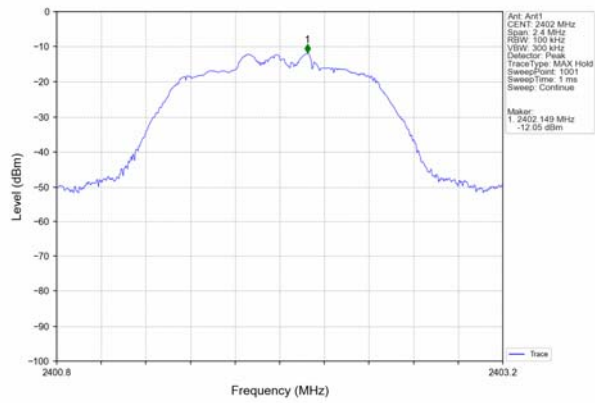
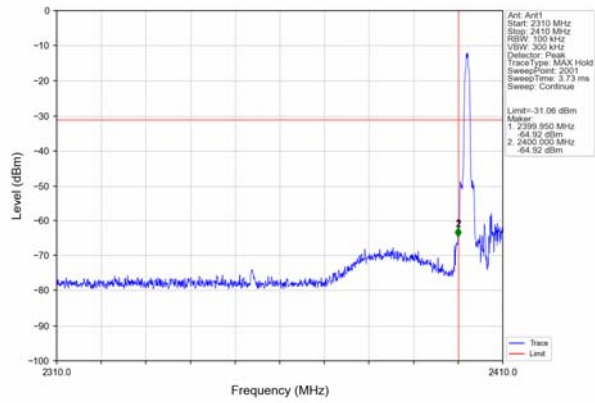


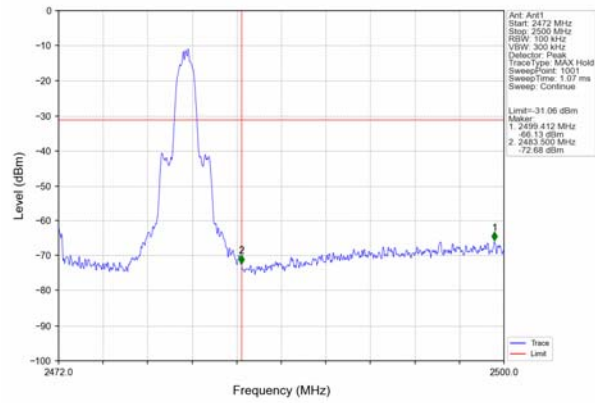
Ref



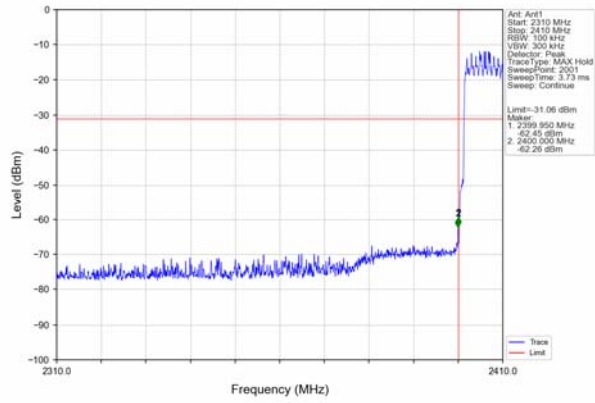
$\pi/4$ DQPSK: Band edge-left side



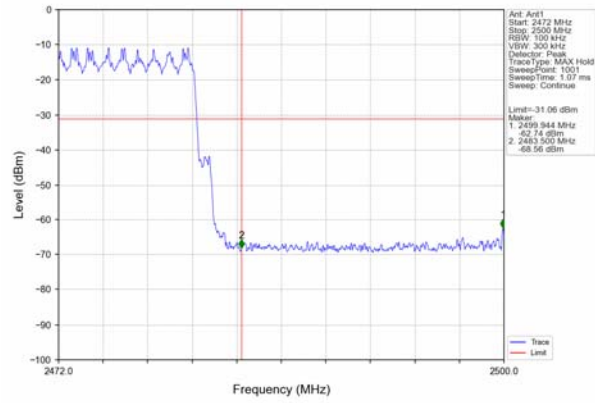
$\pi/4$ DQPSK: Band edge-right side



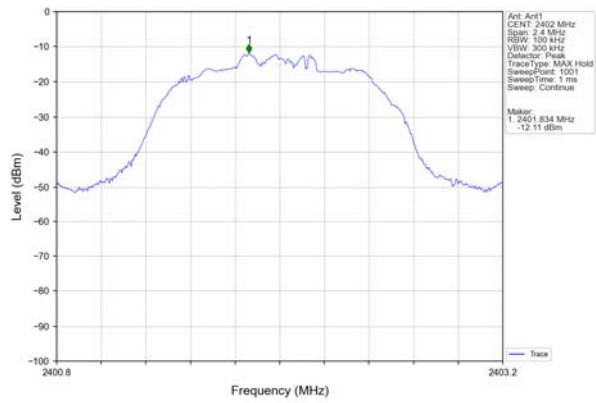
$\pi/4$ DQPSK Hopping: Band edge-left side



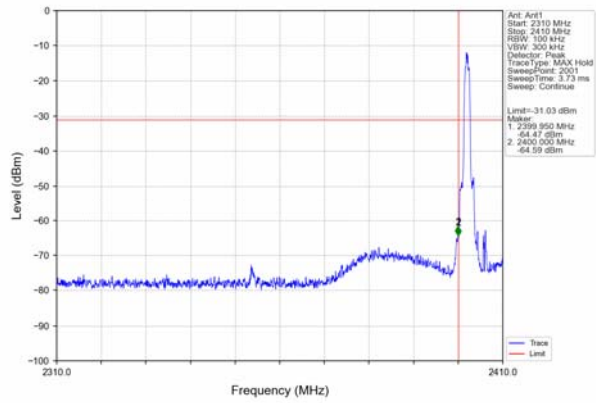
$\pi/4$ DQPSK Hopping: Band edge-right side



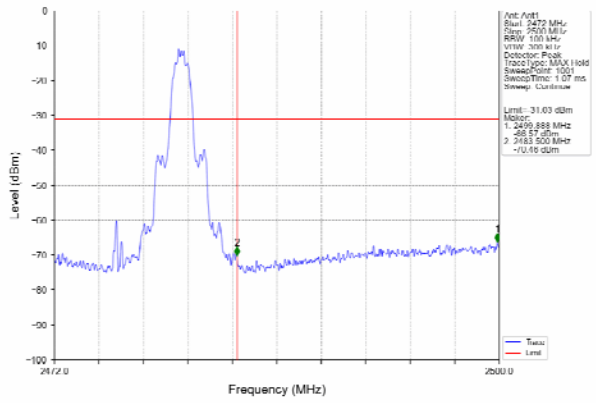
Ref



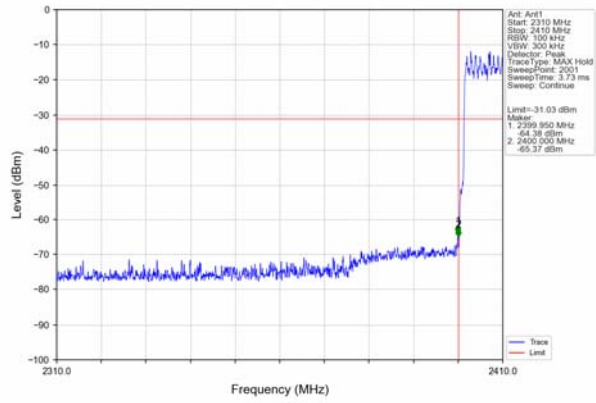
8DPSK: Band edge-left side



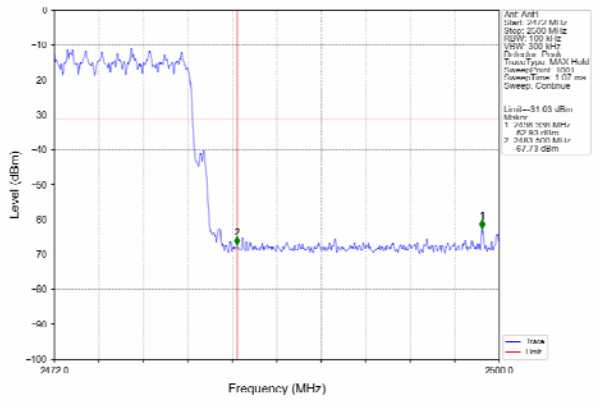
8DPSK: Band edge-right side



8DPSK Hopping: Band edge-left side

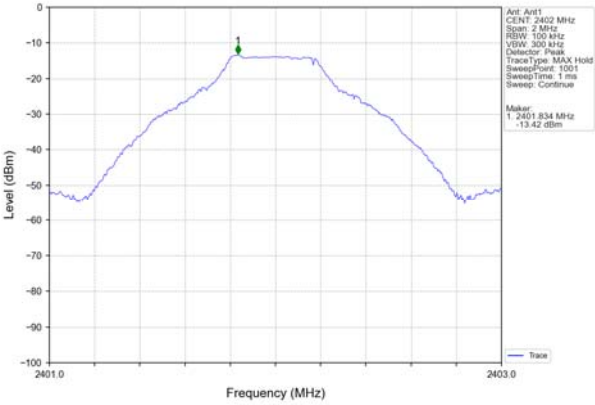


8DPSK Hopping: Band edge-right side

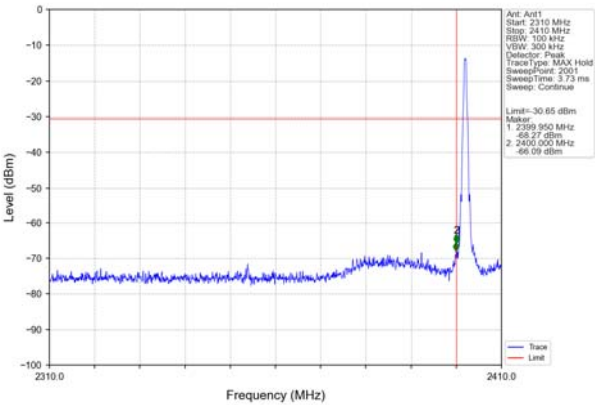


Bluetooth2

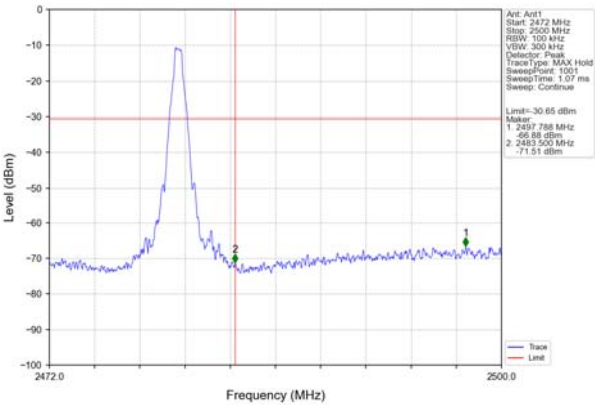
Ref



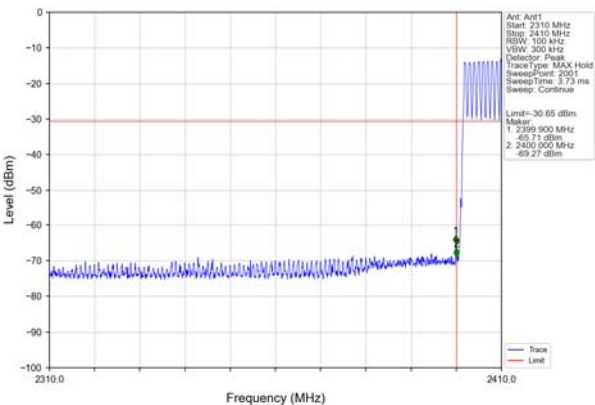
GFSK: Band edge-left side



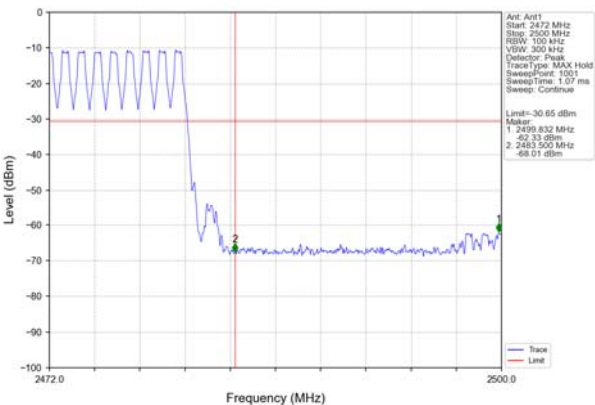
GFSK: Band edge-right side



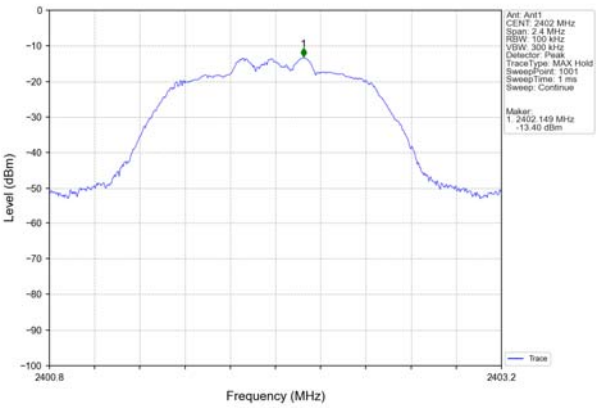
GFSK Hopping: Band edge-left side



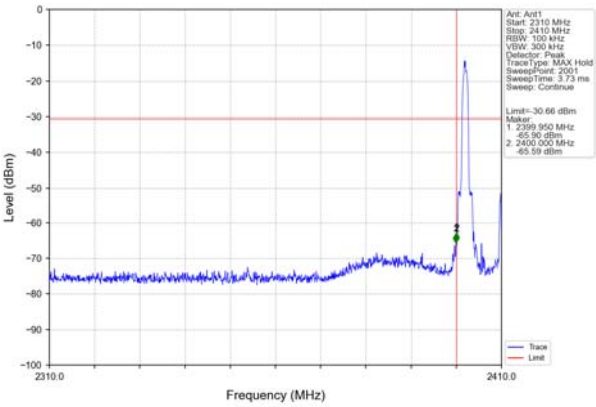
GFSK Hopping: Band edge-right side



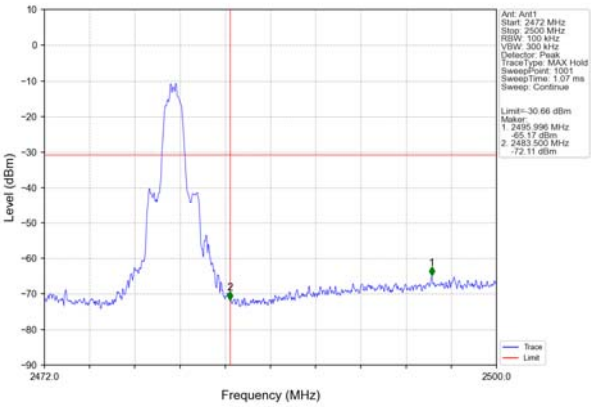
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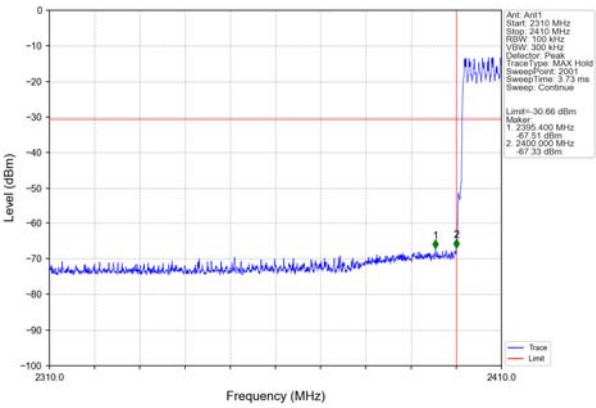
$\pi/4$ DQPSK: Band edge-left side



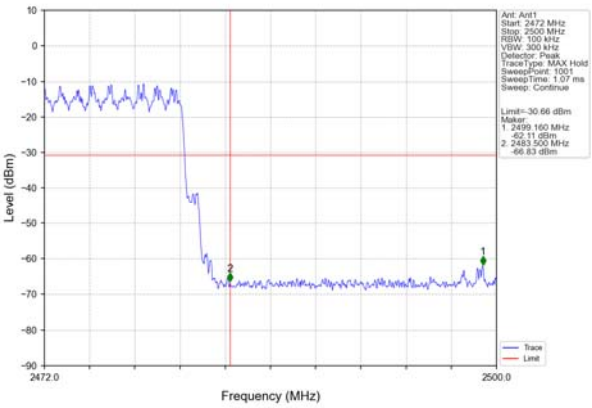
$\pi/4$ DQPSK: Band edge-right side



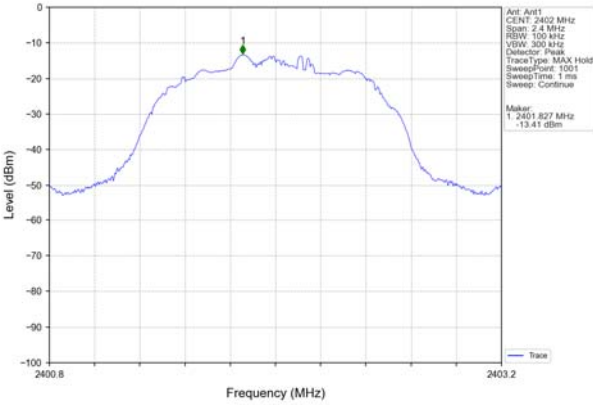
$\pi/4$ DQPSK Hopping: Band edge-left side



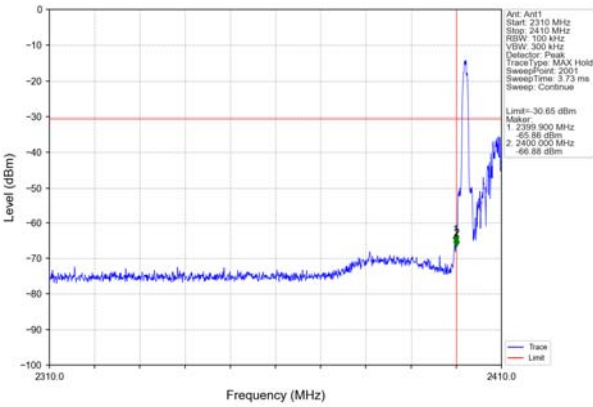
$\pi/4$ DQPSK Hopping: Band edge-right side



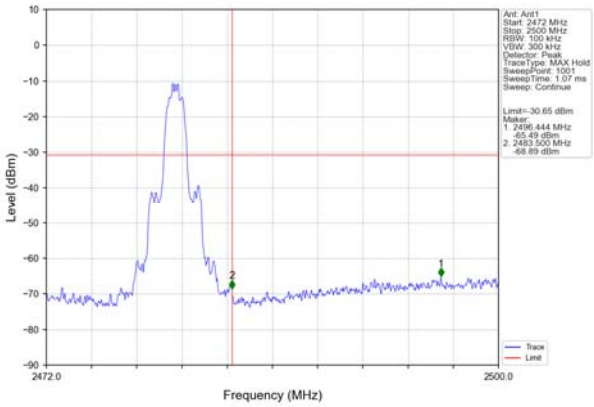
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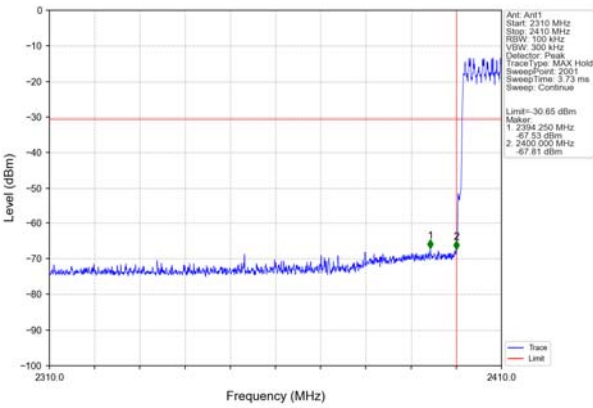
8DPSK: Band edge-left side



