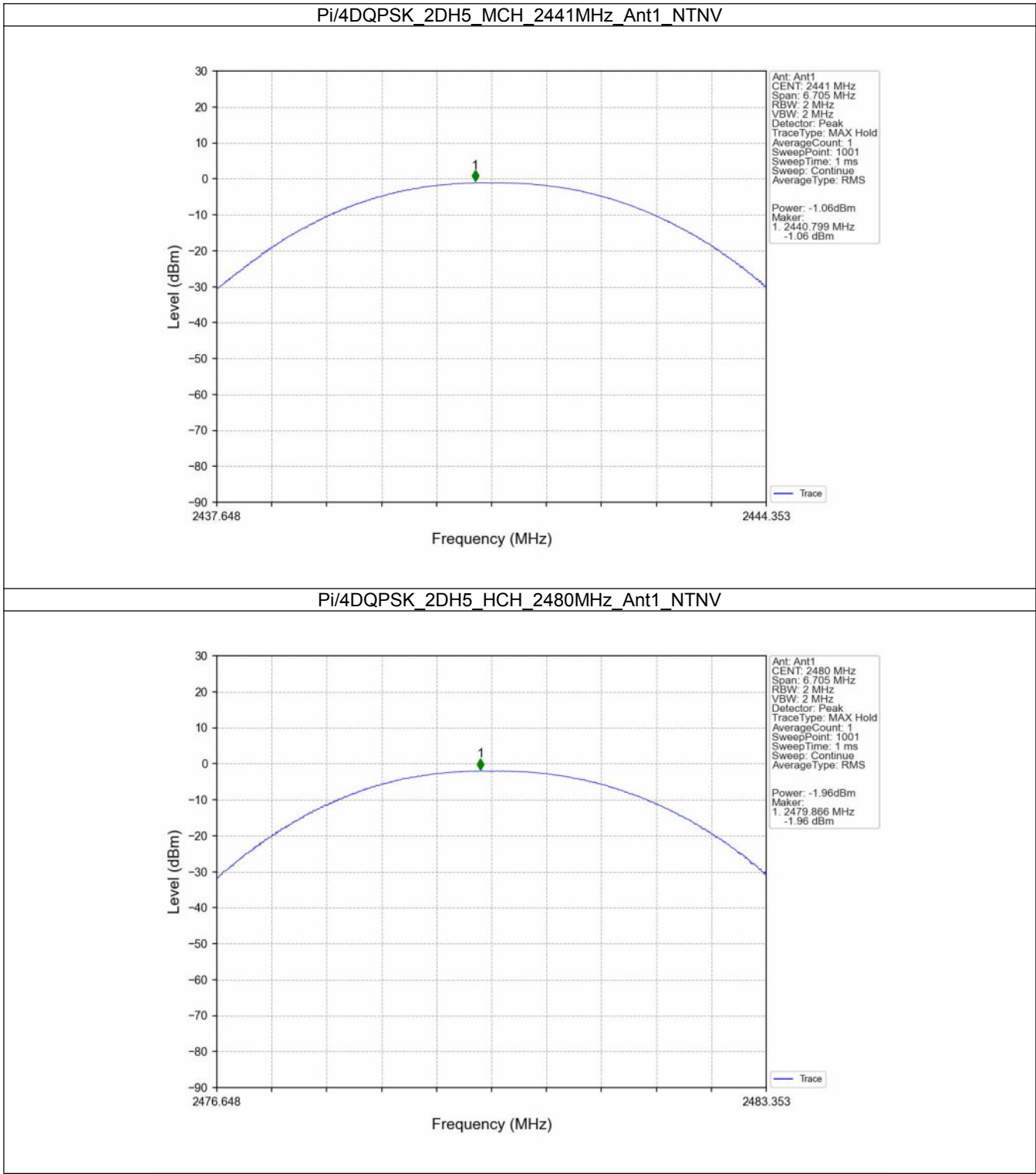
2.2.1 Power



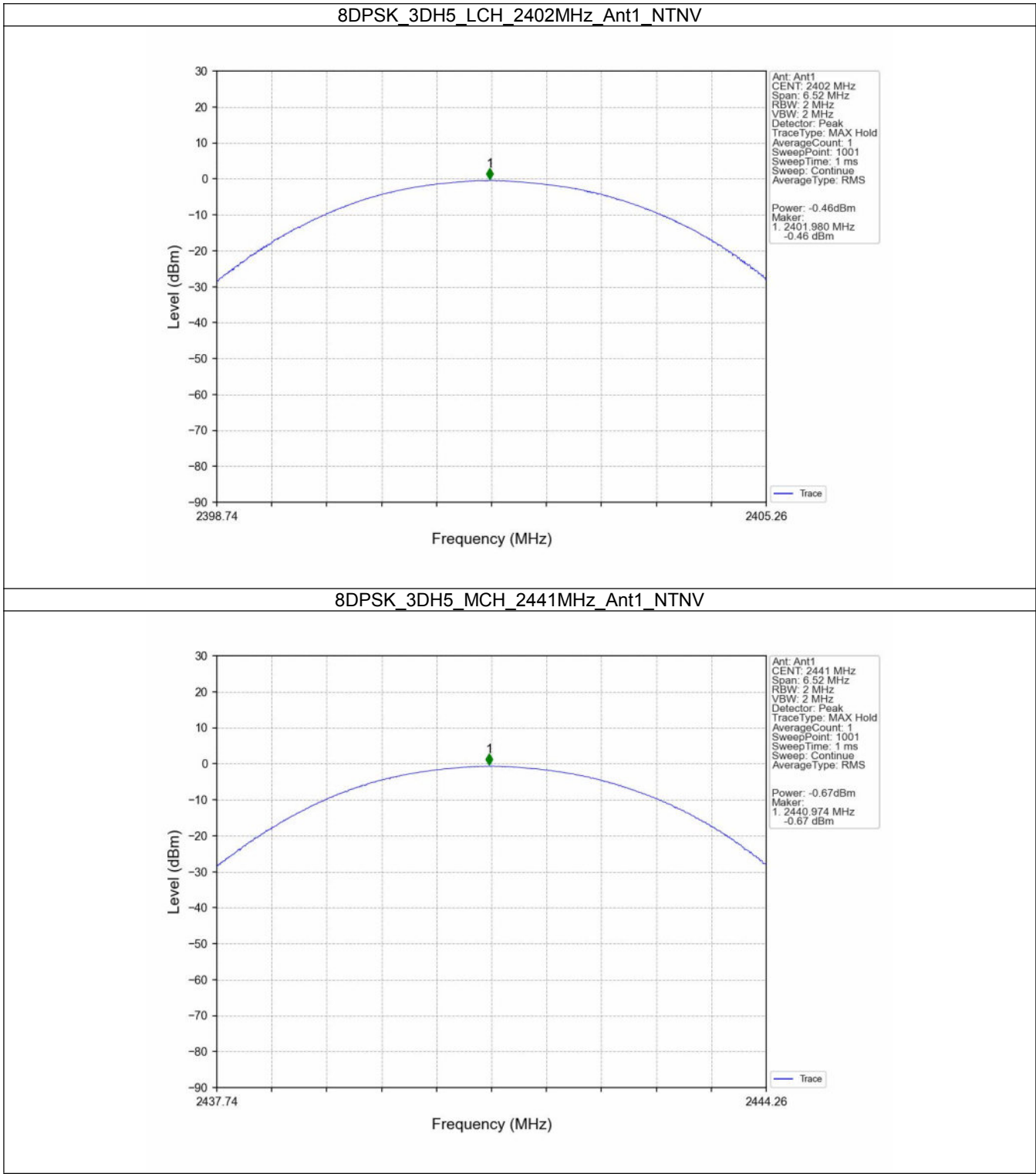
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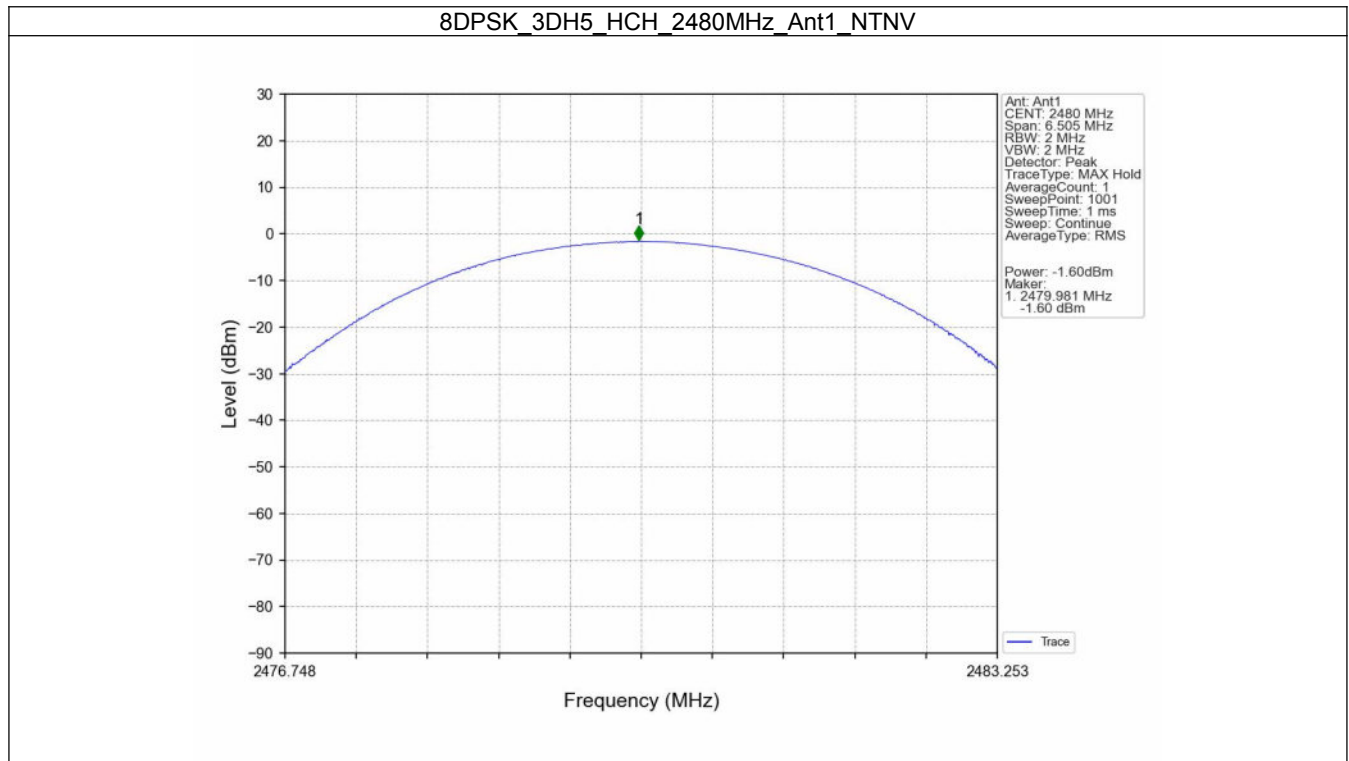
FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK

3. Carrier Frequency Separation

3.1 Test Result

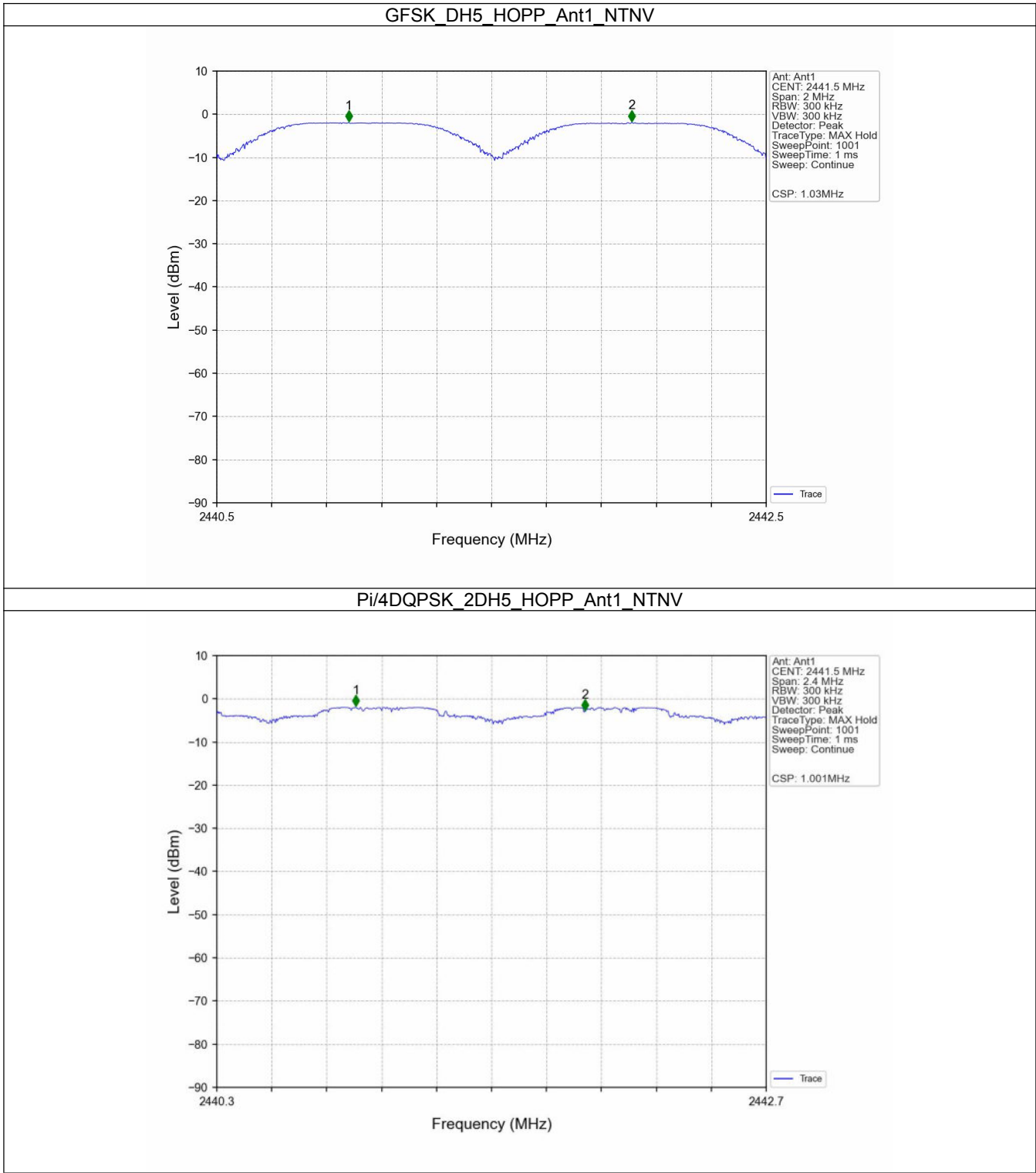
3.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.030	1.067	≥ 0.711	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.341	≥ 0.894	Pass
8DPSK	SISO	HOPP	3DH5	1.006	1.304	≥ 0.869	Pass

