Appendix for 15.247

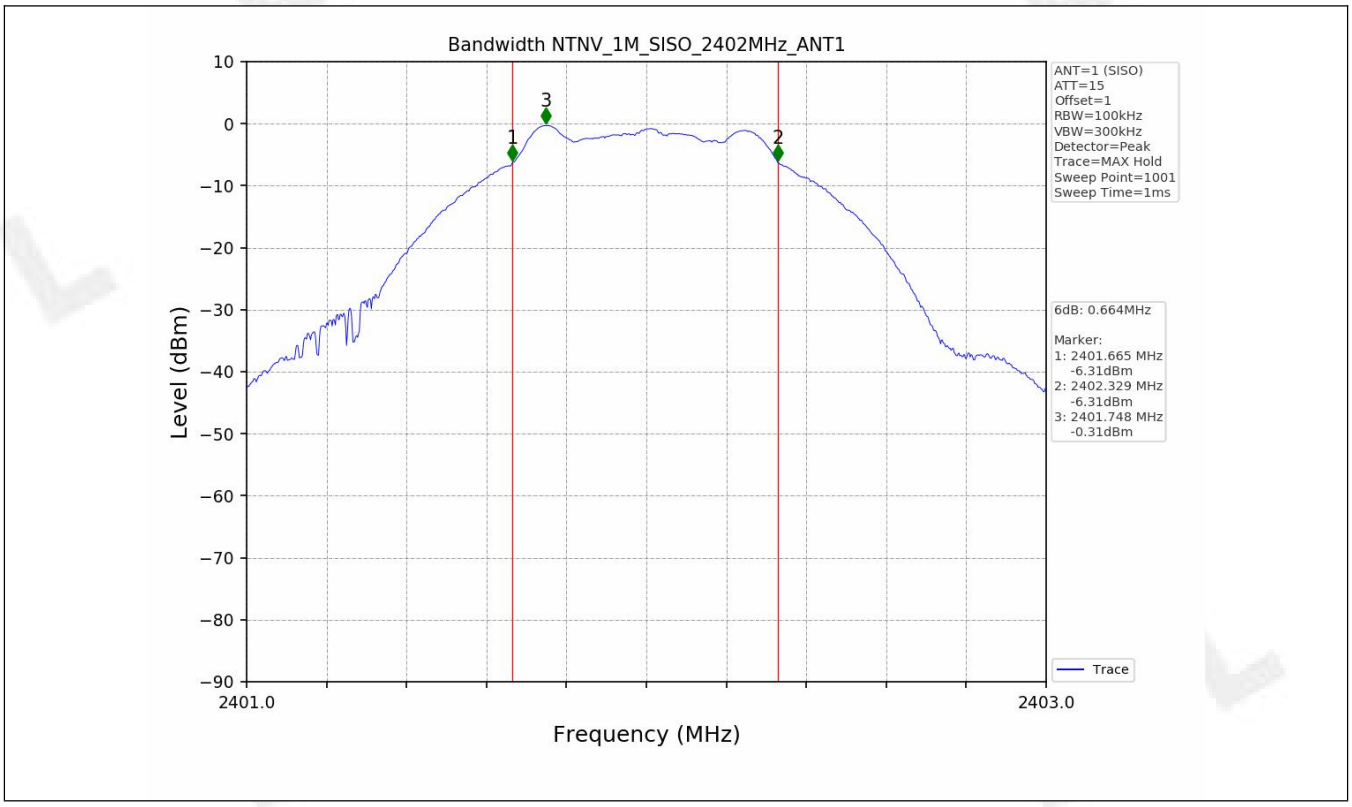
1. Bandwidth

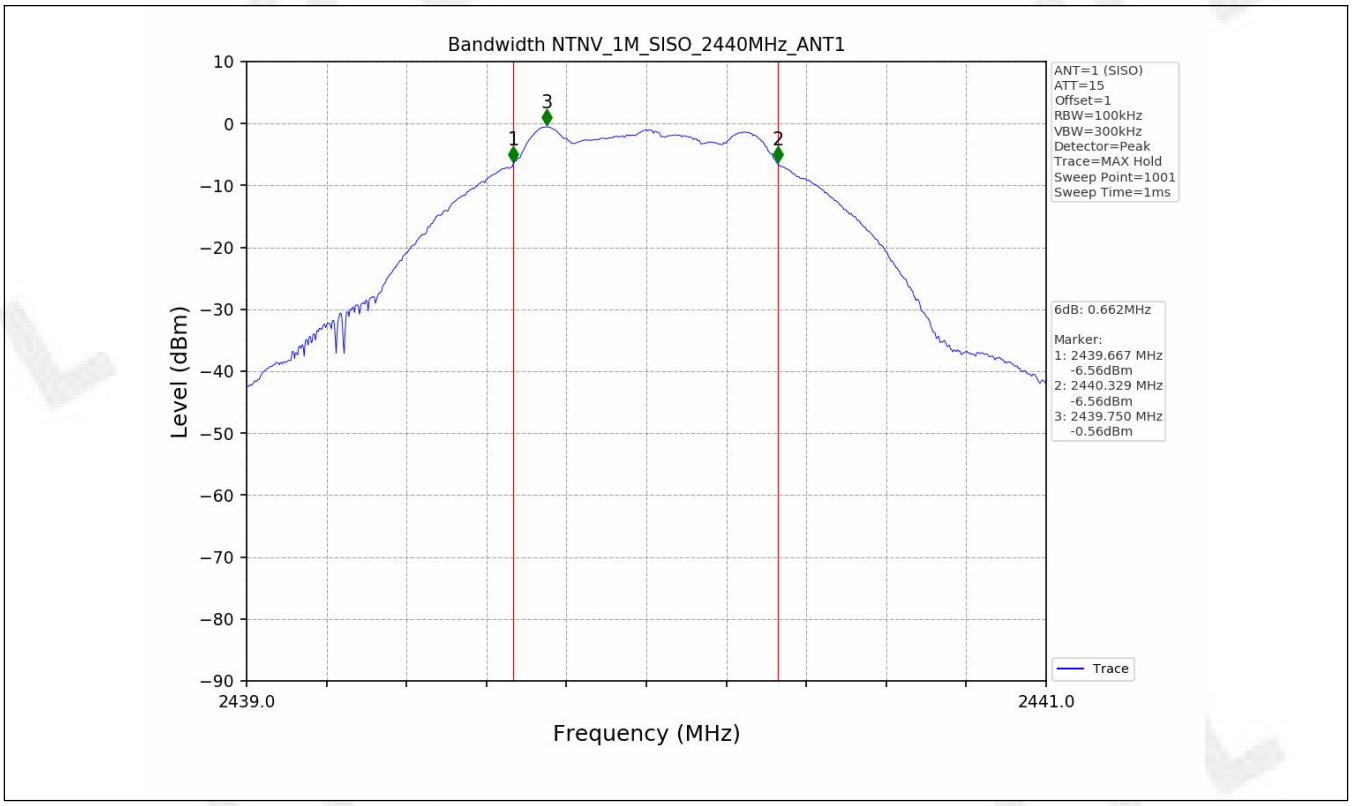
1.1 Test Result

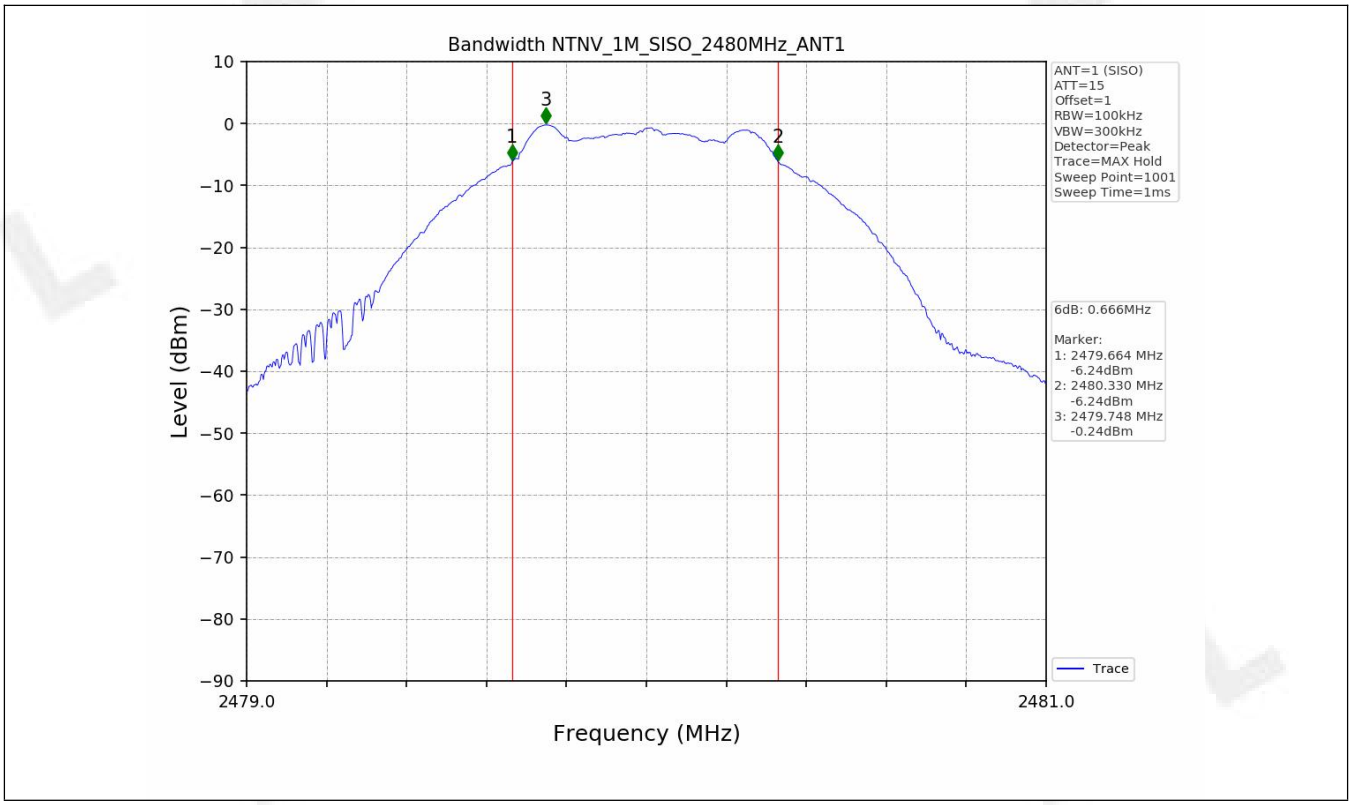
Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth Test Result (MHz)	Verdict
1M	2402	SISO	1	0.664	PASS
	2440	SISO	1	0.662	PASS
	2480	SISO	1	0.666	PASS
2M	2402	SISO	1	1.171	PASS
	2440	SISO	1	1.164	PASS
	2480	SISO	1	1.163	PASS

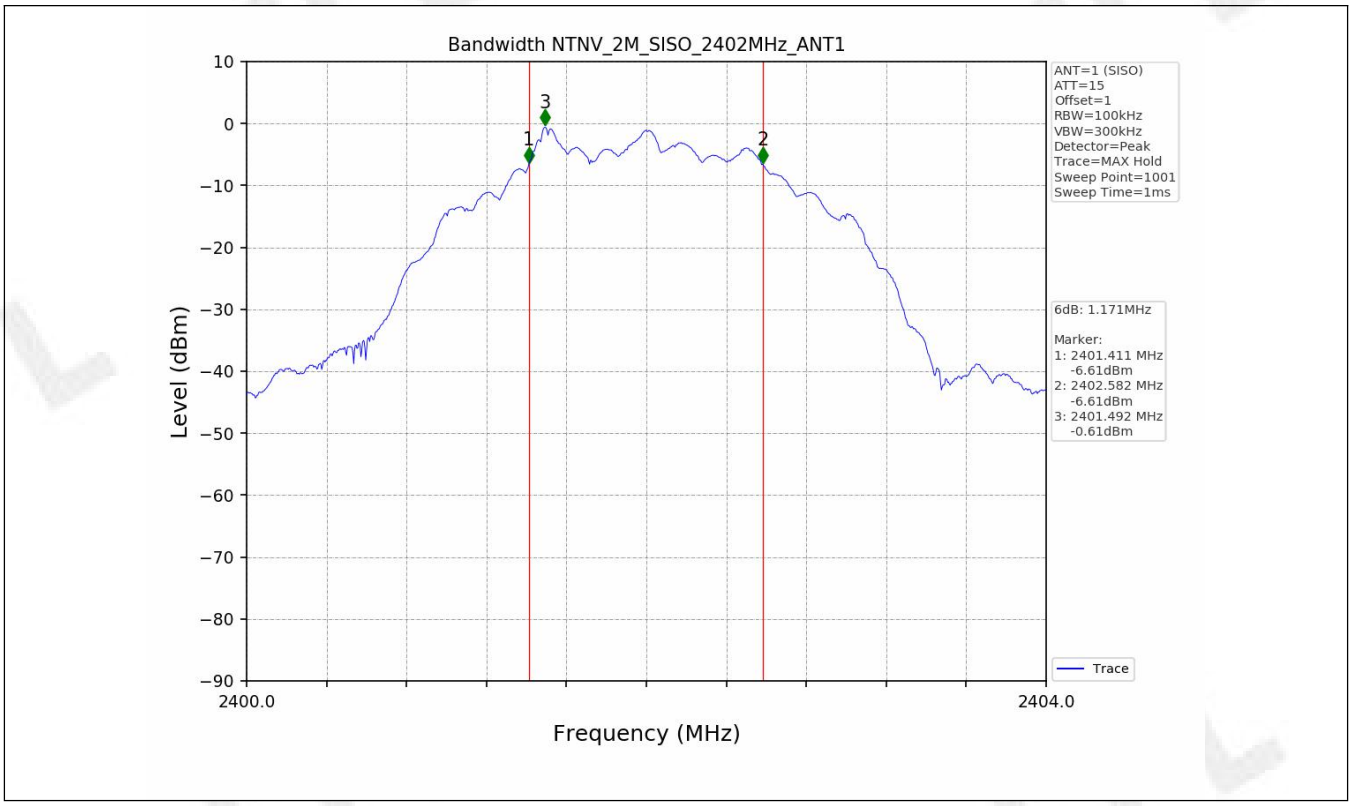
Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth Test Result (MHz)	
1M	2402	SISO	1	1.010	Only for Report Use
	2440	SISO	1	1.009	Only for Report Use
	2480	SISO	1	1.013	Only for Report Use
2M	2402	SISO	1	2.016	Only for Report Use
	2440	SISO	1	2.015	Only for Report Use
	2480	SISO	1	2.022	Only for Report Use

