

Shenzhen CTL Testing Technology Co., Ltd.

Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

Appendix for 15.247

1. Bandwidth

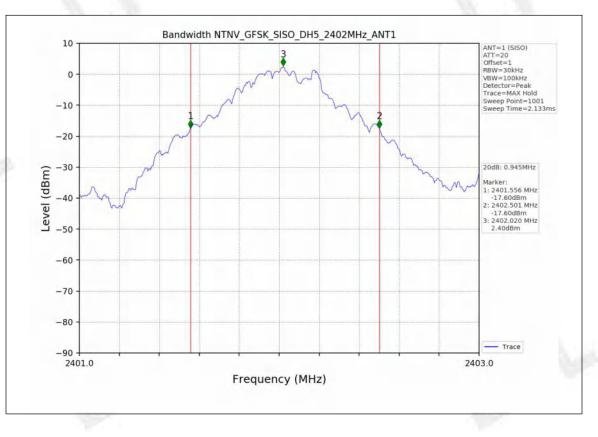
1.1 Test Result

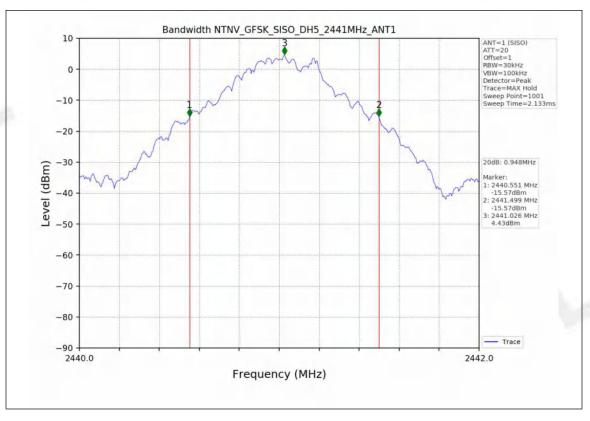
| Test Mode | Frequency (MHz) | ТХ Туре | ANT No. | 20dB Bandwidth Test Result (MHz) | Verdict |
|-----------|-----------------|---------|---------|--|---------|
| | 2402 | SISO | 1 | 0.945 | PASS |
| GFSK | 2441 | SISO | 1 | 0.948 | PASS |
| | 2480 | SISO | 1 | 0.945 | PASS |
| | 2402 | SISO | 1 | 1.271 | PASS |
| Pi/4DQPSK | 2441 | SISO | 1 | 1.228 | PASS |
| | 2480 | SISO | 1 | 1.237 | PASS |
| | 2402 | SISO | 1 | 1.263 | PASS |
| 8DPSK | 2441 | SISO | 1 | 1.269 | PASS |
| | 2480 | SISO | 1 | 1.263 | PASS |

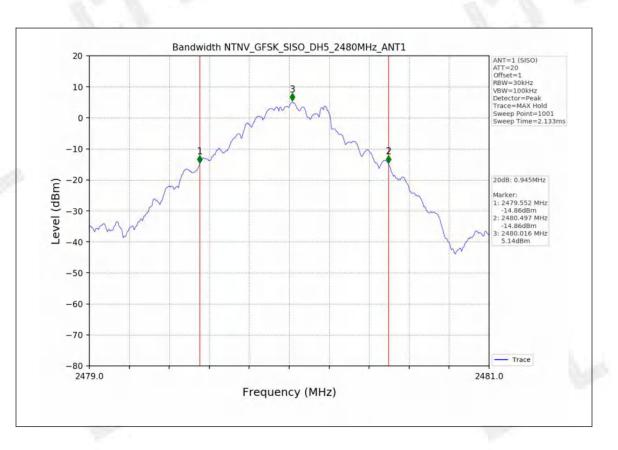
| Test Mode | Frequency (MHz) | ТХ Туре | ANT No. | | ed Bandwidth sult (MHz) |
|-----------|-----------------|---------|---------|-------|----------------------------|
| | 2402 | SISO | 1 | 0.868 | Only for Report Use |
| GFSK | 2441 | SISO | 1 | 0.861 | Only for Report Use |
| | 2480 | SISO | 1 | 0.862 | Only for Report Use |
| 1 | 2402 | SISO | 1 | 1.164 | Only for Report Use |
| Pi/4DQPSK | 2441 | SISO | 1 | 1.164 | Only for Report Use |
| | 2480 | SISO | 1 | 1.166 | Only for Report Use |
| | 2402 | SISO | 1 | 1.164 | Only for Report Use |
| 8DPSK | 2441 | SISO | 1 | 1.160 | Only for Report Use |
| | 2480 | SISO | 1 | 1.160 | Only for Report Use |

