Appendix Test Data

Project No.:	18220WC10145001	Test Date:	2021.7.2
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	23.3℃	Relative Humidity:	56 %
Pressure:	1012 hPa		

1. Bandwidth

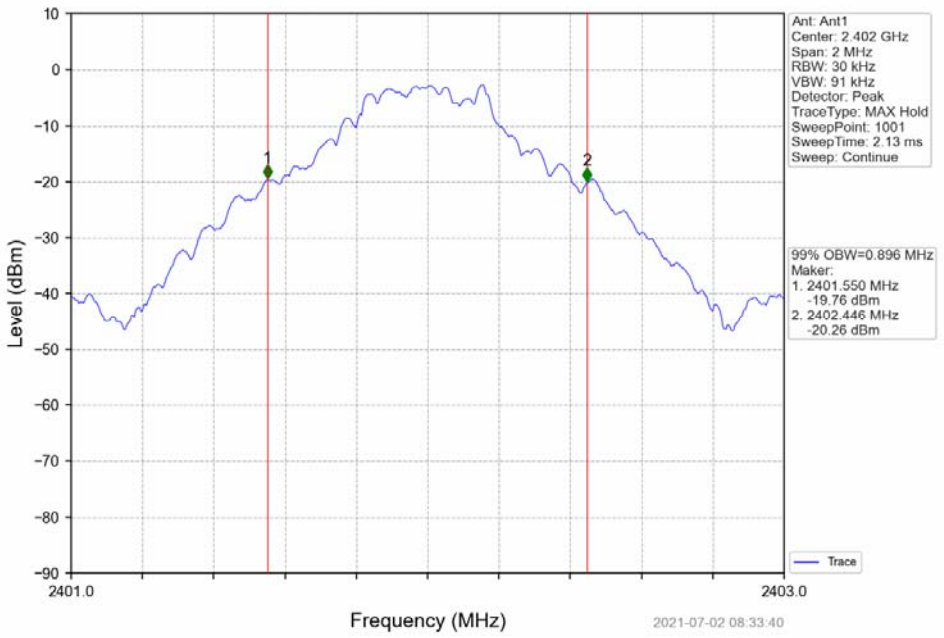
1.1 OBW

1.1.1 Test Result

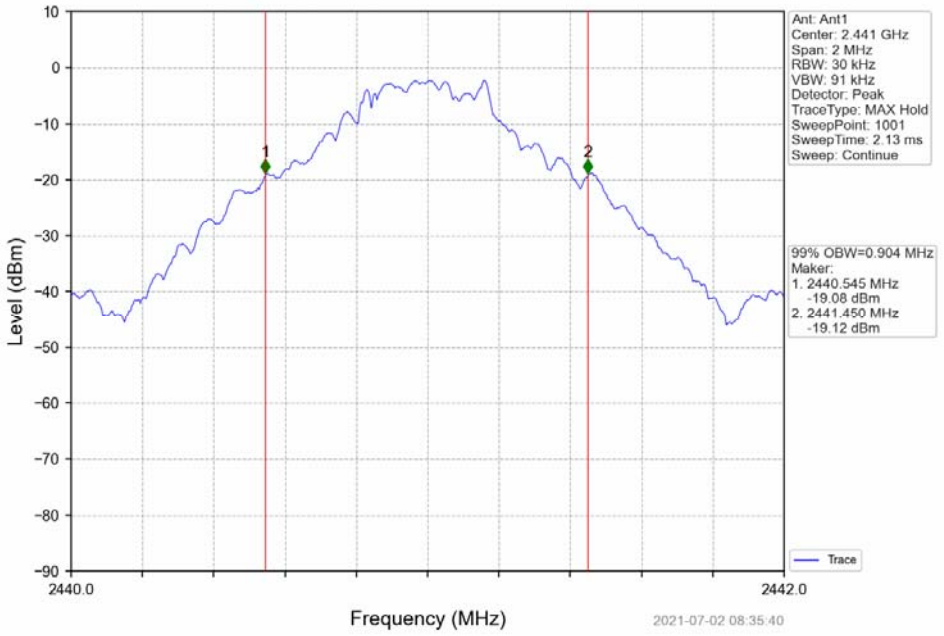
Mode	TX Type	Frequency (MHz)	Packet Type	Ant	99% Occupied Bandwidth (MHz)	Limit	Verdict
GFSK	SISO	2402	DH5	1	0.90	/	Pass
		2441	DH5	1	0.90	/	Pass
		2480	DH5	1	0.90	/	Pass
π /4-DQPSK	SISO	2402	2DH5	1	1.18	/	Pass
		2441	2DH5	1	1.18	/	Pass
		2480	2DH5	1	1.17	/	Pass
8DPSK	SISO	2402	3DH5	1	1.19	/	Pass
		2441	3DH5	1	1.18	/	Pass
		2480	3DH5	1	1.18	/	Pass

1.1.2 Test Graph

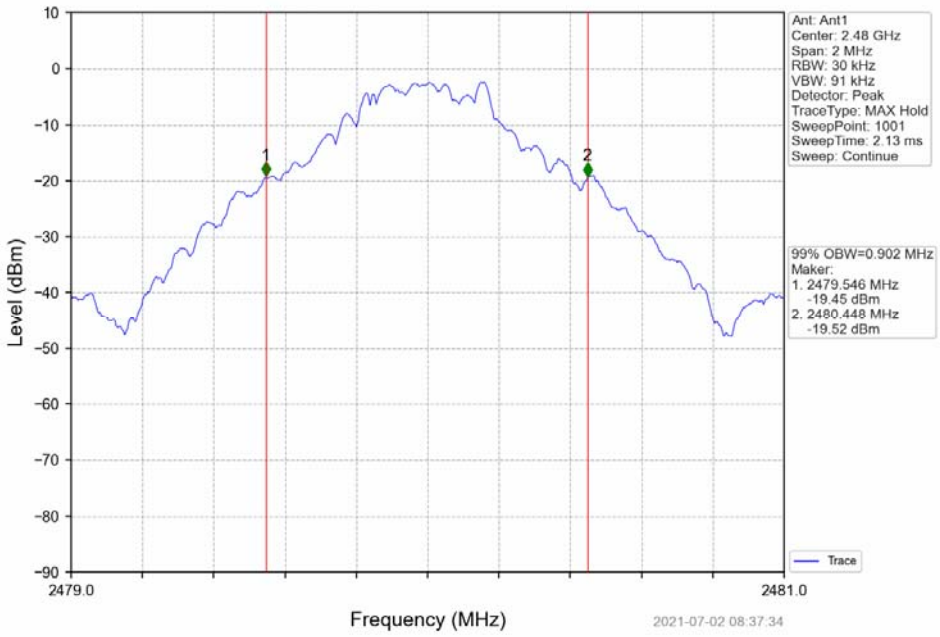
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



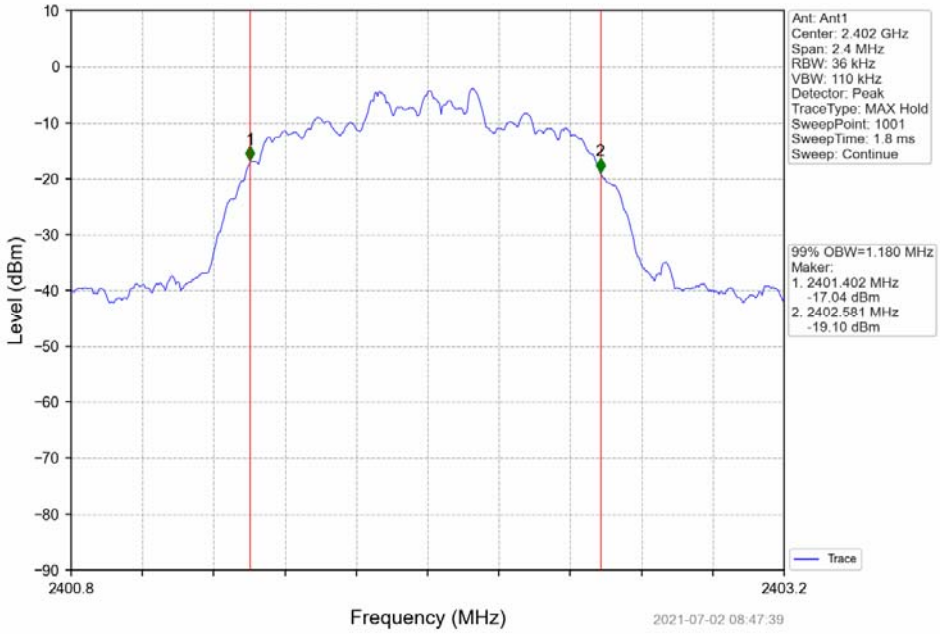
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



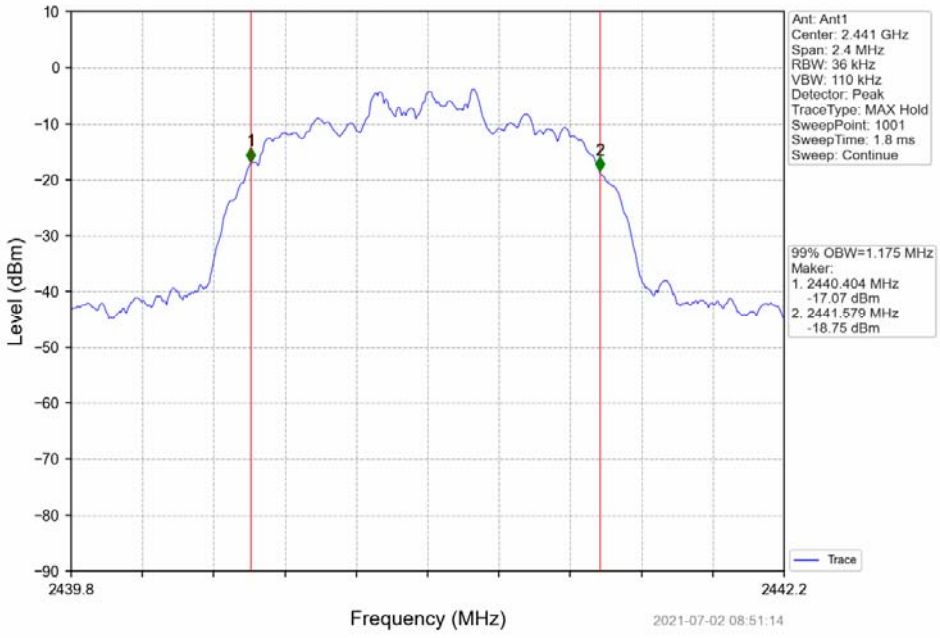
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



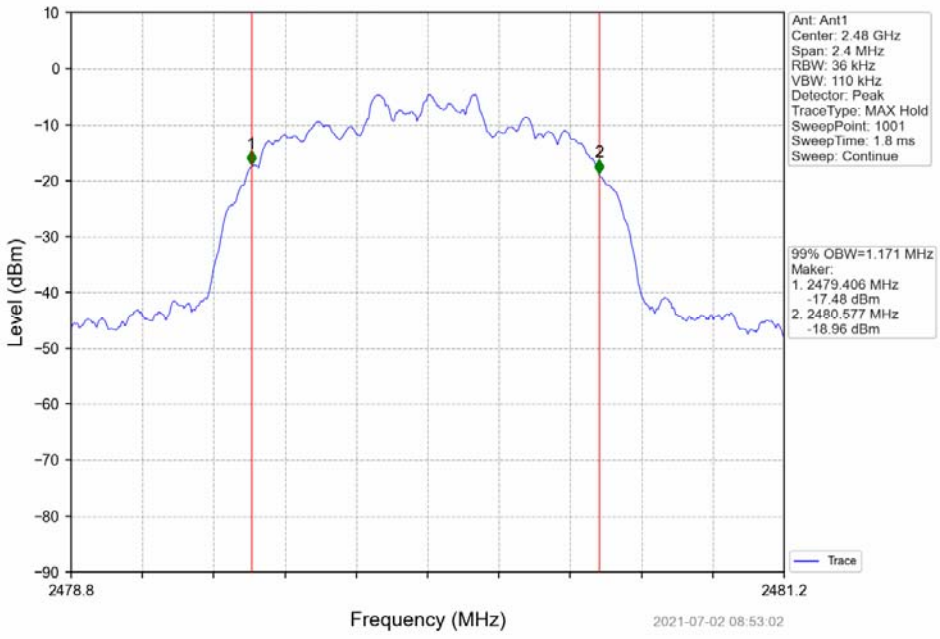
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



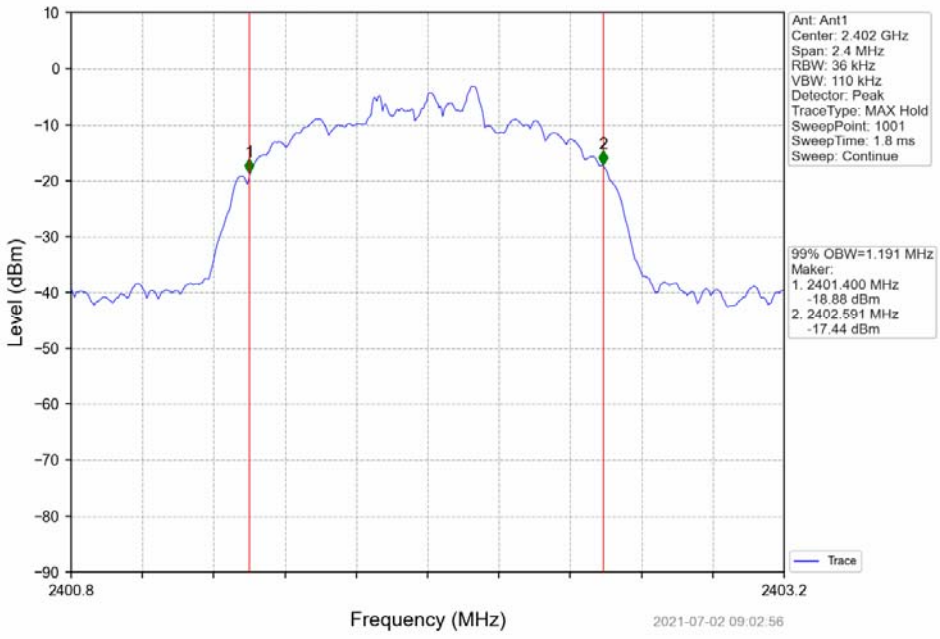
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



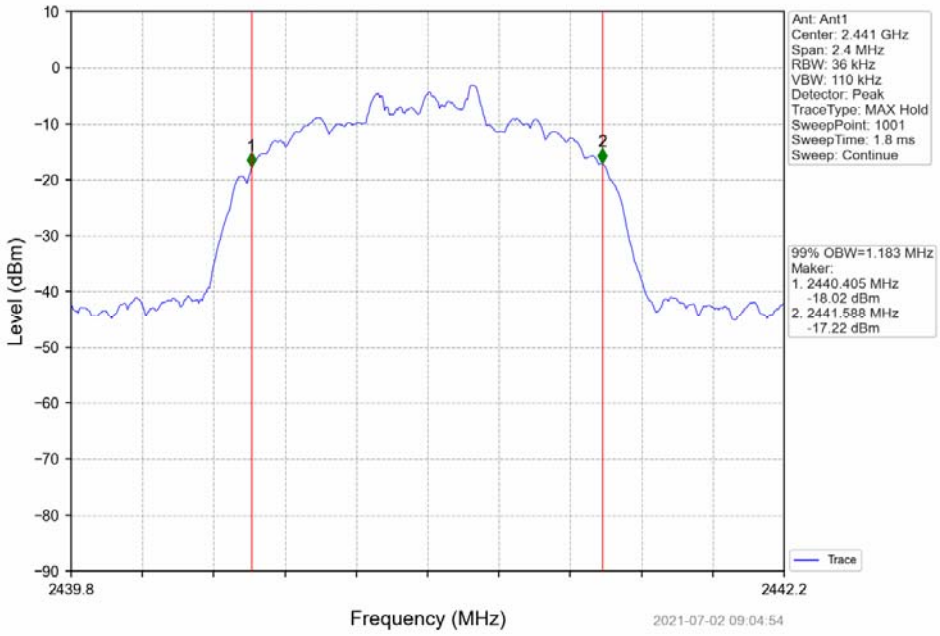
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



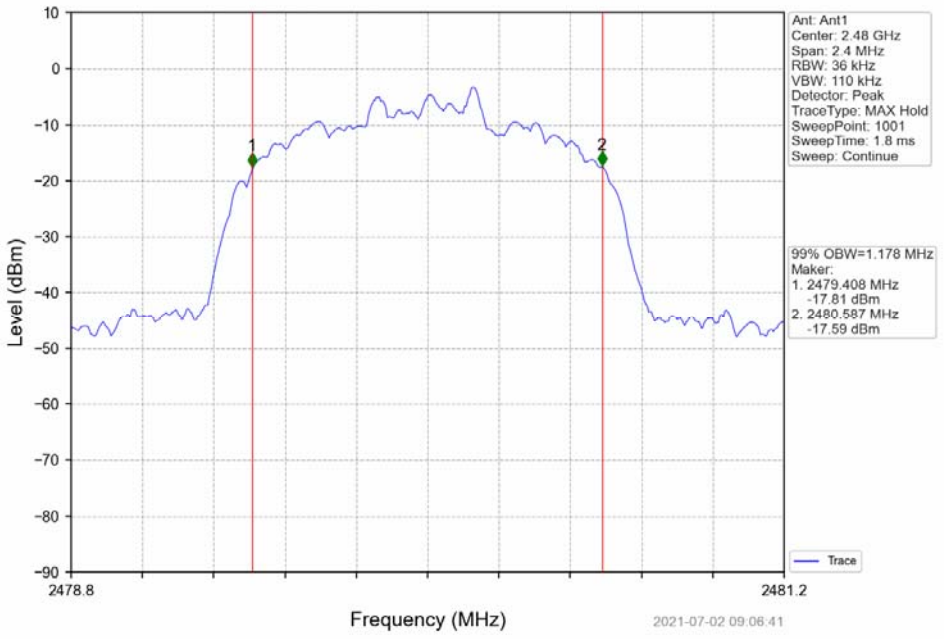
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



