

ANNEX E TEST DATA

For

Project No.:	8230EU012401W
Client:	Guangzhou Munbyn Information Technology Co, Ltd.
Product Name:	Android Barcode Scanner
Model No.:	IPDA099
FCC ID:	2A8JV-IPDA099
Technology:	Bluetooth BDR+EDR
Test Engineer:	<i>Mikoy zhu</i>
Test Date:	2024-06-06

Test Summary

Item	Result
Duty Cycle	Pass
Bandwidth	Pass
Maximum Conducted Output Power	Pass
Carrier Frequency Separation	Pass
Number of Hopping Frequencies	Pass
Time of Occupancy (Dwell Time)	Pass
Unwanted Emissions In Non-restricted Frequency Bands	Pass

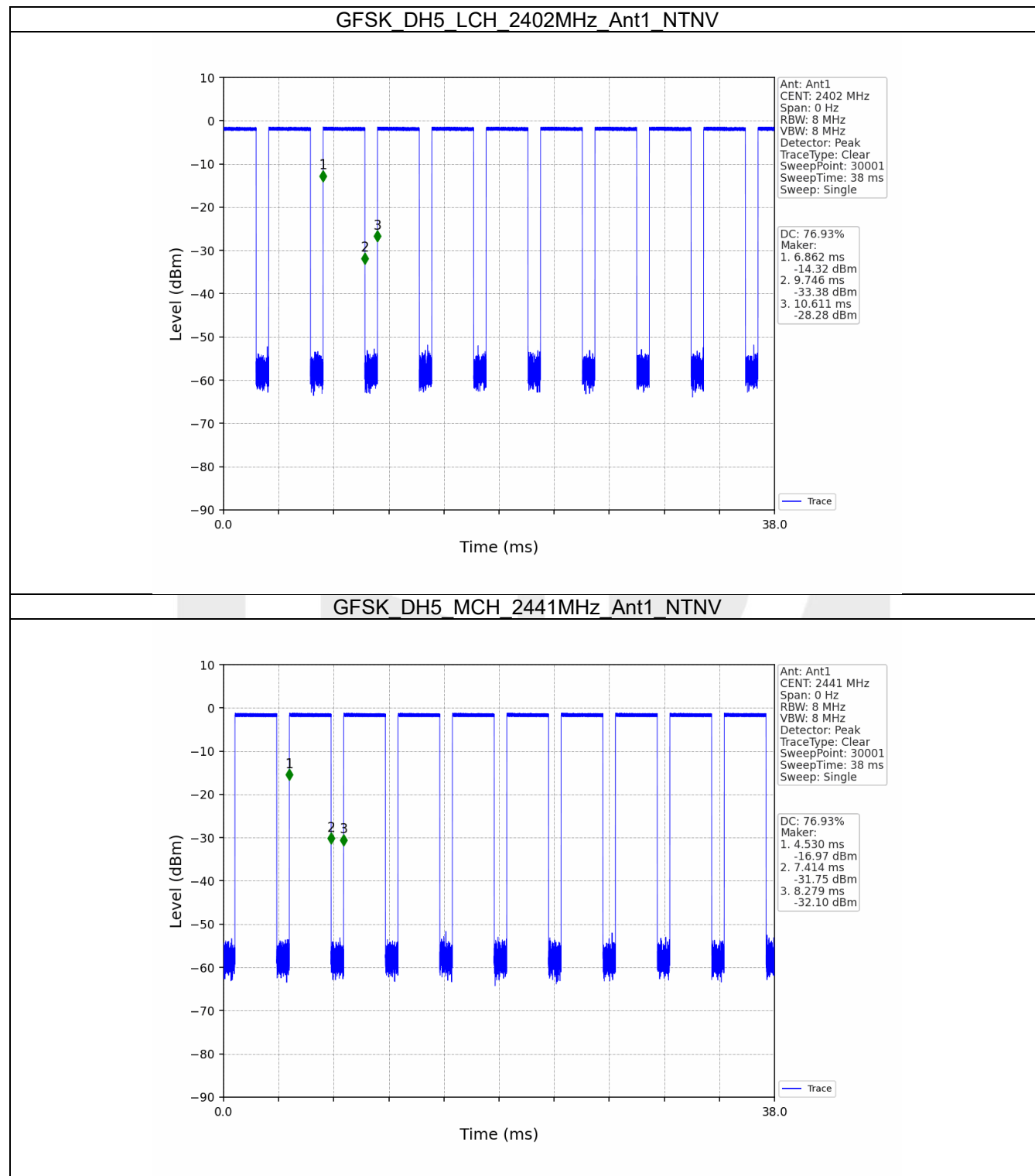
1. Duty Cycle

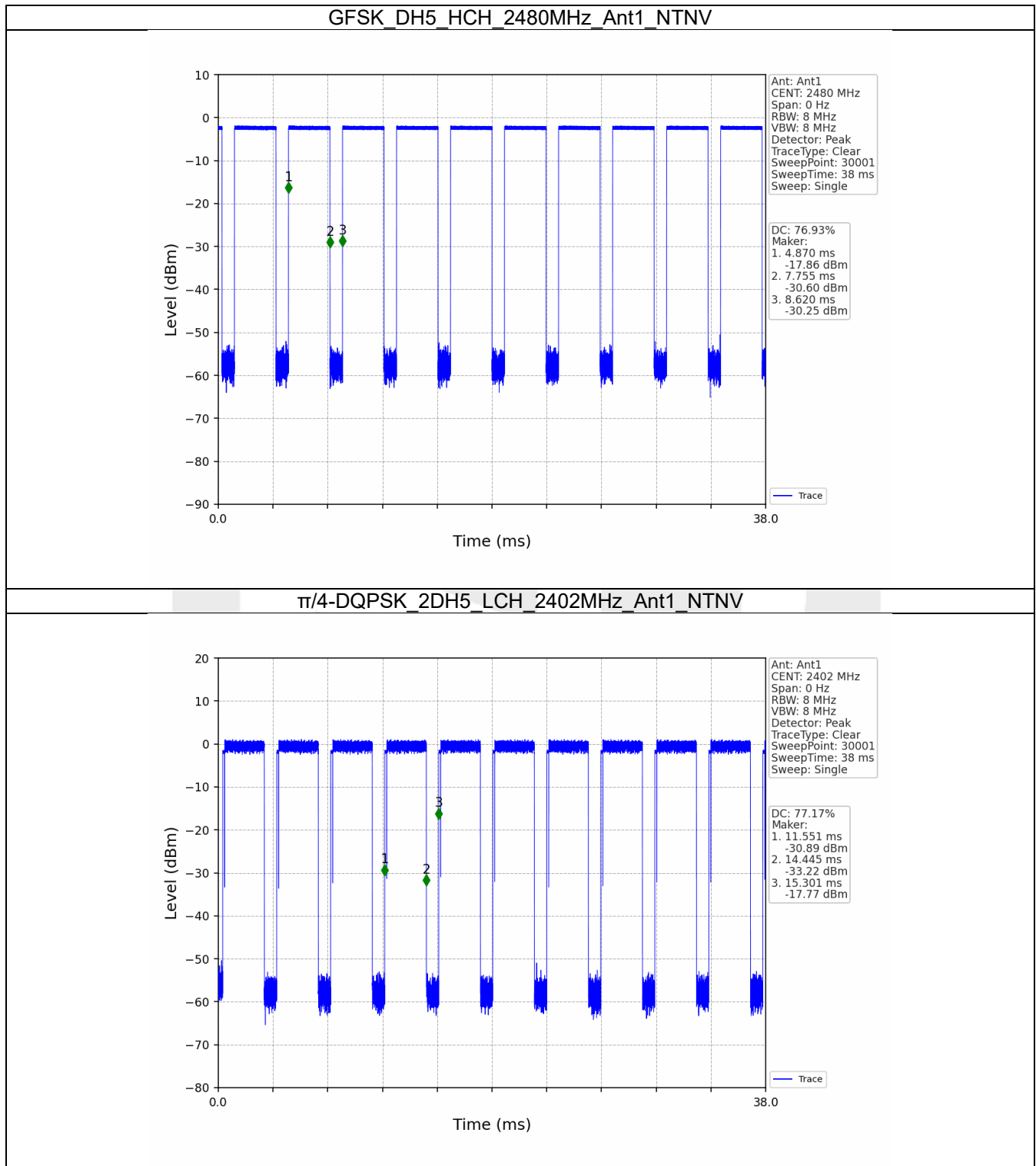
1.1 Ant1

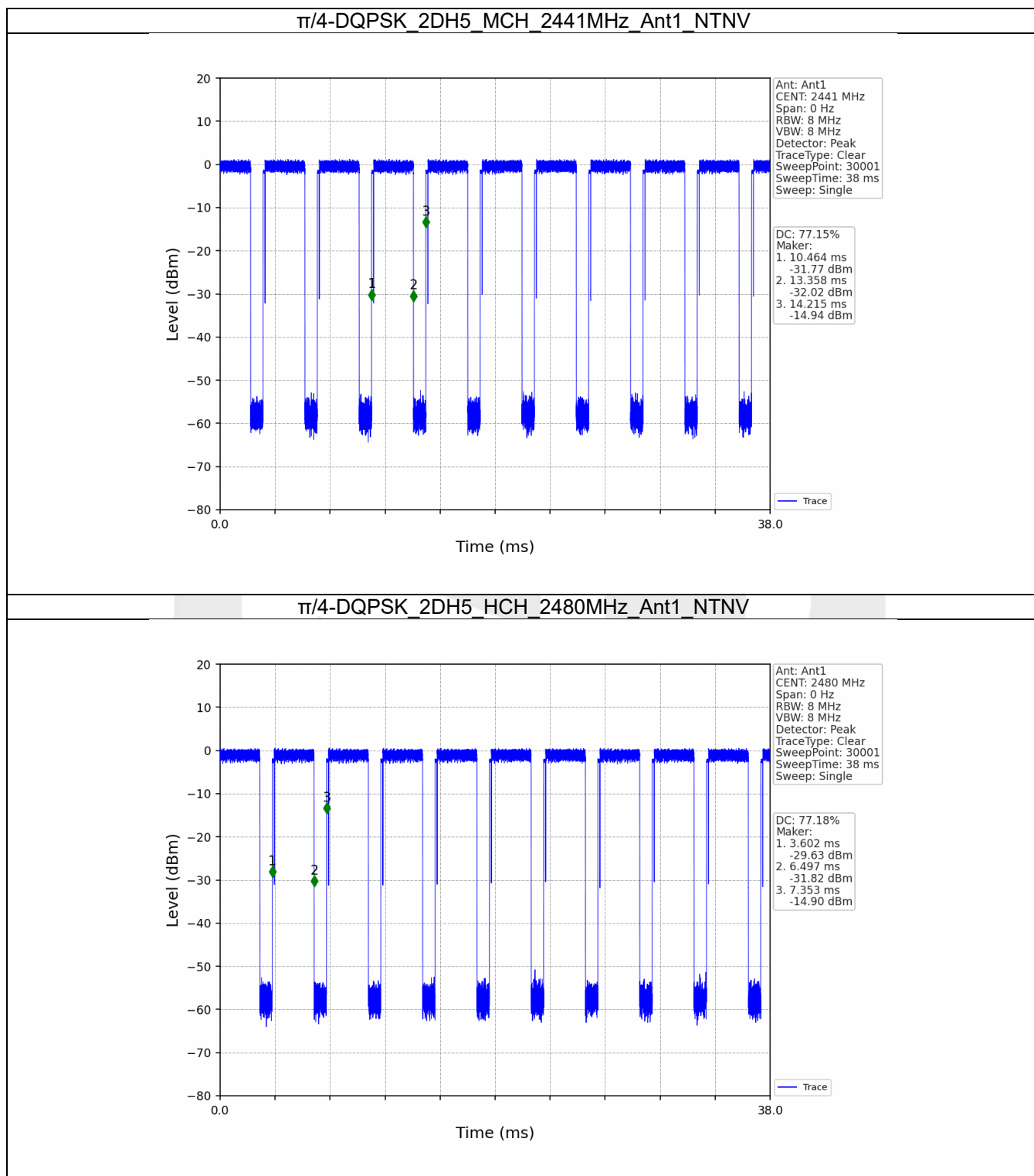
1.1.1 Test Result

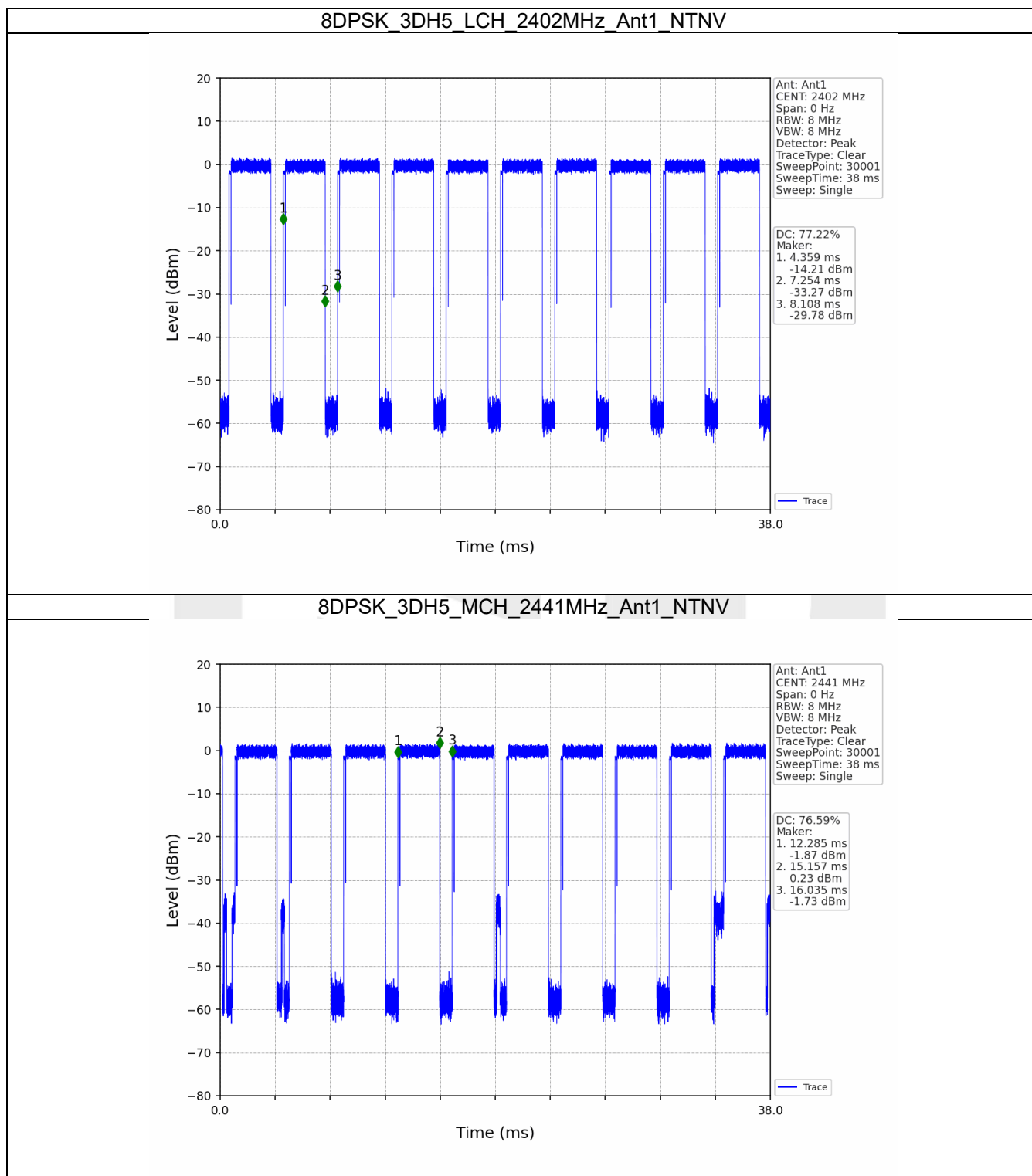
Ant1								
Mode	Tx Type	Frequency (MHz)	Packet Type	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
GFSK	SISO	2402	DH5	2.884	3.749	76.93	1.14	0.01
		2441	DH5	2.884	3.749	76.93	1.14	0.03
		2480	DH5	2.885	3.750	76.93	1.14	0.03
$\pi/4$ -DQPSK	SISO	2402	2DH5	2.894	3.750	77.17	1.13	0.03
		2441	2DH5	2.894	3.751	77.15	1.13	0.03
		2480	2DH5	2.895	3.751	77.18	1.12	0.03
8DPSK	SISO	2402	3DH5	2.895	3.749	77.22	1.12	0.03
		2441	3DH5	2.872	3.750	76.59	1.16	0.24
		2480	3DH5	2.896	3.751	77.21	1.12	0.04

