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Annex for Bluetooth

Test Report No.: CTL2607013011-WF01

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FCC ID: 2A33C-E707

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	0.899	/	Pass
		2441	DH5	1	0.902	/	Pass
		2480	DH5	1	0.904	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.218	/	Pass
		2441	2DH5	1	1.222	/	Pass
		2480	2DH5	1	1.219	/	Pass
8DPSK	SISO	2402	3DH5	1	1.218	/	Pass
		2441	3DH5	1	1.219	/	Pass
		2480	3DH5	1	1.218	/	Pass

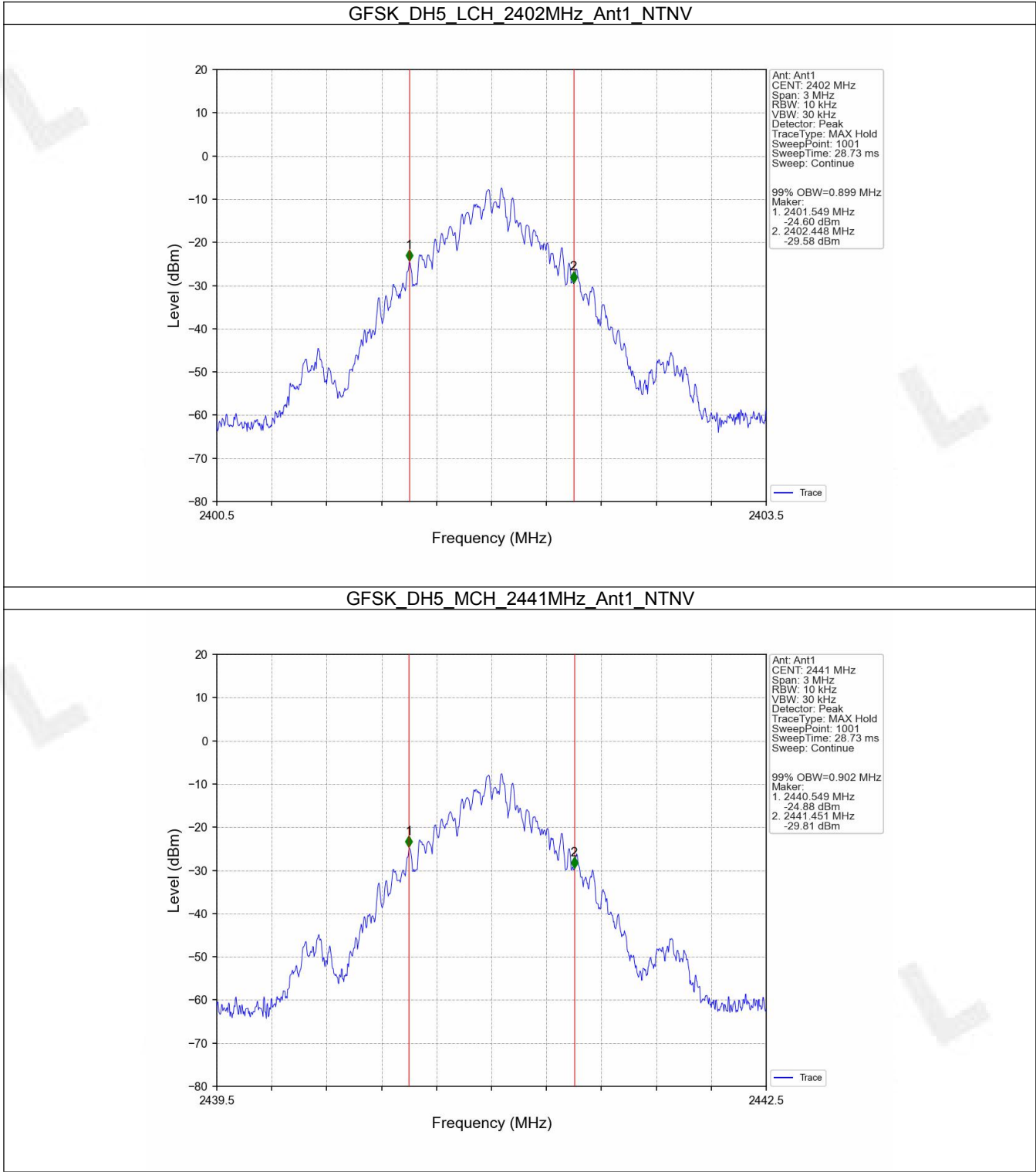
1.1.2 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.933	/	Pass
		2441	DH5	1	0.933	/	Pass
		2480	DH5	1	0.933	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.358	/	Pass
		2441	2DH5	1	1.359	/	Pass
		2480	2DH5	1	1.362	/	Pass
8DPSK	SISO	2402	3DH5	1	1.351	/	Pass
		2441	3DH5	1	1.351	/	Pass
		2480	3DH5	1	1.353	/	Pass

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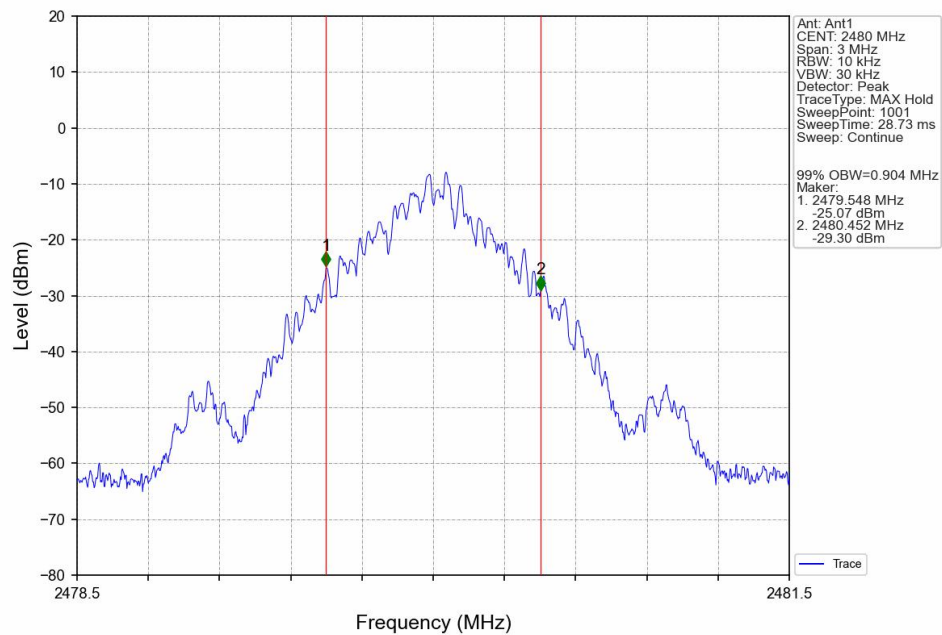
1.2 Test Graph

1.2.1 OBW

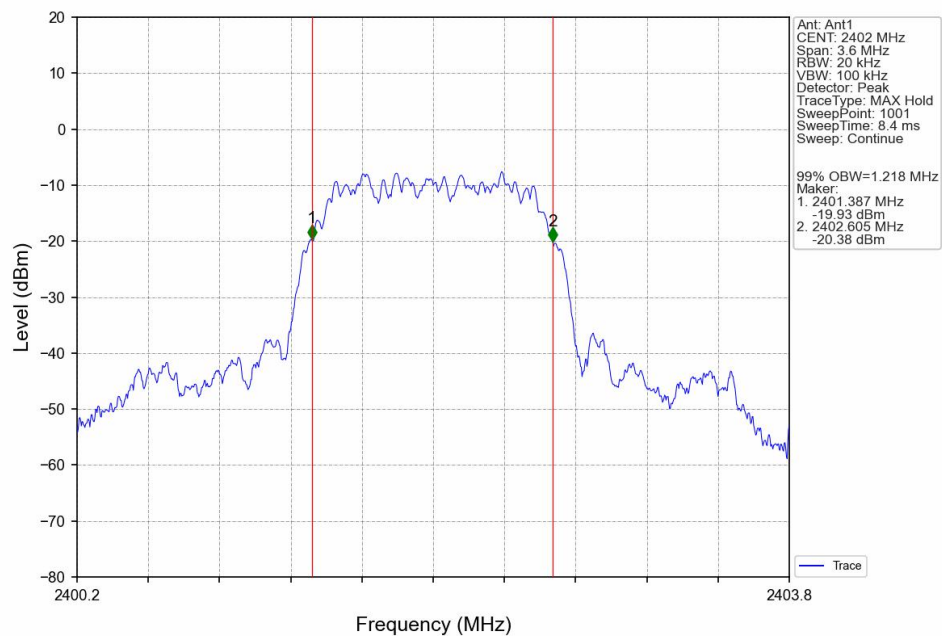


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GFSK_DH5_HCH_2480MHz_Ant1_NTNV

