

RF Test Data

For

Project No.:	DLE-251212025R
Client:	Huiyou Yuwan (Beijing) Technology Co., Ltd.
Manufacturer:	Dongguan bingfeng intelligent technology co., ltd
Product Description:	Game controller
Model Number:	HaptiX-1
Test Engineer:	Alisa Song
Test Date:	2025-12-10

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
Frequency Error	Pass

1. Duty Cycle

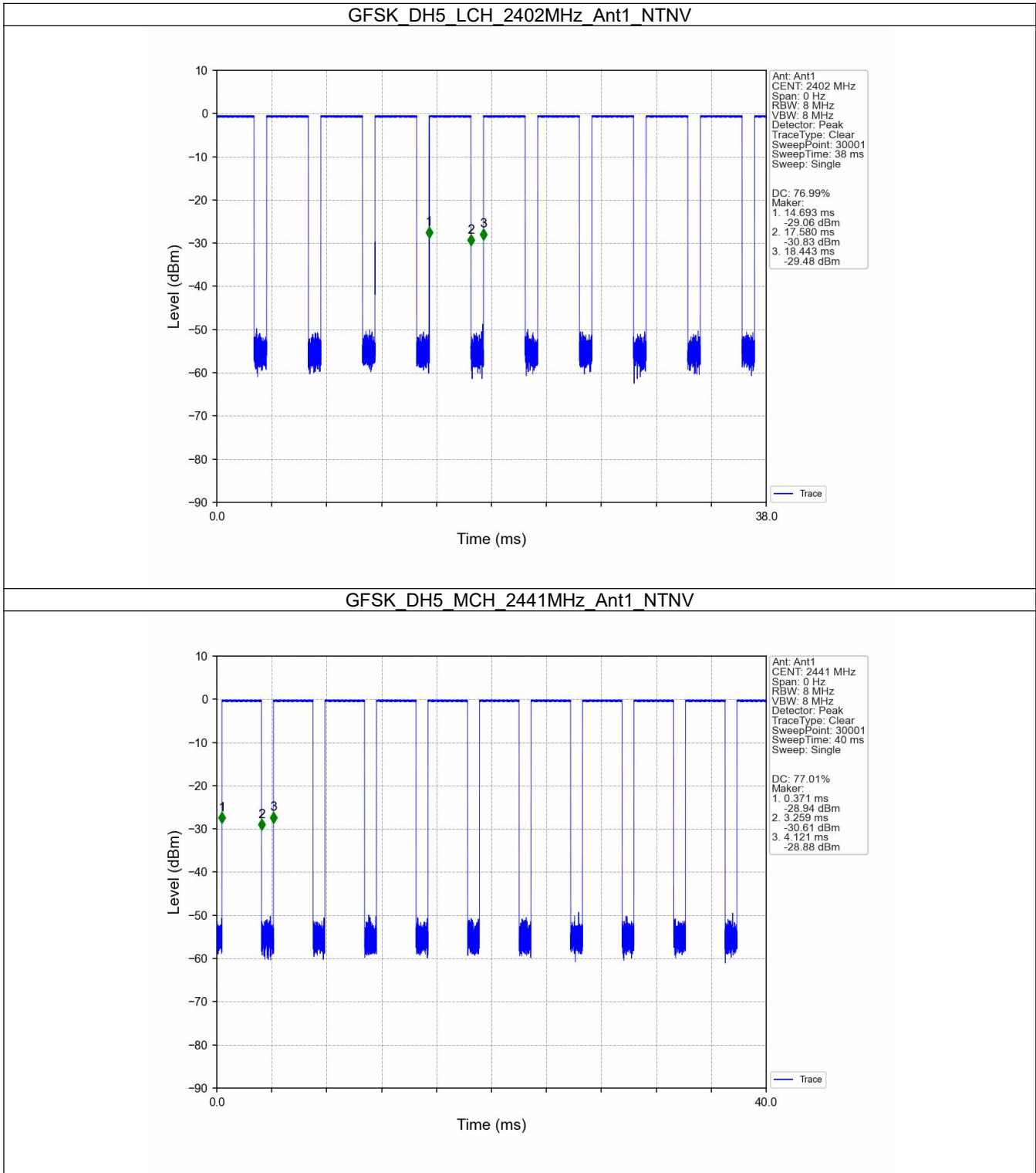
1.1 Test Result

1.1.1 Ant1

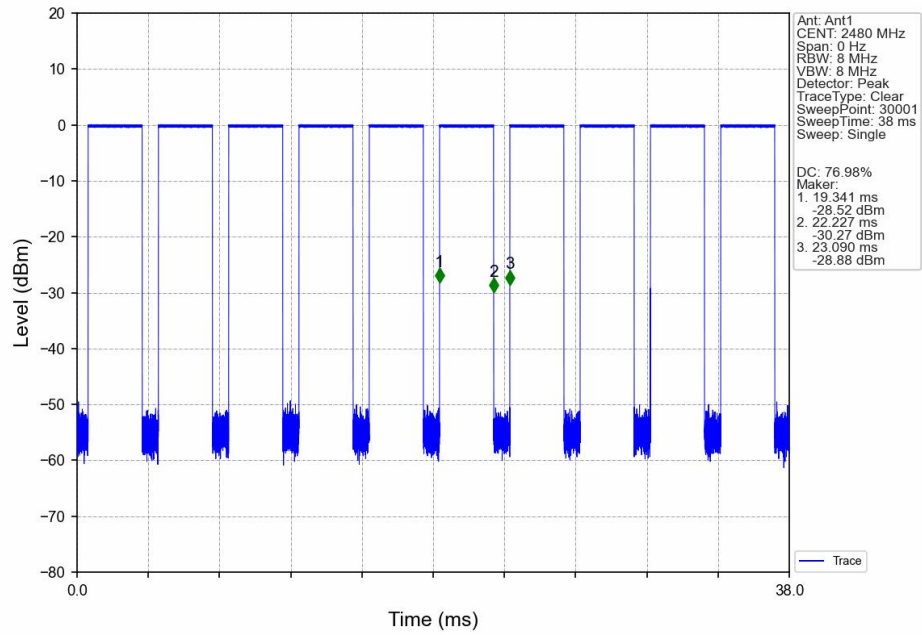
Ant1								
Mode	TX Type	Frequency (MHz)	Packet Type	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
GFSK	SISO	2402	DH5	2.887	3.750	76.99	1.14	0.03
		2441	DH5	2.888	3.750	77.01	1.13	0.03
		2480	DH5	2.886	3.749	76.98	1.14	0.03
Pi/4DQPSK	SISO	2402	2DH5	2.893	3.749	77.17	1.13	0.01
		2441	2DH5	2.894	3.751	77.15	1.13	0.04
		2480	2DH5	2.893	3.749	77.17	1.13	0.01
8DPSK	SISO	2402	3DH5	2.895	3.750	77.20	1.12	0.04
		2441	3DH5	2.895	3.749	77.22	1.12	0.01
		2480	3DH5	2.895	3.750	77.20	1.12	0.03

1.2 Test Graph

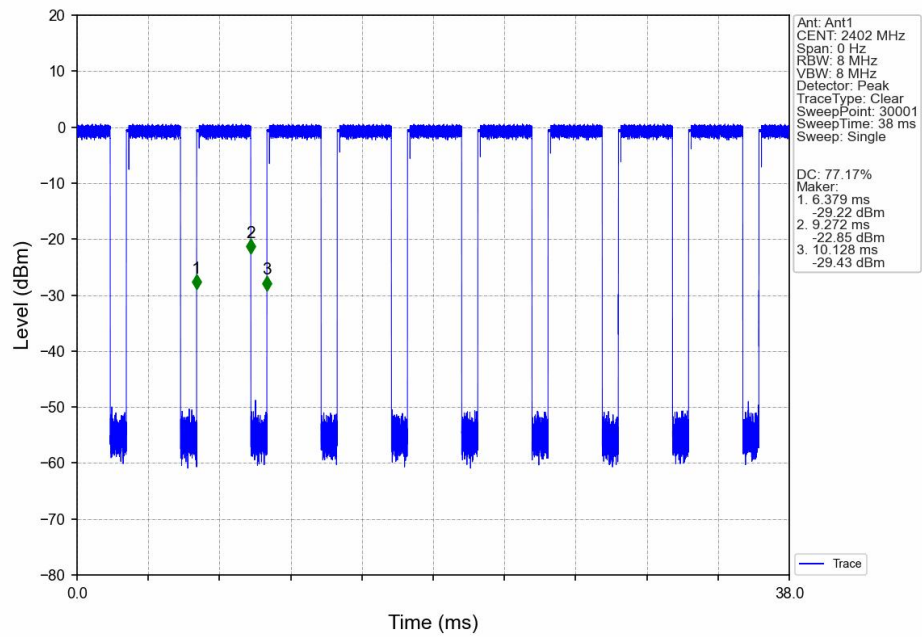
1.2.1 Ant1



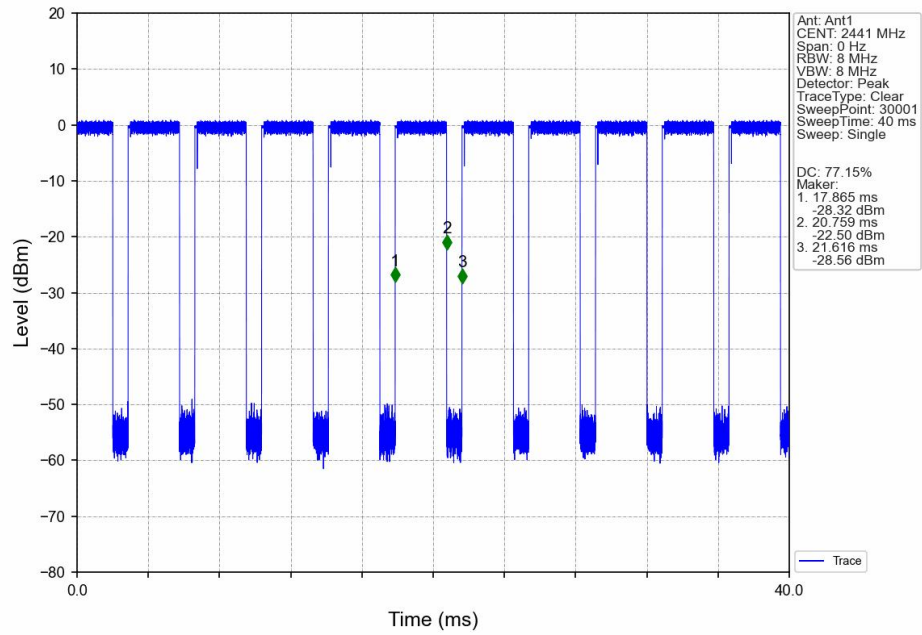
GFSK DH5 HCH 2480MHz Ant1 NTN



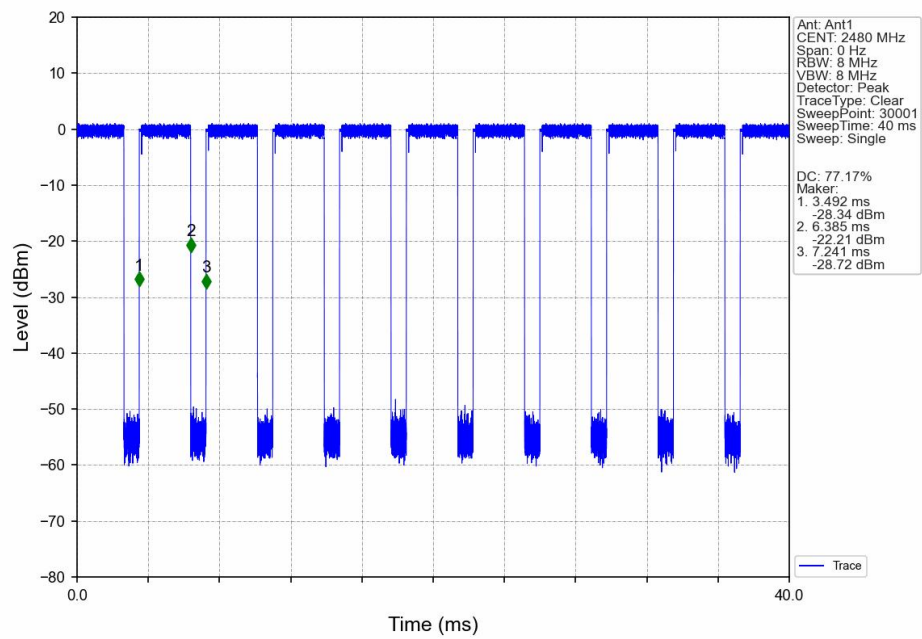
Pi/4DQPSK 2DH5 LCH 2402MHz Ant1 NTN



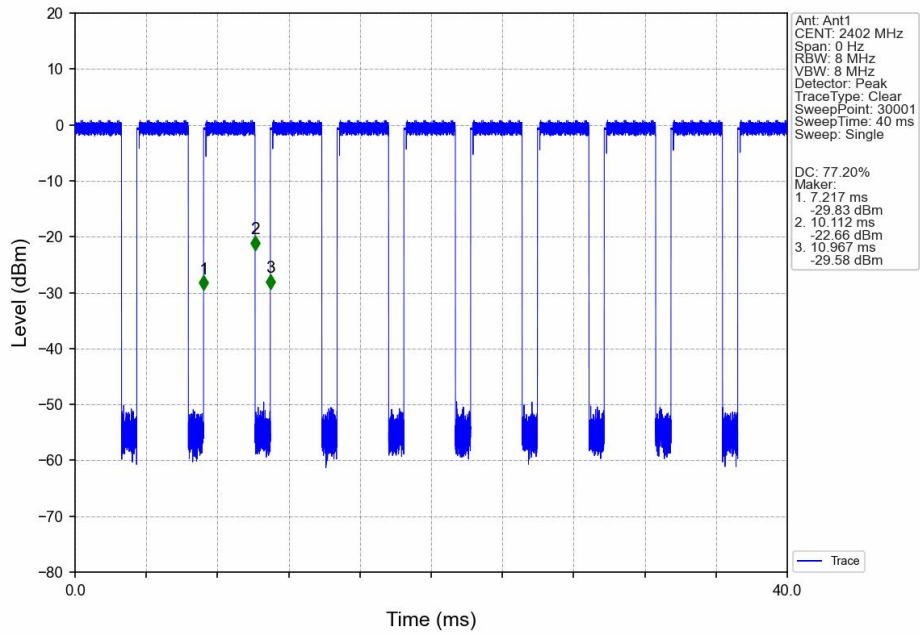
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



