ANNEX D TEST DATA

For

Project No.:	8328EU121704W
Client:	Sudio AB
Product Name:	Bluetooth earphone
Model No.:	Sudio A3 Pro
FCC ID:	2AF9P-SUDIOAN3PRO
Technology:	Bluetooth BDR&EDR
Test Engineer:	Mikey zhu
Test Date:	2025-03-27

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

Left Ear

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	2.912	3.750	77.65	1.10	0.03
		2441	DH5	2.910	3.749	77.62	1.10	0.03
		2480	DH5	2.910	3.749	77.62	1.10	0.03
π/4DQPSK	SISO	2402	2DH5	2.917	3.750	77.79	1.09	0.04
		2441	2DH5	2.917	3.749	77.81	1.09	0.03
		2480	2DH5	2.918	3.750	77.81	1.09	0.01
8DPSK	SISO	2402	3DH5	2.918	3.749	77.83	1.09	0.01
		2441	3DH5	2.918	3.751	77.79	1.09	0.03
		2480	3DH5	2.919	3.751	77.82	1.09	0.03

Right Ear

1. Duty Cycle

1.1 Test Result

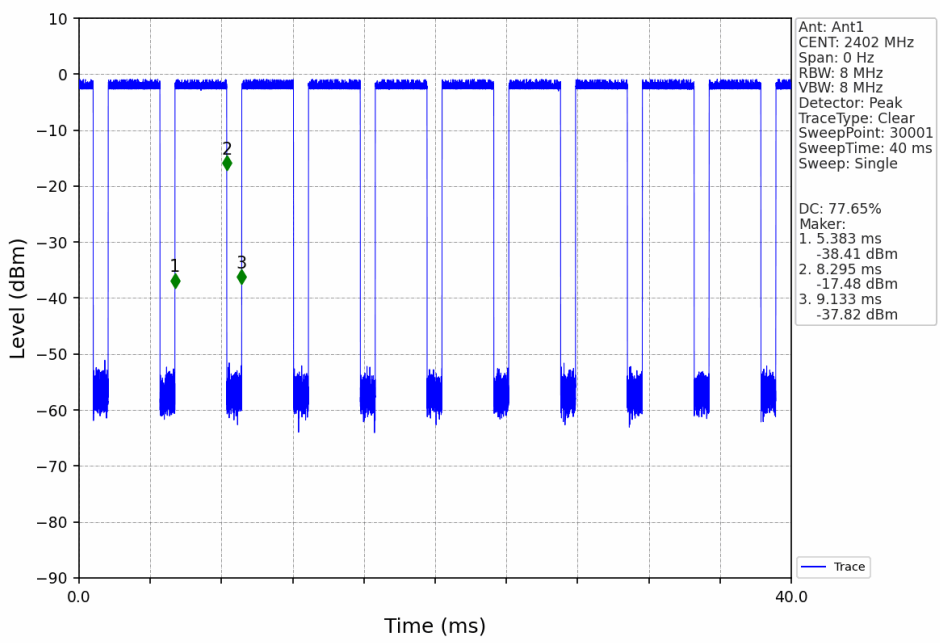
1.1.1 Ant1

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	2.910	3.749	77.62	1.10	0.03
		2441	DH5	2.911	3.749	77.65	1.10	0.03
		2480	DH5	2.911	3.749	77.65	1.10	0.04
π/4-DQPSK	SISO	2402	2DH5	2.918	3.751	77.79	1.09	0.04
		2441	2DH5	2.918	3.750	77.81	1.09	0.01
		2480	2DH5	2.917	3.751	77.77	1.09	0.03
8DPSK	SISO	2402	3DH5	2.918	3.750	77.81	1.09	0.03
		2441	3DH5	2.917	3.749	77.81	1.09	0.03
		2480	3DH5	2.918	3.750	77.81	1.09	0.04

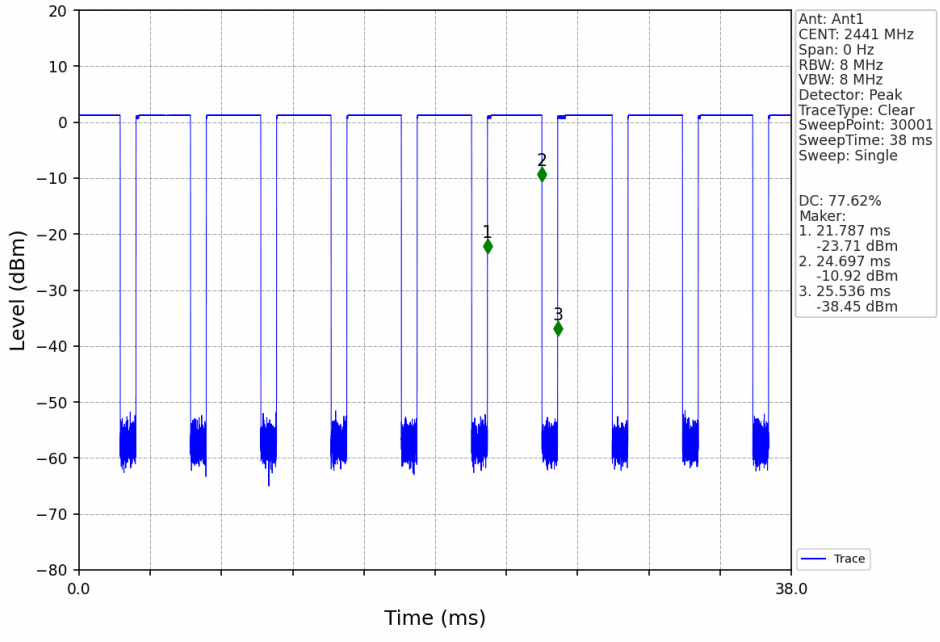
1.2 Test Graph(Left Ear)

1.2.1 Ant1

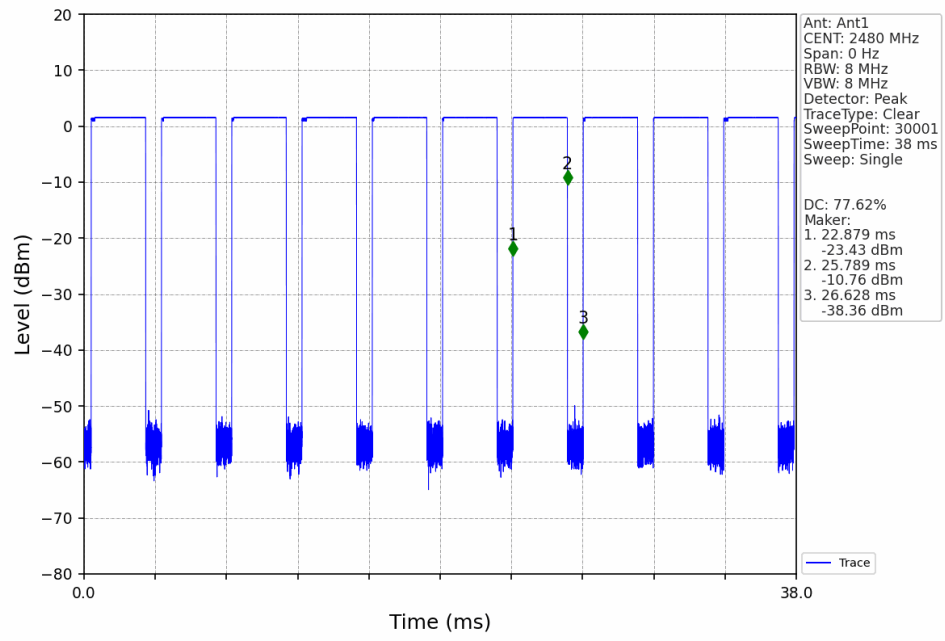
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



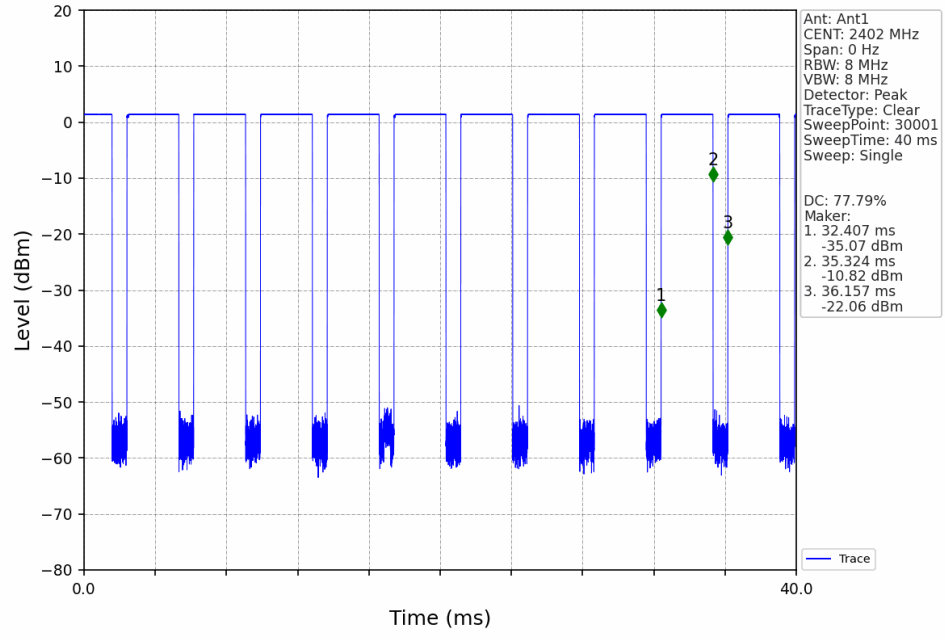
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



π/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



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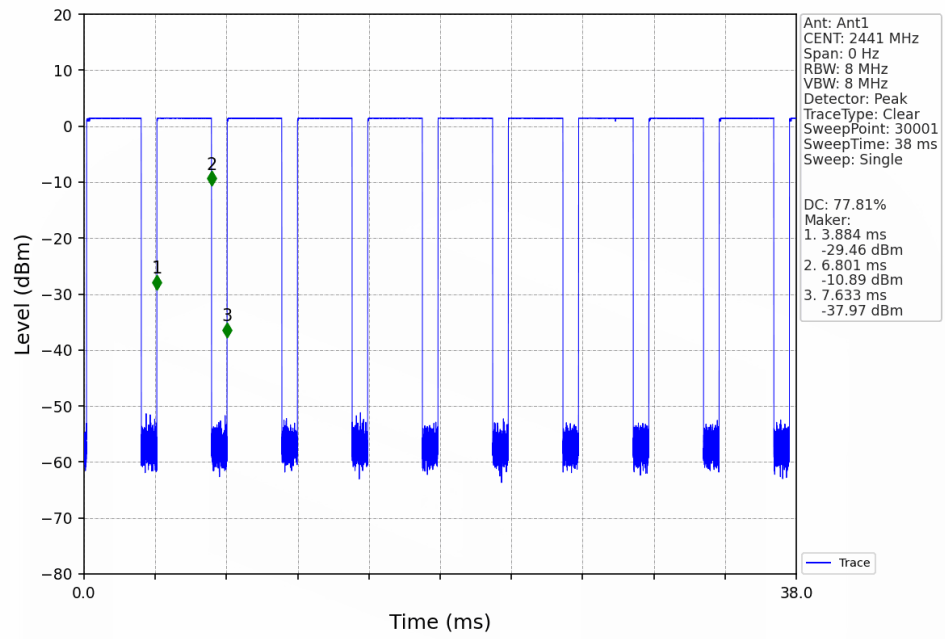

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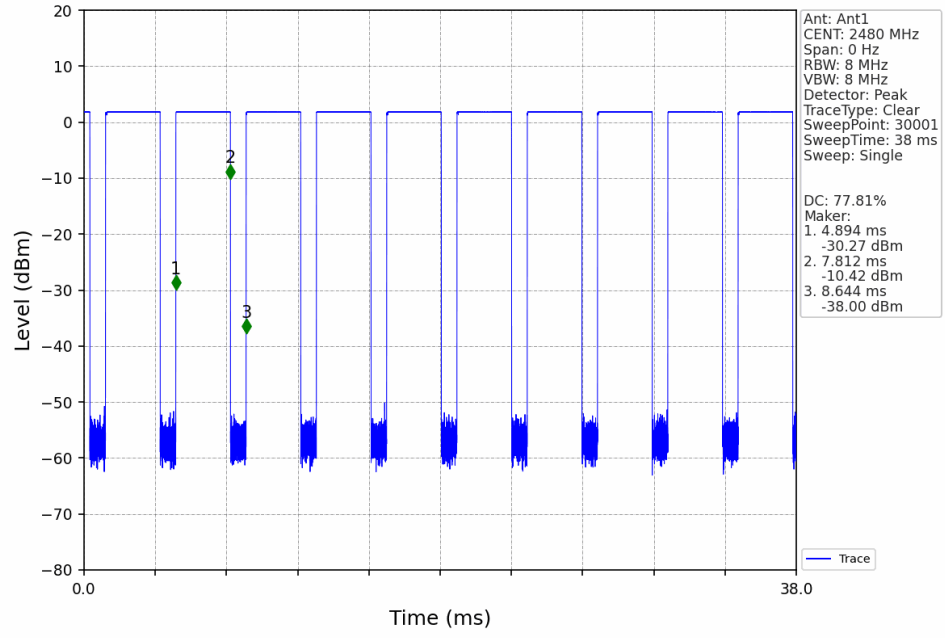
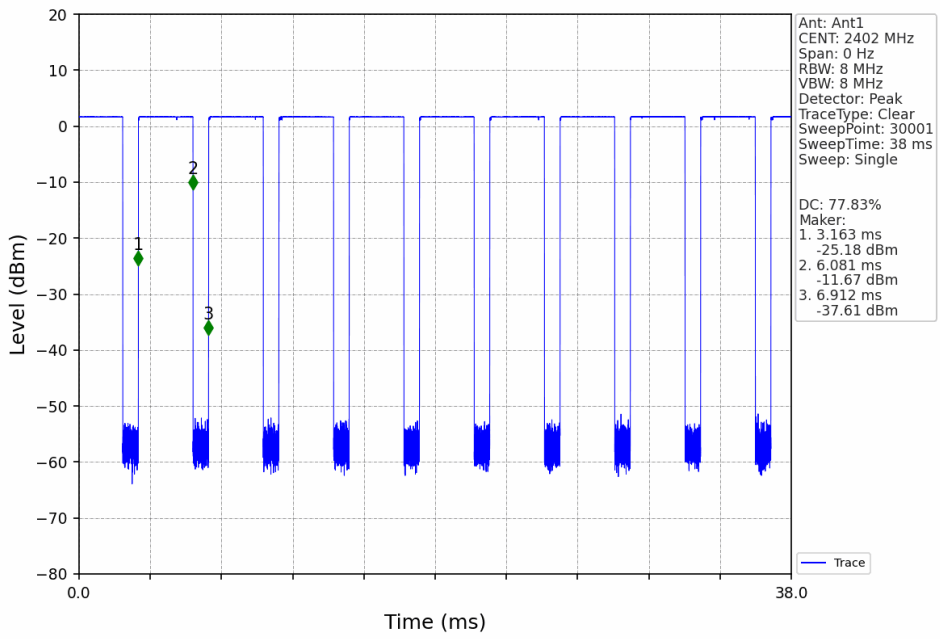
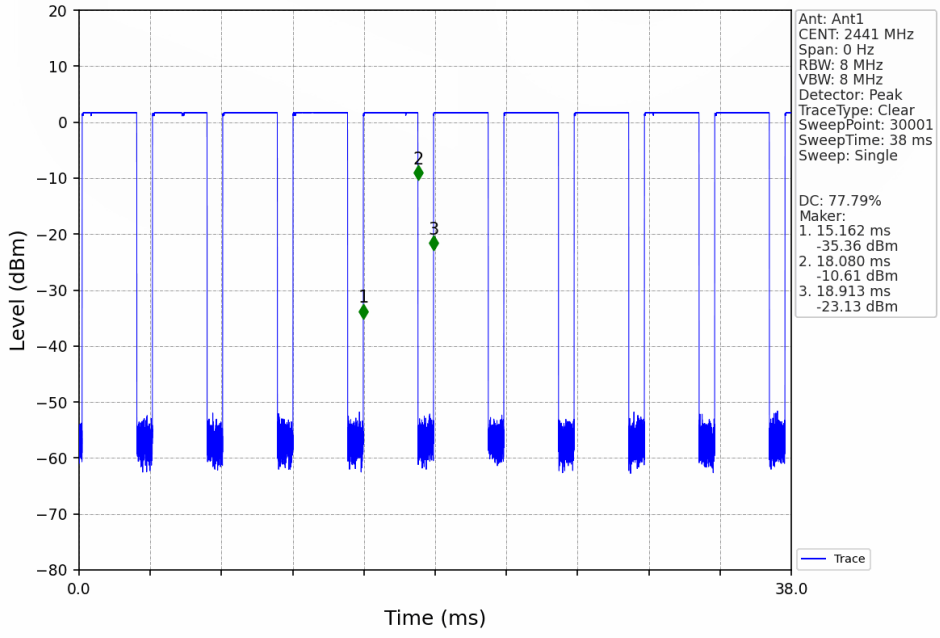


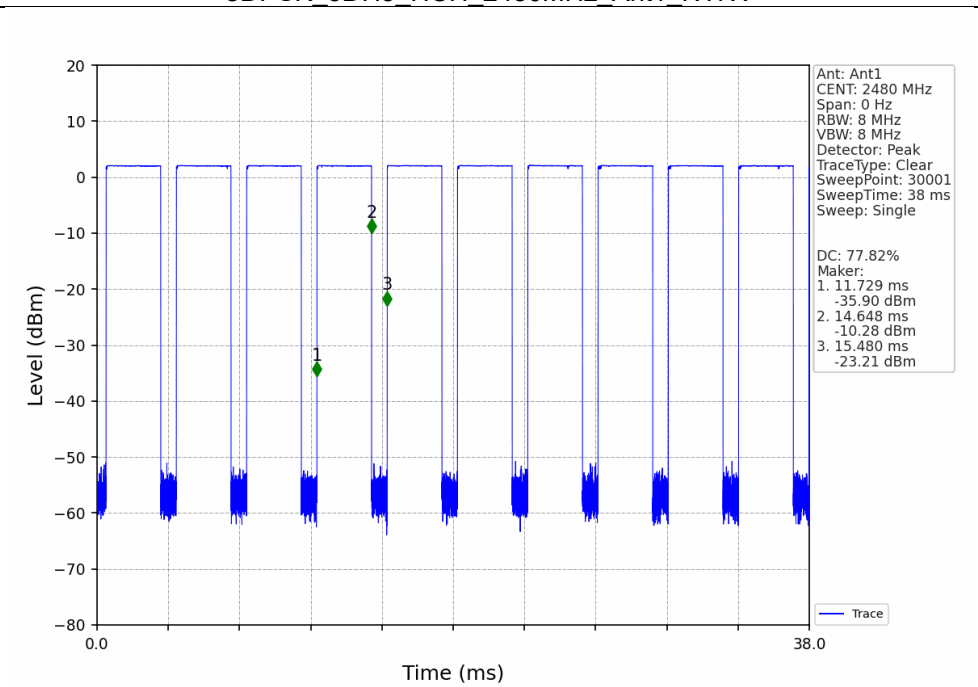
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



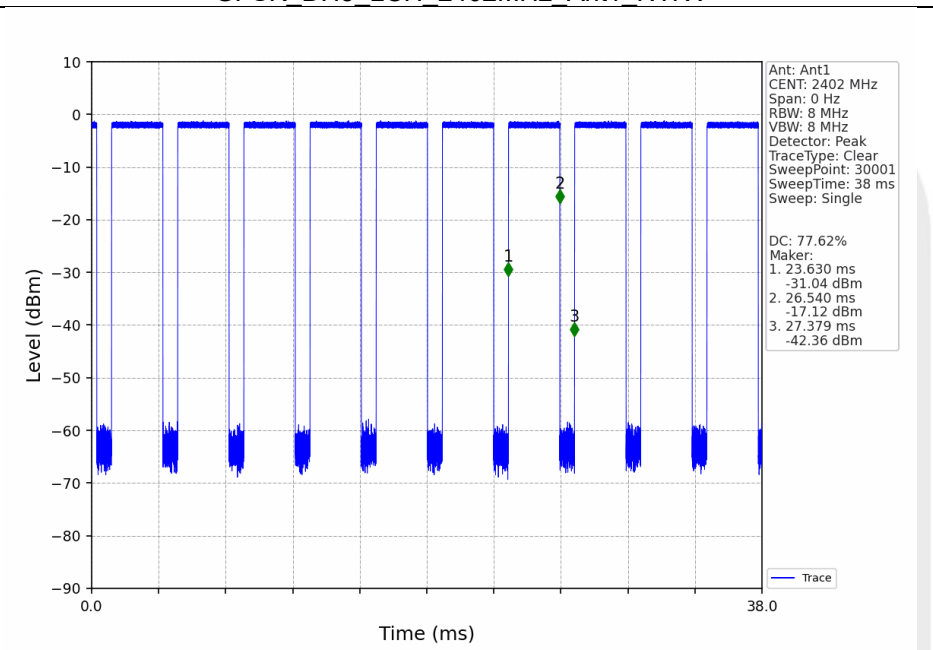
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



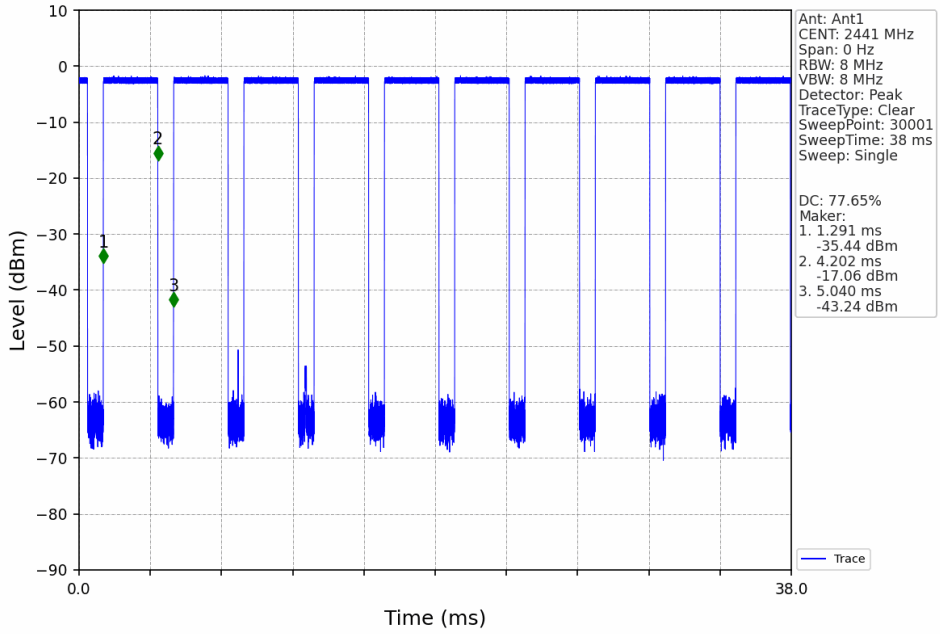
1.2 Test Graph(Right Ear)

1.2.1 Ant1

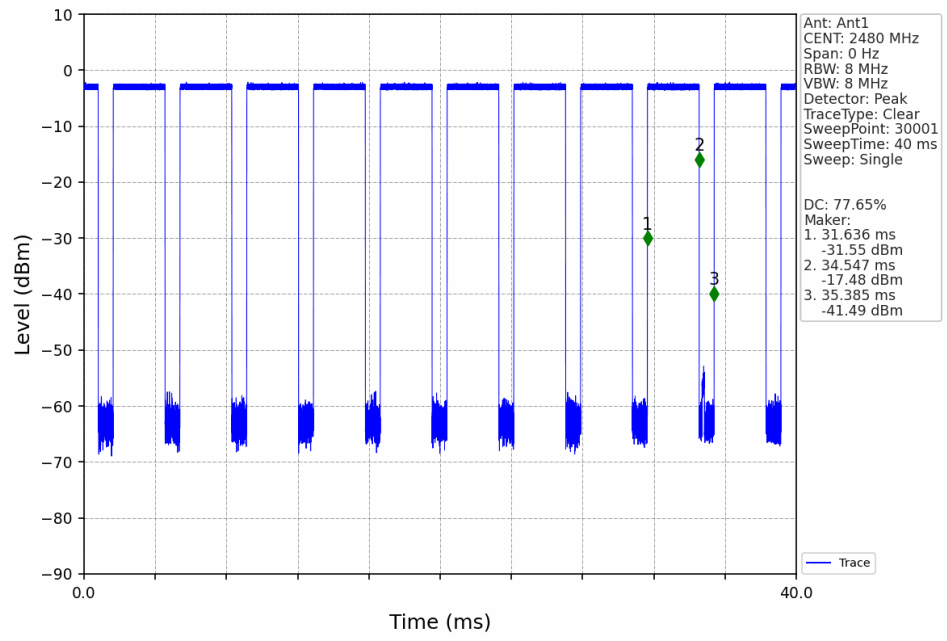
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



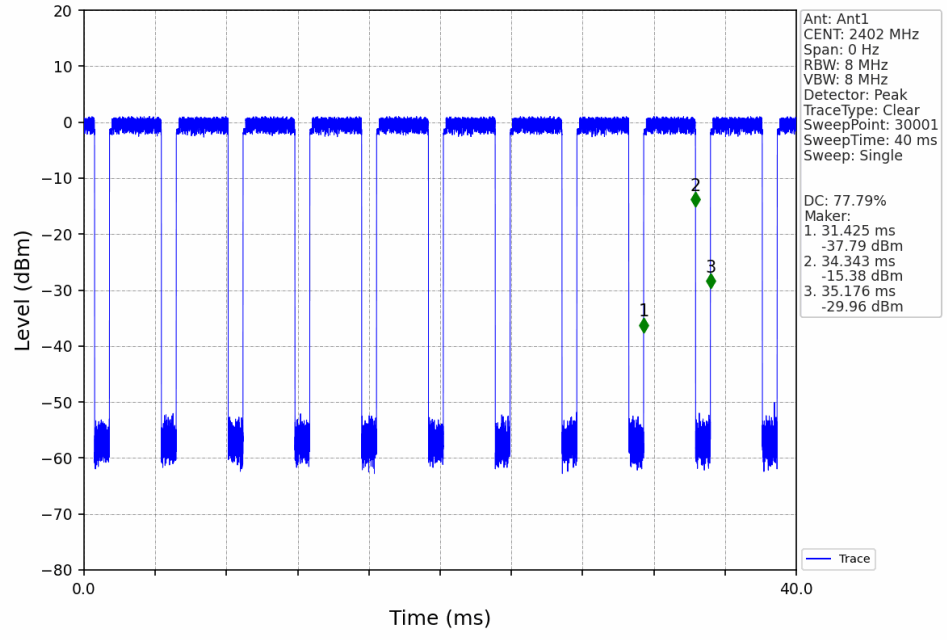
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



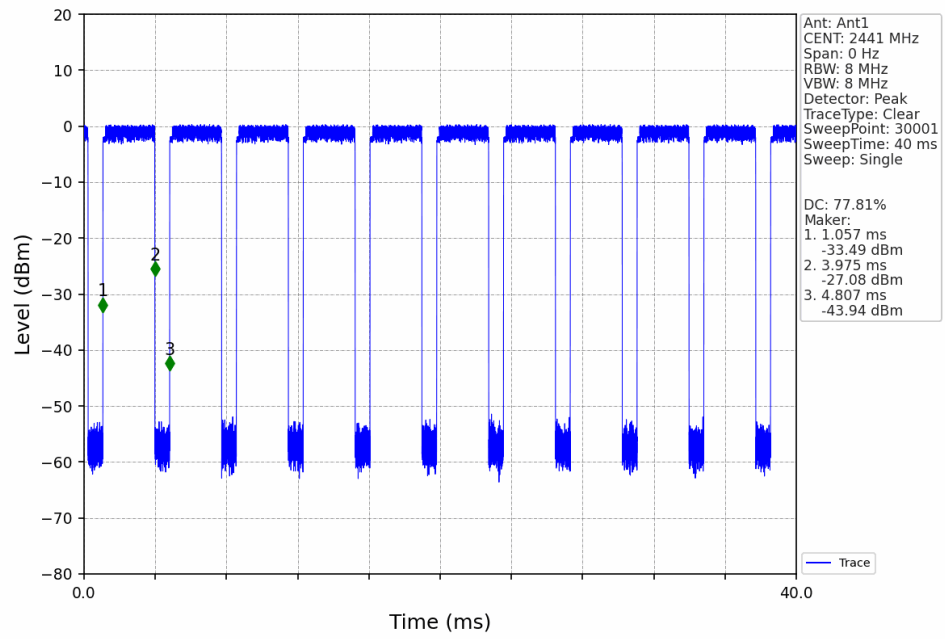
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