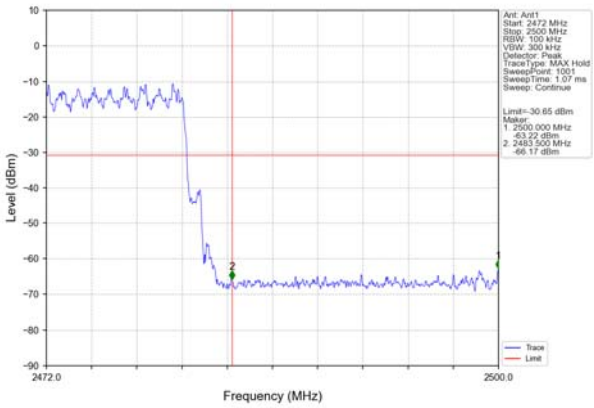
8DPSK: Band edge-right side



8DPSK Hopping: Band edge-left side

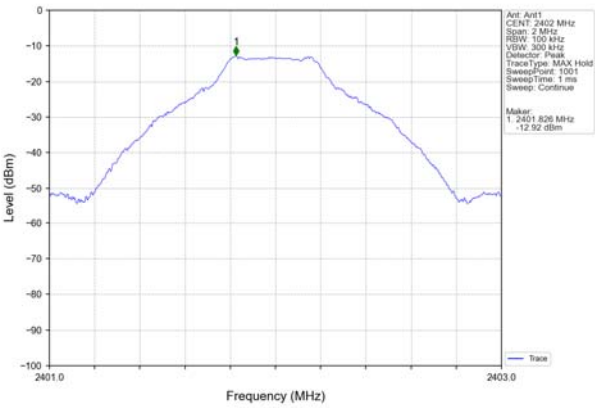


8DPSK Hopping: Band edge-right side

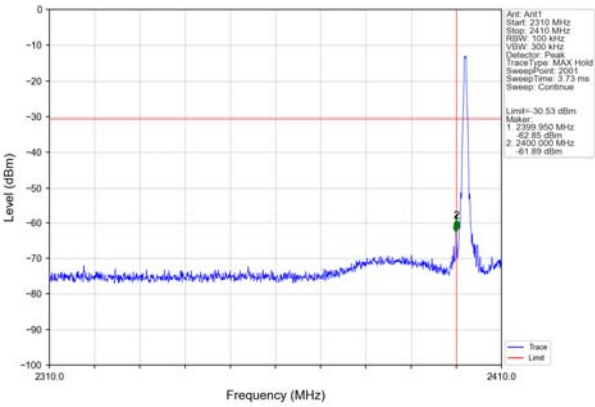


Bluetooth3

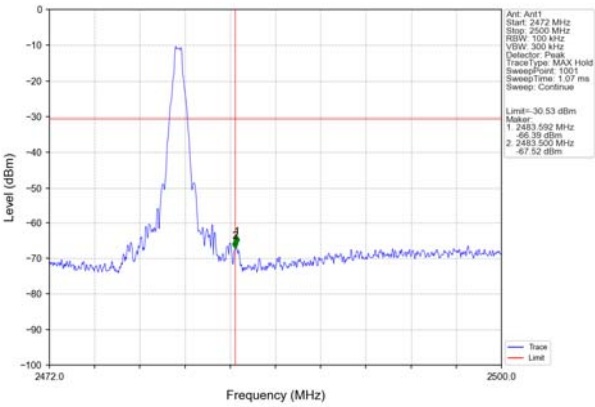
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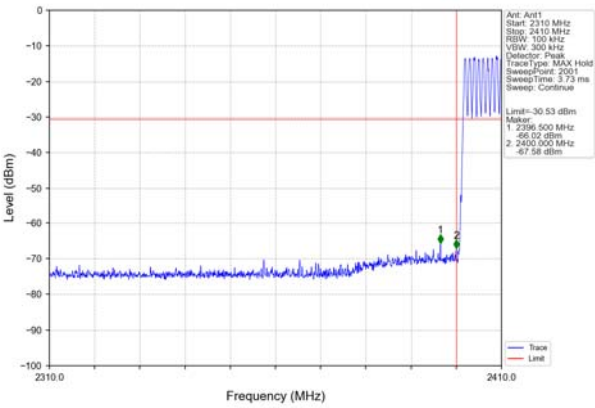
GFSK: Band edge-left side



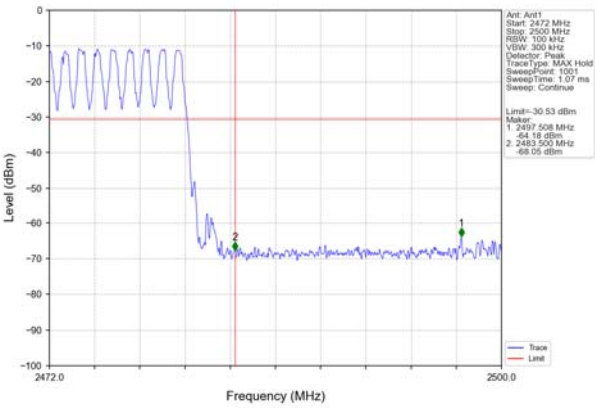
GFSK: Band edge-right side



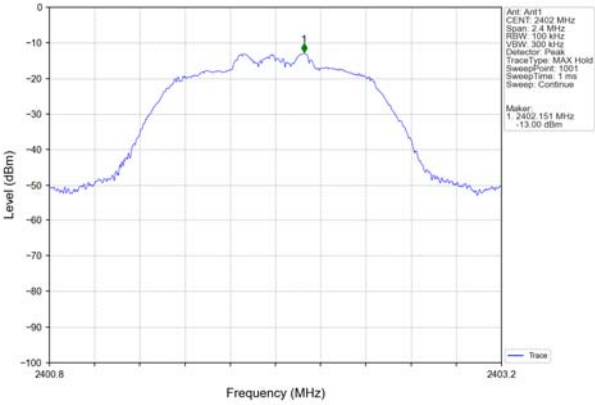
GFSK Hopping: Band edge-left side



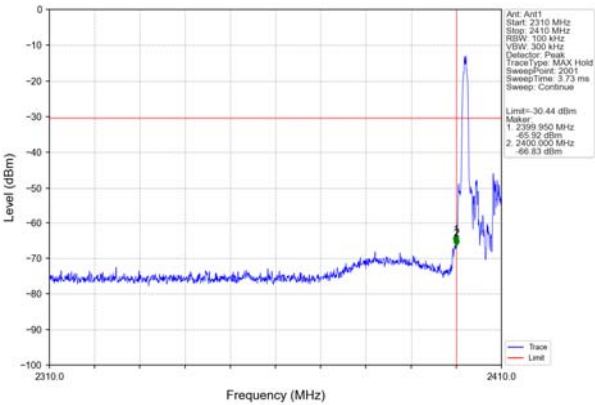
GFSK Hopping: Band edge-right side



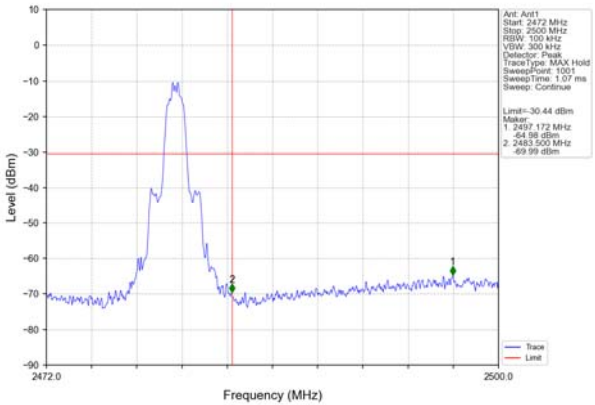
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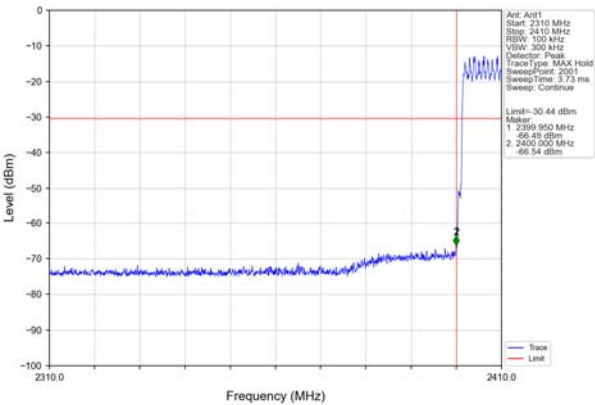
$\pi/4$ DQPSK: Band edge-left side



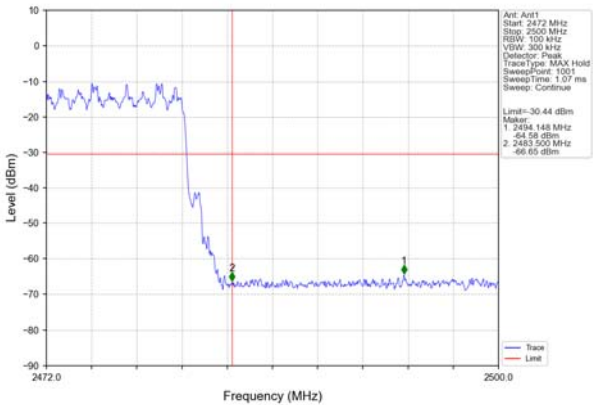
$\pi/4$ DQPSK: Band edge-right side



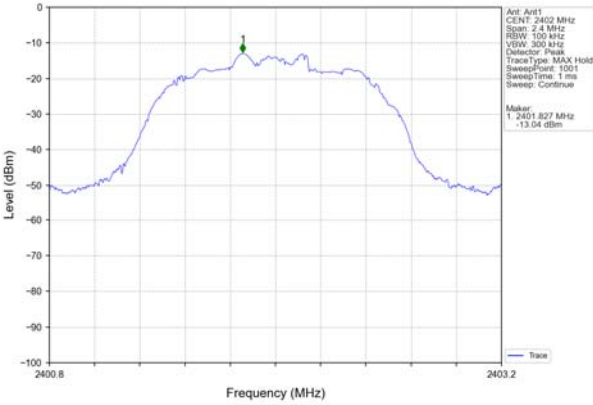
$\pi/4$ DQPSK Hopping: Band edge-left side



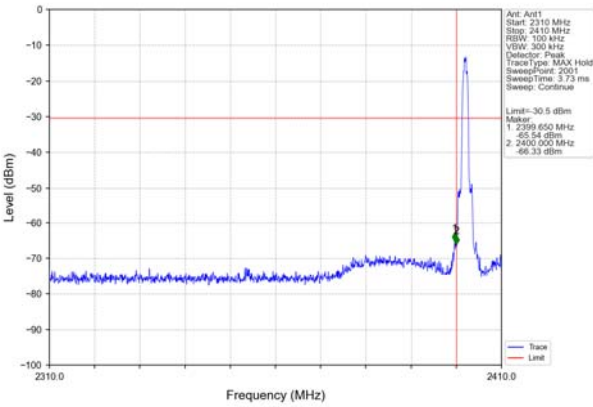
$\pi/4$ DQPSK Hopping: Band edge-right side



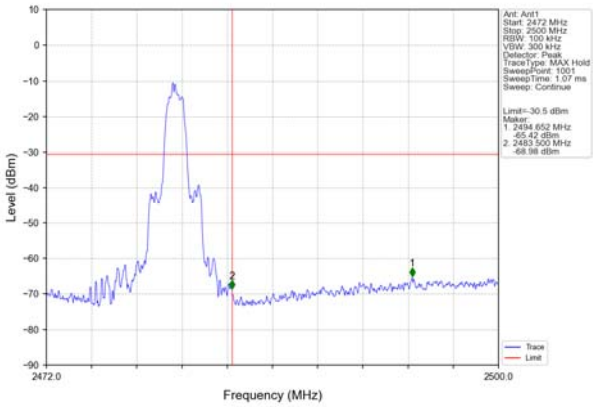
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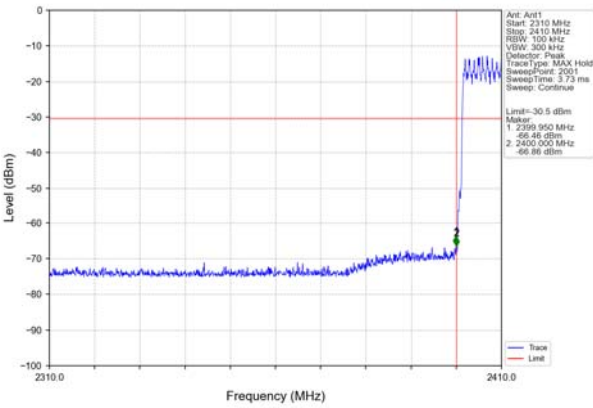
8DPSK: Band edge-left side



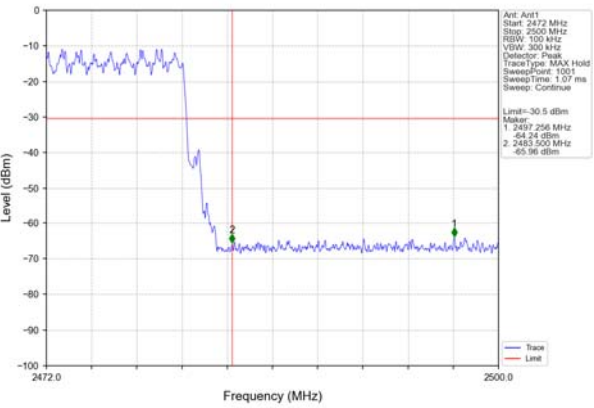
8DPSK: Band edge-right side



8DPSK Hopping: Band edge-left side

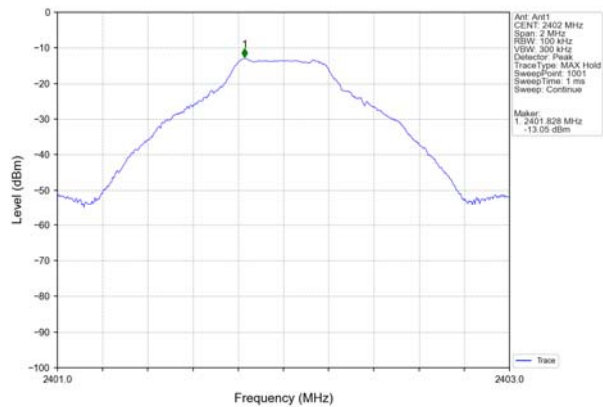


8DPSK Hopping: Band edge-right side

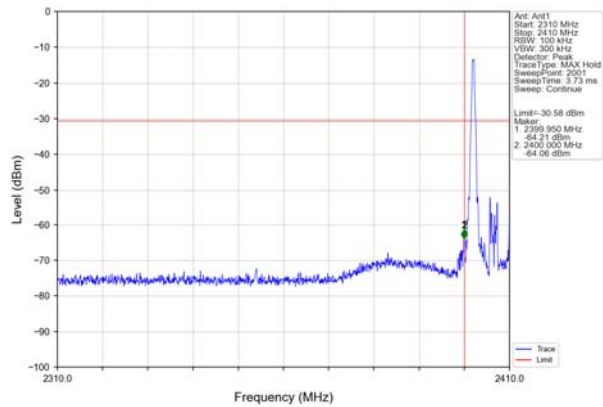


Bluetooth4

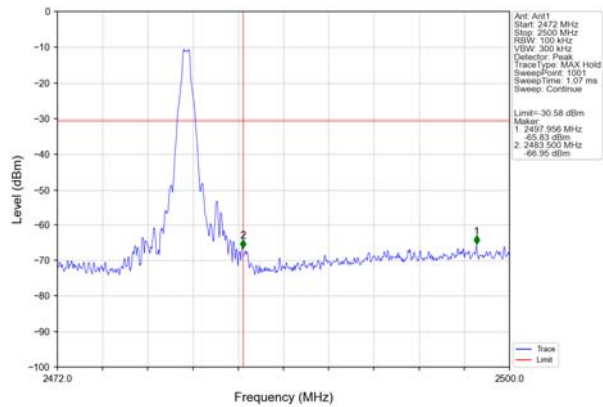
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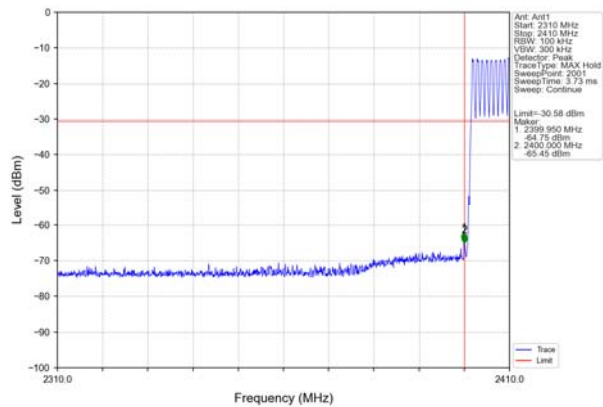
GFSK: Band edge-left side



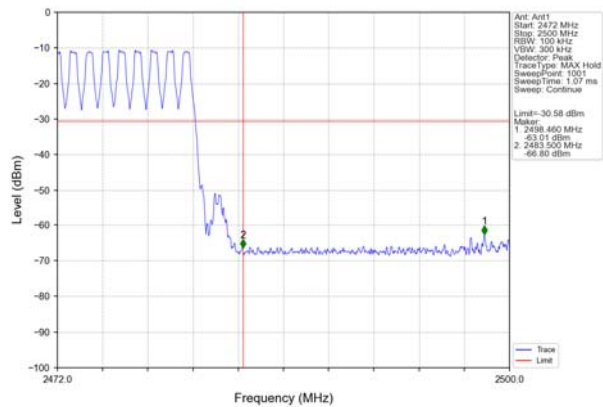
GFSK: Band edge-right side



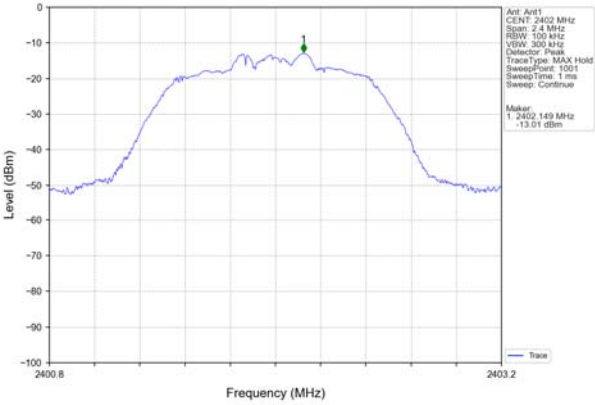
GFSK Hopping: Band edge-left side



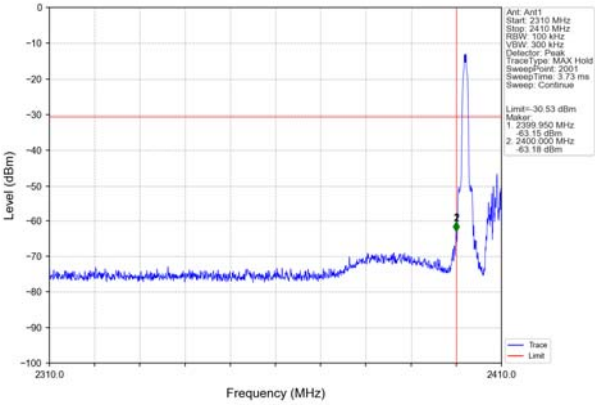
GFSK Hopping: Band edge-right side



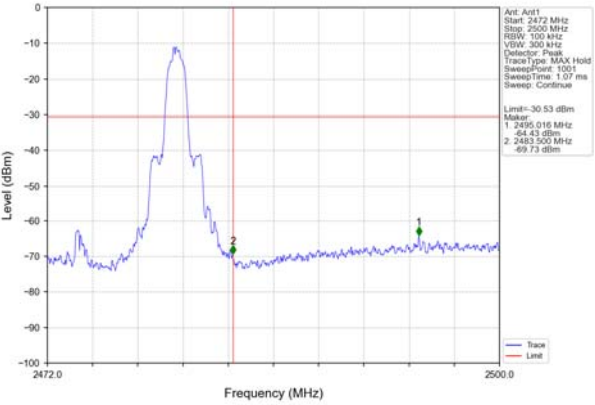
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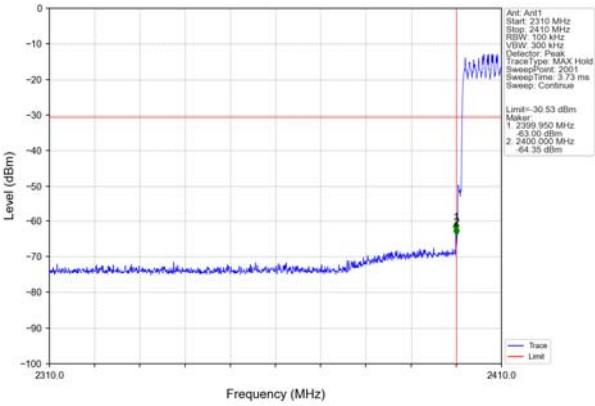
$\pi/4$ DQPSK: Band edge-left side



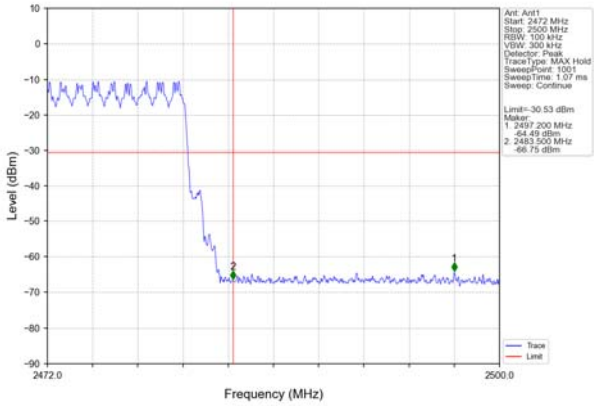
$\pi/4$ DQPSK: Band edge-right side



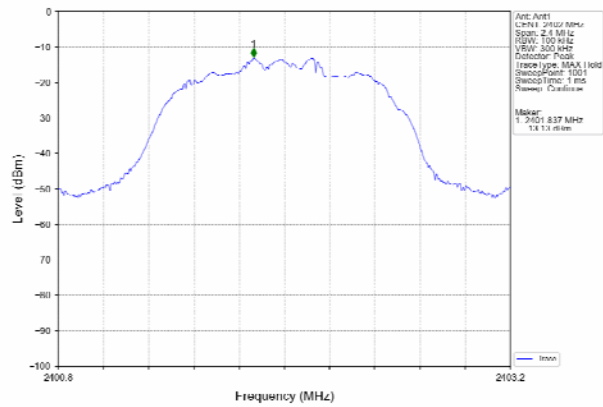
$\pi/4$ DQPSK Hopping: Band edge-left side



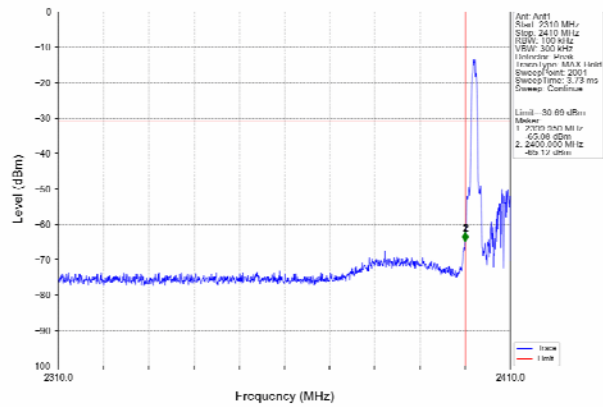
$\pi/4$ DQPSK Hopping: Band edge-right side



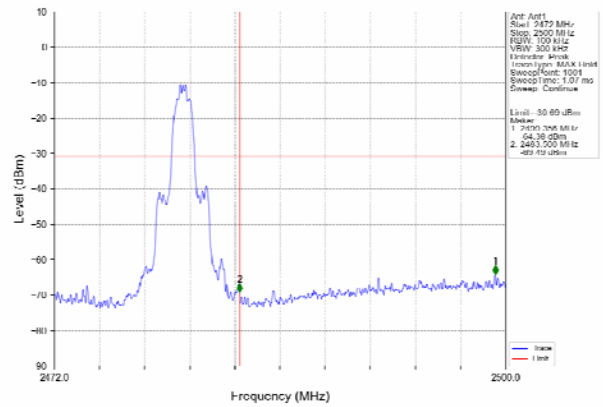
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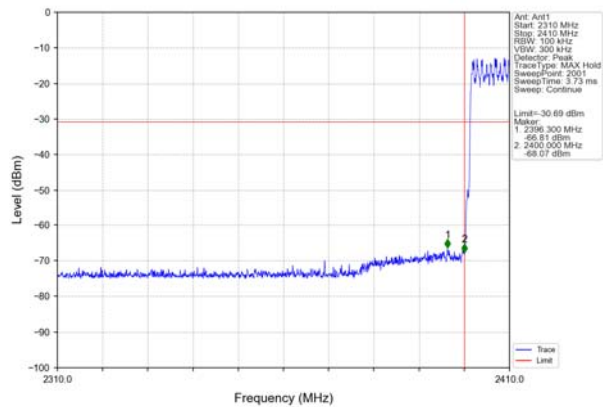
8DPSK: Band edge-left side



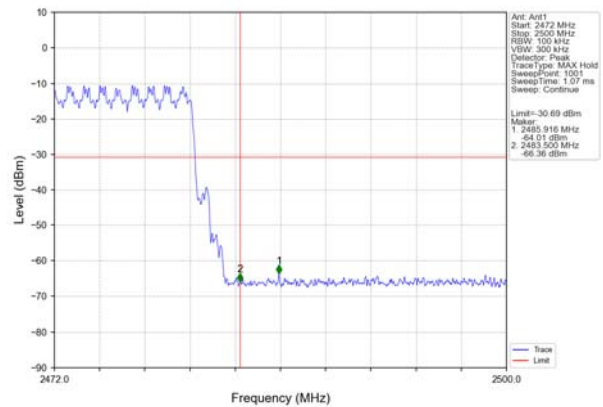
8DPSK: Band edge-right side



8DPSK Hopping: Band edge-left side



8DPSK Hopping: Band edge-right side



11 20dB Bandwidth and 99% Bandwidth Measurement

Test Requirement: FCC 47CFR Part 15 Section 15.247

Test Method: ANSI C63.10-2020

Test Mode: Test in fixing operating frequency at low, Middle, high channel.

