

## FCC - TEST REPORT

|                                     |                                                                                            |                |            |
|-------------------------------------|--------------------------------------------------------------------------------------------|----------------|------------|
| Report Number                       | : 68.950.24.0555.01                                                                        | Date of Issue: | 2024-07-17 |
| Model                               | : Altos BrainSphere P1 F9                                                                  |                |            |
| Product Type                        | : All-in-One PCs                                                                           |                |            |
| Applicant                           | : ALTOS COMPUTING INDIA PRIVATE LIMITED                                                    |                |            |
| Address                             | : 6th Floor, No. 13, Embassy Heights, Magrath Road, Karnataka,<br>Bengaluru, 560025, India |                |            |
| Manufacturer                        | : ALTOS COMPUTING INDIA PRIVATE LIMITED                                                    |                |            |
| Address                             | : 6th Floor, No. 13, Embassy Heights, Magrath Road, Karnataka,<br>Bengaluru, 560025, India |                |            |
| Test Result                         | : <input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative           |                |            |
| Total pages including<br>Appendices | : 99                                                                                       |                |            |

*Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details, please see testing and certification regulation, chapter A-3.4.*

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12&13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou,  
Nanshan District, Shenzhen City, 518052, P. R. China

Telephone: 86 755 8828 6998

Fax: 86 755 828 5299

FCC Registration No.: 514049

FCC Designation No.: CN5009

### 3 Description of the Equipment Under Test

|                            |                                                                                                                                                                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product:                   | All-in-One PCs                                                                                                                                                                                                                                    |
| Model no.:                 | Altos BrainSphere P1 F9                                                                                                                                                                                                                           |
| FCC ID:                    | 2BHDD-AQ67ALTOSP1F9                                                                                                                                                                                                                               |
| Rating:                    | 19VDC, 7.9A (powered by adapter)                                                                                                                                                                                                                  |
| Accessories:               | Adapter Model: HKA15019079-6C<br>Input: 100-240VAC 50/60Hz, 2.0A,<br>Output: 19VDC, 7.9A<br>Manufacturer: Shenzhen Huntkey Electric Co., Ltd.                                                                                                     |
| RF Transmission Frequency: | 2412MHz-2462MHz for 802.11b/g/n20/n40/ax20/ax40                                                                                                                                                                                                   |
| No. of Operated Channel:   | 11                                                                                                                                                                                                                                                |
| Modulation:                | 802.11b: BPSK, QPSK, CCK,<br>802.11g/802.11n20/802.11n40: BPSK, QPSK, 16-QAM, 64-QAM<br>802.11ax20/802.11ax40: BPSK, QPSK, 16-QAM, 64-QAM/256-QAM/1024-QAM                                                                                        |
| Antenna Type:              | Internal Antenna                                                                                                                                                                                                                                  |
| Antenna Gain:              | 3.41dBi max for 2.4GHz Ant1<br>3.14dBi max for 2.4GHz Ant2<br>Note: Antenna 1 and Antenna 2 support MIMO mode, so directional gain value as below:<br>$\text{Directional Gain} = 10 * \log[(10^{3.41/20} + 10^{3.14/20})^2 / 2] = 6.29\text{dBi}$ |
| Description of the EUT:    | The Equipment Under Test (EUT) is an All-in-One PCs supports Bluetooth Low Energy / Bluetooth BR+EDR/ Wi-Fi functions                                                                                                                             |

## 4 Summary of Test Standards

| Test Standards                             |                                                                        |
|--------------------------------------------|------------------------------------------------------------------------|
| FCC Part 15 Subpart C<br>10-1-2023 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators |

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.

## 5 Summary of Test Results

| Technical Requirements         |                                             |            |             |
|--------------------------------|---------------------------------------------|------------|-------------|
| FCC Part 15 Subpart C          |                                             |            |             |
| Test Condition                 |                                             | Test Site  | Test Result |
| §15.207                        | Conducted emission AC power port            | Site 1     | Pass        |
| §15.247 (b) (3)                | Conducted peak output power                 | Site 1     | Pass        |
| §15.247(a)(2)                  | 6dB bandwidth and 99% Occupied Bandwidth    | Site 1     | Pass        |
| §15.247(e)                     | Power spectral density                      | Site 1     | Pass        |
| §15.247(d)                     | Spurious RF conducted emissions             | Site 1     | Pass        |
| §15.247(d)                     | Band edge                                   | Site 1     | Pass        |
| §15.247(d) & §15.209 & §15.205 | Spurious radiated emissions for transmitter | Site 1     | Pass        |
| §15.203                        | Antenna requirement                         | See note 2 | Pass        |

Note 1: N/A=Not Applicable.

Note 2: The EUT uses an Internal Integrated Metal Antenna, which gain is 3.41dBi max for 2.4GHz Ant1, 3.14dBi max for 2.4GHz Ant2. In accordance to §15.203, it is considered sufficiently to comply with the provisions of this section.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2BHDD-AQ67ALTOSP1F9, complies with Section 15.207, 15.209, 15.205, 15.247 of the FCC Part 15, Subpart C.

The Model: Altos BrainSphere P1 F9 supports Bluetooth Low Energy/Bluetooth BR+EDR/Wi-Fi functions. The TX and RX range is 2402MHz-2480MHz for Bluetooth, 2412MHz – 2462MHz for 2.4GHz Wi-Fi, 5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHz Wi-Fi.

This report is for the 2.4GHz Wi-Fi part.

### SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2024-05-21

Testing Start Date: 2024-05-22

Testing End Date: 2024-06-24

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:

Prepared by:

Tested by:



John Zhi  
Project Manager



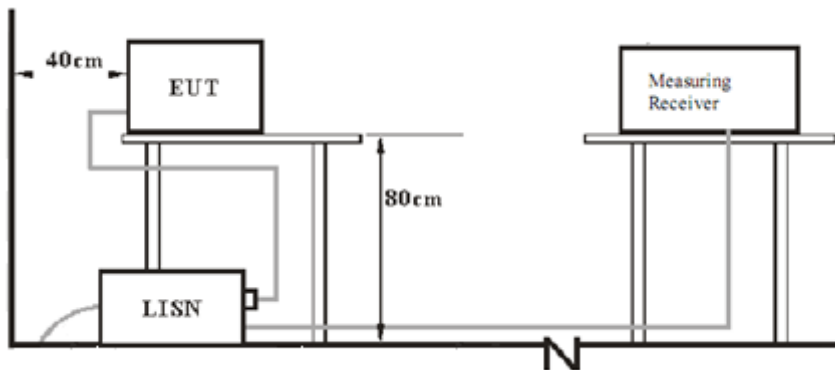
Joe Gu  
Project Engineer



Carry Cai  
Test Engineer

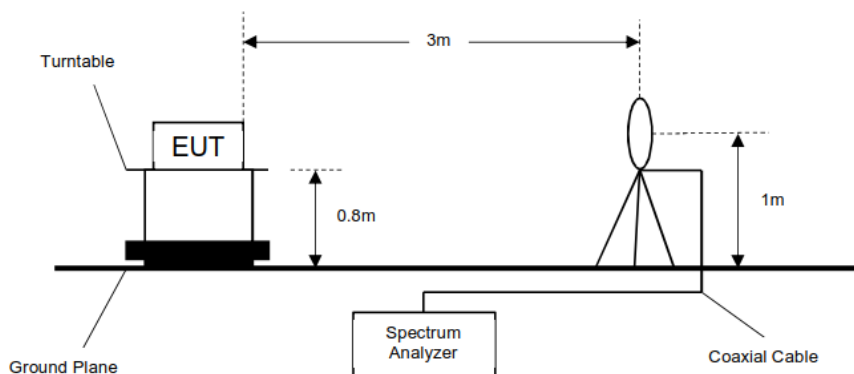
## 7 Test Setups

### 7.1 AC Power Line Conducted Emission test setups

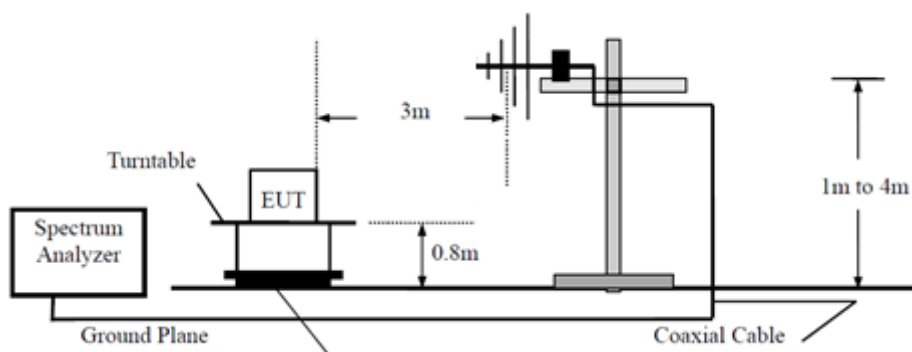


### 7.2 Radiated test setups

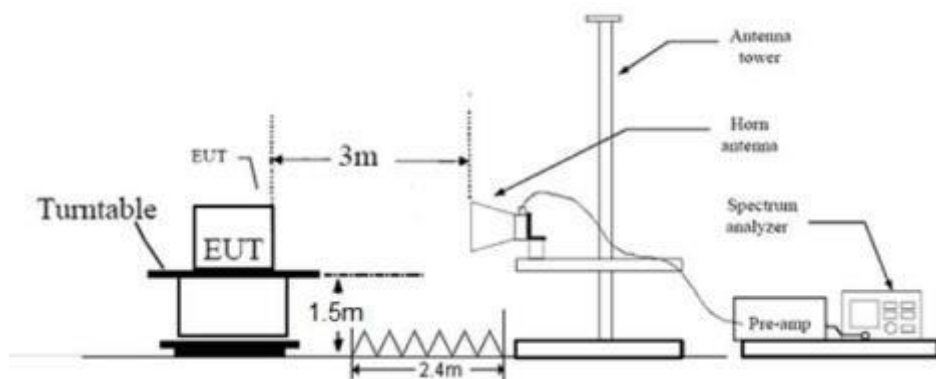
#### 9kHz - 30MHz



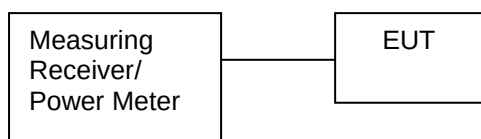
#### 30MHz - 1GHz



Above 1GHz



### 7.3 Conducted RF test setups



## 8 Systems Test Configuration

Auxiliary Equipment Used during Test:

| Description | Manufacturer | Model NO. | S/N |
|-------------|--------------|-----------|-----|
| LAPTOP      | LENOVO       | T460S     | --- |

Test Channel information:

| Test Mode  | Channel (MHz) |               |                |
|------------|---------------|---------------|----------------|
| 802.11b    | CH 1: 2412MHz | CH 6: 2437MHz | CH 11: 2462MHz |
| 802.11g    | CH 1: 2412MHz | CH 6: 2437MHz | CH 11: 2462MHz |
| 802.11n20  | CH 1: 2412MHz | CH 6: 2437MHz | CH 11: 2462MHz |
| 802.11n40  | CH 3: 2422MHz | CH 6: 2437MHz | CH 9: 2452MHz  |
| 802.11ax20 | CH 1: 2412MHz | CH 6: 2437MHz | CH 11: 2462MHz |
| 802.11ax40 | CH 3: 2422MHz | CH 6: 2437MHz | CH 9: 2452MHz  |

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

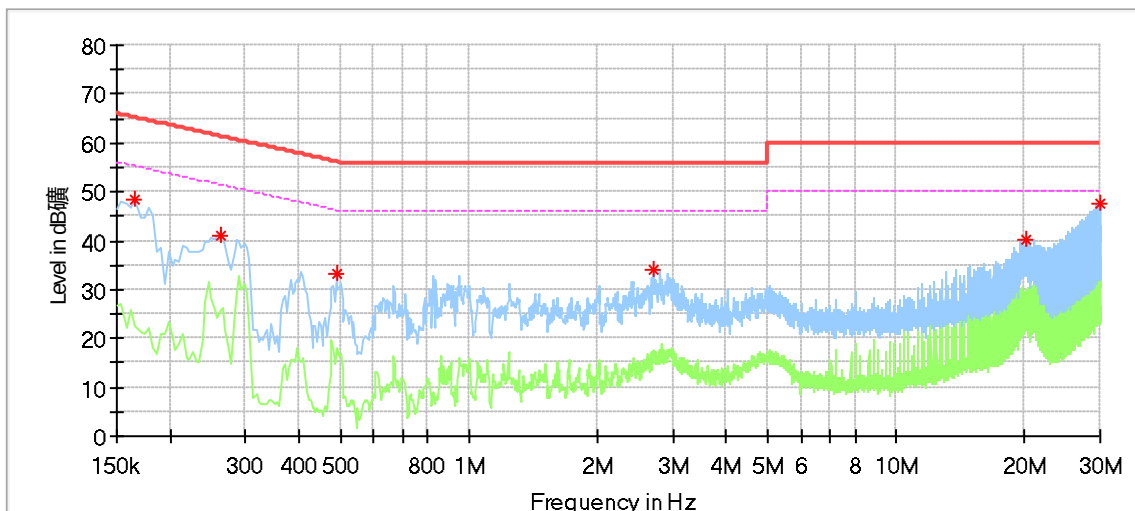
#### Limit

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

\*Decreases with the logarithm of the frequency.

