

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

**Company:** : Huizhou Huizhi Technology Co., Ltd

**EUT** : WIFI MODULE

**FCC ID:** : 2BGY7-HZ02

**Model Number** : HZ-TA22UV1.0

**Report No.** : HTT2025061079F04

**Reviewed By** : Heber He

## 1. Duty Cycle

### 1.1 Test Result

#### 1.1.1 Ant1

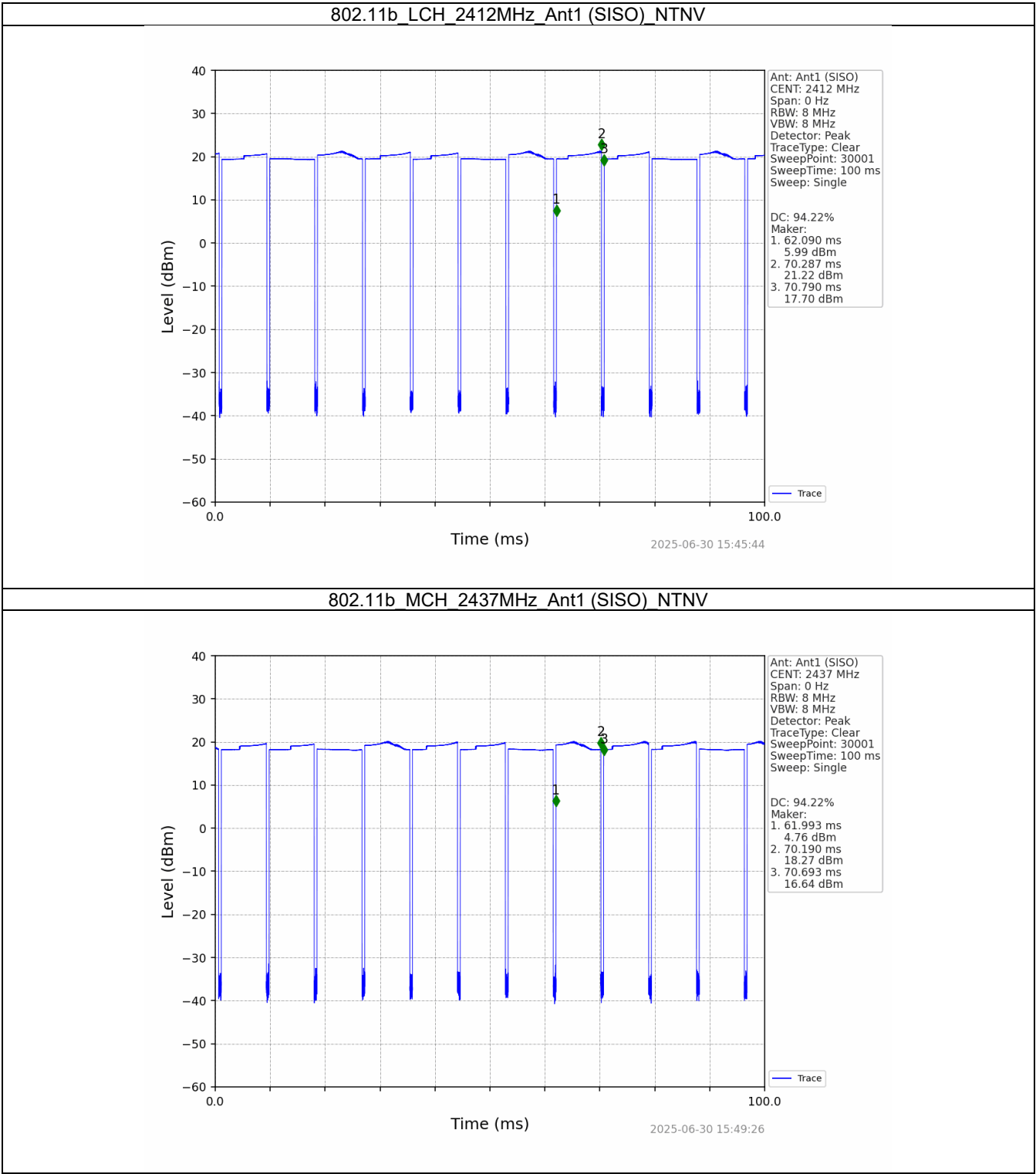
| Ant1           |         |                 |           |             |                |                                   |                       |
|----------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode           | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11b        | SISO    | 2412            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
|                |         | 2437            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
|                |         | 2462            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
| 802.11g        | SISO    | 2412            | 1.362     | 1.863       | 73.11          | 1.36                              | 0.03                  |
|                |         | 2437            | 1.361     | 1.862       | 73.09          | 1.36                              | 0.03                  |
|                |         | 2462            | 1.361     | 1.862       | 73.09          | 1.36                              | 0.03                  |
| 802.11n (HT20) | MIMO    | 2412            | 1.274     | 1.775       | 71.77          | 1.44                              | 0.02                  |
|                |         | 2437            | 1.273     | 1.774       | 71.76          | 1.44                              | 0.03                  |
|                |         | 2462            | 1.273     | 1.774       | 71.76          | 1.44                              | 0.03                  |
| 802.11n (HT40) | MIMO    | 2422            | 0.634     | 1.134       | 55.91          | 2.53                              | 0.01                  |
|                |         | 2437            | 0.634     | 1.134       | 55.91          | 2.53                              | 0.01                  |
|                |         | 2452            | 0.634     | 1.135       | 55.86          | 2.53                              | 0.03                  |

#### 1.1.2 Ant2

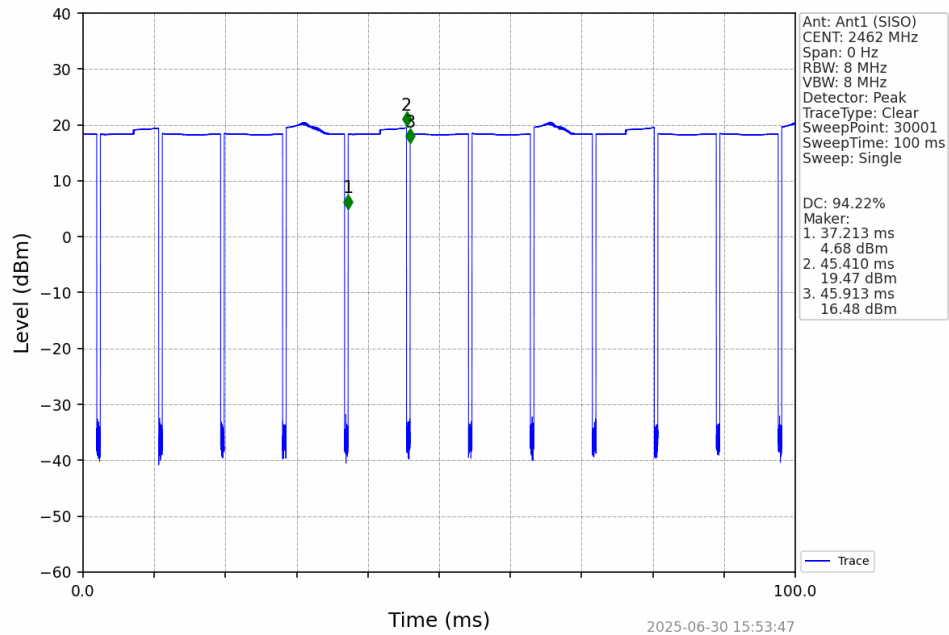
| Ant2           |         |                 |           |             |                |                                   |                       |
|----------------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode           | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 802.11b        | SISO    | 2412            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
|                |         | 2437            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
|                |         | 2462            | 8.197     | 8.700       | 94.22          | 0.26                              | 0.04                  |
| 802.11g        | SISO    | 2412            | 1.362     | 1.863       | 73.11          | 1.36                              | 0.03                  |
|                |         | 2437            | 1.362     | 1.863       | 73.11          | 1.36                              | 0.03                  |
|                |         | 2462            | 1.362     | 1.863       | 73.11          | 1.36                              | 0.02                  |
| 802.11n (HT20) | MIMO    | 2412            | 1.274     | 1.775       | 71.77          | 1.44                              | 0.02                  |
|                |         | 2437            | 1.273     | 1.774       | 71.76          | 1.44                              | 0.03                  |
|                |         | 2462            | 1.273     | 1.774       | 71.76          | 1.44                              | 0.03                  |
| 802.11n (HT40) | MIMO    | 2422            | 0.634     | 1.134       | 55.91          | 2.53                              | 0.01                  |
|                |         | 2437            | 0.633     | 1.134       | 55.82          | 2.53                              | 0.03                  |
|                |         | 2452            | 0.633     | 1.134       | 55.82          | 2.53                              | 0.01                  |

1.2 Test Graph

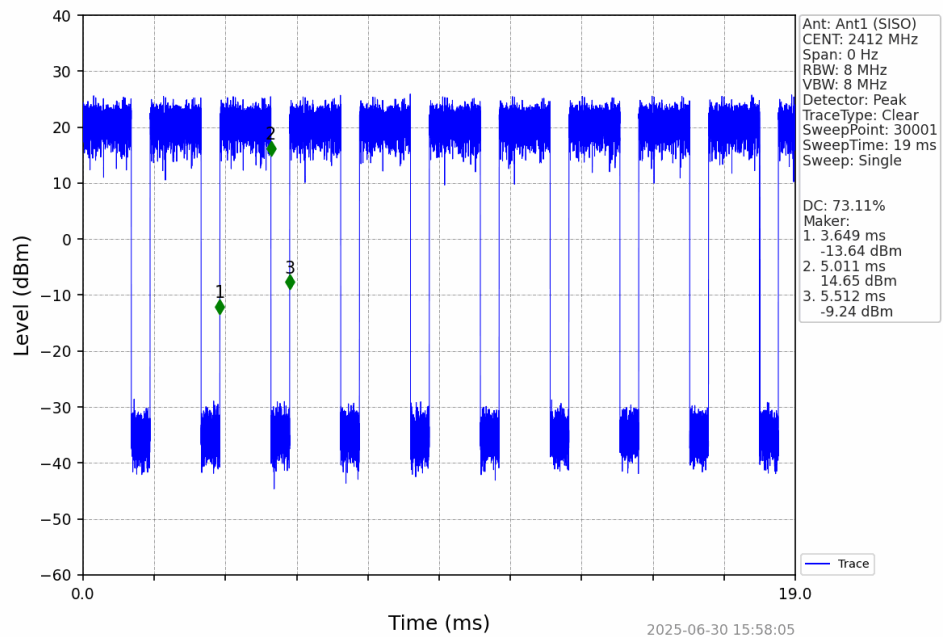
1.2.1 Ant1



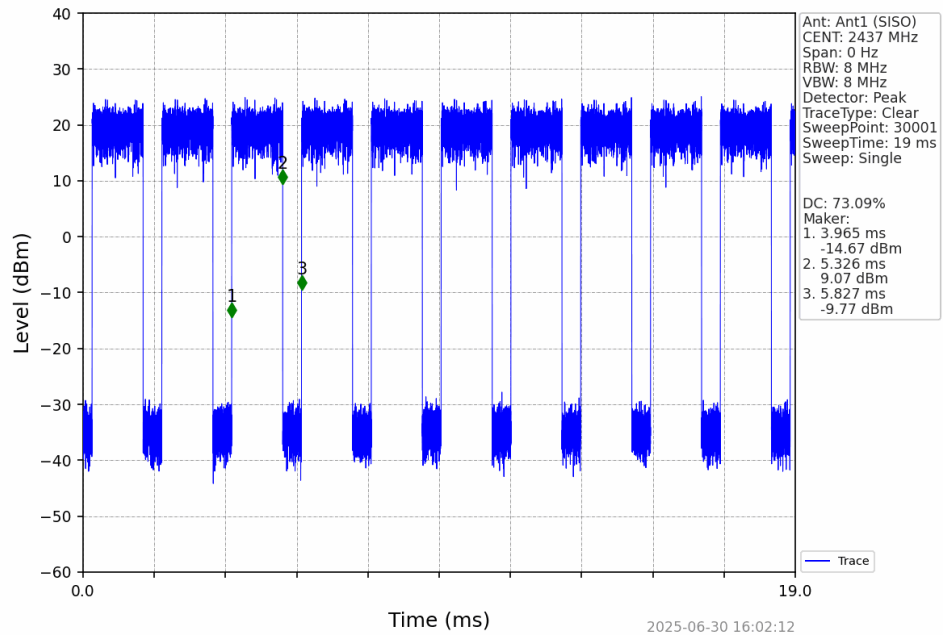
# 802.11b HCH 2462MHz Ant1 (SISO) NTN



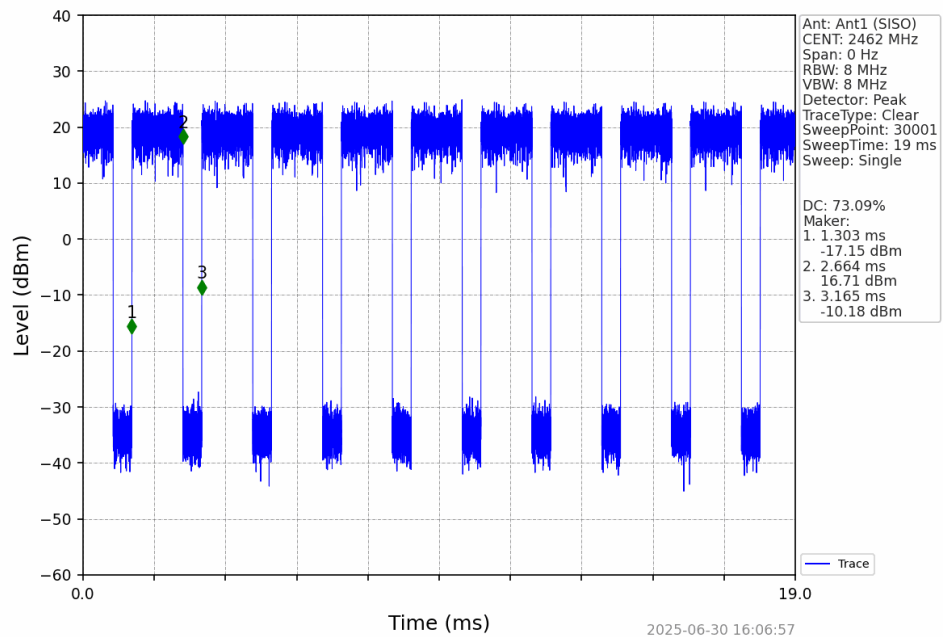
# 802.11g LCH 2412MHz Ant1 (SISO) NTN



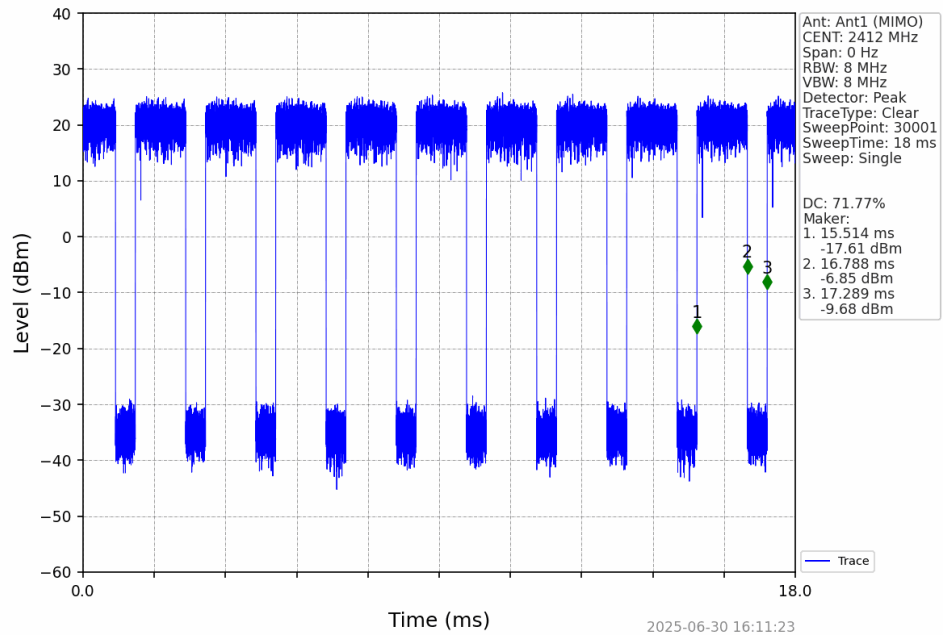
# 802.11g MCH 2437MHz Ant1 (SISO) NTN



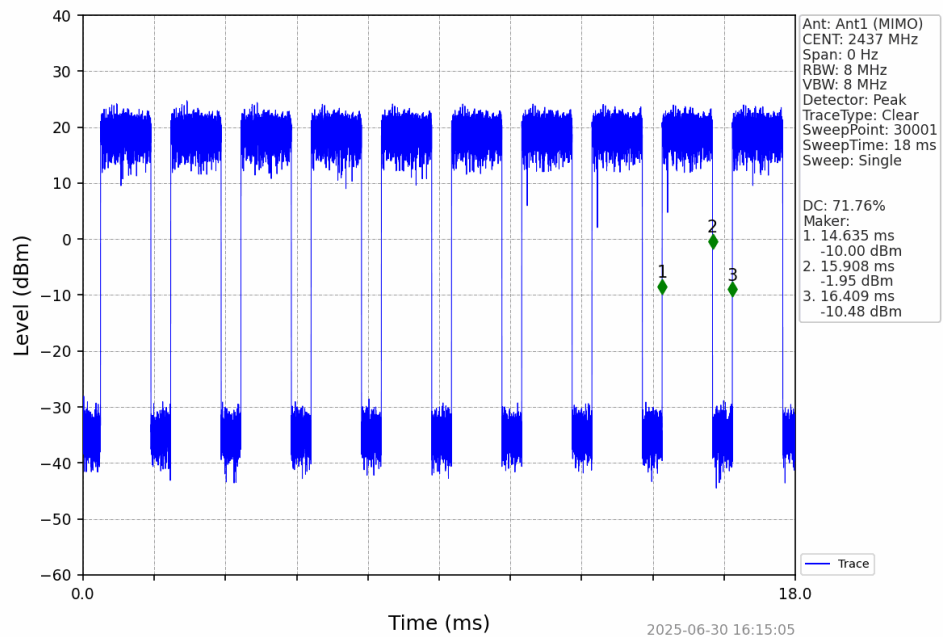
# 802.11g\_HCH\_2462MHz\_Ant1 (SISO) NTN



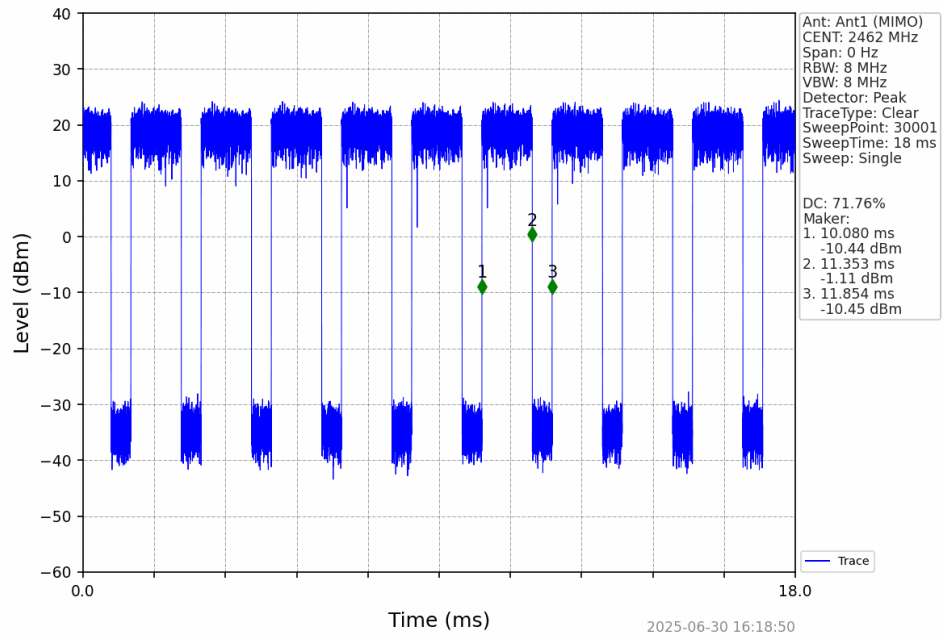
# 802.11n(HT20) LCH 2412MHz Ant1 (MIMO) NTNV



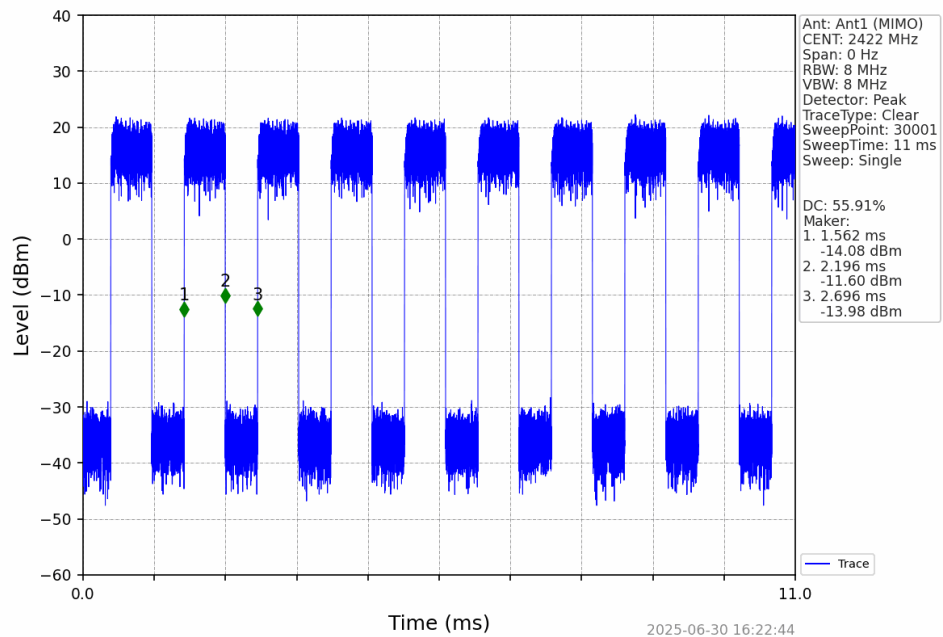
# 802.11n(HT20) MCH 2437MHz Ant1 (MIMO) NTNV



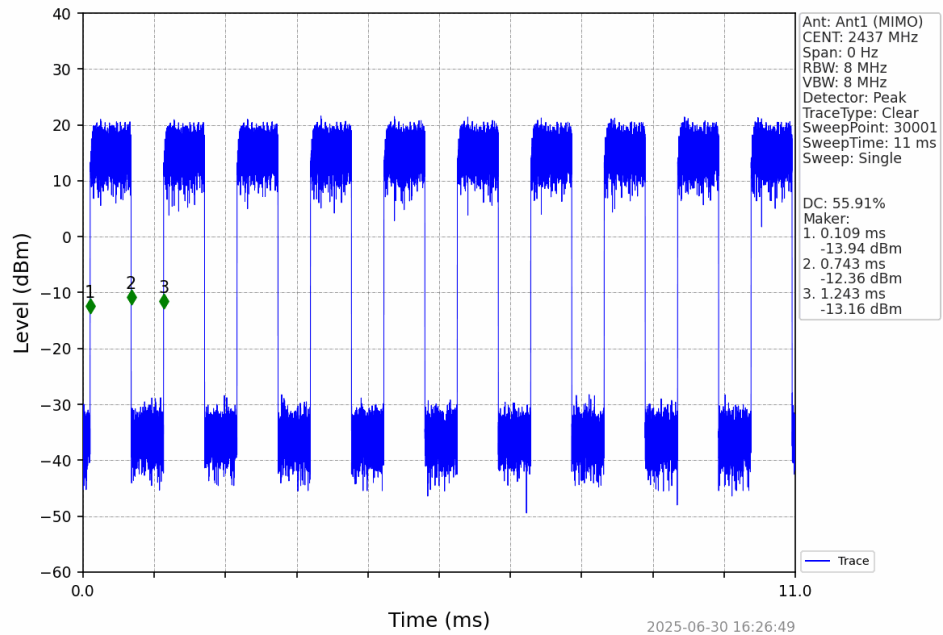
# 802.11n(HT20) HCH 2462MHz Ant1 (MIMO) NTN



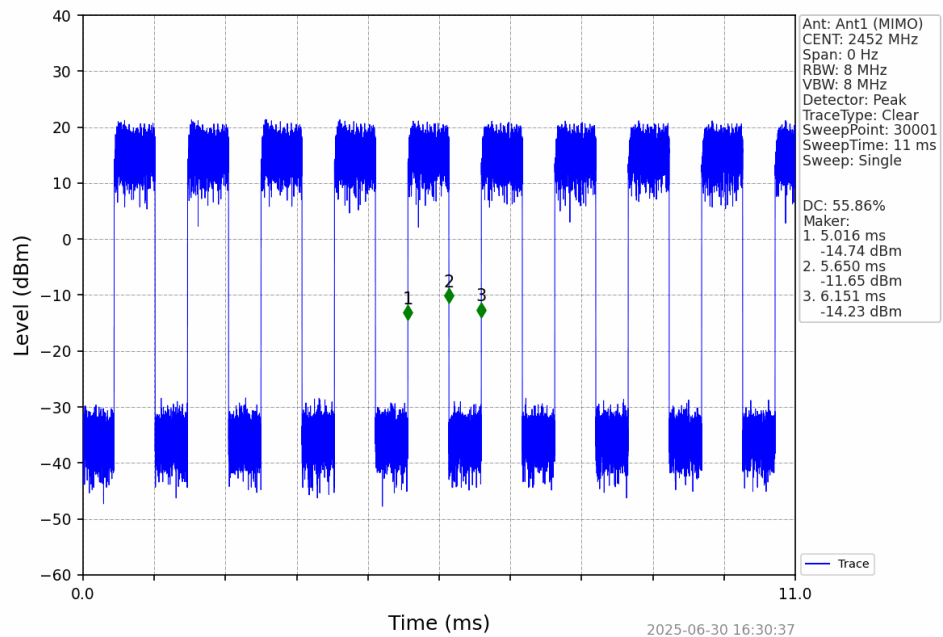
# 802.11n(HT40) LCH 2422MHz Ant1 (MIMO) NTN



