



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.: CTL2503262194-WF01

TABLE OF CONTENTS

1. Bandwidth	3
1.1 Test Result	3
1.1.1 OBW	3
1.1.2 20dB BW	3
1.2 Test Graph	4
1.2.1 OBW	4
1.2.2 20dB BW	9
2. Maximum Conducted Output Power	14
2.1 Test Result	14
2.1.1 Power	14
2.2 Test Graph	15
2.2.1 Power	15
3. Carrier Frequency Separation	20
3.1 Test Result	20
3.1.1 Ant1	20
3.2 Test Graph	21
3.2.1 Ant1	21
4. Number of Hopping Frequencies	23
4.1 Test Result	23

FCCID: 2ASC7FX6X00

4.1.1 HoppNum	23
4.2 Test Graph	24
4.2.1 HoppNum	24
5. Time of Occupancy (Dwell Time)	26
5.1 Test Result	26
5.1.1 Ant1	26
5.2 Test Graph	27
5.2.1 Ant1	27
6. Unwanted Emissions In Non-restricted Frequency Bands	36
6.1 Test Result	36
6.1.1 Ref	36
6.1.2 CSE	36
6.2 Test Graph	37
6.2.1 Ref	37
6.2.2 CSE	42

FCCID: 2ASC7FX6X00

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	0.865	/	Pass
		2441	DH5	1	0.862	/	Pass
		2480	DH5	1	0.869	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.173	/	Pass
		2441	2DH5	1	1.172	/	Pass
		2480	2DH5	1	1.173	/	Pass
8DPSK	SISO	2402	3DH5	1	1.179	/	Pass
		2441	3DH5	1	1.183	/	Pass
		2480	3DH5	1	1.183	/	Pass

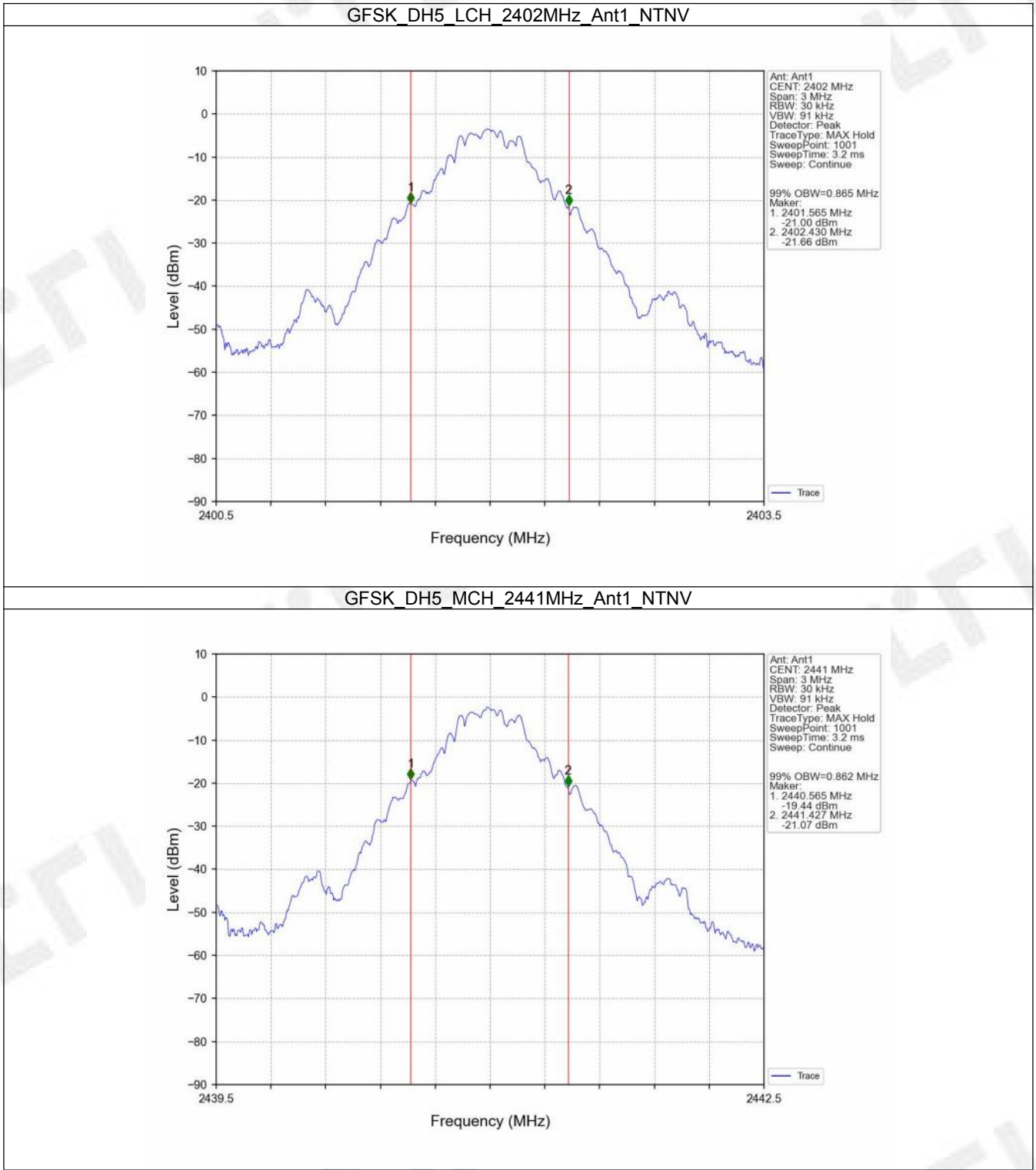
1.1.2 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.959	/	Pass
		2441	DH5	1	0.956	/	Pass
		2480	DH5	1	0.955	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.309	/	Pass
		2441	2DH5	1	1.310	/	Pass
		2480	2DH5	1	1.289	/	Pass
8DPSK	SISO	2402	3DH5	1	1.302	/	Pass
		2441	3DH5	1	1.302	/	Pass
		2480	3DH5	1	1.305	/	Pass

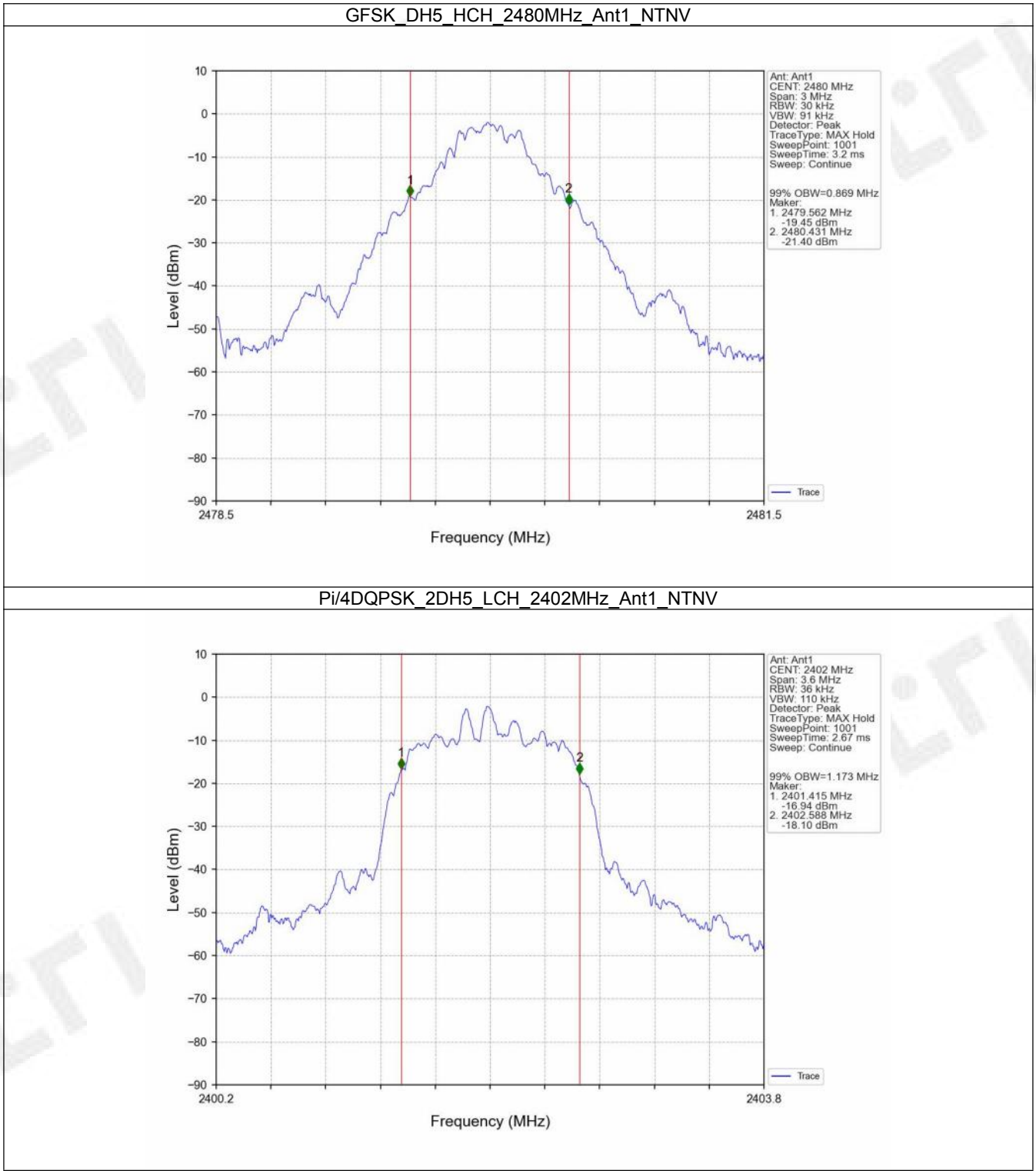
FCCID: 2ASC7FX6X00

1.2 Test Graph

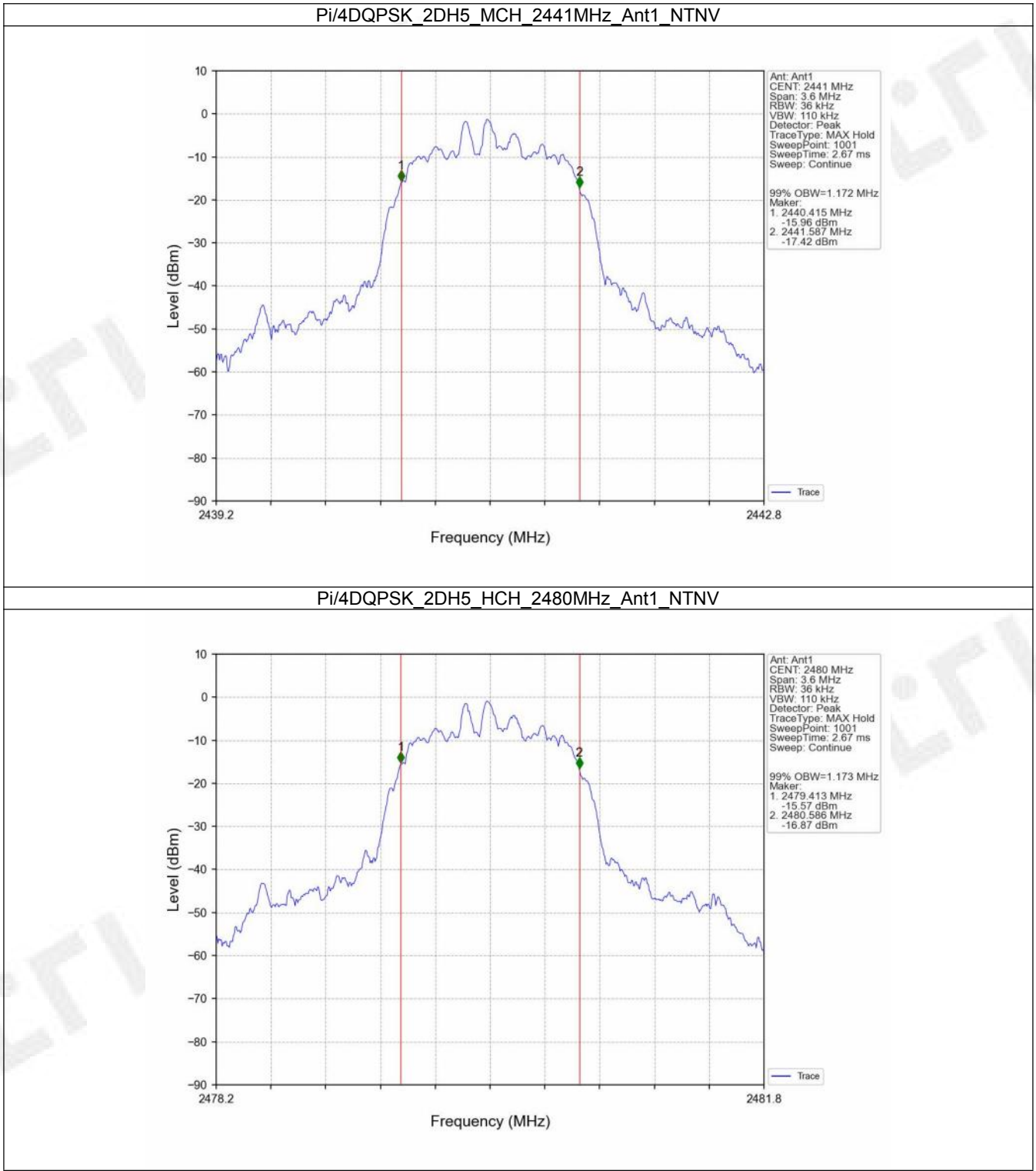
1.2.1 OBW



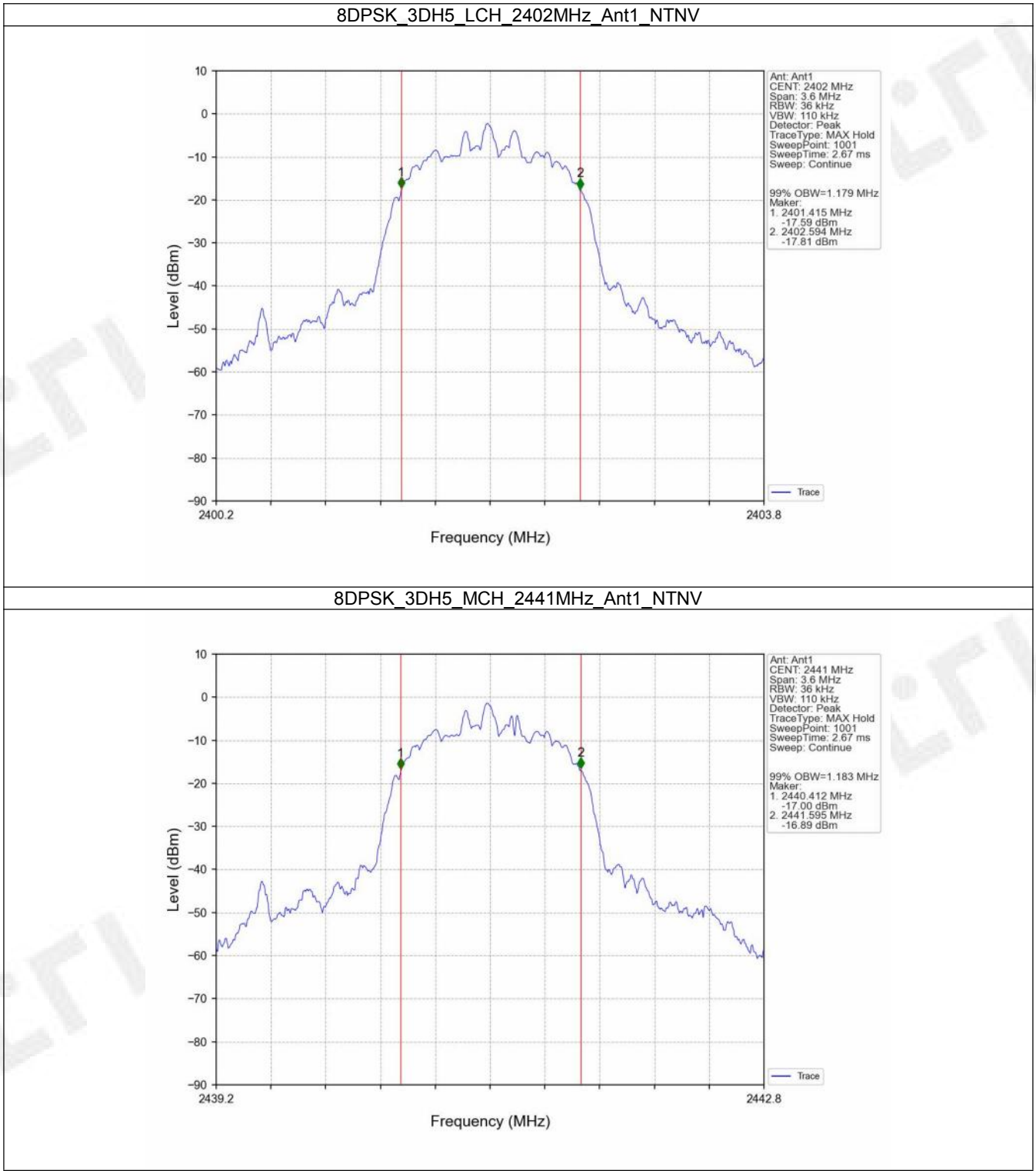
FCCID: 2ASC7FX6X00



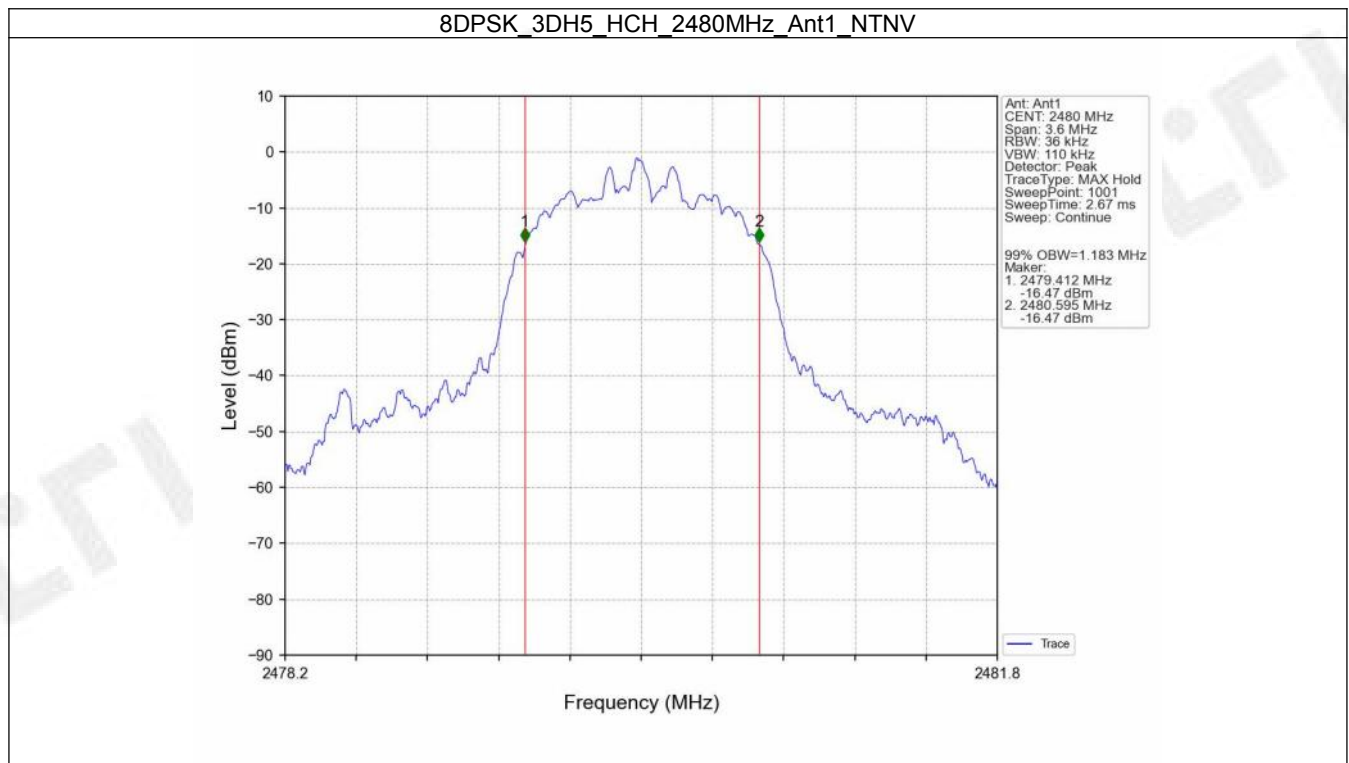
FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

