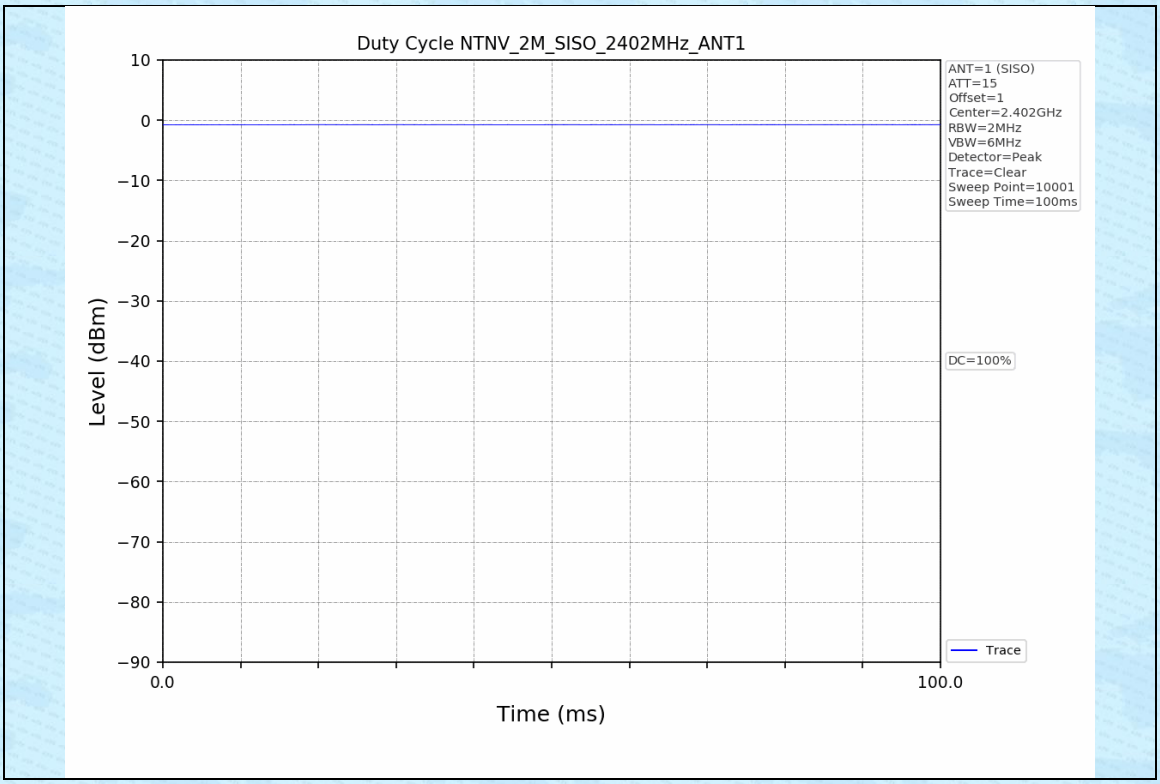
Appendix for 15.247

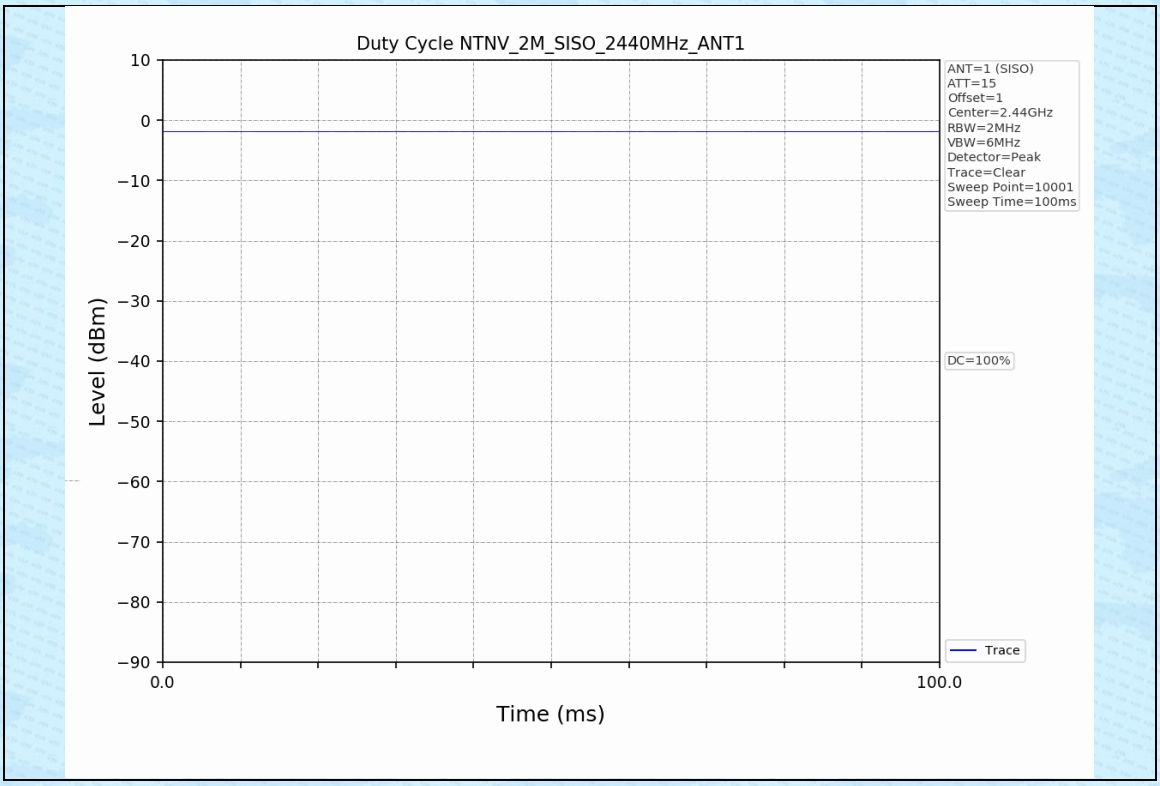
1. Duty Cycle

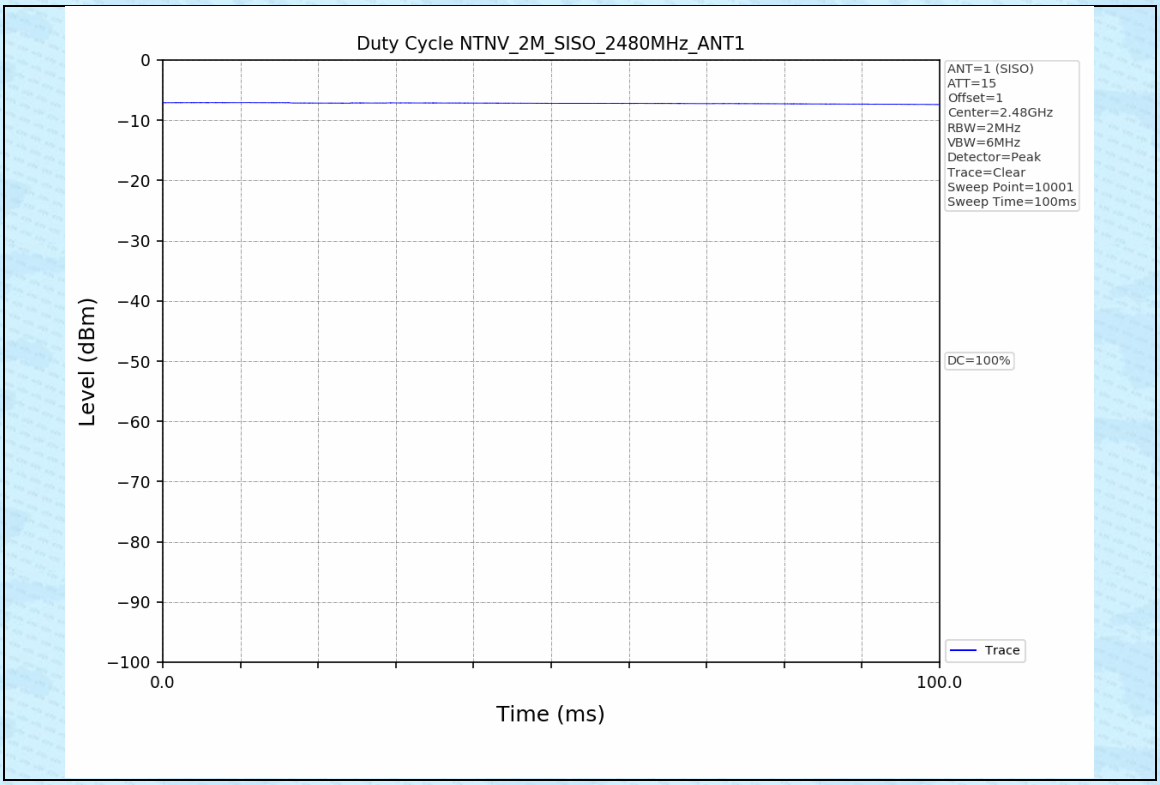
1.1 Test Result

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	100.000	100.000	100.00	0.00
	2440	SISO	1	100.000	100.000	100.00	0.00
	2480	SISO	1	100.000	100.000	100.00	0.00

