ANNEX D TEST DATA

For

Project No.:	8226EU012902W
Client:	Shenzhen Lianghao Technology Development Co., LTD.
Product Name:	Home TV Speaker
Model No.:	YXHDZ-(JT)5011 (refer to clause 2.4)
FCC ID:	2BFLN-YXHDZ
Technology:	Bluetooth BDR&EDR
Test Engineer:	Mikey zhu
Test Date:	2024-03-08

Test Summary

Item	Result
Duty Cycle	Pass
Bandwidth	Pass
Maximum Conducted Output Power	Pass
Carrier Frequency Separation	Pass
Number of Hopping Frequencies	Pass
Time of Occupancy (Dwell Time)	Pass
Unwanted Emissions In Non-restricted Frequency Bands	Pass

1. Duty Cycle

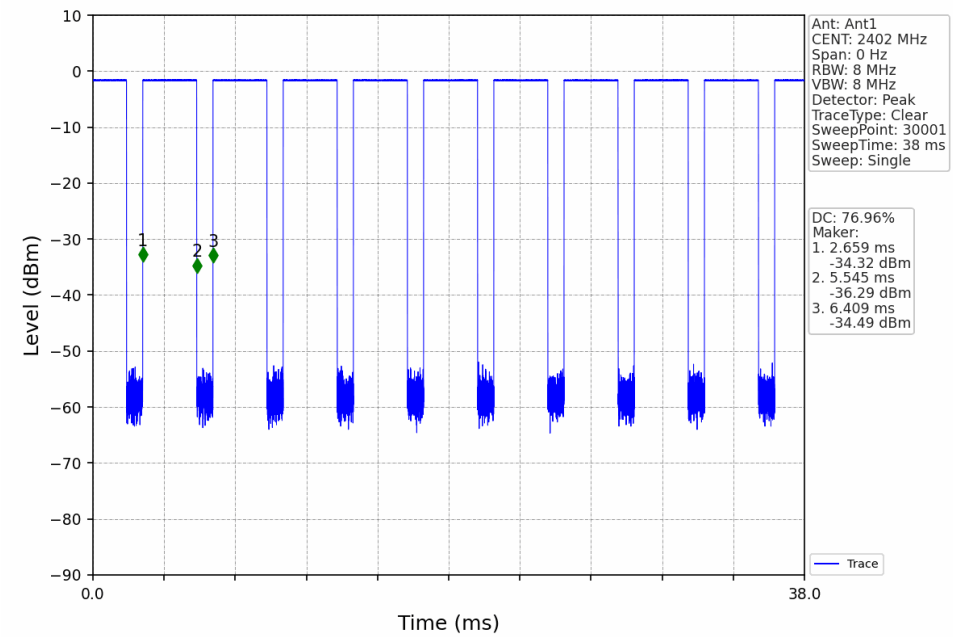
1.1 Ant1

1.1.1 Test Result

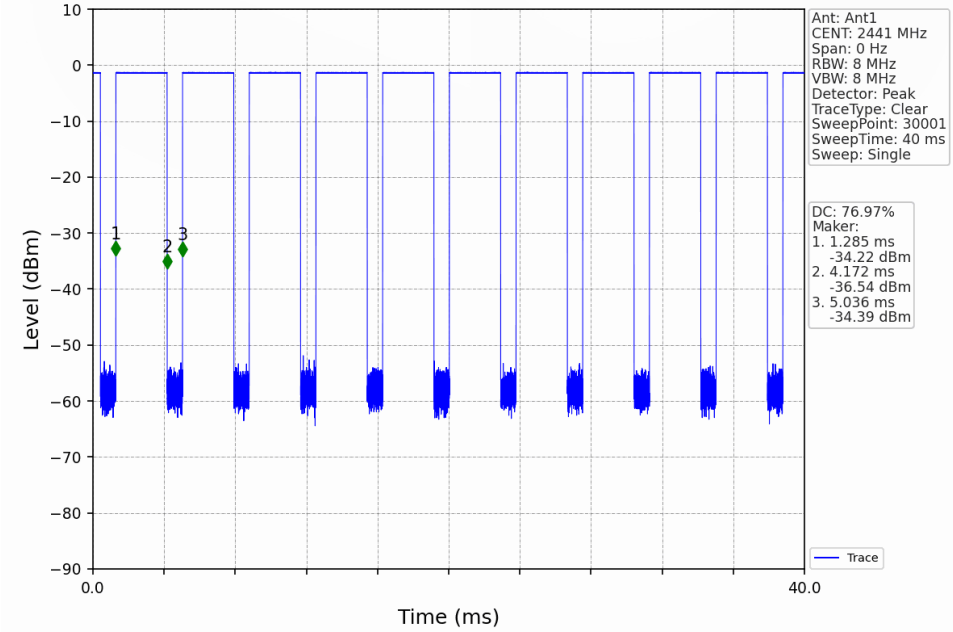
Ant1								
Mode	TX Type	Frequency (MHz)	Packet Type	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
GFSK	SISO	2402	DH5	2.886	3.750	76.96	1.14	0.03
		2441	DH5	2.887	3.751	76.97	1.14	0.04
		2480	DH5	2.887	3.751	76.97	1.14	0.03
π/4QPSK	SISO	2402	2DH5	2.893	3.751	77.13	1.13	0.03
		2441	2DH5	2.893	3.751	77.13	1.13	0.03
		2480	2DH5	2.893	3.750	77.15	1.13	0.03

1.1.2 Test Graph

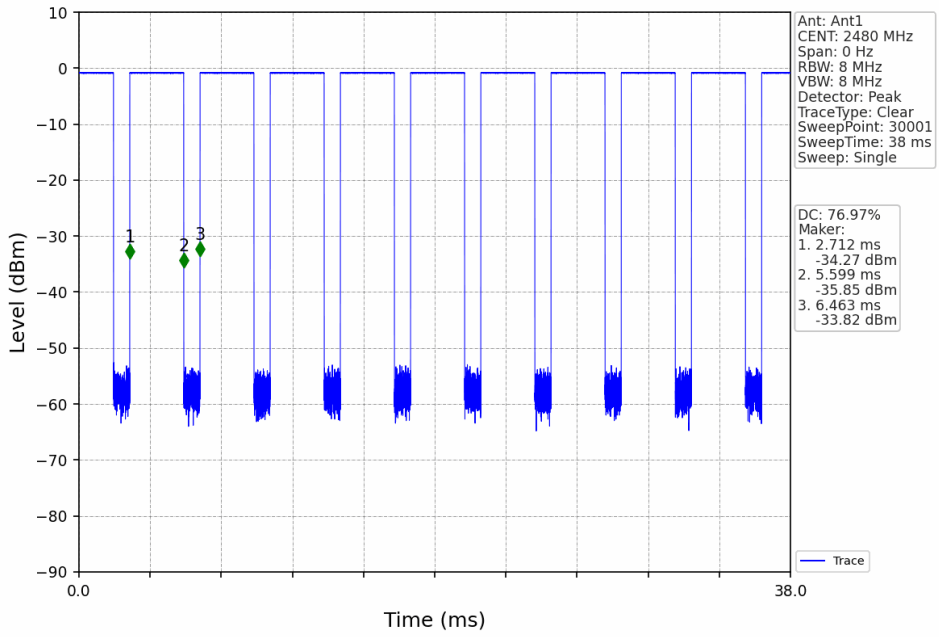
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



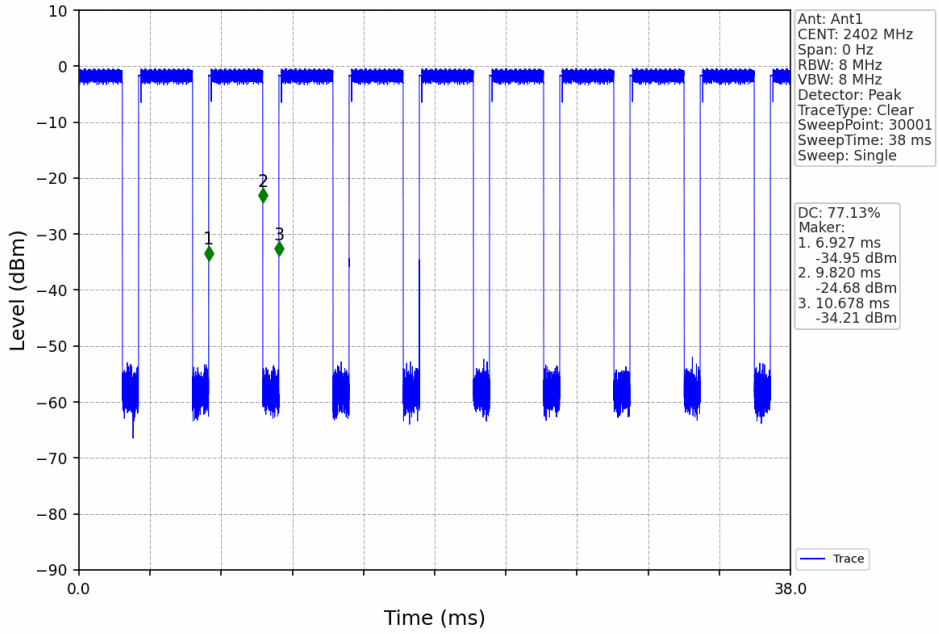
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



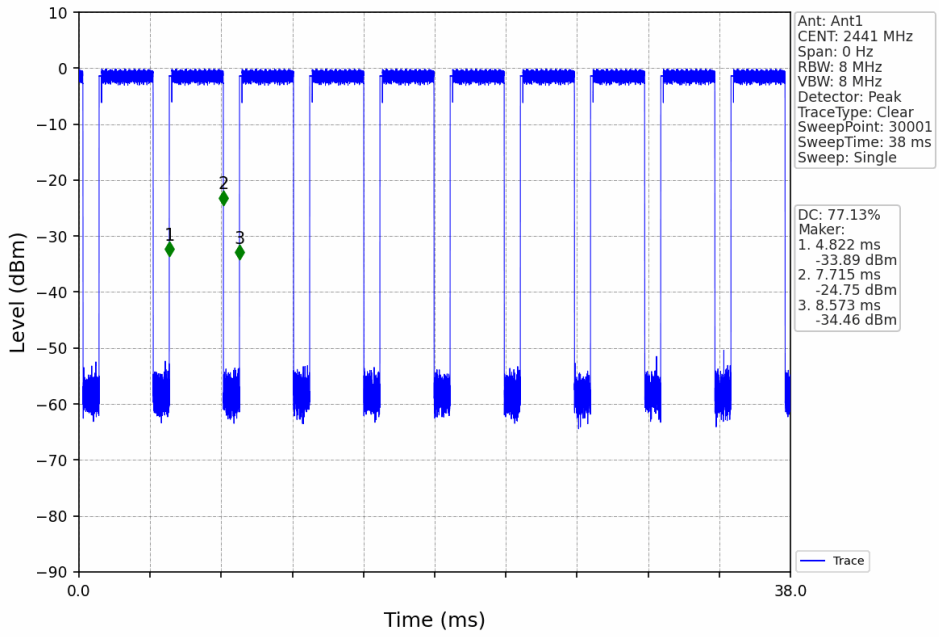
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



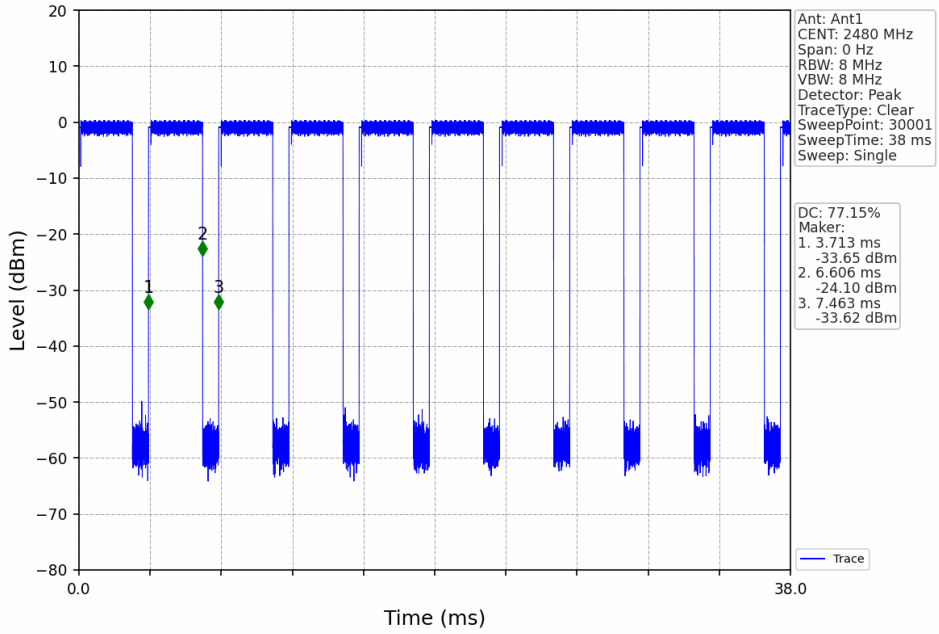
π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



π/4QPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



2. Bandwidth

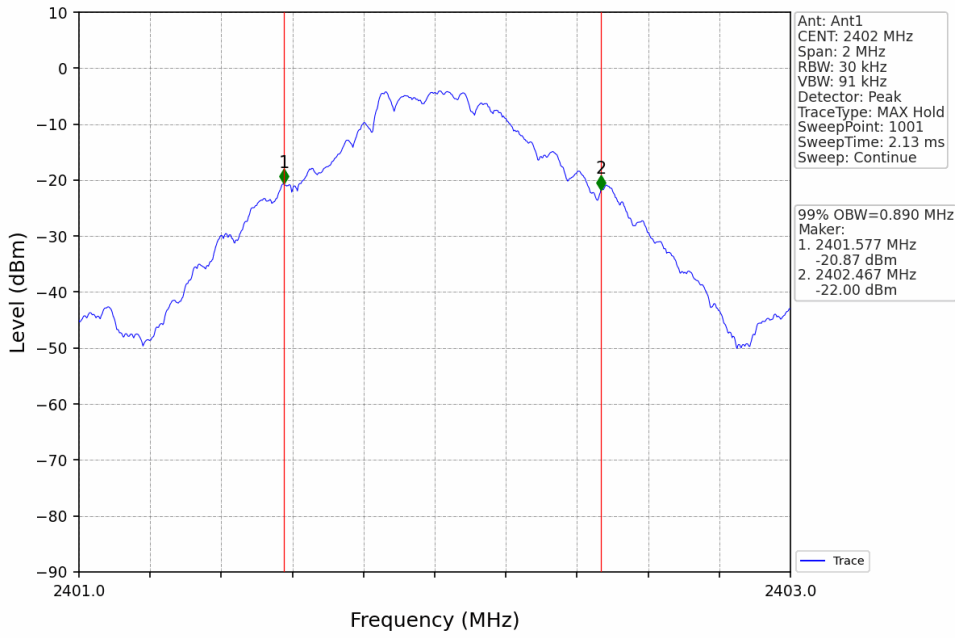
2.1 OBW

2.1.1 Test Result

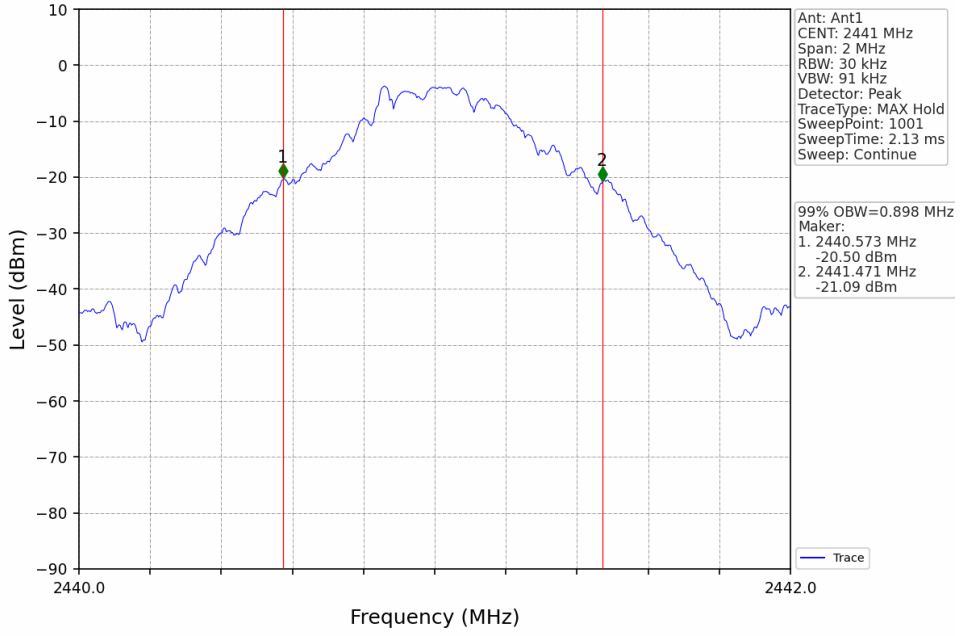
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz) Result	Verdict
GFSK	SISO	2402	DH5	1	0.890	Pass
		2441	DH5	1	0.898	Pass
		2480	DH5	1	0.903	Pass
π/4QPSK	SISO	2402	2DH5	1	1.180	Pass
		2441	2DH5	1	1.183	Pass
		2480	2DH5	1	1.186	Pass