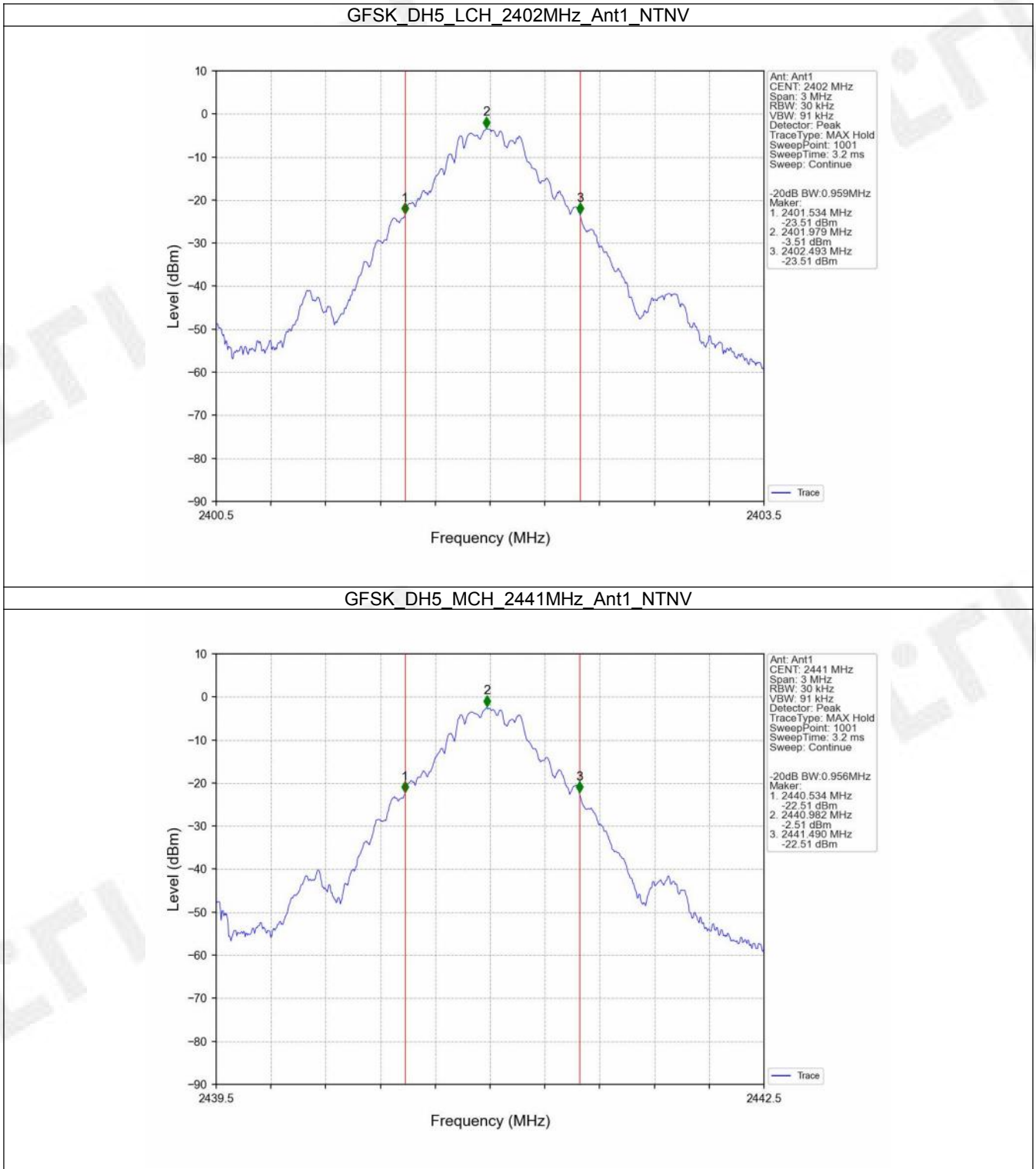


FCCID: 2ASC7FX6X00

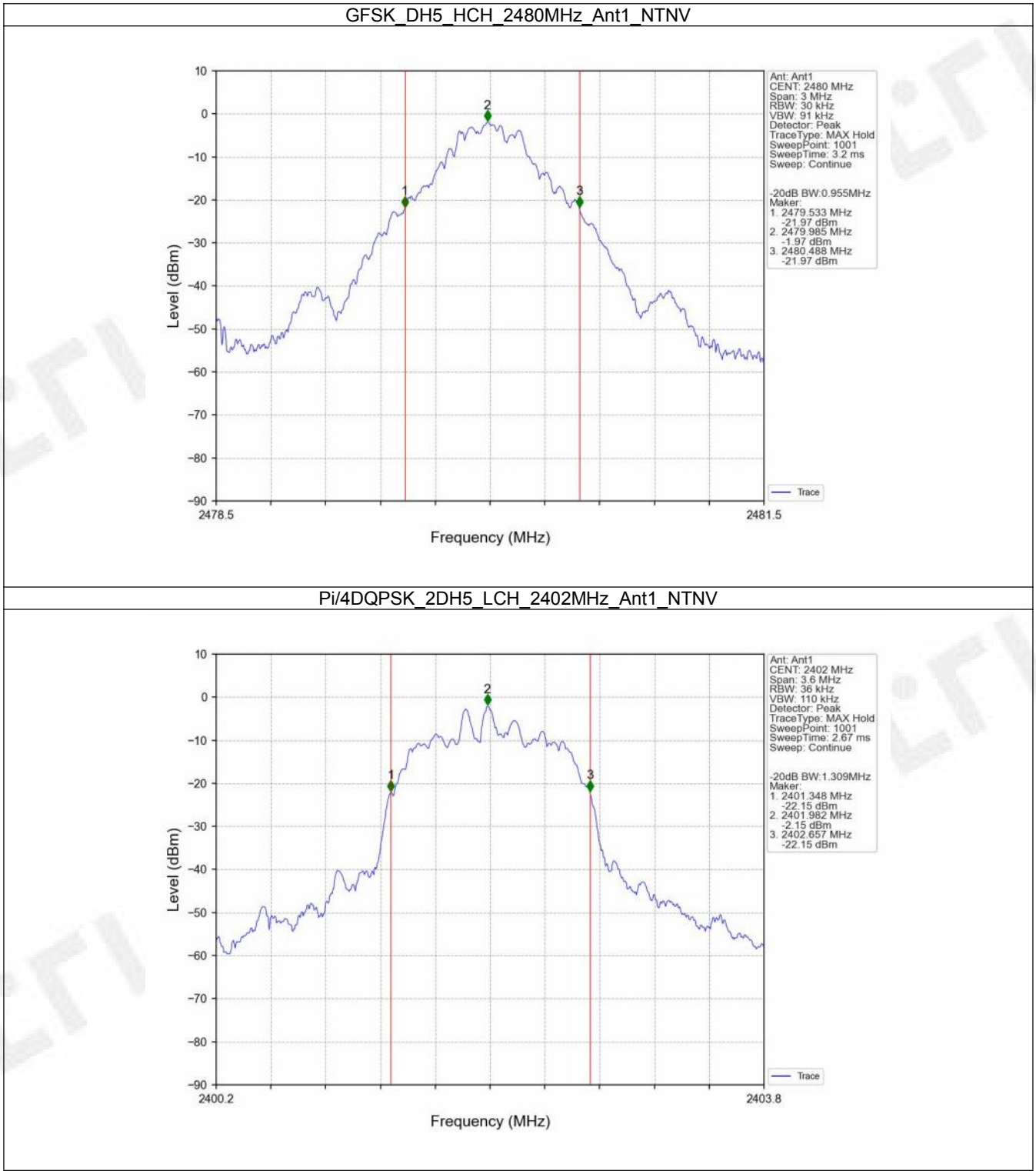


FCCID: 2ASC7FX6X00

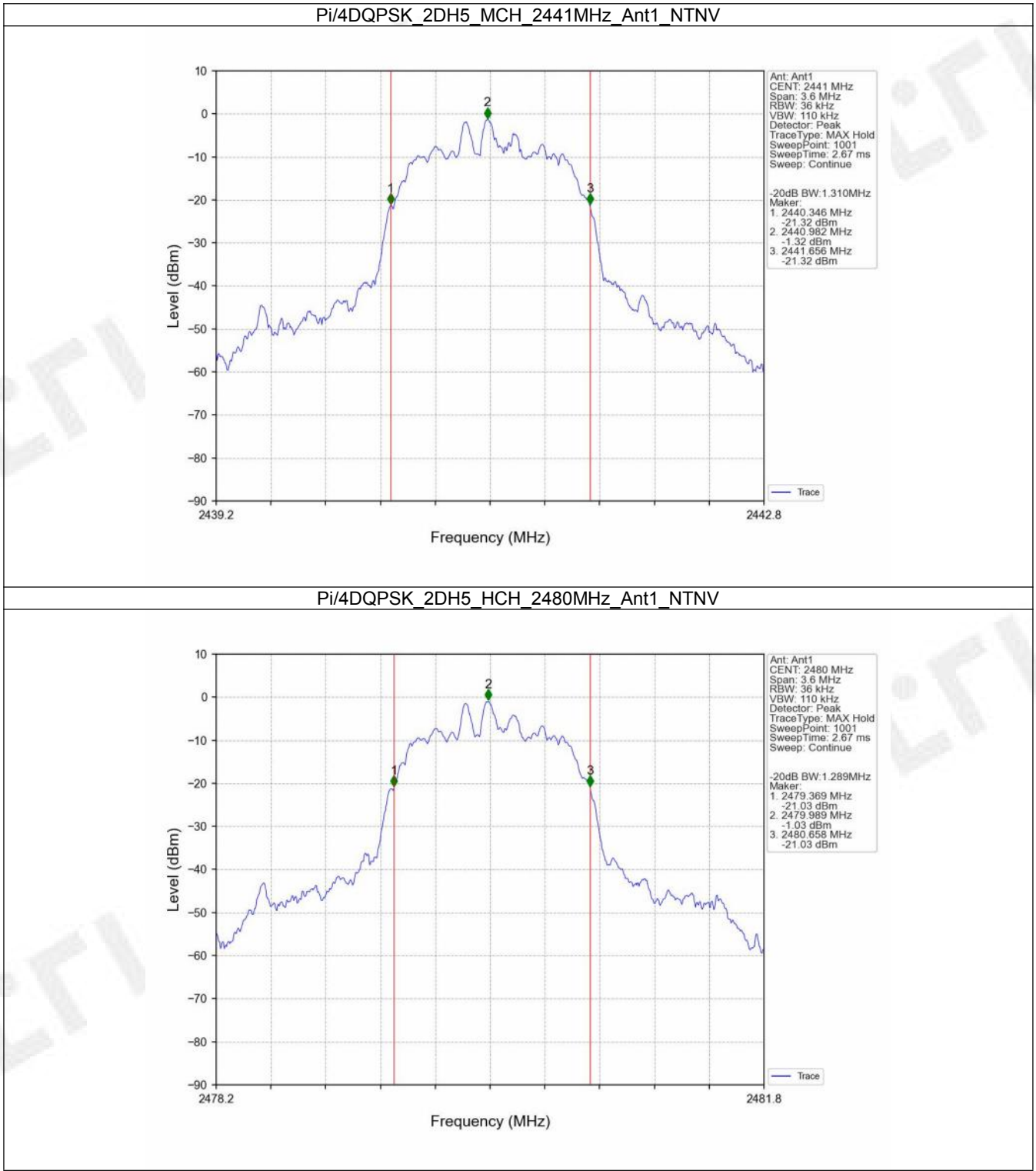
1.2.2 20dB BW



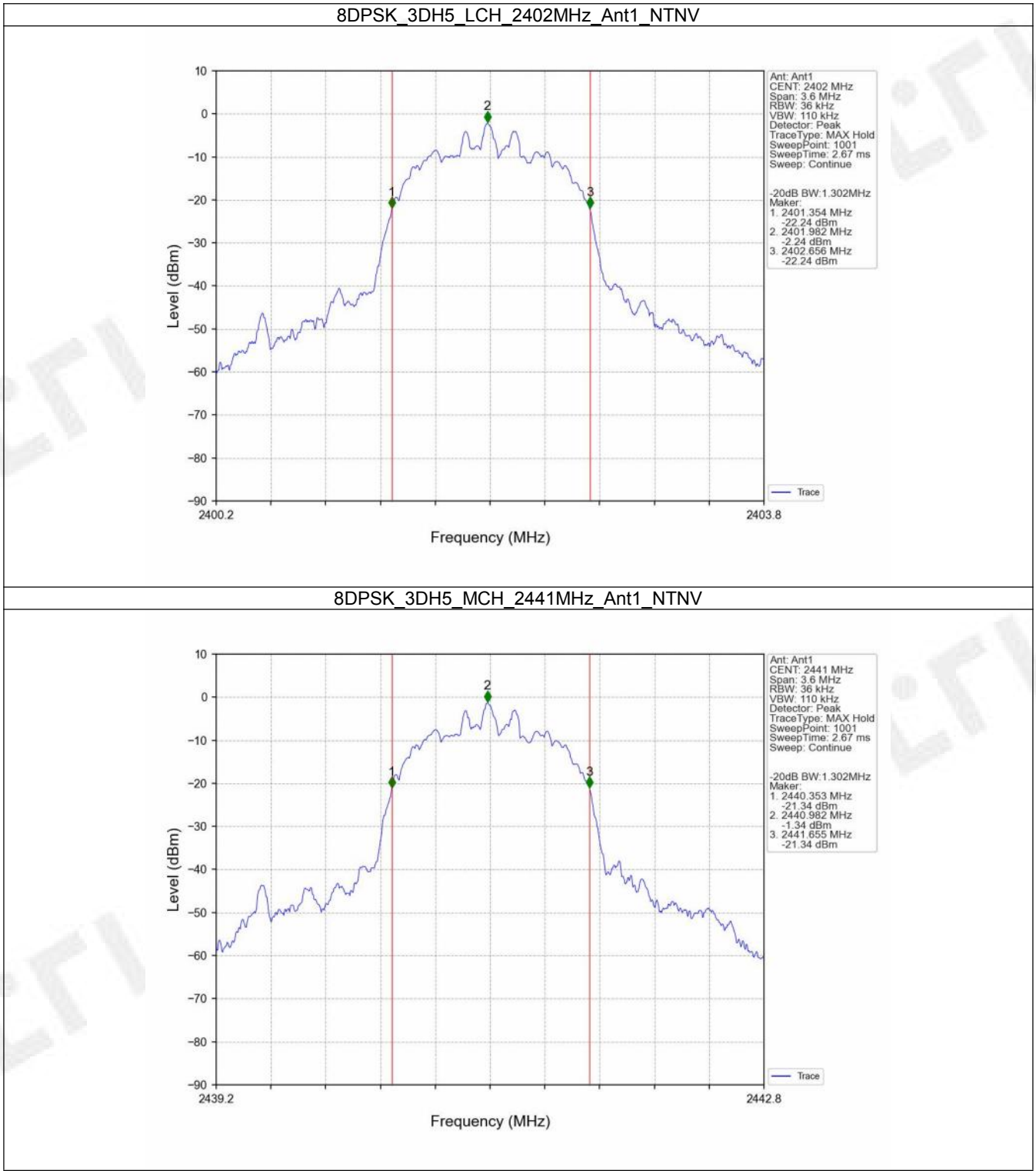
FCCID: 2ASC7FX6X00



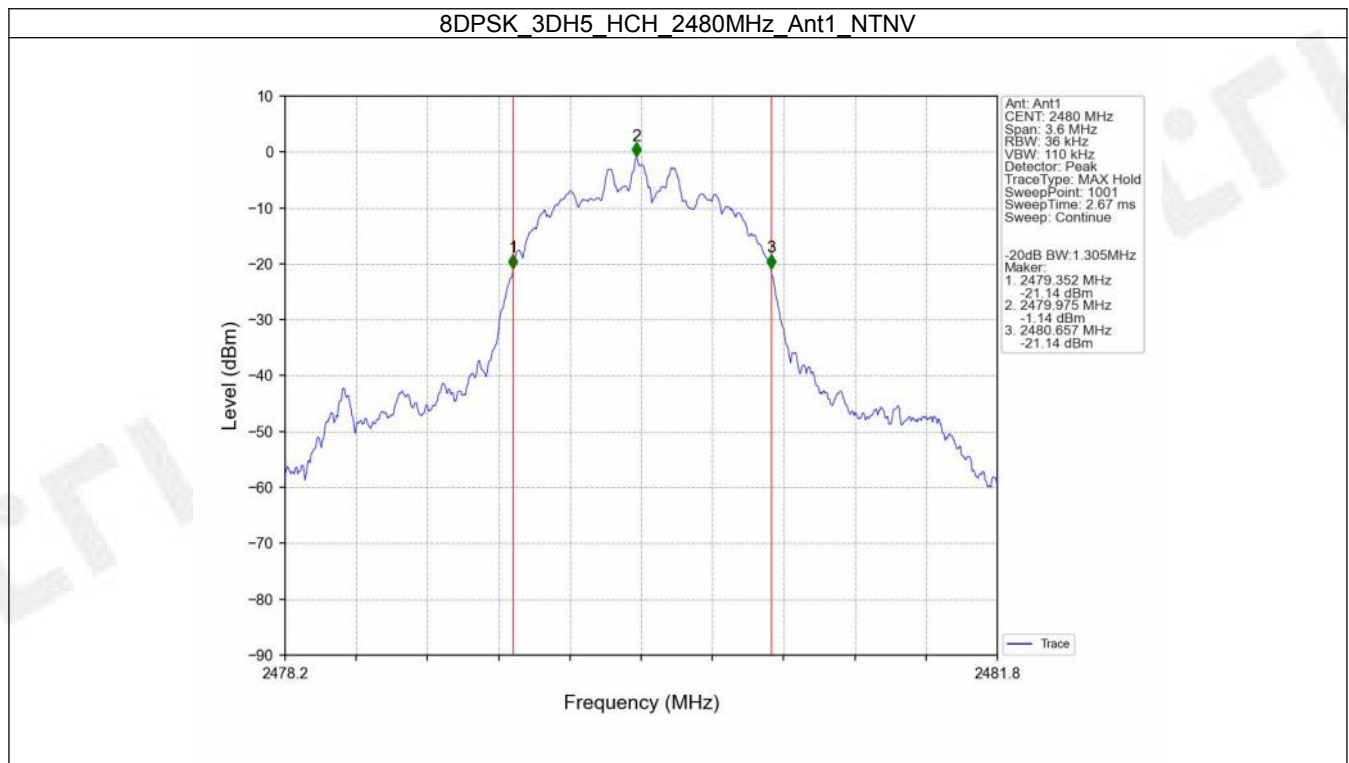
FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

2. Maximum Conducted Output Power

2.1 Test Result

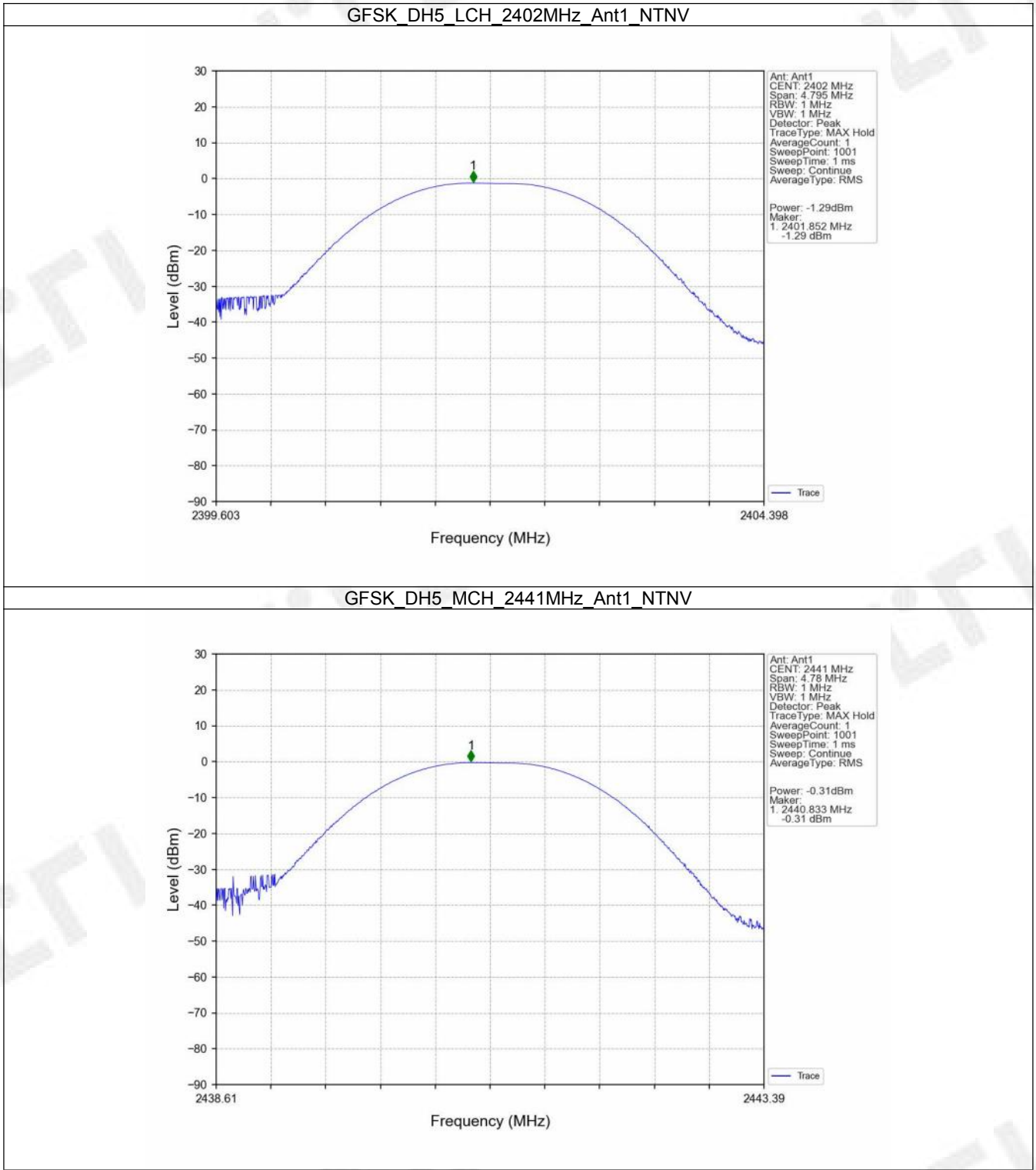
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.29	<=30	Pass
		2441	DH5	-0.31	<=30	Pass
		2480	DH5	0.06	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	0.08	<=20.97	Pass
		2441	2DH5	1.00	<=20.97	Pass
		2480	2DH5	1.34	<=20.97	Pass
8DPSK	SISO	2402	3DH5	0.41	<=20.97	Pass
		2441	3DH5	1.35	<=20.97	Pass
		2480	3DH5	1.66	<=20.97	Pass
Note1: Antenna Gain: Ant1: 2.75dBi;						