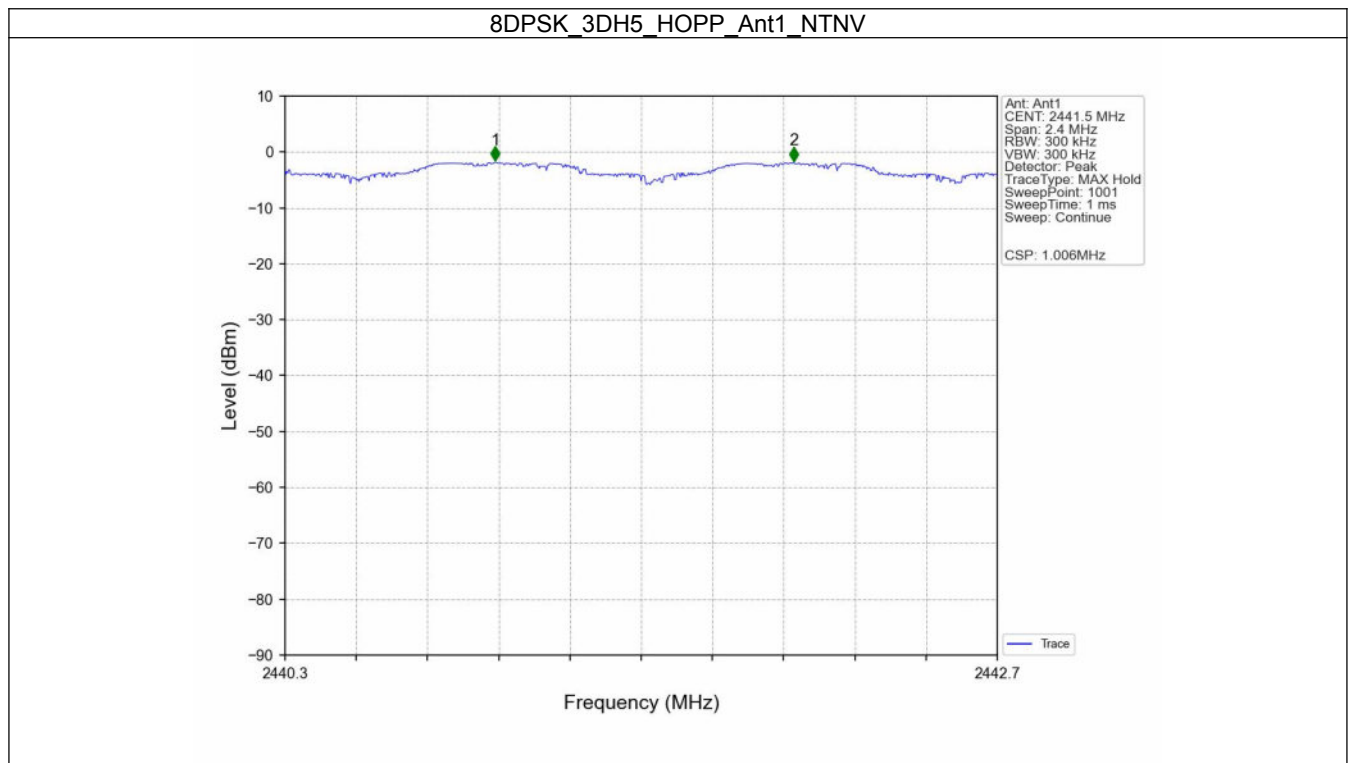
FCCID: 2BKO4-SPKRPUCK

3.2 Test Graph

3.2.1 Ant1



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK

4. Number of Hopping Frequencies

4.1 Test Result

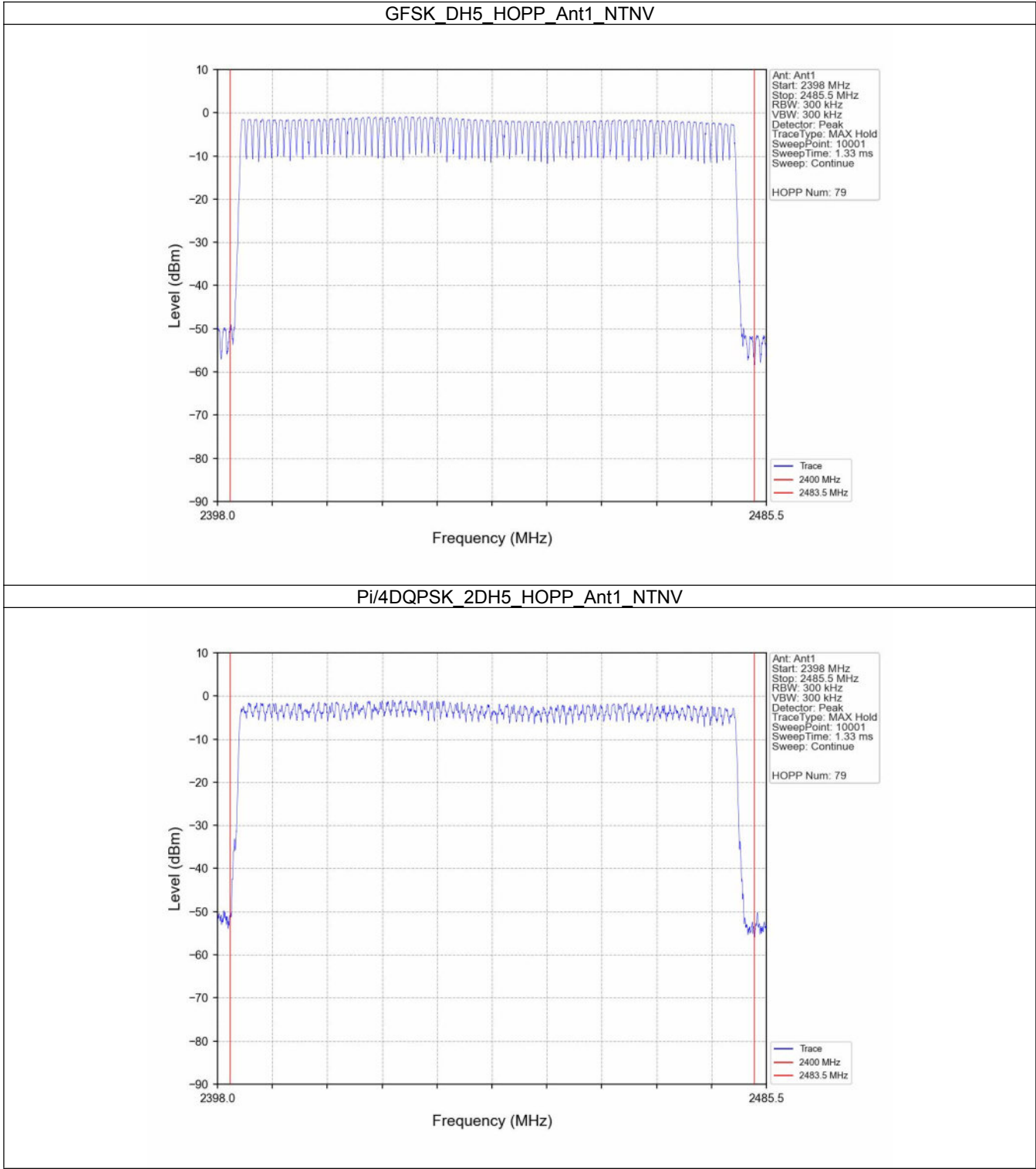
4.1.1 HoppNum

Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

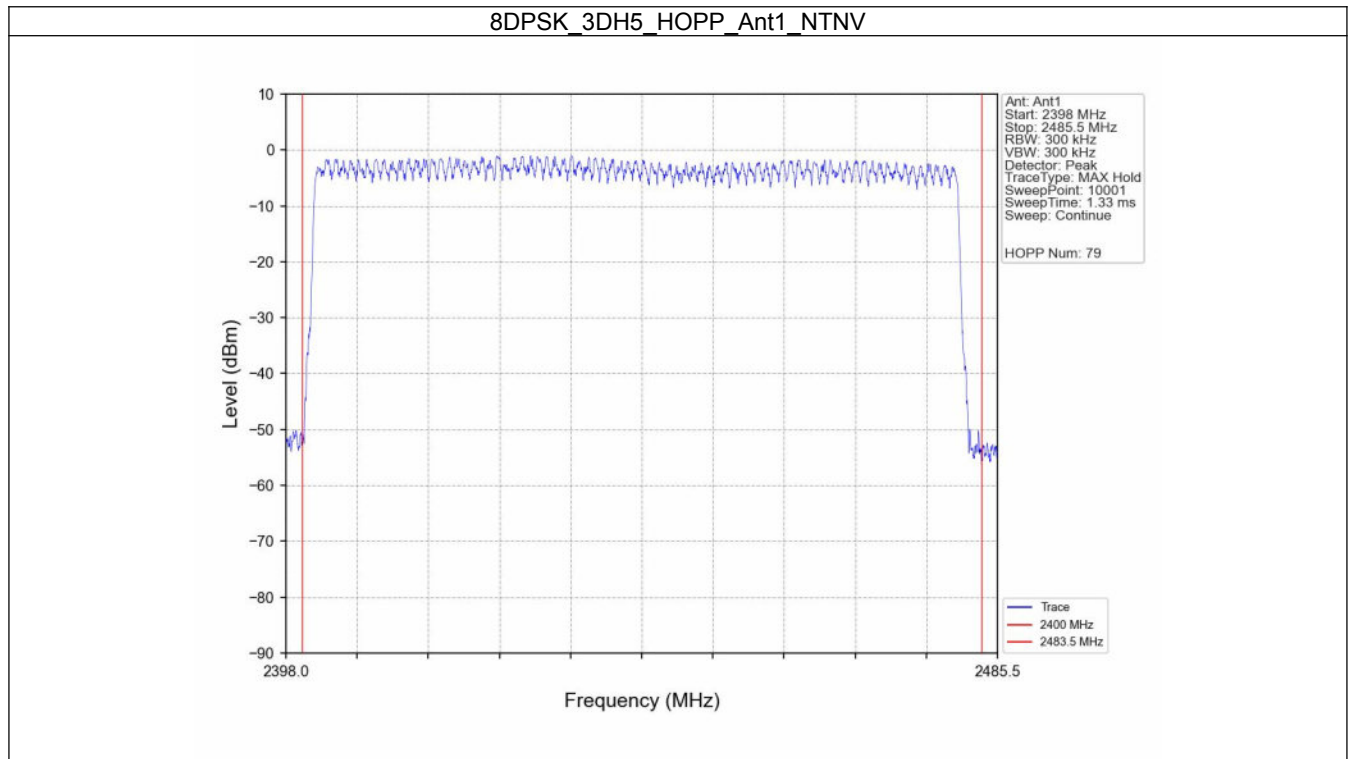
FCCID: 2BKO4-SPKRPUCK

4.2 Test Graph

4.2.1 HoppNum



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUC

5. Time of Occupancy (Dwell Time)

5.1 Test Result

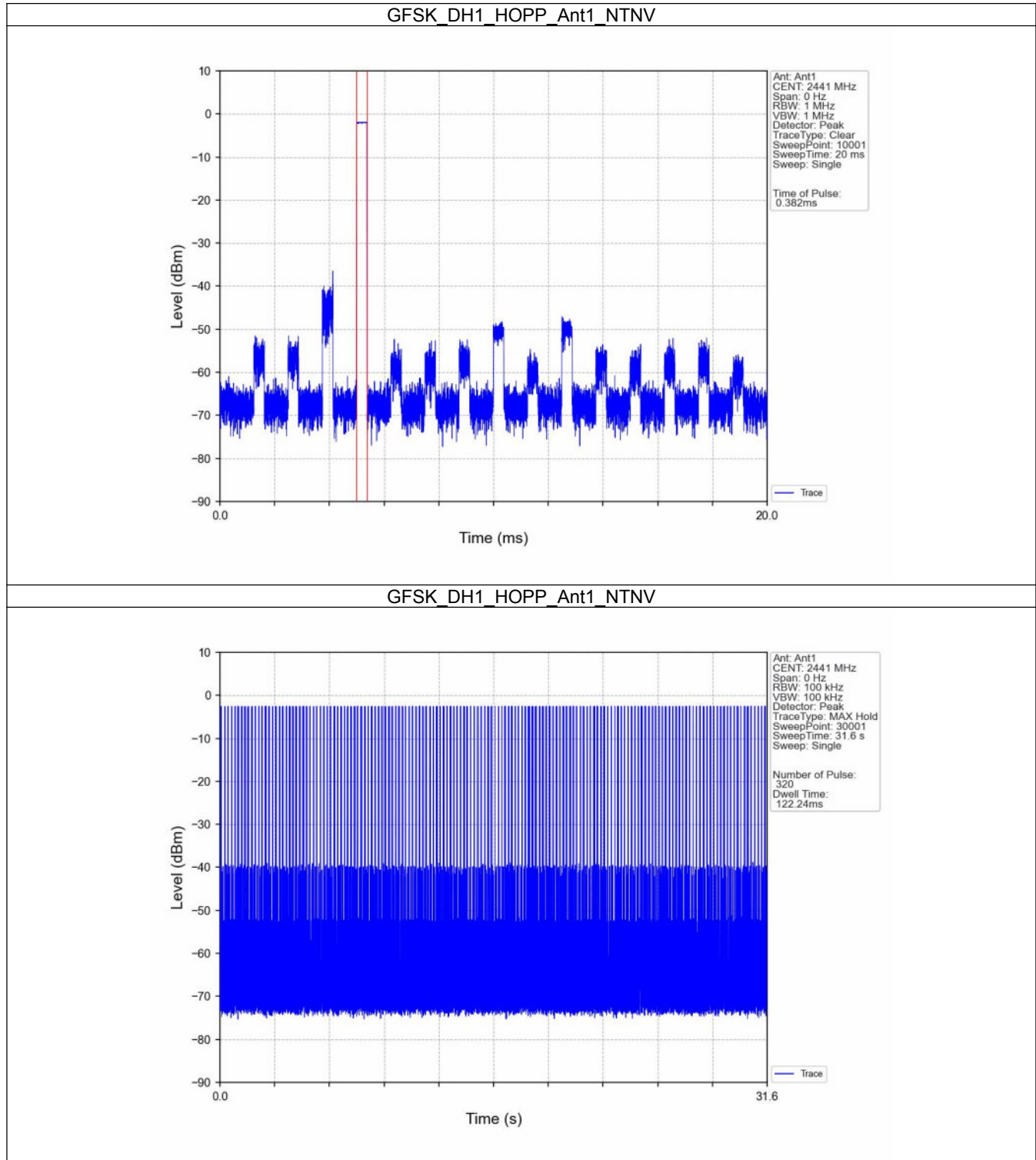
5.1.1 Ant1

Ant1									
Mode	Tx Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.382	31.600	320	122.240	<=400	Pass
			DH3	1.640	31.600	144	236.160	<=400	Pass
			DH5	2.888	31.600	109	314.792	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.390	31.600	318	124.020	<=400	Pass
			2DH3	1.642	31.600	170	279.140	<=400	Pass
			2DH5	2.892	31.600	94	271.848	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.392	31.600	321	125.832	<=400	Pass
			3DH3	1.640	31.600	158	259.120	<=400	Pass
			3DH5	2.892	31.600	110	318.120	<=400	Pass