1.2 Test Graph




Duty Cycle NTNV_2M_SISO_2440MHz_ANT1
Level (dBm)
Time (ms)
10
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
0.0
100.0
ANT=1 (SISO)
ATT=15
Offset=1
Center=2.44GHz
RBW=2MHz
VBW=6MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=100ms
DC=100%
Trace


Duty Cycle NTNV_2M_SISO_2480MHz_ANT1
Level (dBm)
Time (ms)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
0.0
100.0
ANT=1 (SISO)
ATT=15
Offset=1
Center=2.48GHz
RBW=2MHz
VBW=6MHz
Detector=Peak
Trace=Clear
Sweep Point=10001
Sweep Time=100ms
DC=100%
Trace

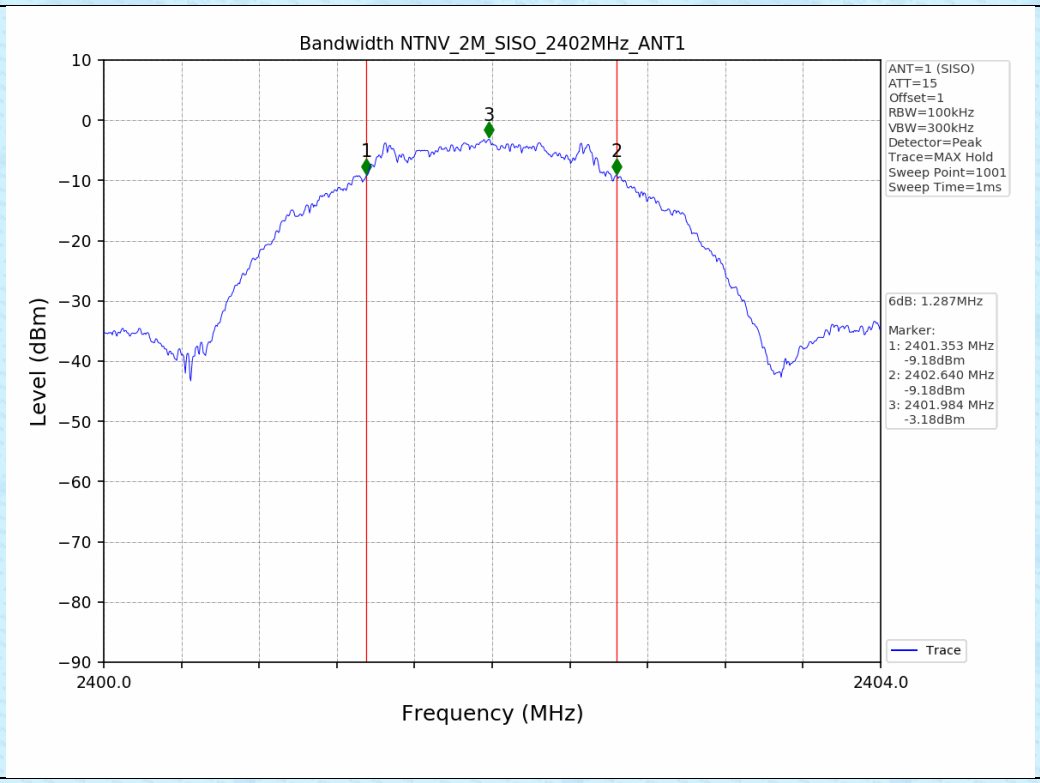
2. Bandwidth

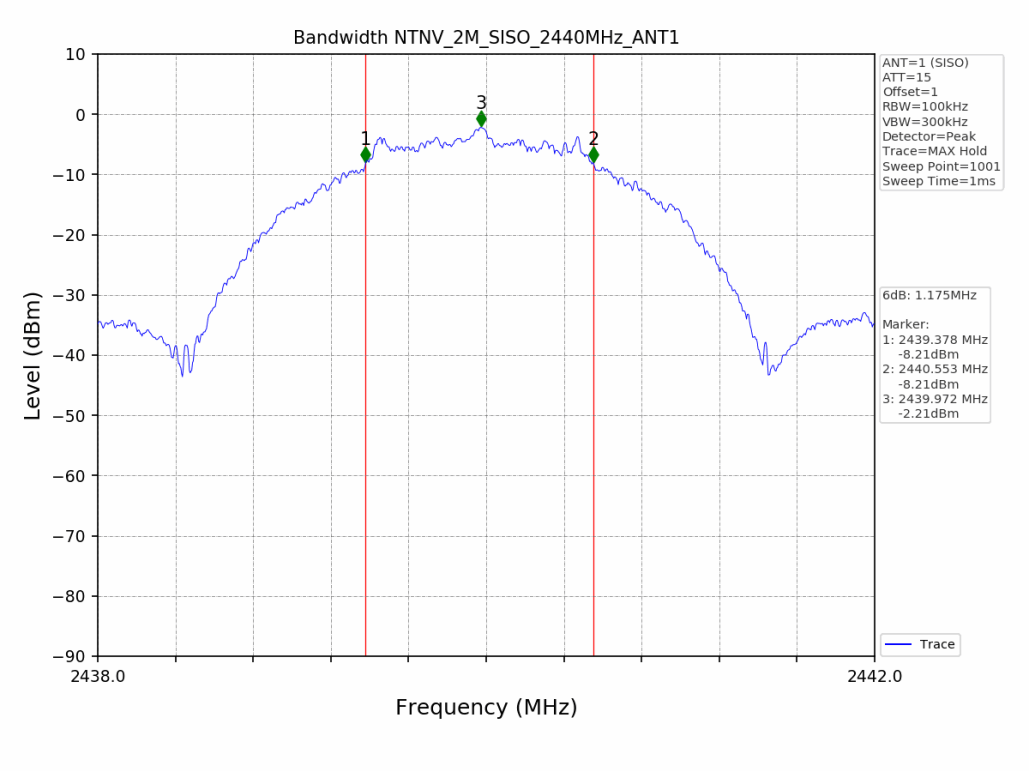
2.1 Test Result

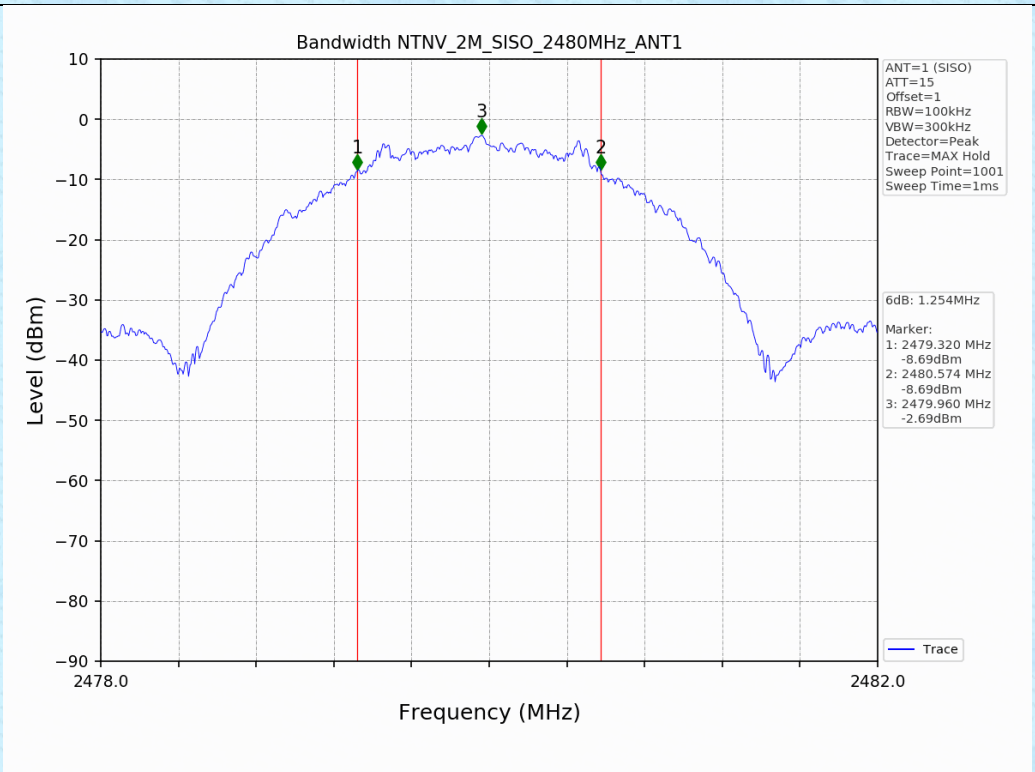
Test Mode	Frequency (MHz)	TX Type	ANT No.	6dB Bandwidth		Verdict
				Test Result (MHz)	Limits (MHz)	
GFSK	2402	SISO	1	1.287	≥0.5	PASS
	2440	SISO	1	1.175	≥0.5	PASS
	2480	SISO	1	1.254	≥0.5	PASS