2.1.2 Test Graph

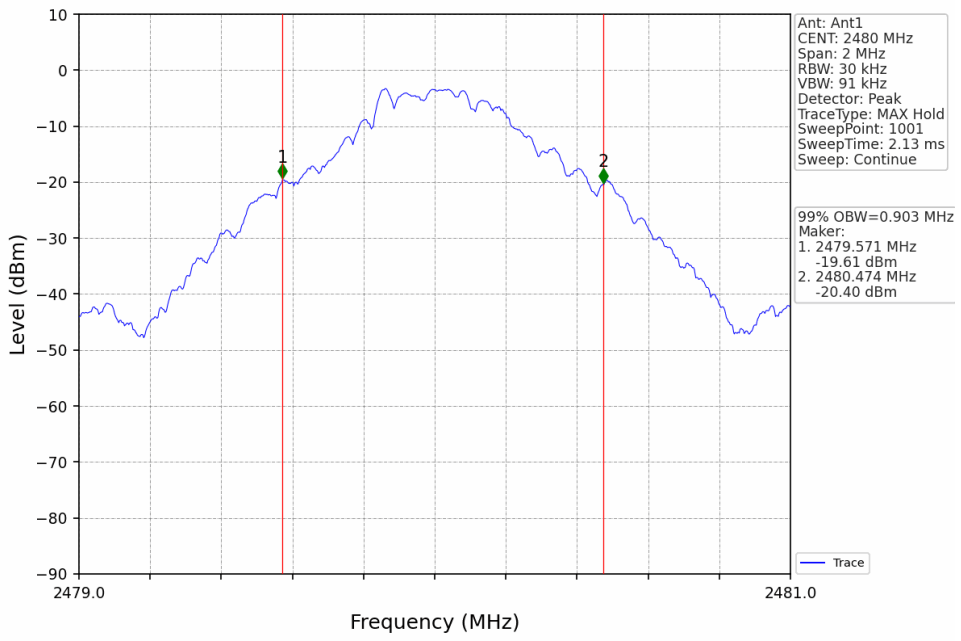
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



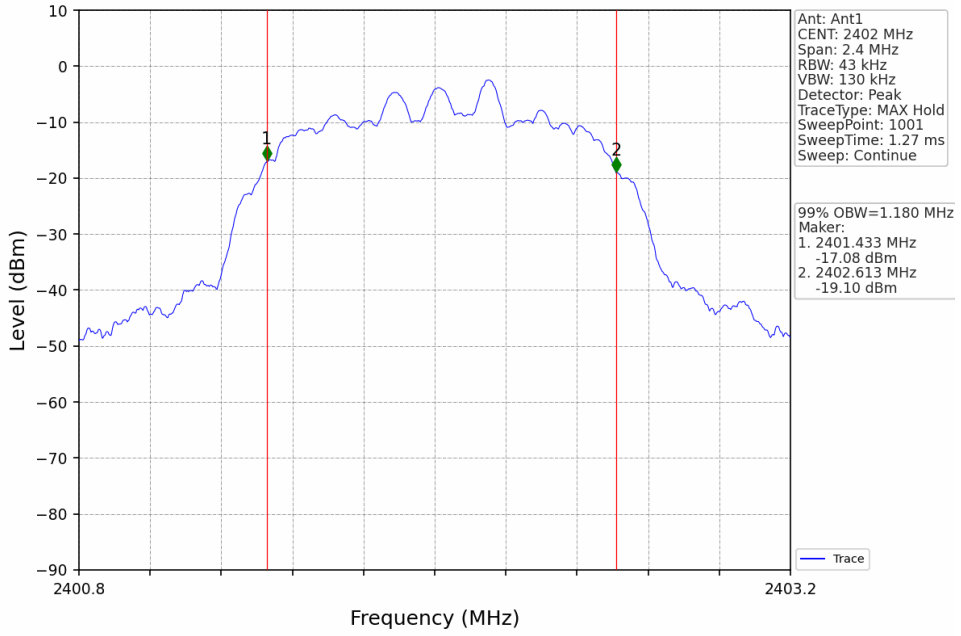
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



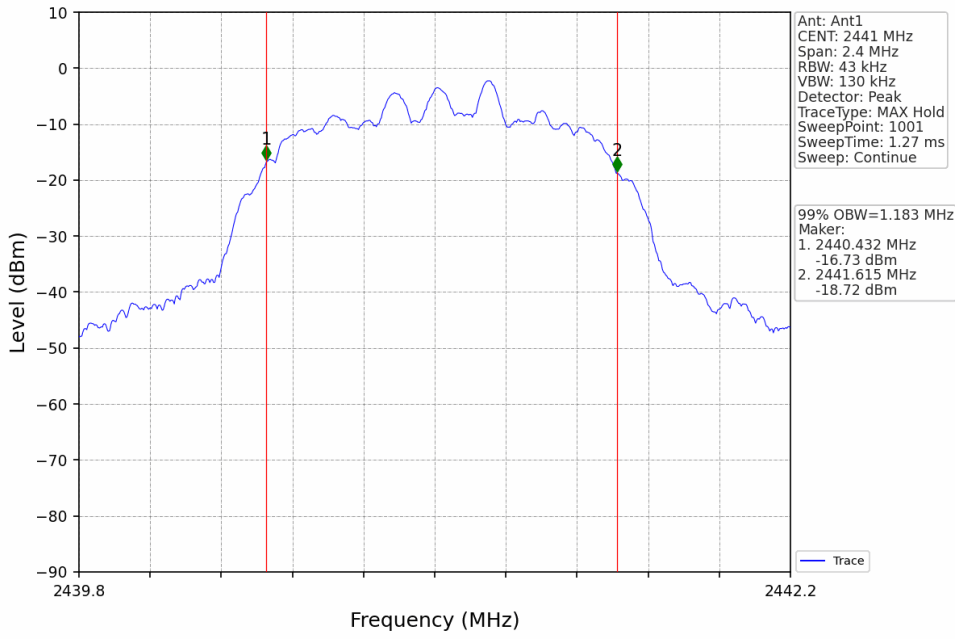
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



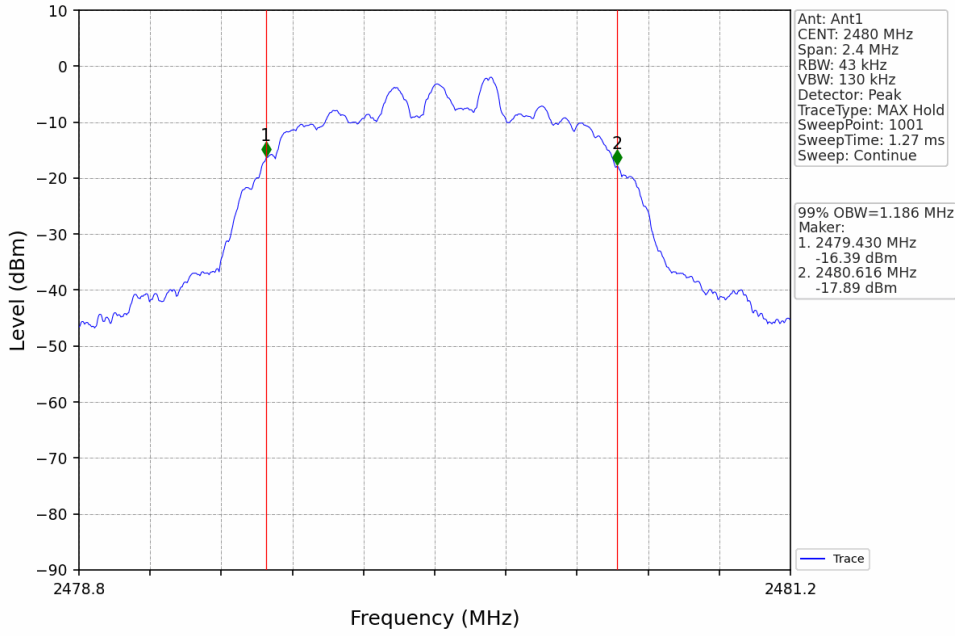
π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



π/4QPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



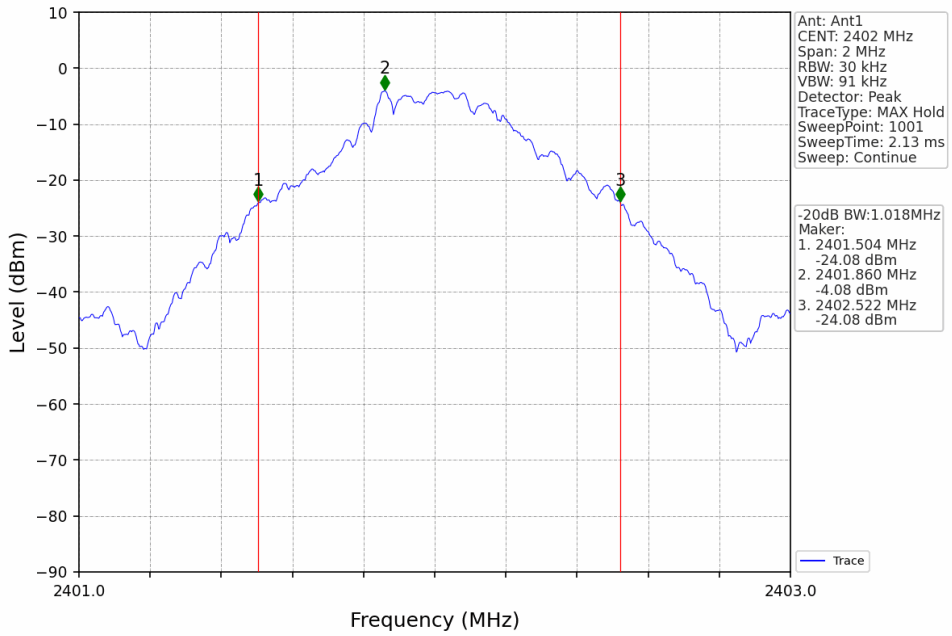
2.2 20dB BW

2.2.1 Test Result

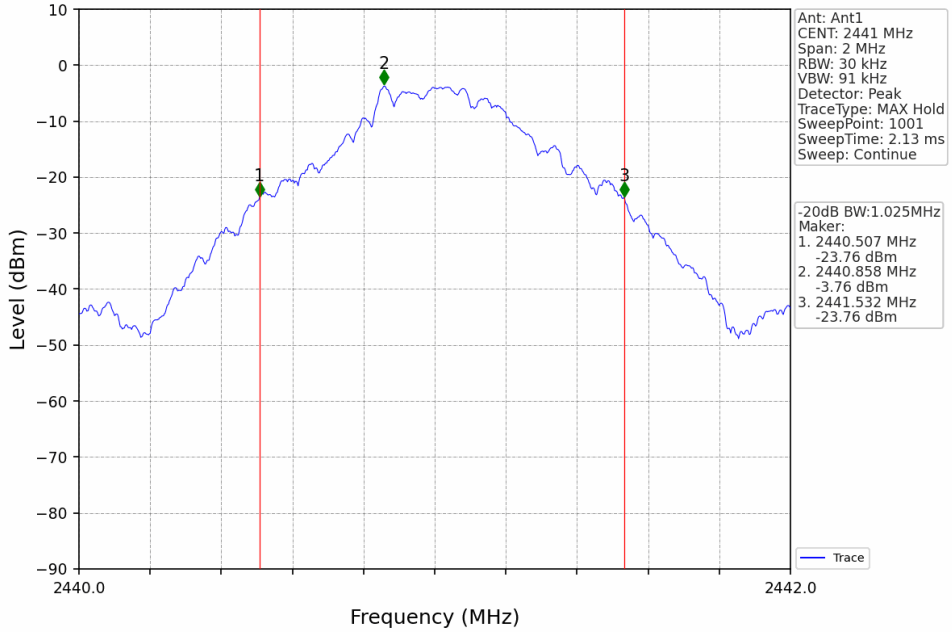
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz) Result	Verdict
GFSK	SISO	2402	DH5	1	1.018	Pass
		2441	DH5	1	1.025	Pass
		2480	DH5	1	1.031	Pass
π/4QPSK	SISO	2402	2DH5	1	1.299	Pass
		2441	2DH5	1	1.297	Pass
		2480	2DH5	1	1.327	Pass

