

## **Appendix RF Test Data for 2.4G WIFI**

**Company:** : Hangzhou Adaprox Intelligent Technology Co., Ltd.

**EUT** : ADB1 Cloud Module

**FCC ID:** : 2A2X5-ADB1

**Model Number** : ADB1

**Report No.** : HTT202512747F01

**Reviewed By** : Heber He

## 1. Duty Cycle

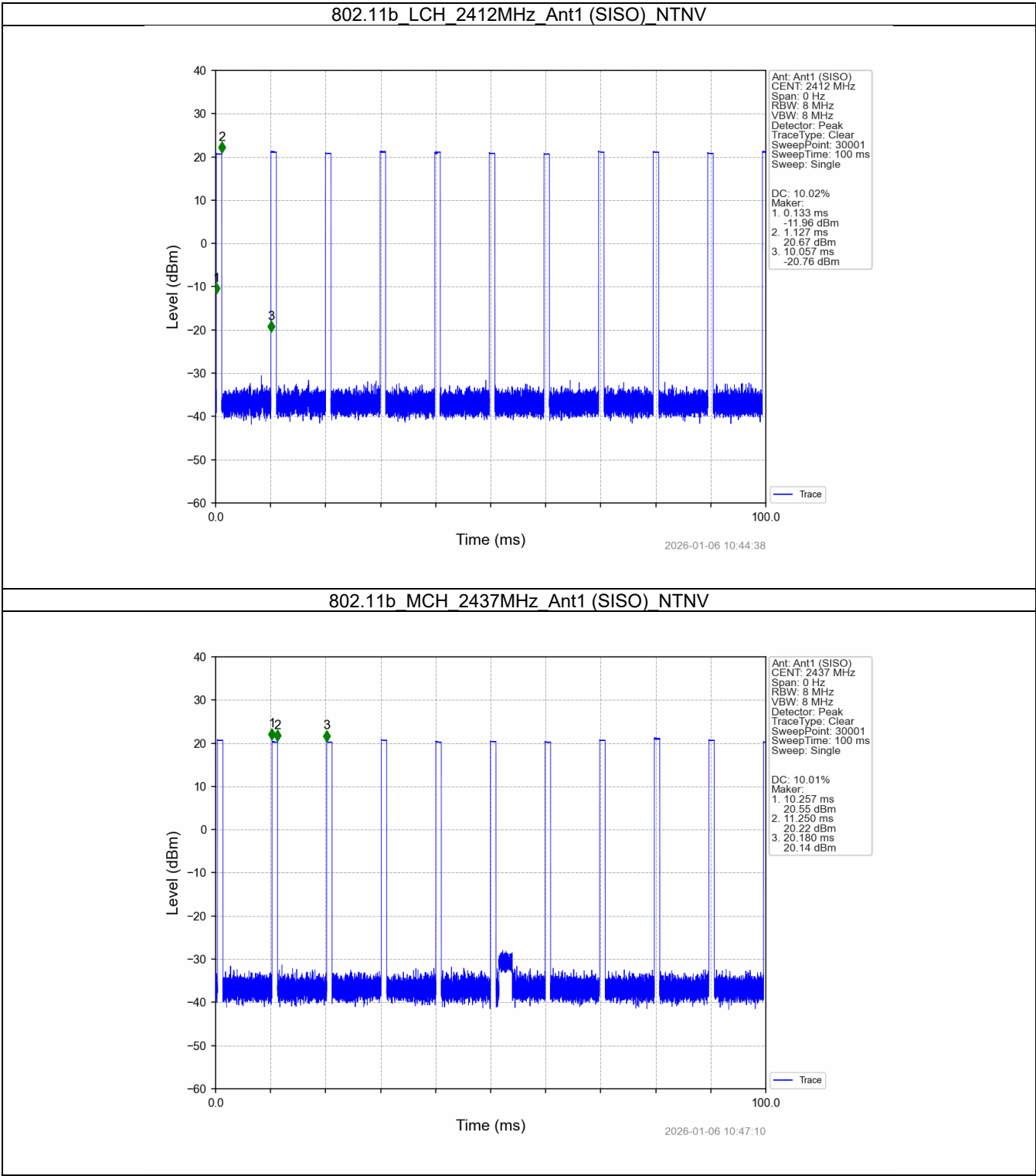
### 1.1 Test Result

#### 1.1.1 Ant1

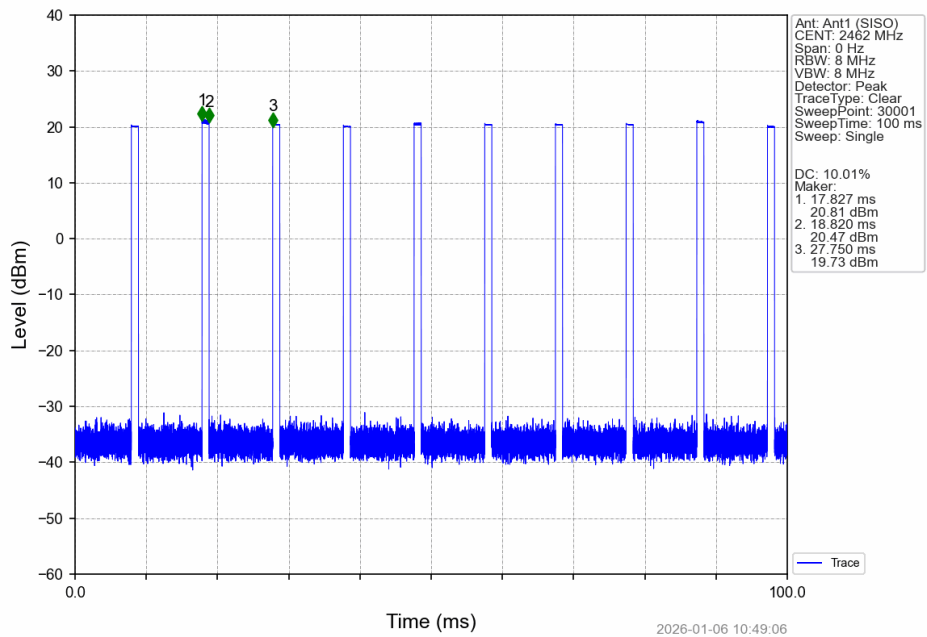
| Ant1           |         |                 |           |             |                |                                   |                       |
|----------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode           | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11b        | SISO    | 2412            | 0.994     | 9.924       | 10.02          | 9.99                              | 0.03                  |
|                |         | 2437            | 0.993     | 9.923       | 10.01          | 10.00                             | 0.03                  |
|                |         | 2462            | 0.993     | 9.923       | 10.01          | 10.00                             | 0.03                  |
| 802.11g        | SISO    | 2412            | 1.393     | 13.980      | 9.96           | 10.02                             | 0.00                  |
|                |         | 2437            | 1.393     | 13.976      | 9.97           | 10.01                             | 0.02                  |
|                |         | 2462            | 1.393     | 13.980      | 9.96           | 10.02                             | 0.02                  |
| 802.11n (HT20) | SISO    | 2412            | 1.300     | 13.057      | 9.96           | 10.02                             | 0.03                  |
|                |         | 2437            | 1.300     | 13.057      | 9.96           | 10.02                             | 0.03                  |
|                |         | 2462            | 1.300     | 13.056      | 9.96           | 10.02                             | 0.03                  |

1.2 Test Graph

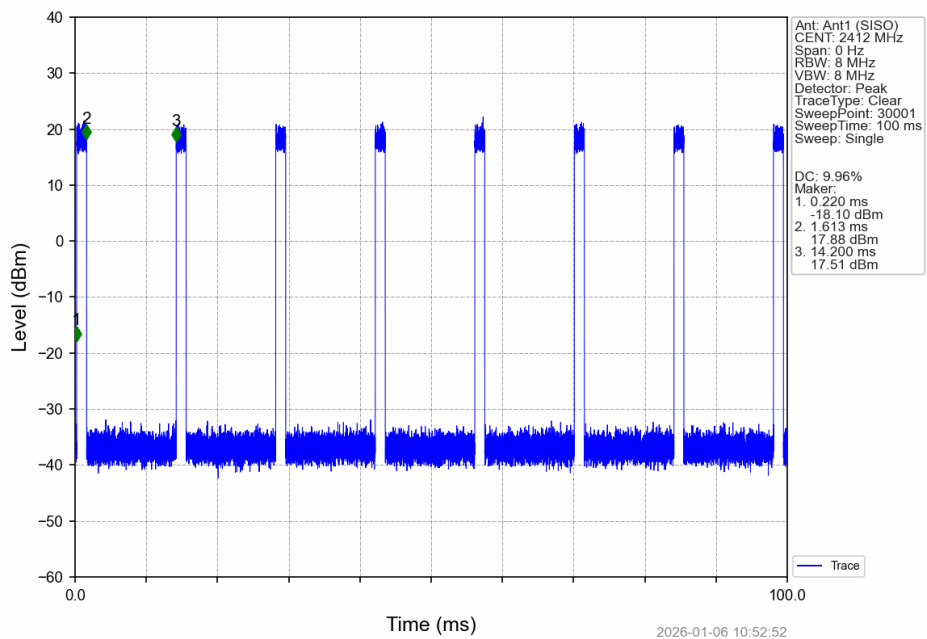
1.2.1 Ant1



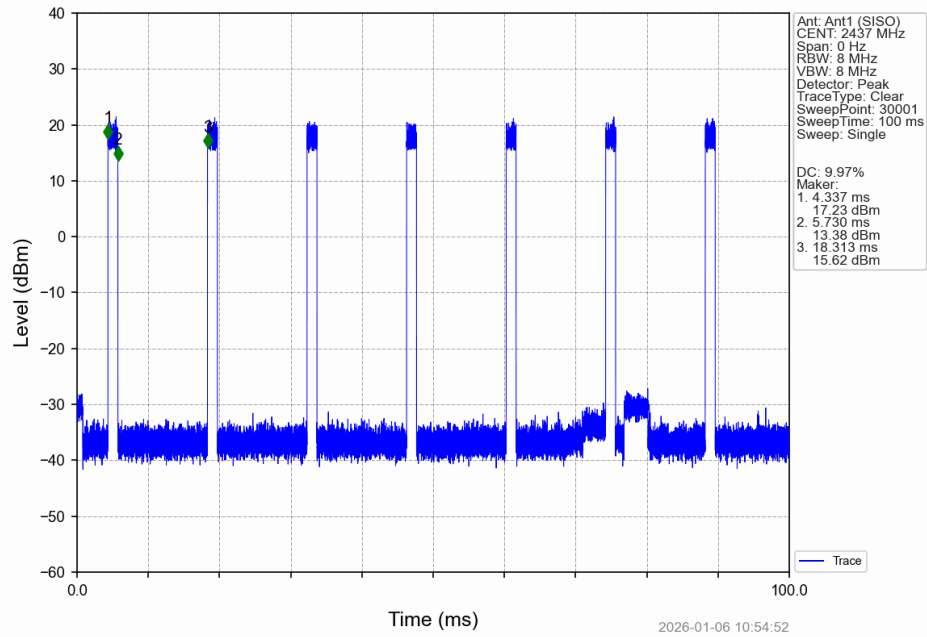
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



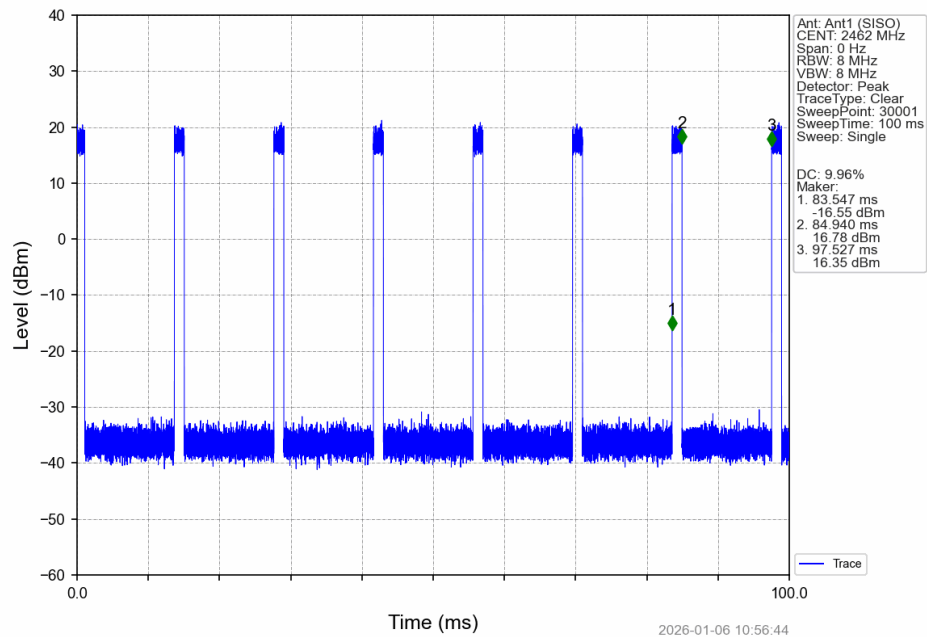
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



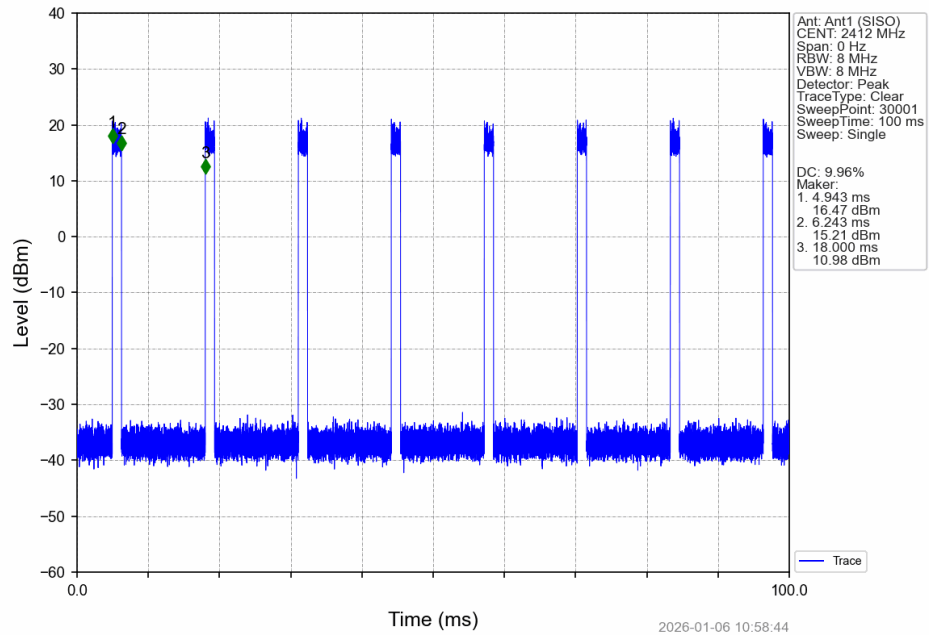
# 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



