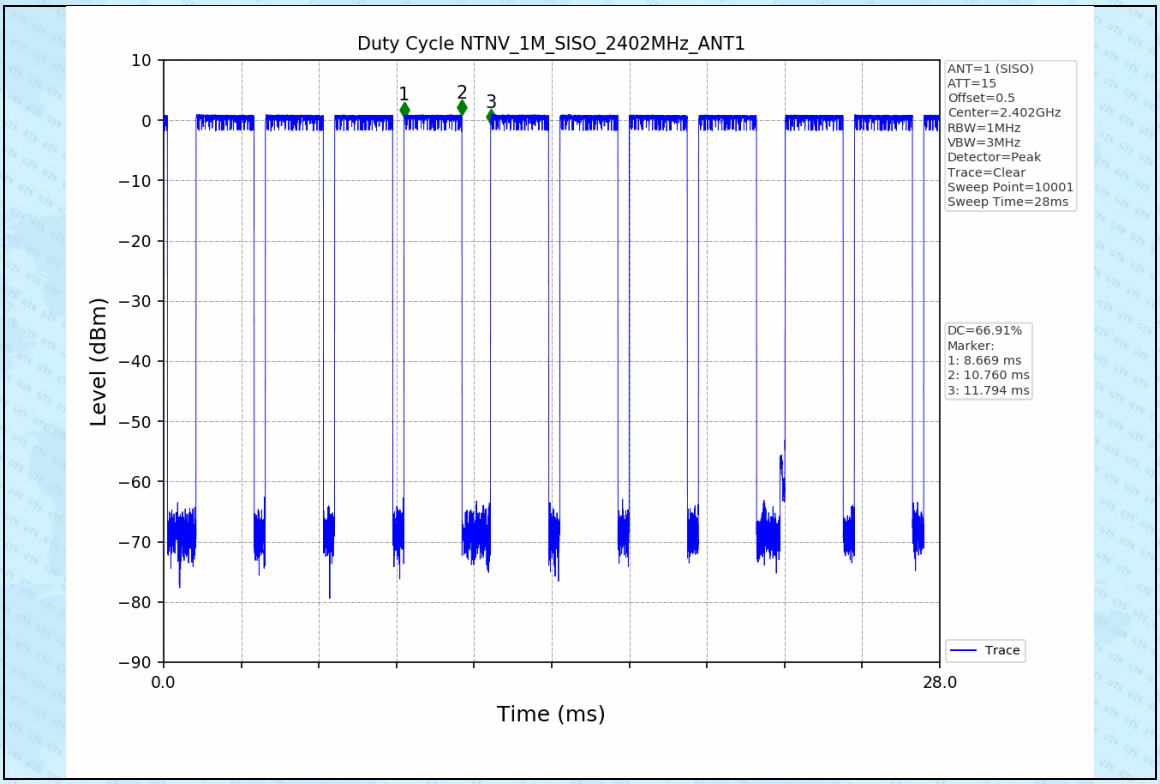
Appendix for 15.247

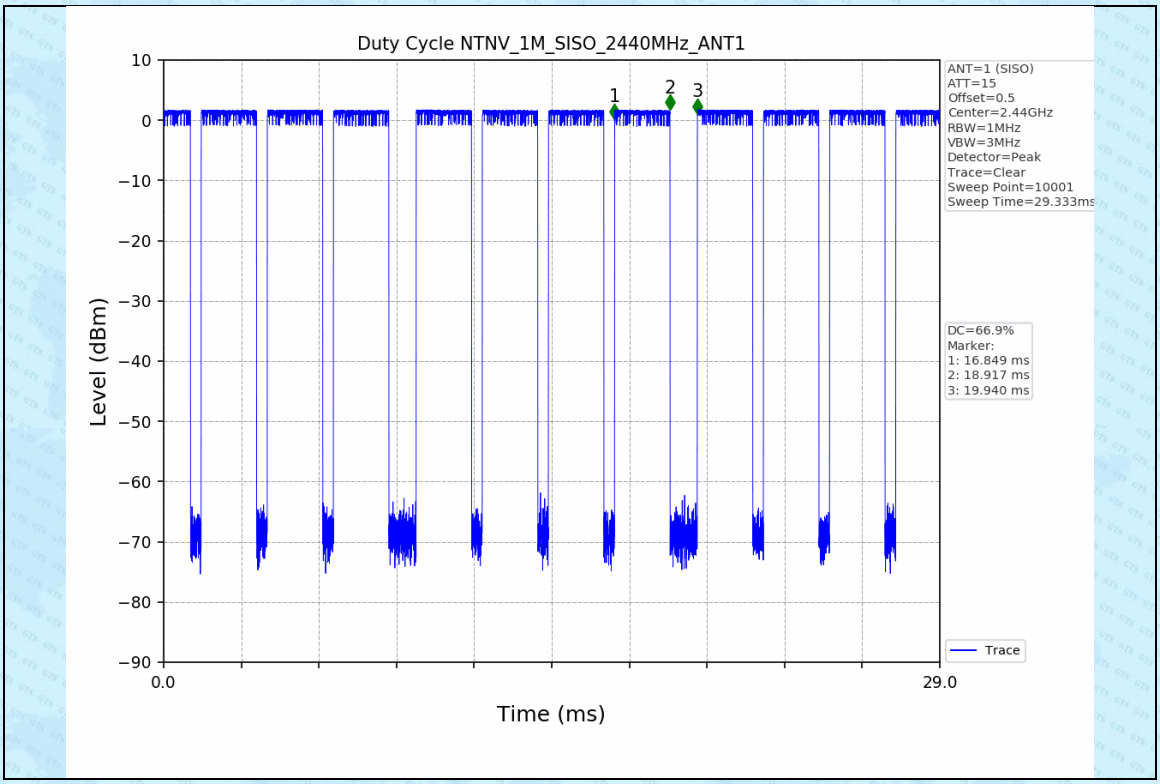
1. Duty Cycle

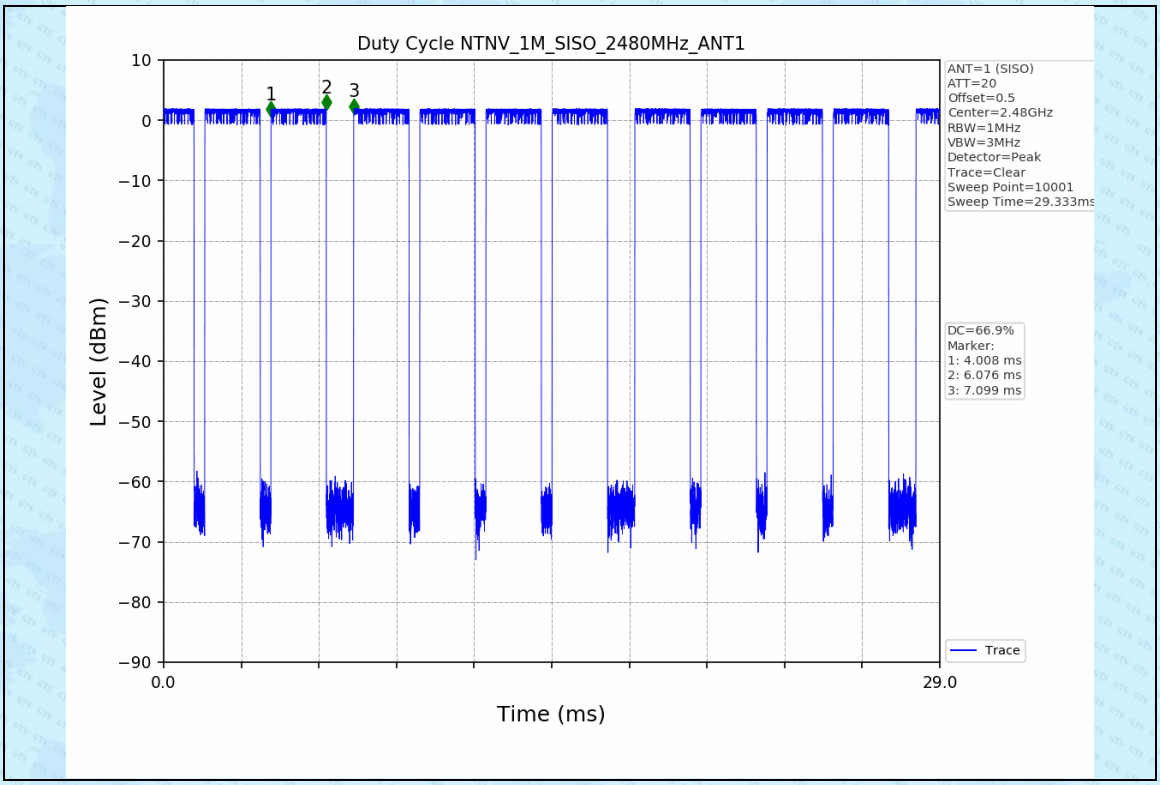
1.1 Test Result

Test Mode	Channel Frequency(MHz)	TX Type	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
GFSK	2402	SISO	1	2.091	3.125	66.91	1.75
	2440	SISO	1	2.068	3.091	66.90	1.75
	2480	SISO	1	2.068	3.091	66.90	1.75