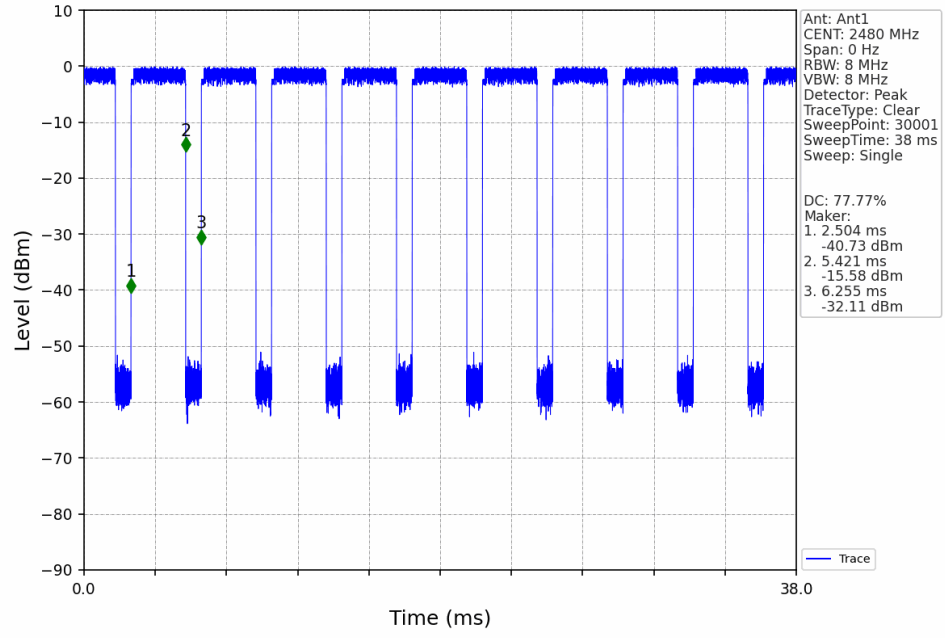
π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



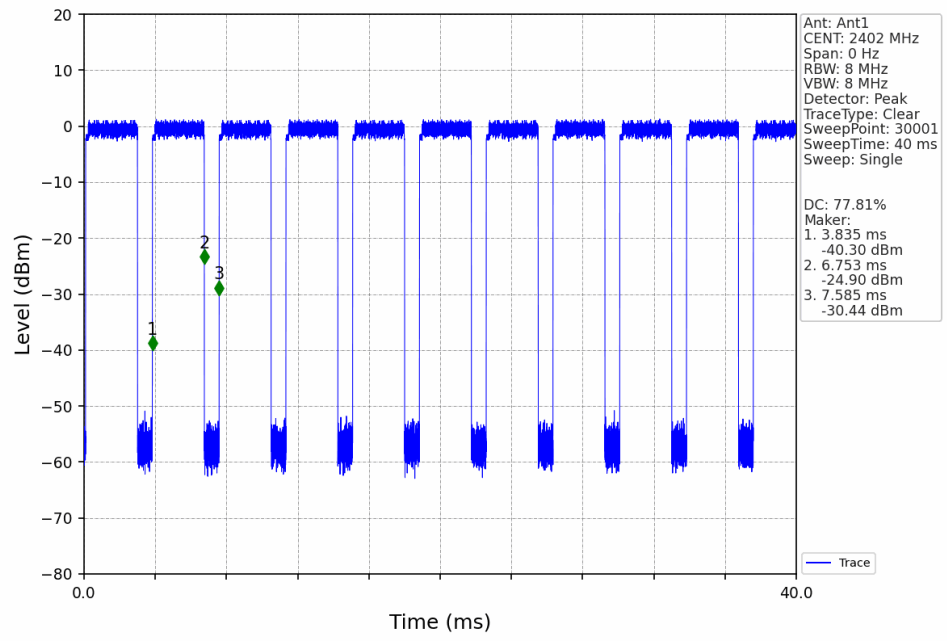
π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



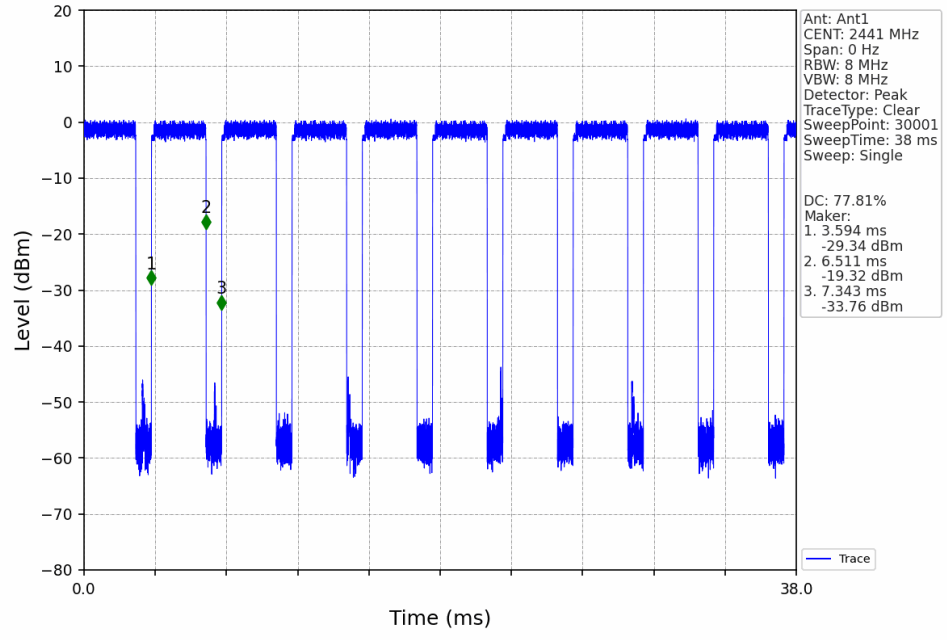
π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



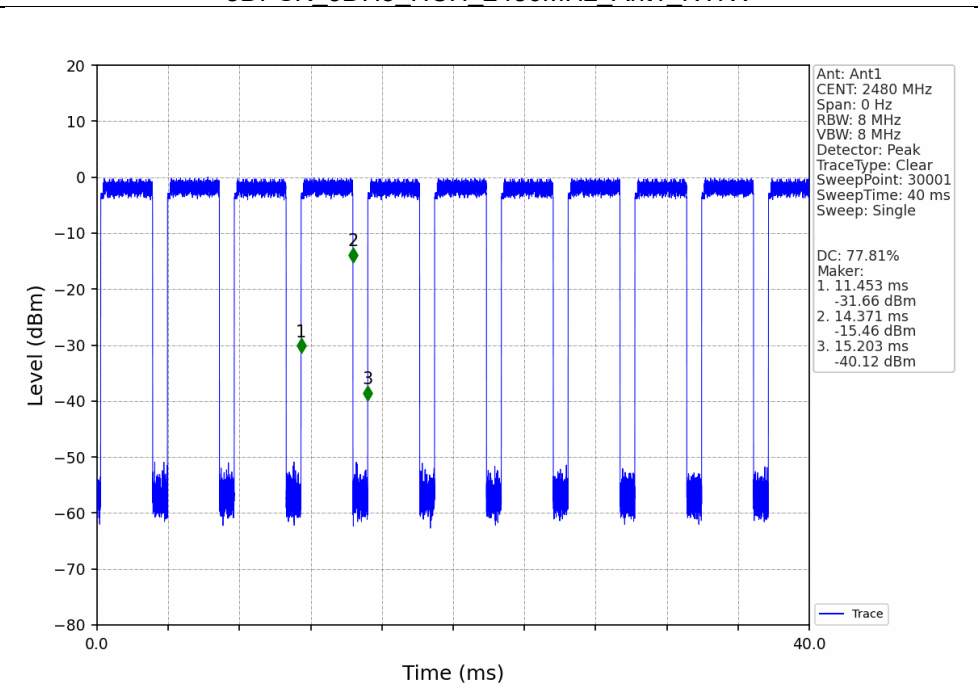
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



Left Ear

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	0.835	/	Pass
		2441	DH5	1	0.837	/	Pass
		2480	DH5	1	0.837	/	Pass
π/4DQPSK	SISO	2402	2DH5	1	1.159	/	Pass
		2441	2DH5	1	1.159	/	Pass
		2480	2DH5	1	1.159	/	Pass
8DPSK	SISO	2402	3DH5	1	1.166	/	Pass
		2441	3DH5	1	1.165	/	Pass
		2480	3DH5	1	1.165	/	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	0.942	/	Pass
		2441	DH5	1	0.945	/	Pass
		2480	DH5	1	0.945	/	Pass
π/4DQPSK	SISO	2402	2DH5	1	1.284	/	Pass
		2441	2DH5	1	1.282	/	Pass
		2480	2DH5	1	1.283	/	Pass
8DPSK	SISO	2402	3DH5	1	1.301	/	Pass
		2441	3DH5	1	1.301	/	Pass
		2480	3DH5	1	1.300	/	Pass

Right Ear

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	0.844	/	Pass
		2441	DH5	1	0.843	/	Pass
		2480	DH5	1	0.836	/	Pass
π/4-DQPSK	SISO	2402	2DH5	1	1.165	/	Pass
		2441	2DH5	1	1.164	/	Pass
		2480	2DH5	1	1.171	/	Pass
8DPSK	SISO	2402	3DH5	1	1.168	/	Pass
		2441	3DH5	1	1.173	/	Pass
		2480	3DH5	1	1.172	/	Pass

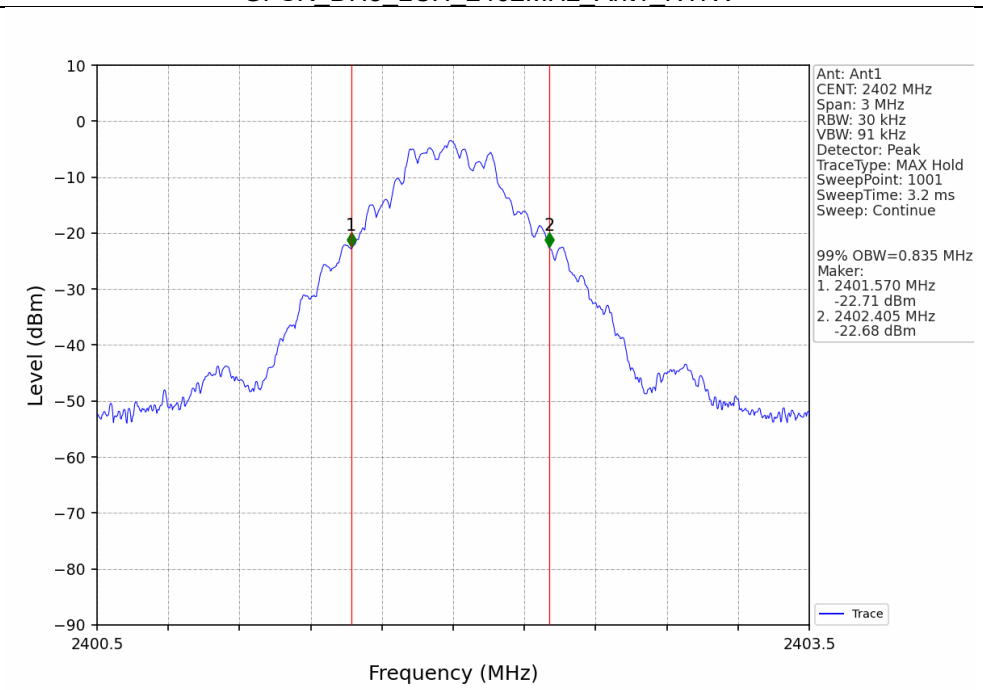
2.1.2 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.953	/	Pass
		2441	DH5	1	0.953	/	Pass
		2480	DH5	1	0.953	/	Pass
π/4-DQPSK	SISO	2402	2DH5	1	1.313	/	Pass
		2441	2DH5	1	1.289	/	Pass
		2480	2DH5	1	1.289	/	Pass
8DPSK	SISO	2402	3DH5	1	1.310	/	Pass
		2441	3DH5	1	1.311	/	Pass
		2480	3DH5	1	1.311	/	Pass

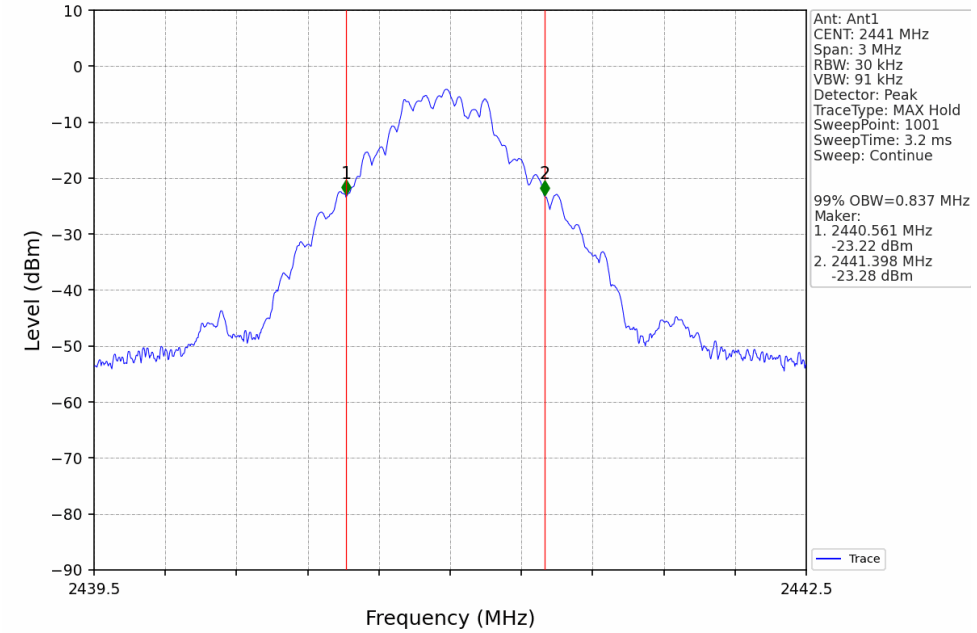
2.2 Test Graph(Left Ear)

2.2.1 OBW

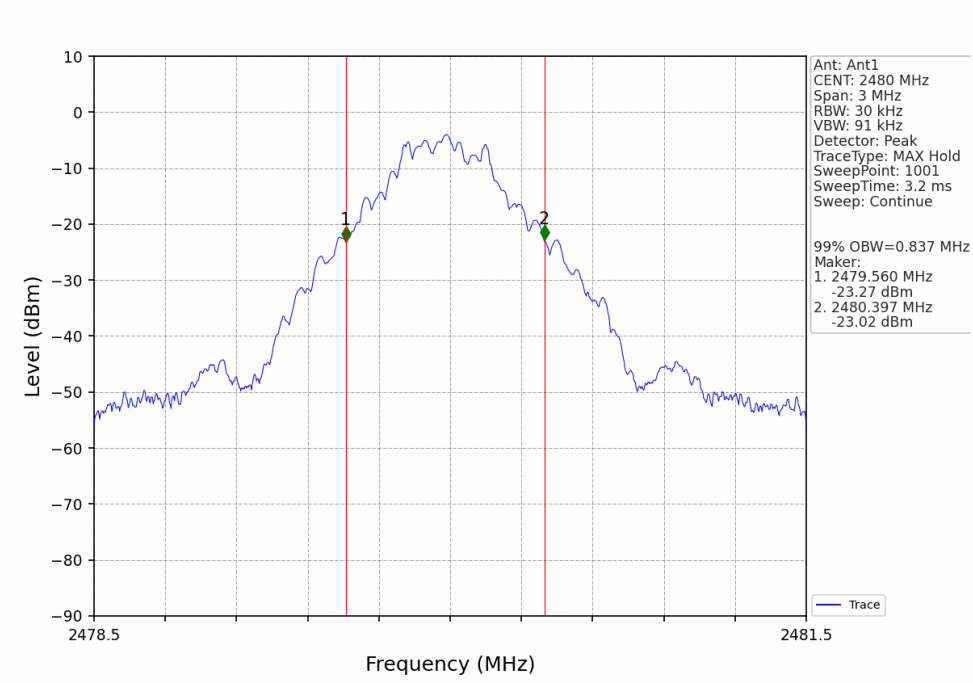
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



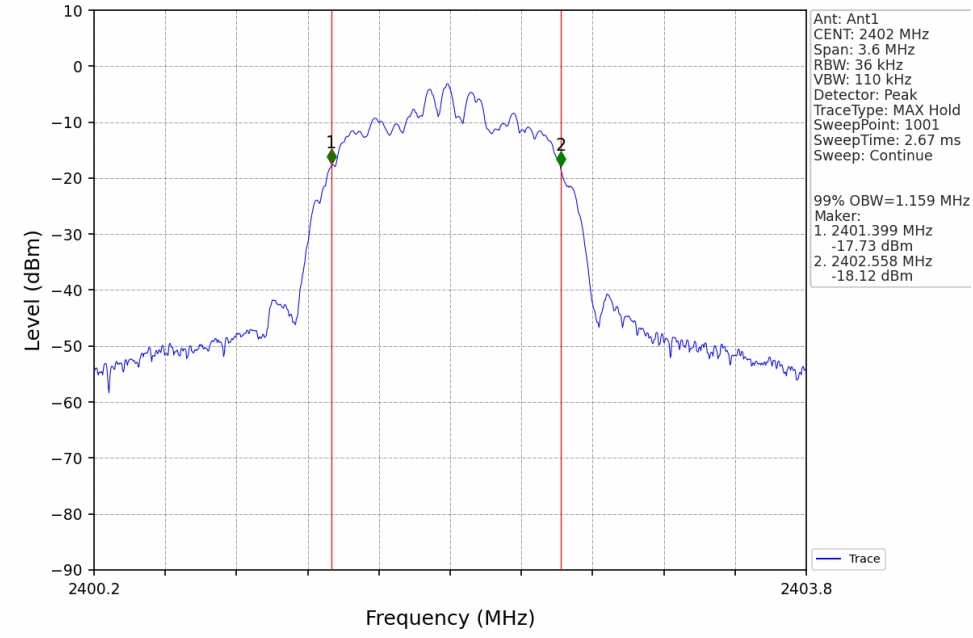
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



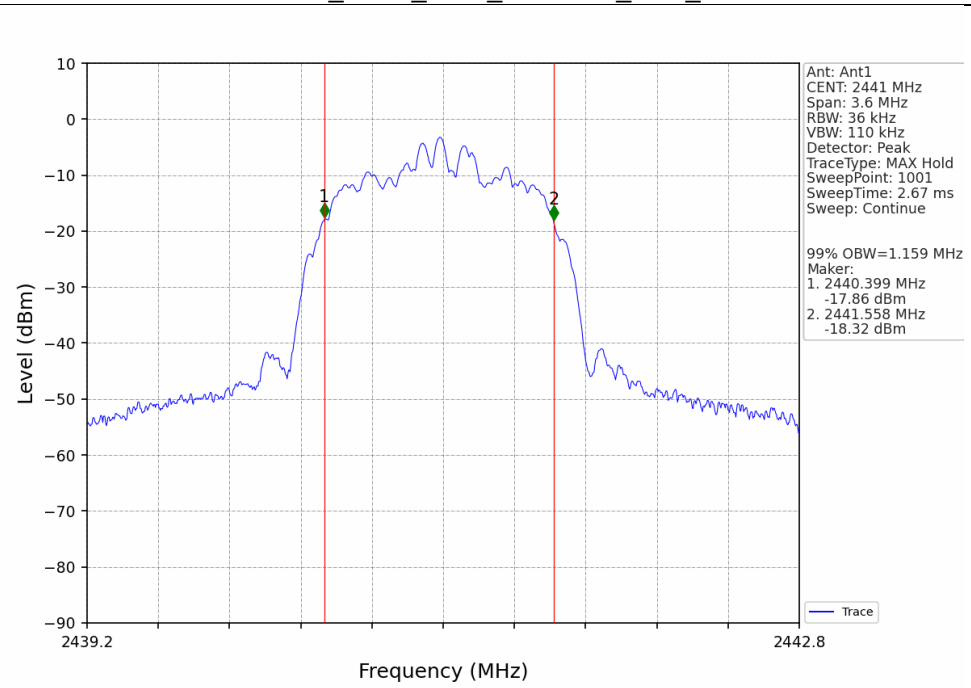
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



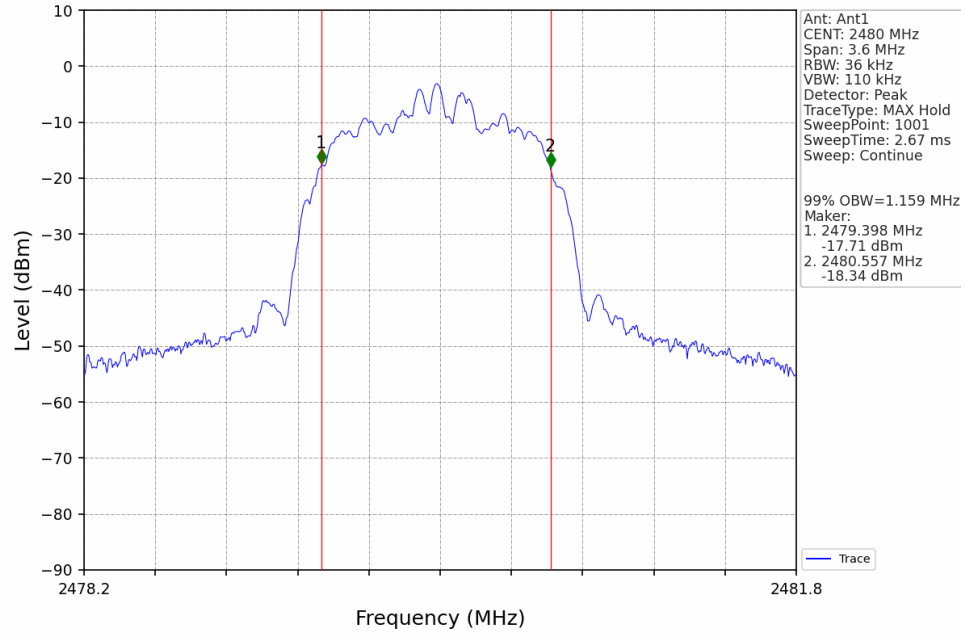
π/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



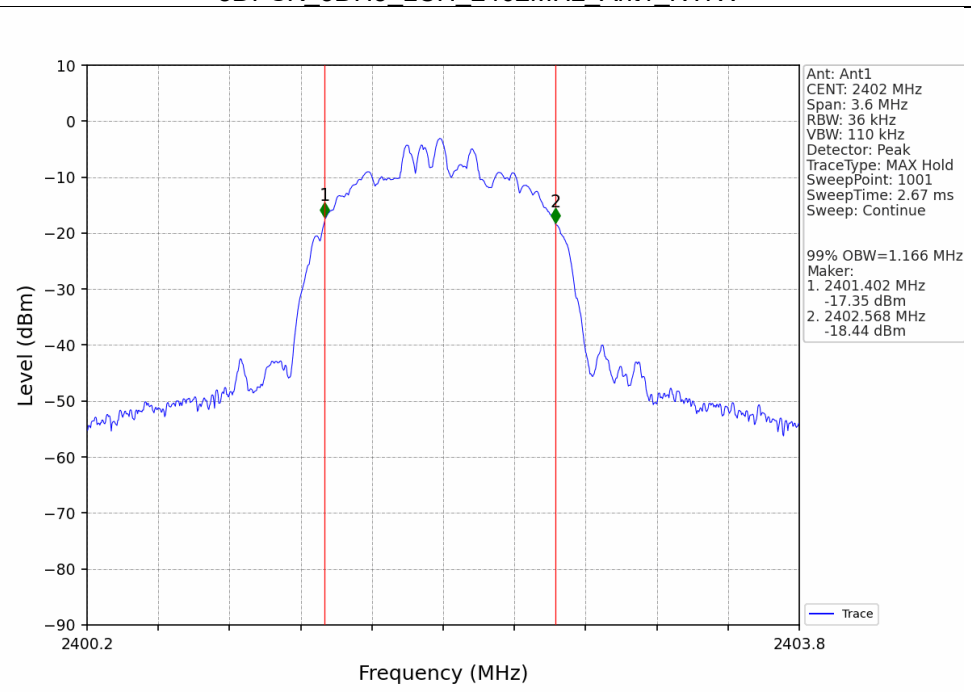
π /4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



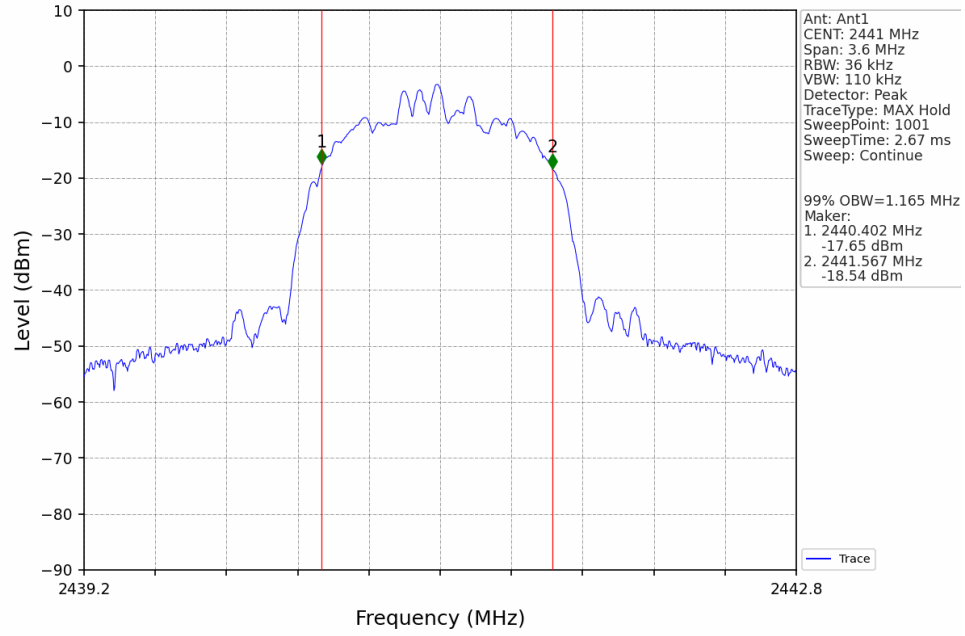
π /4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



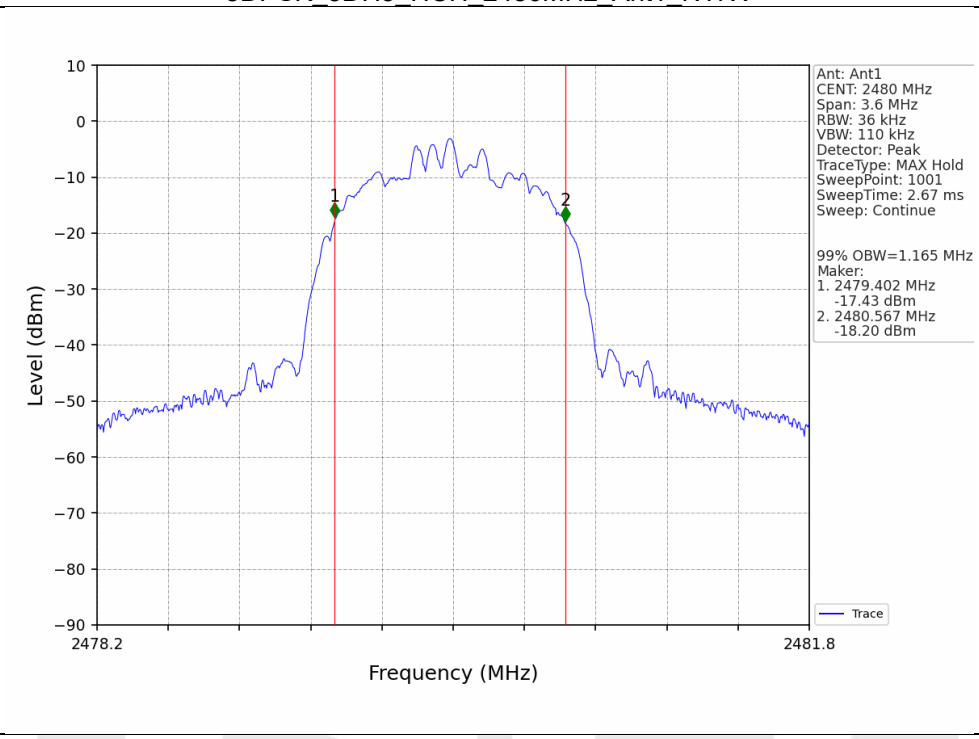
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