2.2.2 Test Graph

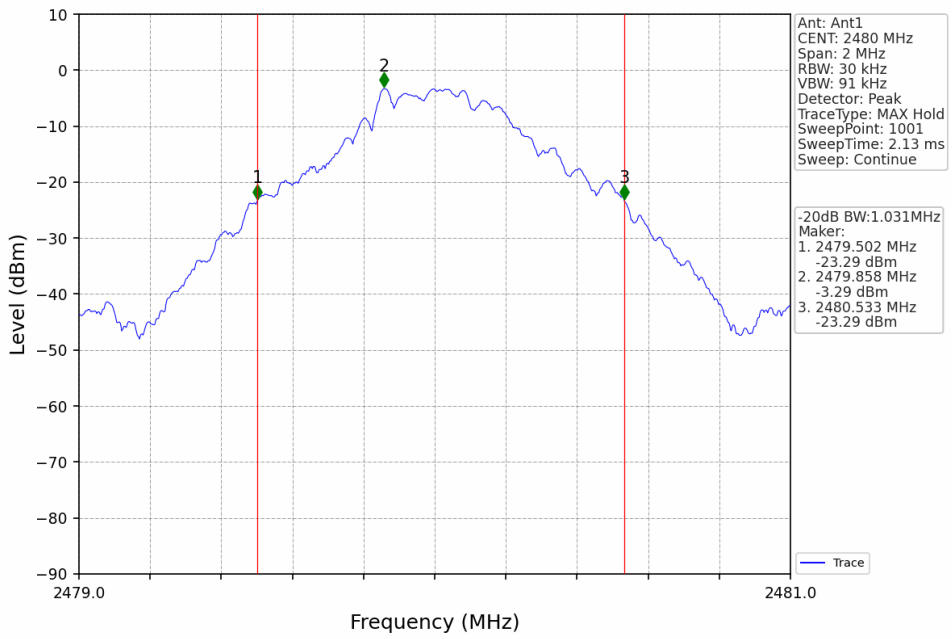
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



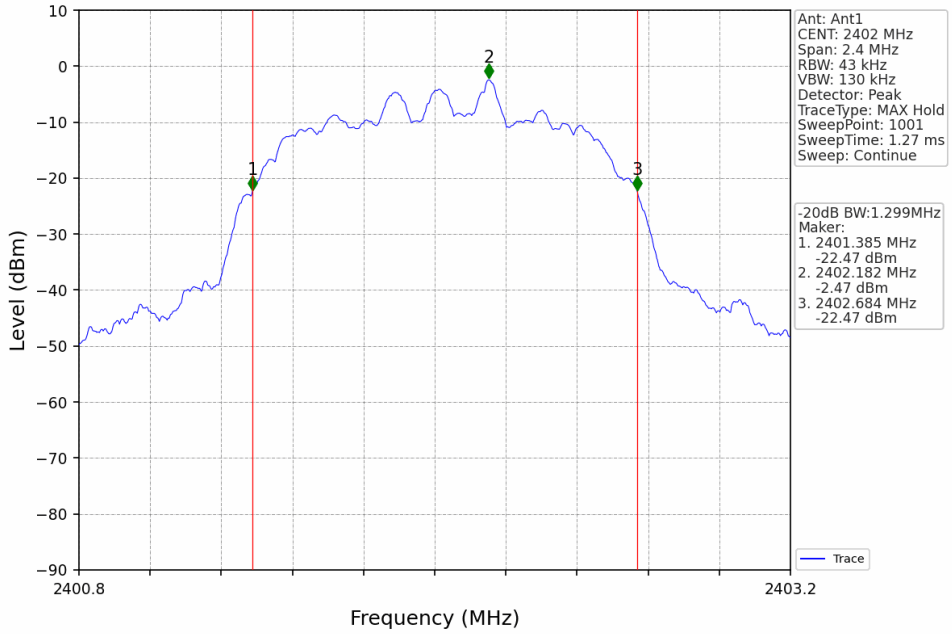
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



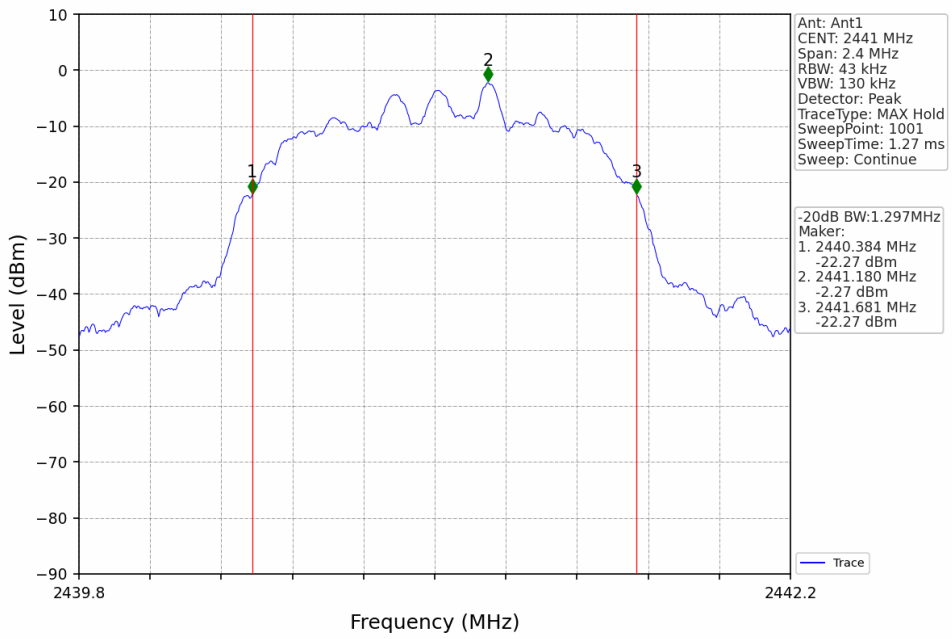
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



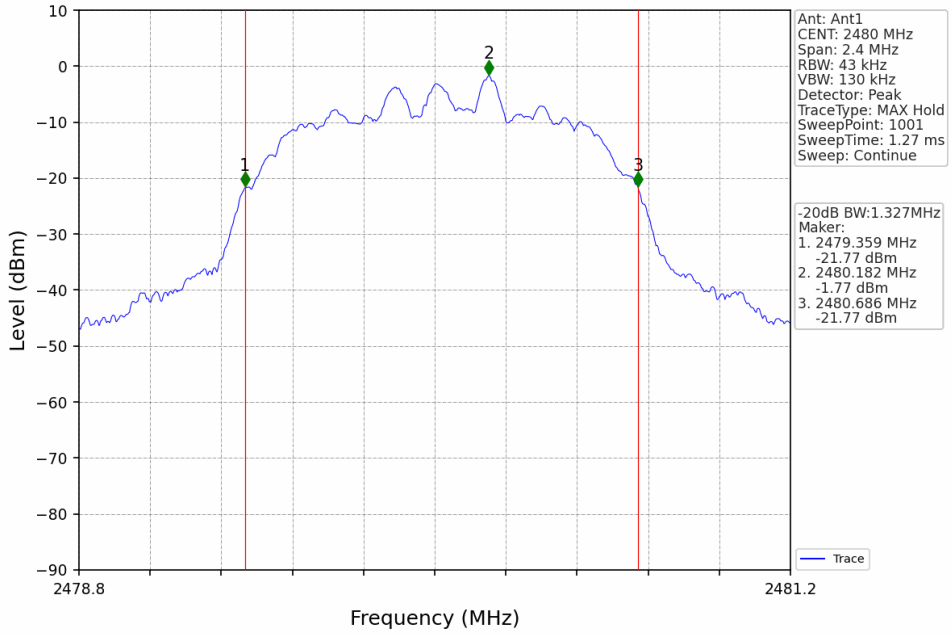
π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



π/4QPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

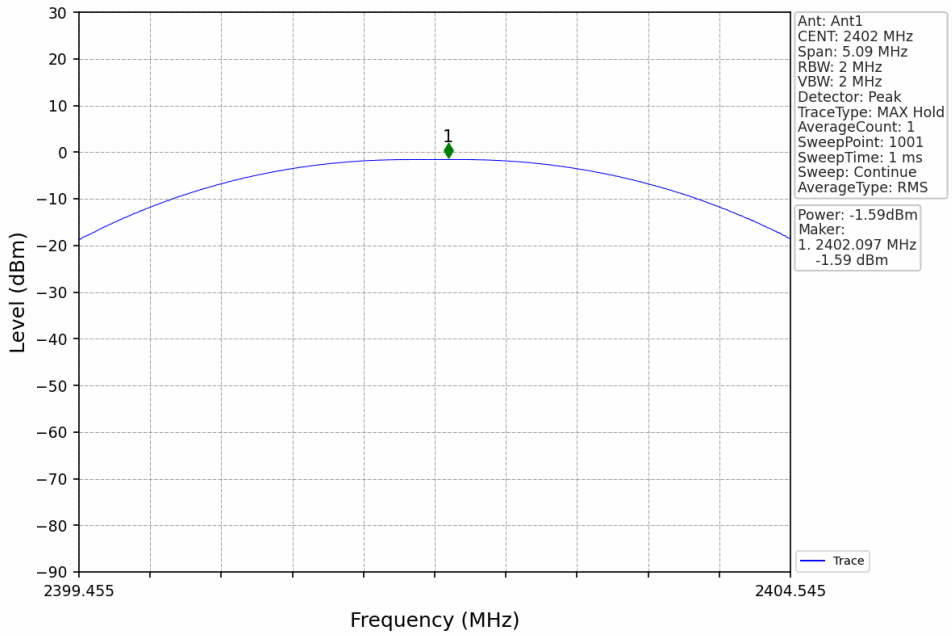
3.1 Power

3.1.1 Test Result

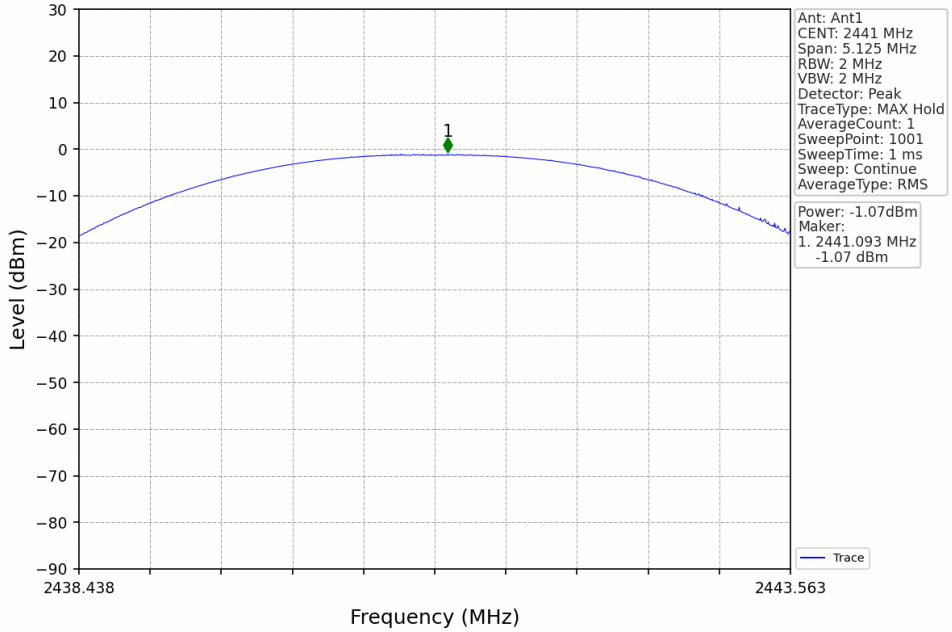
Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.59	<=20.97	Pass
		2441	DH5	-1.07	<=20.97	Pass
		2480	DH5	-0.82	<=20.97	Pass
π/4QPSK	SISO	2402	2DH5	-0.71	<=20.97	Pass
		2441	2DH5	-0.44	<=20.97	Pass
		2480	2DH5	0.06	<=20.97	Pass

3.1.2 Test Graph

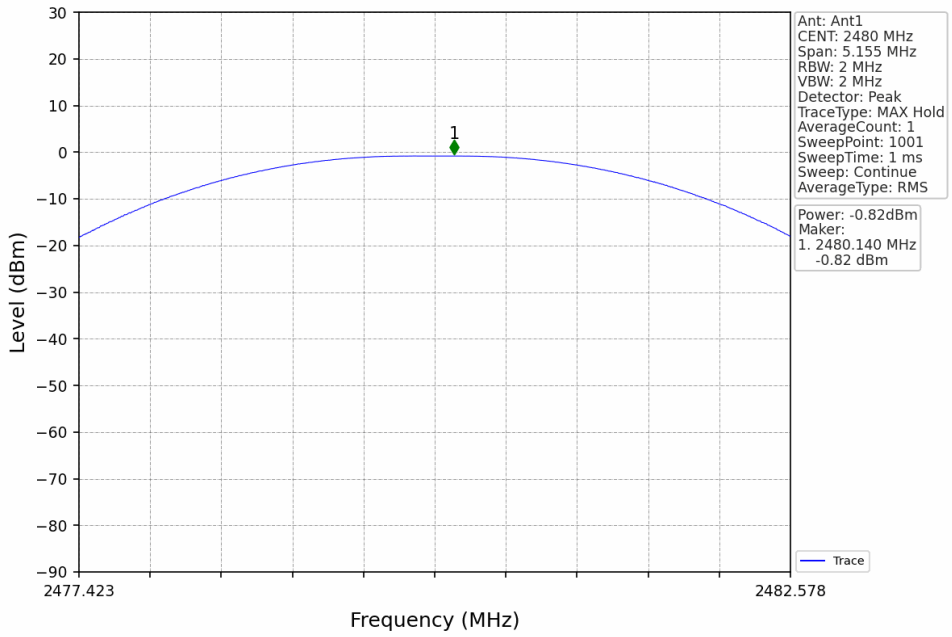
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



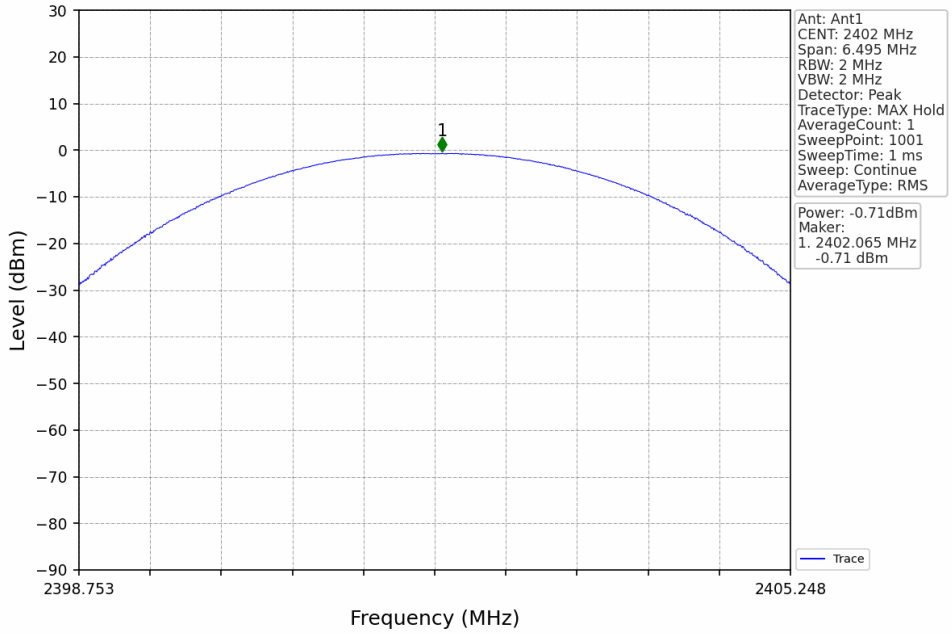
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



