# Annex for BLE Part 15.247

# Test Report No. :  CTL2008054041-WF02

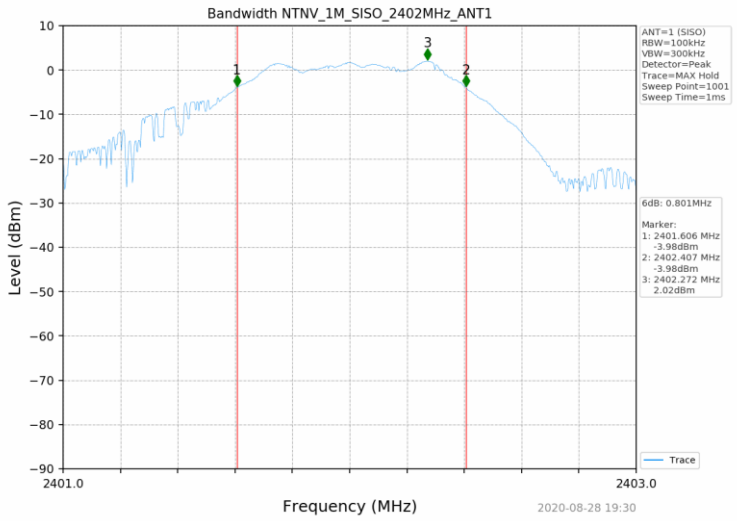
## 1. Bandwidth

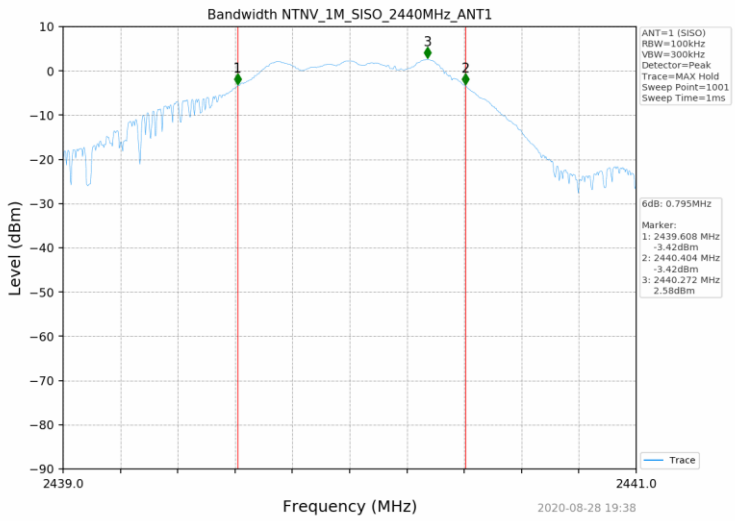
### 1.1 Test Result

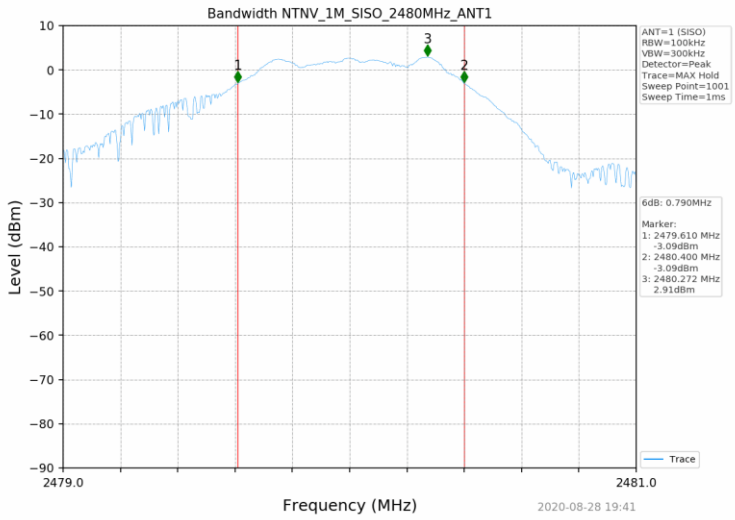
| Test Mode | Frequency (MHz) | TX Type | ANT No. | 6dB Bandwidth | | Verdict |
|---|---|---|---|---|---|---|
| | | | | Test Result (MHz) | Limits (MHz) | |
| 1M | 2402 | SISO | 1 | 0.801 | ≥0.5 | PASS |
| | 2440 | SISO | 1 | 0.795 | ≥0.5 | PASS |
| | 2480 | SISO | 1 | 0.790 | ≥0.5 | PASS |