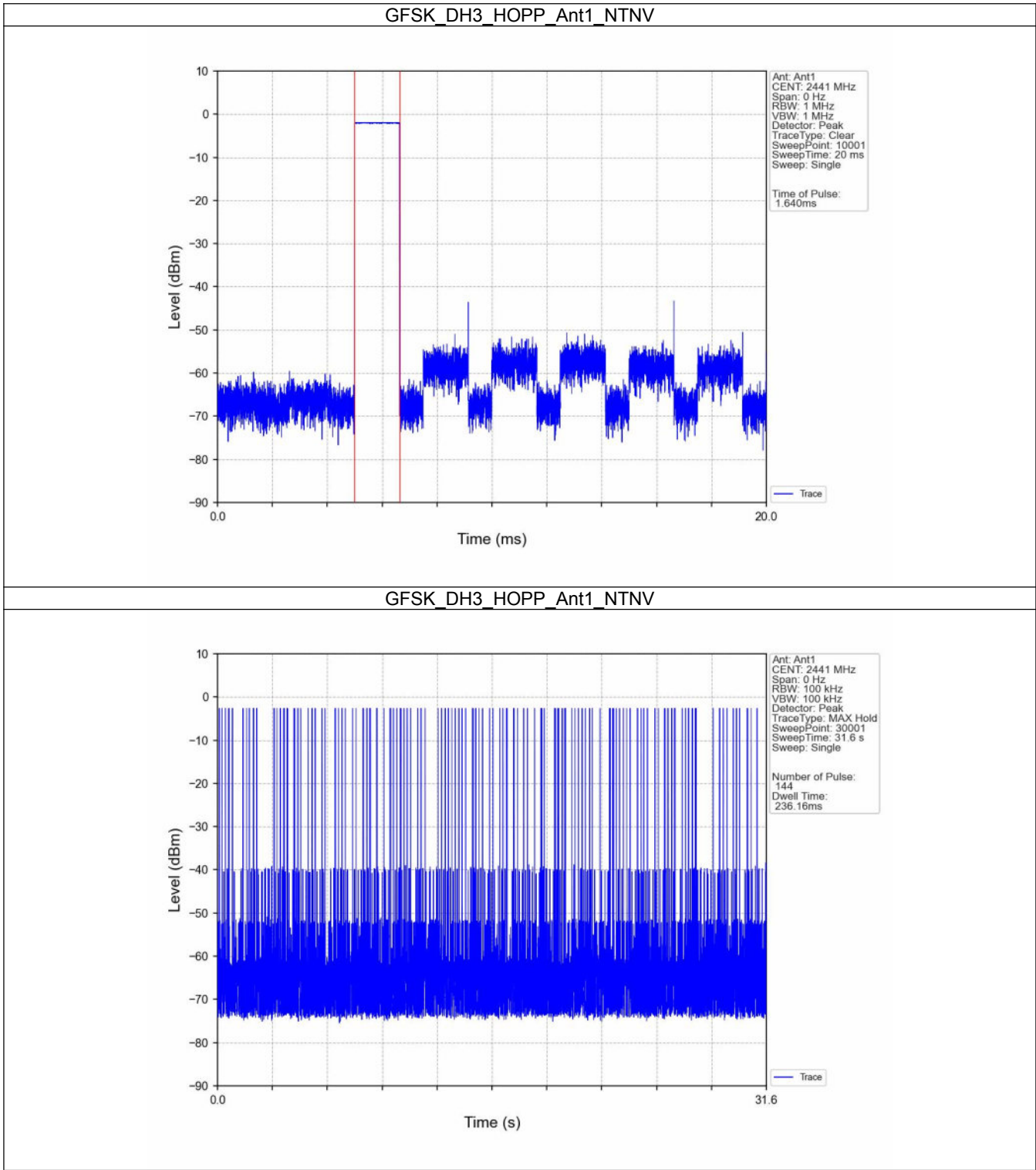
FCCID: 2BKO4-SPKRPICK

5.2 Test Graph

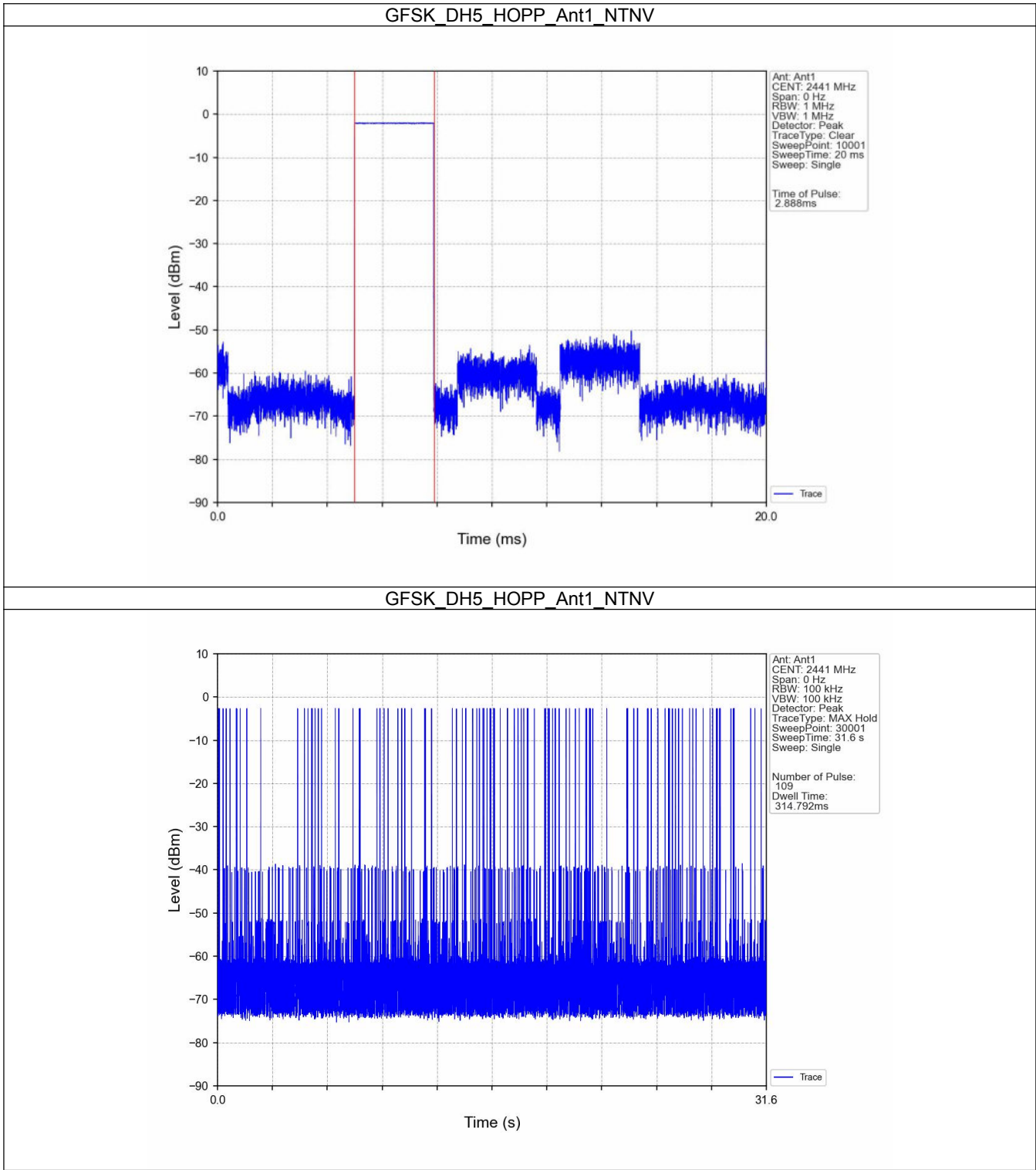
5.2.1 Ant1



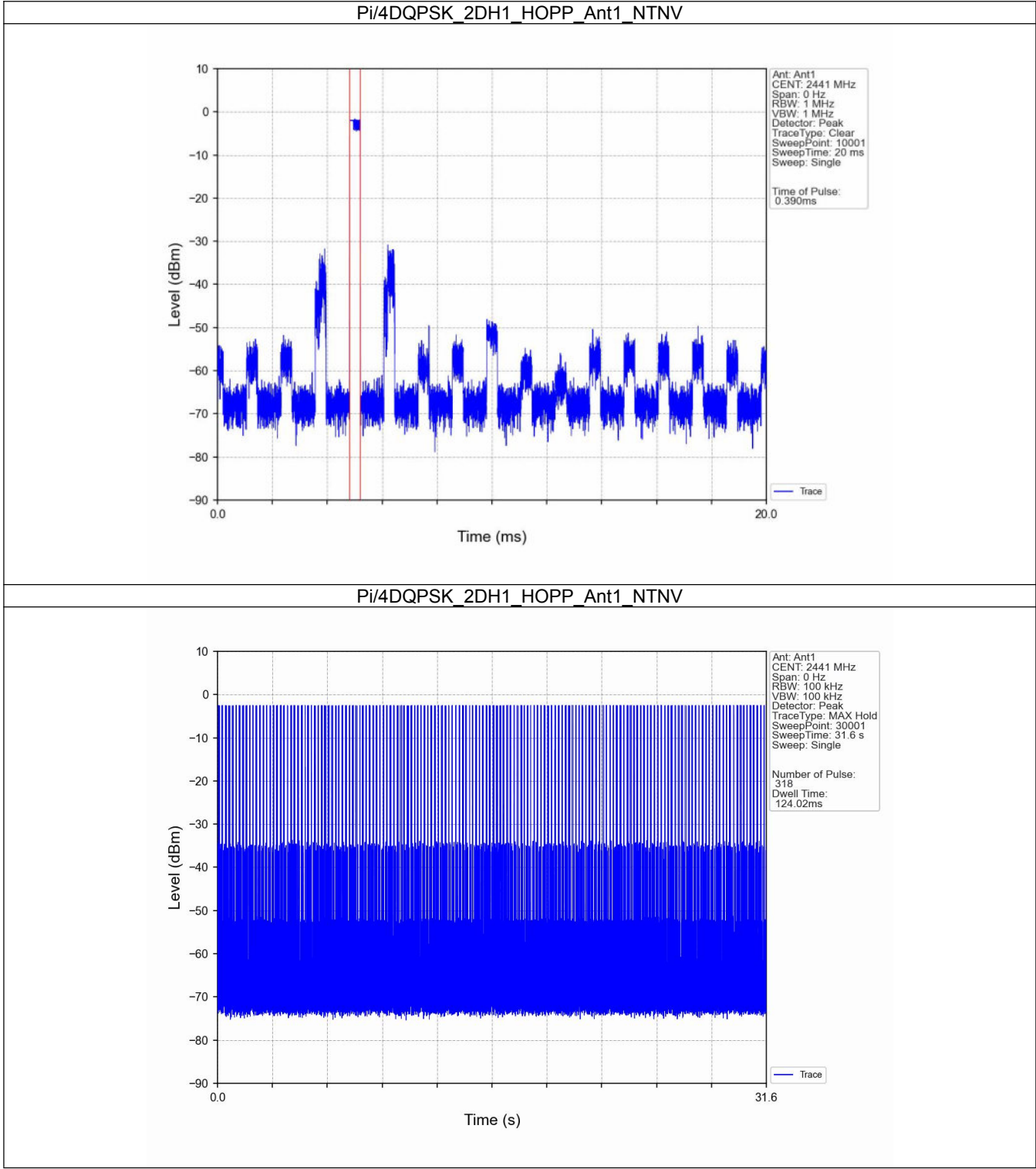
FCCID: 2BKO4-SPKRPUCK



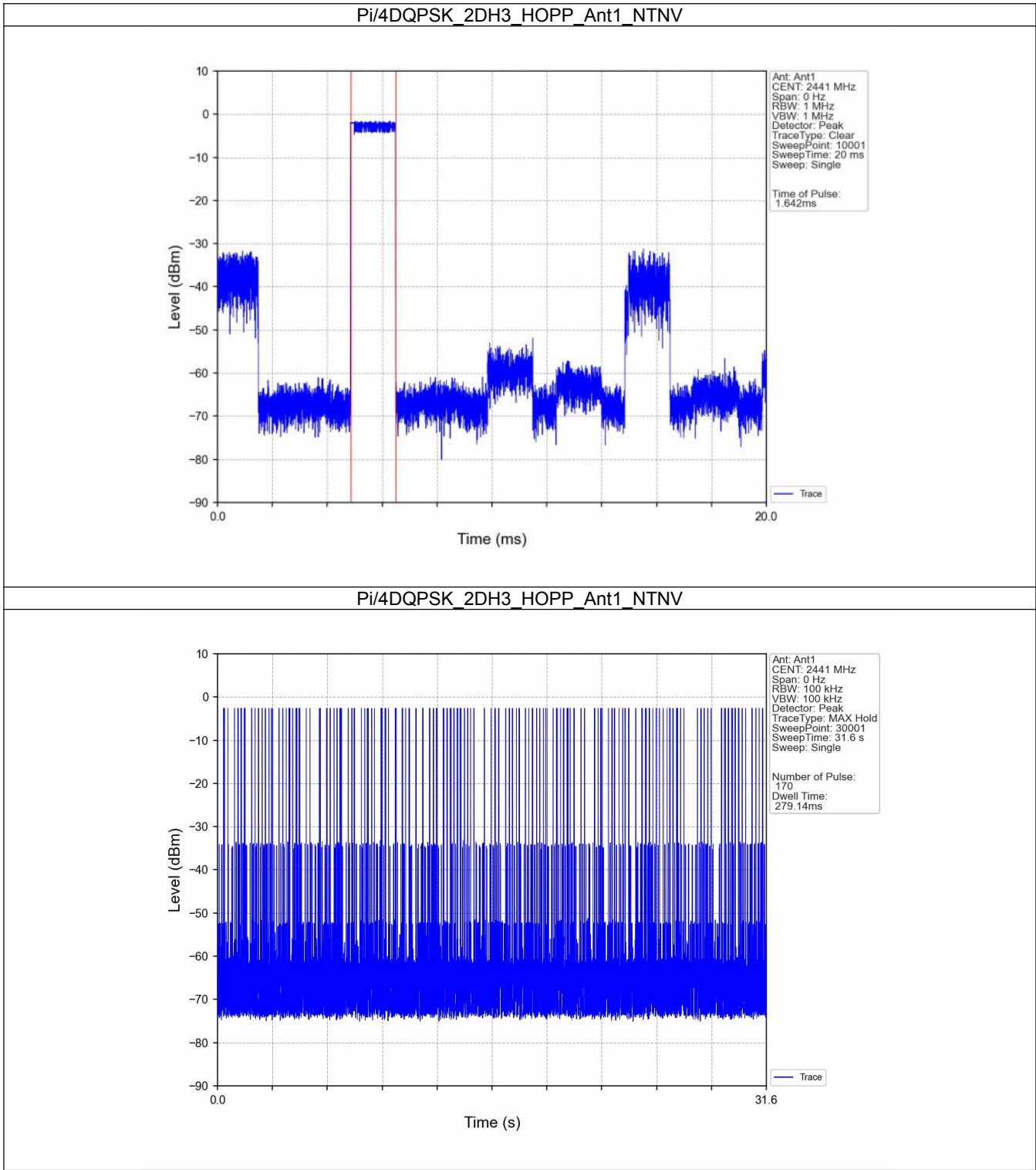
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FCCID: 2BKO4-SPKRPUCK