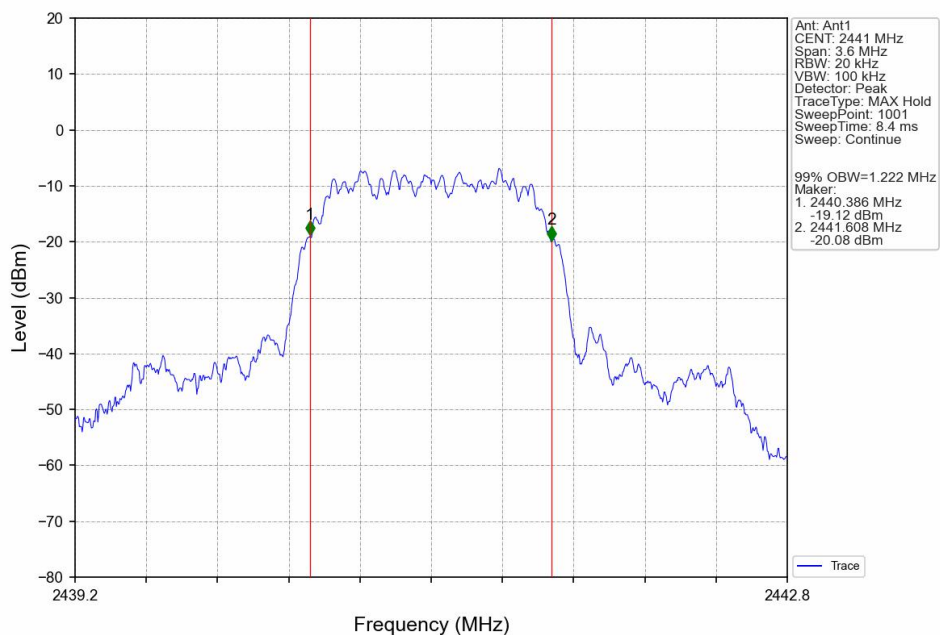


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV

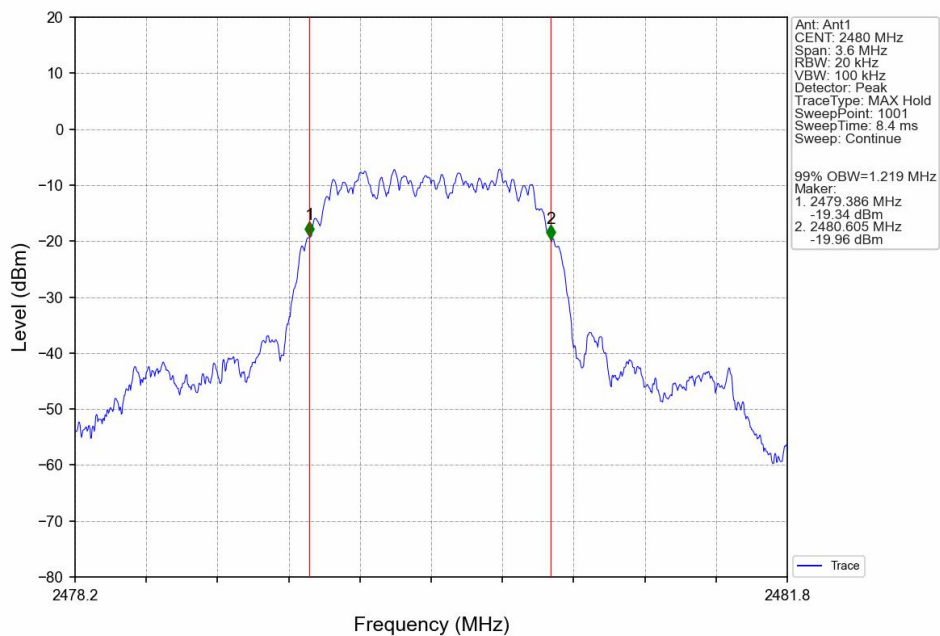


FCC ID: 2A33C-E707

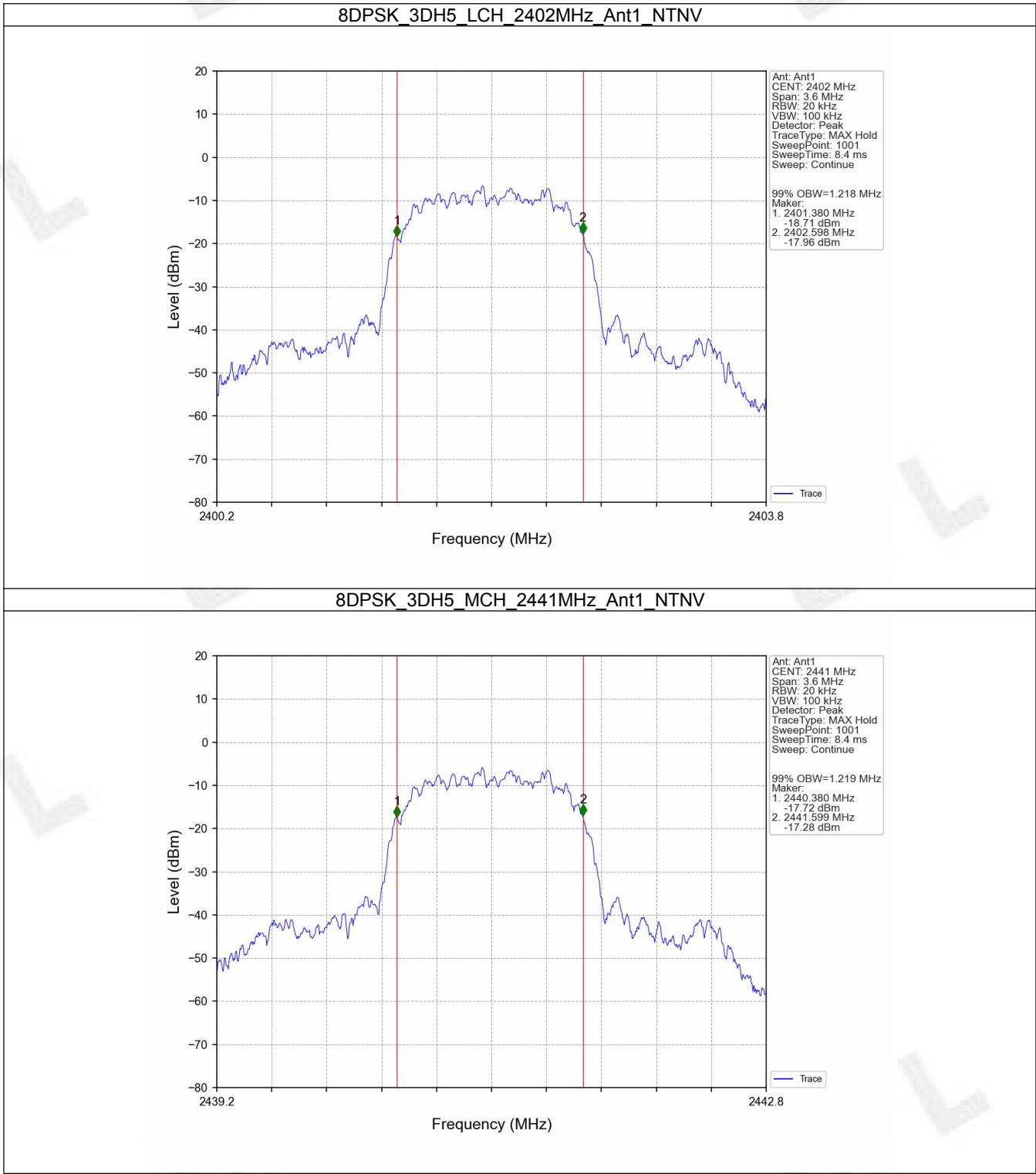
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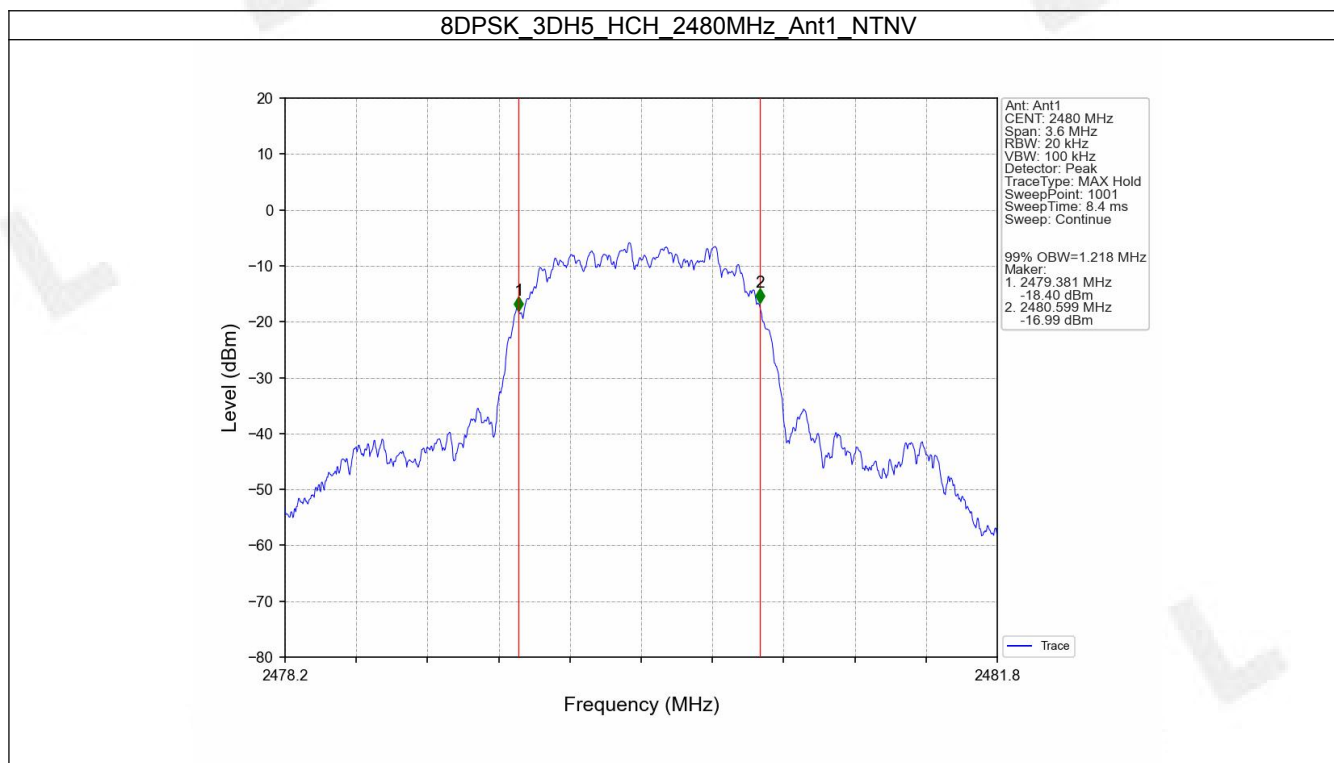
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



FCC ID: 2A33C-E707

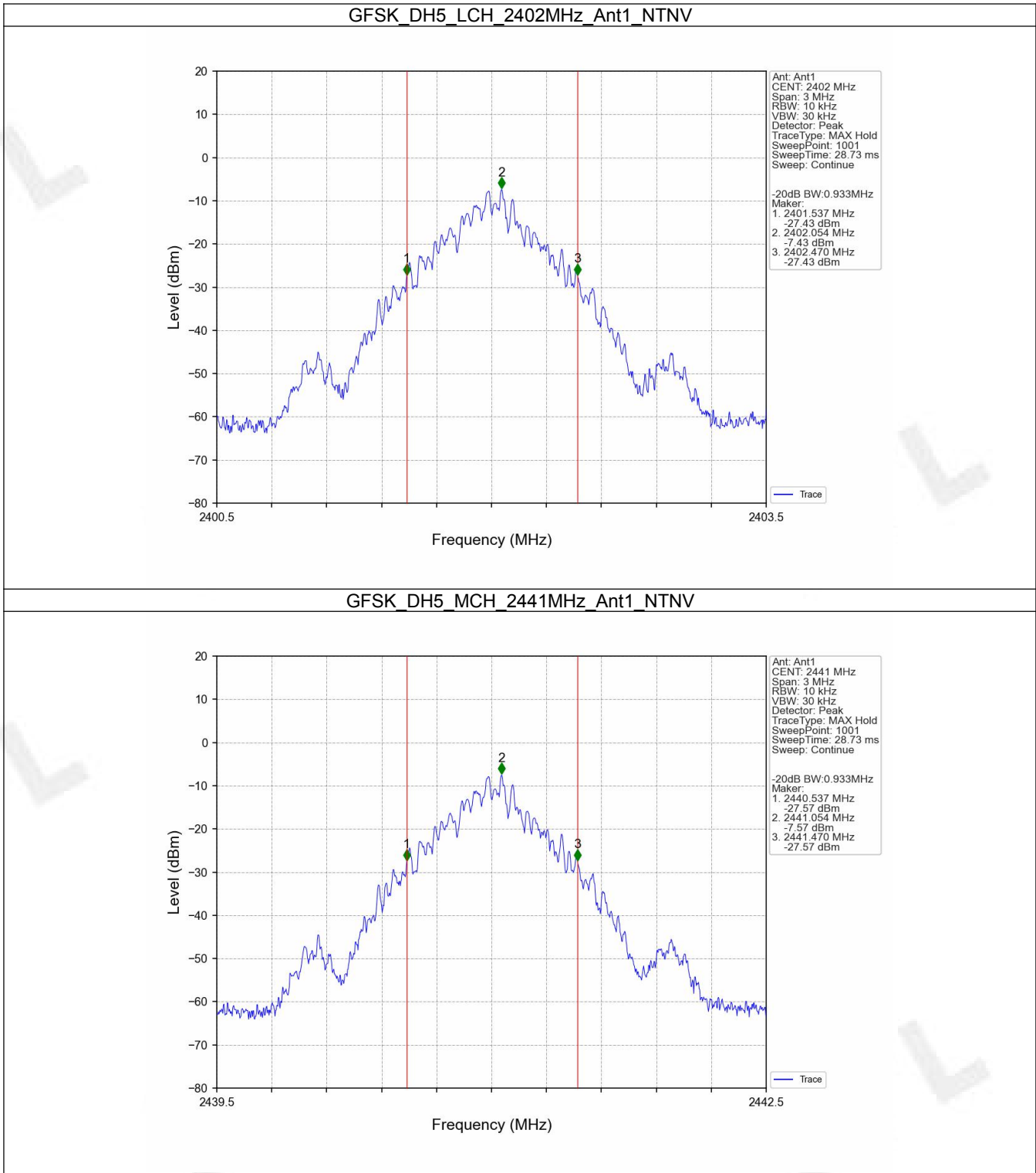


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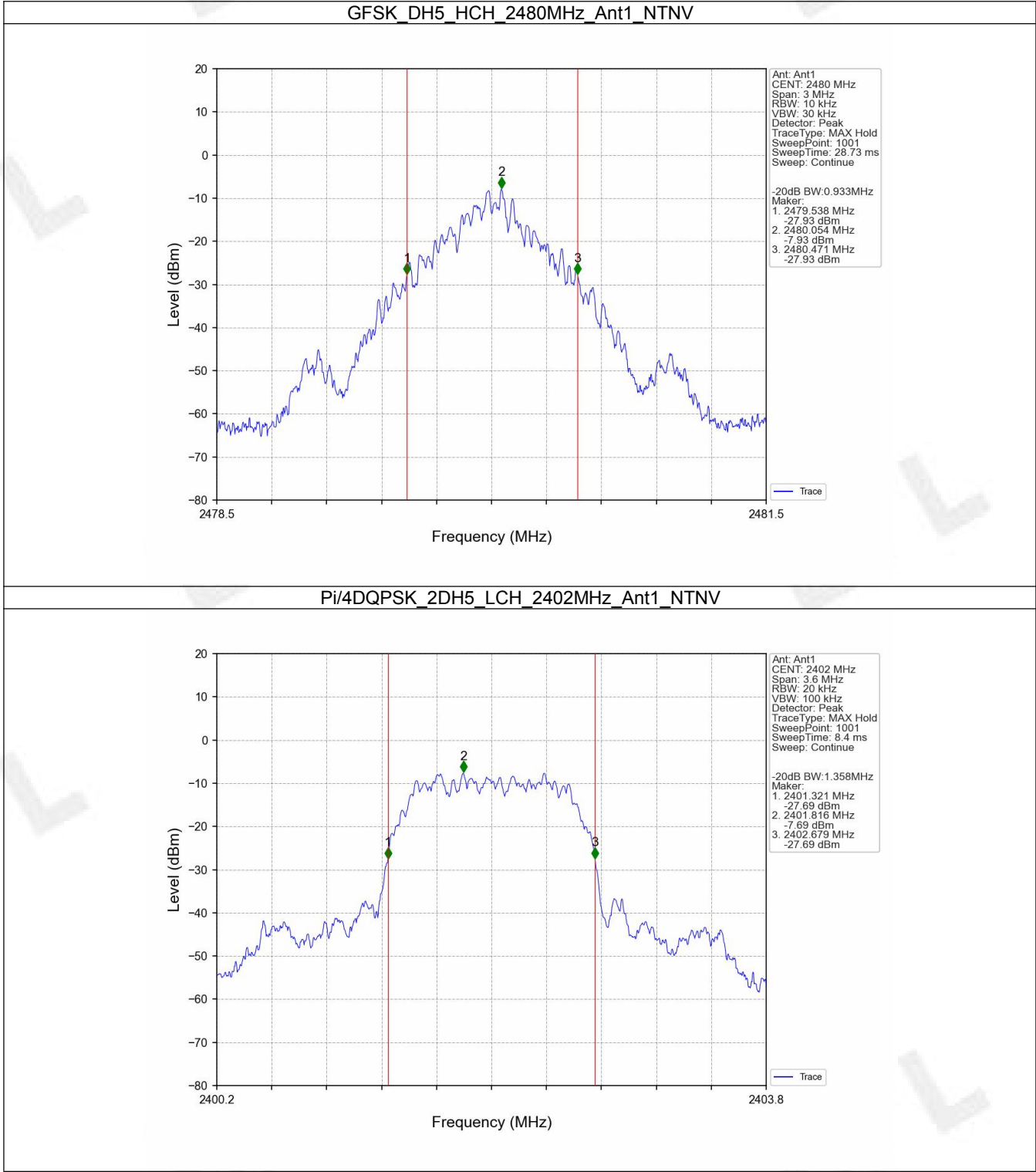