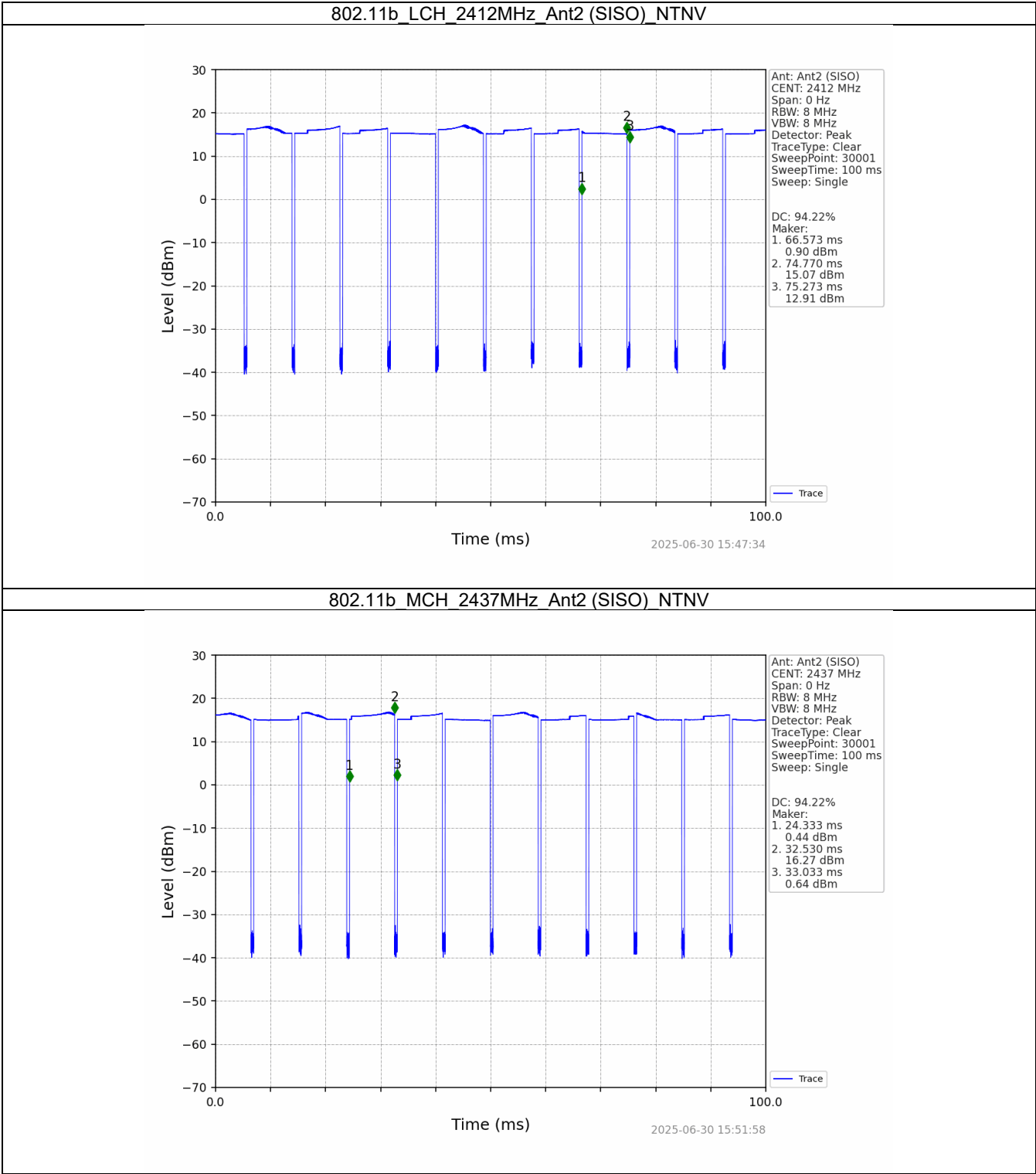
# 802.11n(HT40) MCH 2437MHz Ant1 (MIMO) NTNV



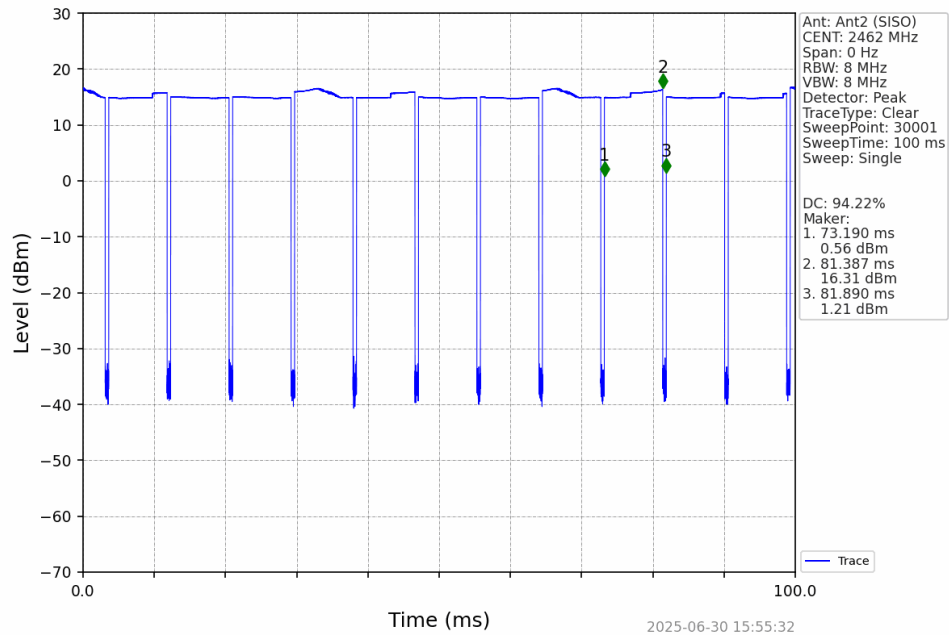
# 802.11n(HT40) HCH 2452MHz Ant1 (MIMO) NTNV



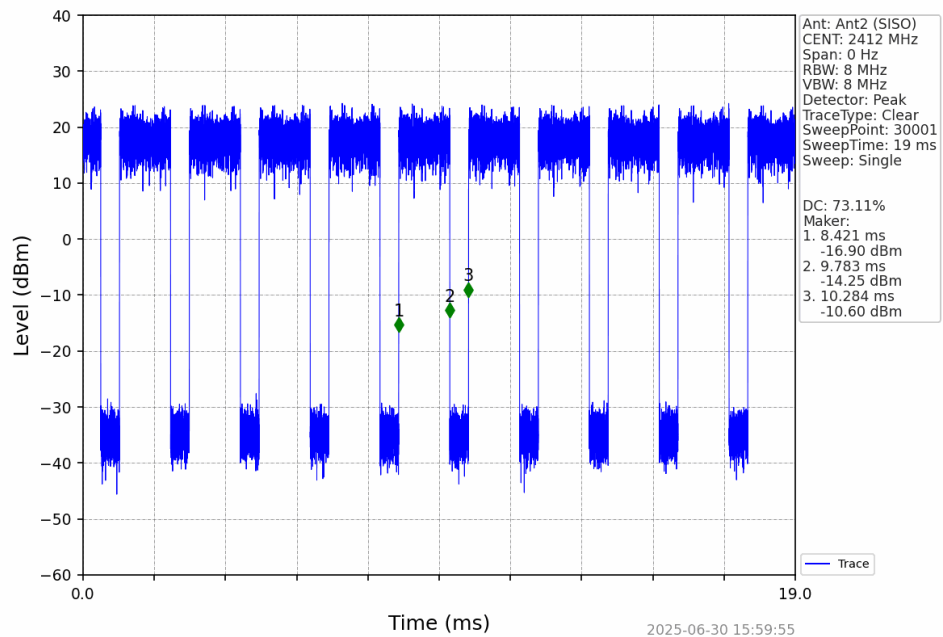
1.2.2 Ant2



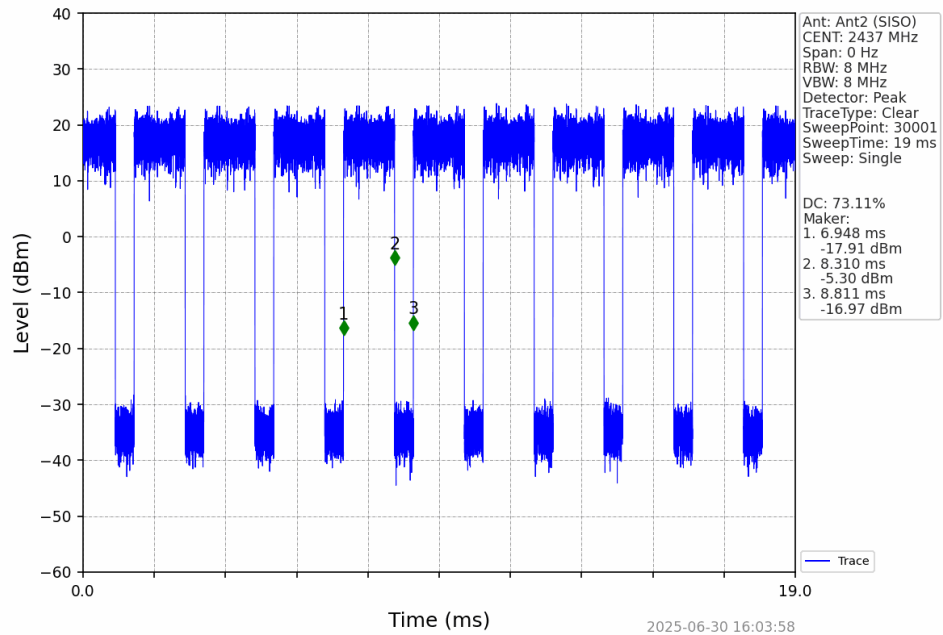
# 802.11b HCH 2462MHz Ant2 (SISO) NTN



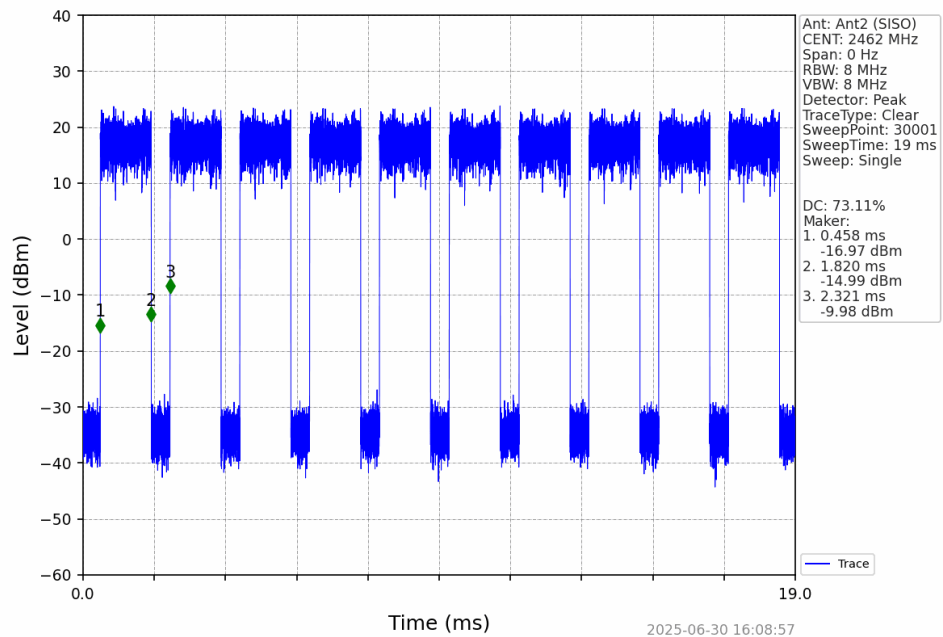
# 802.11g LCH 2412MHz Ant2 (SISO) NTN



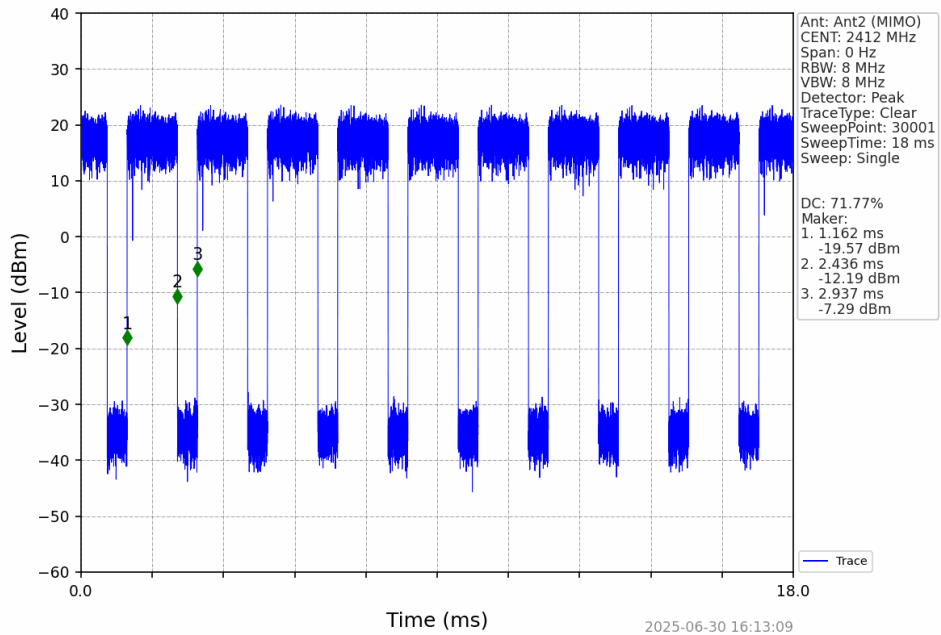
# 802.11g MCH 2437MHz Ant2 (SISO) NTN



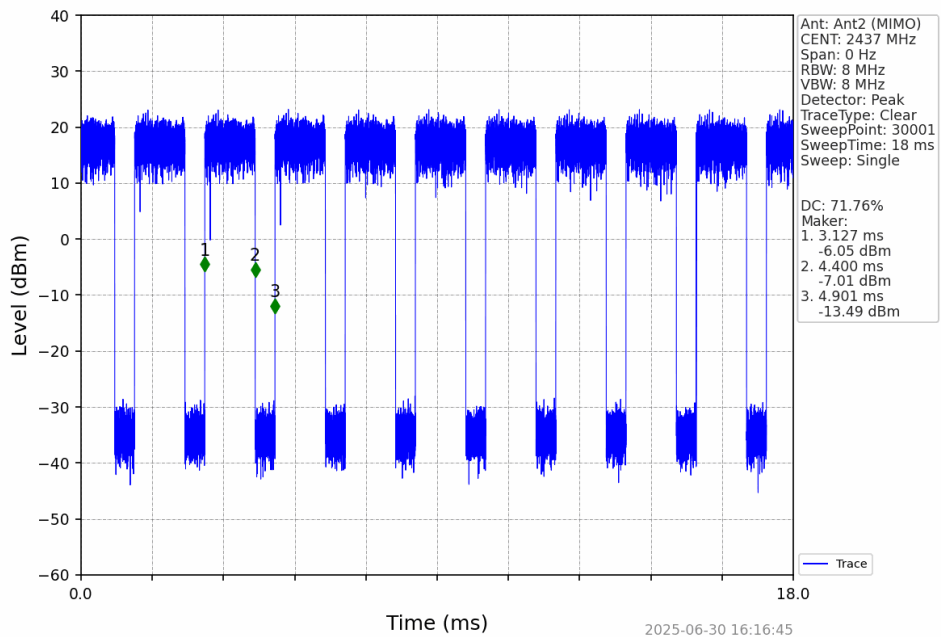
# 802.11g\_HCH\_2462MHz\_Ant2 (SISO) NTN



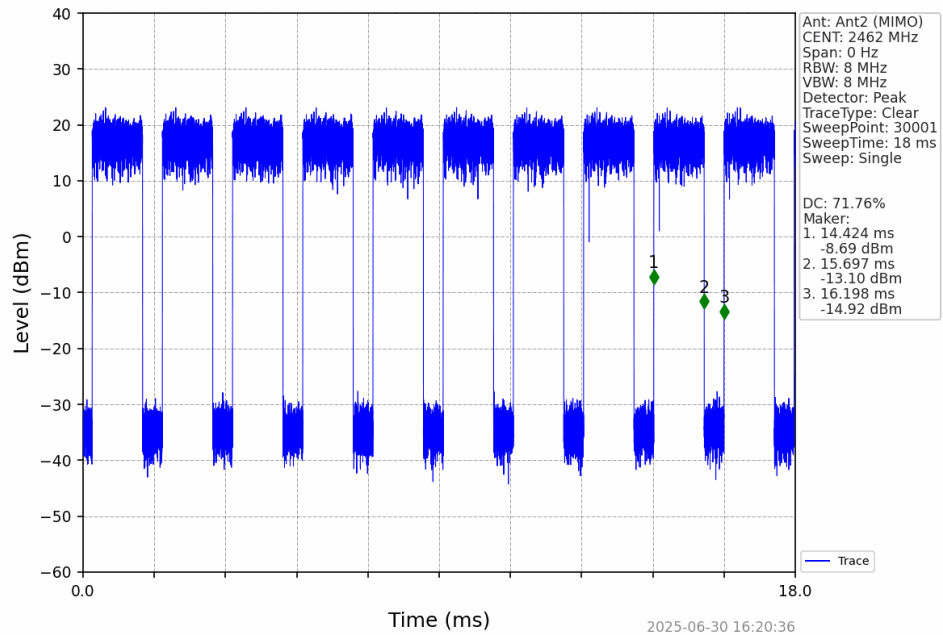
# 802.11n(HT20) LCH 2412MHz Ant2 (MIMO) NTNV



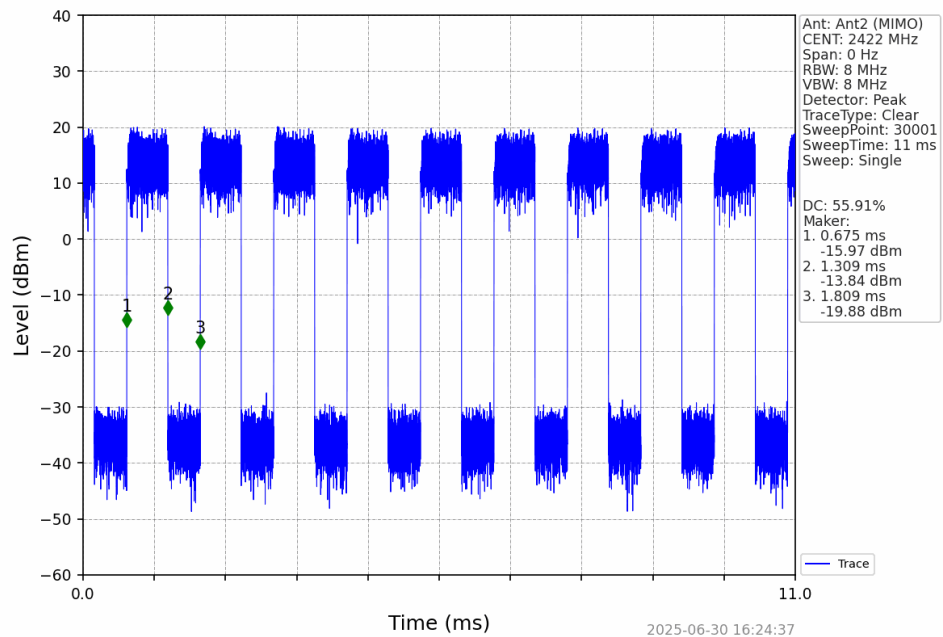
# 802.11n(HT20) MCH 2437MHz Ant2 (MIMO) NTNV



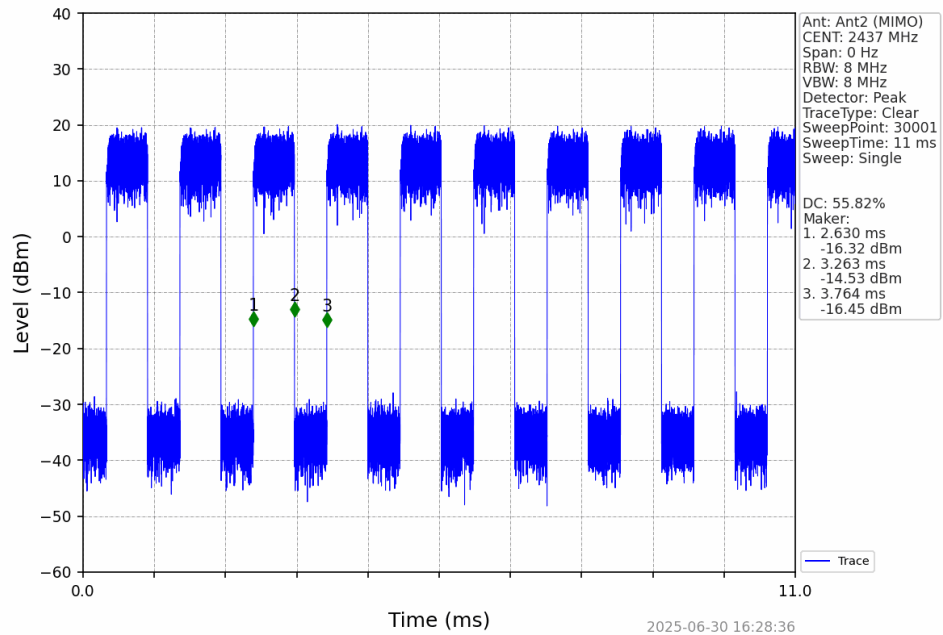
# 802.11n(HT20) HCH 2462MHz Ant2 (MIMO) NTNV



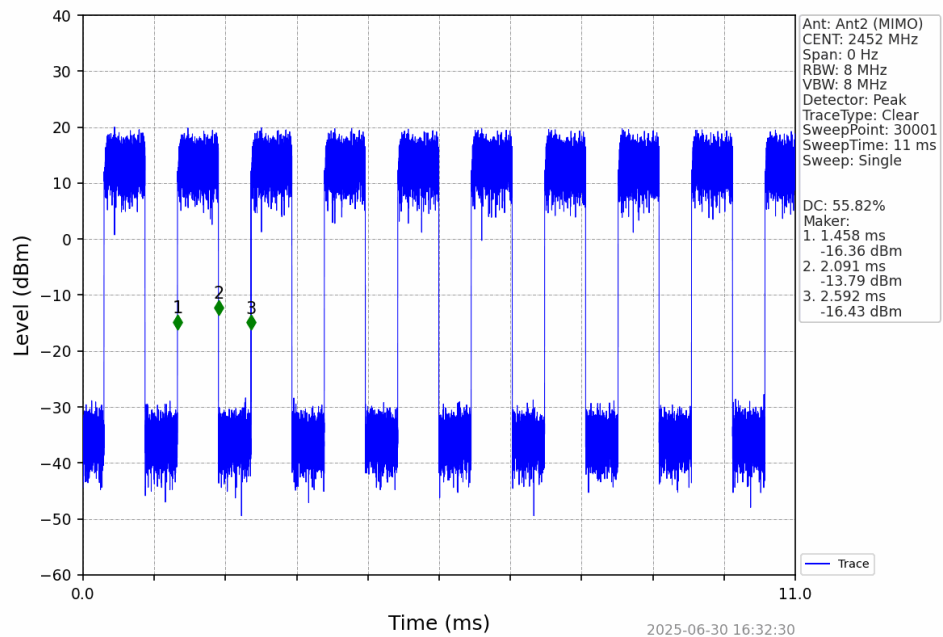
# 802.11n(HT40) LCH 2422MHz Ant2 (MIMO) NTNV



# 802.11n(HT40) MCH 2437MHz Ant2 (MIMO) NTN



# 802.11n(HT40) HCH 2452MHz Ant2 (MIMO) NTN



## 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   | 14.840                       | /     | Pass    |
|                |         |                 | 2   | 14.586                       | /     | Pass    |
|                |         | 2437            | 1   | 14.863                       | /     | Pass    |
|                |         |                 | 2   | 14.570                       | /     | Pass    |
|                |         | 2462            | 1   | 14.835                       | /     | Pass    |
|                |         |                 | 2   | 14.614                       | /     | Pass    |
| 802.11g        | SISO    | 2412            | 1   | 17.694                       | /     | Pass    |
|                |         |                 | 2   | 17.262                       | /     | Pass    |
|                |         | 2437            | 1   | 17.438                       | /     | Pass    |
|                |         |                 | 2   | 16.877                       | /     | Pass    |
|                |         | 2462            | 1   | 17.453                       | /     | Pass    |
|                |         |                 | 2   | 16.906                       | /     | Pass    |
| 802.11n (HT20) | MIMO    | 2412            | 1   | 18.716                       | /     | Pass    |
|                |         |                 | 2   | 18.298                       | /     | Pass    |
|                |         | 2437            | 1   | 18.539                       | /     | Pass    |
|                |         |                 | 2   | 18.111                       | /     | Pass    |
|                |         | 2462            | 1   | 18.527                       | /     | Pass    |
|                |         |                 | 2   | 18.346                       | /     | Pass    |
| 802.11n (HT40) | MIMO    | 2422            | 1   | 37.157                       | /     | Pass    |
|                |         |                 | 2   | 36.631                       | /     | Pass    |
|                |         | 2437            | 1   | 36.954                       | /     | Pass    |
|                |         |                 | 2   | 36.589                       | /     | Pass    |
|                |         | 2452            | 1   | 36.729                       | /     | Pass    |
|                |         |                 | 2   | 37.052                       | /     | Pass    |

