

Appendix for 15.247

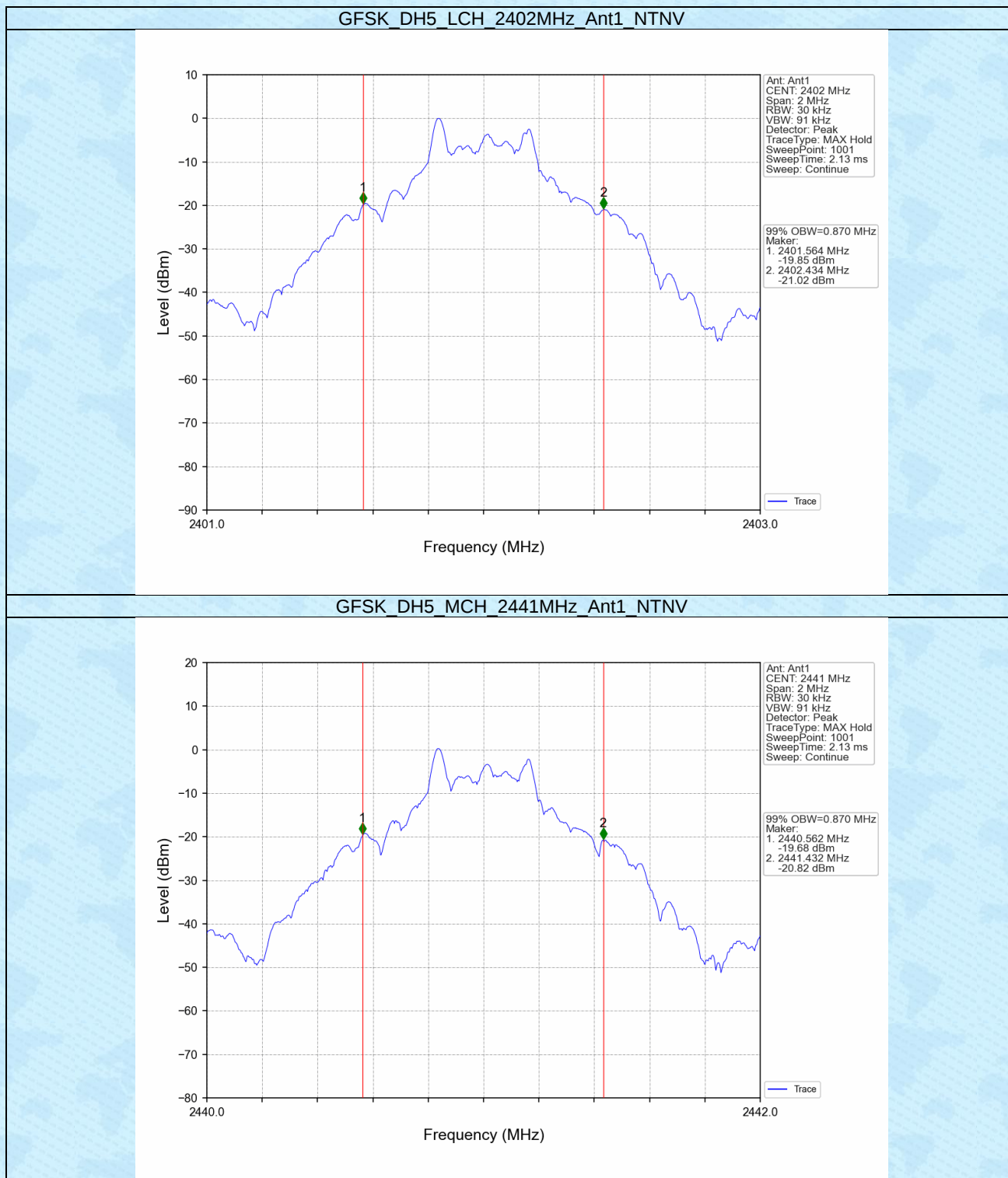
1. Bandwidth

1.1 OBW

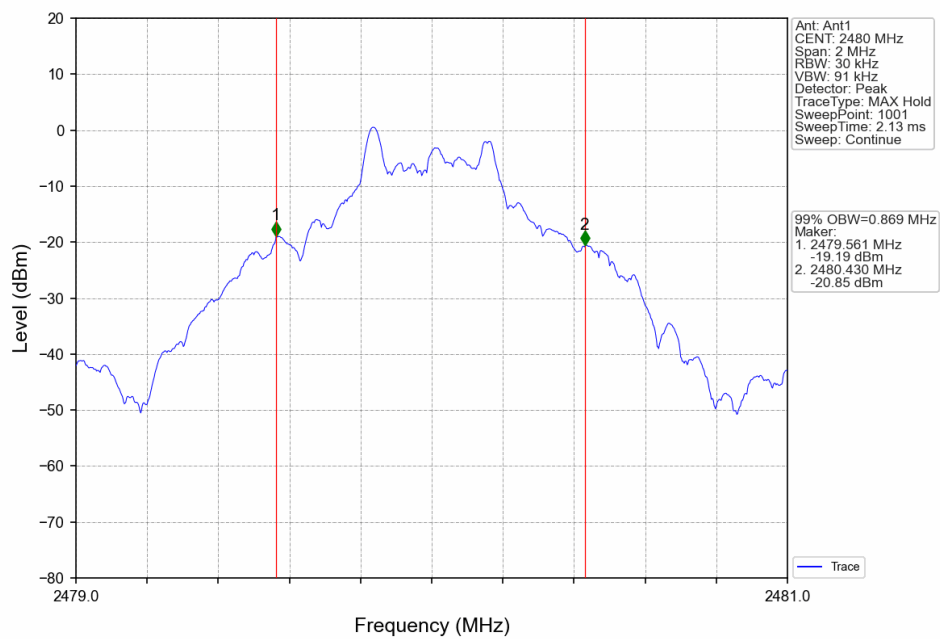
1.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)	Verdict
					Result	
GFSK	SISO	2402	DH5	1	0.870	Pass
		2441	DH5	1	0.870	Pass
		2480	DH5	1	0.869	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	1.094	Pass
		2441	2DH5	1	1.094	Pass
		2480	2DH5	1	1.093	Pass
8-DPSK	SISO	2402	3DH5	1	1.089	Pass
		2441	3DH5	1	1.096	Pass
		2480	3DH5	1	1.093	Pass

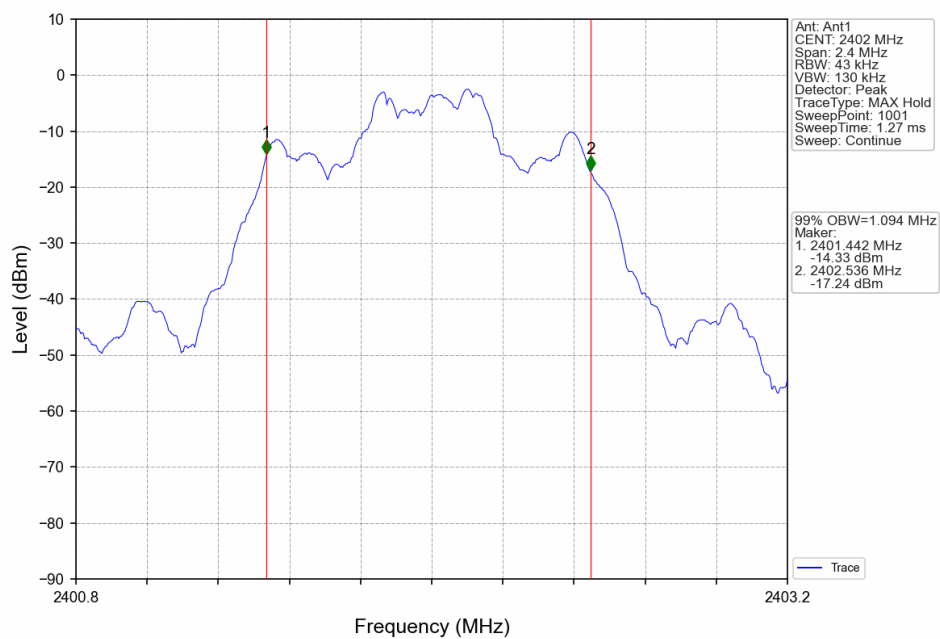
1.1.2 Test Graph



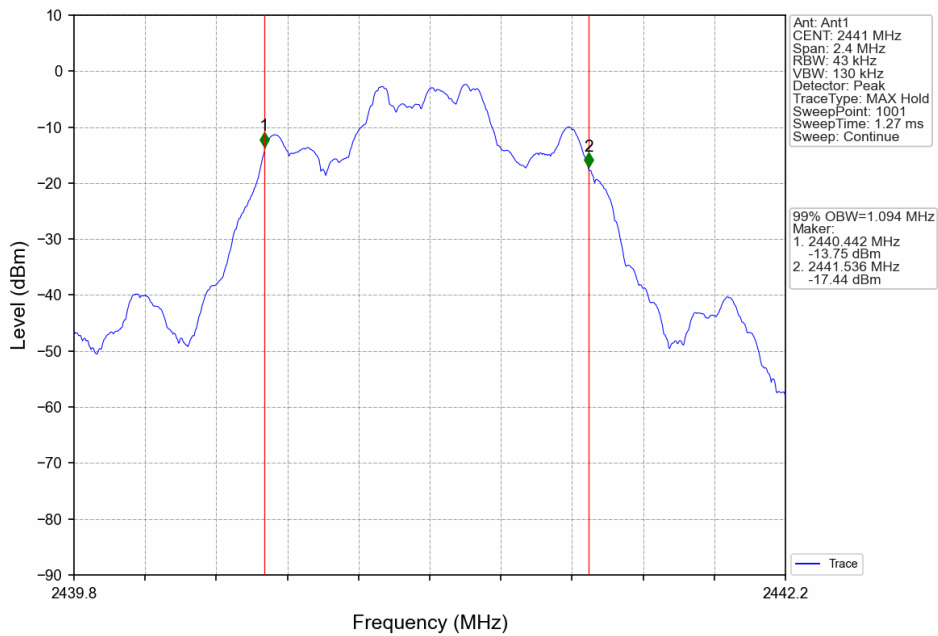
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



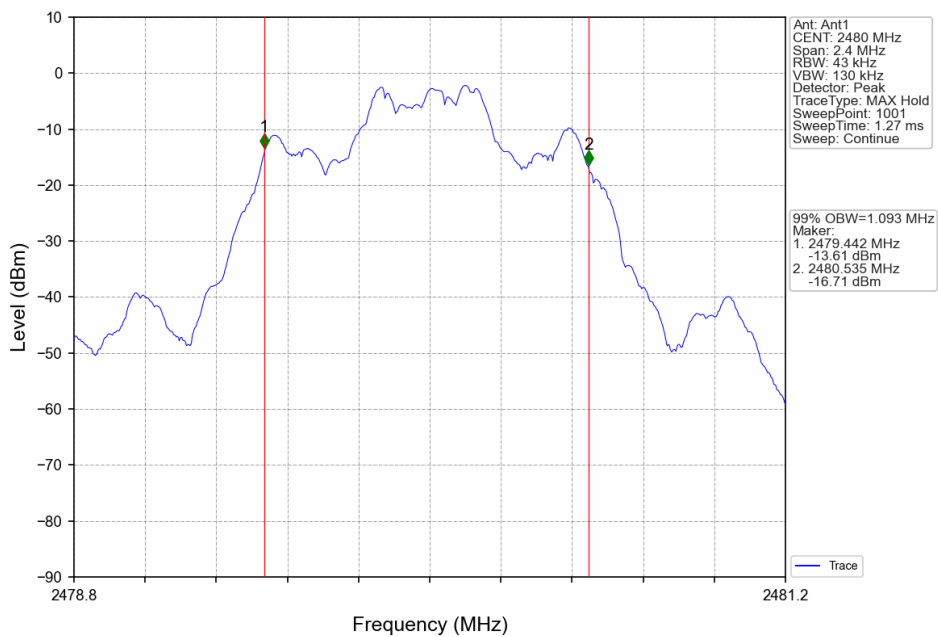
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



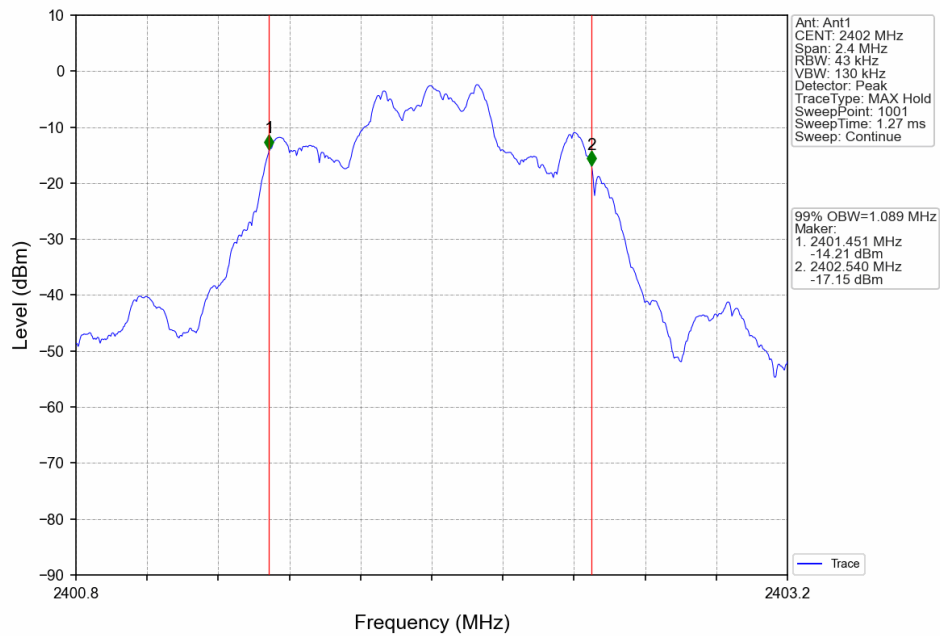
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



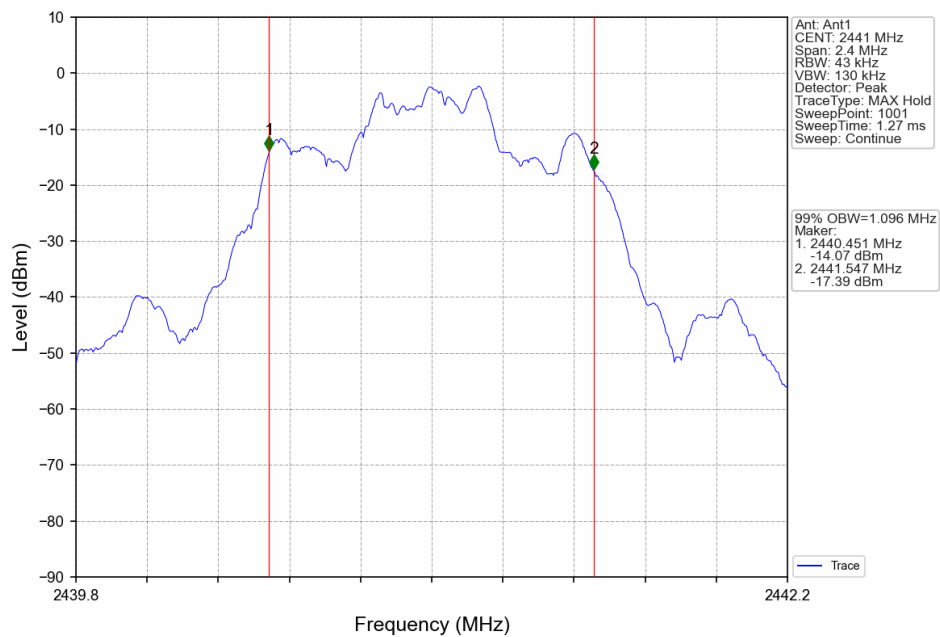
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

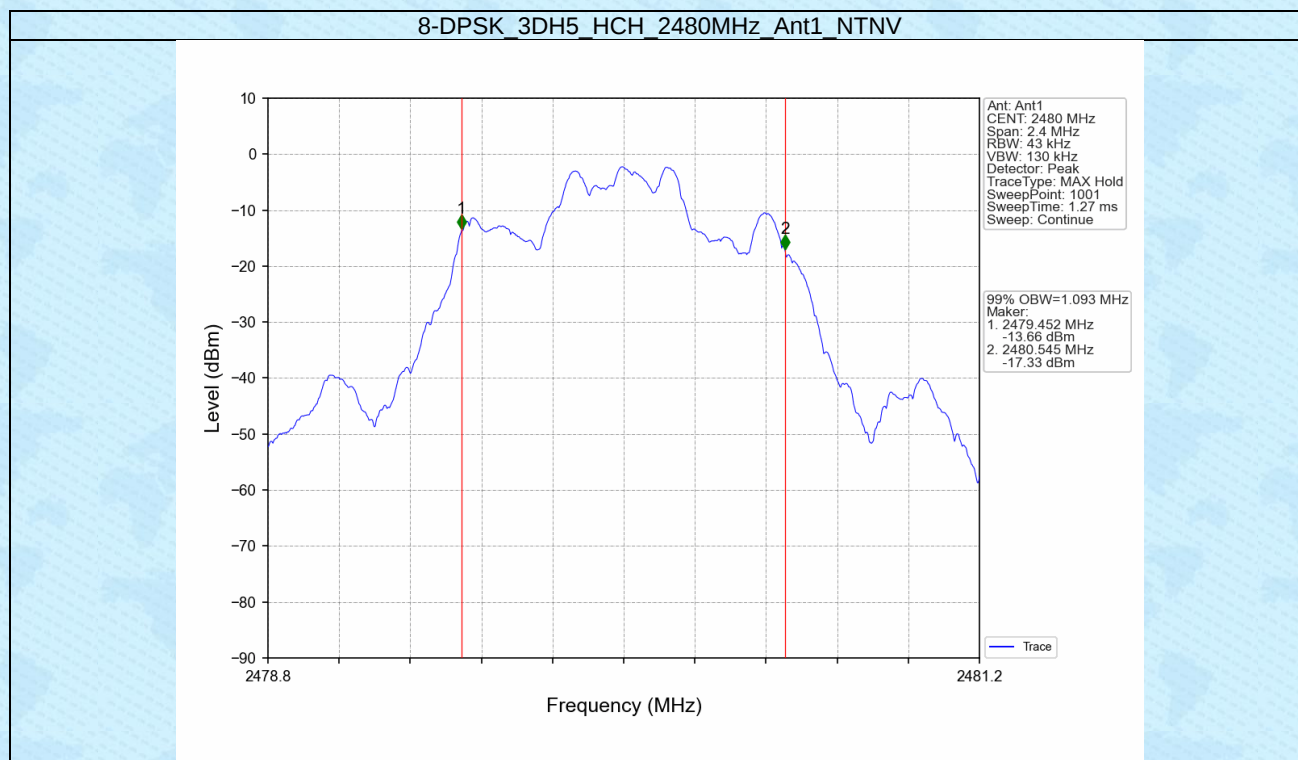


8-DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8-DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