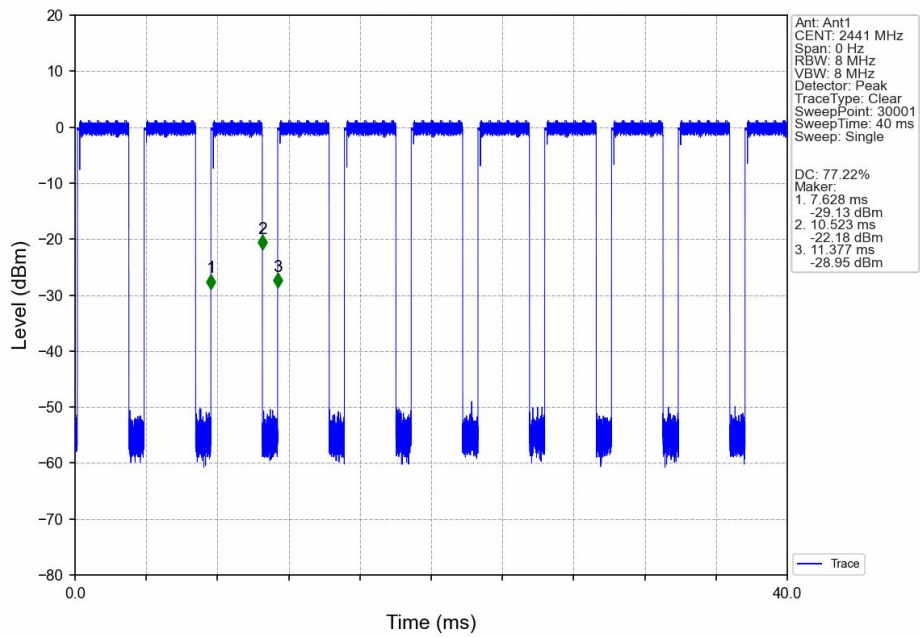
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



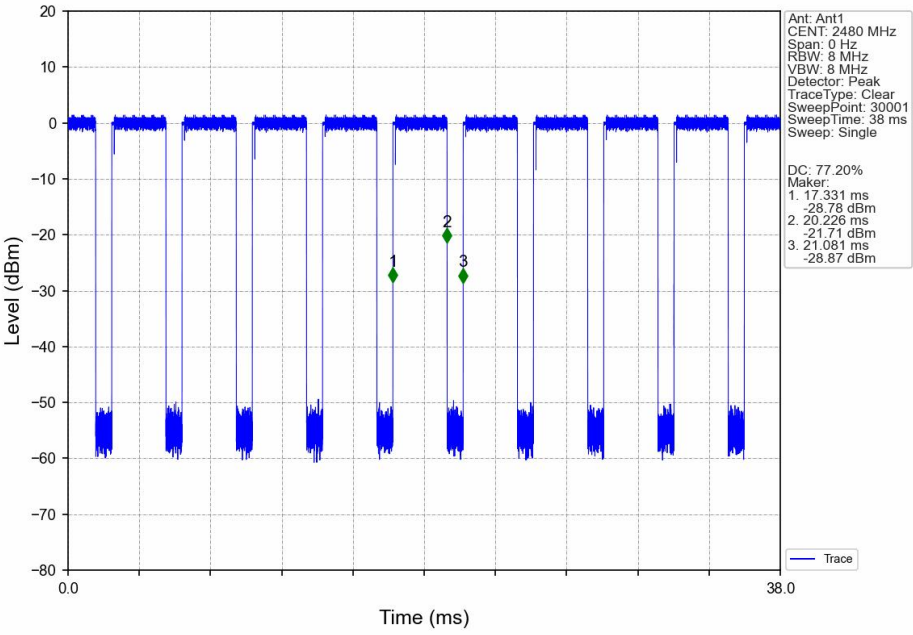
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

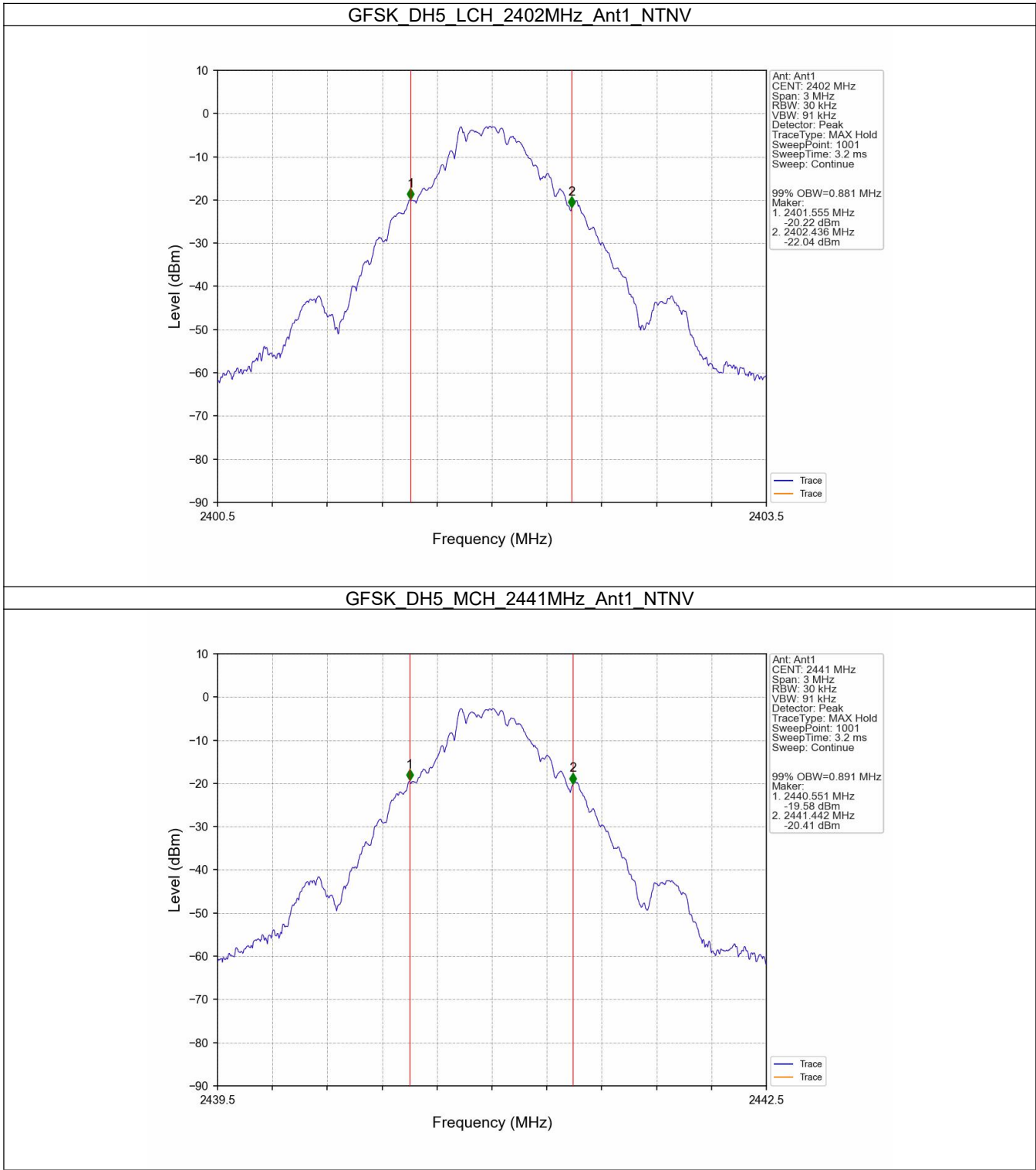
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.881	/	Pass
		2441	DH5	1	0.891	/	Pass
		2480	DH5	1	0.904	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.178	/	Pass
		2441	2DH5	1	1.184	/	Pass
		2480	2DH5	1	1.189	/	Pass
8DPSK	SISO	2402	3DH5	1	1.186	/	Pass
		2441	3DH5	1	1.191	/	Pass
		2480	3DH5	1	1.195	/	Pass

2.1.2 20dB BW

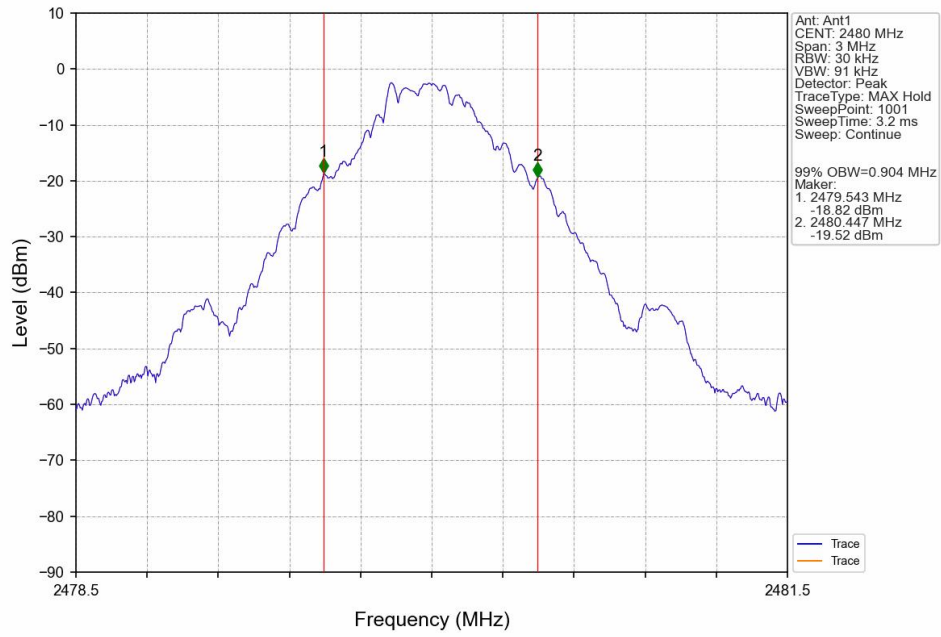
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.987	/	Pass
		2441	DH5	1	1.026	/	Pass
		2480	DH5	1	1.030	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.292	/	Pass
		2441	2DH5	1	1.320	/	Pass
		2480	2DH5	1	1.320	/	Pass
8DPSK	SISO	2402	3DH5	1	1.310	/	Pass
		2441	3DH5	1	1.308	/	Pass
		2480	3DH5	1	1.308	/	Pass