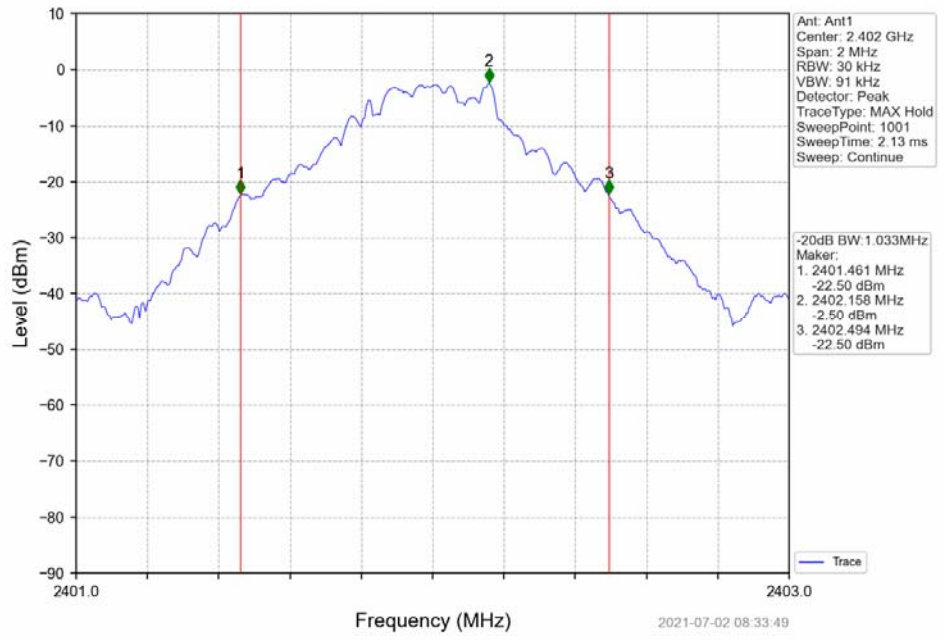
1.2 20dB BW

1.2.1 Test Result

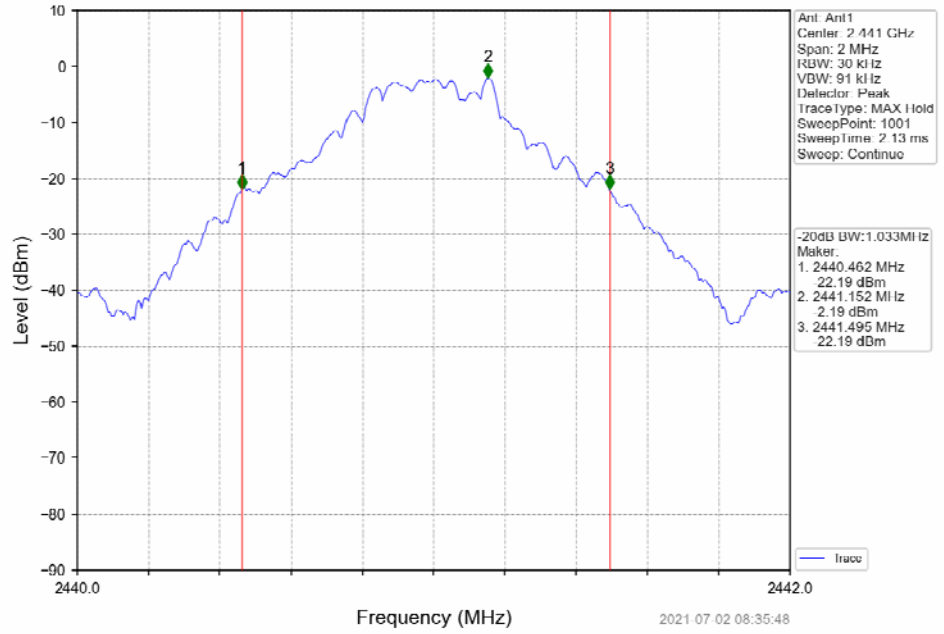
Mode	TX Type	Frequency (MHz)	Packet Type	Ant	20dB Bandwidth (MHz)	Limit	Verdict
GFSK	SISO	2402	DH5	1	1.03	/	Pass
		2441	DH5	1	1.03	/	Pass
		2480	DH5	1	1.04	/	Pass
π/4-DQPSK	SISO	2402	2DH5	1	1.32	/	Pass
		2441	2DH5	1	1.32	/	Pass
		2480	2DH5	1	1.30	/	Pass
8DPSK	SISO	2402	3DH5	1	1.31	/	Pass
		2441	3DH5	1	1.31	/	Pass
		2480	3DH5	1	1.30	/	Pass

1.2.2 Test Graph

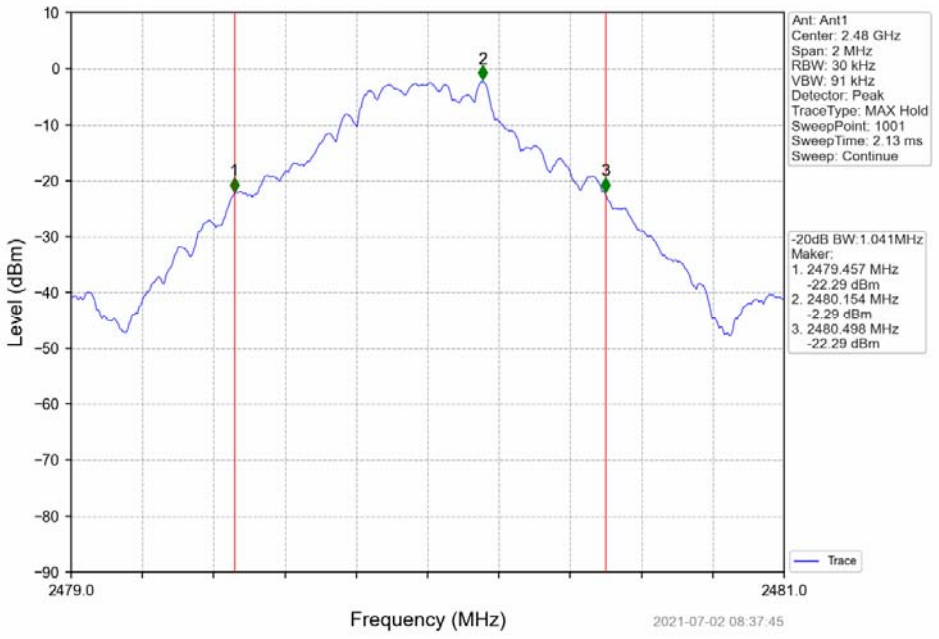
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



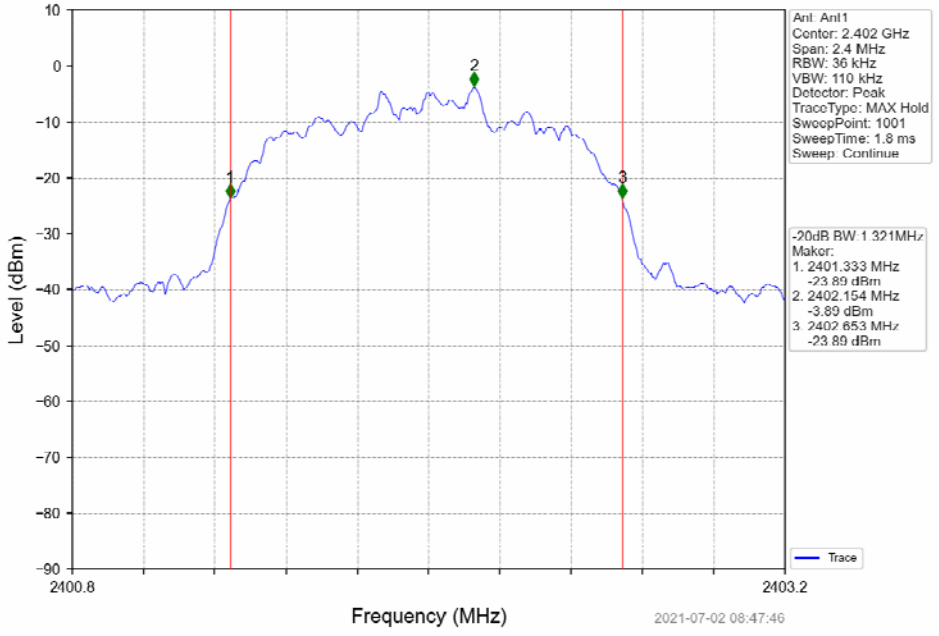
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



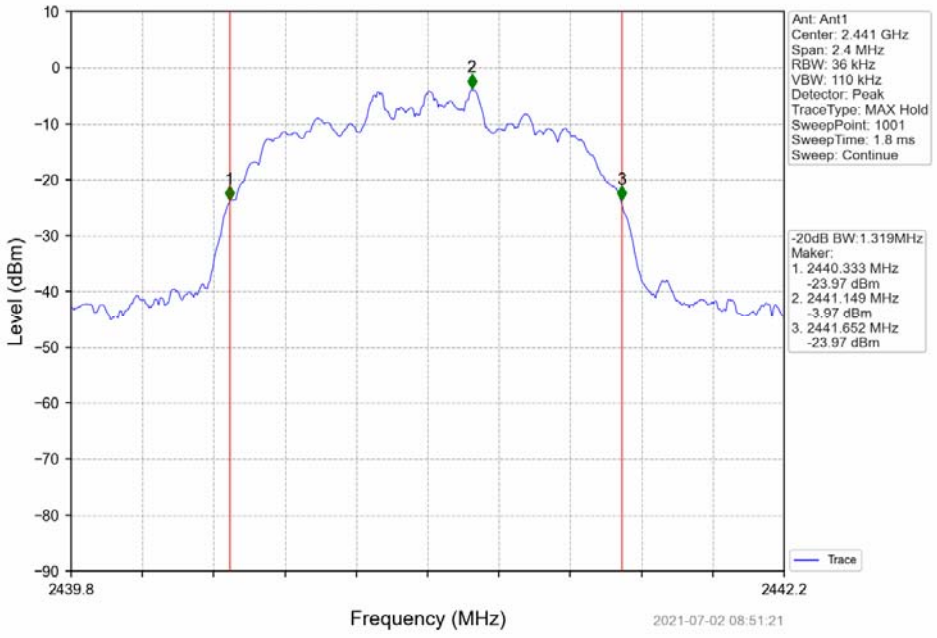
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



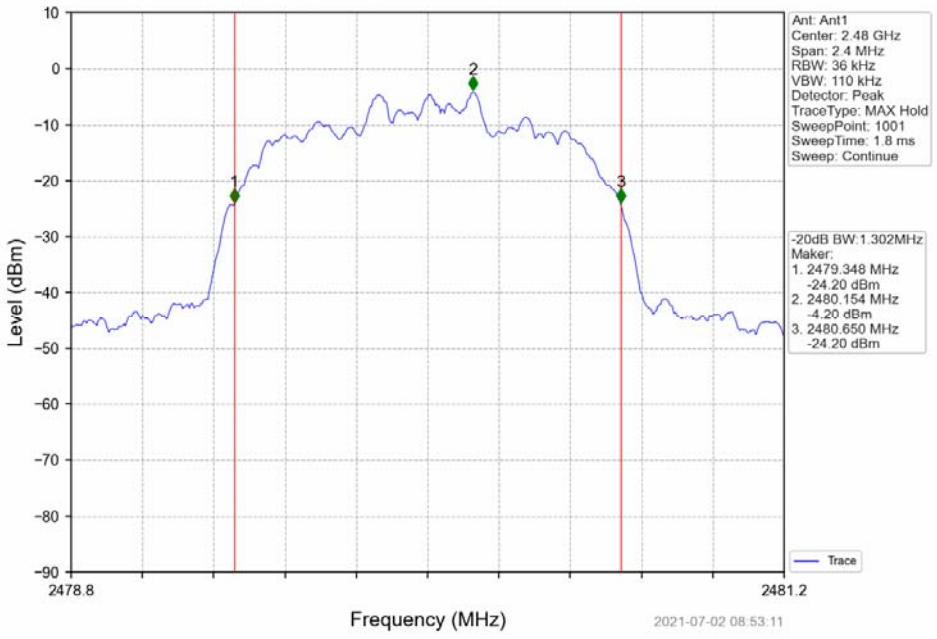
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



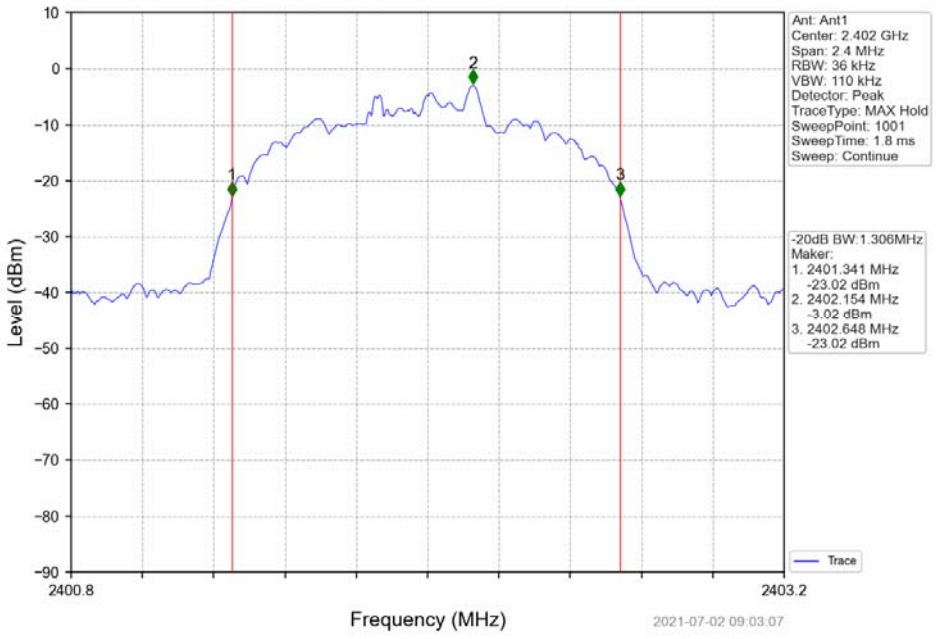
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



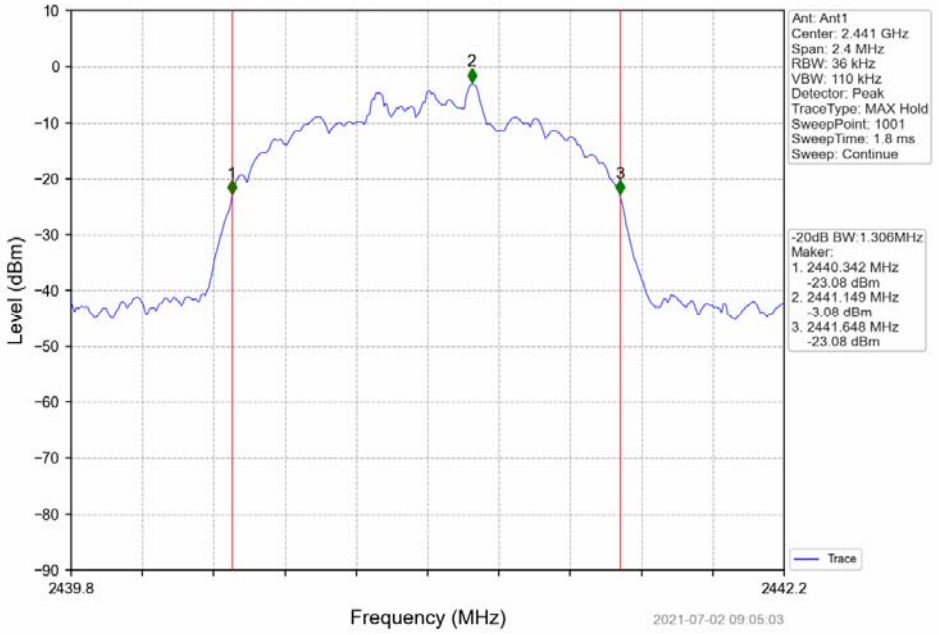
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



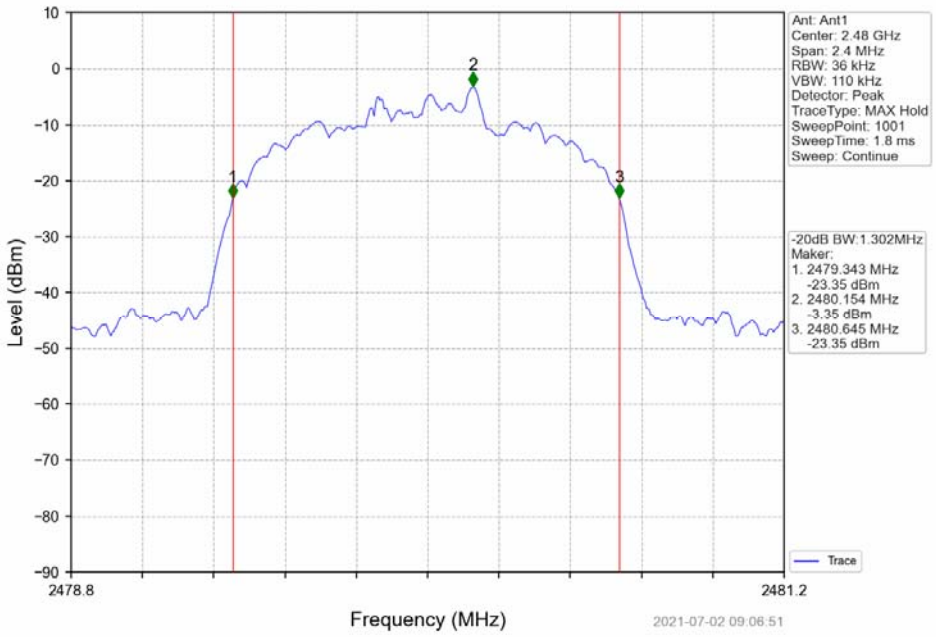
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



2. Maximum Conducted Output Power

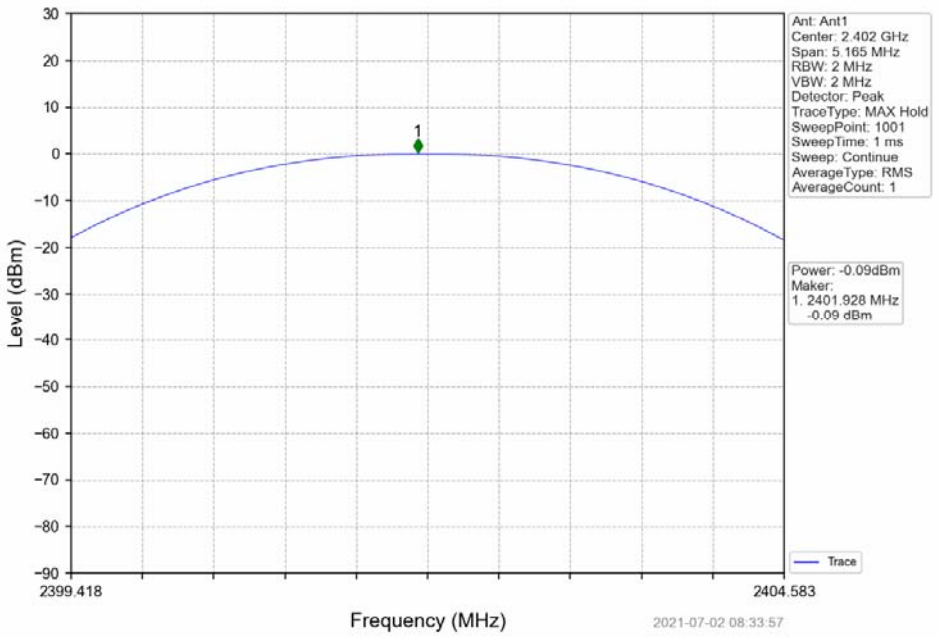
2.1 Power

2.1.1 Test Result

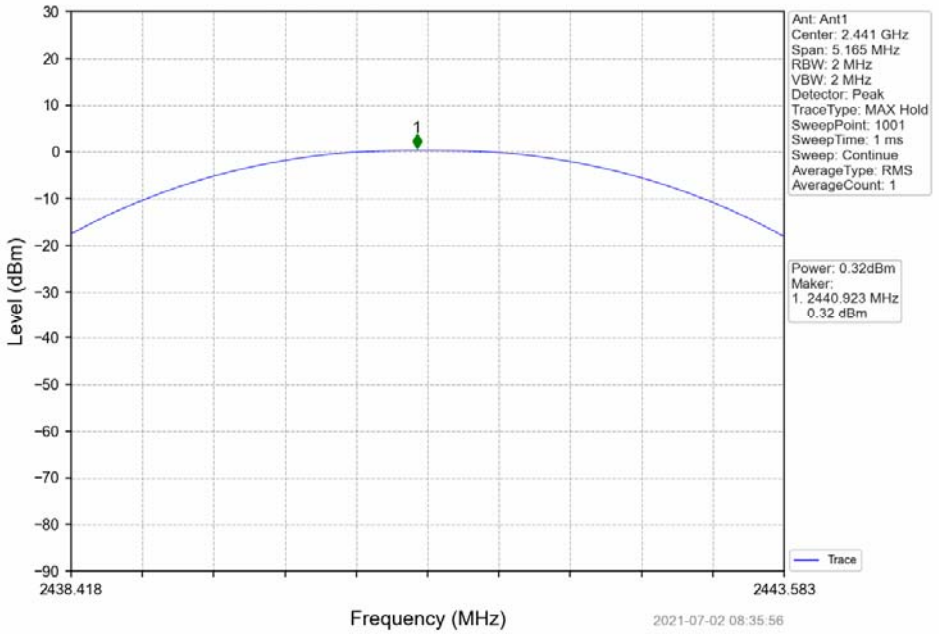
Mode	TX Type	Frequency (MHz)	Packet Type	Measured Peak Output Power (dBm)	Limit (dBm)	Verdict
				Ant1		
GFSK	SISO	2402	DH5	-0.09	<=20.97	Pass
		2441	DH5	0.32	<=20.97	Pass
		2480	DH5	0.20	<=20.97	Pass
π/4-DQPSK	SISO	2402	2DH5	-0.61	<=20.97	Pass
		2441	2DH5	-0.41	<=20.97	Pass
		2480	2DH5	-0.66	<=20.97	Pass
8DPSK	SISO	2402	3DH5	-0.43	<=20.97	Pass
		2441	3DH5	-0.22	<=20.97	Pass
		2480	3DH5	-0.49	<=20.97	Pass
Note1: Antenna Gain: Ant1: -0.58dBi;						