1.2 Test Graph




Duty Cycle NTNV_1M_SISO_2440MHz_ANT1
Level (dBm)
Time (ms)
0.0
29.0
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
1
2
3
ANT=1 (SISO)
ATT=15
Offset=0.5
Center=2.44GHz
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=29.333ms
DC=66.9%
Marker:
1: 16.849 ms
2: 18.917 ms
3: 19.940 ms
Trace


Duty Cycle NTNV_1M_SISO_2480MHz_ANT1
Level (dBm)
Time (ms)
0.0
29.0
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
1
2
3
ANT=1 (SISO)
ATT=20
Offset=0.5
Center=2.48GHz
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=29.333ms
DC=66.9%
Marker:
1: 4.008 ms
2: 6.076 ms
3: 7.099 ms
Trace

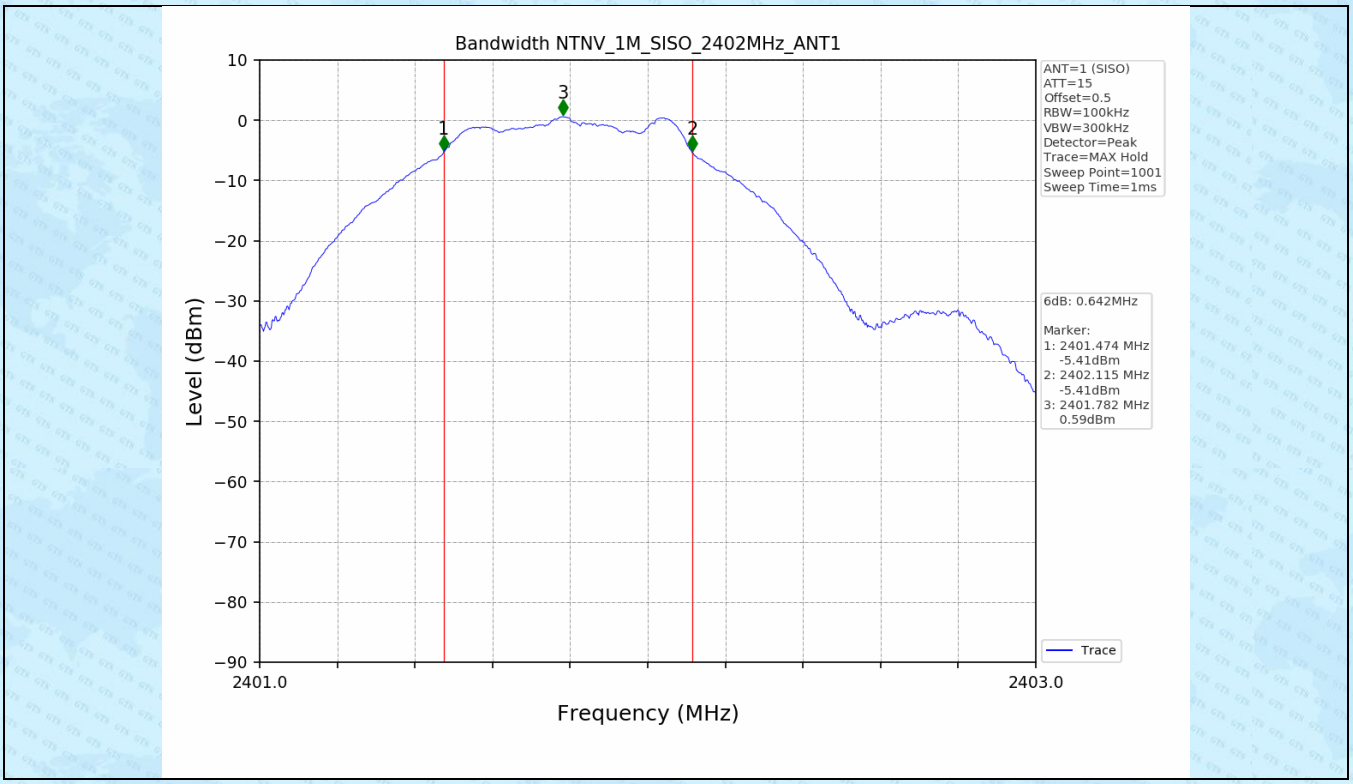
2. Bandwidth

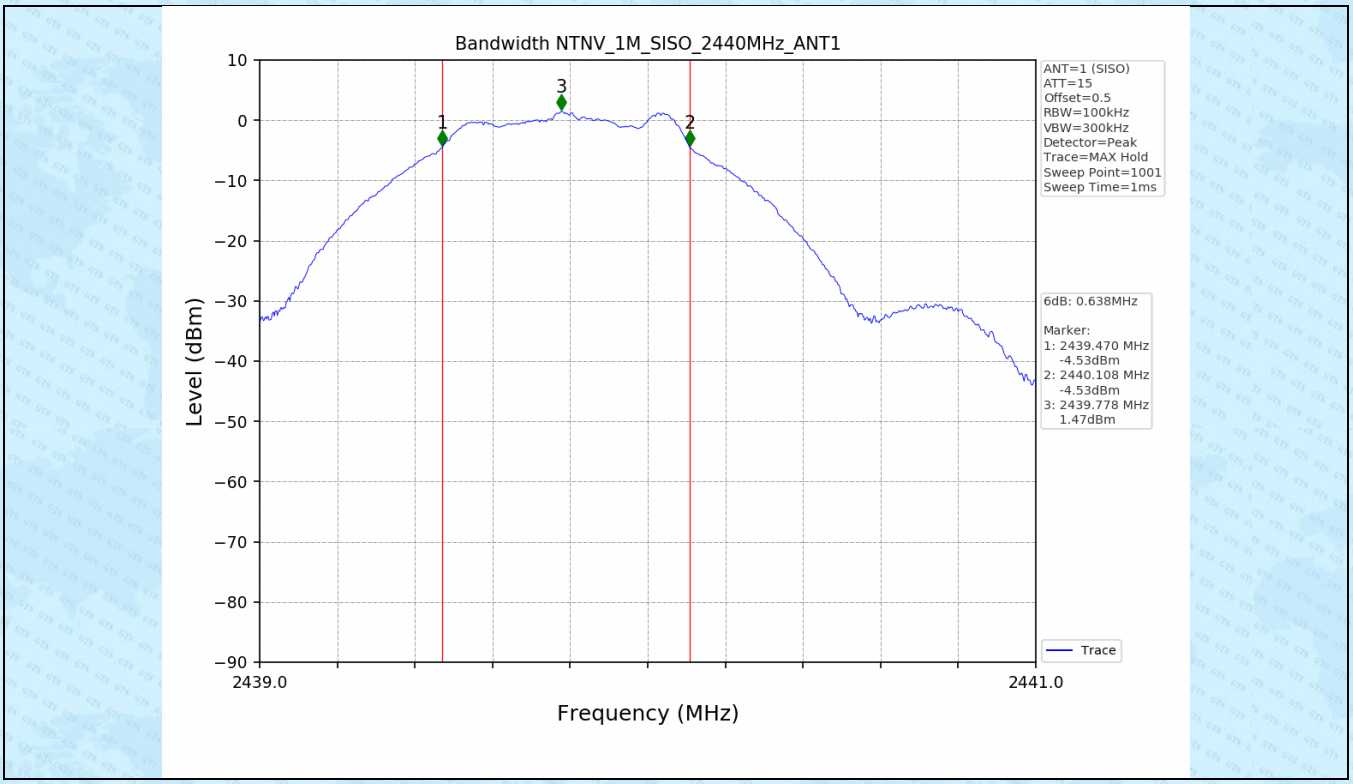
2.1 Test Result

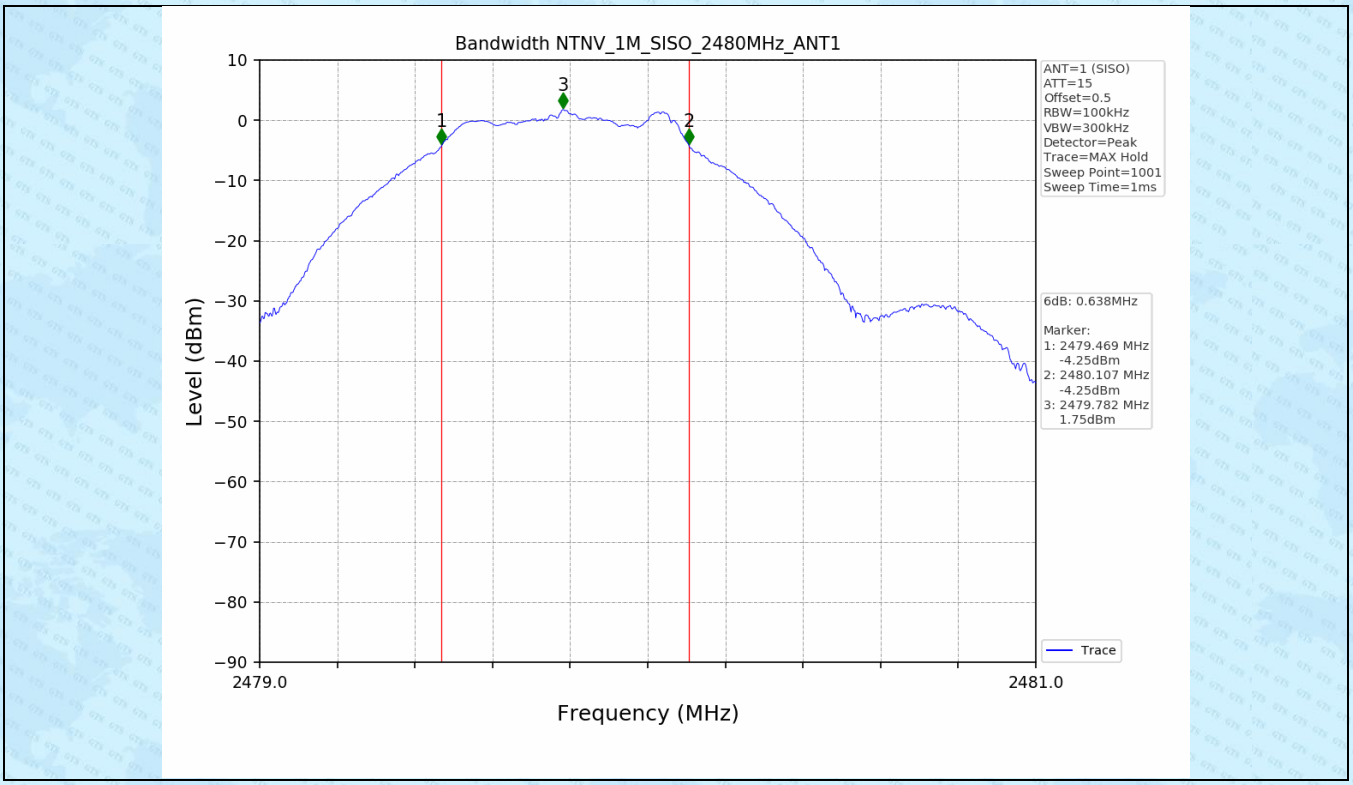
Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth		Verdict
				Test Result (MHz)	Limits (MHz)	
GFSK	2402	SISO	1	0.642	≥0.5	PASS
	2440	SISO	1	0.638	≥0.5	PASS
	2480	SISO	1	0.638	≥0.5	PASS

Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth	
				Test Result (MHz)	
GFSK	2402	SISO	1	1.015	Only for Report Use
	2440	SISO	1	1.014	Only for Report Use
	2480	SISO	1	1.012	Only for Report Use