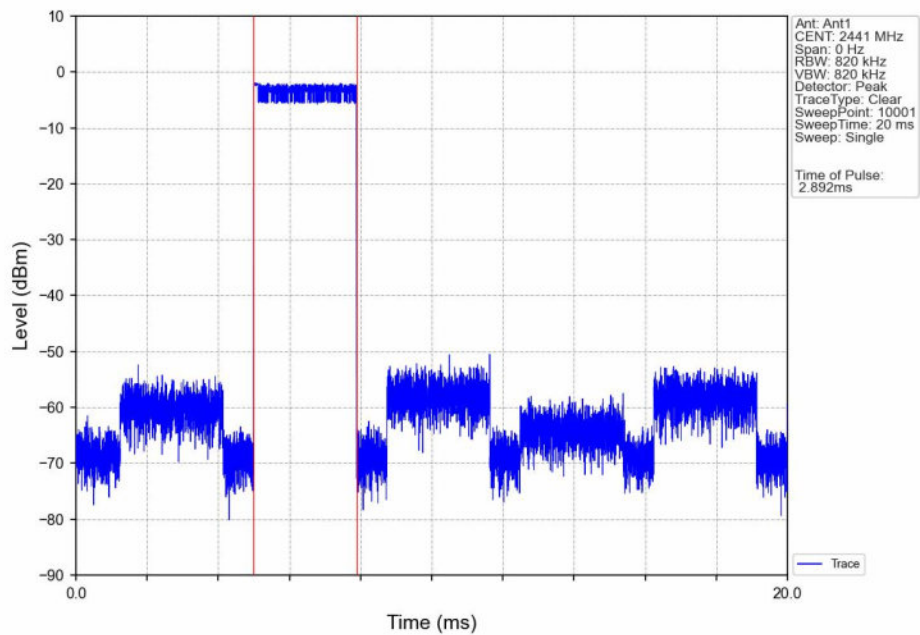


FCCID: 2BKO4-SPKRPUCK

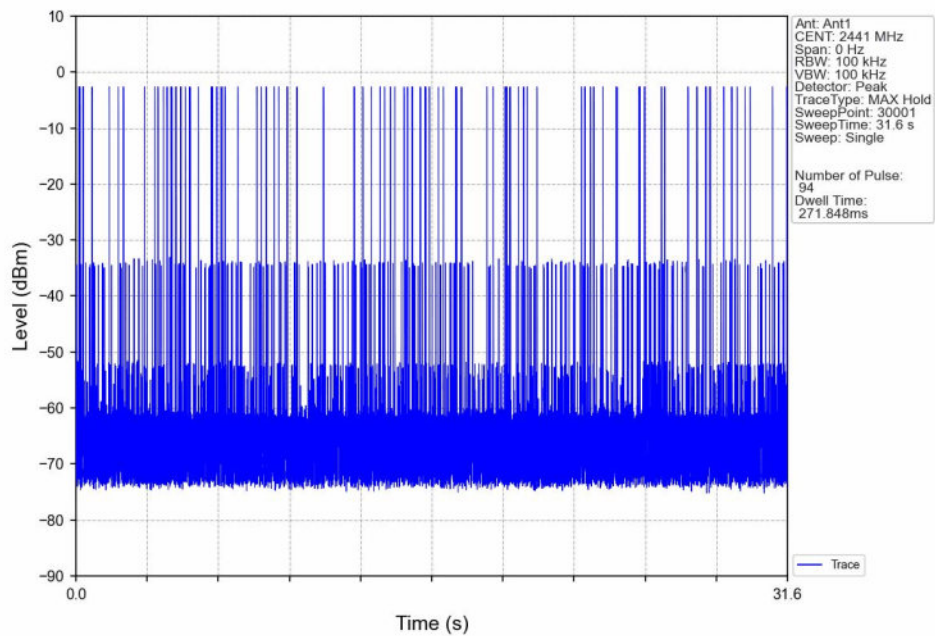


FCCID: 2BKO4-SPKRPUCK

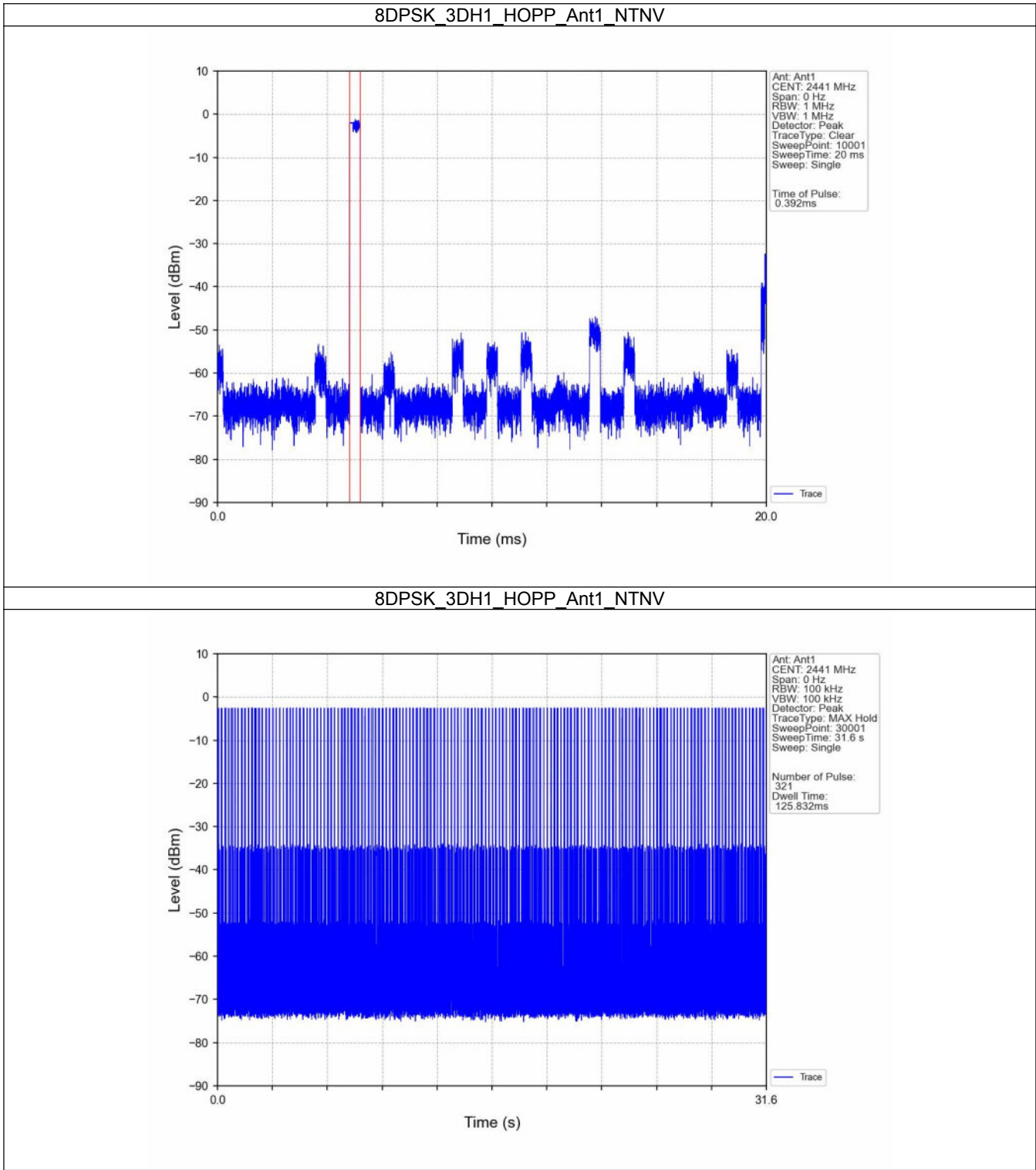
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



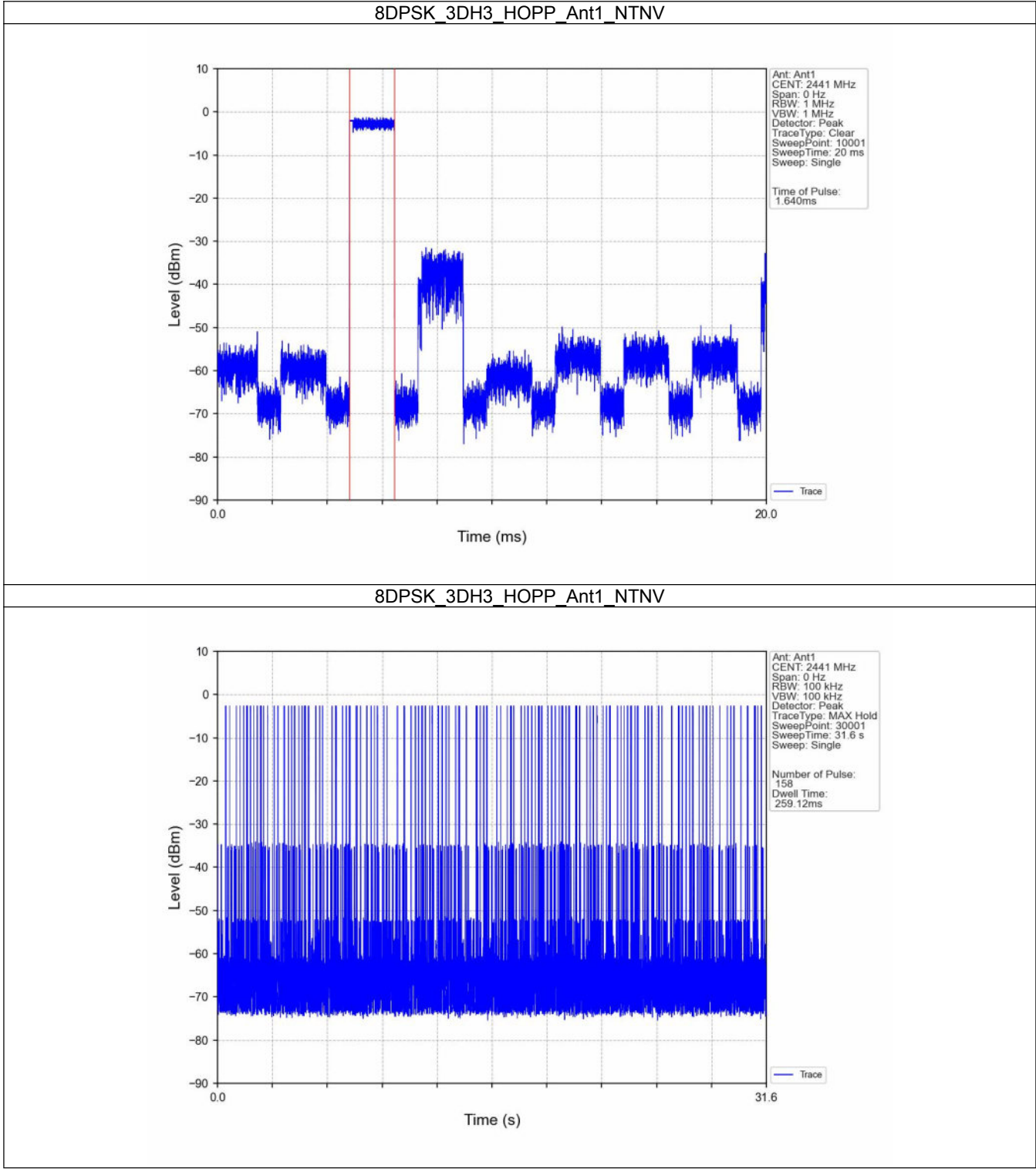
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



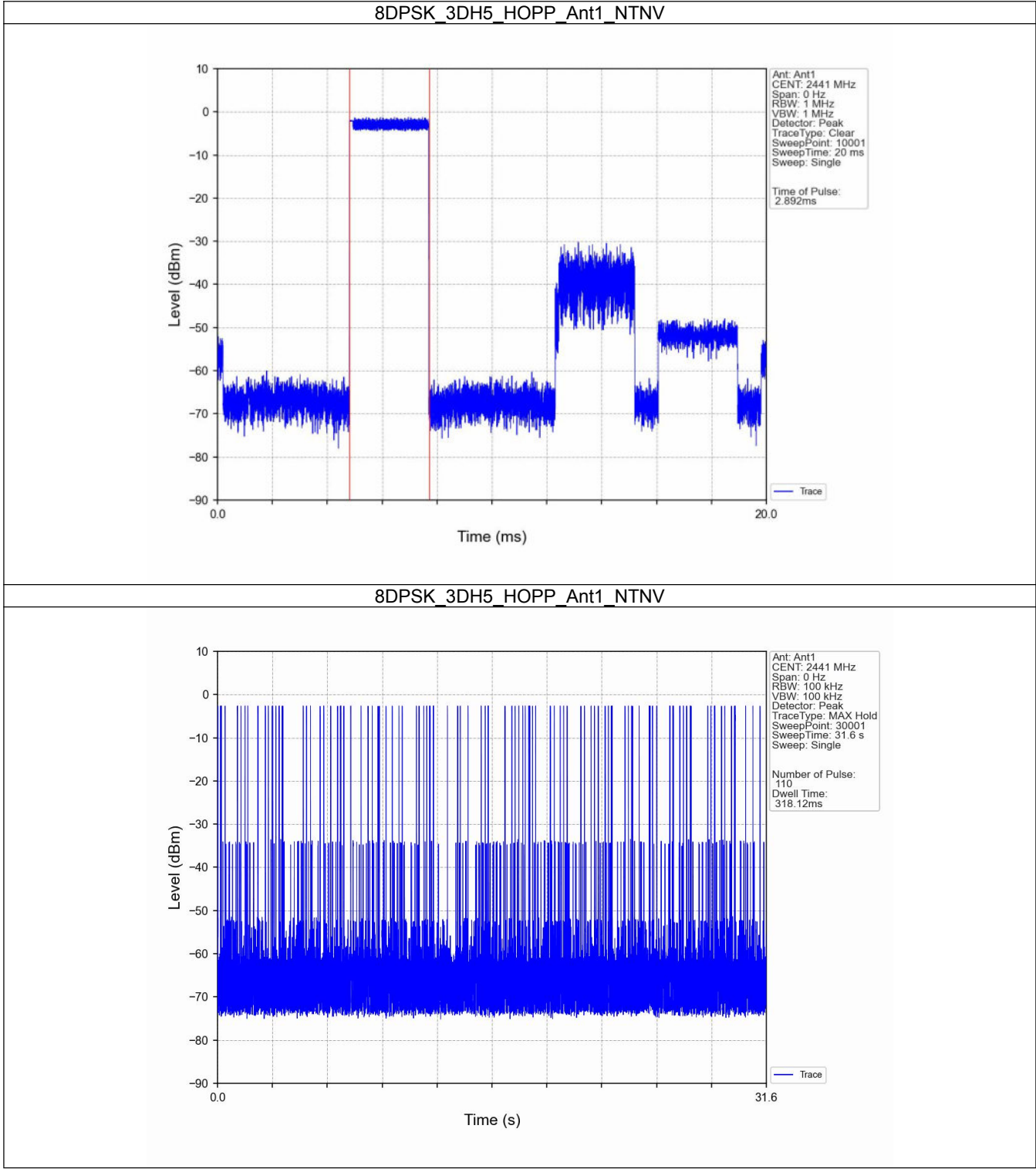
FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK

6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	-2.02
		2441	DH5	1	-2.33
		2480	DH5	1	-3.27
Pi/4DQPSK	SISO	2402	2DH5	1	-2.01
		2441	2DH5	1	-2.28
		2480	2DH5	1	-3.23
8DPSK	SISO	2402	3DH5	1	-2.00
		2441	3DH5	1	-2.24
		2480	3DH5	1	-3.21

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.

