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Annex for Bluetooth

Test Report No.: CTL2412032624-WF01

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FCCID: 2ASC7VCIDS300

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	0.860	/	Pass
		2441	DH5	1	0.863	/	Pass
		2480	DH5	1	0.871	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.173	/	Pass
		2441	2DH5	1	1.176	/	Pass
		2480	2DH5	1	1.178	/	Pass
8DPSK	SISO	2402	3DH5	1	1.180	/	Pass
		2441	3DH5	1	1.183	/	Pass
		2480	3DH5	1	1.188	/	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	0.954	/	Pass
		2441	DH5	1	0.958	/	Pass
		2480	DH5	1	0.957	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.286	/	Pass
		2441	2DH5	1	1.312	/	Pass
		2480	2DH5	1	1.288	/	Pass
8DPSK	SISO	2402	3DH5	1	1.302	/	Pass

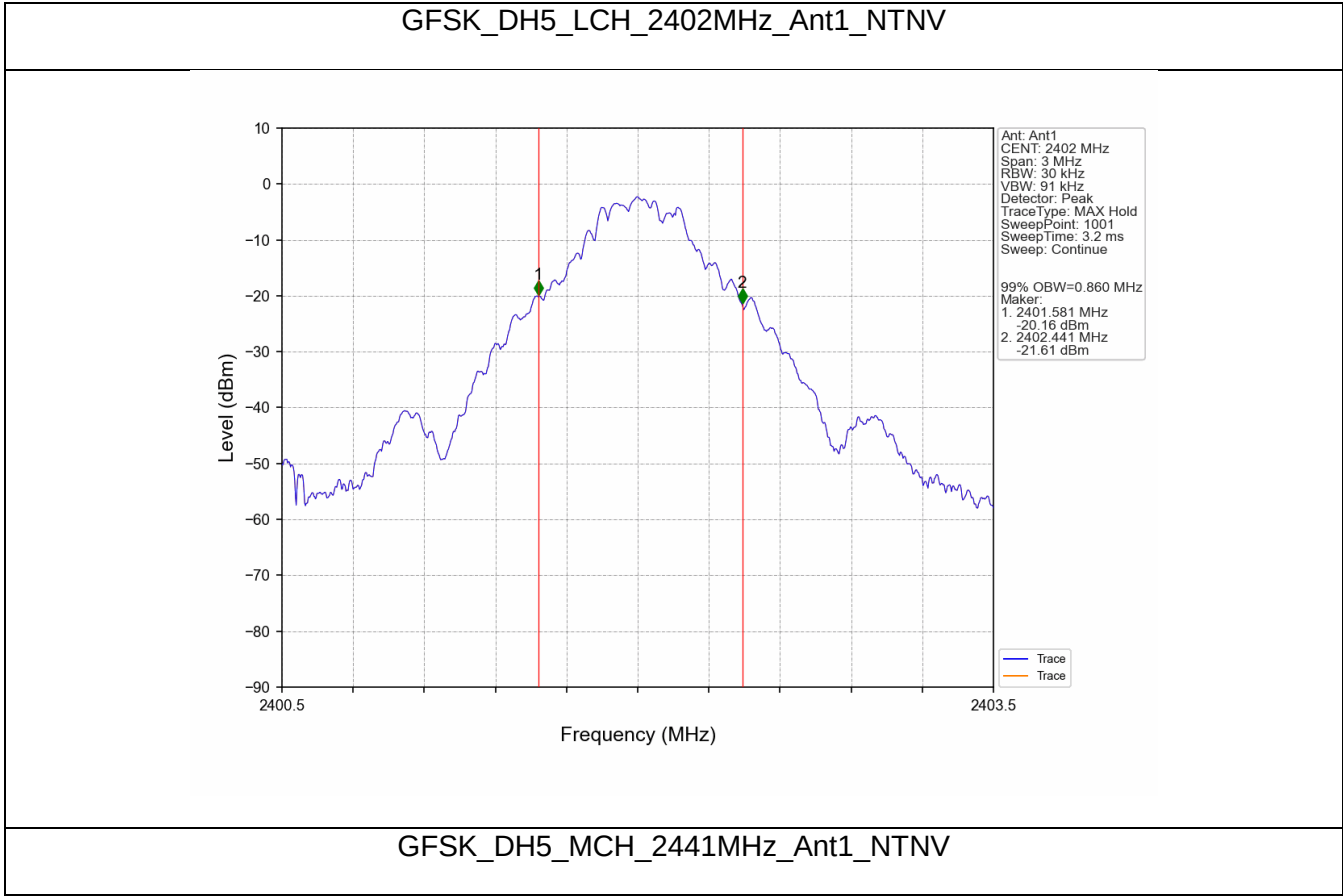
FCCID: 2ASC7VCIDS300

		2441	3DH5	1	1.301	/	Pass
		2480	3DH5	1	1.307	/	Pass

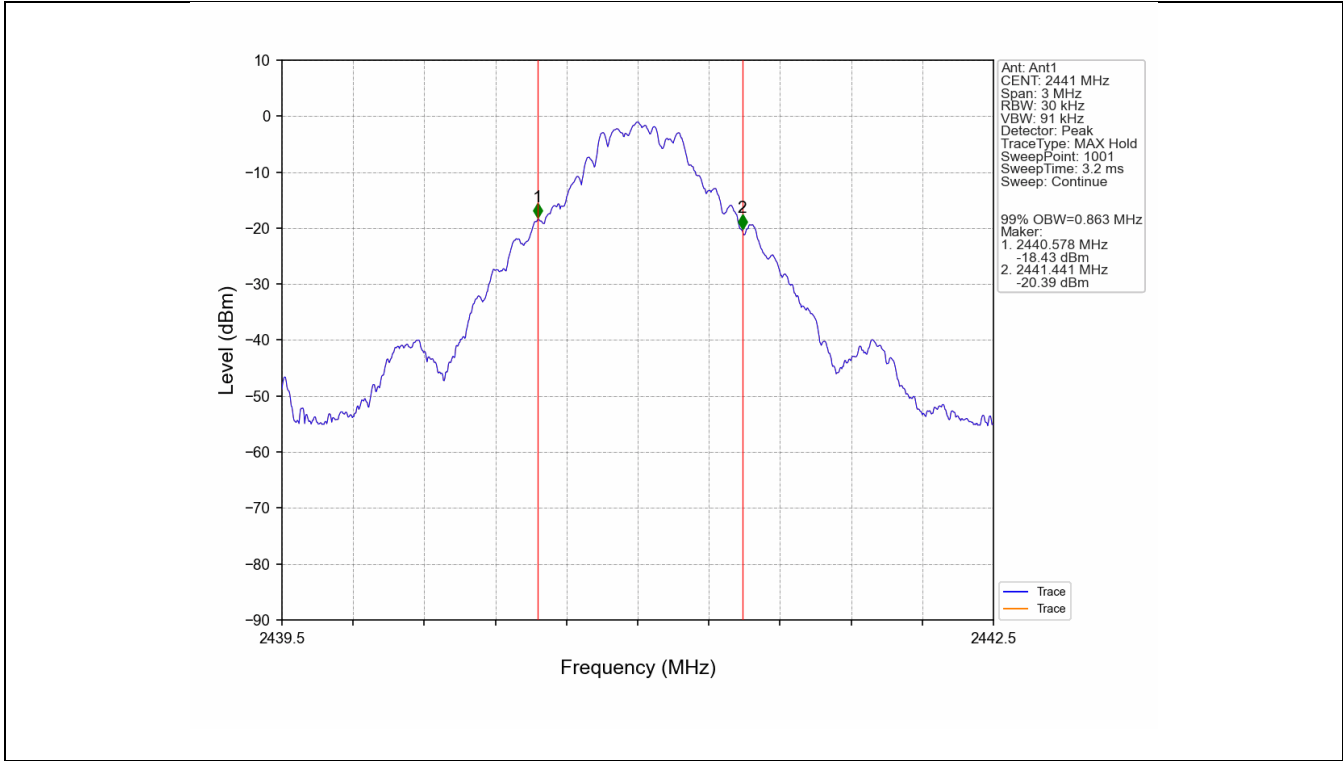
FCCID: 2ASC7VCIDS300

1.2 Test Graph

1.2.1 OBW

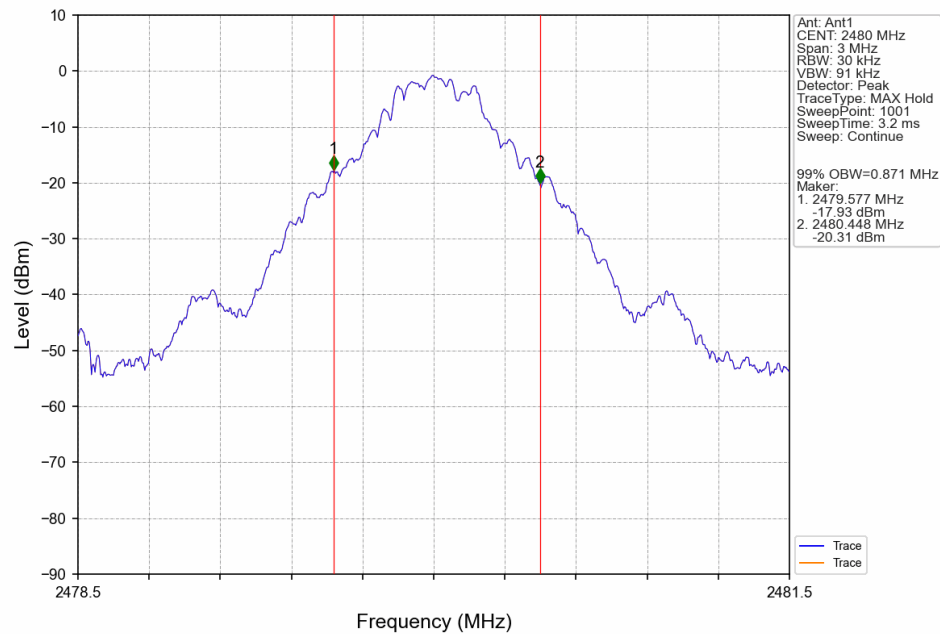


FCCID: 2ASC7VCIDS300

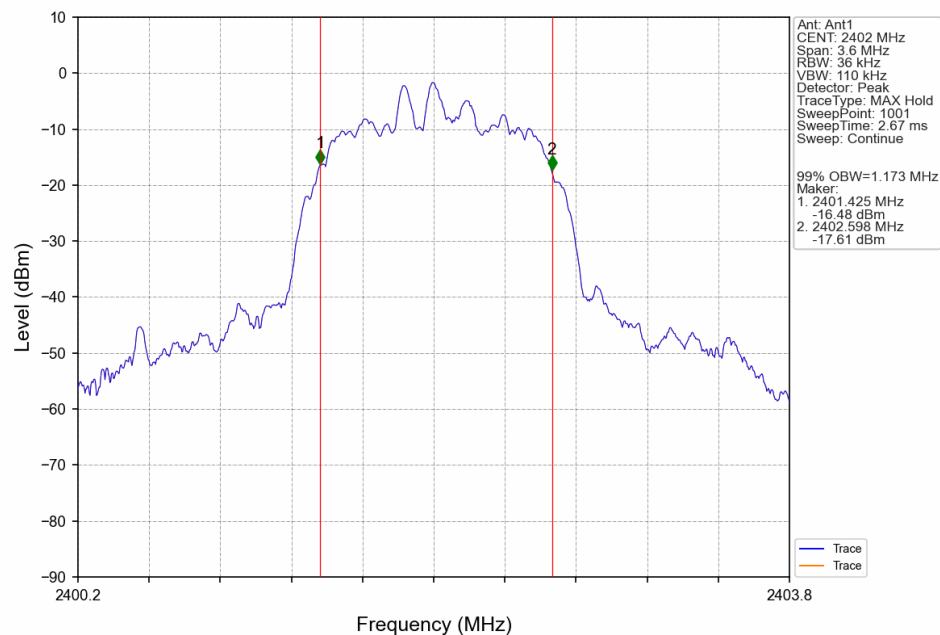


FCCID: 2ASC7VCIDS300

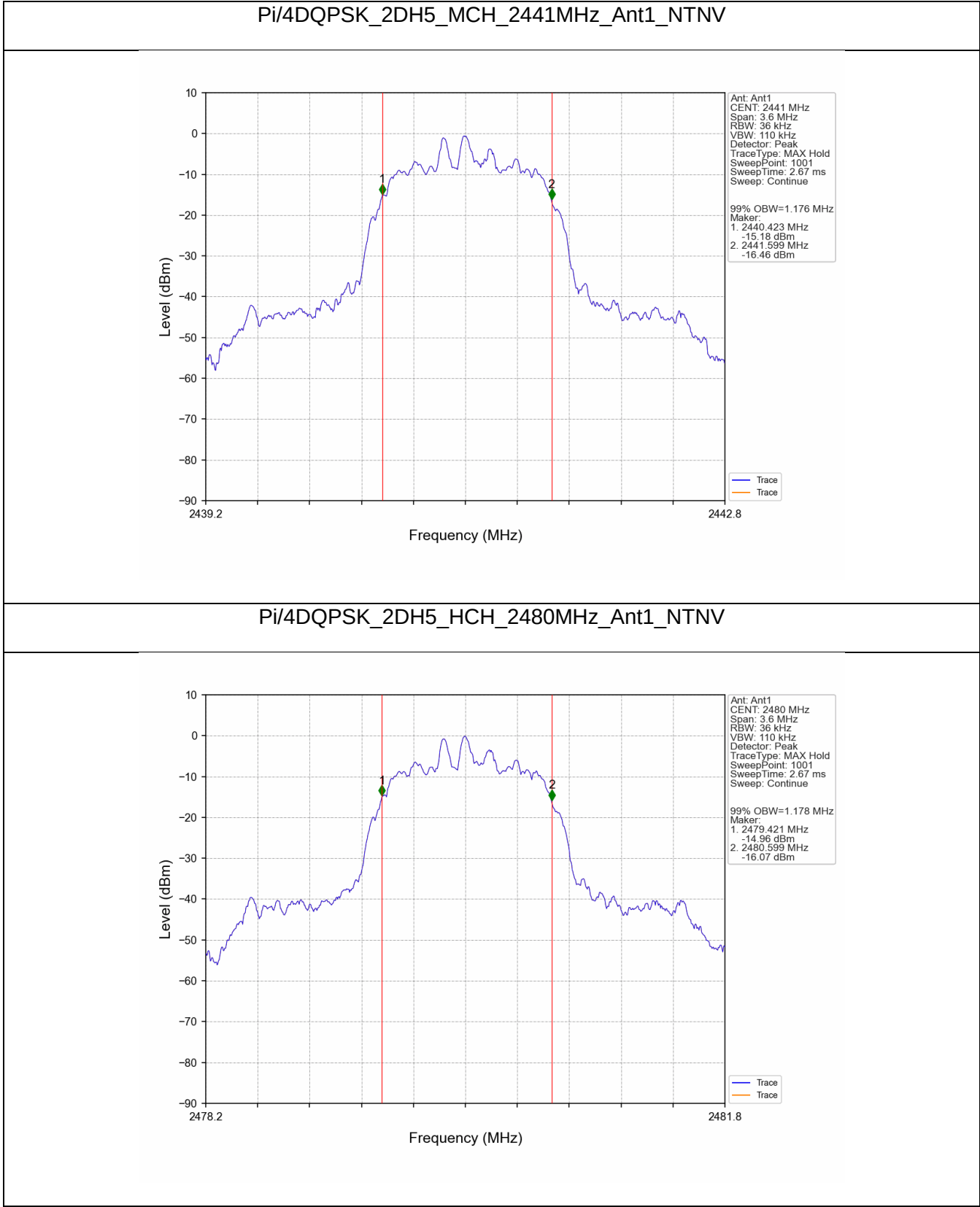
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

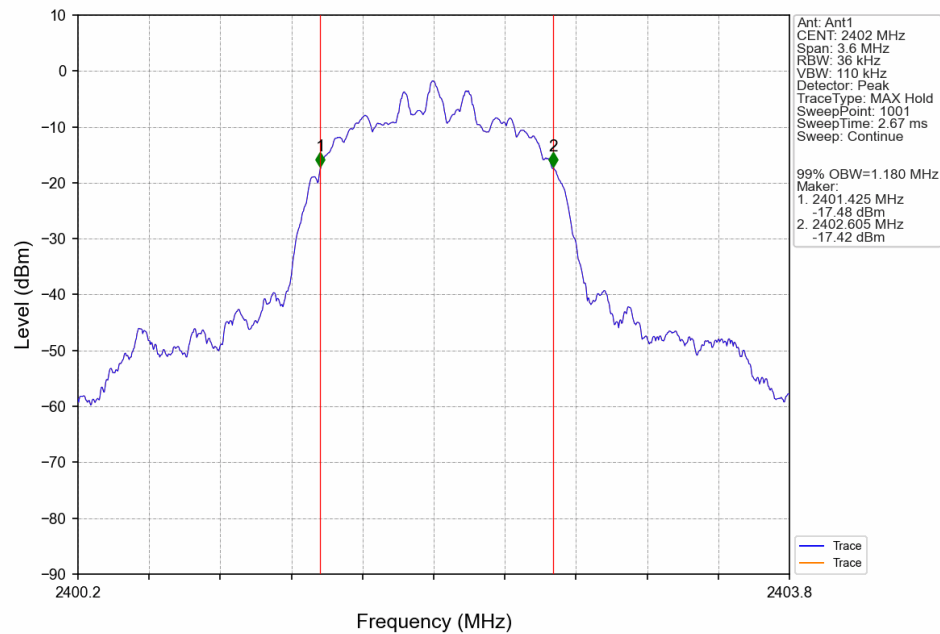


FCCID: 2ASC7VCIDS300

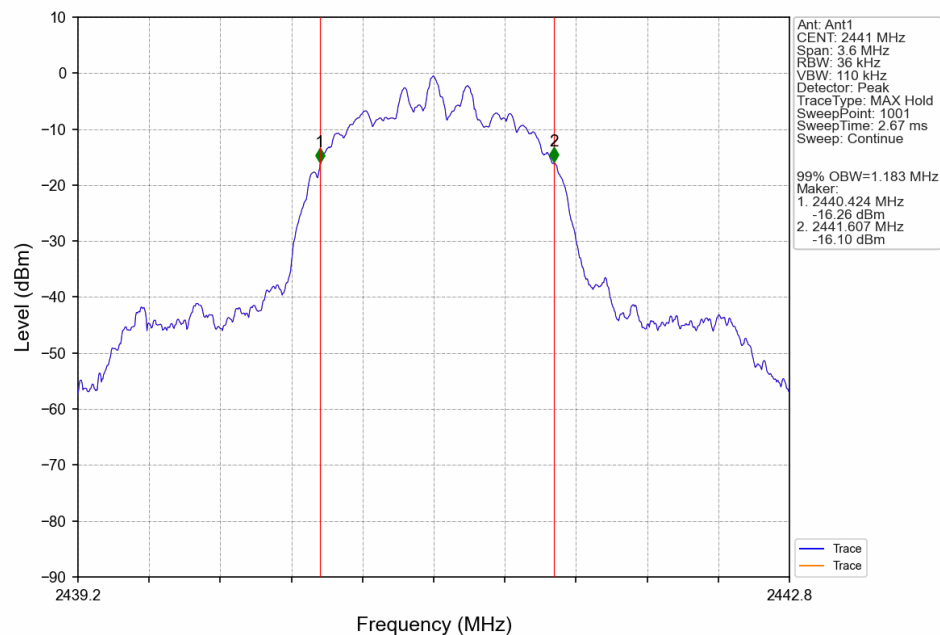


FCCID: 2ASC7VCIDS300

8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

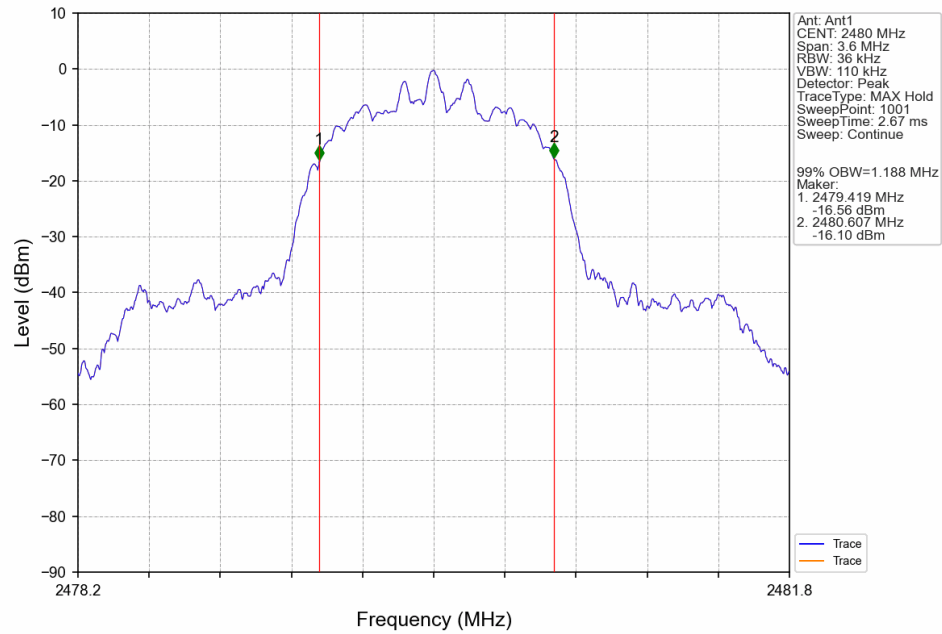


8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



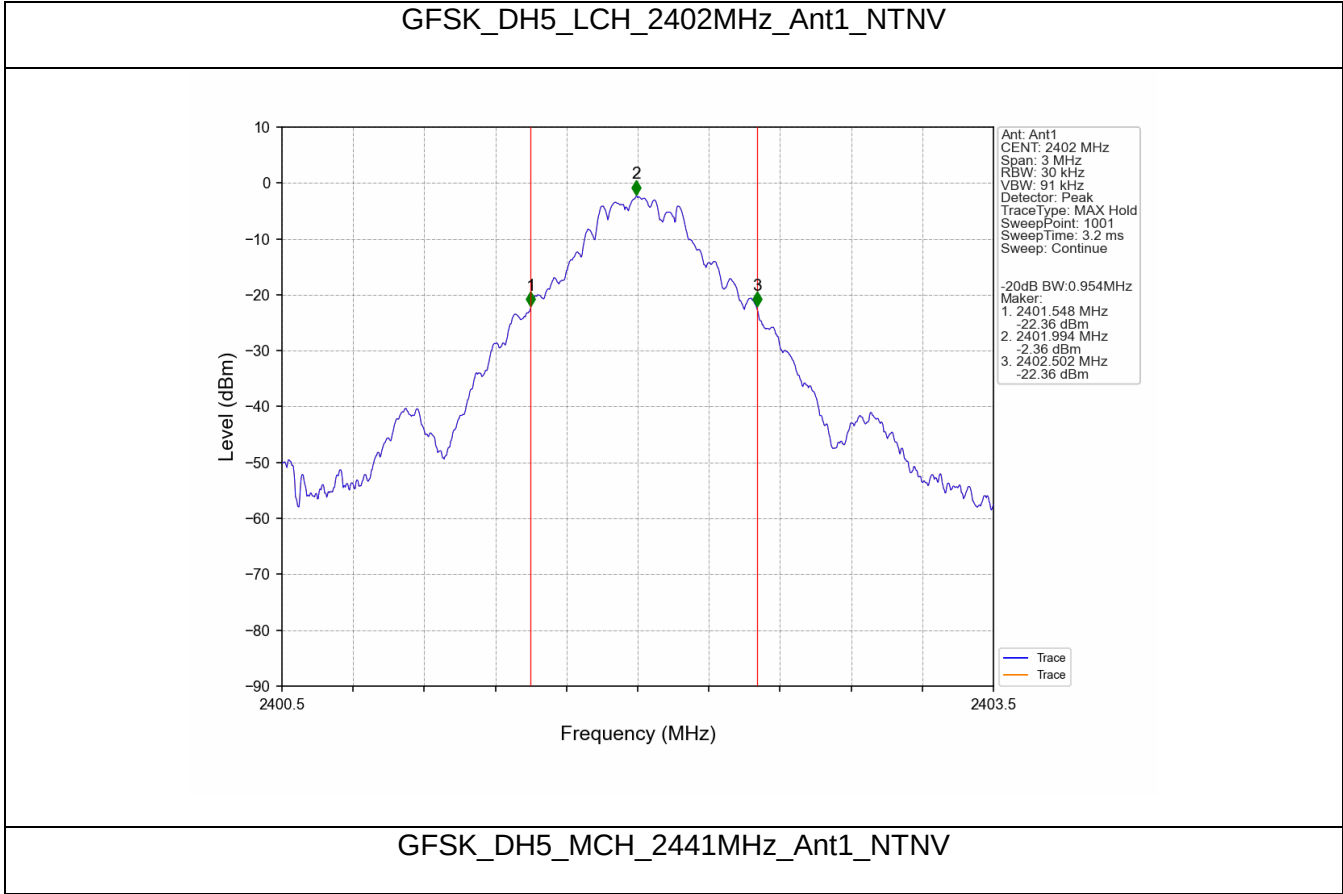
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8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