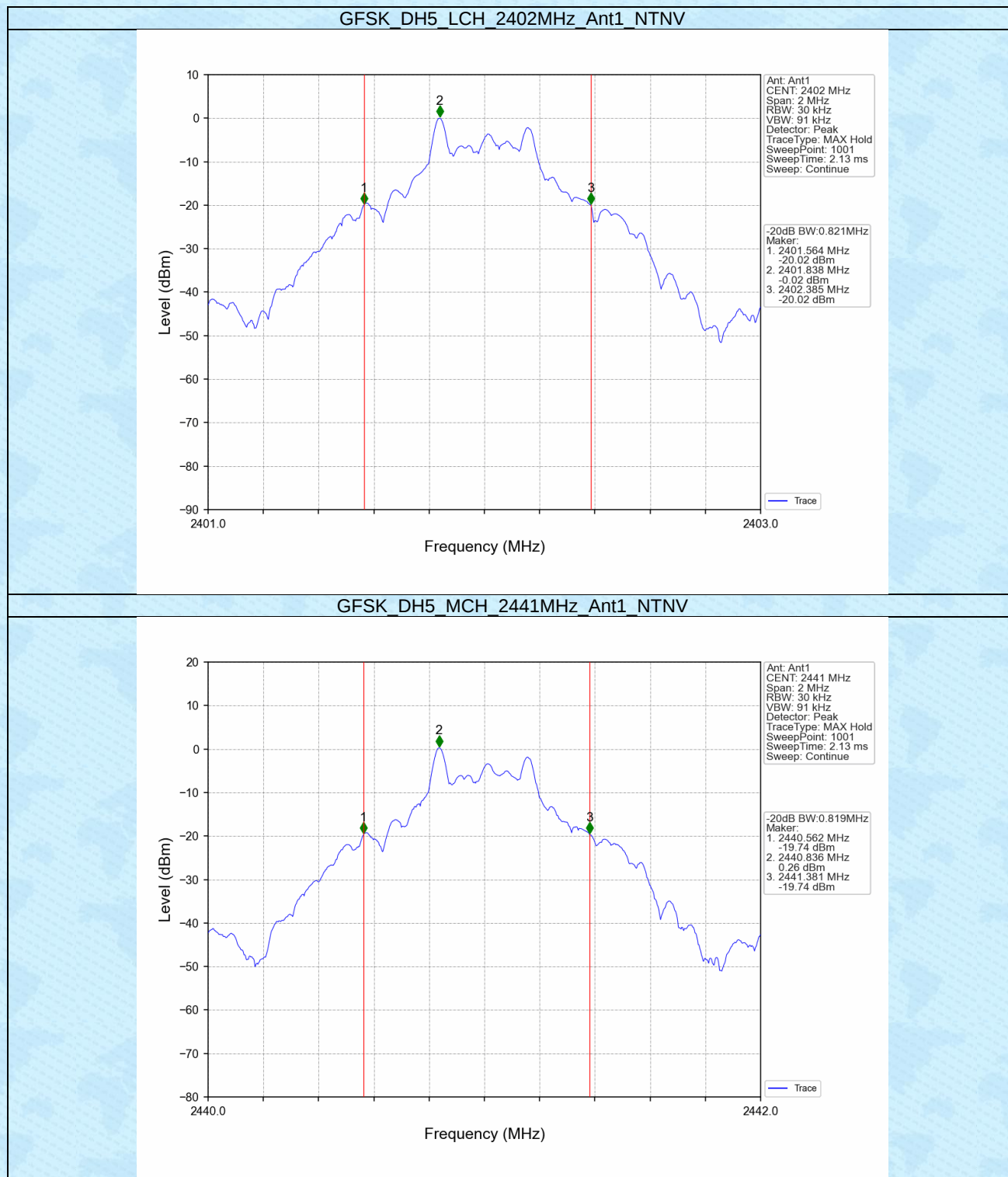


1.2 20dB BW

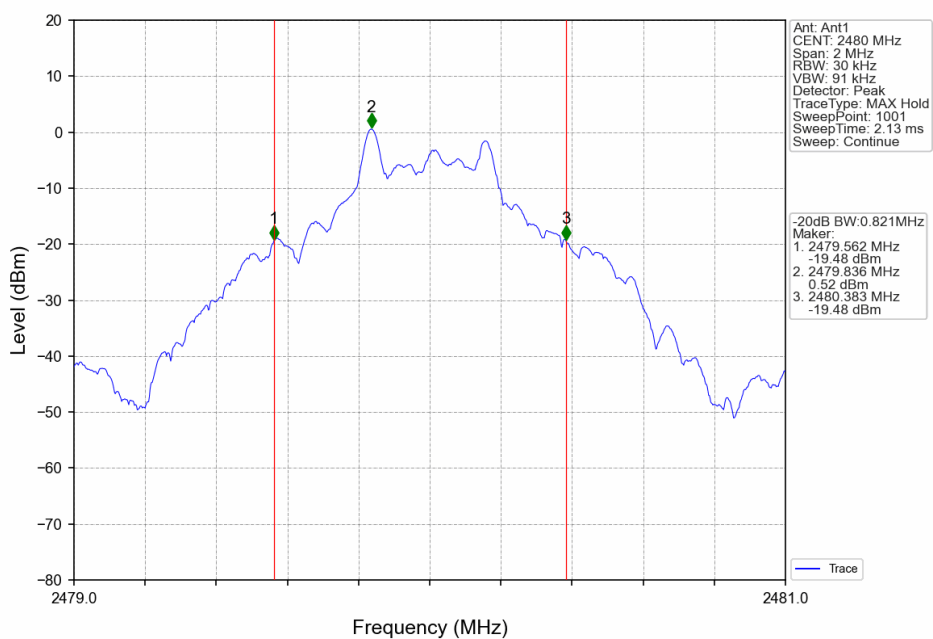
1.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)	Verdict
					Result	
GFSK	SISO	2402	DH5	1	0.821	Pass
		2441	DH5	1	0.819	Pass
		2480	DH5	1	0.821	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	1.200	Pass
		2441	2DH5	1	1.207	Pass
		2480	2DH5	1	1.207	Pass
8-DPSK	SISO	2402	3DH5	1	1.185	Pass
		2441	3DH5	1	1.194	Pass
		2480	3DH5	1	1.169	Pass

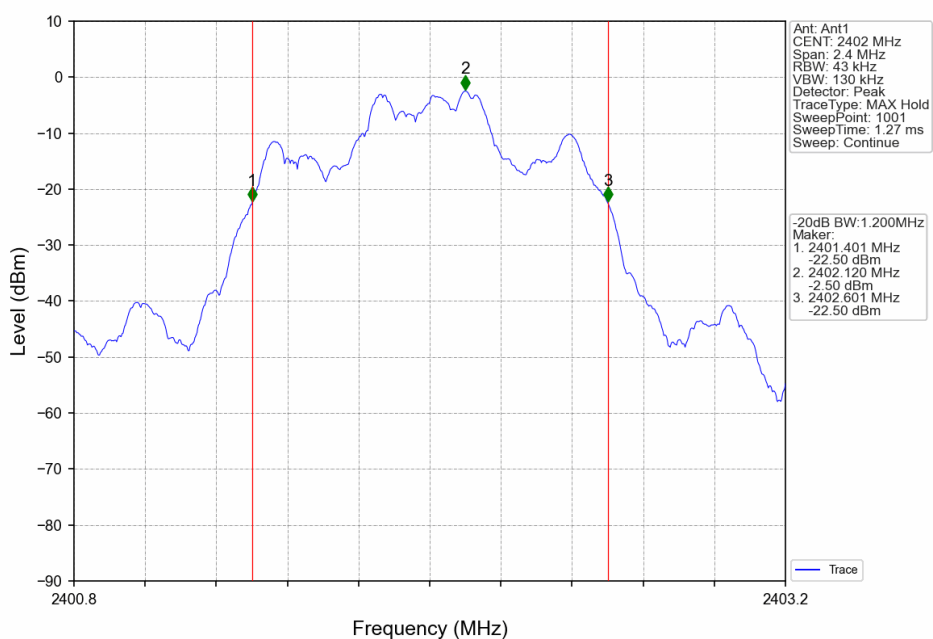
1.2.2 Test Graph



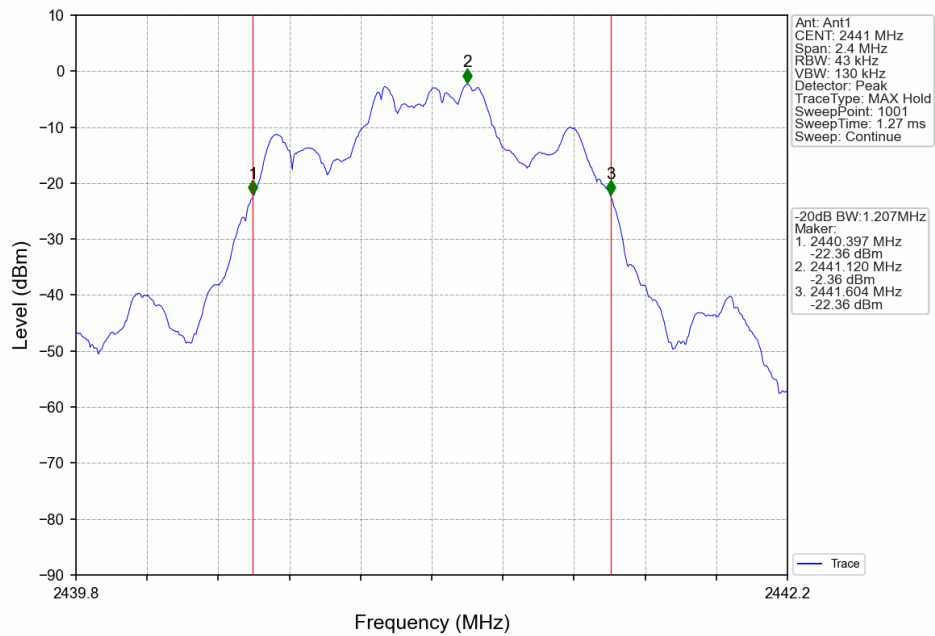
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



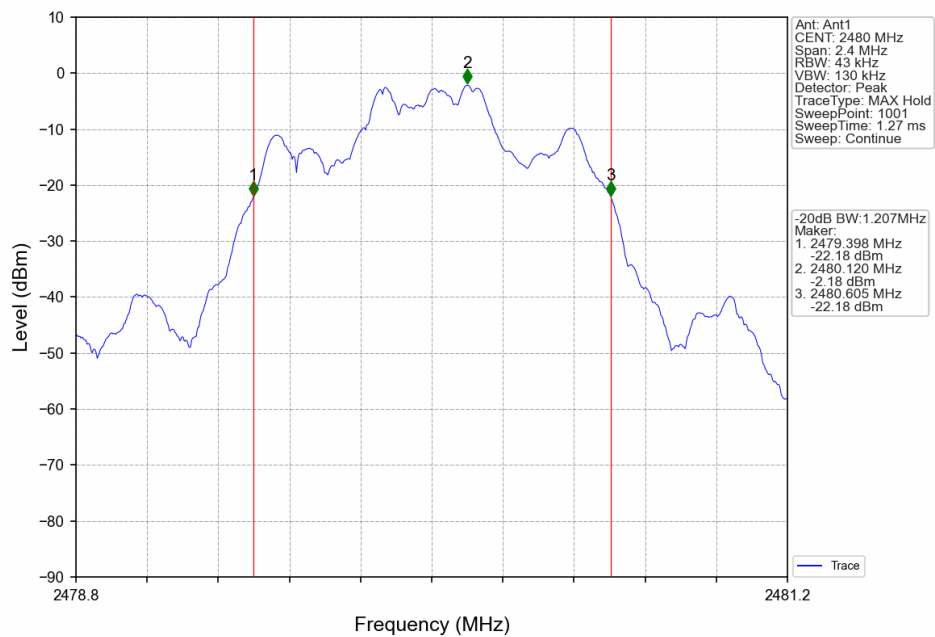
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



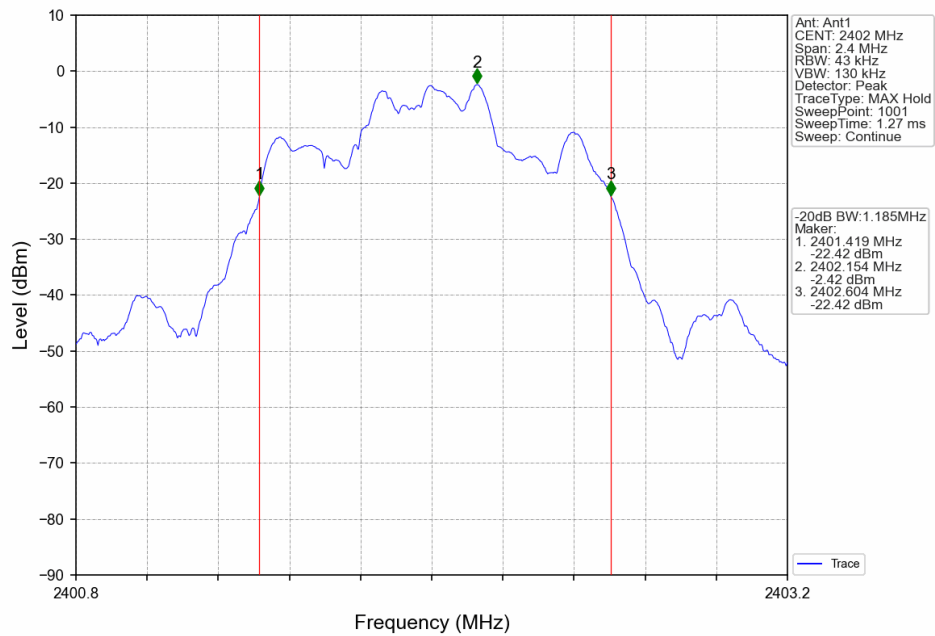
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



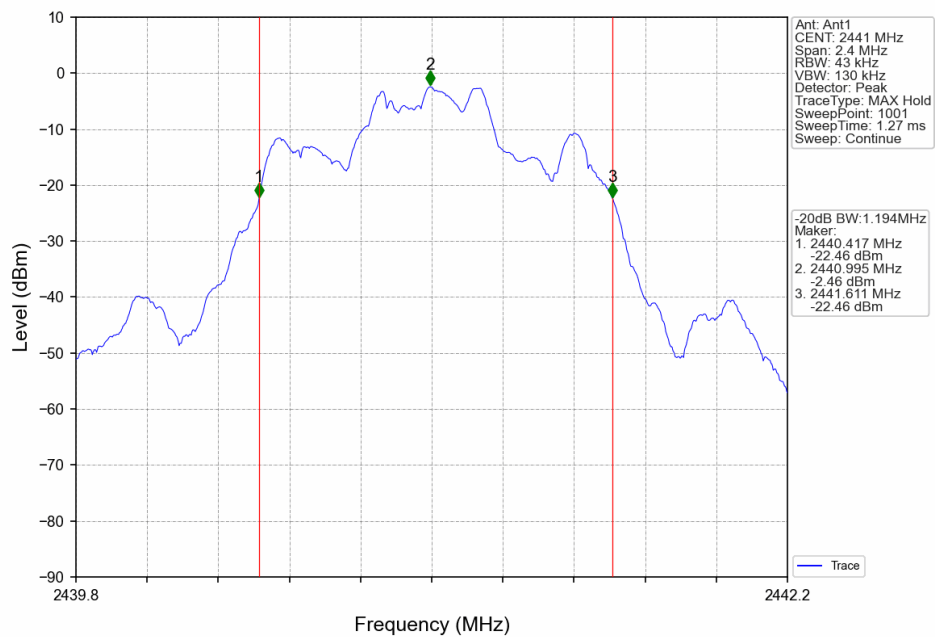
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

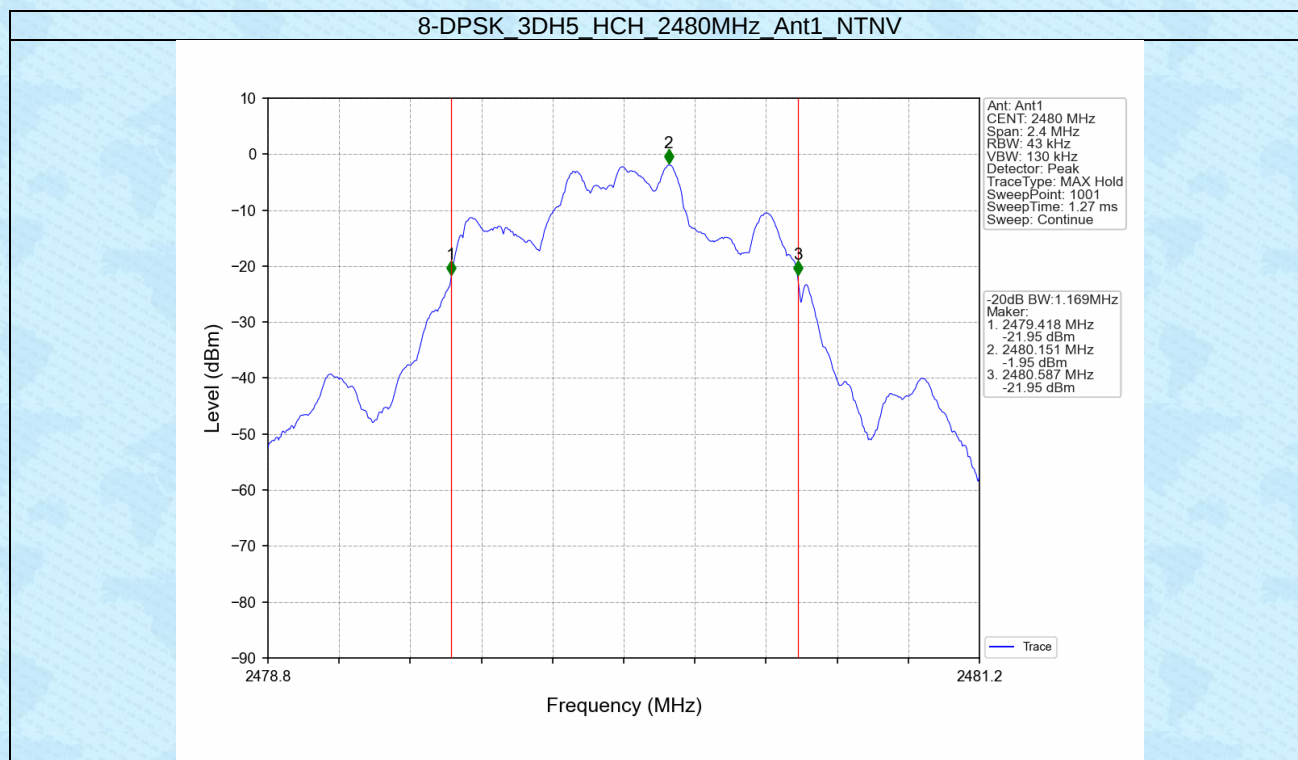


8-DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8-DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



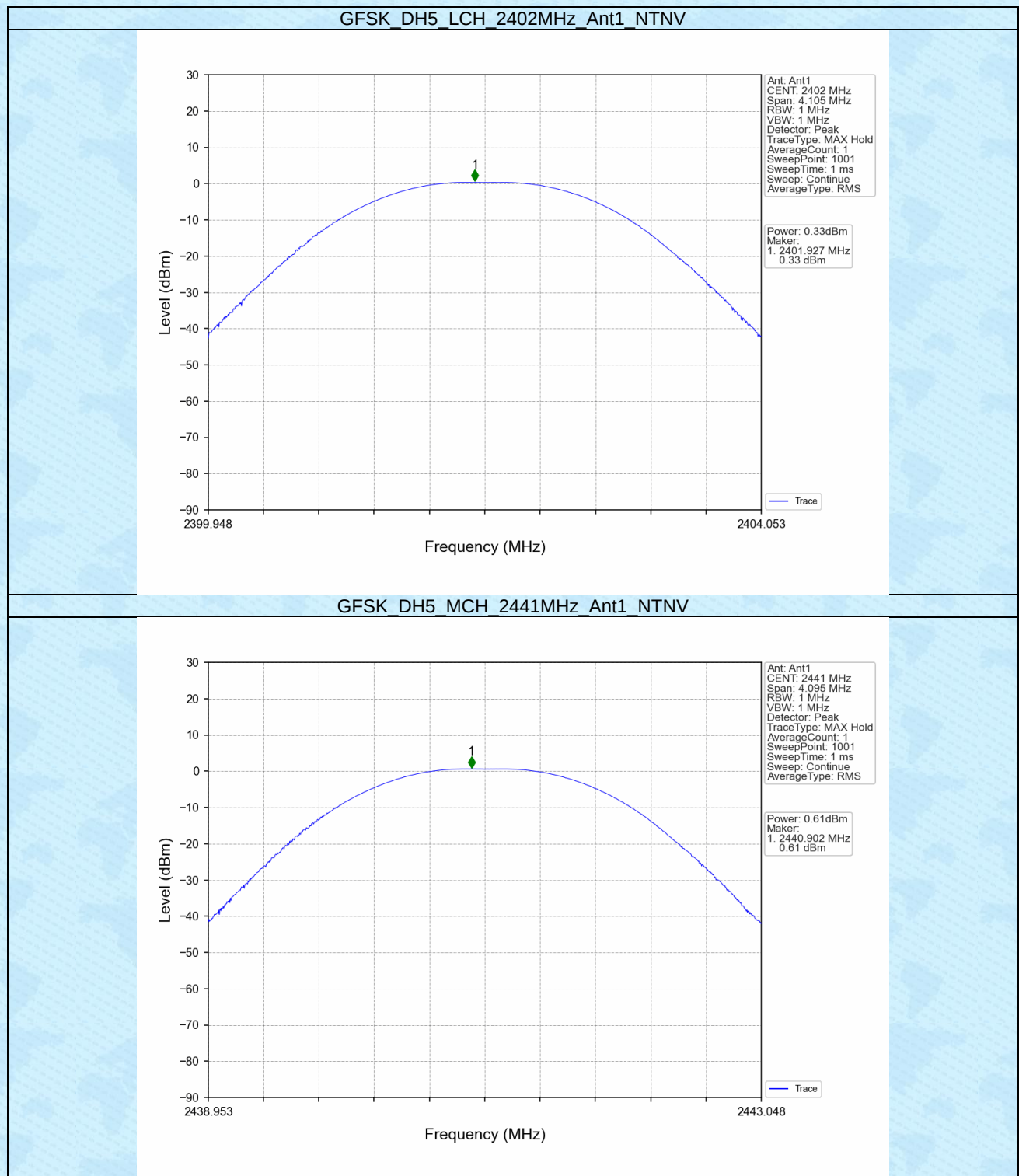


2. Maximum Conducted Output Power

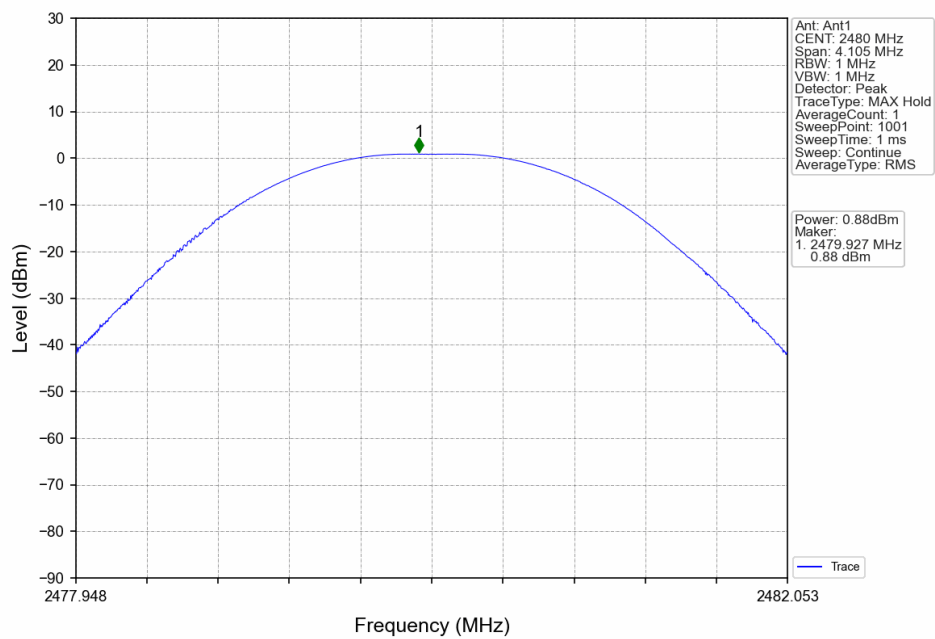
2.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	0.33	≤ 30	Pass
		2441	DH5	0.61	≤ 30	Pass
		2480	DH5	0.88	≤ 30	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	-0.60	≤ 20.97	Pass
		2441	2DH5	-0.33	≤ 20.97	Pass
		2480	2DH5	-0.09	≤ 20.97	Pass
8-DPSK	SISO	2402	3DH5	-0.60	≤ 20.97	Pass
		2441	3DH5	-0.35	≤ 20.97	Pass
		2480	3DH5	-0.08	≤ 20.97	Pass