6.1.2 CSE

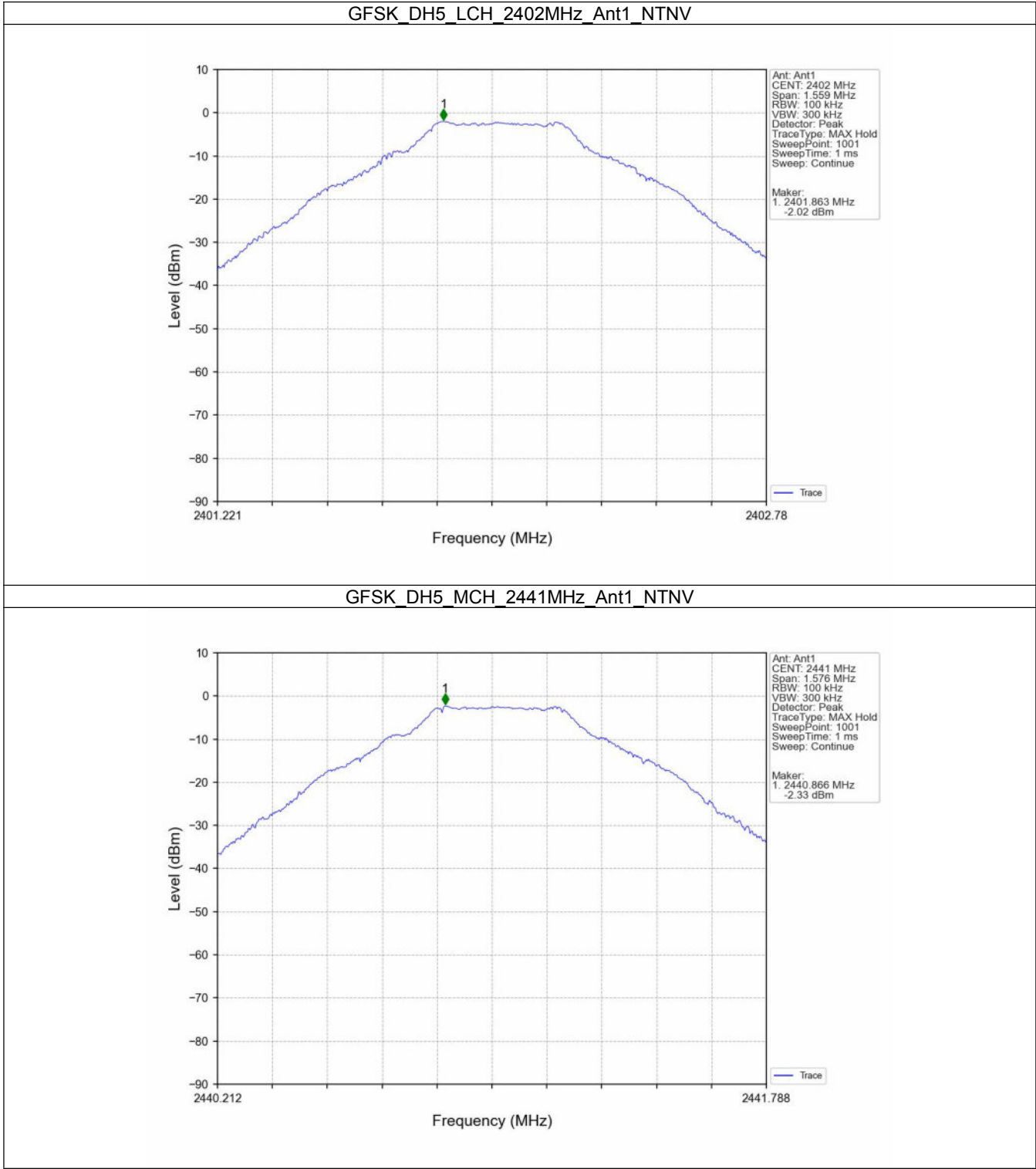
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-2.02	-22.02	Pass
		2441	DH5	1	-2.02	-22.02	Pass
		2480	DH5	1	-2.02	-22.02	Pass
		HOPP	DH5	1	-2.02	-22.02	Pass
					-2.02	-22.02	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-2.01	-22.01	Pass
		2441	2DH5	1	-2.01	-22.01	Pass
		2480	2DH5	1	-2.01	-22.01	Pass
		HOPP	2DH5	1	-2.01	-22.01	Pass
					-2.01	-22.01	Pass
8DPSK	SISO	2402	3DH5	1	-2.00	-22.00	Pass
		2441	3DH5	1	-2.00	-22.00	Pass
		2480	3DH5	1	-2.00	-22.00	Pass
		HOPP	3DH5	1	-2.00	-22.00	Pass
					-2.00	-22.00	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.