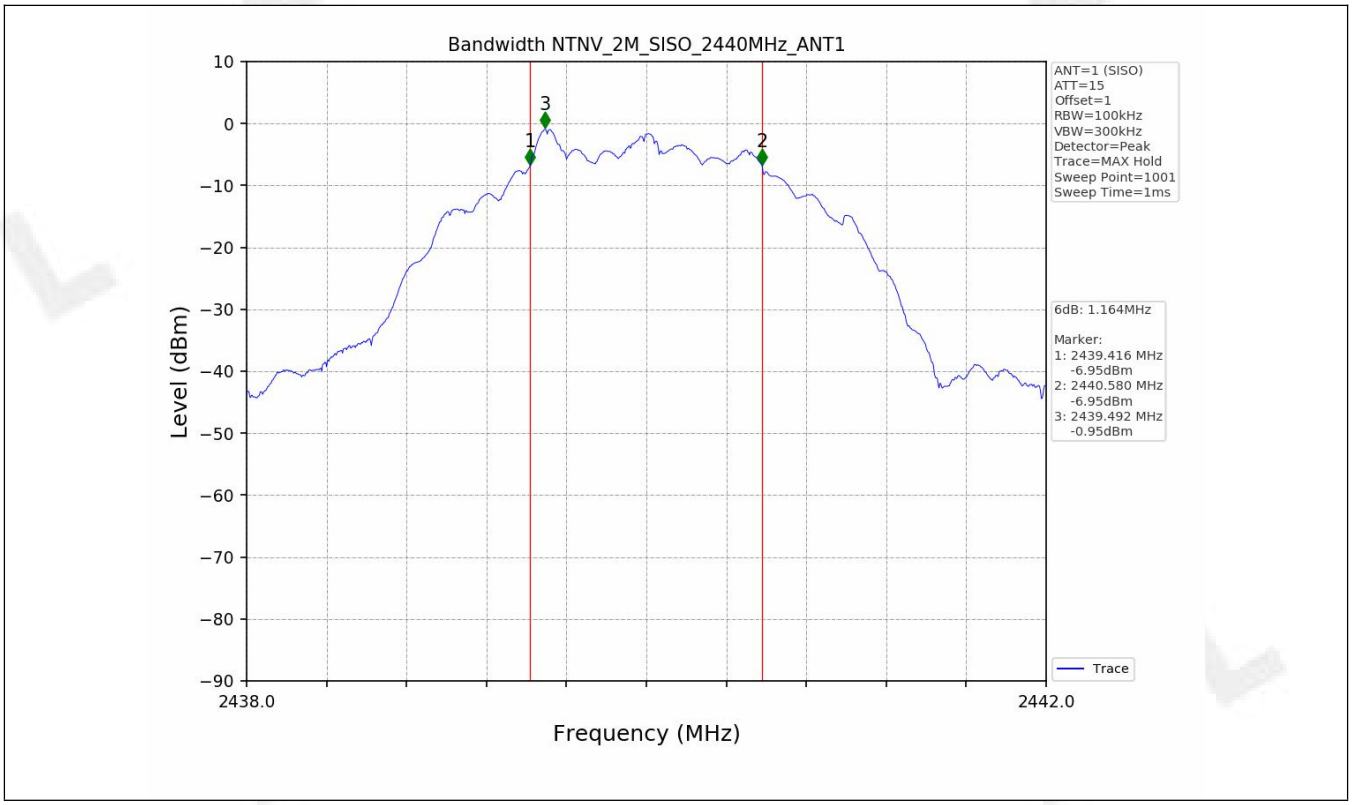
1.2 Test Graph - 6dB Bandwidth

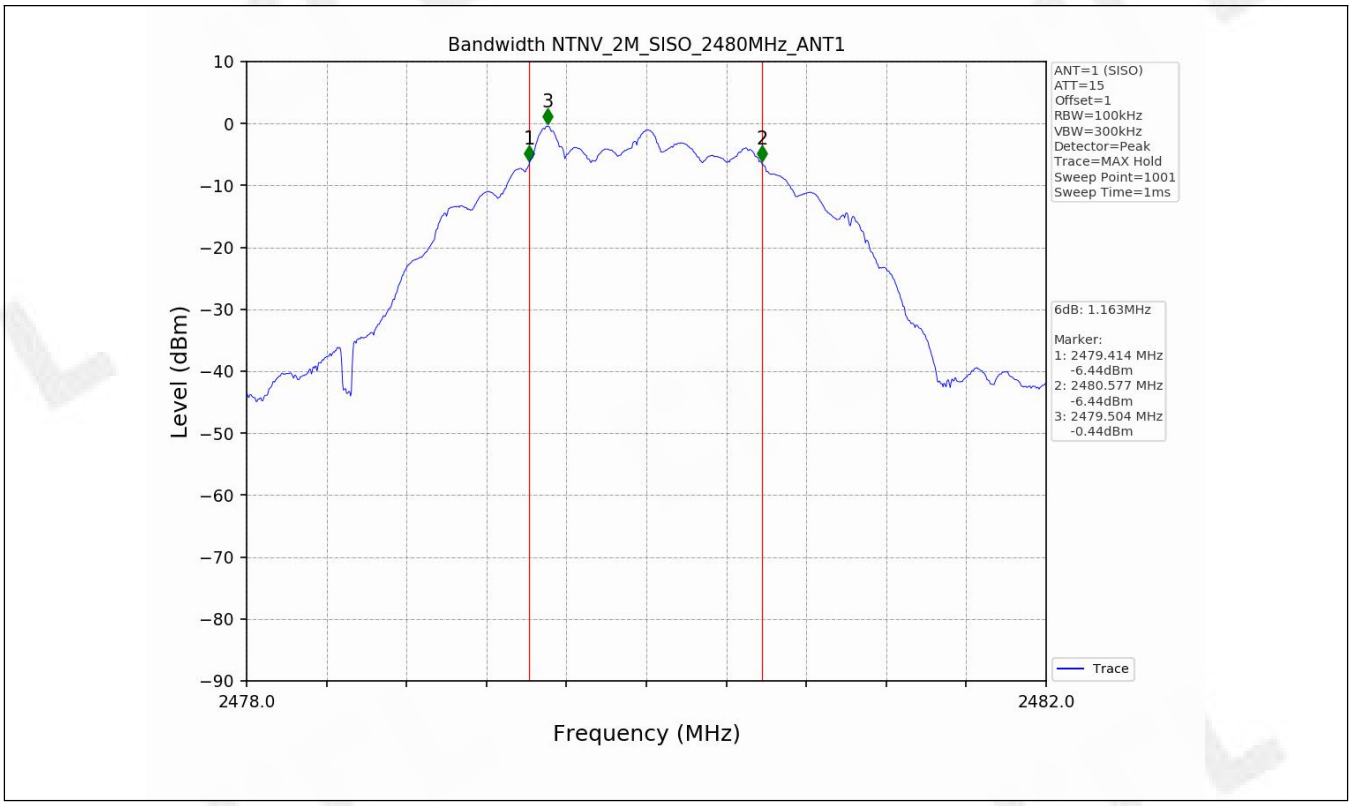



Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 0.662MHz
Marker:
1: 2439.667 MHz
-6.56dBm
2: 2440.329 MHz
-6.56dBm
3: 2439.750 MHz
-0.56dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0

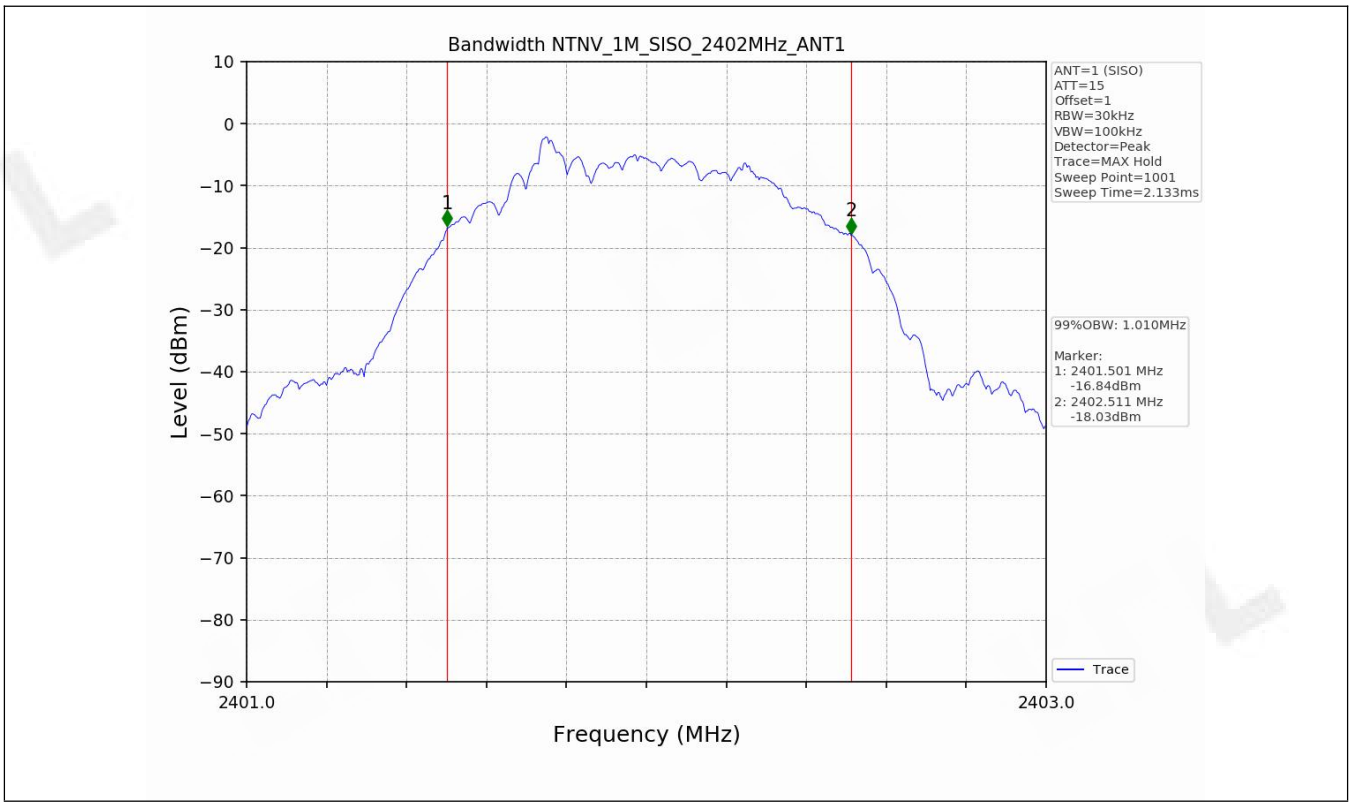

Bandwidth NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 0.666MHz
Marker:
1: 2479.664 MHz
-6.24dBm
2: 2480.330 MHz
-6.24dBm
3: 2479.748 MHz
-0.24dBm
Trace
Level (dBm)
Frequency (MHz)
2479.0
2481.0

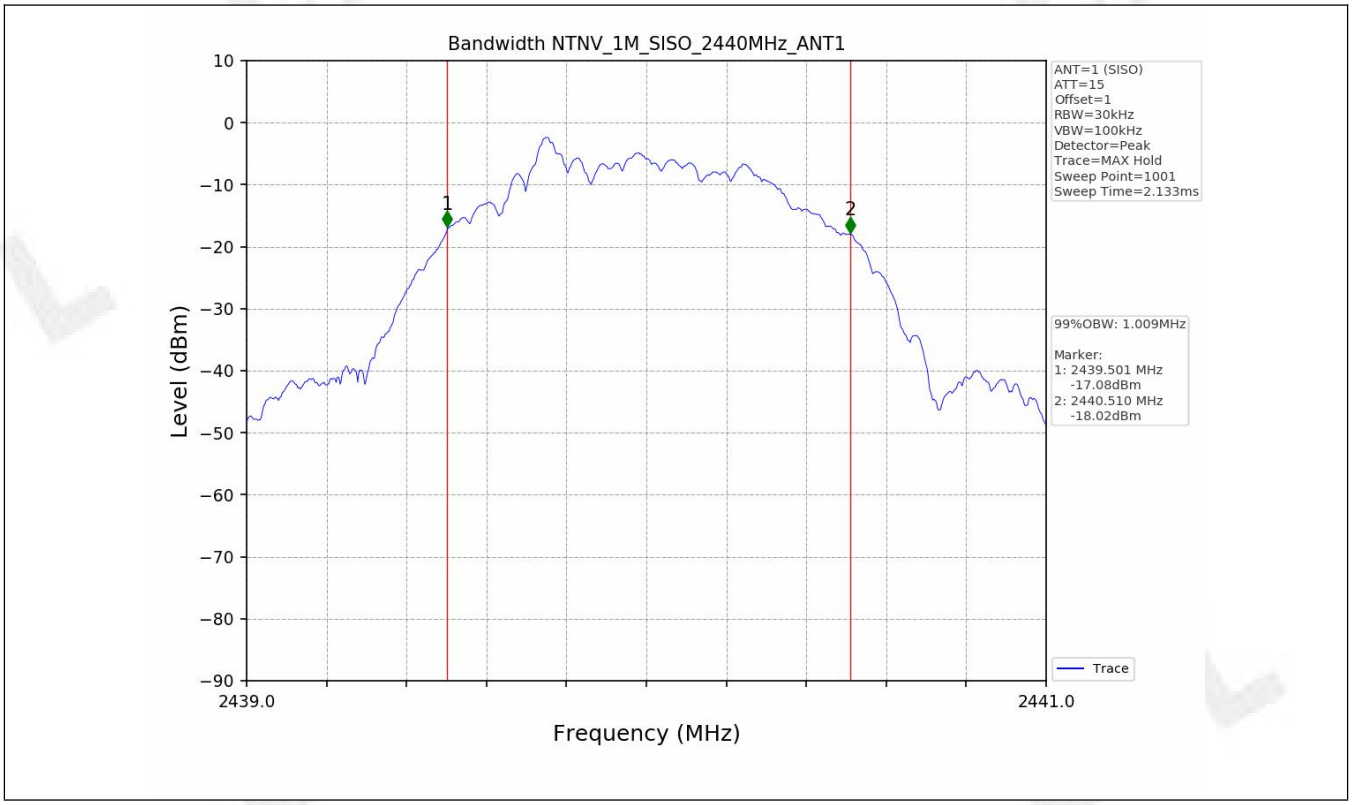

Bandwidth NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 1.171MHz
Marker:
1: 2401.411 MHz
-6.61dBm
2: 2402.582 MHz
-6.61dBm
3: 2401.492 MHz
-0.61dBm
Trace
Level (dBm)
Frequency (MHz)
2400.0
2404.0

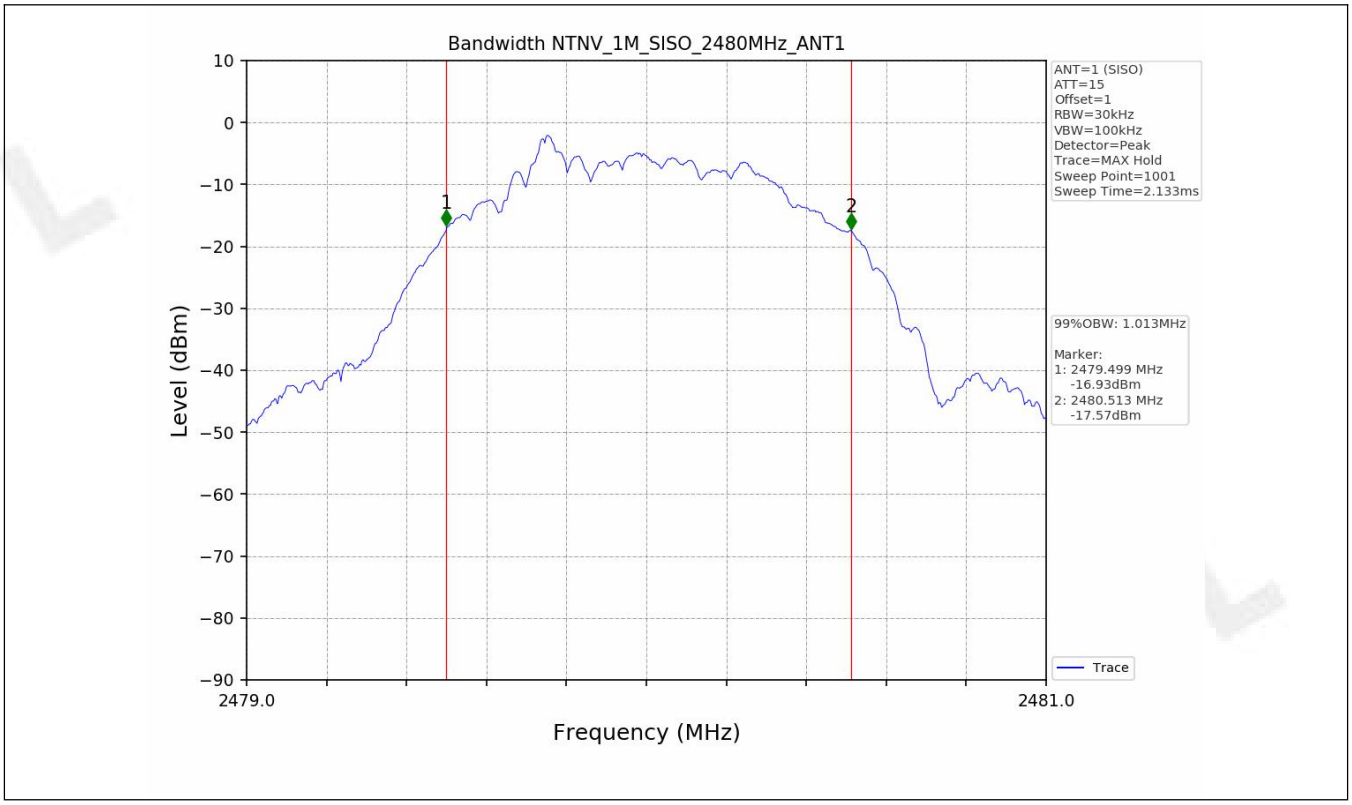

Bandwidth NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 1.164MHz
Marker:
1: 2439.416 MHz
-6.95dBm
2: 2440.580 MHz
-6.95dBm
3: 2439.492 MHz
-0.95dBm
Trace
Level (dBm)
Frequency (MHz)
2438.0
2442.0

