



Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

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

Annex for BT

Test Report No.: CTL2409247021-WF01

TABLE OF CONTENTS

Annex for BT	1
1. Bandwidth	2
2. Maximum Conducted Output Power	13
3. Carrier Frequency Separation	19
4. Number of Hopping Frequencies	22
5. Time of Occupancy (Dwell Time)	25
6. Unwanted Emissions In Non-restricted Frequency Bands	35

FCCID: 2A69E-RGSSPRBK-01

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	0.847	/	Pass
		2441	DH5	1	0.851	/	Pass
		2480	DH5	1	0.849	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.153	/	Pass
		2441	2DH5	1	1.160	/	Pass
		2480	2DH5	1	1.155	/	Pass
8DPSK	SISO	2402	3DH5	1	1.152	/	Pass
		2441	3DH5	1	1.151	/	Pass
		2480	3DH5	1	1.150	/	Pass

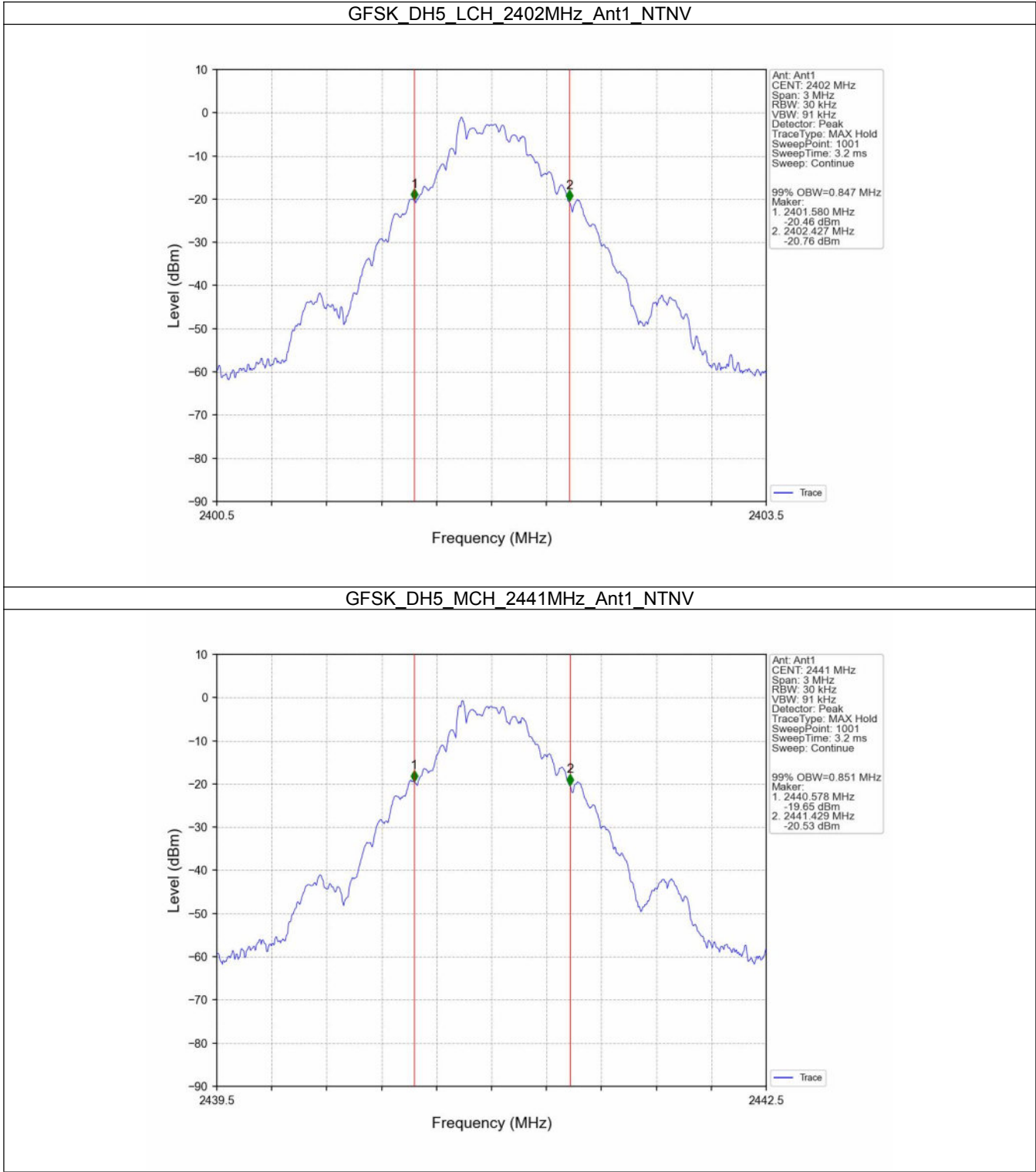
1.1.2 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.941	/	Pass
		2441	DH5	1	0.945	/	Pass
		2480	DH5	1	0.941	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.288	/	Pass
		2441	2DH5	1	1.263	/	Pass
		2480	2DH5	1	1.267	/	Pass
8DPSK	SISO	2402	3DH5	1	1.249	/	Pass
		2441	3DH5	1	1.250	/	Pass
		2480	3DH5	1	1.214	/	Pass

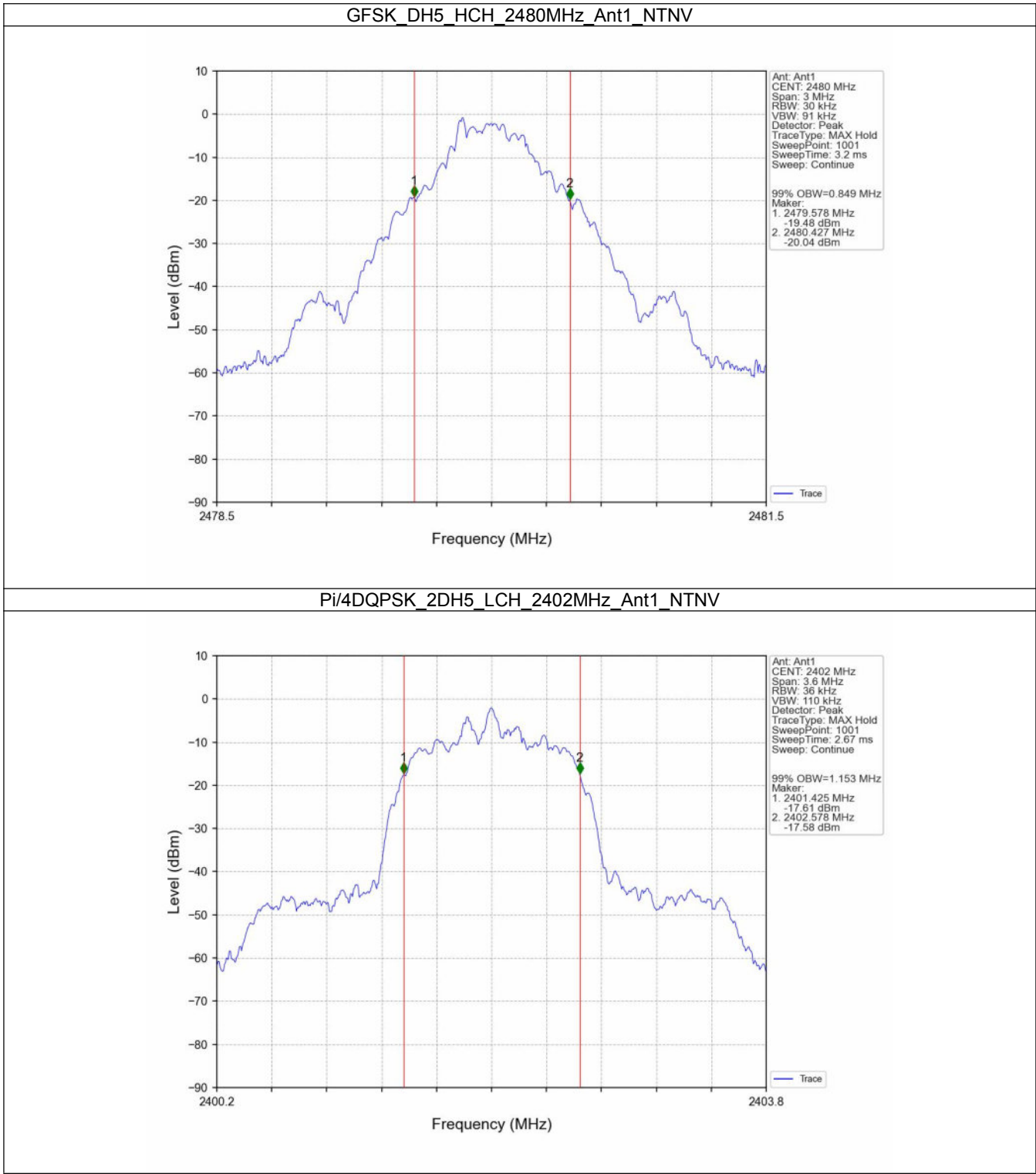
FCCID: 2A69E-RGSSPRBK-01

1.2 Test Graph

1.2.1 OBW

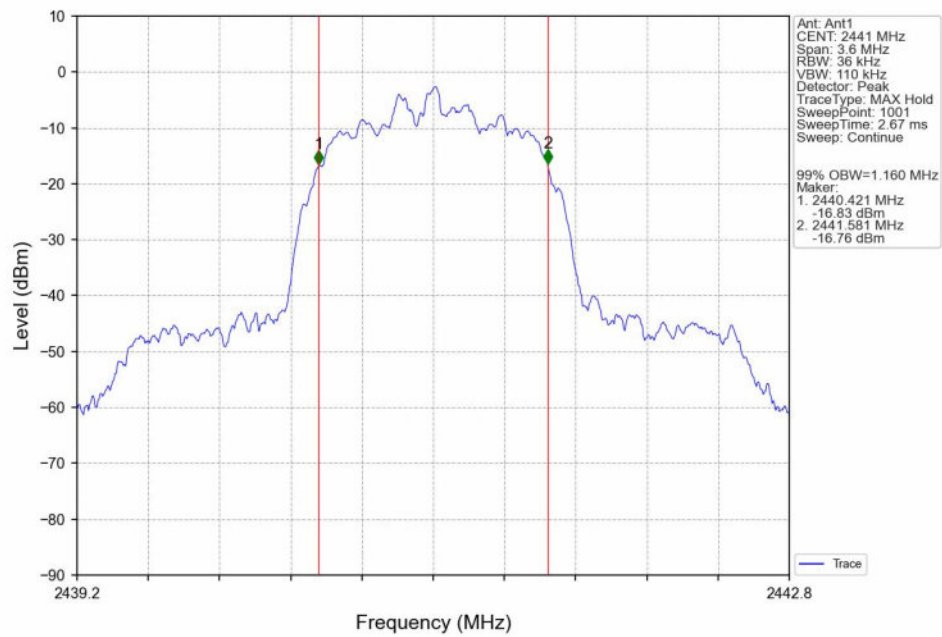


FCCID: 2A69E-RGSSPRBK-01

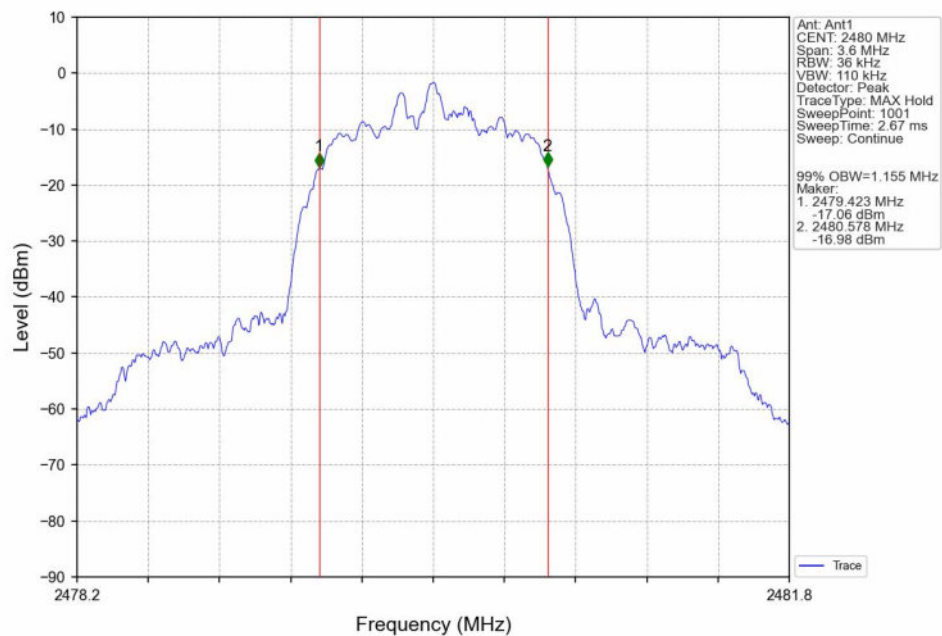


FCCID: 2A69E-RGSSPRBK-01

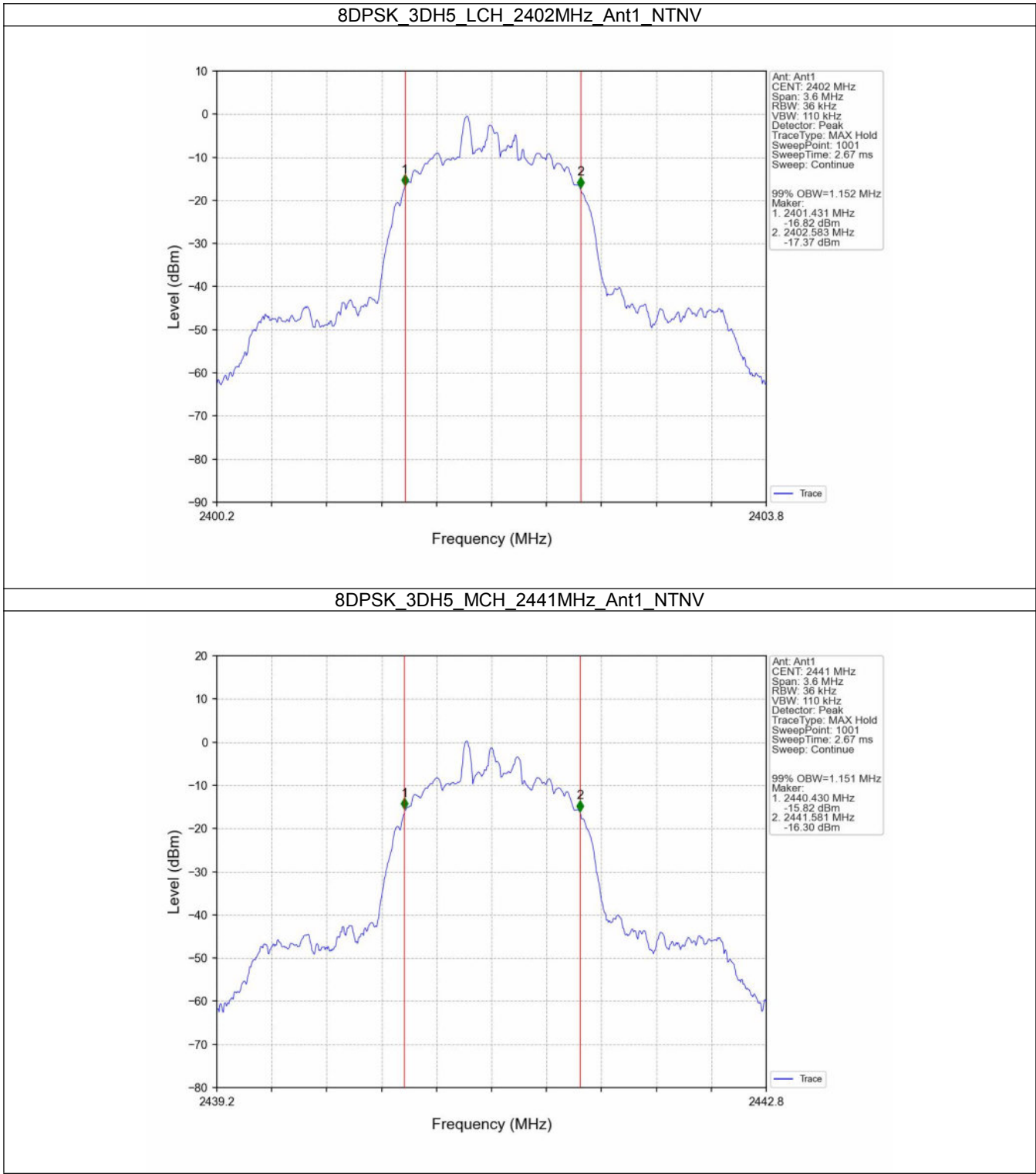
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



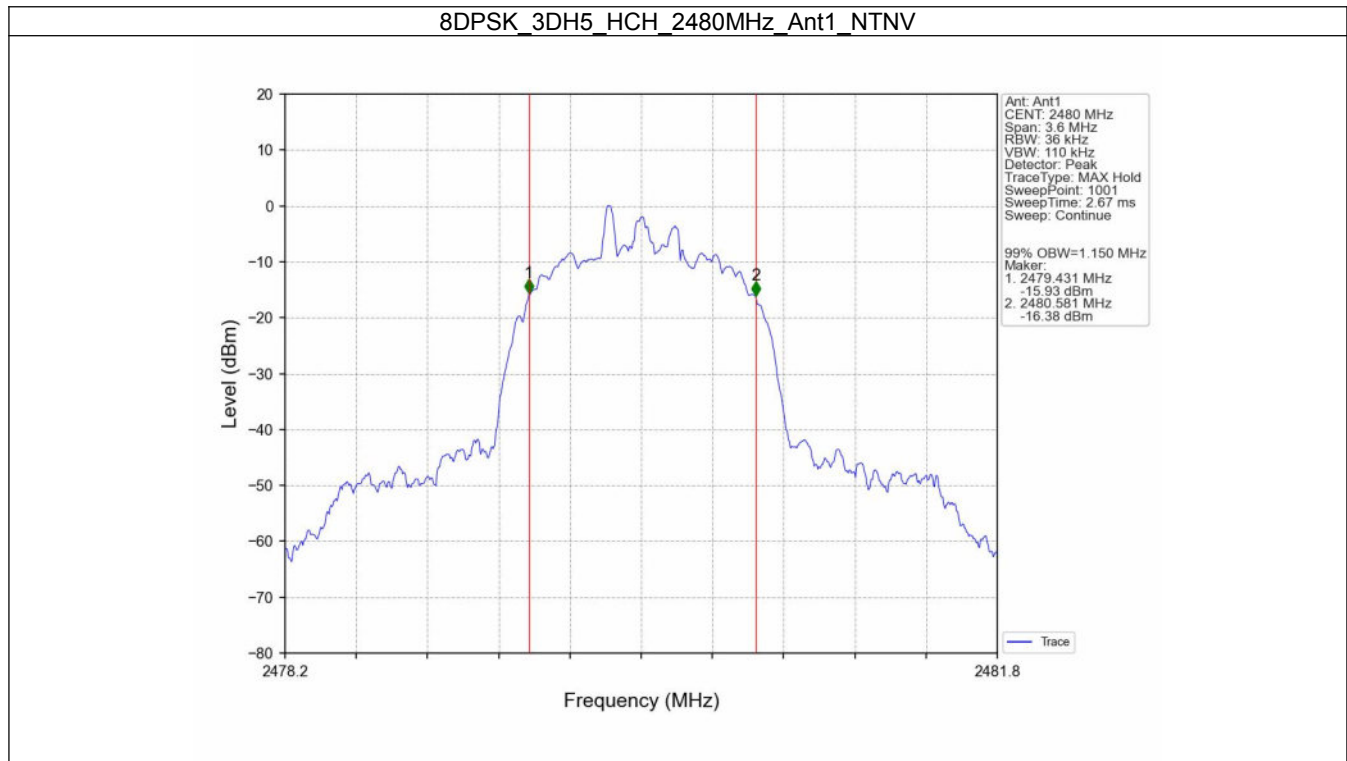
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