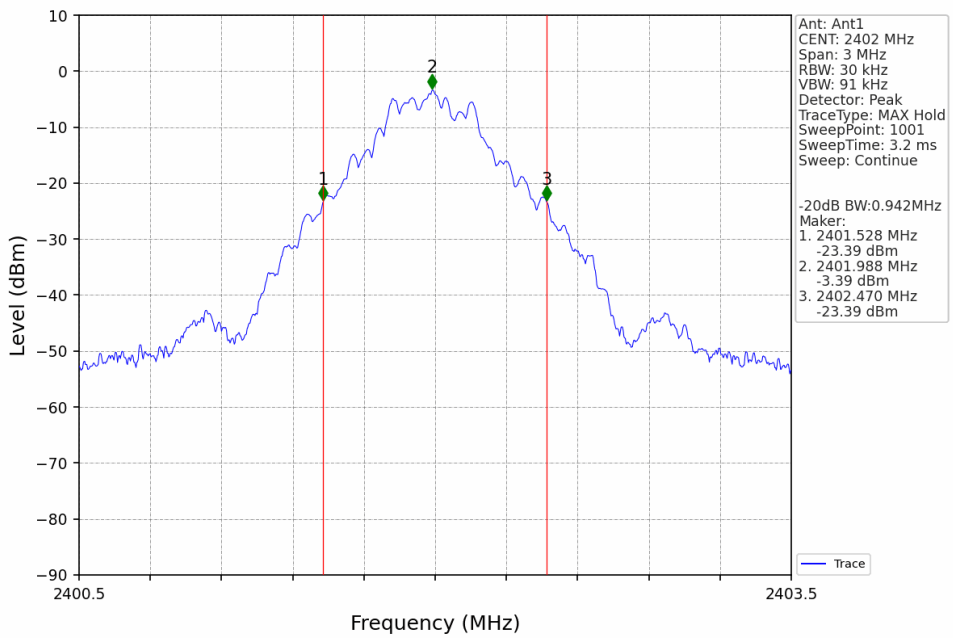


8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

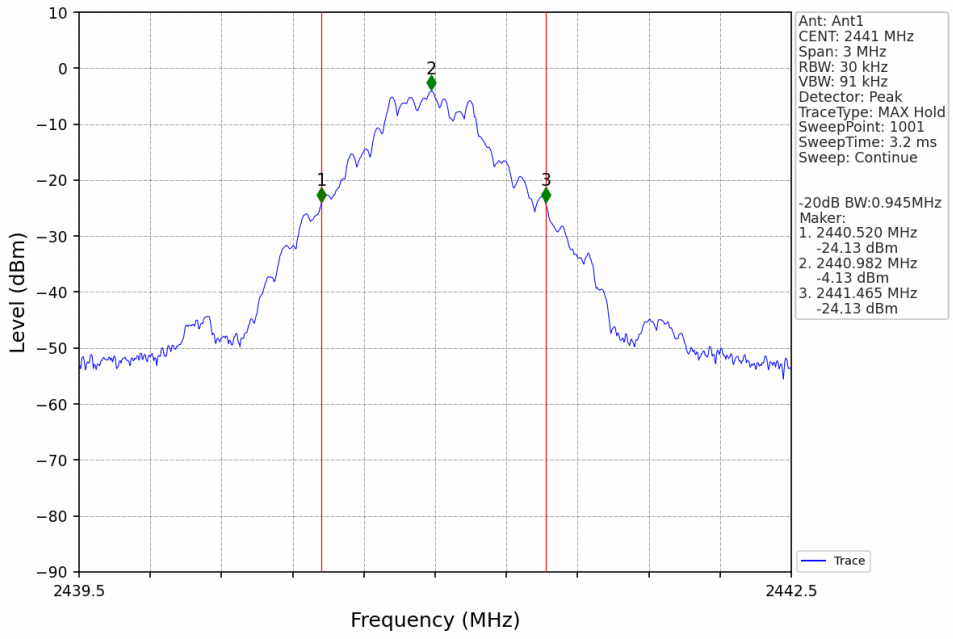


2.2.2 20dB BW

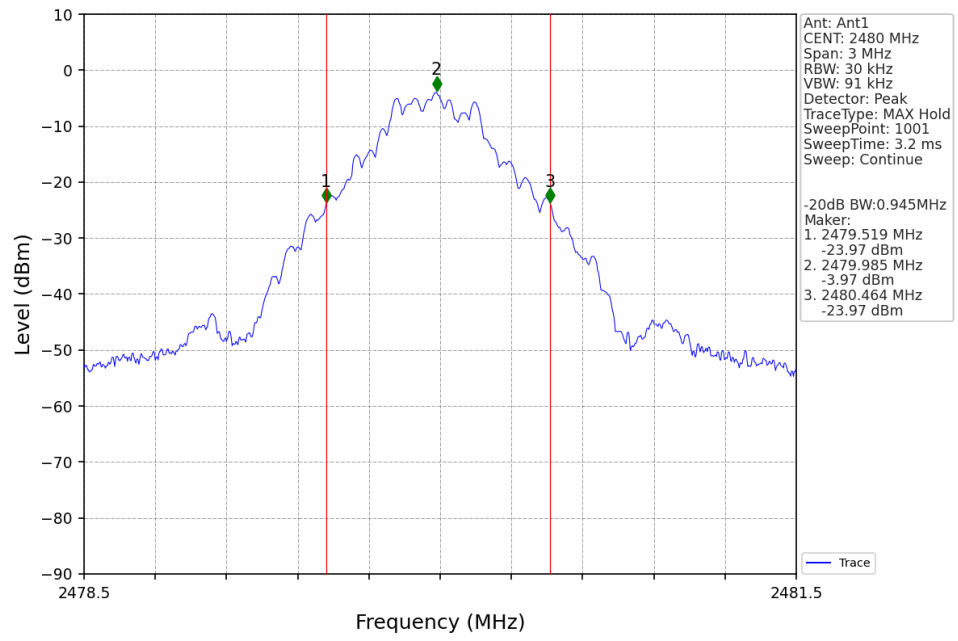
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



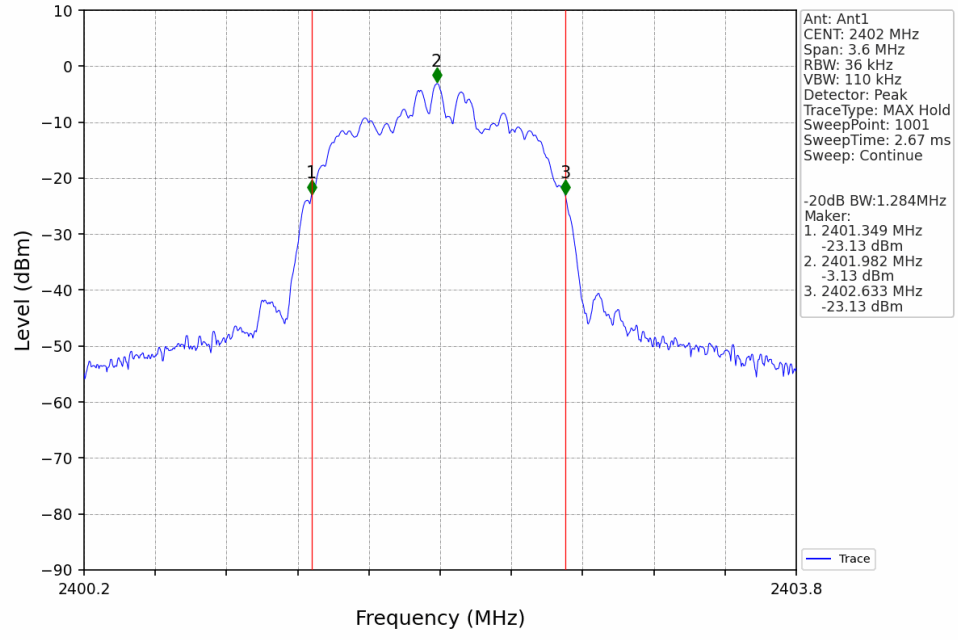
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



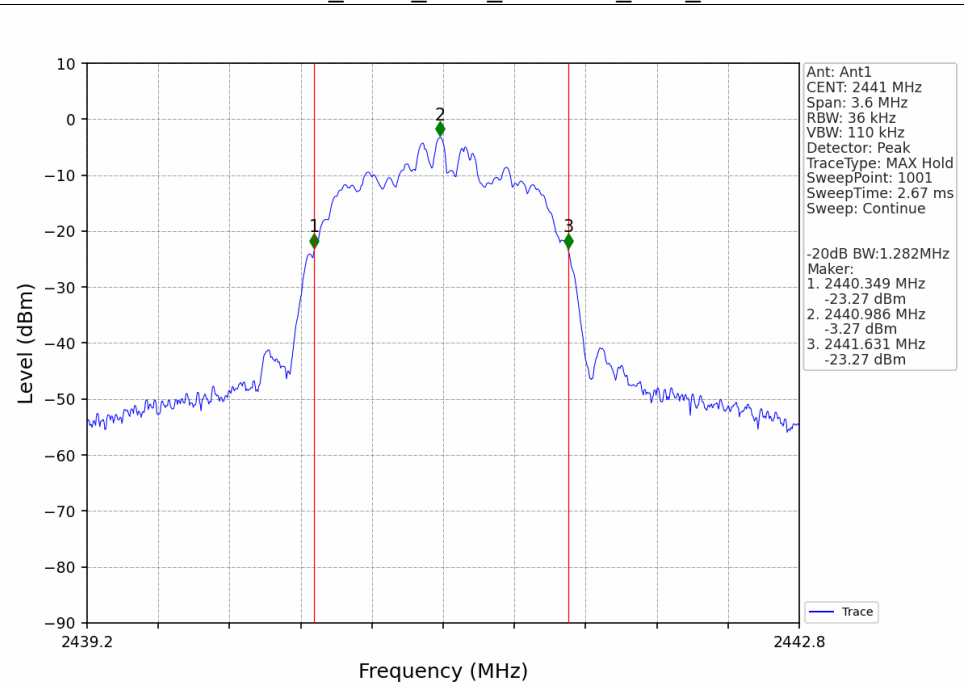
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



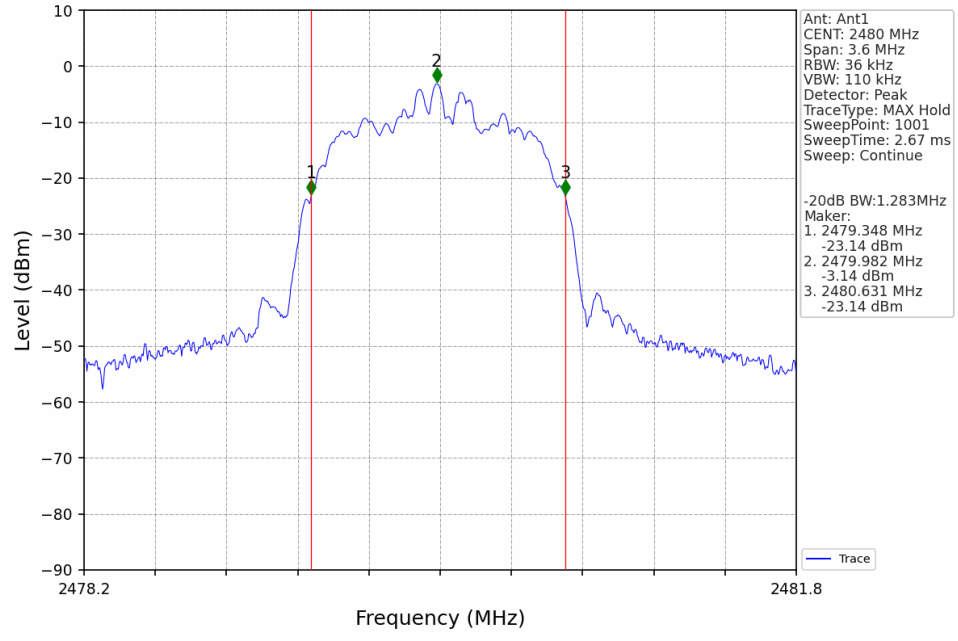
π/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



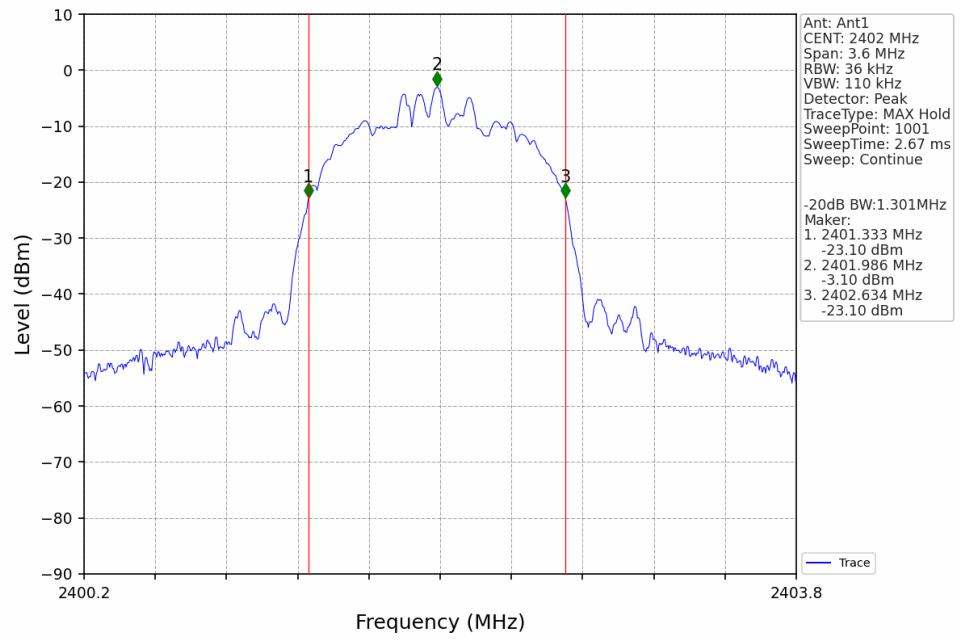
π /4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



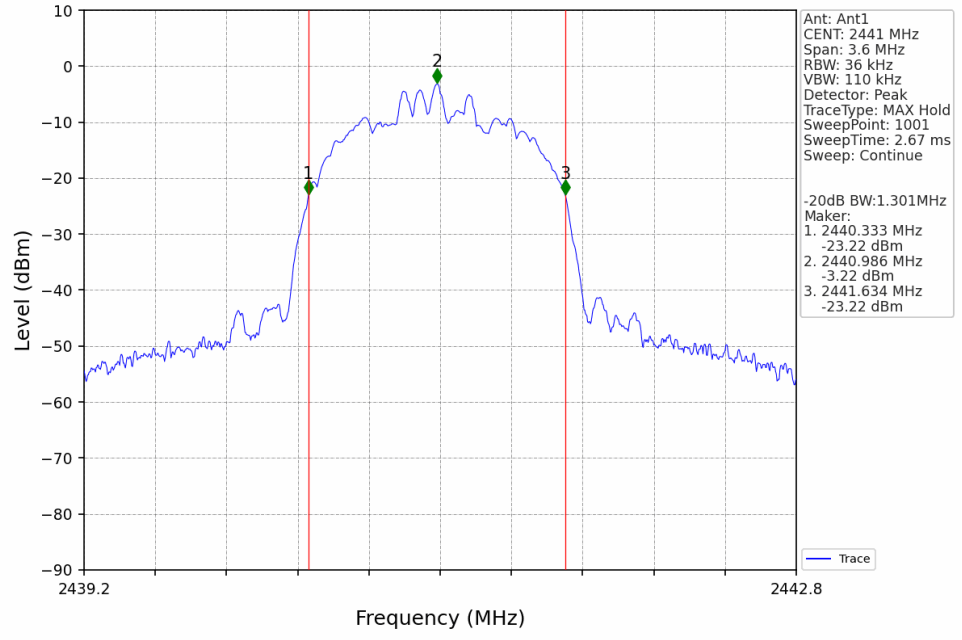
π /4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



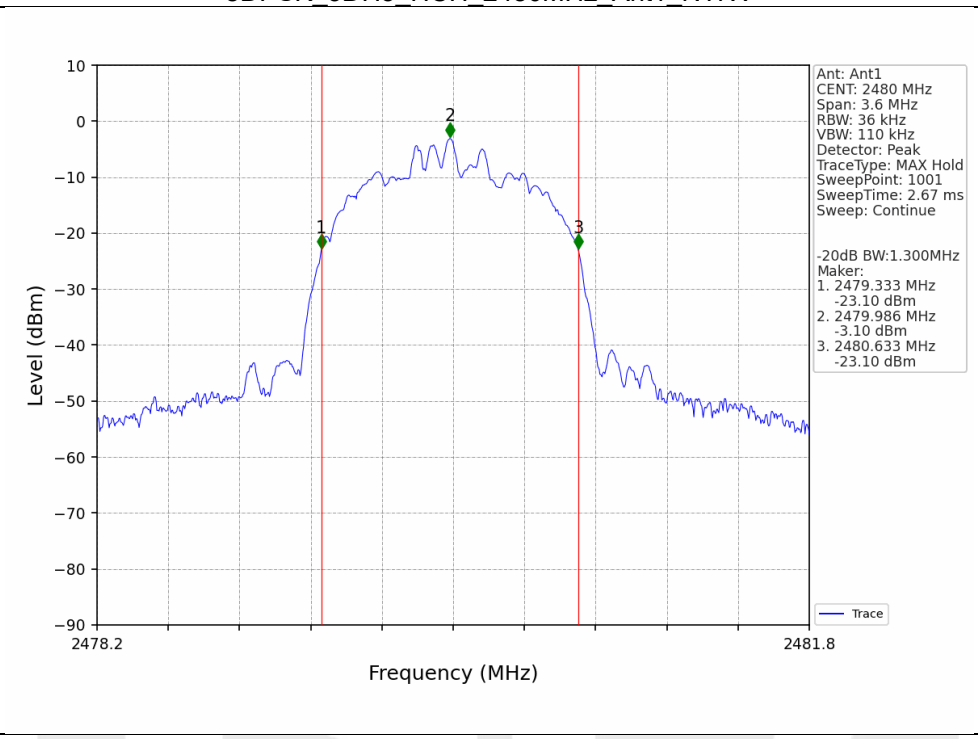
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



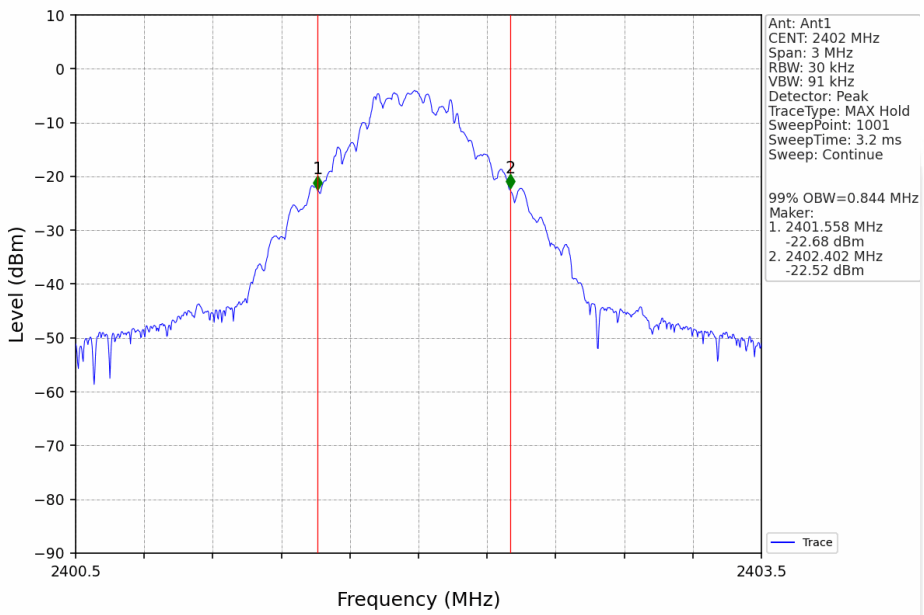
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



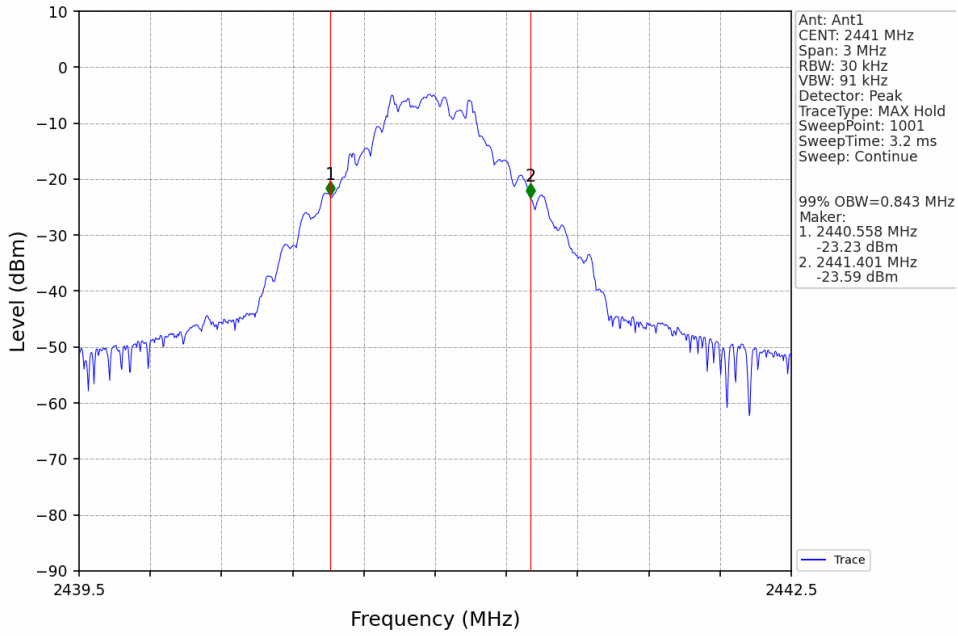
2.2 Test Graph(Right Ear)

2.2.1 OBW

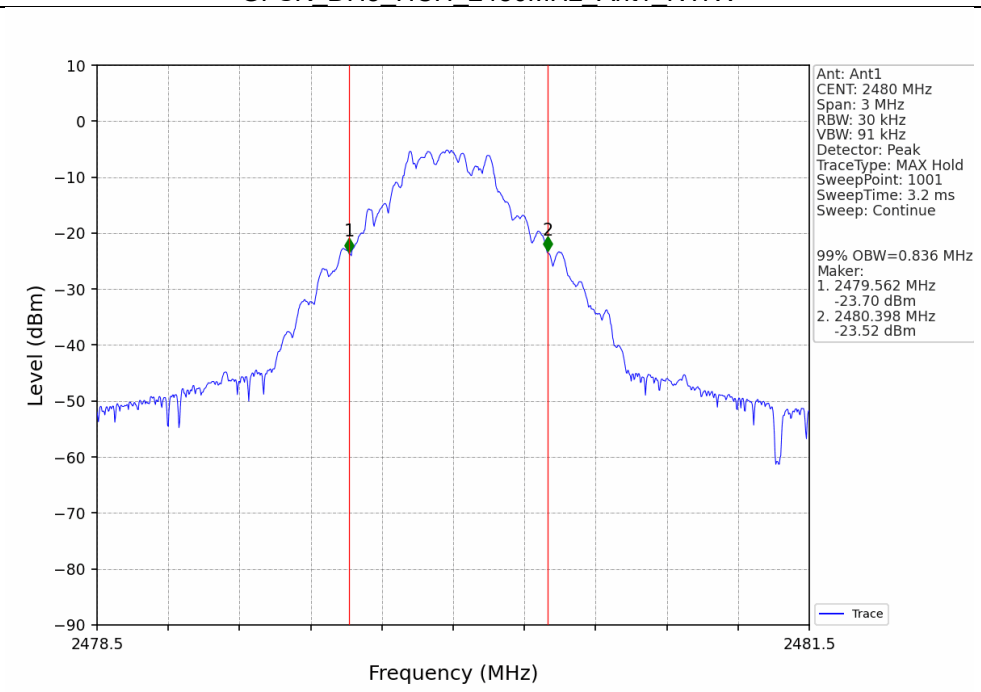
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



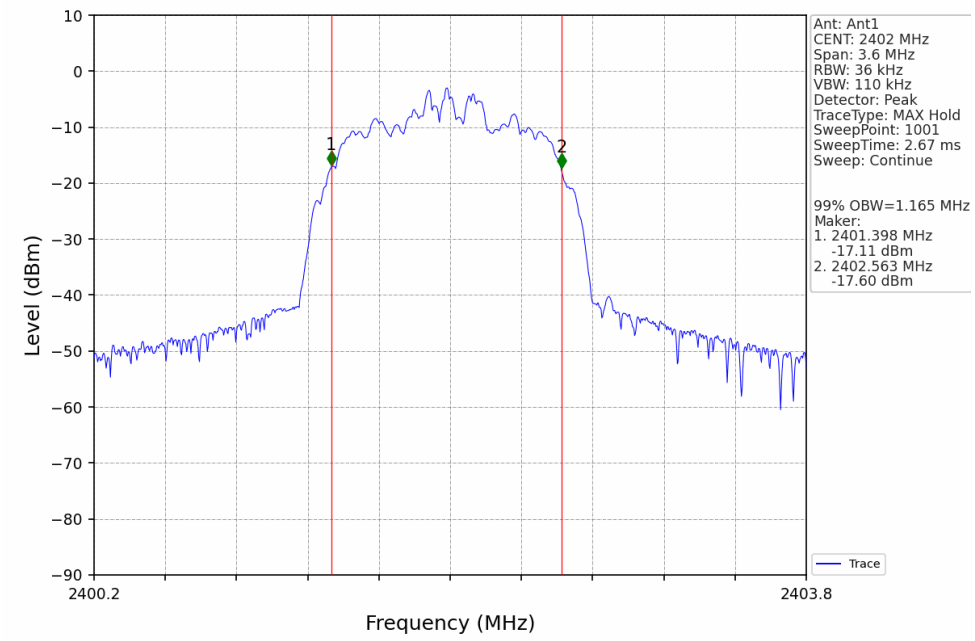
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



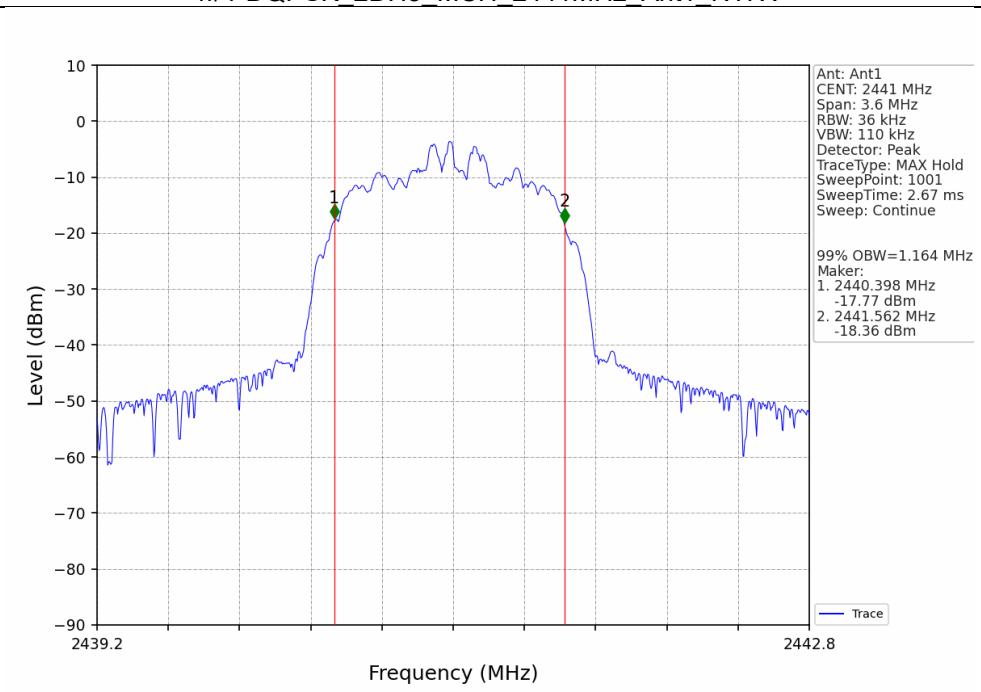
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



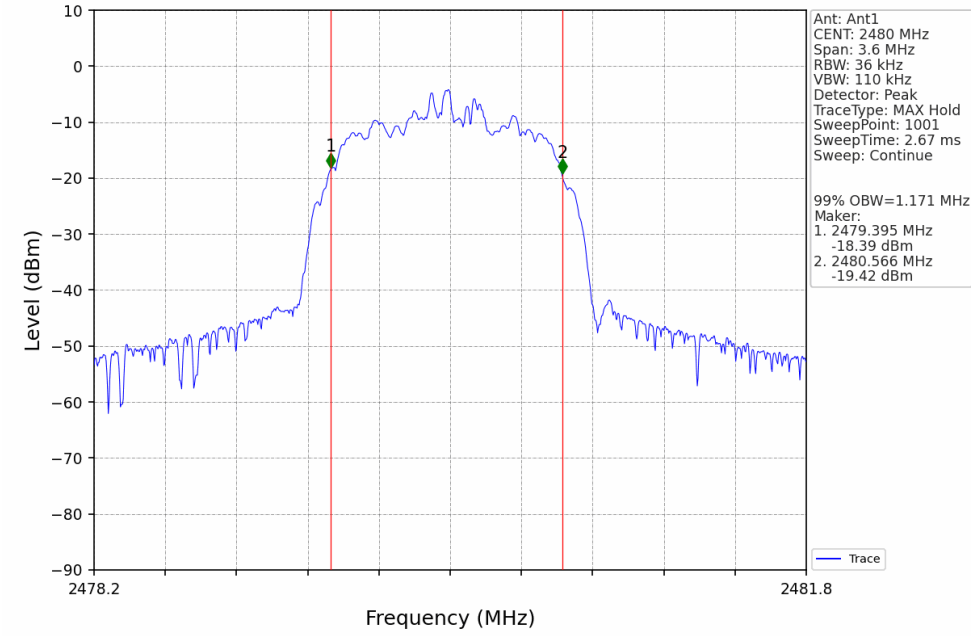
π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



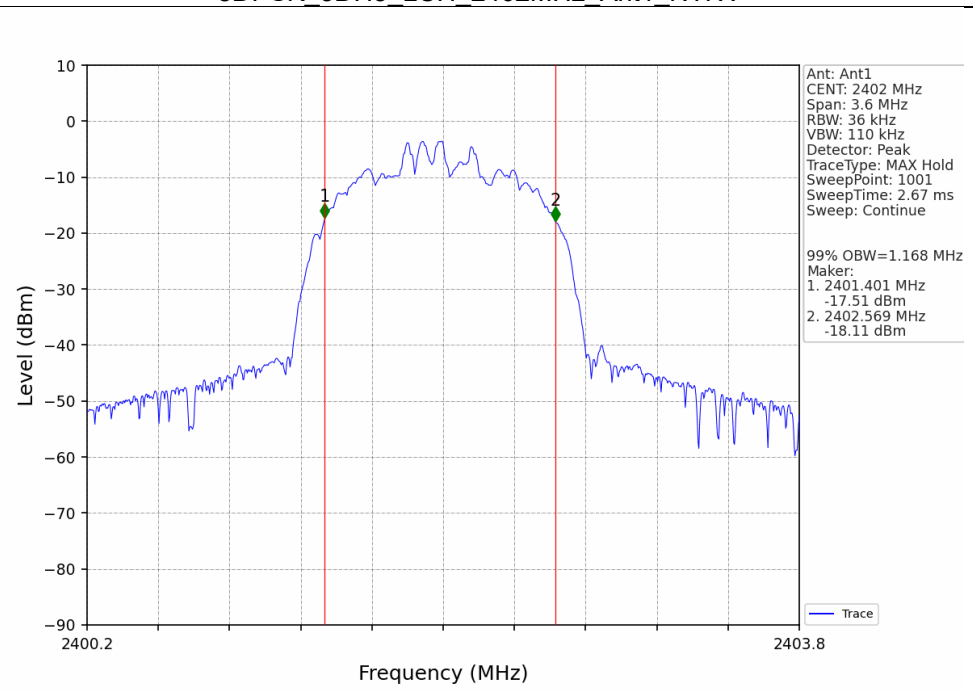
π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



