

Appendix for 15.247

Product Name: Bluetooth Speaker

Test Model: The Player

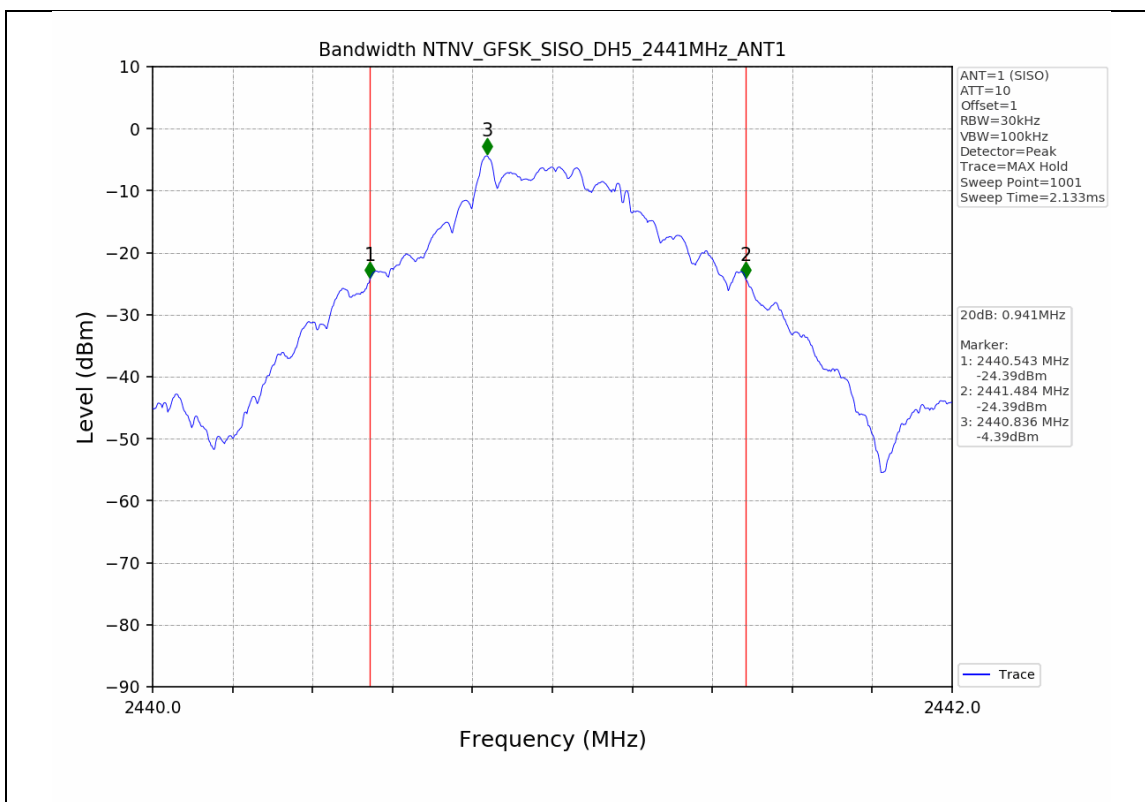
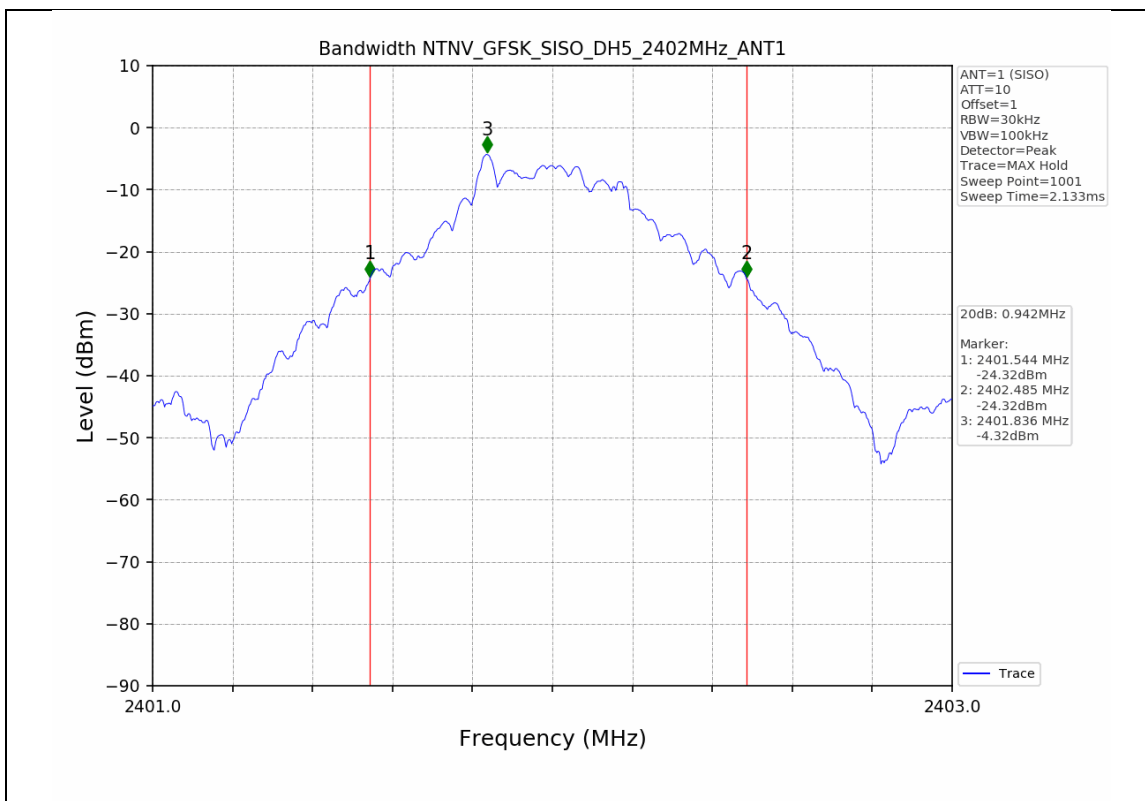
1. Bandwidth

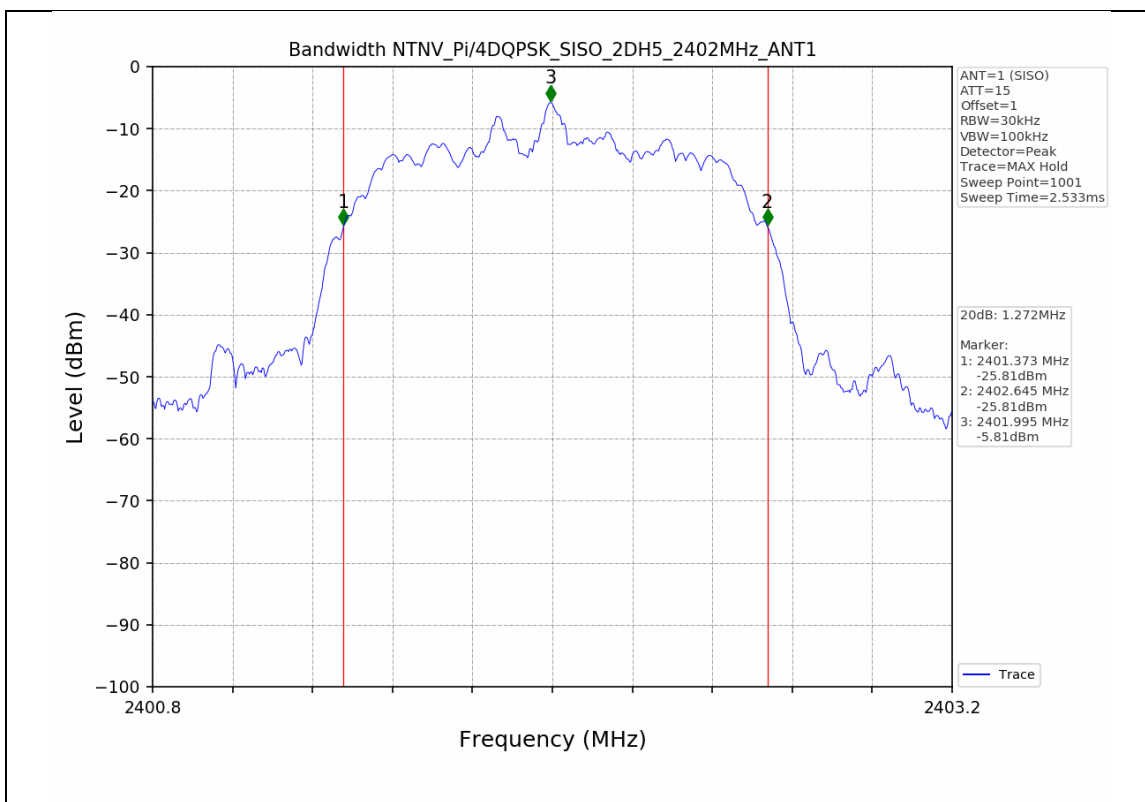
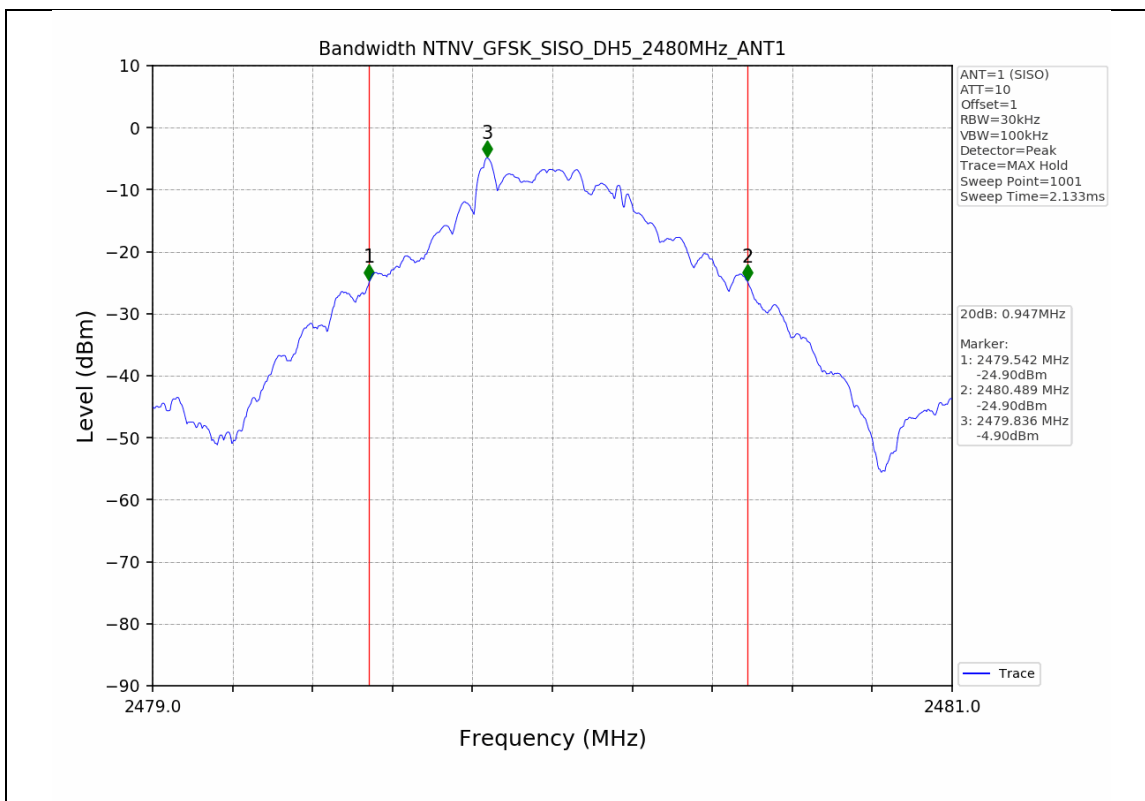
1.1 Test Result

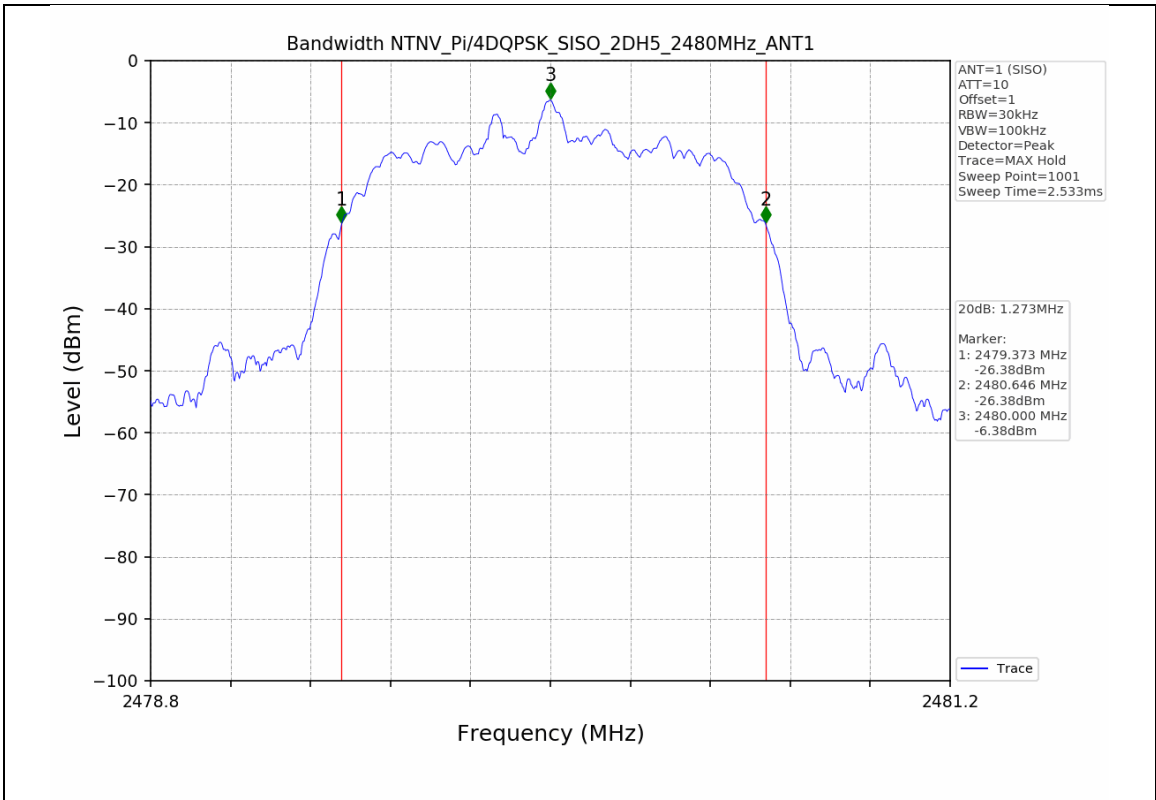
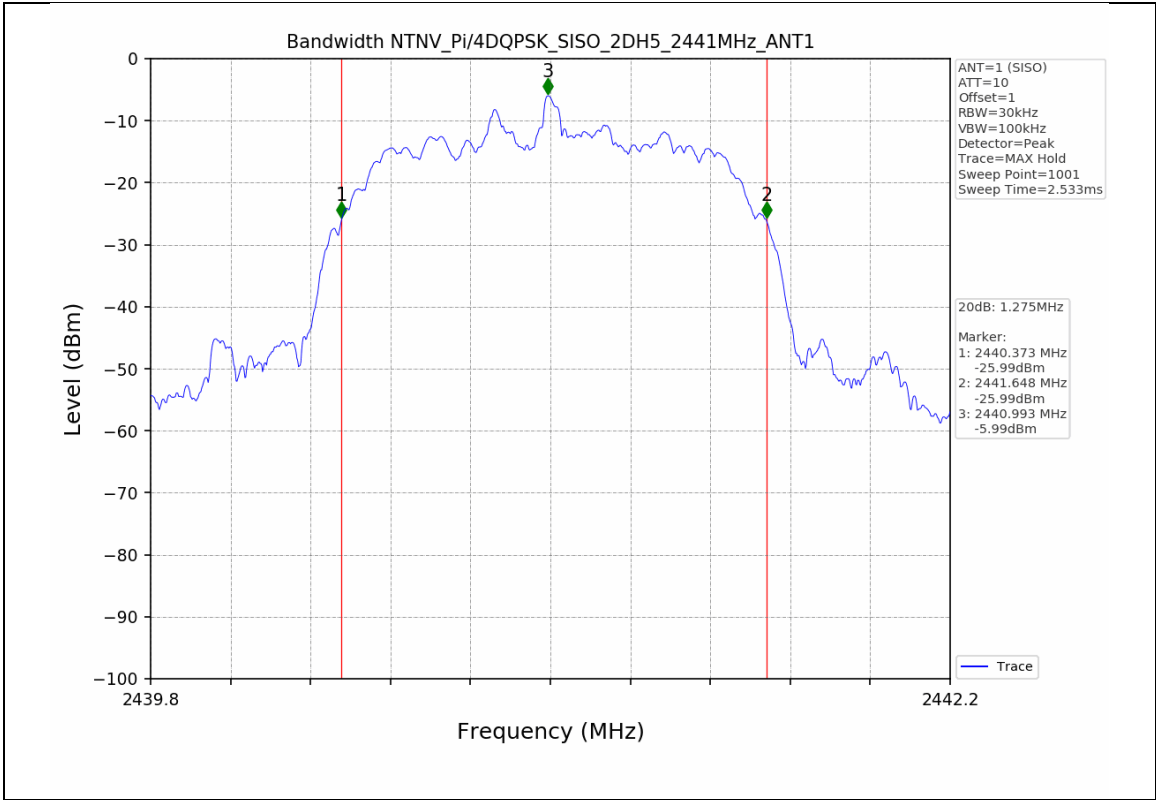
Test Mode	Frequency (MHz)	TX Type	ANT No.	20dB Bandwidth	Verdict
				Test Result (MHz)	
GFSK	2402	SISO	1	0.942	PASS
	2441	SISO	1	0.941	PASS
	2480	SISO	1	0.947	PASS
Pi/4DQPSK	2402	SISO	1	1.272	PASS
	2441	SISO	1	1.275	PASS
	2480	SISO	1	1.273	PASS
8DPSK	2402	SISO	1	1.252	PASS
	2441	SISO	1	1.250	PASS
	2480	SISO	1	1.253	PASS

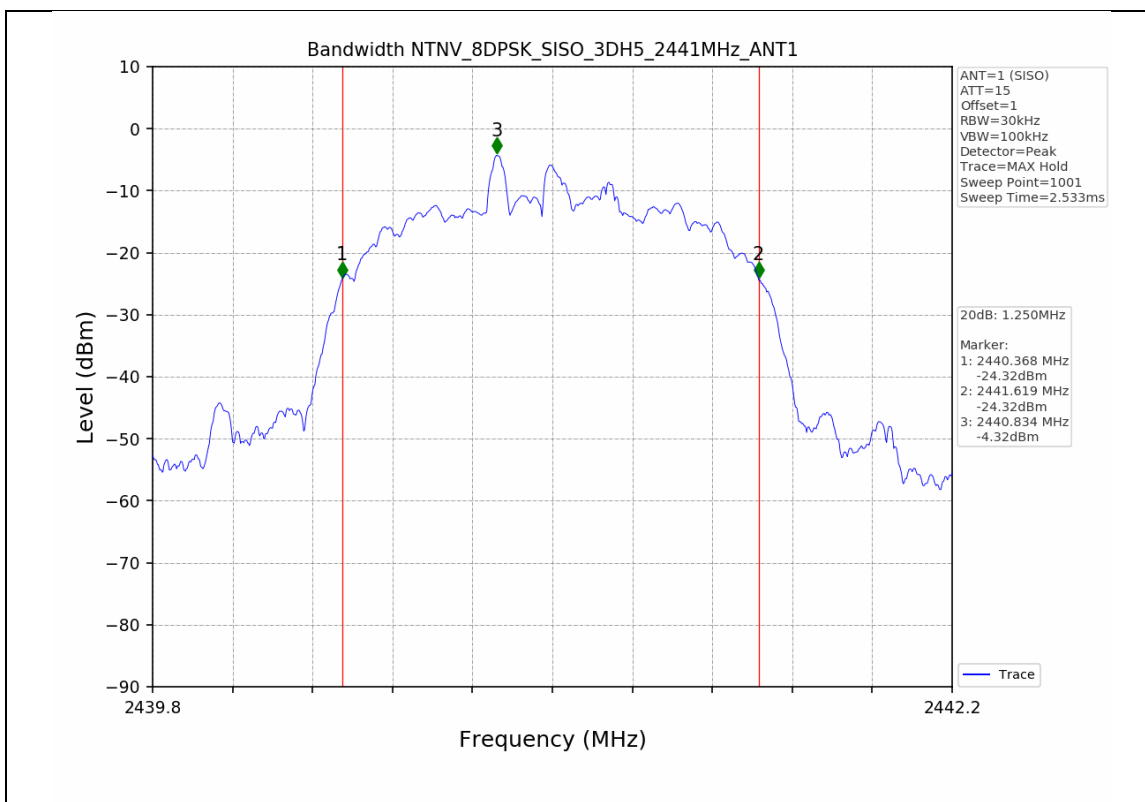
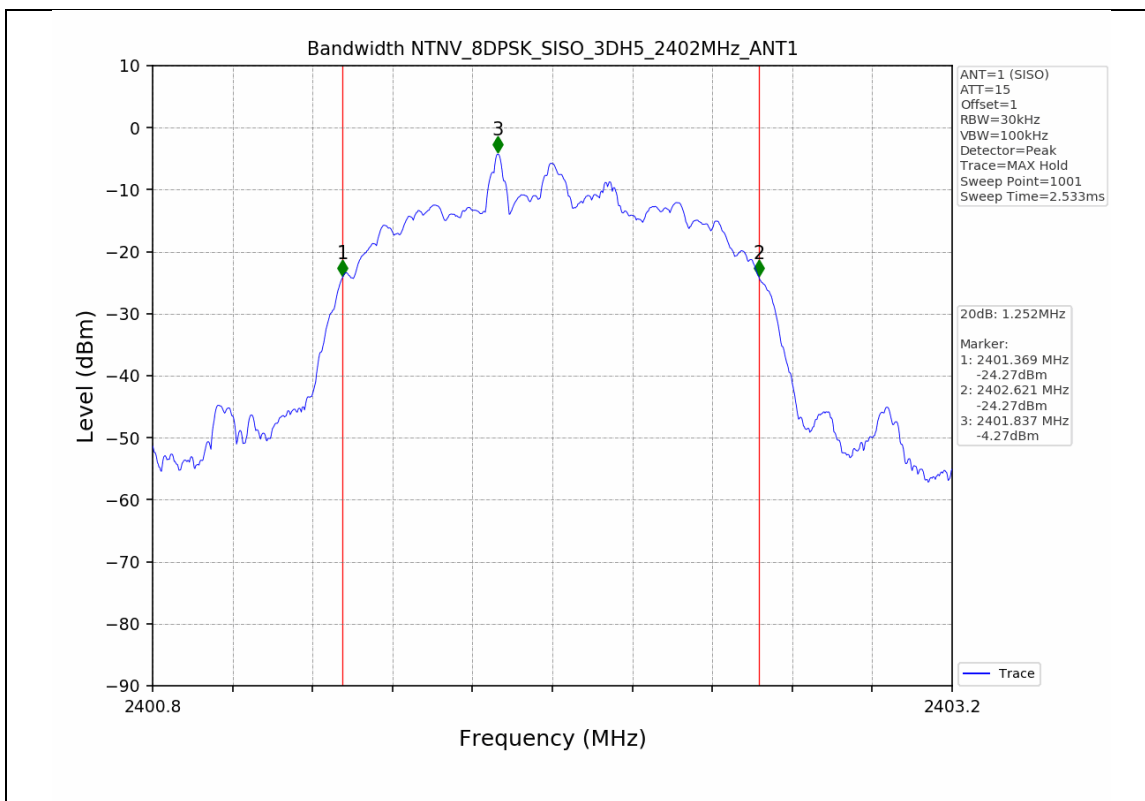
Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth	
				Test Result (MHz)	
GFSK	2402	SISO	1	0.877	Only for Report Use
	2441	SISO	1	0.882	Only for Report Use
	2480	SISO	1	0.878	Only for Report Use
Pi/4DQPSK	2402	SISO	1	1.165	Only for Report Use
	2441	SISO	1	1.164	Only for Report Use
	2480	SISO	1	1.165	Only for Report Use
8DPSK	2402	SISO	1	1.158	Only for Report Use
	2441	SISO	1	1.157	Only for Report Use
	2480	SISO	1	1.155	Only for Report Use