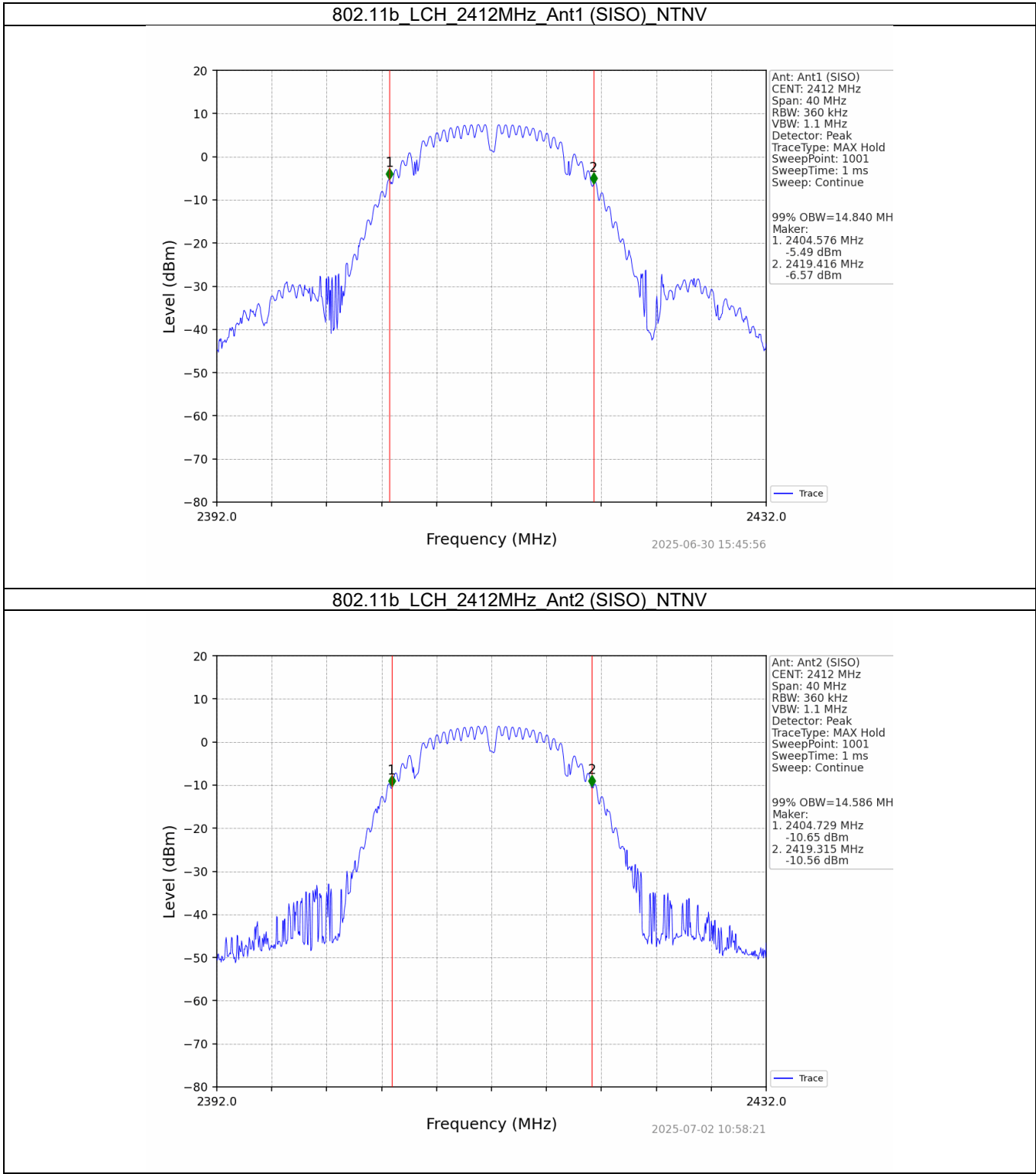
#### 2.1.2 6dB BW

| Mode           | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) |            | Verdict |
|----------------|---------|-----------------|-----|---------------------|------------|---------|
|                |         |                 |     | Result              | Limit      |         |
| 802.11b        | SISO    | 2412            | 1   | 10.130              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 10.135              | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 10.136              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 10.135              | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 10.136              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 10.141              | $\geq 0.5$ | Pass    |
| 802.11g        | SISO    | 2412            | 1   | 15.759              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 15.955              | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 15.768              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 16.341              | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 15.138              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 16.347              | $\geq 0.5$ | Pass    |
| 802.11n (HT20) | MIMO    | 2412            | 1   | 16.301              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 16.329              | $\geq 0.5$ | Pass    |
|                |         | 2437            | 1   | 15.825              | $\geq 0.5$ | Pass    |
|                |         |                 | 2   | 15.996              | $\geq 0.5$ | Pass    |
|                |         | 2462            | 1   | 16.056              | $\geq 0.5$ | Pass    |
|                |         |                 | 1   |                     |            | Pass    |

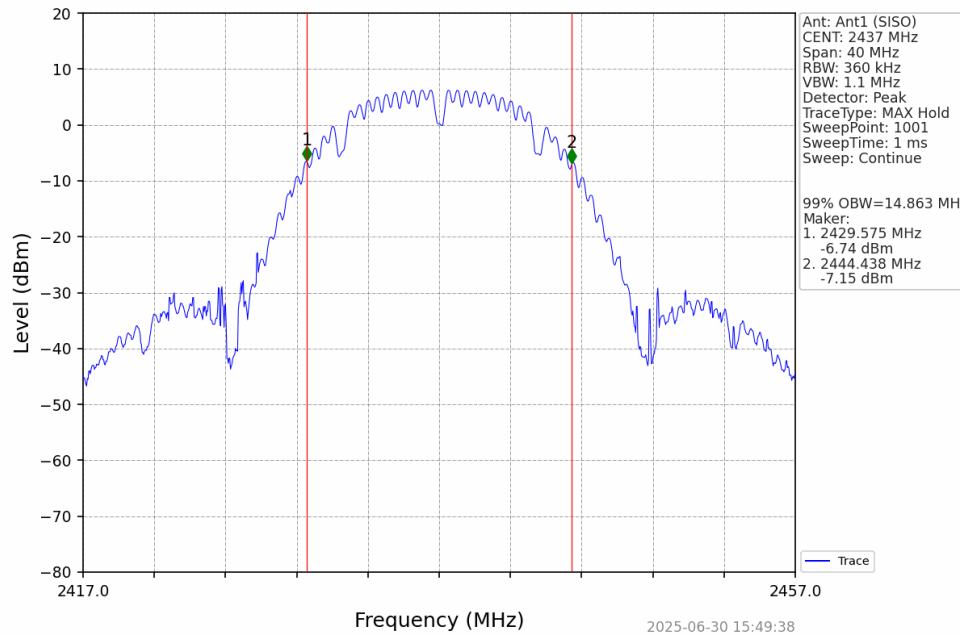
|                   |      |      |   |        |            |      |
|-------------------|------|------|---|--------|------------|------|
|                   |      |      | 2 | 16.458 | $\geq 0.5$ | Pass |
| 802.11n<br>(HT40) | MIMO | 2422 | 1 | 35.124 | $\geq 0.5$ | Pass |
|                   |      |      | 2 | 35.183 | $\geq 0.5$ | Pass |
|                   |      | 2437 | 1 | 35.178 | $\geq 0.5$ | Pass |
|                   |      |      | 2 | 35.184 | $\geq 0.5$ | Pass |
|                   |      | 2452 | 1 | 35.119 | $\geq 0.5$ | Pass |
|                   |      |      | 2 | 35.176 | $\geq 0.5$ | Pass |

2.2 Test Graph

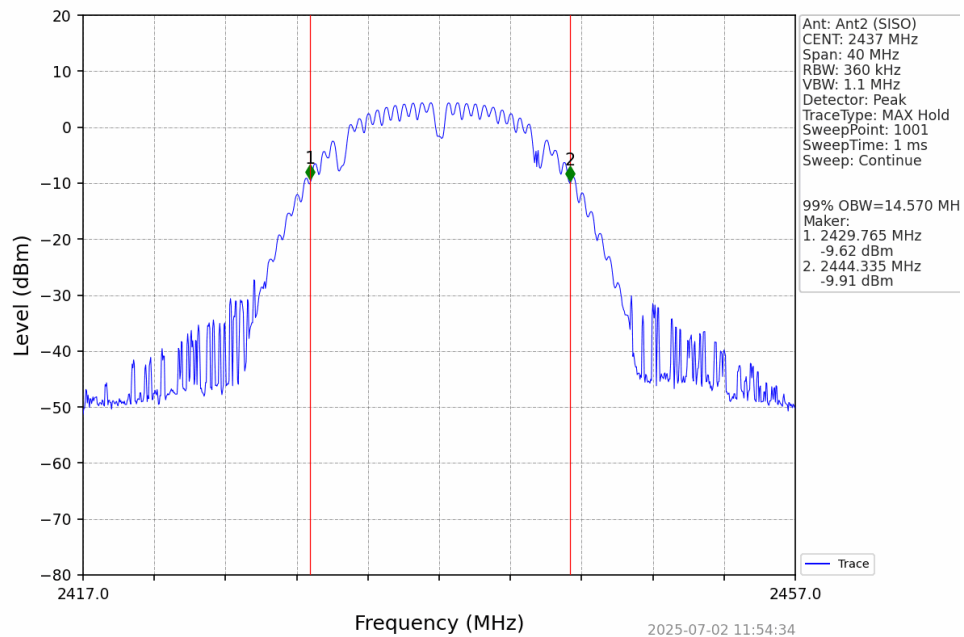
2.2.1 OBW



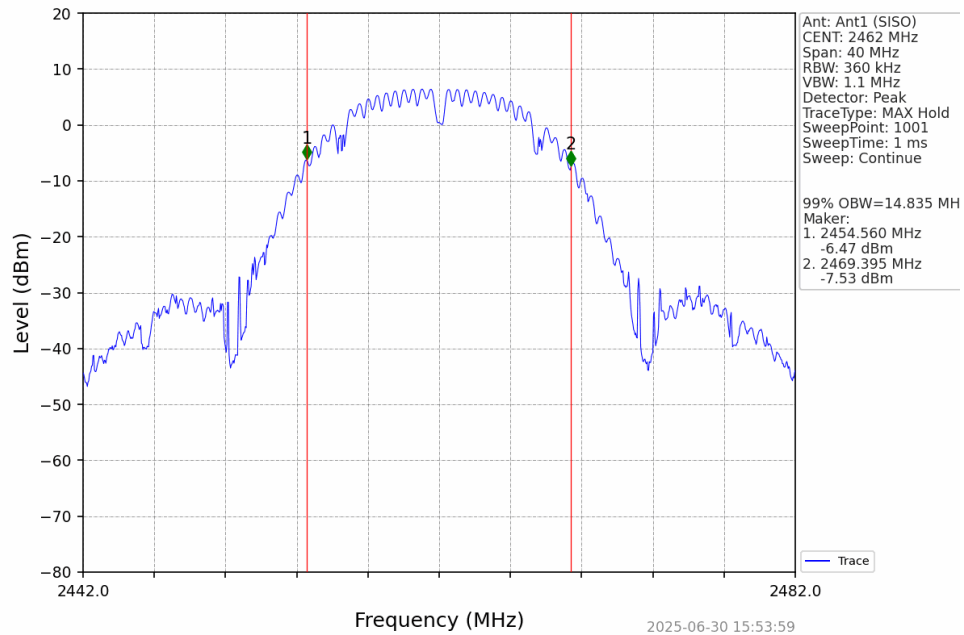
# 802.11b MCH 2437MHz Ant1 (SISO) NTN



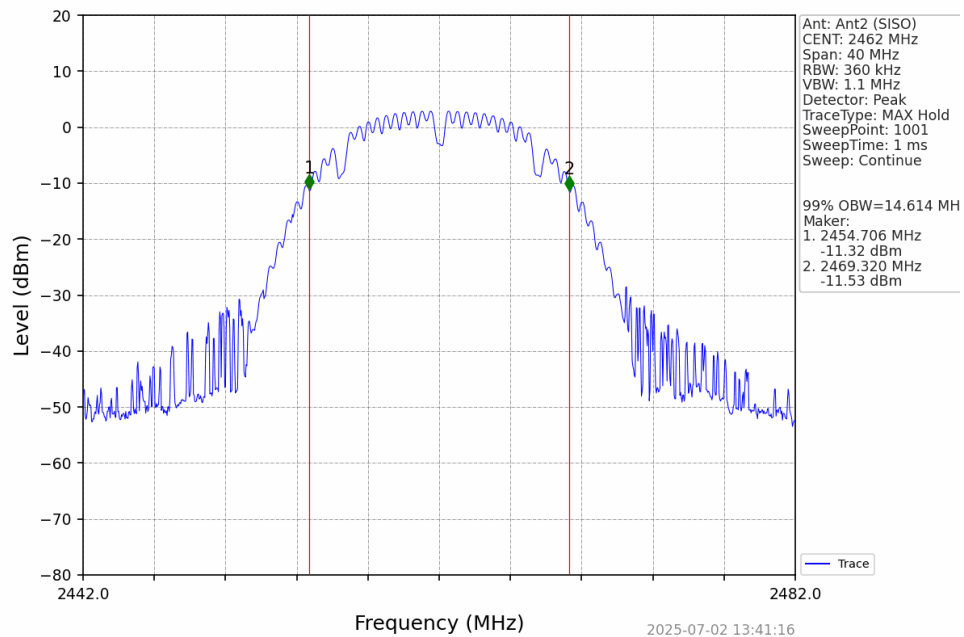
# 802.11b\_MCH\_2437MHz\_Ant2 (SISO)\_NTN



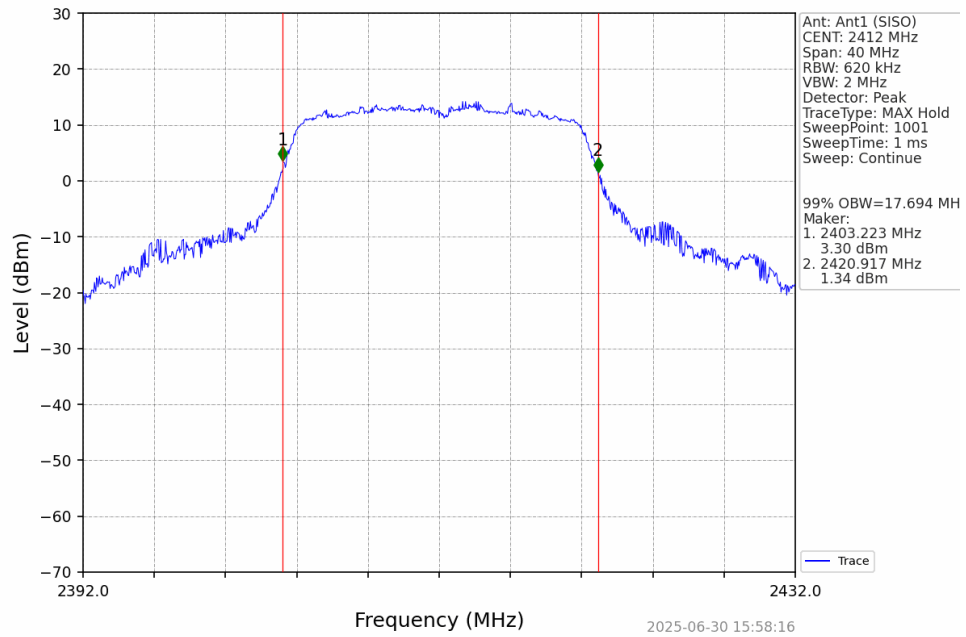
### 802.11b HCH 2462MHz Ant1 (SISO) NTN



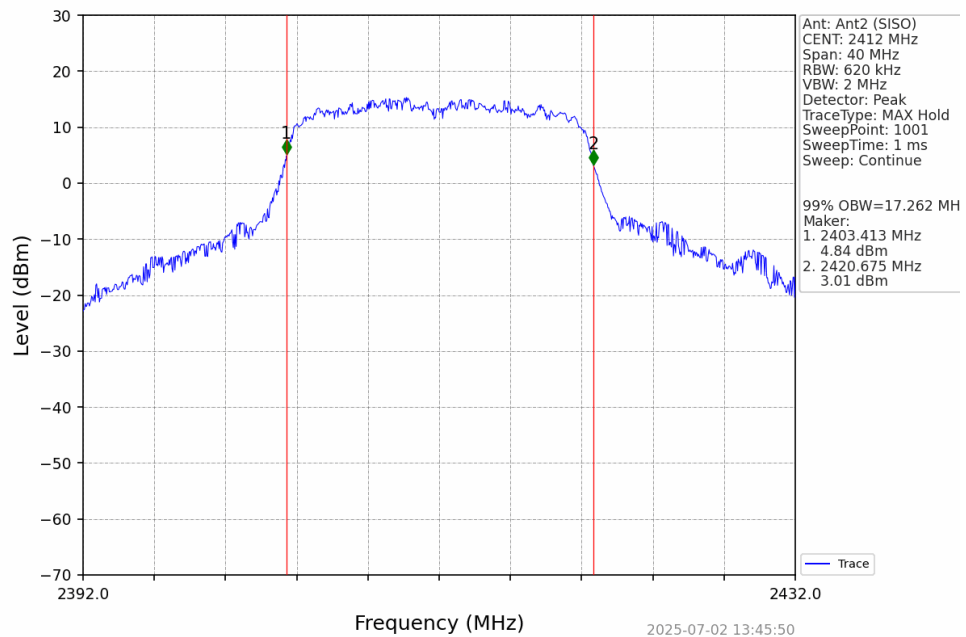
### 802.11b\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



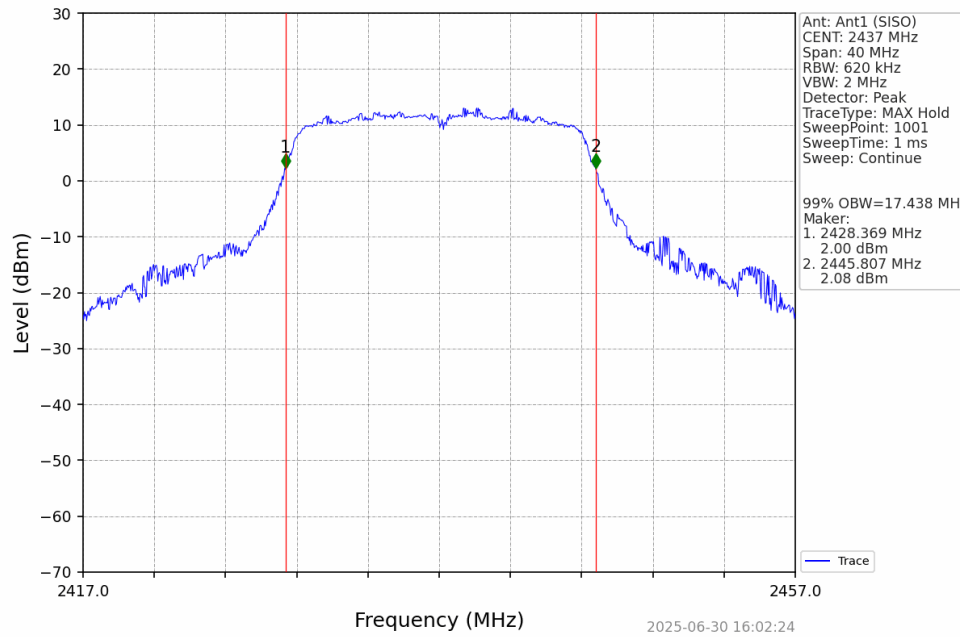
### 802.11g LCH 2412MHz Ant1 (SISO) NTN



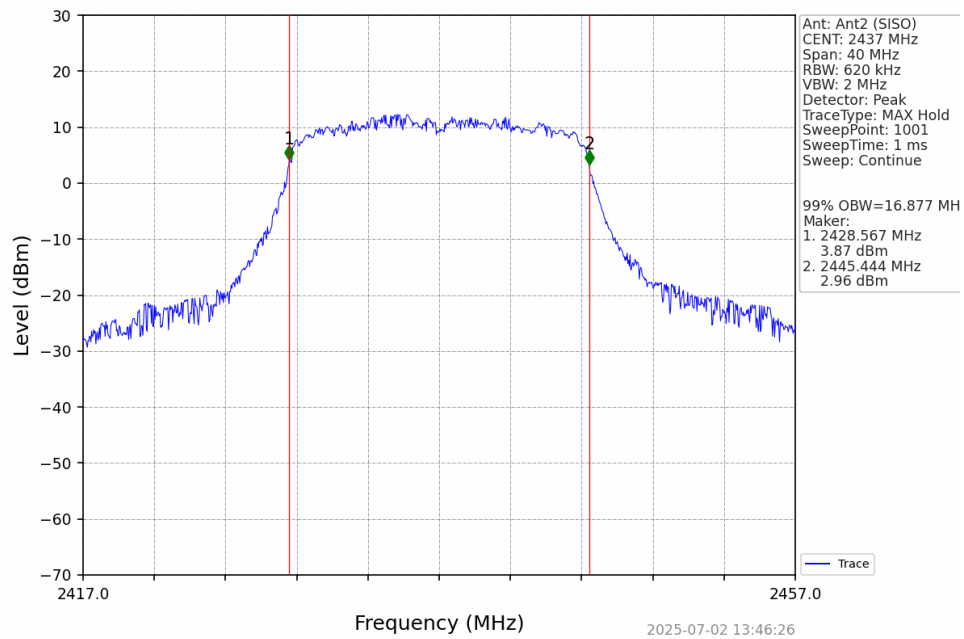
### 802.11g LCH 2412MHz Ant2 (SISO) NTN



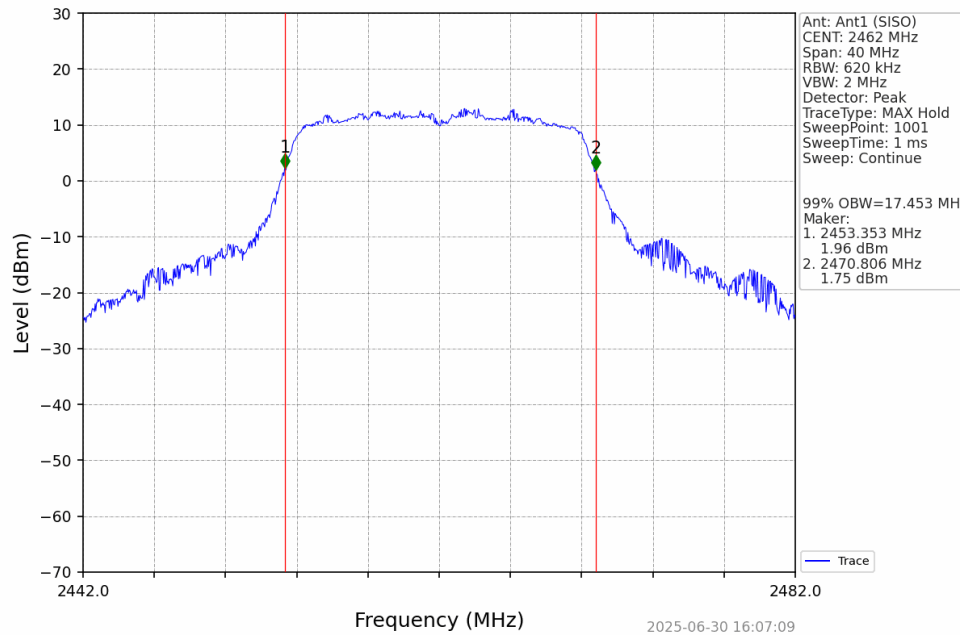
# 802.11g MCH 2437MHz Ant1 (SISO) NTN



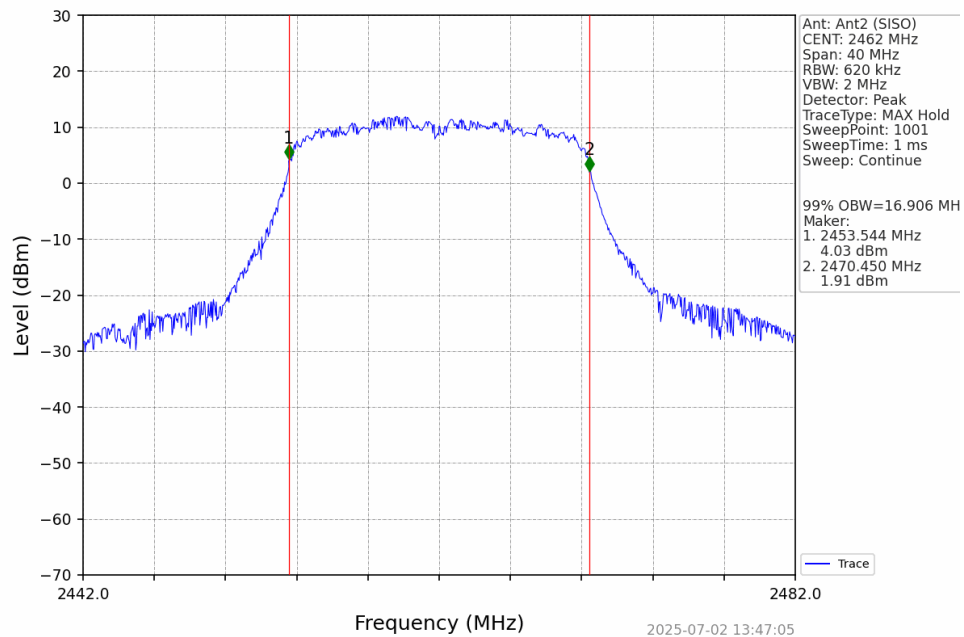
# 802.11g MCH 2437MHz Ant2 (SISO) NTN



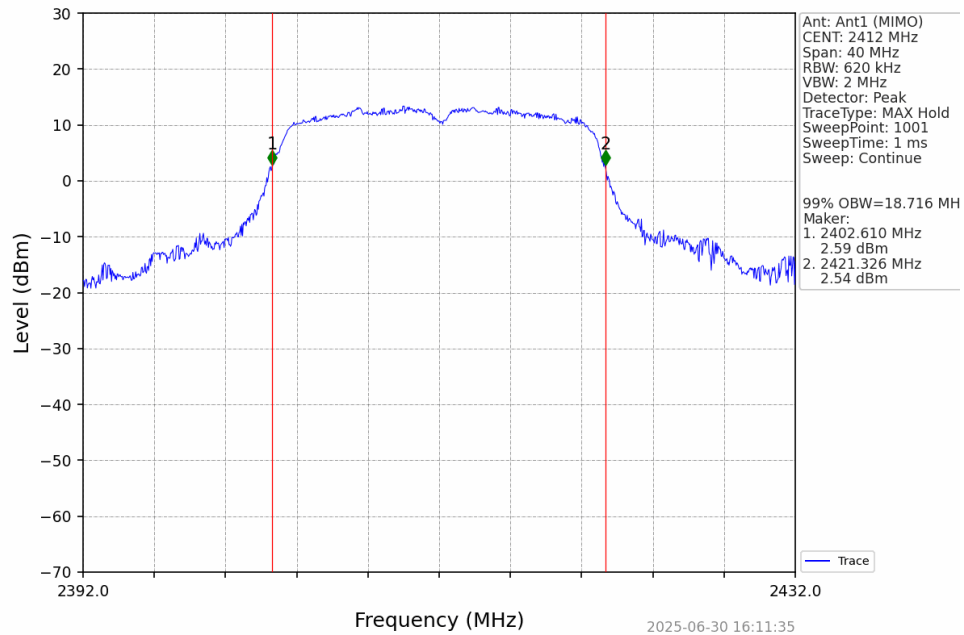
### 802.11g HCH 2462MHz Ant1 (SISO) NTN



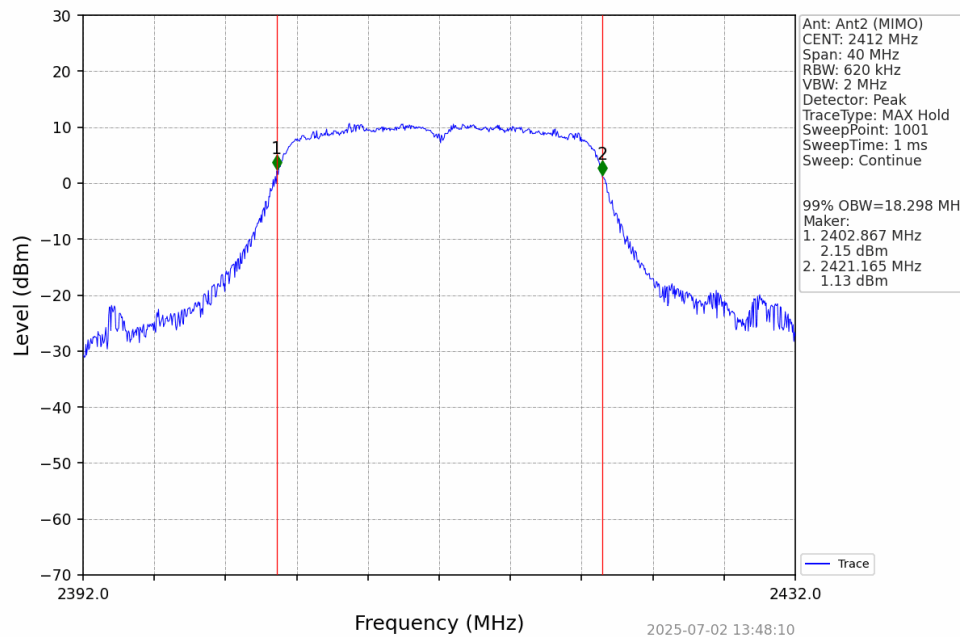
### 802.11g\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