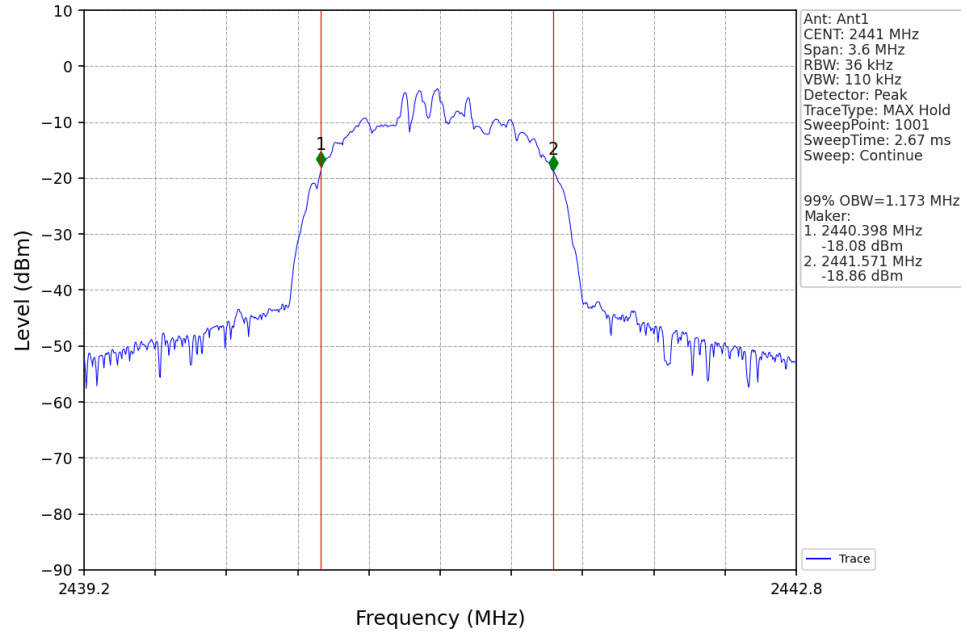
π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



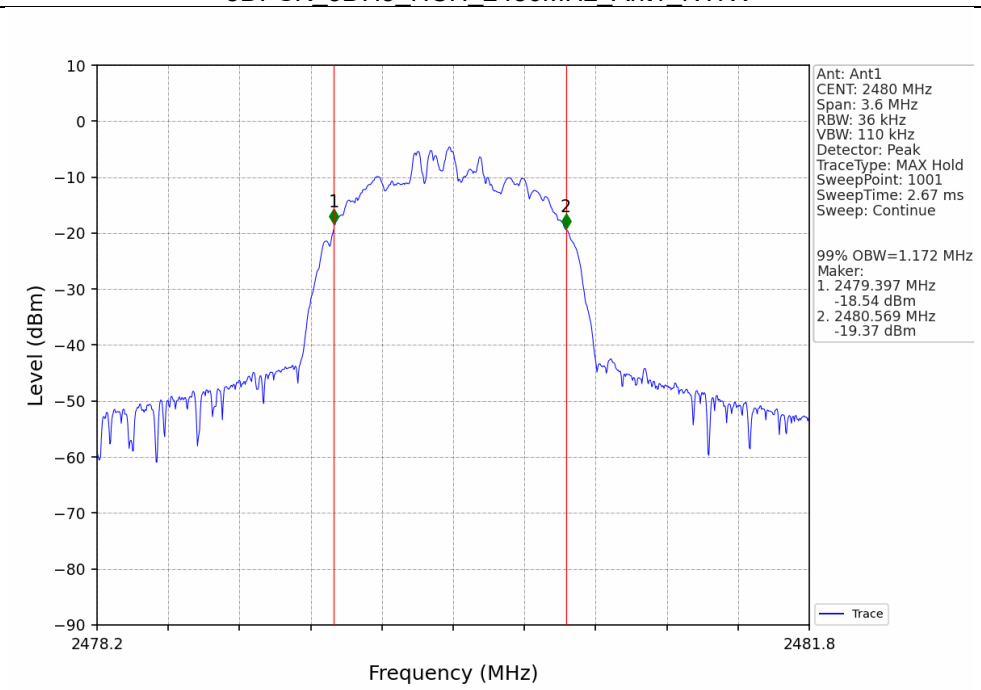
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

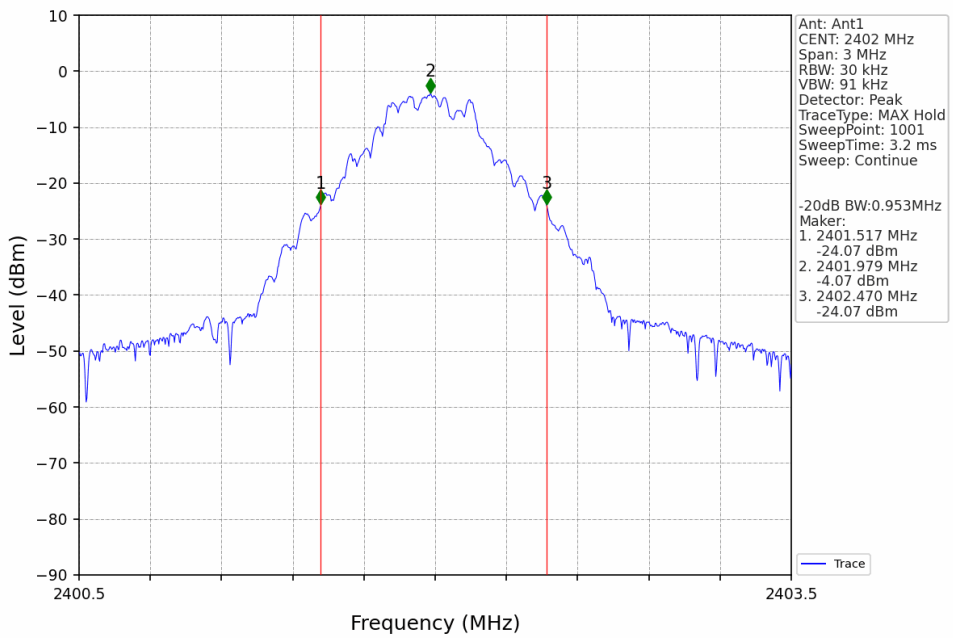


8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

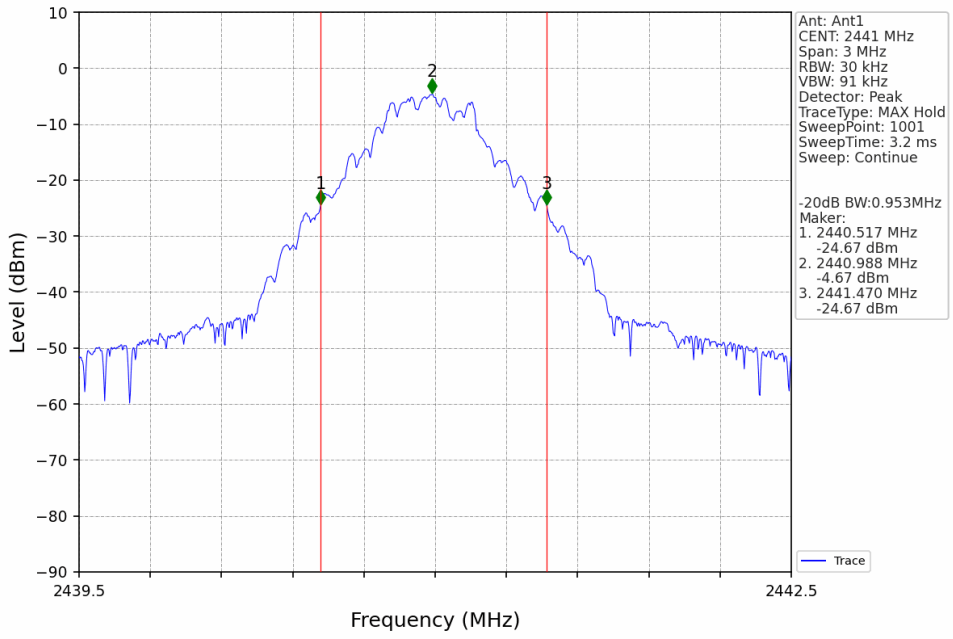


2.2.2 20dB BW

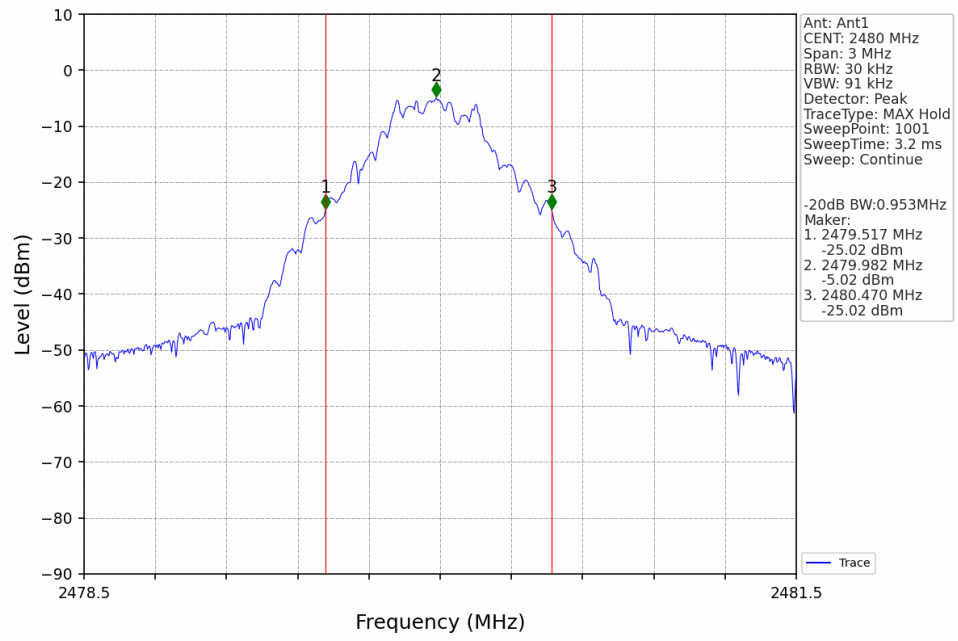
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



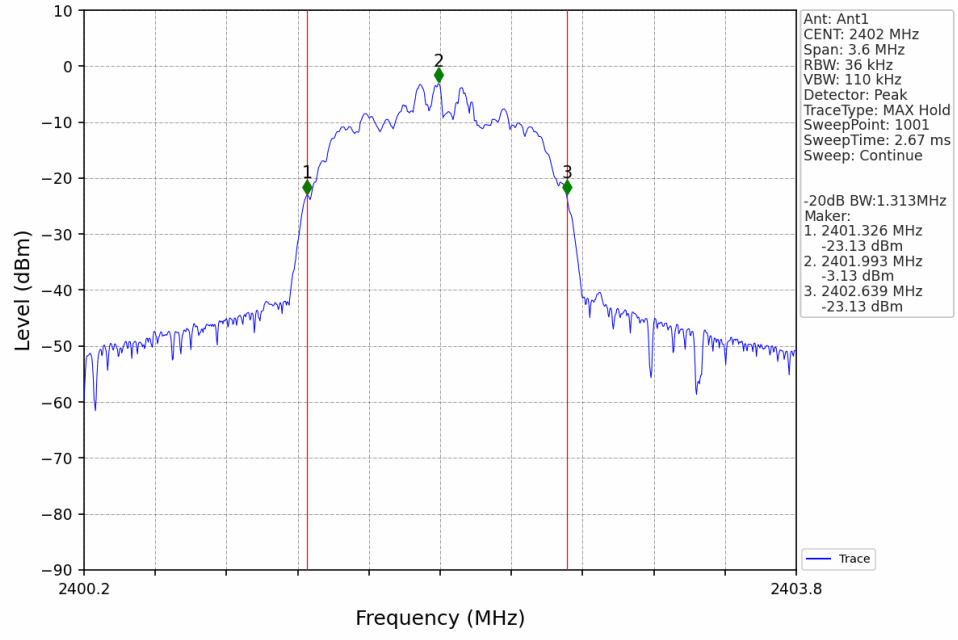
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



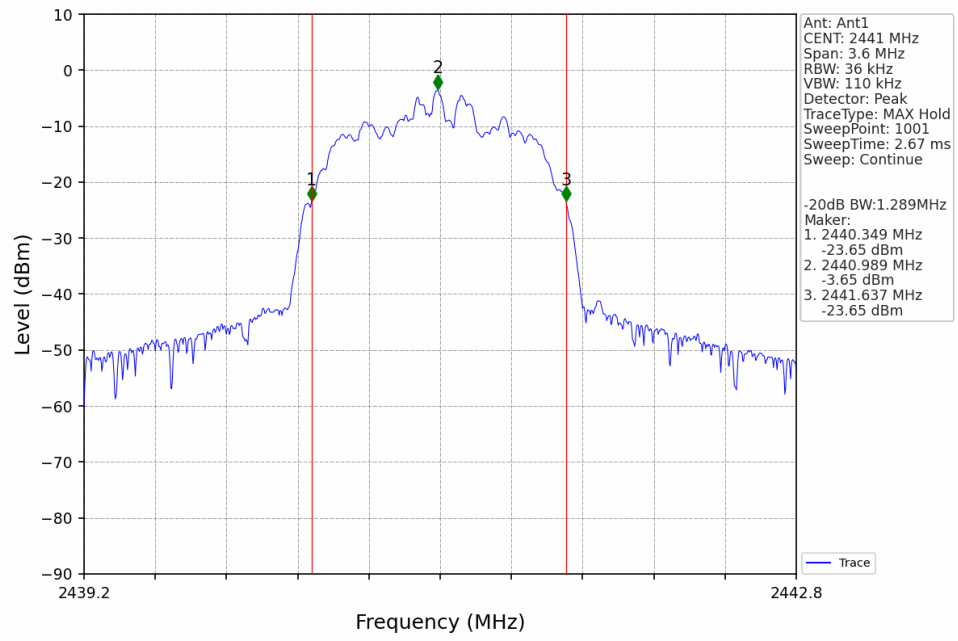
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



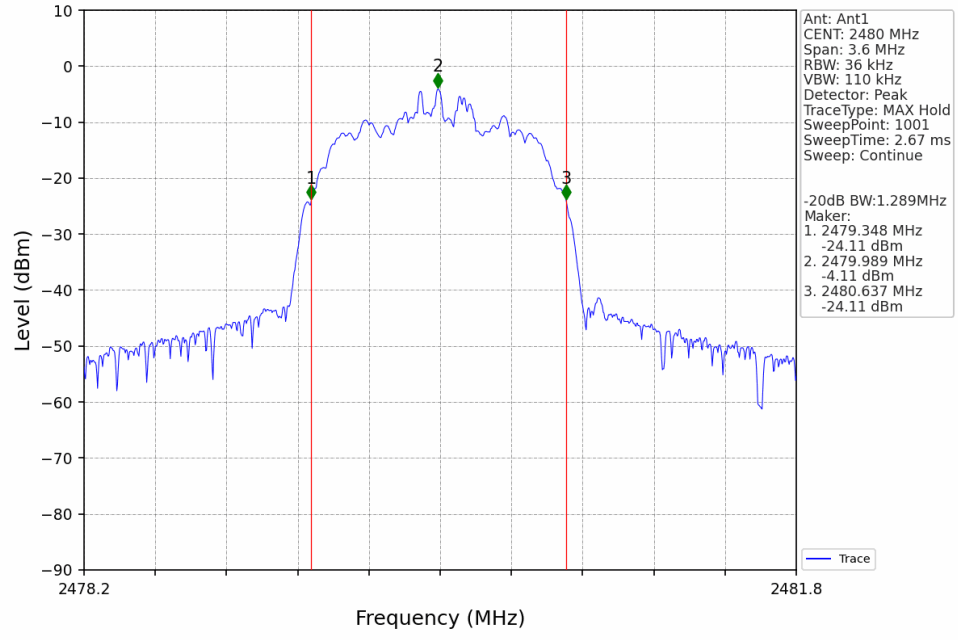
π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



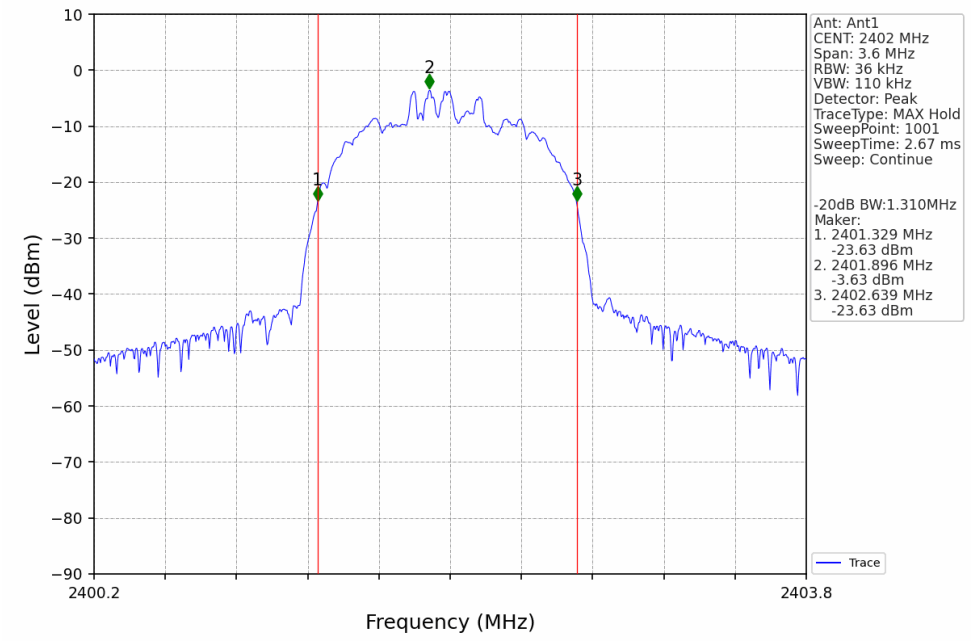
π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



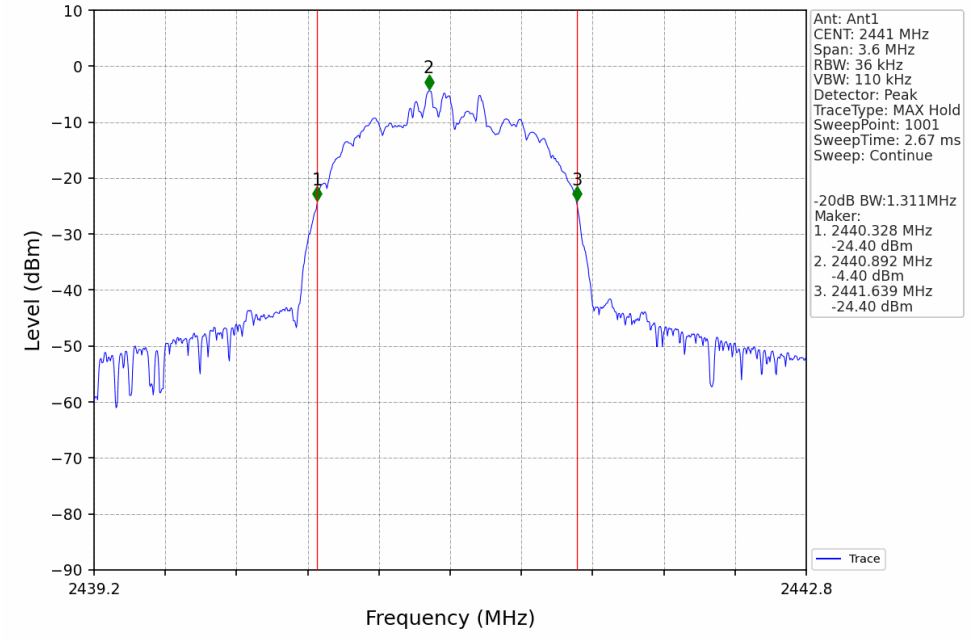
π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



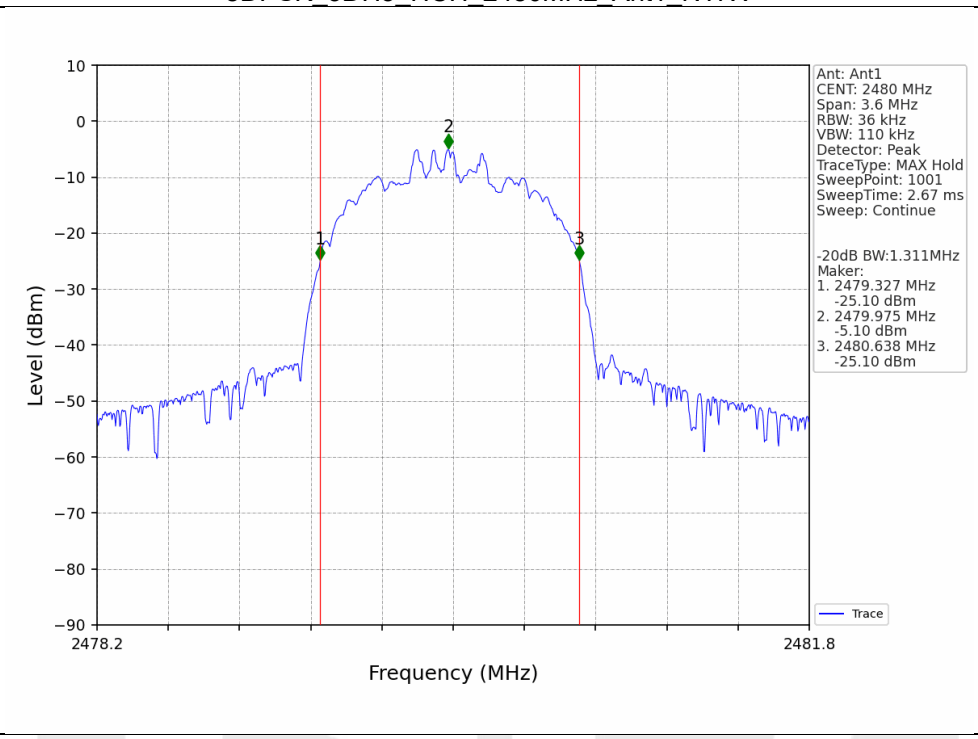
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



Left Ear

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	-1.09	<=30	Pass
		2441	DH5	1.27	<=30	Pass
		2480	DH5	1.56	<=30	Pass
π/4DQPSK	SISO	2402	2DH5	1.41	<=30	Pass
		2441	2DH5	1.47	<=30	Pass
		2480	2DH5	1.81	<=30	Pass
8DPSK	SISO	2402	3DH5	1.66	<=30	Pass
		2441	3DH5	1.73	<=30	Pass
		2480	3DH5	2.08	<=30	Pass

Right Ear

3. Maximum Conducted Output Power

3.1 Test Result

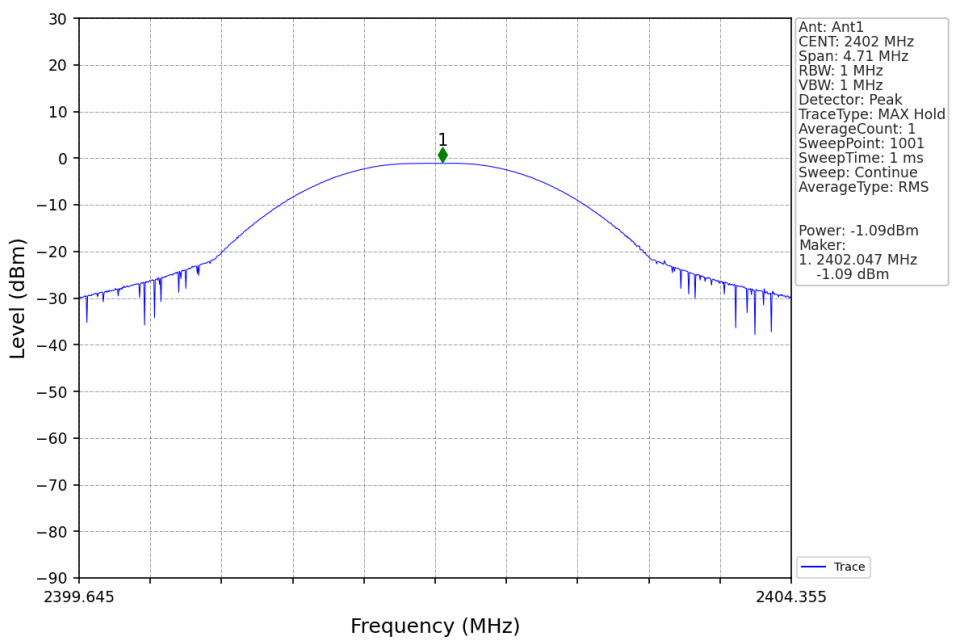
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-1.21	<=30	Pass
		2441	DH5	-1.85	<=30	Pass
		2480	DH5	-2.23	<=30	Pass
π/4-DQPSK	SISO	2402	2DH5	0.91	<=30	Pass
		2441	2DH5	0.19	<=30	Pass
		2480	2DH5	-0.30	<=30	Pass
8DPSK	SISO	2402	3DH5	1.13	<=30	Pass
		2441	3DH5	0.29	<=30	Pass
		2480	3DH5	-0.29	<=30	Pass

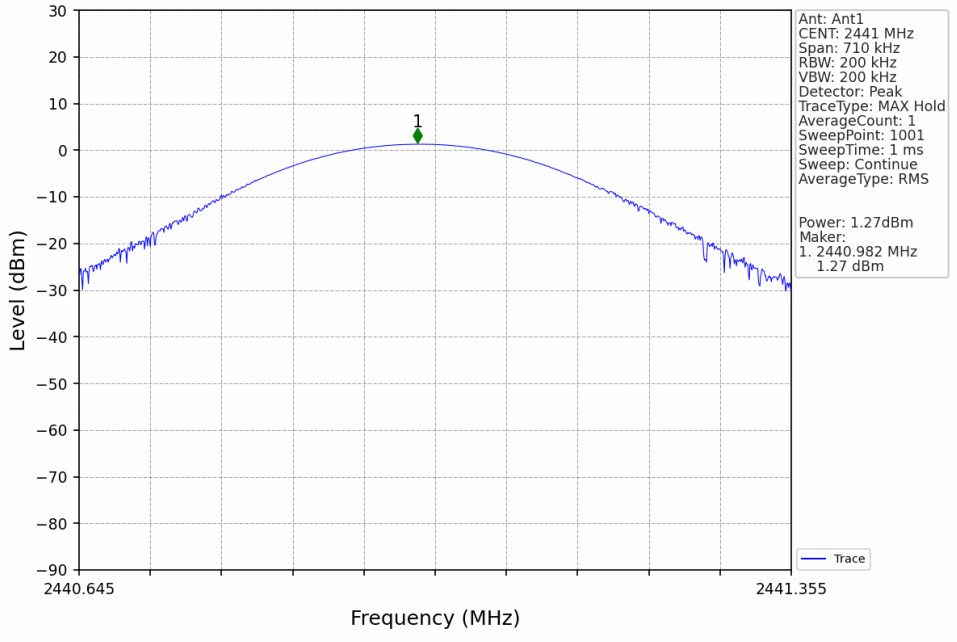
3.2 Test Graph(Left Ear)

3.2.1 Power

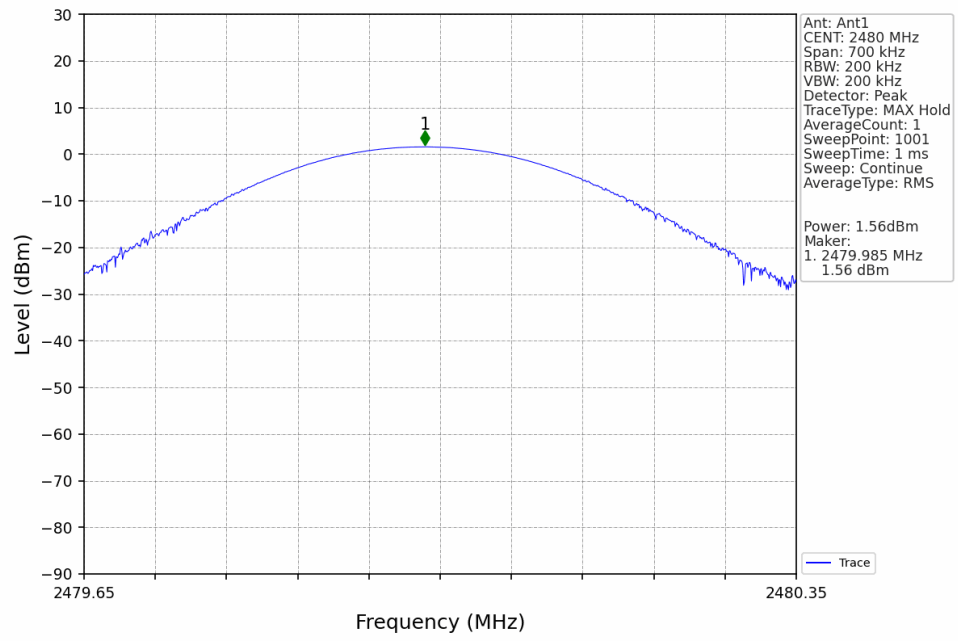
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