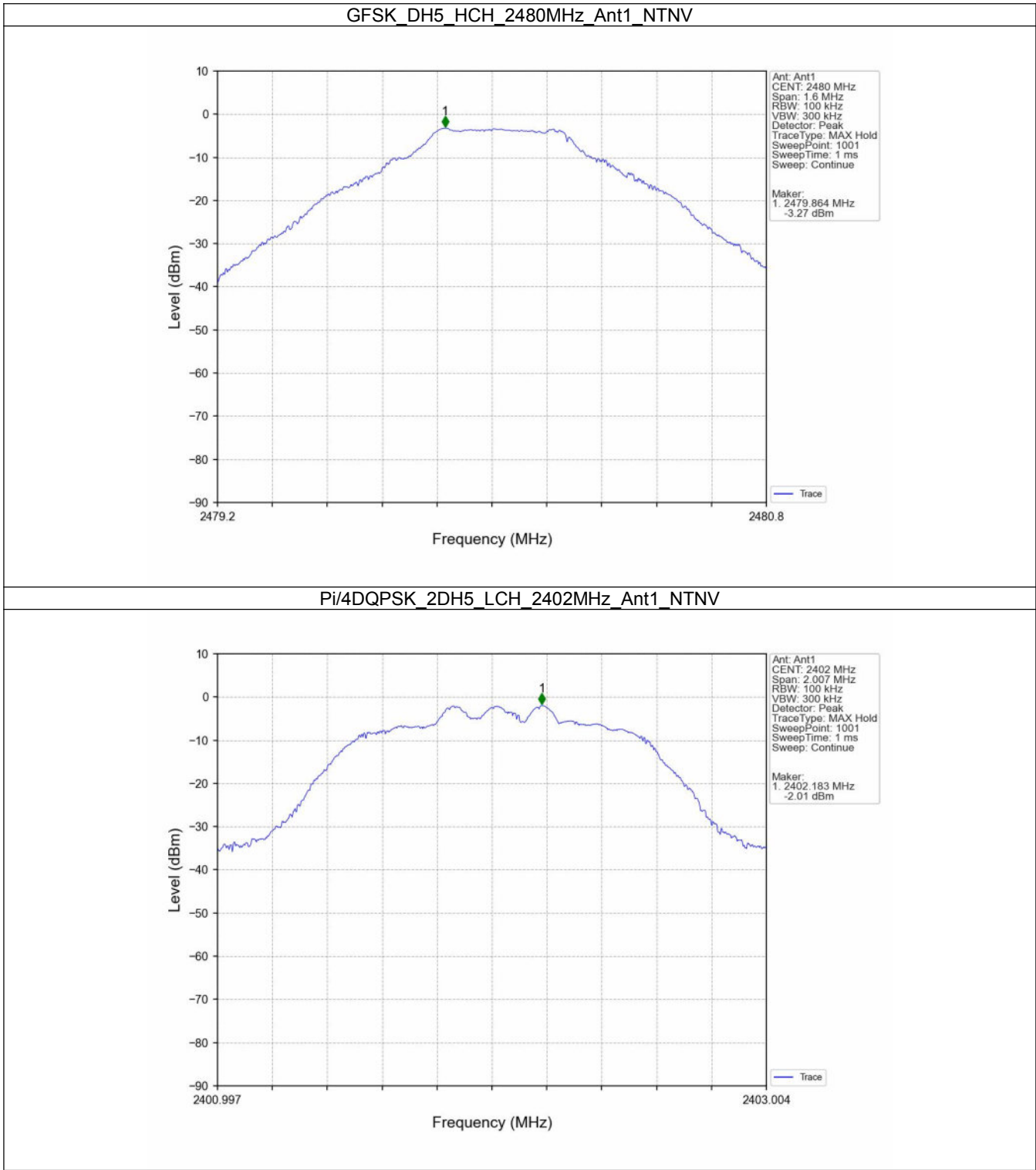
FCCID: 2BKO4-SPKRPUCK

6.2 Test Graph

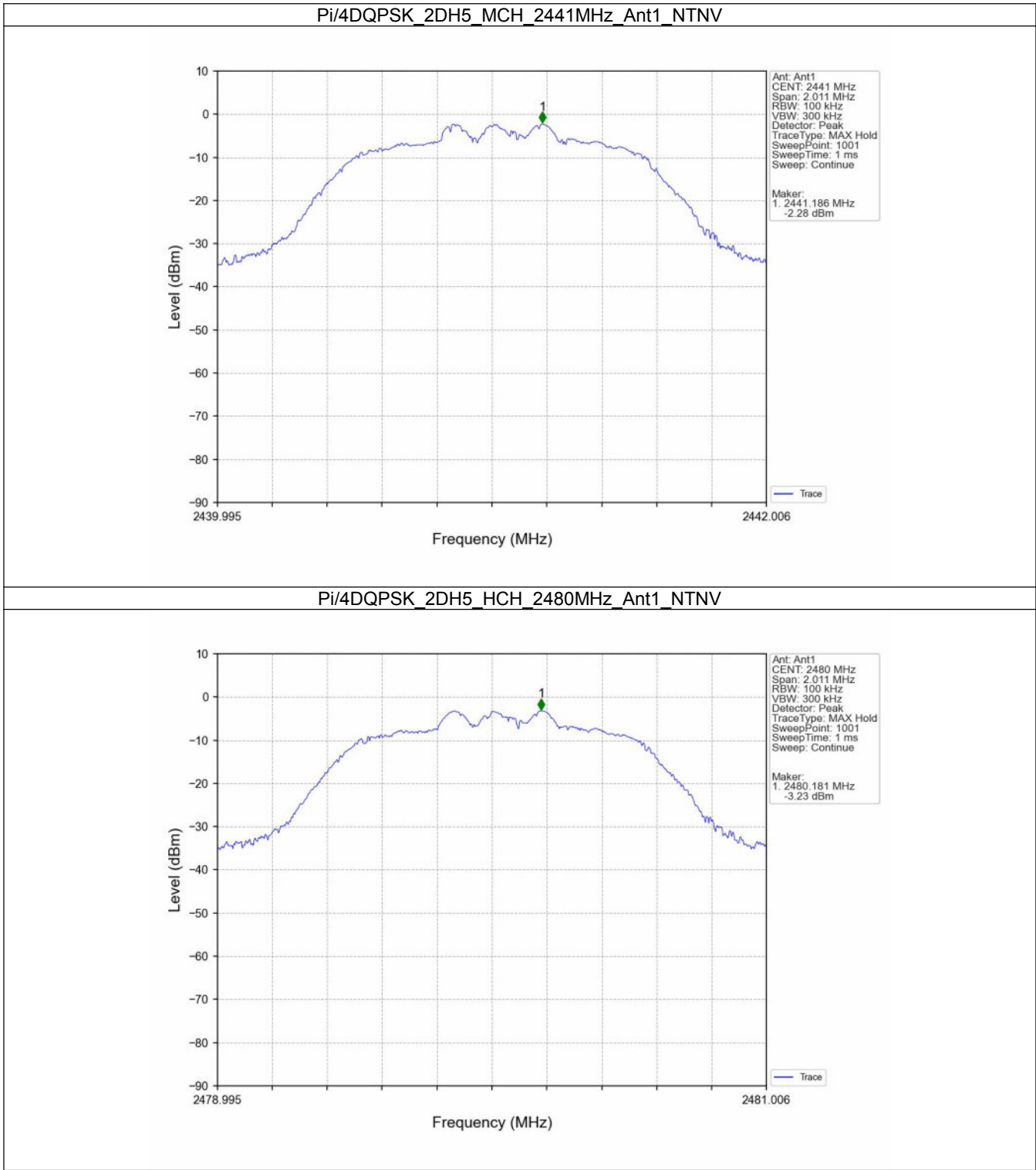
6.2.1 Ref



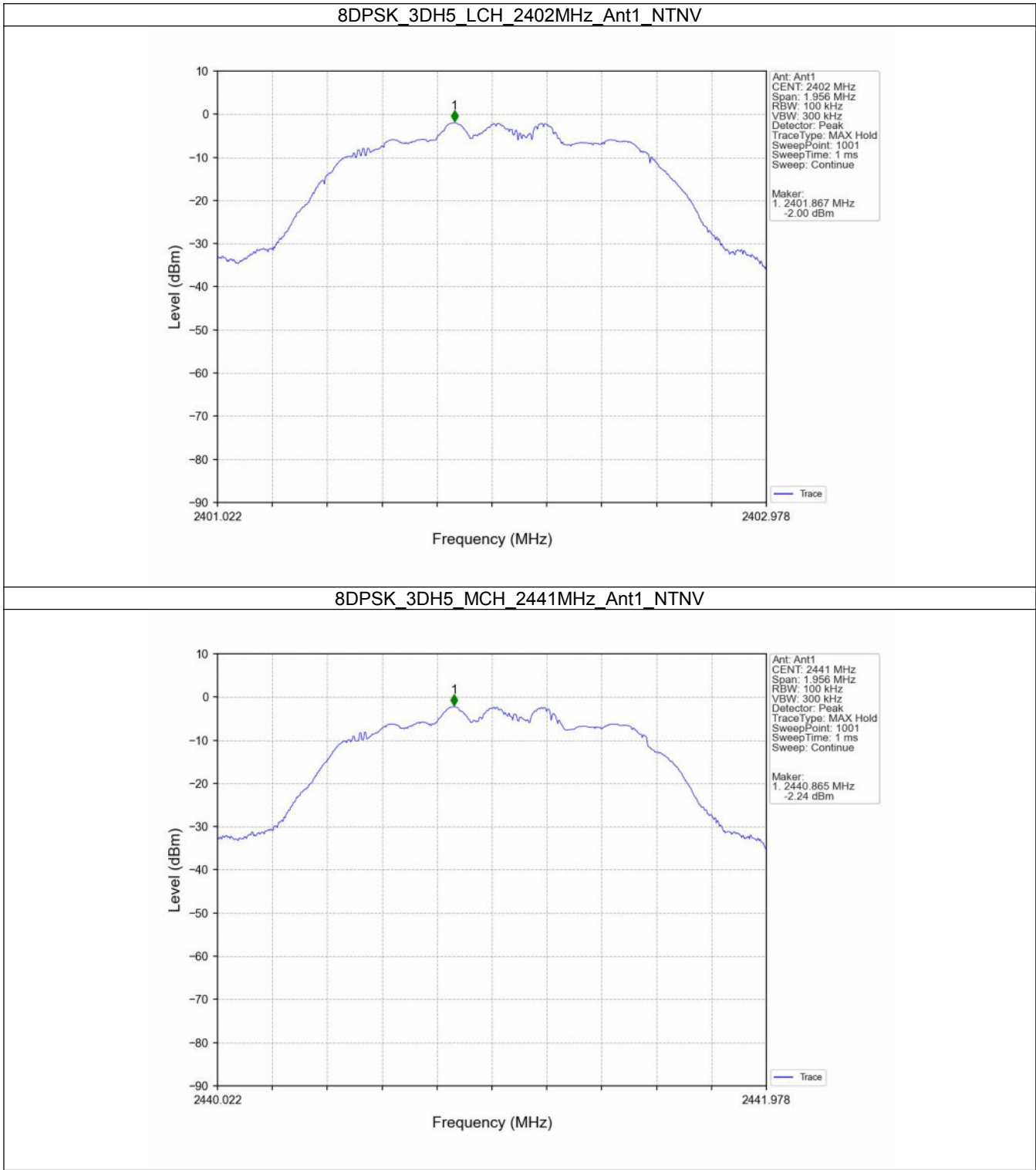
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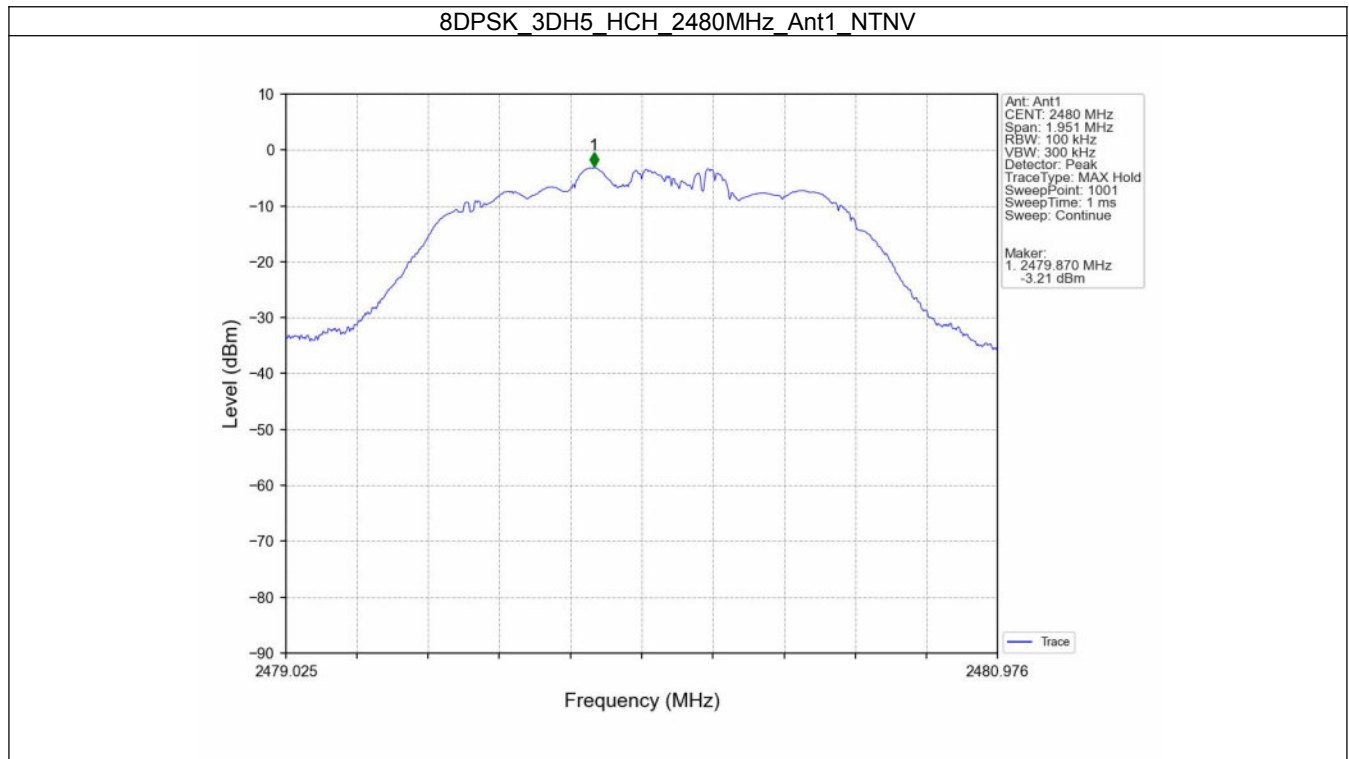
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FCCID: 2BKO4-SPKRUUCK

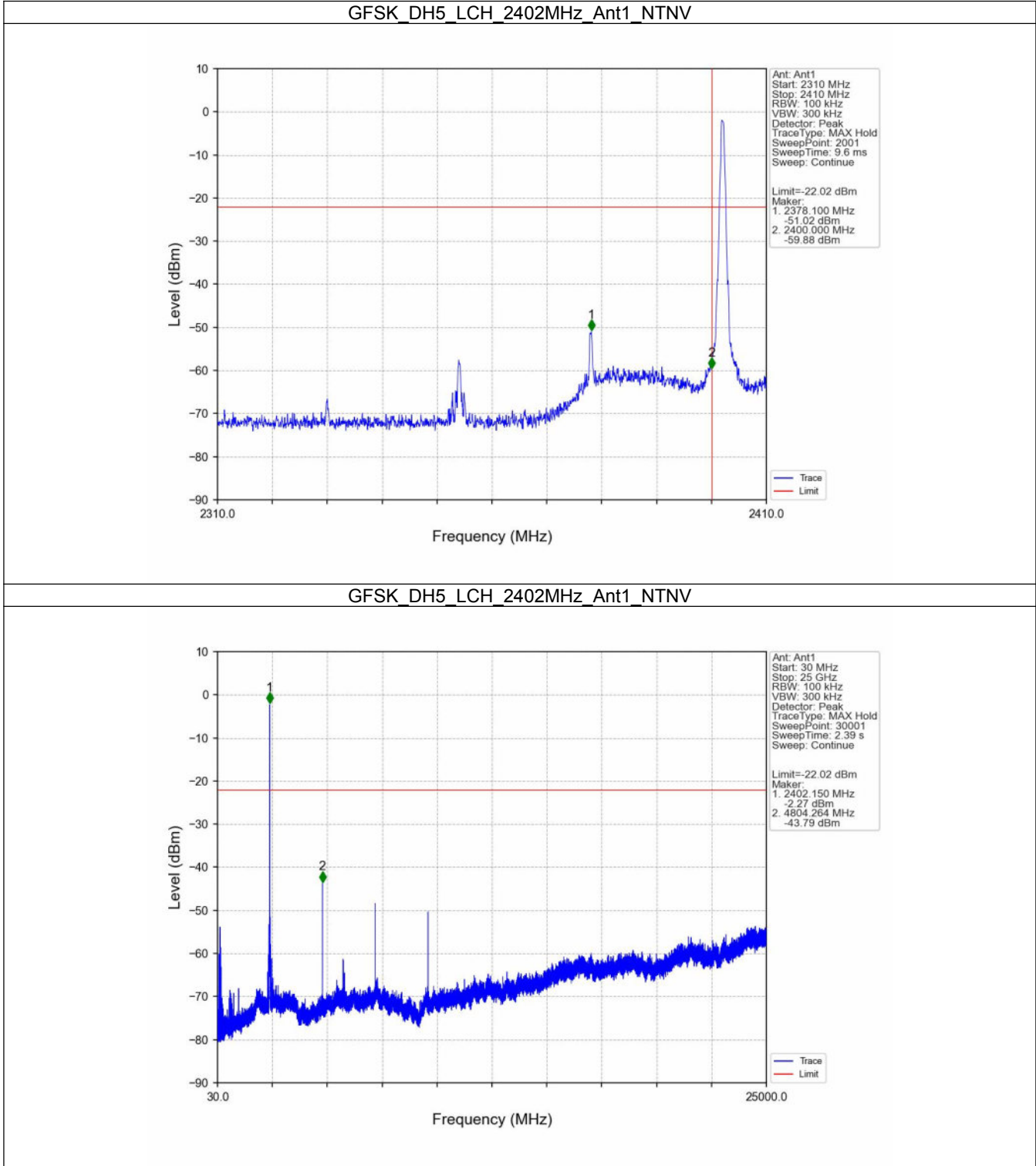


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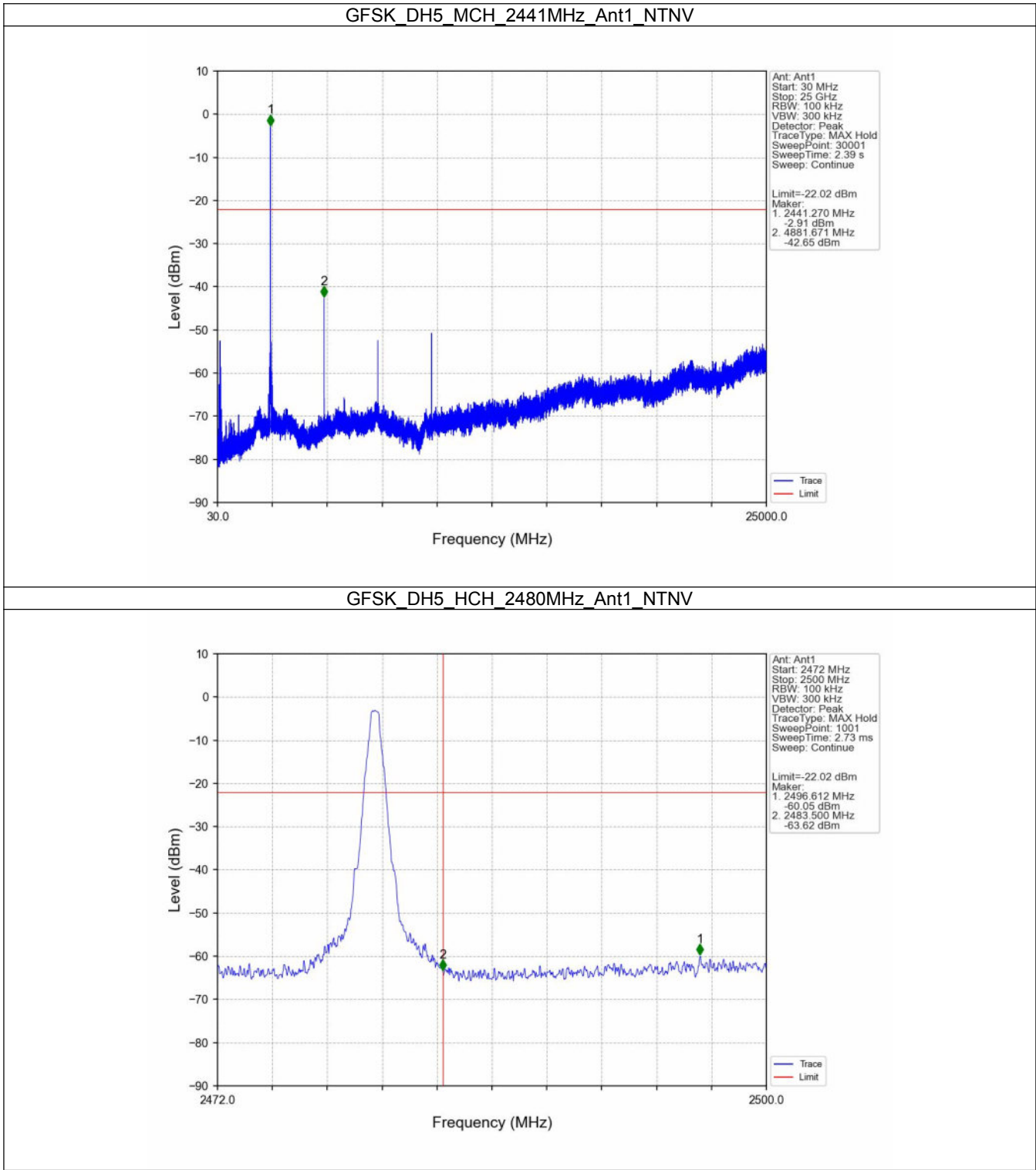


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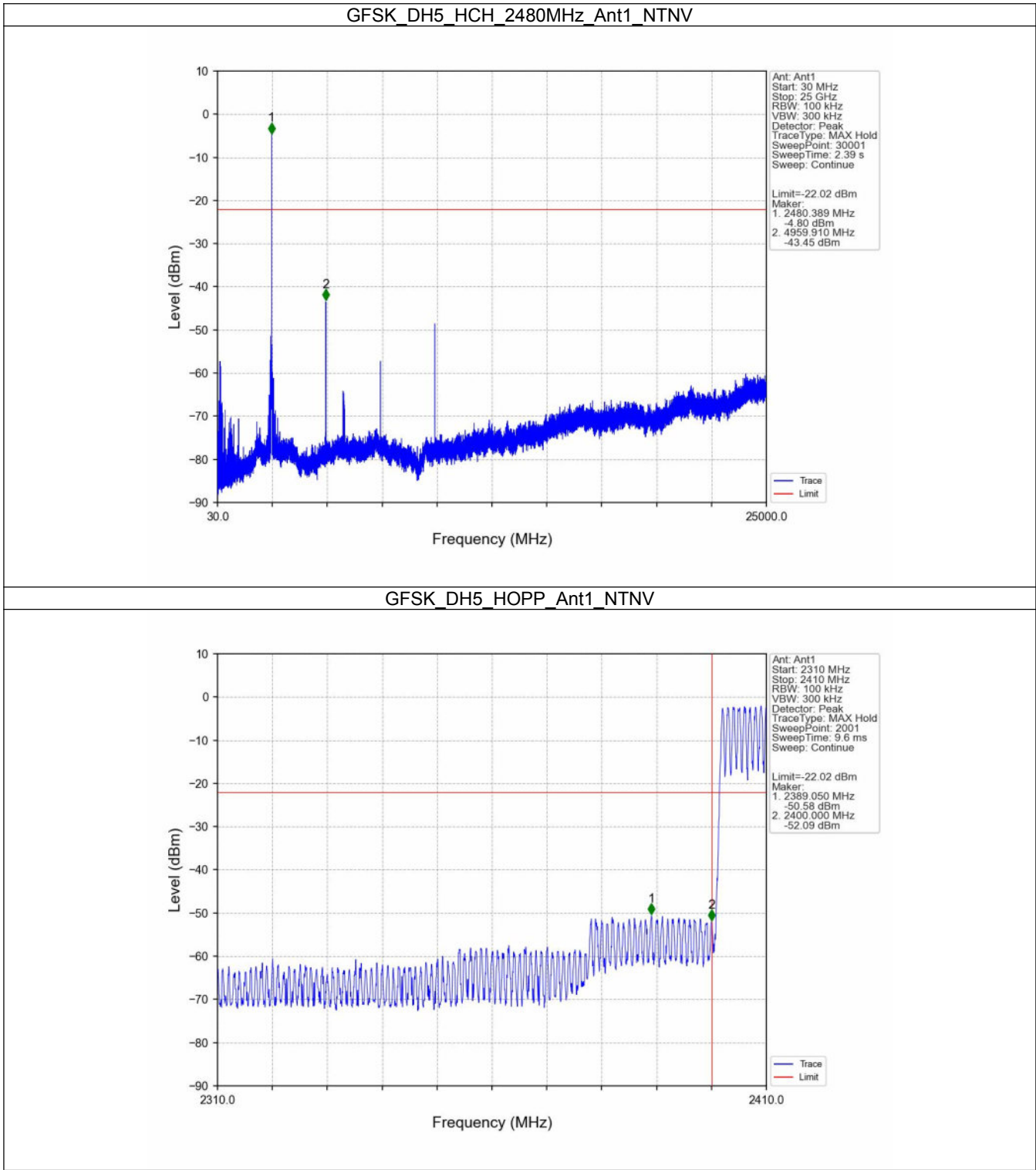
6.2.2 CSE