2.1.2 Test Graph

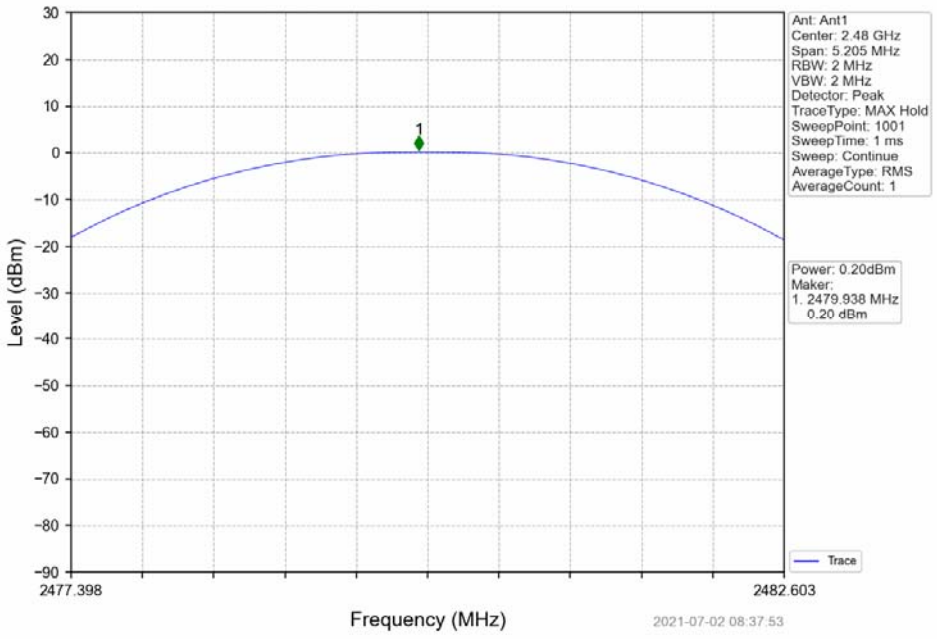
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



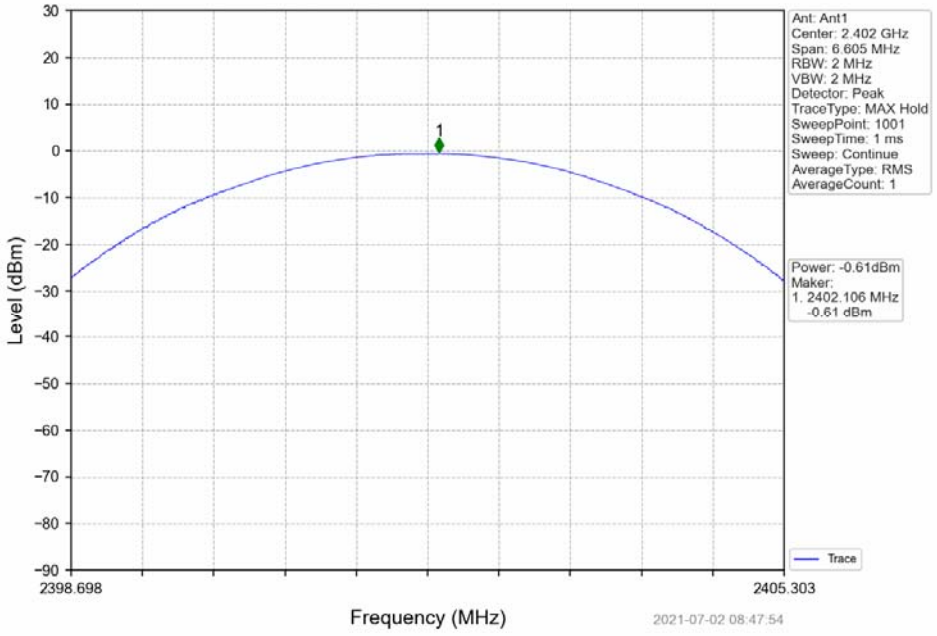
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



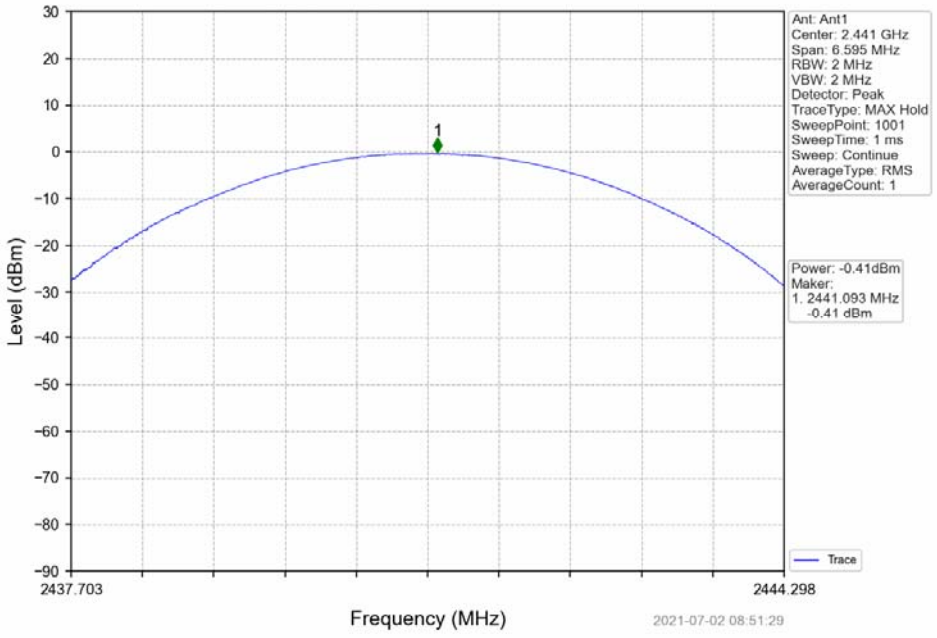
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



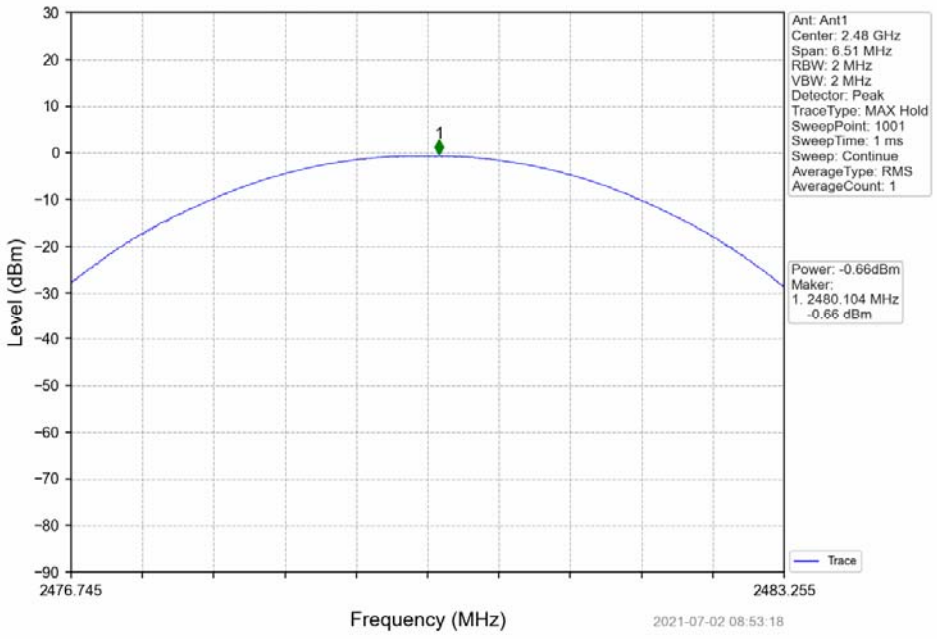
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



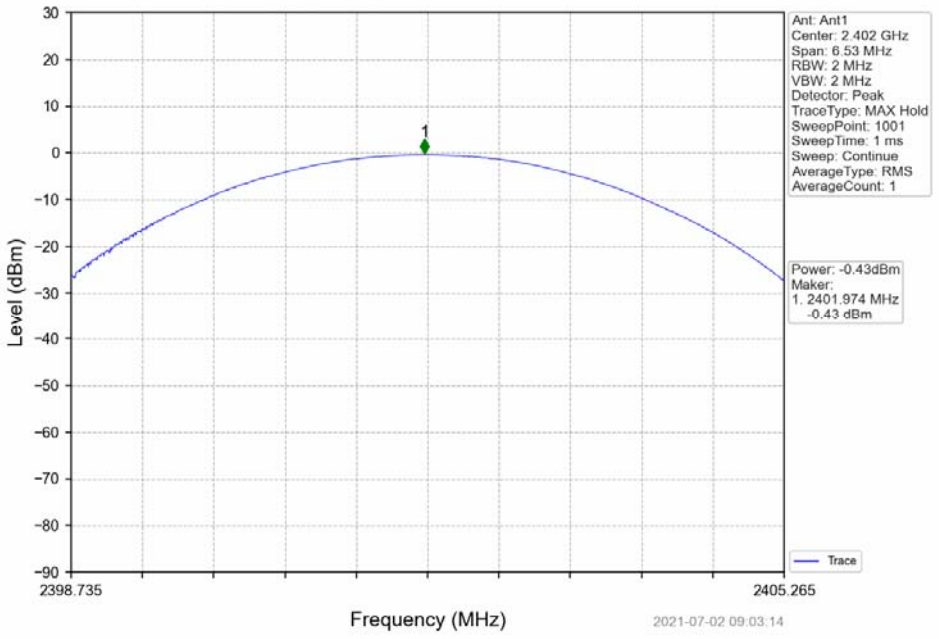
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



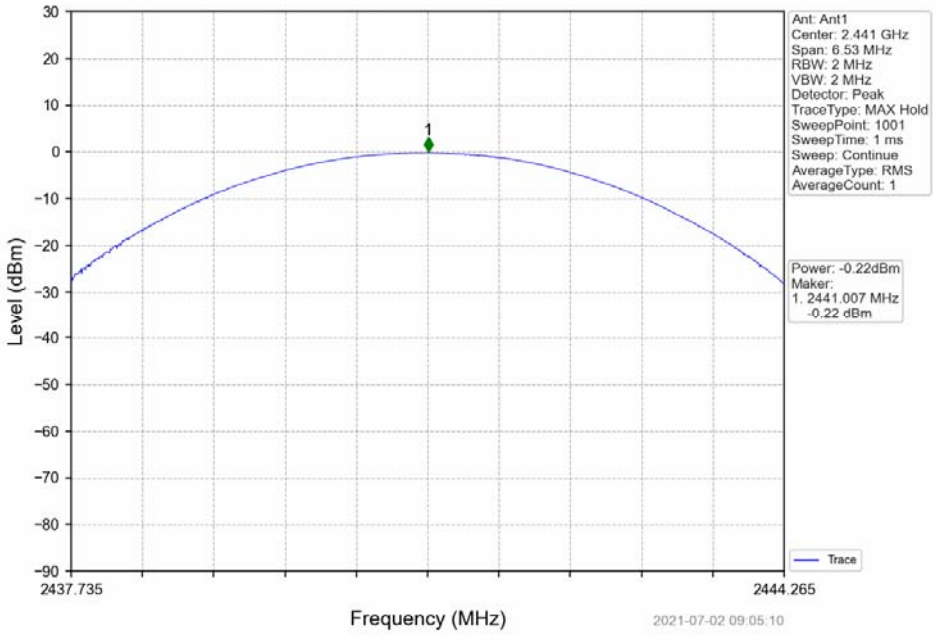
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



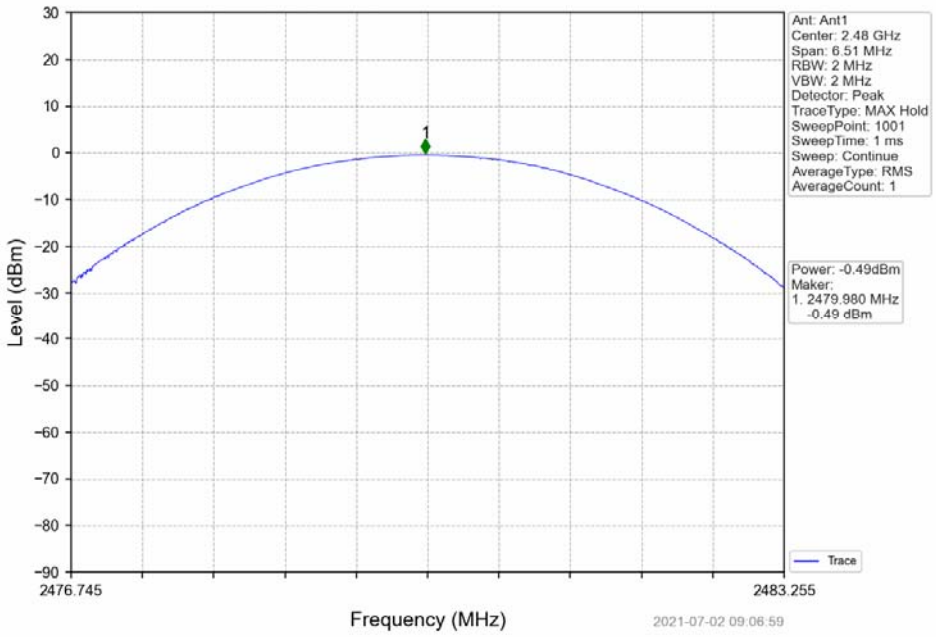
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



3. Carrier Frequency Separation

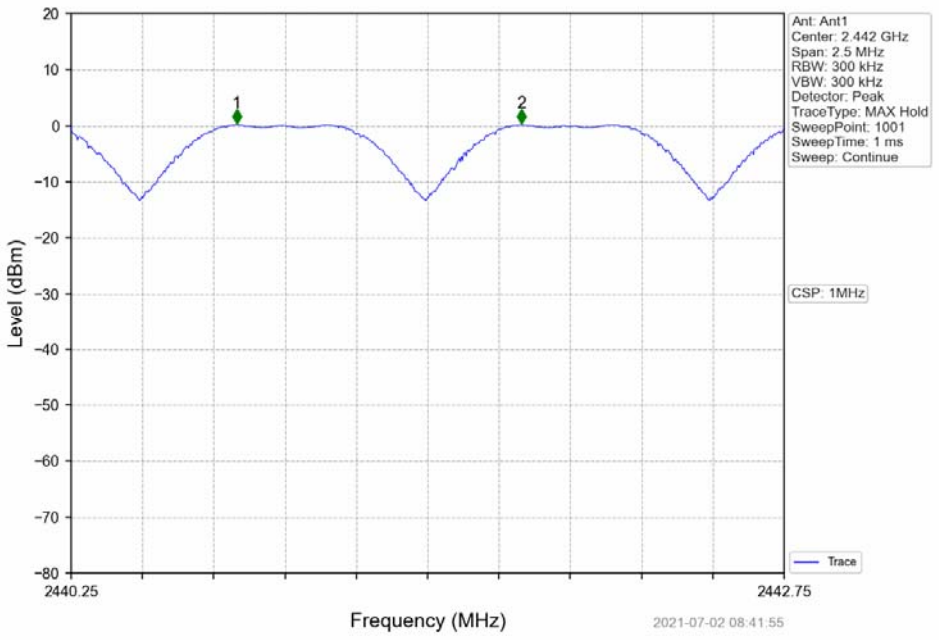
3.1 Ant1

3.1.1 Test Result

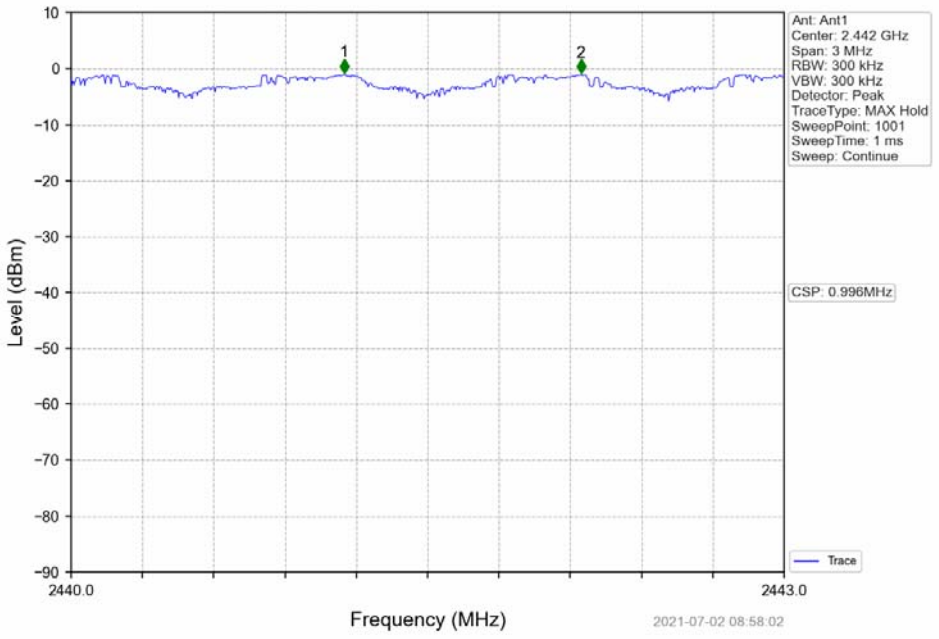
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.00	1.03	>=0.689	Pass
π/4-DQPSK	SISO	HOPP	2DH5	1.00	1.32	>=0.881	Pass
8DPSK	SISO	HOPP	3DH5	1.00	1.31	>=0.871	Pass