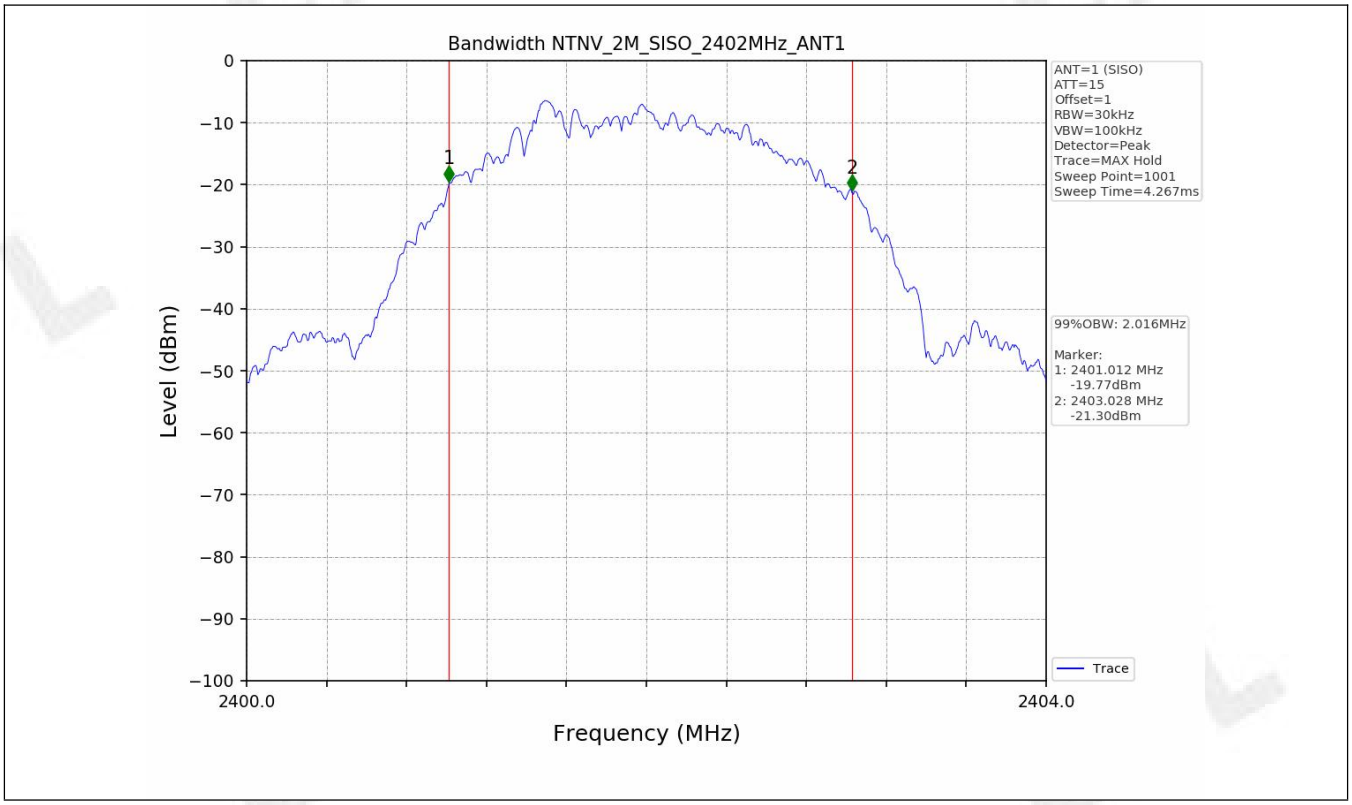


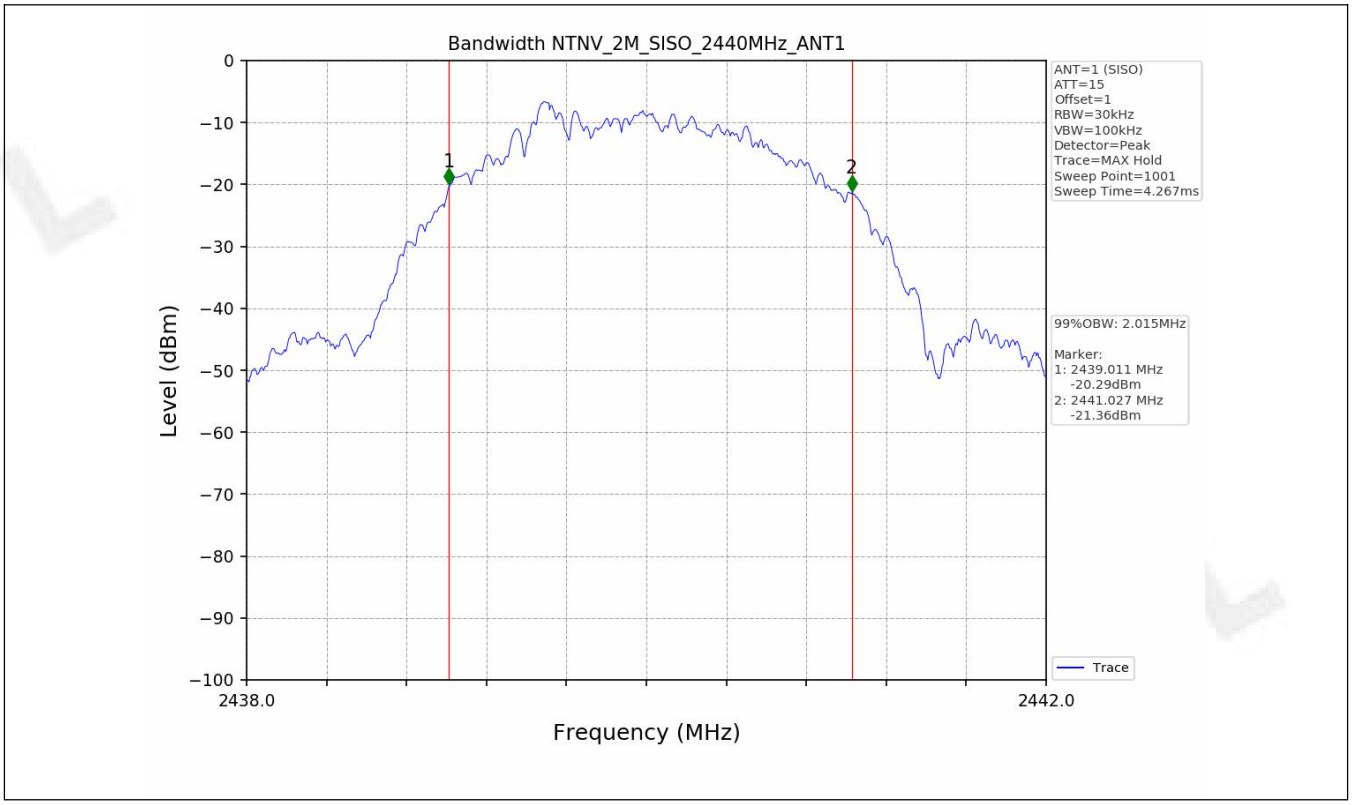
1.3 Test Graph - 99% Occupied Bandwidth

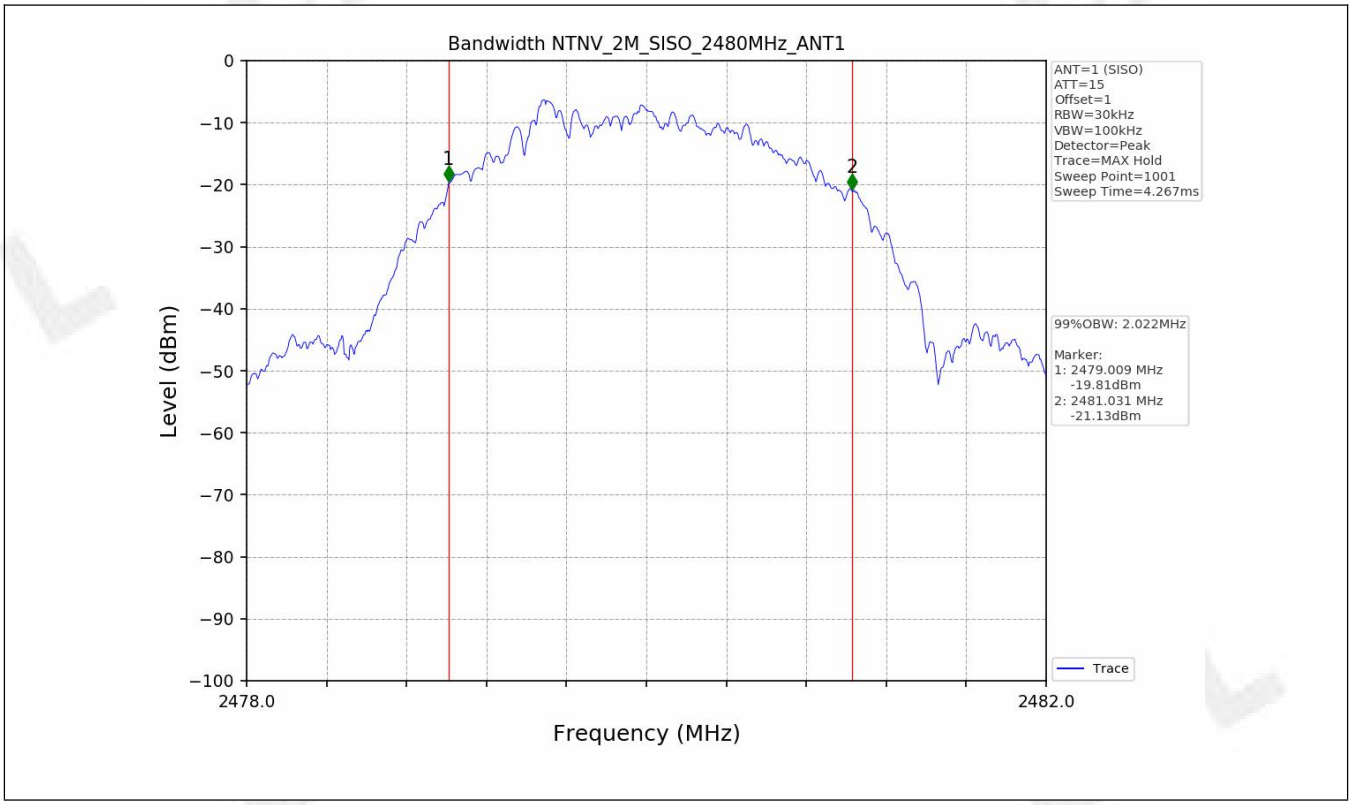



Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.009MHz
Marker:
1: 2439.501 MHz
-17.08dBm
2: 2440.510 MHz
-18.02dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0


Bandwidth NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.013MHz
Marker:
1: 2479.499 MHz
-16.93dBm
2: 2480.513 MHz
-17.57dBm
Trace
Level (dBm)
Frequency (MHz)
2479.0
2481.0


Bandwidth NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=4.267ms
99%OBW: 2.016MHz
Marker:
1: 2401.012 MHz
-19.77dBm
2: 2403.028 MHz
-21.30dBm
Trace
Level (dBm)
Frequency (MHz)
2400.0
2404.0


Bandwidth NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=4.267ms
99%OBW: 2.015MHz
Marker:
1: 2439.011 MHz
-20.29dBm
2: 2441.027 MHz
-21.36dBm
Trace
Level (dBm)
Frequency (MHz)
2438.0
2442.0