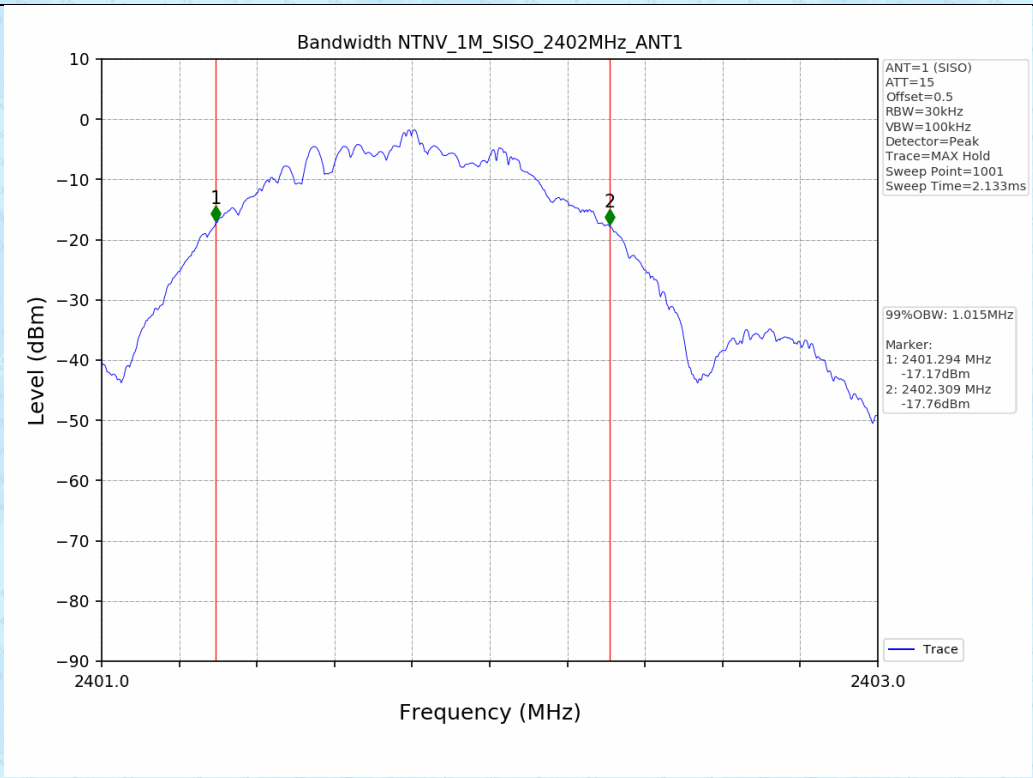
2.2 Test Graph - 6dB Bandwidth

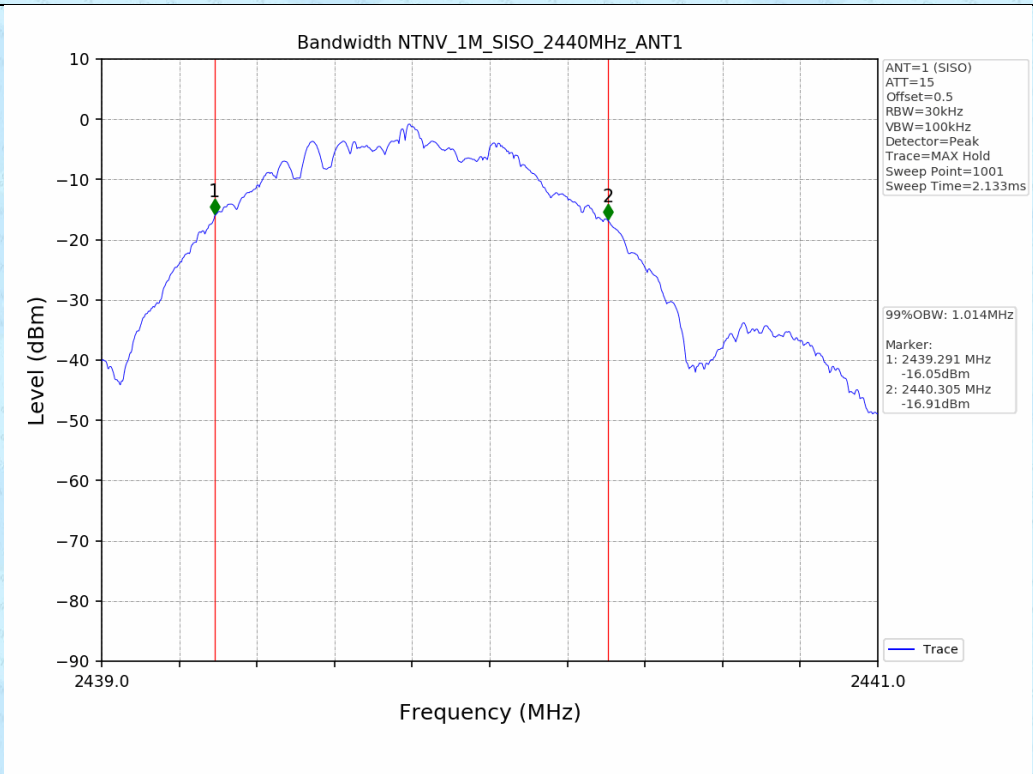


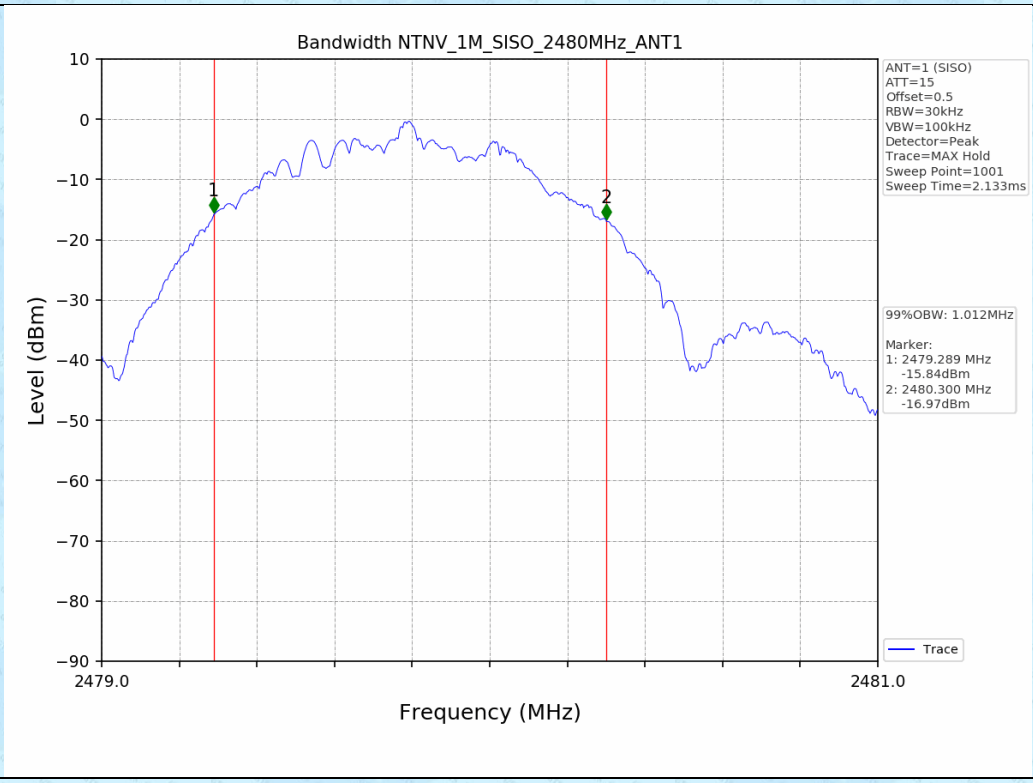

Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 0.638MHz
Marker:
1: 2439.470 MHz
-4.53dBm
2: 2440.108 MHz
-4.53dBm
3: 2439.778 MHz
1.47dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0


Bandwidth NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 0.638MHz
Marker:
1: 2479.469 MHz
-4.25dBm
2: 2480.107 MHz
-4.25dBm
3: 2479.782 MHz
1.75dBm
Trace
Level (dBm)
Frequency (MHz)
2479.0
2481.0