11.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 30kHz, VBW = 100kHz

11.2 Test Result

Bluetooth1

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.923	/	Pass
		2441	DH5	1	0.923	/	Pass
		2480	DH5	1	0.922	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.290	/	Pass
		2441	2DH5	1	1.312	/	Pass
		2480	2DH5	1	1.314	/	Pass
8DPSK	SISO	2402	3DH5	1	1.261	/	Pass
		2441	3DH5	1	1.264	/	Pass
		2480	3DH5	1	1.286	/	Pass

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.877	/	Pass
		2441	DH5	1	0.875	/	Pass
		2480	DH5	1	0.878	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.188	/	Pass
		2441	2DH5	1	1.201	/	Pass
		2480	2DH5	1	1.215	/	Pass
8DPSK	SISO	2402	3DH5	1	1.204	/	Pass
		2441	3DH5	1	1.212	/	Pass
		2480	3DH5	1	1.223	/	Pass

Bluetooth2

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.923	/	Pass
		2441	DH5	1	0.923	/	Pass
		2480	DH5	1	0.923	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.287	/	Pass
		2441	2DH5	1	1.313	/	Pass
		2480	2DH5	1	1.314	/	Pass
8DPSK	SISO	2402	3DH5	1	1.259	/	Pass
		2441	3DH5	1	1.282	/	Pass
		2480	3DH5	1	1.286	/	Pass

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.877	/	Pass
		2441	DH5	1	0.882	/	Pass
		2480	DH5	1	0.882	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.187	/	Pass
		2441	2DH5	1	1.202	/	Pass
		2480	2DH5	1	1.214	/	Pass
8DPSK	SISO	2402	3DH5	1	1.198	/	Pass
		2441	3DH5	1	1.214	/	Pass
		2480	3DH5	1	1.224	/	Pass

Bluetooth3

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.922	/	Pass
		2441	DH5	1	0.922	/	Pass
		2480	DH5	1	0.923	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.286	/	Pass
		2441	2DH5	1	1.318	/	Pass
		2480	2DH5	1	1.318	/	Pass
8DPSK	SISO	2402	3DH5	1	1.259	/	Pass
		2441	3DH5	1	1.284	/	Pass
		2480	3DH5	1	1.289	/	Pass

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.871	/	Pass
		2441	DH5	1	0.874	/	Pass
		2480	DH5	1	0.877	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.186	/	Pass
		2441	2DH5	1	1.198	/	Pass
		2480	2DH5	1	1.216	/	Pass
8DPSK	SISO	2402	3DH5	1	1.201	/	Pass
		2441	3DH5	1	1.213	/	Pass
		2480	3DH5	1	1.224	/	Pass

Bluetooth4

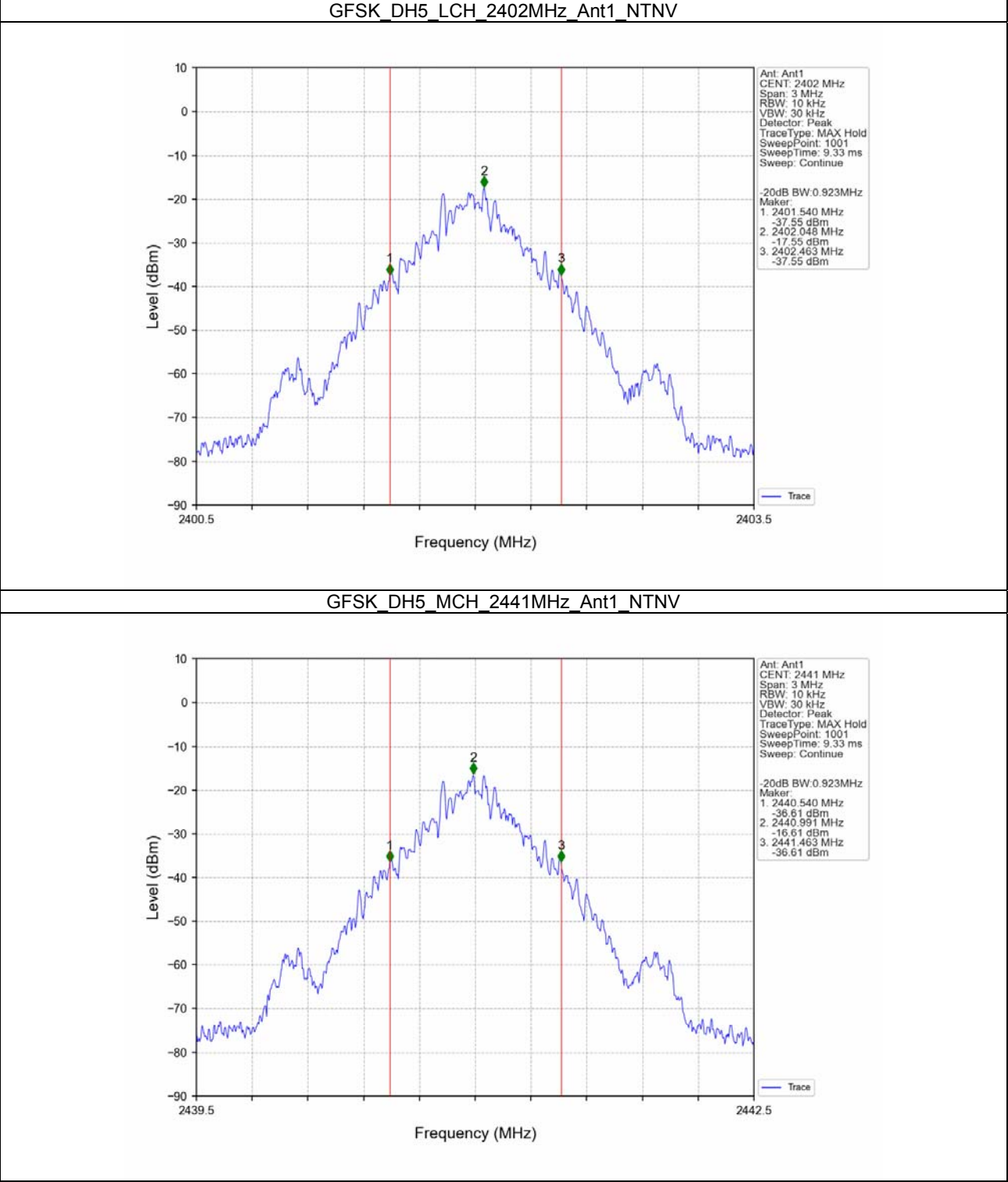
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.924	/	Pass
		2441	DH5	1	0.922	/	Pass
		2480	DH5	1	0.924	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.289	/	Pass
		2441	2DH5	1	1.316	/	Pass
		2480	2DH5	1	1.318	/	Pass
8DPSK	SISO	2402	3DH5	1	1.259	/	Pass
		2441	3DH5	1	1.264	/	Pass
		2480	3DH5	1	1.284	/	Pass

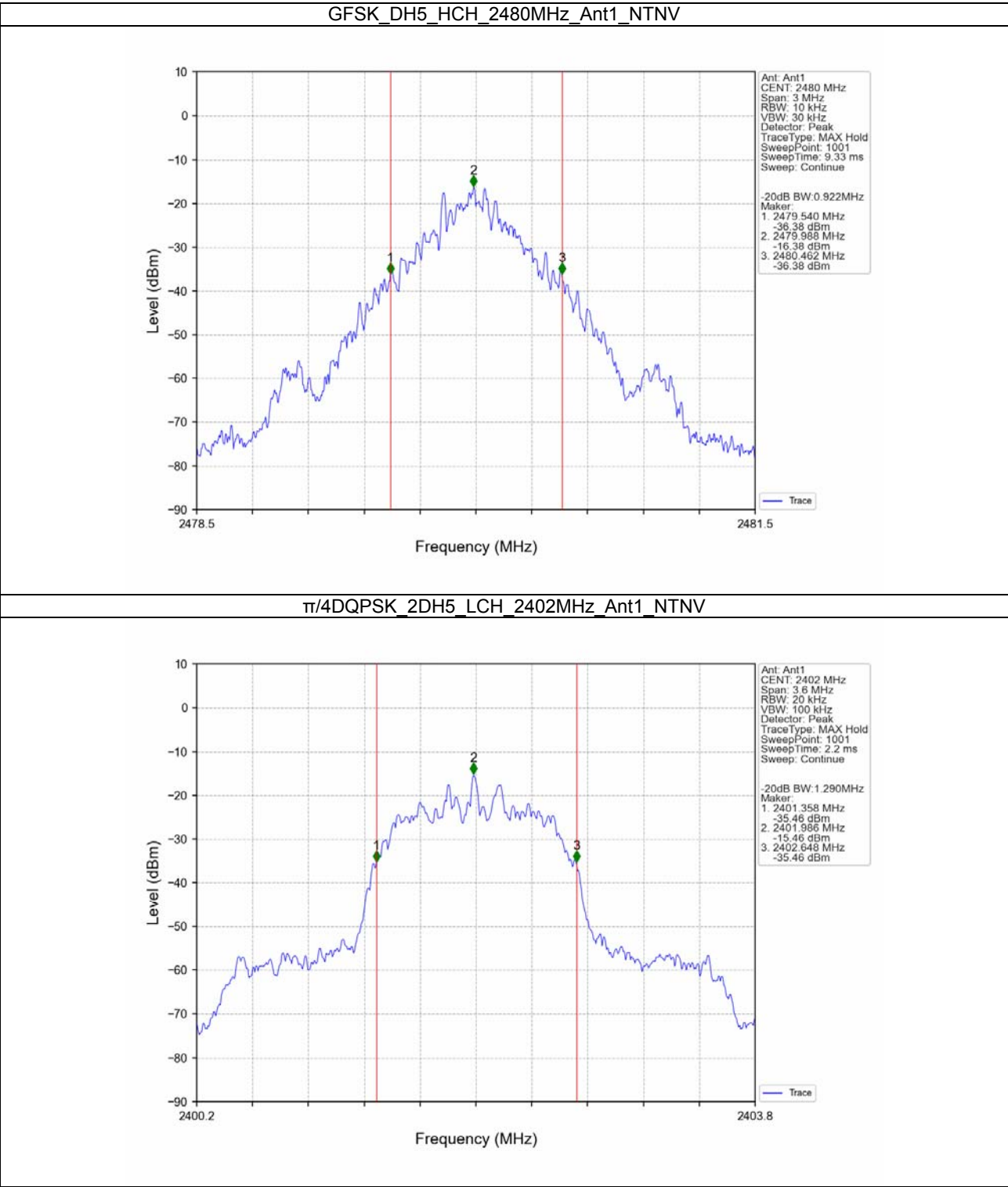
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.871	/	Pass
		2441	DH5	1	0.879	/	Pass
		2480	DH5	1	0.879	/	Pass
$\pi/4$ DQPSK	SISO	2402	2DH5	1	1.188	/	Pass
		2441	2DH5	1	1.205	/	Pass
		2480	2DH5	1	1.213	/	Pass
8DPSK	SISO	2402	3DH5	1	1.199	/	Pass
		2441	3DH5	1	1.215	/	Pass
		2480	3DH5	1	1.226	/	Pass

