

## **Appendix RF Test Data for BLE**

**Company:** : Dongguan Bolaiyuan Electronic Technology Co., LTD

**EUT** : Wireless Controller

**FCC ID:** : 2BQHB-CM-501

**Model Number** : CM-501

**Report No.** : HTT202605233F01

**Reviewed By** : Heber He

## 1. Duty Cycle

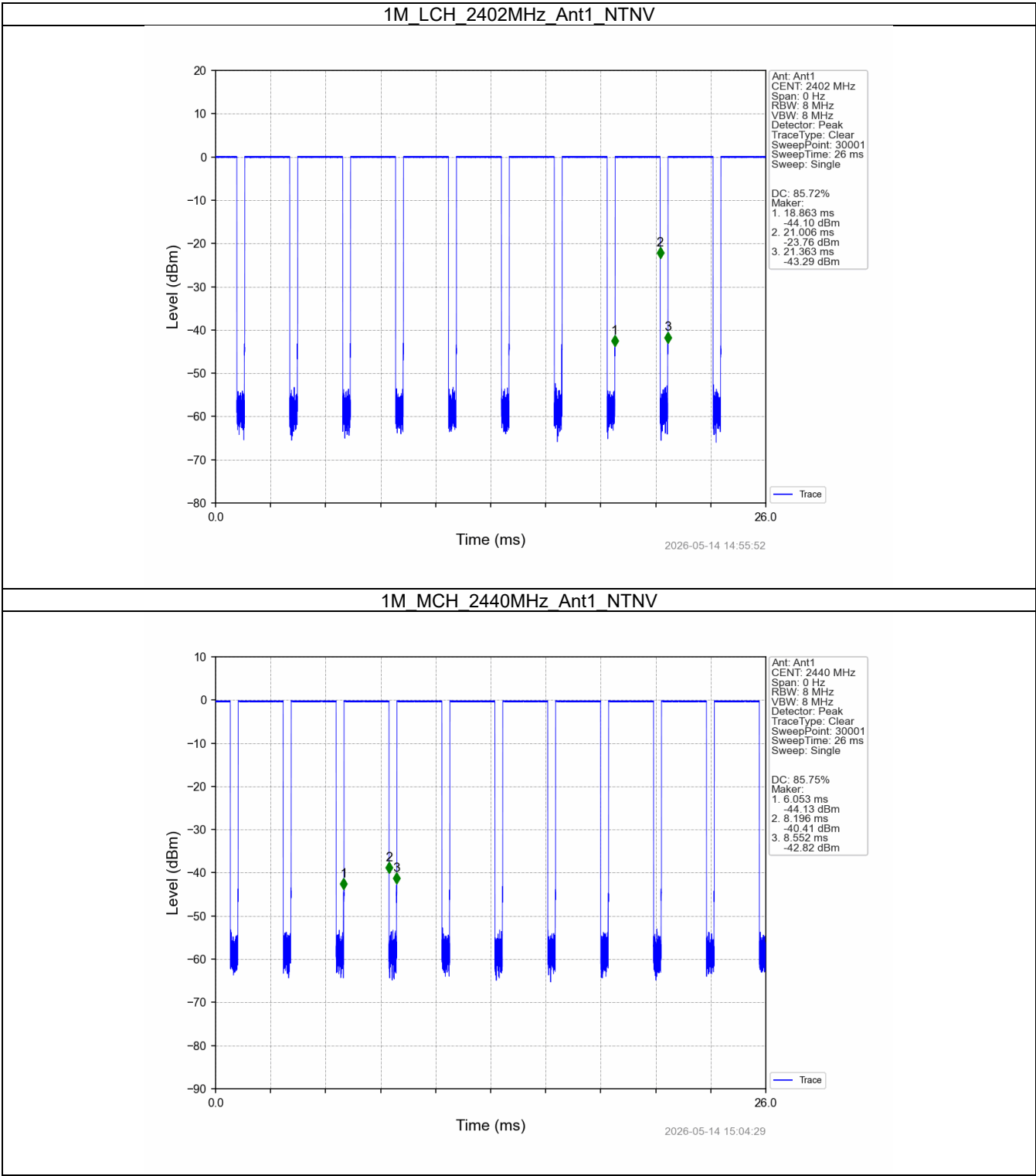
### 1.1 Test Result

#### 1.1.1 Ant1

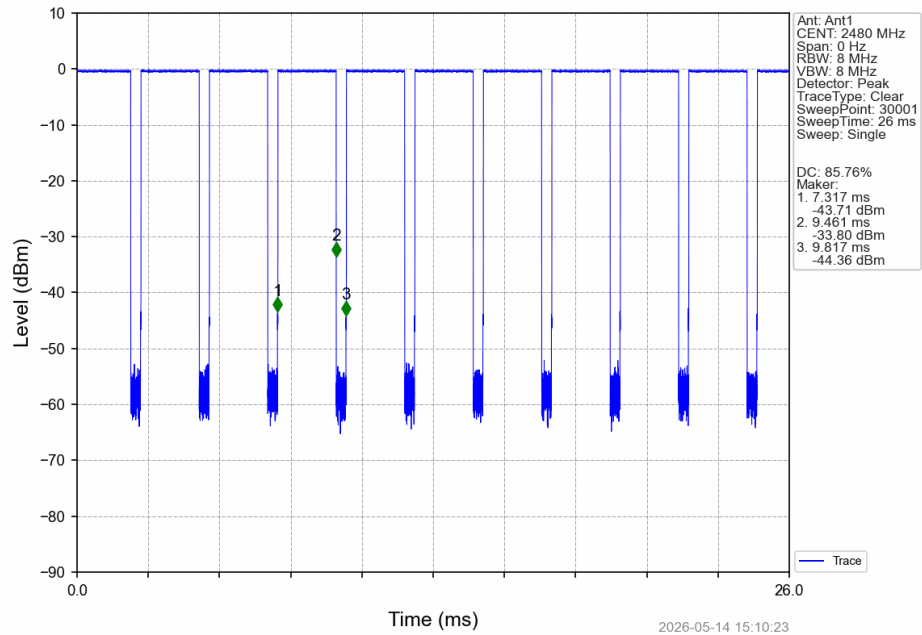
| Ant1 |         |                 |           |             |                |                                   |                       |
|------|---------|-----------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode | TX Type | Frequency (MHz) | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| 1M   | SISO    | 2402            | 2.143     | 2.500       | 85.72          | 0.67                              | 0.03                  |
|      |         | 2440            | 2.143     | 2.499       | 85.75          | 0.67                              | 0.00                  |
|      |         | 2480            | 2.144     | 2.500       | 85.76          | 0.67                              | 0.03                  |
| 2M   | SISO    | 2402            | 1.090     | 1.250       | 87.20          | 0.59                              | 0.03                  |
|      |         | 2440            | 1.090     | 1.250       | 87.20          | 0.59                              | 0.03                  |
|      |         | 2480            | 1.074     | 1.250       | 85.92          | 0.66                              | 0.03                  |

1.2 Test Graph

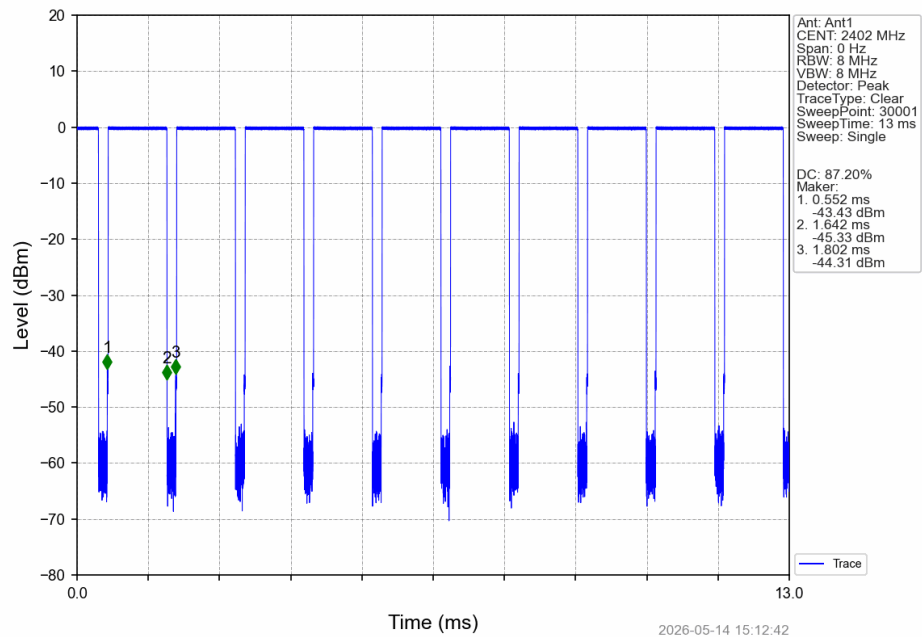
1.2.1 Ant1



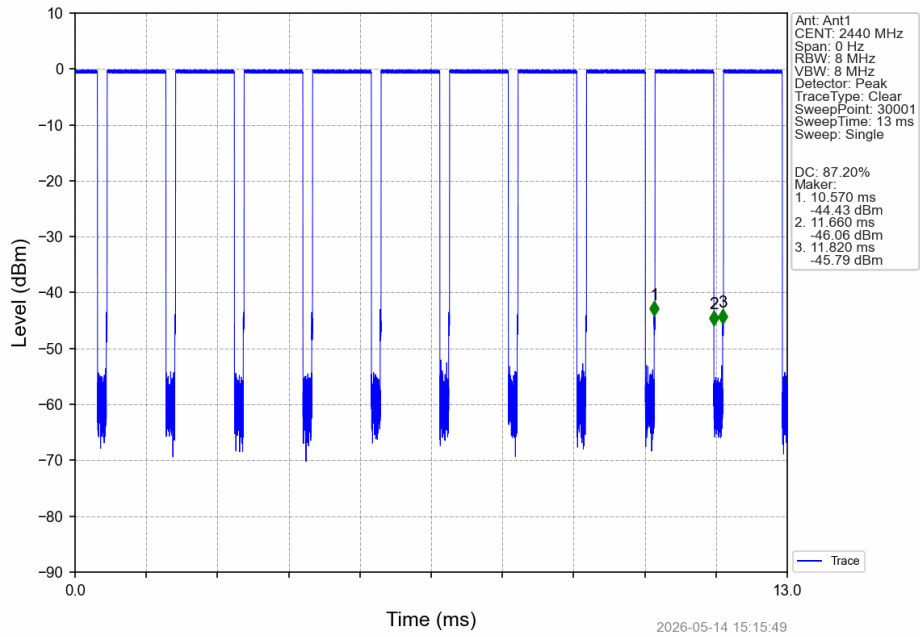
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