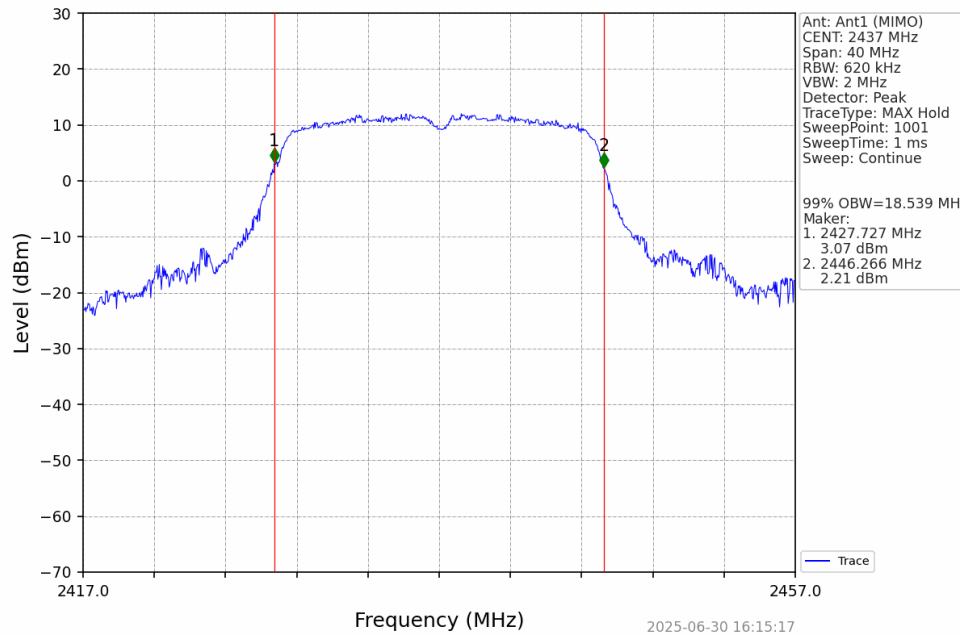
### 802.11n(HT20) LCH 2412MHz Ant1 (MIMO) NTN



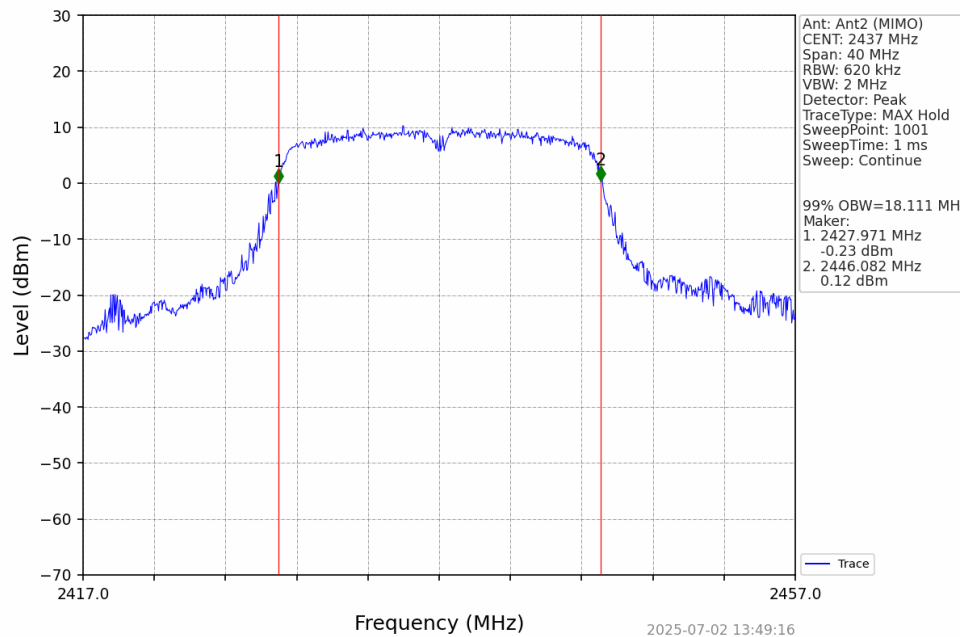
### 802.11n(HT20) LCH 2412MHz Ant2 (MIMO) NTN



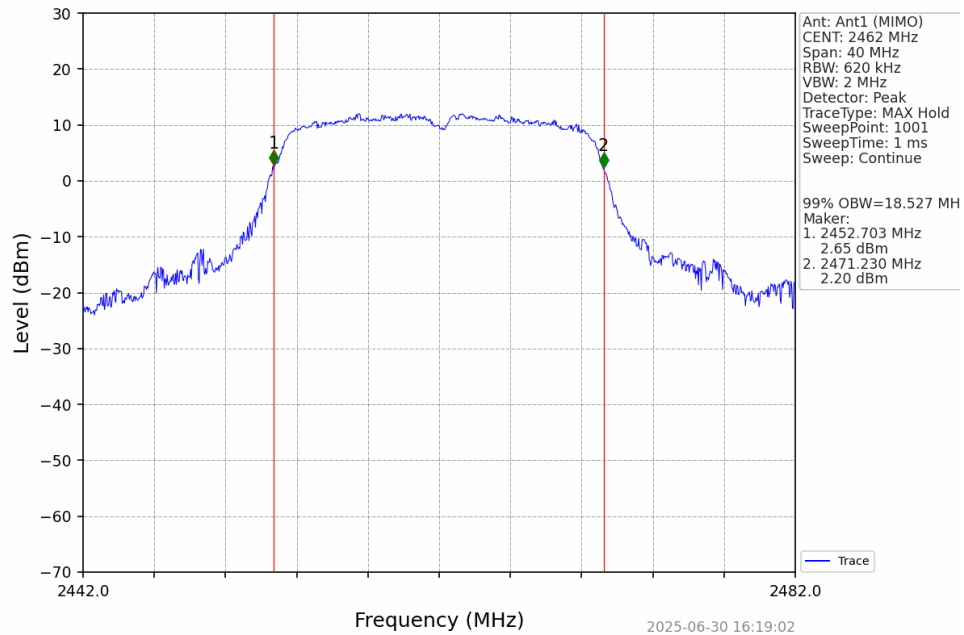
# 802.11n(HT20) MCH\_2437MHz\_Ant1 (MIMO) NTN



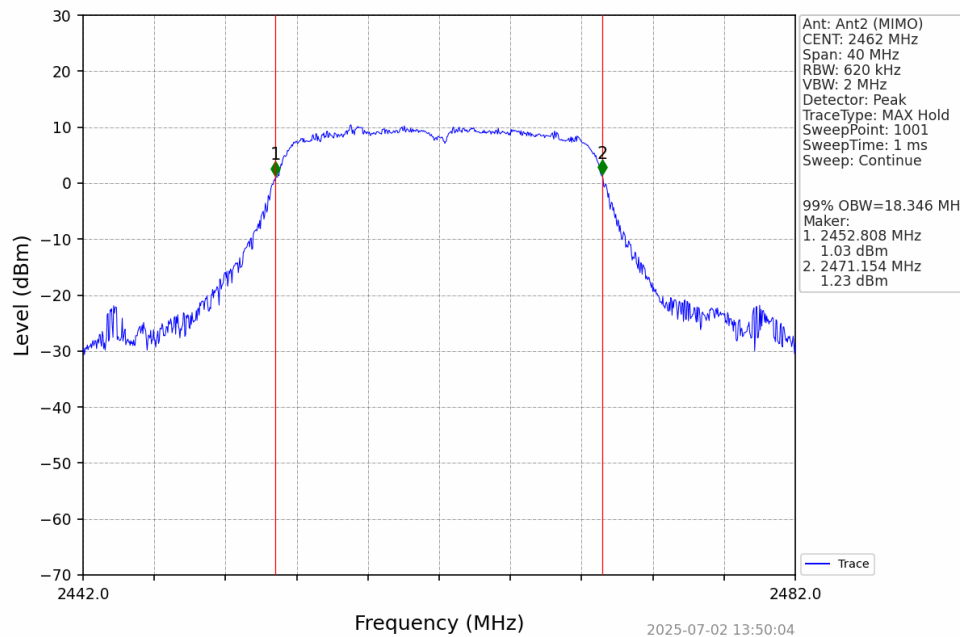
# 802.11n(HT20) MCH\_2437MHz\_Ant2 (MIMO) NTN



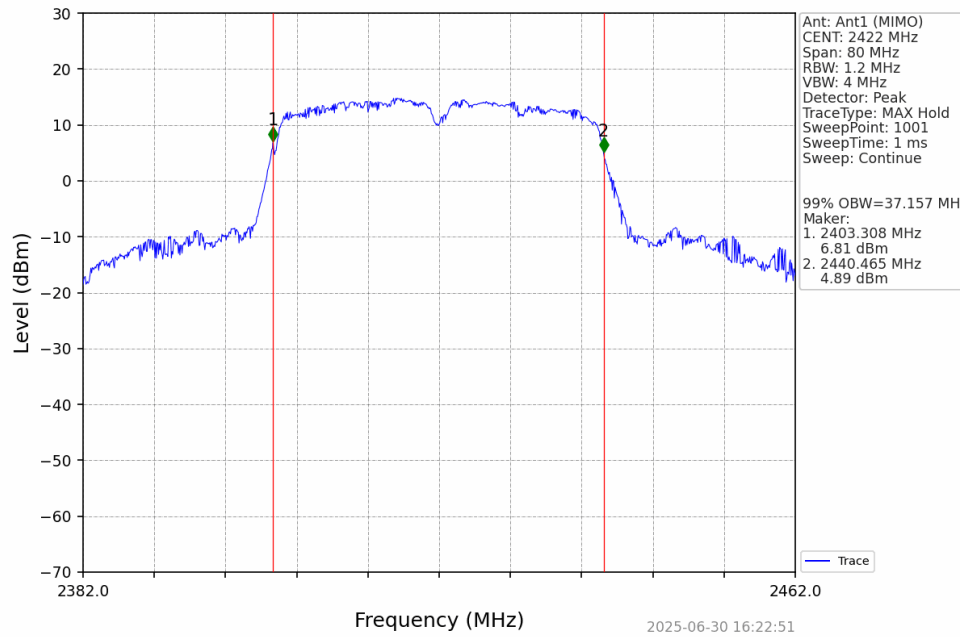
# 802.11n(HT20) HCH 2462MHz Ant1 (MIMO) NTN



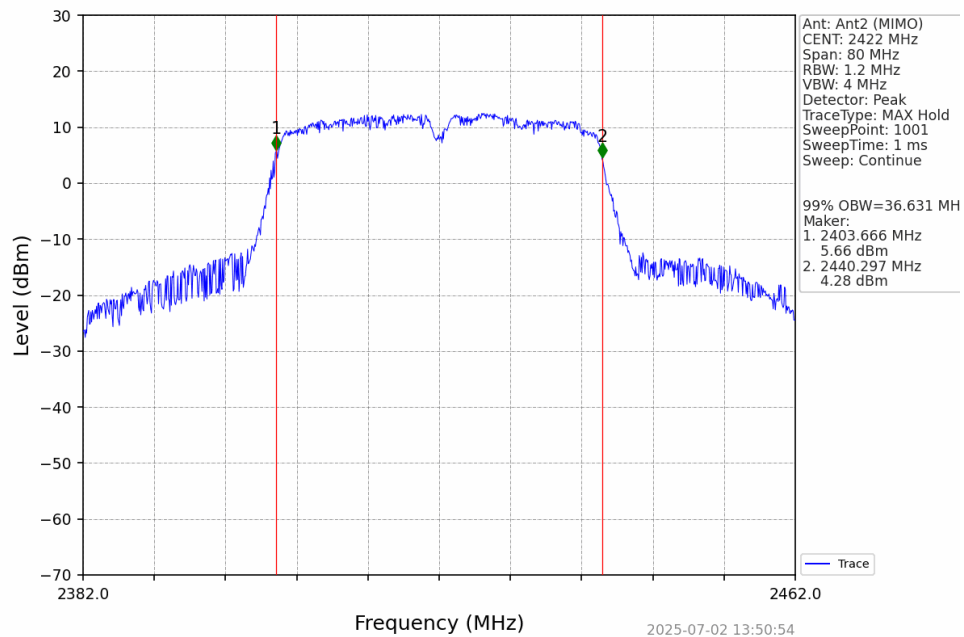
# 802.11n(HT20) HCH 2462MHz Ant2 (MIMO) NTN



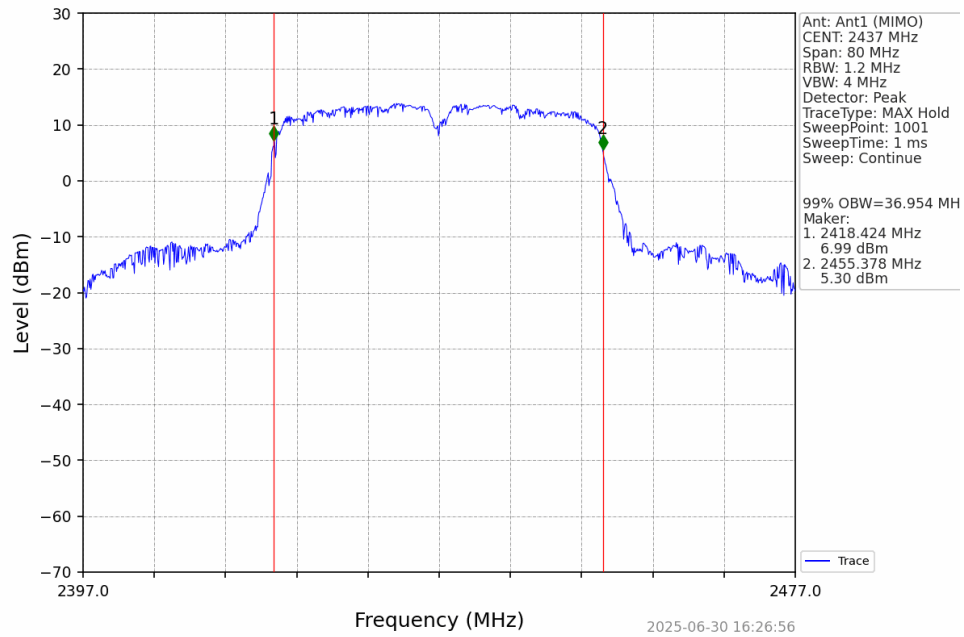
# 802.11n(HT40) LCH 2422MHz Ant1 (MIMO) NTN



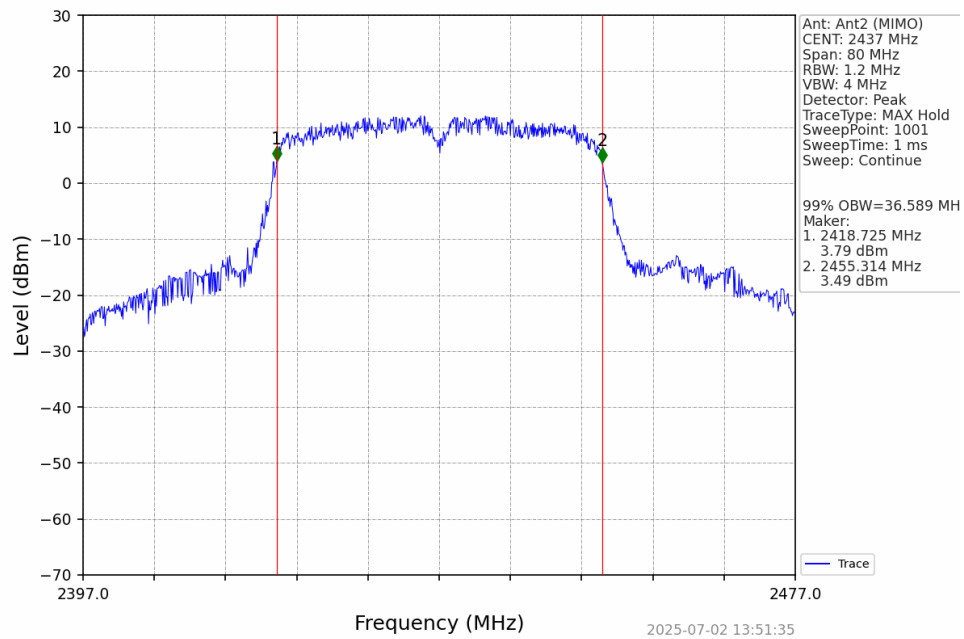
# 802.11n(HT40) LCH 2422MHz Ant2 (MIMO) NTN



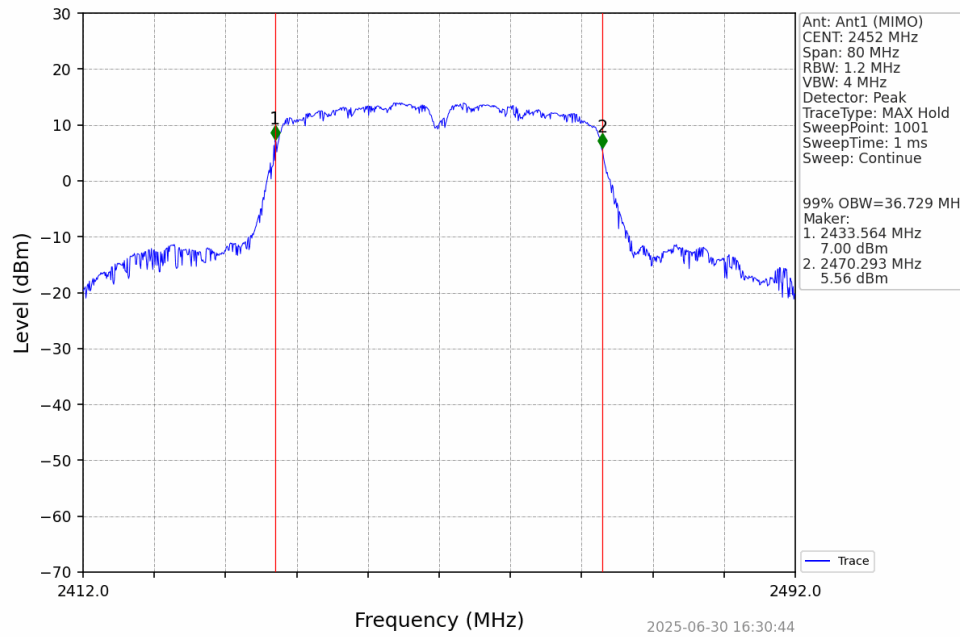
# 802.11n(HT40) MCH 2437MHz Ant1 (MIMO) NTN



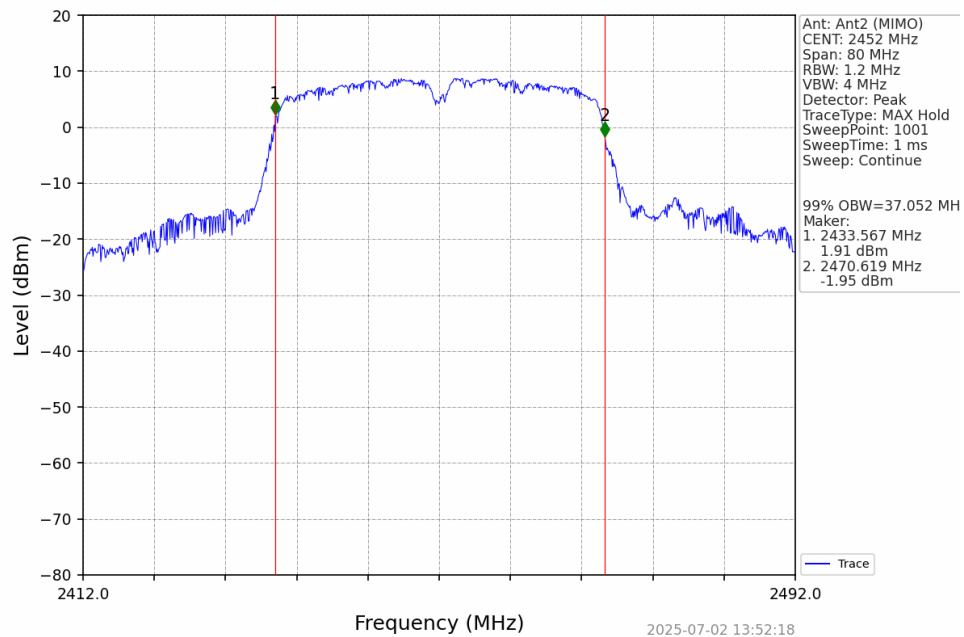
# 802.11n(HT40) MCH 2437MHz Ant2 (MIMO) NTN



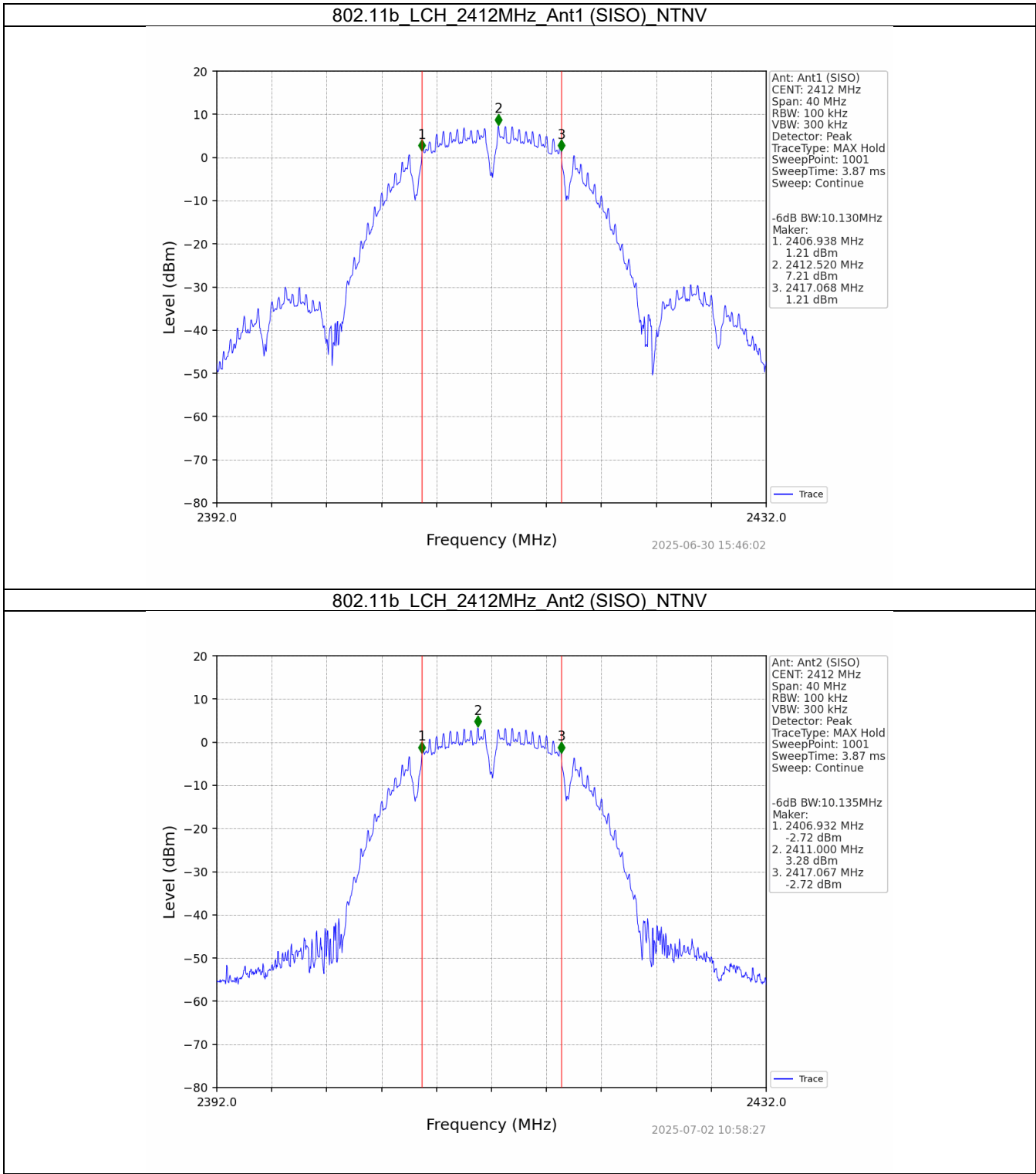
# 802.11n(HT40) HCH 2452MHz Ant1 (MIMO) NTNV