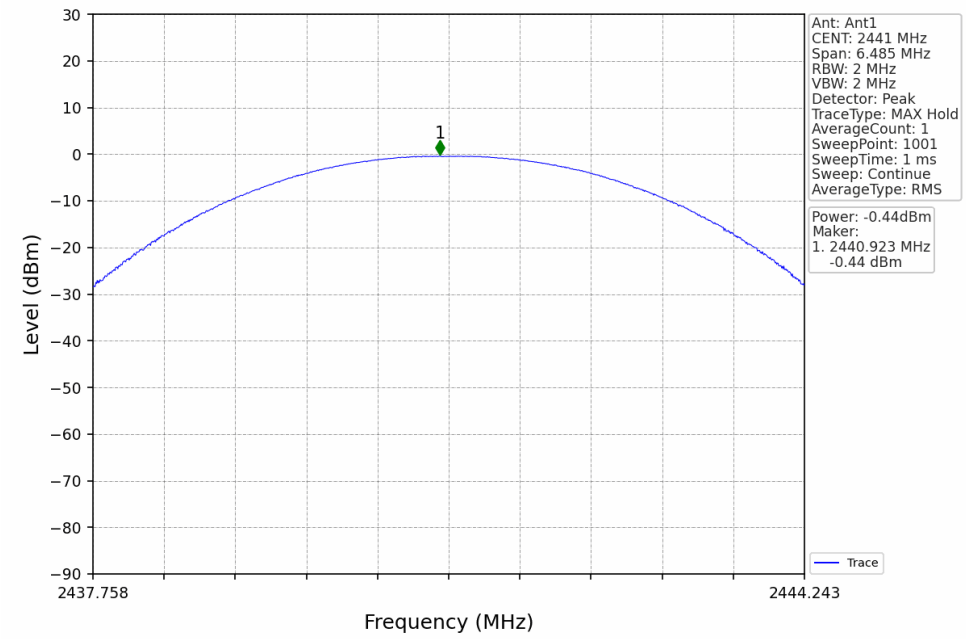
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



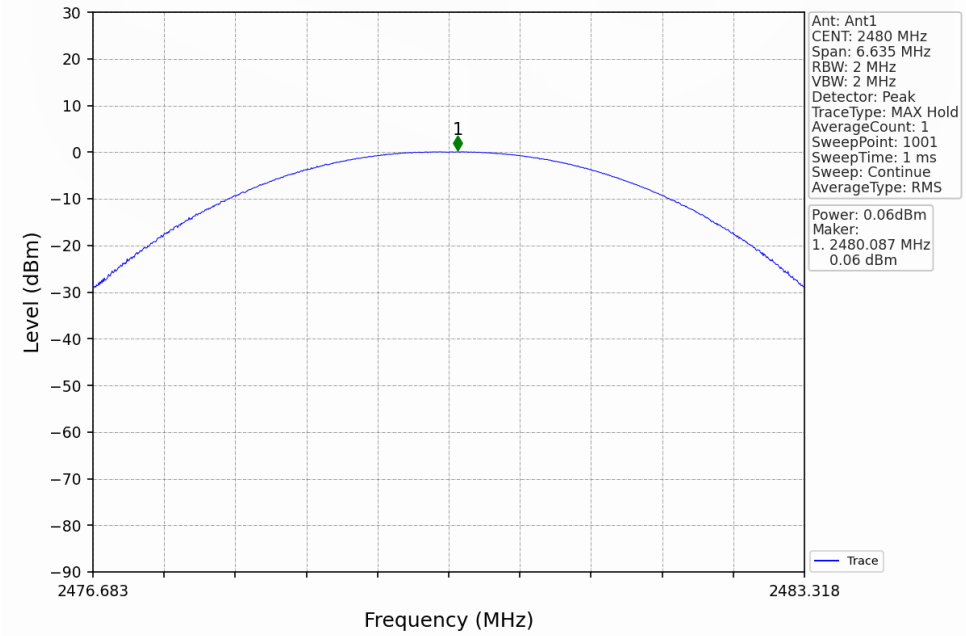
π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



π/4QPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



4. Carrier Frequency Separation

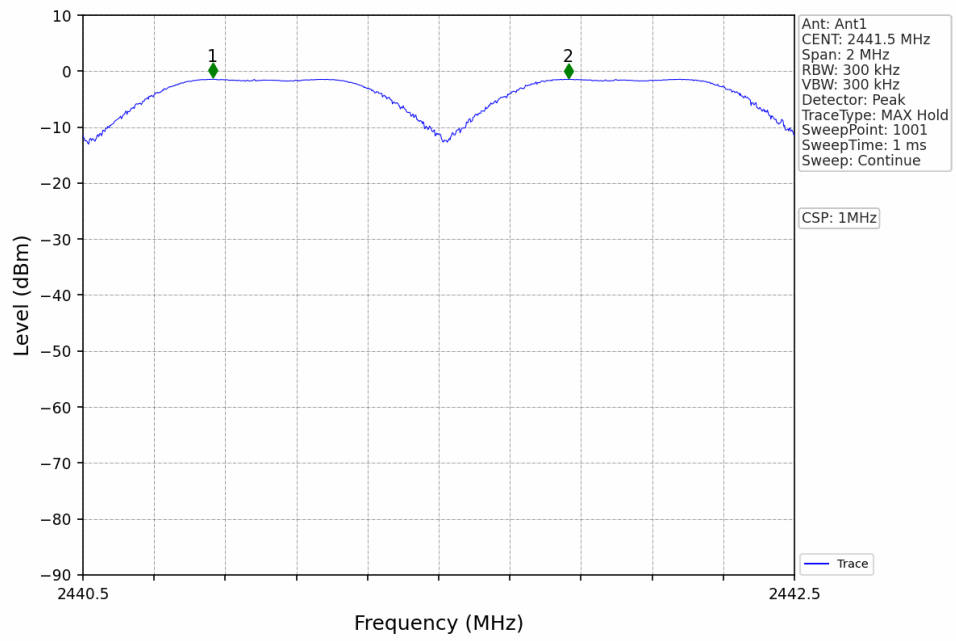
4.1 Ant1

4.1.1 Test Result

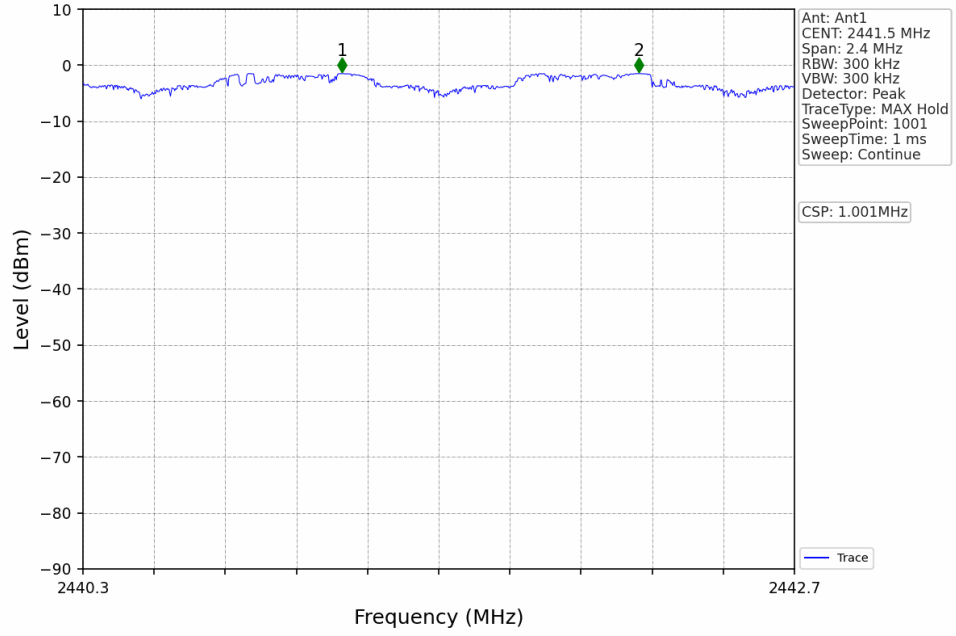
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	1.031	>=0.687	Pass
π/4QPSK	SISO	HOPP	2DH5	1.001	1.327	>=0.885	Pass

4.1.2 Test Graph

GFSK_DH5_HOPP_Ant1_NTNV



π/4QPSK_2DH5_HOPP_Ant1_NTNV



5. Number of Hopping Frequencies

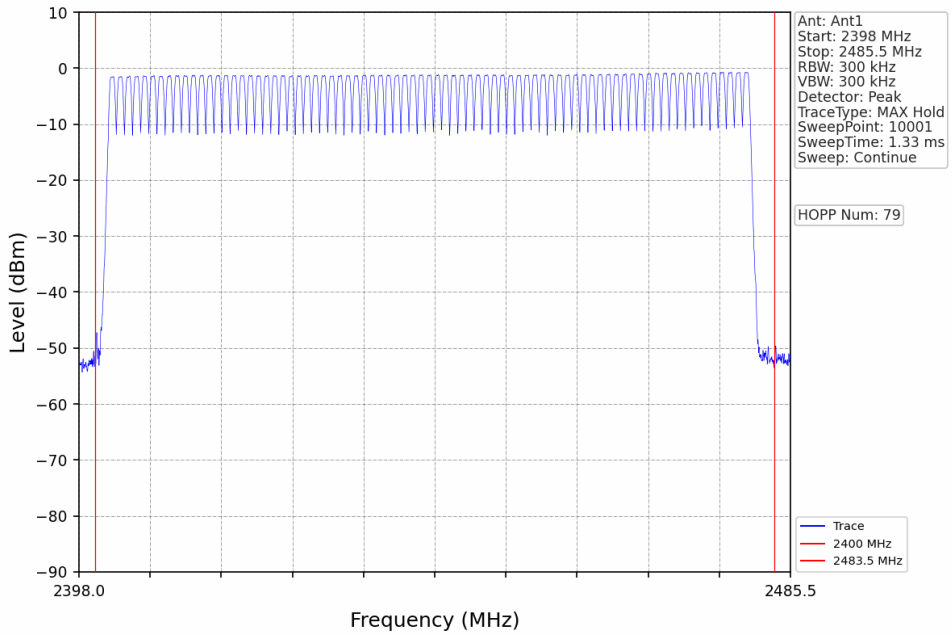
5.1 HoppNum

5.1.1 Test Result

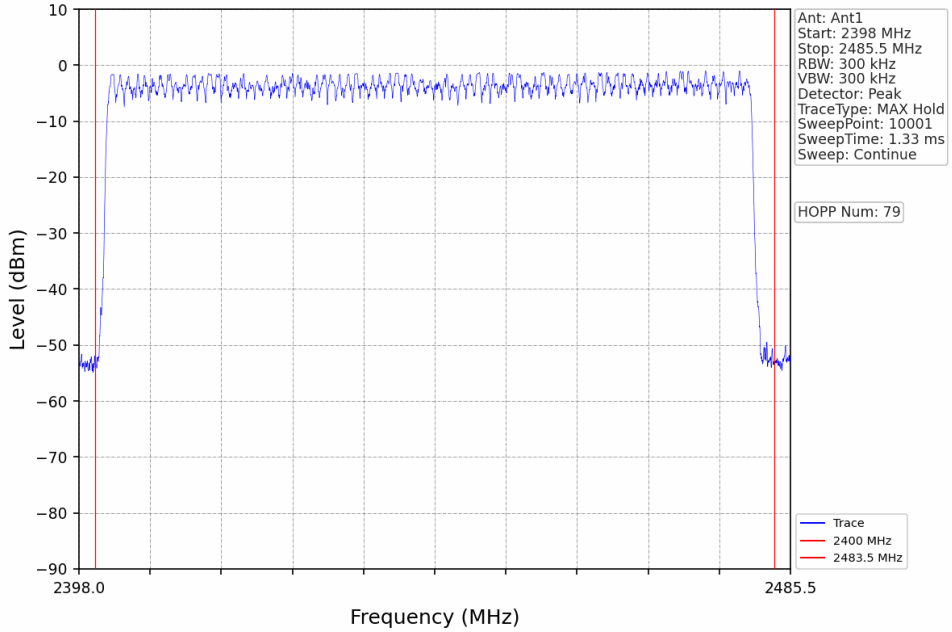
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	>=15	Pass
π/4QPSK	SISO	HOPP	2DH5	79	>=15	Pass

5.1.2 Test Graph

GFSK_DH5_HOPP_Ant1_NTNV



π/4QPSK_2DH5_HOPP_Ant1_NTNV



6. Time of Occupancy (Dwell Time)

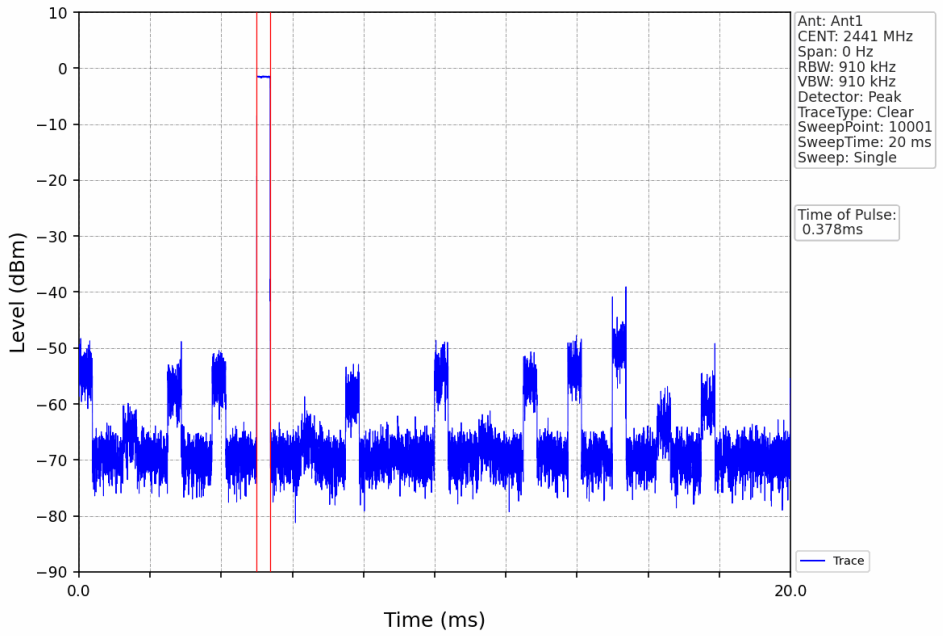
6.1 Ant1

6.1.1 Test Result

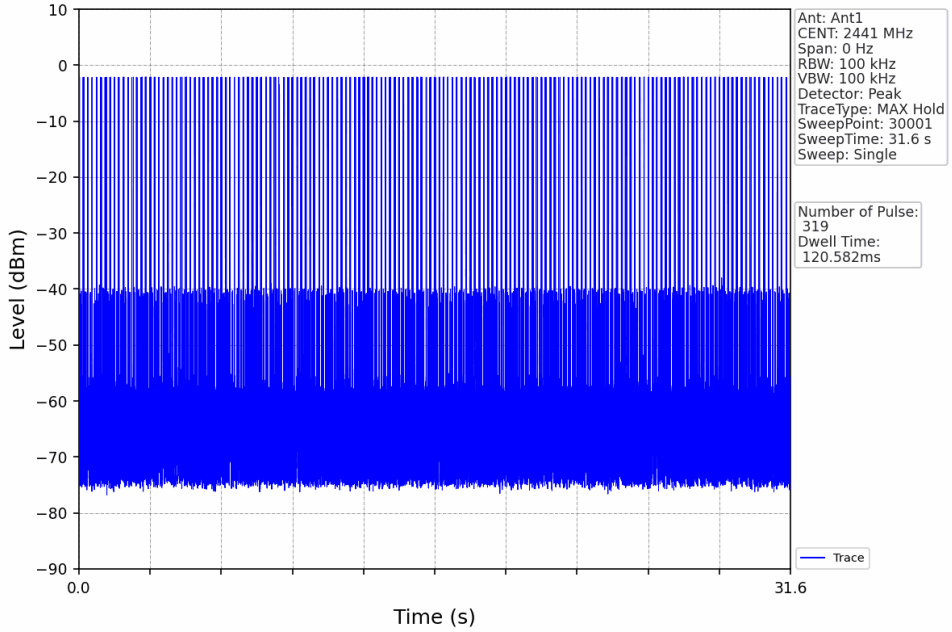
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.378	31.600	319	120.582	<=400	Pass
			DH3	1.636	31.600	169	276.484	<=400	Pass
			DH5	2.886	31.600	114	329.004	<=400	Pass
π/4QPSK	SISO	HOPP	2DH1	0.390	31.600	320	124.800	<=400	Pass
			2DH3	1.642	31.600	158	259.436	<=400	Pass
			2DH5	2.890	31.600	106	306.340	<=400	Pass