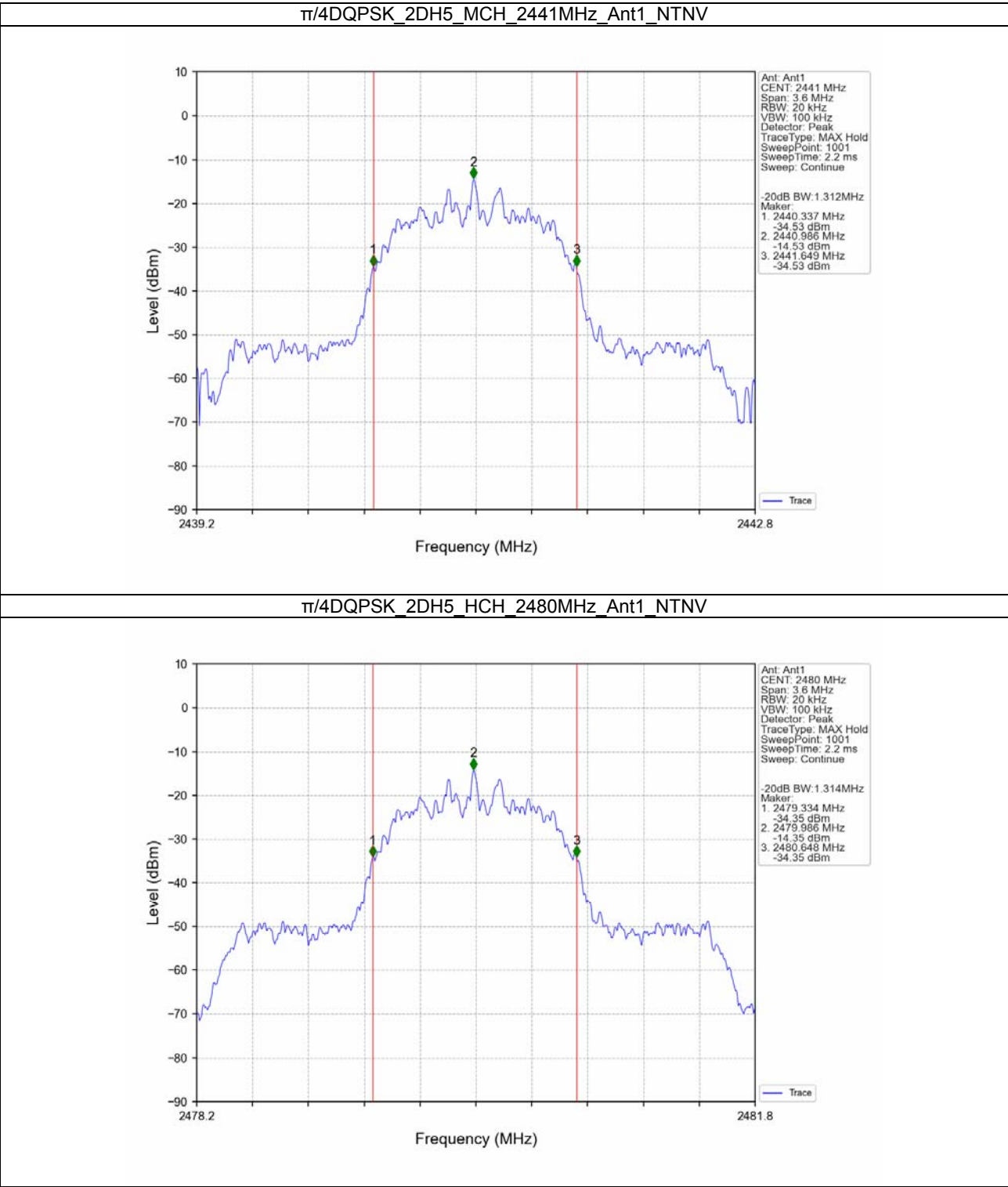
Test plots

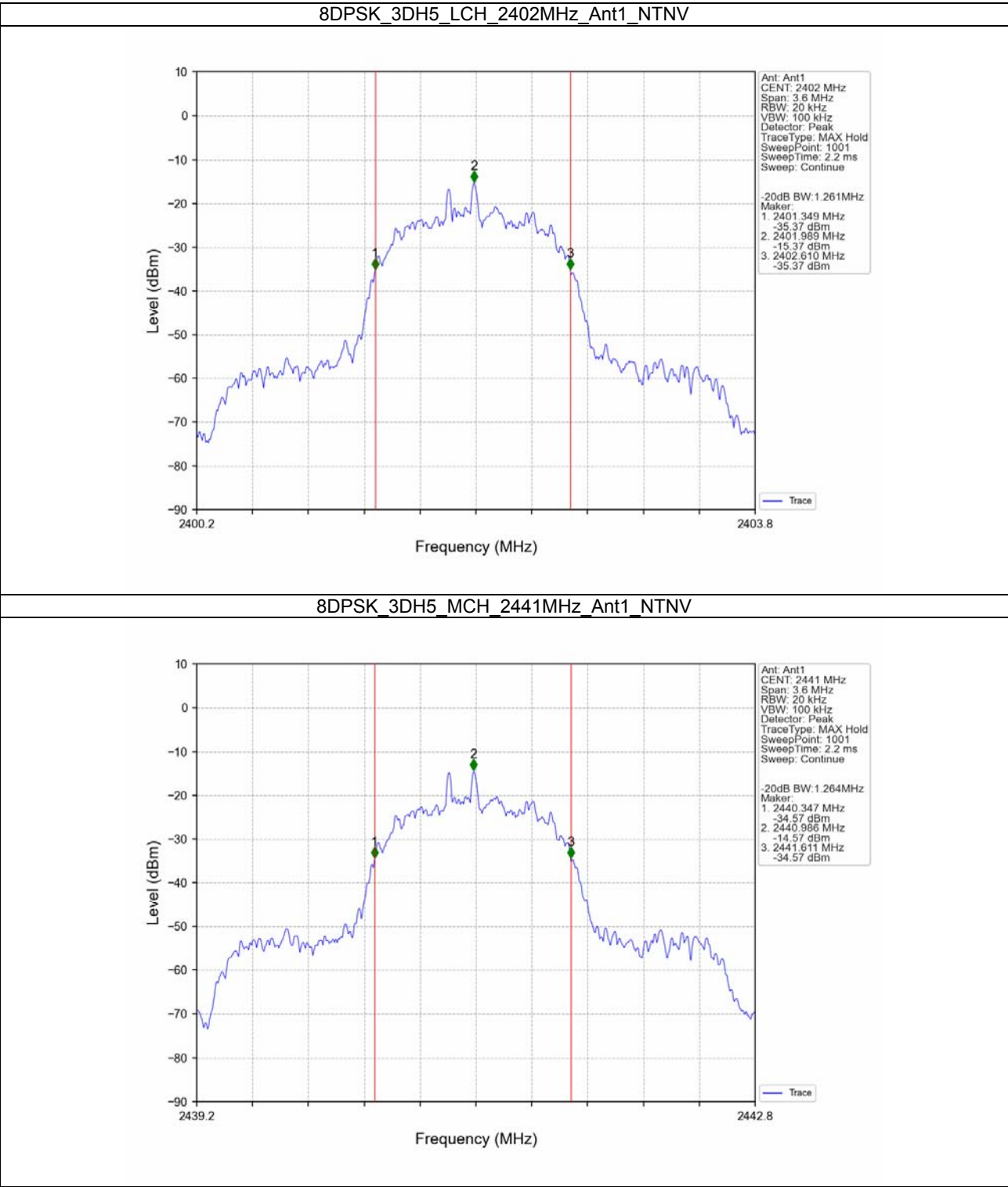
Bluetooth1

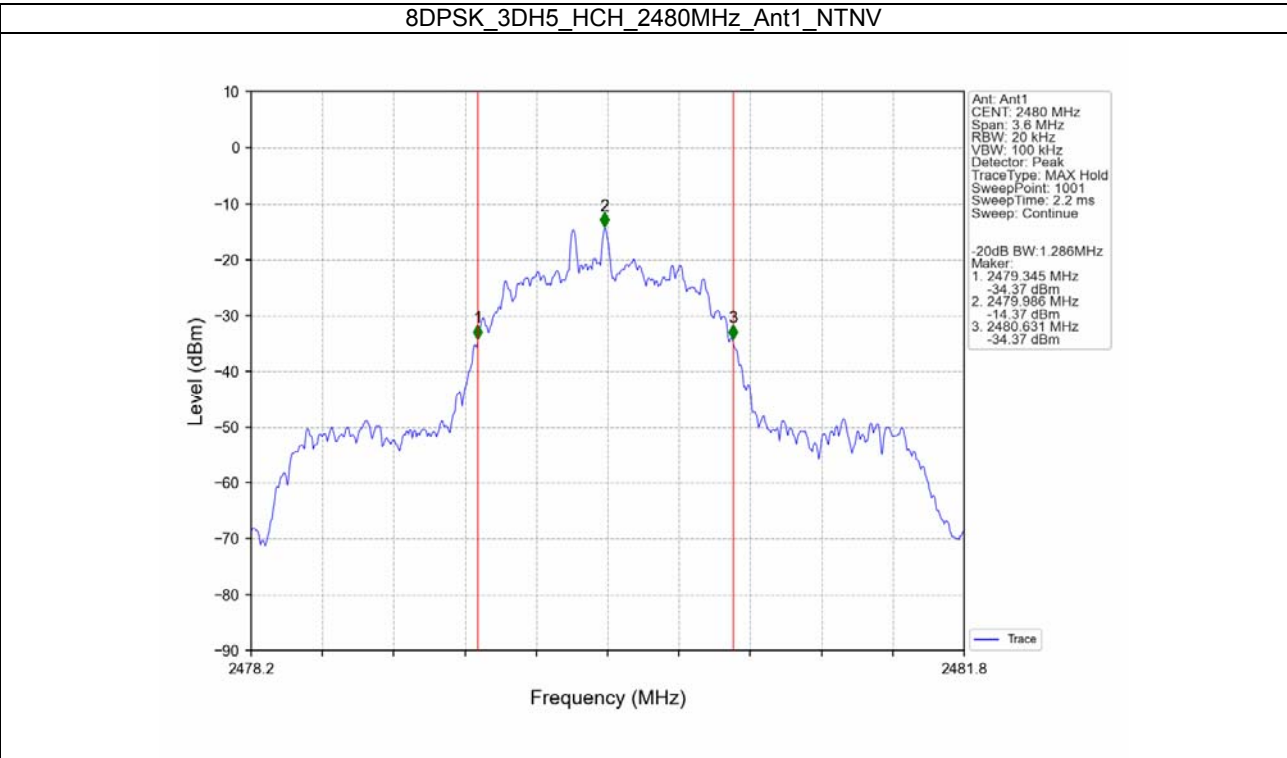
20 dB Bandwidth



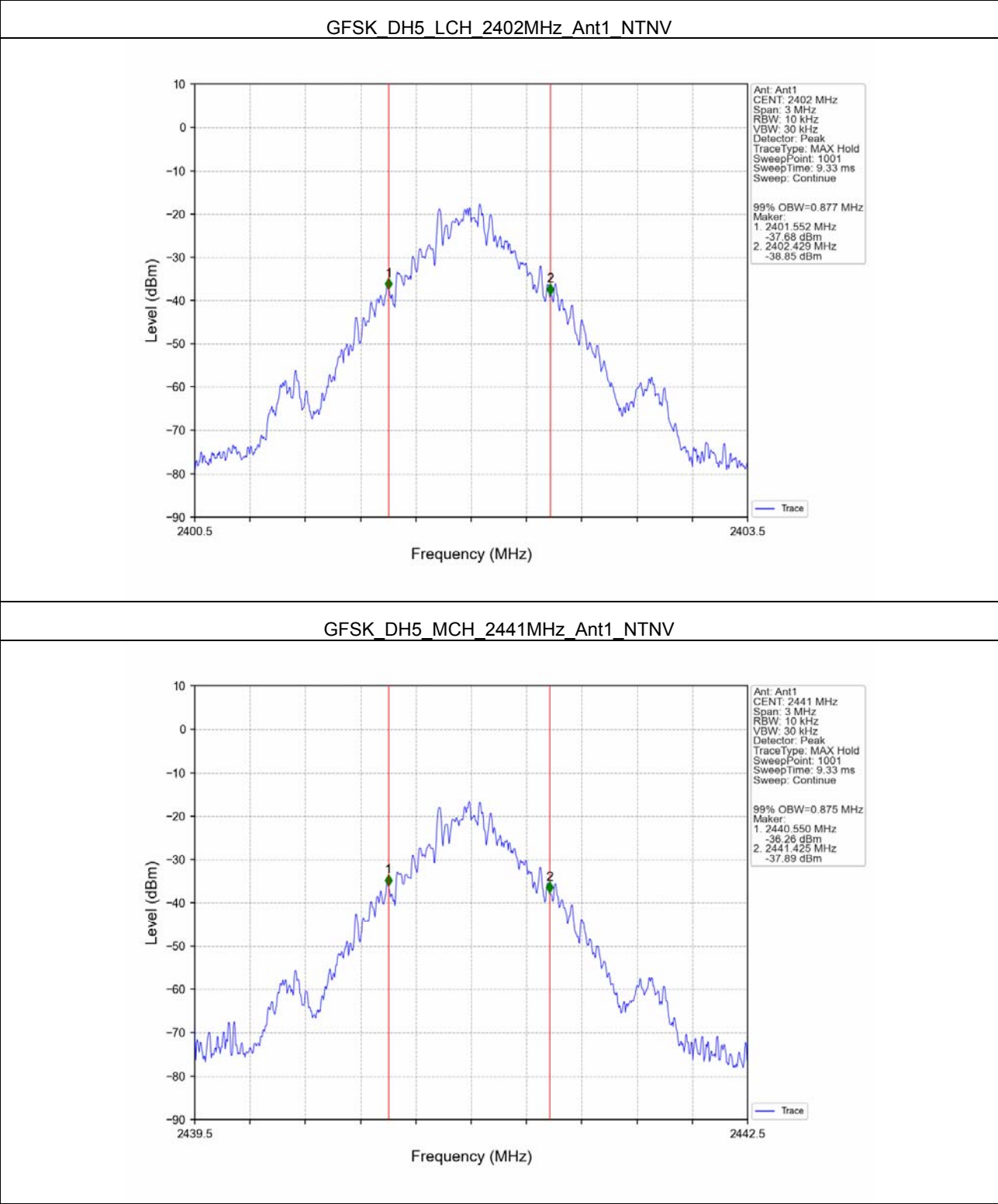


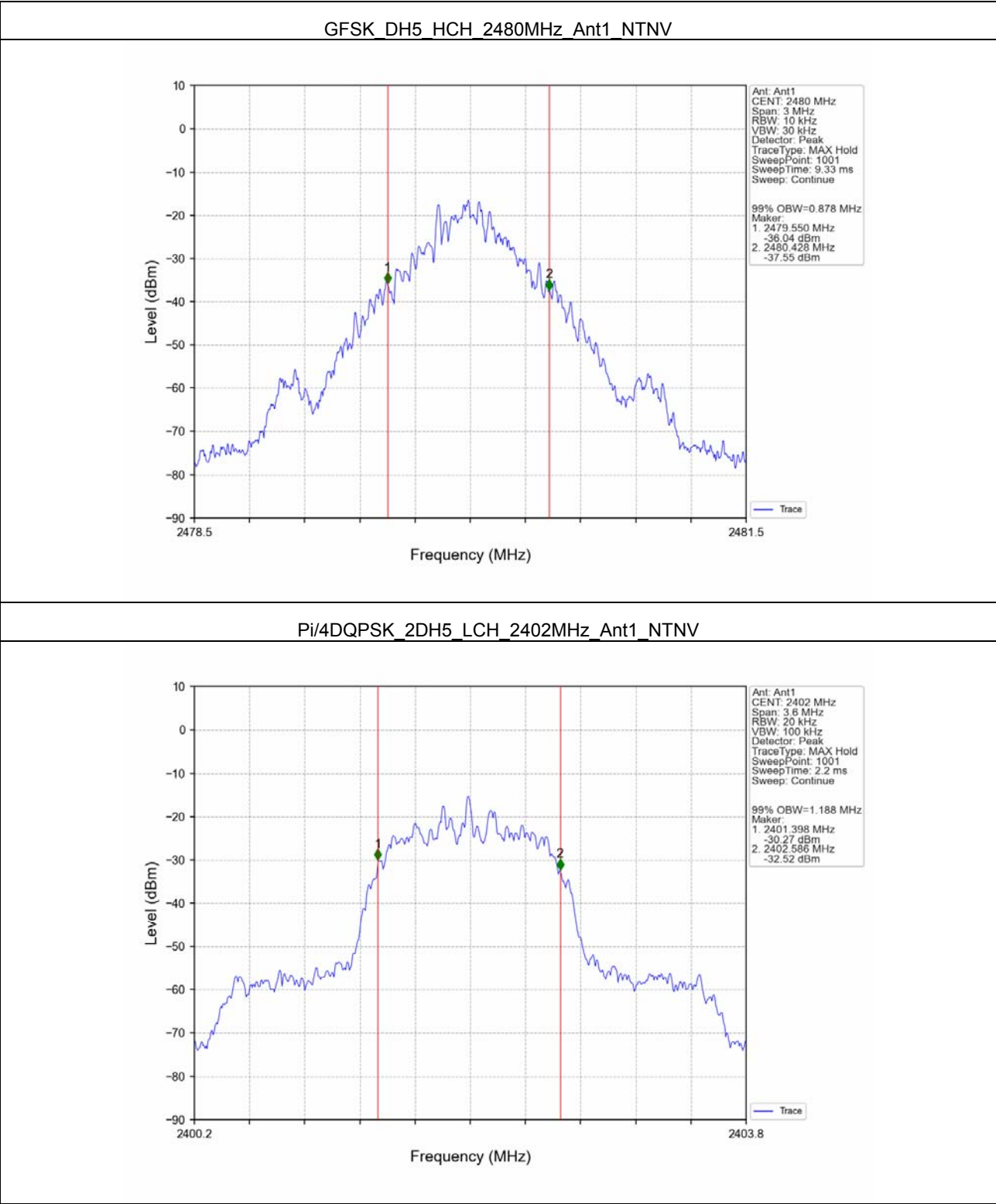


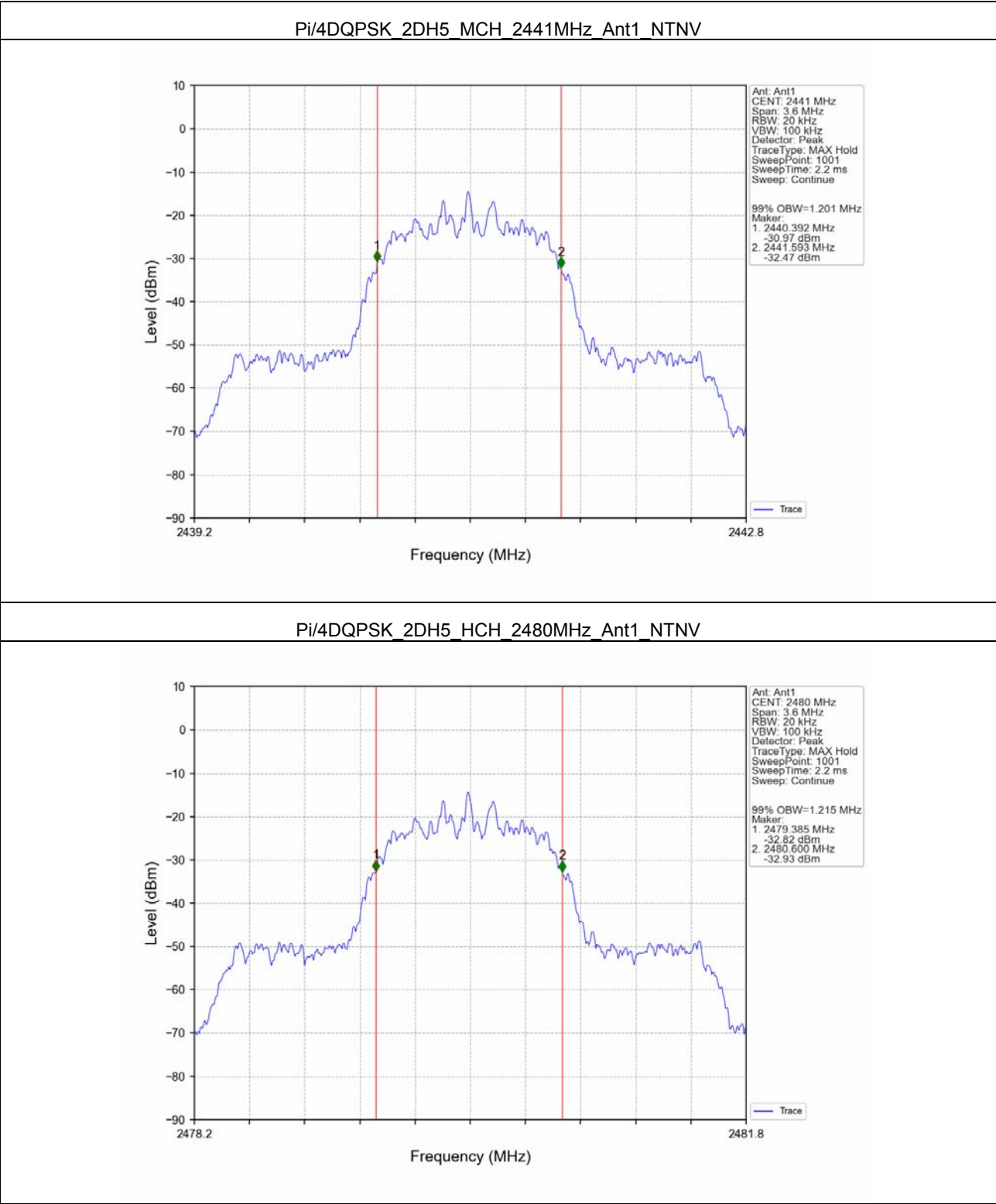


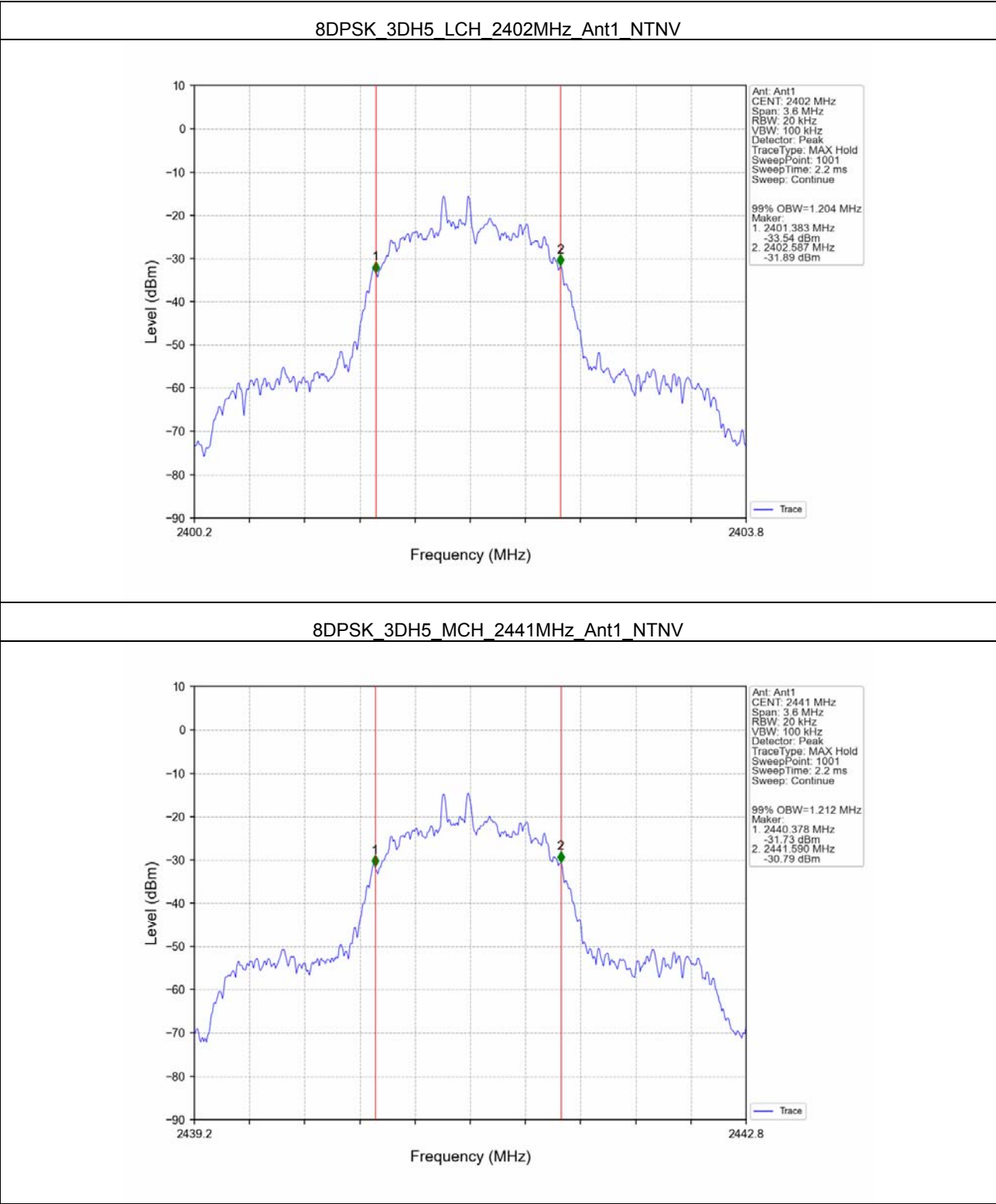


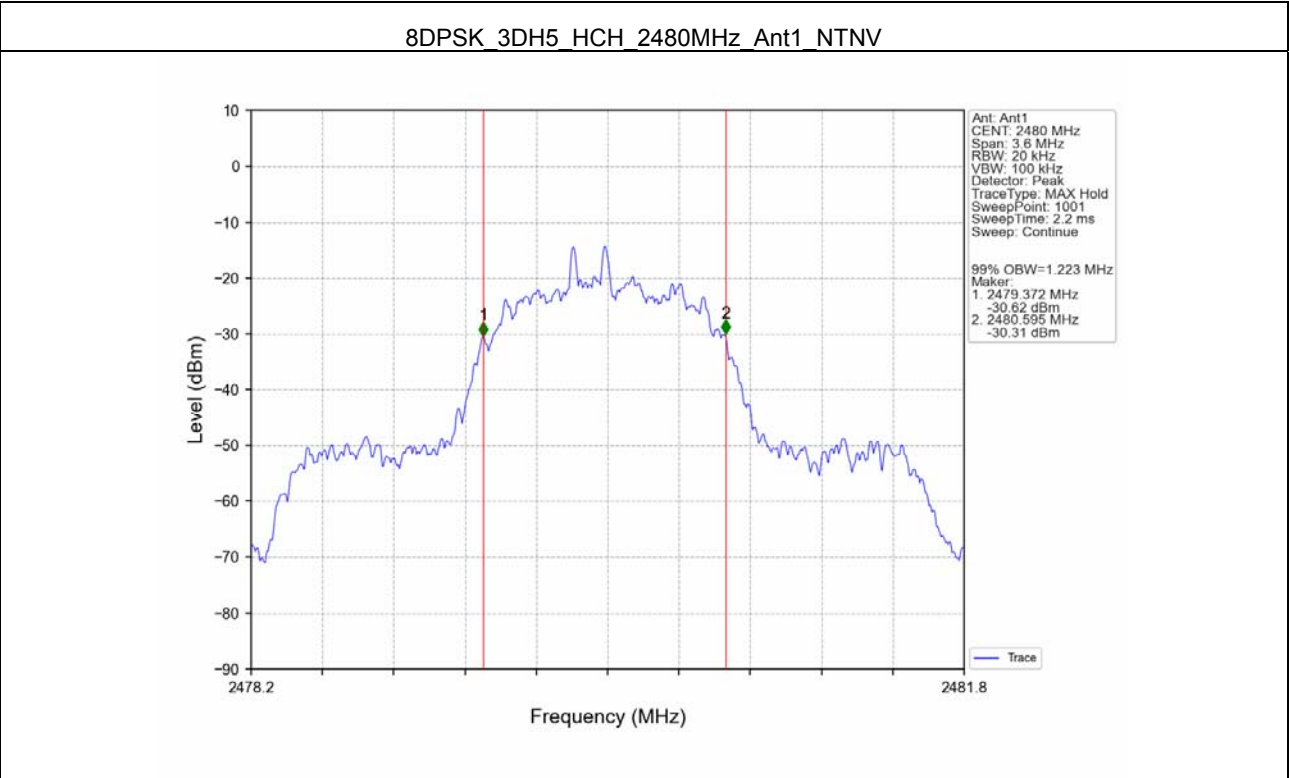