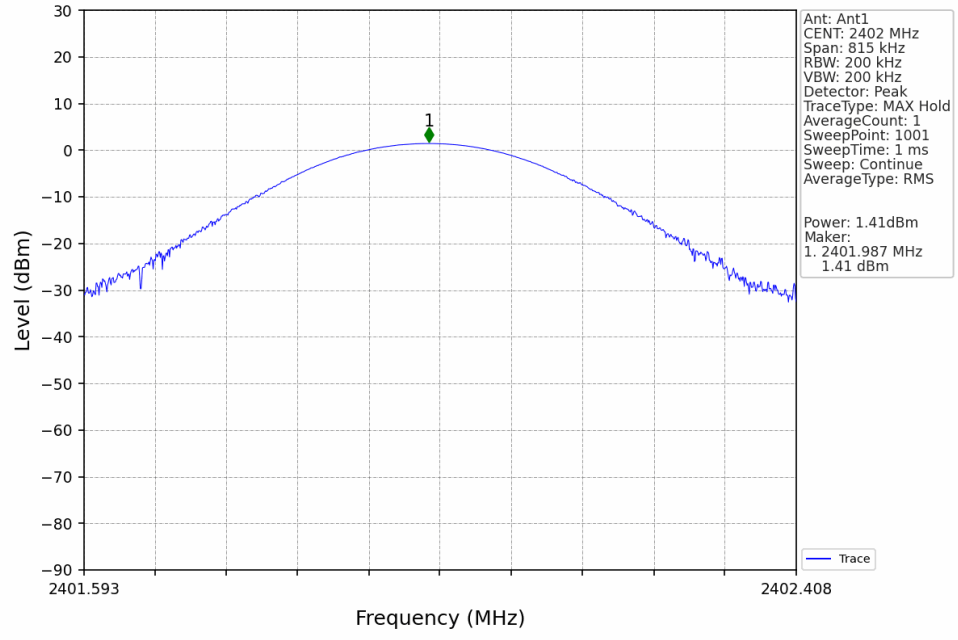
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



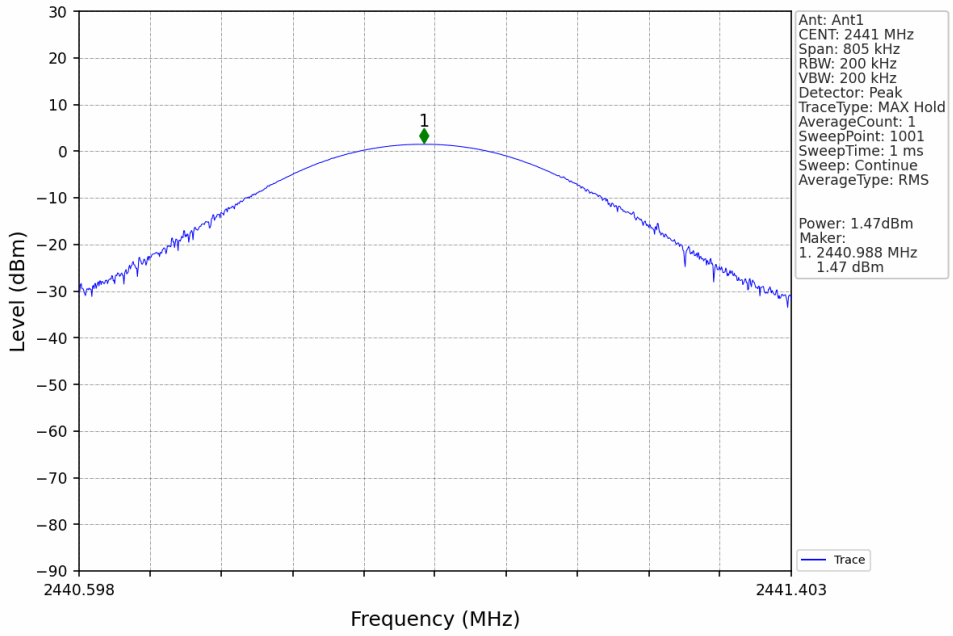
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



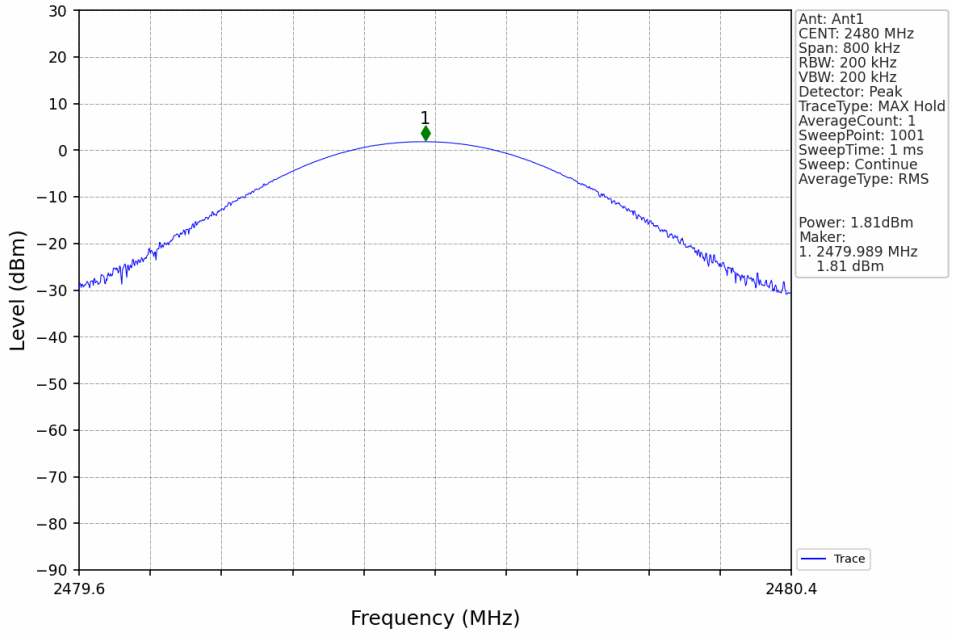
π/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



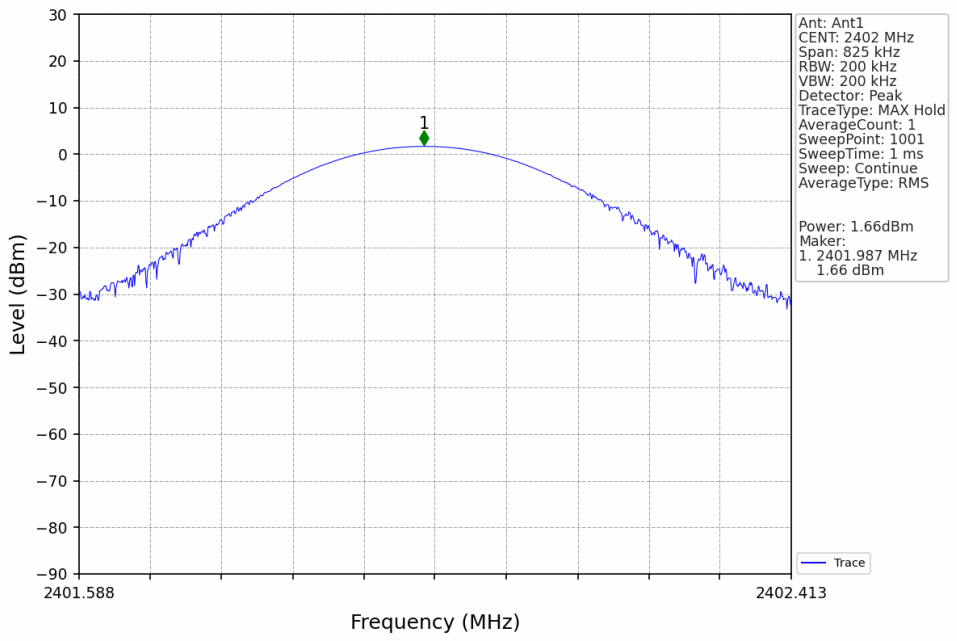
π /4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



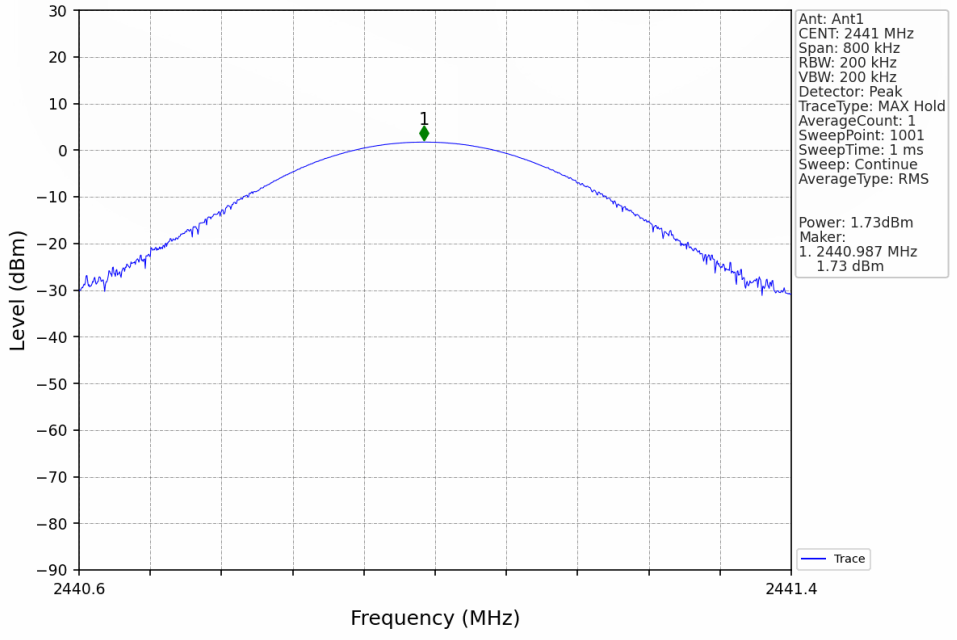
π /4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



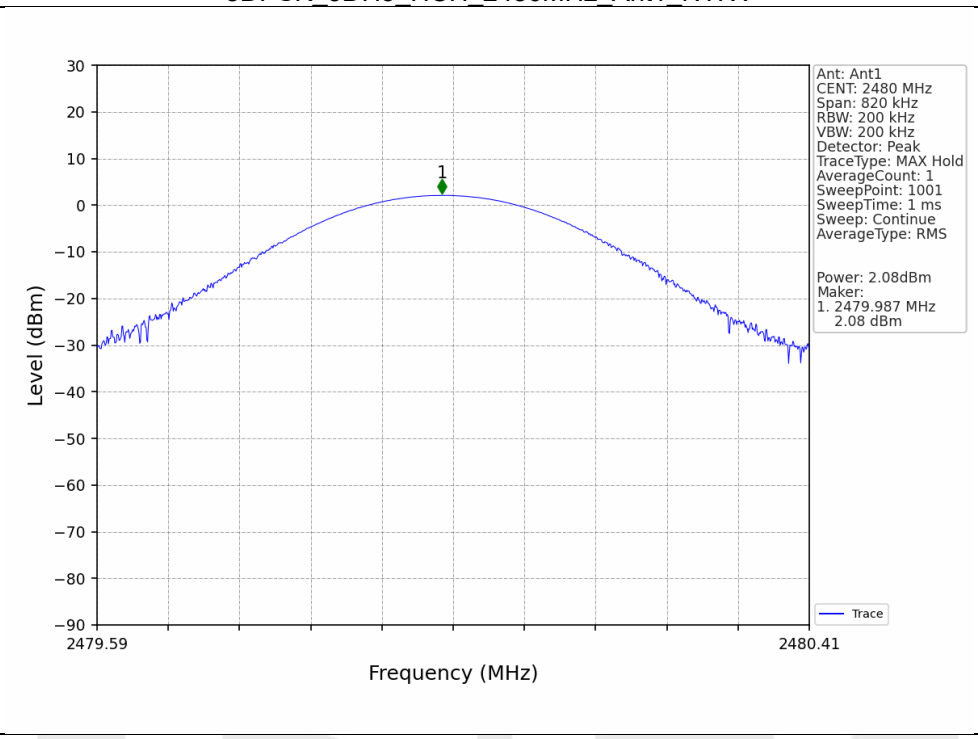
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



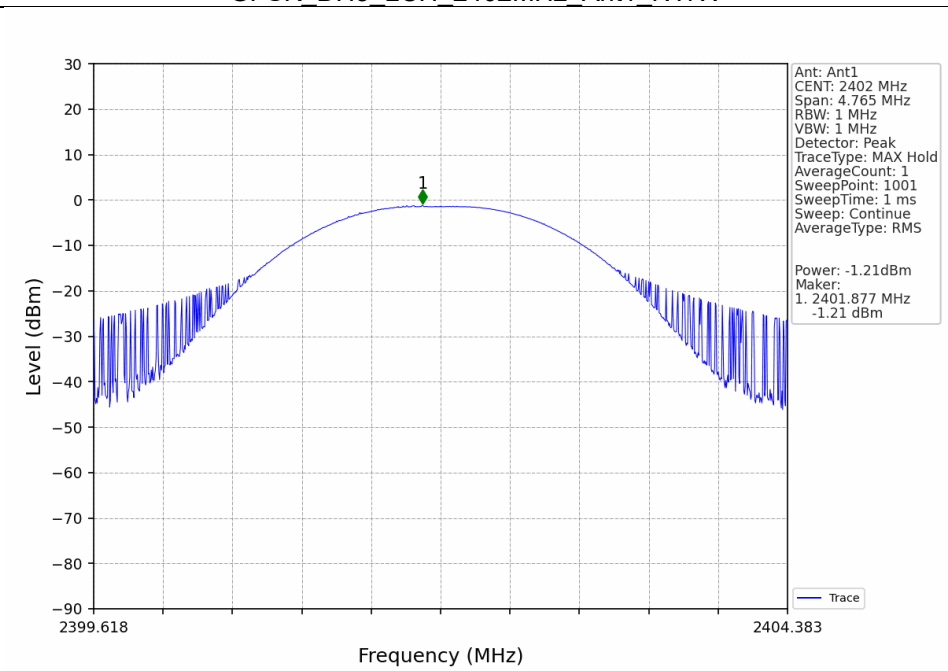
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



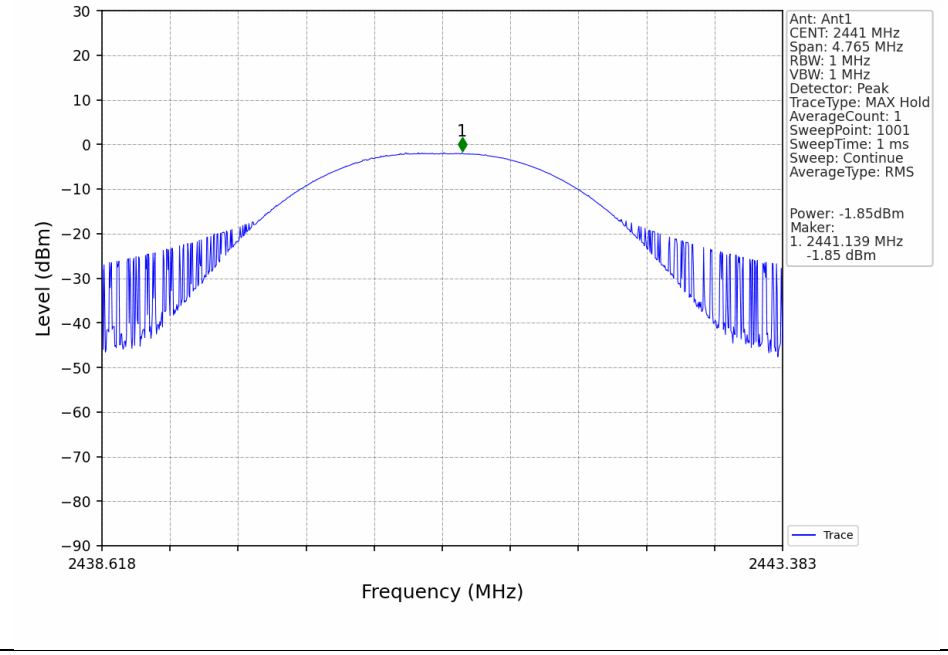
3.2 Test Graph(Right Ear)

3.2.1 Power

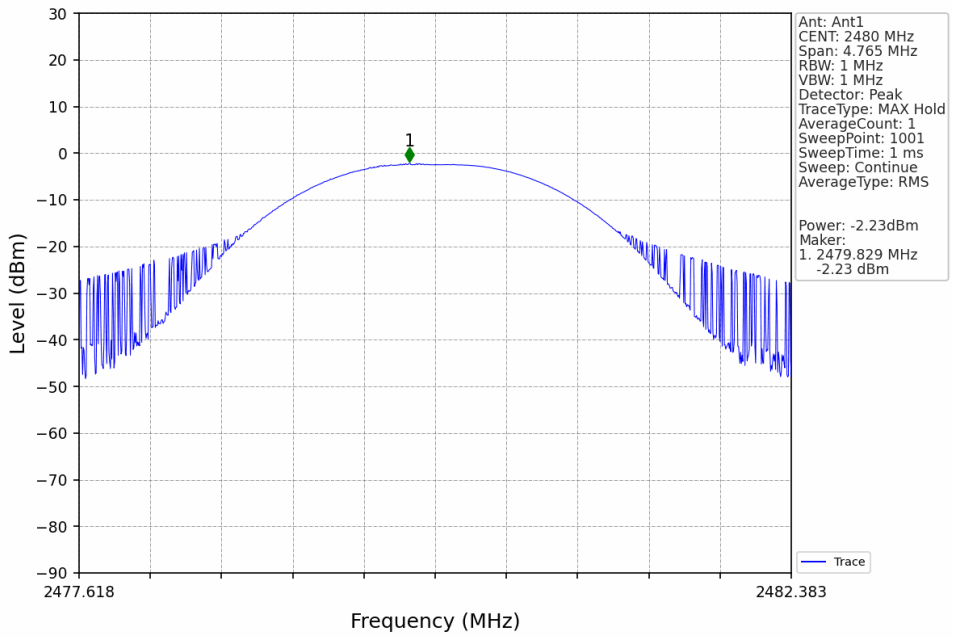
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



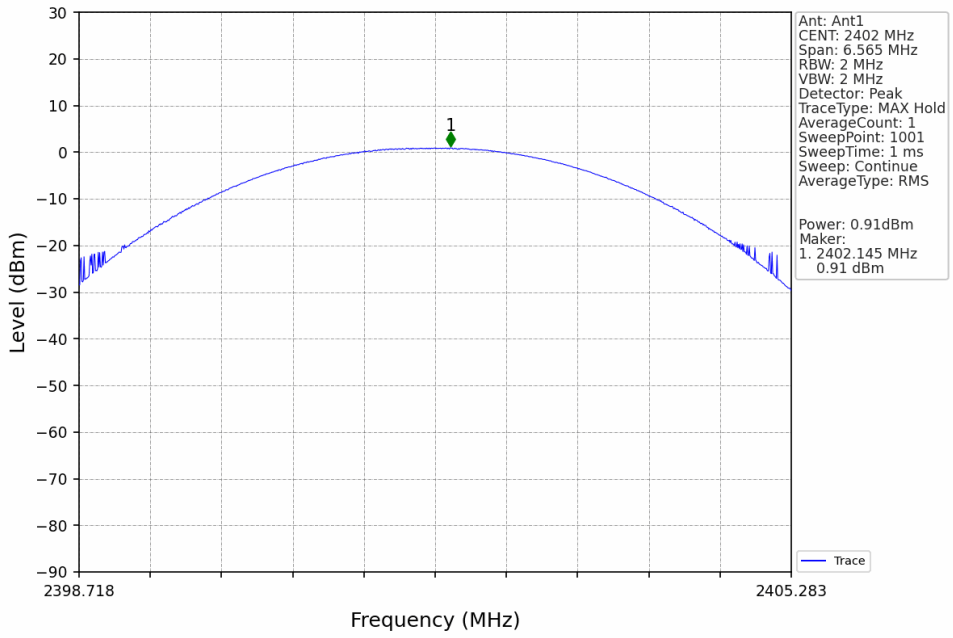
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



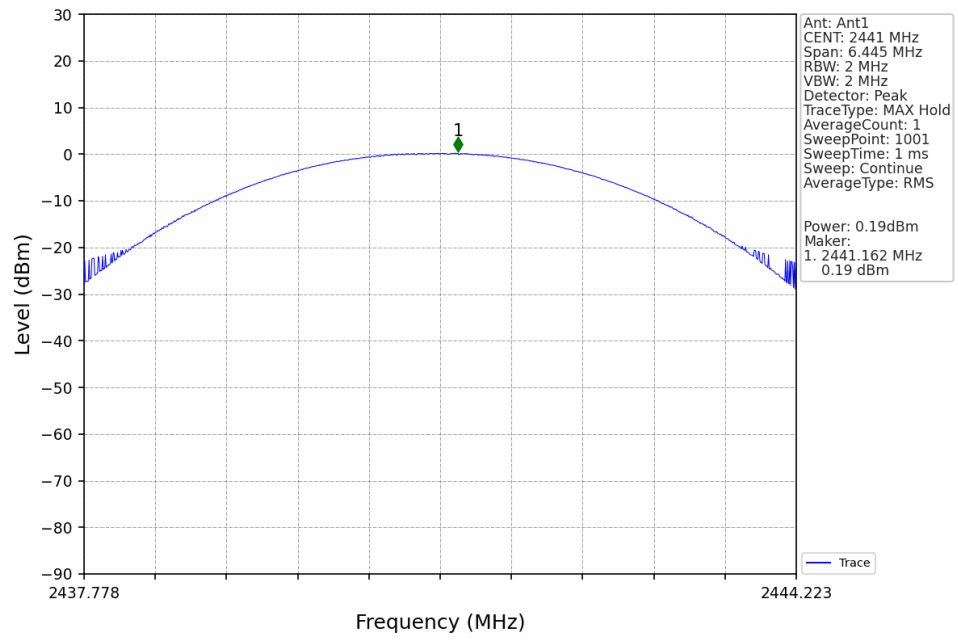
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



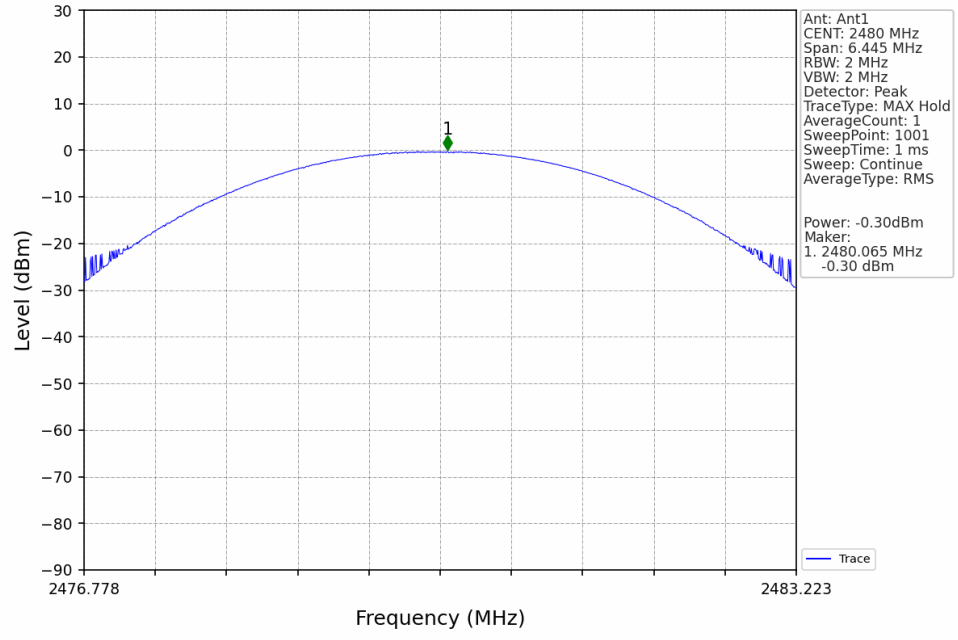
π/4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



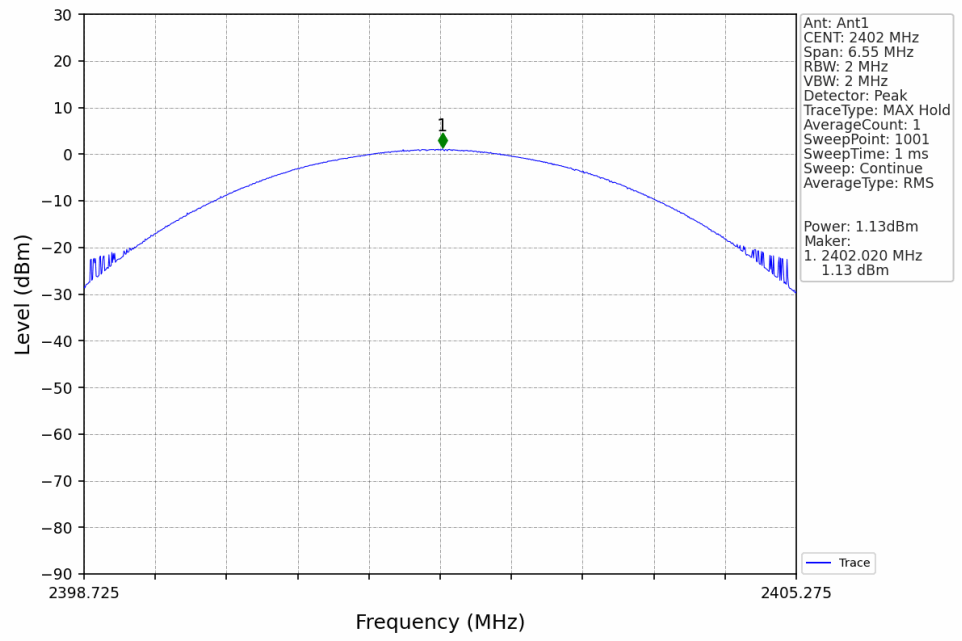
π/4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



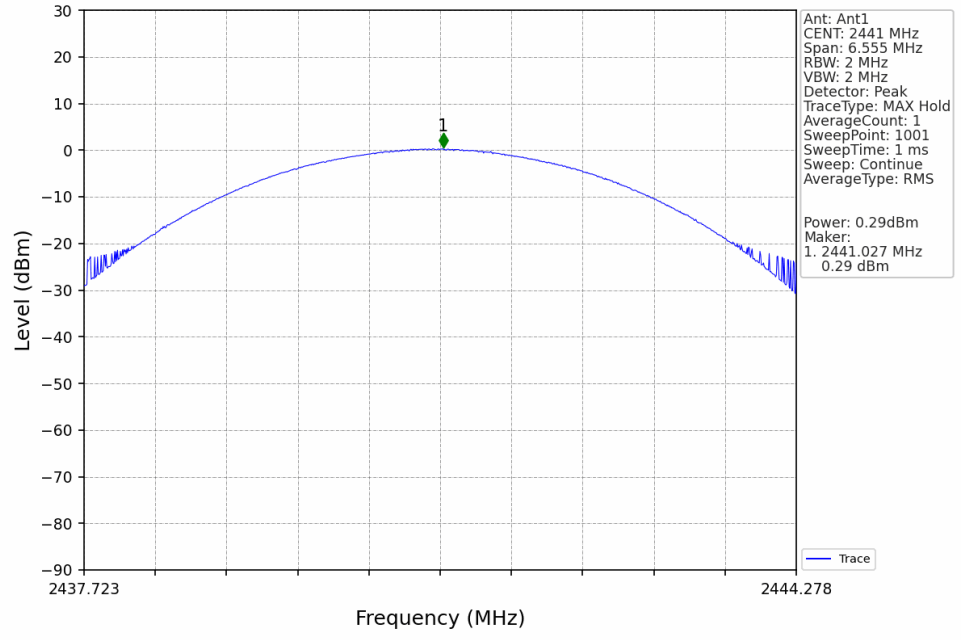
π/4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



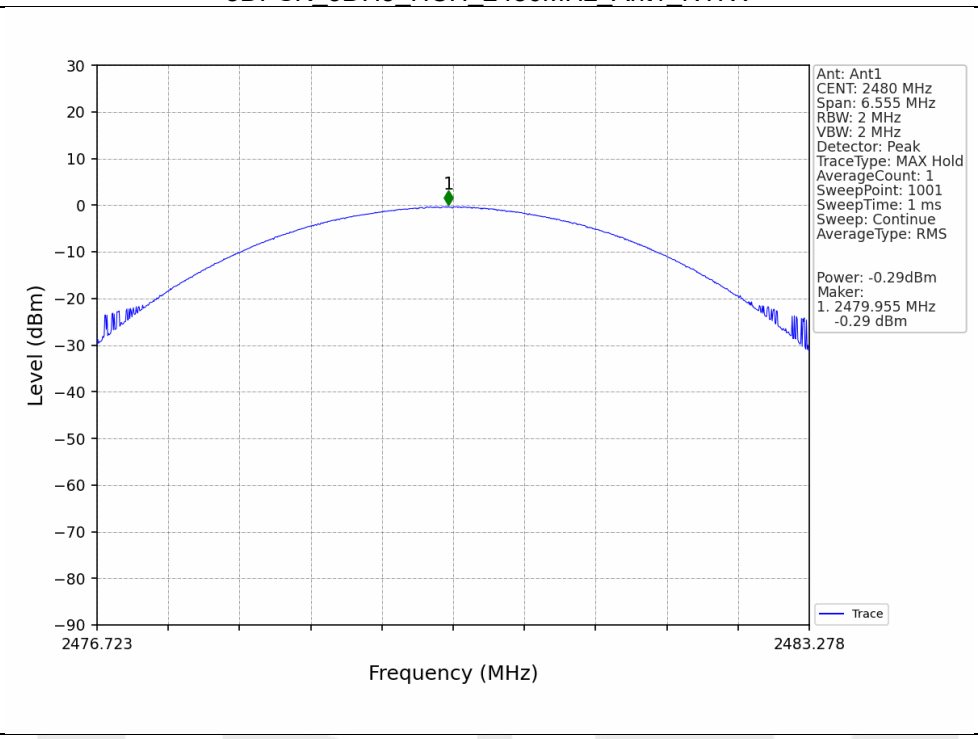
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



