

Appendix A for SHEM210700793801

1. Duty Cycle

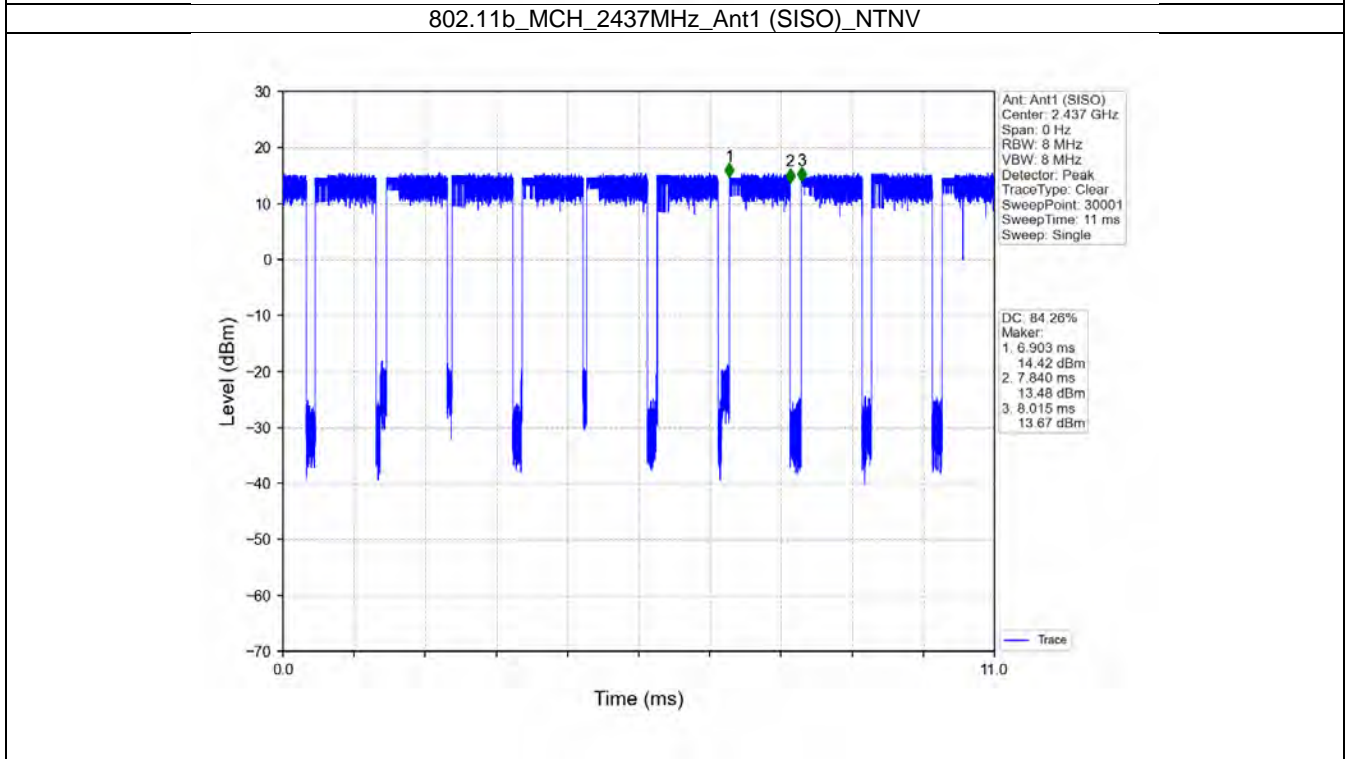
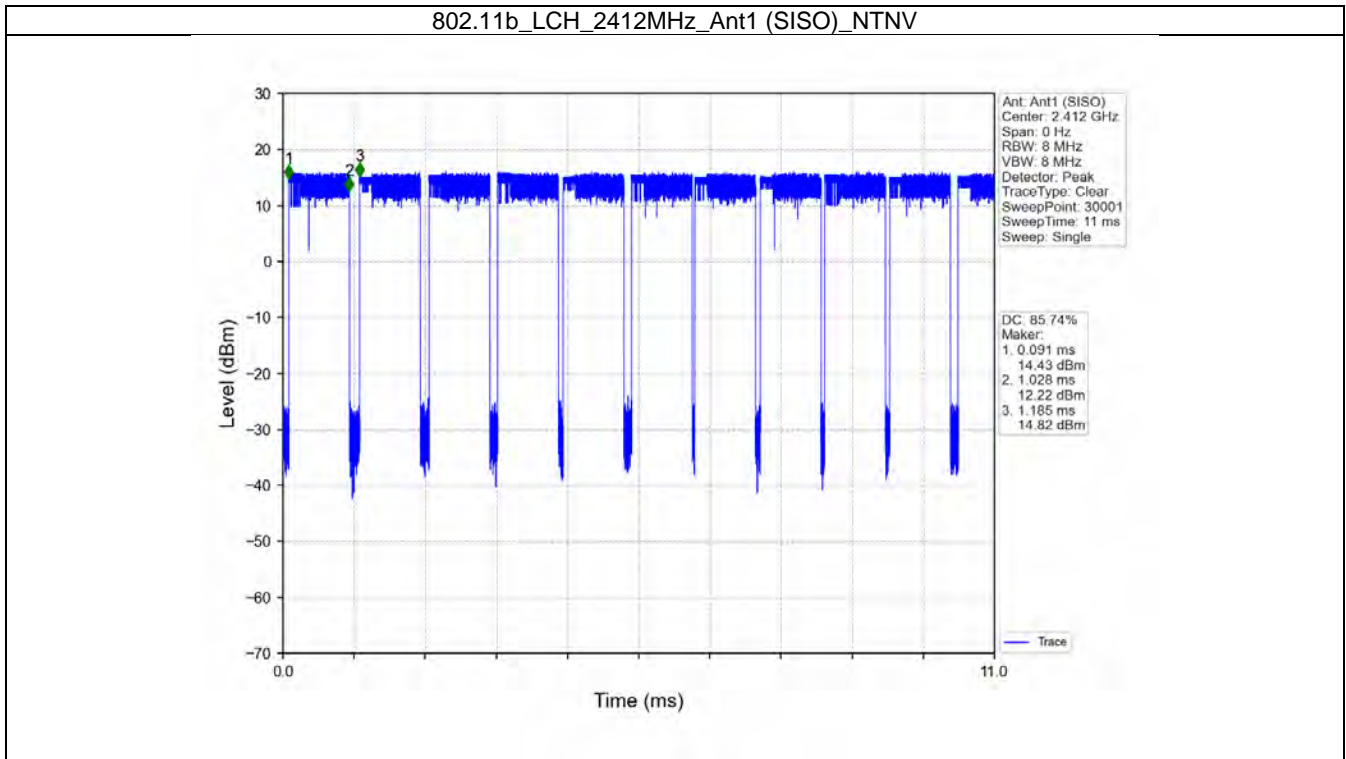
1.1 Ant1

1.1.1 Test Result

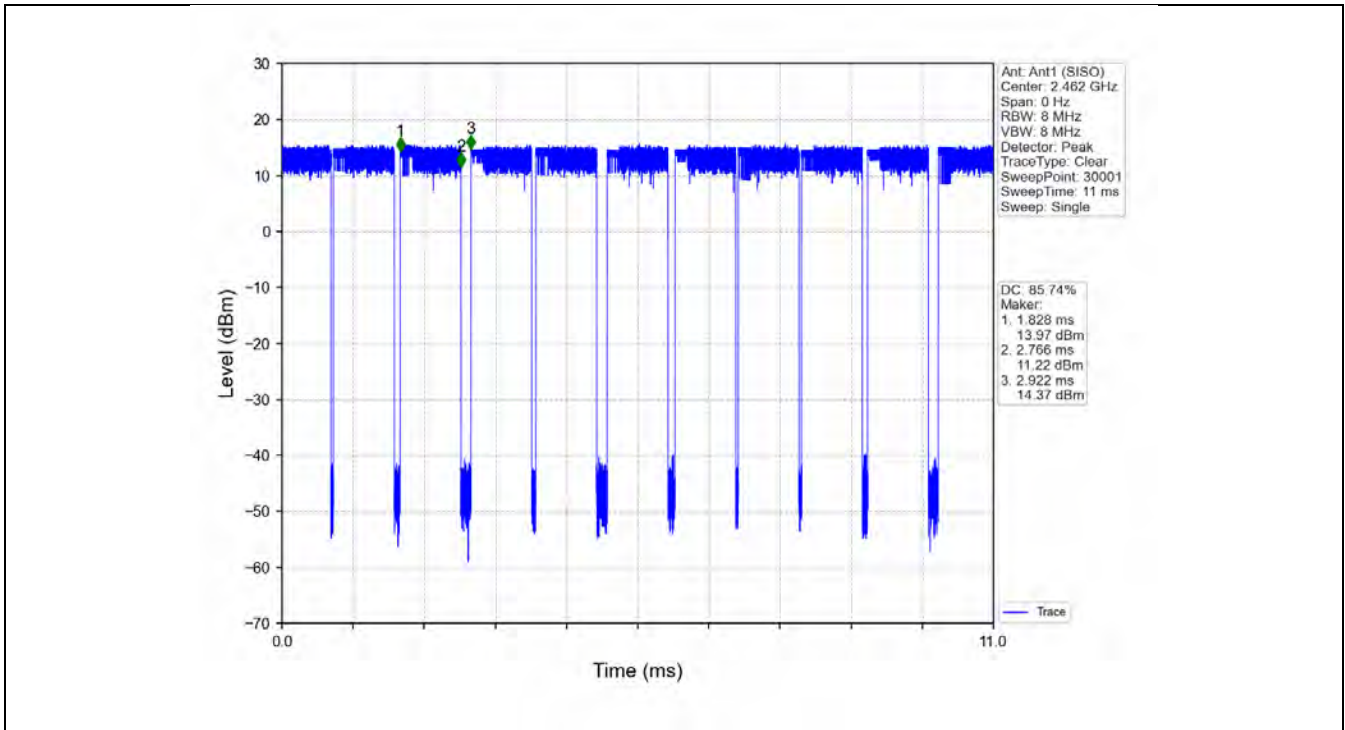
| Ant1 | | | | | | | |
|----------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11b | SISO | 2412 | 0.938 | 1.094 | 85.74 | 0.67 | 10.26 |
| | | 2437 | 0.937 | 1.112 | 84.26 | 0.74 | 9.91 |
| | | 2462 | 0.938 | 1.094 | 85.74 | 0.67 | 10.27 |
| 802.11g | SISO | 2412 | 1.396 | 1.557 | 89.66 | 0.47 | 6.12 |
| | | 2437 | 1.396 | 1.566 | 89.14 | 0.50 | 6.64 |
| | | 2462 | 1.396 | 1.566 | 89.14 | 0.50 | 7.21 |
| 802.11n (HT20) | MIMO | 2412 | 1.308 | 1.450 | 90.21 | 0.45 | 5.35 |
| | | 2437 | 1.308 | 1.487 | 87.96 | 0.56 | 8.15 |
| | | 2462 | 1.308 | 1.478 | 88.50 | 0.53 | 8.25 |

Note: 802.11g/n mode has reached the maximum duty cycle under the continuous transmission program provided by the customer.

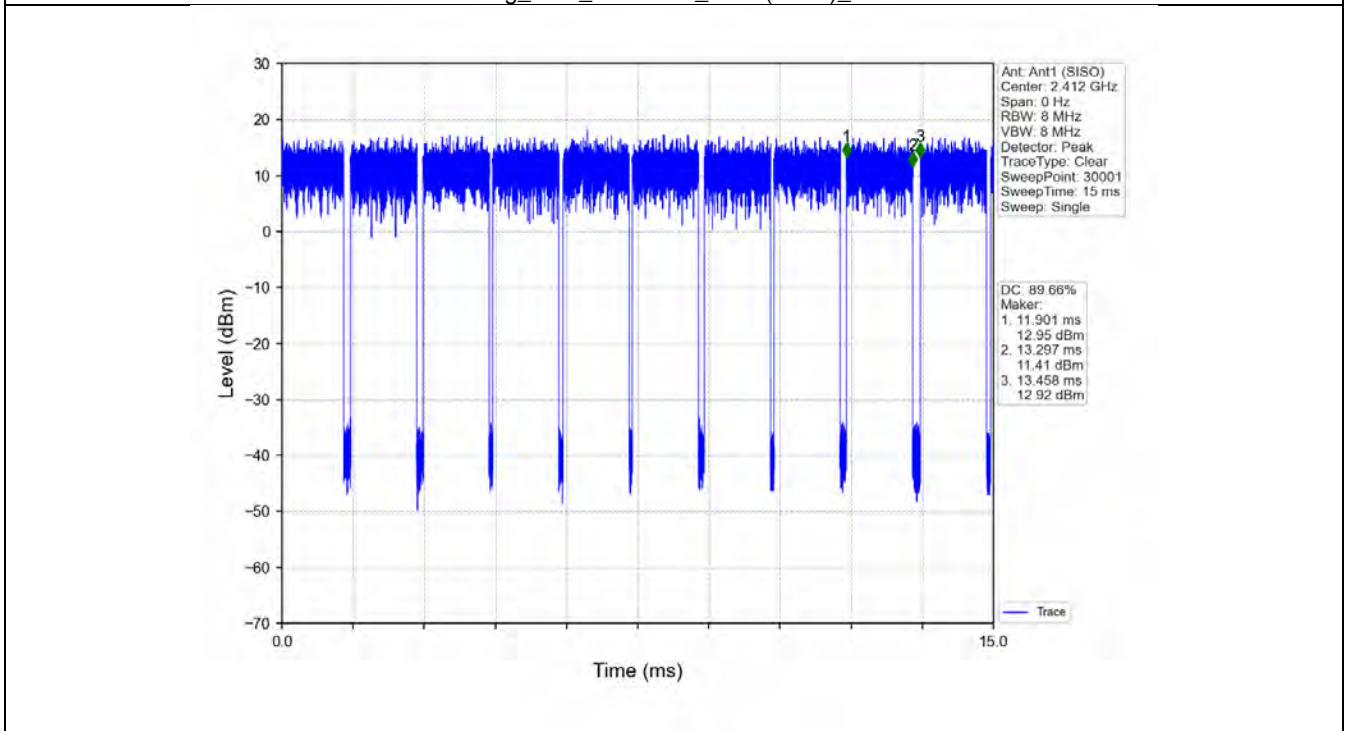
1.1.2 Test Graph

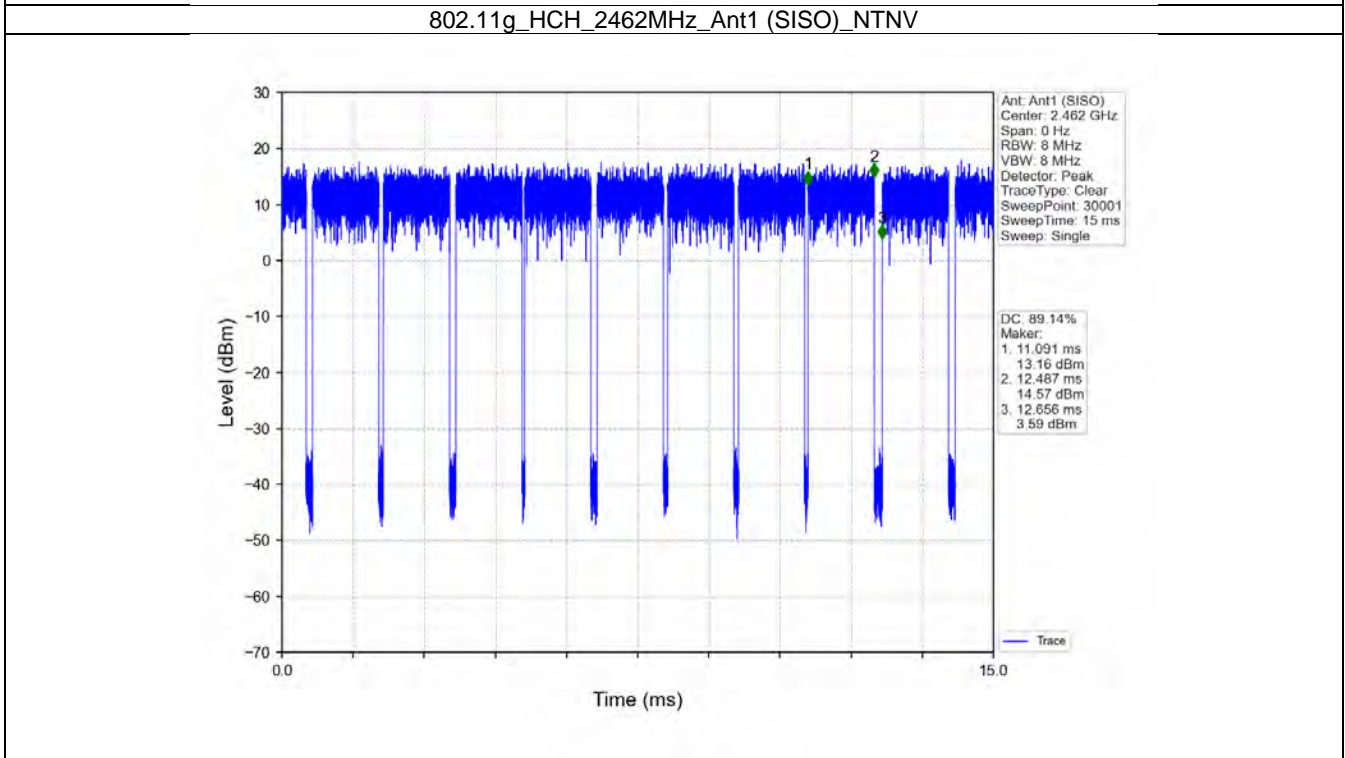
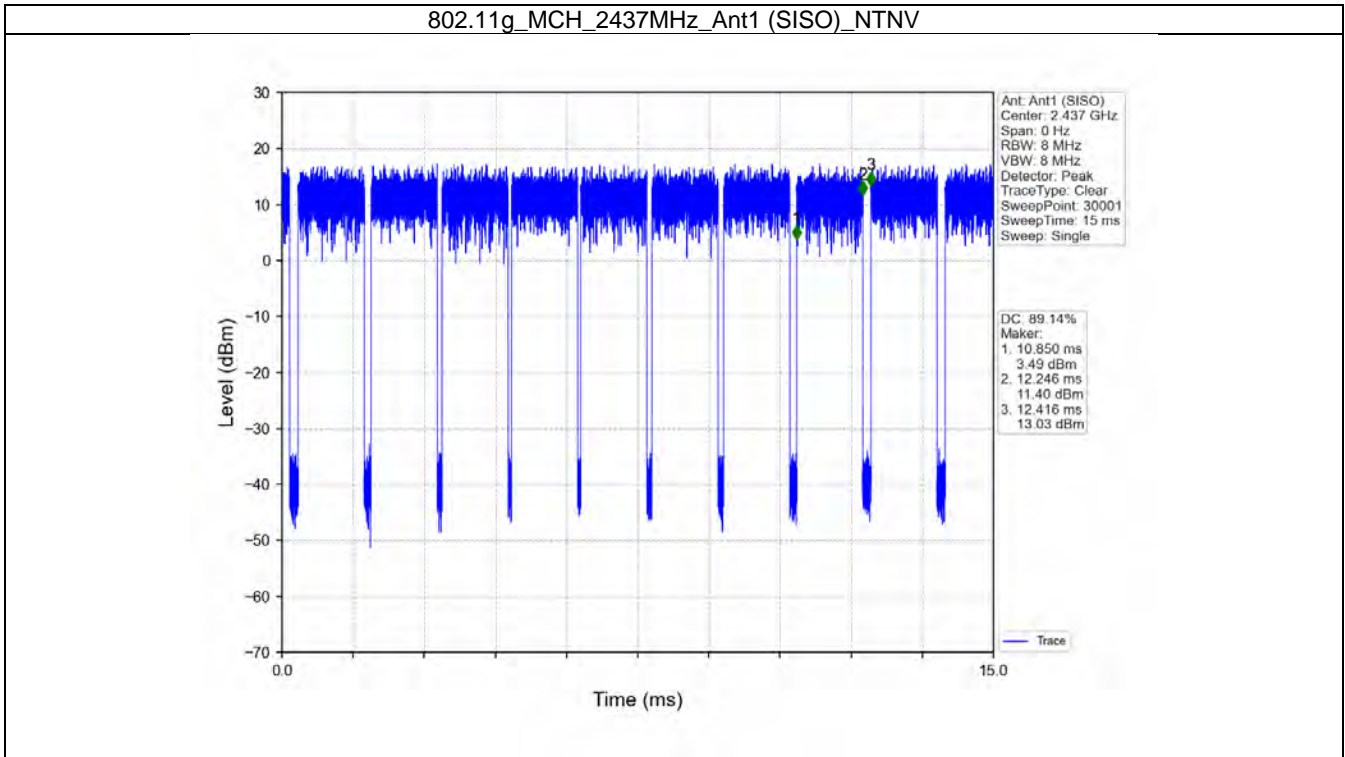


802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV

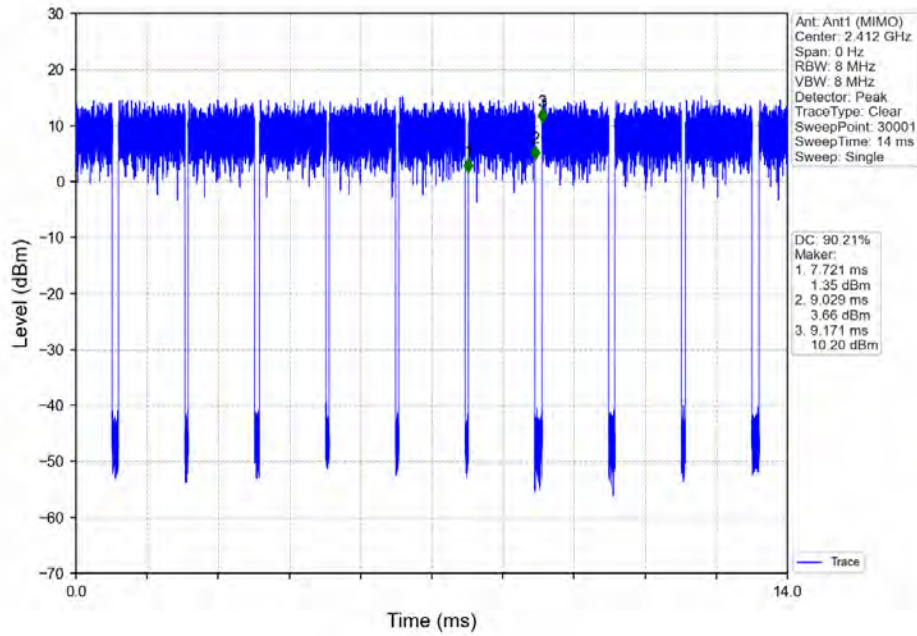


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

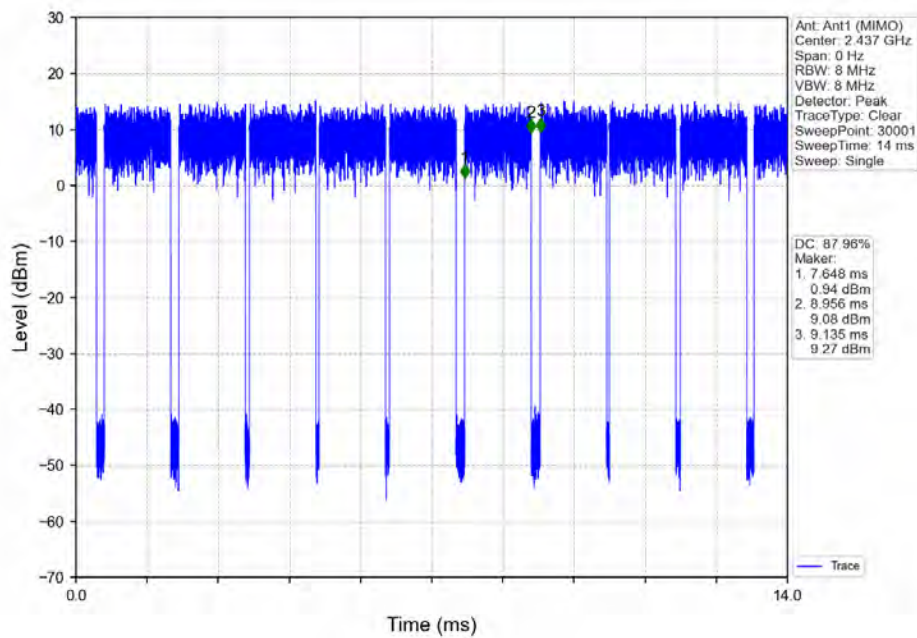


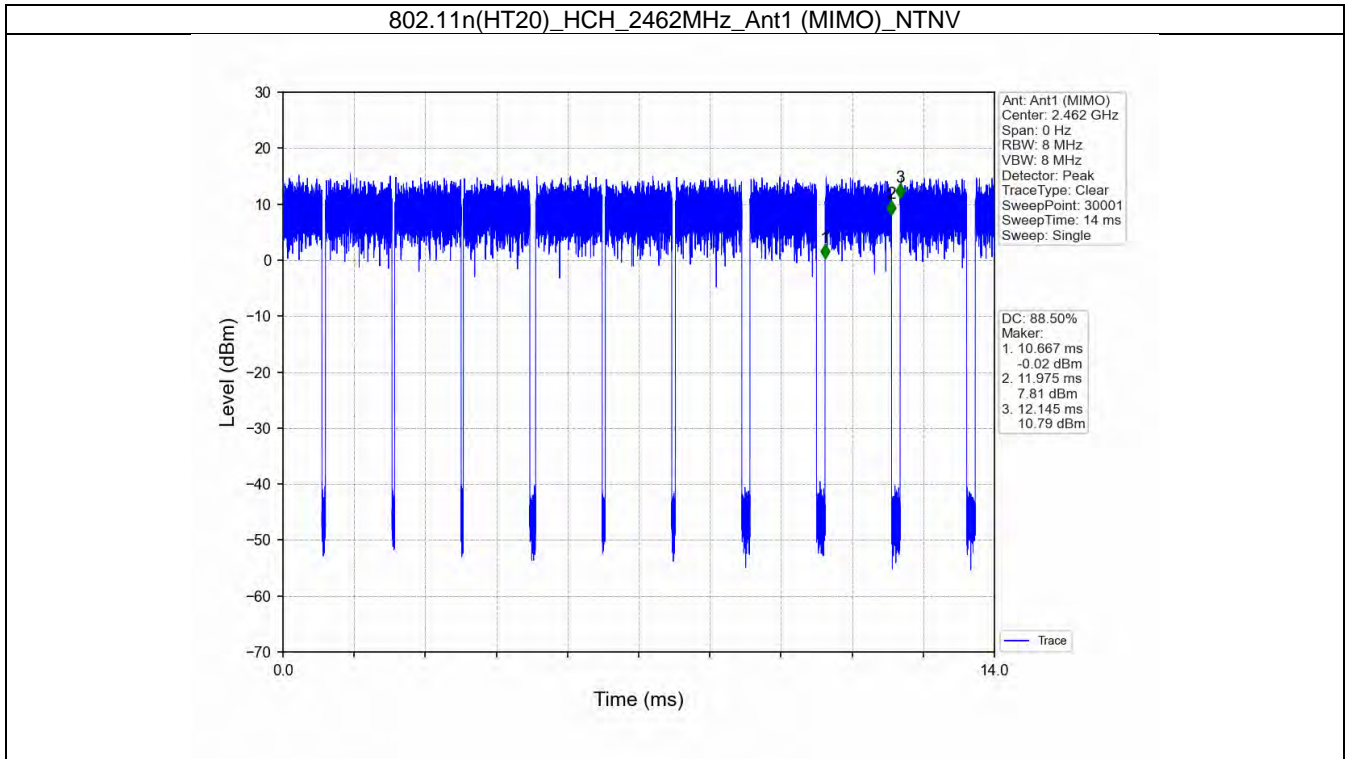


802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV





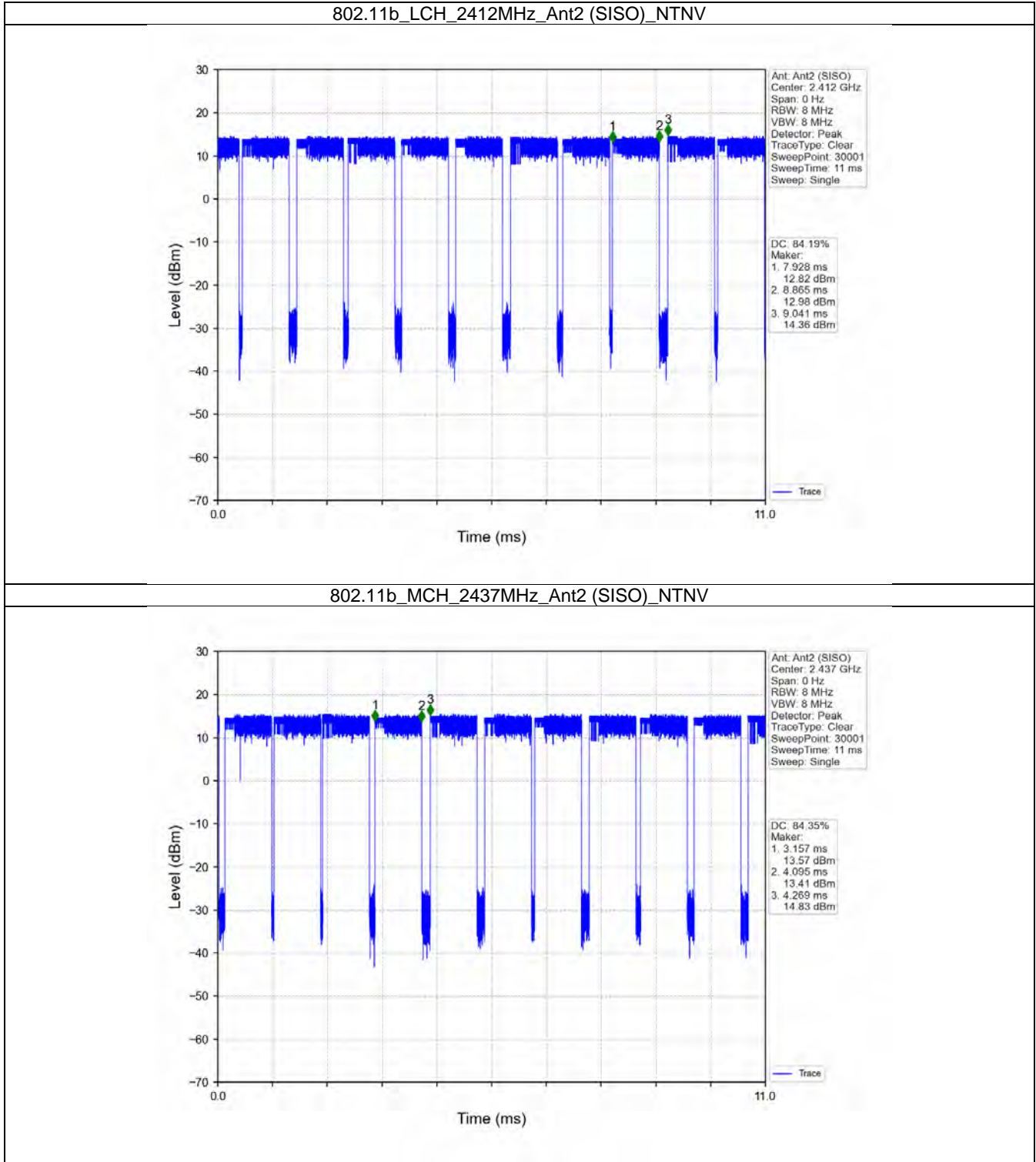
1.2 Ant2

1.2.1 Test Result

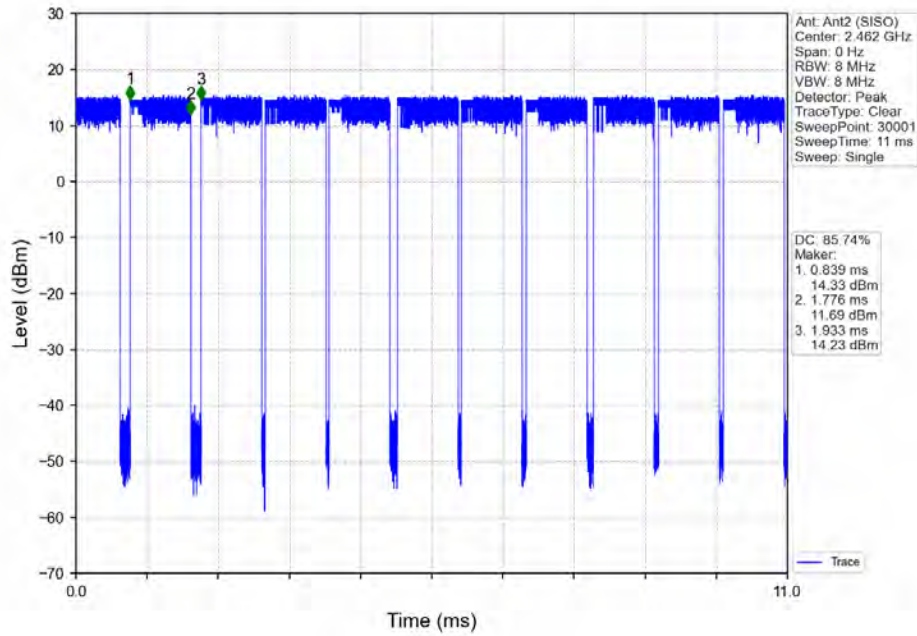
| Ant2 | | | | | | | |
|----------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11b | SISO | 2412 | 0.937 | 1.113 | 84.19 | 0.75 | 9.93 |
| | | 2437 | 0.938 | 1.112 | 84.35 | 0.74 | 11.66 |
| | | 2462 | 0.938 | 1.094 | 85.74 | 0.67 | 9.43 |
| 802.11g | SISO | 2412 | 1.396 | 1.575 | 88.63 | 0.52 | 8.31 |
| | | 2437 | 1.395 | 1.565 | 89.14 | 0.50 | 6.61 |
| | | 2462 | 1.396 | 1.557 | 89.66 | 0.47 | 6.12 |
| 802.11n (HT20) | MIMO | 2412 | 1.308 | 1.478 | 88.50 | 0.53 | 7.59 |
| | | 2437 | 1.308 | 1.478 | 88.50 | 0.53 | 8.25 |
| | | 2462 | 1.308 | 1.469 | 89.04 | 0.50 | 6.47 |

Note: 802.11g/n mode has reached the maximum duty cycle under the continuous transmission program provided by the customer.