99% Bandwidth





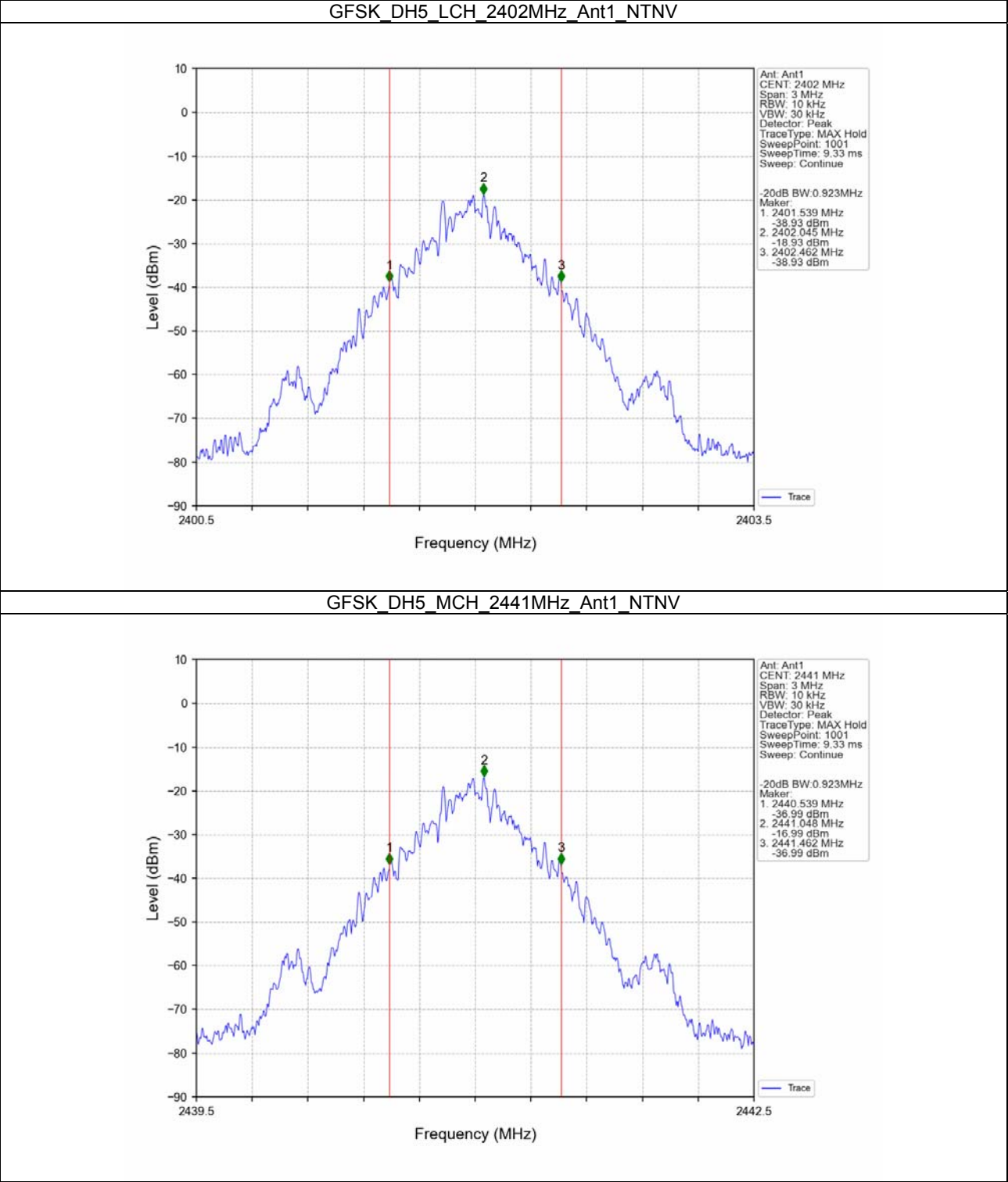


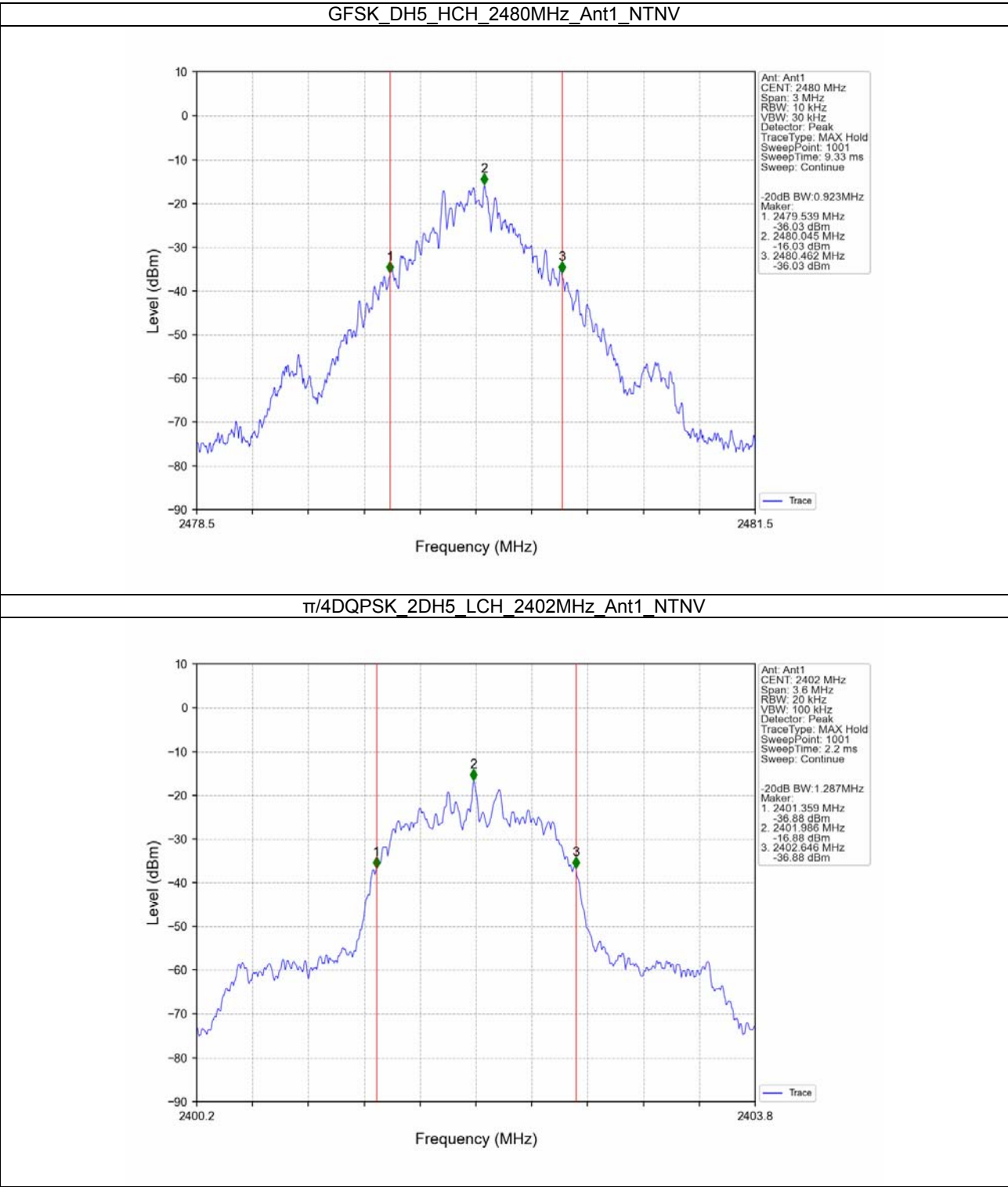


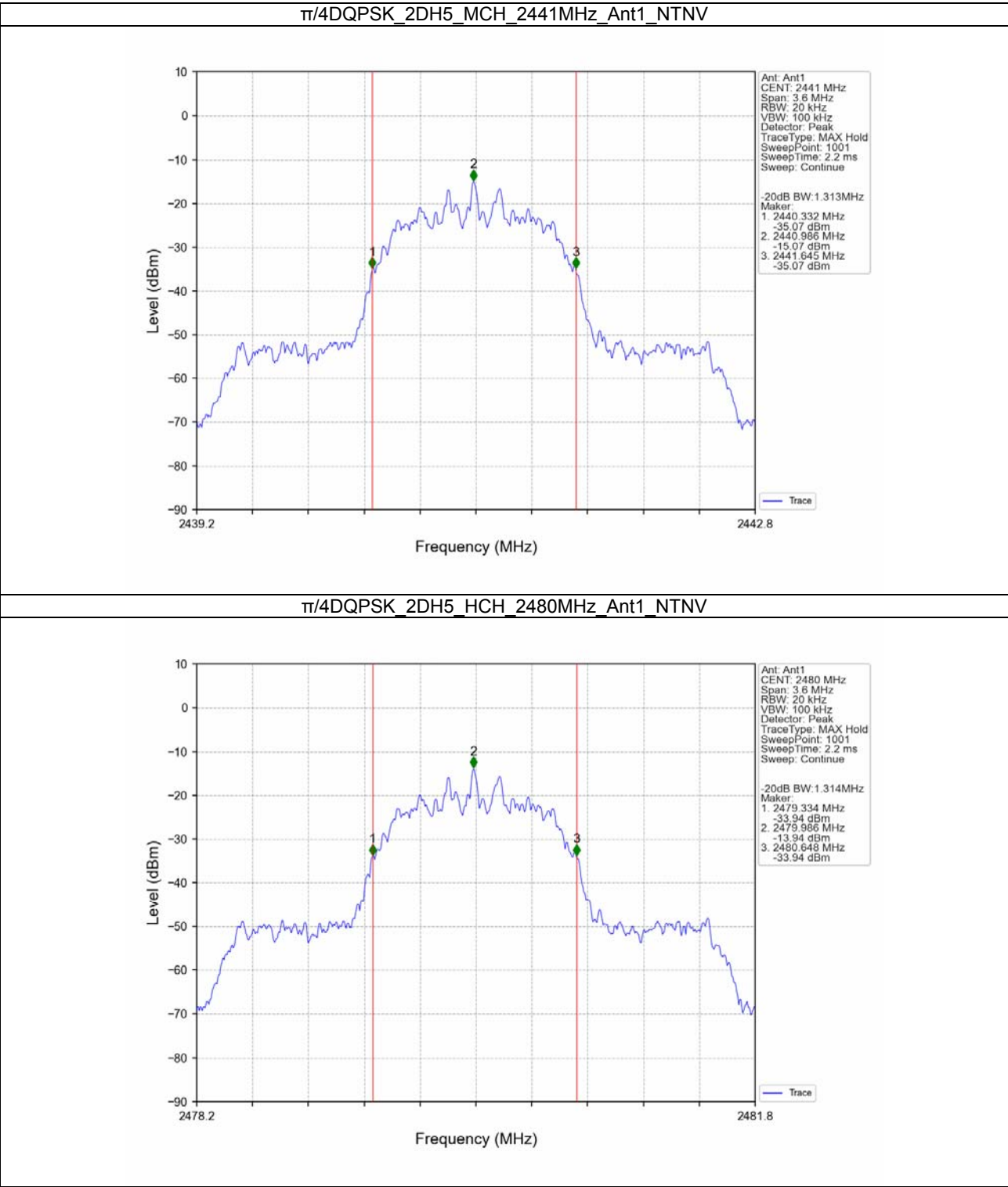


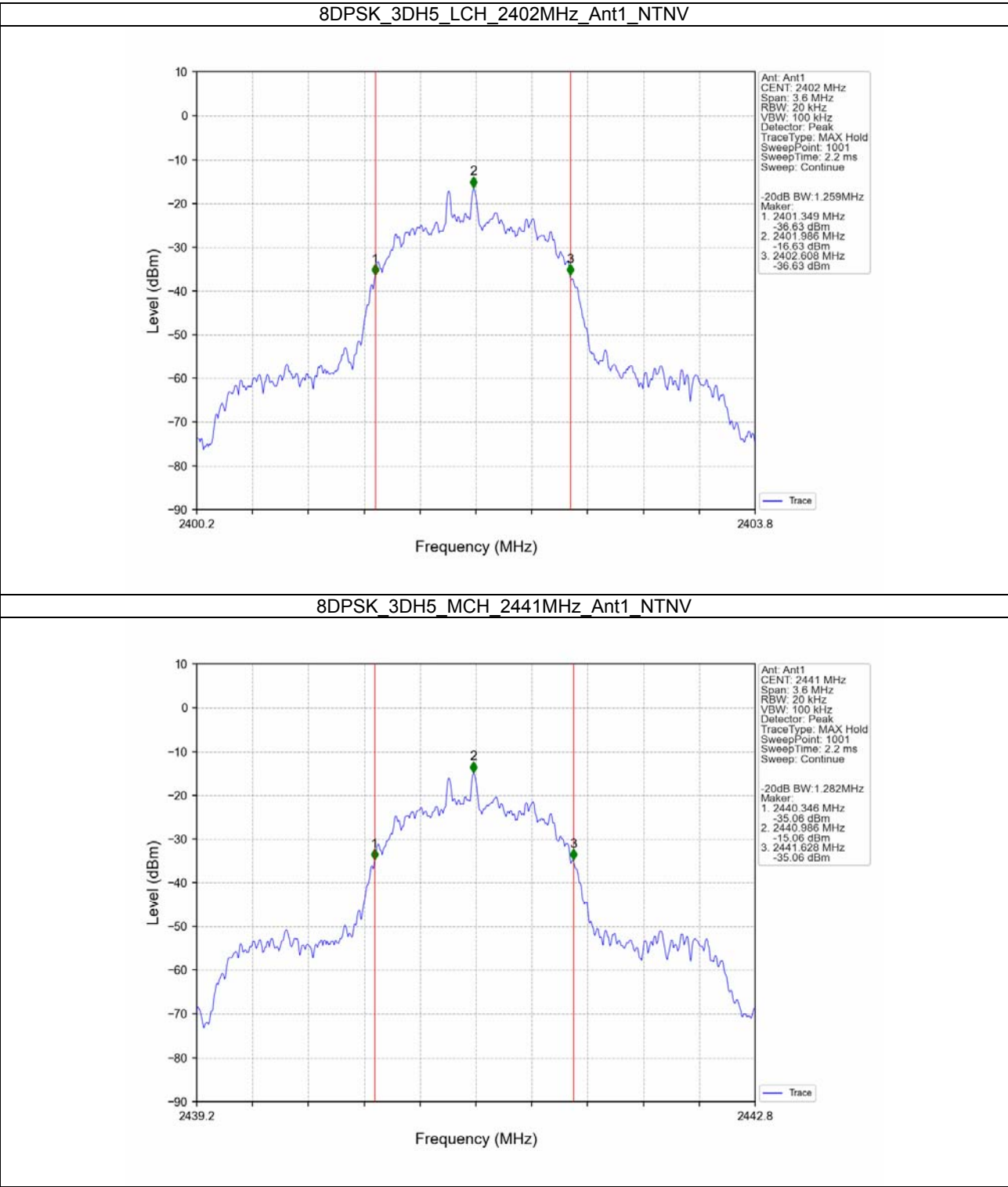
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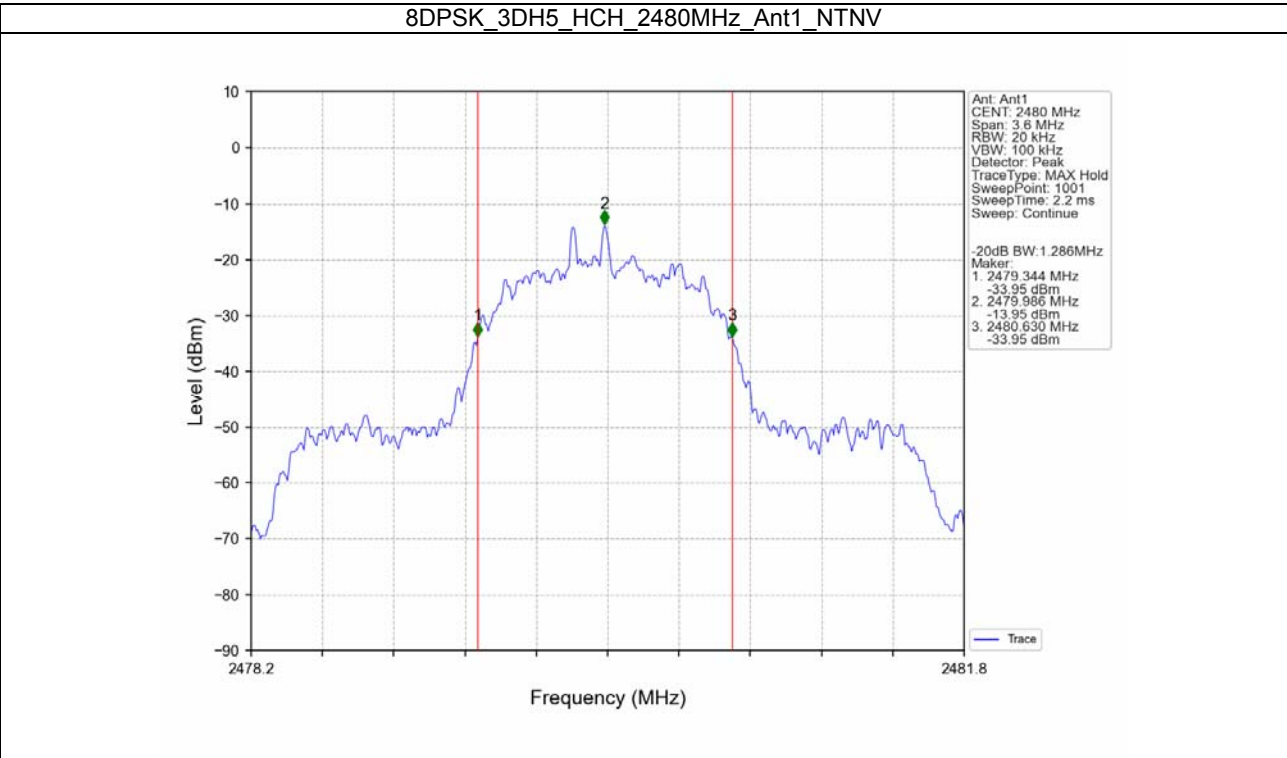
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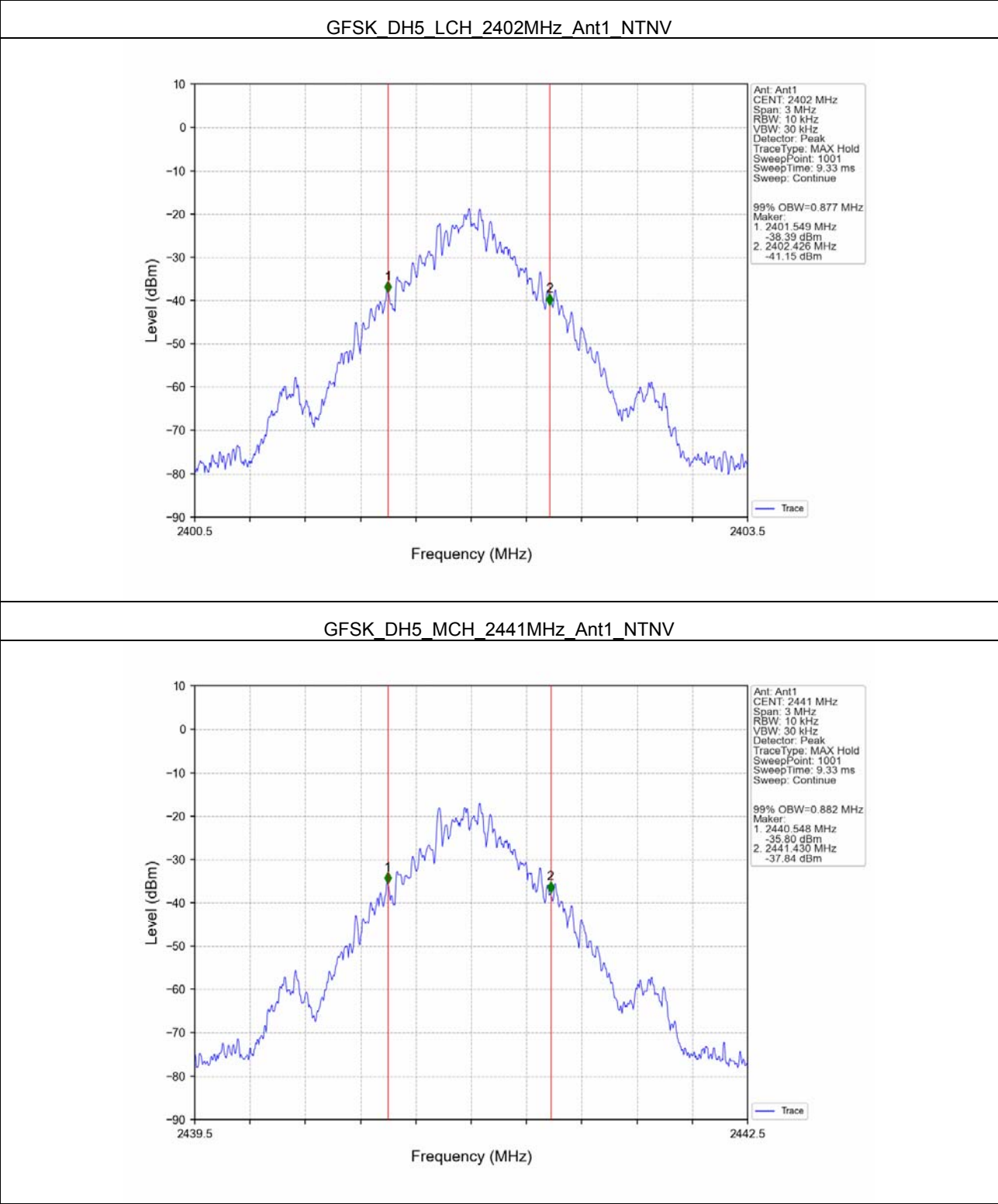