## Conducted Emission

Product Type : All-in-One PCs  
 M/N : Altos BrainSphere P1 F9  
 Operating Condition : Transmitting  
 Test Specification : Line  
 Comment : AC 120V/60Hz



| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.166000        | 48.40          | ---            | 65.16        | 16.76       | L1   | 9.54       |
| 0.262000        | 40.82          | ---            | 61.37        | 20.54       | L1   | 9.56       |
| 0.490000        | 33.33          | ---            | 56.17        | 22.84       | L1   | 9.59       |
| 2.698000        | 34.02          | ---            | 56.00        | 21.98       | L1   | 9.64       |
| 20.082000       | 40.32          | ---            | 60.00        | 19.68       | L1   | 10.01      |
| 29.918000       | 47.43          | ---            | 60.00        | 12.57       | L1   | 10.03      |

Remark:

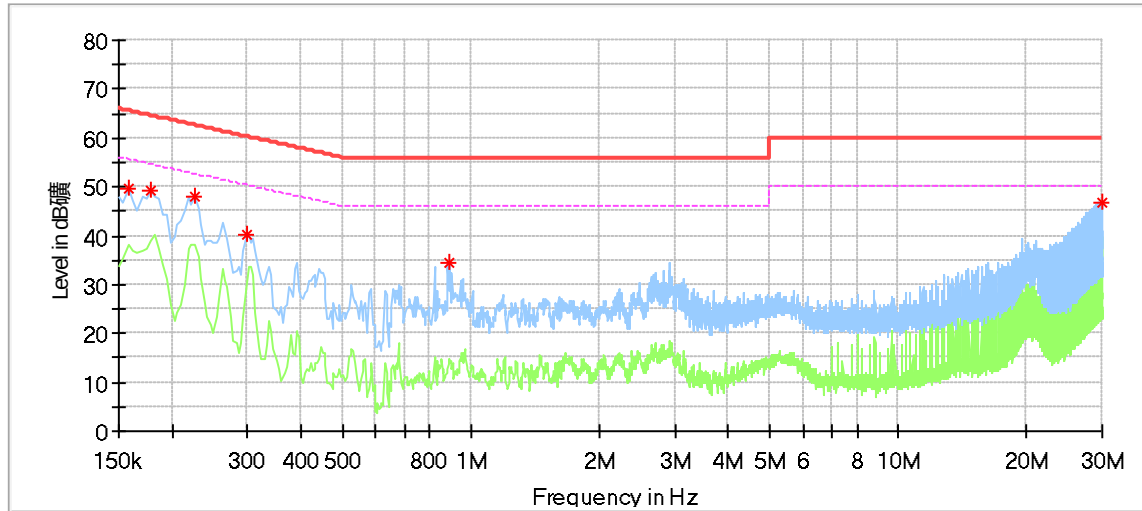
Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

## Conducted Emission

Product Type : All-in-One PCs  
 M/N : Altos BrainSphere P1 F9  
 Operating Condition : Transmitting  
 Test Specification : Neutral  
 Comment : AC 120V/60Hz



| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------|------------|
| 0.158000        | 49.66          | ---            | 65.57        | 15.90       | N    | 9.56       |
| 0.178000        | 49.24          | ---            | 64.58        | 15.34       | N    | 9.57       |
| 0.226000        | 48.10          | ---            | 62.60        | 14.49       | N    | 9.58       |
| 0.298000        | 40.40          | ---            | 60.30        | 19.90       | N    | 9.60       |
| 0.894000        | 34.46          | ---            | 56.00        | 21.54       | N    | 9.63       |
| 29.846000       | 46.97          | ---            | 60.00        | 13.03       | N    | 9.88       |

Remark:

Level=Reading Level + Correction Factor

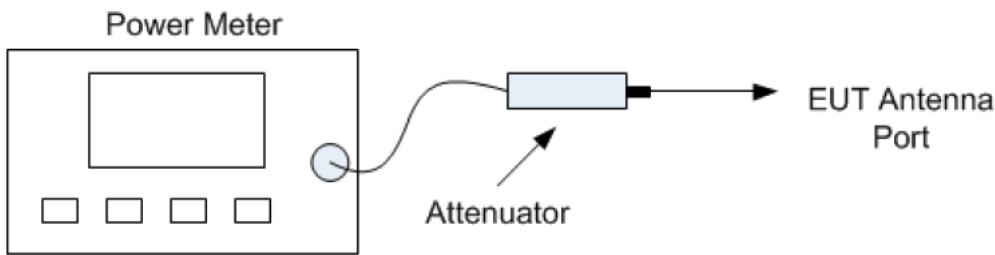
Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

9.2 Conducted Output Power

Test Method

- 1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
- 2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
- 3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
- 4) Measure the peak power of the transmitter. This measurement is a peak over both the ON and OFF periods of the transmitter.



Power meter conducted test setup

Limits

According to §15.247 (b) (3), conducted output power limit as below:

| Frequency Range<br>MHz | Limit<br>W | Limit<br>dBm |
|------------------------|------------|--------------|
| 2400-2483.5            | ≤1         | ≤30          |

Note: The Antenna directional gain is 6.29 dBi. The limit is the above limits reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi, which is 30dBm – 0.1dB=29.9dBm

Test result as below table

802.11b\_SISO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                    | Ant 2                    | Result |
|------------------------|--------------------------|--------------------------|--------|
|                        | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) |        |
| Low channel 2412MHz    | 14.4                     | 14.8                     | Pass   |
| Middle channel 2437MHz | 14.5                     | 15.0                     | Pass   |
| High channel 2462MHz   | 14.3                     | 14.9                     | Pass   |

802.11g\_SISO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                    | Ant 2                    | Result |
|------------------------|--------------------------|--------------------------|--------|
|                        | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) |        |
| Low channel 2412MHz    | 13.7                     | 14.1                     | Pass   |
| Middle channel 2437MHz | 13.9                     | 14.5                     | Pass   |
| High channel 2462MHz   | 13.8                     | 14.4                     | Pass   |

802.11n20\_MIMO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                    | Ant 2                    | Ant 1+ Ant 2             | Result |
|------------------------|--------------------------|--------------------------|--------------------------|--------|
|                        | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) |        |
| Low channel 2412MHz    | 9.8                      | 9.7                      | 12.8                     | Pass   |
| Middle channel 2437MHz | 11.0                     | 11.2                     | 14.1                     | Pass   |
| High channel 2462MHz   | 10.7                     | 11.1                     | 13.9                     | Pass   |

802.11n40\_MIMO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                    | Ant 2                    | Ant 1+ Ant 2             | Result |
|------------------------|--------------------------|--------------------------|--------------------------|--------|
|                        | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) |        |
| Low channel 2422MHz    | 11.3                     | 11.6                     | 14.5                     | Pass   |
| Middle channel 2437MHz | 11.3                     | 11.7                     | 14.5                     | Pass   |
| High channel 2452MHz   | 11.2                     | 11.6                     | 14.4                     | Pass   |

802.11ax20\_MIMO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                    | Ant 2                    | Ant 1+ Ant 2             | Result |
|------------------------|--------------------------|--------------------------|--------------------------|--------|
|                        | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) | Conducted Power<br>(dBm) |        |
| Low channel 2412MHz    | 9.7                      | 9.6                      | 12.7                     | Pass   |
| Middle channel 2437MHz | 10.8                     | 11.0                     | 13.9                     | Pass   |
| High channel 2462MHz   | 10.6                     | 10.9                     | 13.8                     | Pass   |

## 802.11ax40 MIMO modulation Test Result

| Frequency<br>(MHz)     | Ant 1                       | Ant 2                       | Ant 1+ Ant 2                | Result |
|------------------------|-----------------------------|-----------------------------|-----------------------------|--------|
|                        | Conducted<br>Power<br>(dBm) | Conducted<br>Power<br>(dBm) | Conducted<br>Power<br>(dBm) |        |
| Low channel 2422MHz    | 11.0                        | 11.4                        | 14.2                        | Pass   |
| Middle channel 2437MHz | 11.0                        | 11.4                        | 14.2                        | Pass   |
| High channel 2452MHz   | 10.8                        | 11.3                        | 14.1                        | Pass   |

$$\text{Power}_{\text{SUM}} = 10 * \log(10^{(\text{Power}_{\text{ANT1}}/10)} + 10^{(\text{Power}_{\text{ANT2}}/10)})$$

### 9.3 6dB Bandwidth

#### Test Method for 6 dB Bandwidth

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set center frequency to the nominal EUT channel center frequency.
3. Set RBW = 1% to 5% of the OBW, but not less than 100 kHz, VBW  $\geq 3 \times$  RBW Detector = Peak. Trace mode = max hold. Sweep = auto Trace = max hold
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
5. Record the results in the test report.

#### Limit

Limit [kHz]

---

$\geq 500$

#### Test Method for 99 % Bandwidth

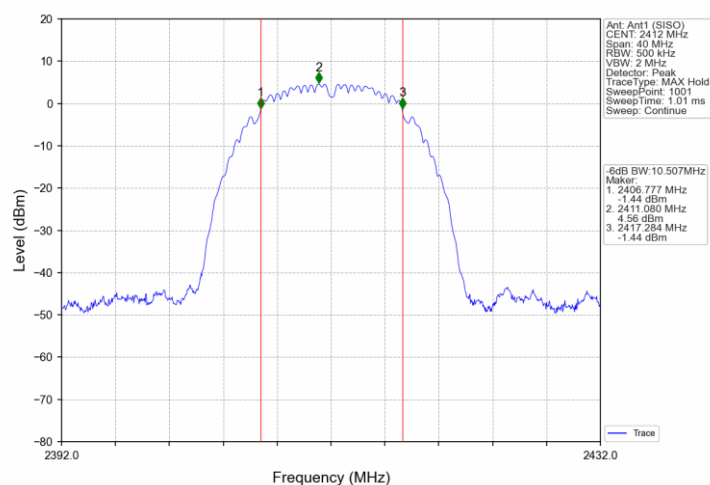
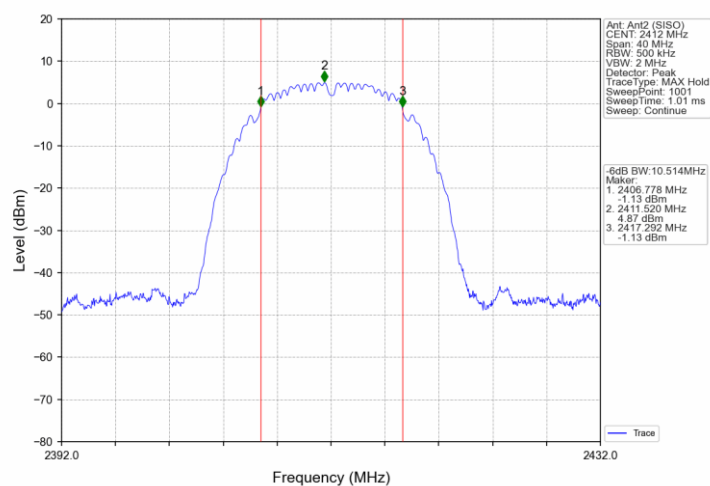
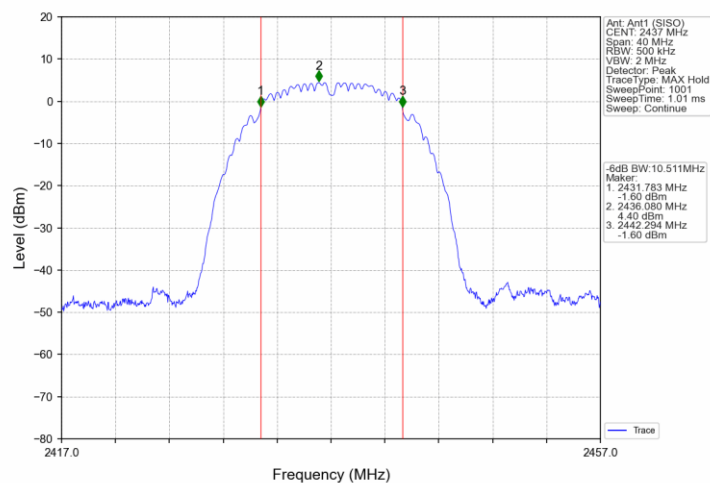
1. Set center frequency to the nominal EUT channel center frequency
2. Set span = 1.5 times to 5.0 times the OBW. Set RBW = 1 % to 5 % of the OBW Set VBW  $\geq 3$  RBW Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize.
3. Use the 99 % power bandwidth function of the instrument.
4. Record the results in the test report.

#### Limit

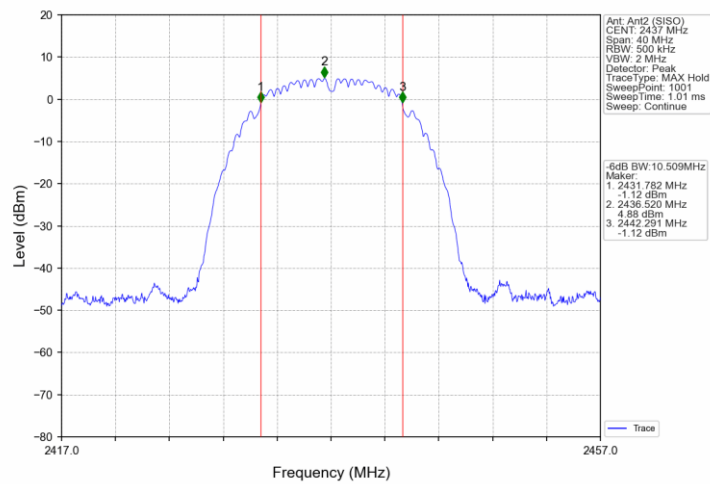
Limit [kHz]

## 6 dB Bandwidth

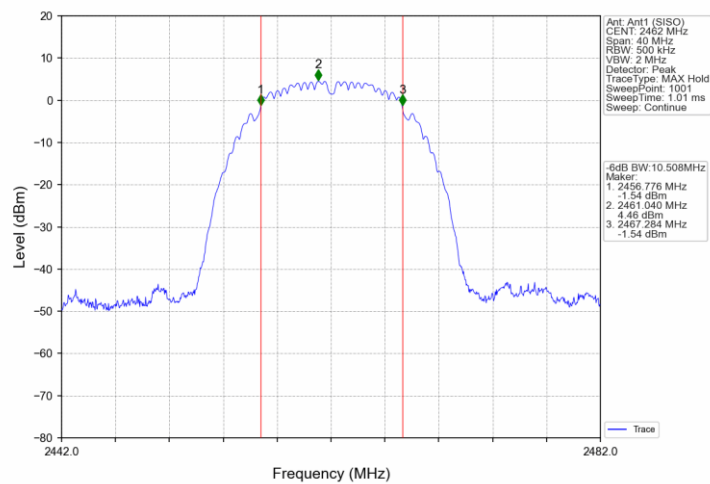
| Mode             | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) |            | Verdict |
|------------------|---------|-----------------|-----|---------------------|------------|---------|
|                  |         |                 |     | Result              | Limit      |         |
| 802.11b          | SISO    | 2412            | 1   | 10.507              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 10.514              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 10.511              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 10.509              | $\geq 0.5$ | Pass    |
|                  |         | 2462            | 1   | 10.508              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 10.502              | $\geq 0.5$ | Pass    |
| 802.11g          | SISO    | 2412            | 1   | 16.271              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 16.109              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 16.136              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 16.096              | $\geq 0.5$ | Pass    |
|                  |         | 2462            | 1   | 16.093              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 16.211              | $\geq 0.5$ | Pass    |
| 802.11n (HT20)   | MIMO    | 2412            | 1   | 17.330              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 17.232              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 17.243              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 17.352              | $\geq 0.5$ | Pass    |
|                  |         | 2462            | 1   | 17.241              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 17.272              | $\geq 0.5$ | Pass    |
| 802.11n (HT40)   | MIMO    | 2422            | 1   | 35.539              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 35.607              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 35.402              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 35.579              | $\geq 0.5$ | Pass    |
|                  |         | 2452            | 1   | 35.425              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 35.578              | $\geq 0.5$ | Pass    |
| 802.11ax (HEW20) | MIMO    | 2412            | 1   | 18.734              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 18.636              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 18.777              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 18.430              | $\geq 0.5$ | Pass    |
|                  |         | 2462            | 1   | 18.727              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 18.641              | $\geq 0.5$ | Pass    |
| 802.11ax (HEW40) | MIMO    | 2422            | 1   | 36.863              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 36.598              | $\geq 0.5$ | Pass    |
|                  |         | 2437            | 1   | 36.828              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 36.790              | $\geq 0.5$ | Pass    |
|                  |         | 2452            | 1   | 36.994              | $\geq 0.5$ | Pass    |
|                  |         |                 | 2   | 36.615              | $\geq 0.5$ | Pass    |