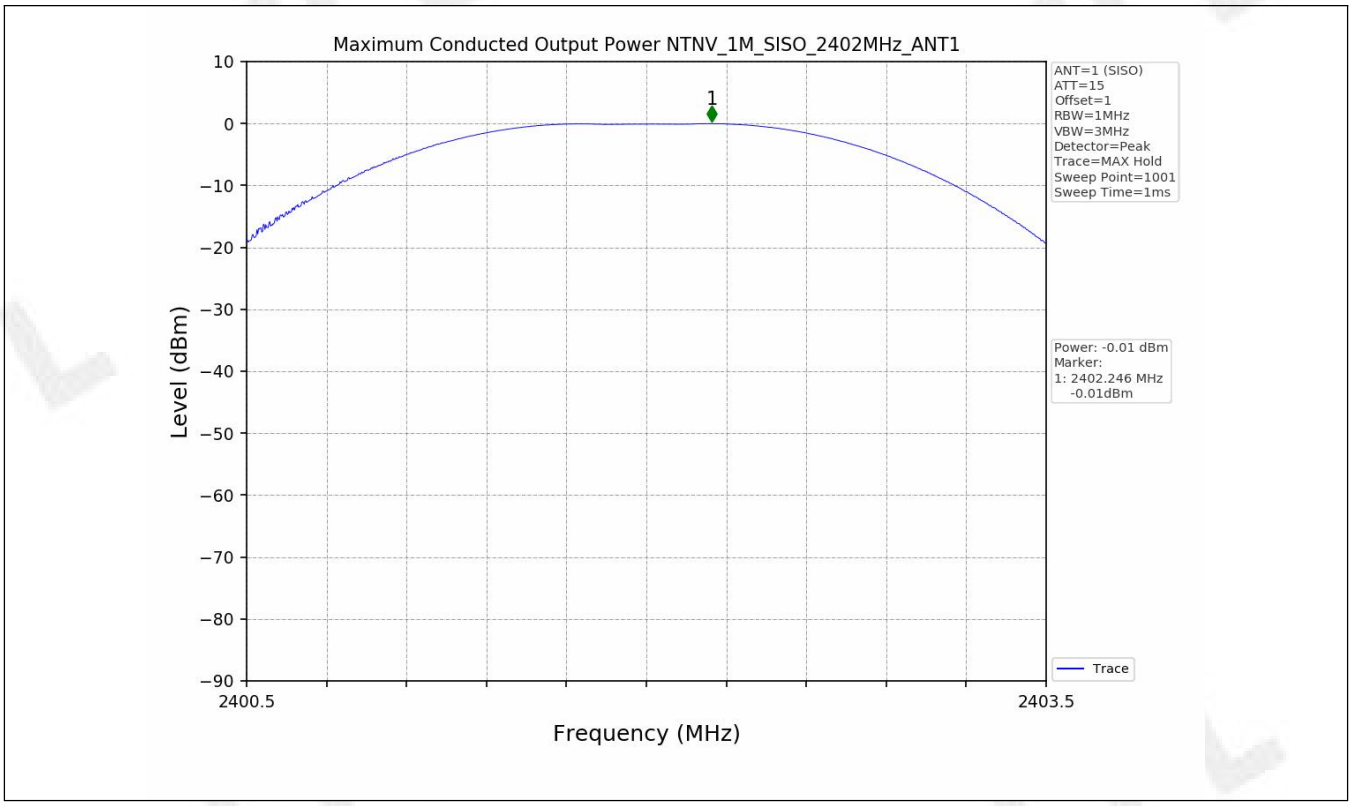


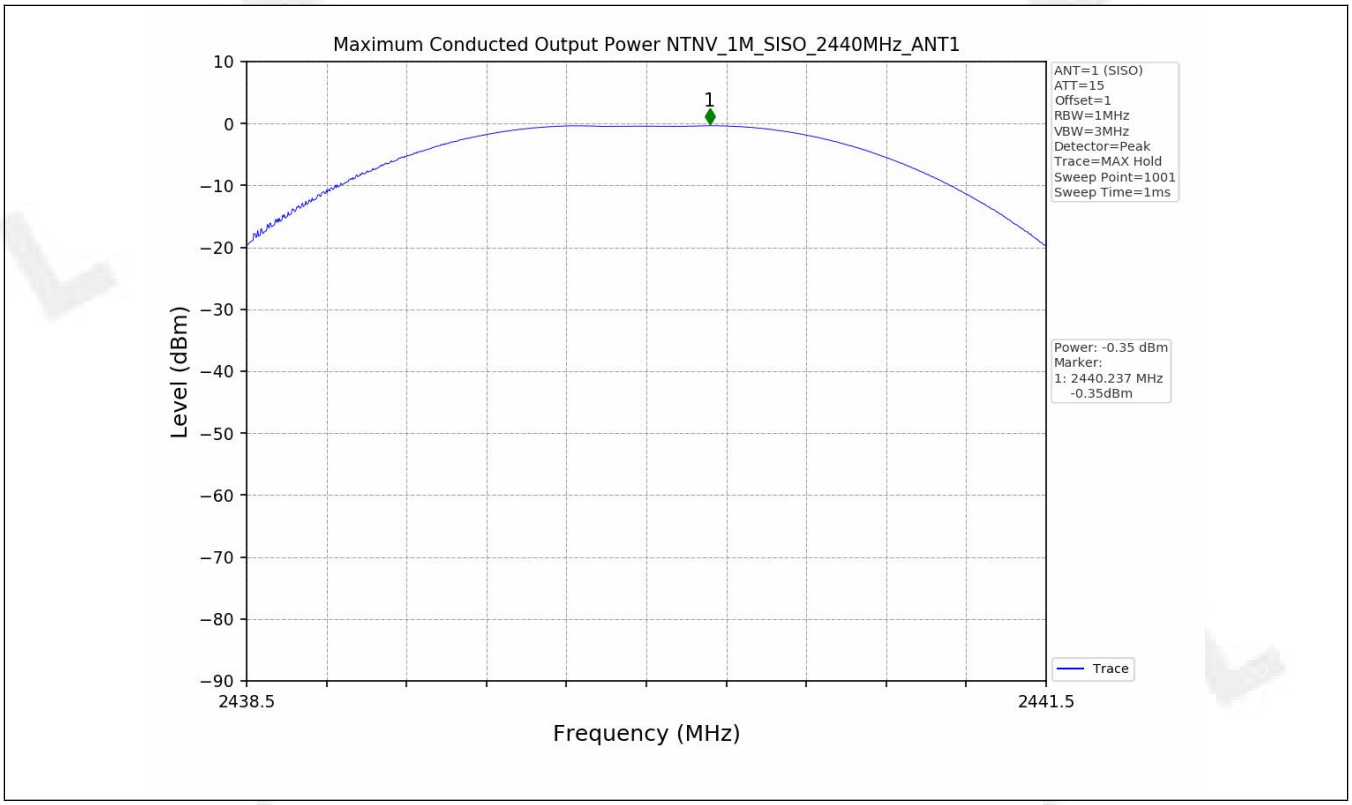
2. Maximum Conducted Output Power

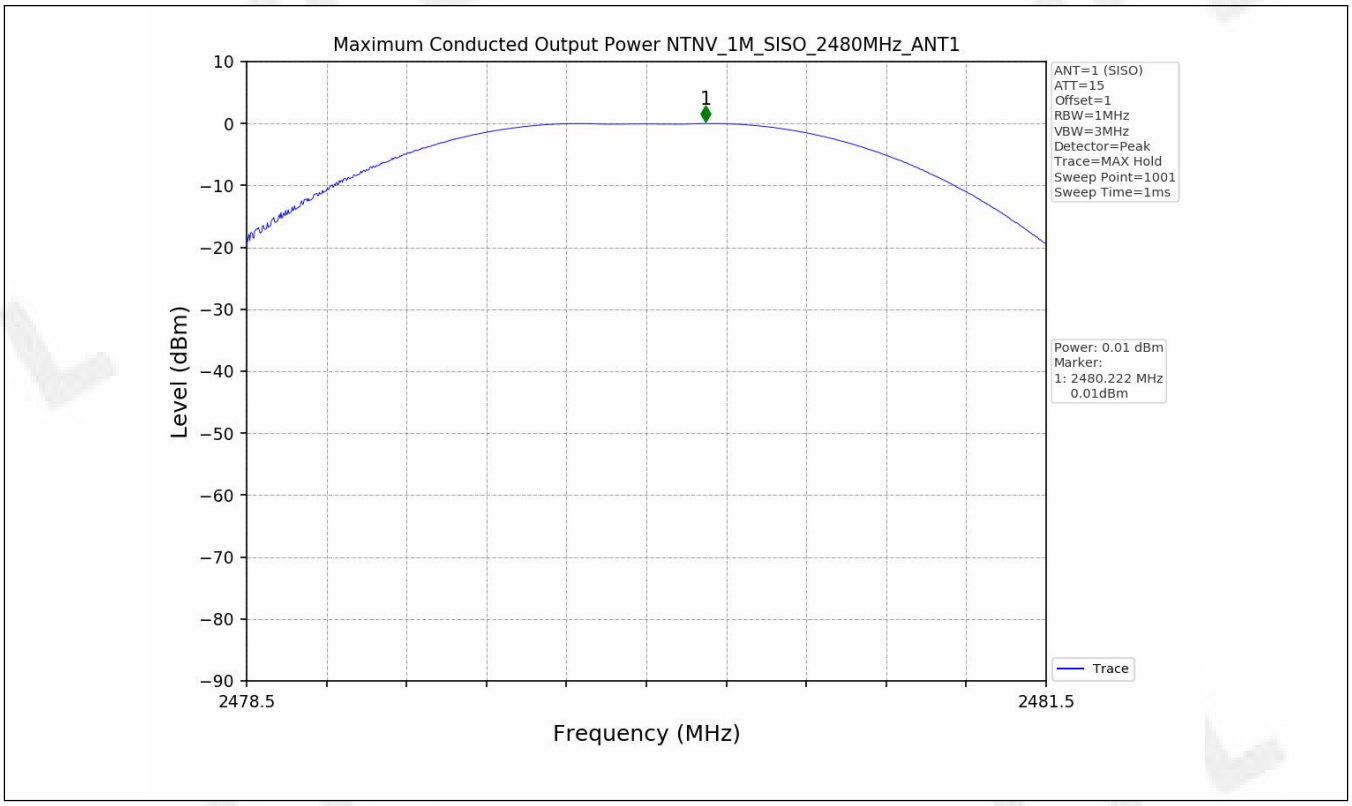
2.1 Test Result

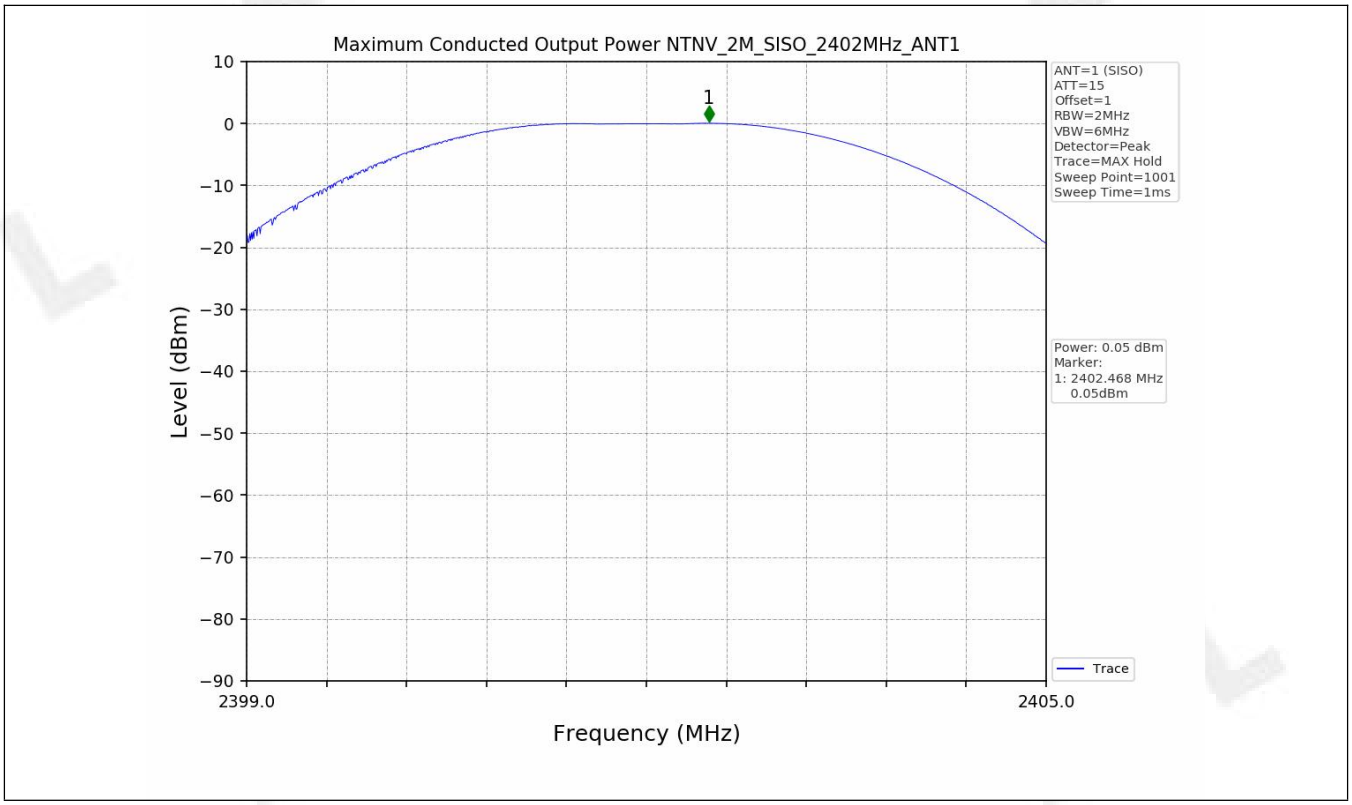
Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
1M	2402	SISO	-0.01	30	PASS
	2440	SISO	-0.35	30	PASS
	2480	SISO	0.01	30	PASS
2M	2402	SISO	0.05	30	PASS
	2440	SISO	-0.32	30	PASS
	2480	SISO	0.03	30	PASS

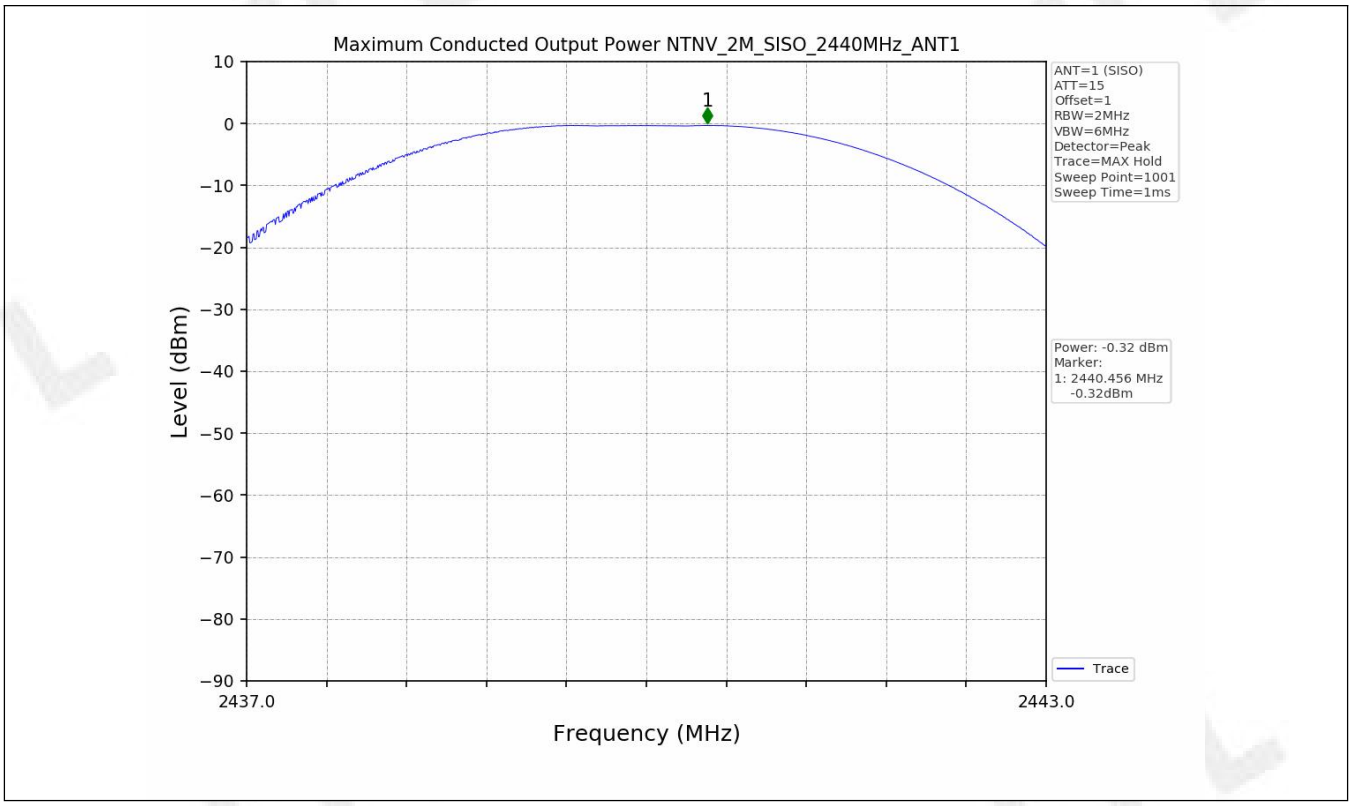
2.2 Test Graph

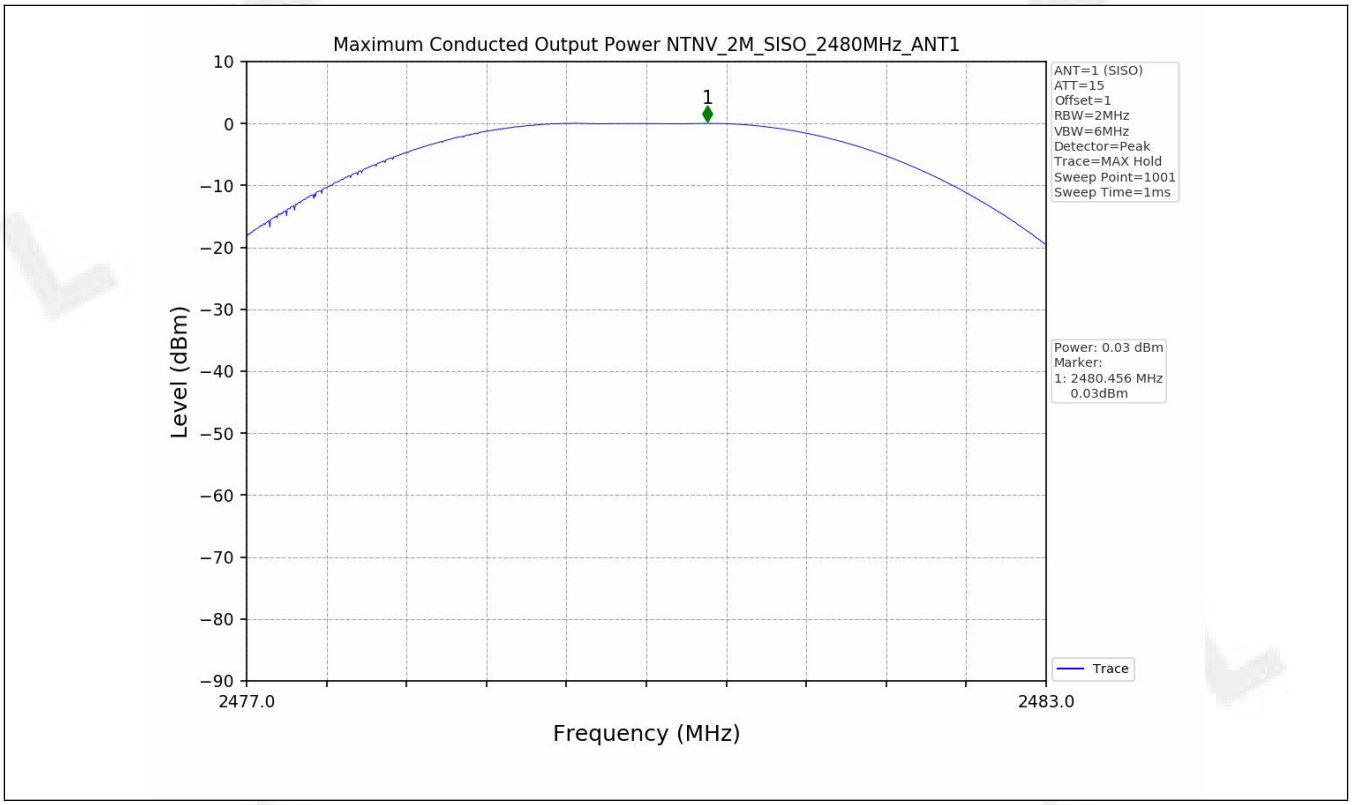

Maximum Conducted Output Power NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: -0.01 dBm
Marker:
1: 2402.246 MHz
-0.01dBm
Trace
Level (dBm)
Frequency (MHz)
2400.5
2403.5


Maximum Conducted Output Power NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: -0.35 dBm
Marker:
1: 2440.237 MHz
-0.35dBm
Trace
Level (dBm)
Frequency (MHz)
2438.5
2441.5


Maximum Conducted Output Power NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=1MHz
VBW=3MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 0.01 dBm
Marker:
1: 2480.222 MHz
0.01dBm
Trace
Level (dBm)
Frequency (MHz)
2478.5
2481.5


Maximum Conducted Output Power NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=2MHz
VBW=6MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 0.05 dBm
Marker:
1: 2402.468 MHz
0.05dBm
Trace
Level (dBm)
Frequency (MHz)
2399.0
2405.0