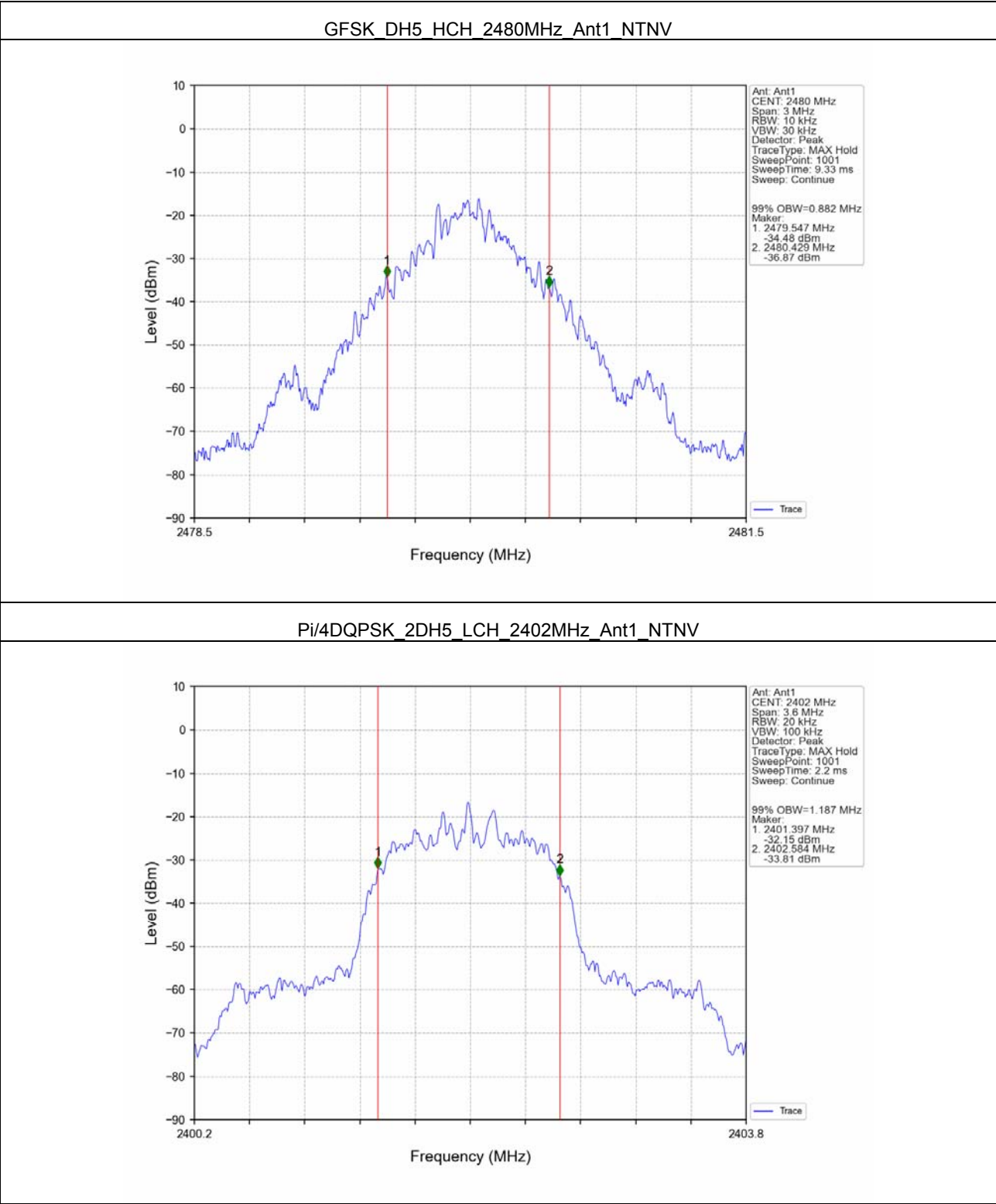


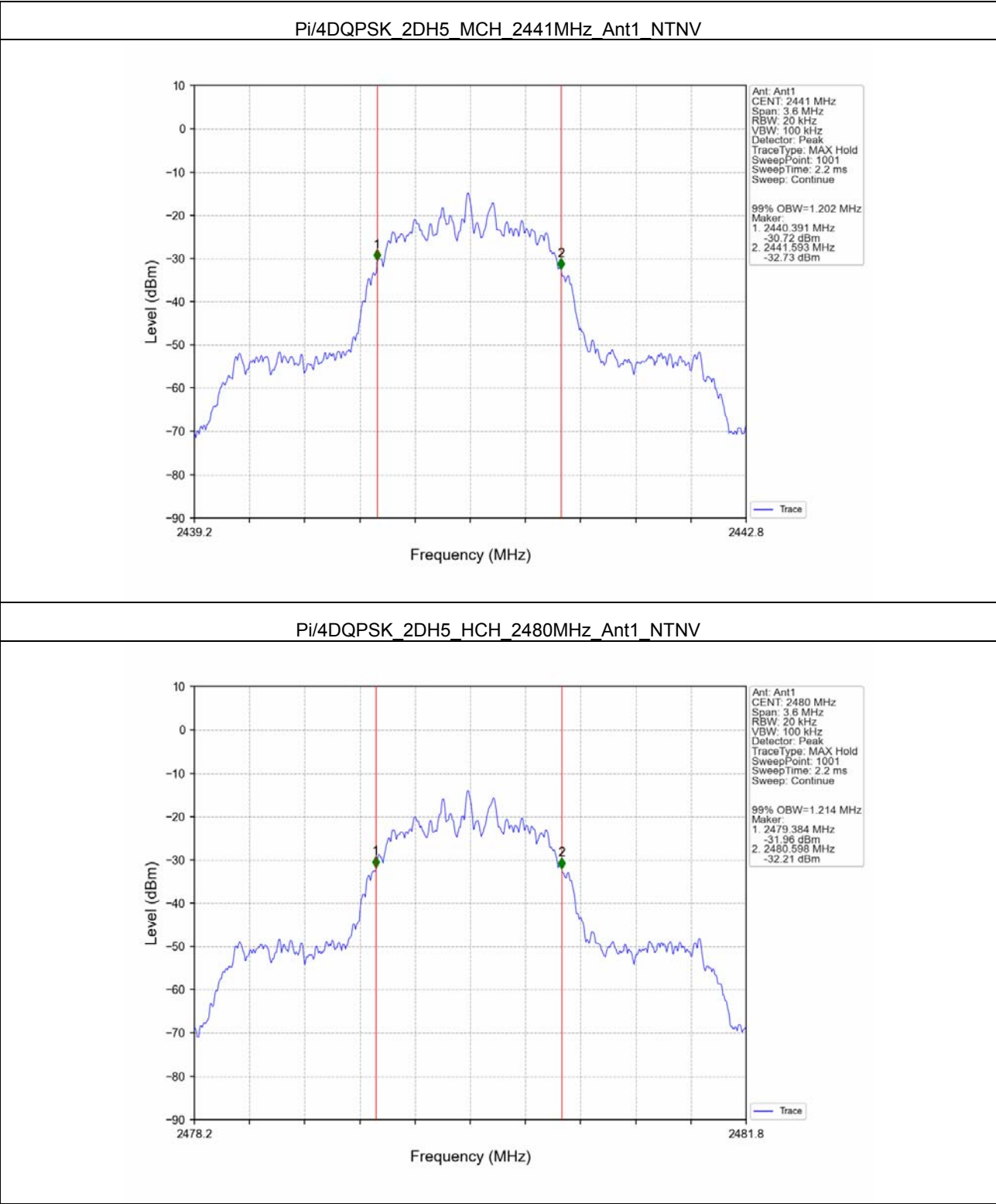


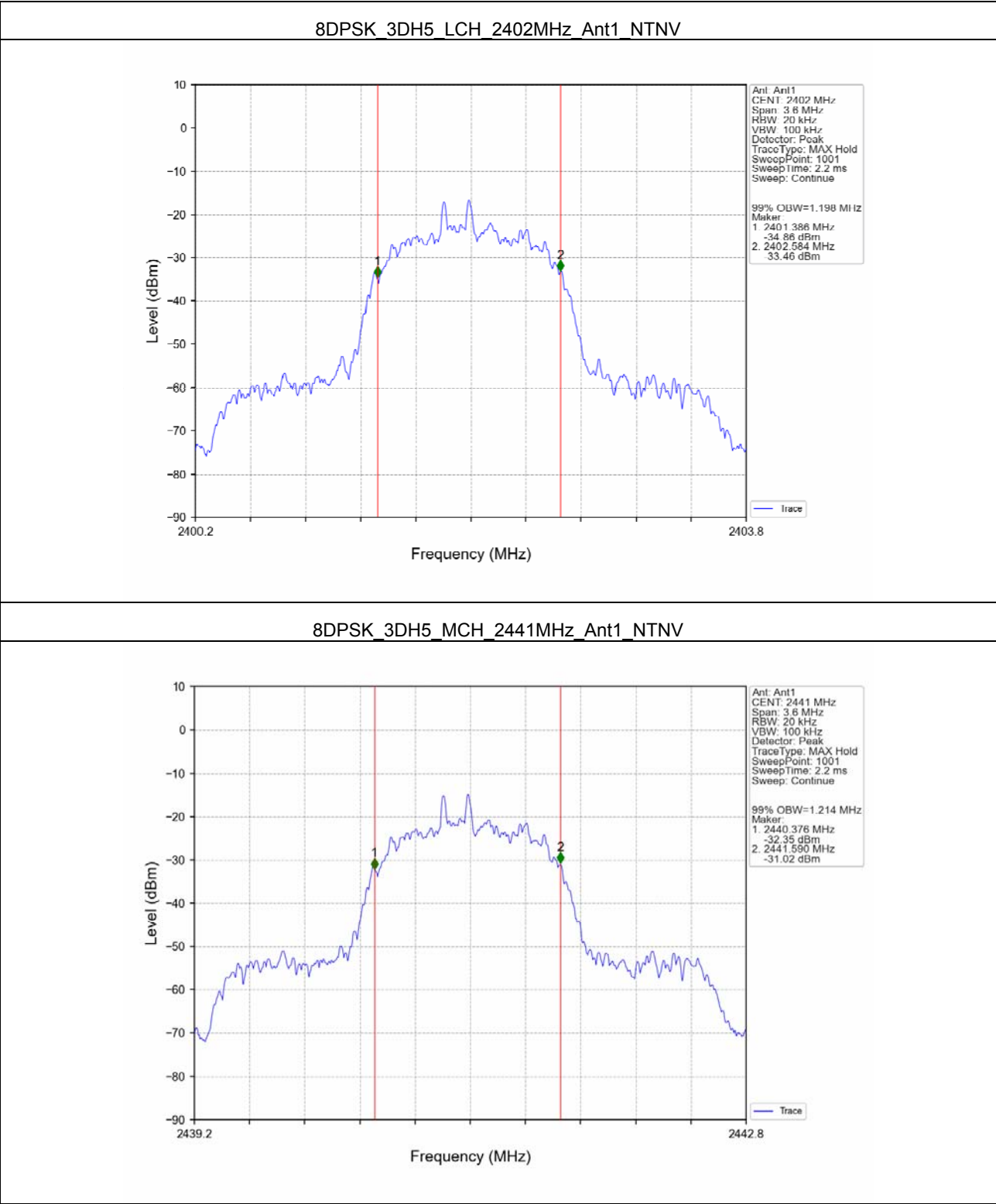


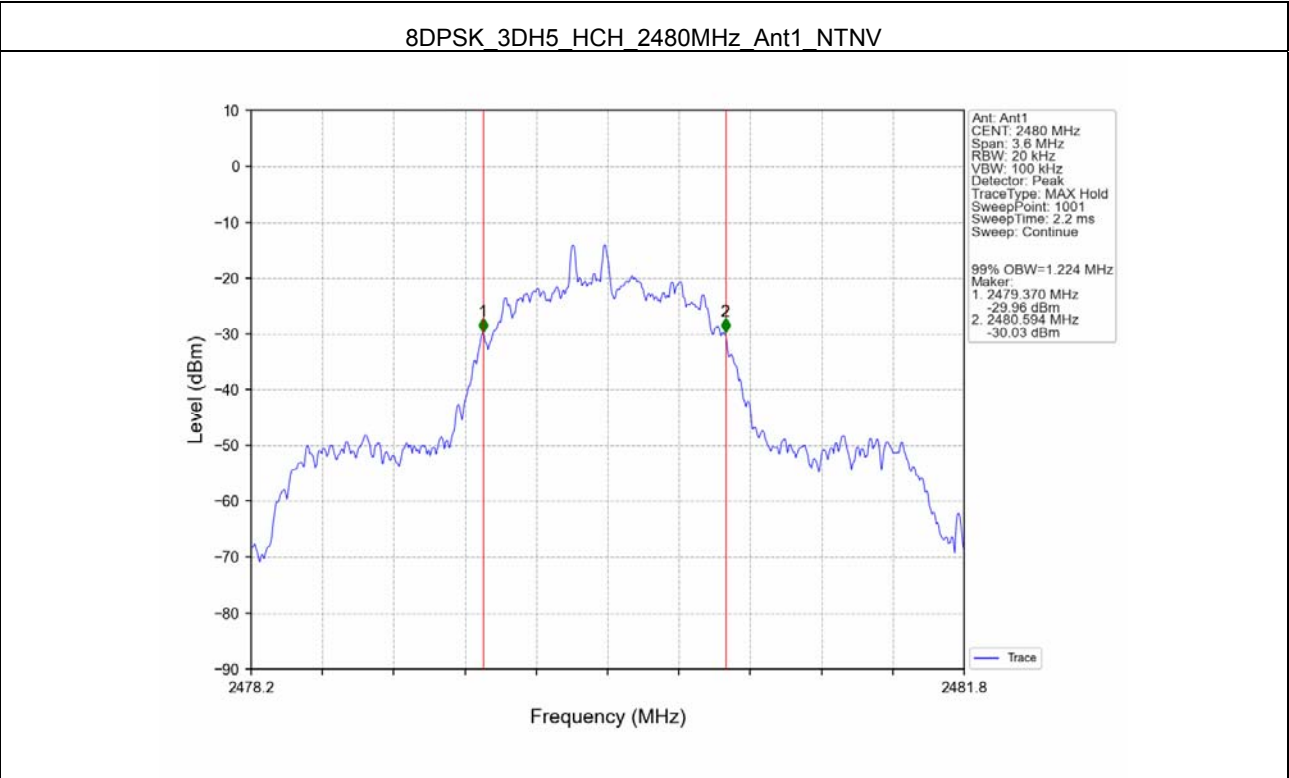
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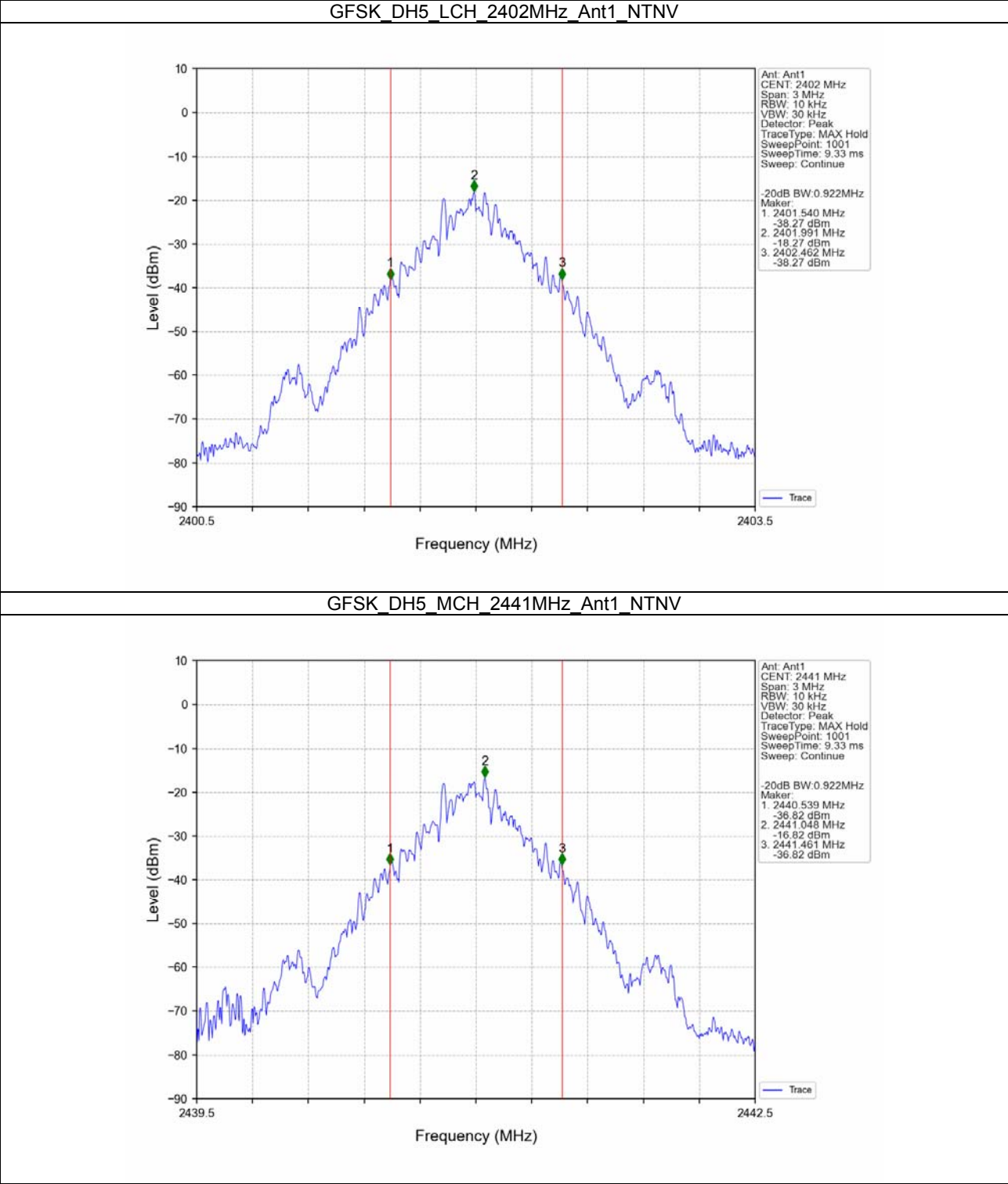