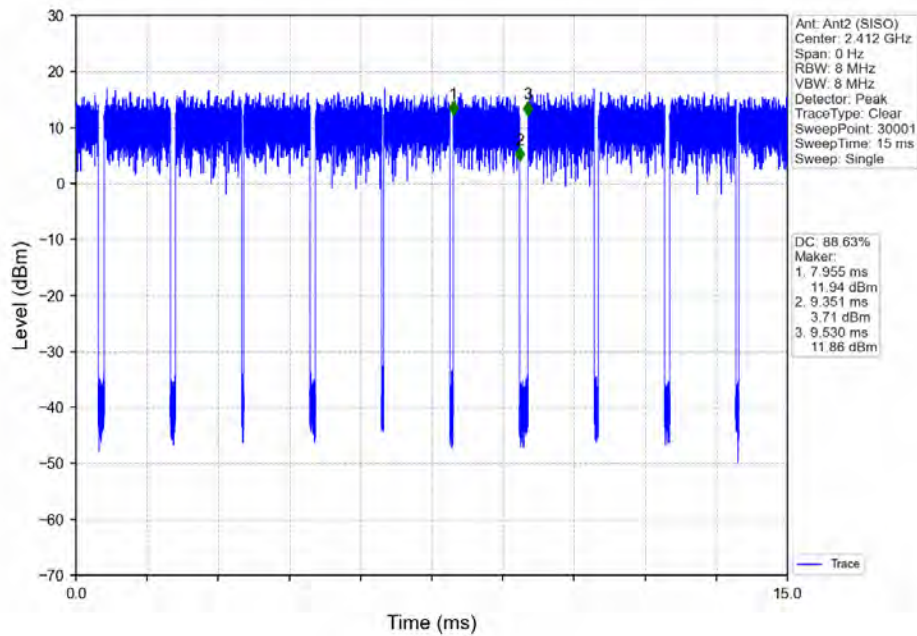
1.2.2 Test Graph

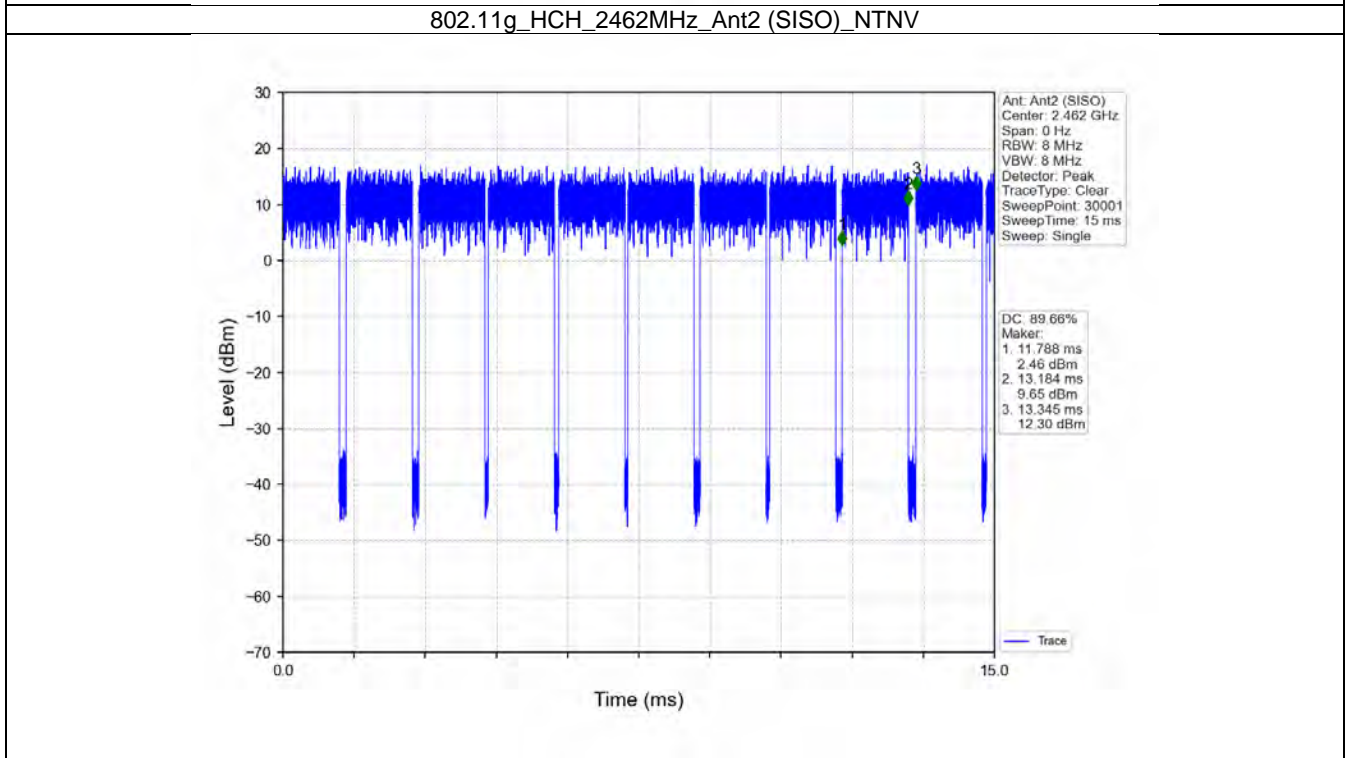
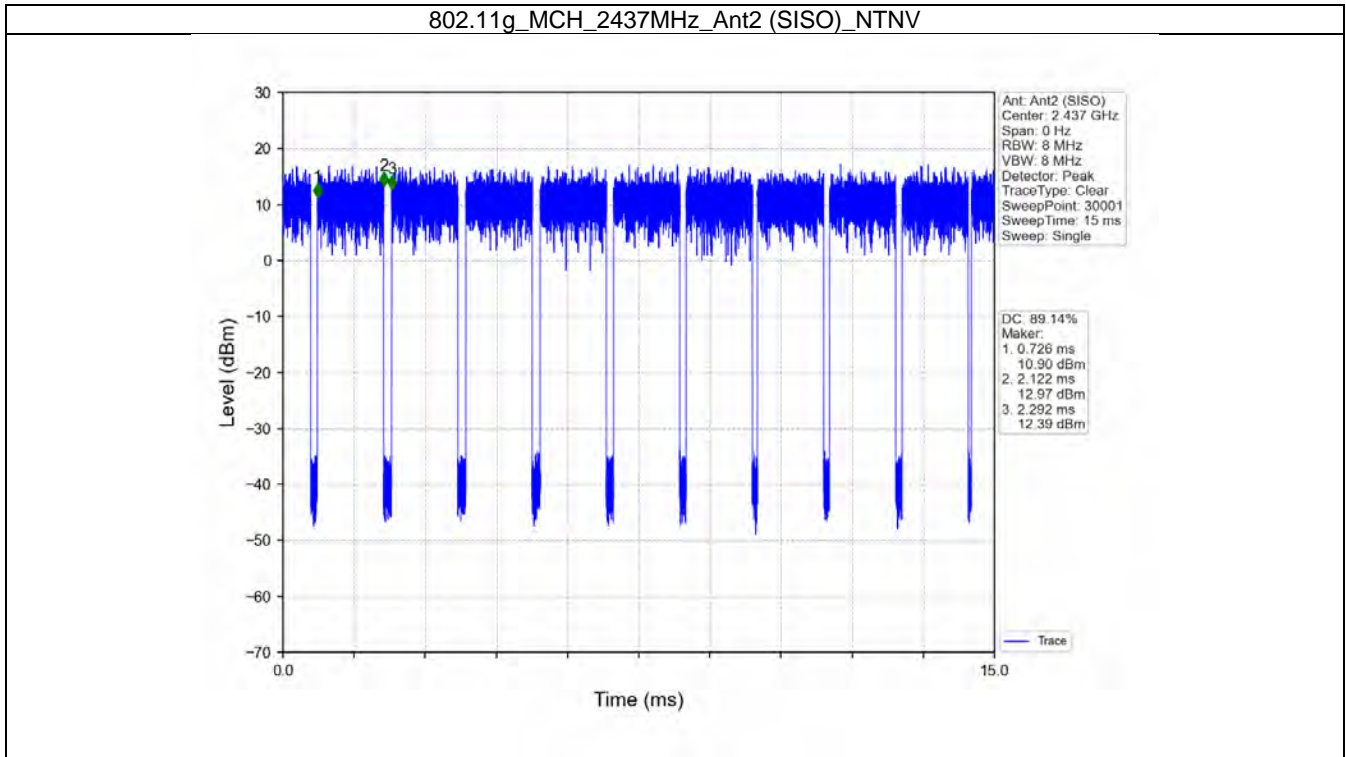


802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV

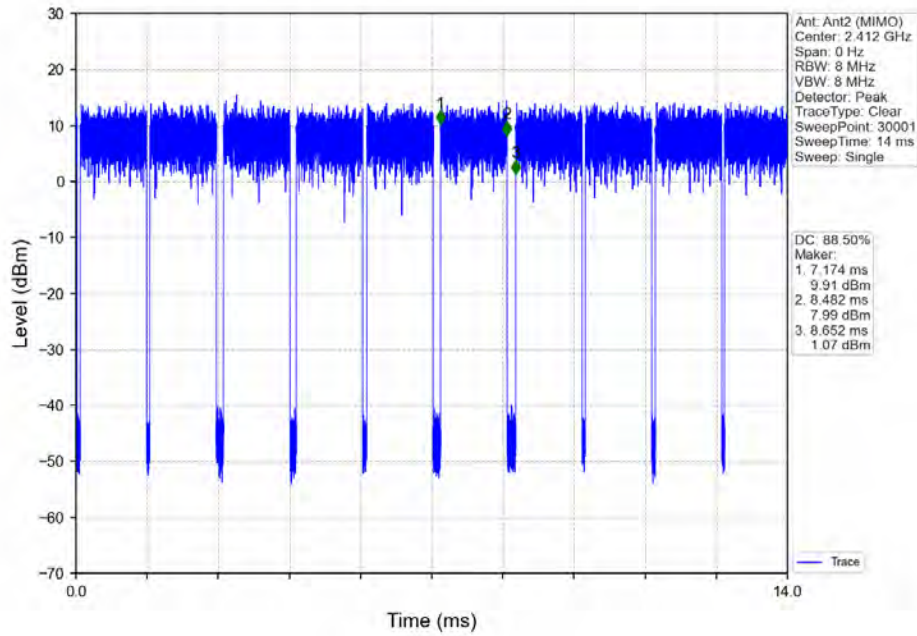


802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV

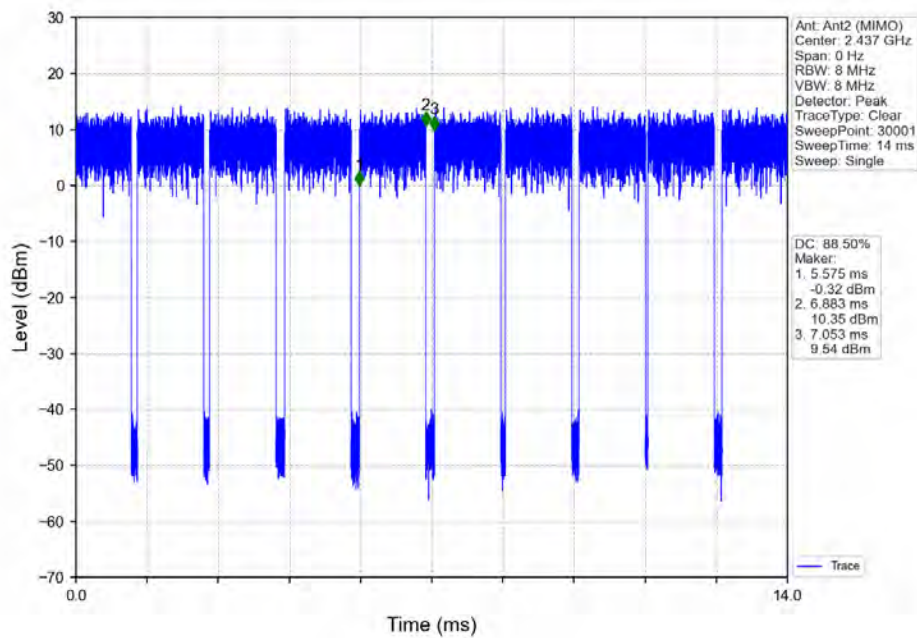


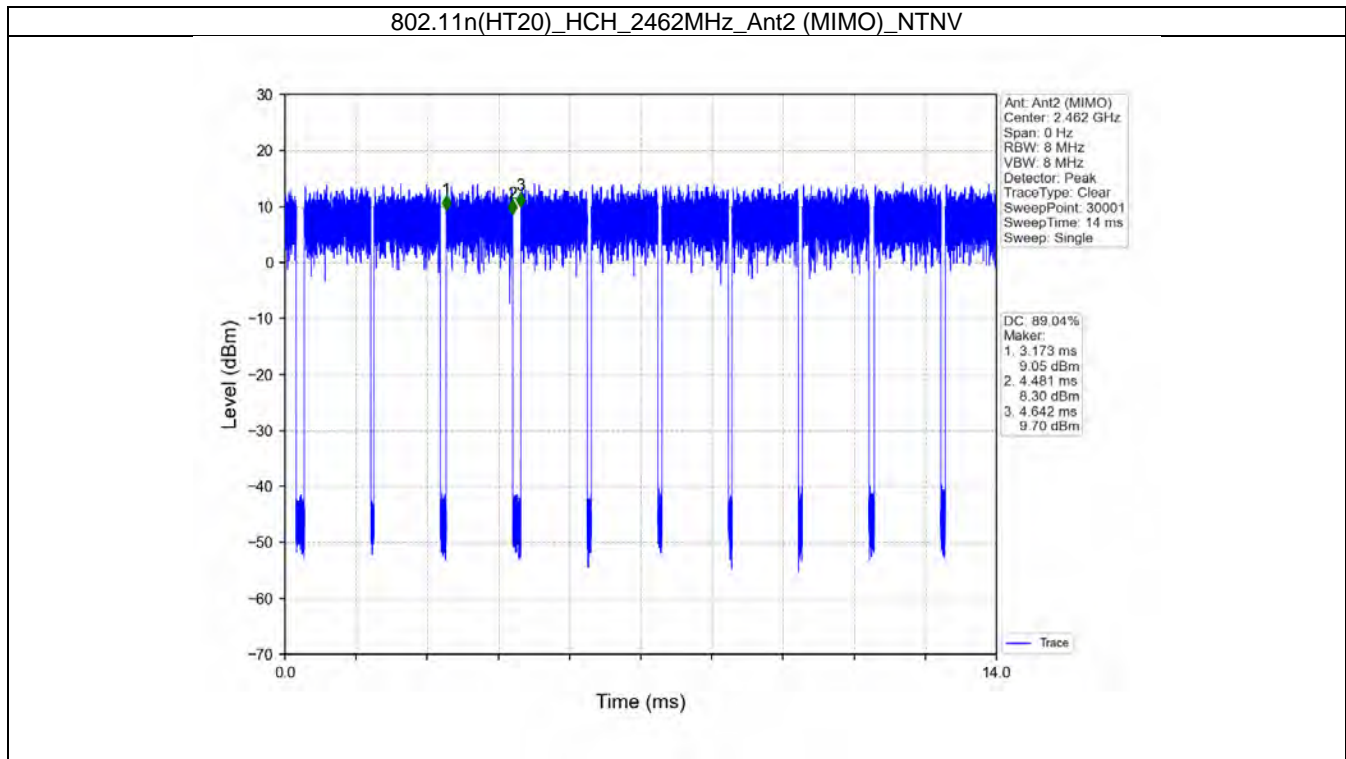


802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV





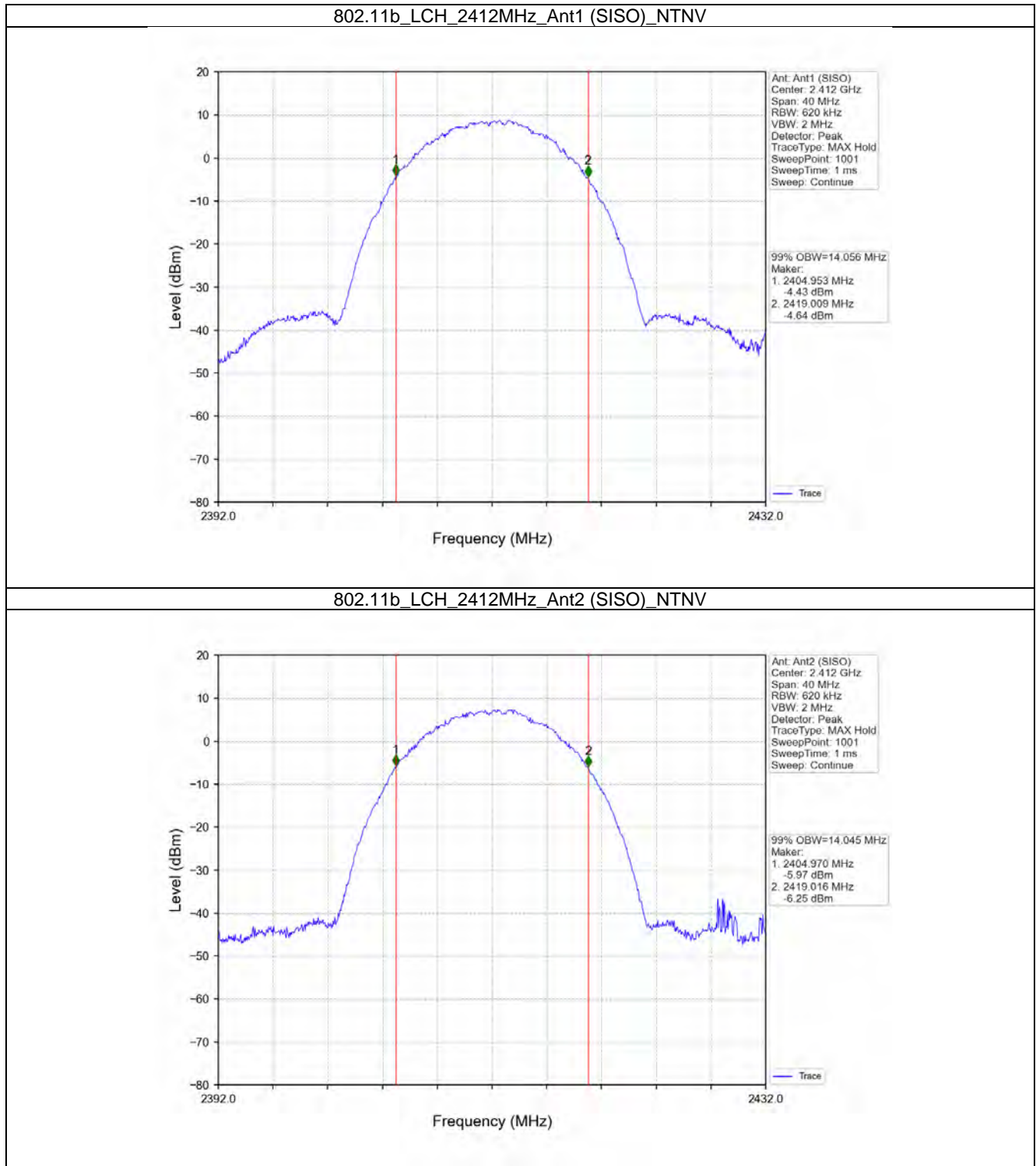
2. Bandwidth

2.1 OBW

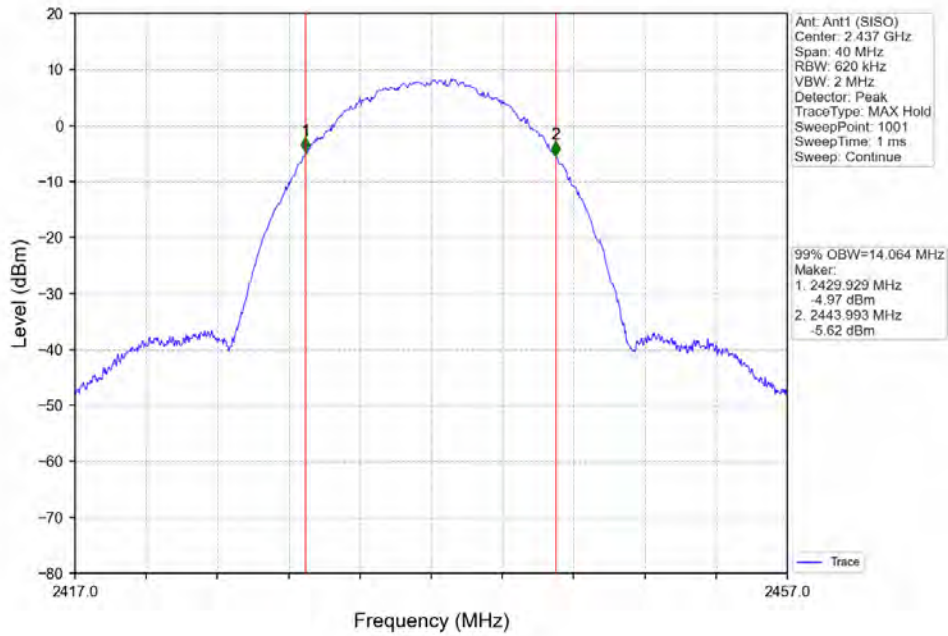
2.1.1 Test Result

| Mode | TX Type | Frequency (MHz) | Ant | 99% Occupied Bandwidth (MHz) | Limit (MHz) | Verdict |
|-------------------|---------|-----------------|-----|------------------------------|-------------|---------|
| 802.11b | SISO | 2412 | 1 | 14.056 | / | Pass |
| | | | 2 | 14.045 | / | Pass |
| | | 2437 | 1 | 14.064 | / | Pass |
| | | | 2 | 14.029 | / | Pass |
| | | 2462 | 1 | 14.059 | / | Pass |
| | | | 2 | 14.003 | / | Pass |
| 802.11g | SISO | 2412 | 1 | 16.933 | / | Pass |
| | | | 2 | 16.929 | / | Pass |
| | | 2437 | 1 | 16.957 | / | Pass |
| | | | 2 | 16.931 | / | Pass |
| | | 2462 | 1 | 16.916 | / | Pass |
| | | | 2 | 16.902 | / | Pass |
| 802.11n (HT20) | MIMO | 2412 | 1 | 17.682 | / | Pass |
| | | | 2 | 17.752 | / | Pass |
| | | 2437 | 1 | 17.736 | / | Pass |
| | | | 2 | 17.705 | / | Pass |
| | | 2462 | 1 | 17.729 | / | Pass |
| | | | 2 | 17.720 | / | Pass |

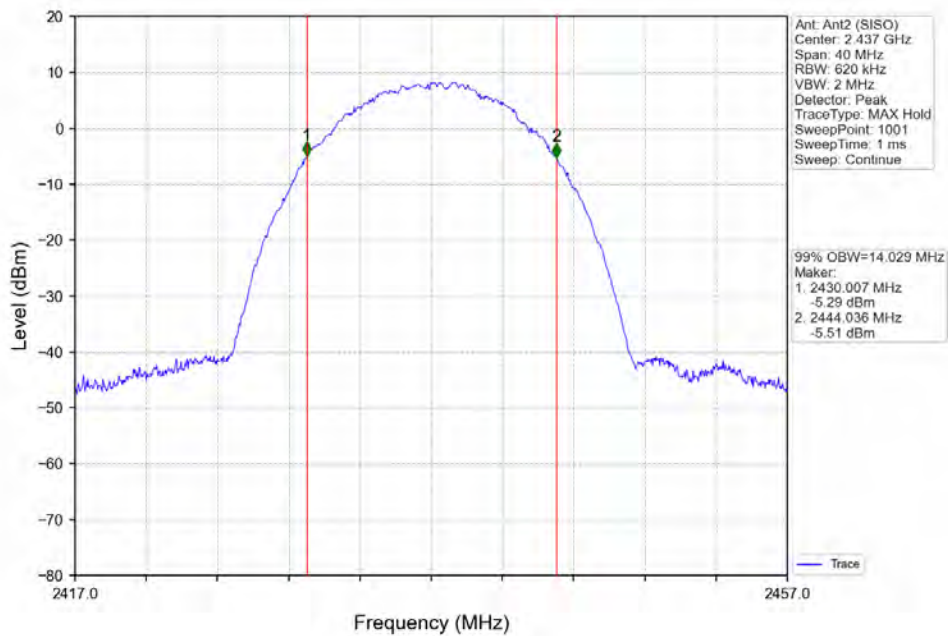
2.1.2 Test Graph



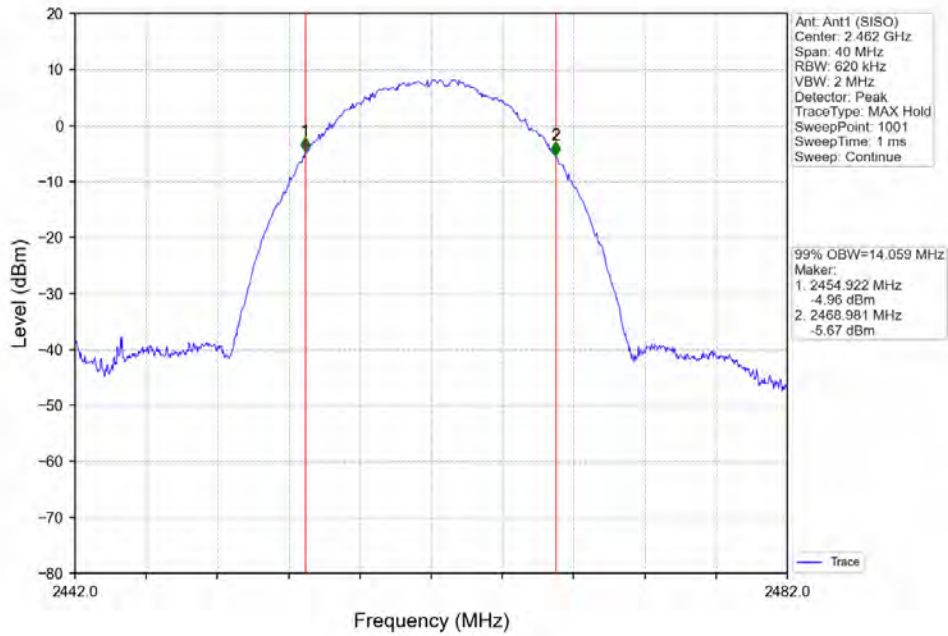
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



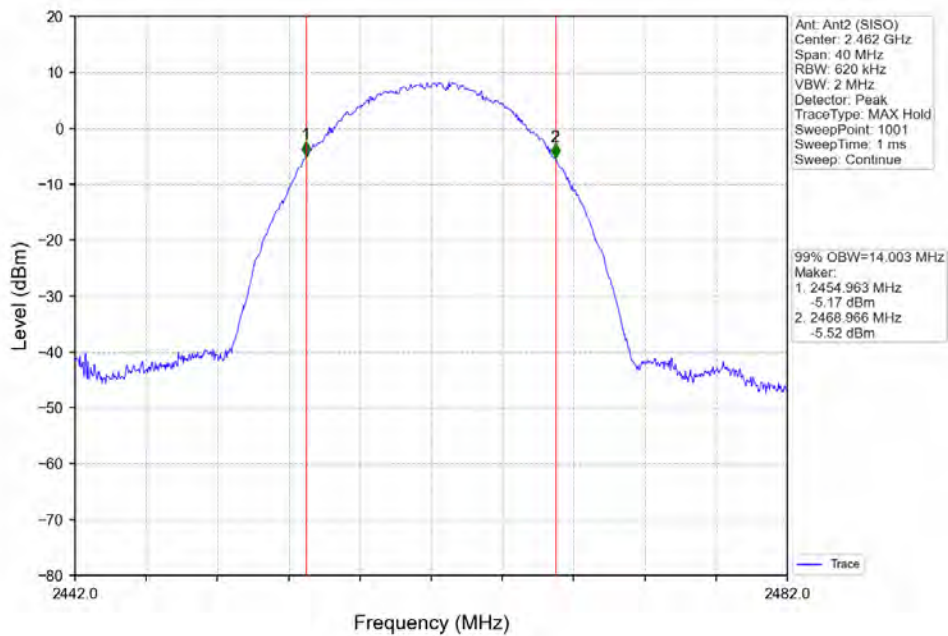
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



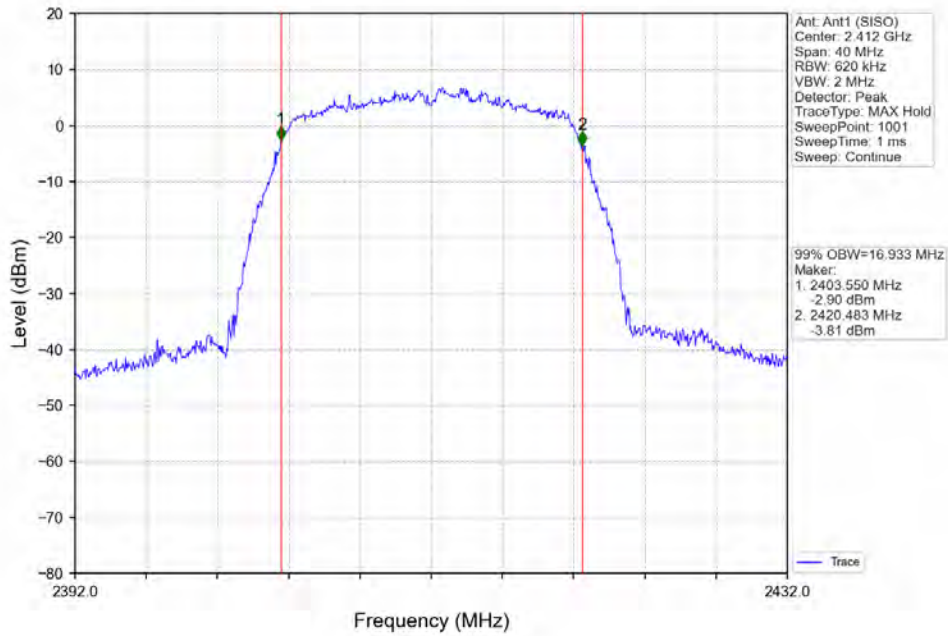
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



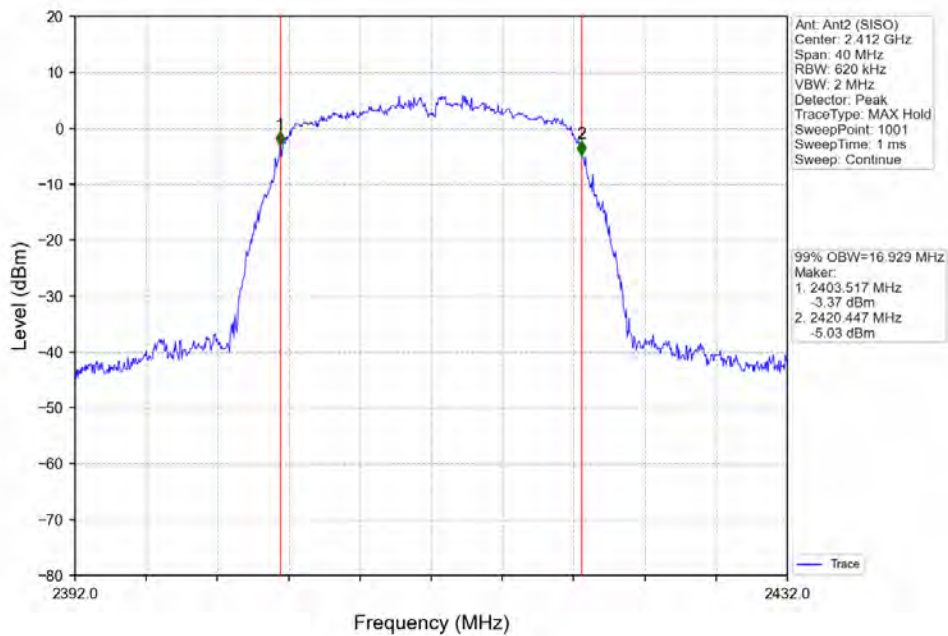
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



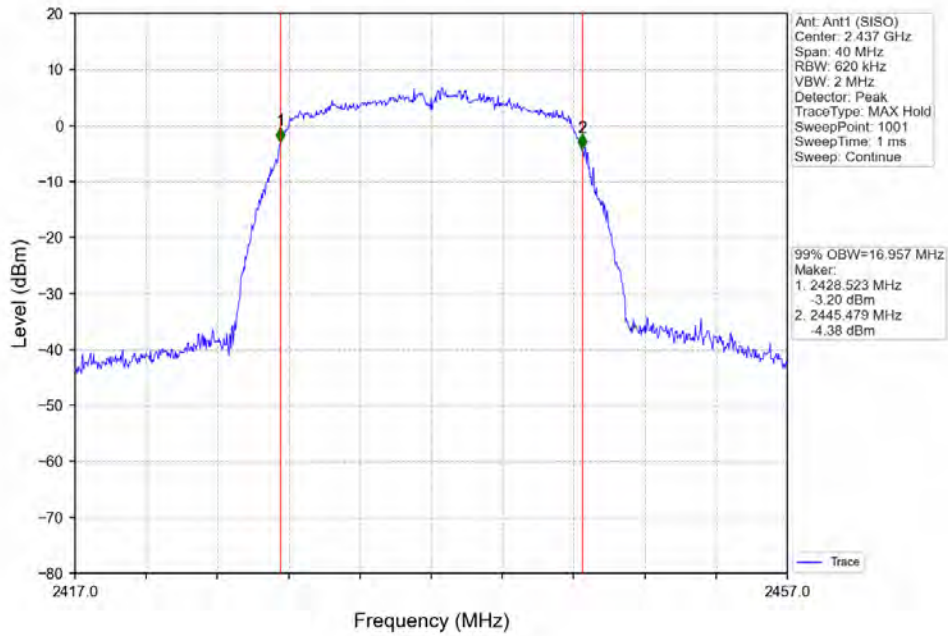
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



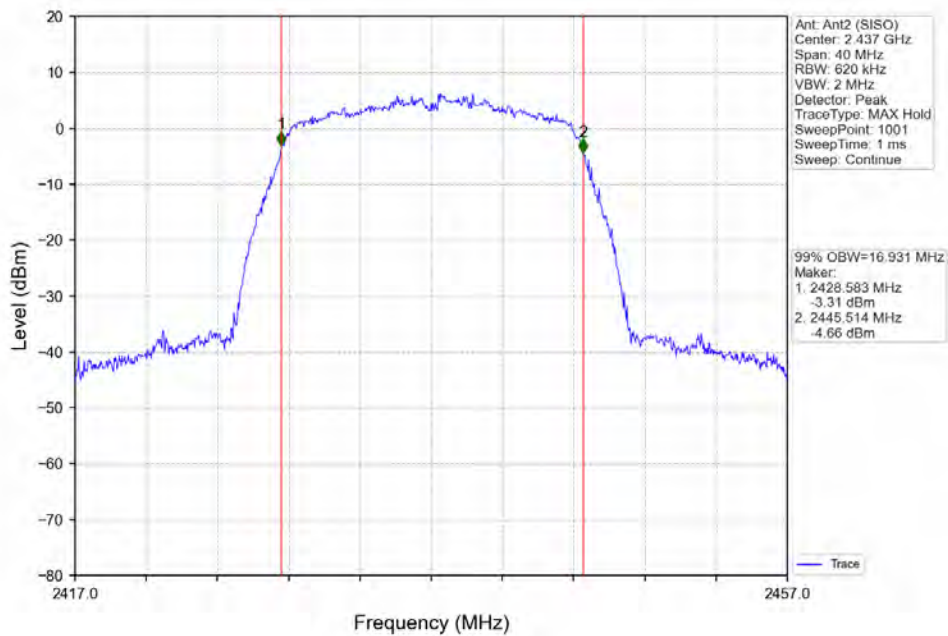
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



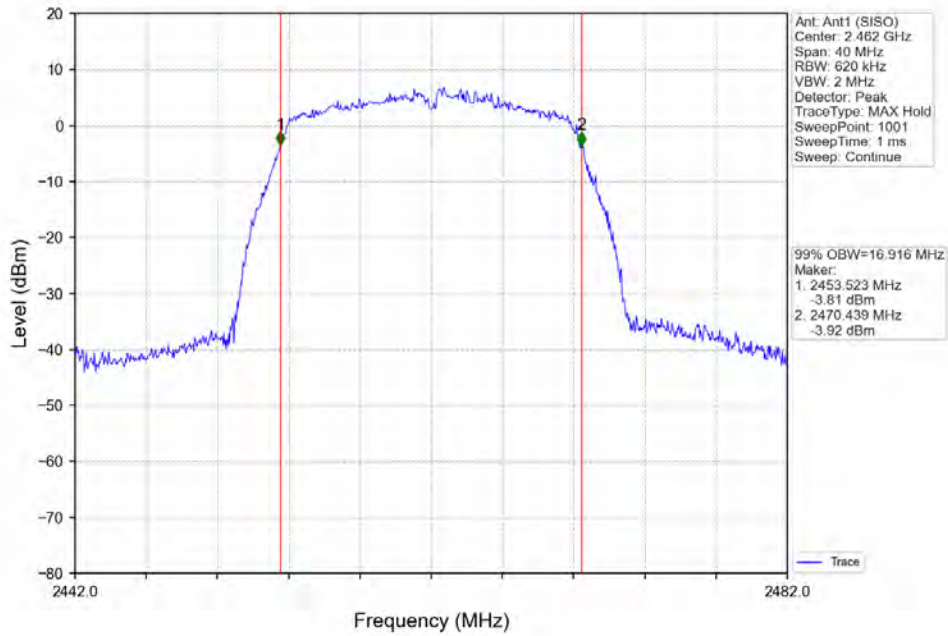
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



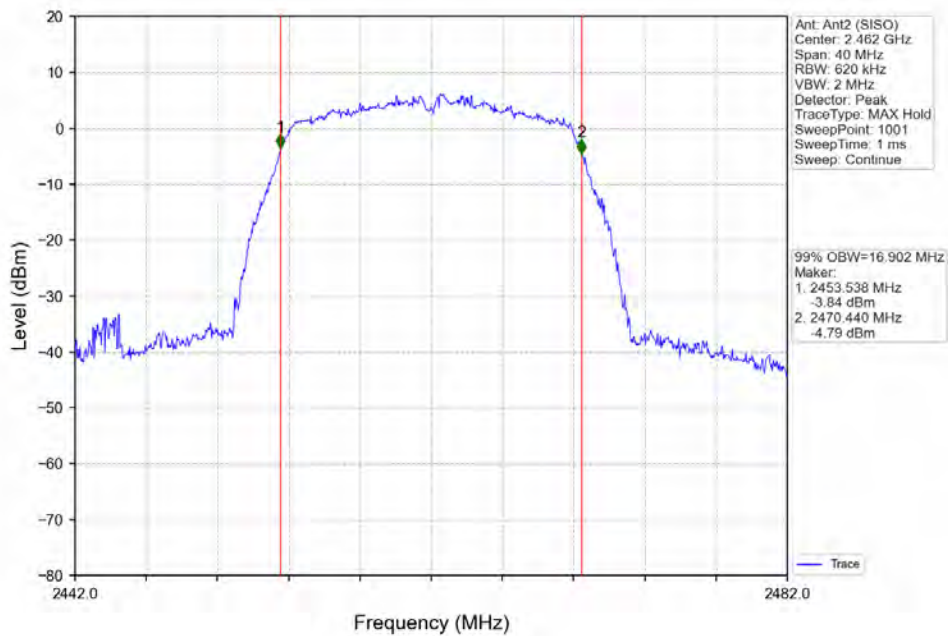
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



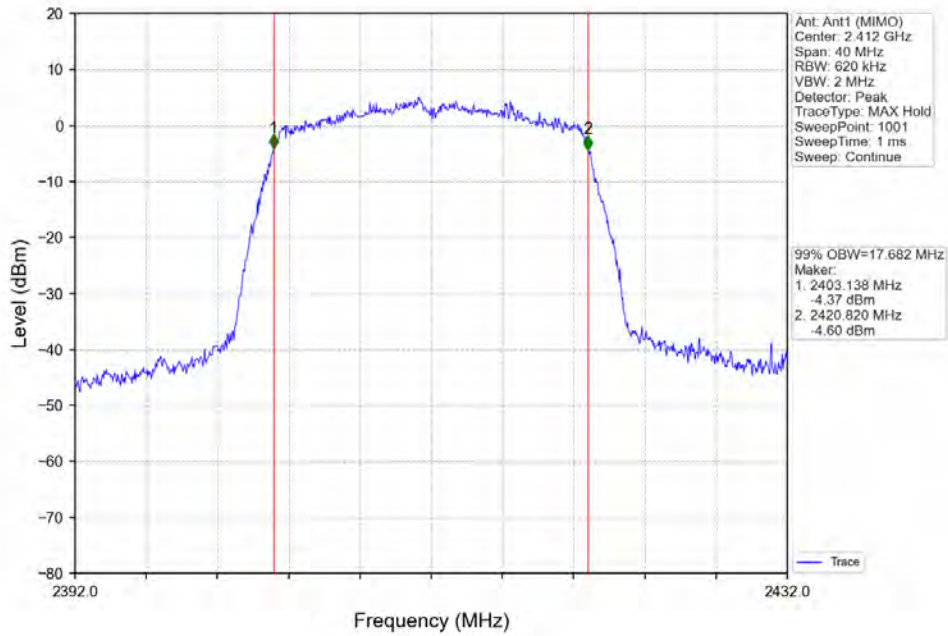
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



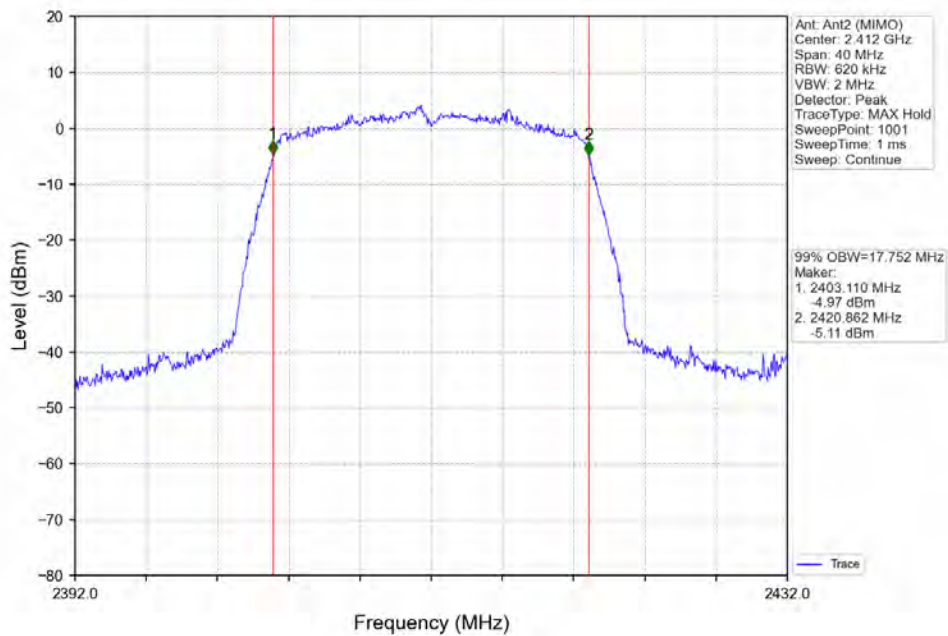
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



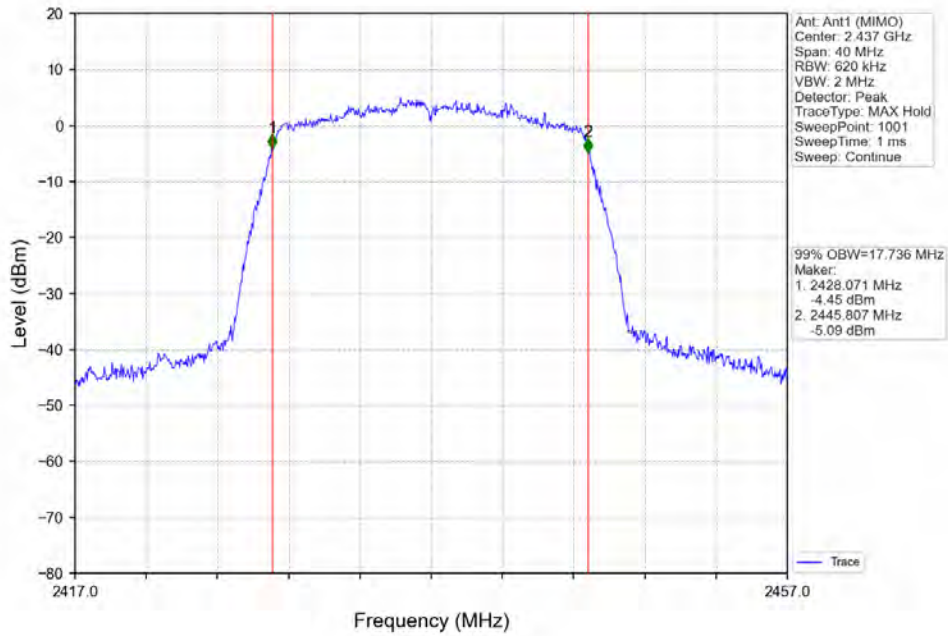
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