2.2 Test Graph

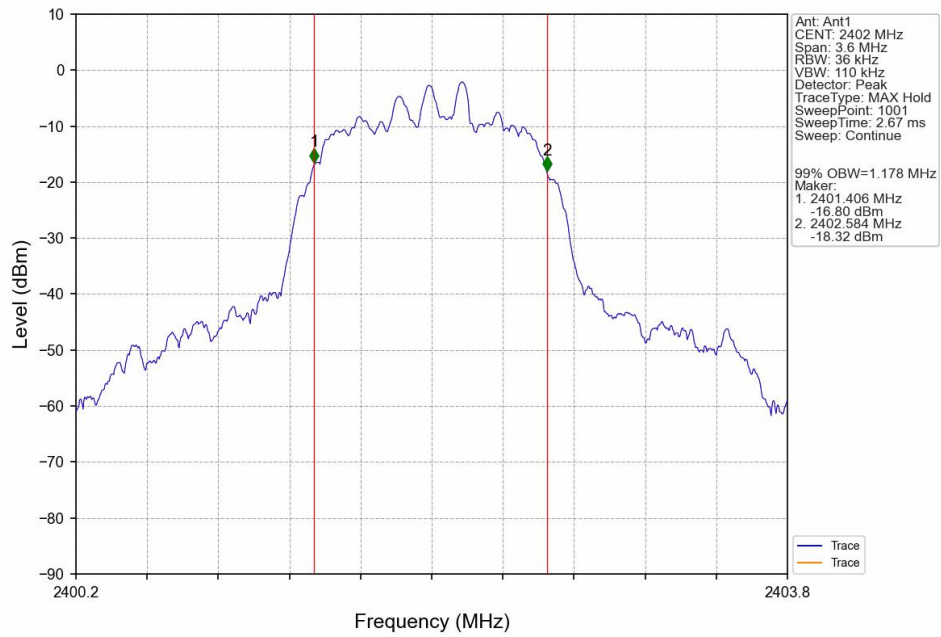
2.2.1 OBW



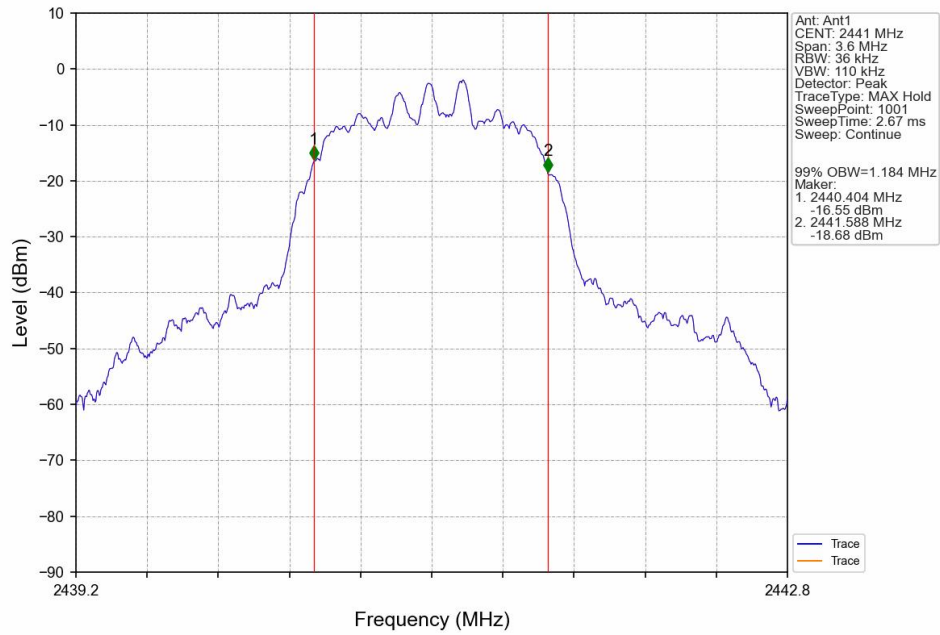
GFSK DH5_HCH_2480MHz_Ant1_NTNV



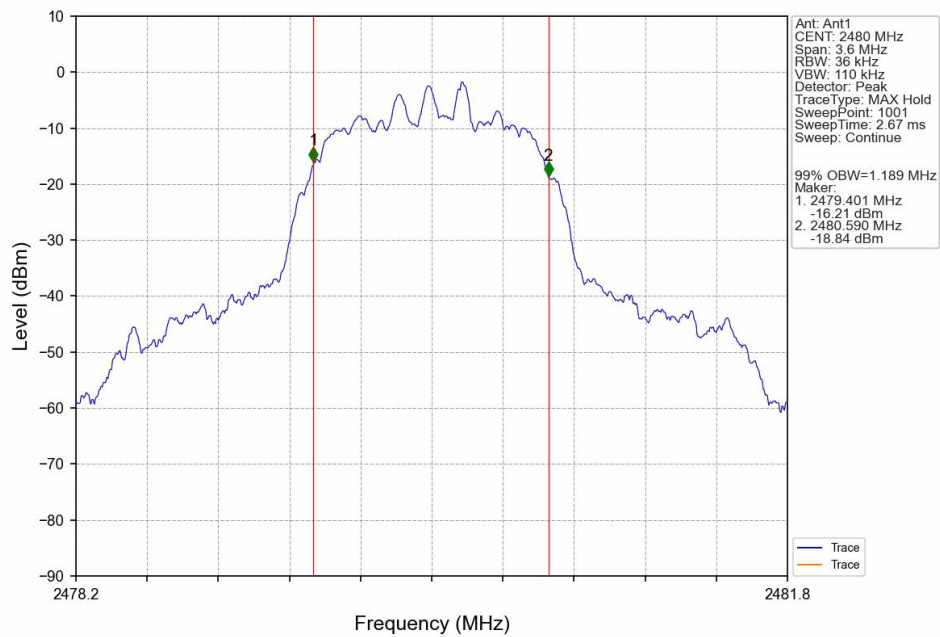
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



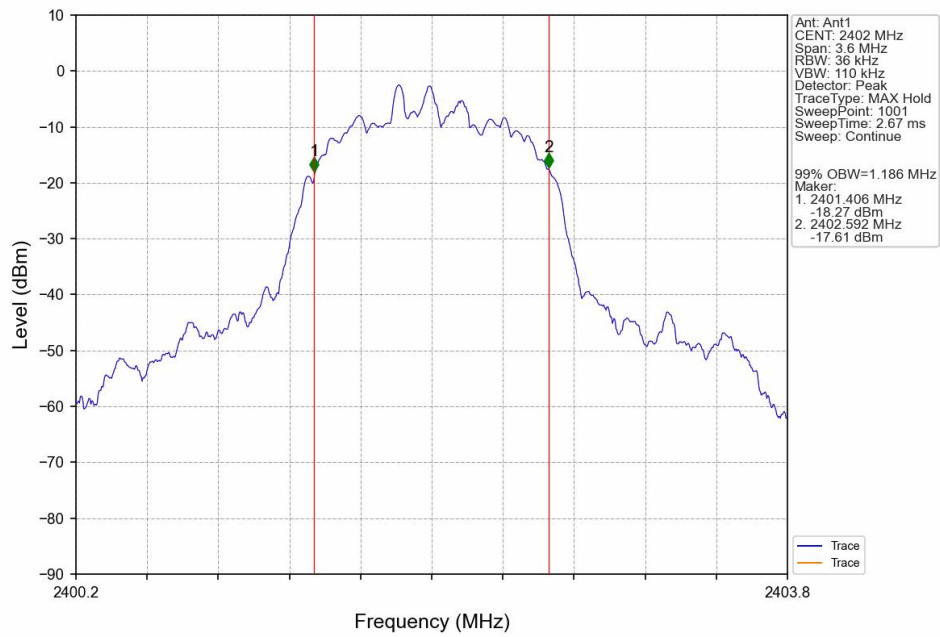
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



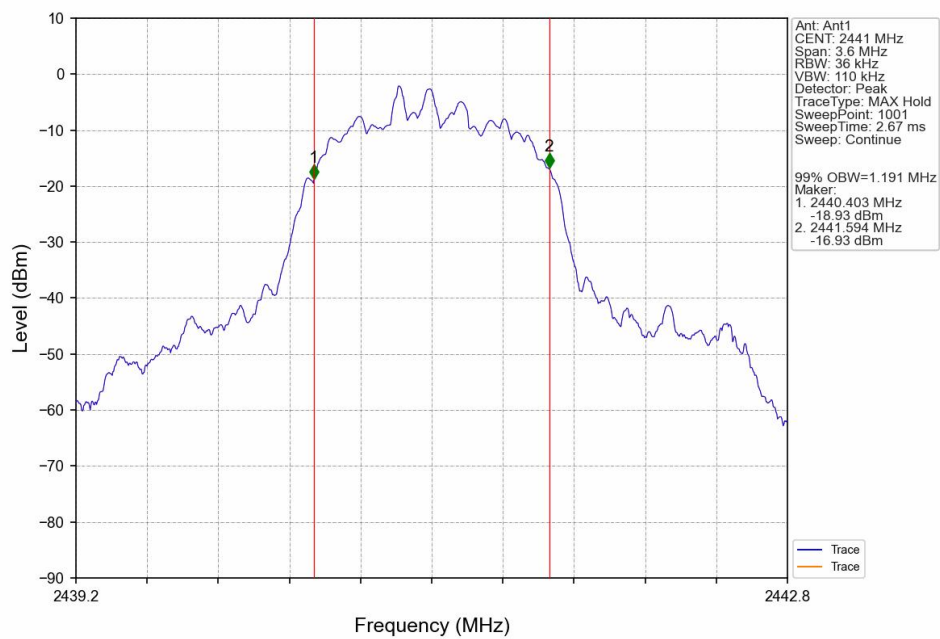
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



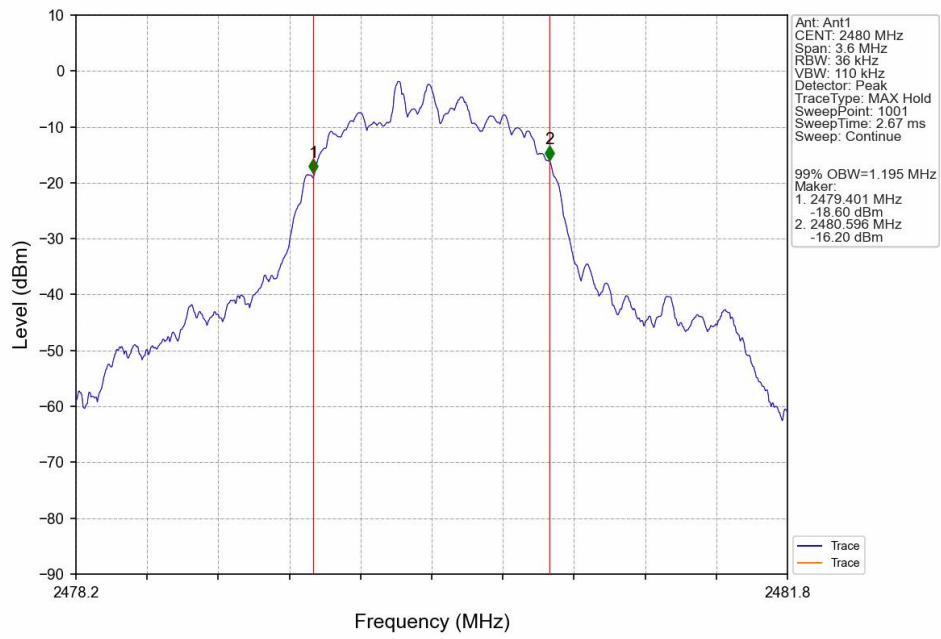
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



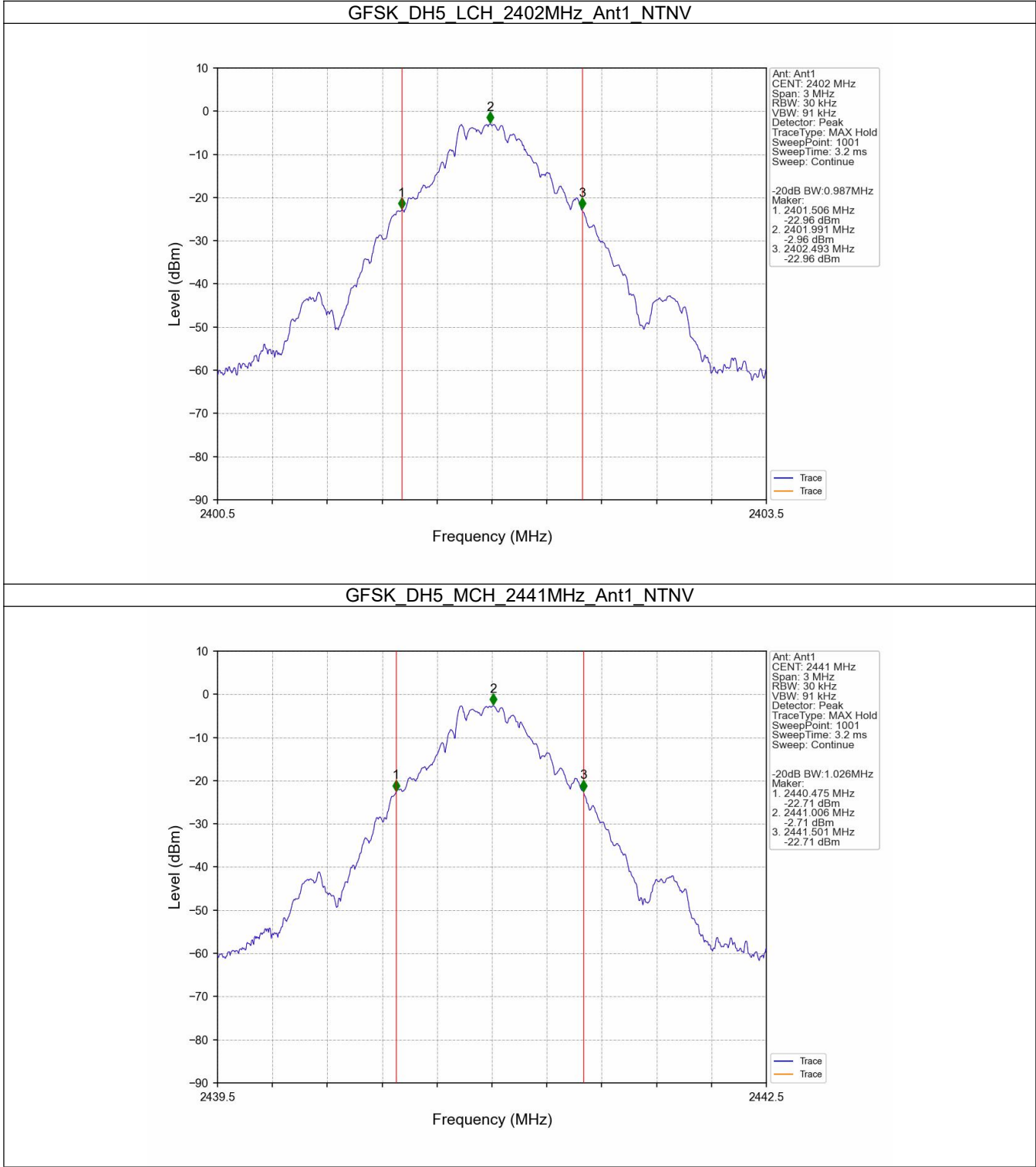
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