| Test Mode | Frequency (MHz) | TX Type | ANT No. | 99% Occupied Bandwidth | |
|---|---|---|---|---|---|
| | | | | Test Result (MHz) | |
| 1M | 2402 | SISO | 1 | 1.202 | Only for Report Use |
| | 2440 | SISO | 1 | 1.214 | Only for Report Use |
| | 2480 | SISO | 1 | 1.179 | Only for Report Use |

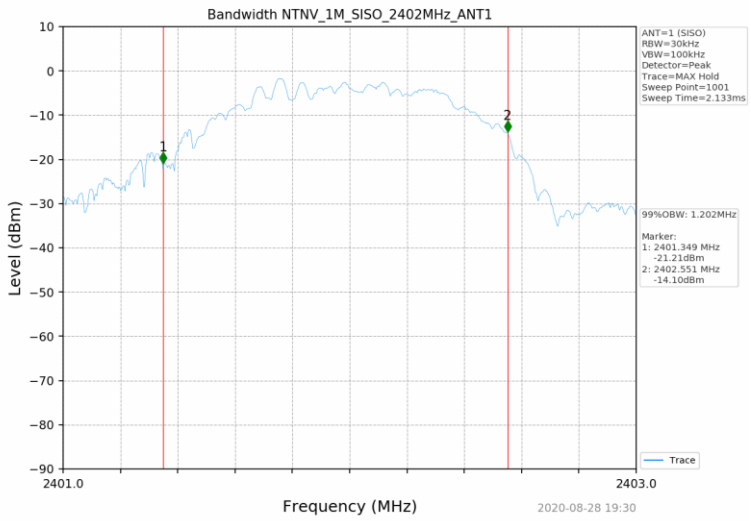
### 1.2 Test Graph - 6dB Bandwidth

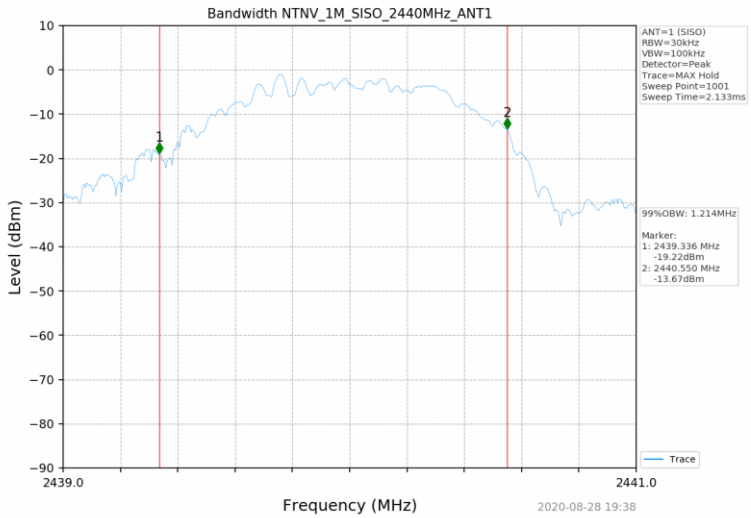


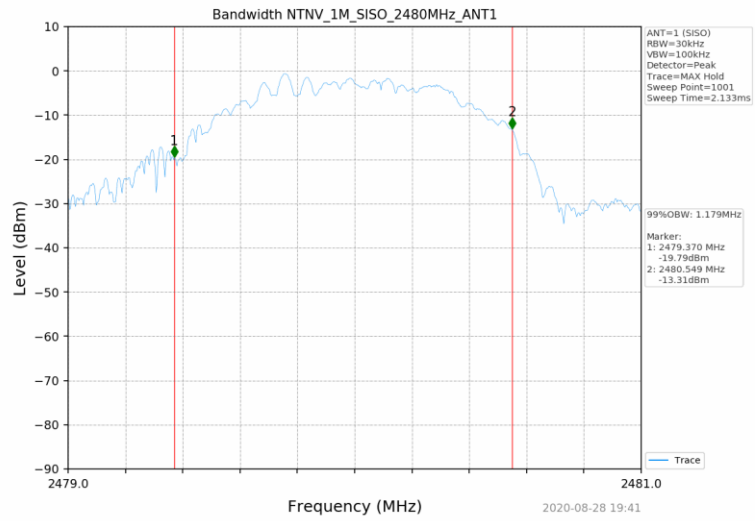



### 1.2 Test Graph - 99% Occupied Bandwidth


Bandwidth NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.202MHz
Marker:
1: 2401.349 MHz
-21.21dBm
2: 2402.551 MHz
-14.10dBm
Trace
Level (dBm)
Frequency (MHz)
2401.0
2403.0
2020-08-28 19:30


Bandwidth NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
RBW=30kHz
VBW=100kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.133ms
99%OBW: 1.214MHz
Marker:
1: 2439.336 MHz
-19.22dBm
2: 2440.550 MHz
-13.67dBm
Trace
Level (dBm)
Frequency (MHz)
2439.0
2441.0
2020-08-28 19:38