Maximum Conducted Output Power NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=2MHz
VBW=6MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: -0.32 dBm
Marker:
1: 2440.456 MHz
-0.32dBm
Trace
Level (dBm)
Frequency (MHz)
2437.0
2443.0

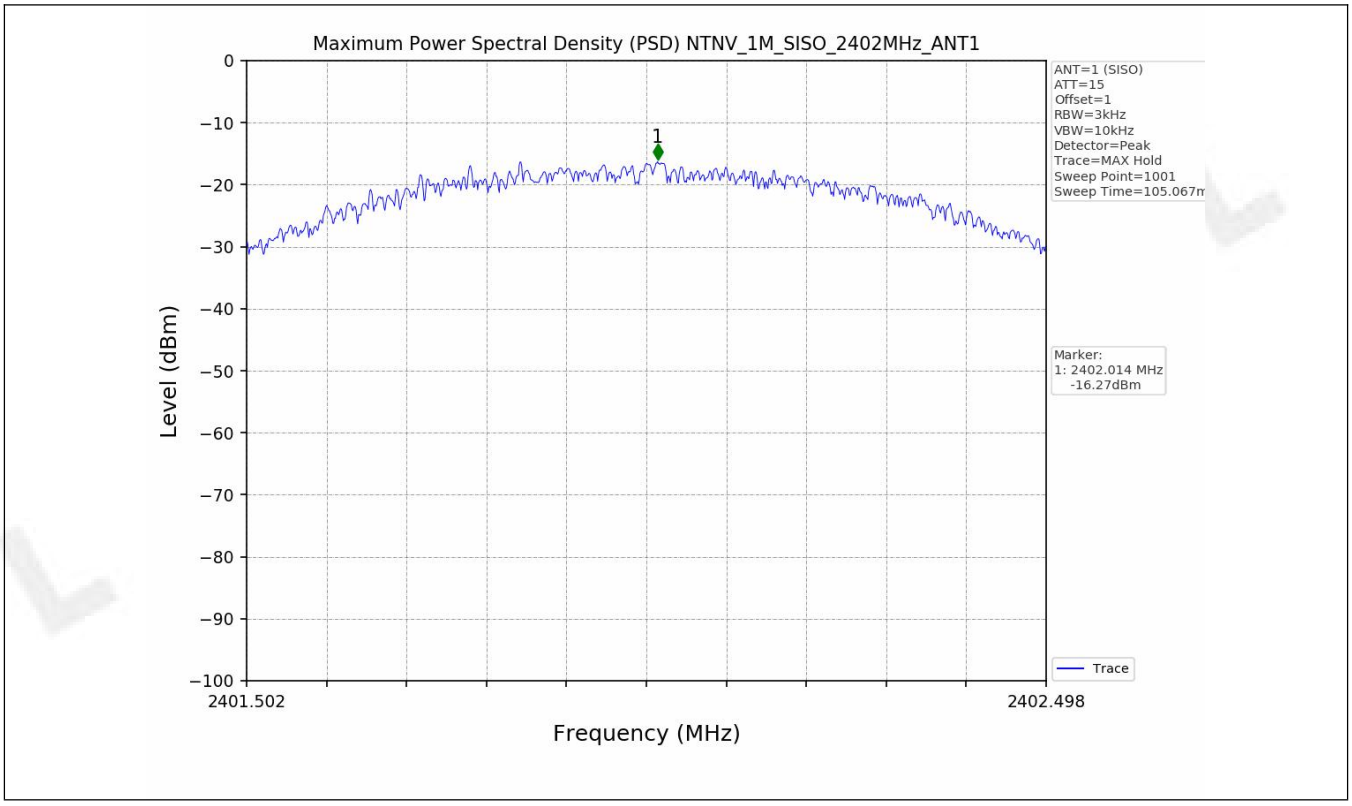

Maximum Conducted Output Power NTNV_2M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=2MHz
VBW=6MHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Power: 0.03 dBm
Marker:
1: 2480.456 MHz
0.03dBm
Trace
Level (dBm)
Frequency (MHz)
2477.0
2483.0

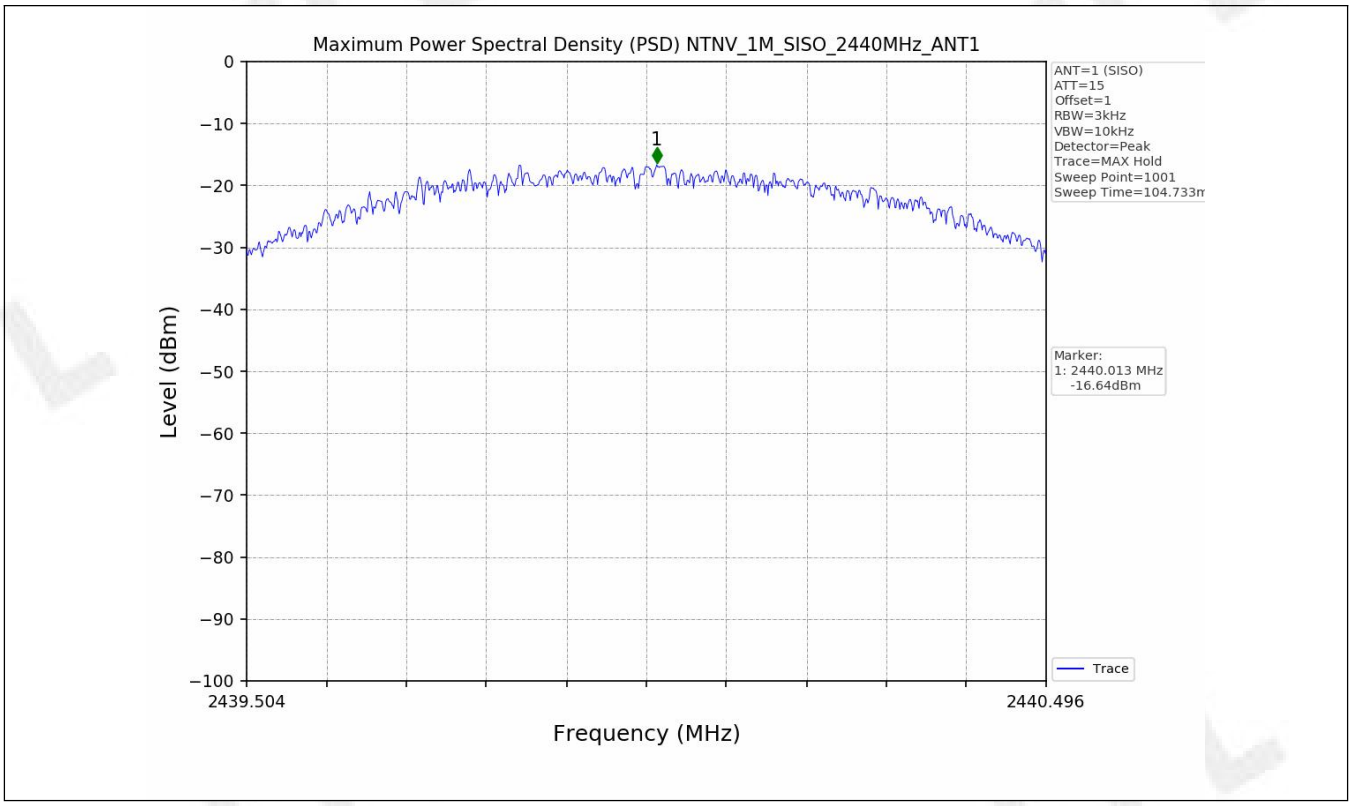
3. Maximum Power Spectral Density (PSD)

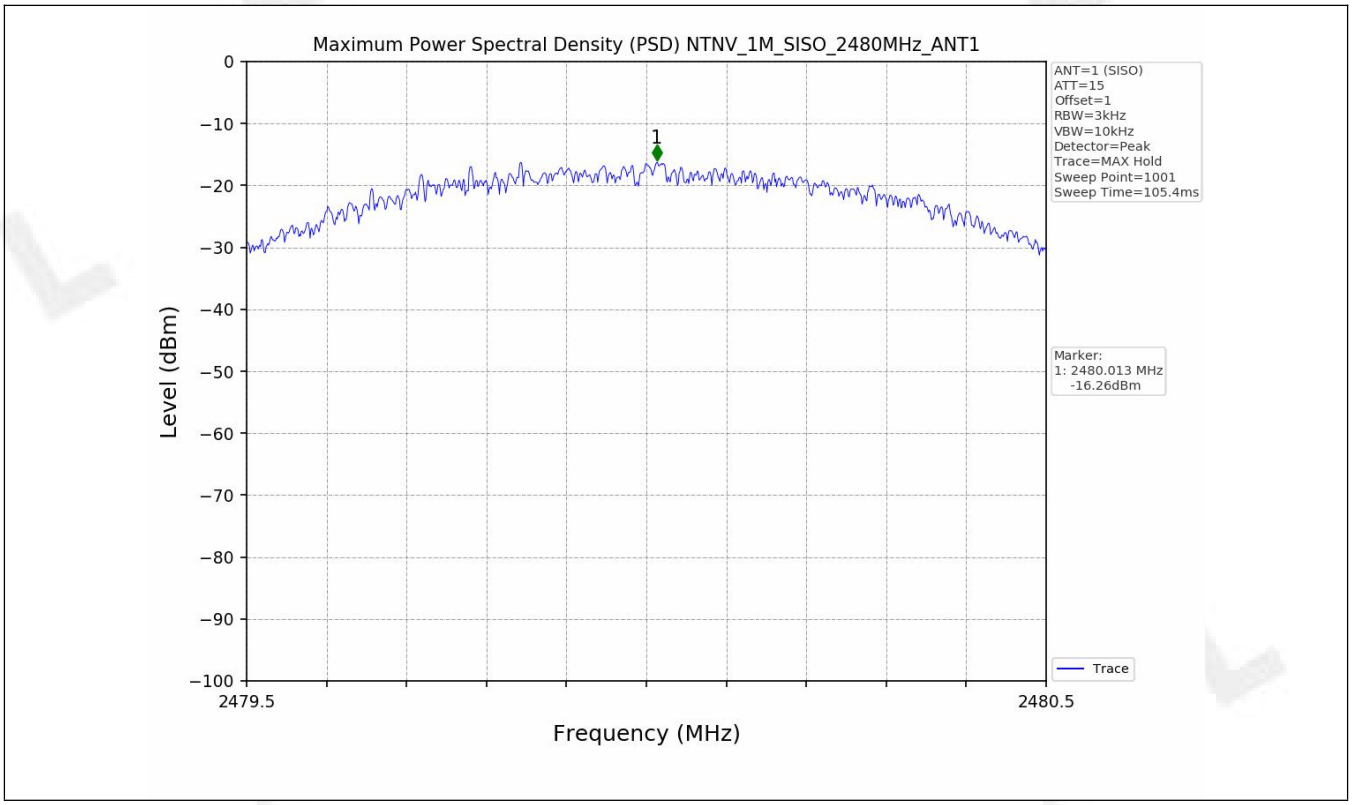
3.1 Test Result

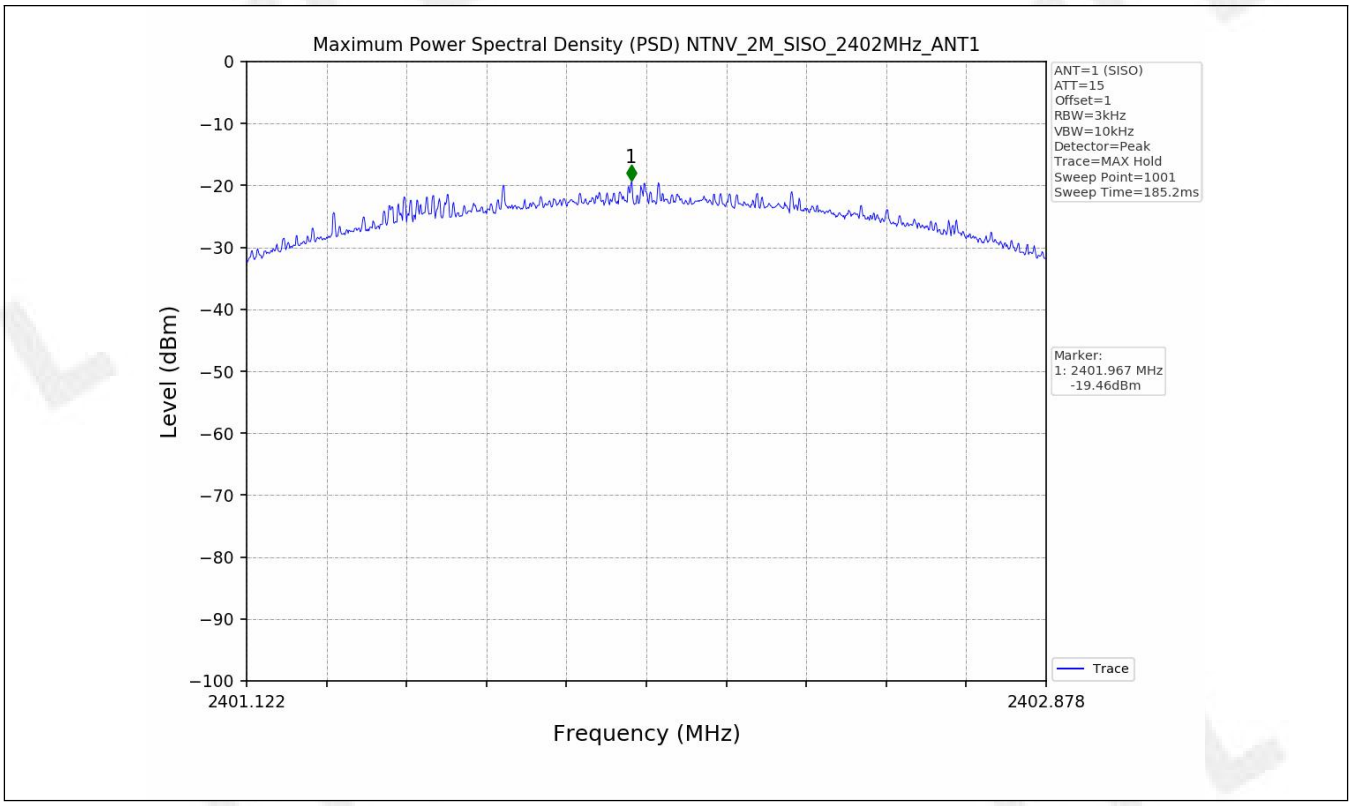
Test Mode	Frequency (MHz)	Tx Type	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
			Ant 1		
1M	2402	SISO	-16.27	≤8	PASS
	2440	SISO	-16.64	≤8	PASS
	2480	SISO	-16.26	≤8	PASS
2M	2402	SISO	-19.46	≤8	PASS
	2440	SISO	-19.98	≤8	PASS
	2480	SISO	-19.65	≤8	PASS