3.1.2 Test Graph

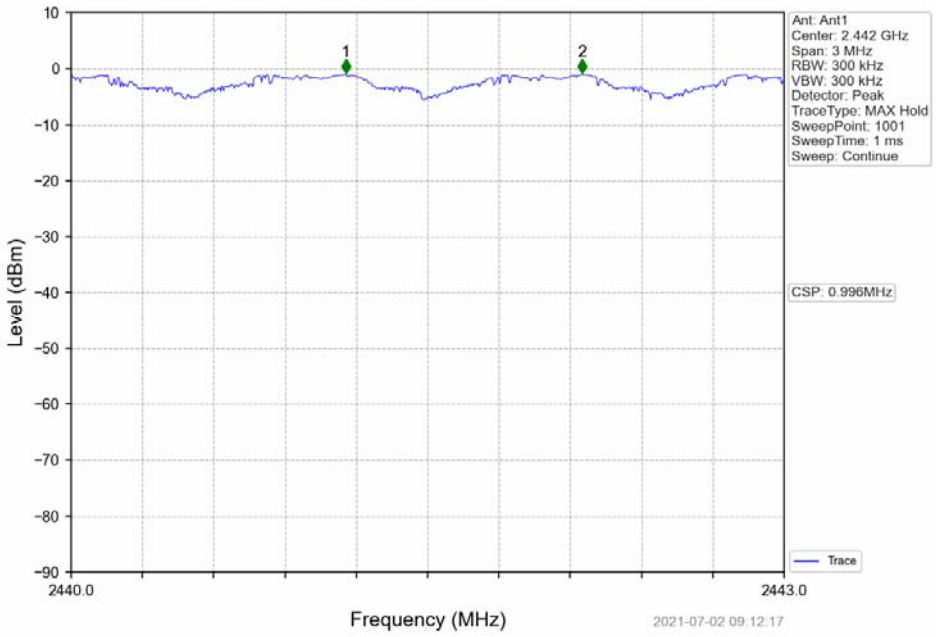
GFSK_DH5_HOPP_Ant1_NTNV



π /4-DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



4. Number of Hopping Frequencies

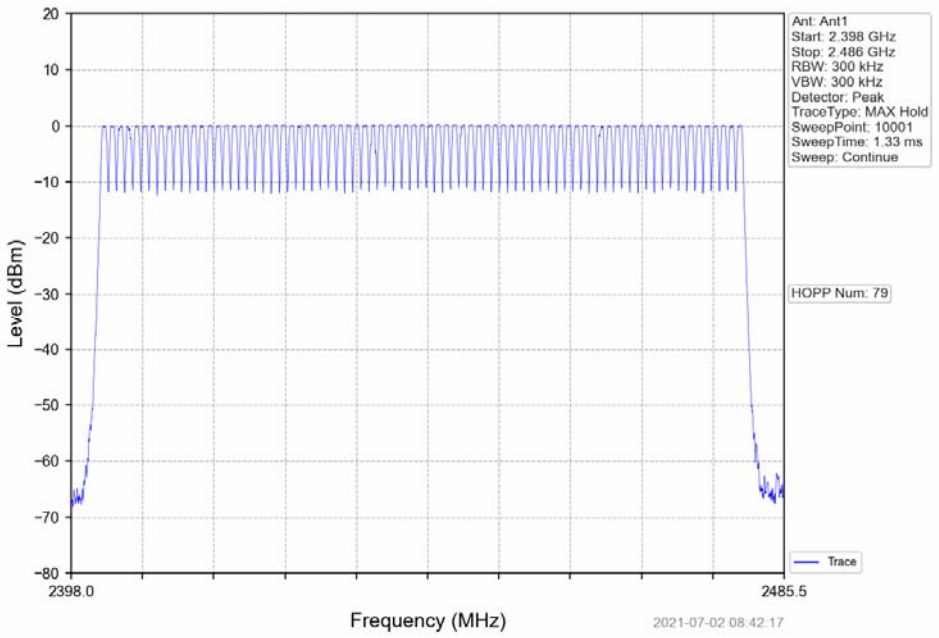
4.1 HoppNum

4.1.1 Test Result

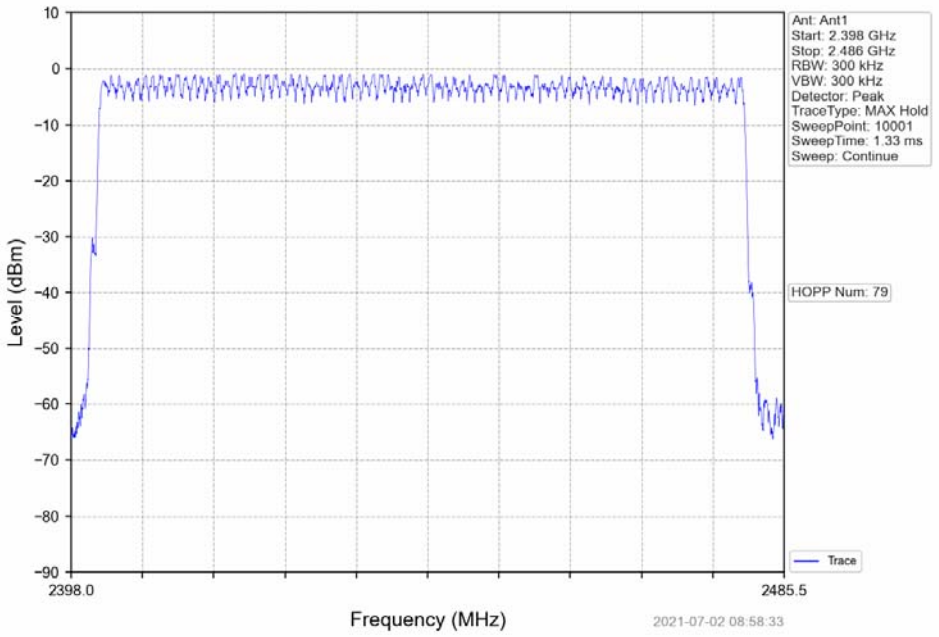
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies	Limit	Verdict
				Ant1		
GFSK	SISO	HOPP	DH5	79	>=15	Pass
π/4-DQPSK	SISO	HOPP	2DH5	79	>=15	Pass
8DPSK	SISO	HOPP	3DH5	79	>=15	Pass

4.1.2 Test Graph

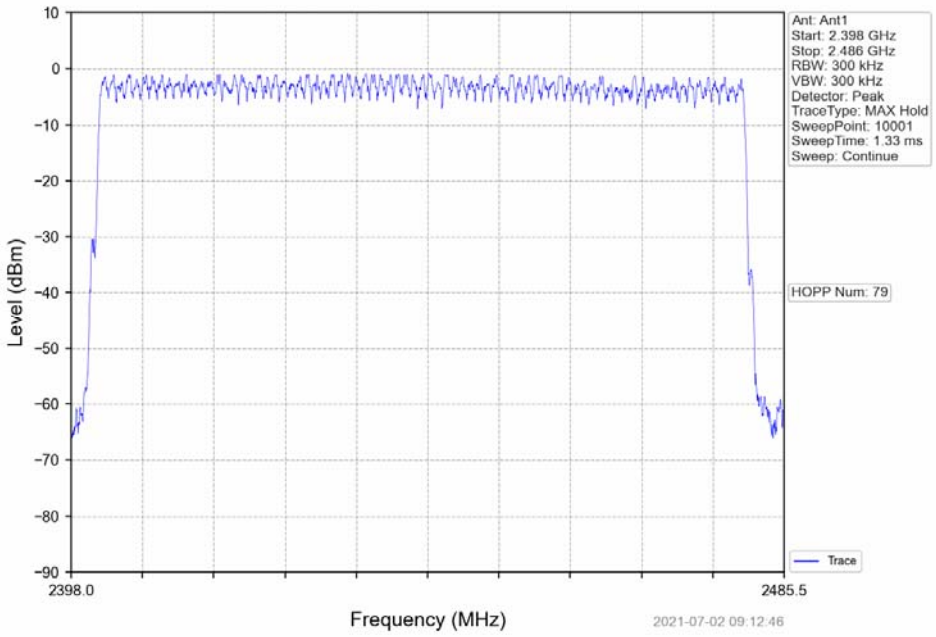
GFSK_DH5_HOPP_Ant1_NTNV



π /4-DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



5. Time of Occupancy (Dwell Time)

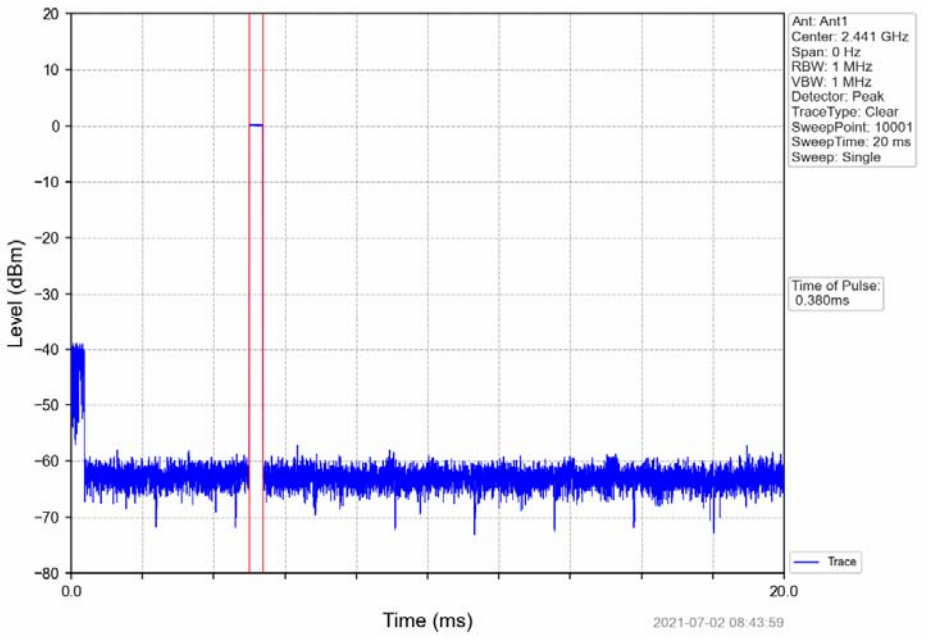
5.1 Ant1

5.1.1 Test Result

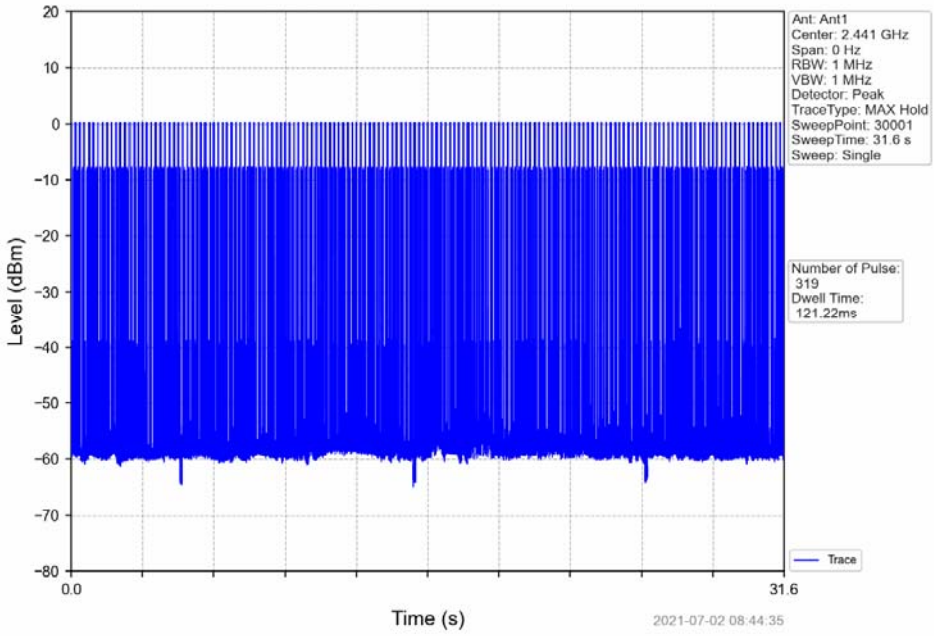
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.38	31.60	319	121.22	<=400	Pass
			DH3	1.64	31.60	159	260.12	<=400	Pass
			DH5	2.88	31.60	105	302.61	<=400	Pass
π/4-DQPSK	SISO	HOPP	2DH1	0.39	31.60	319	123.13	<=400	Pass
			2DH3	1.64	31.60	164	268.30	<=400	Pass
			2DH5	2.89	31.60	102	294.37	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.39	31.60	319	123.13	<=400	Pass
			3DH3	1.64	31.60	155	253.58	<=400	Pass
			3DH5	2.89	31.60	115	332.12	<=400	Pass