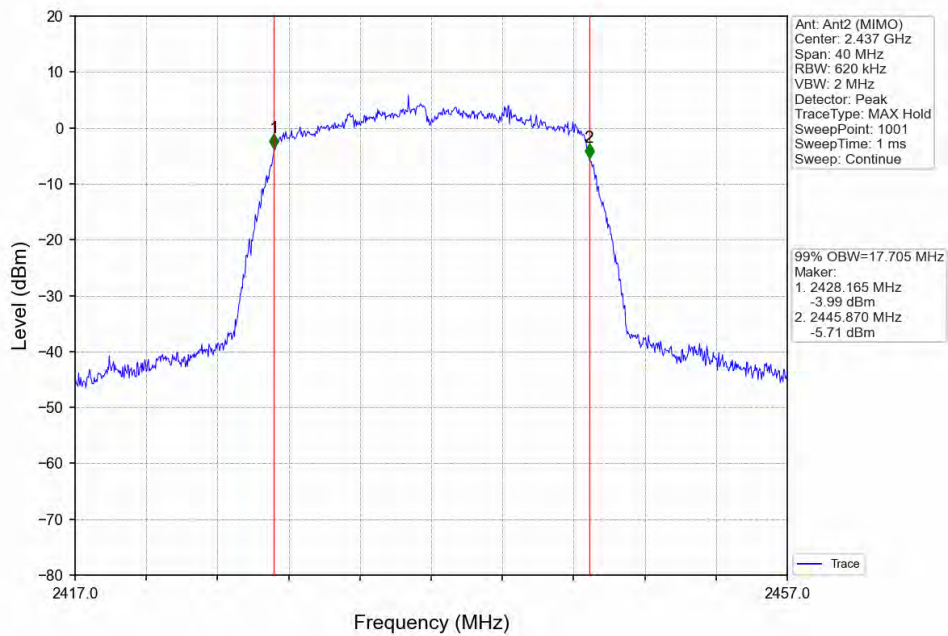
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



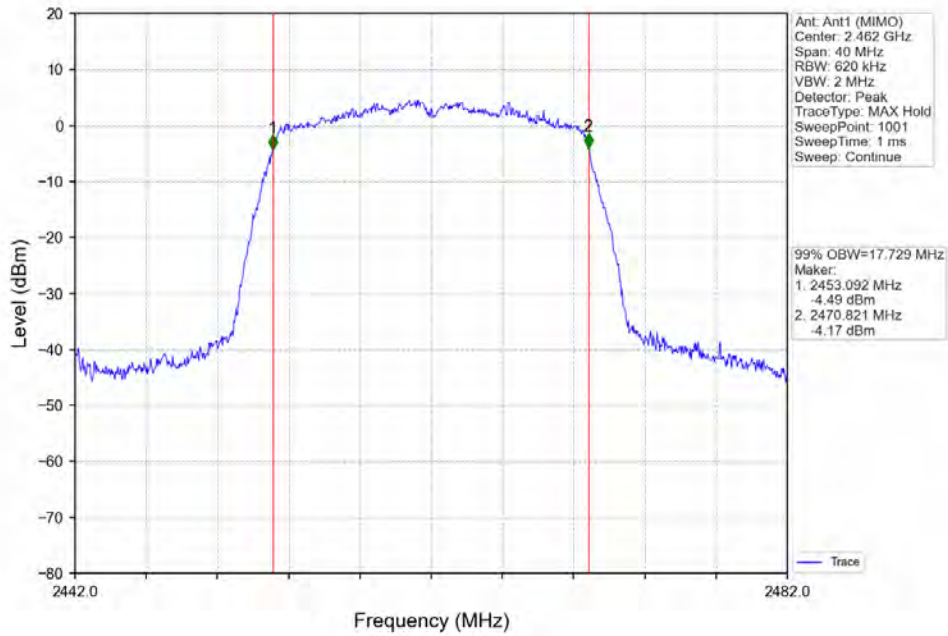
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



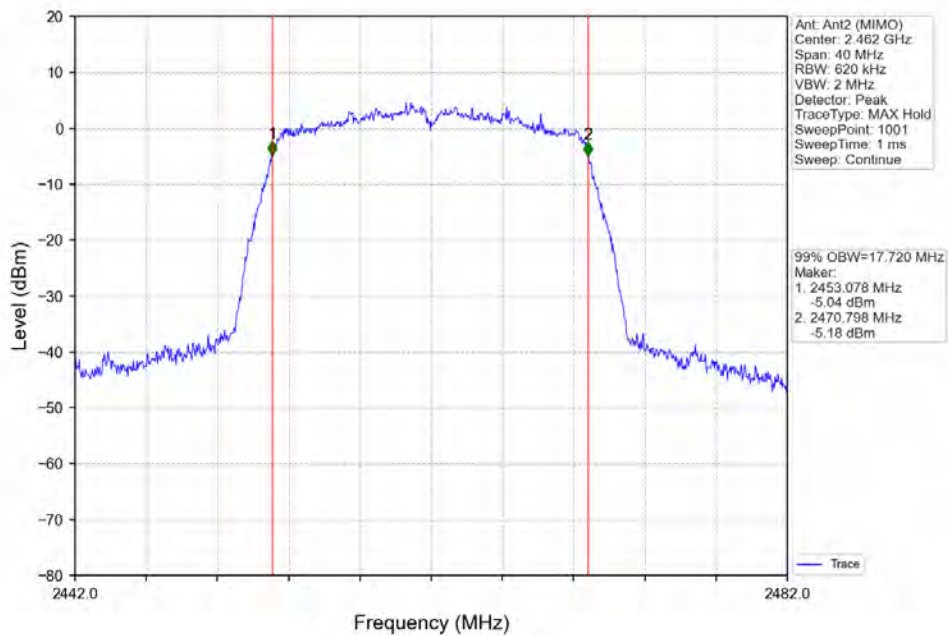
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV

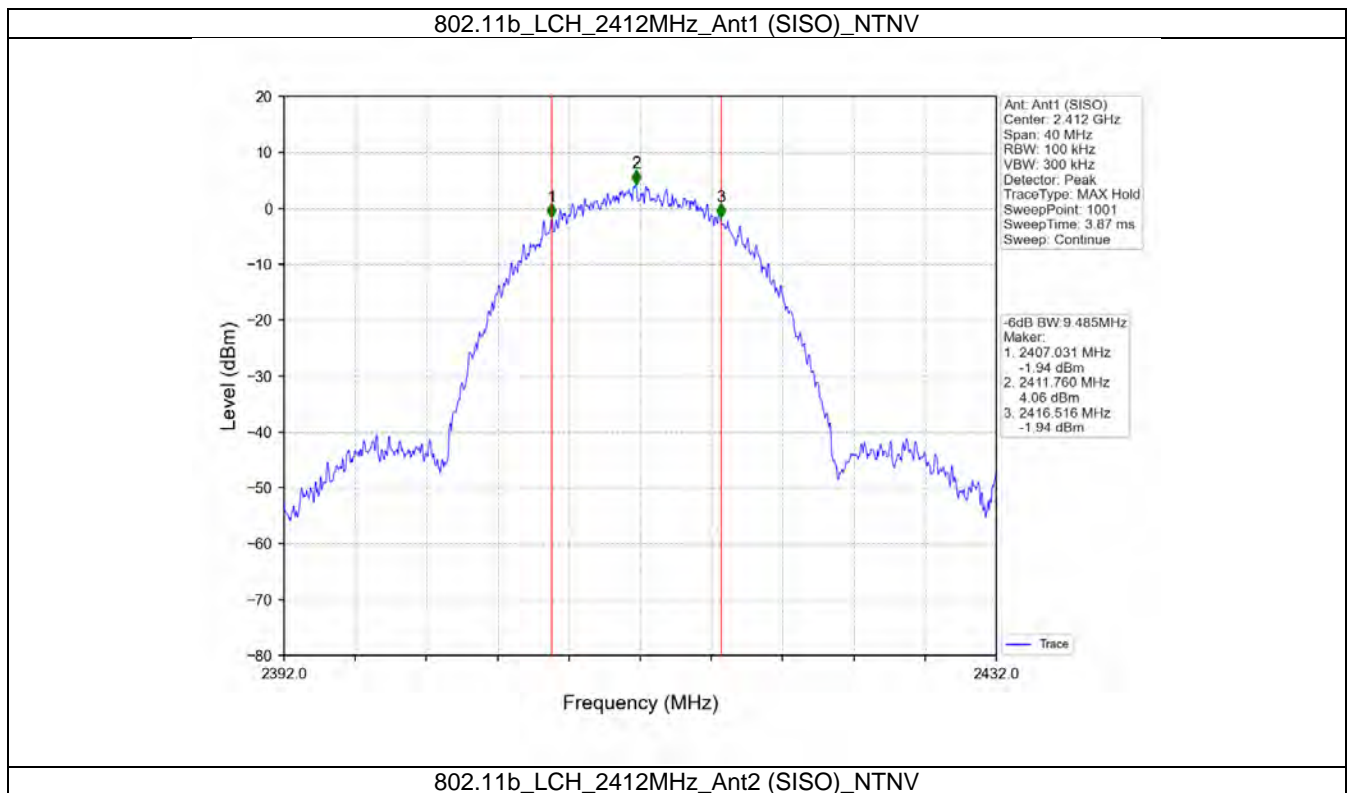


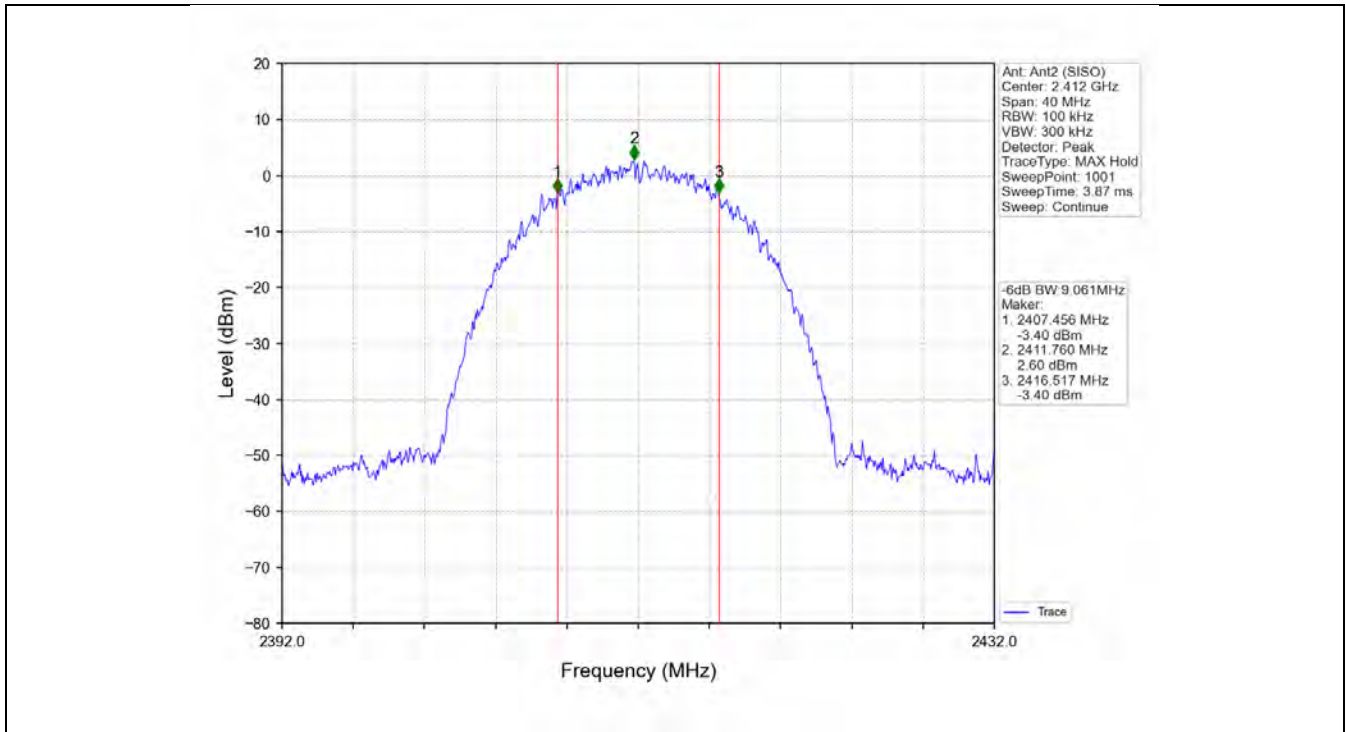
2.2 6dB BW

2.2.1 Test Result

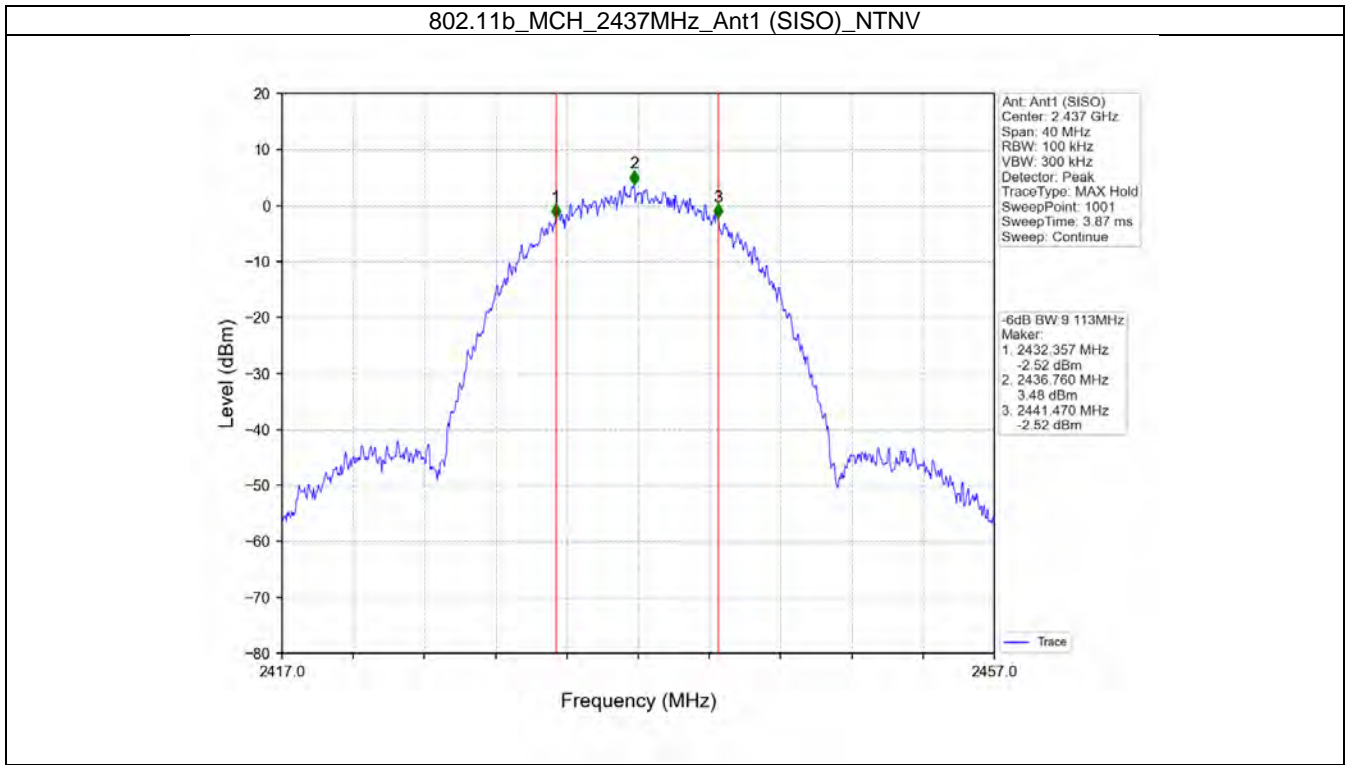
| Mode | TX Type | Frequency (MHz) | Ant | 6dB Bandwidth (MHz) | Limit (MHz) | Verdict |
|-------------------|---------|-----------------|-----|---------------------|-------------|---------|
| 802.11b | SISO | 2412 | 1 | 9.485 | ≥ 0.5 | Pass |
| | | | 2 | 9.061 | ≥ 0.5 | Pass |
| | | 2437 | 1 | 9.113 | ≥ 0.5 | Pass |
| | | | 2 | 9.060 | ≥ 0.5 | Pass |
| | | 2462 | 1 | 9.059 | ≥ 0.5 | Pass |
| | | | 2 | 9.062 | ≥ 0.5 | Pass |
| 802.11g | SISO | 2412 | 1 | 15.171 | ≥ 0.5 | Pass |
| | | | 2 | 15.141 | ≥ 0.5 | Pass |
| | | 2437 | 1 | 15.143 | ≥ 0.5 | Pass |
| | | | 2 | 15.134 | ≥ 0.5 | Pass |
| | | 2462 | 1 | 15.147 | ≥ 0.5 | Pass |
| | | | 2 | 15.138 | ≥ 0.5 | Pass |
| 802.11n (HT20) | MIMO | 2412 | 1 | 15.140 | ≥ 0.5 | Pass |
| | | | 2 | 15.143 | ≥ 0.5 | Pass |
| | | 2437 | 1 | 15.141 | ≥ 0.5 | Pass |
| | | | 2 | 15.138 | ≥ 0.5 | Pass |
| | | 2462 | 1 | 15.147 | ≥ 0.5 | Pass |
| | | | 2 | 15.146 | ≥ 0.5 | Pass |

2.2.2 Test Graph

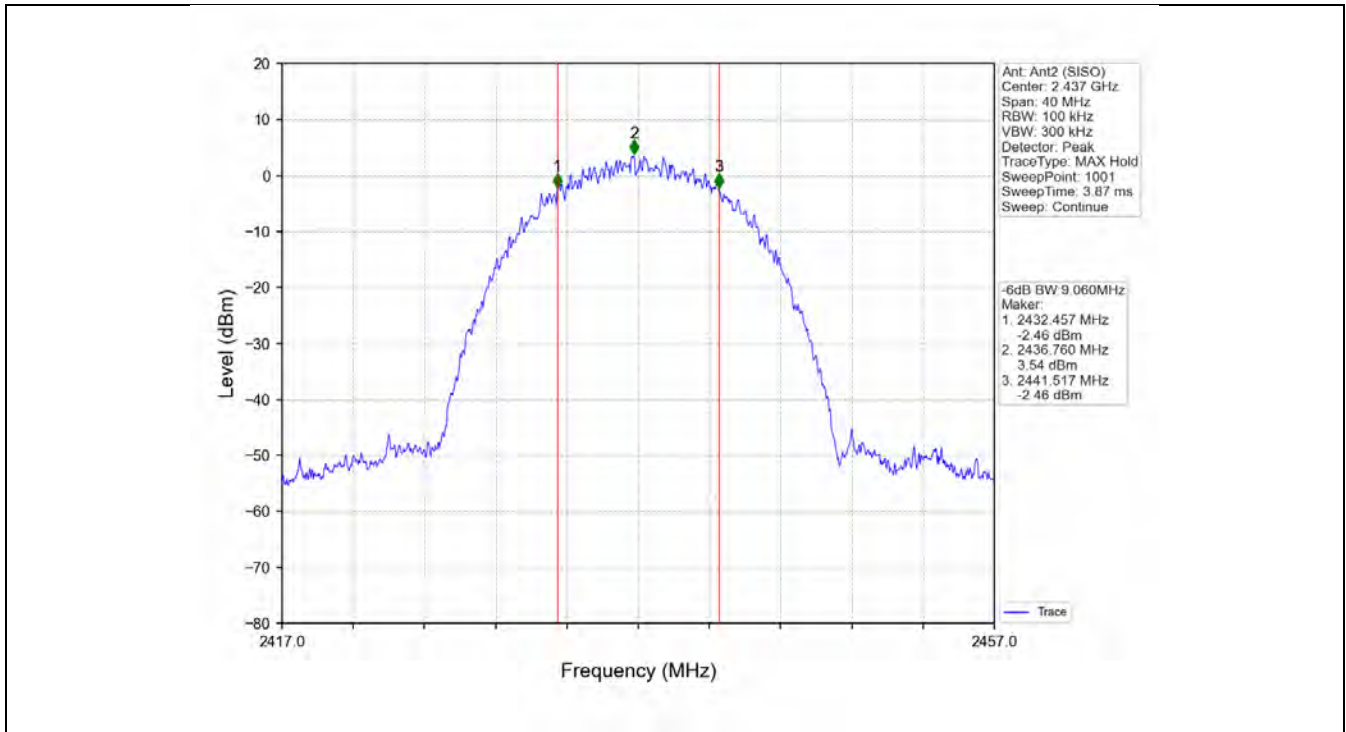




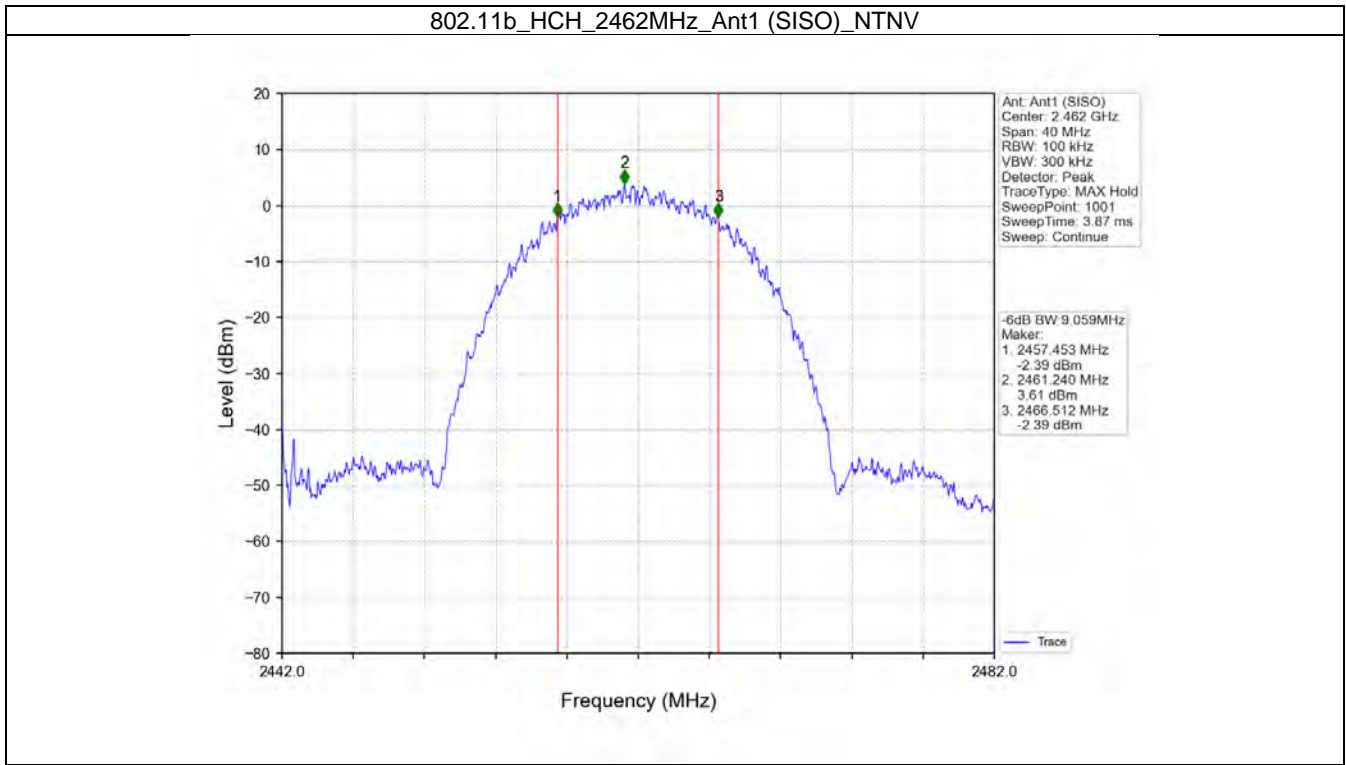
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



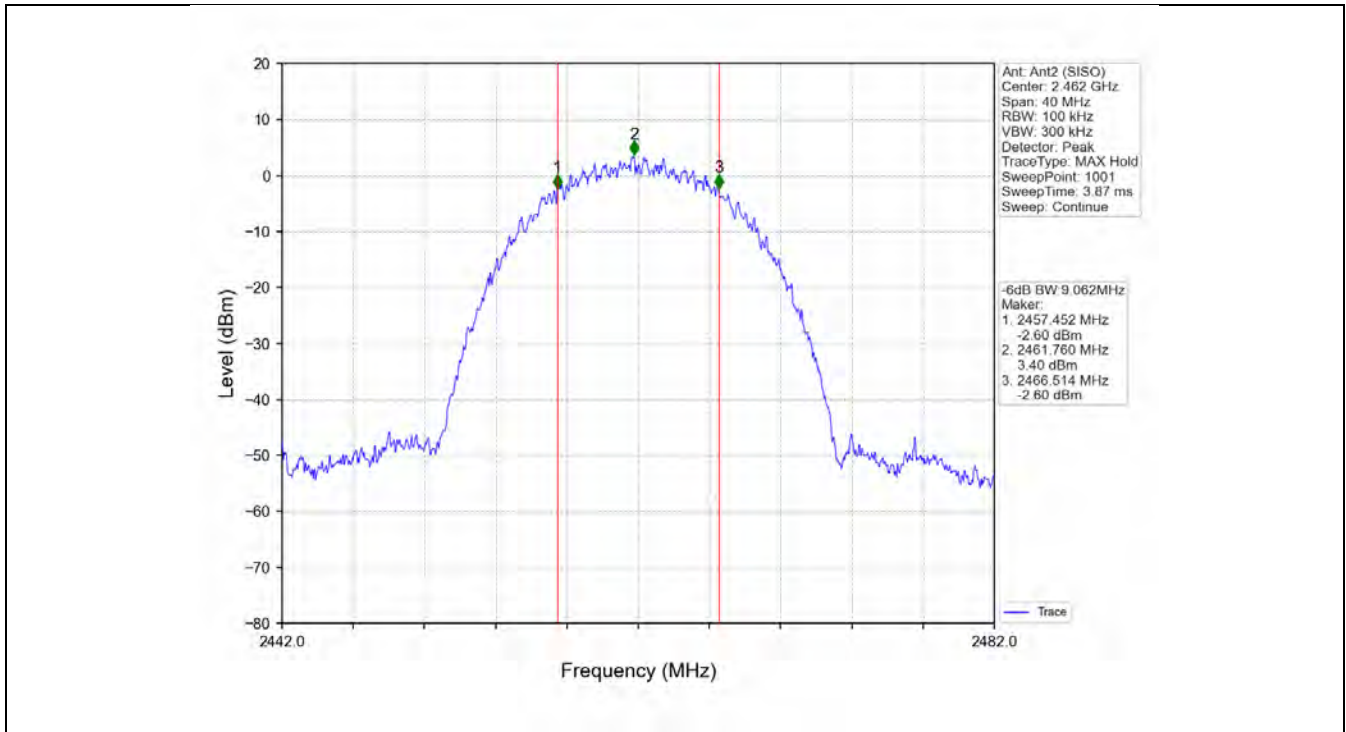
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



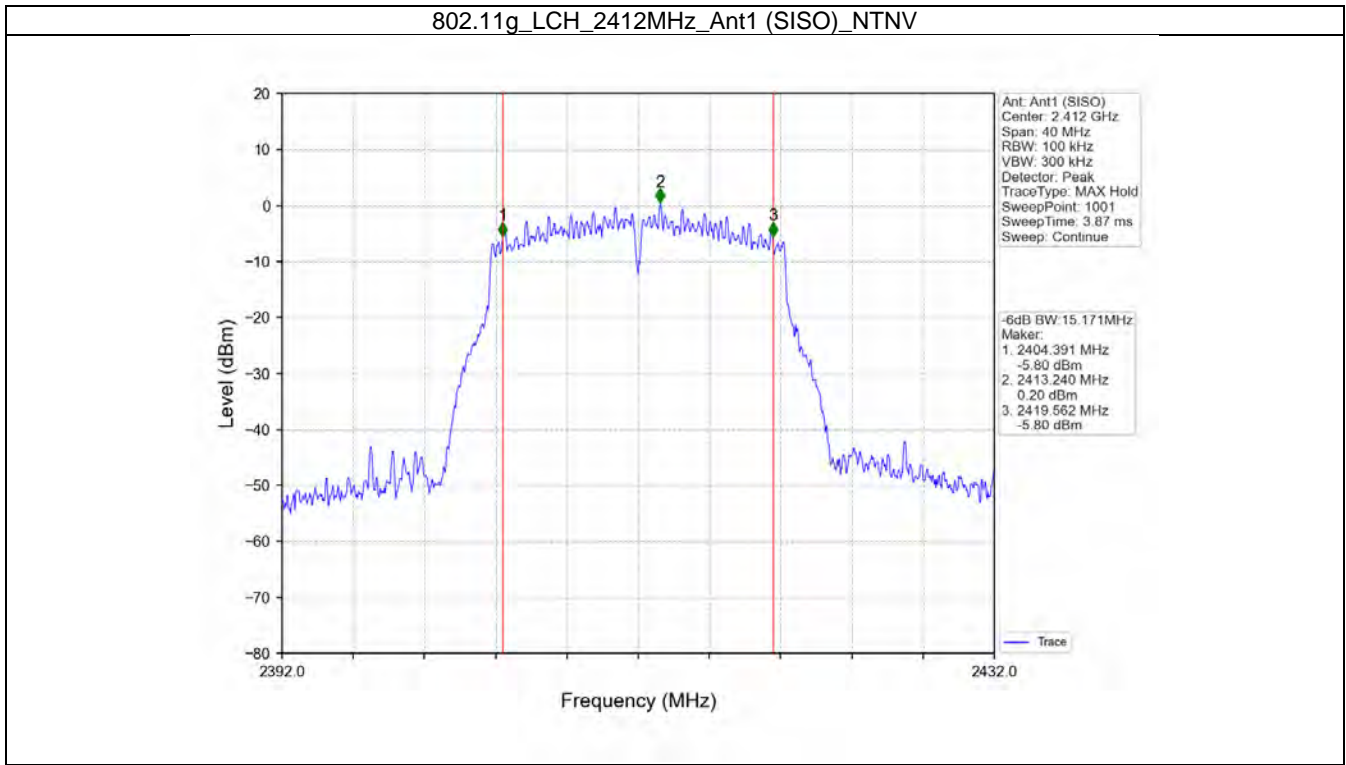
802.11b_HCH_2462MHz_Ant1 (SISO)_NTNV



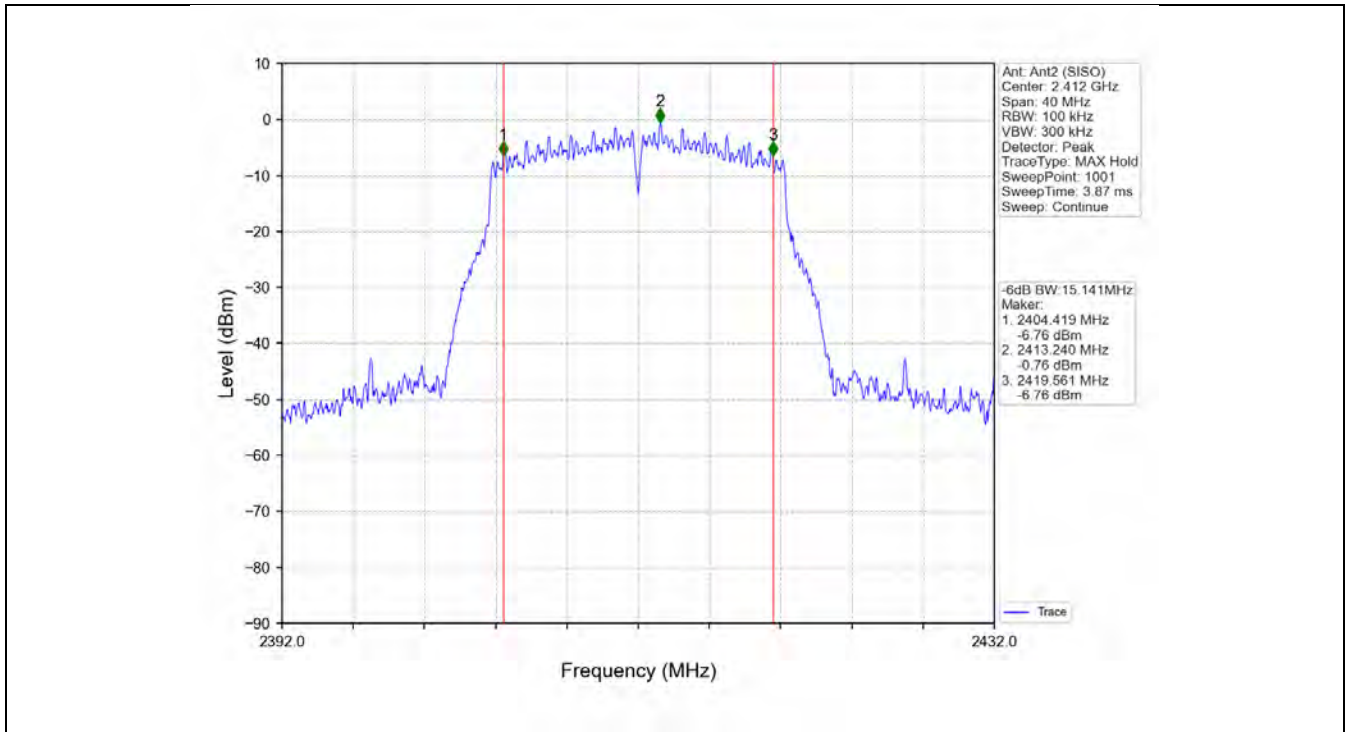
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



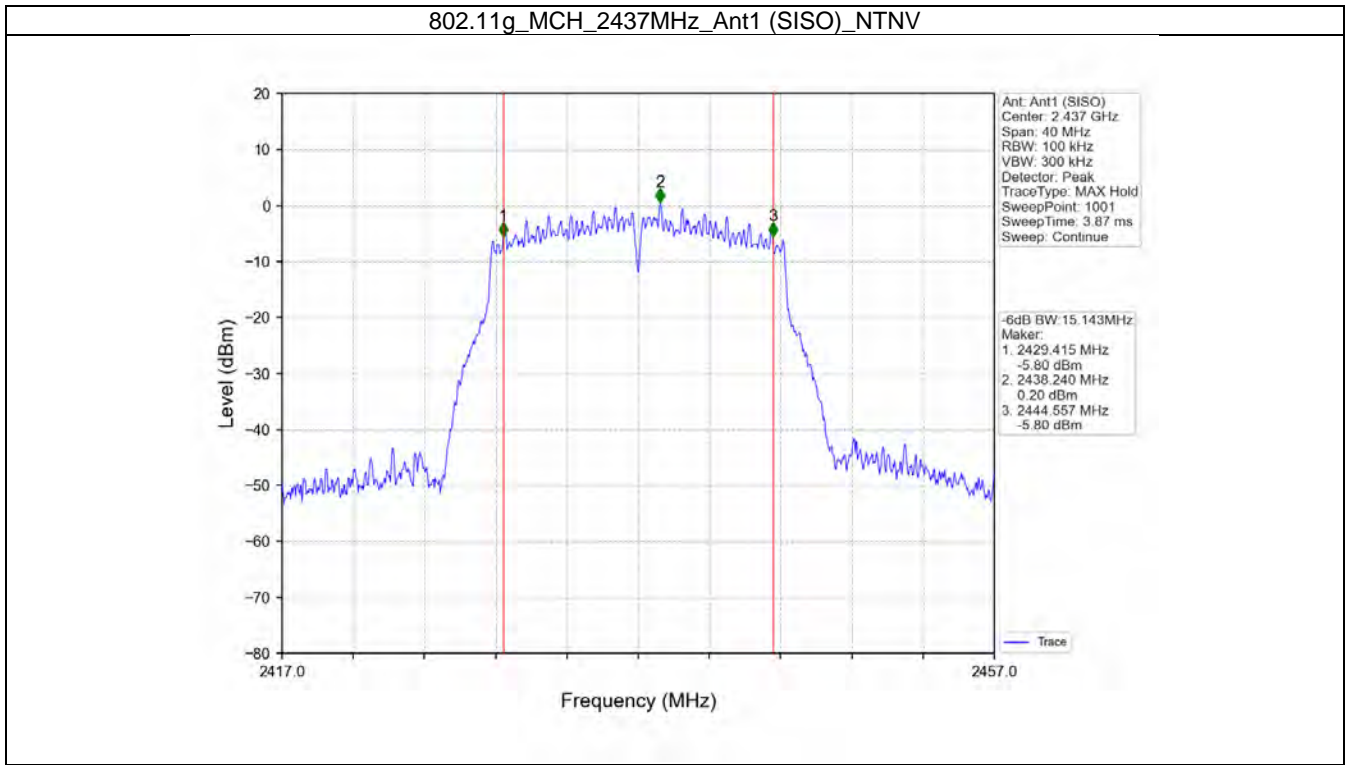
802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV



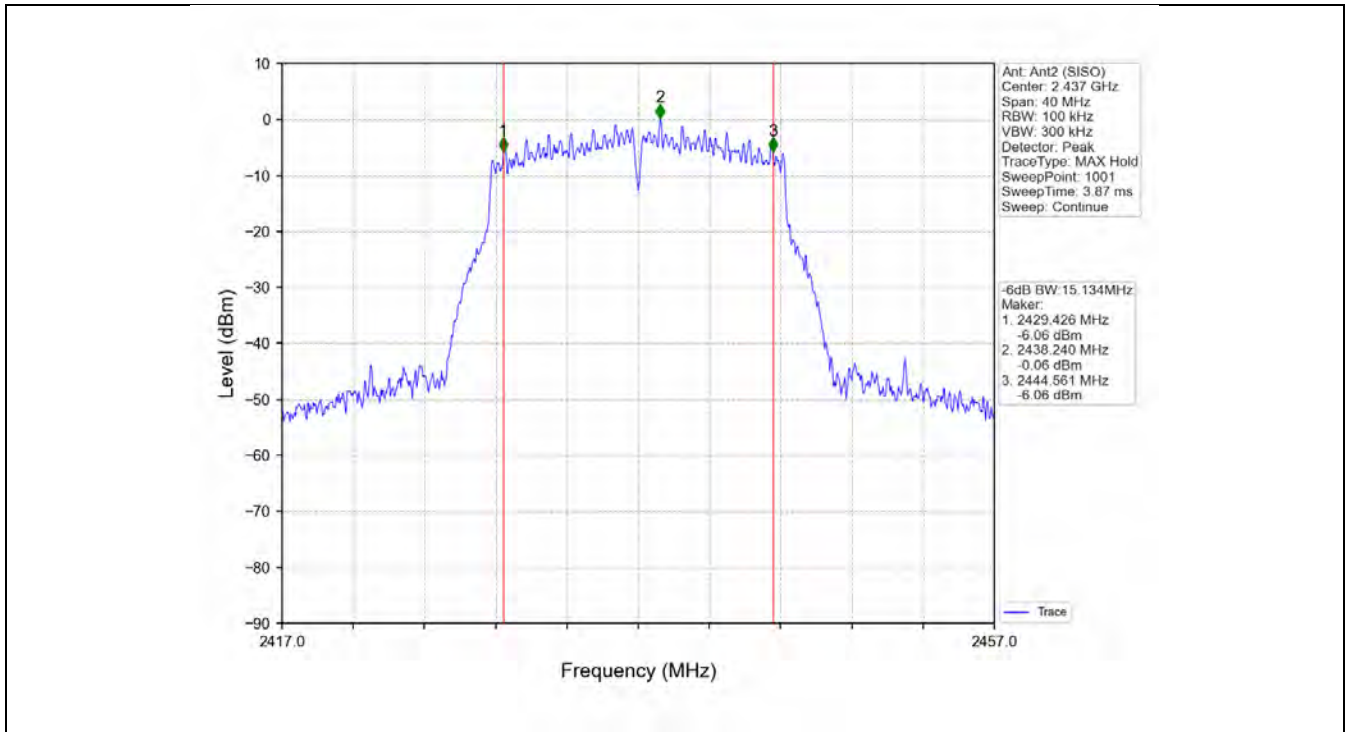
802.11g_LCH_2412MHz_Ant2 (SISO)_NTNV



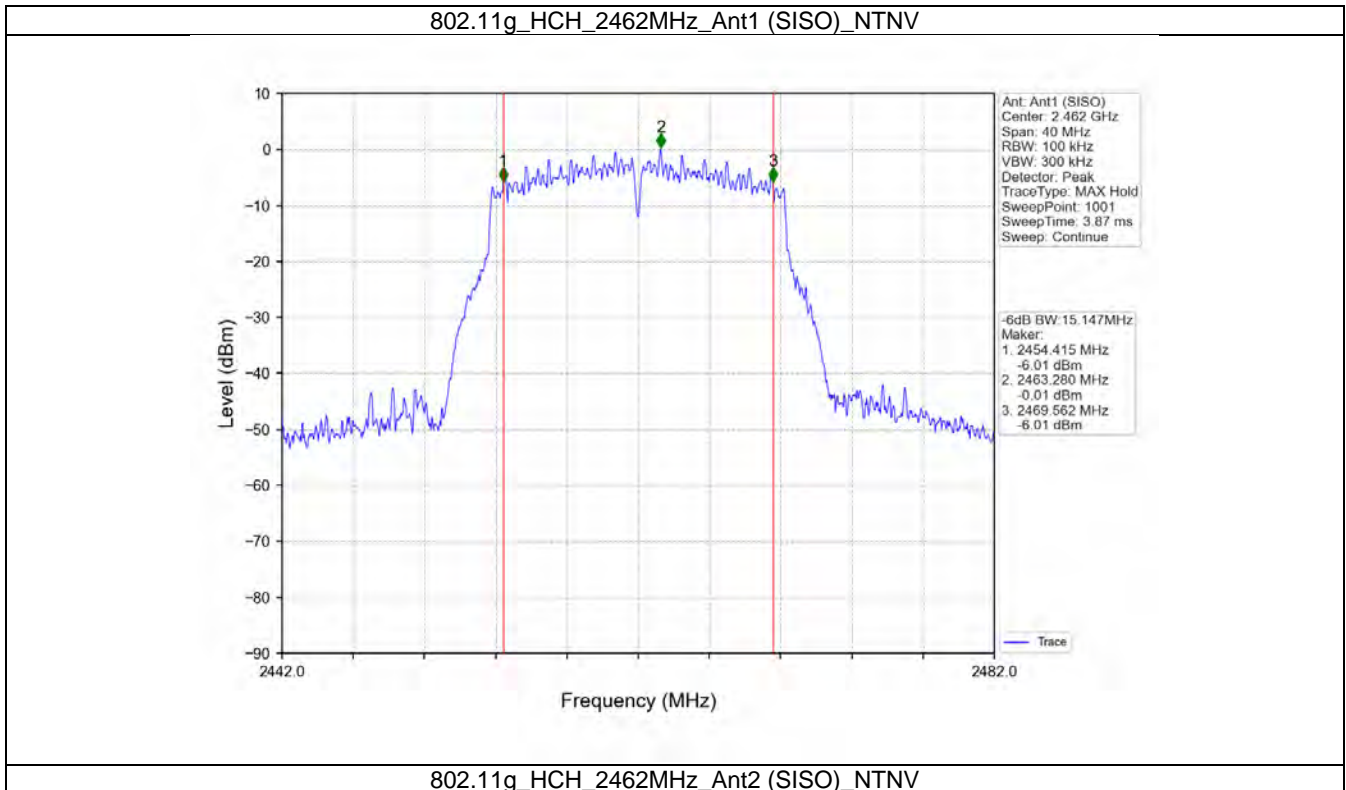
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



