



Annex for BLE

Test Report No.: CTL2401102093-WF02

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6.2 CSE 43

6.2.1 Test Result 43

1. Bandwidth

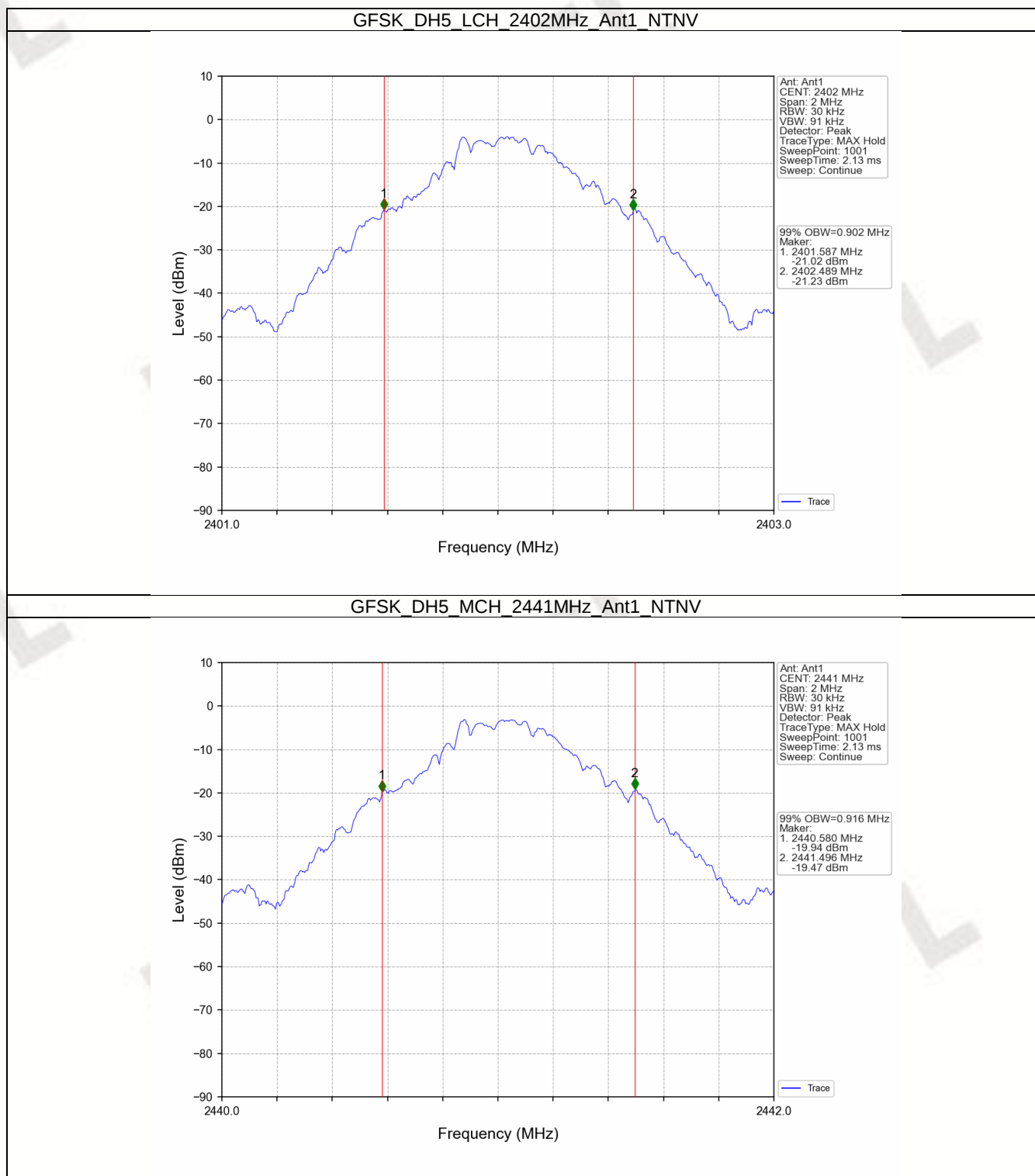
1.1 OBW

1.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.902	/	Pass
		2441	DH5	1	0.916	/	Pass
		2480	DH5	1	0.924	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.191	/	Pass
		2441	2DH5	1	1.195	/	Pass
		2480	2DH5	1	1.198	/	Pass
8DPSK	SISO	2402	3DH5	1	1.193	/	Pass
		2441	3DH5	1	1.196	/	Pass
		2480	3DH5	1	1.198	/	Pass

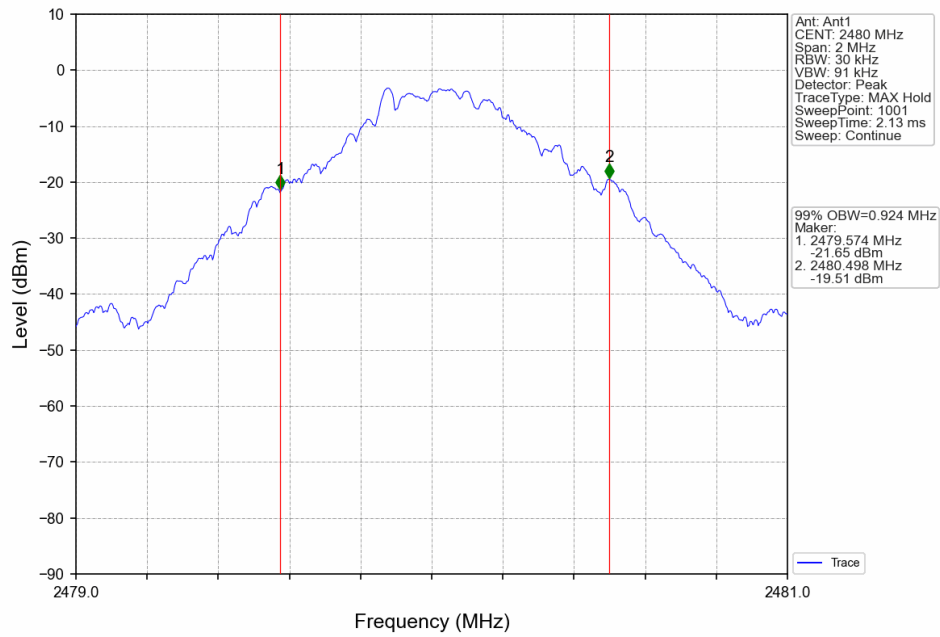
FCC ID:2AU4P-BTS121

1.1.2 Test Graph

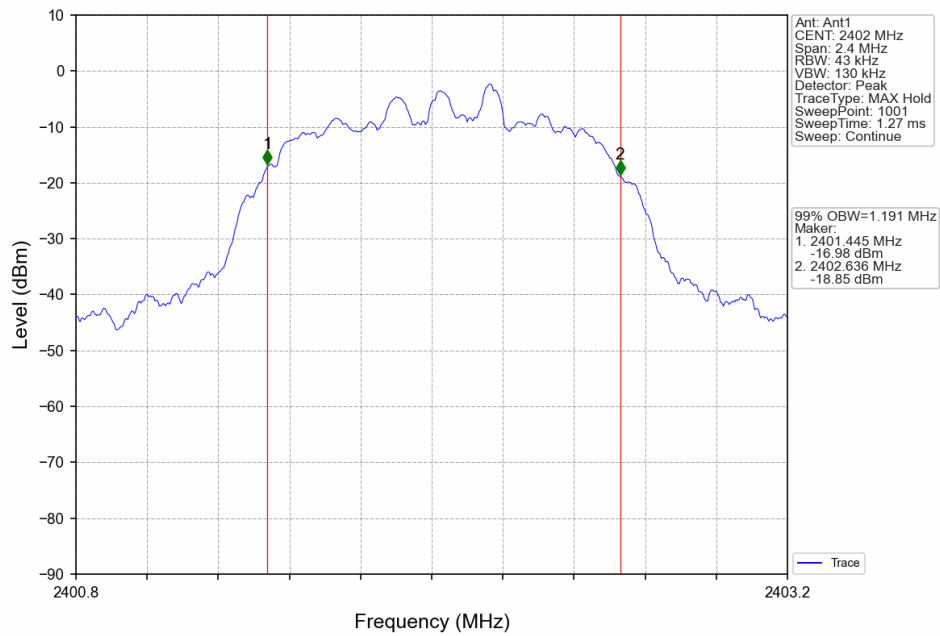


FCC ID:2AU4P-BTS121

GFSK_DH5_HCH_2480MHz_Ant1_NTNV

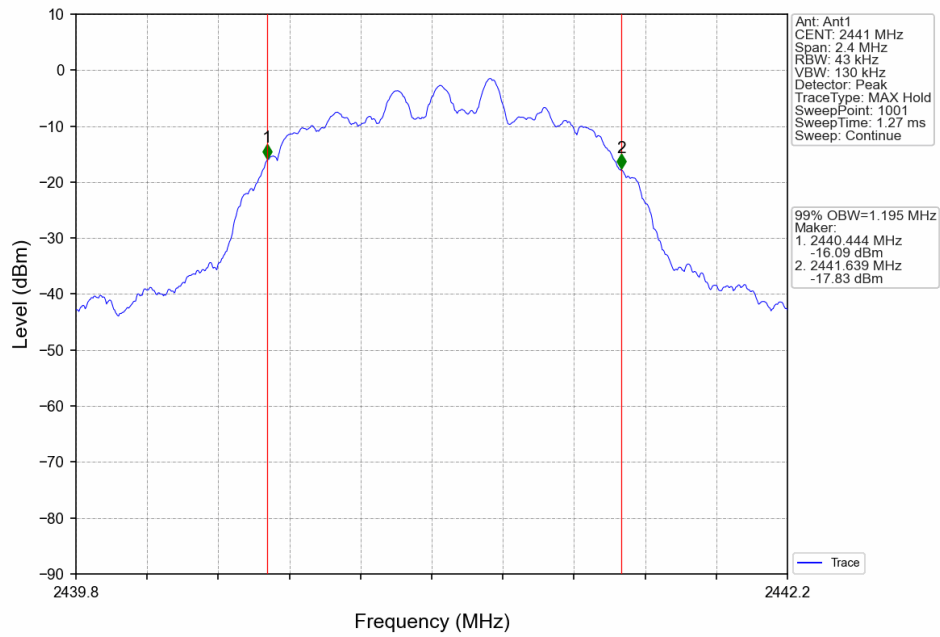


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

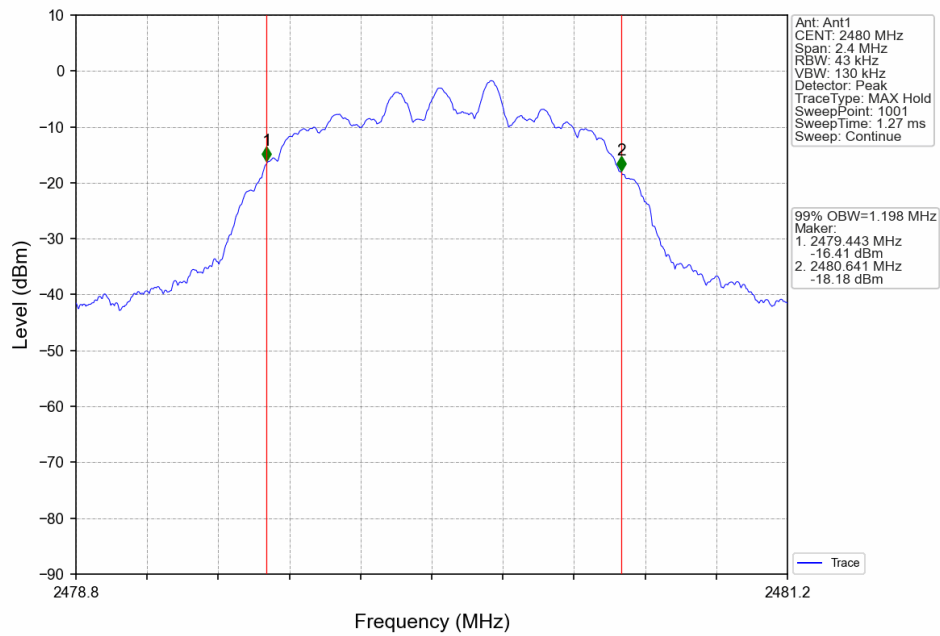


FCC ID:2AU4P-BTS121

Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV

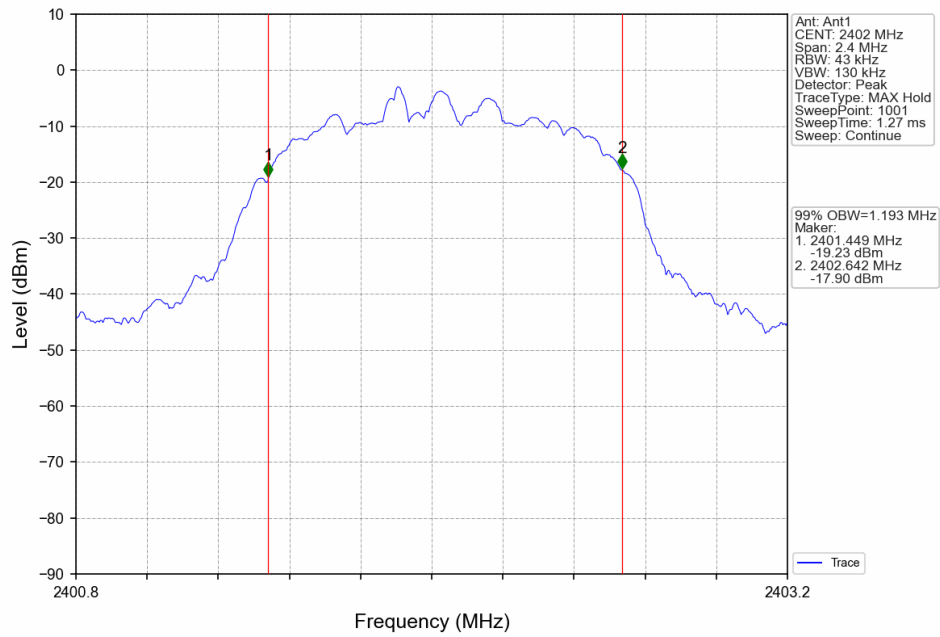


Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

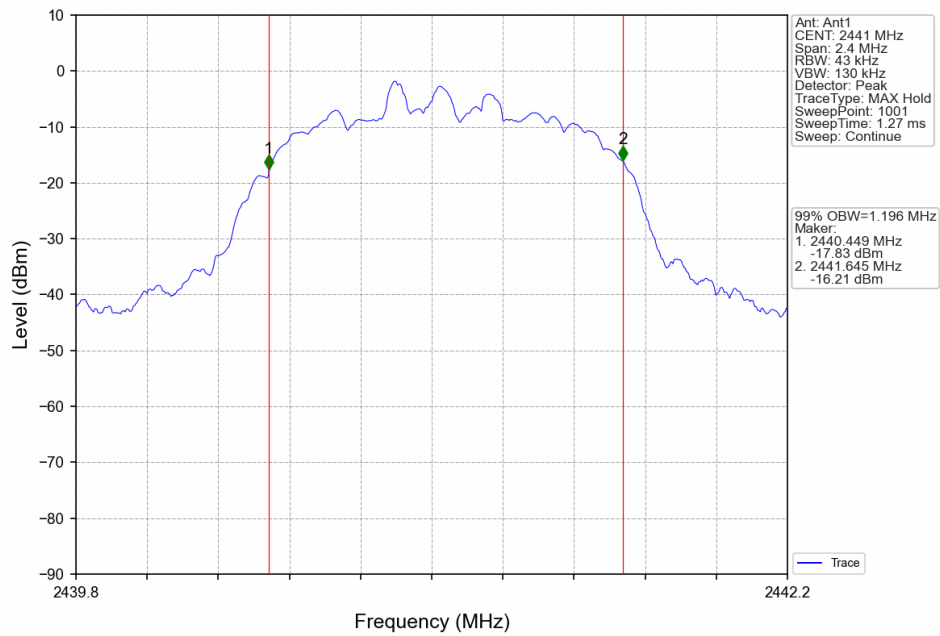


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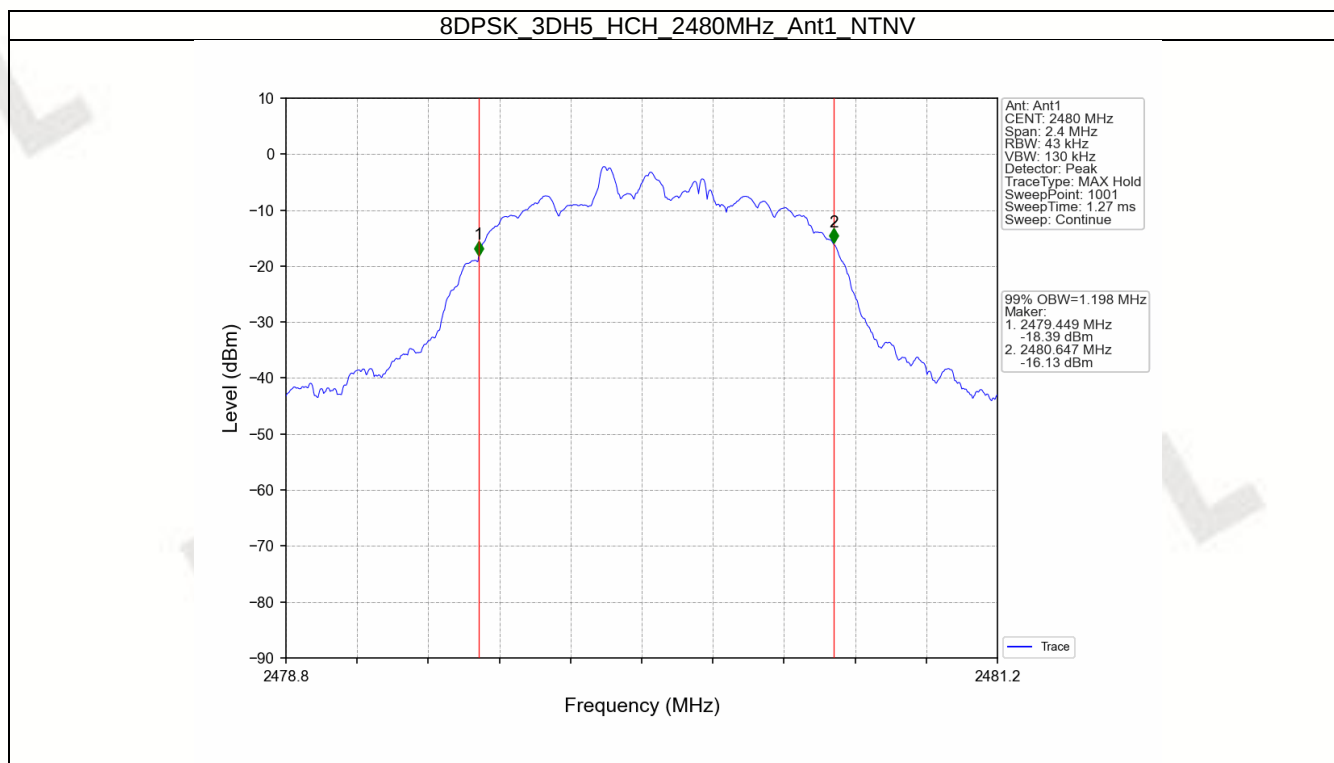
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