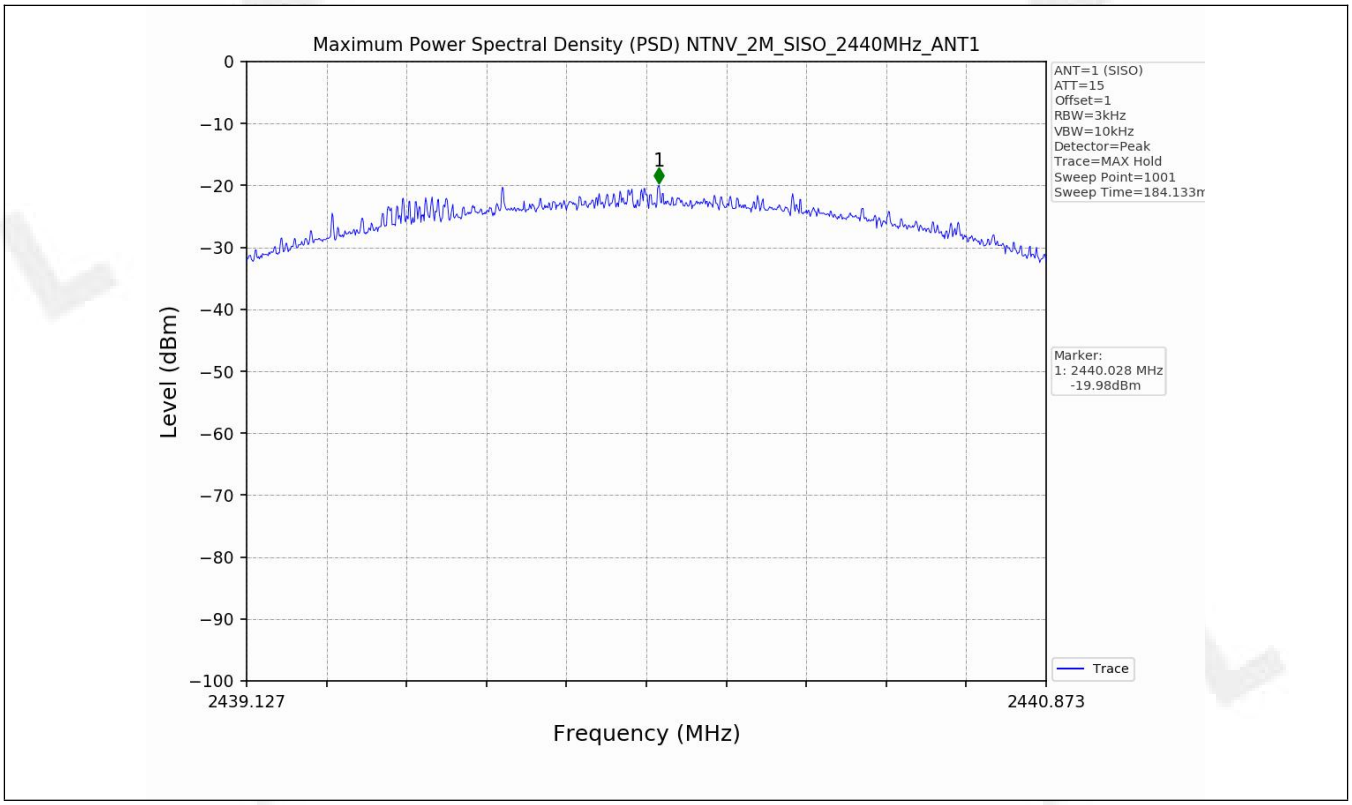
3.2 Test Graph

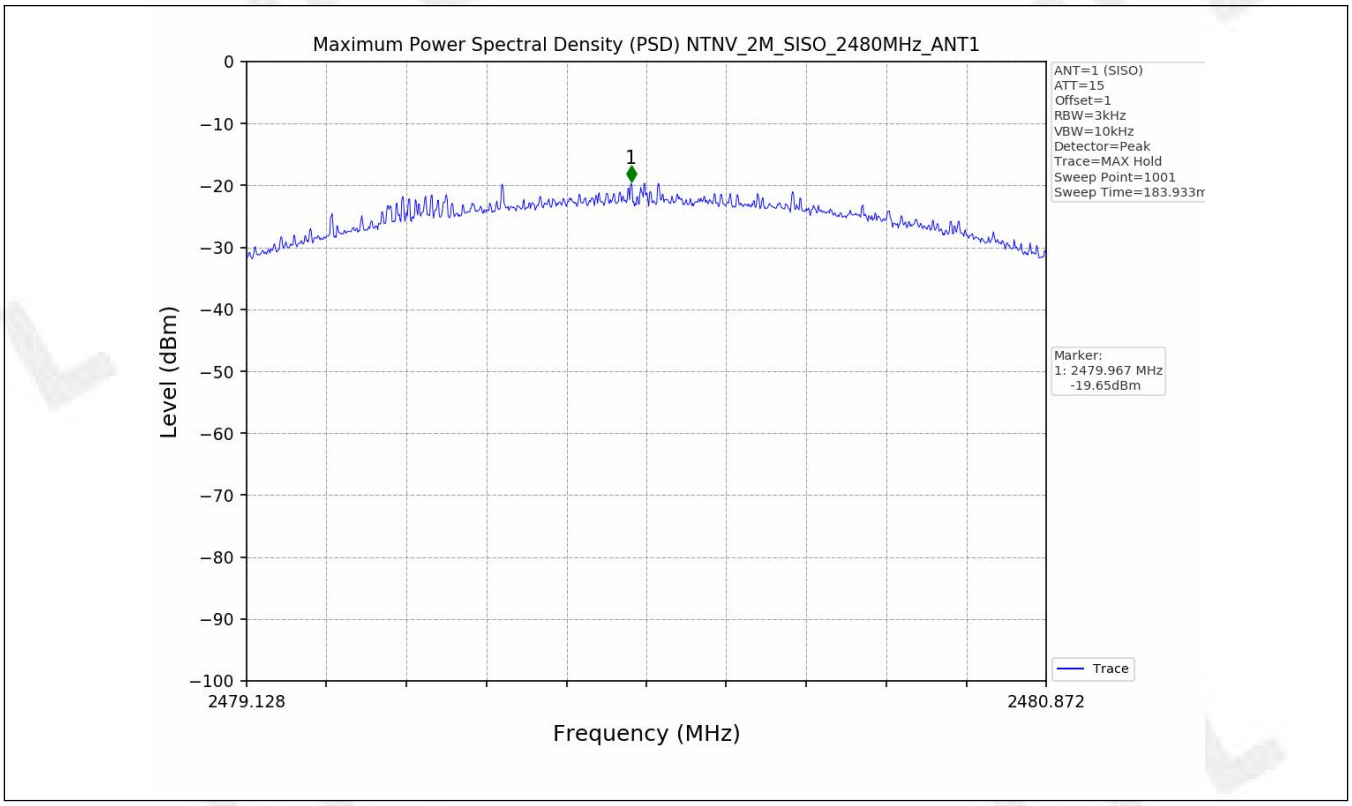



Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=104.733m
Marker:
1: 2440.013 MHz
-16.64dBm
Trace
Level (dBm)
Frequency (MHz)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2439.504
2440.496


Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=105.4ms
Marker:
1: 2480.013 MHz
-16.26dBm
Trace
Level (dBm)
Frequency (MHz)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2479.5
2480.5


Maximum Power Spectral Density (PSD) NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=185.2ms
Marker:
1: 2401.967 MHz
-19.46dBm
Trace
Level (dBm)
Frequency (MHz)
2401.122
2402.878


Maximum Power Spectral Density (PSD) NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=184.133m
Marker:
1: 2440.028 MHz
-19.98dBm
Trace
Level (dBm)
Frequency (MHz)
2439.127
2440.873

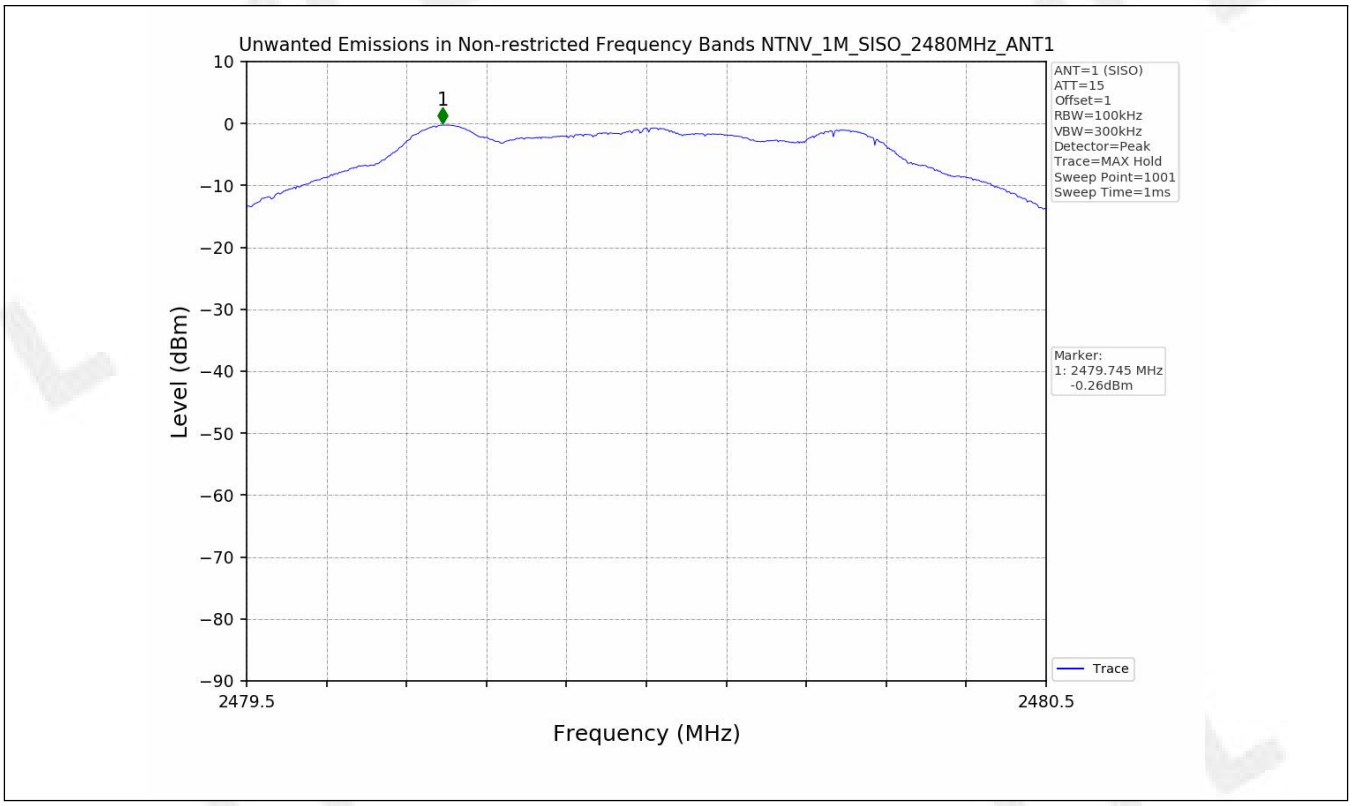


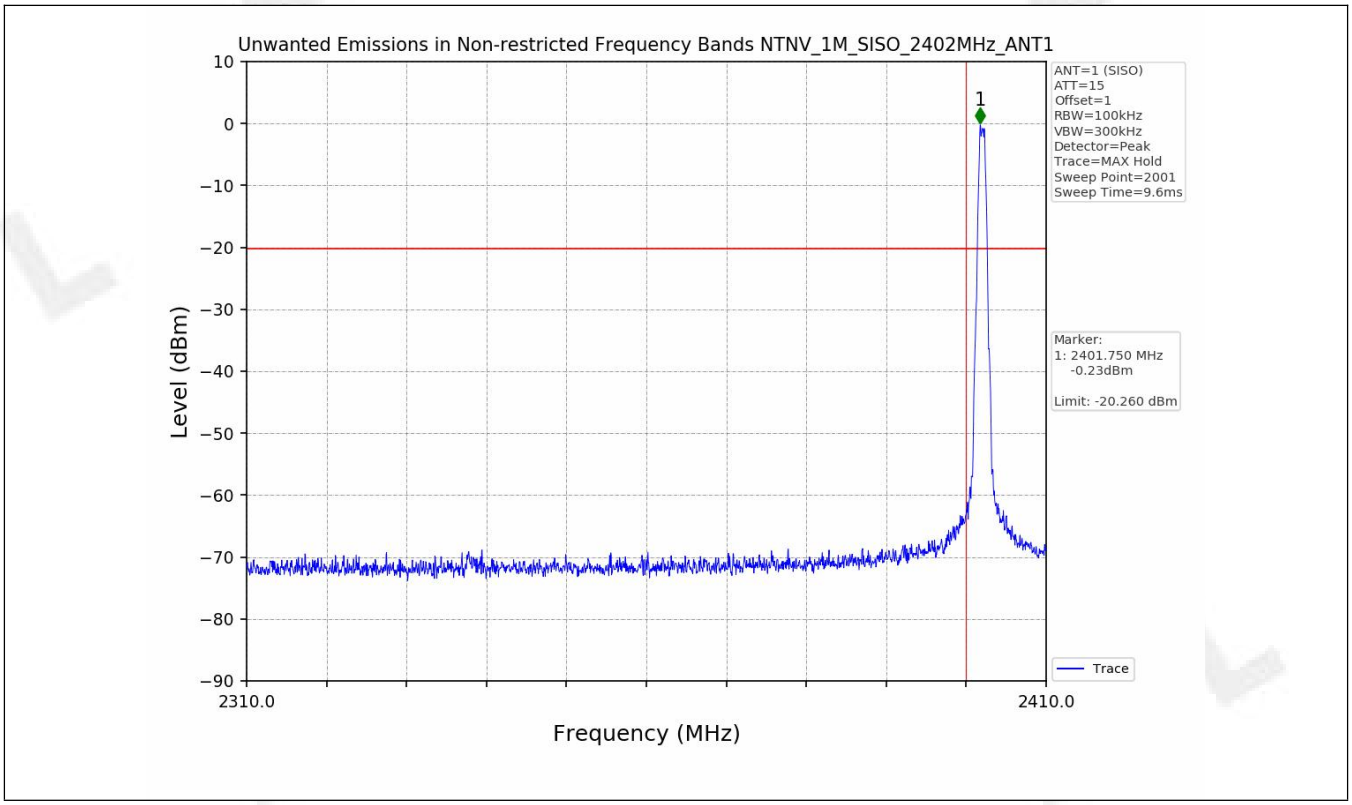
4. Unwanted Emissions in Non-restricted Frequency Bands