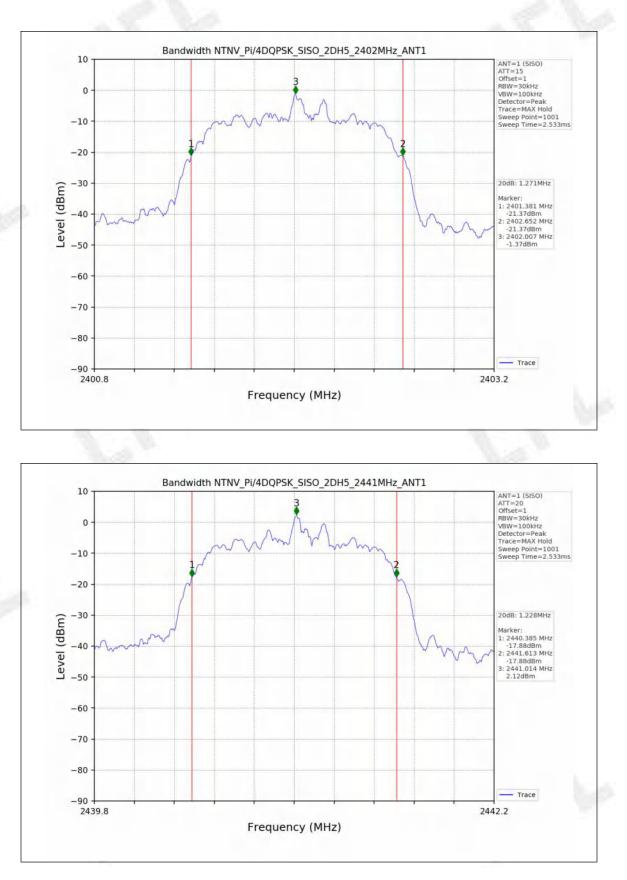
V1.0

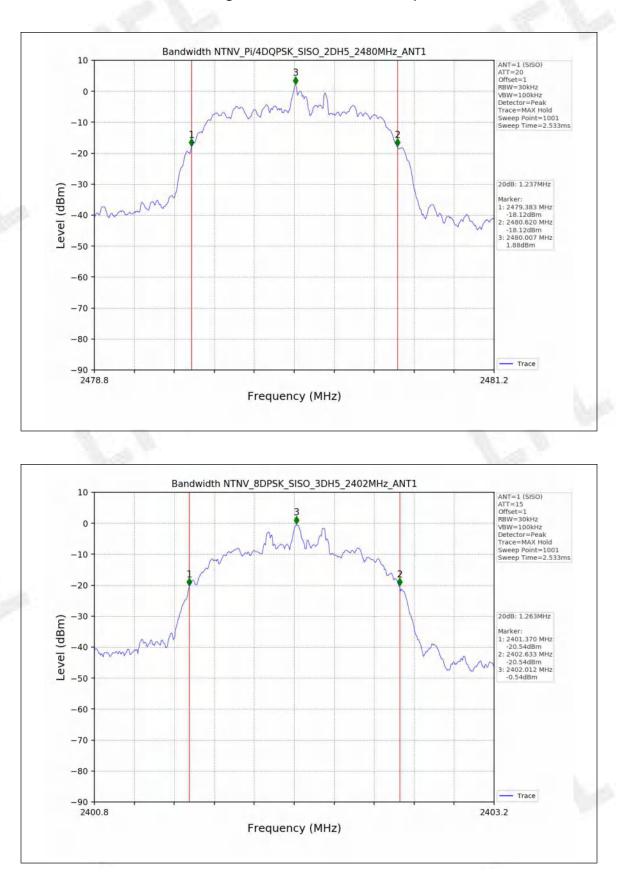
1.2 Test Graph - 20dB Bandwidth

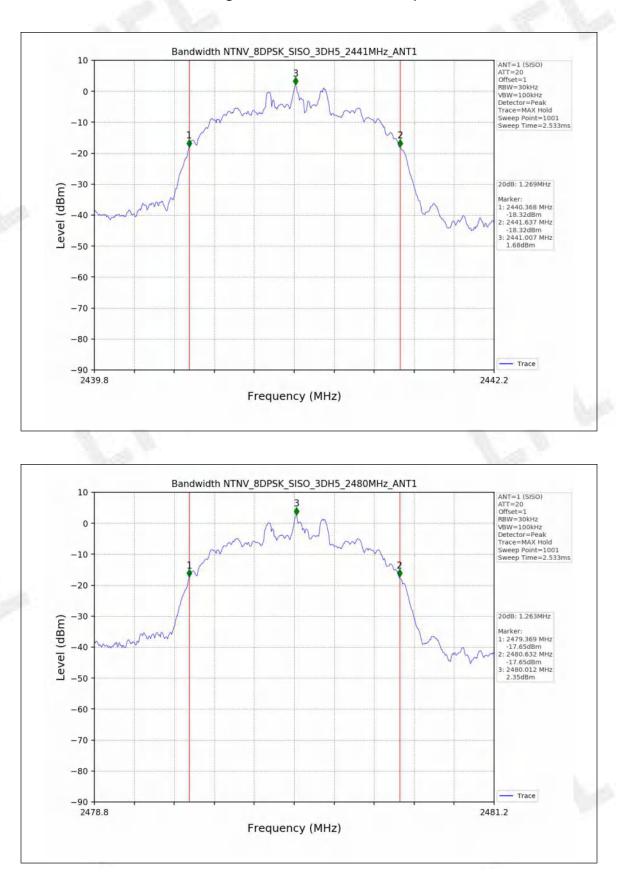






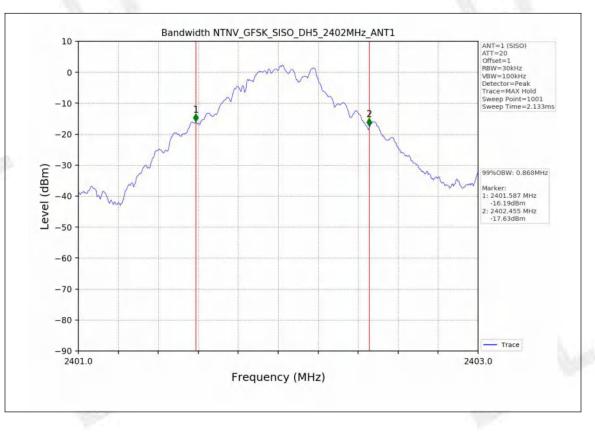


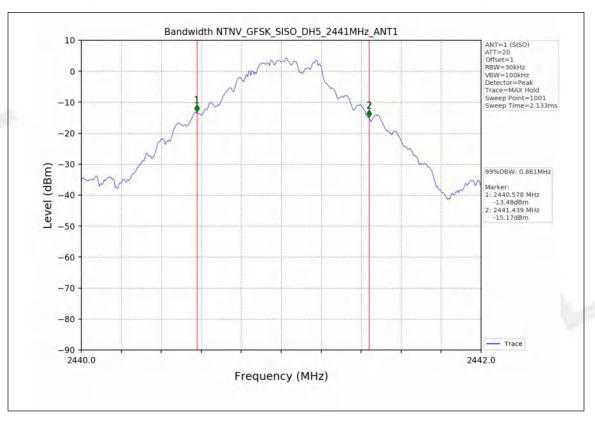




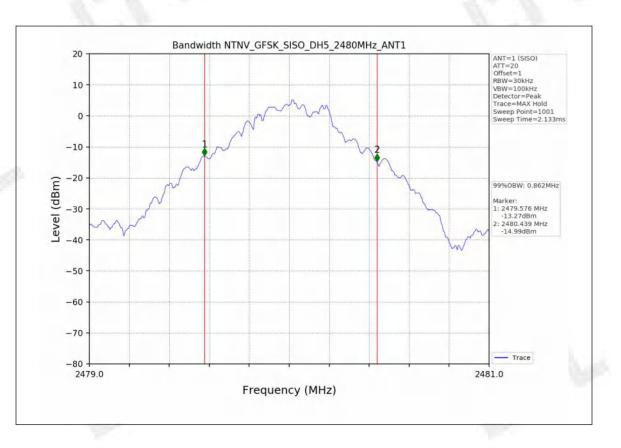
V1.0

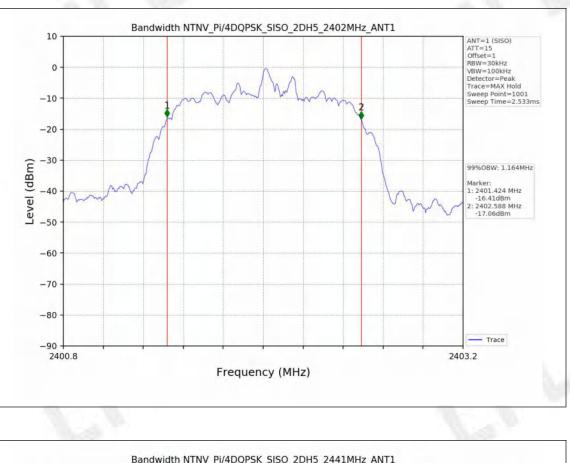
1.3 Test Graph - 99% Occupied Bandwidth

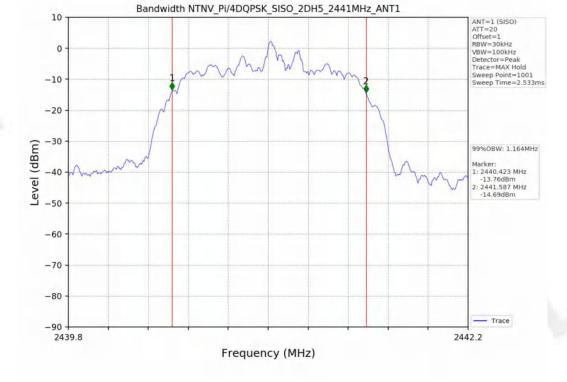




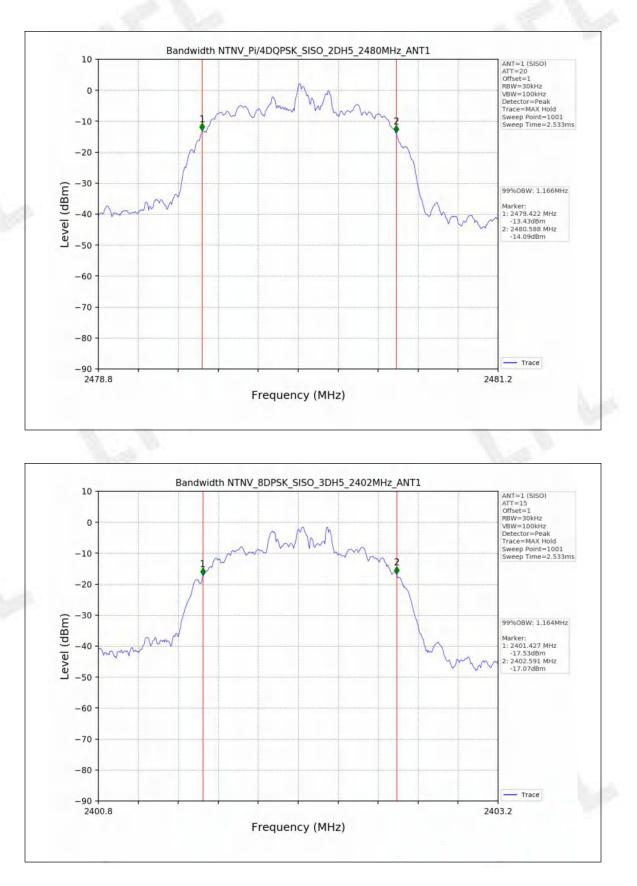
100

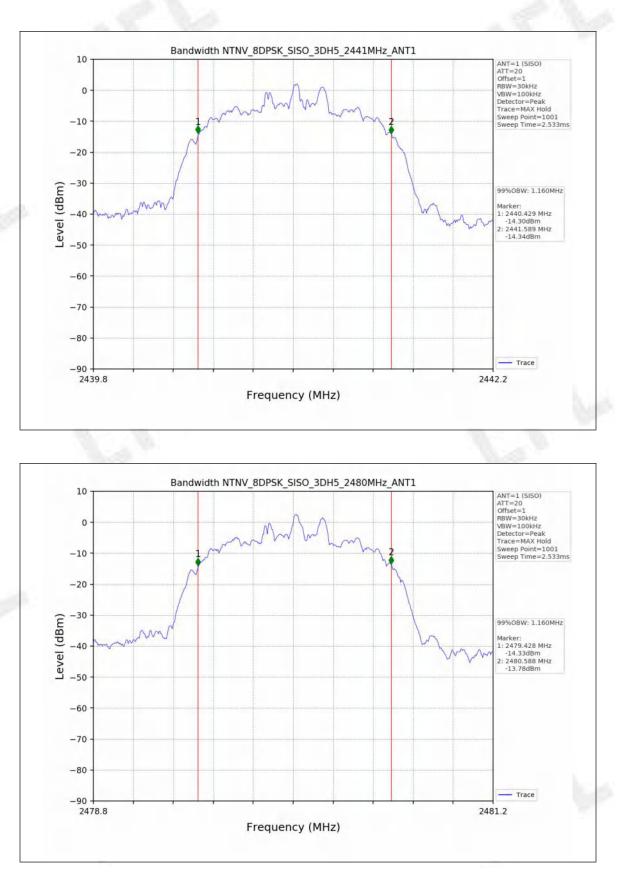






Page 10 of 43



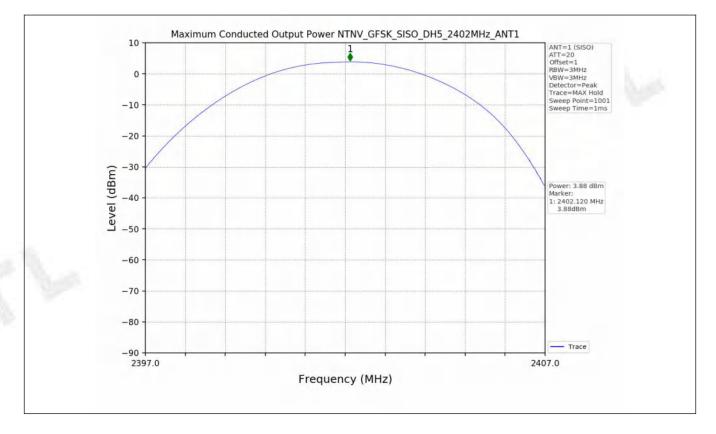


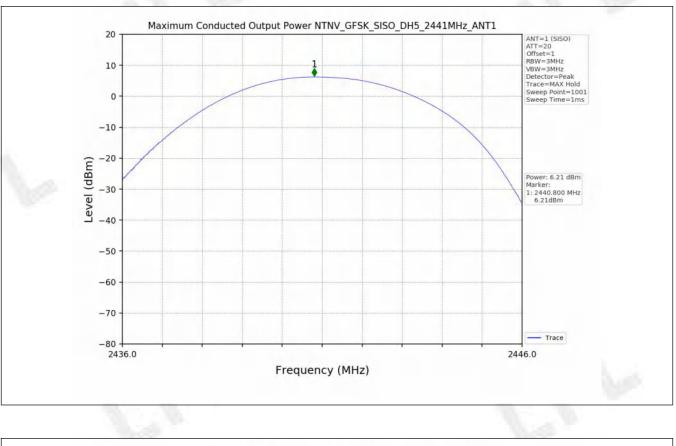
2. Maximum Conducted Output Power

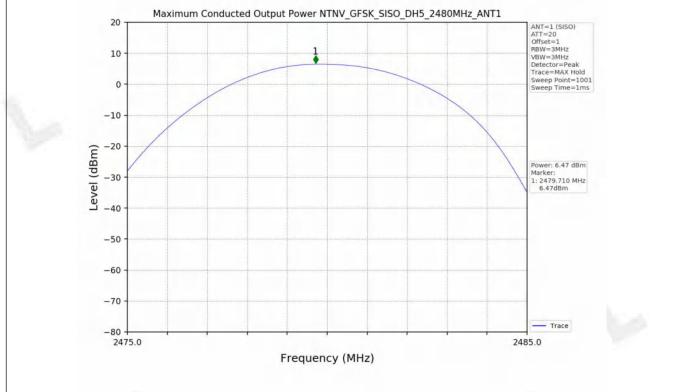
2.1 Test Result

| Test Mode | Frequency (MHz) | Тх Туре | Measured Peak Output Power (dBm) Ant 1 | Limits (dBm) | Verdict |
|-----------|-----------------|---------|--|--------------|---------|
| | 2402 | SISO | 3.88 | 30 | PASS |
| GFSK | 2441 | SISO | 6.21 | 30 | PASS |
| | 2480 | SISO | 6.47 | 30 | PASS |
| | 2402 | SISO | 1.62 | 20.97 | PASS |