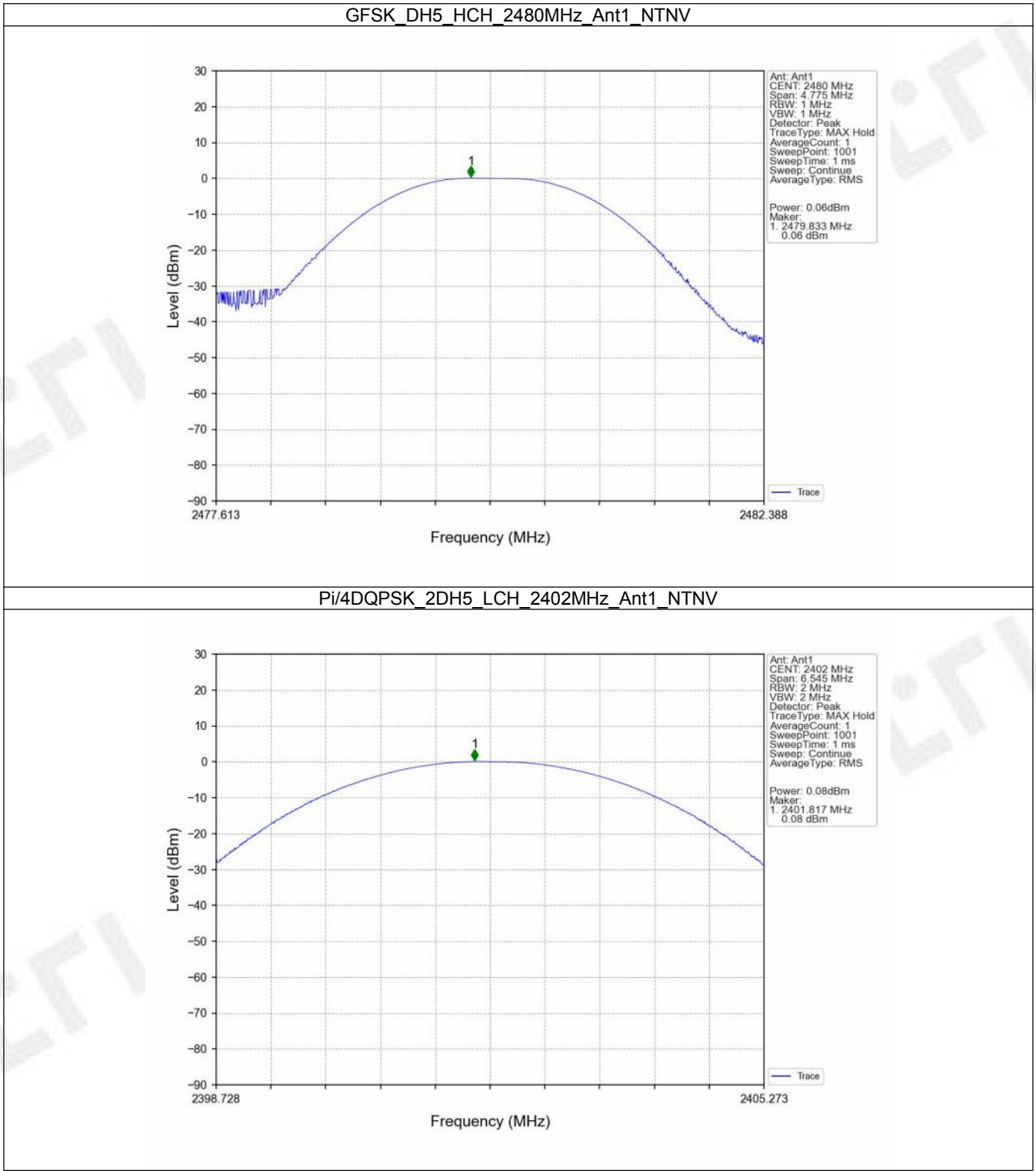
FCCID: 2ASC7FX6X00

2.2 Test Graph

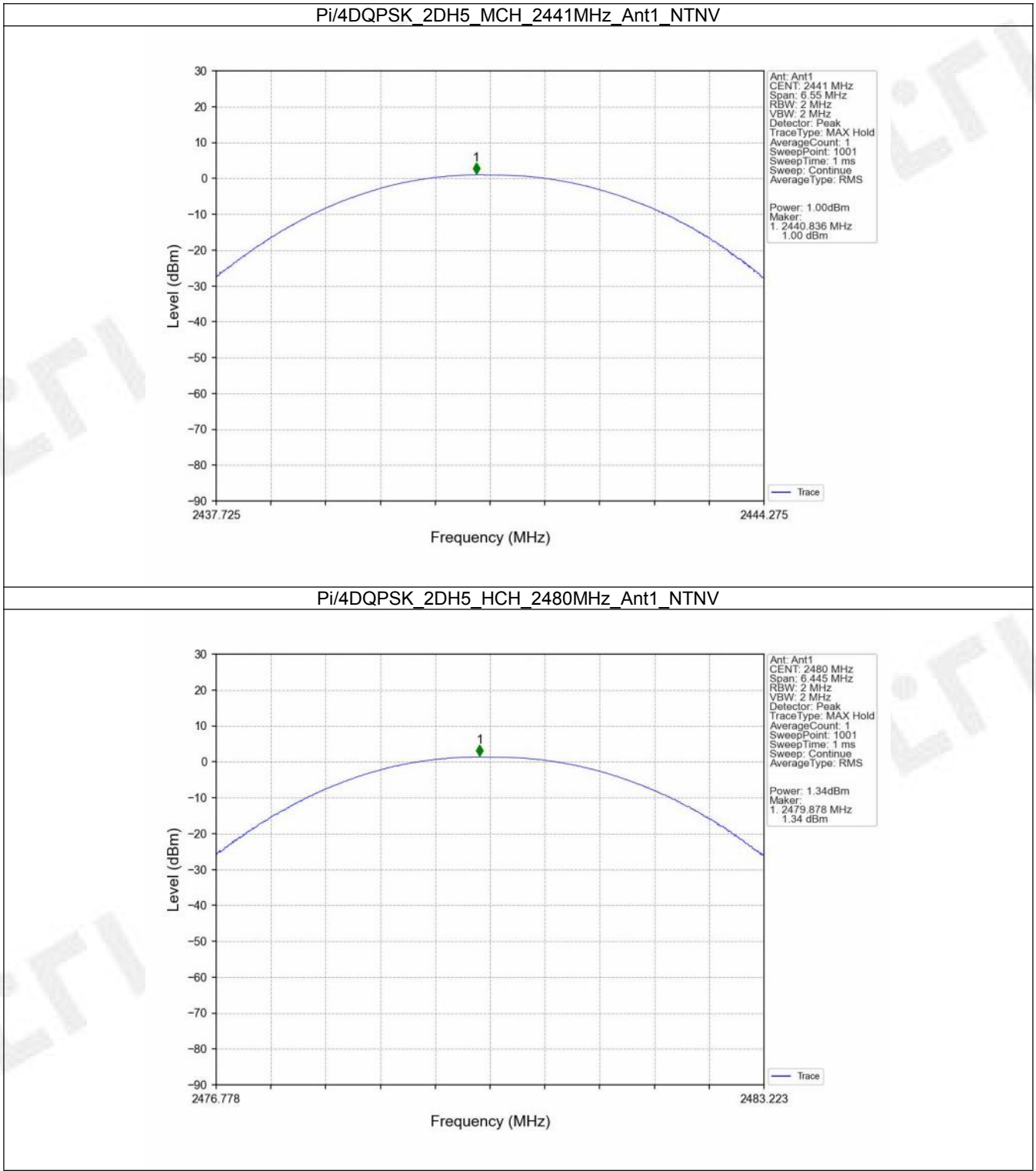
2.2.1 Power



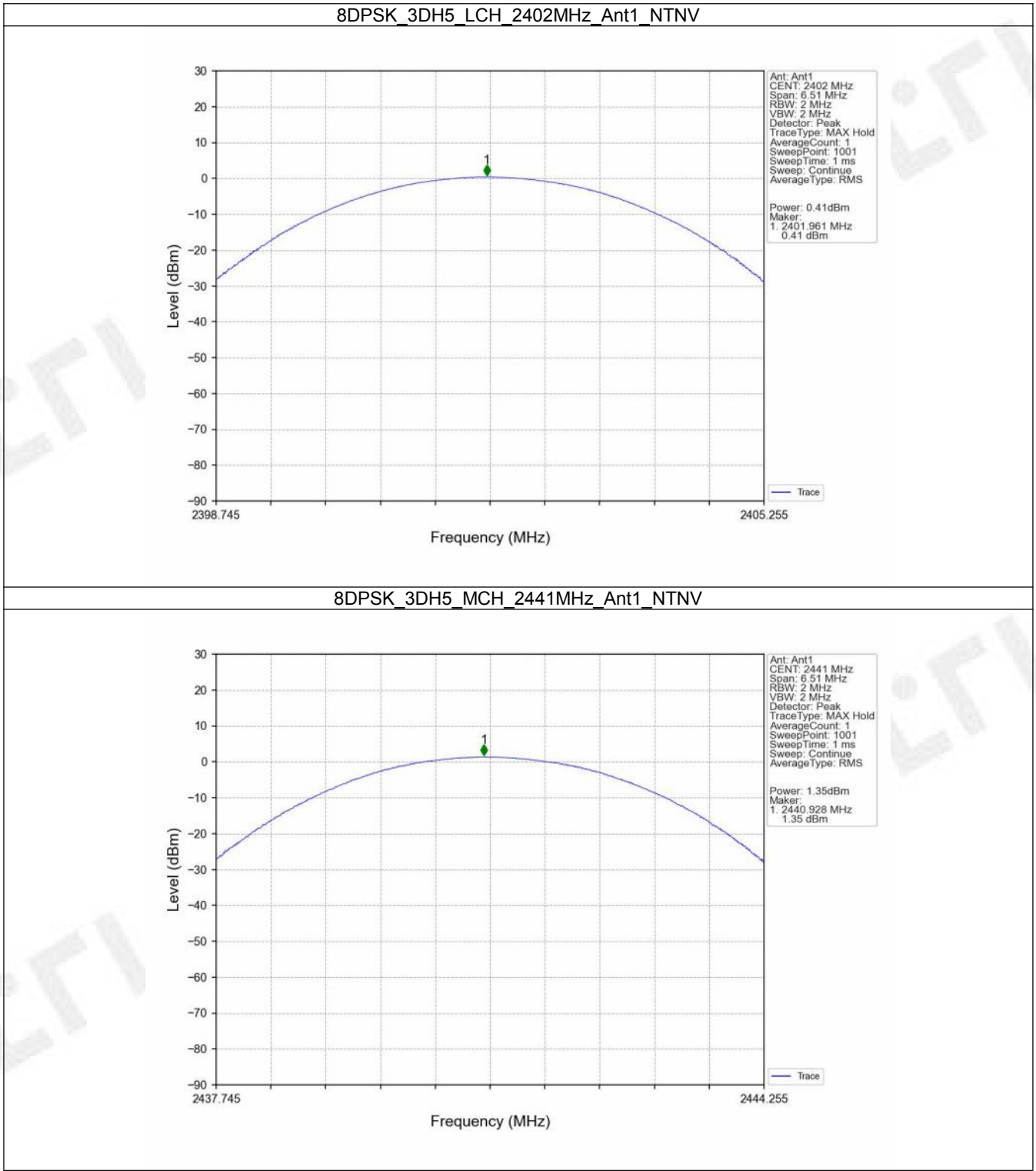
FCCID: 2ASC7FX6X00



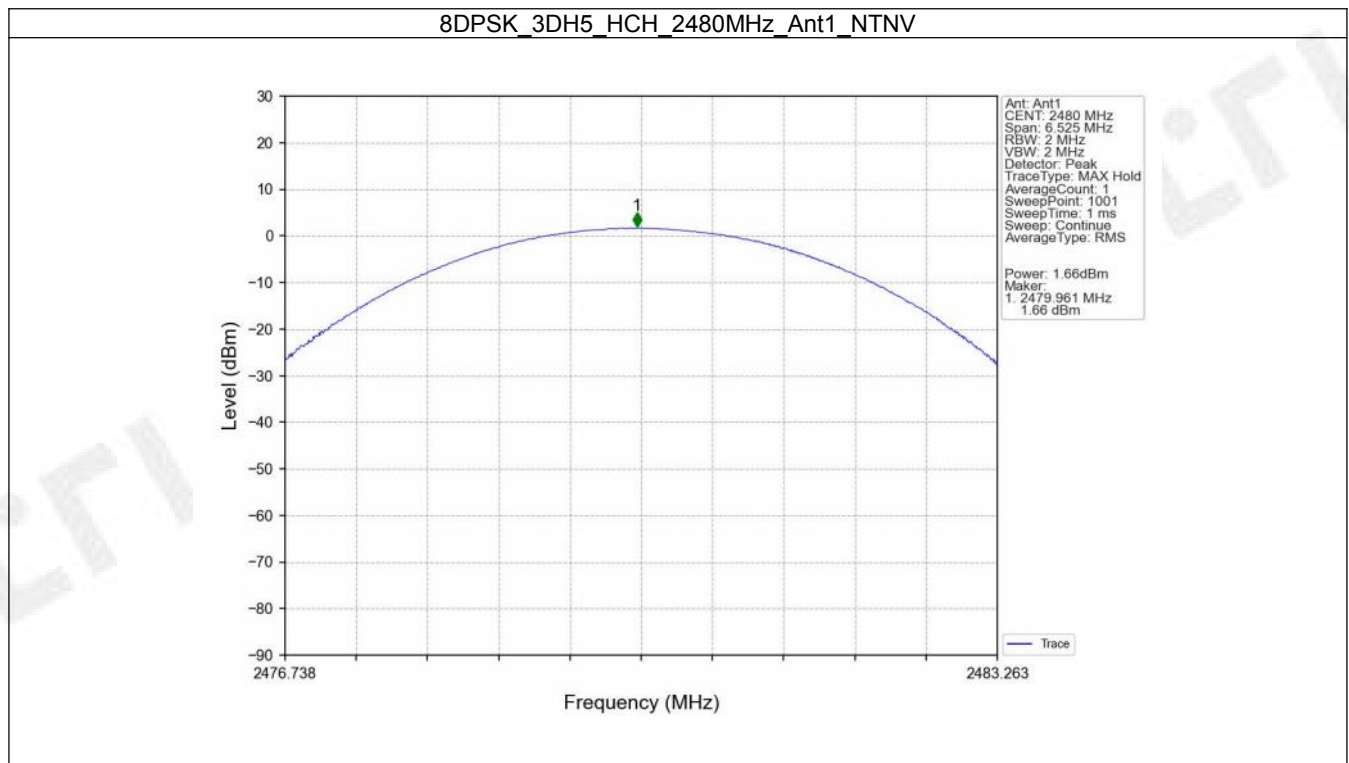
FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

3. Carrier Frequency Separation

3.1 Test Result

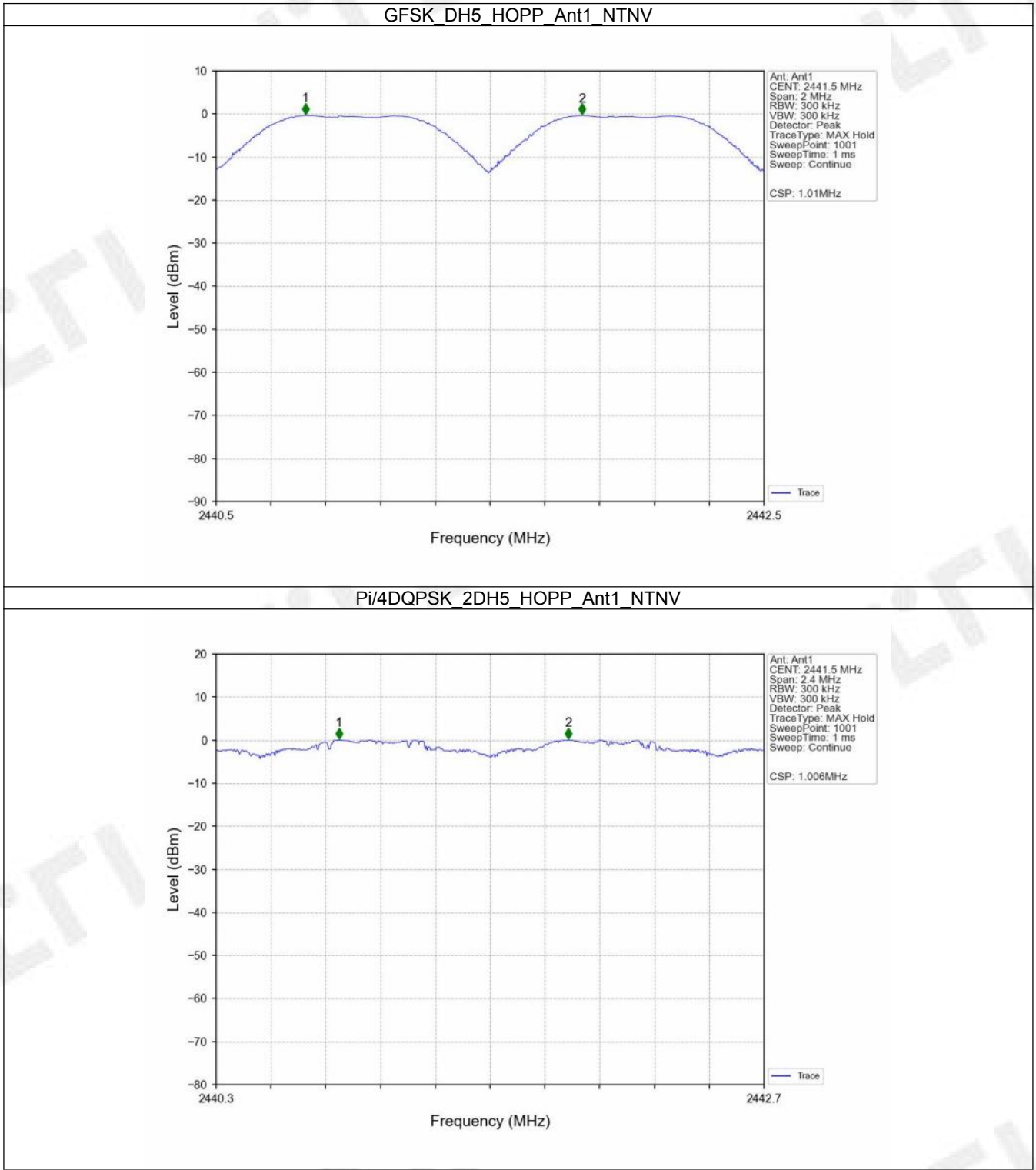
3.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.010	0.959	≥ 0.959	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.006	1.310	≥ 0.873	Pass
8DPSK	SISO	HOPP	3DH5	1.003	1.305	≥ 0.87	Pass