Test Mode	Frequency (MHz)	TX Type	ANT No.	99% Occupied Bandwidth	
				Test Result (MHz)	
GFSK	2402	SISO	1	2.064	Only for Report Use
	2440	SISO	1	2.066	Only for Report Use
	2480	SISO	1	2.077	Only for Report Use

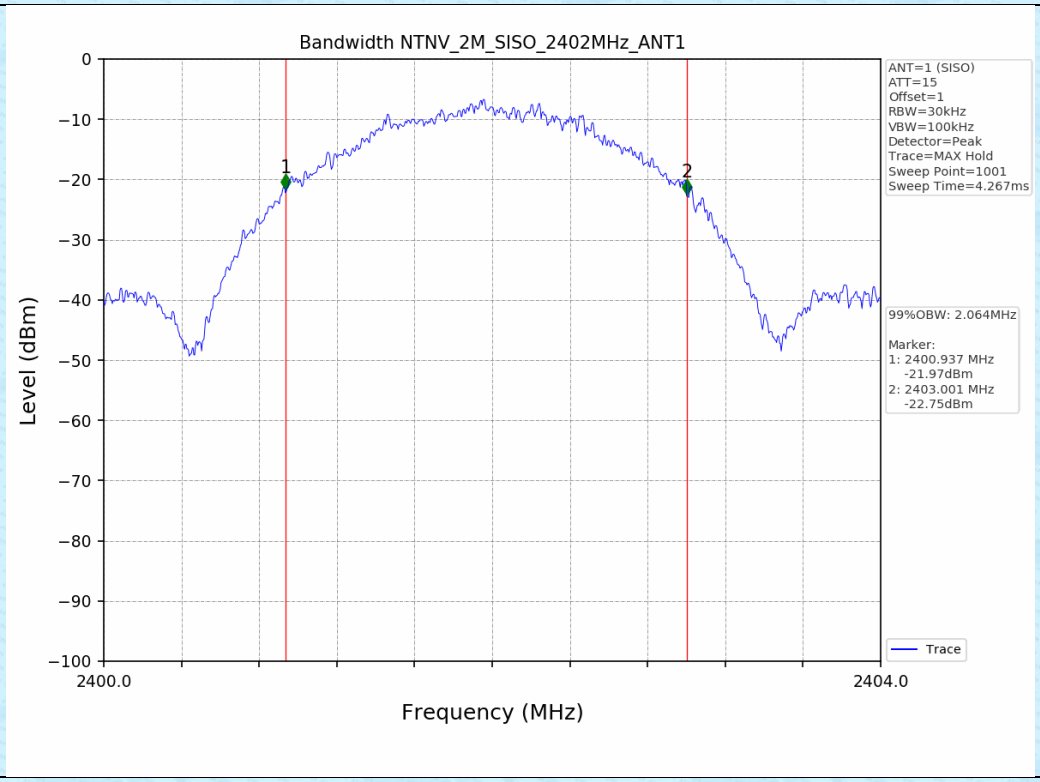
2.2 Test Graph - 6dB Bandwidth

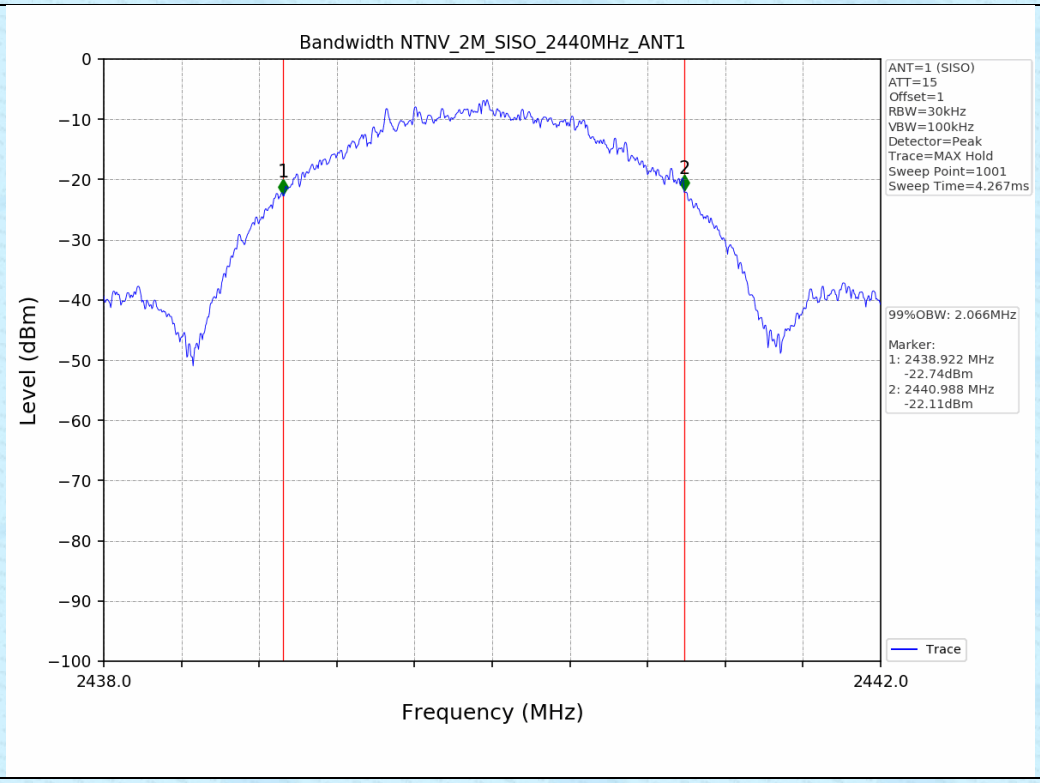


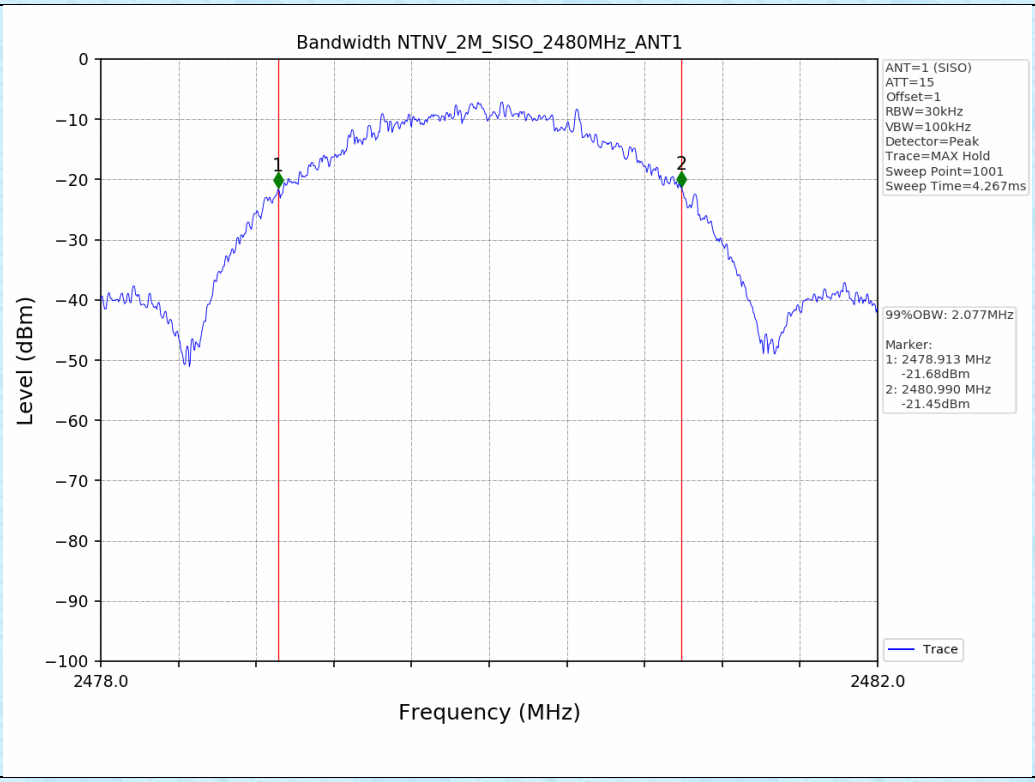

Bandwidth NTNV_2M_SISO_2440MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
6dB: 1.175MHz
Marker:
1: 2439.378 MHz
-8.21dBm
2: 2440.553 MHz
-8.21dBm
3: 2439.972 MHz
-2.21dBm
Trace
Level (dBm)
Frequency (MHz)
2438.0
2442.0