FCC ID:2AU4P-BTS121



FCC ID:2AU4P-BTS121

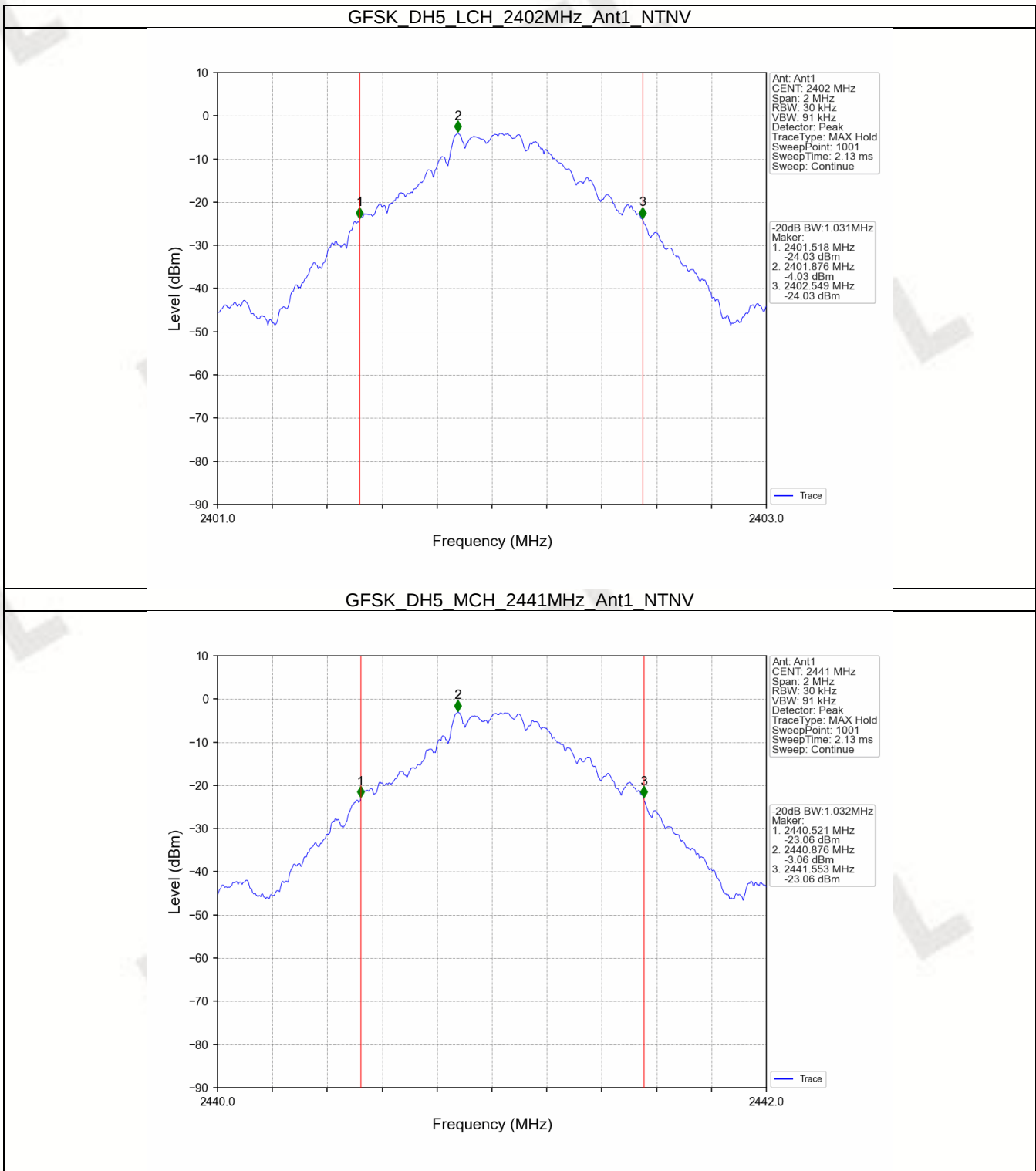
1.2 20dB BW

1.2.1 Test Result

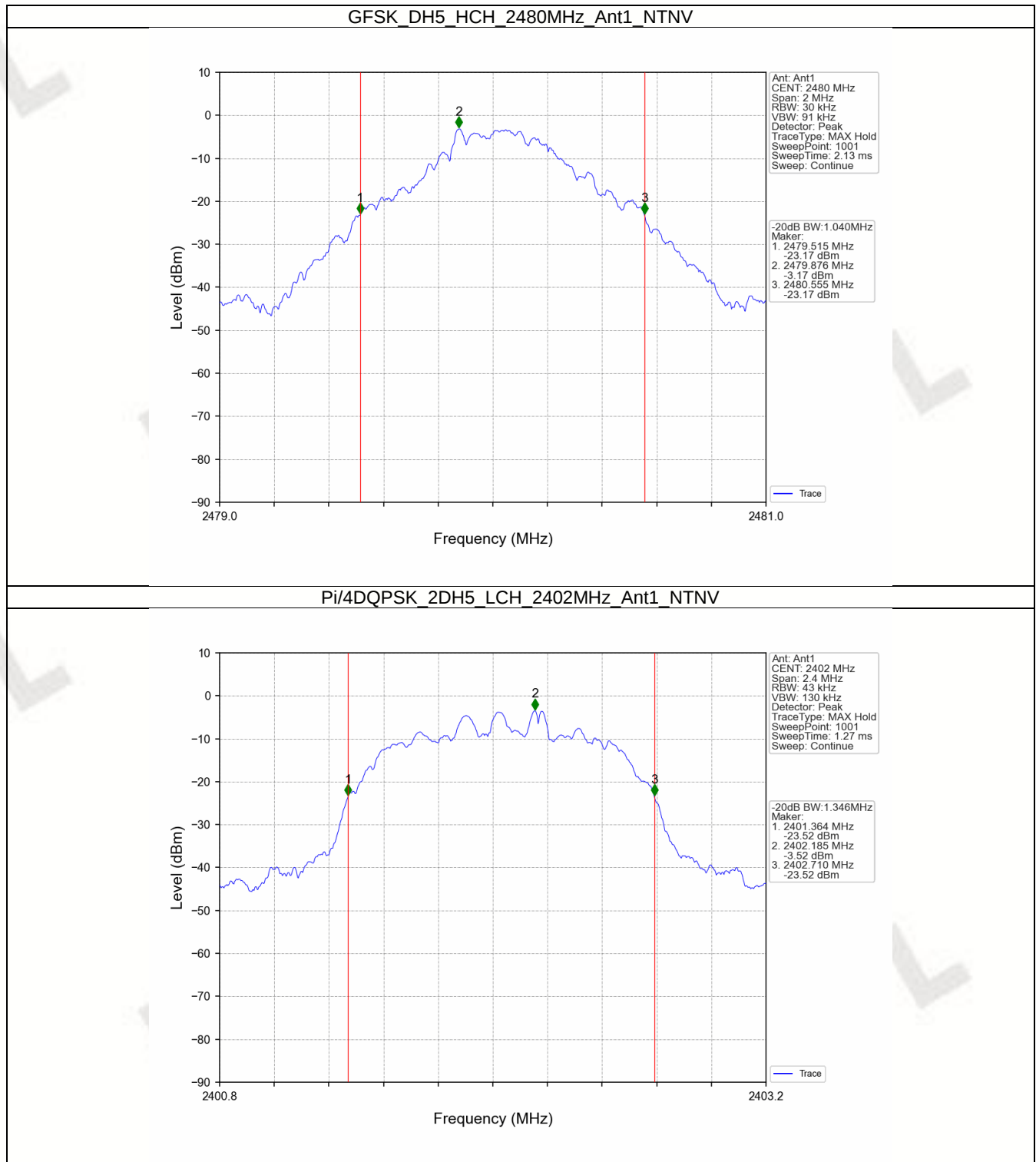
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	1.031	/	Pass
		2441	DH5	1	1.032	/	Pass
		2480	DH5	1	1.040	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.346	/	Pass
		2441	2DH5	1	1.325	/	Pass
		2480	2DH5	1	1.328	/	Pass
8DPSK	SISO	2402	3DH5	1	1.316	/	Pass
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		2480	3DH5	1	1.313	/	Pass

FCC ID:2AU4P-BTS121

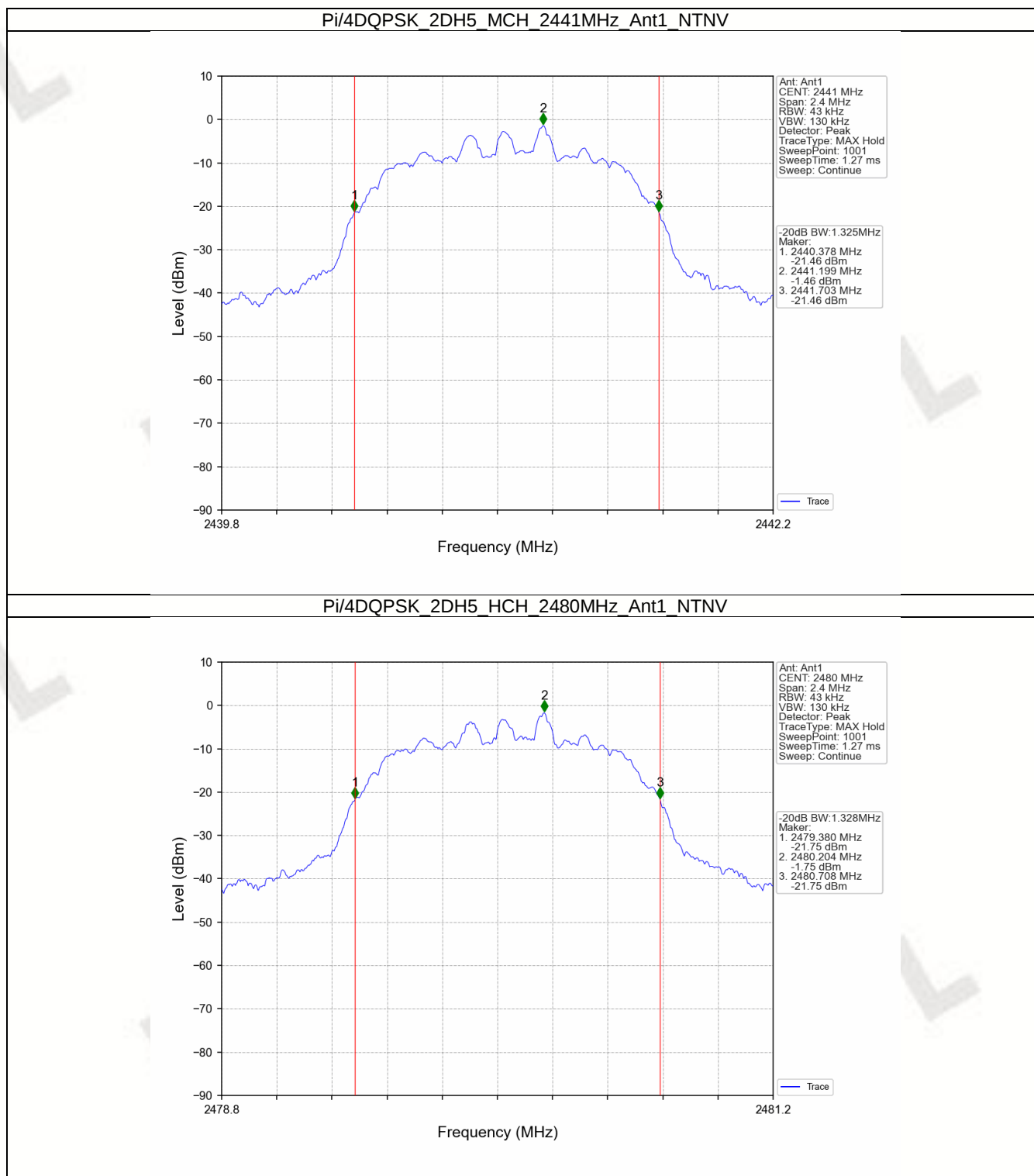
1.2.2 Test Graph



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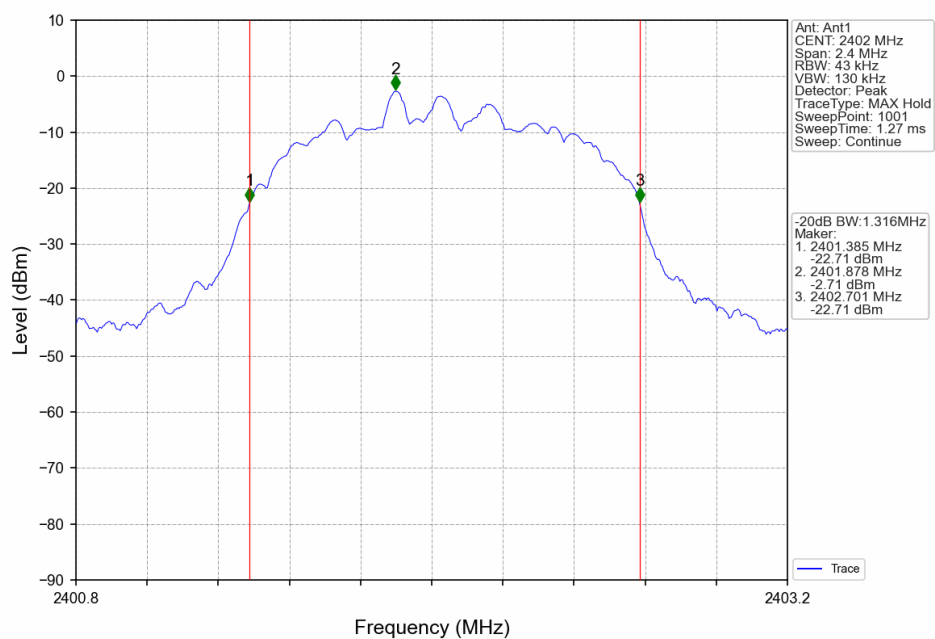


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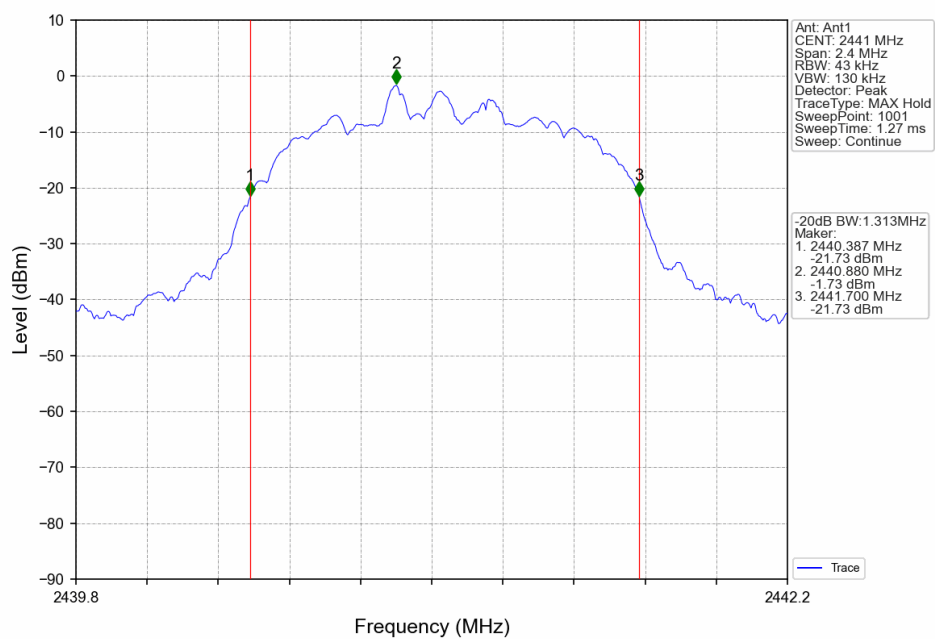


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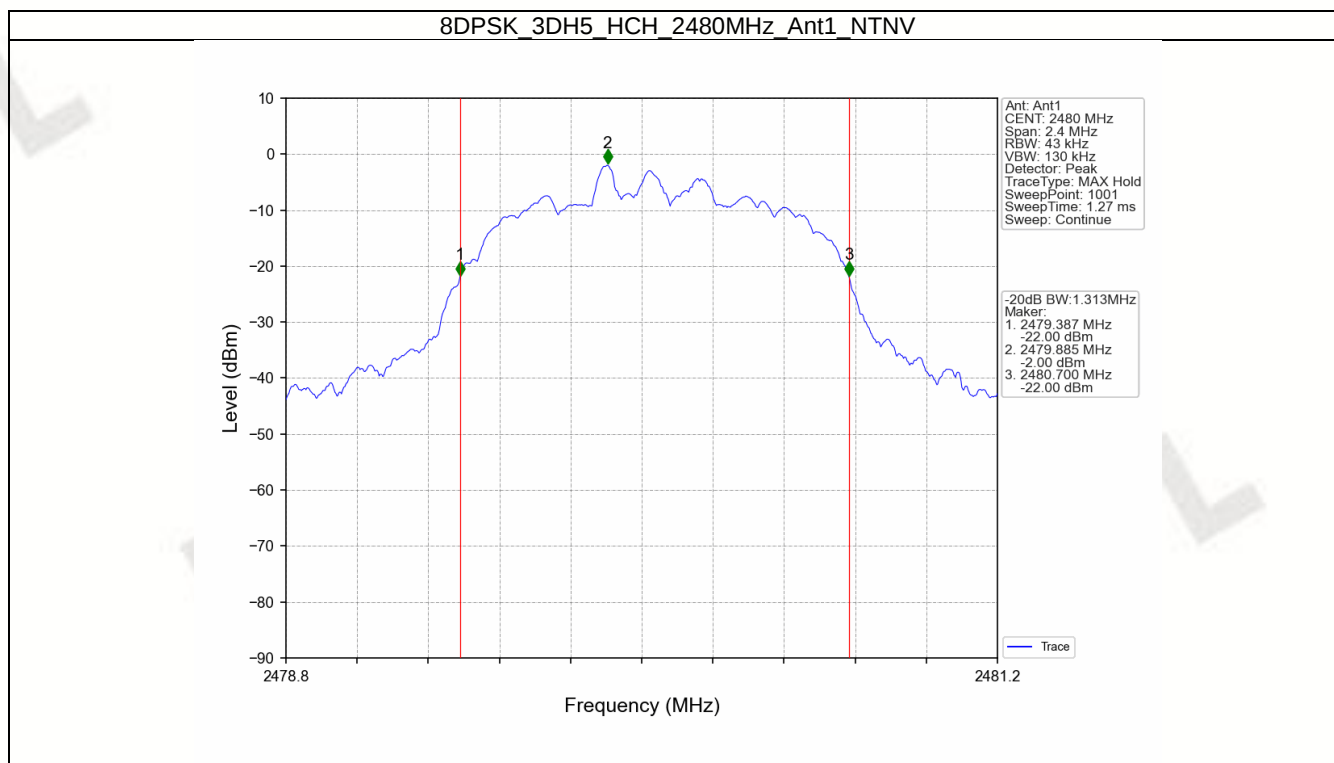
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



FCC ID:2AU4P-BTS121



2. Maximum Conducted Output Power

2.1 Power

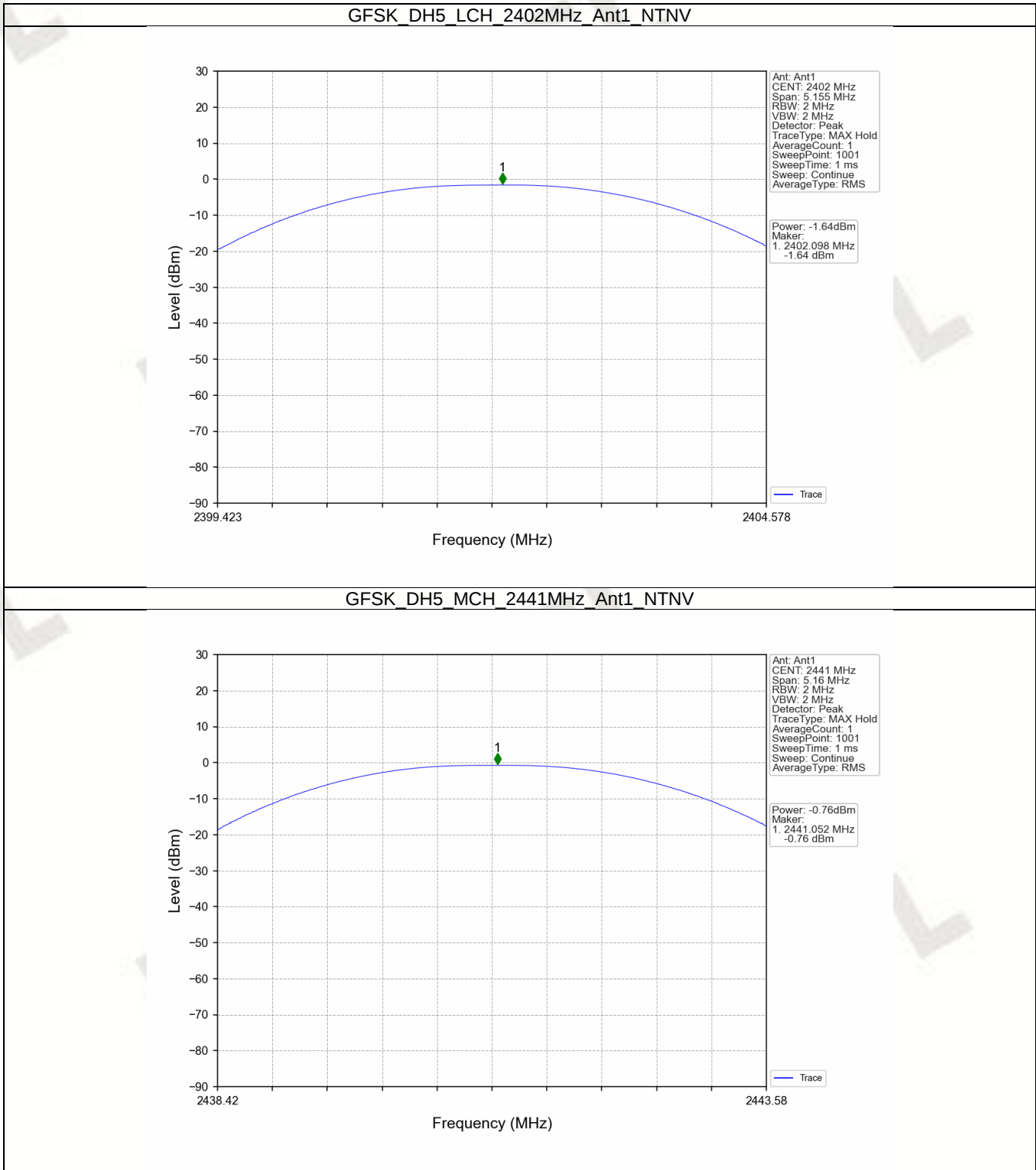
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.64	<=20.97	Pass
		2441	DH5	-0.76	<=20.97	Pass
		2480	DH5	-0.96	<=20.97	Pass
PI/4DQPSK	SISO	2402	2DH5	-0.82	<=20.97	Pass
		2441	2DH5	0.01	<=20.97	Pass
		2480	2DH5	-0.19	<=20.97	Pass
8DPSK	SISO	2402	3DH5	-0.49	<=20.97	Pass
		2441	3DH5	0.40	<=20.97	Pass
		2480	3DH5	0.19	<=20.97	Pass

