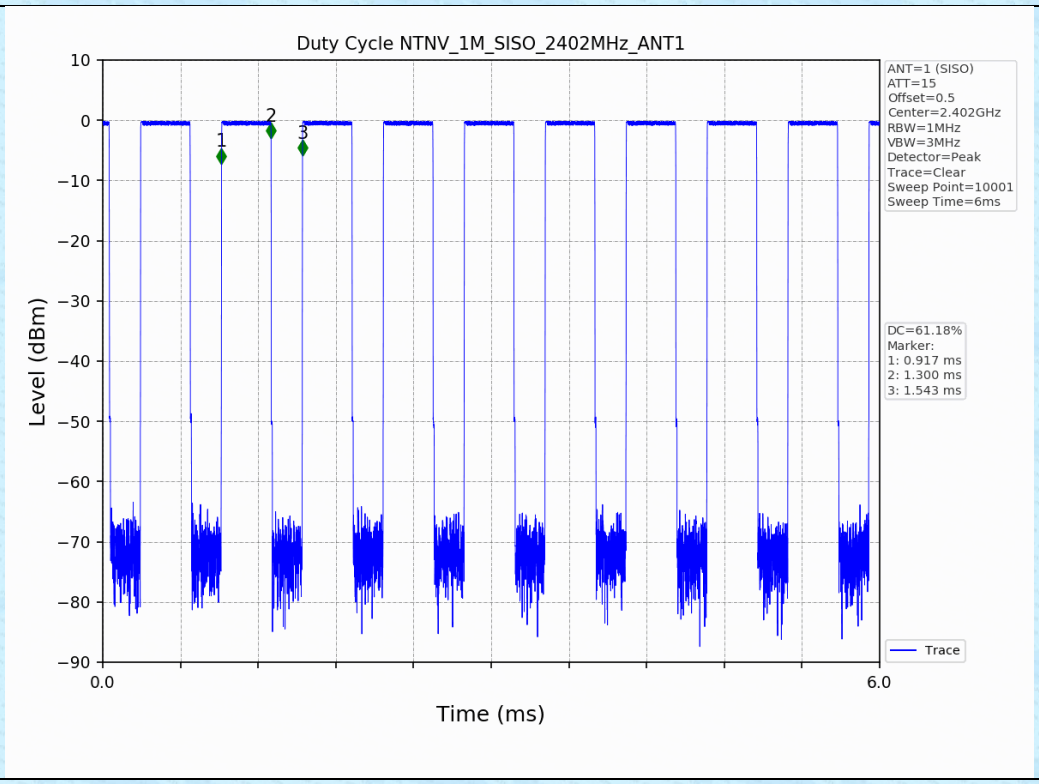
Appendix for 15.247

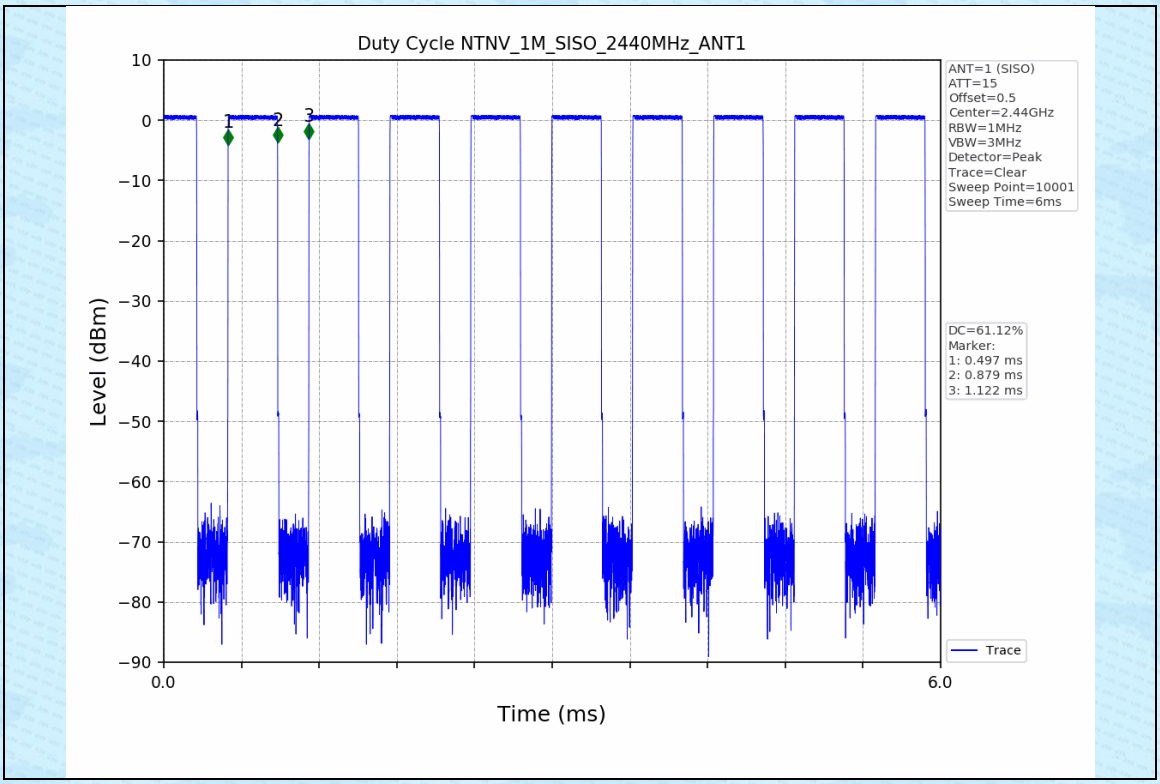
1. Duty Cycle

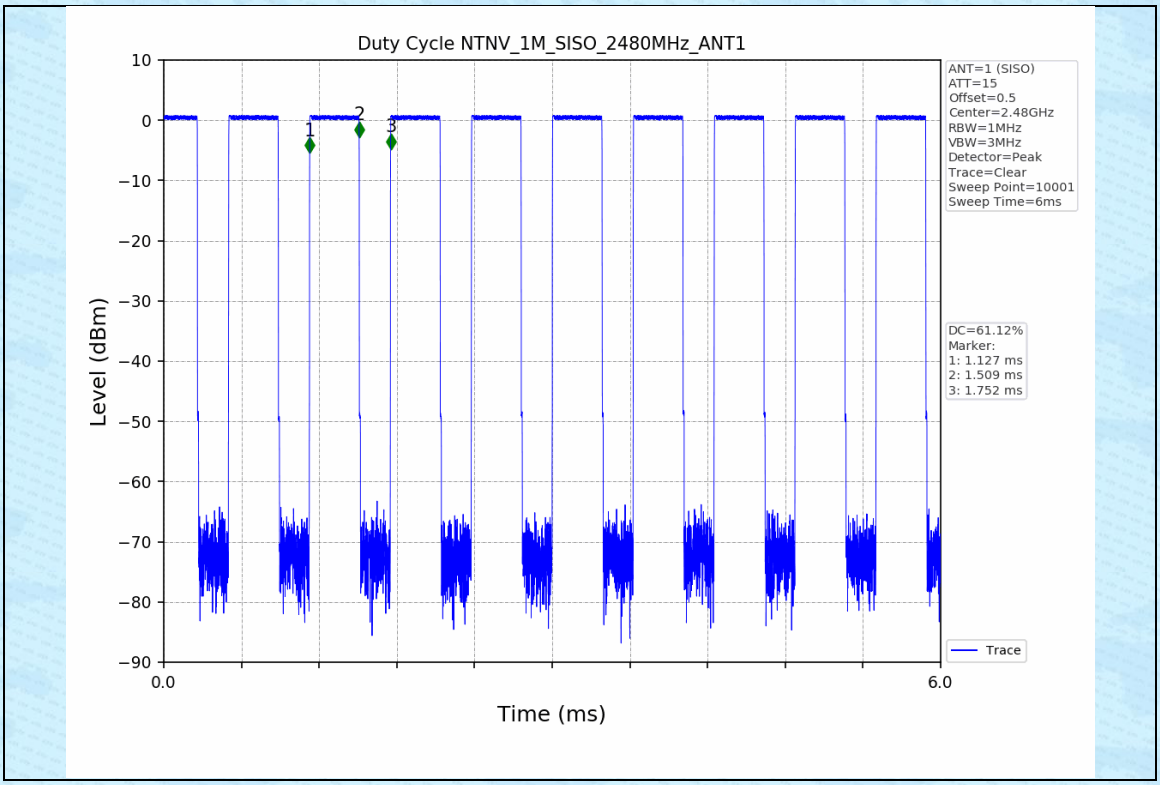
1.1 Test Result

Test Mode	Channel Frequency(MHz)	TX Type	ANT No.	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
1M	2402	SISO	1	0.383	0.626	61.18	2.13
	2440	SISO	1	0.382	0.625	61.12	2.14
	2480	SISO	1	0.382	0.625	61.12	2.14