Bandwidth 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
6dB: 1.254MHz
Marker:
1: 2479.320 MHz
-8.69dBm
2: 2480.574 MHz
-8.69dBm
3: 2479.960 MHz
-2.69dBm
Trace
Level (dBm)
Frequency (MHz)
2478.0
2482.0

2.3 Test Graph - 99% Occupied Bandwidth





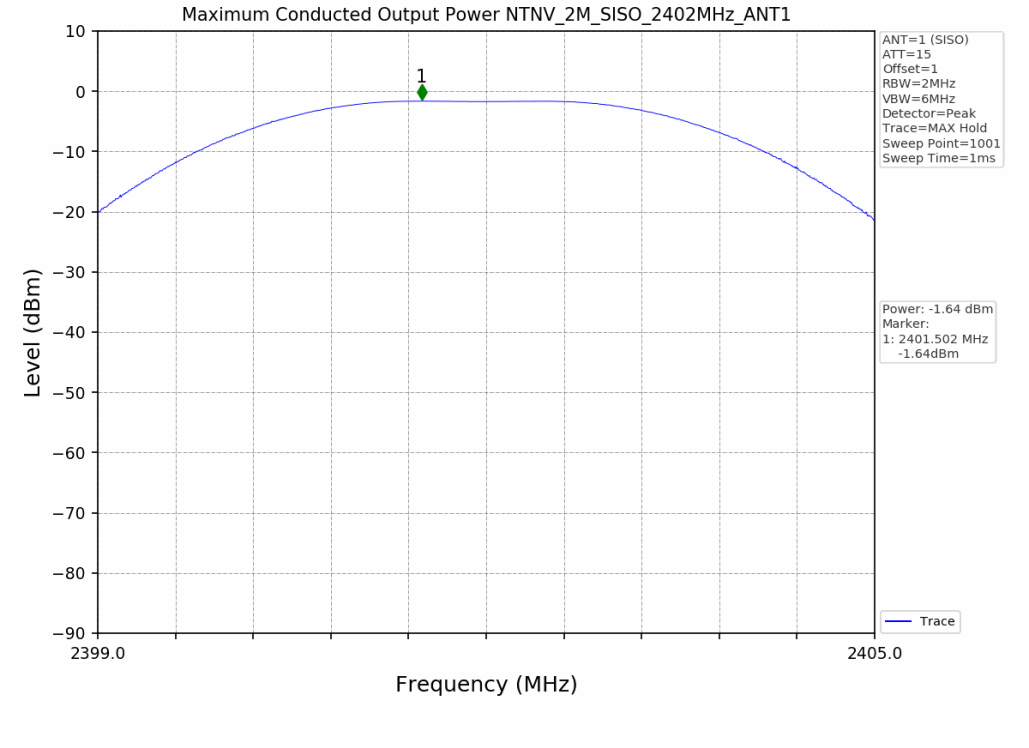


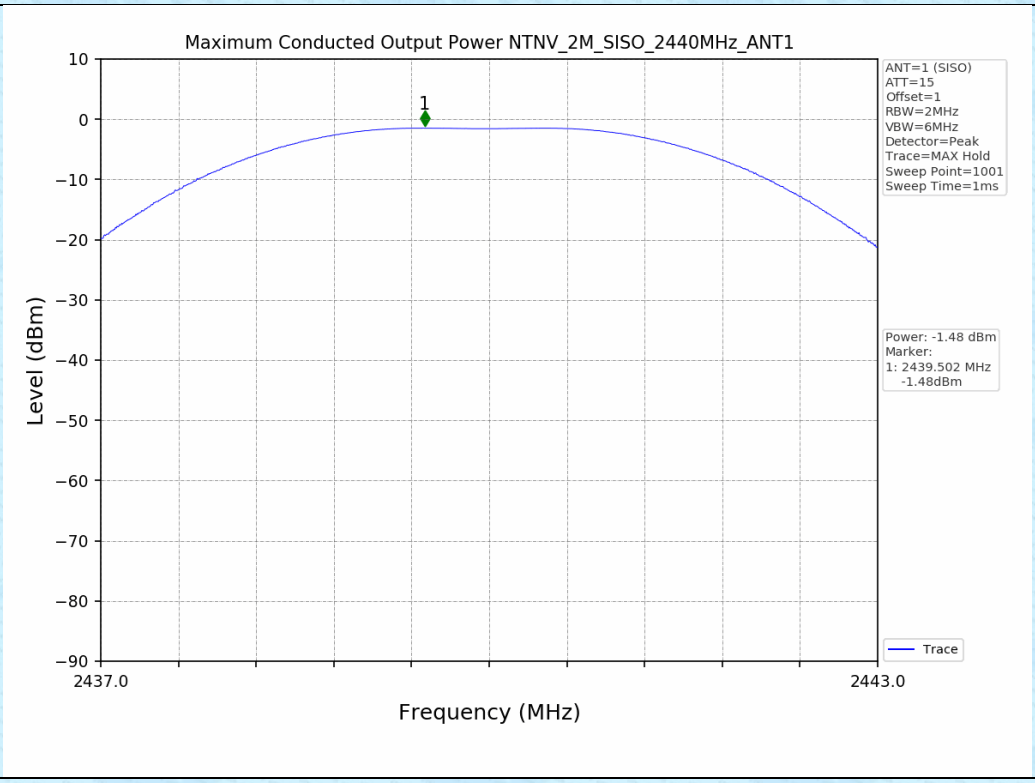
3. Maximum Conducted Output Power

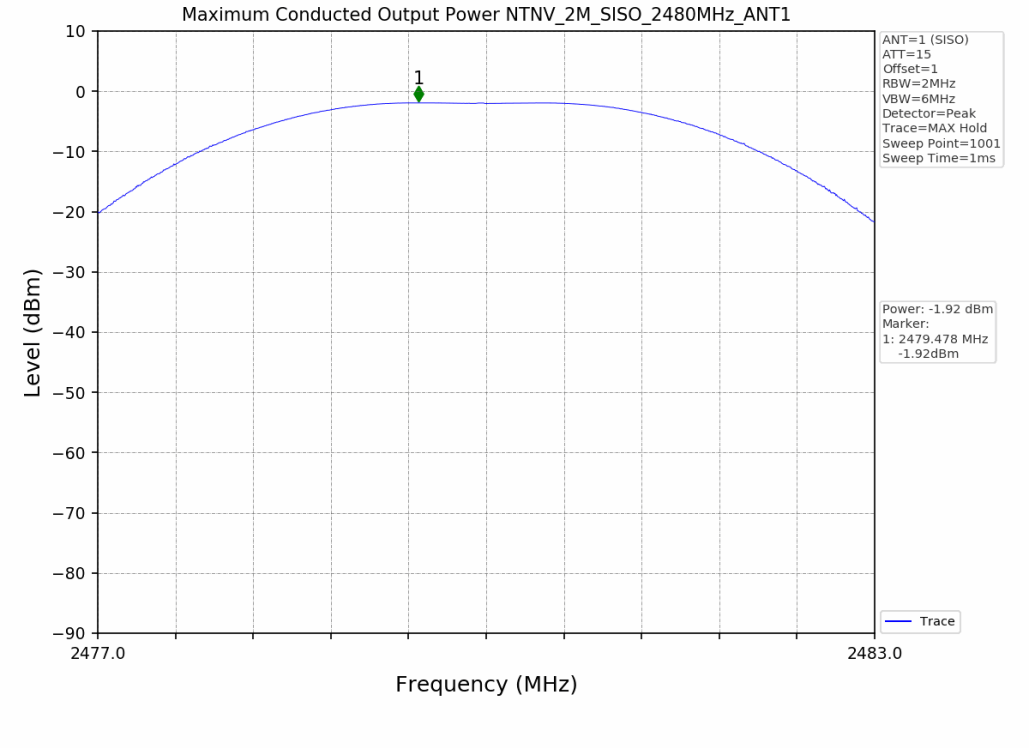
3.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
GFSK	2402	SISO	-1.64	30	PASS
	2440	SISO	-1.48	30	PASS
	2480	SISO	-1.92	30	PASS