2.3 Test Graph - 99% Occupied Bandwidth





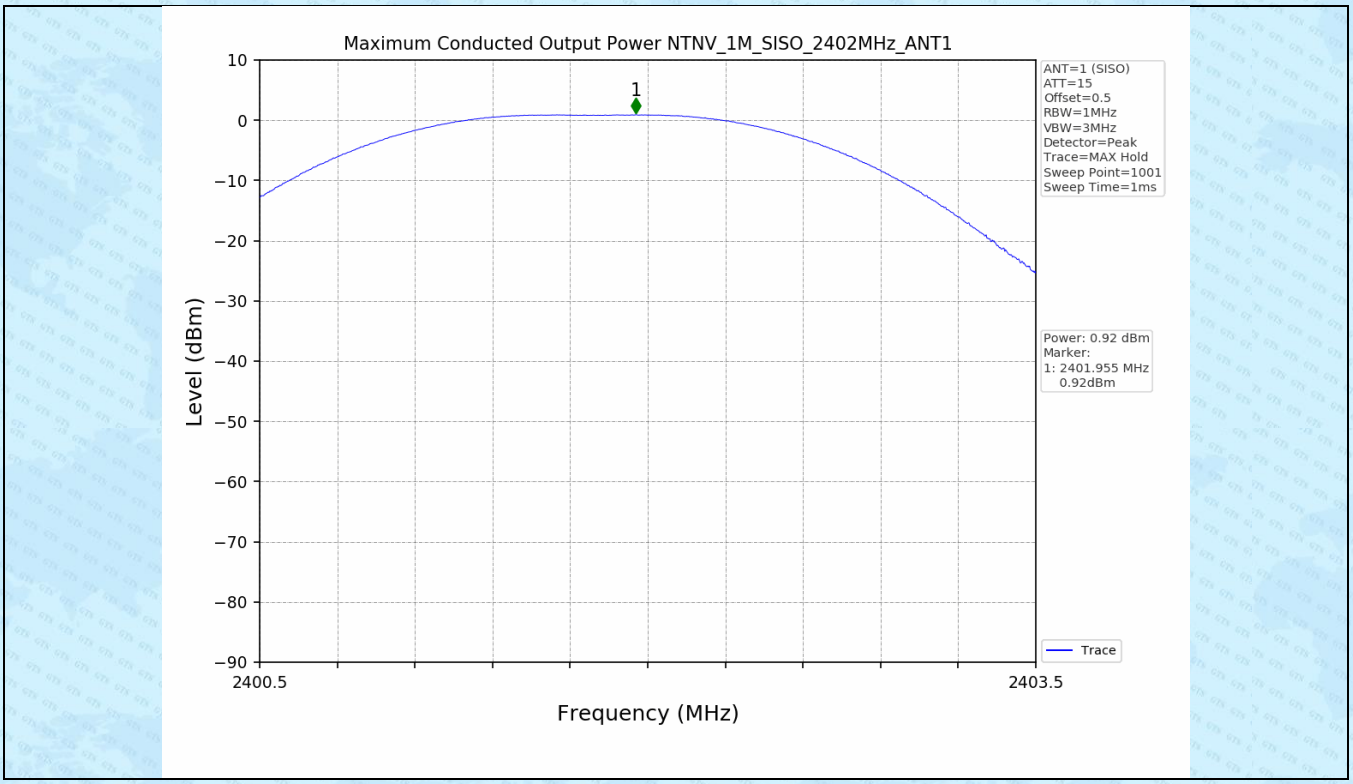


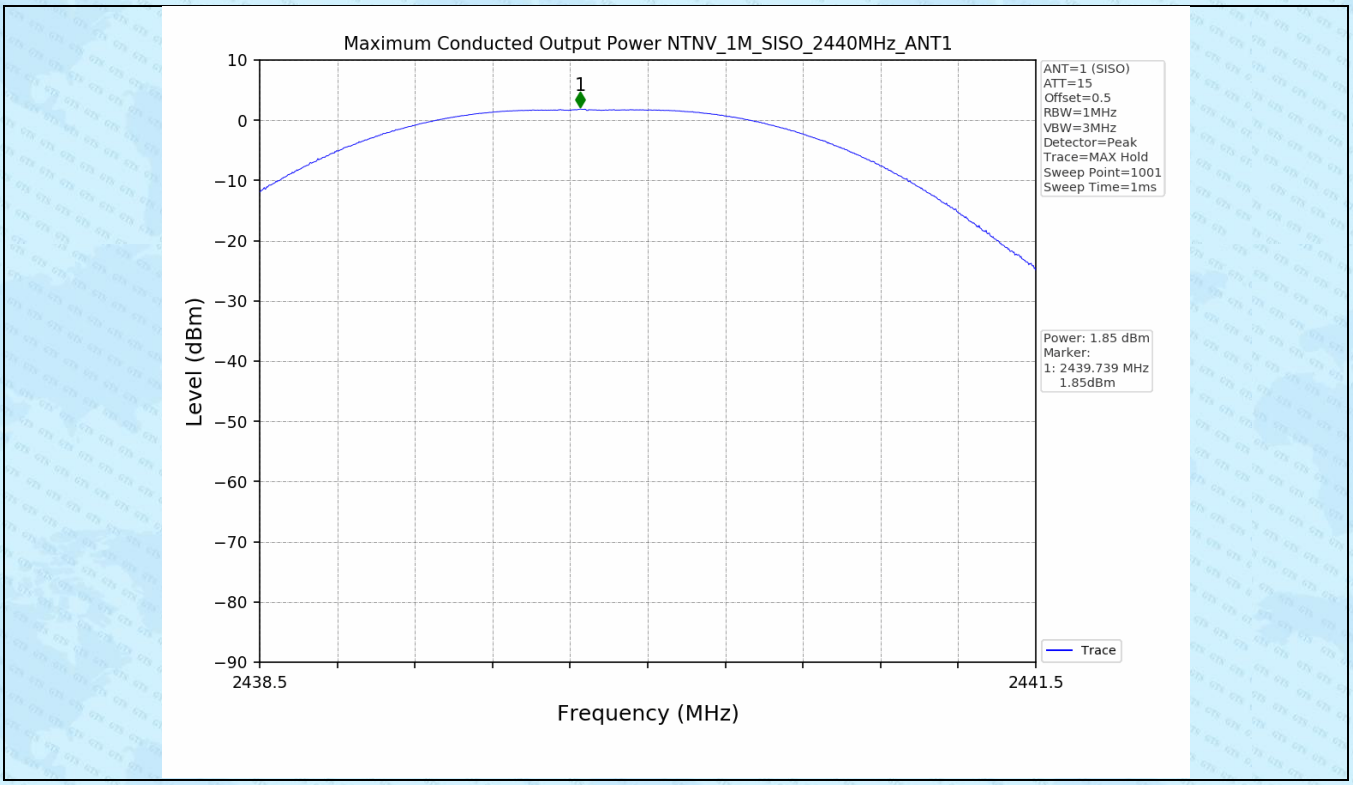
3. Maximum Conducted Output Power

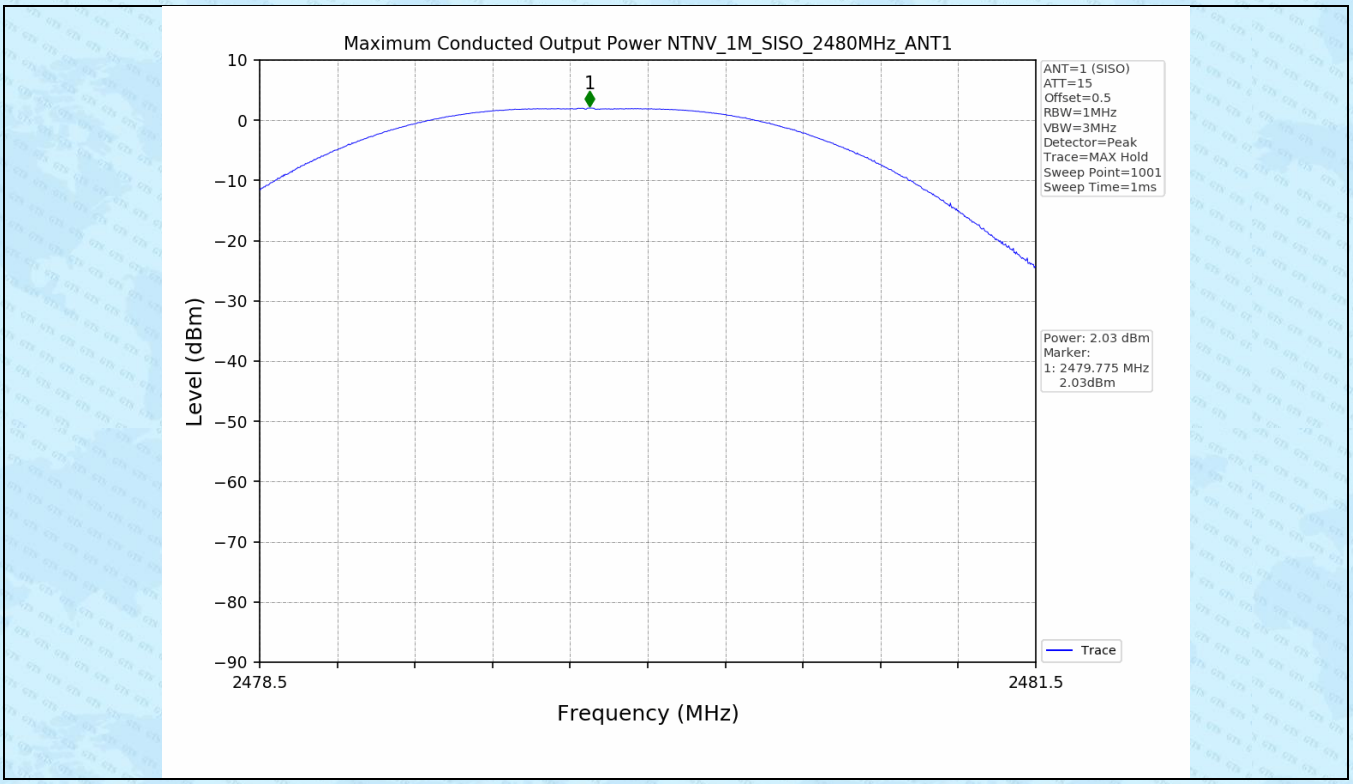
3.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
GFSK	2402	SISO	0.92	30	PASS
	2440	SISO	1.85	30	PASS
	2480	SISO	2.03	30	PASS

3.2 Test Graph


Maximum Conducted Output Power NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 0.92 dBm