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1.2.2 20dB BW

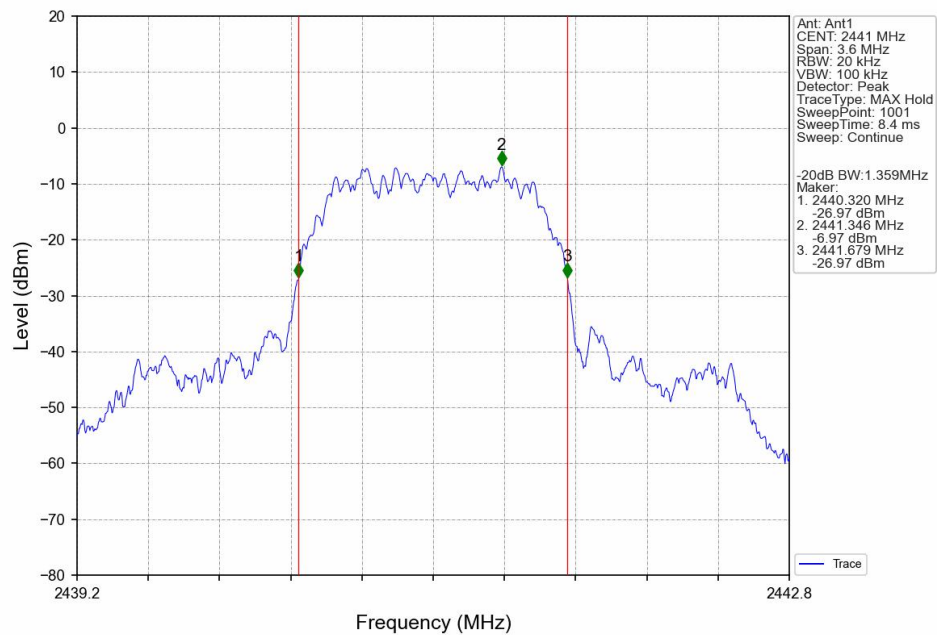


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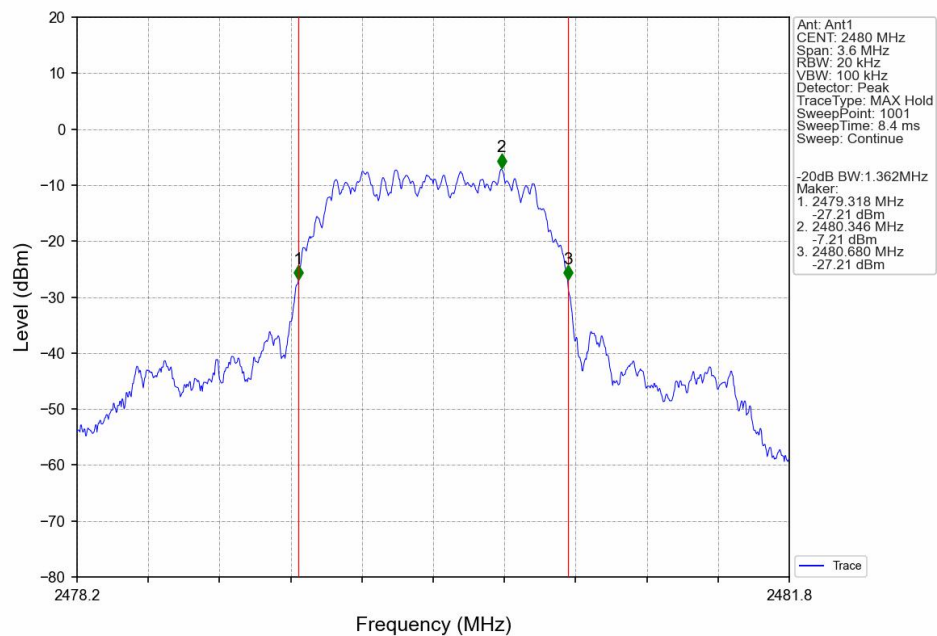


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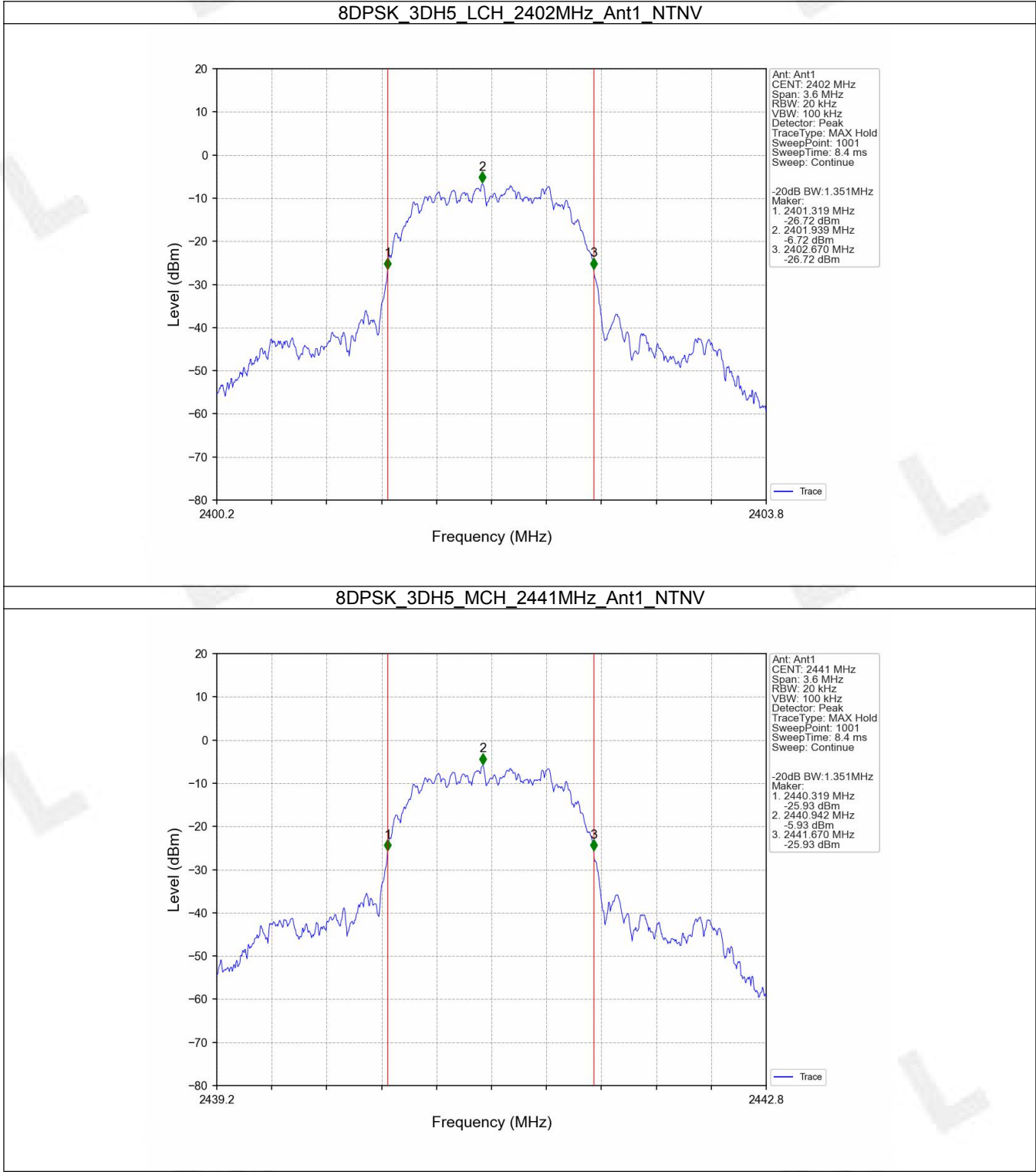
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



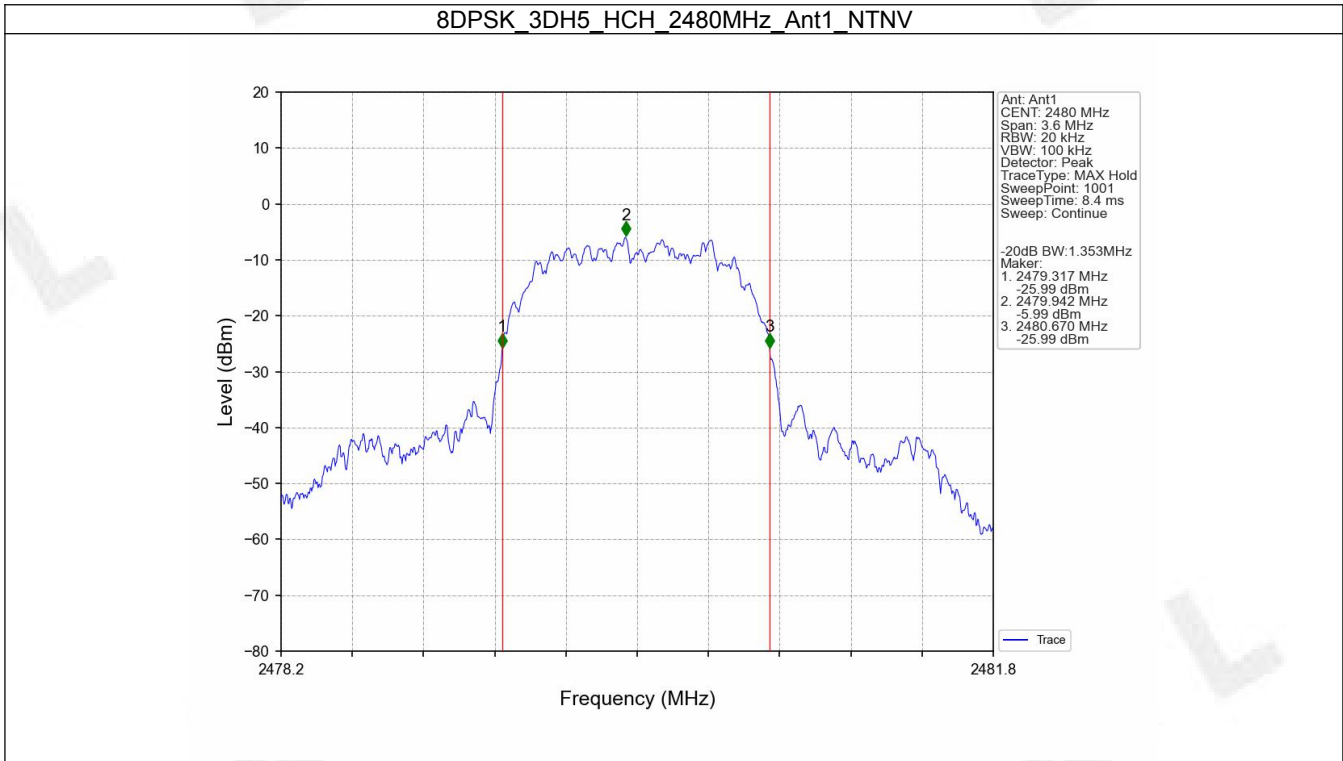
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



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2. Maximum Conducted Output Power

2.1 Test Result

2.1.1 Power

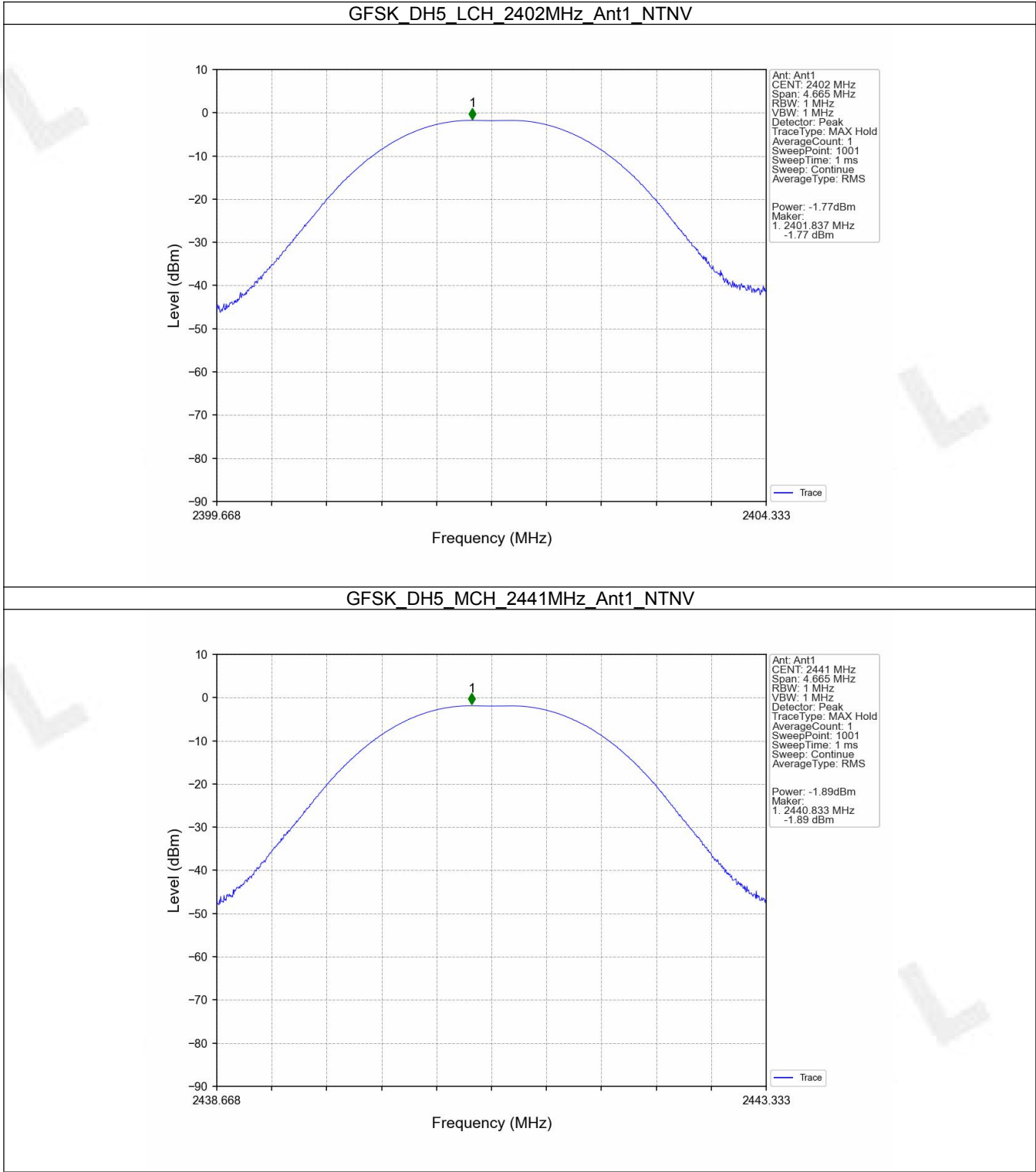
Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.77	<=30	Pass
		2441	DH5	-1.89	<=30	Pass
		2480	DH5	-2.24	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	3.07	<=20.97	Pass
		2441	2DH5	3.68	<=20.97	Pass
		2480	2DH5	3.52	<=20.97	Pass
8DPSK	SISO	2402	3DH5	3.85	<=20.97	Pass
		2441	3DH5	4.75	<=20.97	Pass
		2480	3DH5	4.70	<=20.97	Pass