**6 dB Bandwidth****802.11b LCH 2412MHz Ant1 (SISO) NTN****802.11b LCH 2412MHz Ant2 (SISO) NTN****802.11b MCH 2437MHz Ant1 (SISO) NTN**

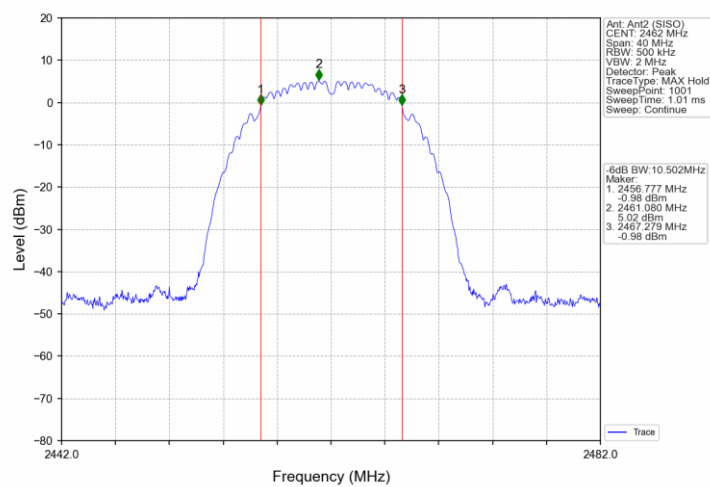
## 802.11b\_MCH\_2437MHz\_Ant2 (SISO)\_NTNV



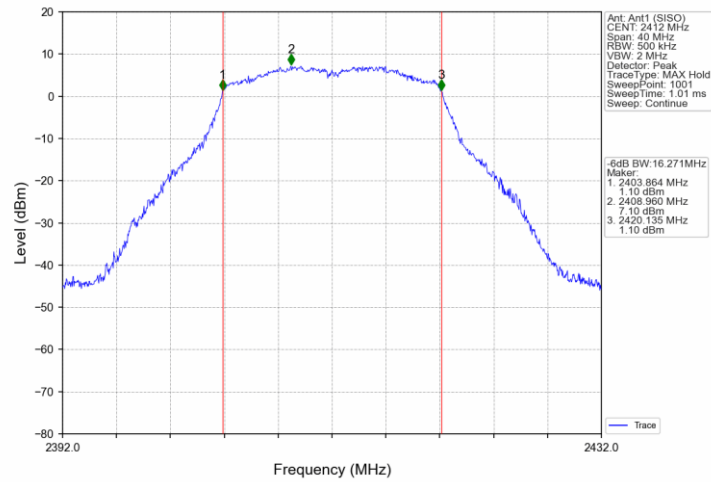
## 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



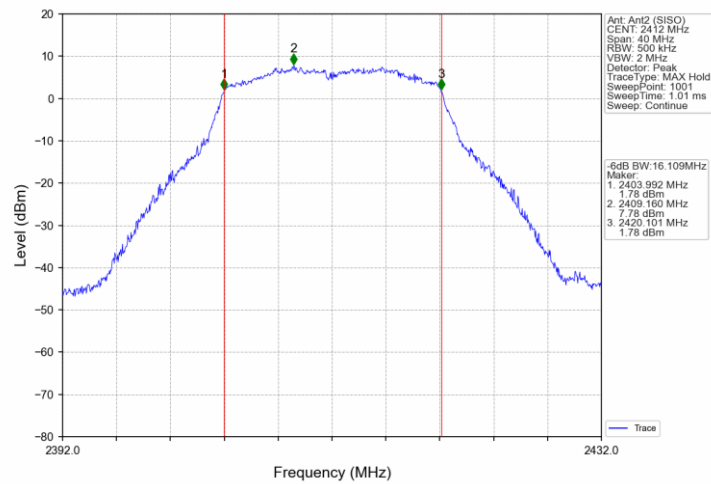
## 802.11b\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



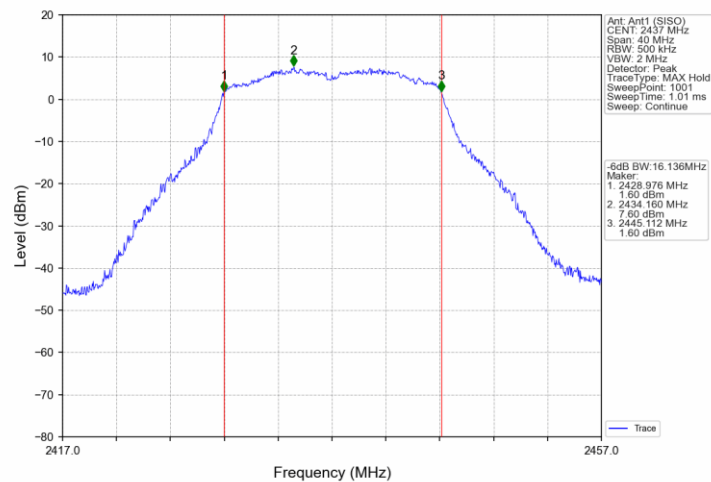
## 802.11g\_LCH\_2412MHz\_Ant1 (SISO) NTNv



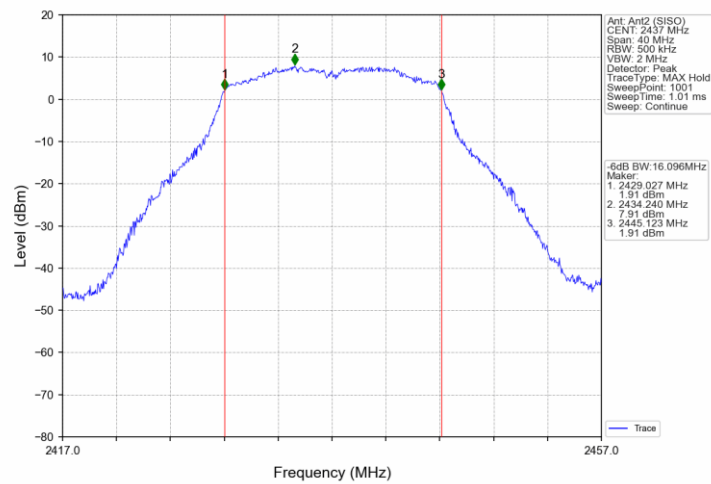
## 802.11g\_LCH\_2412MHz\_Ant2 (SISO) NTNv



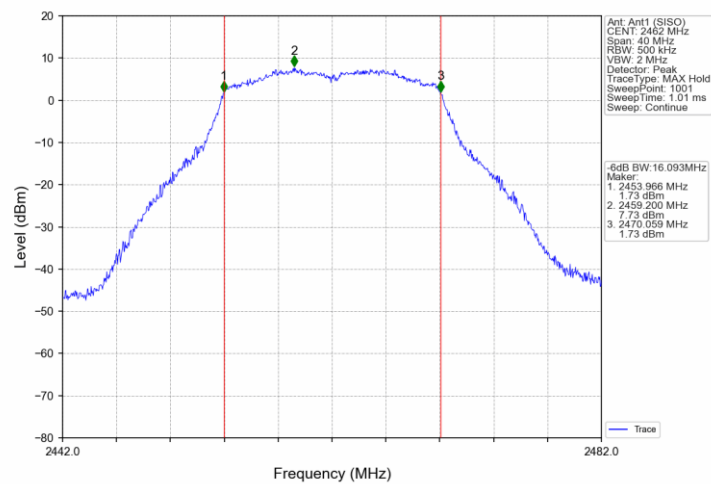
## 802.11g\_MCH\_2437MHz\_Ant1 (SISO) NTNv



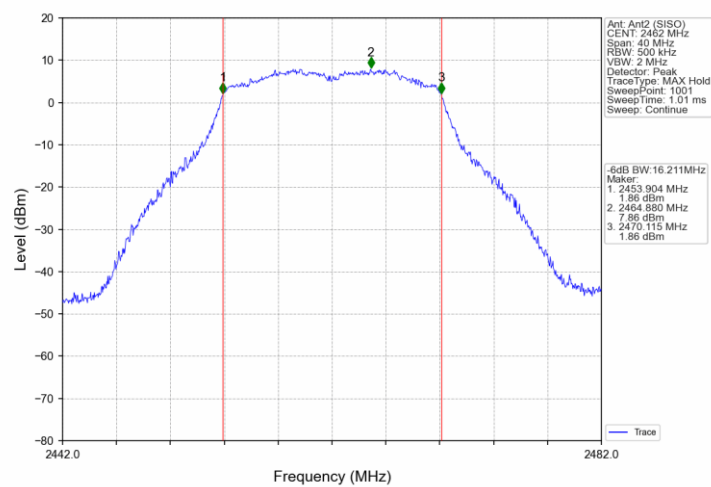
## 802.11g\_MCH\_2437MHz\_Ant2 (SISO)\_NTNV



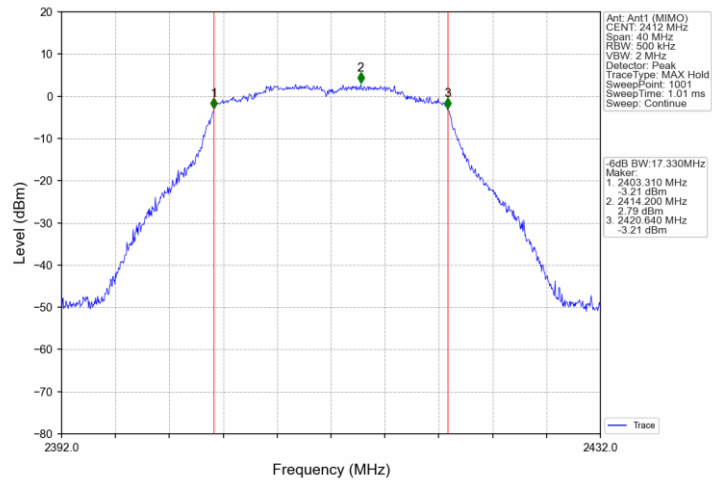
## 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



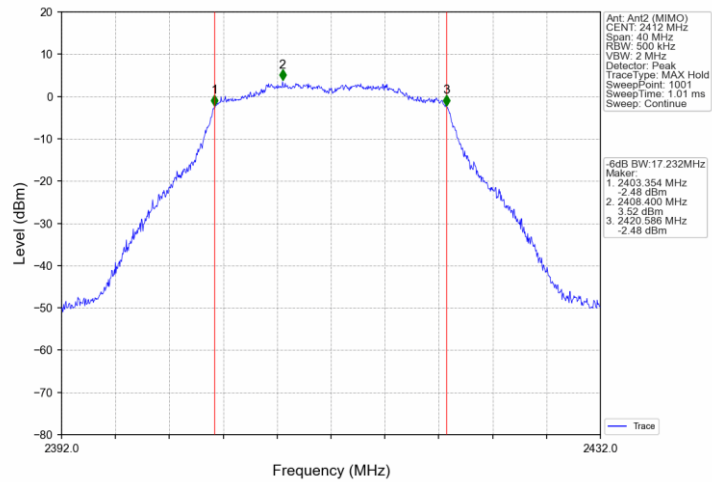
## 802.11g\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



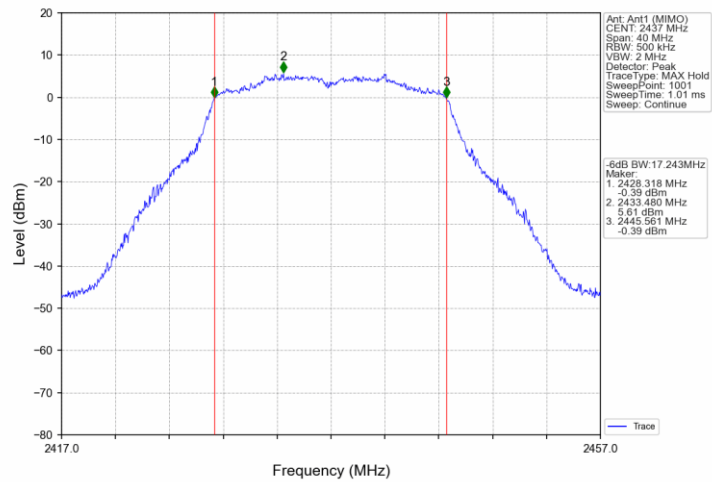
802.11n(HT20)\_LCH\_2412MHz\_Ant1 (MIMO)\_NTNV



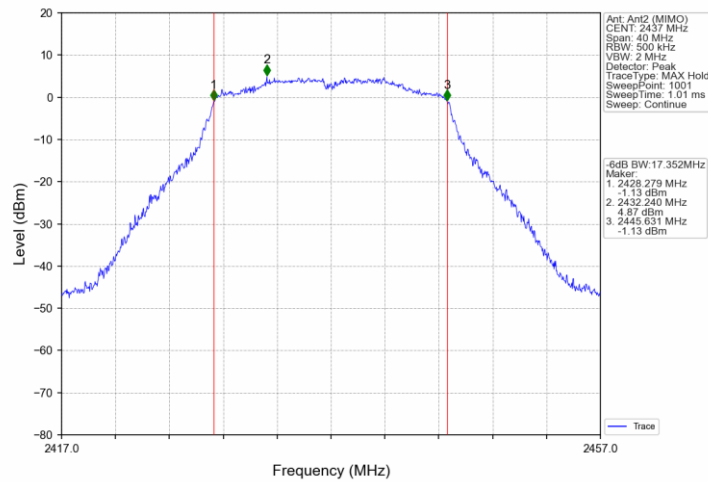
802.11n(HT20)\_LCH\_2412MHz\_Ant2 (MIMO)\_NTNV



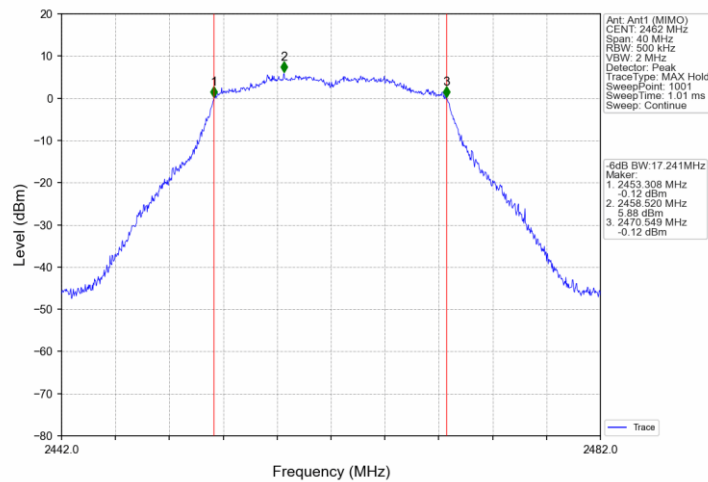
802.11n(HT20)\_MCH\_2437MHz\_Ant1 (MIMO)\_NTNV