5.1.2 Test Graph

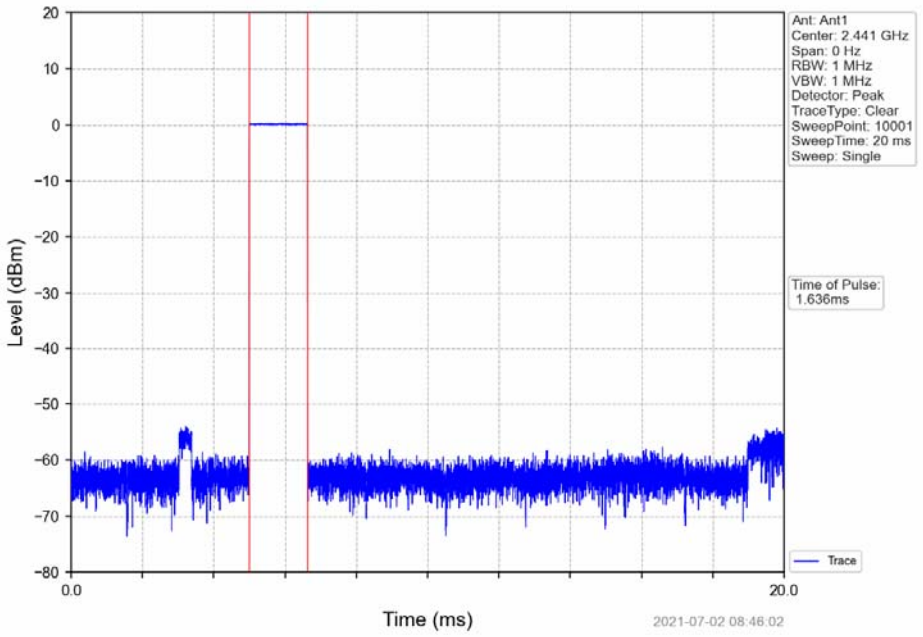
GFSK_DH1_HOPP_Ant1_NTNV



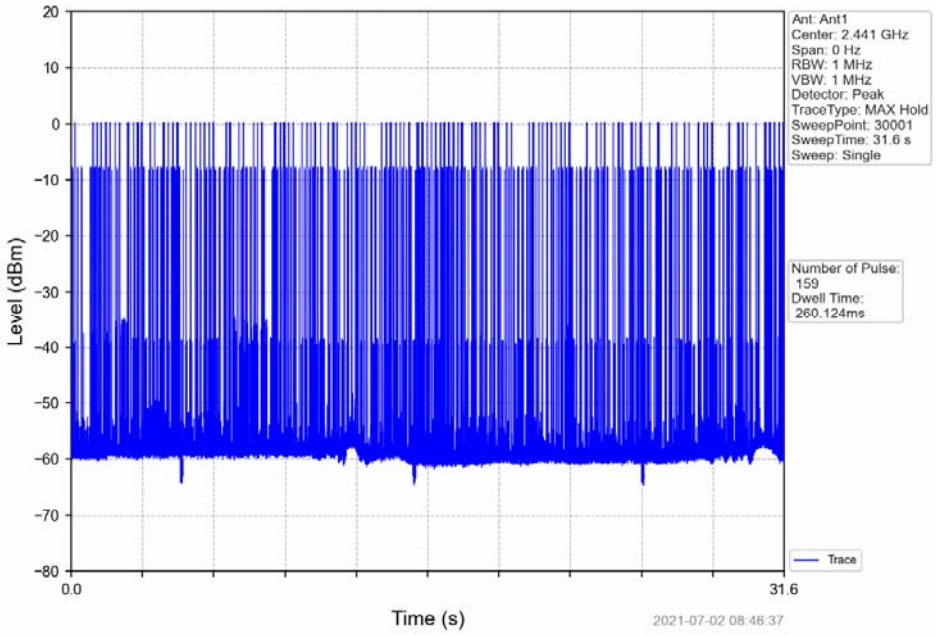
GFSK_DH1_HOPP_Ant1_NTNV



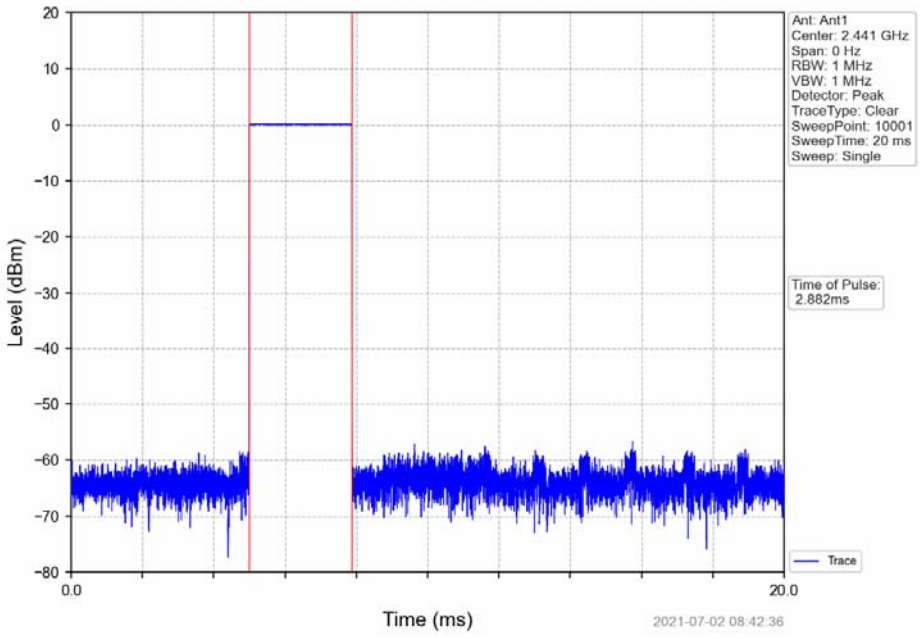
GFSK_DH3_HOPP_Ant1_NTNV



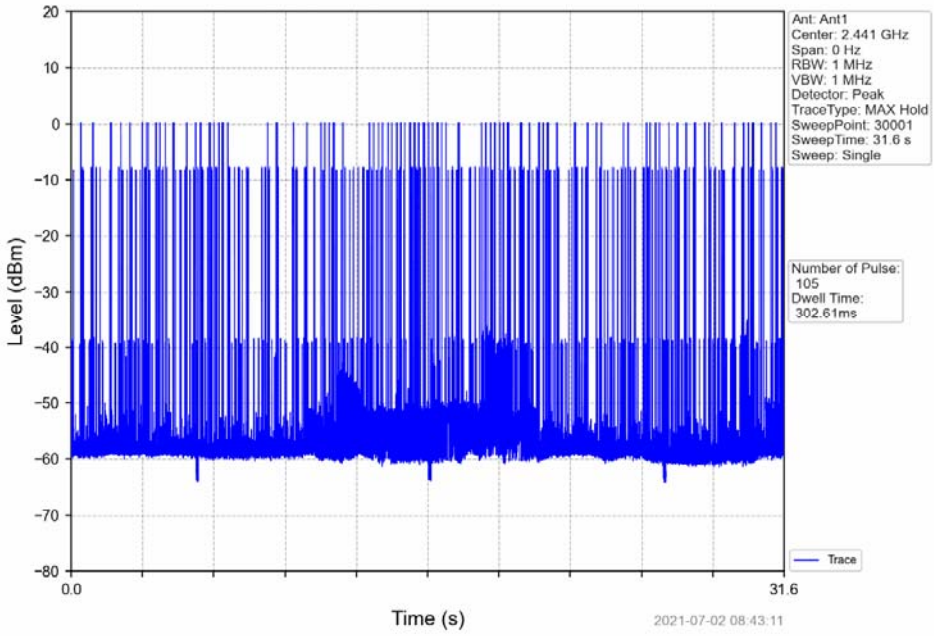
GFSK_DH3_HOPP_Ant1_NTNV



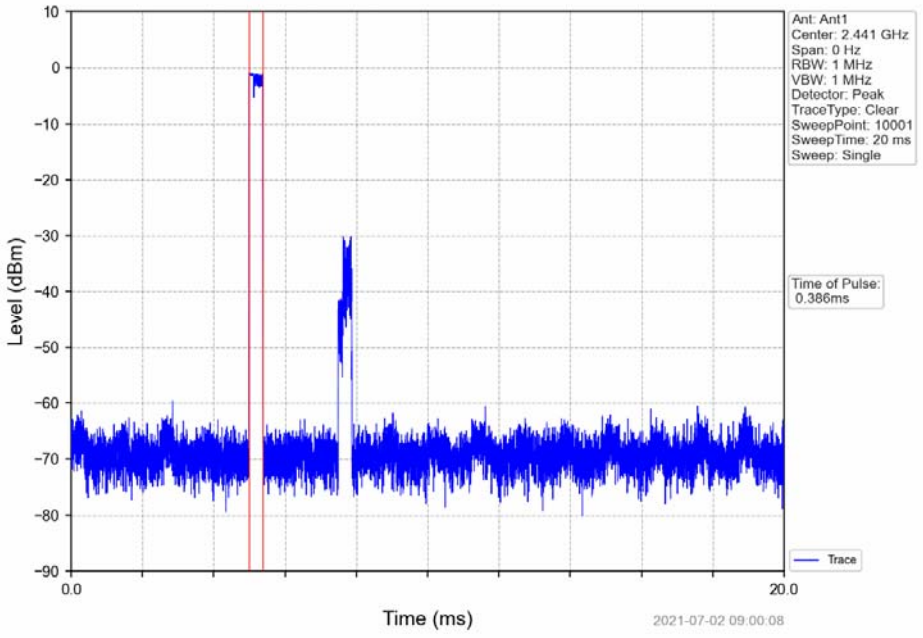
GFSK_DH5_HOPP_Ant1_NTNV



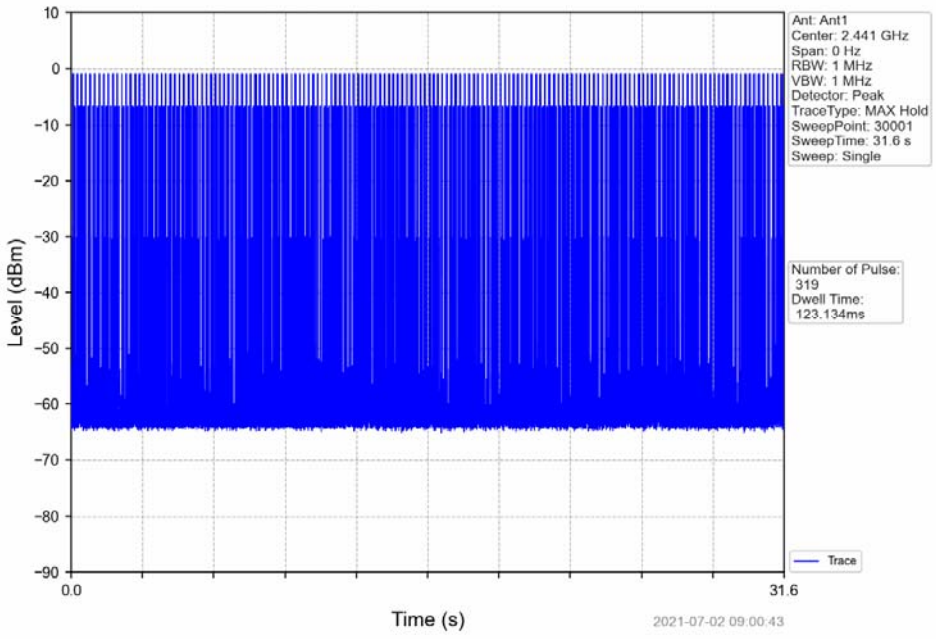
GFSK_DH5_HOPP_Ant1_NTNV



π /4-DQPSK_2DH1_HOPP_Ant1_NTNV



π /4-DQPSK_2DH1_HOPP_Ant1_NTNV



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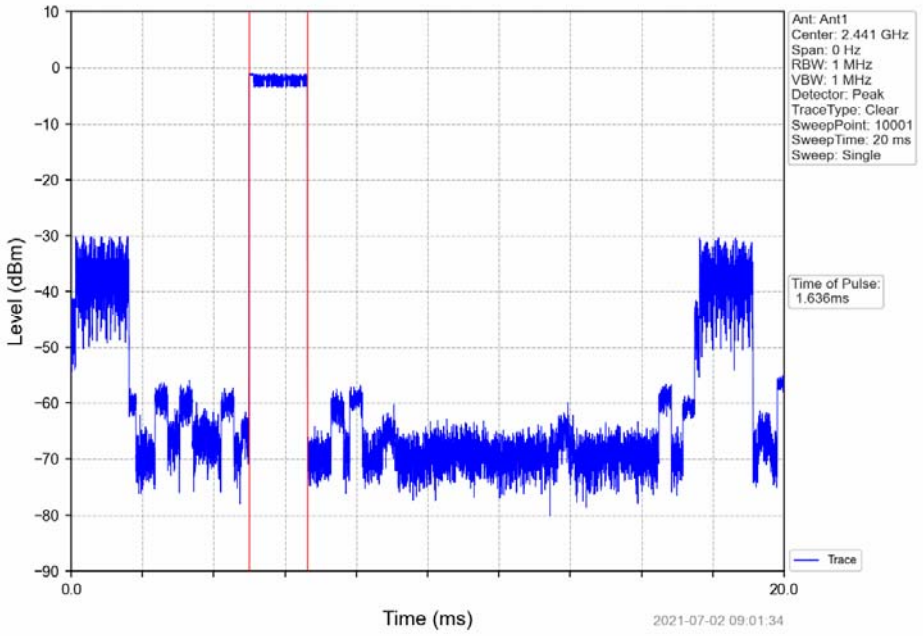

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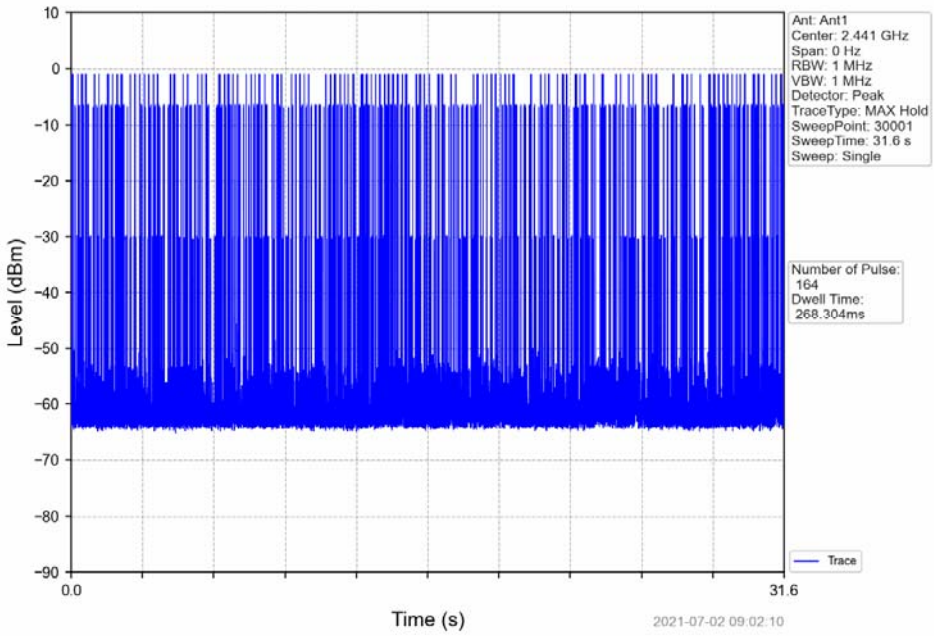

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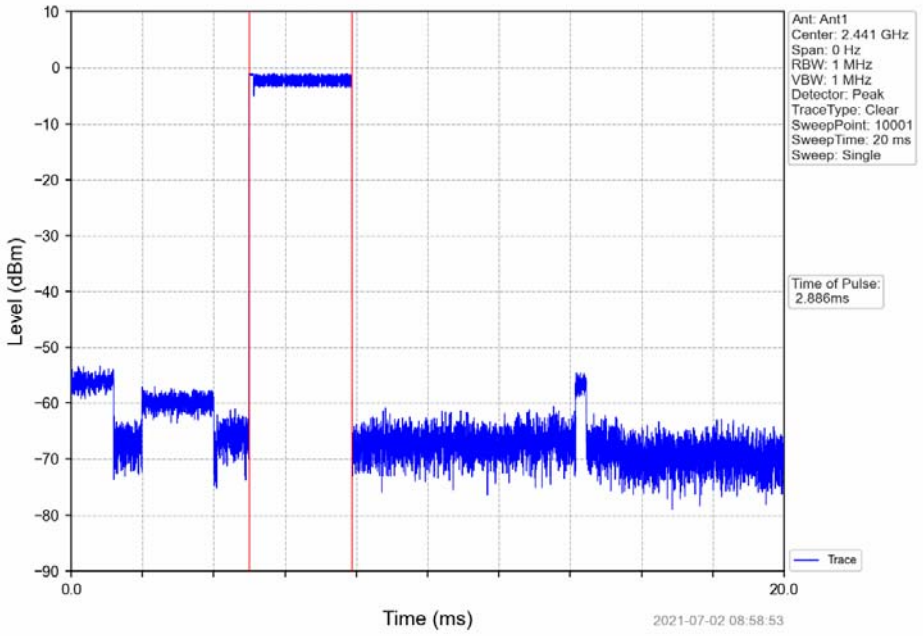

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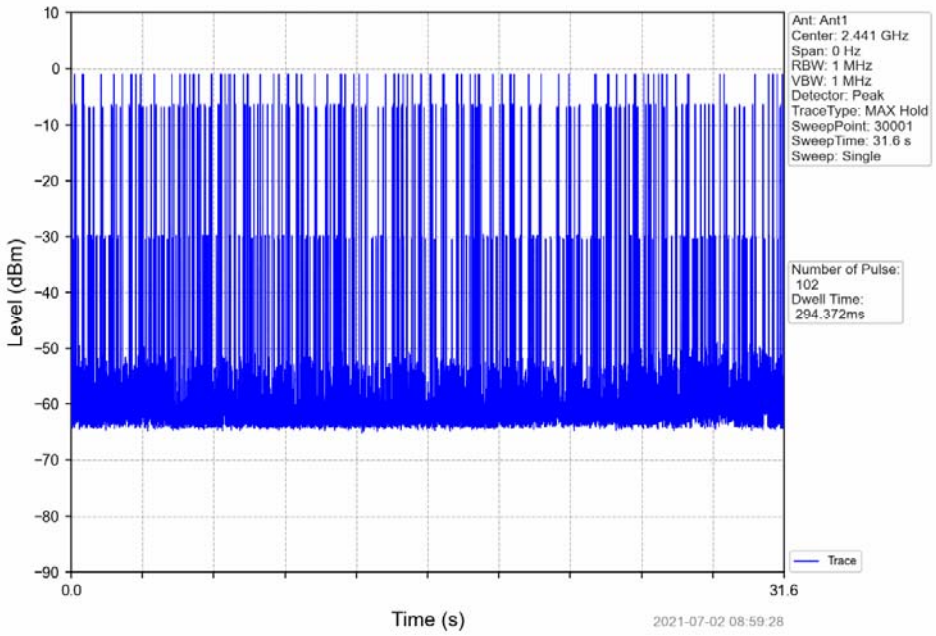
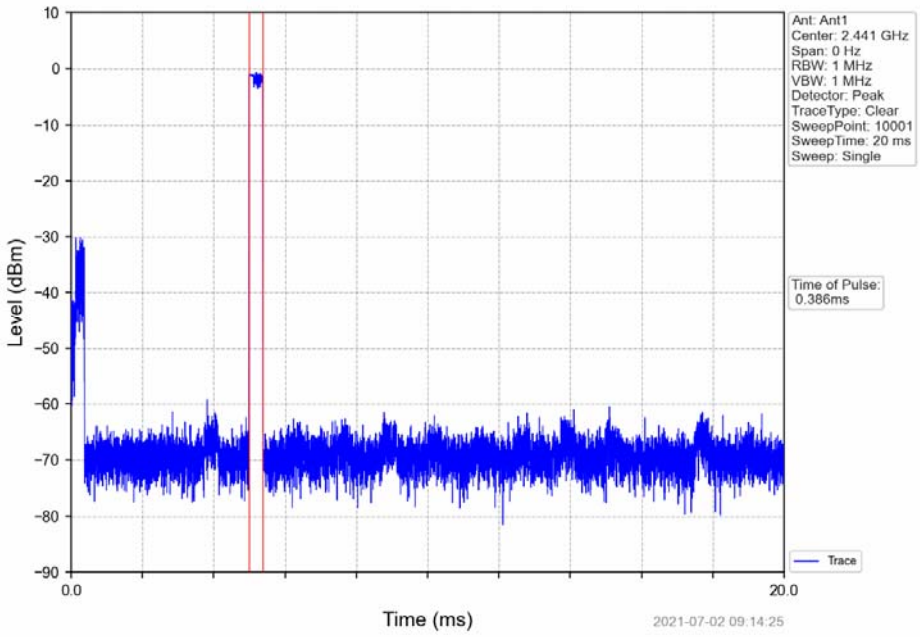


8DPSK_3DH1_HOPP_Ant1_NTNV



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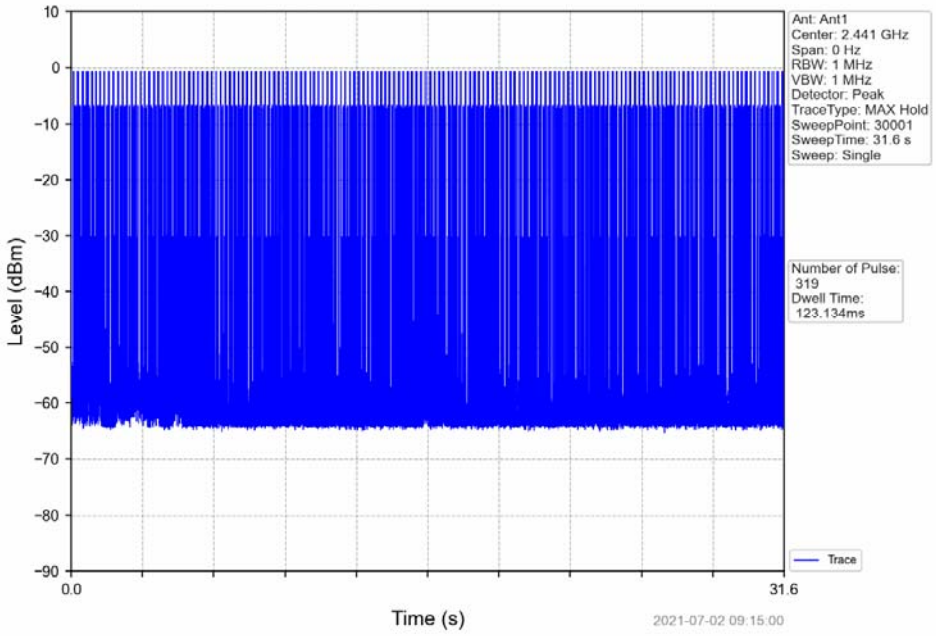

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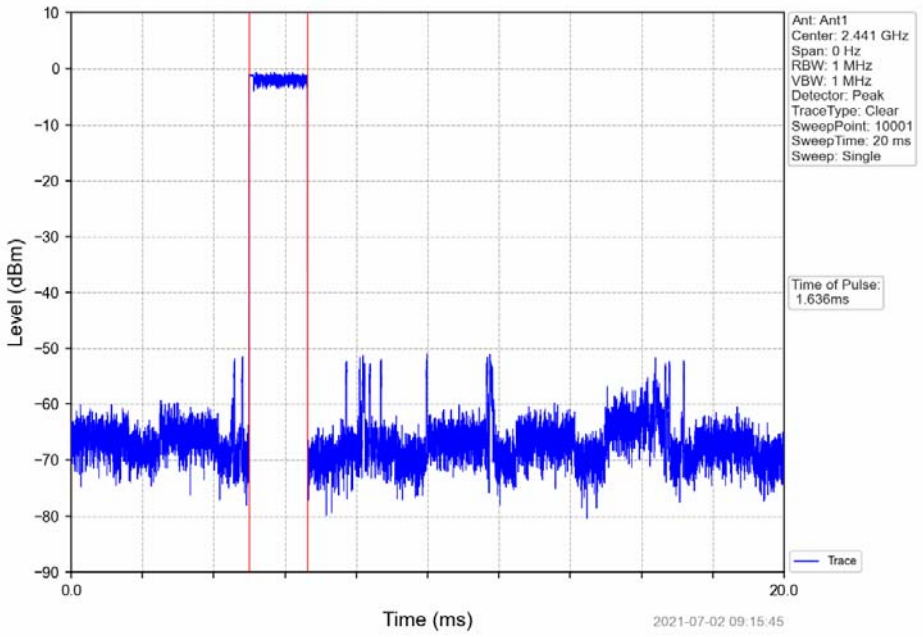

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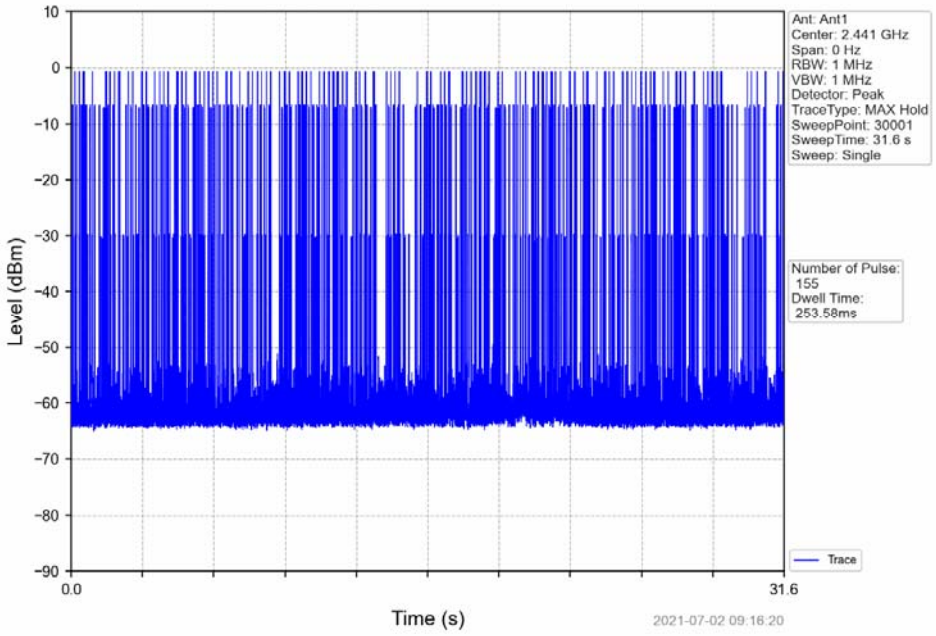
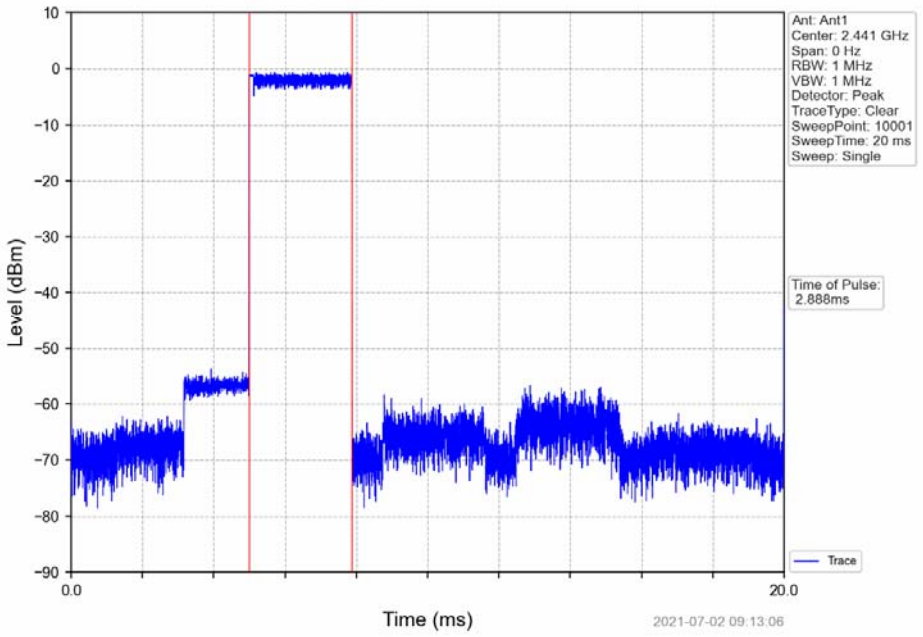
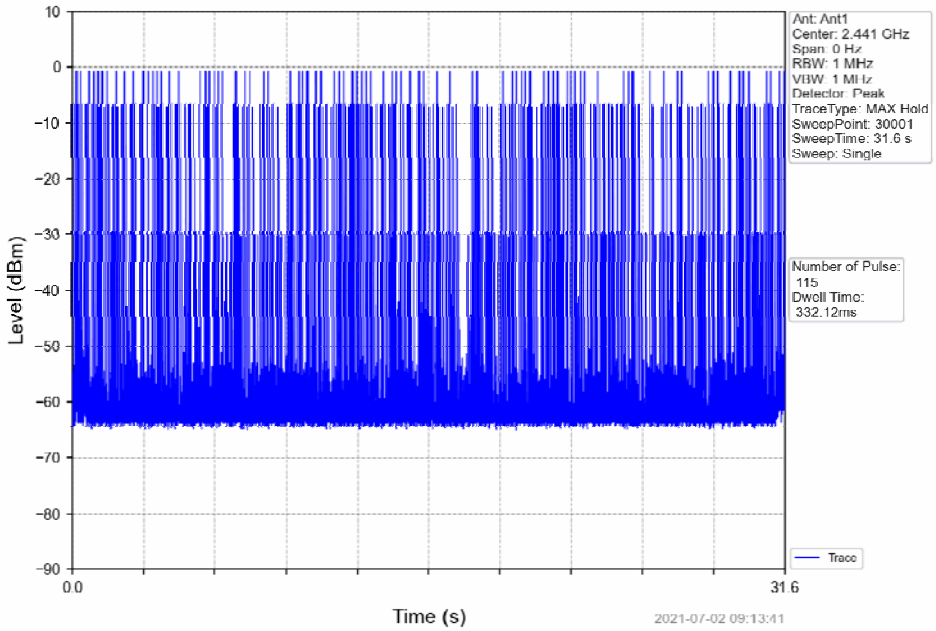