| Pi/4DQPSK | 2441 | SISO | 4.22 | 20.97 | PASS |
| | 2480 | SISO | 4.58 | 20.97 | PASS |
| | 2402 | SISO | 2.22 | 20.97 | PASS |
| 8DPSK | 2441 | SISO | 4.74 | 20.97 | PASS |
| | 2480 | SISO | 5.08 | 20.97 | PASS |

2.2 Test Graph





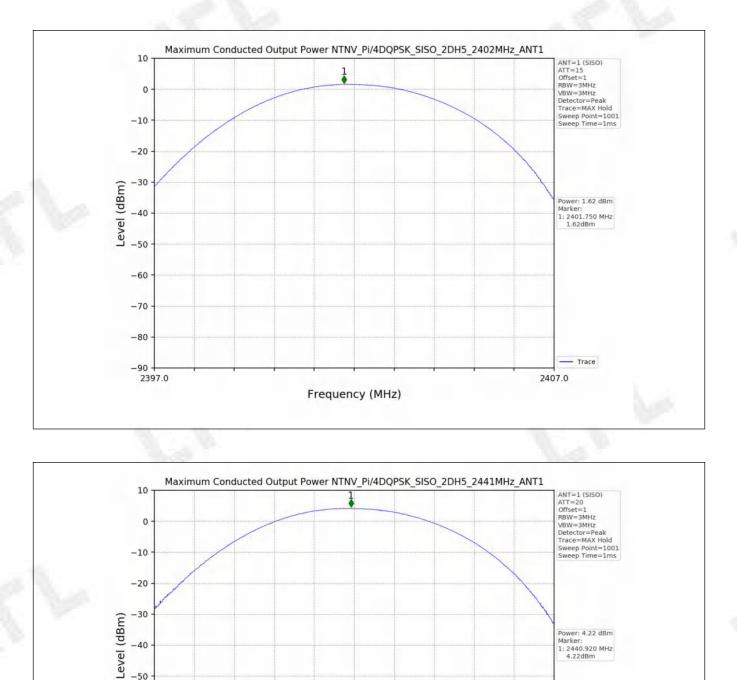


Page 14 of 43

Power: 4.22 dBm Marker: 1: 2440.920 MHz 4.22dBm

Trace

2446.0



Frequency (MHz)



-40

-50

-60

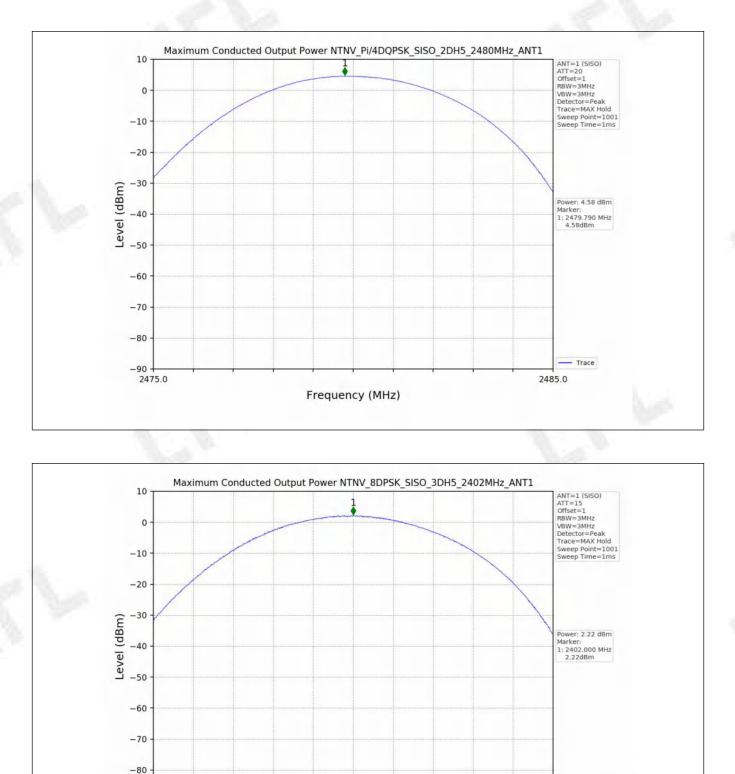
-70

-80

-90 2436.0 Page 15 of 43

Trace

2407.0

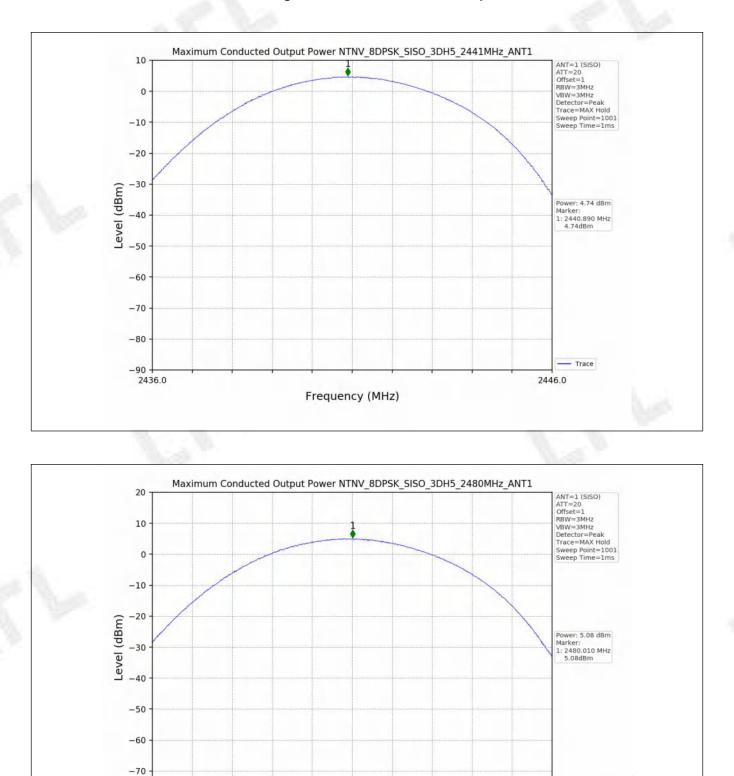


Frequency (MHz)

-90 -2397.0 Page 16 of 43

- Trace

2485.0



Frequency (MHz)

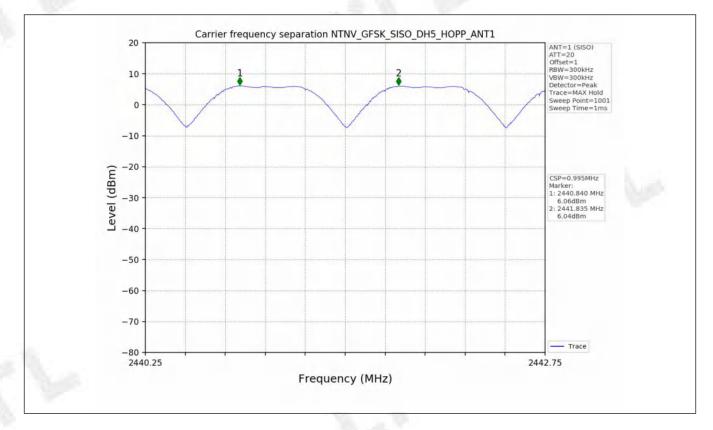
-80

3. Carrier frequency separation

3.1 Test Result

| Test Mode | ТХ Туре | ANT No. | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limits (MHz) | Verdict |
|-----------|---------|---------|-----------------------------|-------------------------|--------------|---------|
| GFSK | SISO | 1 | 0.995 | 0.948 | ≥0.948 | PASS |
| Pi/4DQPSK | SISO | 1 | 1.000 | 1.271 | ≥0.847 | PASS |
| 8DPSK | SISO | 1 | 0.975 | 1.269 | ≥0.846 | PASS |