Note1: Antenna Gain: Ant1: -0.58dBi;

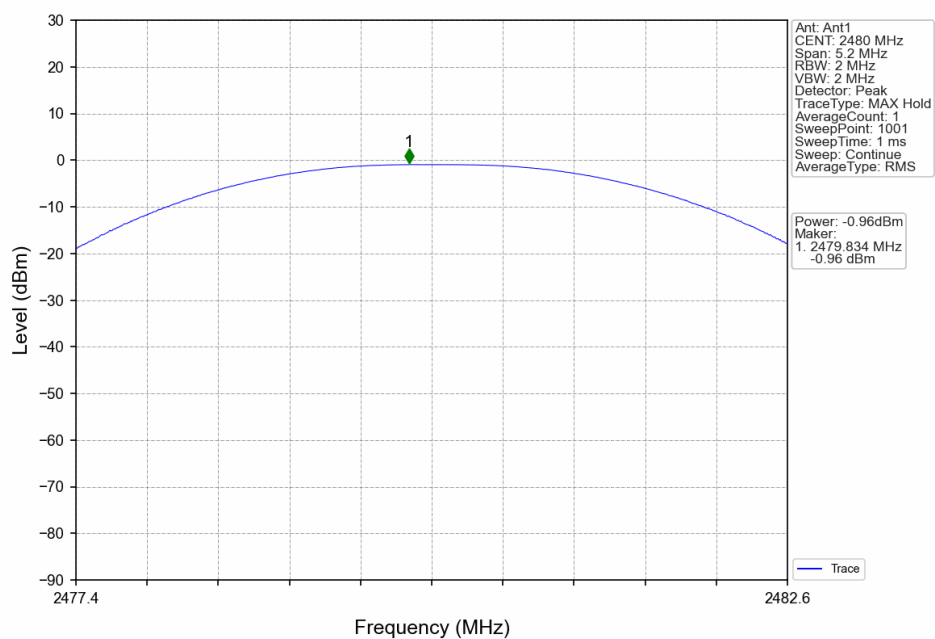
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2.1.2 Test Graph

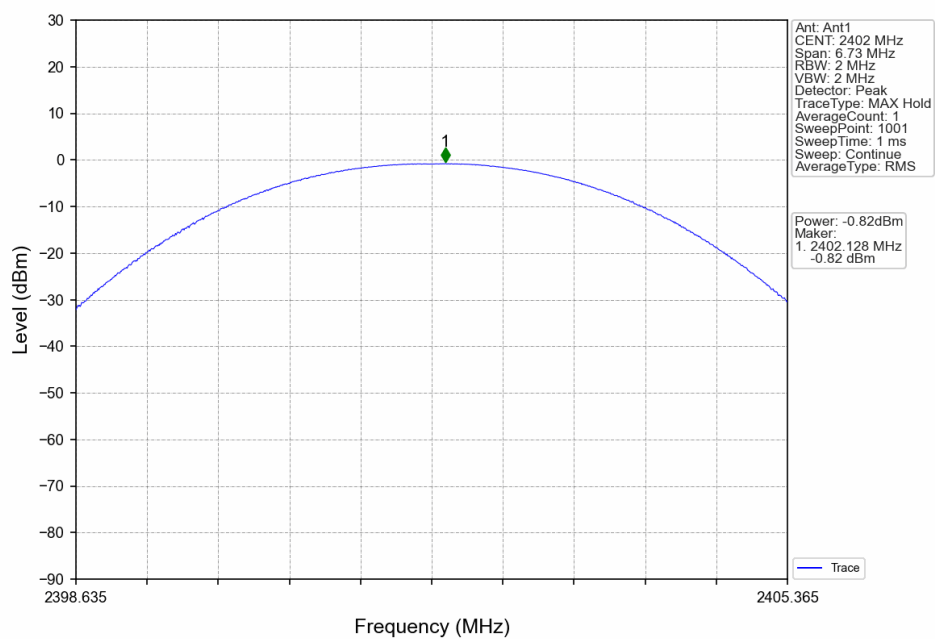


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GFSK_DH5_HCH_2480MHz_Ant1_NTNV

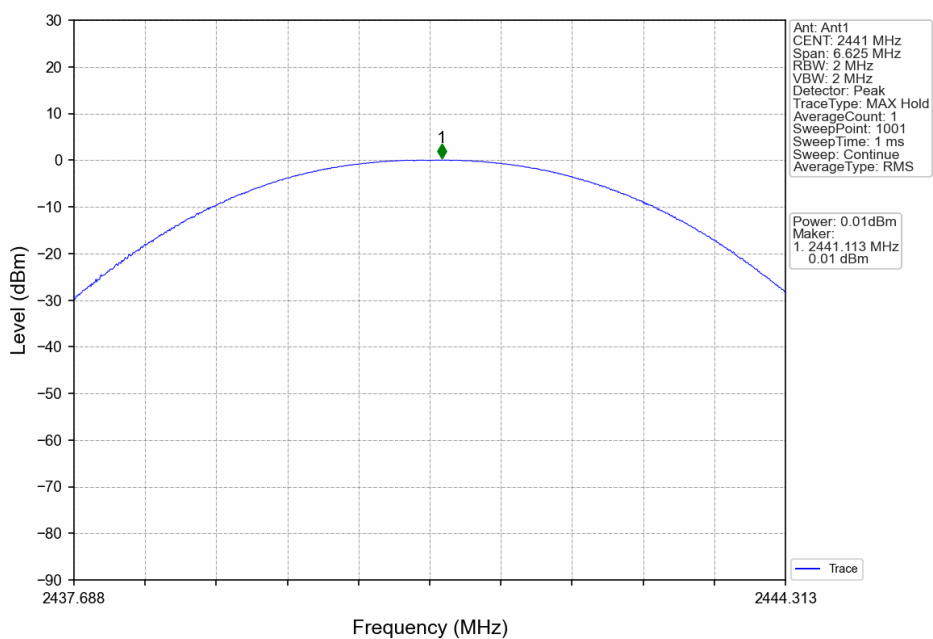


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

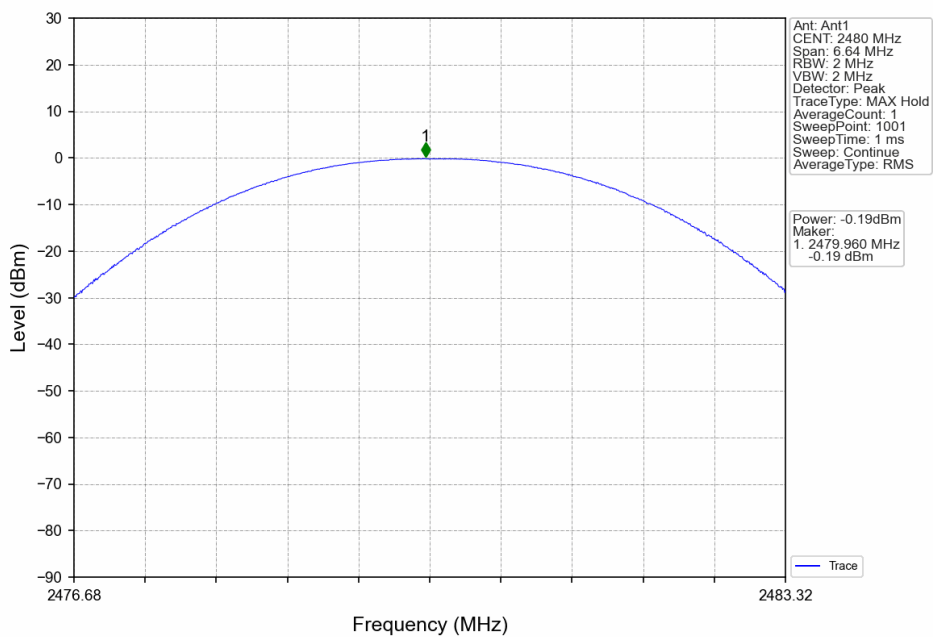


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Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV

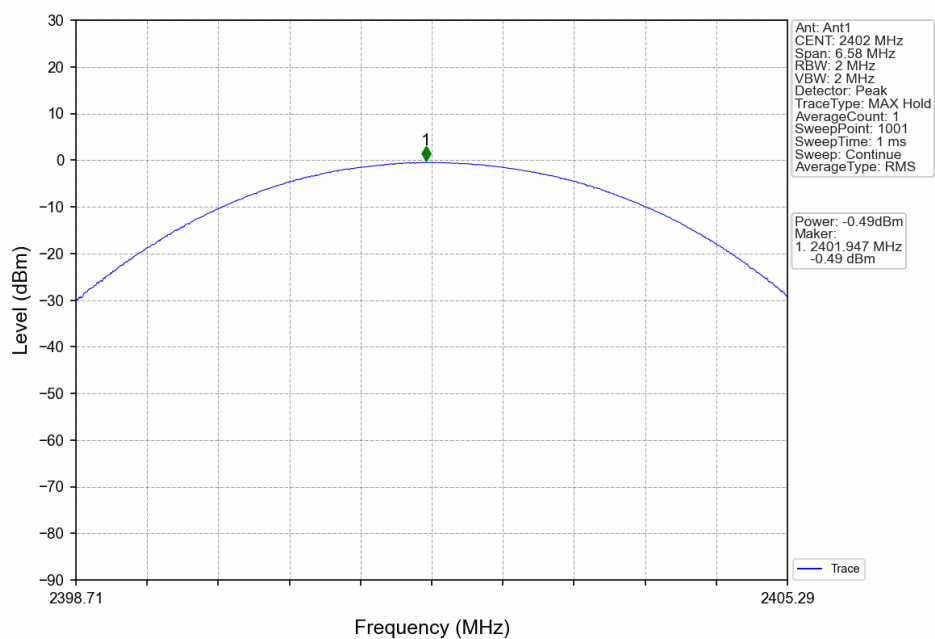


Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

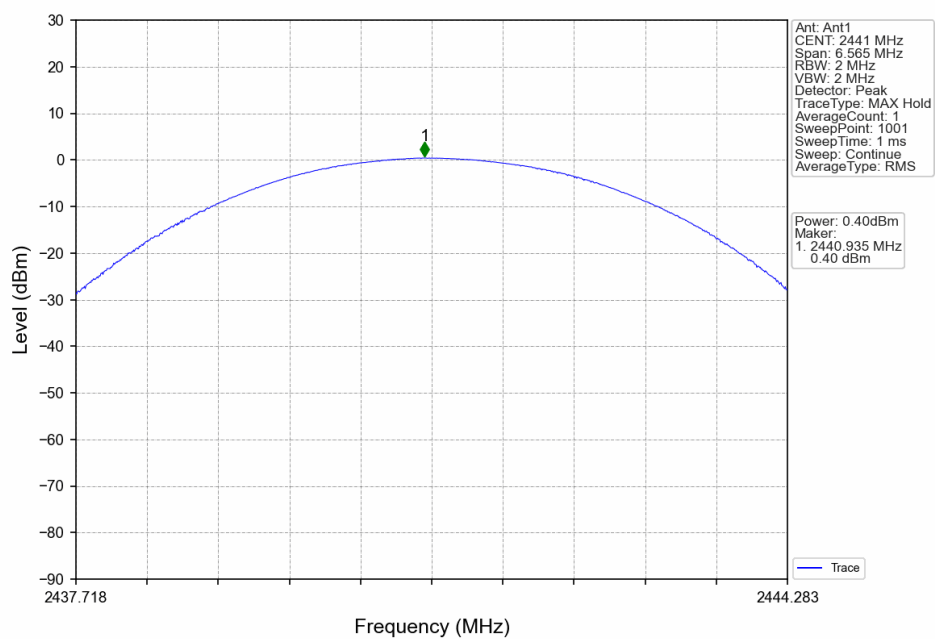


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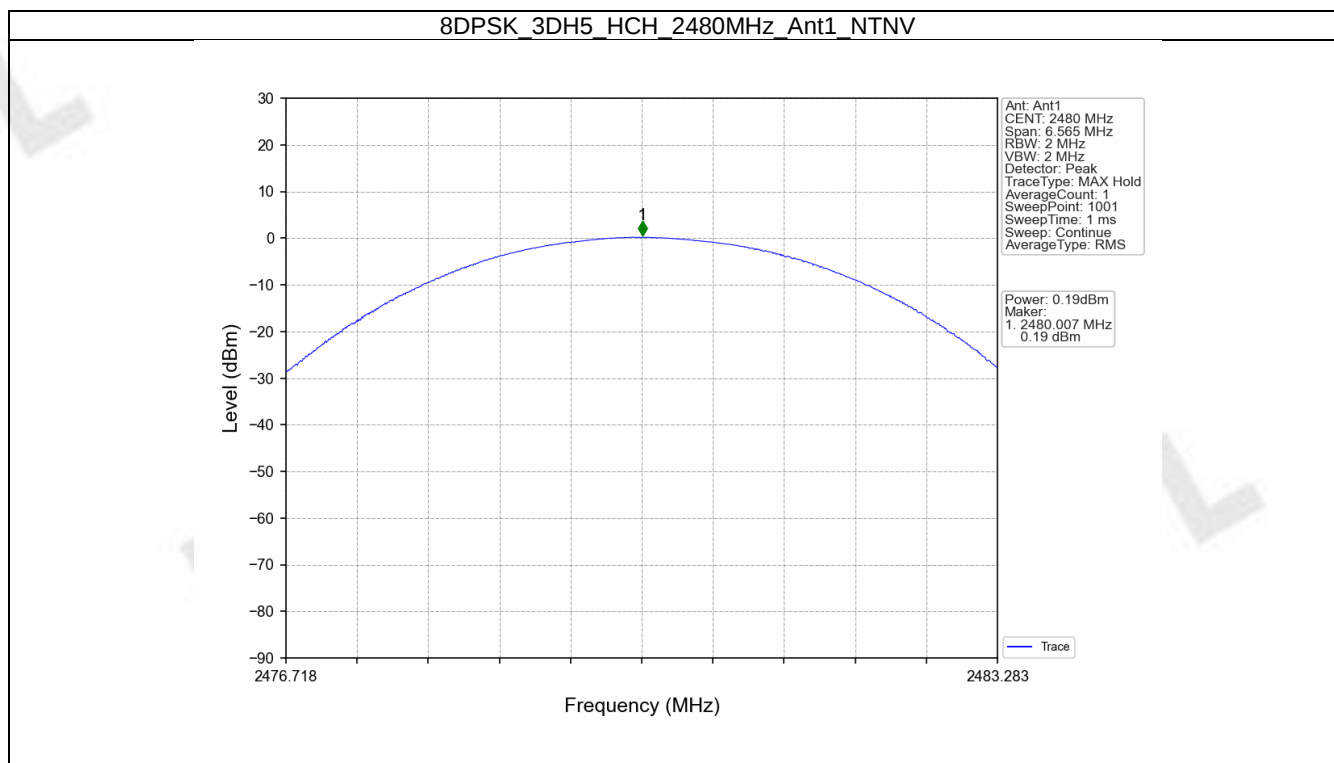
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