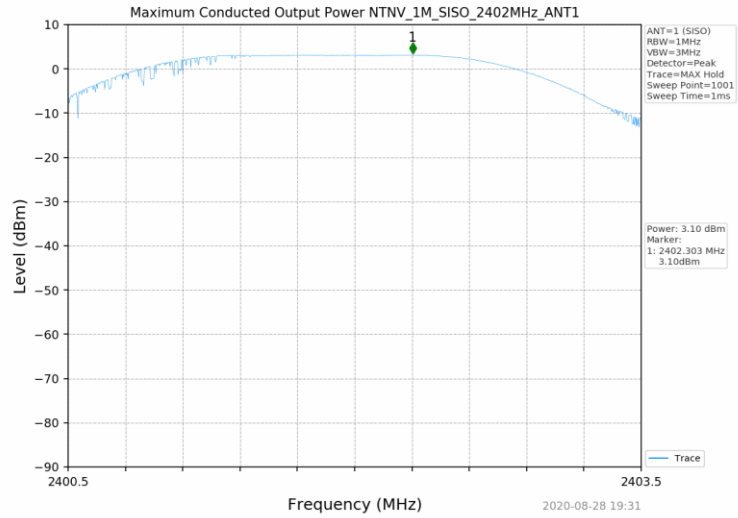


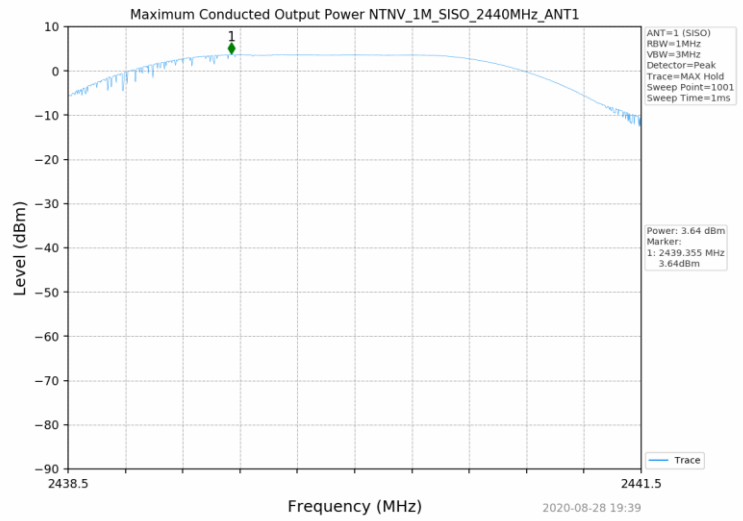

## 2. Maximum Conducted Output Power

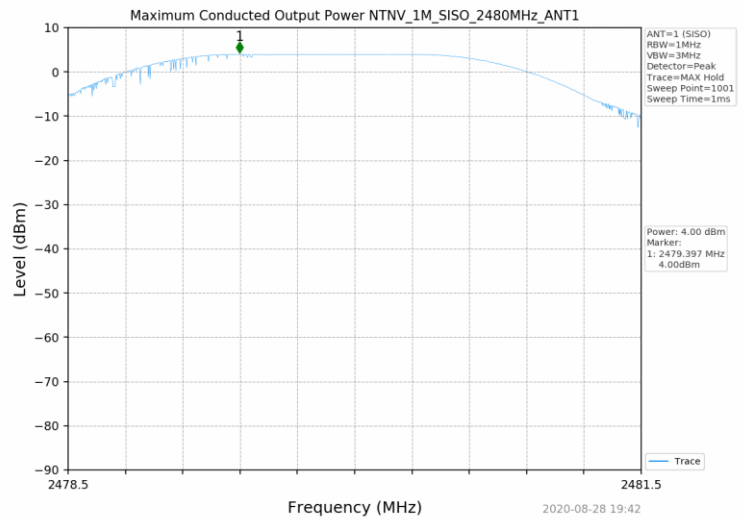
### 2.1 Test Result

| Test Mode | Frequency (MHz) | Tx Type | Measured Peak Output Power (dBm) | Limits (dBm) | Verdict |
|---|---|---|---|---|---|
| | | | Ant 1 | | |
| 1M | 2402 | SISO | 3.10 | 30 | PASS |
| | 2440 | SISO | 3.64 | 30 | PASS |
| | 2480 | SISO | 4.00 | 30 | PASS |