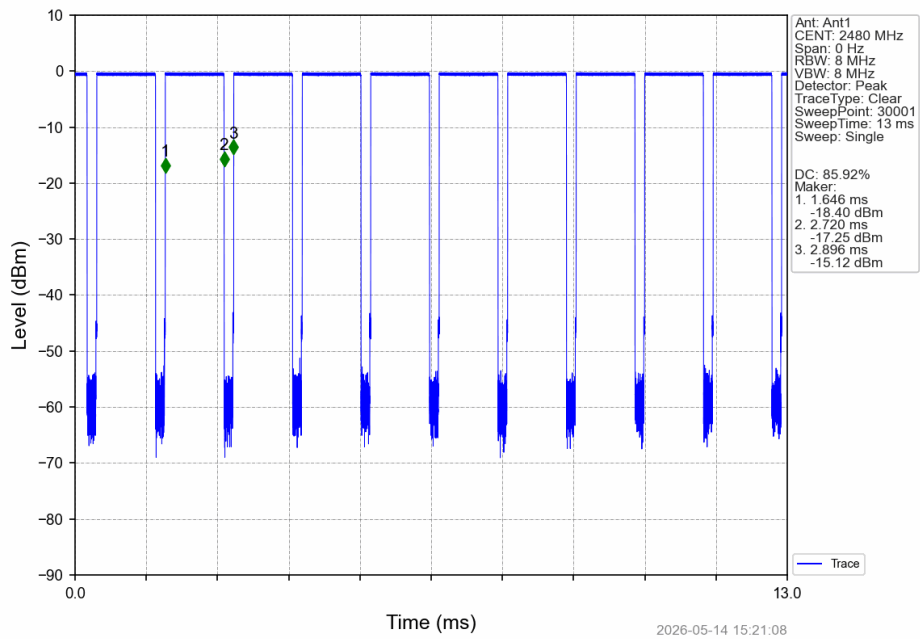
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



### 2M\_MCH\_2440MHz\_Ant1\_NTNV



### 2M\_HCH\_2480MHz\_Ant1\_NTNV



## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

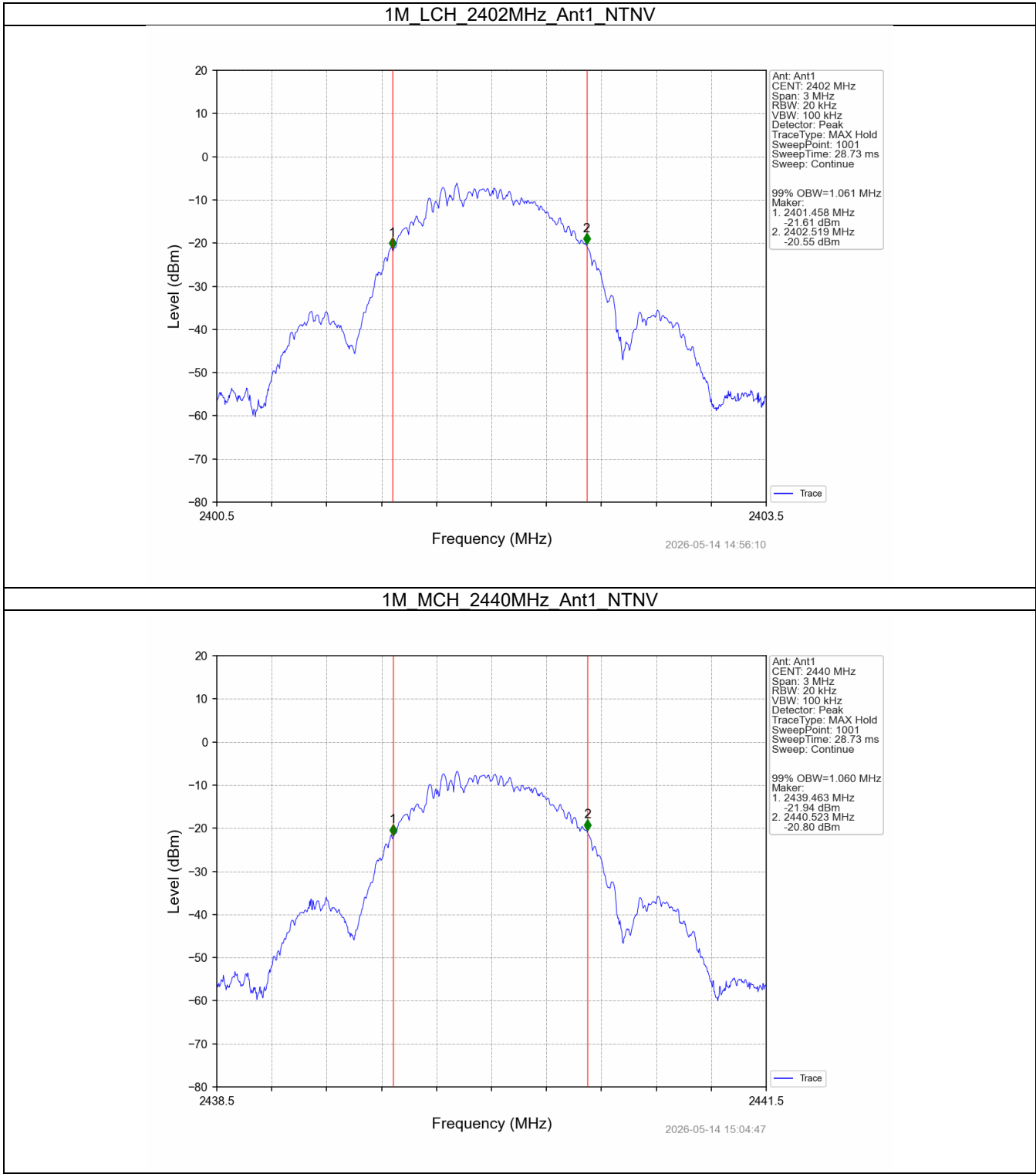
| Mode | TX Type | Frequency (MHz) | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|------|---------|-----------------|-----|------------------------------|-------|---------|
|      |         |                 |     | Result                       | Limit |         |
| 1M   | SISO    | 2402            | 1   | 1.061                        | /     | Pass    |
|      |         | 2440            | 1   | 1.060                        | /     | Pass    |
|      |         | 2480            | 1   | 1.061                        | /     | Pass    |
| 2M   | SISO    | 2402            | 1   | 2.068                        | /     | Pass    |
|      |         | 2440            | 1   | 2.069                        | /     | Pass    |
|      |         | 2480            | 1   | 2.064                        | /     | Pass    |

#### 2.1.2 6dB BW

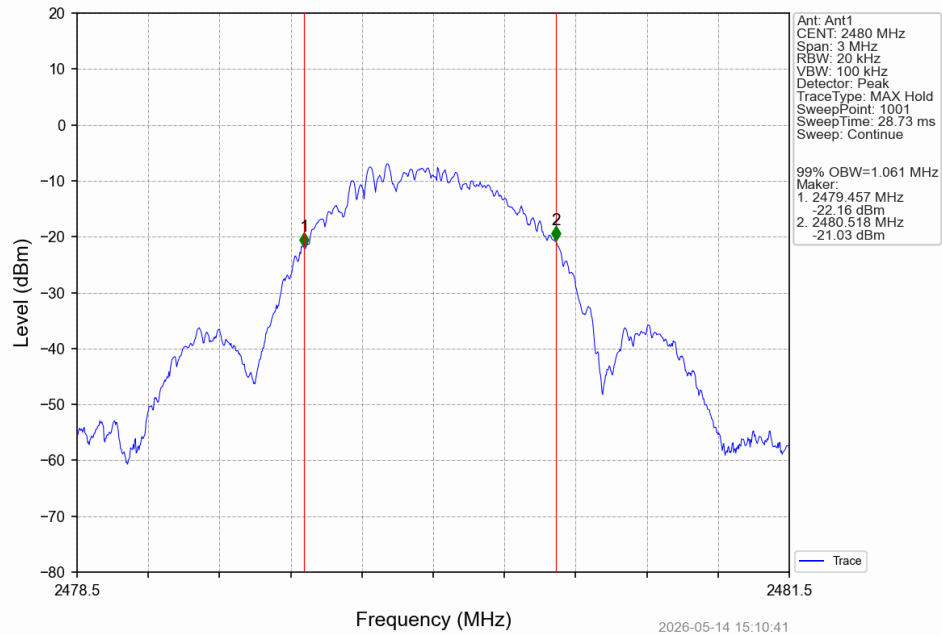
| Mode | TX Type | Frequency (MHz) | ANT | 6dB Bandwidth (MHz) |            | Verdict |
|------|---------|-----------------|-----|---------------------|------------|---------|
|      |         |                 |     | Result              | Limit      |         |
| 1M   | SISO    | 2402            | 1   | 0.721               | $\geq 0.5$ | Pass    |
|      |         | 2440            | 1   | 0.721               | $\geq 0.5$ | Pass    |
|      |         | 2480            | 1   | 0.716               | $\geq 0.5$ | Pass    |
| 2M   | SISO    | 2402            | 1   | 1.185               | $\geq 0.5$ | Pass    |
|      |         | 2440            | 1   | 1.266               | $\geq 0.5$ | Pass    |
|      |         | 2480            | 1   | 1.187               | $\geq 0.5$ | Pass    |