8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

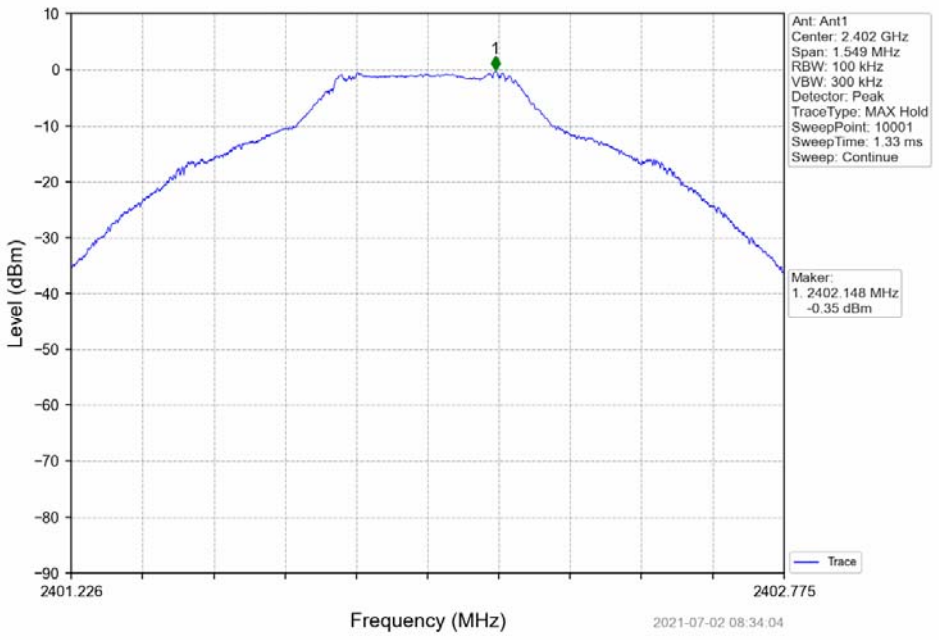
6.1 Ref

6.1.1 Test Result

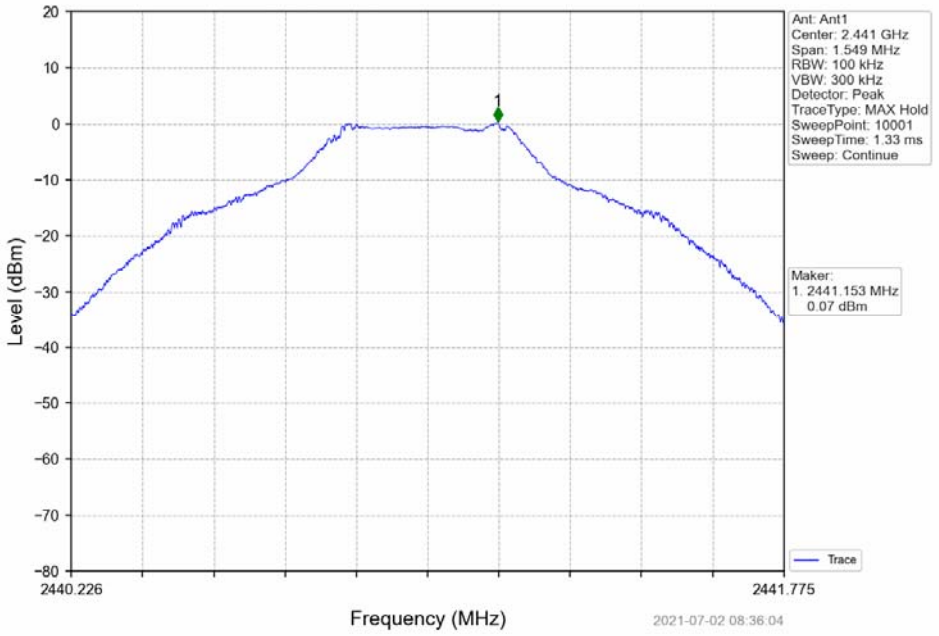
Mode	TX Type	Frequency (MHz)	Packet Type	Ant	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-0.35	/	/
		2441	DH5	1	0.07	/	/
		2480	DH5	1	-0.14	/	/
π /4-DQPSK	SISO	2402	2DH5	1	-1.35	/	/
		2441	2DH5	1	-1.24	/	/
		2480	2DH5	1	-1.62	/	/
8DPSK	SISO	2402	3DH5	1	-1.26	/	/
		2441	3DH5	1	-1.31	/	/
		2480	3DH5	1	-1.60	/	/
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 Test Graph

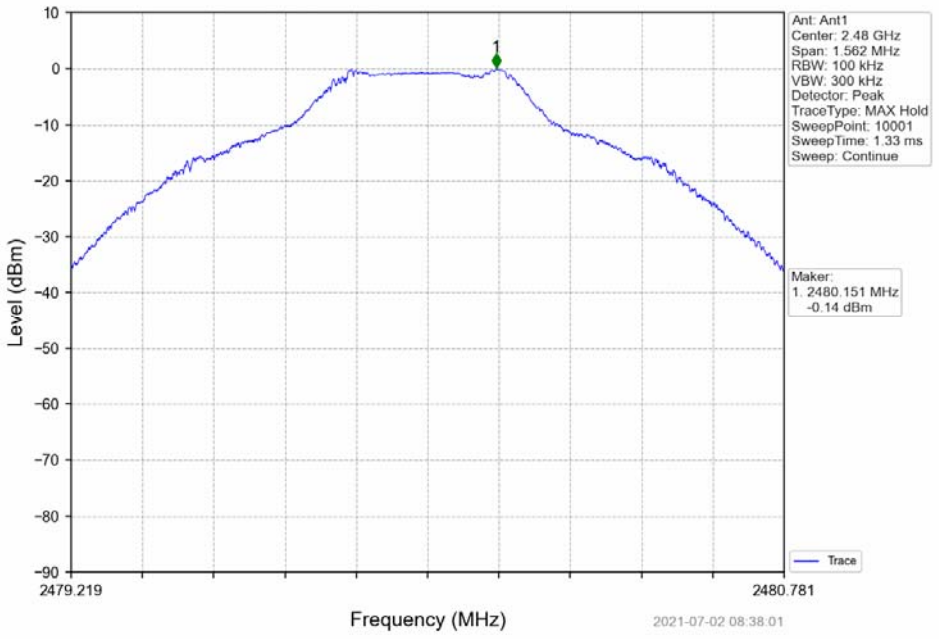
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



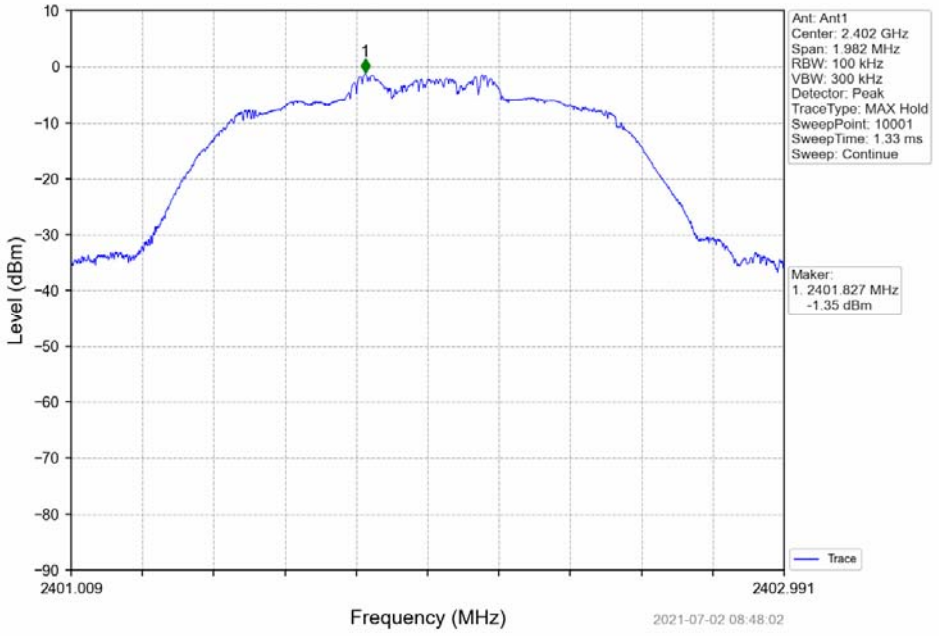
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



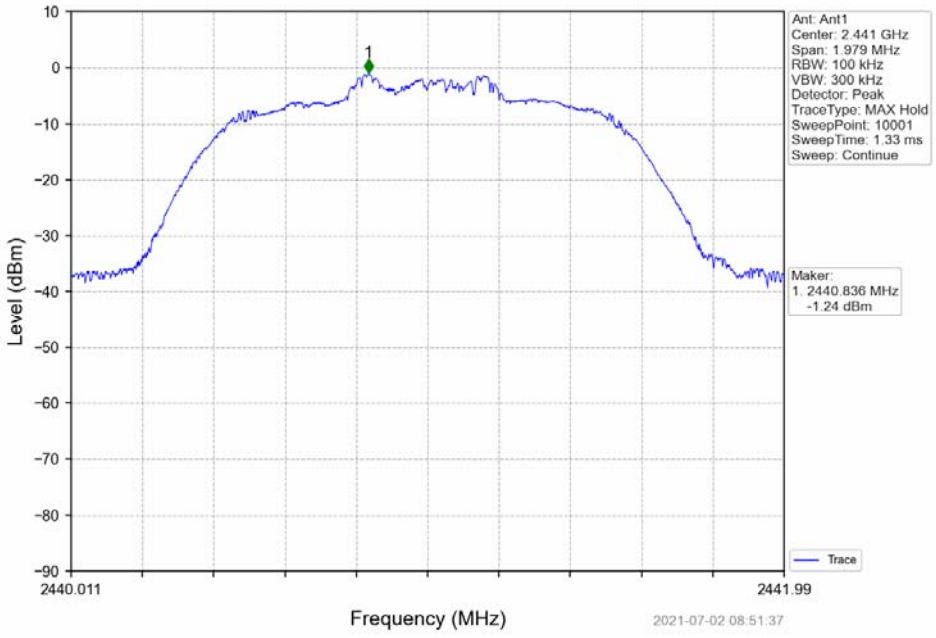
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



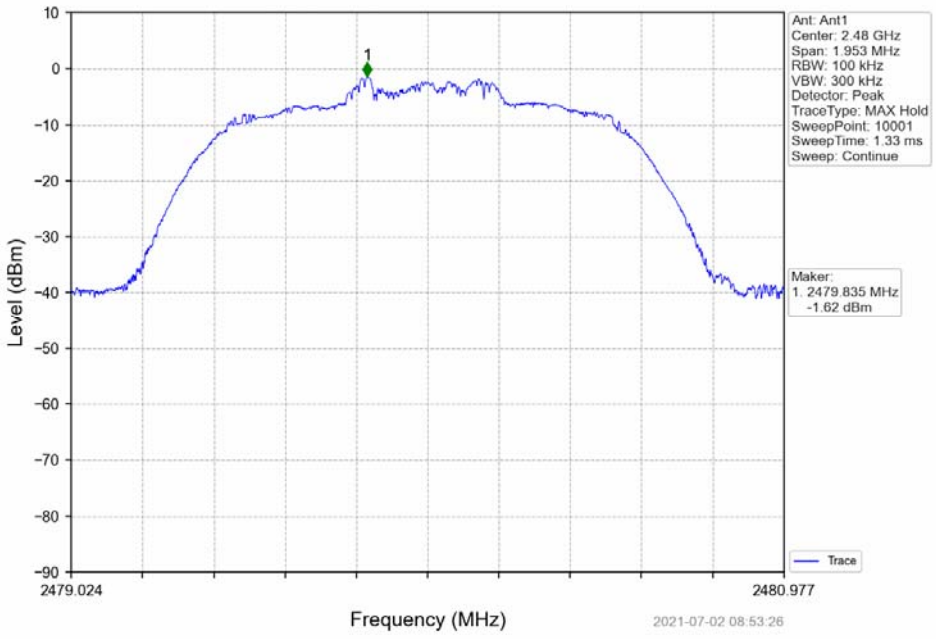
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



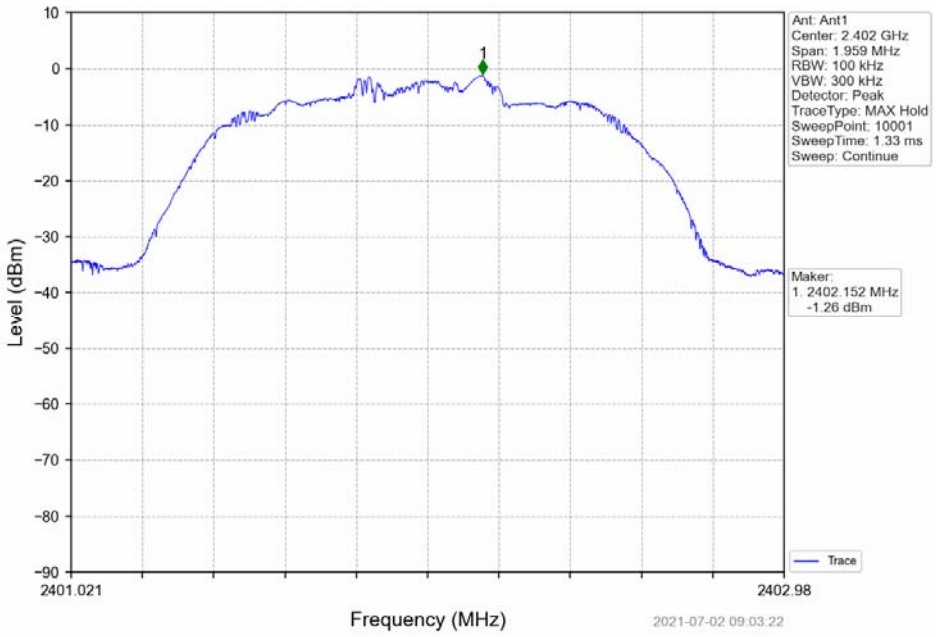
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



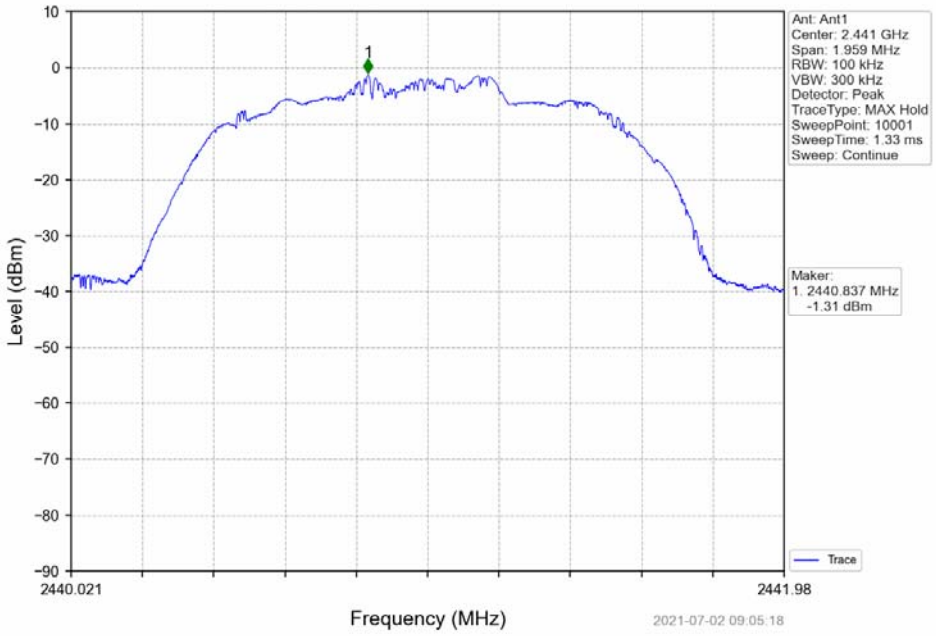
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



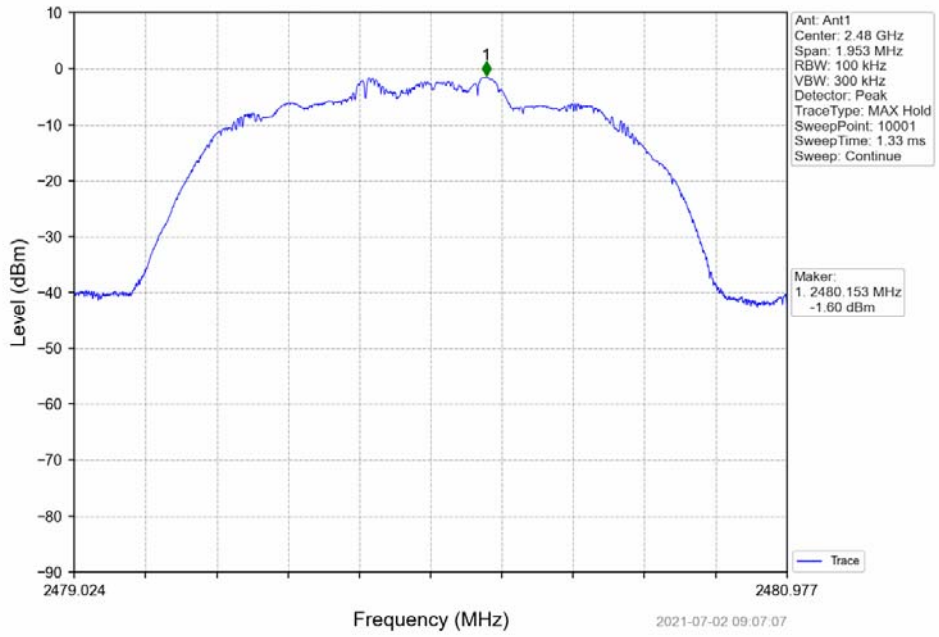
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