3.2 Test Graph



Page 18 of 43

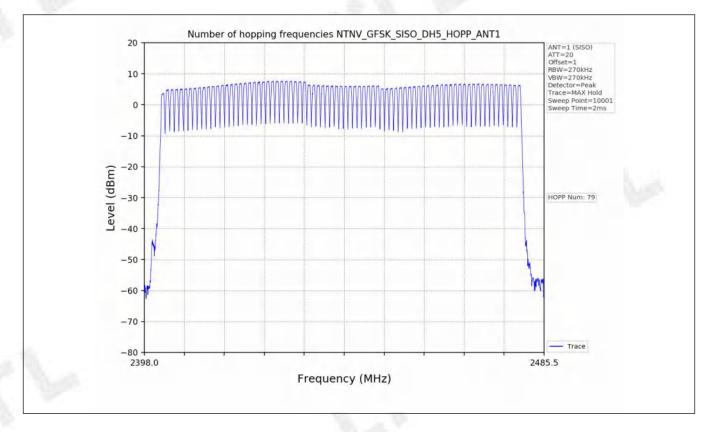


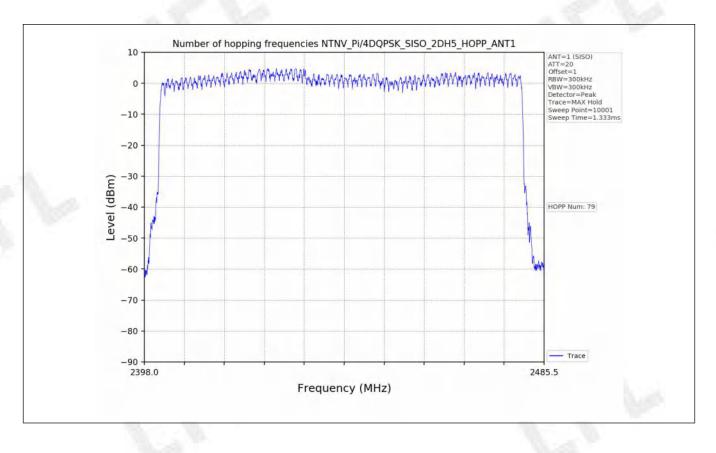
4. Number of hopping frequencies

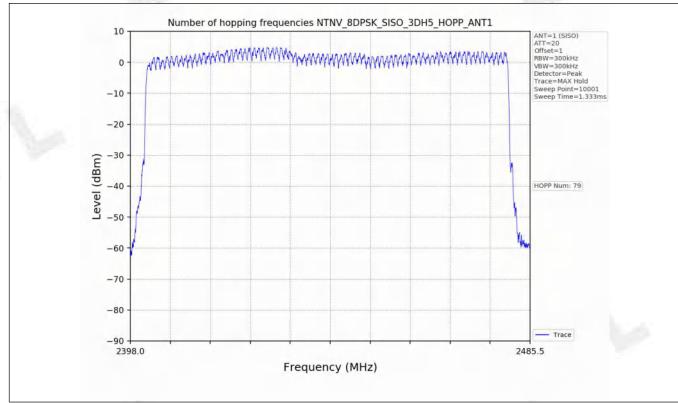
4.1 Test Result

| Test Mode | ТХ Туре | 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





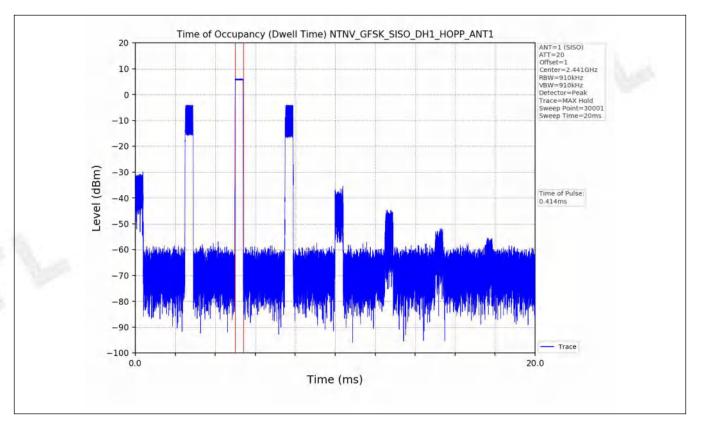


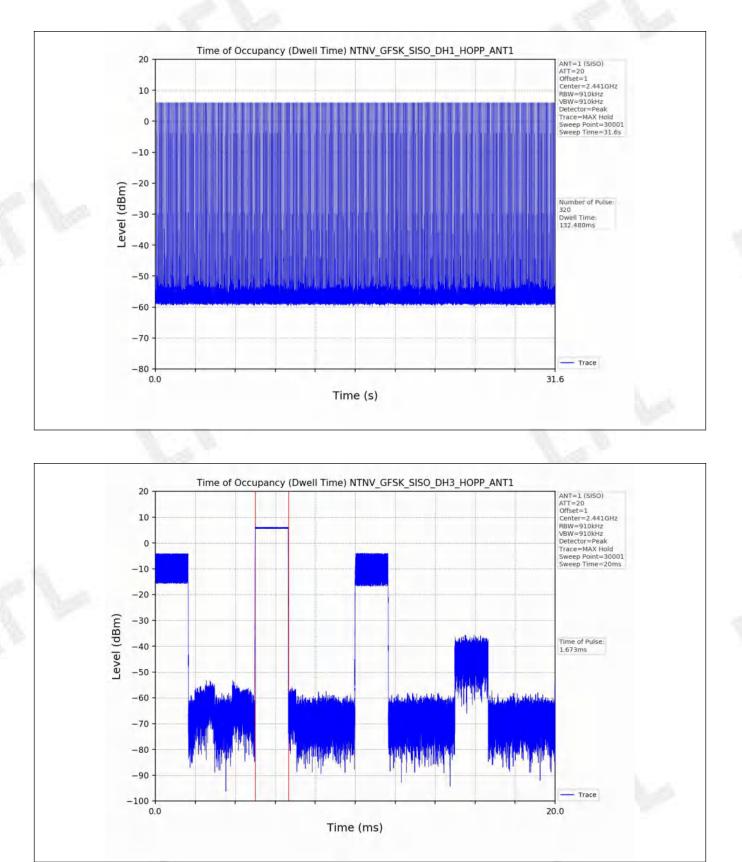
5. Time of Occupancy (Dwell Time)

5.1 Test Result

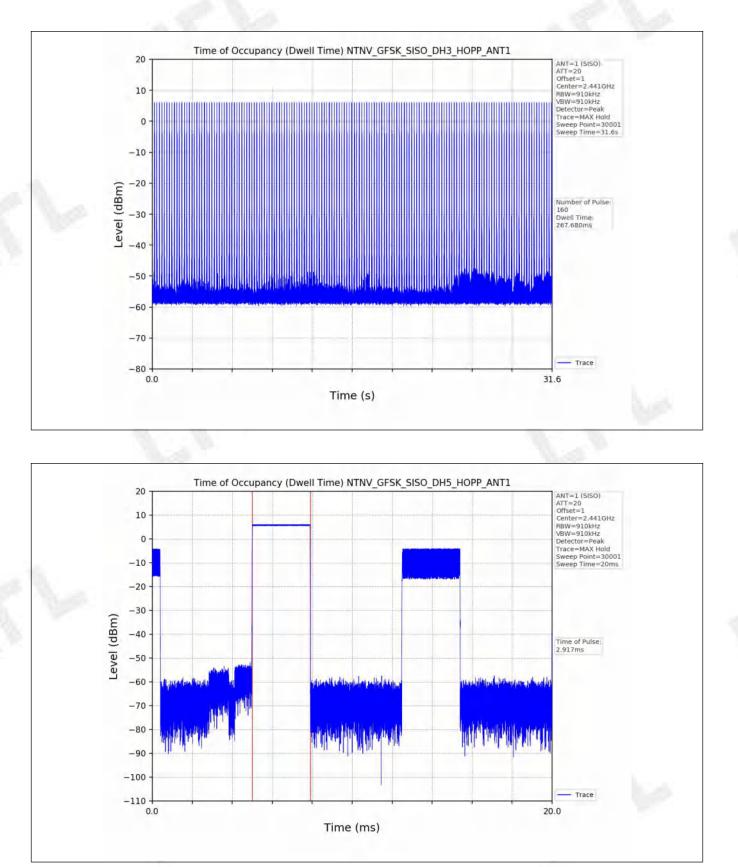
| Test Mode | Packet Type | ТХ Туре | ANT No. | Duration of Single Pulse (ms) | Obeservatio | Num of Pulse in Observation Period | Dwell Time (ms) | Limits (ms) | Verdict |
|-----------|----------------|---------|---------|-------------------------------------|-------------|---|--------------------|-------------|---------|
| | DH1 | SISO | 1 | 0.414 | 31.6 | 320 | 132.480 | ≤400 | PASS |
| GFSK | DH3 | SISO | 1 | 1.673 | 31.6 | 160 | 267.680 | ≤400 | PASS |
| | DH5 | SISO | 1 | 2.917 | 31.6 | 107 | 312.119 | ≤400 | PASS |
| 1000 | 2DH1 | SISO | 1 | 0.427 | 31.6 | 320 | 136.640 | ≤400 | PASS |
| Pi/4DQPSK | 2DH3 | SISO | 1 | 1.678 | 31.6 | 160 | 268.480 | ≤400 | PASS |
| | 2DH5 | SISO | 1 | 2.929 | 31.6 | 106 | 310.474 | ≤400 | PASS |
| | 3DH1 | SISO | 1 | 0.427 | 31.6 | 320 | 136.640 | ≤400 | PASS |
| 8DPSK | 3DH3 | SISO | 1 | 1.677 | 31.6 | 160 | 268.320 | ≤400 | PASS |
| | 3DH5 | SISO | 1 | 2.931 | 31.6 | 107 | 313.617 | ≤400 | PASS |