Note1: Antenna Gain: Ant1: 2.70dBi;

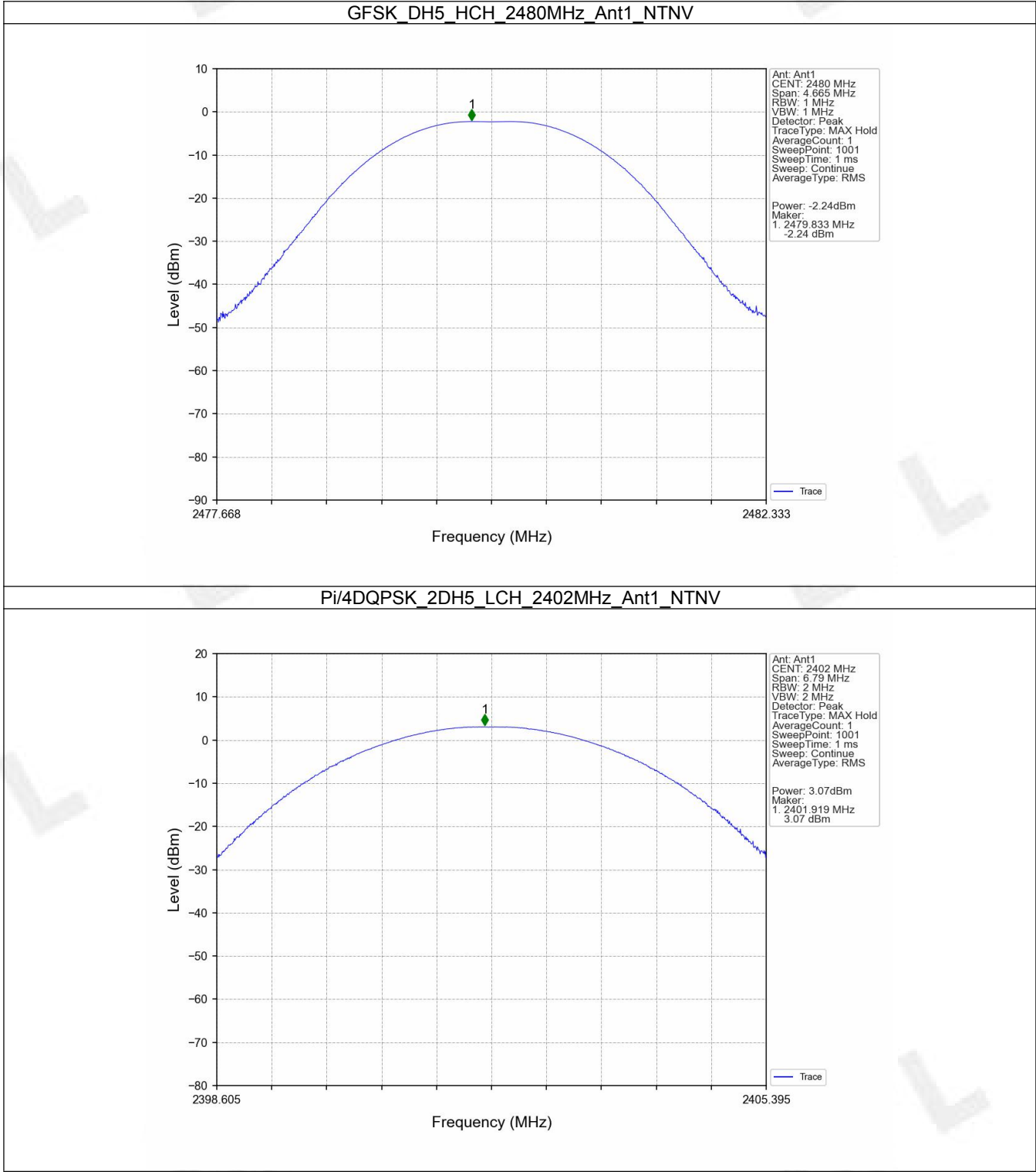
FCC ID: 2A33C-E707

2.2 Test Graph

2.2.1 Power

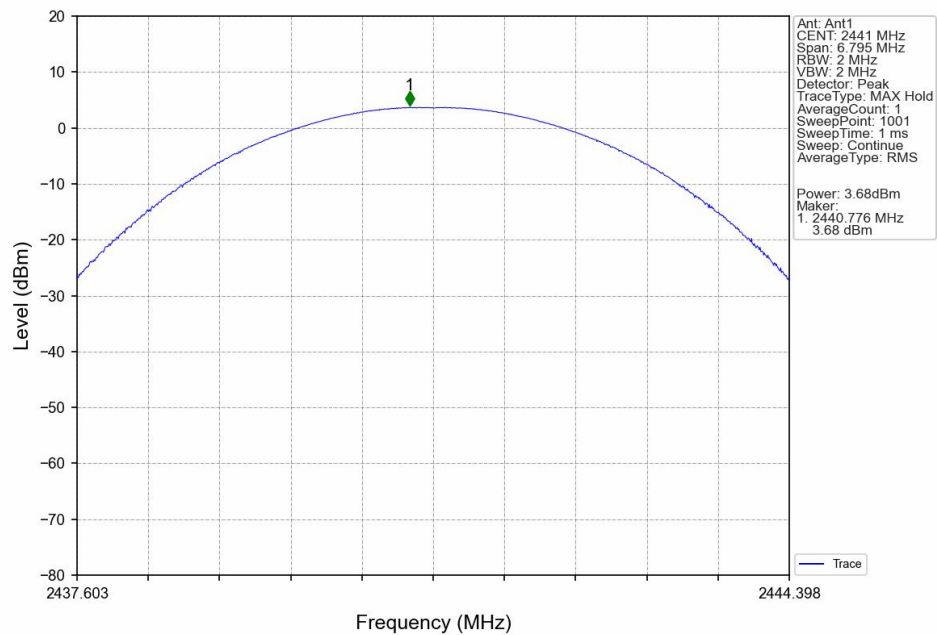


FCC ID: 2A33C-E707

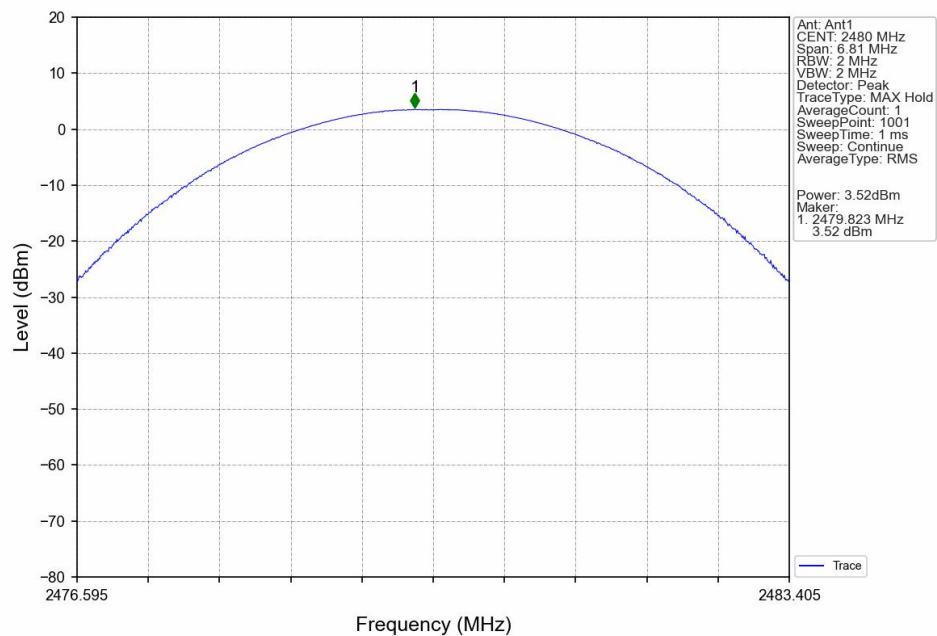


FCC ID: 2A33C-E707

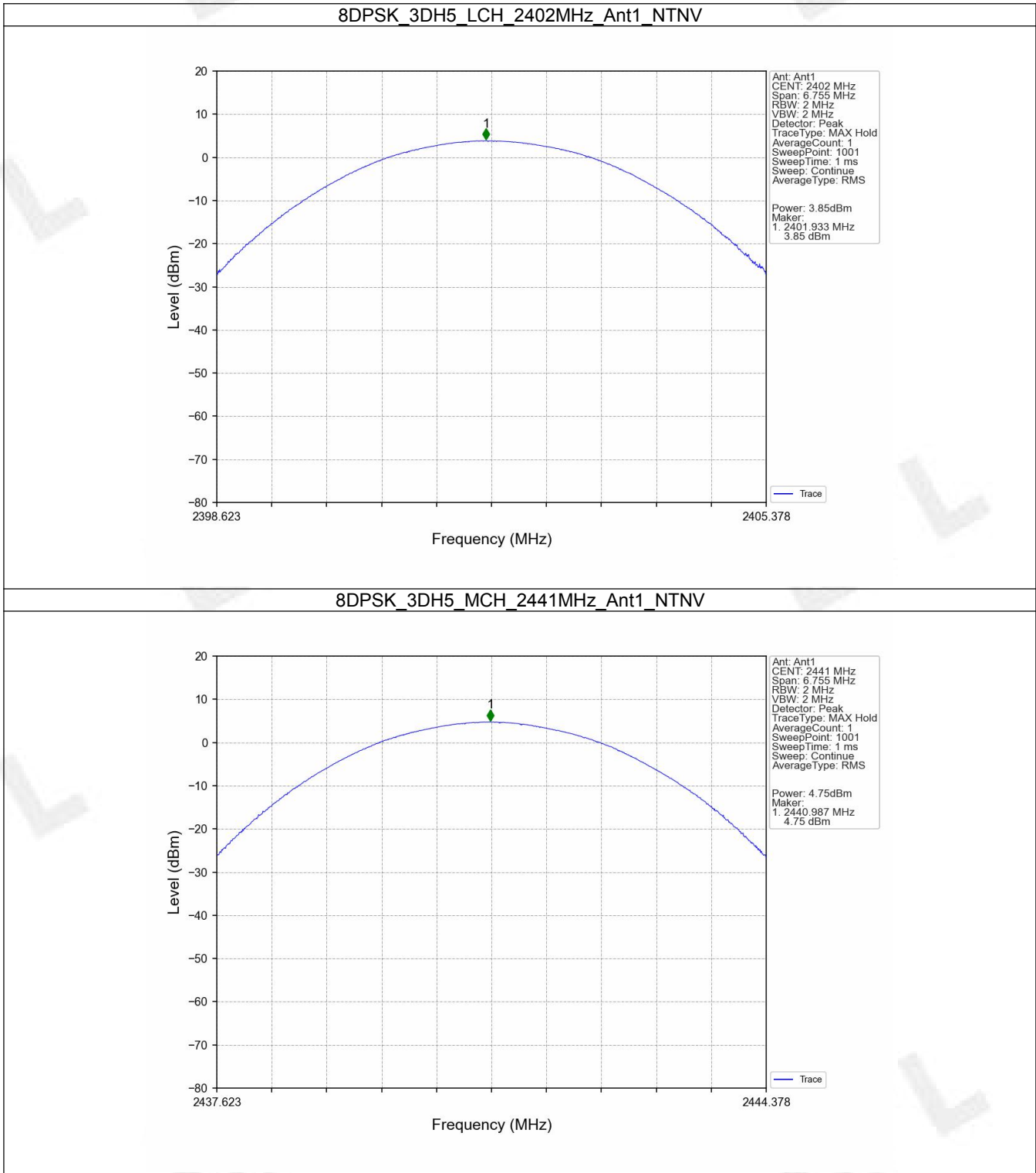
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



