

## **Appendix RF Test Data for BT**

**Company:** : Dongguan Shengxiang Technology Co., Ltd.

**EUT** : Bluetooth speaker

**FCC ID:** : 2BDCS-ST-911

**Model Number** : ST-911

**Report No.** : HTT202511986F01

**Reviewed By** : Heber He

## 1. Duty Cycle

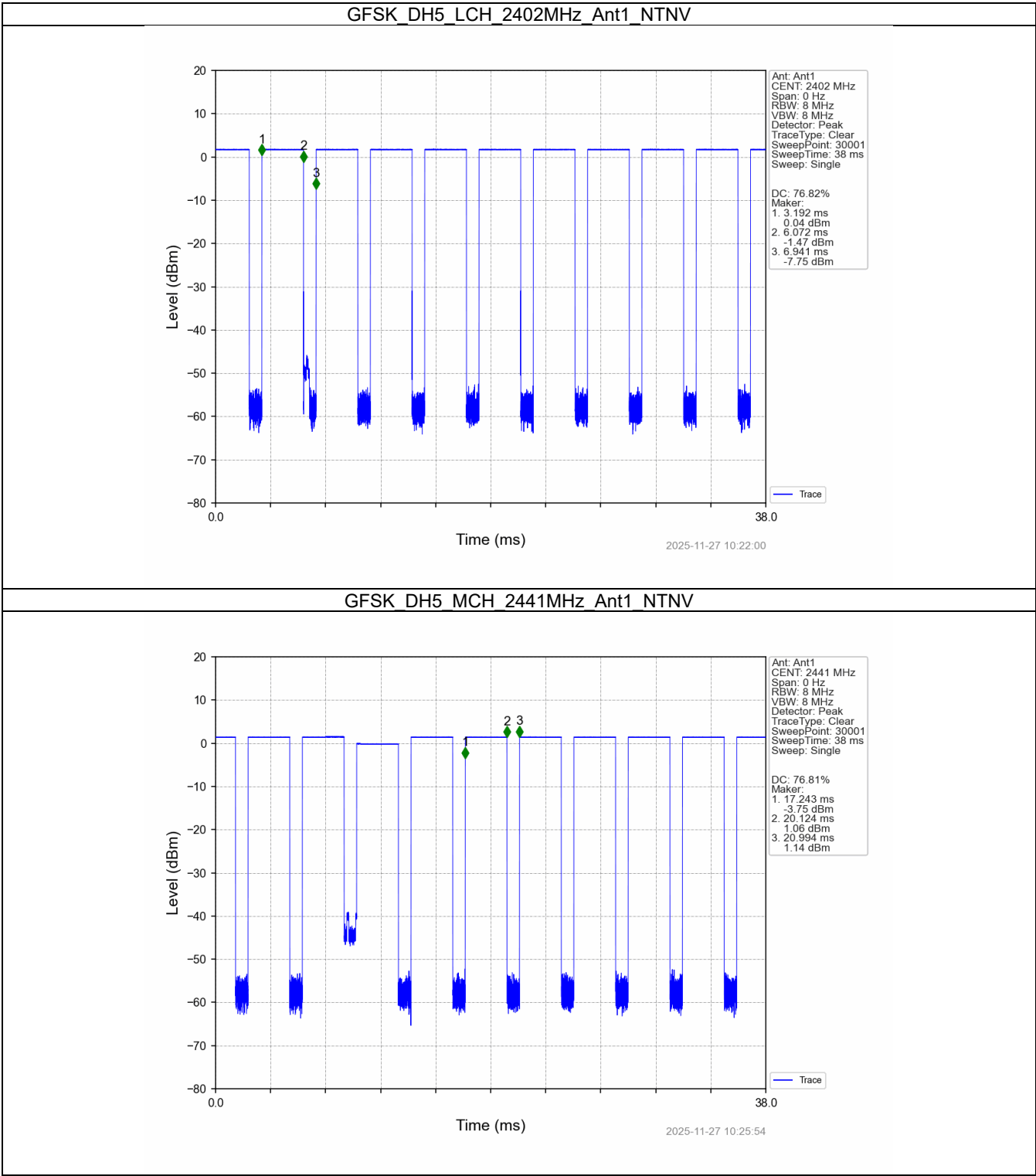
### 1.1 Test Result

#### 1.1.1 Ant1

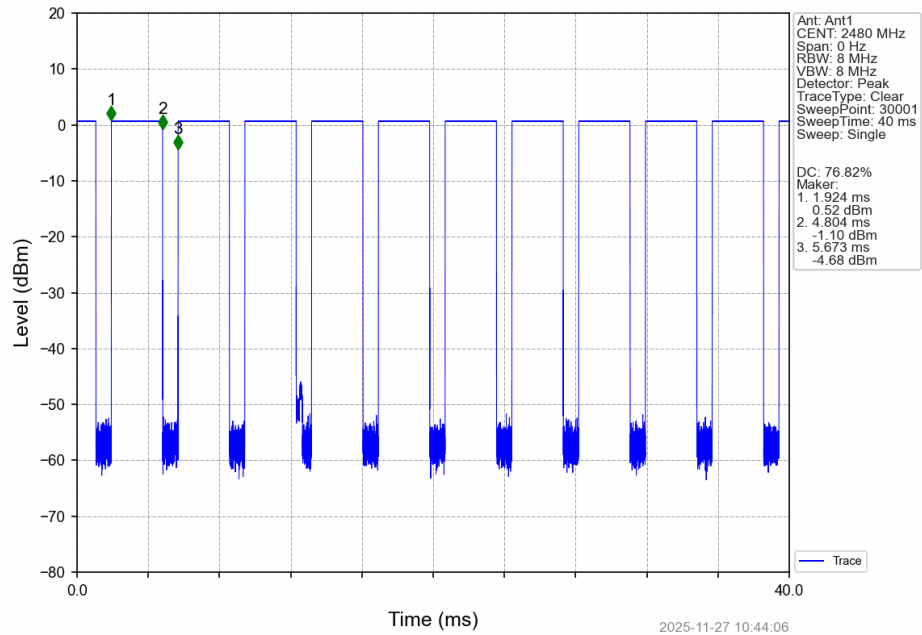
| Ant1      |         |                 |             |           |             |                |                                   |                       |
|-----------|---------|-----------------|-------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Max. DC Variation (%) |
| GFSK      | SISO    | 2402            | DH5         | 2.880     | 3.749       | 76.82          | 1.15                              | 0.01                  |
|           |         | 2441            | DH5         | 2.881     | 3.751       | 76.81          | 1.15                              | 0.03                  |
|           |         | 2480            | DH5         | 2.880     | 3.749       | 76.82          | 1.15                              | 0.01                  |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 2.886     | 3.750       | 76.96          | 1.14                              | 0.03                  |
|           |         | 2441            | 2DH5        | 2.887     | 3.751       | 76.97          | 1.14                              | 0.03                  |
|           |         | 2480            | 2DH5        | 2.887     | 3.751       | 76.97          | 1.14                              | 0.03                  |