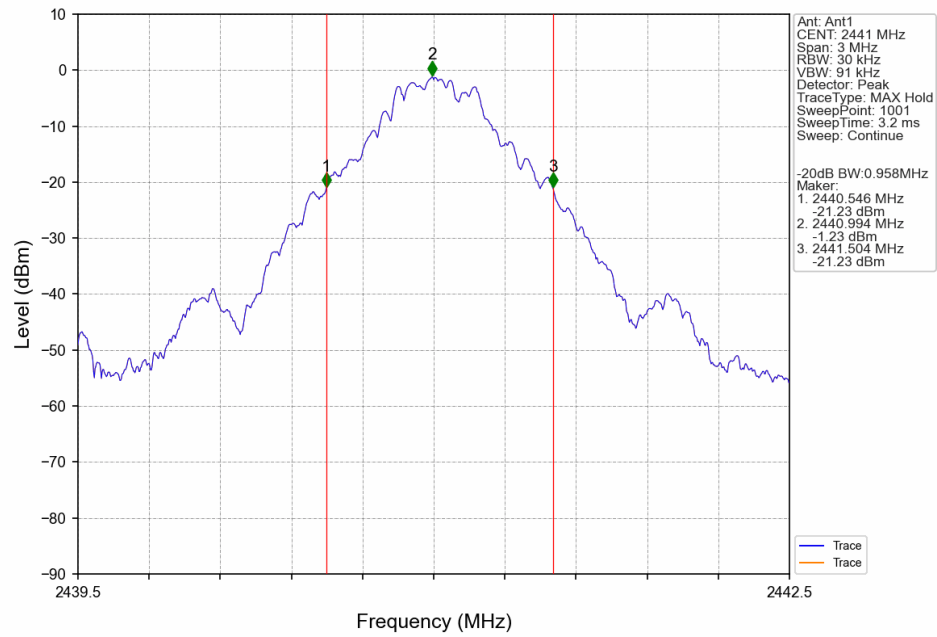


FCCID: 2ASC7VCIDS300

1.2.2 20dB BW

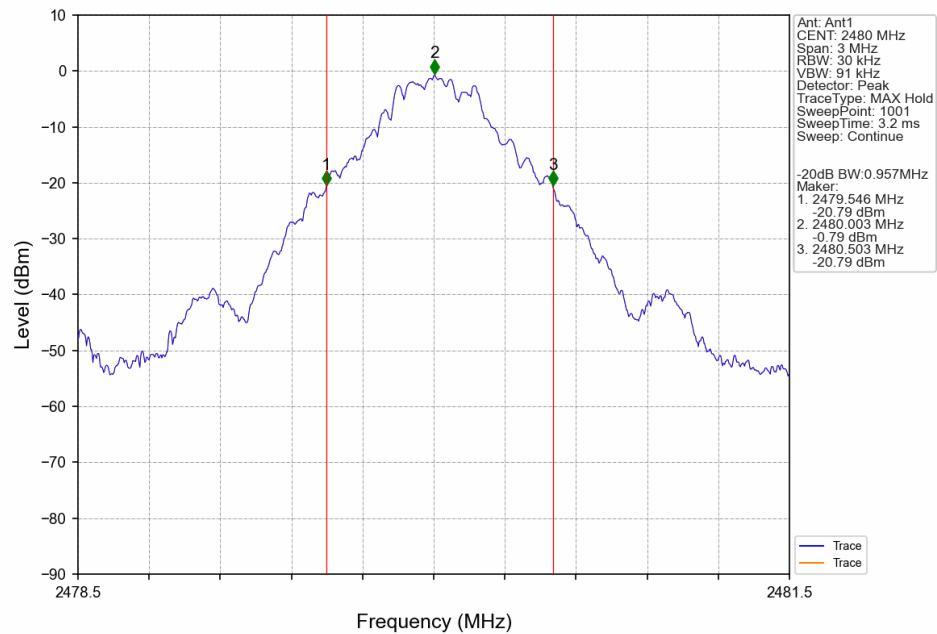


FCCID: 2ASC7VCIDS300

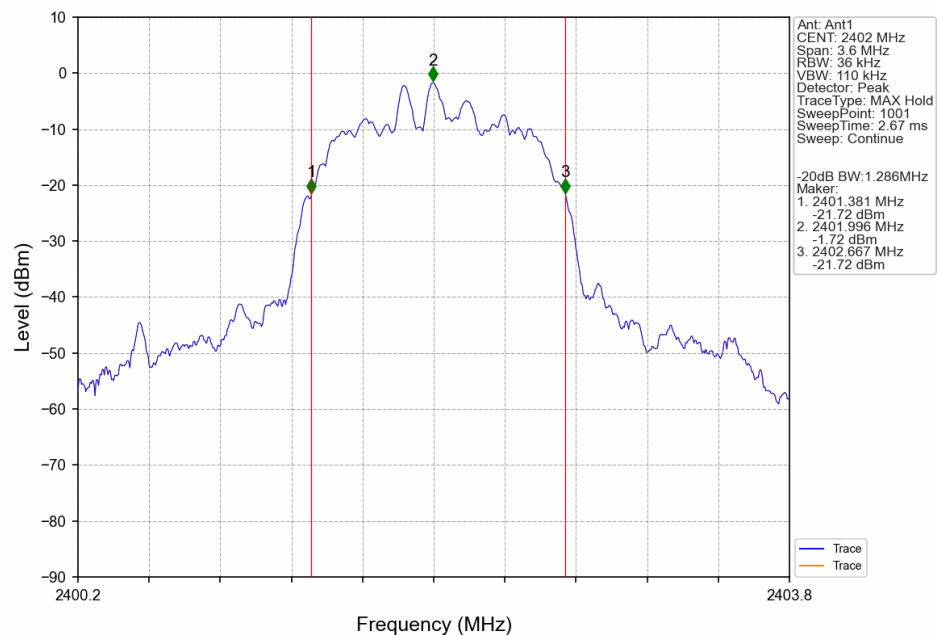


FCCID: 2ASC7VCIDS300

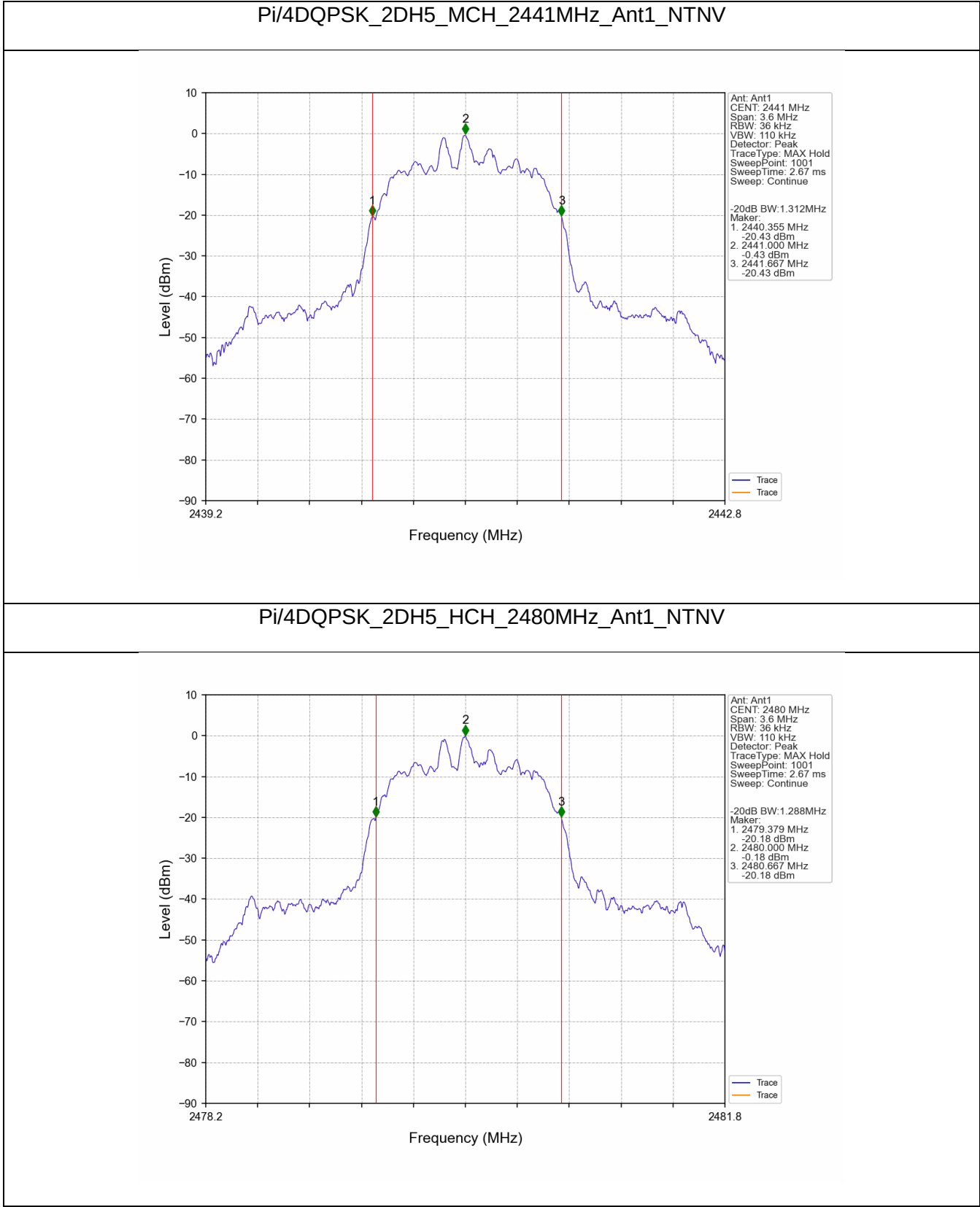
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

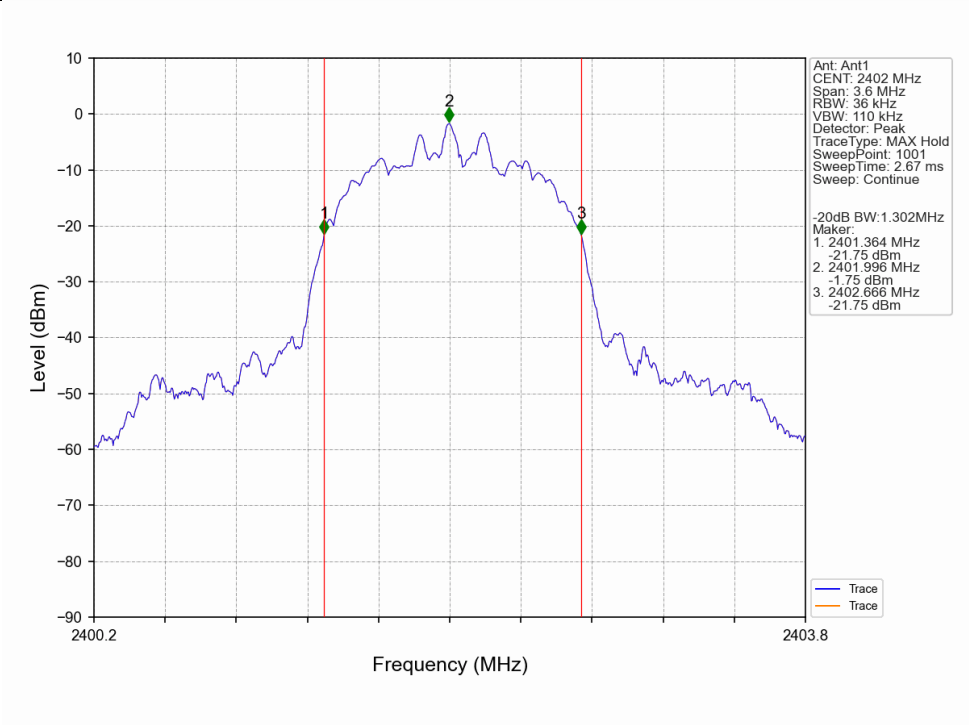


FCCID: 2ASC7VCIDS300

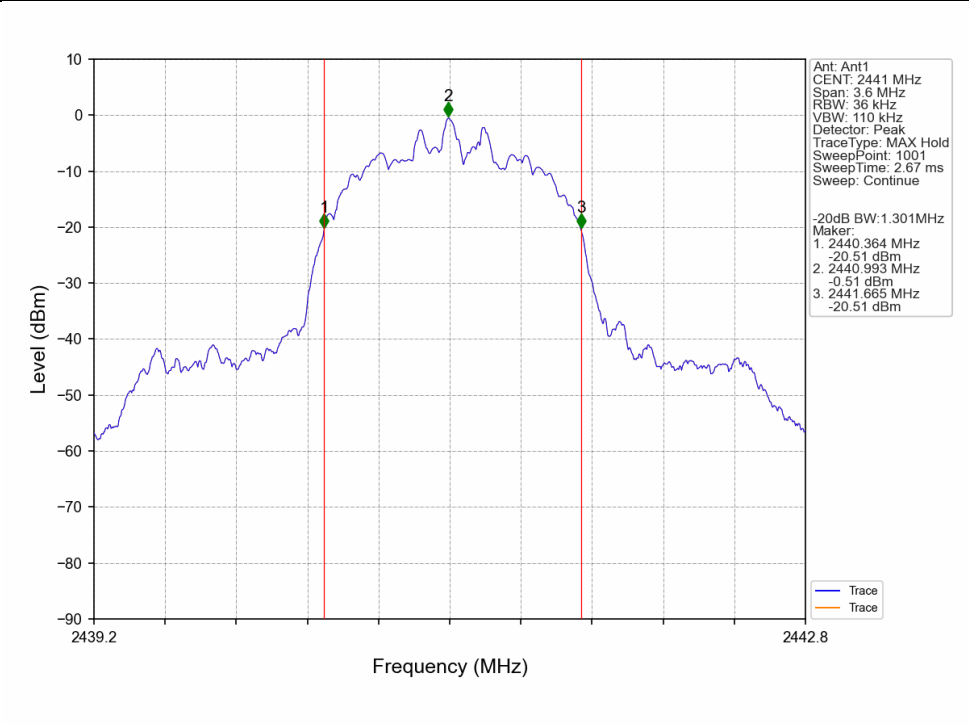


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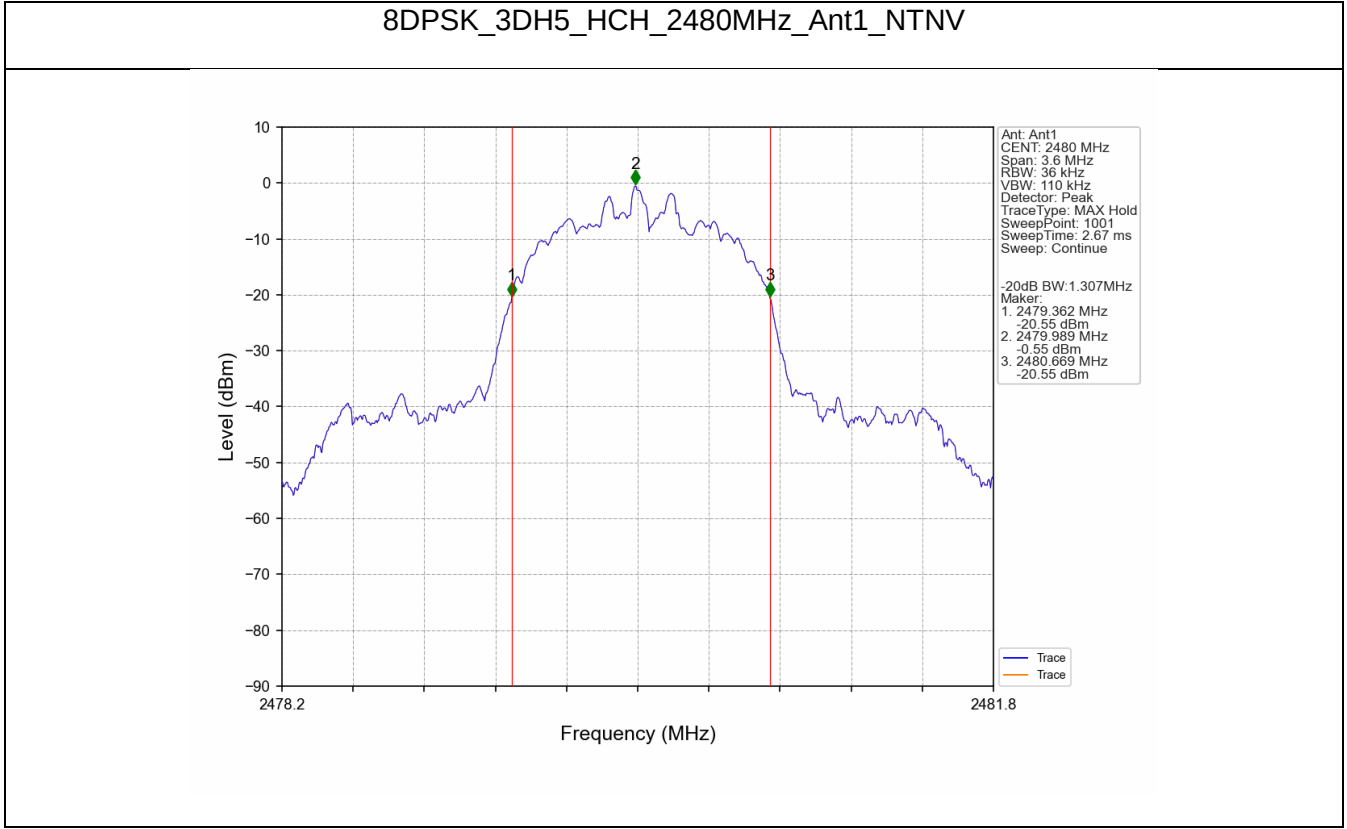
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300

2. Maximum Conducted Output Power

2.1 Test Result

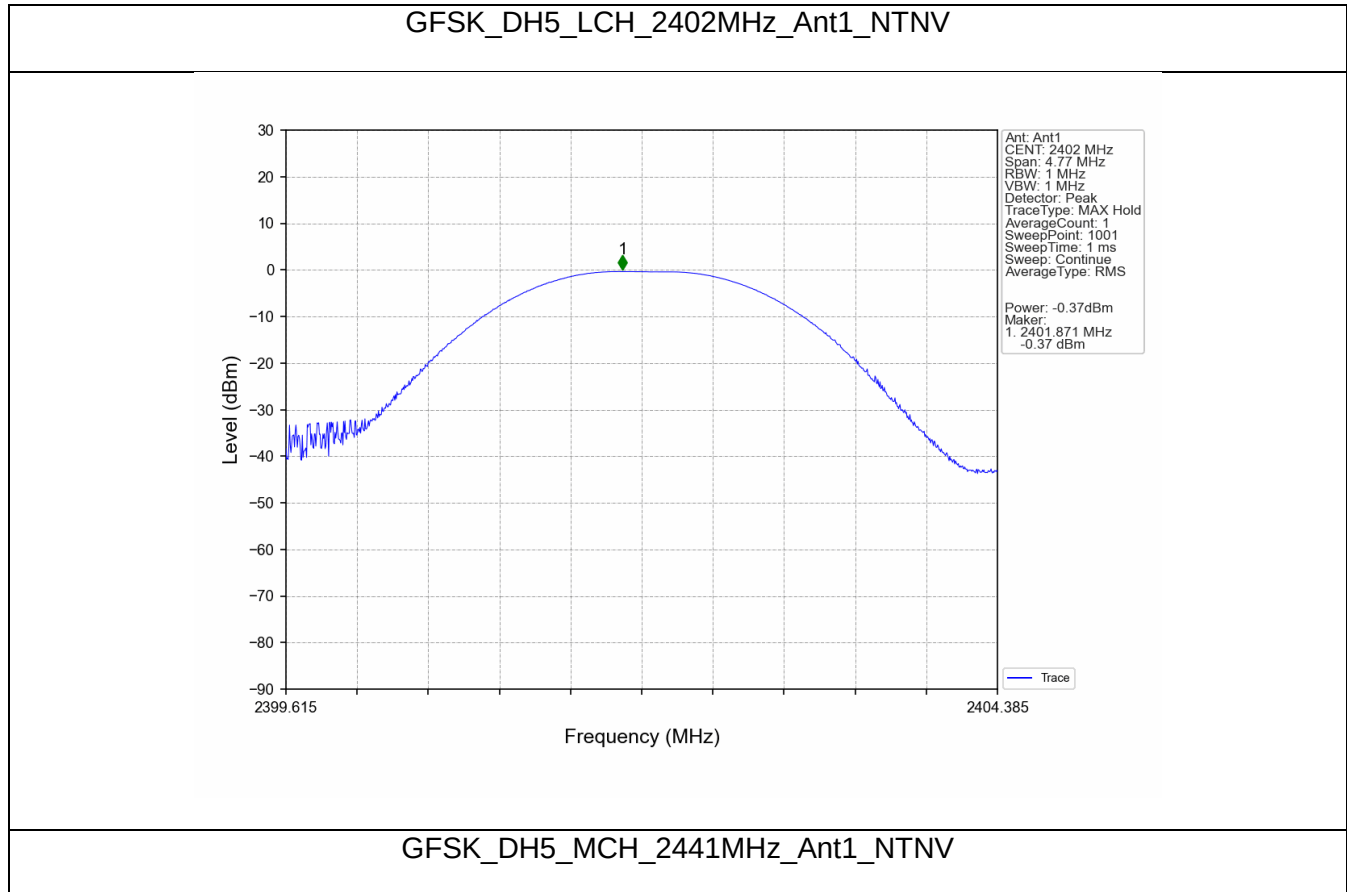
2.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-0.37	<=30	Pass
		2441	DH5	0.81	<=30	Pass
		2480	DH5	1.16	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	0.49	<=20.97	Pass
		2441	2DH5	1.64	<=20.97	Pass
		2480	2DH5	1.88	<=20.97	Pass
8DPSK	SISO	2402	3DH5	0.83	<=20.97	Pass
		2441	3DH5	1.93	<=20.97	Pass
		2480	3DH5	2.13	<=20.97	Pass
Note1: Antenna Gain: Ant1: 2.35dBi;						