FCC ID:2AU4P-BTS121



3. Carrier Frequency Separation

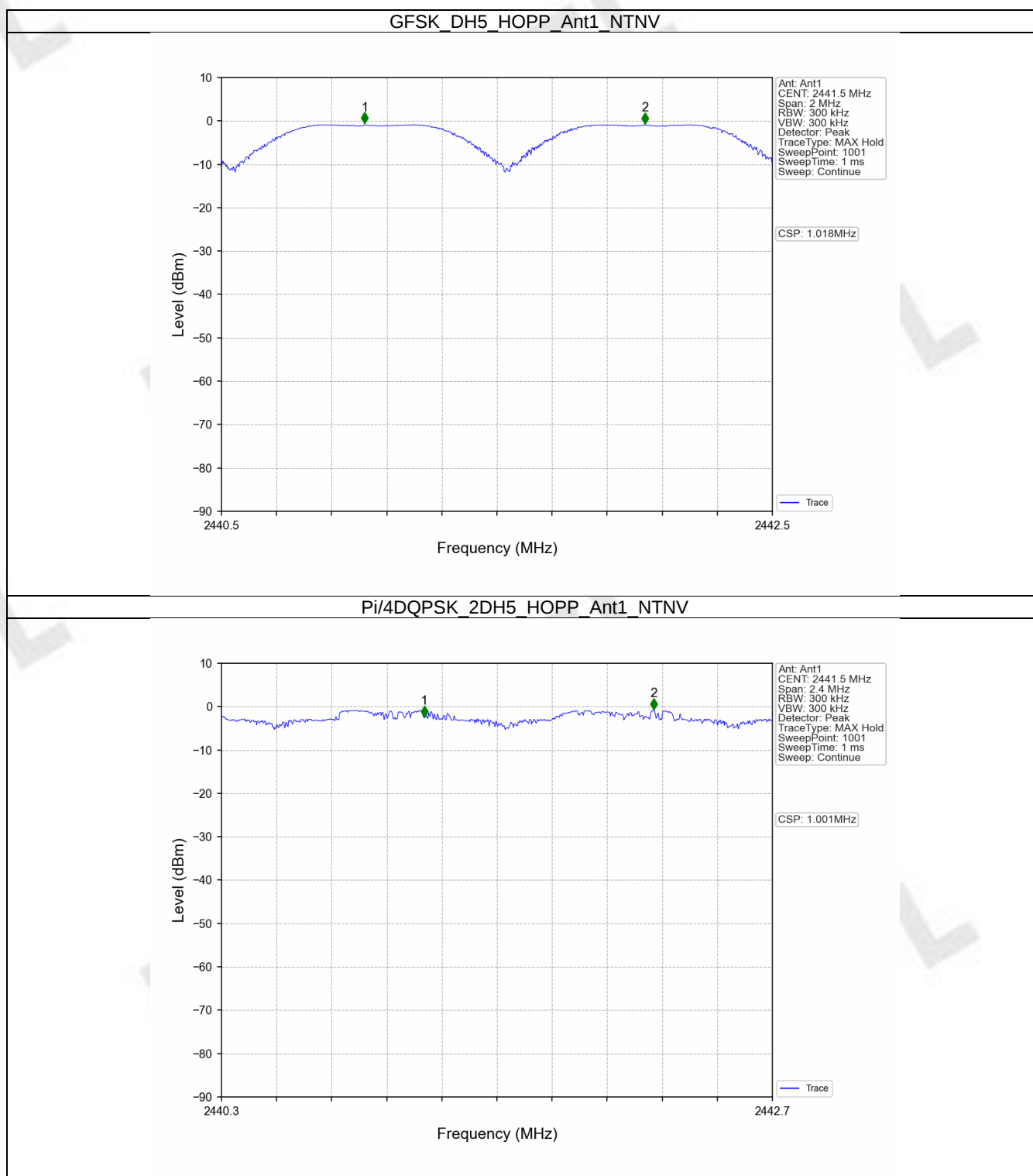
3.1 Ant1

3.1.1 Test Result

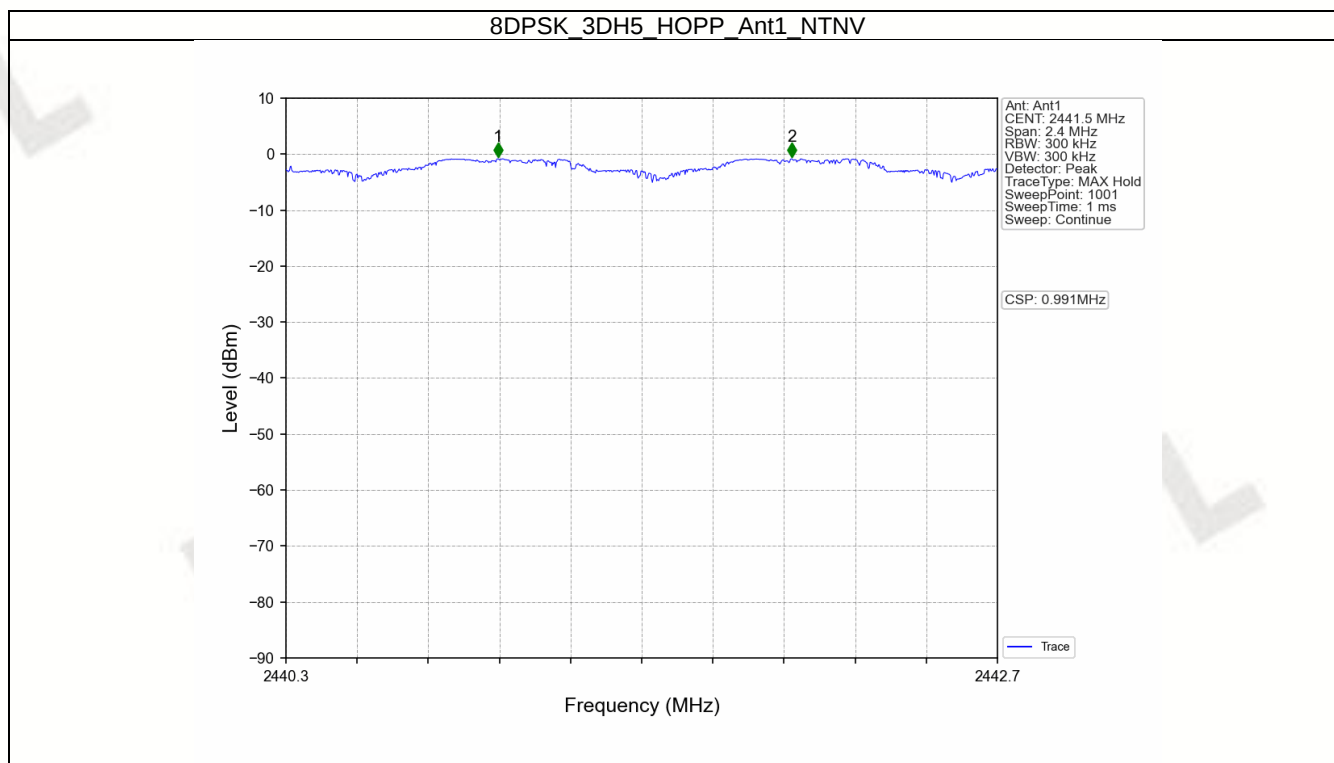
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.018	1.040	≥ 0.693	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.346	≥ 0.897	Pass
8DPSK	SISO	HOPP	3DH5	0.991	1.316	≥ 0.877	Pass

FCC ID:2AU4P-BTS121

3.1.2 Test Graph



FCC ID:2AU4P-BTS121



4. Number of Hopping Frequencies

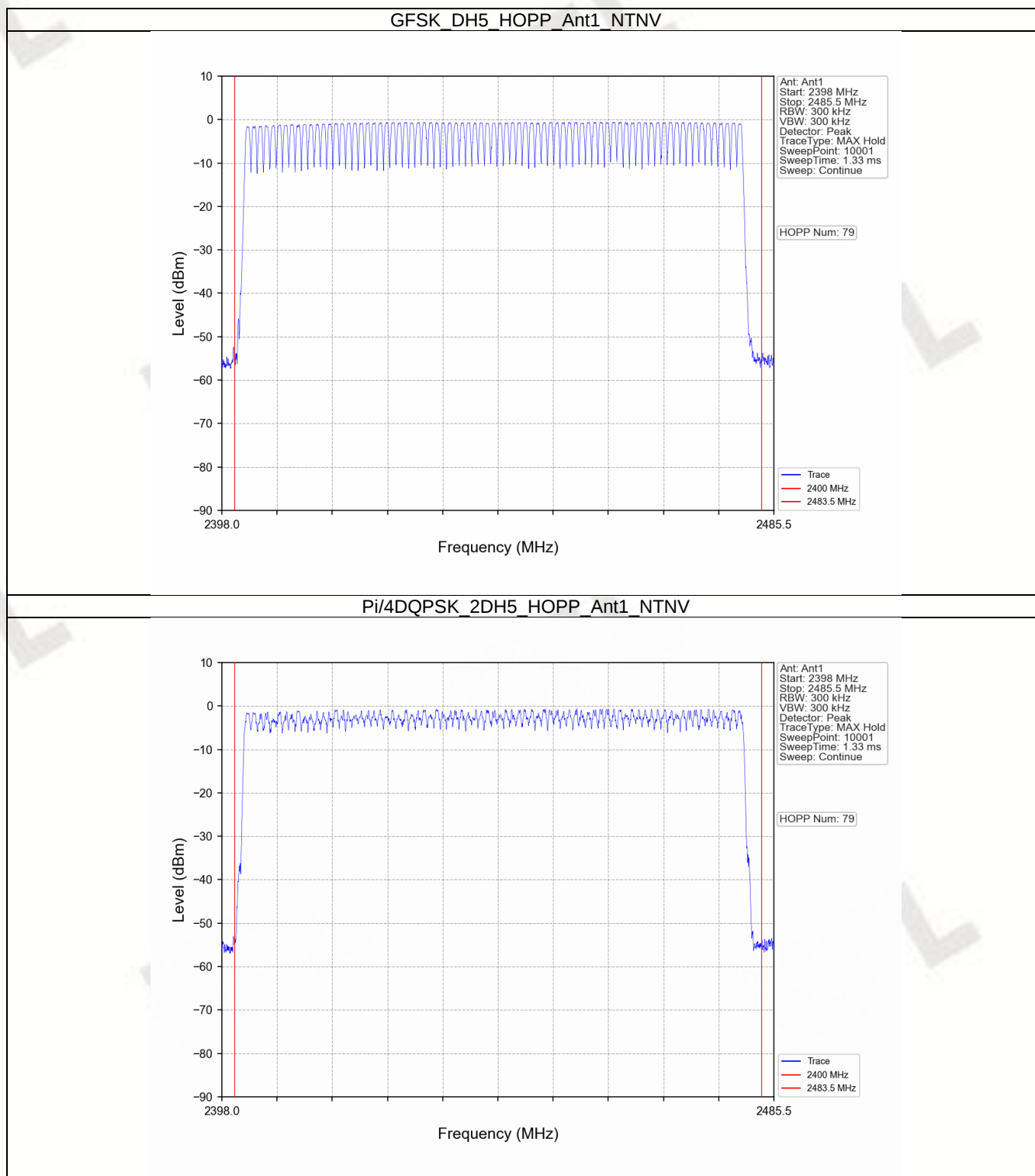
4.1 HoppNum

4.1.1 Test Result

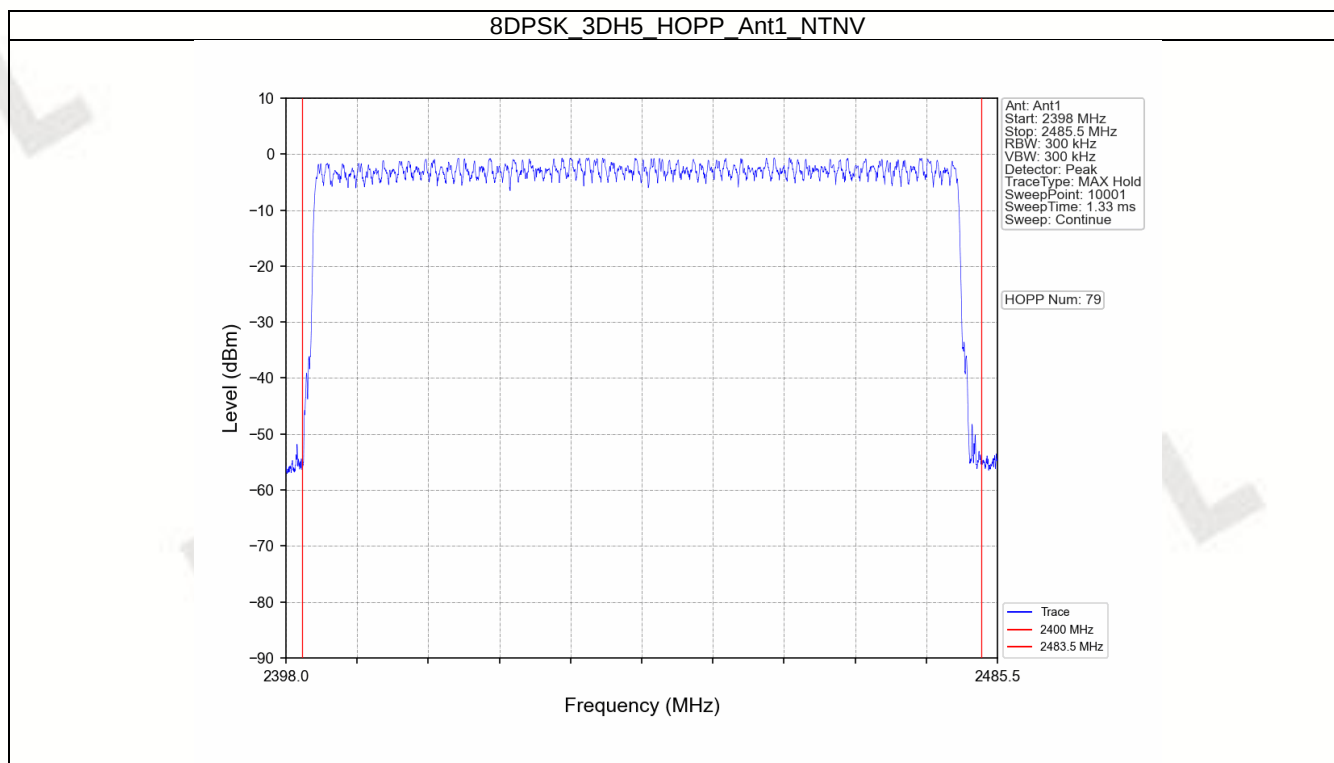
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

FCC ID:2AU4P-BTS121

4.1.2 Test Graph



FCC ID:2AU4P-BTS121



5. Time of Occupancy (Dwell Time)

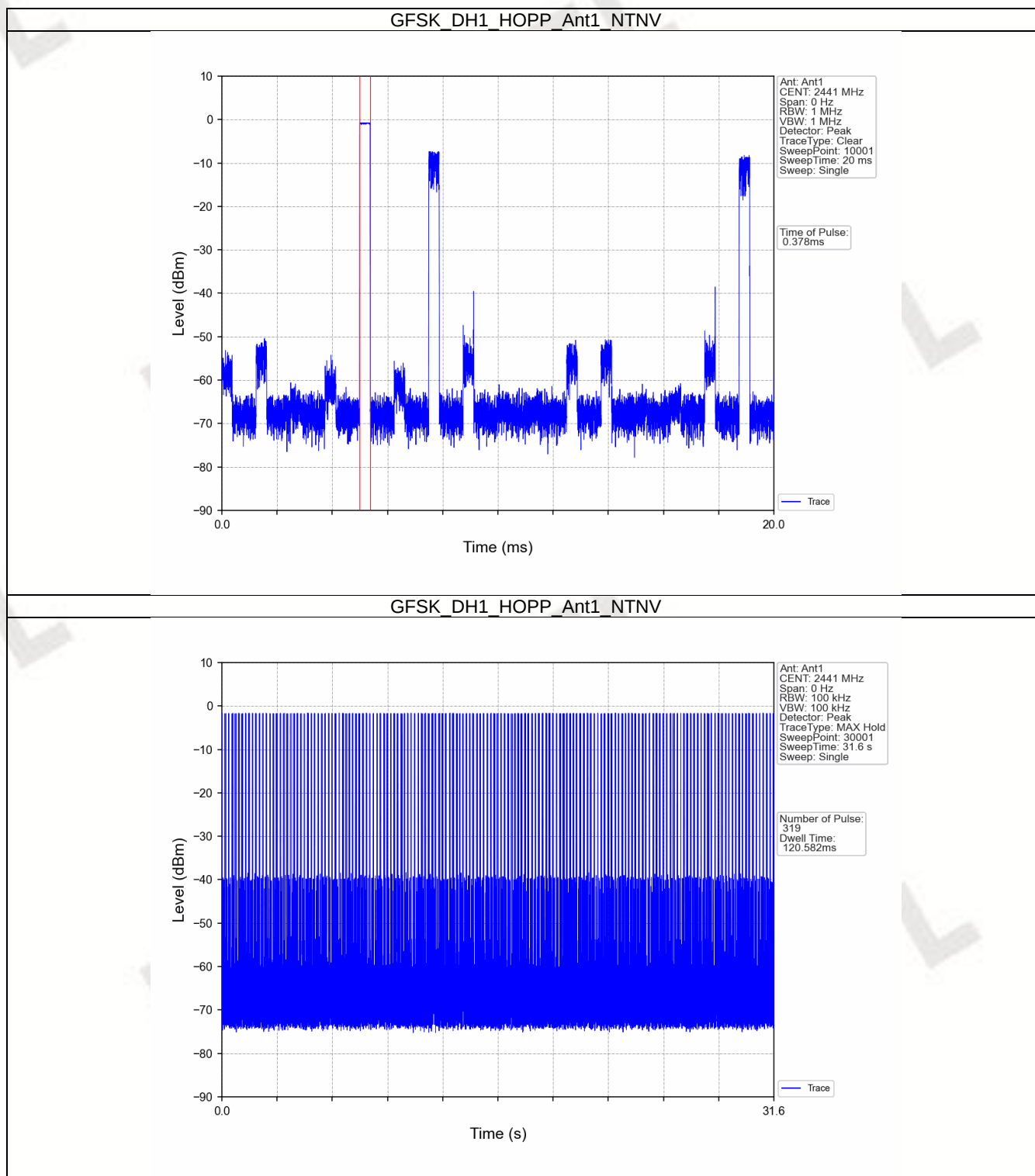
5.1 Ant1

5.1.1 Test Result

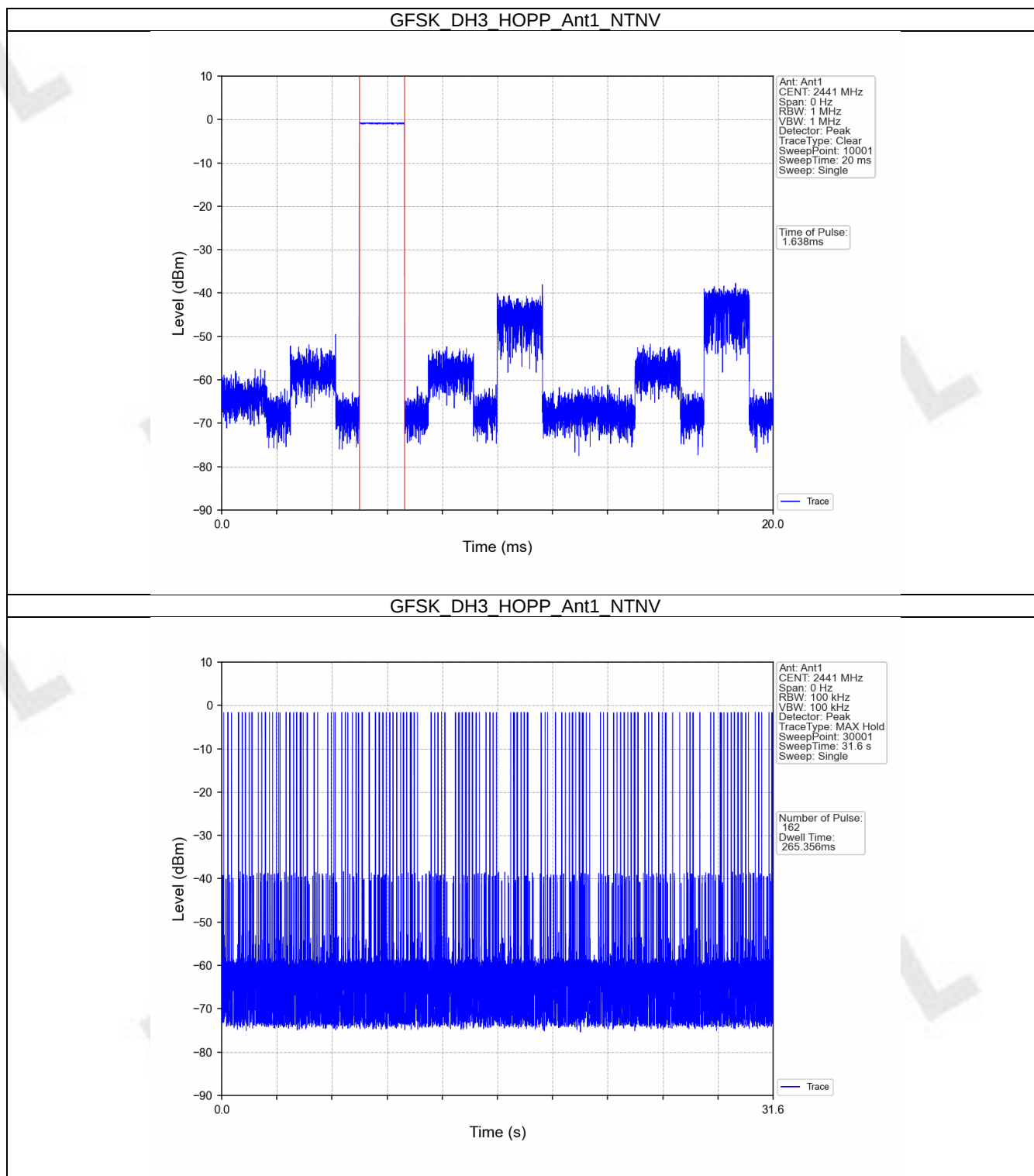
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.378	31.600	319	120.582	<=400	Pass
			DH3	1.638	31.600	162	265.356	<=400	Pass
			DH5	2.890	31.600	115	332.350	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.390	31.600	320	124.800	<=400	Pass
			2DH3	2.896	31.600	114	330.144	<=400	Pass
			2DH5	2.890	31.600	111	320.790	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.390	31.600	319	124.410	<=400	Pass
			3DH3	1.648	31.600	159	262.032	<=400	Pass
			3DH5	2.898	31.600	101	292.698	<=400	Pass