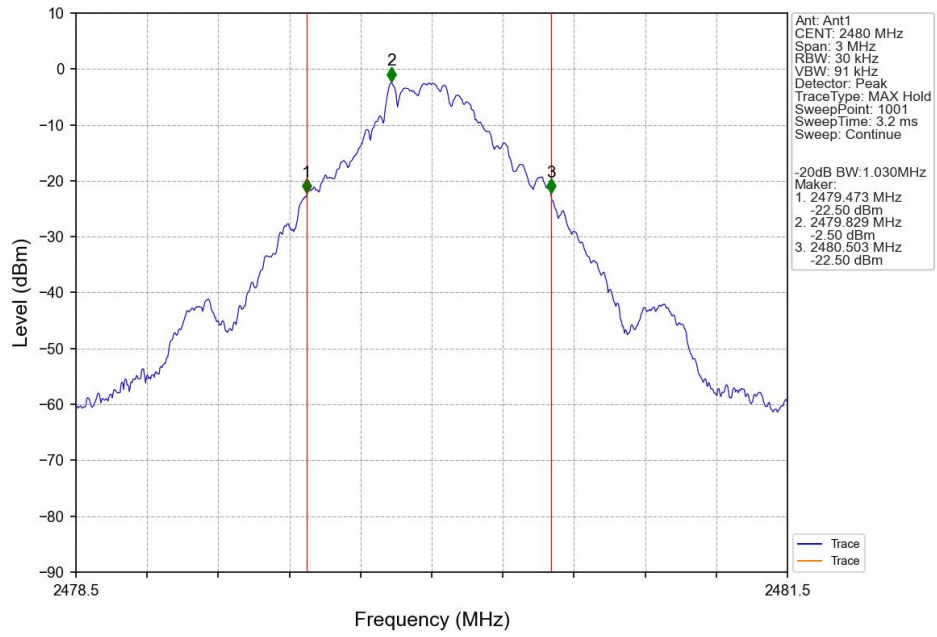
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



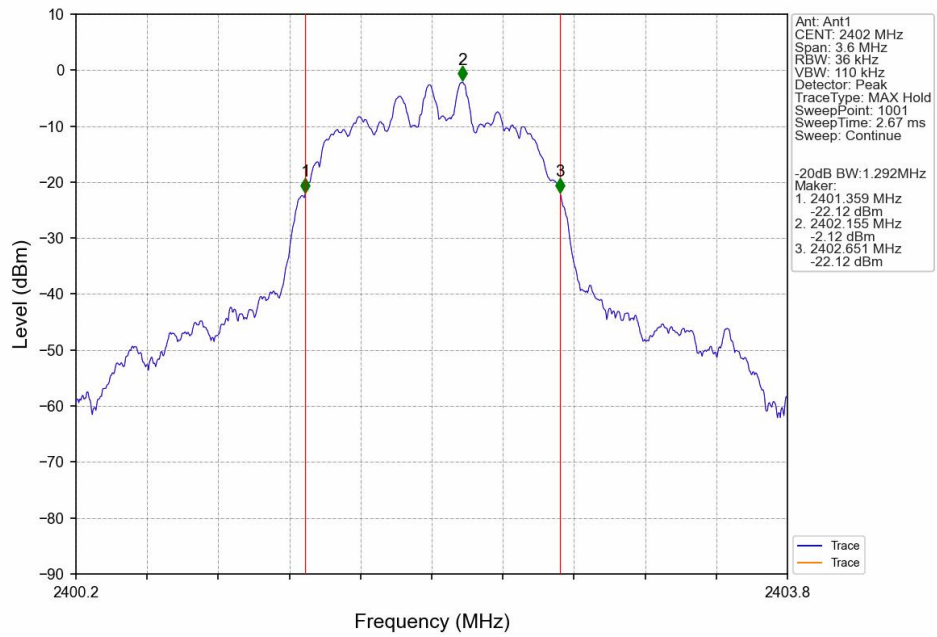
2.2.2 20dB BW



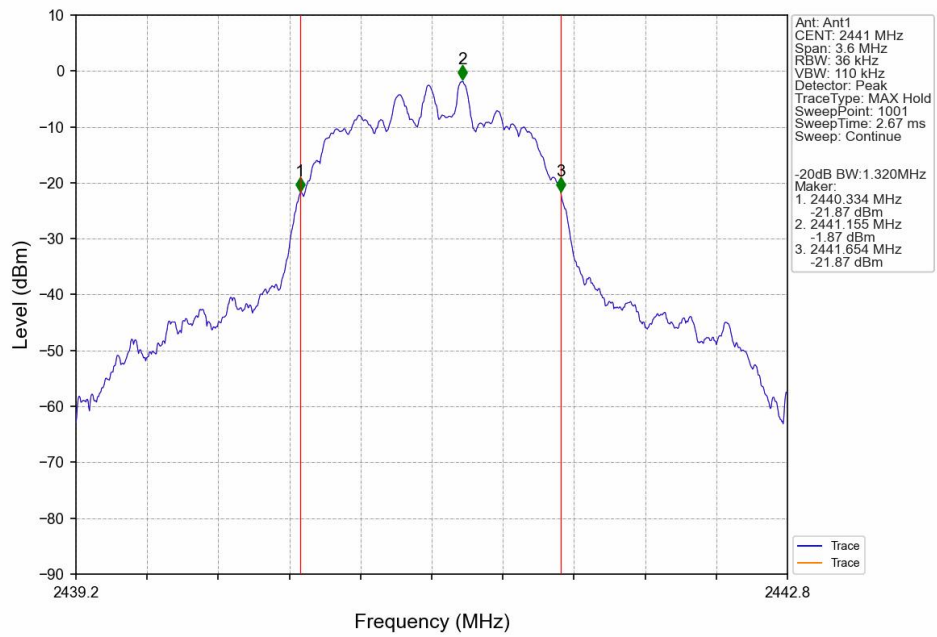
GFSK DH5_HCH_2480MHz_Ant1_NTNV



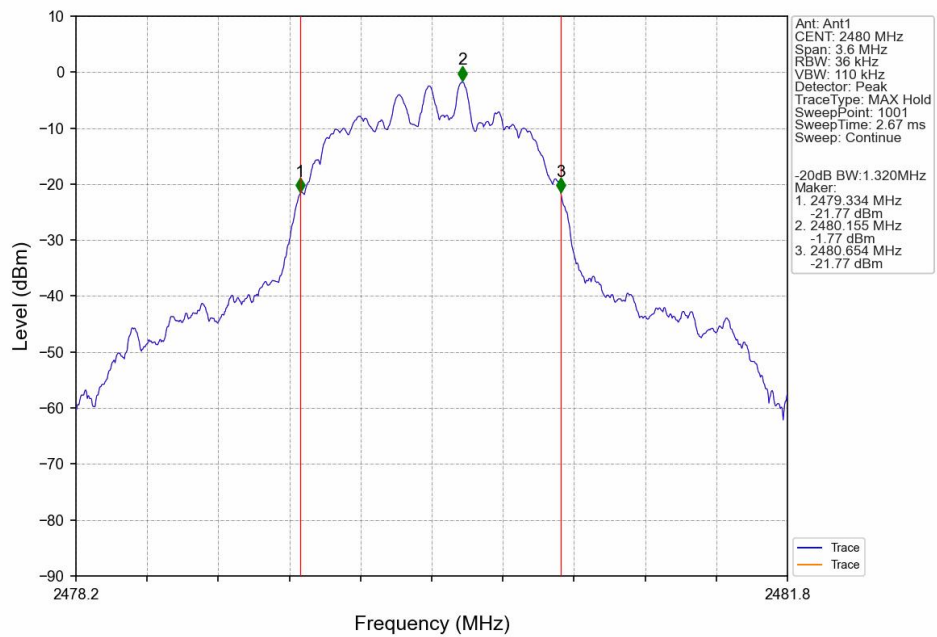
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



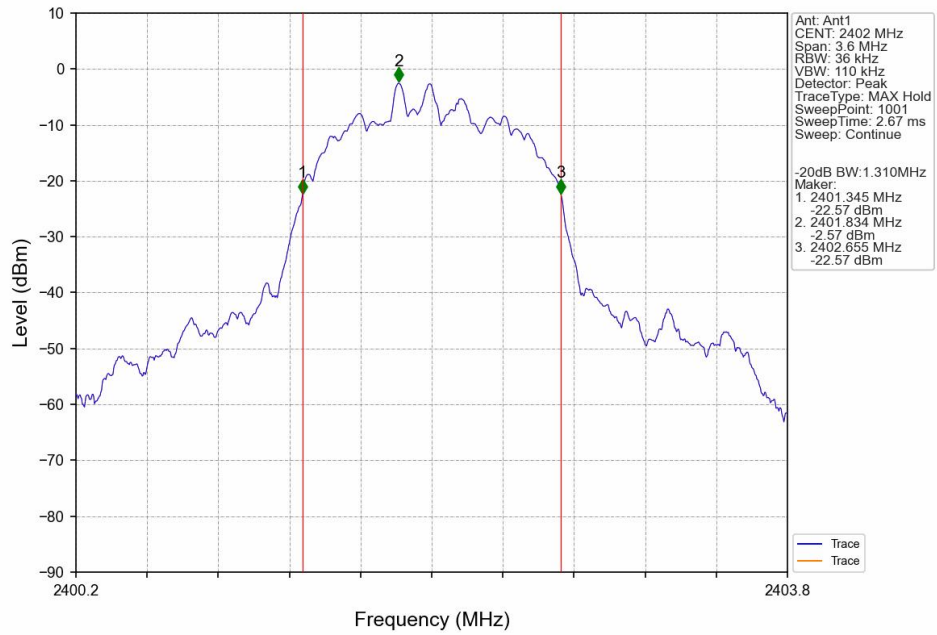
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



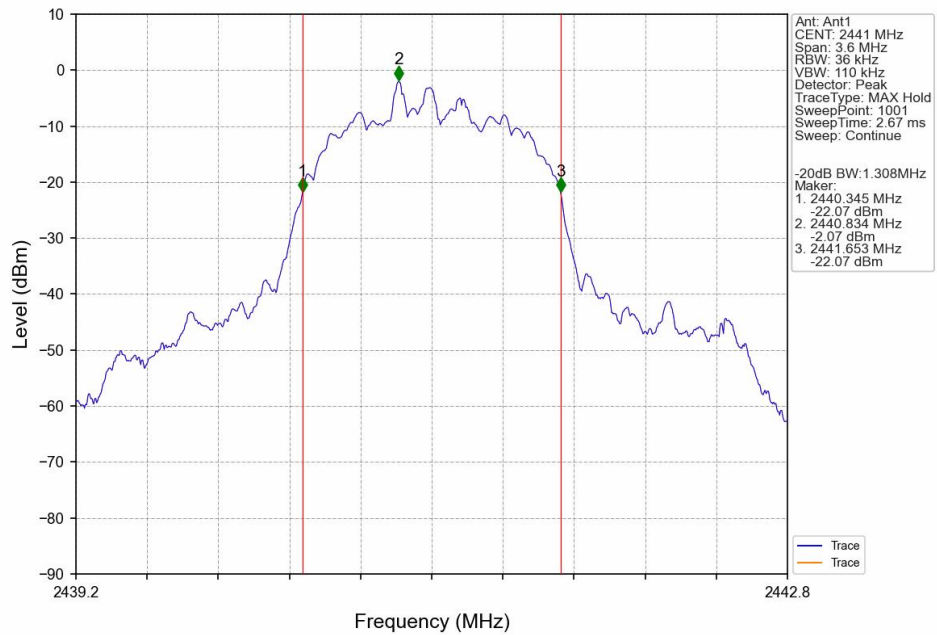
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