2.2 Test Graph

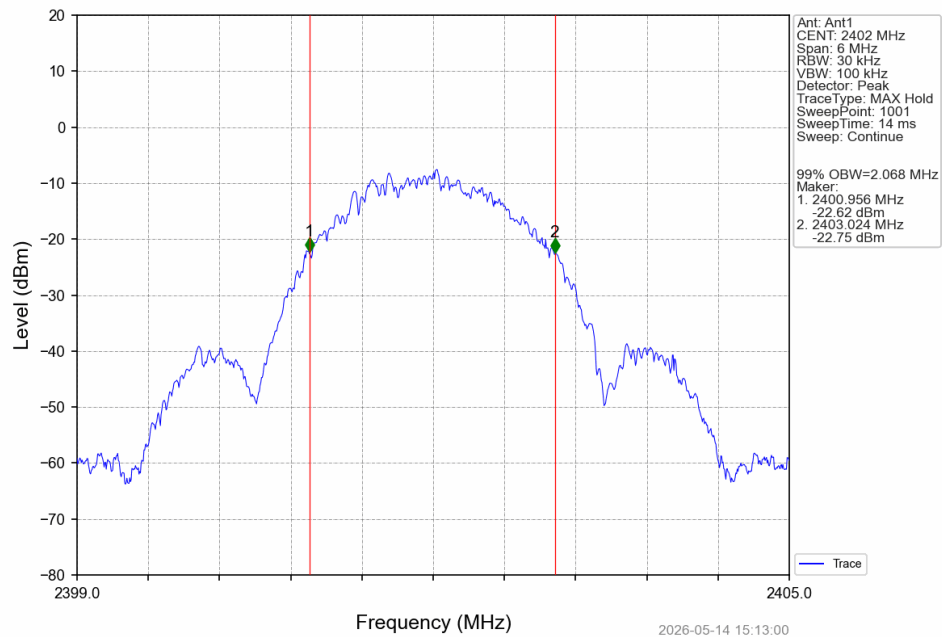
2.2.1 OBW



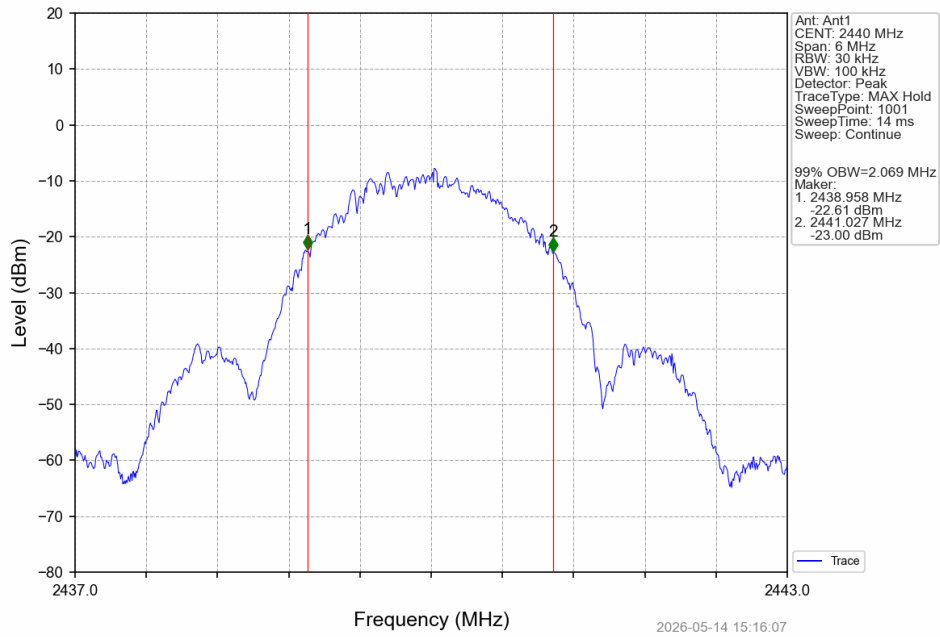
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



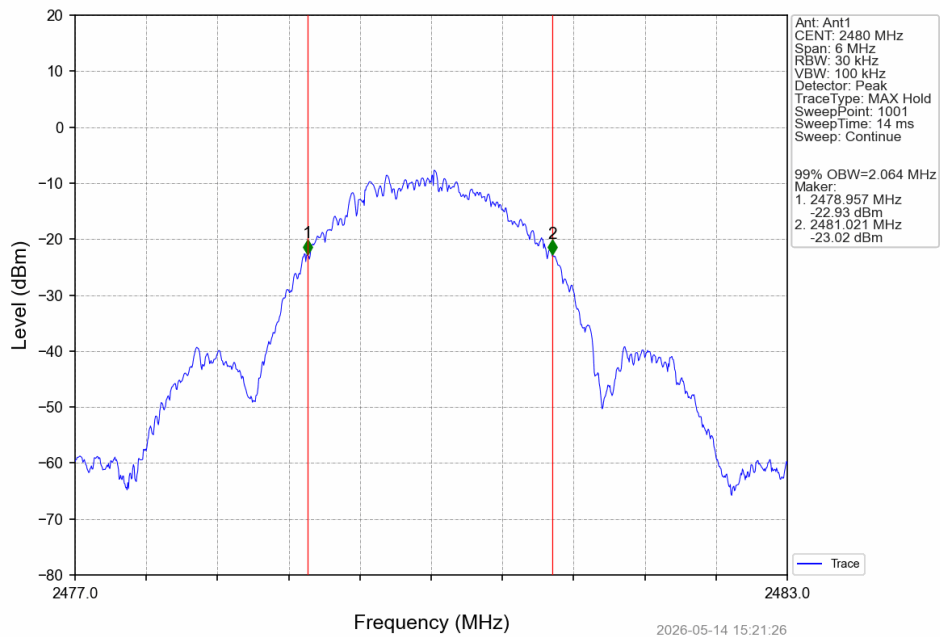
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