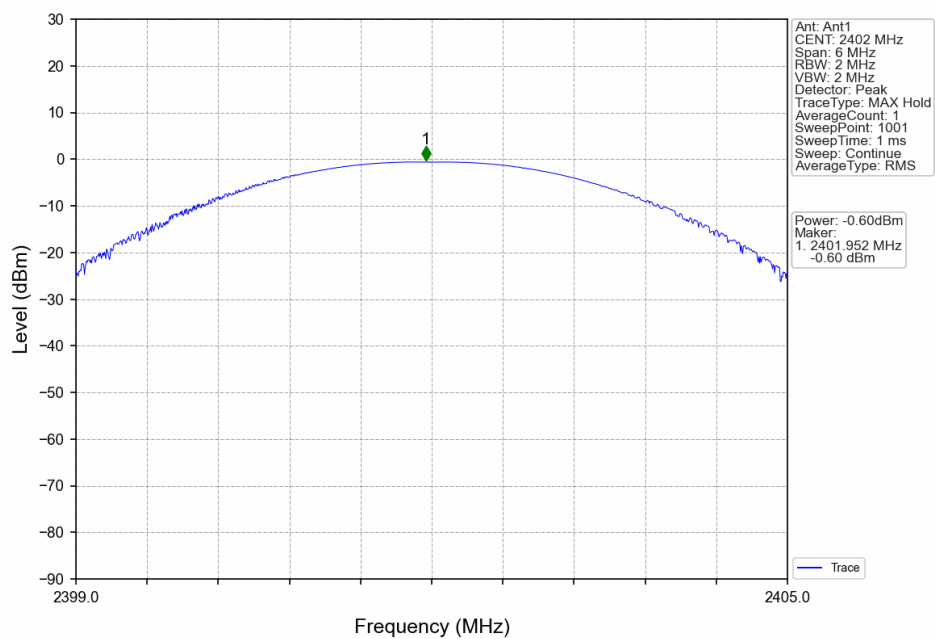
2.2 Test Graph



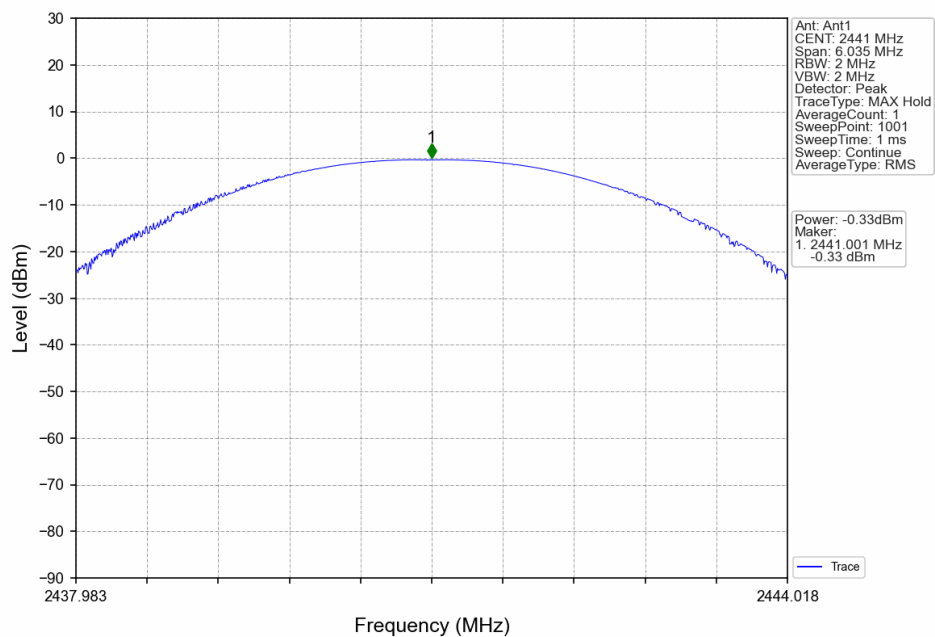
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



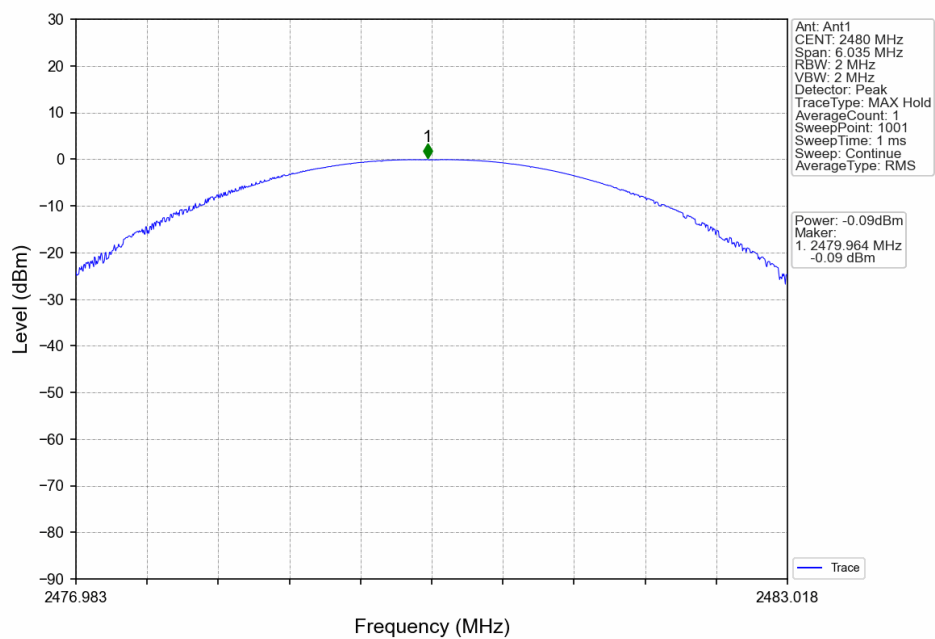
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



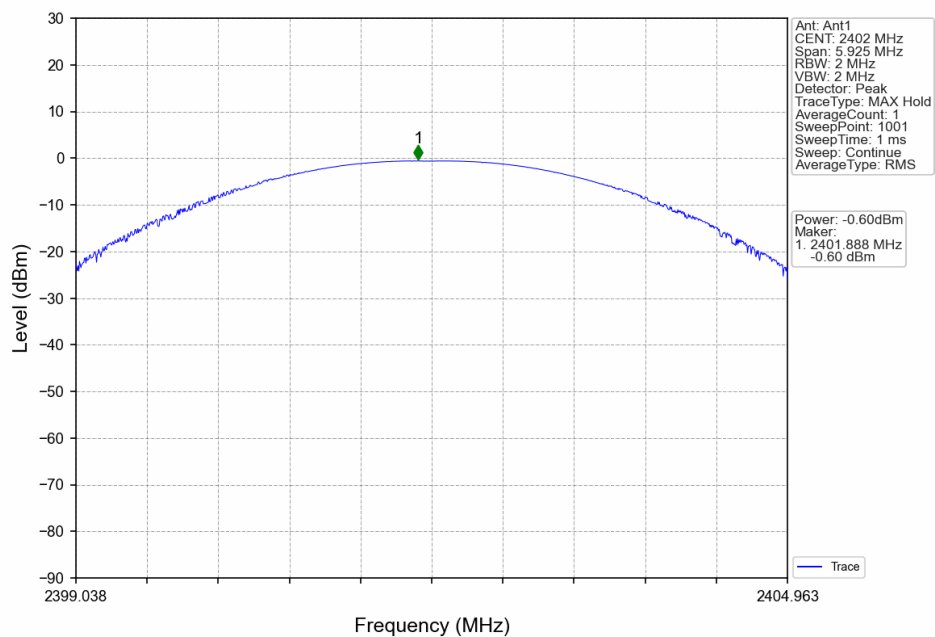
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



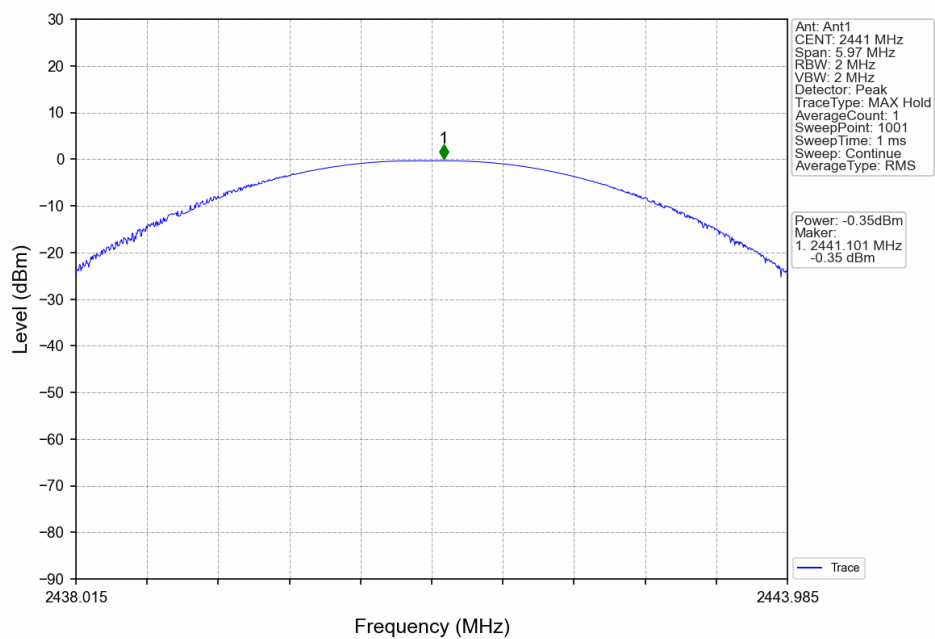
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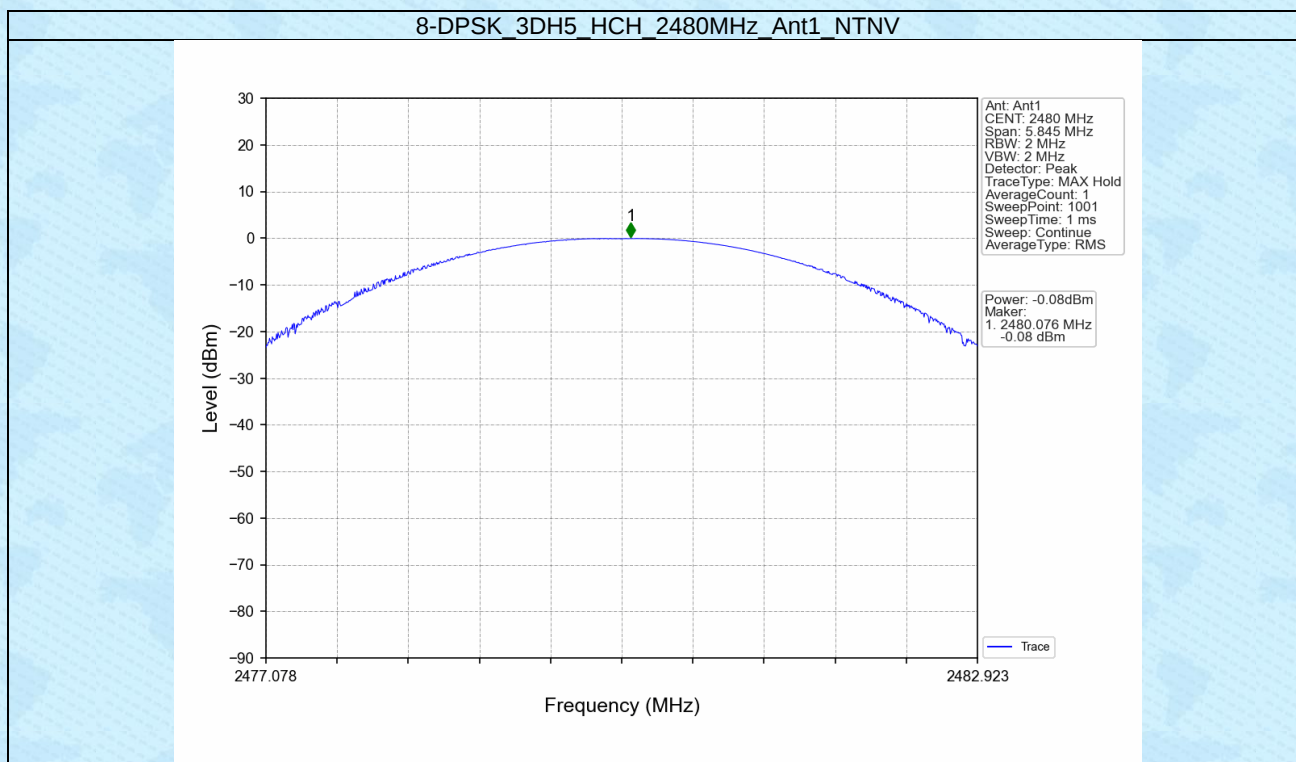


8-DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8-DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



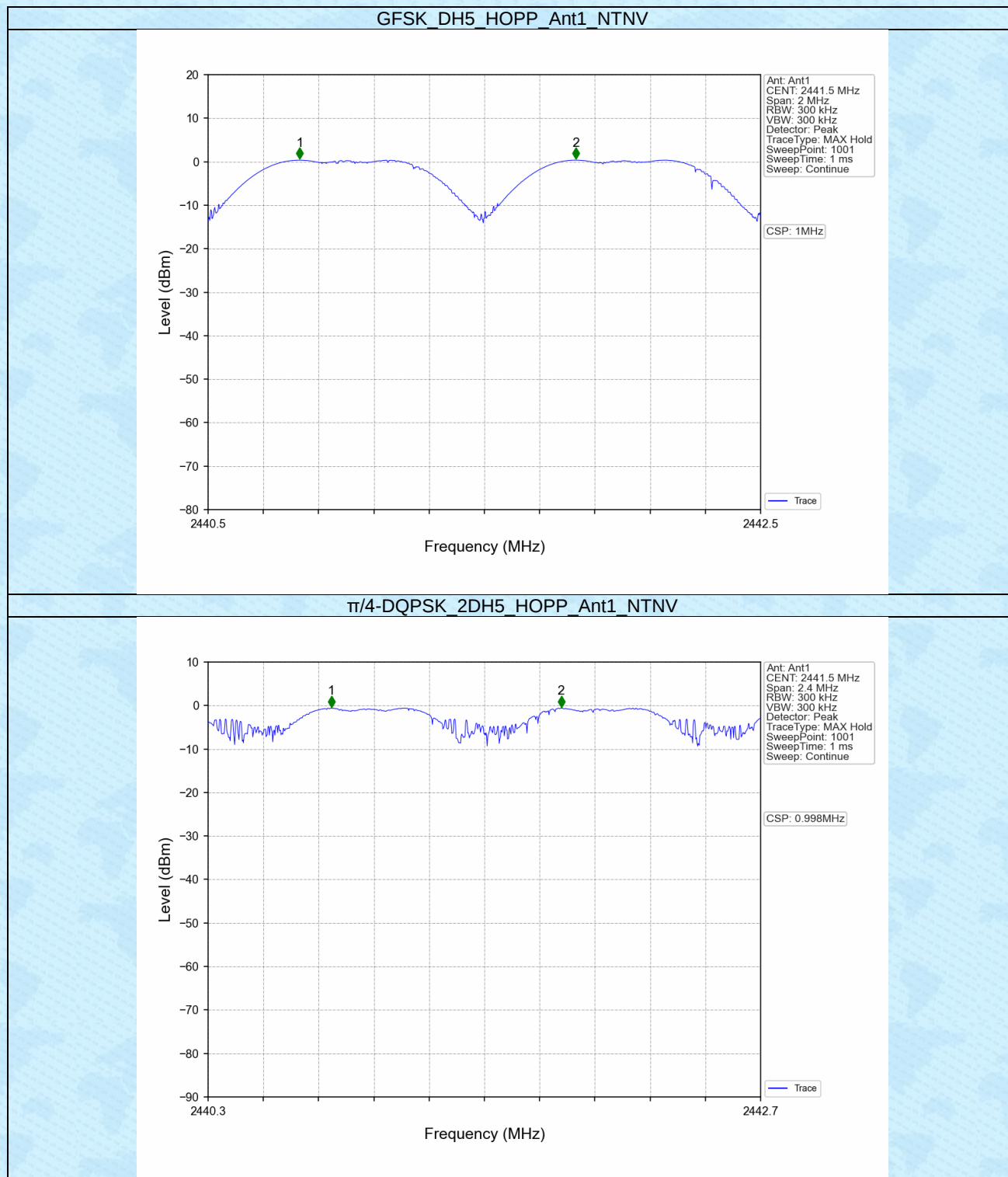


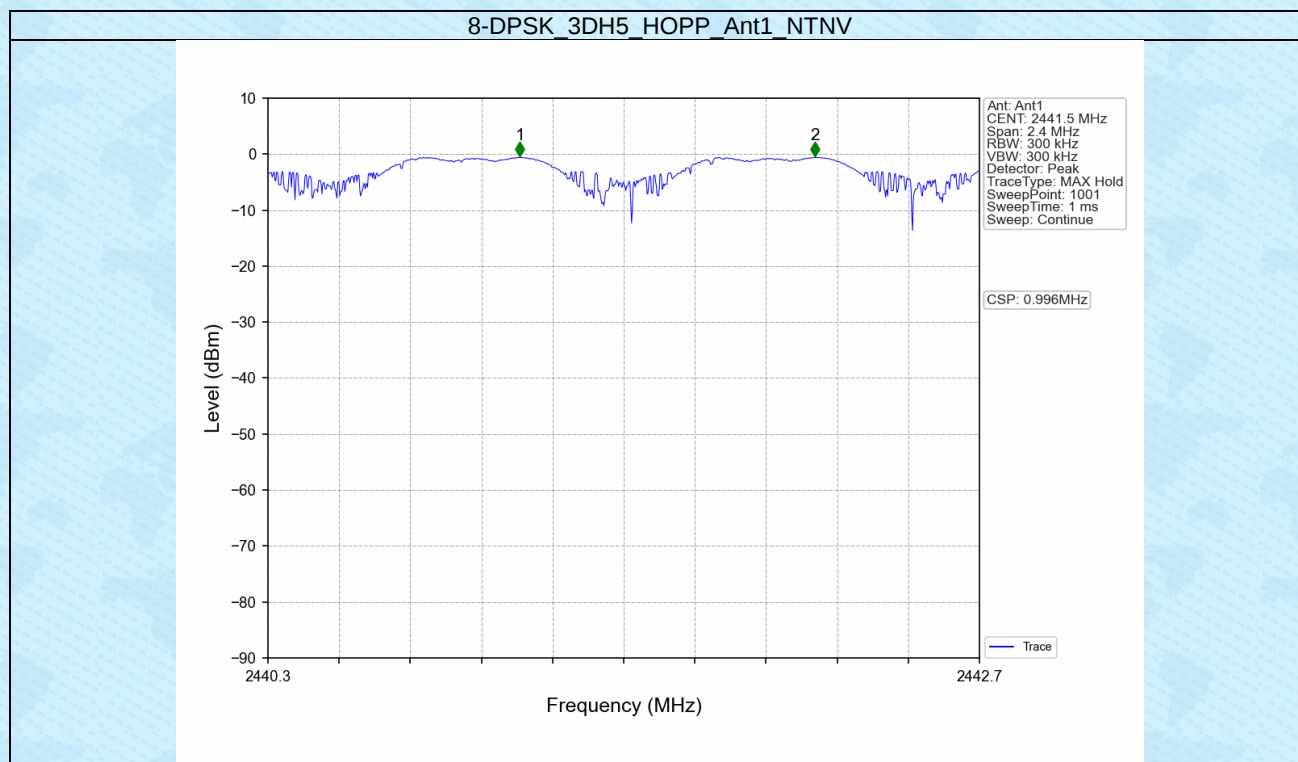
3. Carrier Frequency Separation

3.1 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	0.821	≥ 0.821	Pass
$\pi/4$ -DQPSK	SISO	HOPP	2DH5	0.998	1.207	≥ 0.805	Pass
8-DPSK	SISO	HOPP	3DH5	0.996	1.194	≥ 0.796	Pass