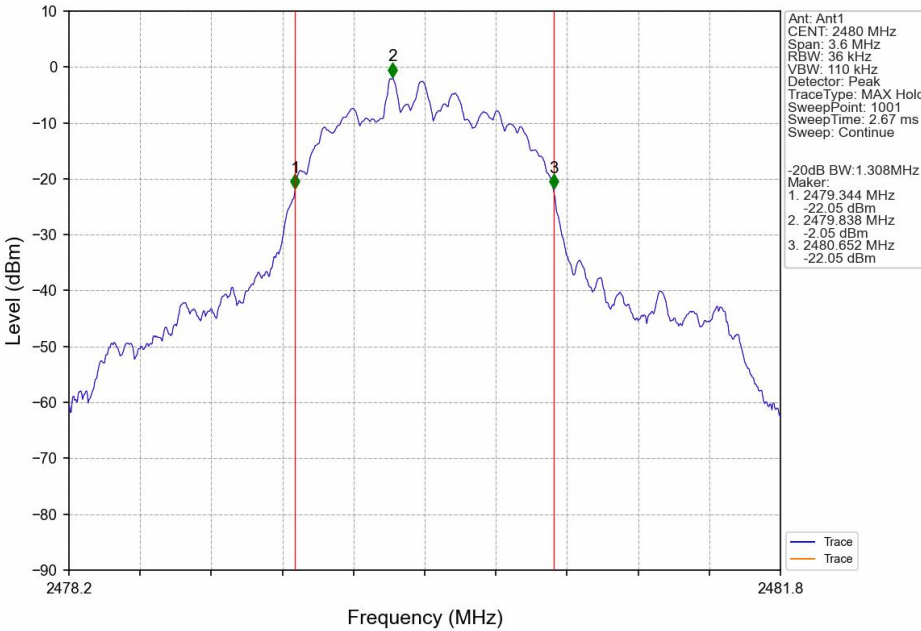
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

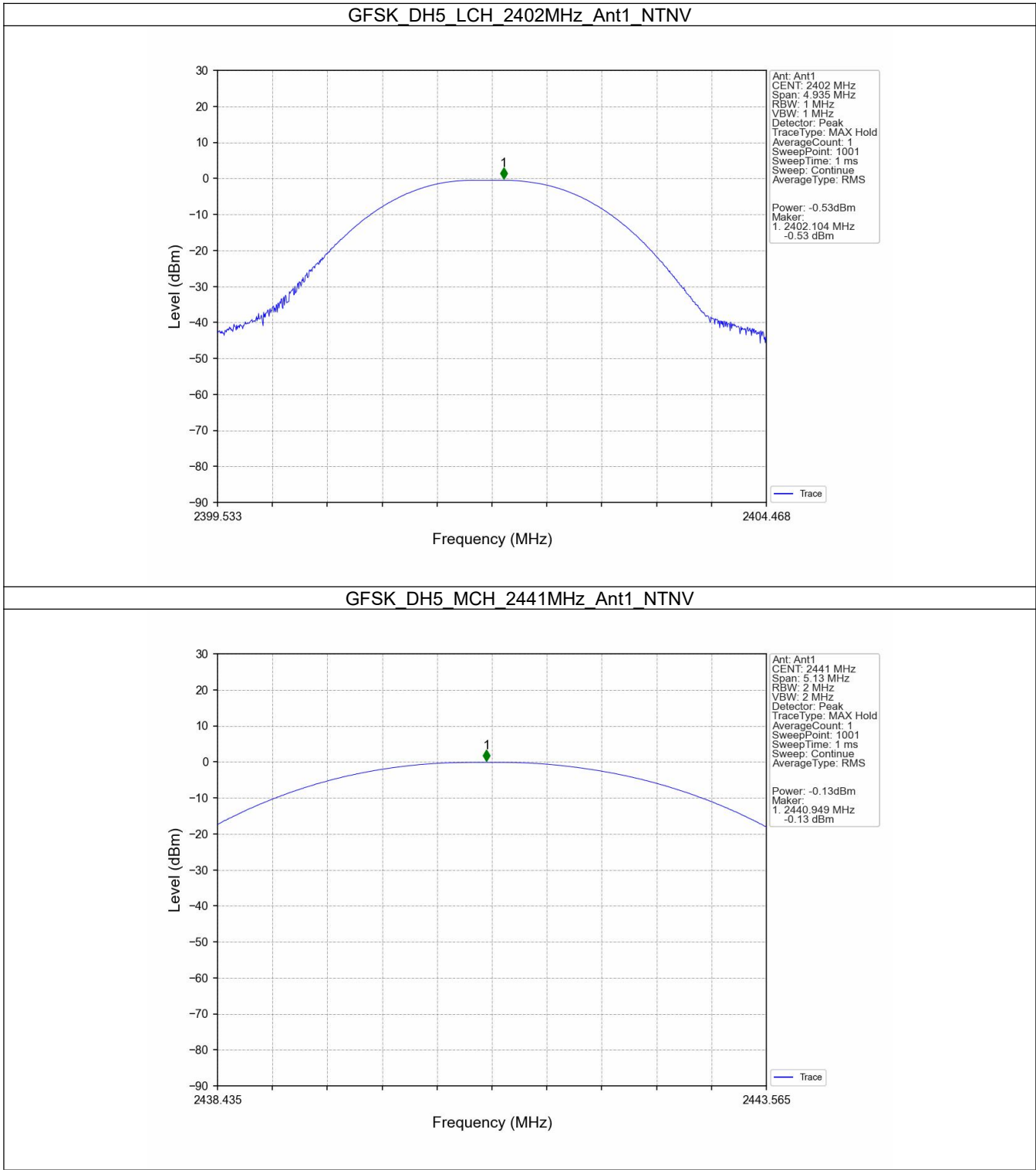
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-0.53	<=30	Pass
		2441	DH5	-0.13	<=20.97	Pass
		2480	DH5	0.06	<=20.97	Pass
Pi/4DQPSK	SISO	2402	2DH5	0.35	<=20.97	Pass
		2441	2DH5	0.65	<=20.97	Pass
		2480	2DH5	0.77	<=20.97	Pass
8DPSK	SISO	2402	3DH5	0.78	<=20.97	Pass
		2441	3DH5	1.08	<=20.97	Pass
		2480	3DH5	1.28	<=20.97	Pass

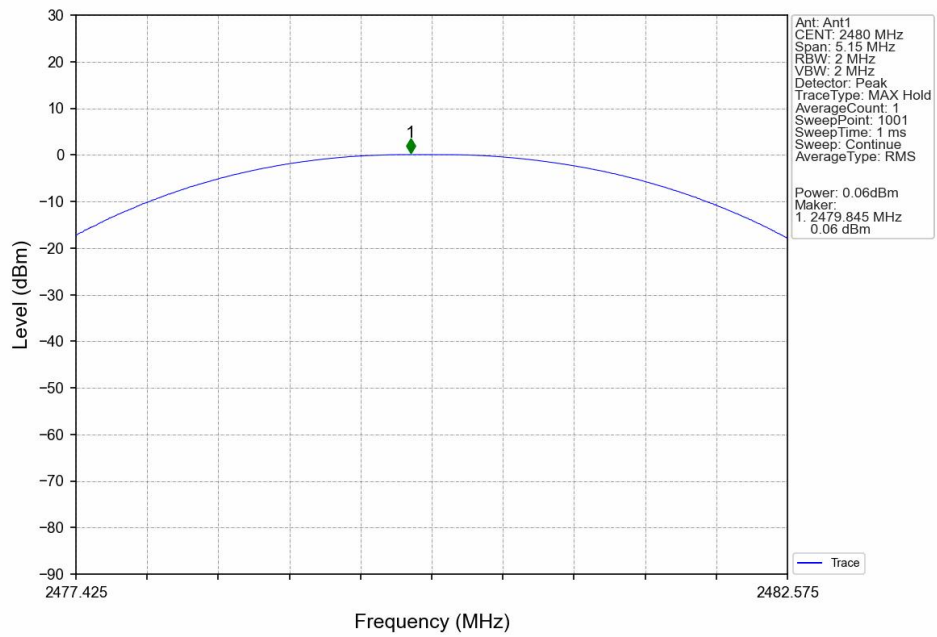
Note1: Antenna Gain: Ant1: 2.64dBi;

3.2 Test Graph

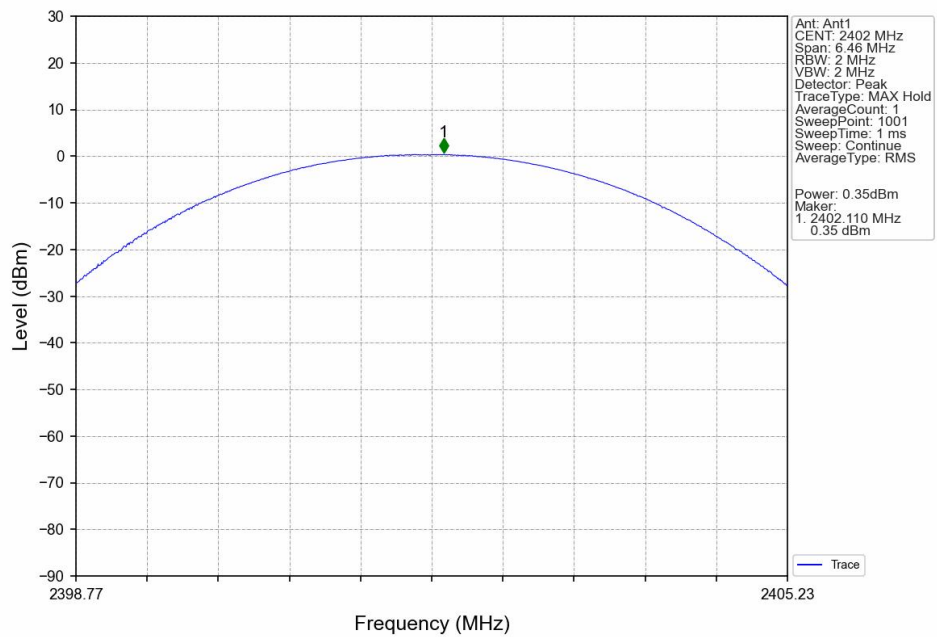
3.2.1 Power



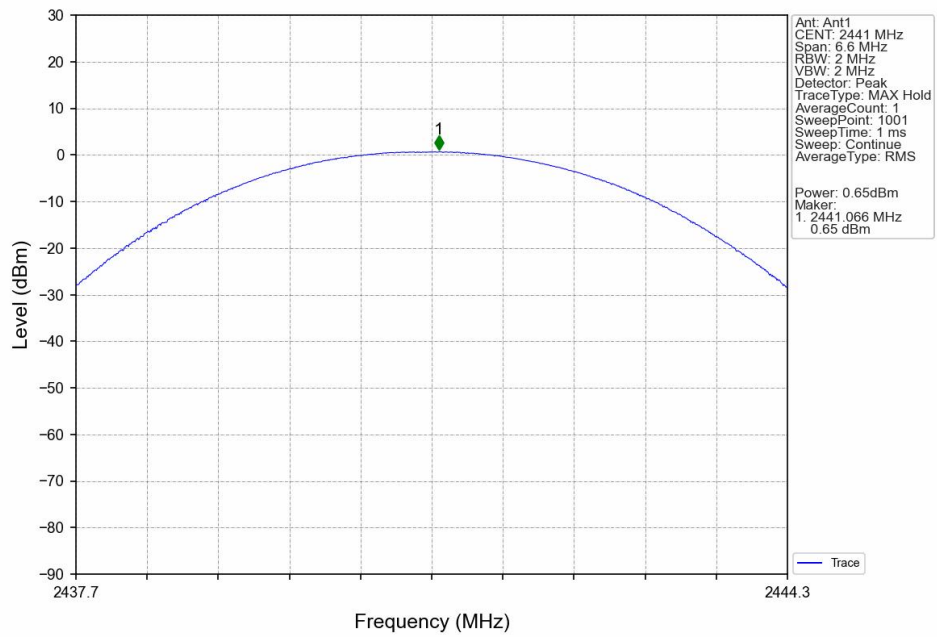
GFSK DH5 HCH 2480MHz Ant1_NTNV



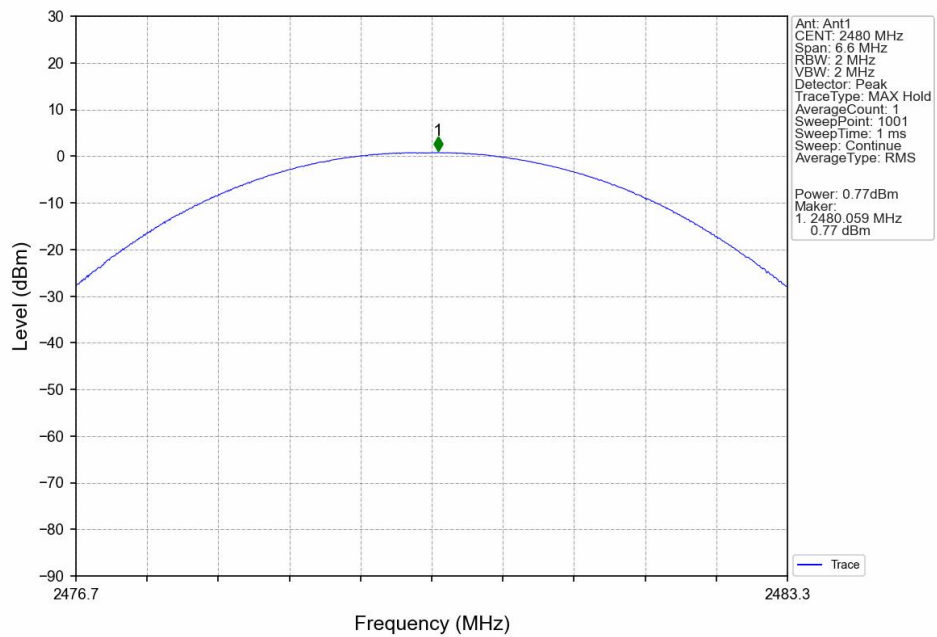
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