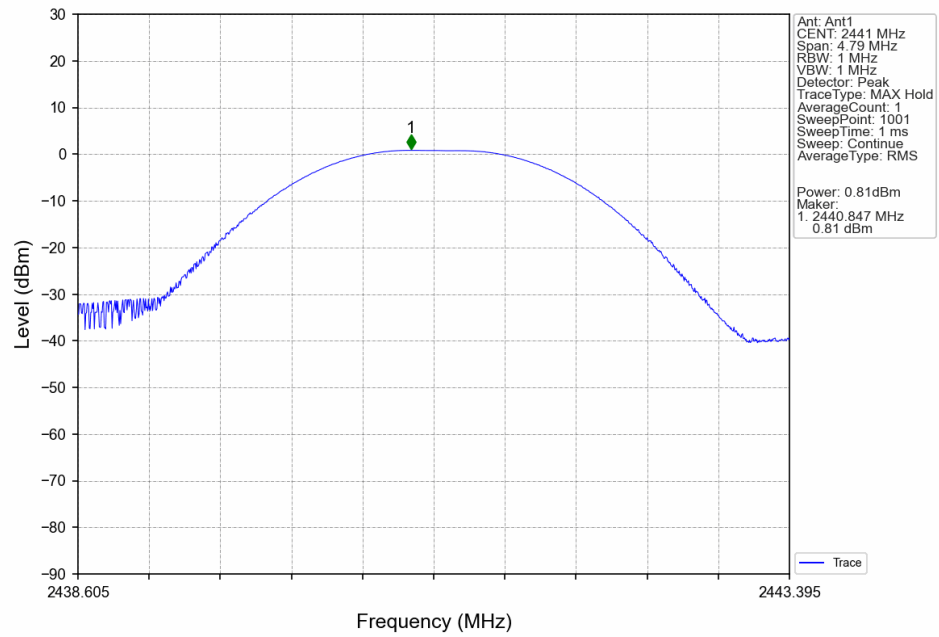
FCCID: 2ASC7VCIDS300

2.2 Test Graph

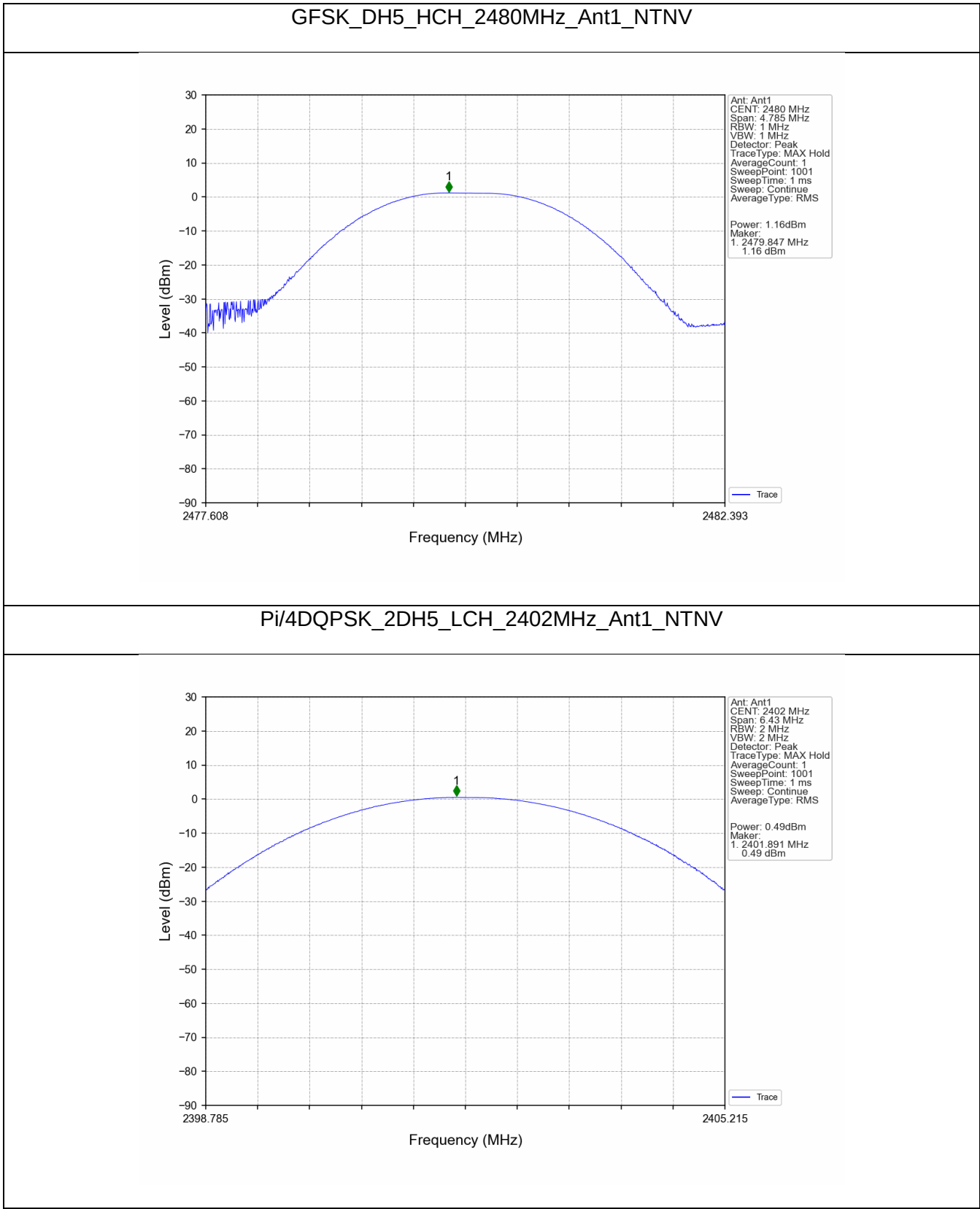
2.2.1 Power



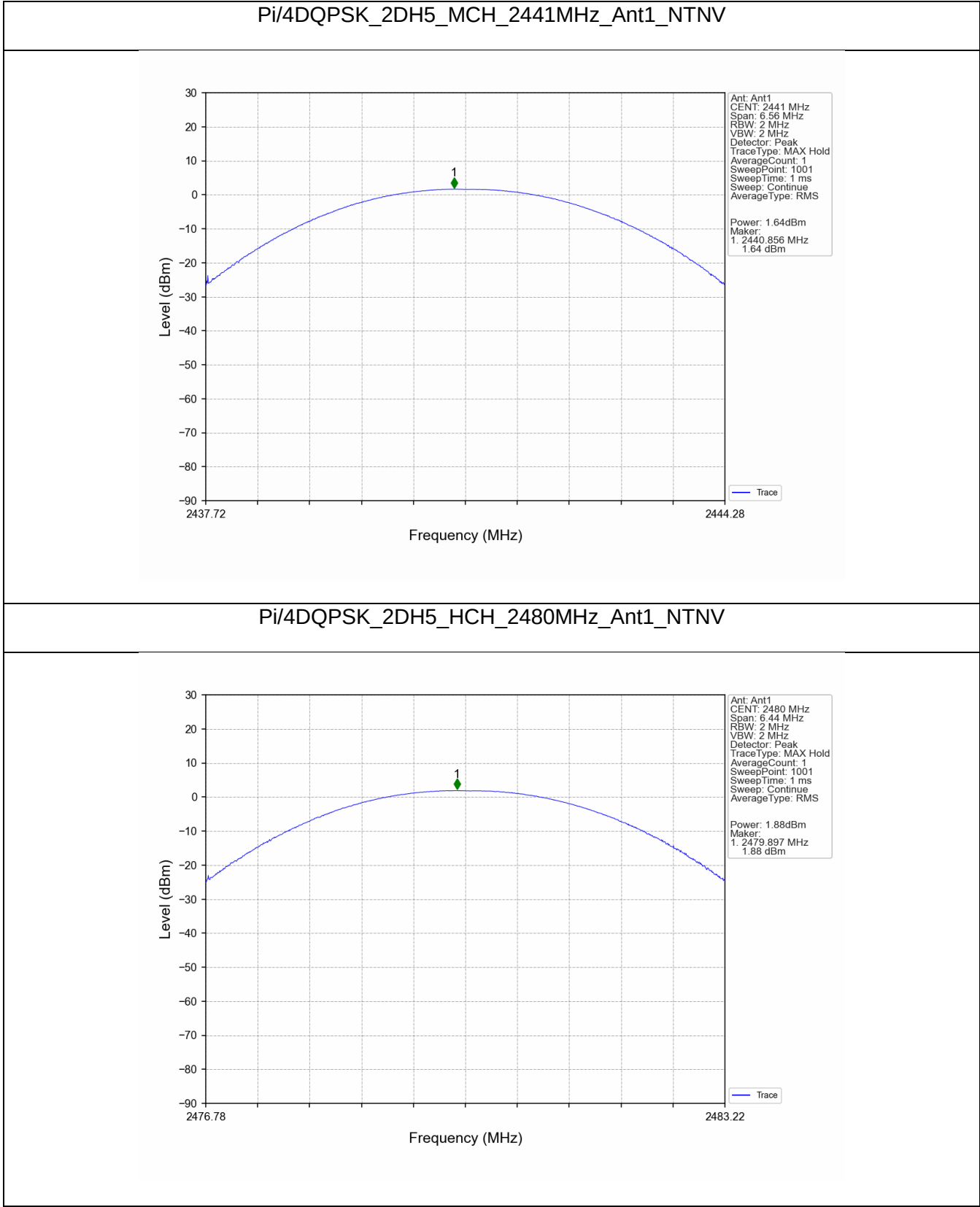
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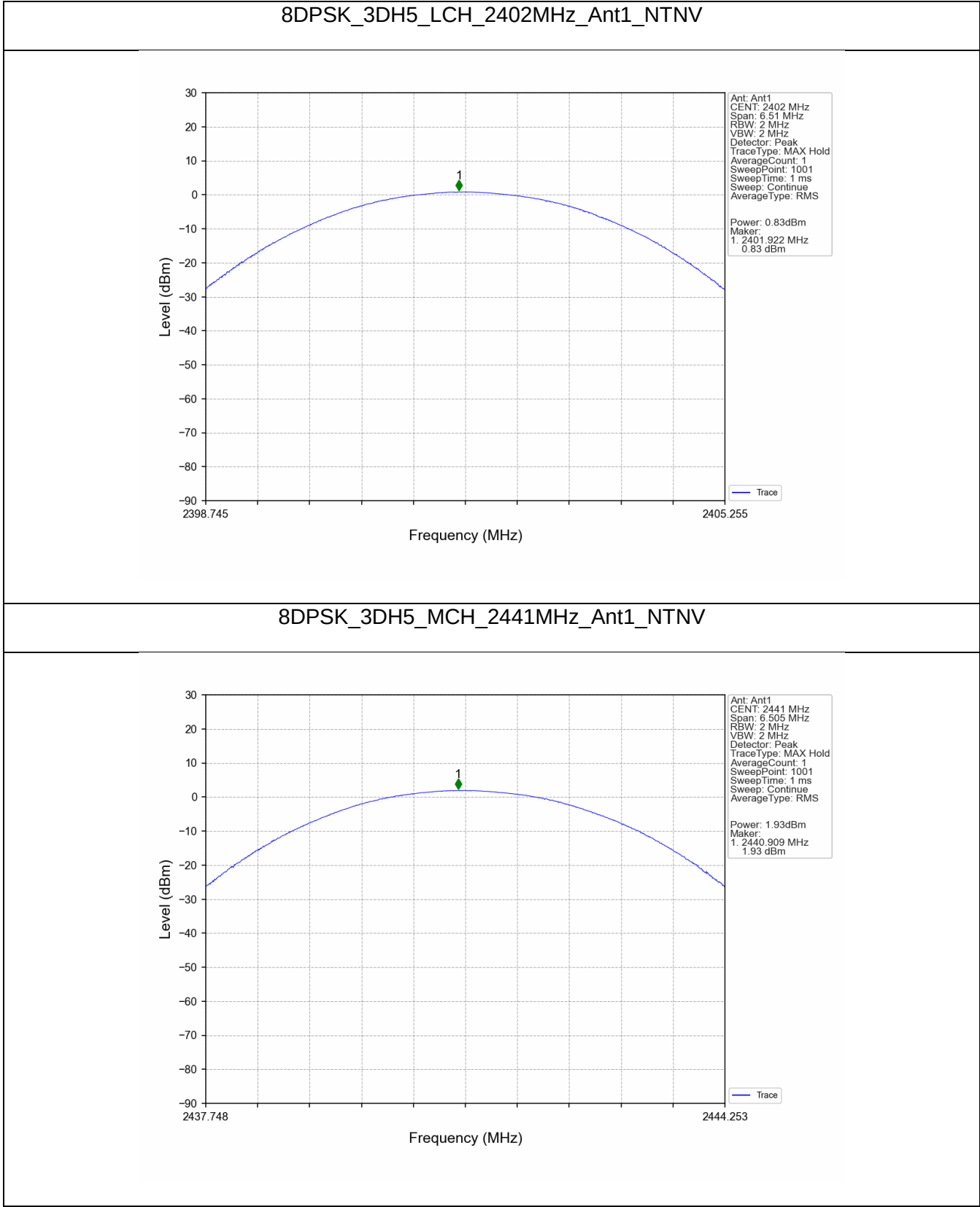
FCCID: 2ASC7VCIDS300



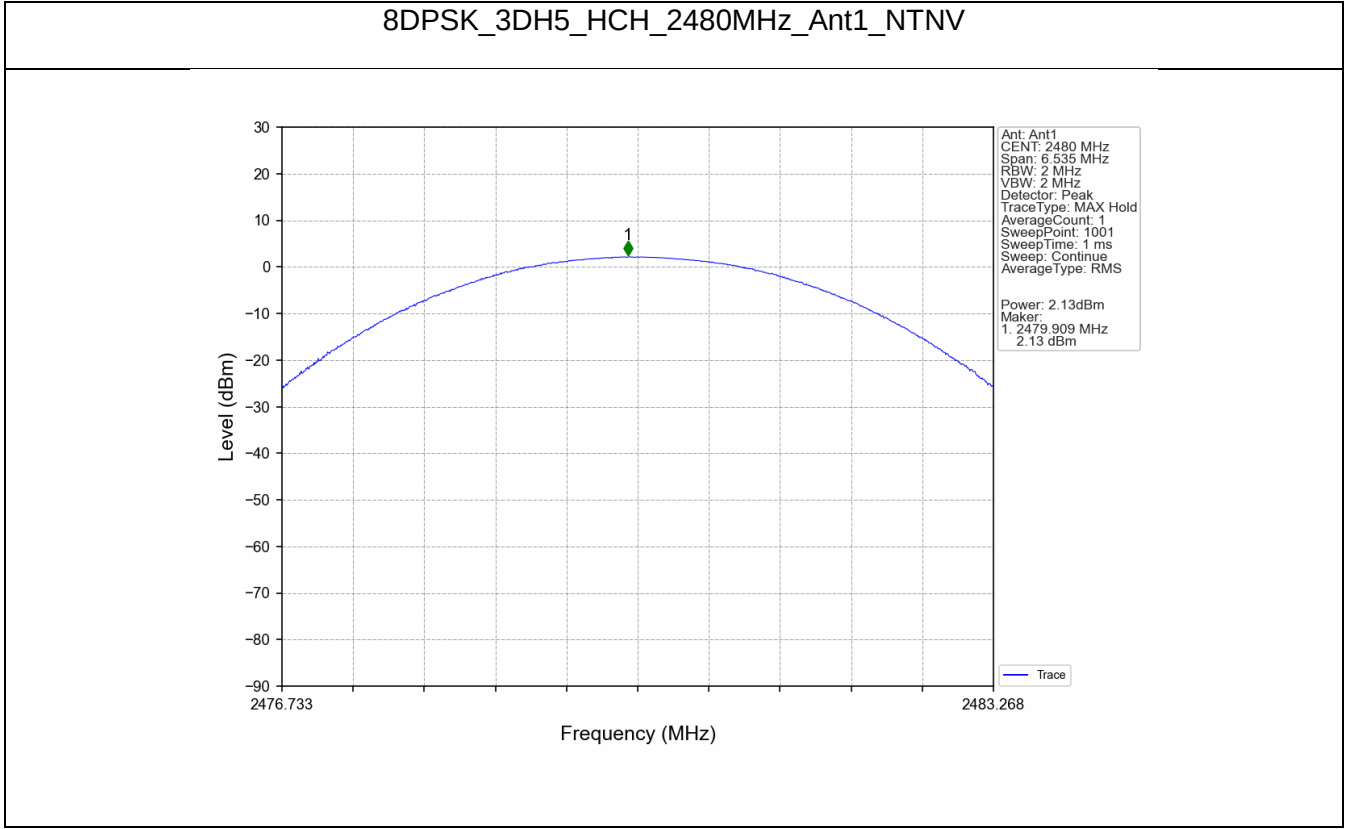
FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300

3. Carrier Frequency Separation

3.1 Test Result

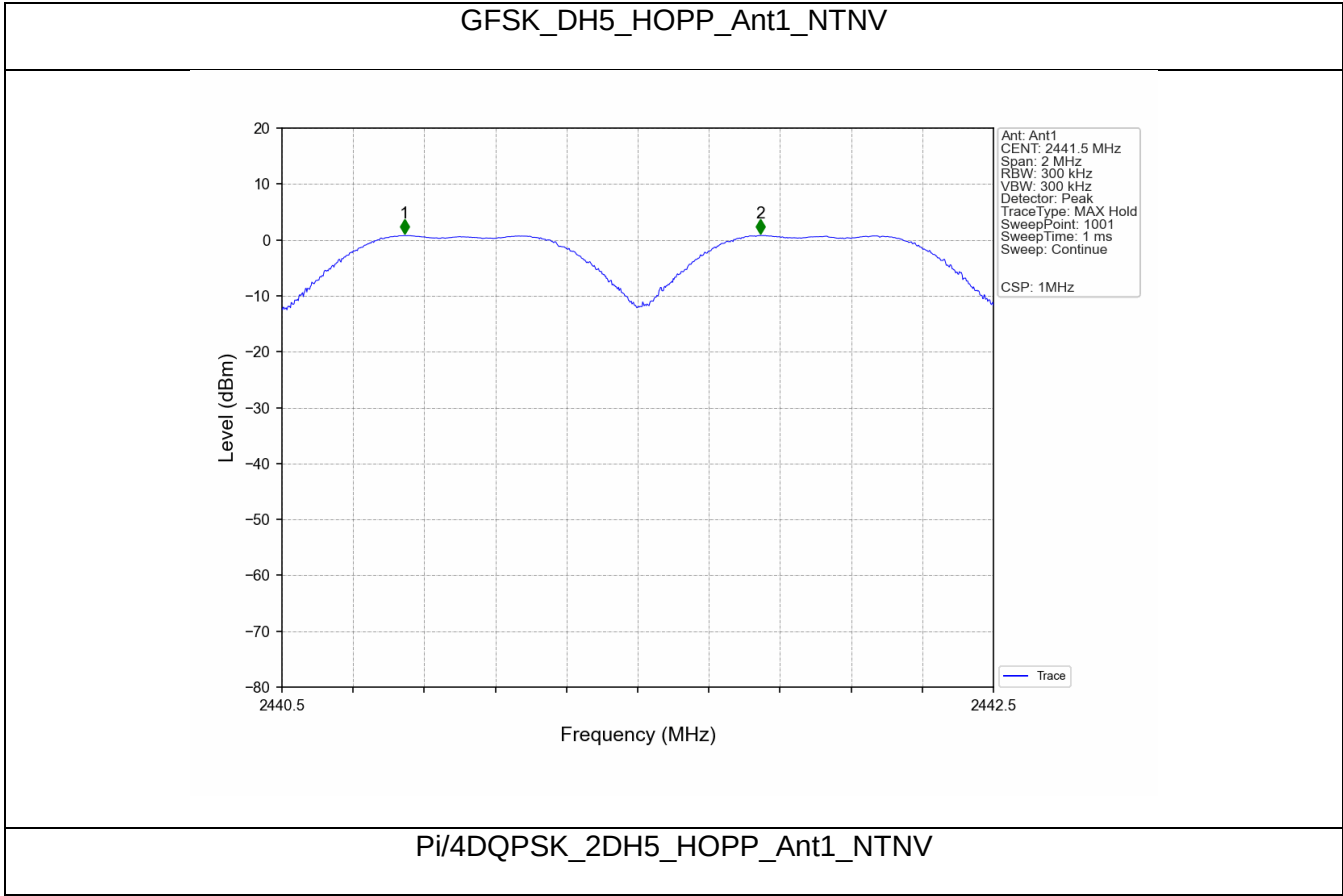
3.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	0.958	≥ 0.958	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.312	≥ 0.875	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.307	≥ 0.871	Pass