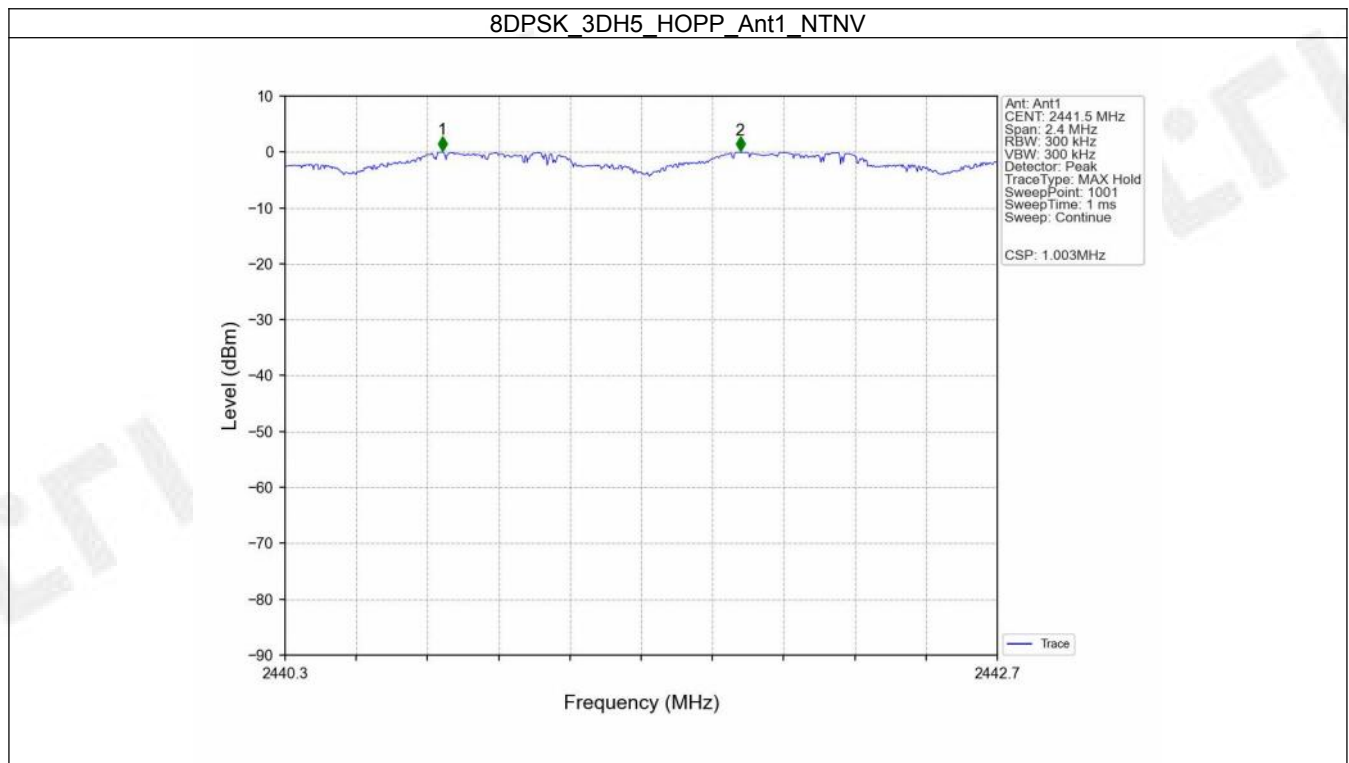
FCCID: 2ASC7FX6X00

3.2 Test Graph

3.2.1 Ant1



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

4. Number of Hopping Frequencies

4.1 Test Result

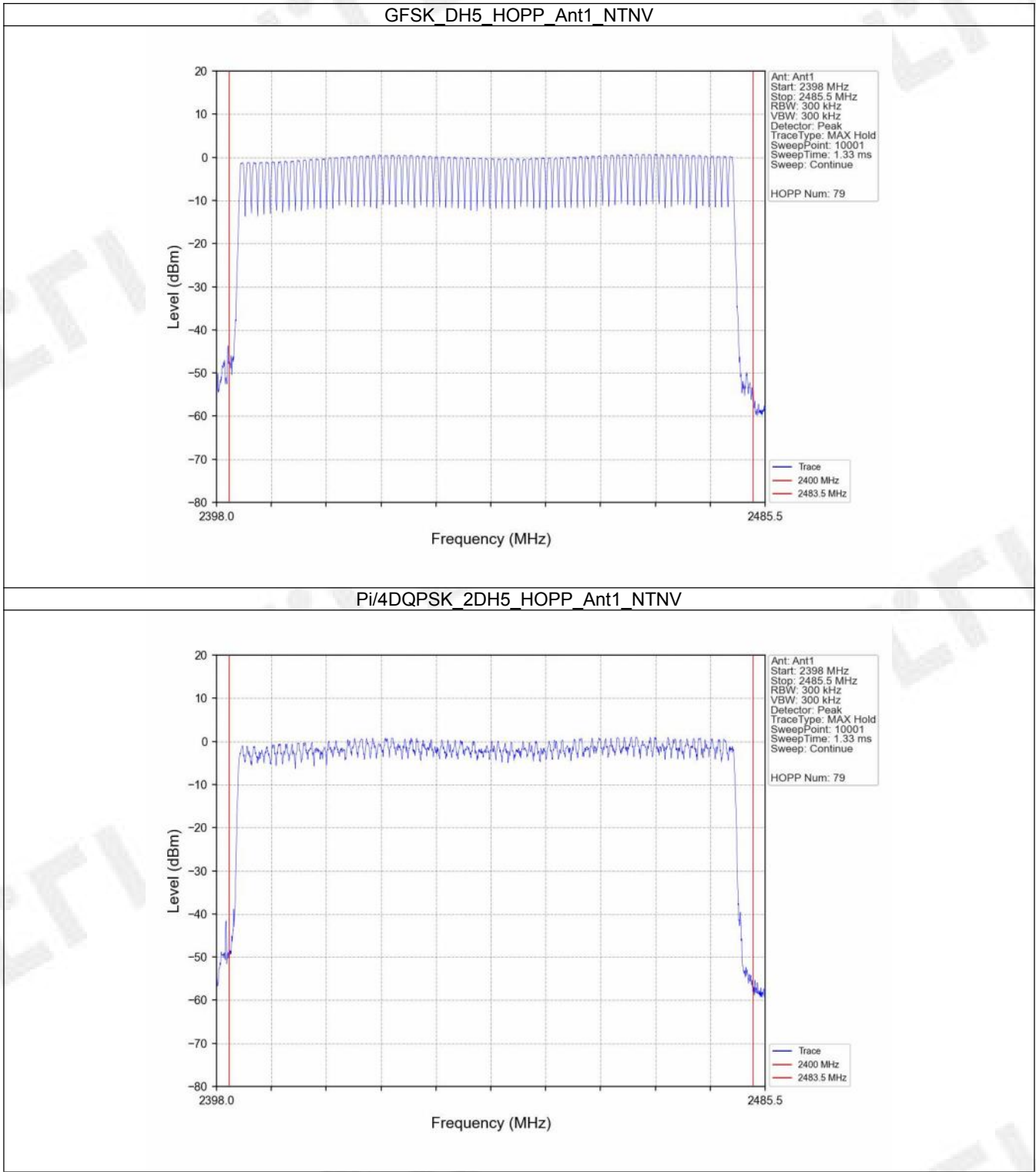
4.1.1 HoppNum

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

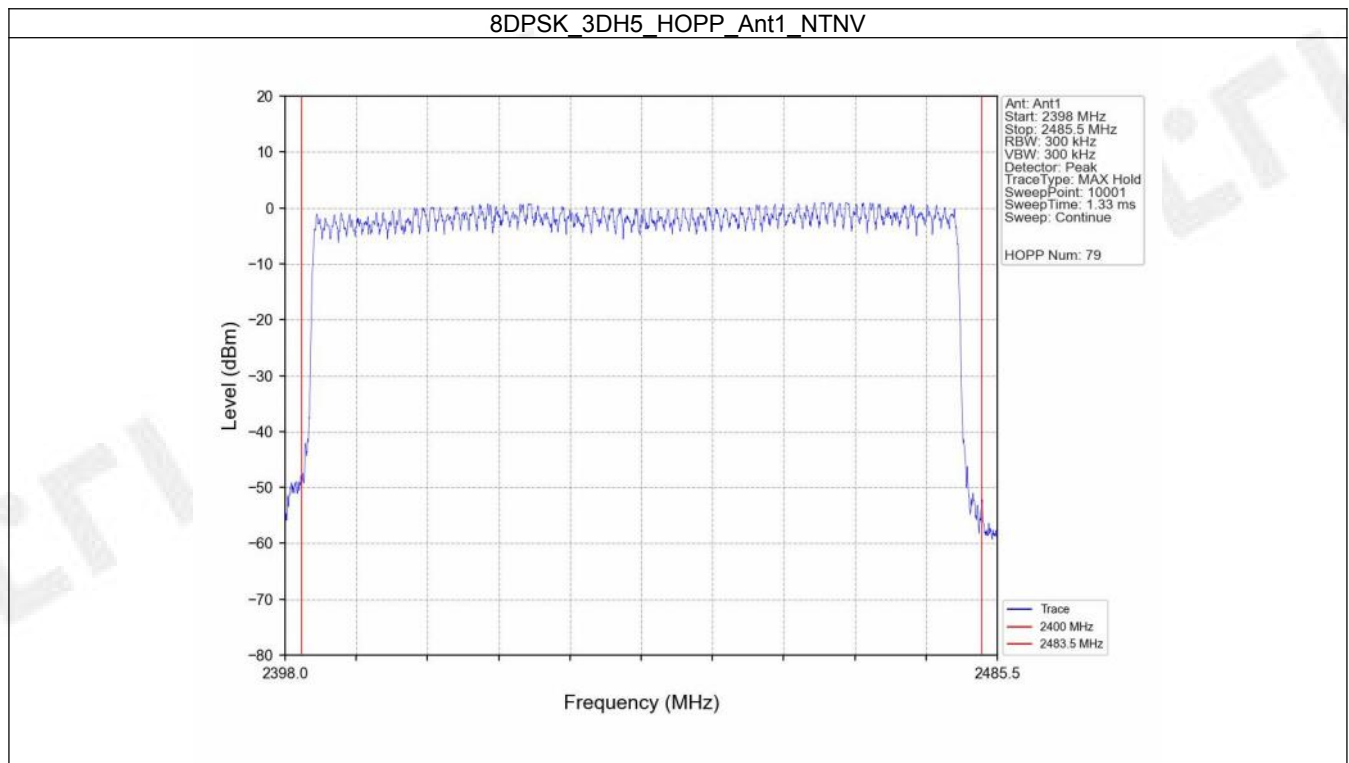
FCCID: 2ASC7FX6X00

4.2 Test Graph

4.2.1 HoppNum



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

5. Time of Occupancy (Dwell Time)

5.1 Test Result

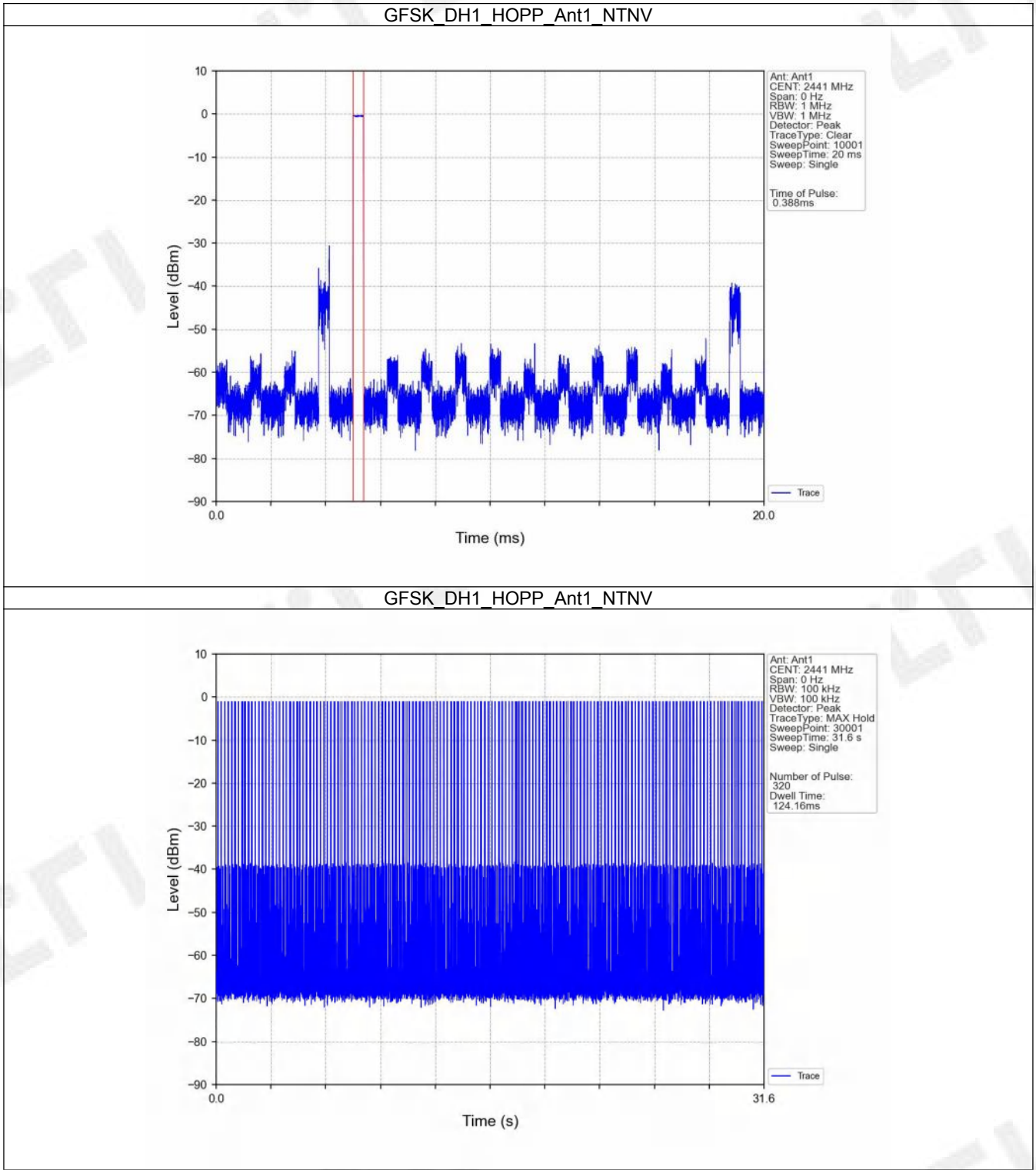
5.1.1 Ant1

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	0.388	31.600	320	124.160	<=400	Pass
			DH3	1.648	31.600	156	257.088	<=400	Pass
			DH5	2.892	31.600	113	326.796	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.396	31.600	319	126.324	<=400	Pass
			2DH3	1.648	31.600	170	280.160	<=400	Pass
			2DH5	2.896	31.600	107	309.872	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.394	31.600	318	125.292	<=400	Pass
			3DH3	1.646	31.600	155	255.130	<=400	Pass
			3DH5	2.898	31.600	106	307.188	<=400	Pass