5.2 Test Graph

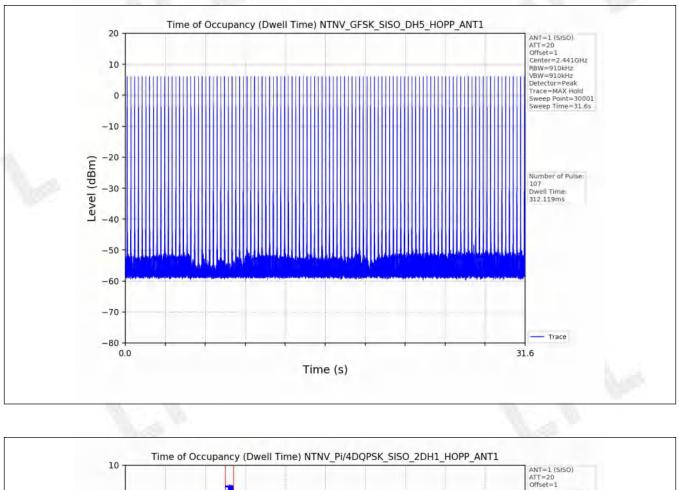


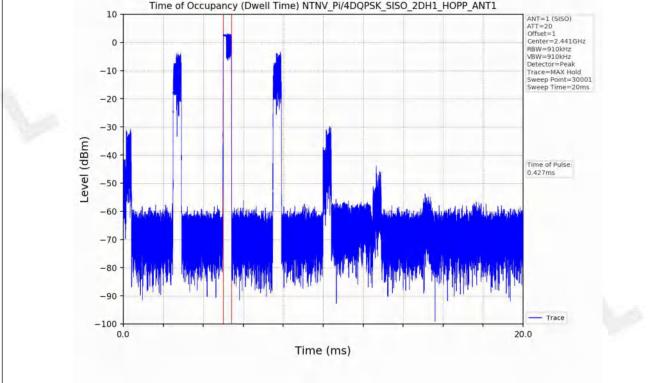


Page 23 of 43



Page 24 of 43

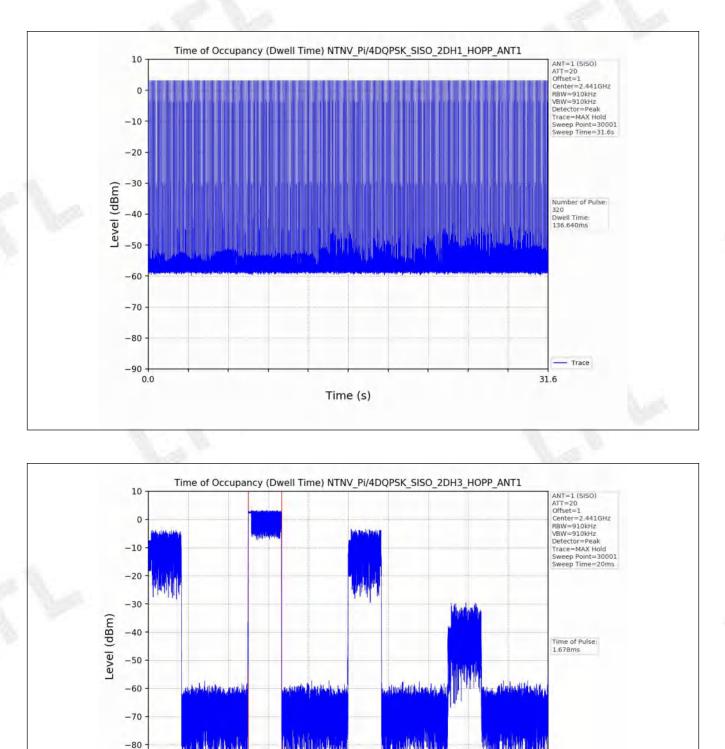




Page 25 of 43

Trace

20.0

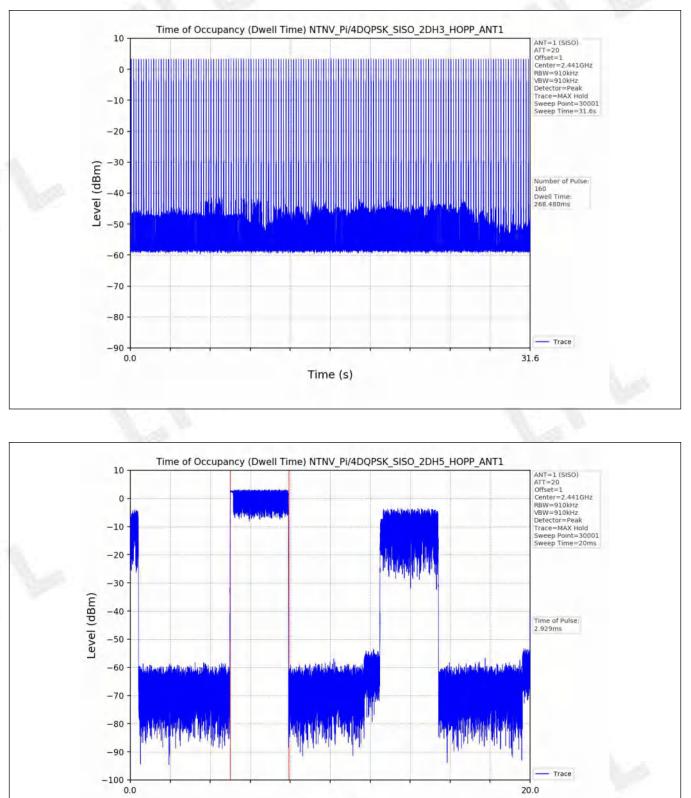


Time (ms)

-90

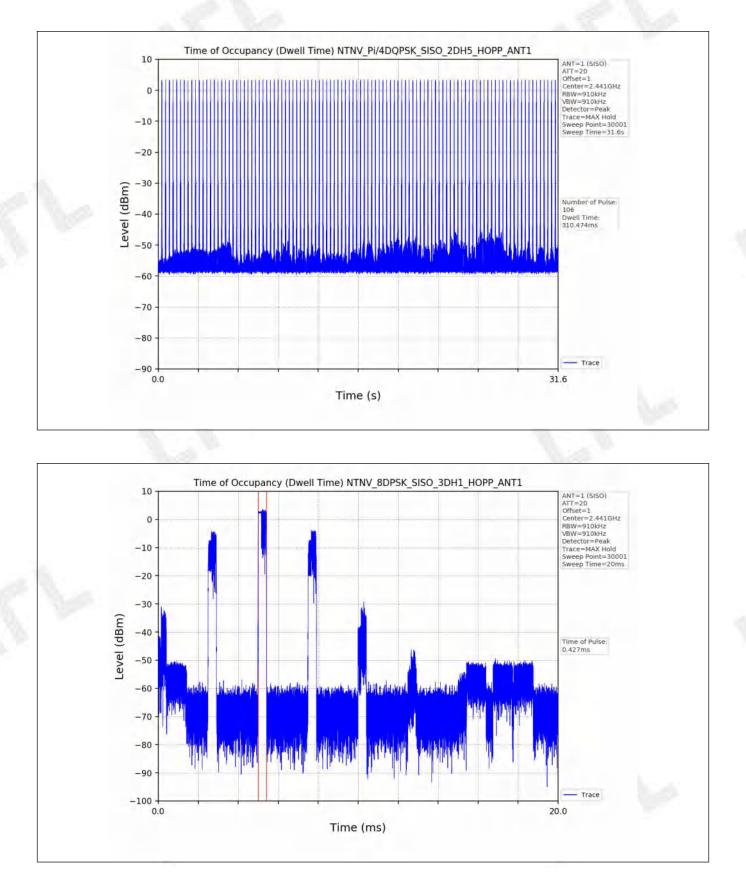
-100 + 0.0

Page 26 of 43

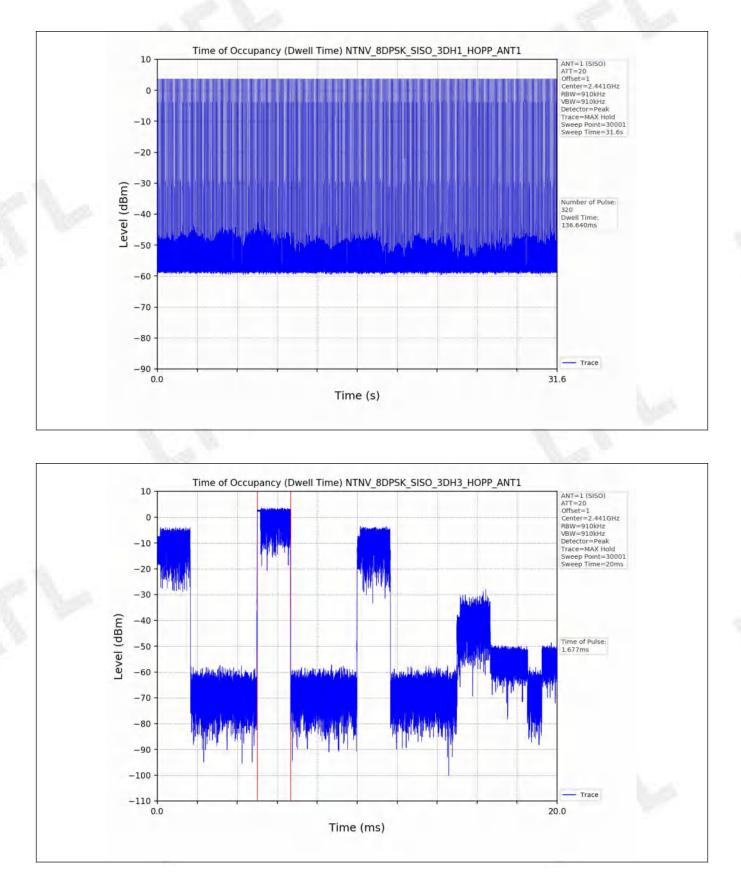


Time (ms)