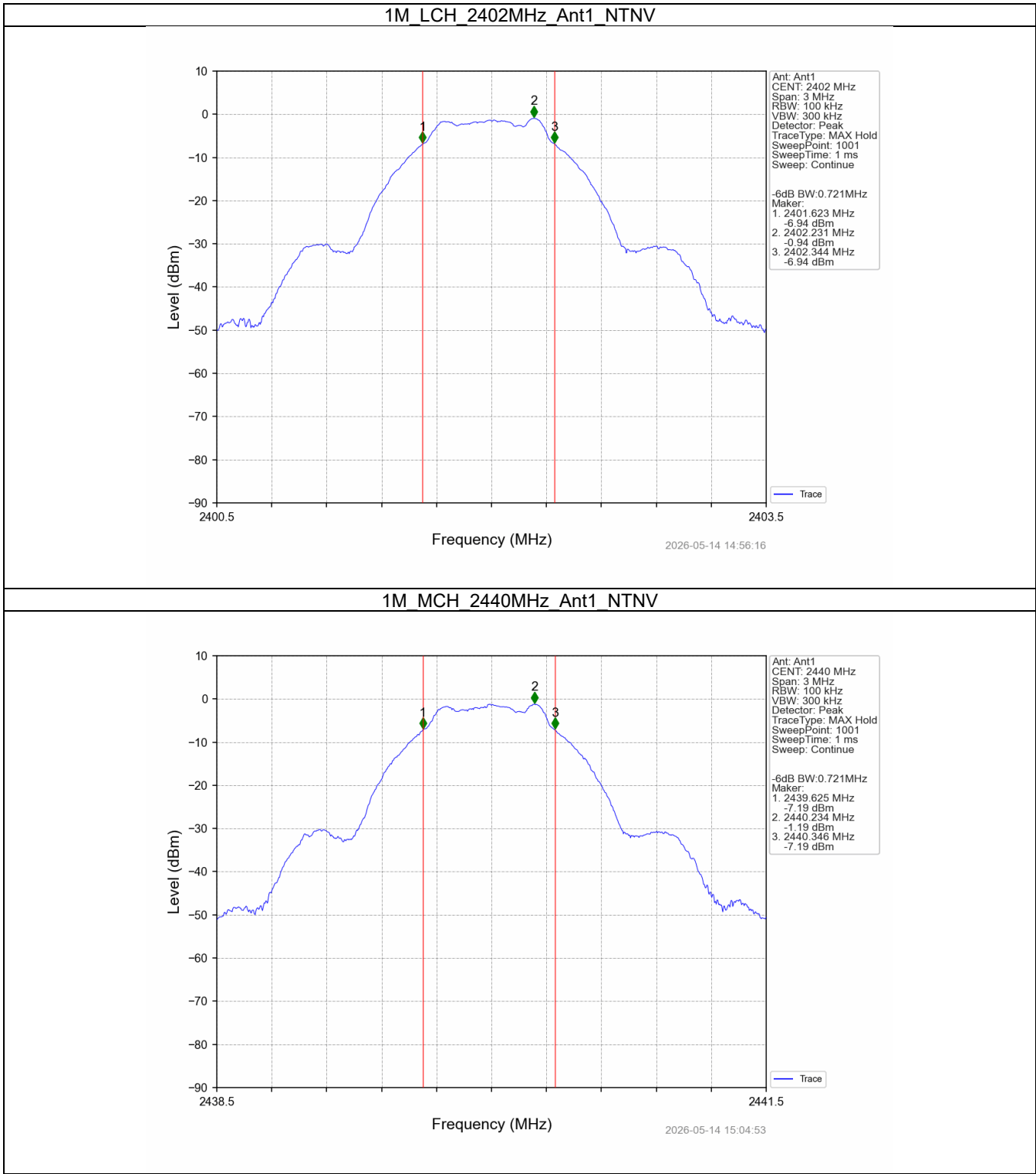
### 2M\_MCH\_2440MHz\_Ant1\_NTNV



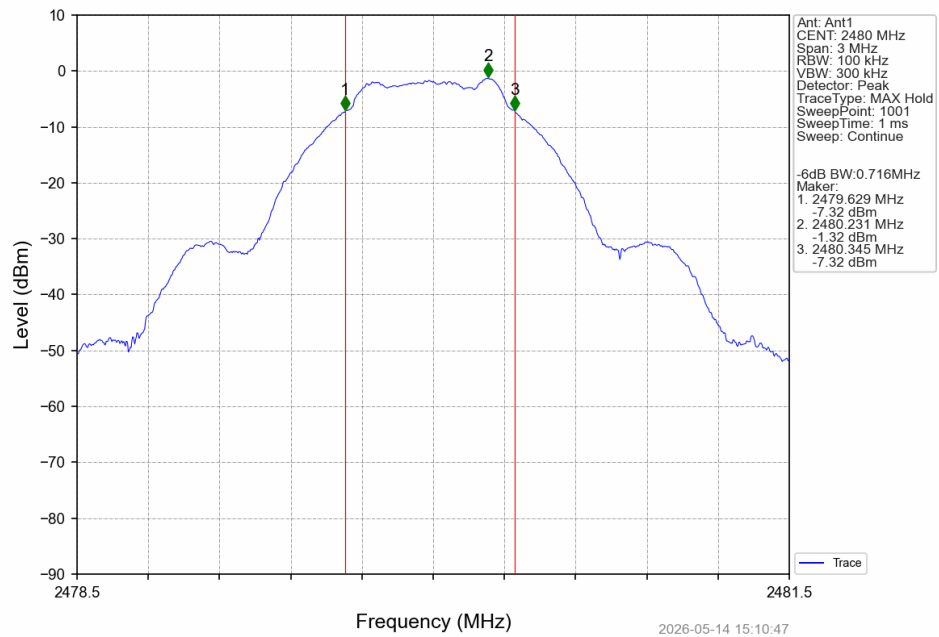
### 2M\_HCH\_2480MHz\_Ant1\_NTNV



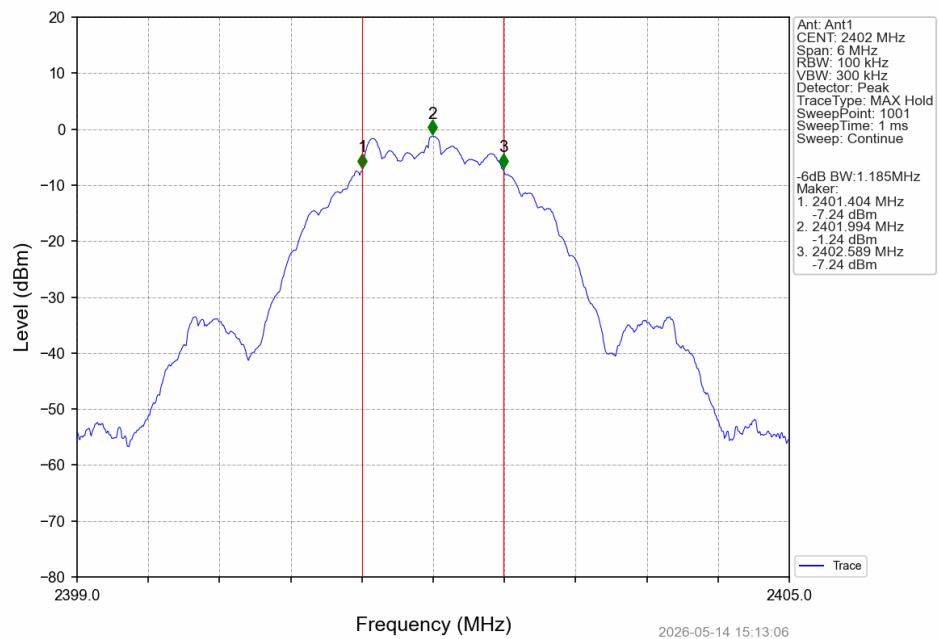
2.2.2 6dB BW



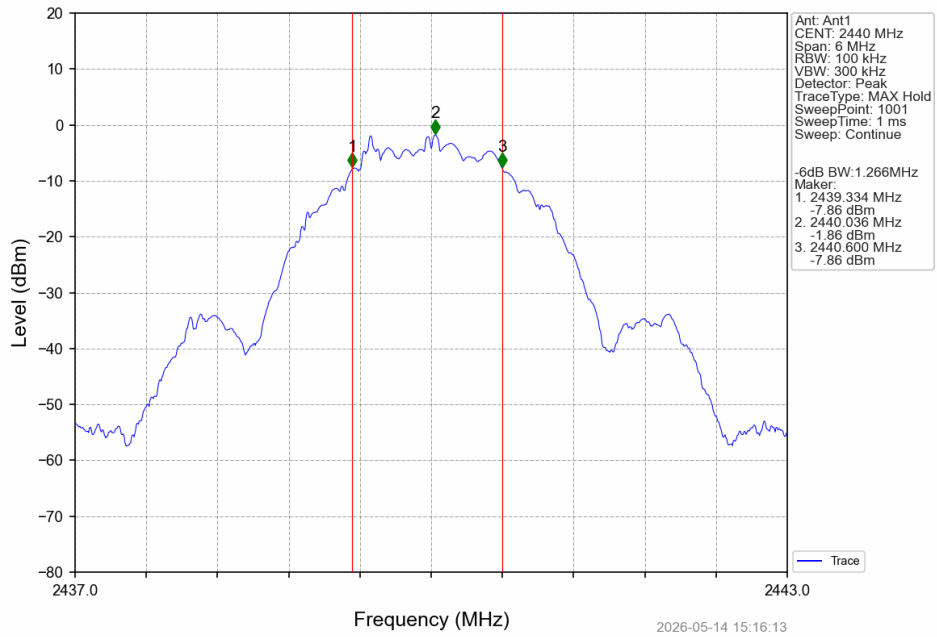
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



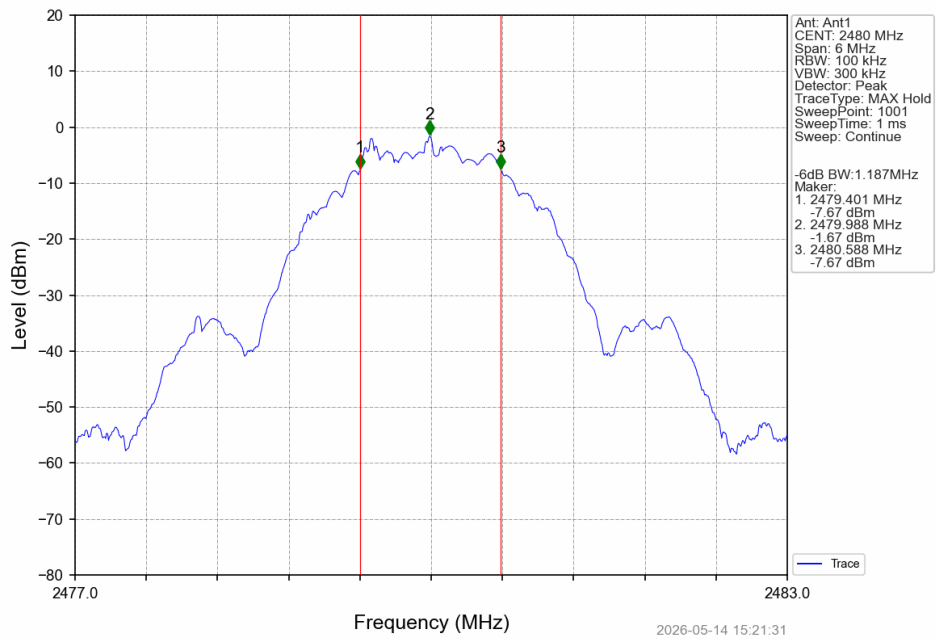
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



### 2M\_MCH\_2440MHz\_Ant1\_NTNV



### 2M\_HCH\_2480MHz\_Ant1\_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 |         |
| 1M   | SISO    | 2402            | -0.01                                     | <=30  | Pass    |
|      |         | 2440            | -0.24                                     | <=30  | Pass    |
|      |         | 2480            | -0.37                                     | <=30  | Pass    |
| 2M   | SISO    | 2402            | -0.07                                     | <=30  | Pass    |
|      |         | 2440            | -0.31                                     | <=30  | Pass    |
|      |         | 2480            | -0.42                                     | <=30  | Pass    |