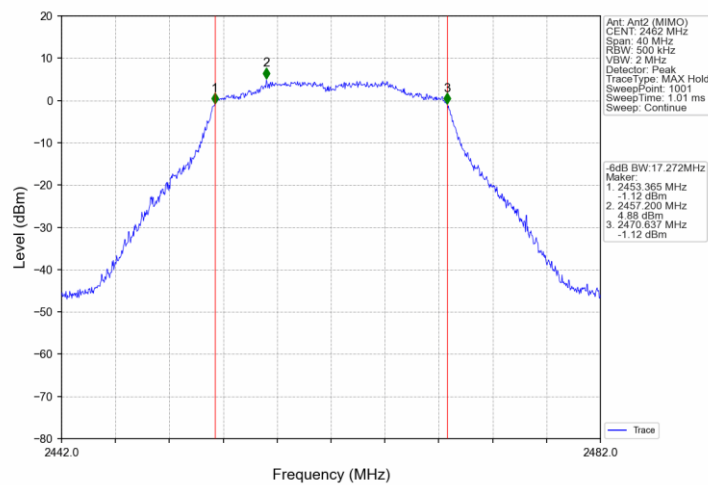
## 802.11n(HT20)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



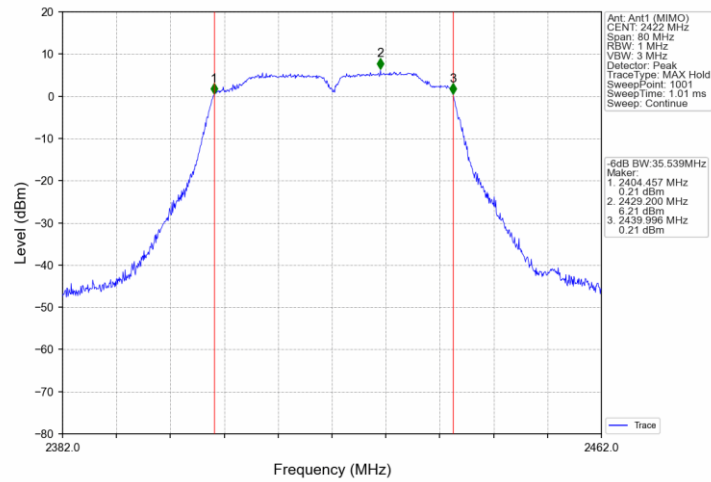
## 802.11n(HT20)\_HCH\_2462MHz\_Ant1 (MIMO)\_NTNV



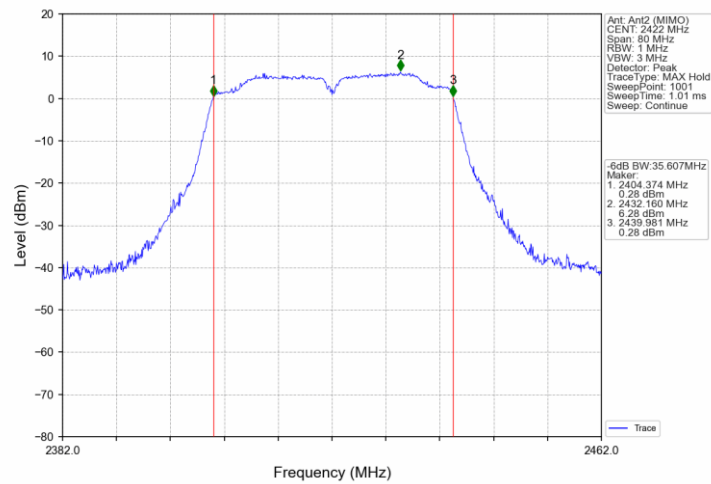
## 802.11n(HT20)\_HCH\_2462MHz\_Ant2 (MIMO)\_NTNV



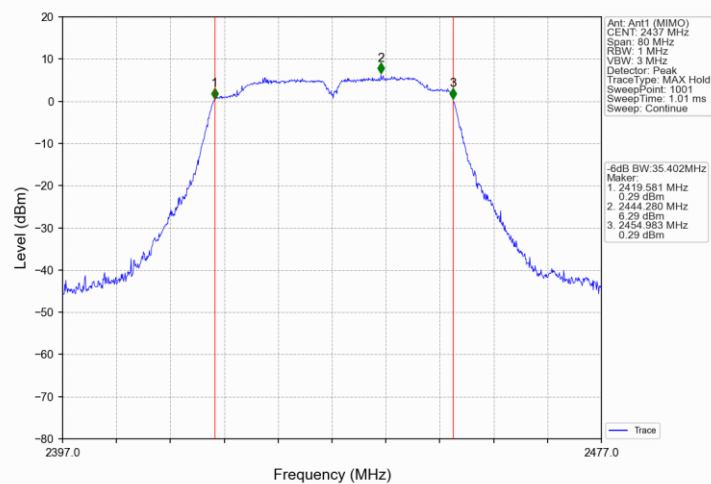
## 802.11n(HT40)\_LCH\_2422MHz\_Ant1 (MIMO)\_NTNV



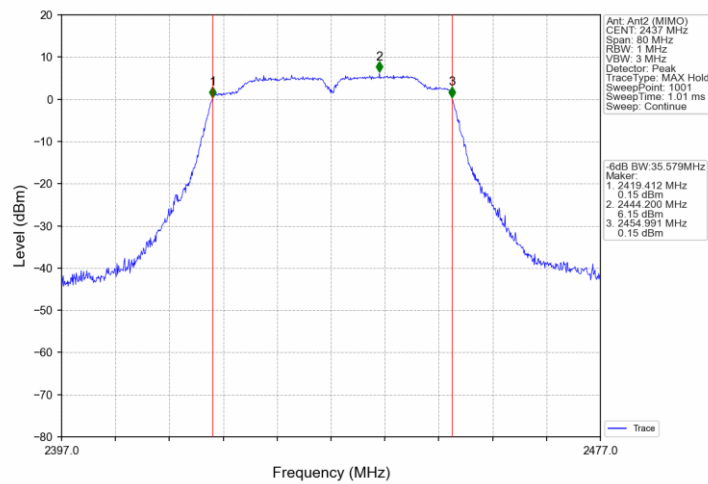
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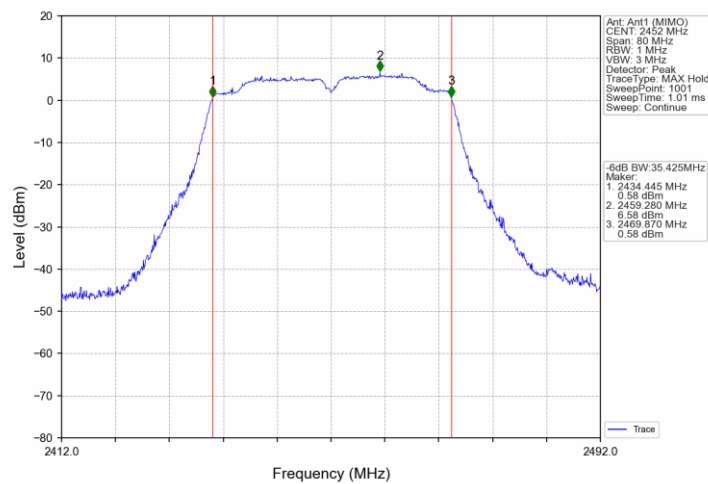
## 802.11n(HT40)\_MCH\_2437MHz\_Ant1 (MIMO)\_NTNV



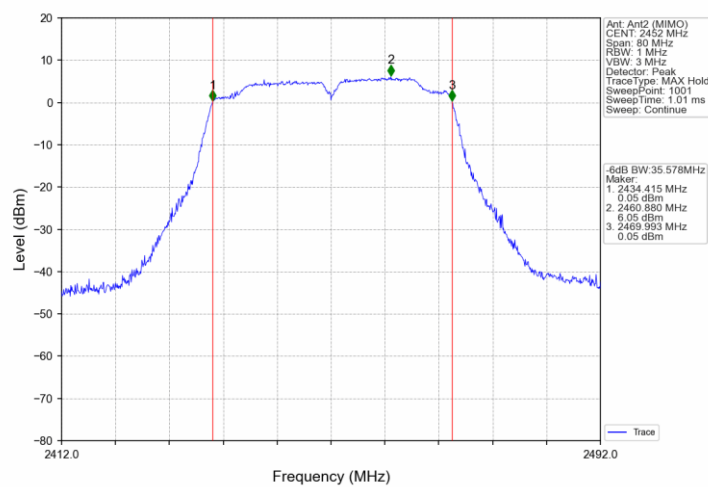
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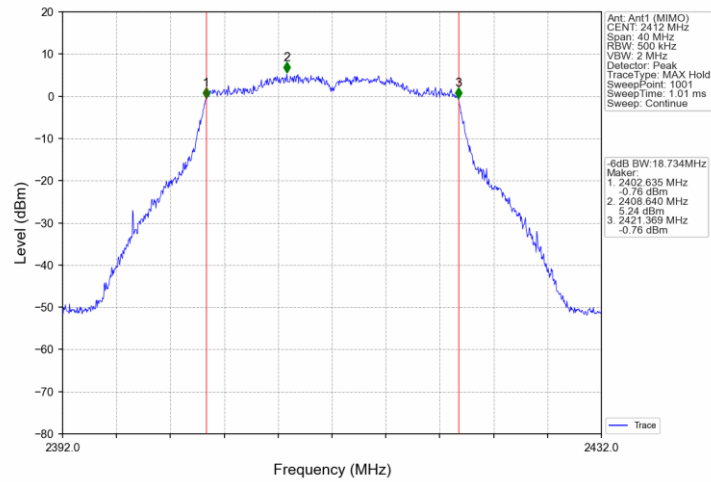
## 802.11n(HT40)\_HCH\_2452MHz\_Ant1 (MIMO)\_NTNV



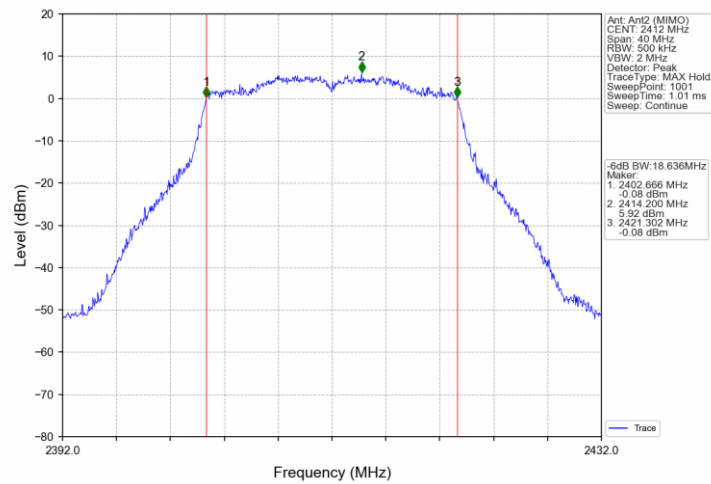
## 802.11n(HT40)\_HCH\_2452MHz\_Ant2 (MIMO)\_NTNV



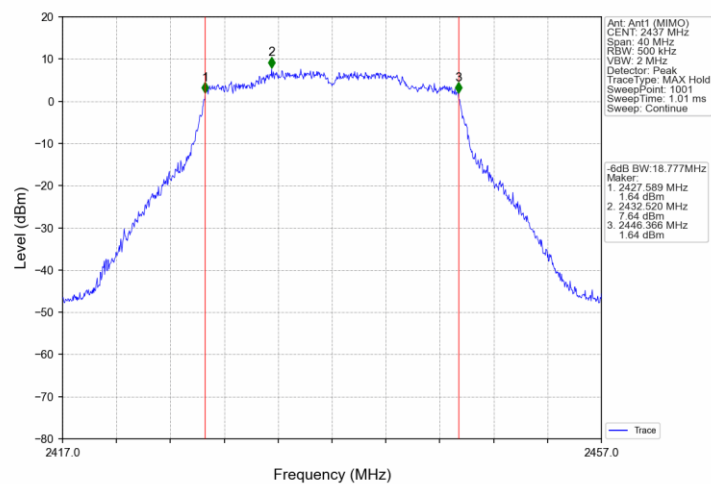
## 802.11ax(HEW20) LCH 2412MHz Ant1 (MIMO) NTNV



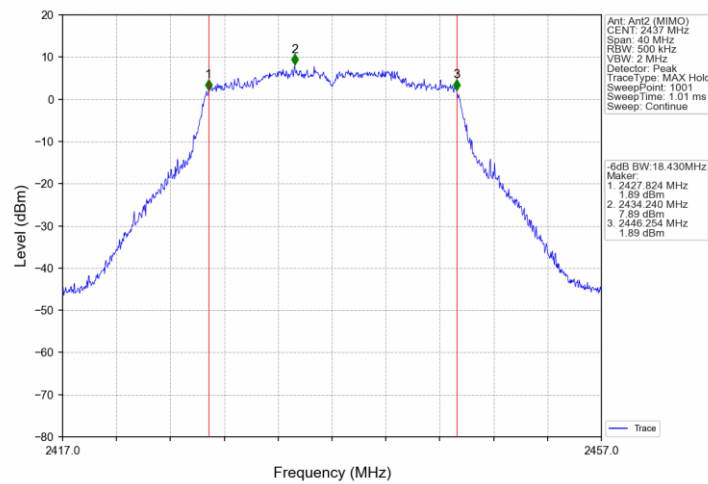
## 802.11ax(HEW20) LCH 2412MHz Ant2 (MIMO) NTNV



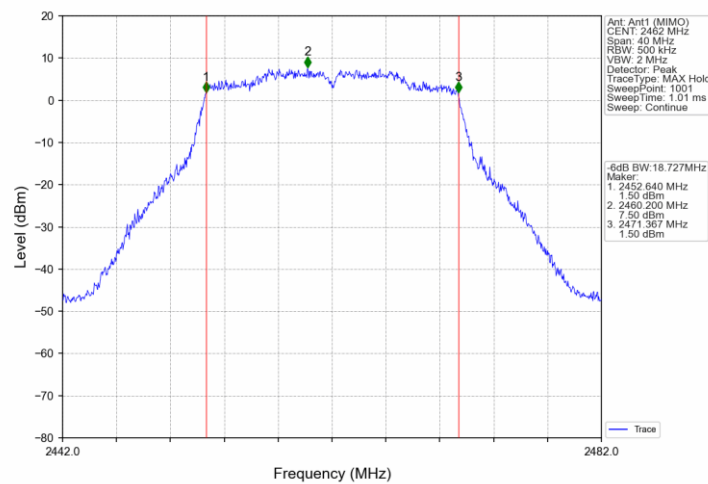
## 802.11ax(HEW20) MCH 2437MHz Ant1 (MIMO) NTNV