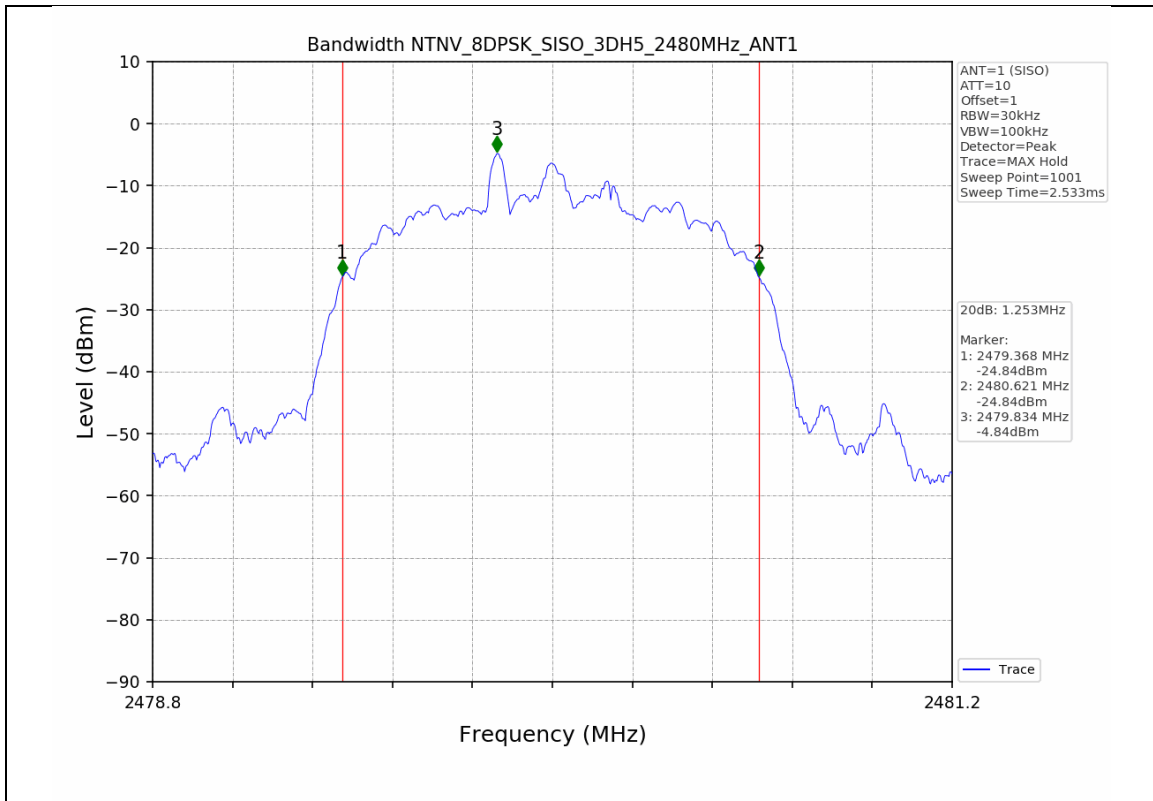
1.2 Test Graph - 20dB Bandwidth



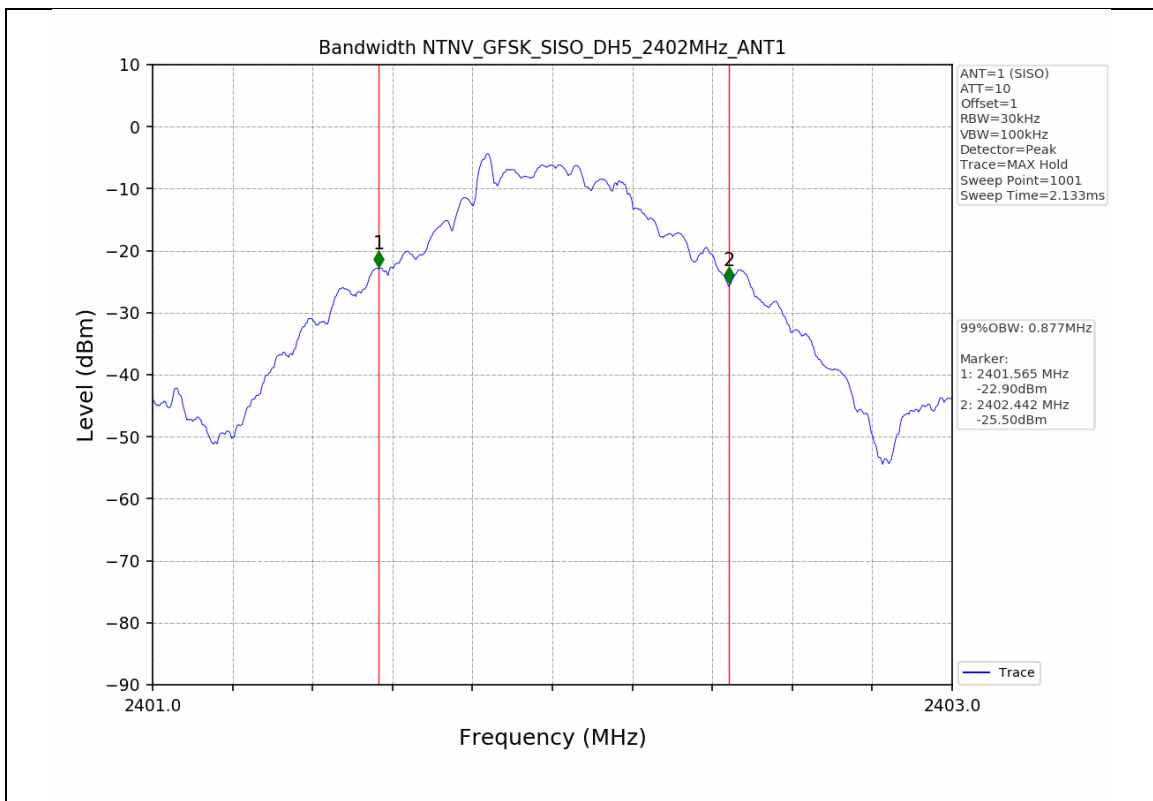


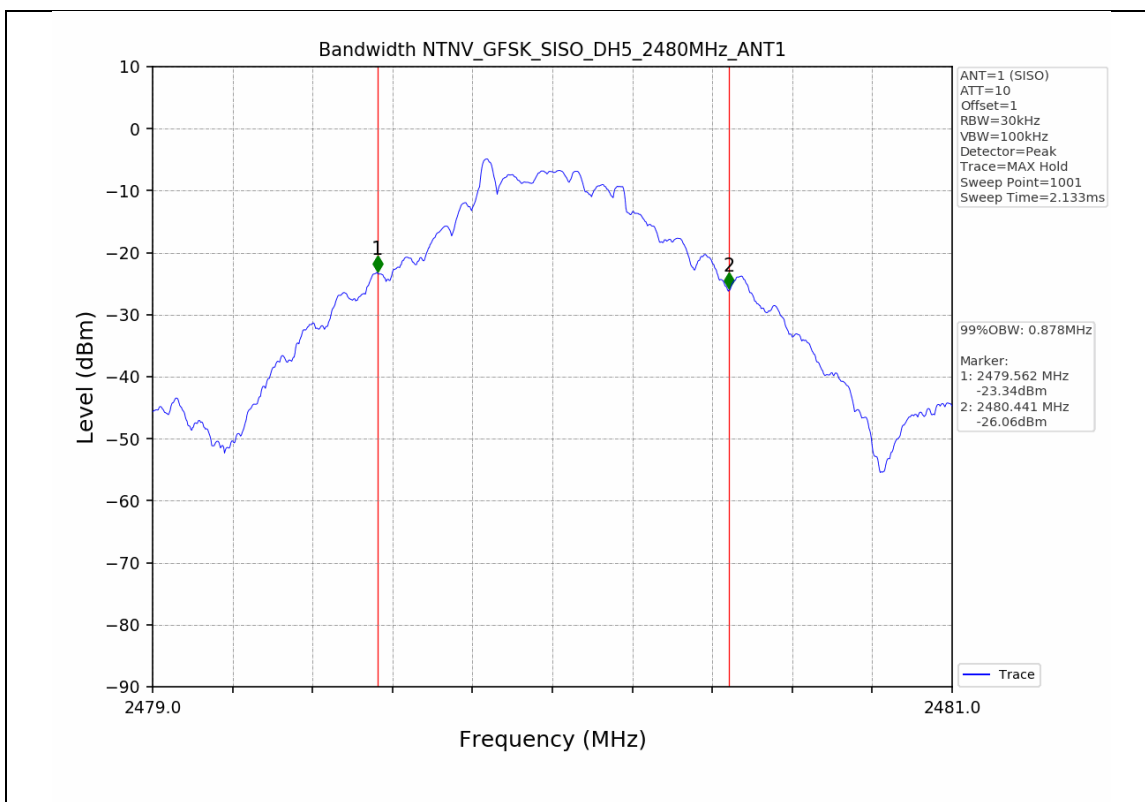
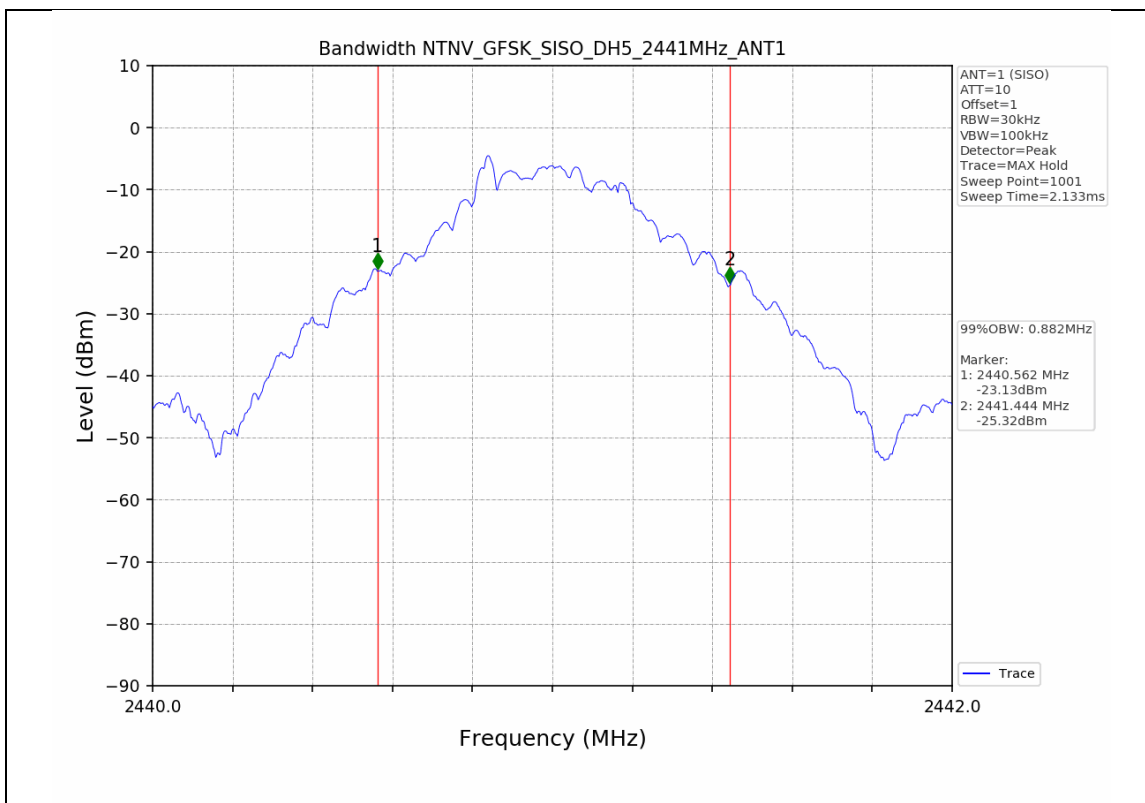


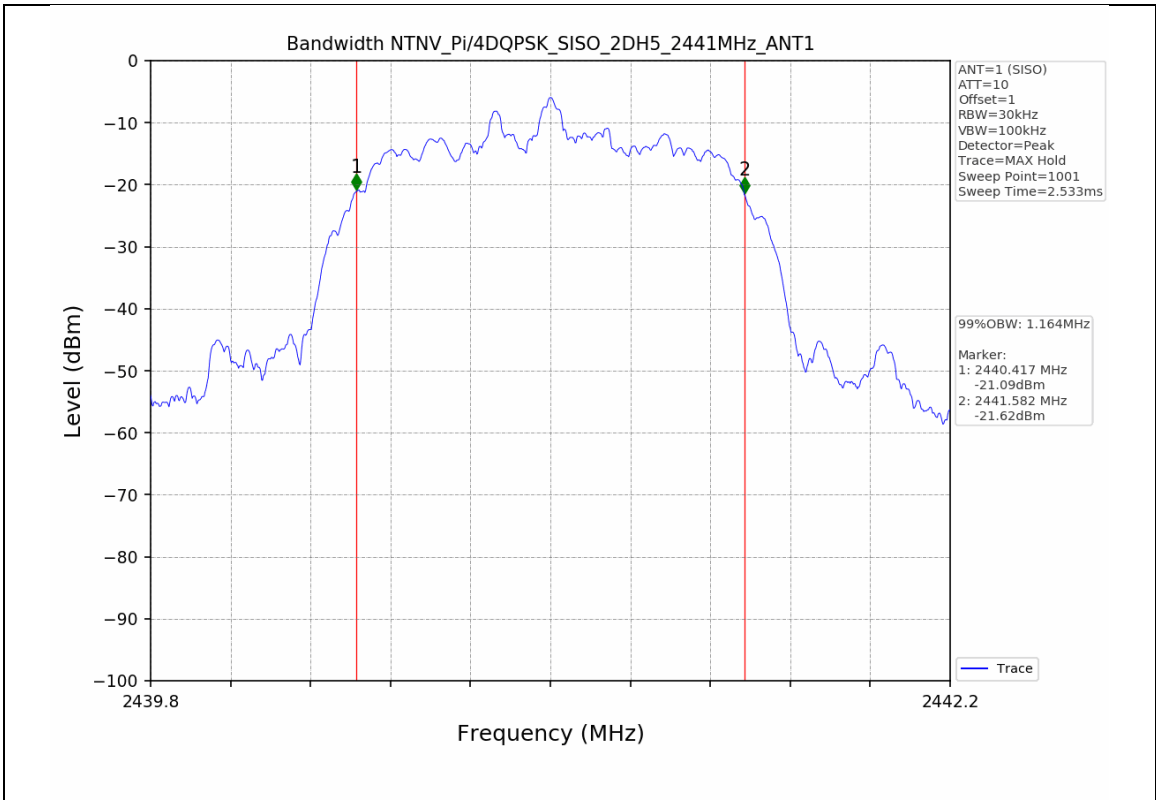
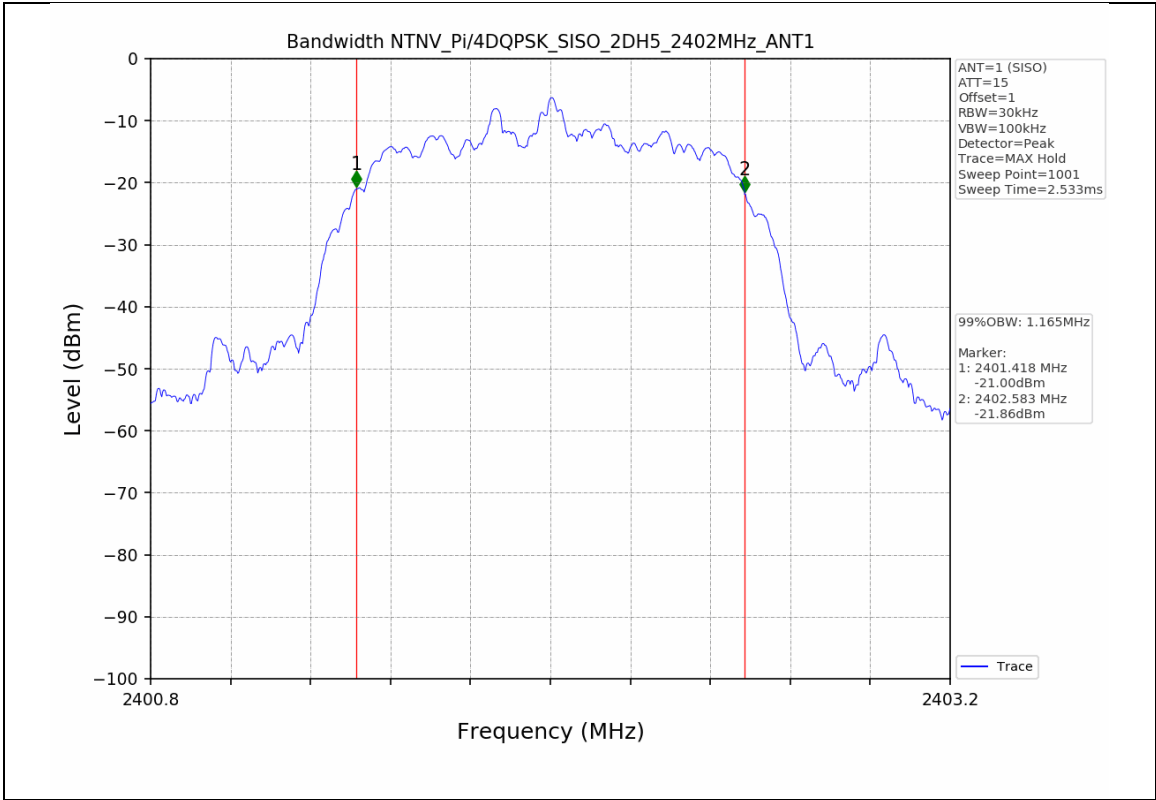


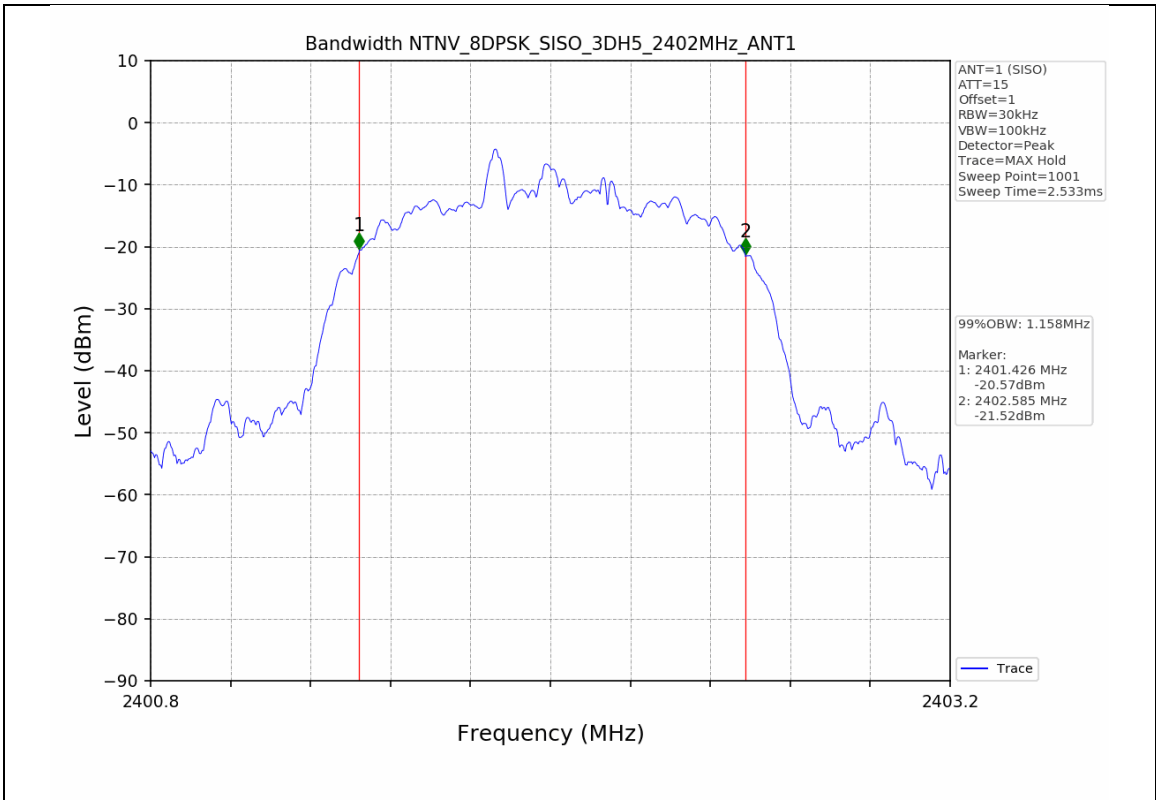
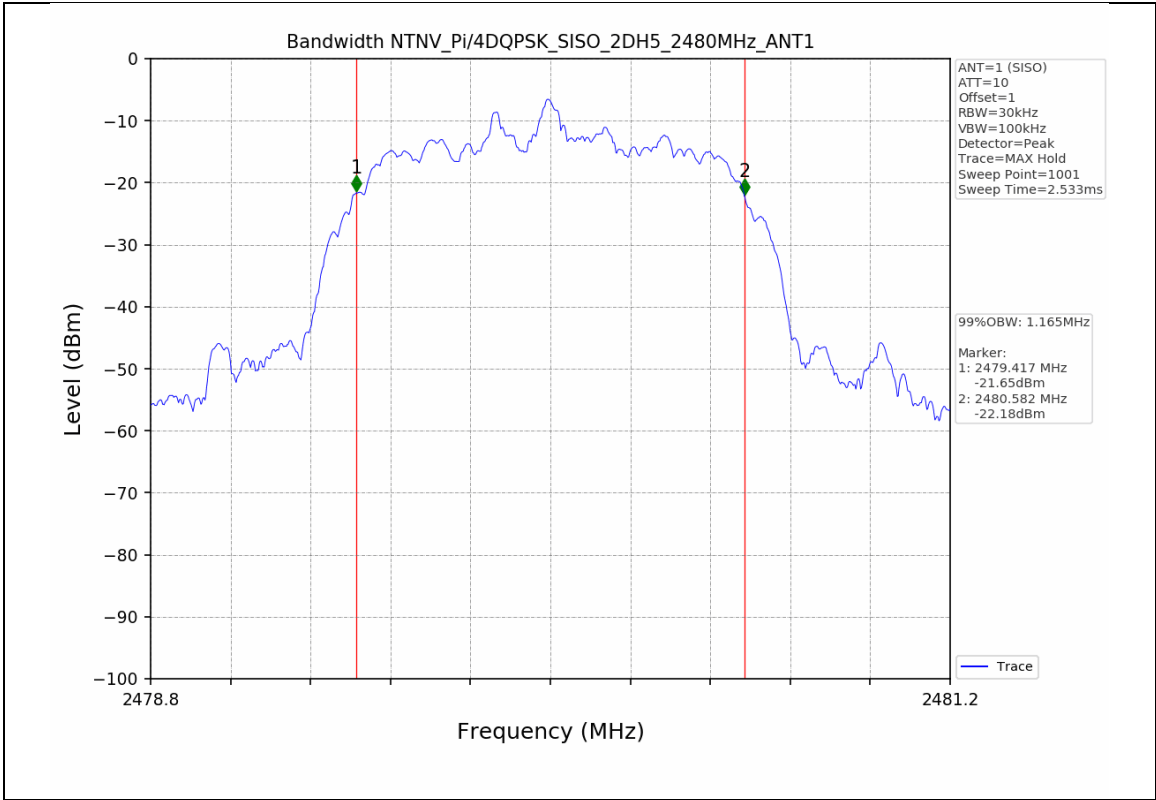


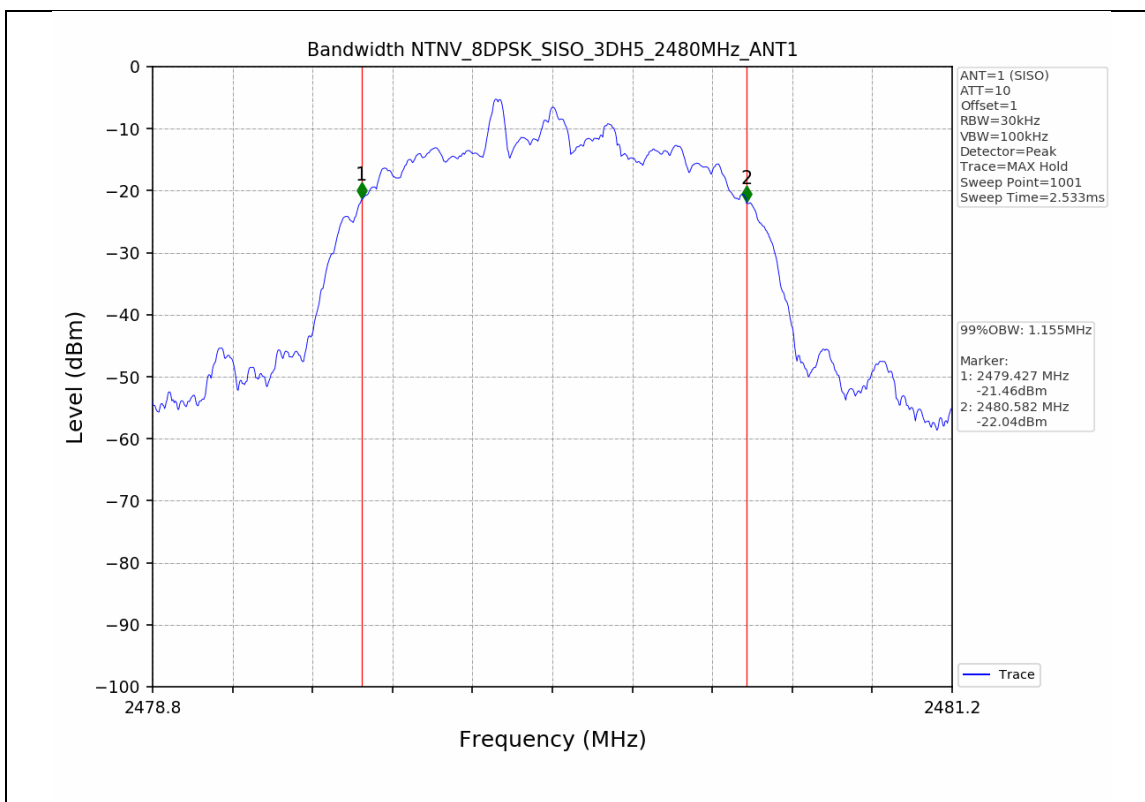
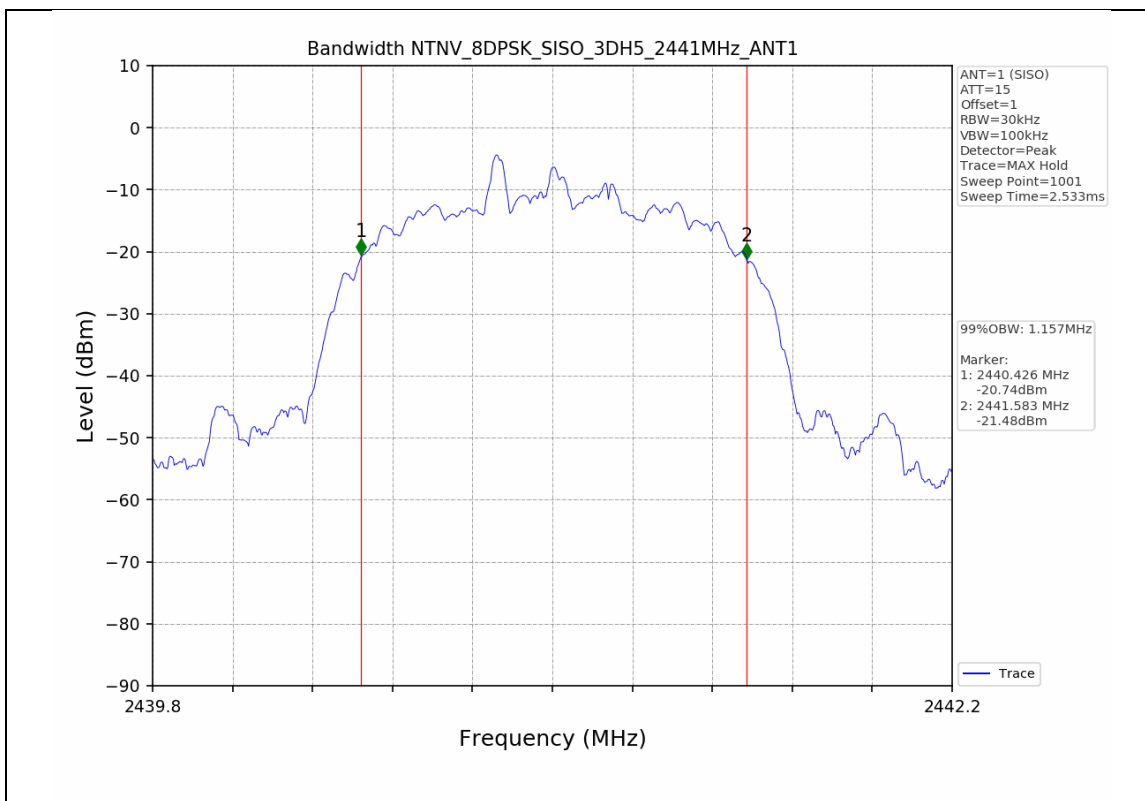
1.3 Test Graph - 99% Occupied Bandwidth