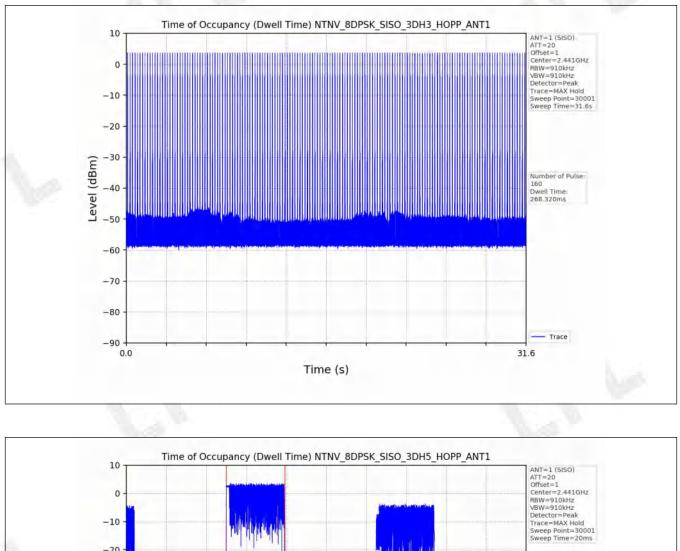
Page 27 of 43

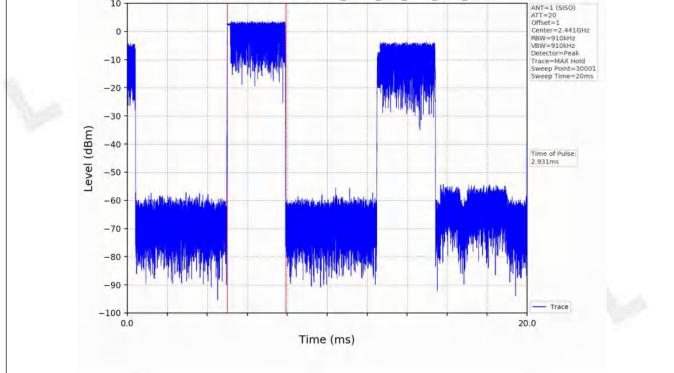


Page 28 of 43

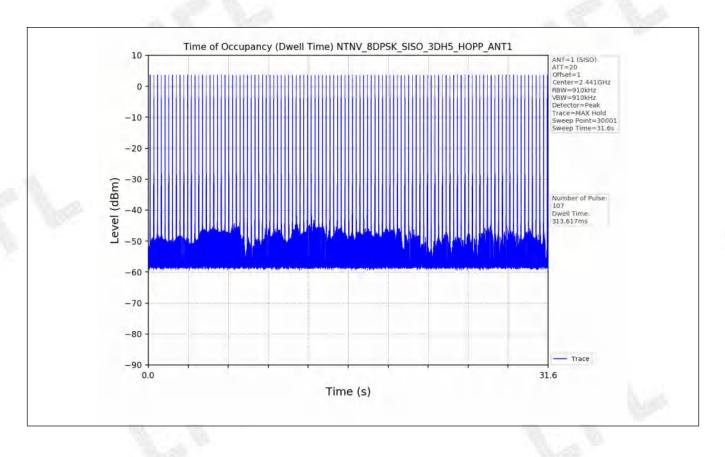


Page 29 of 43





Page 30 of 43



6. Unwanted Emissions in Non-restricted Frequency Bands

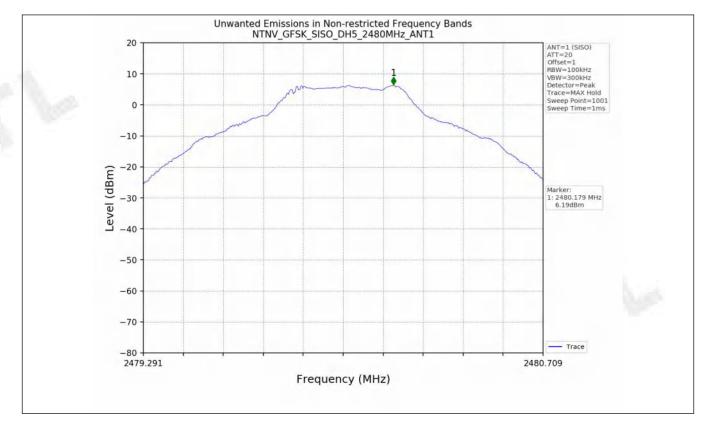
6.1 Test Result

| Test Mode | Frequency (MHz) | ТХ Туре | ANT No. | Spurious Conducted Emission (dBm) | Limits (dBm) | Verdict |
|-----------|-----------------|---------|---------|---|--------------|---------|
| 1 | 2402 | SISO | 1 | Refer to test graph | -13.81 | PASS |
| GFSK | 2441 | SISO | 1 | Refer to test graph | -13.81 | PASS |
| Gron | 2480 | SISO | 1 | Refer to test graph | -13.81 | PASS |
| | Hopping | SISO | 1 | Refer to test graph | -13.81 | PASS |
| | 2402 | SISO | 1 | Refer to test graph | -16.97 | PASS |
| | 2441 | SISO | 1 | Refer to test graph | -16.97 | PASS |
| Pi/4DQPSK | 2480 | SISO | 1 | Refer to test graph | -16.97 | PASS |
| | Hopping | SISO | 1 | Refer to test graph | -16.97 | PASS |
| | 2402 | SISO | 1 | Refer to test graph | -16.90 | PASS |
| 8DPSK | 2441 | SISO | 1 | Refer to test graph | -16.90 | PASS |
| | 2480 | SISO | 1 | Refer to test graph | -16.90 | PASS |

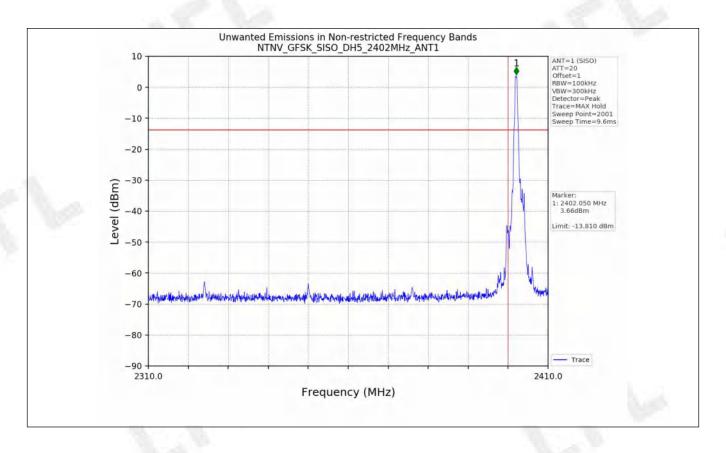
| Hopping SISO 1 | Refer to test graph | -16.90 | PASS |
|----------------|------------------------|--------|------|
|----------------|------------------------|--------|------|