### 2.2 Test Graph





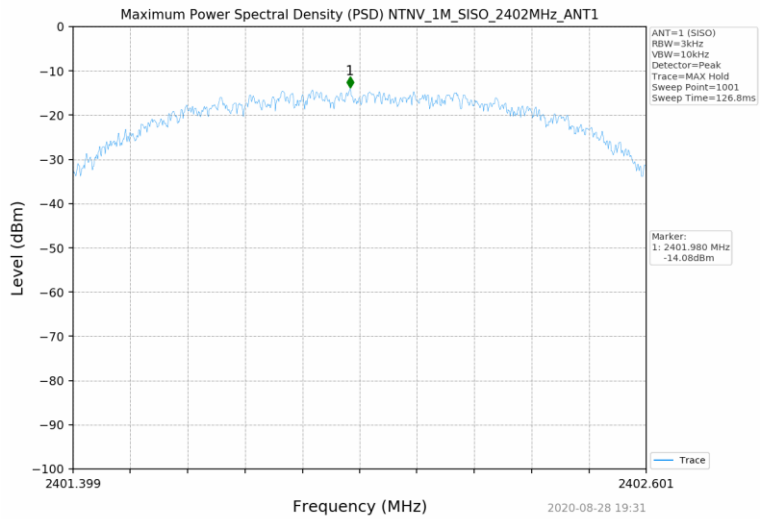



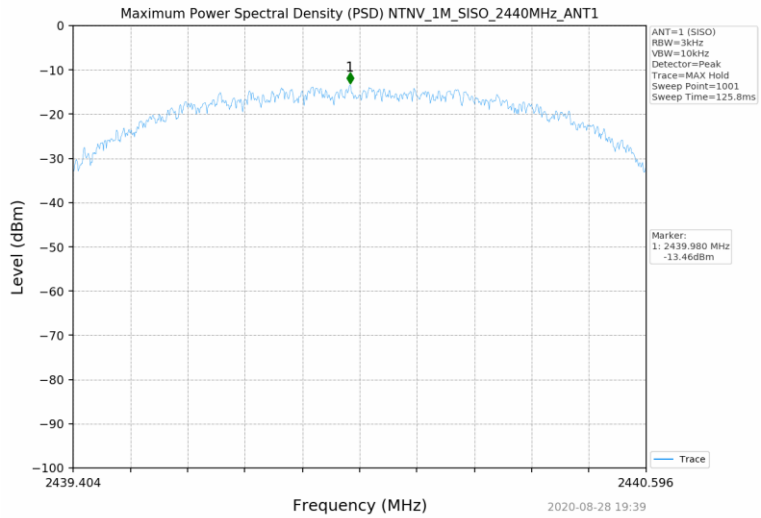

# 3. Maximum Power Spectral Density (PSD)

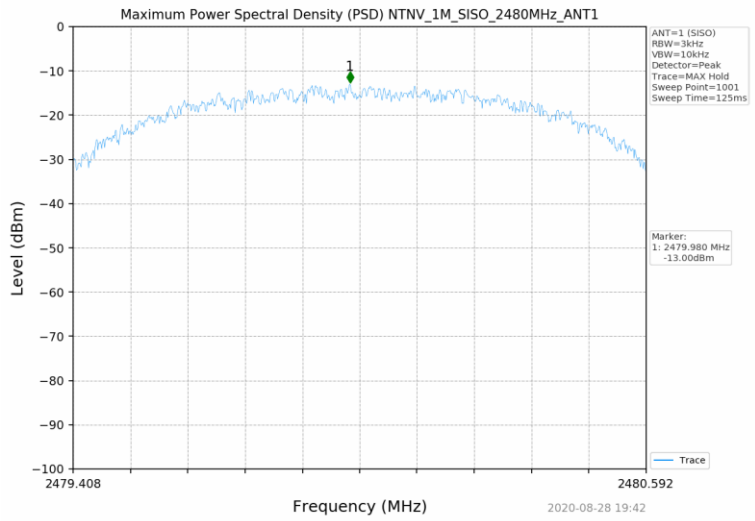
## 3.1 Test Result

| Test Mode | Frequency (MHz) | Tx Type | Maximum Power Spectral Density (dBm/3KHz) | Limits (dBm/3kHz) | Verdict |
|---|---|---|---|---|---|
| | | | Ant 1 | | |
| 1M | 2402 | SISO | -14.08 | ≤8 | PASS |
| | 2440 | SISO | -13.46 | ≤8 | PASS |
| | 2480 | SISO | -13.00 | ≤8 | PASS |

## 3.2 Test Graph


Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=126.8ms
Marker:
1: 2401.980 MHz
-14.08dBm
Trace
Level (dBm)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2401.399
2402.601
Frequency (MHz)
2020-08-28 19:31


Maximum Power Spectral Density (PSD) NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
RBW=3kHz
VBW=10kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=125.8ms
Marker:
1: 2439.980 MHz
-13.46dBm
Trace
Level (dBm)
0
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
2439.404
2440.596
Frequency (MHz)
2020-08-28 19:39