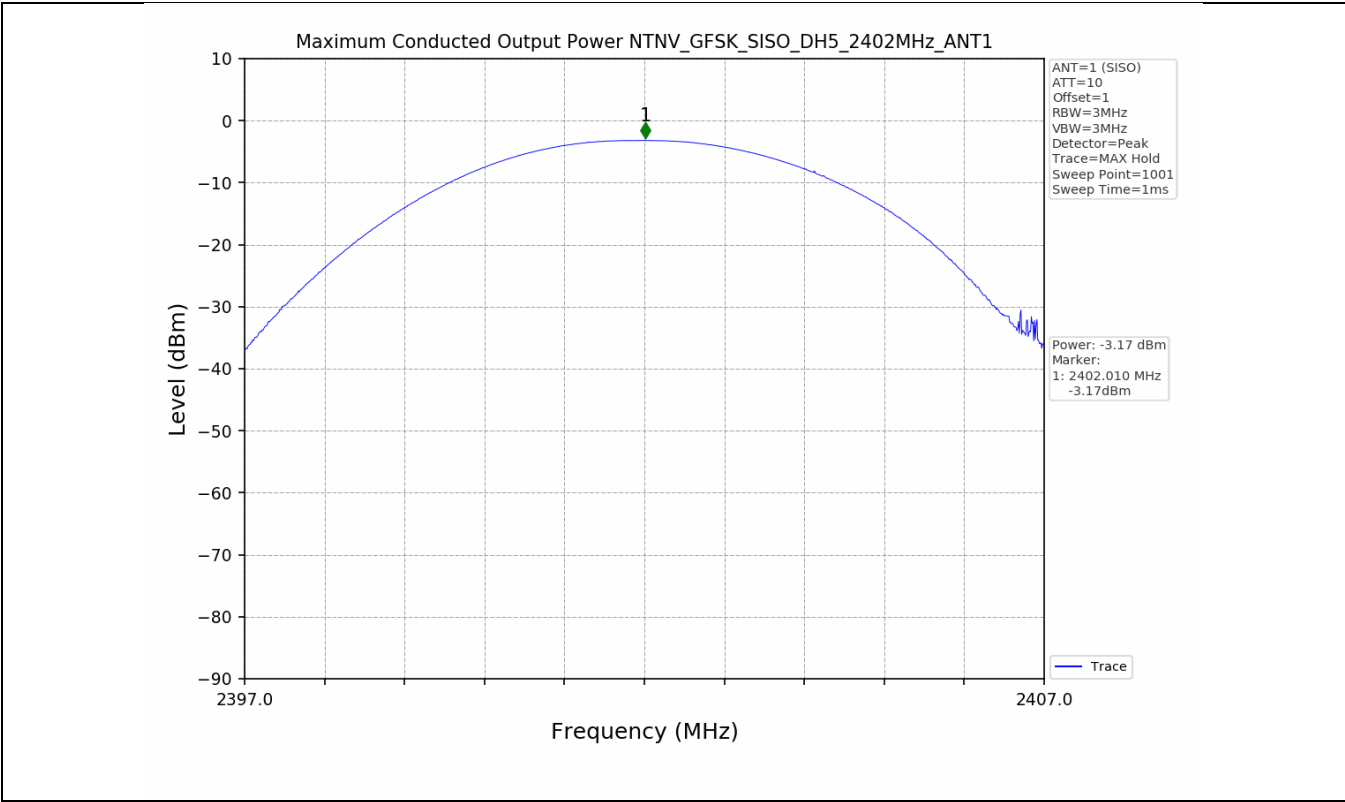


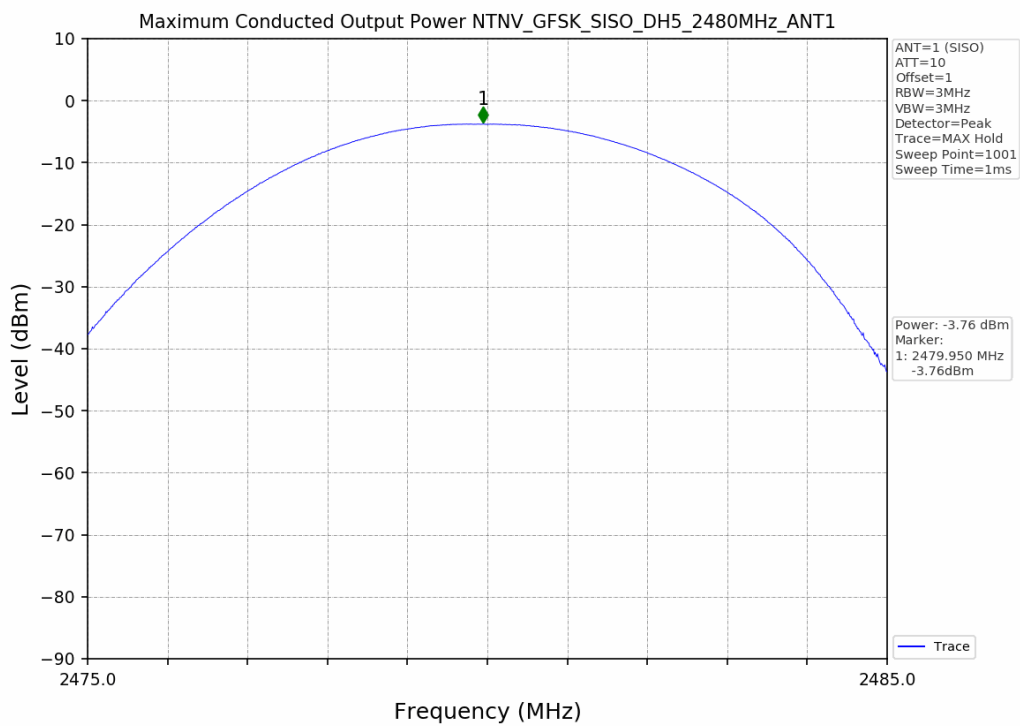
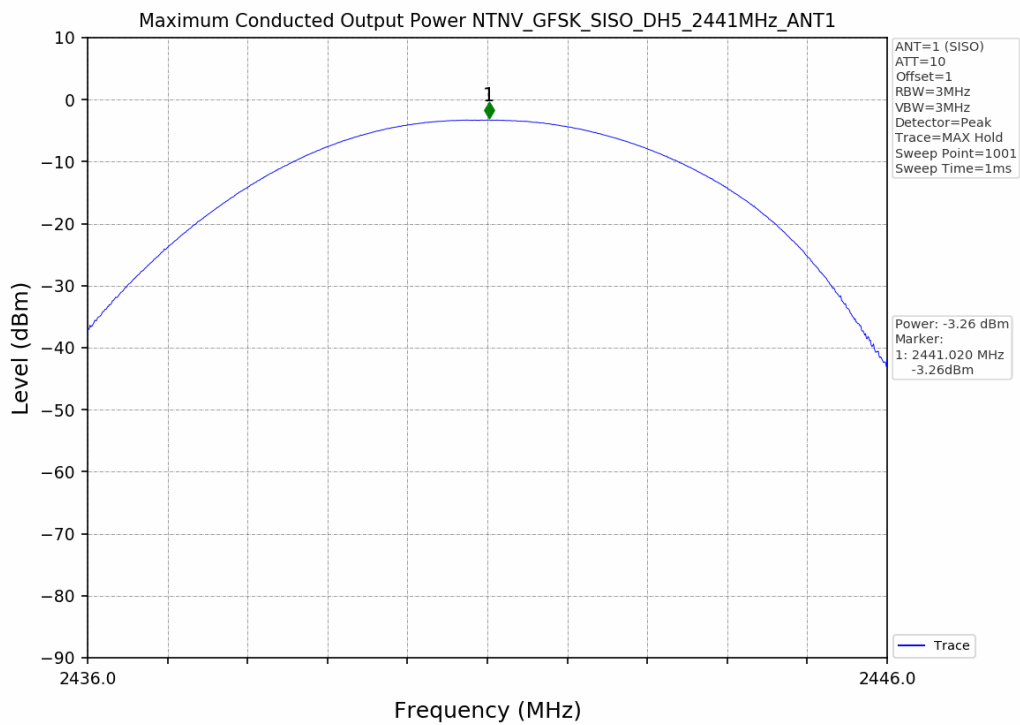
2. Maximum Conducted Output Power

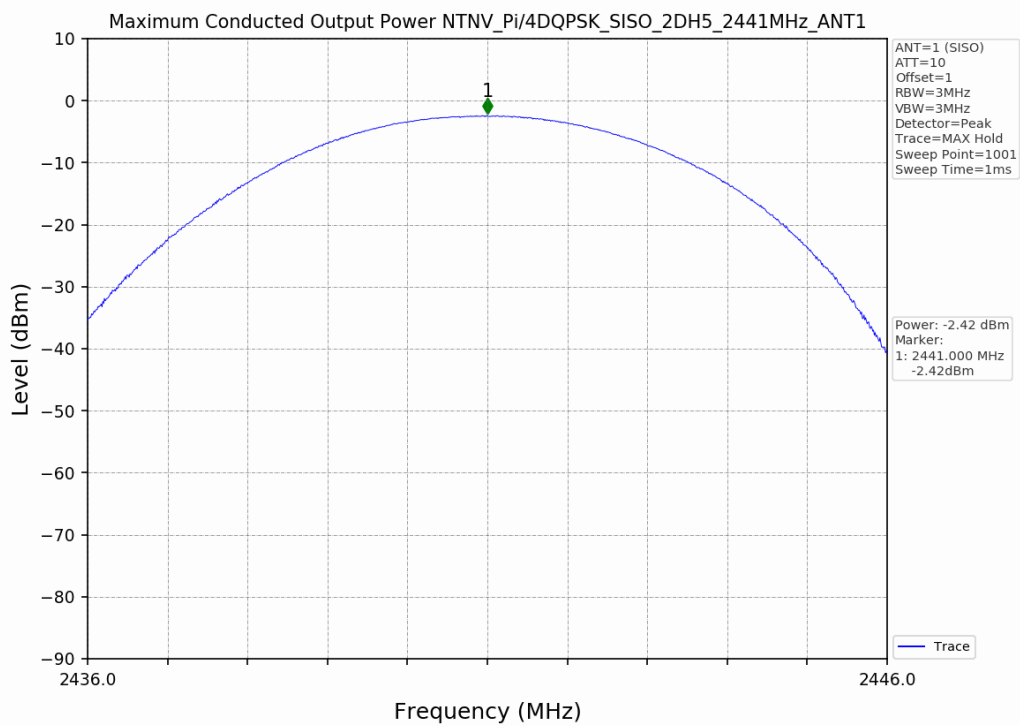
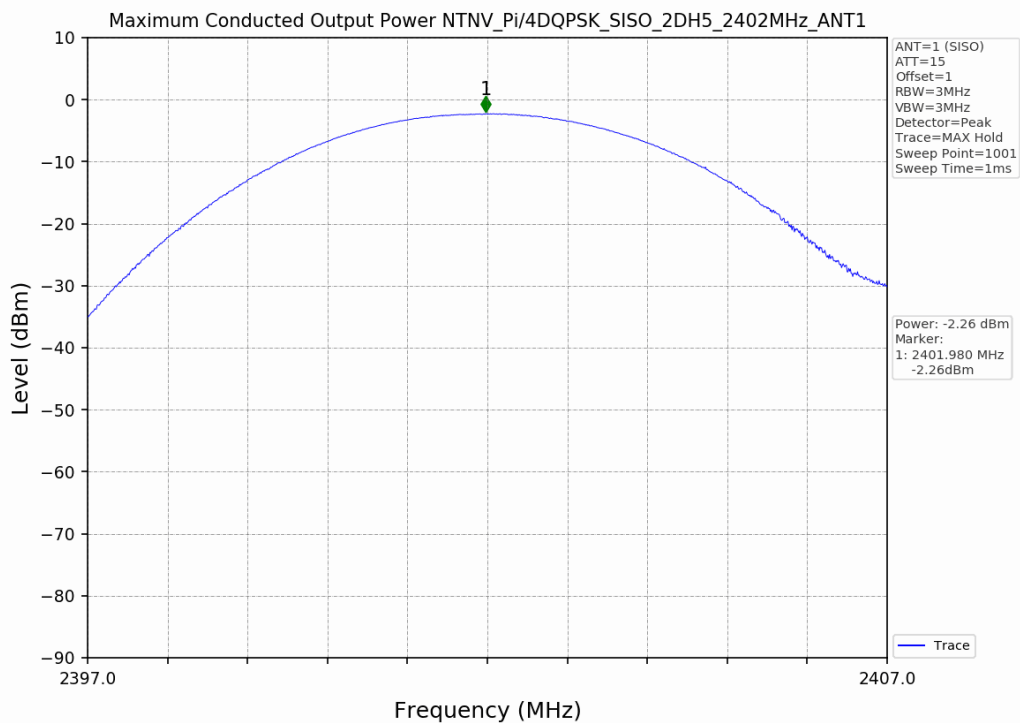
2.1 Test Result

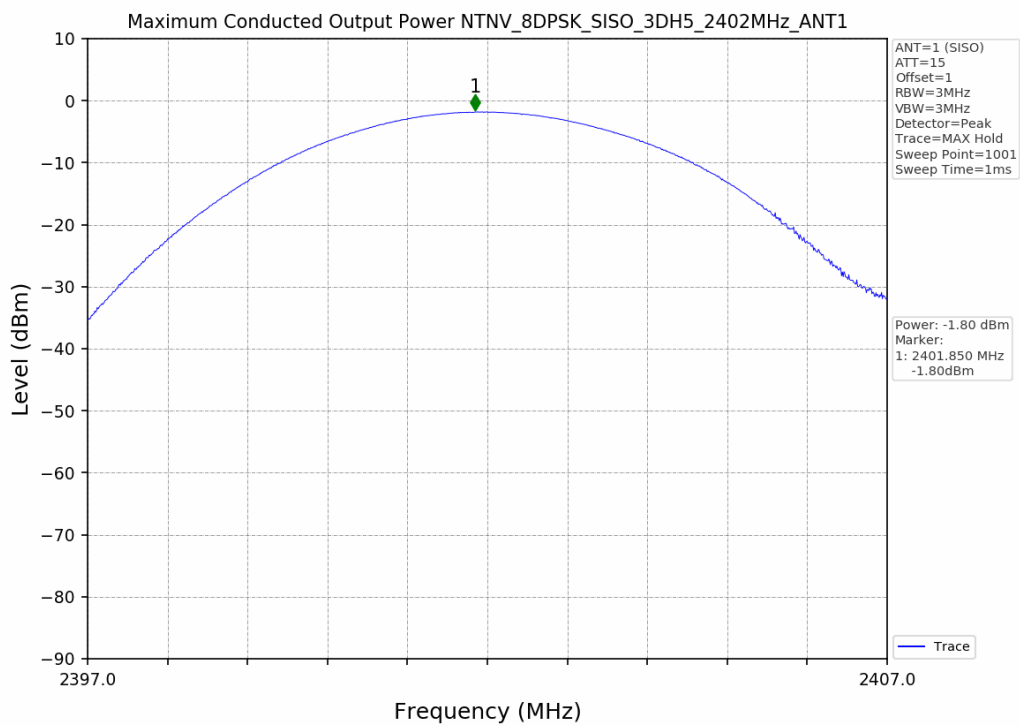
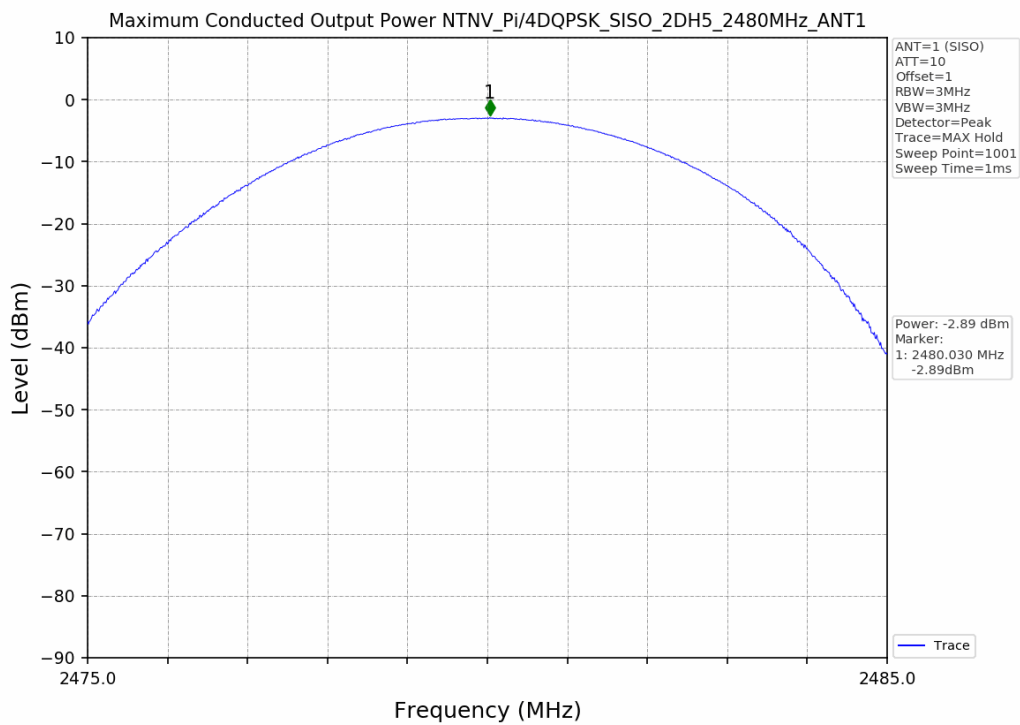
Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
GFSK	2402	SISO	-3.17	30	PASS
	2441	SISO	-3.26	30	PASS
	2480	SISO	-3.76	30	PASS
Pi/4DQPSK	2402	SISO	-2.26	20.97	PASS
	2441	SISO	-2.42	20.97	PASS
	2480	SISO	-2.89	20.97	PASS
8DPSK	2402	SISO	-1.80	20.97	PASS
	2441	SISO	-1.88	20.97	PASS
	2480	SISO	-2.38	20.97	PASS

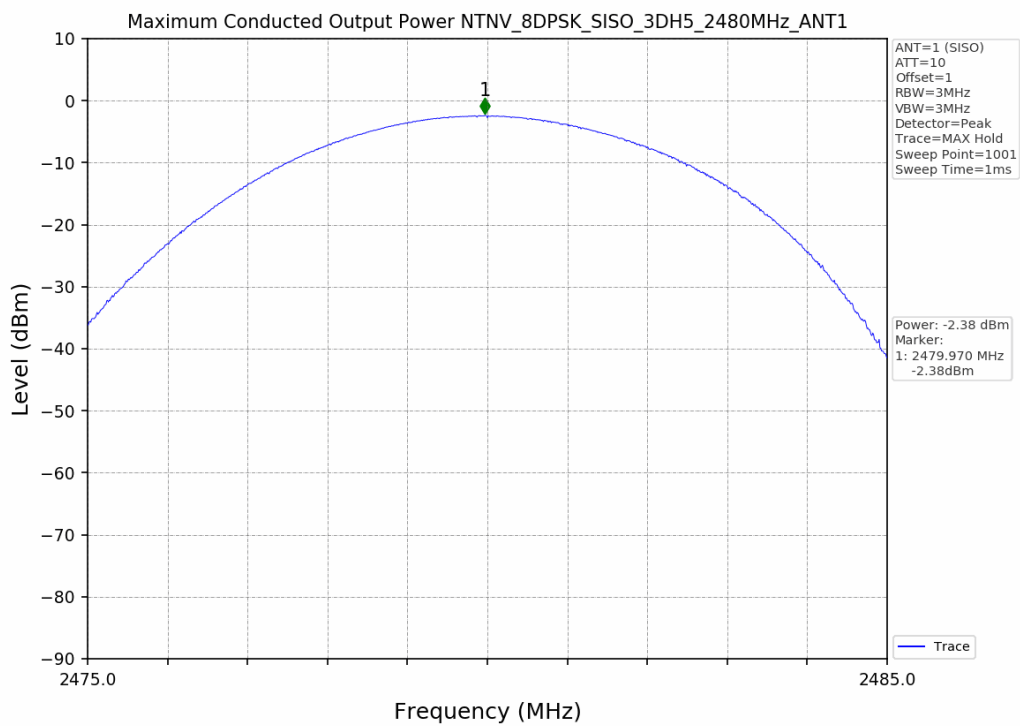
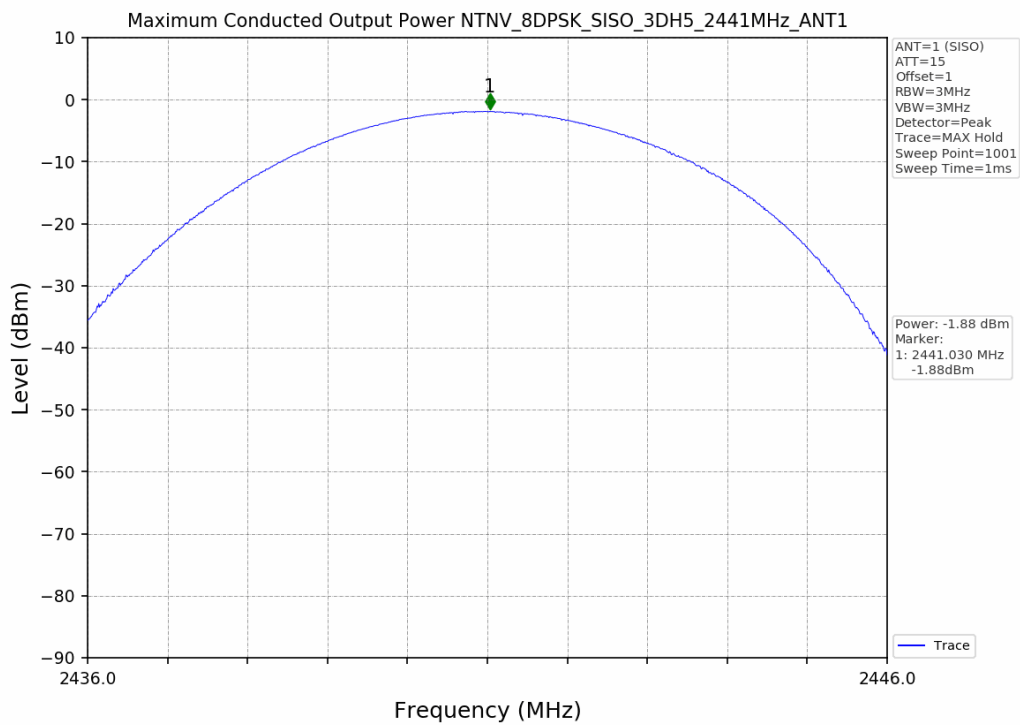
2.2 Test Graph