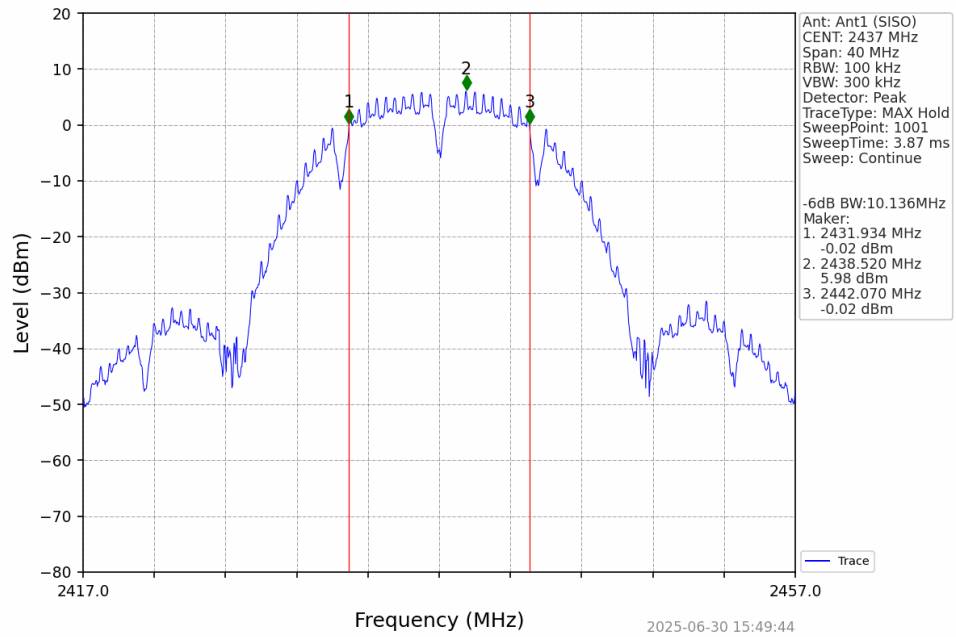
# 802.11n(HT40) HCH 2452MHz Ant2 (MIMO) NTNV



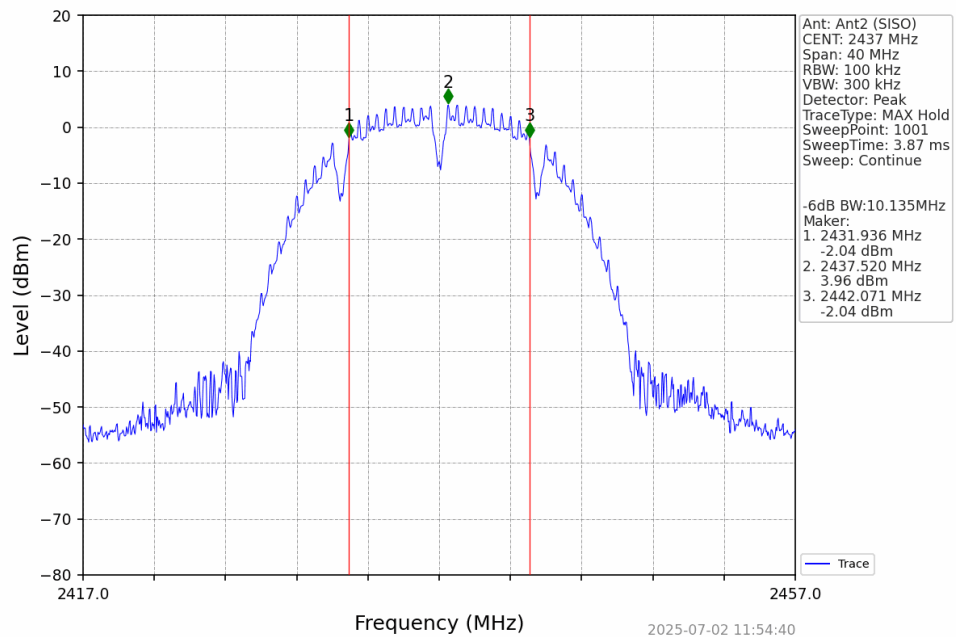
2.2.2 6dB BW



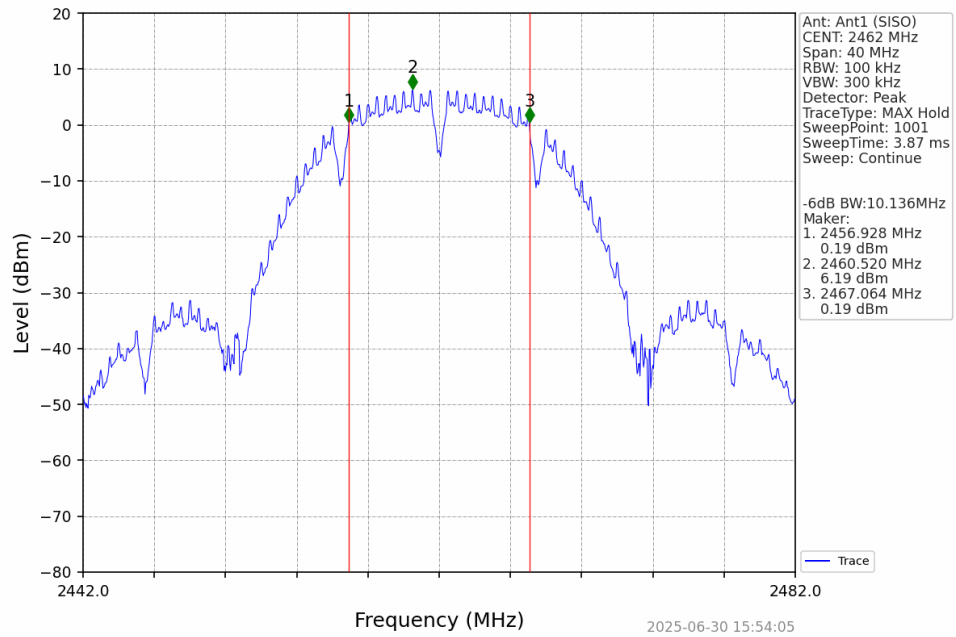
# 802.11b MCH 2437MHz Ant1 (SISO) NTN



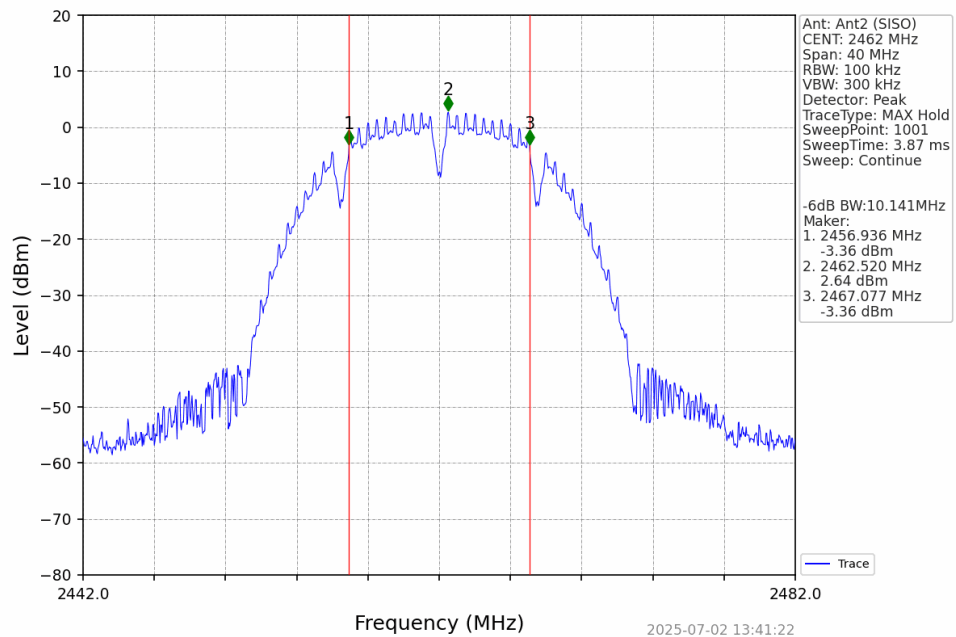
# 802.11b\_MCH\_2437MHz\_Ant2 (SISO)\_NTNV



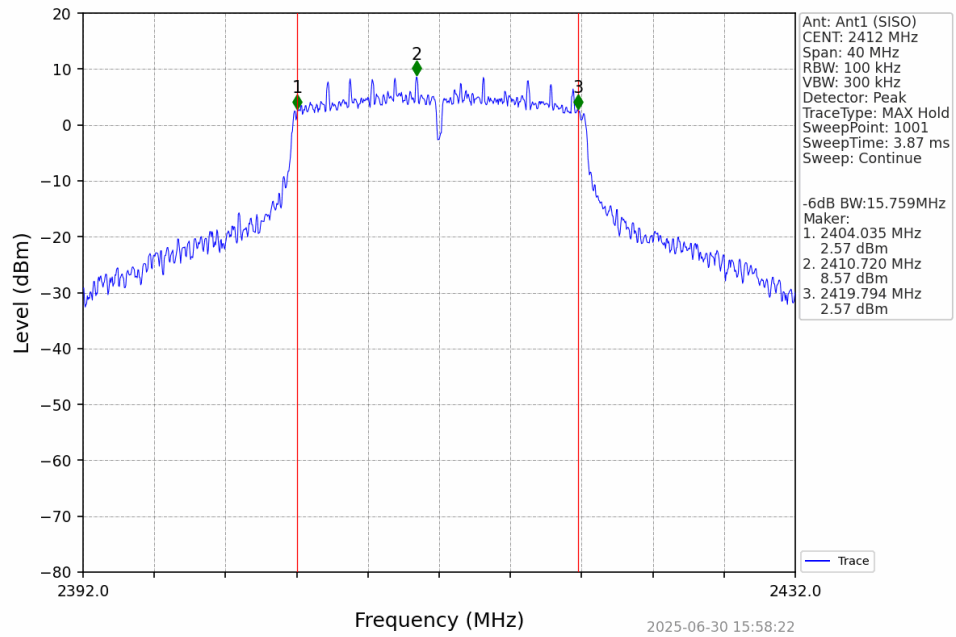
# 802.11b HCH 2462MHz Ant1 (SISO) NTN



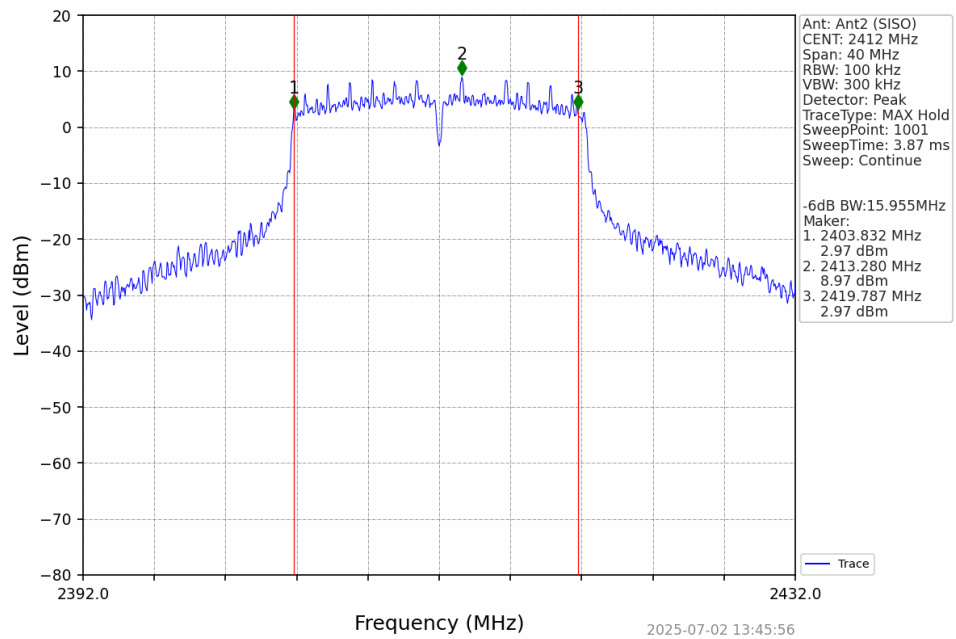
# 802.11b\_HCH\_2462MHz\_Ant2 (SISO) NTN



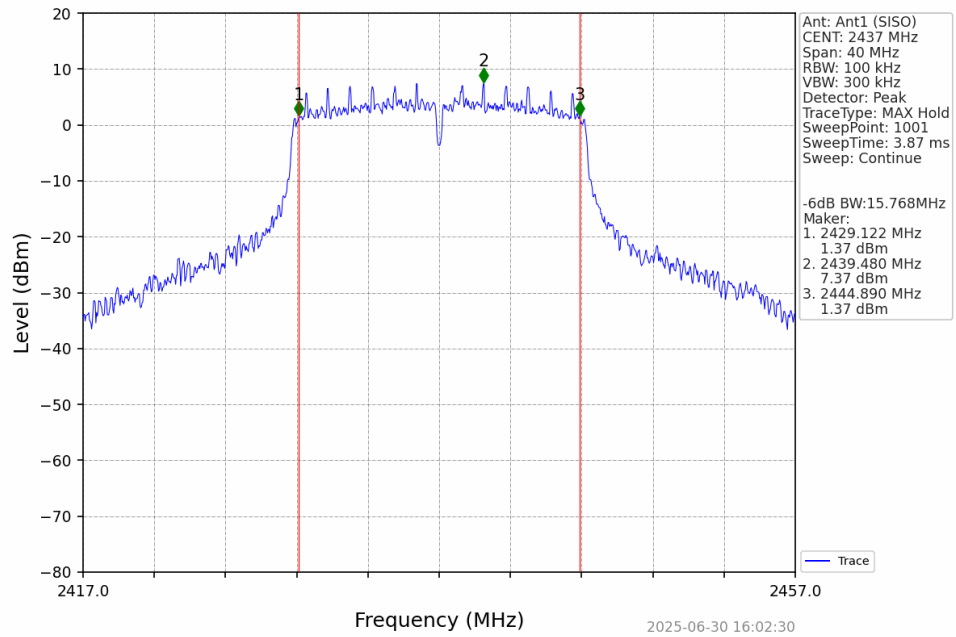
### 802.11g LCH 2412MHz Ant1 (SISO) NTN



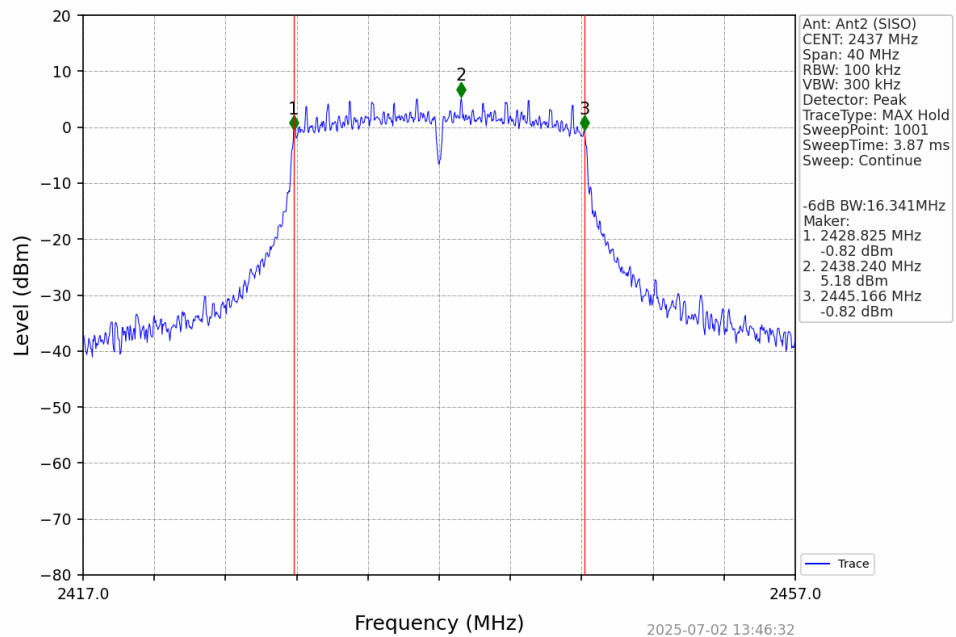
### 802.11g LCH 2412MHz Ant2 (SISO) NTN



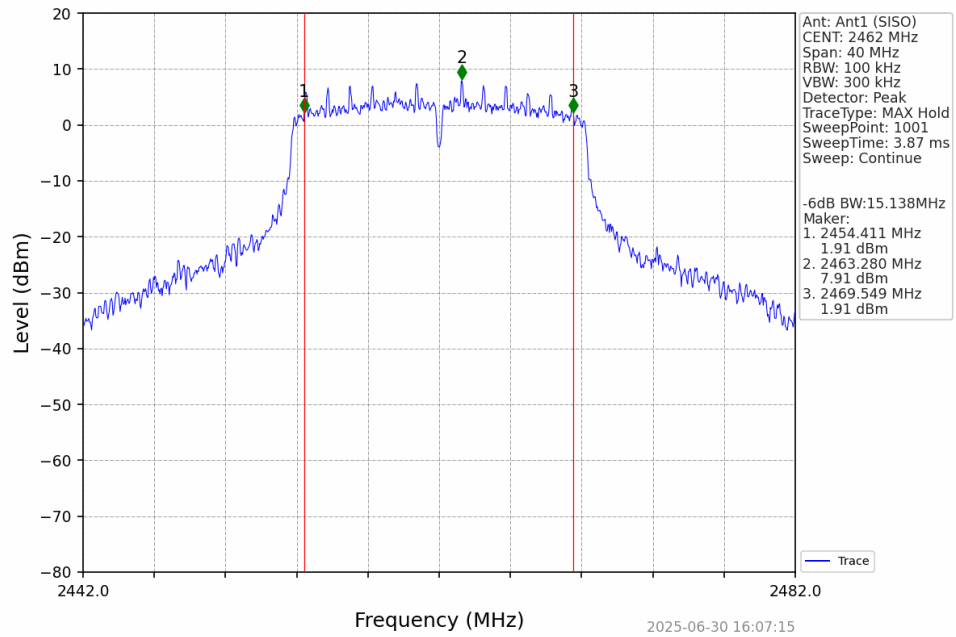
### 802.11g MCH 2437MHz Ant1 (SISO) NTN



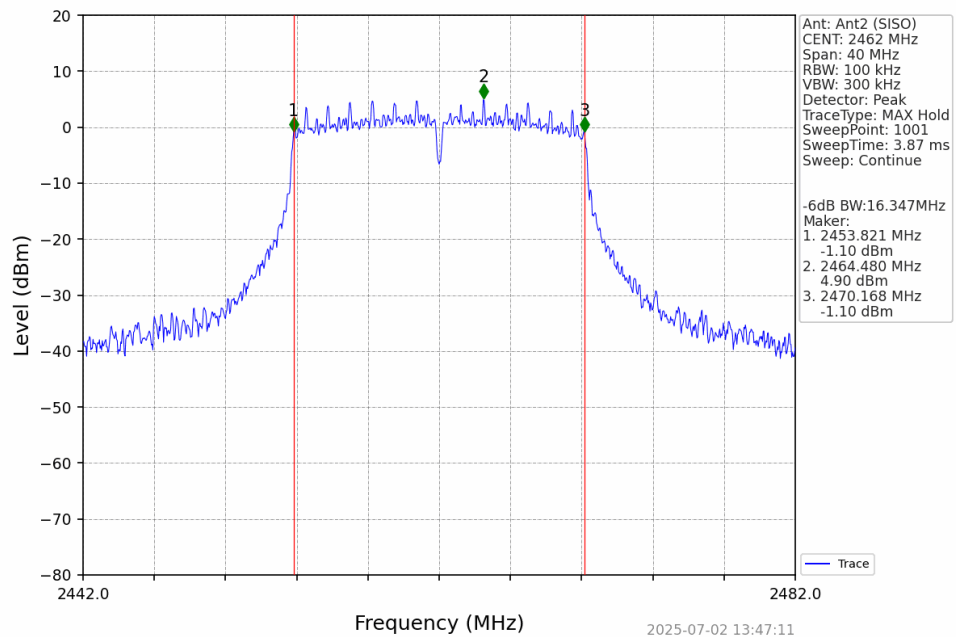
### 802.11g MCH 2437MHz Ant2 (SISO) NTN



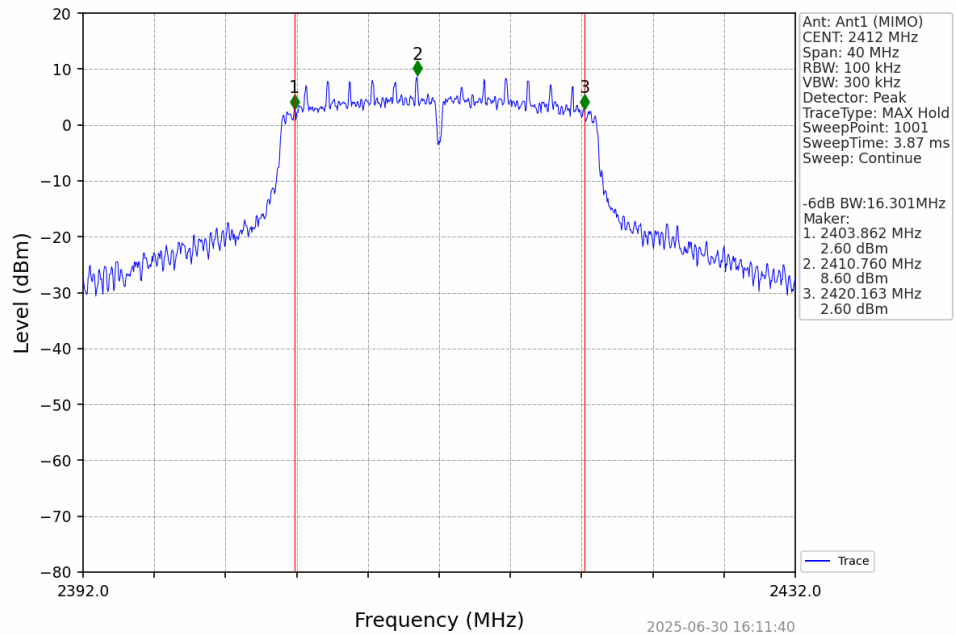
# 802.11g HCH 2462MHz Ant1 (SISO) NTN



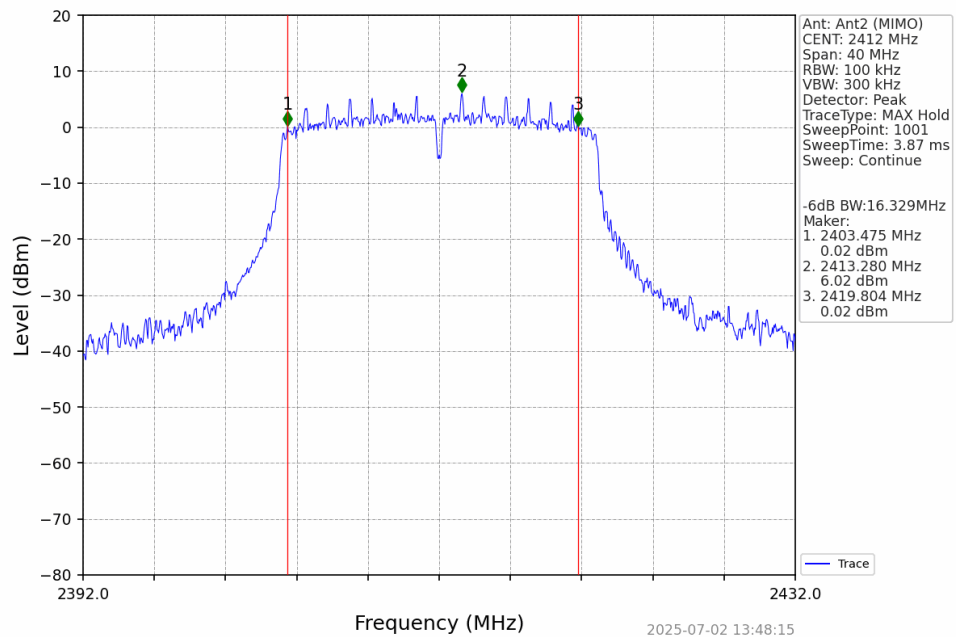
# 802.11g\_HCH\_2462MHz\_Ant2 (SISO)\_NTNV