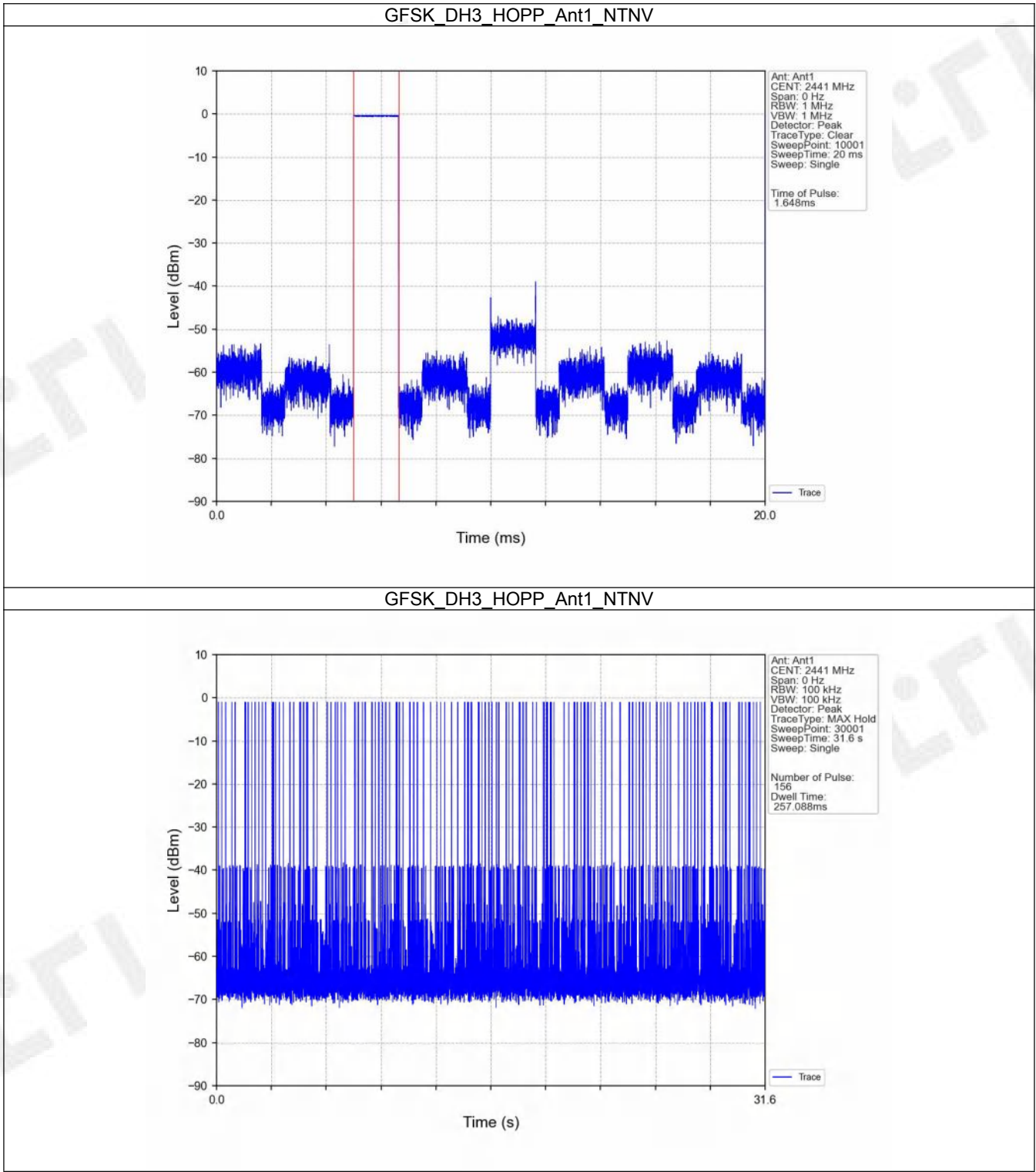
FCCID: 2ASC7FX6X00

5.2 Test Graph

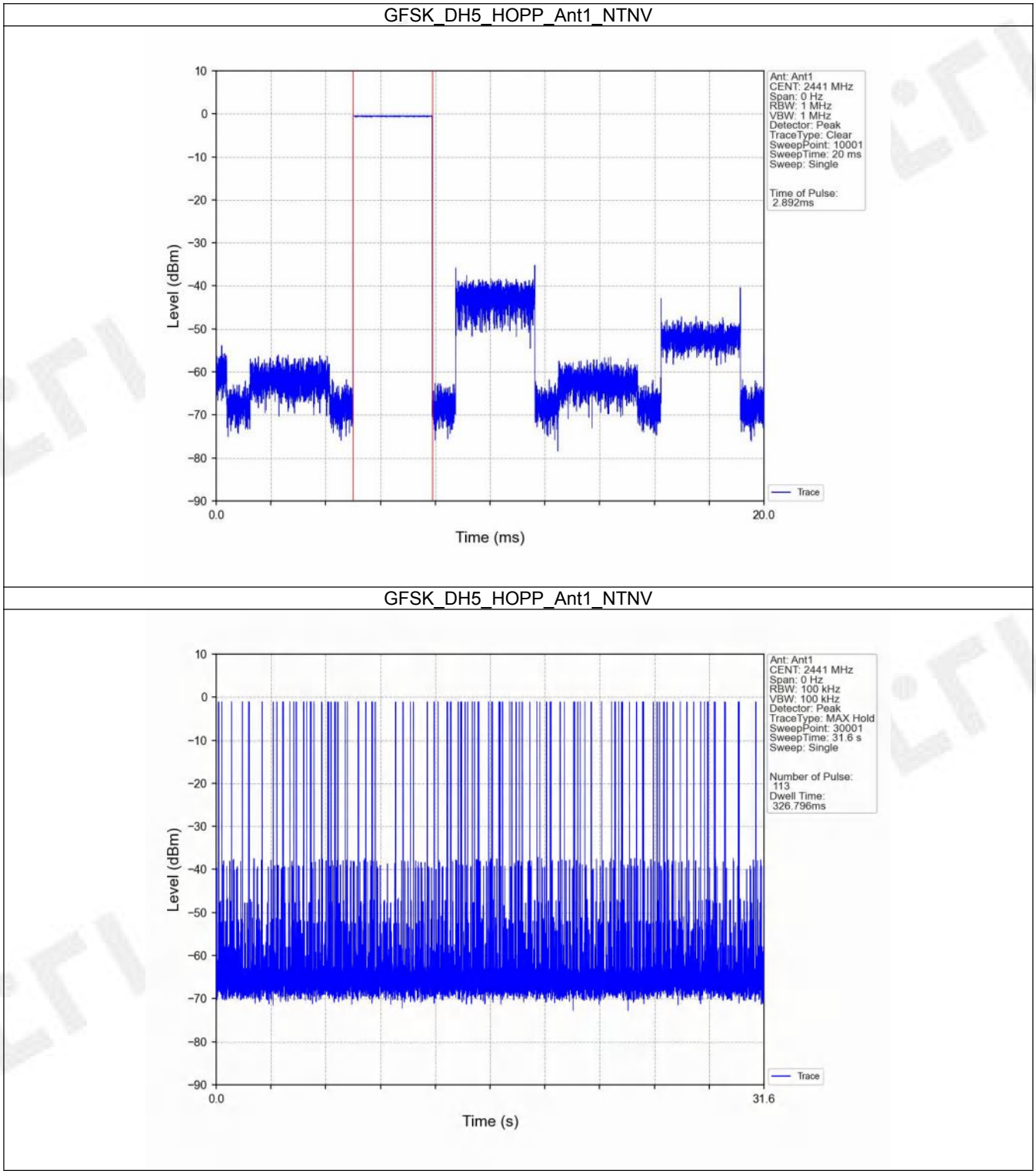
5.2.1 Ant1



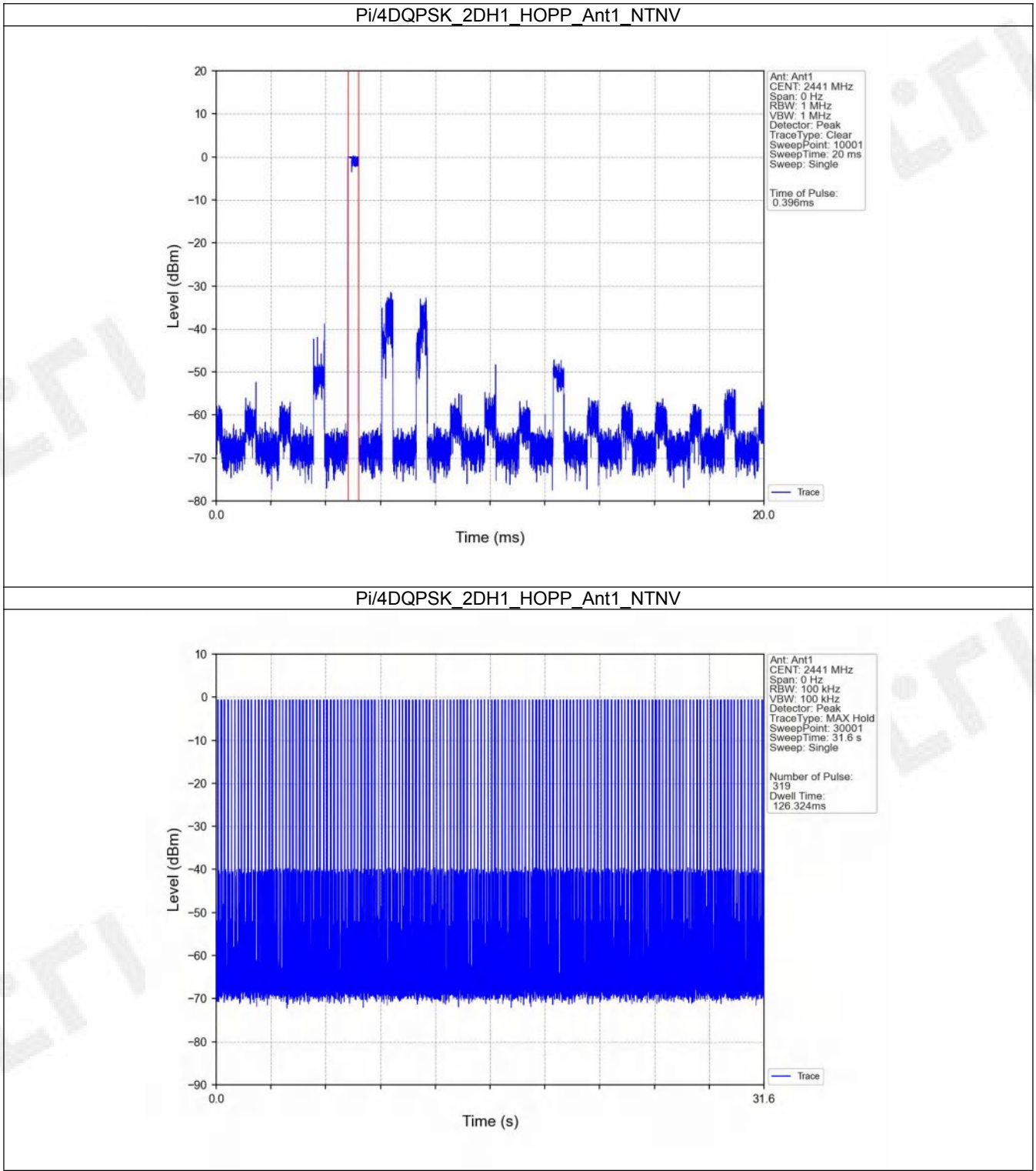
FCCID: 2ASC7FX6X00



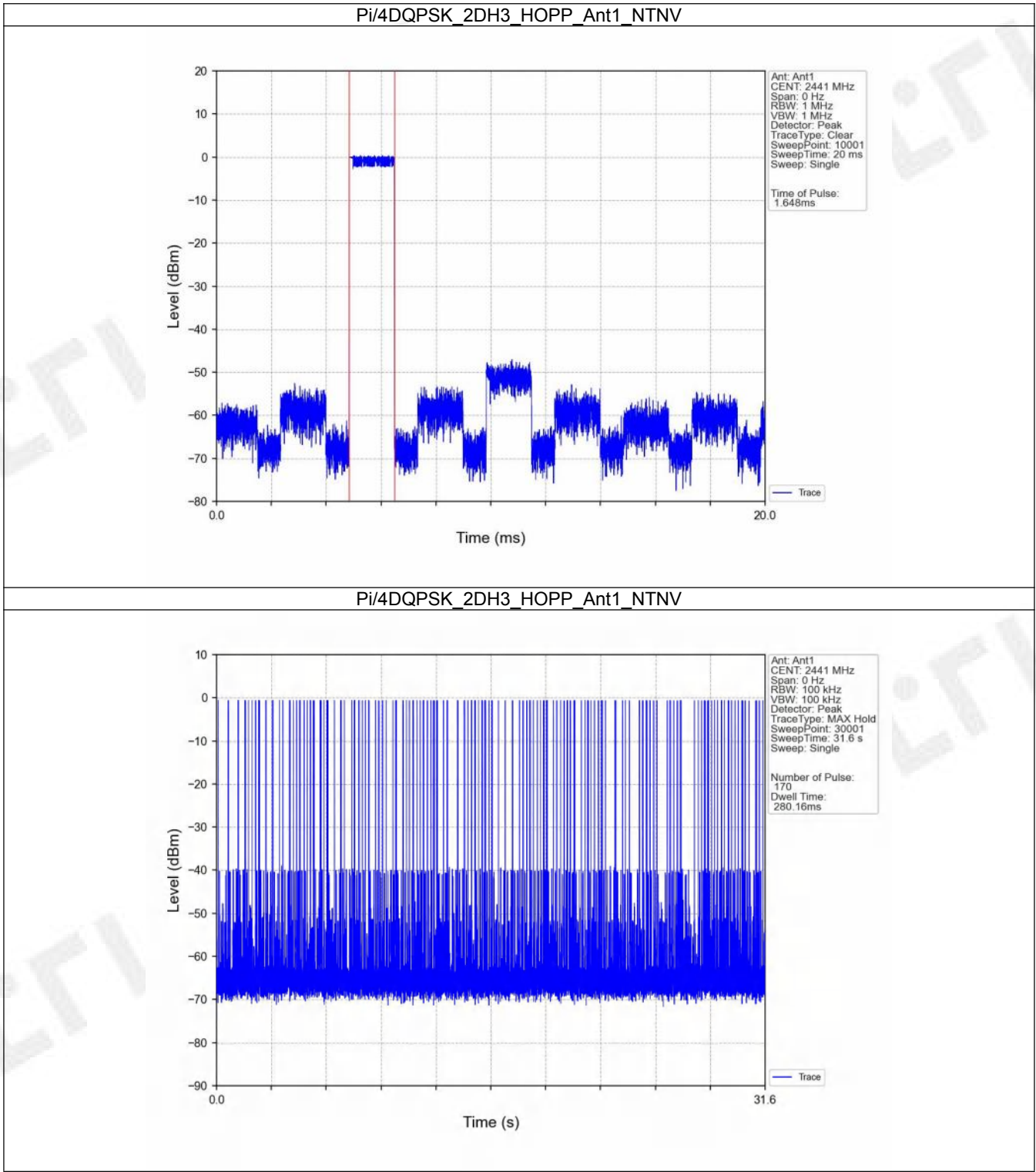
FCCID: 2ASC7FX6X00



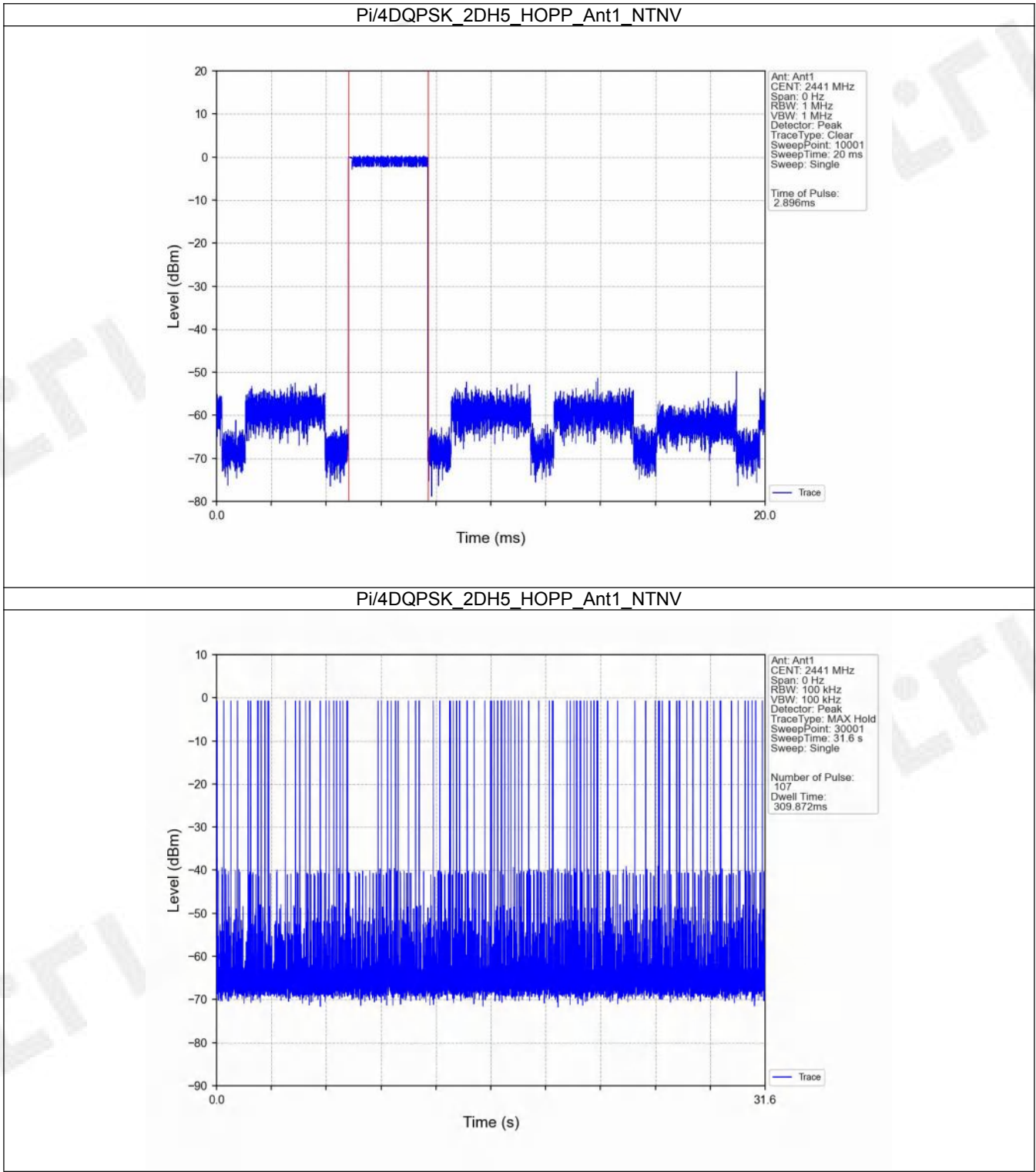
FCCID: 2ASC7FX6X00



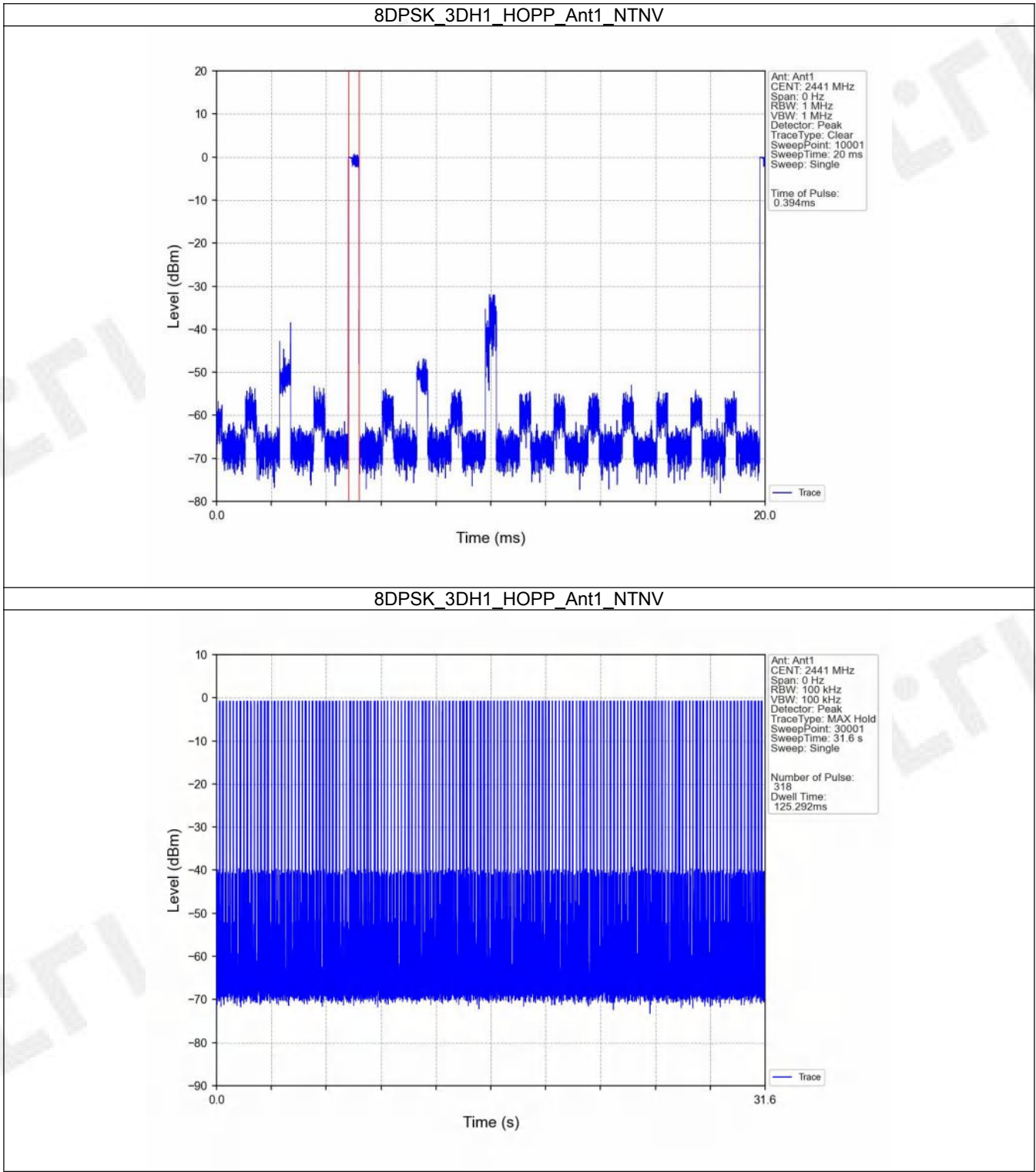
FCCID: 2ASC7FX6X00



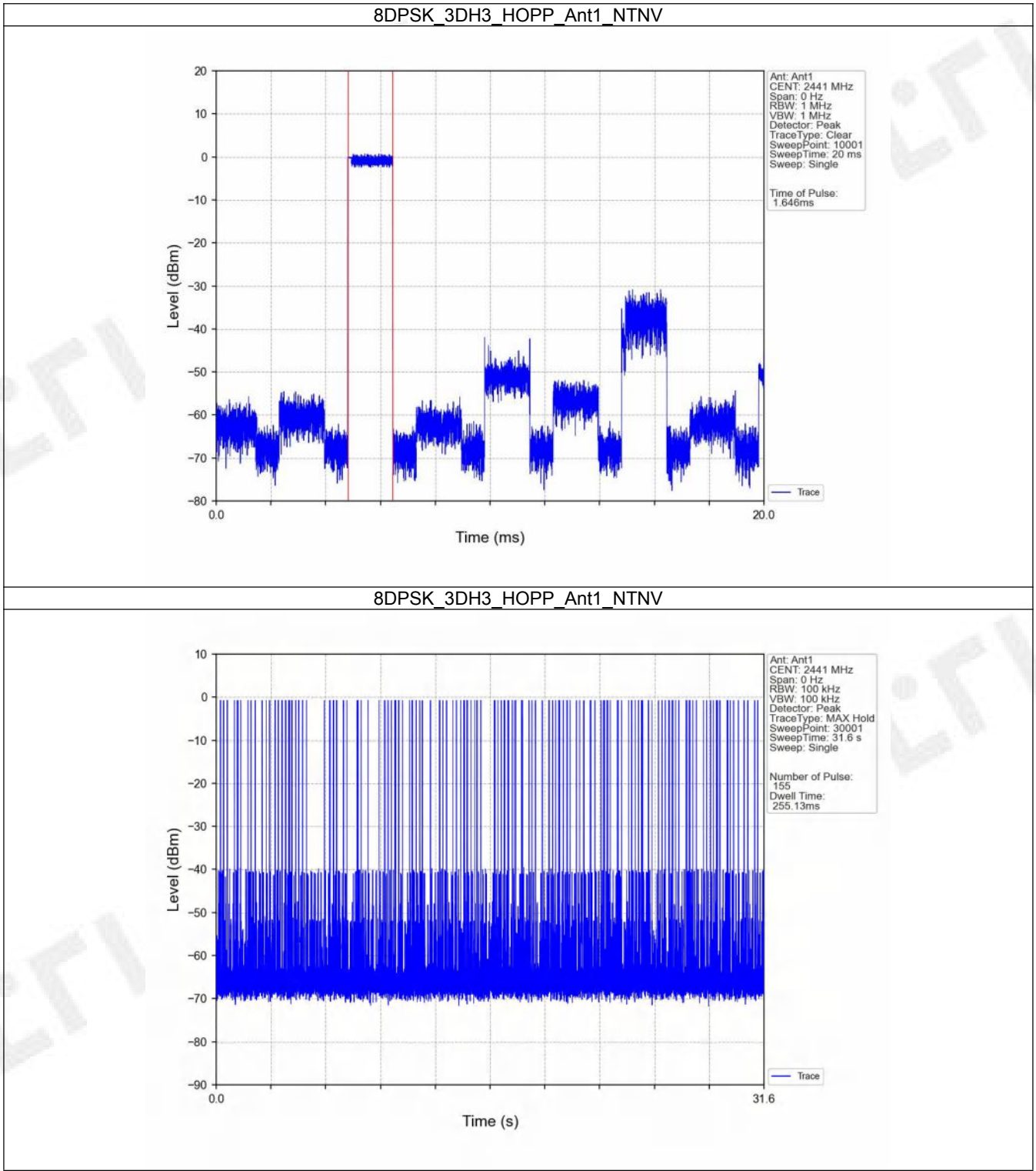
FCCID: 2ASC7FX6X00



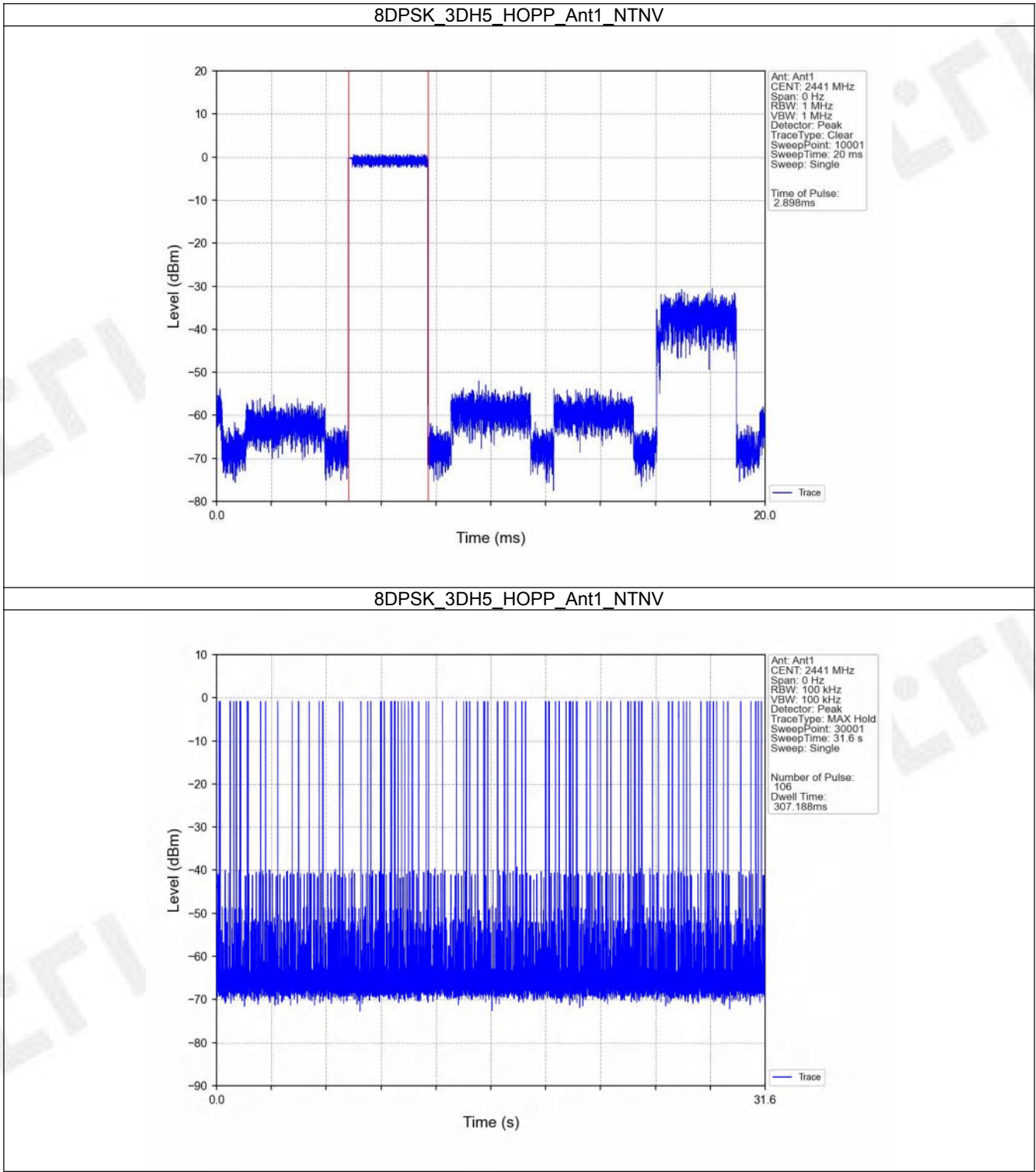
FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

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	-1.49
		2441	DH5	1	-0.54
		2480	DH5	1	-0.27
Pi/4DQPSK	SISO	2402	2DH5	1	-0.98
		2441	2DH5	1	-0.02
		2480	2DH5	1	0.35
8DPSK	SISO	2402	3DH5	1	-1.11
		2441	3DH5	1	-0.15
		2480	3DH5	1	0.26

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

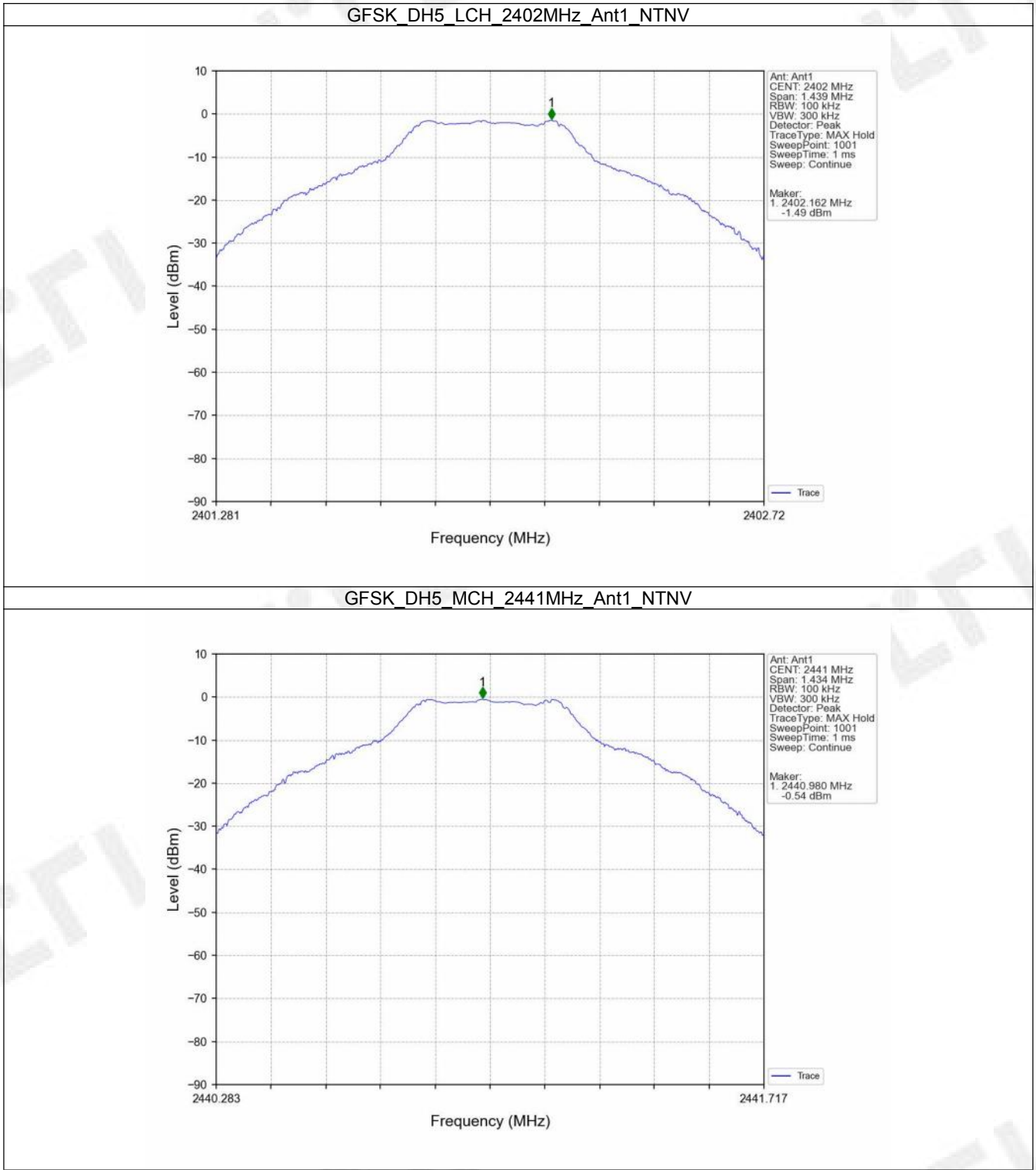
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-0.27	-20.27	Pass
		2441	DH5	1	-0.27	-20.27	Pass
		2480	DH5	1	-0.27	-20.27	Pass
		HOPP	DH5	1	-0.27	-20.27	Pass
					-0.27	-20.27	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	0.35	-19.65	Pass
		2441	2DH5	1	0.35	-19.65	Pass
		2480	2DH5	1	0.35	-19.65	Pass
		HOPP	2DH5	1	0.35	-19.65	Pass
					0.35	-19.65	Pass
8DPSK	SISO	2402	3DH5	1	0.26	-19.74	Pass
		2441	3DH5	1	0.26	-19.74	Pass
		2480	3DH5	1	0.26	-19.74	Pass
		HOPP	3DH5	1	0.26	-19.74	Pass
					0.26	-19.74	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.