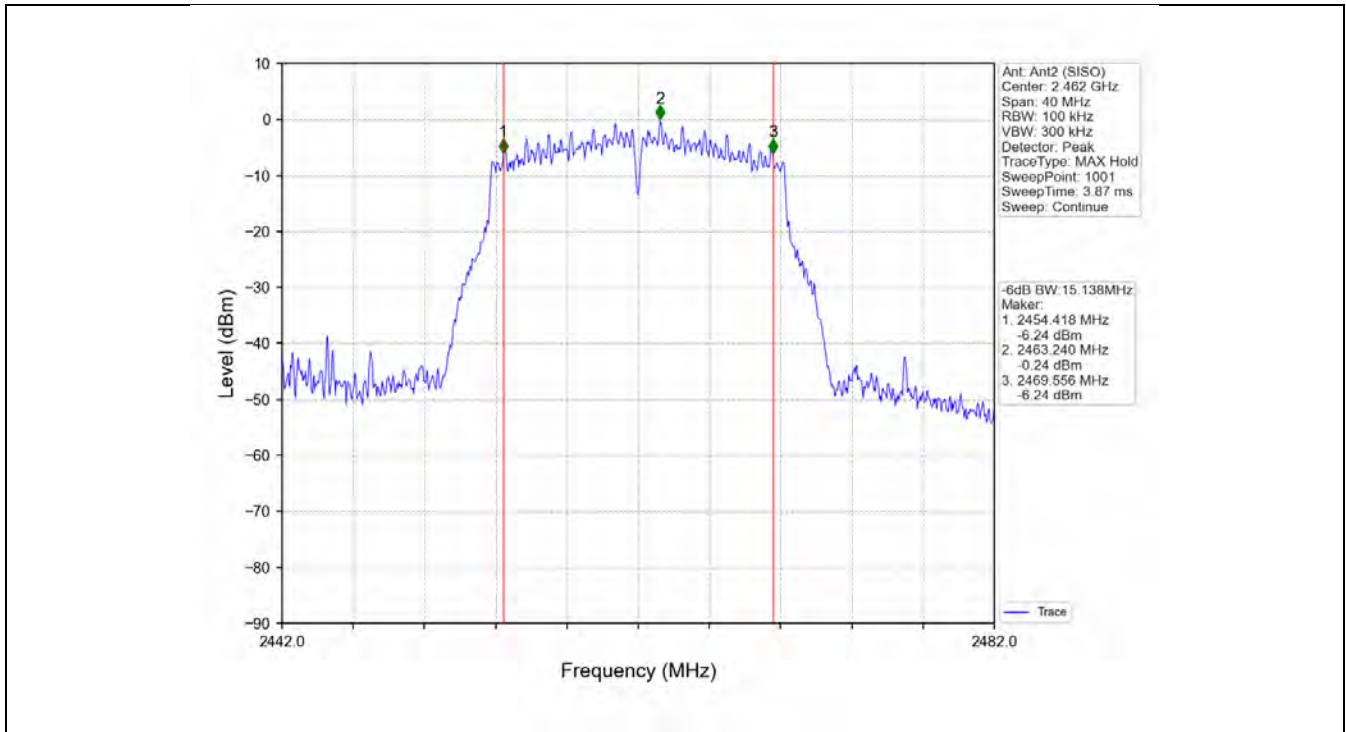
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



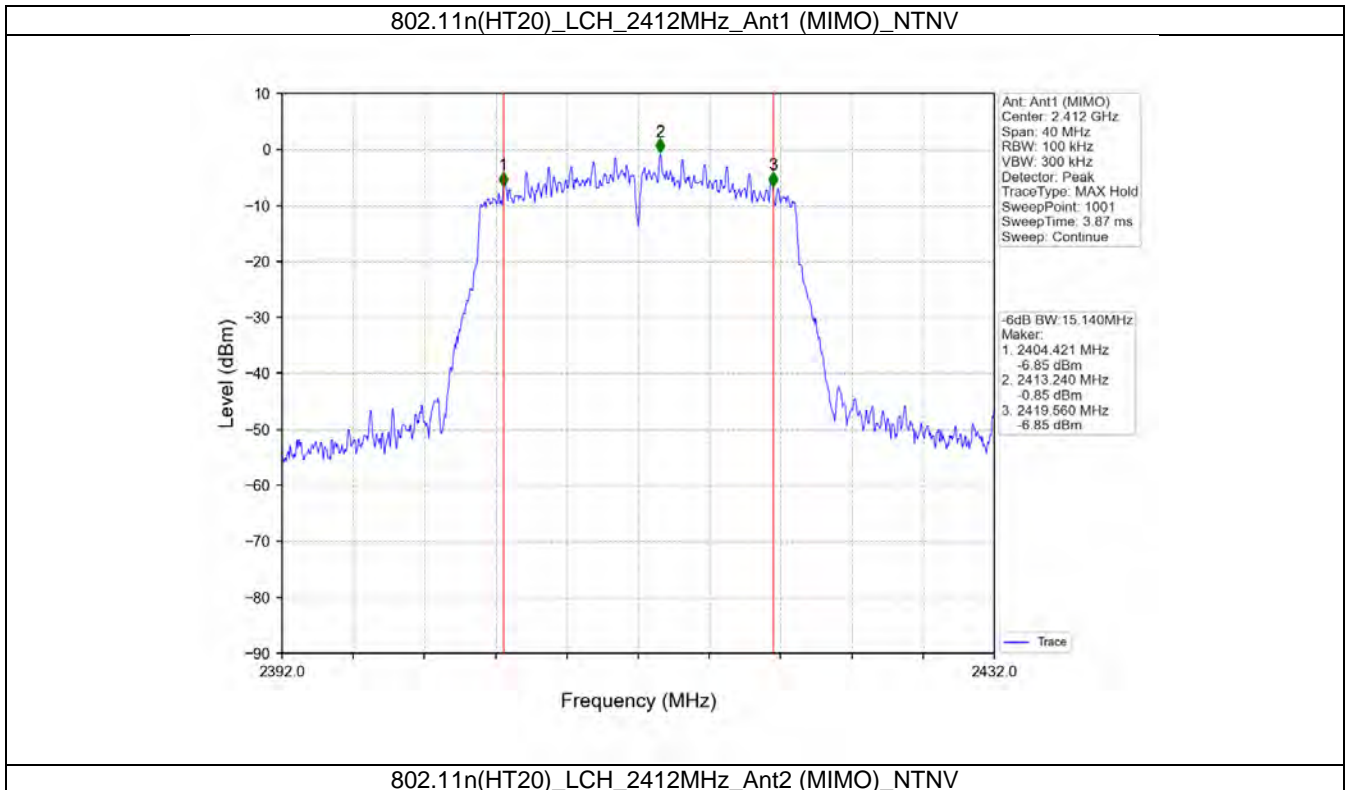
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



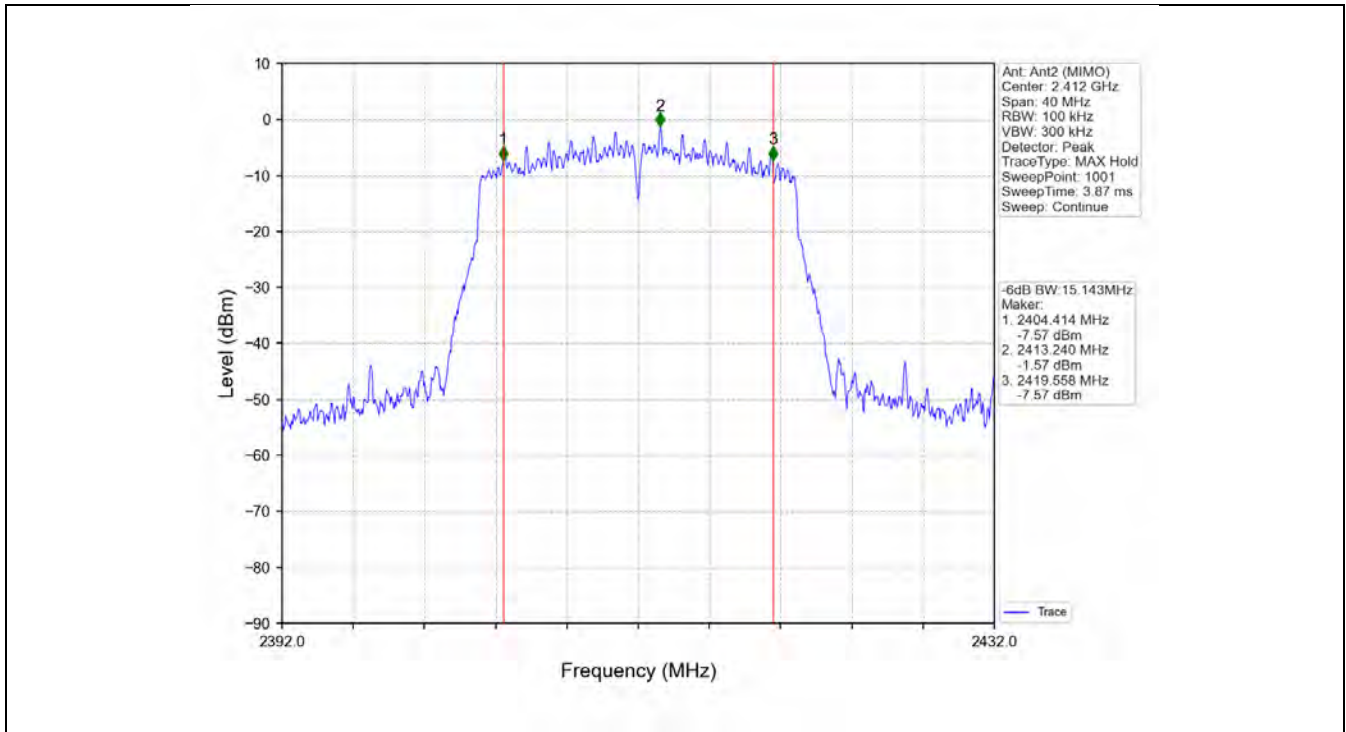
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



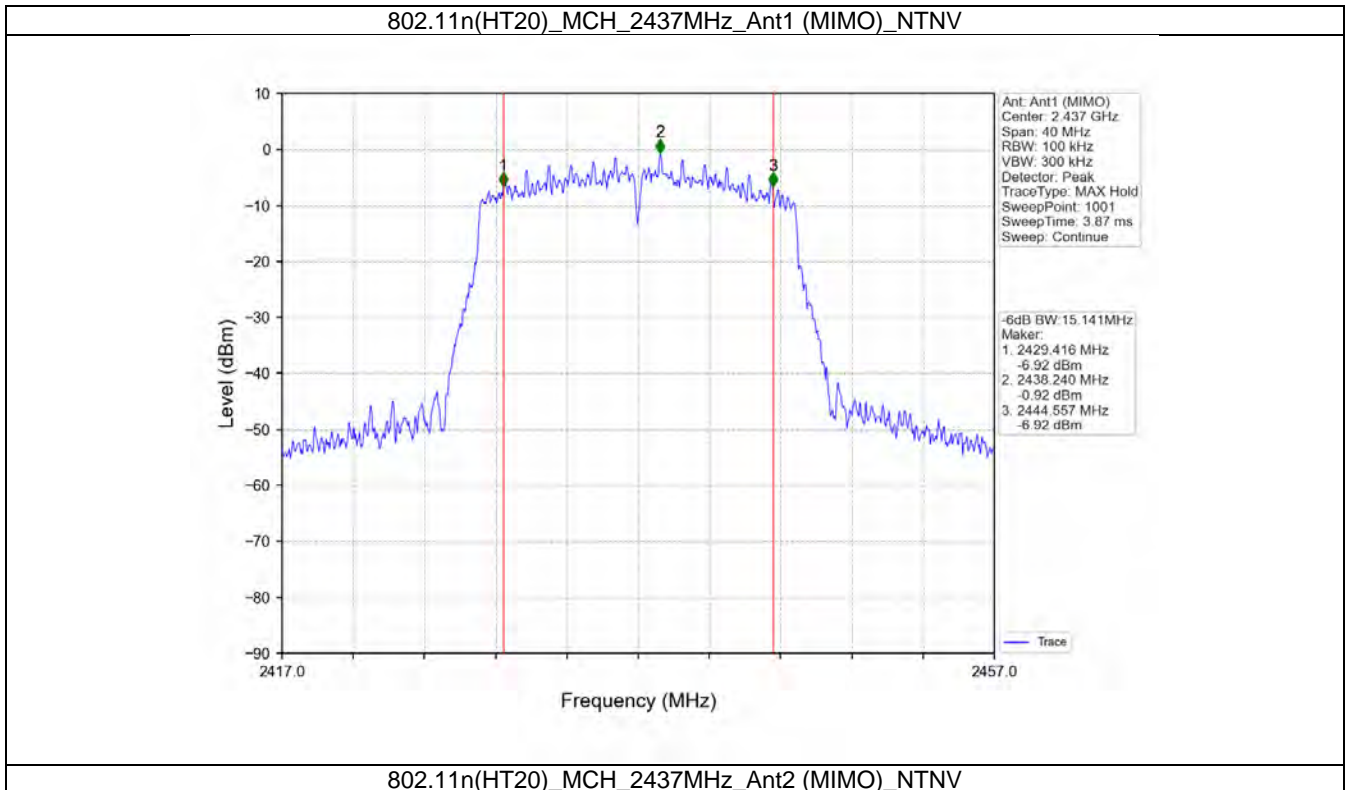
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



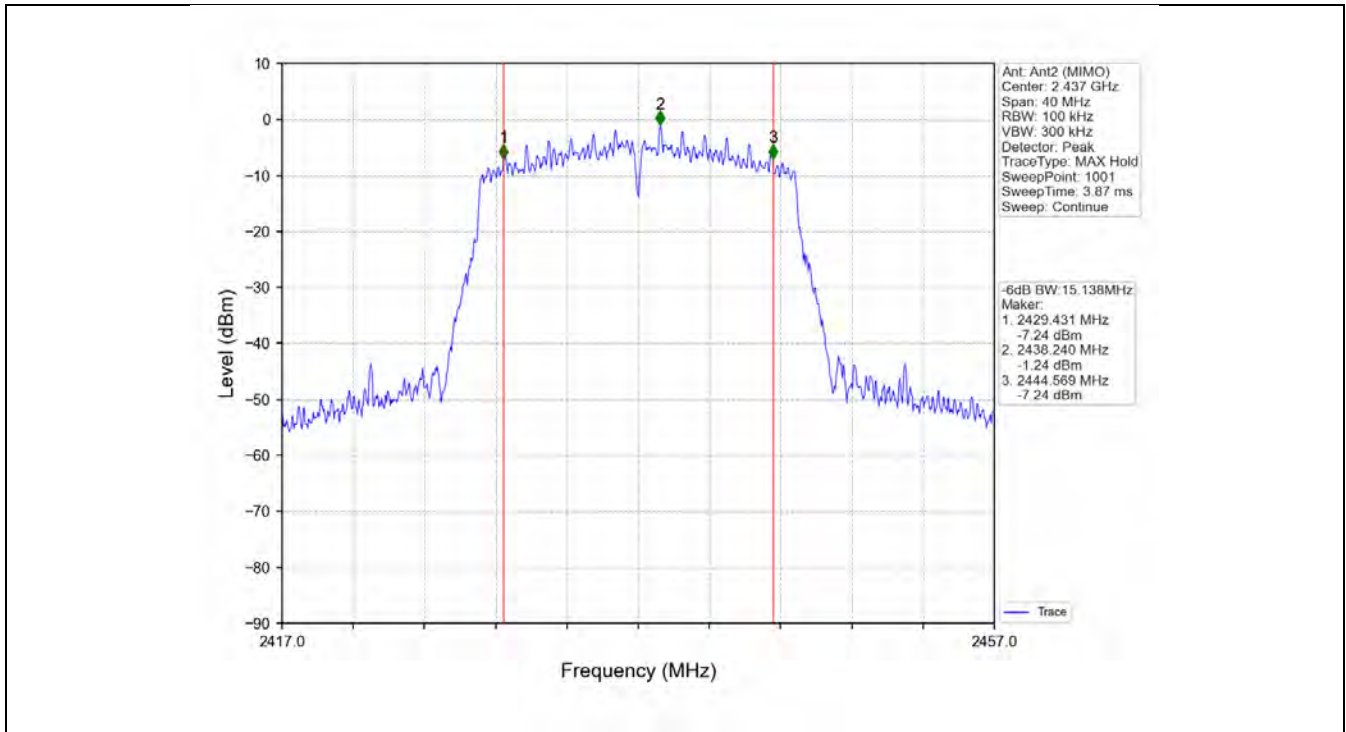
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



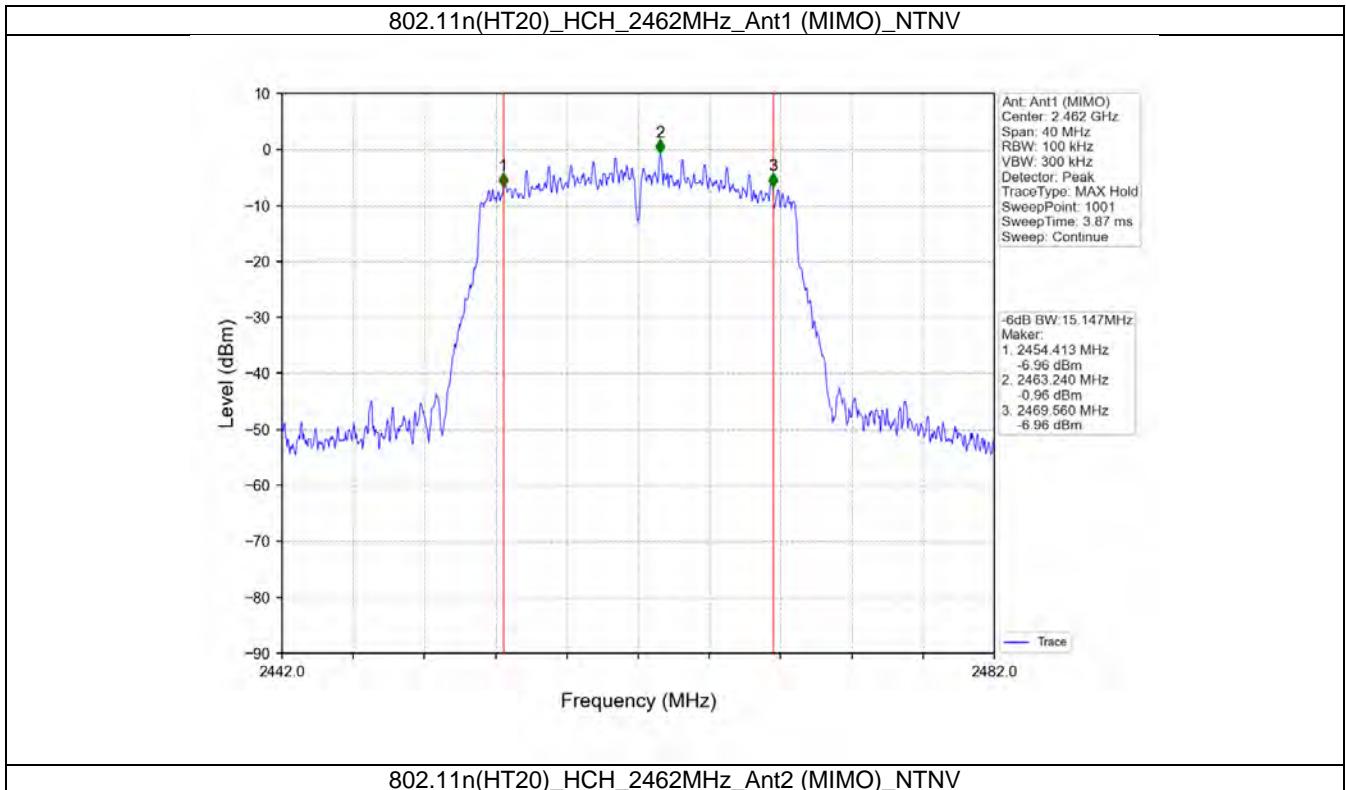
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



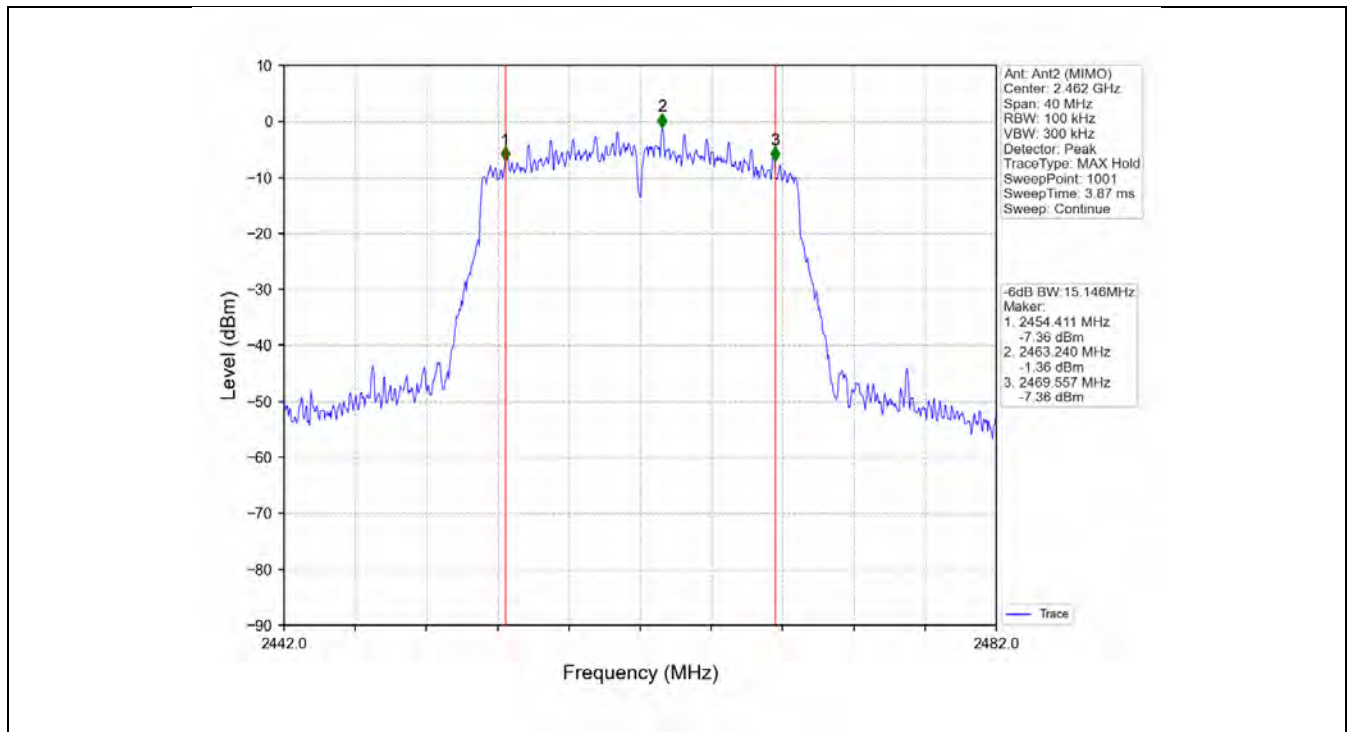
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



3. Maximum Conducted Output Power

3.1 Power

3.1.1 Test Result

| Mode | TX Type | Frequency (MHz) | Measured Peak Output Power (dBm) | | | | Verdict |
|----------------|---------|-----------------|----------------------------------|-------|-------|---------|---------|
| | | | Ant1 | Ant2 | Sum | Limit | |
| 802.11b | SISO | 2412 | 18.11 | 16.58 | / | <=30 | Pass |
| | | 2437 | 17.46 | 17.50 | / | <=30 | Pass |
| | | 2462 | 17.47 | 17.35 | / | <=30 | Pass |
| 802.11g | SISO | 2412 | 17.93 | 18.13 | / | <=30 | Pass |
| | | 2437 | 18.04 | 17.42 | / | <=30 | Pass |
| | | 2462 | 18.19 | 17.38 | / | <=30 | Pass |
| 802.11n (HT20) | MIMO | 2412 | 15.51 | 14.77 | 18.17 | <=29.64 | Pass |
| | | 2437 | 15.67 | 14.58 | 18.17 | <=29.64 | Pass |
| | | 2462 | 15.58 | 14.53 | 18.10 | <=29.64 | Pass |

Note1: Antenna Gain: Ant1: 3.40dBi; Ant2: 3.30dBi;
 Note2: Directional Gain: 6.36dBi

4. Maximum Power Spectral Density

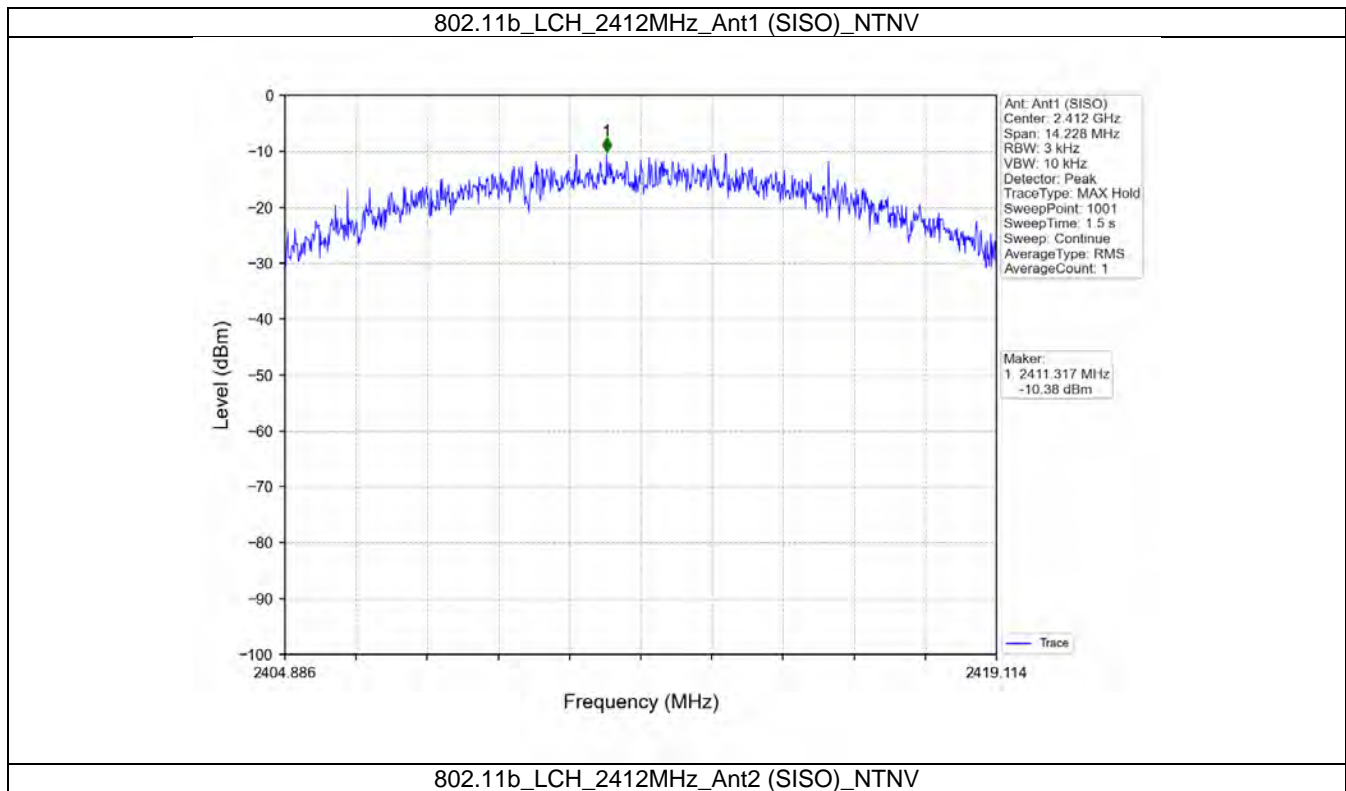
4.1 PSD

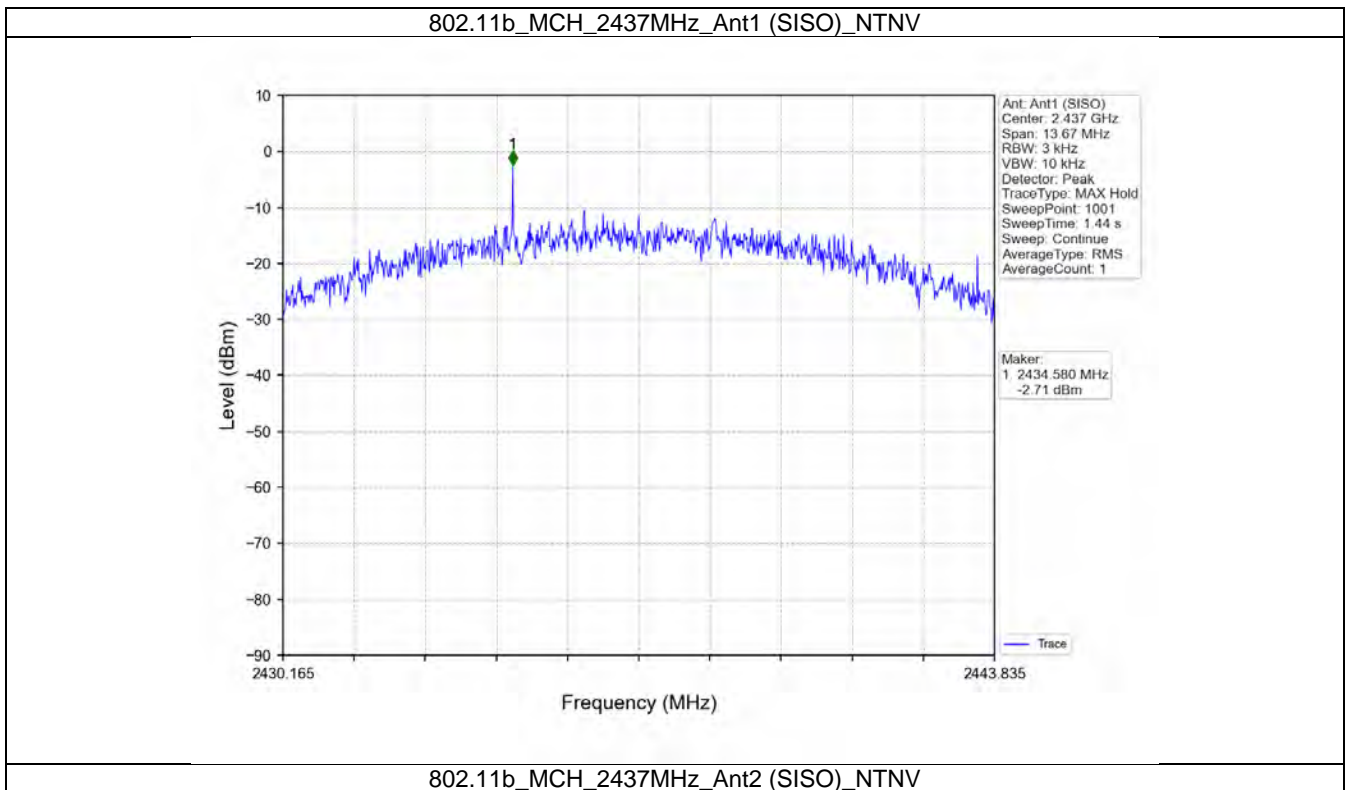
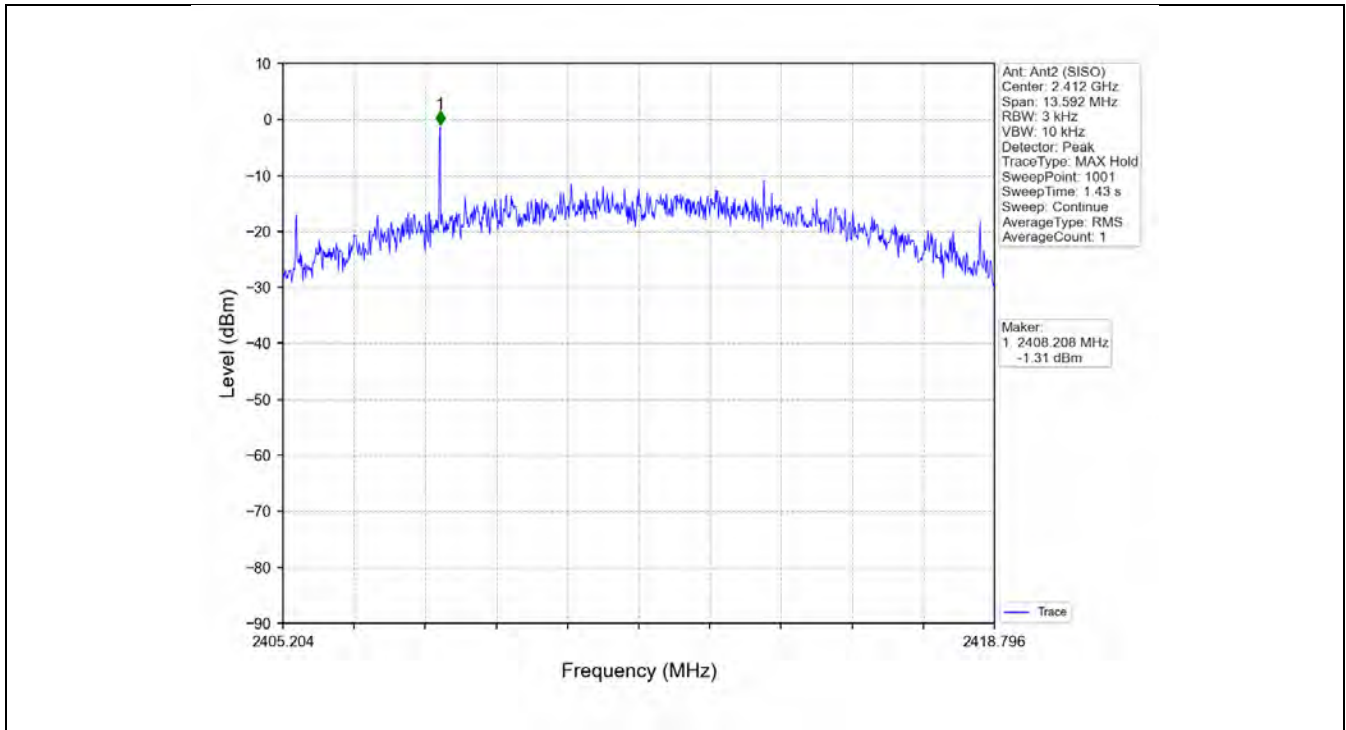
4.1.1 Test Result