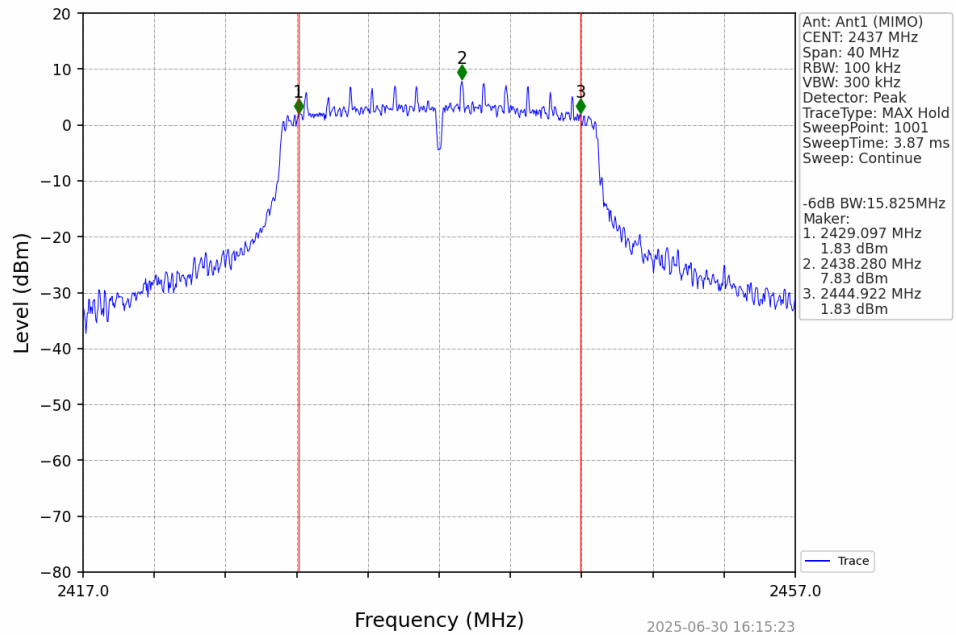
# 802.11n(HT20) LCH 2412MHz Ant1 (MIMO) NTN



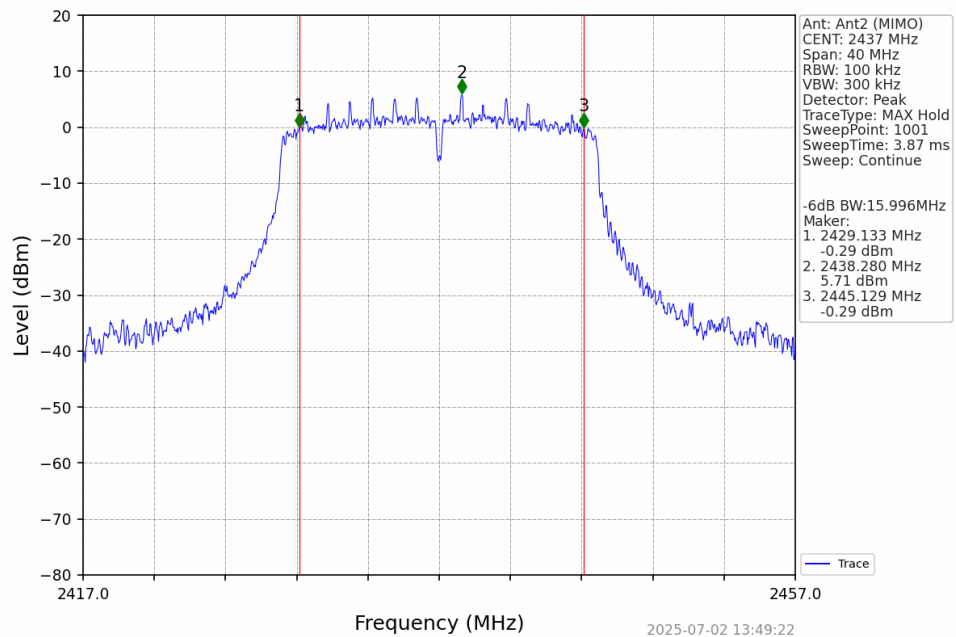
# 802.11n(HT20) LCH 2412MHz Ant2 (MIMO) NTN



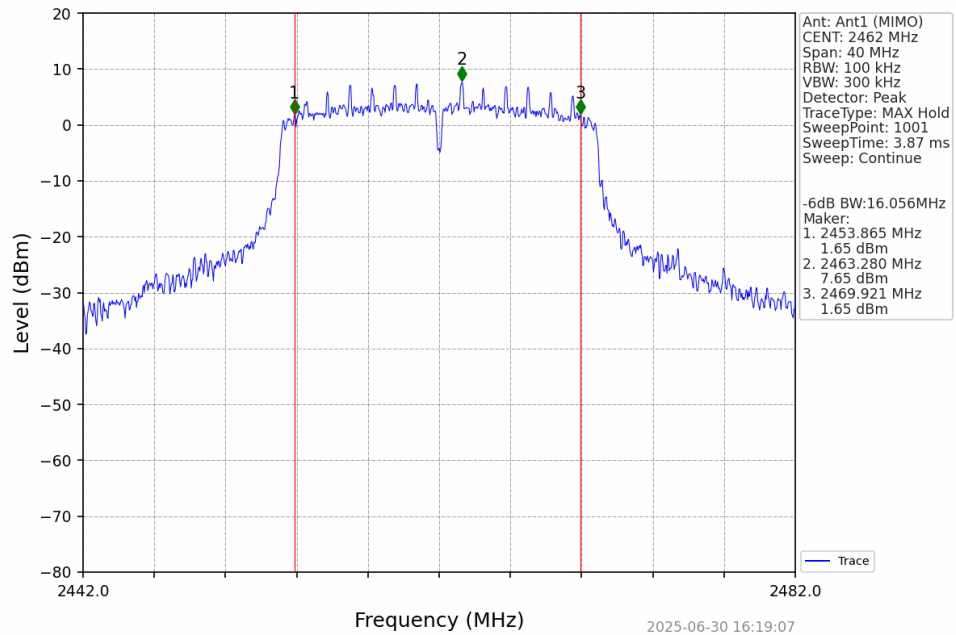
# 802.11n(HT20) MCH 2437MHz Ant1 (MIMO) NTN



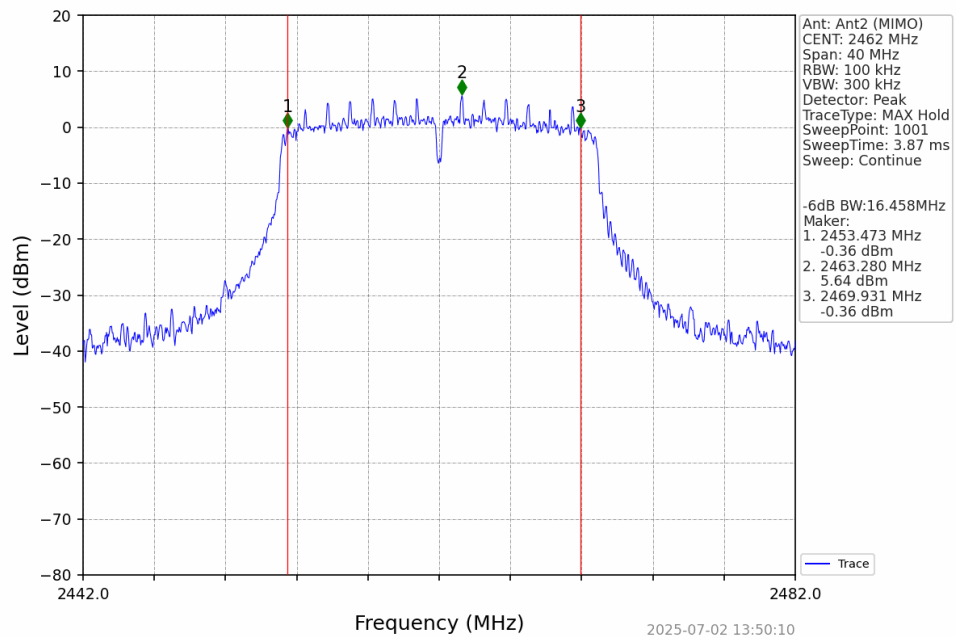
# 802.11n(HT20) MCH 2437MHz Ant2 (MIMO) NTN



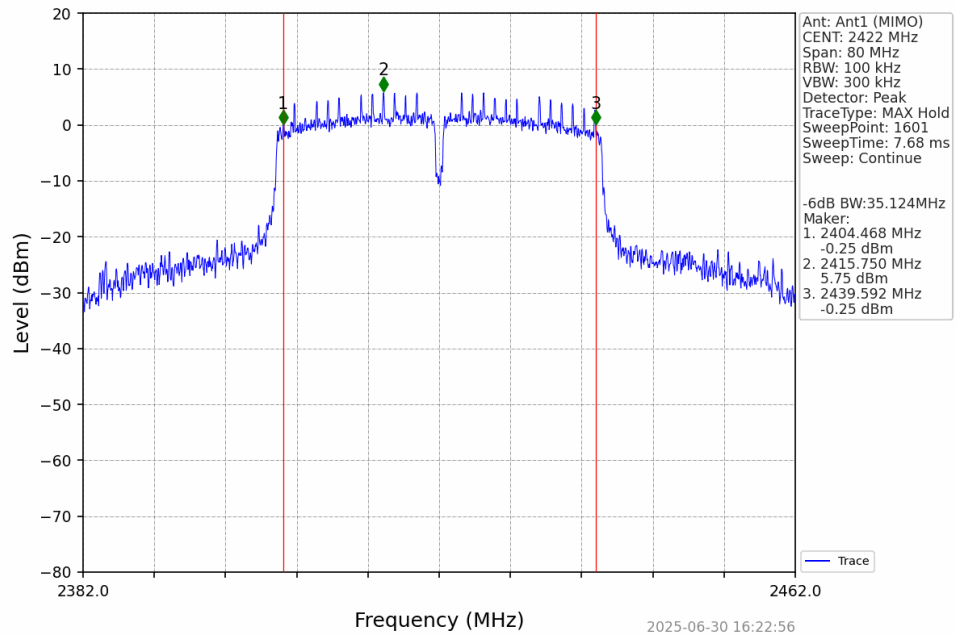
# 802.11n(HT20) HCH 2462MHz Ant1 (MIMO) NTN



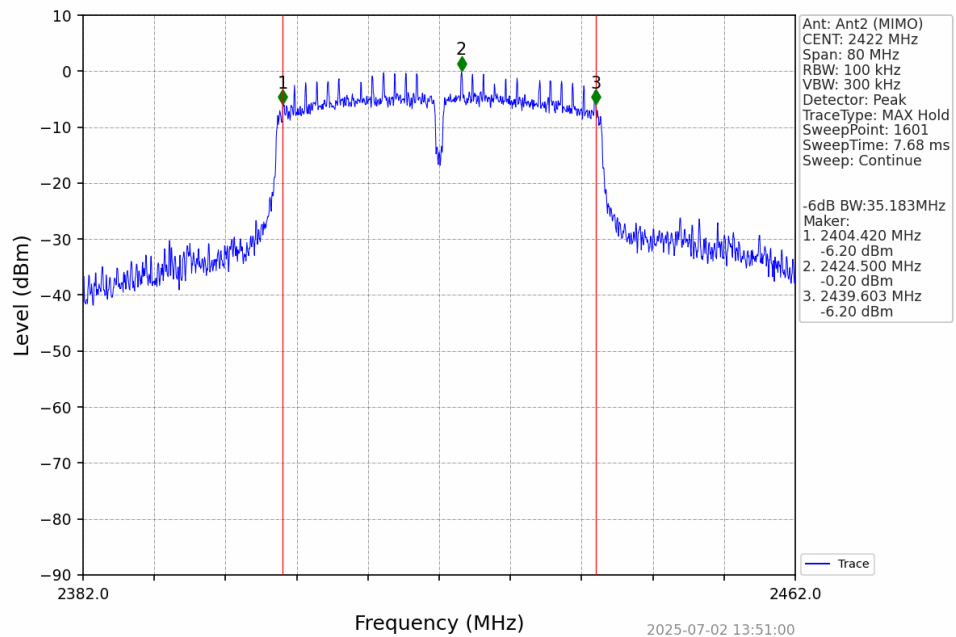
# 802.11n(HT20) HCH 2462MHz Ant2 (MIMO) NTN



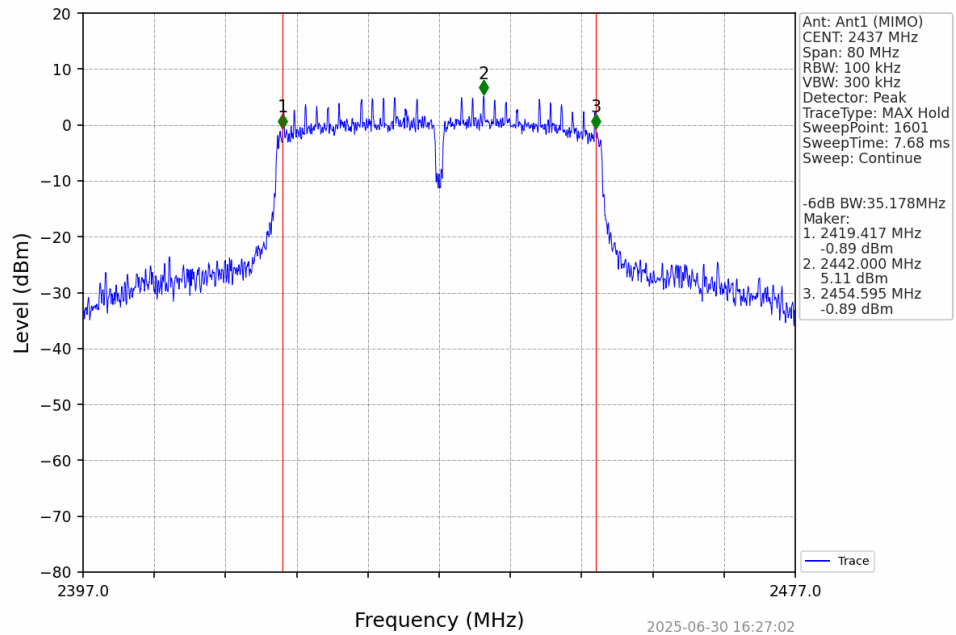
# 802.11n(HT40) LCH 2422MHz Ant1 (MIMO) NTN



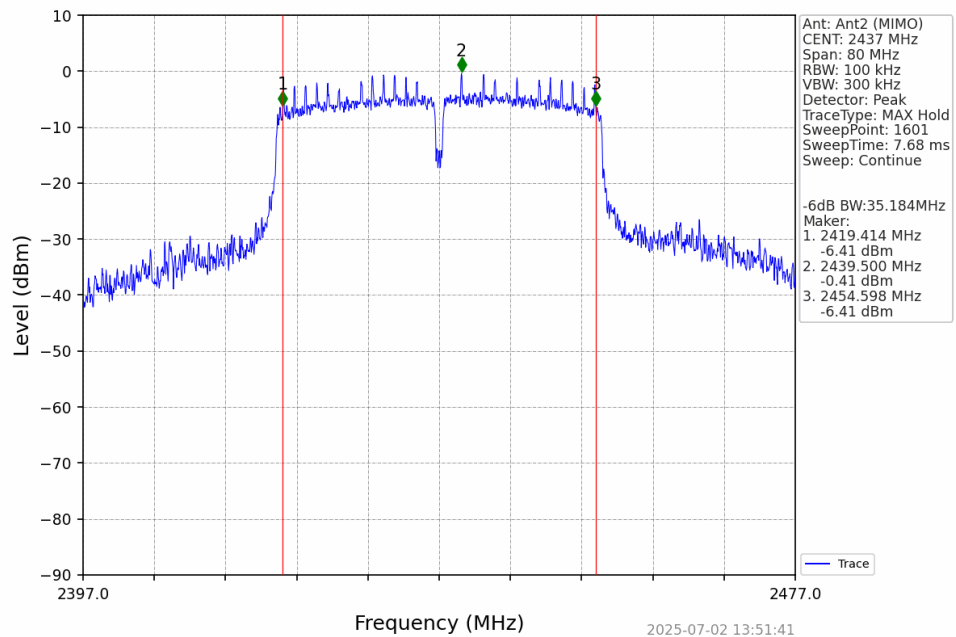
# 802.11n(HT40) LCH 2422MHz Ant2 (MIMO) NTN



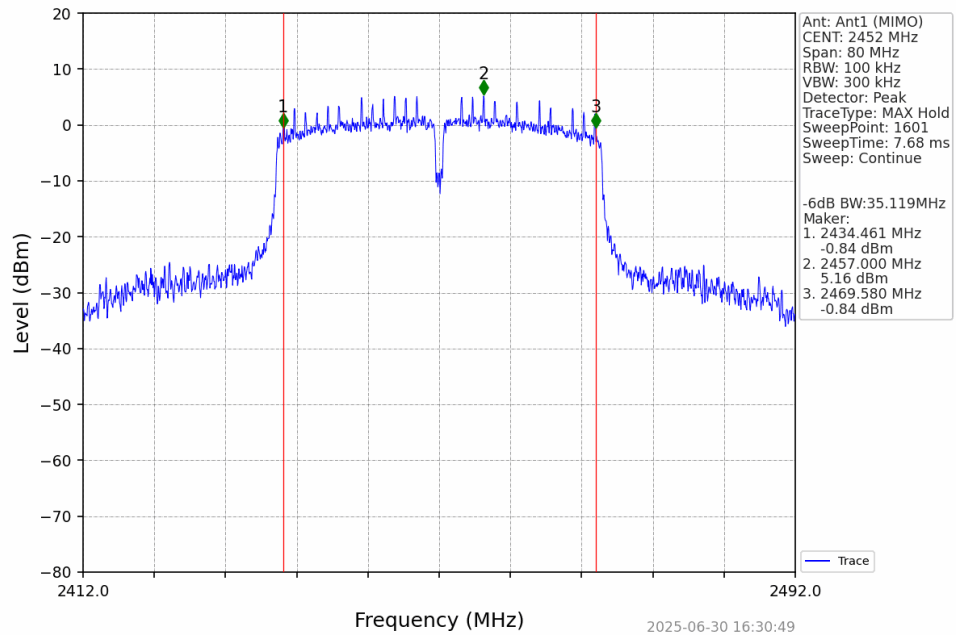
# 802.11n(HT40) MCH 2437MHz Ant1 (MIMO) NTN



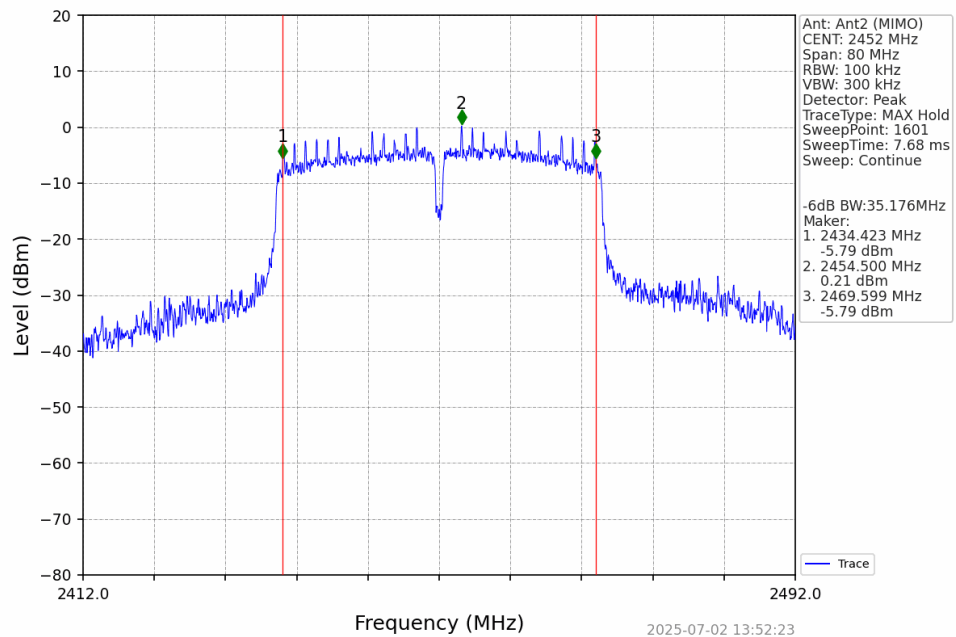
# 802.11n(HT40)\_MCH\_2437MHz\_Ant2 (MIMO)\_NTN



# 802.11n(HT40) HCH 2452MHz Ant1 (MIMO) NTN



# 802.11n(HT40) HCH 2452MHz Ant2 (MIMO) NTN



### 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                                      | ANT2  | MIMO  | Limit |         |
| 802.11b                                                                              | SISO    | 2412            | 19.04                                     | 14.94 | /     | <=30  | Pass    |
|                                                                                      |         | 2437            | 17.84                                     | 14.79 | /     | <=30  | Pass    |
|                                                                                      |         | 2462            | 18.04                                     | 14.58 | /     | <=30  | Pass    |
| 802.11g                                                                              | SISO    | 2412            | 26.93                                     | 24.93 | /     | <=30  | Pass    |
|                                                                                      |         | 2437            | 25.80                                     | 24.55 | /     | <=30  | Pass    |
|                                                                                      |         | 2462            | 25.68                                     | 24.47 | /     | <=30  | Pass    |
| 802.11n (HT20)                                                                       | MIMO    | 2412            | 26.78                                     | 24.35 | 28.74 | <=30  | Pass    |
|                                                                                      |         | 2437            | 25.47                                     | 23.86 | 27.75 | <=30  | Pass    |
|                                                                                      |         | 2462            | 25.55                                     | 23.82 | 27.78 | <=30  | Pass    |
| 802.11n (HT40)                                                                       | MIMO    | 2422            | 27.02                                     | 24.98 | 29.13 | <=30  | Pass    |
|                                                                                      |         | 2437            | 26.29                                     | 24.51 | 28.50 | <=30  | Pass    |
|                                                                                      |         | 2452            | 26.29                                     | 24.57 | 28.52 | <=30  | Pass    |
| Note1: Antenna Gain: Ant1: 2.00dBi; Ant2: -2.49dBi;<br>Note2: Directional Gain: 2dBi |         |                 |                                           |       |       |       |         |

## 4. Maximum Power Spectral Density

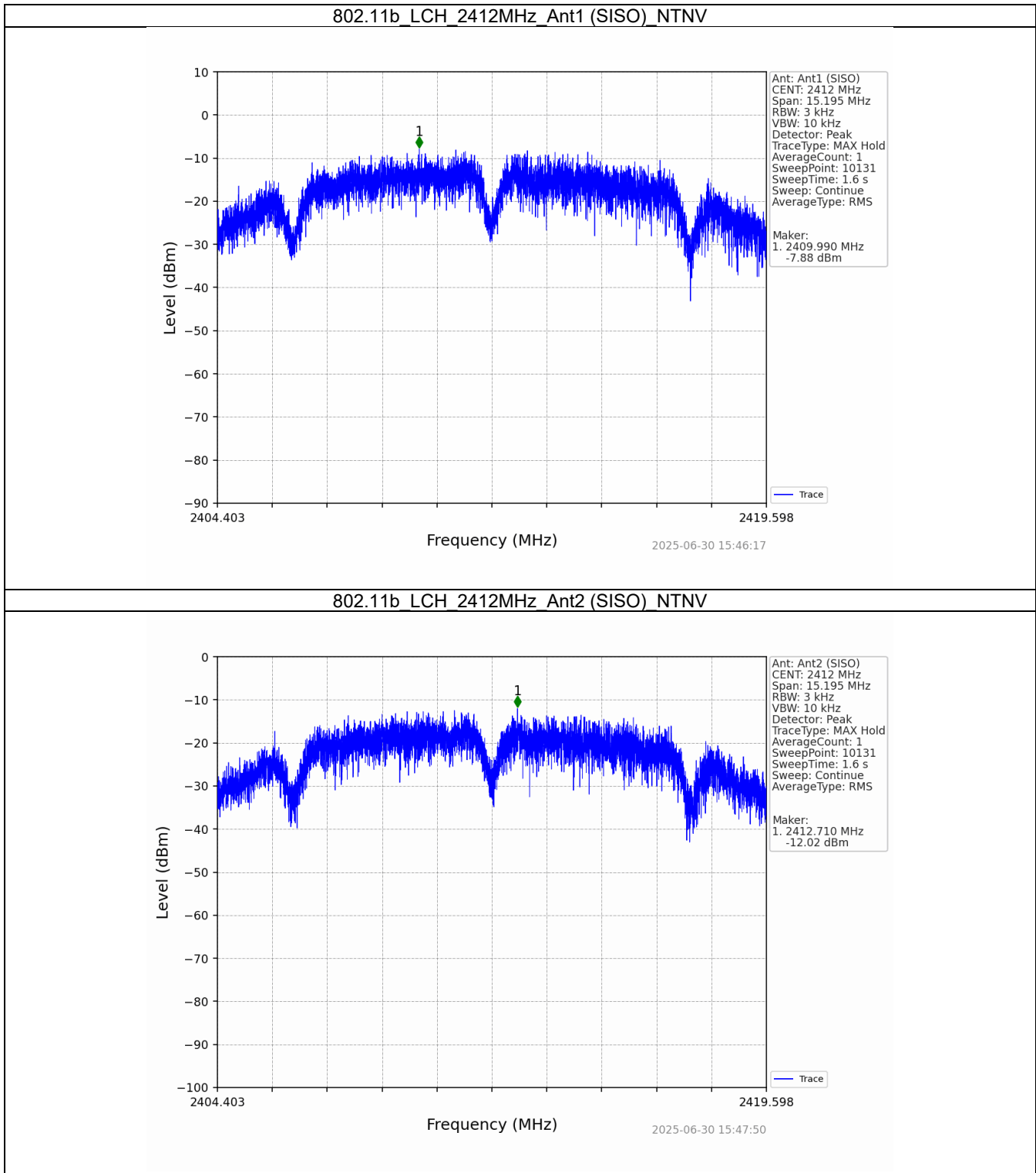
### 4.1 Test Result

#### 4.1.1 PSD

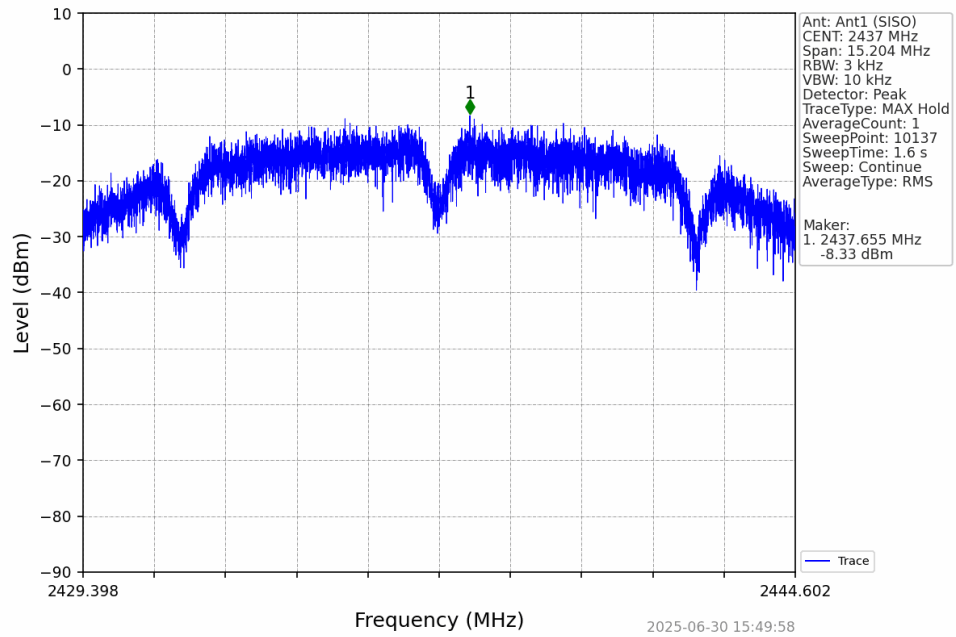
| Mode                                                                                 | TX Type | Frequency (MHz) | Maximum PSD (dBm/3kHz) |        |       |       | Verdict |
|--------------------------------------------------------------------------------------|---------|-----------------|------------------------|--------|-------|-------|---------|
|                                                                                      |         |                 | ANT1                   | ANT2   | MIMO  | Limit |         |
| 802.11b                                                                              | SISO    | 2412            | -7.88                  | -12.02 | /     | <=8   | Pass    |
|                                                                                      |         | 2437            | -8.33                  | -10.67 | /     | <=8   | Pass    |
|                                                                                      |         | 2462            | -7.07                  | -10.82 | /     | <=8   | Pass    |
| 802.11g                                                                              | SISO    | 2412            | -7.06                  | -8.60  | /     | <=8   | Pass    |
|                                                                                      |         | 2437            | -7.54                  | -9.65  | /     | <=8   | Pass    |
|                                                                                      |         | 2462            | -7.54                  | -9.72  | /     | <=8   | Pass    |
| 802.11n (HT20)                                                                       | MIMO    | 2412            | -5.84                  | -8.24  | -3.86 | <=8   | Pass    |
|                                                                                      |         | 2437            | -7.18                  | -8.96  | -5.48 | <=8   | Pass    |
|                                                                                      |         | 2462            | -6.90                  | -9.96  | -6.00 | <=8   | Pass    |
| 802.11n (HT40)                                                                       | MIMO    | 2422            | -8.11                  | -10.15 | -6.02 | <=8   | Pass    |
|                                                                                      |         | 2437            | -8.74                  | -11.80 | -7.00 | <=8   | Pass    |
|                                                                                      |         | 2452            | -9.44                  | -11.64 | -7.39 | <=8   | Pass    |
| Note1: Antenna Gain: Ant1: 2.00dBi; Ant2: -2.49dBi;<br>Note2: Directional Gain: 2dBi |         |                 |                        |        |       |       |         |