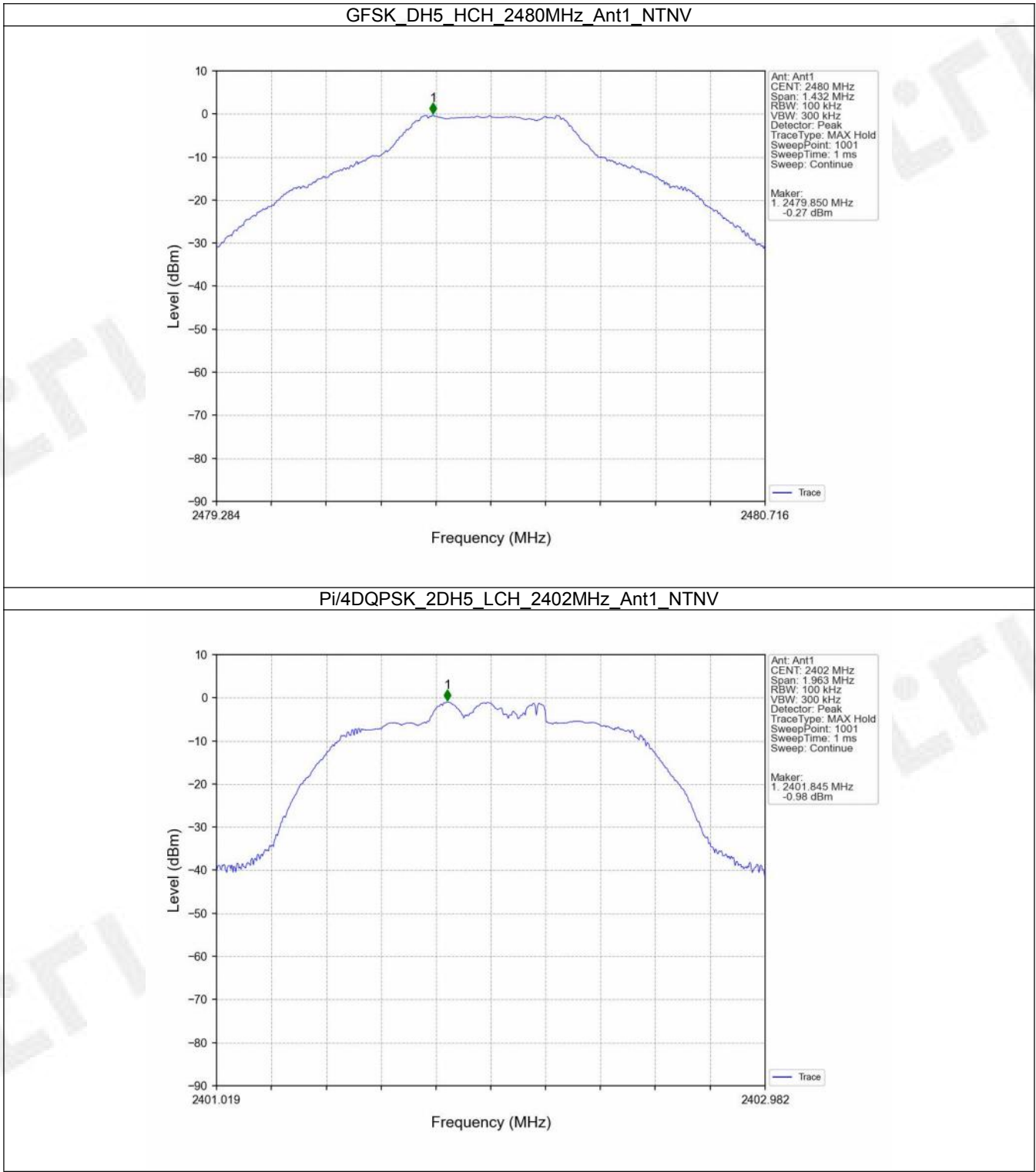
FCCID: 2ASC7FX6X00

6.2 Test Graph

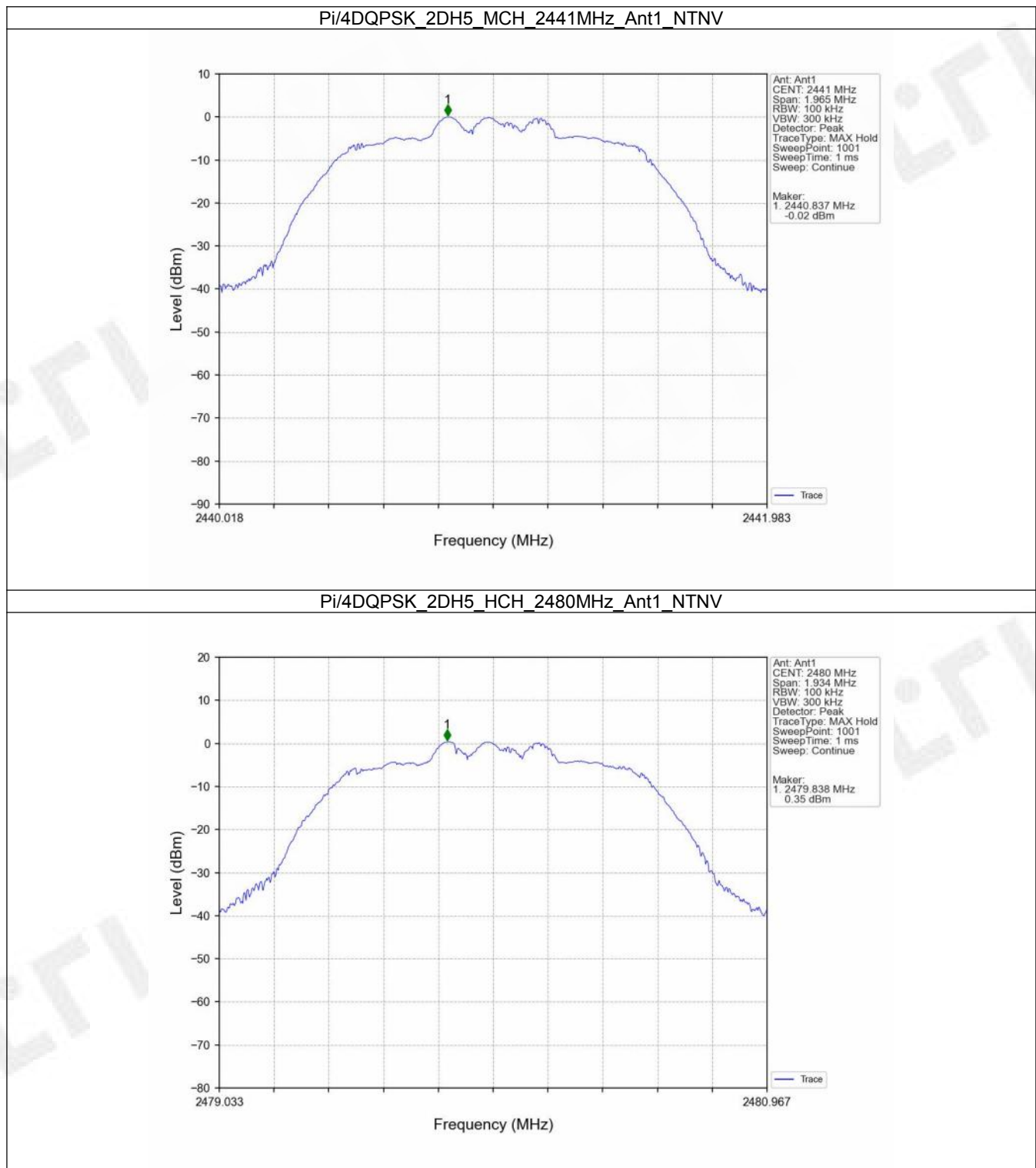
6.2.1 Ref



FCCID: 2ASC7FX6X00

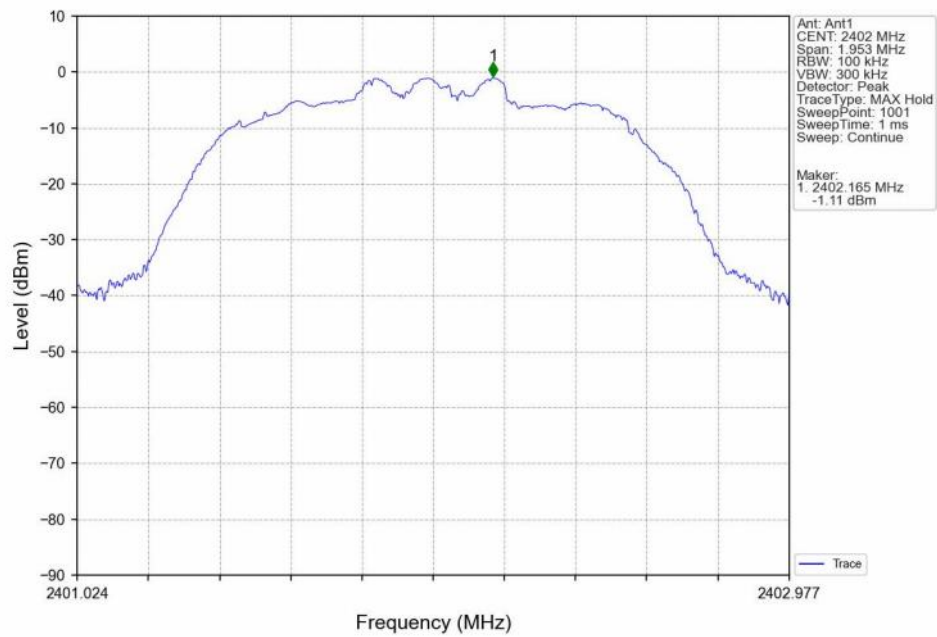


FCCID: 2ASC7FX6X00

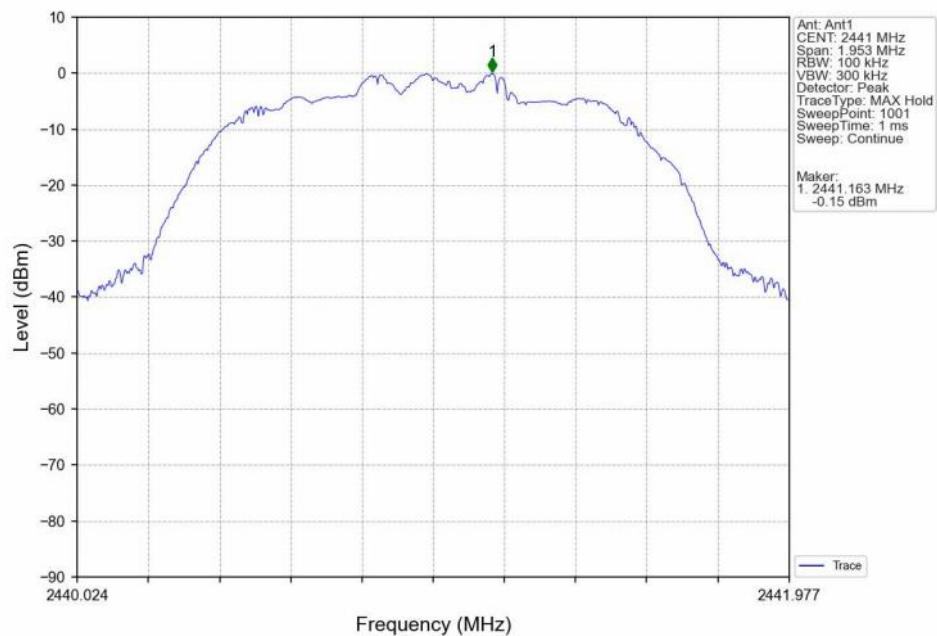


FCCID: 2ASC7FX6X00

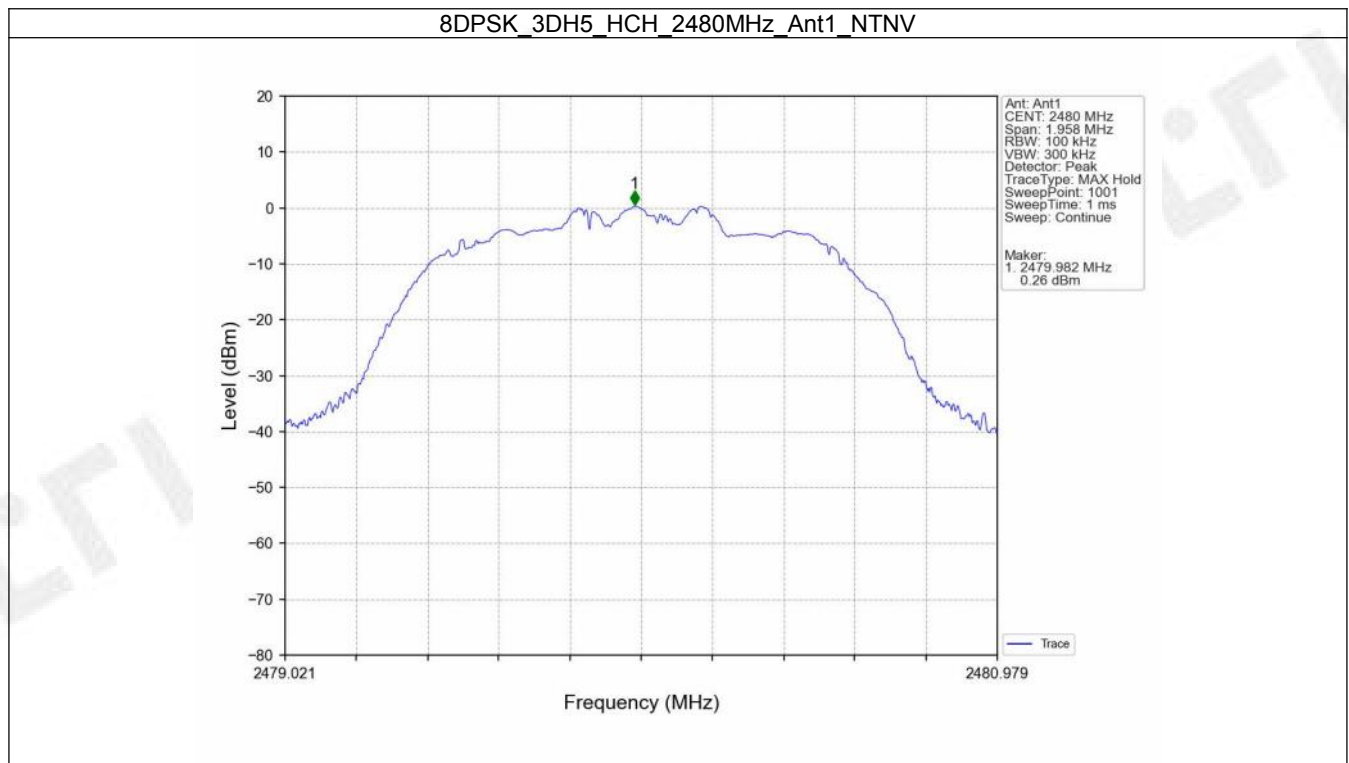
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