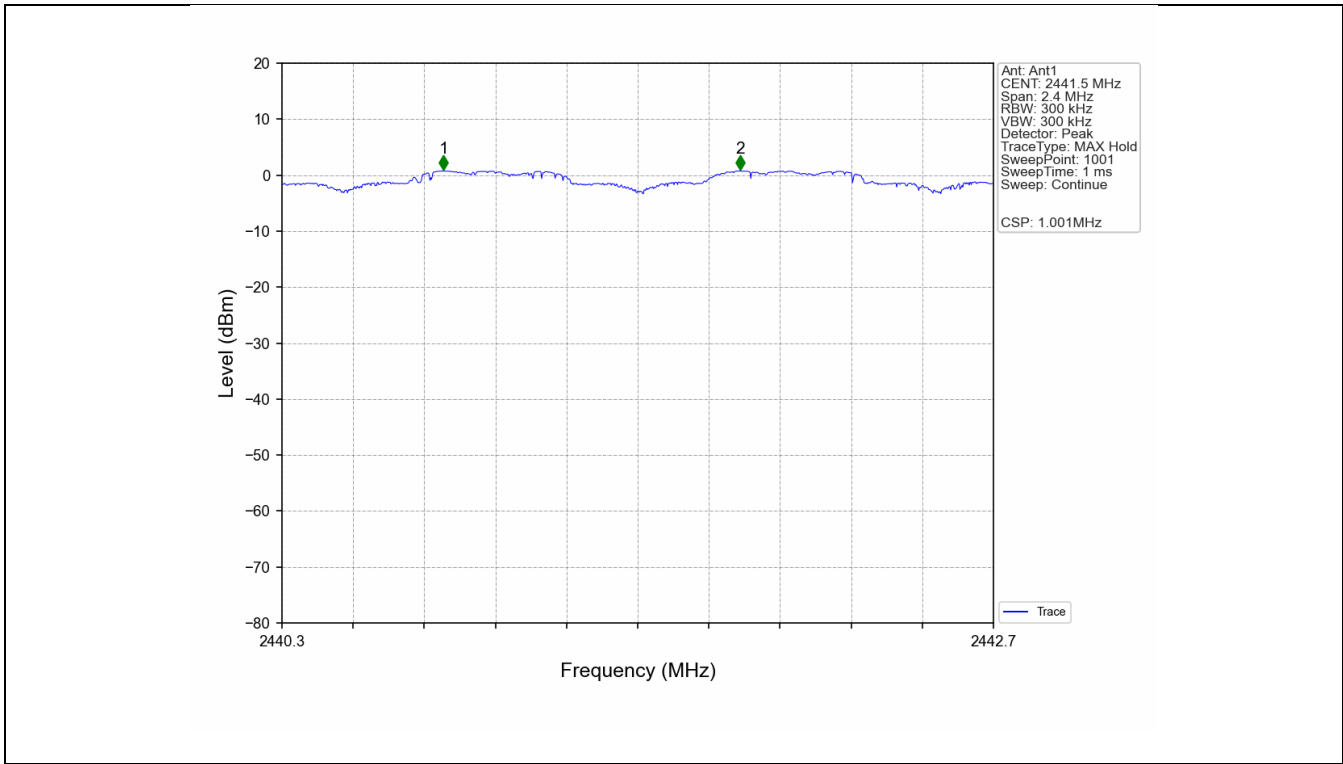
FCCID: 2ASC7VCIDS300

3.2 Test Graph

3.2.1 Ant1

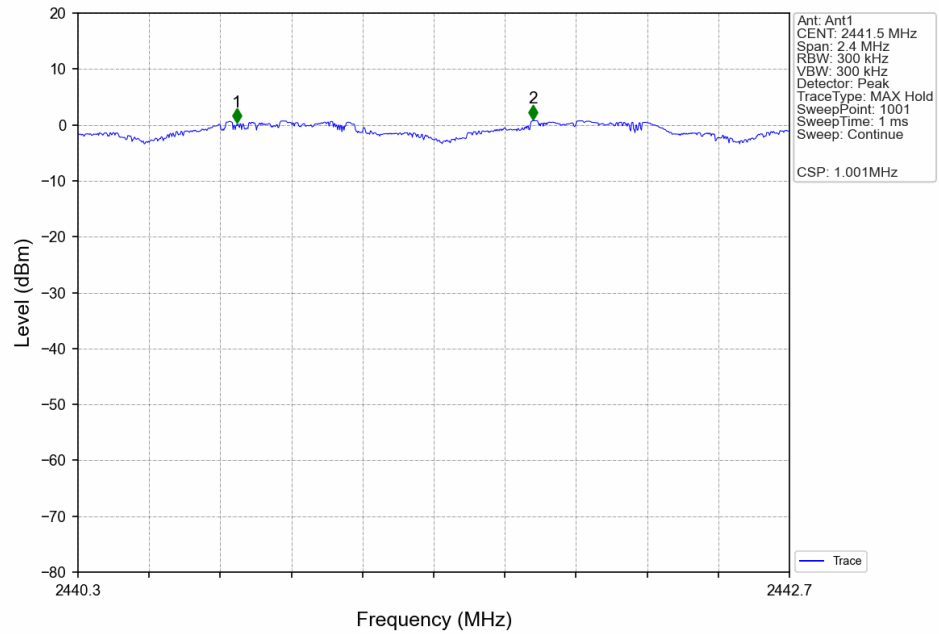


FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300

8DPSK_3DH5_HOPP_Ant1_NTNV



FCCID: 2ASC7VCIDS300

4. Number of Hopping Frequencies

4.1 Test Result

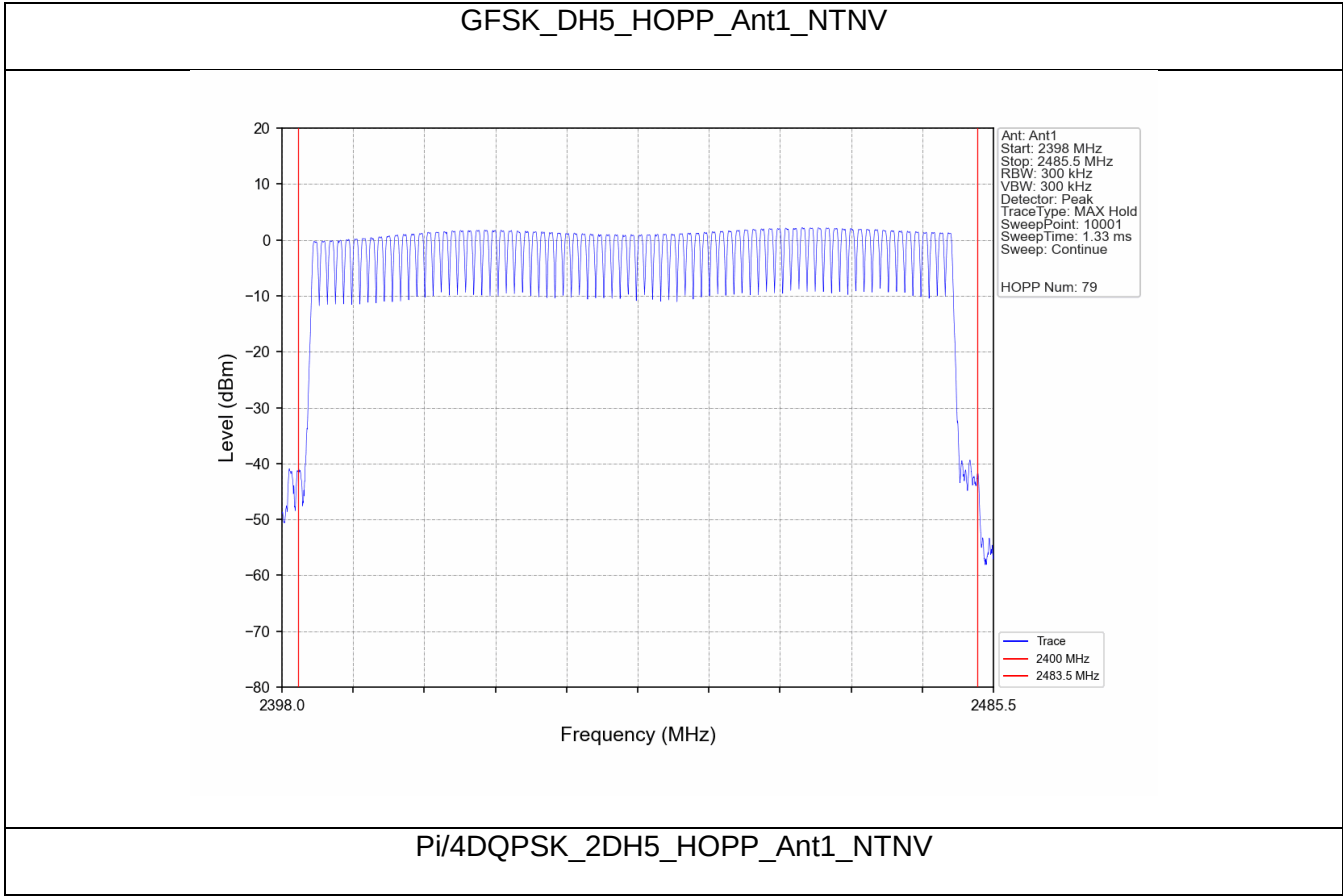
4.1.1 HoppNum

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

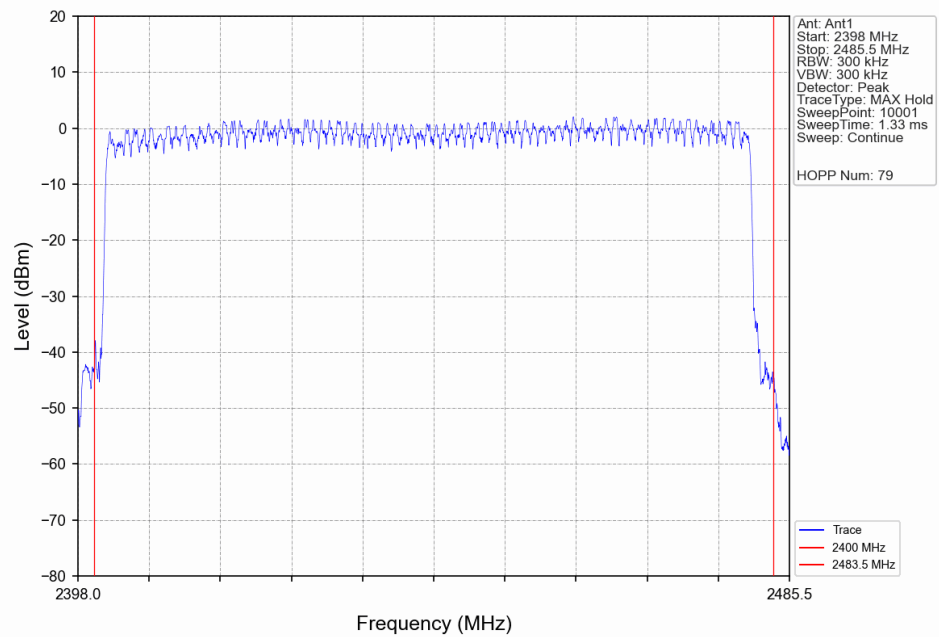
FCCID: 2ASC7VCIDS300

4.2 Test Graph

4.2.1 HoppNum

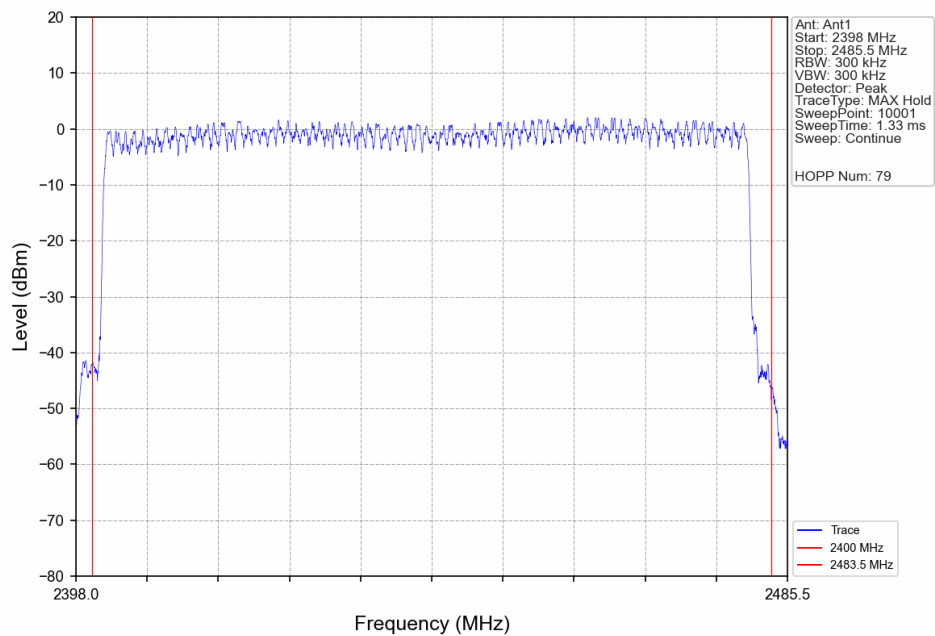


FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300

8DPSK_3DH5_HOPP_Ant1_NTNV



FCCID: 2ASC7VCIDS300

5. Time of Occupancy (Dwell Time)

5.1 Test Result

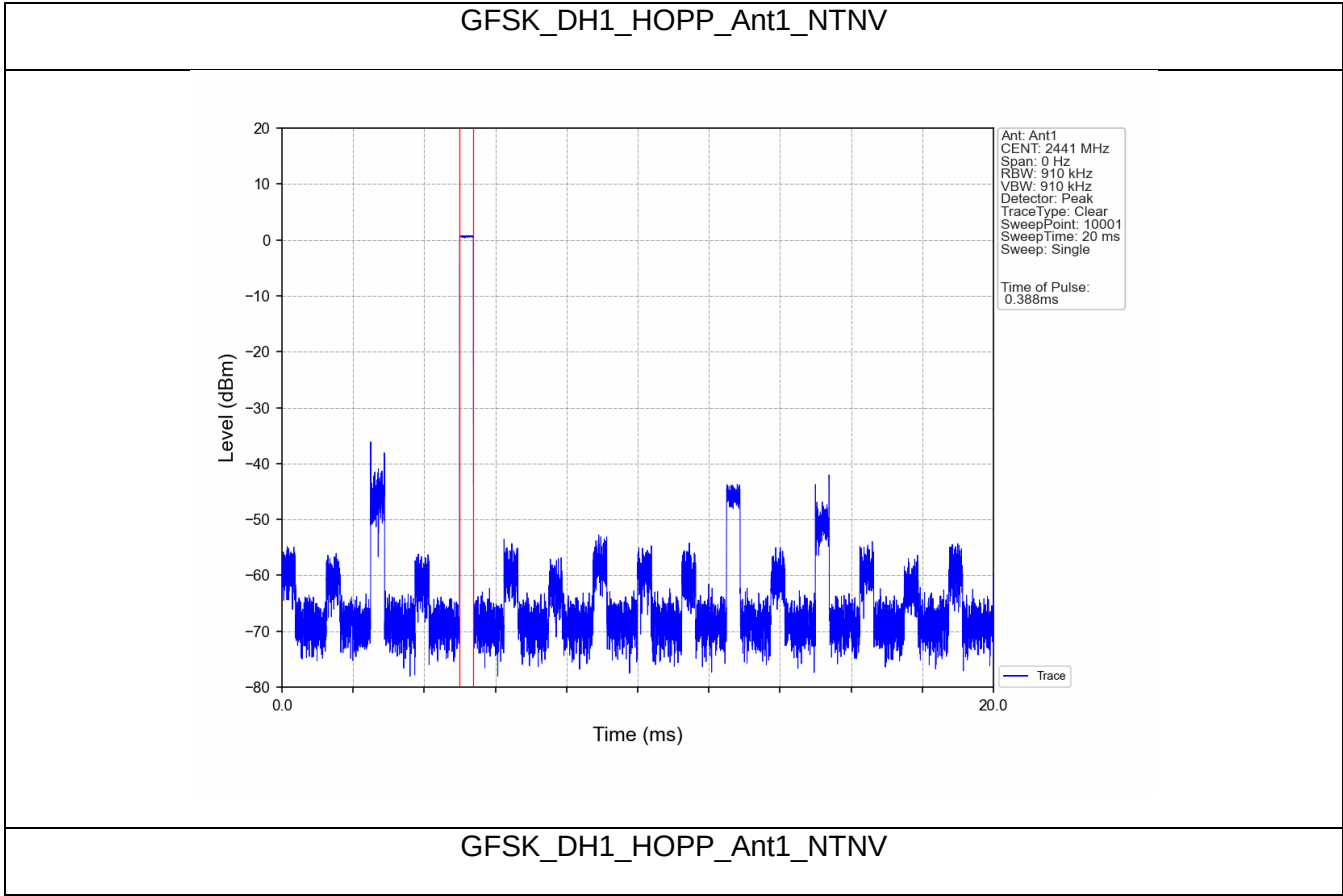
5.1.1 Ant1

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	318	123.384	<=400	Pass
			DH3	1.648	31.600	165	271.920	<=400	Pass
			DH5	2.896	31.600	107	309.872	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.396	31.600	320	126.720	<=400	Pass
			2DH3	1.648	31.600	162	266.976	<=400	Pass
			2DH5	2.896	31.600	108	312.768	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.396	31.600	320	126.720	<=400	Pass
			3DH3	1.648	31.600	157	258.736	<=400	Pass
			3DH5	2.898	31.600	114	330.372	<=400	Pass