# 1.2 Test Graph

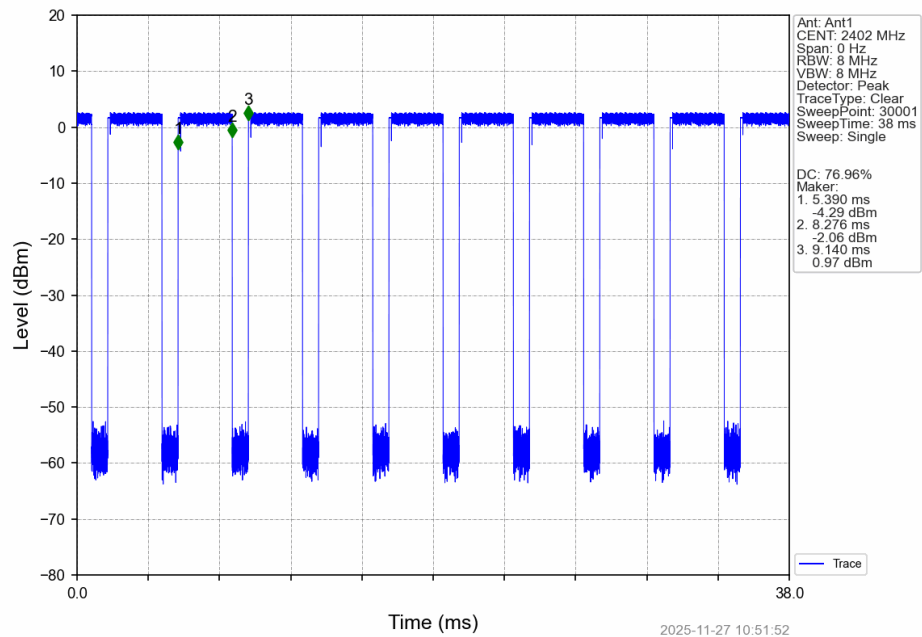
## 1.2.1 Ant1



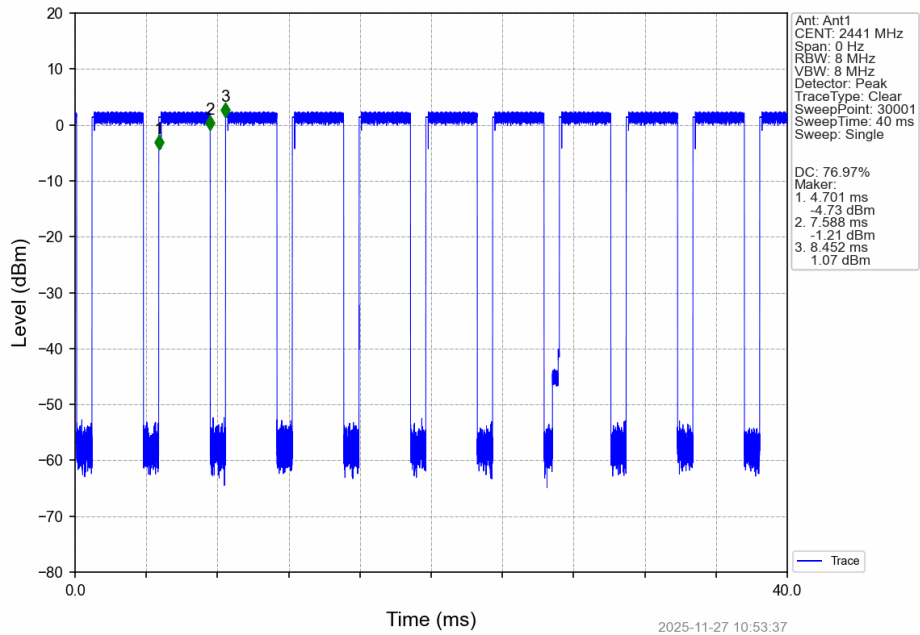
# GFSK DH5\_HCH\_2480MHz\_Ant1\_NTNV



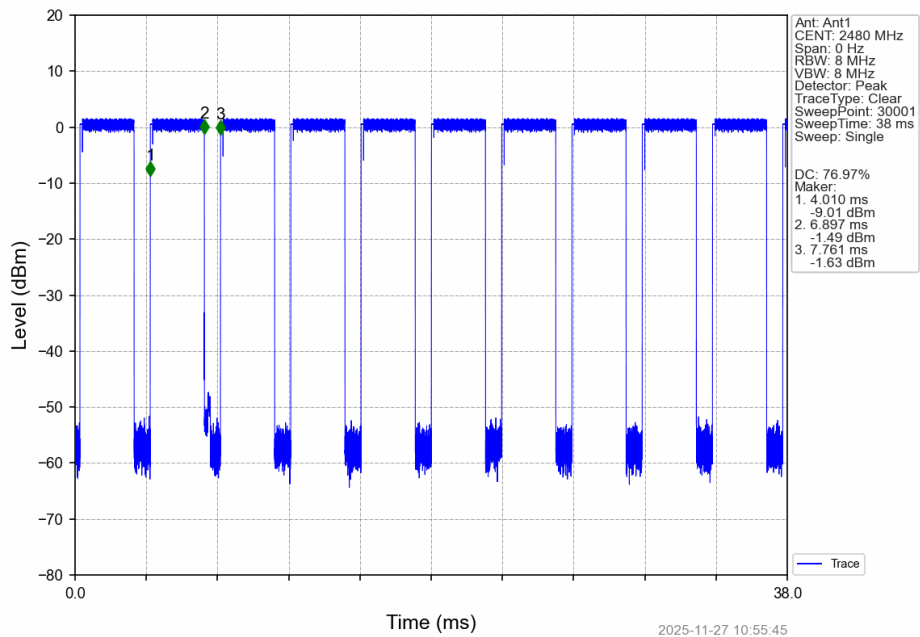
# Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