FCCID: 2A69E-RGSSPRBK-01

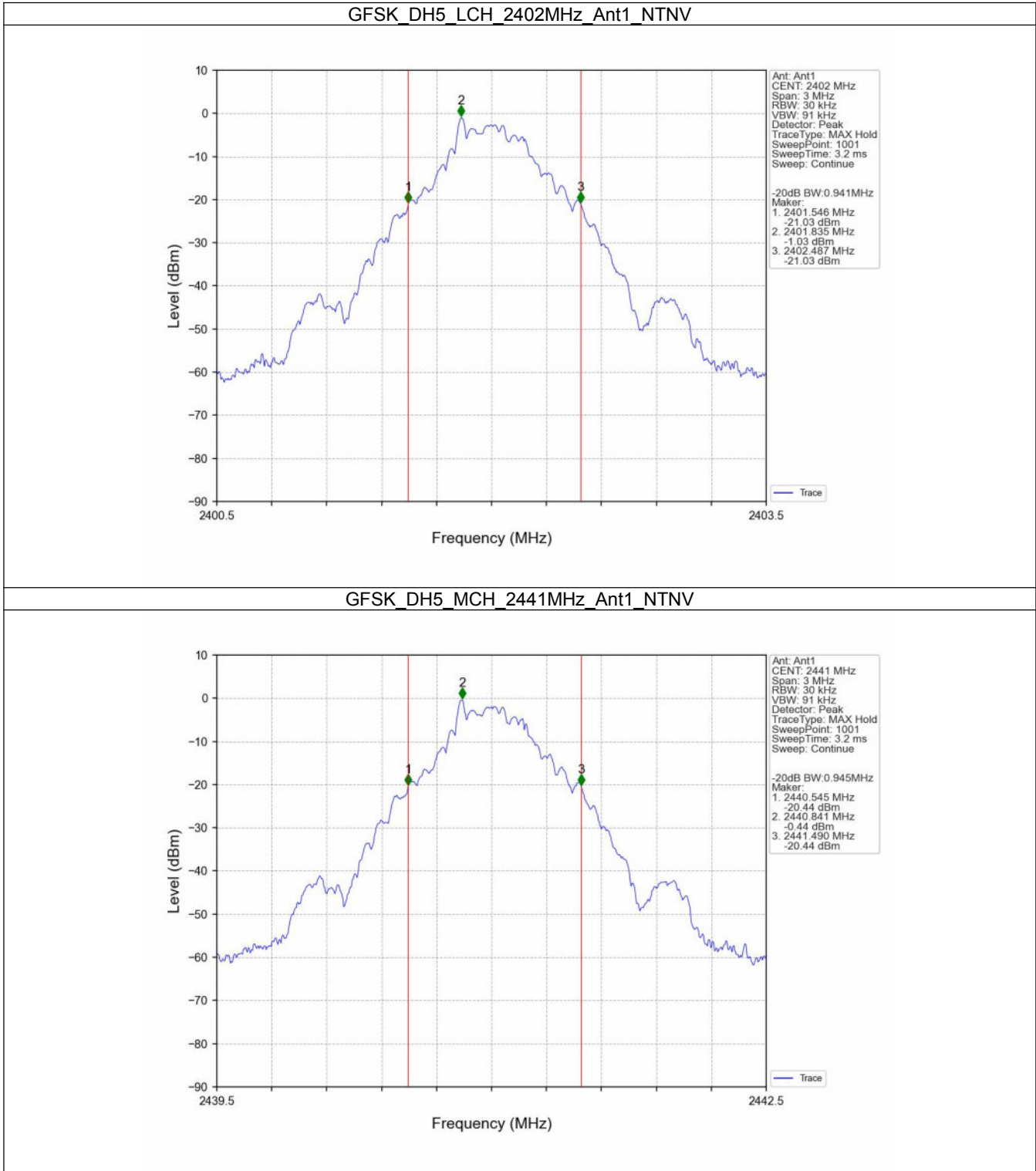


FCCID: 2A69E-RGSSPRBK-01

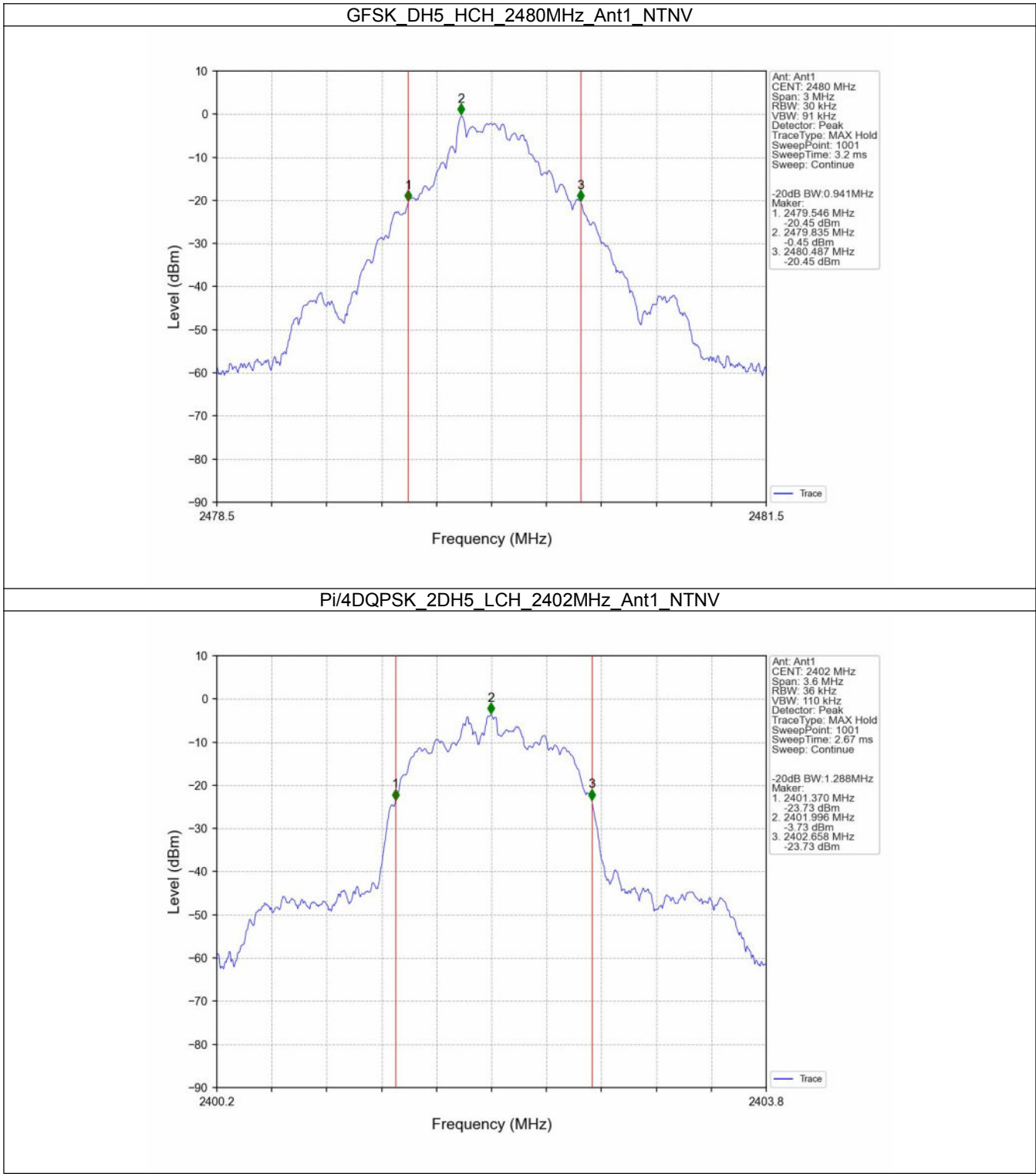


FCCID: 2A69E-RGSSPRBK-01

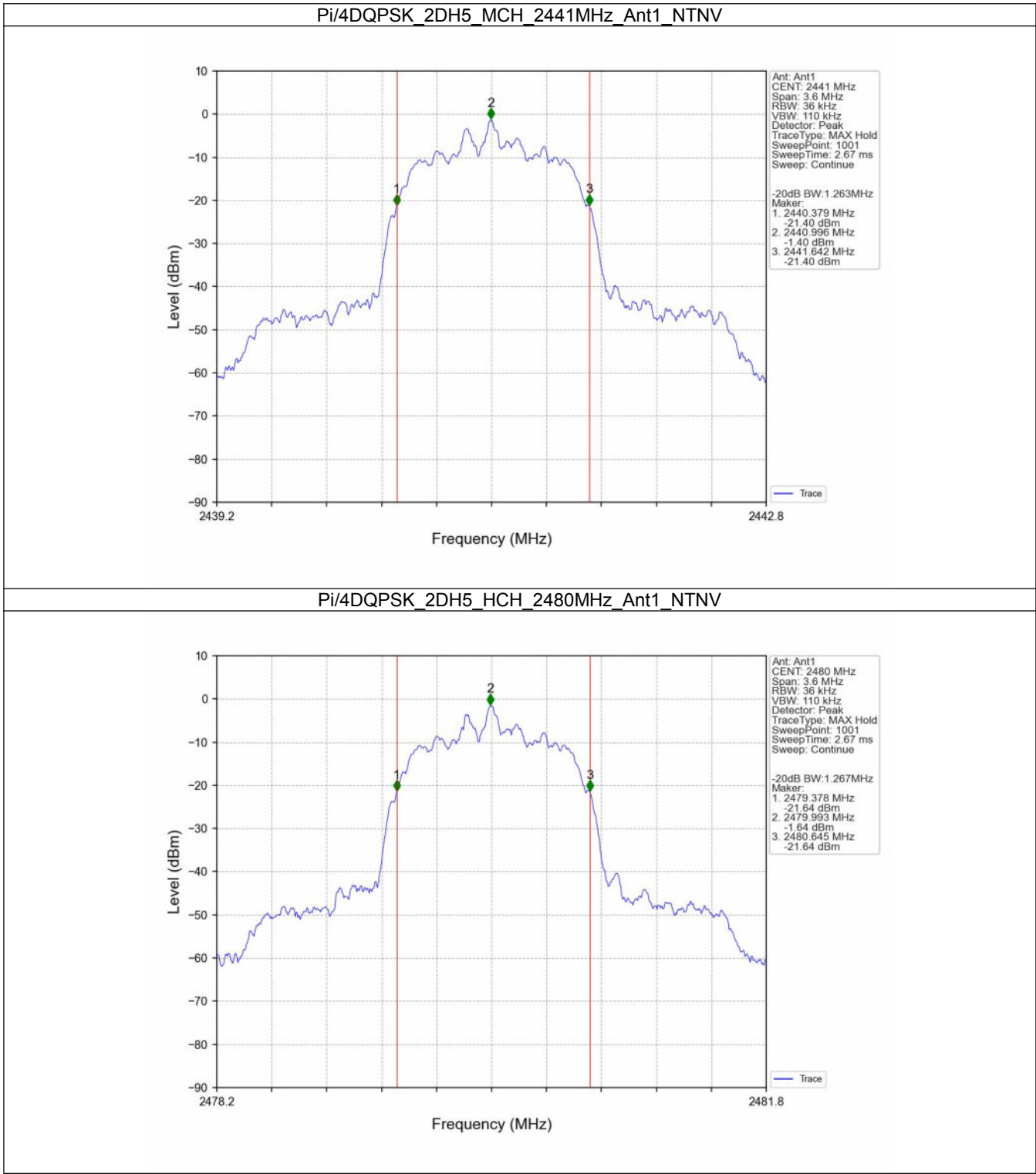
1.2.2 20dB BW



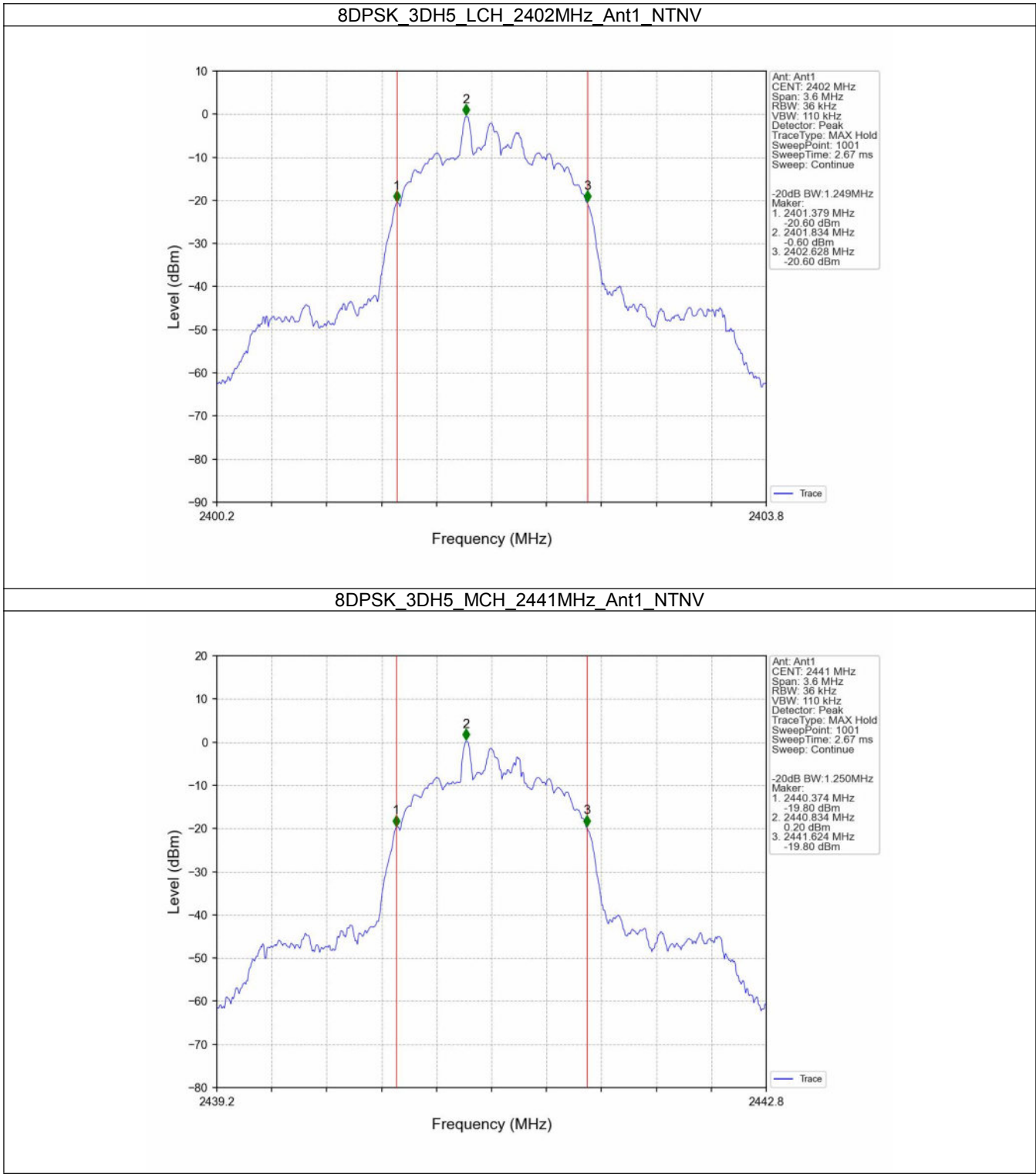
FCCID: 2A69E-RGSSPRBK-01



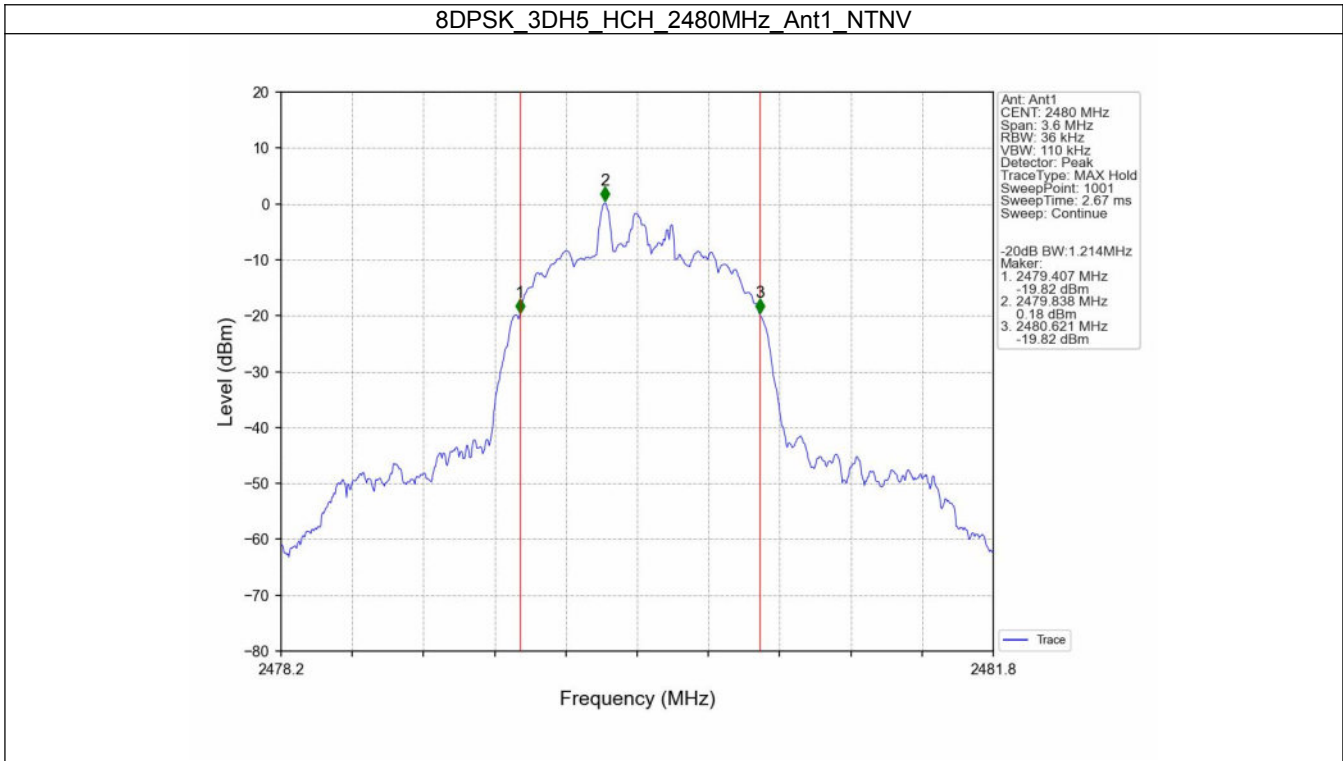
FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01

2. Maximum Conducted Output Power

2.1 Test Result

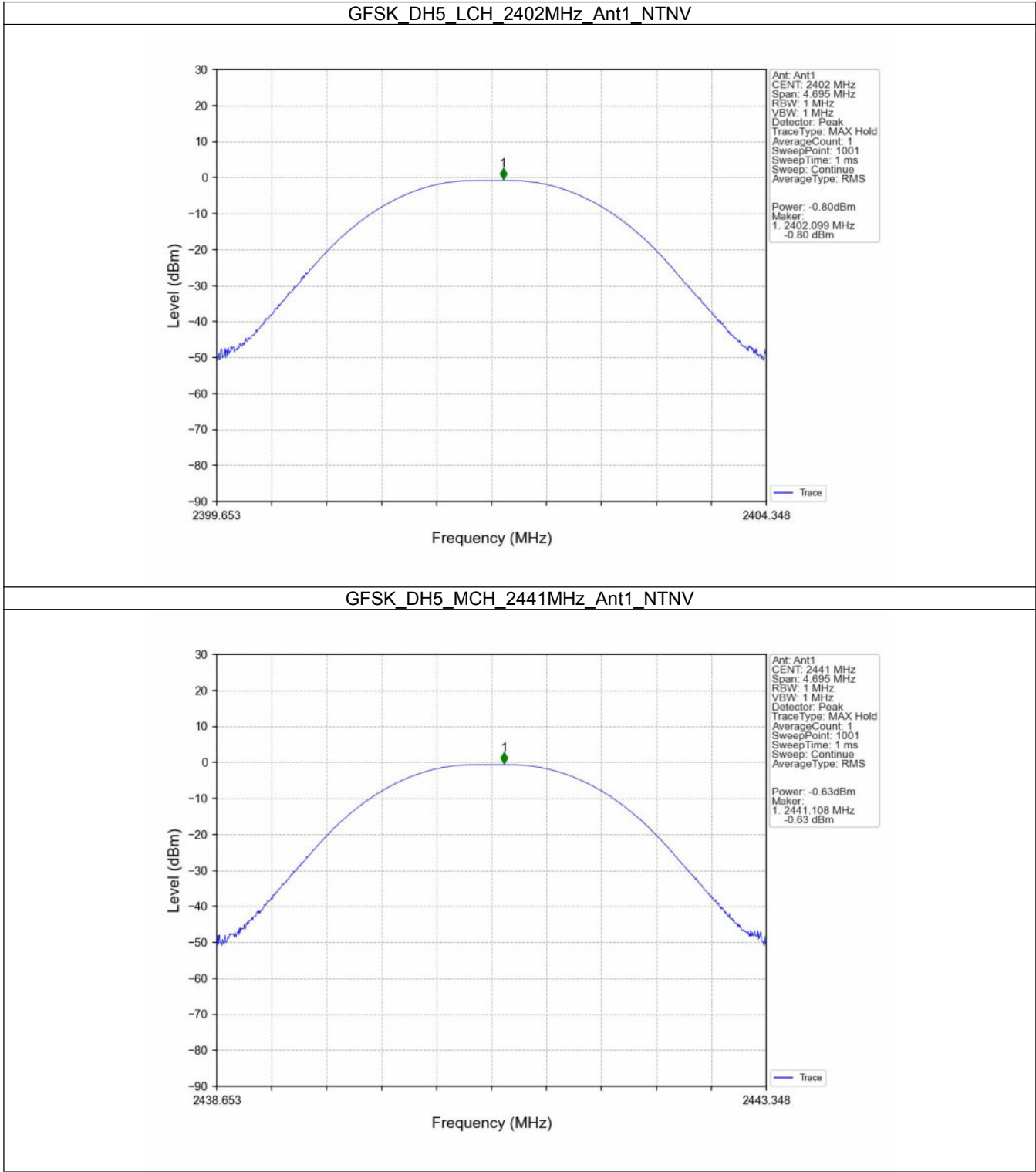
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-0.80	<=30	Pass
		2441	DH5	-0.63	<=30	Pass
		2480	DH5	-0.59	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	-0.81	<=20.97	Pass
		2441	2DH5	-0.61	<=20.97	Pass
		2480	2DH5	-0.56	<=20.97	Pass
8DPSK	SISO	2402	3DH5	-0.56	<=20.97	Pass
		2441	3DH5	-0.37	<=20.97	Pass
		2480	3DH5	-0.33	<=20.97	Pass
Note1: Antenna Gain: Ant1: 1.56dBi;						