## 4. Maximum Power Spectral Density

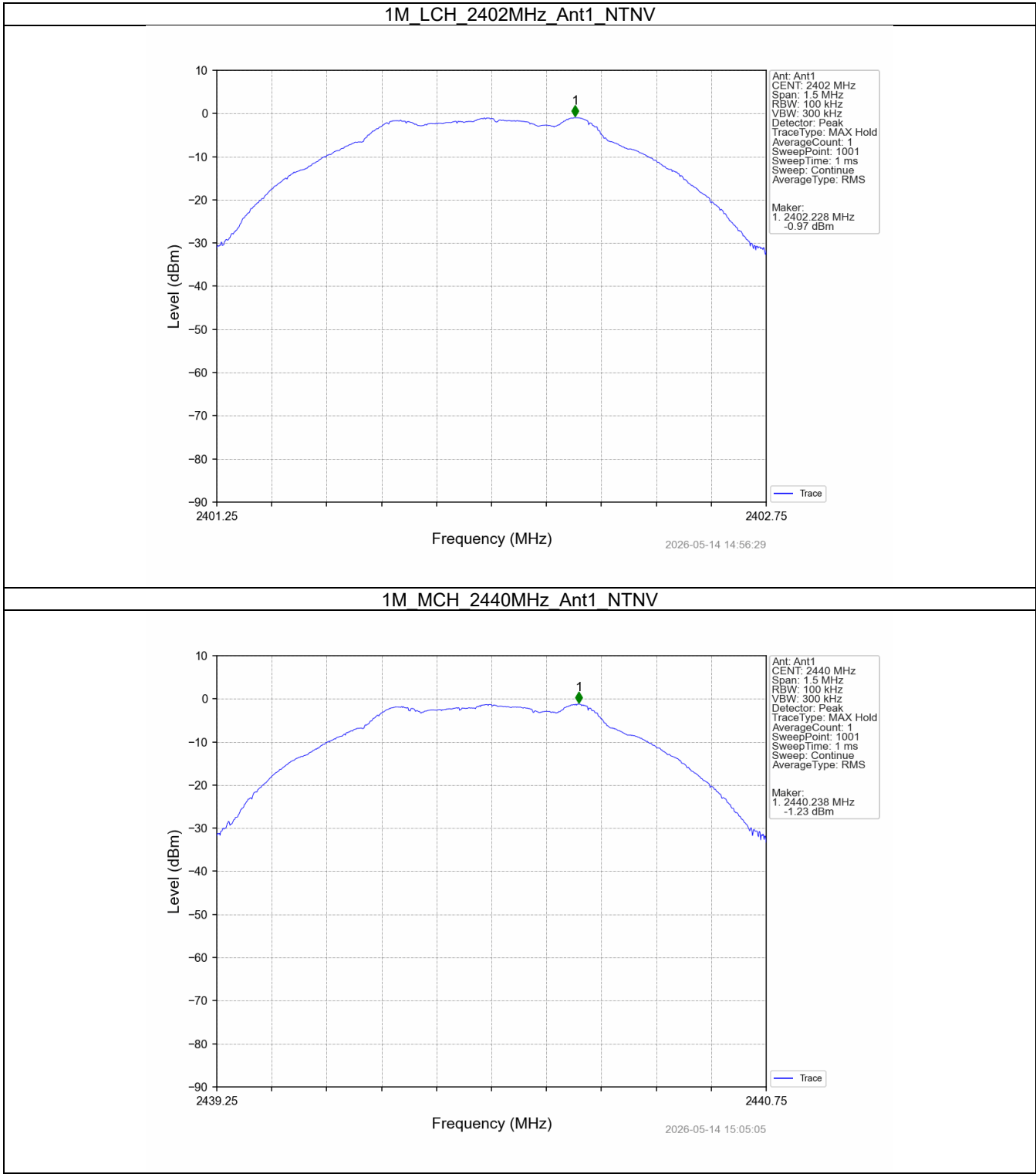
### 4.1 Test Result

#### 4.1.1 PSD

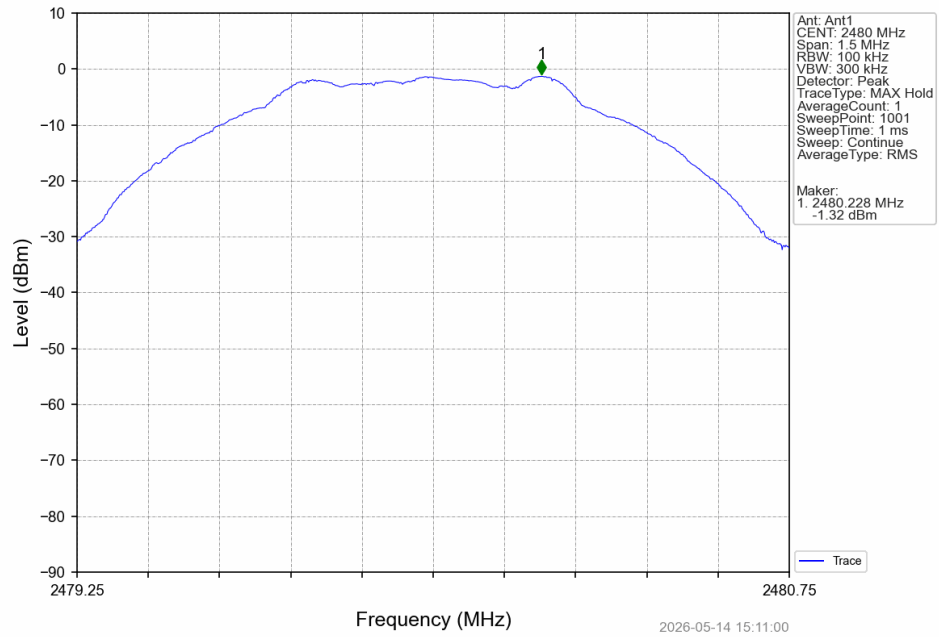
| Mode | TX Type | Frequency (MHz) | Maximum PSD (dBm) |                 | Verdict |
|------|---------|-----------------|-------------------|-----------------|---------|
|      |         |                 | ANT1              | Limit(dBm/3kHz) |         |
| 1M   | SISO    | 2402            | -0.97dBm/100kHz   | <=8             | Pass    |
|      |         | 2440            | -1.23dBm/100kHz   | <=8             | Pass    |
|      |         | 2480            | -1.32dBm/100kHz   | <=8             | Pass    |
| 2M   | SISO    | 2402            | -1.40dBm/100kHz   | <=8             | Pass    |
|      |         | 2440            | -1.64dBm/100kHz   | <=8             | Pass    |
|      |         | 2480            | -1.75dBm/100kHz   | <=8             | Pass    |

4.2 Test Graph

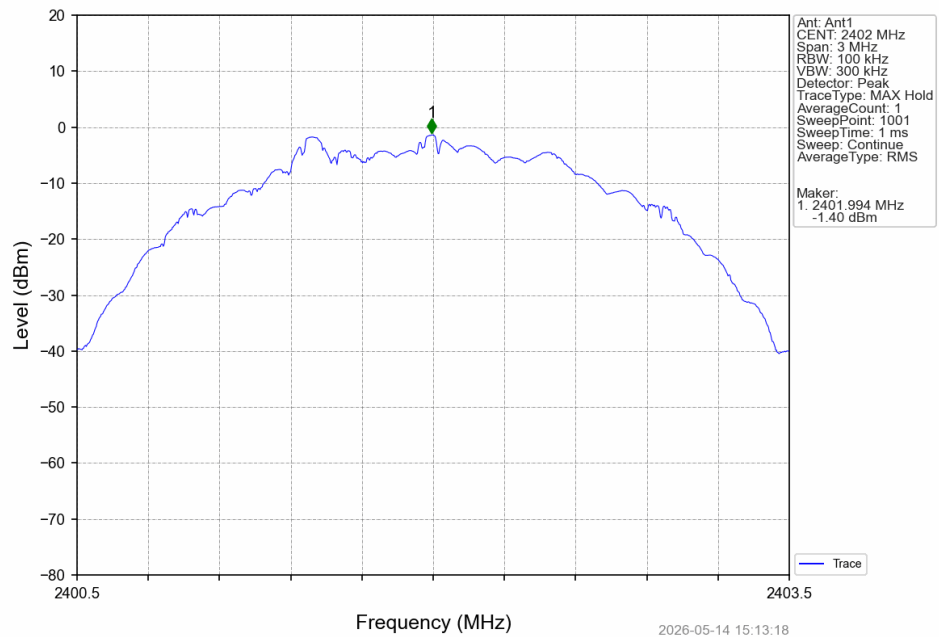
4.2.1 PSD



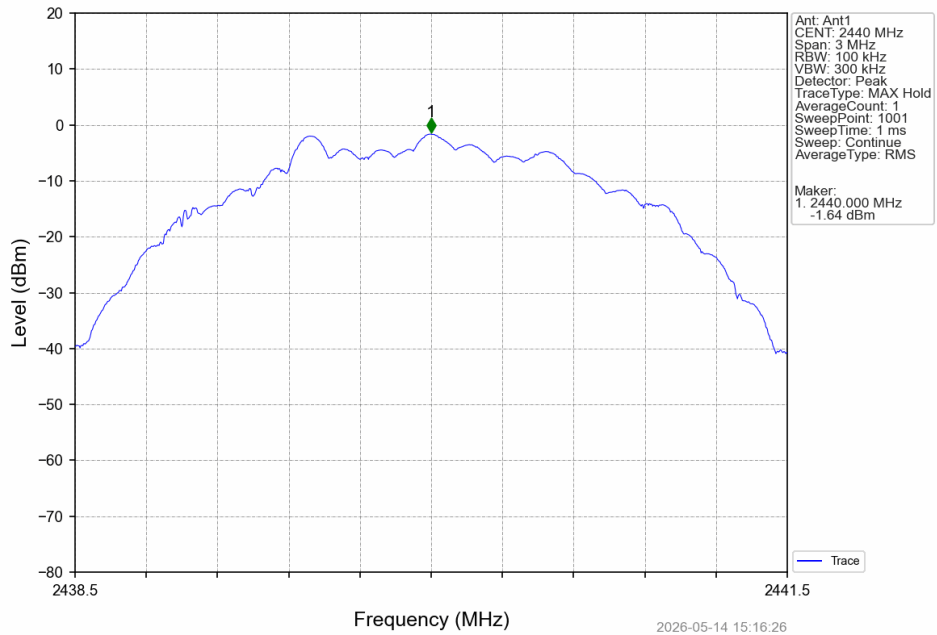
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



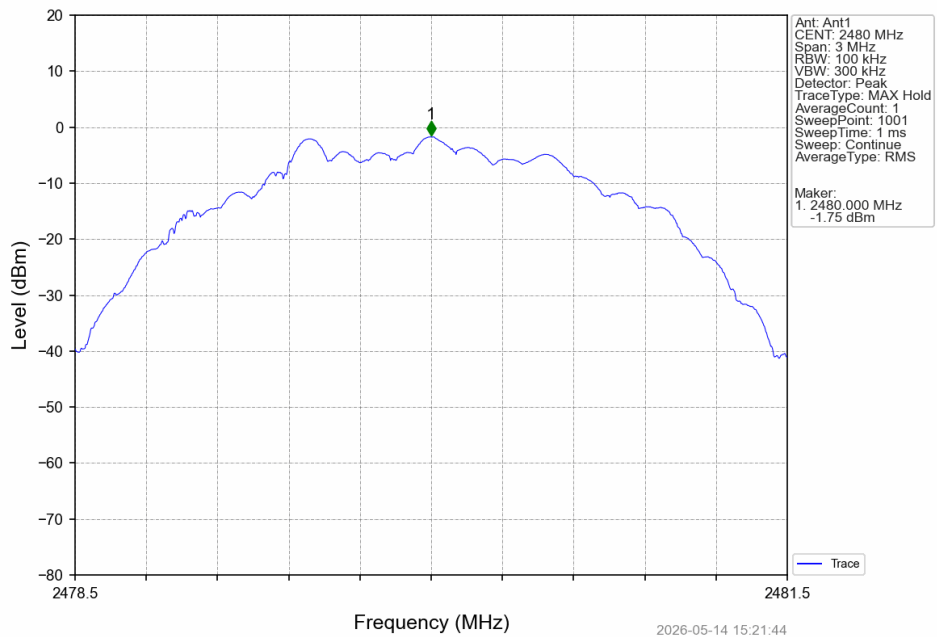
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