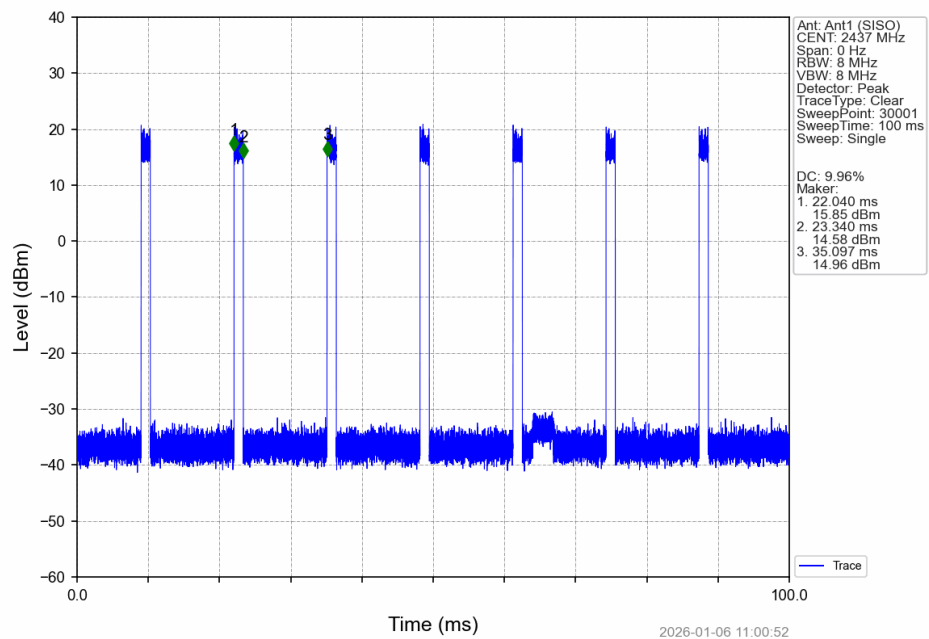
# 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



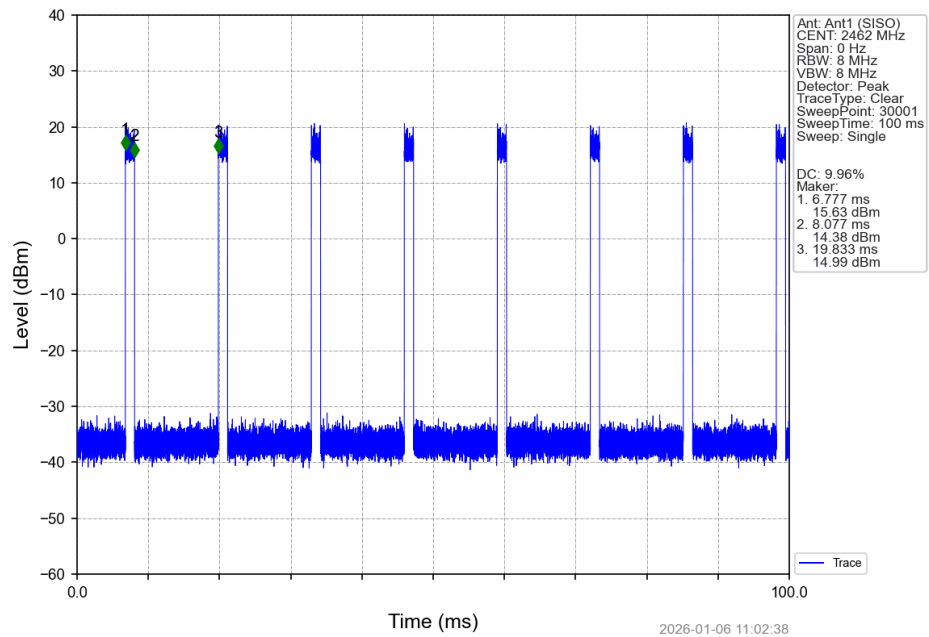
# 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



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



802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

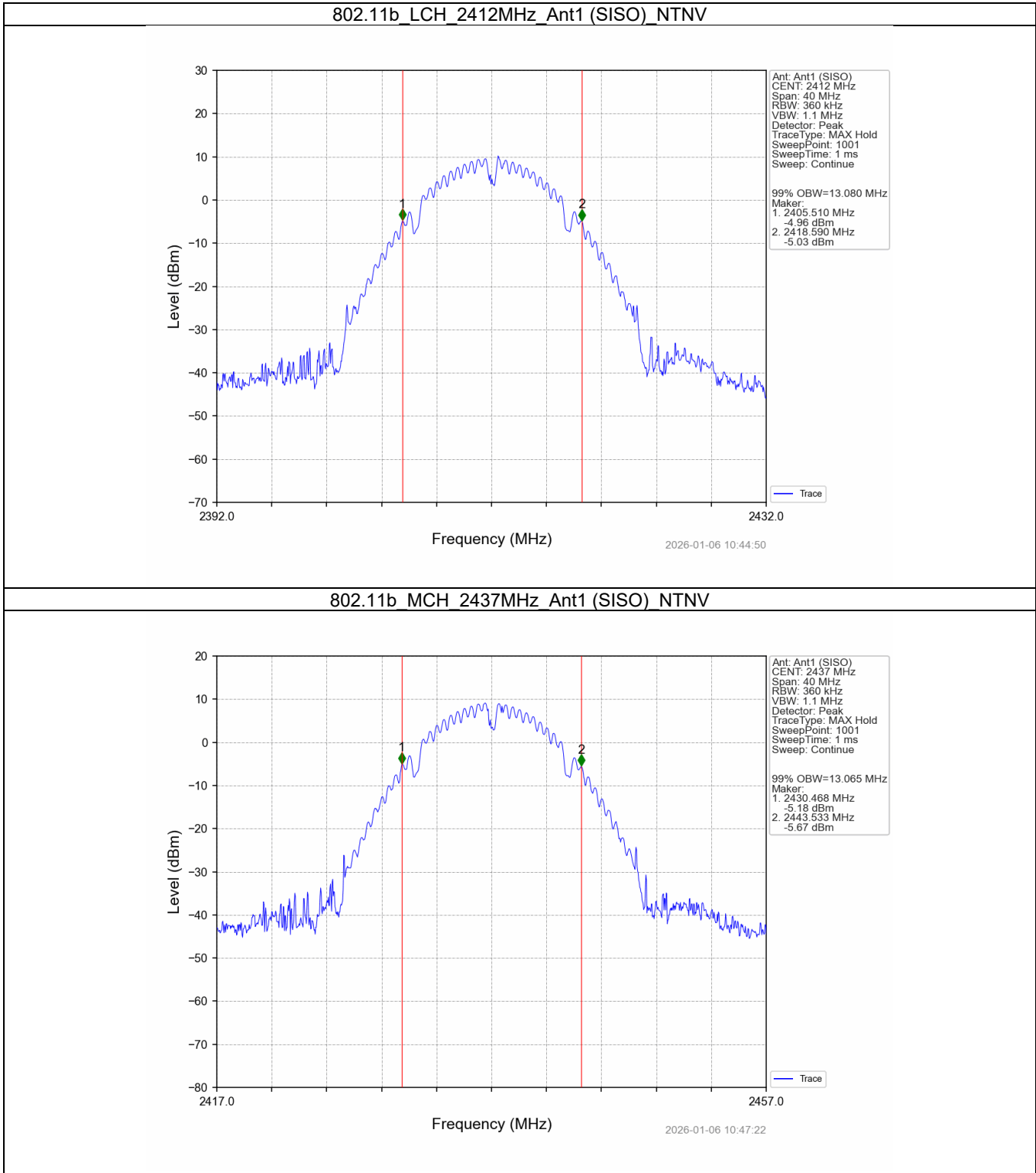
| Mode           | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|----------------|---------|-----------------|-----|------------------------------|-------|---------|
|                |         |                 |     | Result                       | Limit |         |
| 802.11b        | SISO    | 2412            | 1   | 13.080                       | /     | Pass    |
|                |         | 2437            | 1   | 13.065                       | /     | Pass    |
|                |         | 2462            | 1   | 12.959                       | /     | Pass    |
| 802.11g        | SISO    | 2412            | 1   | 17.561                       | /     | Pass    |
|                |         | 2437            | 1   | 17.721                       | /     | Pass    |
|                |         | 2462            | 1   | 17.567                       | /     | Pass    |
| 802.11n (HT20) | SISO    | 2412            | 1   | 18.553                       | /     | Pass    |
|                |         | 2437            | 1   | 18.605                       | /     | Pass    |
|                |         | 2462            | 1   | 18.271                       | /     | Pass    |

#### 2.1.2 6dB BW

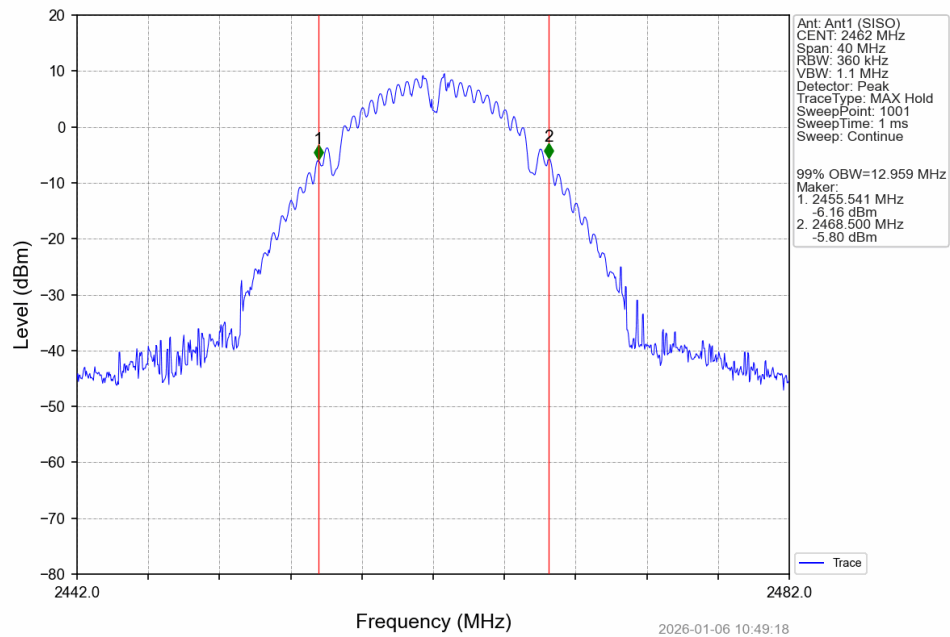
| Mode           | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) |            | Verdict |
|----------------|---------|-----------------|-----|---------------------|------------|---------|
|                |         |                 |     | Result              | Limit      |         |
| 802.11b        | SISO    | 2412            | 1   | 8.193               | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 8.192               | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 7.216               | $\geq 0.5$ | Pass    |
| 802.11g        | SISO    | 2412            | 1   | 17.405              | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 17.298              | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 17.449              | $\geq 0.5$ | Pass    |
| 802.11n (HT20) | SISO    | 2412            | 1   | 16.448              | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 15.607              | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 15.911              | $\geq 0.5$ | Pass    |

2.2 Test Graph

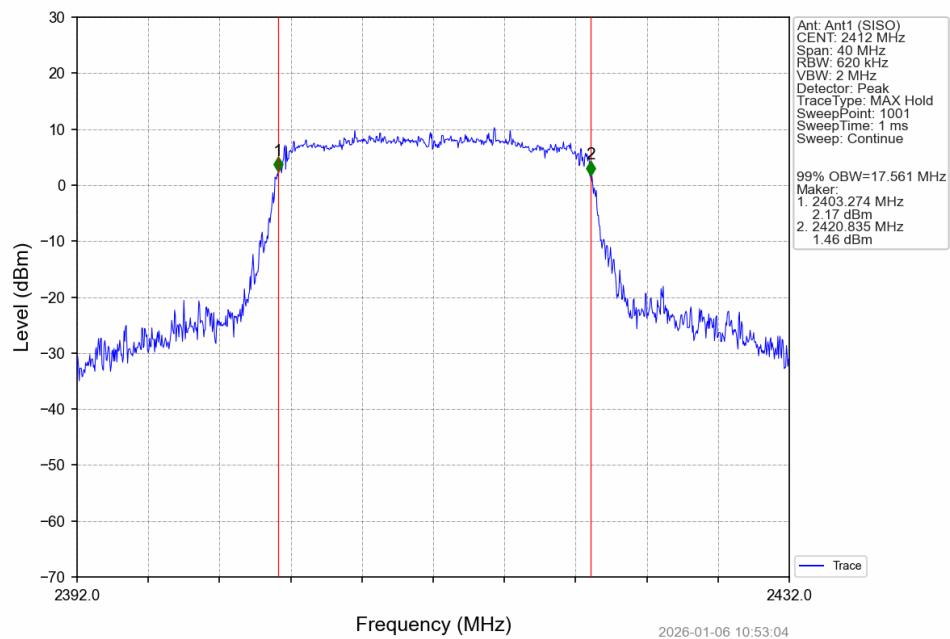
2.2.1 OBW



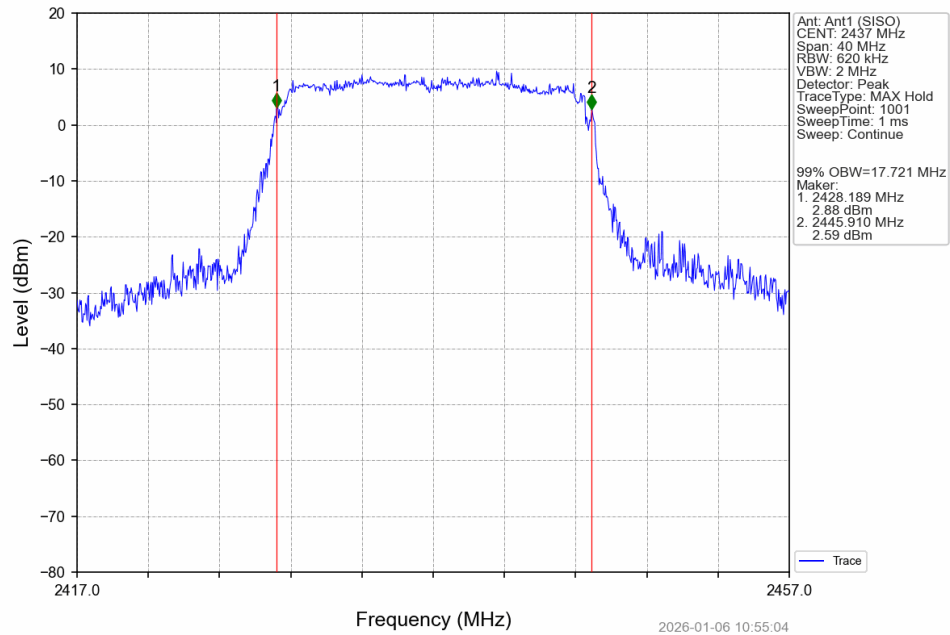
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