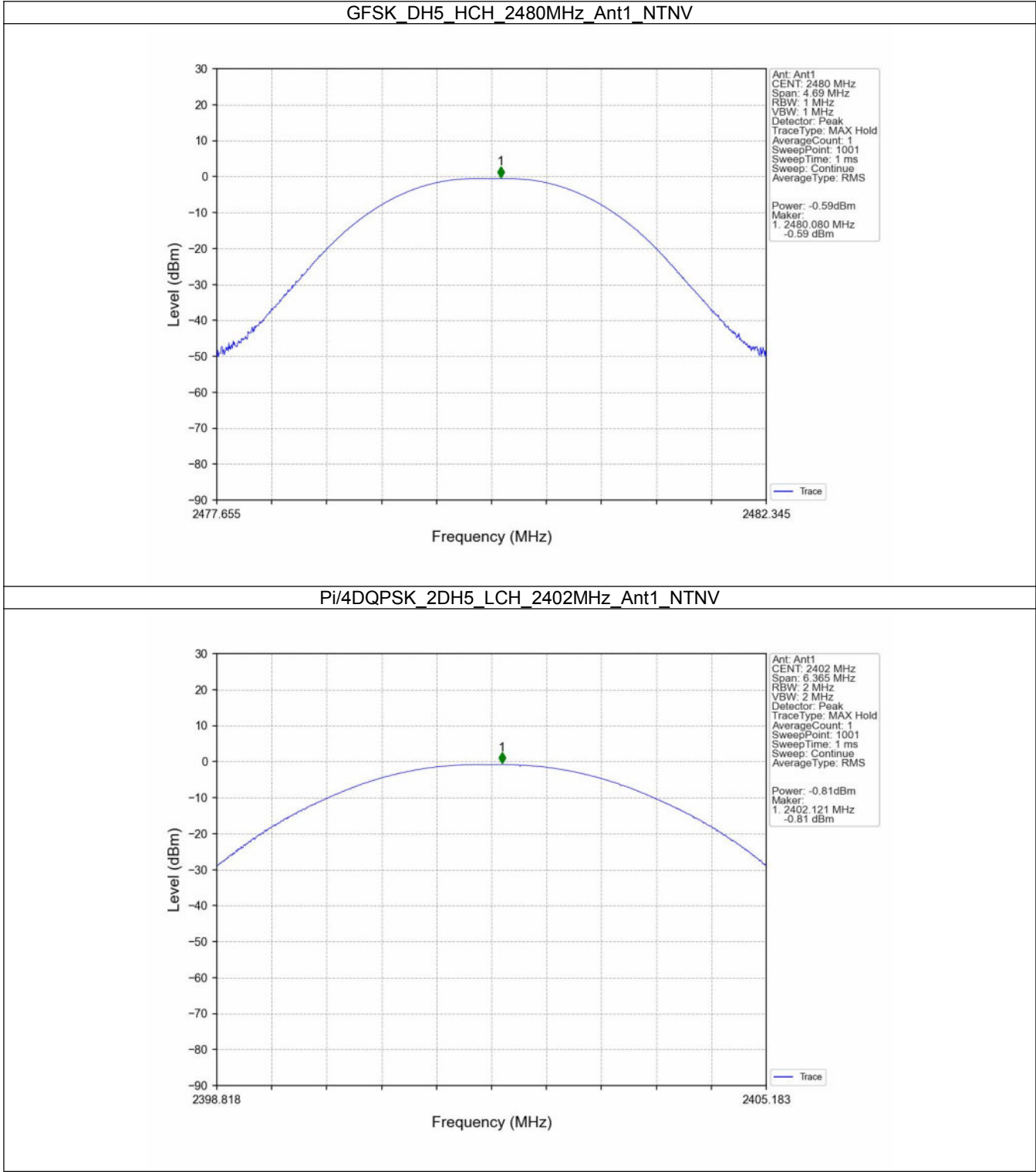
FCCID: 2A69E-RGSSPRBK-01

2.2 Test Graph

2.2.1 Power

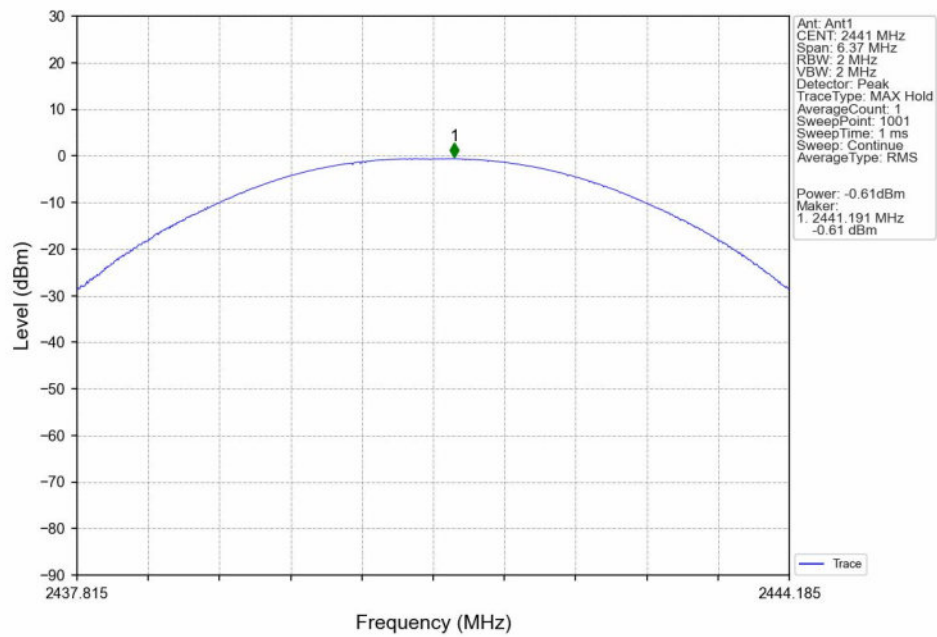


FCCID: 2A69E-RGSSPRBK-01

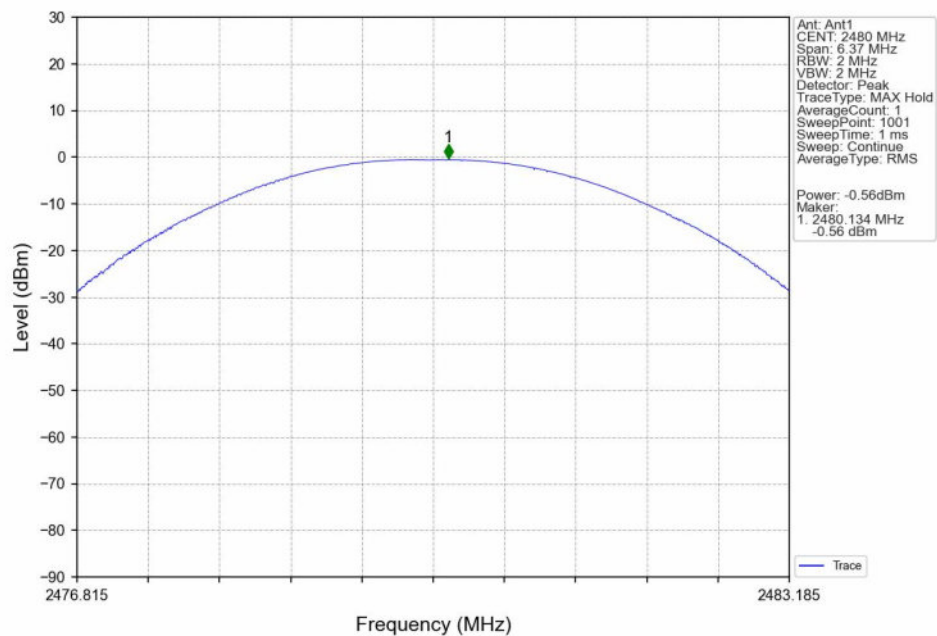


FCCID: 2A69E-RGSSPRBK-01

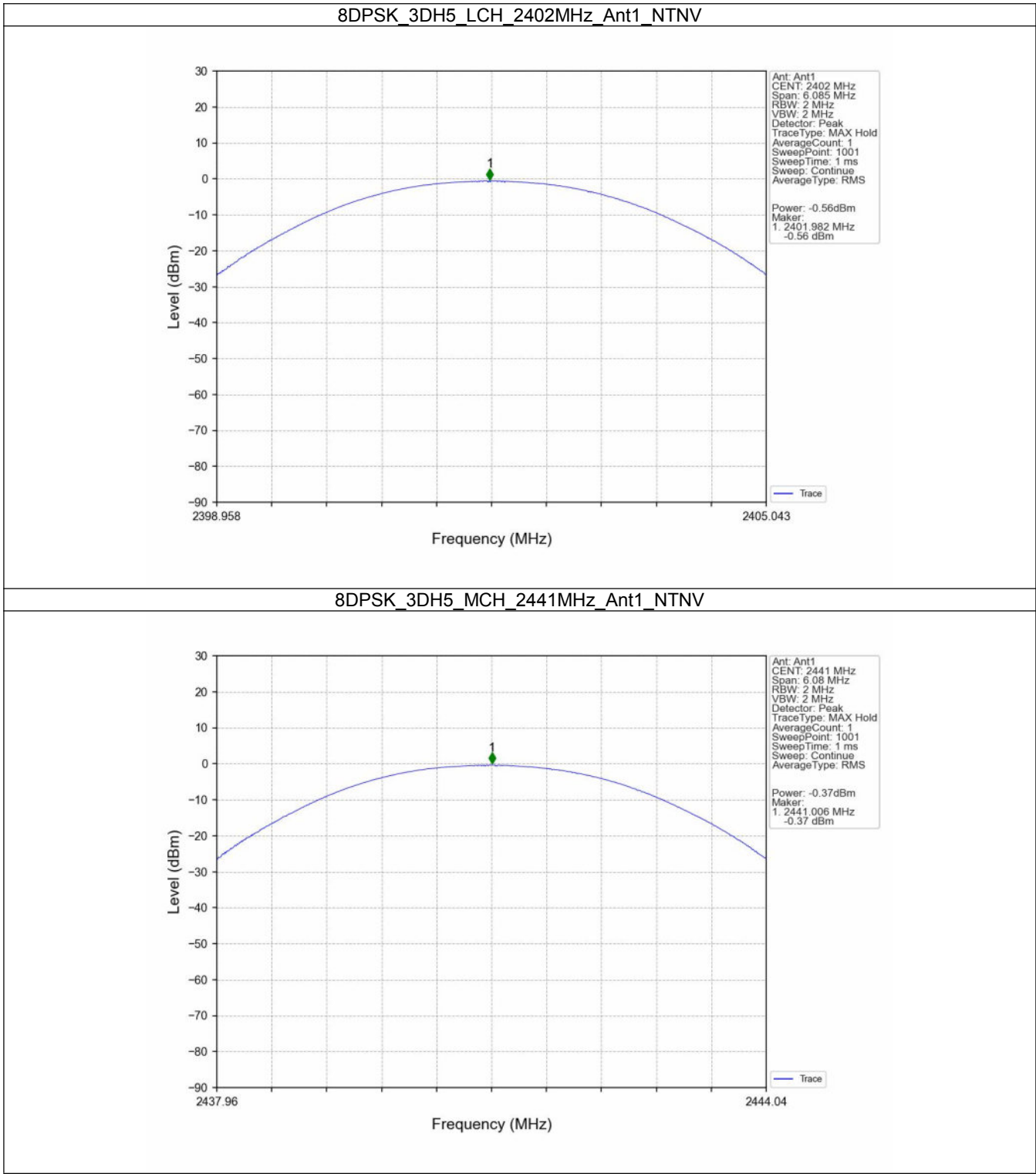
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



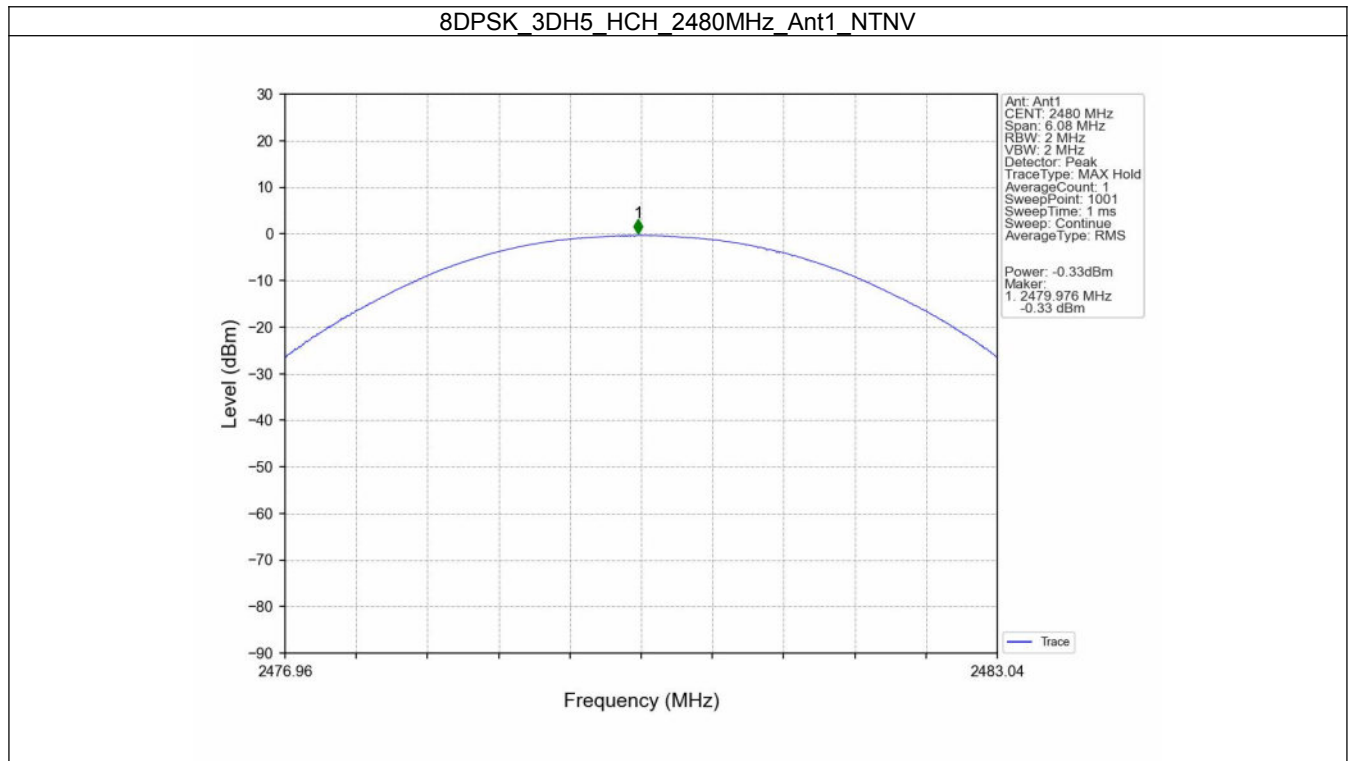
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01

3. Carrier Frequency Separation

3.1 Test Result

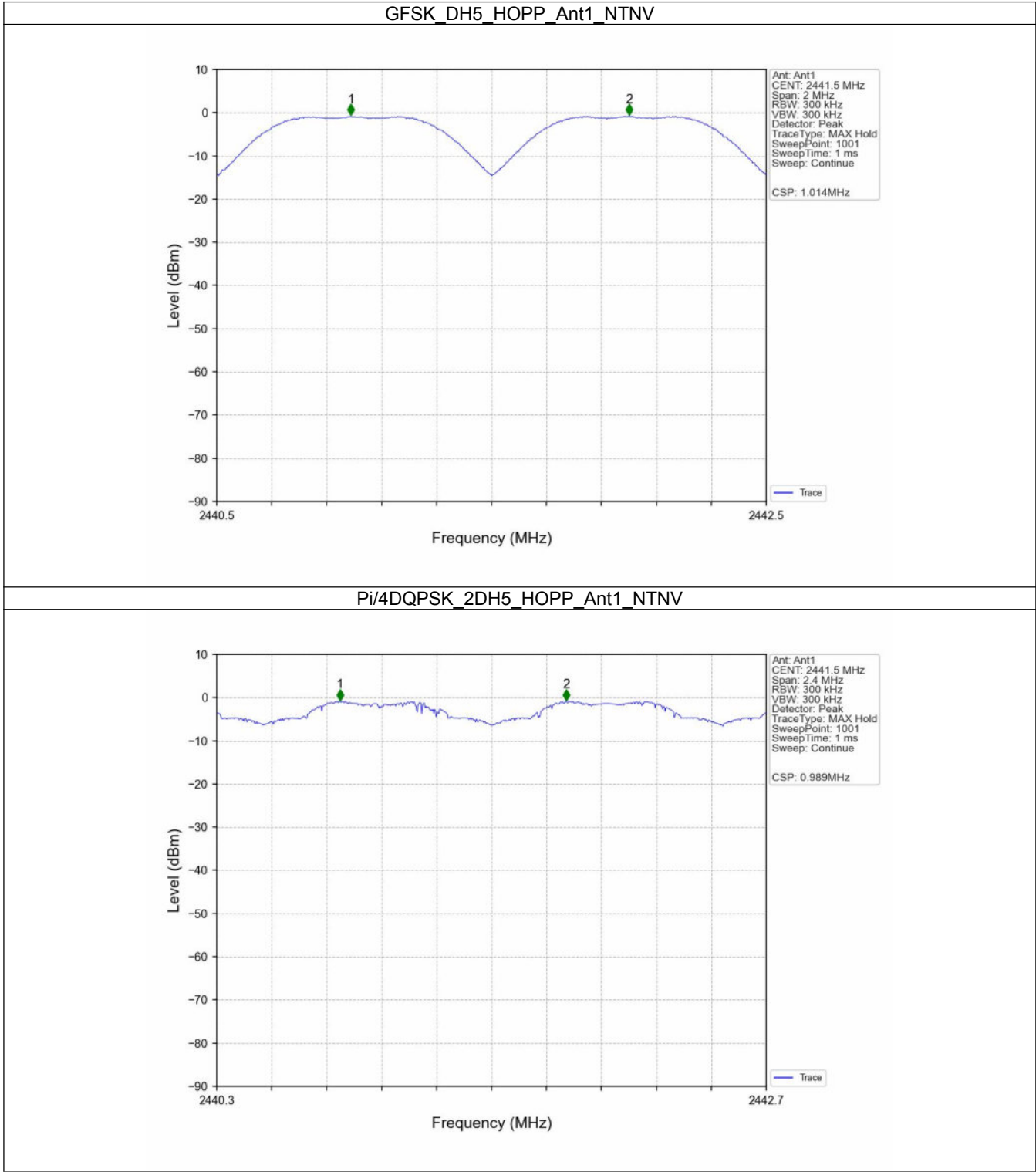
3.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.014	0.945	≥ 0.945	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	0.989	1.288	≥ 0.859	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.250	≥ 0.833	Pass