FCC ID:2AU4P-BTS121

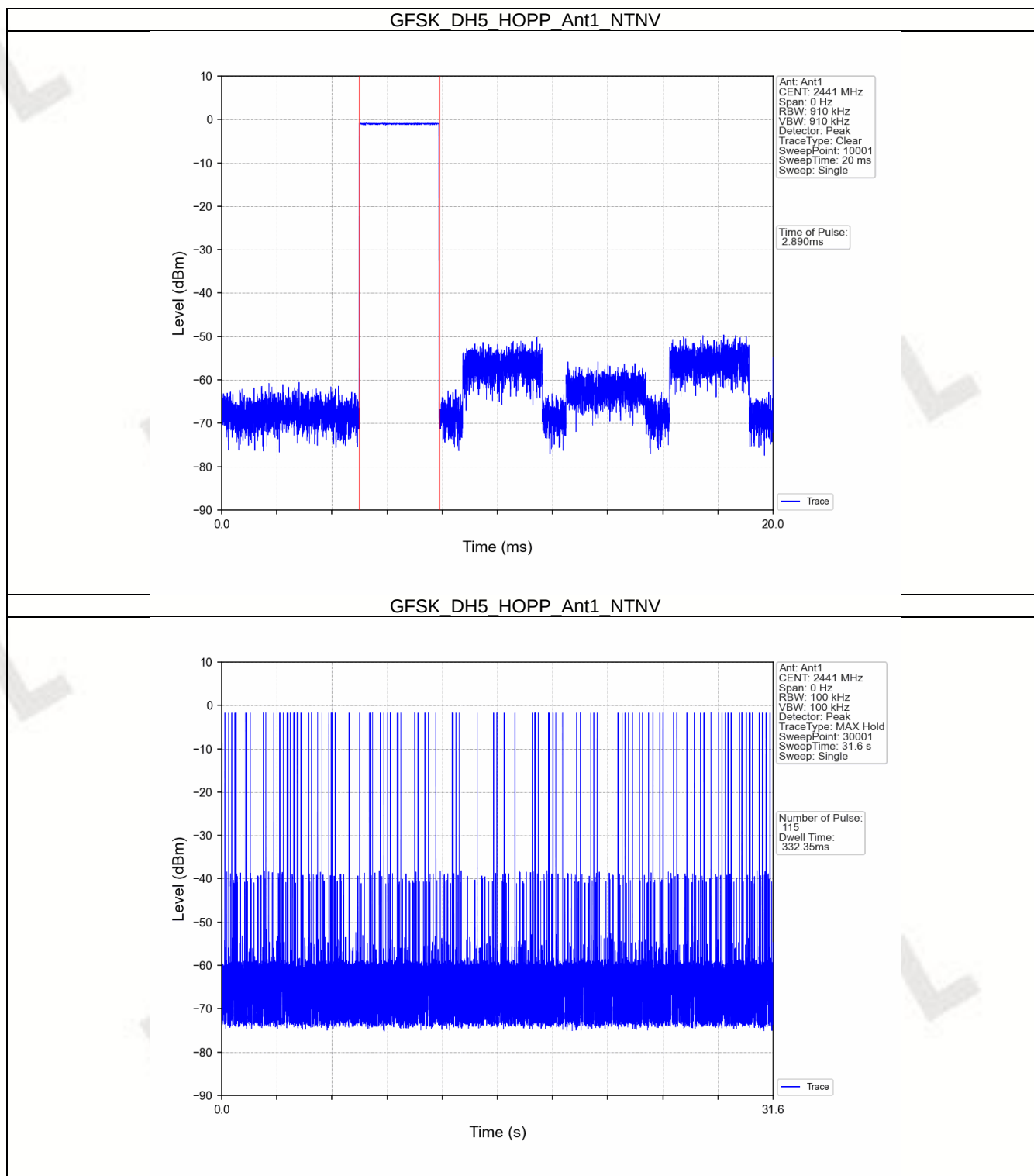
5.1.2 Test Graph



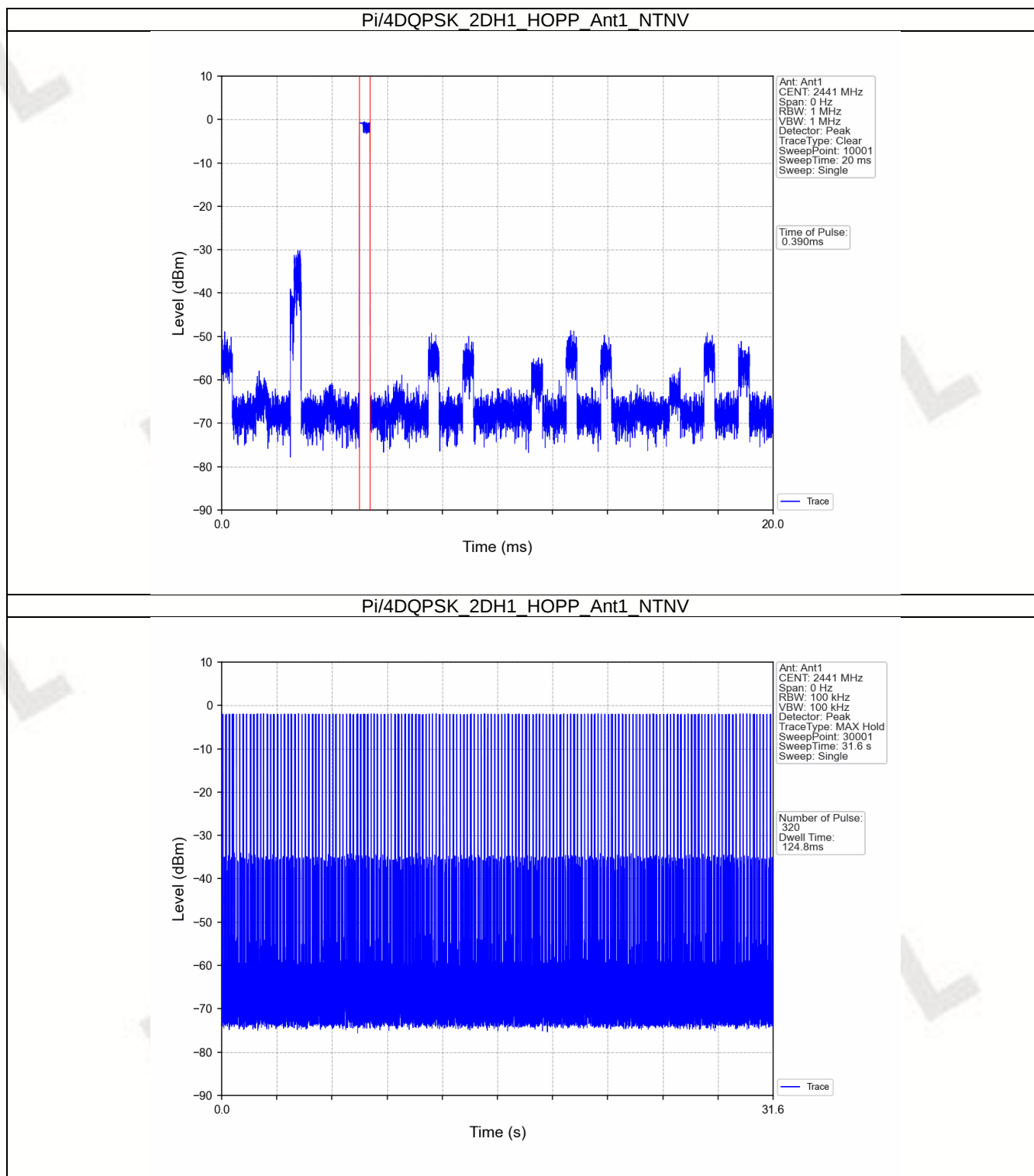
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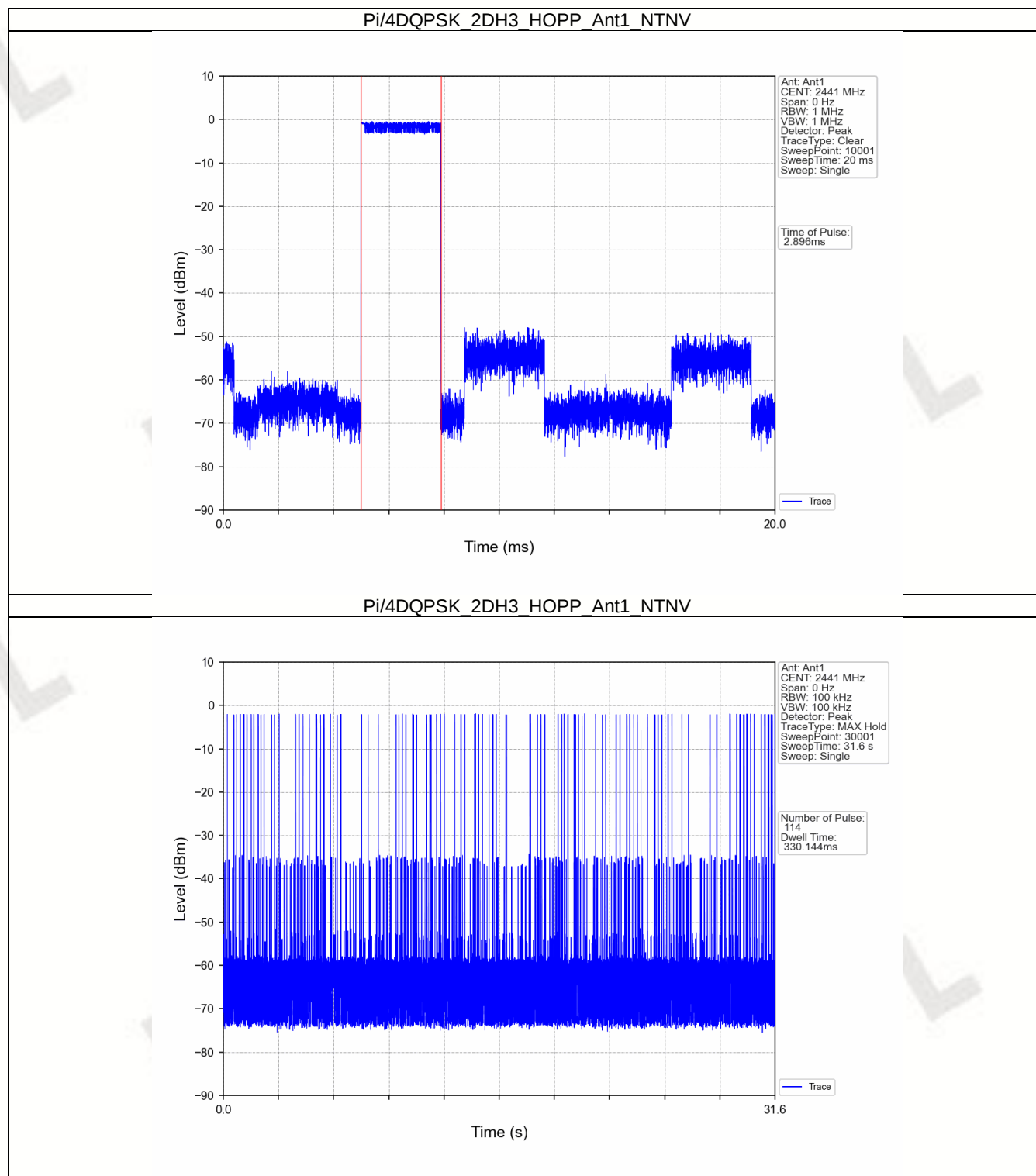
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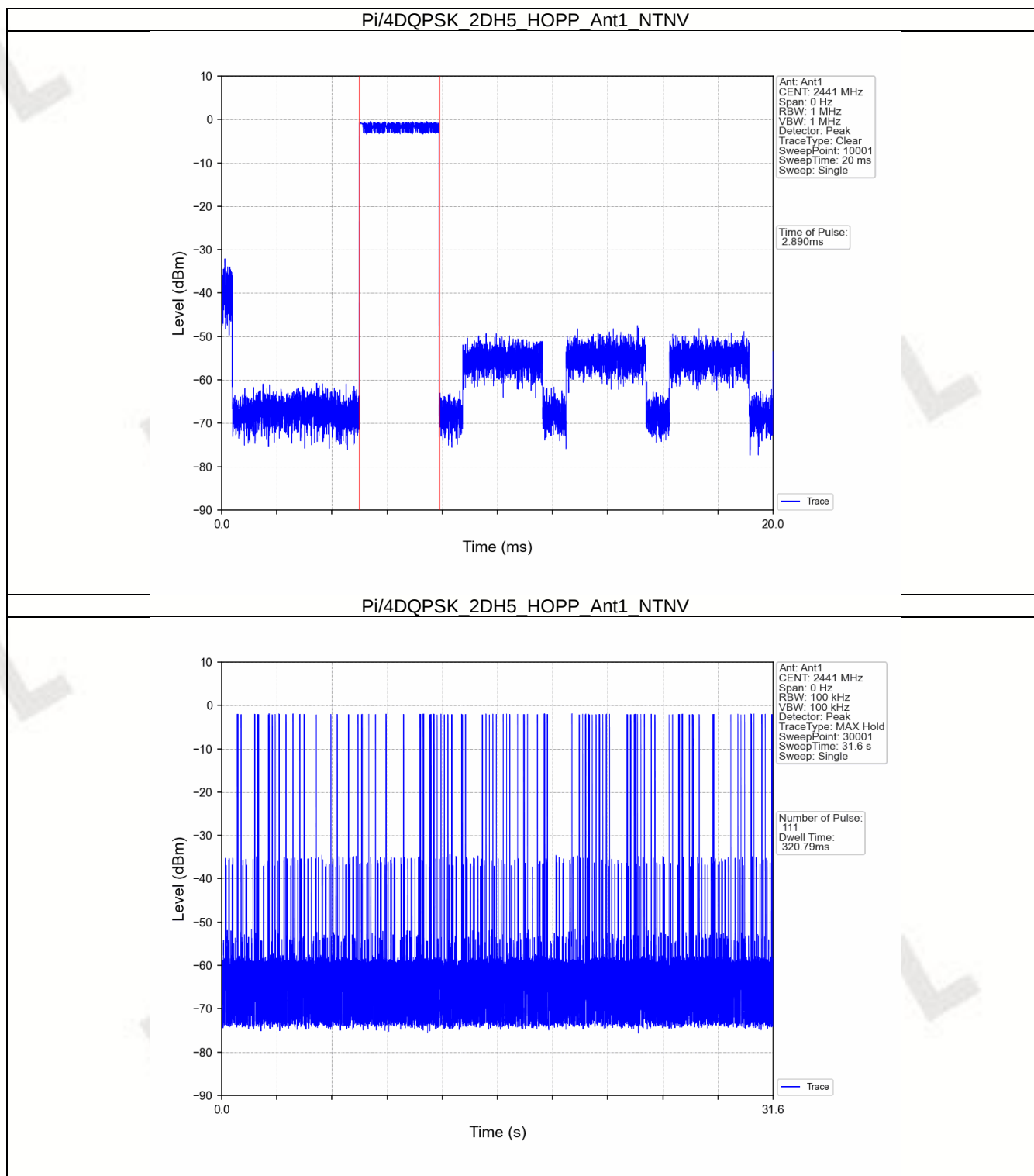
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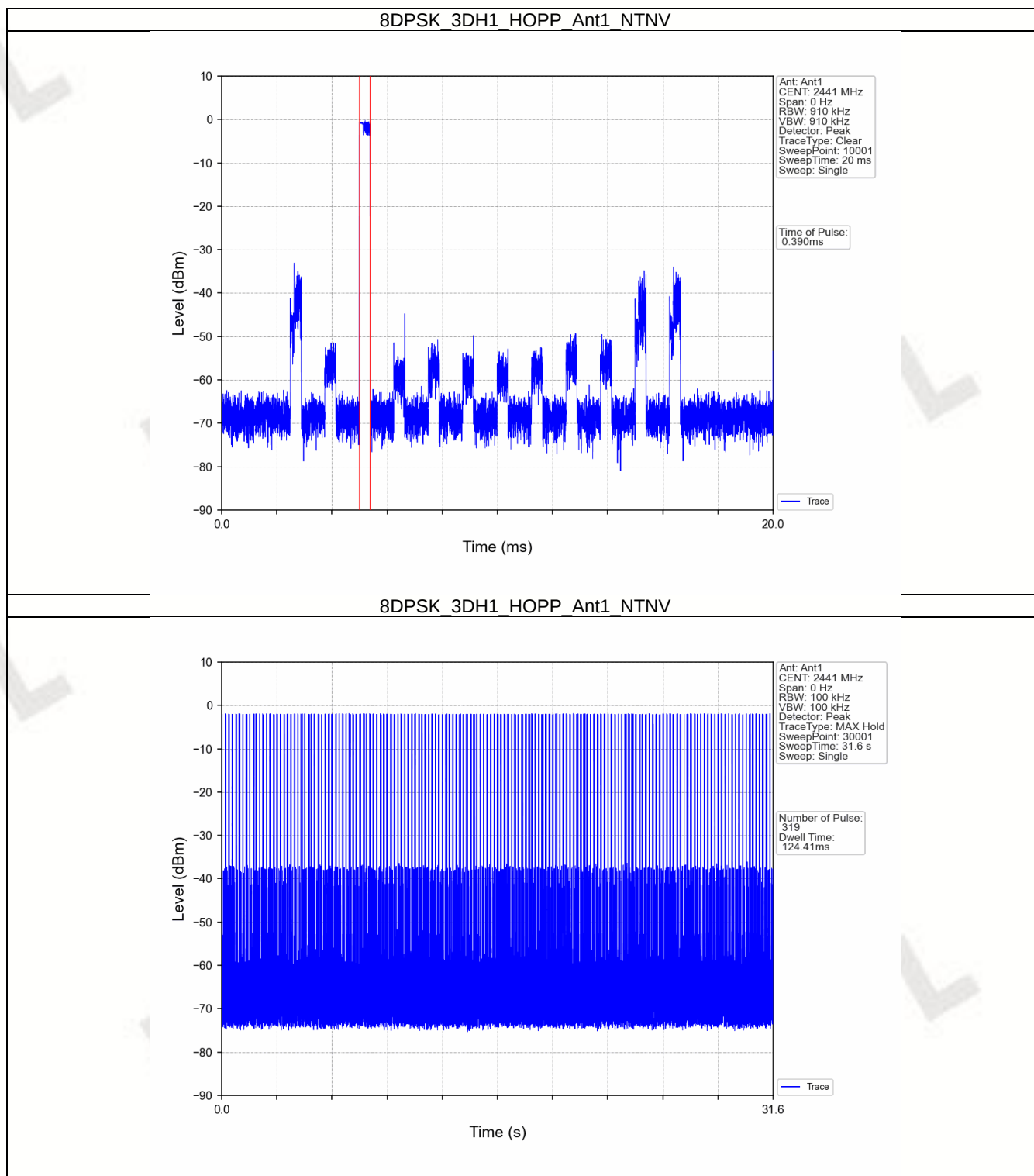
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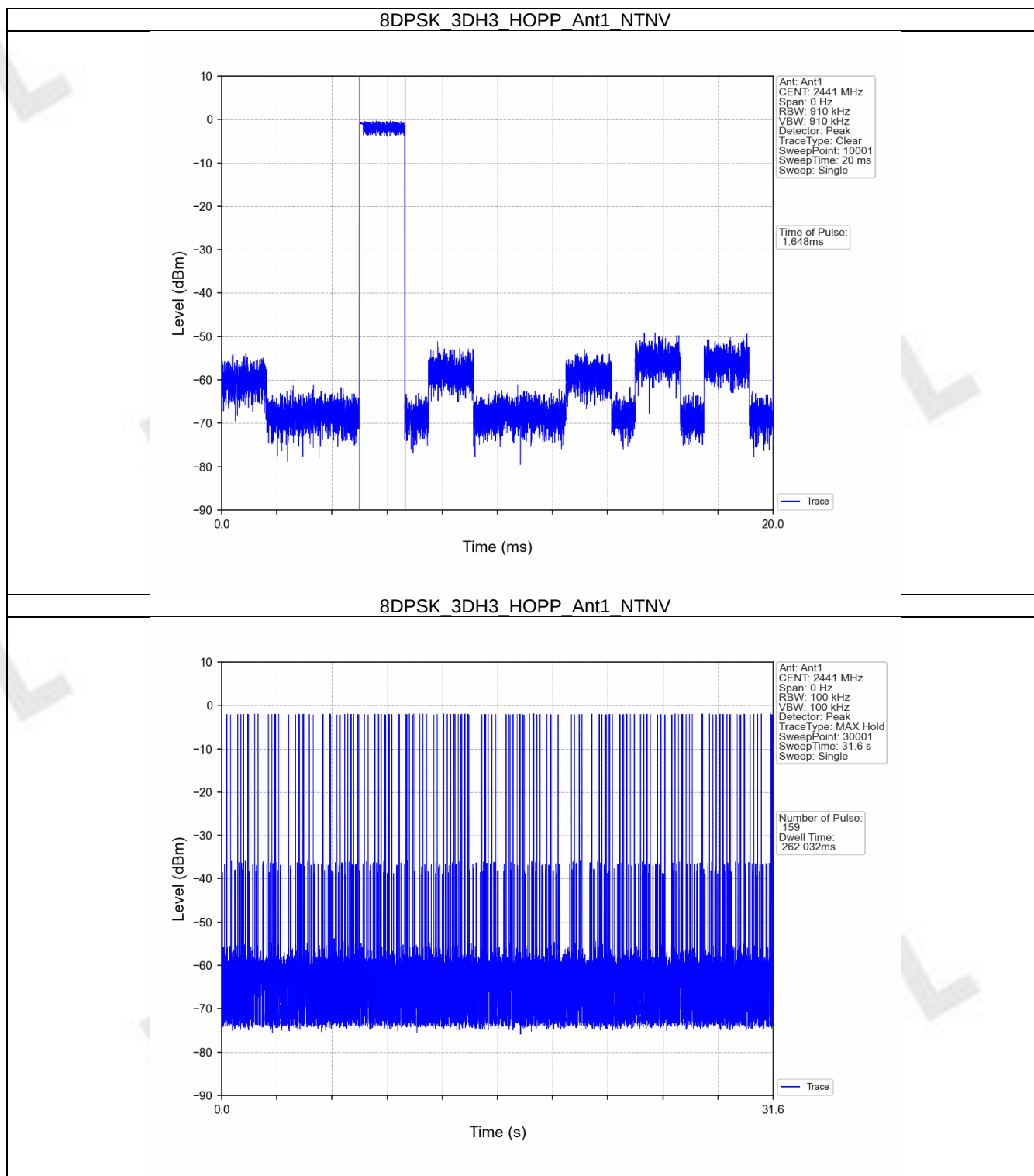
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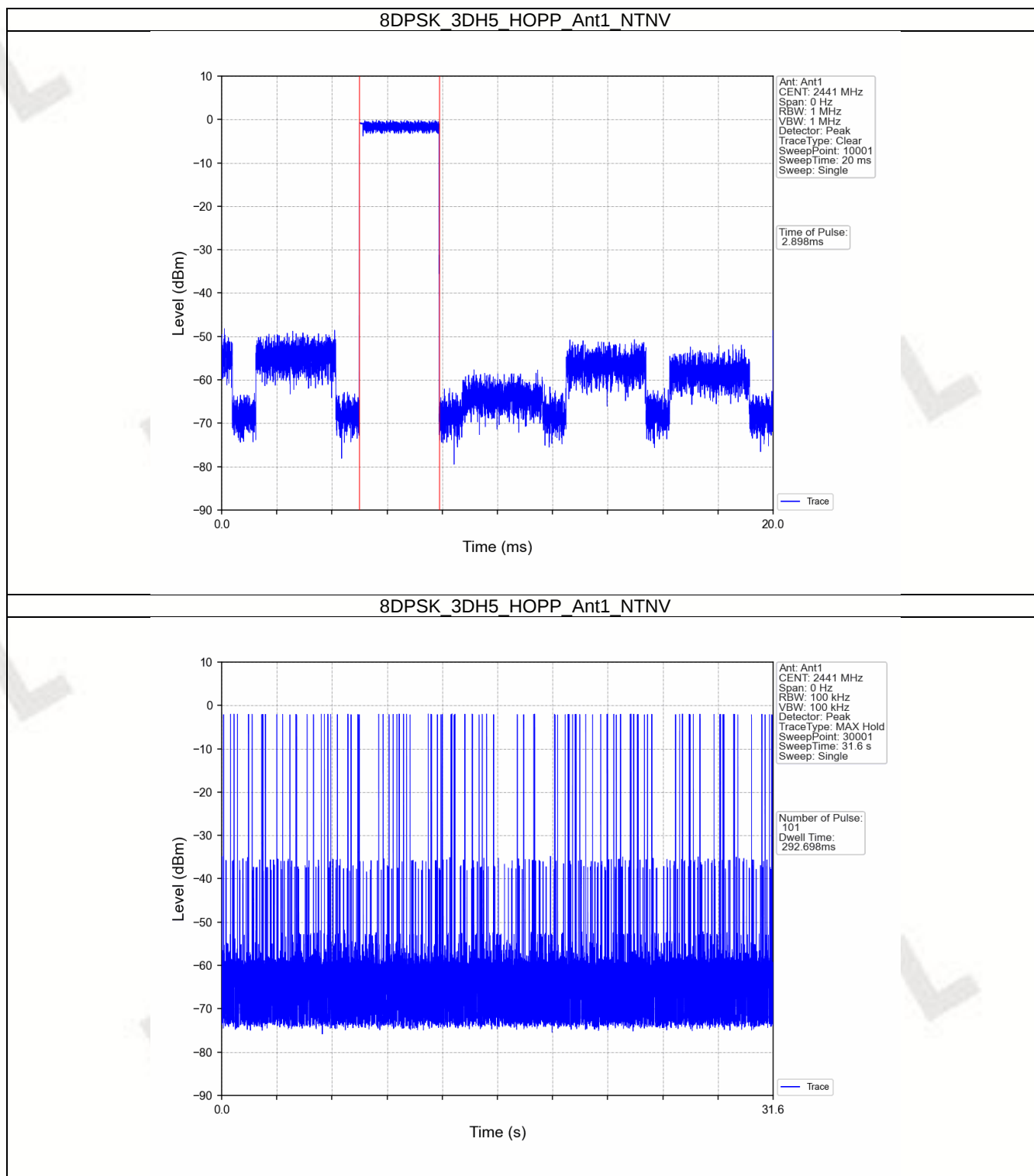
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6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Ref