6.1.2 Test Graph

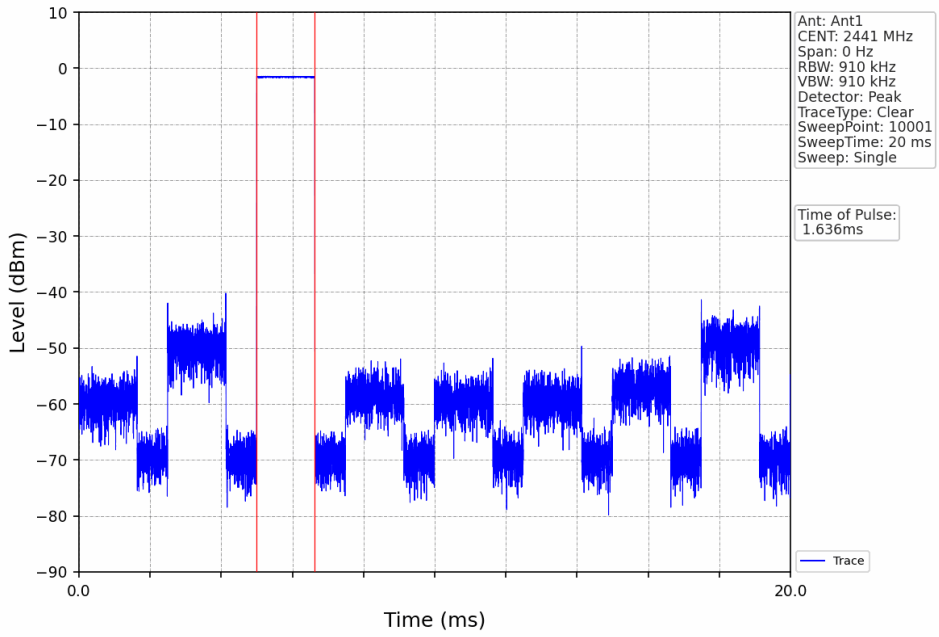
GFSK_DH1_HOPP_Ant1_NTNV



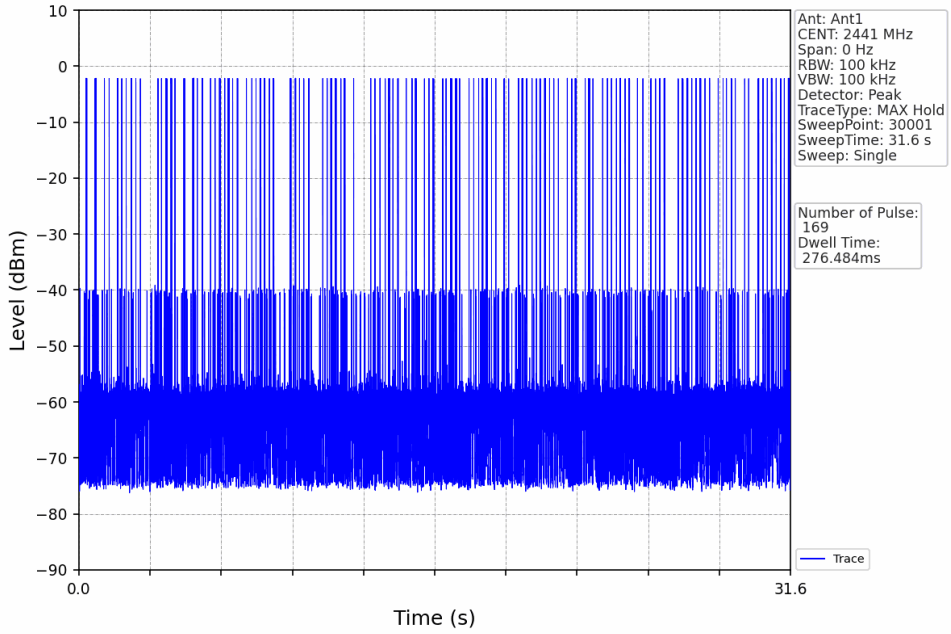
GFSK_DH1_HOPP_Ant1_NTNV



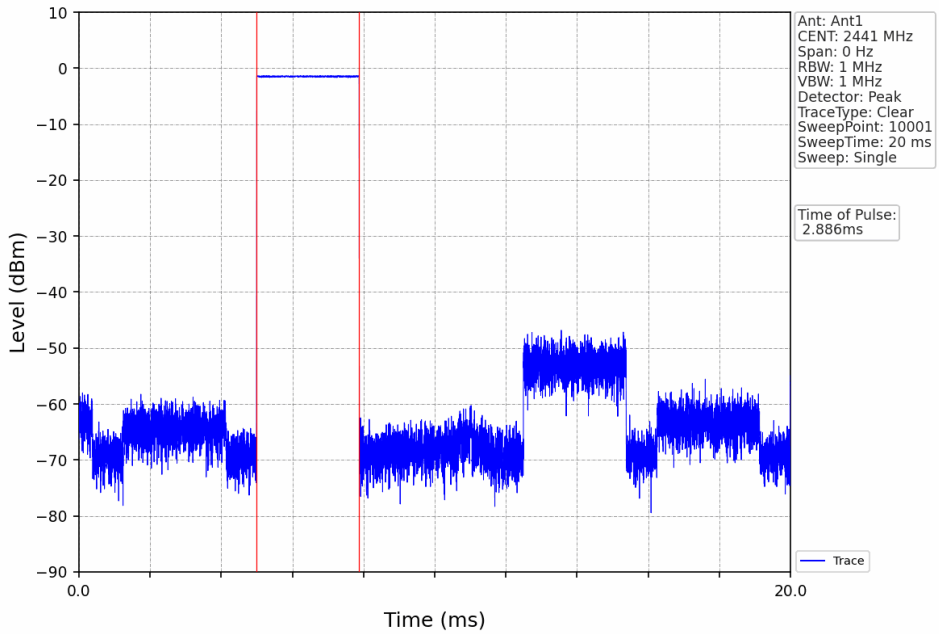
GFSK_DH3_HOPP_Ant1_NTNV



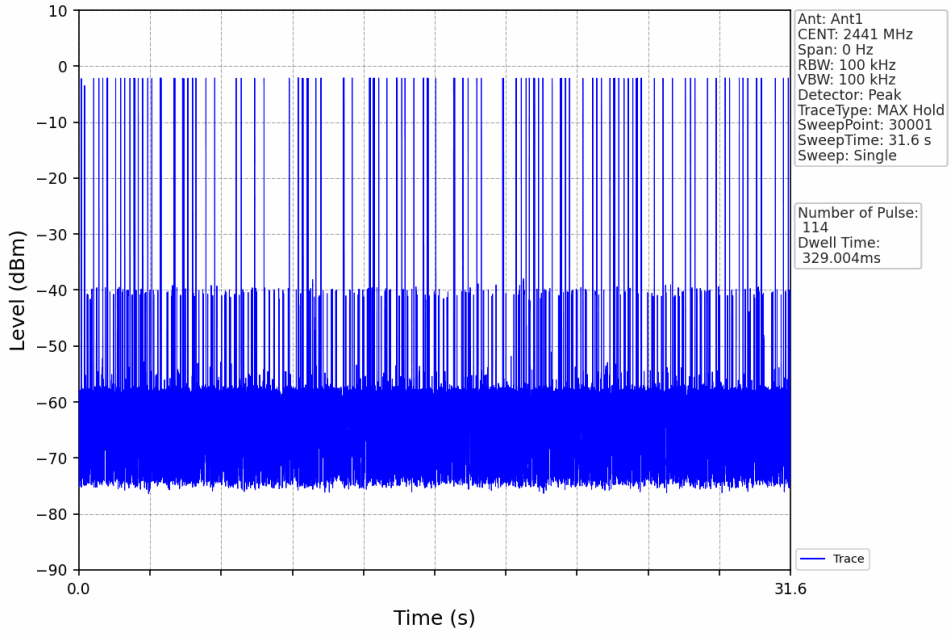
GFSK_DH3_HOPP_Ant1_NTNV



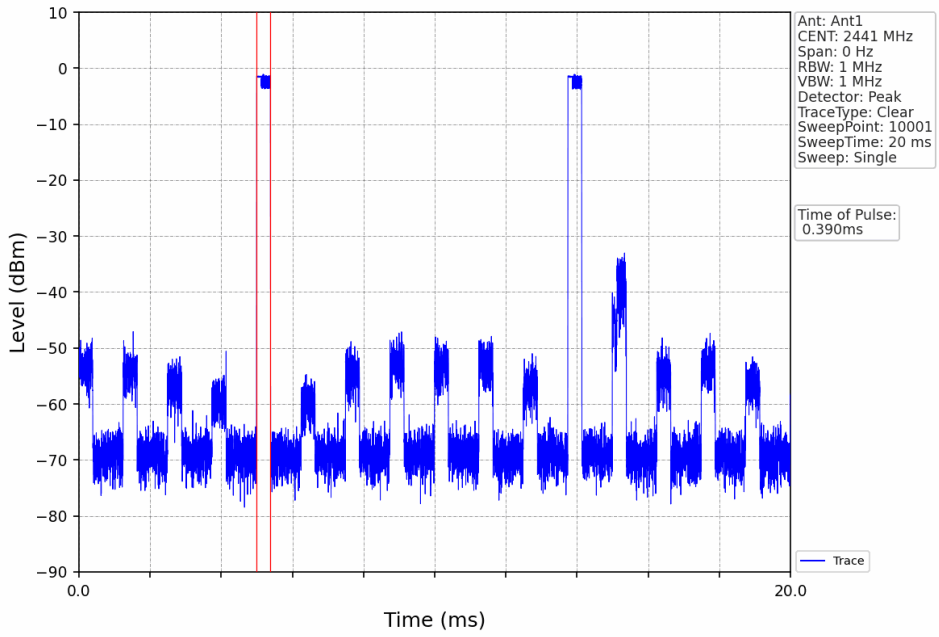
GFSK_DH5_HOPP_Ant1_NTNV



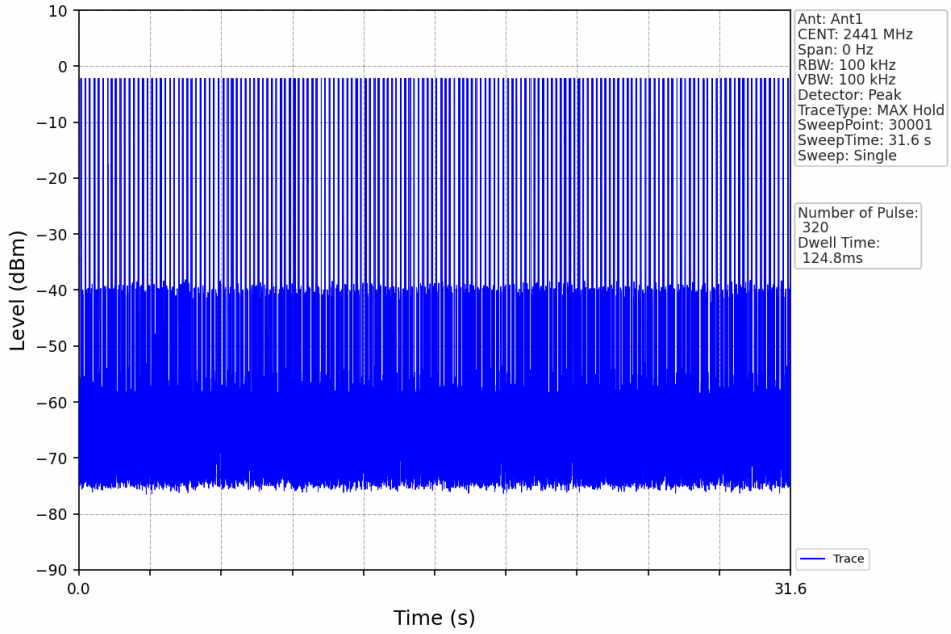
GFSK_DH5_HOPP_Ant1_NTNV



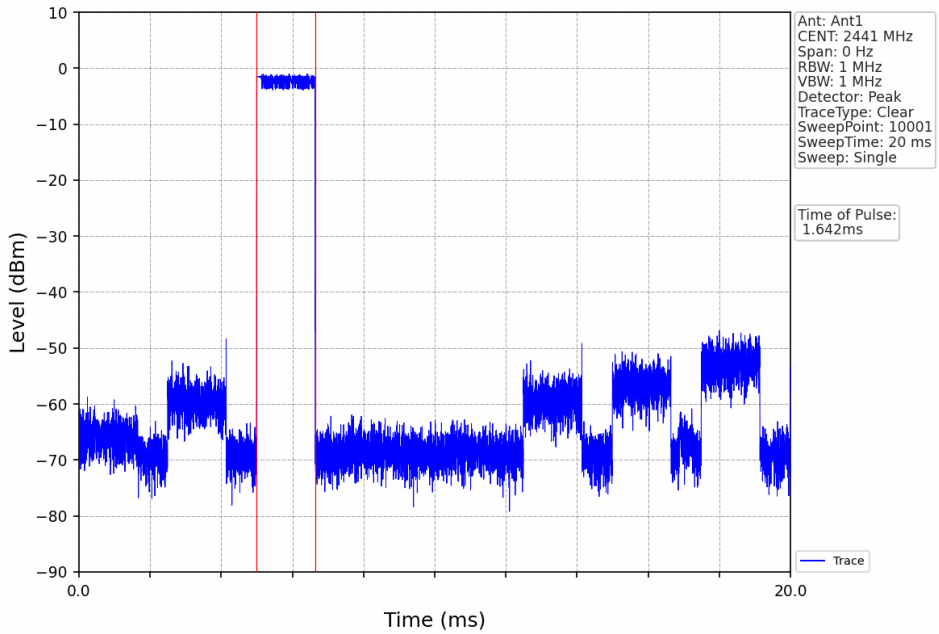
π/4QPSK_2DH1_HOPP_Ant1_NTNV



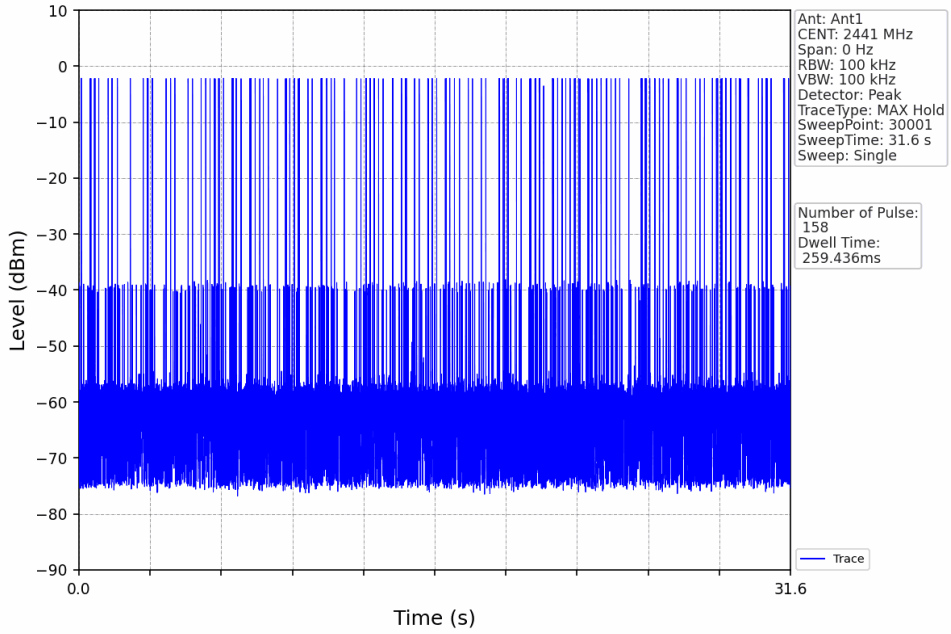
π/4QPSK_2DH1_HOPP_Ant1_NTNV



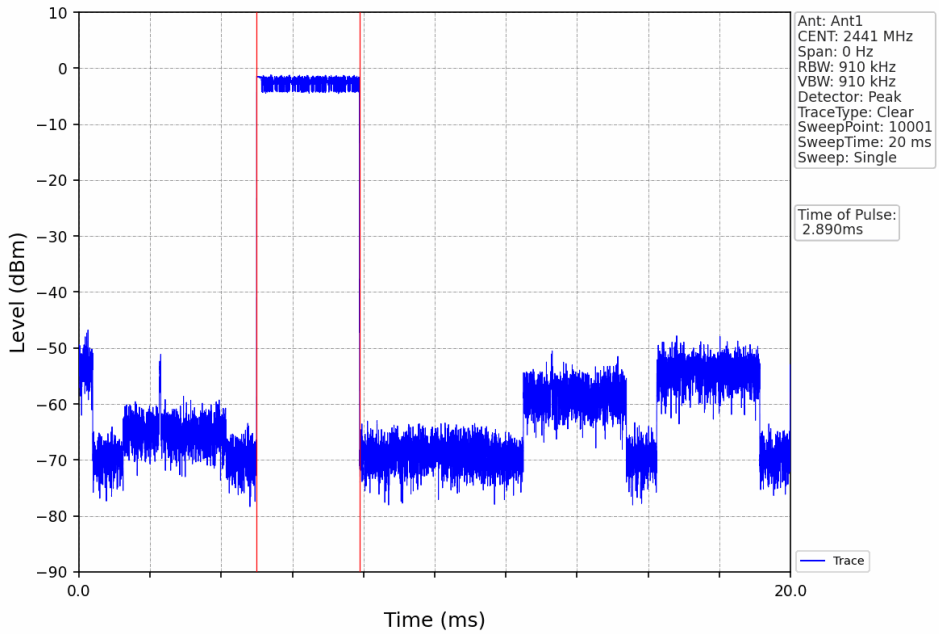
π/4QPSK_2DH3_HOPP_Ant1_NTNV



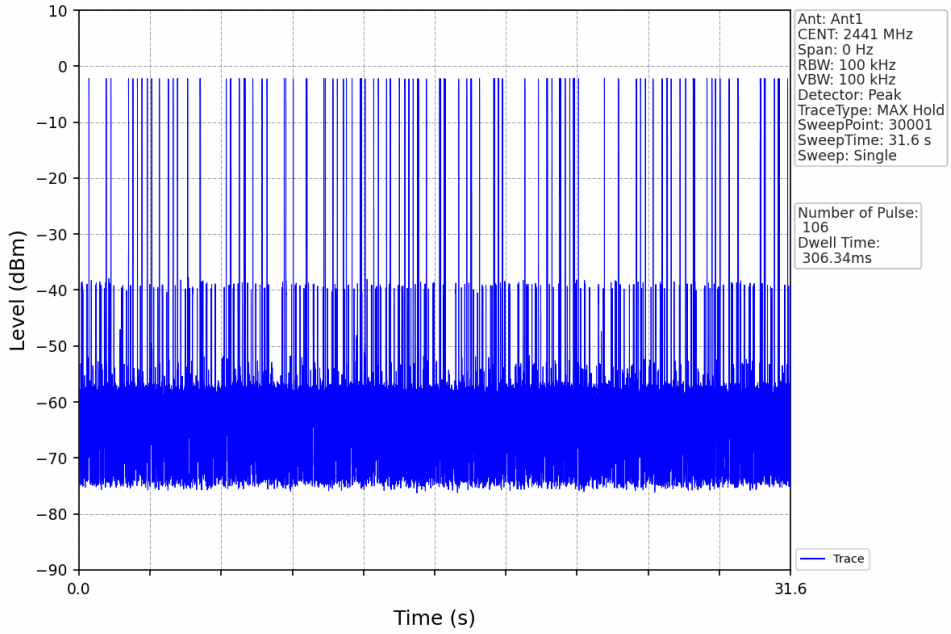
π/4QPSK_2DH3_HOPP_Ant1_NTNV



π/4QPSK_2DH5_HOPP_Ant1_NTNV