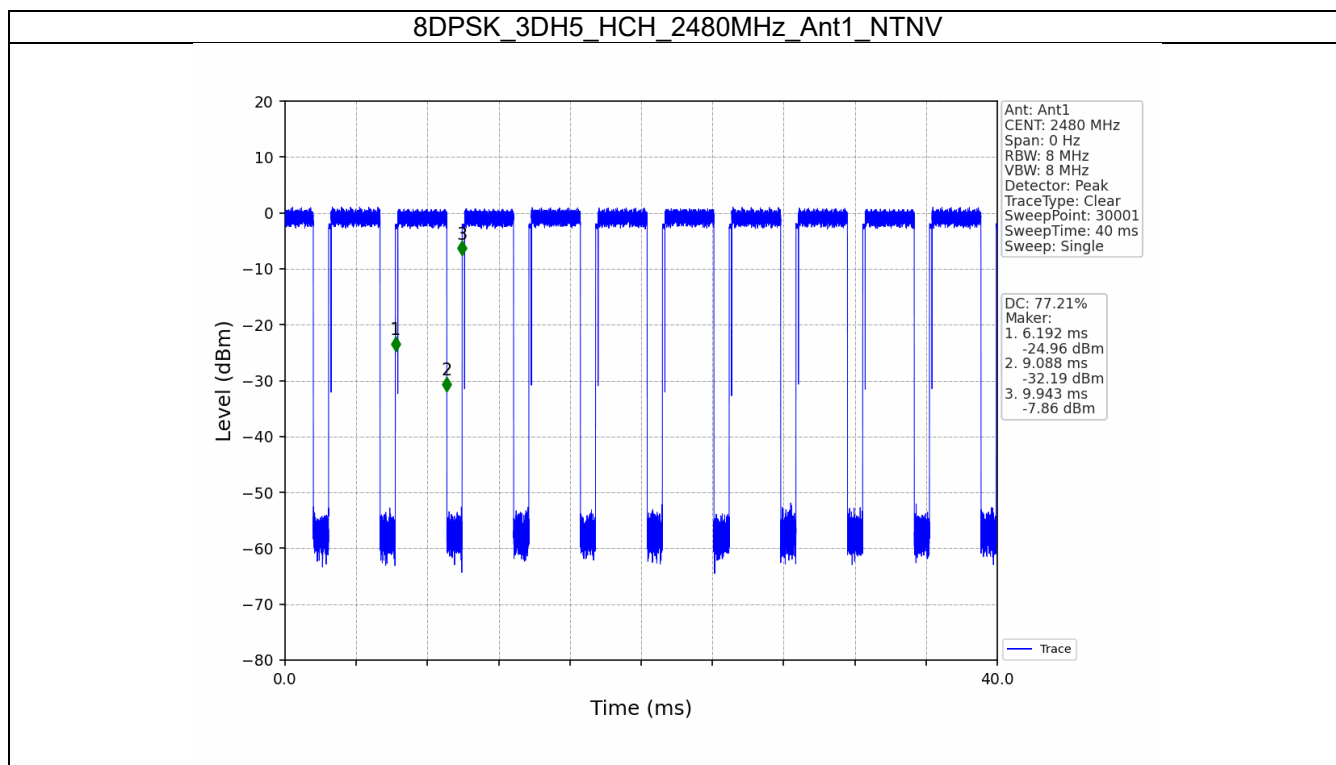
1.1.2 Test Graph











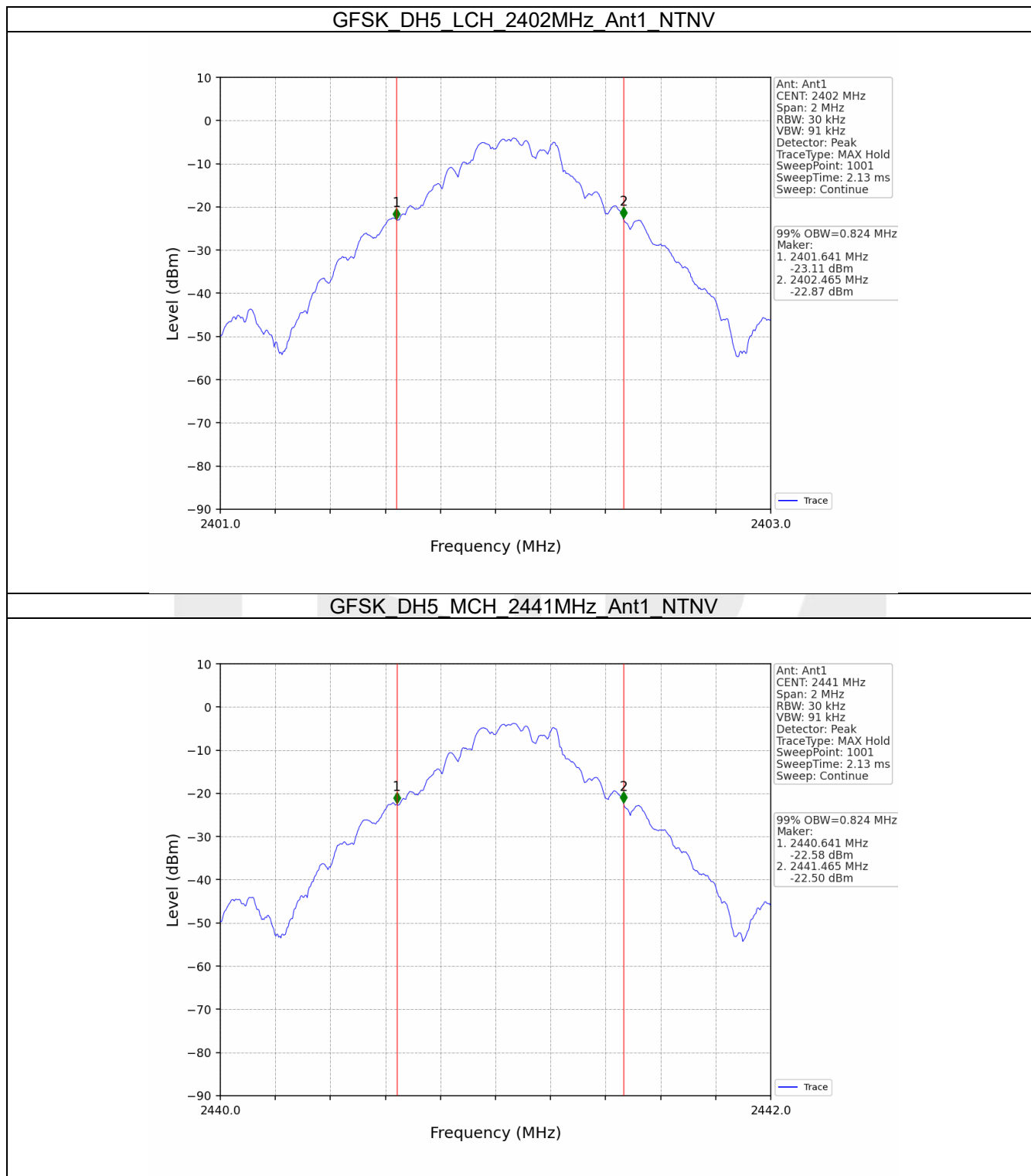
2. Bandwidth

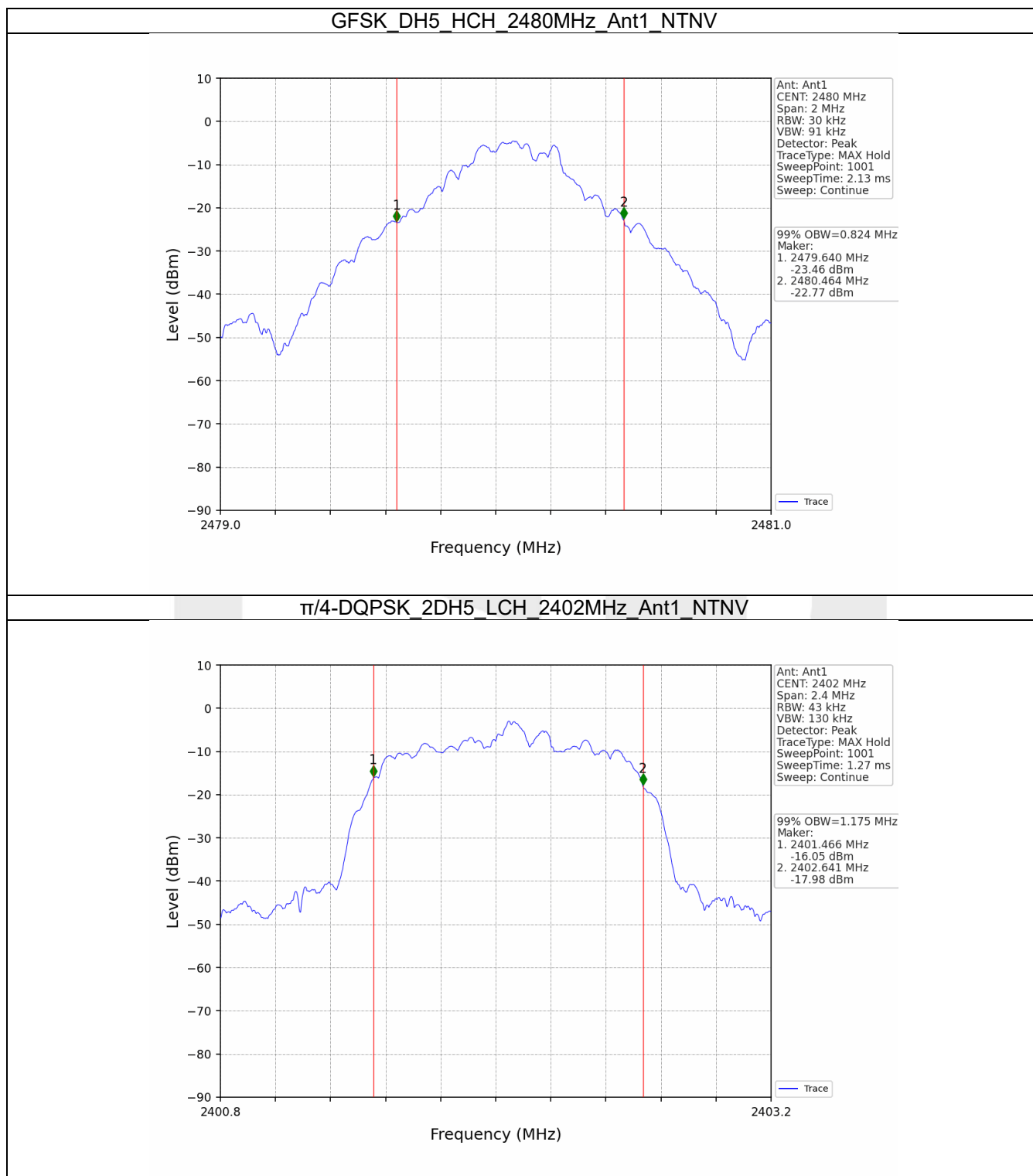
2.1 OBW

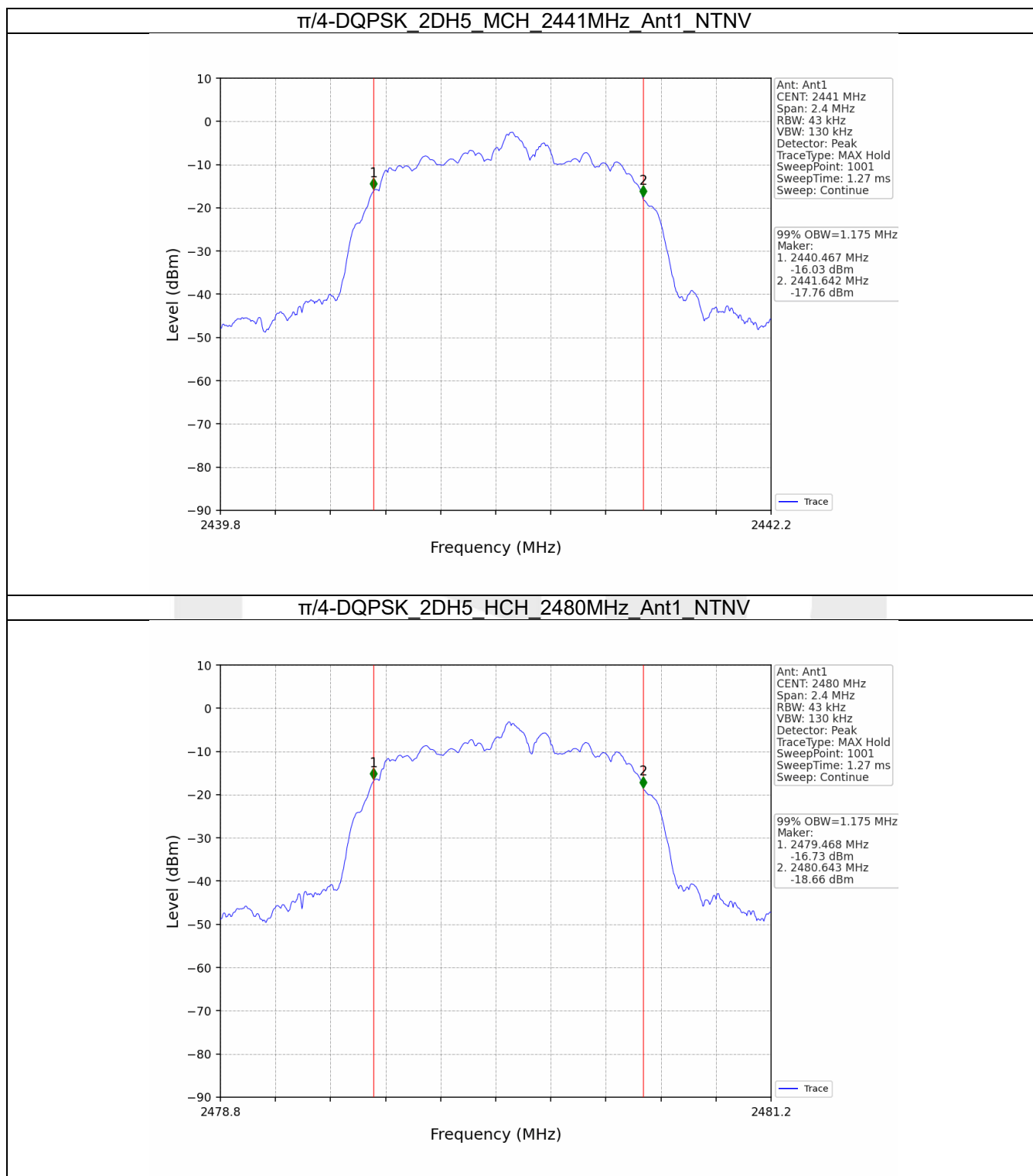
2.1.1 Test Result

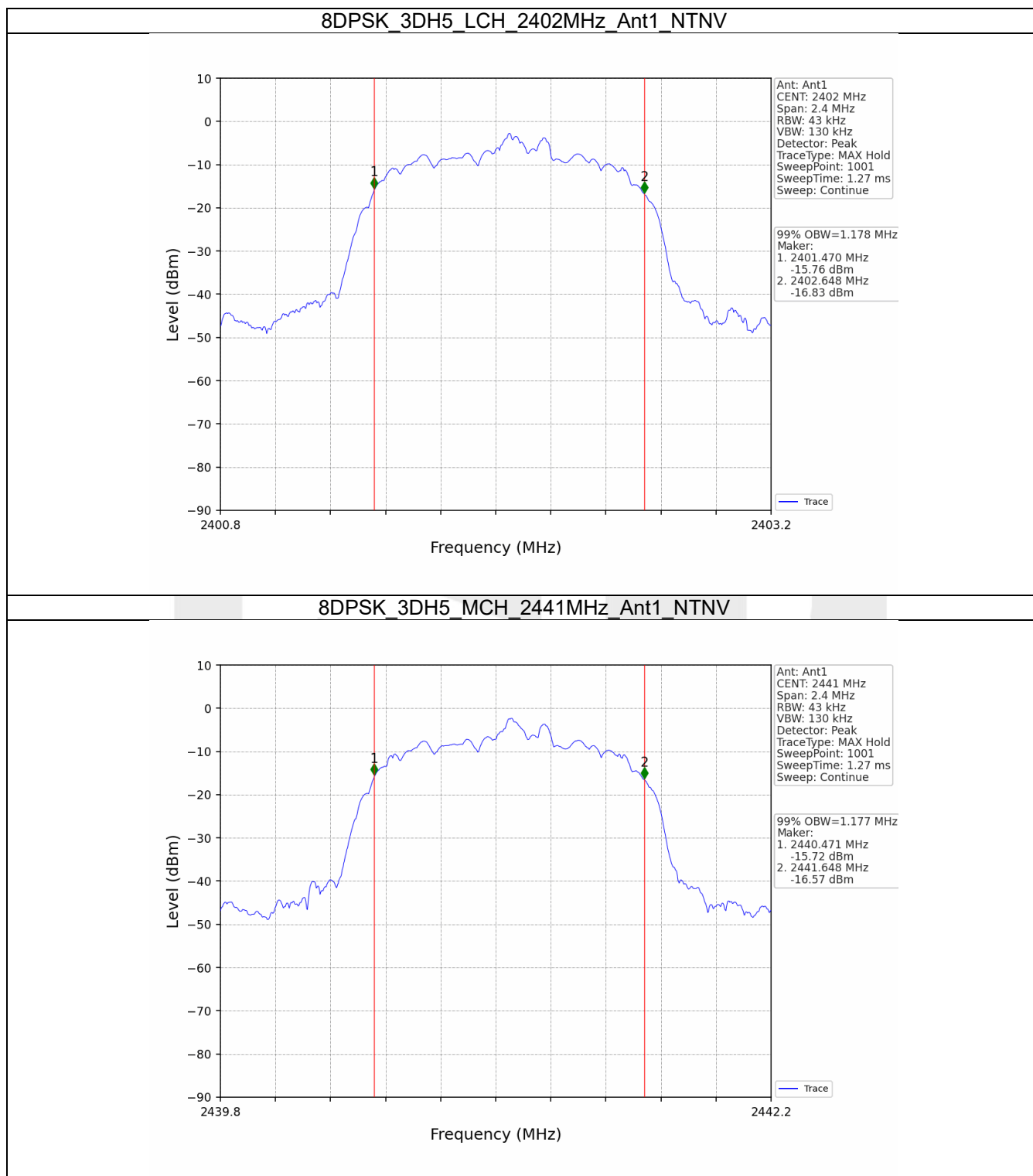
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.824	/	Pass
		2441	DH5	1	0.824	/	Pass
		2480	DH5	1	0.824	/	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	1.175	/	Pass
		2441	2DH5	1	1.175	/	Pass
		2480	2DH5	1	1.175	/	Pass
8DPSK	SISO	2402	3DH5	1	1.178	/	Pass
		2441	3DH5	1	1.177	/	Pass
		2480	3DH5	1	1.178	/	Pass