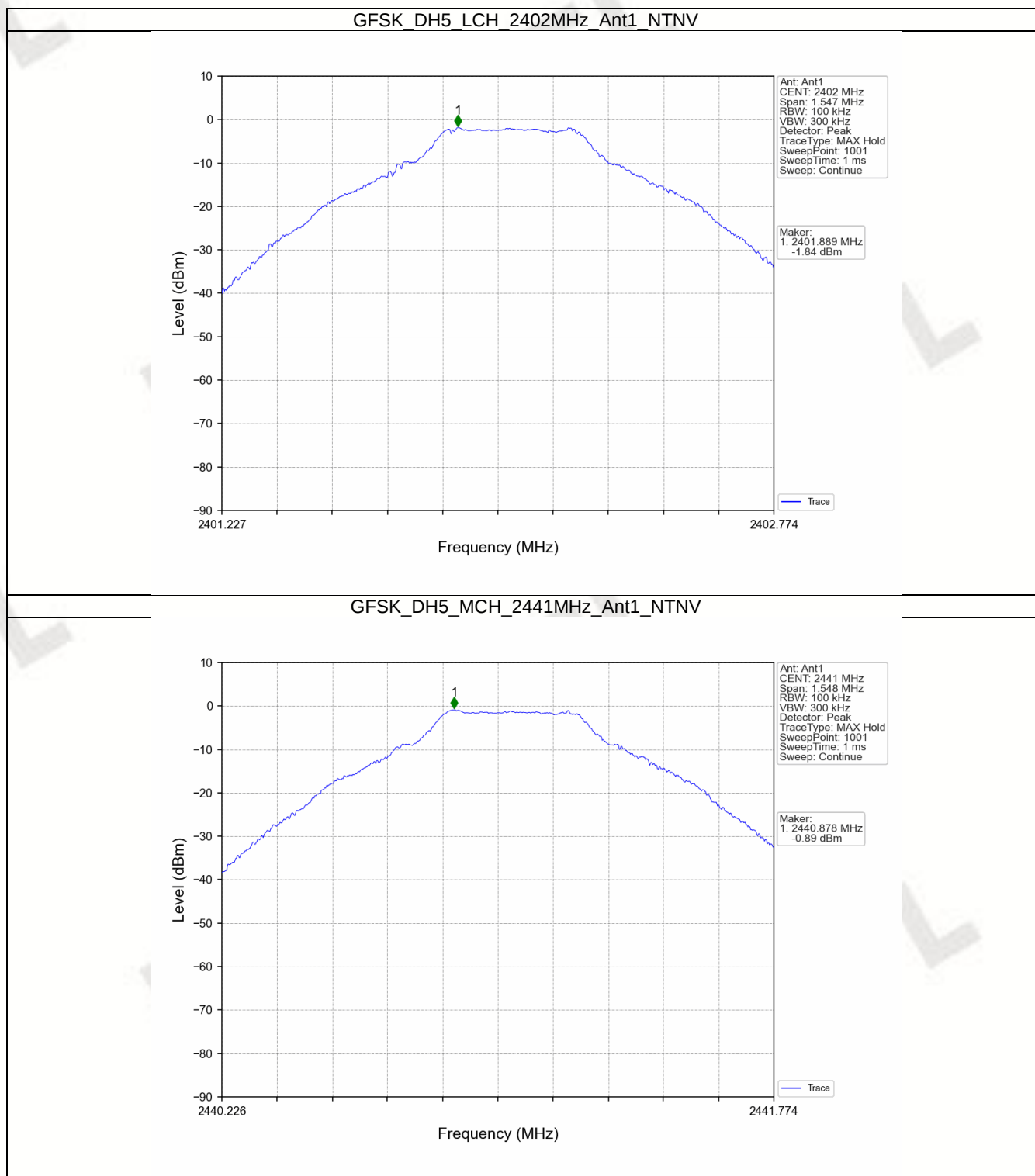
6.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	-1.84
		2441	DH5	1	-0.89
		2480	DH5	1	-1.14
Pi/4DQPSK	SISO	2402	2DH5	1	-1.72
		2441	2DH5	1	-0.86
		2480	2DH5	1	-1.15
8DPSK	SISO	2402	3DH5	1	-1.72
		2441	3DH5	1	-0.85
		2480	3DH5	1	-1.30

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.

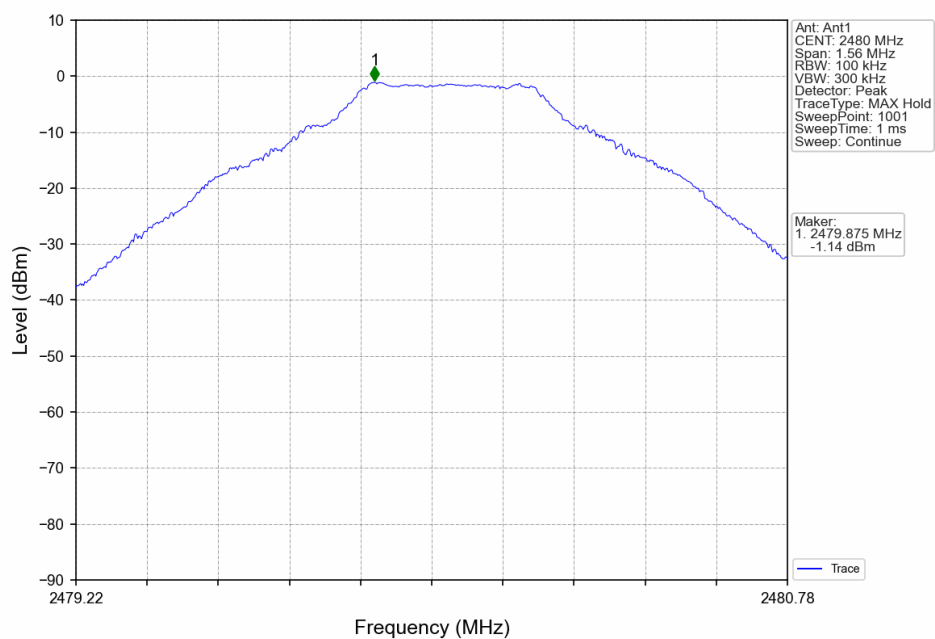
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6.1.2 Test Graph

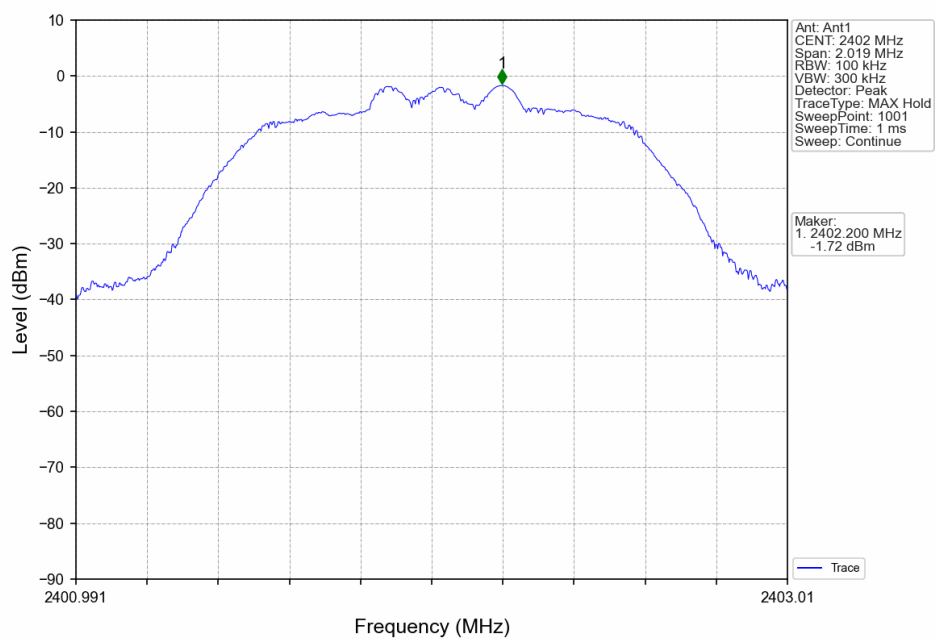


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GFSK_DH5_HCH_2480MHz_Ant1_NTNV

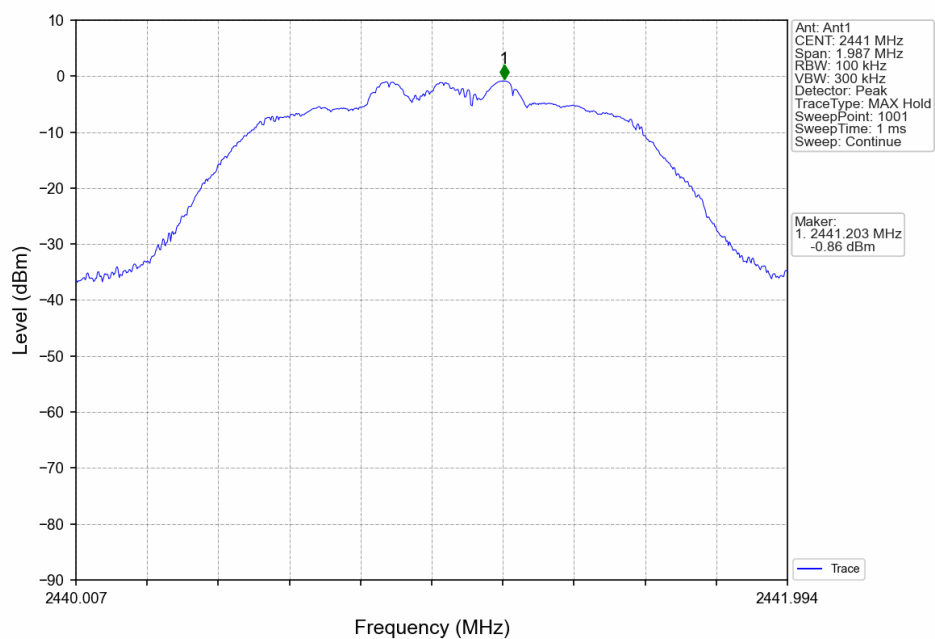


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

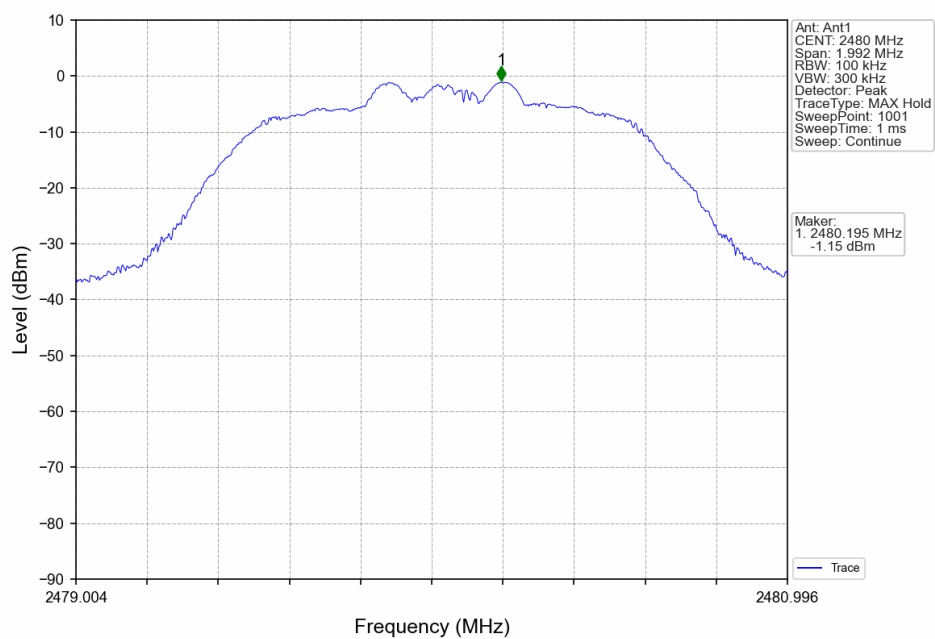


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Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV

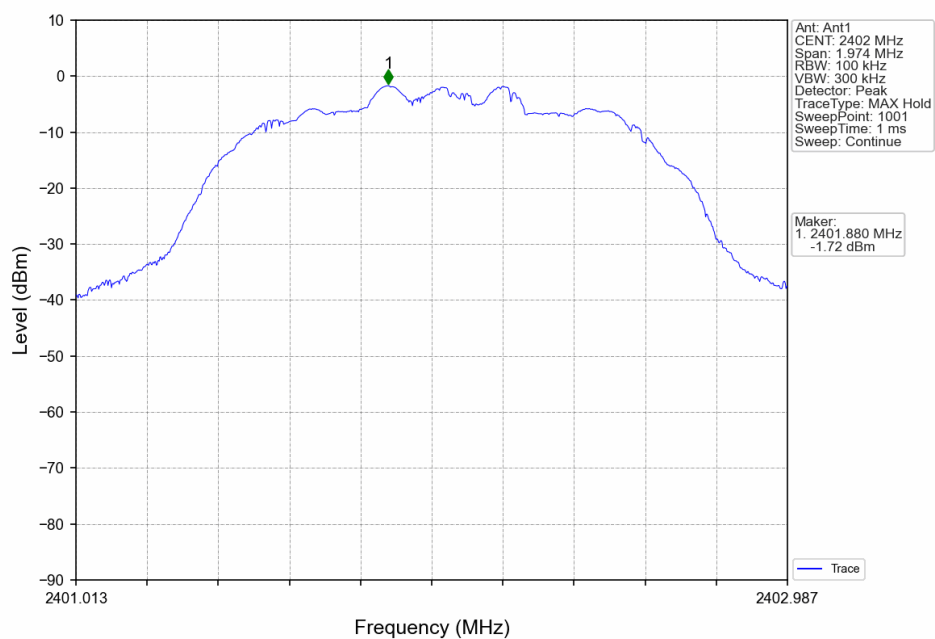


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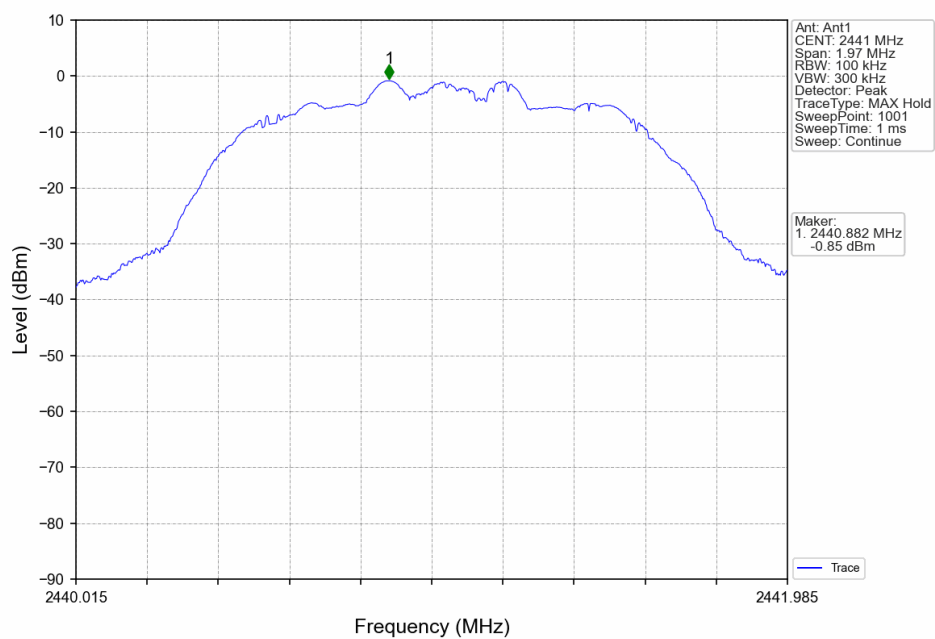