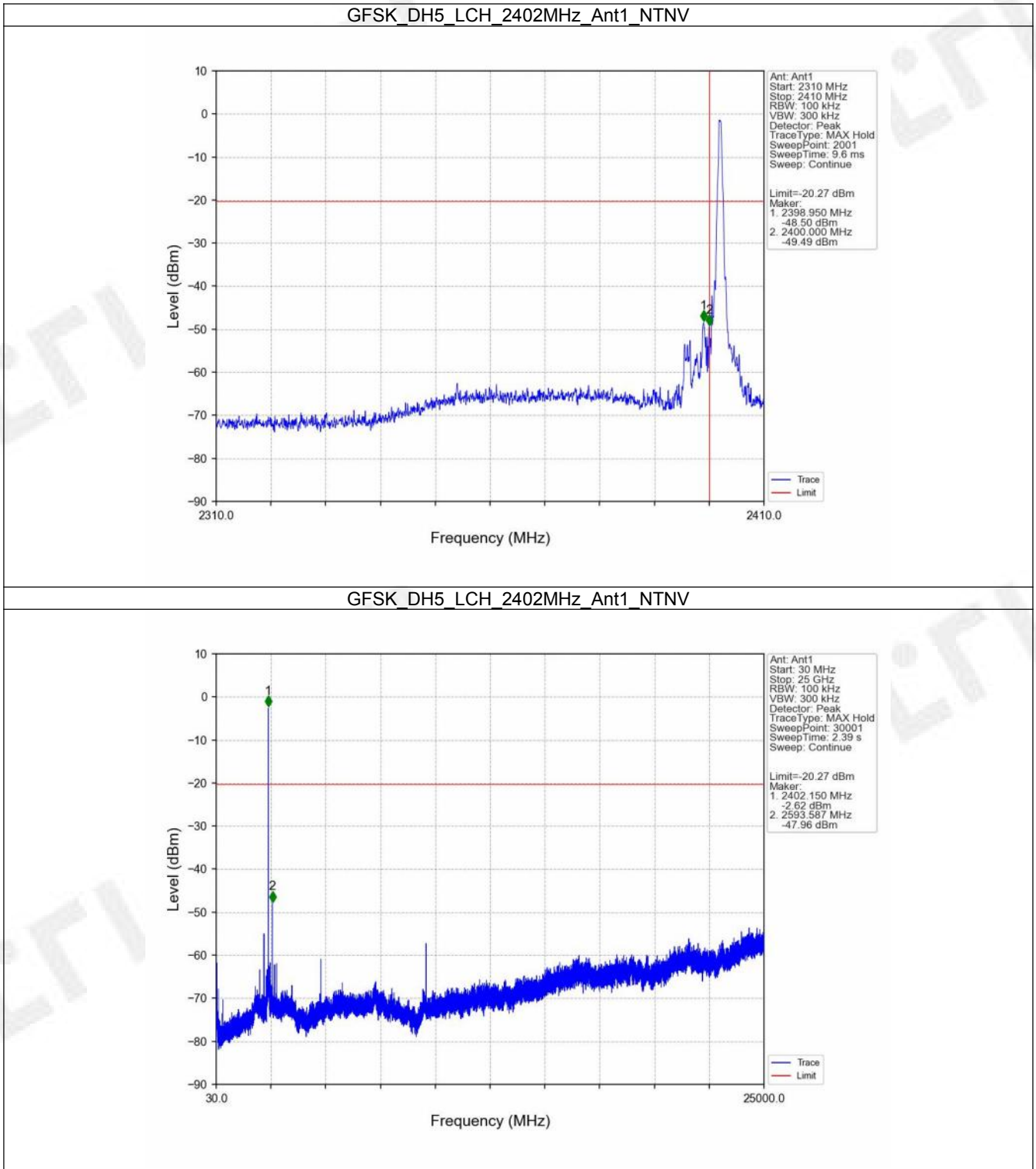


FCCID: 2ASC7FX6X00

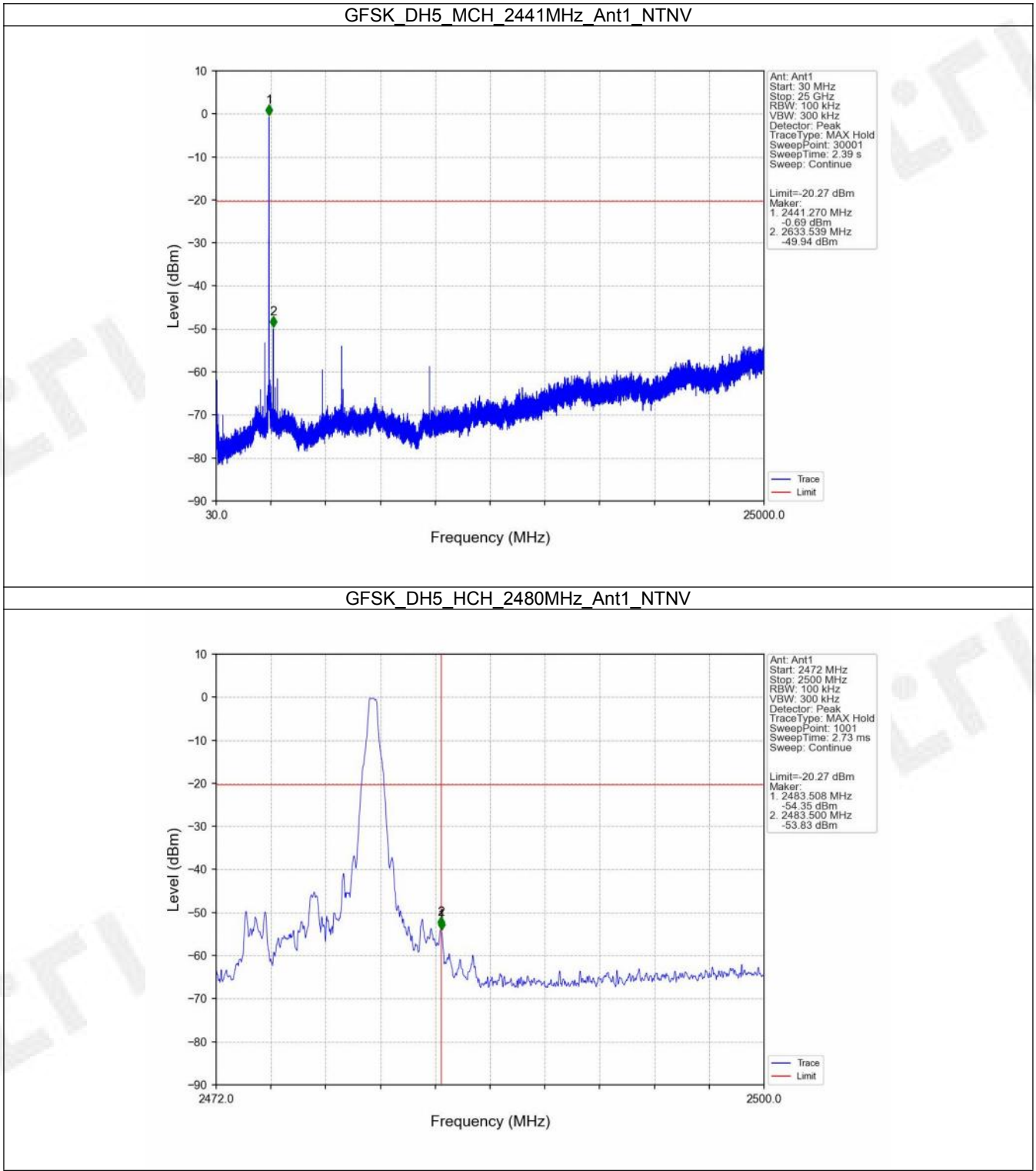


FCCID: 2ASC7FX6X00

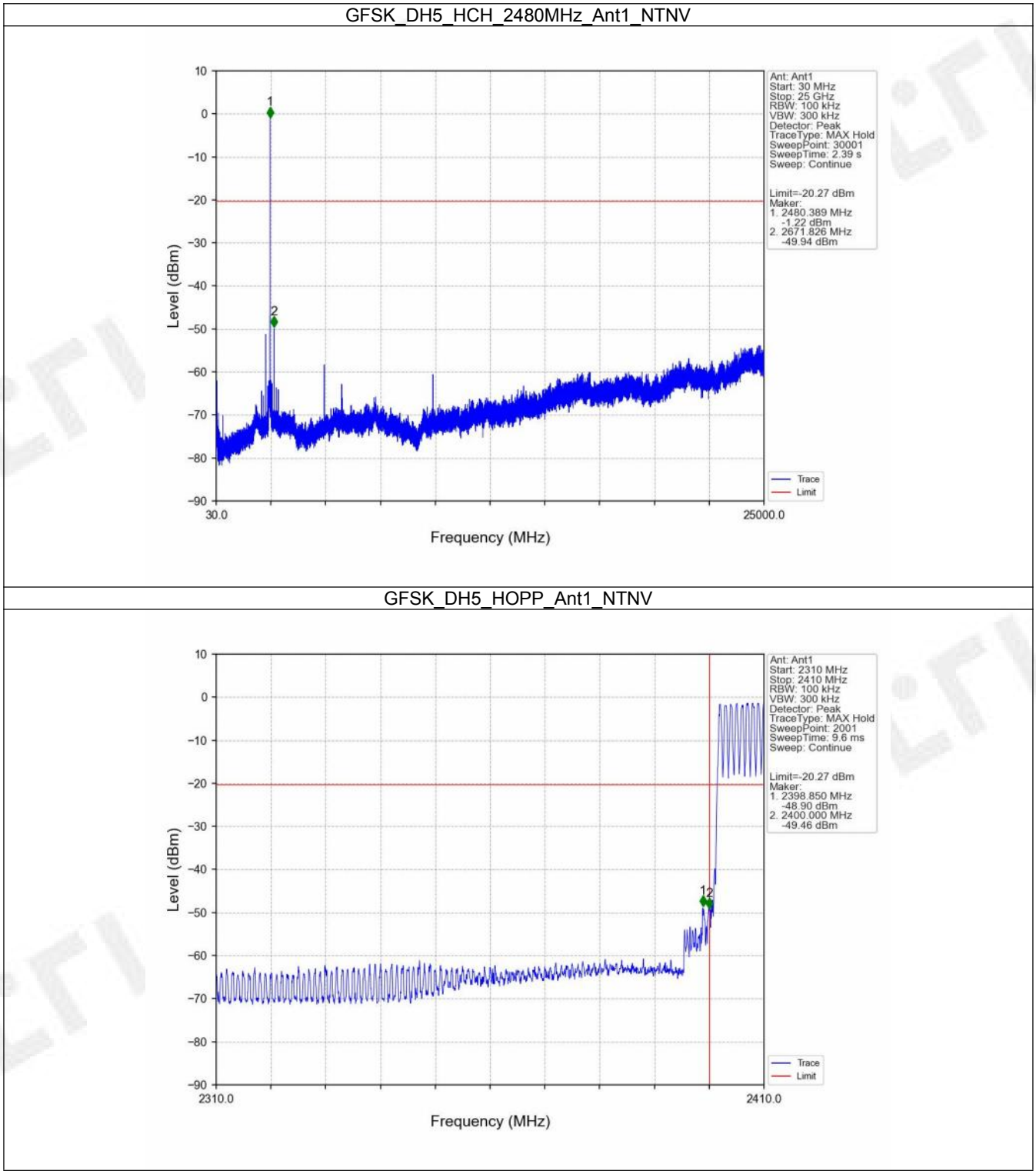
6.2.2 CSE



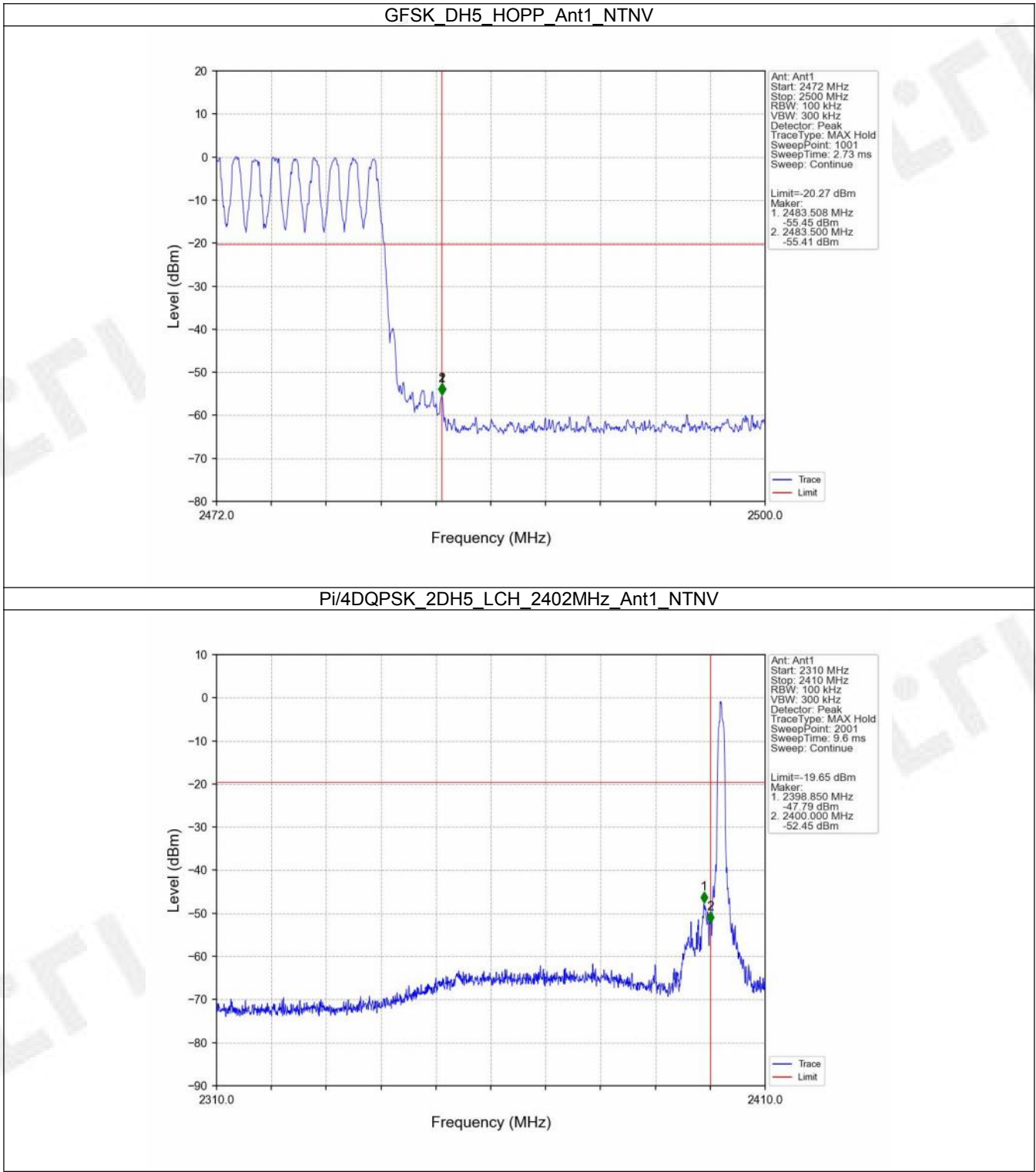
FCCID: 2ASC7FX6X00



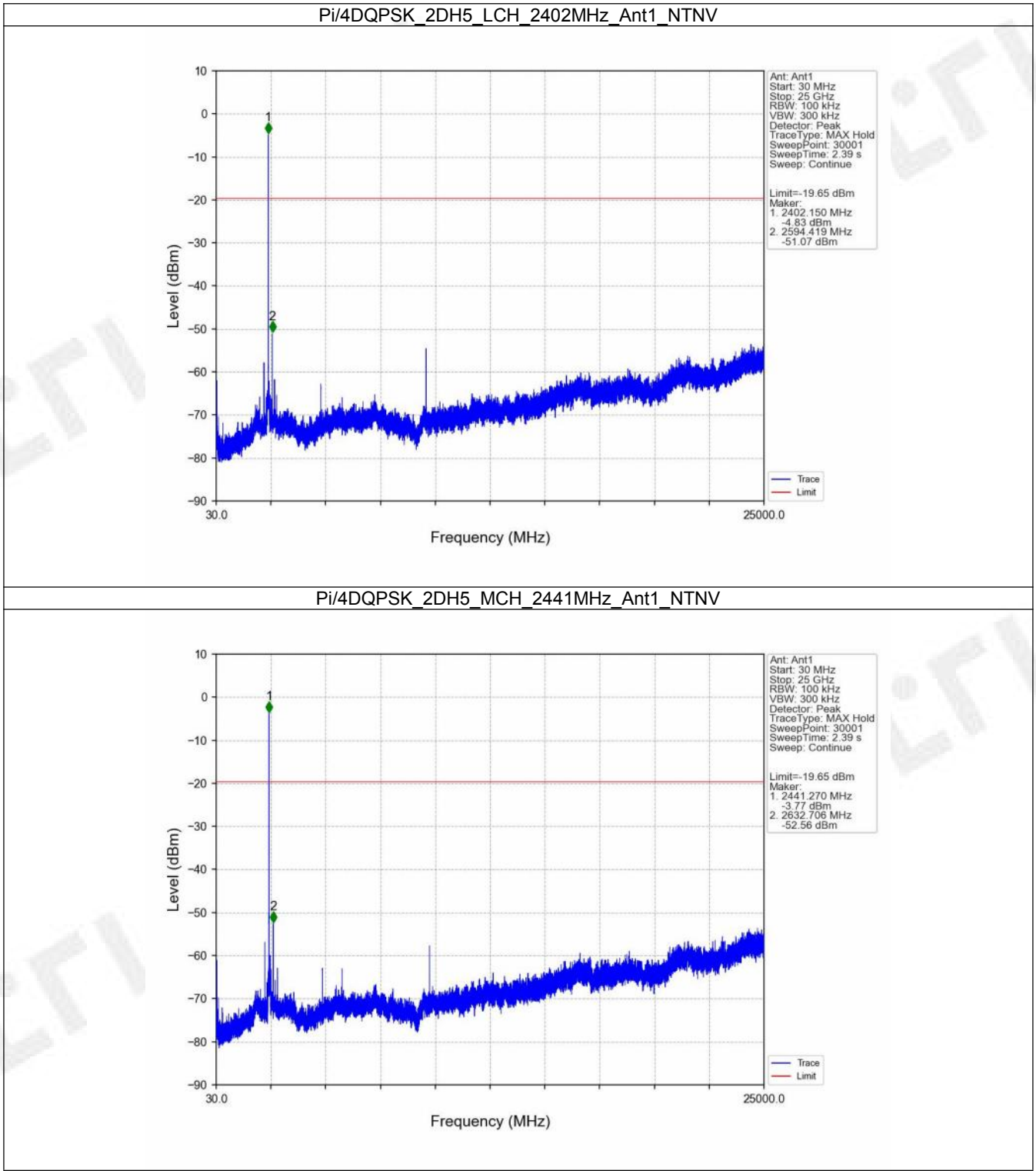
FCCID: 2ASC7FX6X00



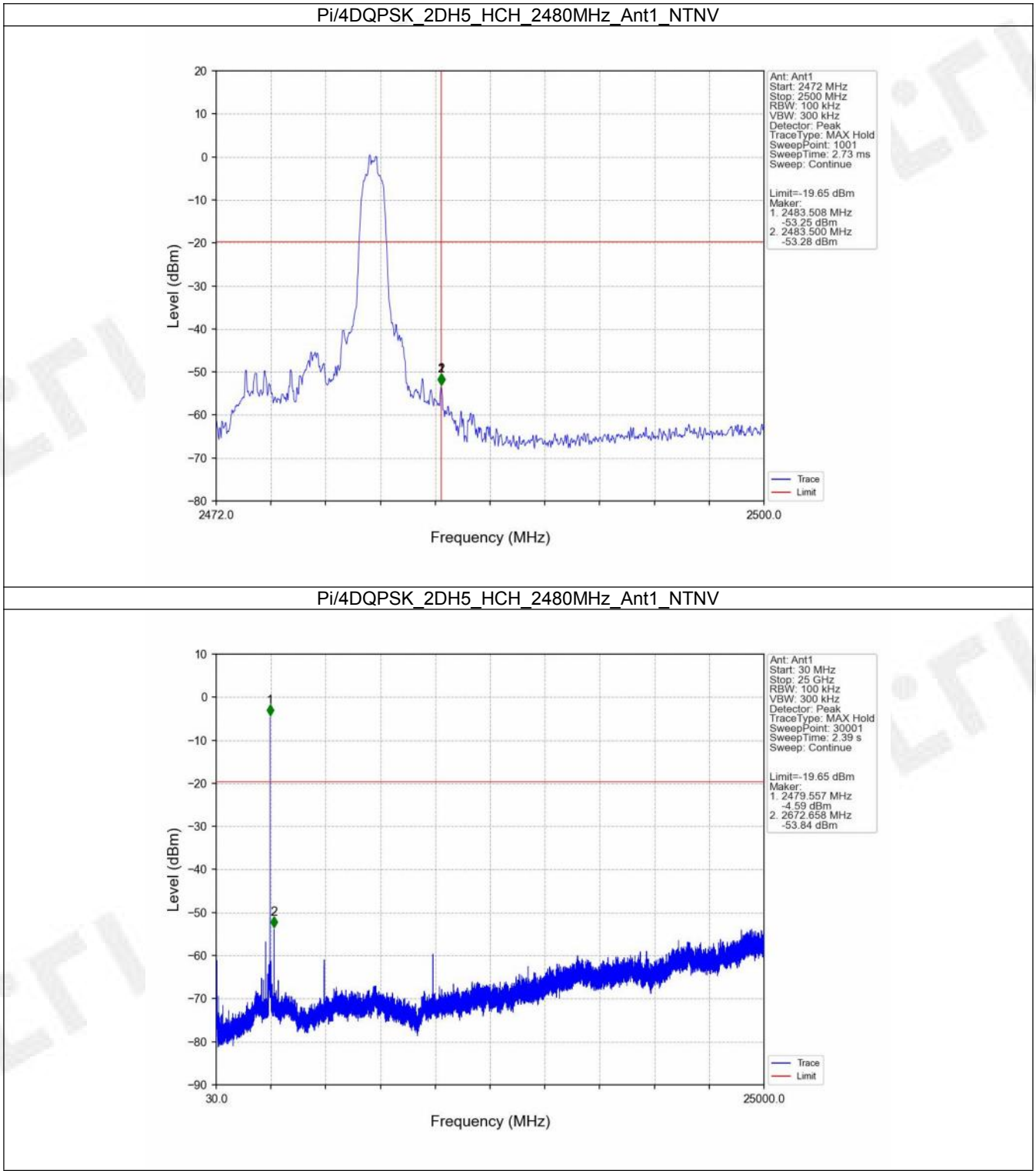