Marker:
1: 2401.955 MHz
0.92dBm
Trace
Level (dBm)
Frequency (MHz)
2400.5
2403.5


Maximum Conducted Output Power NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 1.85 dBm
Marker:
1: 2439.739 MHz
1.85dBm
Trace
Level (dBm)
Frequency (MHz)
2438.5
2441.5

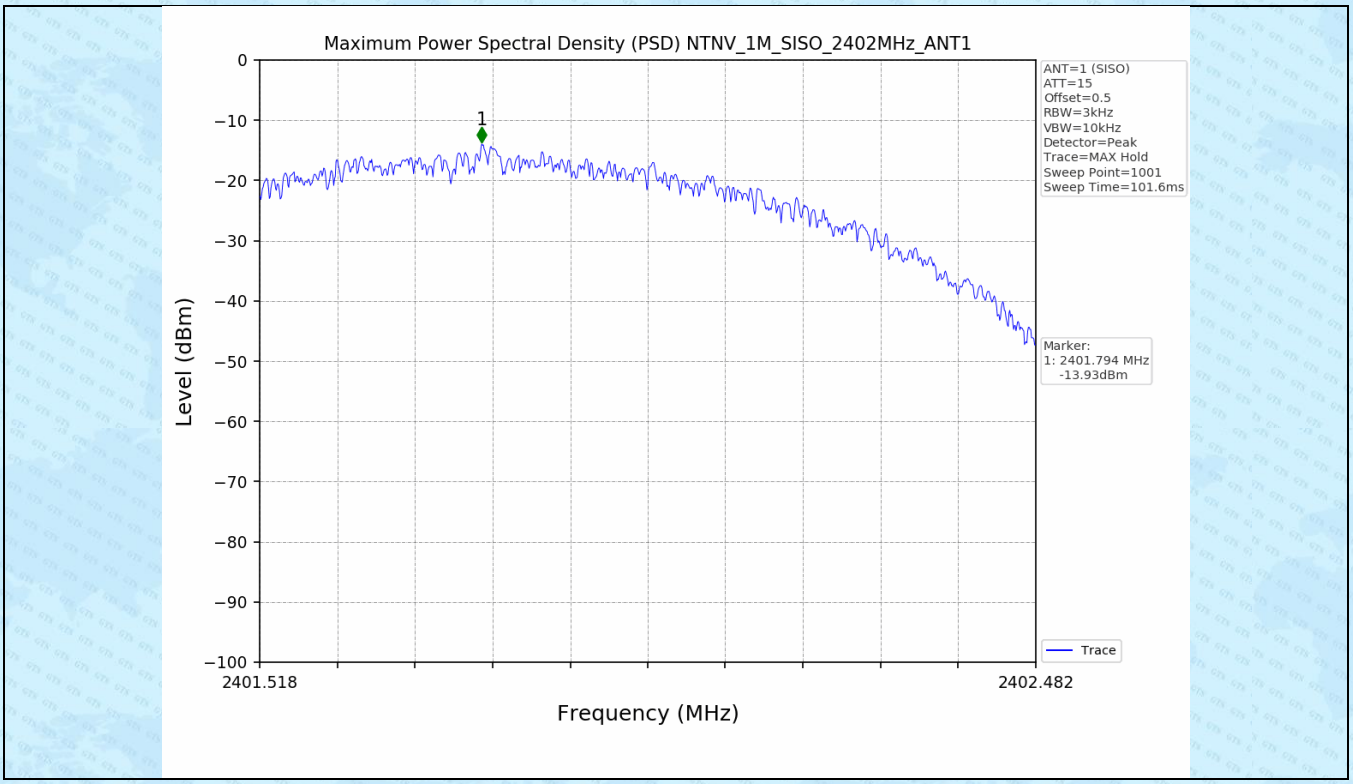


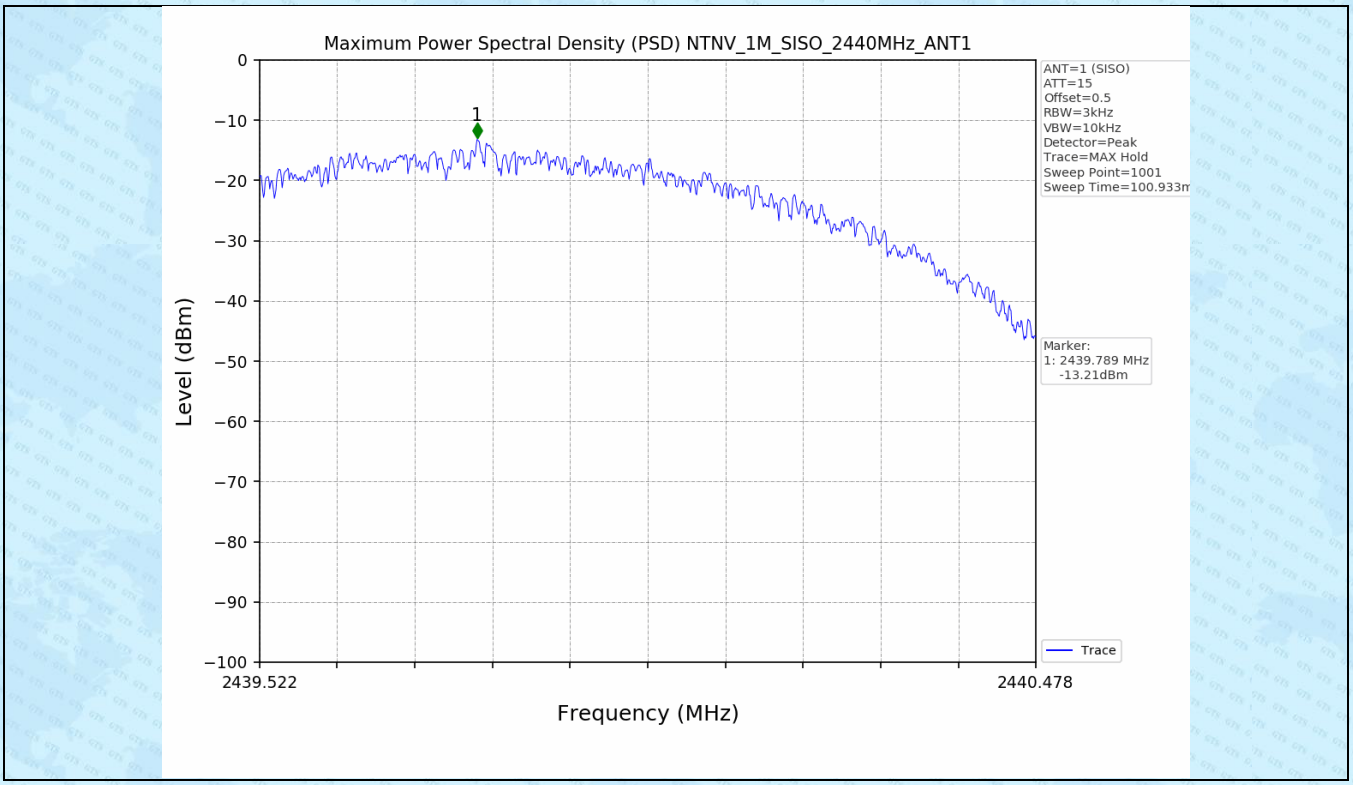
4. Maximum Power Spectral Density (PSD)