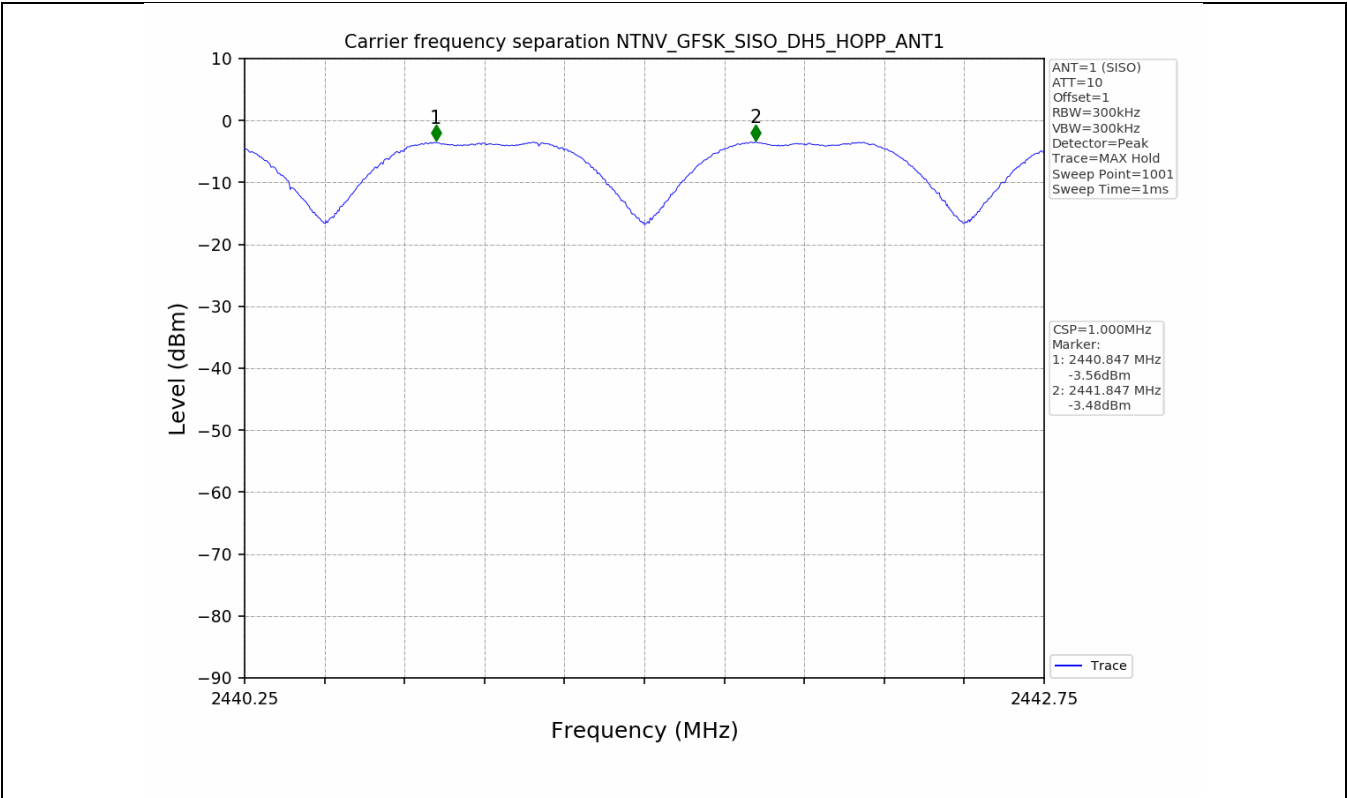


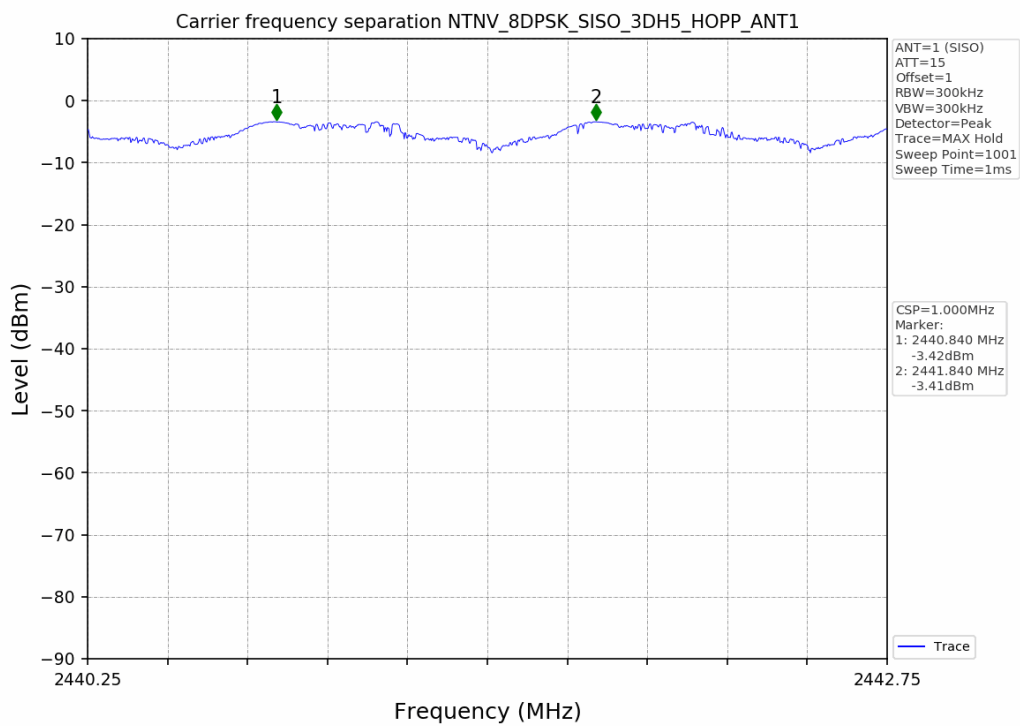
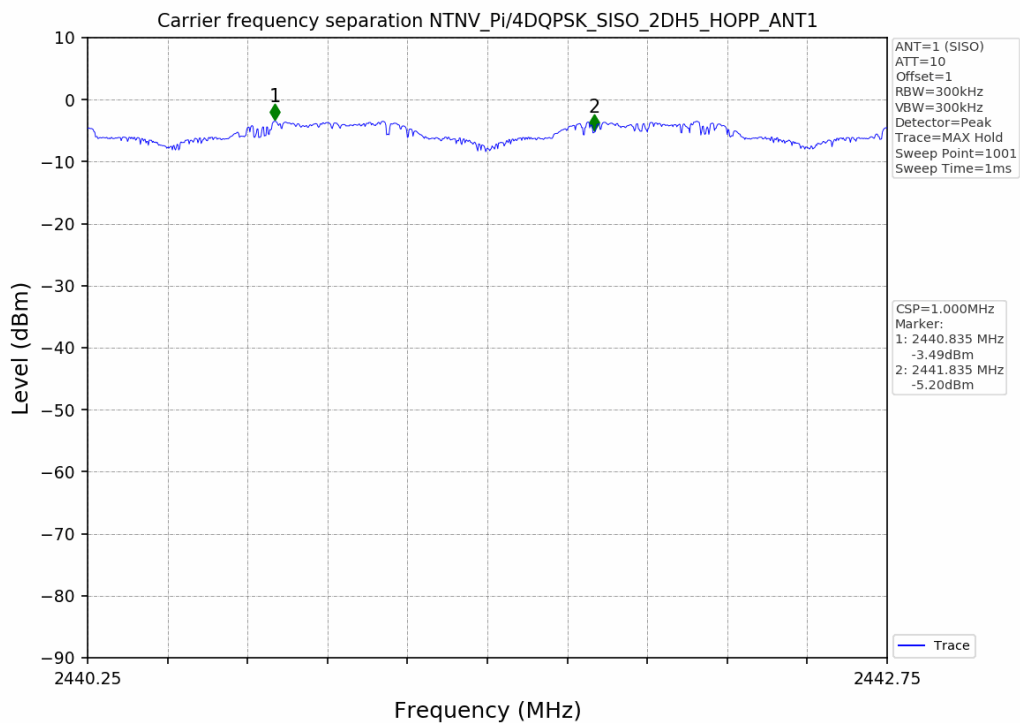
3. Carrier frequency separation

3.1 Test Result

Test Mode	TX Type	ANT No.	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limits (MHz)	Verdict
GFSK	SISO	1	1.000	0.947	≥0.947	PASS
Π/4DQPSK	SISO	1	1.000	1.275	≥0.850	PASS
8DPSK	SISO	1	1.000	1.253	≥0.835	PASS

3.2 Test Graph



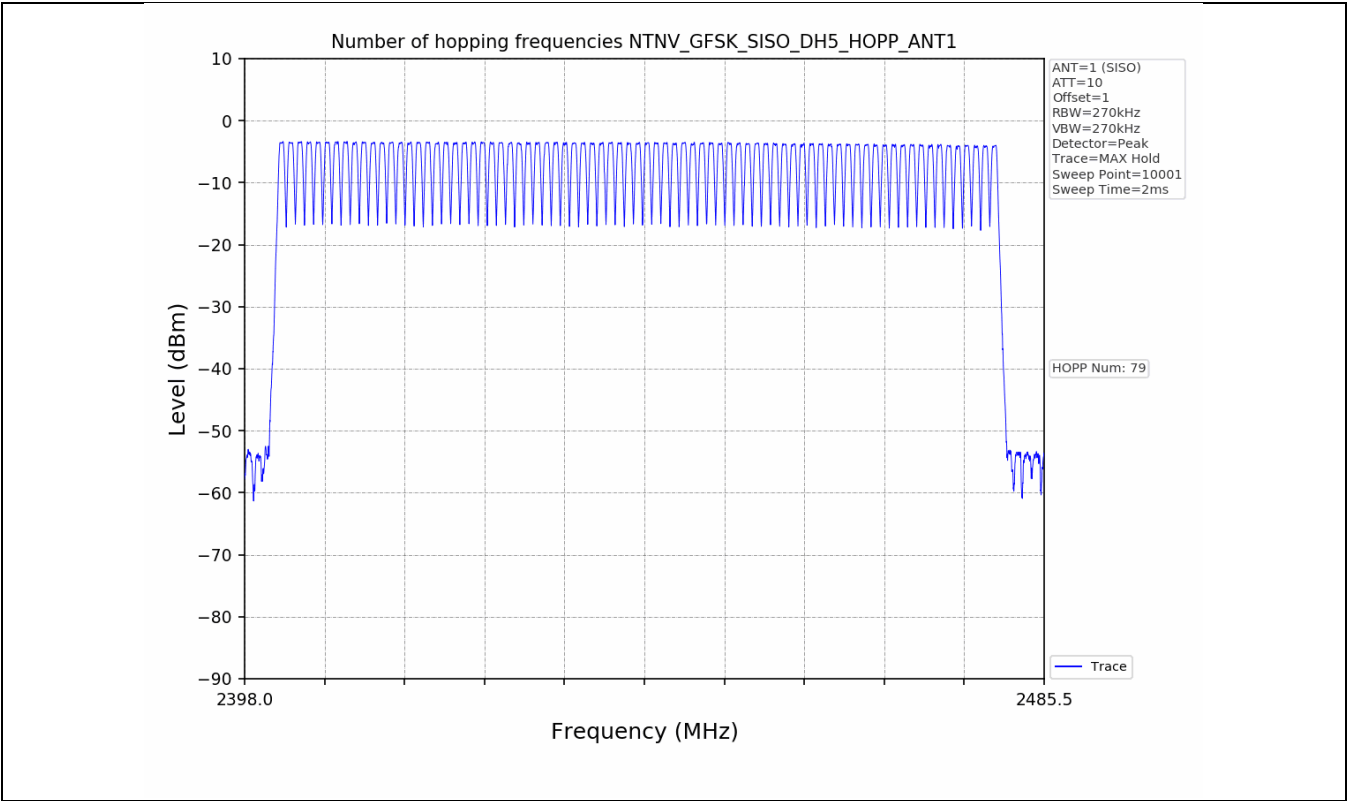


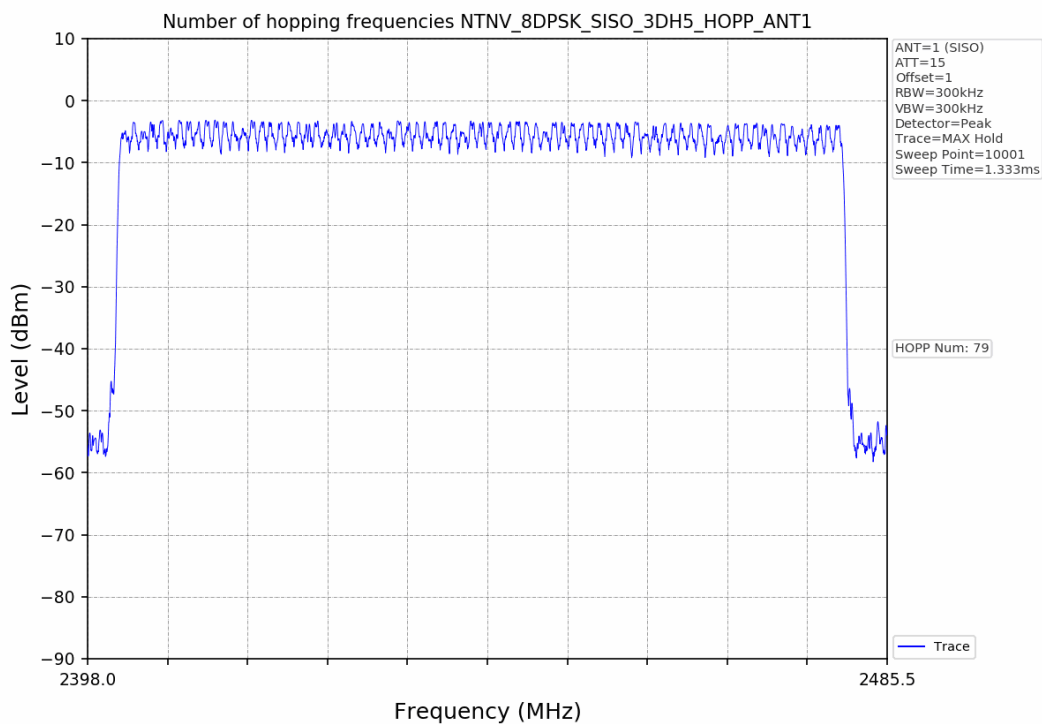
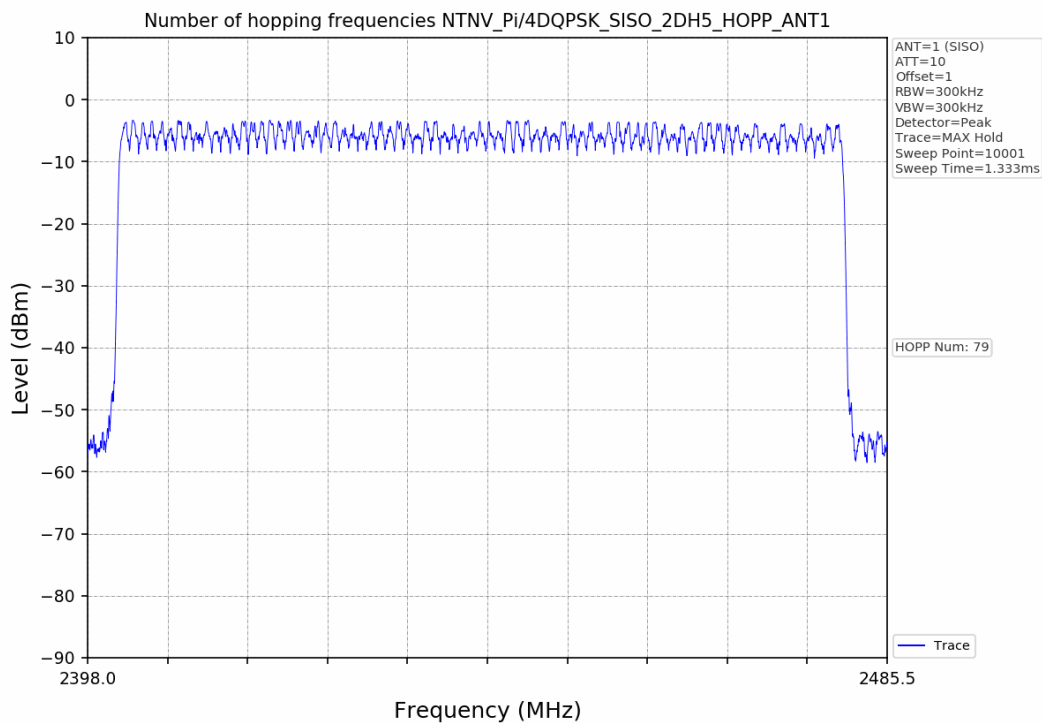
4. Number of hopping frequencies

4.1 Test Result

Test Mode	TX Type	ANT No.	Num of Hopping Frequencies	Limits	Verdict
GFSK	SISO	1	79	≥ 15	PASS
Pi/4DQPSK	SISO	1	79	≥ 15	PASS
8DPSK	SISO	1	79	≥ 15	PASS

4.2 Test Graph



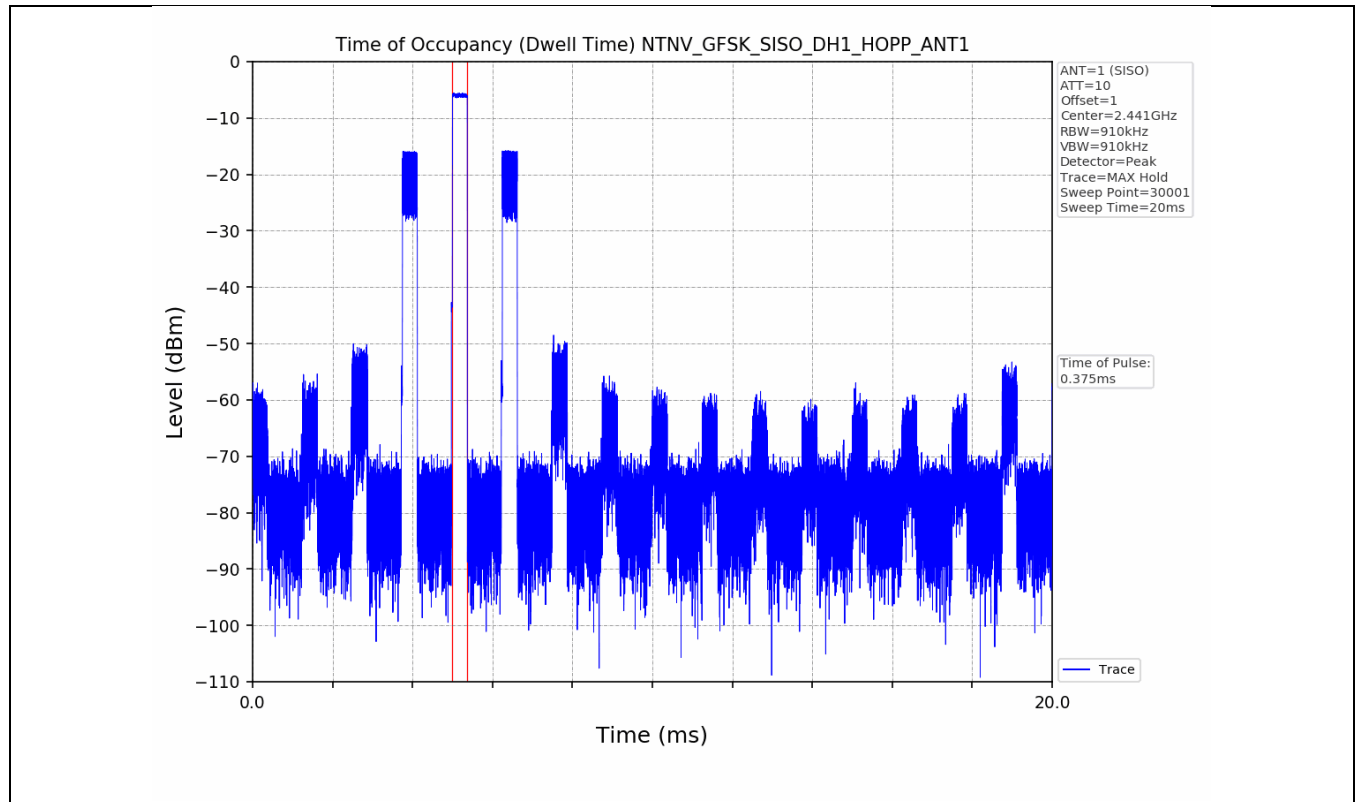


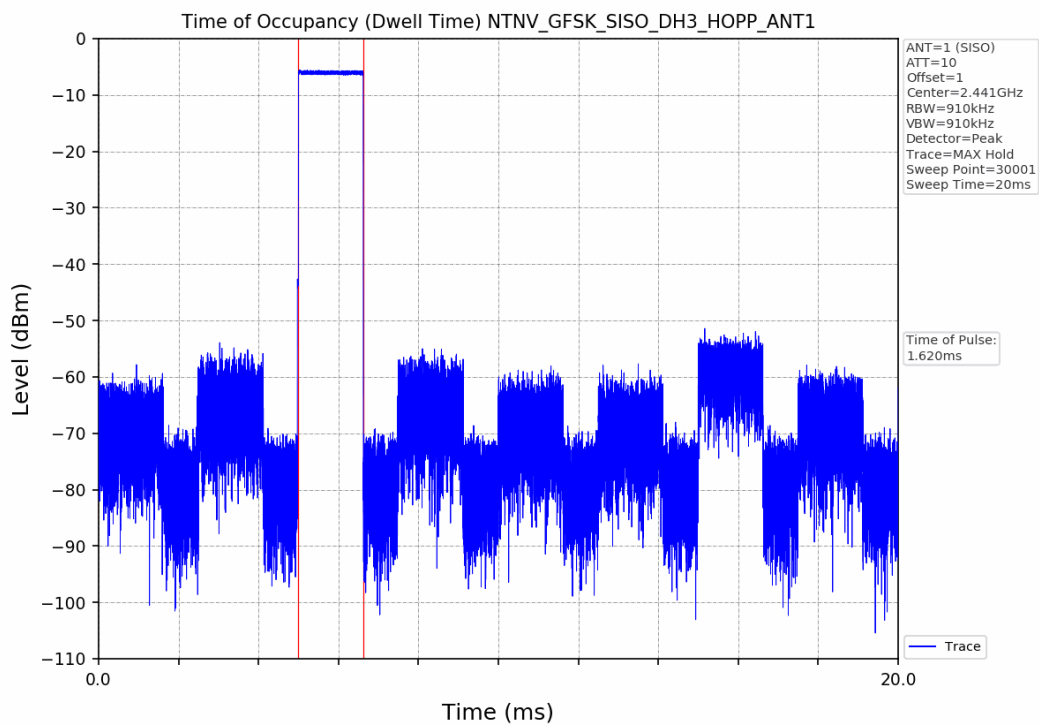
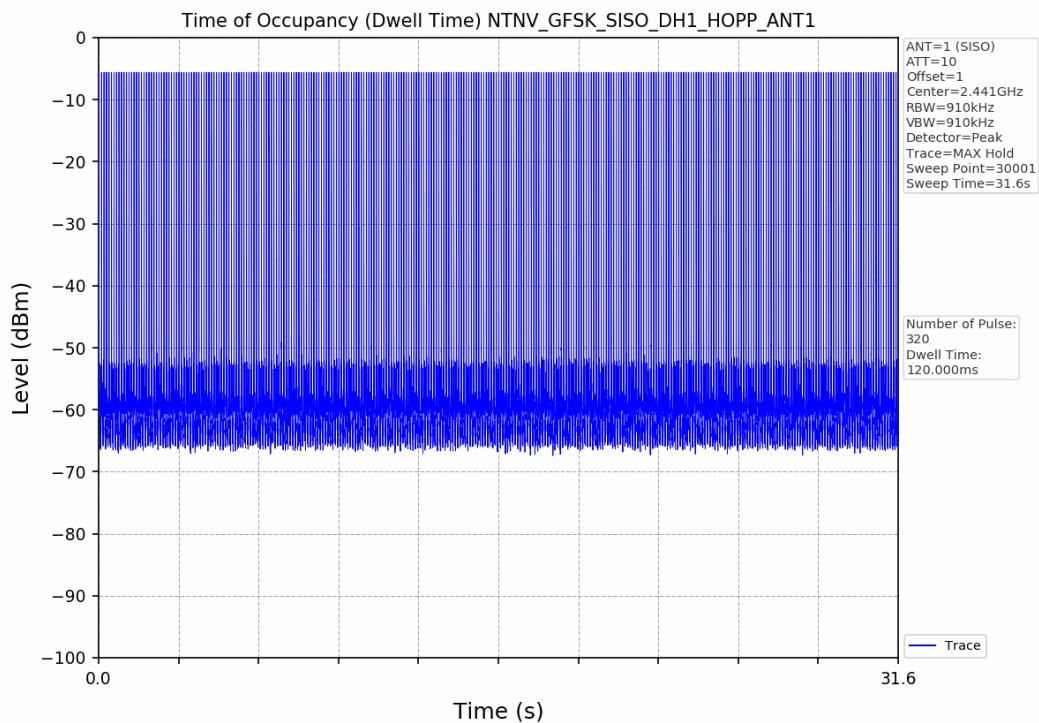
5. Time of Occupancy (Dwell Time)