3.2 Test Graph



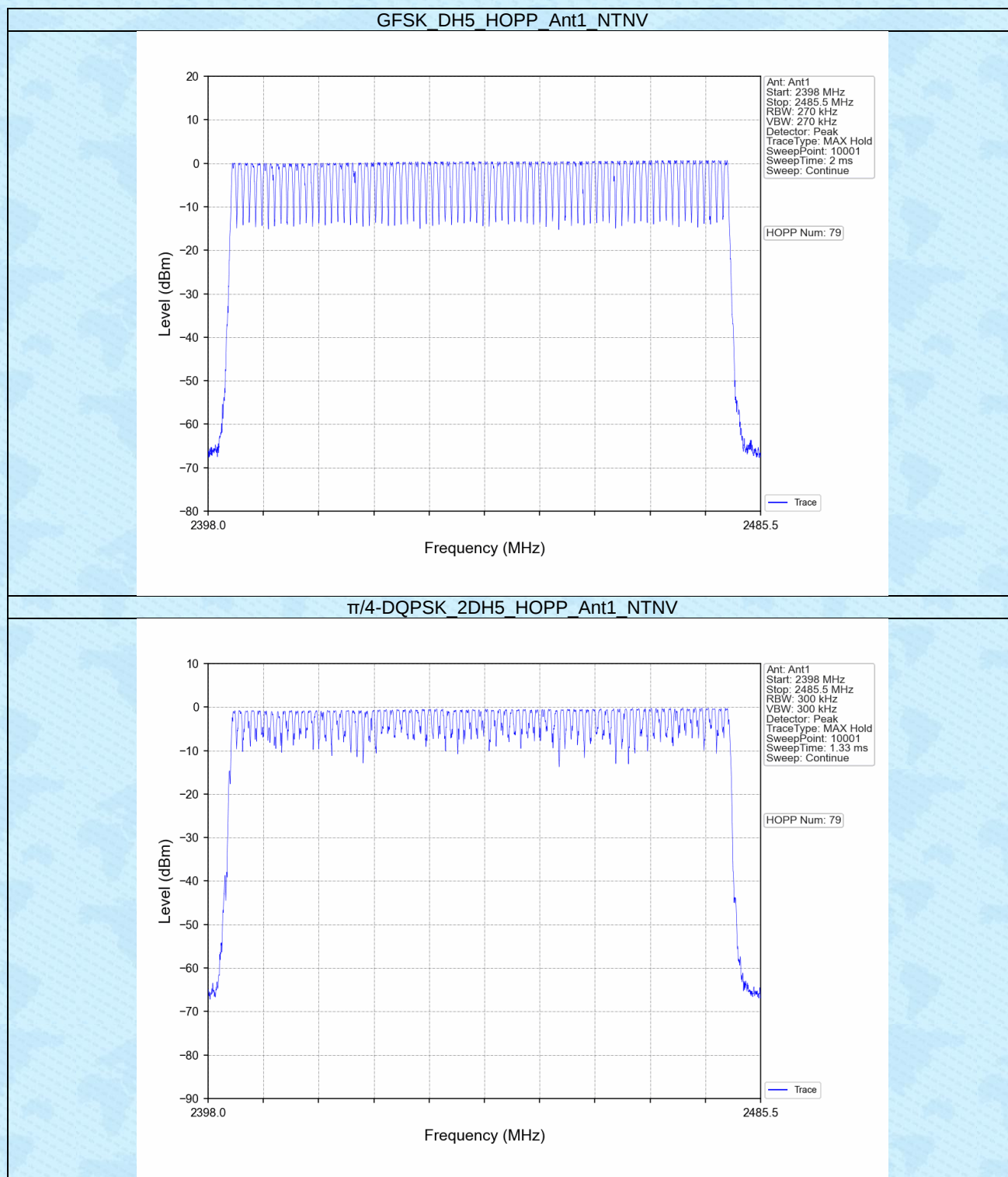


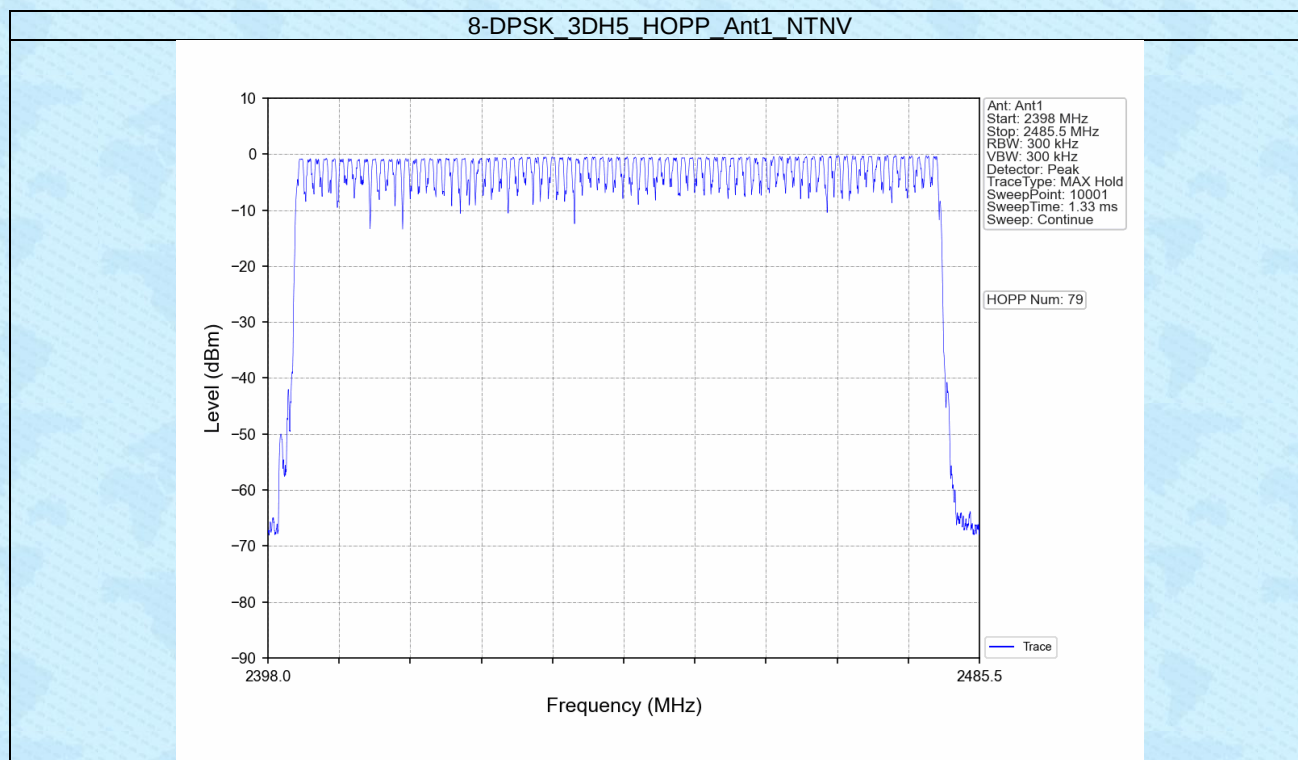
4. Number of Hopping Frequencies

4.1 Test Result

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

4.2 Test Graph



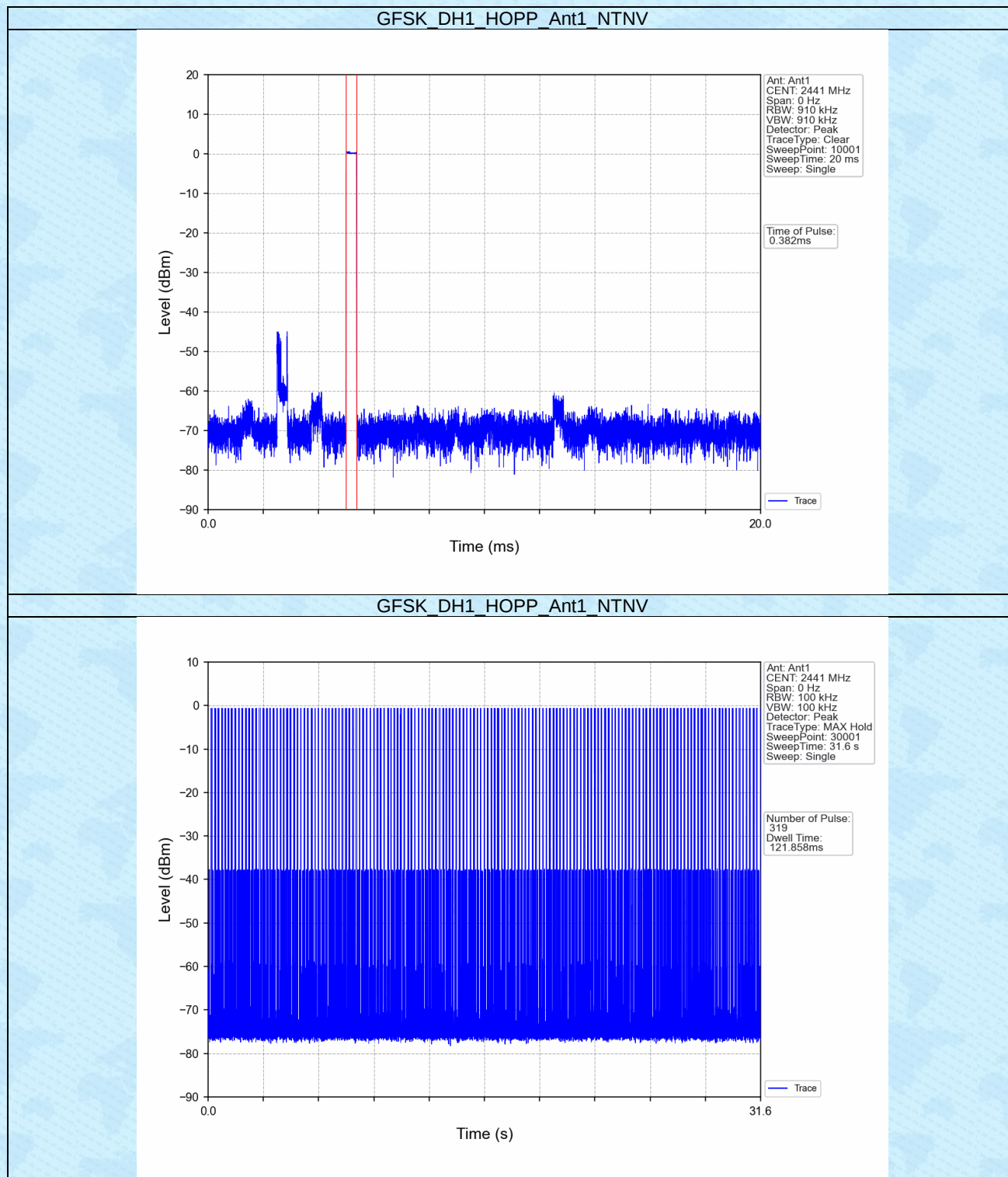


5. Time of Occupancy (Dwell Time)

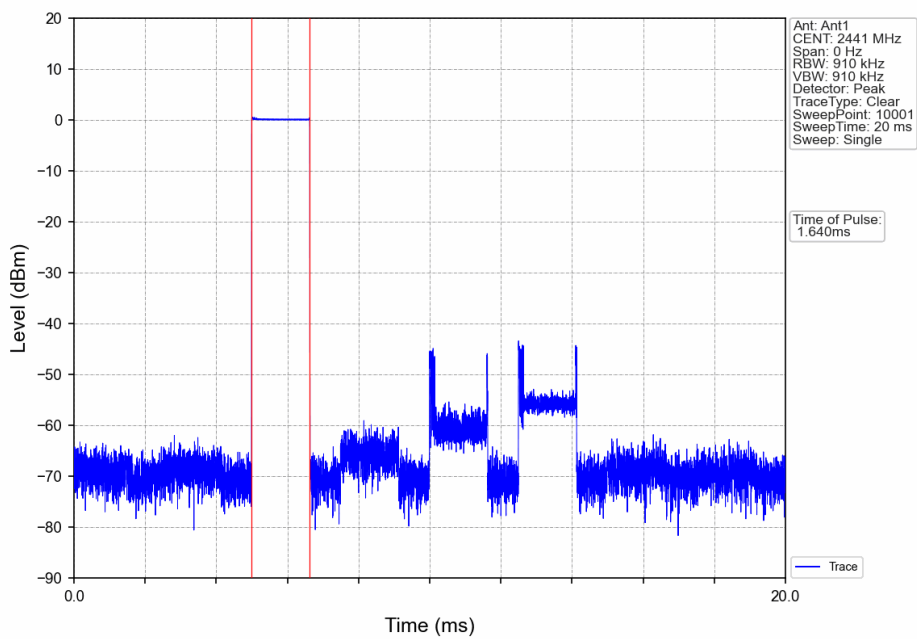
5.1 Test Result

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	0.382	31.600	319	121.858	<=400	Pass
			DH3	1.640	31.600	161	264.040	<=400	Pass
			DH5	2.888	31.600	110	317.680	<=400	Pass
$\pi/4$ -DQPSK	SISO	HOPP	2DH1	0.388	31.600	320	124.160	<=400	Pass
			2DH3	1.646	31.600	160	263.360	<=400	Pass
			2DH5	2.892	31.600	108	312.336	<=400	Pass
8-DPSK	SISO	HOPP	3DH1	0.394	31.600	320	126.080	<=400	Pass
			3DH3	1.640	31.600	158	259.120	<=400	Pass
			3DH5	2.898	31.600	124	359.352	<=400	Pass