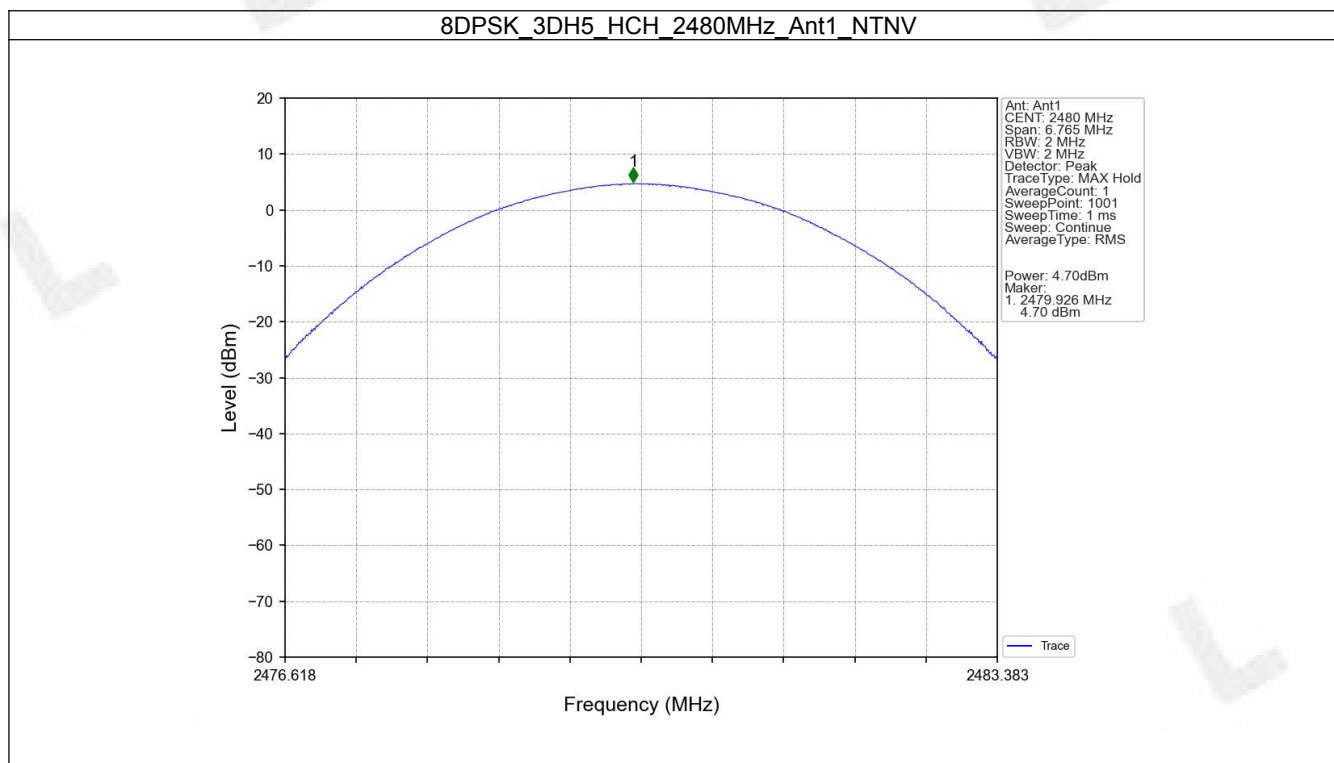
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



FCC ID: 2A33C-E707



FCC ID: 2A33C-E707



FCC ID: 2A33C-E707

3. Carrier Frequency Separation

3.1 Test Result

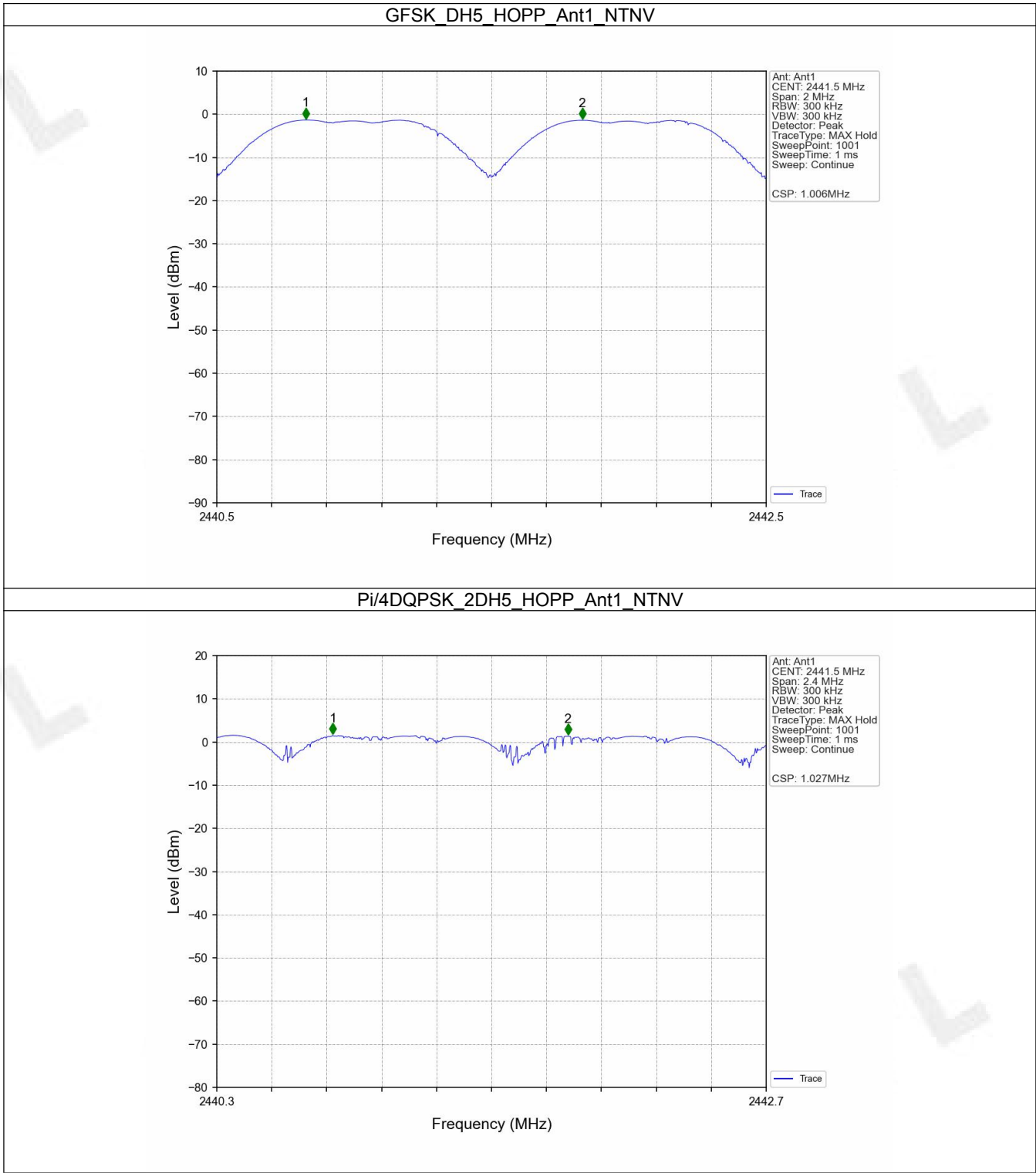
3.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.006	0.933	≥ 0.933	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.027	1.362	≥ 0.908	Pass
8DPSK	SISO	HOPP	3DH5	0.998	1.353	≥ 0.902	Pass