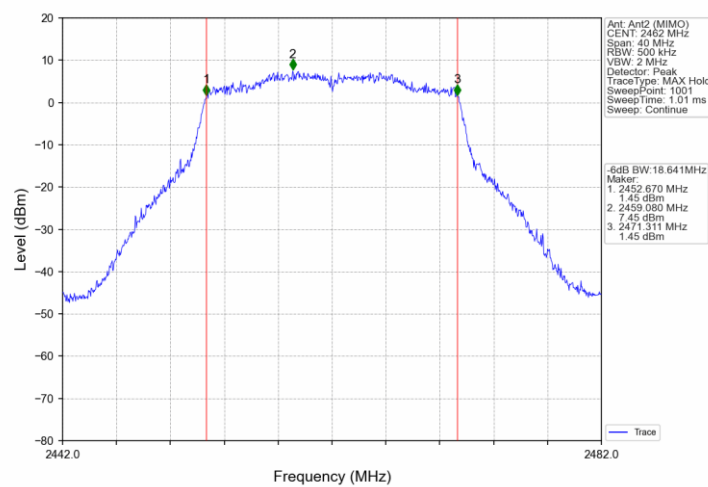
## 802.11ax(HEW20)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



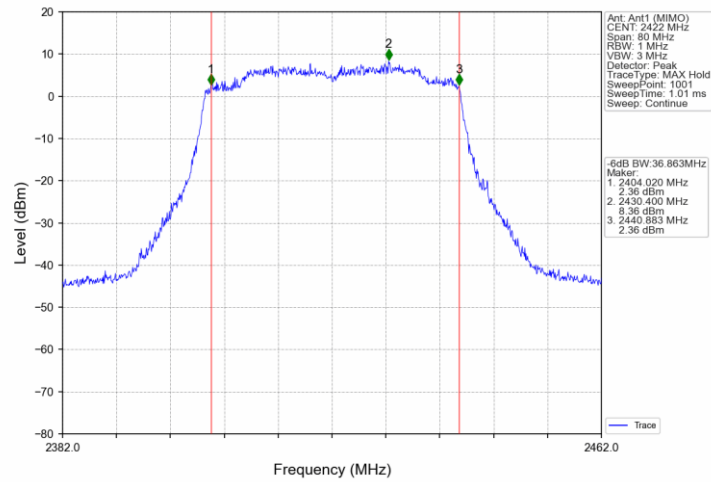
## 802.11ax(HEW20)\_HCH\_2462MHz\_Ant1 (MIMO)\_NTNV



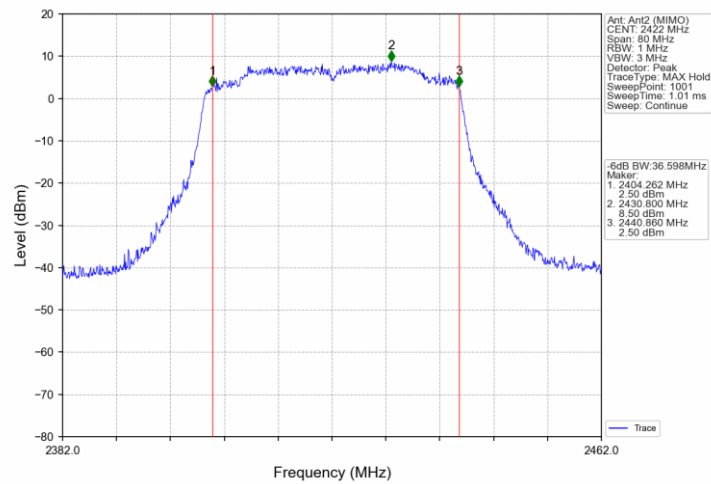
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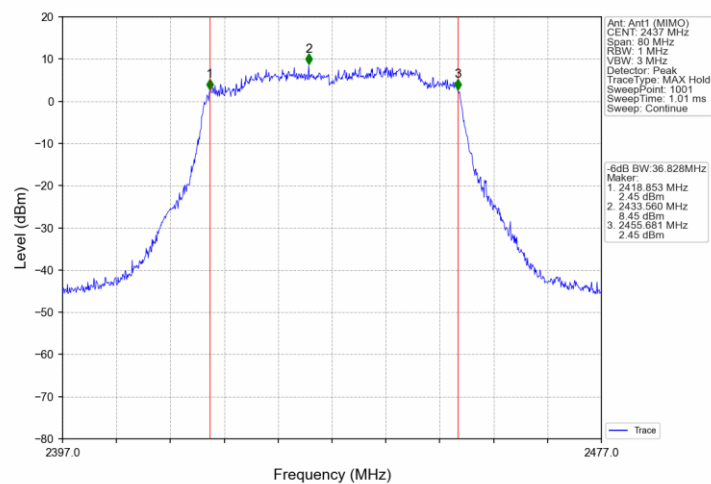
## 802.11ax(HEW40) LCH 2422MHz Ant1 (MIMO) NTNV



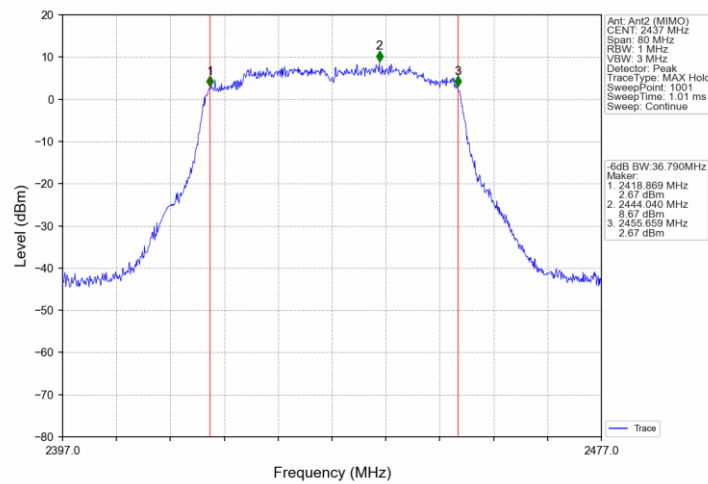
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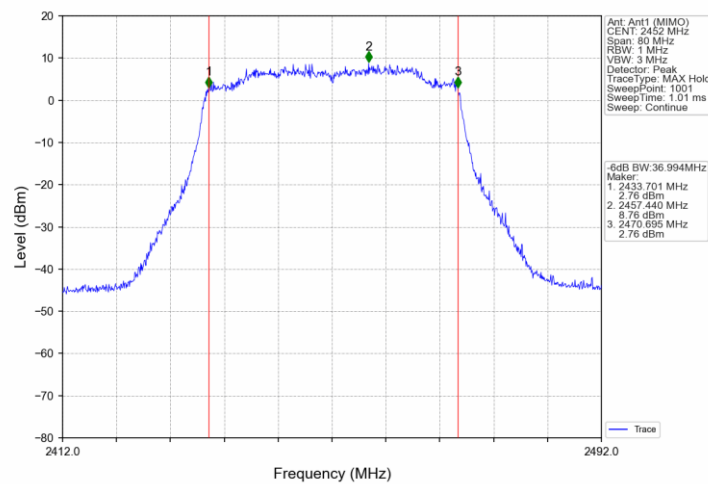
## 802.11ax(HEW40) MCH 2437MHz Ant1 (MIMO) NTNV



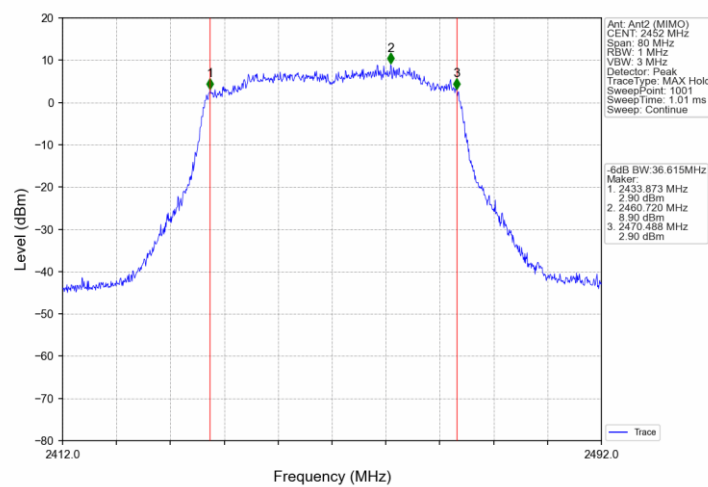
## 802.11ax(HEW40)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



## 802.11ax(HEW40)\_HCH\_2452MHz\_Ant1 (MIMO)\_NTNV

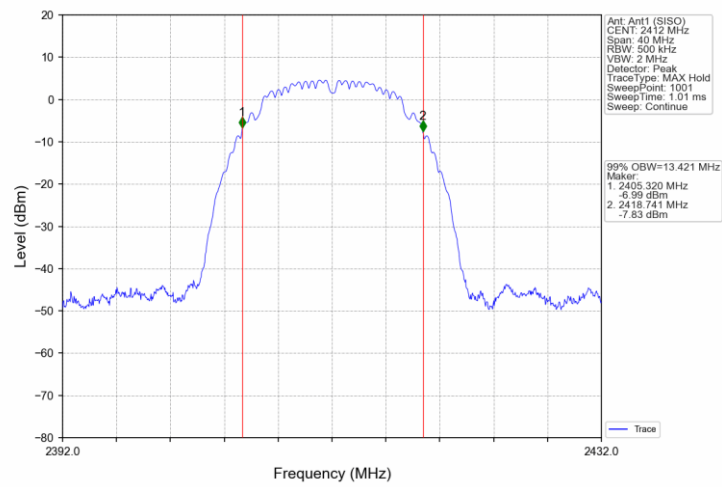
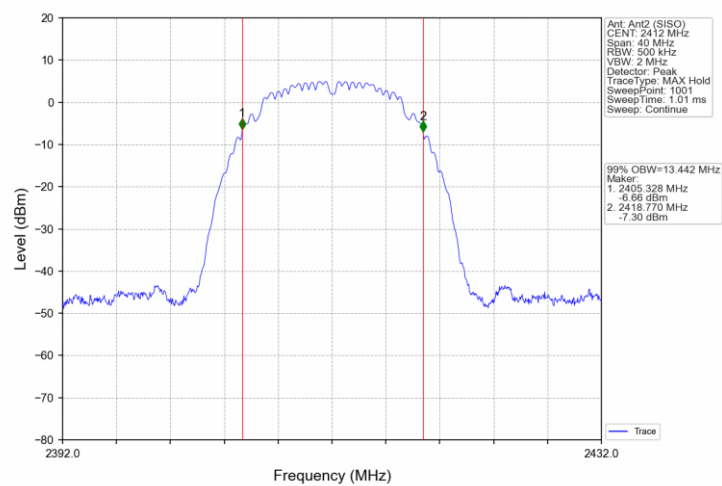
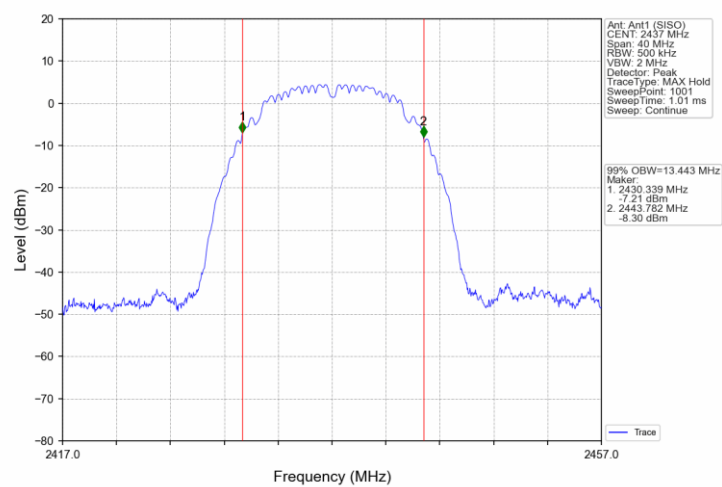