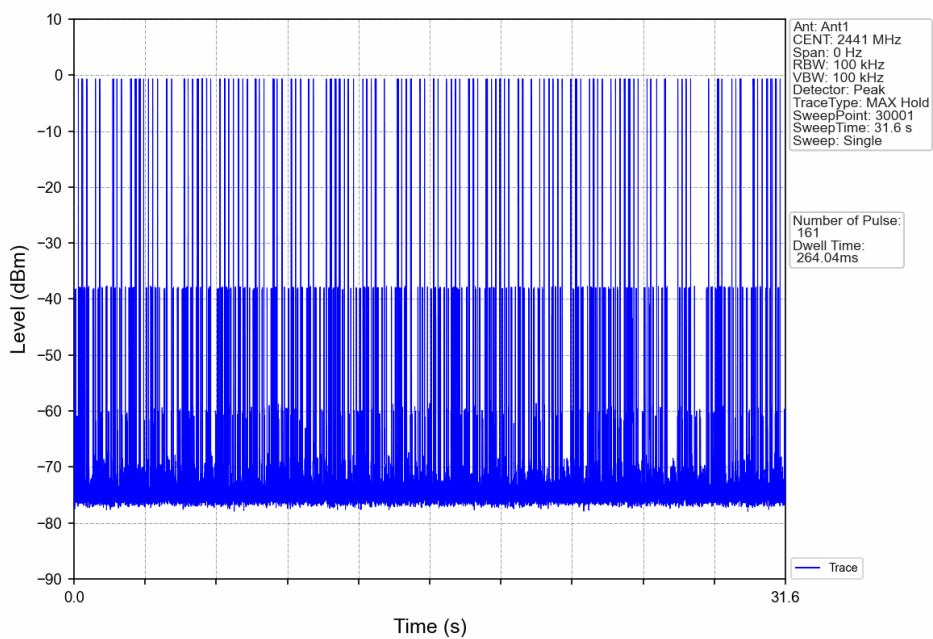
5.2 Test Graph



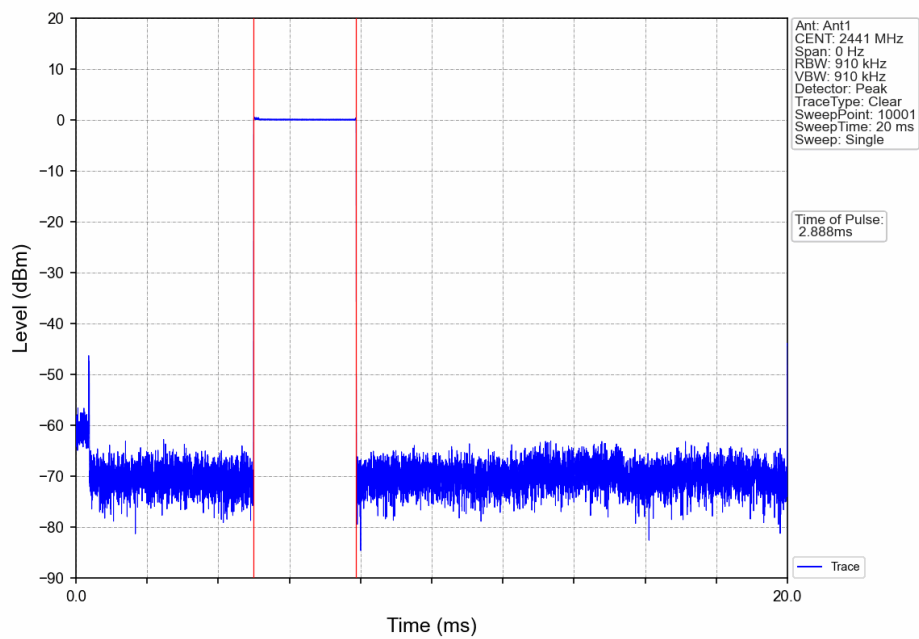
GFSK_DH3_HOPP_Ant1_NTNV



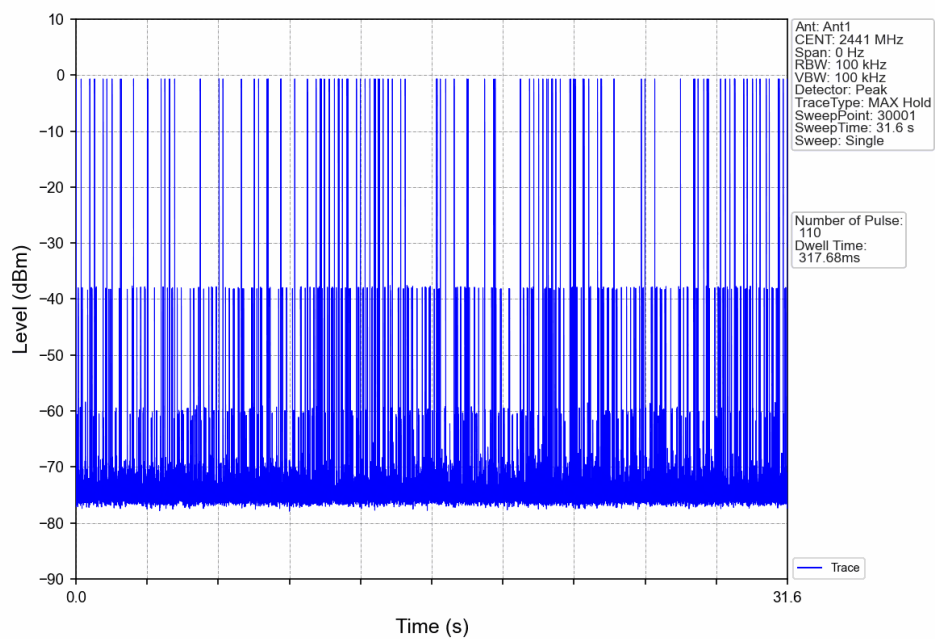
GFSK_DH3_HOPP_Ant1_NTNV



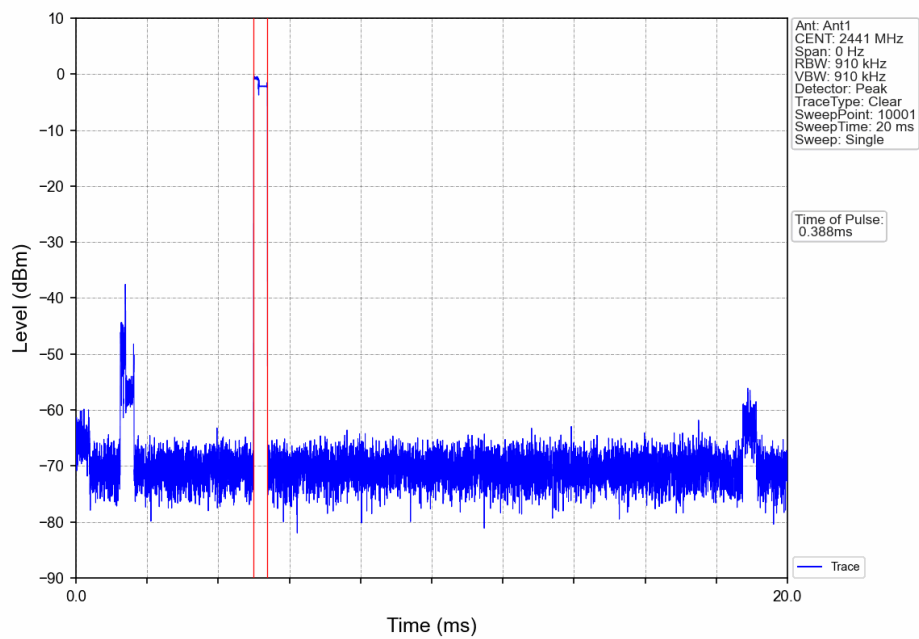
GFSK_DH5_HOPP_Ant1_NTNV



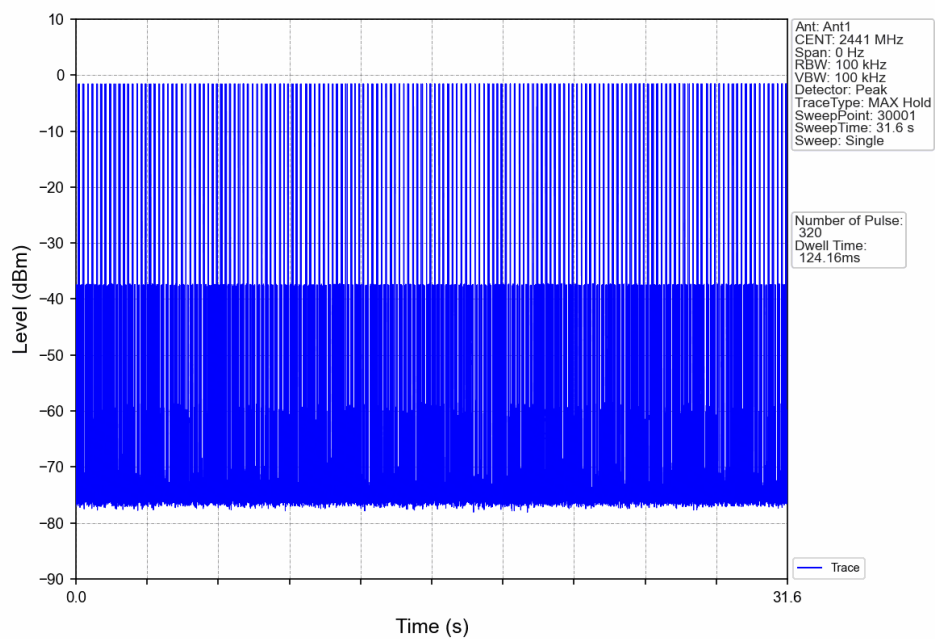
GFSK_DH5_HOPP_Ant1_NTNV



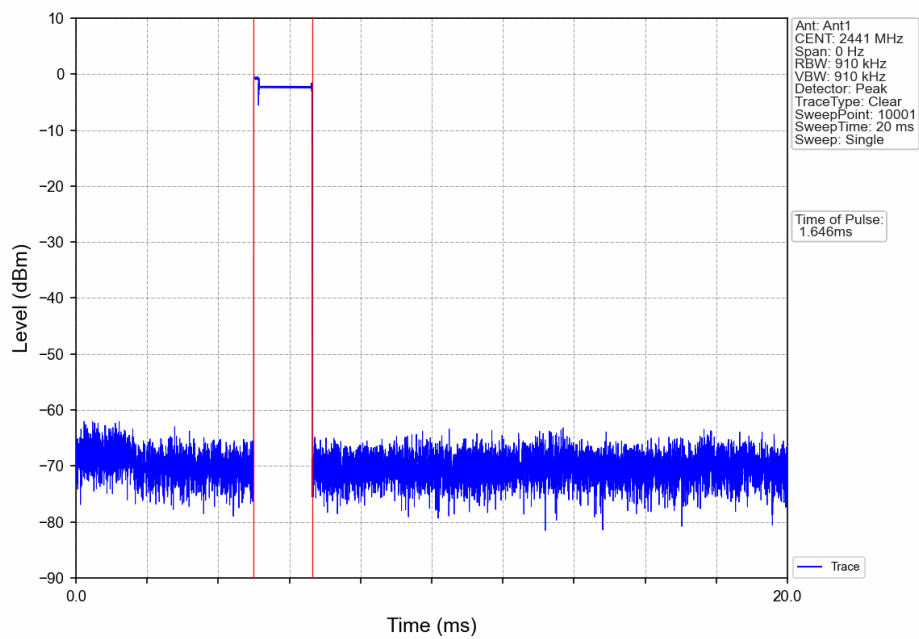
$\pi/4$ -DQPSK_2DH1_HOPP_Ant1_NTNV



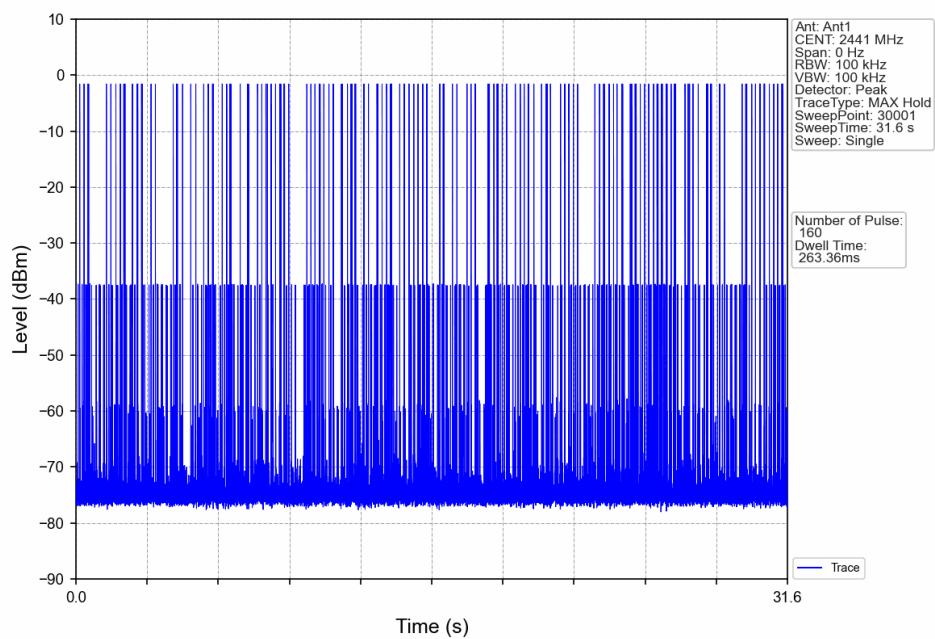
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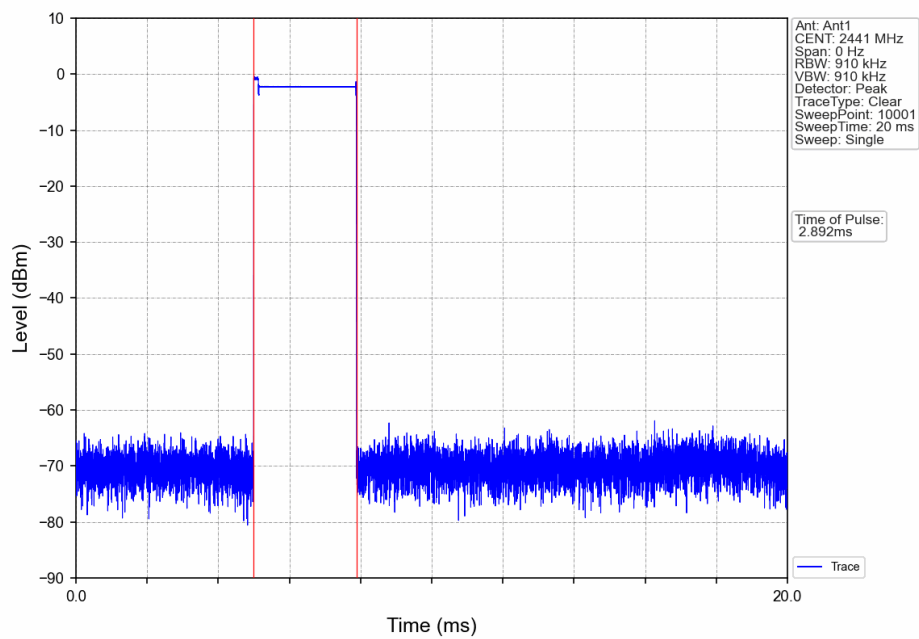
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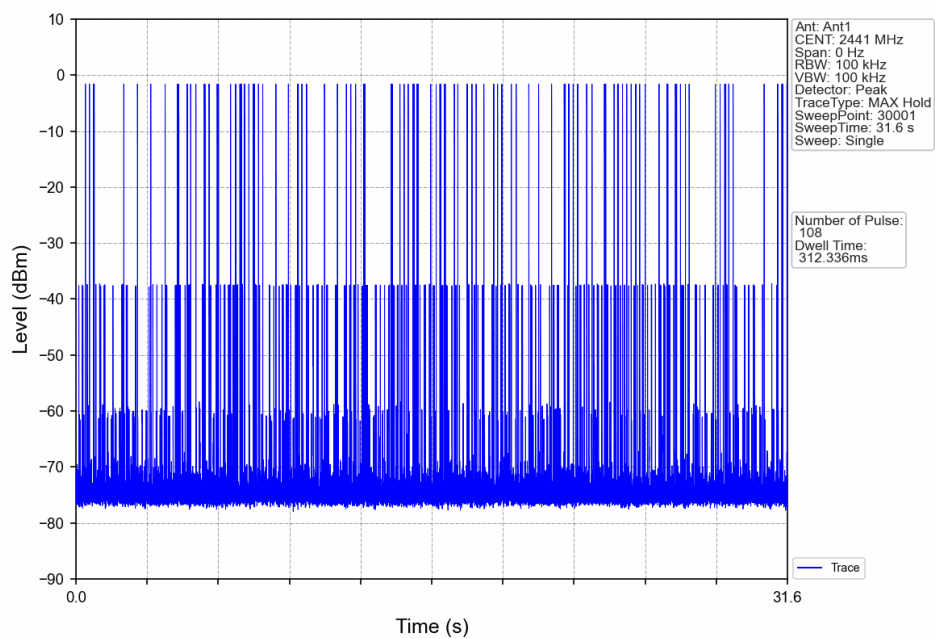
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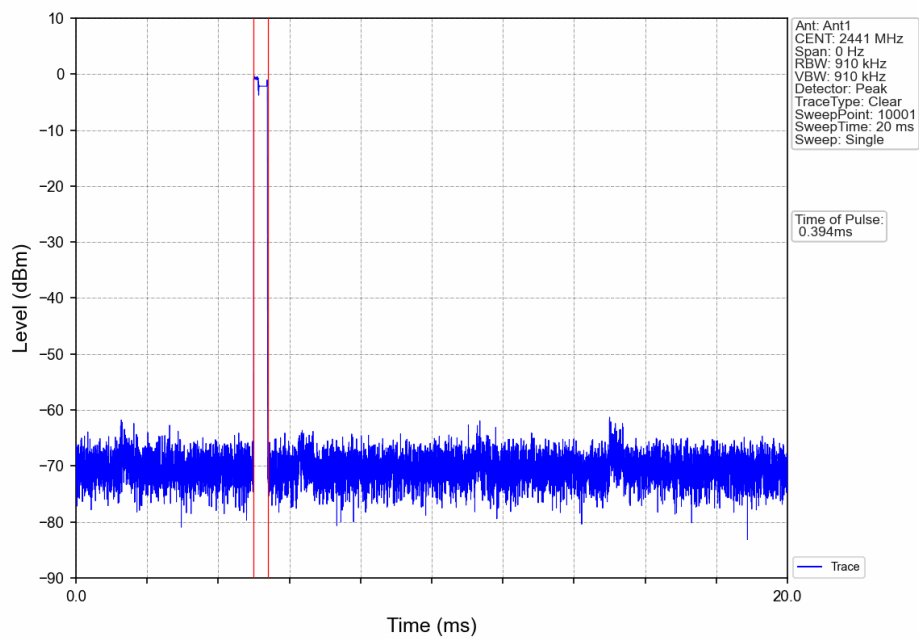
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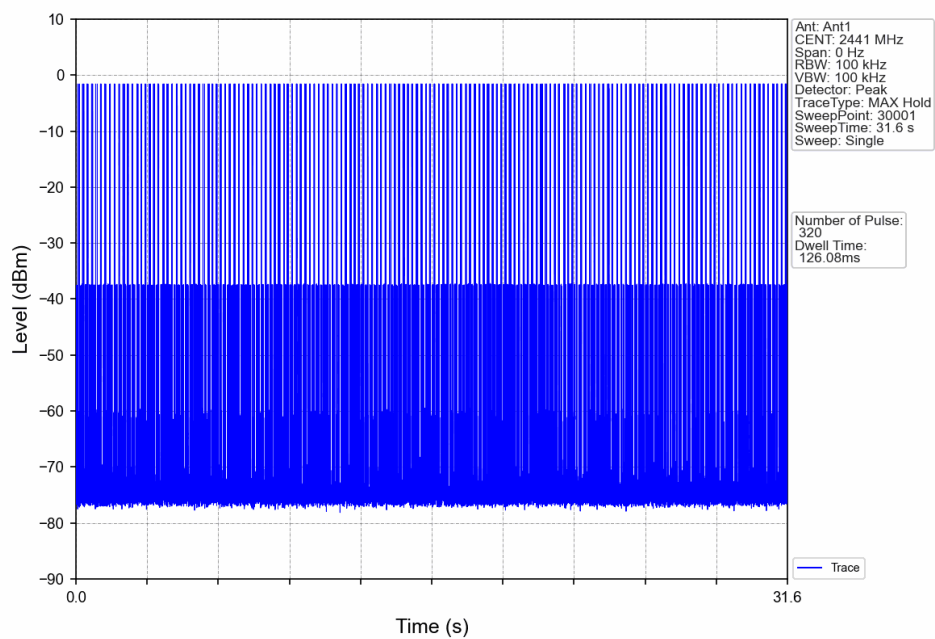
$\pi/4$ -DQPSK_2DH5_HOPP_Ant1_NTNV



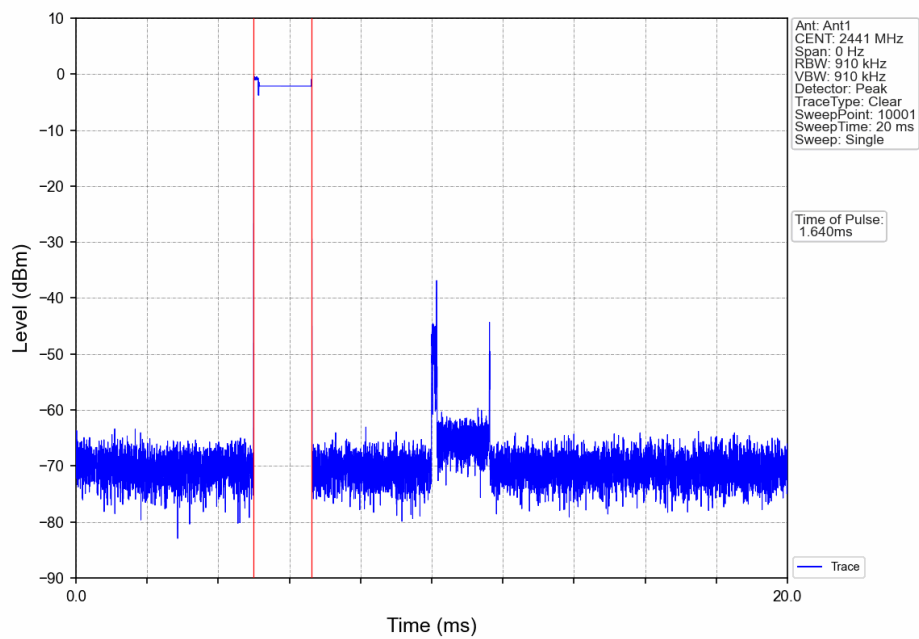
8-DPSK_3DH1_HOPP_Ant1_NTNV



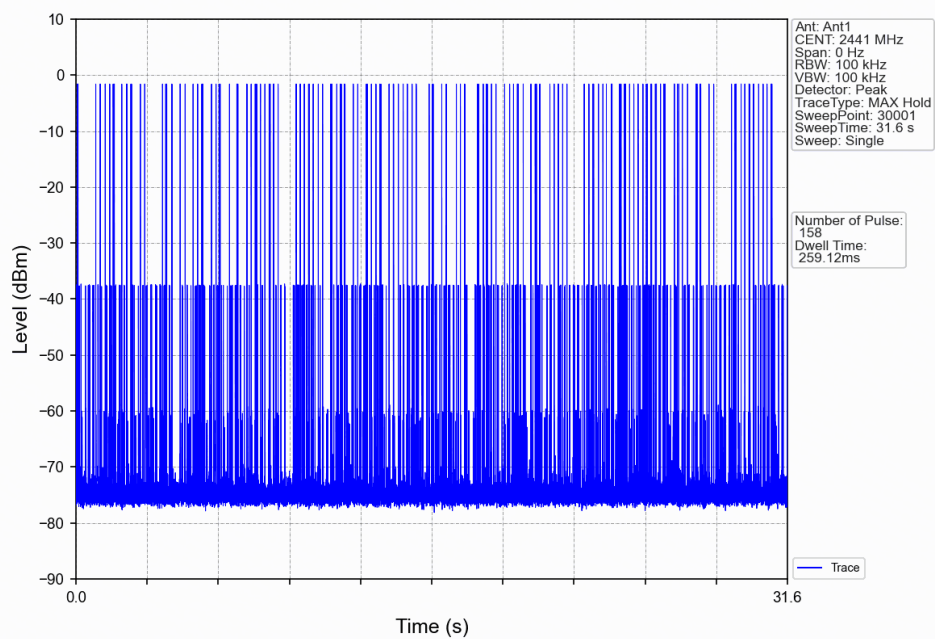
8-DPSK_3DH1_HOPP_Ant1_NTNV



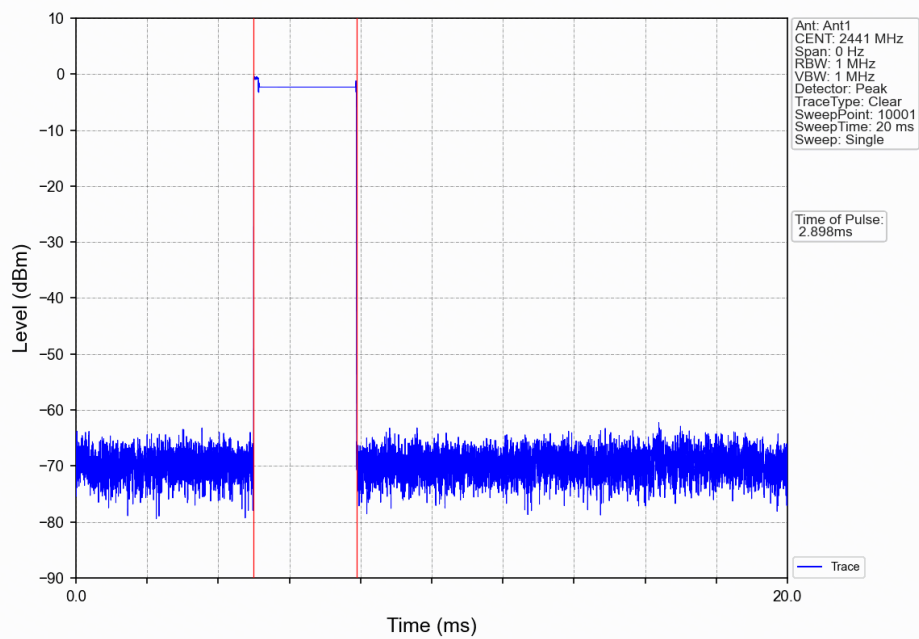
8-DPSK_3DH3_HOPP_Ant1_NTNV



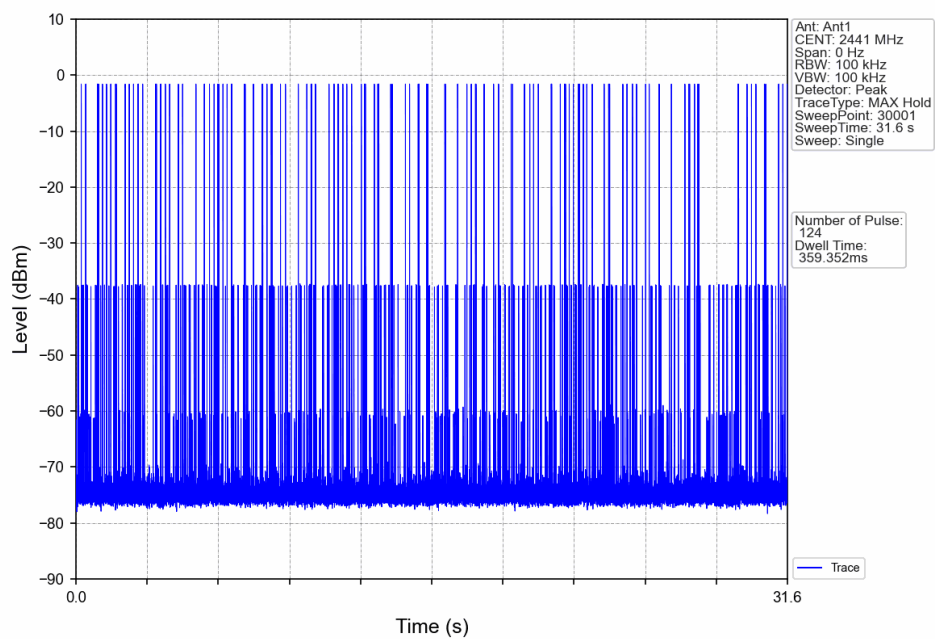
8-DPSK_3DH3_HOPP_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