3.2 Test Graph


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: -1.64 dBm
Marker:
1: 2401.502 MHz
-1.64dBm
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: -1.48 dBm
Marker:
1: 2439.502 MHz
-1.48dBm
Trace
Level (dBm)
Frequency (MHz)
2437.0
2443.0

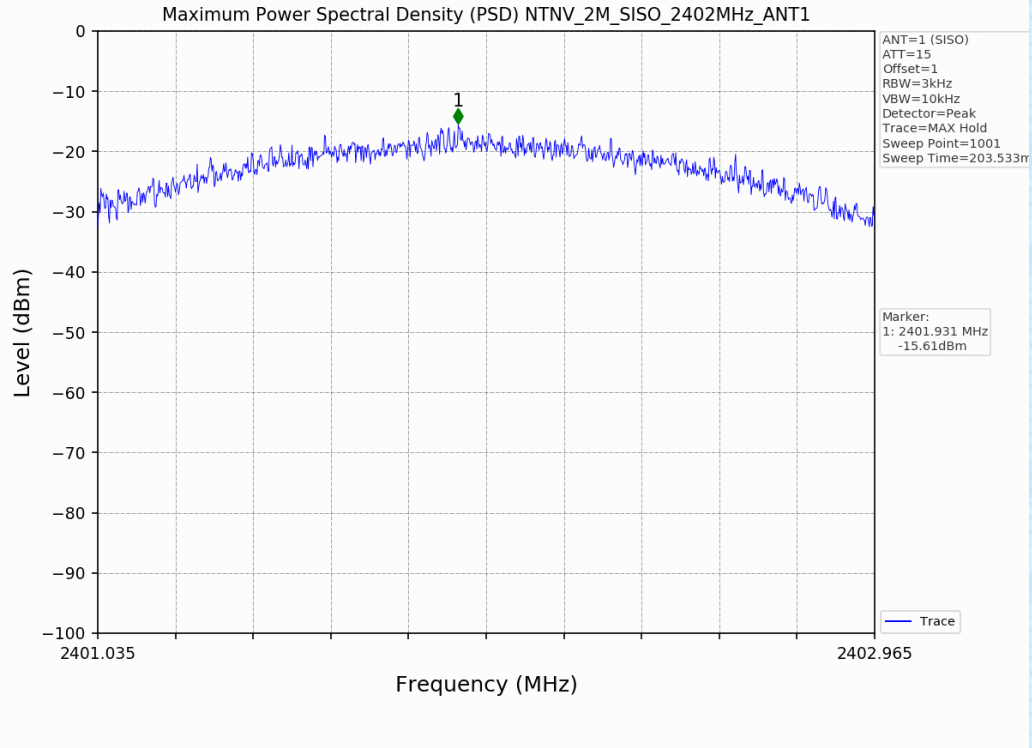


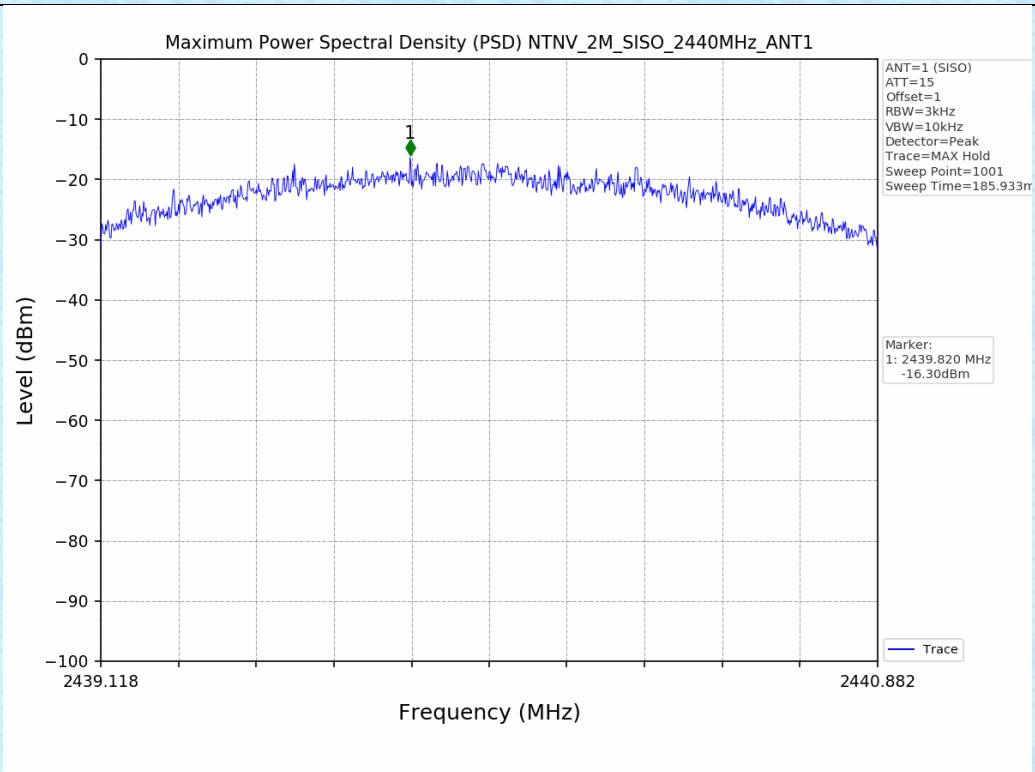
4. Maximum Power Spectral Density (PSD)

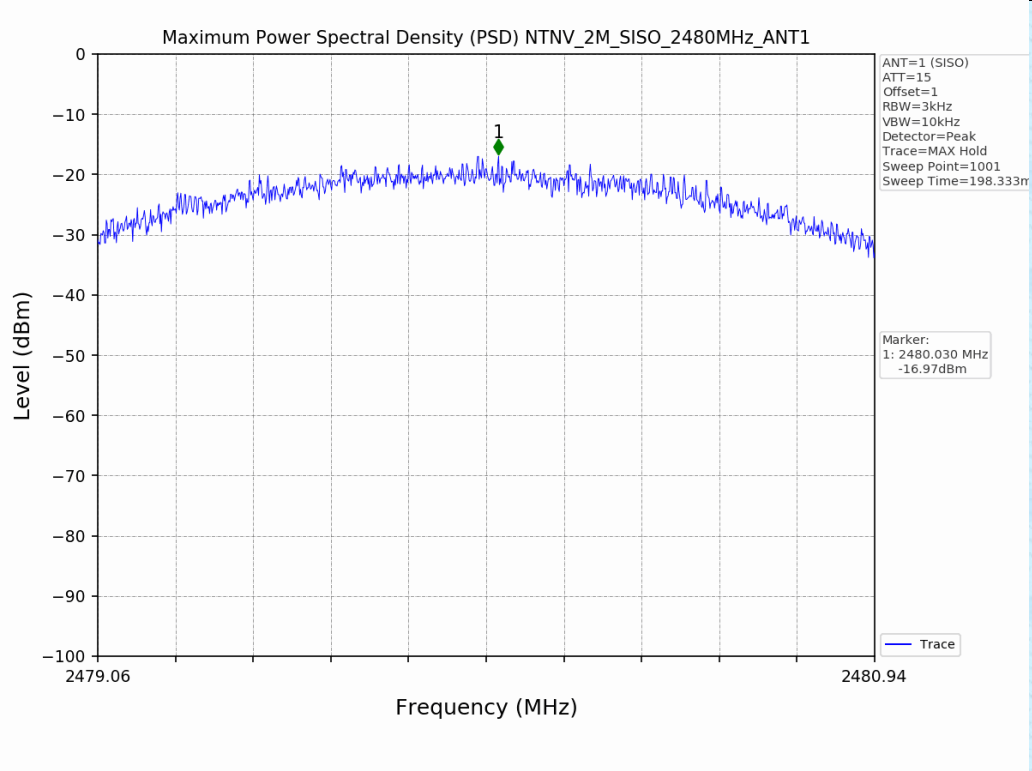
4.1 Test Result

Test Mode	Frequency (MHz)	Tx Type	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
			Ant 1		
GFSK	2402	SISO	-15.61	≤8	PASS
	2440	SISO	-16.30	≤8	PASS
	2480	SISO	-16.97	≤8	PASS