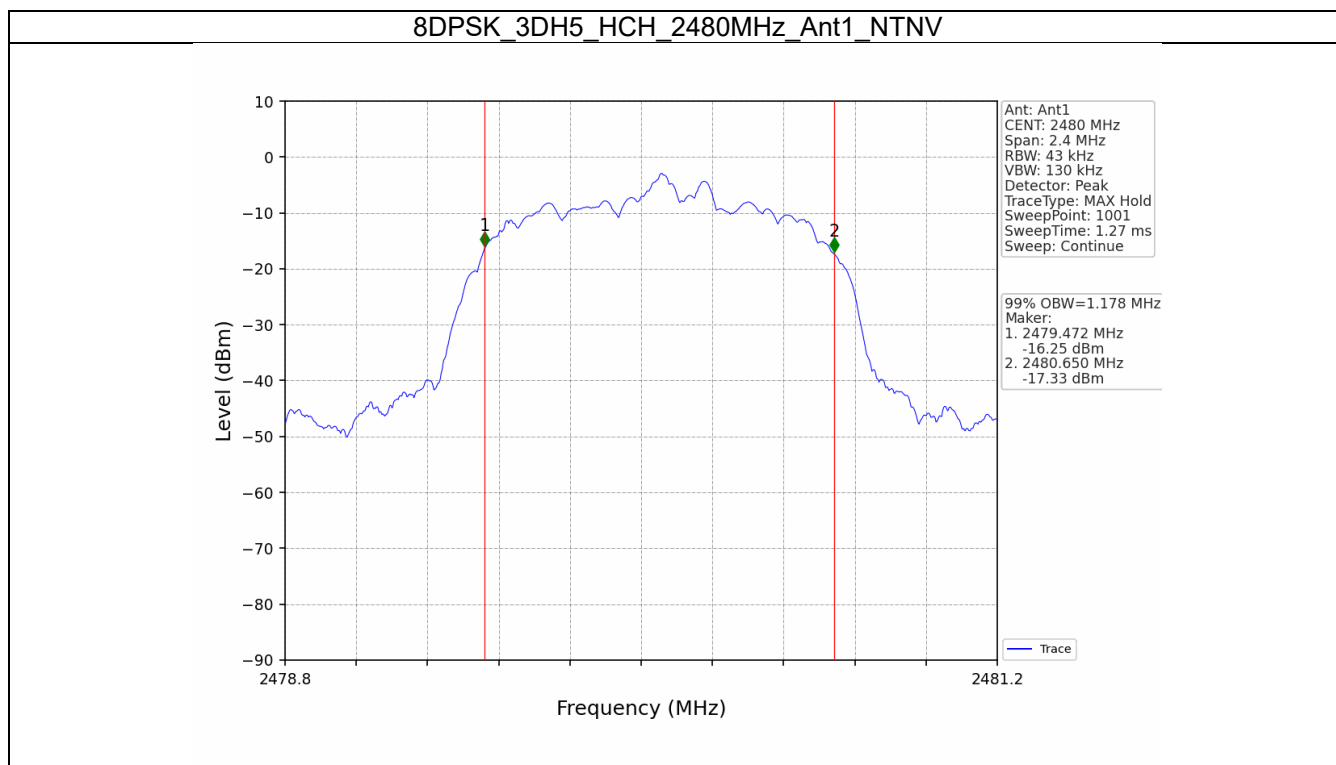
2.1.2 Test Graph









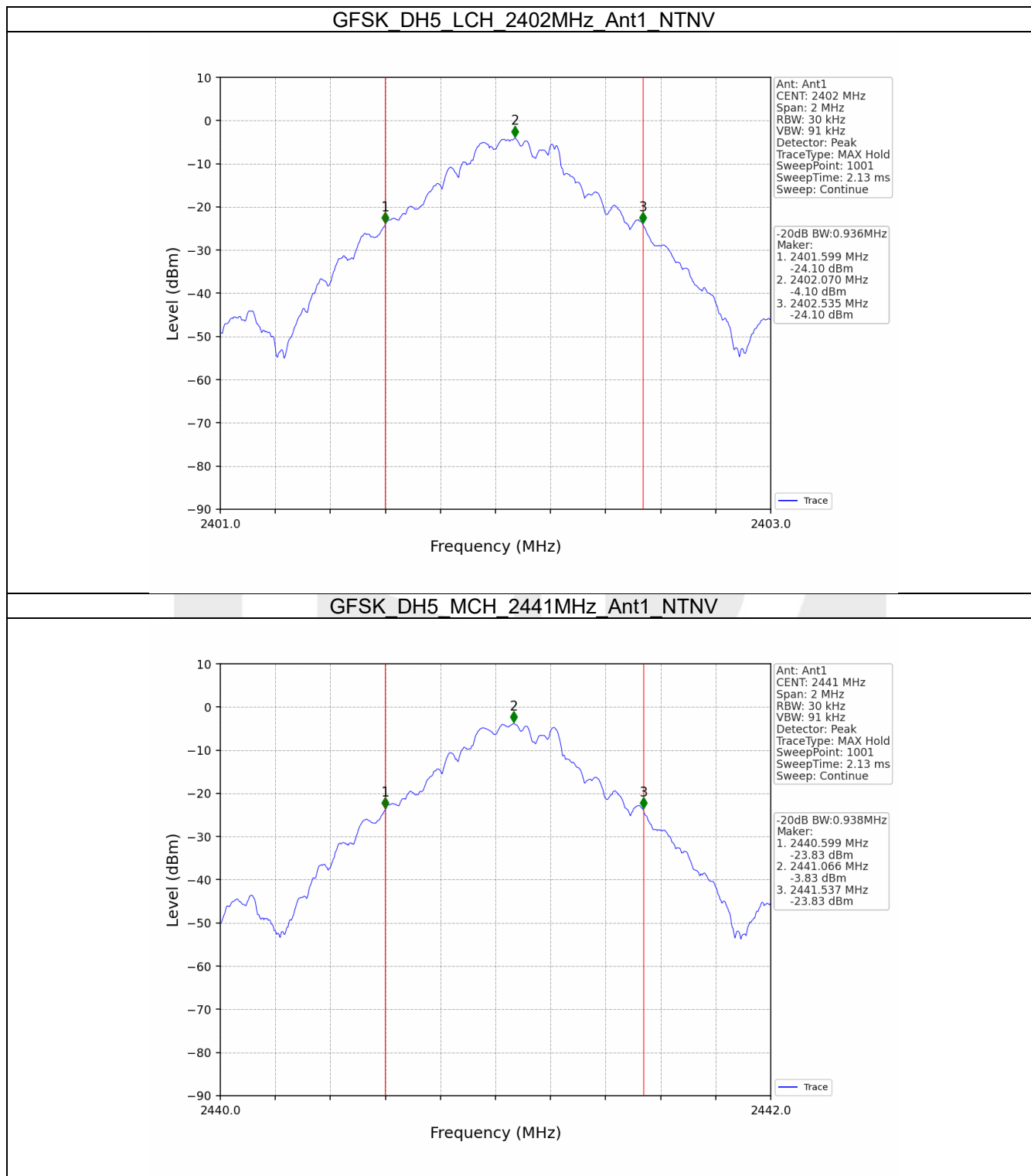


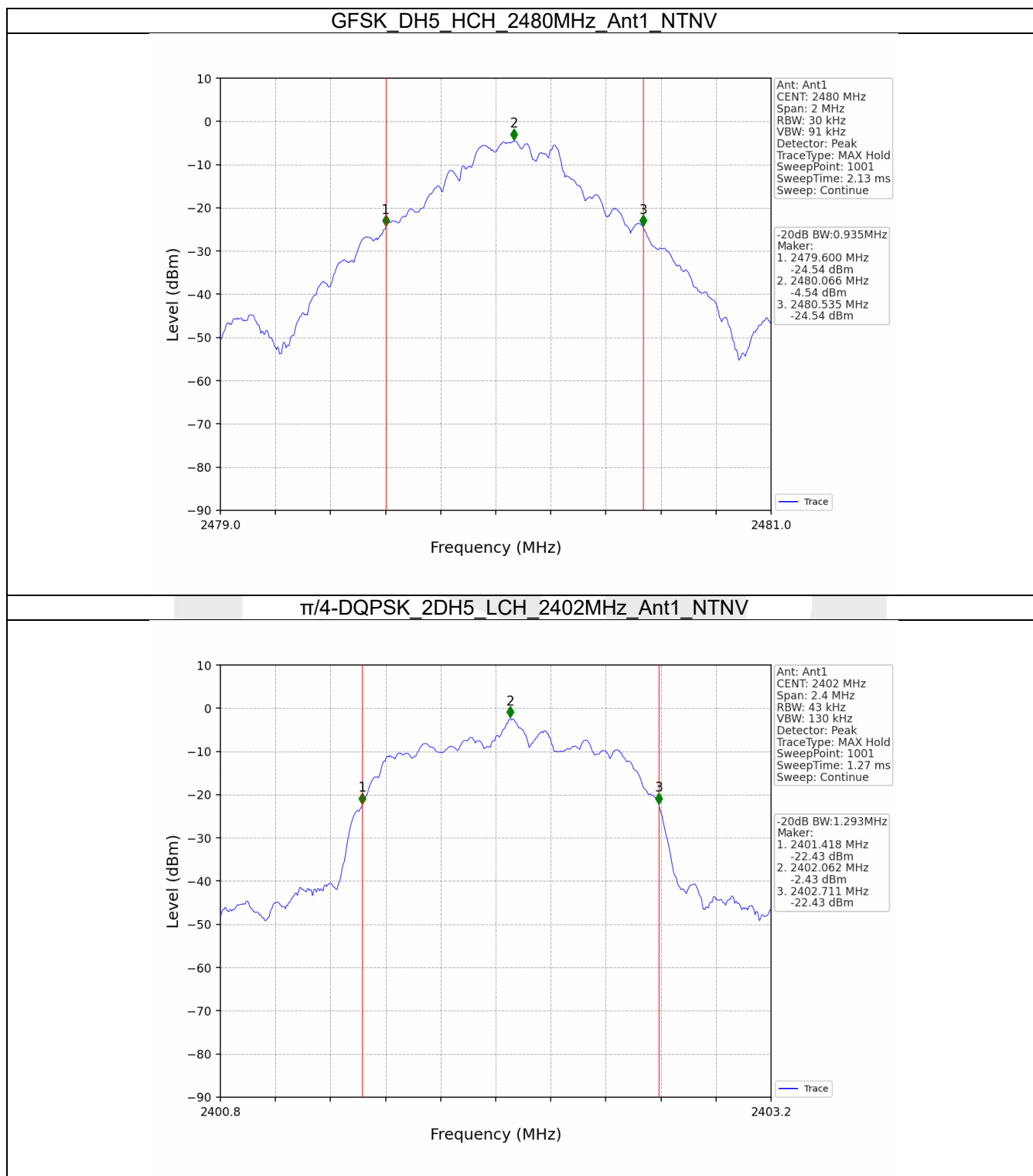
2.2 20dB BW

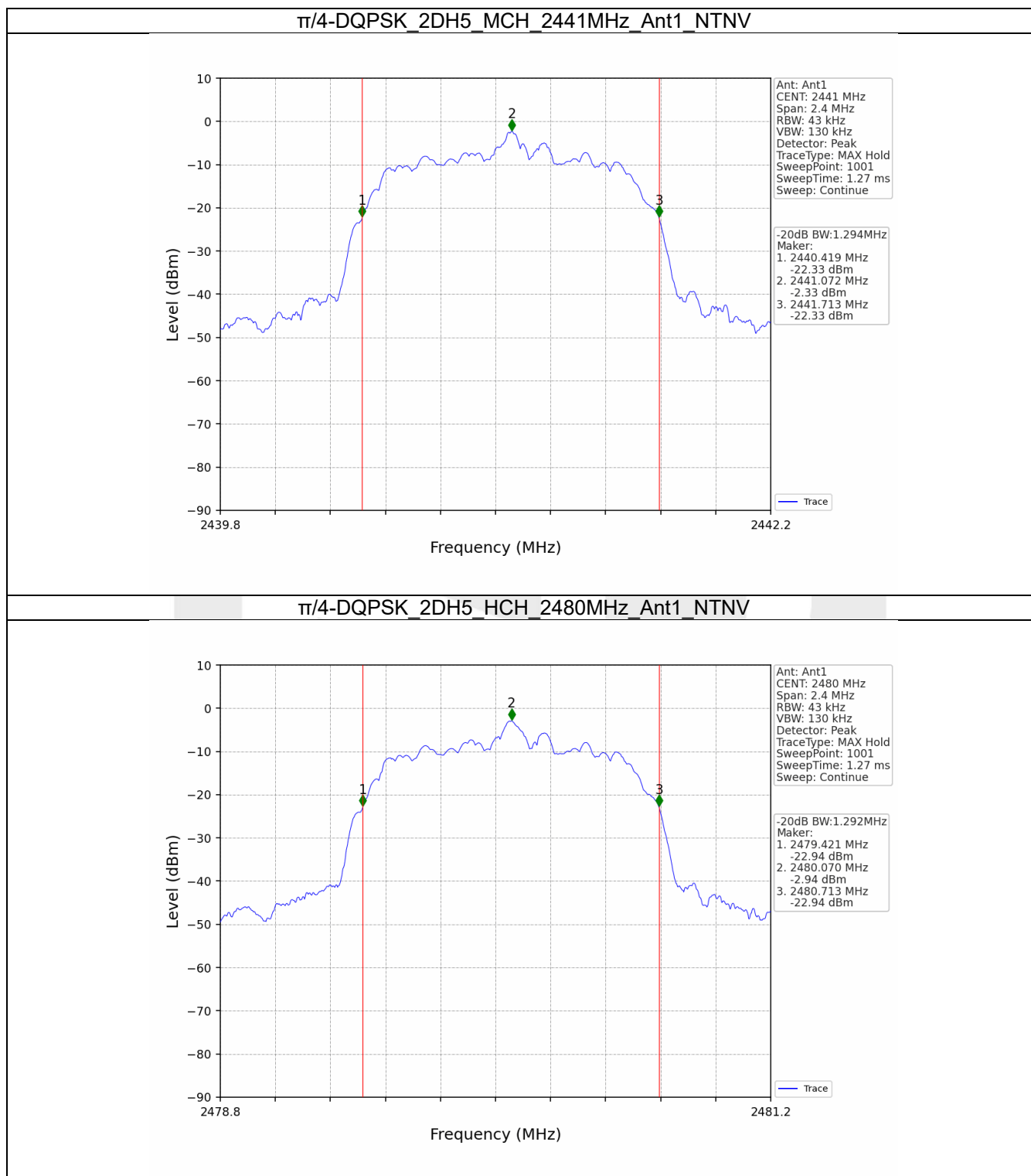
2.2.1 Test Result

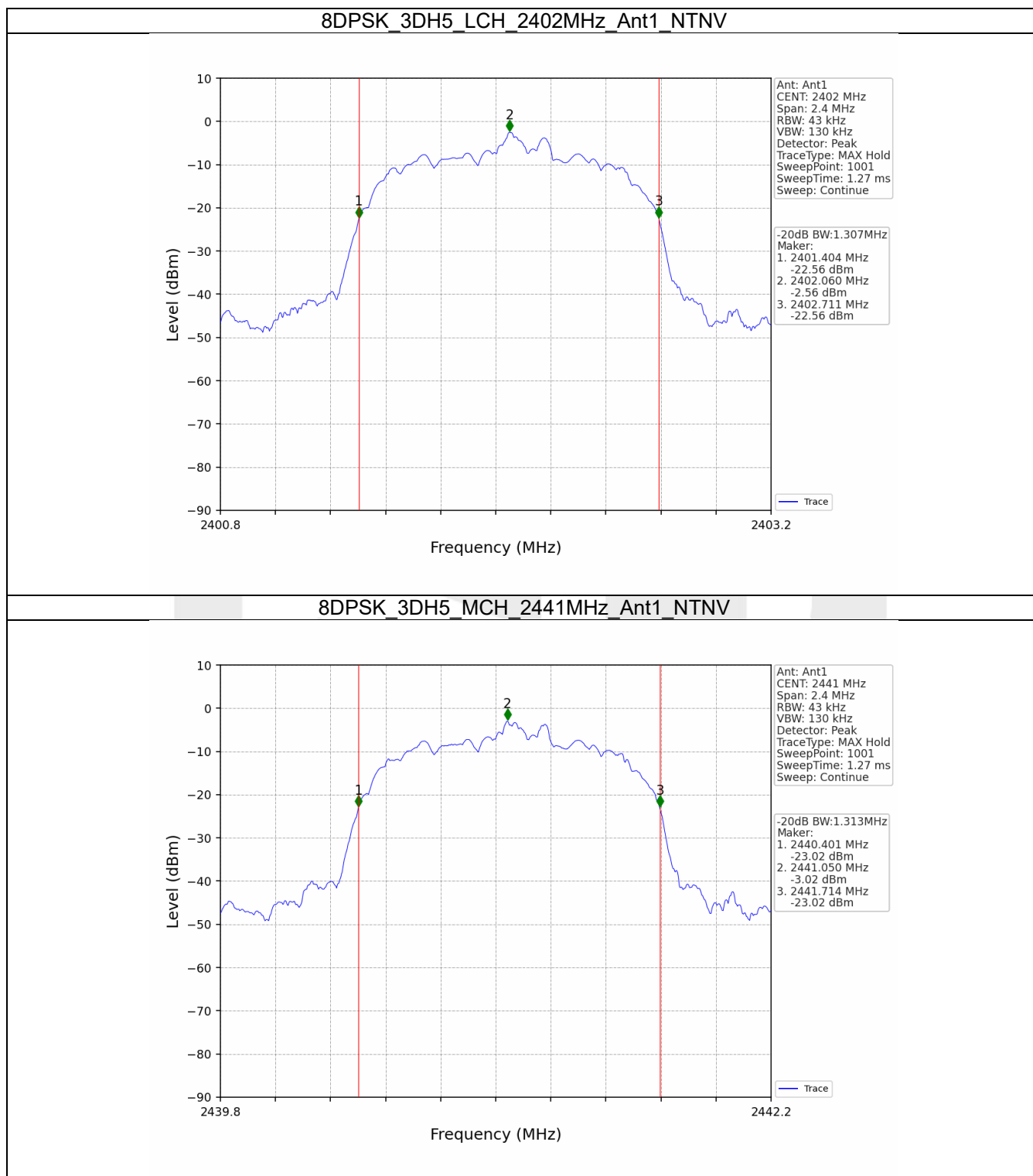
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.936	/	Pass
		2441	DH5	1	0.938	/	Pass
		2480	DH5	1	0.935	/	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	1.293	/	Pass
		2441	2DH5	1	1.294	/	Pass
		2480	2DH5	1	1.292	/	Pass
8DPSK	SISO	2402	3DH5	1	1.307	/	Pass
		2441	3DH5	1	1.313	/	Pass
		2480	3DH5	1	1.308	/	Pass

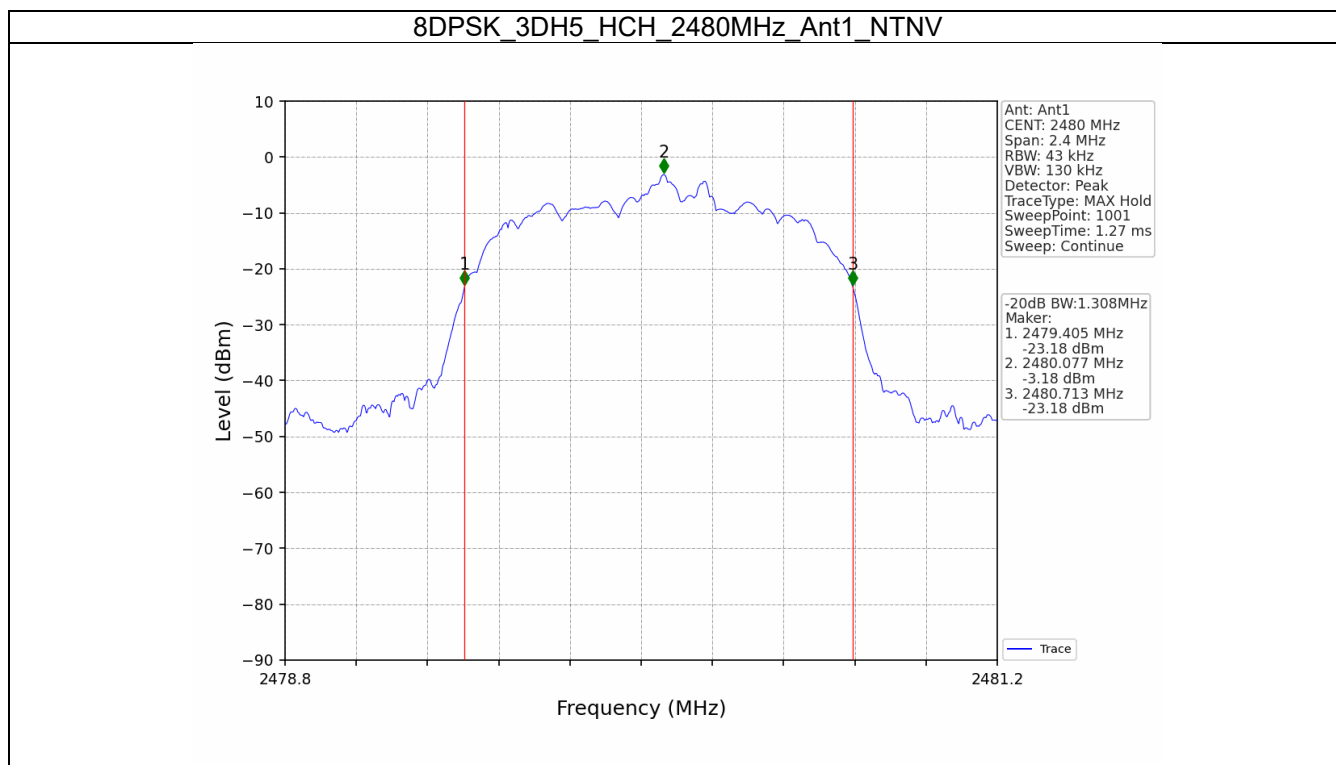
2.2.2 Test Graph











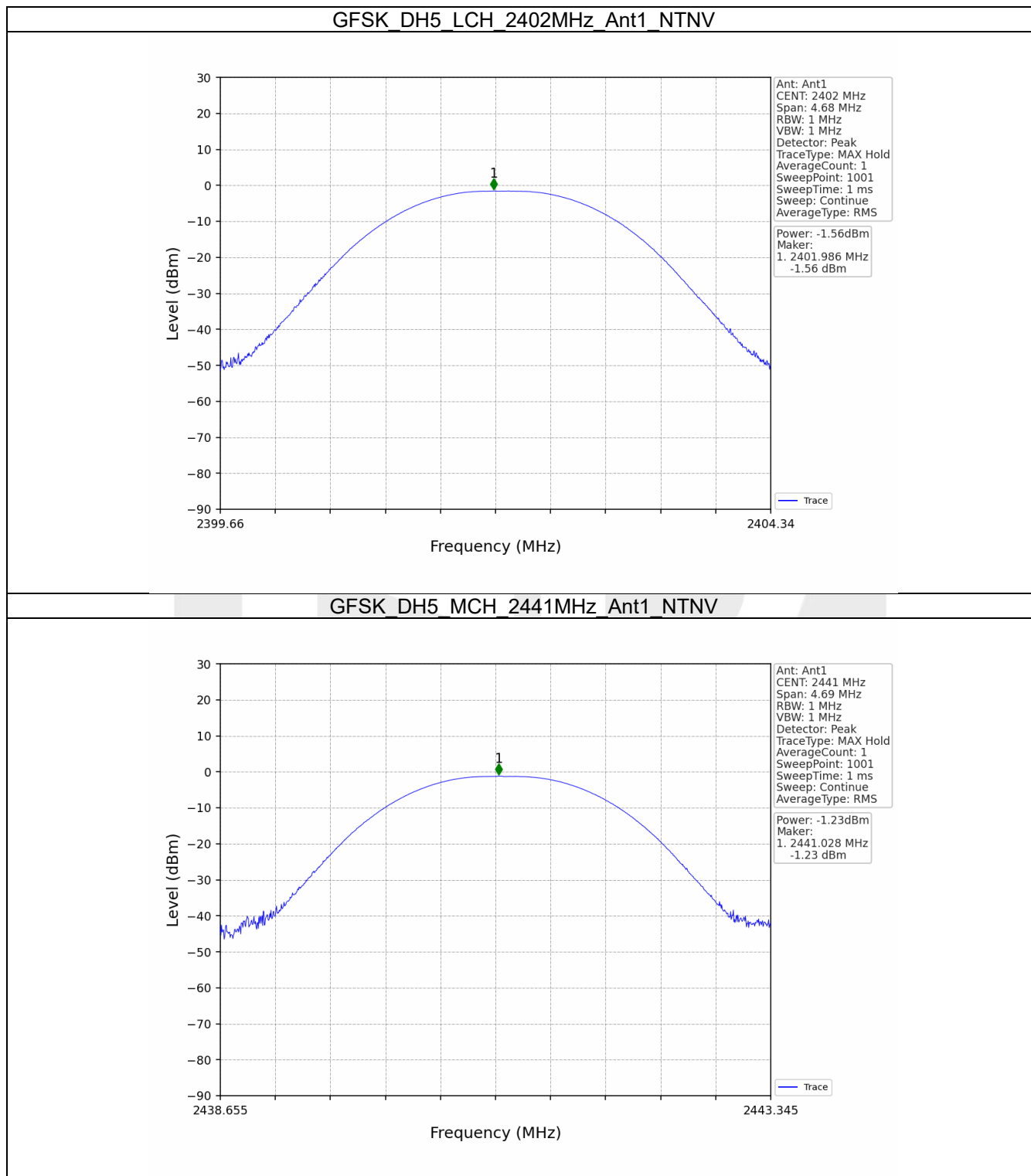
3. Maximum Conducted Output Power

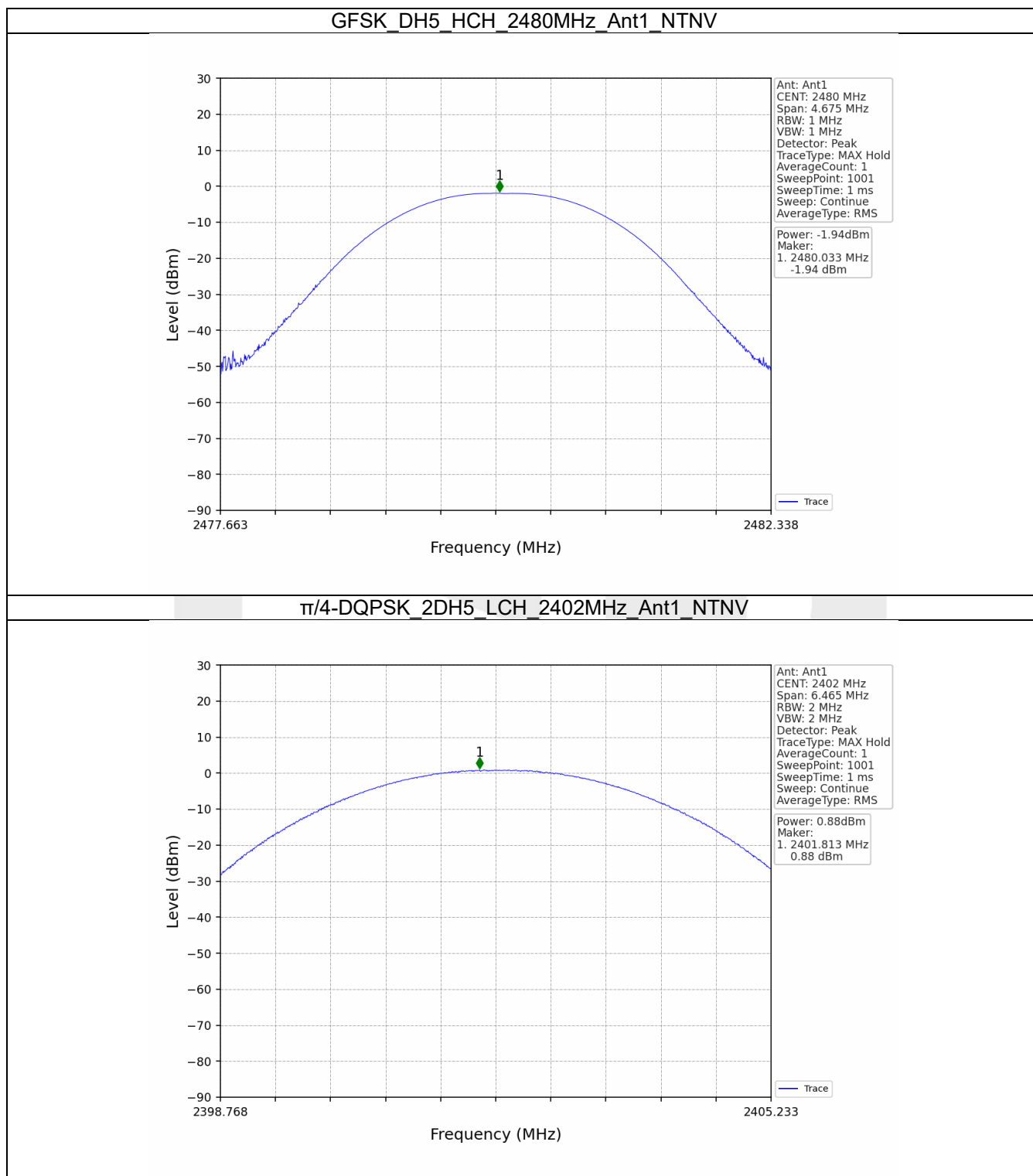
3.1 Power

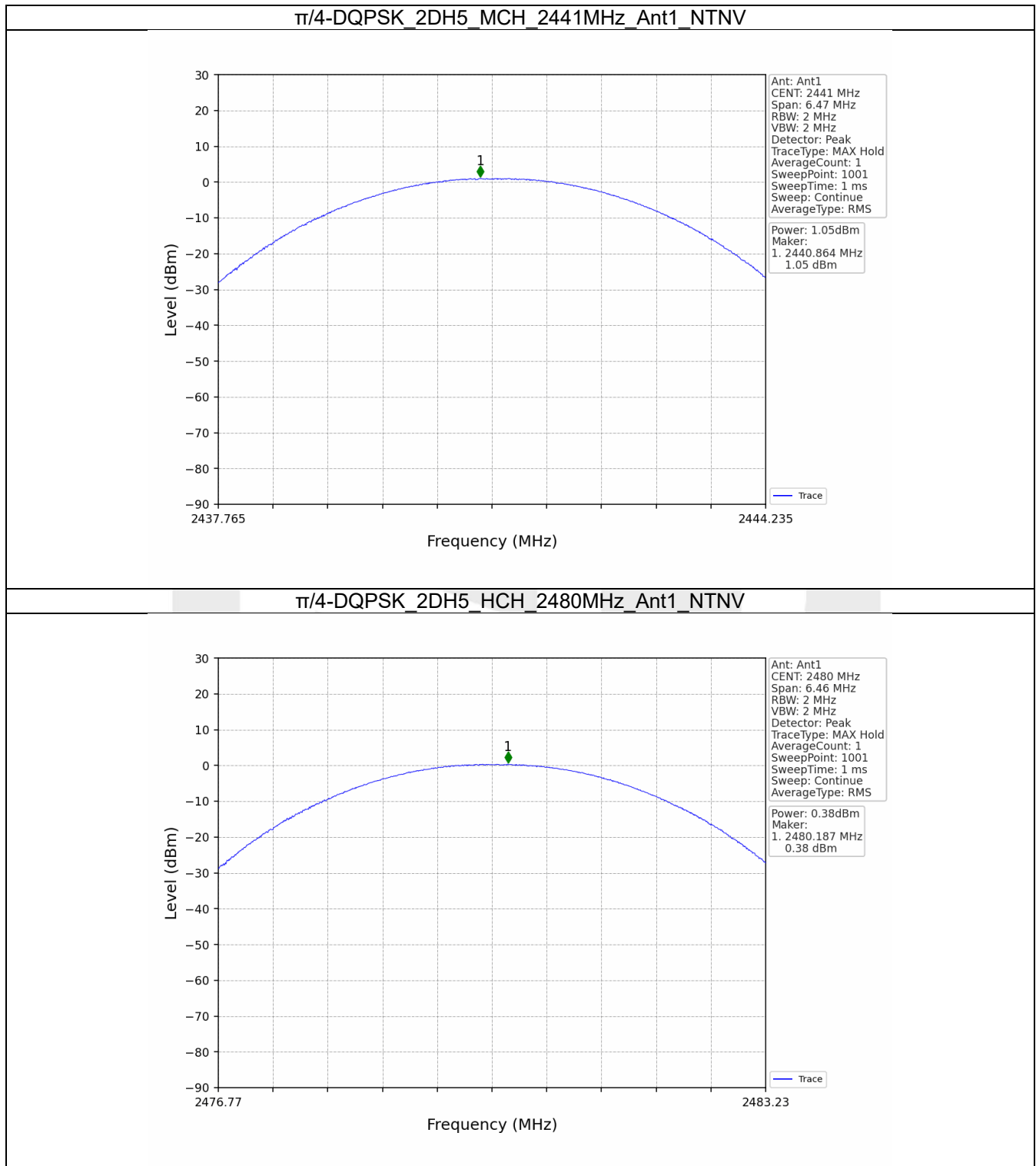
3.1.1 Test Result

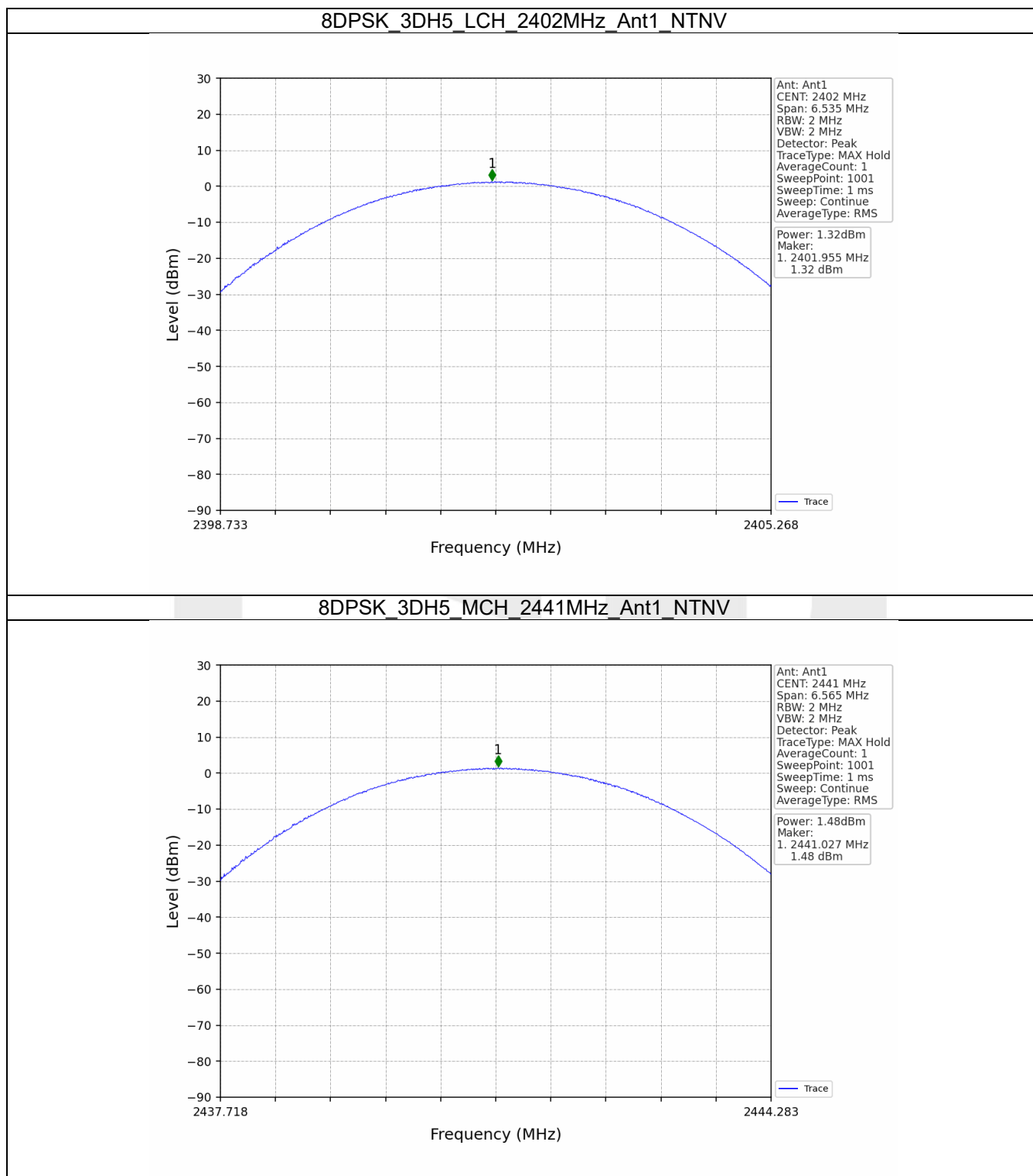
Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.56	≤ 30	Pass
		2441	DH5	-1.23	≤ 30	Pass
		2480	DH5	-1.94	≤ 30	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	0.88	≤ 20.97	Pass
		2441	2DH5	1.05	≤ 20.97	Pass
		2480	2DH5	0.38	≤ 20.97	Pass
8DPSK	SISO	2402	3DH5	1.32	≤ 20.97	Pass
		2441	3DH5	1.48	≤ 20.97	Pass
		2480	3DH5	0.84	≤ 20.97	Pass