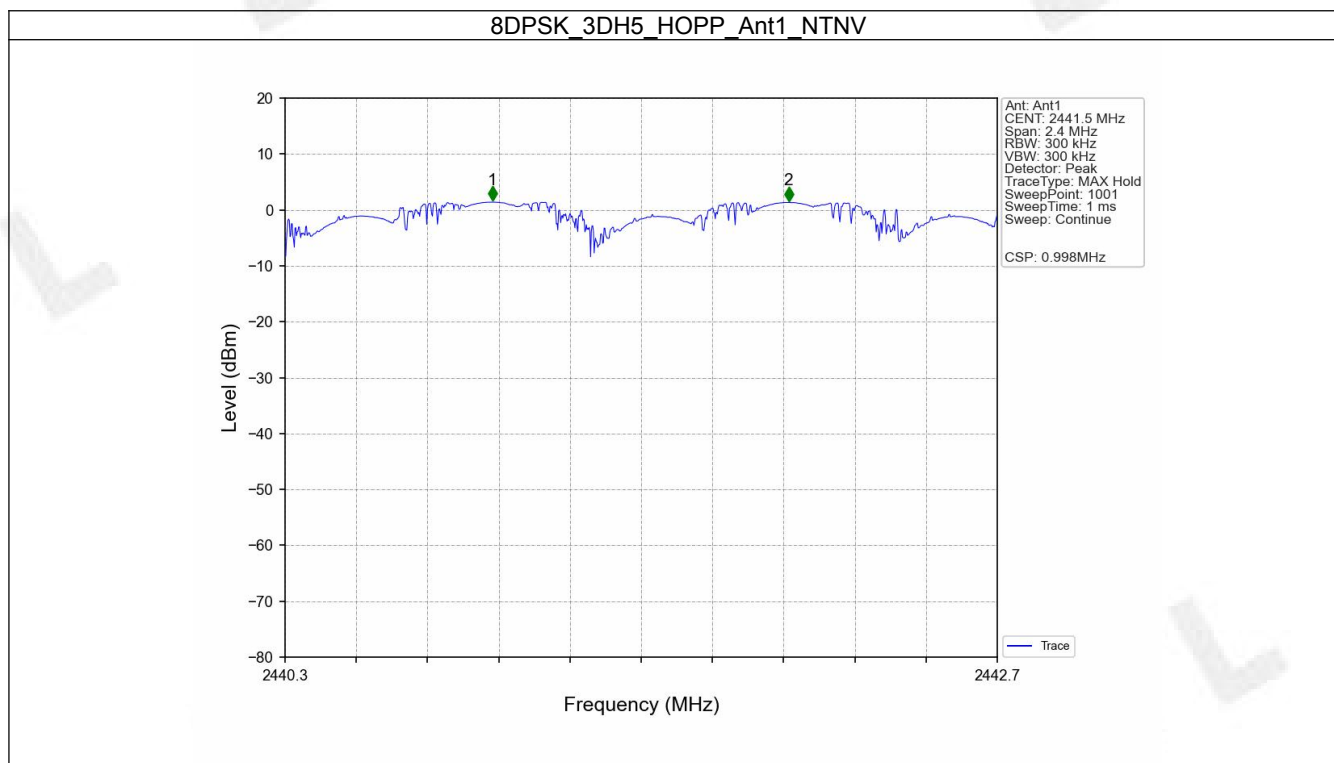
FCC ID: 2A33C-E707

3.2 Test Graph

3.2.1 Ant1



FCC ID: 2A33C-E707



FCC ID: 2A33C-E707

4. Number of Hopping Frequencies

4.1 Test Result

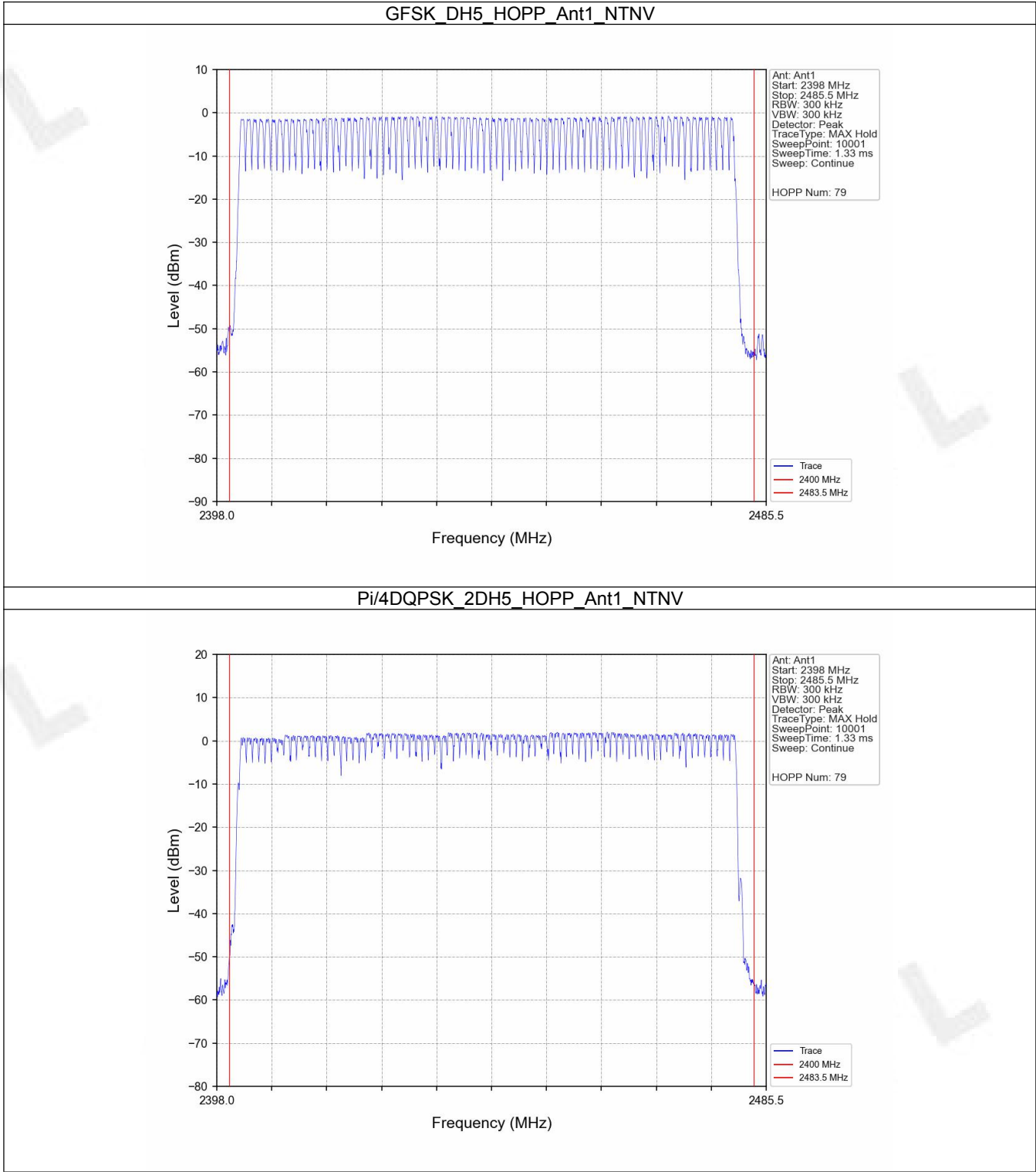
4.1.1 HoppNum

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

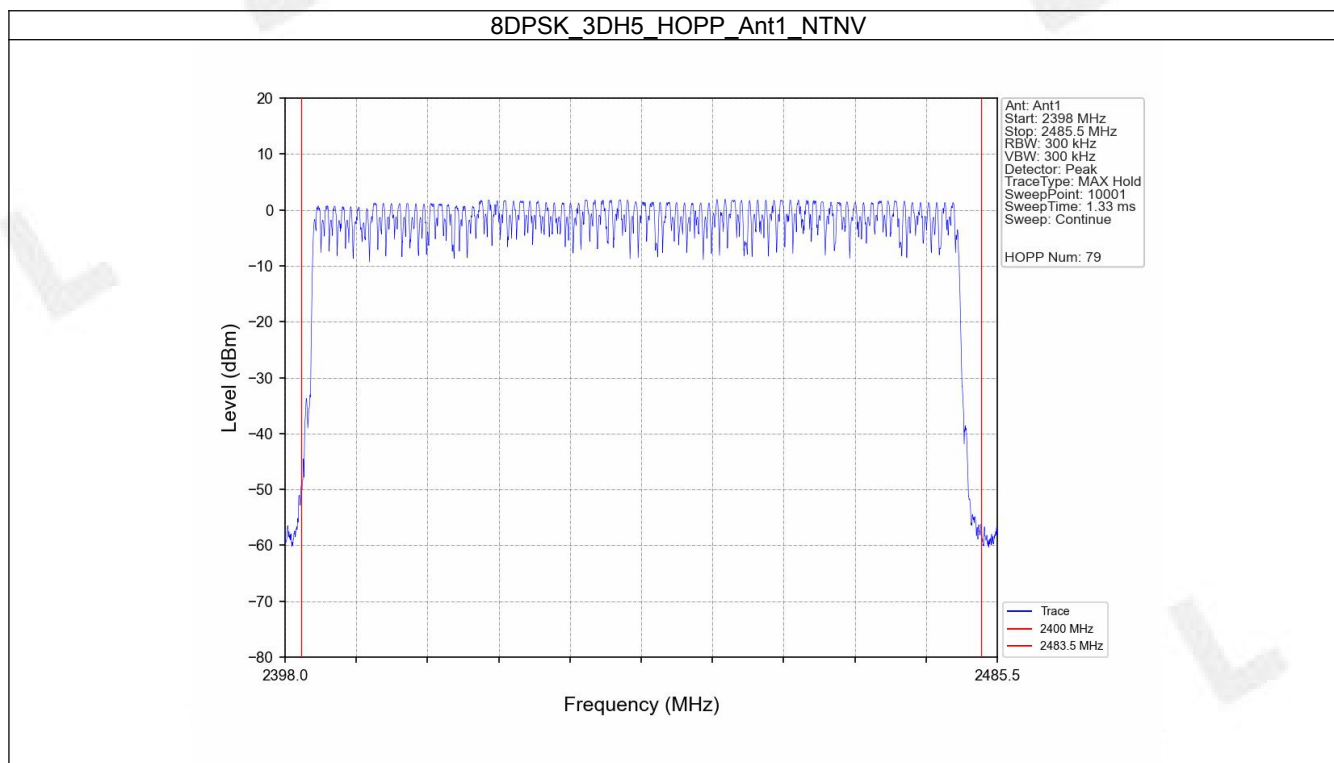
FCC ID: 2A33C-E707

4.2 Test Graph

4.2.1 HoppNum



FCC ID: 2A33C-E707



FCC ID: 2A33C-E707

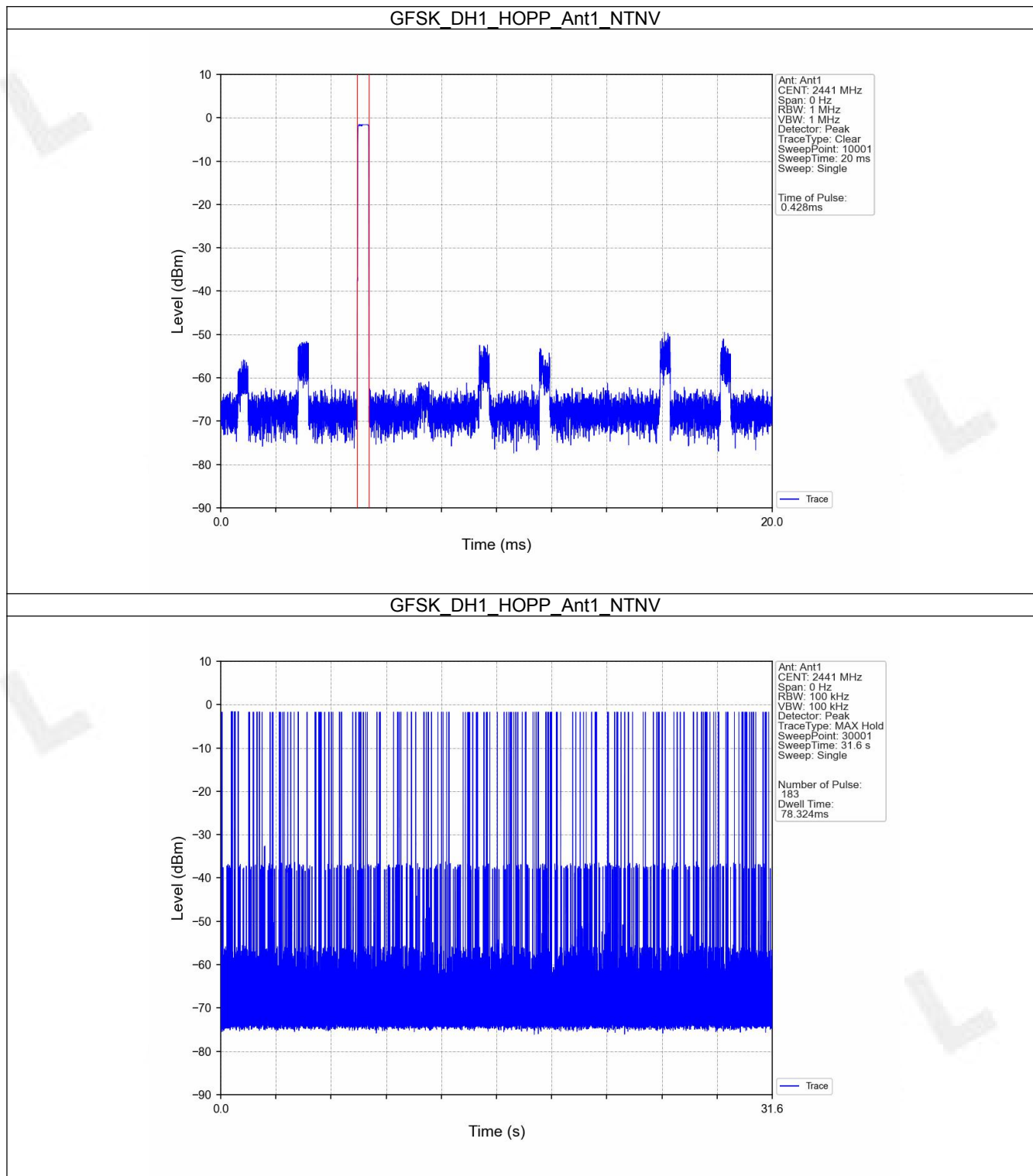
5. Time of Occupancy (Dwell Time)**5.1 Test Result****5.1.1 Ant1**

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	0.428	31.600	183	78.324	<=400	Pass
			DH3	1.684	31.600	114	191.976	<=400	Pass
			DH5	2.932	31.600	82	240.424	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.382	31.600	183	69.906	<=400	Pass
			2DH3	1.684	31.600	113	190.292	<=400	Pass
			2DH5	2.932	31.600	92	269.744	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.438	31.600	183	80.154	<=400	Pass
			3DH3	1.684	31.600	112	188.608	<=400	Pass
			3DH5	2.936	31.600	95	278.920	<=400	Pass