1.2 Test Graph




Duty Cycle NTNV_1M_SISO_2440MHz_ANT1
Level (dBm)
Time (ms)
ANT=1 (SISO)
ATT=15
Offset=0.5
Center=2.44GHz
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=6ms
DC=61.12%
Marker:
1: 0.497 ms
2: 0.879 ms
3: 1.122 ms
Trace


Duty Cycle NTNV_1M_SISO_2480MHz_ANT1
Level (dBm)
Time (ms)
ANT=1 (SISO)
ATT=15
Offset=0.5
Center=2.48GHz
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=6ms
DC=61.12%
Marker:
1: 1.127 ms
2: 1.509 ms
3: 1.752 ms
Trace

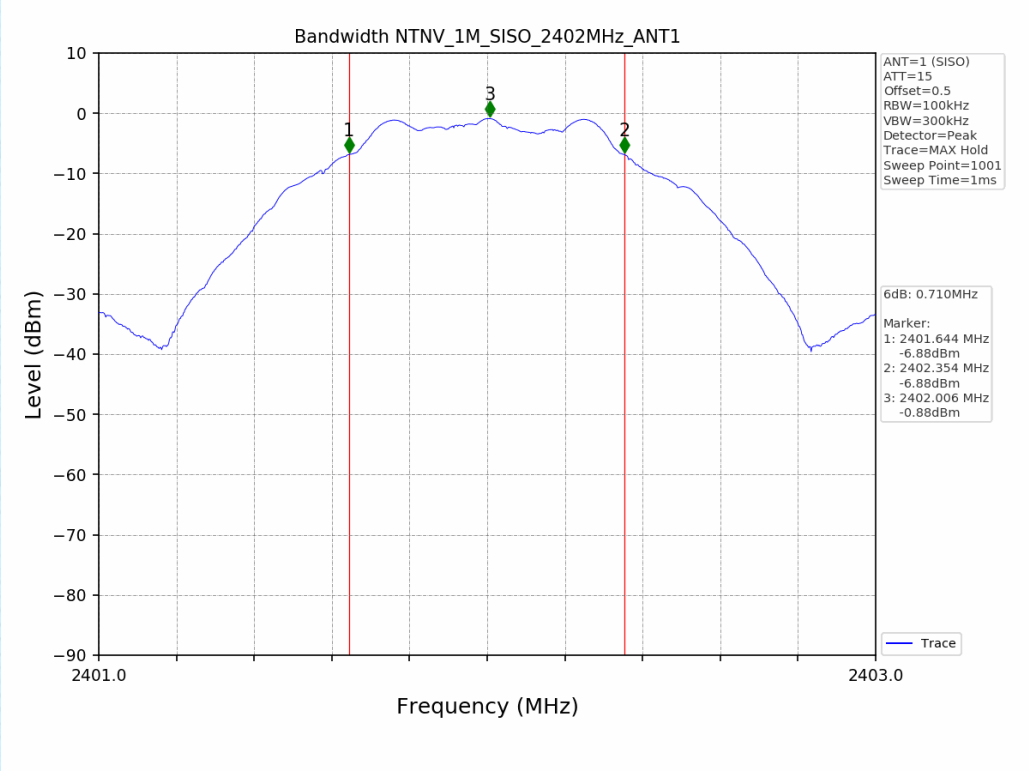
2. Bandwidth

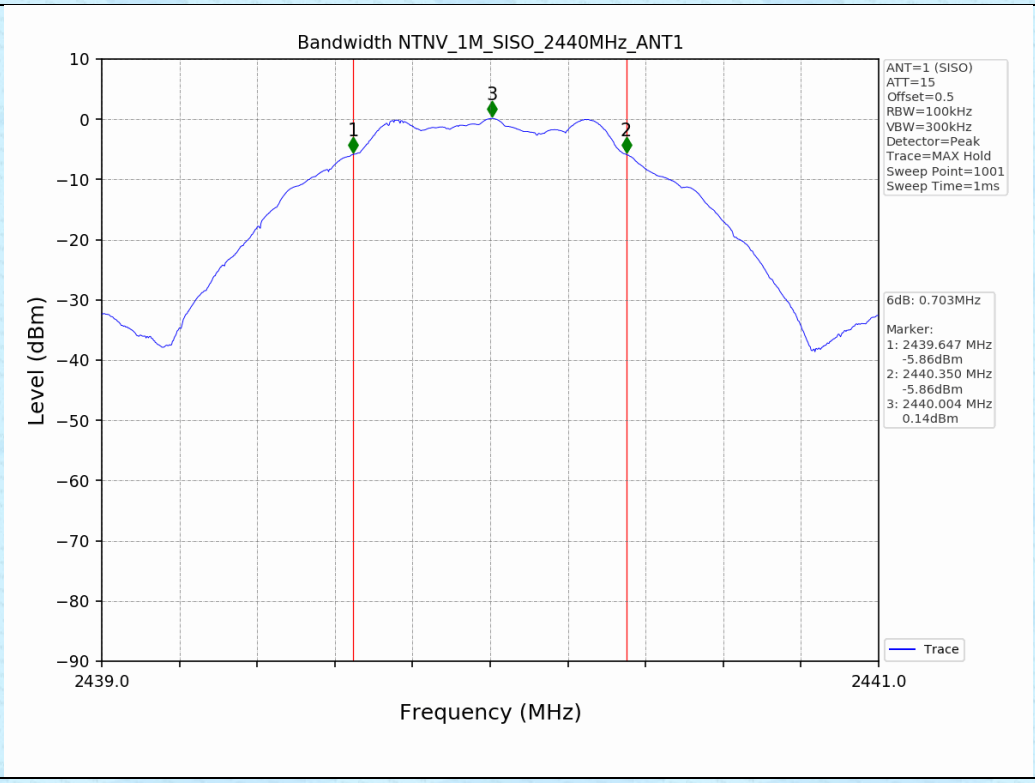
2.1 Test Result

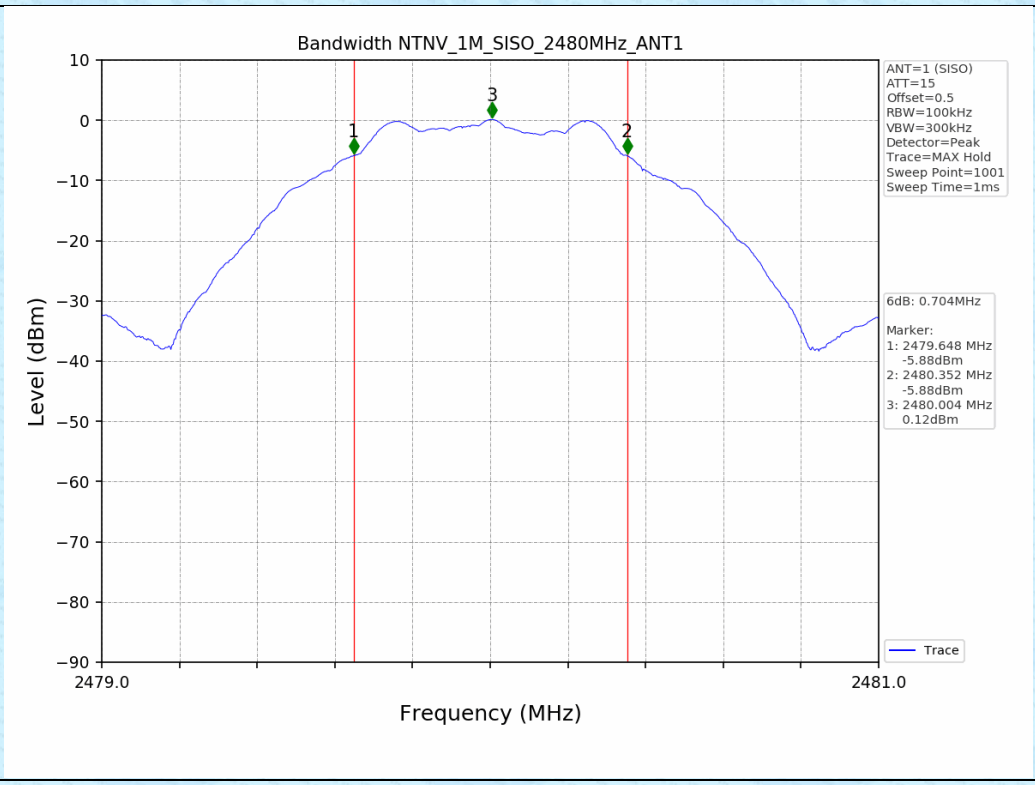
Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth Test Result (MHz)	Verdict
1M	2402	SISO	1	0.710	PASS
	2440	SISO	1	0.703	PASS
	2480	SISO	1	0.704	PASS

Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth Test Result (MHz)	
1M	2402	SISO	1	1.077	Only for Report Use
	2440	SISO	1	1.075	Only for Report Use
	2480	SISO	1	1.074	Only for Report Use

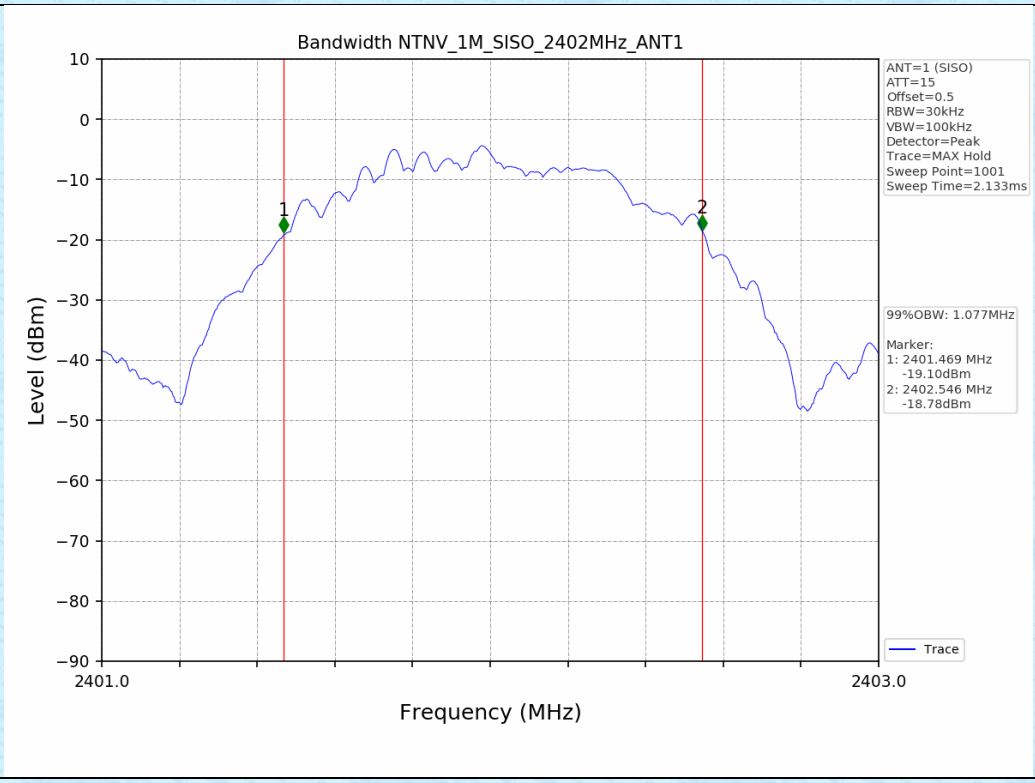
2.2 Test Graph - 6dB Bandwidth

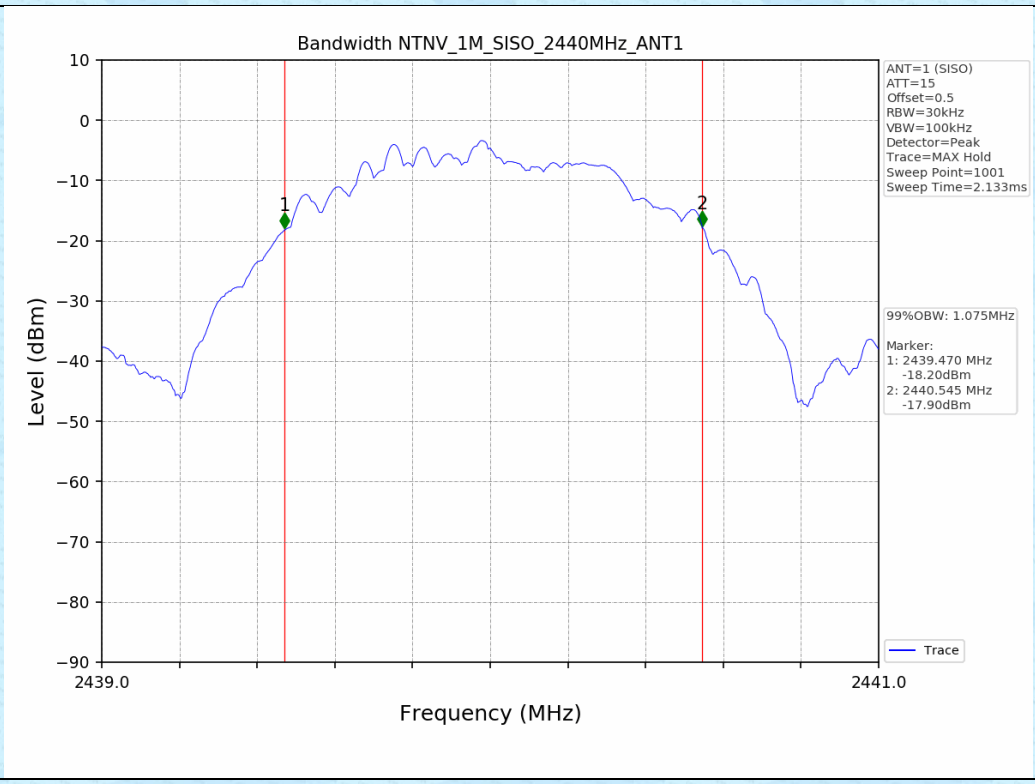


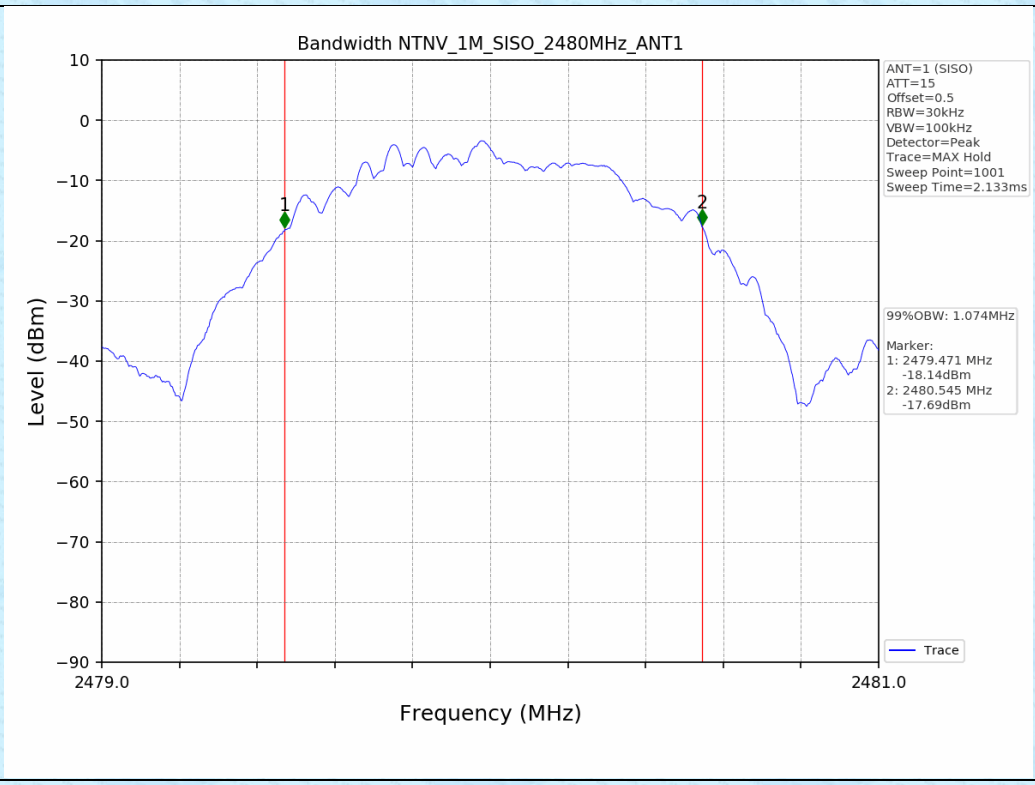

Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 0.703MHz
Marker:
1: 2439.647 MHz
-5.86dBm
2: 2440.350 MHz
-5.86dBm
3: 2440.004 MHz
0.14dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0