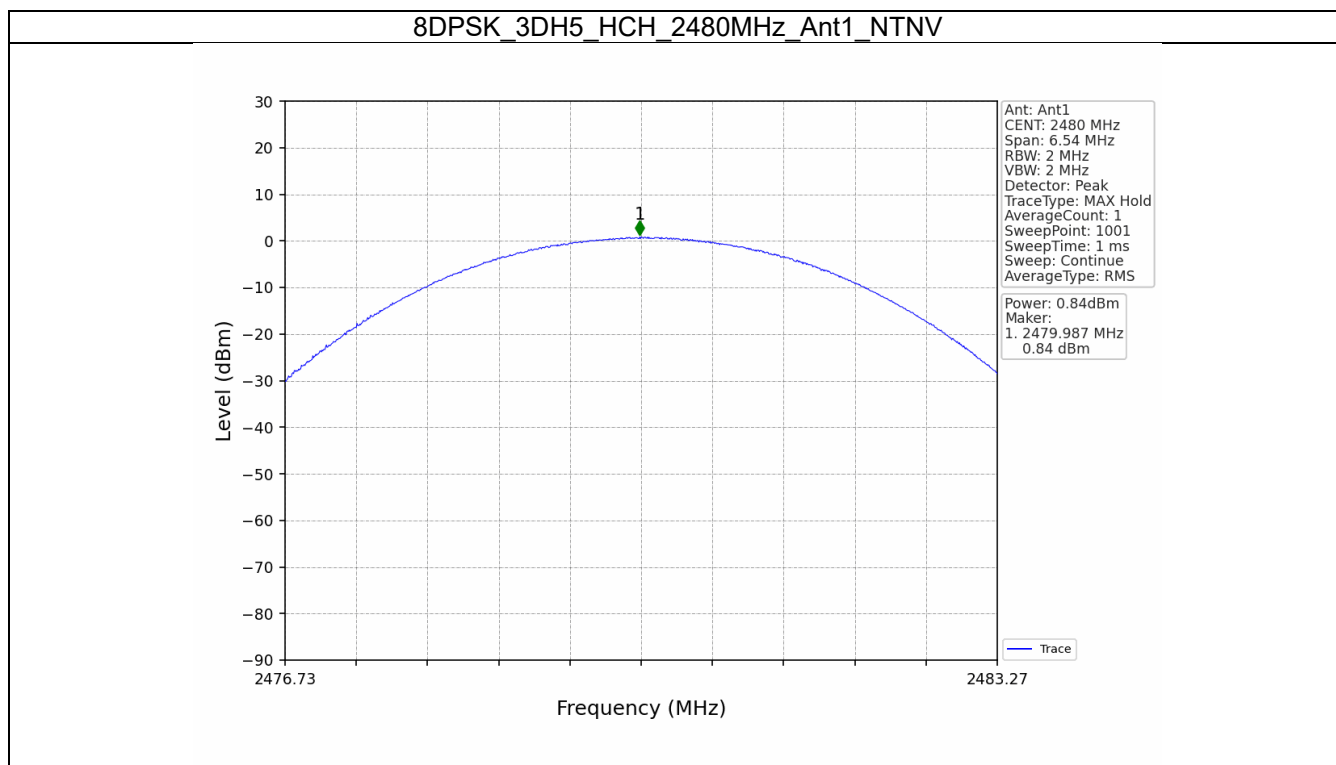
3.1.2 Test Graph











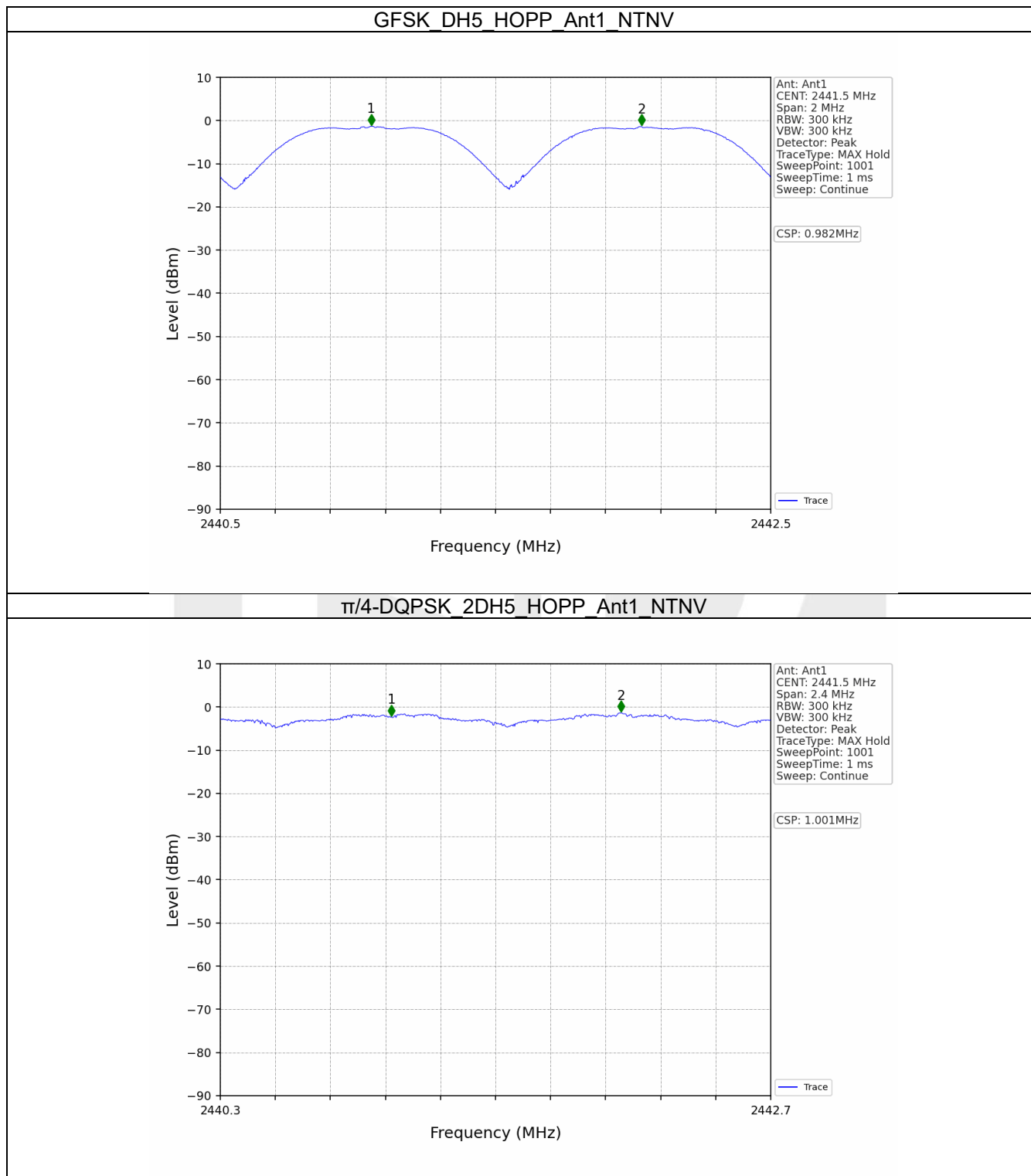
4. Carrier Frequency Separation

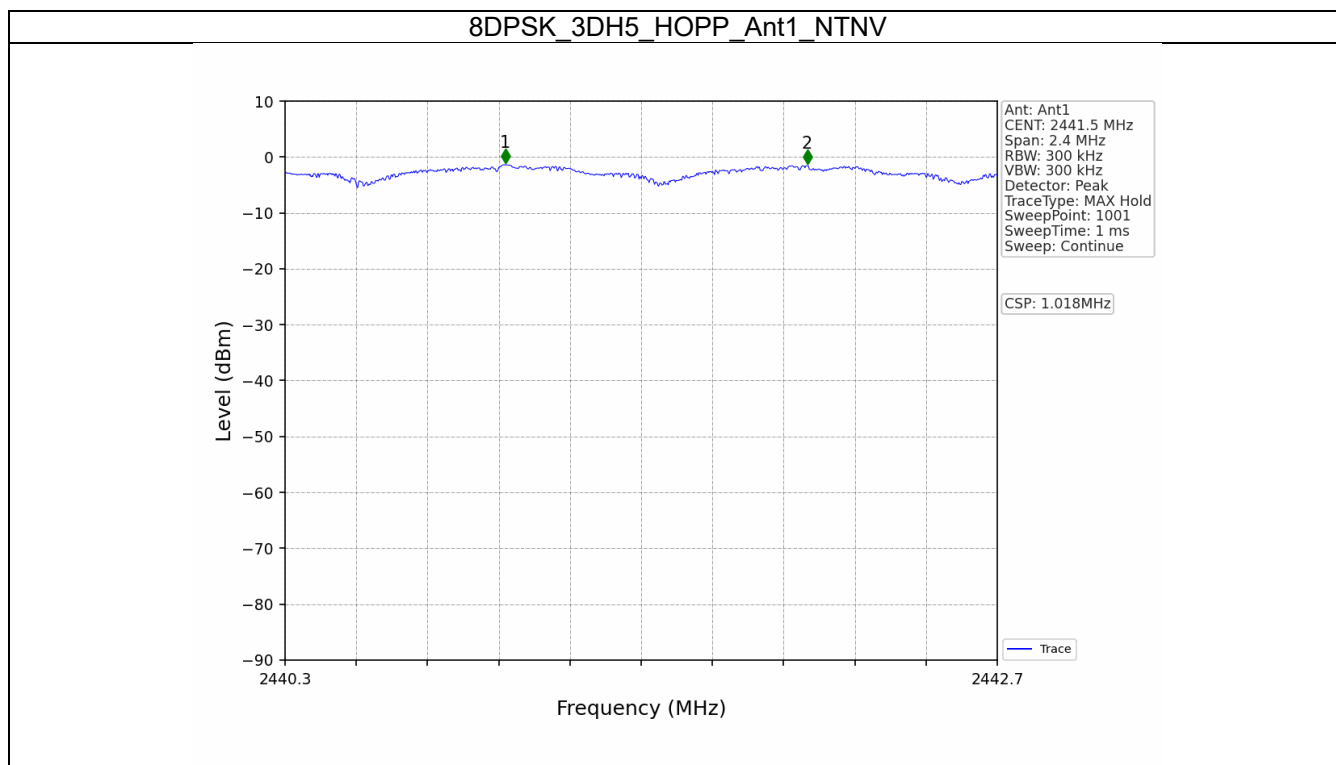
4.1 Ant1

4.1.1 Test Result

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	0.982	0.938	≥ 0.938	Pass
$\pi/4$ -DQPSK	SISO	HOPP	2DH5	1.001	1.294	≥ 0.863	Pass
8DPSK	SISO	HOPP	3DH5	1.018	1.313	≥ 0.875	Pass

4.1.2 Test Graph





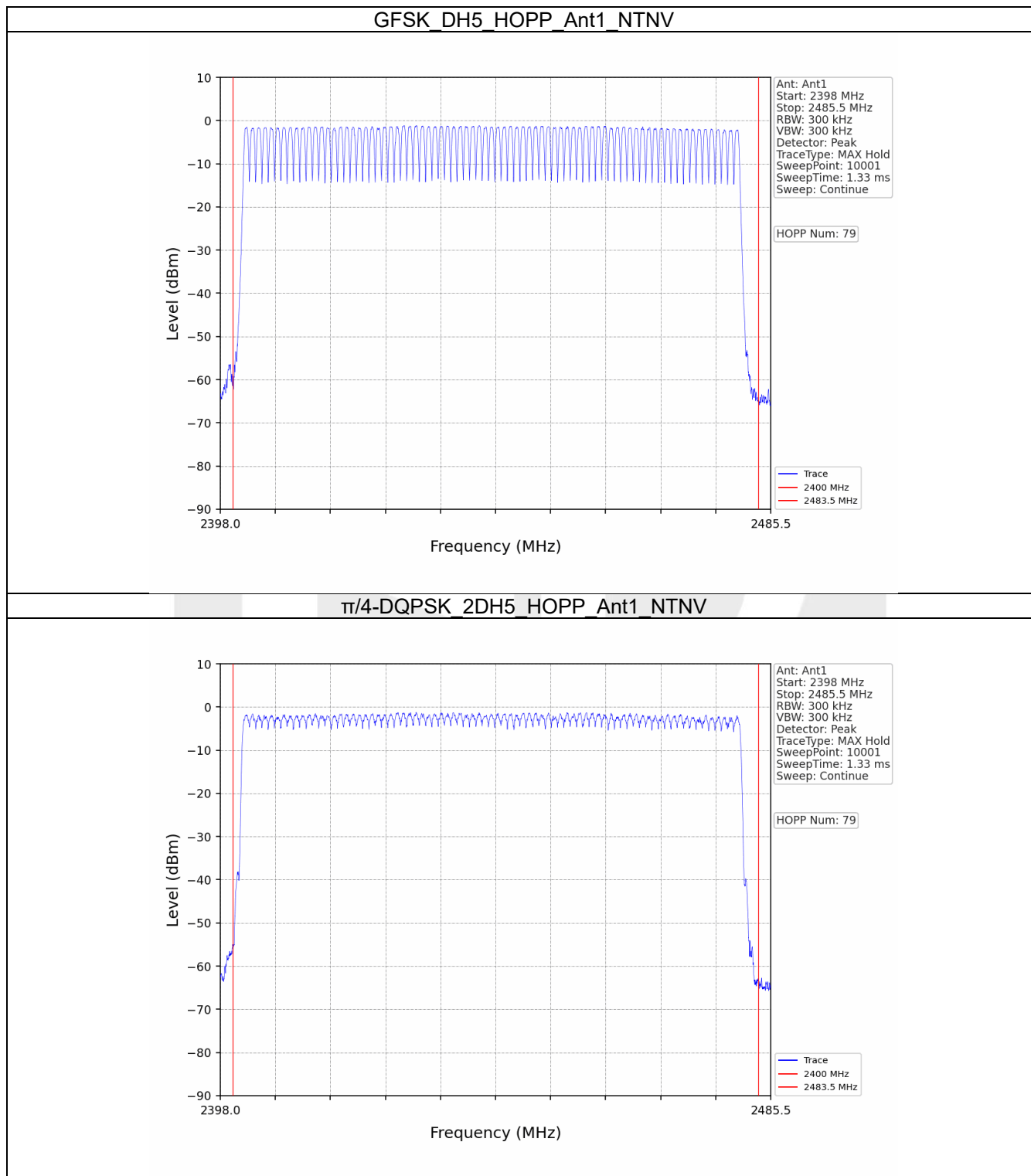
5. Number of Hopping Frequencies

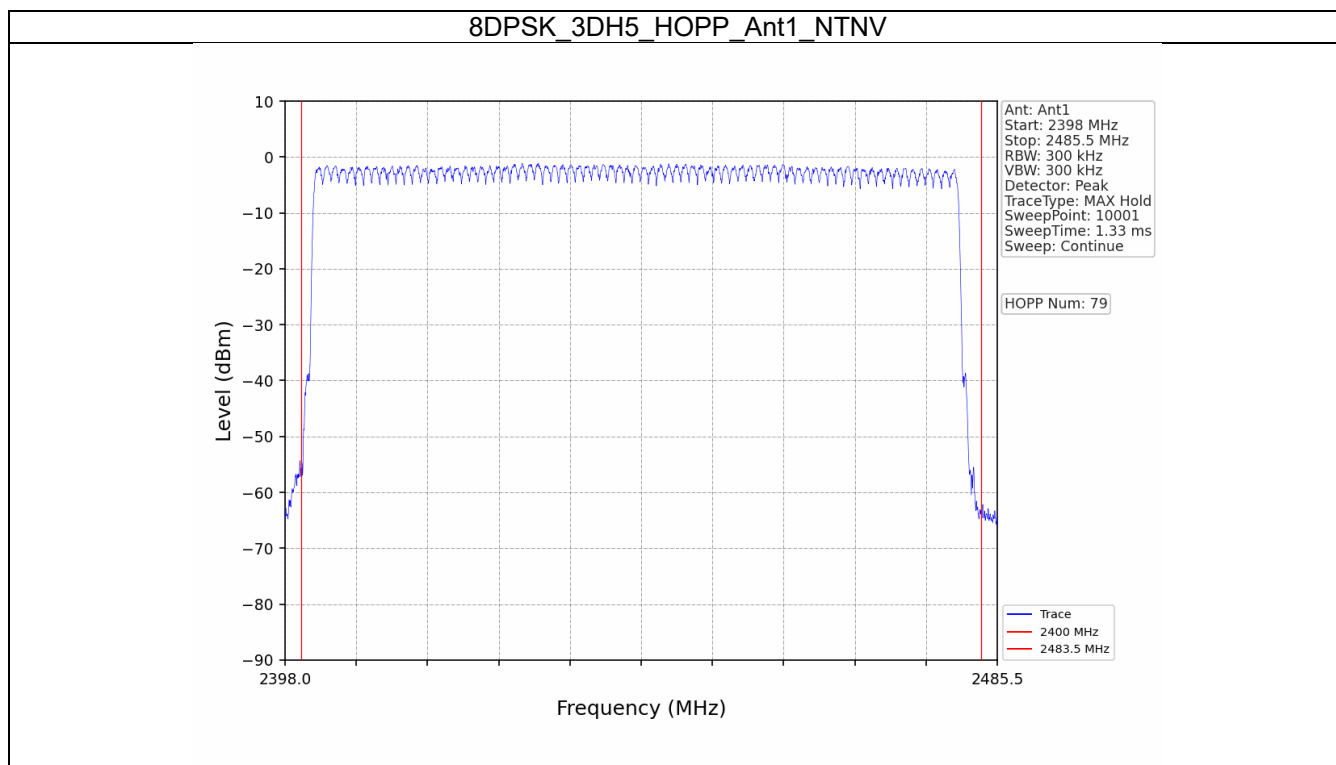
5.1 HoppNum

5.1.1 Test Result

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

5.1.2 Test Graph





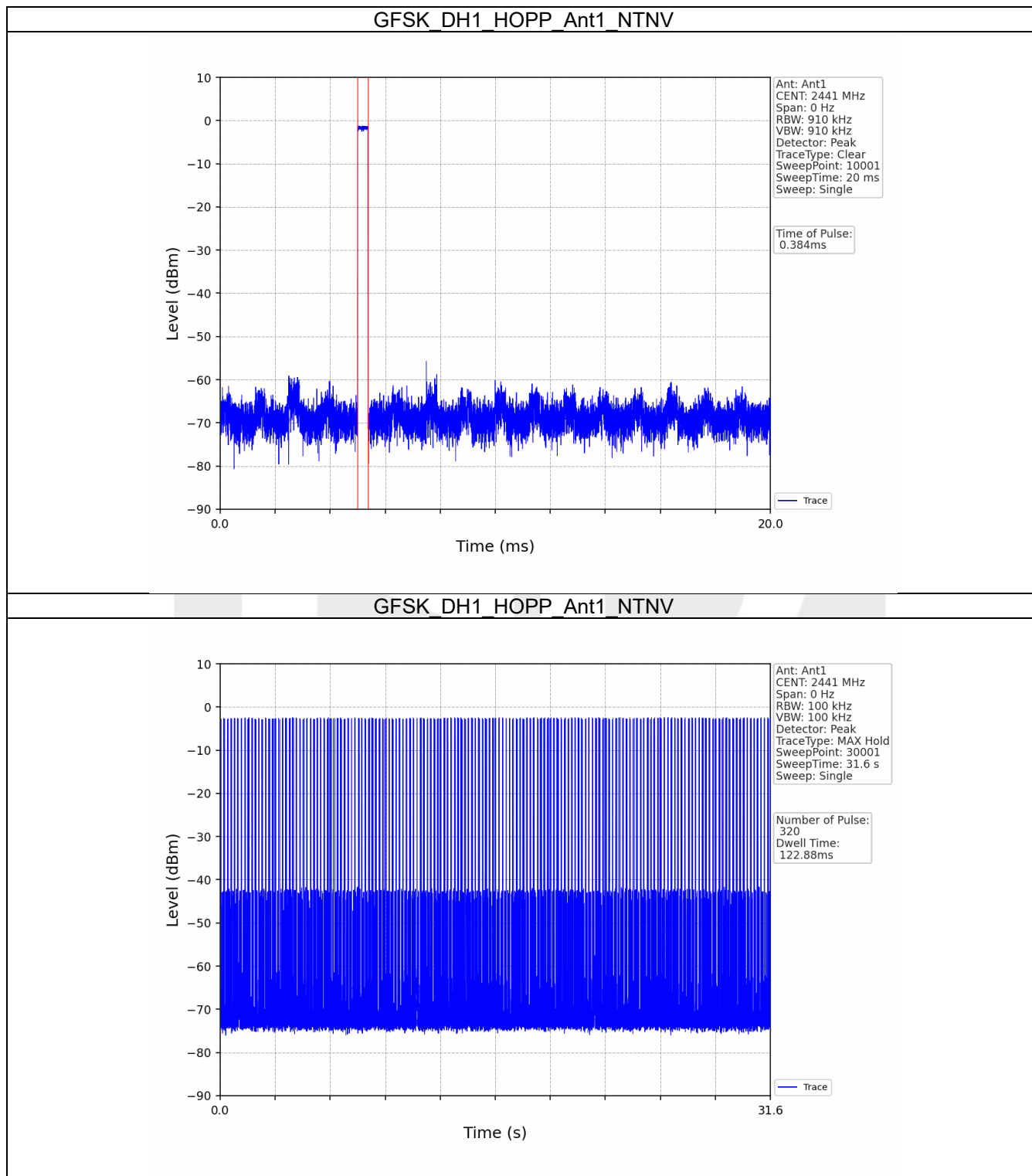
6. Time of Occupancy (Dwell Time)