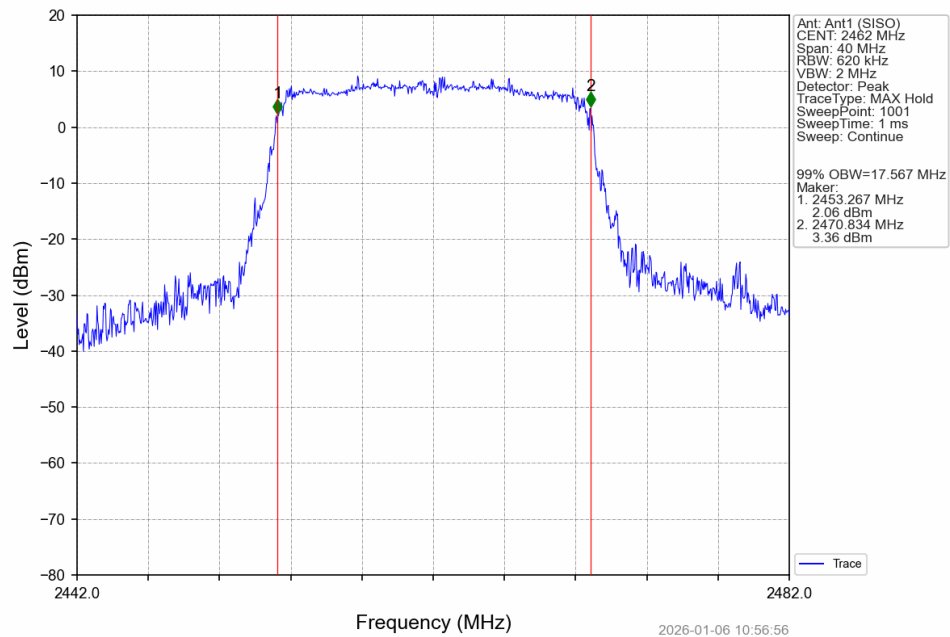
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



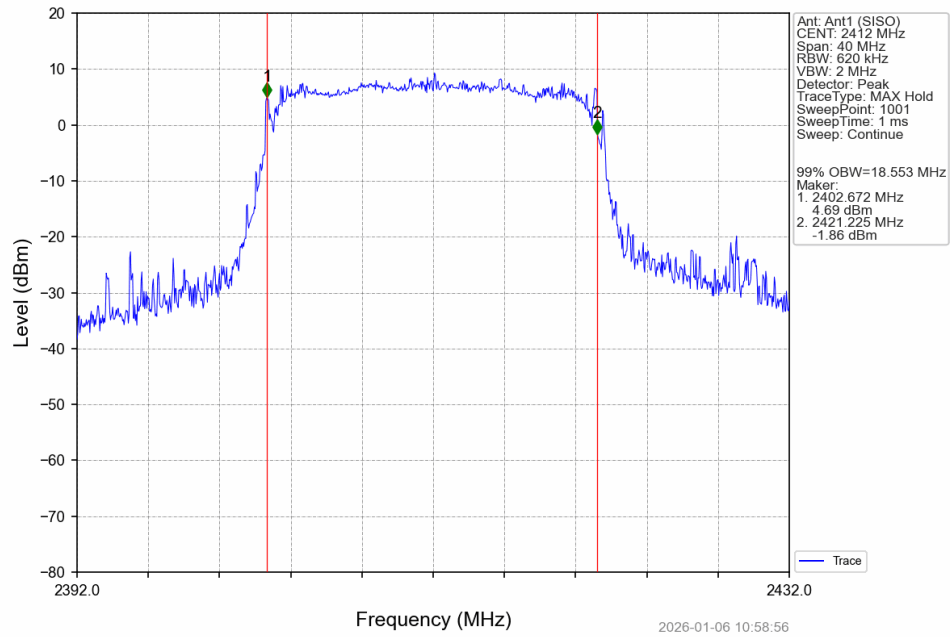
### 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



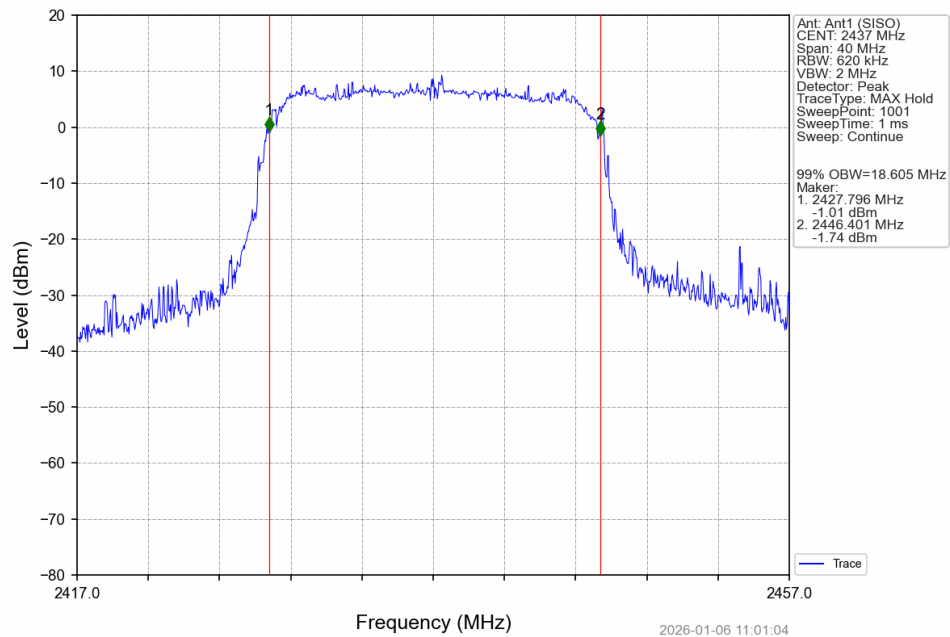
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



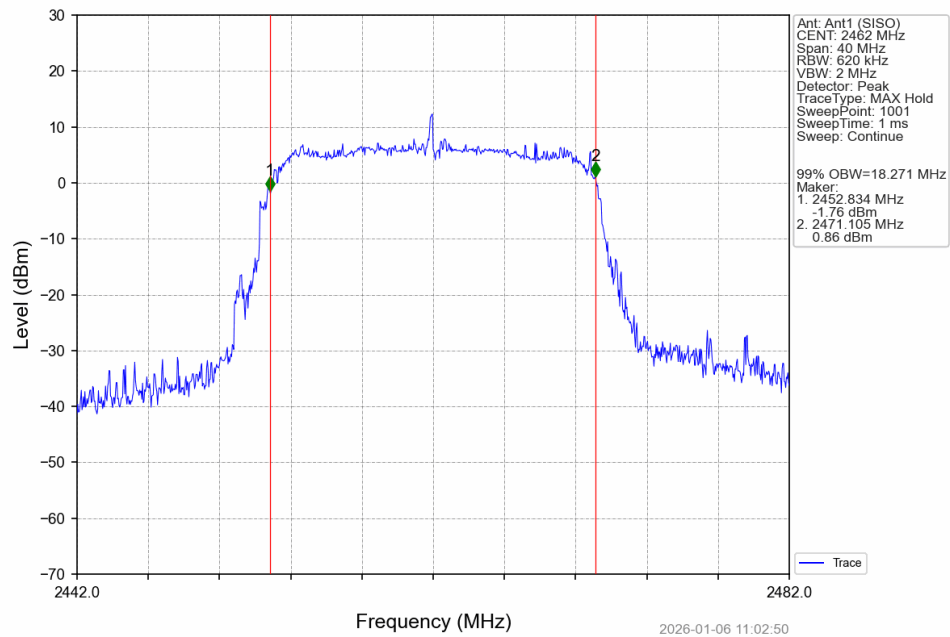
### 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



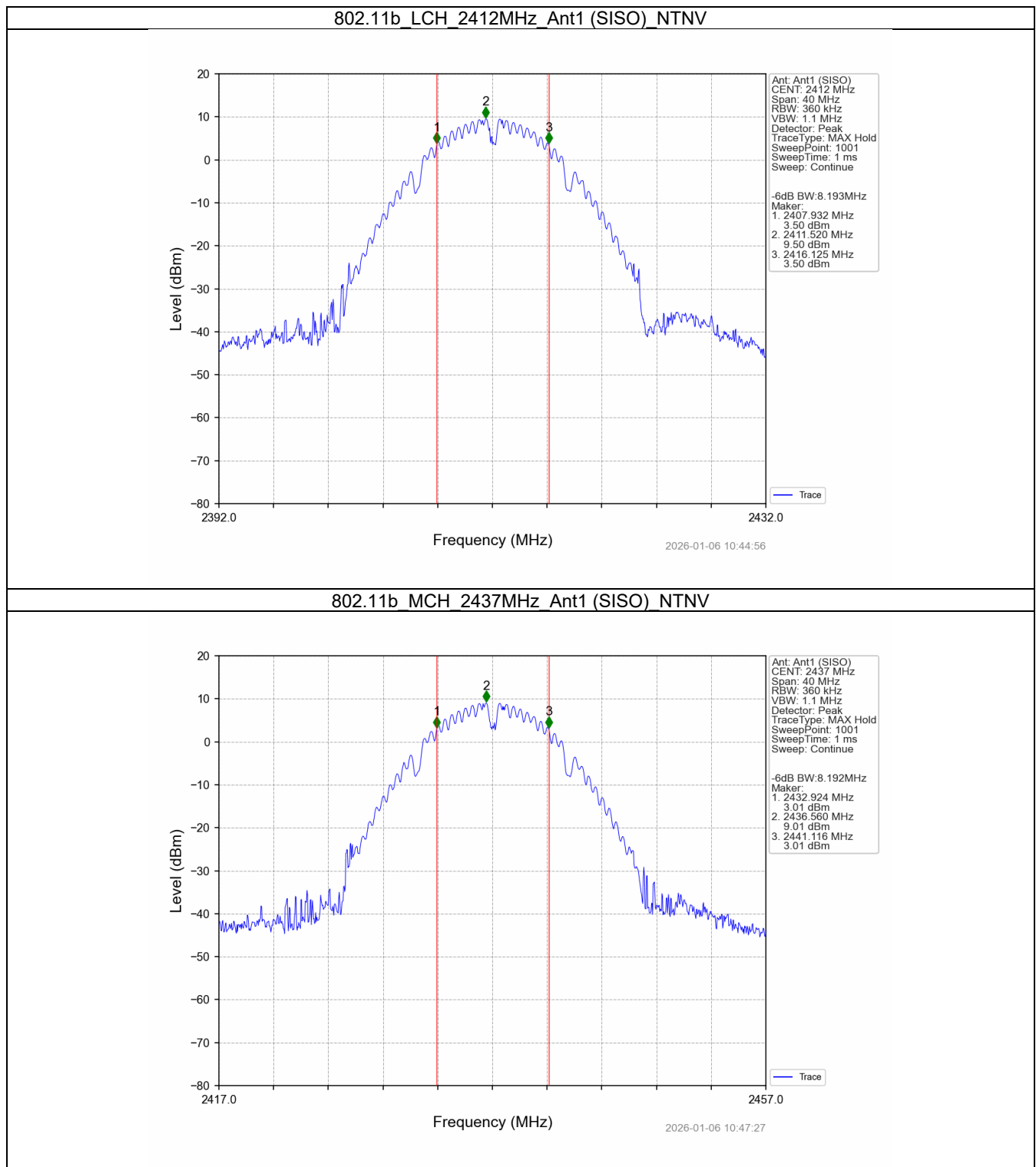
### 802.11n(HT20)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



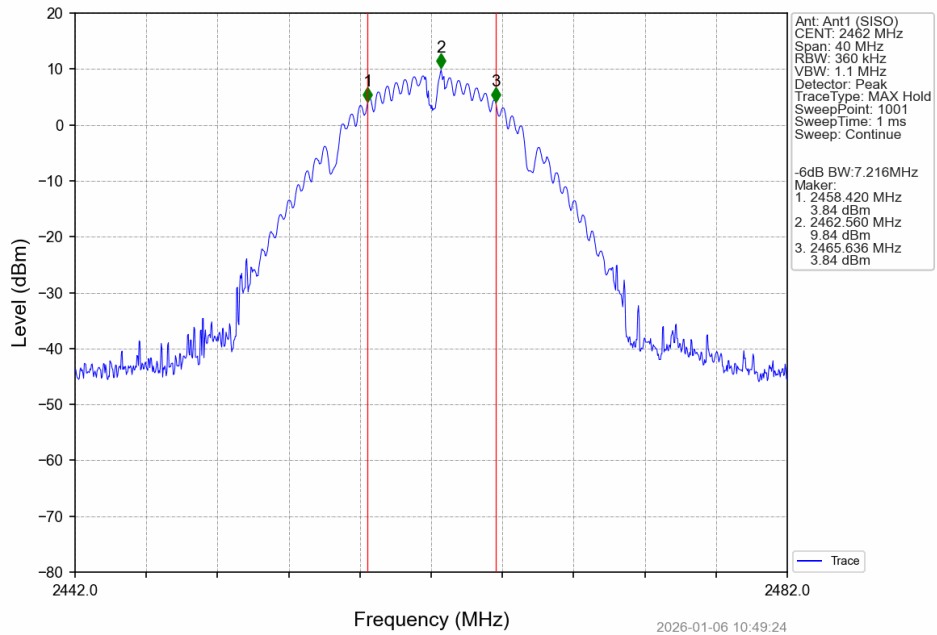
802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