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: 0.704MHz
Marker:
1: 2479.648 MHz
-5.88dBm
2: 2480.352 MHz
-5.88dBm
3: 2480.004 MHz
0.12dBm
Trace
Level (dBm)
Frequency (MHz)
2479.0
2481.0

2.3 Test Graph - 99% Occupied Bandwidth




Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.075MHz
Marker:
1: 2439.470 MHz
-18.20dBm
2: 2440.545 MHz
-17.90dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0

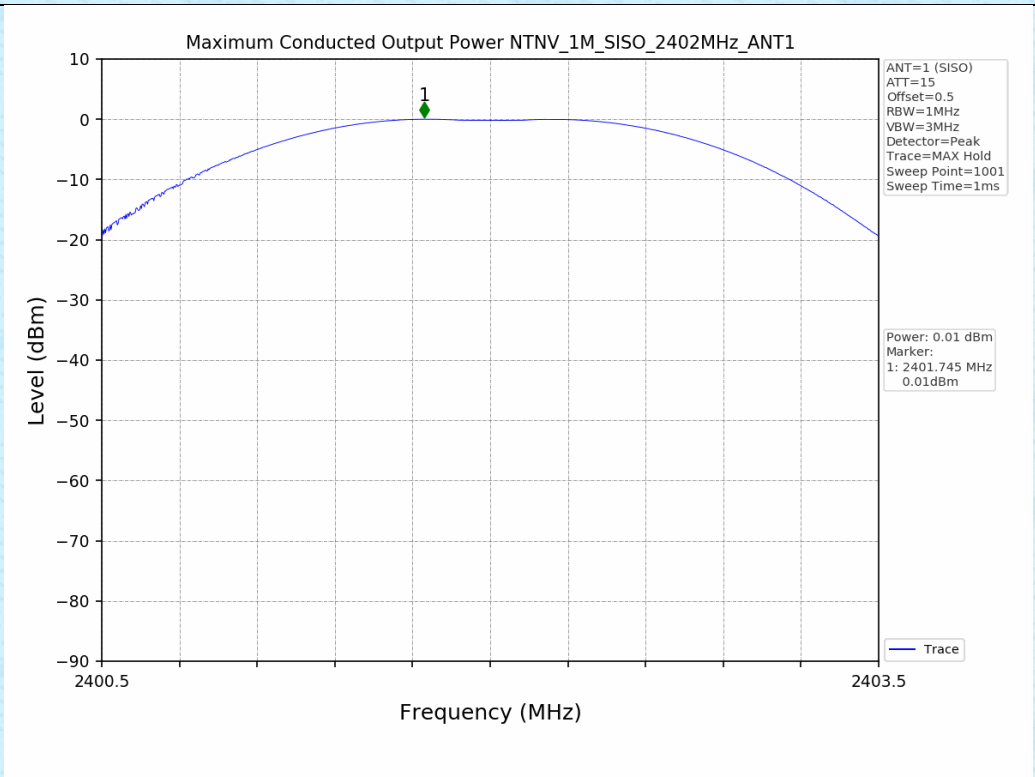

Bandwidth NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.074MHz
Marker:
1: 2479.471 MHz
-18.14dBm
2: 2480.545 MHz
-17.69dBm
Trace
Level (dBm)
Frequency (MHz)
2479.0
2481.0

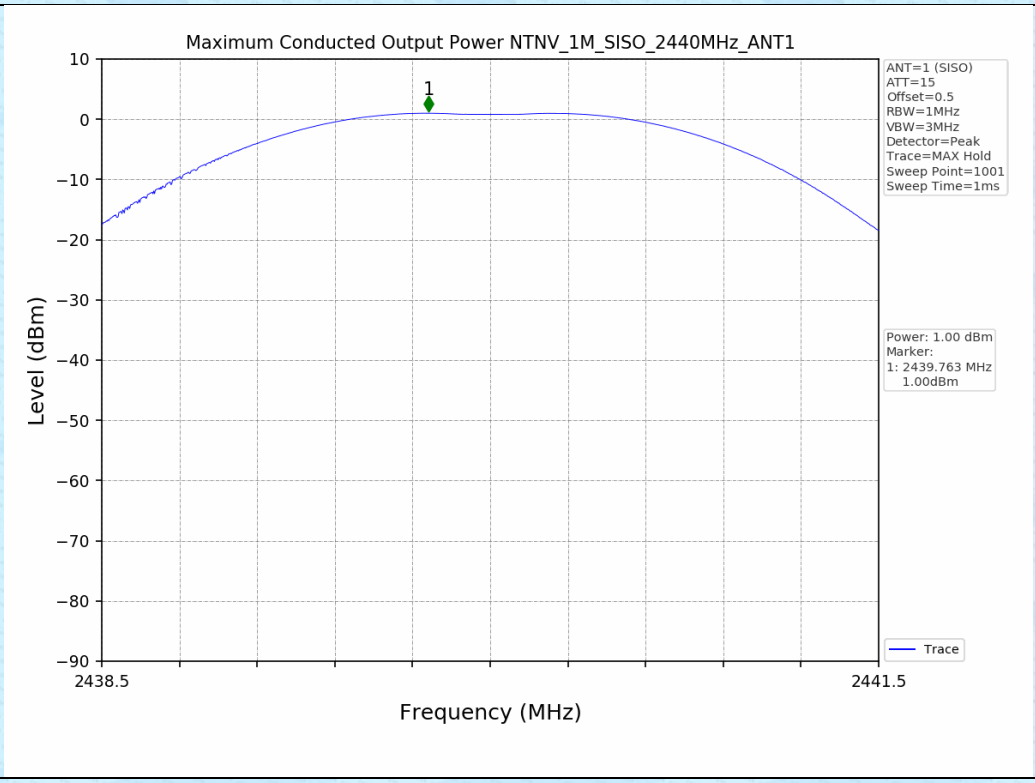
3. Maximum Conducted Output Power

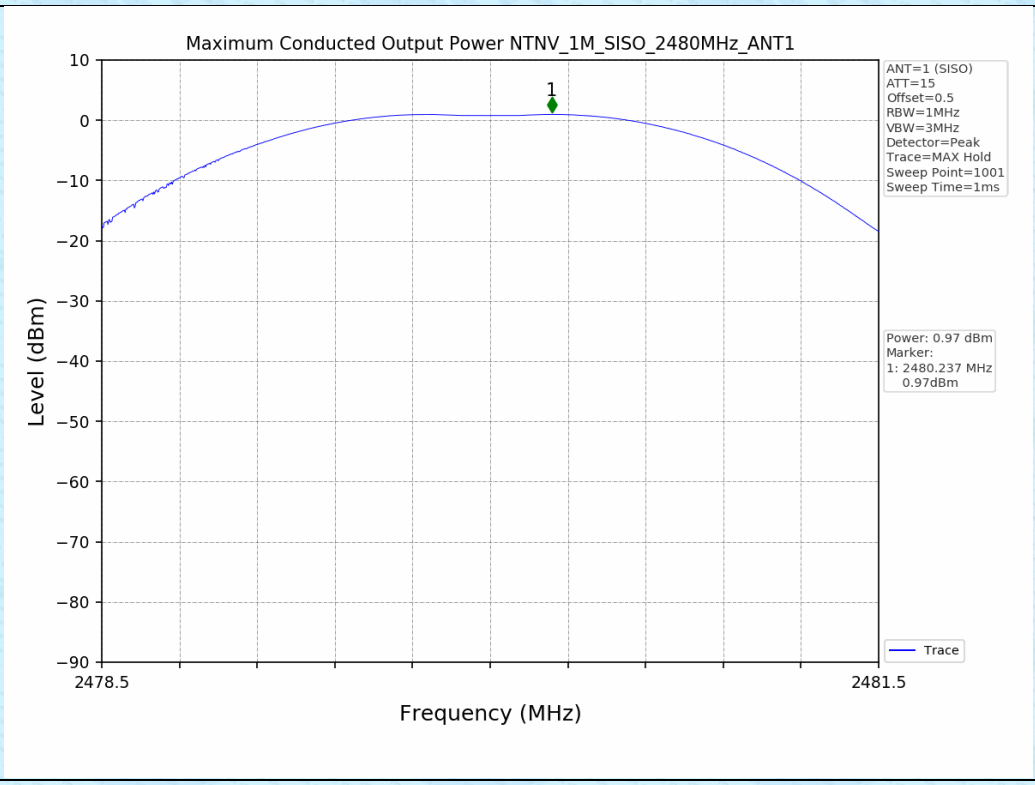
3.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
1M	2402	SISO	0.01	30	PASS
	2440	SISO	1.00	30	PASS
	2480	SISO	0.97	30	PASS