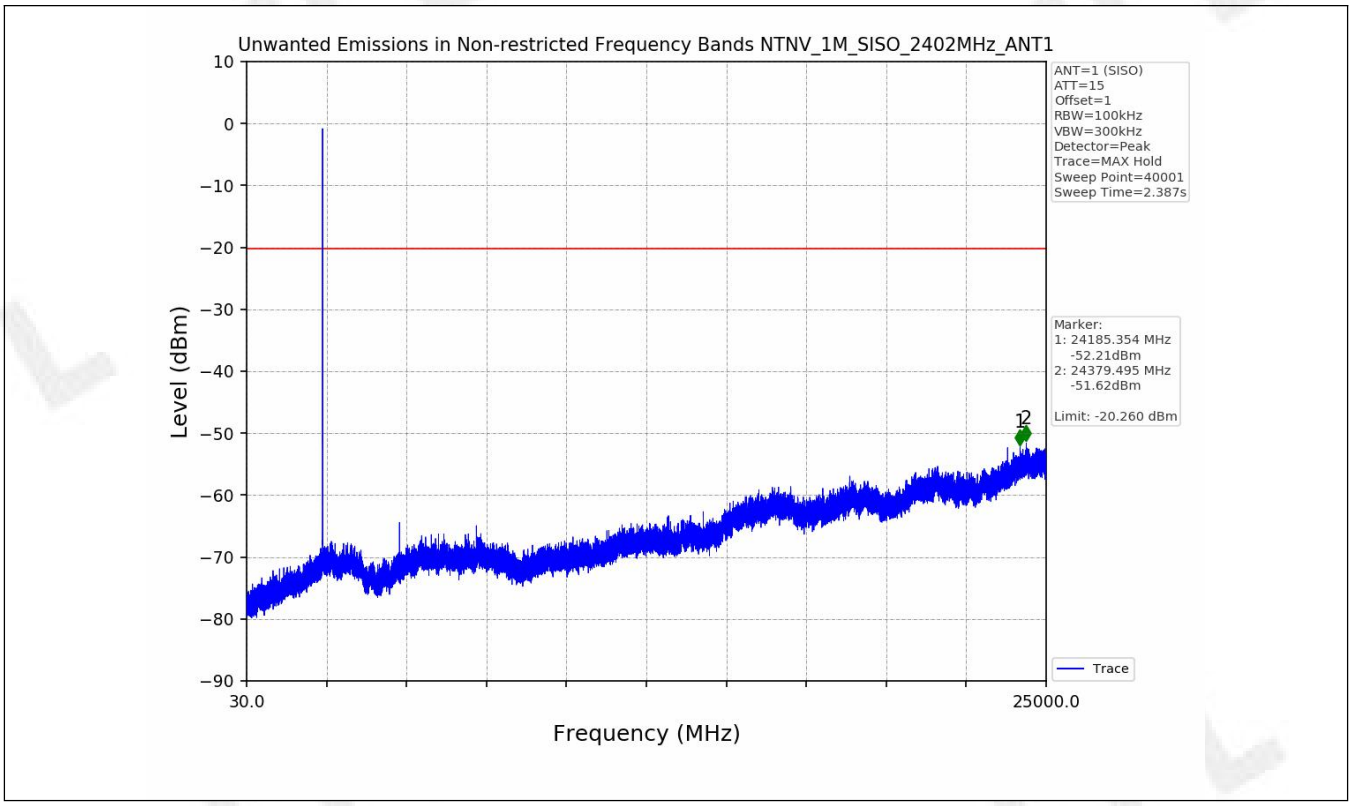
4.1 Test Result

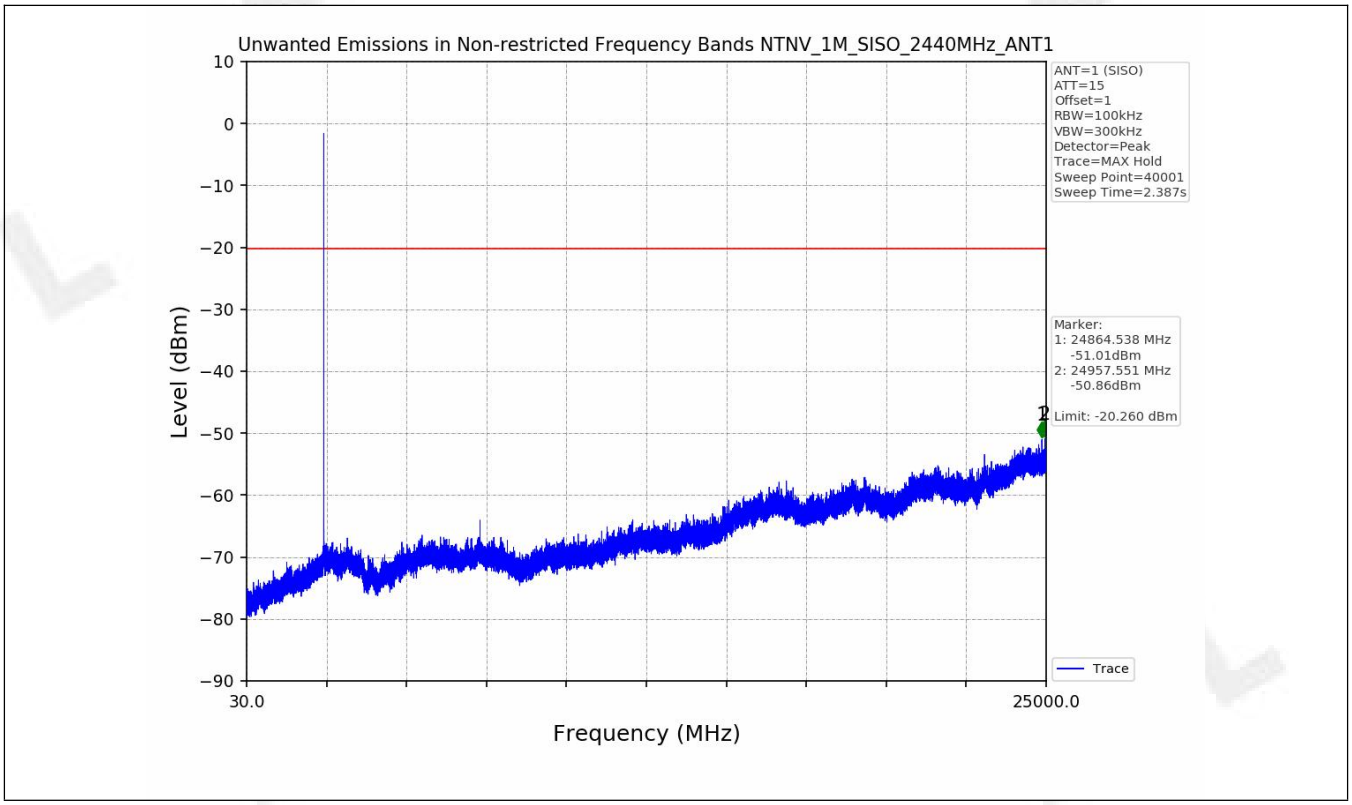
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
1M	2402	SISO	1	Refer to test graph	-20.26	PASS
	2440	SISO	1	Refer to test graph	-20.26	PASS
	2480	SISO	1	Refer to test graph	-20.26	PASS
2M	2402	SISO	1	Refer to test graph	-20.44	PASS
	2440	SISO	1	Refer to test graph	-20.44	PASS
	2480	SISO	1	Refer to test graph	-20.44	PASS

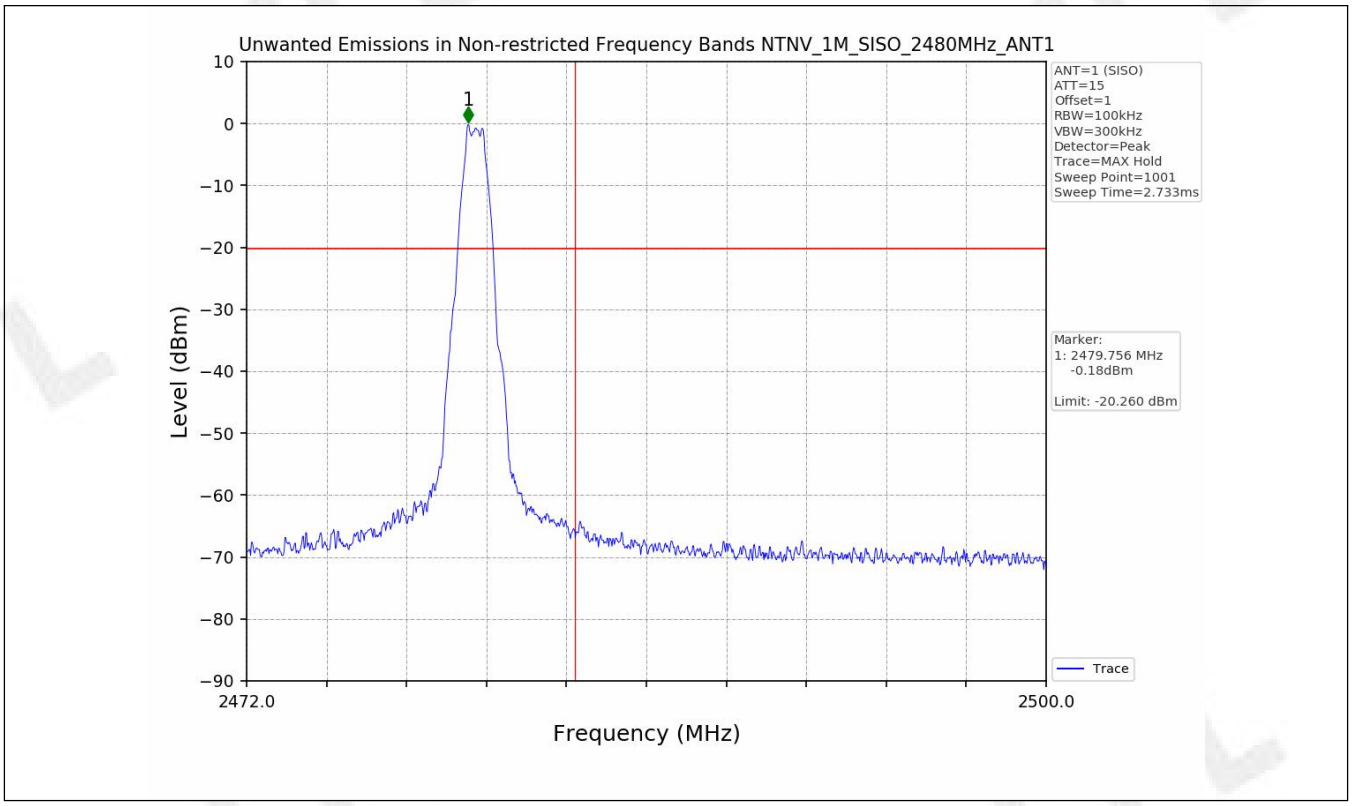
4.2 Test Graph

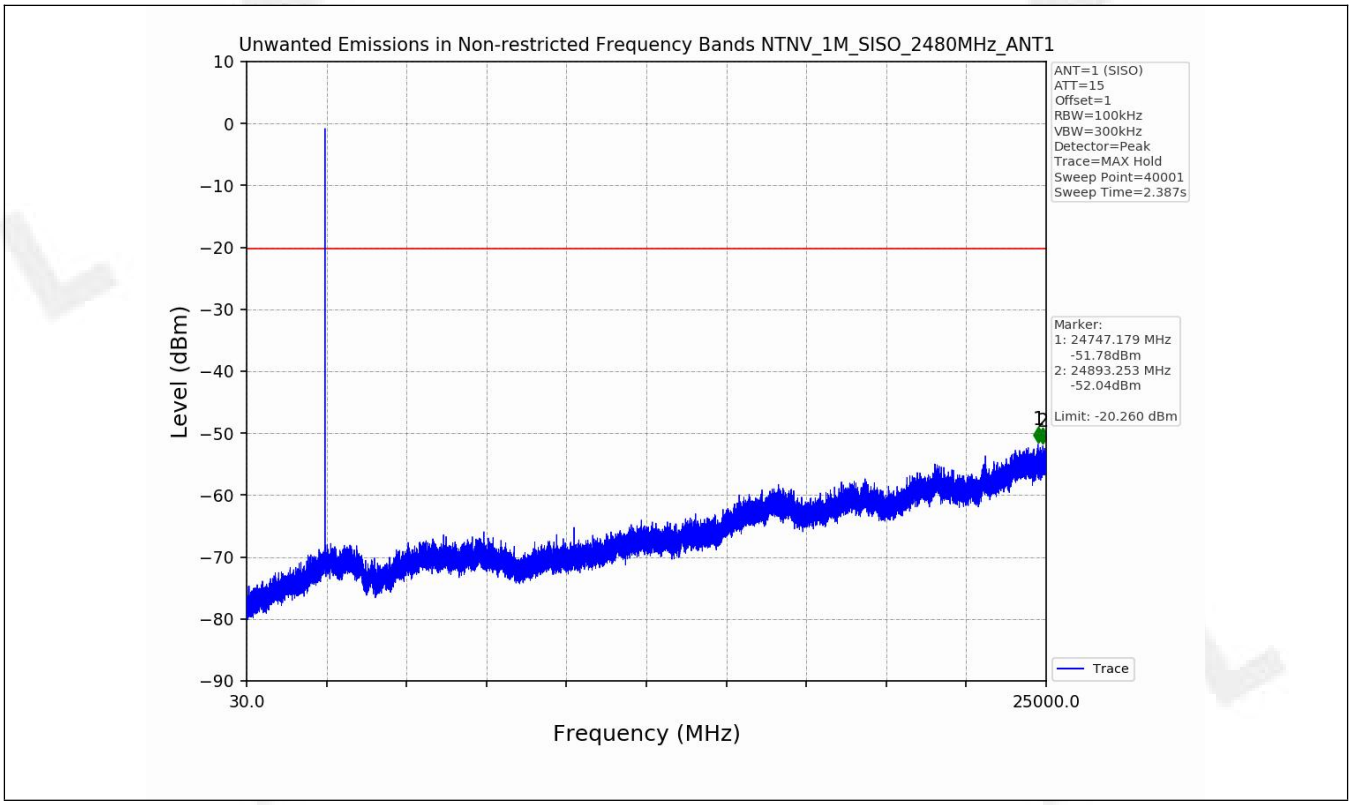

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2479.745 MHz
-0.26dBm
Trace
Level (dBm)
Frequency (MHz)
2479.5
2480.5

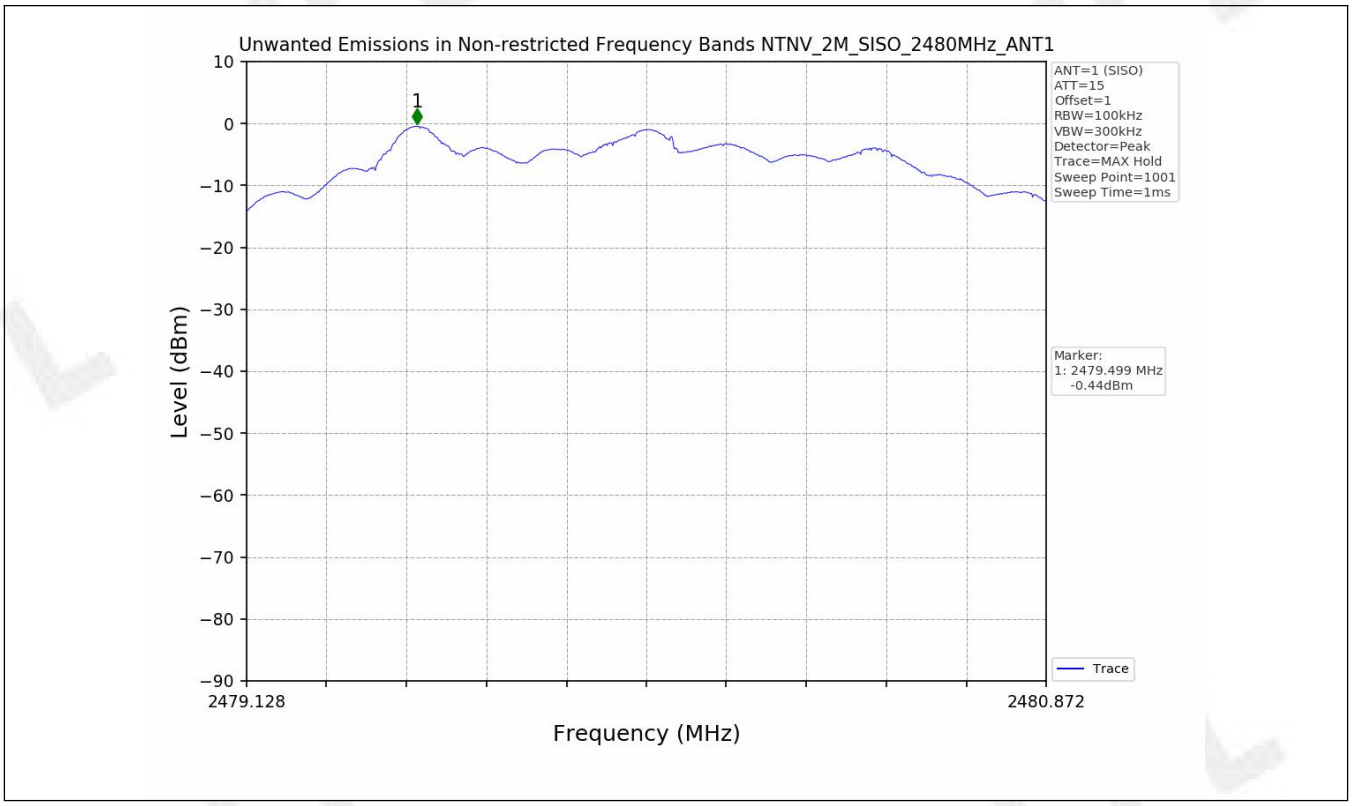

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=2001
Sweep Time=9.6ms
Marker:
1: 2401.750 MHz
-0.23dBm
Limit: -20.260 dBm
Trace
Level (dBm)
Frequency (MHz)
2310.0
2410.0

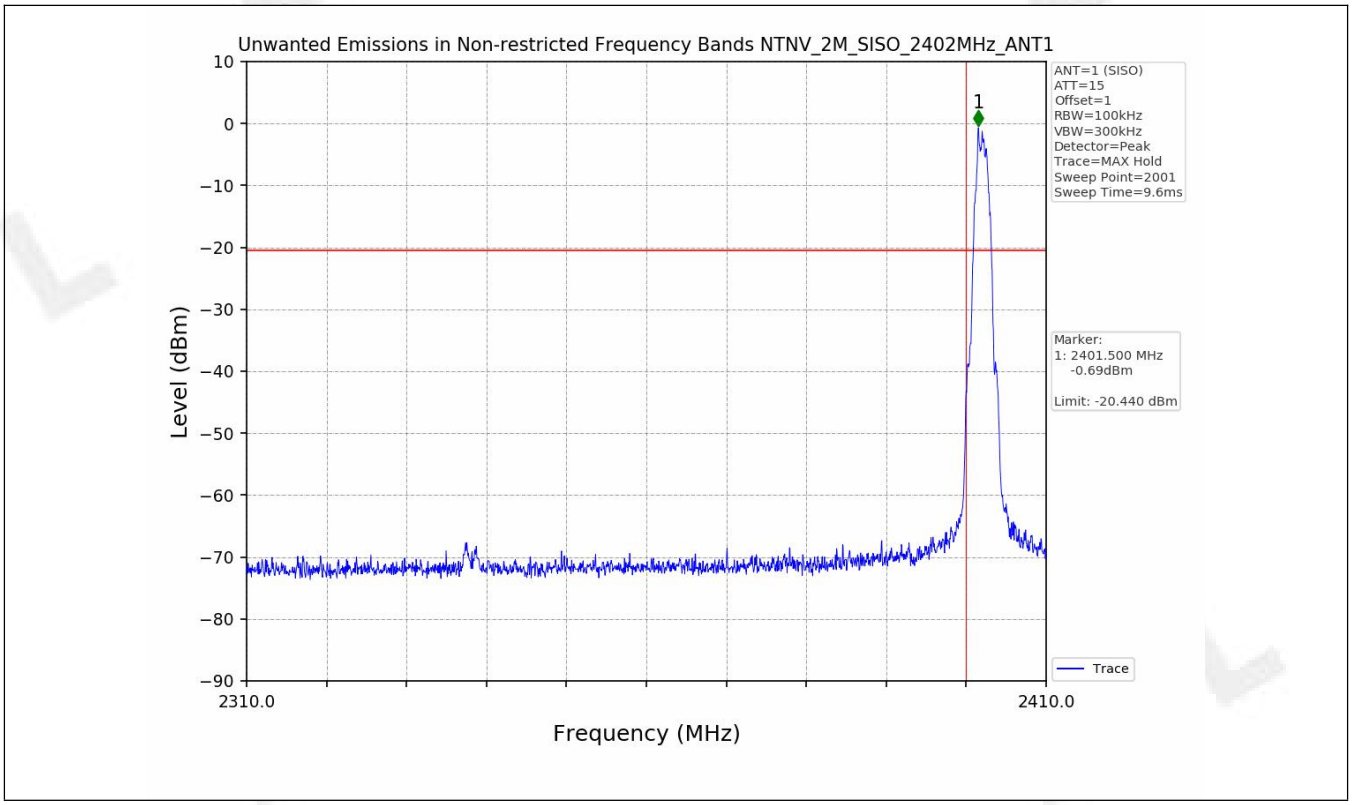

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24185.354 MHz
-52.21dBm
2: 24379.495 MHz
-51.62dBm
Limit: -20.260 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0