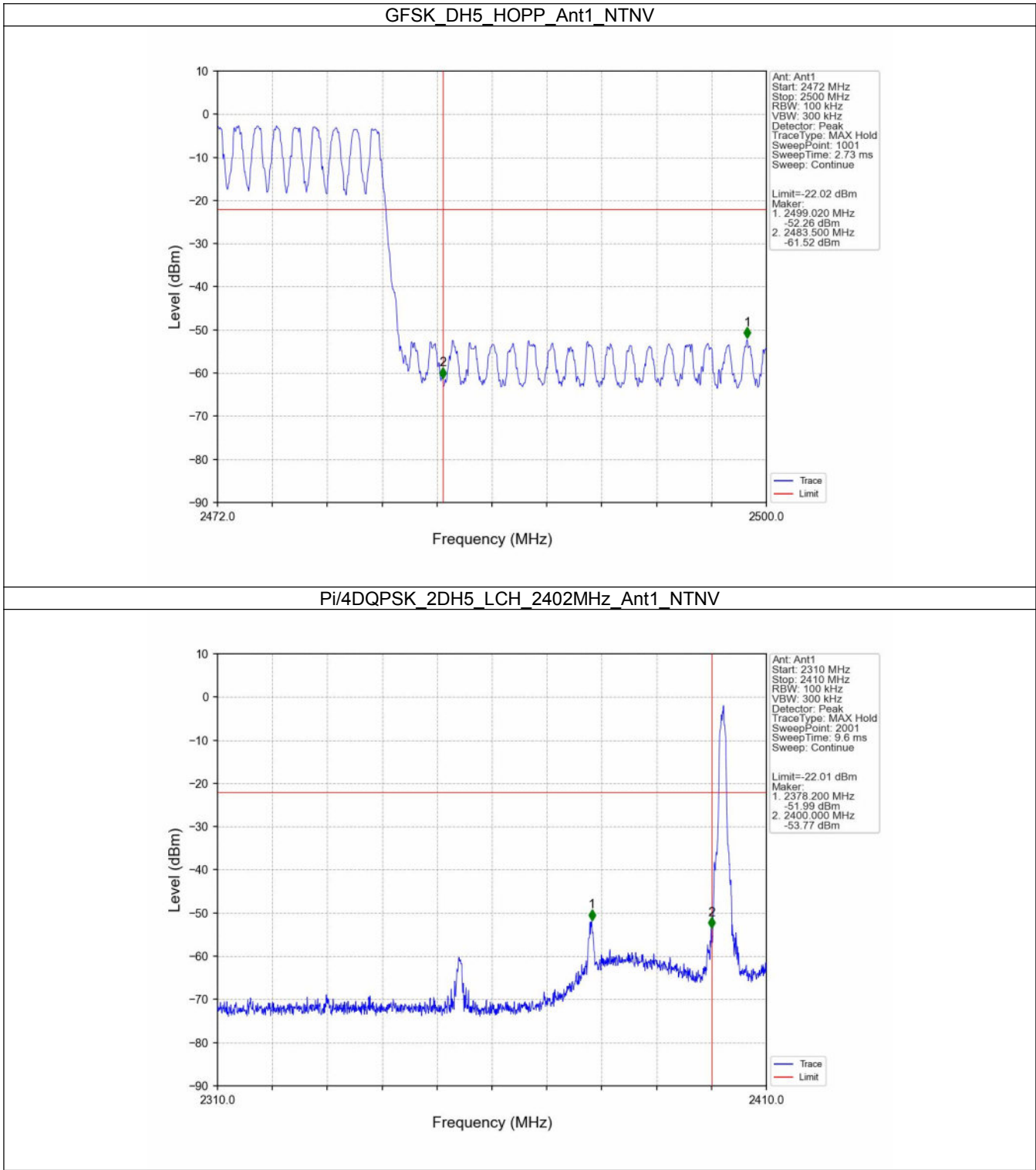
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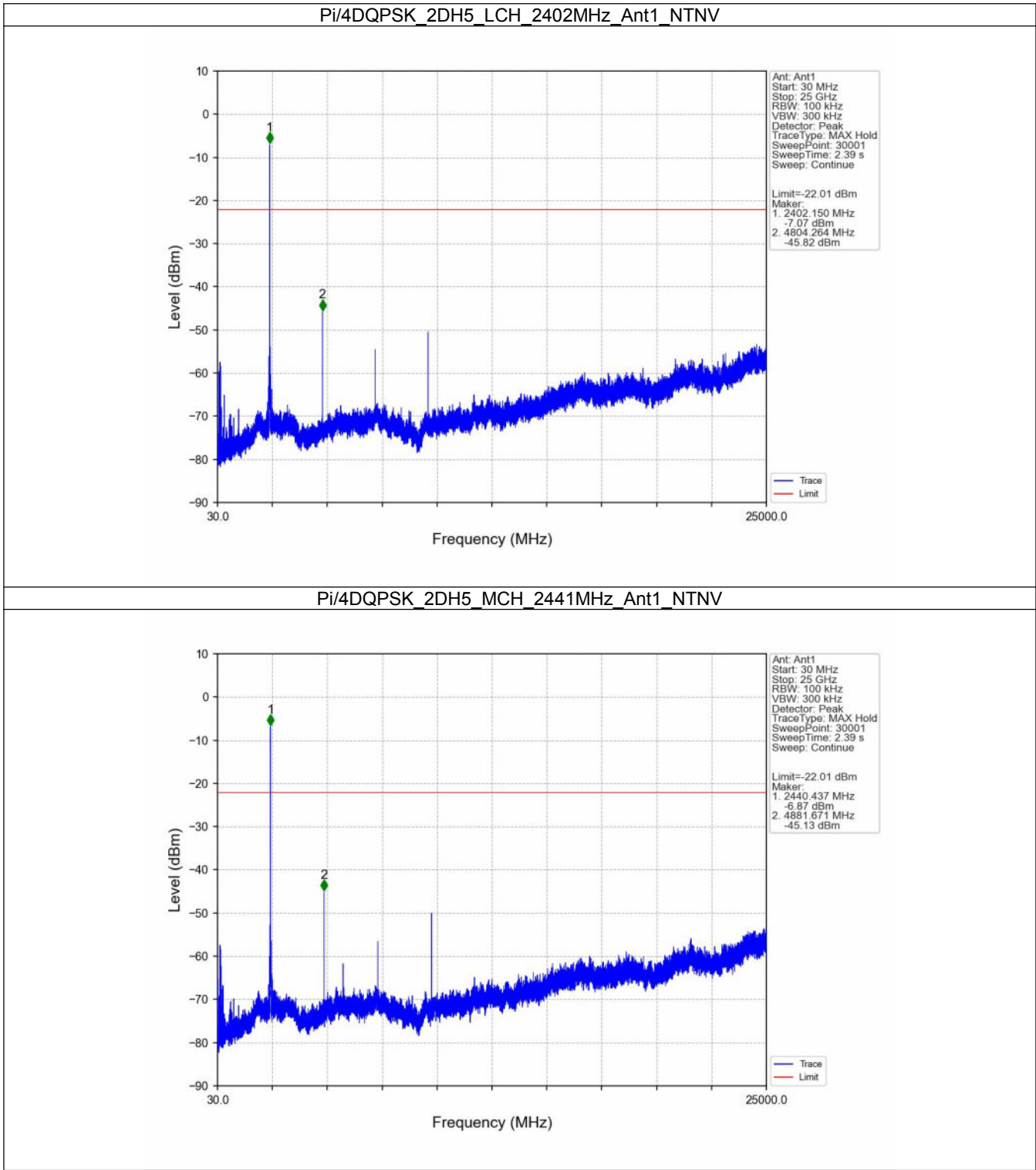
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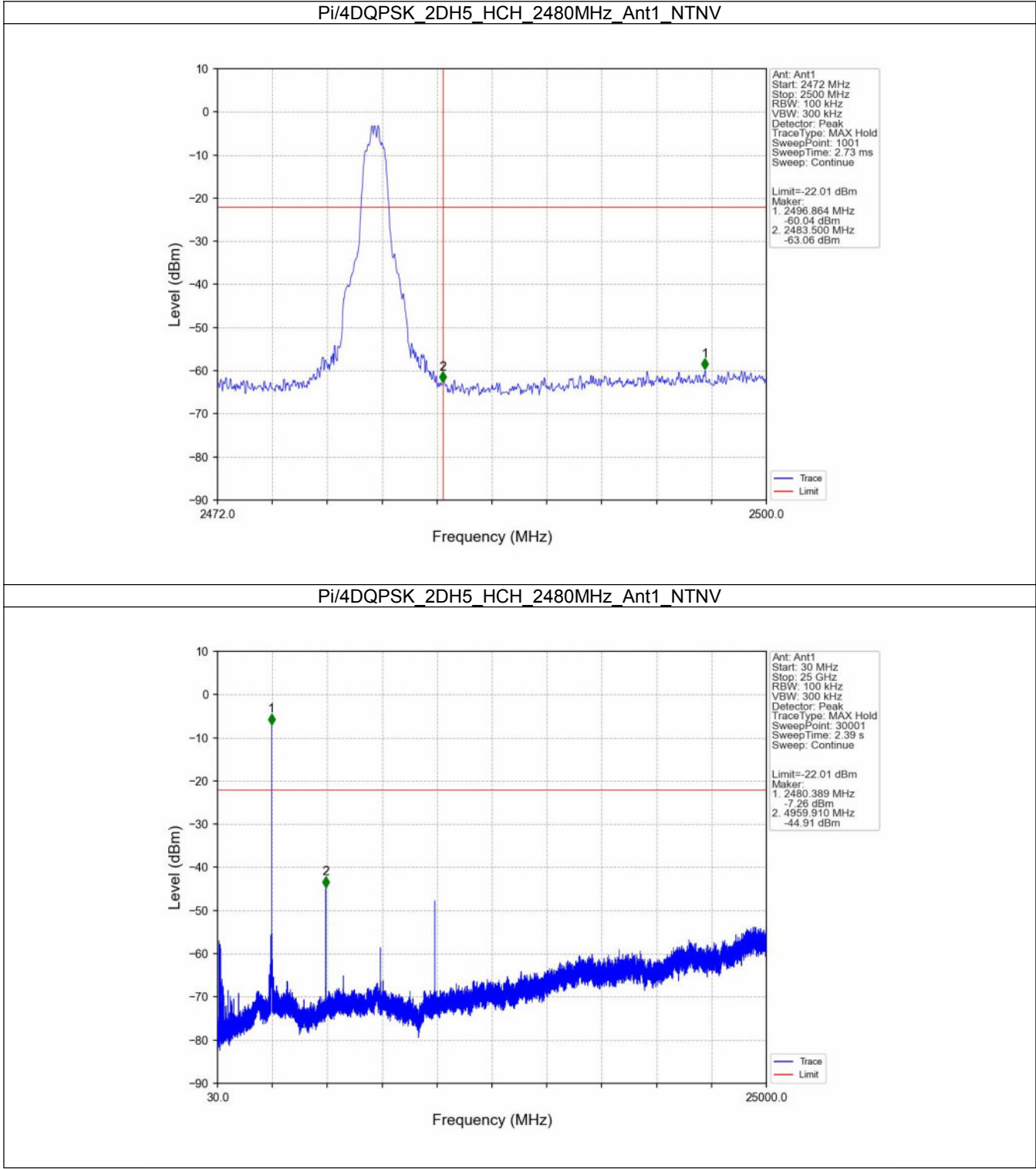
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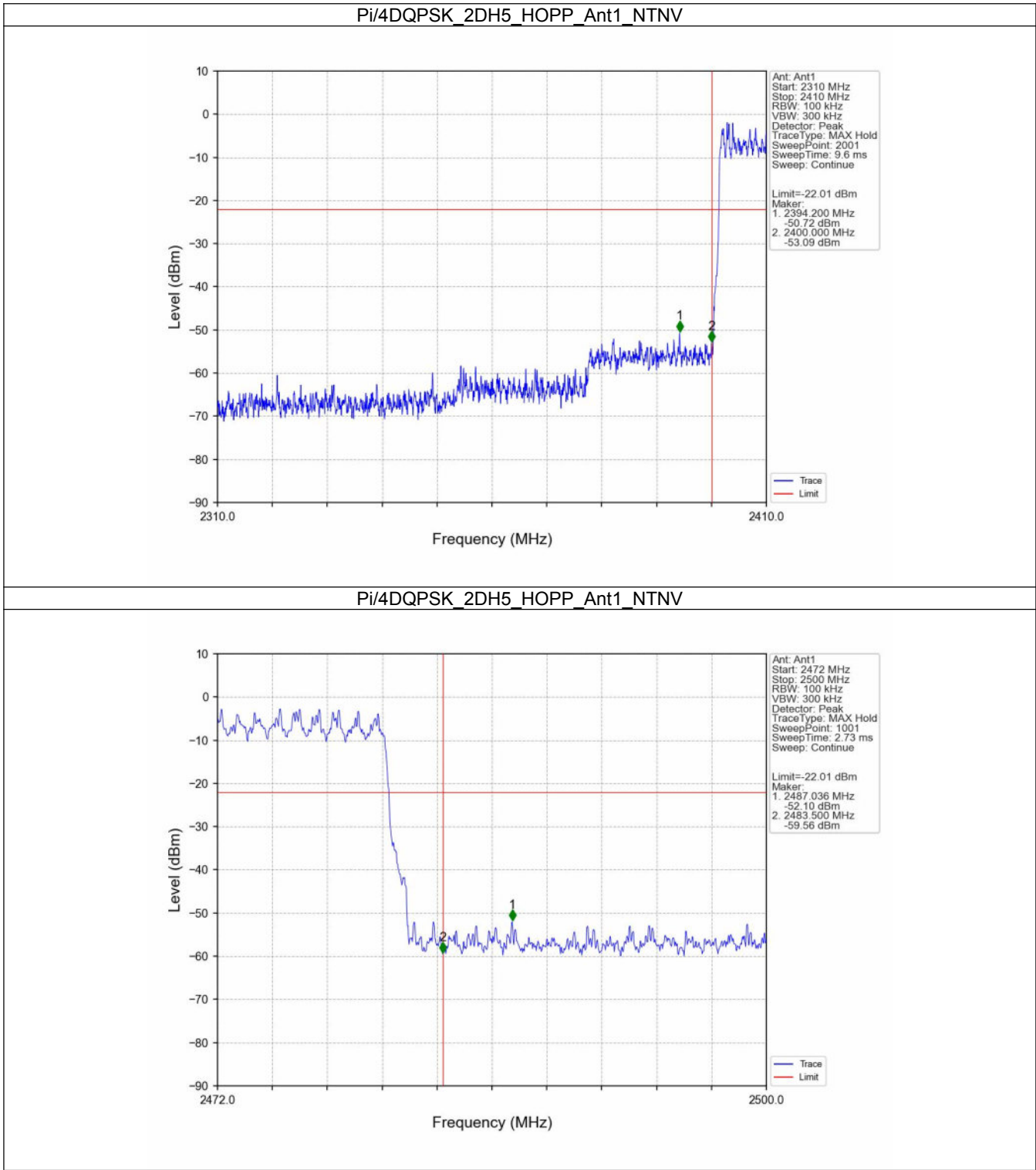
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FCCID: 2BKO4-SPKRPUCK