# 4.2 Test Graph

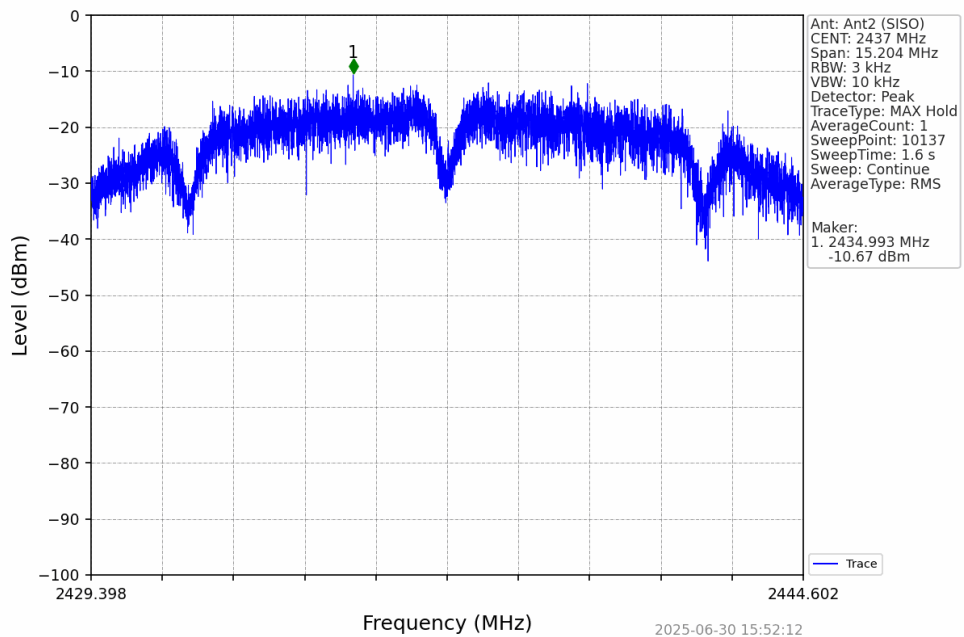
## 4.2.1 PSD



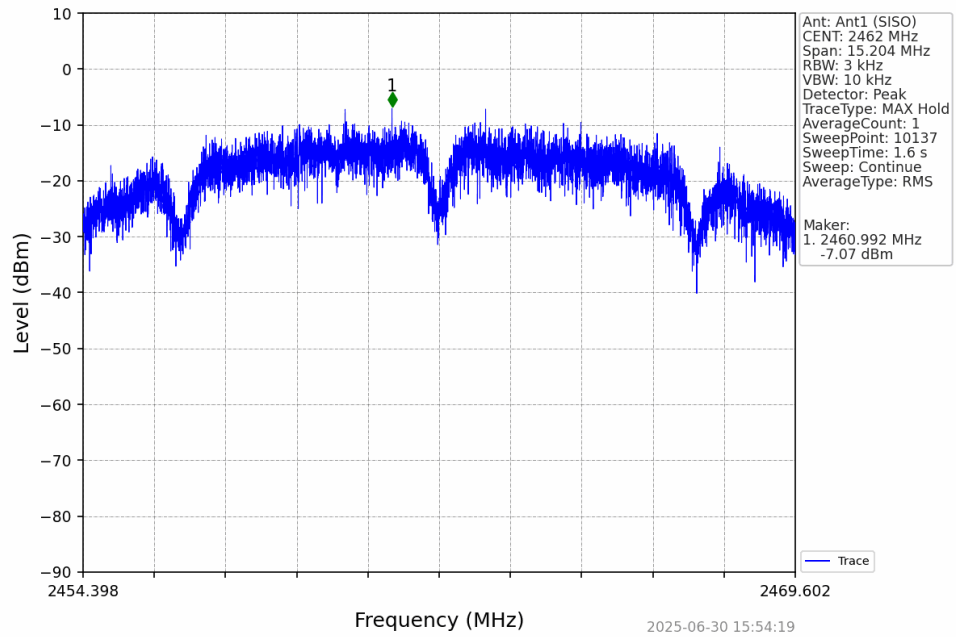
# 802.11b MCH 2437MHz Ant1 (SISO) NTN



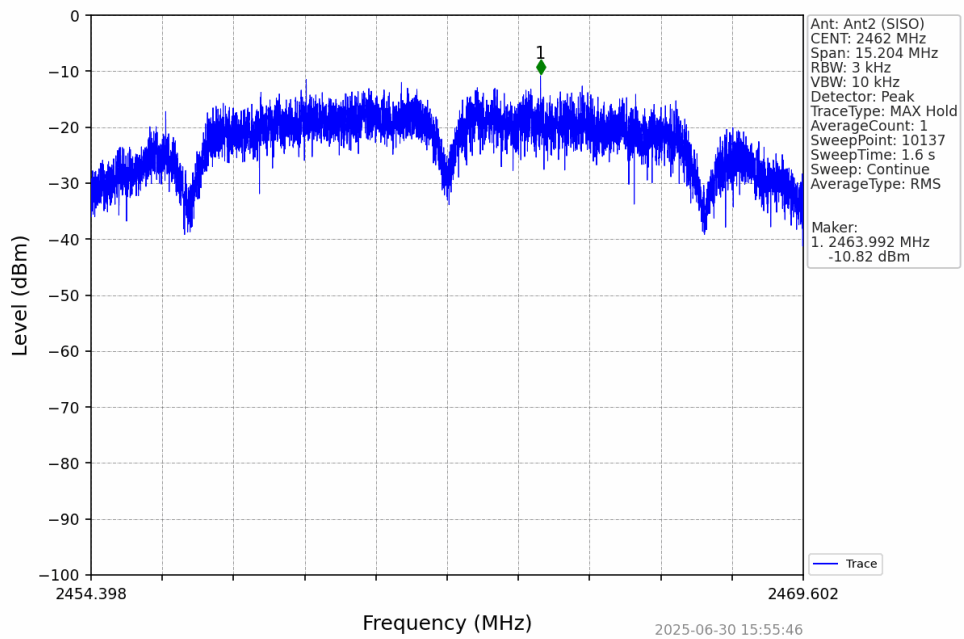
# 802.11b MCH 2437MHz Ant2 (SISO) NTN



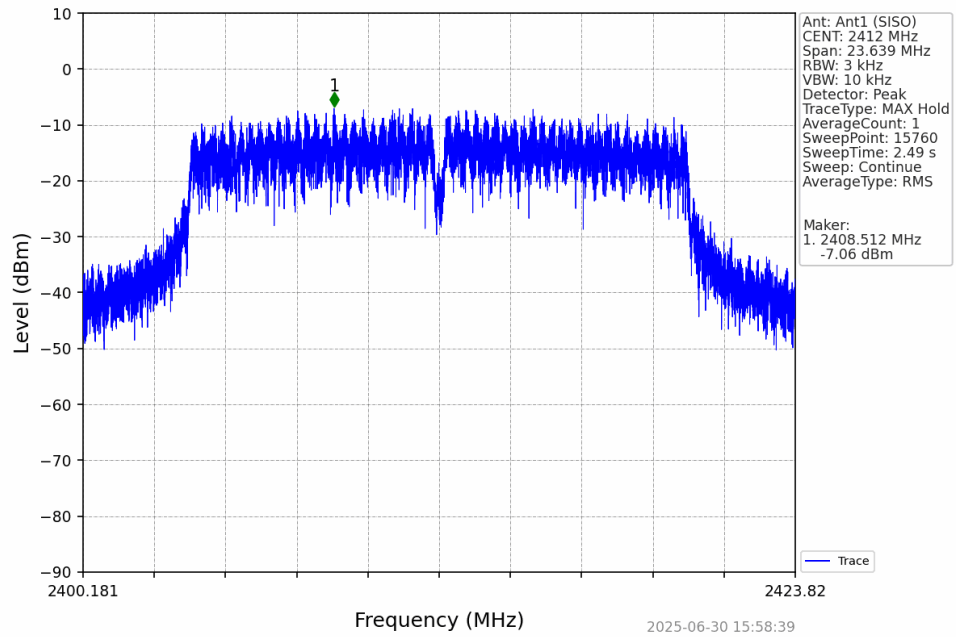
# 802.11b HCH 2462MHz Ant1 (SISO) NTN



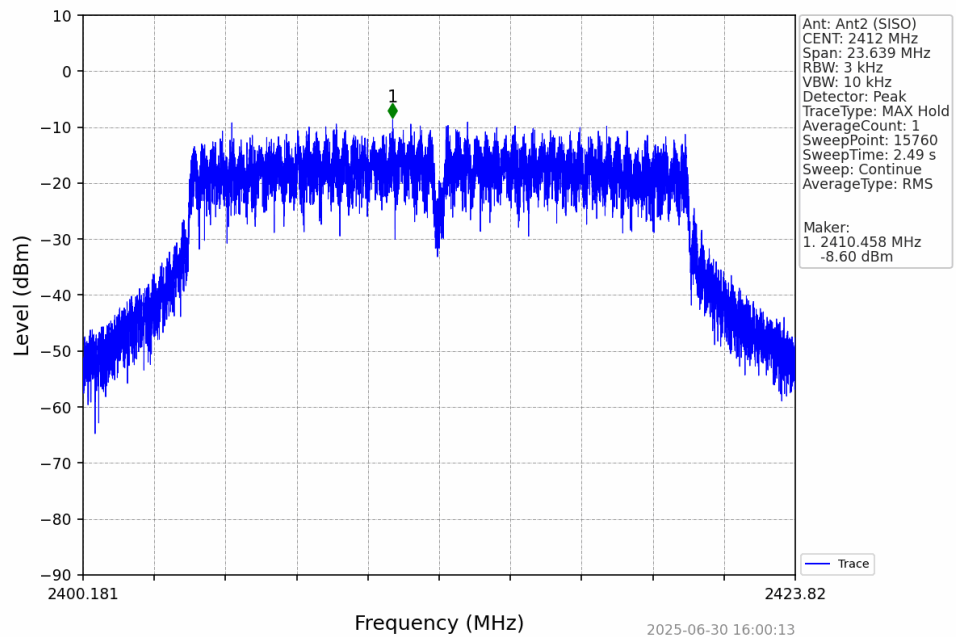
# 802.11b HCH 2462MHz Ant2 (SISO) NTN



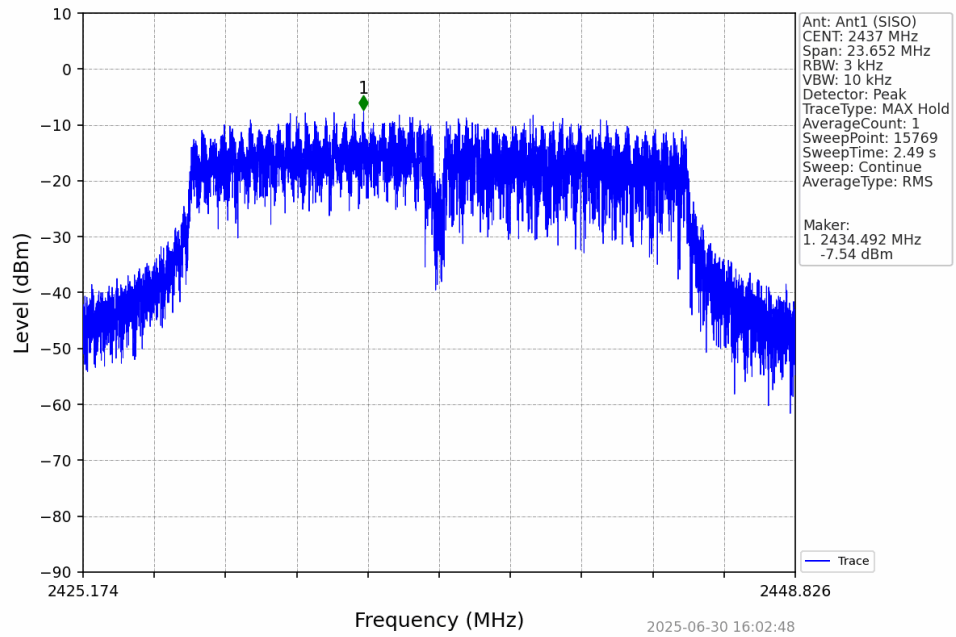
# 802.11g LCH 2412MHz Ant1 (SISO) NTN



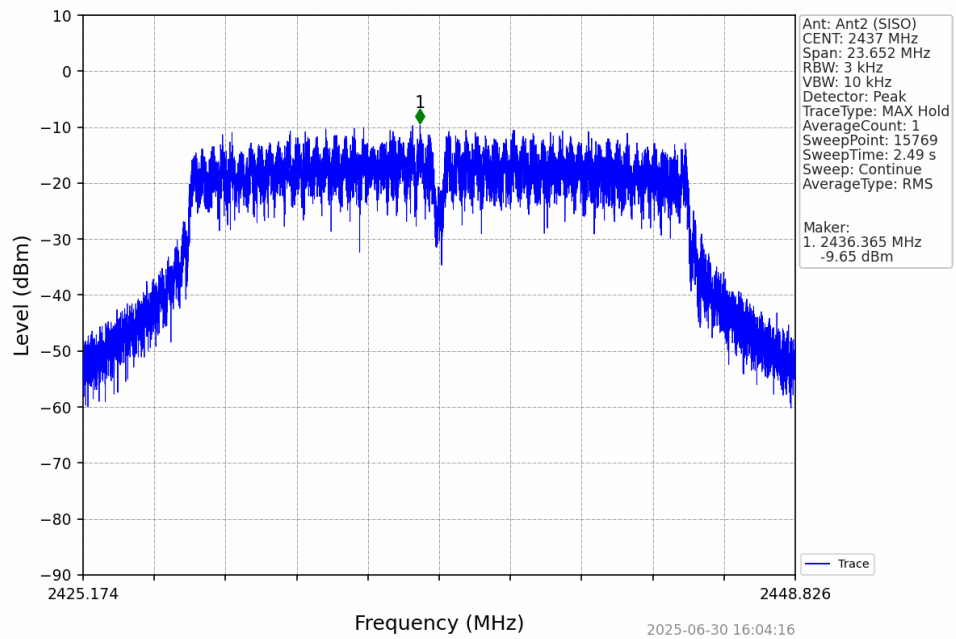
# 802.11g LCH 2412MHz Ant2 (SISO) NTN



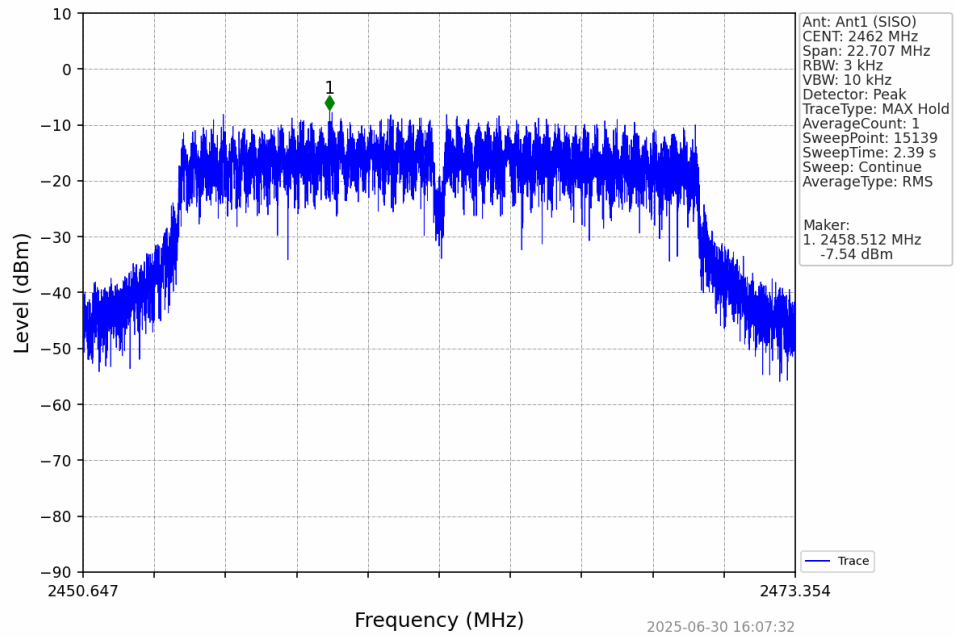
802.11g MCH 2437MHz Ant1 (SISO) NTN



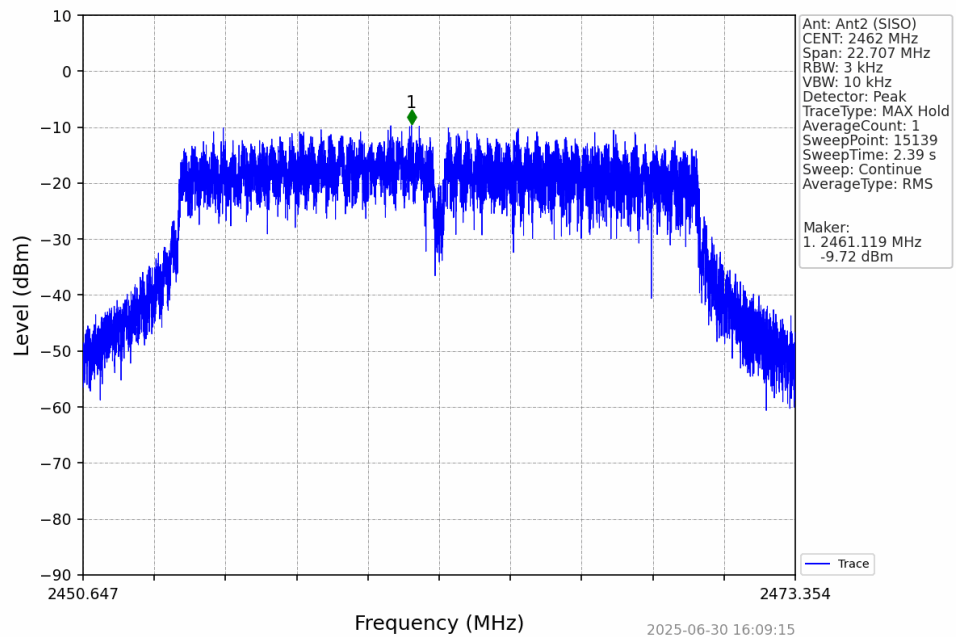
802.11g MCH 2437MHz Ant2 (SISO) NTN



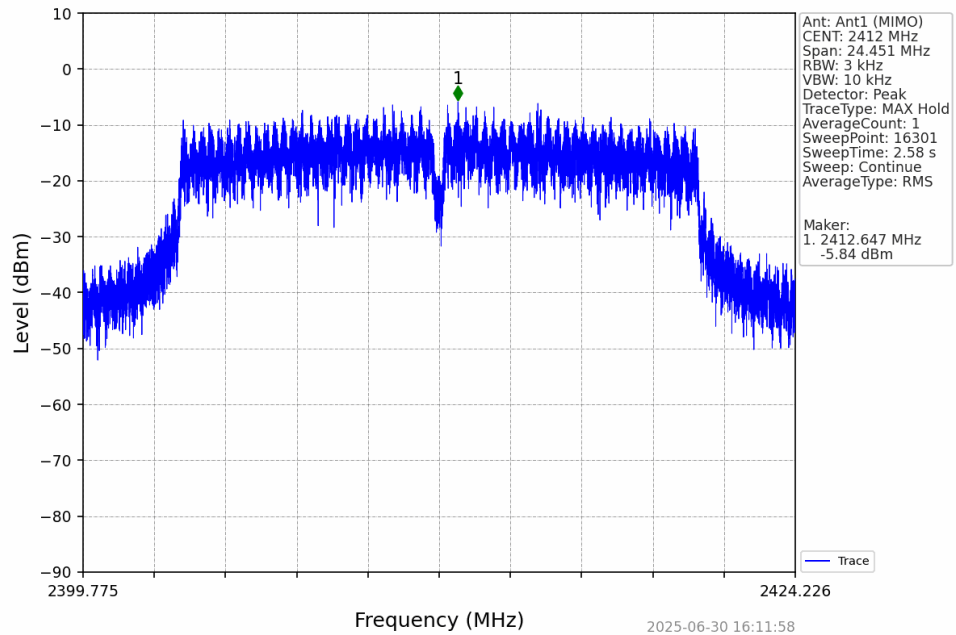
# 802.11g HCH 2462MHz Ant1 (SISO) NTN



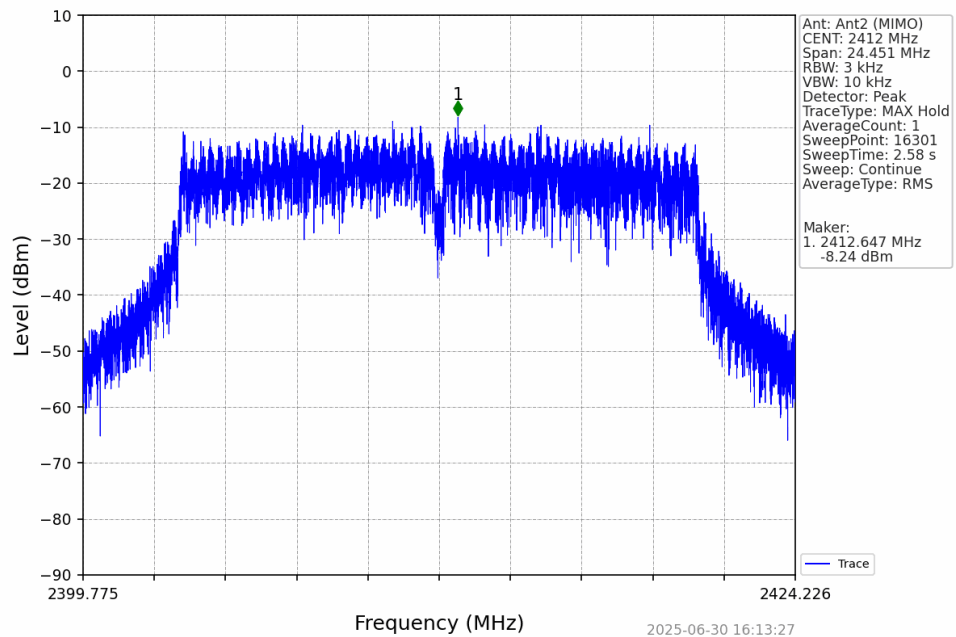
# 802.11g\_HCH\_2462MHz\_Ant2 (SISO) NTN