Left Ear

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	1.006	0.942	>=0.942	Pass
π /4DQPSK	SISO	HOPP	2DH5	1.013	0.163	>=0.163	Pass
8DPSK	SISO	HOPP	3DH5	0.998	0.165	>=0.165	Pass

Right Ear

4. Carrier Frequency Separation

4.1 Test Result

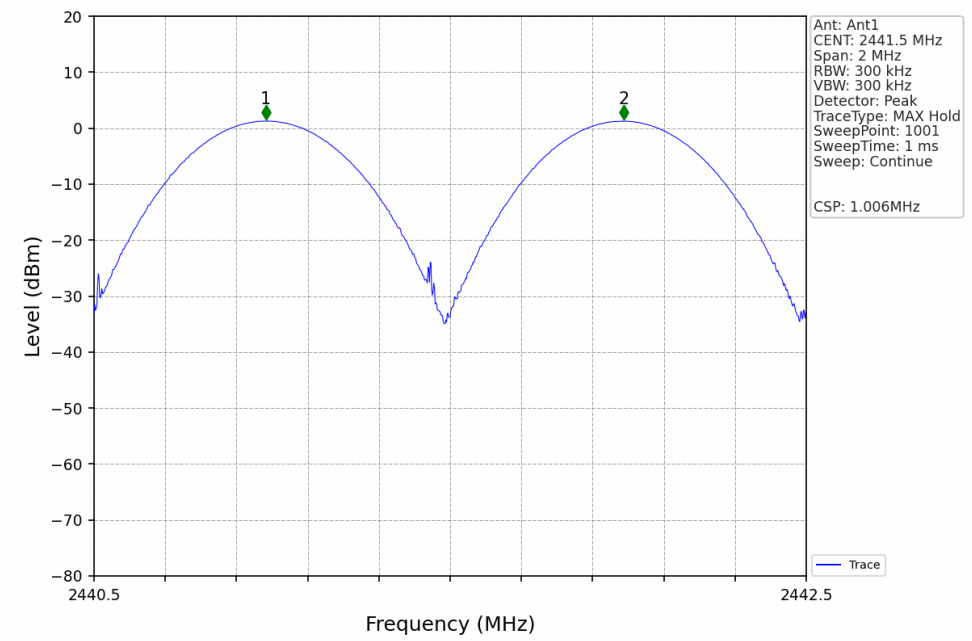
4.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	0.953	>=0.953	Pass
π/4-DQPSK	SISO	HOPP	2DH5	1.001	1.313	>=0.875	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.311	>=0.874	Pass

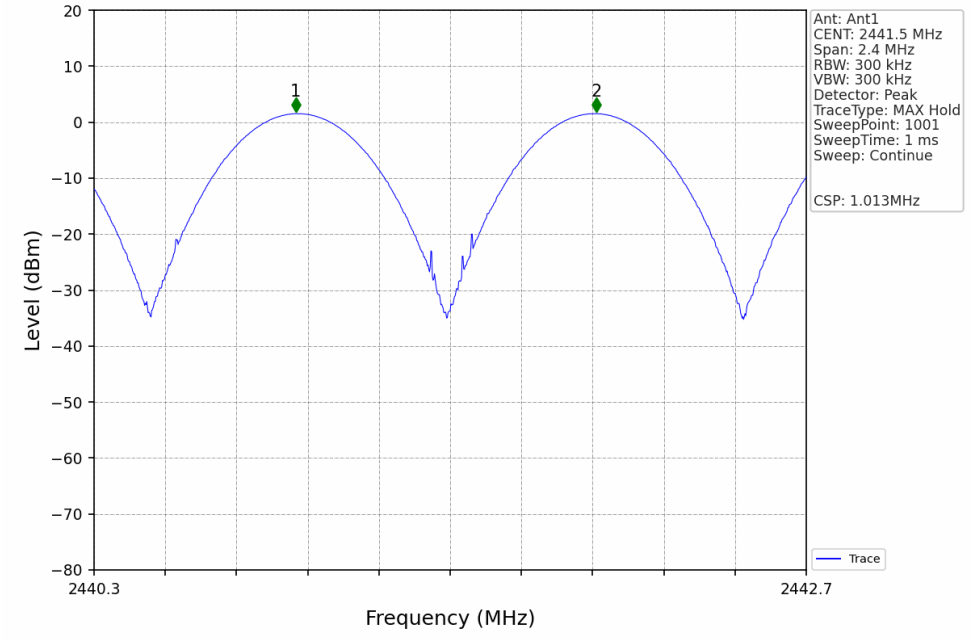
4.2 Test Graph(Left Ear)

4.2.1 Ant1

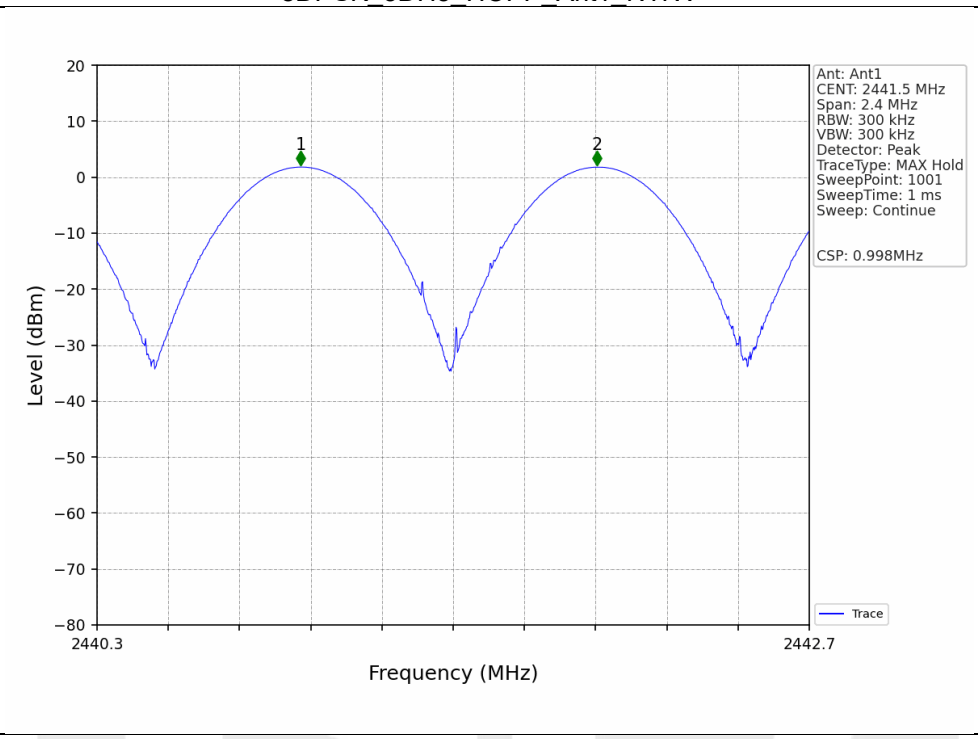
GFSK_DH5_HOPP_Ant1_NTNV



π/4DQPSK_2DH5_HOPP_Ant1_NTNV



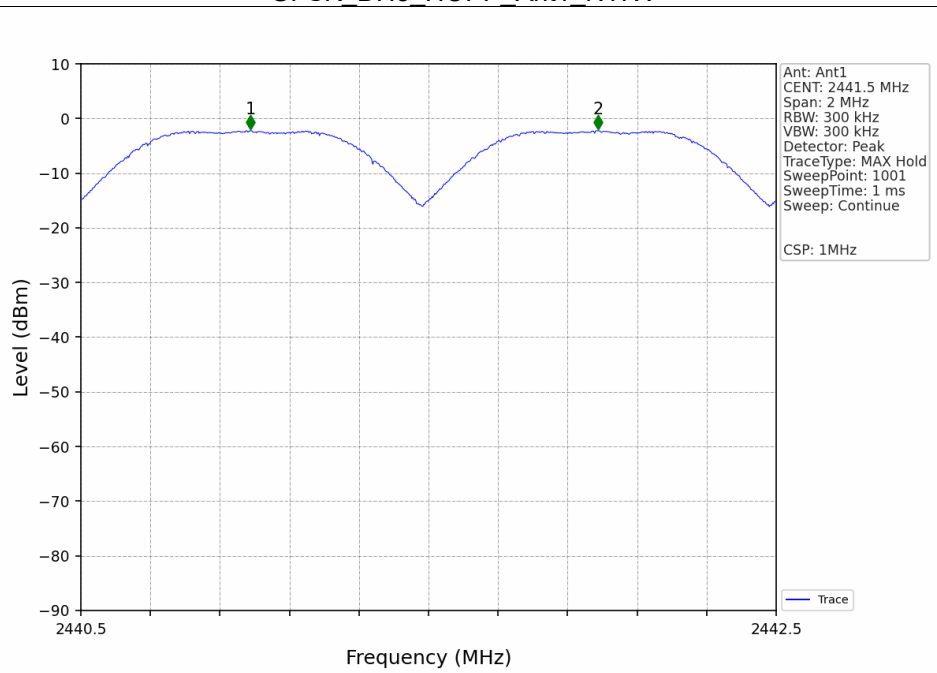
8DPSK_3DH5_HOPP_Ant1_NTNV



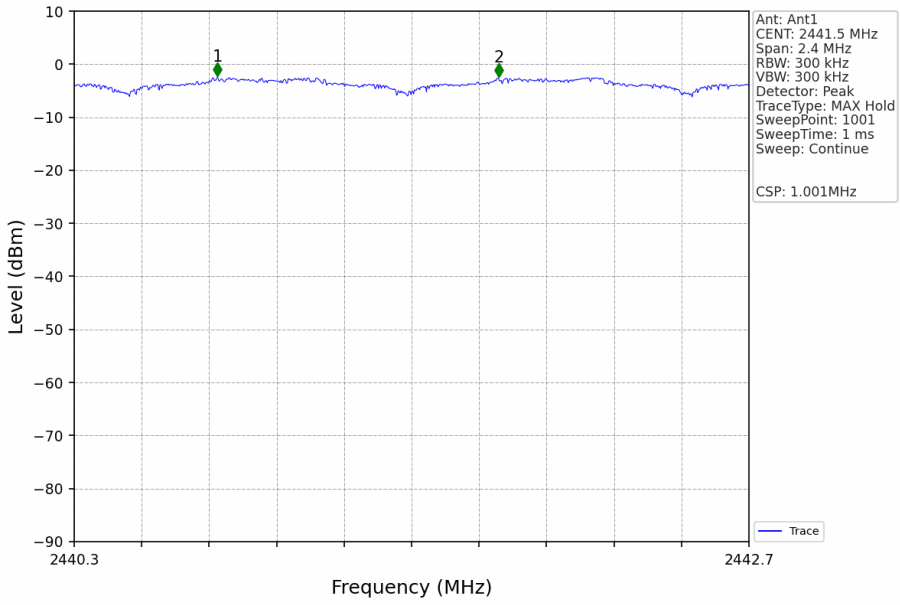
4.2 Test Graph(Right Ear)

4.2.1 Ant1

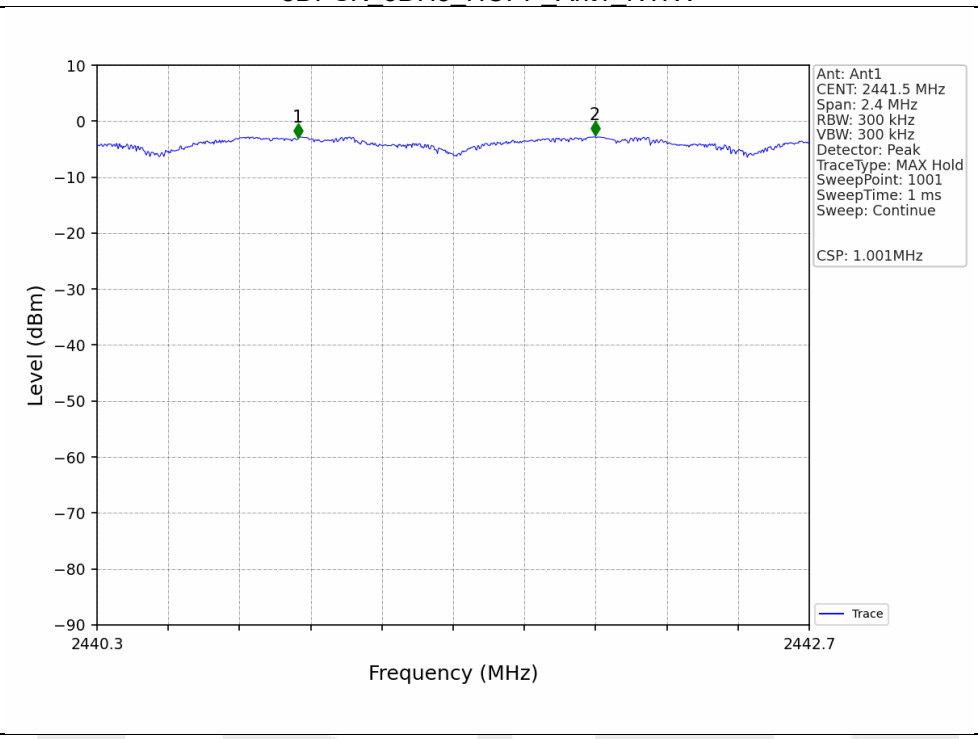
GFSK_DH5_HOPP_Ant1_NTNV



π/4-DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



Left Ear

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
π/4DQPSK	SISO	HOPP	2DH5	79	>=15	Pass
8DPSK	SISO	HOPP	3DH5	79	>=15	Pass

Right Ear

5. Number of Hopping Frequencies

5.1 Test Result

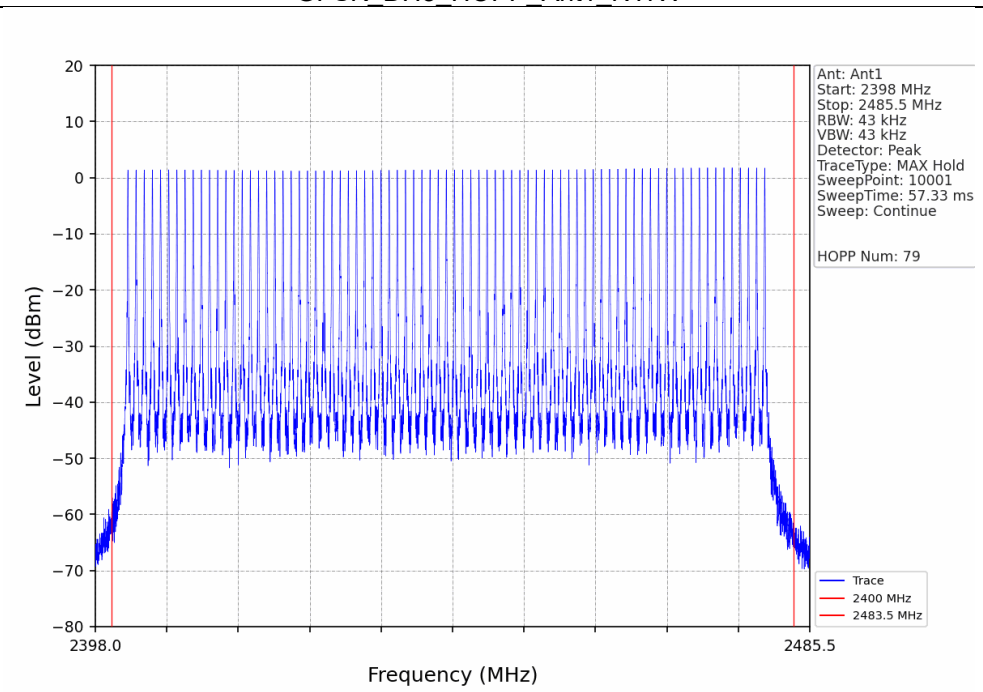
5.1.1 HoppNum

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

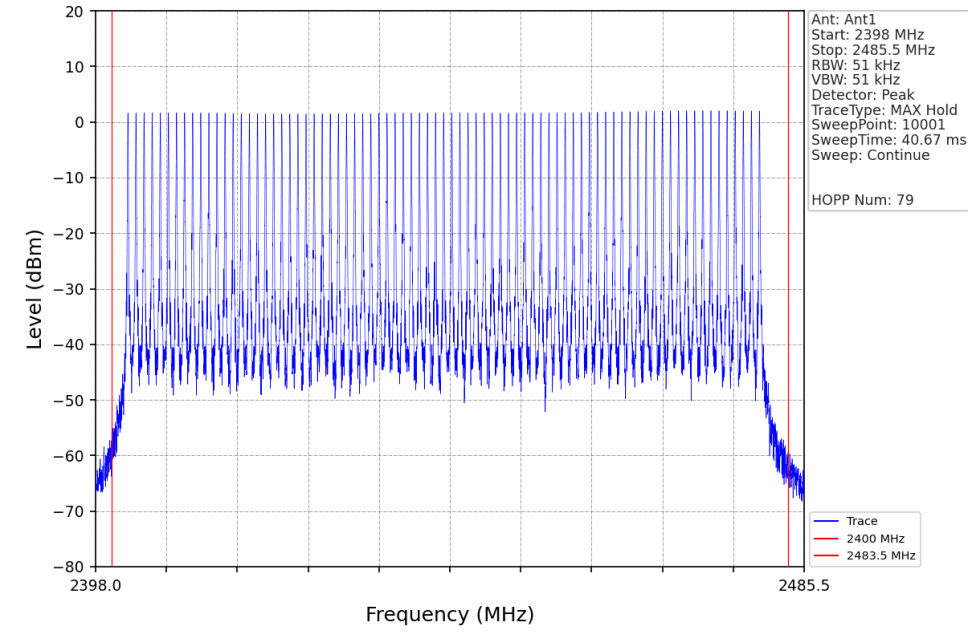
5.2 Test Graph(Left Ear)

5.2.1 HoppNum

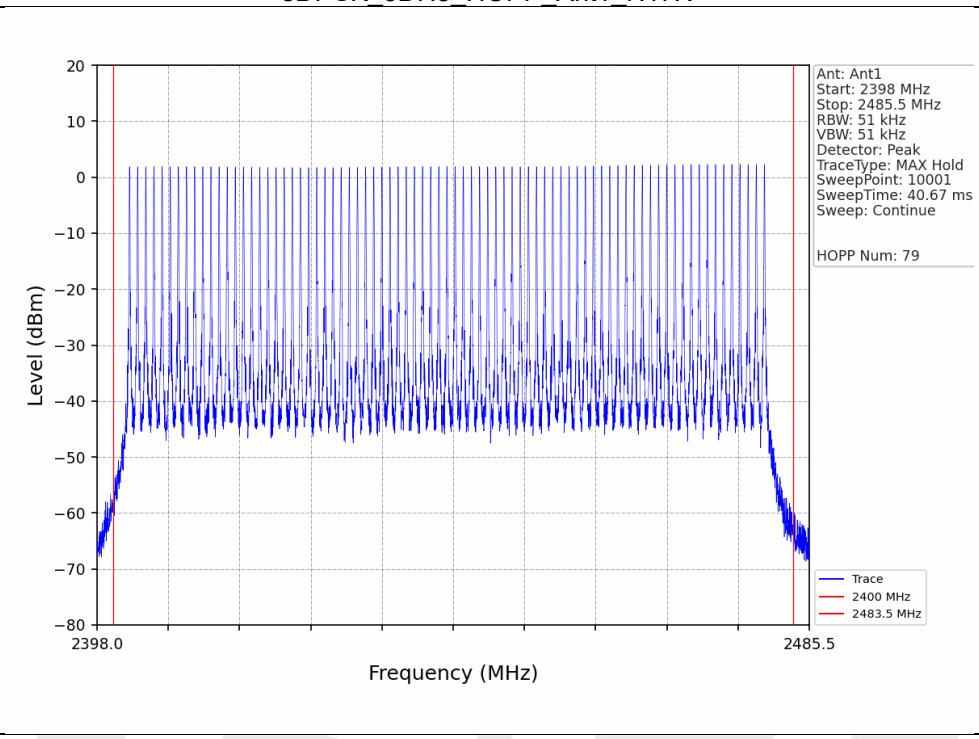
GFSK_DH5_HOPP_Ant1_NTNV



π /4DQPSK_2DH5_HOPP_Ant1_NTNV



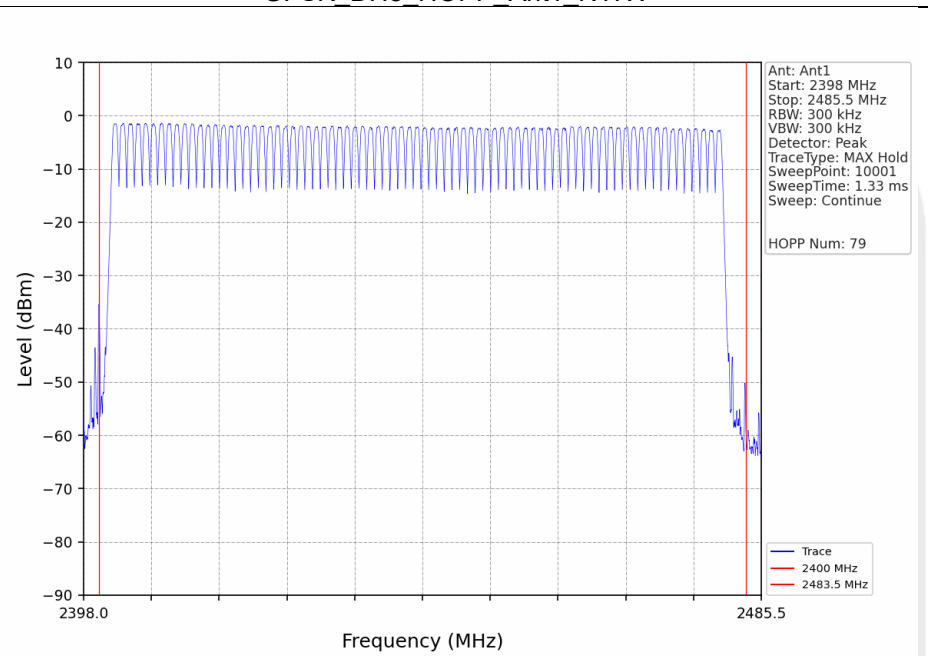
8DPSK_3DH5_HOPP_Ant1_NTNV



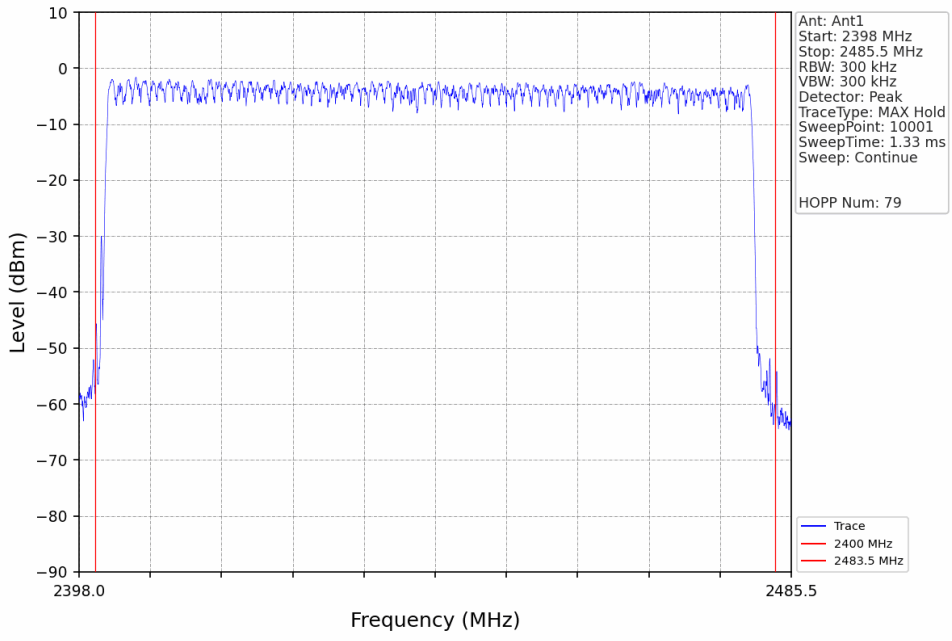
5.2 Test Graph(Right Ear)

5.2.1 HoppNum

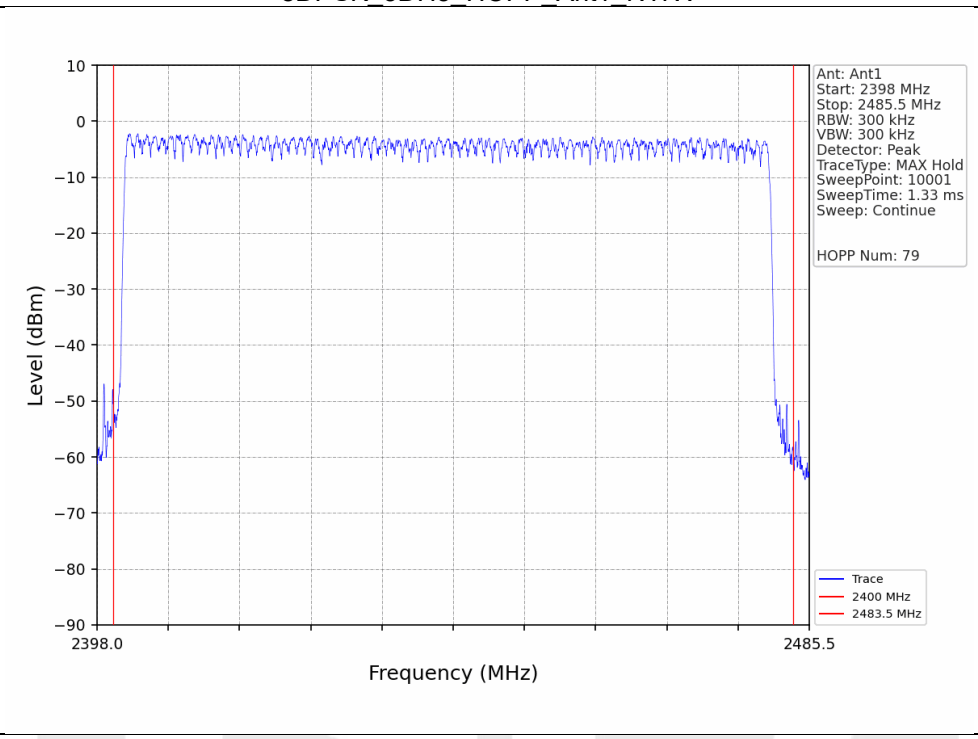
GFSK_DH5_HOPP_Ant1_NTNV



π/4-DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



Left Ear

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	0.410	31.600	320	131.200	<=400	Pass
			DH3	1.666	31.600	165	274.890	<=400	Pass
			DH5	2.916	31.600	111	323.676	<=400	Pass
π /4DQPSK	SISO	HOPP	2DH1	0.420	31.600	320	134.400	<=400	Pass
			2DH3	1.672	31.600	156	260.832	<=400	Pass
			2DH5	2.920	31.600	108	315.360	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.420	31.600	320	134.400	<=400	Pass
			3DH3	1.670	31.600	150	250.500	<=400	Pass
			3DH5	2.920	31.600	112	327.040	<=400	Pass

Right Ear

6. Time of Occupancy (Dwell Time)

6.1 Test Result

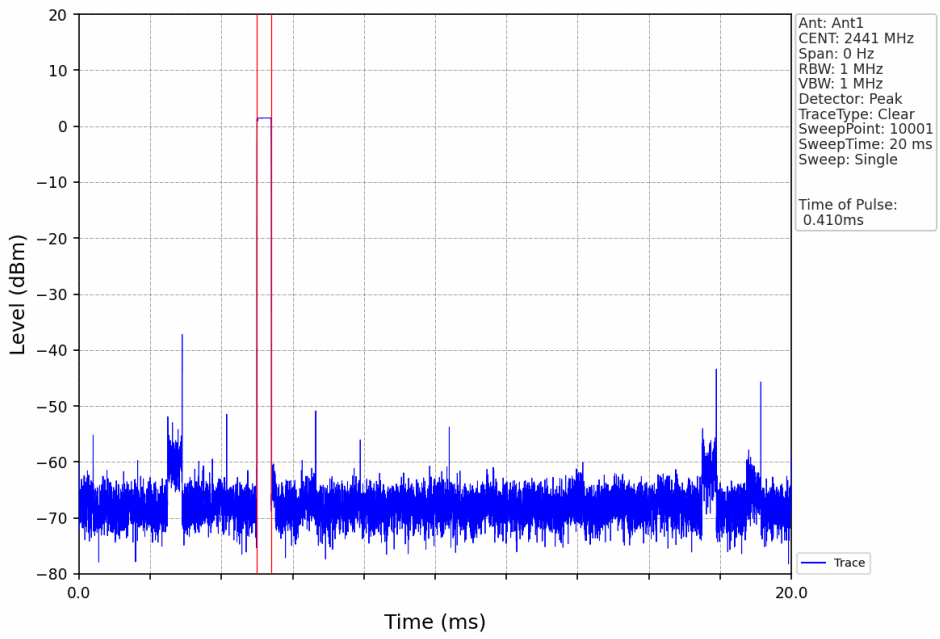
6.1.1 Ant1

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	0.406	31.600	318	129.108	<=400	Pass
			DH3	1.664	31.600	161	267.904	<=400	Pass
			DH5	2.910	31.600	107	311.370	<=400	Pass
π/4-DQPSK	SISO	HOPP	2DH1	0.418	31.600	319	133.342	<=400	Pass
			2DH3	1.670	31.600	153	255.510	<=400	Pass
			2DH5	2.916	31.600	114	332.424	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.416	31.600	317	131.872	<=400	Pass
			3DH3	1.670	31.600	165	275.550	<=400	Pass
			3DH5	2.920	31.600	117	341.640	<=400	Pass