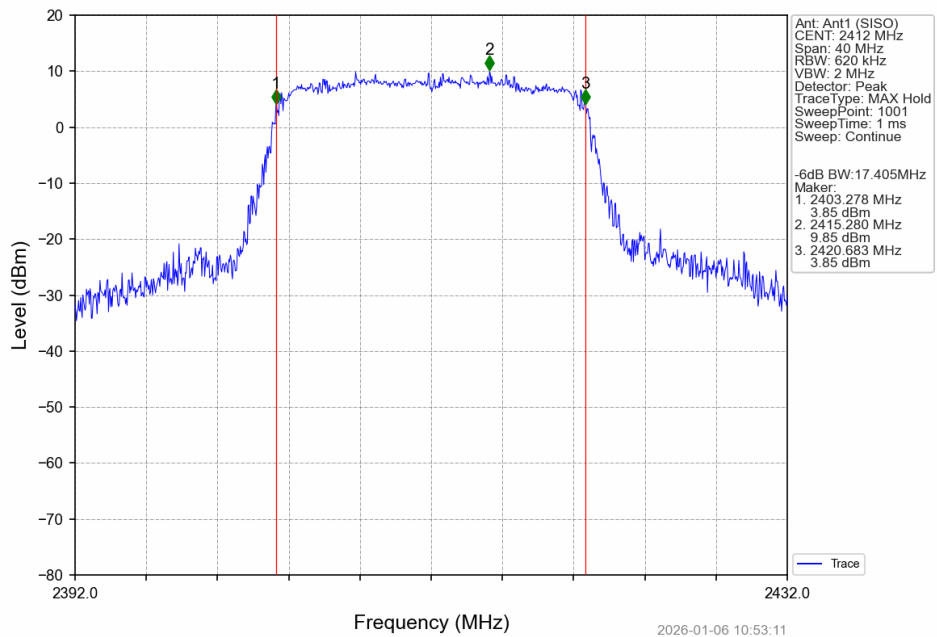
## 2.2.2 6dB BW



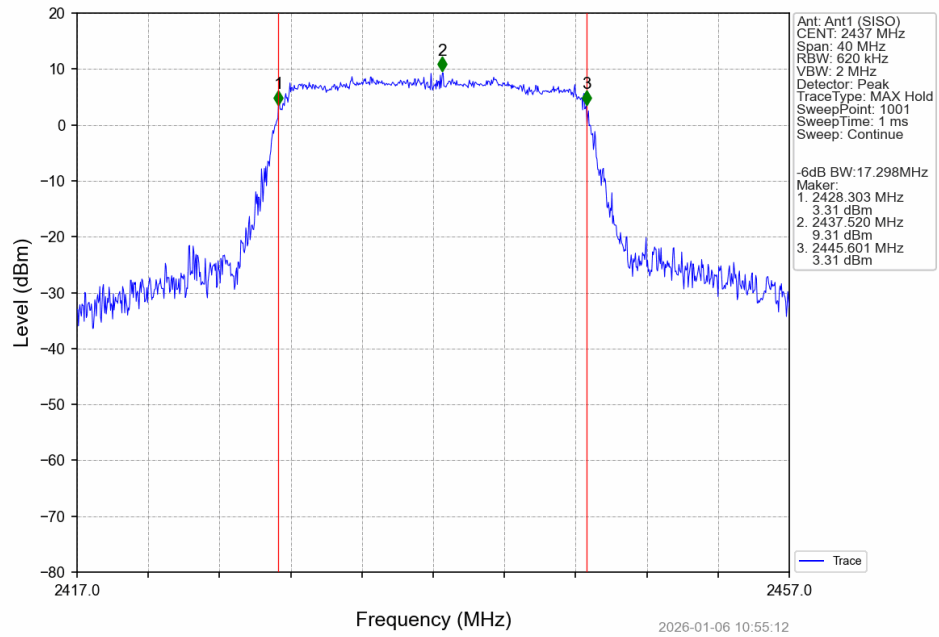
# 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



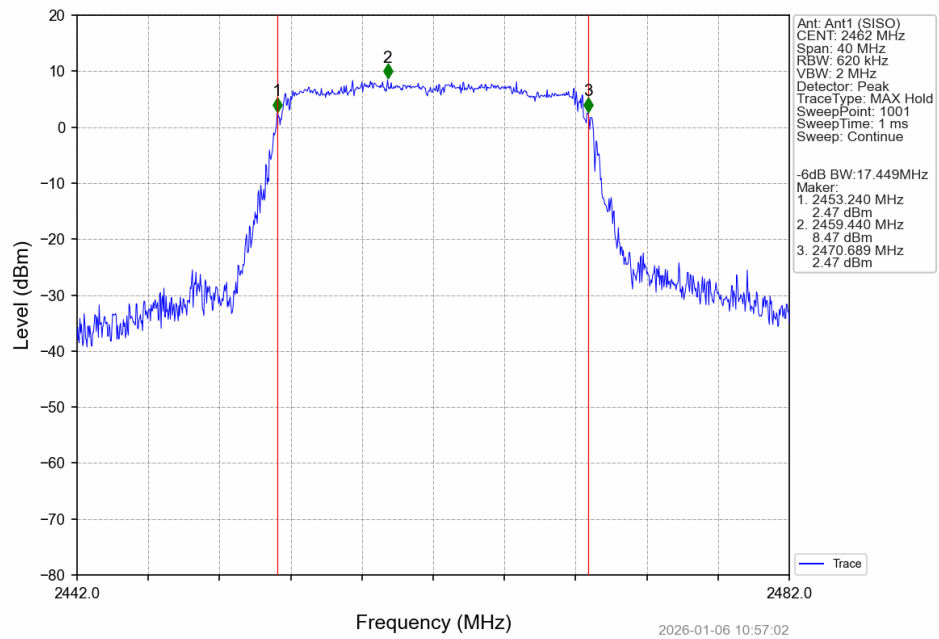
# 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



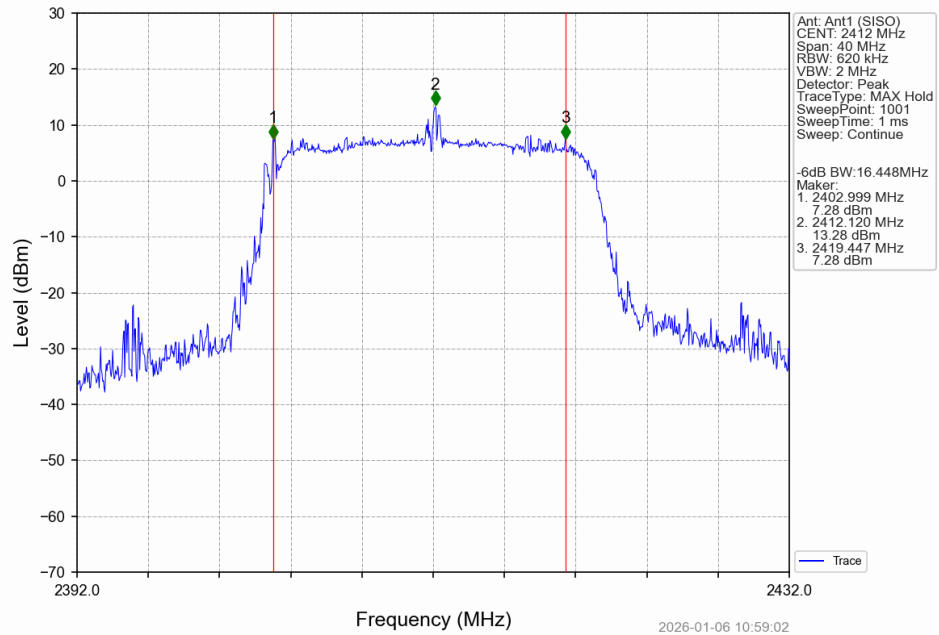
### 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



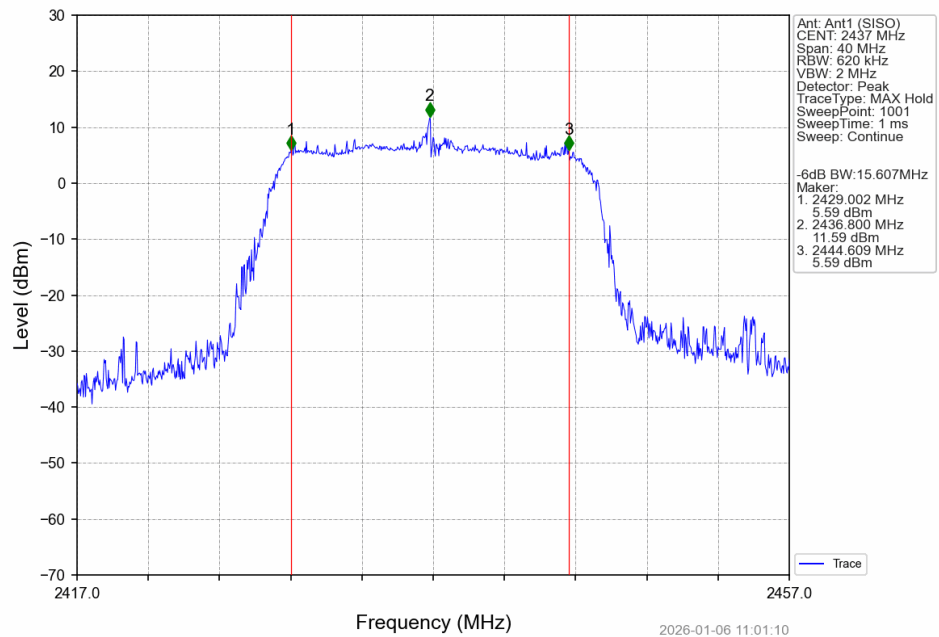
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



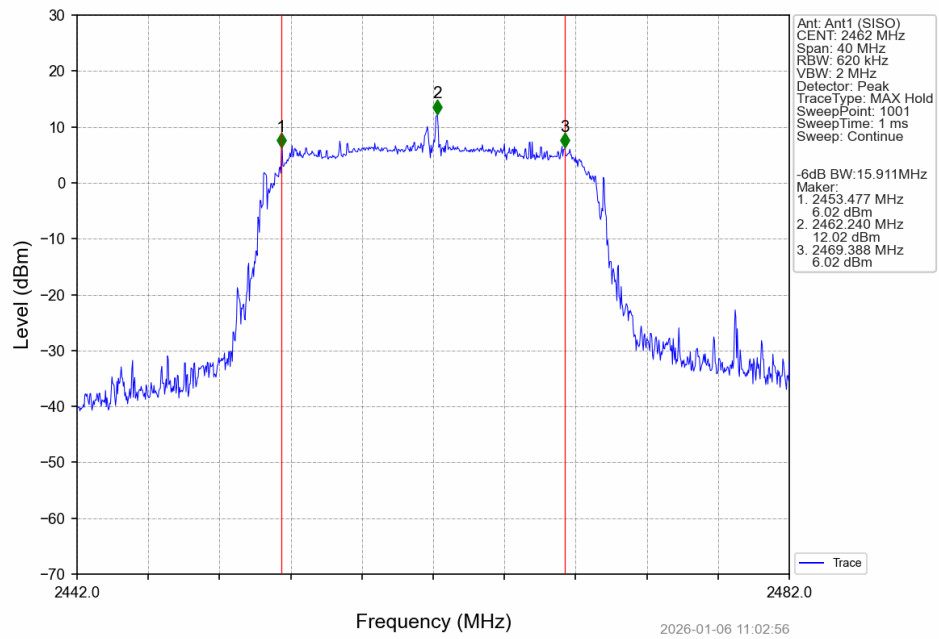
# 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



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



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



### 3. Maximum Conducted Output Power

#### 3.1 Test Result

##### 3.1.1 Power

| Mode           | TX Type | Frequency (MHz) | Maximum Peak Conducted Output Power (dBm) |       | Verdict |
|----------------|---------|-----------------|-------------------------------------------|-------|---------|
|                |         |                 | ANT1                                      | Limit |         |
| 802.11b        | SISO    | 2412            | 19.82                                     | <=30  | Pass    |
|                |         | 2437            | 19.34                                     | <=30  | Pass    |
|                |         | 2462            | 21.26                                     | <=30  | Pass    |
| 802.11g        | SISO    | 2412            | 22.31                                     | <=30  | Pass    |
|                |         | 2437            | 21.90                                     | <=30  | Pass    |
|                |         | 2462            | 21.55                                     | <=30  | Pass    |
| 802.11n (HT20) | SISO    | 2412            | 21.35                                     | <=30  | Pass    |
|                |         | 2437            | 20.76                                     | <=30  | Pass    |
|                |         | 2462            | 20.48                                     | <=30  | Pass    |