π/4QPSK_2DH5_HOPP_Ant1_NTNV



7. Unwanted Emissions In Non-restricted Frequency Bands

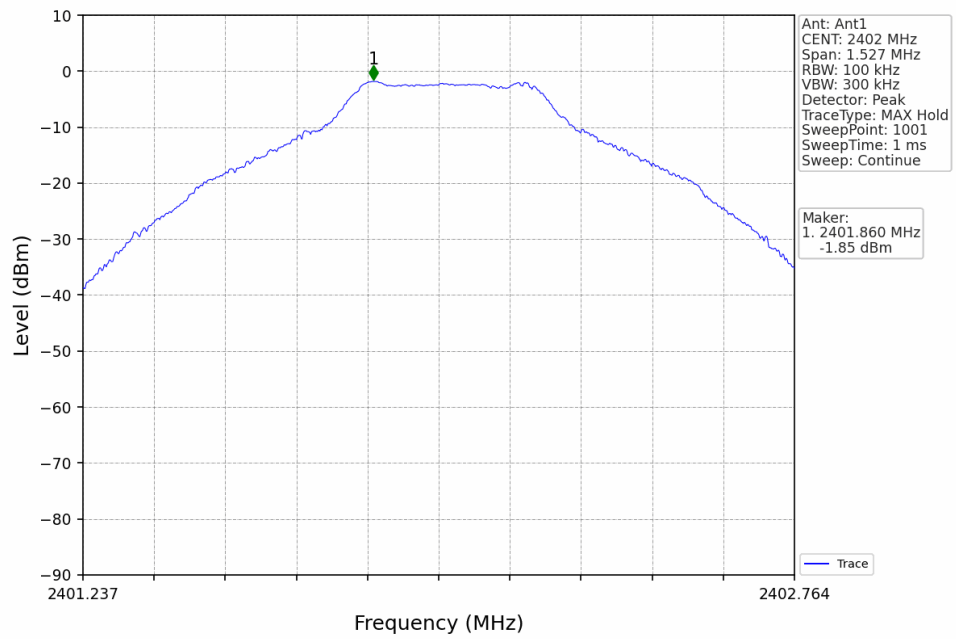
7.1 Ref

7.1.1 Test Result

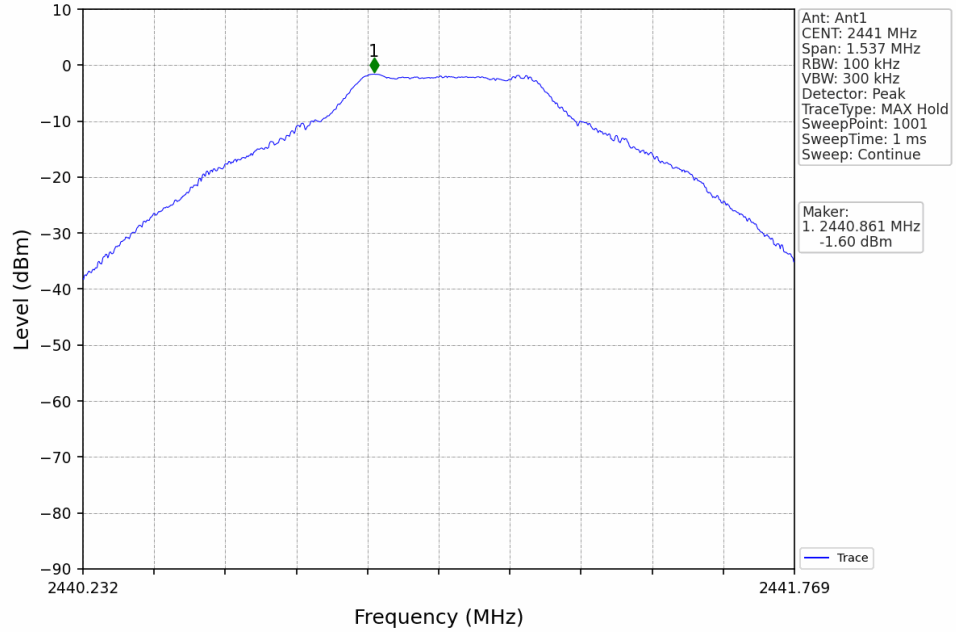
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	-1.85
		2441	DH5	1	-1.60
		2480	DH5	1	-1.14
π/4QPSK	SISO	2402	2DH5	1	-1.88
		2441	2DH5	1	-1.63
		2480	2DH5	1	-1.10
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.					

7.1.2 Test Graph

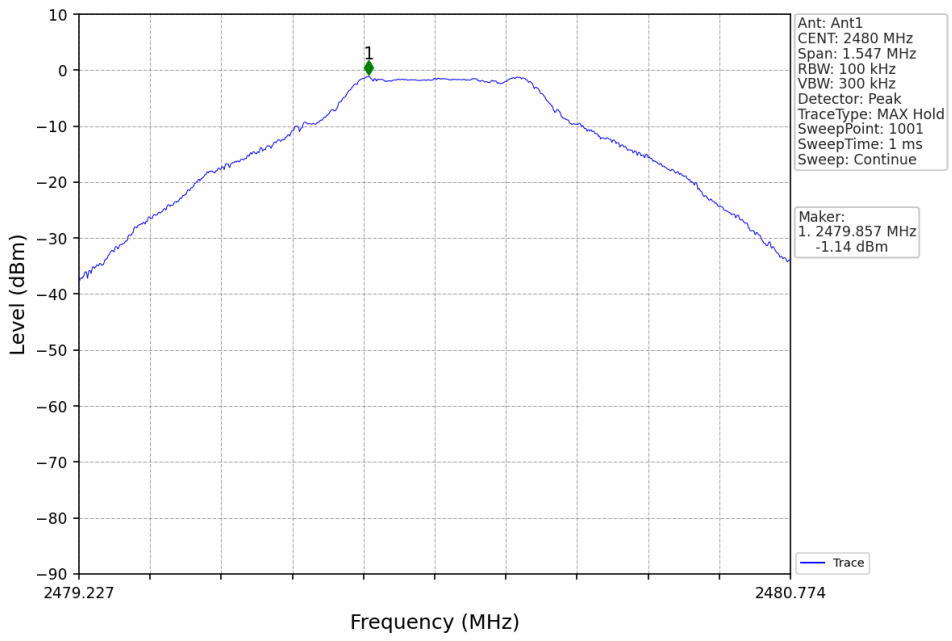
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



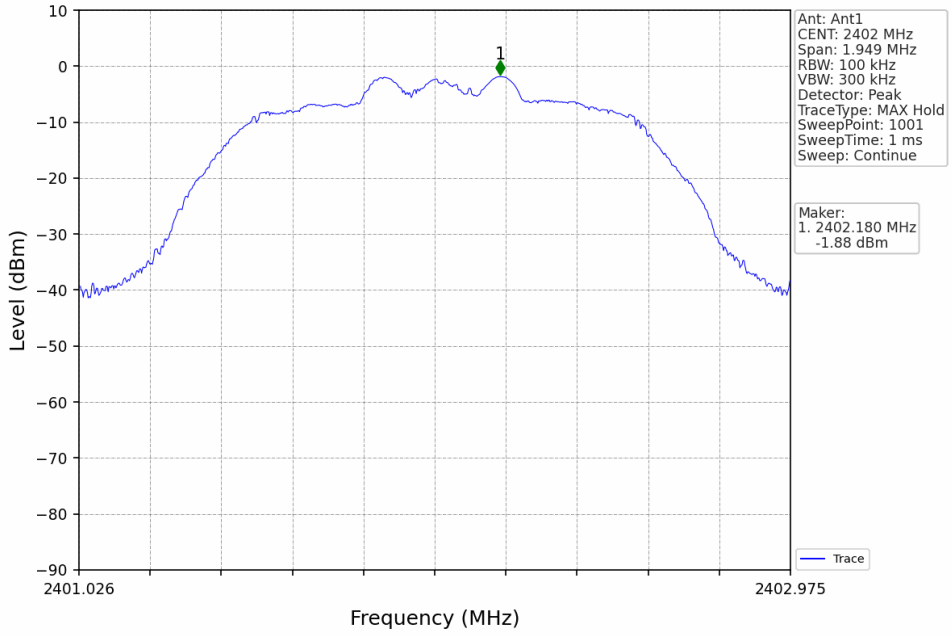
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



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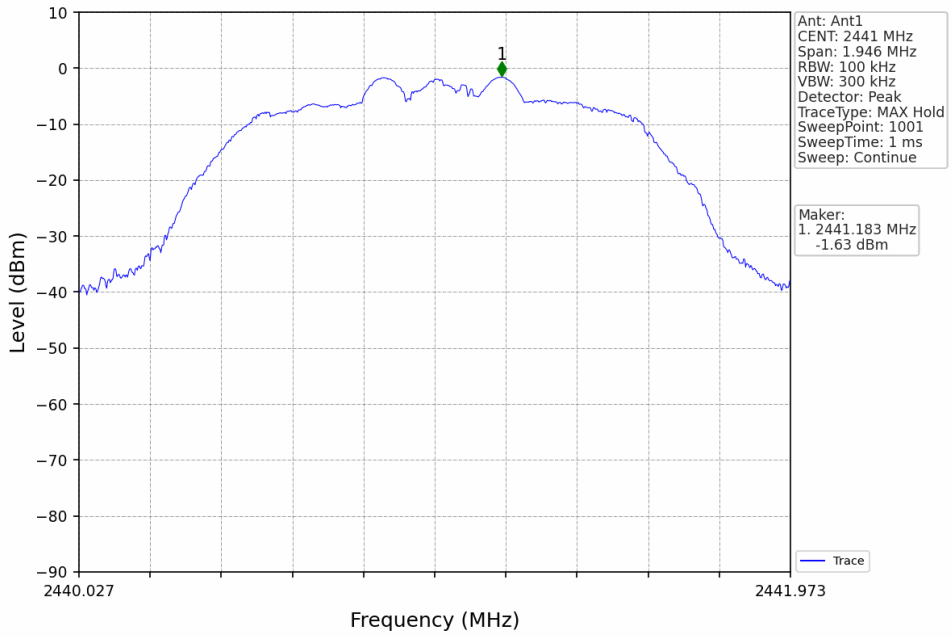