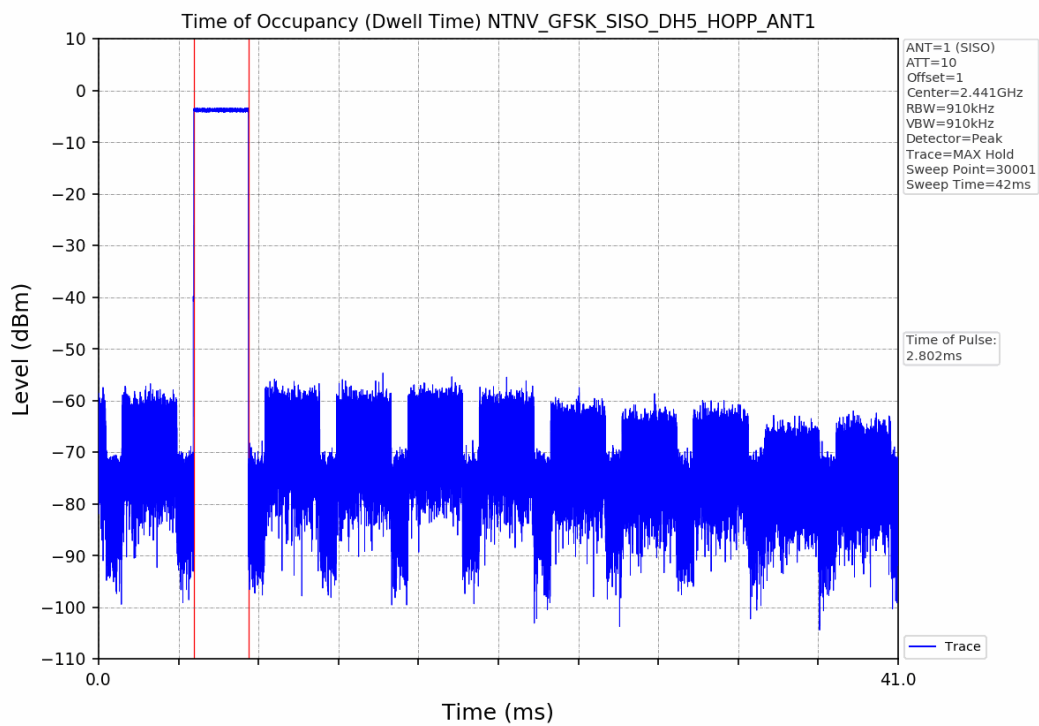
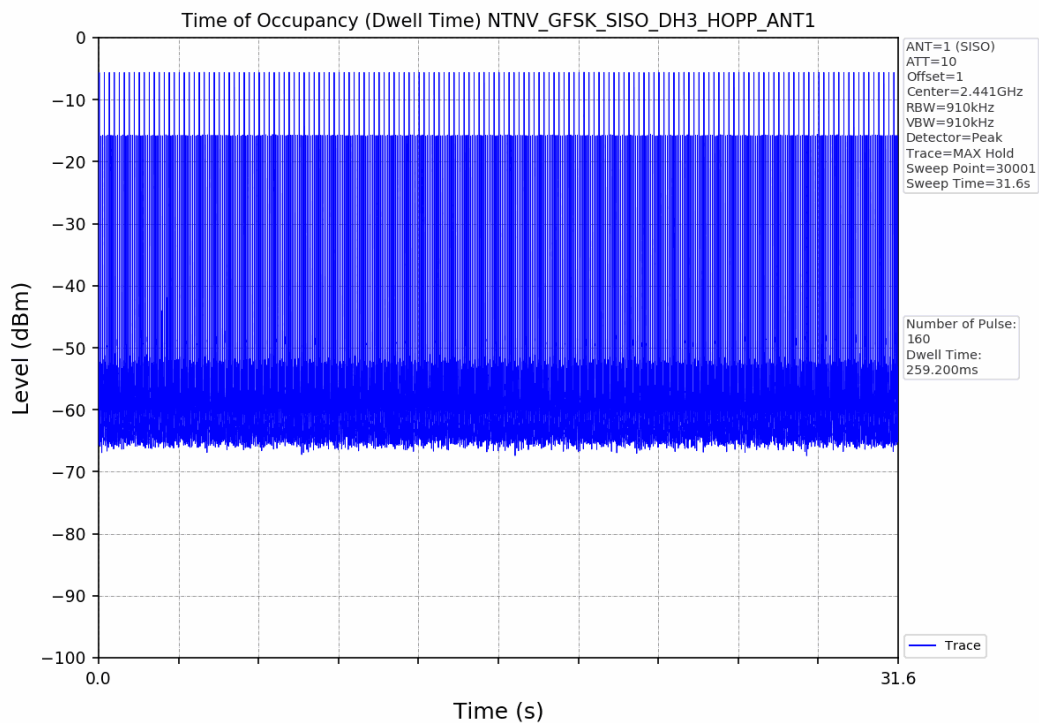
5.1 Test Result

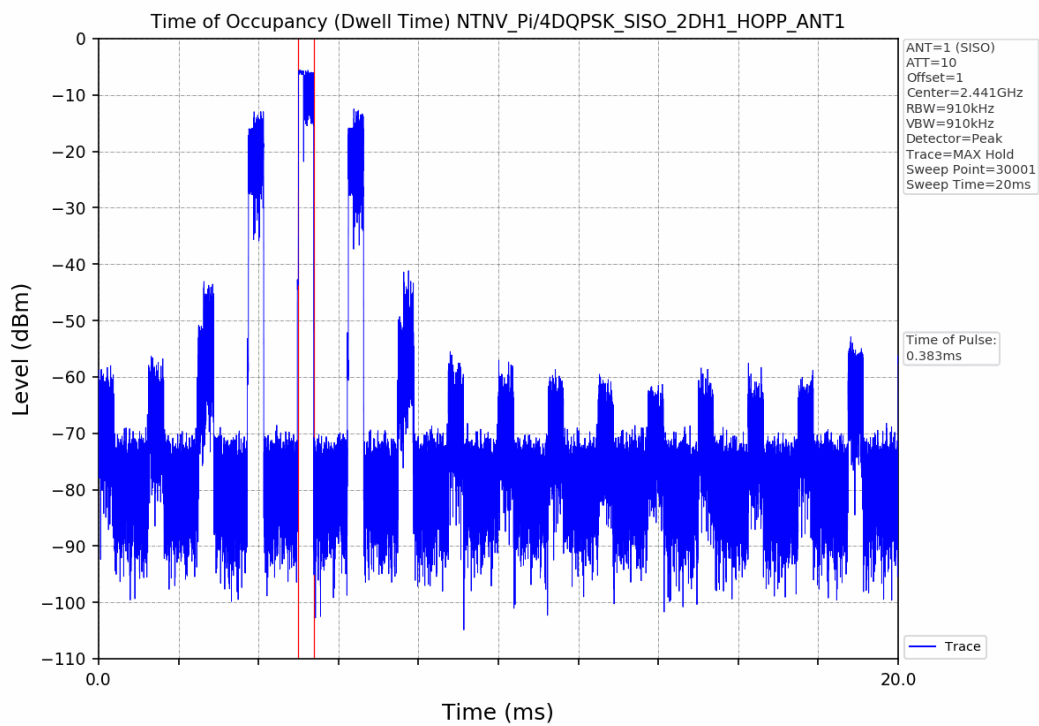
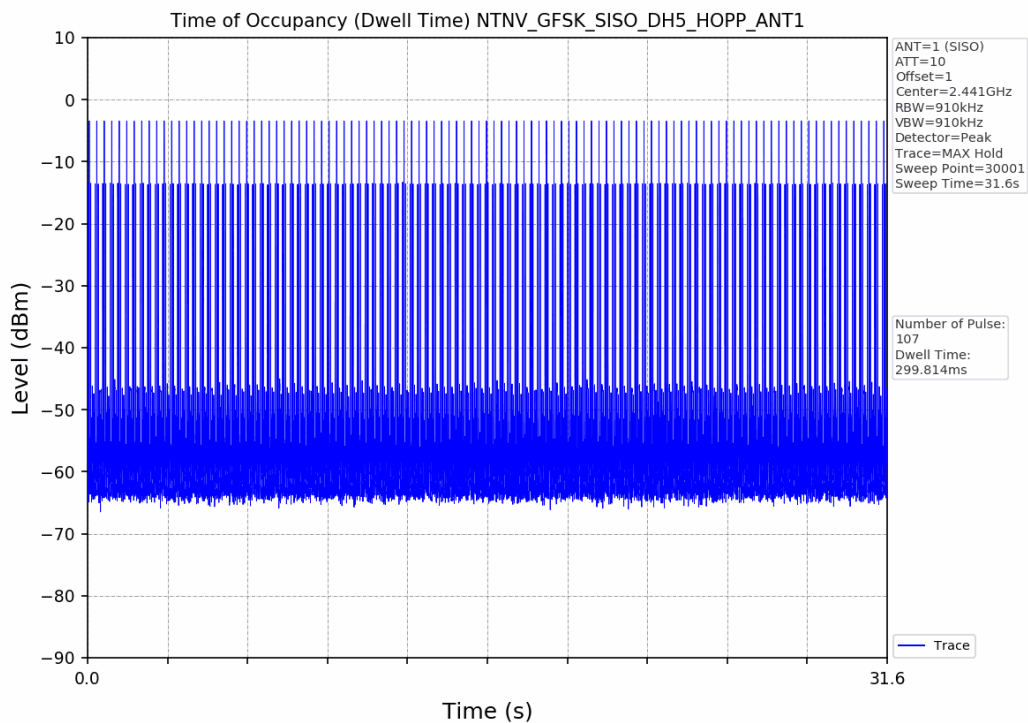
Test Mode	Packet Type	TX Type	ANT No.	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limits (ms)	Verdict
GFSK	DH1	SISO	1	0.375	31.6	320	120.000	≤400	PASS
	DH3	SISO	1	1.620	31.6	160	259.200	≤400	PASS
	DH5	SISO	1	2.802	31.6	107	299.814	≤400	PASS
Pi/4DQ PSK	2DH1	SISO	1	0.383	31.6	320	122.560	≤400	PASS
	2DH3	SISO	1	1.633	31.6	160	261.280	≤400	PASS
	2DH5	SISO	1	2.881	31.6	107	308.267	≤400	PASS
8DPSK	3DH1	SISO	1	0.383	31.6	320	122.560	≤400	PASS
	3DH3	SISO	1	1.632	31.6	160	261.120	≤400	PASS
	3DH5	SISO	1	2.883	31.6	106	305.598	≤400	PASS

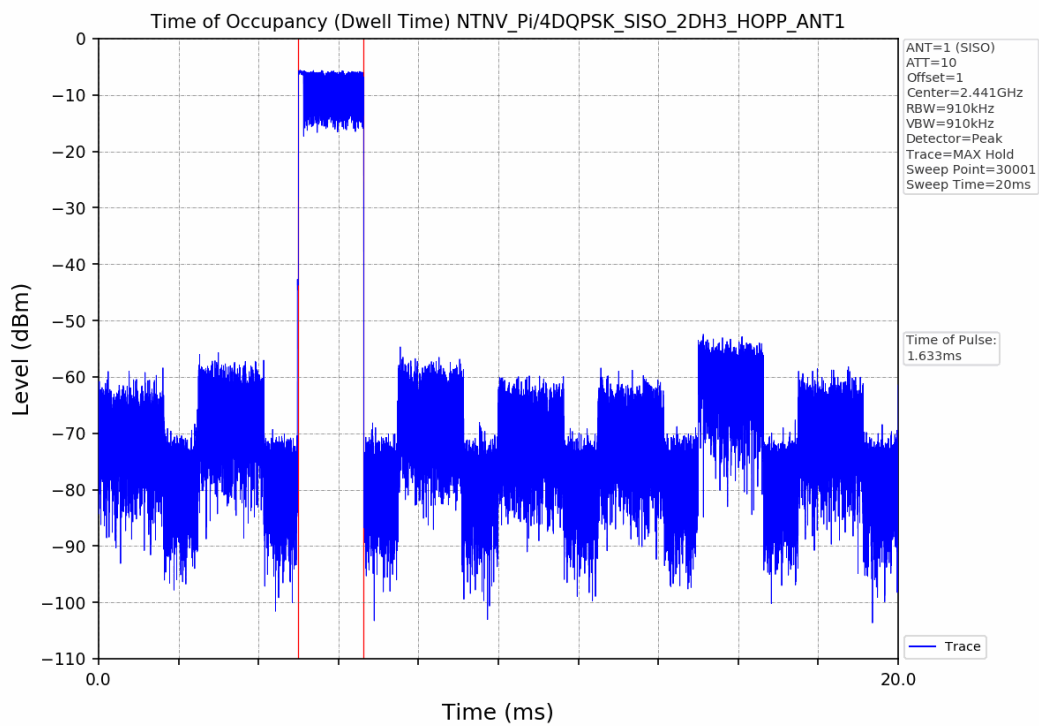
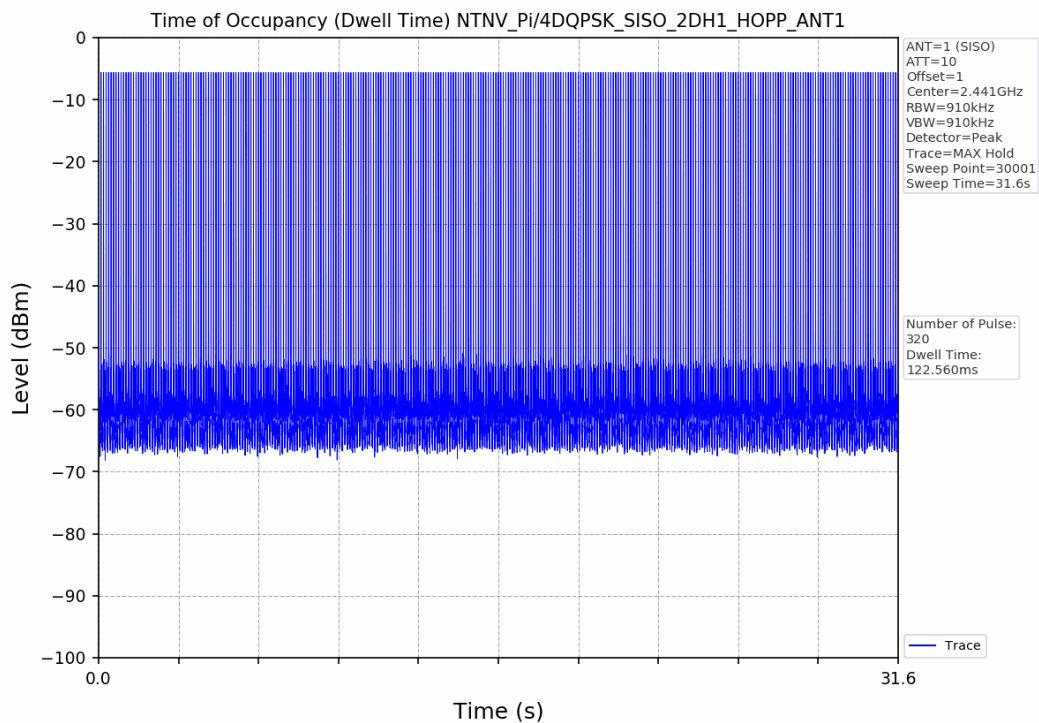
5.2 Test Graph

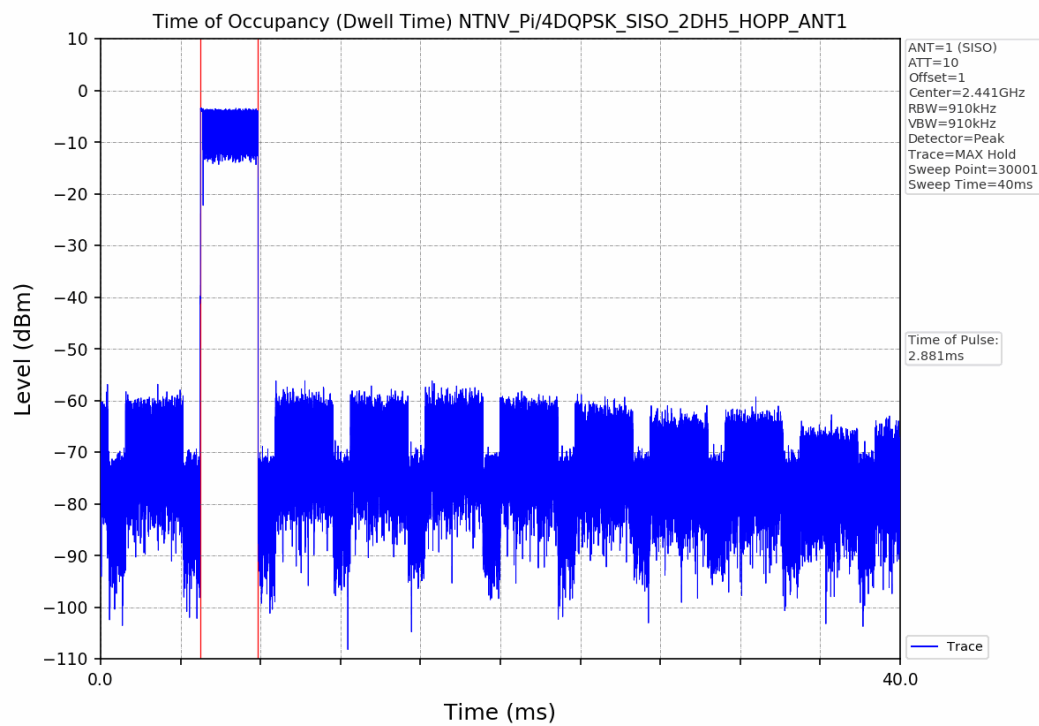
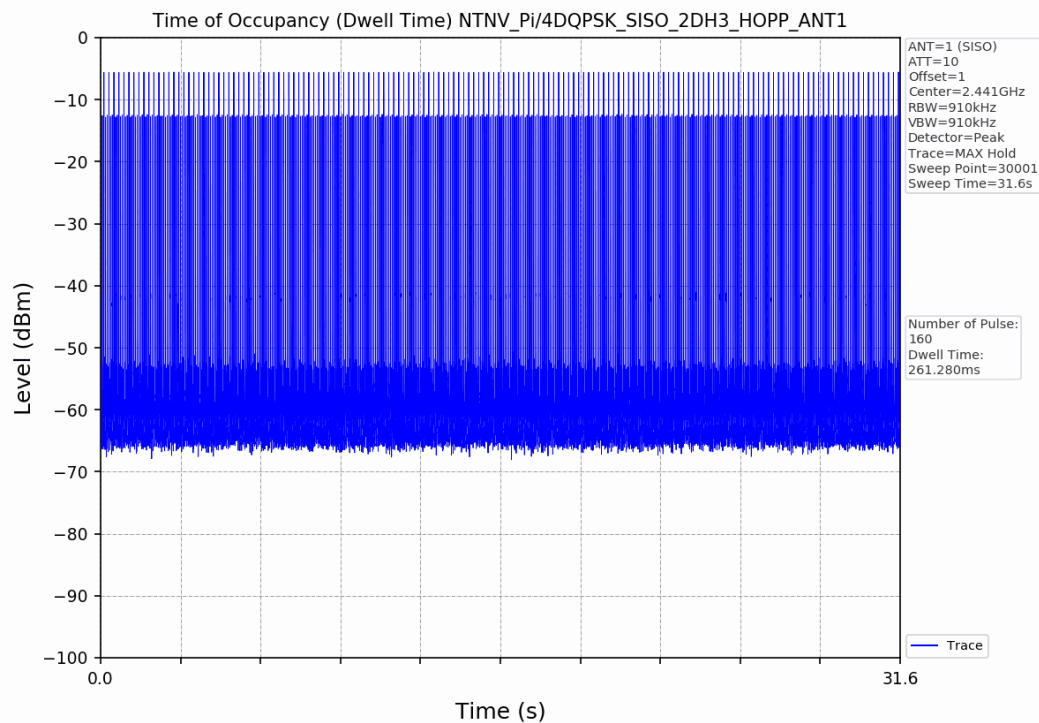


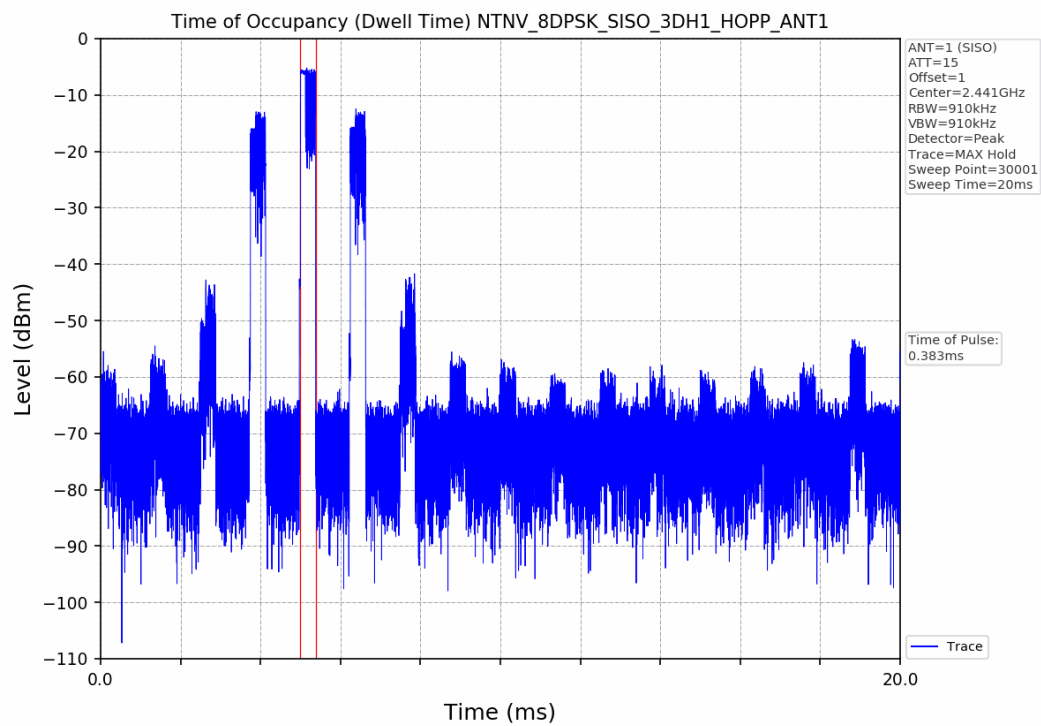
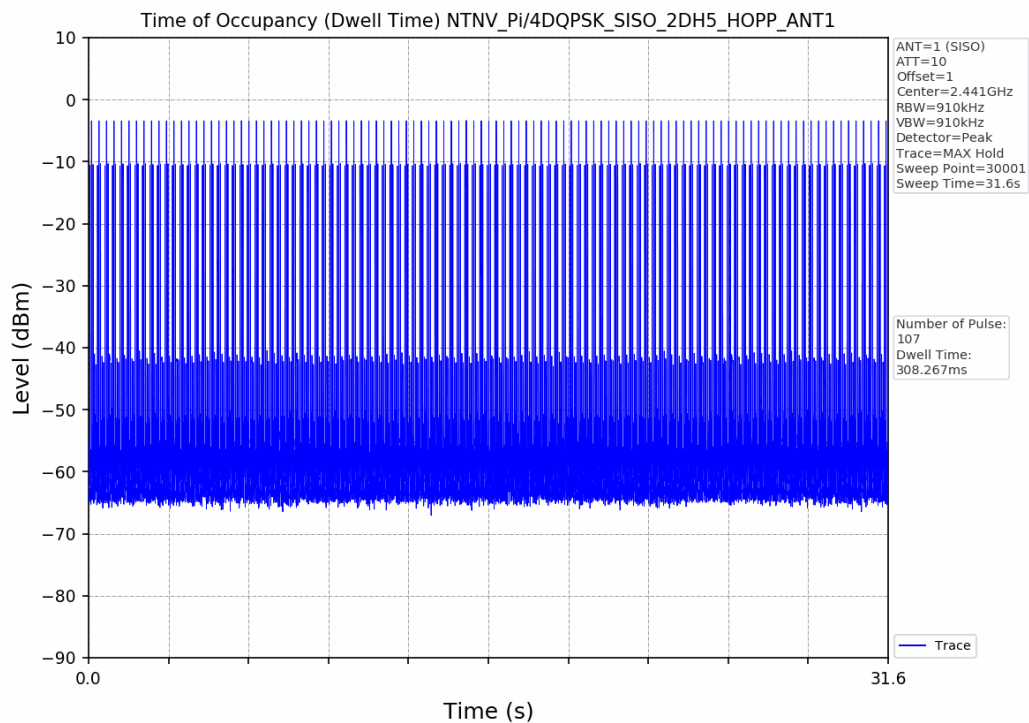


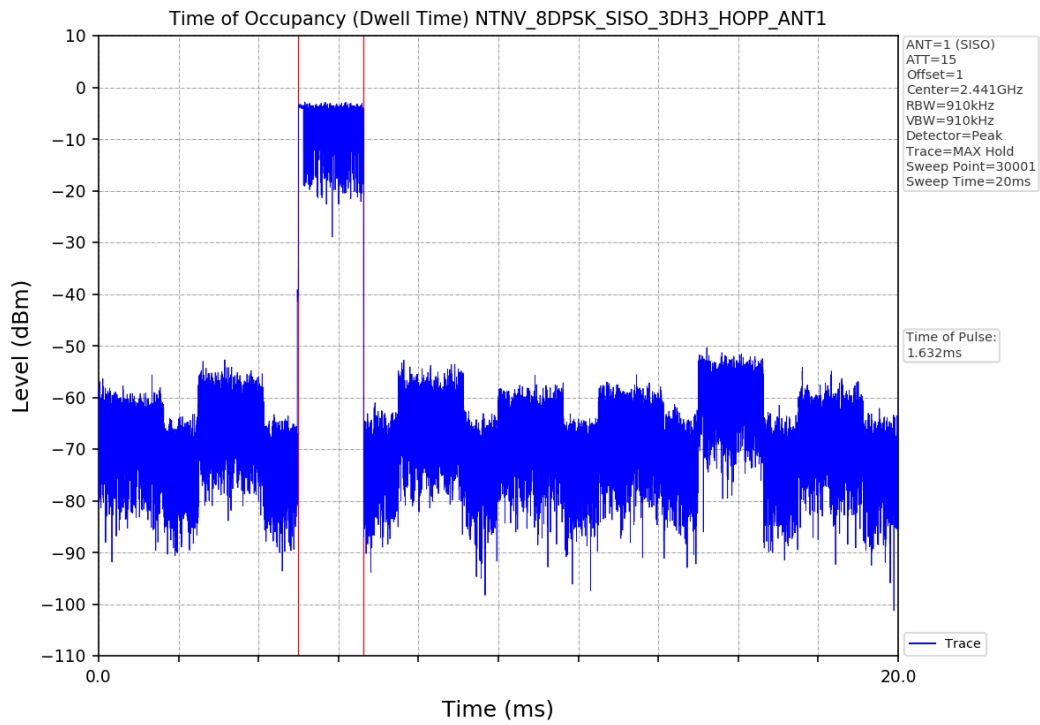
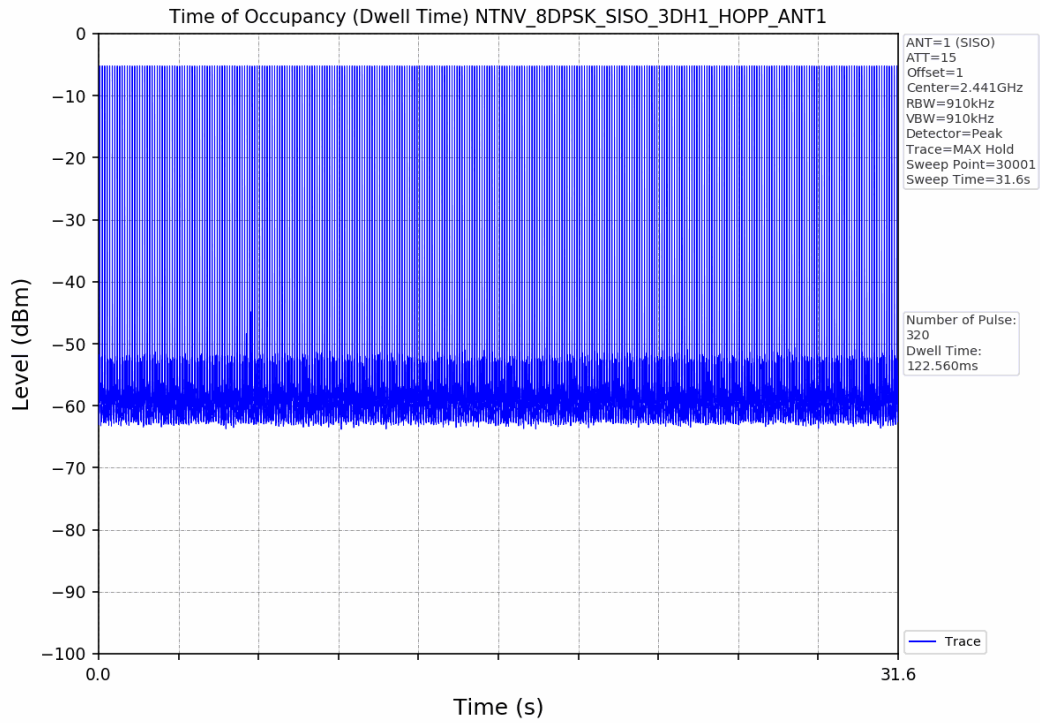