## 4. Maximum Power Spectral Density

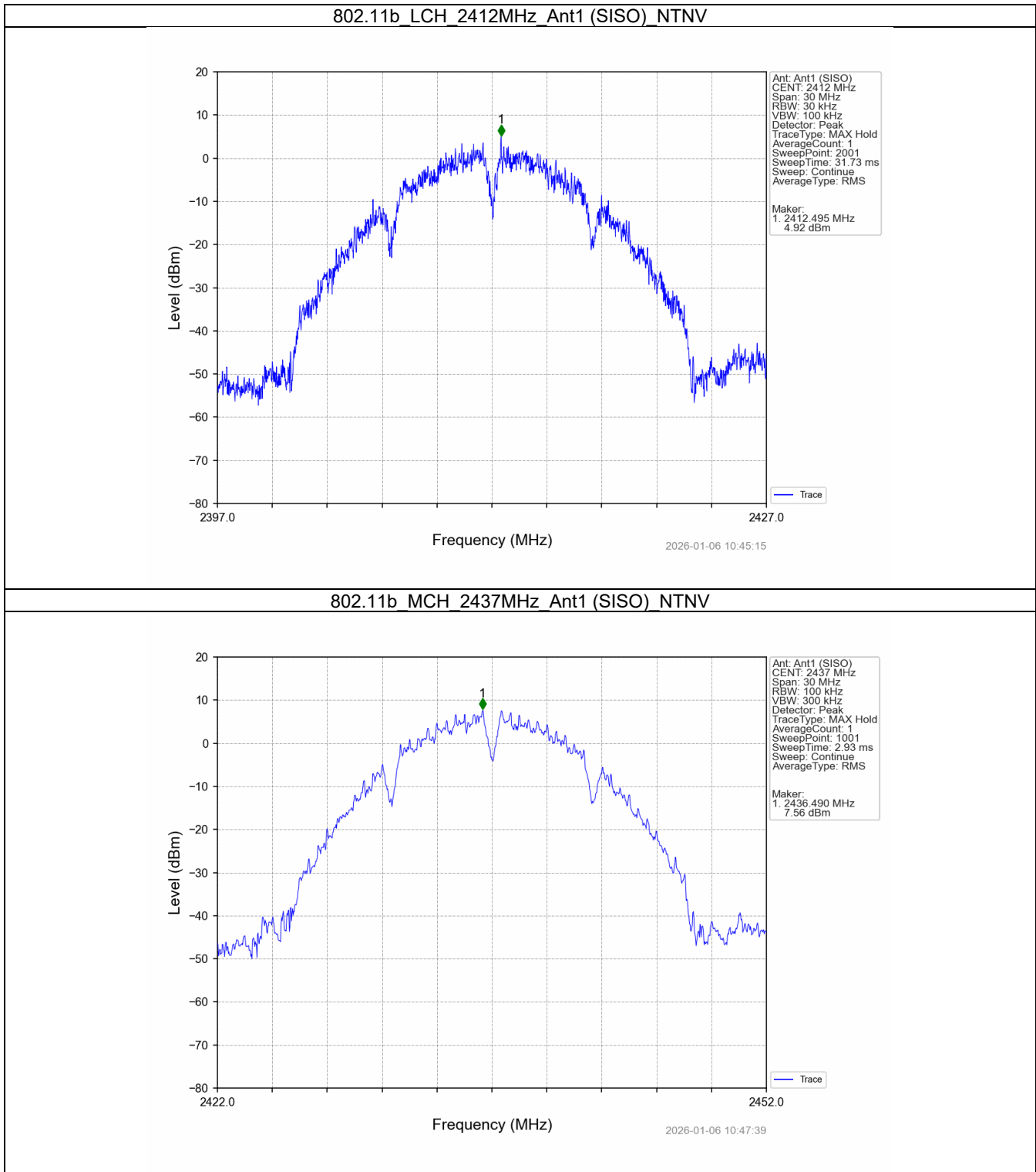
### 4.1 Test Result

#### 4.1.1 PSD

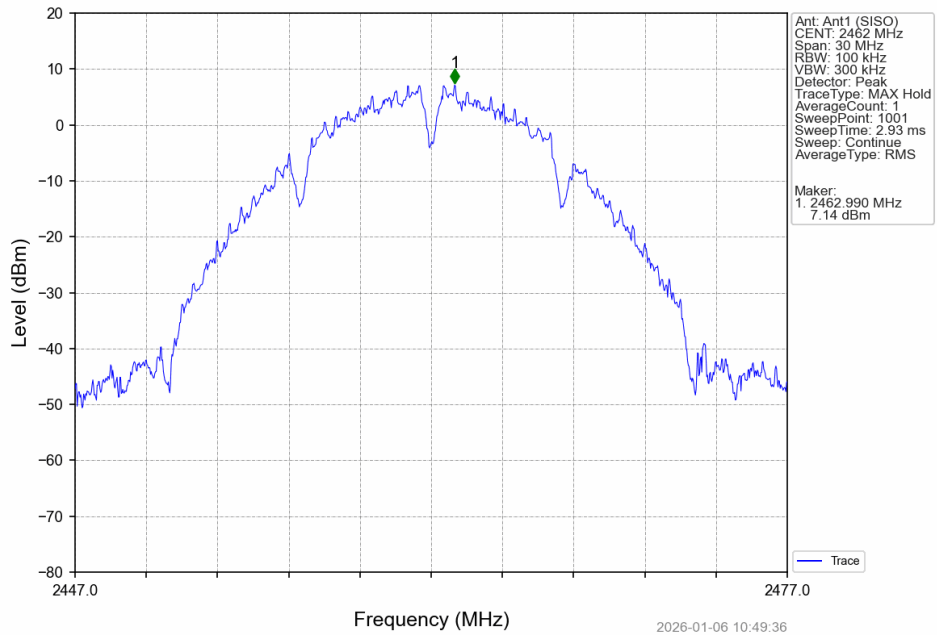
| Mode           | TX Type | Frequency (MHz) | Maximum PSD (dBm) |       | Verdict |
|----------------|---------|-----------------|-------------------|-------|---------|
|                |         |                 | ANT1              | Limit |         |
| 802.11b        | SISO    | 2412            | 4.92              | <=8   | Pass    |
|                |         | 2437            | 7.56              | <=8   | Pass    |
|                |         | 2462            | 7.14              | <=8   | Pass    |
| 802.11g        | SISO    | 2412            | 4.13              | <=8   | Pass    |
|                |         | 2437            | 2.89              | <=8   | Pass    |
|                |         | 2462            | 2.98              | <=8   | Pass    |
| 802.11n (HT20) | SISO    | 2412            | 6.17              | <=8   | Pass    |
|                |         | 2437            | 4.64              | <=8   | Pass    |
|                |         | 2462            | 2.65              | <=8   | Pass    |

# 4.2 Test Graph

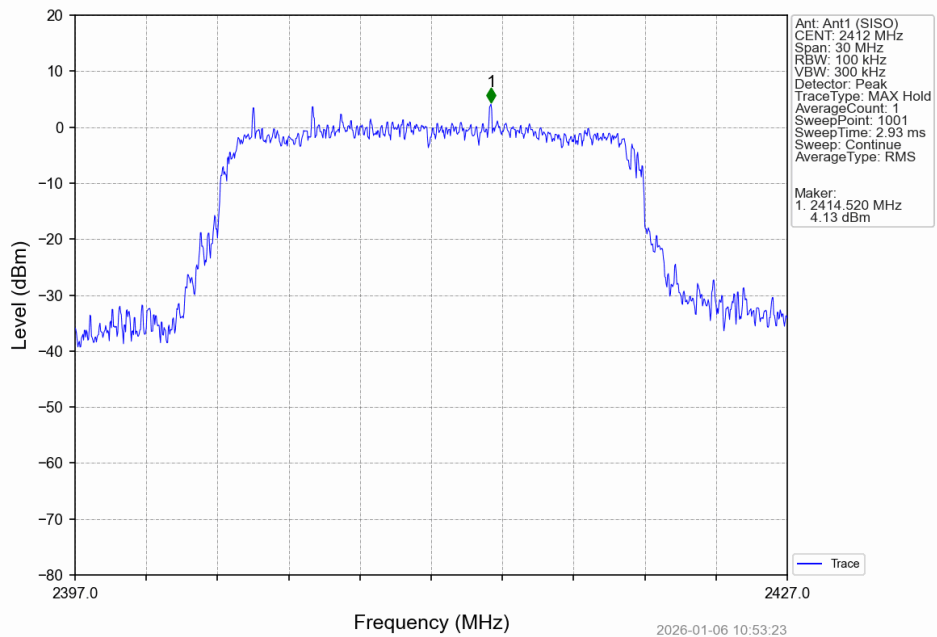
## 4.2.1 PSD



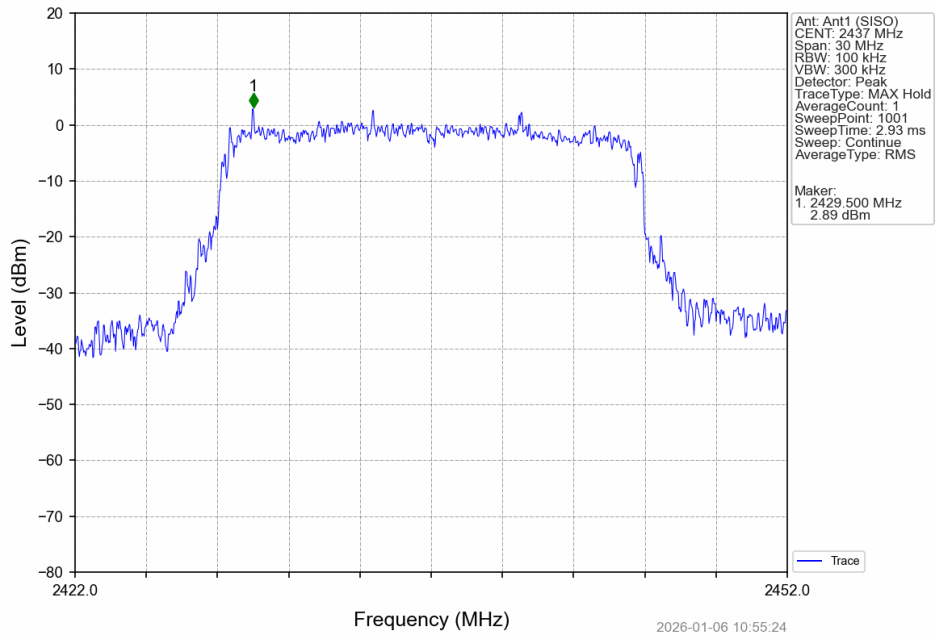
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



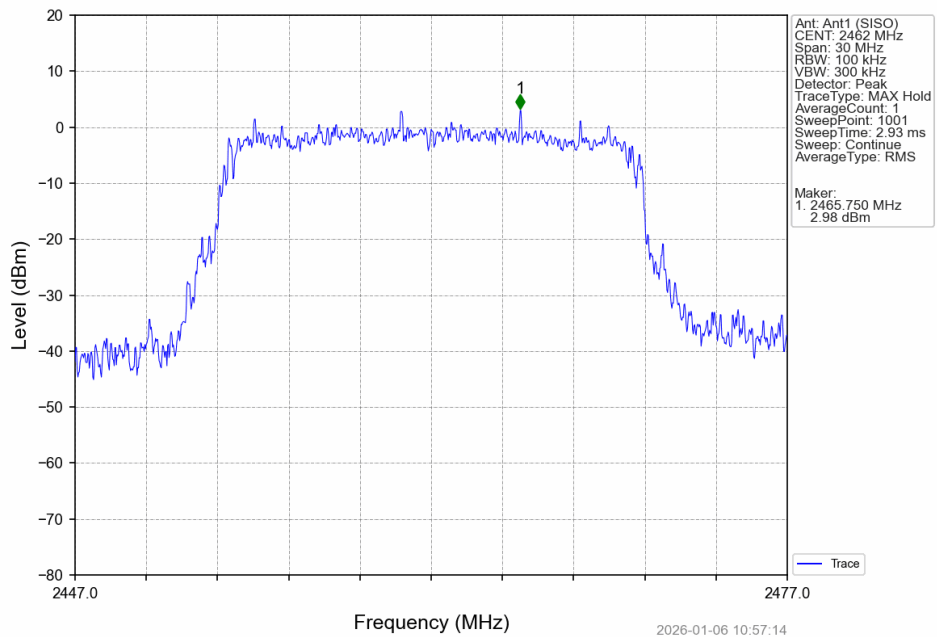
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



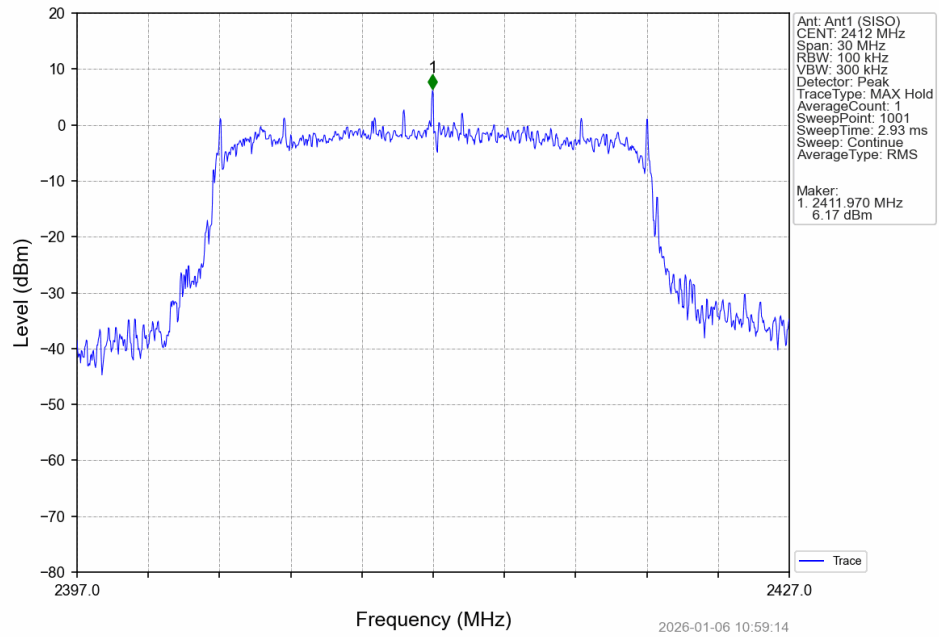
### 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



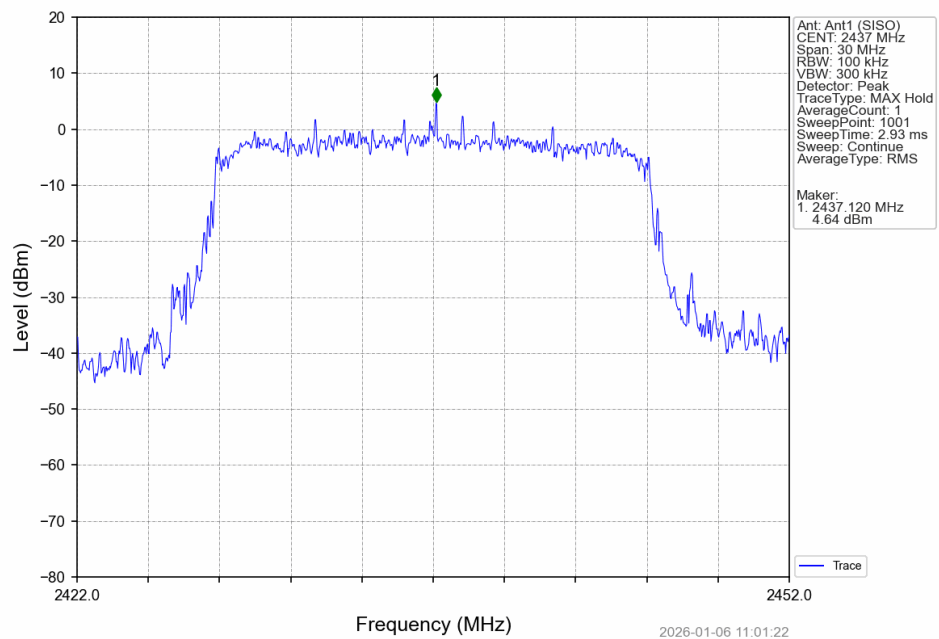
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



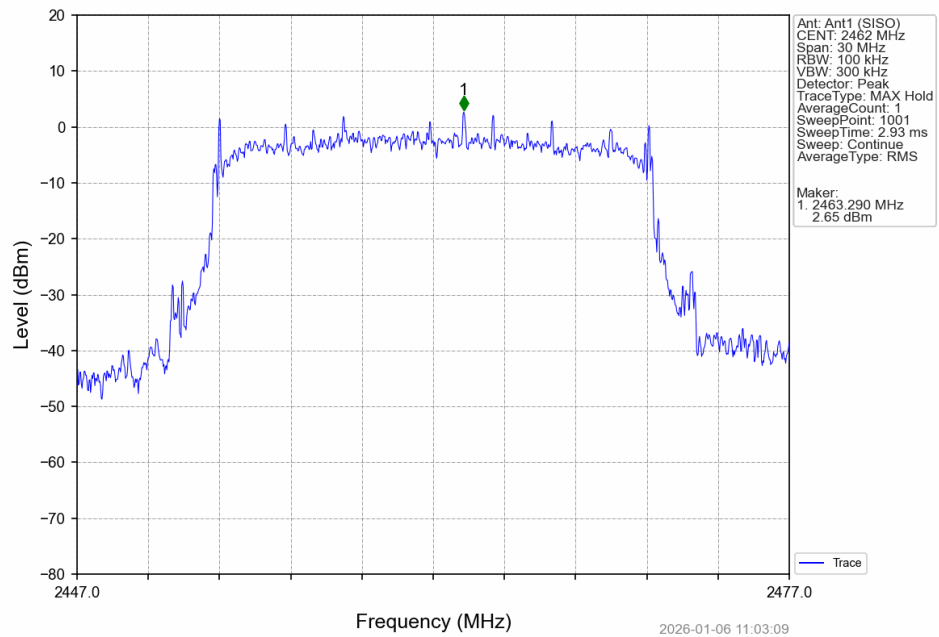
### 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



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



802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



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## 5. Unwanted Emissions In Non-restricted Frequency Bands

### 5.1 Test Result

#### 5.1.1 Ref

| Mode           | Tx Type | Frequency (MHz) | ANT | Level of Reference (dBm) |
|----------------|---------|-----------------|-----|--------------------------|
| 802.11b        | SISO    | 2412            | 1   | 8.04                     |
|                |         | 2437            | 1   | 7.75                     |
|                |         | 2462            | 1   | 6.99                     |
| 802.11g        | SISO    | 2412            | 1   | 4.57                     |
|                |         | 2437            | 1   | 4.06                     |
|                |         | 2462            | 1   | 3.75                     |
| 802.11n (HT20) | SISO    | 2412            | 1   | 2.58                     |
|                |         | 2437            | 1   | 3.16                     |
|                |         | 2462            | 1   | 6.25                     |