4.2 Test Graph


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=203.533m
Marker:
1: 2401.931 MHz
-15.61dBm
Trace
Level (dBm)
Frequency (MHz)
2401.035
2402.965


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=185.933m
Marker:
1: 2439.820 MHz
-16.30dBm
Trace
Level (dBm)
Frequency (MHz)
2439.118
2440.882

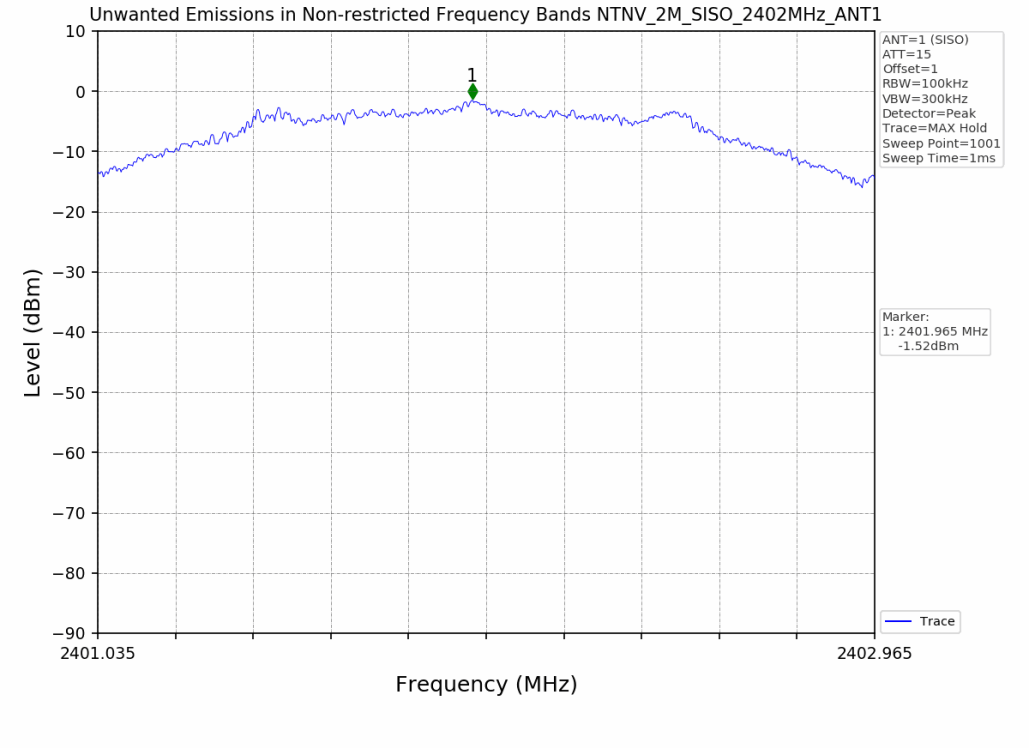


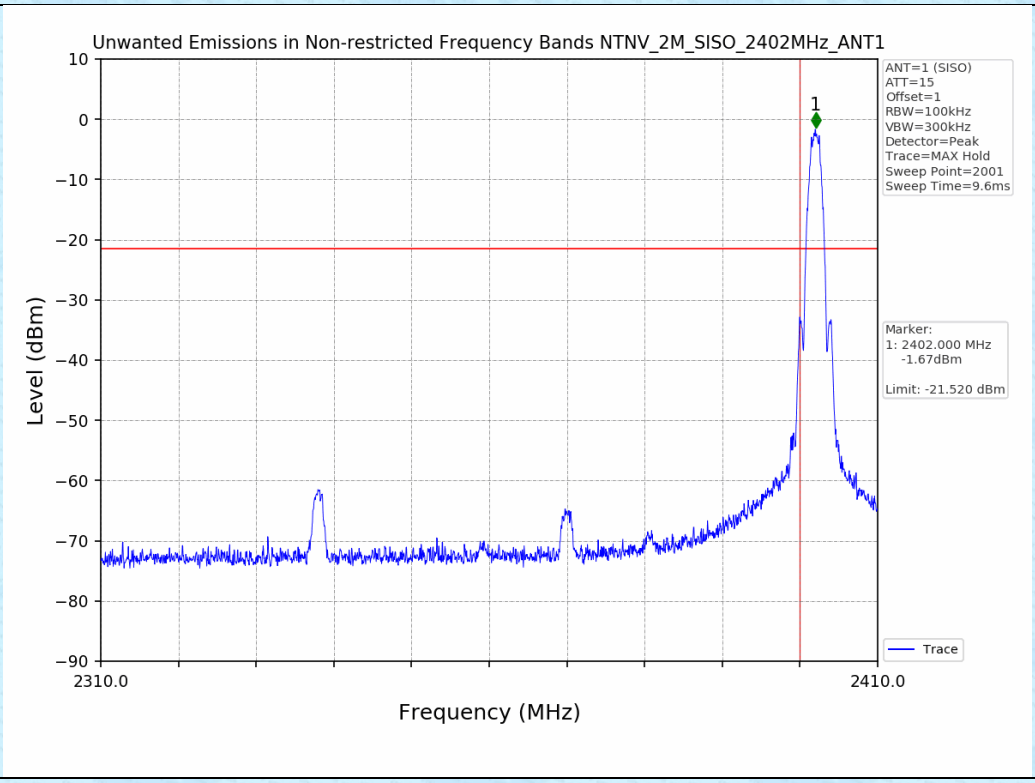
5. Unwanted Emissions in Non-restricted Frequency Bands