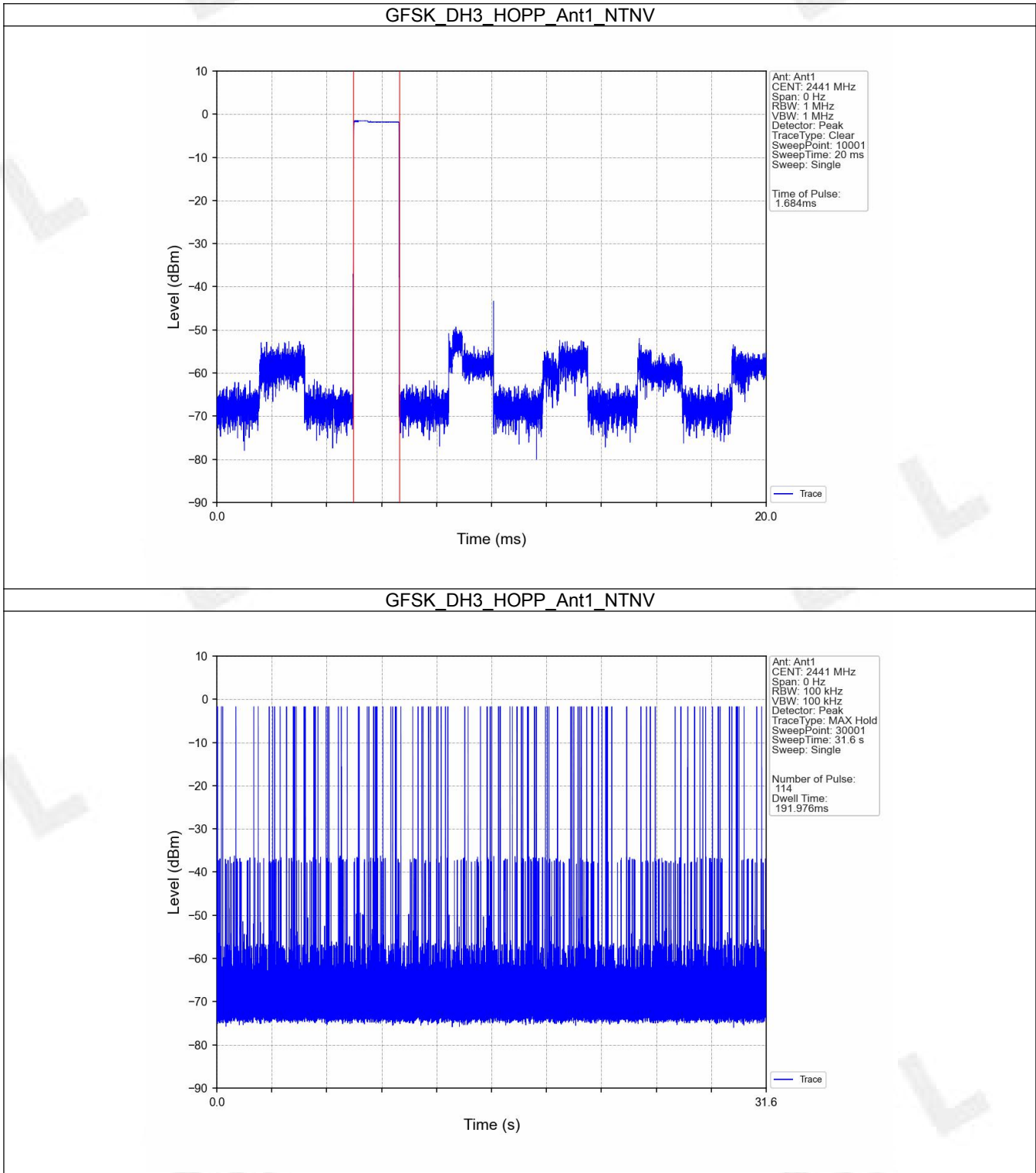
FCC ID: 2A33C-E707

5.2 Test Graph

5.2.1 Ant1

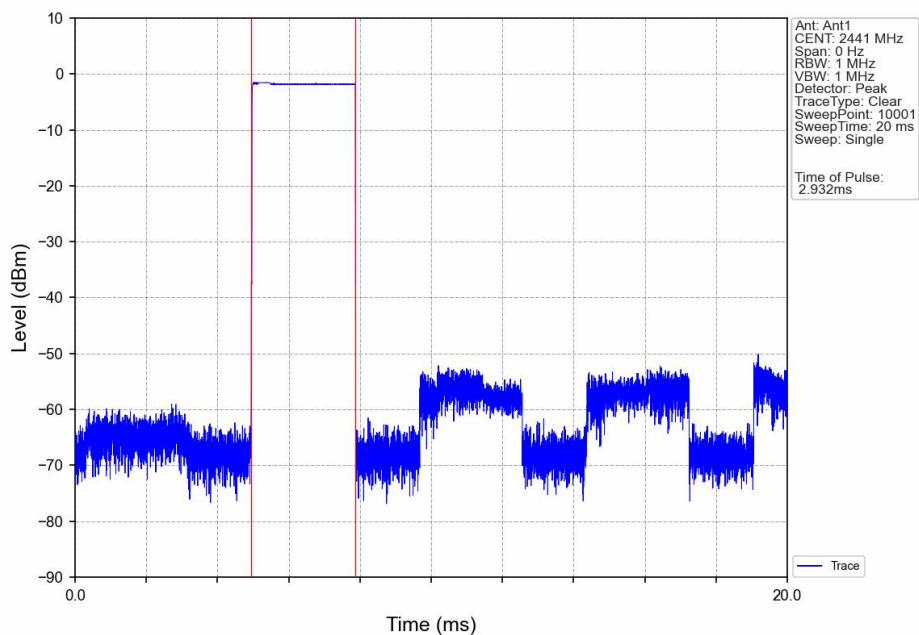


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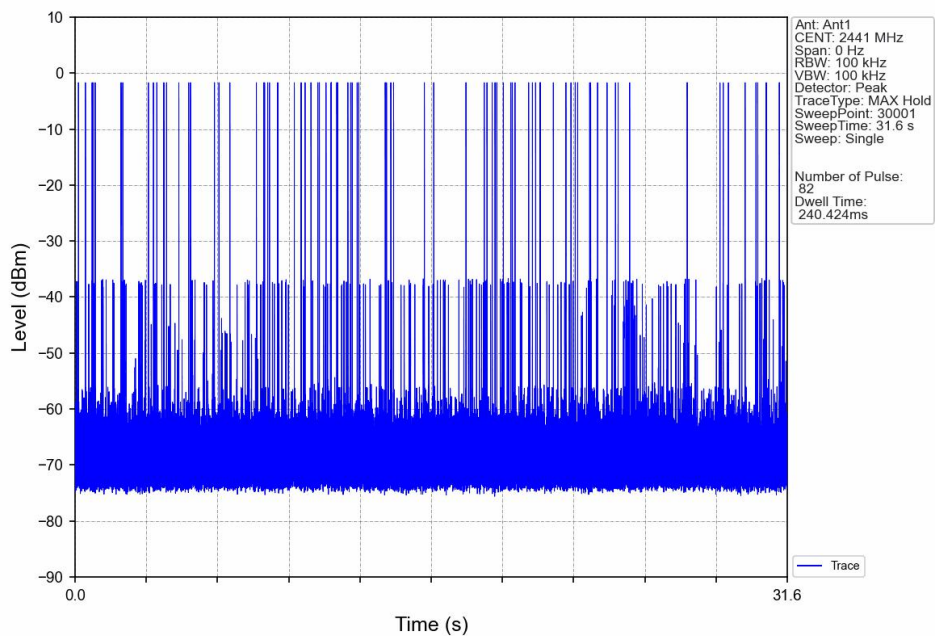