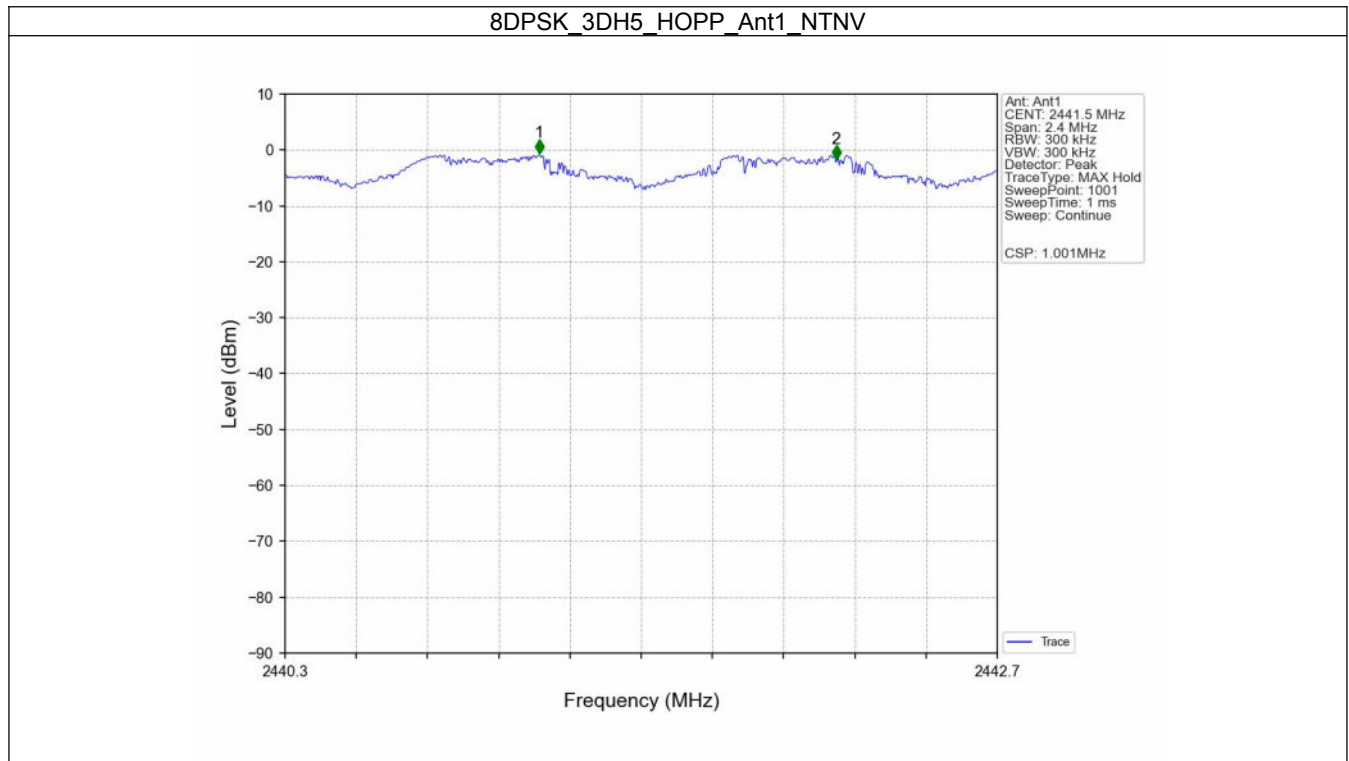
FCCID: 2A69E-RGSSPRBK-01

3.2 Test Graph

3.2.1 Ant1



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01

4. Number of Hopping Frequencies

4.1 Test Result

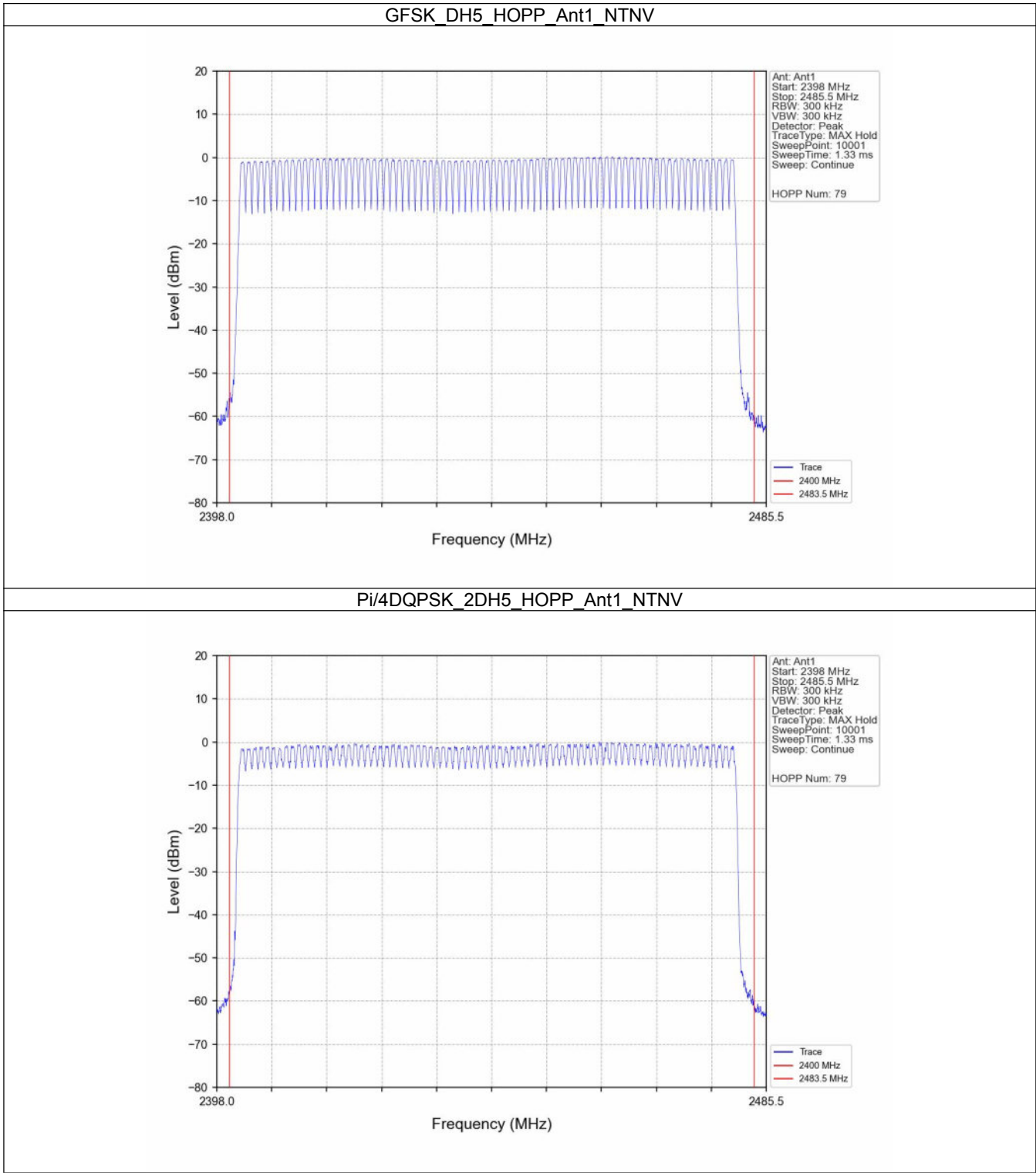
4.1.1 HoppNum

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

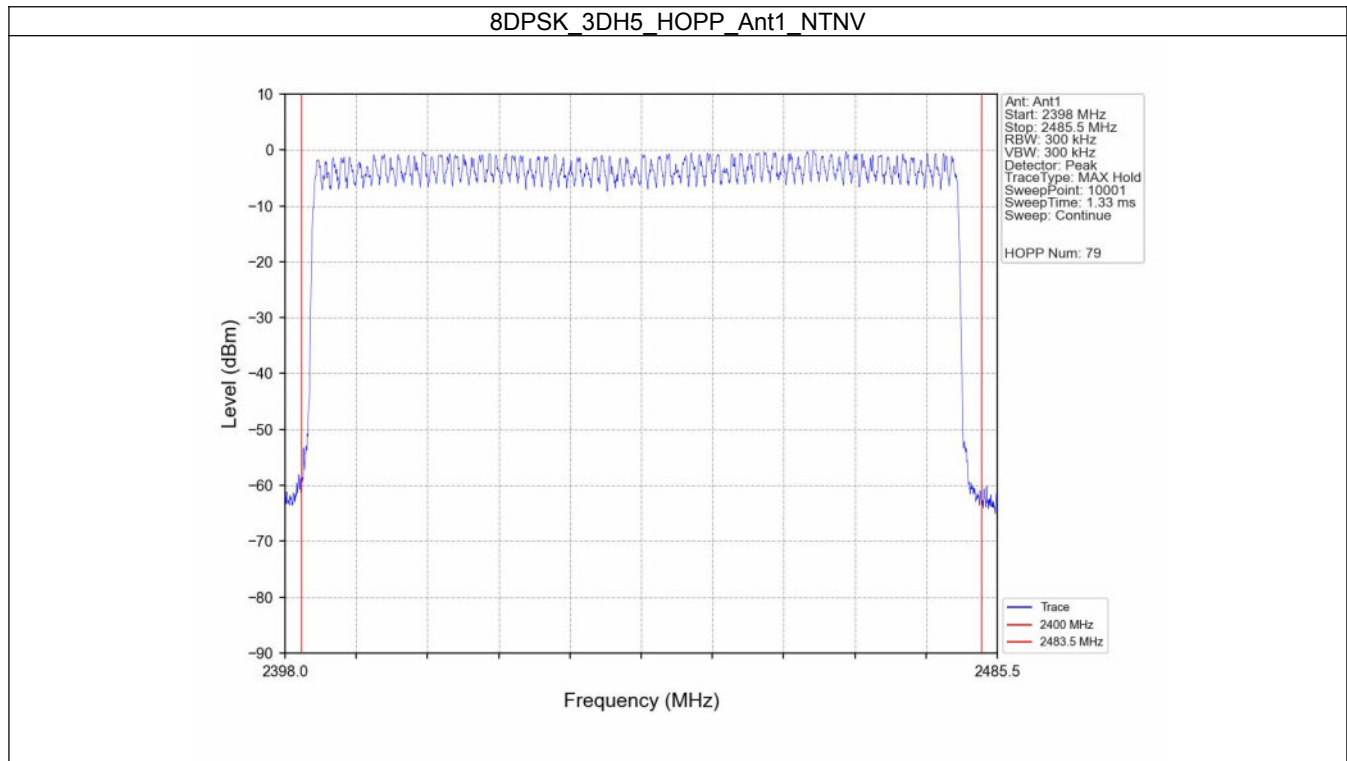
FCCID: 2A69E-RGSSPRBK-01

4.2 Test Graph

4.2.1 HoppNum



FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01

5. Time of Occupancy (Dwell Time)

5.1 Test Result

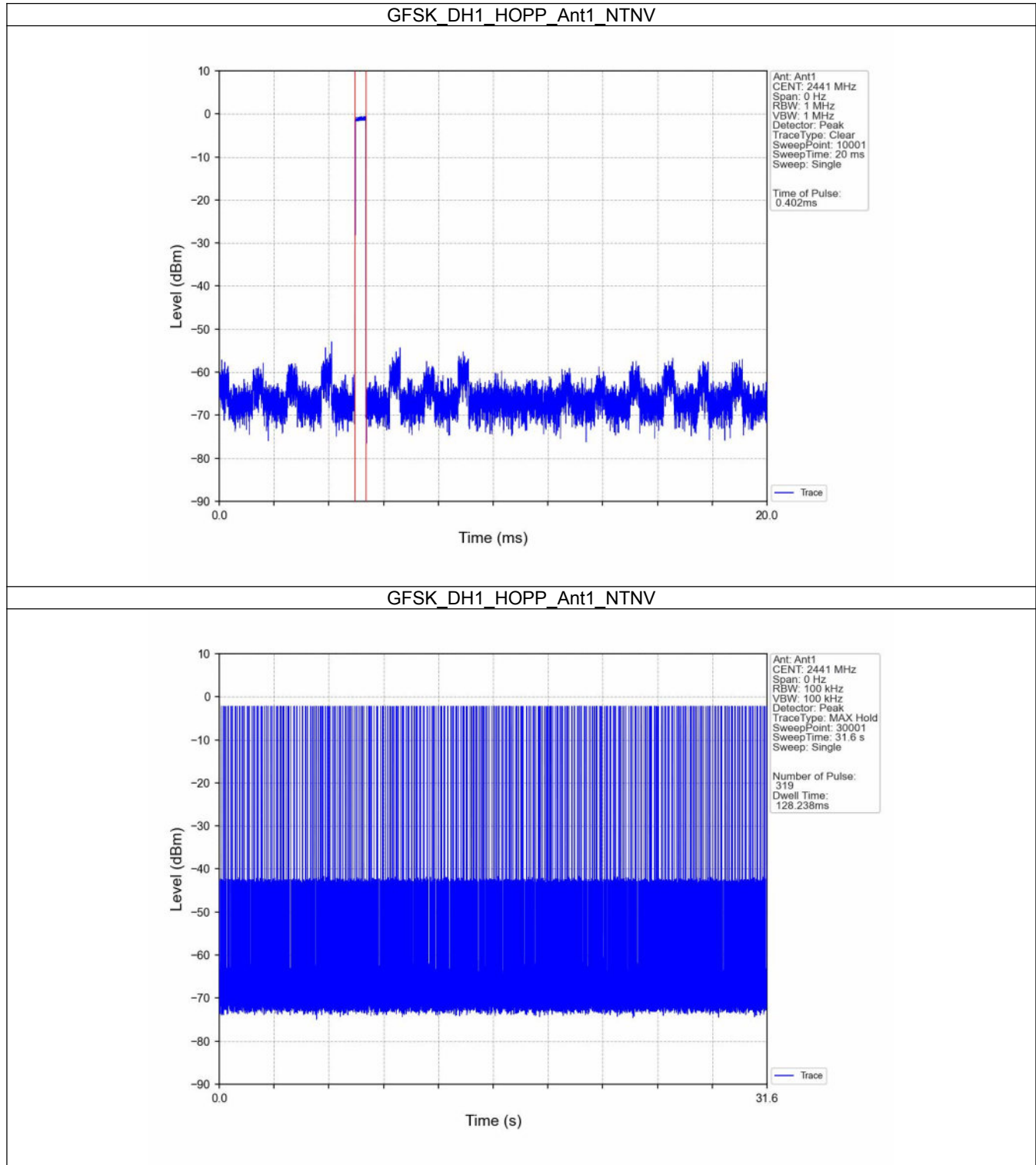
5.1.1 Ant1

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	0.402	31.600	319	128.238	<=400	Pass
			DH3	1.650	31.600	159	262.350	<=400	Pass
			DH5	2.900	31.600	106	307.400	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.410	31.600	319	130.790	<=400	Pass
			2DH3	1.664	31.600	160	266.240	<=400	Pass
			2DH5	2.910	31.600	107	311.370	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.410	31.600	319	130.790	<=400	Pass
			3DH3	1.660	31.600	160	265.600	<=400	Pass
			3DH5	2.912	31.600	106	308.672	<=400	Pass