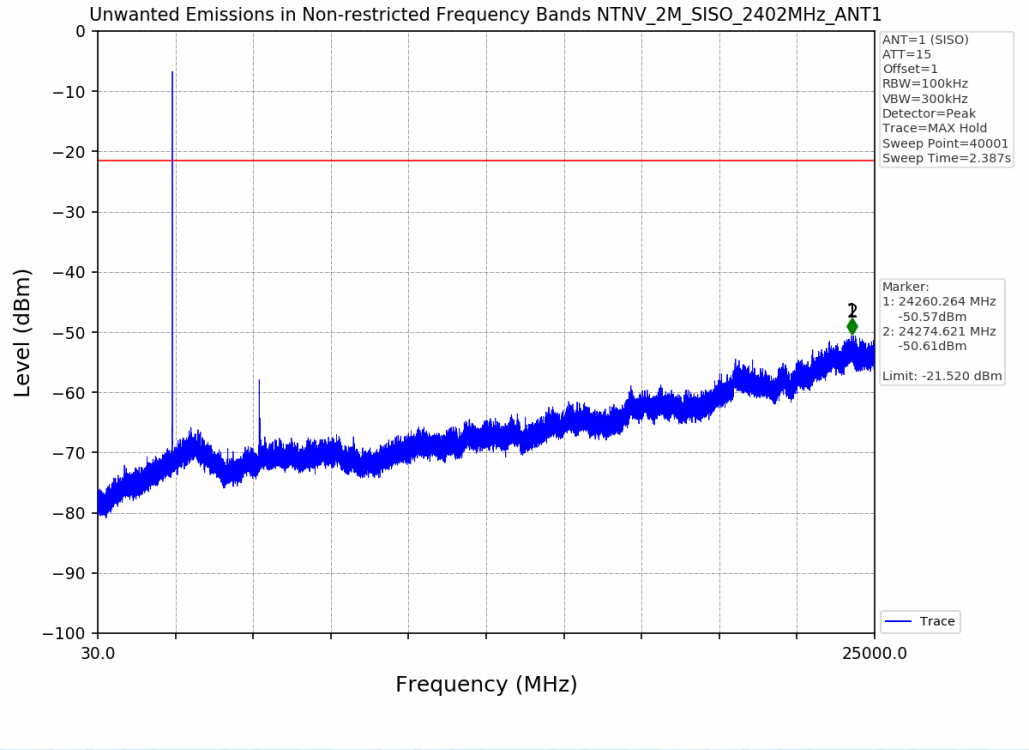
5.1 Test Result

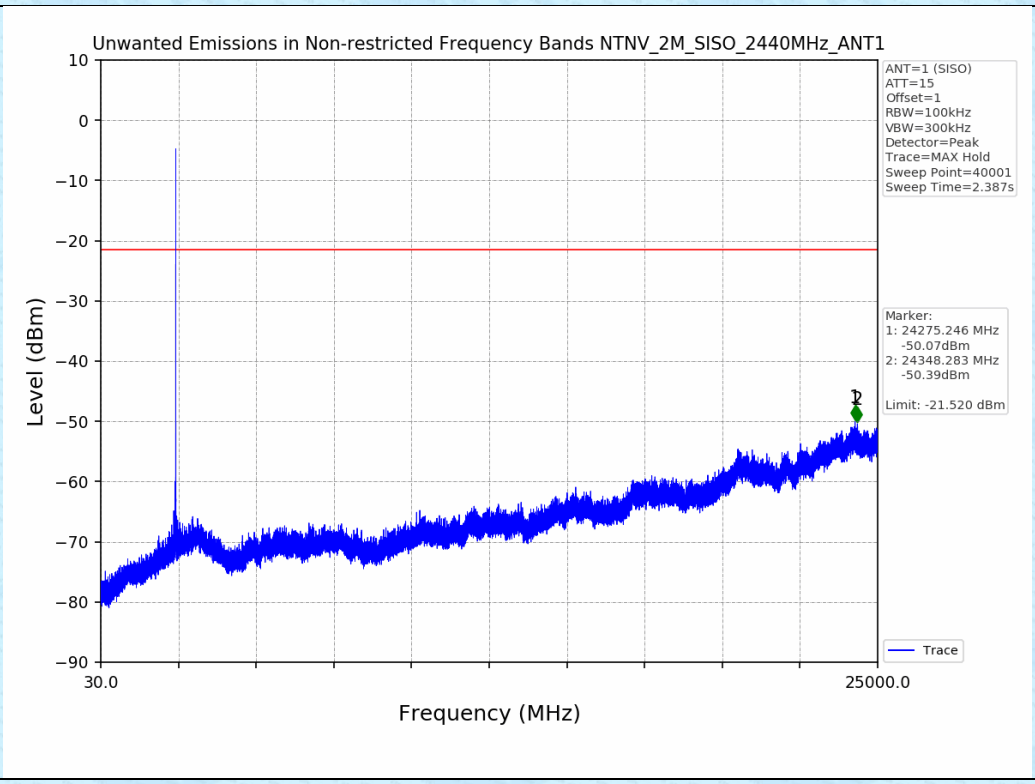
Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
GFSK	2402	SISO	1	Refer to test graph	-21.52	PASS
	2440	SISO	1	Refer to test graph	-21.52	PASS
	2480	SISO	1	Refer to test graph	-21.52	PASS

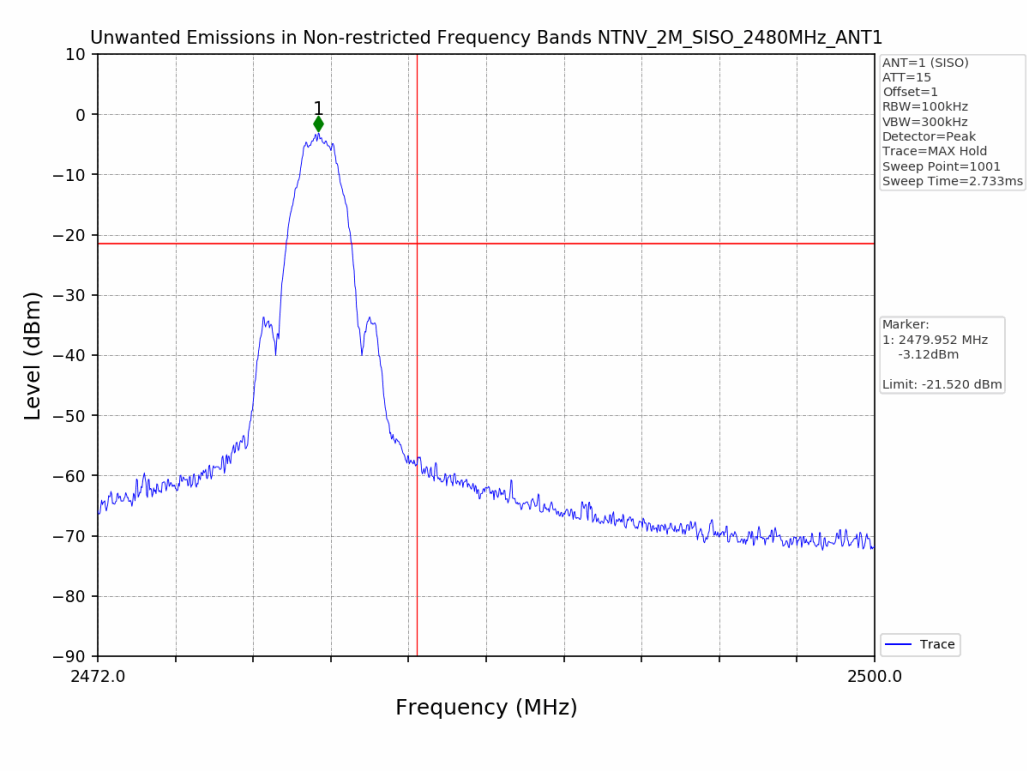
5.2 Test Graph

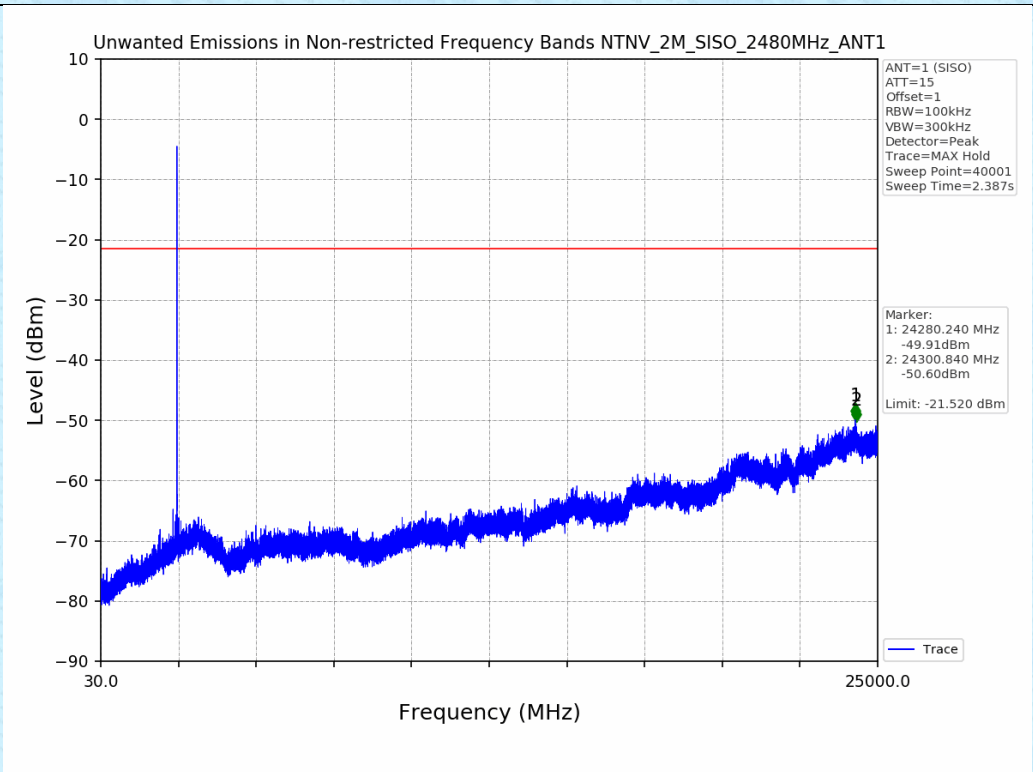

Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2402MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2401.965 MHz
-1.52dBm
Trace
Level (dBm)
Frequency (MHz)
2401.035
2402.965


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: 2402.000 MHz
-1.67dBm
Limit: -21.520 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: 24260.264 MHz
-50.57dBm
2: 24274.621 MHz
-50.61dBm
Limit: -21.520 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: 24275.246 MHz
-50.07dBm
2: 24348.283 MHz
-50.39dBm
Limit: -21.520 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: 2479.952 MHz
-3.12dBm
Limit: -21.520 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0