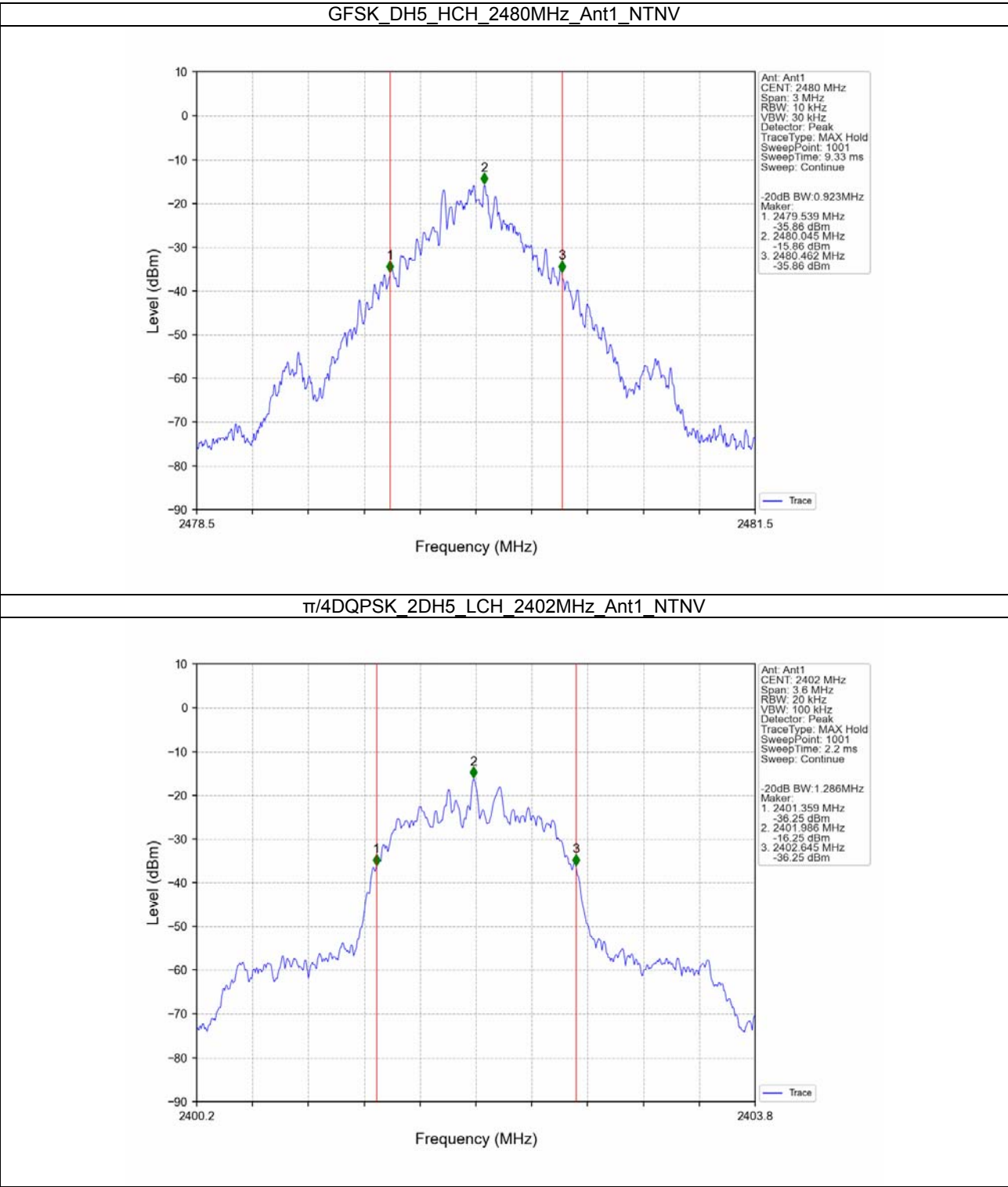


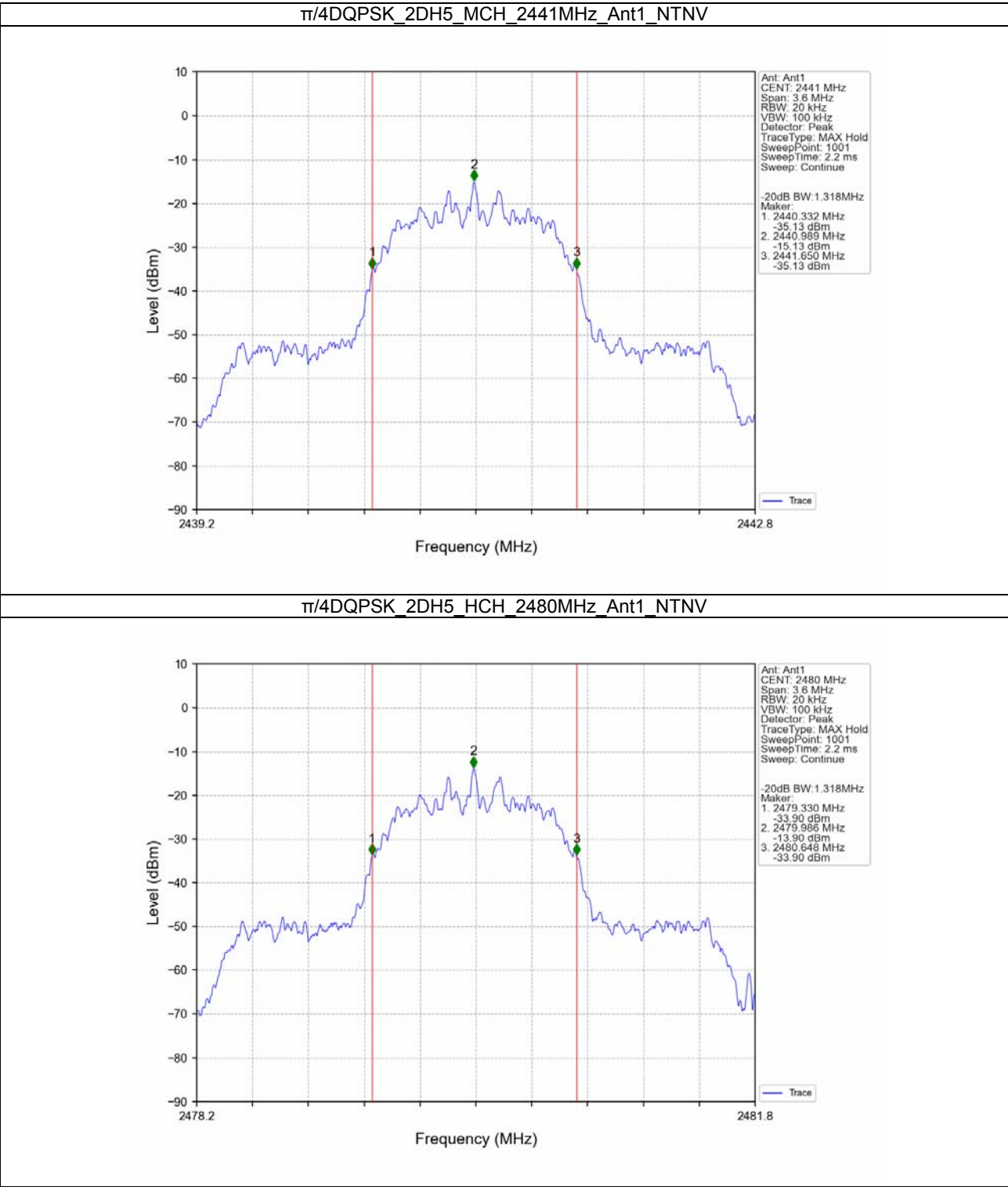


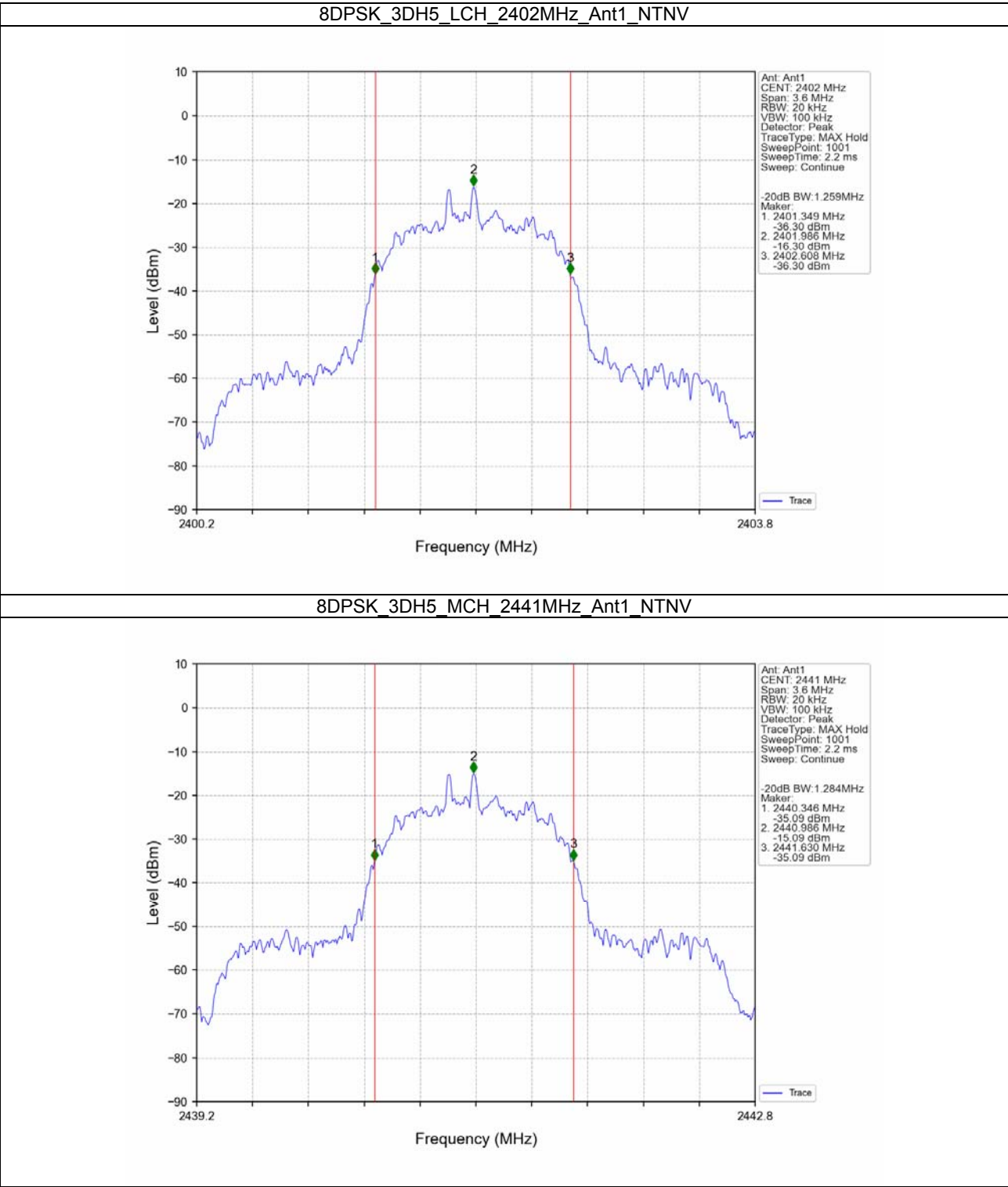
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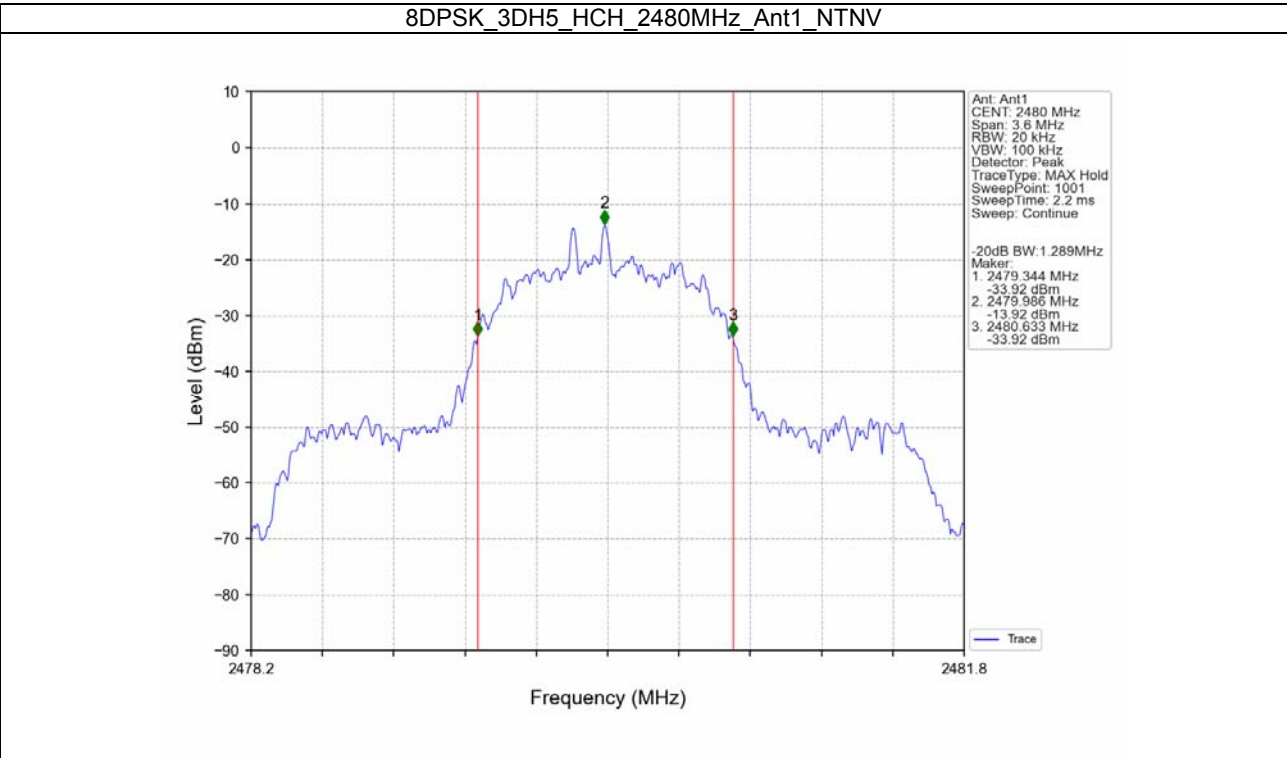
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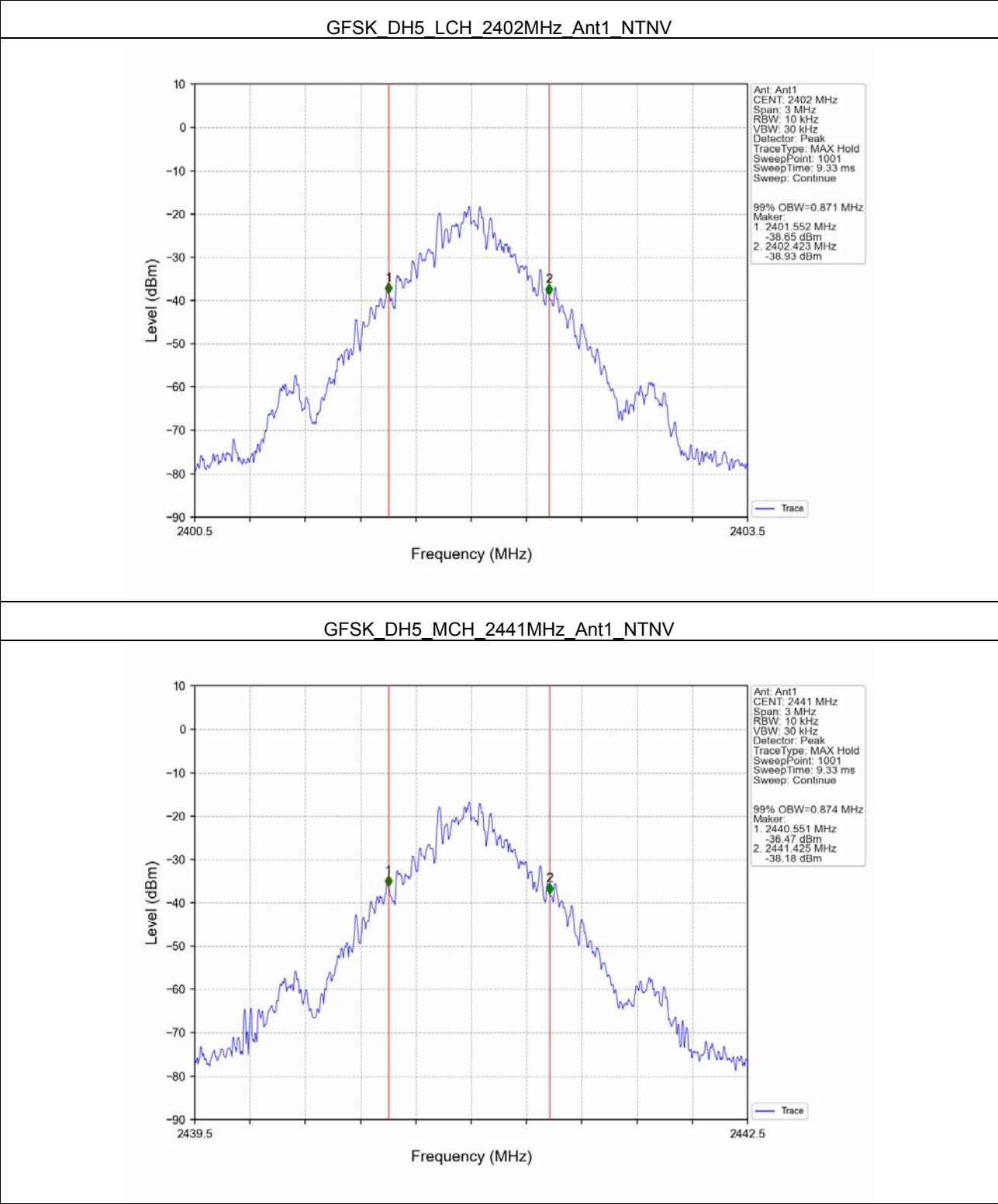