# 2M\_MCH\_2440MHz\_Ant1\_NTNV



# 2M\_HCH\_2480MHz\_Ant1\_NTNV



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

### 5.1 Test Result

#### 5.1.1 Ref

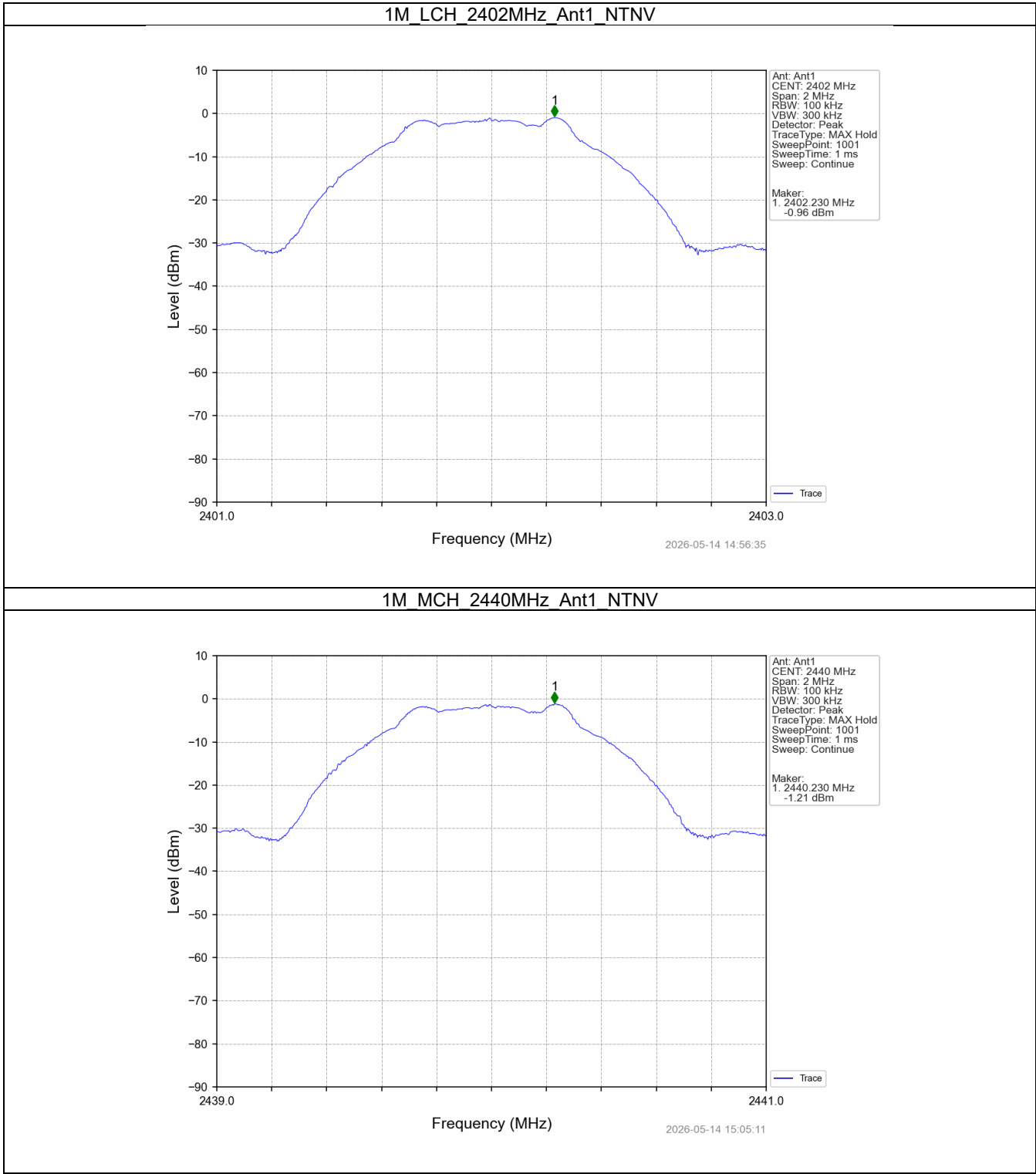
| Mode | TX Type | Frequency (MHz) | ANT | Level of Reference (dBm) |
|------|---------|-----------------|-----|--------------------------|
| 1M   | SISO    | 2402            | 1   | -0.96                    |
|      |         | 2440            | 1   | -1.21                    |
|      |         | 2480            | 1   | -1.32                    |
| 2M   | SISO    | 2402            | 1   | -1.34                    |
|      |         | 2440            | 1   | -1.70                    |
|      |         | 2480            | 1   | -1.70                    |

#### 5.1.2 CSE

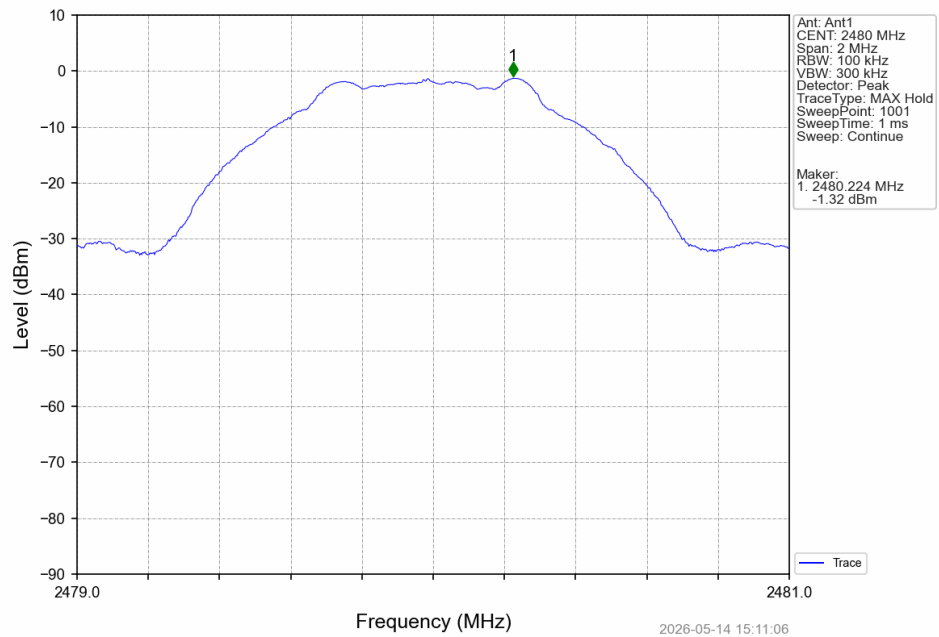
| Mode | TX Type | Frequency (MHz) | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|------|---------|-----------------|-----|--------------------------|-------------|---------|
| 1M   | SISO    | 2402            | 1   | -0.96                    | -20.96      | Pass    |
|      |         | 2440            | 1   | -1.21                    | -21.21      | Pass    |
|      |         | 2480            | 1   | -1.32                    | -21.32      | Pass    |
| 2M   | SISO    | 2402            | 1   | -1.34                    | -21.34      | Pass    |
|      |         | 2440            | 1   | -1.70                    | -21.70      | Pass    |
|      |         | 2480            | 1   | -1.70                    | -21.70      | Pass    |