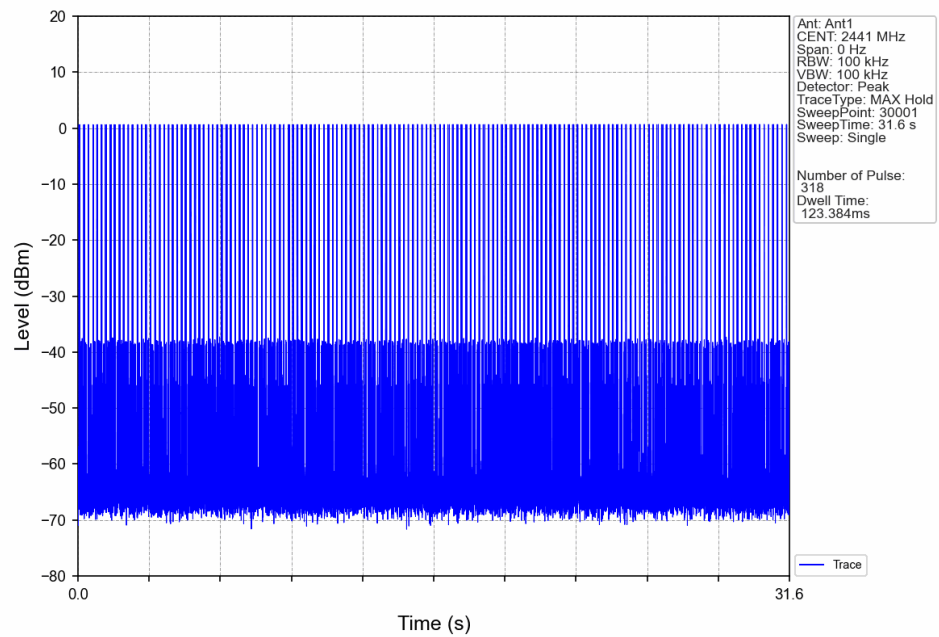
FCCID: 2ASC7VCIDS300

5.2 Test Graph

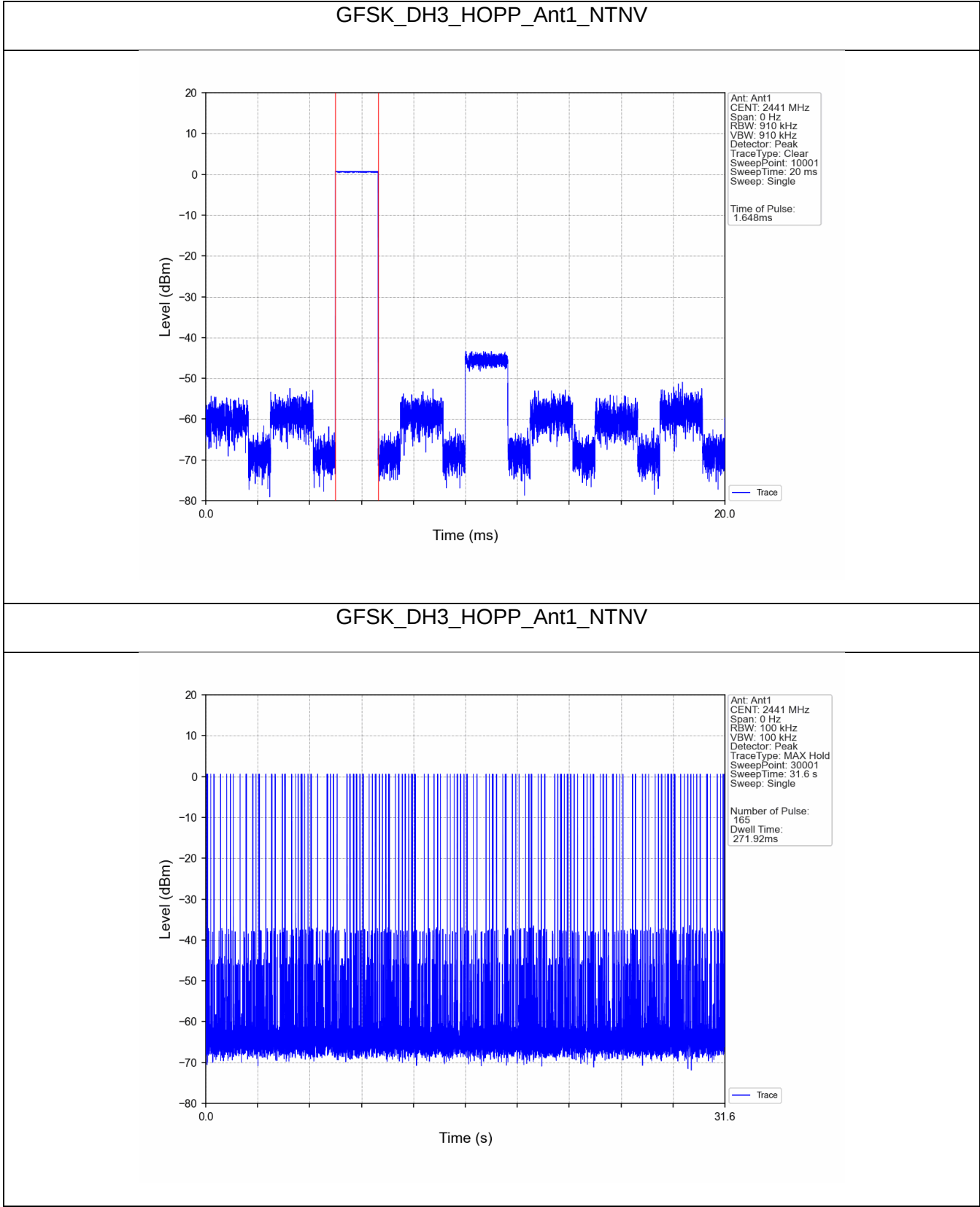
5.2.1 Ant1



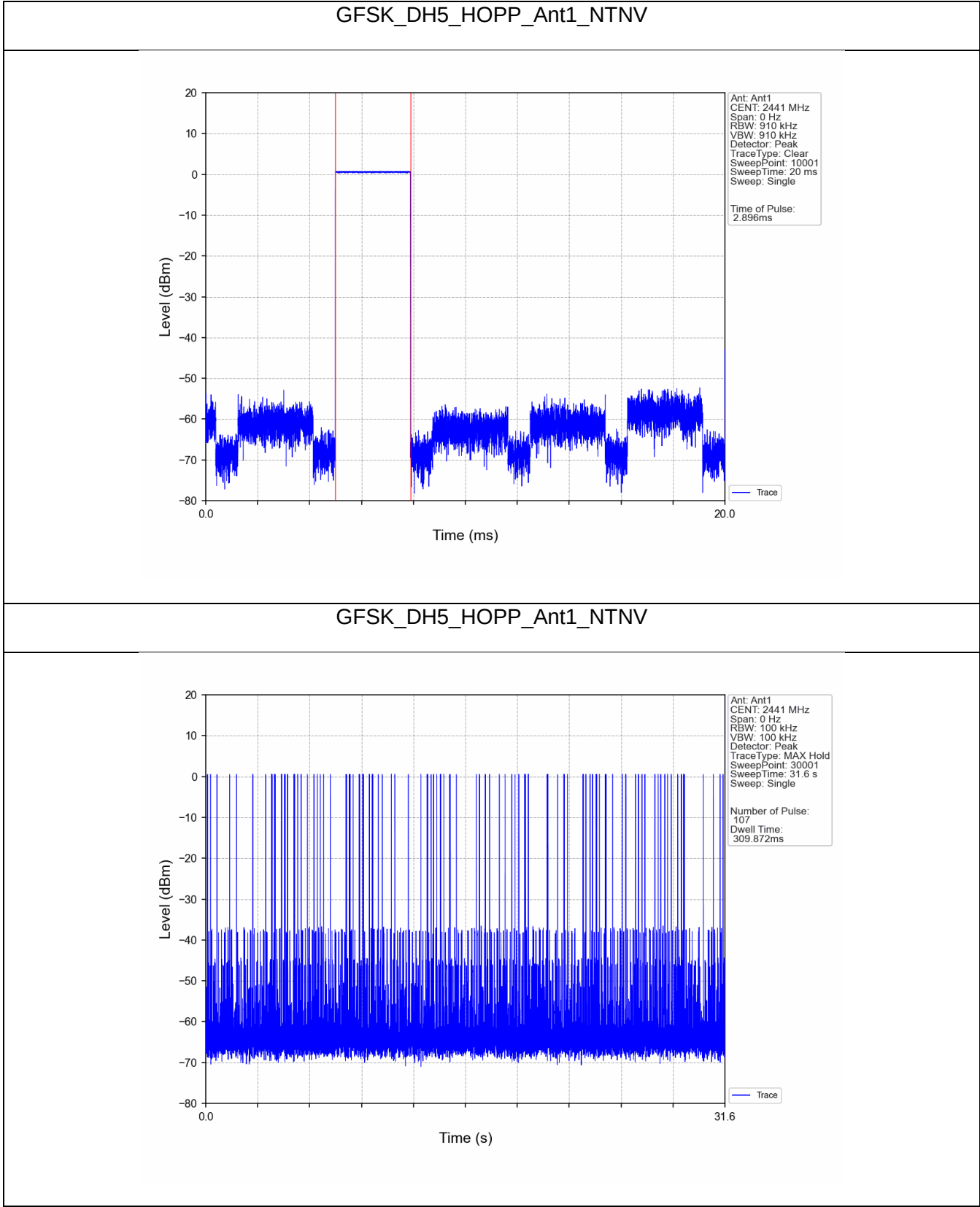
FCCID: 2ASC7VCIDS300



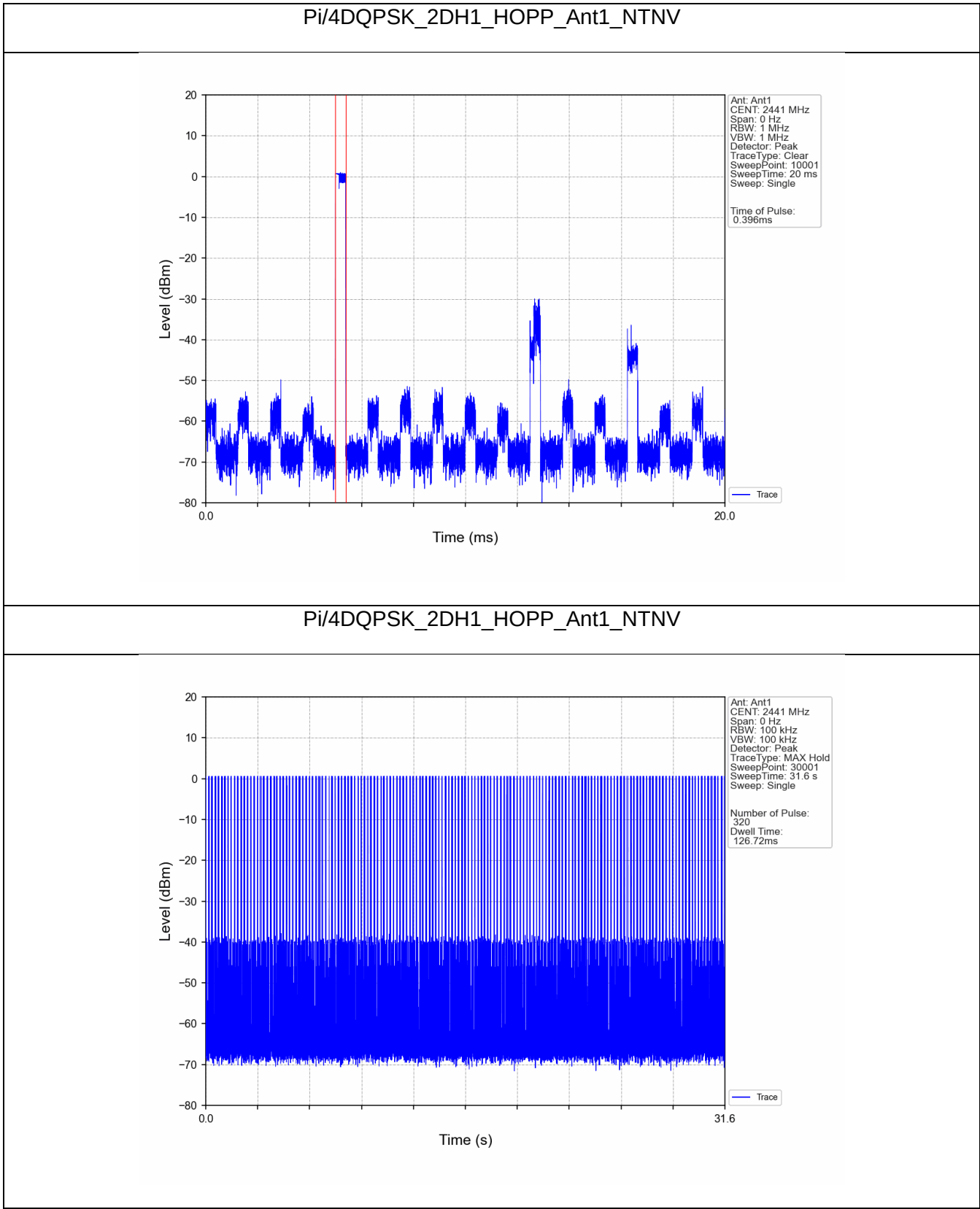
FCCID: 2ASC7VCIDS300



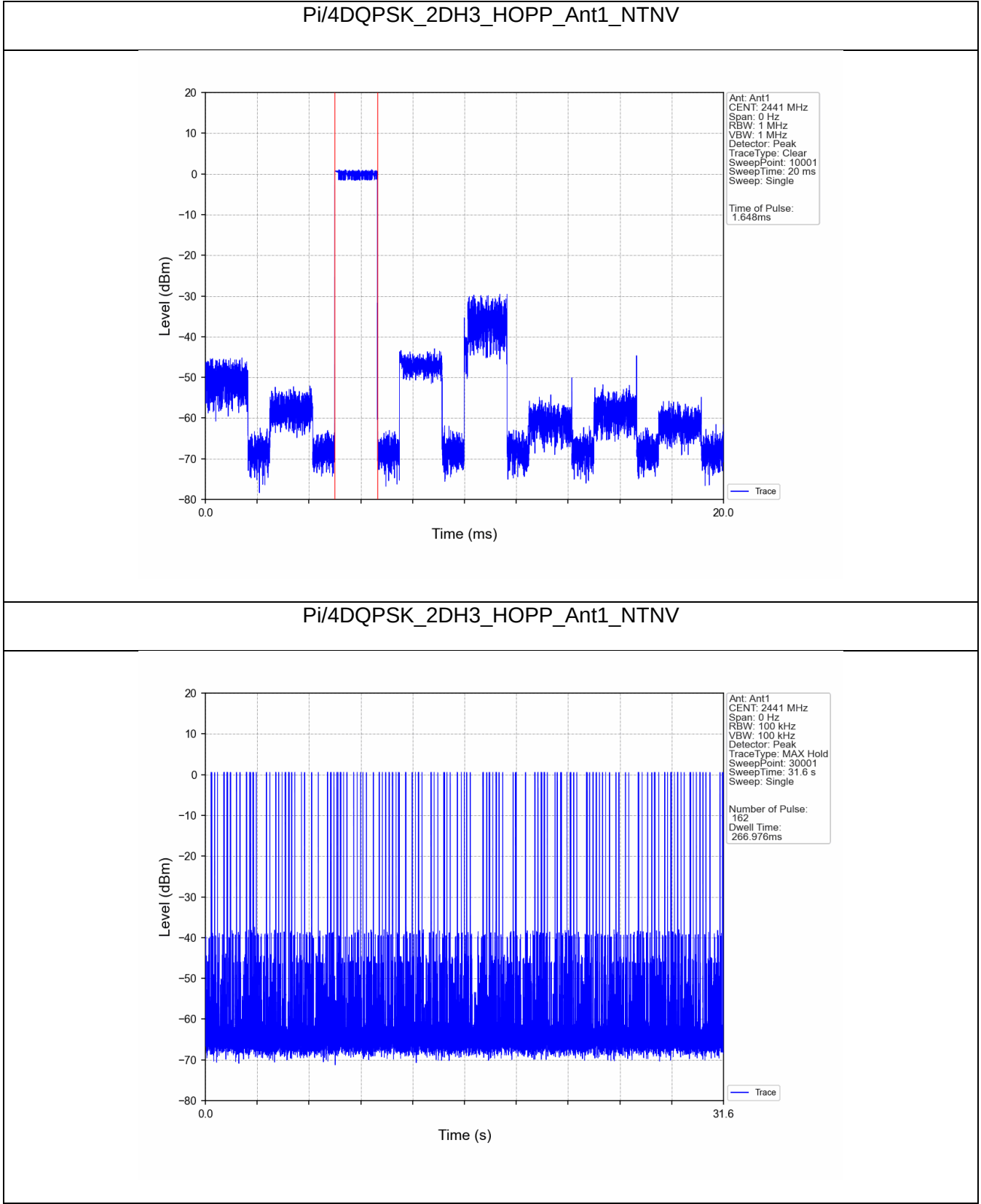
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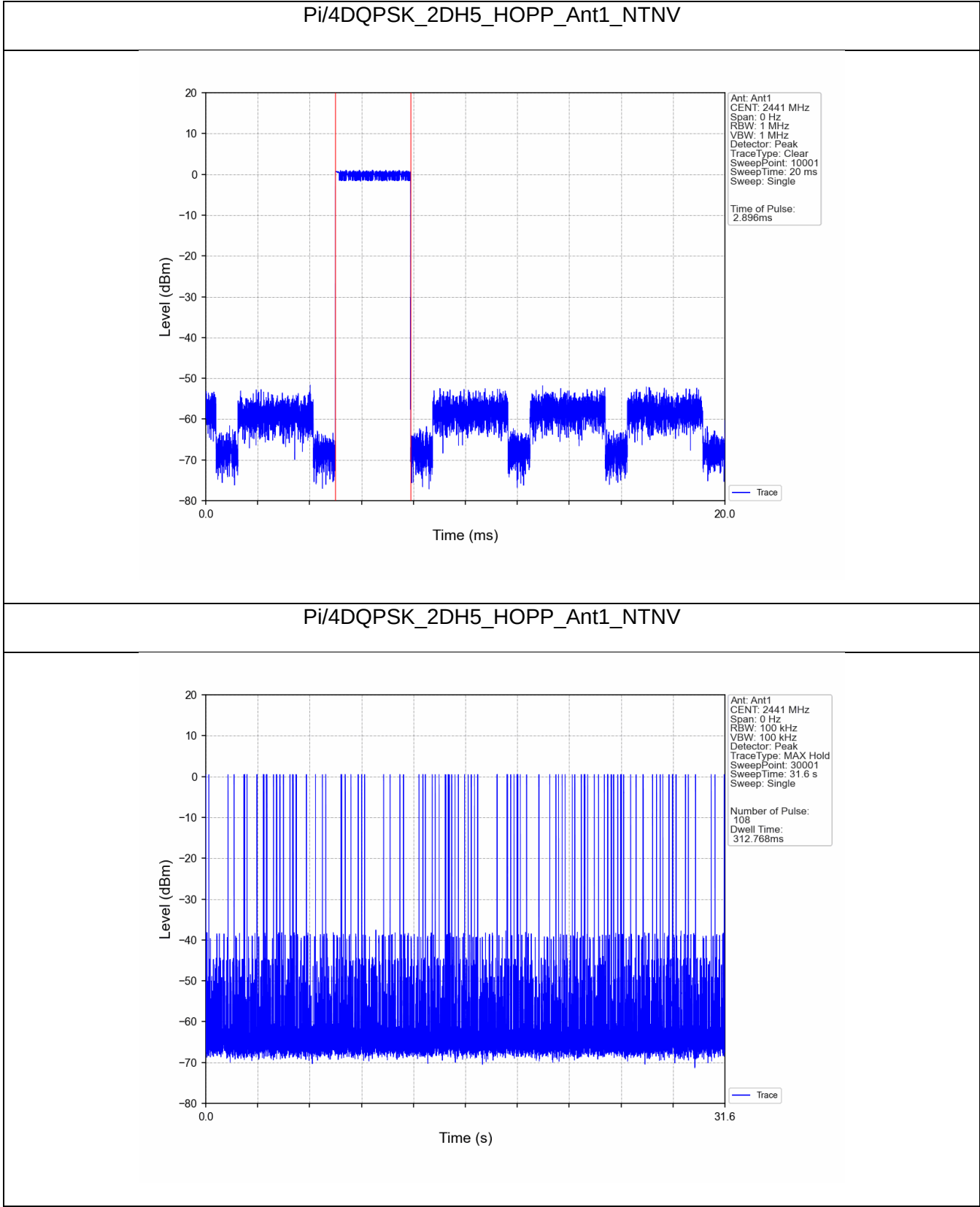
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FCCID: 2ASC7VCIDS300

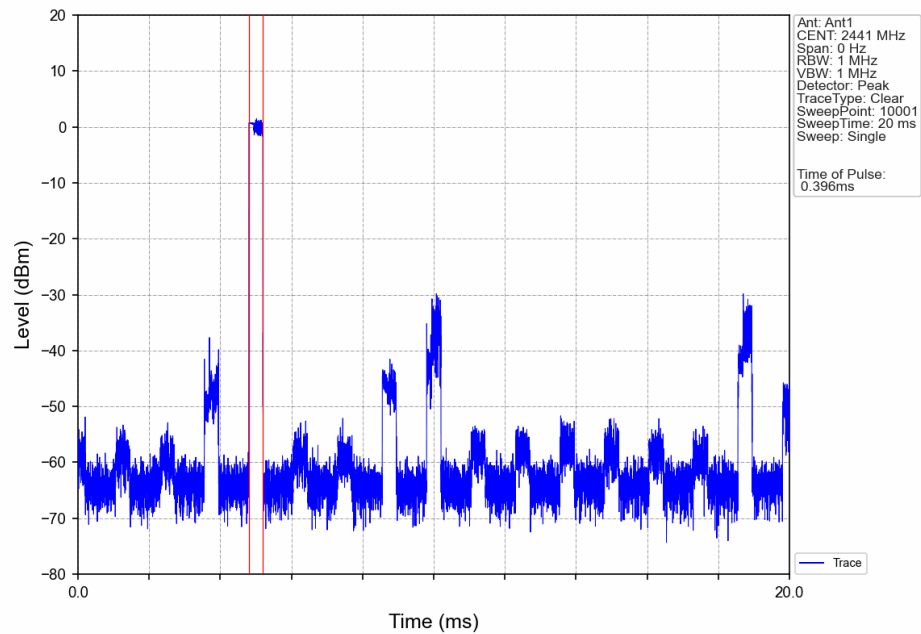


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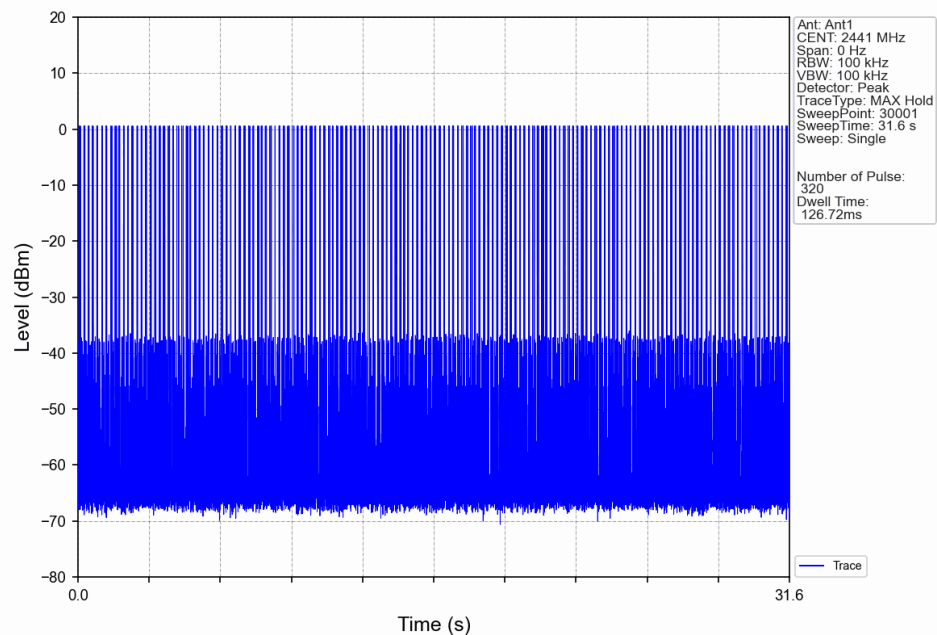


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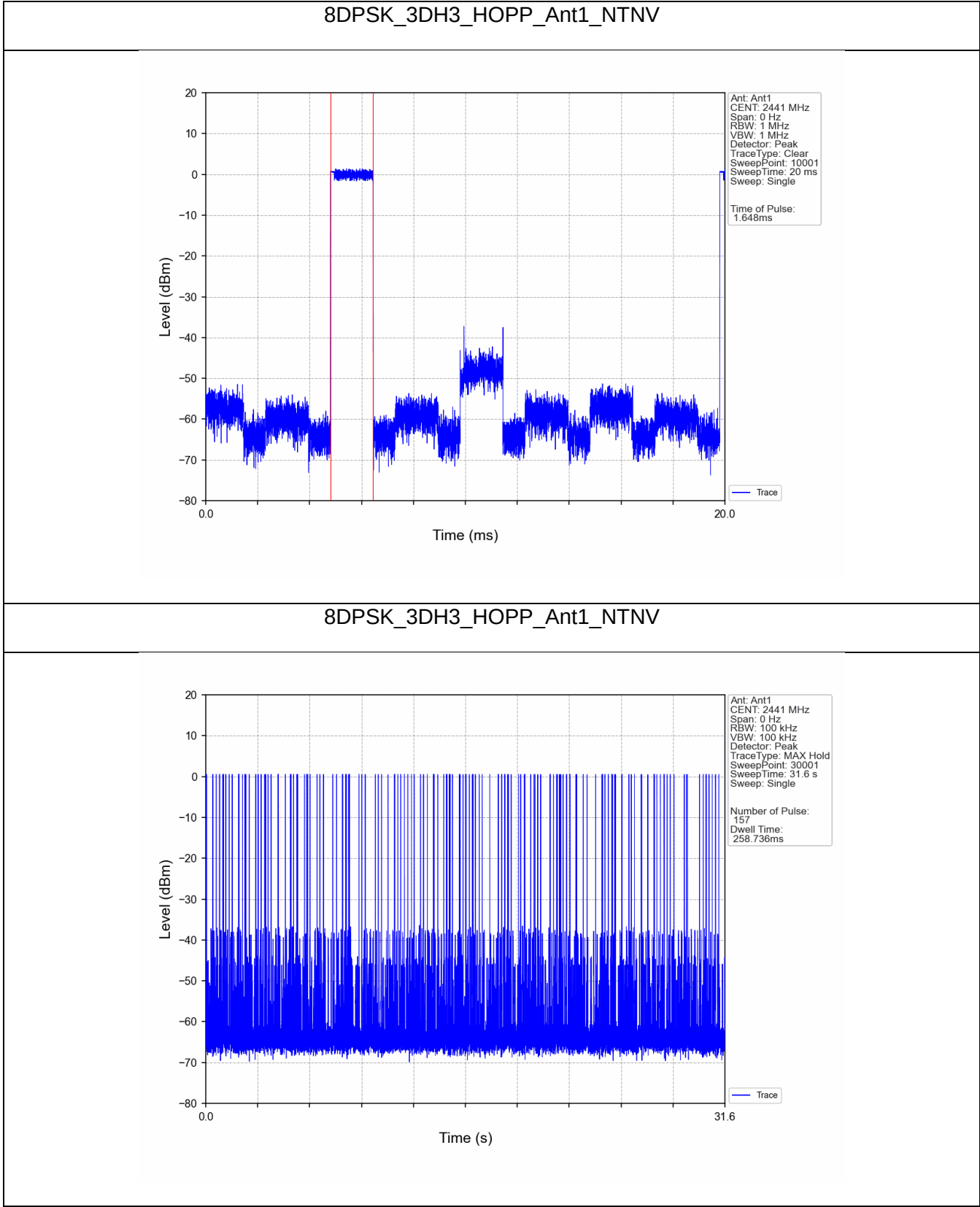
8DPSK_3DH1_HOPP_Ant1_NTNV