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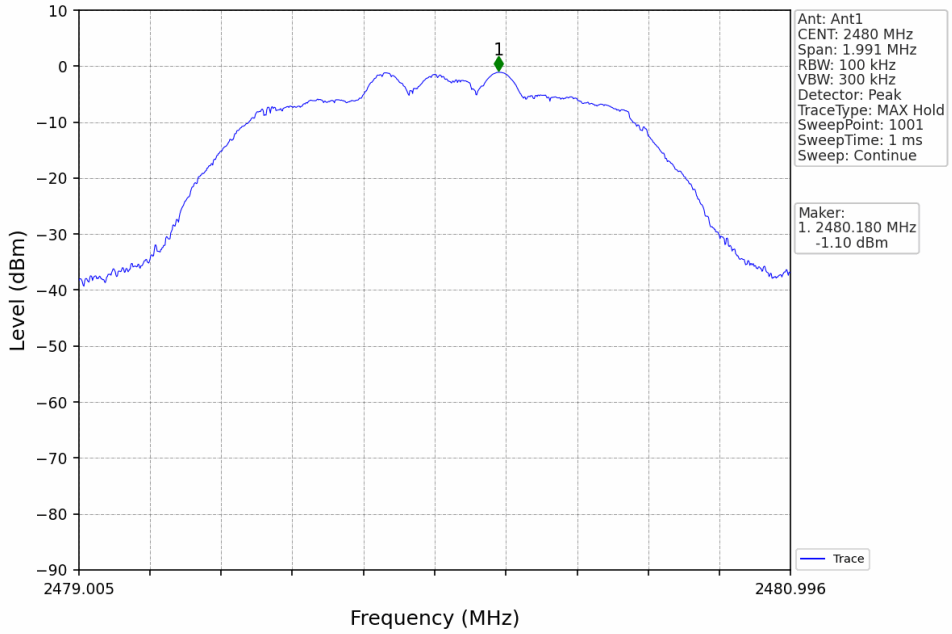


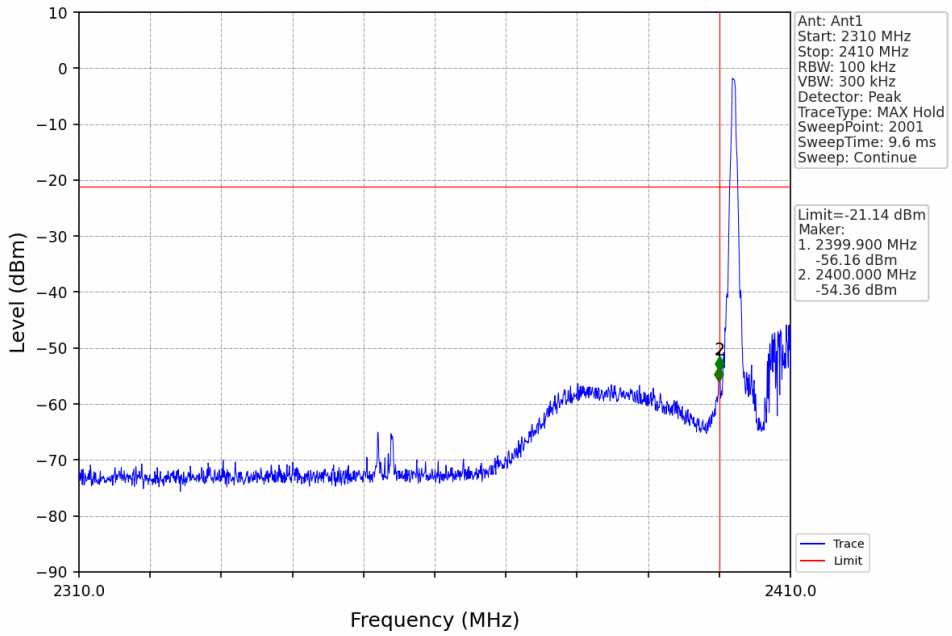
7.2 CSE

7.2.1 Test Result

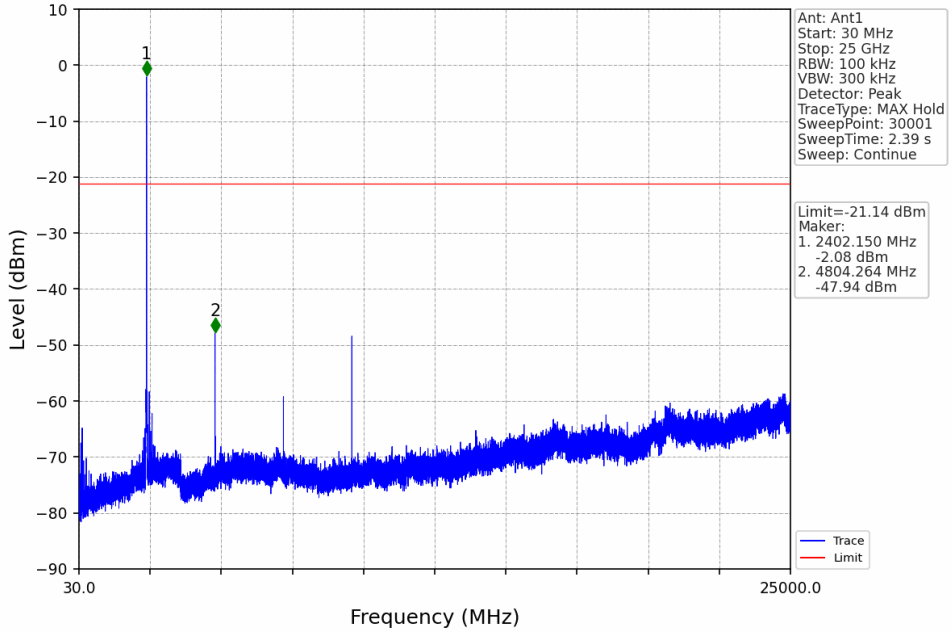
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-1.14	-21.14	Pass
		2441	DH5	1	-1.14	-21.14	Pass
		2480	DH5	1	-1.14	-21.14	Pass
		HOPP	DH5	1	-1.14	-21.14	Pass
π/4QPSK	SISO	2402	2DH5	1	-1.10	-21.10	Pass
		2441	2DH5	1	-1.10	-21.10	Pass
		2480	2DH5	1	-1.10	-21.10	Pass
		HOPP	2DH5	1	-1.10	-21.10	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.							

7.2.2 Test Graph

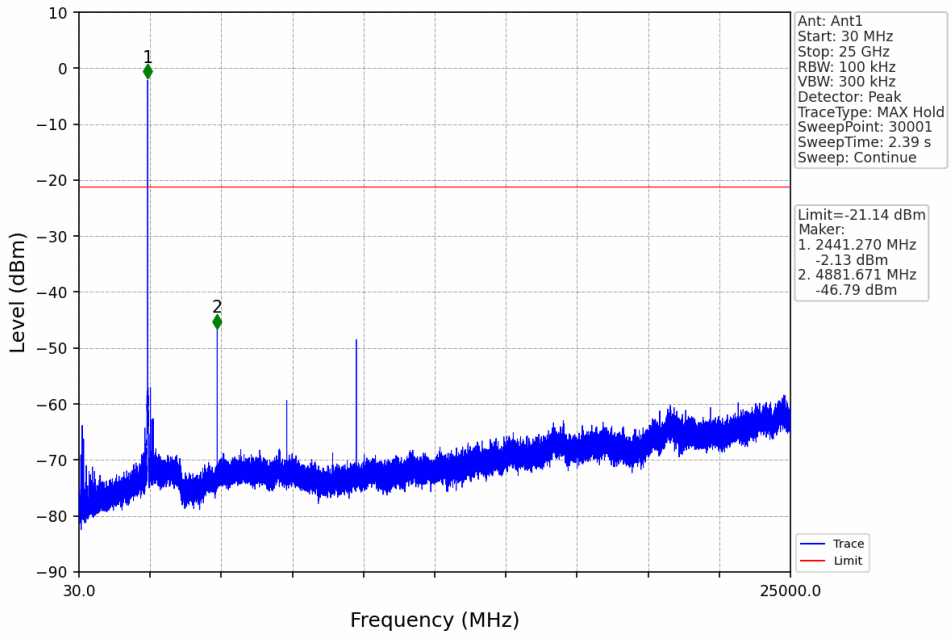
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



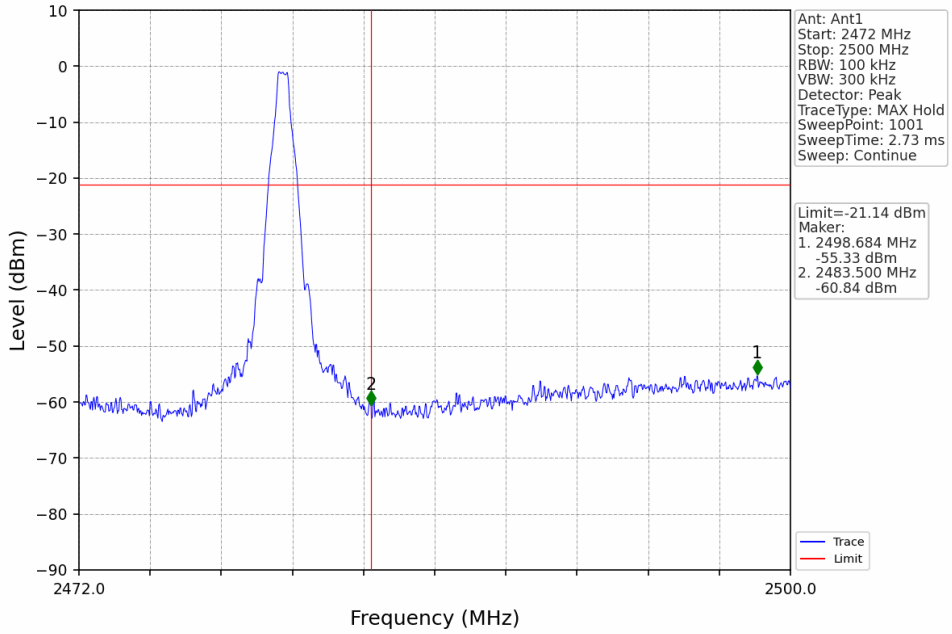
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



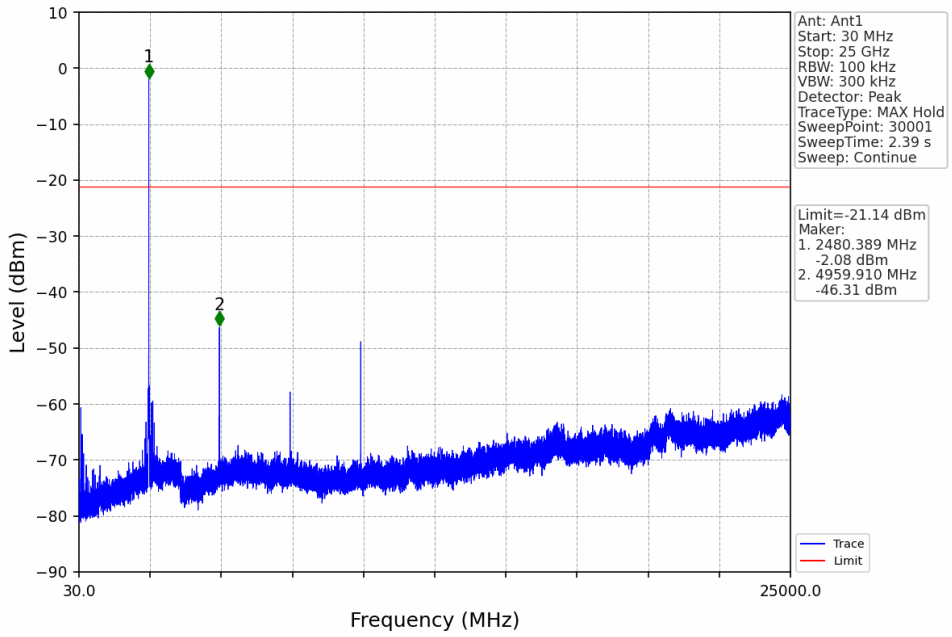
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



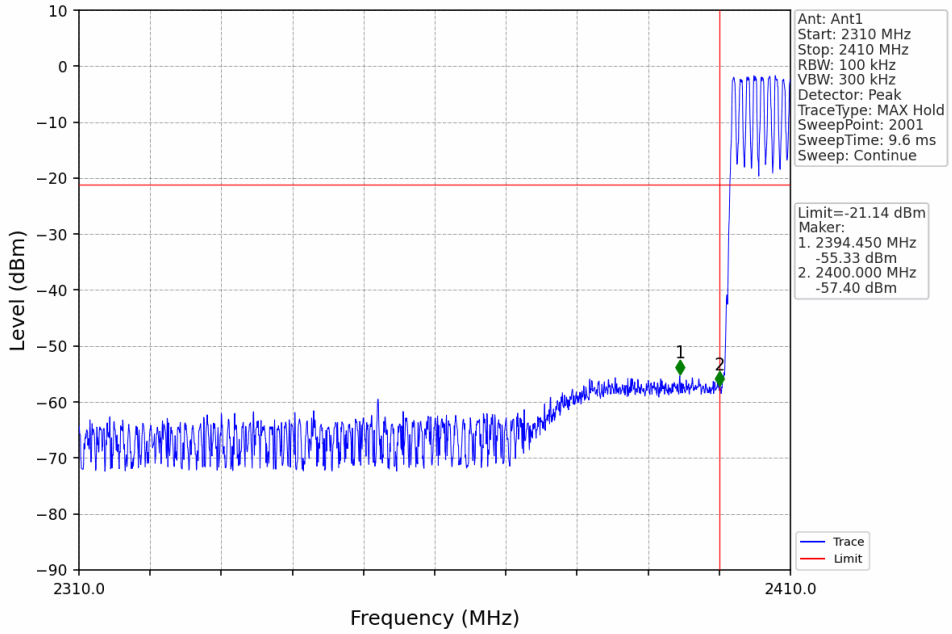
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