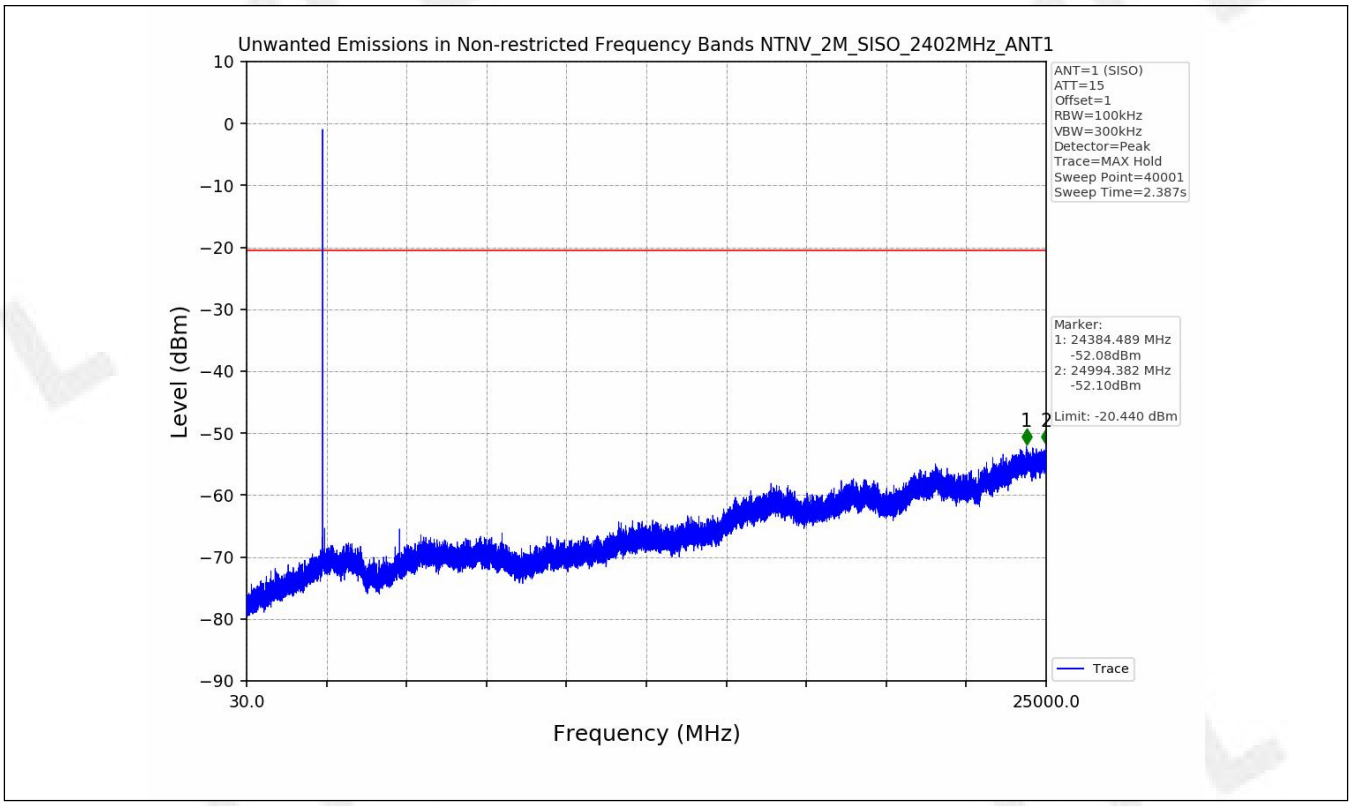

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24864.538 MHz
-51.01dBm
2: 24957.551 MHz
-50.86dBm
Limit: -20.260 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0

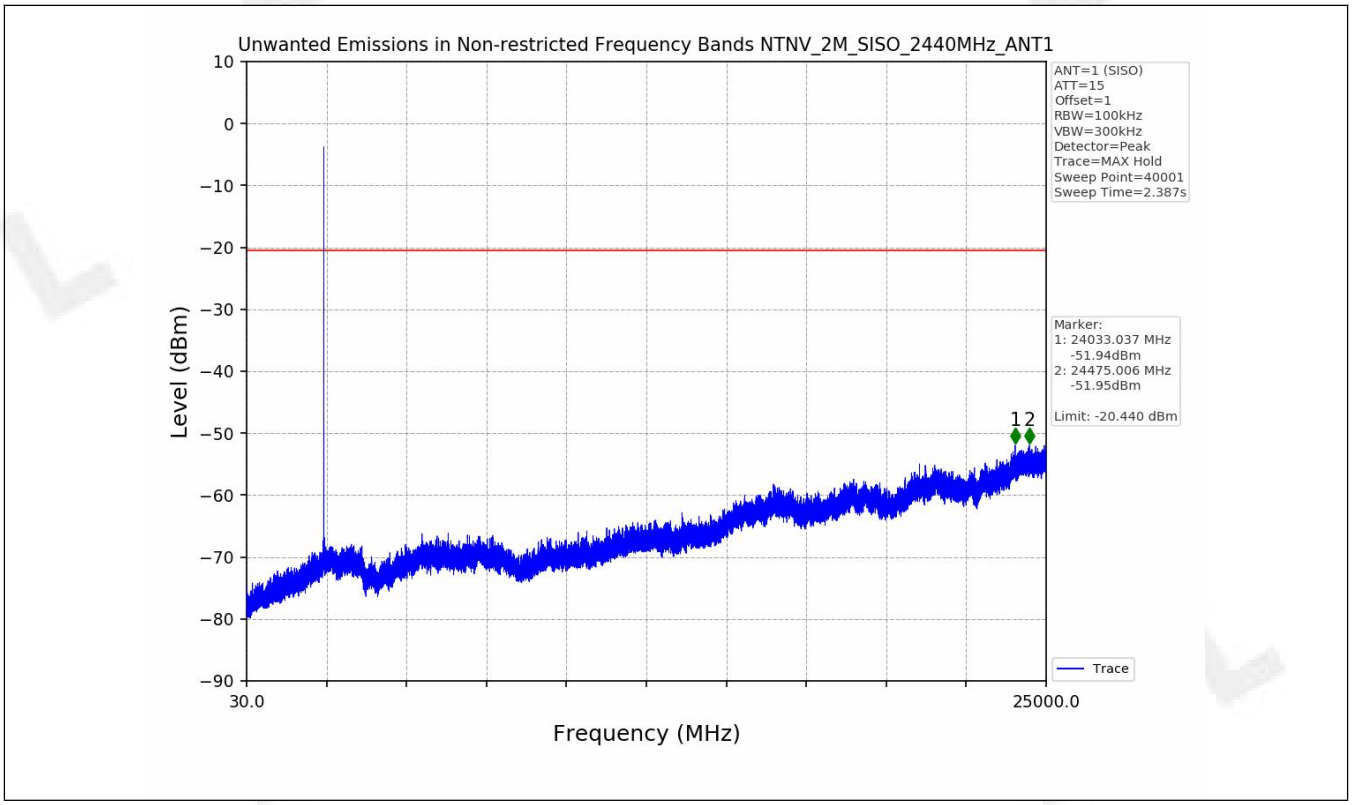

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.733ms
Marker:
1: 2479.756 MHz
-0.18dBm
Limit: -20.260 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0

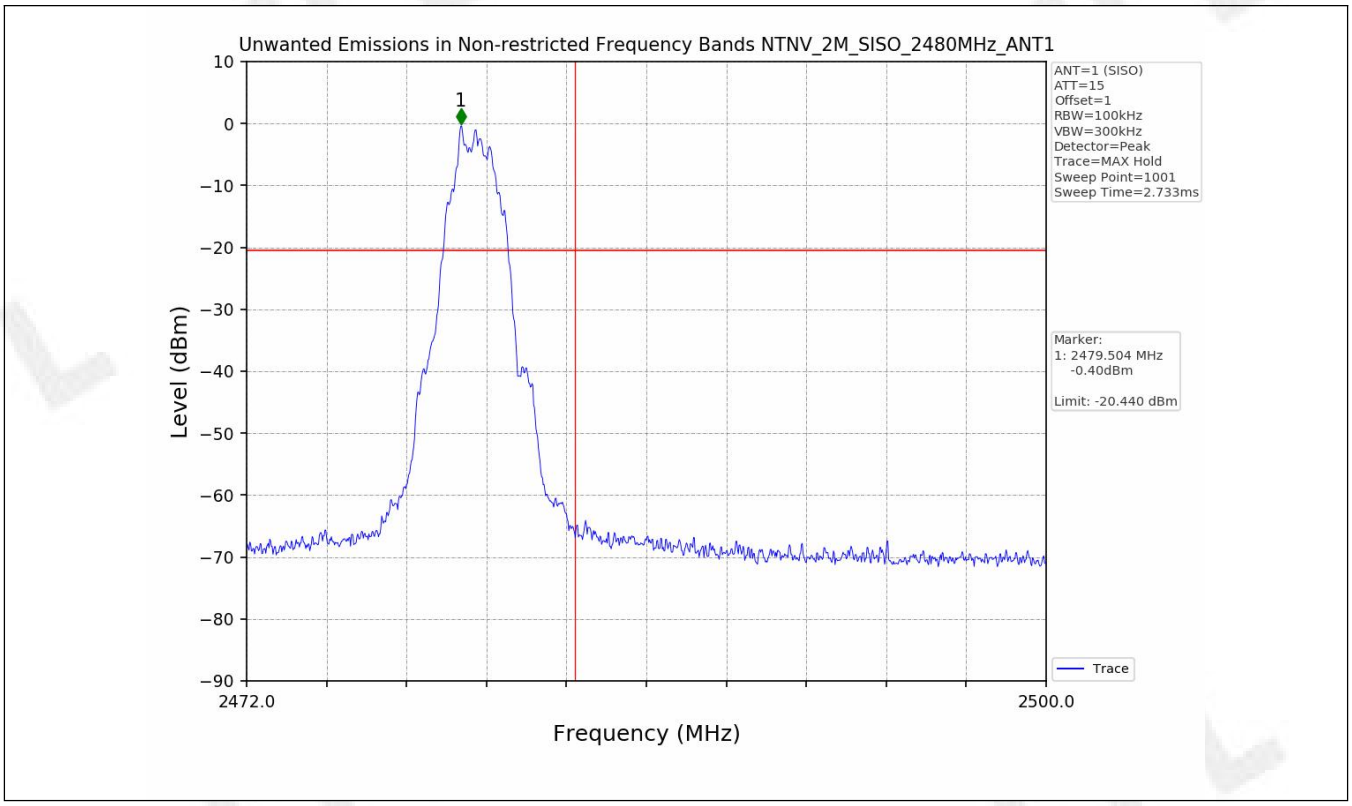

Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24747.179 MHz
-51.78dBm
2: 24893.253 MHz
-52.04dBm
Limit: -20.260 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0

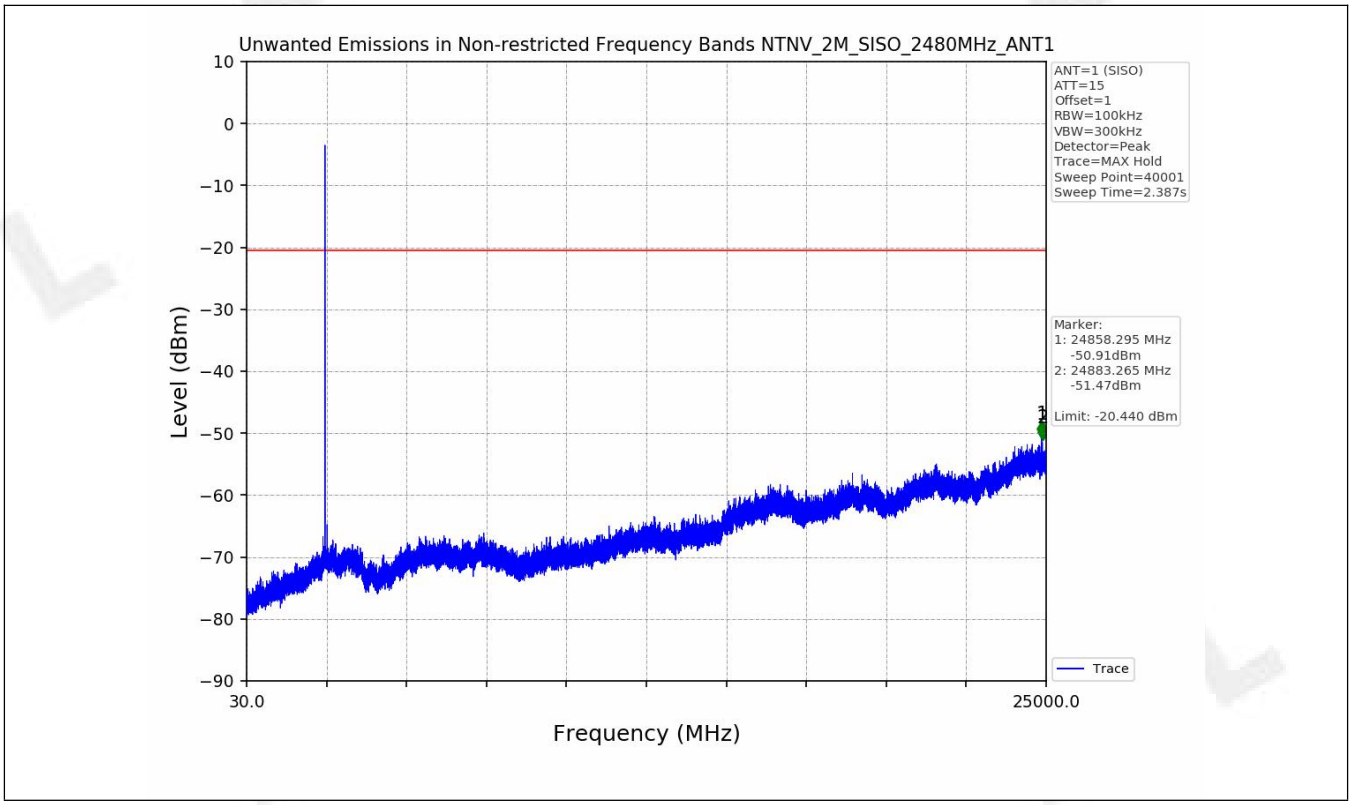

Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2479.499 MHz
-0.44dBm
Trace
Level (dBm)
Frequency (MHz)
2479.128
2480.872


Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=2001
Sweep Time=9.6ms
Marker:
1: 2401.500 MHz
-0.69dBm
Limit: -20.440 dBm
Trace
Level (dBm)
Frequency (MHz)
2310.0
2410.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24384.489 MHz
-52.08dBm
2: 24994.382 MHz
-52.10dBm
Limit: -20.440 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24033.037 MHz
-51.94dBm
2: 24475.006 MHz
-51.95dBm
Limit: -20.440 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.733ms
Marker:
1: 2479.504 MHz
-0.40dBm
Limit: -20.440 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0


Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24858.295 MHz
-50.91dBm
2: 24883.265 MHz
-51.47dBm
Limit: -20.440 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0