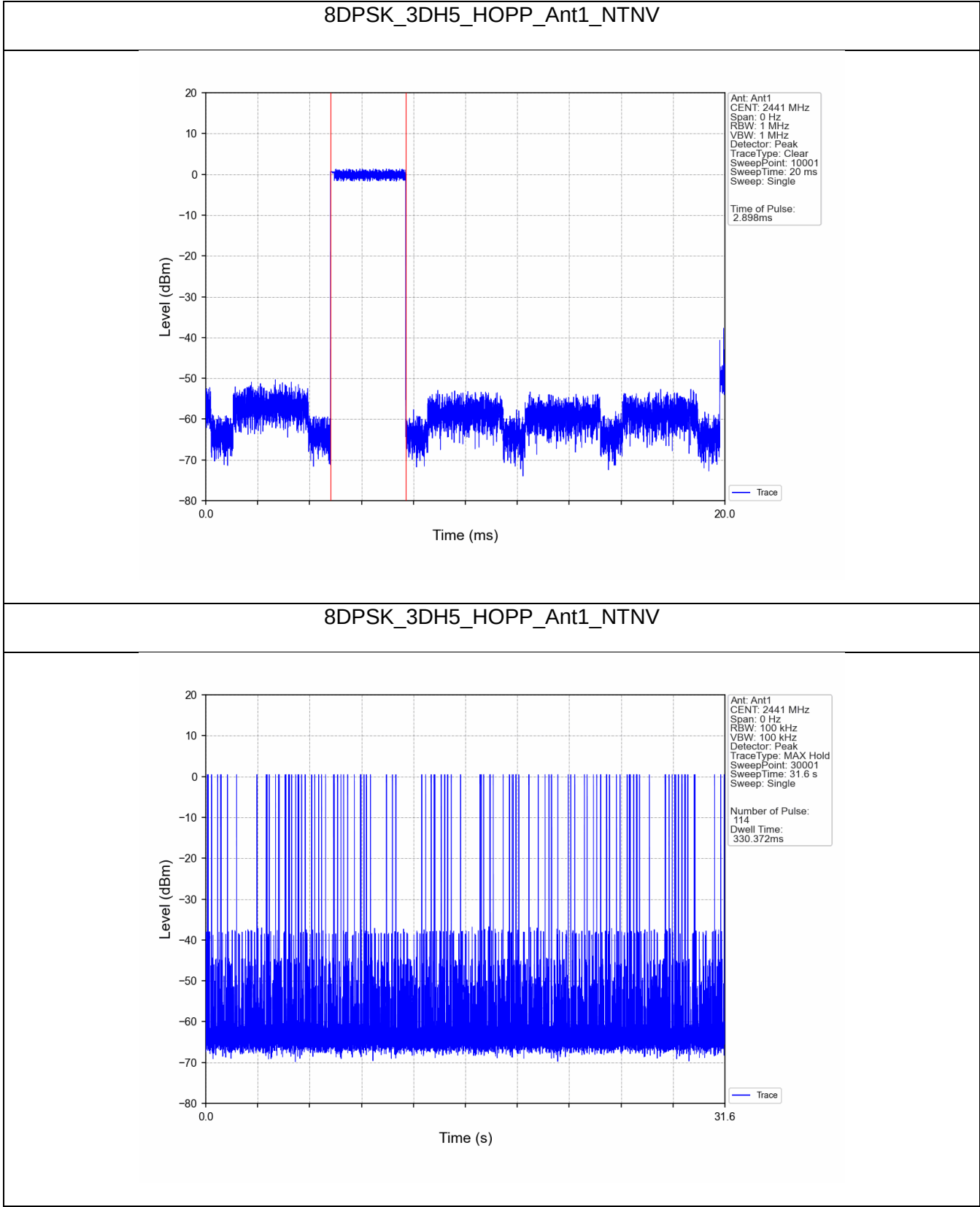
8DPSK_3DH1_HOPP_Ant1_NTNV



FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300



FCCID: 2ASC7VCIDS300

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	-0.53
		2441	DH5	1	0.67
		2480	DH5	1	1.05
Pi/4DQPSK	SISO	2402	2DH5	1	-0.47
		2441	2DH5	1	0.75
		2480	2DH5	1	1.06
8DPSK	SISO	2402	3DH5	1	-0.60
		2441	3DH5	1	0.54
		2480	3DH5	1	0.92
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	1.05	-18.95	Pass
		2441	DH5	1	1.05	-18.95	Pass
		2480	DH5	1	1.05	-18.95	Pass
		HOPP	DH5	1	1.05	-18.95	Pass
					1.05	-18.95	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.06	-18.94	Pass

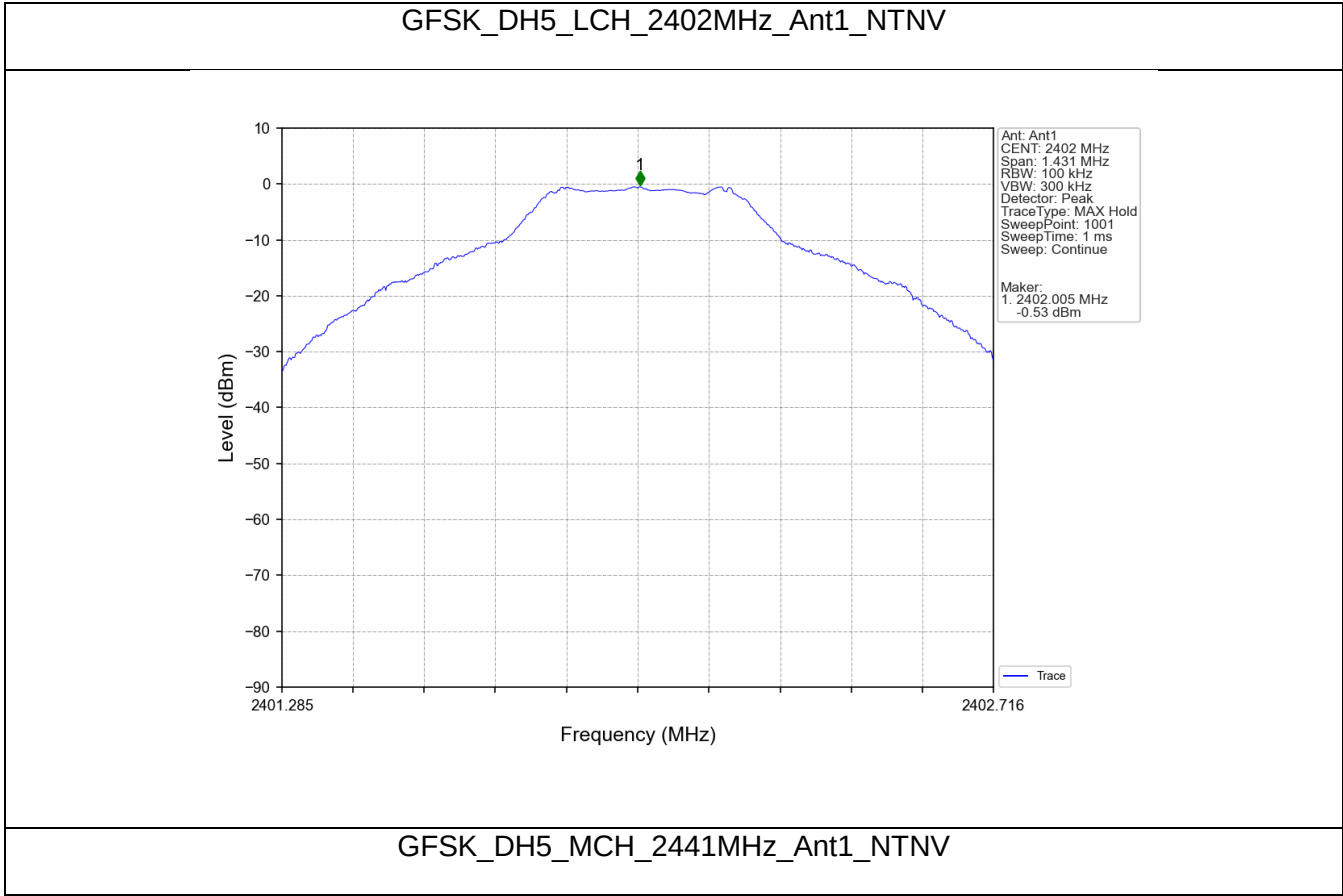
FCCID: 2ASC7VCIDS300

		2441	2DH5	1	1.06	-18.94	Pass
		2480	2DH5	1	1.06	-18.94	Pass
		HOPP	2DH5	1	1.06	-18.94	Pass
					1.06	-18.94	Pass
8DPSK	SISO	2402	3DH5	1	0.92	-19.08	Pass
		2441	3DH5	1	0.92	-19.08	Pass
		2480	3DH5	1	0.92	-19.08	Pass
		HOPP	3DH5	1	0.92	-19.08	Pass
					0.92	-19.08	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.					