FCC ID: 2A33C-E707

GFSK_DH5_HOPP_Ant1_NTNV

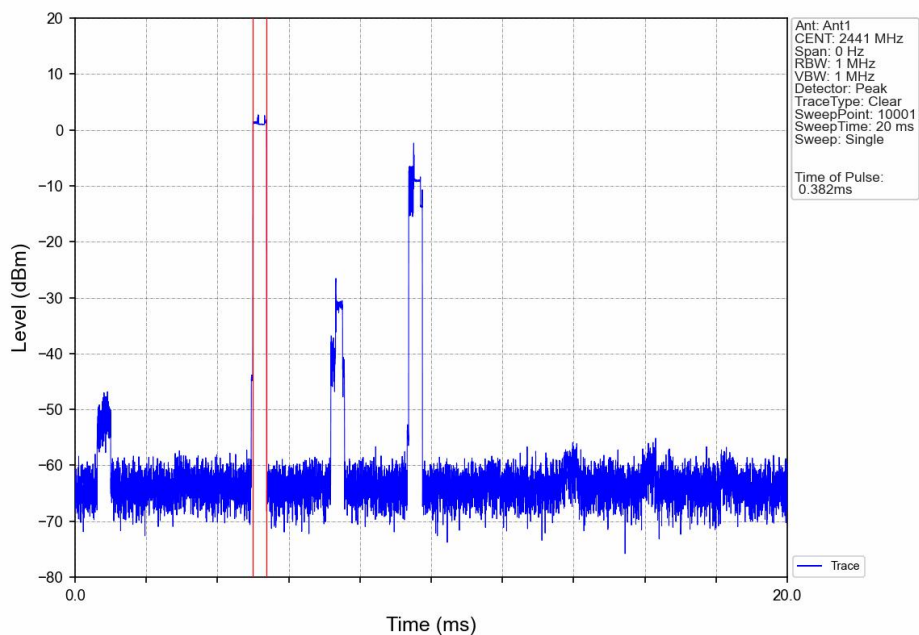


GFSK_DH5_HOPP_Ant1_NTNV

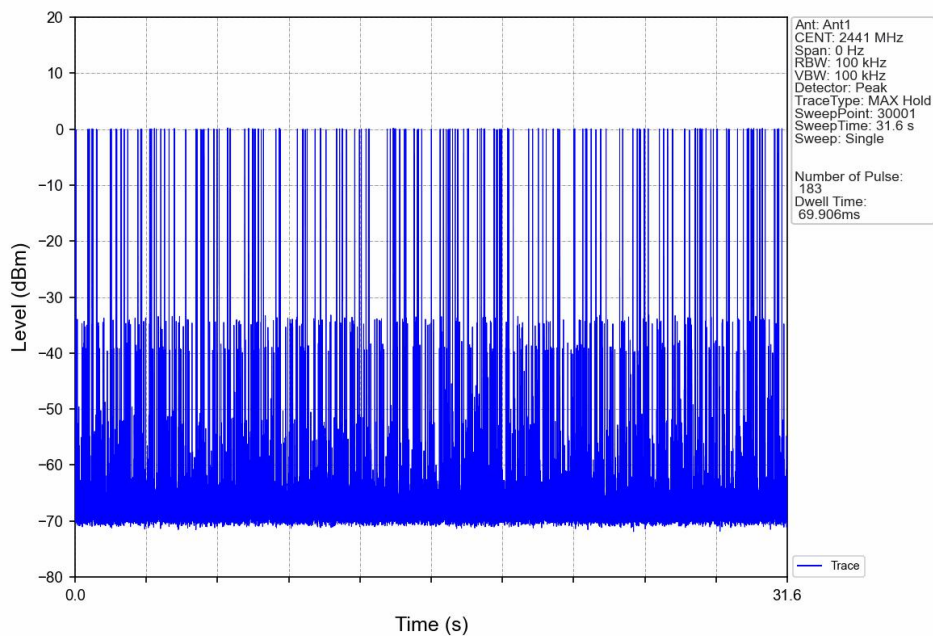


FCC ID: 2A33C-E707

Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV

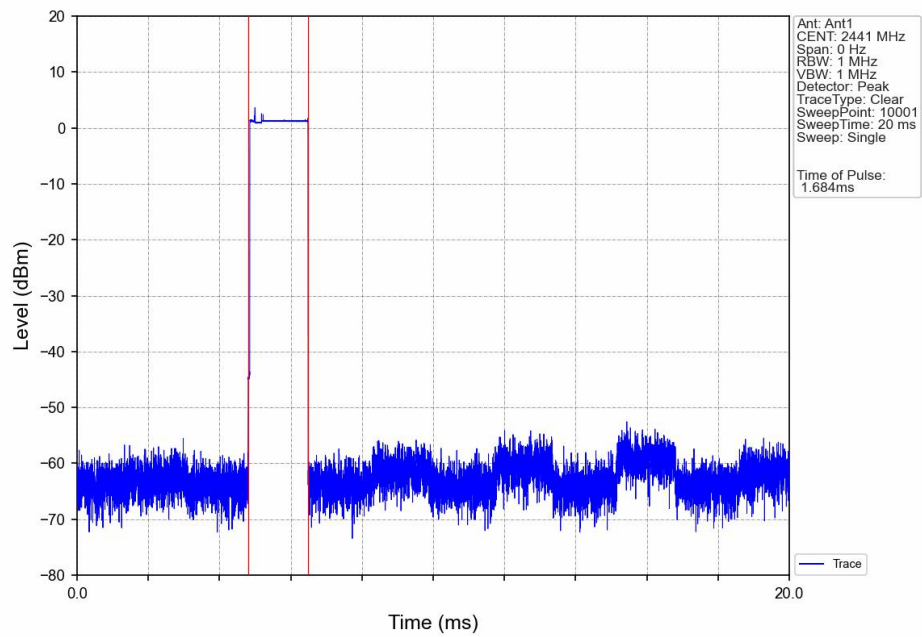


Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV

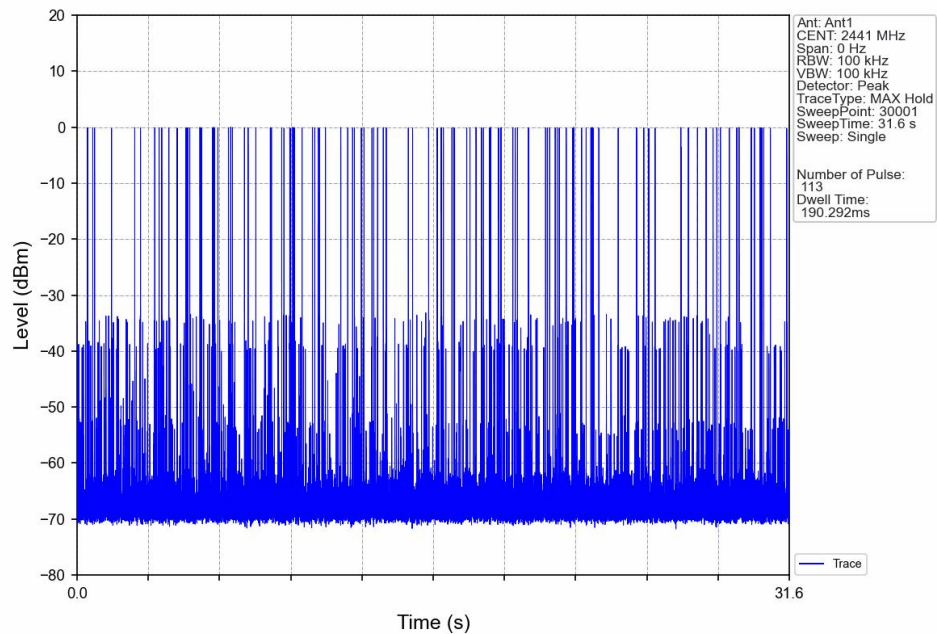


FCC ID: 2A33C-E707

Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

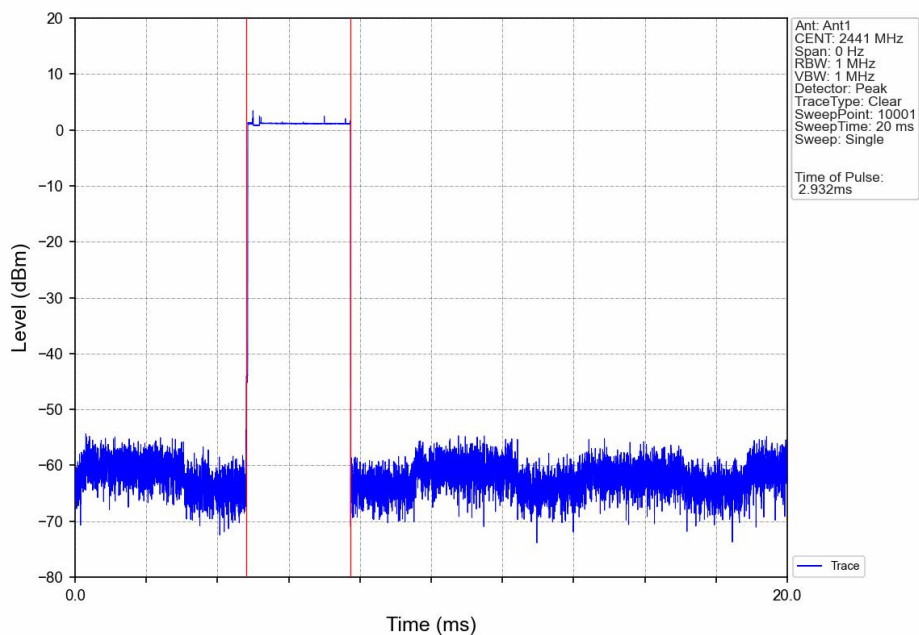


Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

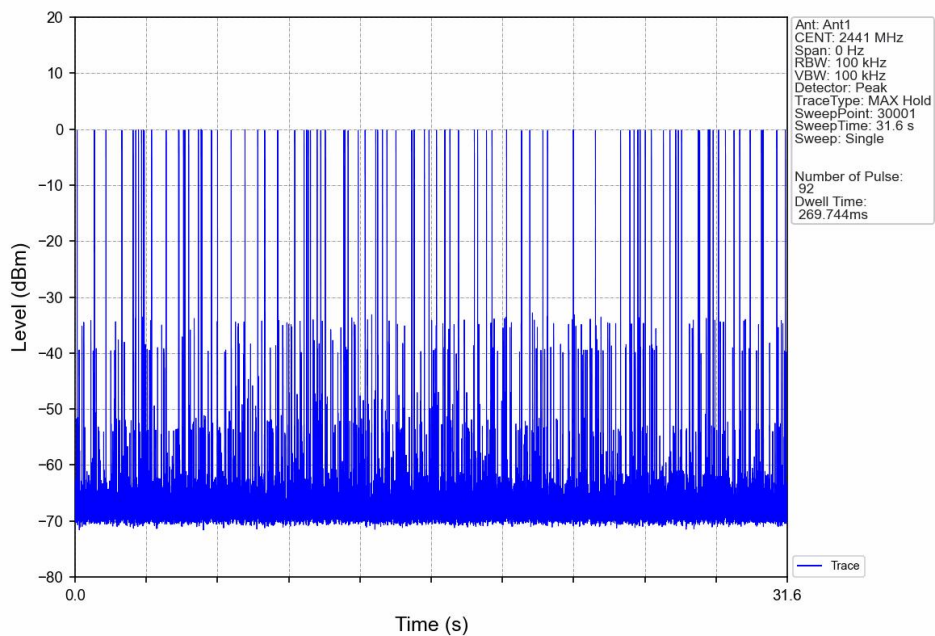


FCC ID: 2A33C-E707

Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

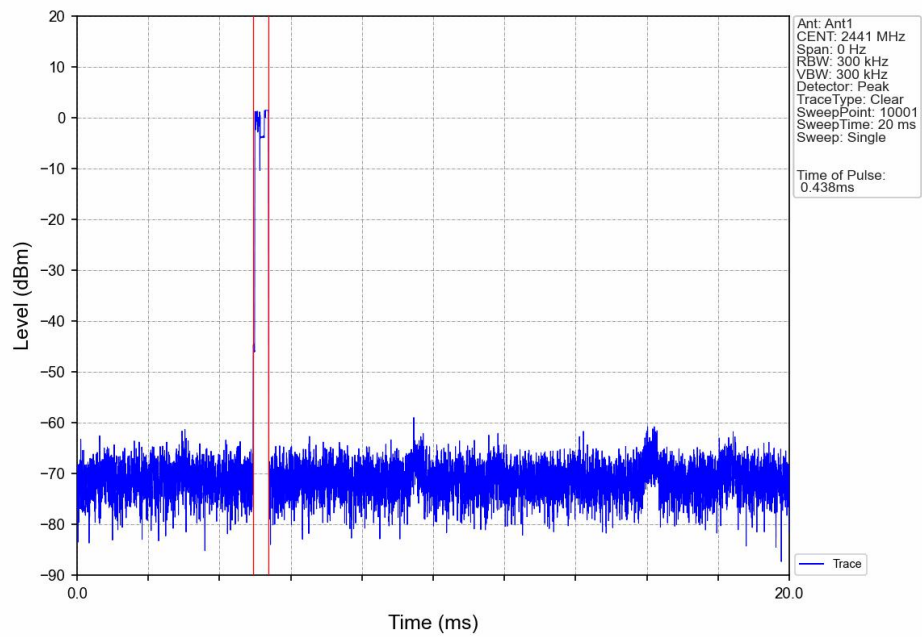


Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

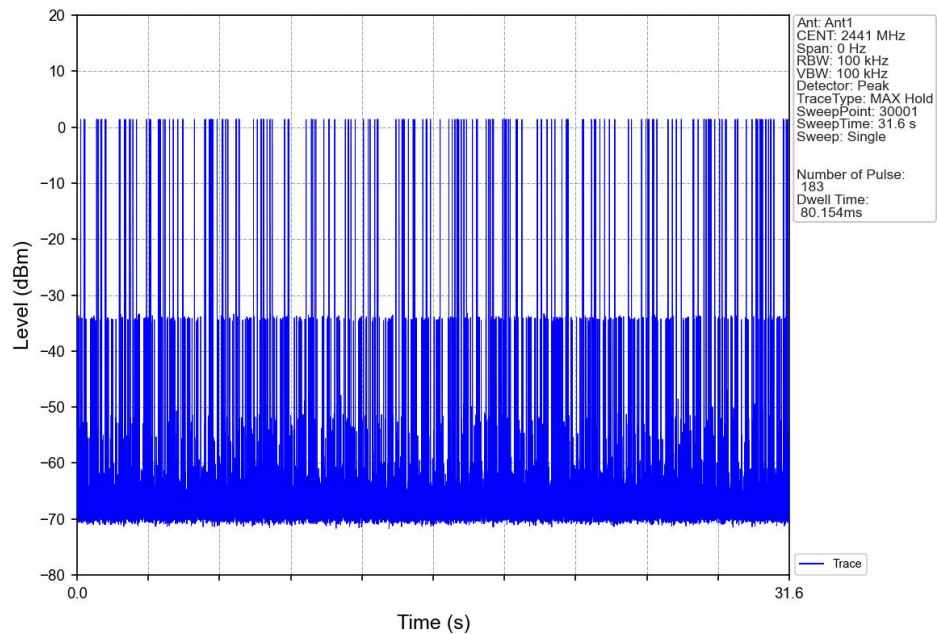


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8DPSK_3DH1_HOPP_Ant1_NTNV

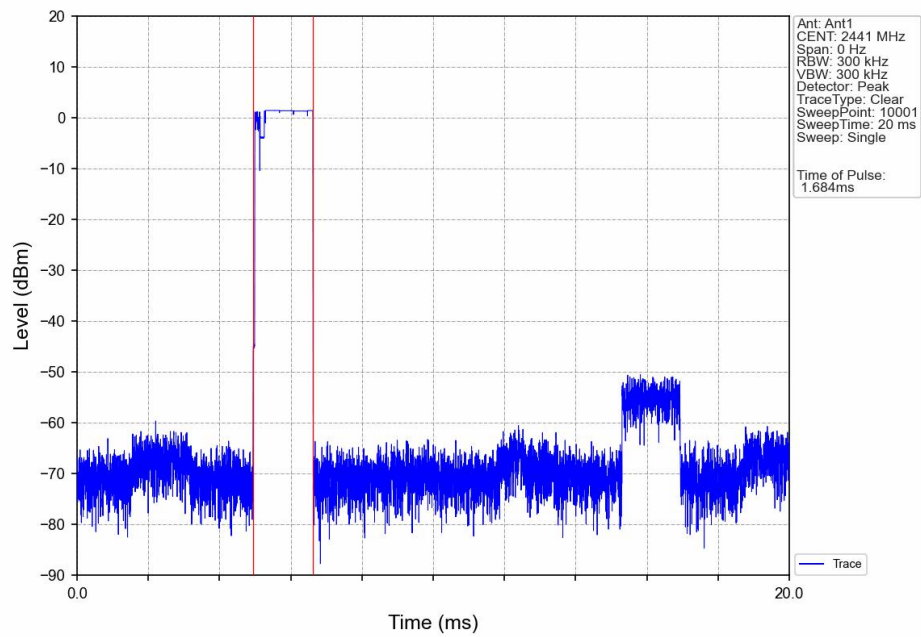


8DPSK_3DH1_HOPP_Ant1_NTNV

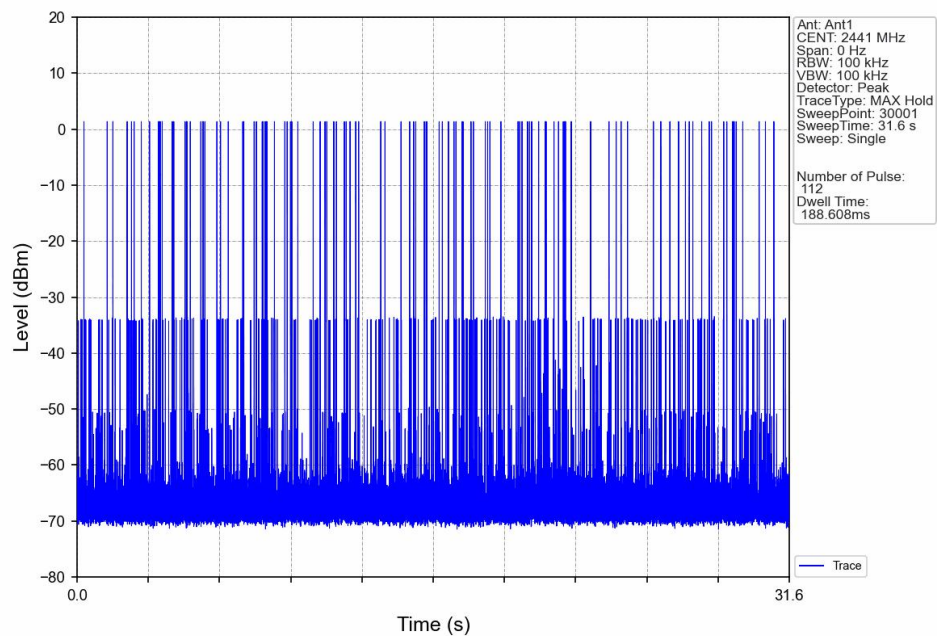


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8DPSK_3DH3_HOPP_Ant1_NTNV

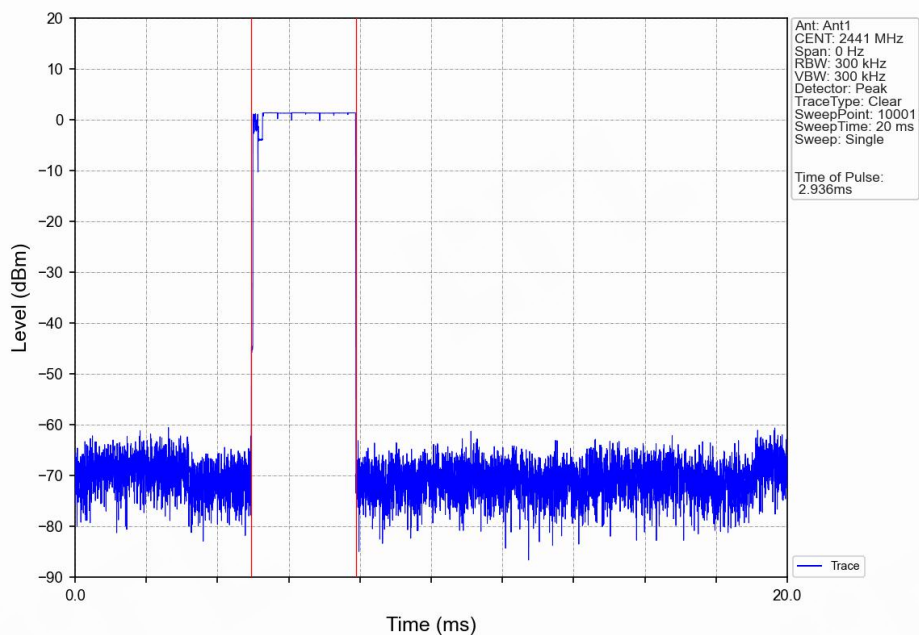


8DPSK_3DH3_HOPP_Ant1_NTNV

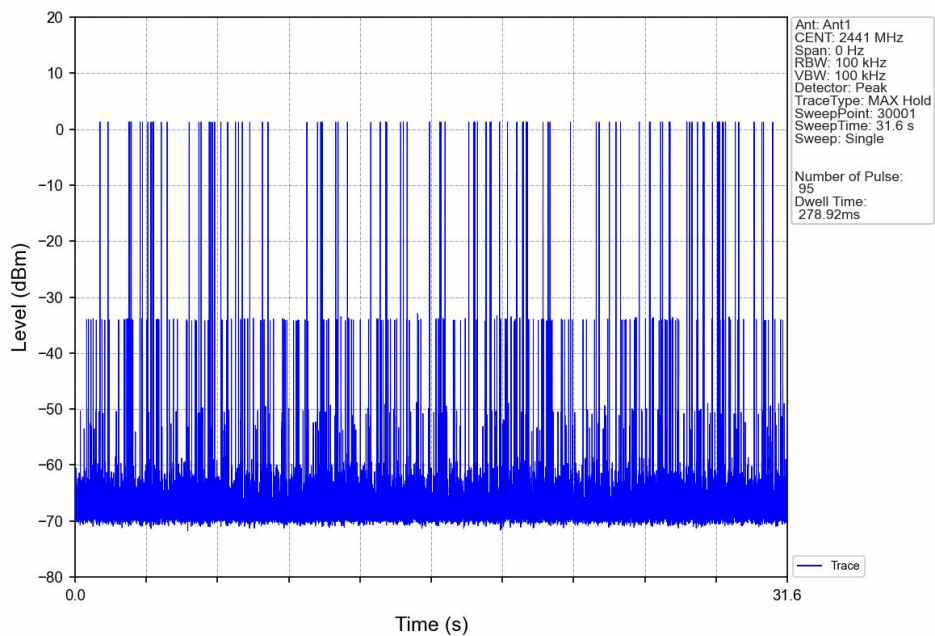


FCC ID: 2A33C-E707

8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



FCC ID: 2A33C-E707

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	-2.40
		2441	DH5	1	-2.53
		2480	DH5	1	-2.90
		HOPP	DH5	1	-0.90
					-0.90
Pi/4DQPSK	SISO	2402	2DH5	1	-1.74
		2441	2DH5	1	-1.11
		2480	2DH5	1	-1.17
		HOPP	2DH5	1	1.47
					1.47
8DPSK	SISO	2402	3DH5	1	-1.31
		2441	3DH5	1	-0.64
		2480	3DH5	1	-0.62
		HOPP	3DH5	1	1.87
					1.87

6.1.2 CSE

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-2.40	-22.40	Pass
		2441	DH5	1	-2.53	-22.53	Pass
		2480	DH5	1	-2.90	-22.90	Pass
		HOPP	DH5	1	-0.90	-20.90	Pass
					-0.90	-20.90	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-1.74	-21.74	Pass
		2441	2DH5	1	-1.11	-21.11	Pass
		2480	2DH5	1	-1.17	-21.17	Pass
		HOPP	2DH5	1	1.47	-18.53	Pass
					1.47	-18.53	Pass
8DPSK	SISO	2402	3DH5	1	-1.31	-21.31	Pass
		2441	3DH5	1	-0.64	-20.64	Pass
		2480	3DH5	1	-0.62	-20.62	Pass
		HOPP	3DH5	1	1.87	-18.13	Pass
					1.87	-18.13	Pass

FCC ID: 2A33C-E707

6.2 Test Graph

6.2.1 Ref