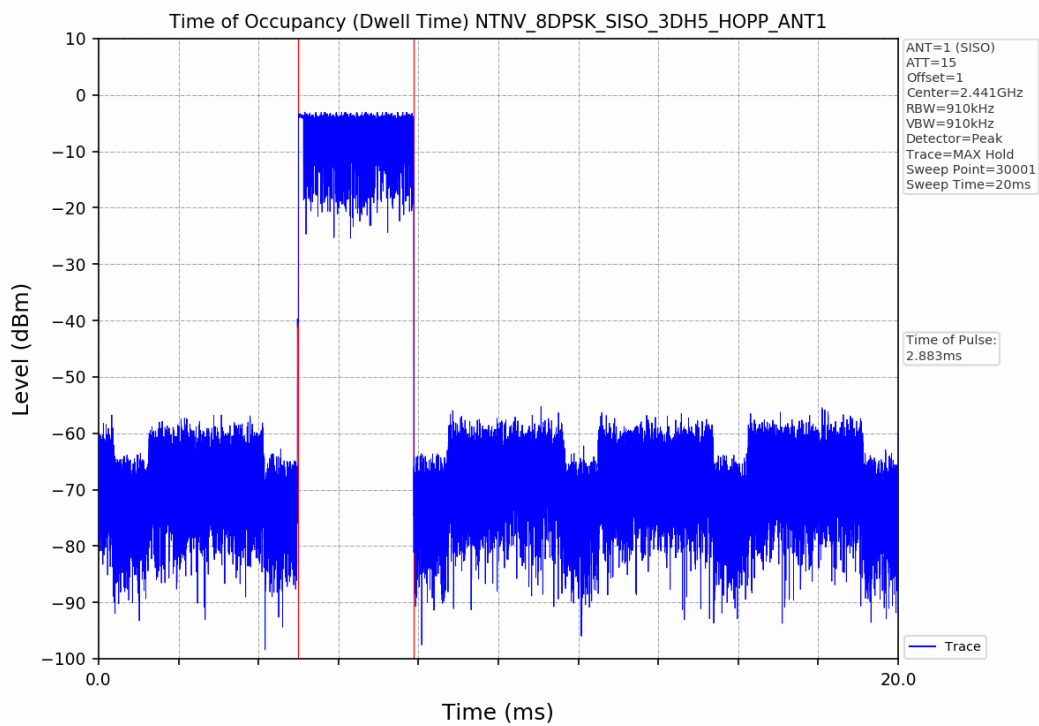
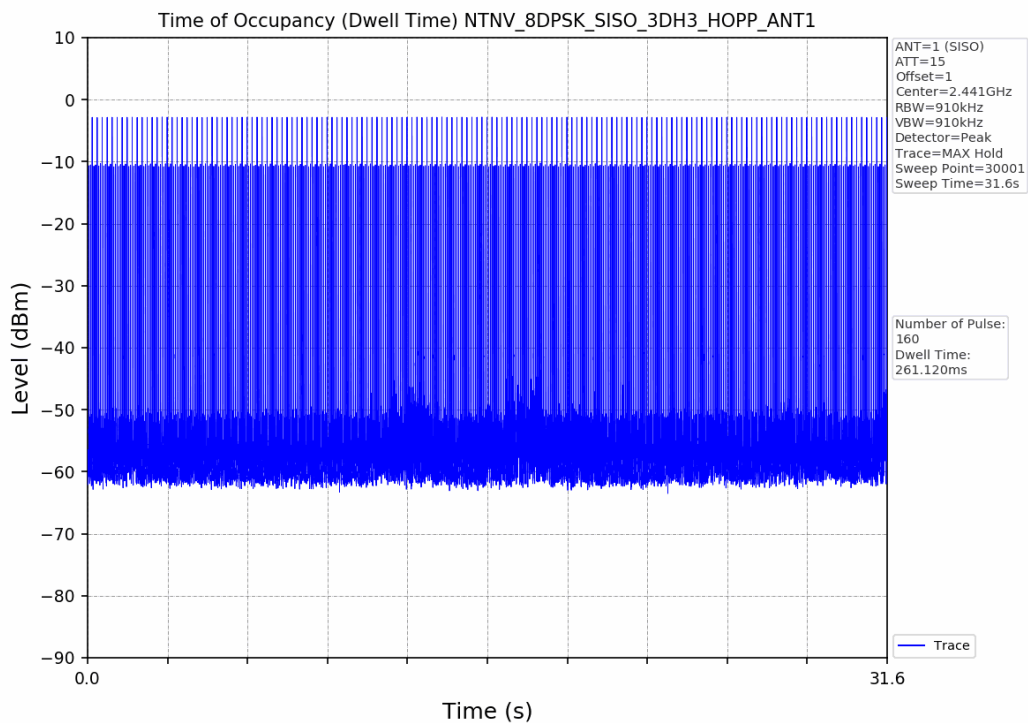


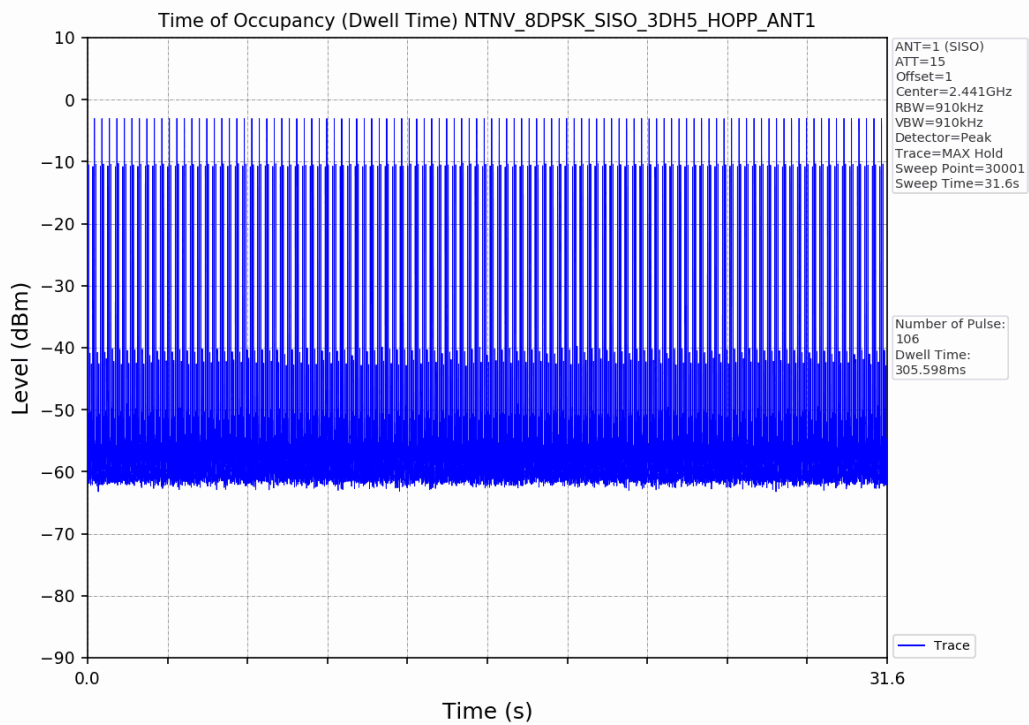










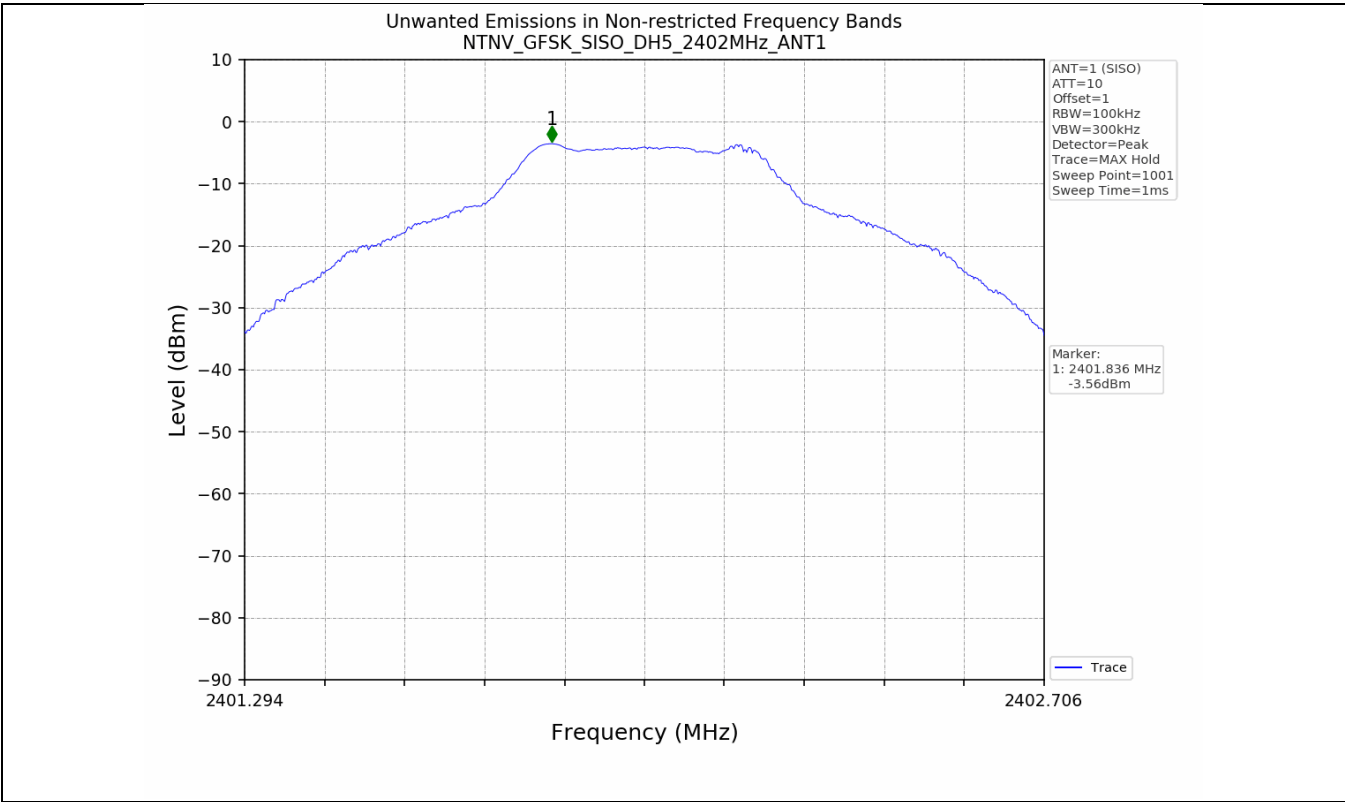


6. Unwanted Emissions in Non-restricted Frequency Bands

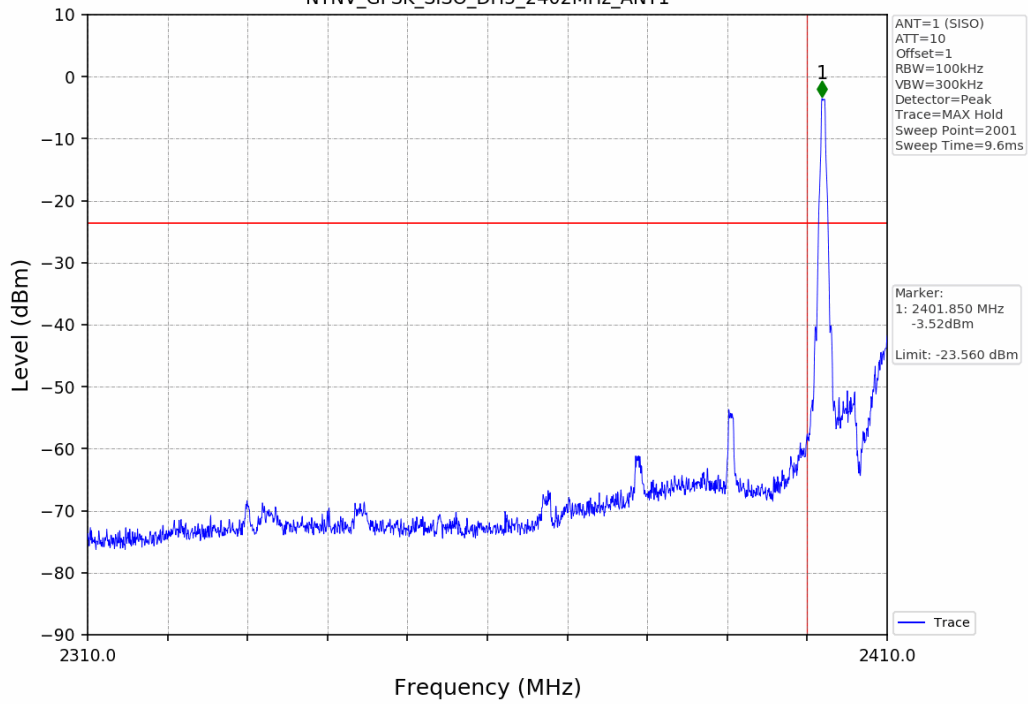
6.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
GFSK	2402	SISO	1	Refer to test graph	-23.56	PASS
	2441	SISO	1	Refer to test graph	-23.56	PASS
	2480	SISO	1	Refer to test graph	-23.56	PASS
	Hopping	SISO	1	Refer to test graph	-23.56	PASS
Pi/4DQPSK	2402	SISO	1	Refer to test graph	-23.64	PASS
	2441	SISO	1	Refer to test graph	-23.64	PASS
	2480	SISO	1	Refer to test graph	-23.64	PASS
	Hopping	SISO	1	Refer to test graph	-23.64	PASS
8DPSK	2402	SISO	1	Refer to test graph	-23.48	PASS
	2441	SISO	1	Refer to test graph	-23.48	PASS
	2480	SISO	1	Refer to test graph	-23.48	PASS
	Hopping	SISO	1	Refer to test graph	-23.48	PASS

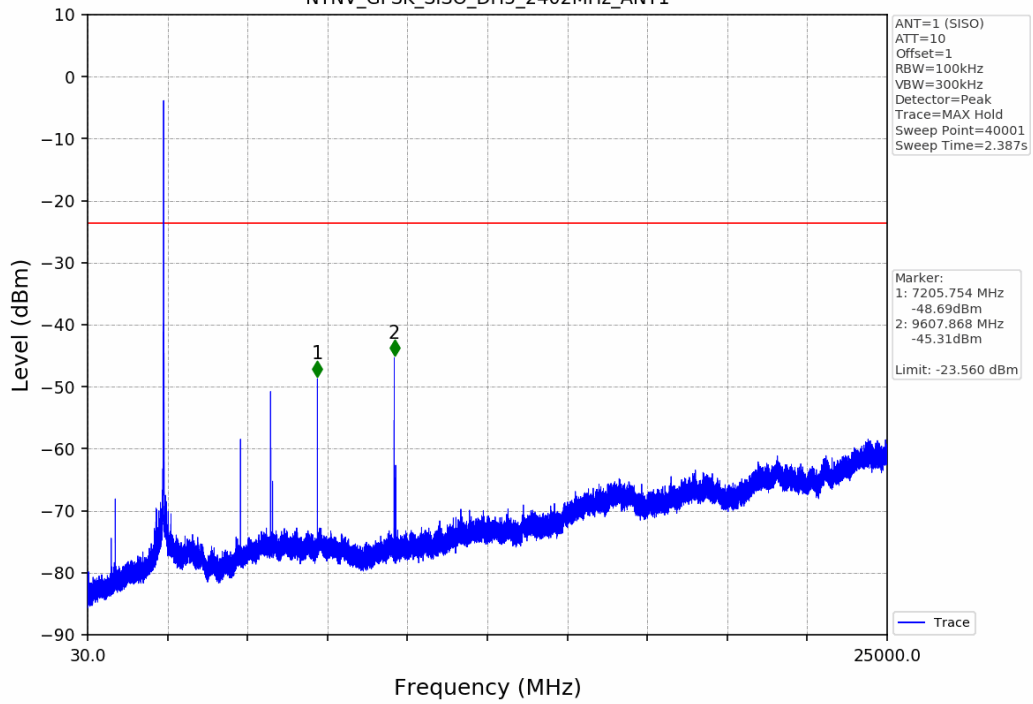
6.2 Test Graph



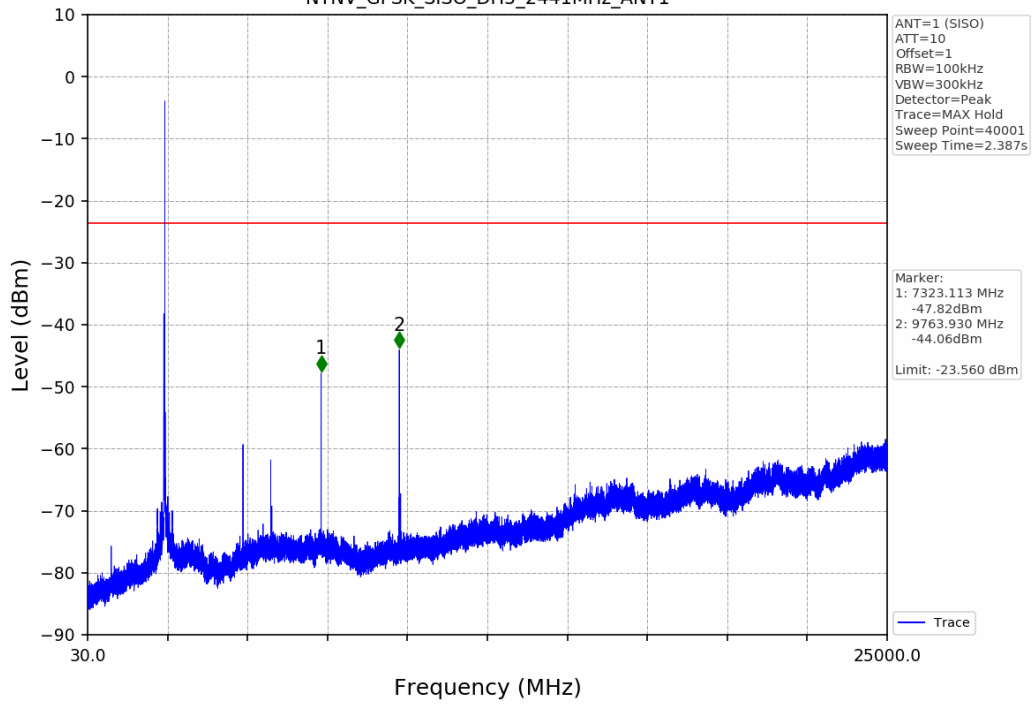
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_GFSK_SISO_DH5_2402MHz_ANT1



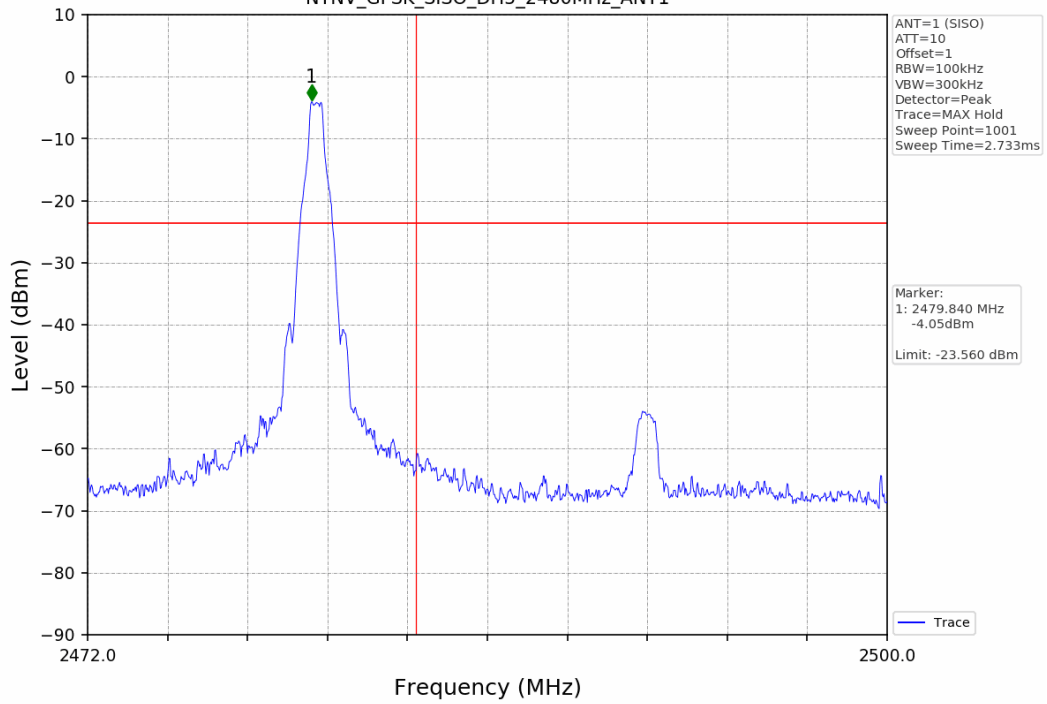
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_GFSK_SISO_DH5_2402MHz_ANT1

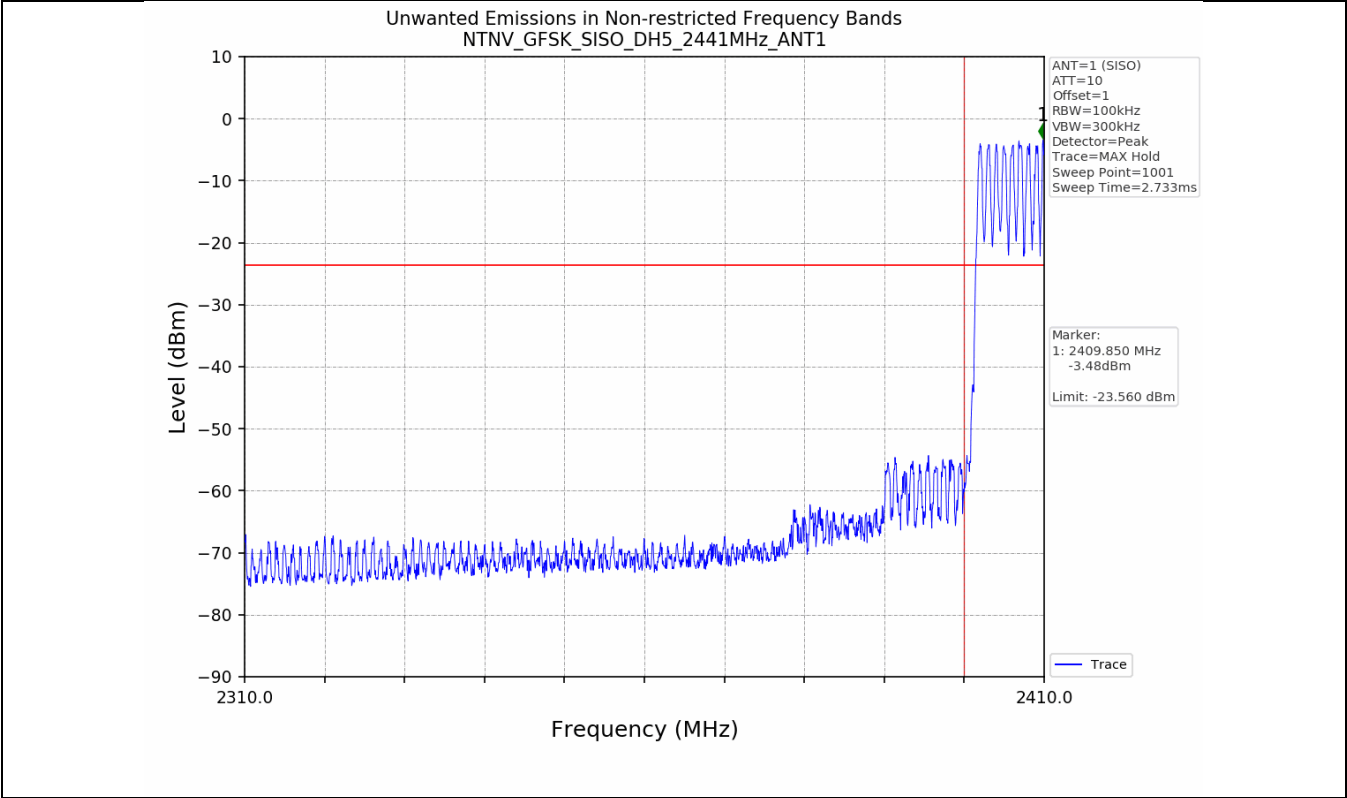
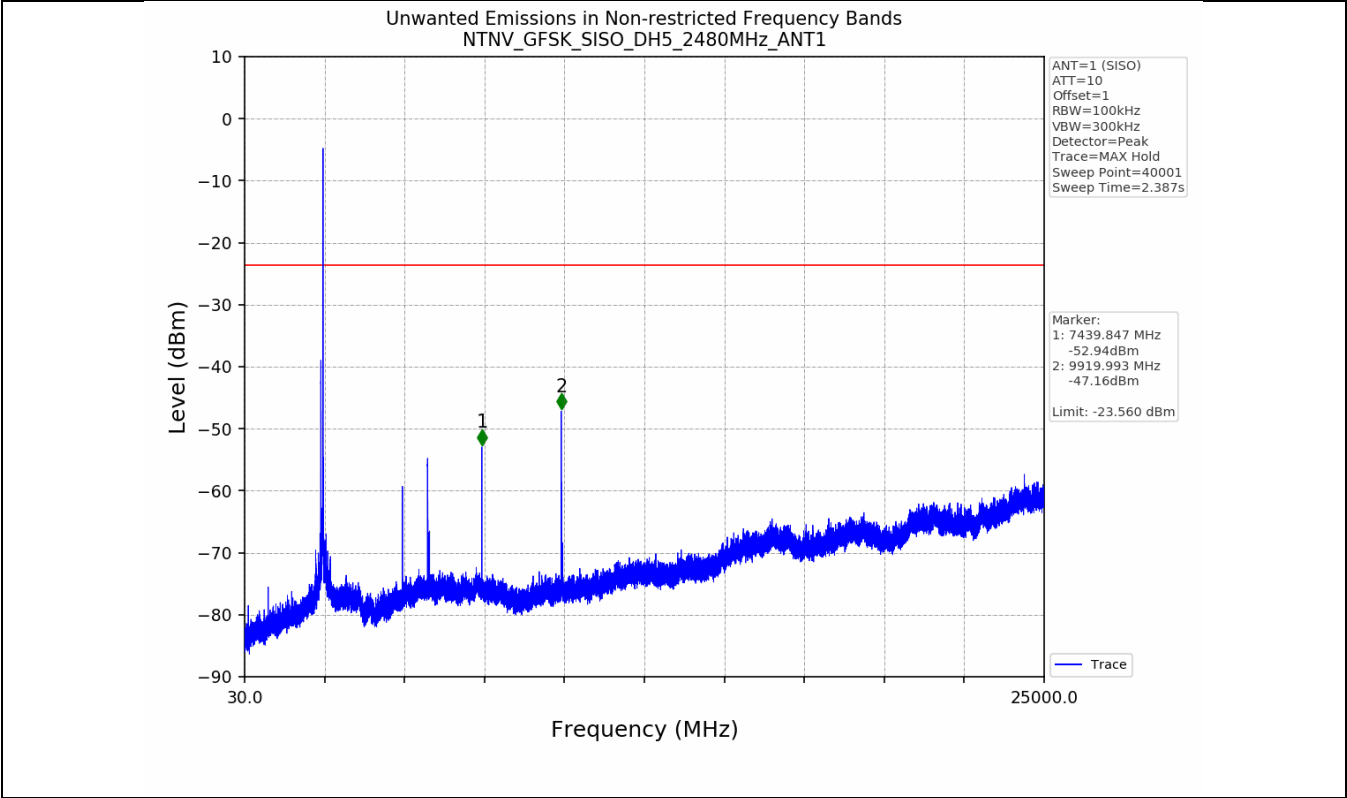