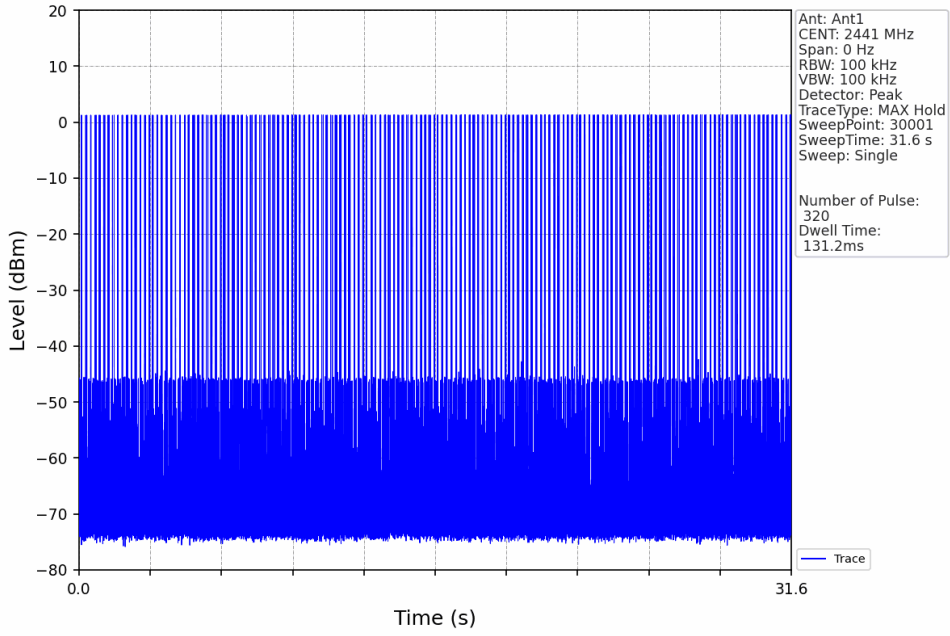
6.2 Test Graph(Left Ear)

6.2.1 Ant1

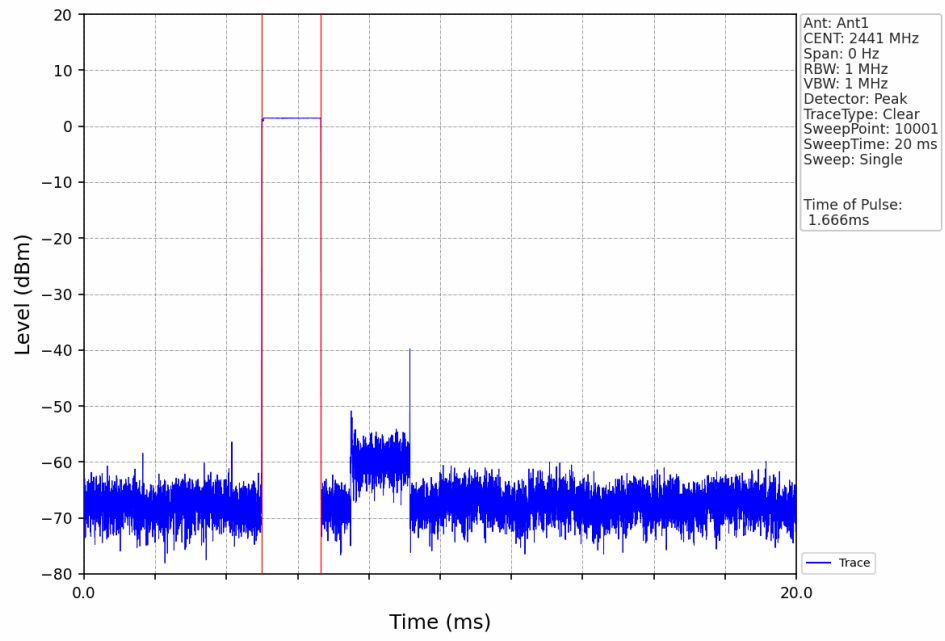
GFSK_DH1_HOPP_Ant1_NTNV



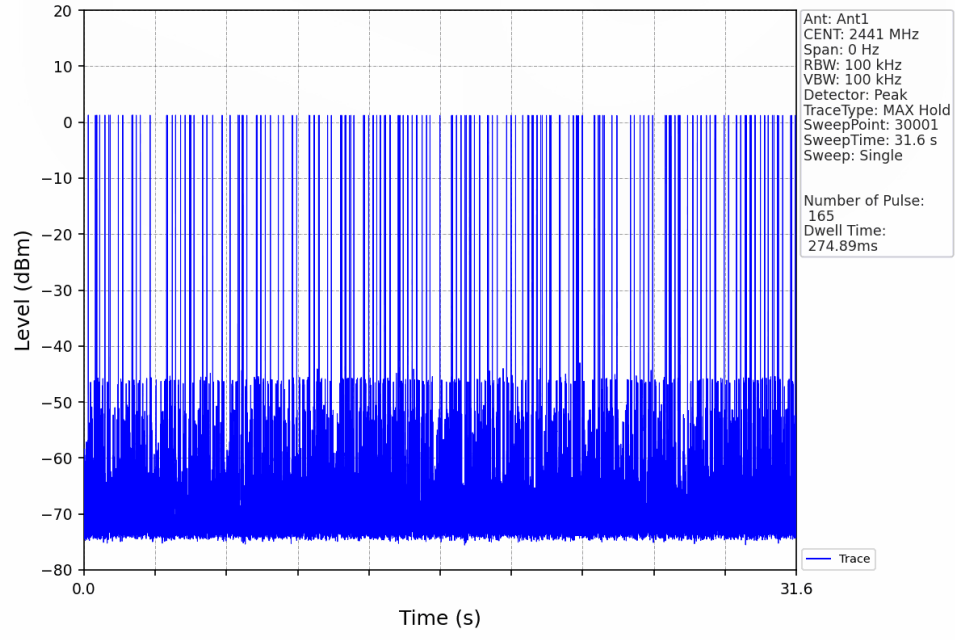
GFSK_DH1_HOPP_Ant1_NTNV



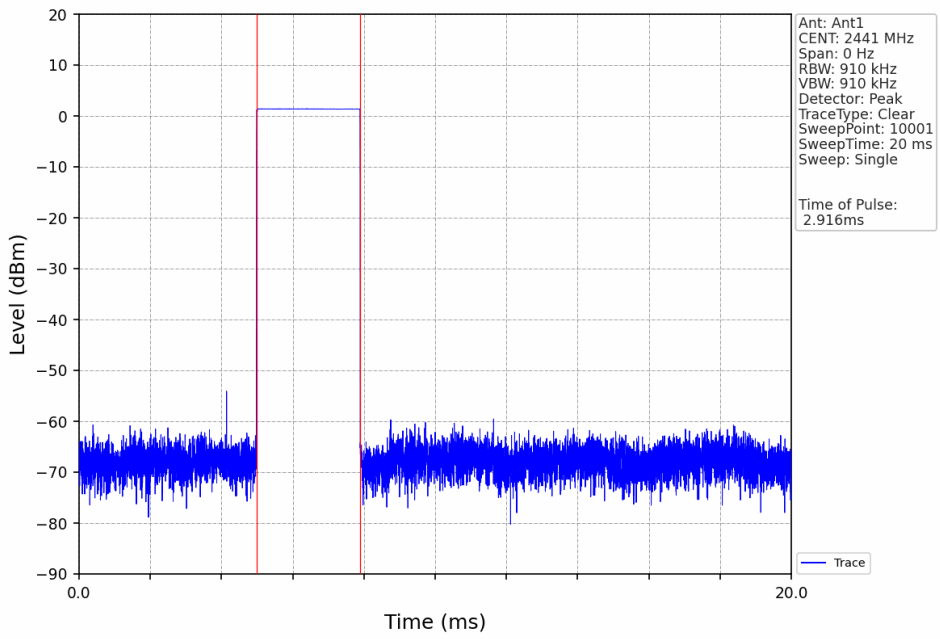
GFSK_DH3_HOPP_Ant1_NTNV



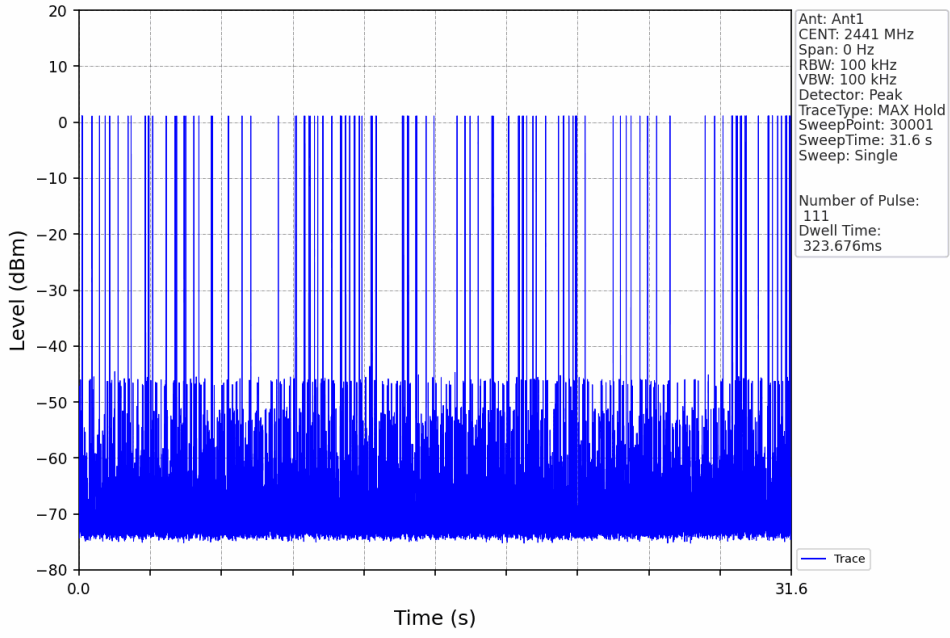
GFSK_DH3_HOPP_Ant1_NTNV



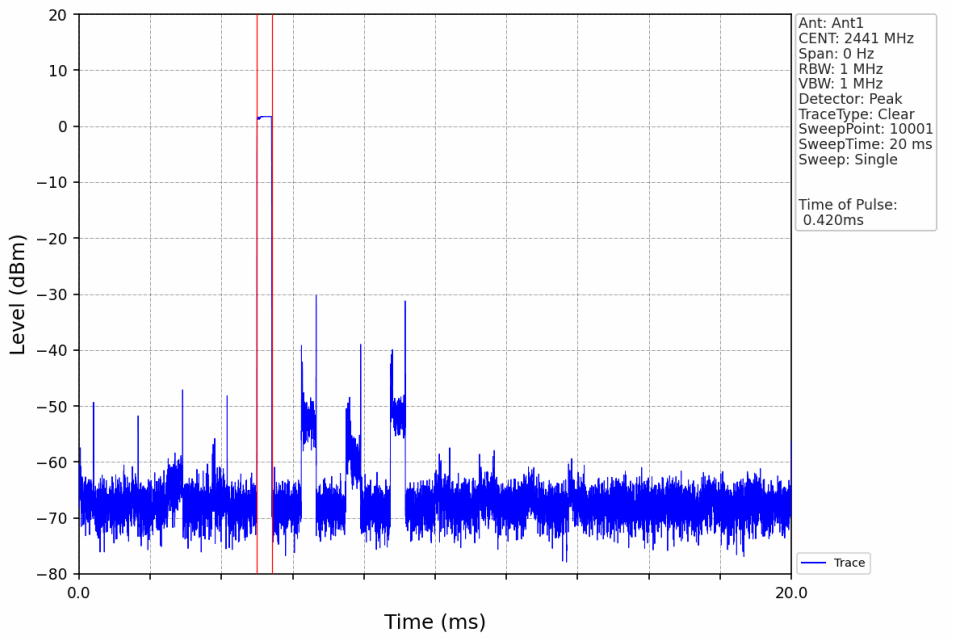
GFSK_DH5_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



π /4DQPSK_2DH1_HOPP_Ant1_NTNV



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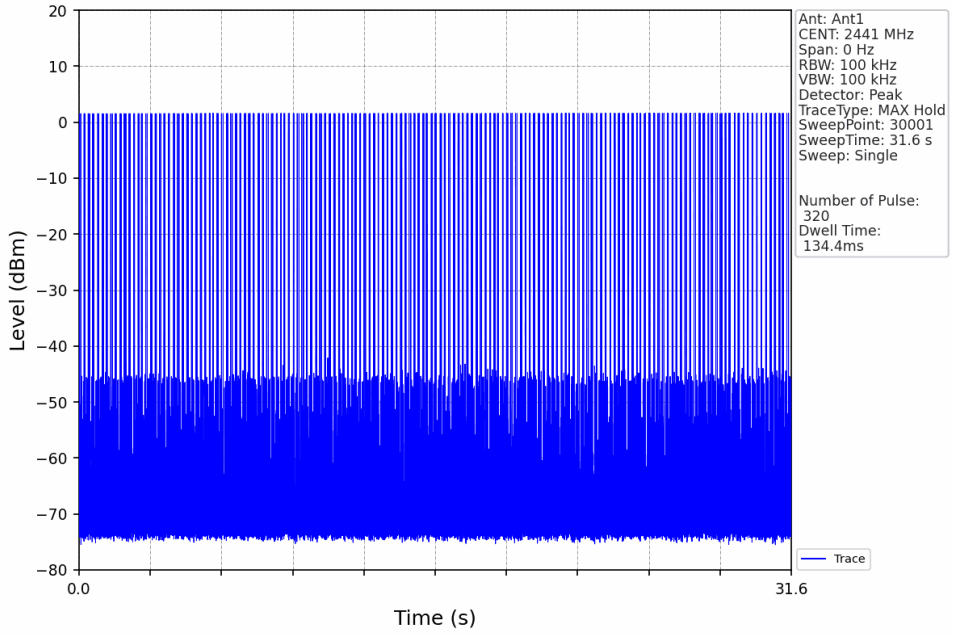

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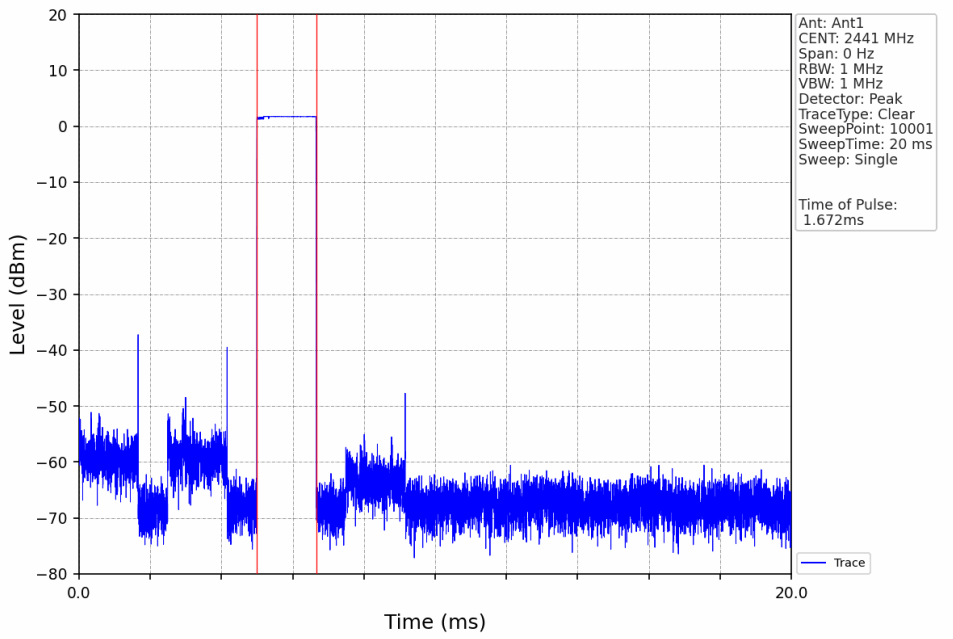

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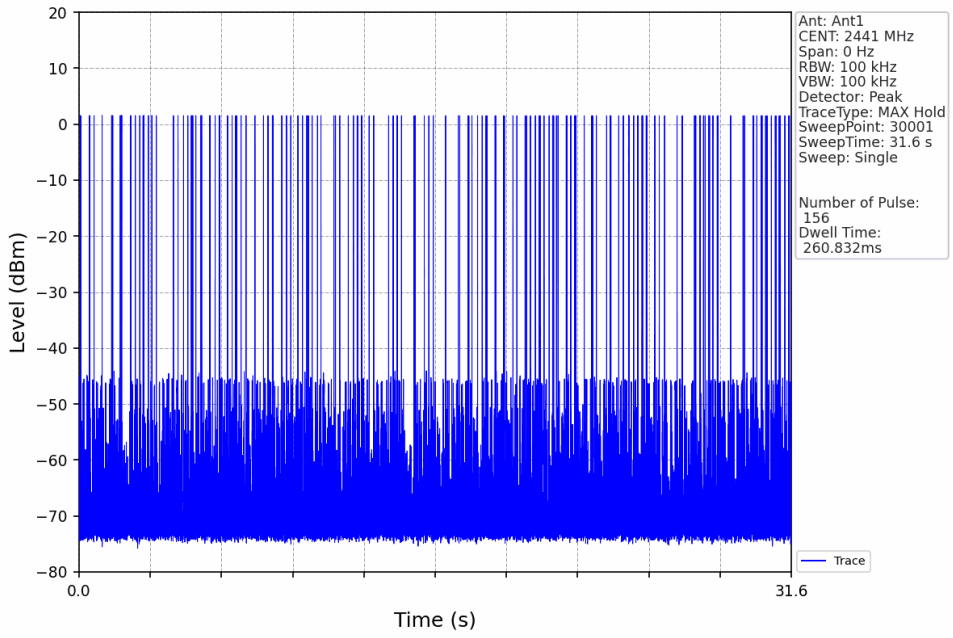

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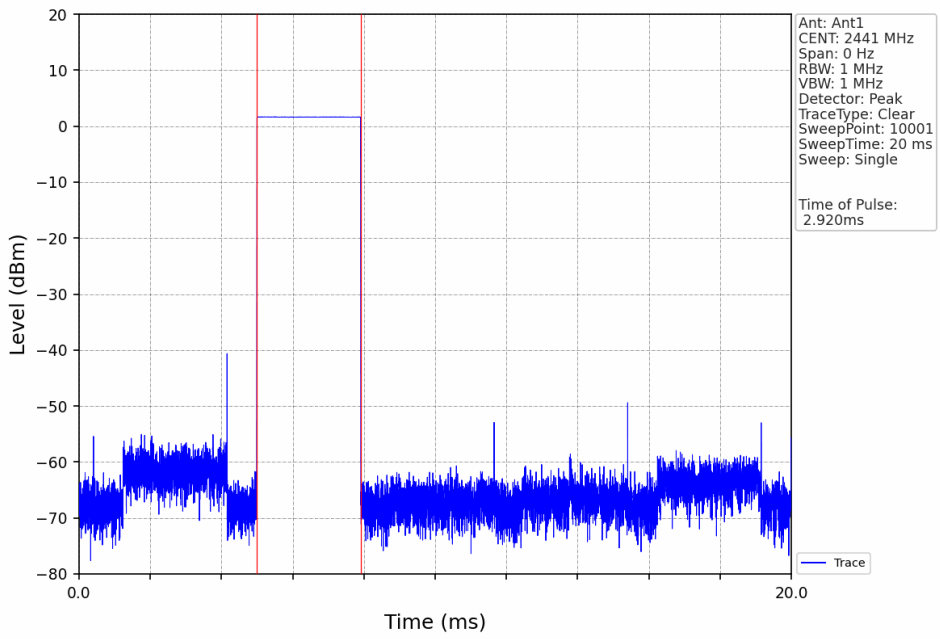

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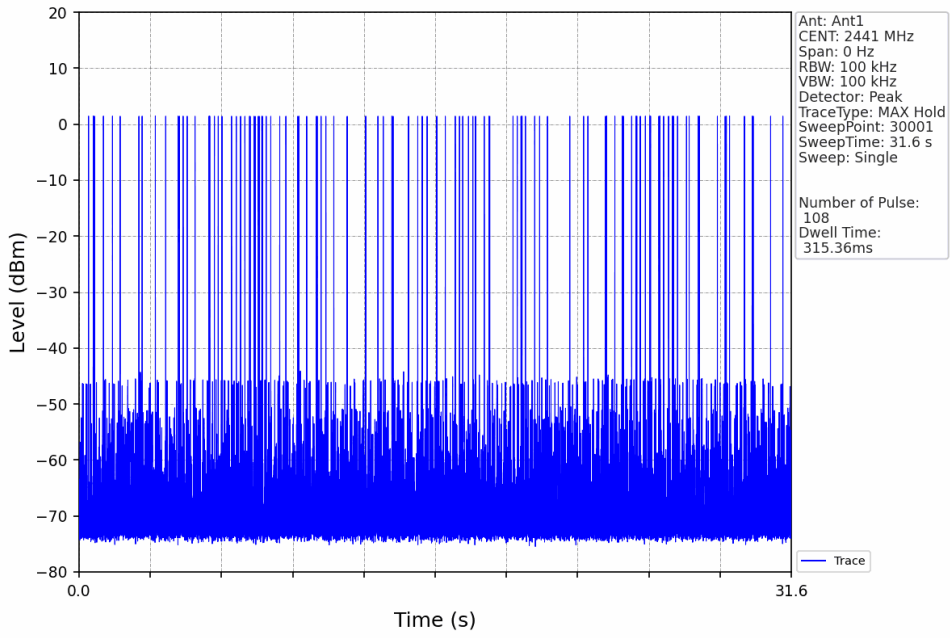
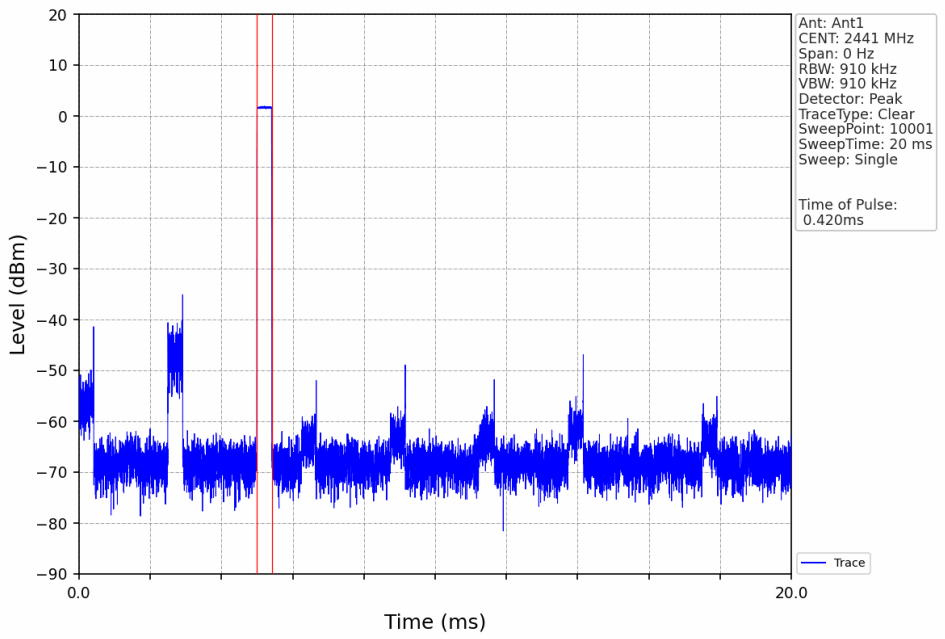


8DPSK_3DH1_HOPP_Ant1_NTNV



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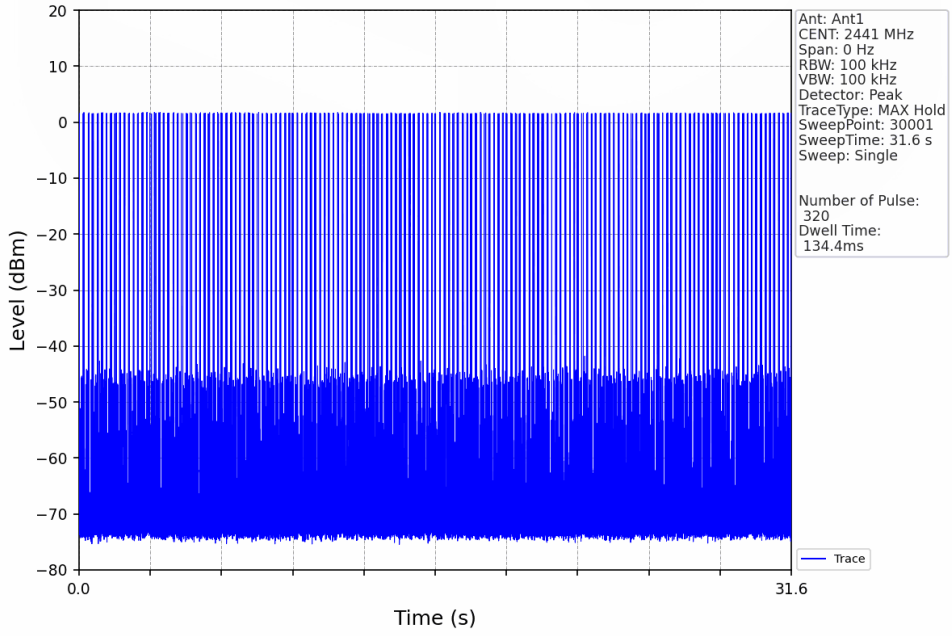