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

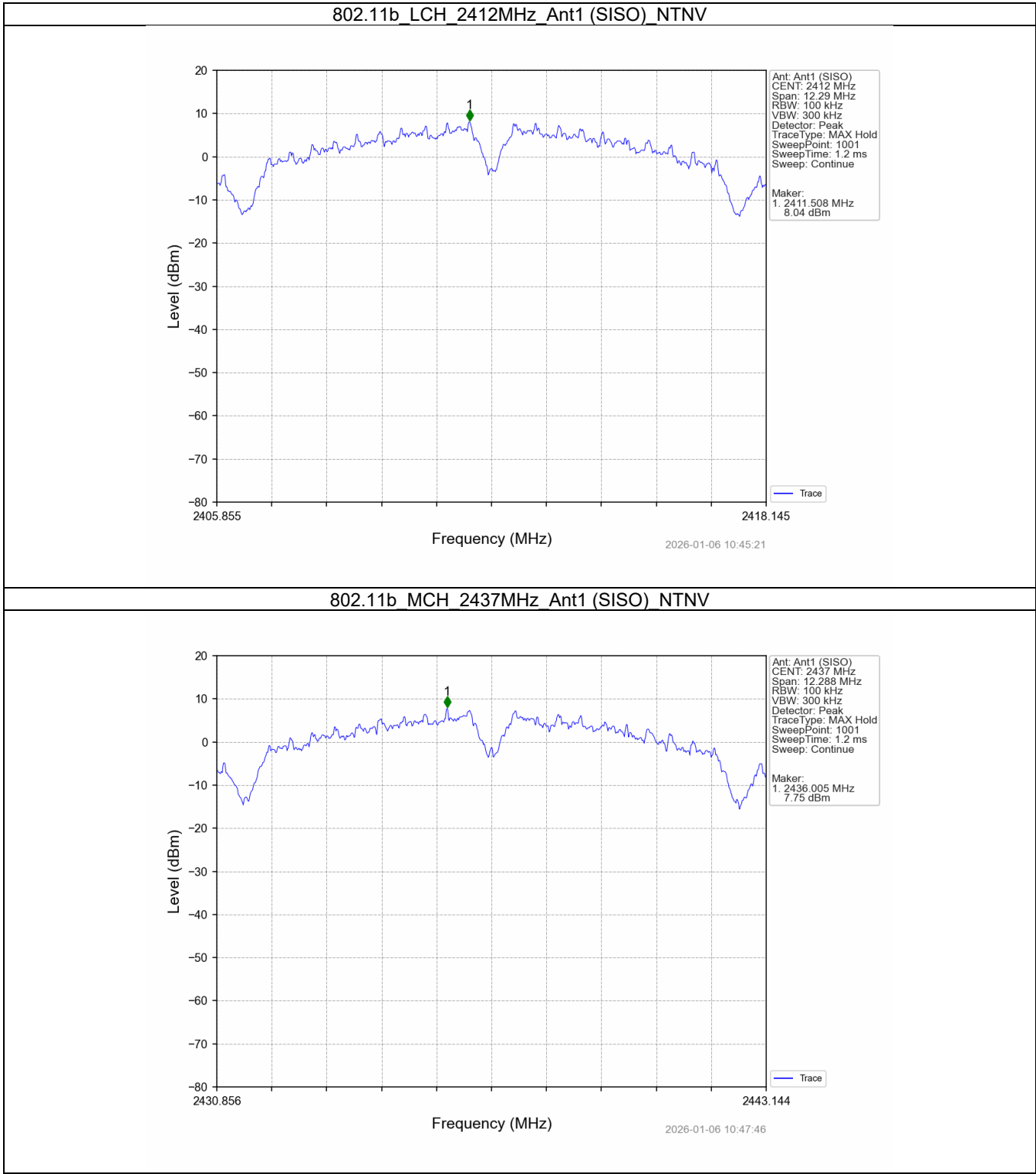
#### 5.1.2 CSE

| Mode           | Tx Type | Frequency (MHz) | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|----------------|---------|-----------------|-----|--------------------------|-------------|---------|
| 802.11b        | SISO    | 2412            | 1   | 8.04                     | -11.96      | Pass    |
|                |         | 2437            | 1   | 7.75                     | -12.25      | Pass    |
|                |         | 2462            | 1   | 6.99                     | -13.01      | Pass    |
| 802.11g        | SISO    | 2412            | 1   | 4.57                     | -15.43      | Pass    |
|                |         | 2437            | 1   | 4.06                     | -15.94      | Pass    |
|                |         | 2462            | 1   | 3.75                     | -16.25      | Pass    |
| 802.11n (HT20) | SISO    | 2412            | 1   | 2.58                     | -17.42      | Pass    |
|                |         | 2437            | 1   | 3.16                     | -16.84      | Pass    |
|                |         | 2462            | 1   | 6.25                     | -13.75      | Pass    |

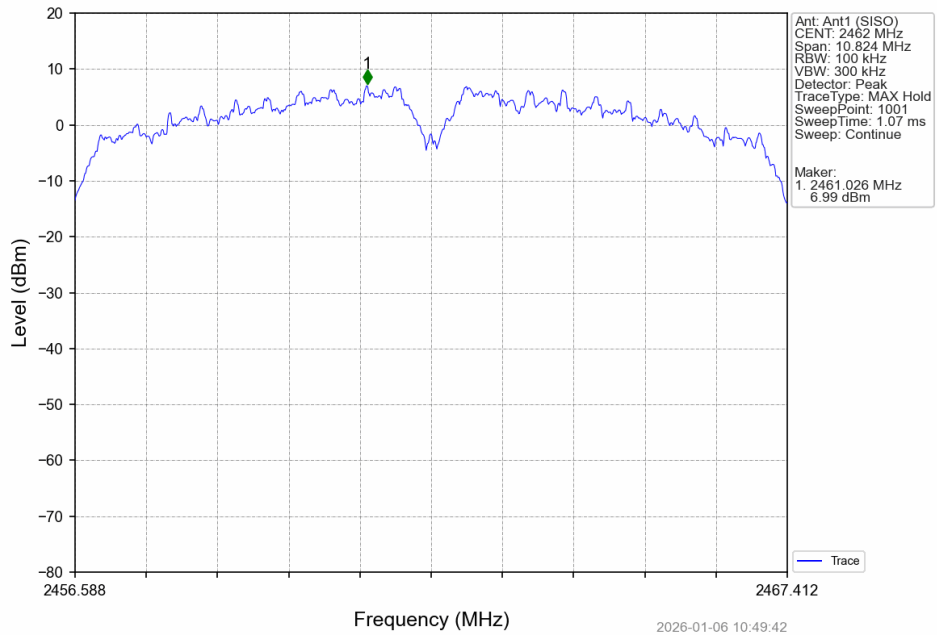
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

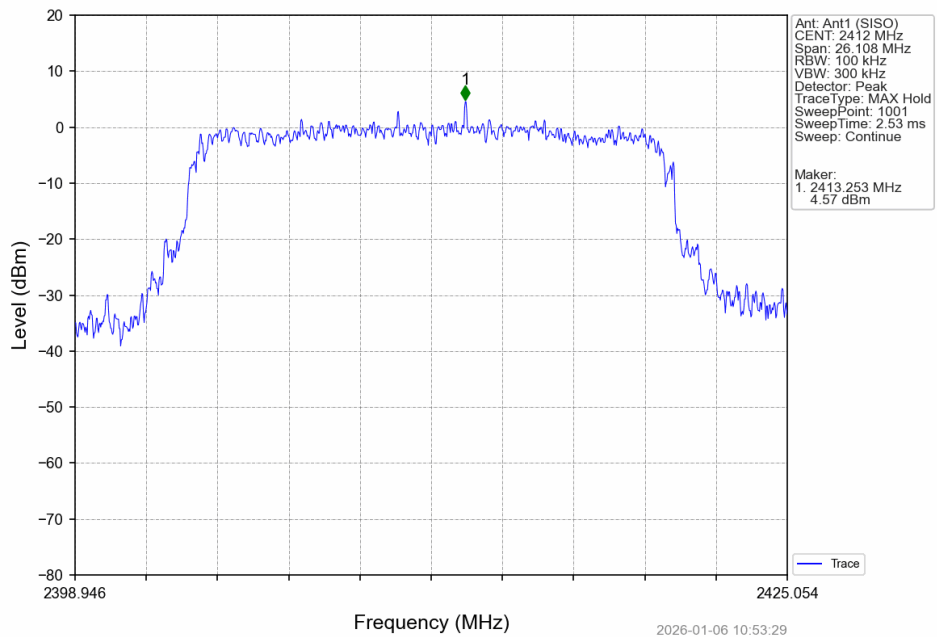
5.2.1 Ref



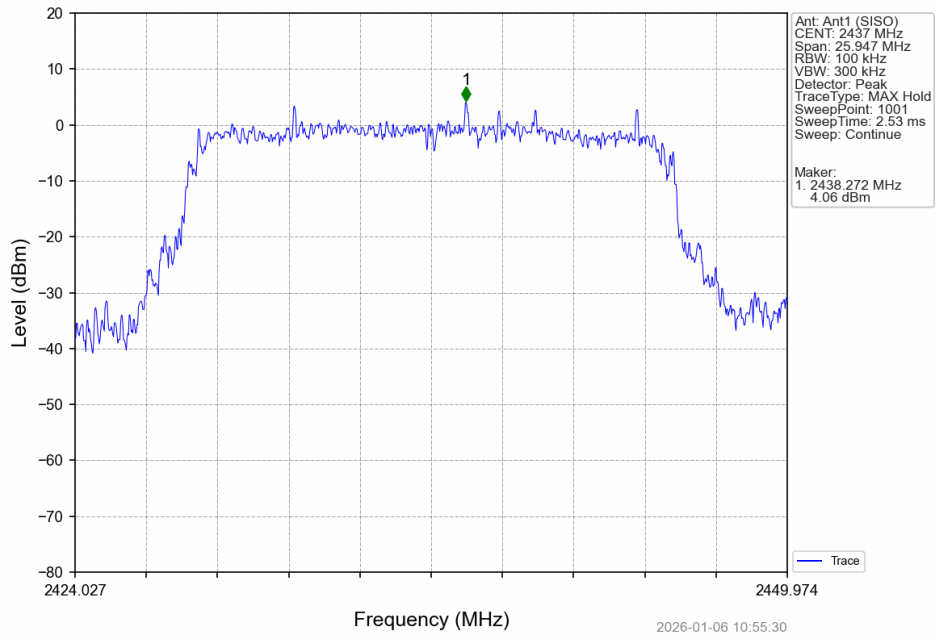
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



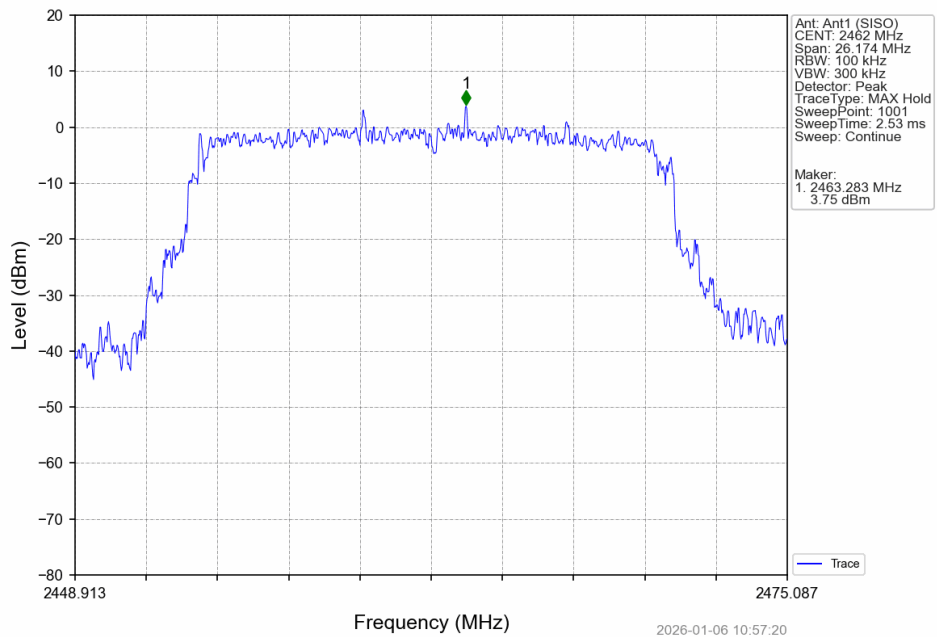
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



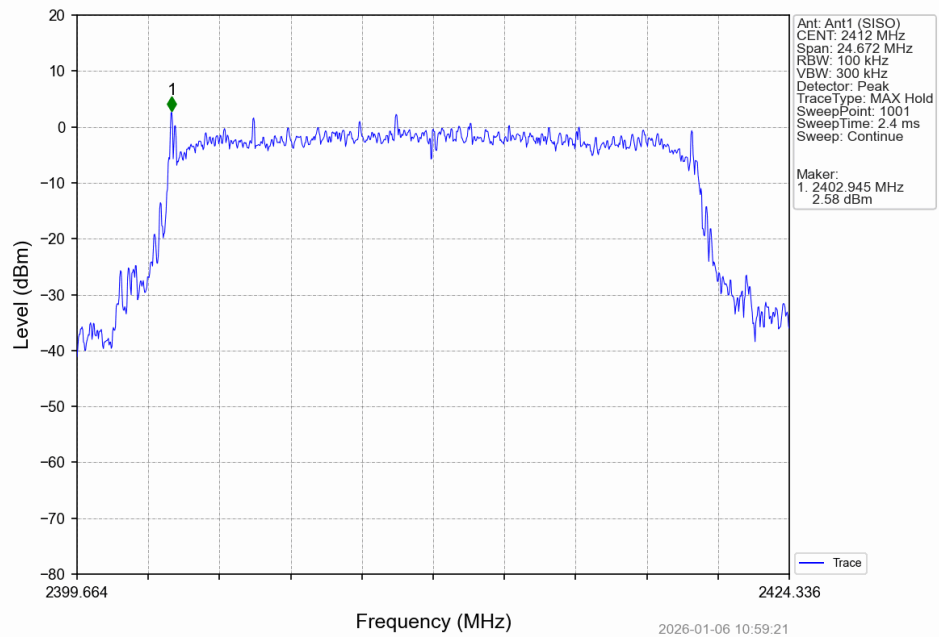
### 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