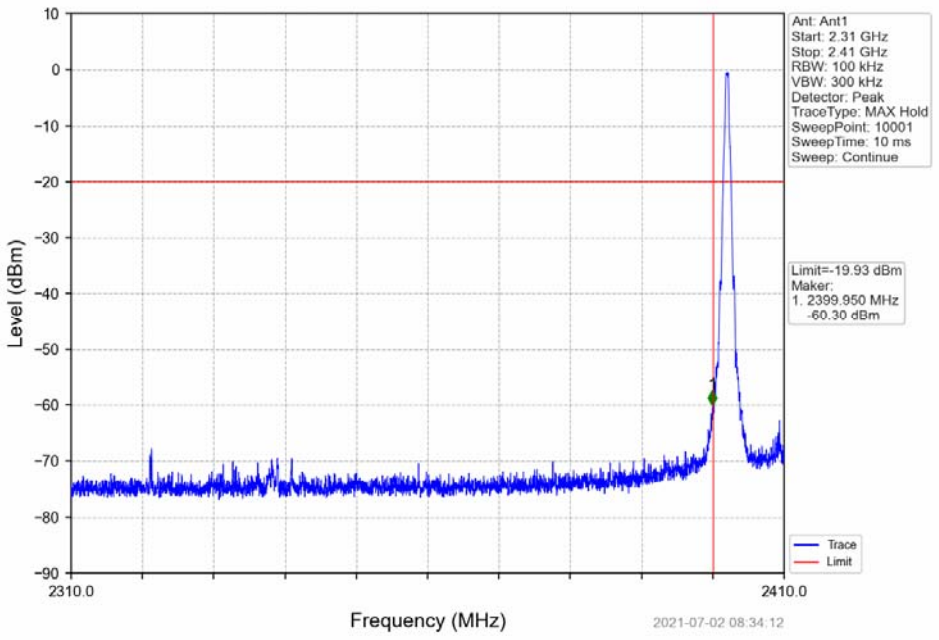
6.2 CSE

6.2.1 Test Result

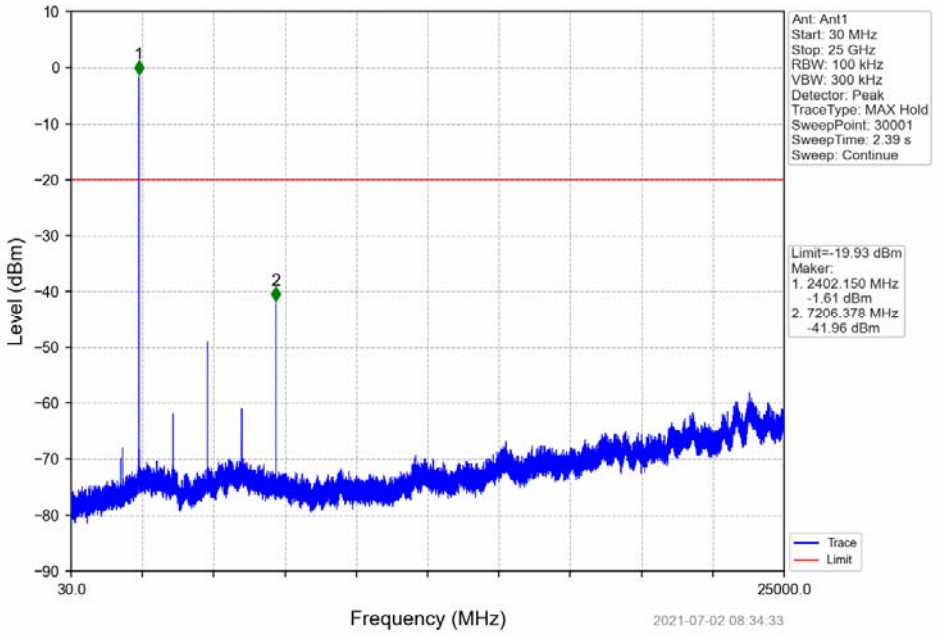
Mode	TX Type	Frequency (MHz)	Packet Type	Ant	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2441	DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2480	DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		HOPP	DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
π/4-DQPSK	SISO	2402	2DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2441	2DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2480	2DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		HOPP	2DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
8DPSK	SISO	2402	3DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2441	3DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		2480	3DH5	1	Refer To Test Graph	Refer To Test Graph	Pass
		HOPP	3DH5	1	Refer To Test Graph	Refer To Test Graph	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.							

6.2.2 Test Graph

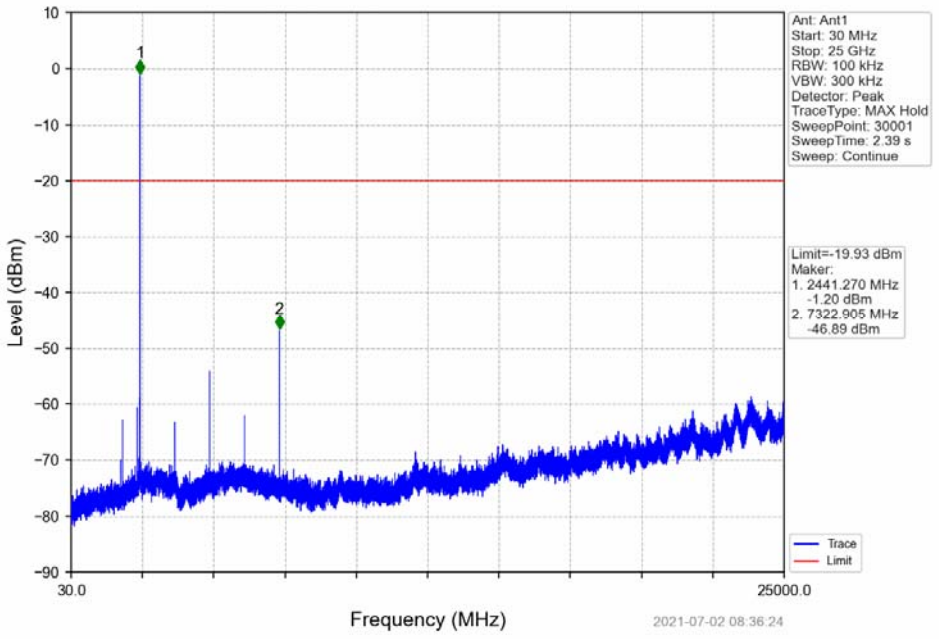
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



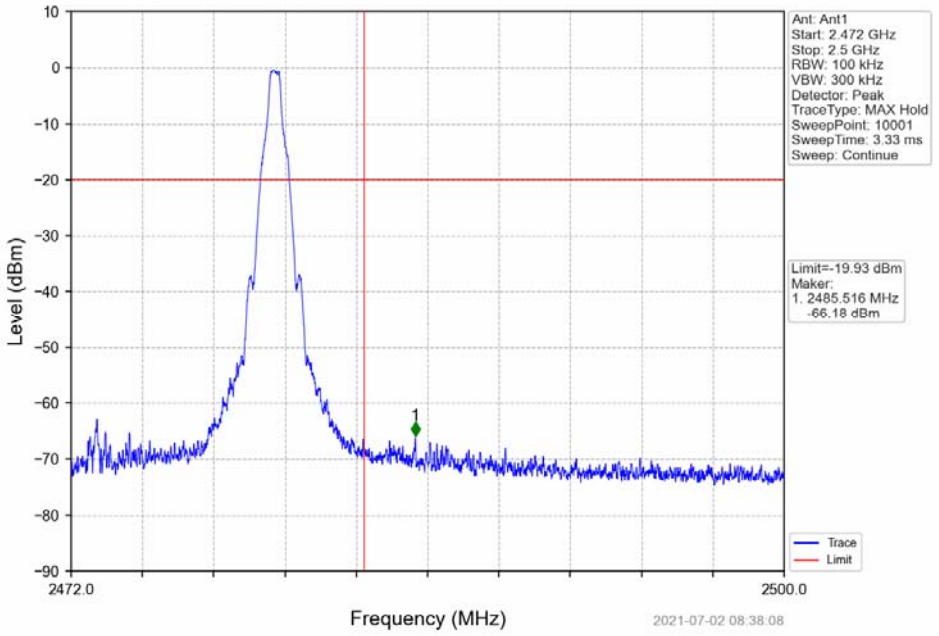
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



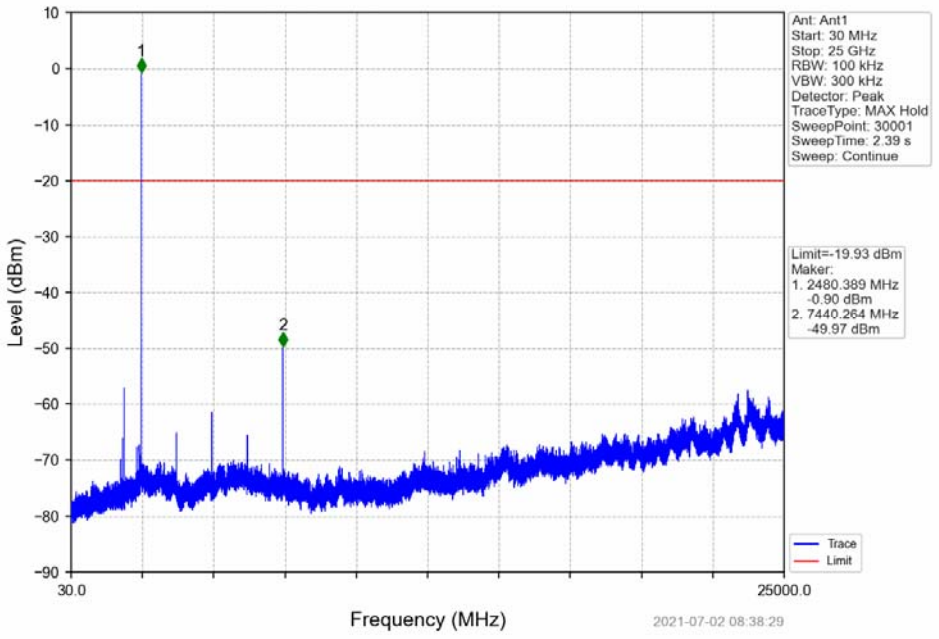
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



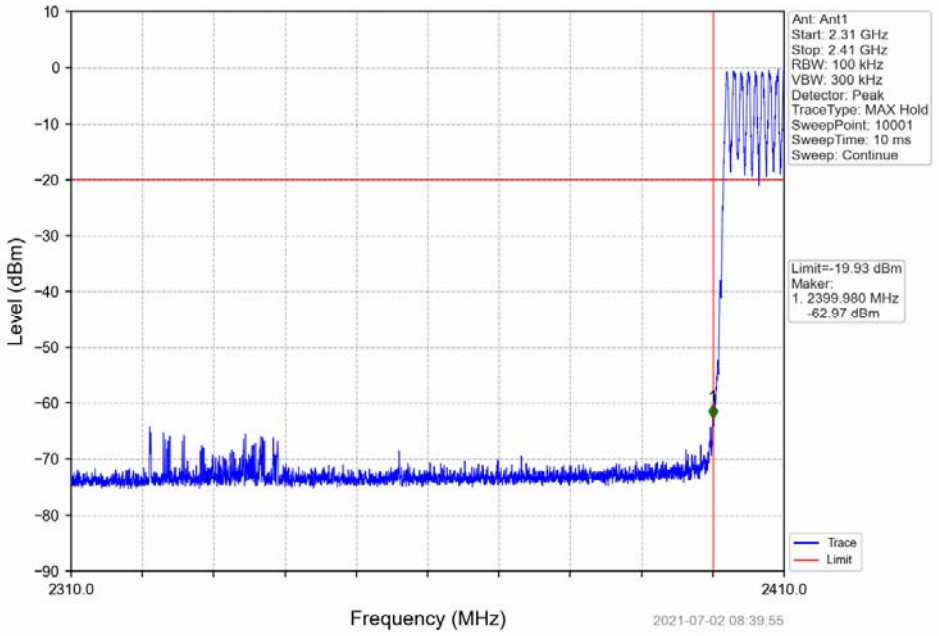
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



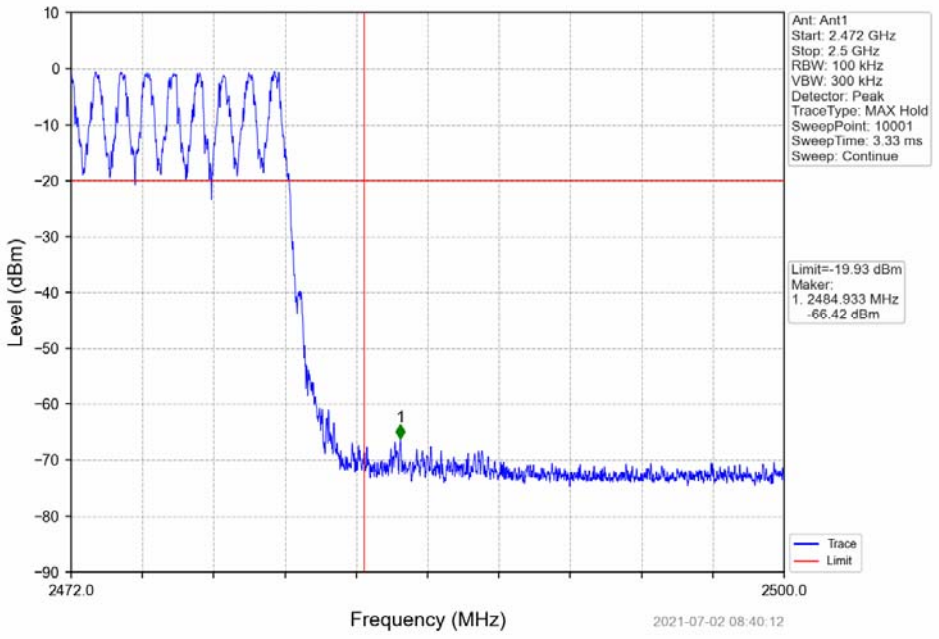
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



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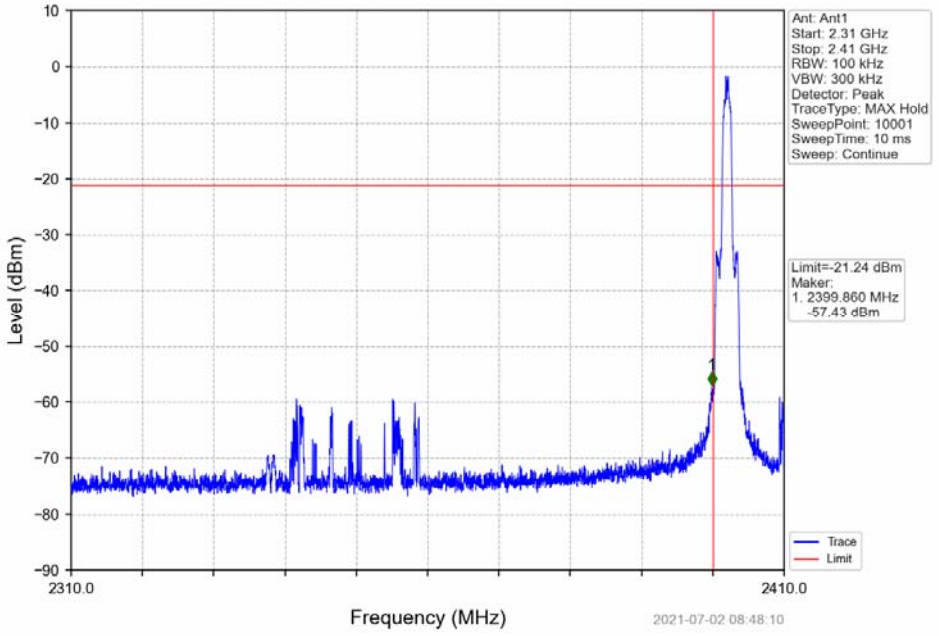

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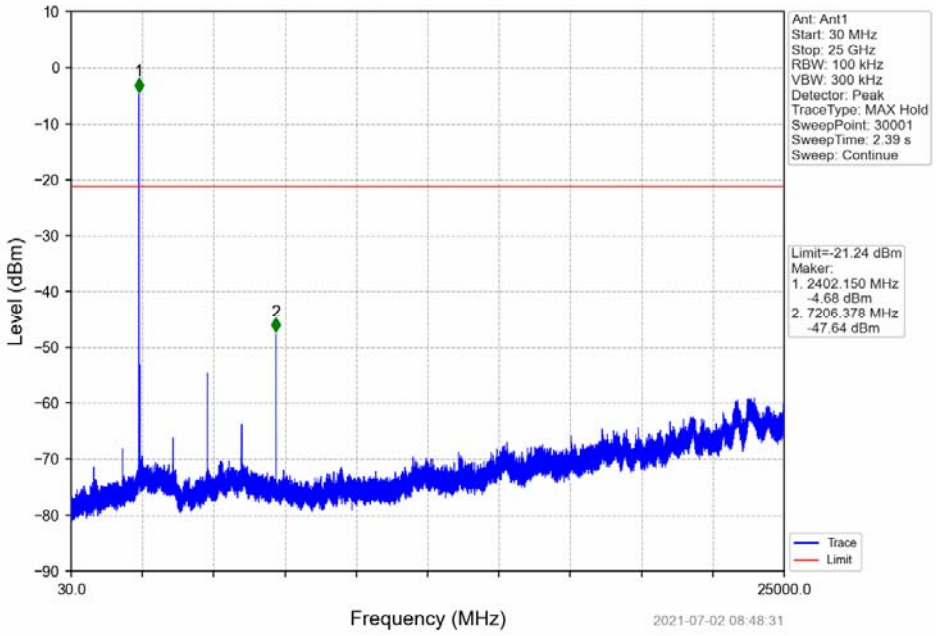

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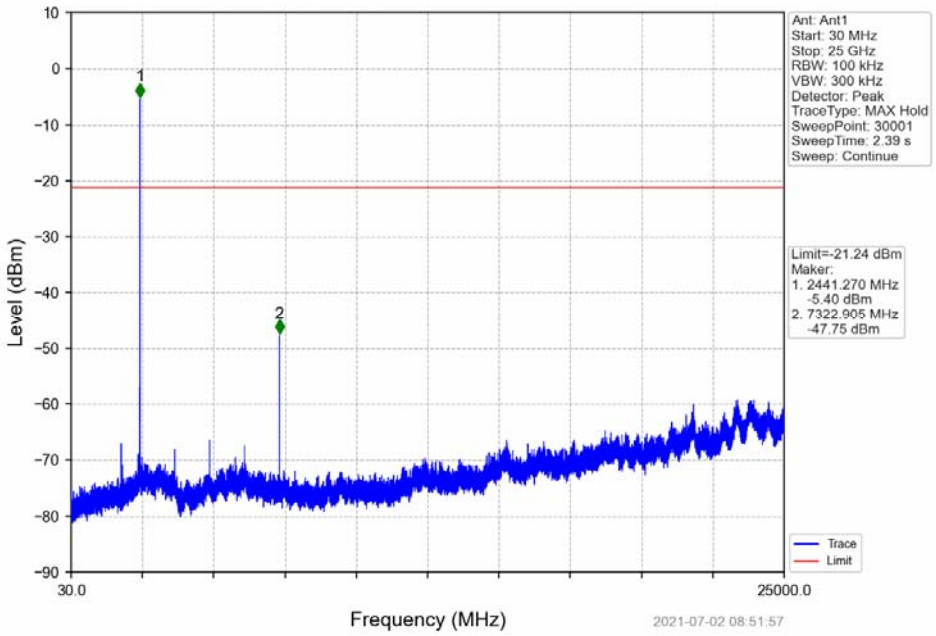

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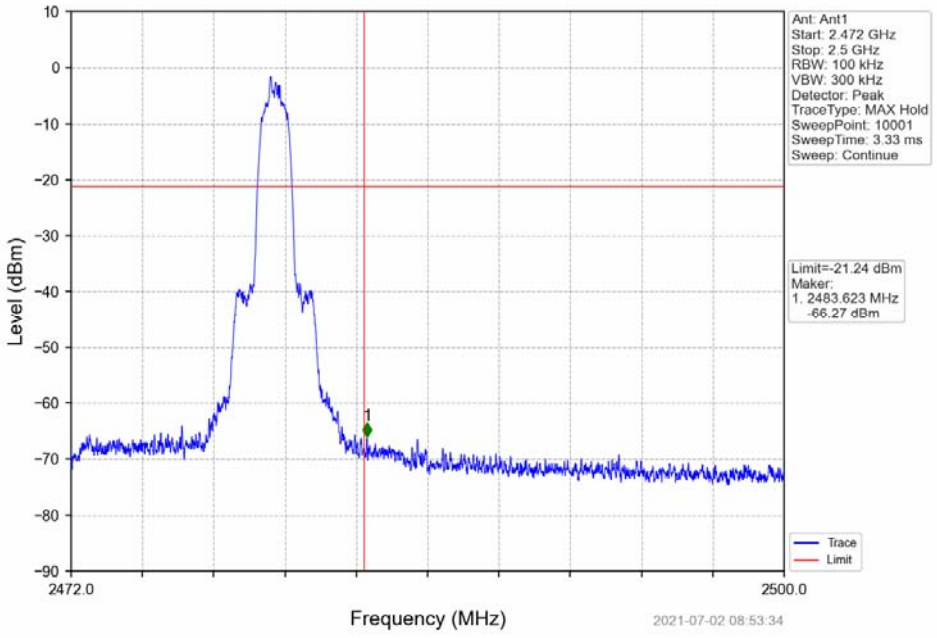