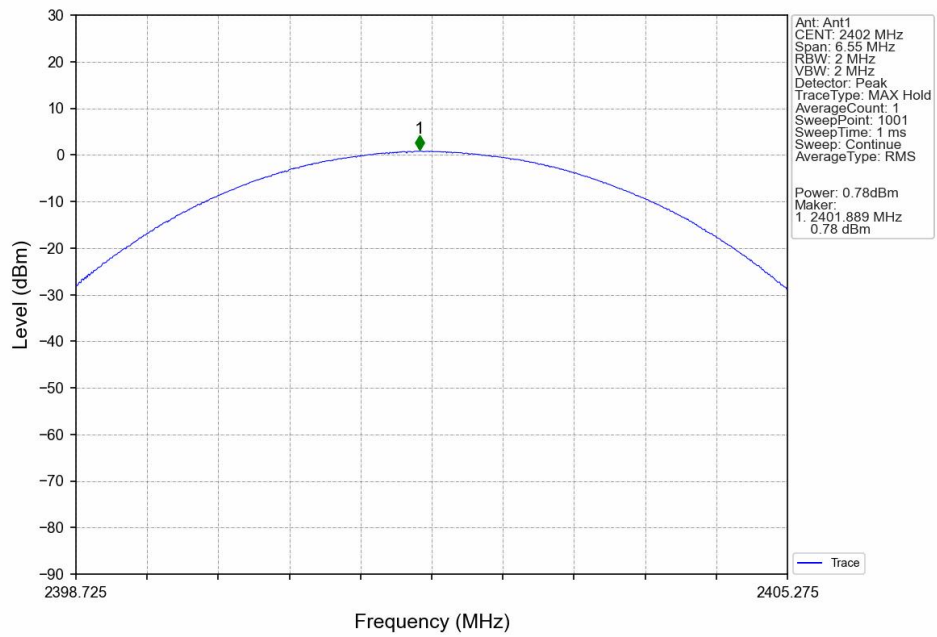
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



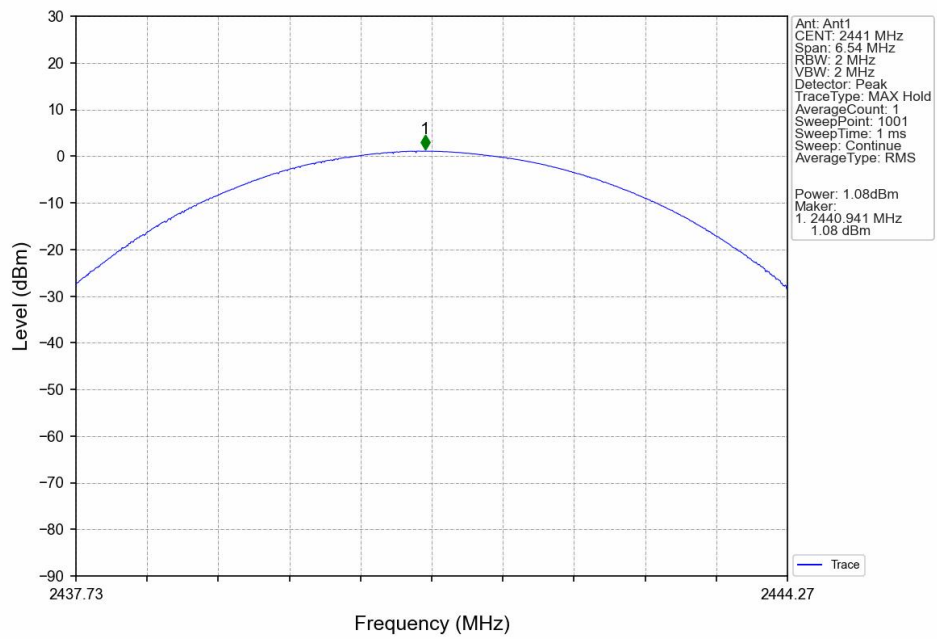
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



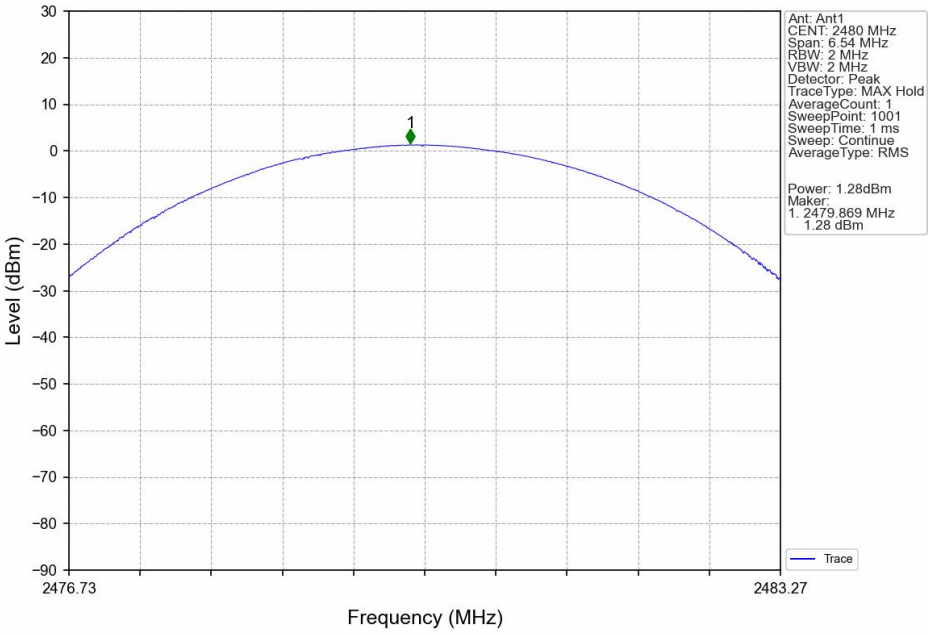
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



4. Carrier Frequency Separation

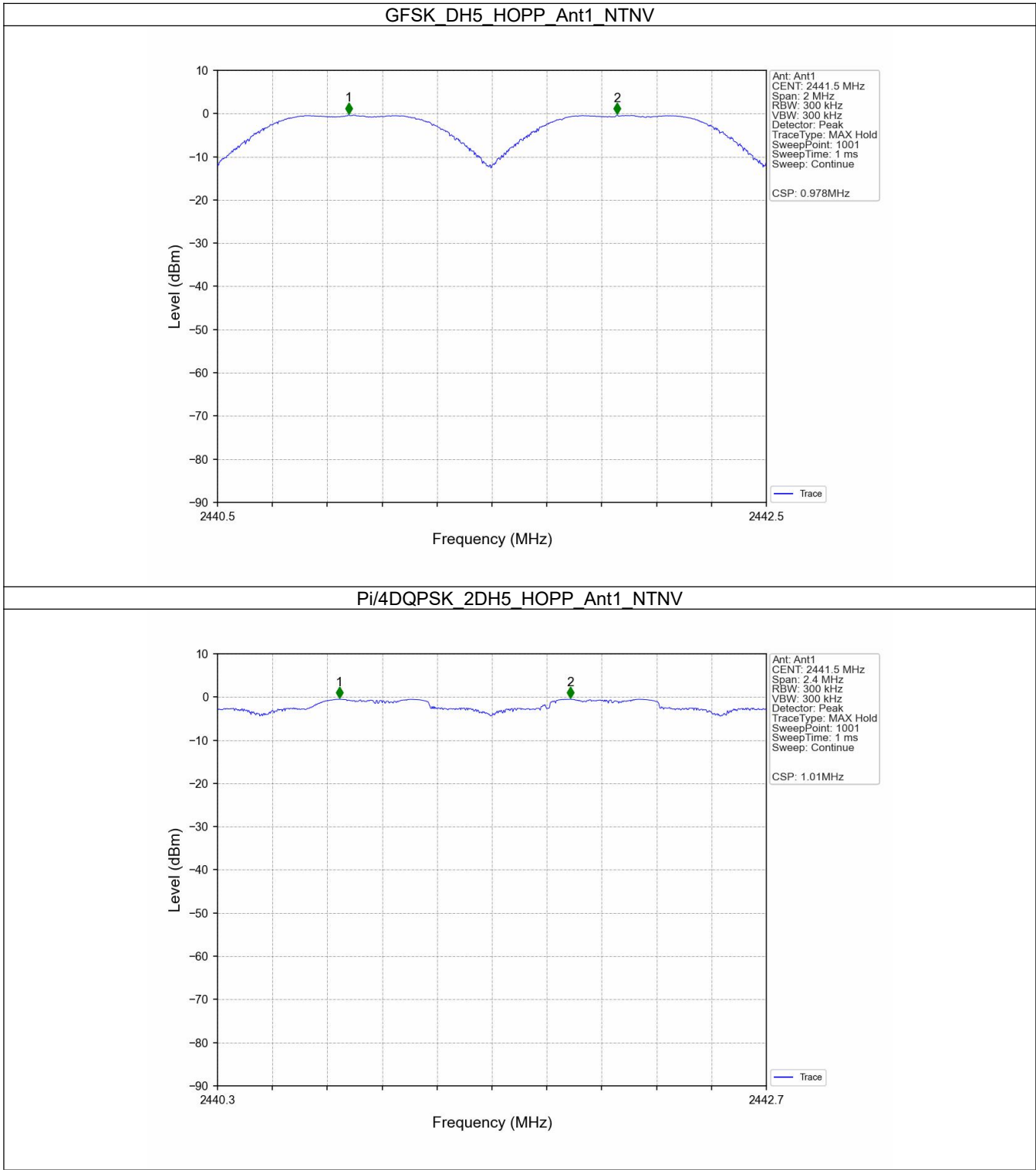
4.1 Test Result

4.1.1 Ant1

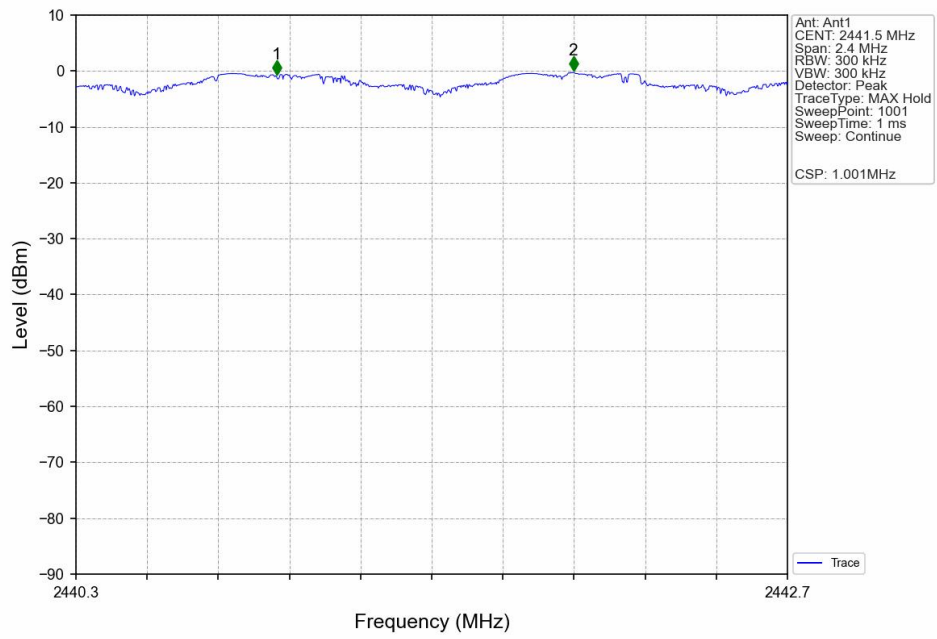
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	0.978	1.030	≥ 0.687	Pass
PI/4DQPSK	SISO	HOPP	2DH5	1.010	1.320	≥ 0.88	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.310	≥ 0.873	Pass