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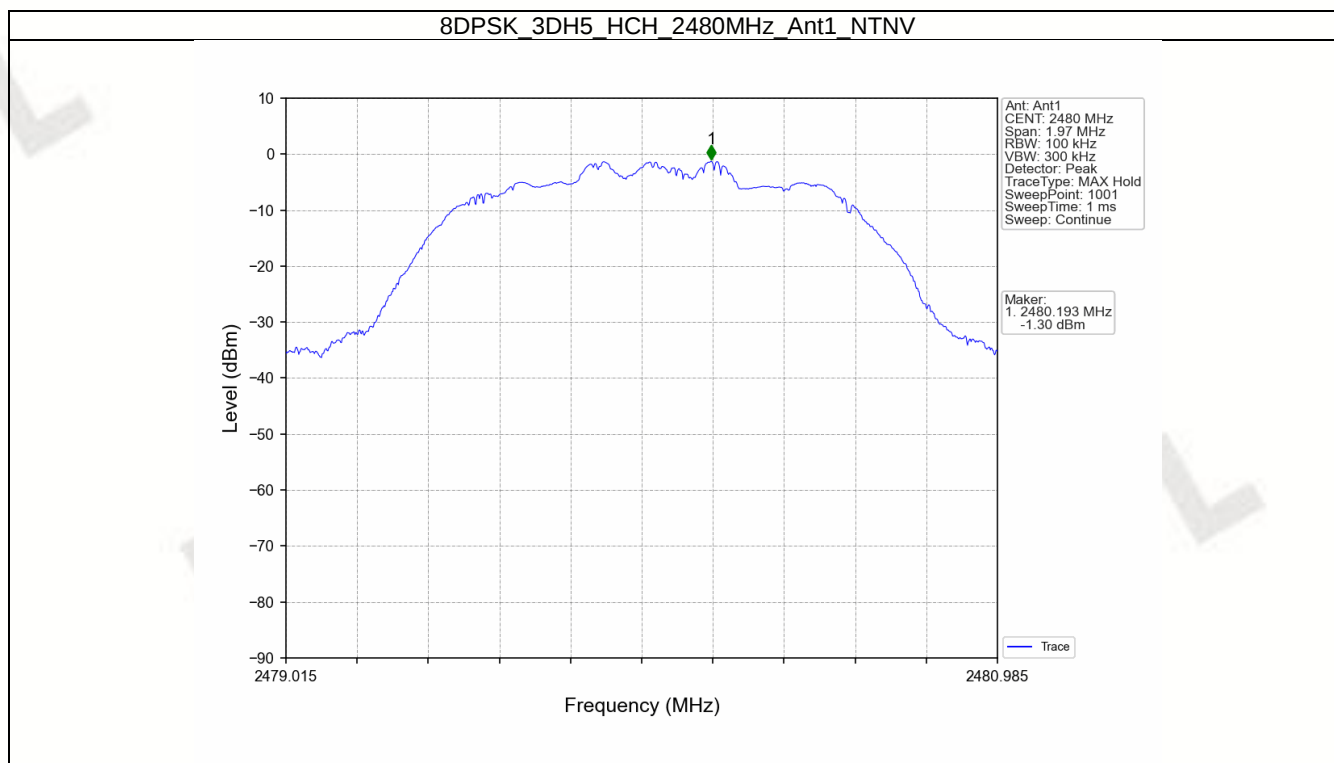
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



FCC ID:2AU4P-BTS121



FCC ID:2AU4P-BTS121

6.2 CSE

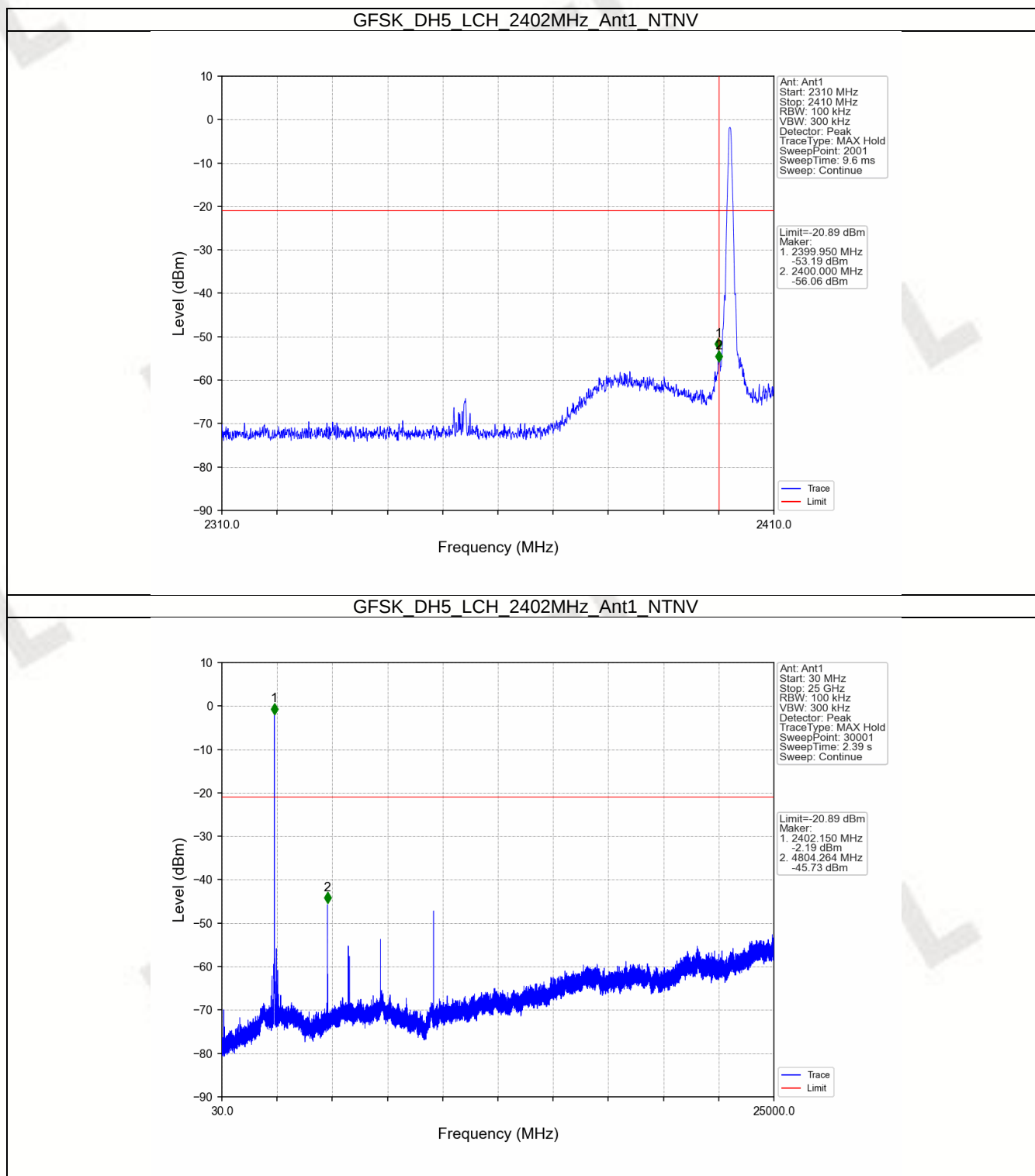
6.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-0.89	-20.89	Pass
		2441	DH5	1	-0.89	-20.89	Pass
		2480	DH5	1	-0.89	-20.89	Pass
		HOPP	DH5	1	-0.89	-20.89	Pass
					-0.89	-20.89	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-0.86	-20.86	Pass
		2441	2DH5	1	-0.86	-20.86	Pass
		2480	2DH5	1	-0.86	-20.86	Pass
		HOPP	2DH5	1	-0.86	-20.86	Pass
					-0.86	-20.86	Pass
8DPSK	SISO	2402	3DH5	1	-0.85	-20.85	Pass
		2441	3DH5	1	-0.85	-20.85	Pass
		2480	3DH5	1	-0.85	-20.85	Pass
		HOPP	3DH5	1	-0.85	-20.85	Pass
					-0.85	-20.85	Pass

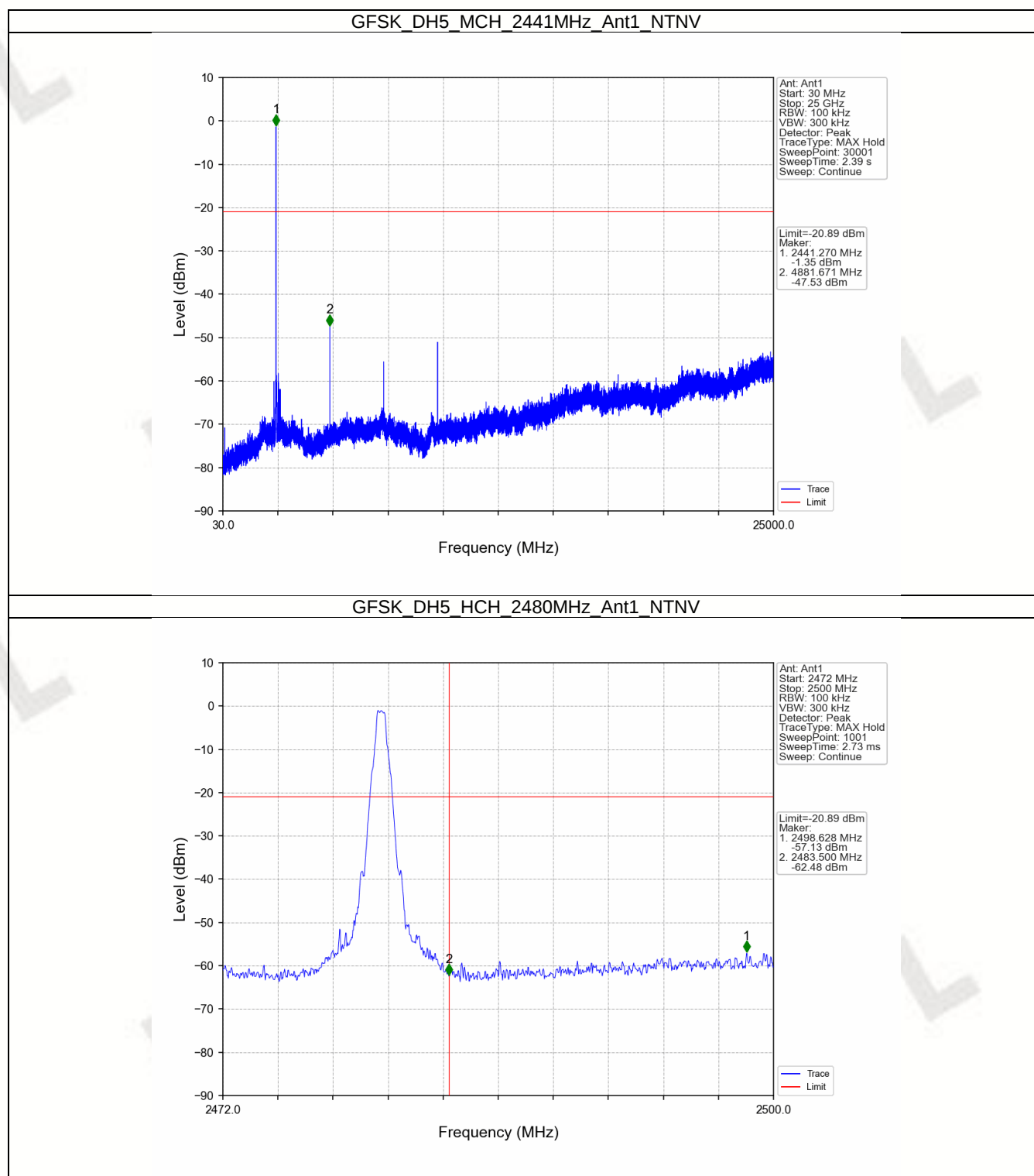
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

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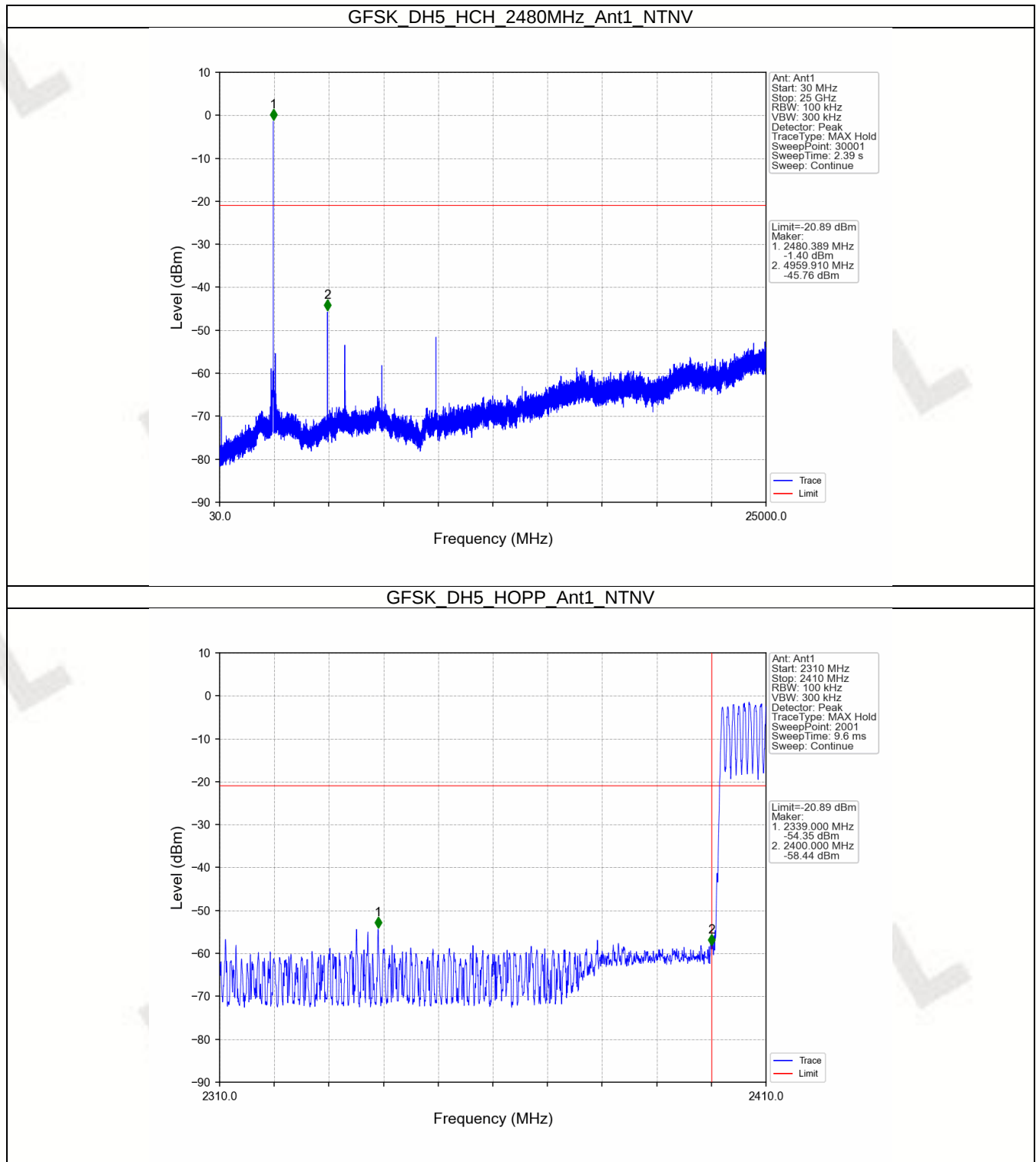
6.2.2 Test Graph