## 802.11ax(HEW40)\_HCH\_2452MHz\_Ant2 (MIMO)\_NTNV

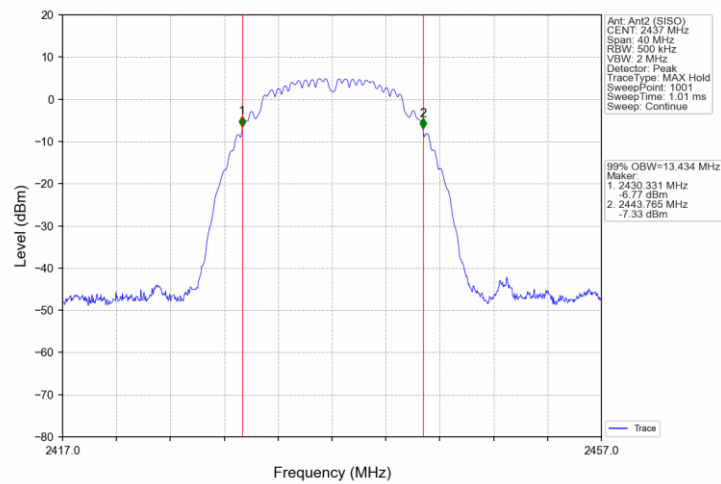


## 99% Bandwidth

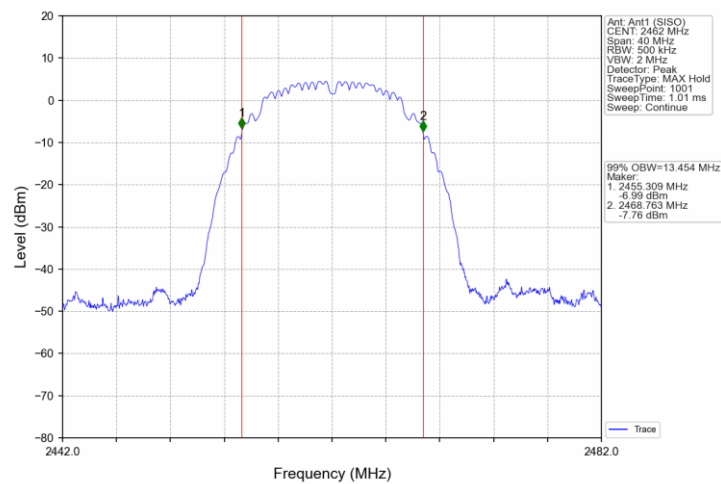
| Mode             | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|------------------|---------|-----------------|-----|------------------------------|-------|---------|
|                  |         |                 |     | Result                       | Limit |         |
| 802.11b          | SISO    | 2412            | 1   | 13.421                       | /     | Pass    |
|                  |         |                 | 2   | 13.442                       | /     | Pass    |
|                  |         | 2437            | 1   | 13.443                       | /     | Pass    |
|                  |         |                 | 2   | 13.434                       | /     | Pass    |
|                  |         | 2462            | 1   | 13.454                       | /     | Pass    |
|                  |         |                 | 2   | 13.439                       | /     | Pass    |
| 802.11g          | SISO    | 2412            | 1   | 17.341                       | /     | Pass    |
|                  |         |                 | 2   | 17.389                       | /     | Pass    |
|                  |         | 2437            | 1   | 17.325                       | /     | Pass    |
|                  |         |                 | 2   | 17.282                       | /     | Pass    |
|                  |         | 2462            | 1   | 17.325                       | /     | Pass    |
|                  |         |                 | 2   | 17.260                       | /     | Pass    |
| 802.11n (HT20)   | MIMO    | 2412            | 1   | 18.369                       | /     | Pass    |
|                  |         |                 | 2   | 18.303                       | /     | Pass    |
|                  |         | 2437            | 1   | 18.391                       | /     | Pass    |
|                  |         |                 | 2   | 18.445                       | /     | Pass    |
|                  |         | 2462            | 1   | 18.368                       | /     | Pass    |
|                  |         |                 | 2   | 18.391                       | /     | Pass    |
| 802.11n (HT40)   | MIMO    | 2422            | 1   | 36.272                       | /     | Pass    |
|                  |         |                 | 2   | 36.288                       | /     | Pass    |
|                  |         | 2437            | 1   | 36.331                       | /     | Pass    |
|                  |         |                 | 2   | 36.371                       | /     | Pass    |
|                  |         | 2452            | 1   | 36.260                       | /     | Pass    |
|                  |         |                 | 2   | 36.265                       | /     | Pass    |
| 802.11ax (HEW20) | MIMO    | 2412            | 1   | 19.110                       | /     | Pass    |
|                  |         |                 | 2   | 19.045                       | /     | Pass    |
|                  |         | 2437            | 1   | 19.067                       | /     | Pass    |
|                  |         |                 | 2   | 19.085                       | /     | Pass    |
|                  |         | 2462            | 1   | 19.098                       | /     | Pass    |
|                  |         |                 | 2   | 19.054                       | /     | Pass    |
| 802.11ax (HEW40) | MIMO    | 2422            | 1   | 37.677                       | /     | Pass    |
|                  |         |                 | 2   | 37.648                       | /     | Pass    |
|                  |         | 2437            | 1   | 37.716                       | /     | Pass    |
|                  |         |                 | 2   | 37.690                       | /     | Pass    |
|                  |         | 2452            | 1   | 37.620                       | /     | Pass    |
|                  |         |                 | 2   | 37.579                       | /     | Pass    |

**99% Bandwidth****802.11b\_LCH\_2412MHz\_Ant1 (SISO) NTN****802.11b\_LCH\_2412MHz\_Ant2 (SISO) NTN****802.11b\_MCH\_2437MHz\_Ant1 (SISO) NTN**

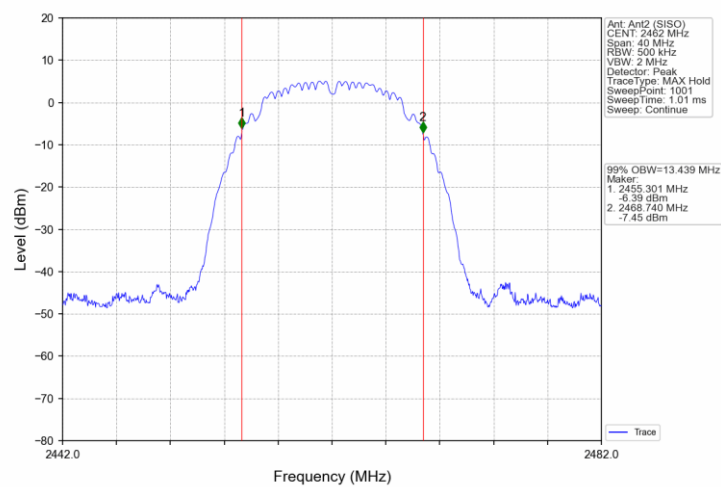
### 802.11b\_MCH\_2437MHz\_Ant2 (SISO)\_NTNV



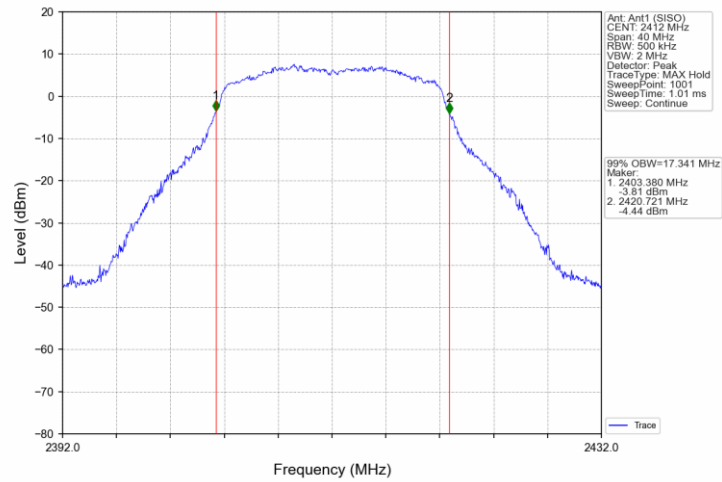
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



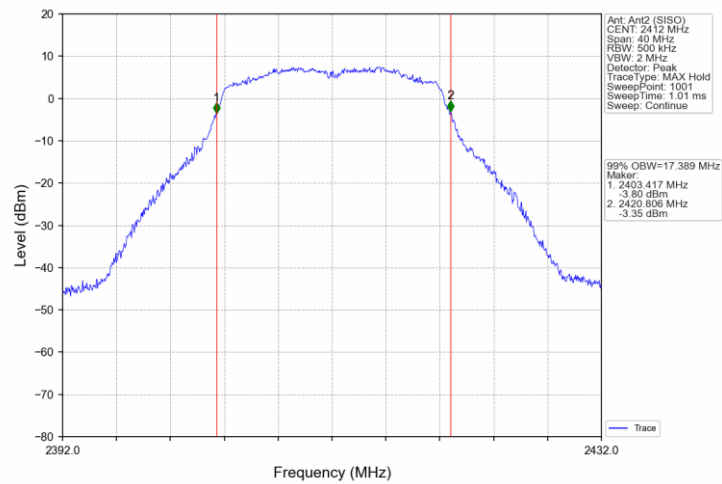
### 802.11b\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



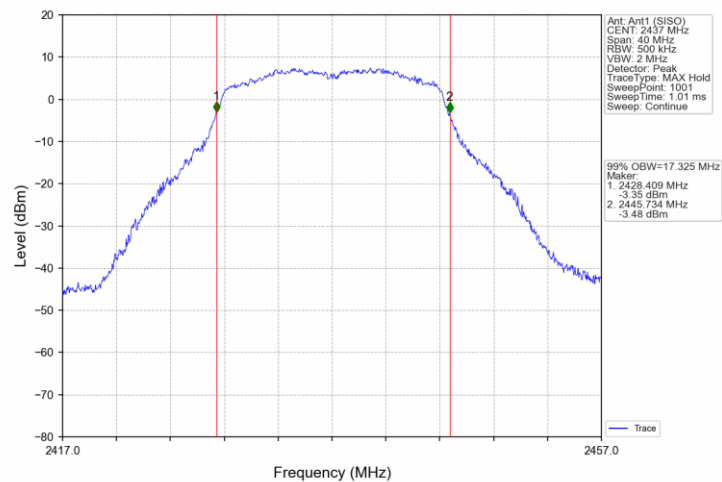
## 802.11g\_LCH\_2412MHz\_Ant1 (SISO) NTN



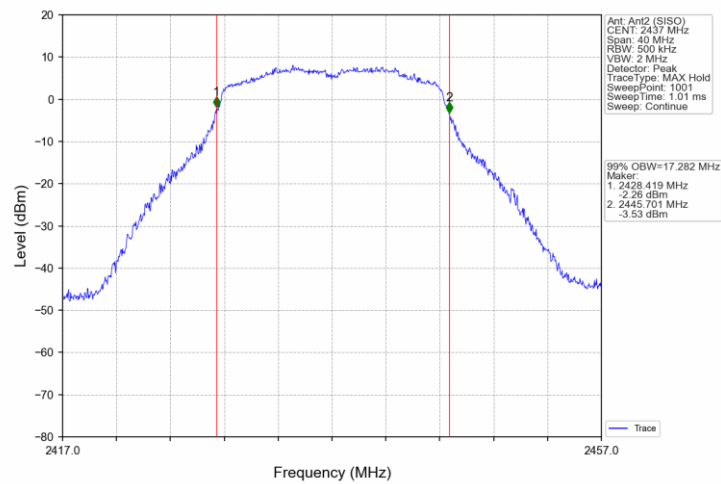
## 802.11g\_LCH\_2412MHz\_Ant2 (SISO) NTN



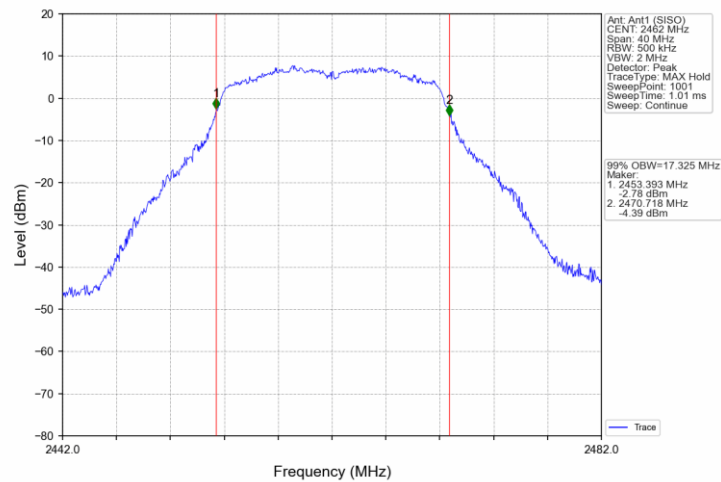
## 802.11g\_MCH\_2437MHz\_Ant1 (SISO) NTN



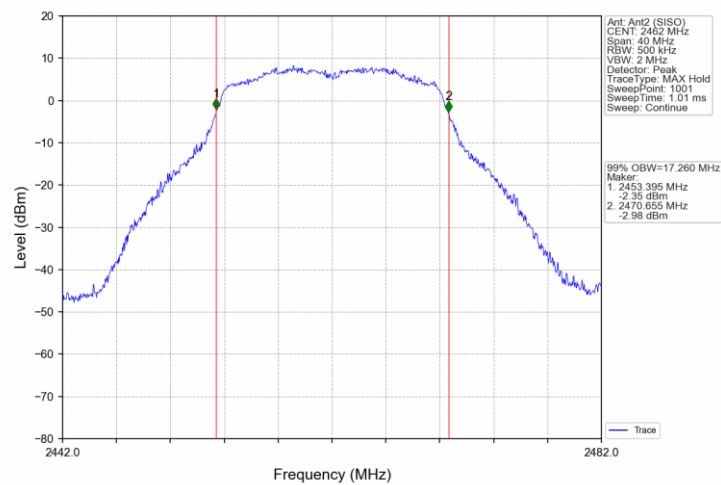
### 802.11g\_MCH\_2437MHz\_Ant2 (SISO)\_NTNV



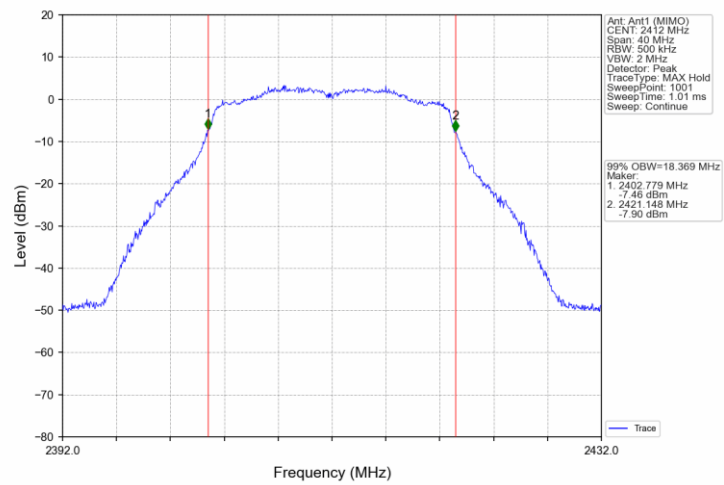
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



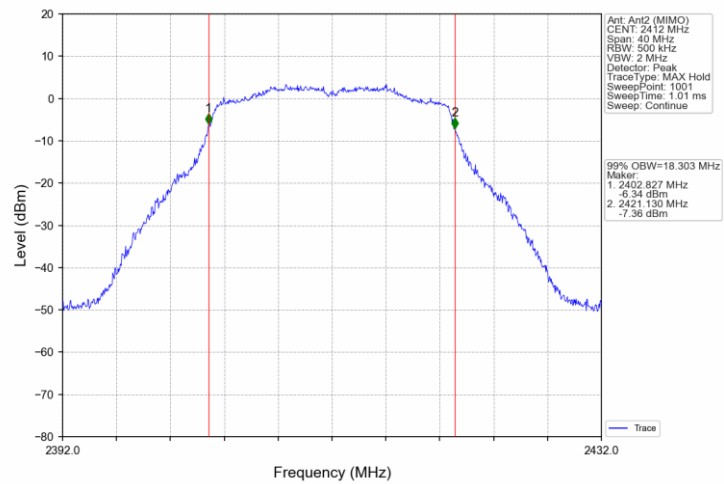
### 802.11g\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



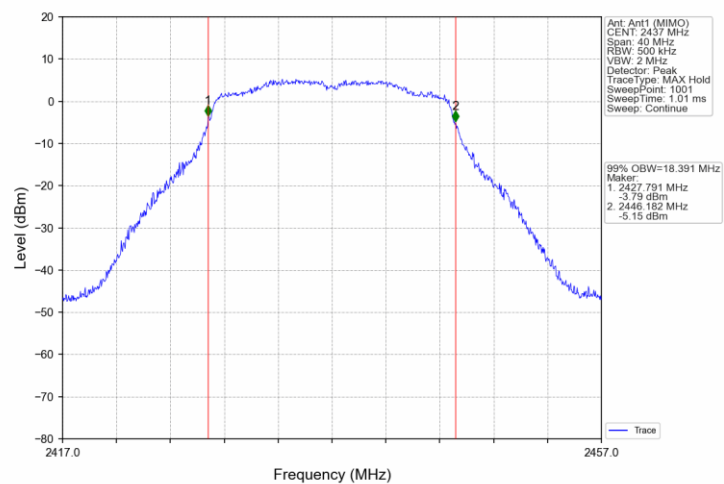
## 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (MIMO)\_NTNV