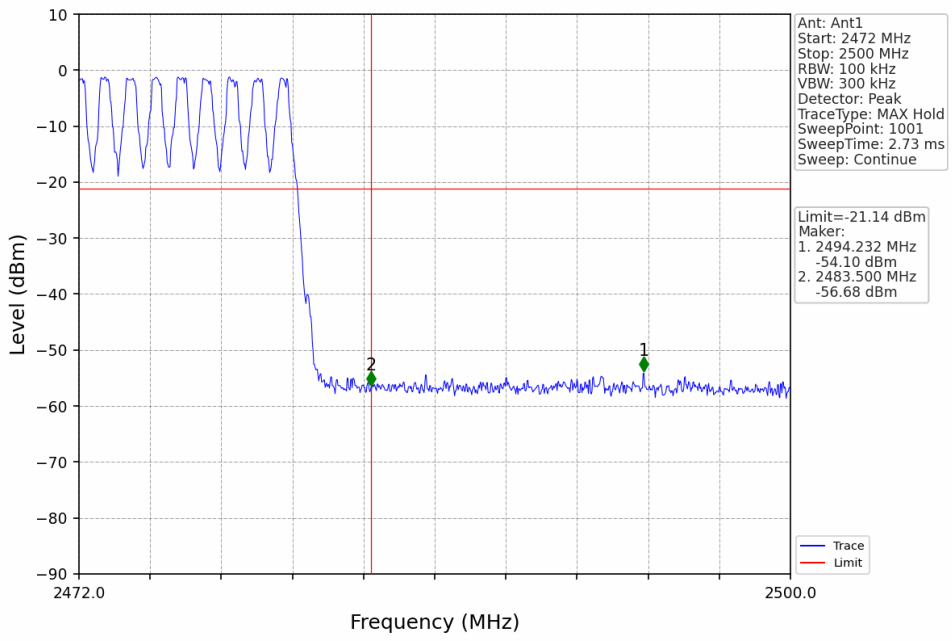
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



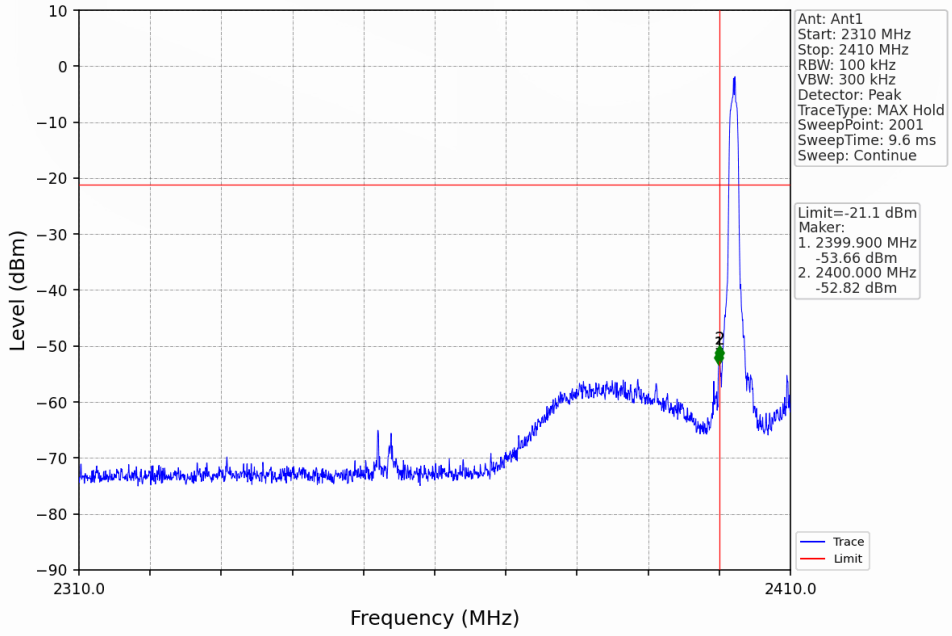
GFSK_DH5_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



π/4QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



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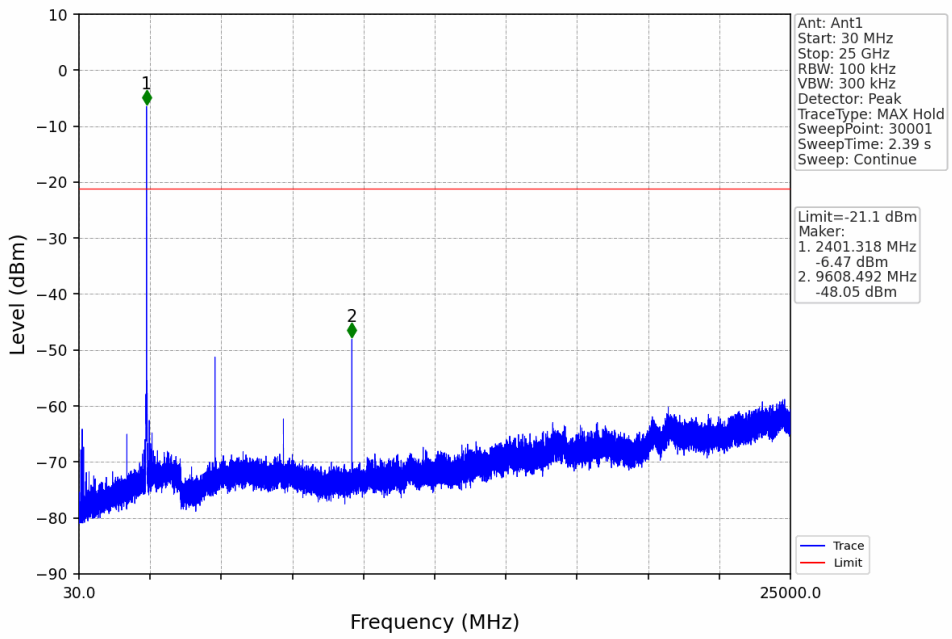
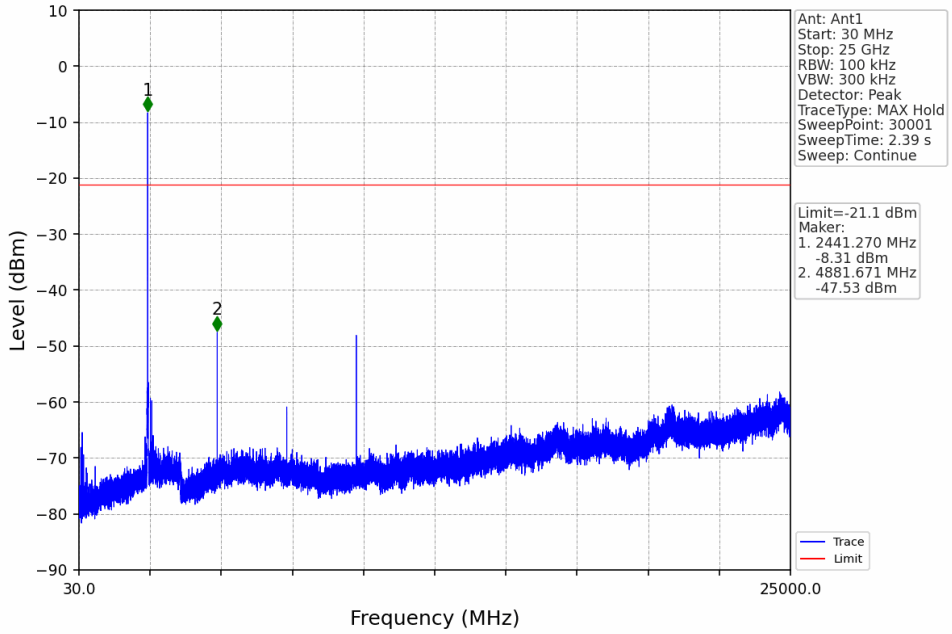
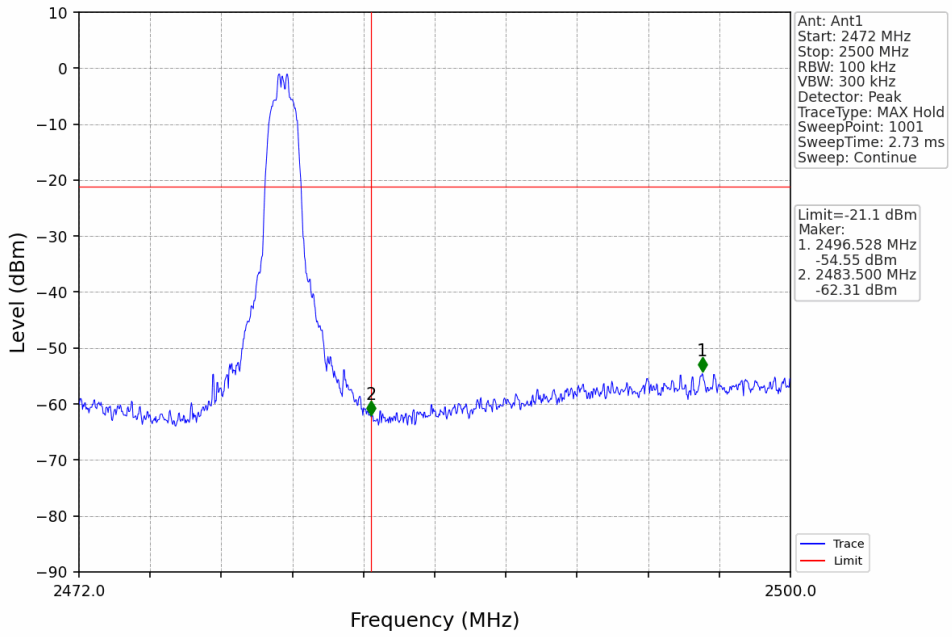


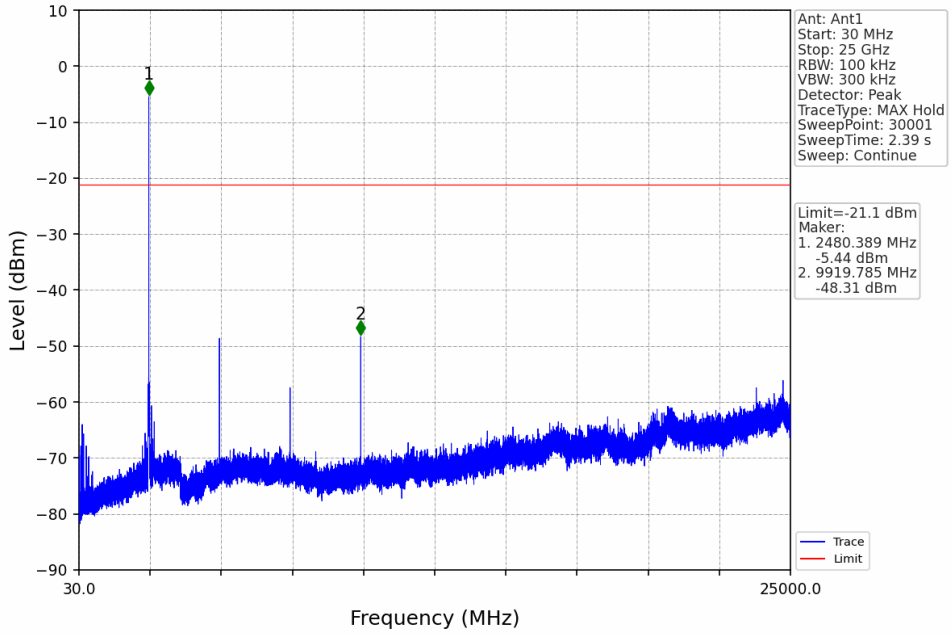
π/4QPSK_2DH5_MCH_2441MHz_Ant1_NTNV



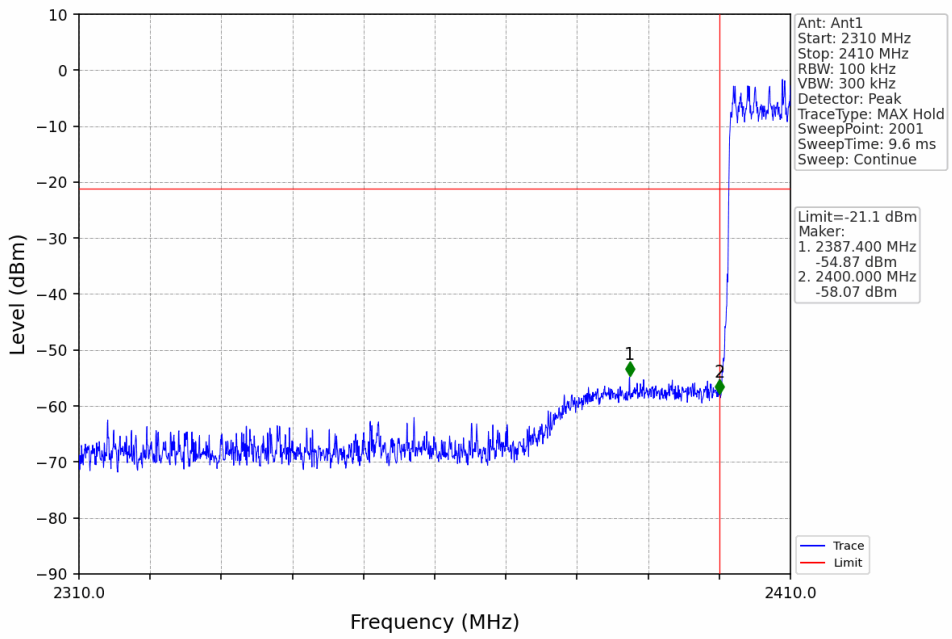
π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



π/4QPSK_2DH5_HCH_2480MHz_Ant1_NTNV



π/4QPSK_2DH5_HOPP_Ant1_NTNV



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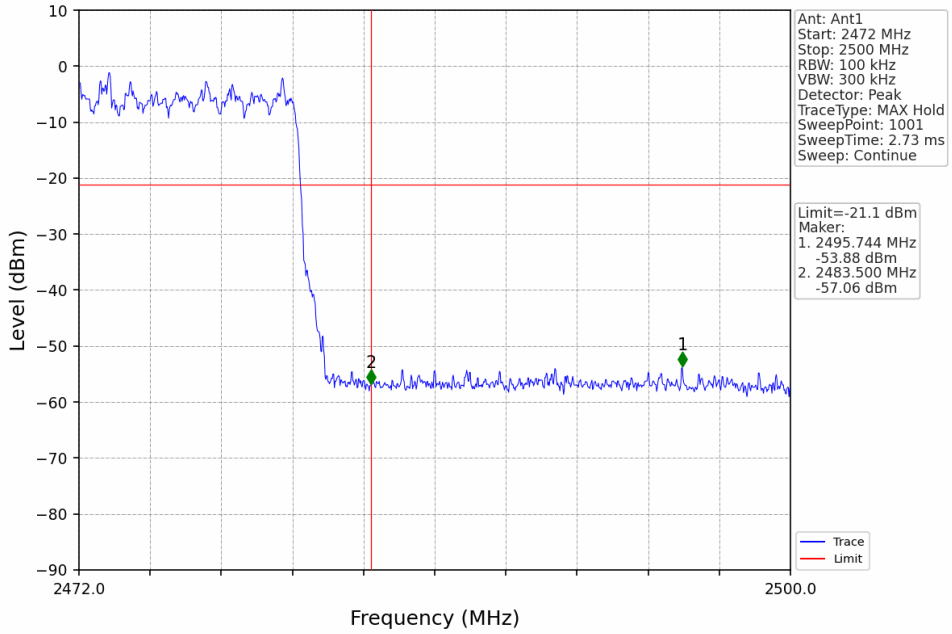

--------- End of Report -------