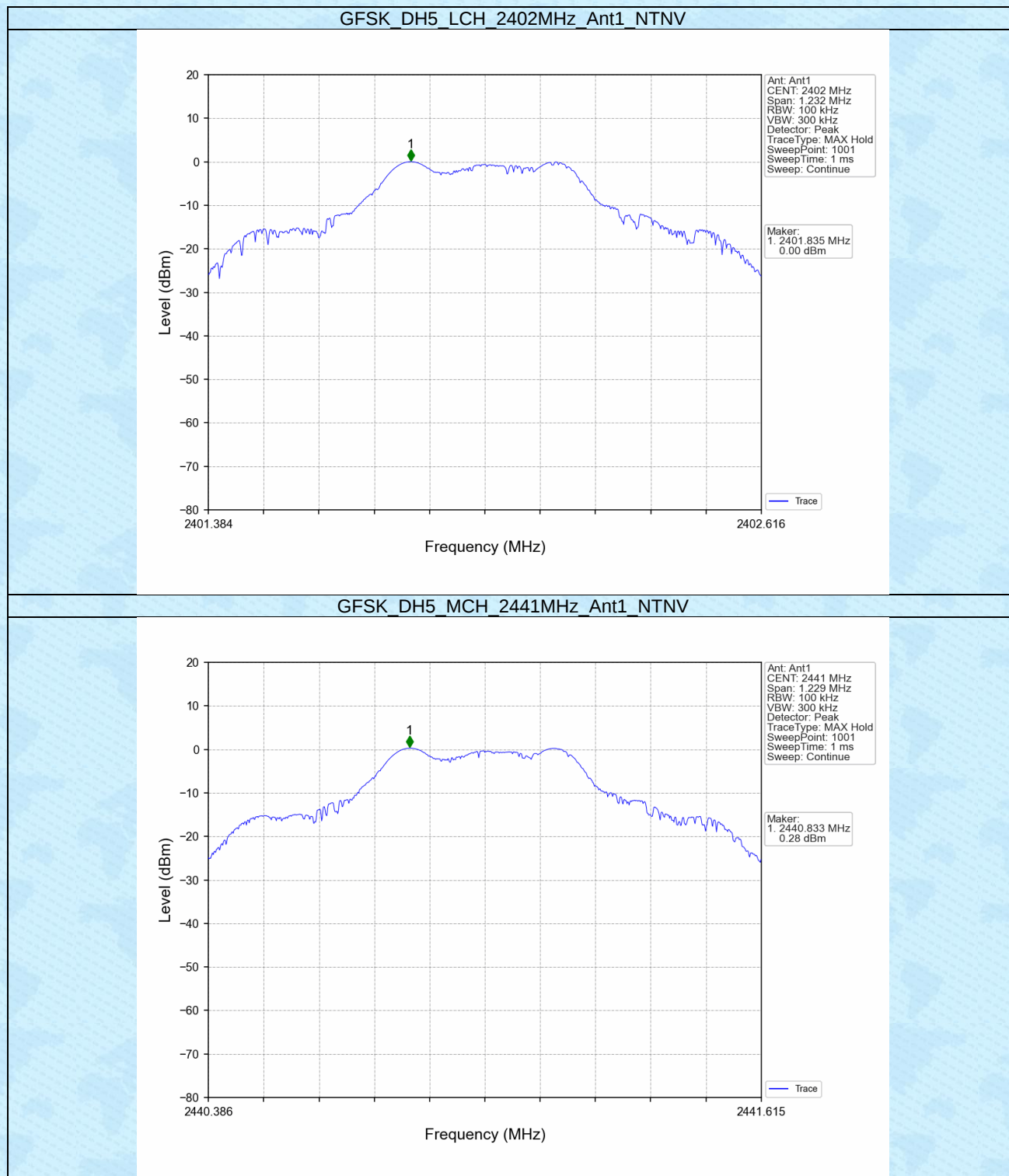
6.1 Ref

6.1.1 Test Result

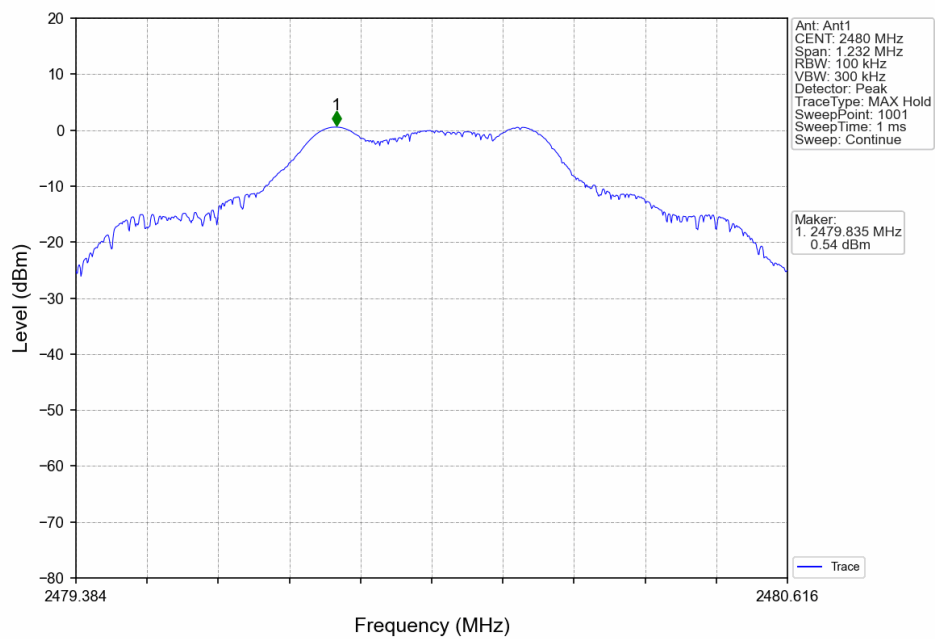
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	0.00
		2441	DH5	1	0.28
		2480	DH5	1	0.54
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	-1.08
		2441	2DH5	1	-0.82
		2480	2DH5	1	-0.59
8-DPSK	SISO	2402	3DH5	1	-1.08
		2441	3DH5	1	-0.85
		2480	3DH5	1	-0.58

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

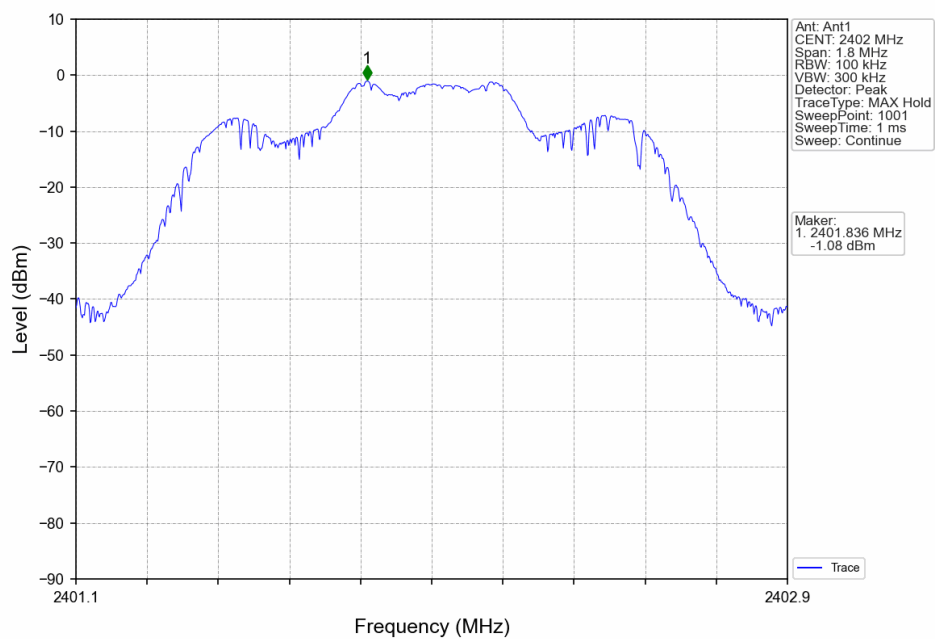
6.1.2 Test Graph



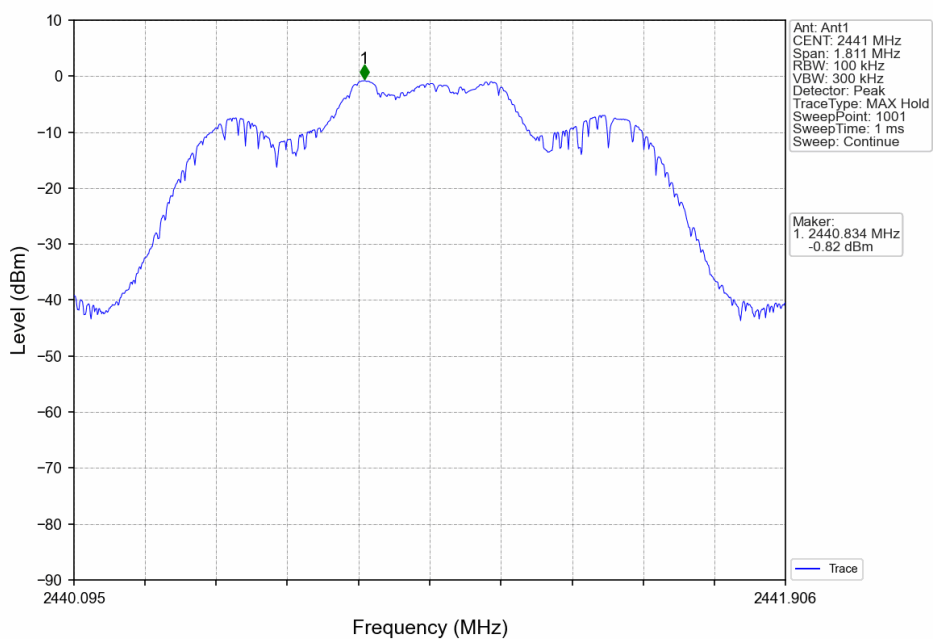
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



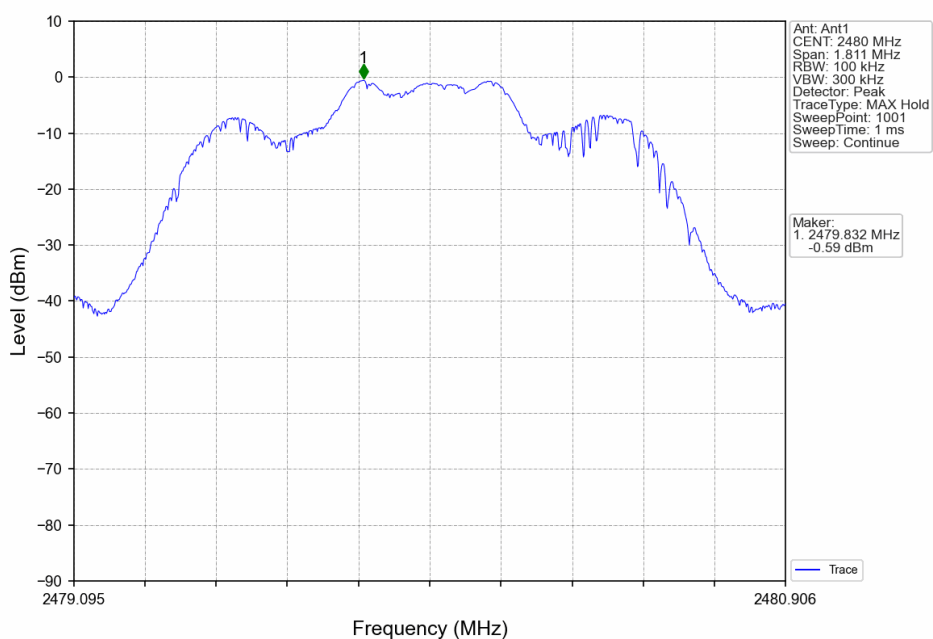
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



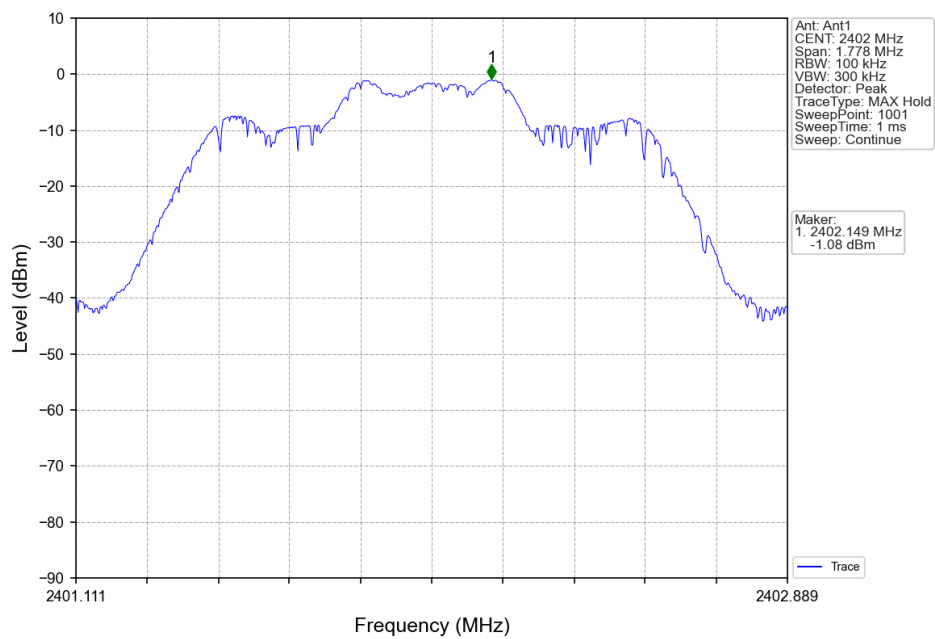
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



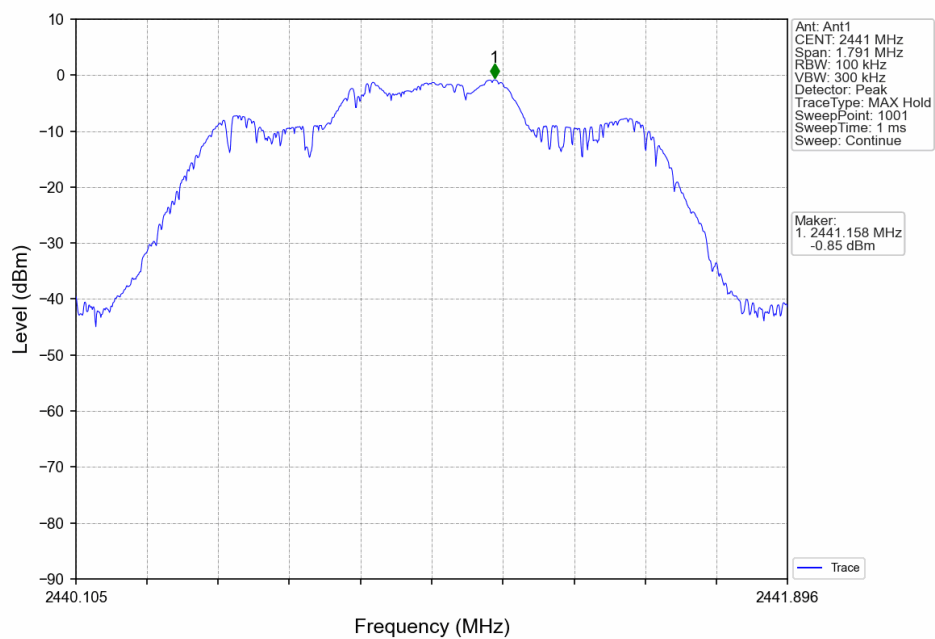
$\pi/4$ -DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

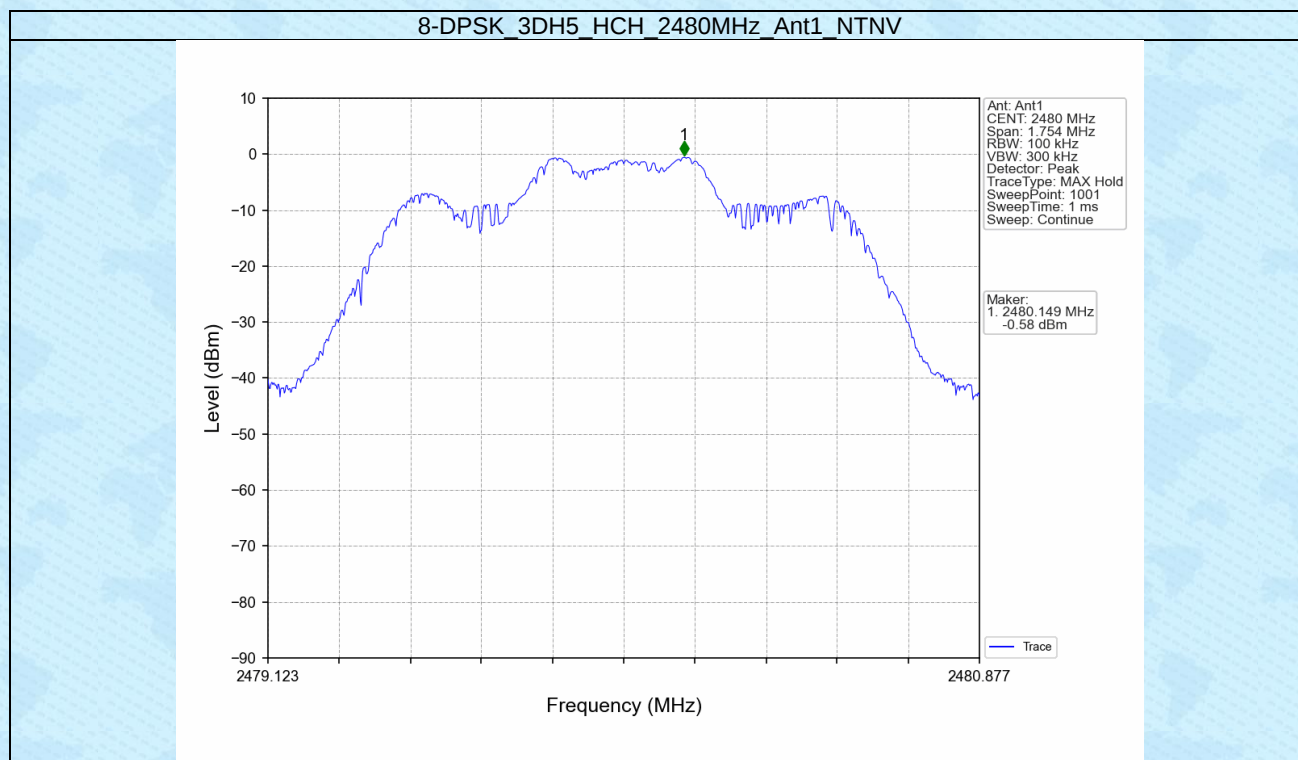


8-DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8-DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