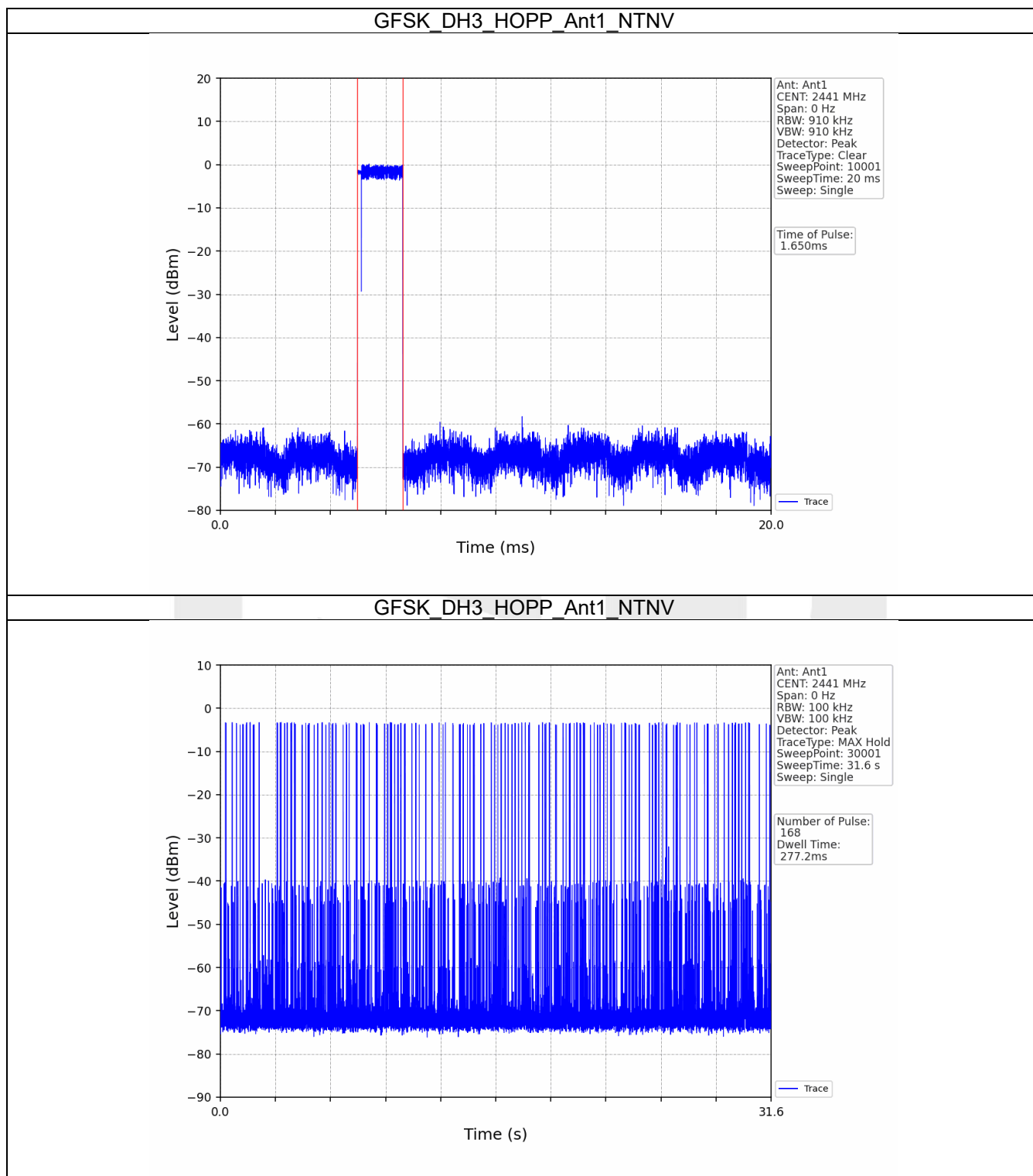
6.1 Ant1

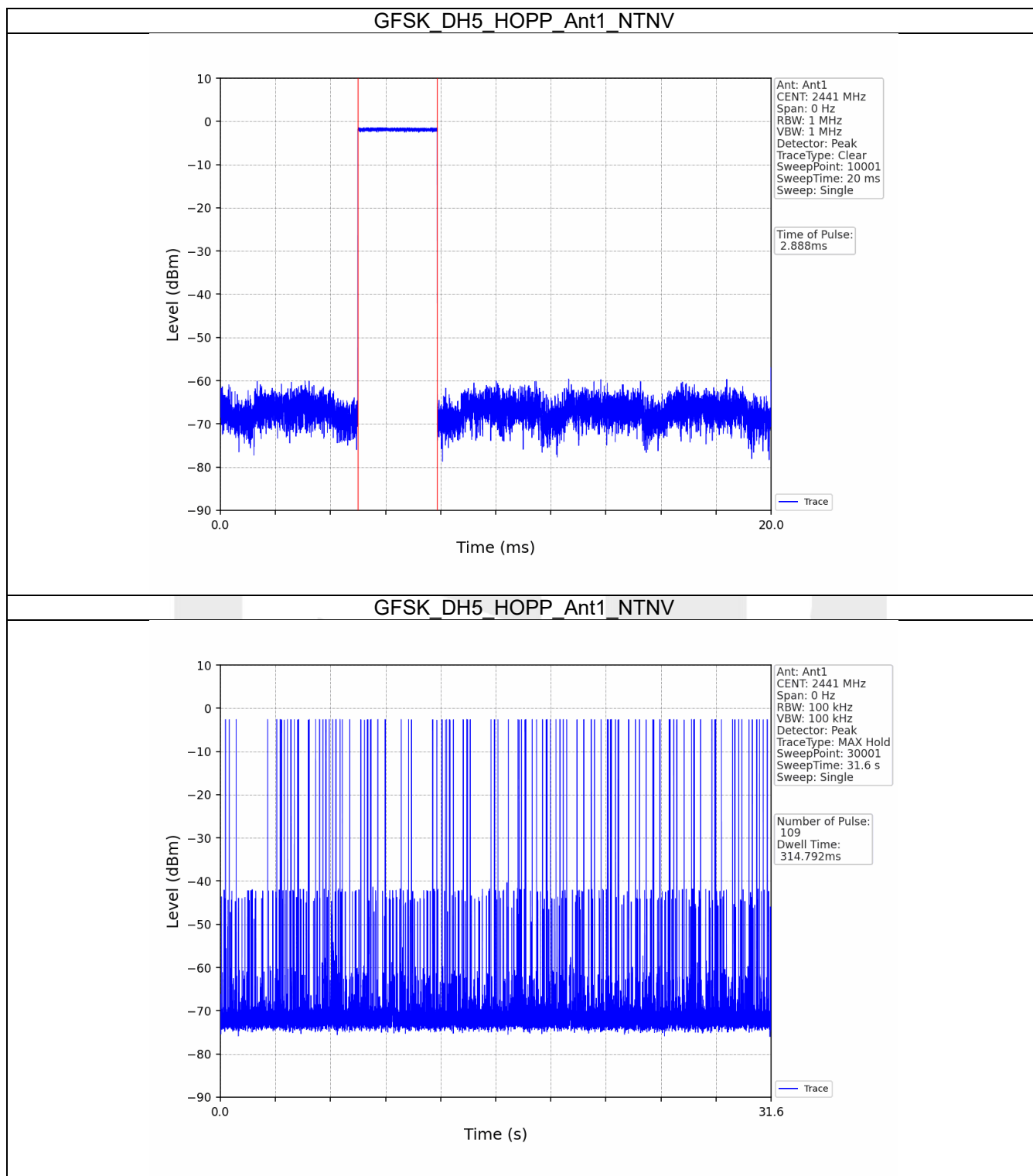
6.1.1 Test Result

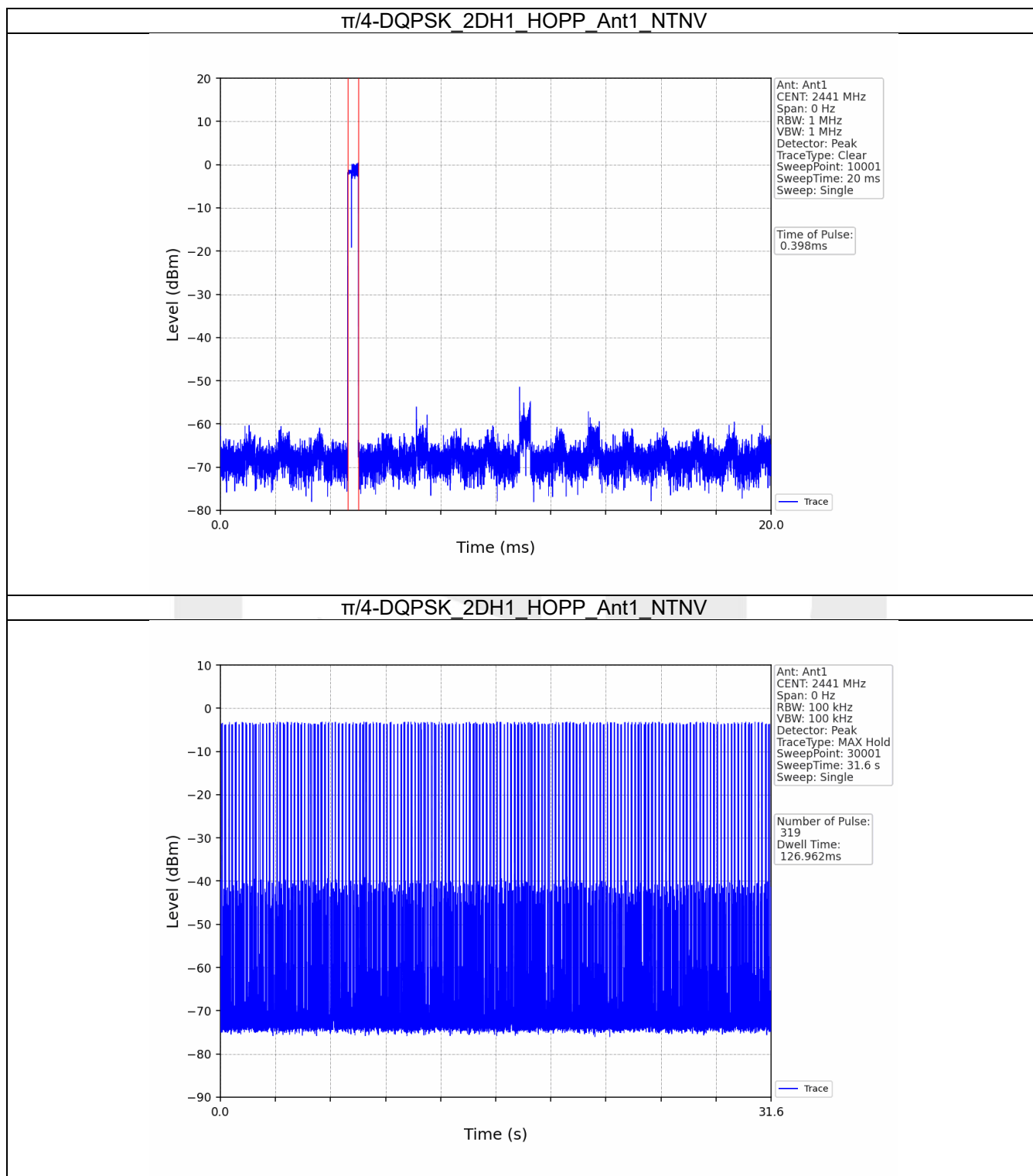
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.384	31.600	320	122.880	<=400	Pass
			DH3	1.650	31.600	168	277.200	<=400	Pass
			DH5	2.888	31.600	109	314.792	<=400	Pass
$\pi/4$ -DQPSK	SISO	HOPP	2DH1	0.398	31.600	319	126.962	<=400	Pass
			2DH3	1.646	31.600	178	292.988	<=400	Pass
			2DH5	2.894	31.600	83	240.202	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.394	31.600	319	125.686	<=400	Pass
			3DH3	1.648	31.600	150	247.200	<=400	Pass
			3DH5	2.900	31.600	110	319.000	<=400	Pass