FCCID: 2A69E-RGSSPRBK-01

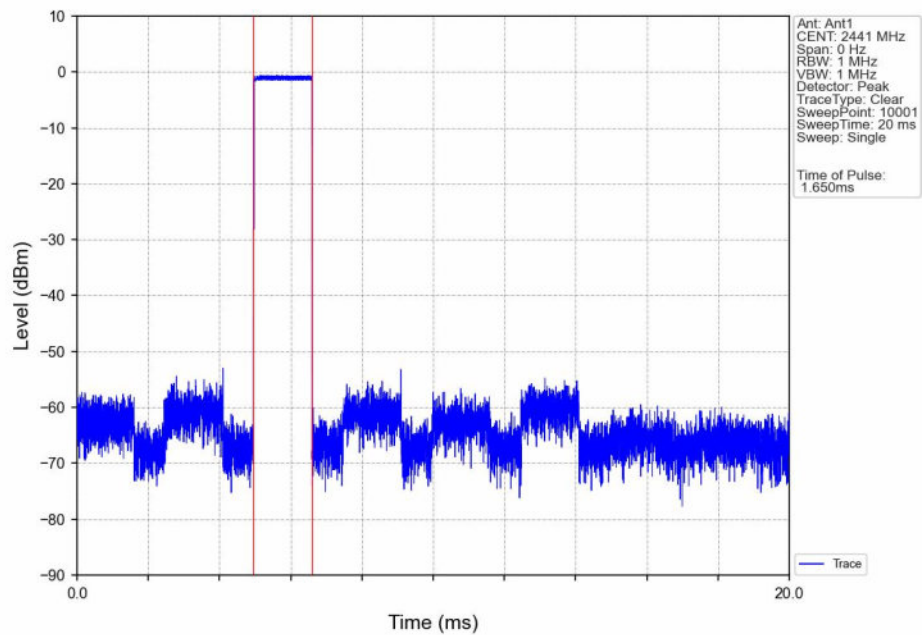
5.2 Test Graph

5.2.1 Ant1

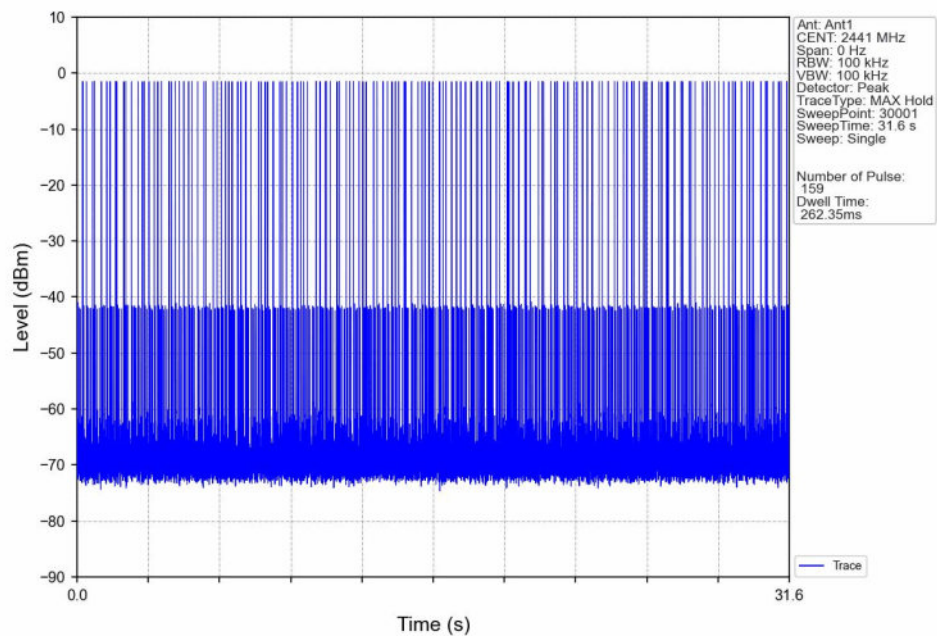


FCCID: 2A69E-RGSSPRBK-01

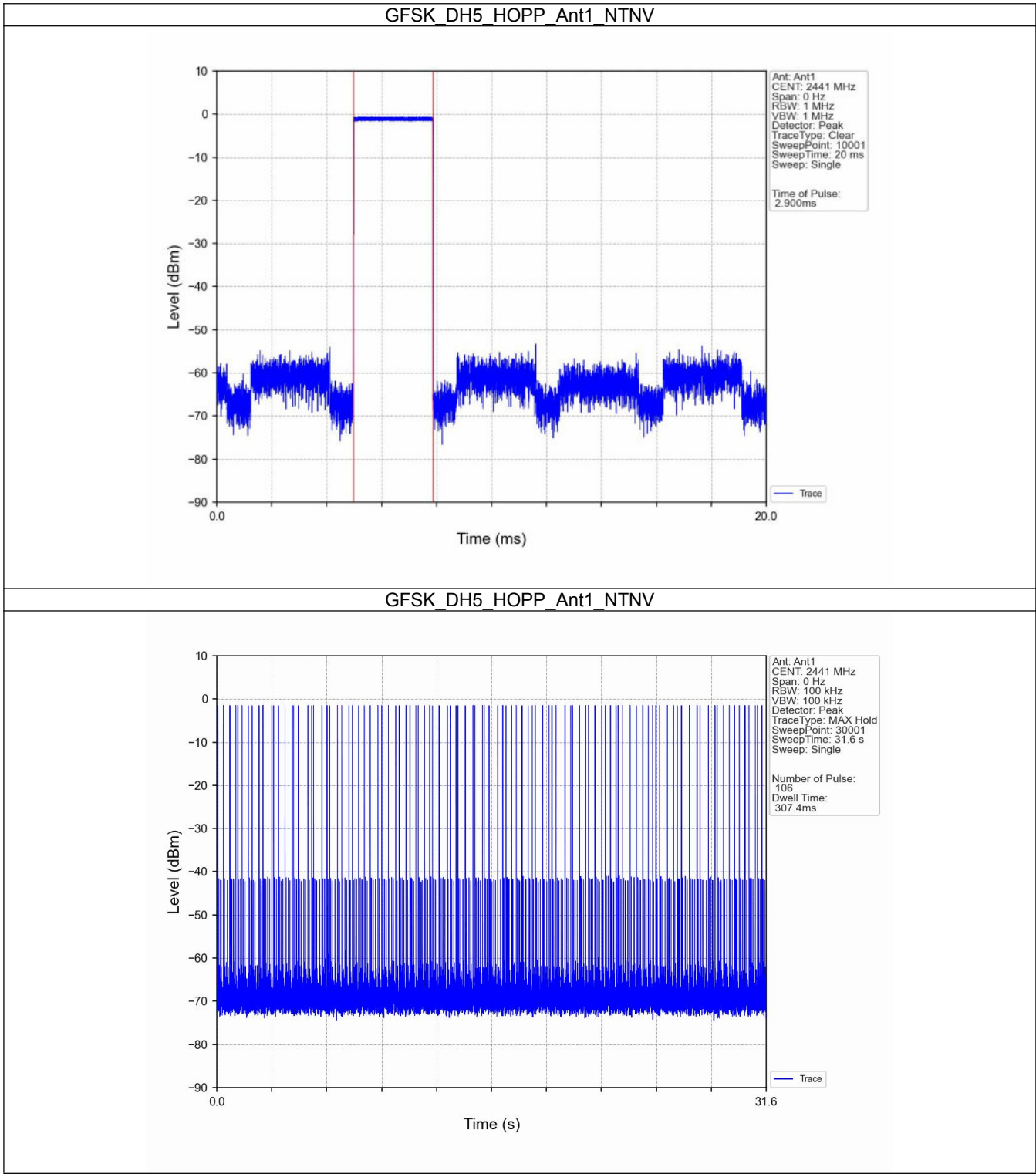
GFSK_DH3_HOPP_Ant1_NTNV



GFSK_DH3_HOPP_Ant1_NTNV

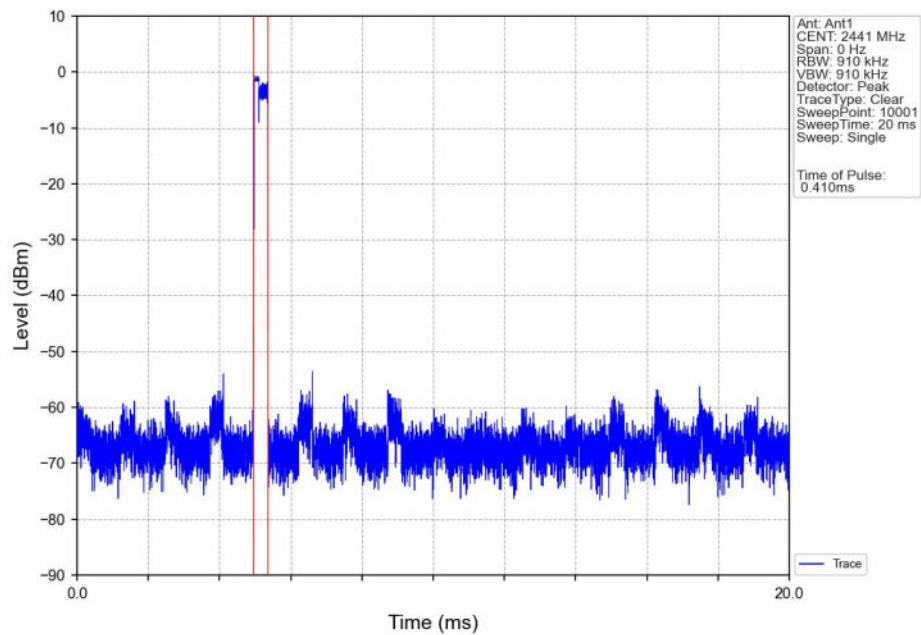


FCCID: 2A69E-RGSSPRBK-01

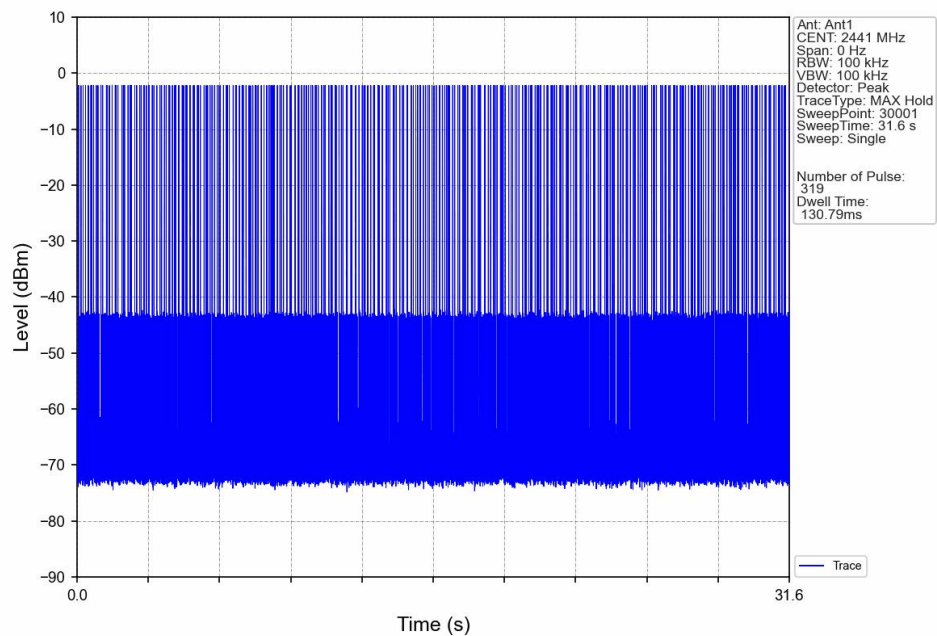


FCCID: 2A69E-RGSSPRBK-01

Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV

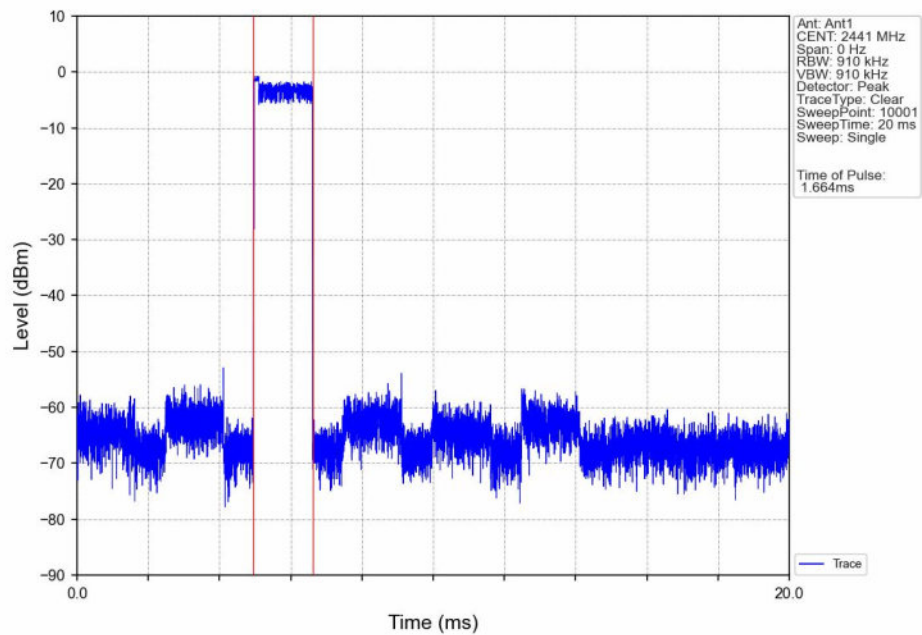


Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV

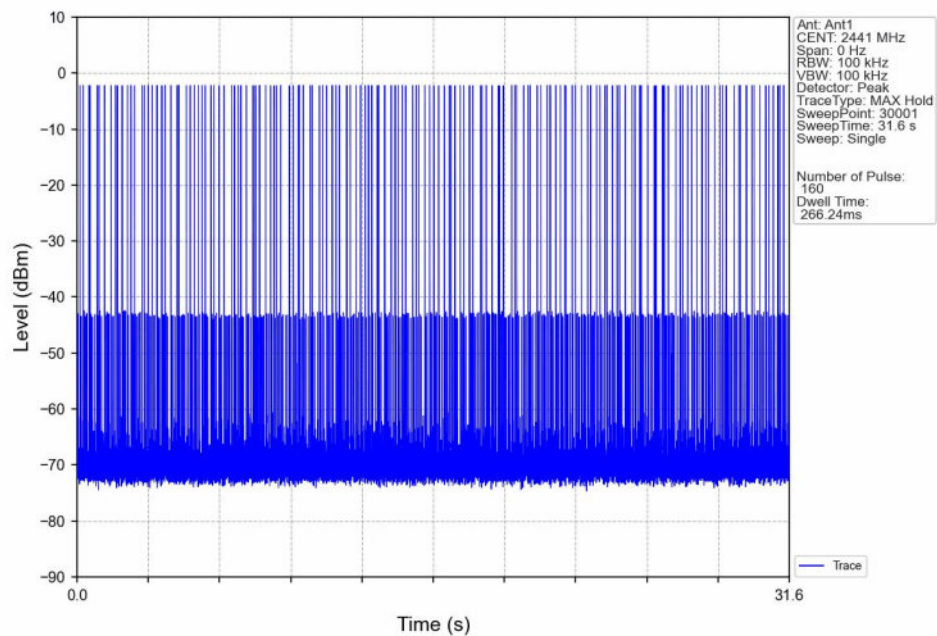


FCCID: 2A69E-RGSSPRBK-01

Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

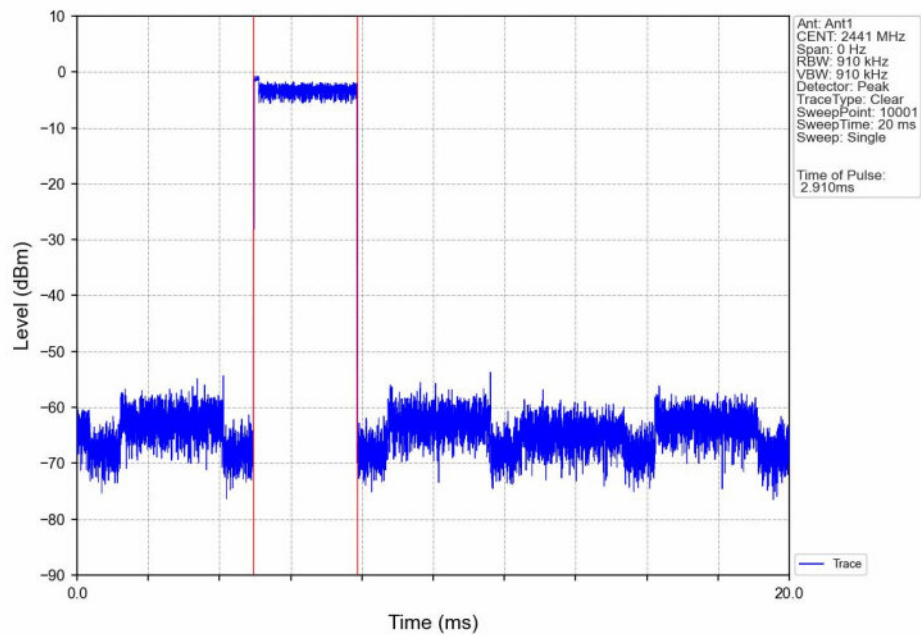


Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

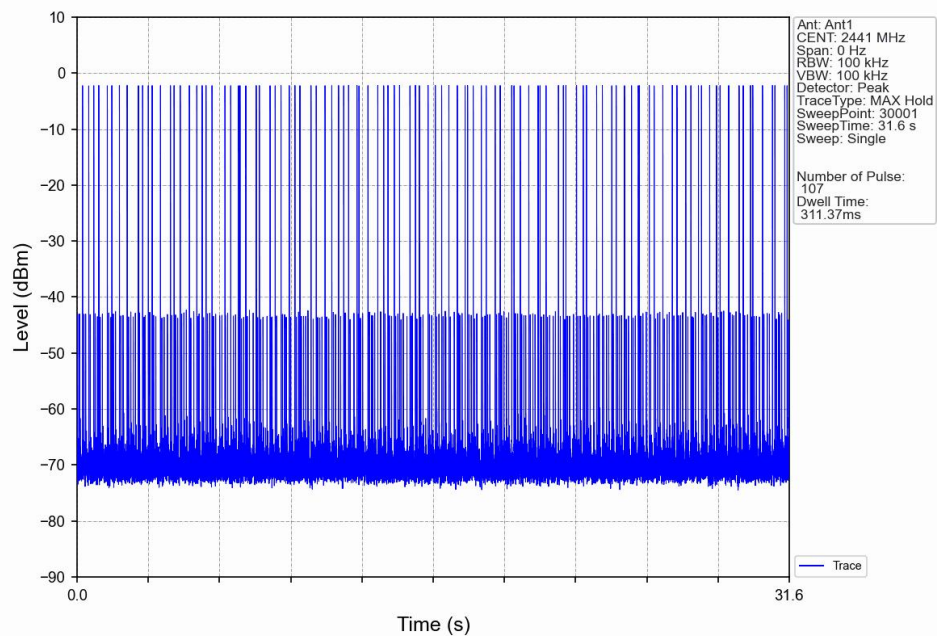


FCCID: 2A69E-RGSSPRBK-01

Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

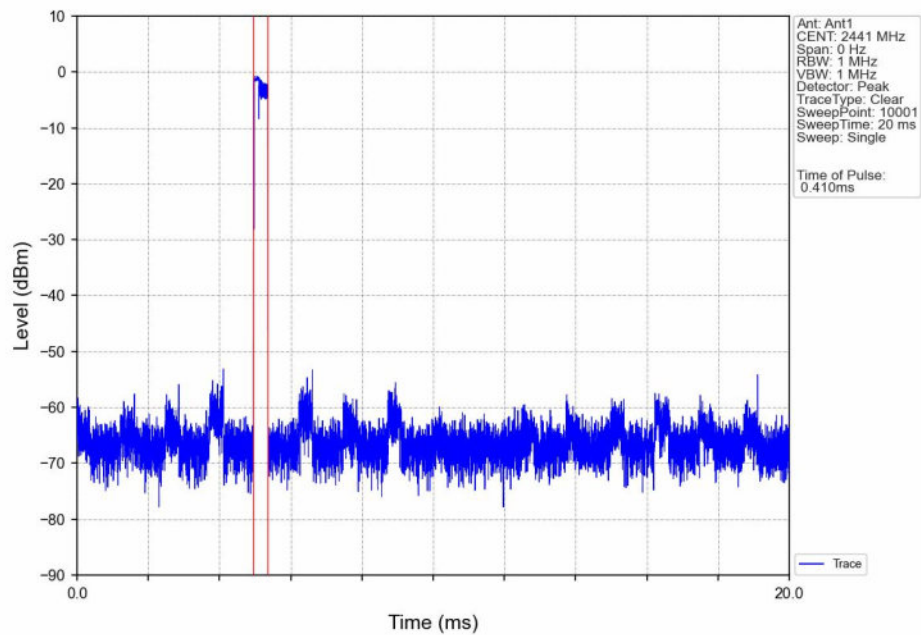


Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

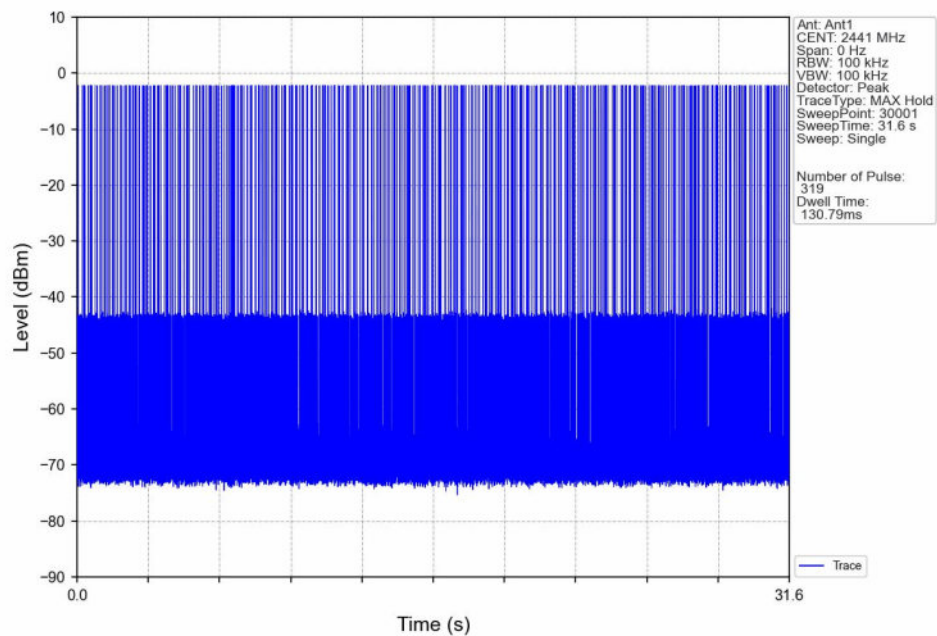


FCCID: 2A69E-RGSSPRBK-01

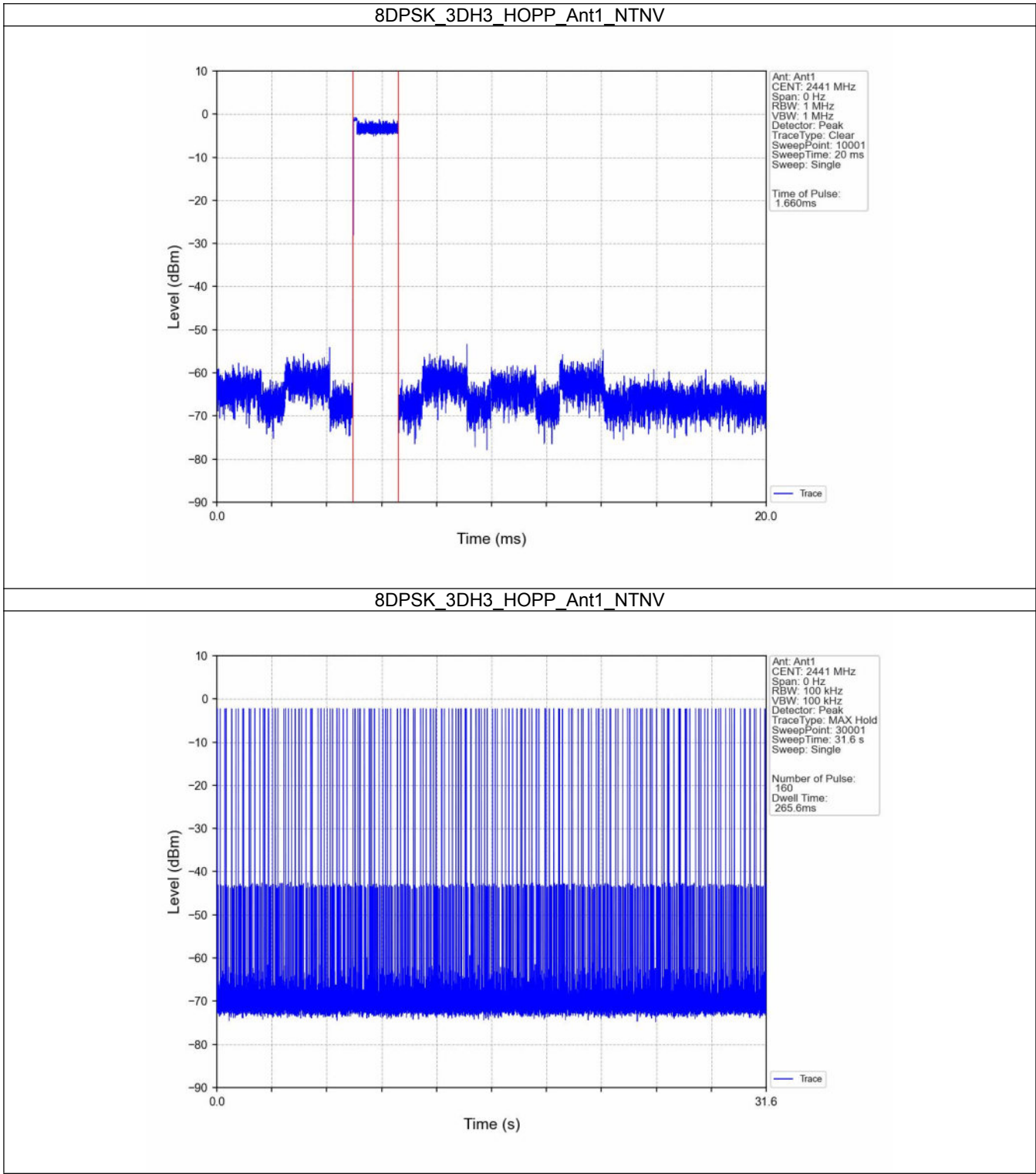
8DPSK_3DH1_HOPP_Ant1_NTNV



8DPSK_3DH1_HOPP_Ant1_NTNV

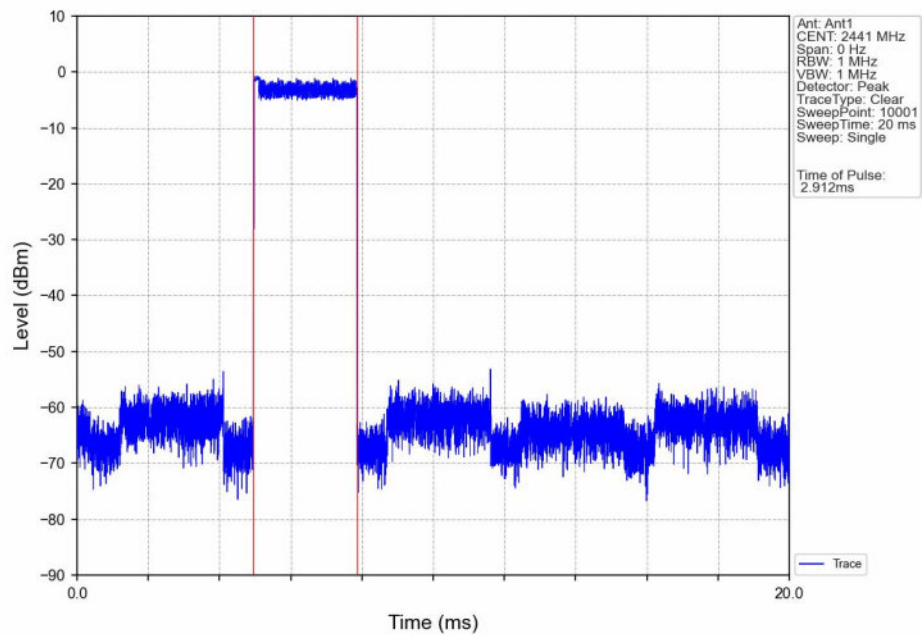


FCCID: 2A69E-RGSSPRBK-01

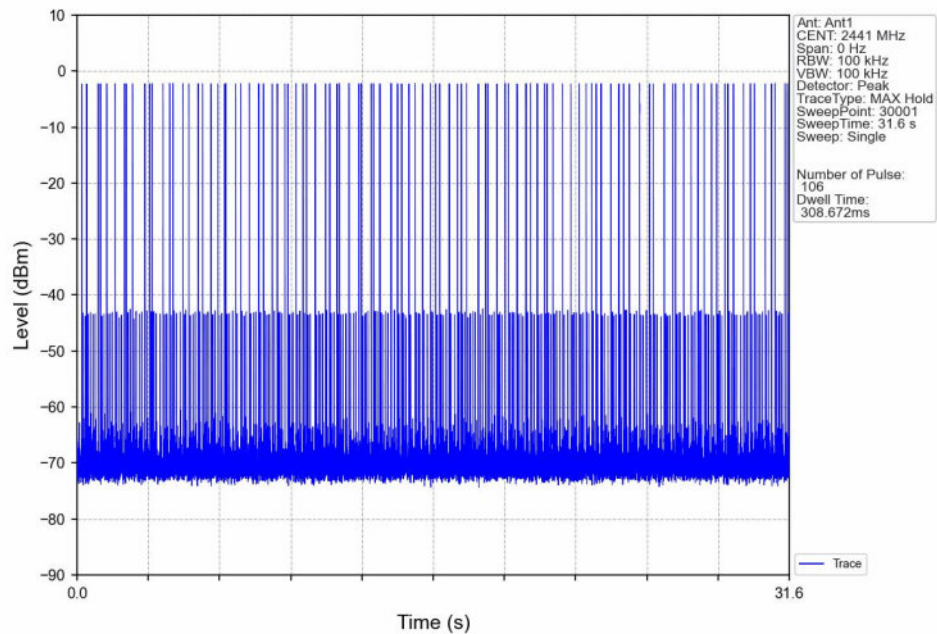


FCCID: 2A69E-RGSSPRBK-01

8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



FCCID: 2A69E-RGSSPRBK-01

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	-1.37