5.2 Test Graph

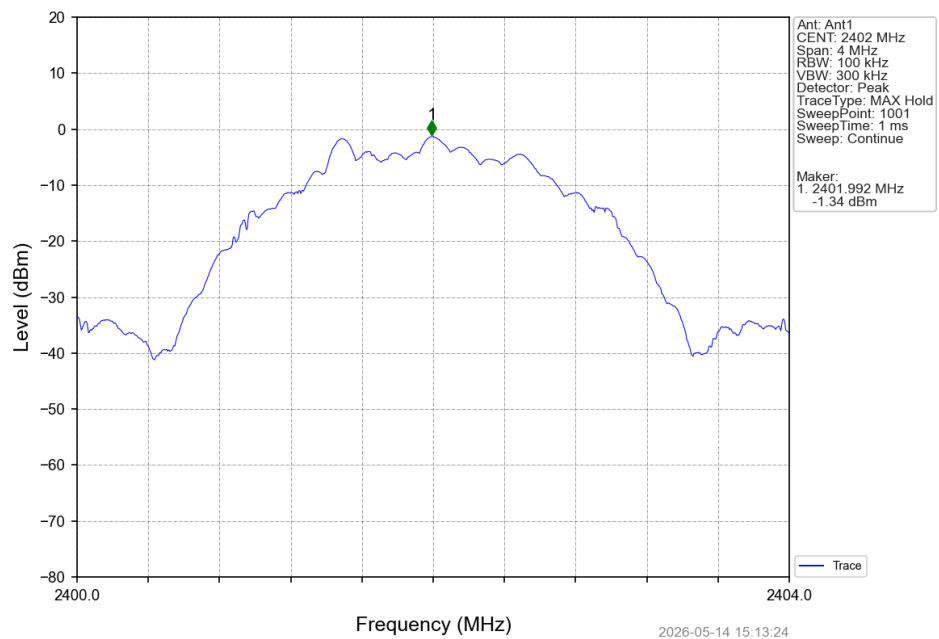
5.2.1 Ref



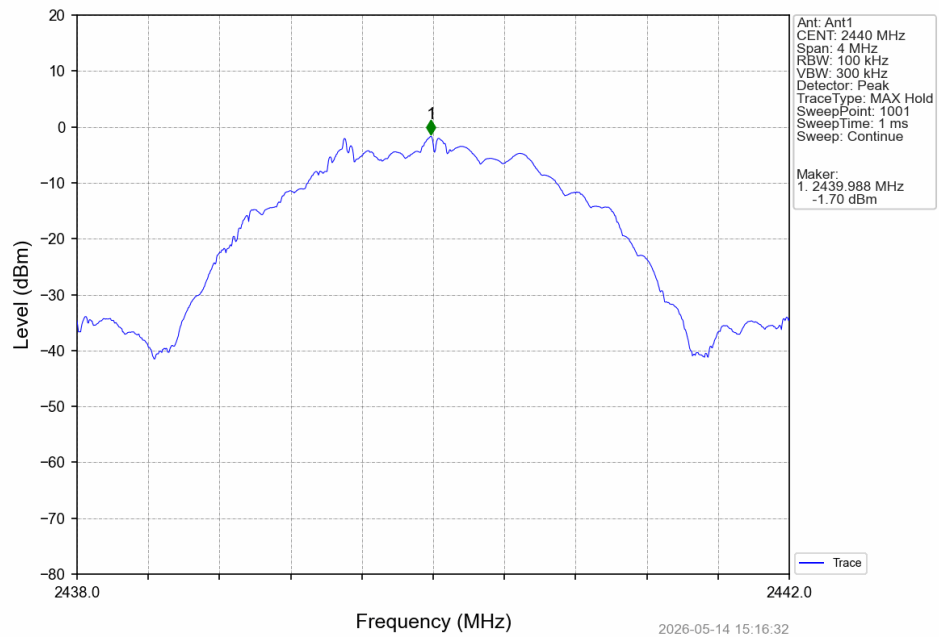
### 1M\_HCH\_2480MHz\_Ant1\_NTNV



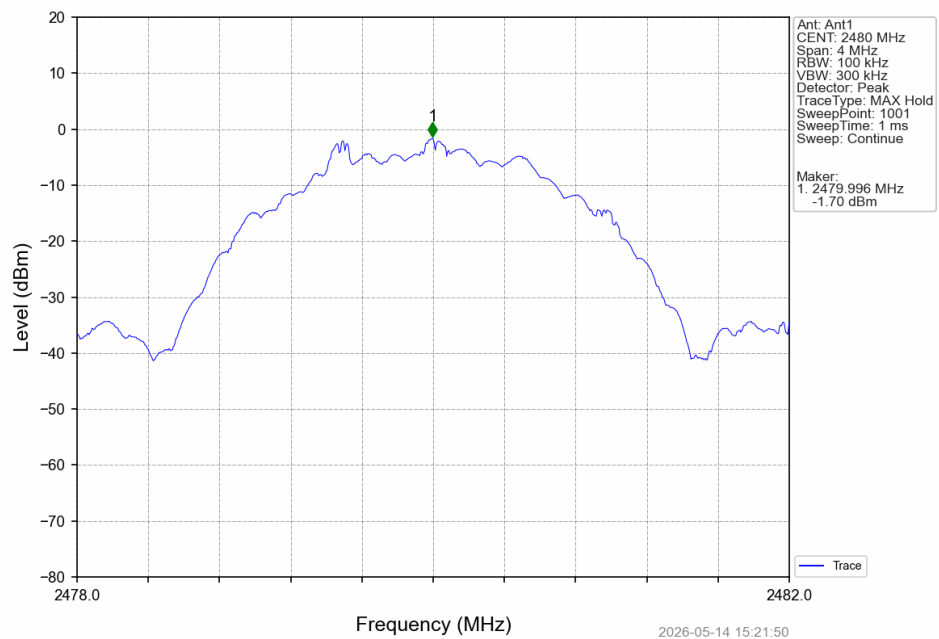
### 2M\_LCH\_2402MHz\_Ant1\_NTNV



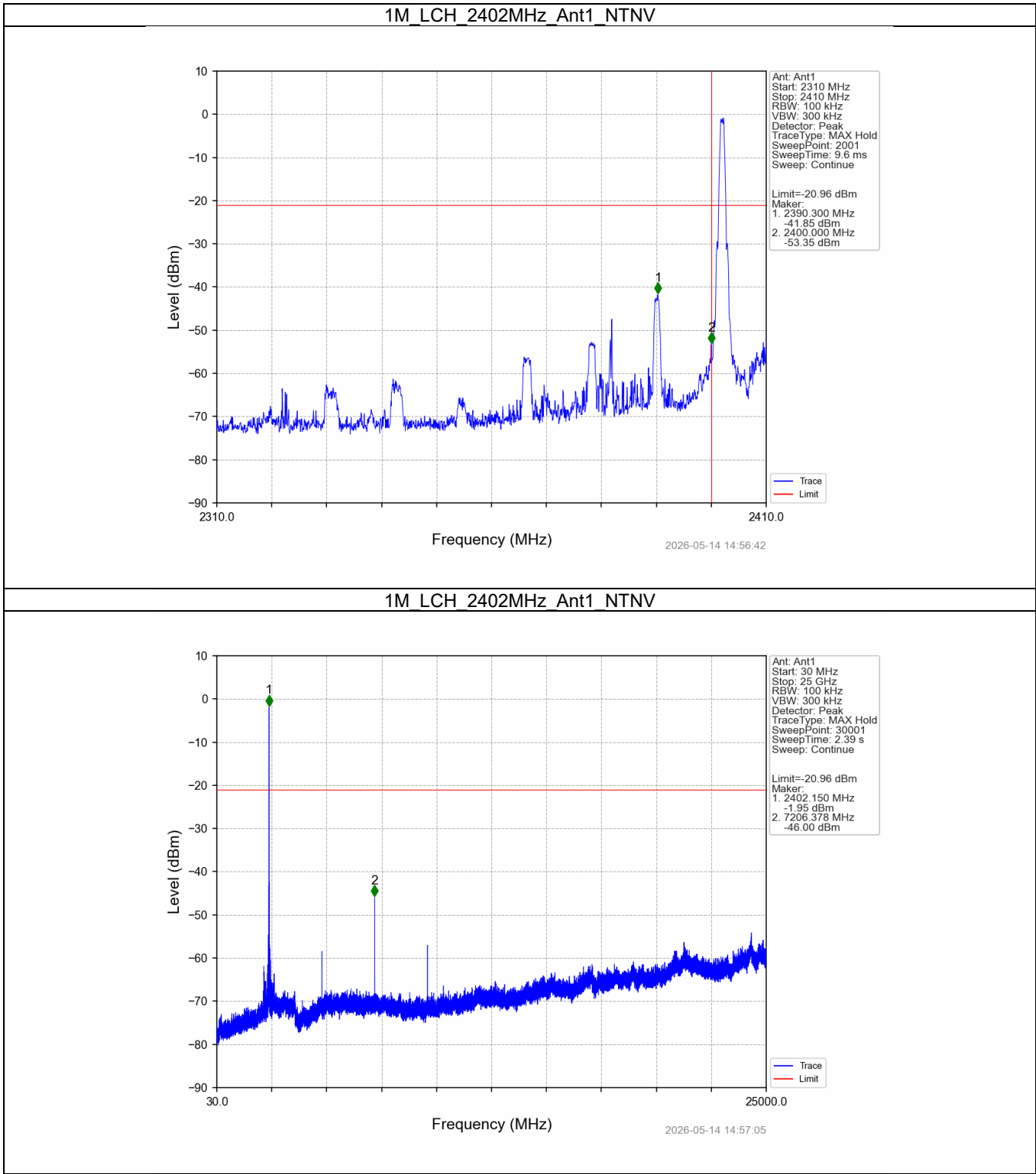
### 2M\_MCH\_2440MHz\_Ant1\_NTNV



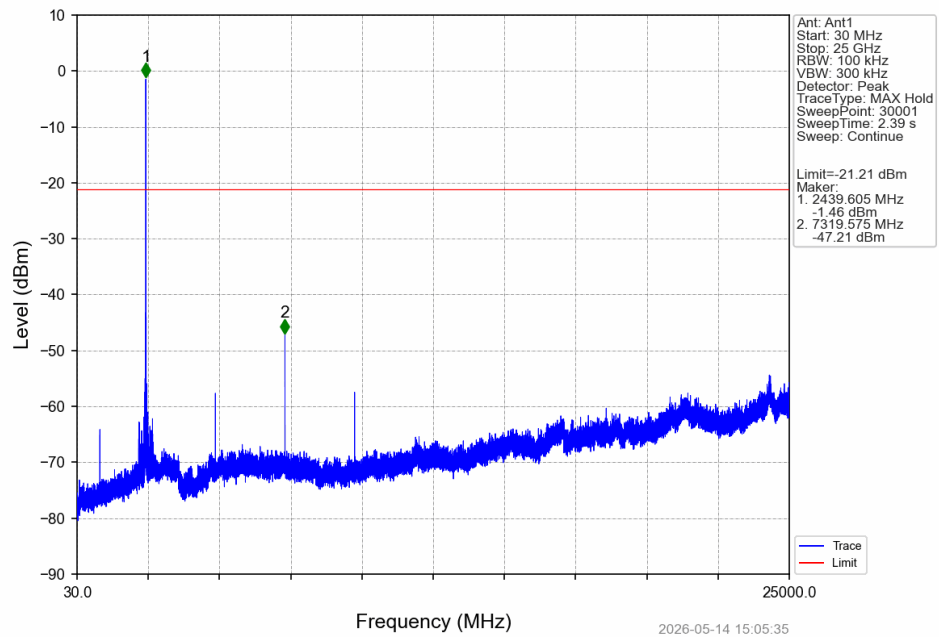
### 2M\_HCH\_2480MHz\_Ant1\_NTNV



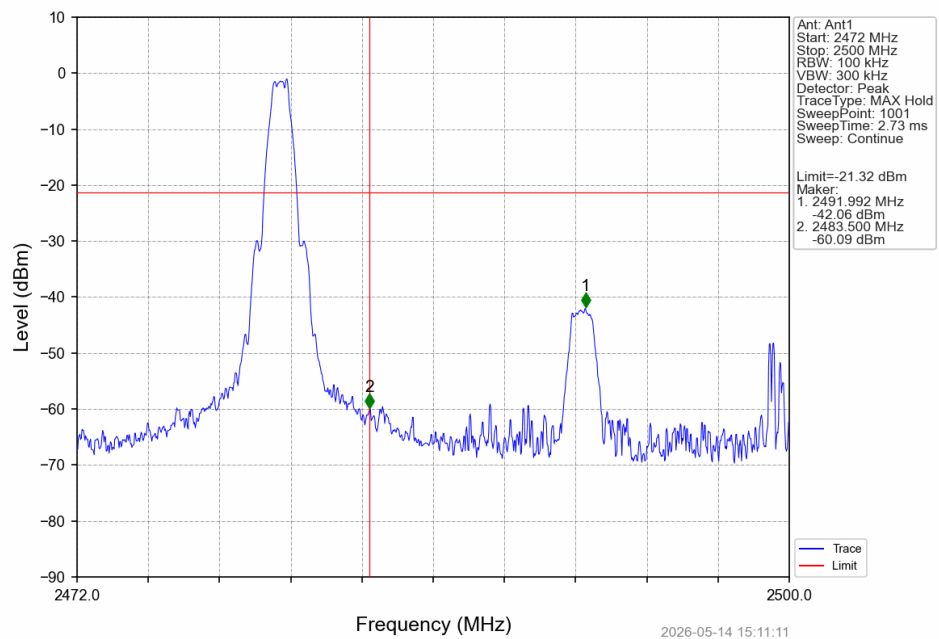
5.2.2 CSE



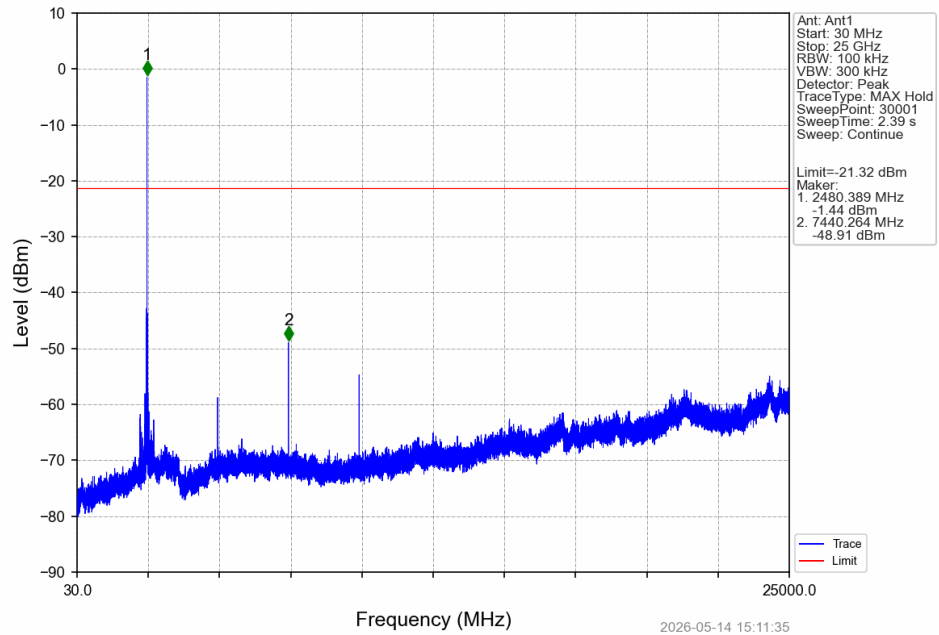