3.2 Test Graph




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: 1.00 dBm
Marker:
1: 2439.763 MHz
1.00dBm
Trace
Level (dBm)
Frequency (MHz)
2438.5
2441.5

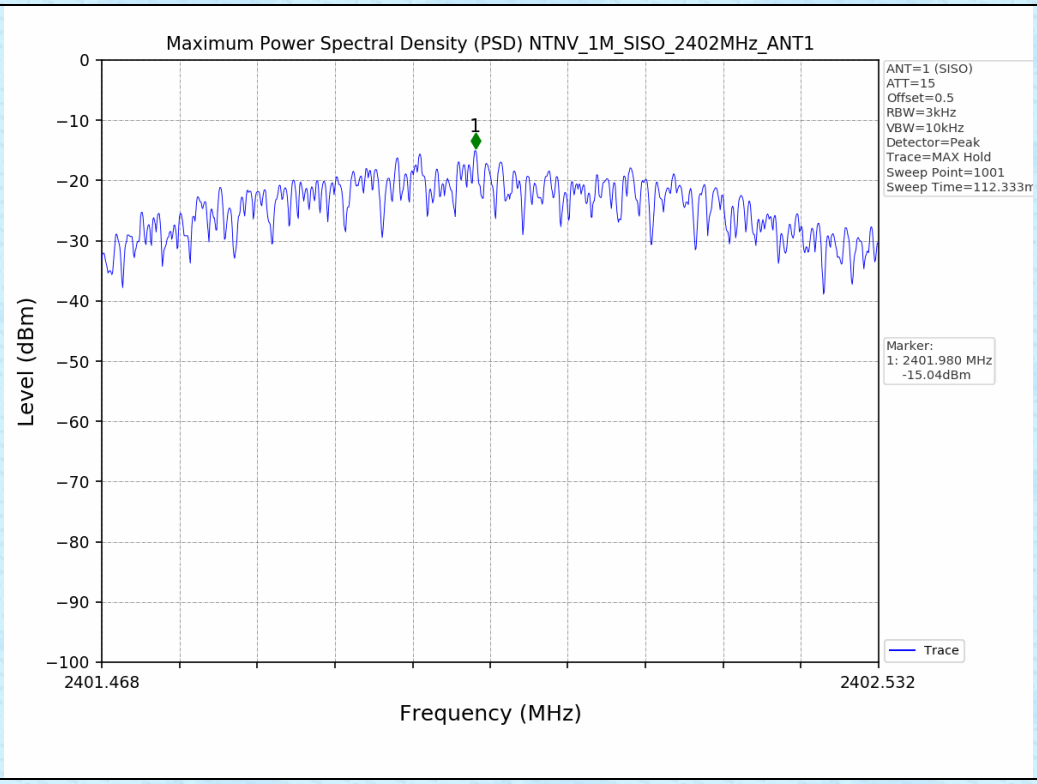

Maximum Conducted Output Power NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 0.97 dBm
Marker:
1: 2480.237 MHz
0.97dBm
Trace
Level (dBm)
Frequency (MHz)
2478.5
2481.5

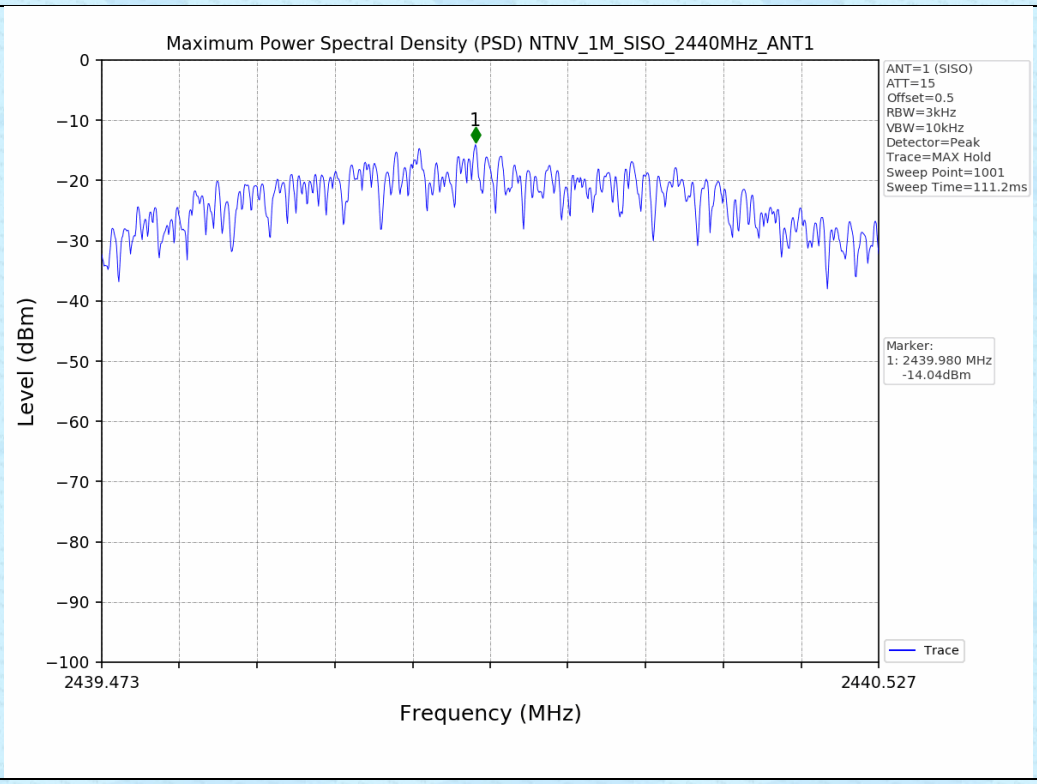
4. Maximum Power Spectral Density (PSD)

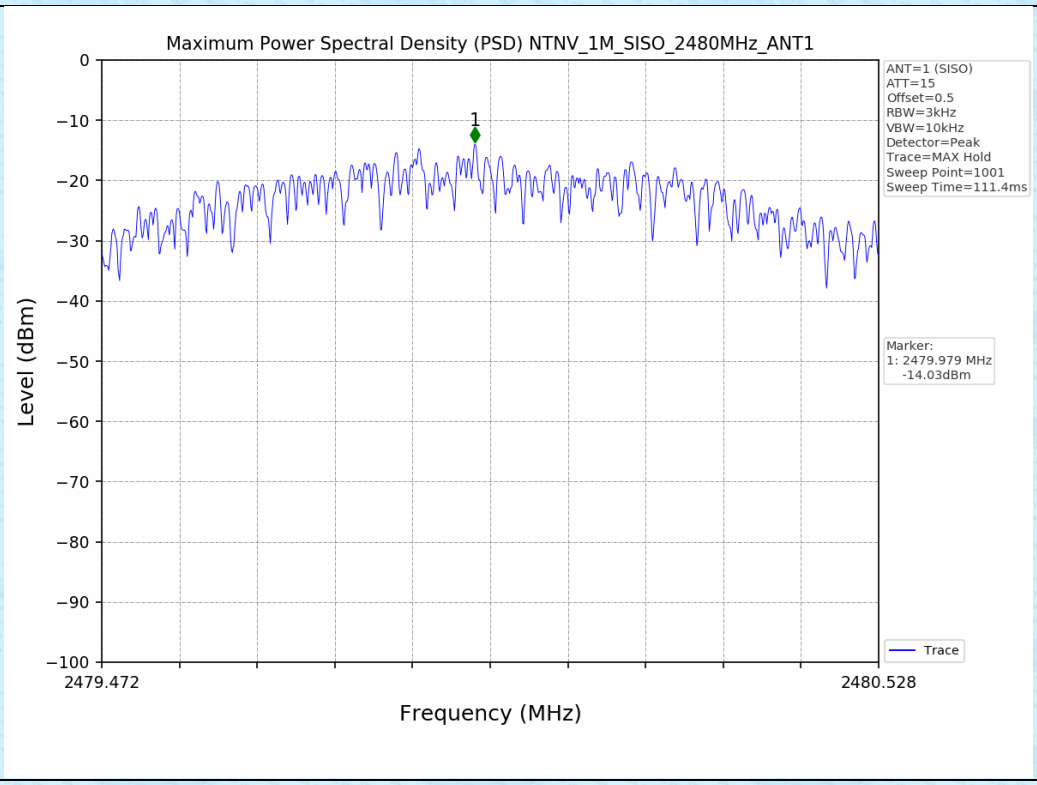
4.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
			Ant 1		
1M	2402	SISO	-15.04	≤8	PASS
	2440	SISO	-14.04	≤8	PASS
	2480	SISO	-14.03	≤8	PASS