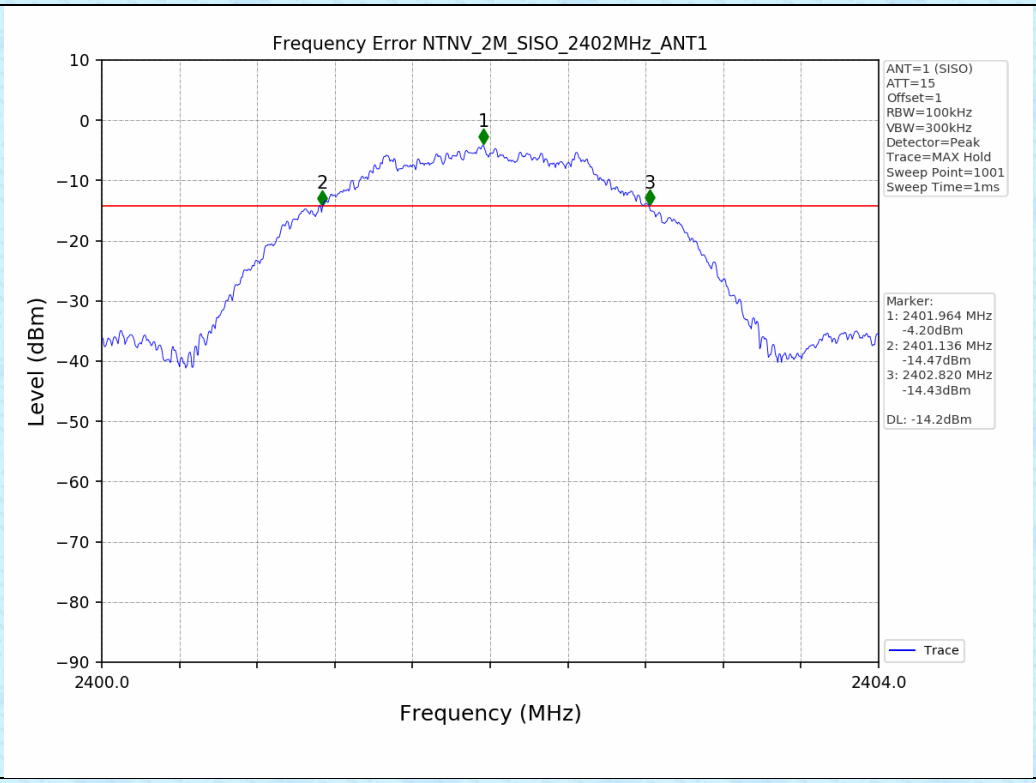

Unwanted Emissions in Non-restricted Frequency Bands NTNV_2M_SISO_2480MHz_ANT1
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=40001
Sweep Time=2.387s
Marker:
1: 24280.240 MHz
-49.91dBm
2: 24300.840 MHz
-50.60dBm
Limit: -21.520 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0

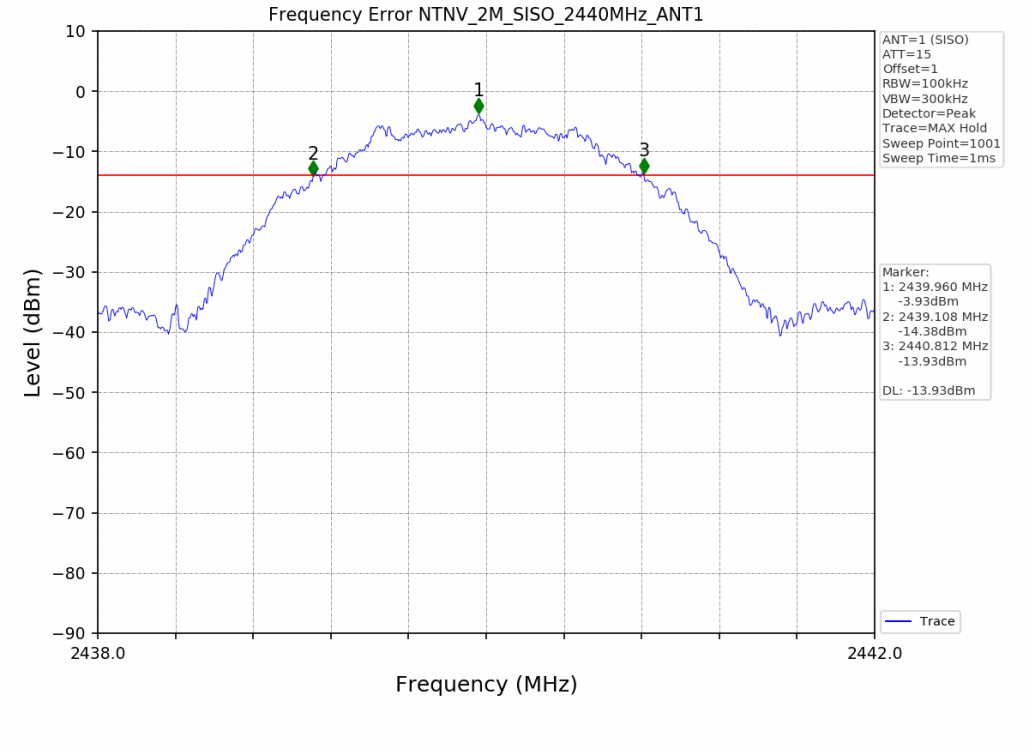
6. Frequency Error

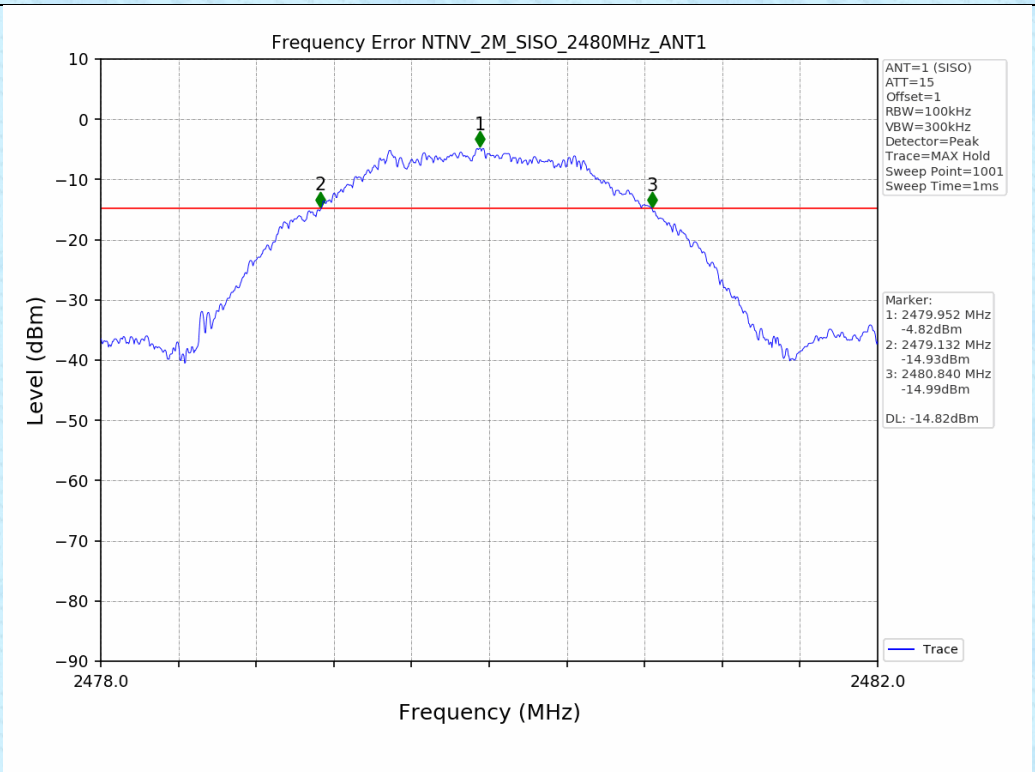
6.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT	Measured Frequency (MHz)		Verdict
				Test Result	Limit	
GFSK	2402	SISO	1	2401.98	2400-2483.5	PASS
	2440	SISO	1	2439.96	2400-2483.5	PASS
	2480	SISO	1	2479.99	2400-2483.5	PASS

6.2 Test Graph




Frequency Error NTNV_2M_SISO_2440MHz_ANT1
Level (dBm)
Frequency (MHz)
2438.0
2442.0
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2439.960 MHz
-3.93dBm
2: 2439.108 MHz
-14.38dBm
3: 2440.812 MHz
-13.93dBm
DL: -13.93dBm
Trace


Frequency Error NTNV_2M_SISO_2480MHz_ANT1
Level (dBm)
Frequency (MHz)
2478.0
2482.0
ANT=1 (SISO)
ATT=15
Offset=1
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=1ms
Marker:
1: 2479.952 MHz
-4.82dBm
2: 2479.132 MHz
-14.93dBm
3: 2480.840 MHz
-14.99dBm
DL: -14.82dBm
Trace

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