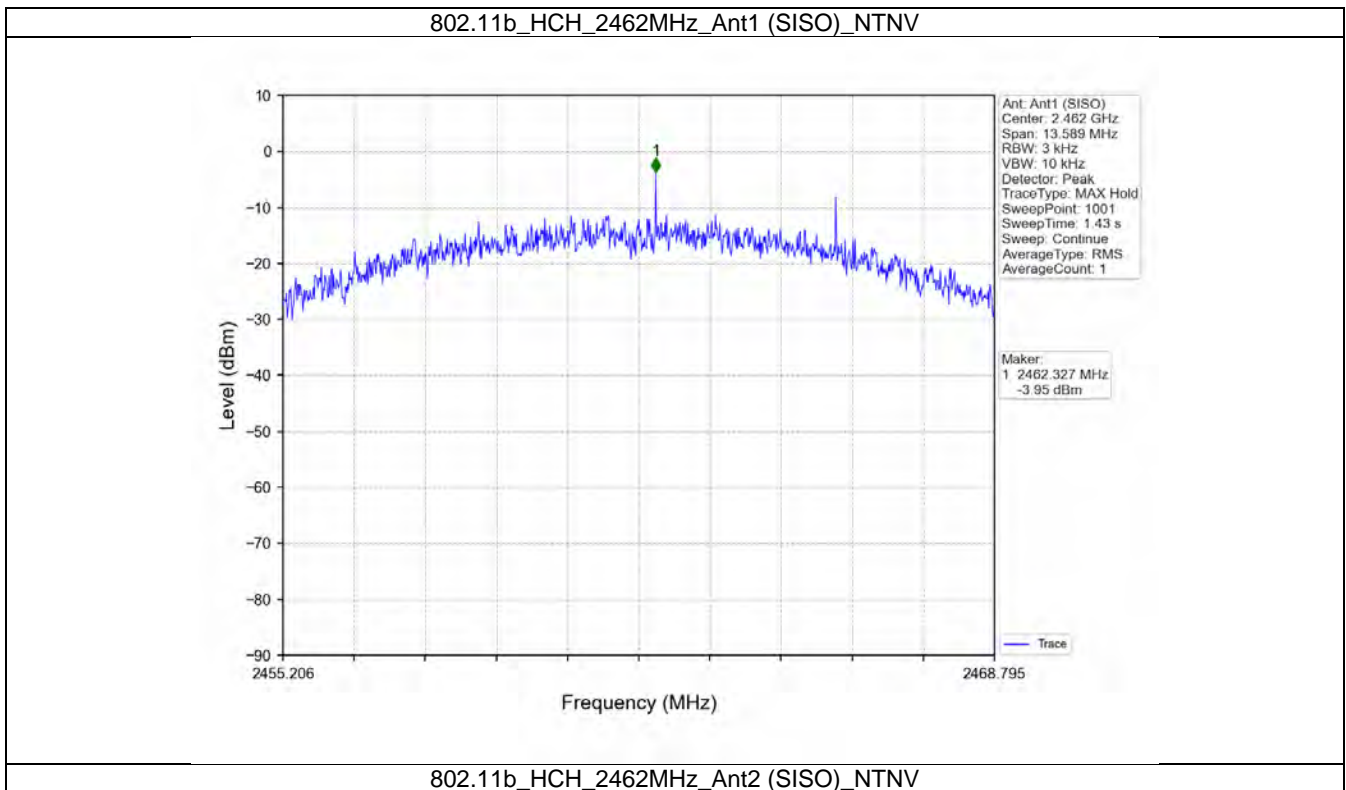
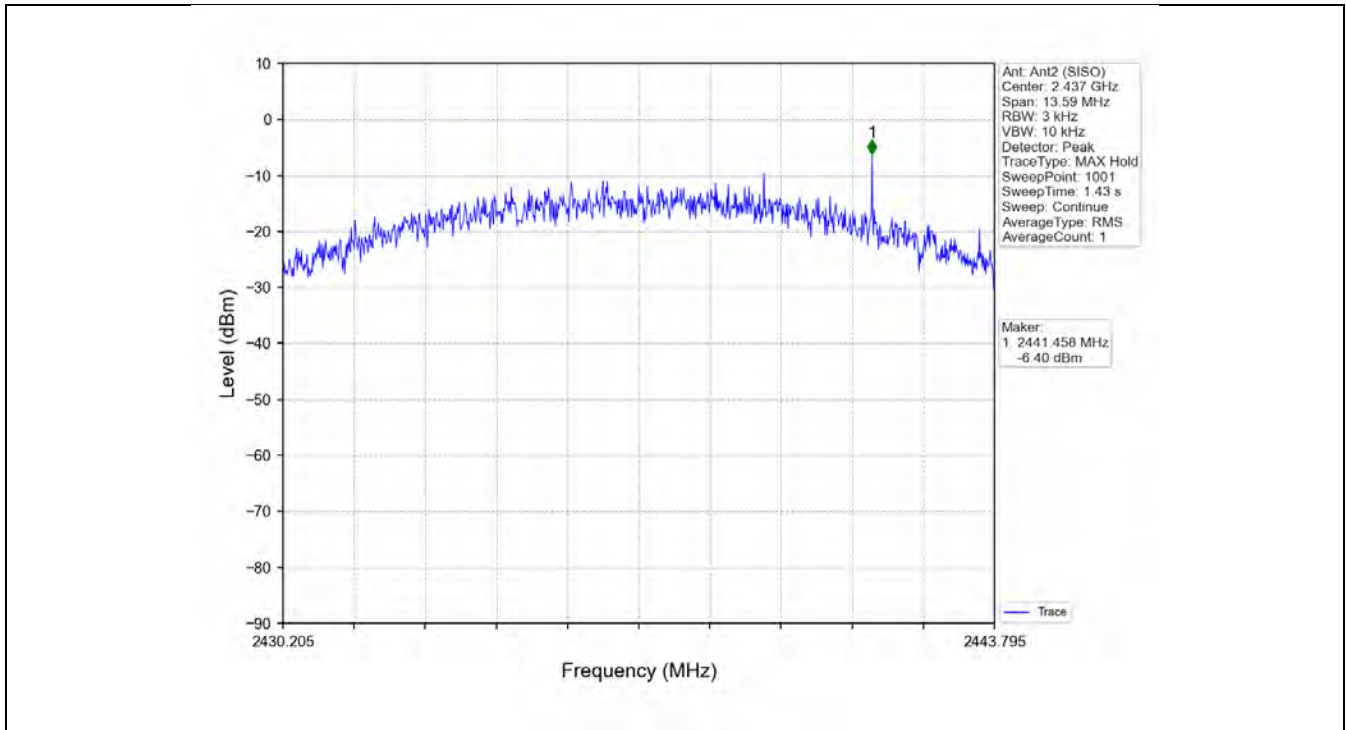
| Mode | TX Type | Frequency (MHz) | Maximum PSD (dBm/3kHz) | | | | Verdict |
|-------------------|---------|-----------------|------------------------|--------|--------|--------|---------|
| | | | Ant1 | Ant2 | Sum | Limit | |
| 802.11b | SISO | 2412 | -10.38 | -1.31 | / | <=8 | Pass |
| | | 2437 | -2.71 | -6.40 | / | <=8 | Pass |
| | | 2462 | -3.95 | -4.10 | / | <=8 | Pass |
| 802.11g | SISO | 2412 | -15.69 | -15.50 | / | <=8 | Pass |
| | | 2437 | -14.01 | -15.97 | / | <=8 | Pass |
| | | 2462 | -14.63 | -15.80 | / | <=8 | Pass |
| 802.11n (HT20) | MIMO | 2412 | -17.34 | -18.40 | -15.34 | <=7.64 | Pass |
| | | 2437 | -17.78 | -18.11 | -15.81 | <=7.64 | Pass |
| | | 2462 | -17.62 | -19.25 | -15.69 | <=7.64 | Pass |

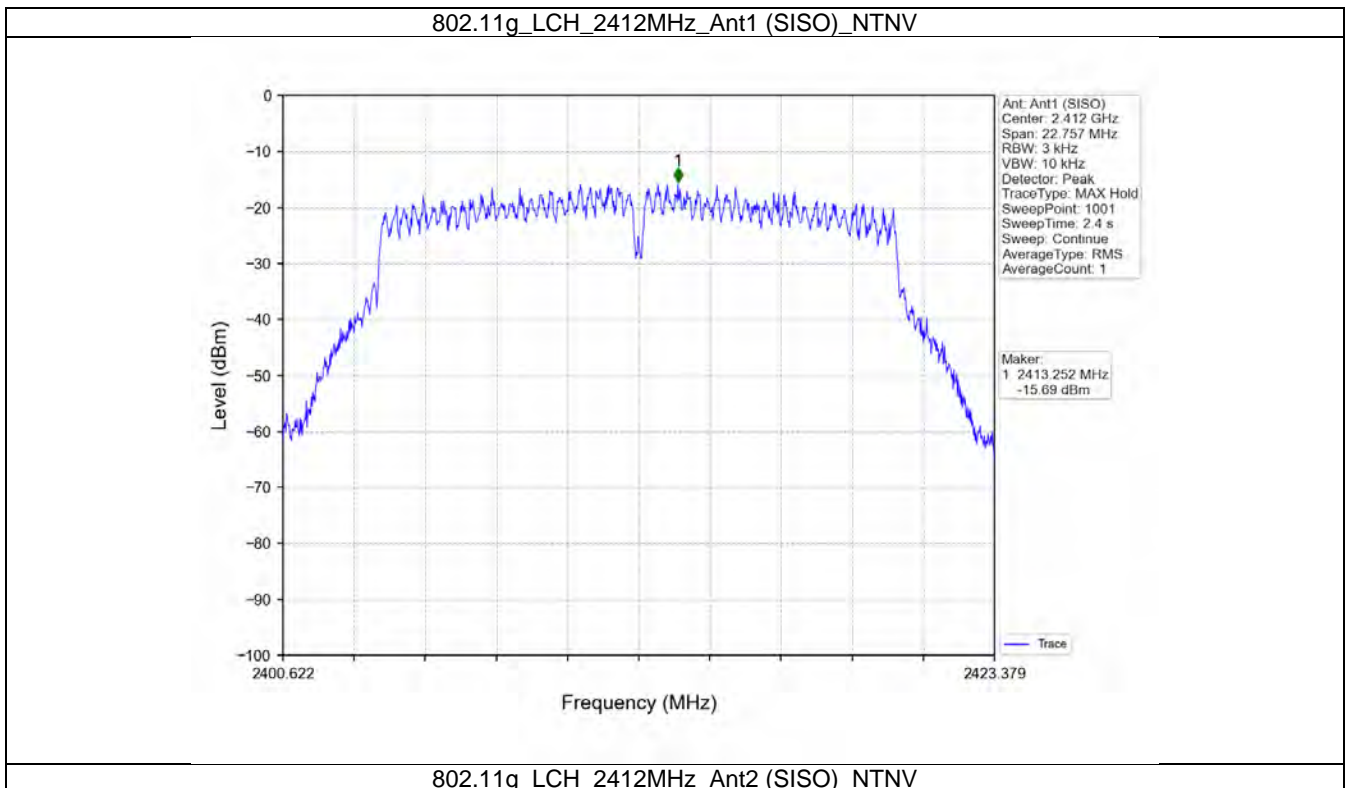
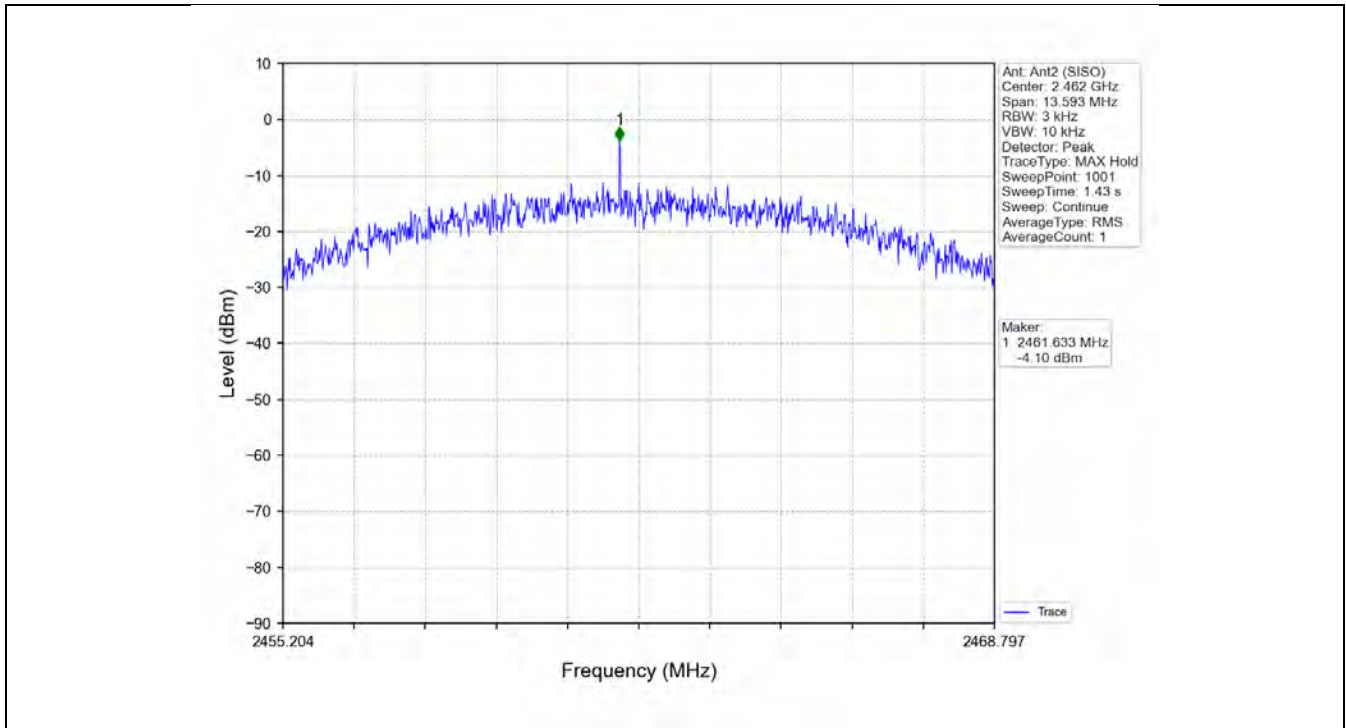
Note1: Antenna Gain: Ant1: 3.40dBi; Ant2: 3.30dBi;
 Note2: Directional Gain: 6.36dBi

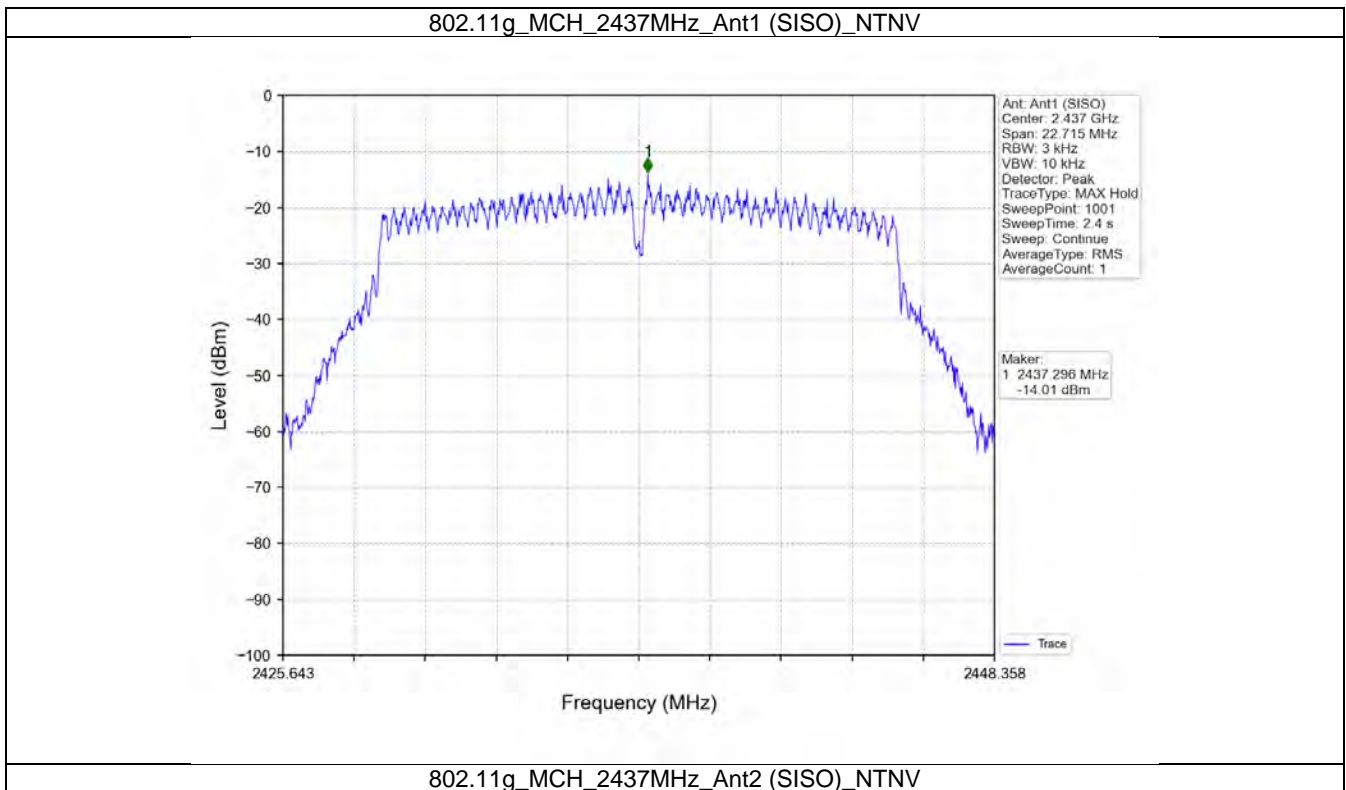
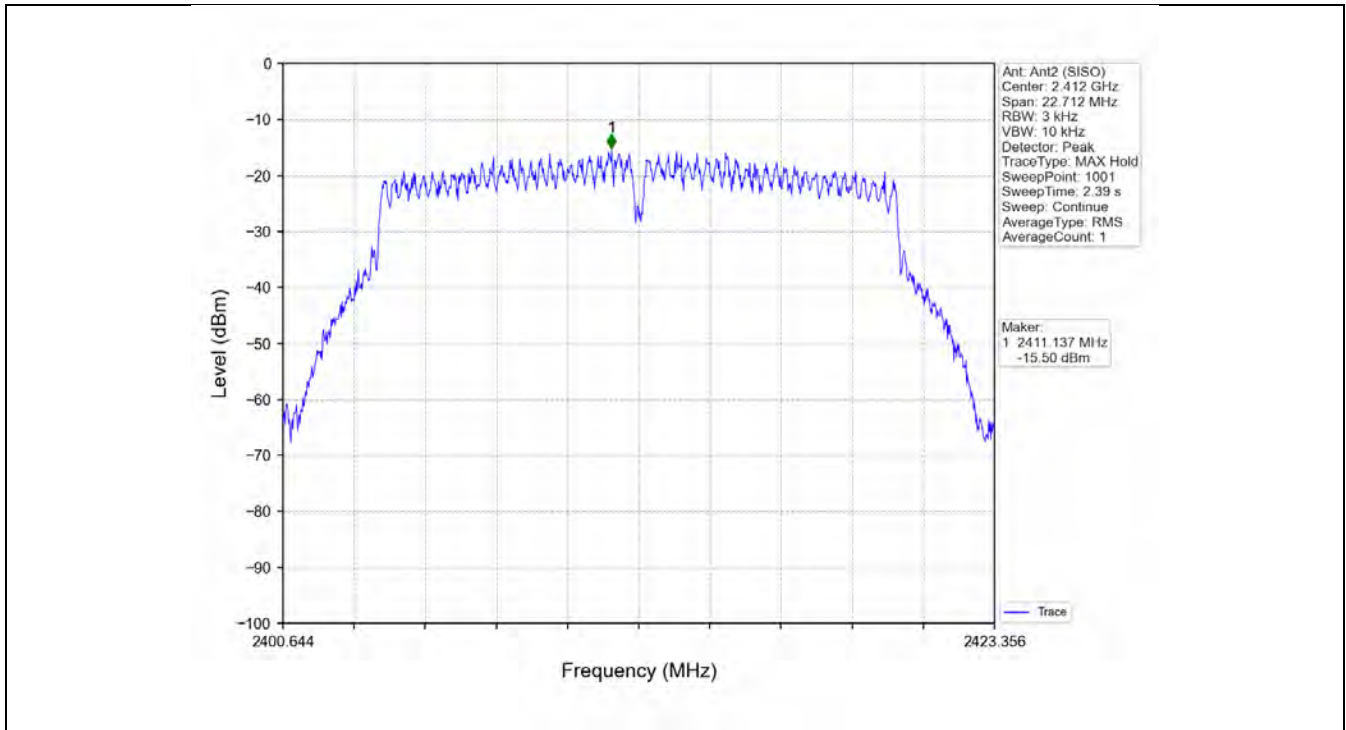
4.1.2 Test Graph

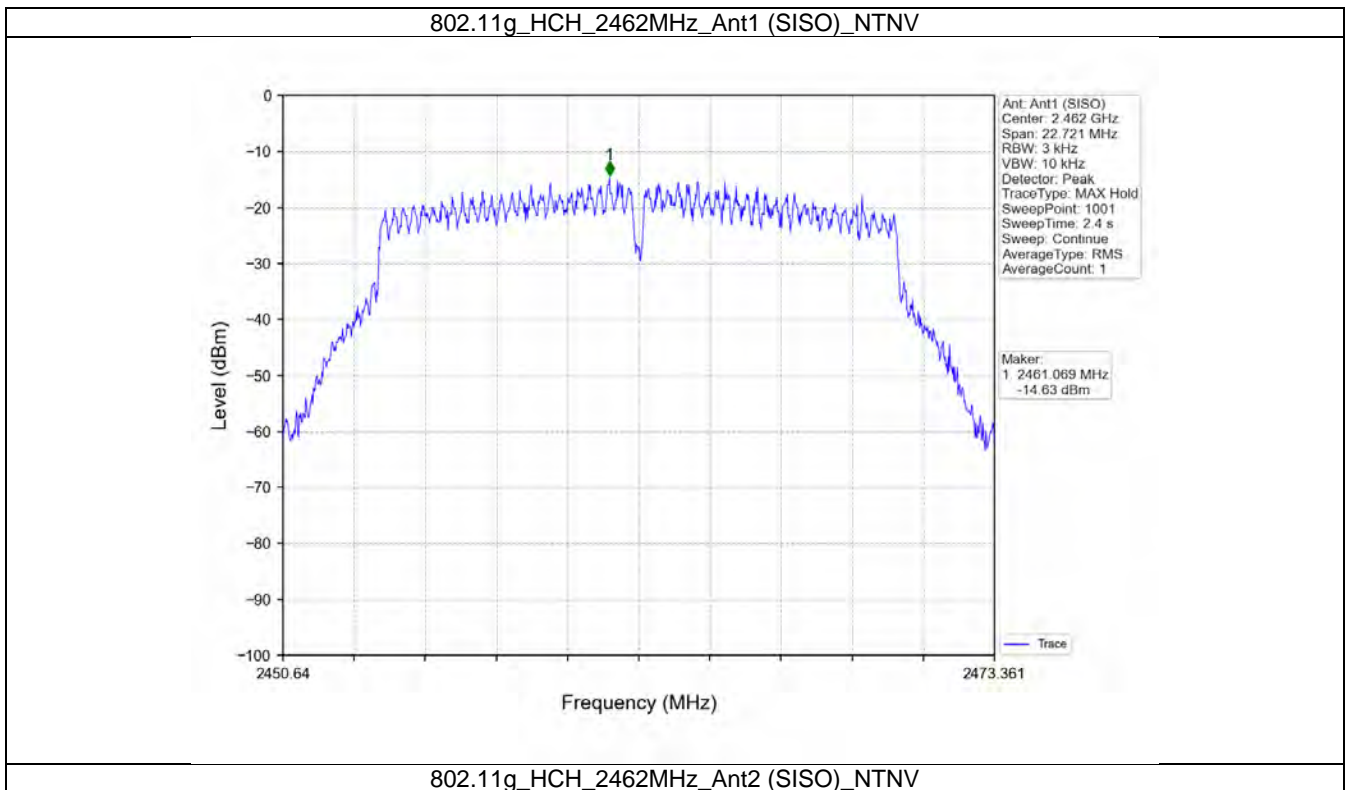
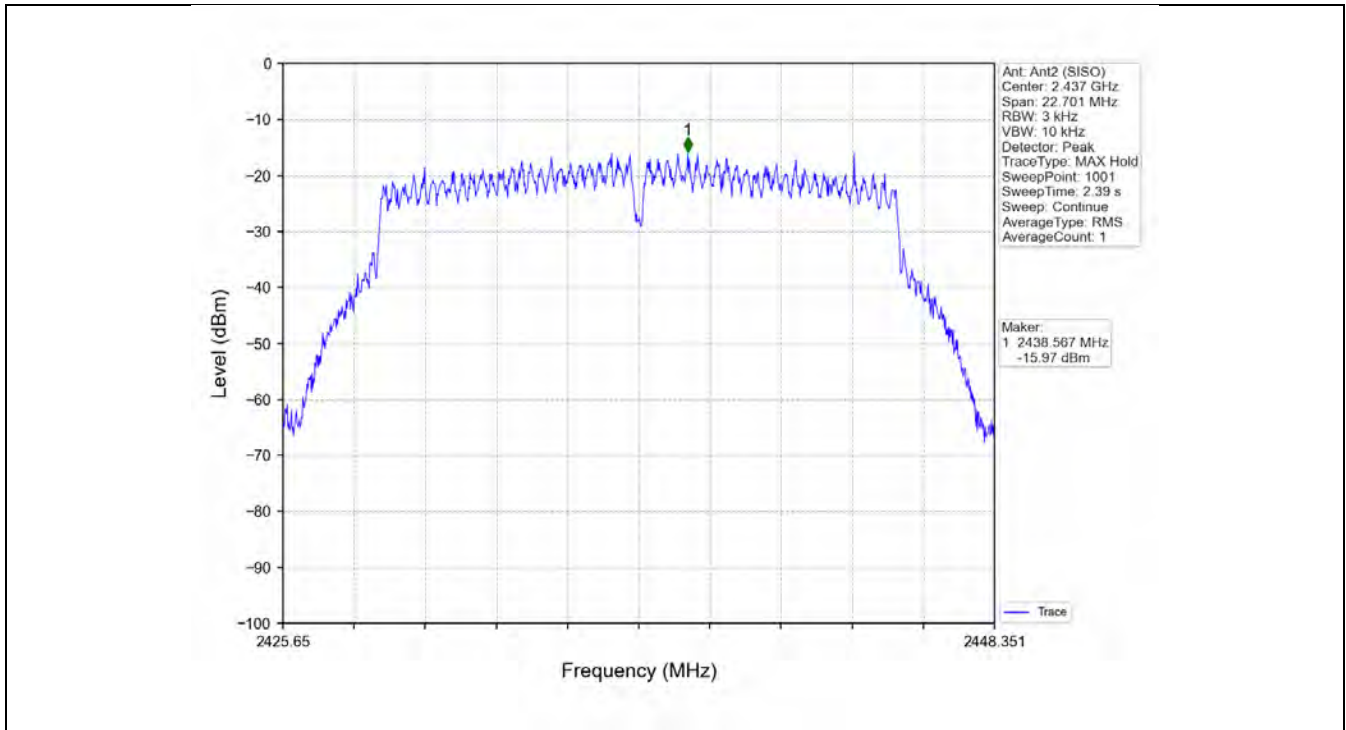


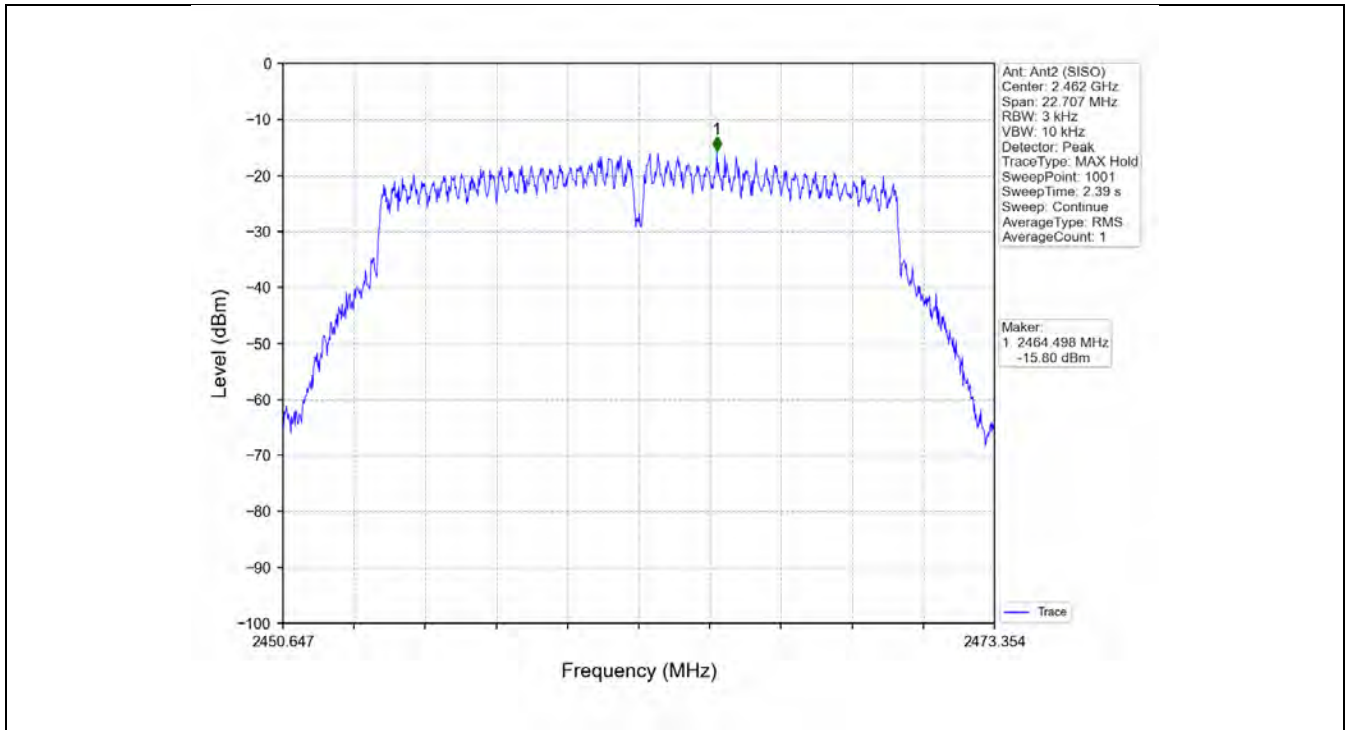




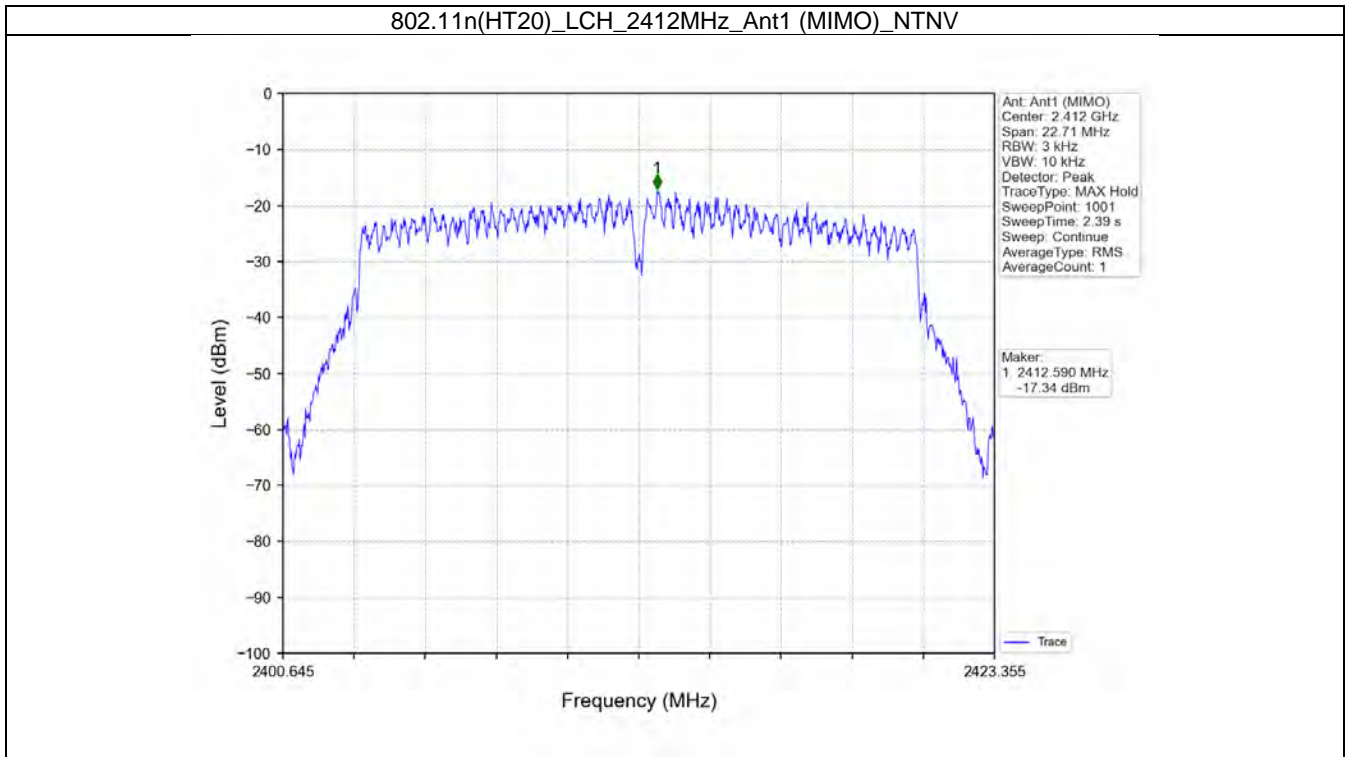




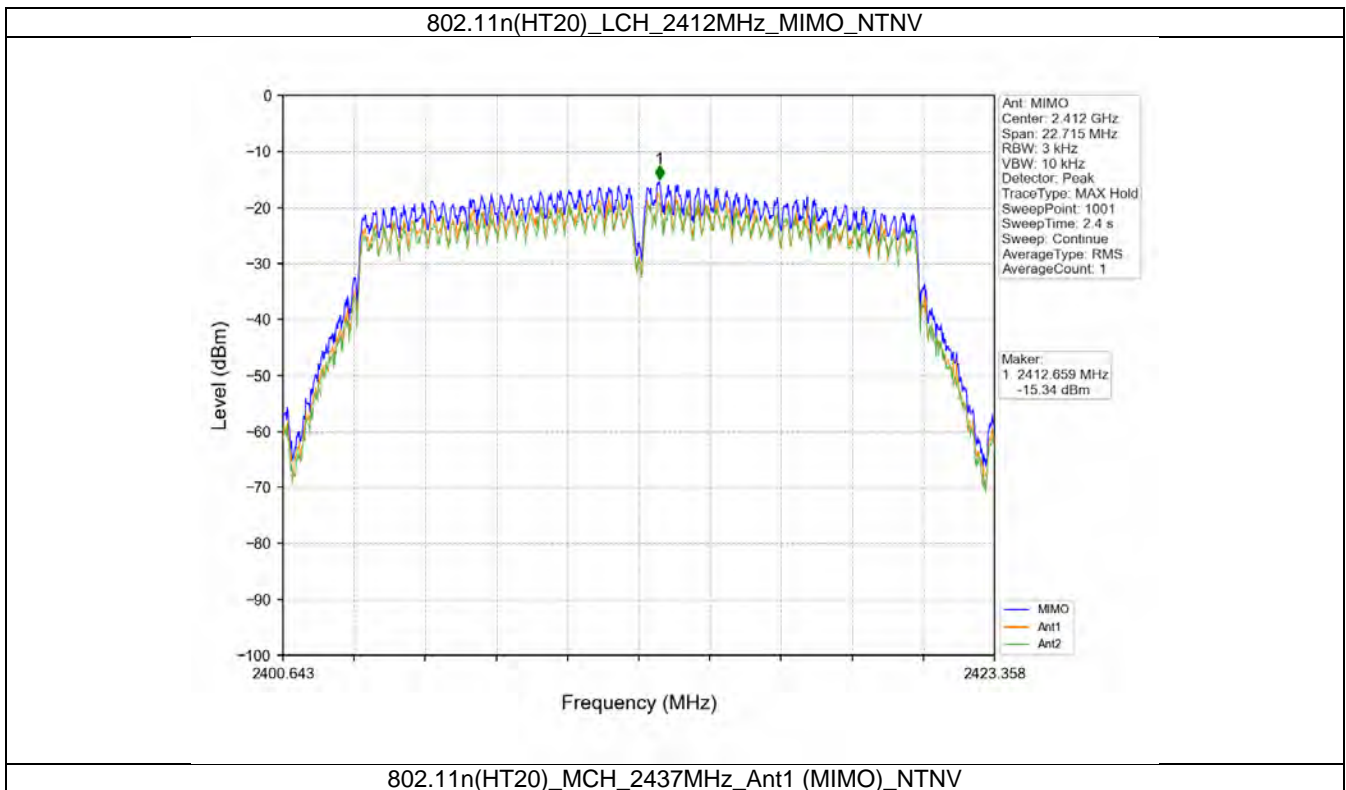
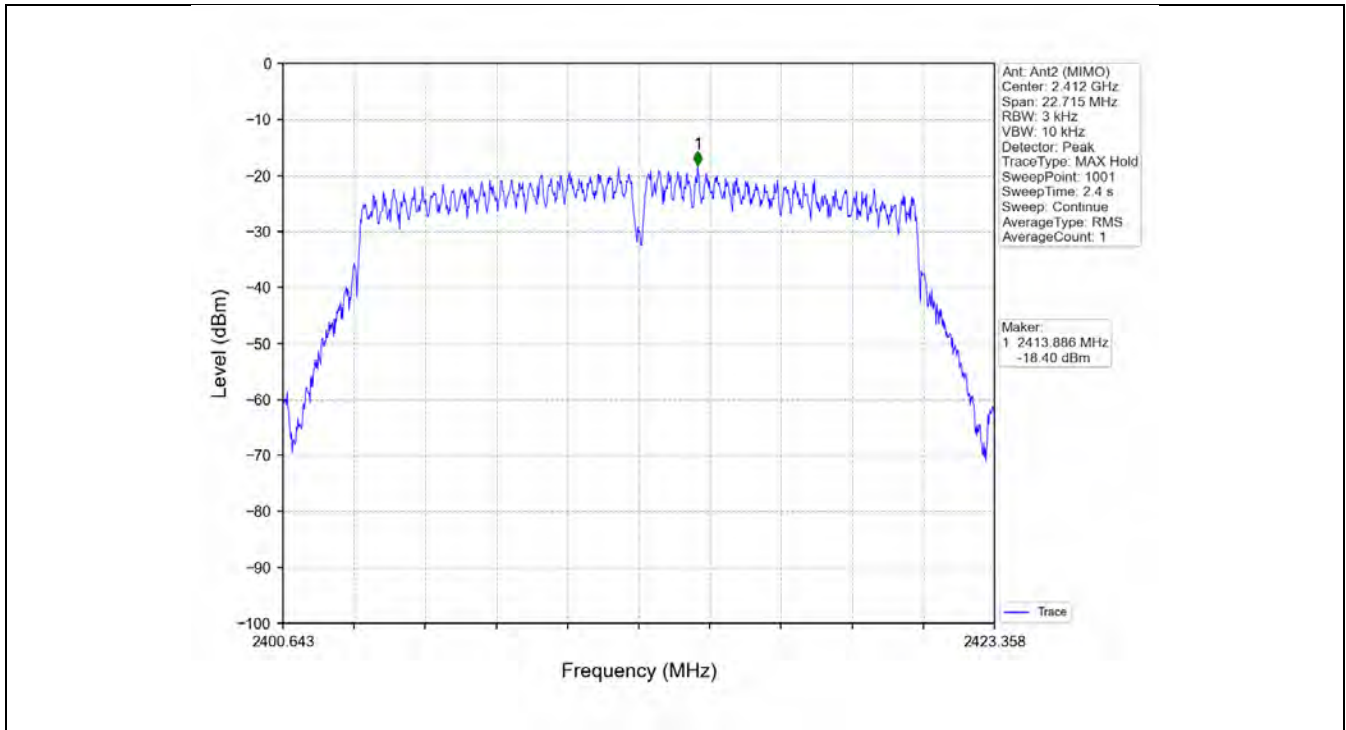