4.2 Test Graph




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=111.2ms
Marker:
1: 2439.980 MHz
-14.04dBm
Trace
Level (dBm)
Frequency (MHz)
2439.473
2440.527

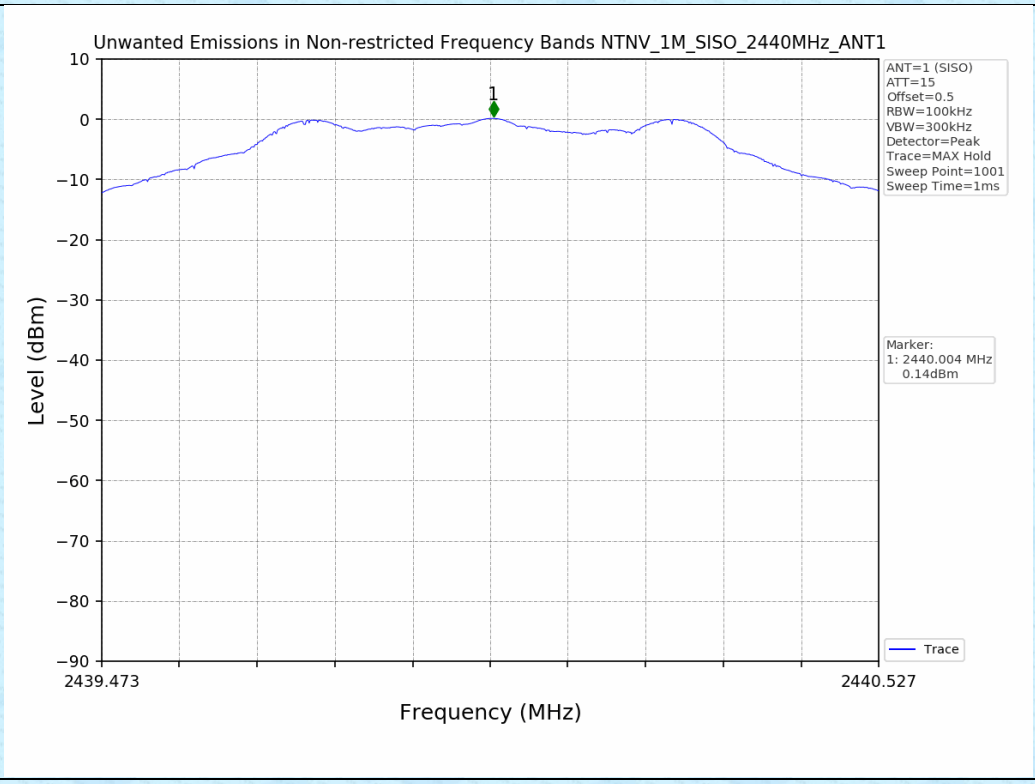

Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=111.4ms
Marker:
1: 2479.979 MHz
-14.03dBm
Trace
Level (dBm)
Frequency (MHz)
2479.472
2480.528

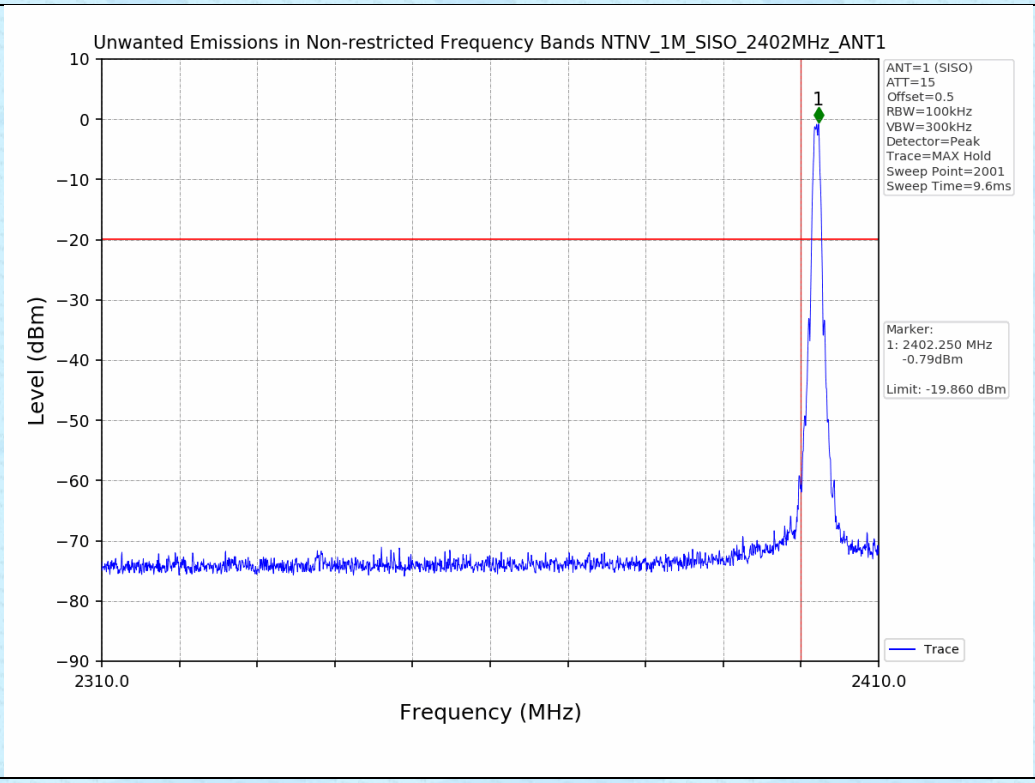
5. Unwanted Emissions in Non-restricted Frequency Bands