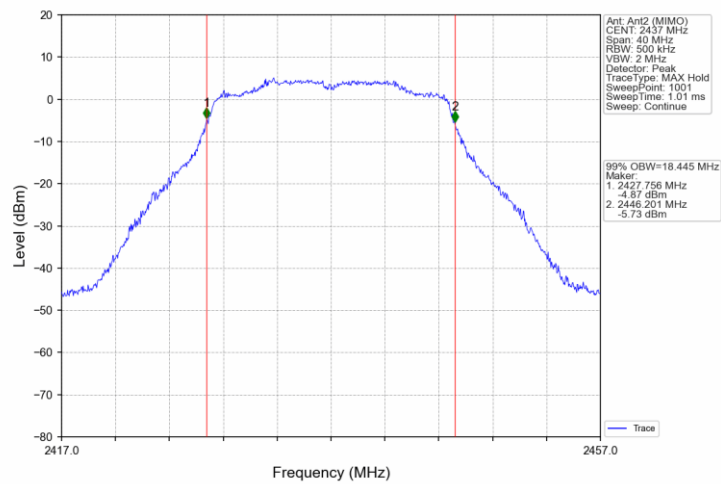
## 802.11n(HT20)\_LCH\_2412MHz\_Ant2 (MIMO)\_NTNV



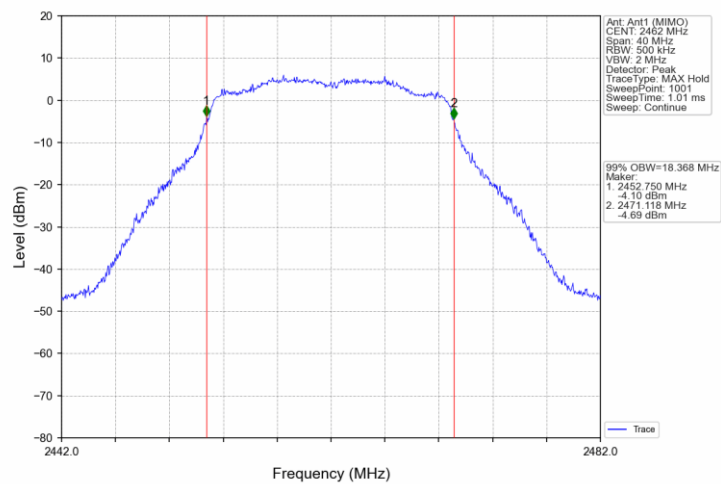
## 802.11n(HT20)\_MCH\_2437MHz\_Ant1 (MIMO)\_NTNV



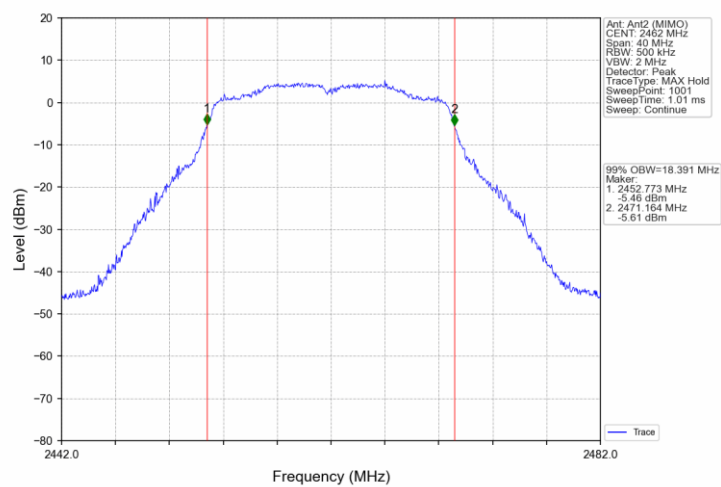
## 802.11n(HT20)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



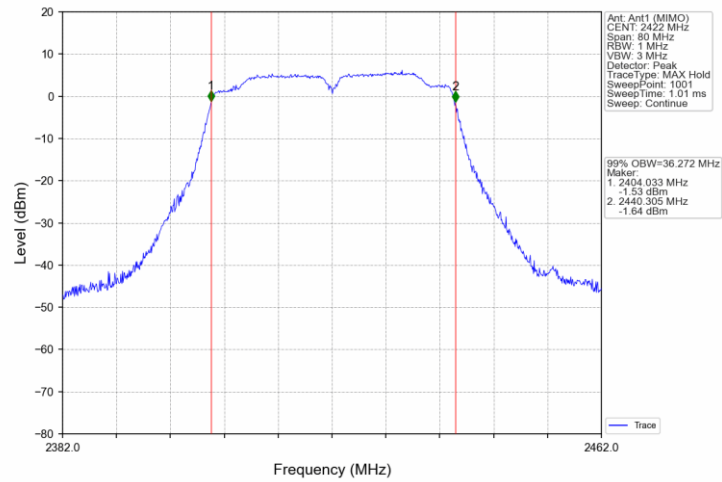
## 802.11n(HT20)\_HCH\_2462MHz\_Ant1 (MIMO)\_NTNV



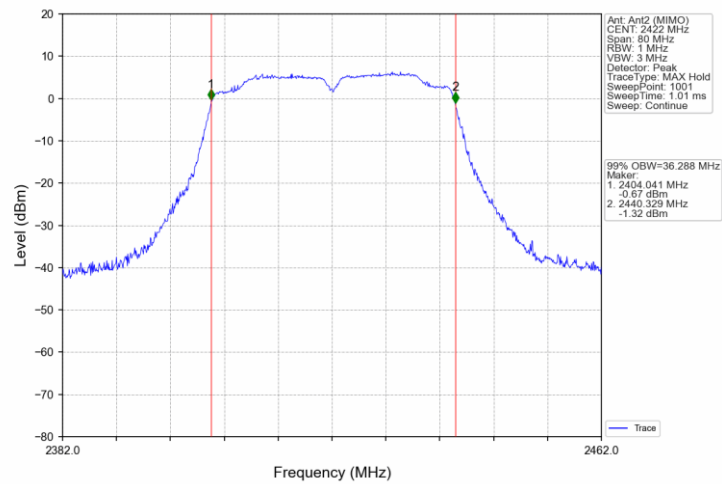
## 802.11n(HT20)\_HCH\_2462MHz\_Ant2 (MIMO)\_NTNV



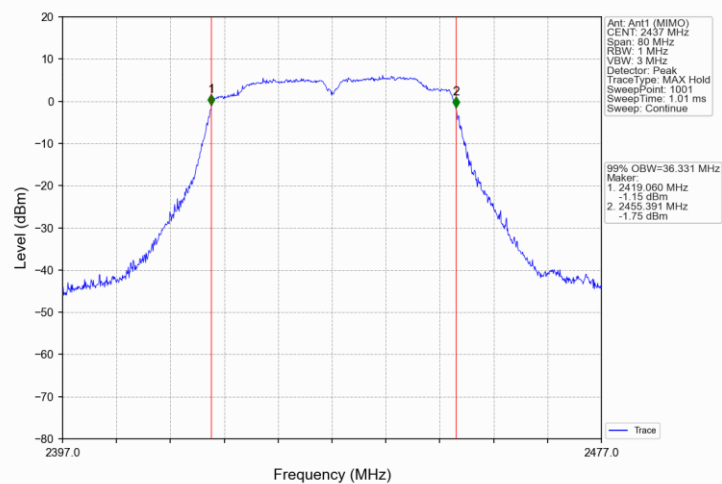
## 802.11n(HT40)\_LCH\_2422MHz\_Ant1 (MIMO)\_NTNV



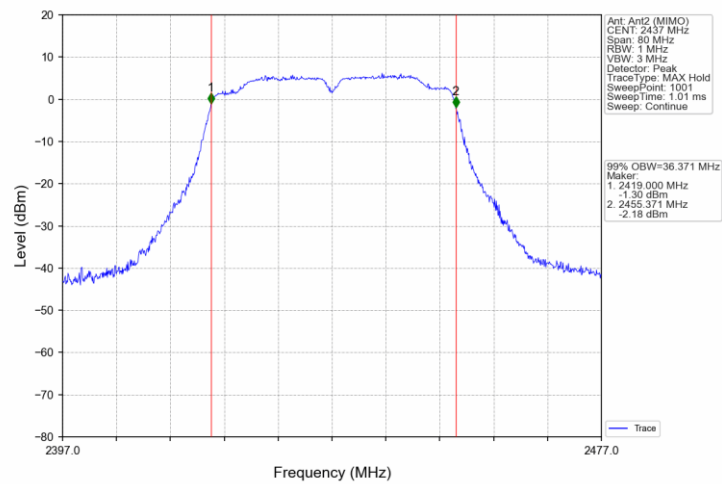
## 802.11n(HT40)\_LCH\_2422MHz\_Ant2 (MIMO)\_NTNV



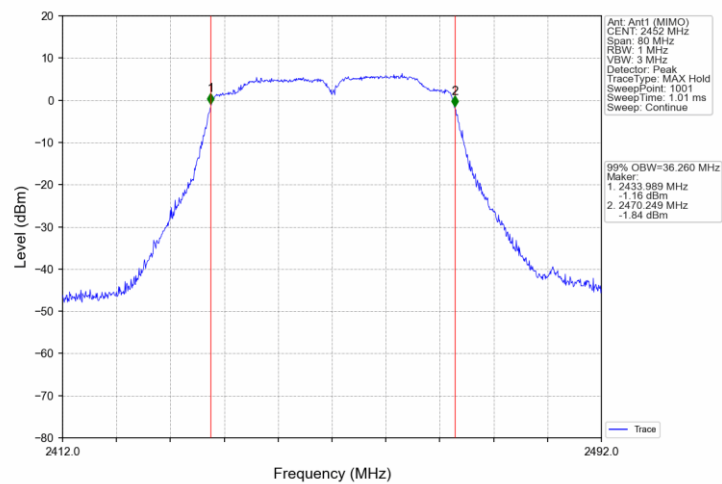
## 802.11n(HT40)\_MCH\_2437MHz\_Ant1 (MIMO)\_NTNV



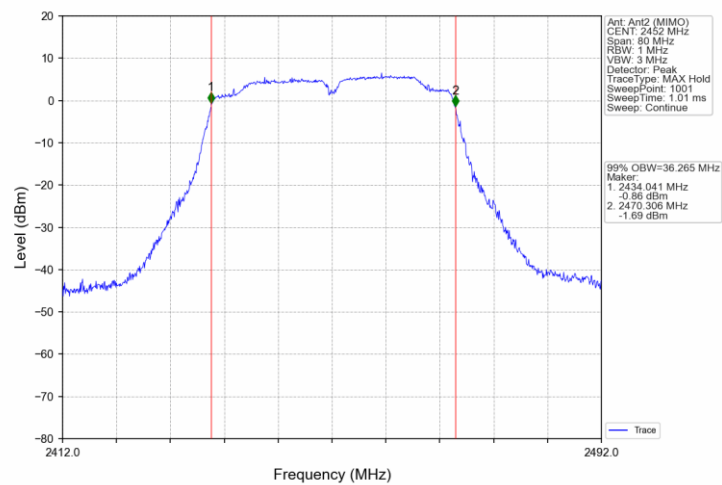
## 802.11n(HT40)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



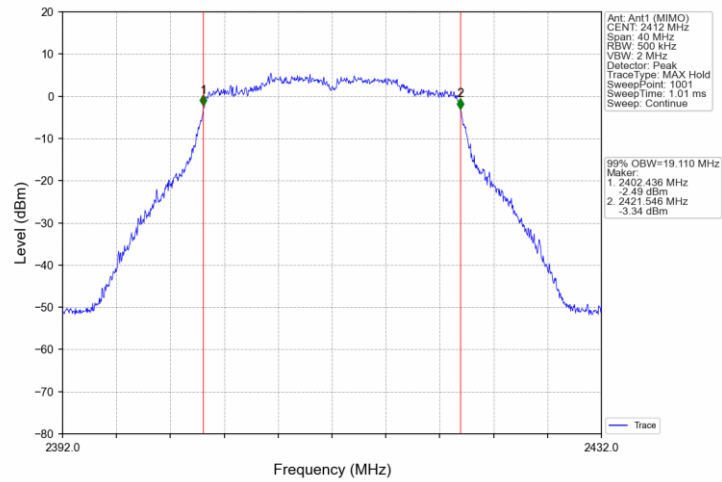
## 802.11n(HT40)\_HCH\_2452MHz\_Ant1 (MIMO)\_NTNV



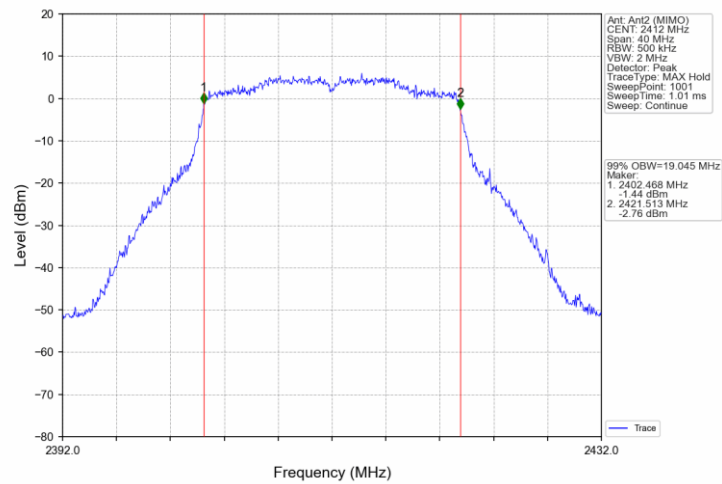
## 802.11n(HT40)\_HCH\_2452MHz\_Ant2 (MIMO)\_NTNV



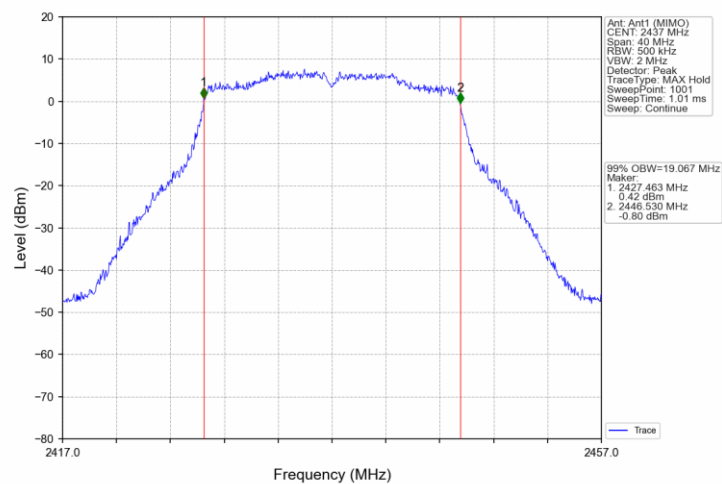
## 802.11ax(HEW20) LCH 2412MHz Ant1 (MIMO) NTNV