4.2 Test Graph

4.2.1 Ant1



8DPSK_3DH5_HOPP_Ant1_NTNV



5. Number of Hopping Frequencies

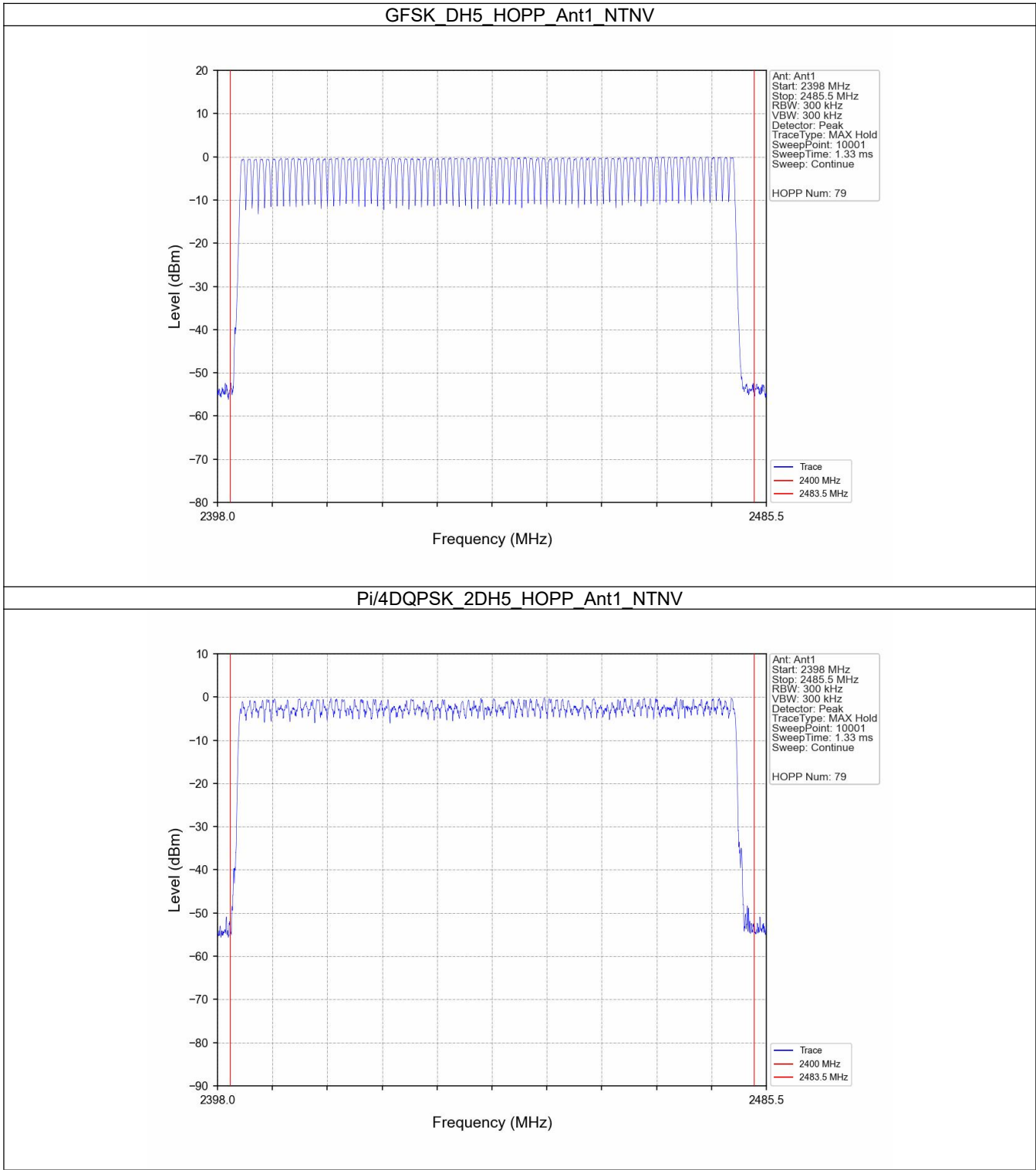
5.1 Test Result

5.1.1 HoppNum

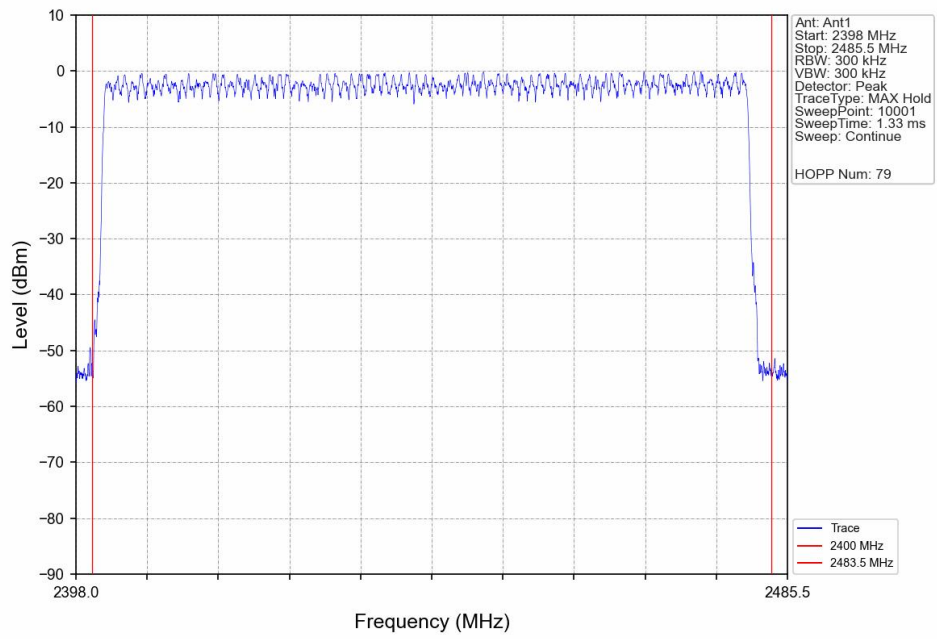
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

5.2 Test Graph

5.2.1 HoppNum



8DPSK_3DH5_HOPP_Ant1_NTNV



6. Time of Occupancy (Dwell Time)

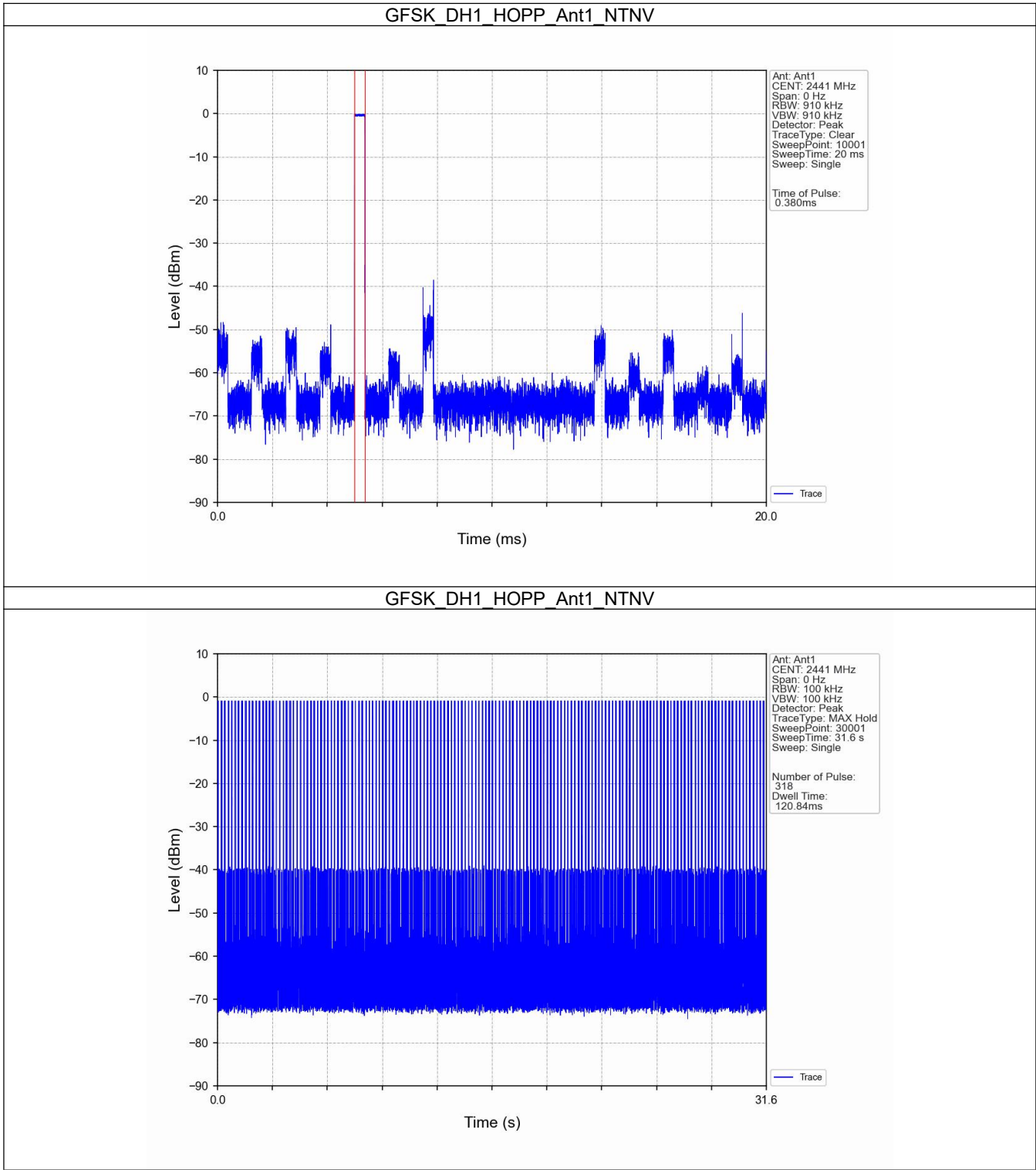
6.1 Test Result

6.1.1 Ant1

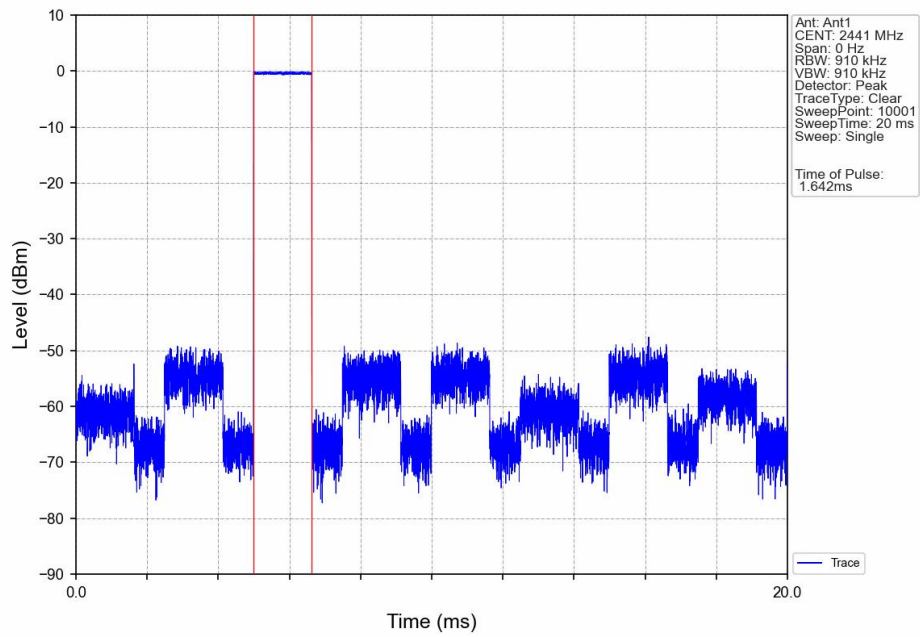
Ant1									
Mode	Tx Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.380	31.600	318	120.840	<=400	Pass
			DH3	1.642	31.600	174	285.708	<=400	Pass
			DH5	2.890	31.600	116	335.240	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.396	31.600	319	126.324	<=400	Pass
			2DH3	1.642	31.600	161	264.362	<=400	Pass
			2DH5	2.890	31.600	107	309.230	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.396	31.600	320	126.720	<=400	Pass
			3DH3	1.646	31.600	160	263.360	<=400	Pass
			3DH5	2.892	31.600	111	321.012	<=400	Pass