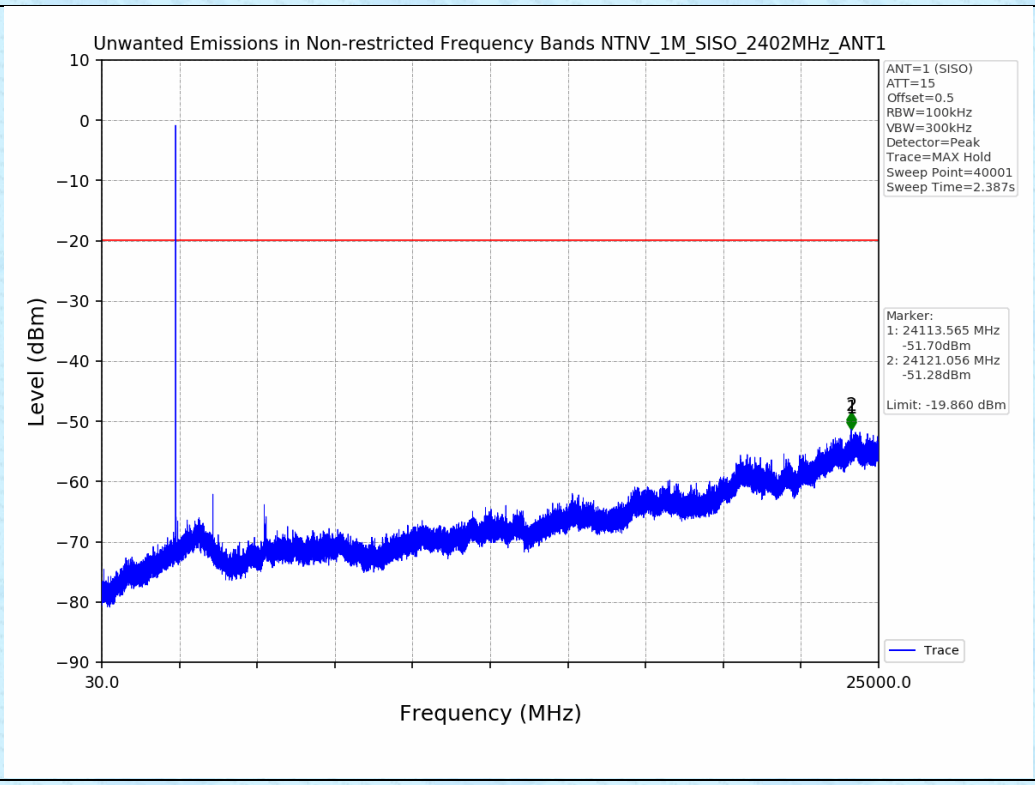
5.1 Test Result

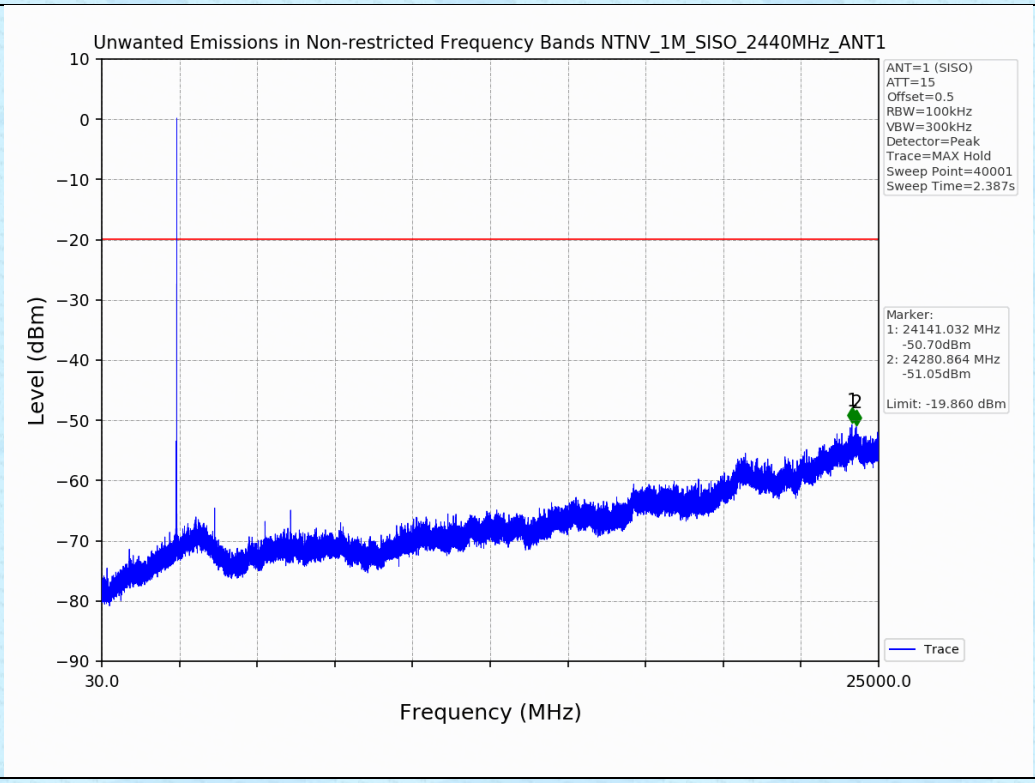
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
1M	2402	SISO	1	Refer to test graph	-19.86	PASS
	2440	SISO	1	Refer to test graph	-19.86	PASS
	2480	SISO	1	Refer to test graph	-19.86	PASS

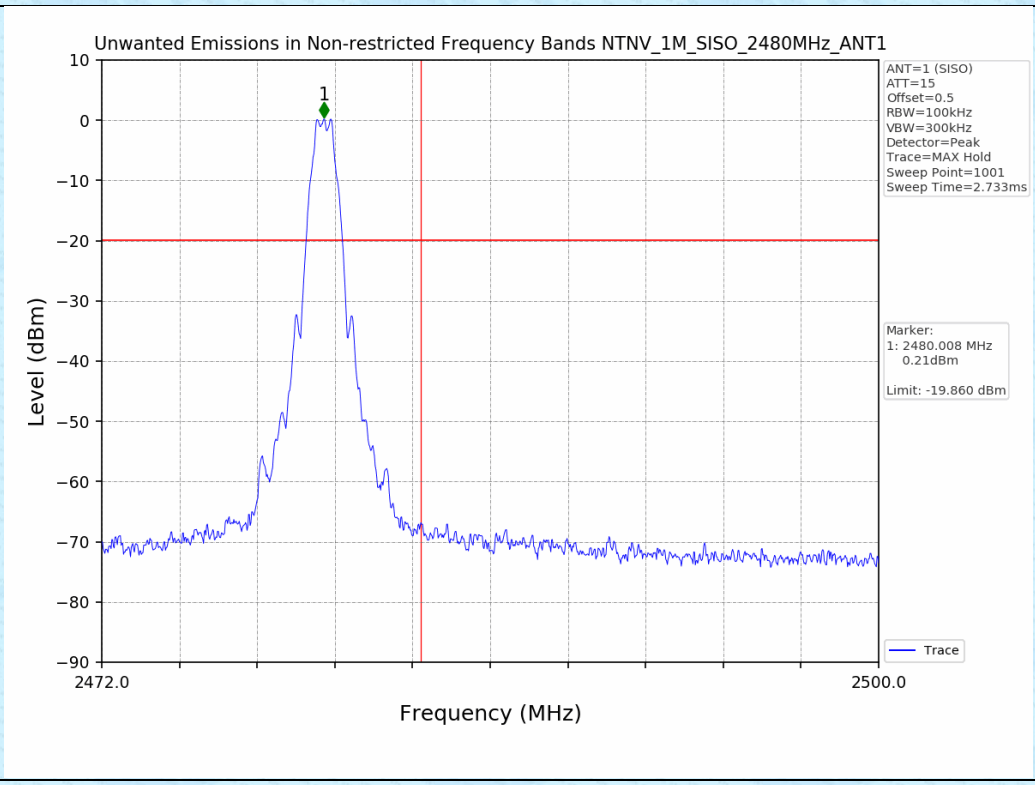
5.2 Test Graph

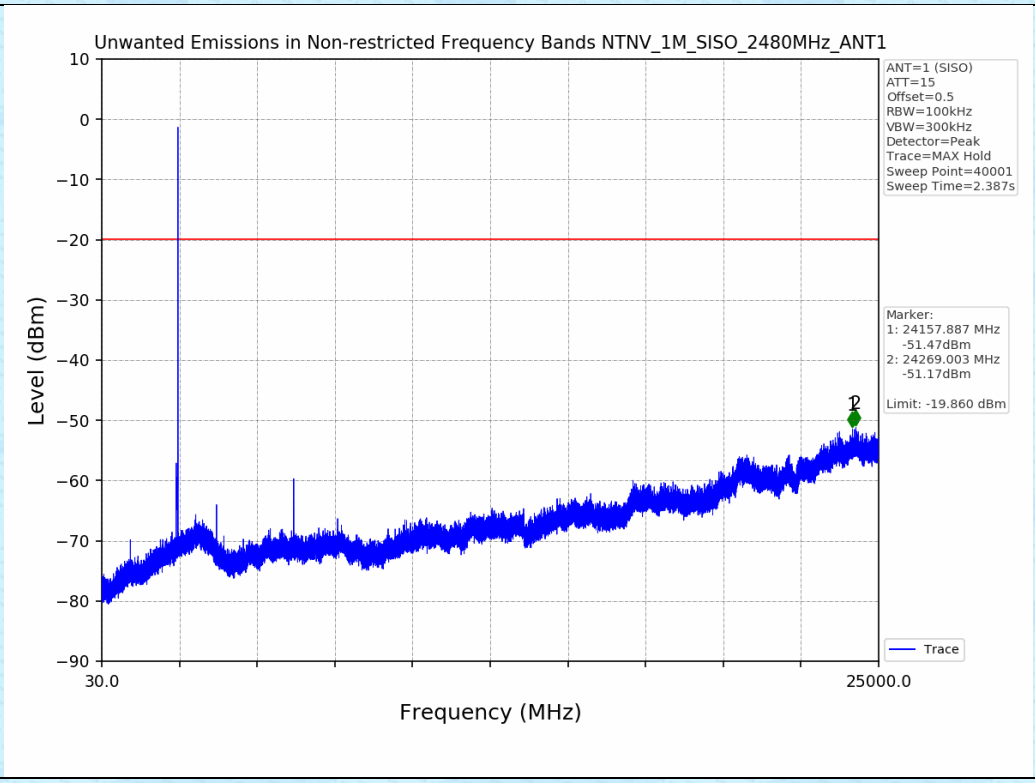



Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=2001
Sweep Time=9.6ms
Marker:
1: 2402.250 MHz
-0.79dBm
Limit: -19.860 dBm
Trace
Level (dBm)
Frequency (MHz)
2310.0
2410.0


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: 24113.565 MHz
-51.70dBm
2: 24121.056 MHz
-51.28dBm
Limit: -19.860 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: 24141.032 MHz
-50.70dBm
2: 24280.864 MHz
-51.05dBm
Limit: -19.860 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: 2480.008 MHz
0.21dBm
Limit: -19.860 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0