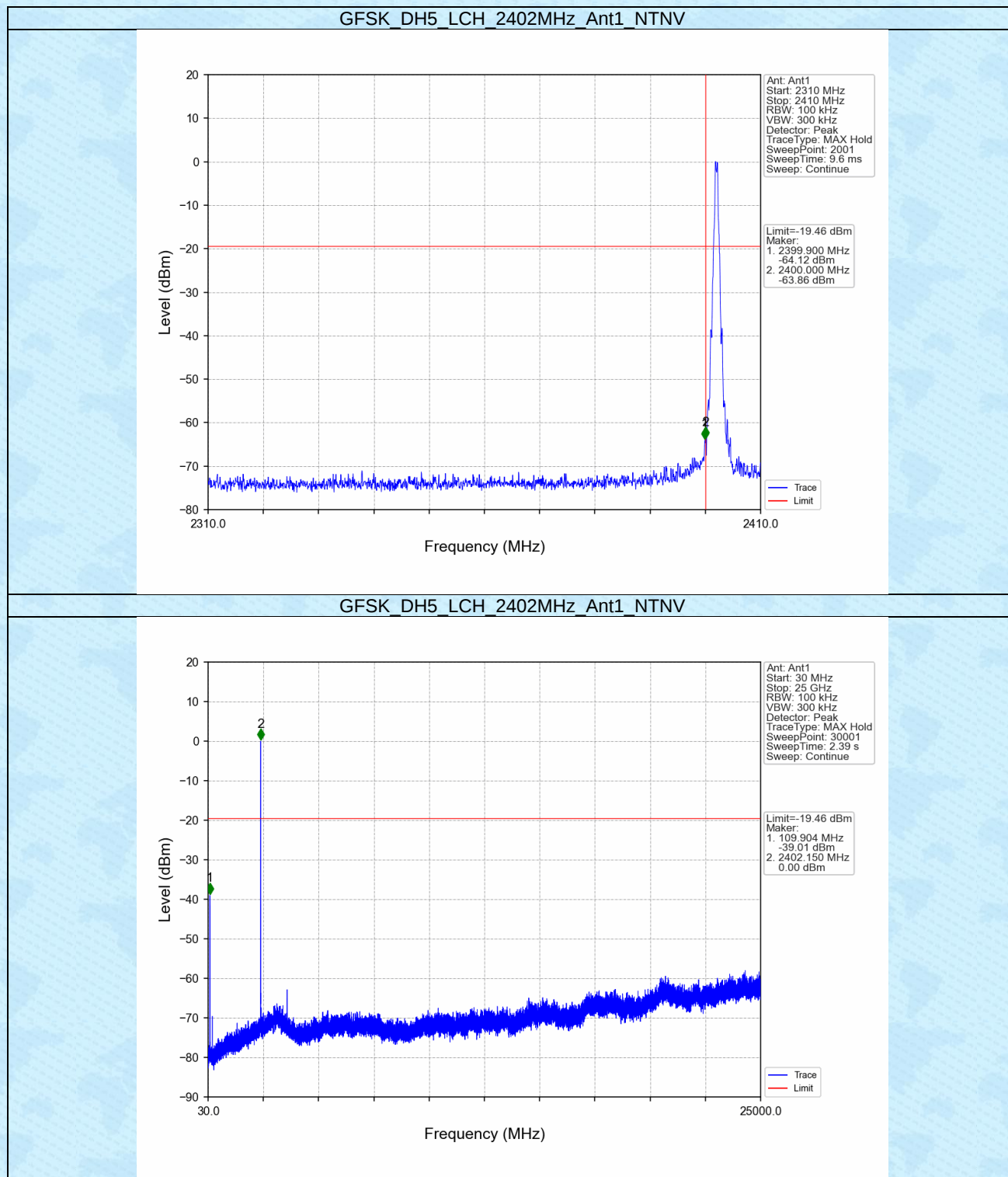


6.2 CSE

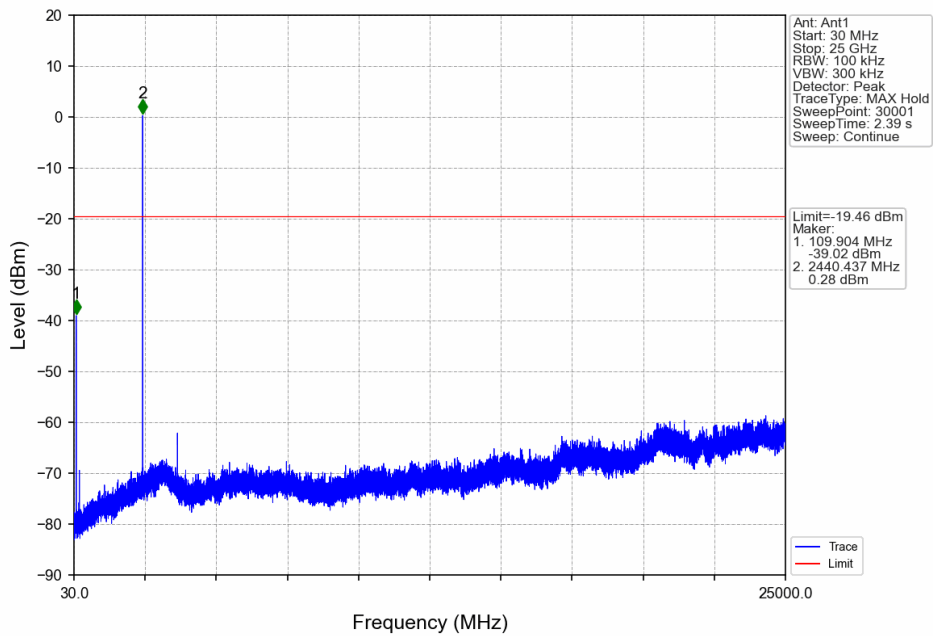
6.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	0.54	-19.46	Pass
		2441	DH5	1	0.54	-19.46	Pass
		2480	DH5	1	0.54	-19.46	Pass
		HOPP	DH5	1	0.54	-19.46	Pass
$\pi/4$ -DQPSK	SISO	2402	2DH5	1	-0.59	-20.59	Pass
		2441	2DH5	1	-0.59	-20.59	Pass
		2480	2DH5	1	-0.59	-20.59	Pass
		HOPP	2DH5	1	-0.59	-20.59	Pass
8-DPSK	SISO	2402	3DH5	1	-0.58	-20.58	Pass
		2441	3DH5	1	-0.58	-20.58	Pass
		2480	3DH5	1	-0.58	-20.58	Pass
		HOPP	3DH5	1	-0.58	-20.58	Pass
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.							

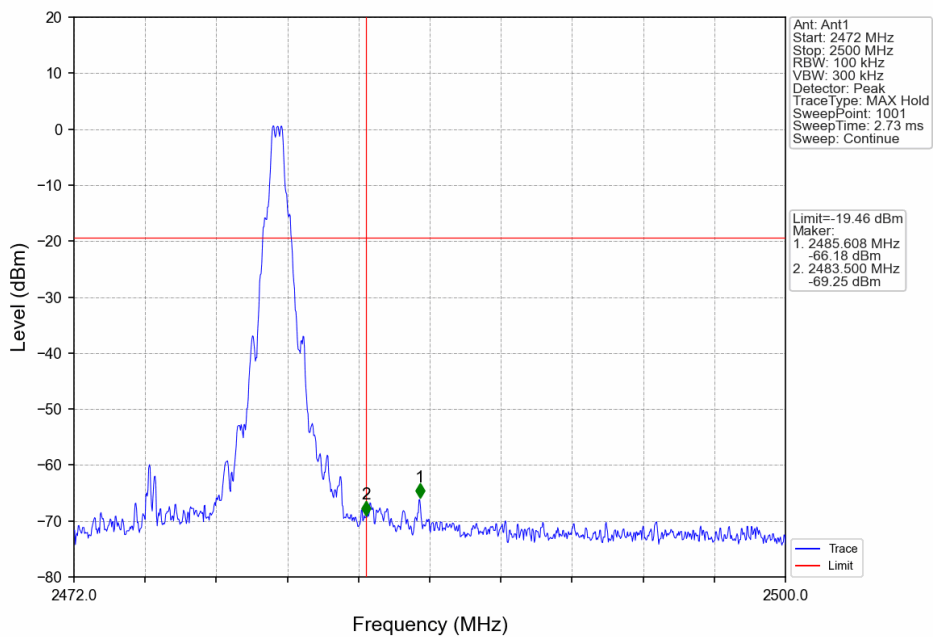
6.2.2 Test Graph



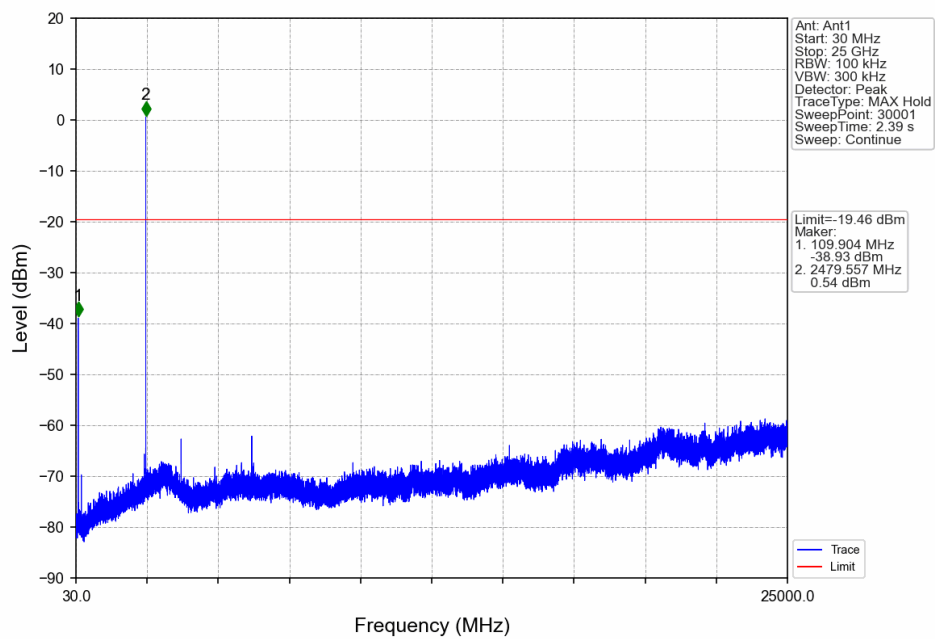
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



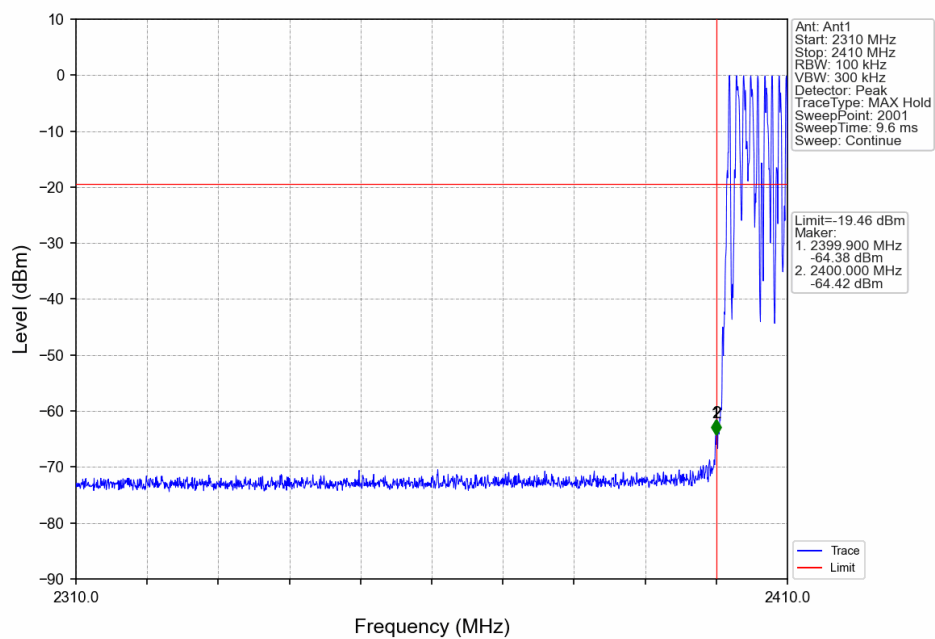
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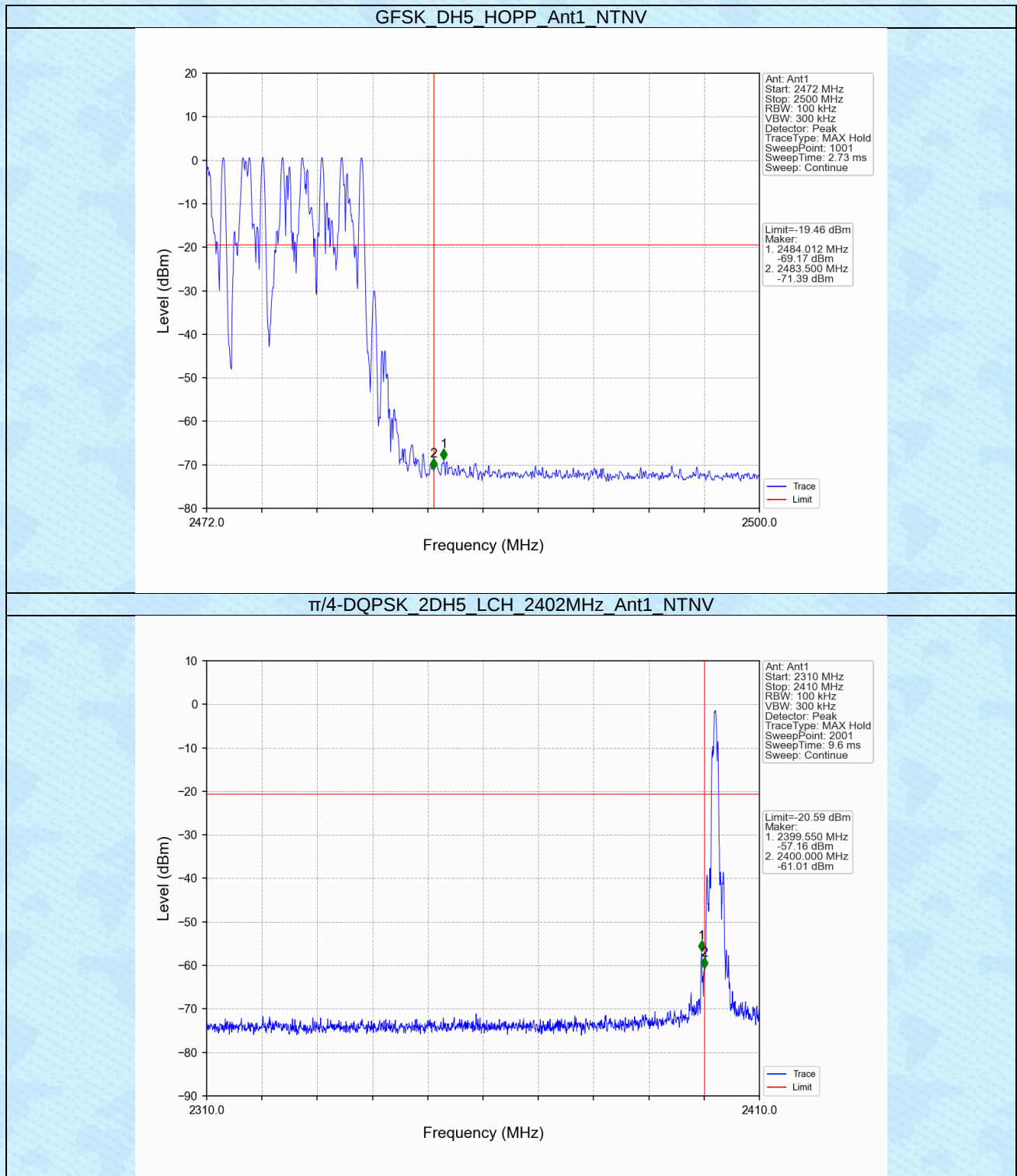


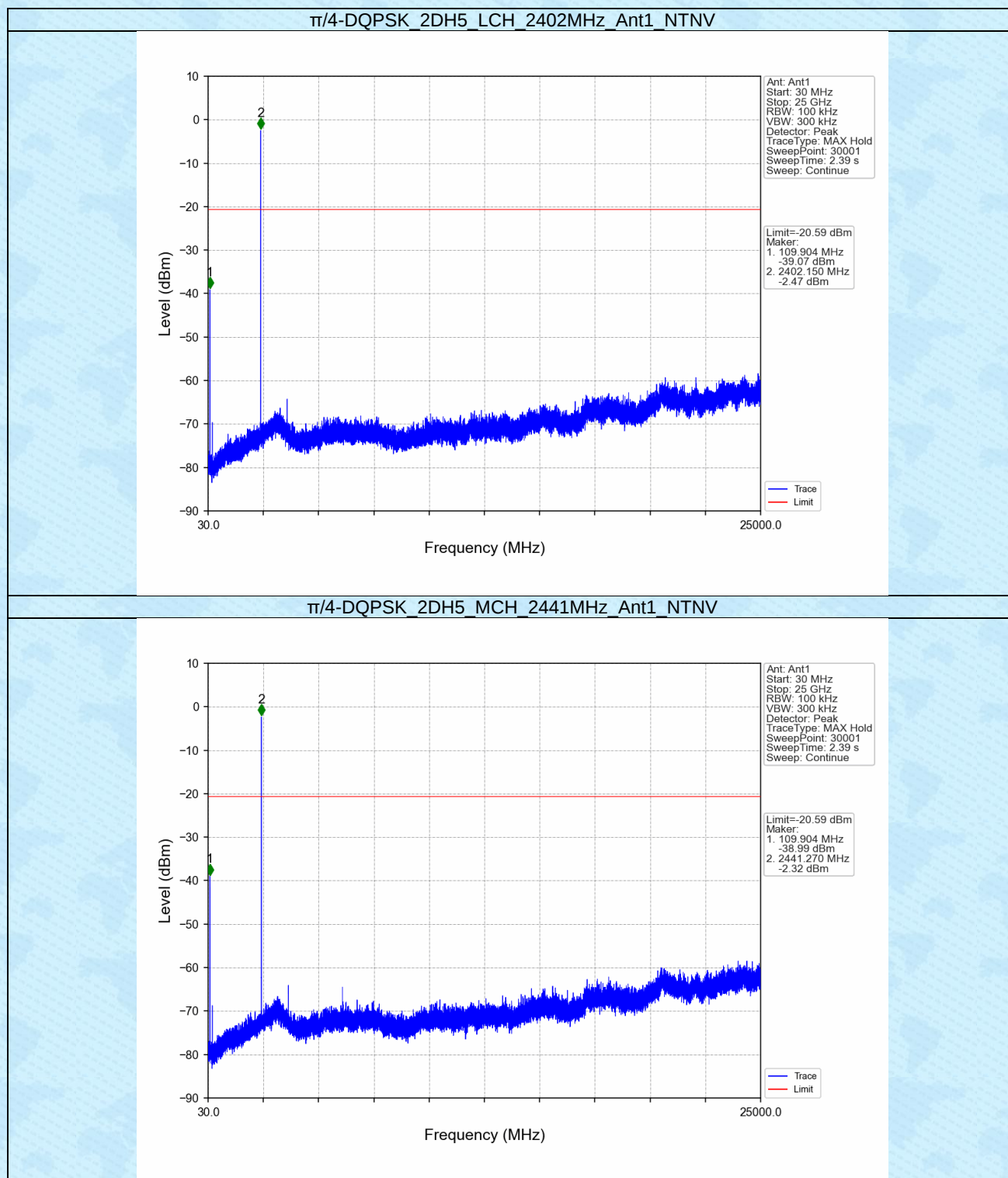
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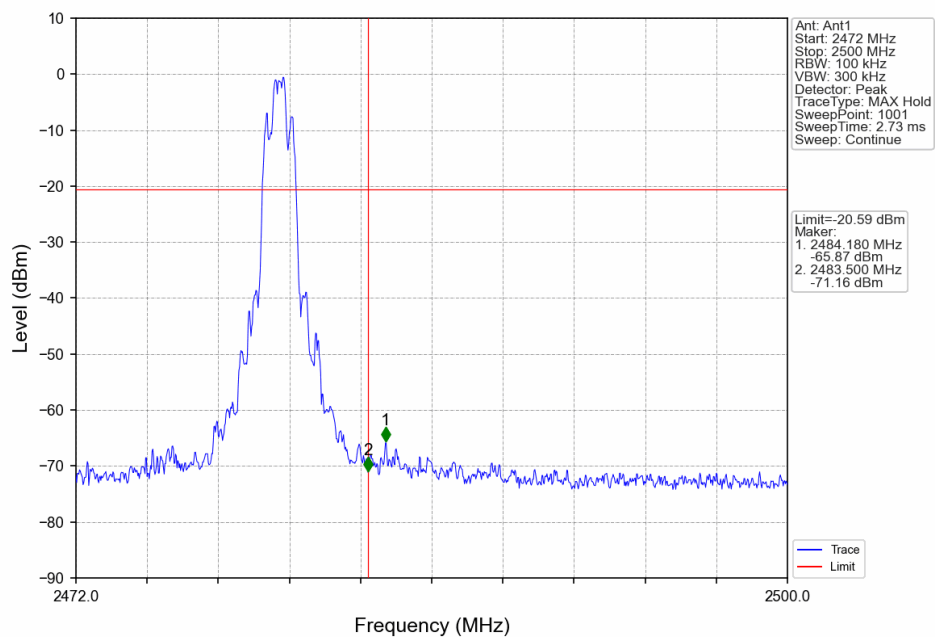
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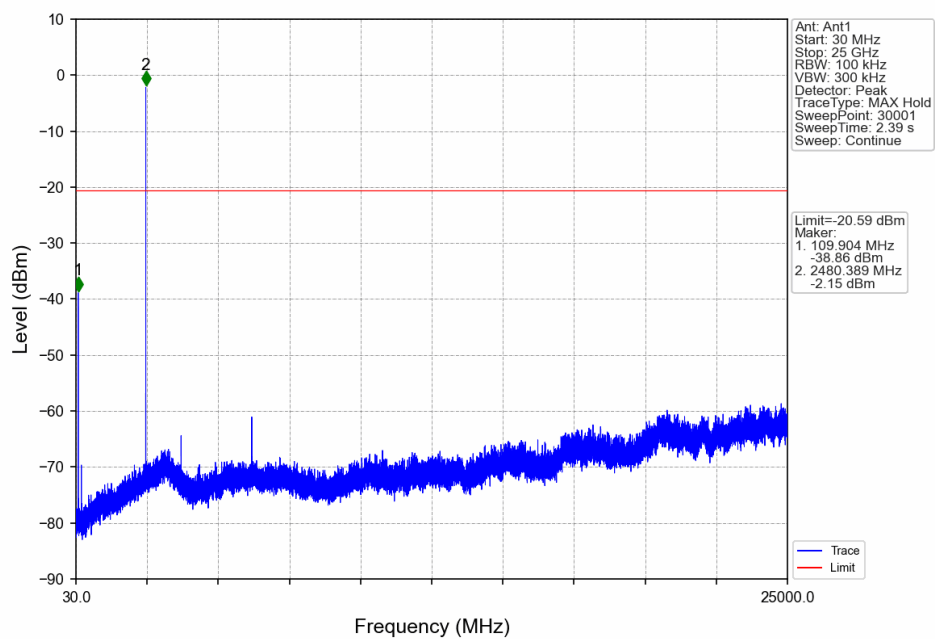