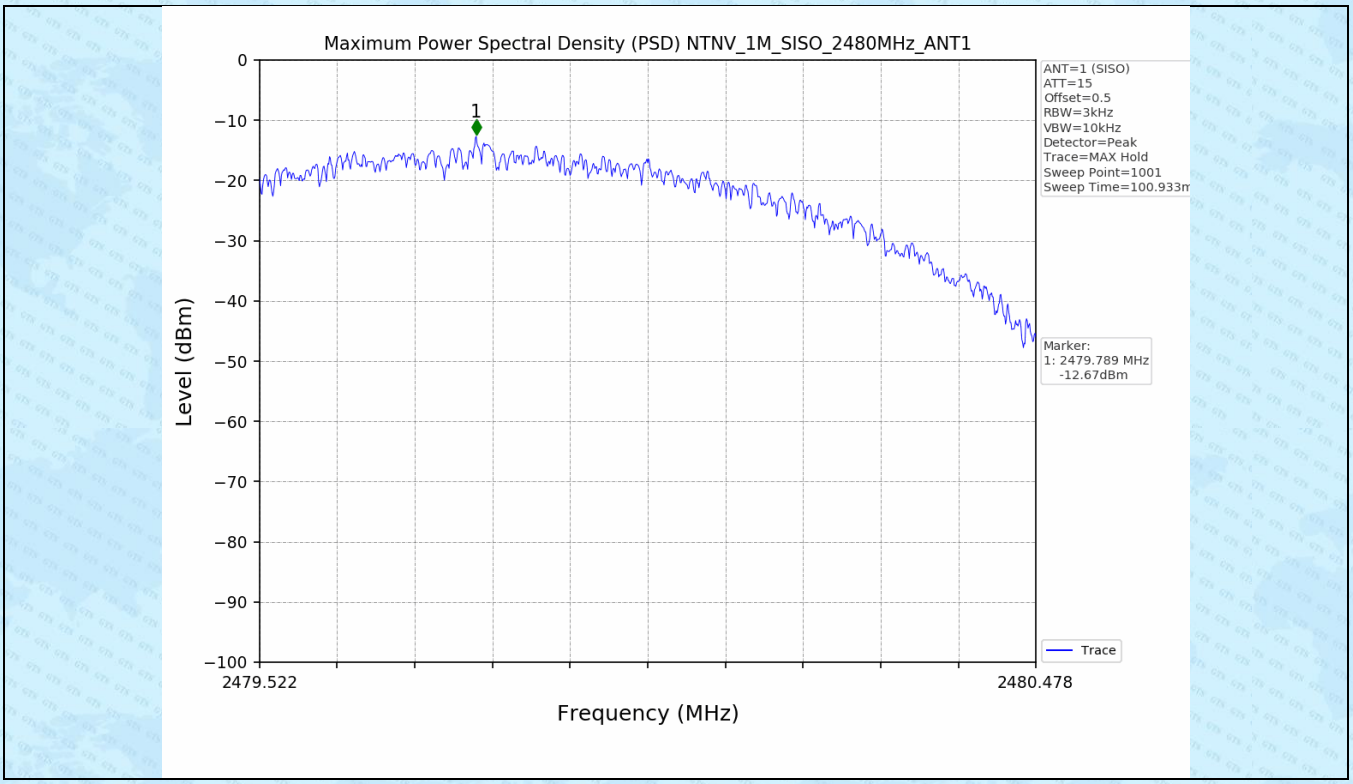
4.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
			Ant 1		
GFSK	2402	SISO	-13.93	≤8	PASS
	2440	SISO	-13.21	≤8	PASS
	2480	SISO	-12.67	≤8	PASS

4.2 Test Graph


Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=101.6ms
Marker:
1: 2401.794 MHz
-13.93dBm
Trace
Level (dBm)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2401.518
2402.482
Frequency (MHz)


Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=100.933m
Marker:
1: 2439.789 MHz
-13.21dBm
Trace
Level (dBm)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2439.522
2440.478
Frequency (MHz)