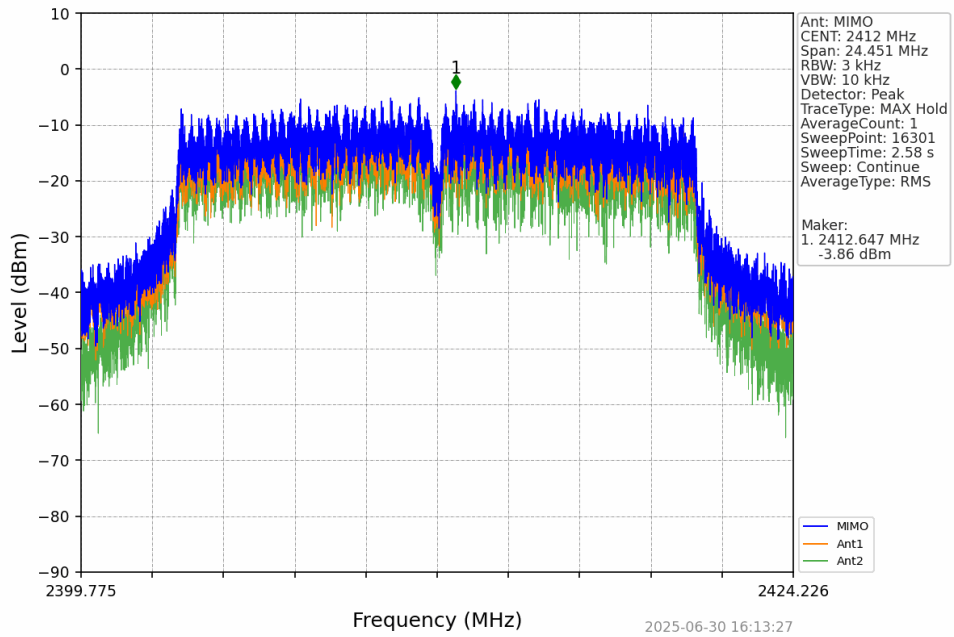
802.11n(HT20) LCH 2412MHz Ant1 (MIMO) NTN



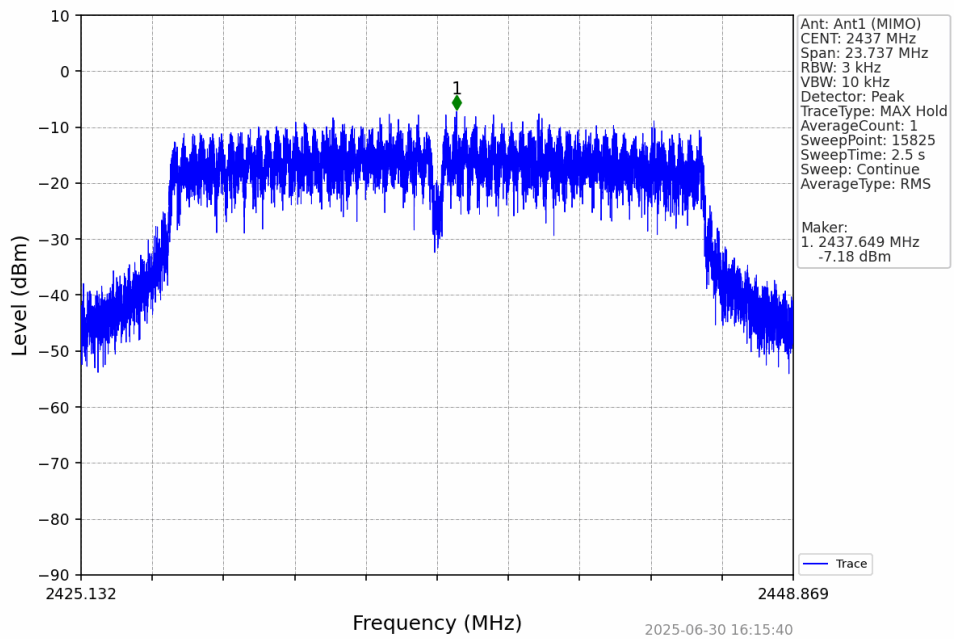
802.11n(HT20) LCH 2412MHz Ant2 (MIMO) NTN



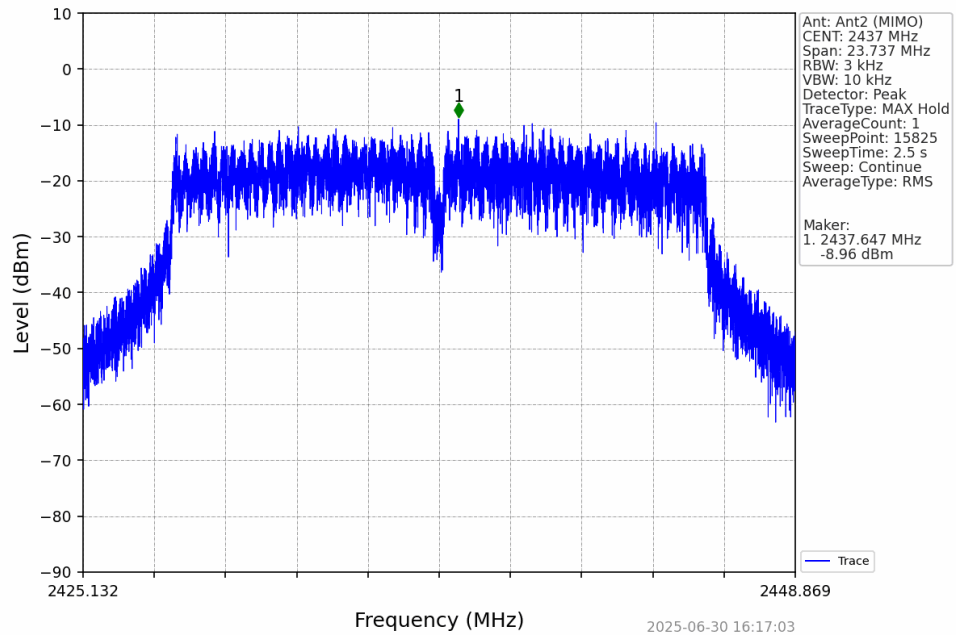
802.11n(HT20) LCH 2412MHz MIMO NTN



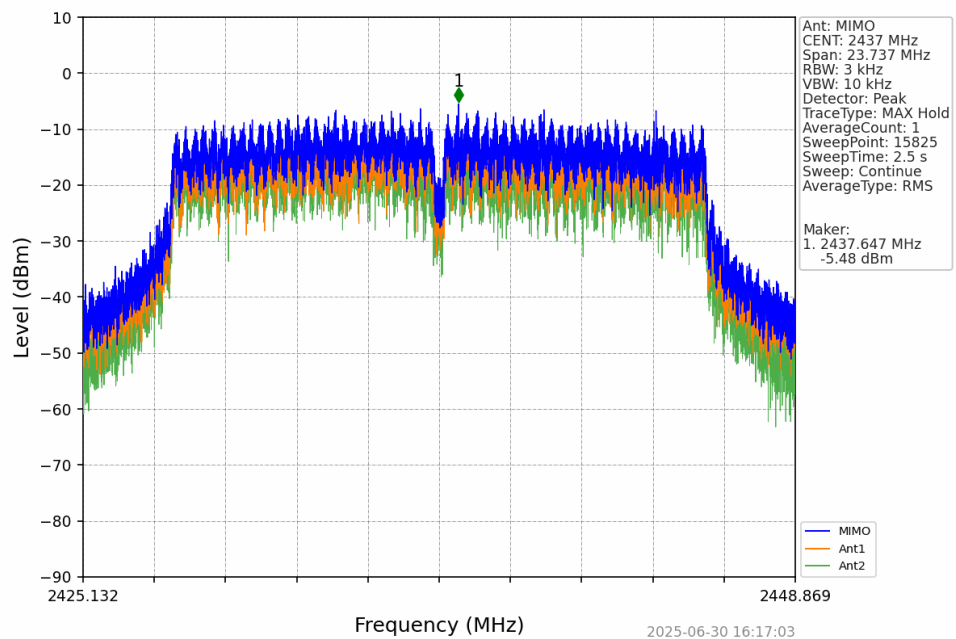
802.11n(HT20) MCH 2437MHz Ant1 (MIMO) NTN



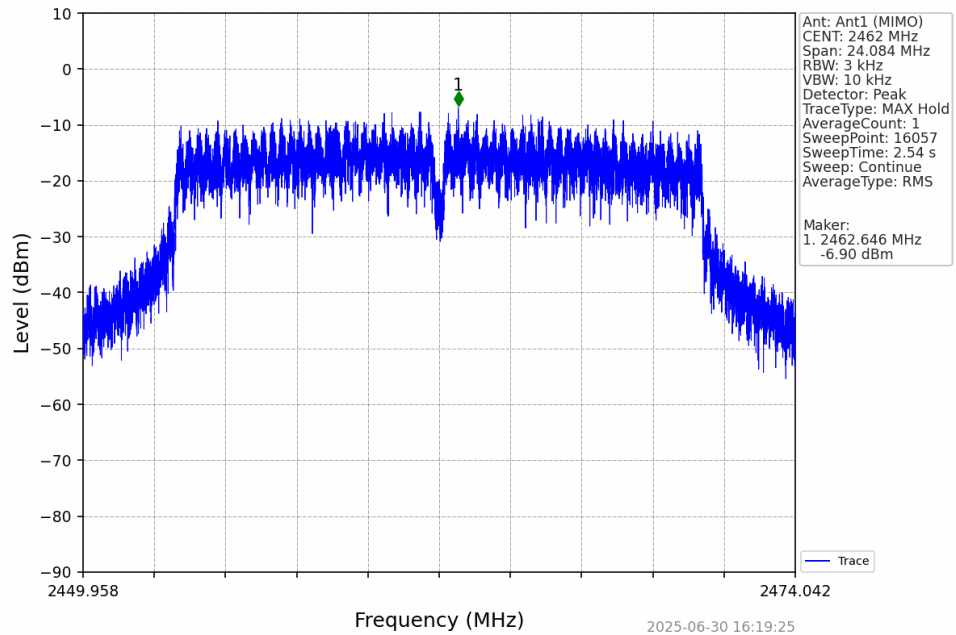
# 802.11n(HT20) MCH 2437MHz Ant2 (MIMO) NTN



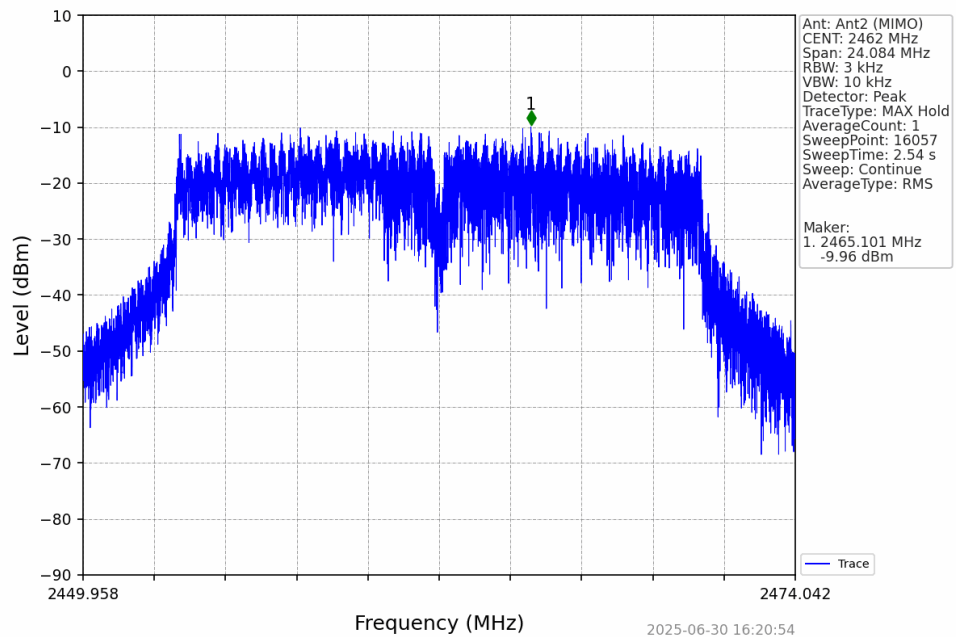
# 802.11n(HT20) MCH 2437MHz MIMO NTN



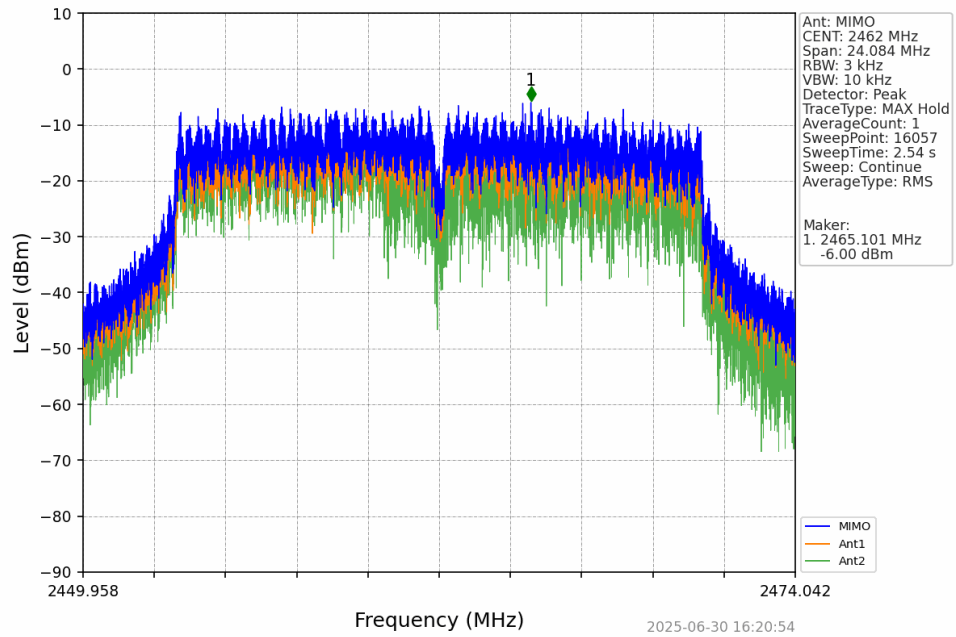
# 802.11n(HT20) HCH 2462MHz Ant1 (MIMO) NTN



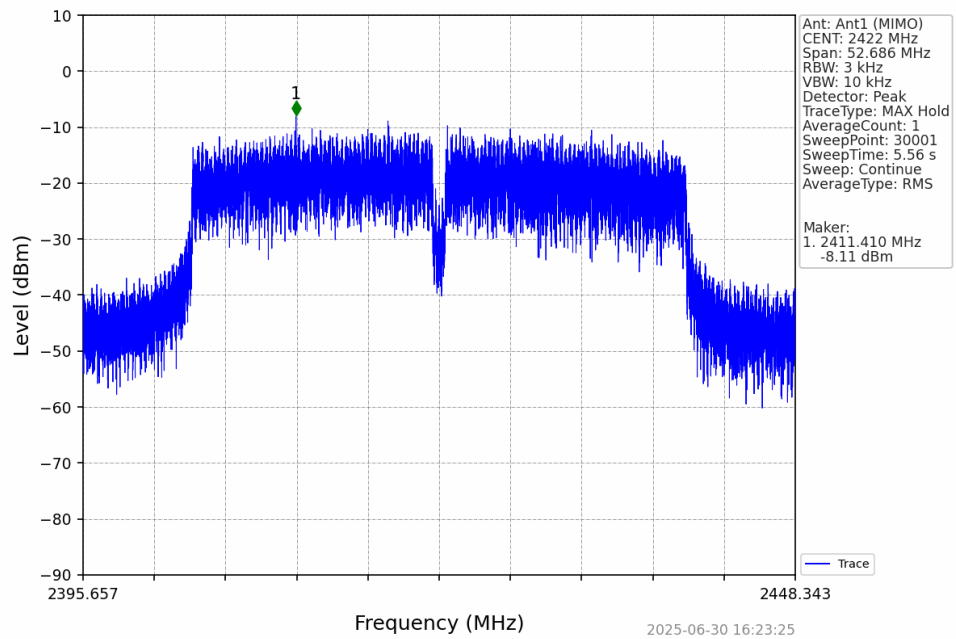
# 802.11n(HT20) HCH 2462MHz Ant2 (MIMO) NTN



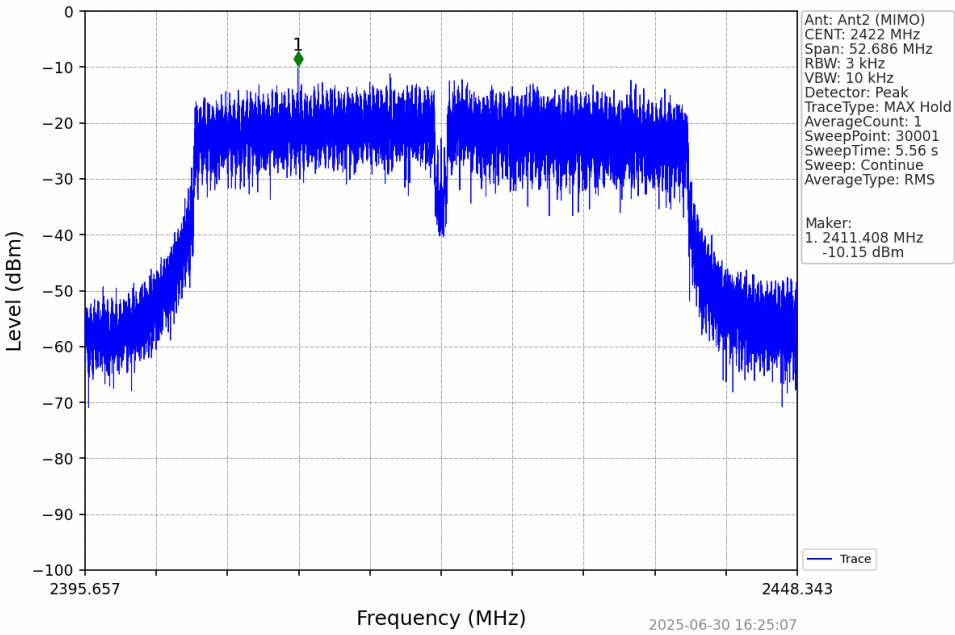
# 802.11n(HT20) HCH 2462MHz MIMO NTN



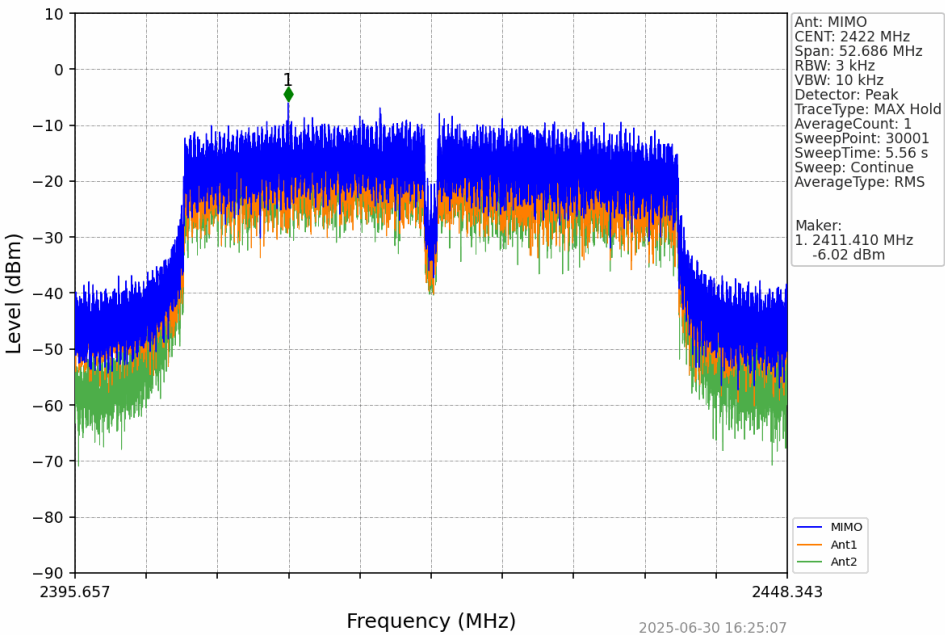
# 802.11n(HT40) LCH 2422MHz\_Ant1 (MIMO)\_NTN



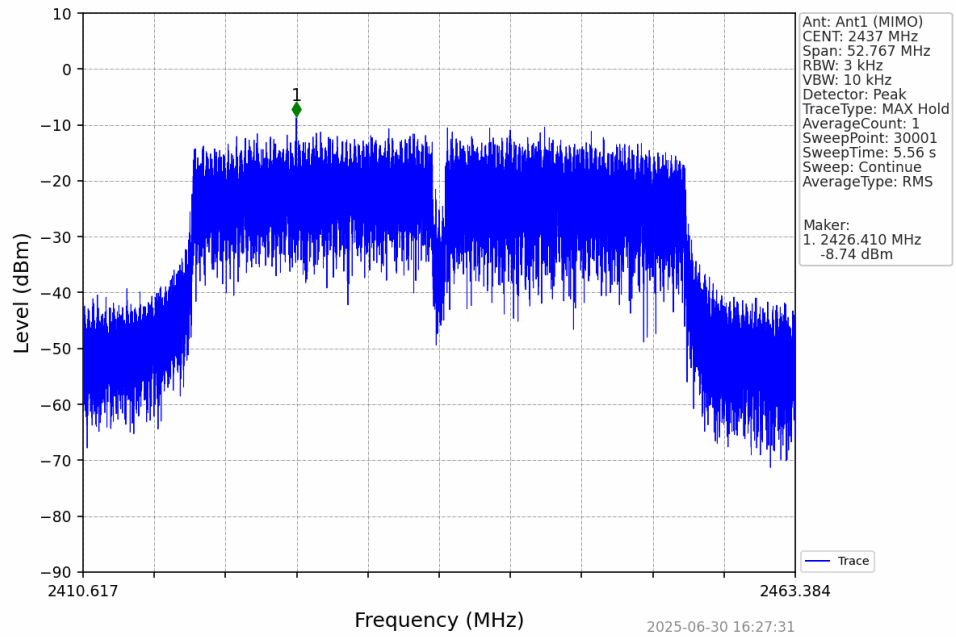
802.11n(HT40) LCH 2422MHz Ant2 (MIMO) NTN



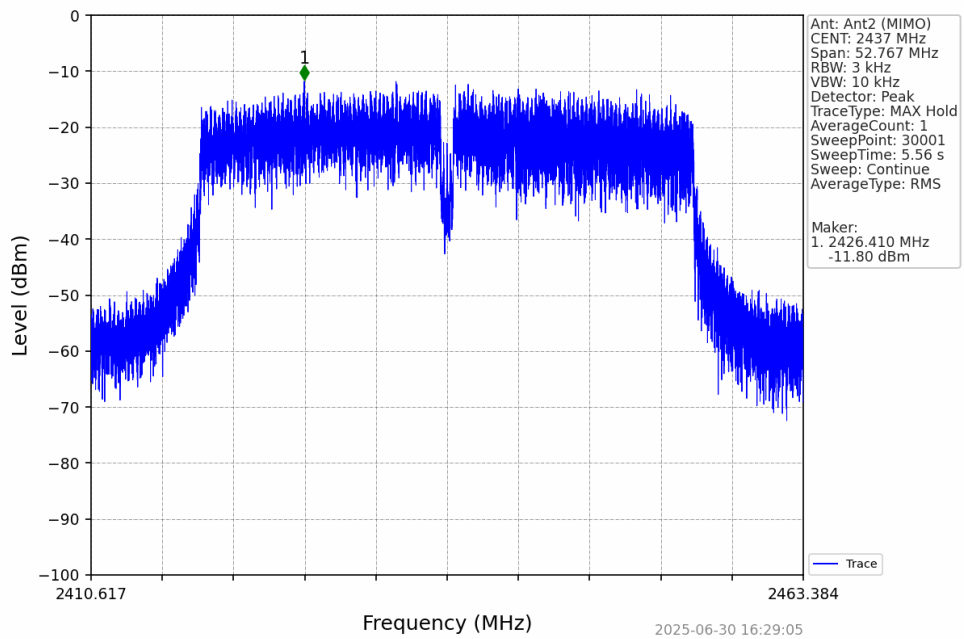
802.11n(HT40) LCH 2422MHz MIMO NTN



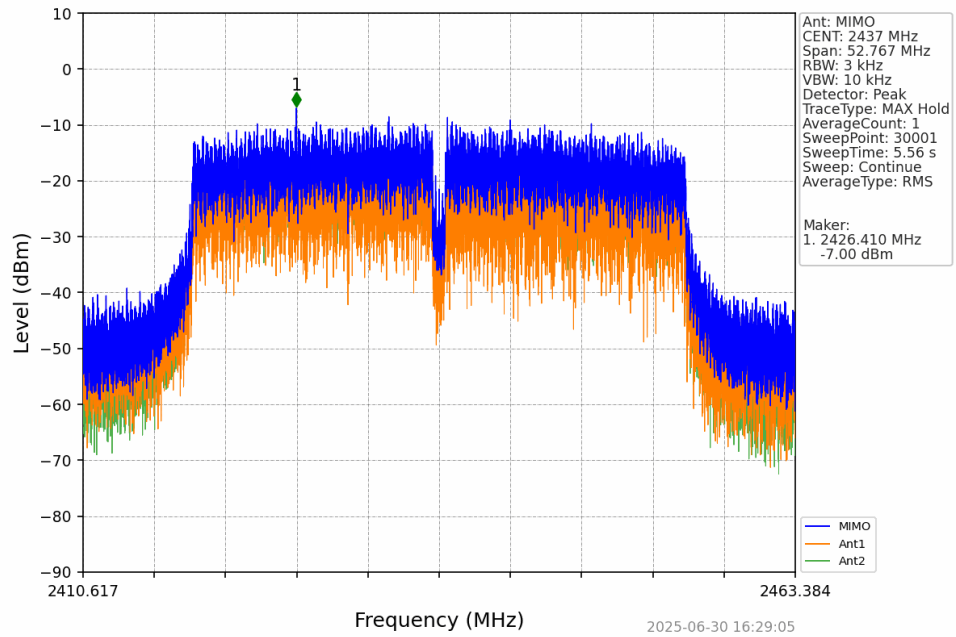
# 802.11n(HT40) MCH 2437MHz Ant1 (MIMO) NTN



# 802.11n(HT40) MCH 2437MHz Ant2 (MIMO) NTN



802.11n(HT40) MCH\_2437MHz MIMO\_NTNV



802.11n(HT40) HCH\_2452MHz\_Ant1 (MIMO)\_NTNV