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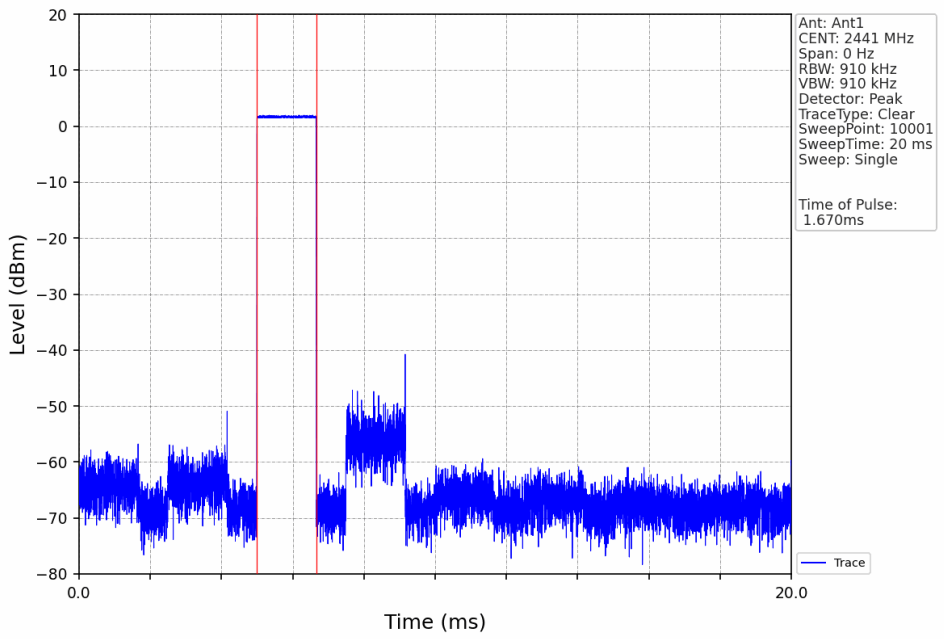
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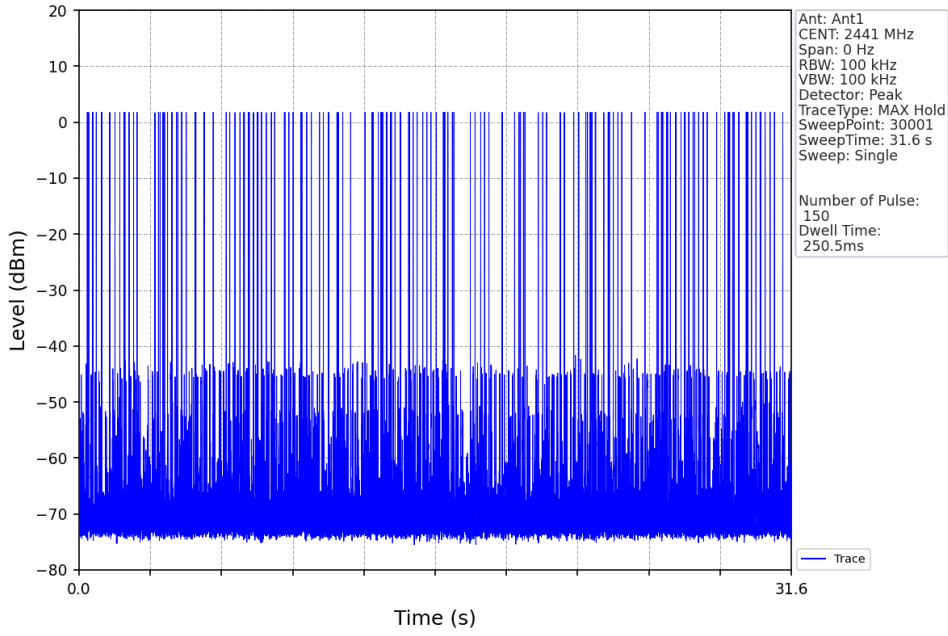
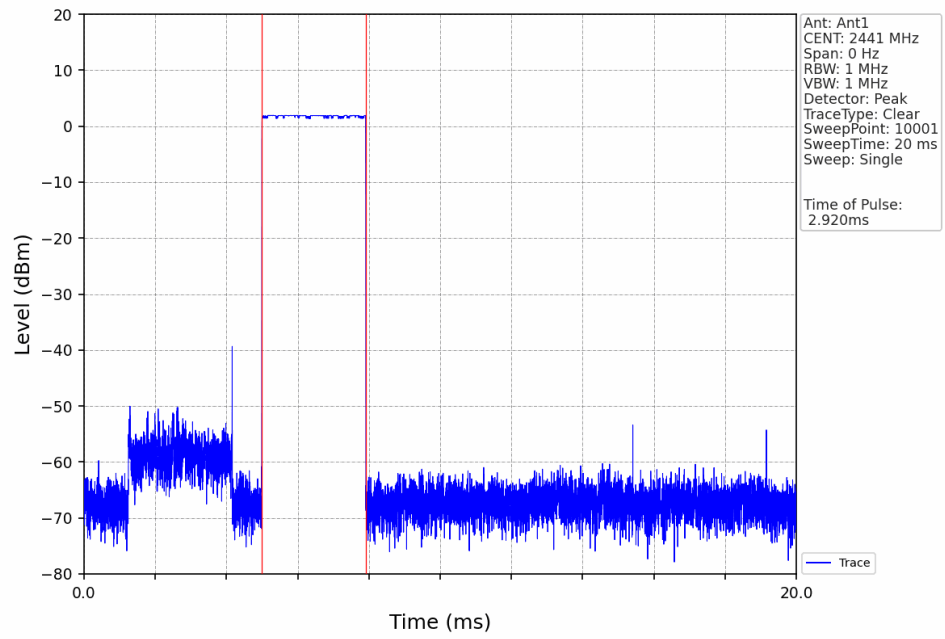
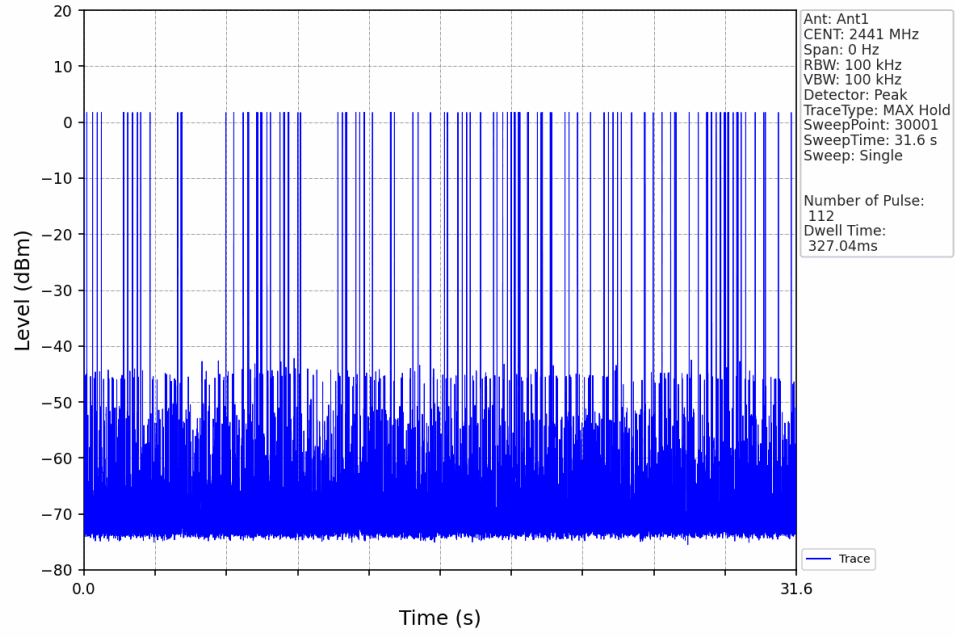


8DPSK_3DH5_HOPP_Ant1_NTNV



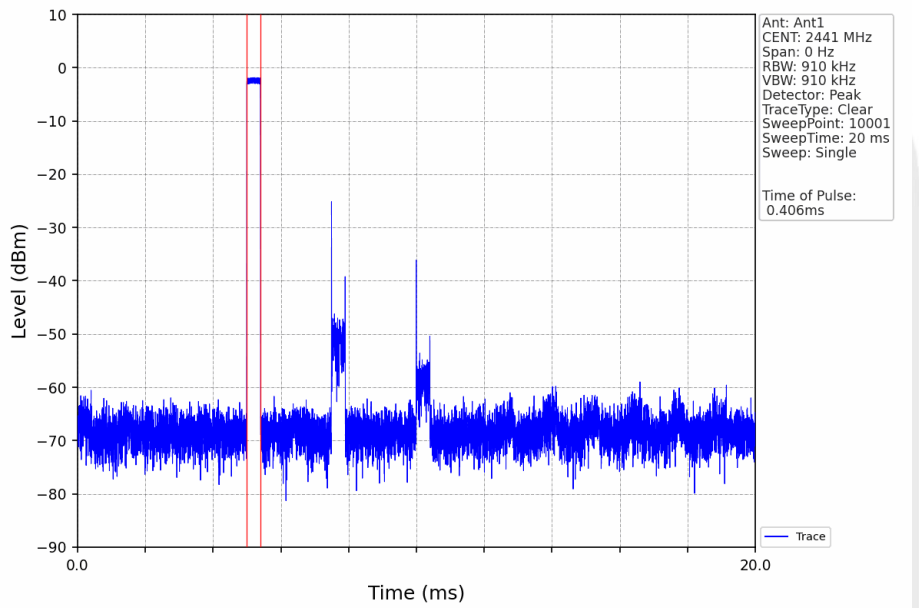
8DPSK_3DH5_HOPP_Ant1_NTNV



6.2 Test Graph(Right Ear)

6.2.1 Ant1

GFSK_DH1_HOPP_Ant1_NTNV



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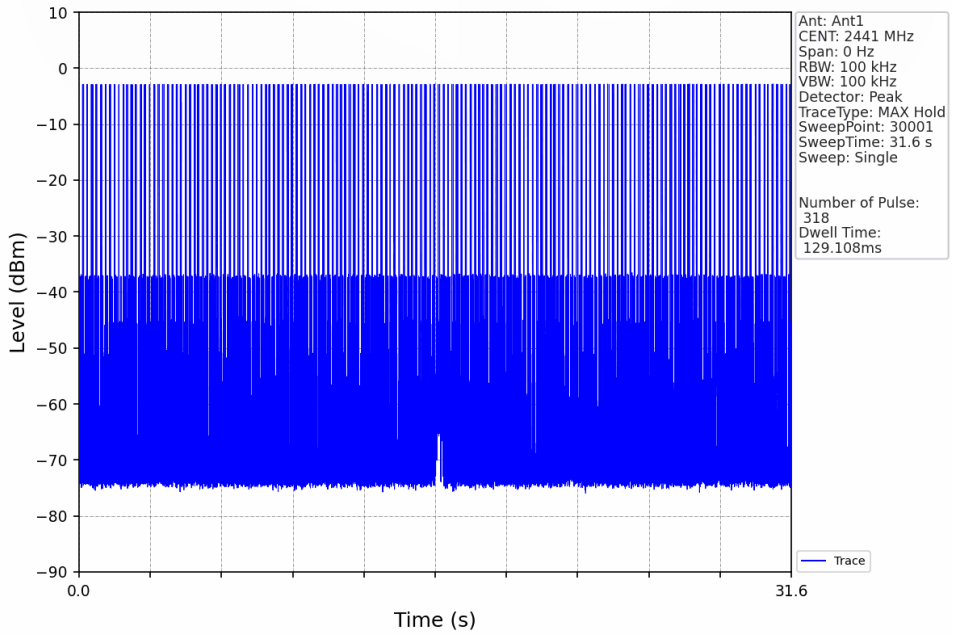

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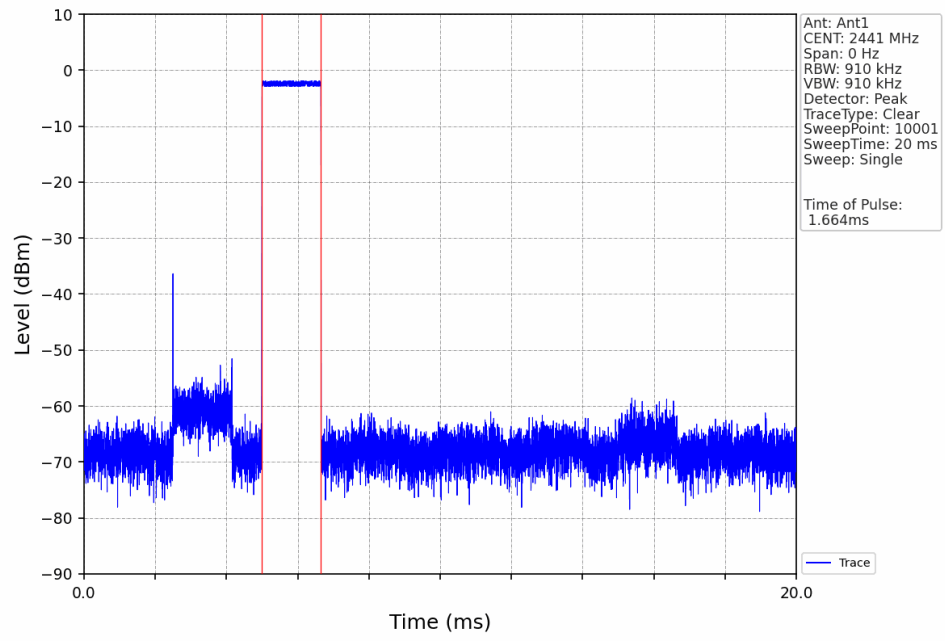
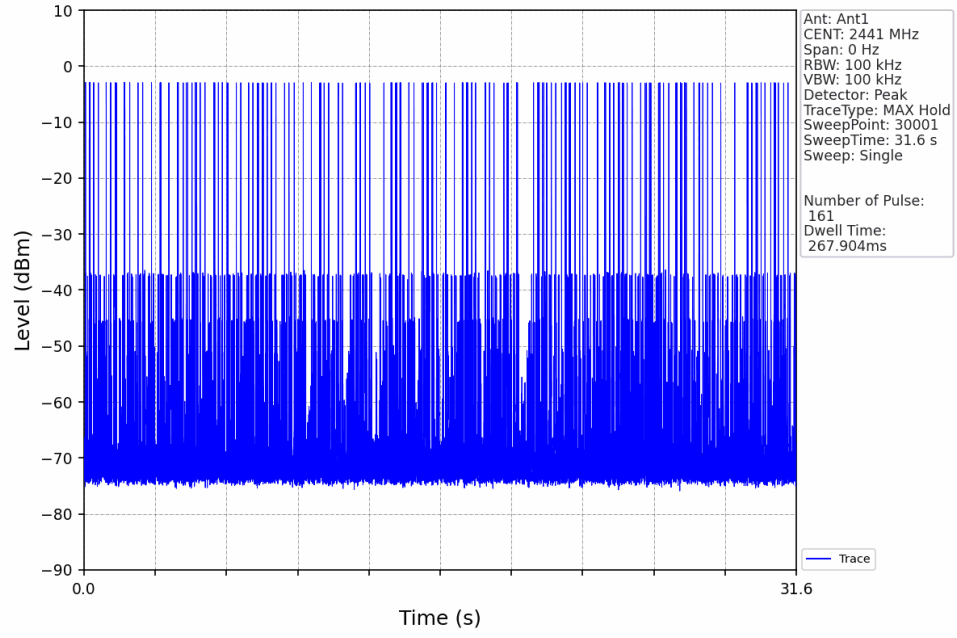
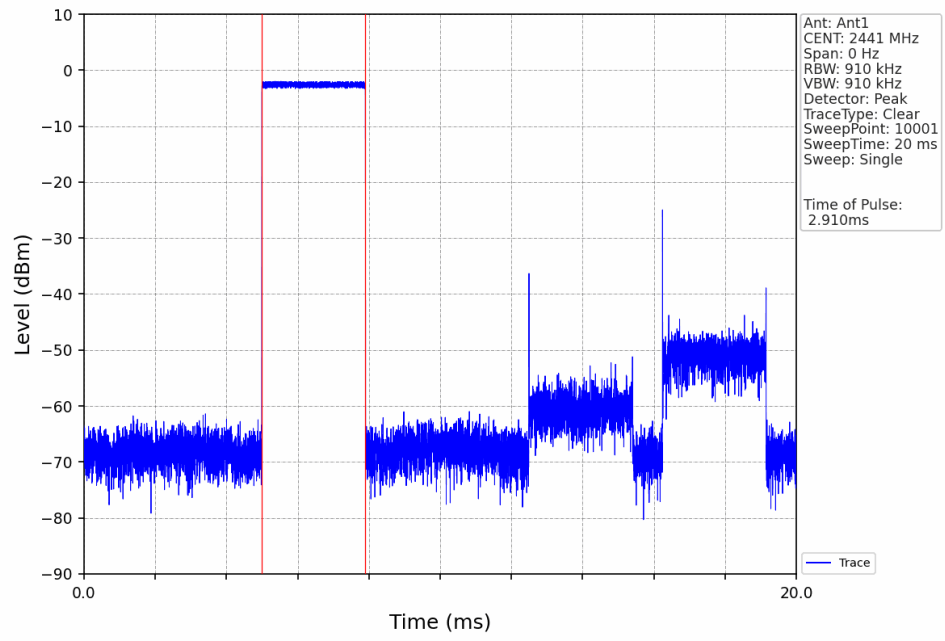


GFSK_DH3_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



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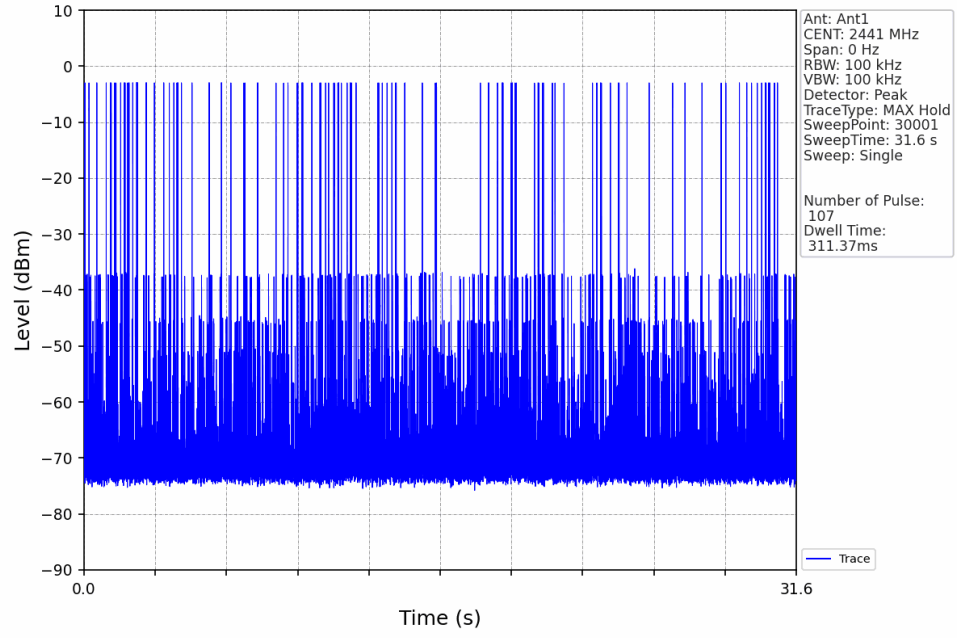
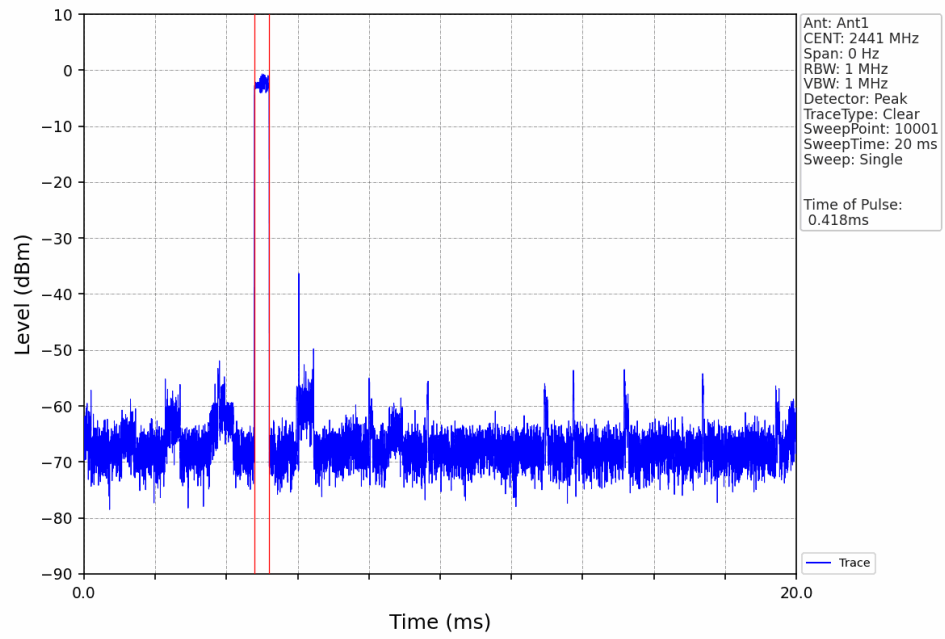


π/4-DQPSK_2DH1_HOPP_Ant1_NTNV



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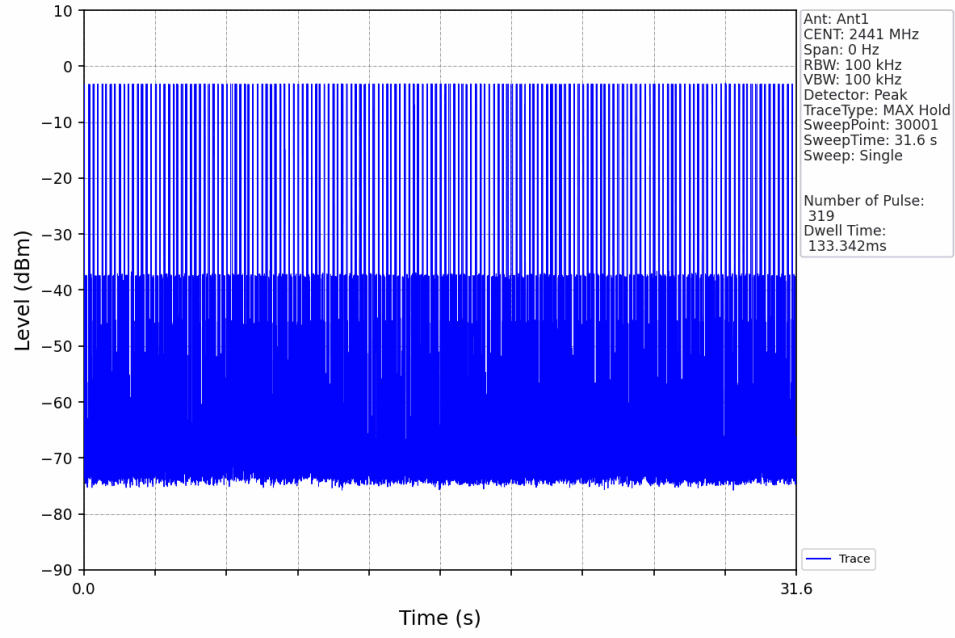
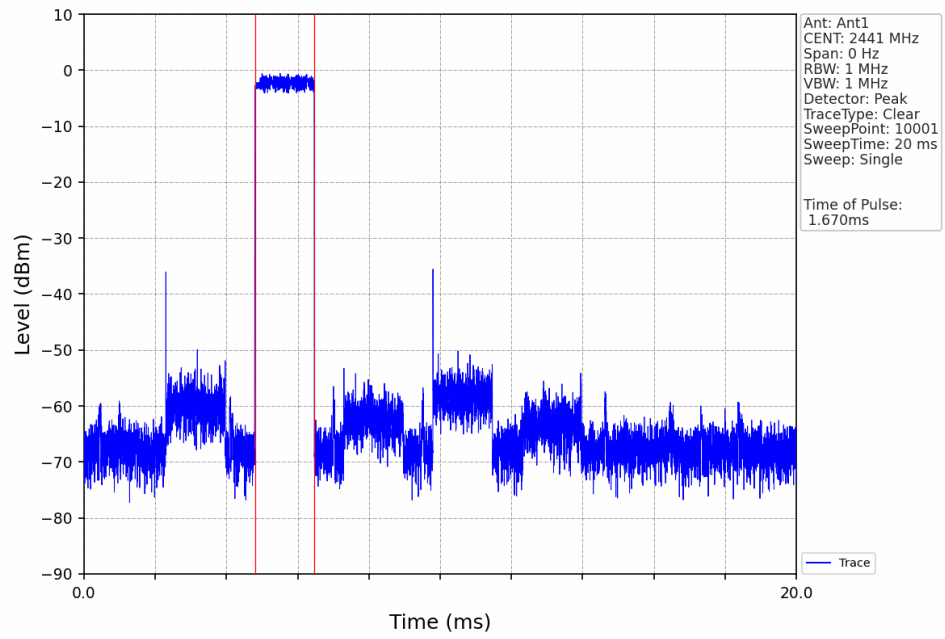
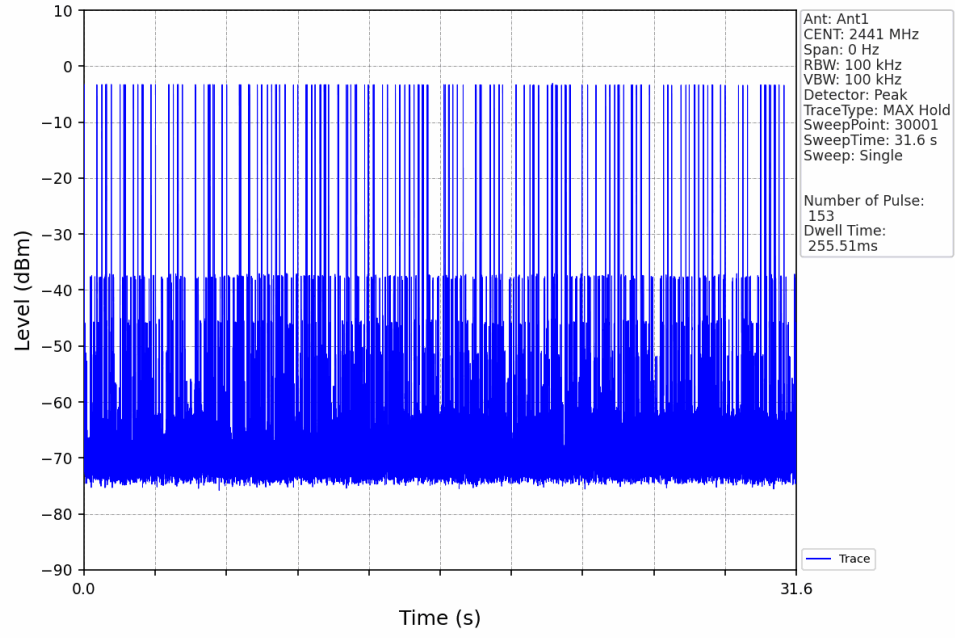


π/4-DQPSK_2DH3_HOPP_Ant1_NTNV



π/4-DQPSK_2DH3_HOPP_Ant1_NTNV



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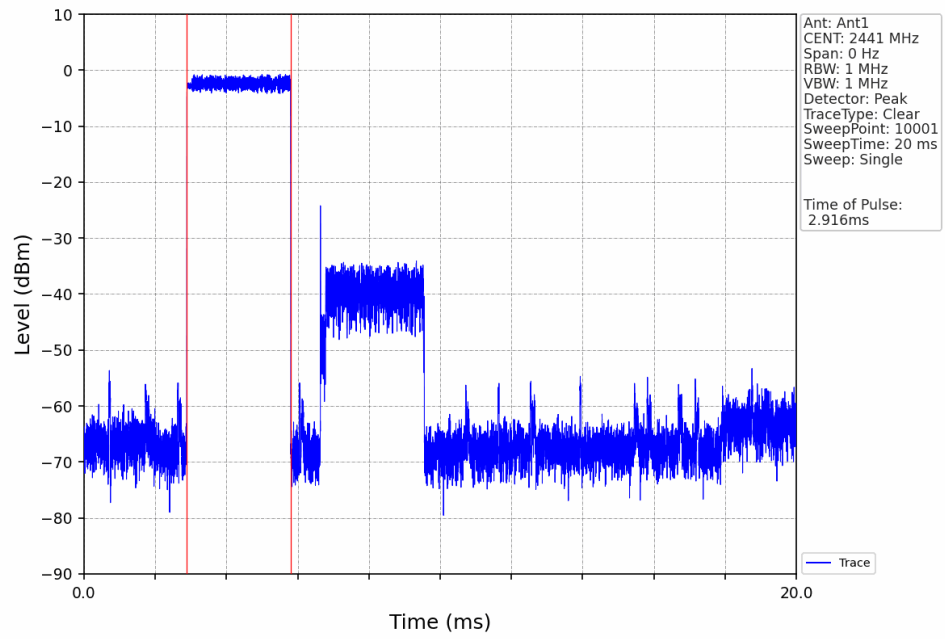

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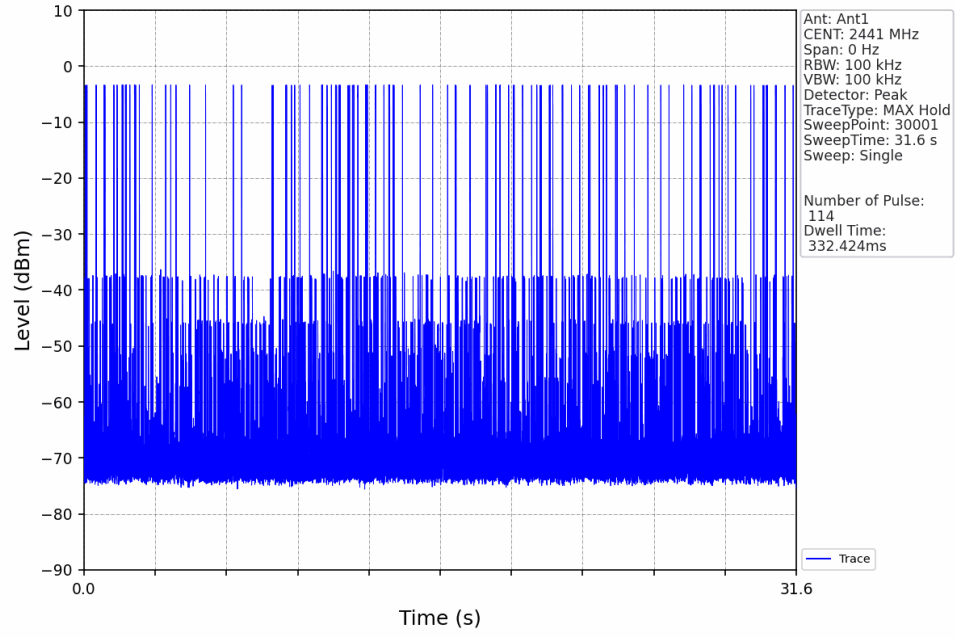
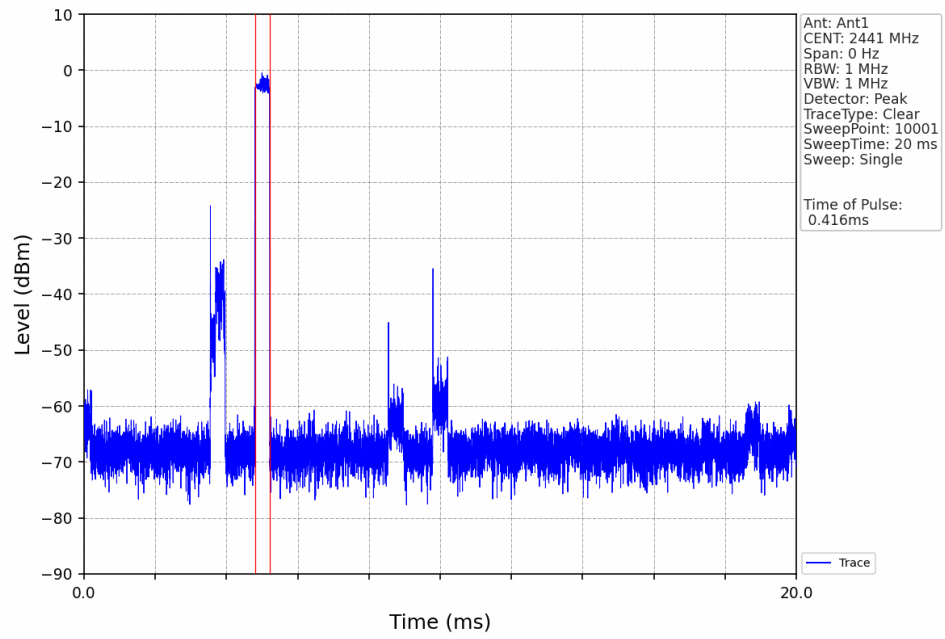


8DPSK_3DH1_HOPP_Ant1_NTNV



8DPSK_3DH1_HOPP_Ant1_NTNV