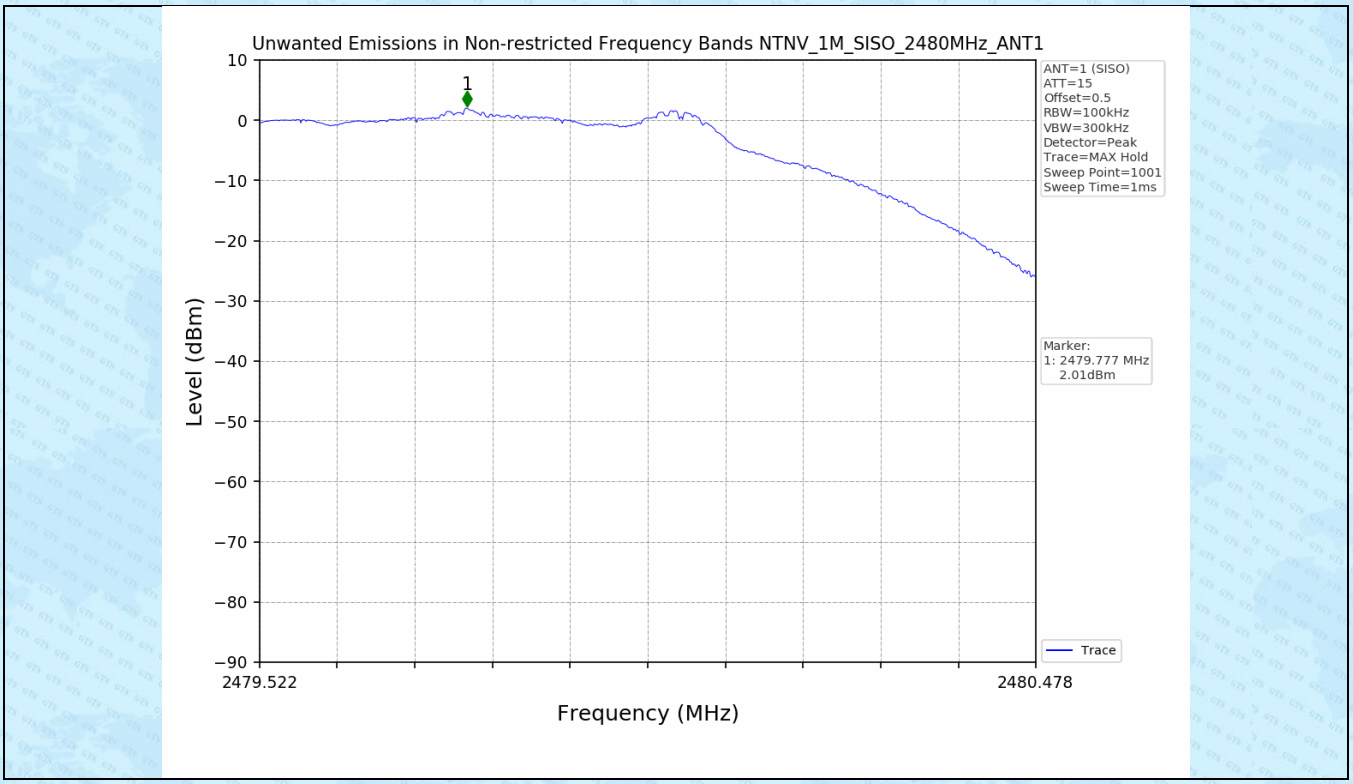


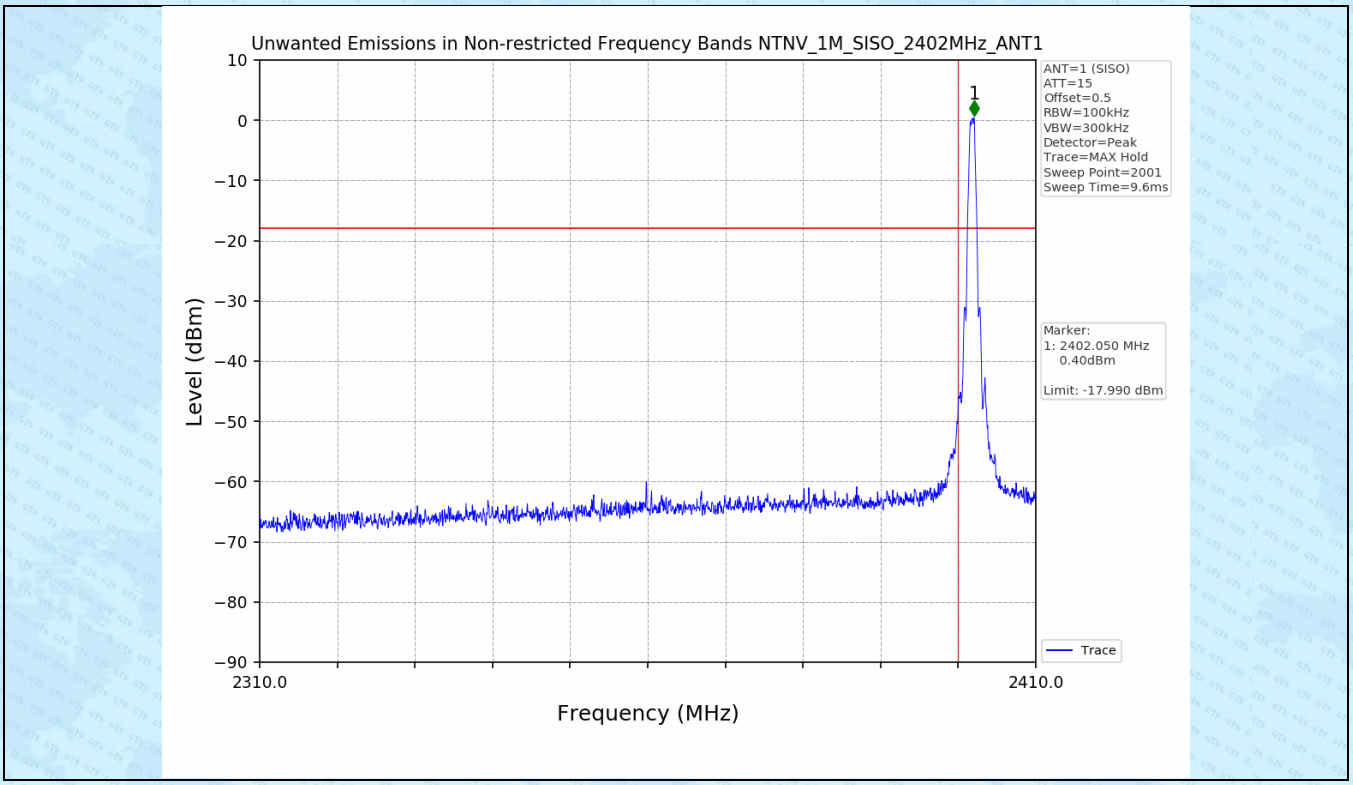
5. Unwanted Emissions in Non-restricted Frequency Bands

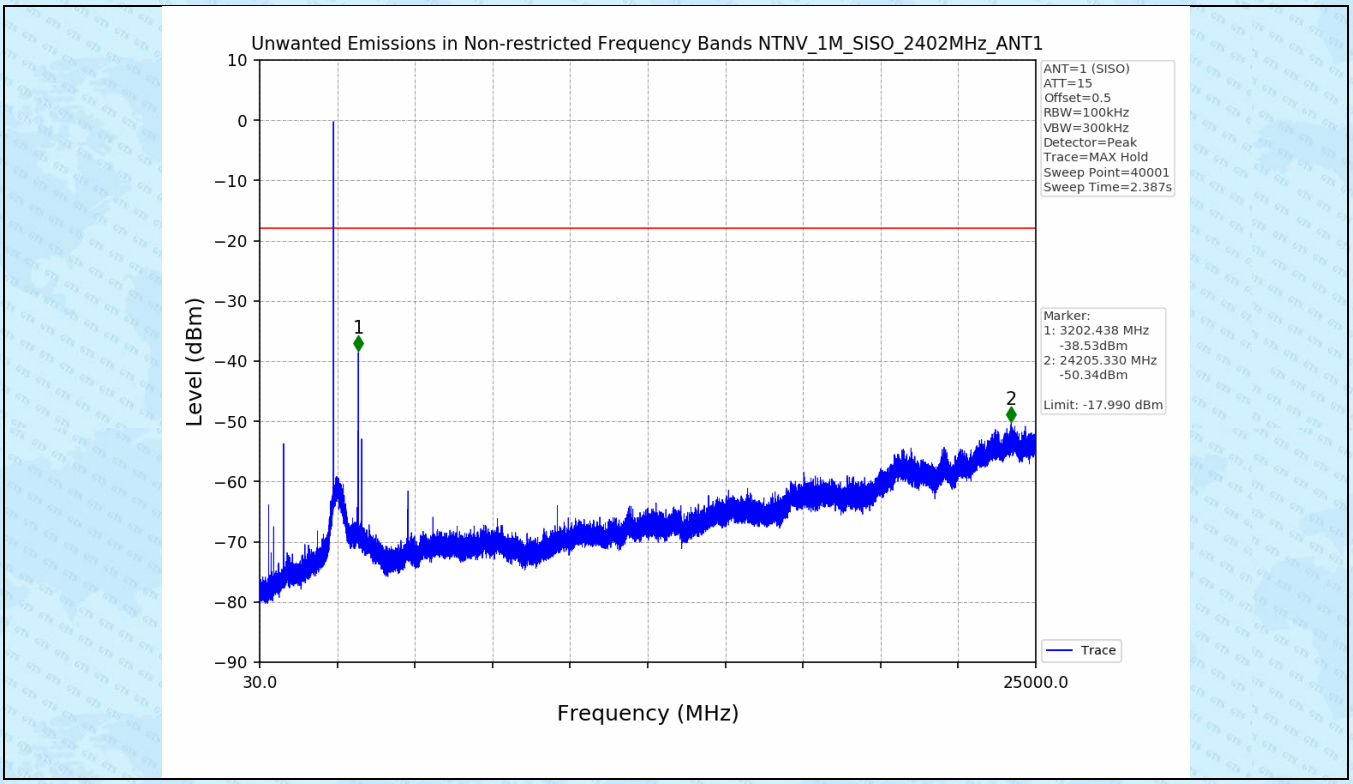
5.1 Test Result

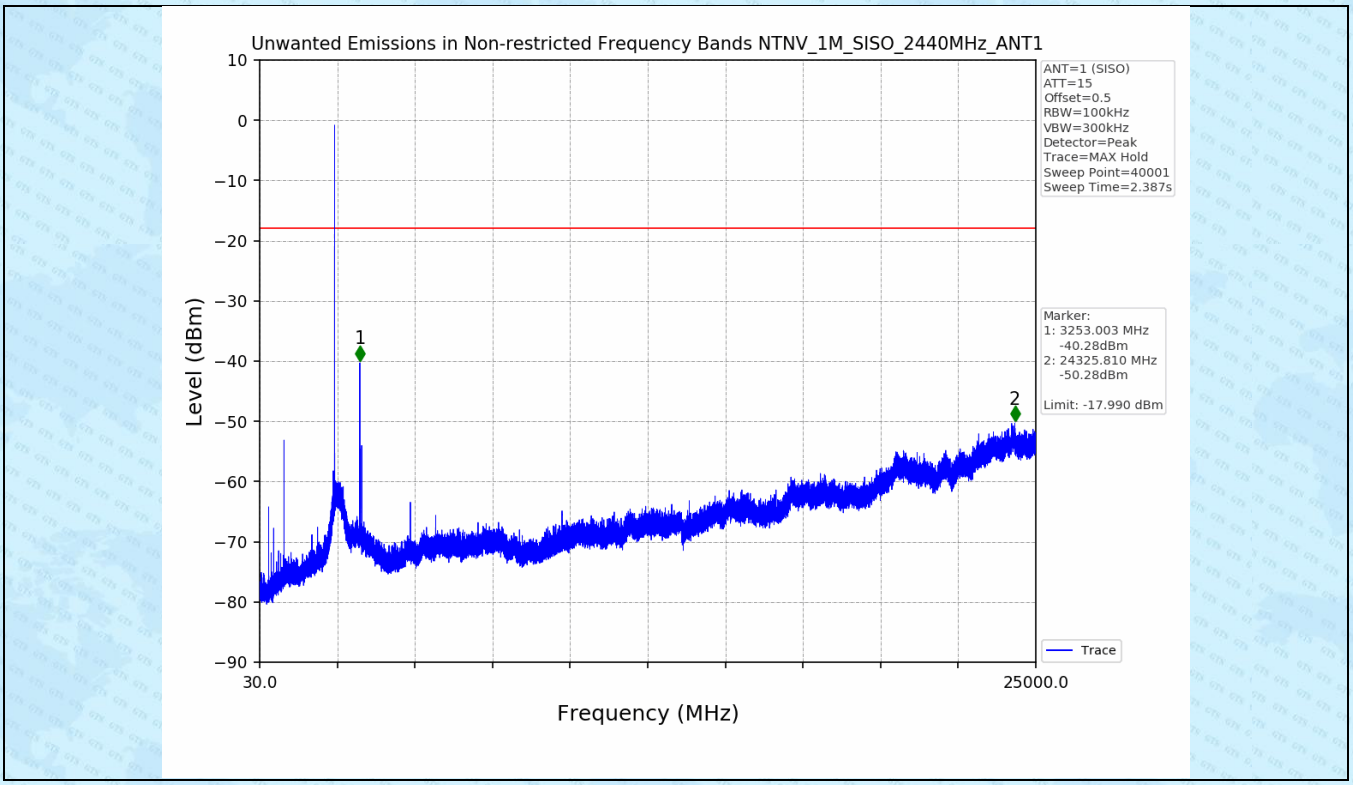
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
GFSK	2402	SISO	1	Refer to test graph	-17.99	PASS
	2440	SISO	1	Refer to test graph	-17.99	PASS
	2480	SISO	1	Refer to test graph	-17.99	PASS