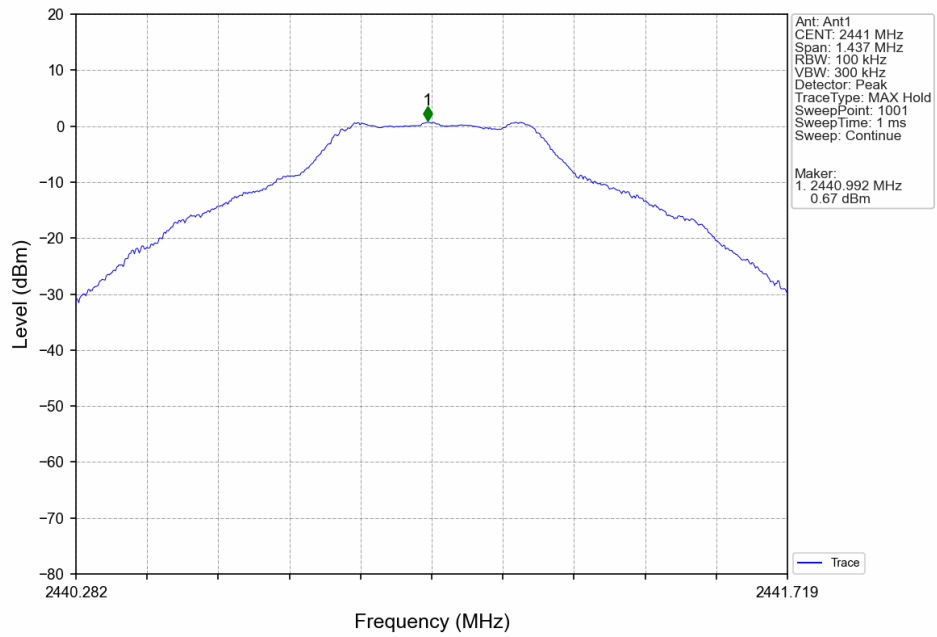
FCCID: 2ASC7VCIDS300

6.2 Test Graph

6.2.1 Ref

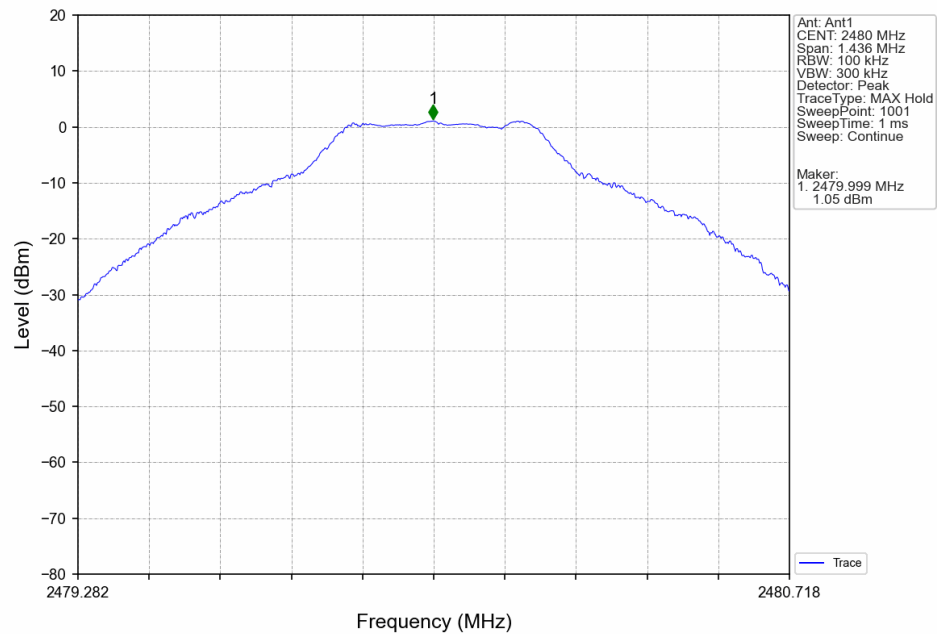


FCCID: 2ASC7VCIDS300

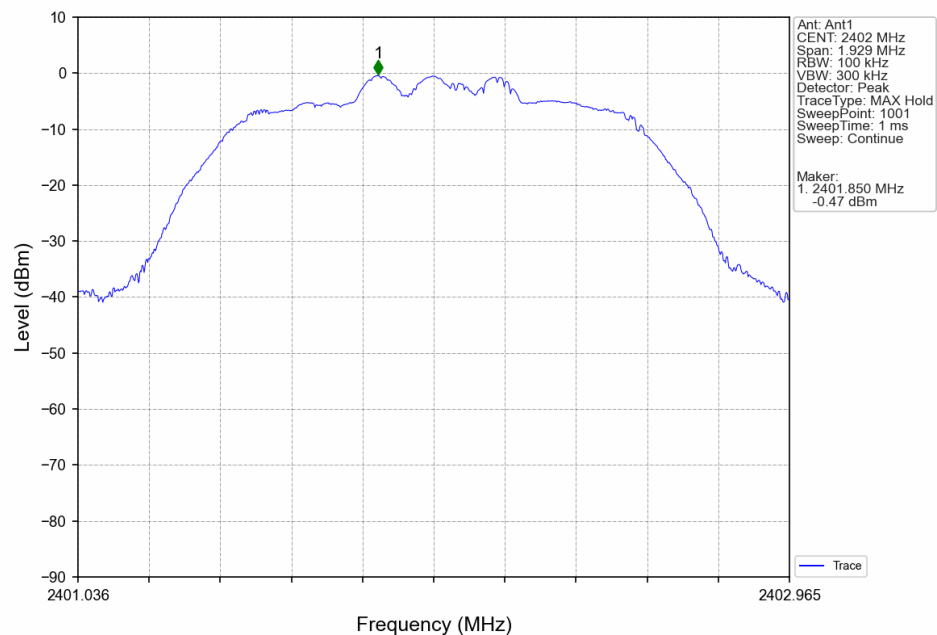


FCCID: 2ASC7VCIDS300

GFSK_DH5_HCH_2480MHz_Ant1_NTNV

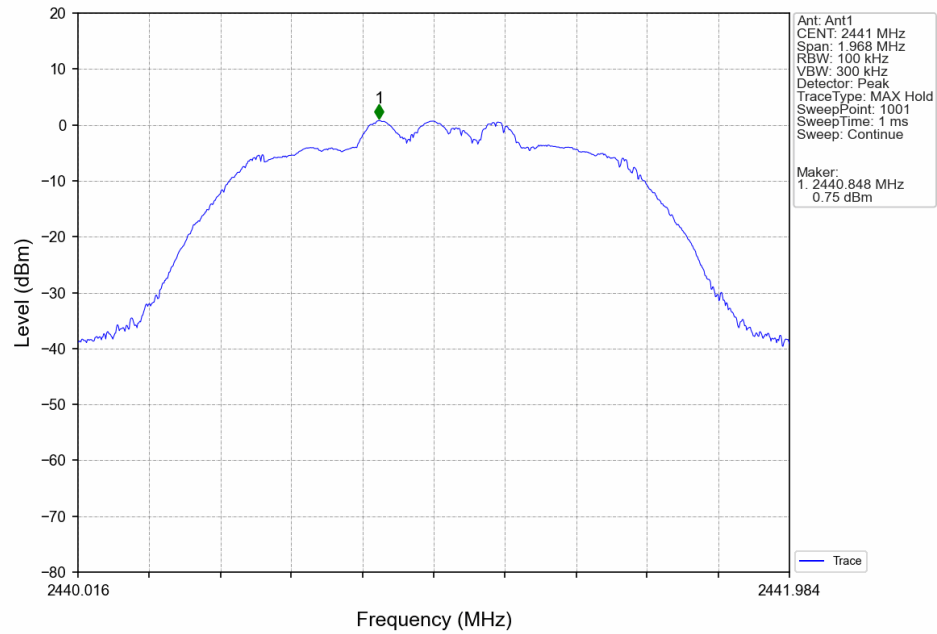


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

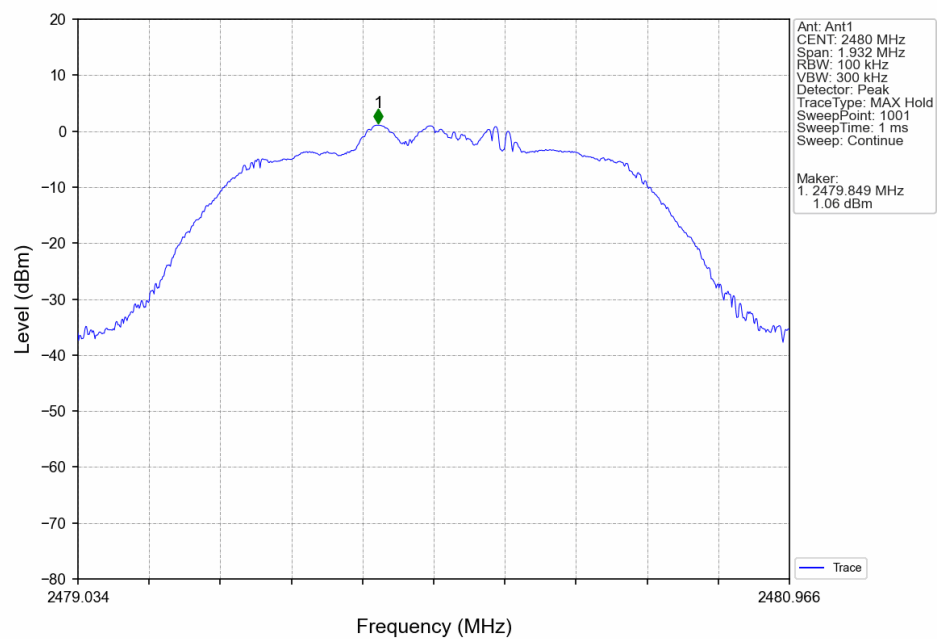


FCCID: 2ASC7VCIDS300

Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV

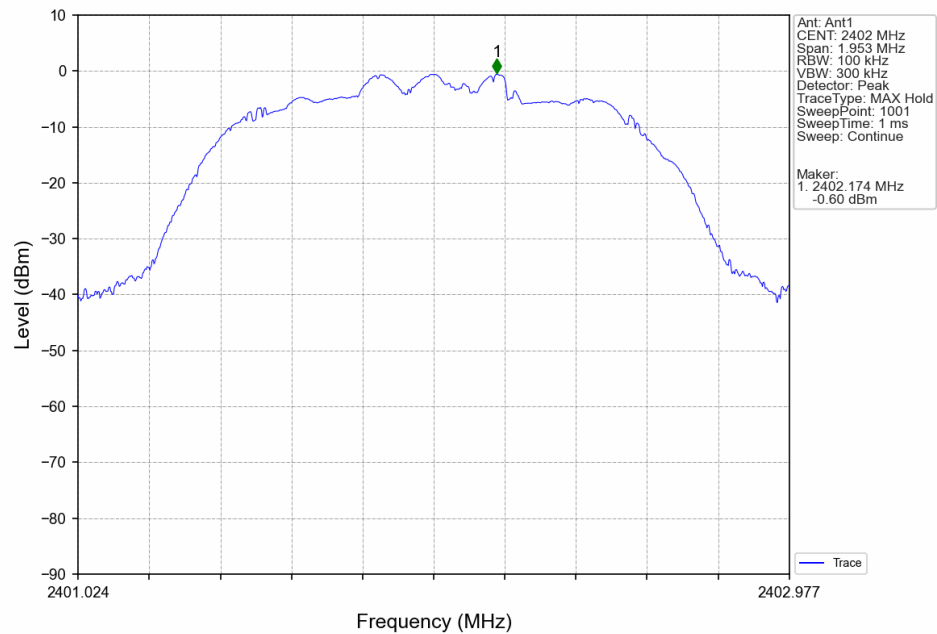


Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

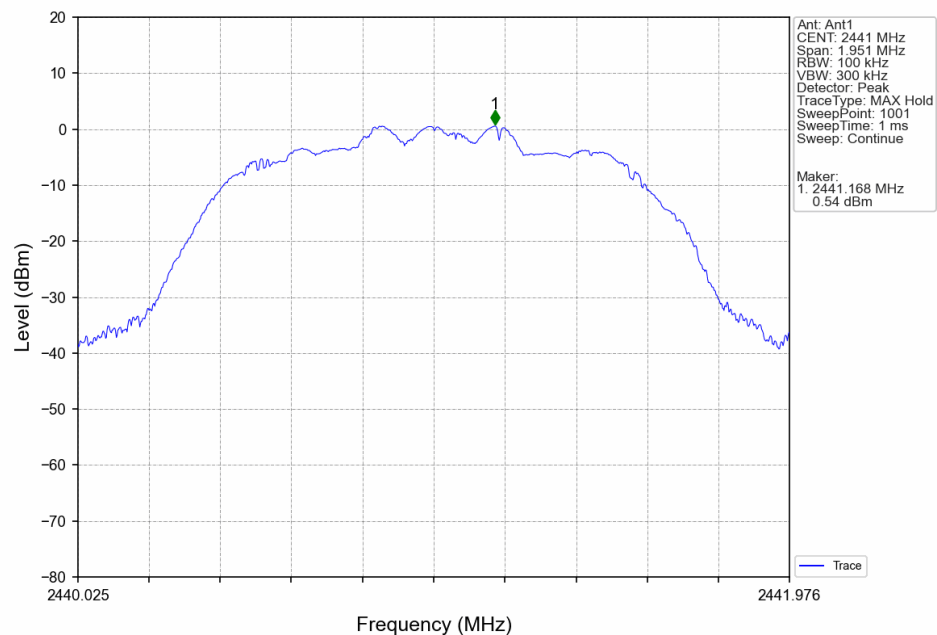


FCCID: 2ASC7VCIDS300

8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

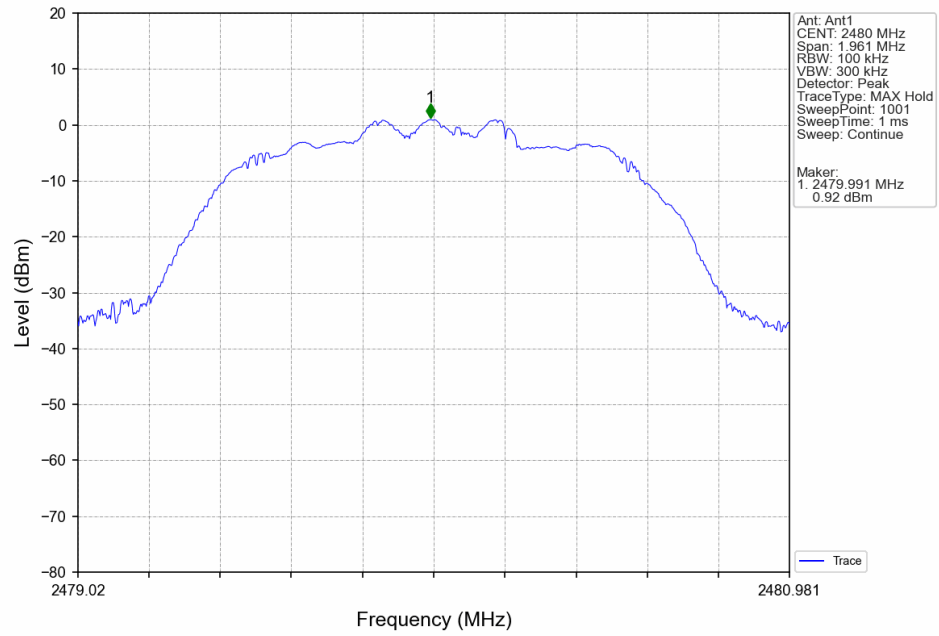


8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



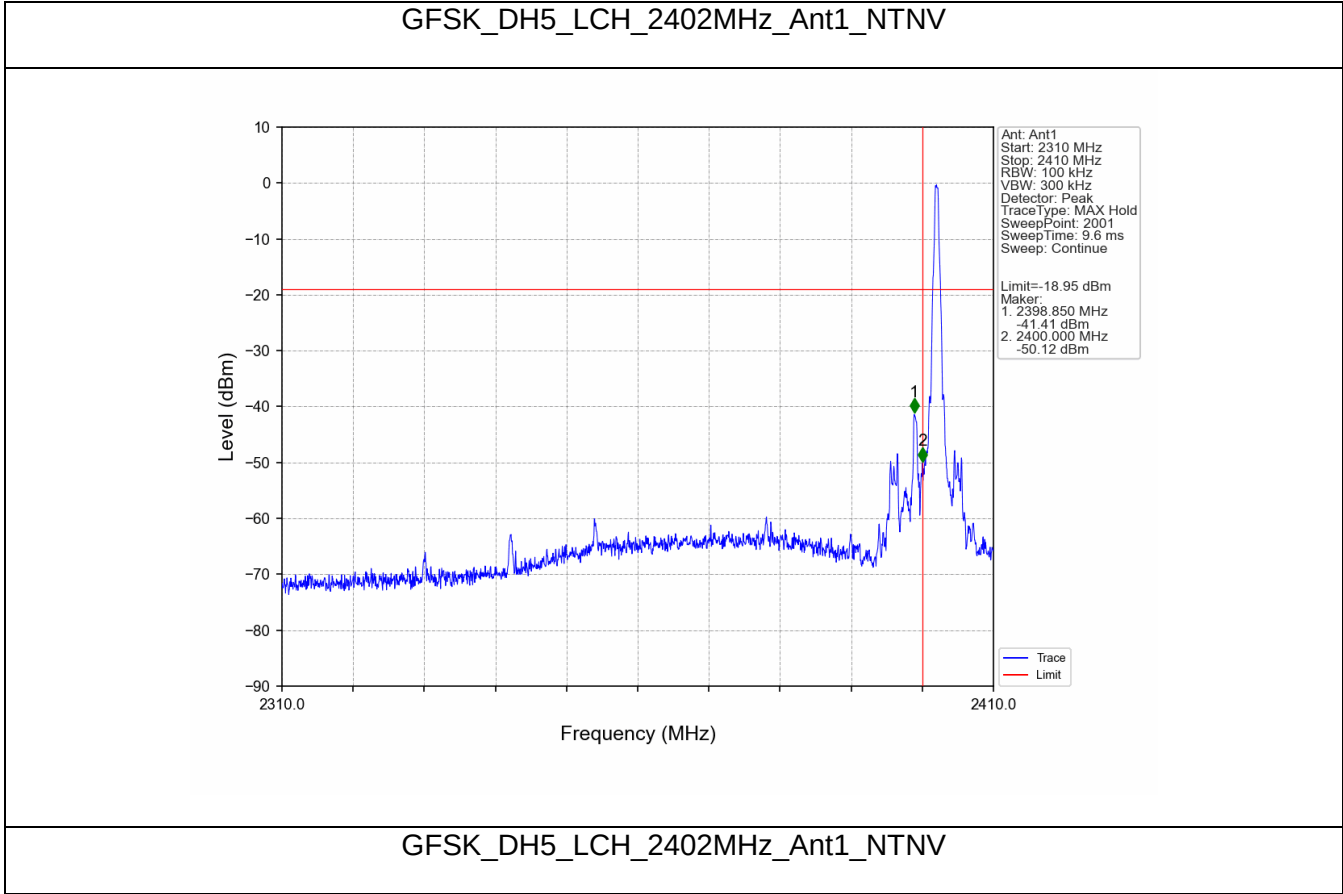
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8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

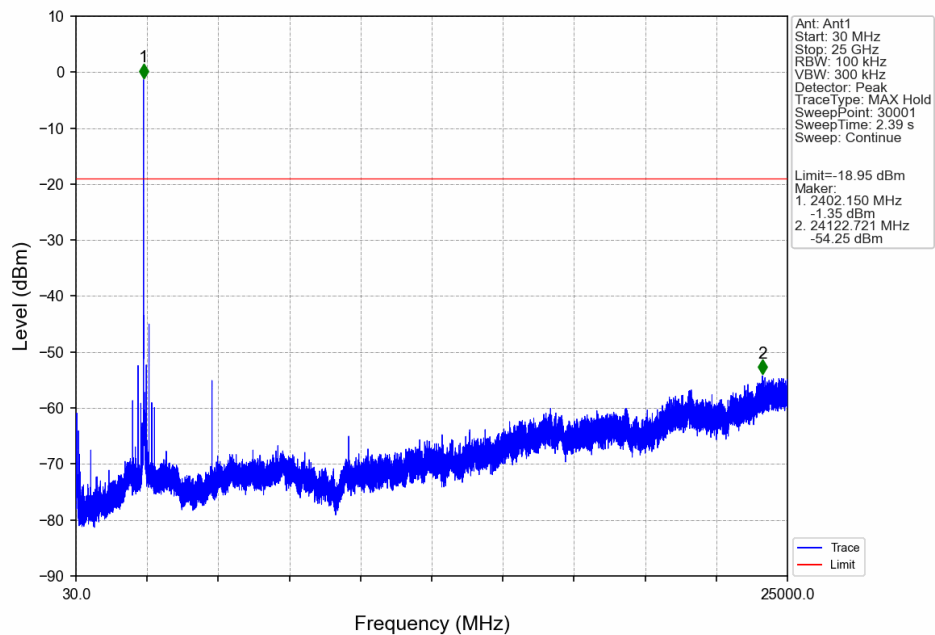


FCCID: 2ASC7VCIDS300

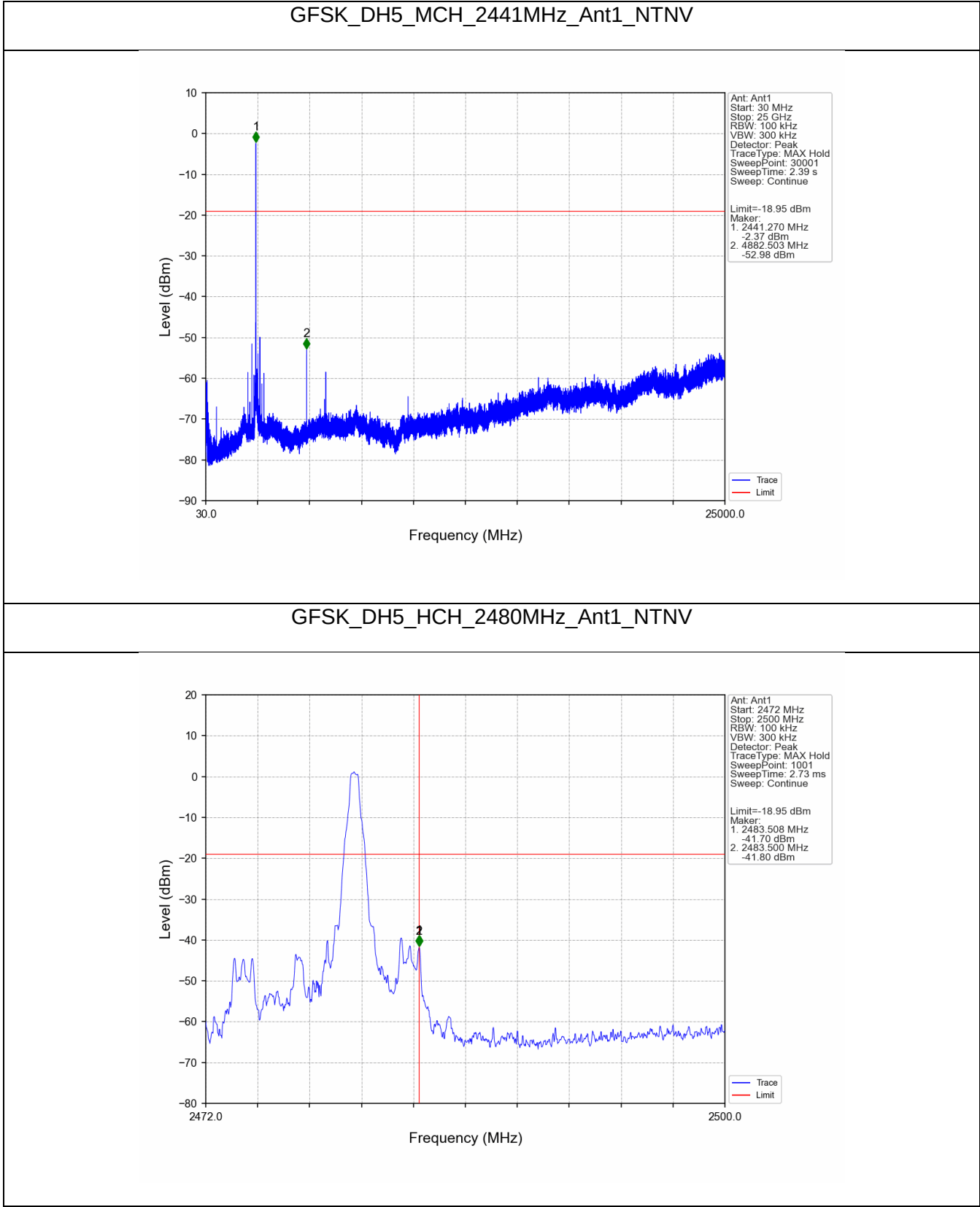
6.2.2 CSE



FCCID: 2ASC7VCIDS300

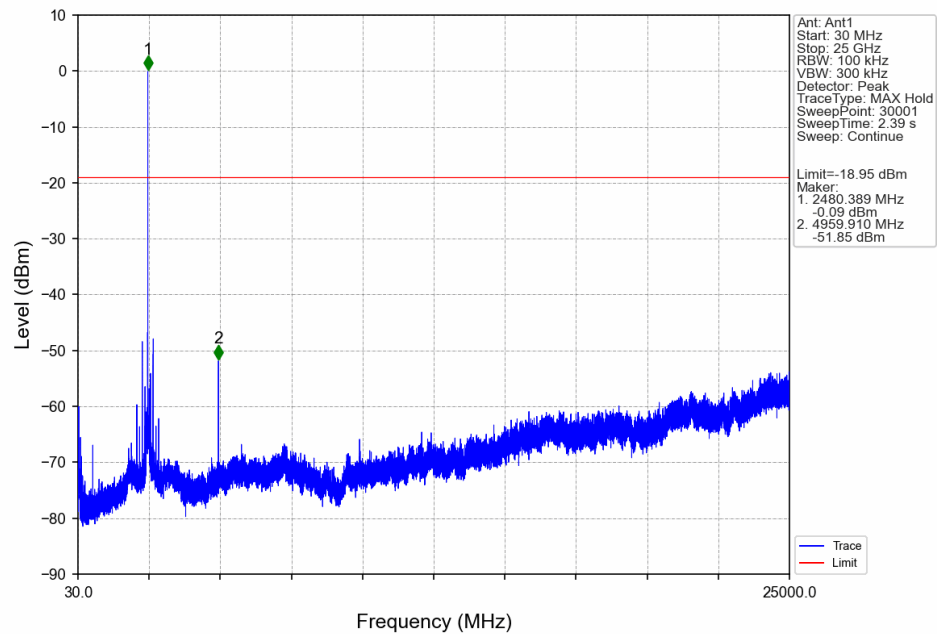


FCCID: 2ASC7VCIDS300

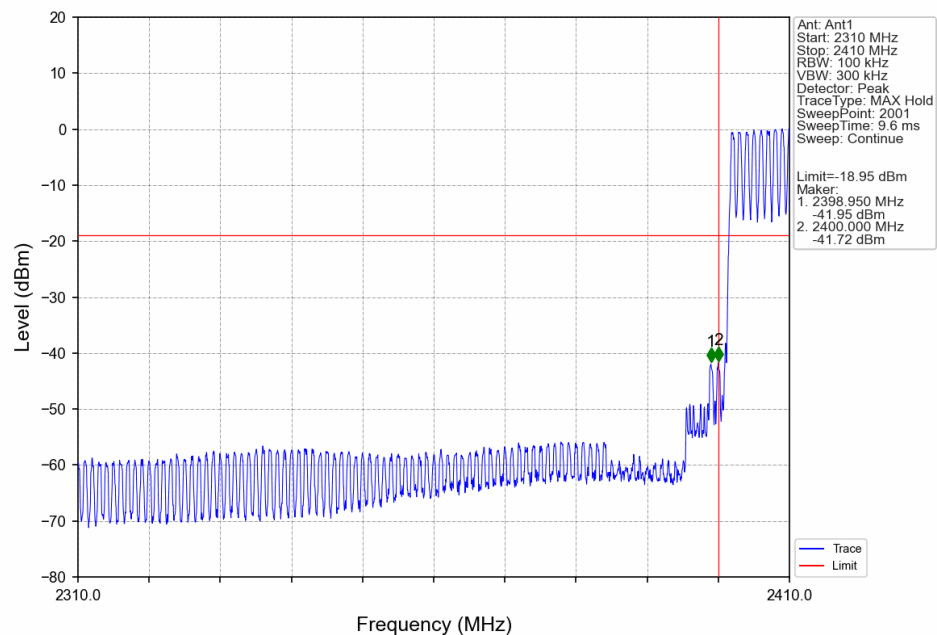


FCCID: 2ASC7VCIDS300

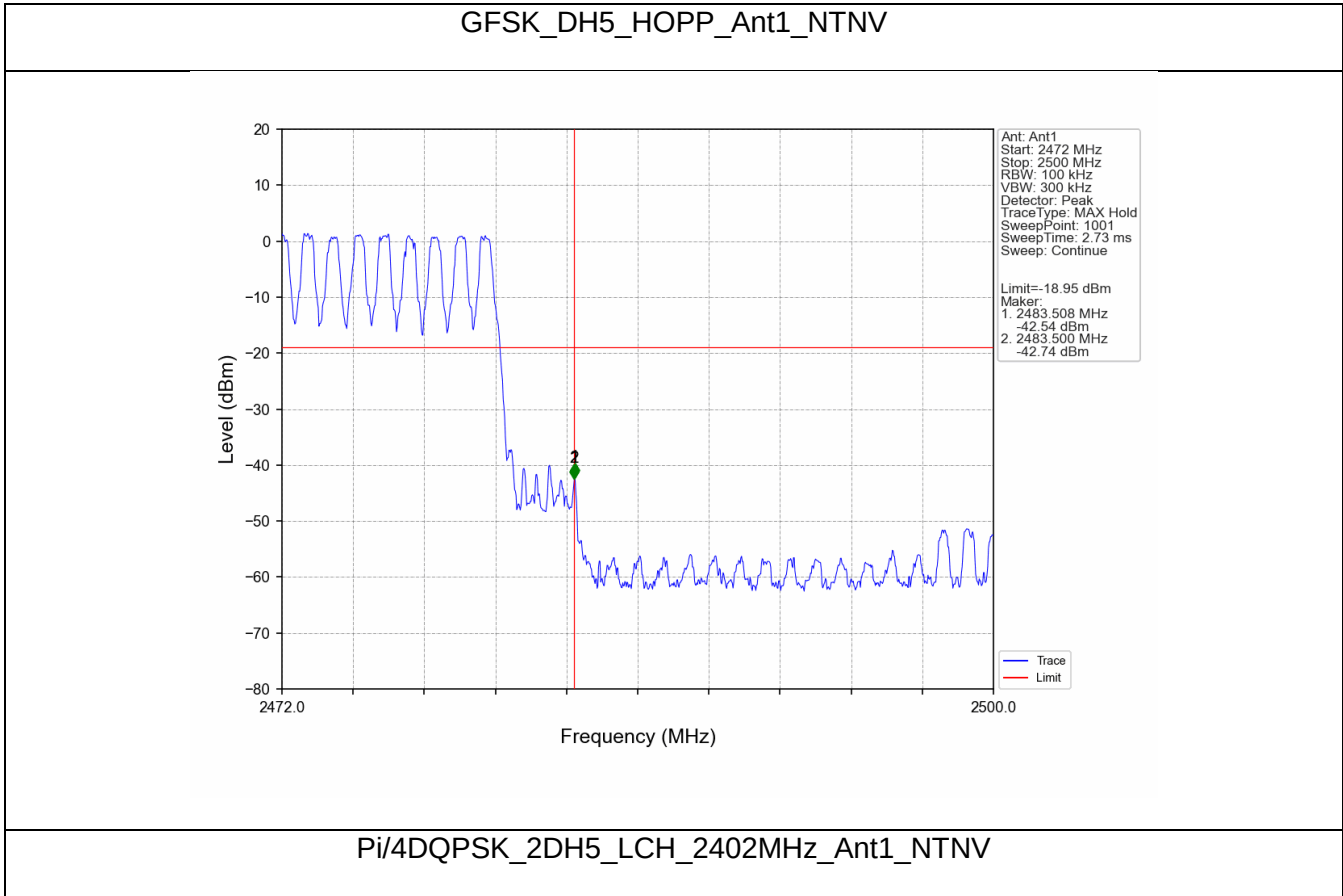
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