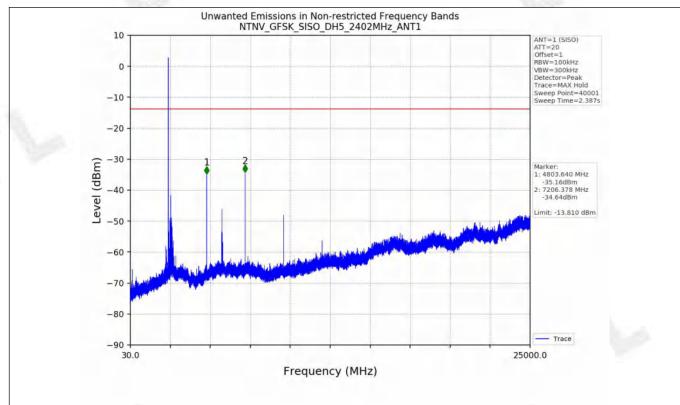
6.2 Test Graph

V1.0

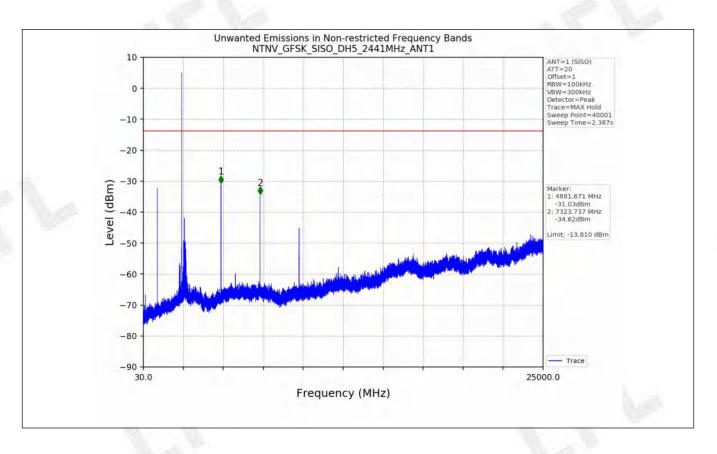


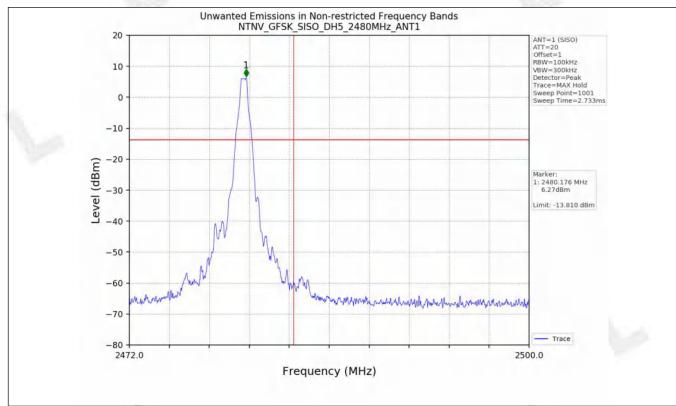
Page 32 of 43



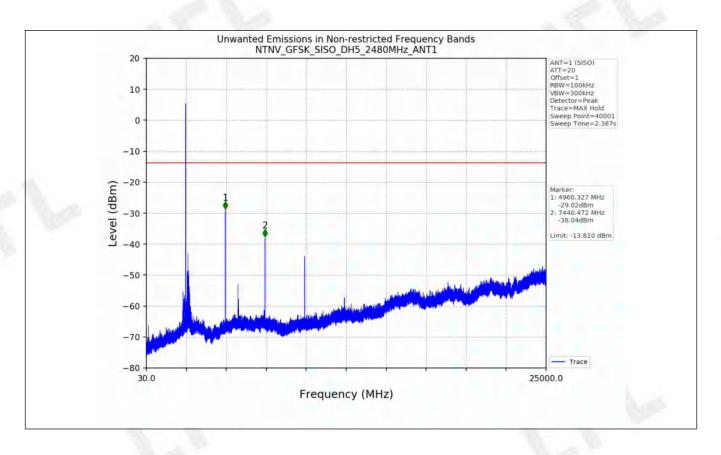


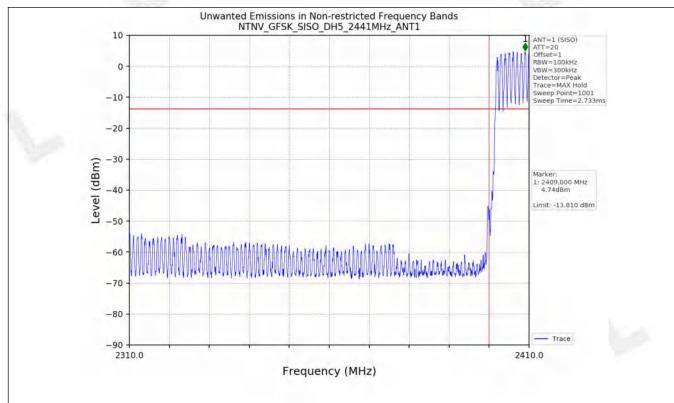
Page 33 of 43



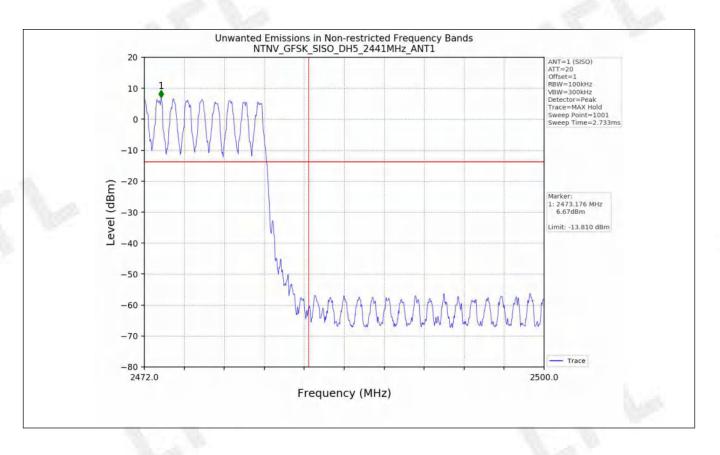


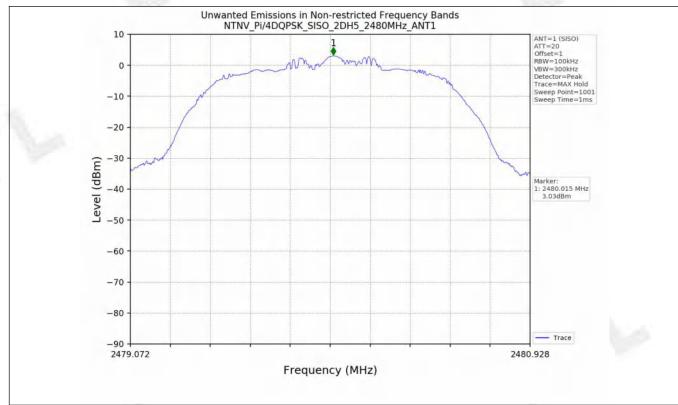
Page 34 of 43



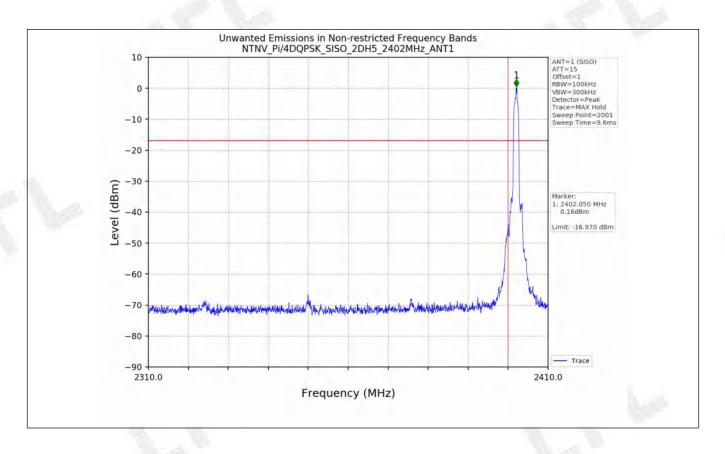


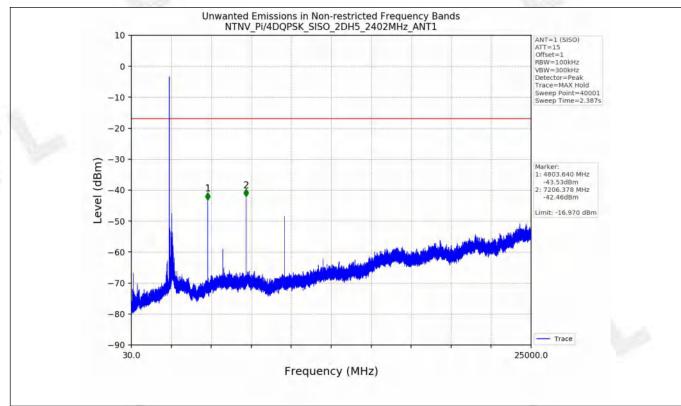
Page 35 of 43



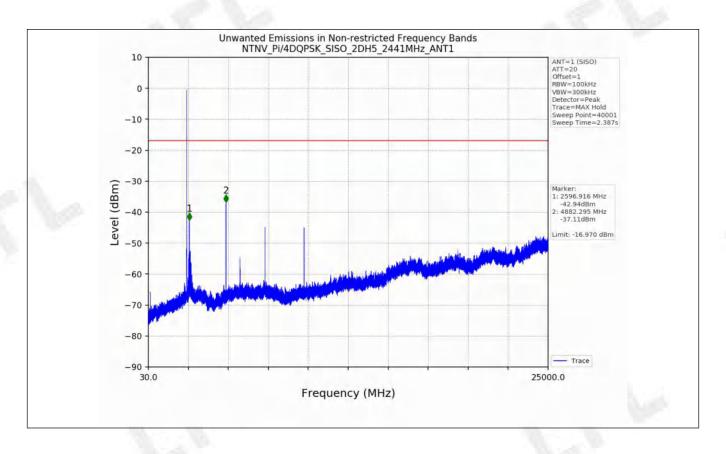


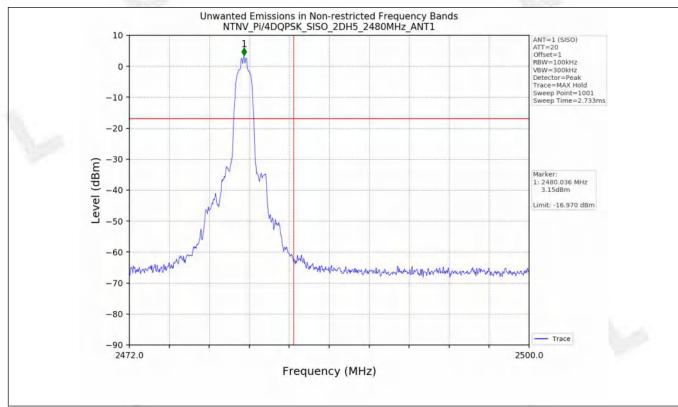