		2441	DH5	1	-1.17
		2480	DH5	1	-1.11
Pi/4DQPSK	SISO	2402	2DH5	1	-1.57
		2441	2DH5	1	-1.33
		2480	2DH5	1	-1.26
8DPSK	SISO	2402	3DH5	1	-1.34
		2441	3DH5	1	-1.14
		2480	3DH5	1	-1.08

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

6.1.2 CSE

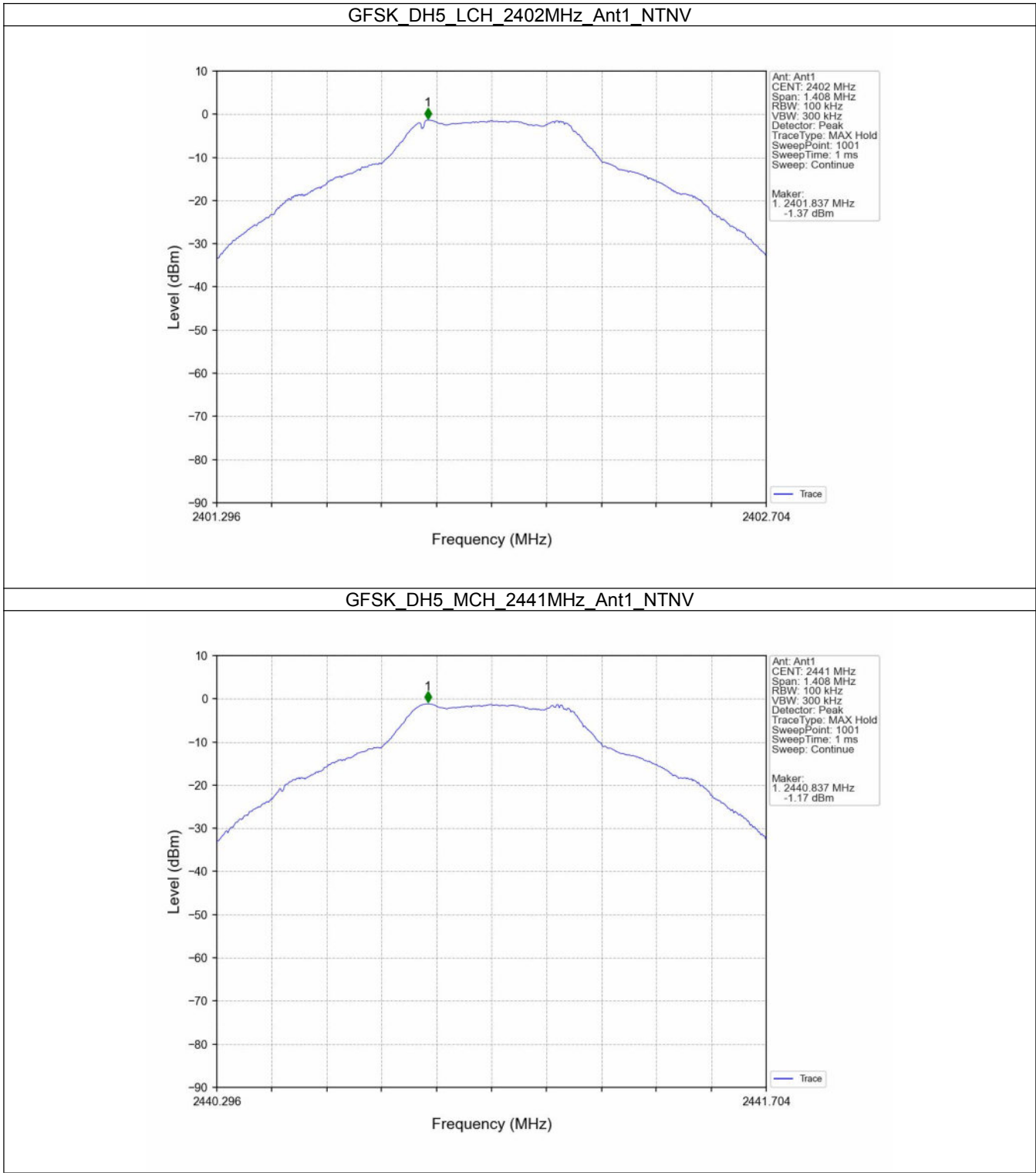
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-1.11	-21.11	Pass
		2441	DH5	1	-1.11	-21.11	Pass
		2480	DH5	1	-1.11	-21.11	Pass
		HOPP	DH5	1	-1.11	-21.11	Pass
					-1.11	-21.11	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-1.26	-21.26	Pass
		2441	2DH5	1	-1.26	-21.26	Pass
		2480	2DH5	1	-1.26	-21.26	Pass
		HOPP	2DH5	1	-1.26	-21.26	Pass
					-1.26	-21.26	Pass
8DPSK	SISO	2402	3DH5	1	-1.08	-21.08	Pass
		2441	3DH5	1	-1.08	-21.08	Pass
		2480	3DH5	1	-1.08	-21.08	Pass
		HOPP	3DH5	1	-1.08	-21.08	Pass
					-1.08	-21.08	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

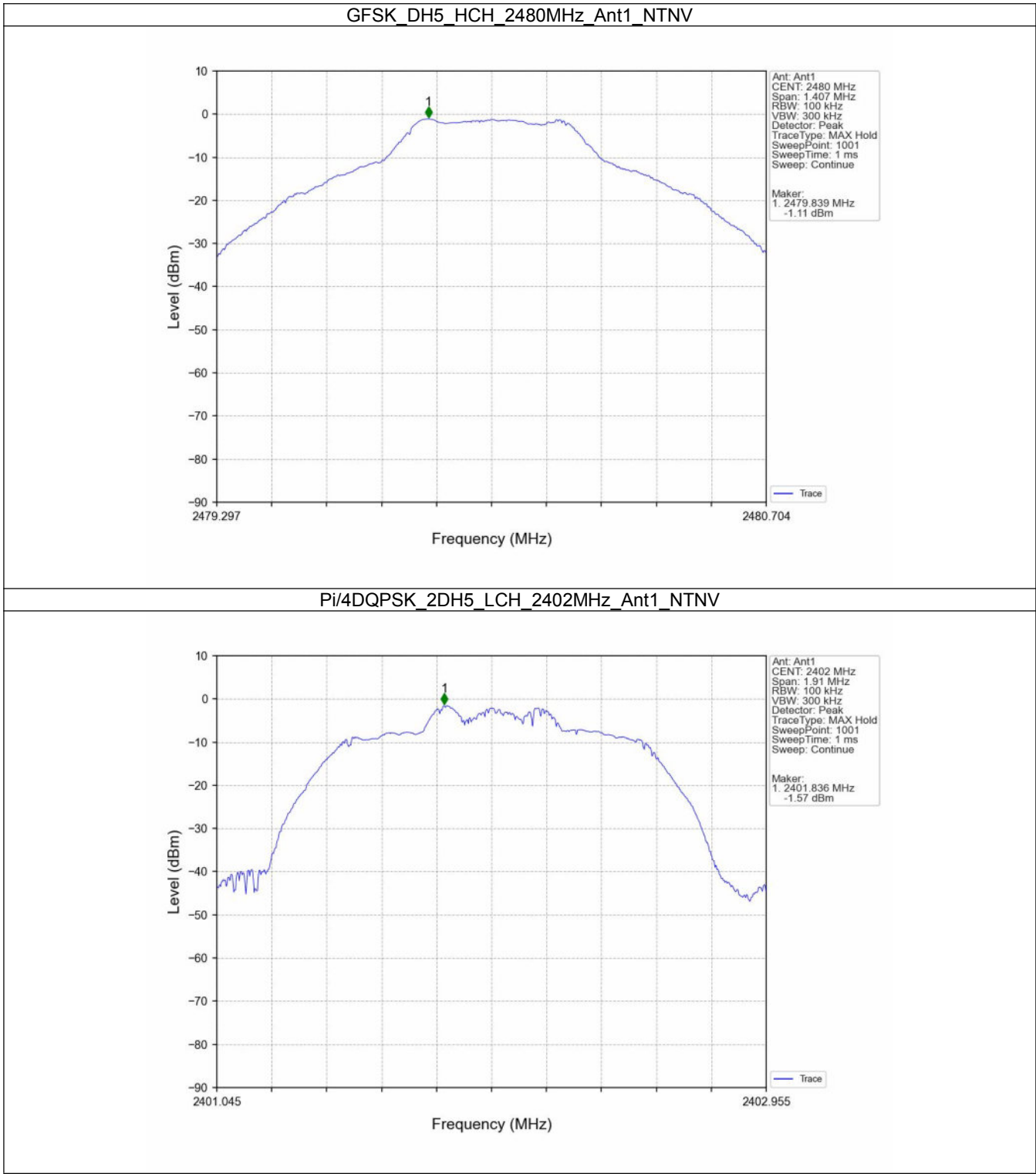
FCCID: 2A69E-RGSSPRBK-01

6.2 Test Graph

6.2.1 Ref

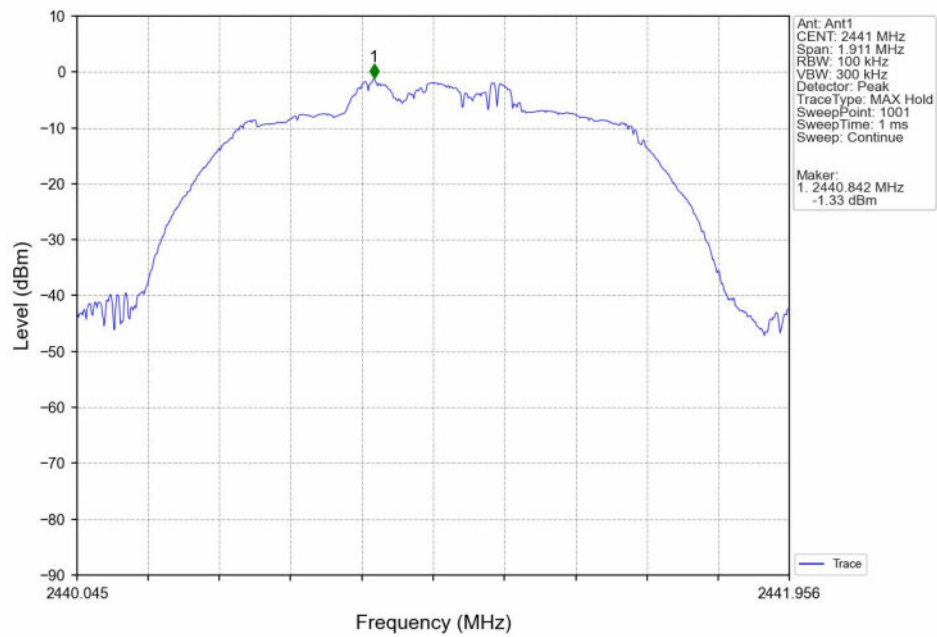


FCCID: 2A69E-RGSSPRBK-01

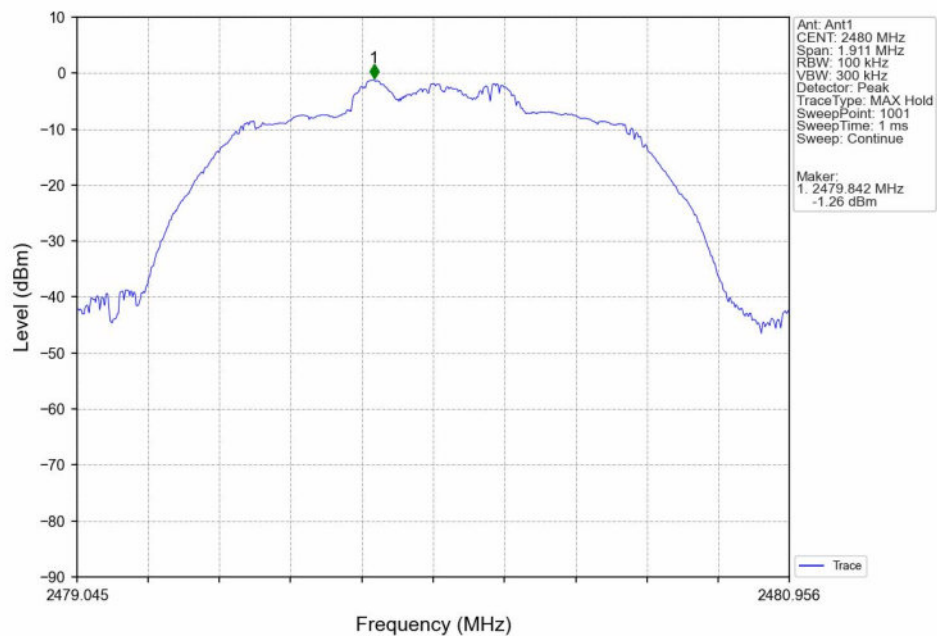


FCCID: 2A69E-RGSSPRBK-01

Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV

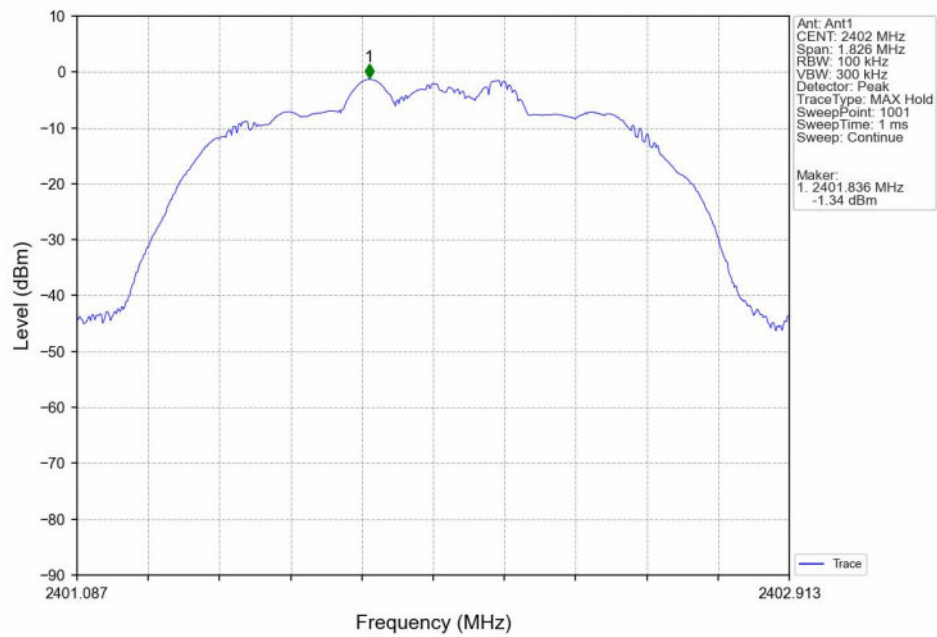


Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

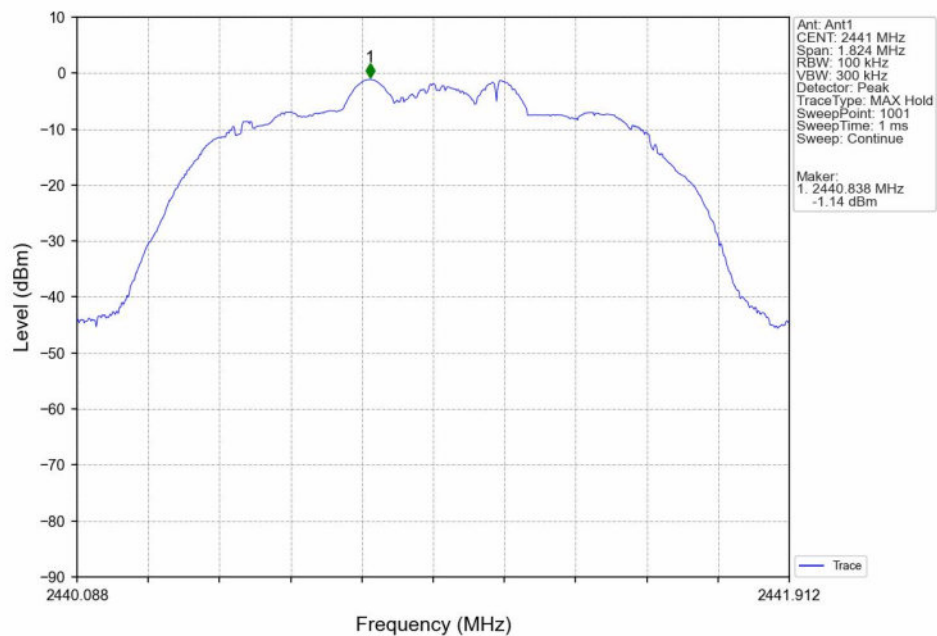


FCCID: 2A69E-RGSSPRBK-01

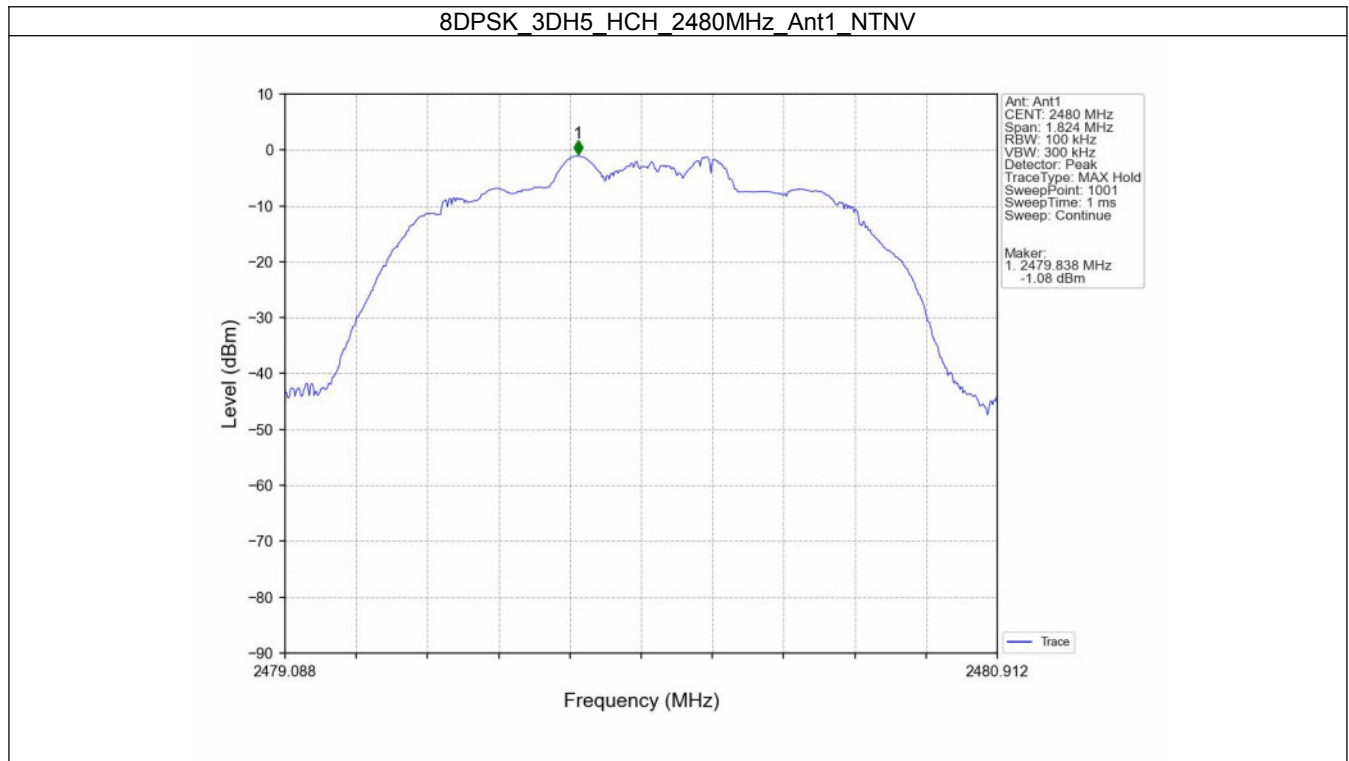
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