6.2 Test Graph

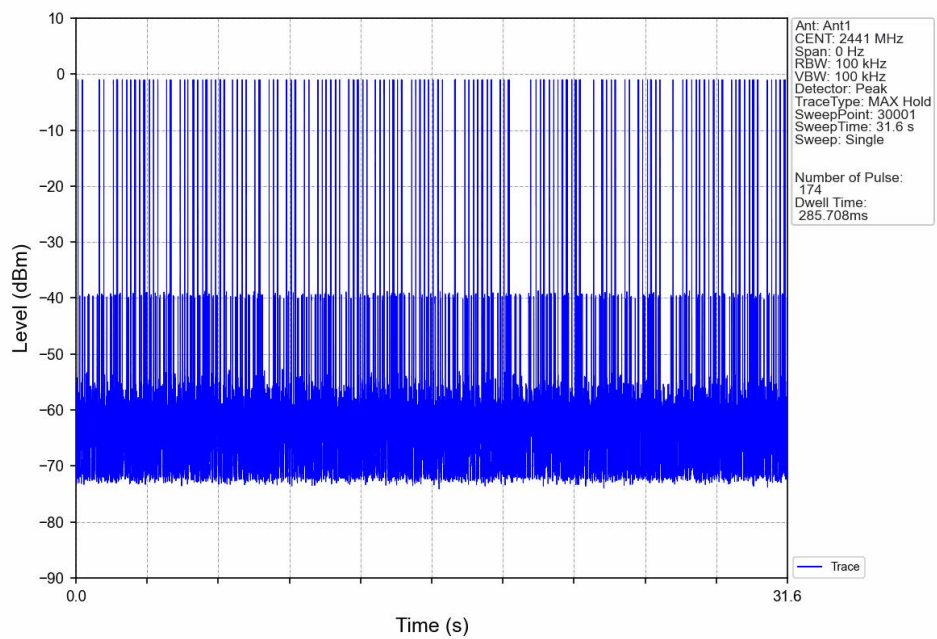
6.2.1 Ant1



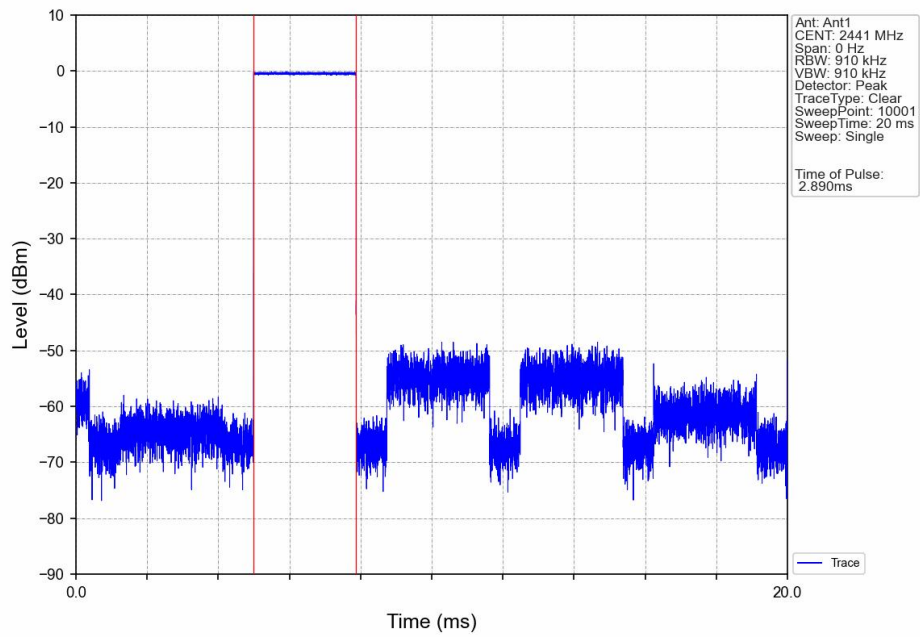
GFSK_DH3_HOPP_Ant1_NTNV



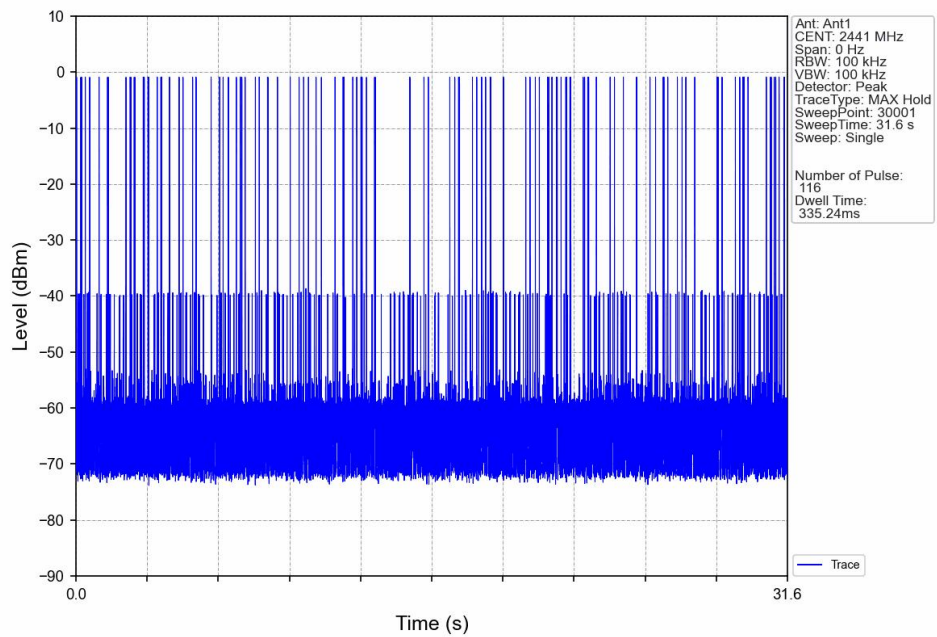
GFSK_DH3_HOPP_Ant1_NTNV



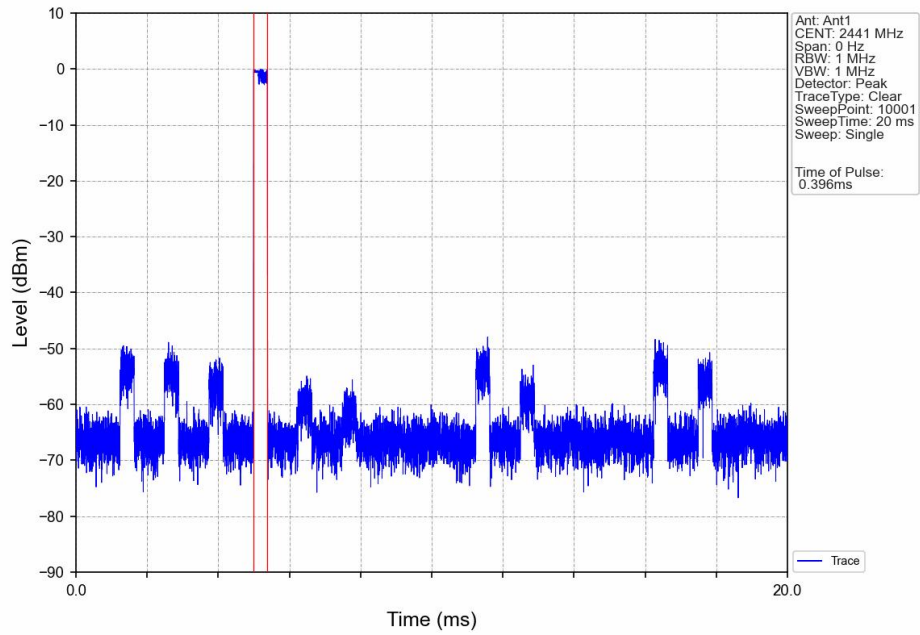
GFSK_DH5_HOPP_Ant1_NTNV



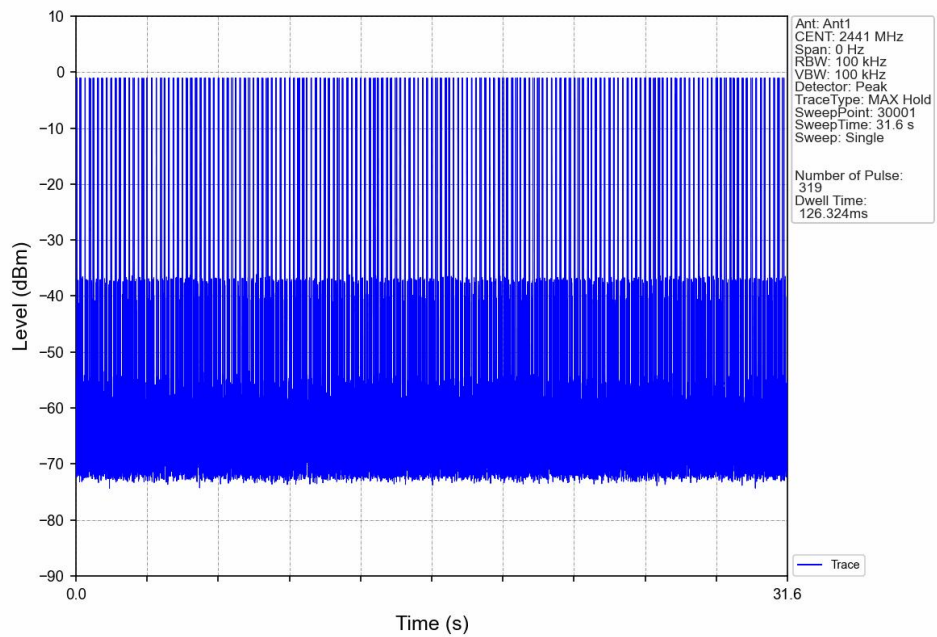
GFSK_DH5_HOPP_Ant1_NTNV



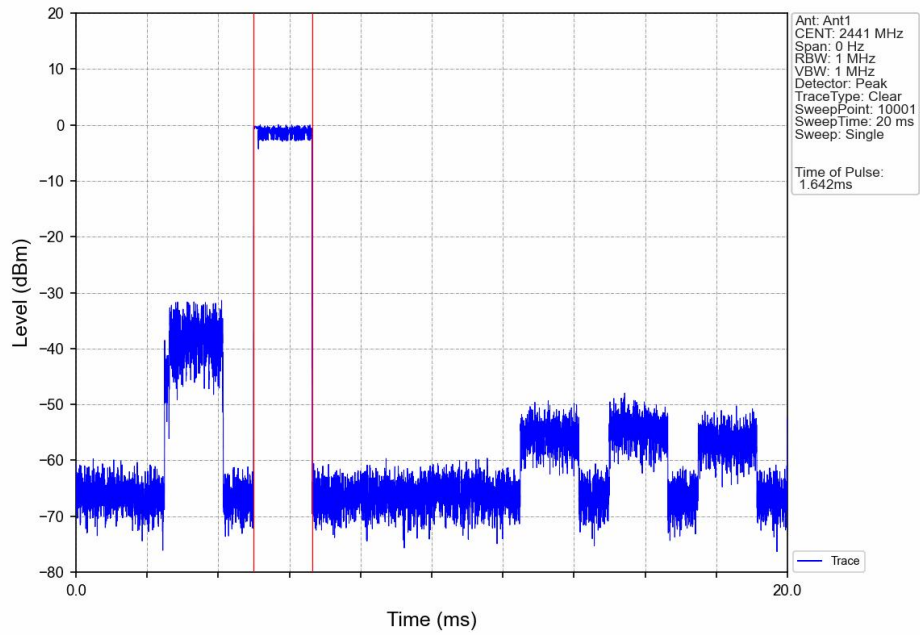
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



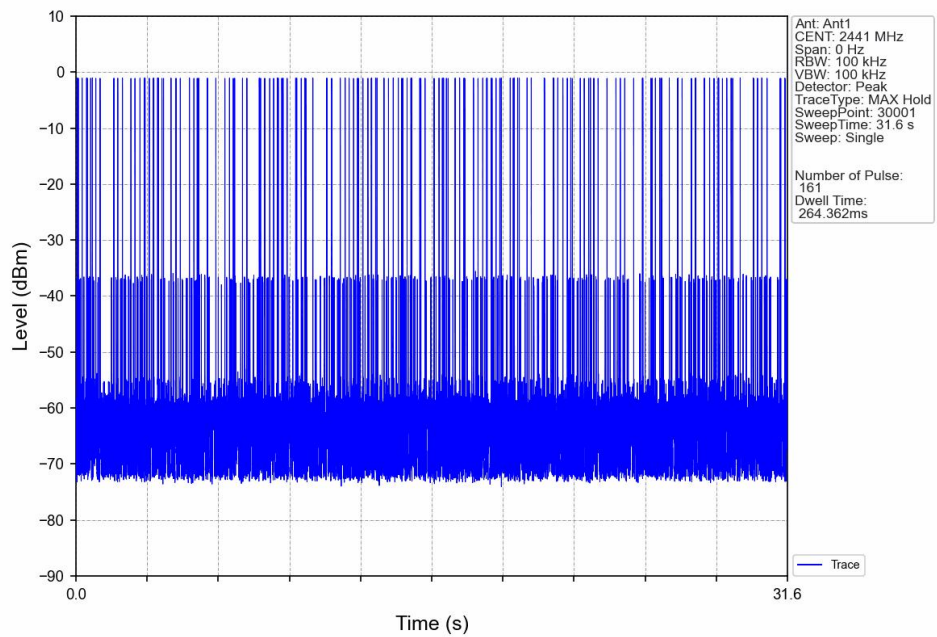
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



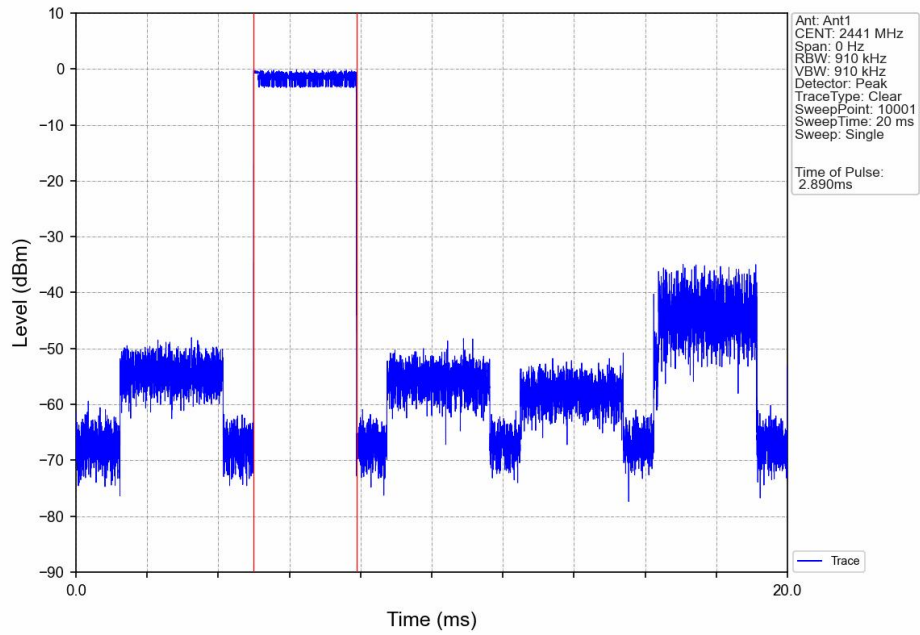
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