Page 36 of 43



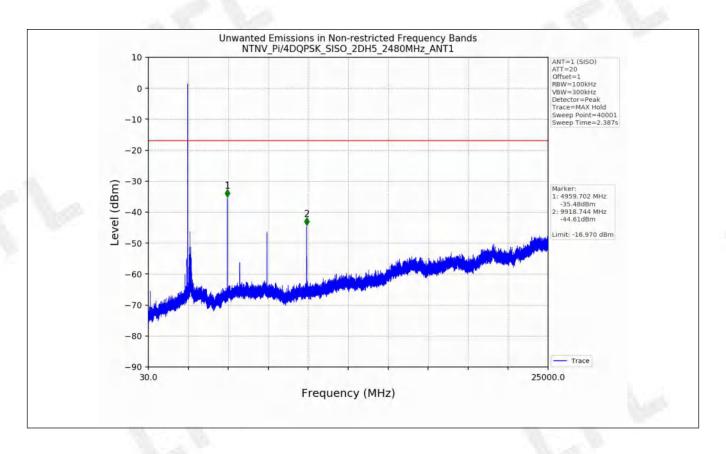


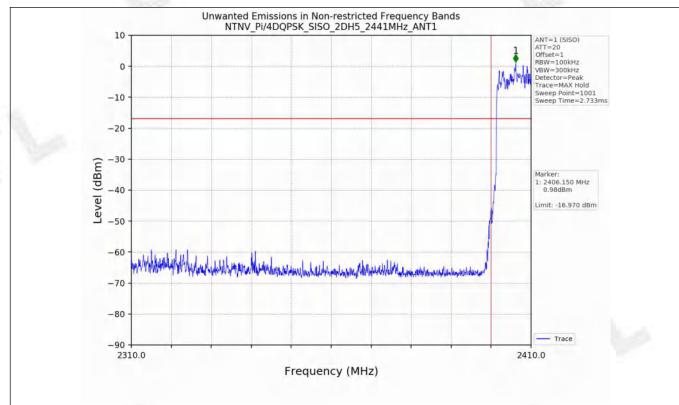
Page 37 of 43



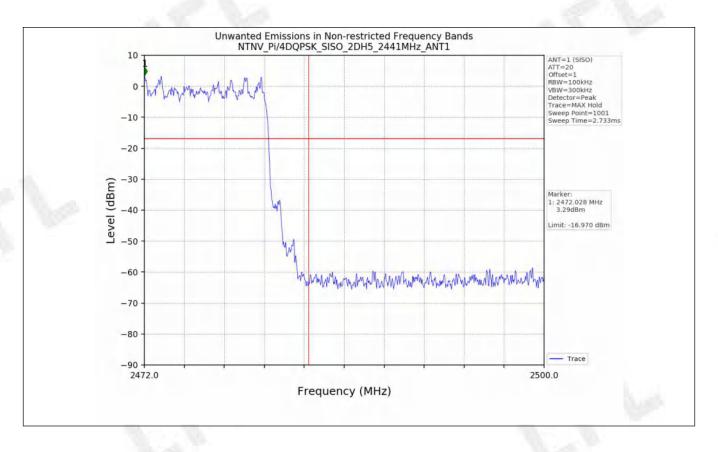


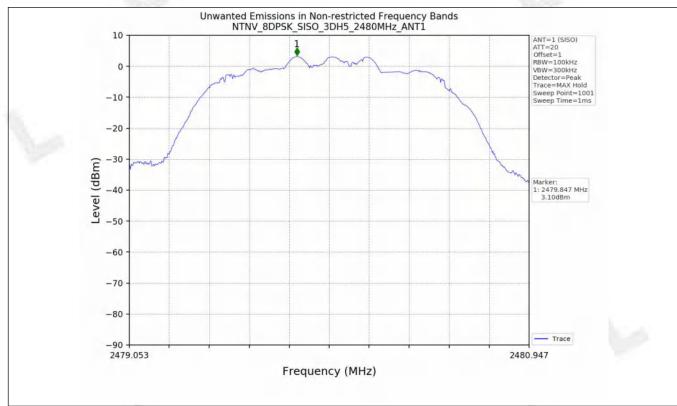
Page 38 of 43



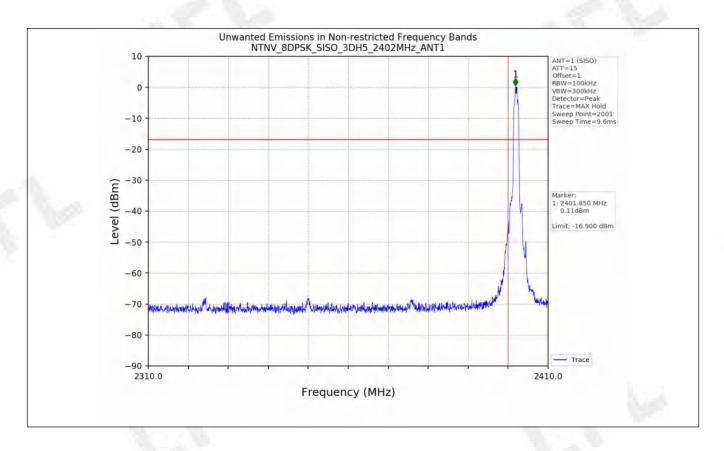


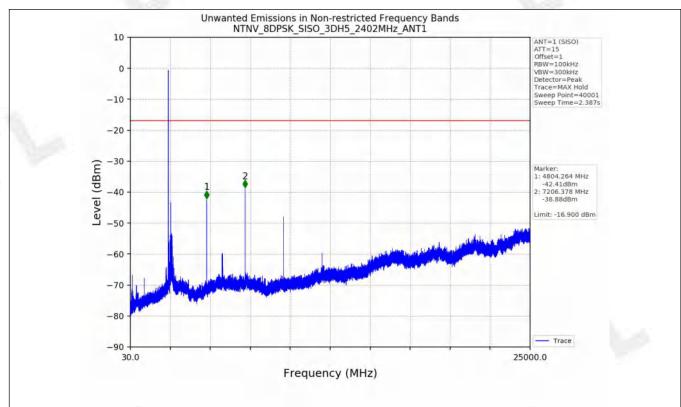
Page 39 of 43



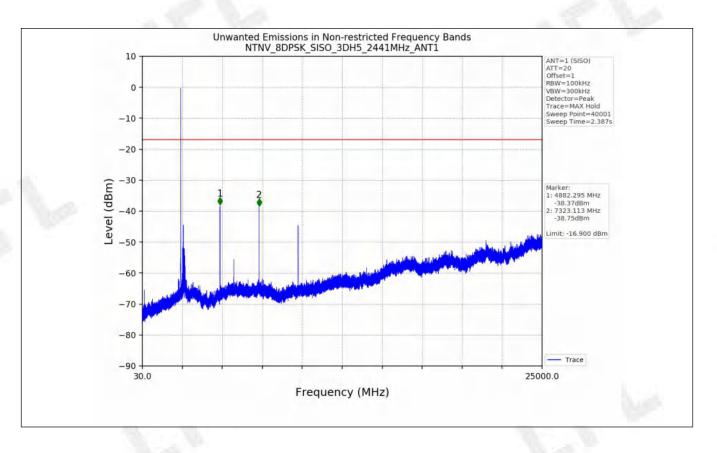


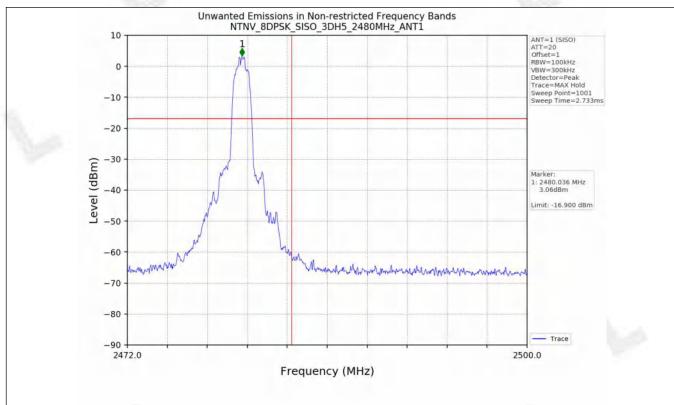
Page 40 of 43





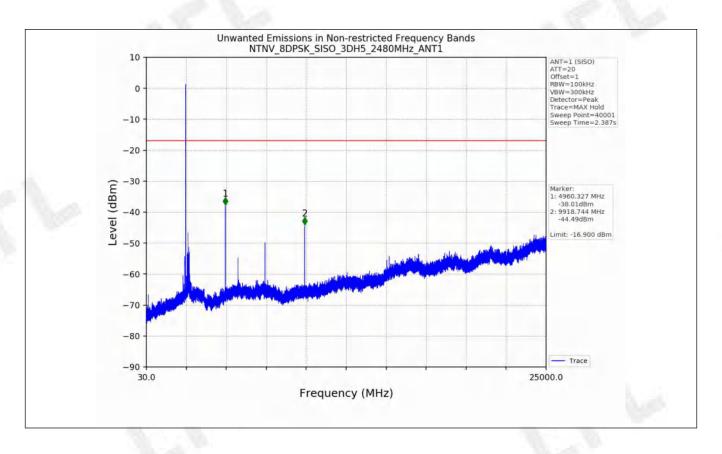
Page 41 of 43

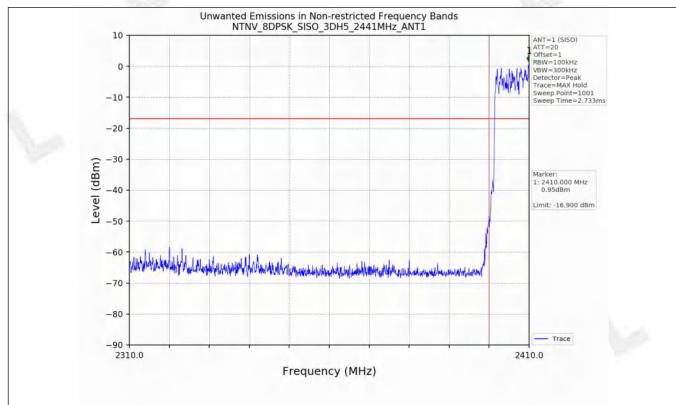




V1.0

Page 42 of 43





Page 43 of 43