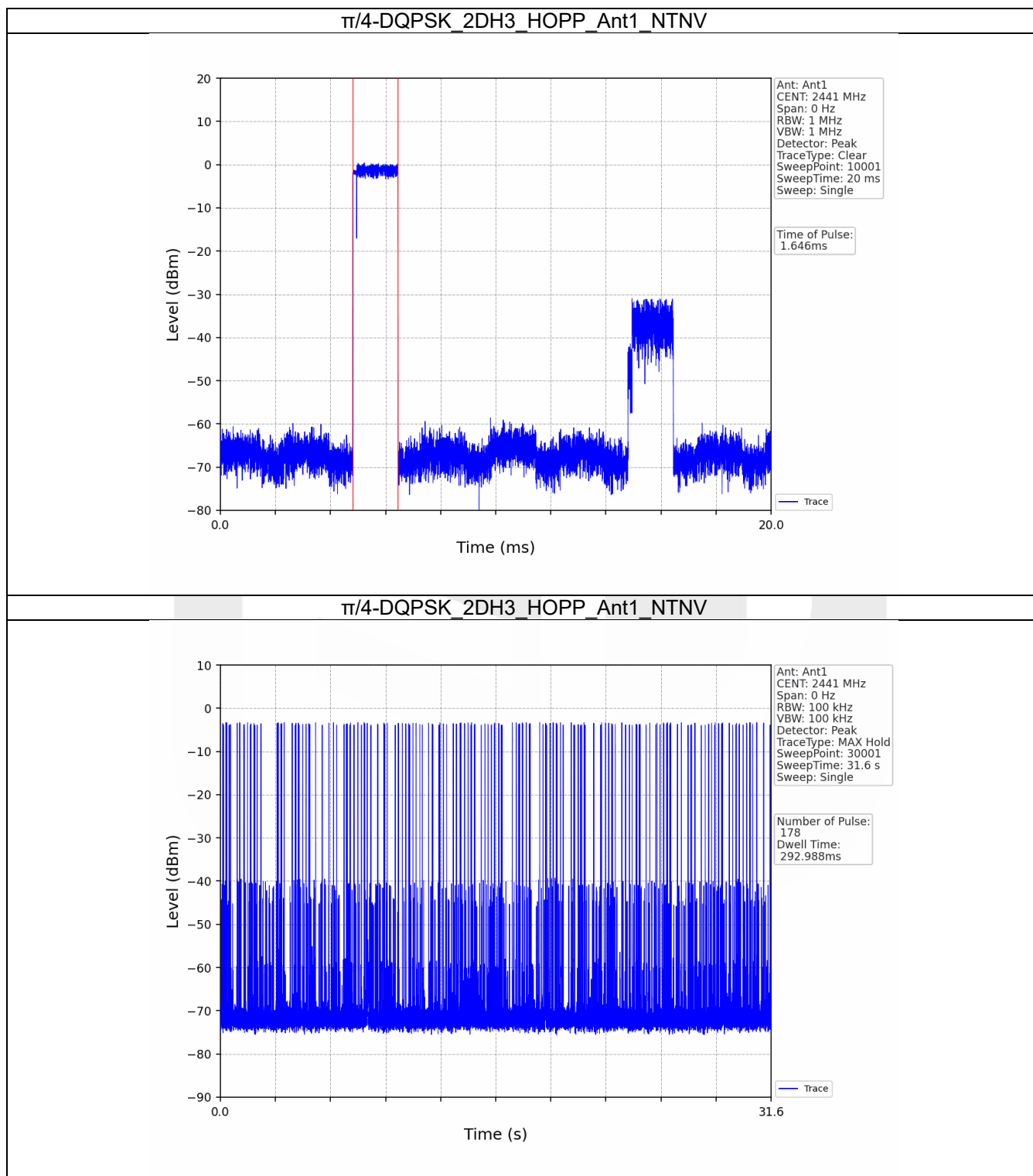
6.1.2 Test Graph

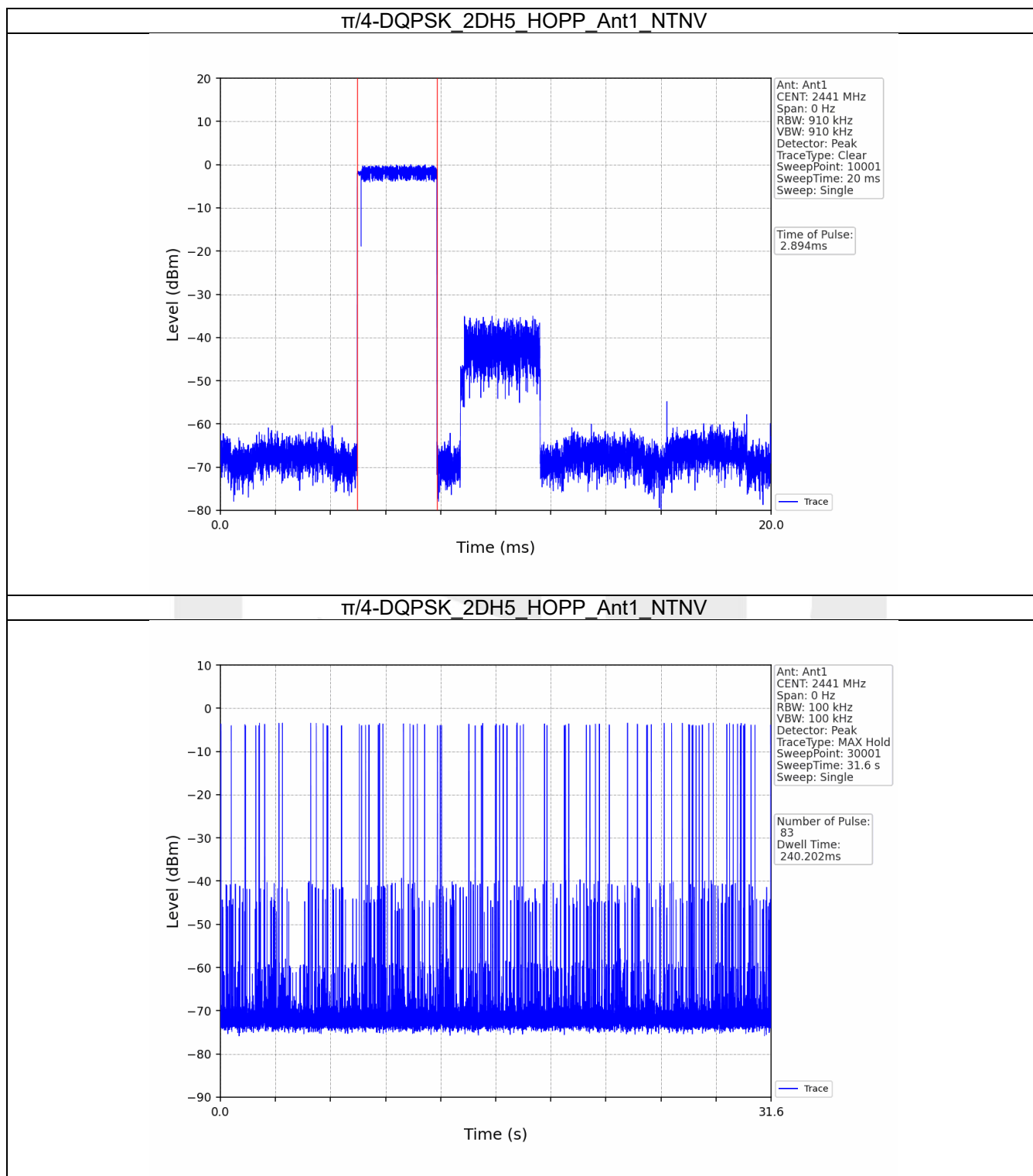


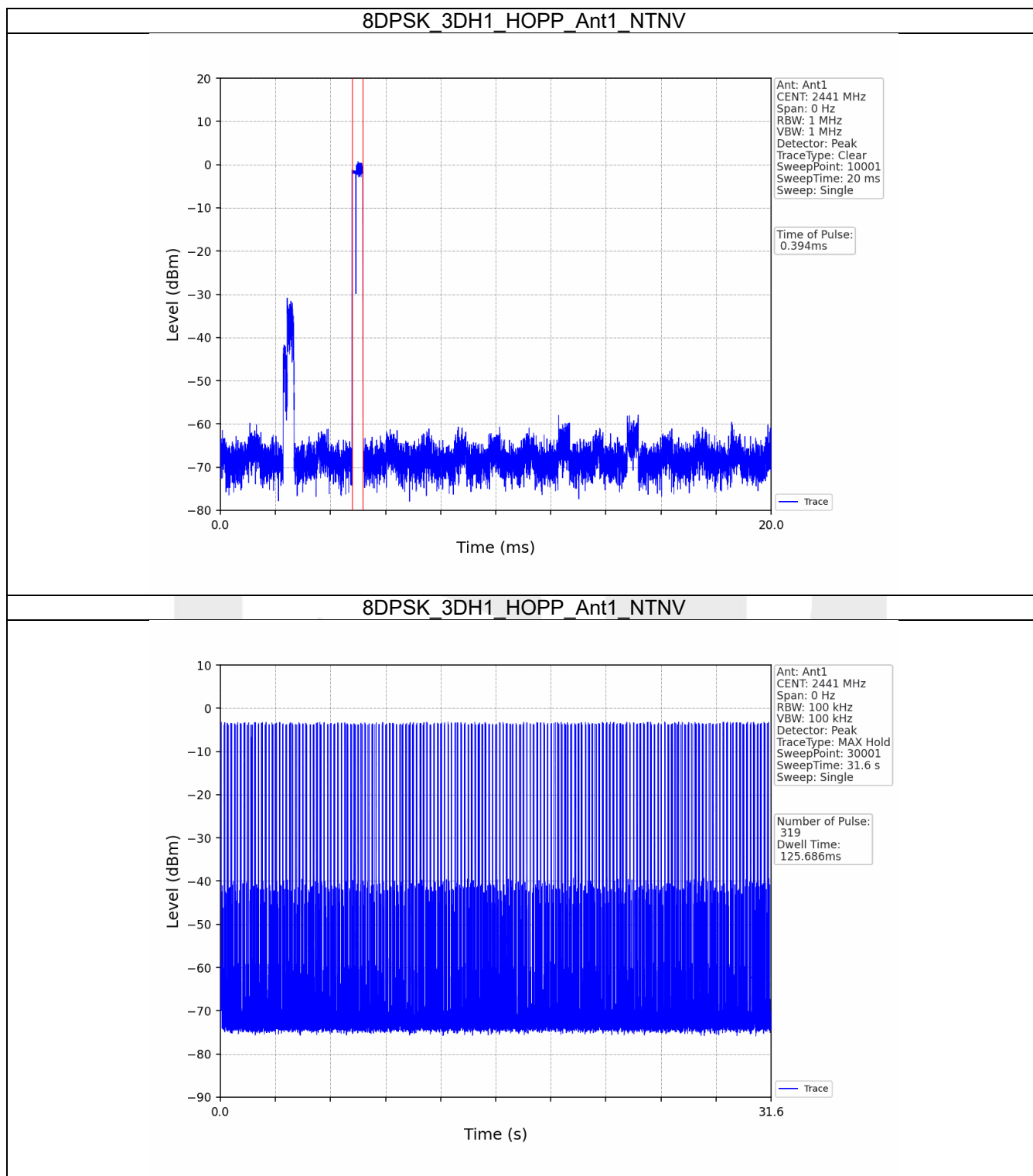


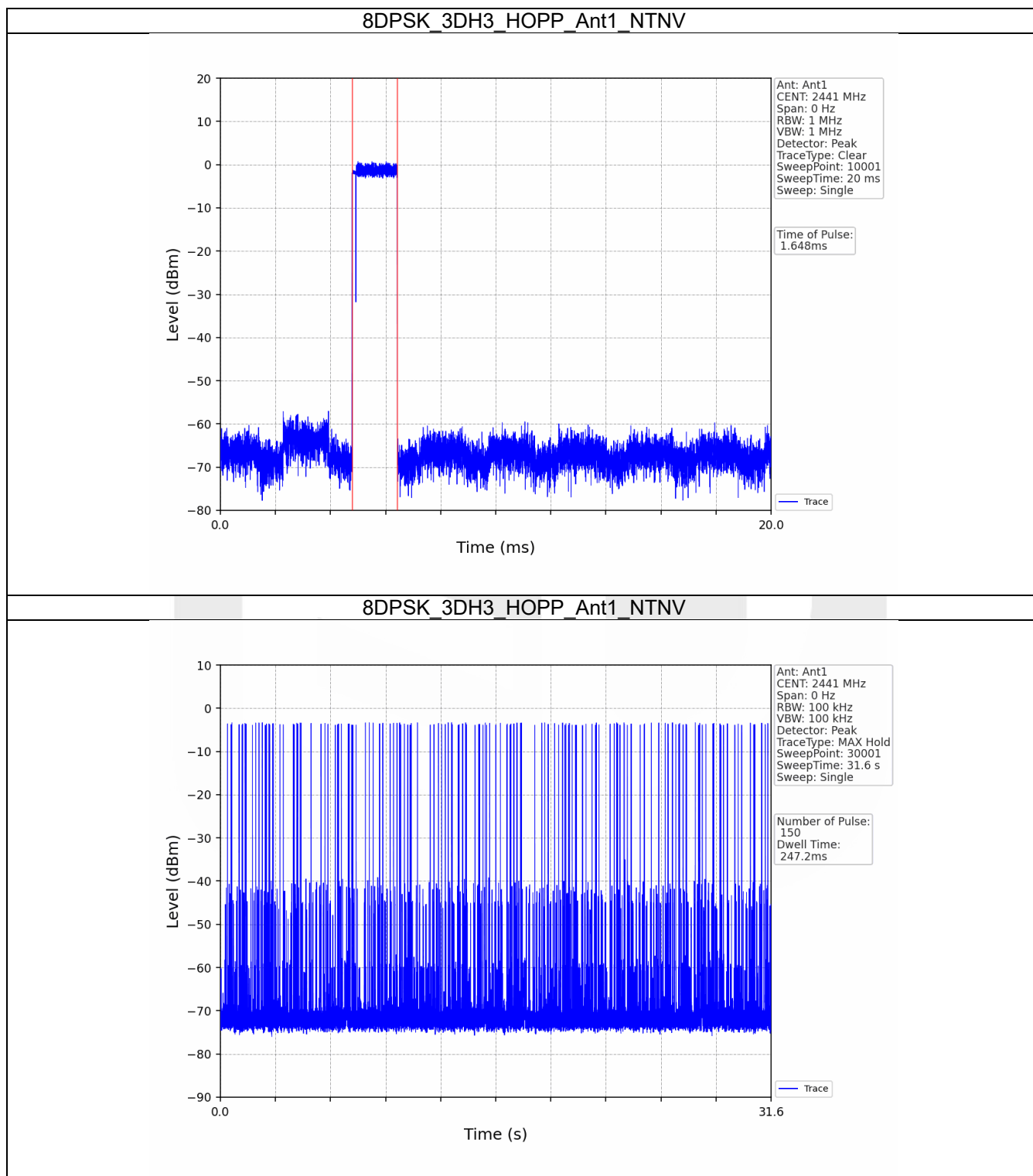


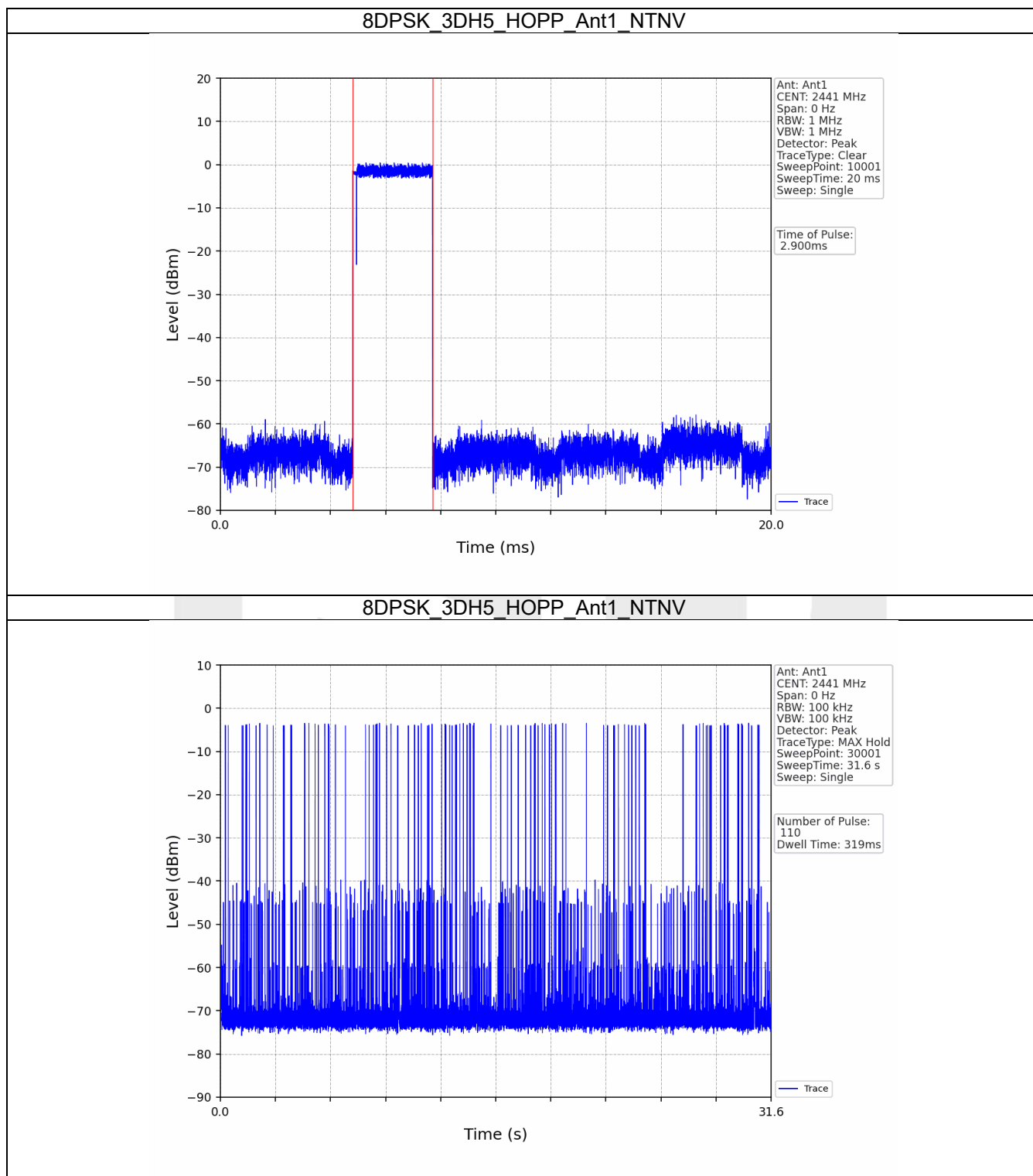












7. Unwanted Emissions In Non-restricted Frequency Bands

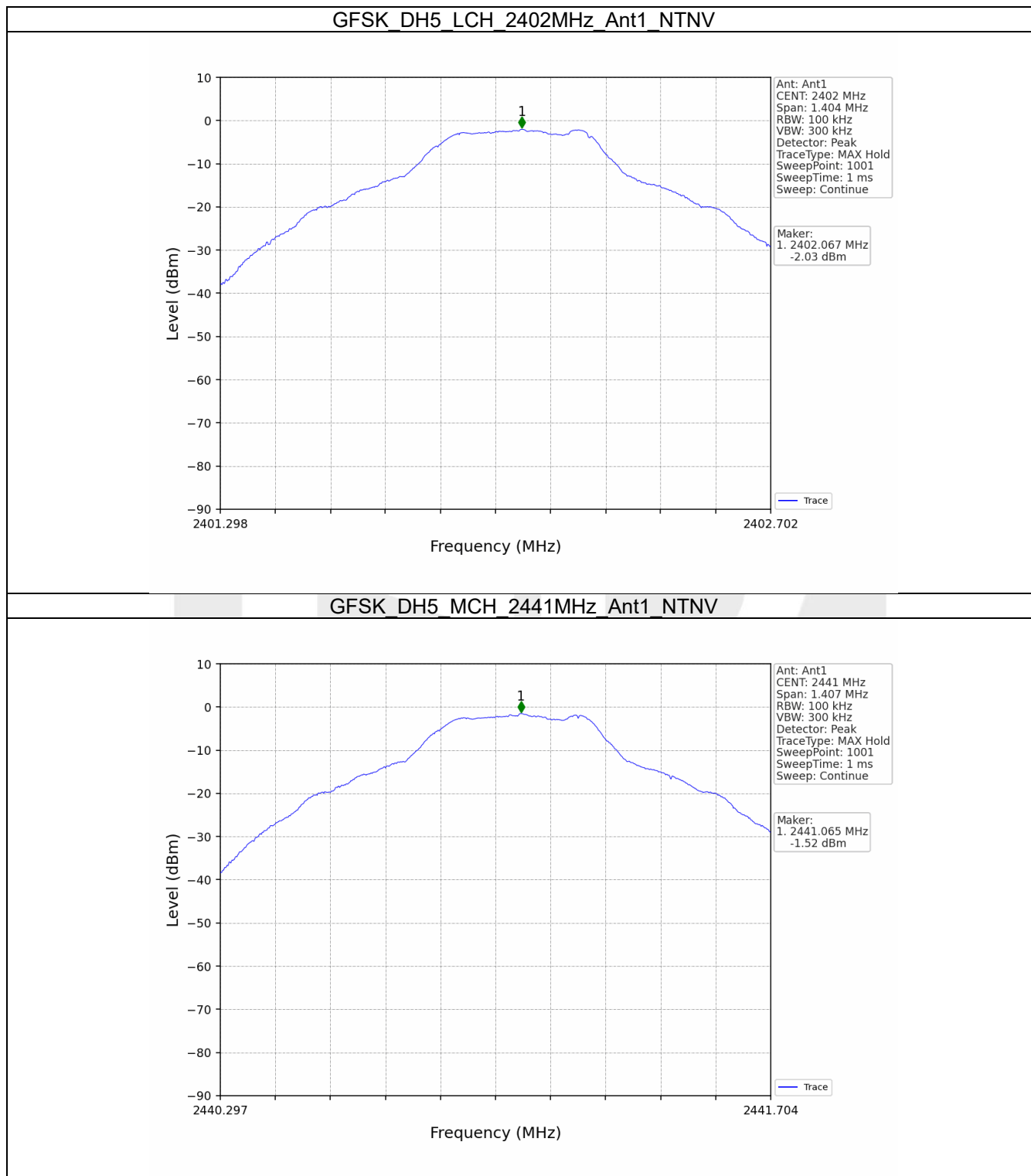
7.1 Ref

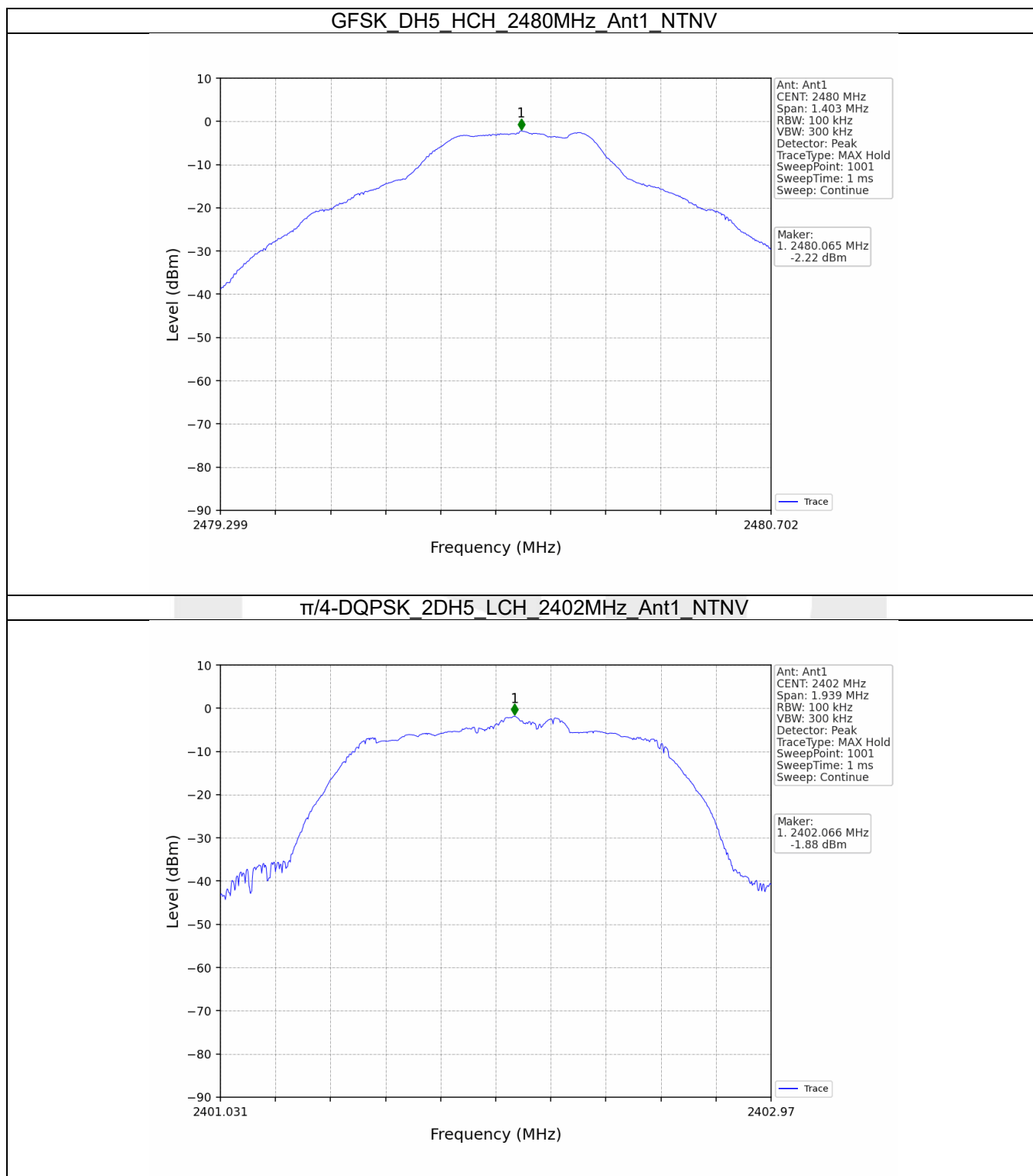
7.1.1 Test Result

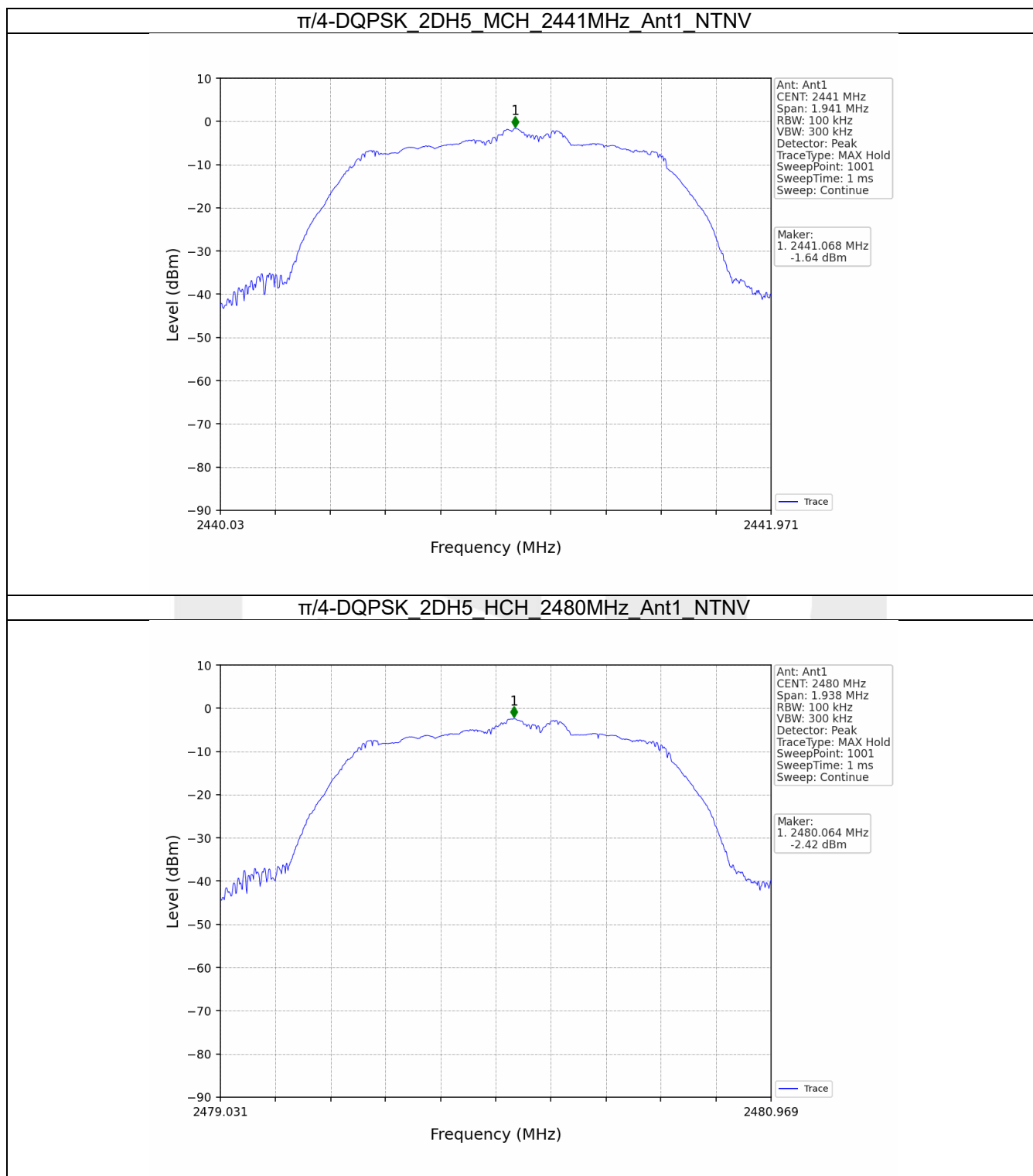
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	-2.03
		2441	DH5	1	-1.52
		2480	DH5	1	-2.22
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	-1.88
		2441	2DH5	1	-1.64
		2480	2DH5	1	-2.42
8DPSK	SISO	2402	3DH5	1	-2.28
		2441	3DH5	1	-1.68
		2480	3DH5	1	-2.43

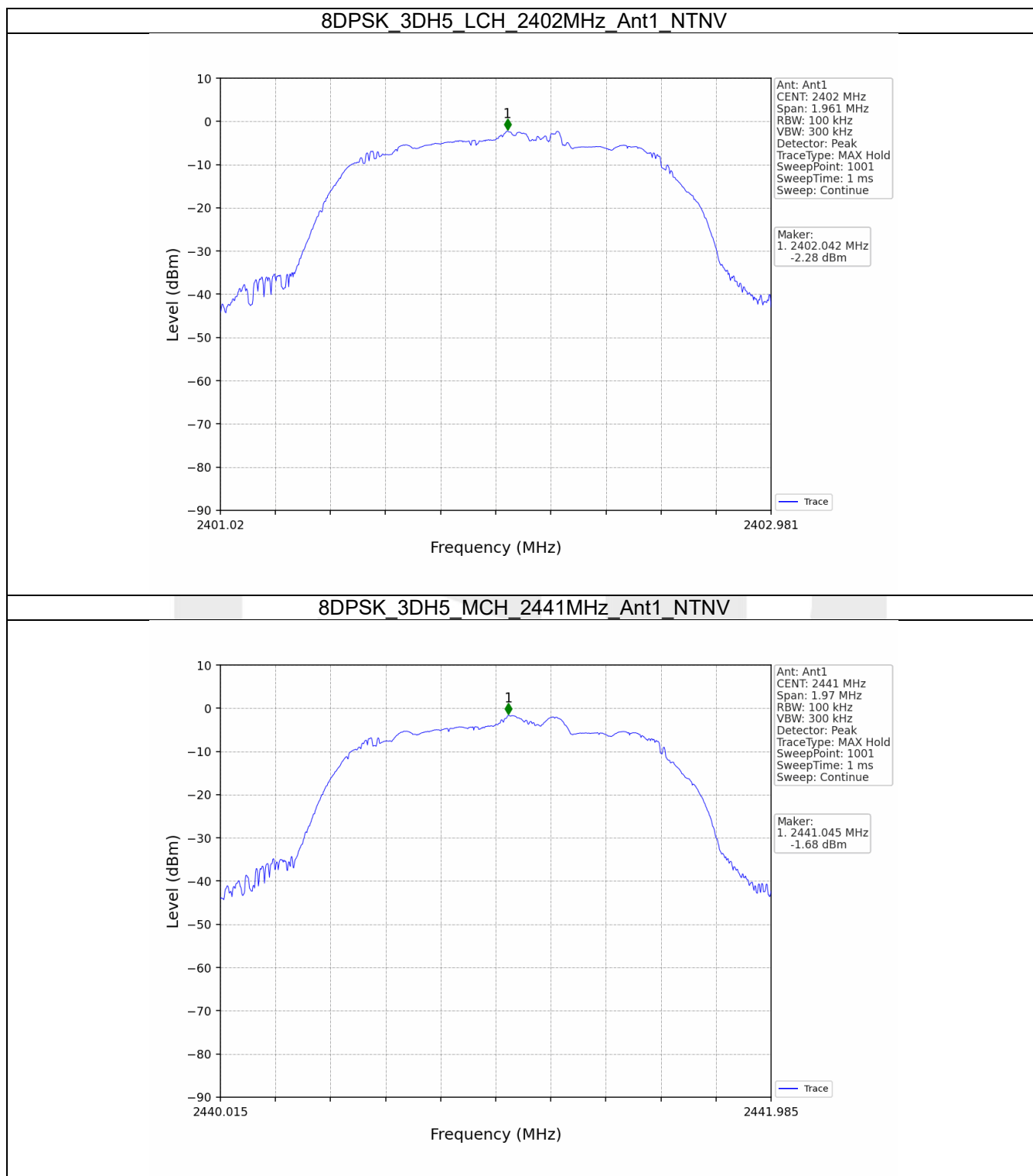
Note1: Refer to RSS-247 Issue 2 section 5.5 and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