FCCID: 2ASC7FX6X00



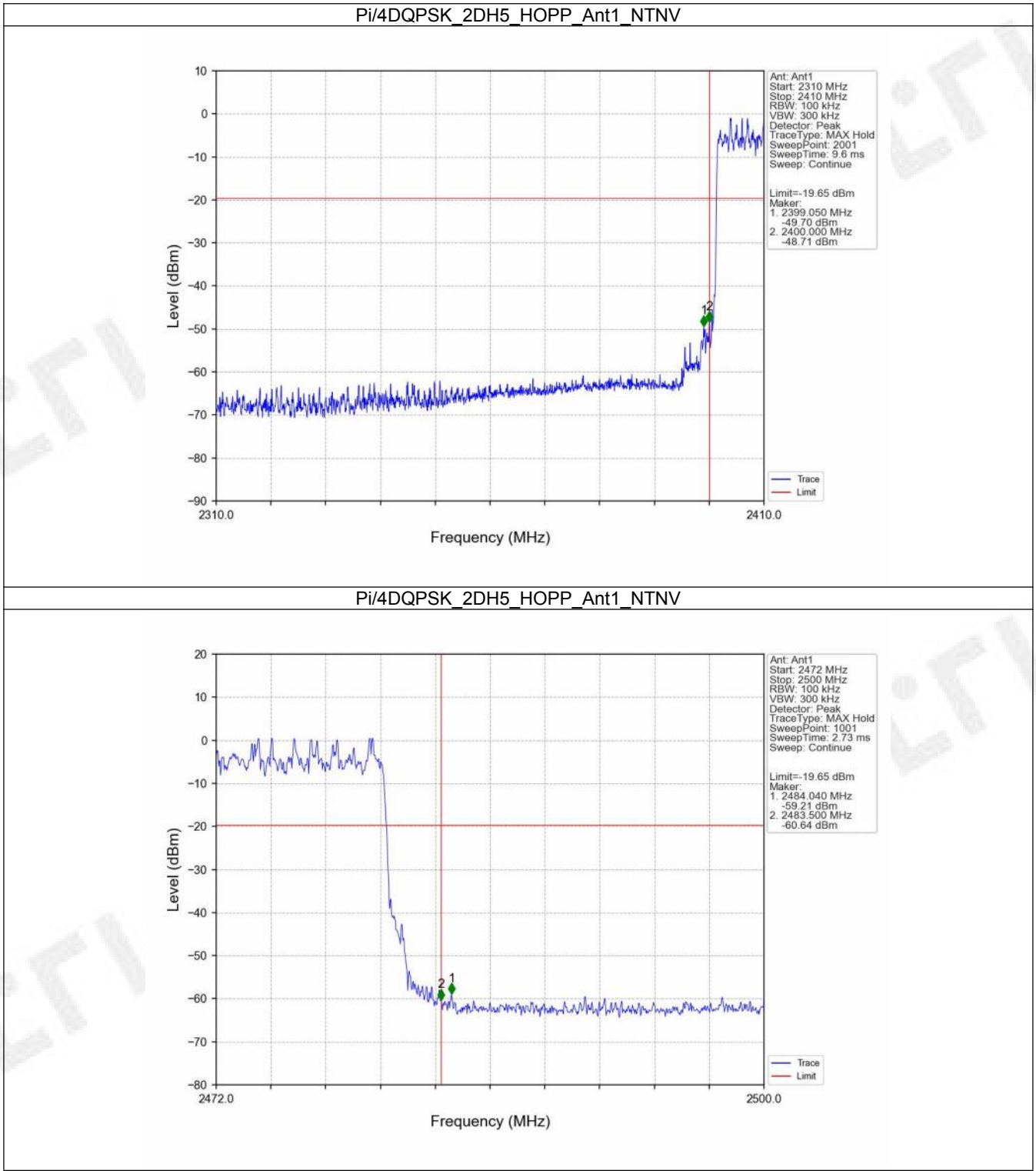
FCCID: 2ASC7FX6X00



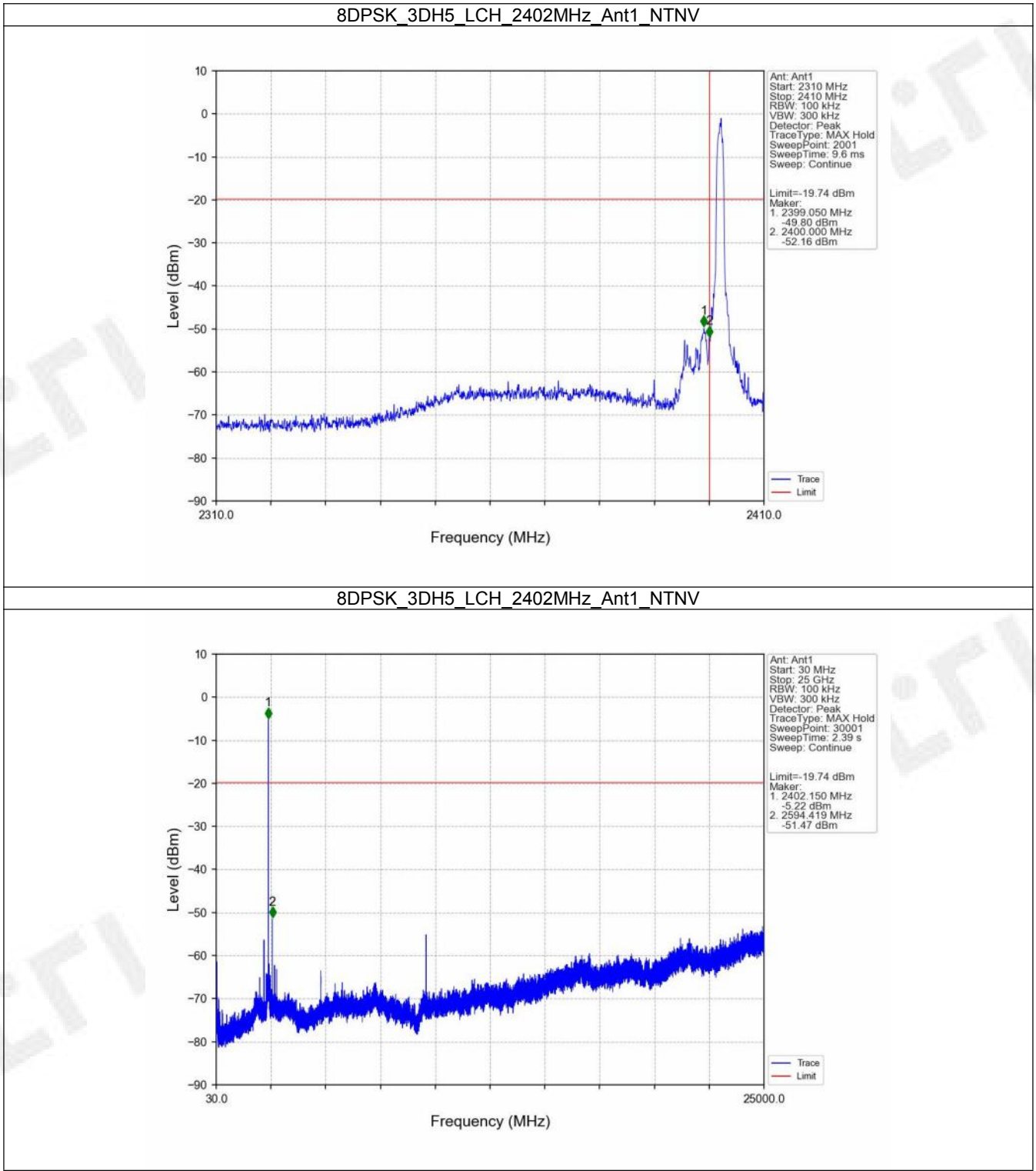
FCCID: 2ASC7FX6X00



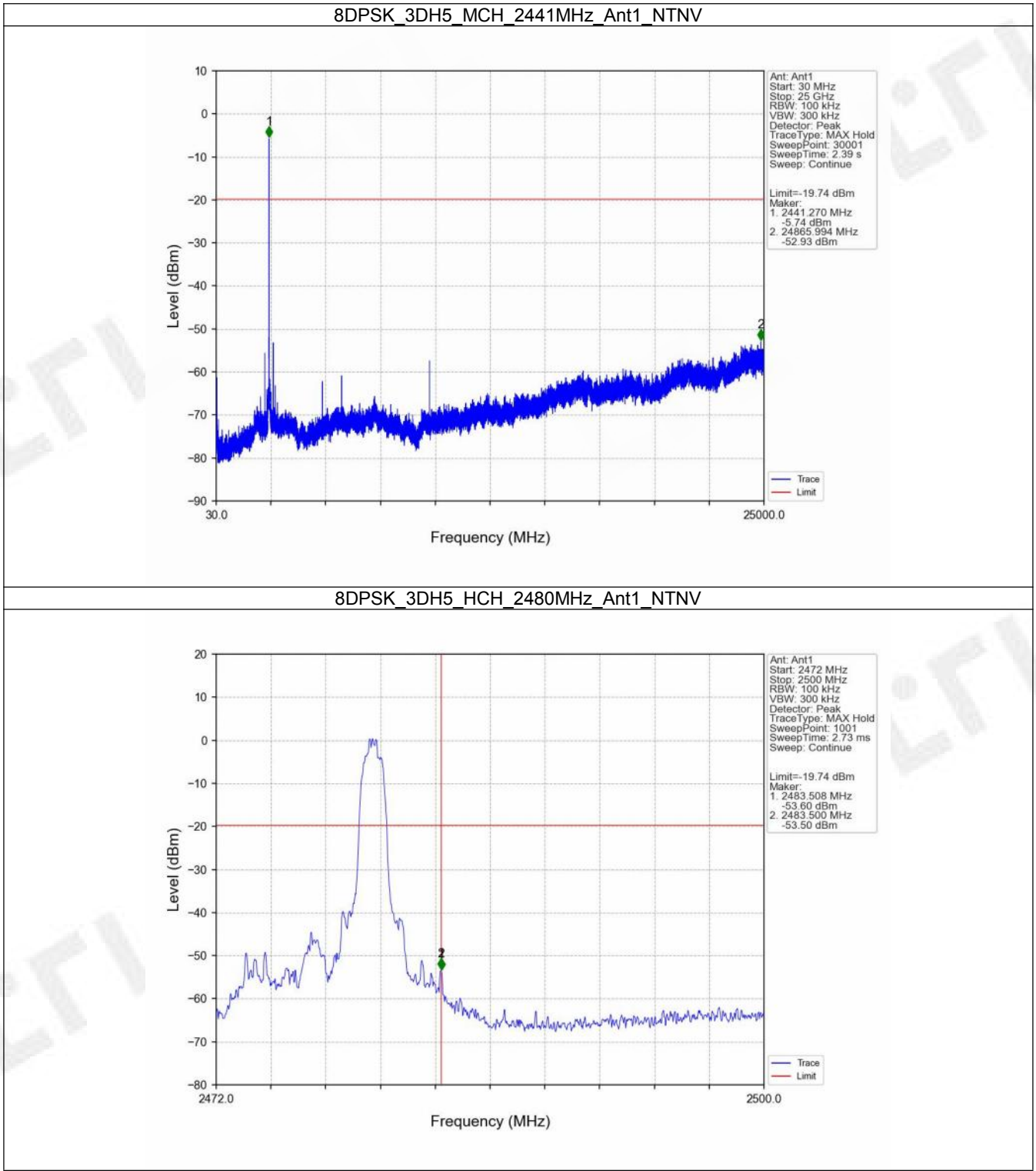
FCCID: 2ASC7FX6X00



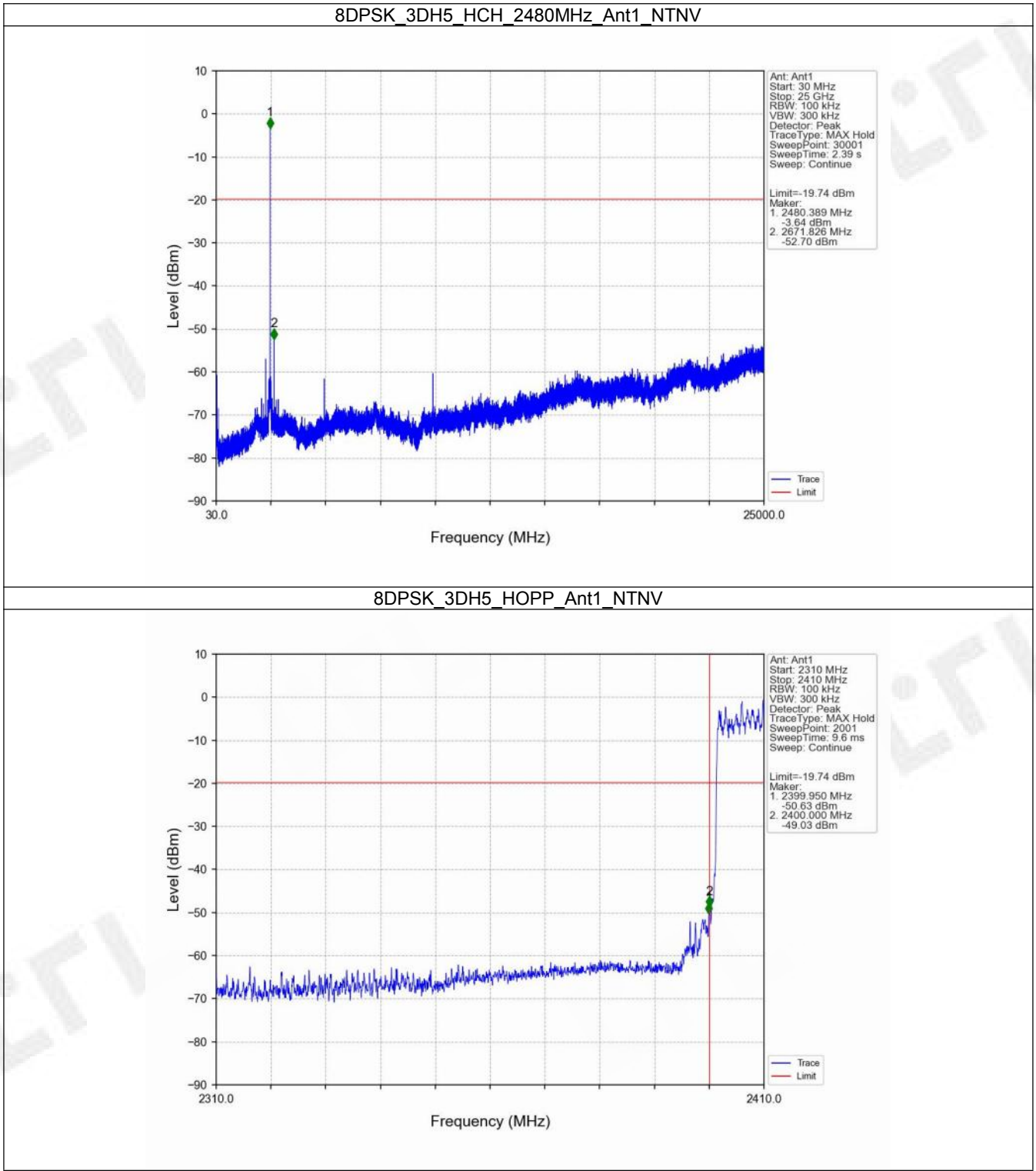
FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00



FCCID: 2ASC7FX6X00