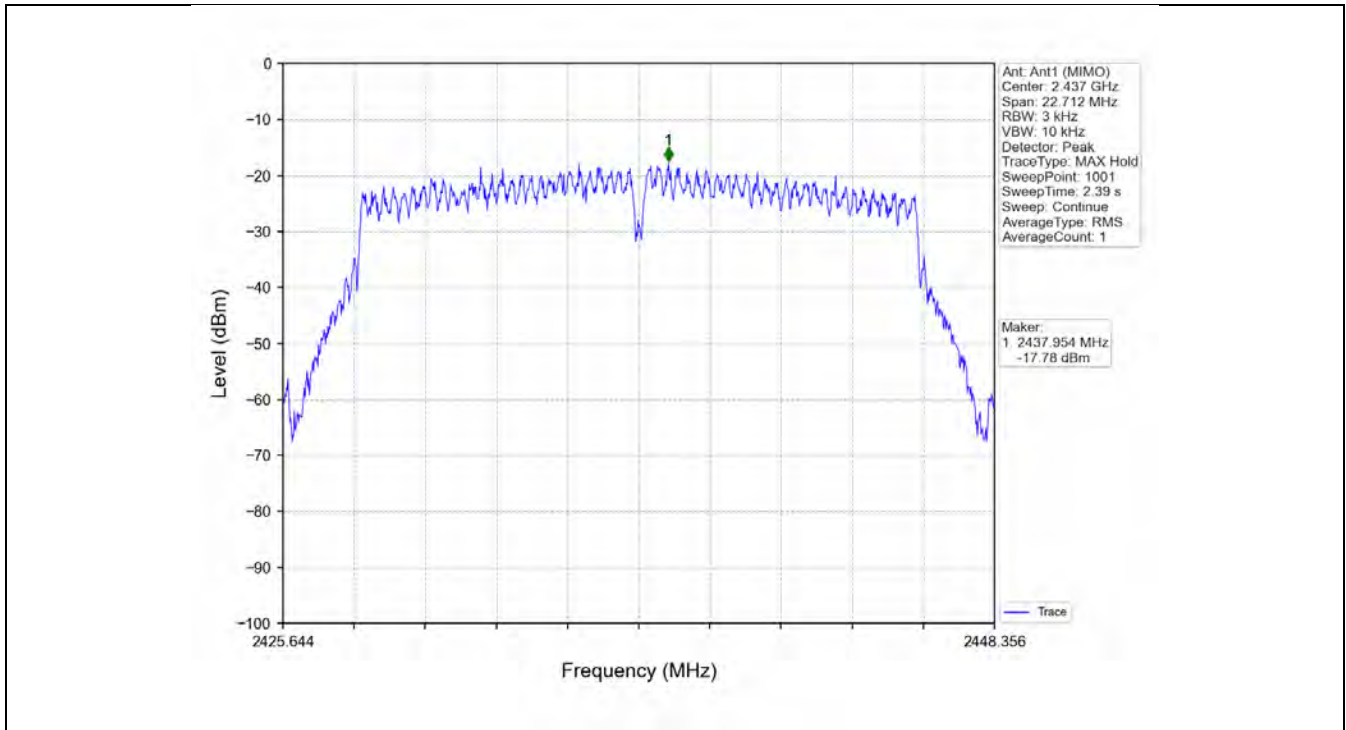


802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV

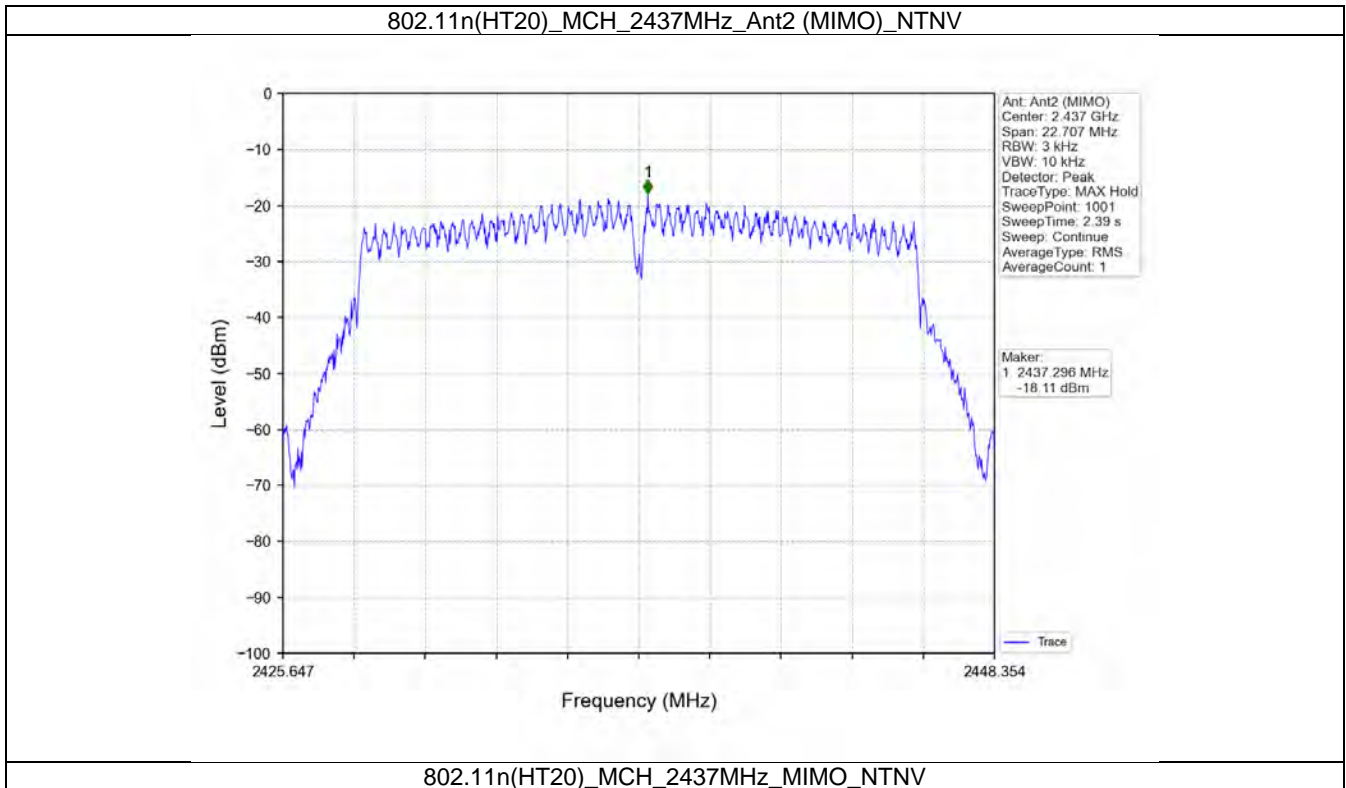


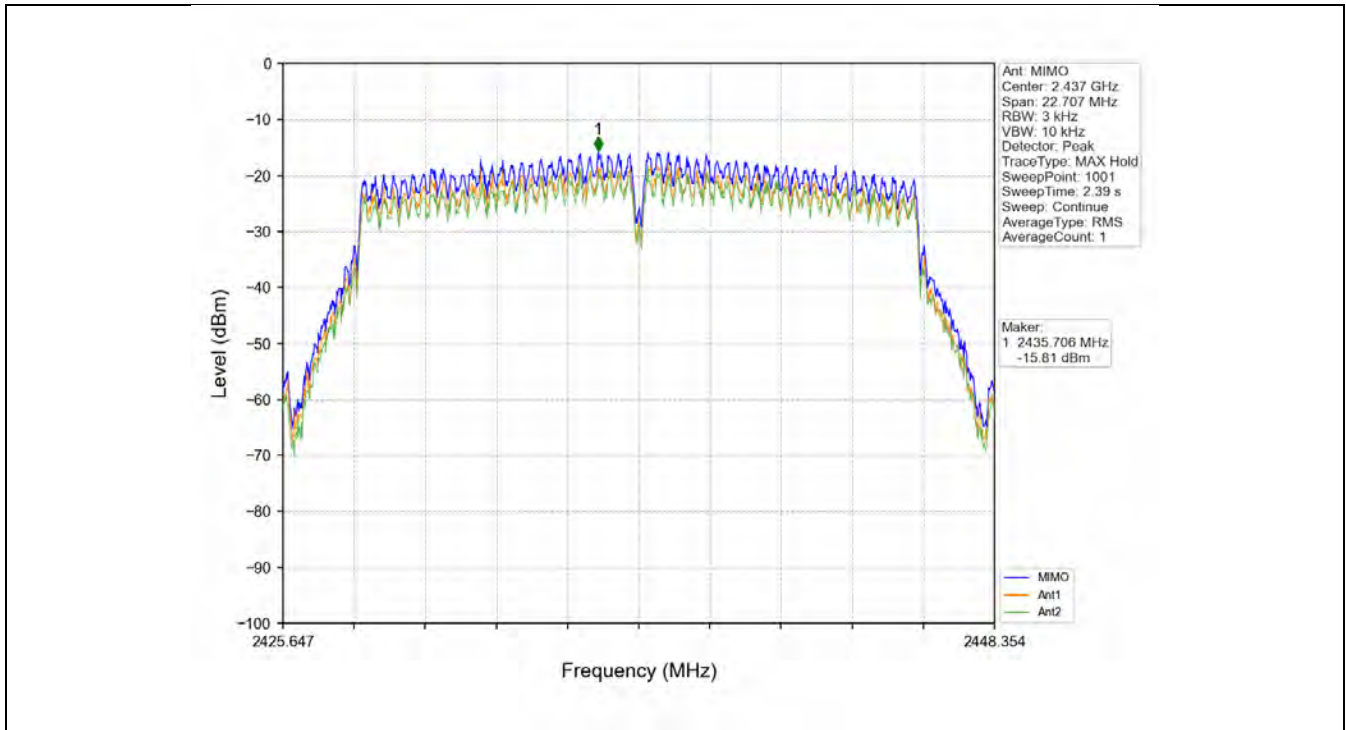
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



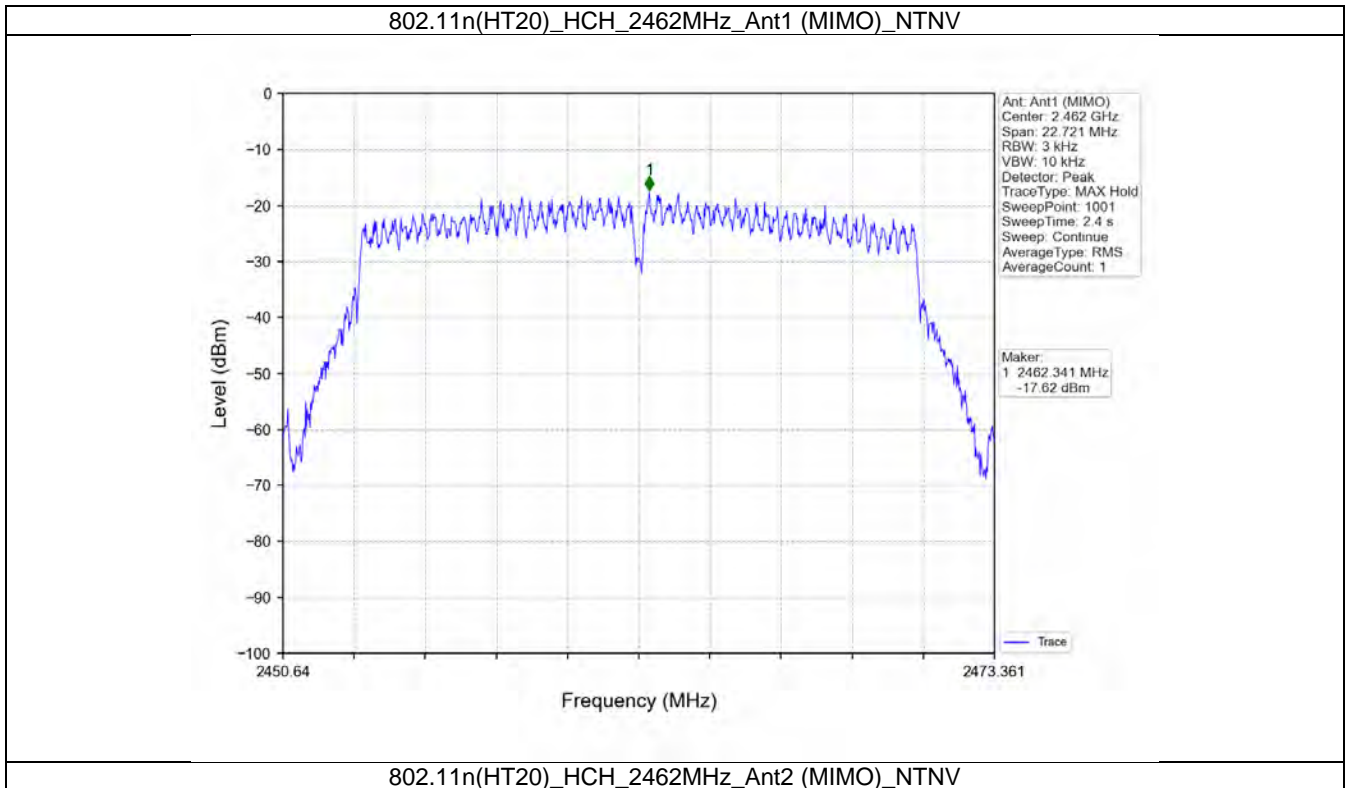


802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV

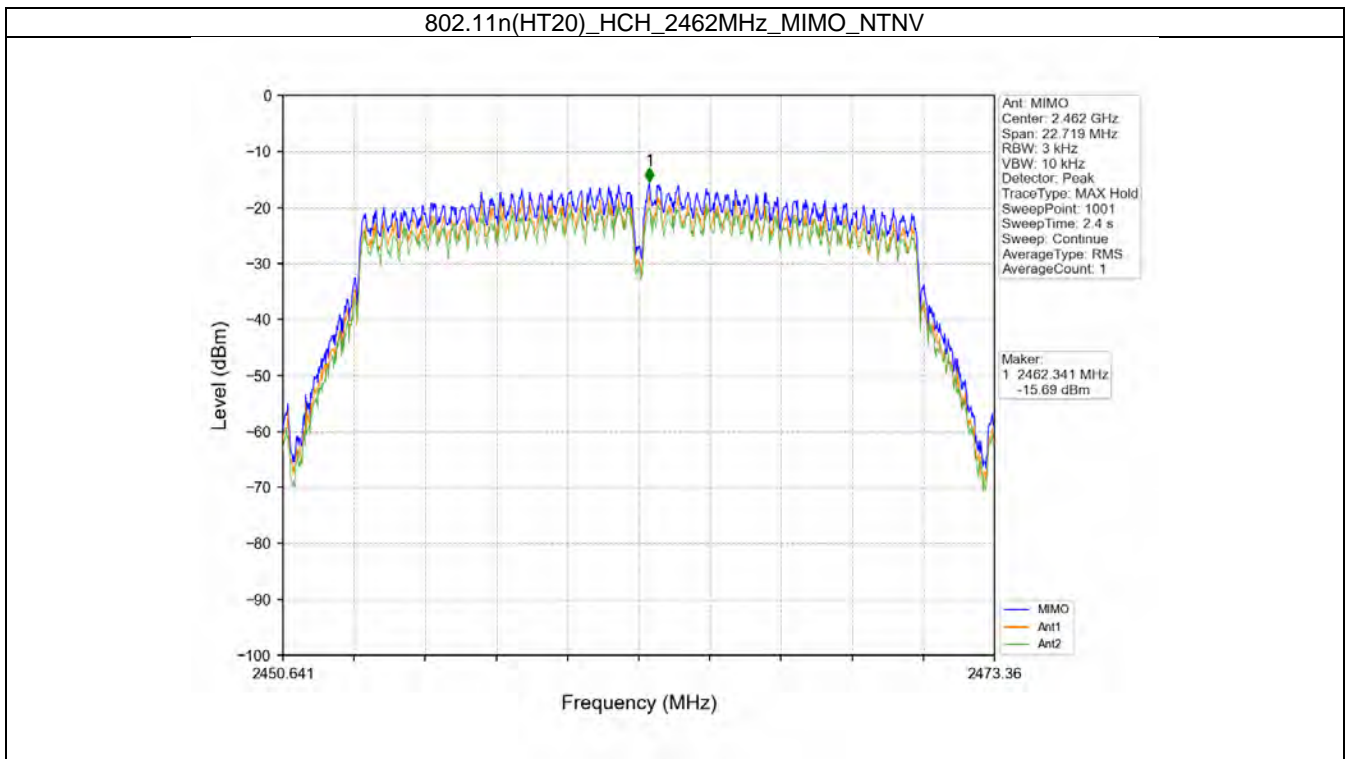
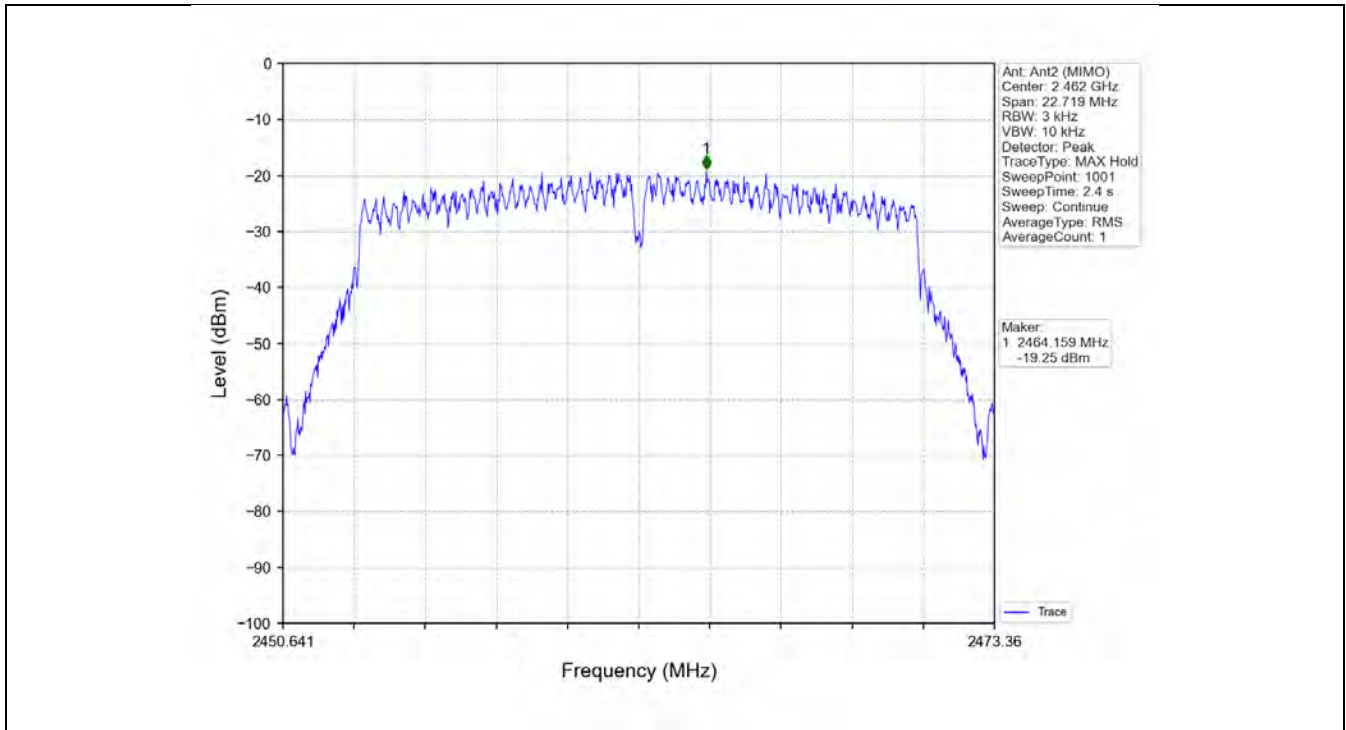




802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



5. Unwanted Emissions In Non-restricted Frequency Bands

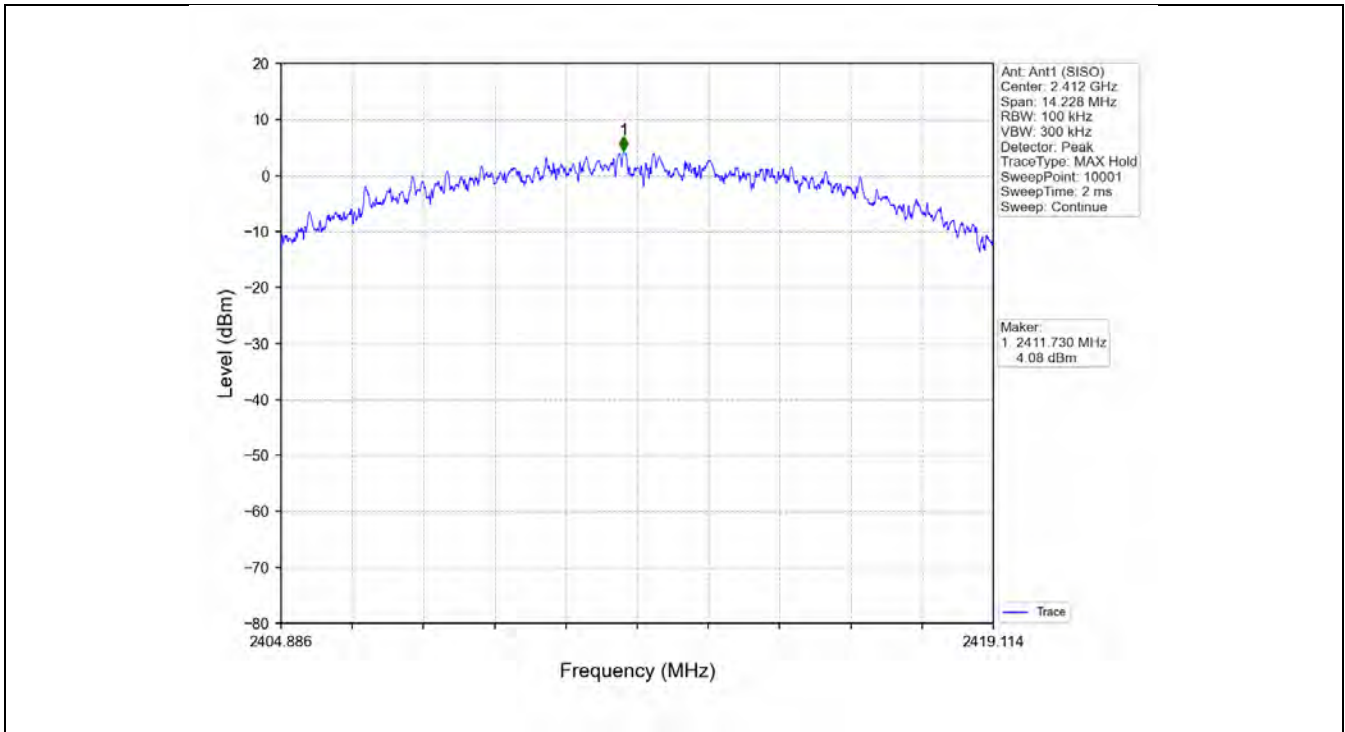
5.1 Ref

5.1.1 Test Result

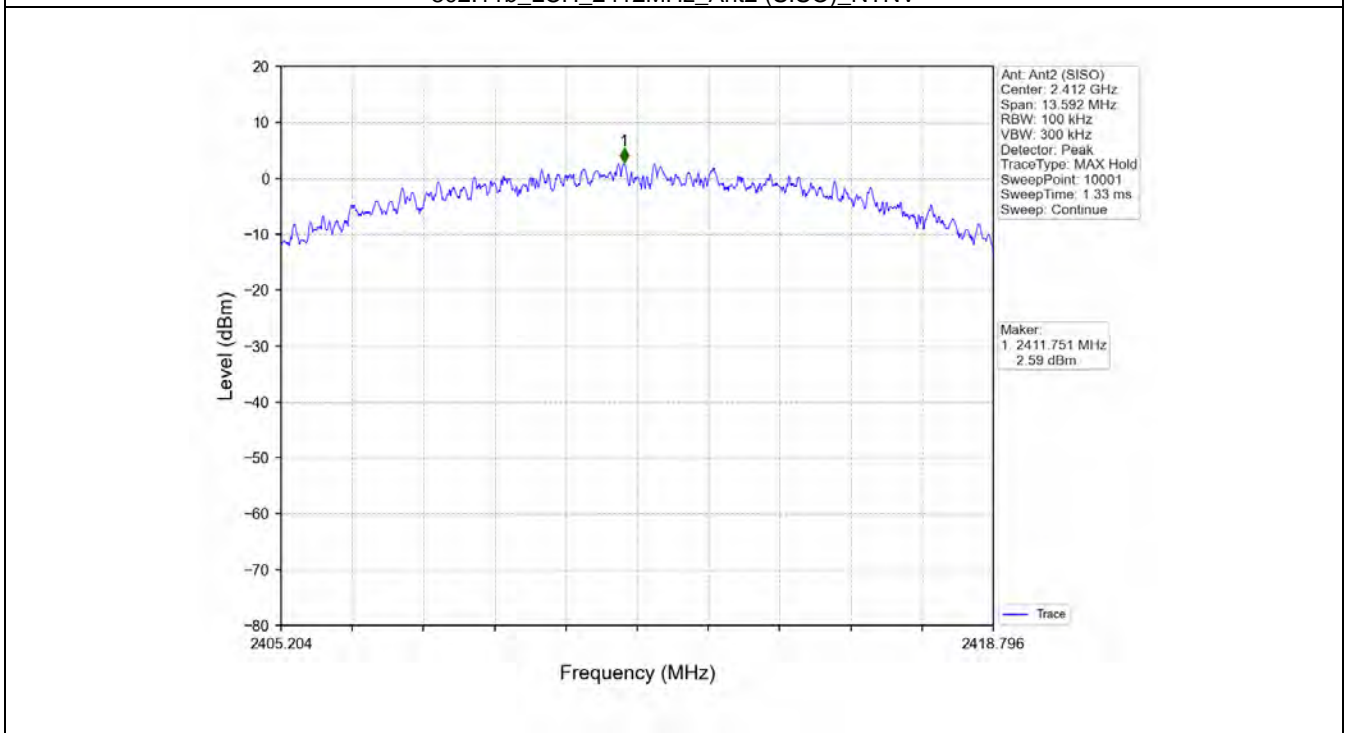
| Mode | TX Type | Frequency (MHz) | Ant | Level of Reference (dBm) |
|---|---------|-----------------|-----|--------------------------|
| 802.11b | SISO | 2412 | 1 | 4.08 |
| | | | 2 | 2.59 |
| | | 2437 | 1 | 3.48 |
| | | | 2 | 3.69 |
| | | 2462 | 1 | 3.49 |
| | | | 2 | 3.36 |
| 802.11g | SISO | 2412 | 1 | 0.09 |
| | | | 2 | -0.89 |
| | | 2437 | 1 | 0.03 |
| | | | 2 | -0.42 |
| | | 2462 | 1 | -0.41 |
| | | | 2 | -0.41 |
| 802.11n (HT20) | MIMO | 2412 | 1 | -1.06 |
| | | | 2 | -1.99 |
| | | 2437 | 1 | -1.16 |
| | | | 2 | -1.39 |
| | | 2462 | 1 | -1.11 |
| | | | 2 | -1.74 |
| Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level. | | | | |

5.1.2 Test Graph

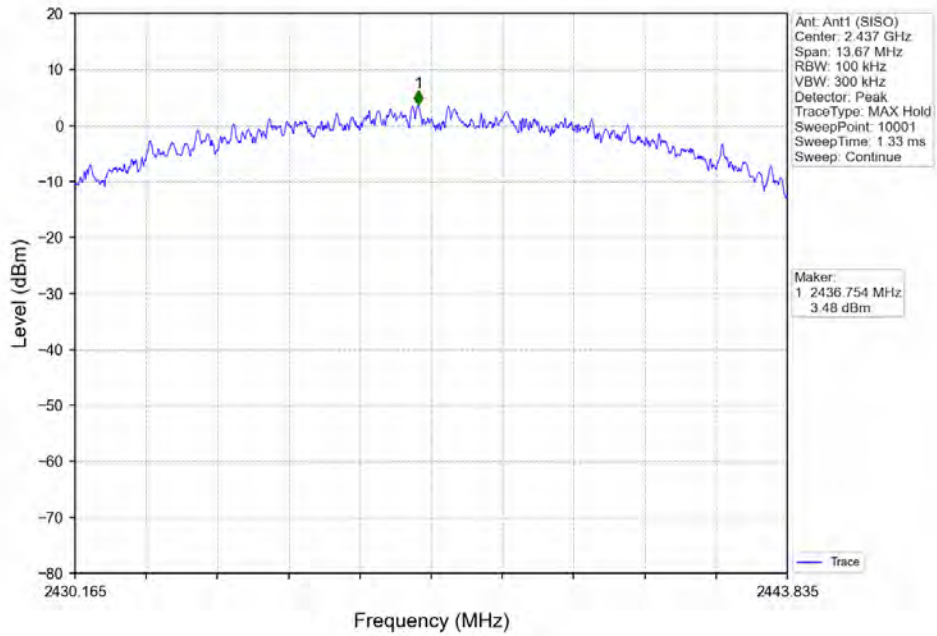
802.11b_LCH_2412MHz_Ant1 (SISO)_NTNV



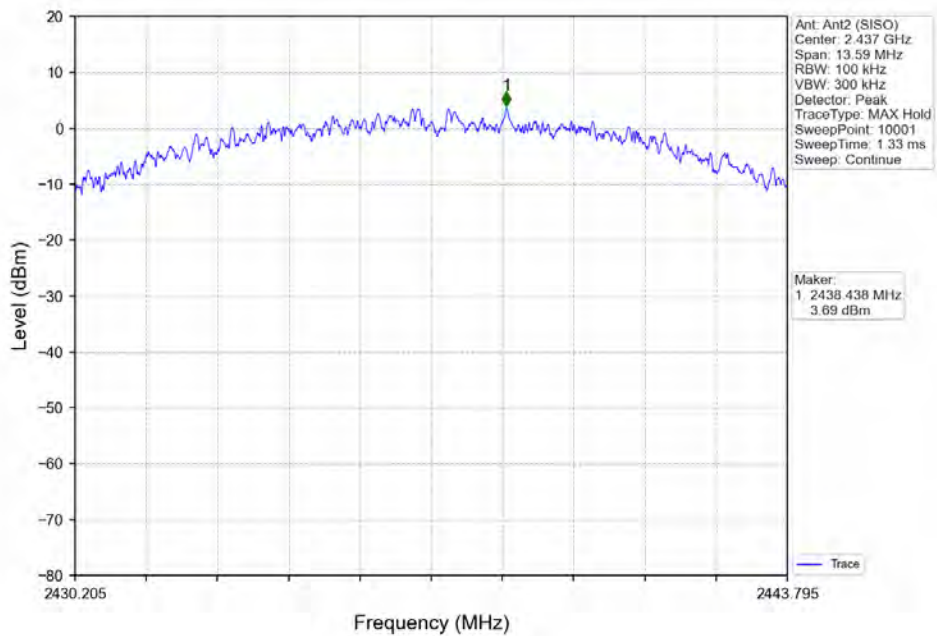
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV

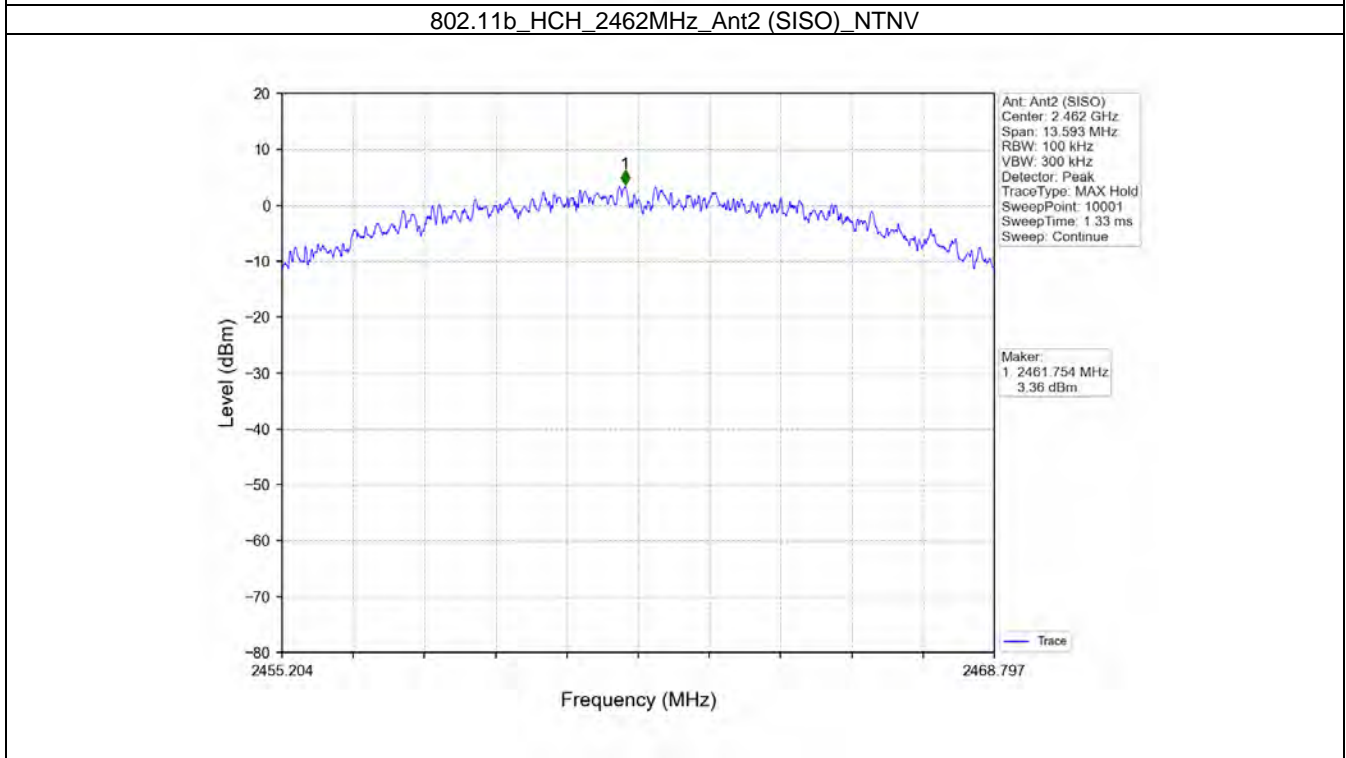
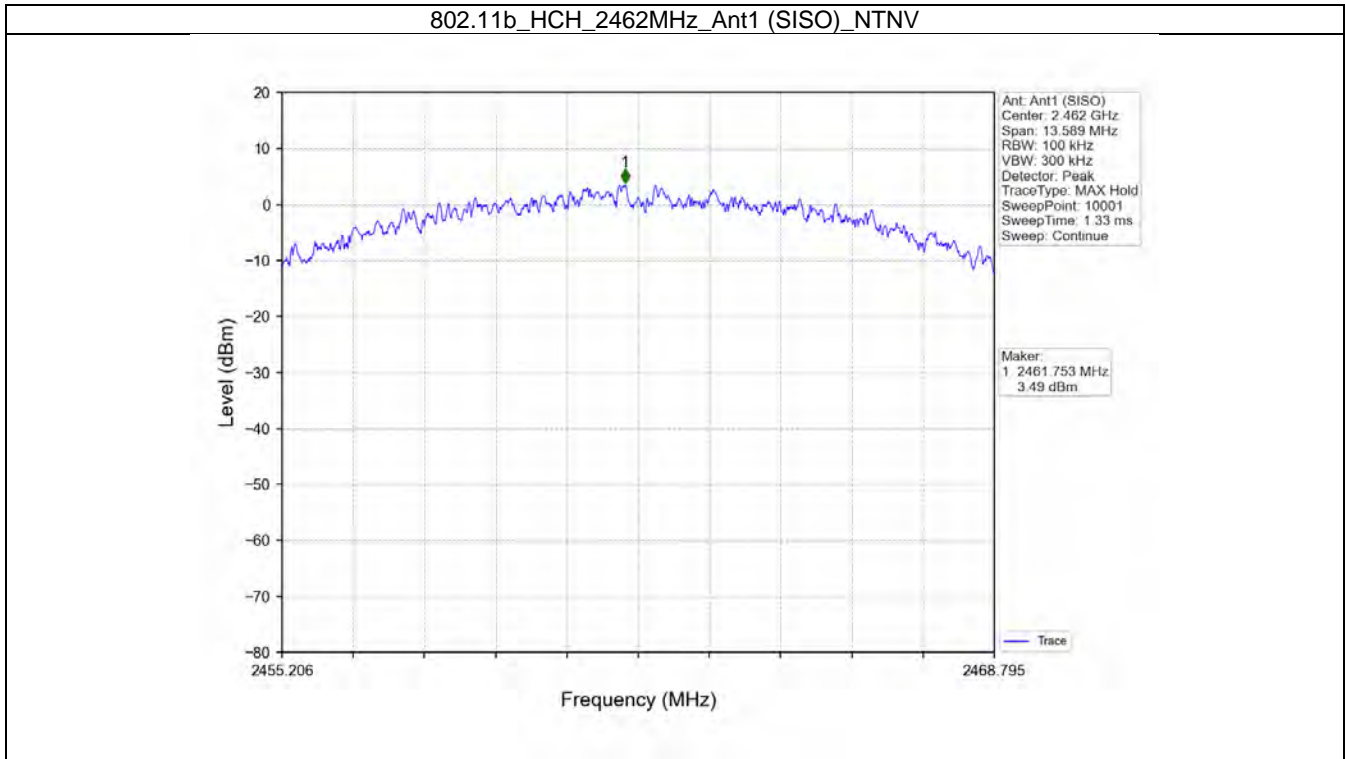


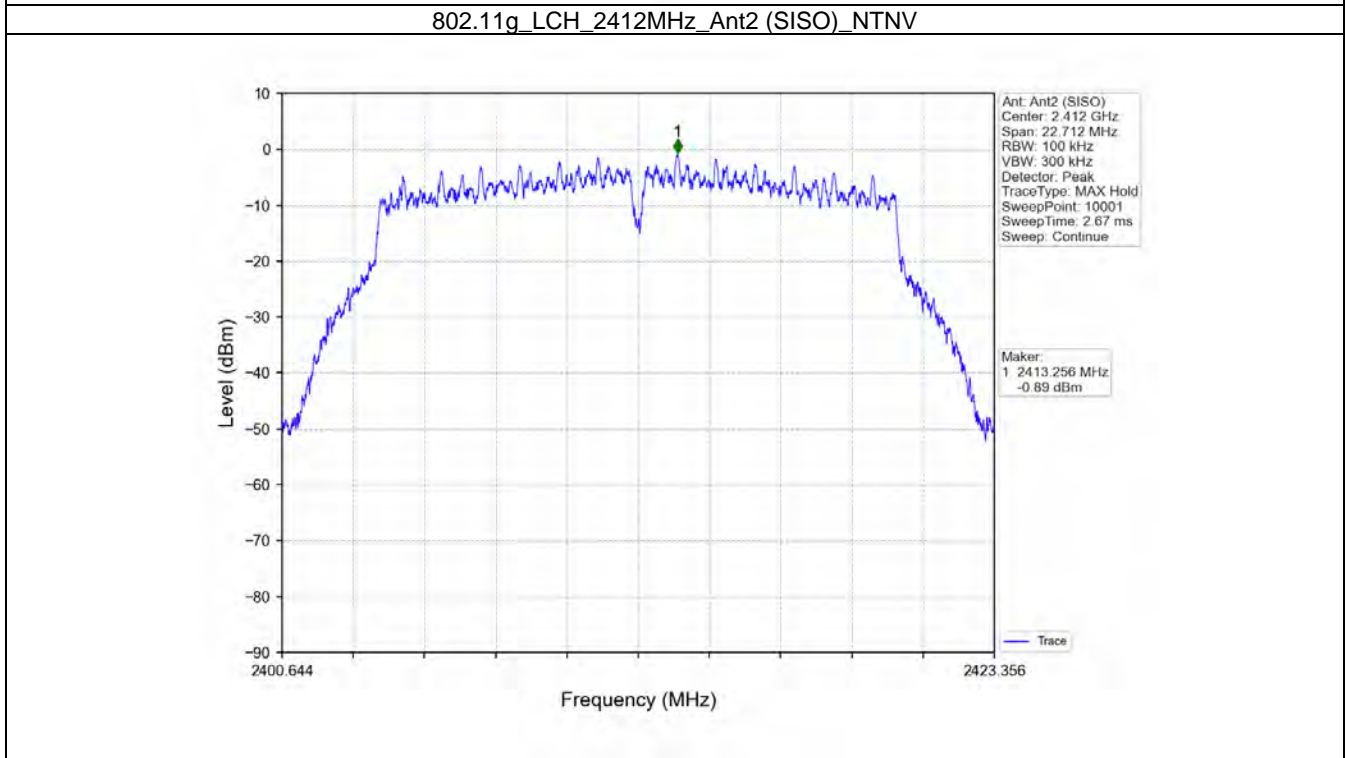
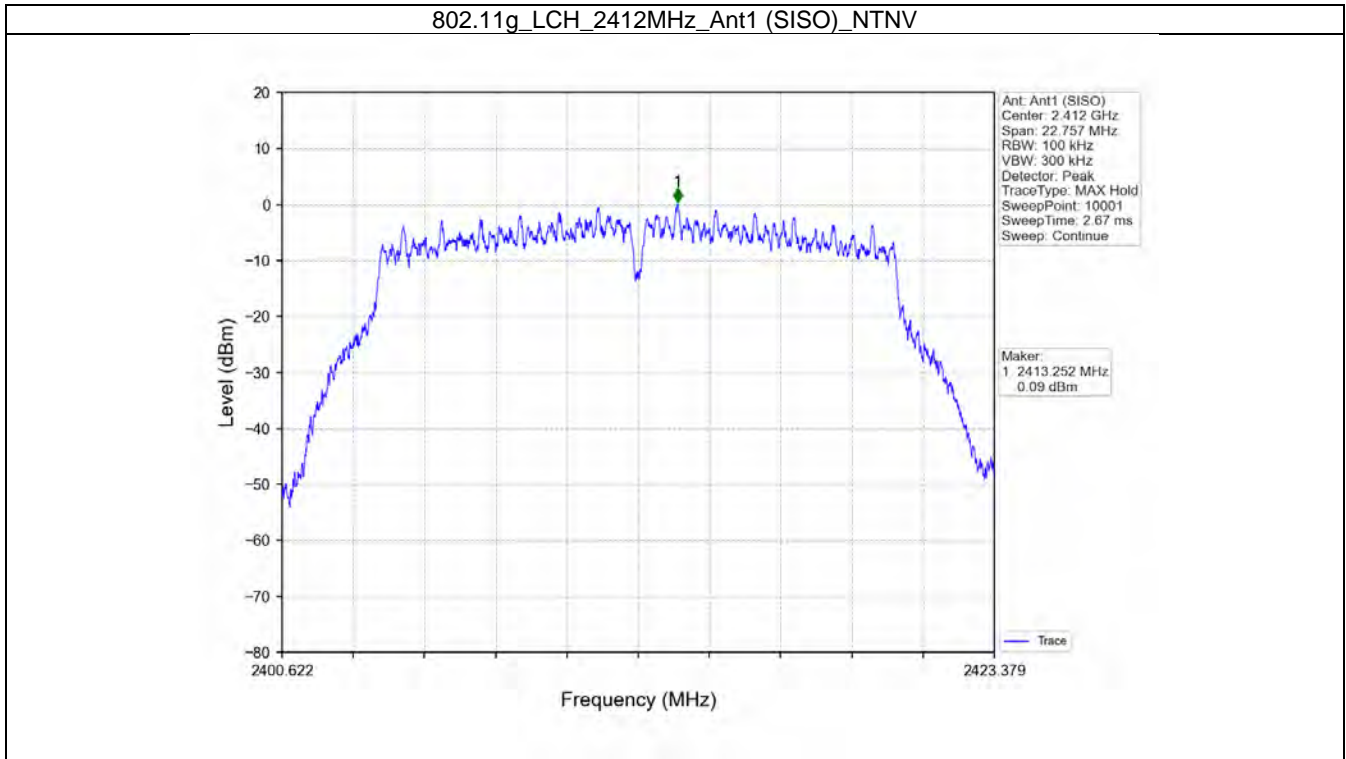
802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV



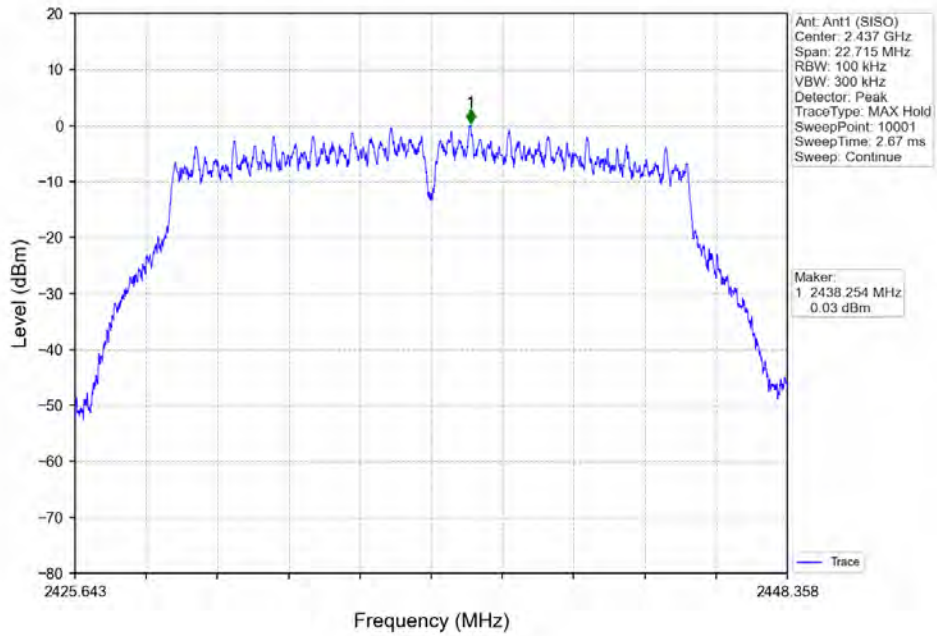
802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV



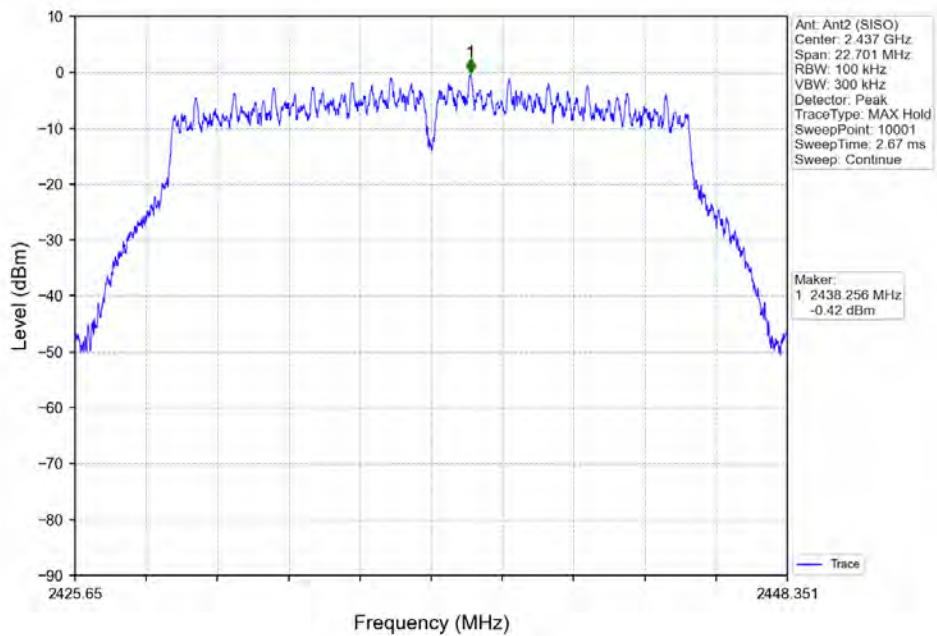




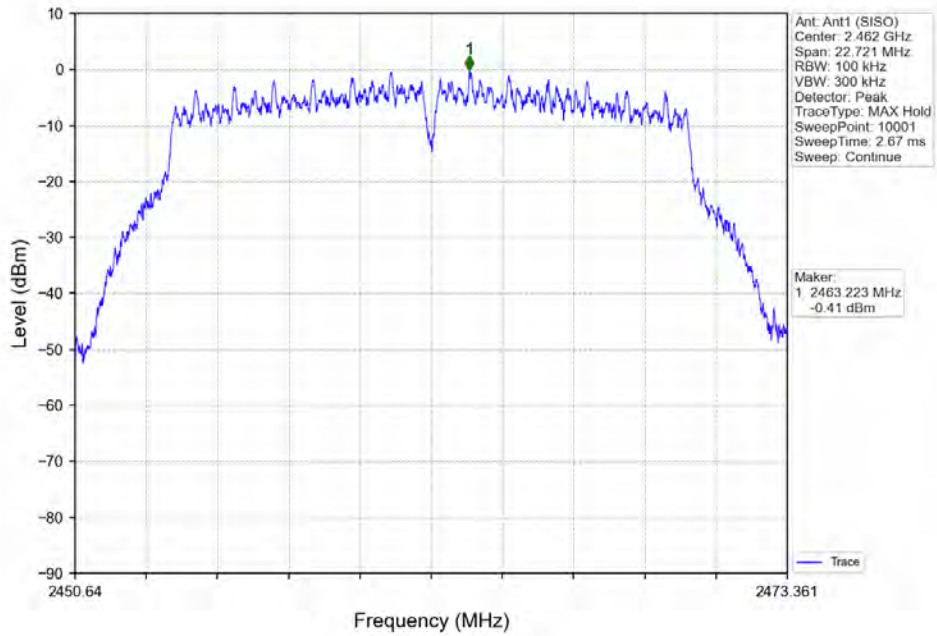
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



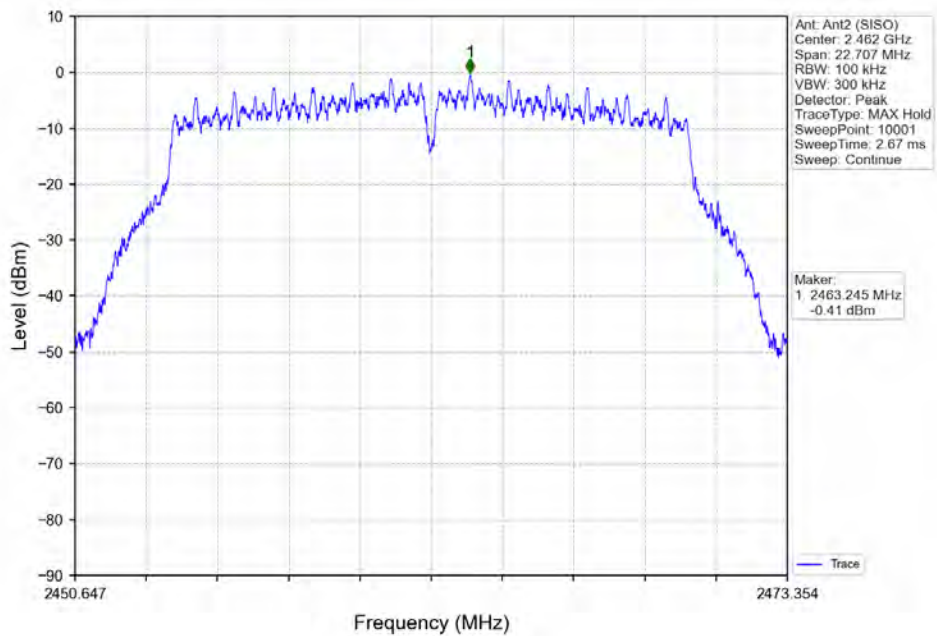
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



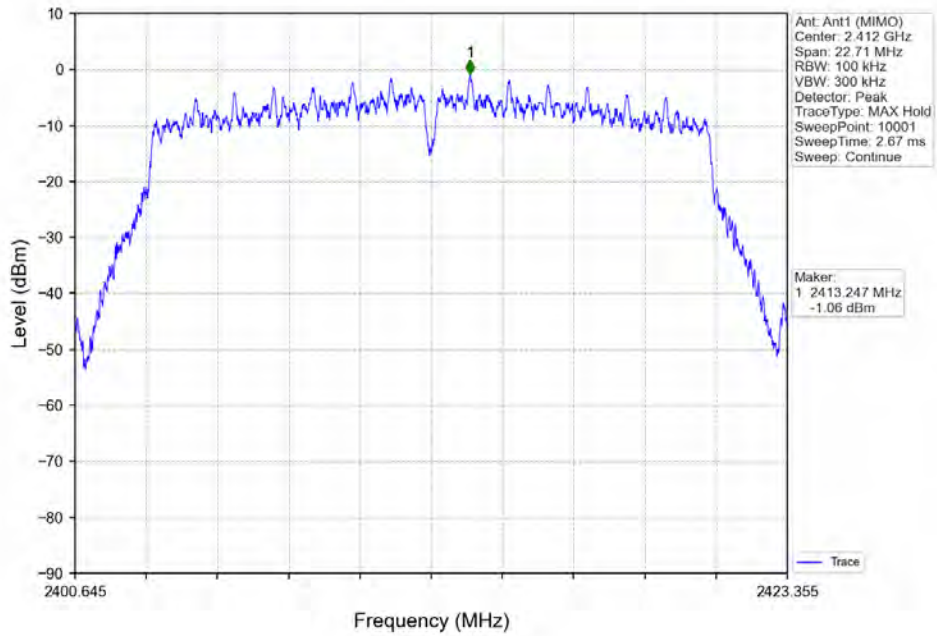
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



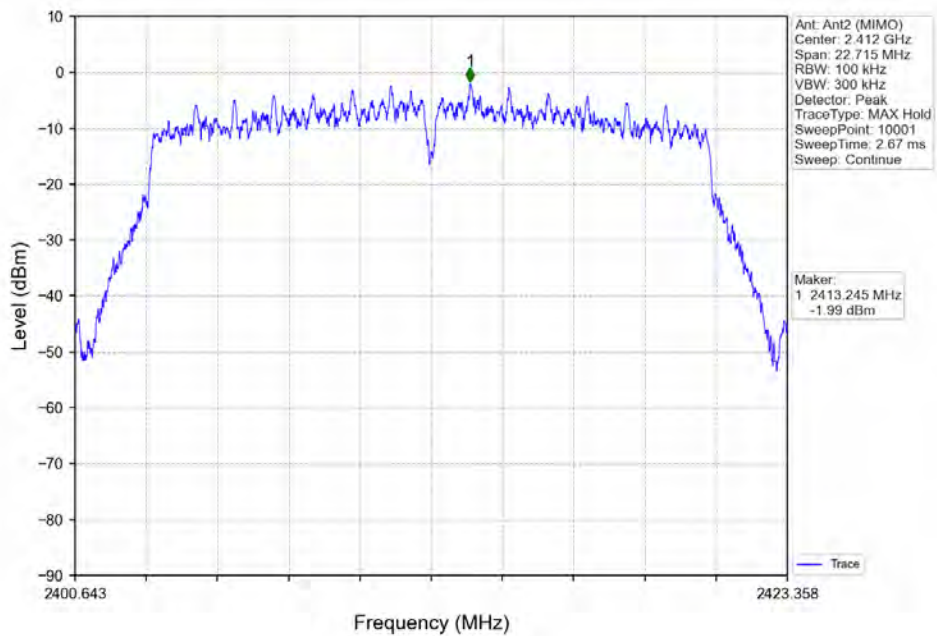
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



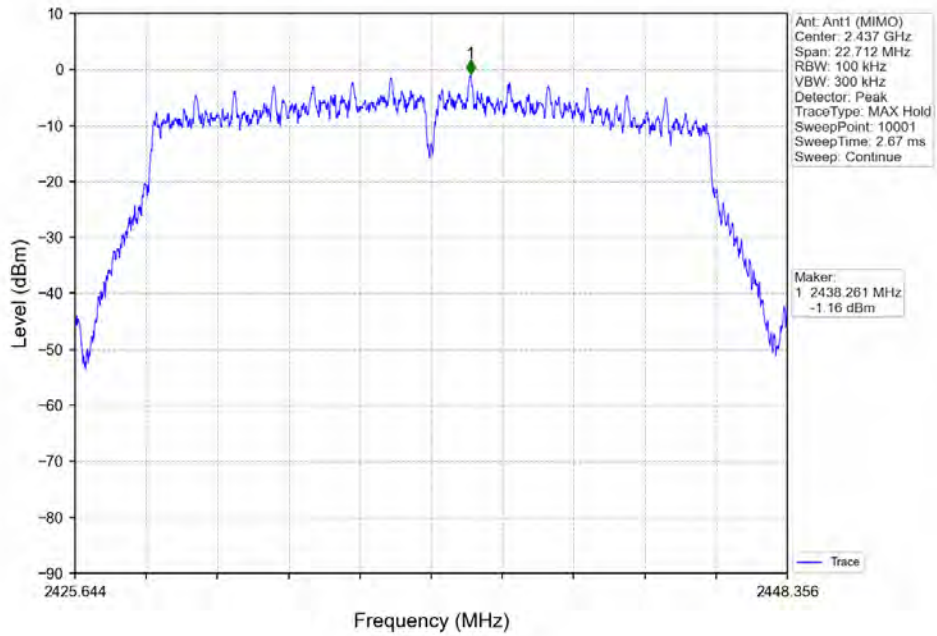
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



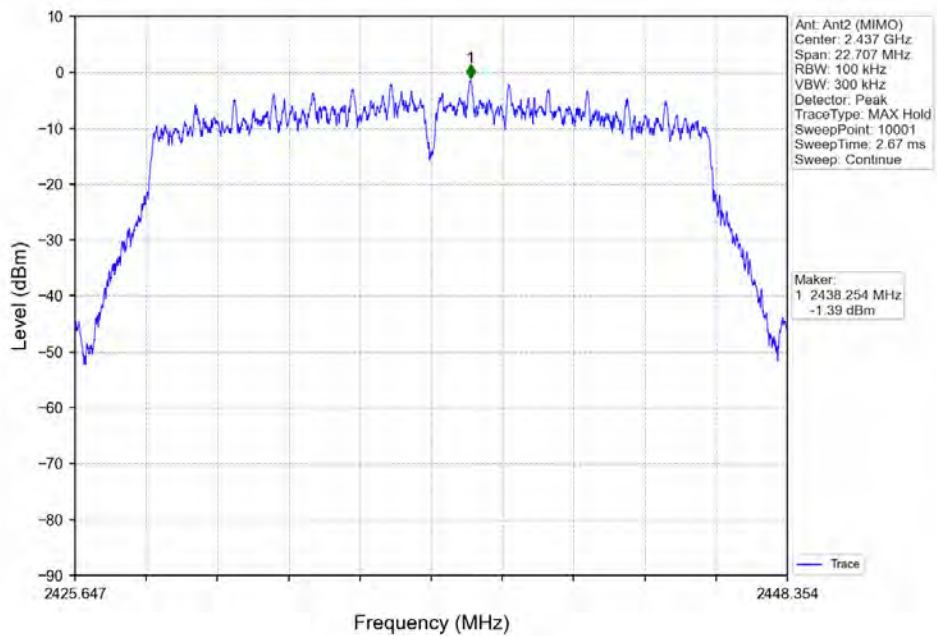
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



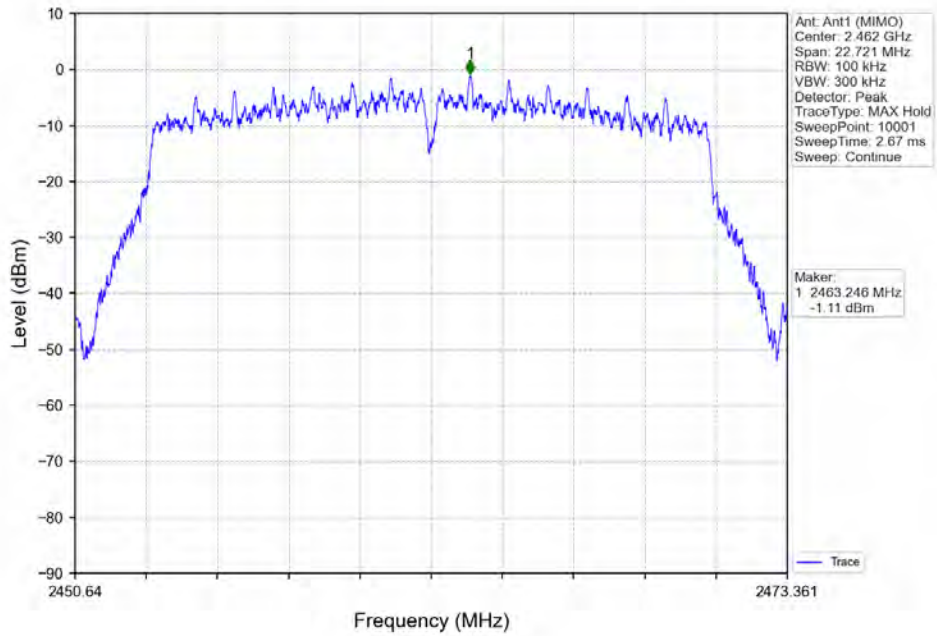
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



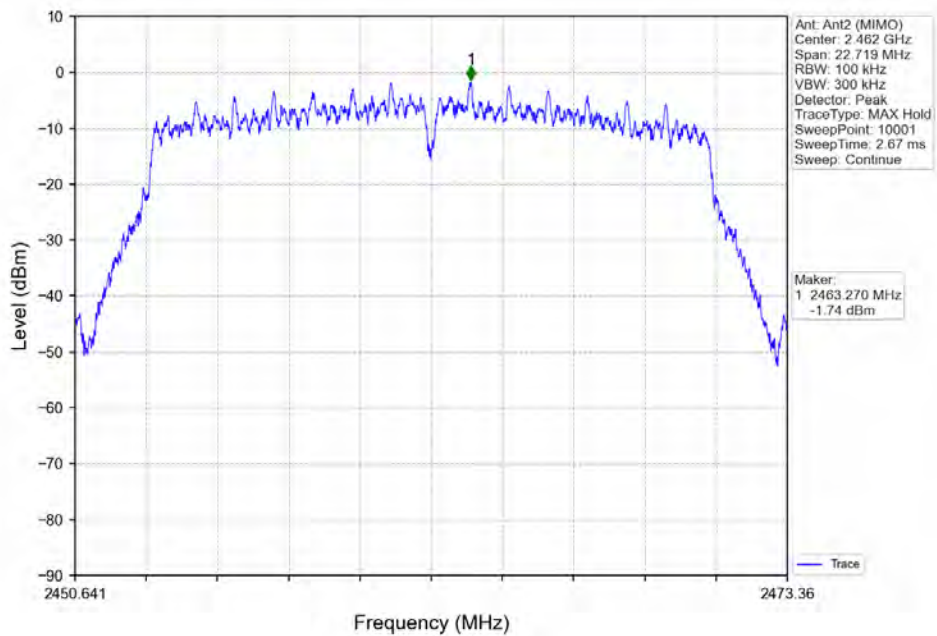
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV





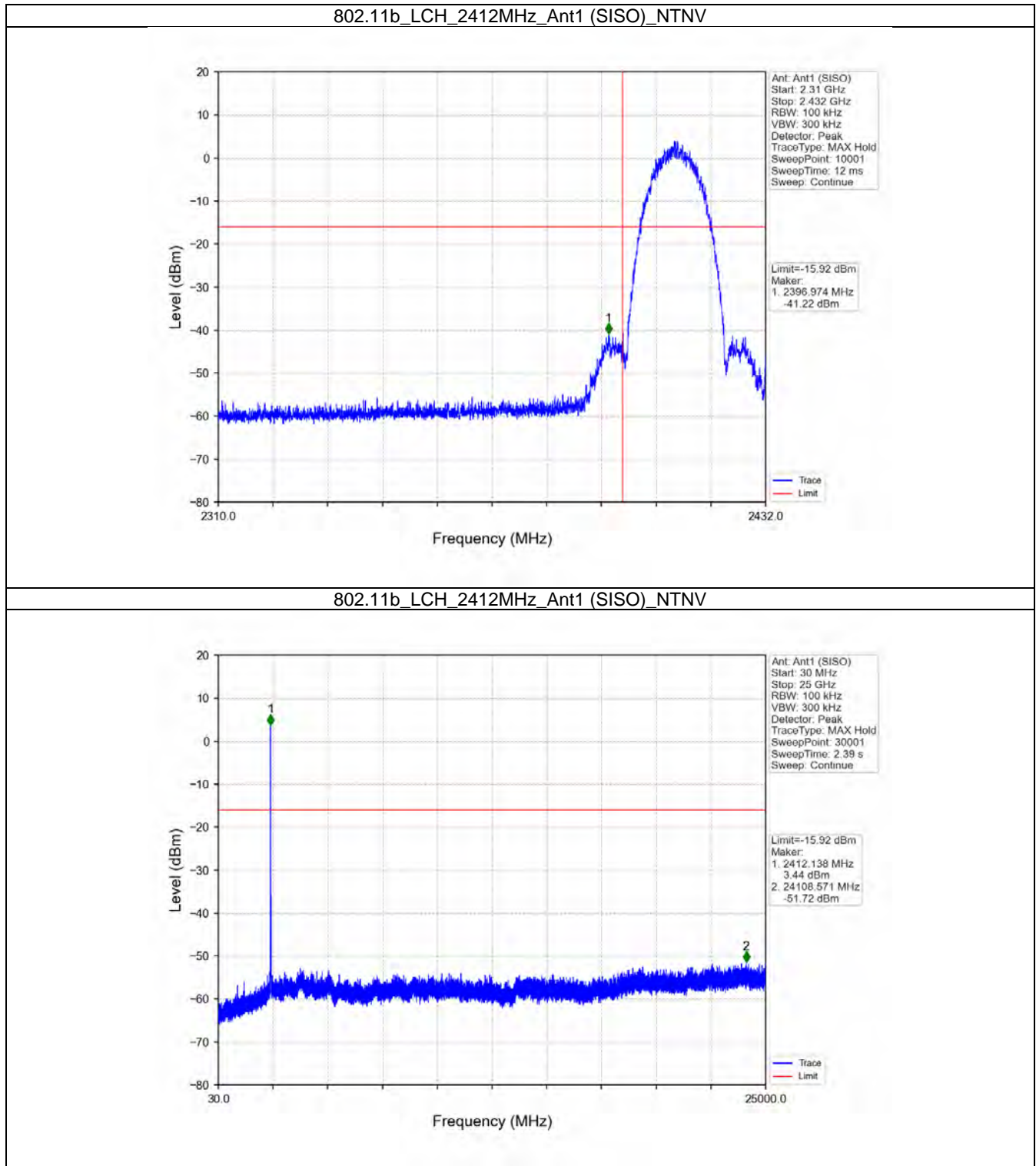
5.2 CSE

5.2.1 Test Result

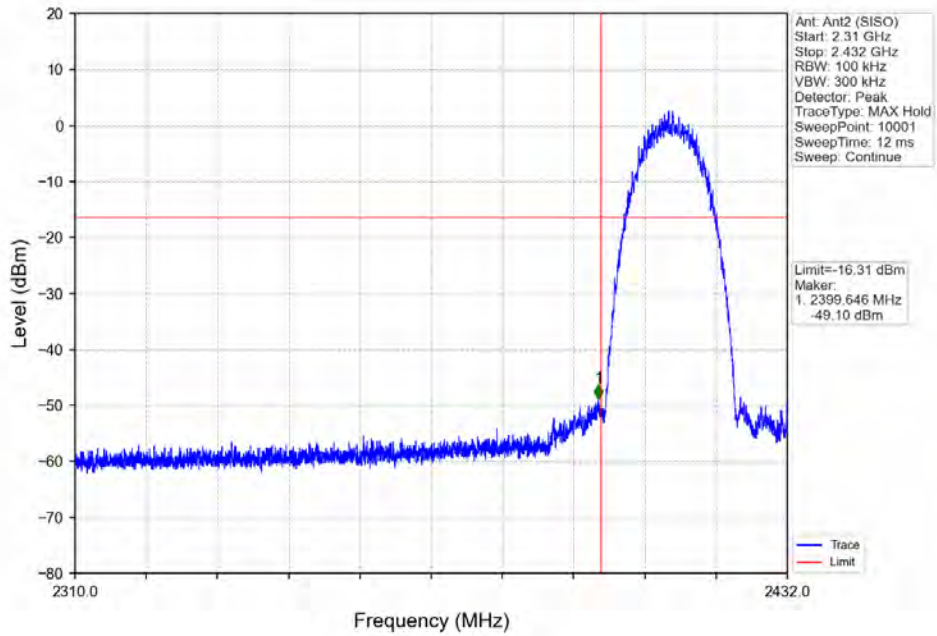
| Mode | TX Type | Frequency (MHz) | Ant | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-------------------|---------|-----------------|-----|--------------------------|-------------|---------|
| 802.11b | SISO | 2412 | 1 | 4.08 | -15.92 | Pass |
| | | | 2 | 3.69 | -16.31 | Pass |
| | | 2437 | 1 | 4.08 | -15.92 | Pass |
| | | | 2 | 3.69 | -16.31 | Pass |
| | | 2462 | 1 | 4.08 | -15.92 | Pass |
| | | | 2 | 3.69 | -16.31 | Pass |
| 802.11g | SISO | 2412 | 1 | 0.09 | -19.91 | Pass |
| | | | 2 | -0.41 | -20.41 | Pass |
| | | 2437 | 1 | 0.09 | -19.91 | Pass |
| | | | 2 | -0.41 | -20.41 | Pass |
| | | 2462 | 1 | 0.09 | -19.91 | Pass |
| | | | 2 | -0.41 | -20.41 | Pass |
| 802.11n (HT20) | MIMO | 2412 | 1 | -1.06 | -21.06 | Pass |
| | | | 2 | -1.39 | -21.39 | Pass |
| | | 2437 | 1 | -1.06 | -21.06 | Pass |
| | | | 2 | -1.39 | -21.39 | Pass |
| | | 2462 | 1 | -1.06 | -21.06 | Pass |
| | | | 2 | -1.39 | -21.39 | Pass |

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

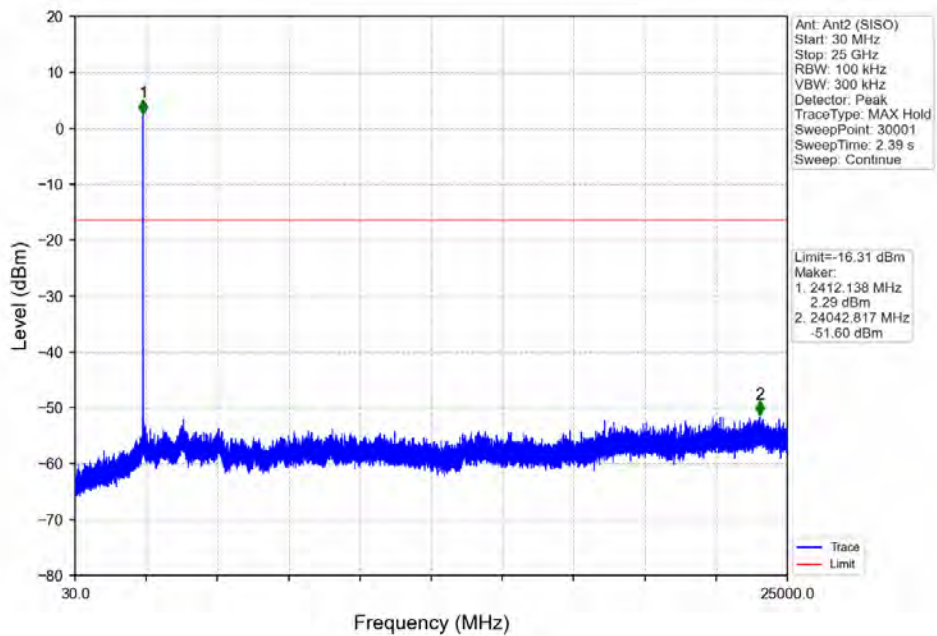
5.2.2 Test Graph



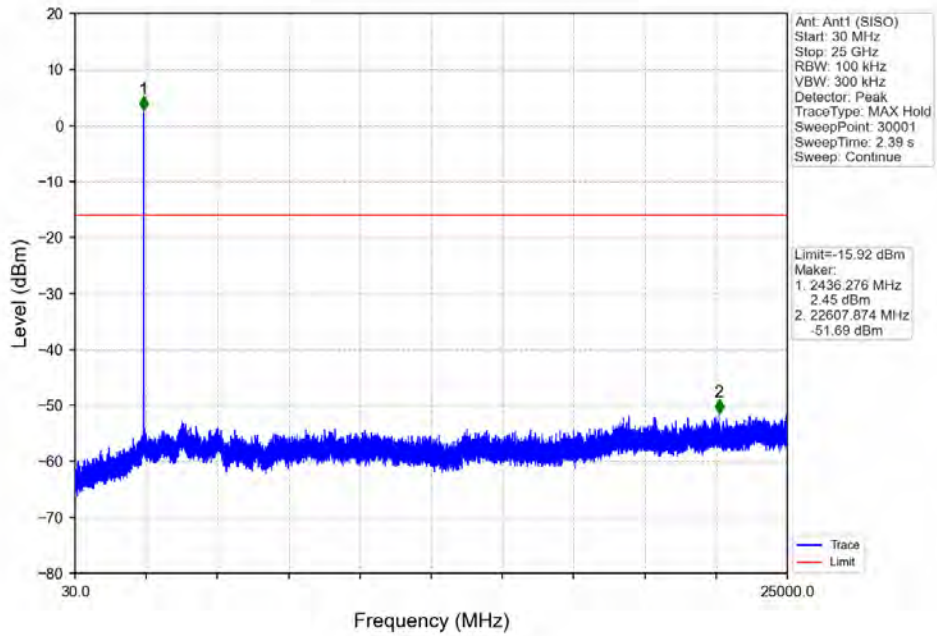
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV



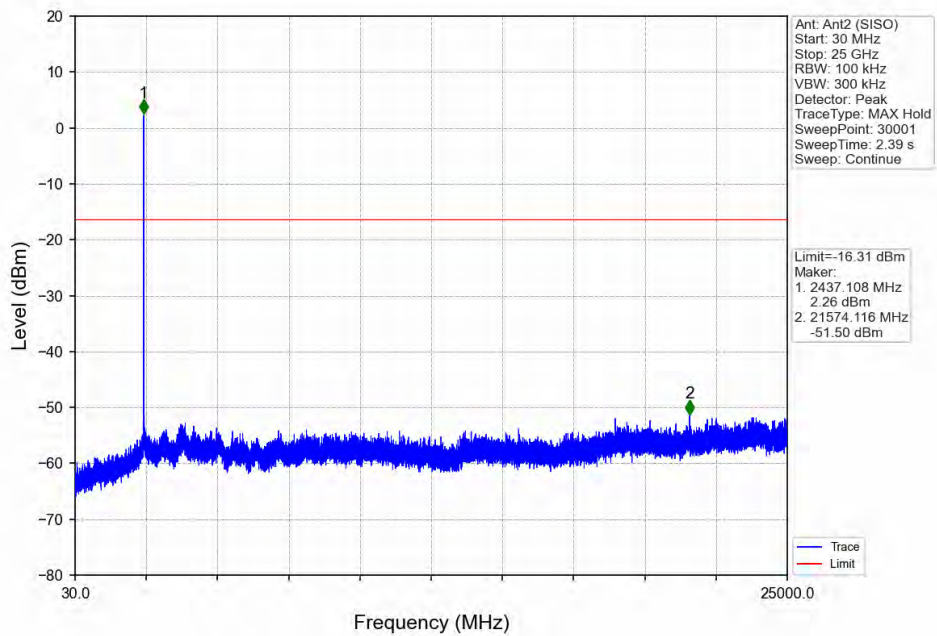
802.11b_LCH_2412MHz_Ant2 (SISO)_NTNV

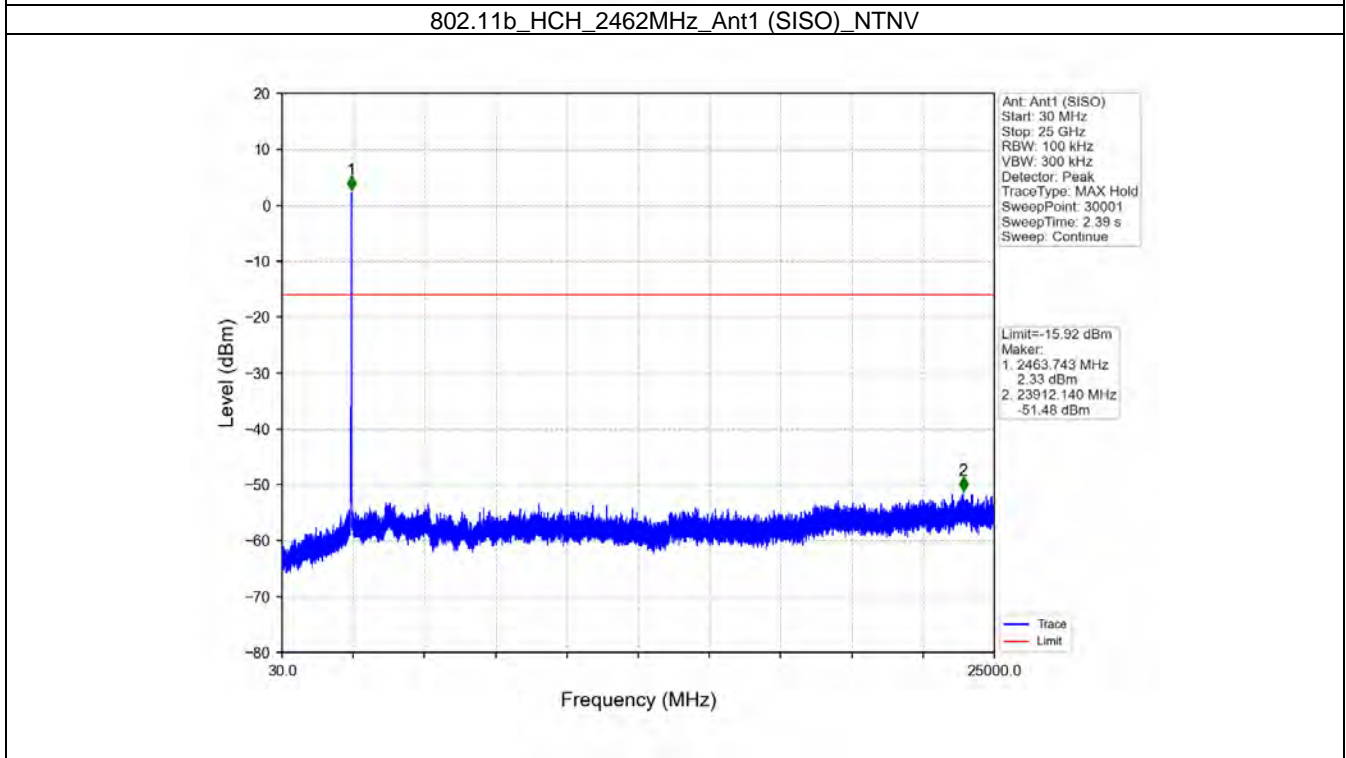


802.11b_MCH_2437MHz_Ant1 (SISO)_NTNV

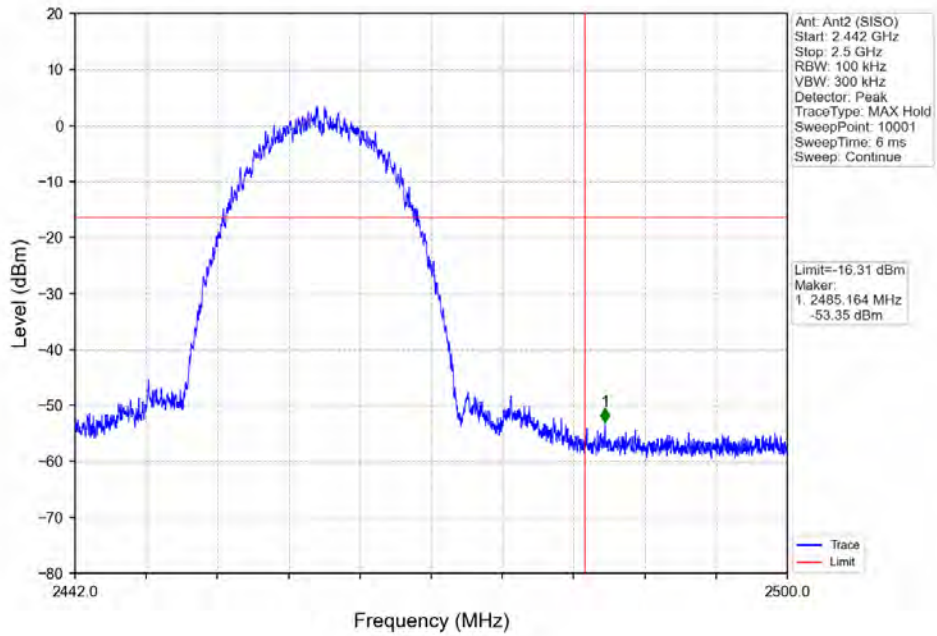


802.11b_MCH_2437MHz_Ant2 (SISO)_NTNV

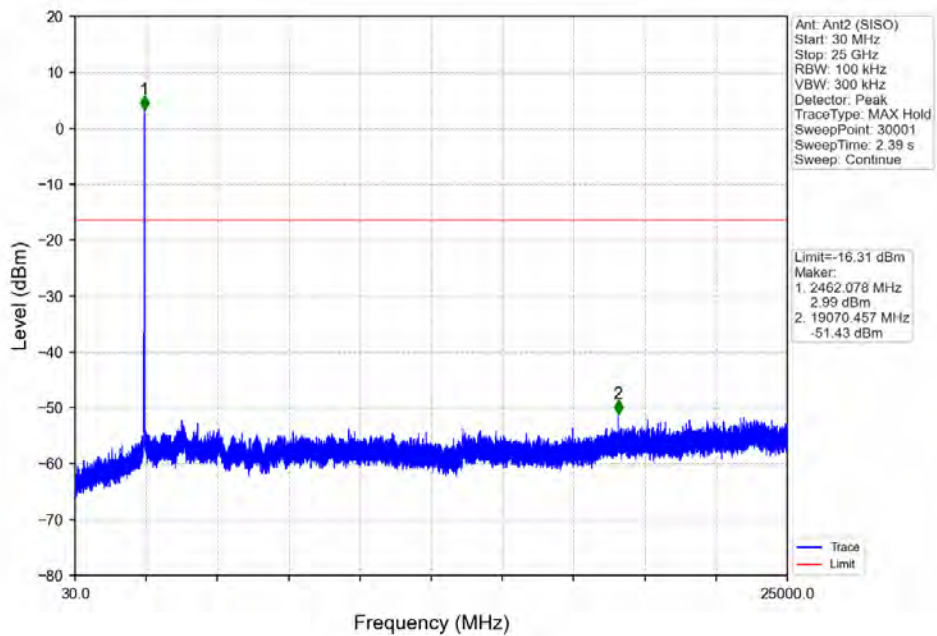




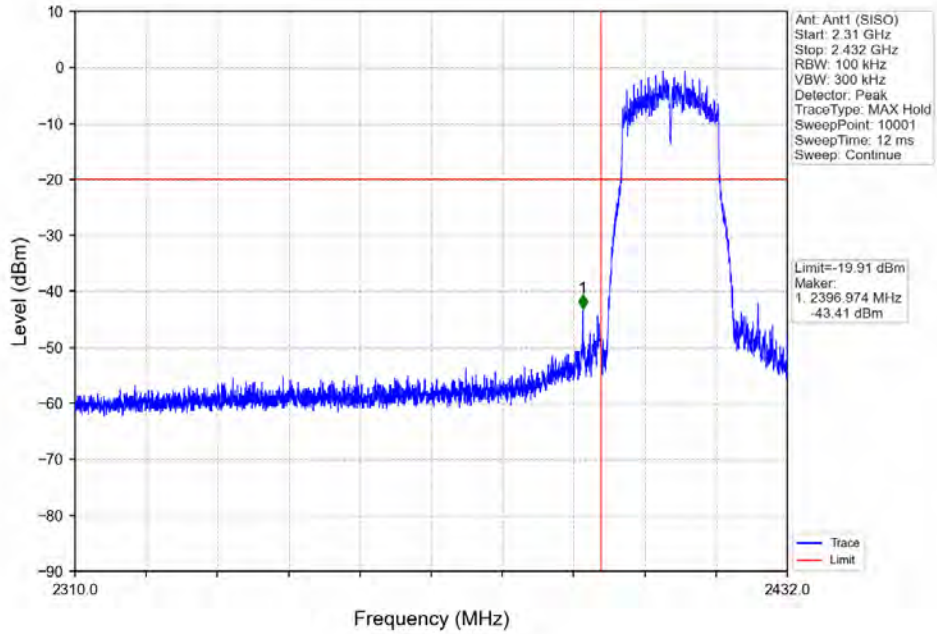
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV



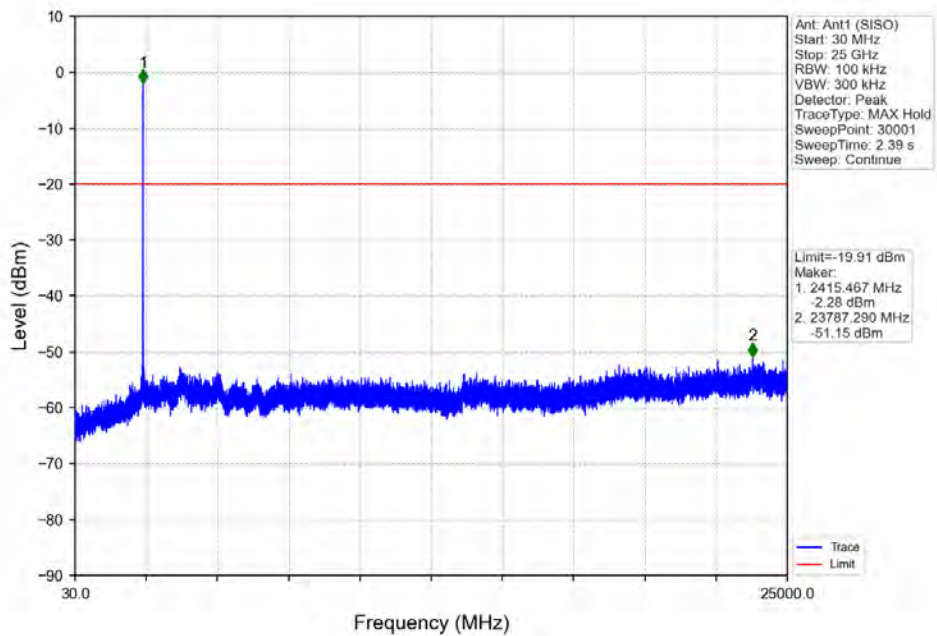
802.11b_HCH_2462MHz_Ant2 (SISO)_NTNV

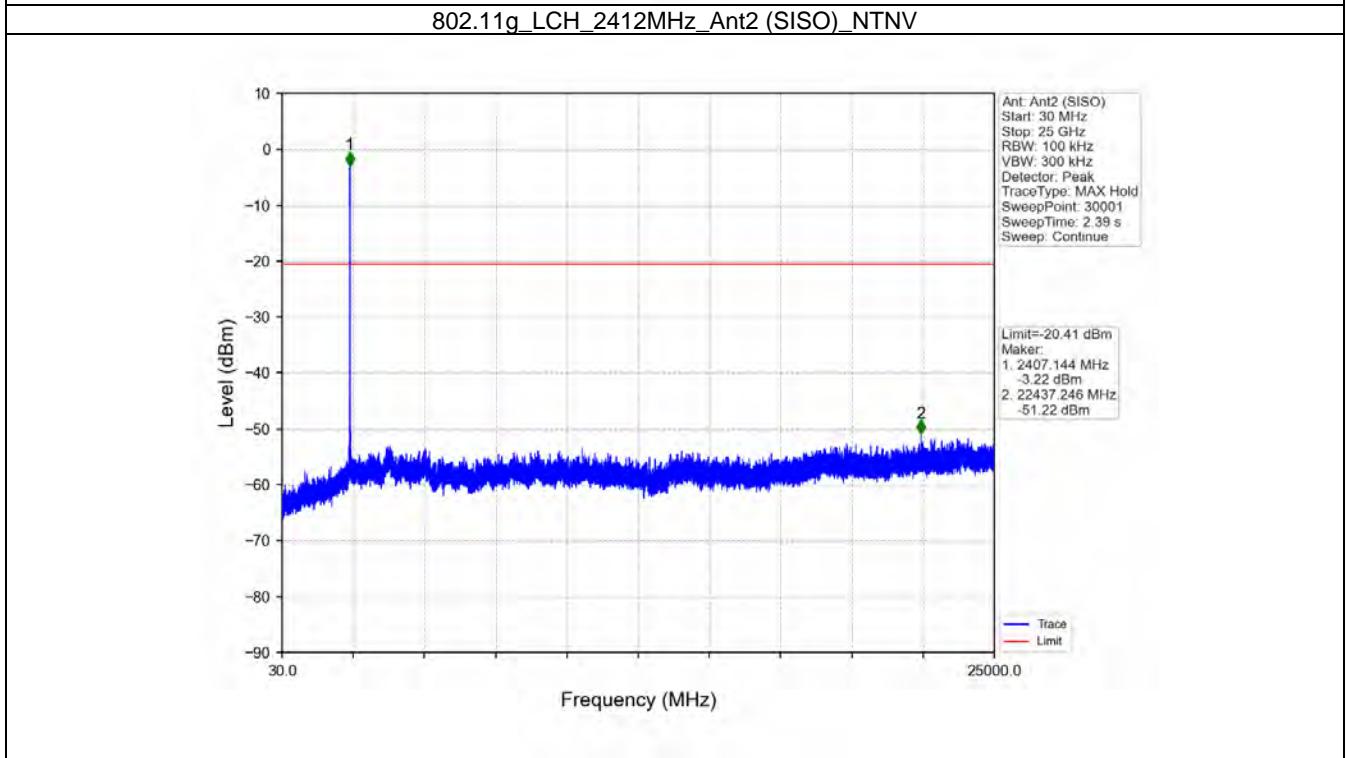
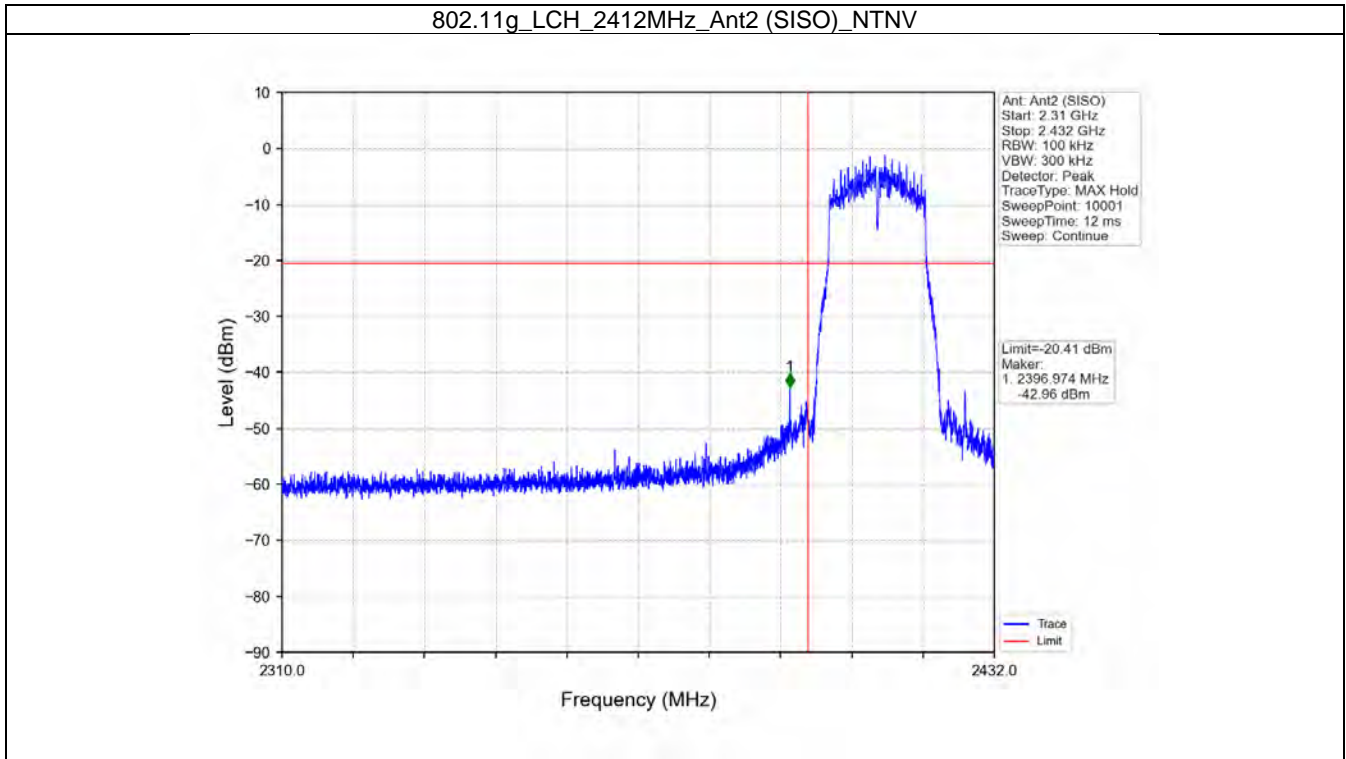


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

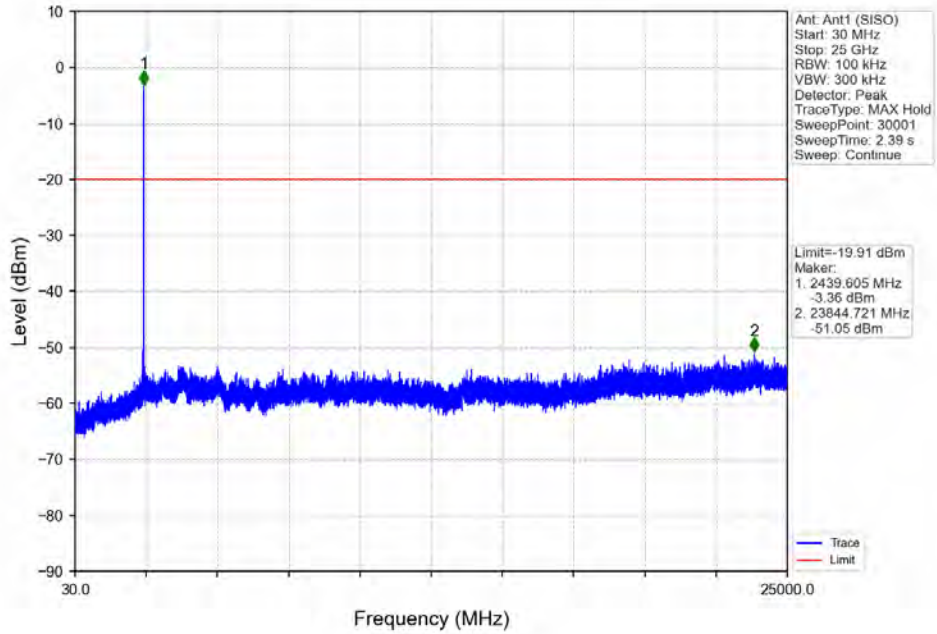


802.11g_LCH_2412MHz_Ant1 (SISO)_NTNV

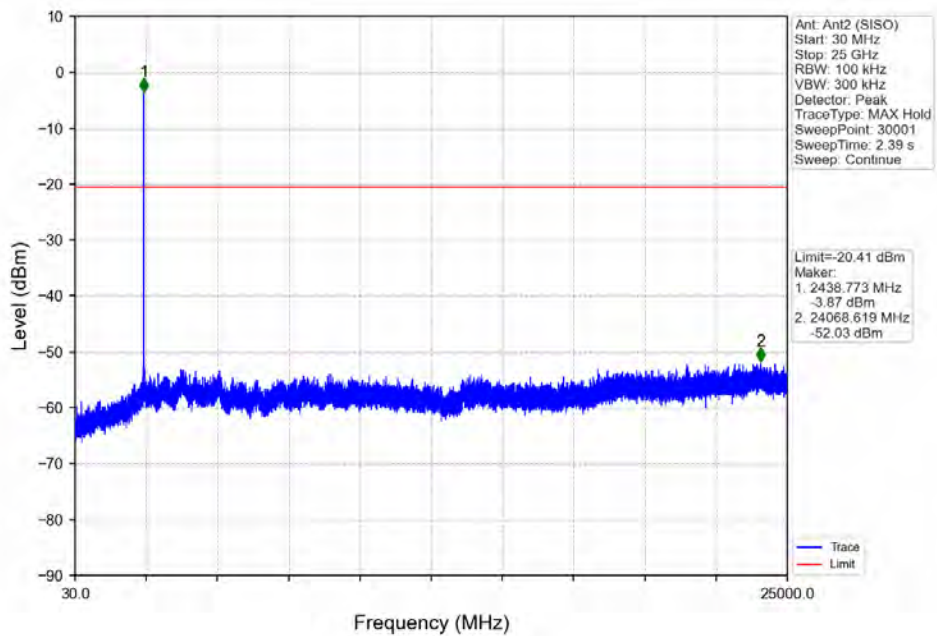




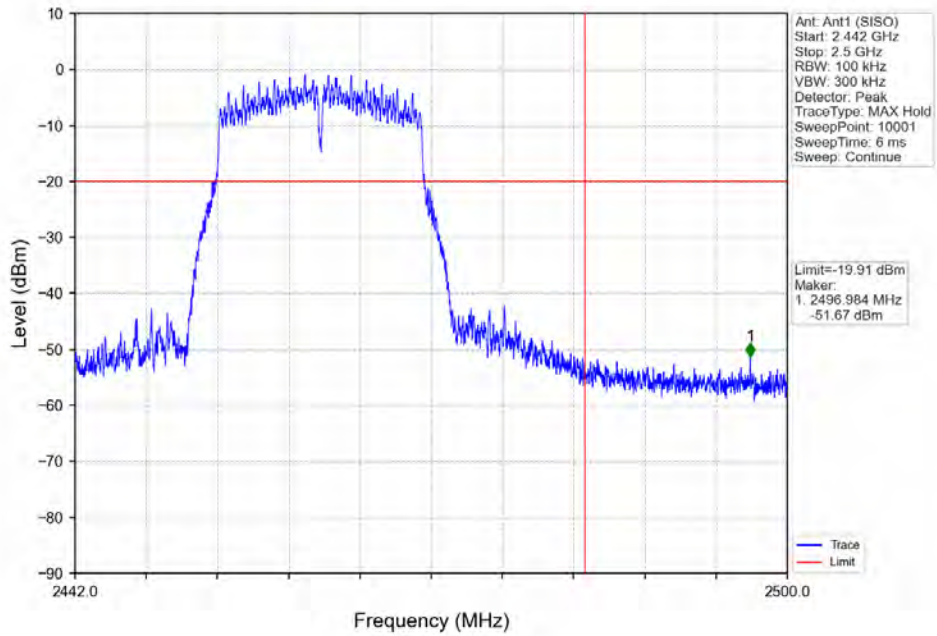
802.11g_MCH_2437MHz_Ant1 (SISO)_NTNV



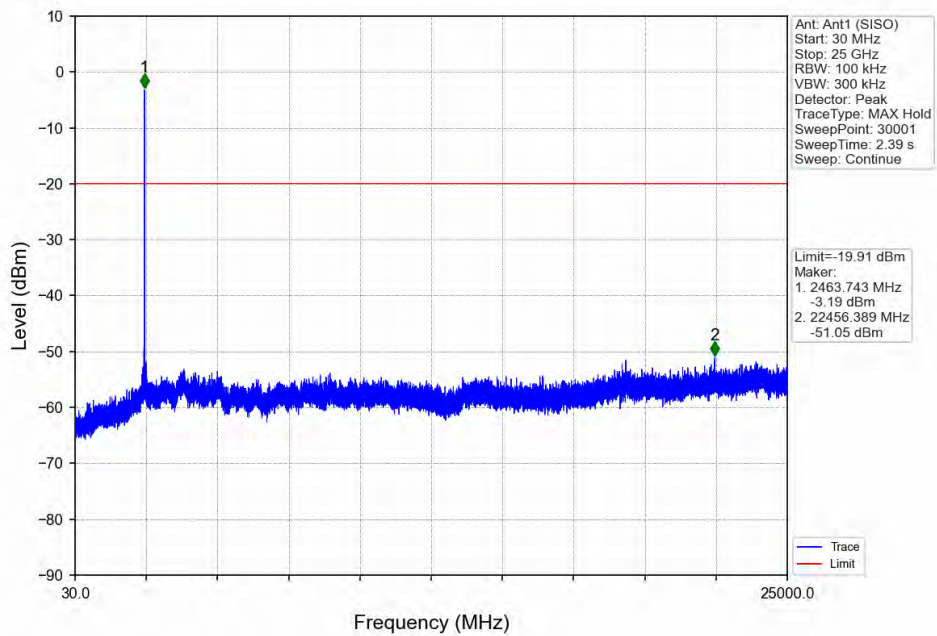
802.11g_MCH_2437MHz_Ant2 (SISO)_NTNV



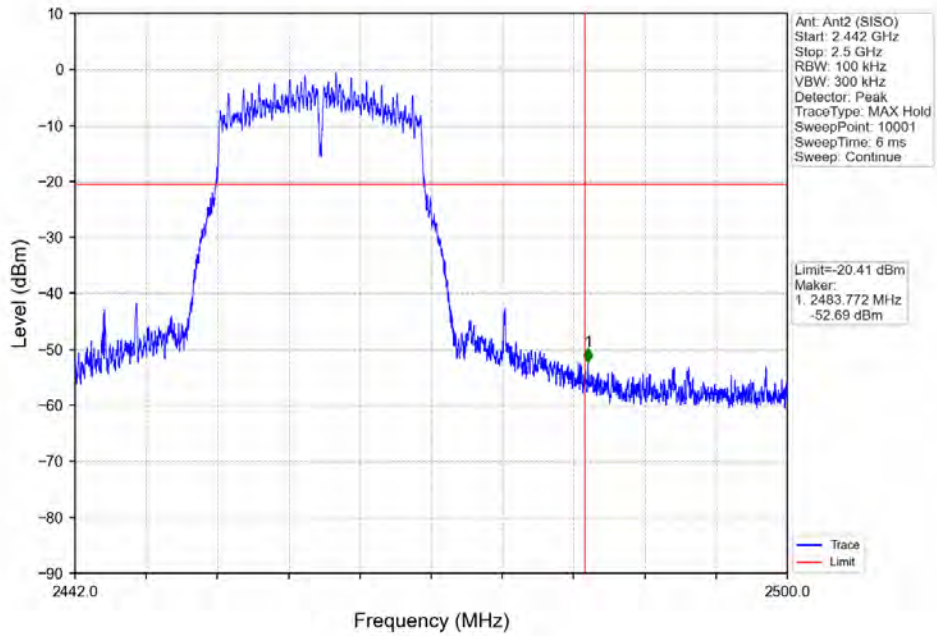
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



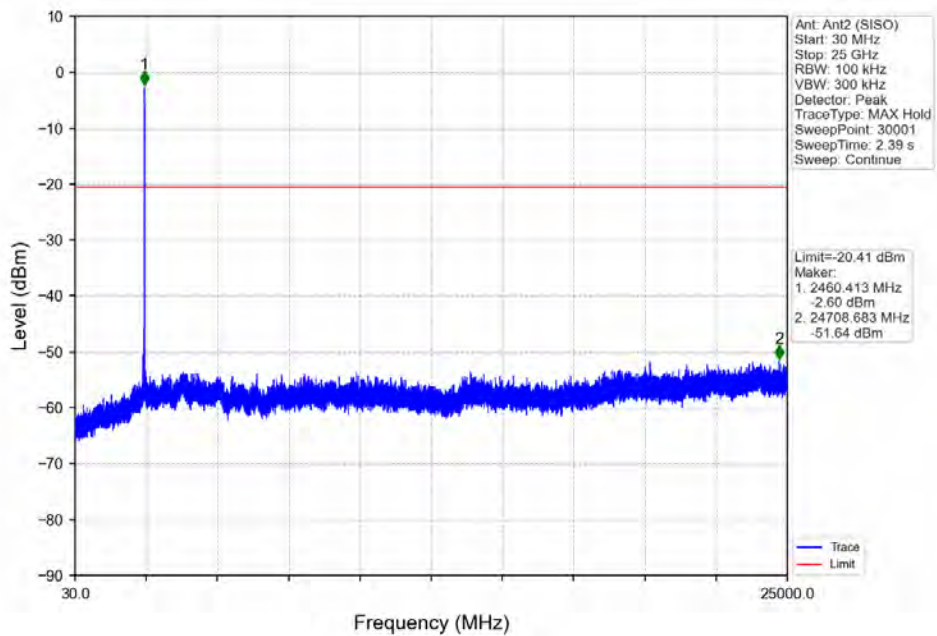
802.11g_HCH_2462MHz_Ant1 (SISO)_NTNV



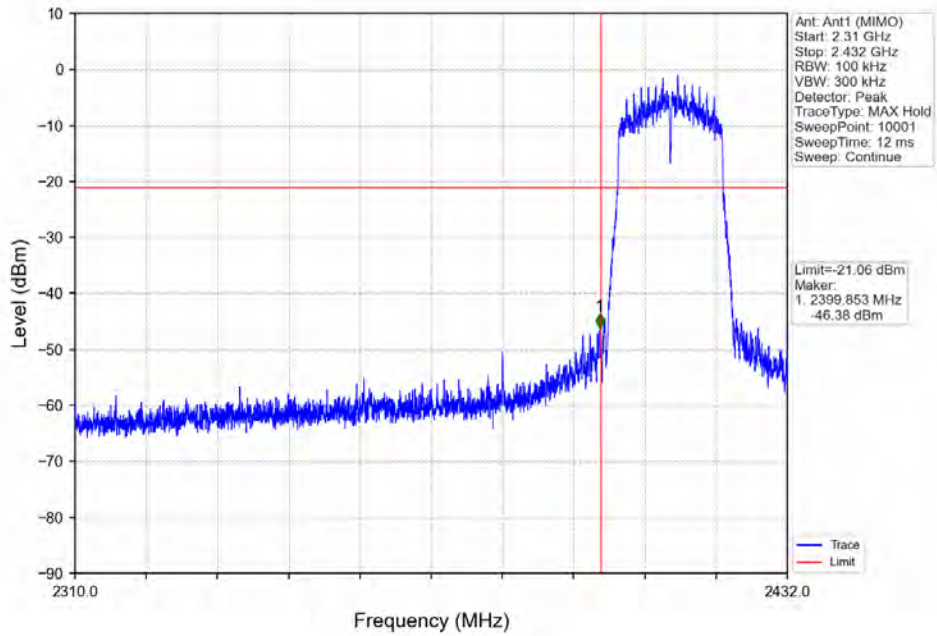
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



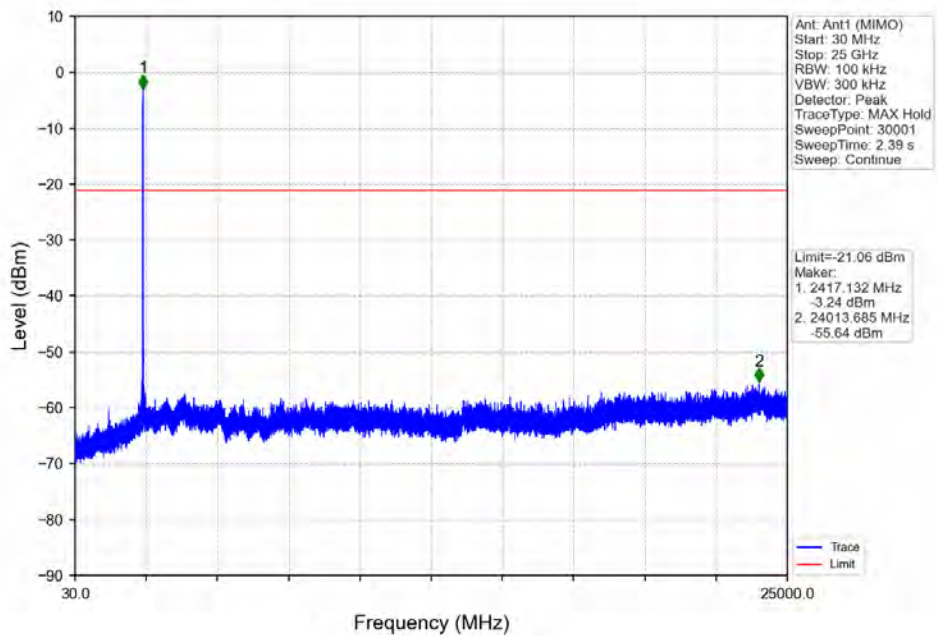
802.11g_HCH_2462MHz_Ant2 (SISO)_NTNV



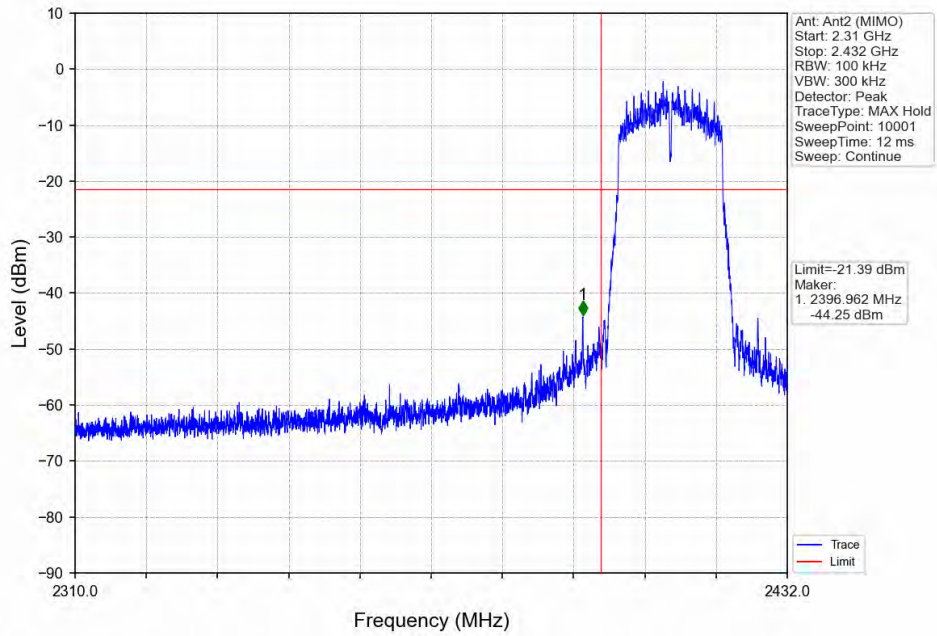
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



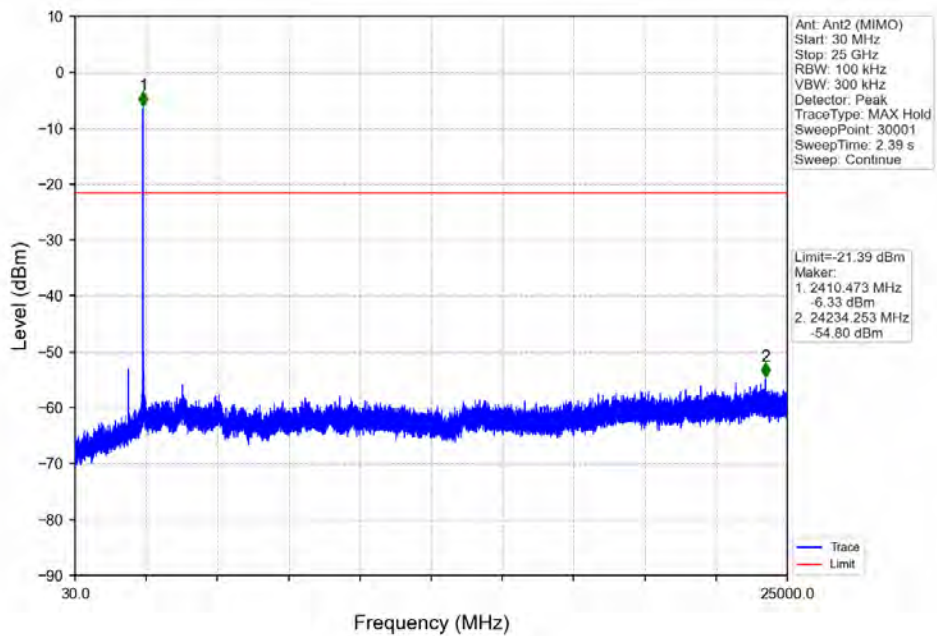
802.11n(HT20)_LCH_2412MHz_Ant1 (MIMO)_NTNV



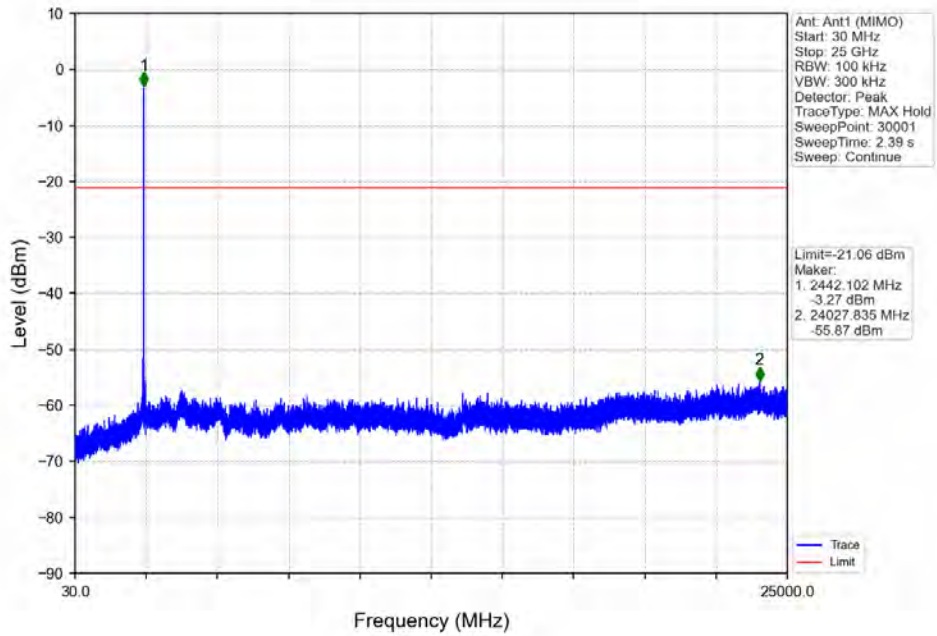
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



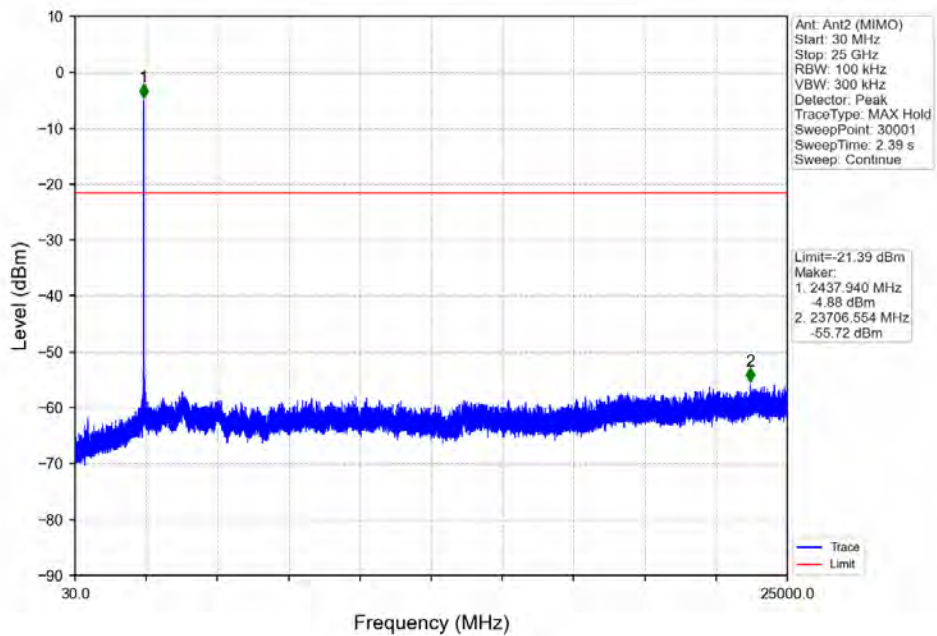
802.11n(HT20)_LCH_2412MHz_Ant2 (MIMO)_NTNV



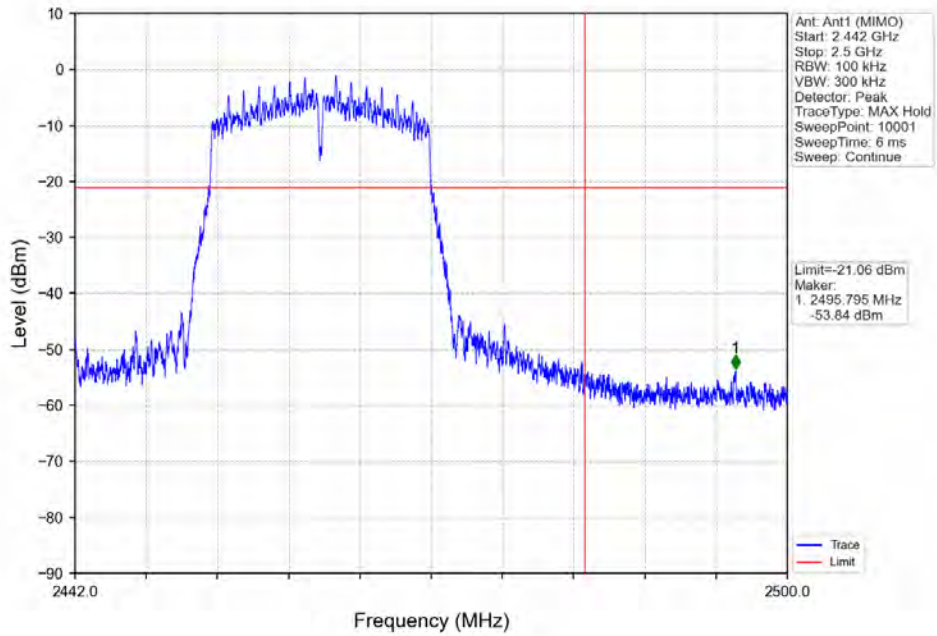
802.11n(HT20)_MCH_2437MHz_Ant1 (MIMO)_NTNV



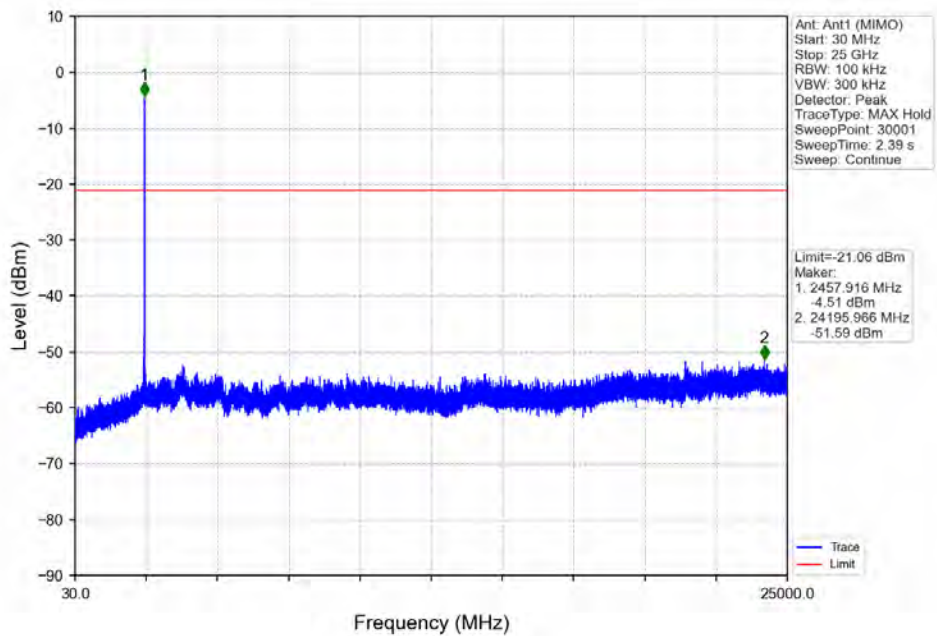
802.11n(HT20)_MCH_2437MHz_Ant2 (MIMO)_NTNV



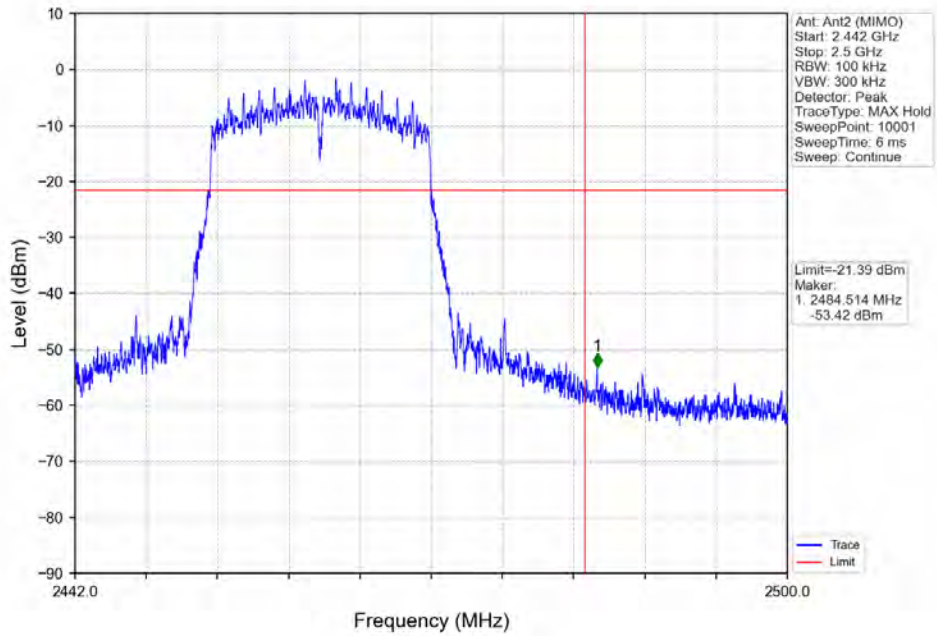
802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant1 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV



802.11n(HT20)_HCH_2462MHz_Ant2 (MIMO)_NTNV