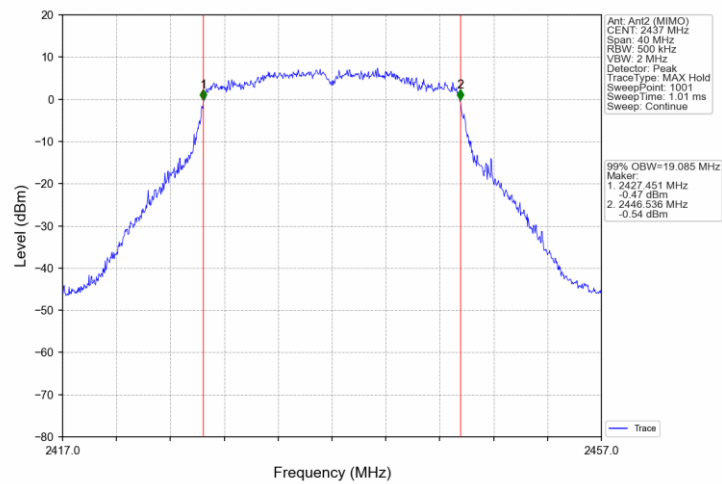
## 802.11ax(HEW20) LCH 2412MHz Ant2 (MIMO) NTNV



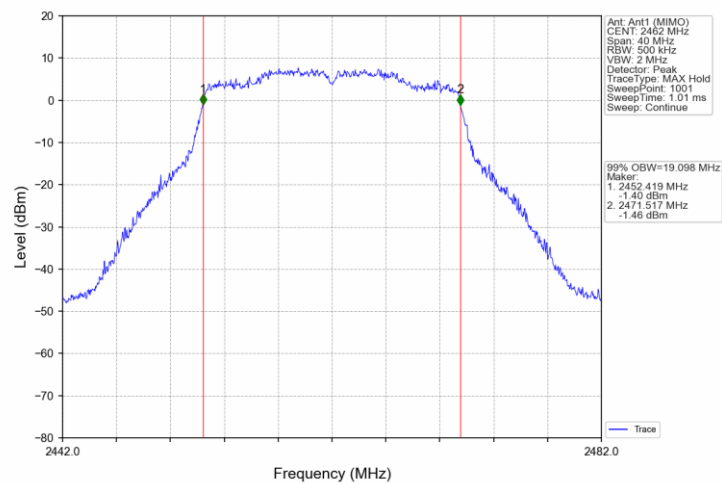
## 802.11ax(HEW20) MCH 2437MHz Ant1 (MIMO) NTNV



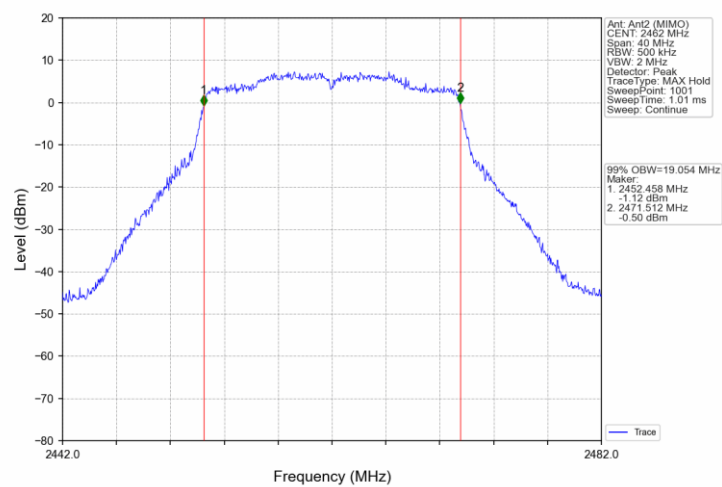
## 802.11ax(HEW20)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



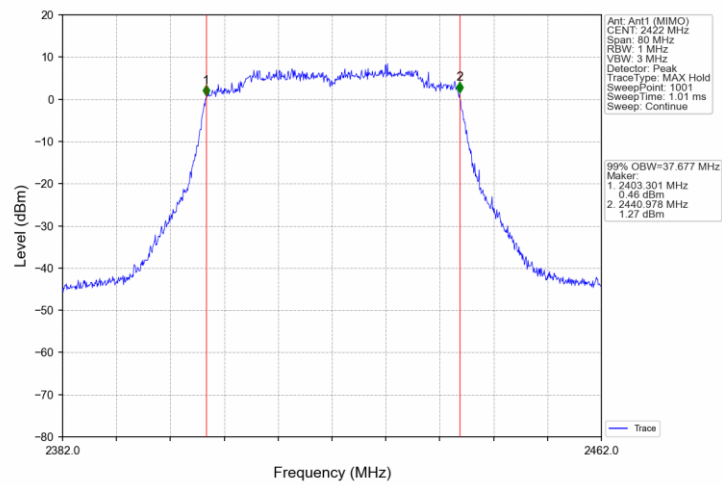
## 802.11ax(HEW20)\_HCH\_2462MHz\_Ant1 (MIMO)\_NTNV



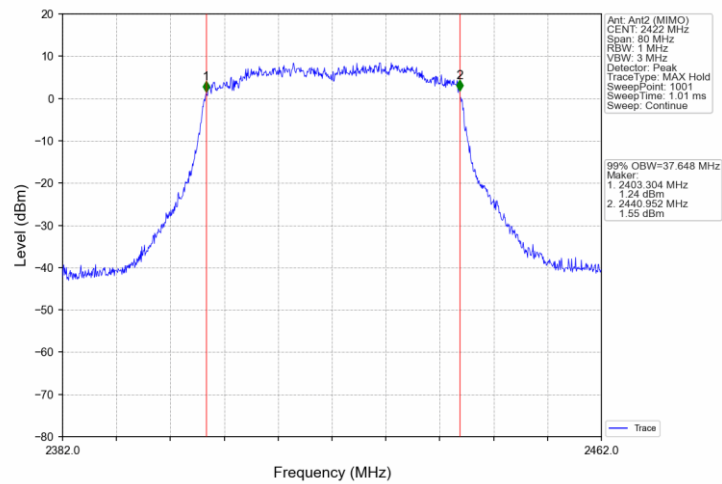
## 802.11ax(HEW20)\_HCH\_2462MHz\_Ant2 (MIMO)\_NTNV



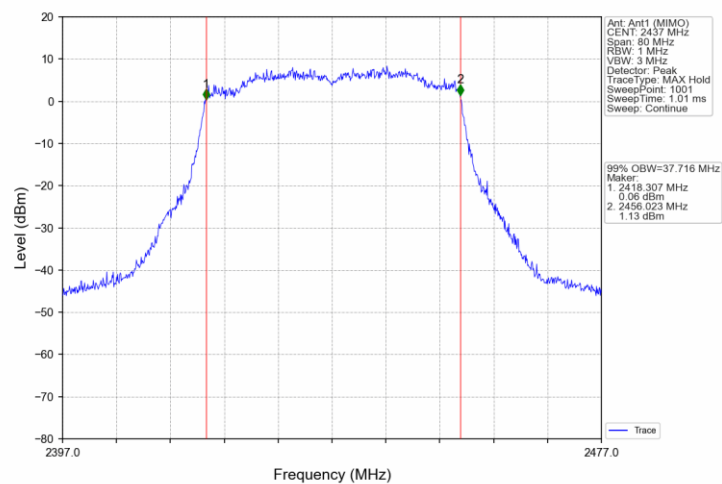
## 802.11ax(HEW40) LCH 2422MHz Ant1 (MIMO) NTNV



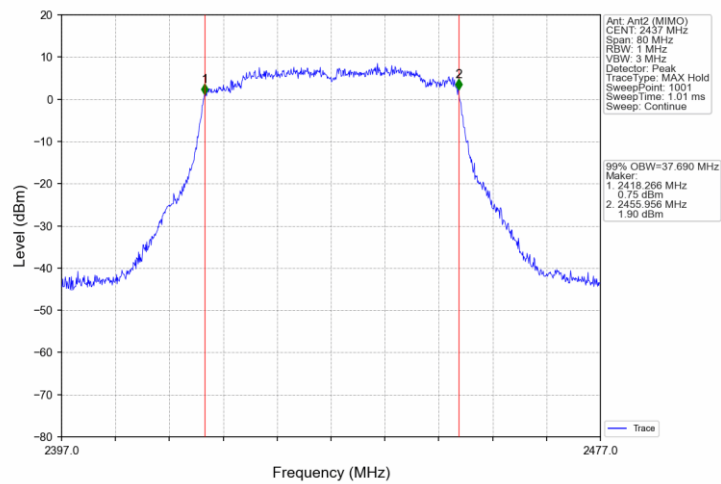
## 802.11ax(HEW40) LCH 2422MHz Ant2 (MIMO) NTNV



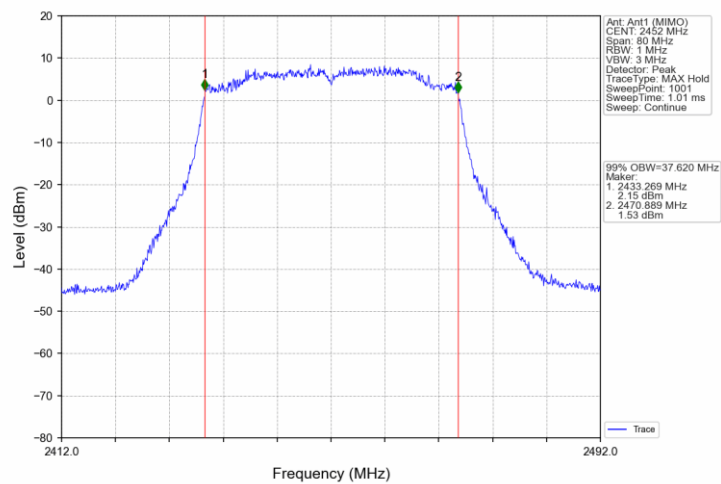
## 802.11ax(HEW40) MCH 2437MHz Ant1 (MIMO) NTNV



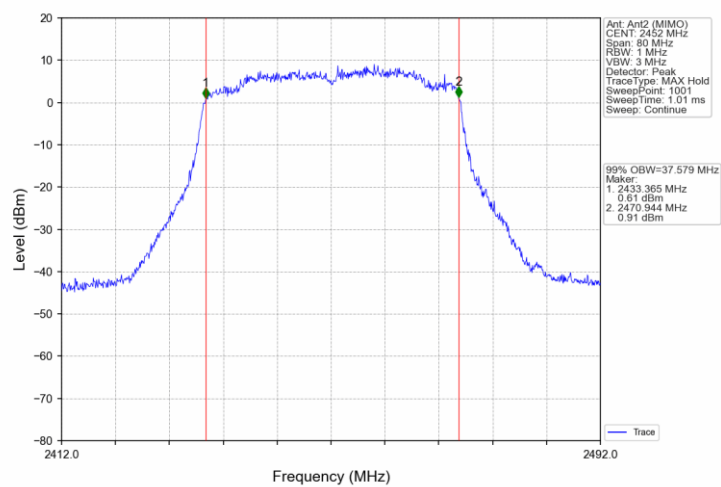
## 802.11ax(HEW40)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTNV



## 802.11ax(HEW40)\_HCH\_2452MHz\_Ant1 (MIMO)\_NTNV



## 802.11ax(HEW40)\_HCH\_2452MHz\_Ant2 (MIMO)\_NTNV



## 9.4 Power Spectral Density

### Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. The RF output of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting, the instrument center frequency is set to the nominal EUT channel center frequency enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
4. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz, VBW $\geq$ 3RBW, Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
5. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
6. Repeat above procedures until other frequencies measured were completed.

### Limit

Limit [dBm/3KHz]

$\leq 8$

Note: The Antenna directional gain is 6.29 dBi. The limit is the above limits reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi, which is 8dBm – 0.1dB=7.9dBm

| Mode             | TX Type | Frequency (MHz) | Maximum PSD (dBm/3kHz) |        |        |       | Verdict |
|------------------|---------|-----------------|------------------------|--------|--------|-------|---------|
|                  |         |                 | ANT1                   | ANT2   | MIMO   | Limit |         |
| 802.11b          | SISO    | 2412            | -10.69                 | -9.53  | /      | <=7.9 | Pass    |
|                  |         | 2437            | -10.28                 | -9.70  | /      | <=7.9 | Pass    |
|                  |         | 2462            | -9.74                  | -10.09 | /      | <=7.9 | Pass    |
| 802.11g          | SISO    | 2412            | -12.75                 | -11.68 | /      | <=7.9 | Pass    |
|                  |         | 2437            | -12.32                 | -12.52 | /      | <=7.9 | Pass    |
|                  |         | 2462            | -12.73                 | -11.73 | /      | <=7.9 | Pass    |
| 802.11n (HT20)   | MIMO    | 2412            | -16.68                 | -16.56 | -14.60 | <=7.9 | Pass    |
|                  |         | 2437            | -13.45                 | -14.67 | -11.55 | <=7.9 | Pass    |
|                  |         | 2462            | -14.34                 | -13.71 | -11.93 | <=7.9 | Pass    |
| 802.11n (HT40)   | MIMO    | 2422            | -17.38                 | -16.89 | -14.89 | <=7.9 | Pass    |
|                  |         | 2437            | -17.76                 | -16.99 | -15.21 | <=7.9 | Pass    |
|                  |         | 2452            | -15.42                 | -16.96 | -14.03 | <=7.9 | Pass    |
| 802.11ax (HEW20) | MIMO    | 2412            | -17.97                 | -16.52 | -15.09 | <=7.9 | Pass    |
|                  |         | 2437            | -15.51                 | -16.20 | -13.55 | <=7.9 | Pass    |
|                  |         | 2462            | -15.19                 | -13.85 | -12.67 | <=7.9 | Pass    |
| 802.11ax (HEW40) | MIMO    | 2422            | -17.75                 | -17.31 | -15.91 | <=7.9 | Pass    |
|                  |         | 2437            | -18.09                 | -17.93 | -16.05 | <=7.9 | Pass    |
|                  |         | 2452            | -17.58                 | -17.76 | -15.96 | <=7.9 | Pass    |

$$PSD^{SUM} = 10 \cdot \log(10^{(PSD_{ANT1}/10)} + 10^{(PSD_{ANT2}/10)})$$