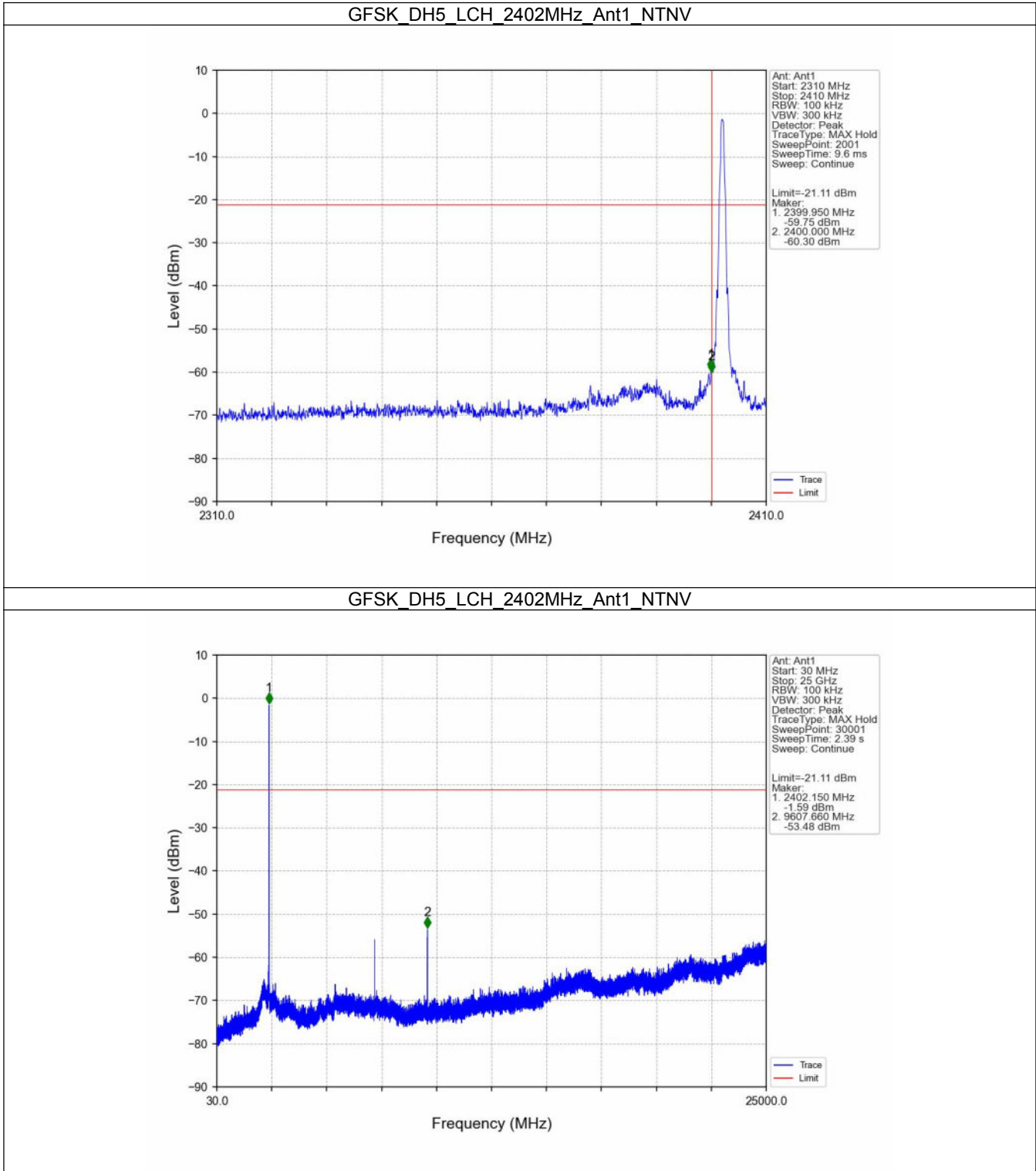


FCCID: 2A69E-RGSSPRBK-01

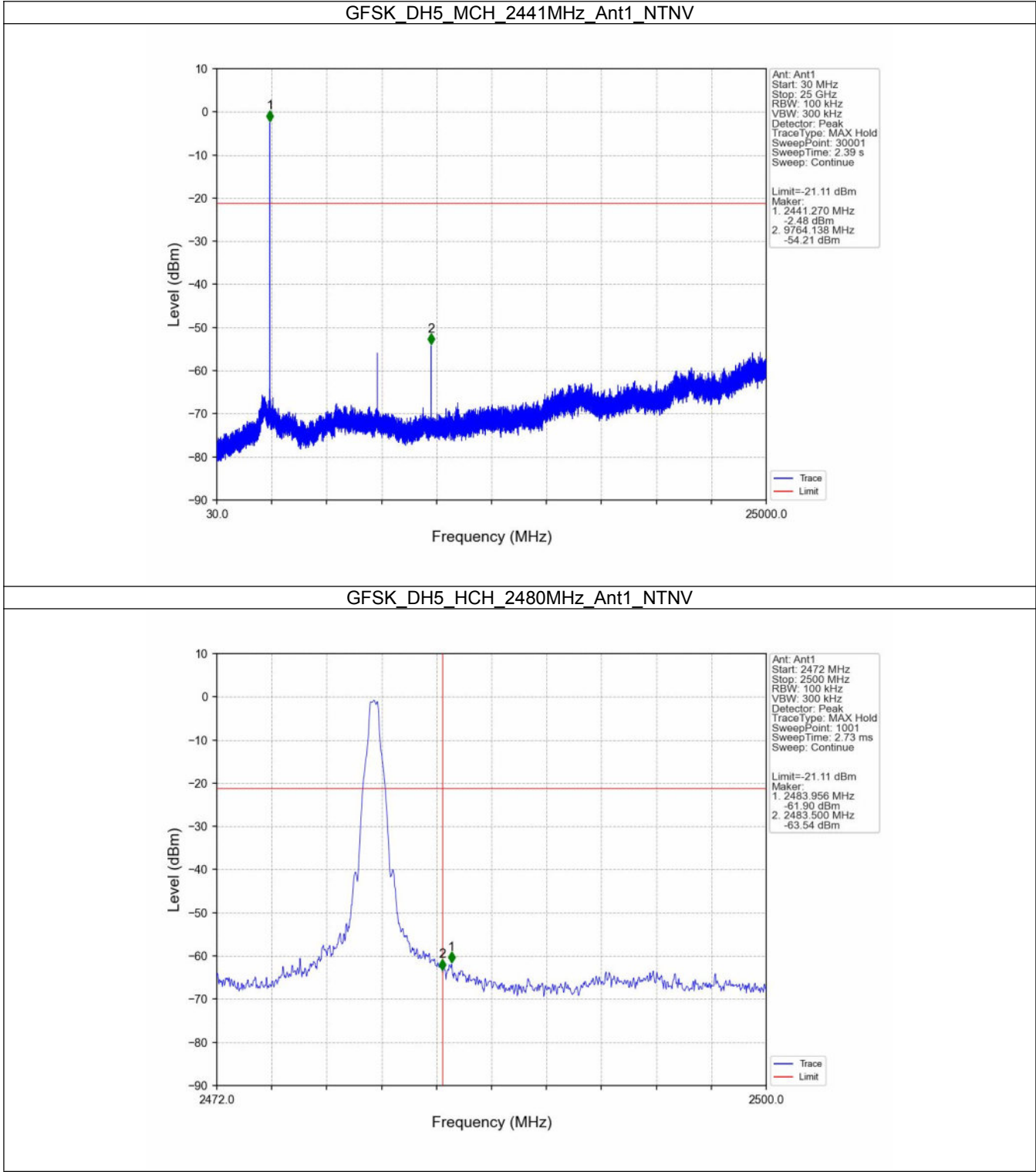


FCCID: 2A69E-RGSSPRBK-01

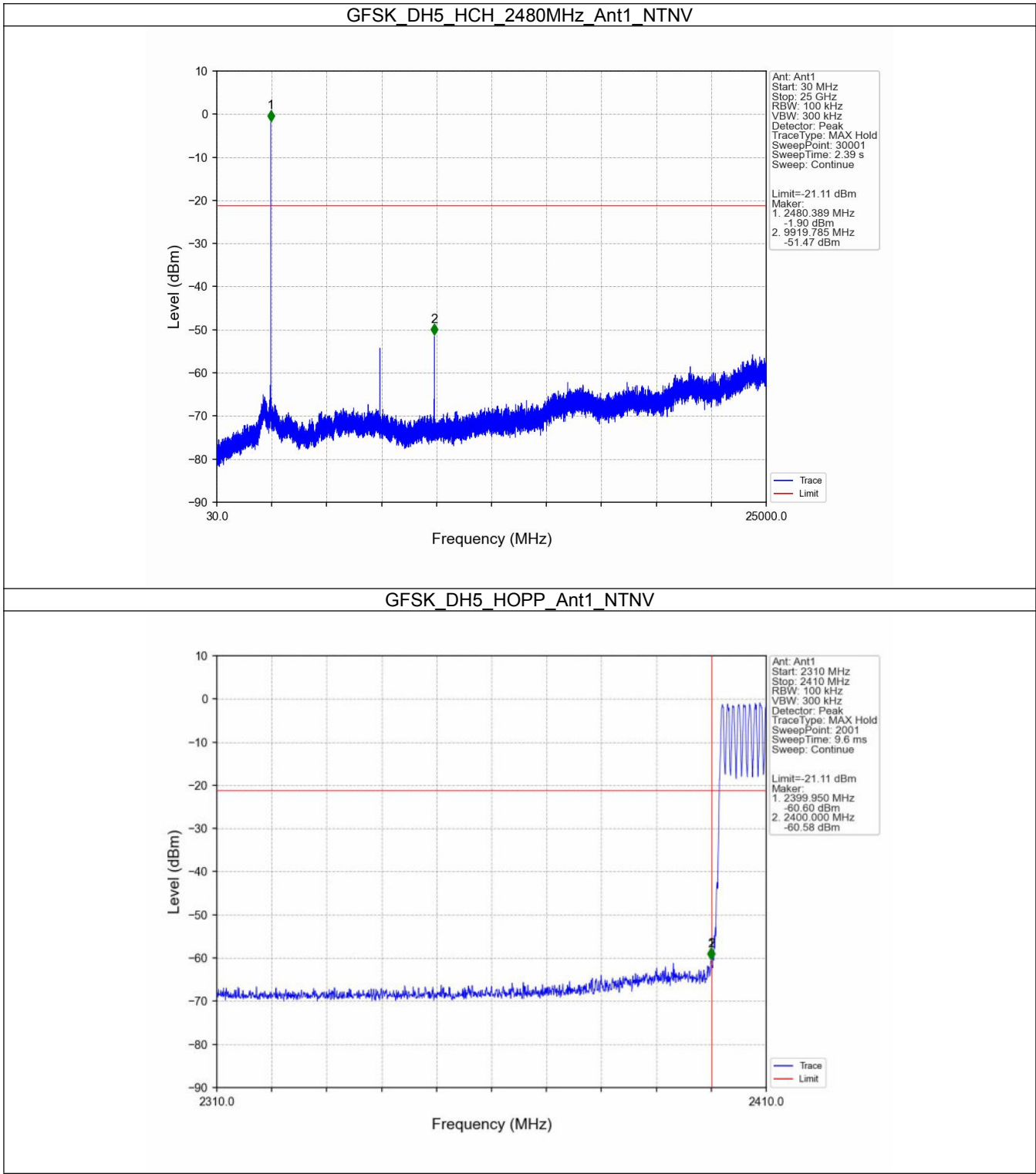
6.2.2 CSE



FCCID: 2A69E-RGSSPRBK-01

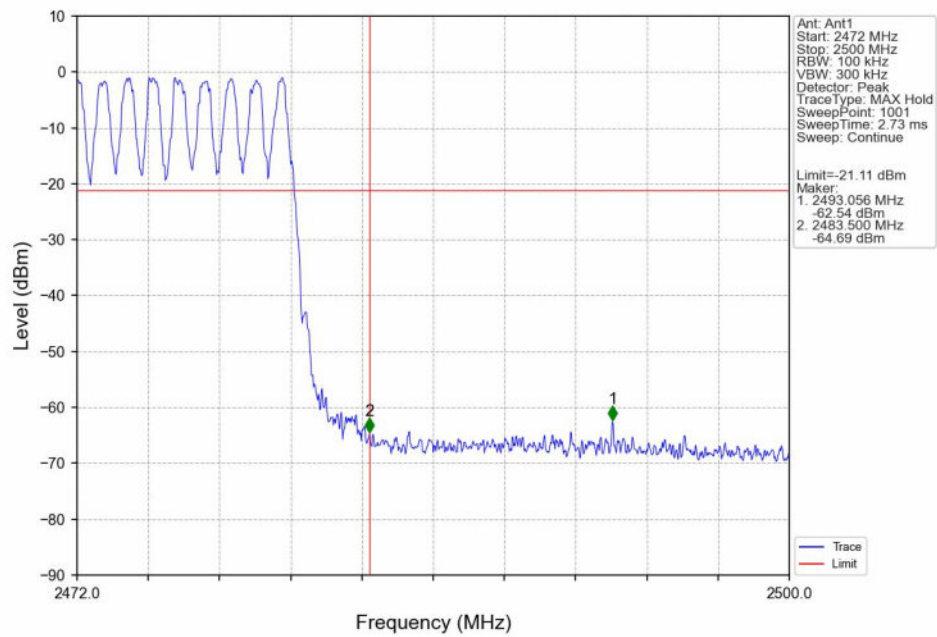


FCCID: 2A69E-RGSSPRBK-01

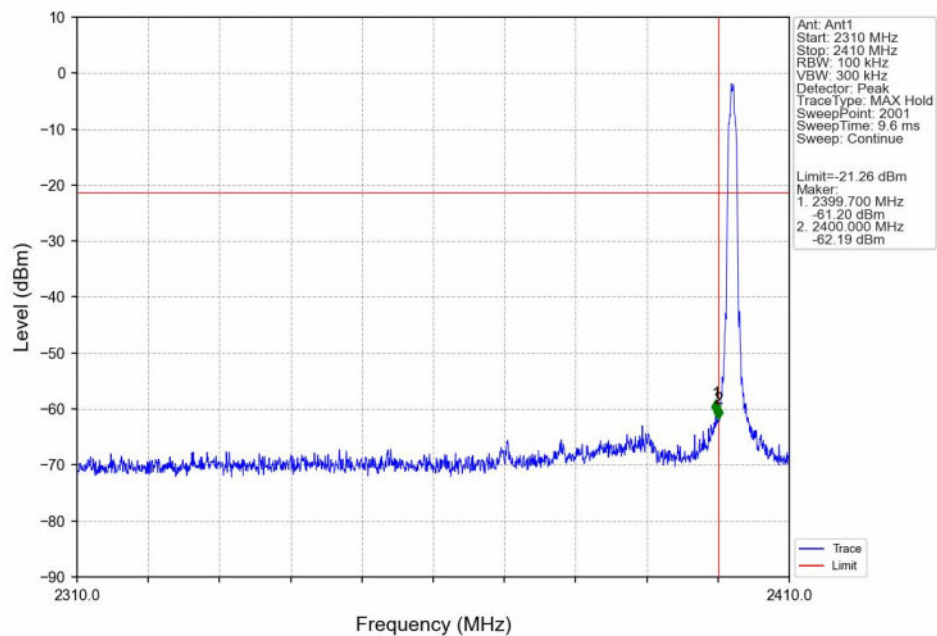


FCCID: 2A69E-RGSSPRBK-01

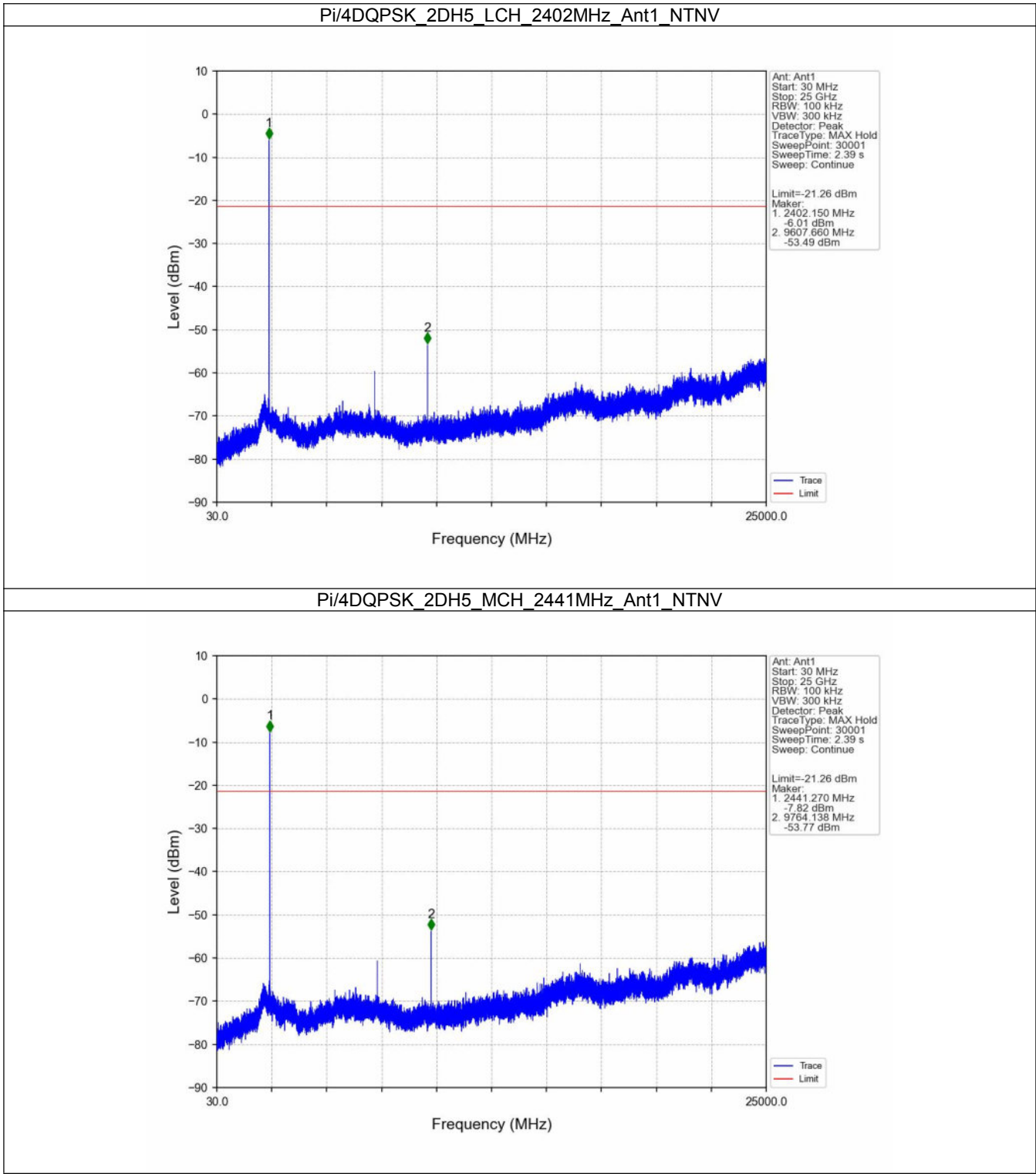
GFSK_DH5_HOPP_Ant1_NTNV



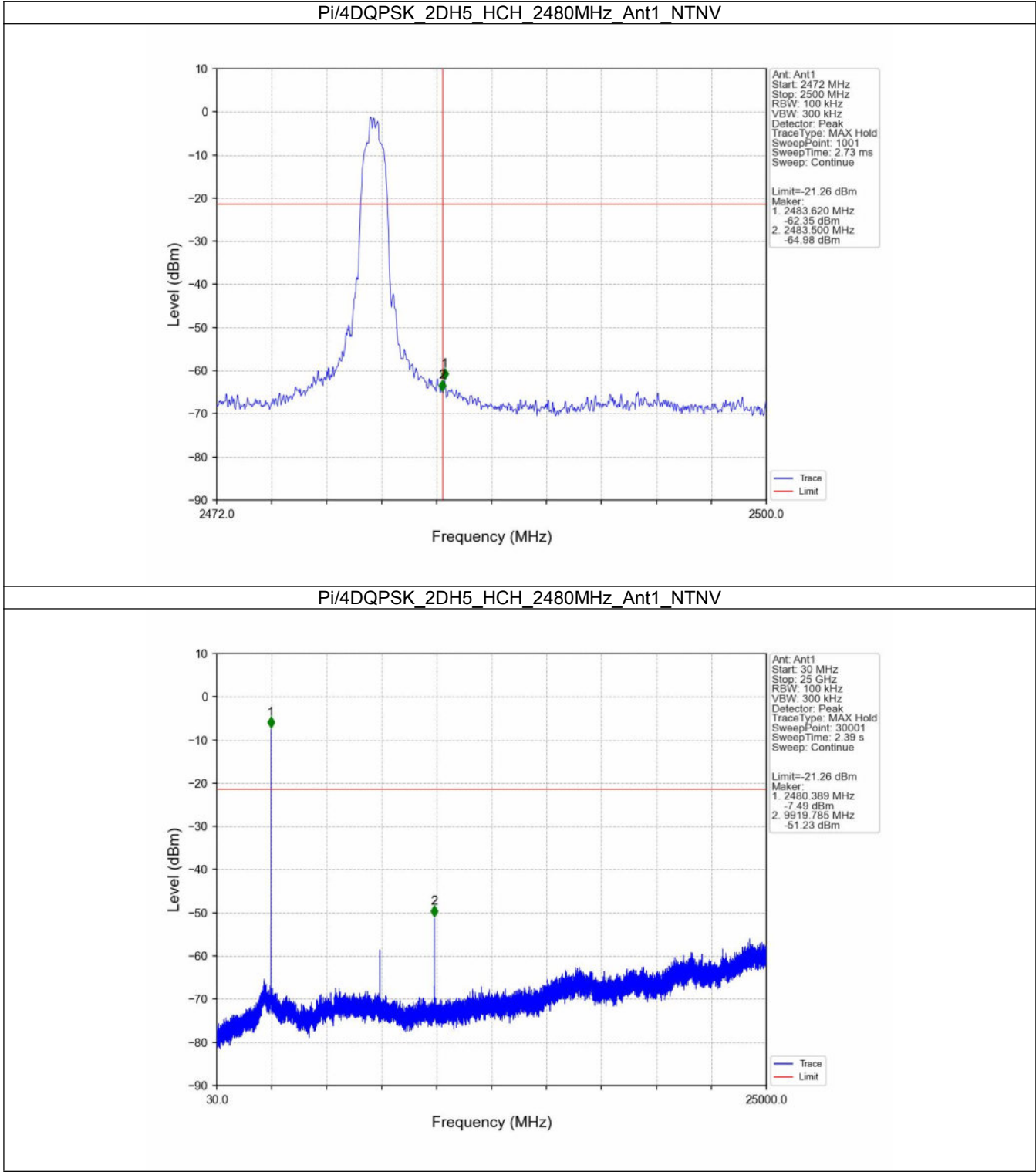
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