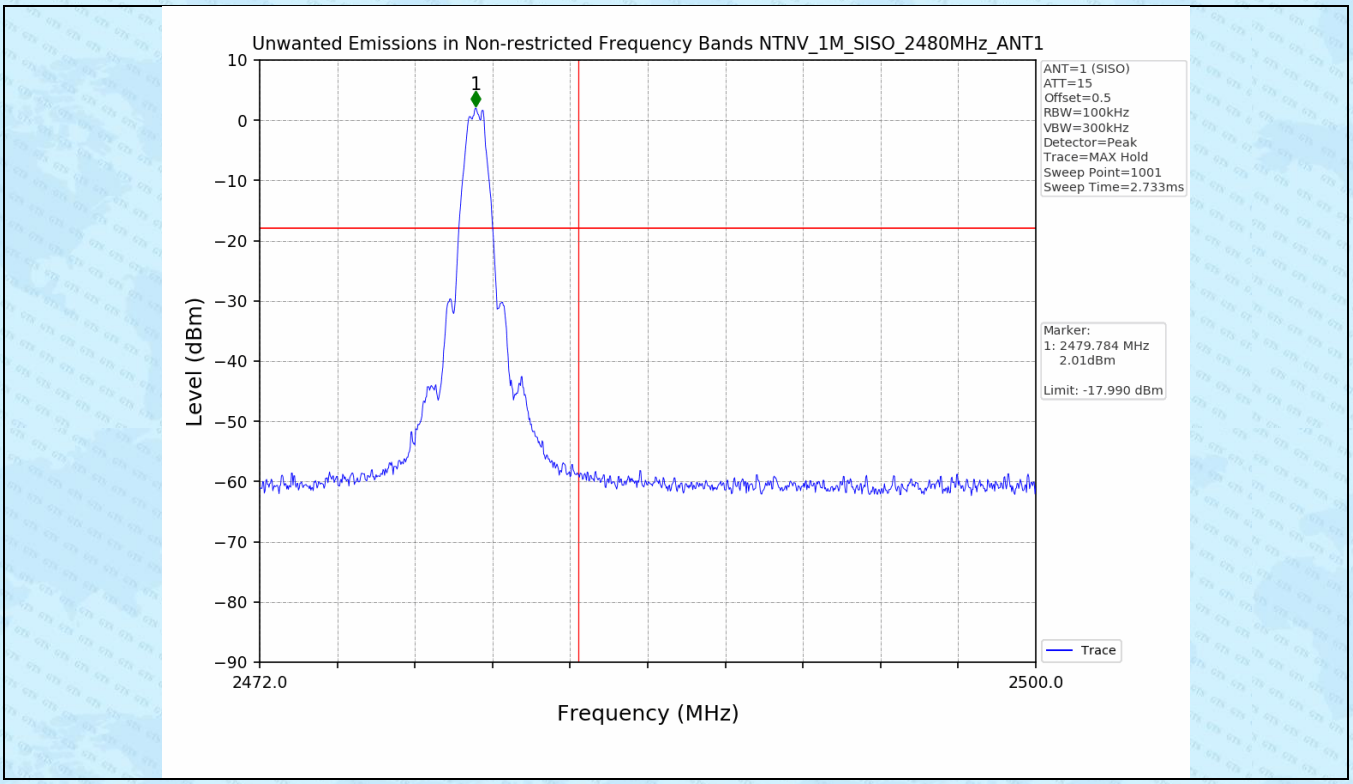
5.2 Test Graph

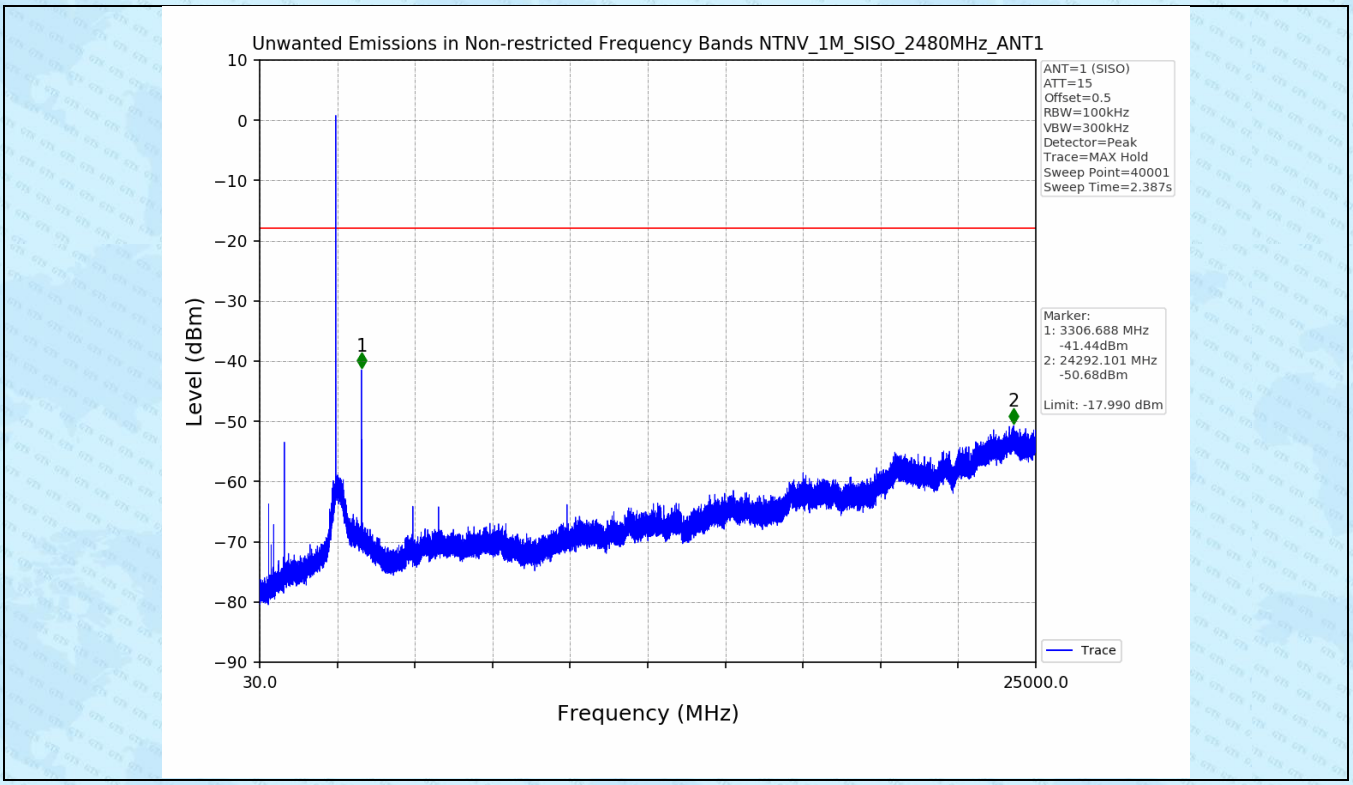

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2479.777 MHz
2.01dBm
Trace
Level (dBm)
Frequency (MHz)
2479.522
2480.478


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=2001
Sweep Time=9.6ms
Marker:
1: 2402.050 MHz
0.40dBm
Limit: -17.990 dBm
Trace
Level (dBm)
Frequency (MHz)
2310.0
2410.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 3202.438 MHz
-38.53dBm
2: 24205.330 MHz
-50.34dBm
Limit: -17.990 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 3253.003 MHz
-40.28dBm
2: 24325.810 MHz
-50.28dBm
Limit: -17.990 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.733ms
Marker:
1: 2479.784 MHz
2.01dBm
Limit: -17.990 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 3306.688 MHz
-41.44dBm
2: 24292.101 MHz
-50.68dBm
Limit: -17.990 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0