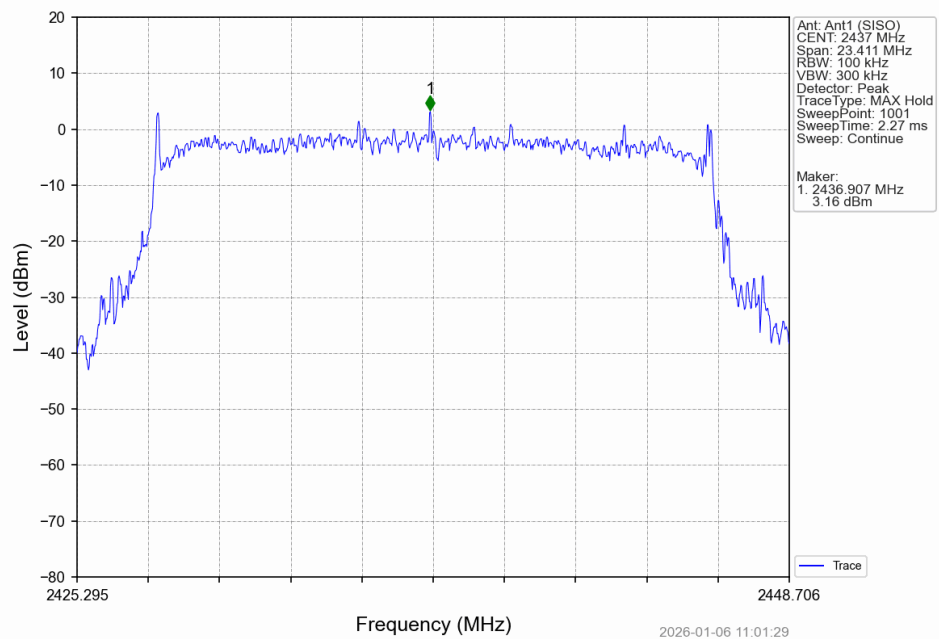
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



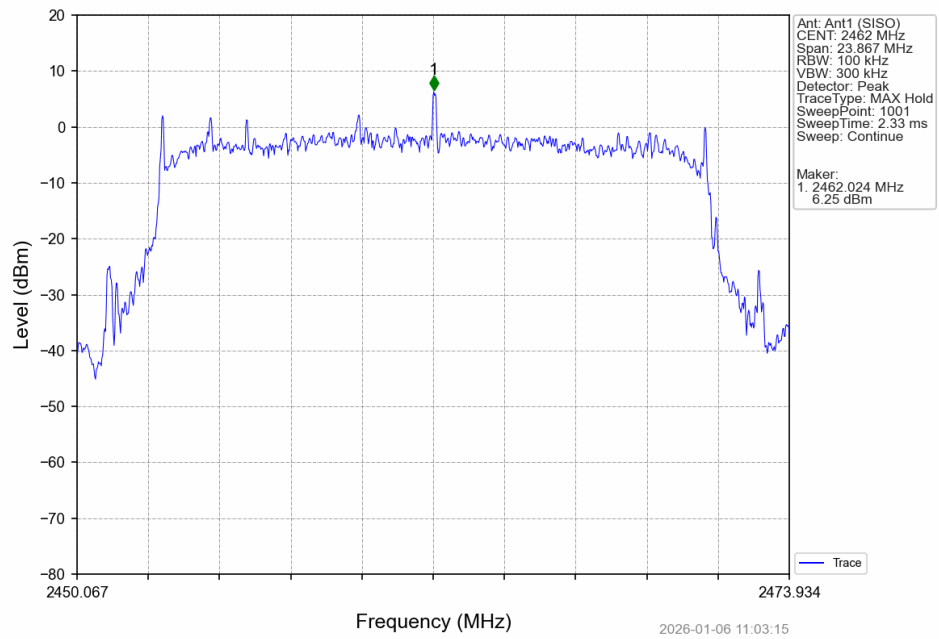
# 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



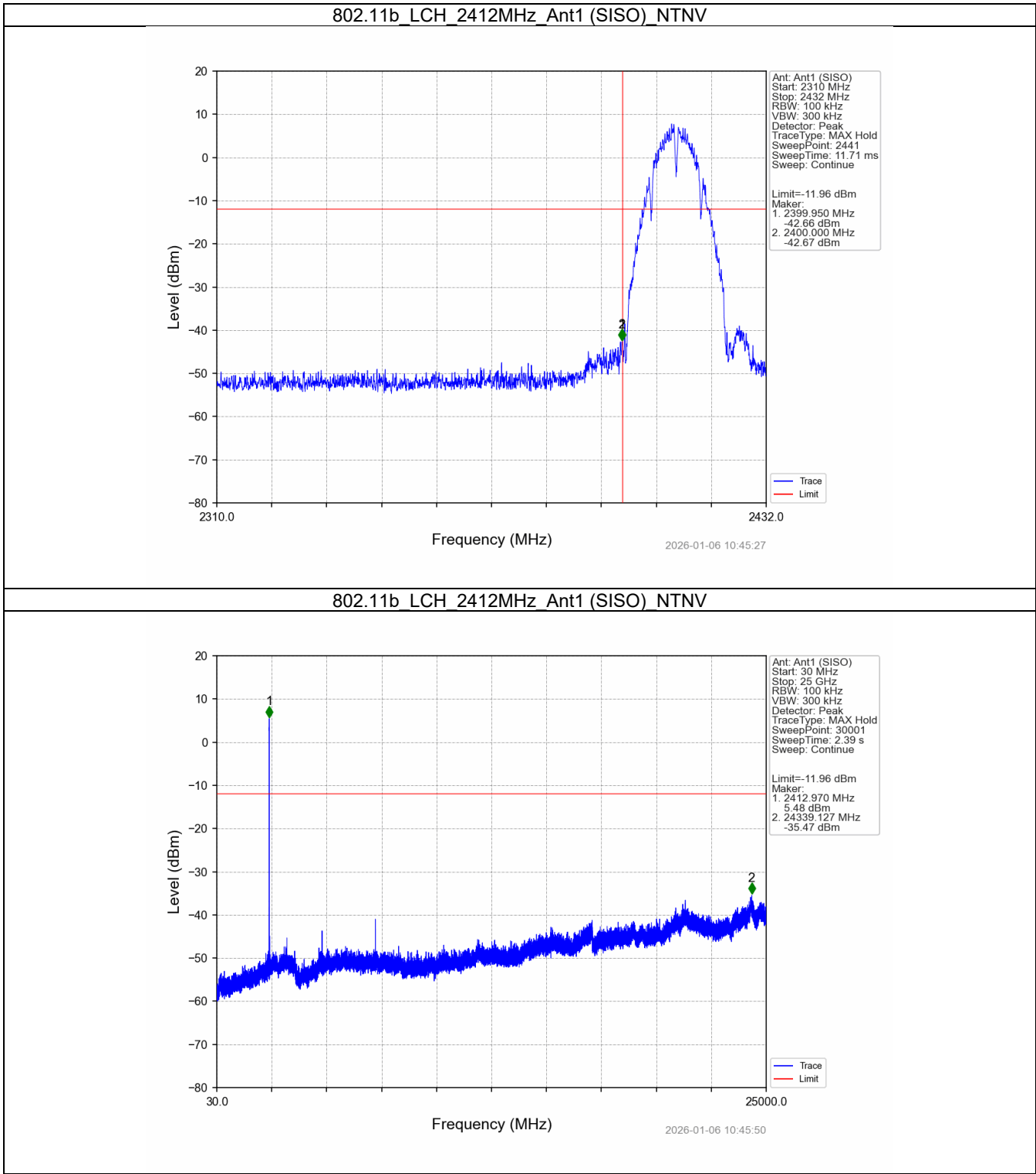
# 802.11n(HT20)\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



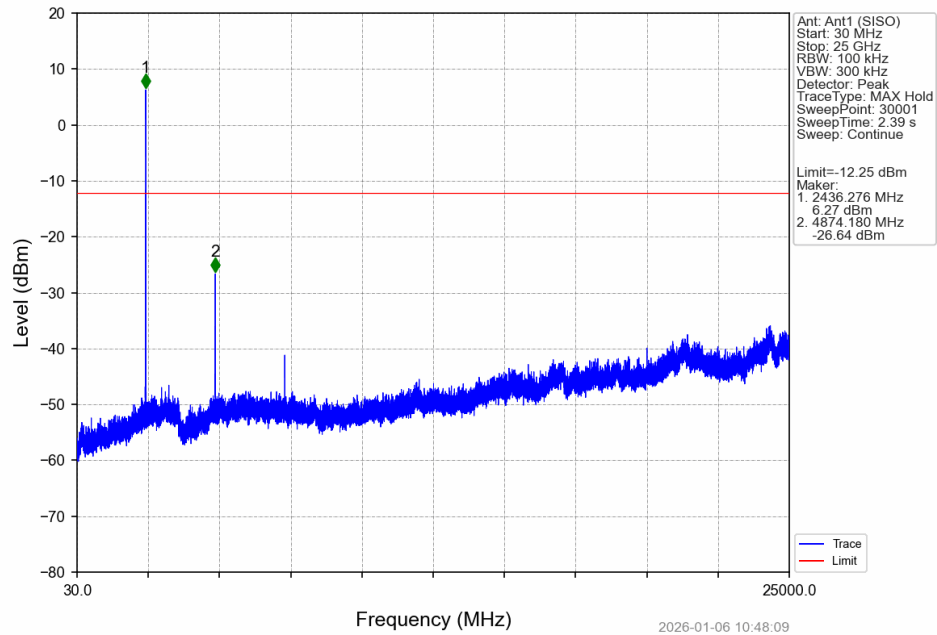
802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



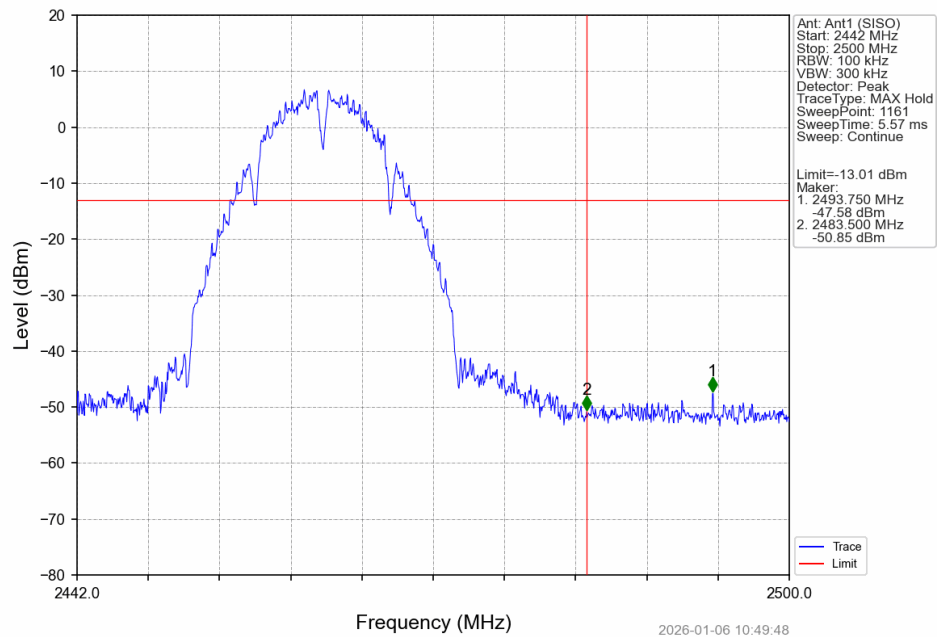
5.2.2 CSE



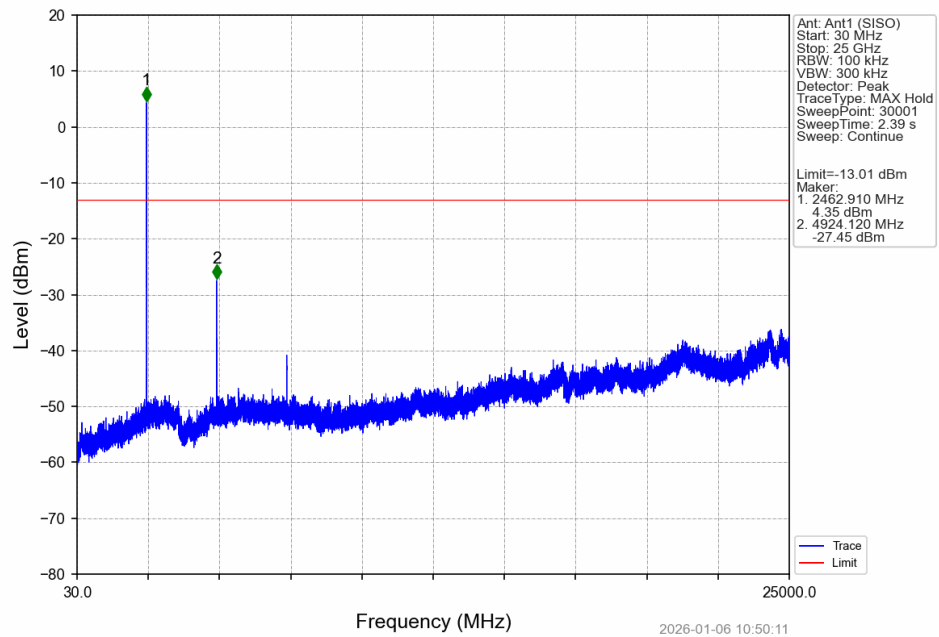
### 802.11b\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



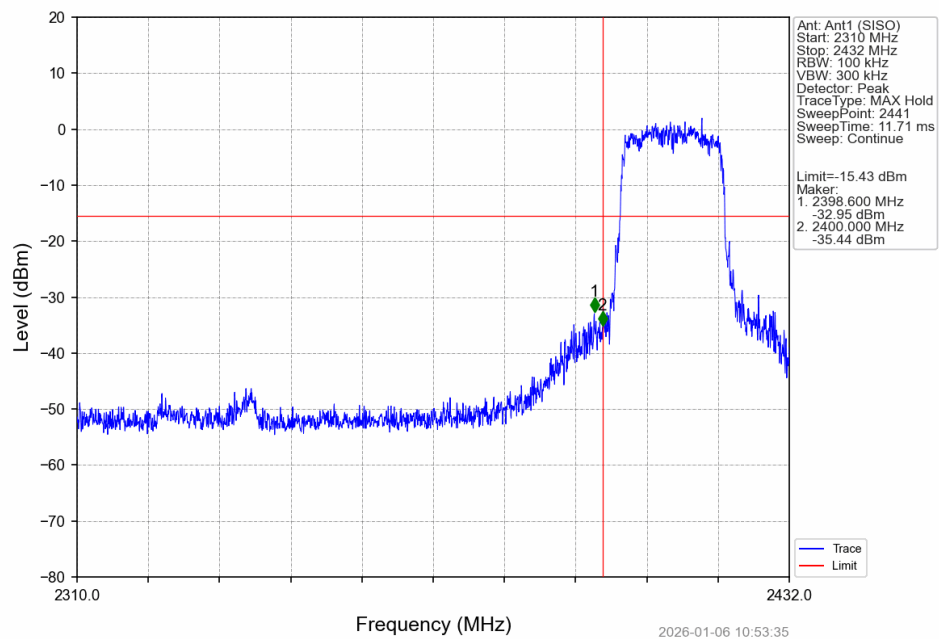
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