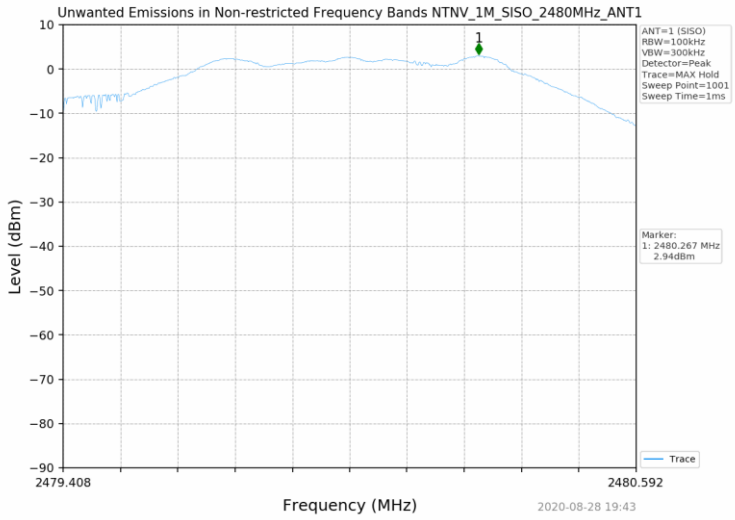


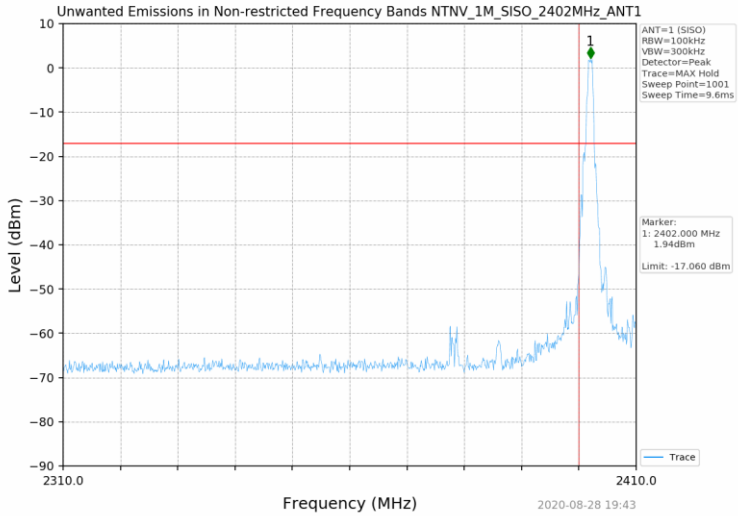

# 4. Unwanted Emissions in Non-restricted Frequency Bands

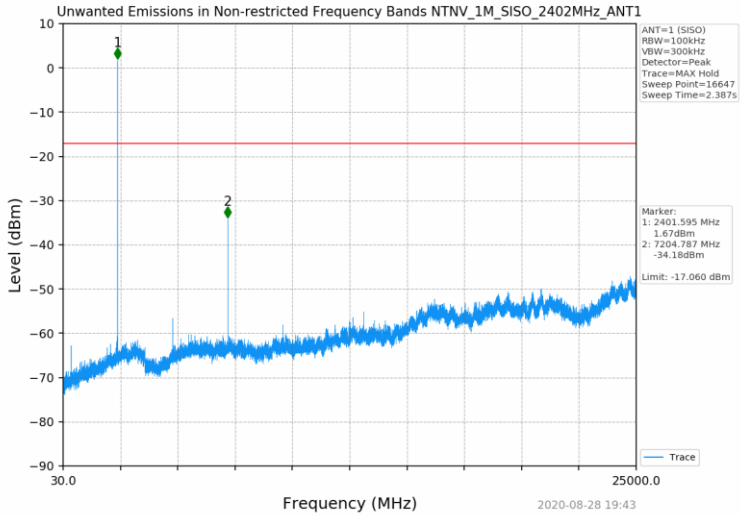
## 4.1 Test Result

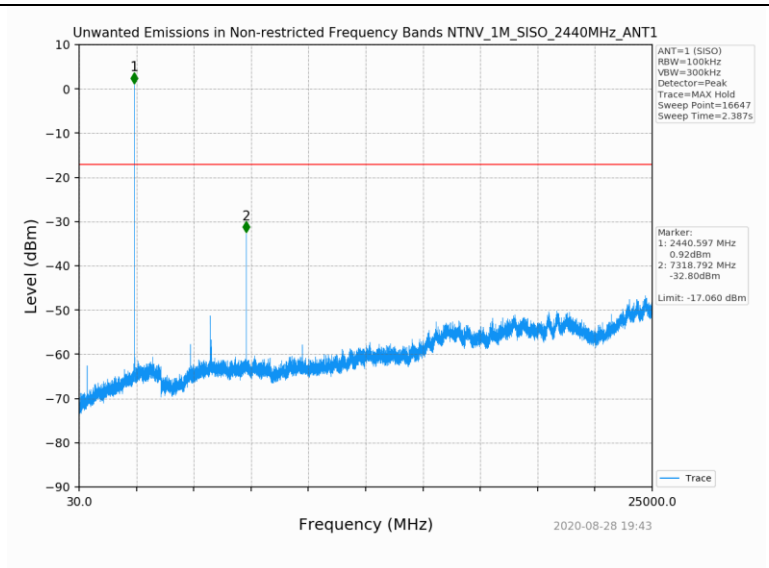
| Test Mode | Frequency (MHz) | TX Type | ANT No. | Spurious Conducted Emission (dBm) | Limits (dBm) | Verdict |
|---|---|---|---|---|---|---|
| 1M | 2402 | SISO | 1 | Refer to test graph | -17.06 | PASS |
| | 2440 | SISO | 1 | Refer to test graph | -17.06 | PASS |
| | 2480 | SISO | 1 | Refer to test graph | -17.06 | PASS |