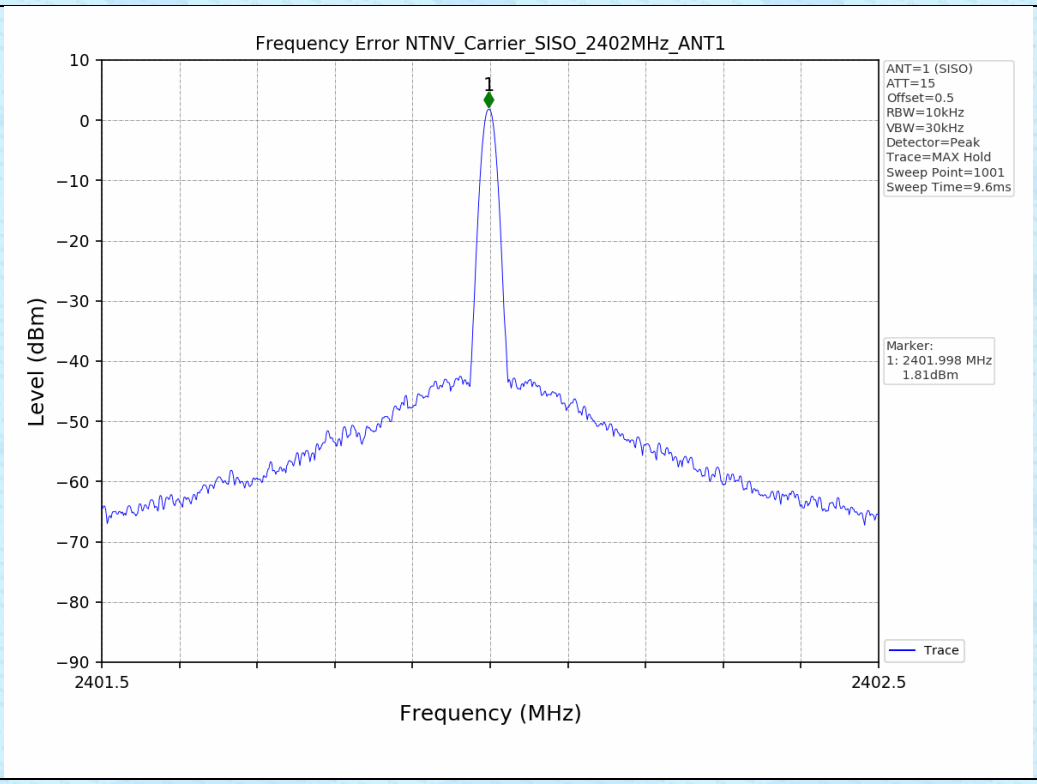


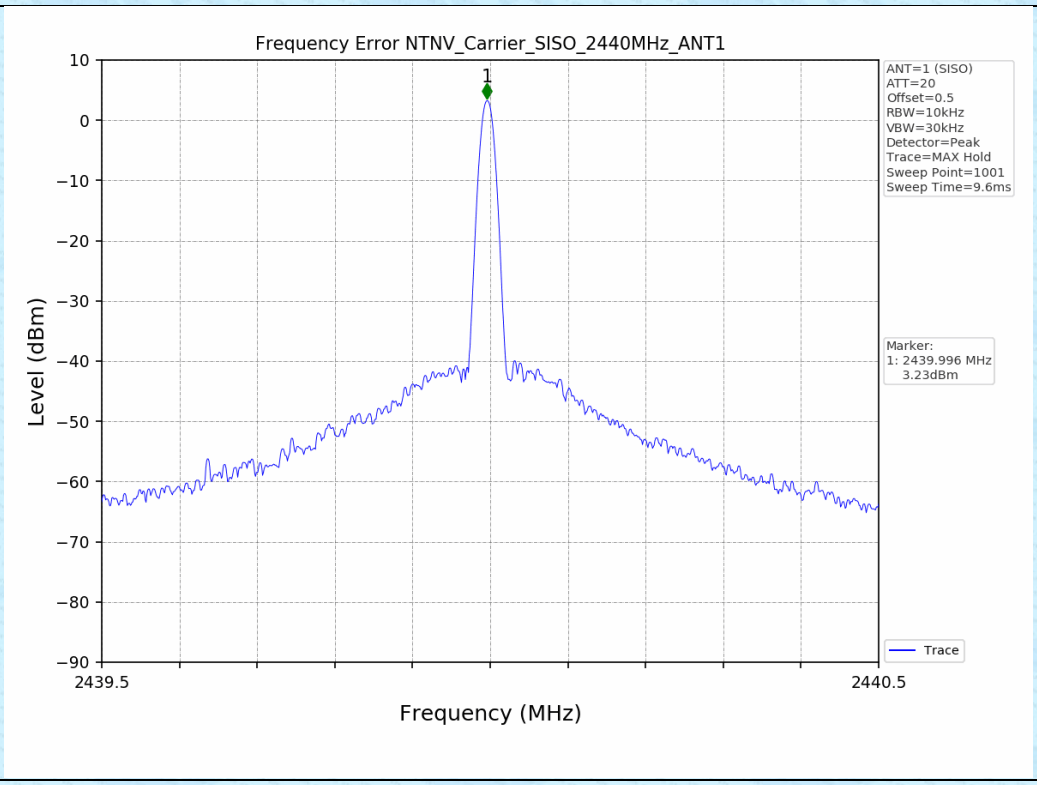
6. Frequency Error

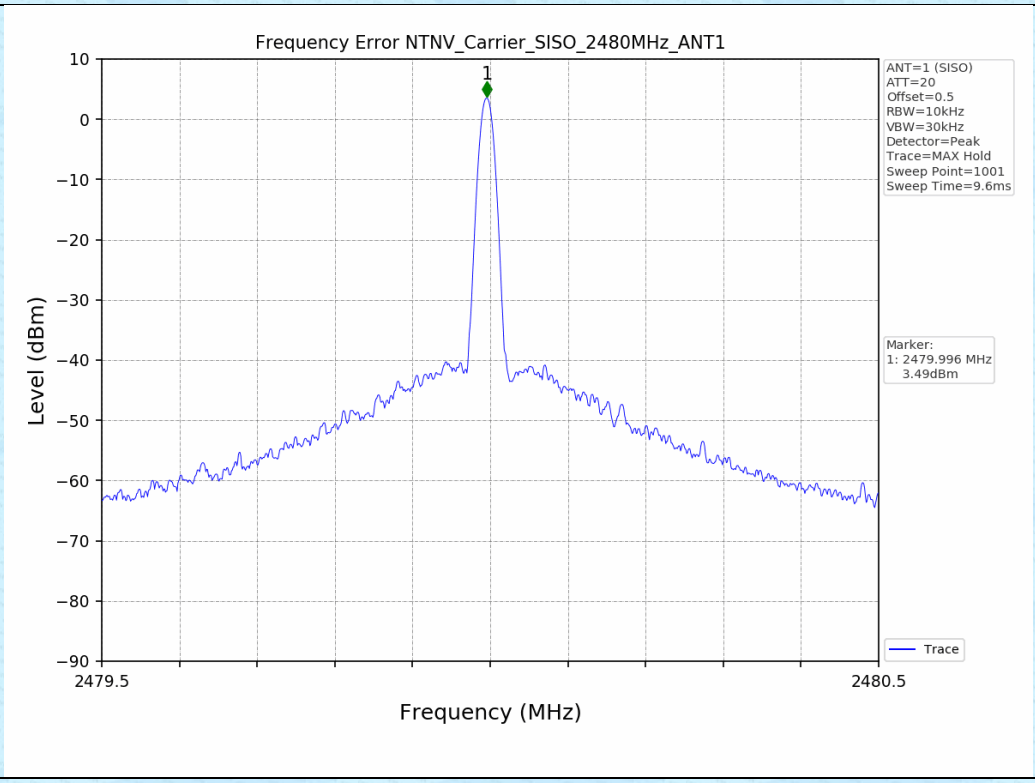
6.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT	Measured Frequency (MHz)		Verdict
				Test Result	Limit	
Carrier	2402	SISO	1	2402.00	2400-2483.5	PASS
	2440	SISO	1	2440.00	2400-2483.5	PASS
	2480	SISO	1	2480.00	2400-2483.5	PASS

6.2 Test Graph


Frequency Error NTNV_Carrier_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=0.5
RBW=10kHz
VBW=30kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=9.6ms
Marker:
1: 2401.998 MHz
1.81dBm
Trace
Level (dBm)
Frequency (MHz)
2401.5
2402.5


Frequency Error NTNV_Carrier_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=20
Offset=0.5
RBW=10kHz
VBW=30kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=9.6ms
Marker:
1: 2439.996 MHz
3.23dBm
Trace
Level (dBm)
Frequency (MHz)
2439.5
2440.5


Frequency Error NTNV_Carrier_SISO_2480MHz_ANT1
Level (dBm)
Frequency (MHz)
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
2479.5
2480.5
1
ANT=1 (SISO)
ATT=20
Offset=0.5
RBW=10kHz
VBW=30kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=9.6ms
Marker:
1: 2479.996 MHz
3.49dBm
Trace

------End------