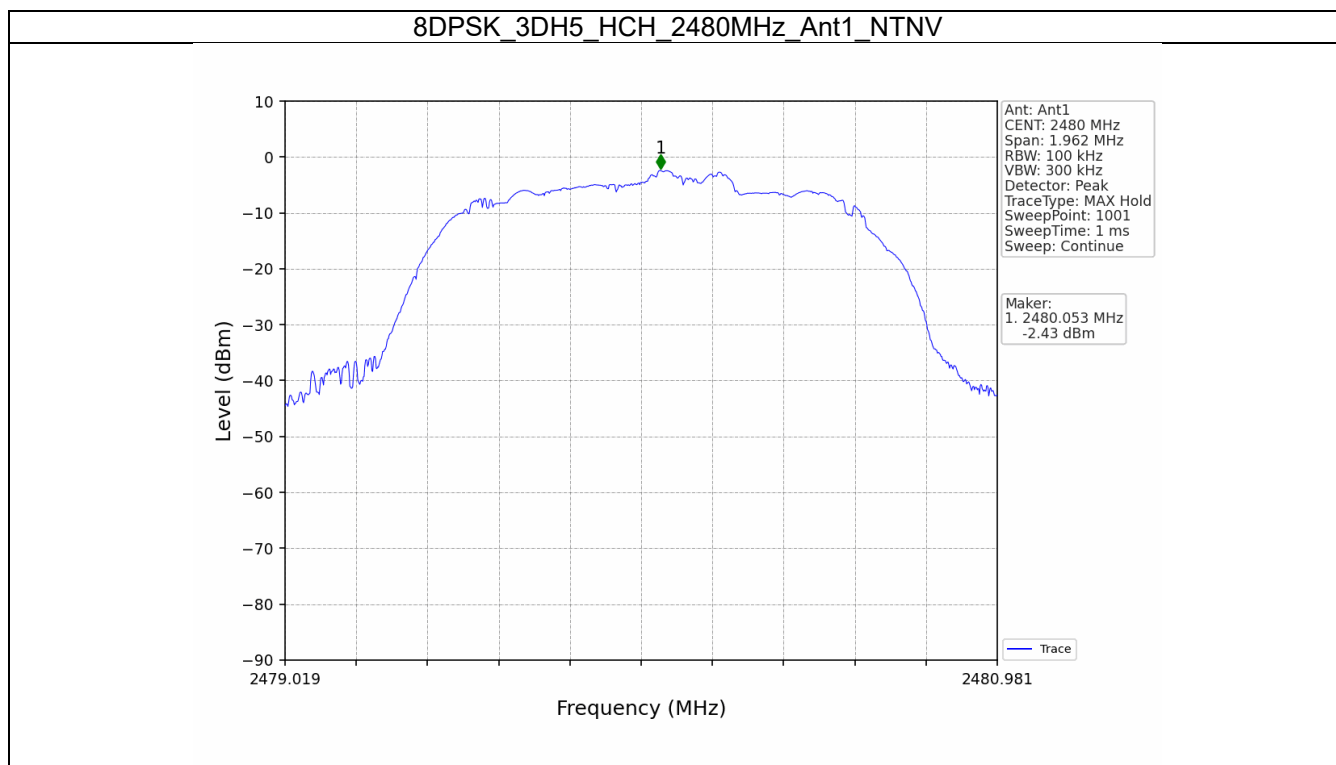
7.1.2 Test Graph









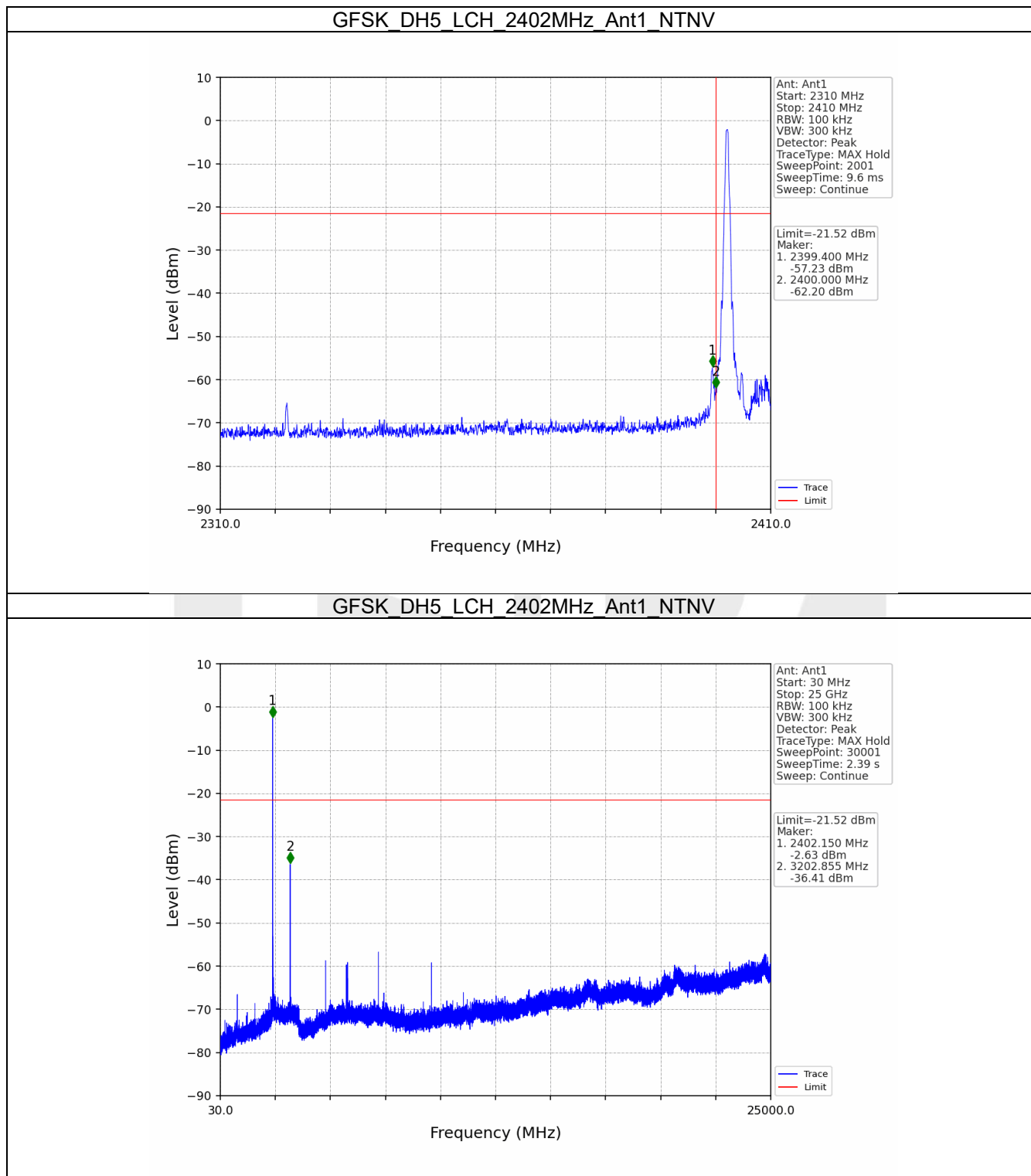


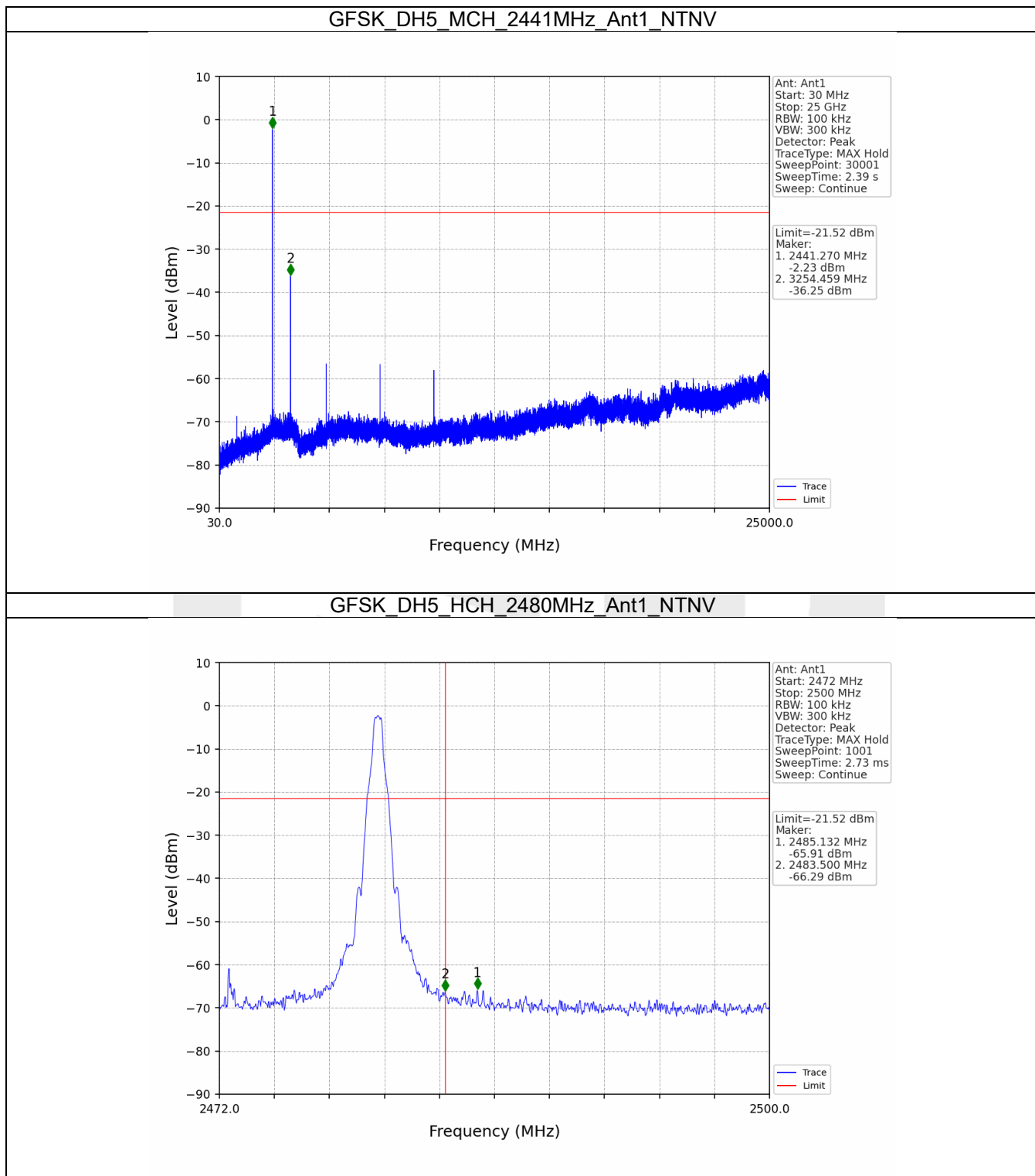
7.2 CSE

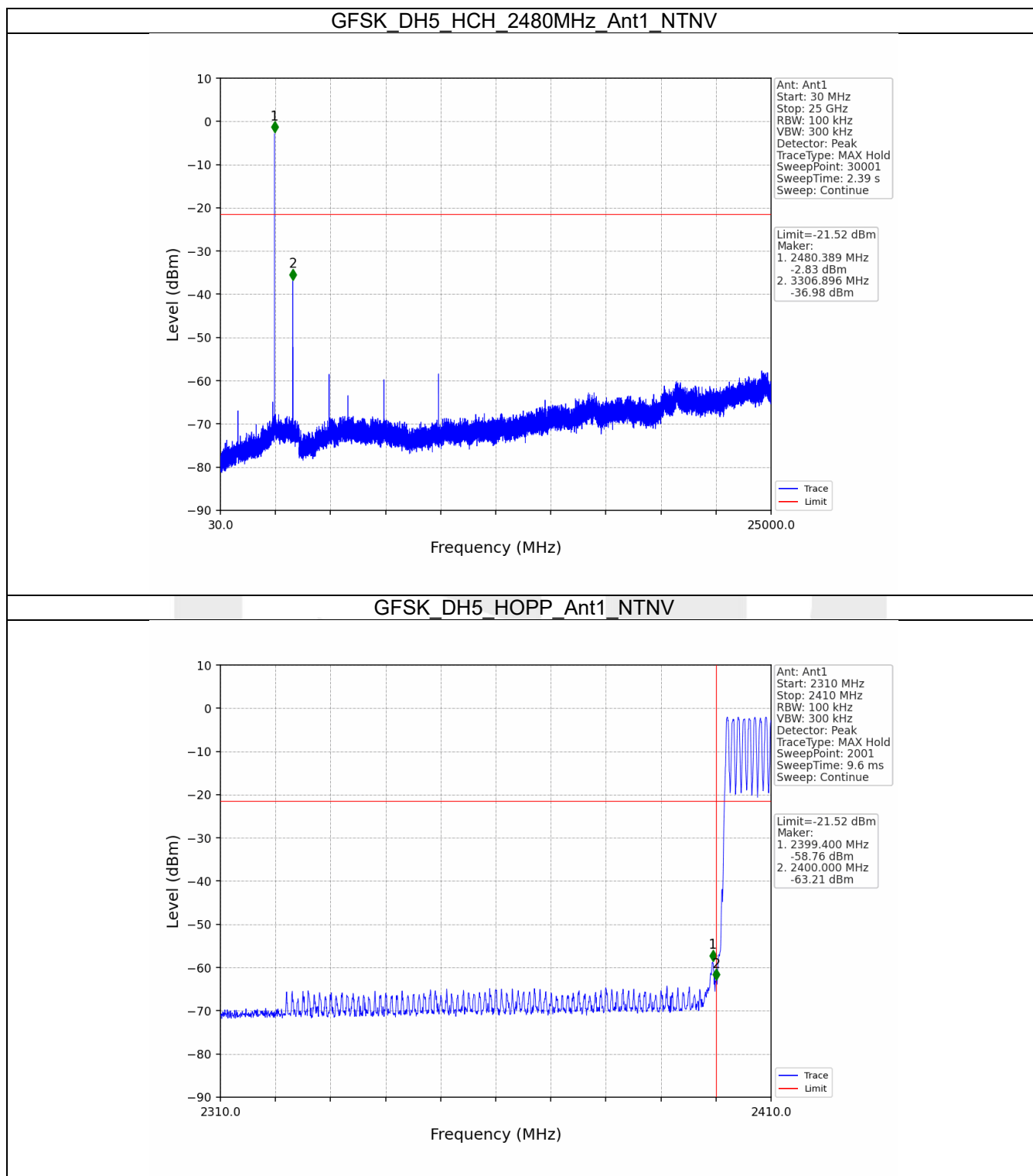
7.2.1 Test Result

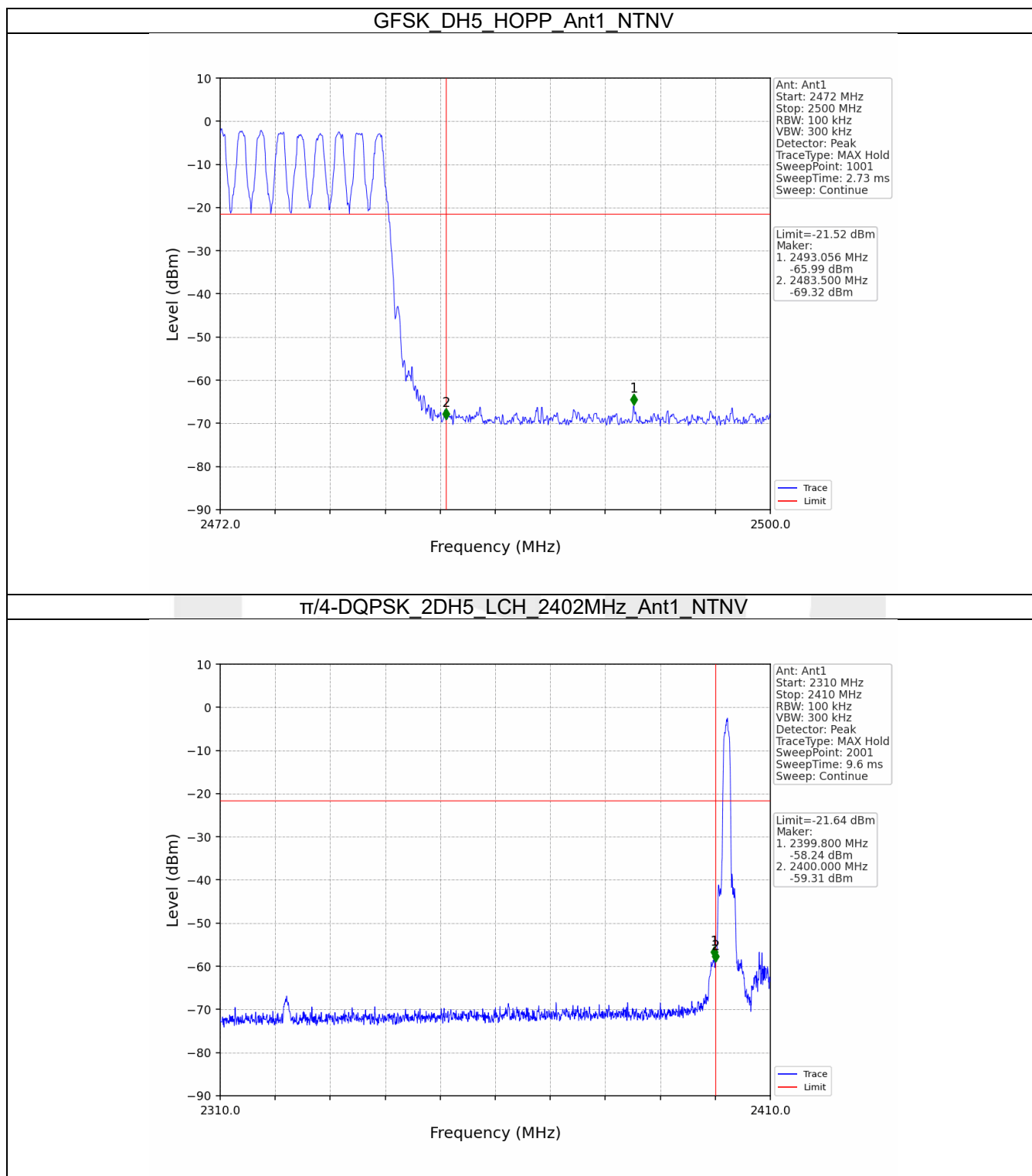
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-1.52	-21.52	Pass
		2441	DH5	1	-1.52	-21.52	Pass
		2480	DH5	1	-1.52	-21.52	Pass
		HOPP	DH5	1	-1.52	-21.52	Pass
					-1.52	-21.52	Pass
π/4-DQPSK	SISO	2402	2DH5	1	-1.64	-21.64	Pass
		2441	2DH5	1	-1.64	-21.64	Pass
		2480	2DH5	1	-1.64	-21.64	Pass
		HOPP	2DH5	1	-1.64	-21.64	Pass
					-1.64	-21.64	Pass
8DPSK	SISO	2402	3DH5	1	-1.68	-21.68	Pass
		2441	3DH5	1	-1.68	-21.68	Pass
		2480	3DH5	1	-1.68	-21.68	Pass
		HOPP	3DH5	1	-1.68	-21.68	Pass
					-1.68	-21.68	Pass
Note1: Refer to RSS-247 Issue 2 section 5.5 and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.							