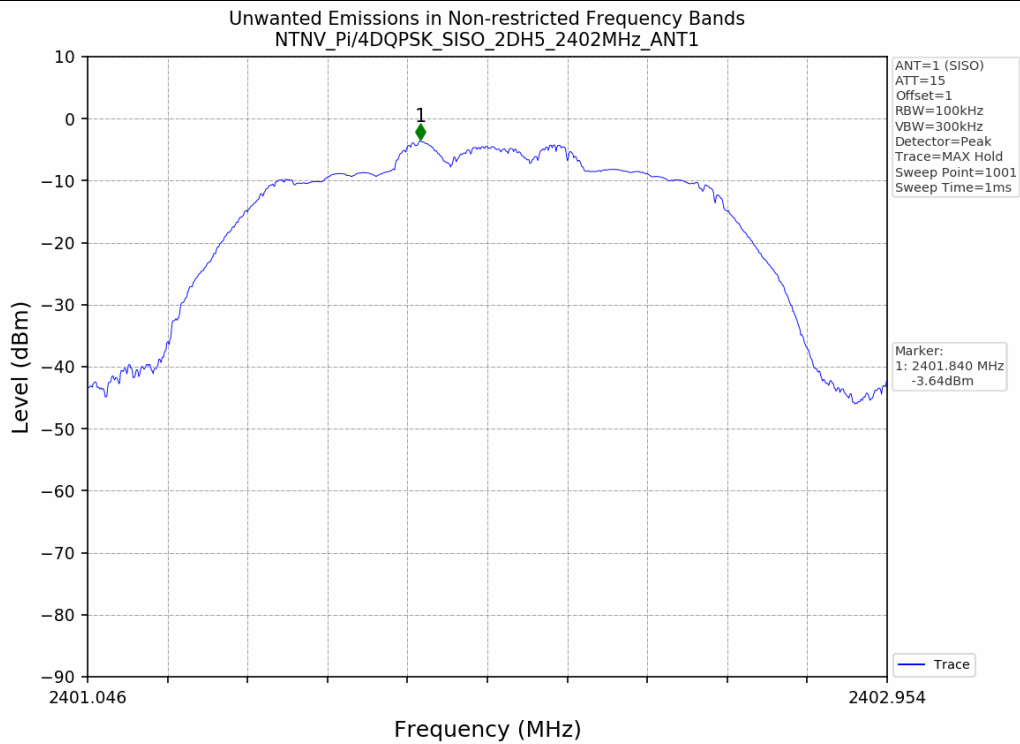
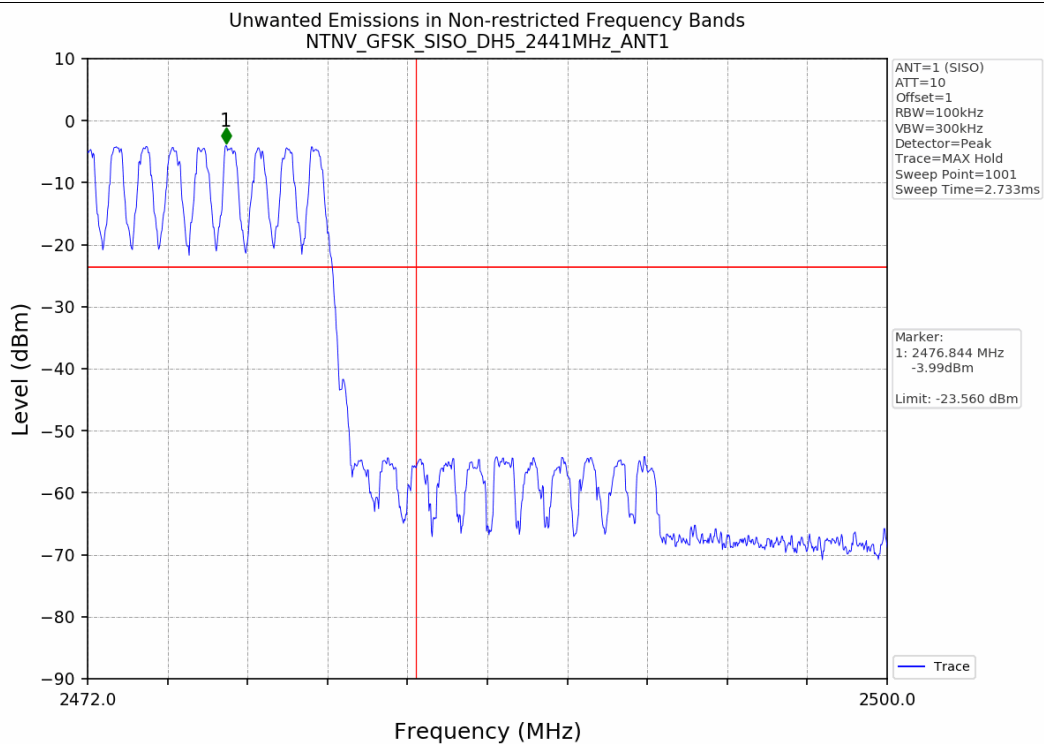
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_GFSK_SISO_DH5_2441MHz_ANT1



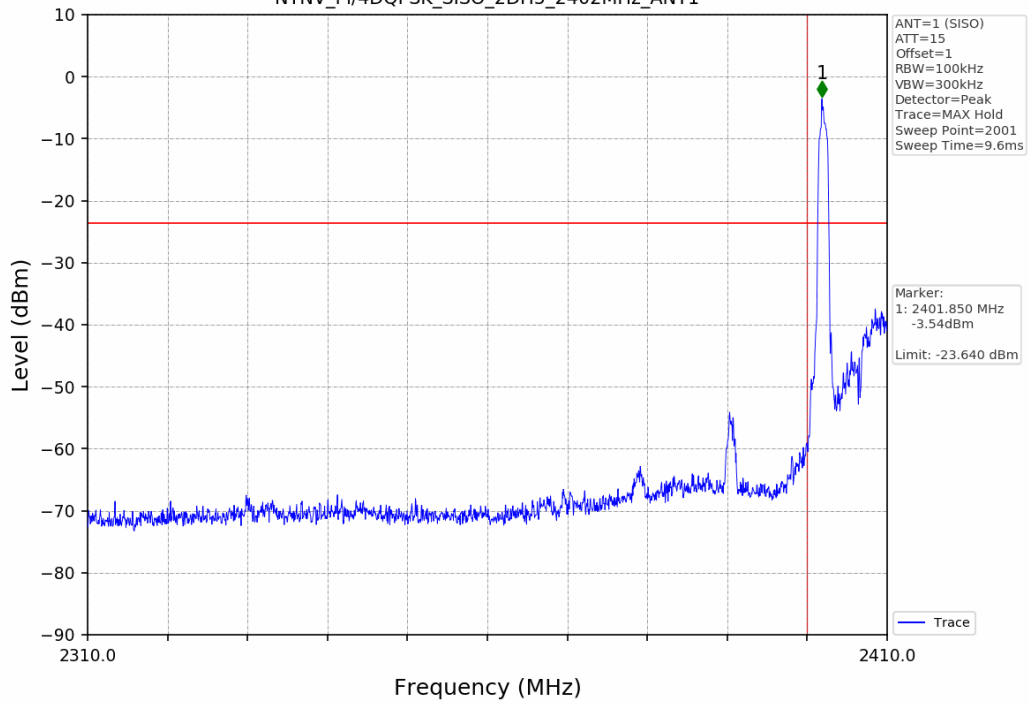
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_GFSK_SISO_DH5_2480MHz_ANT1



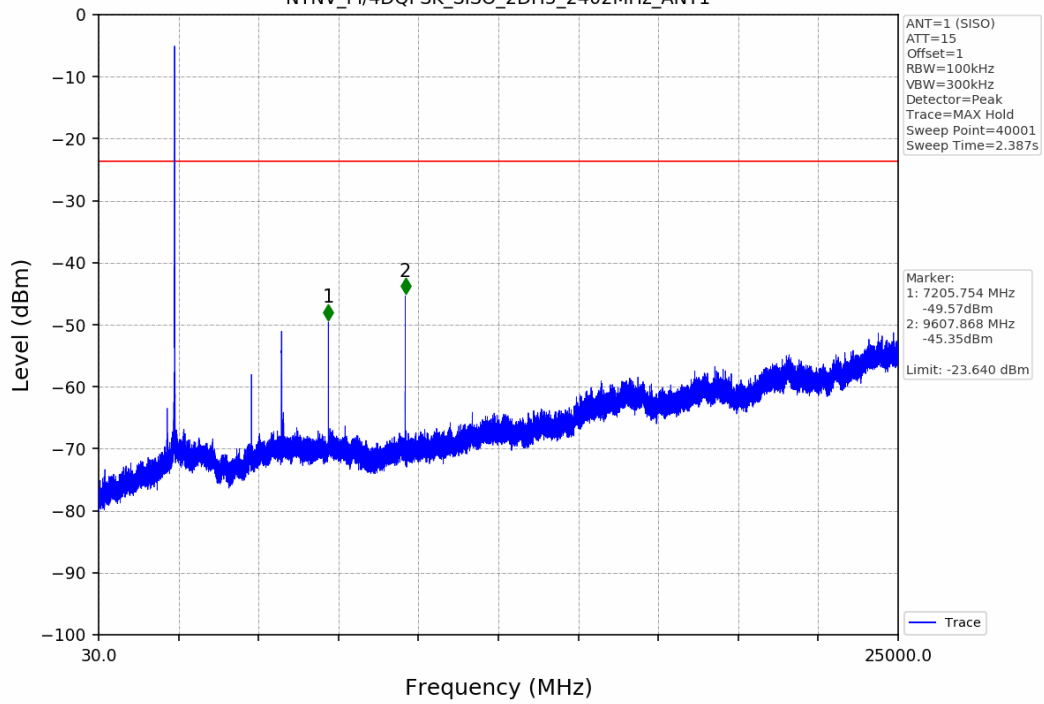




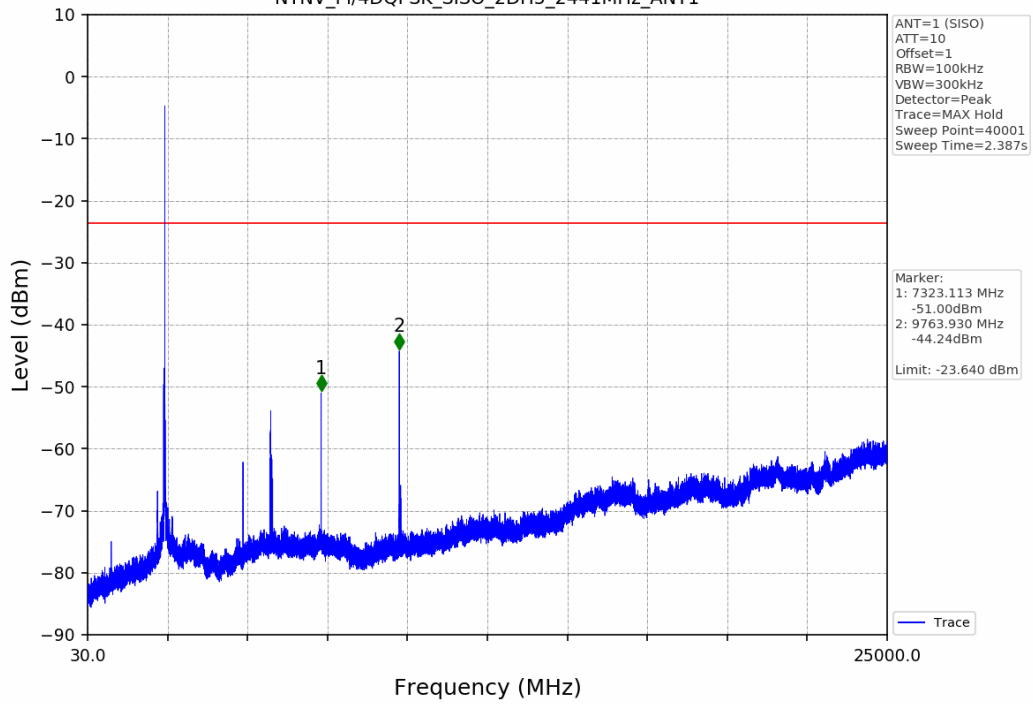
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_Pi/4DQPSK_SISO_2DH5_2402MHz_ANT1



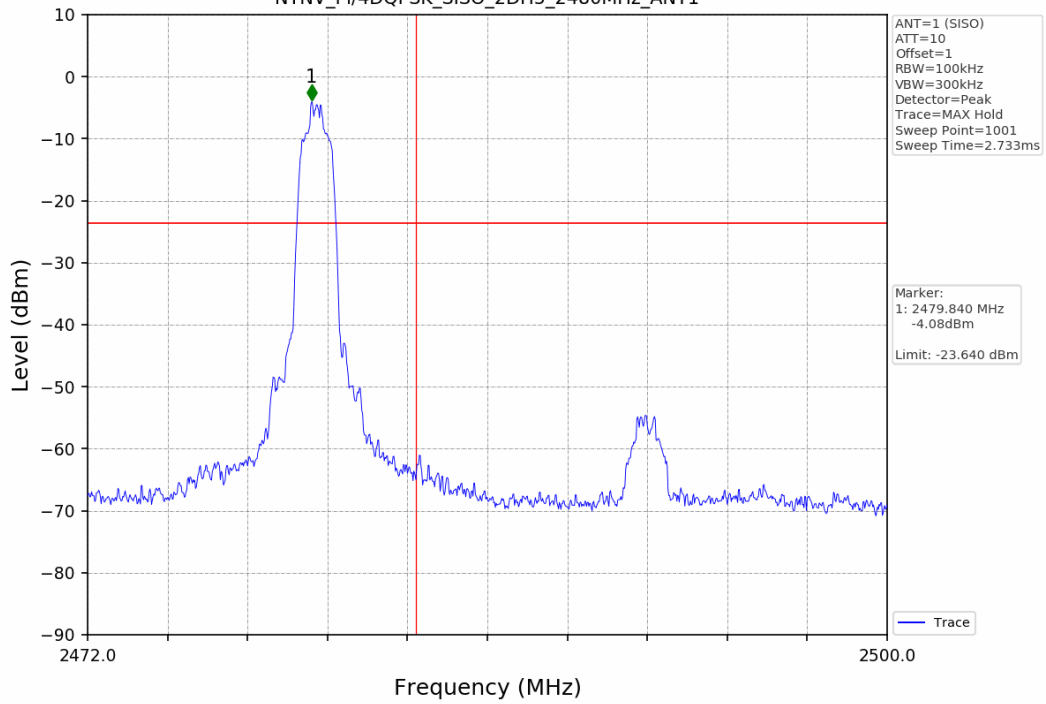
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_Pi/4DQPSK_SISO_2DH5_2402MHz_ANT1

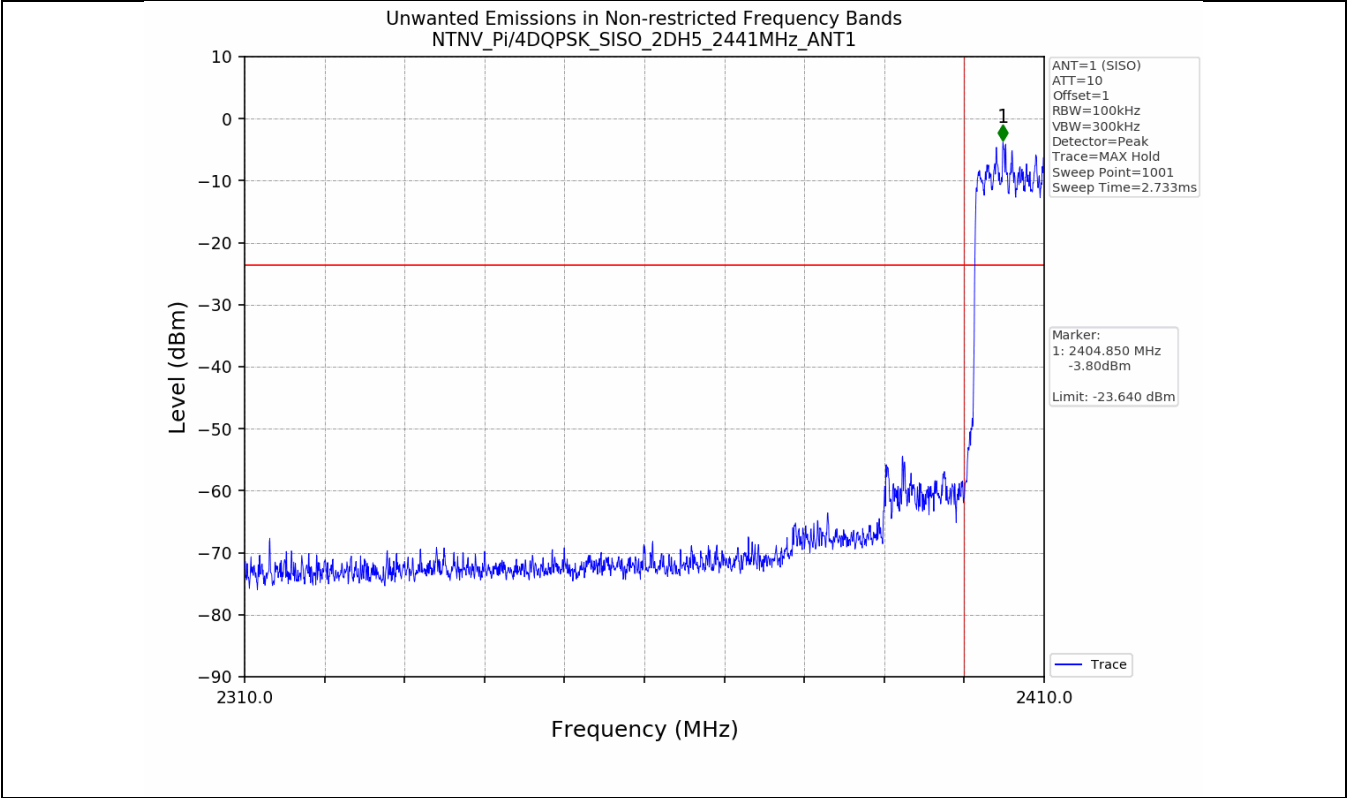
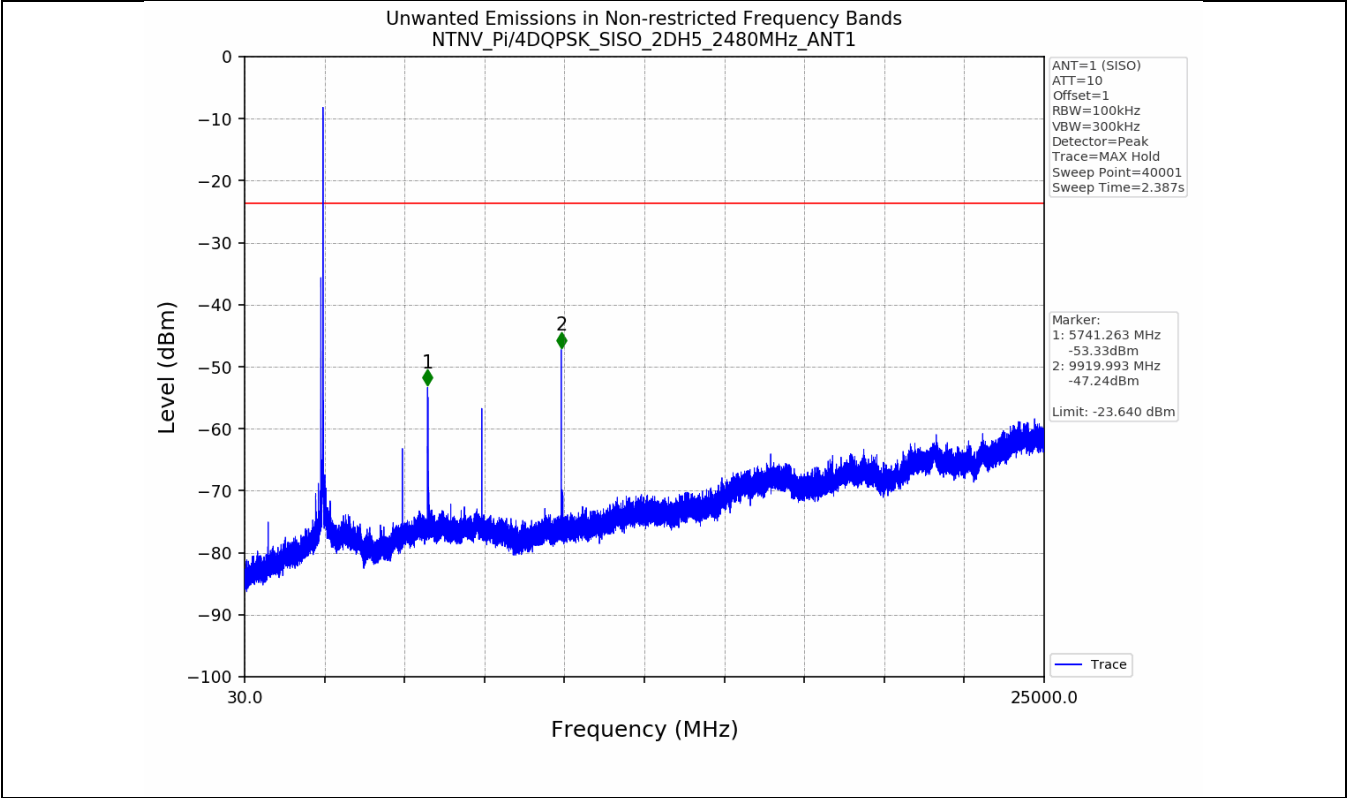