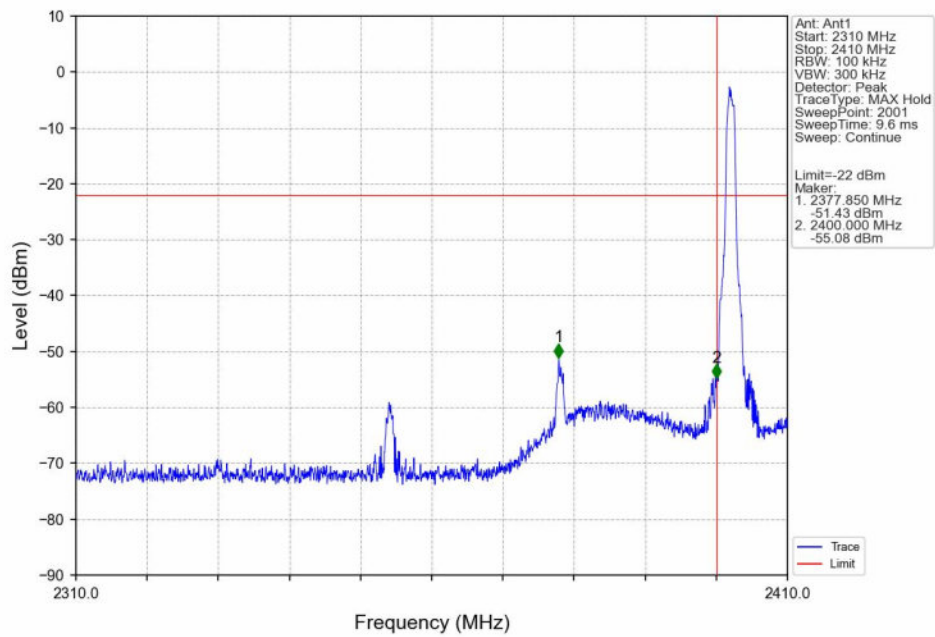


FCCID: 2BKO4-SPKRPUCK

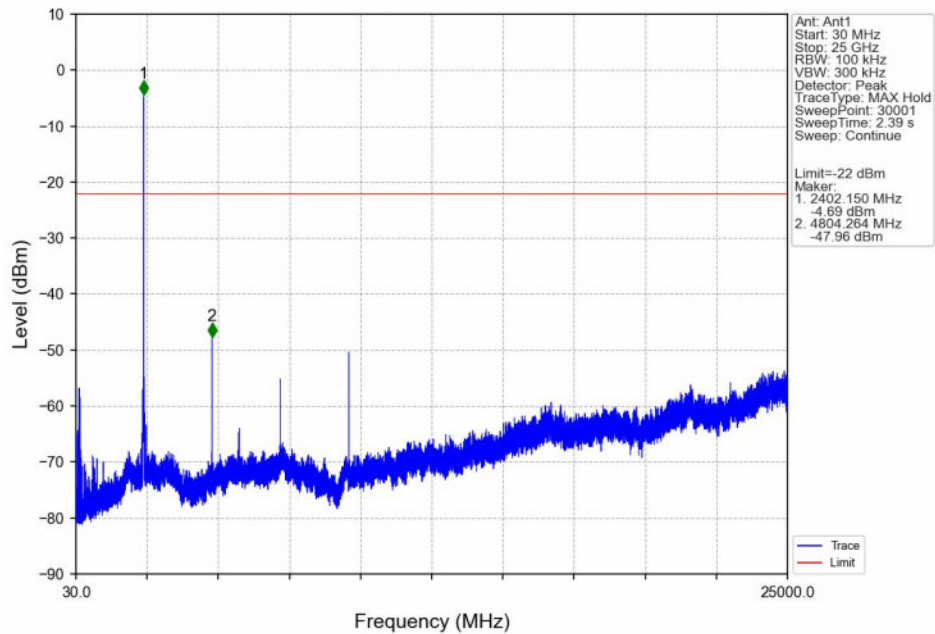


FCCID: 2BKO4-SPKRPICK

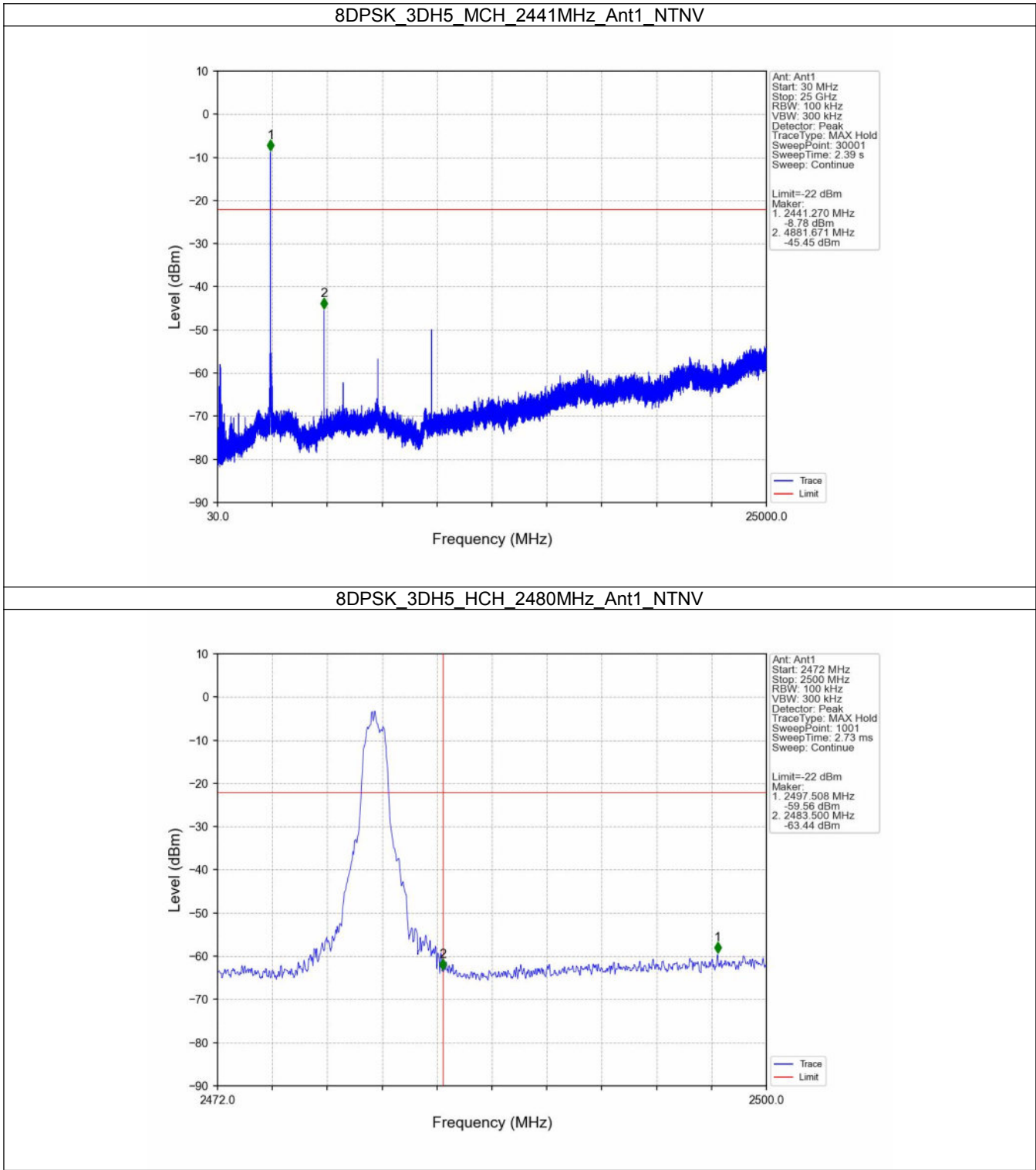
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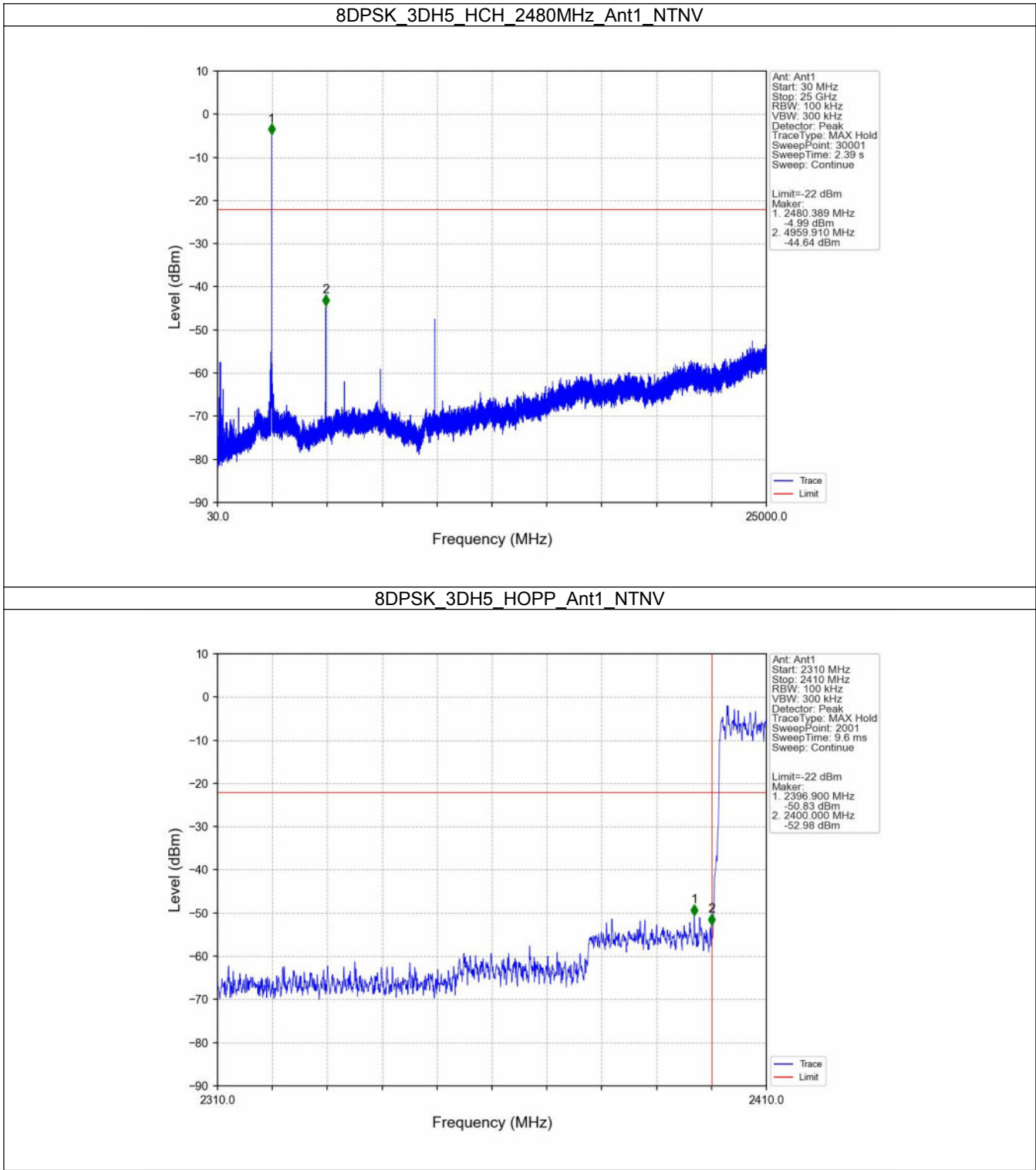
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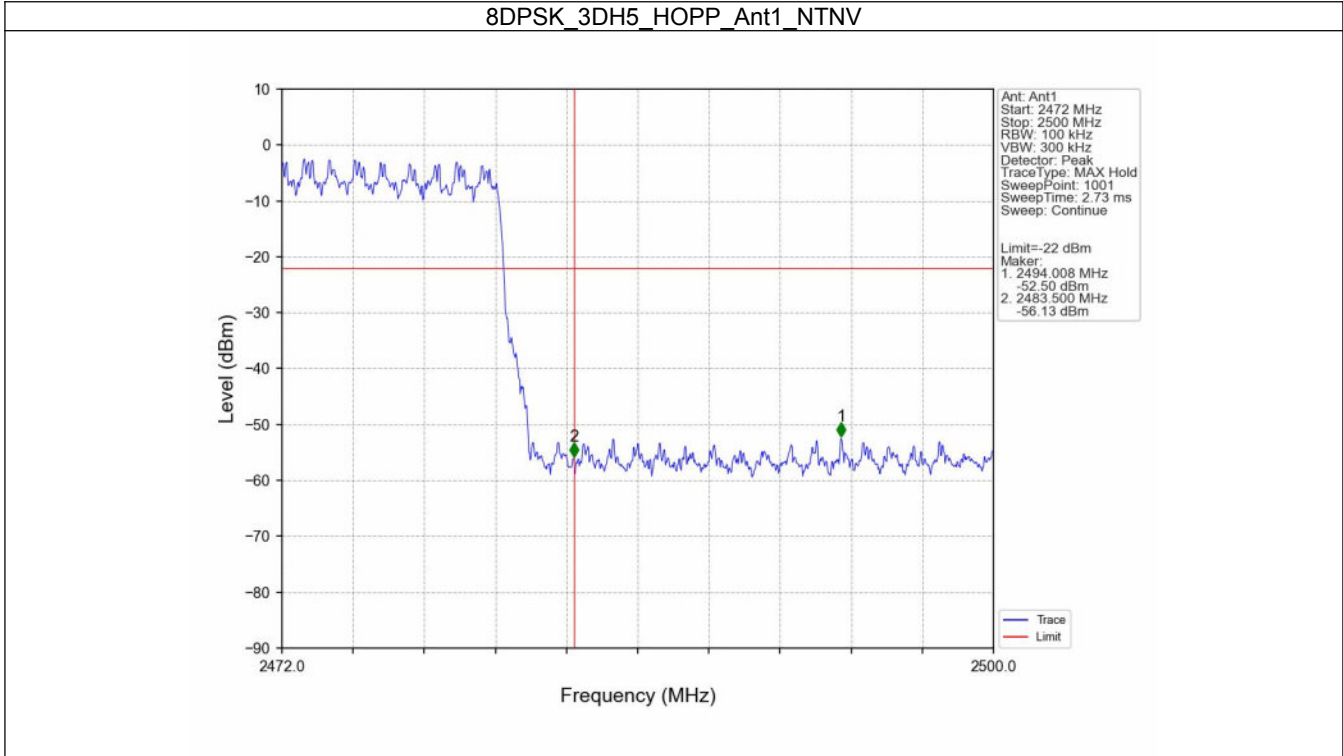
FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK



FCCID: 2BKO4-SPKRPUCK

7. Form731

7.1 Test Result

7.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2402	2480	0.0009	-0.46