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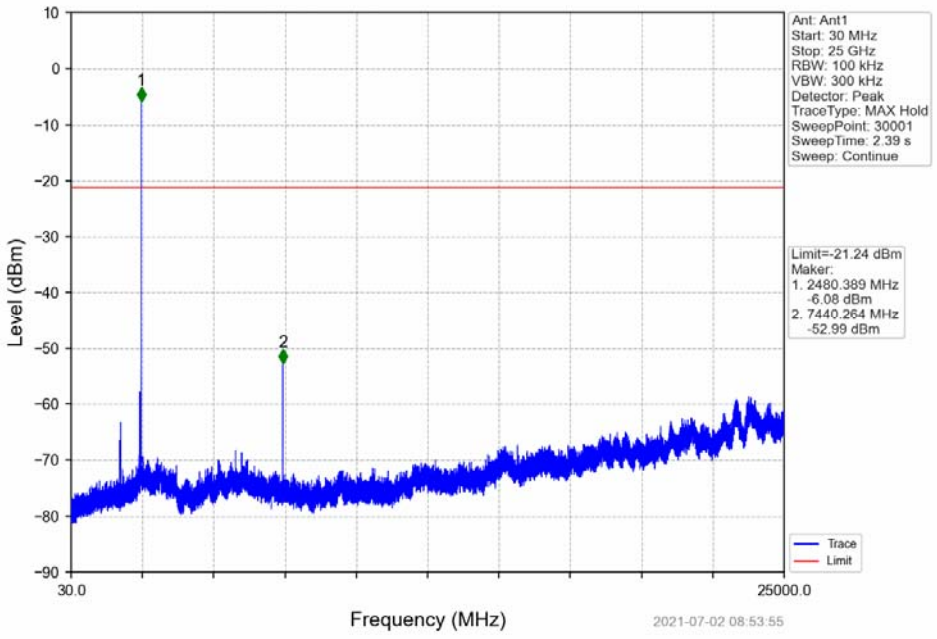

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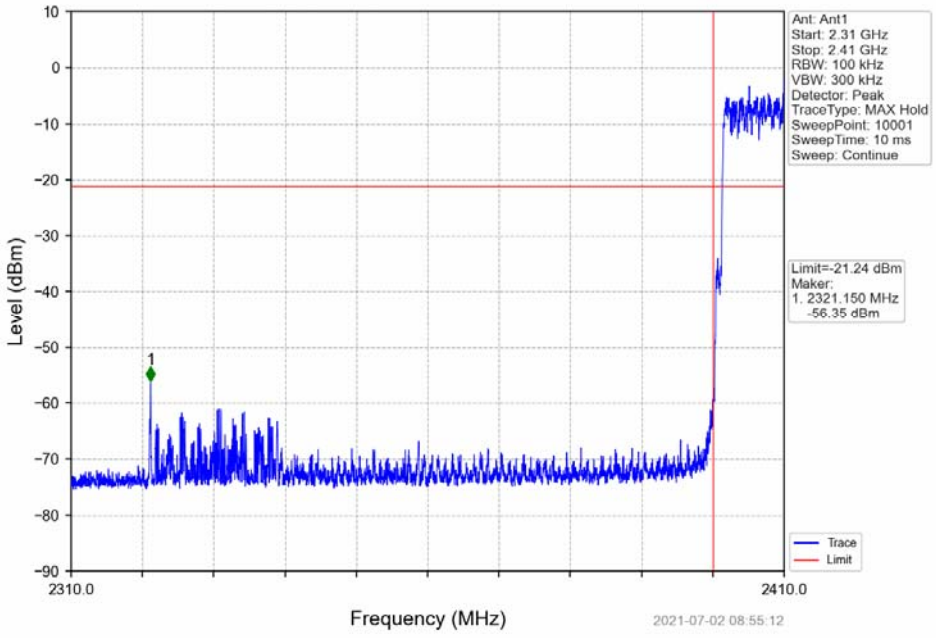

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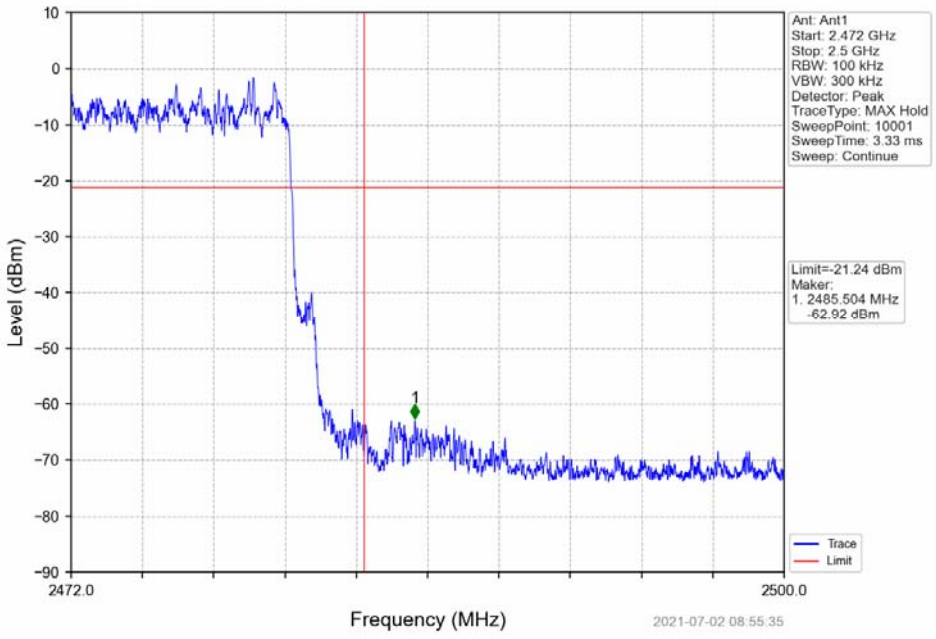
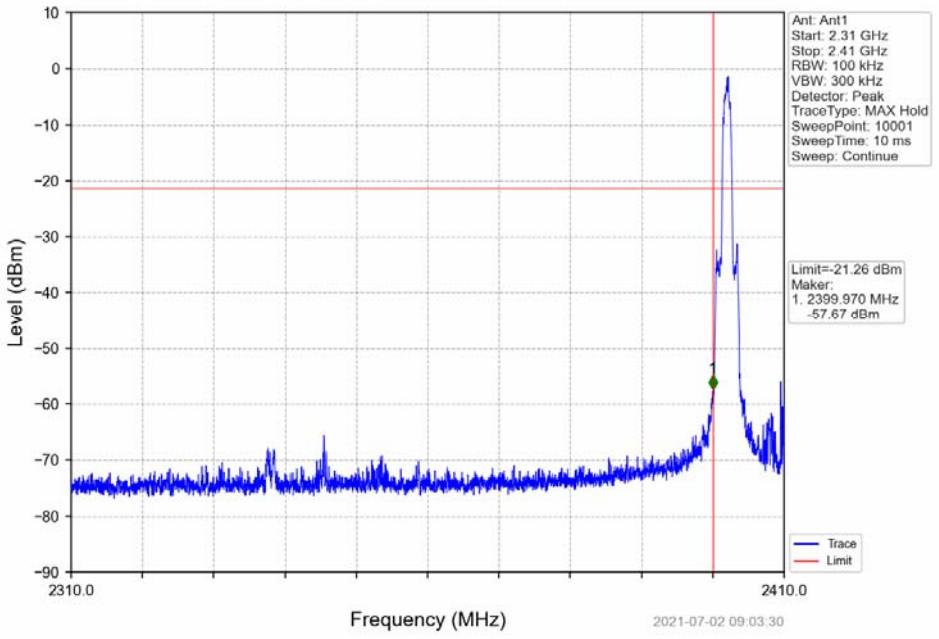
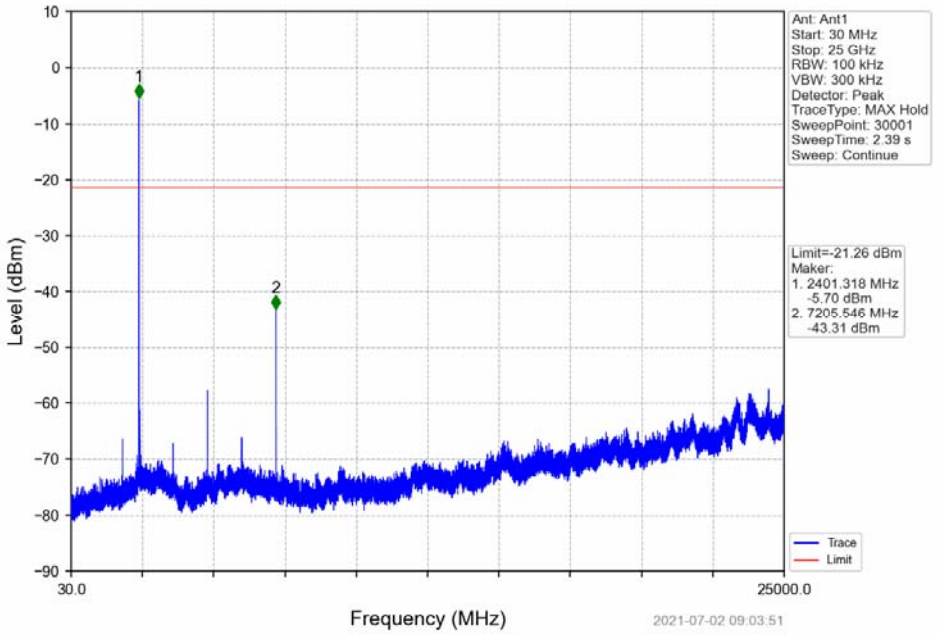


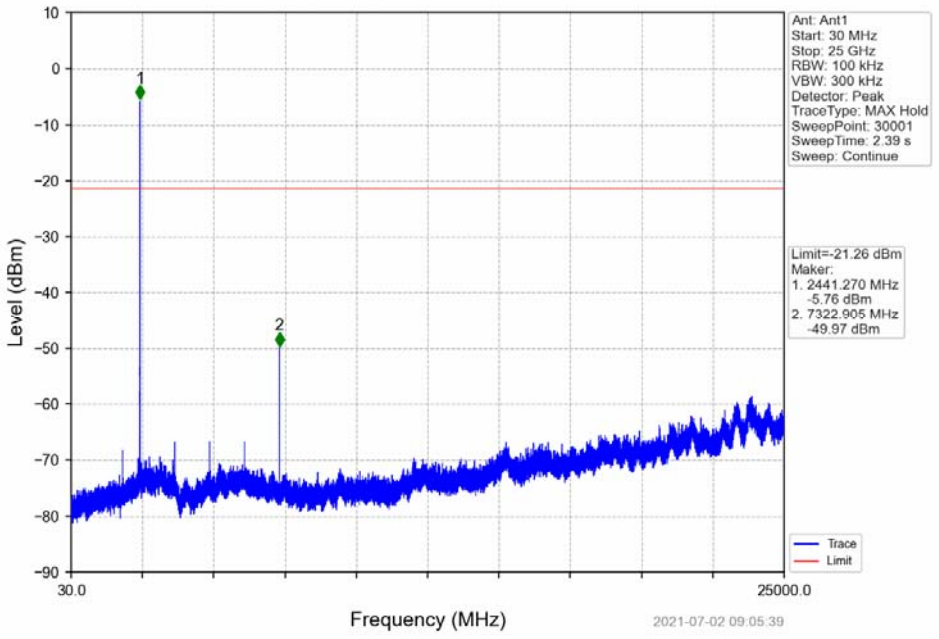
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



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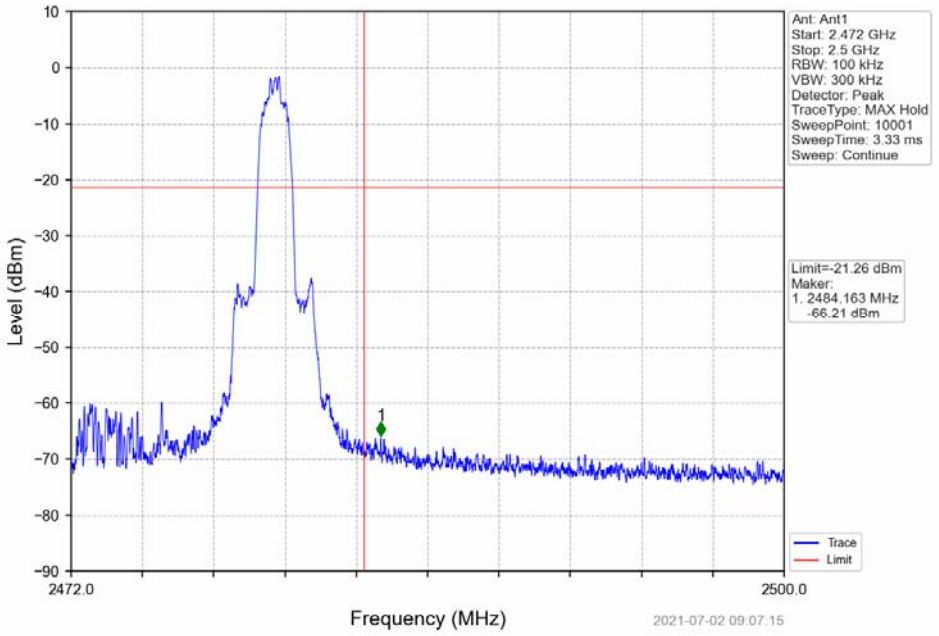

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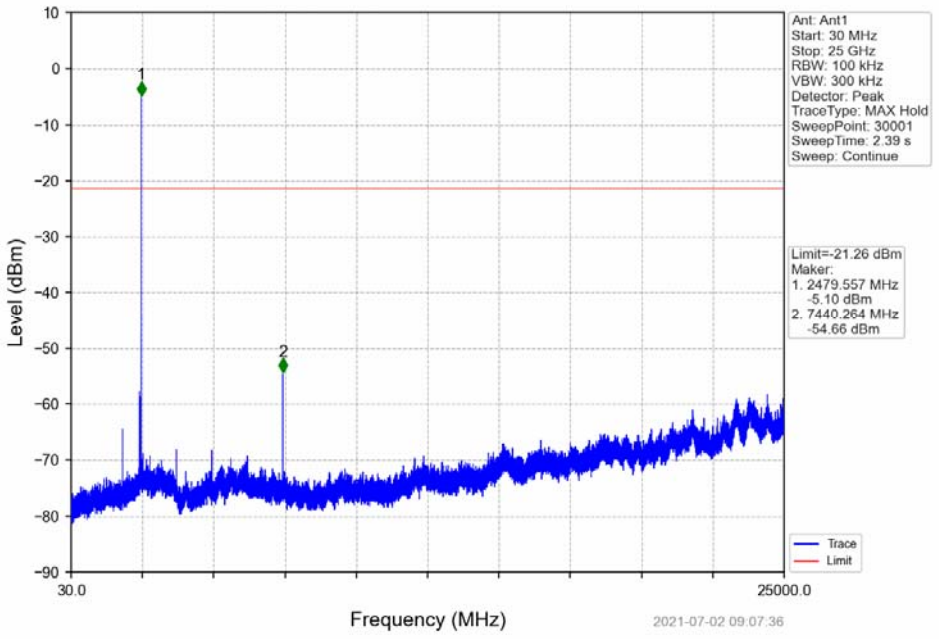
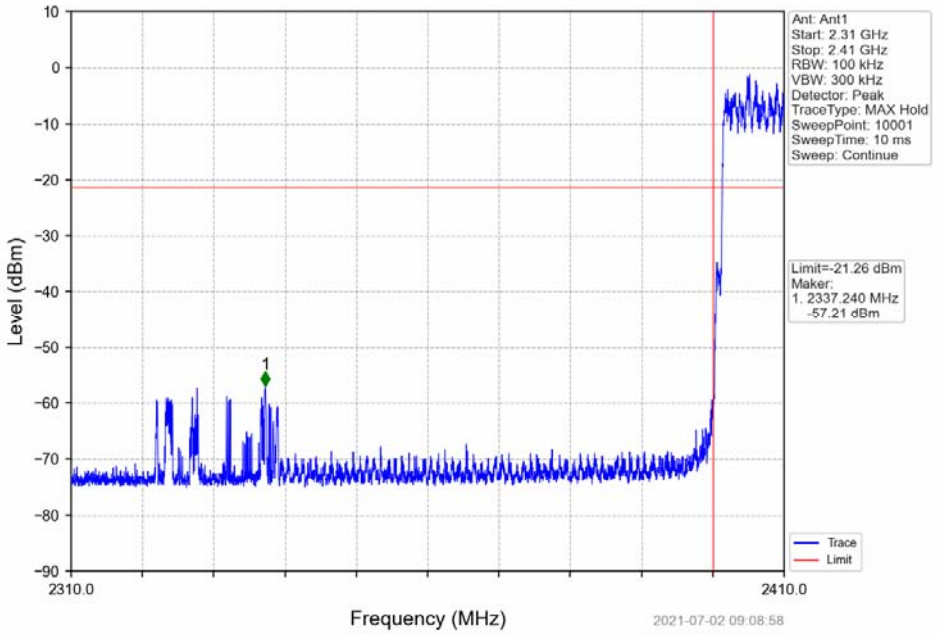


8DPSK_3DH5_HOPP_Ant1_NTNV



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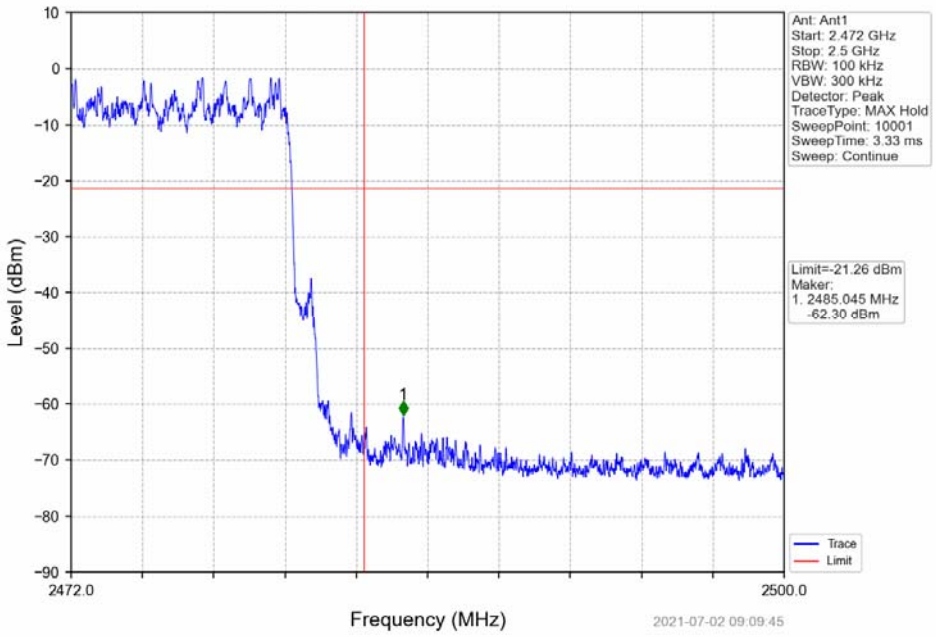

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