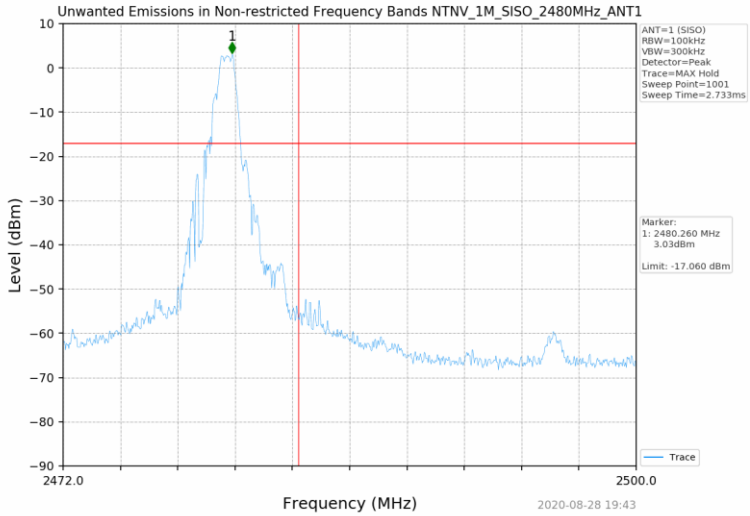
## 4.2 Test Graph

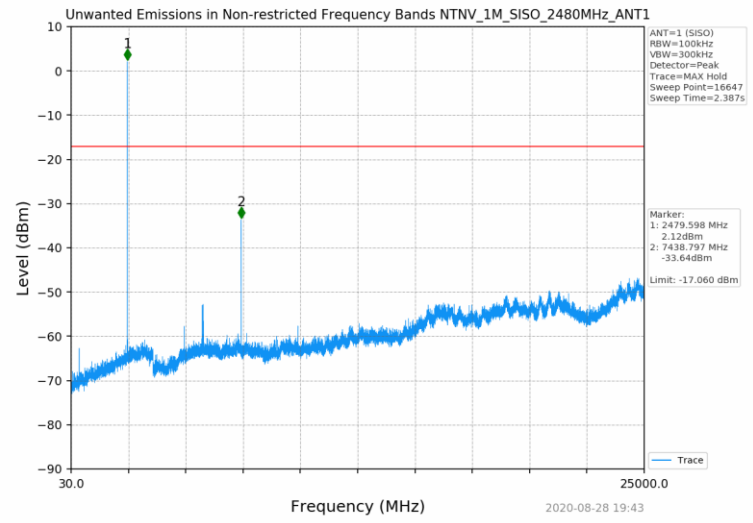



Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=9.6ms
Marker:
1: 2402.000 MHz
1.94dBm
Limit: -17.060 dBm
Trace
Level (dBm)
Frequency (MHz)
2310.0
2410.0
2020-08-28 19:43


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2402MHz_ANT1
ANT=1 (SISO)
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=16647
Sweep Time=2.387s
Marker:
1: 2401.595 MHz
1.67dBm
2: 7204.787 MHz
-34.18dBm
Limit: -17.060 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0
2020-08-28 19:43


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2440MHz_ANT1
ANT=1 (SISO)
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=16647
Sweep Time=2.387s
Marker:
1: 2440.597 MHz
0.92dBm
2: 7318.792 MHz
-32.80dBm
Limit: -17.060 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0
2020-08-28 19:43


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=1001
Sweep Time=2.733ms
Marker:
1: 2480.260 MHz
3.03dBm
Limit: -17.060 dBm
Trace
Level (dBm)
Frequency (MHz)
2472.0
2500.0
2020-08-28 19:43


Unwanted Emissions in Non-restricted Frequency Bands NTNV_1M_SISO_2480MHz_ANT1
ANT=1 (SISO)
RBW=100kHz
VBW=300kHz
Detector=Peak
Trace=MAX Hold
Sweep Point=16647
Sweep Time=2.387s
Marker:
1: 2479.598 MHz
2.12dBm
2: 7438.797 MHz
-33.64dBm
Limit: -17.060 dBm
Trace
Level (dBm)
Frequency (MHz)
30.0
25000.0
2020-08-28 19:43