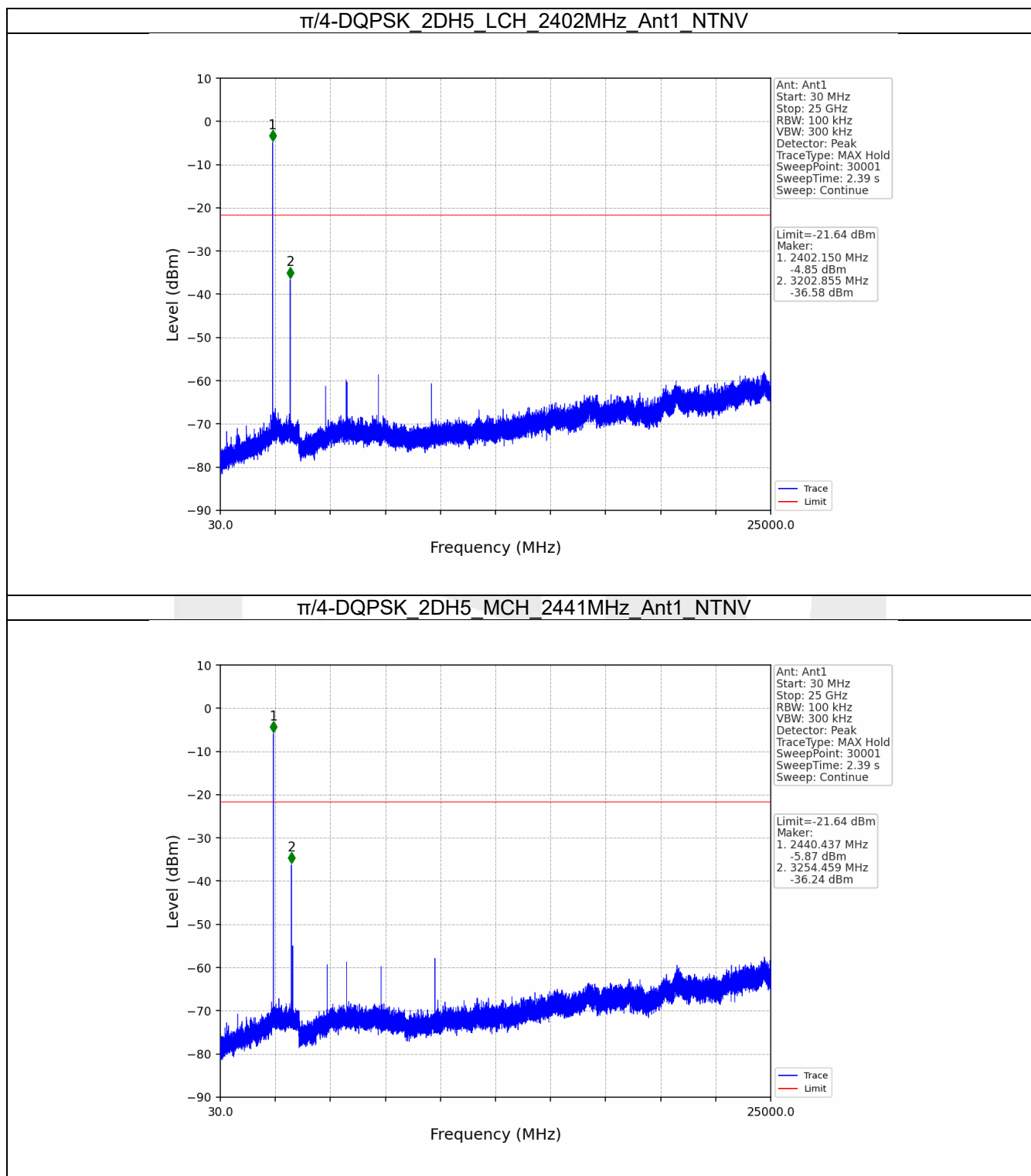
7.2.2 Test Graph

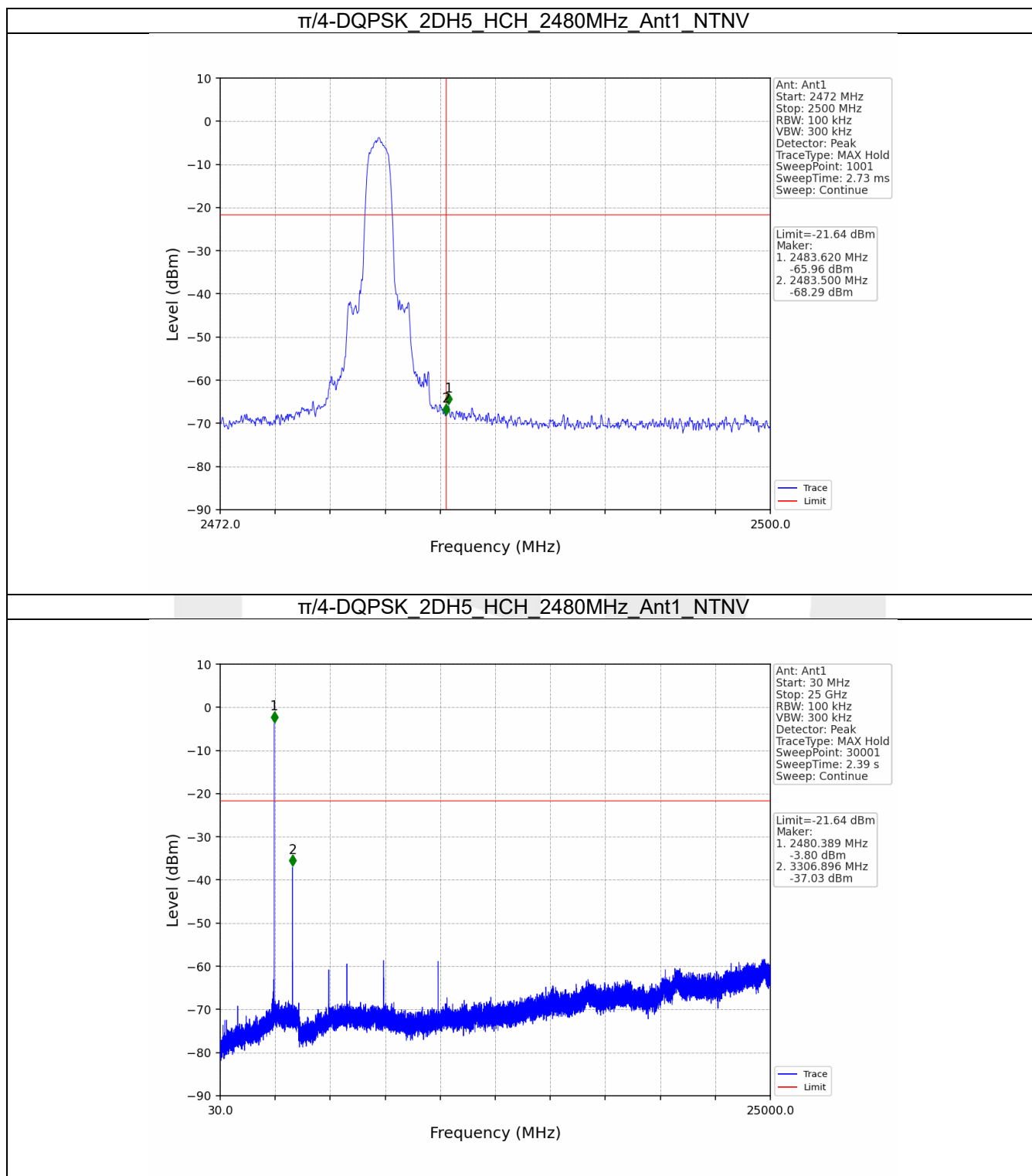


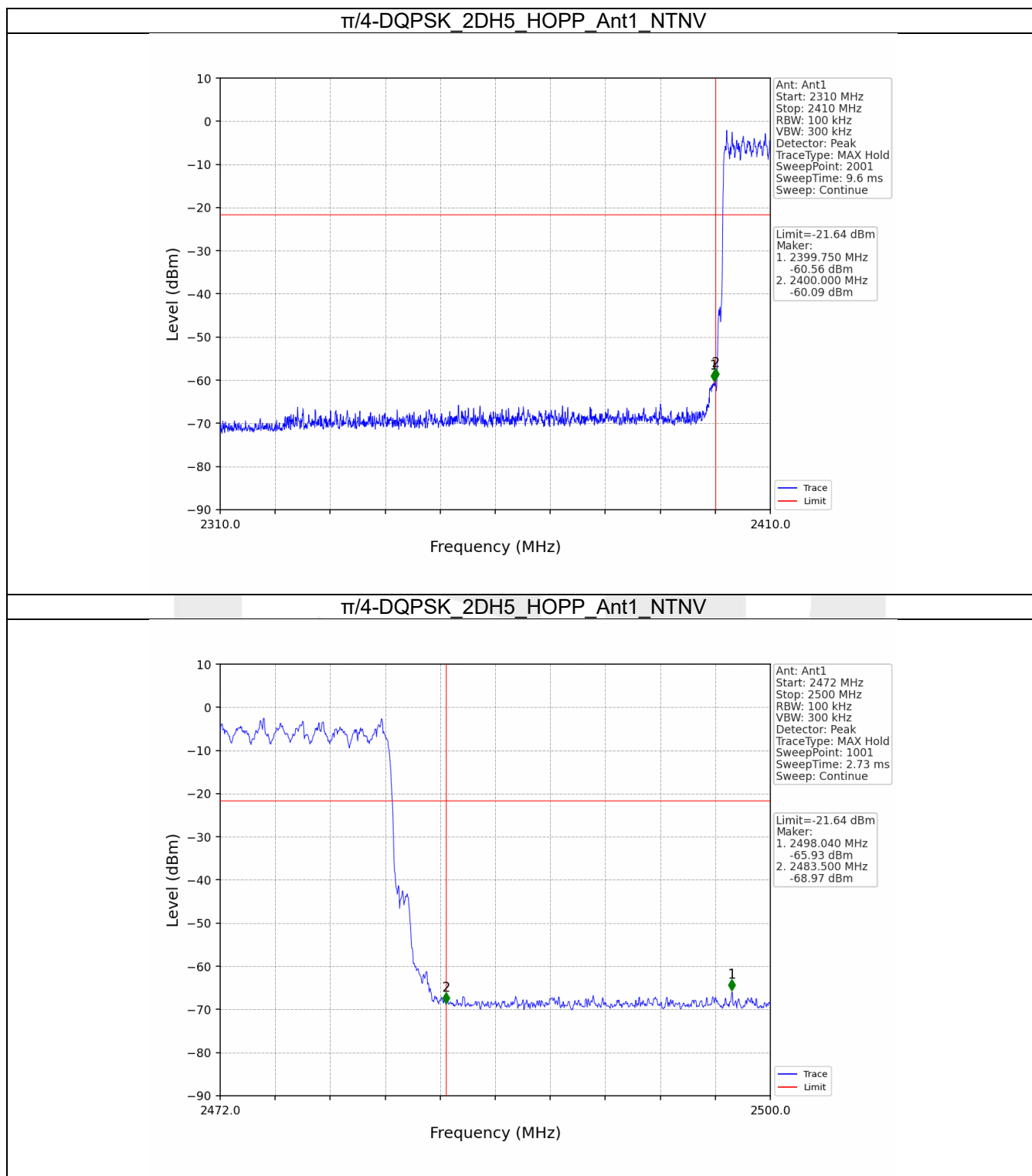


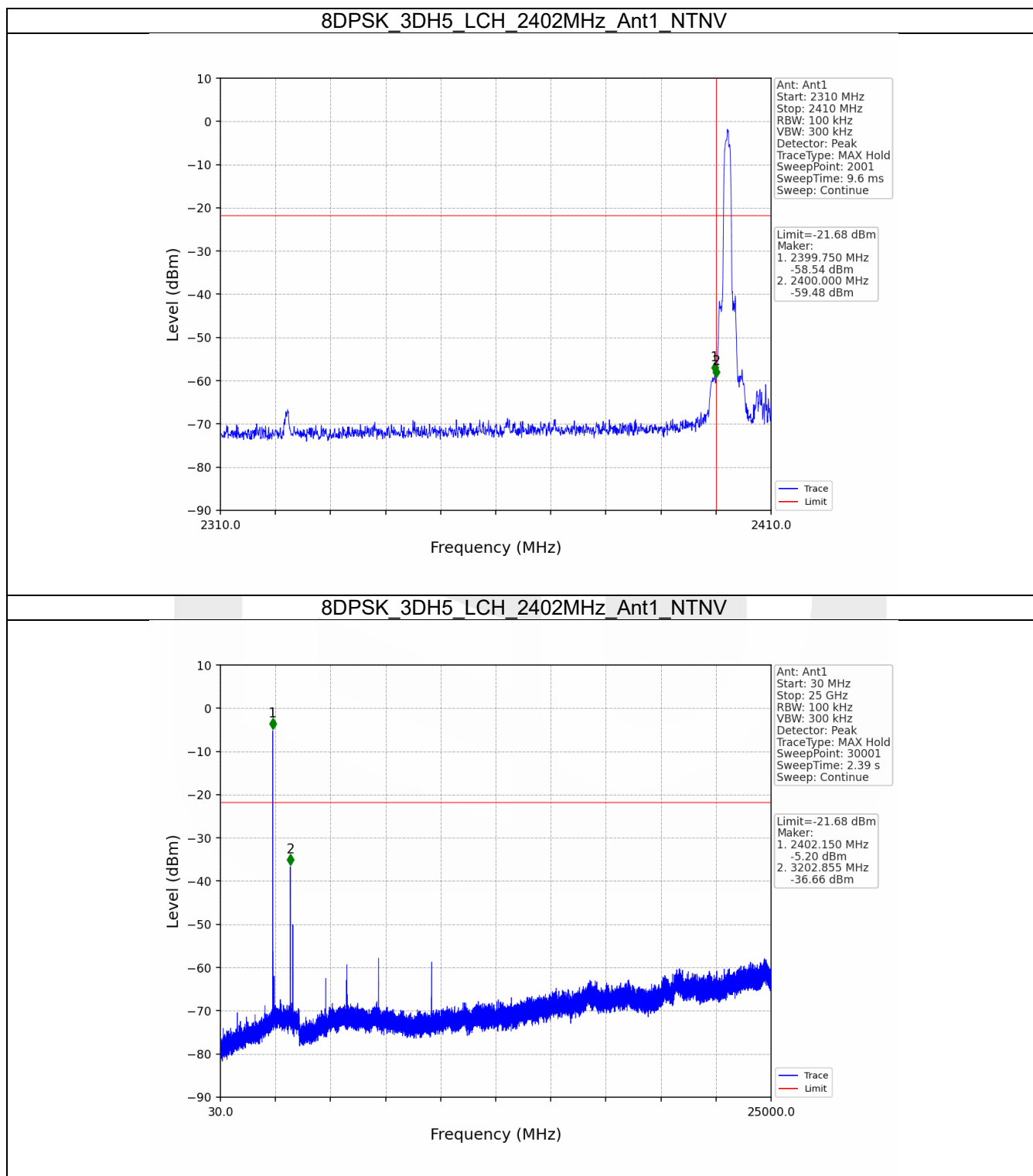


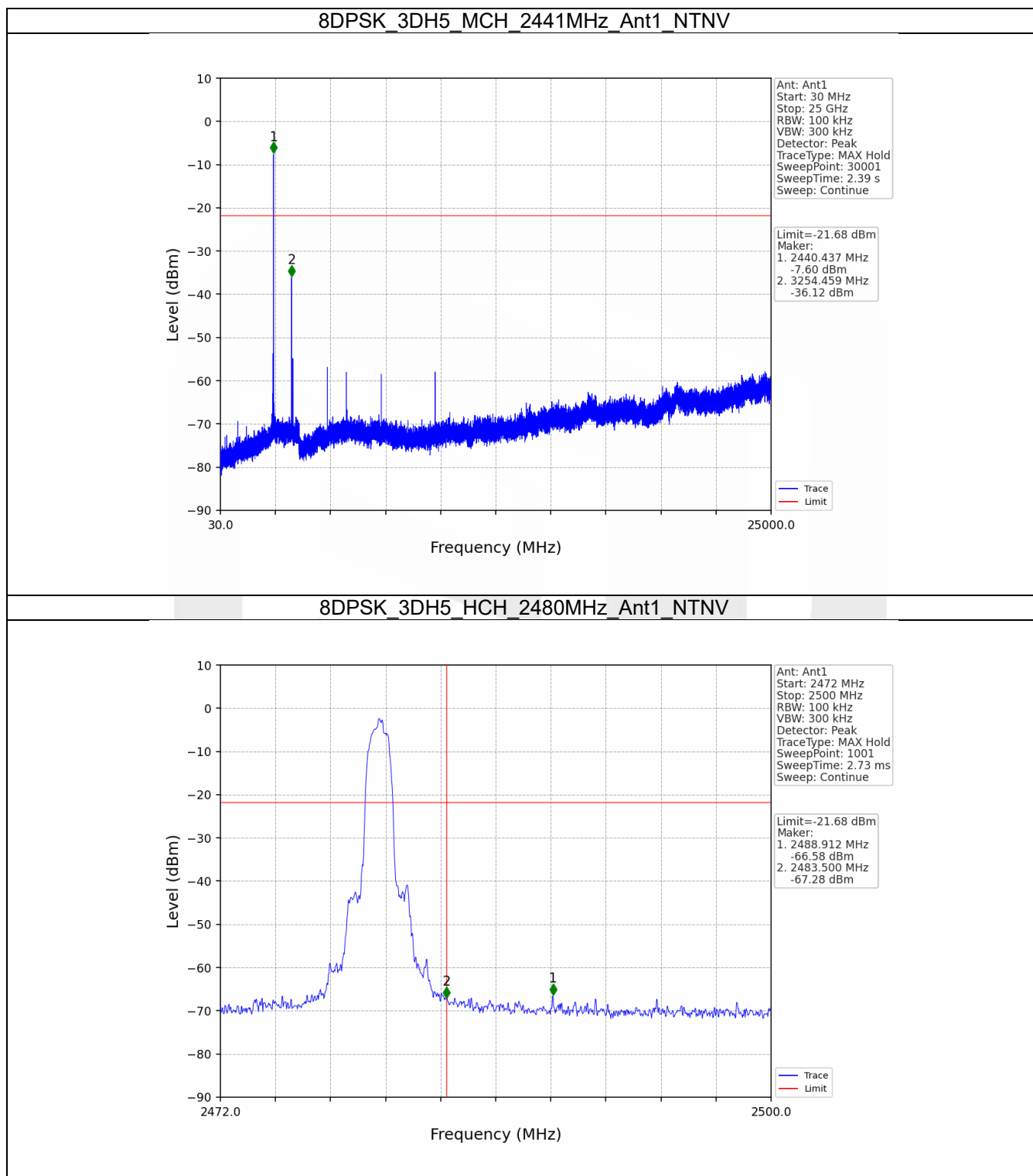


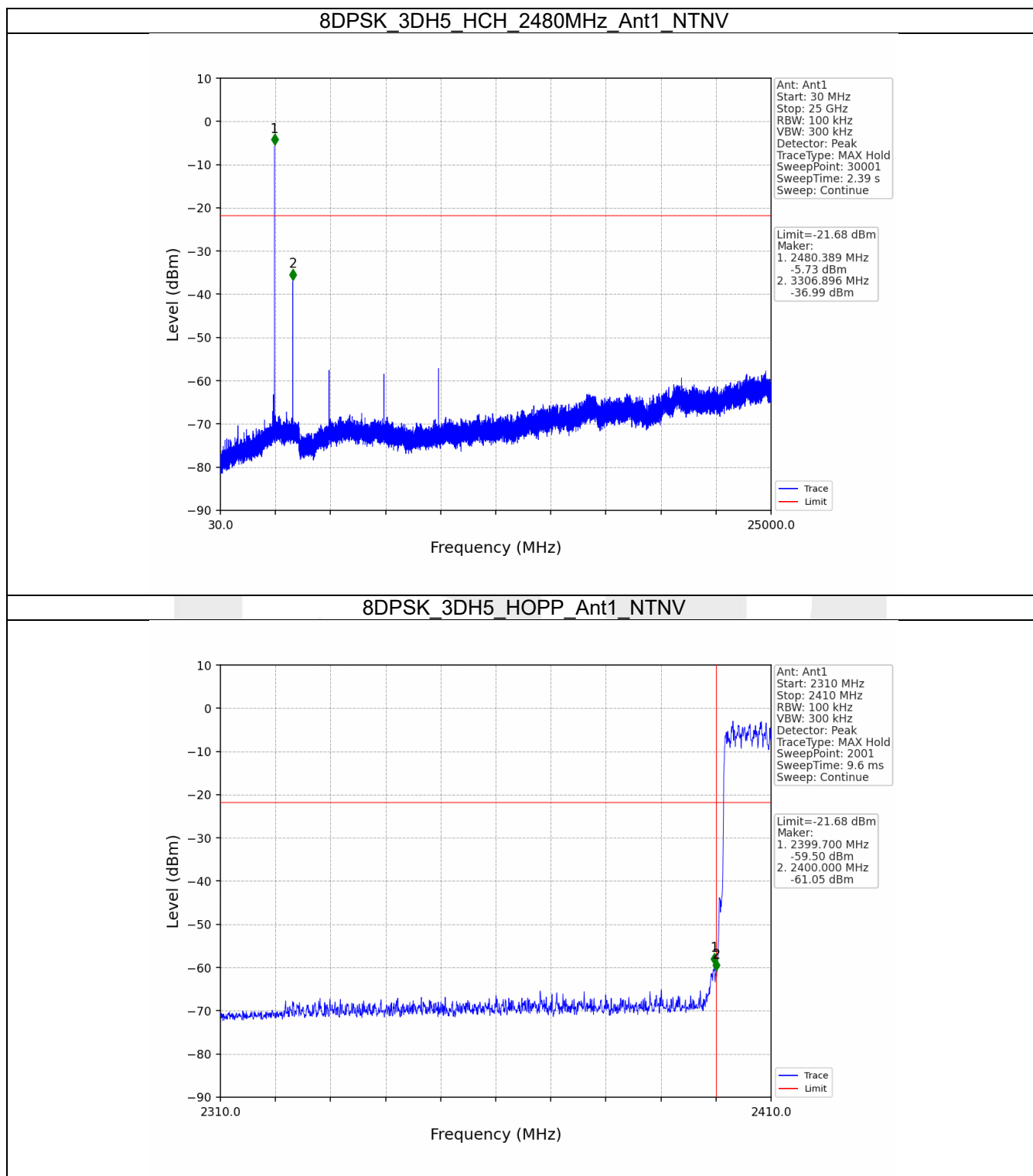


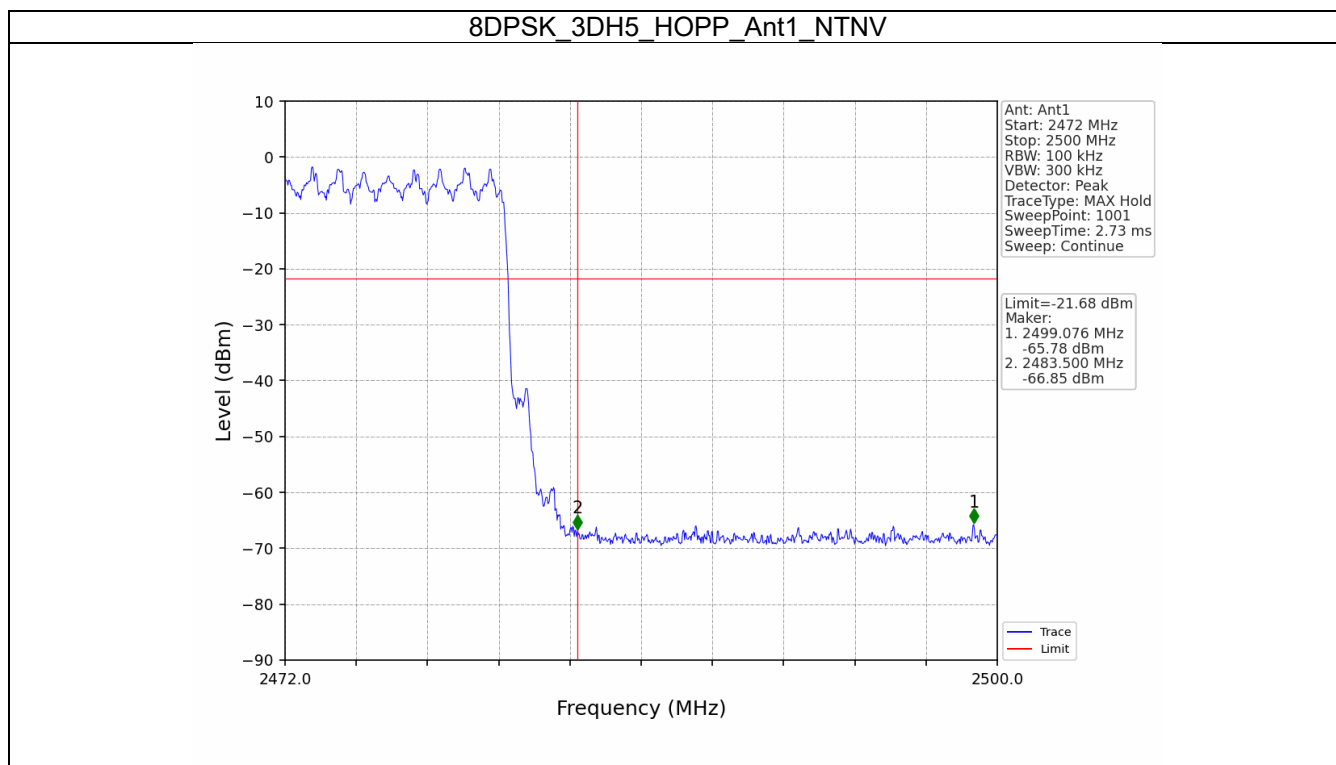












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