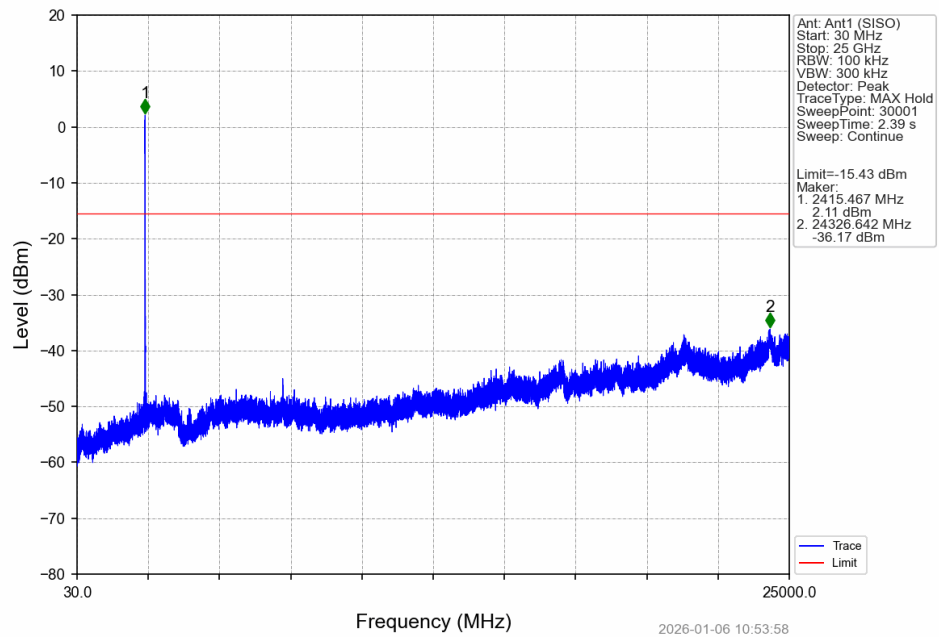
### 802.11b\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



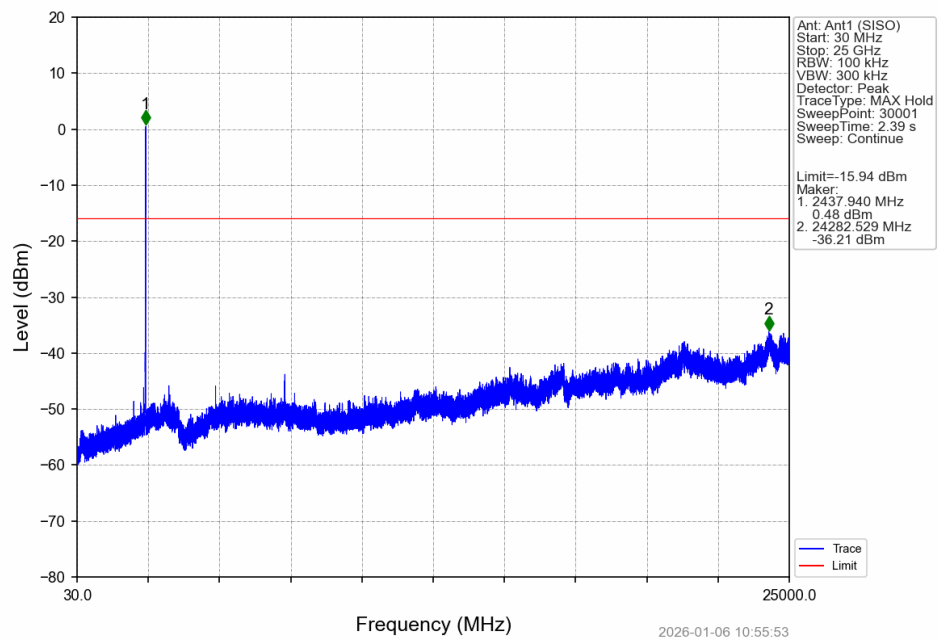
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



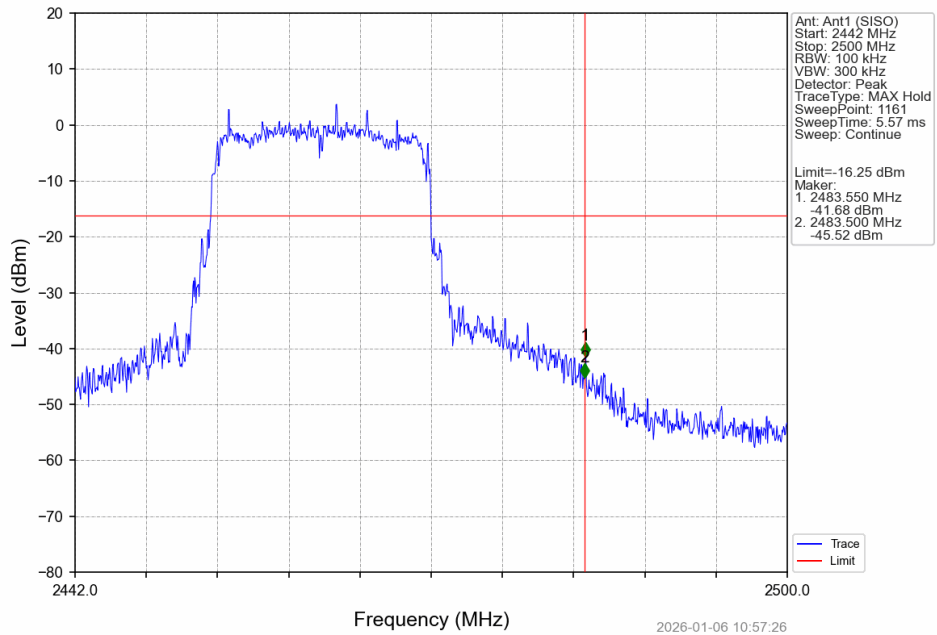
### 802.11g\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



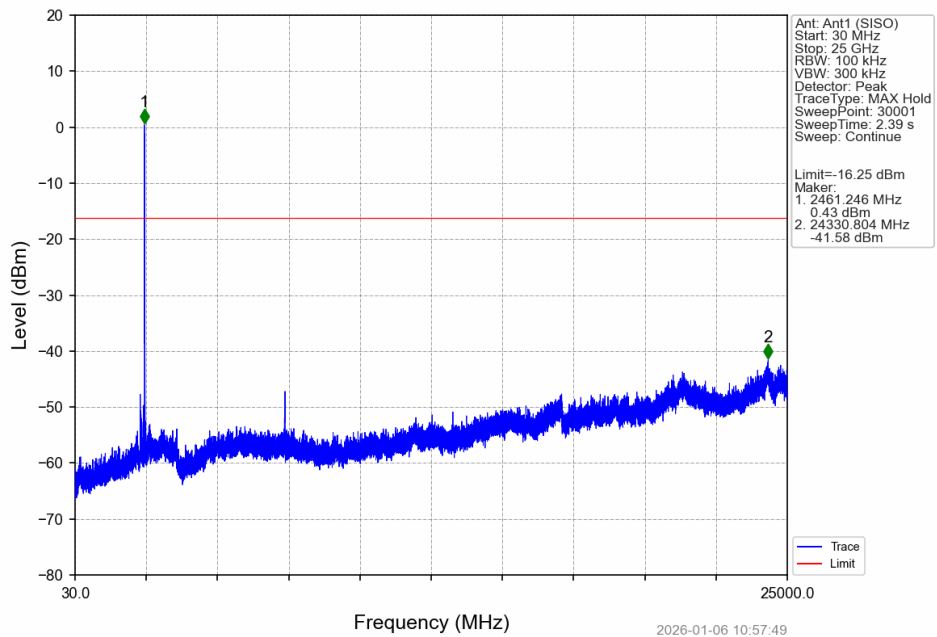
### 802.11g\_MCH\_2437MHz\_Ant1 (SISO)\_NTNV



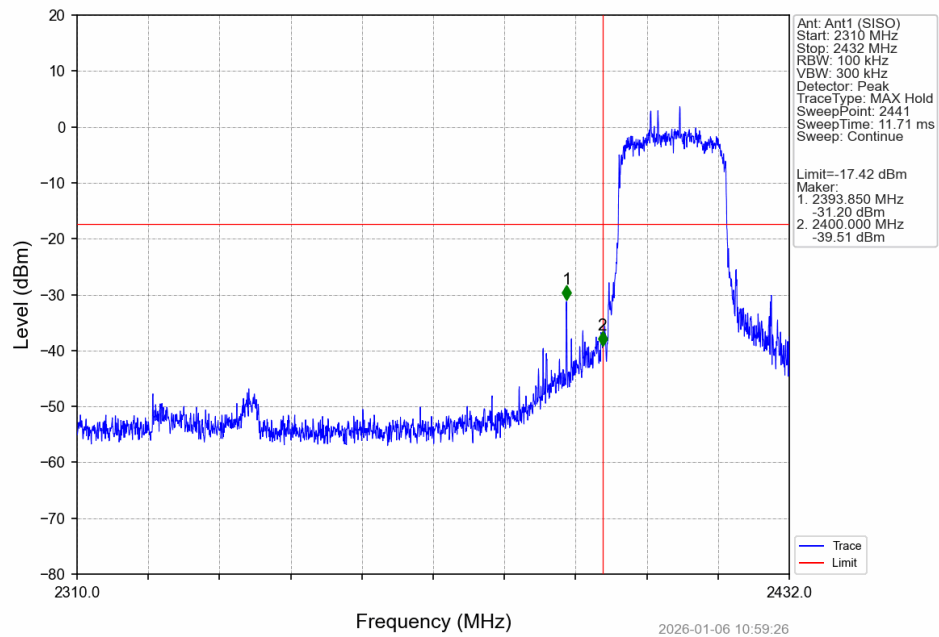
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



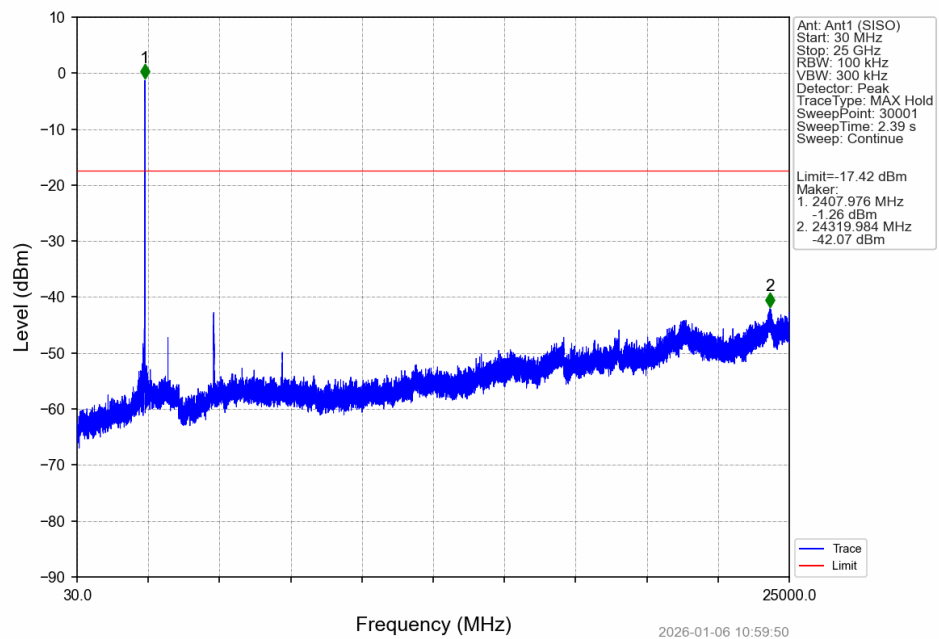
### 802.11g\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV



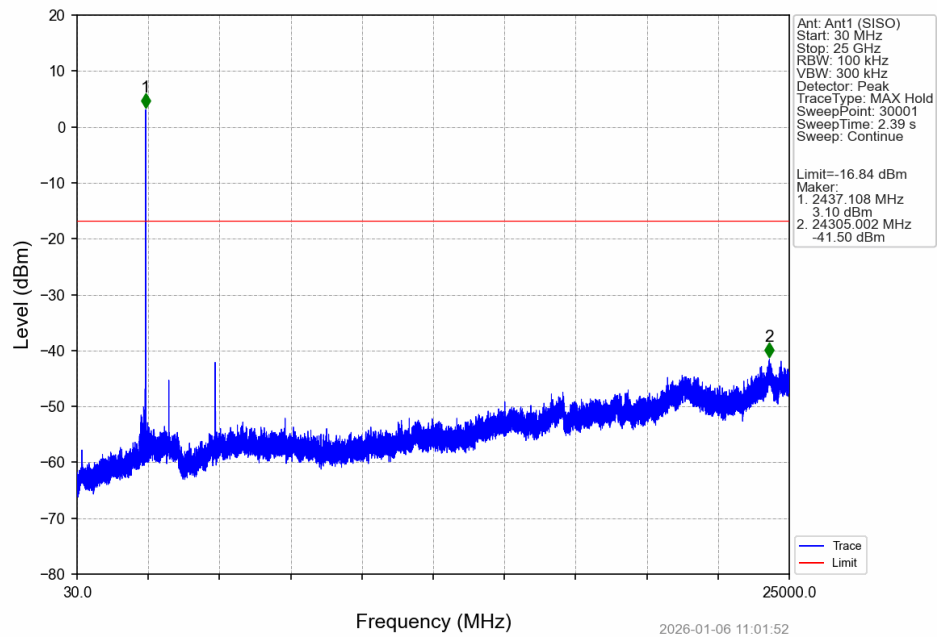
# 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



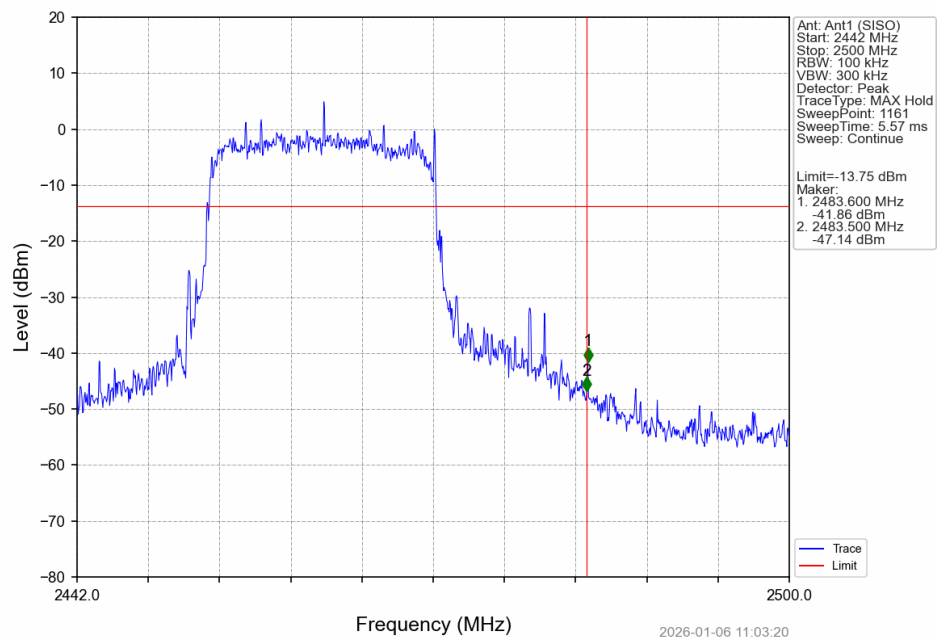
# 802.11n(HT20)\_LCH\_2412MHz\_Ant1 (SISO)\_NTNV



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



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



802.11n(HT20)\_HCH\_2462MHz\_Ant1 (SISO)\_NTNV