# 1M\_MCH\_2440MHz\_Ant1\_NTNV



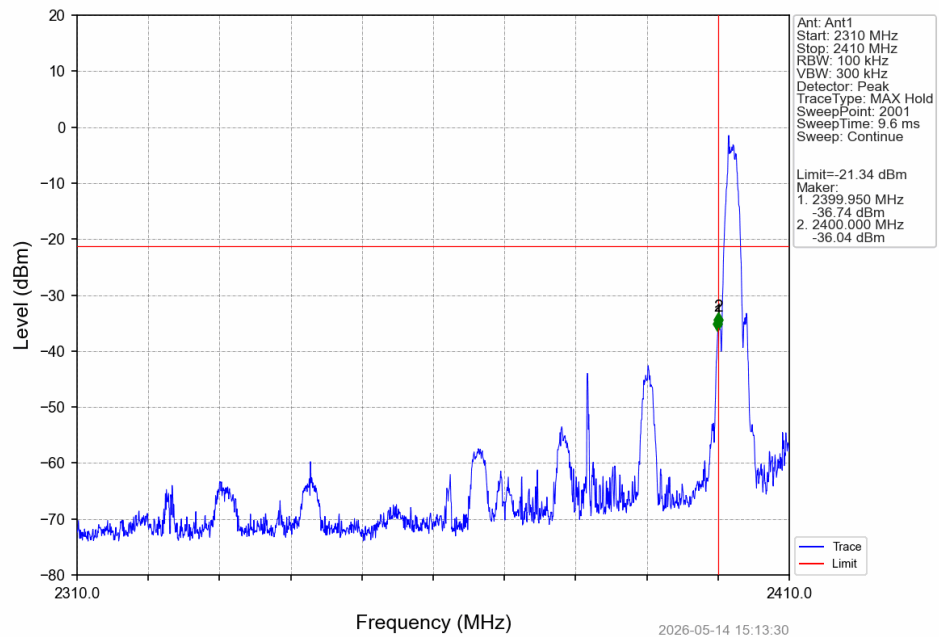
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



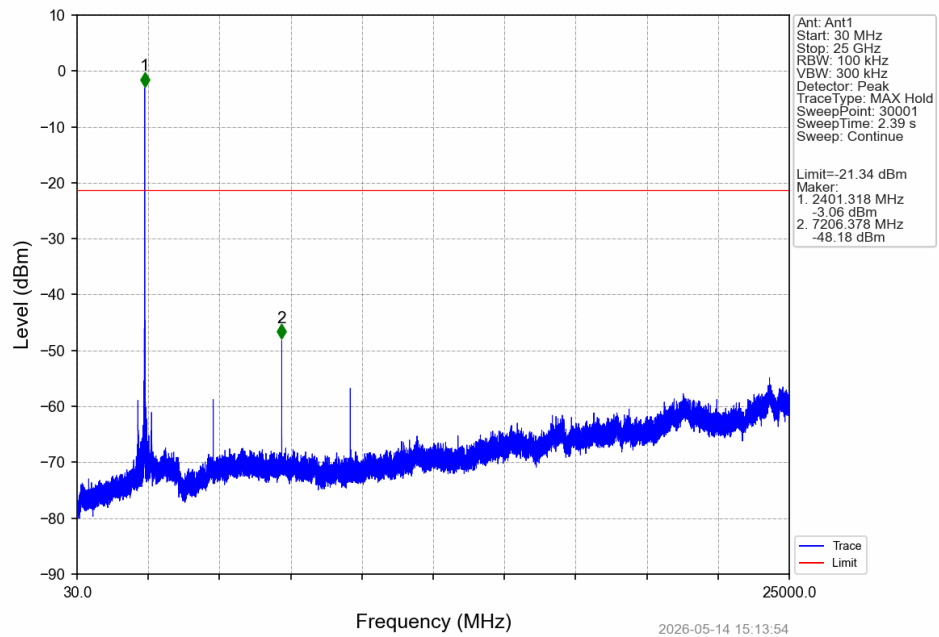
# 1M\_HCH\_2480MHz\_Ant1\_NTNV



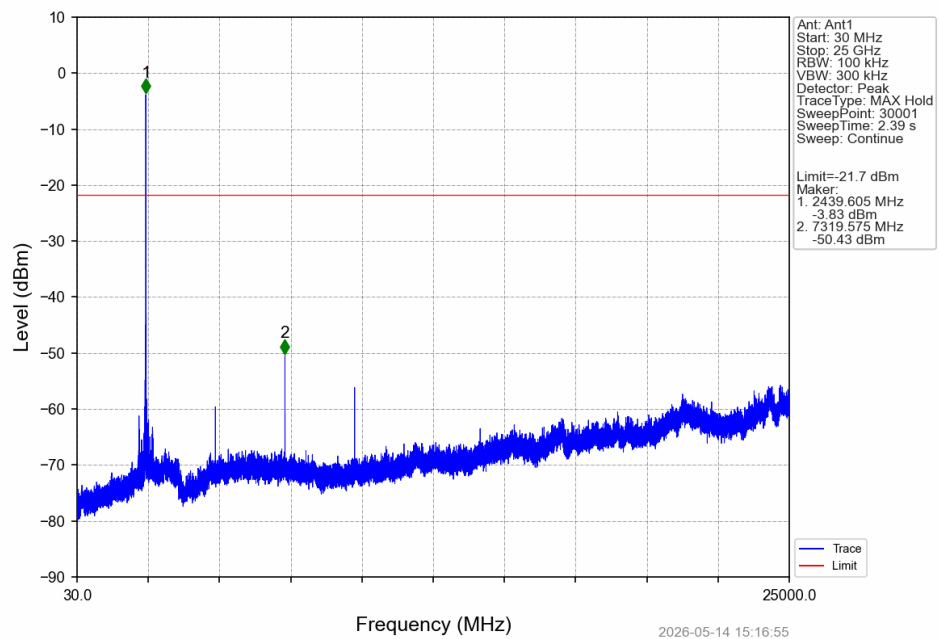
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



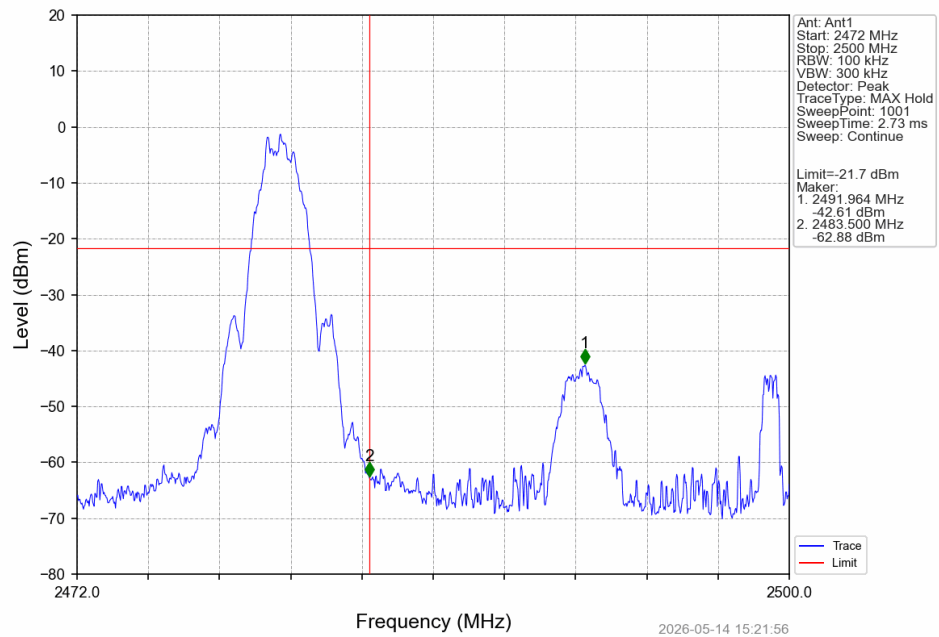
# 2M\_LCH\_2402MHz\_Ant1\_NTNV



# 2M\_MCH\_2440MHz\_Ant1\_NTNV



# 2M\_HCH\_2480MHz\_Ant1\_NTNV



# 2M\_HCH\_2480MHz\_Ant1\_NTNV