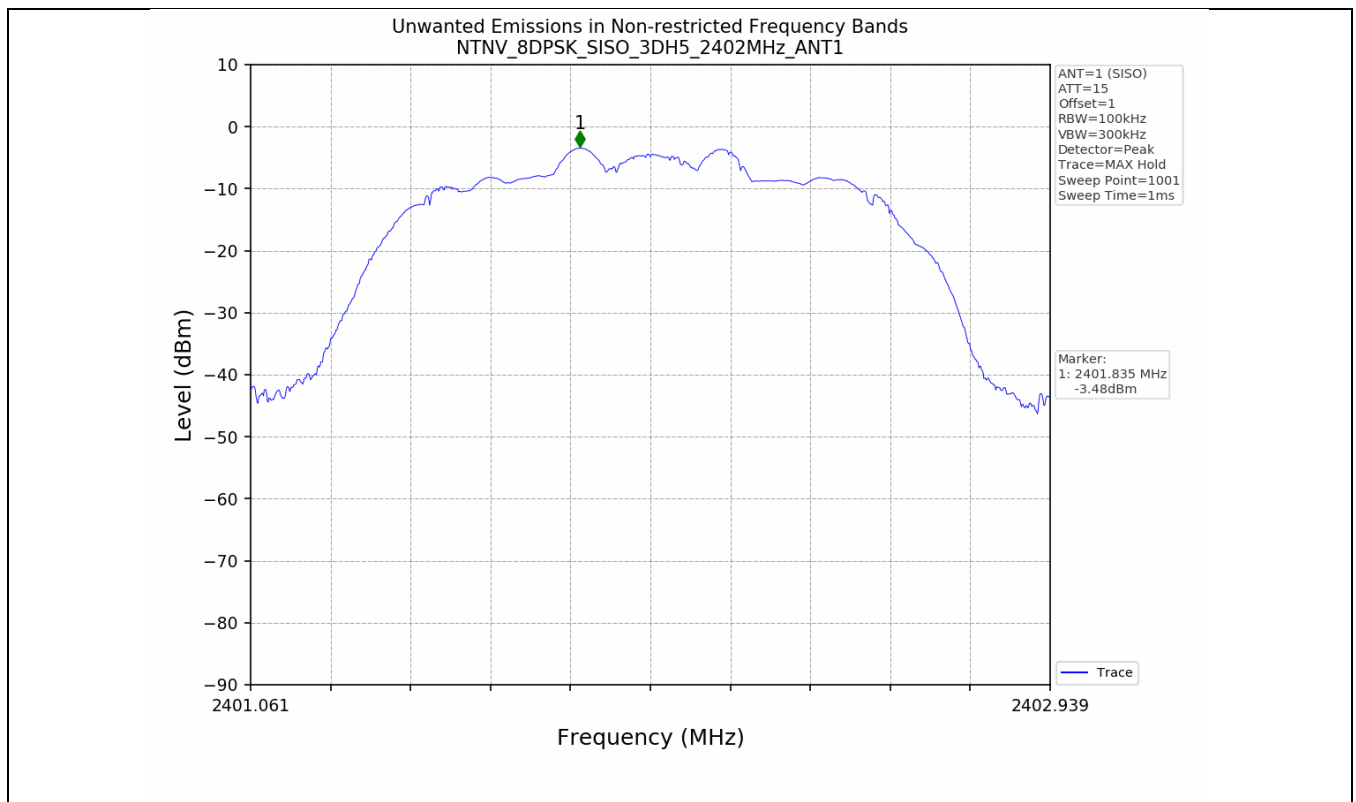
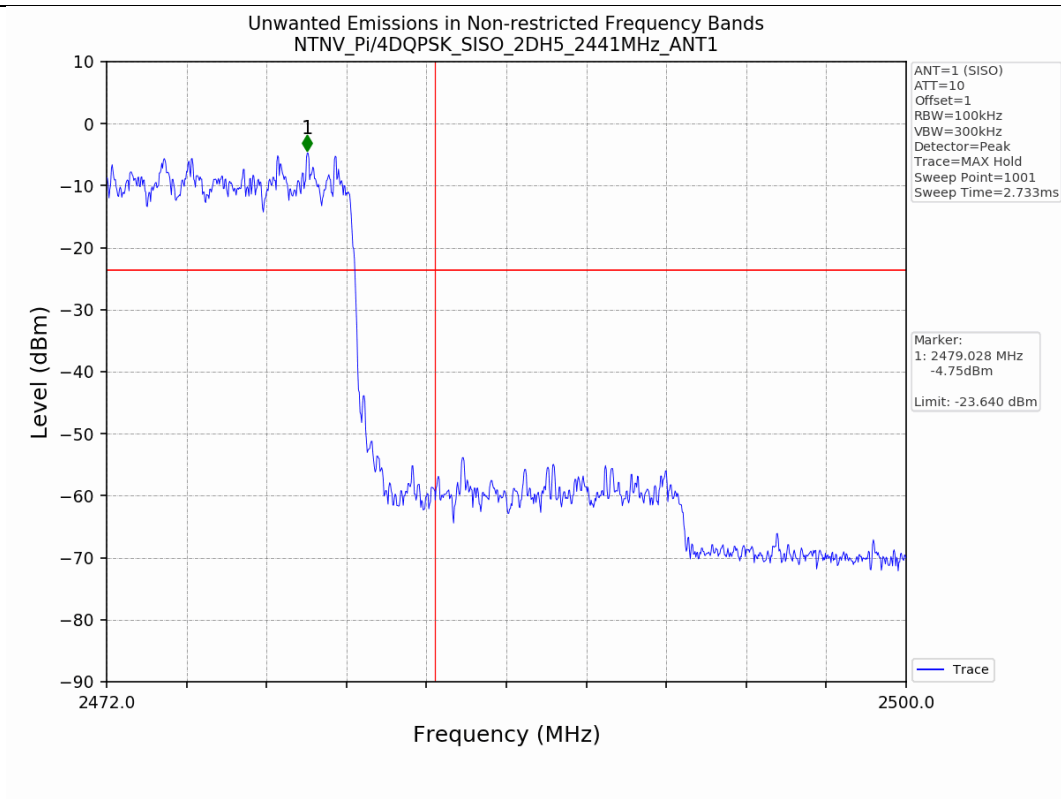
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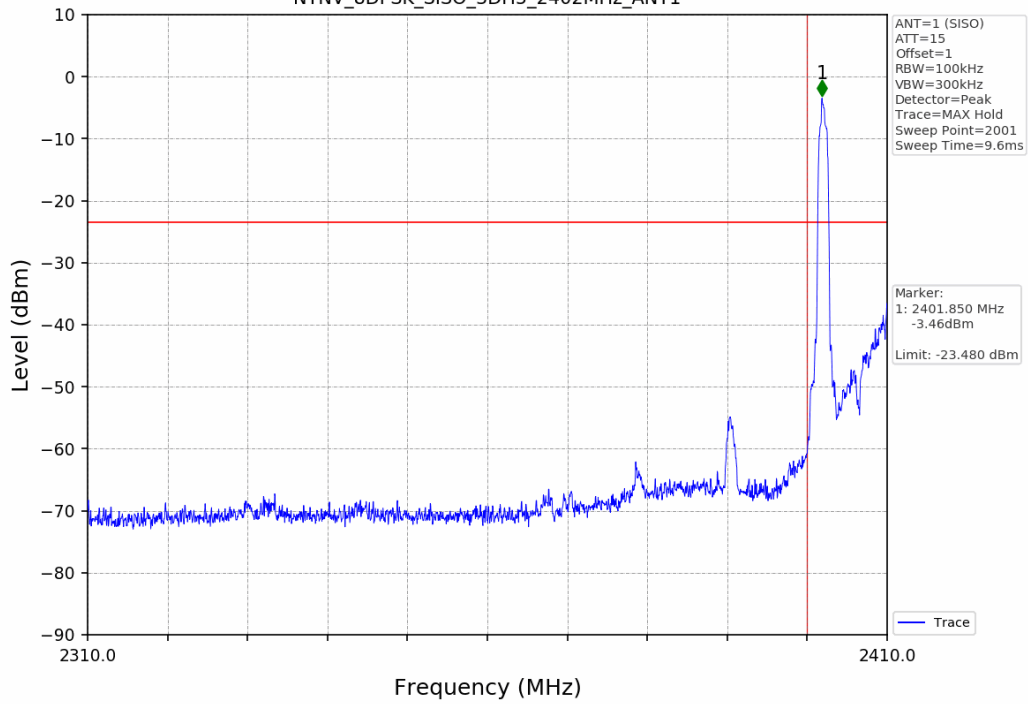
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_Pi/4DQPSK_SISO_2DH5_2480MHz_ANT1



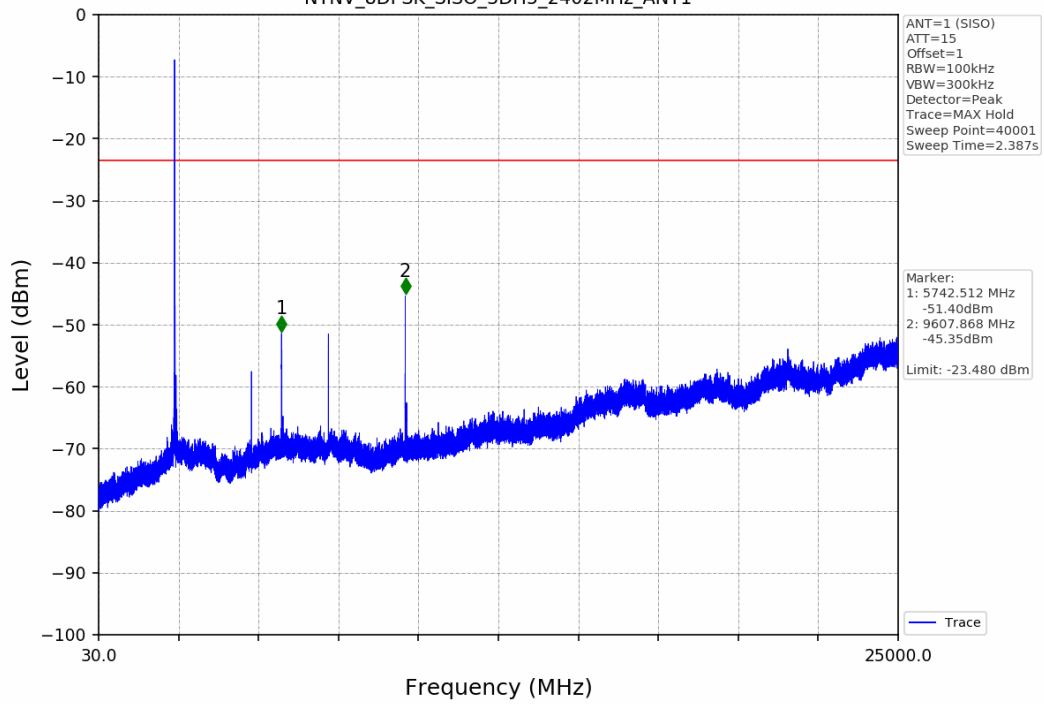


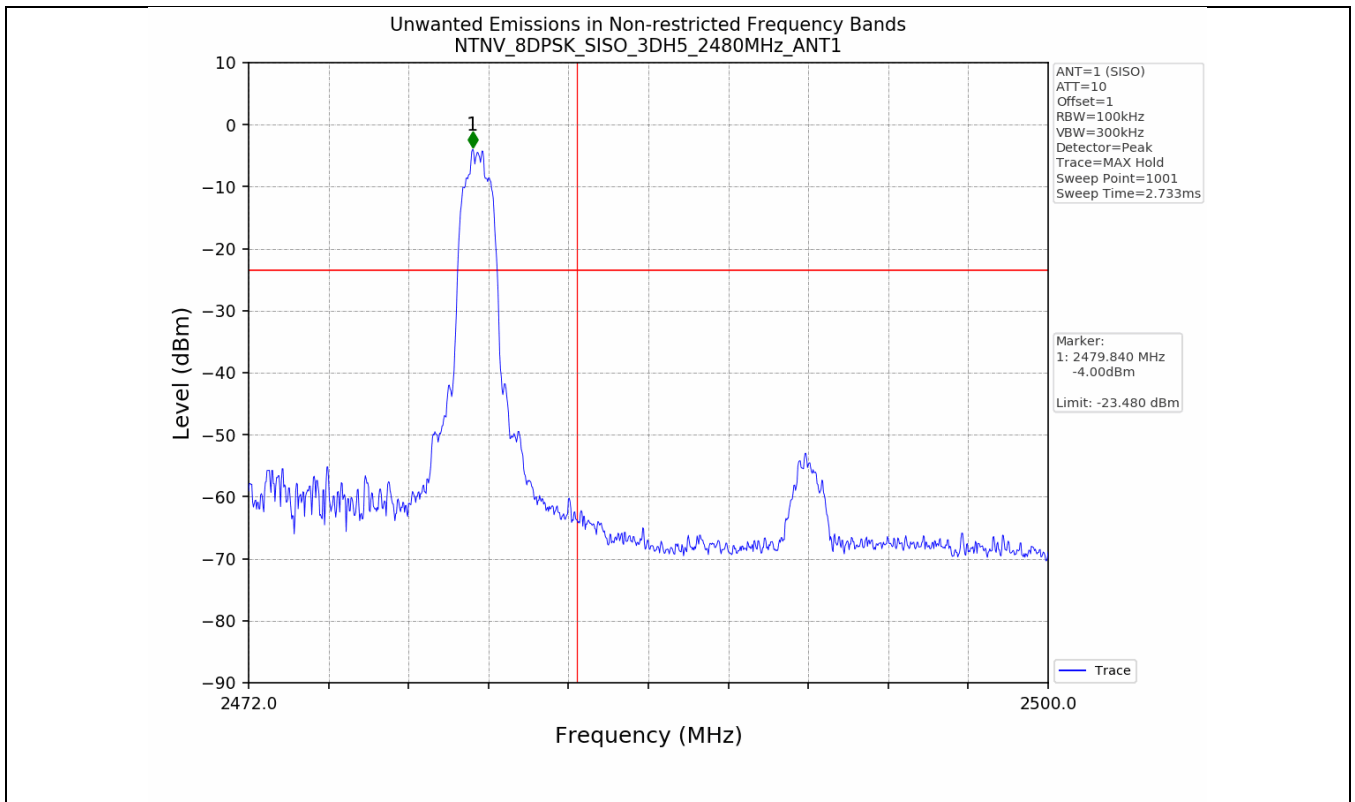
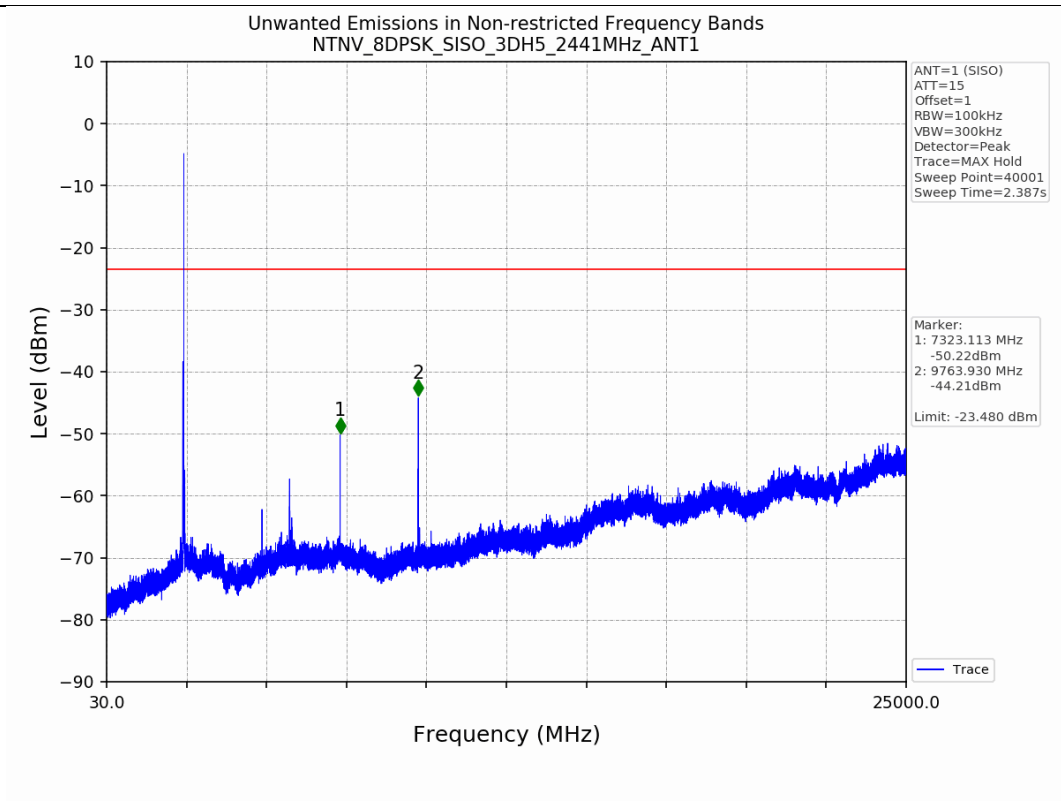


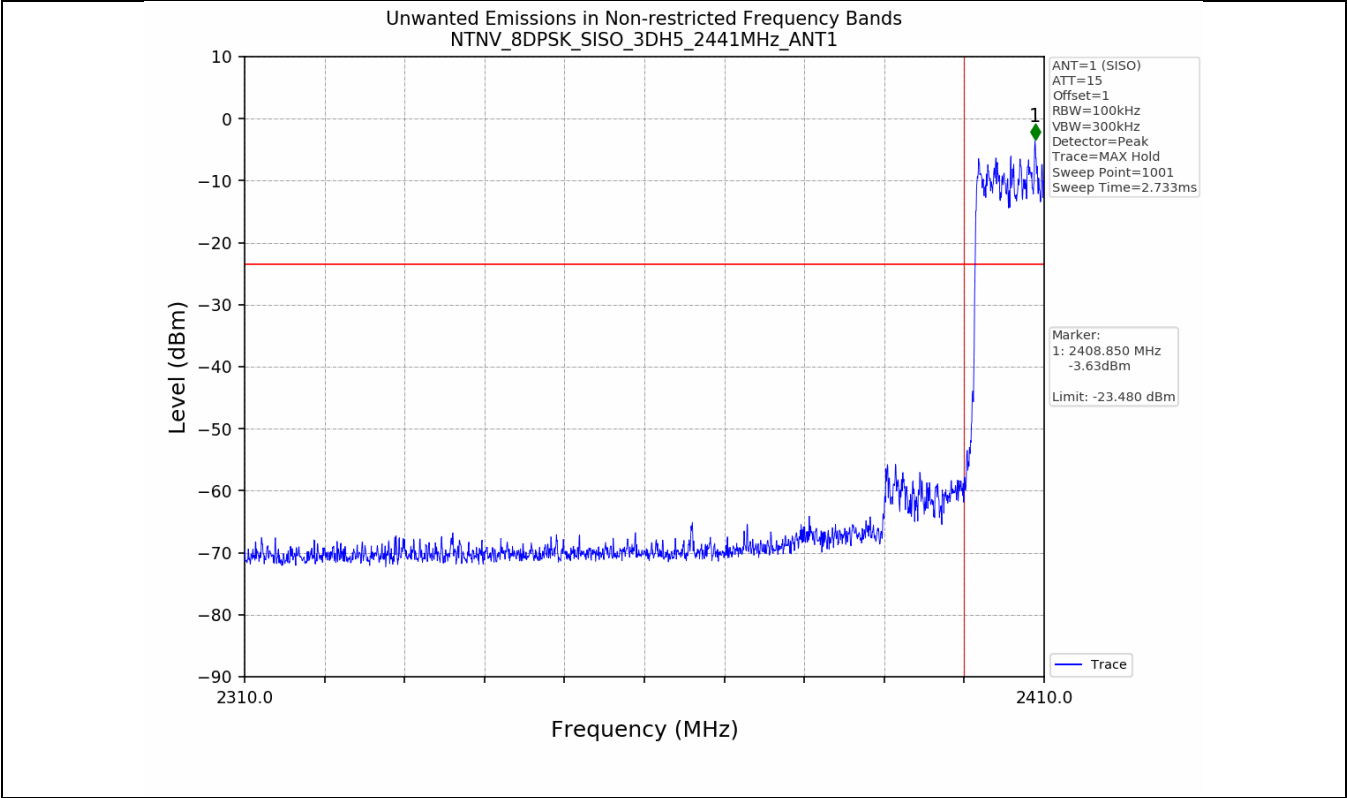
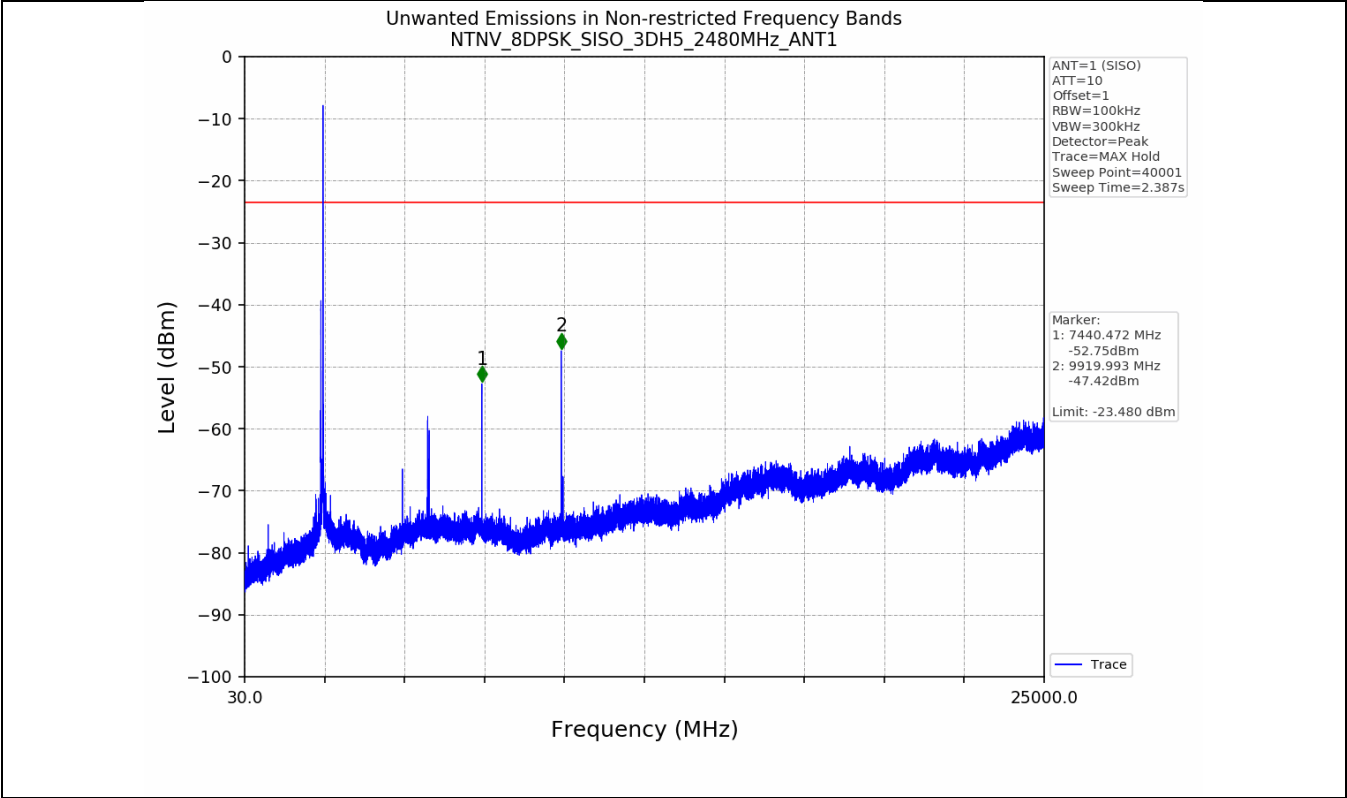
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_8DPSK_SISO_3DH5_2402MHz_ANT1



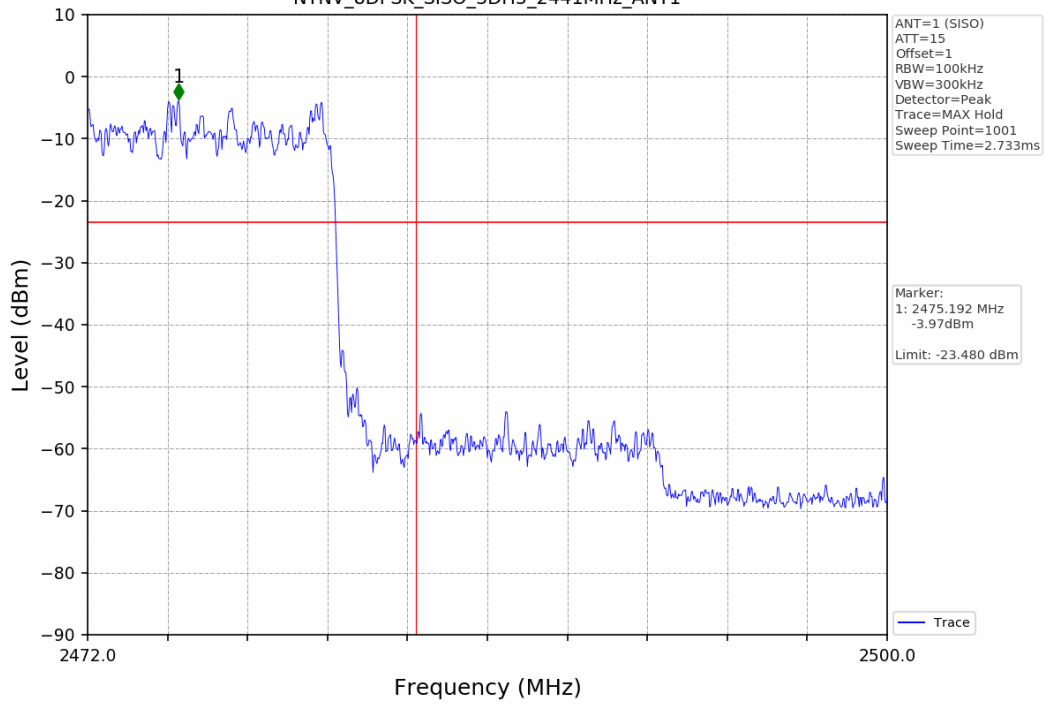
Unwanted Emissions in Non-restricted Frequency Bands
NTNV_8DPSK_SISO_3DH5_2402MHz_ANT1







Unwanted Emissions in Non-restricted Frequency Bands
NTNV_8DPSK_SISO_3DH5_2441MHz_ANT1



7. Frequency Error

7.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT	Measured Frequency (MHz)		Verdict
				Test Result	Limit	
GFSK	2402	SISO	1	2402.00	2400-2483.5	PASS
	2441	SISO	1	2441.01	2400-2483.5	PASS
	2480	SISO	1	2480.01	2400-2483.5	PASS
Pi/4DQPSK	2402	SISO	1	2402.00	2400-2483.5	PASS
	2441	SISO	1	2441.00	2400-2483.5	PASS
	2480	SISO	1	2480.00	2400-2483.5	PASS

7.2 Test Graph