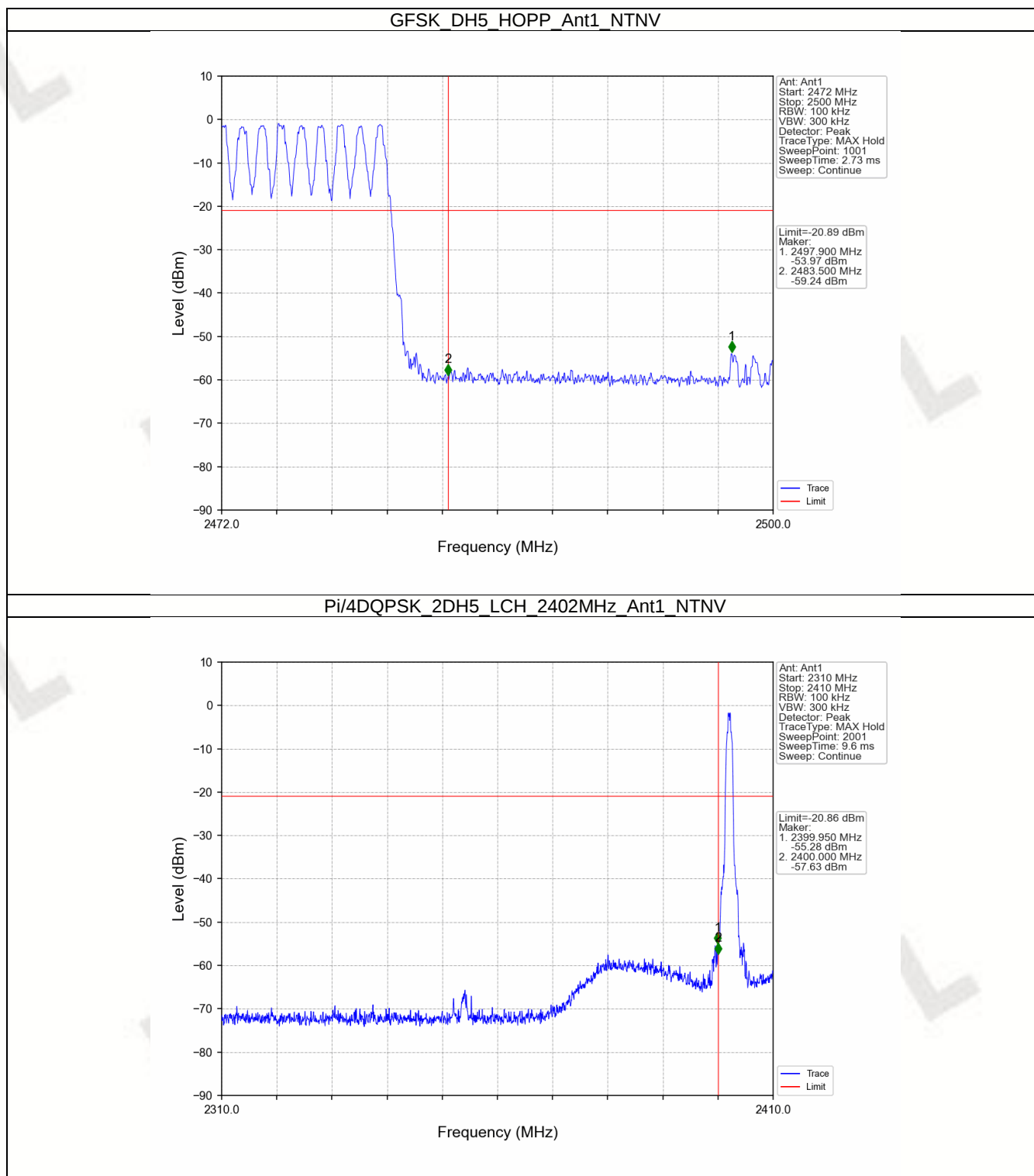
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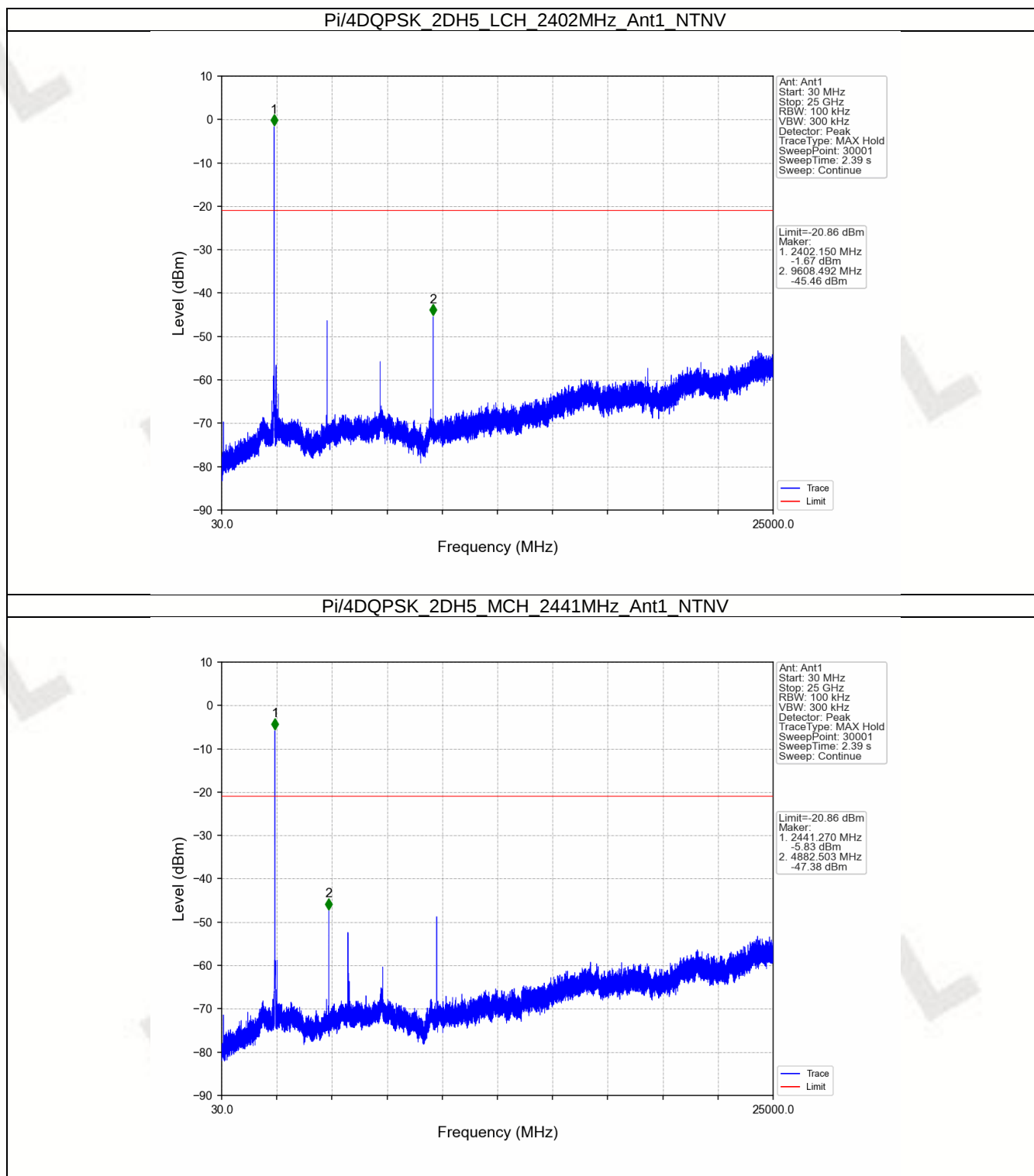
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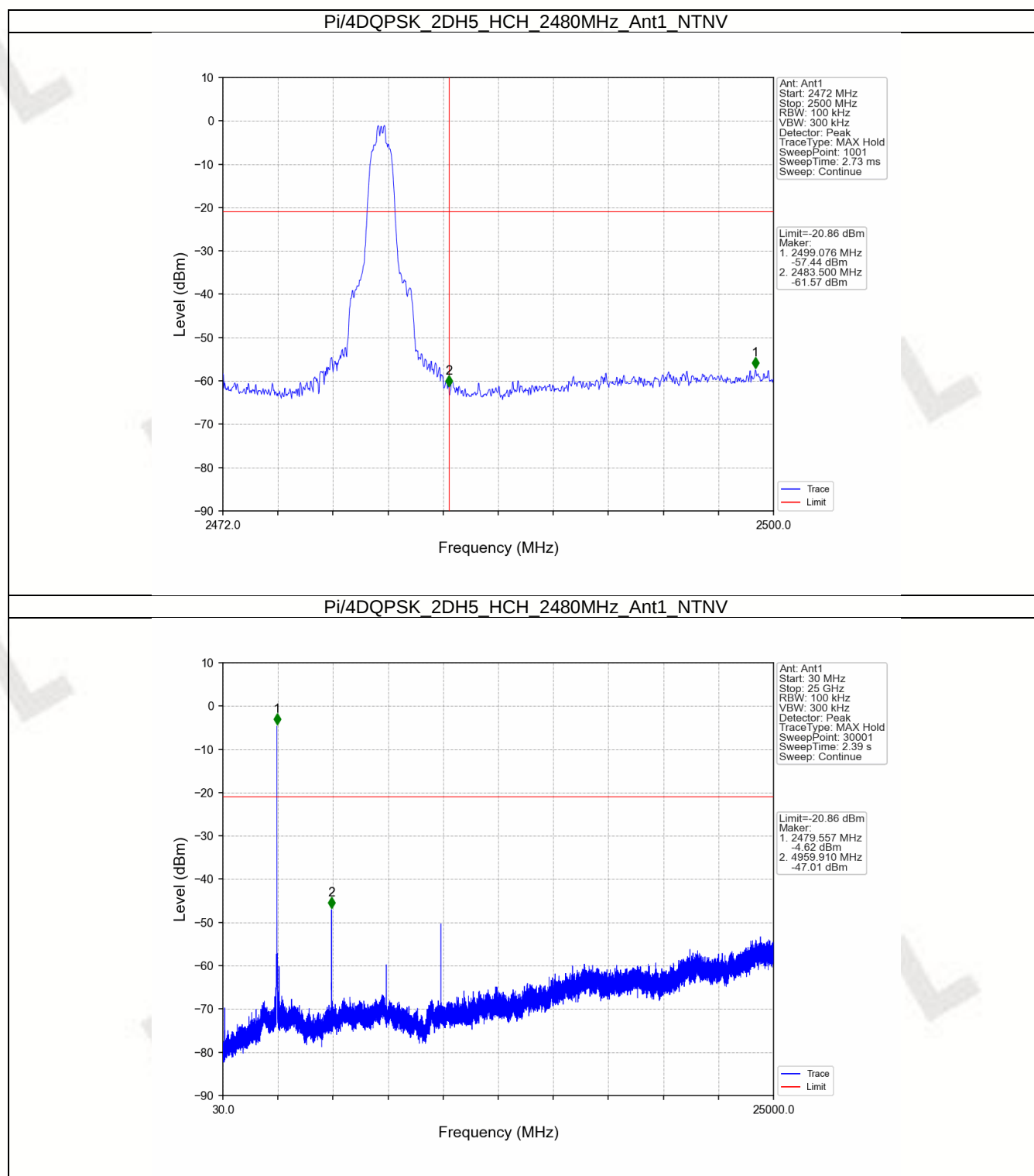
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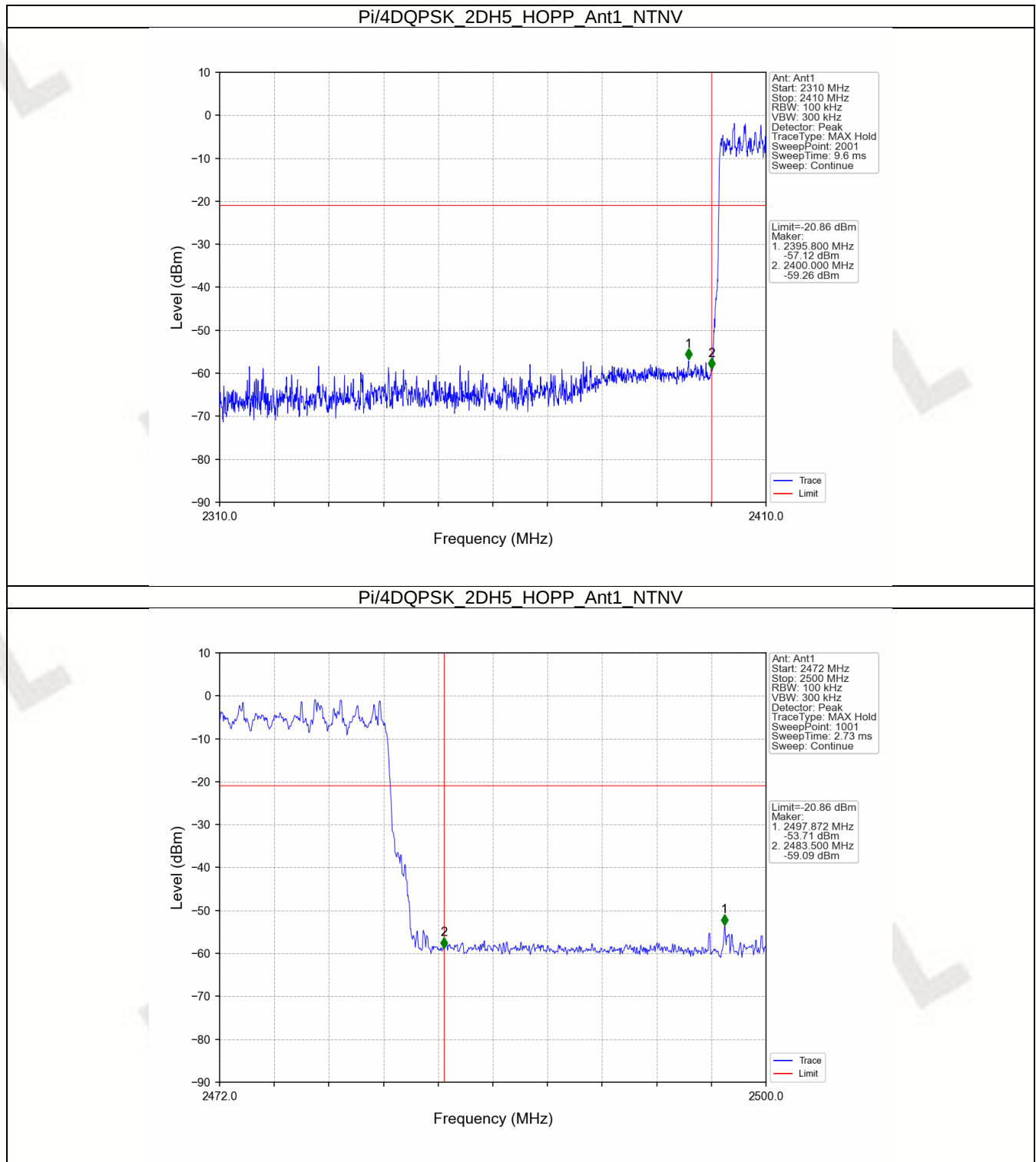
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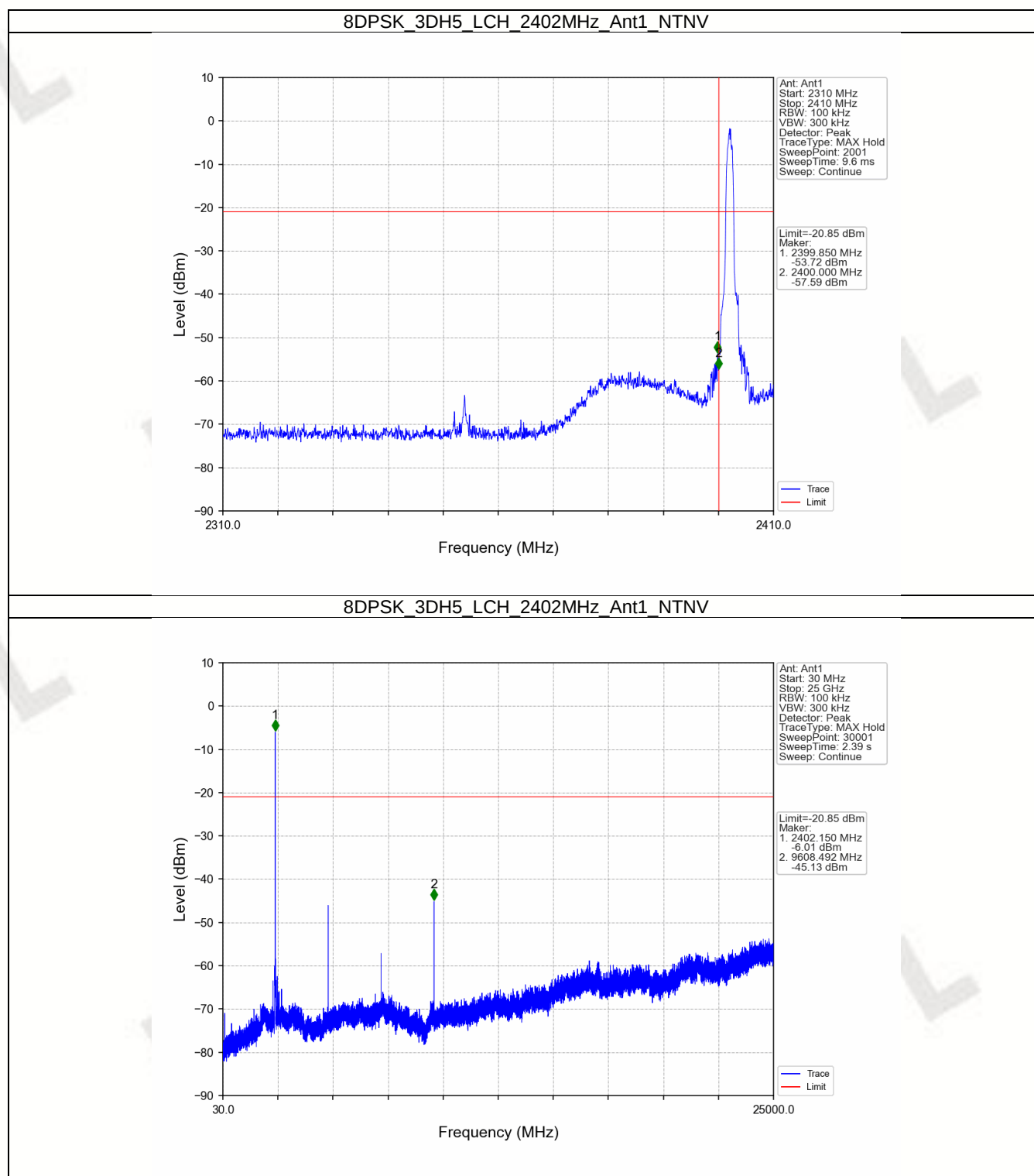
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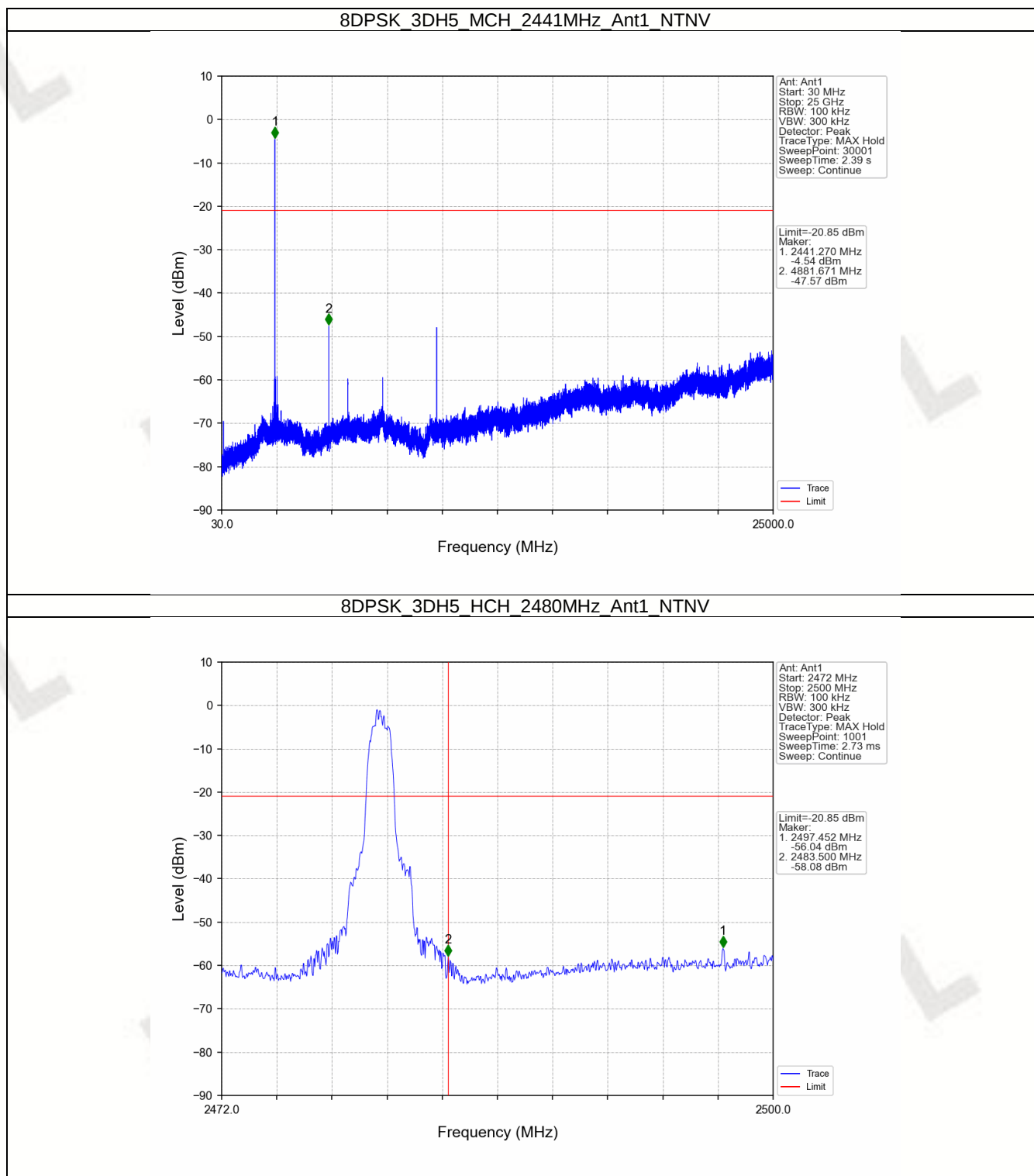
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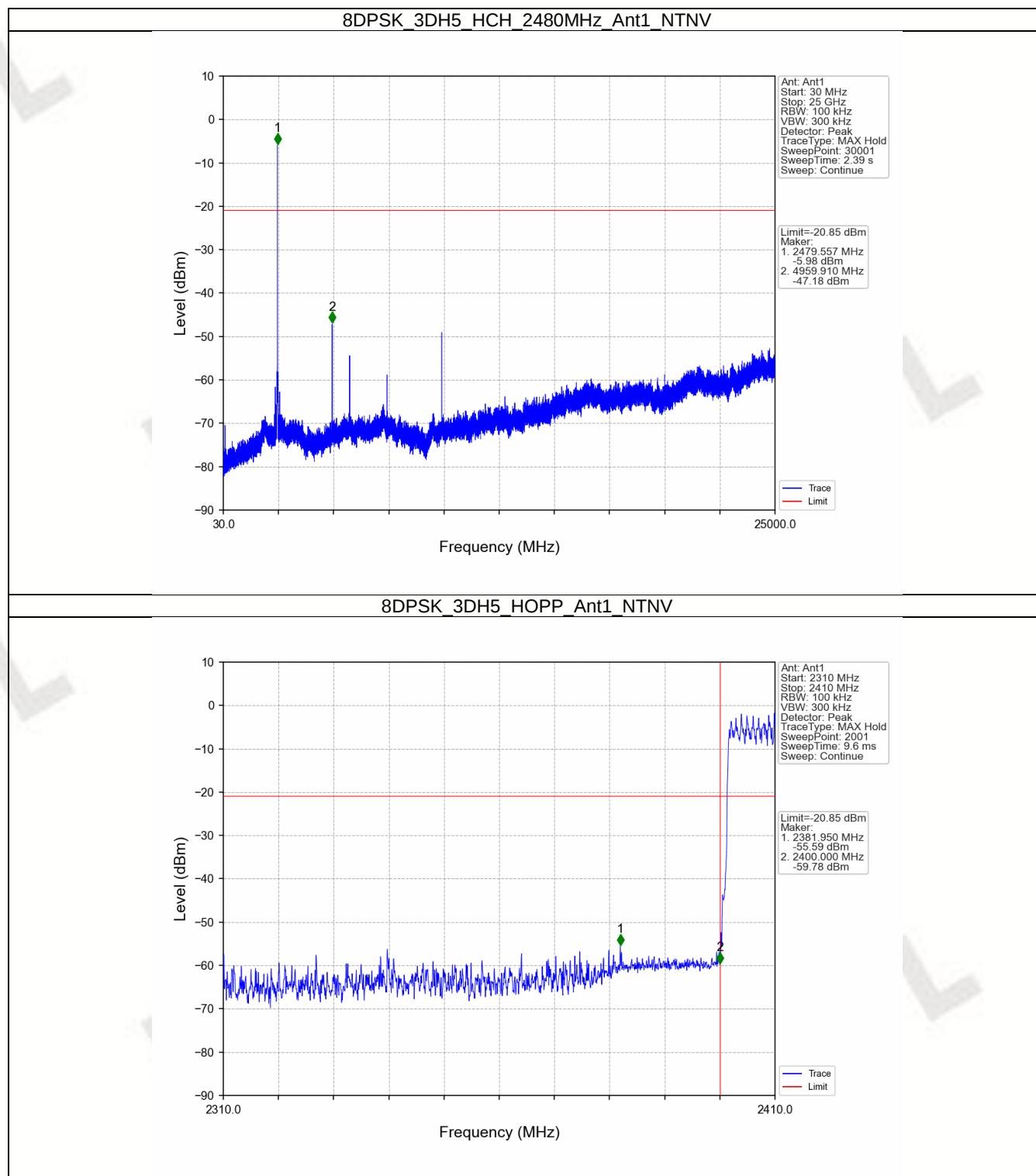
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