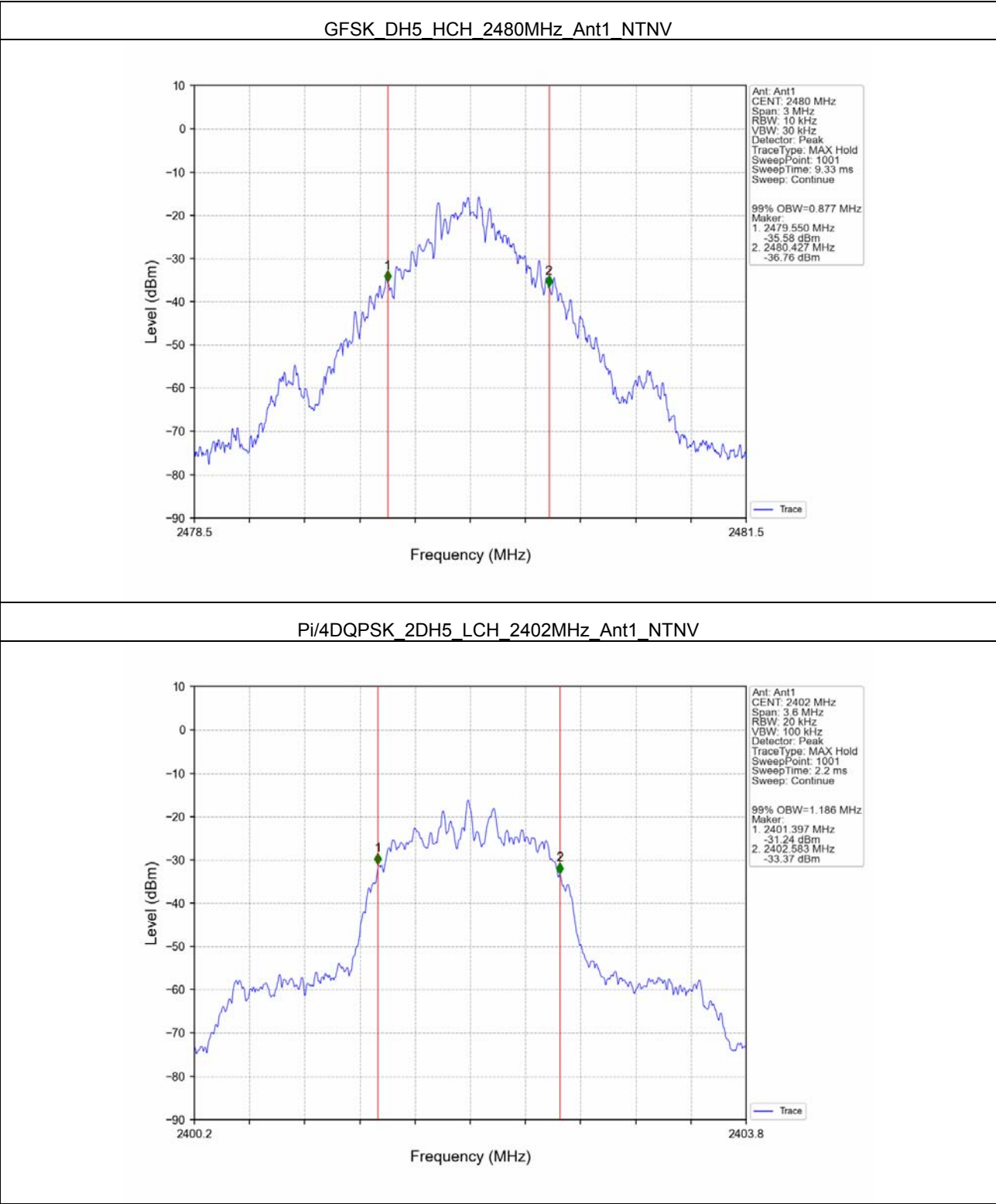


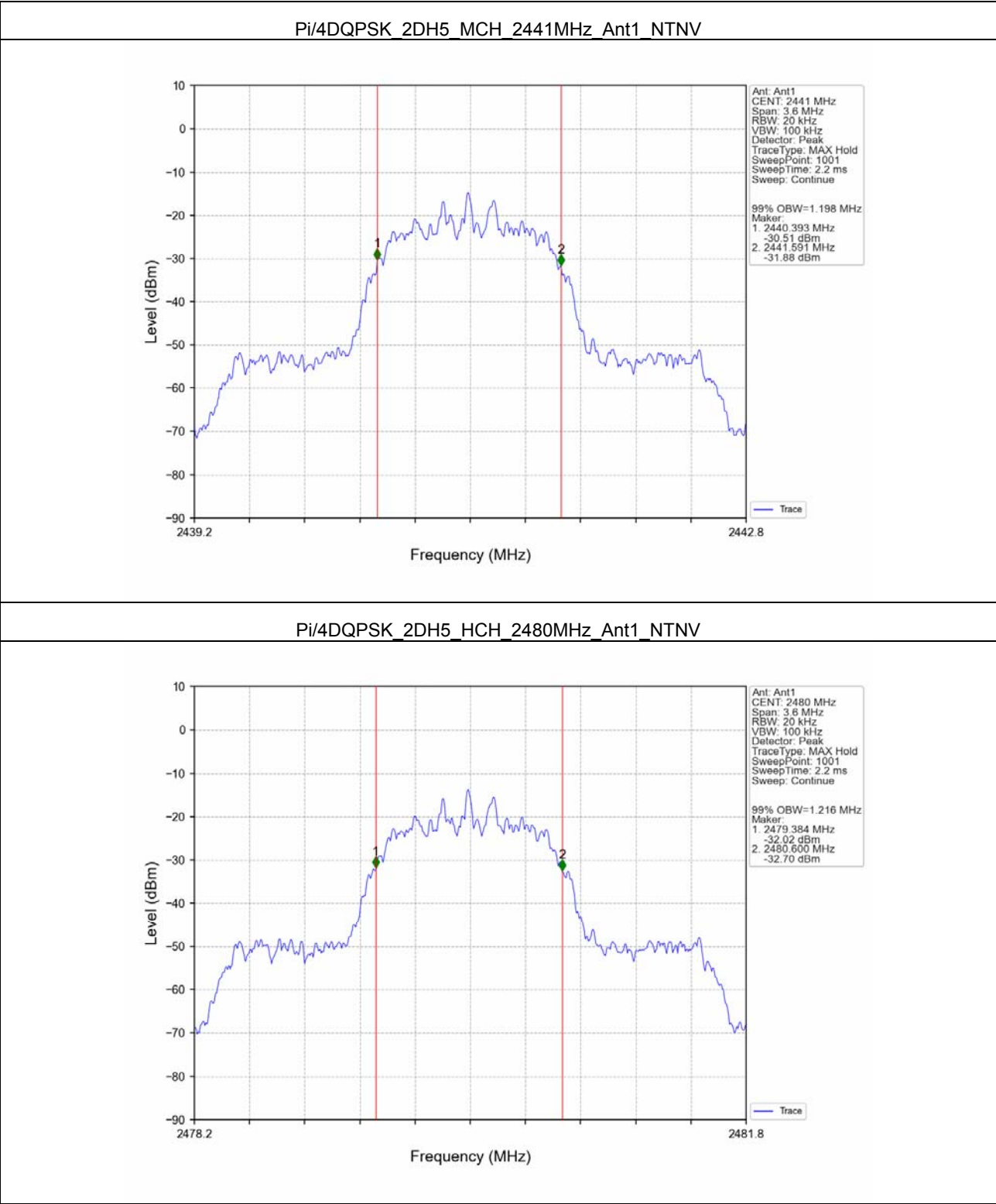


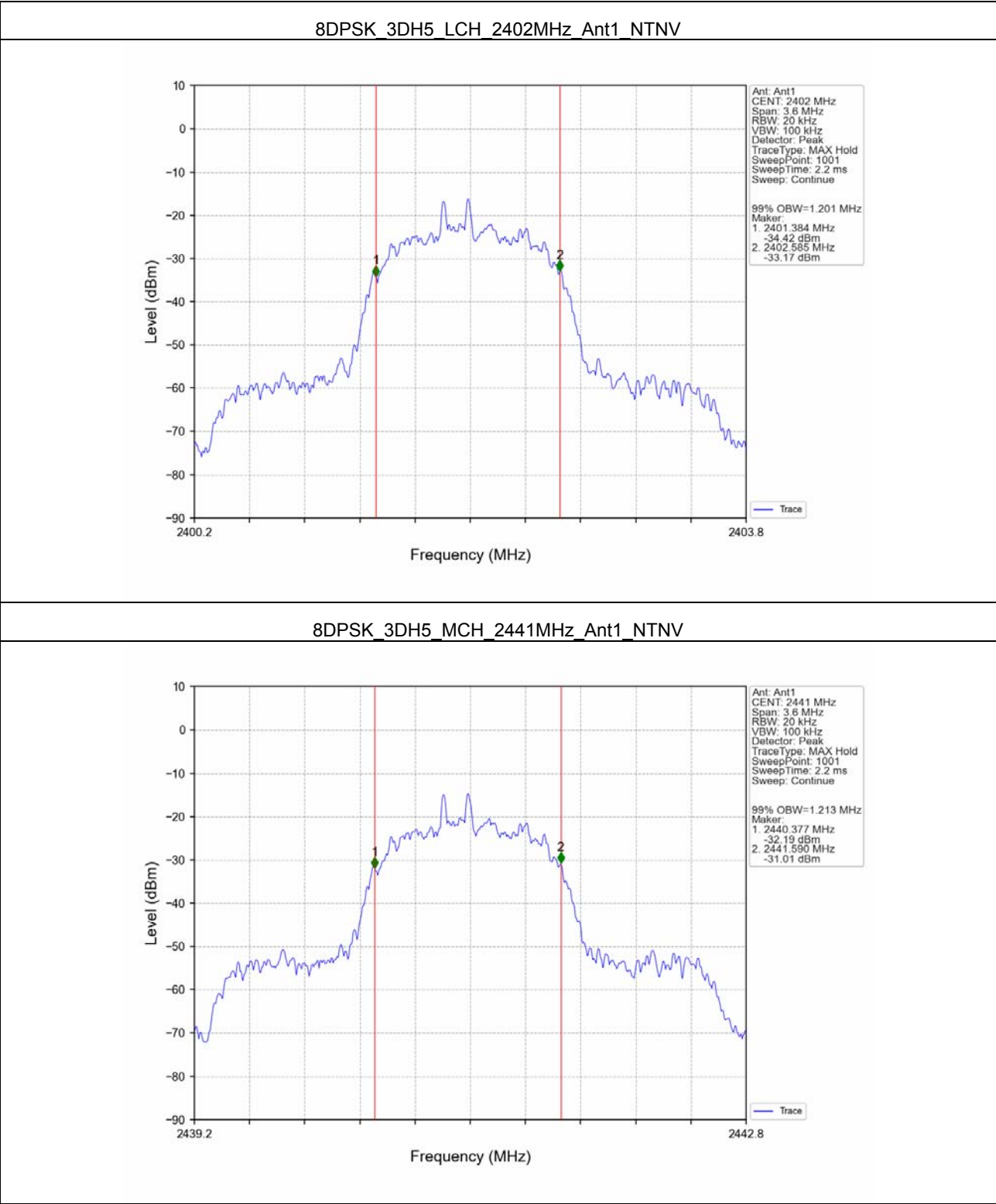


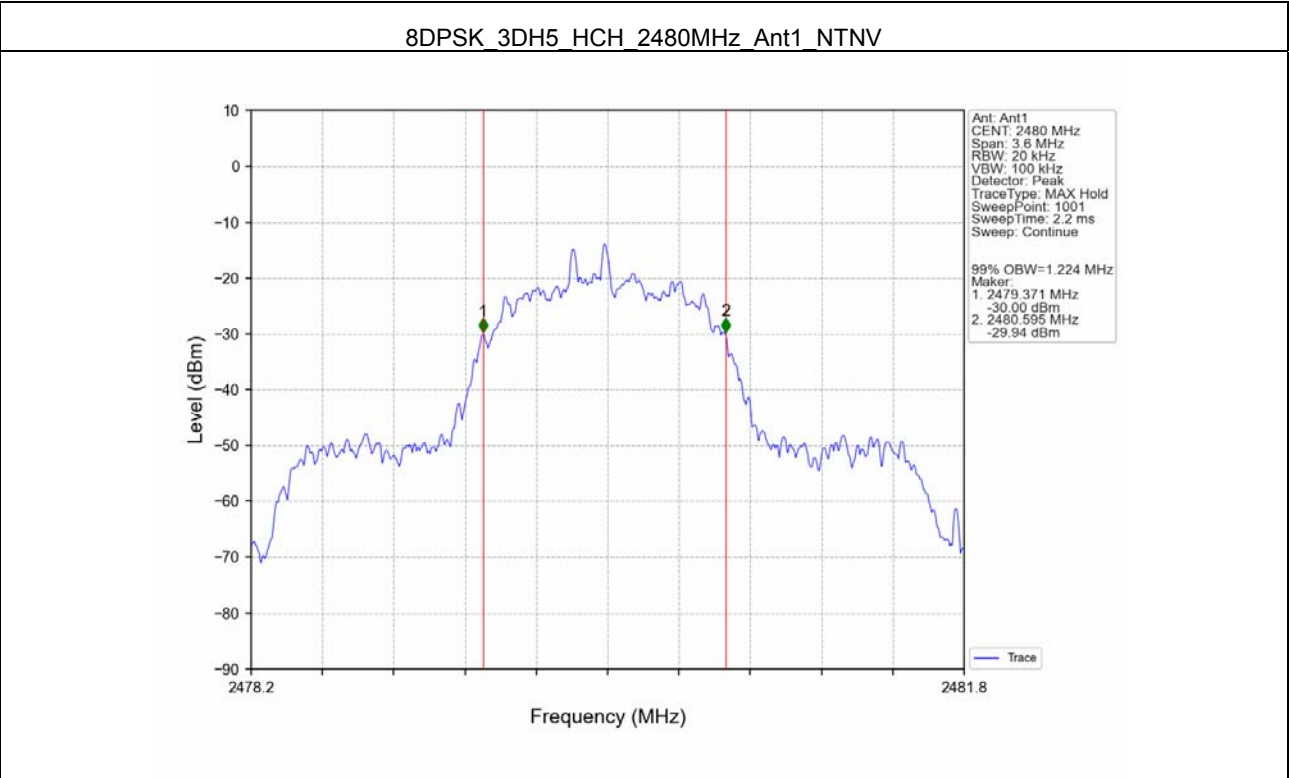
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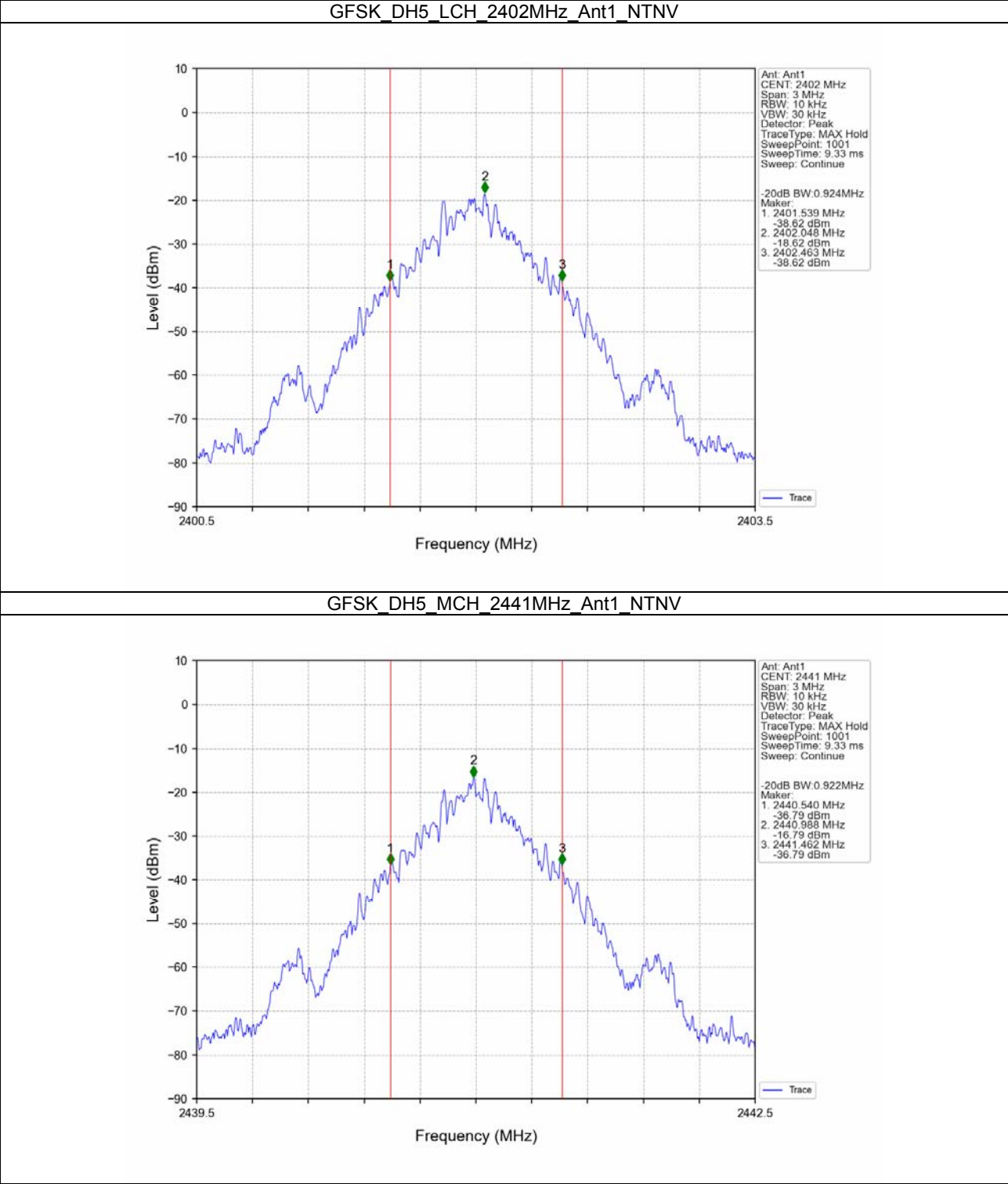


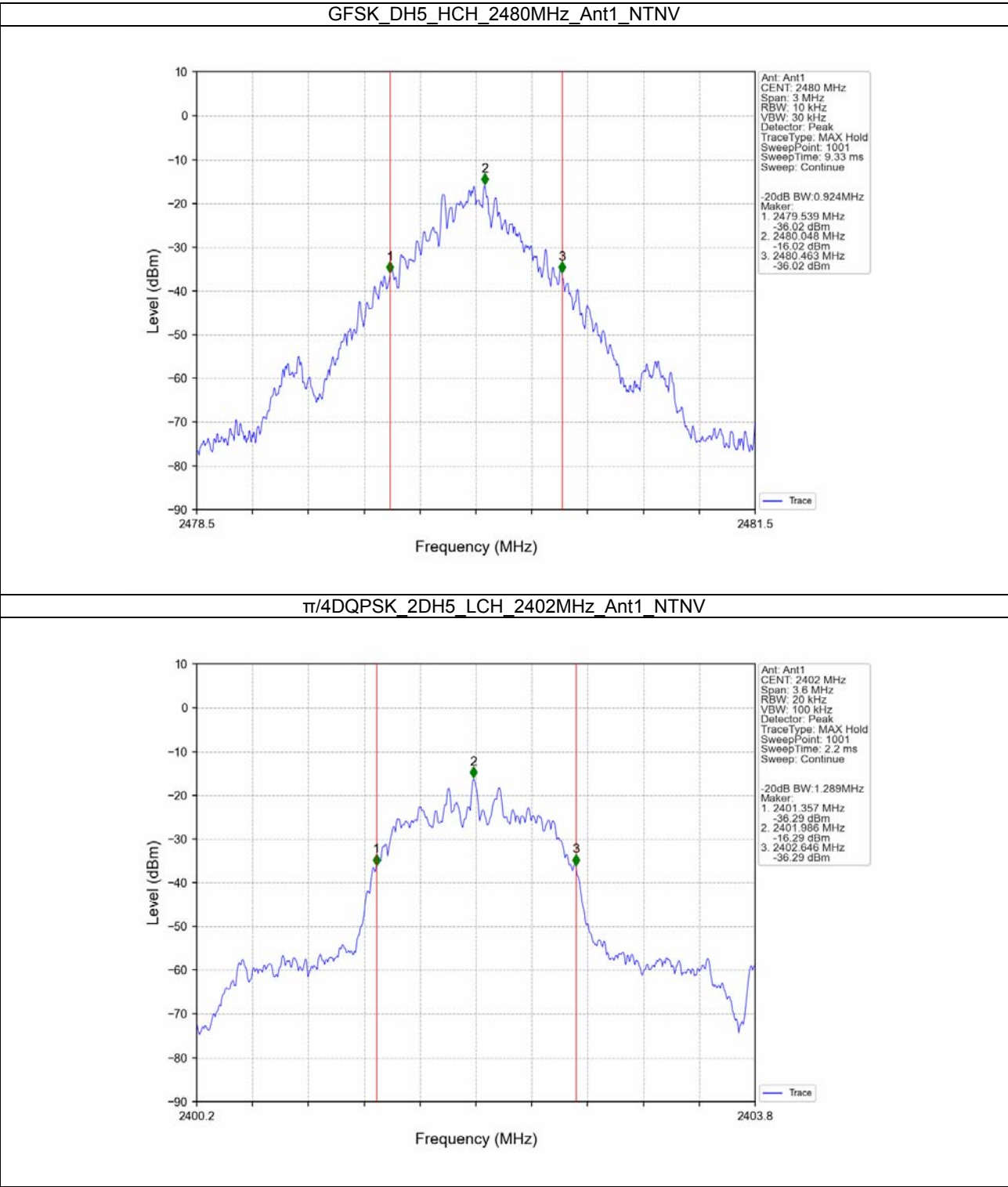


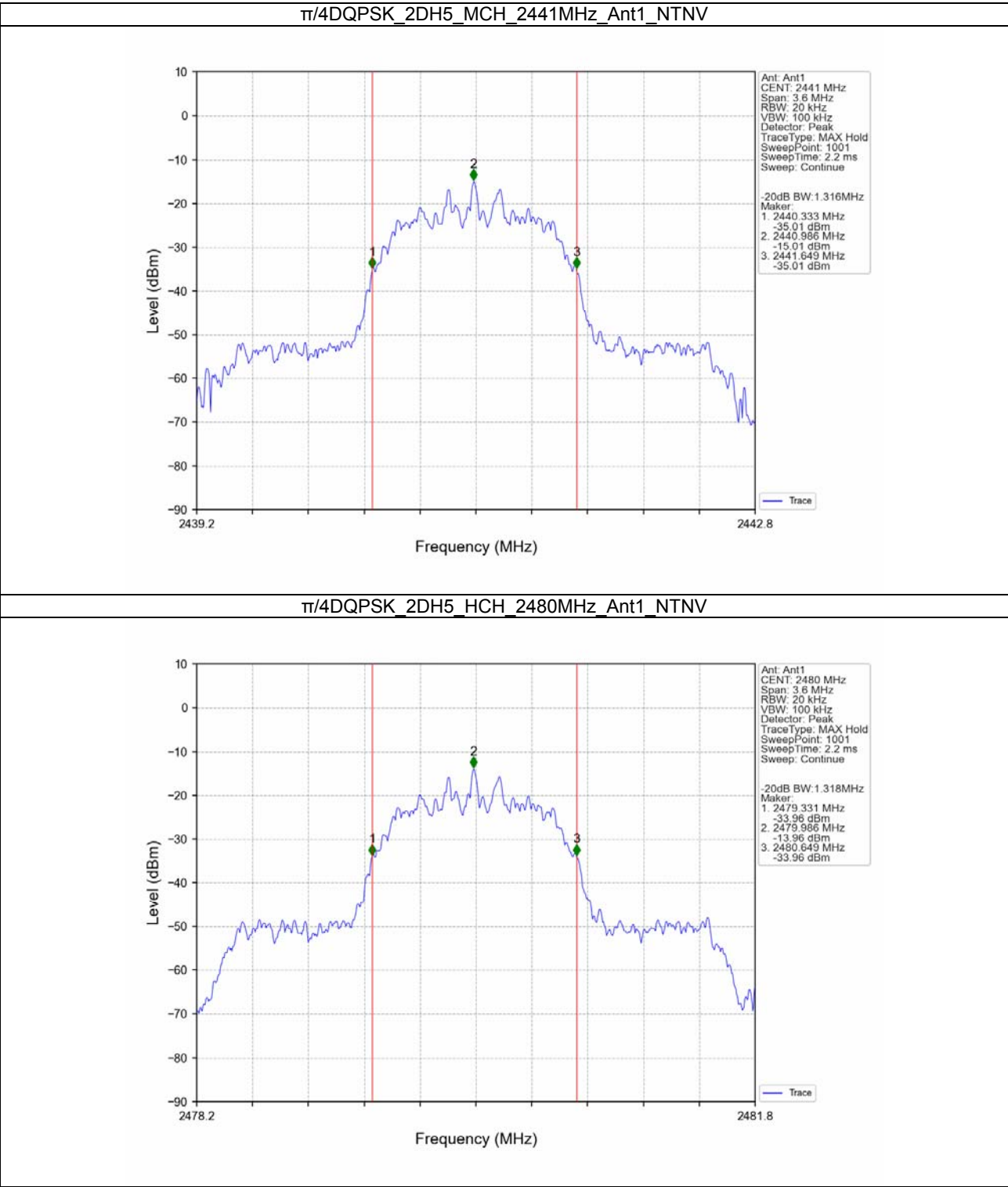


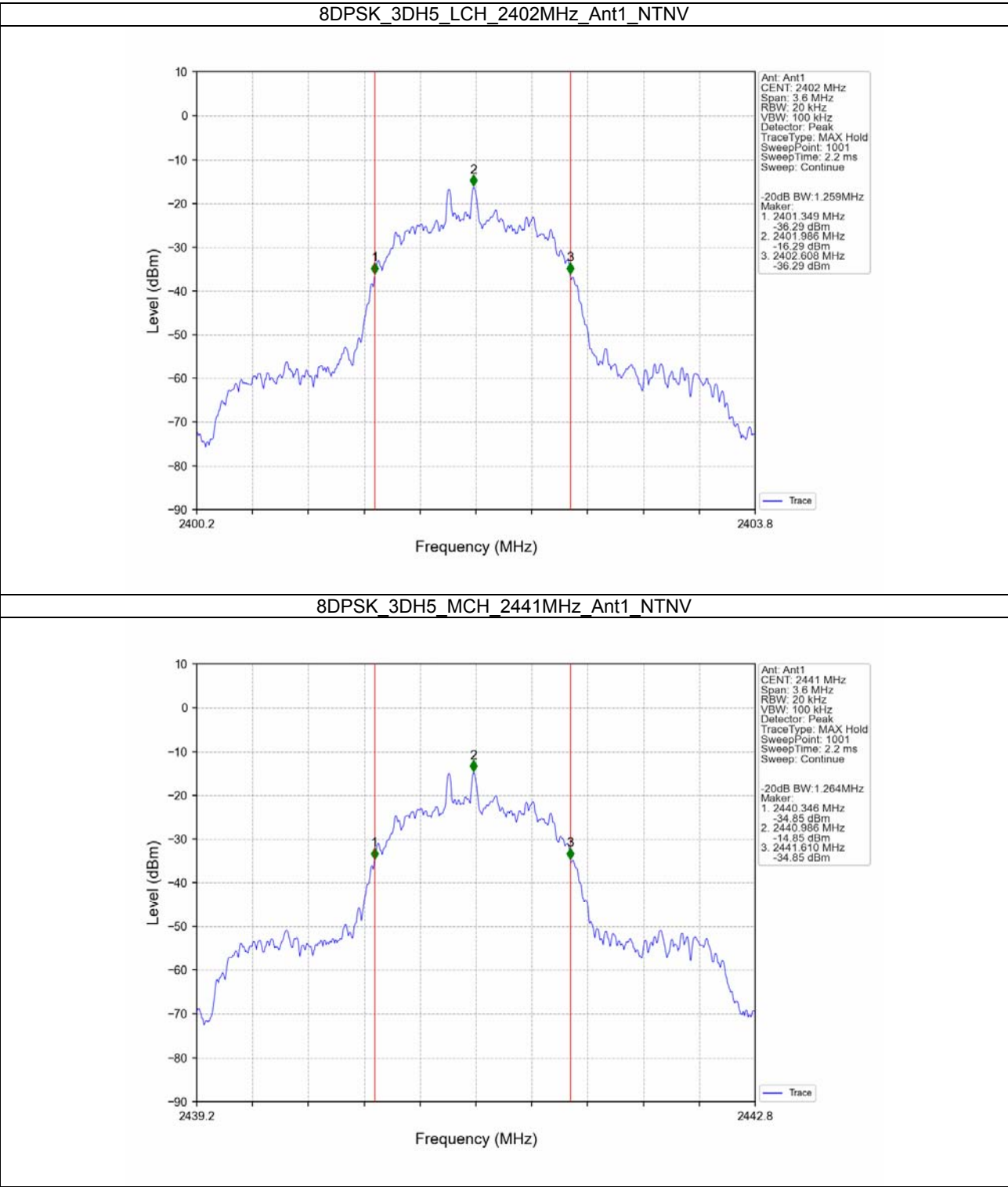
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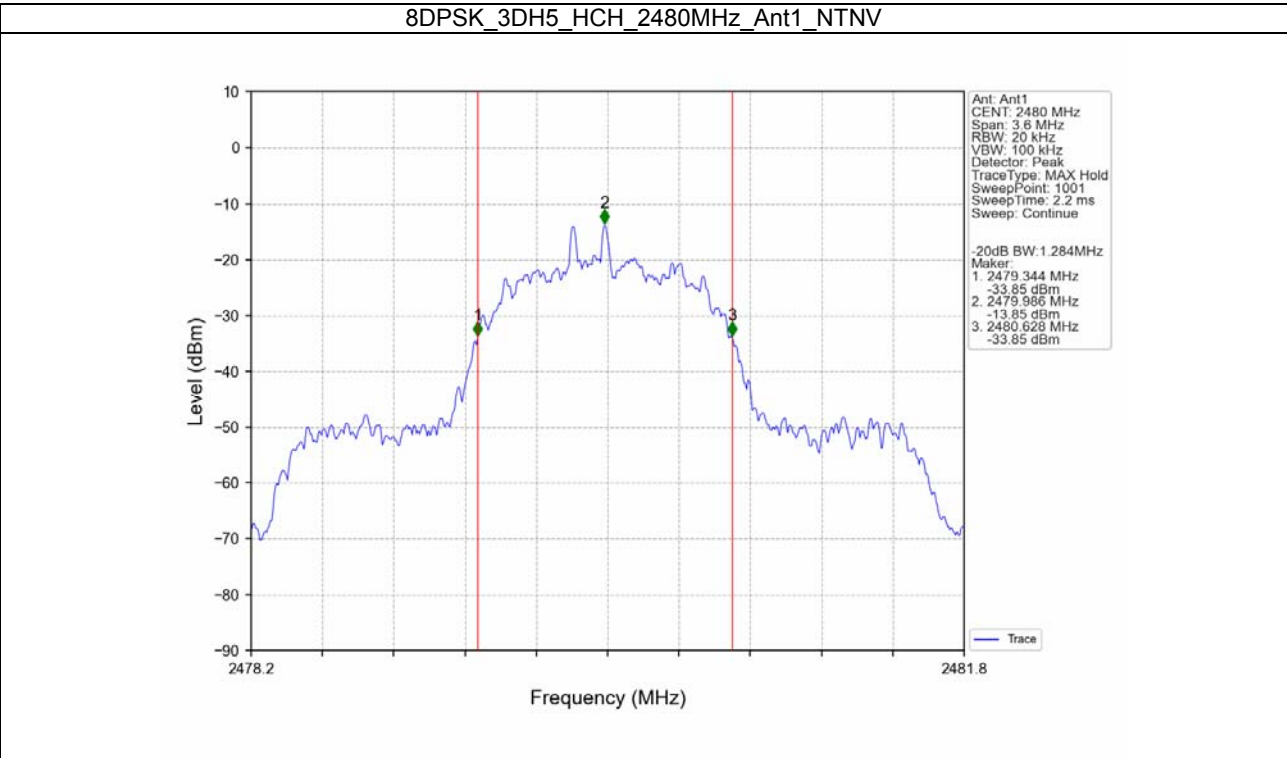
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