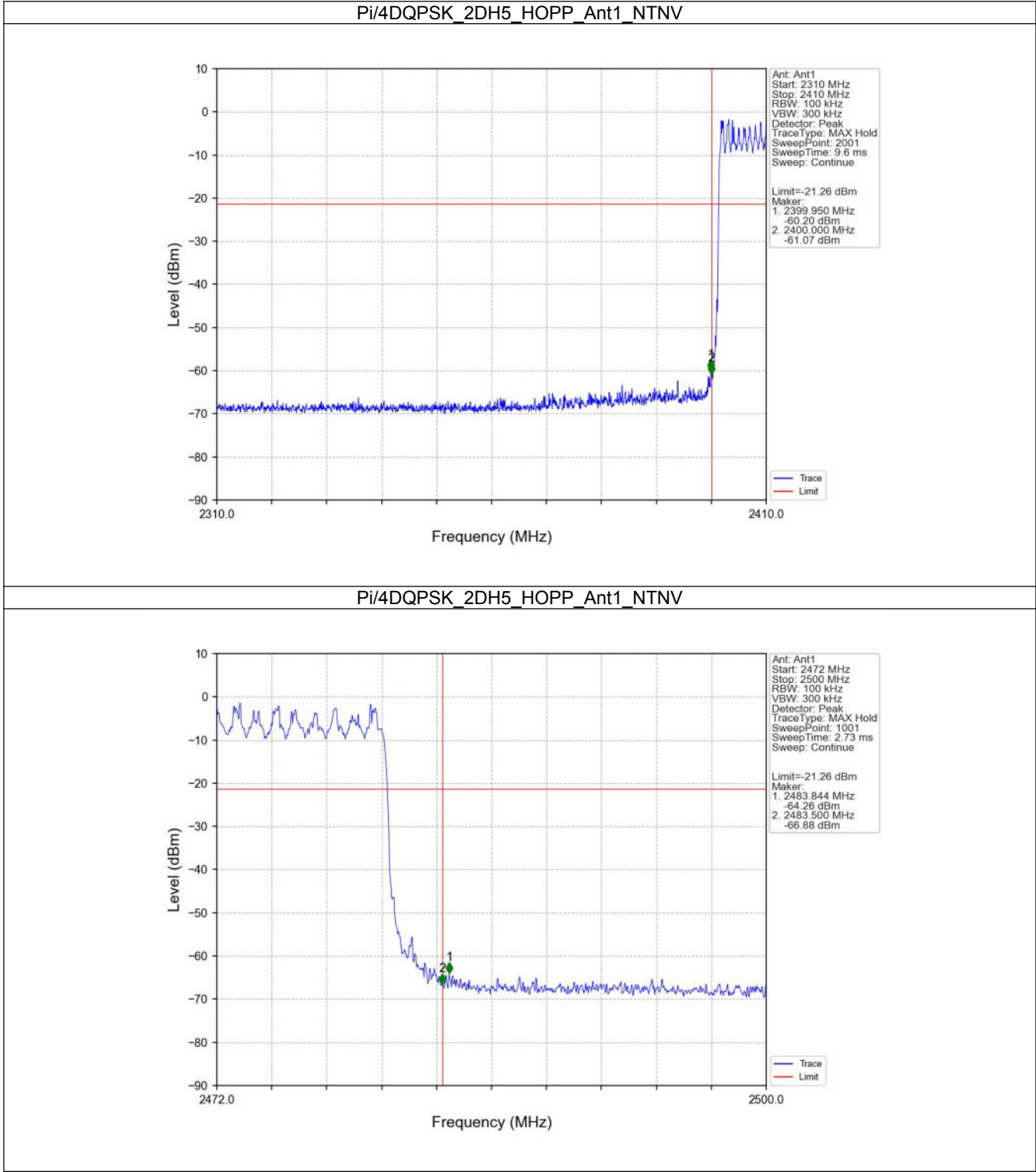
FCCID: 2A69E-RGSSPRBK-01



FCCID: 2A69E-RGSSPRBK-01

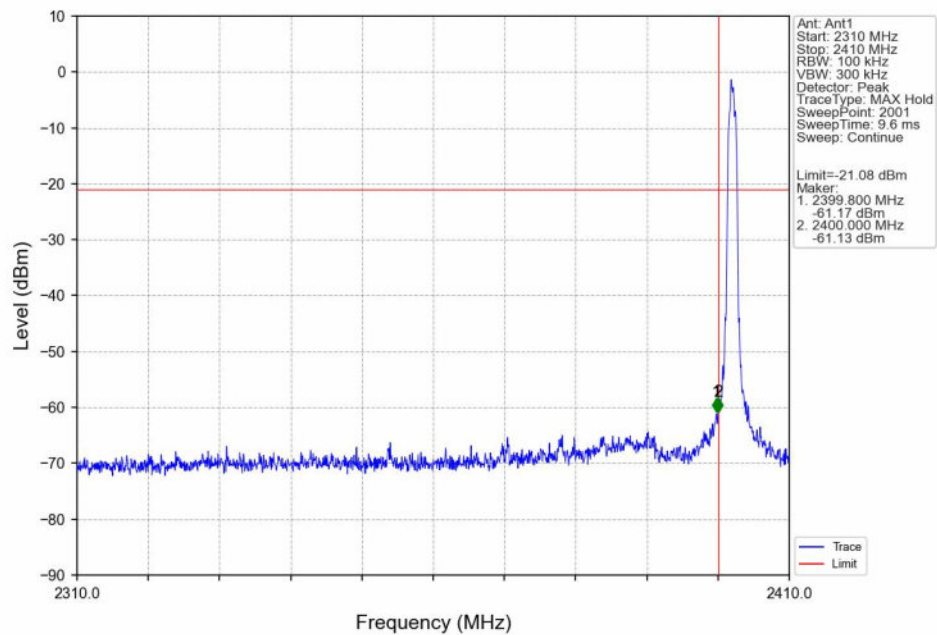


FCCID: 2A69E-RGSSPRBK-01

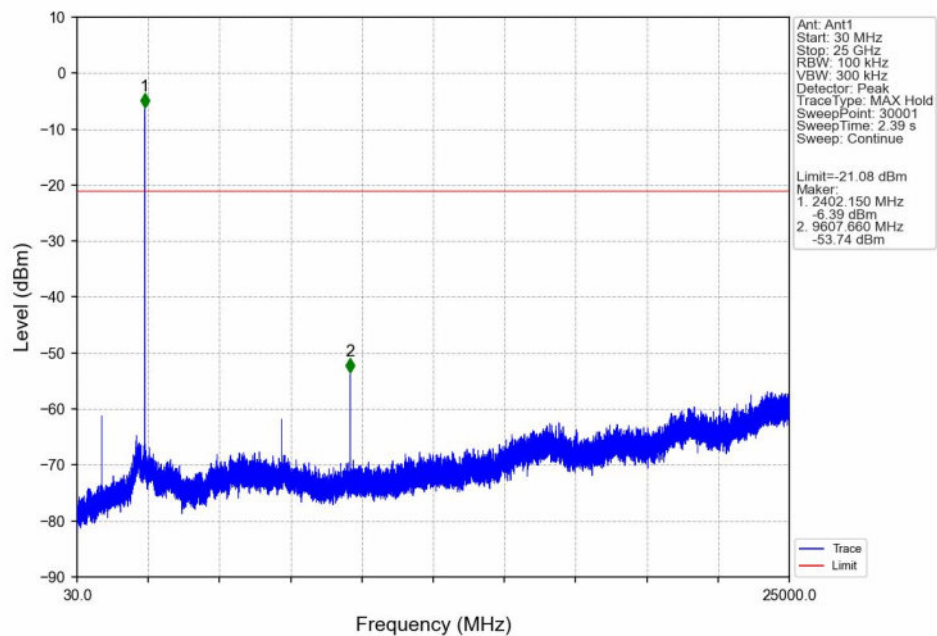


FCCID: 2A69E-RGSSPRBK-01

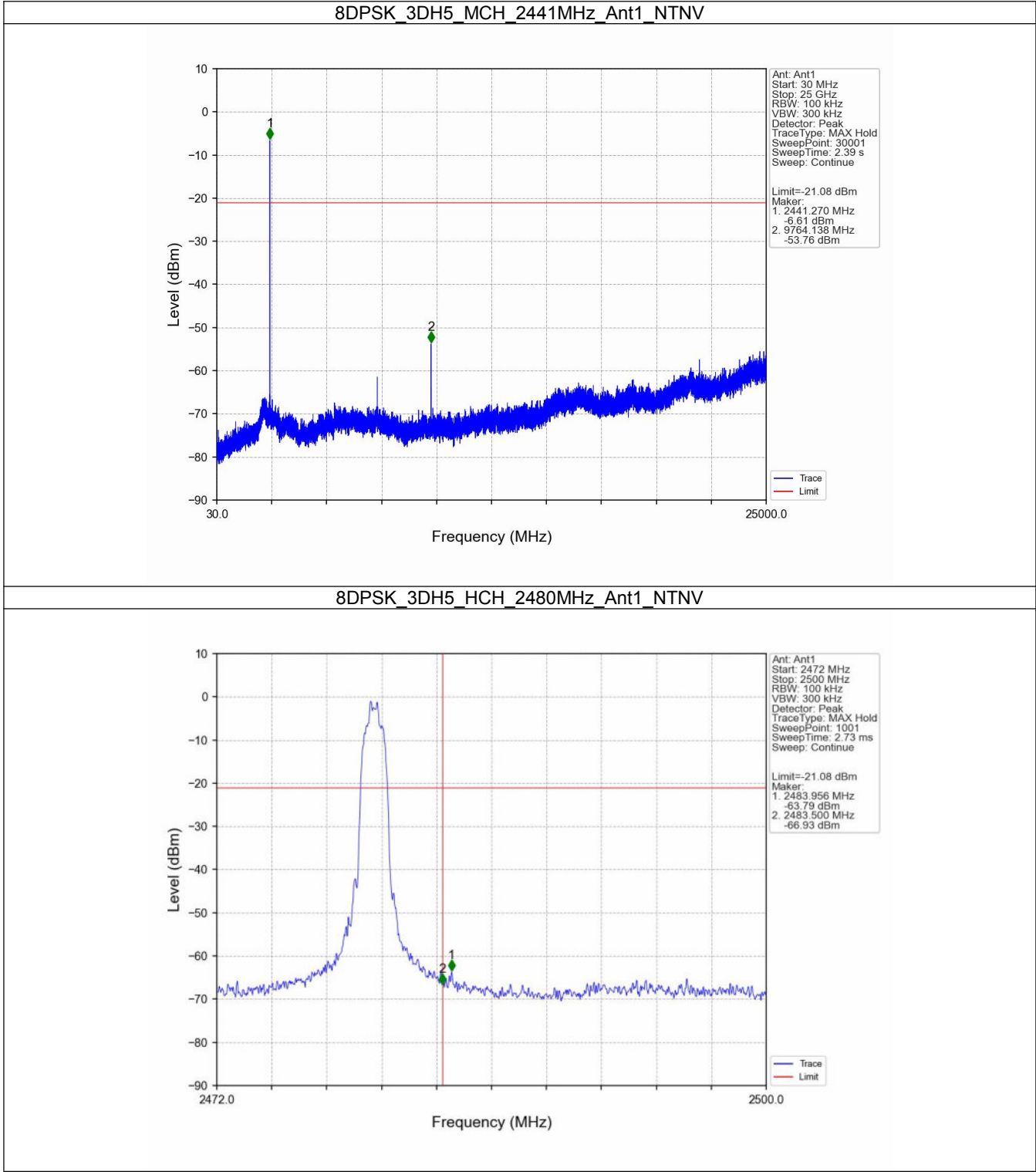
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

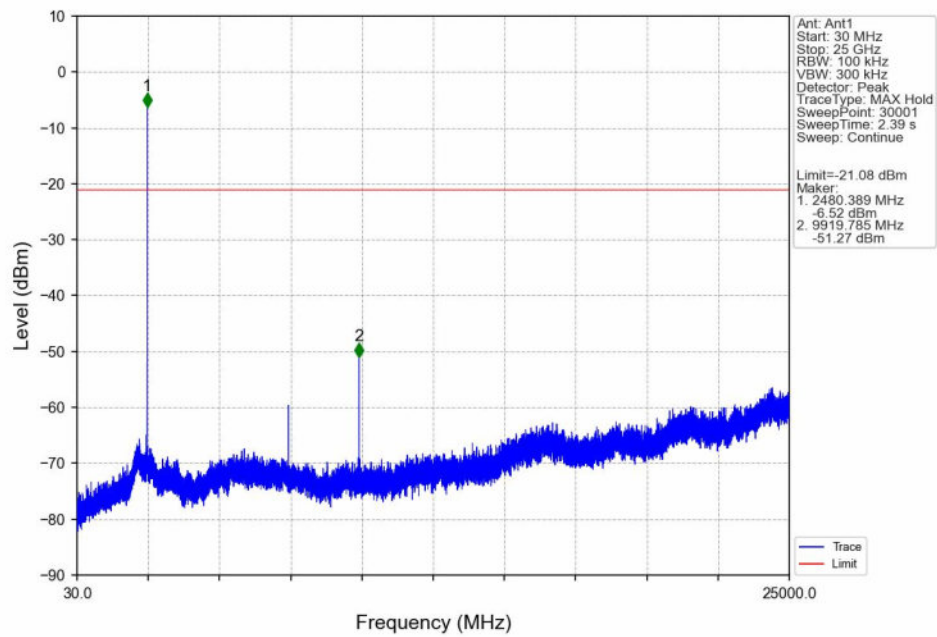


FCCID: 2A69E-RGSSPRBK-01

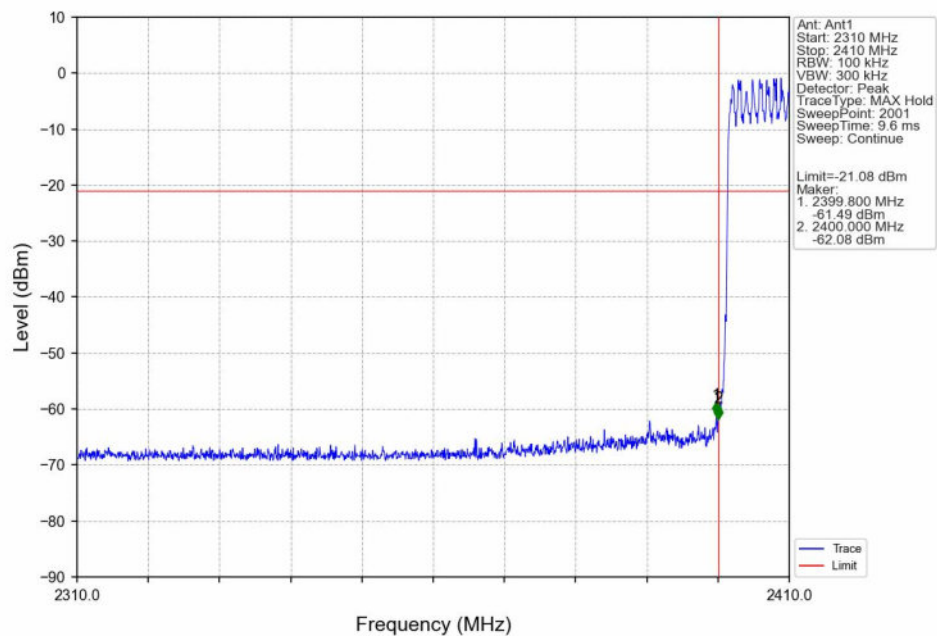


FCCID: 2A69E-RGSSPRBK-01

8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



FCCID: 2A69E-RGSSPRBK-01