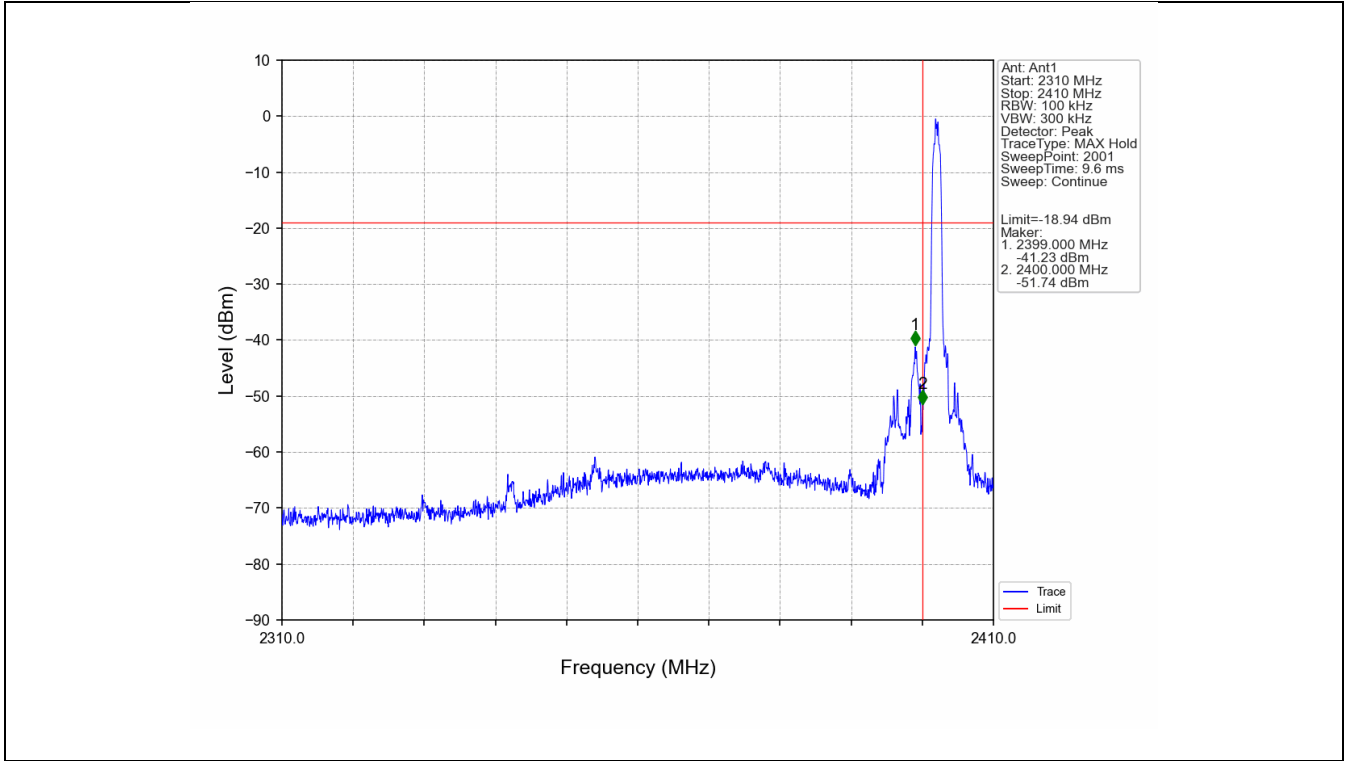
GFSK_DH5_HOPP_Ant1_NTNV



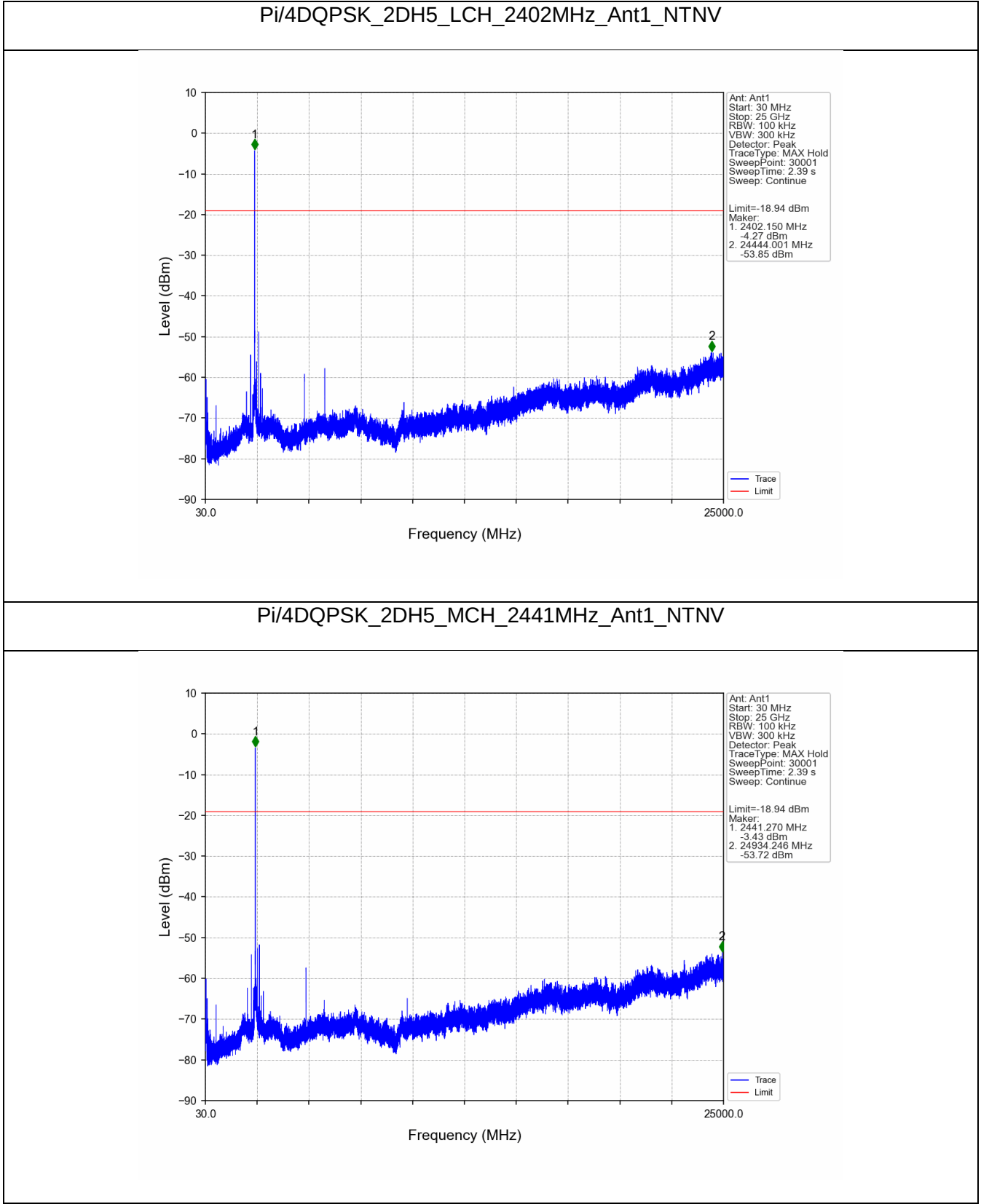
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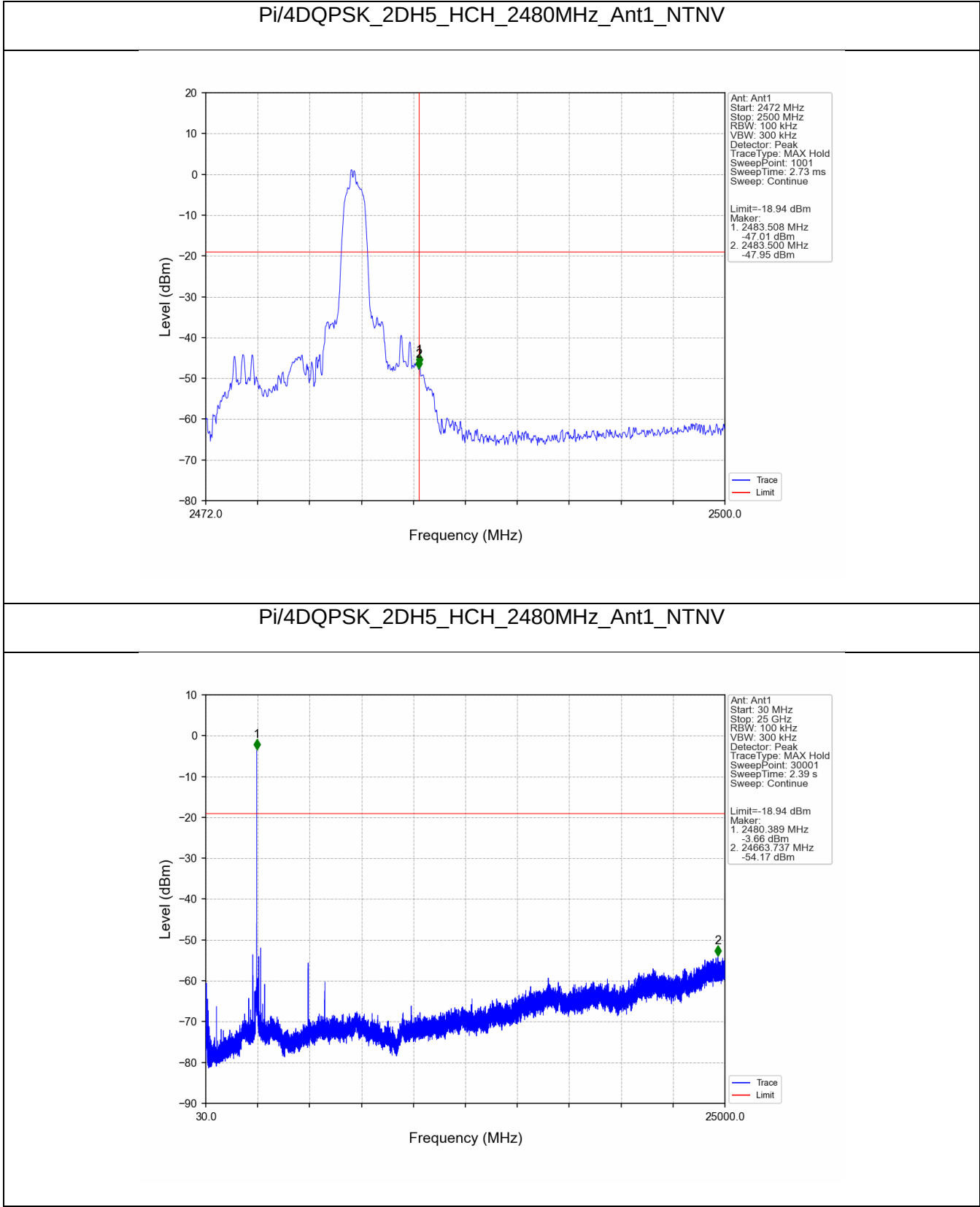
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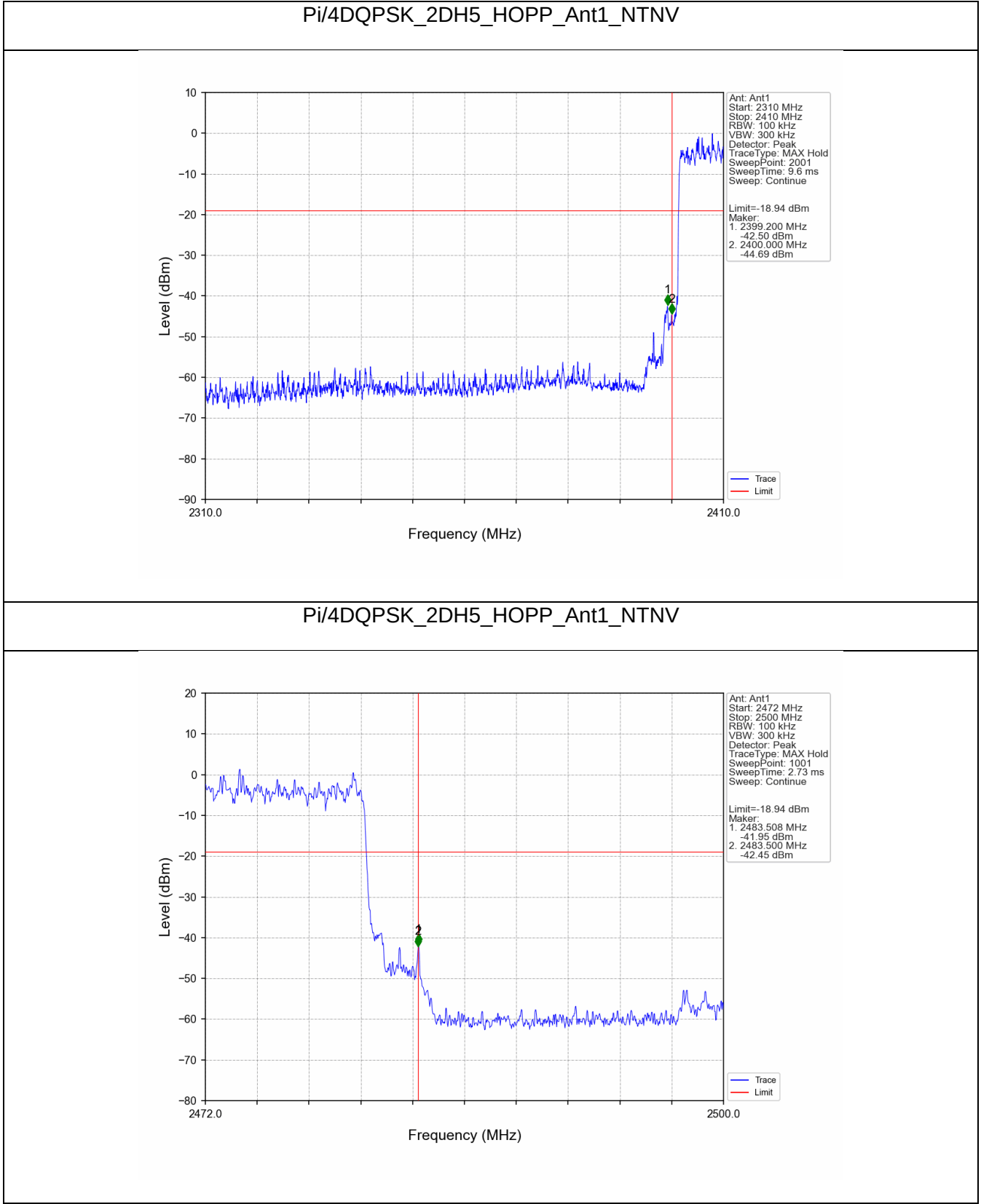
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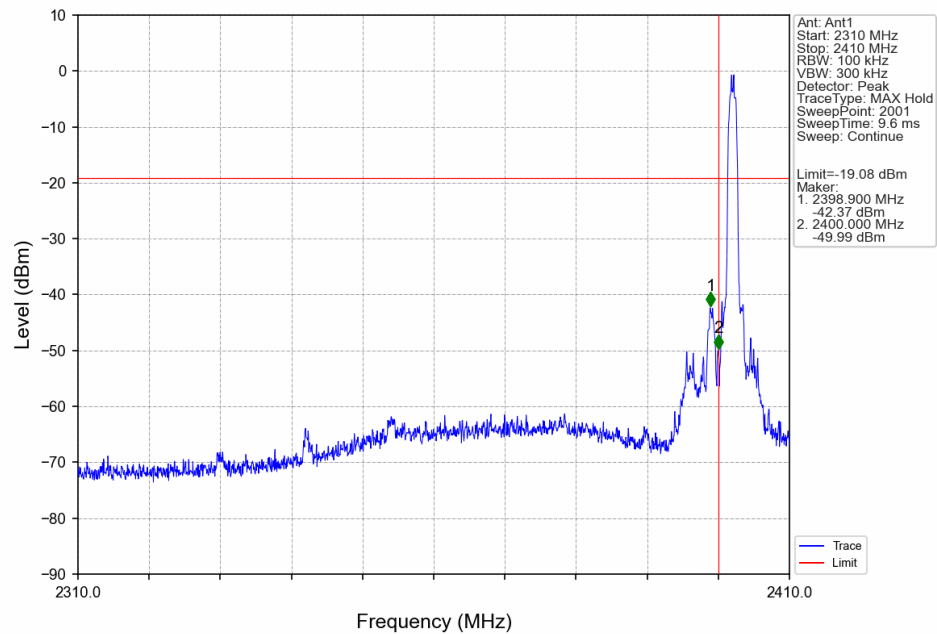


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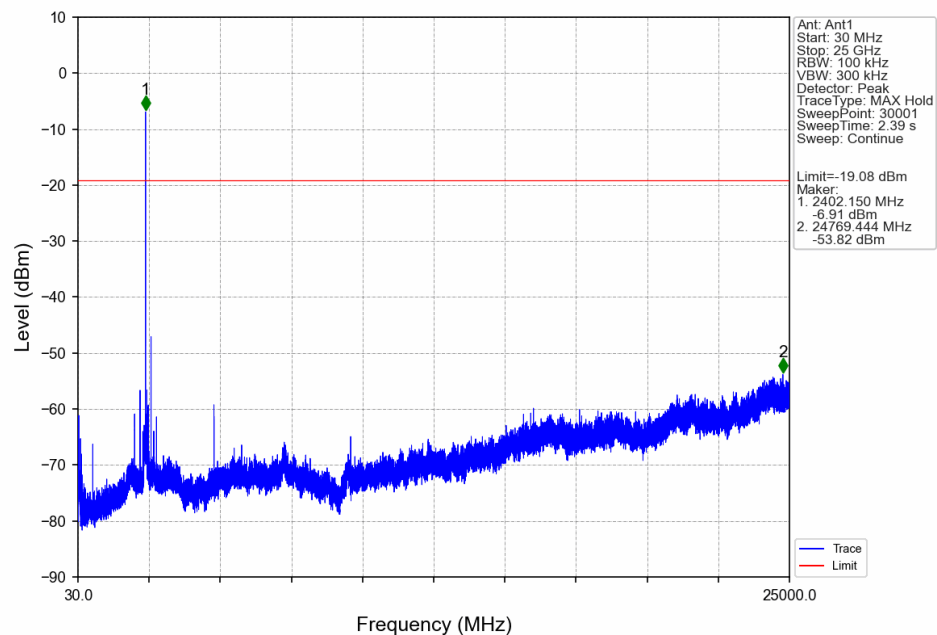


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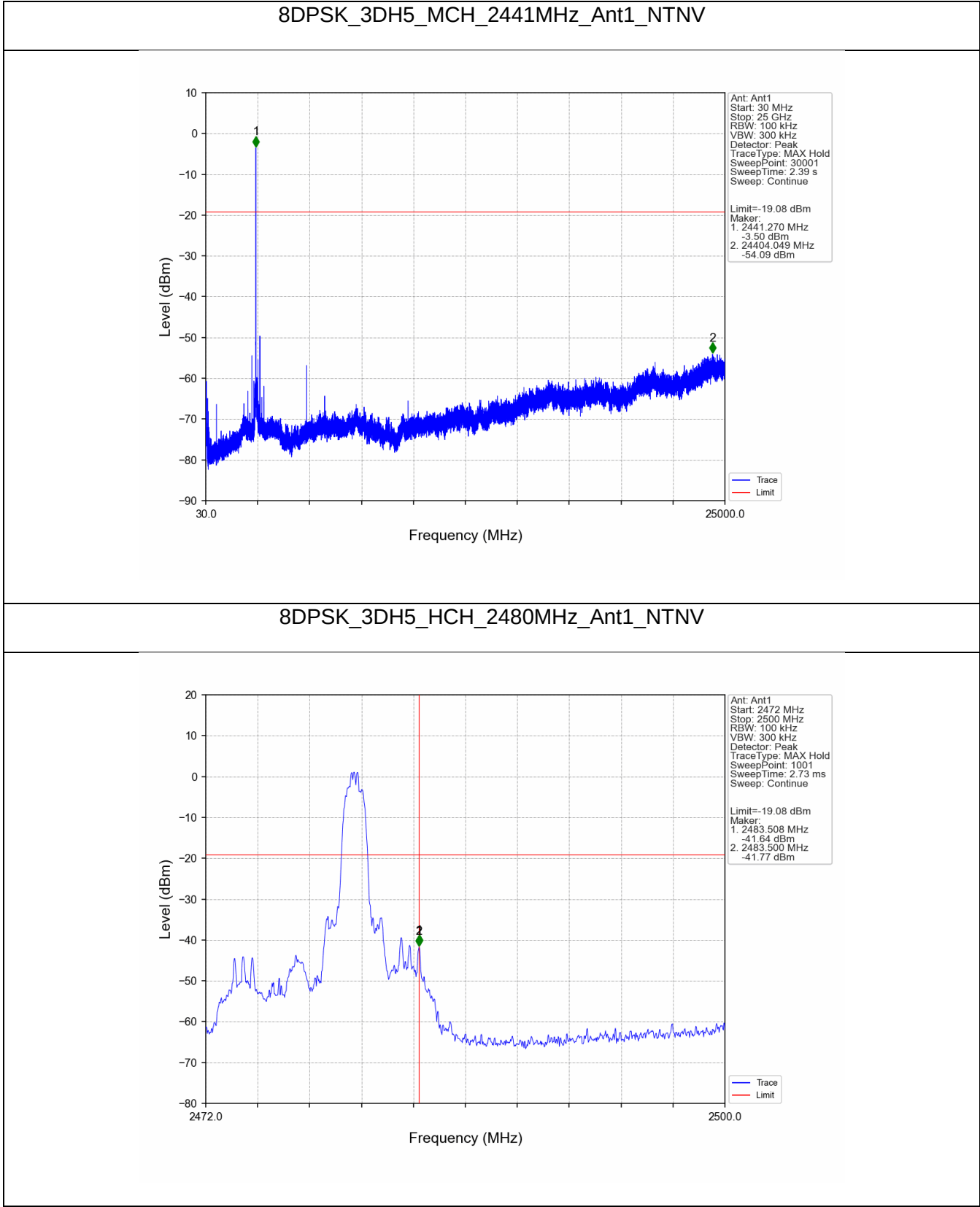
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

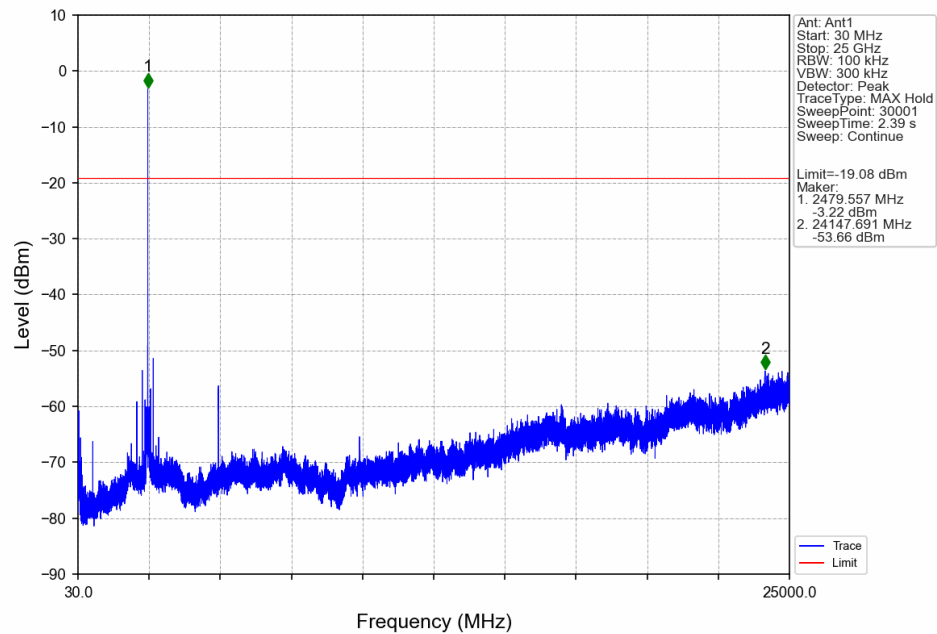


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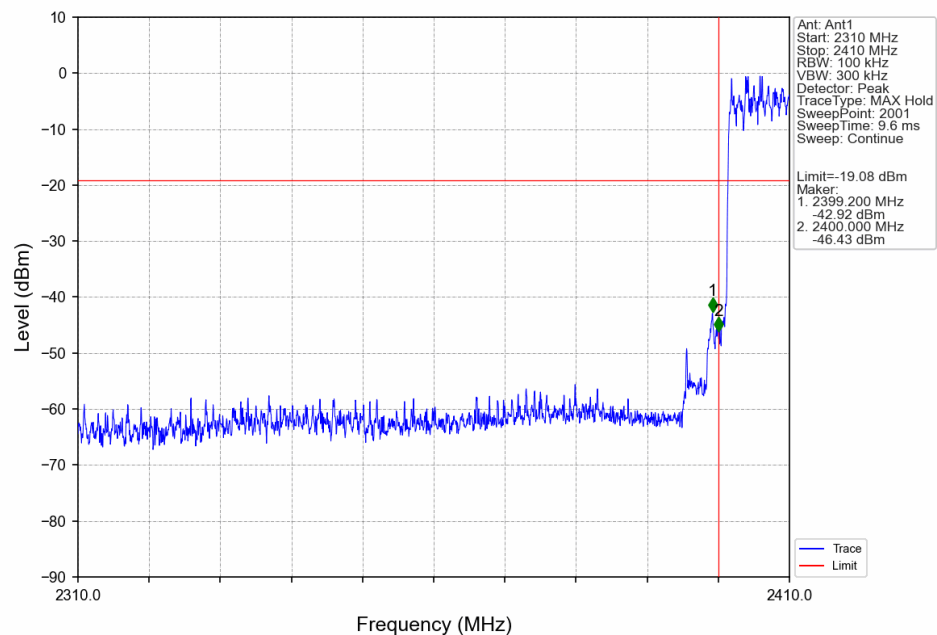


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8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



FCCID: 2ASC7VCIDS300