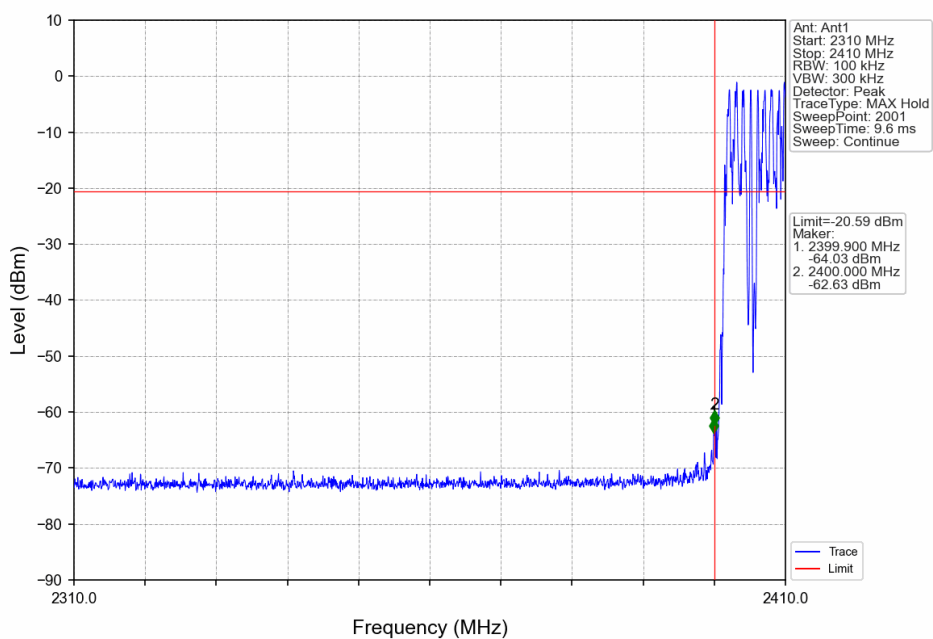
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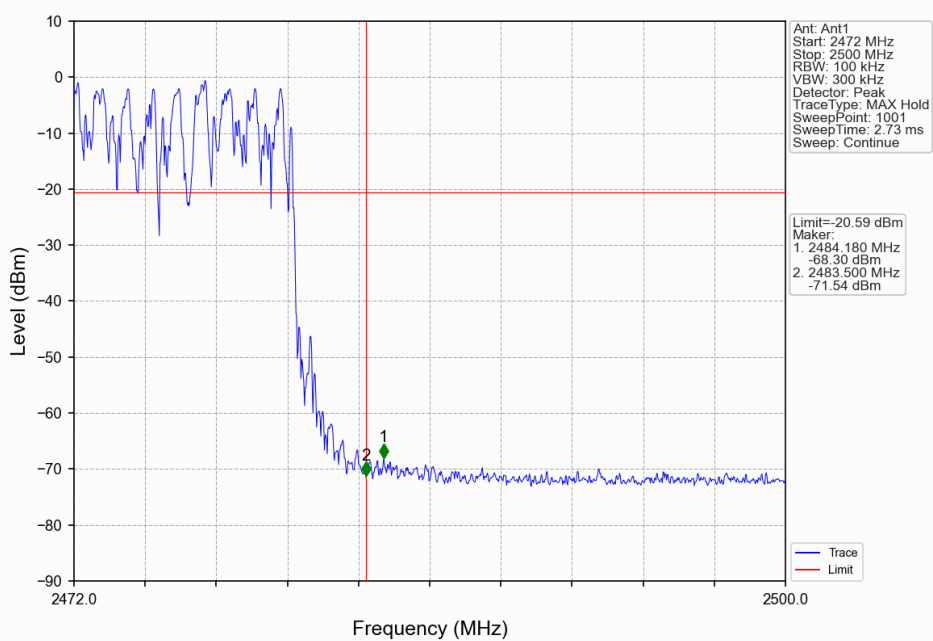
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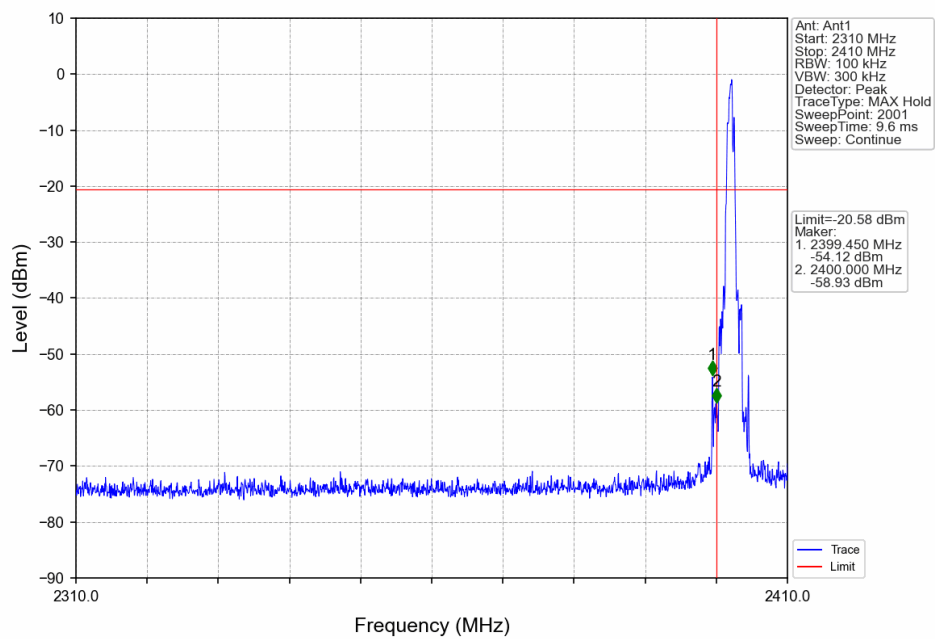
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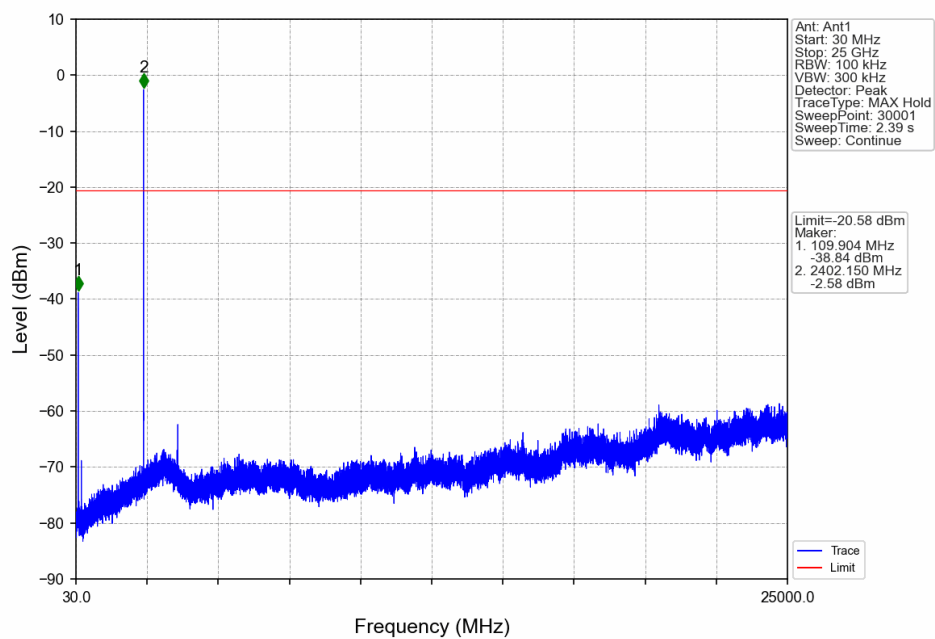
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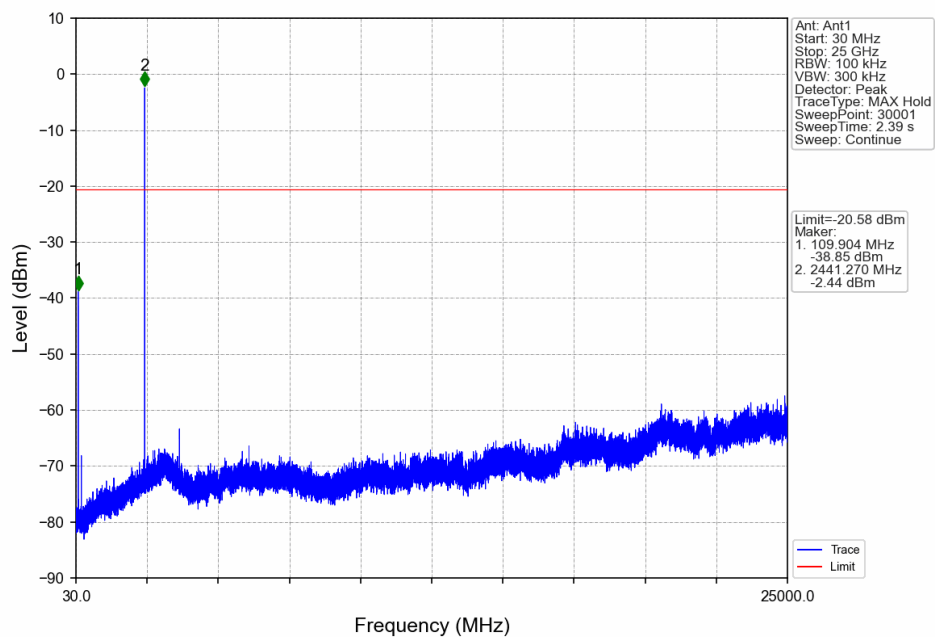
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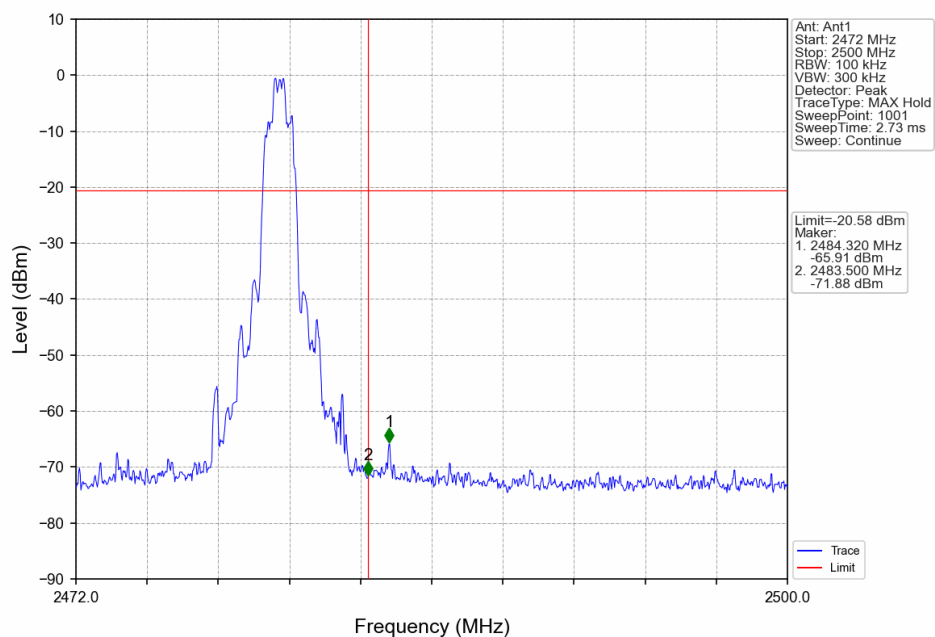
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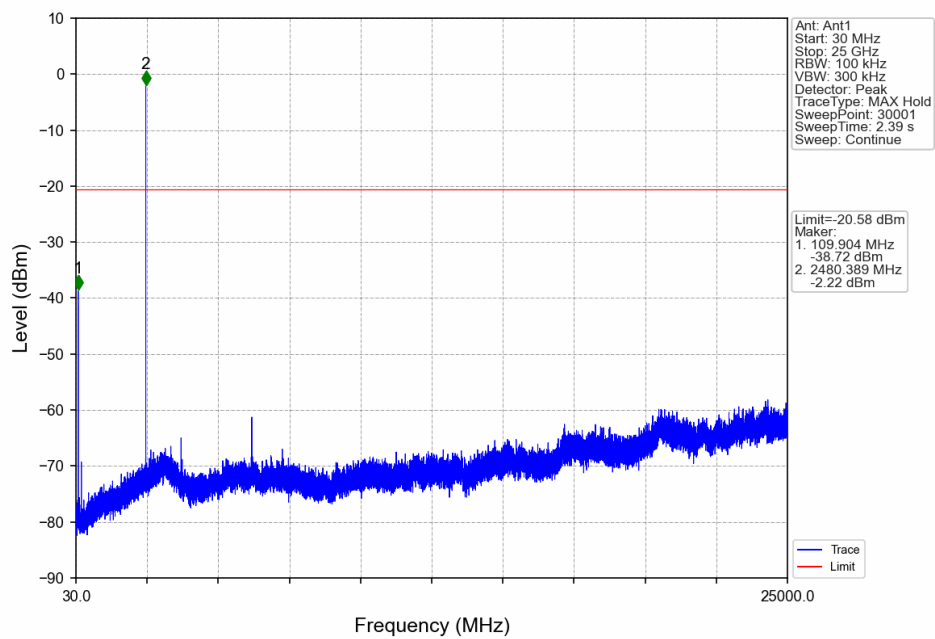
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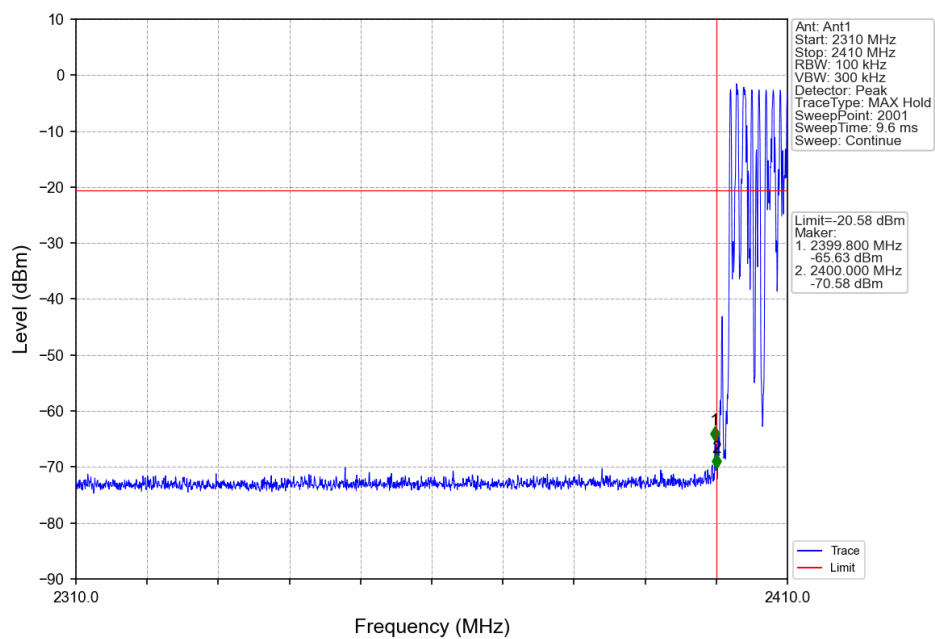
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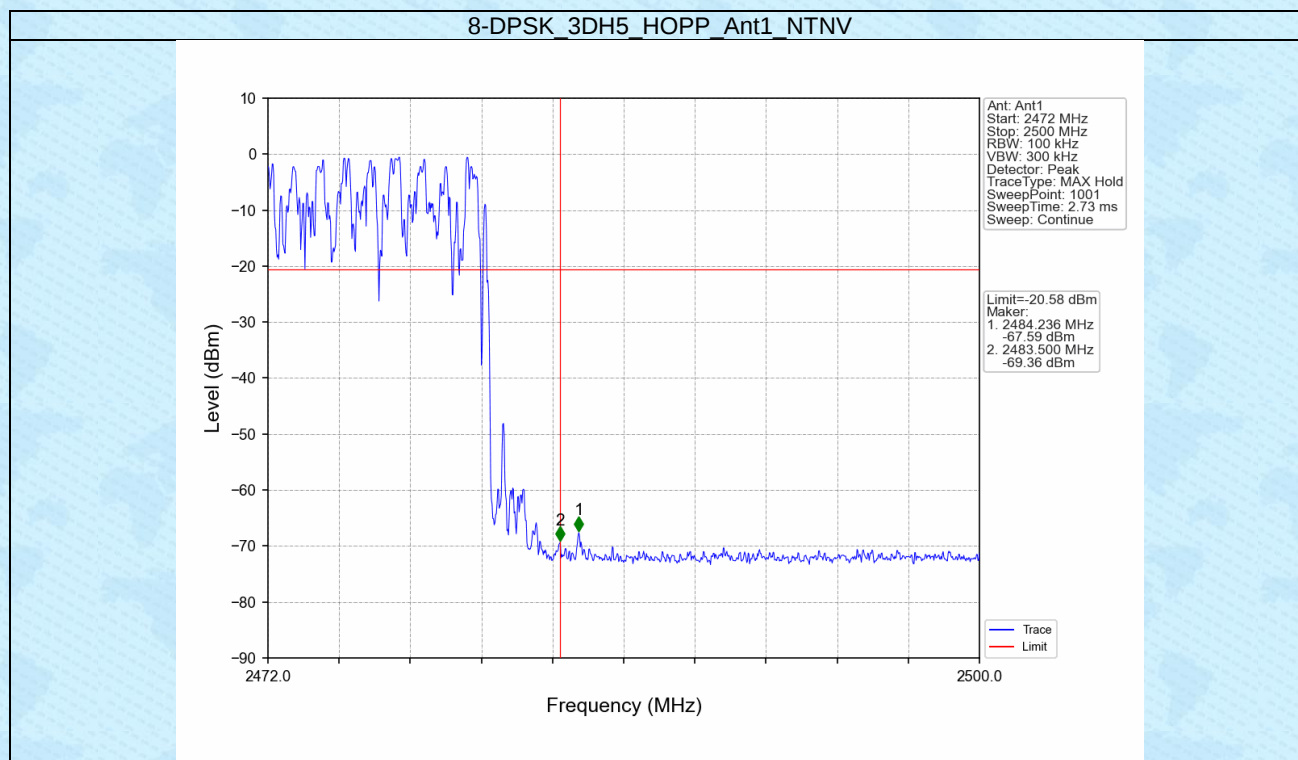


8-DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8-DPSK_3DH5_HOPP_Ant1_NTNV





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