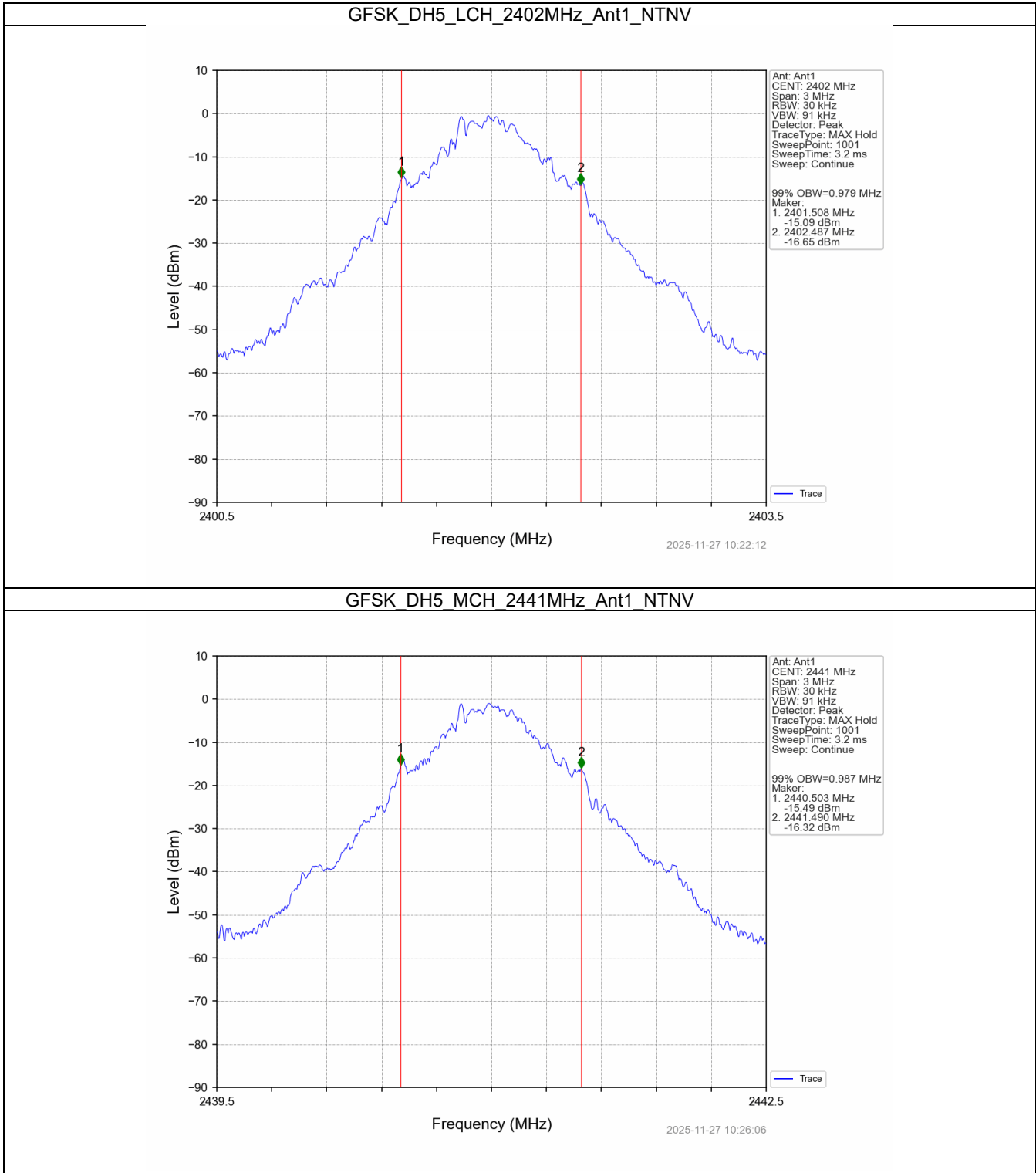
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|           |         |                 |             |     | Result                       | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.979                        | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.987                        | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 0.996                        | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.249                        | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.263                        | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.270                        | /     | Pass    |

#### 2.1.2 20dB BW

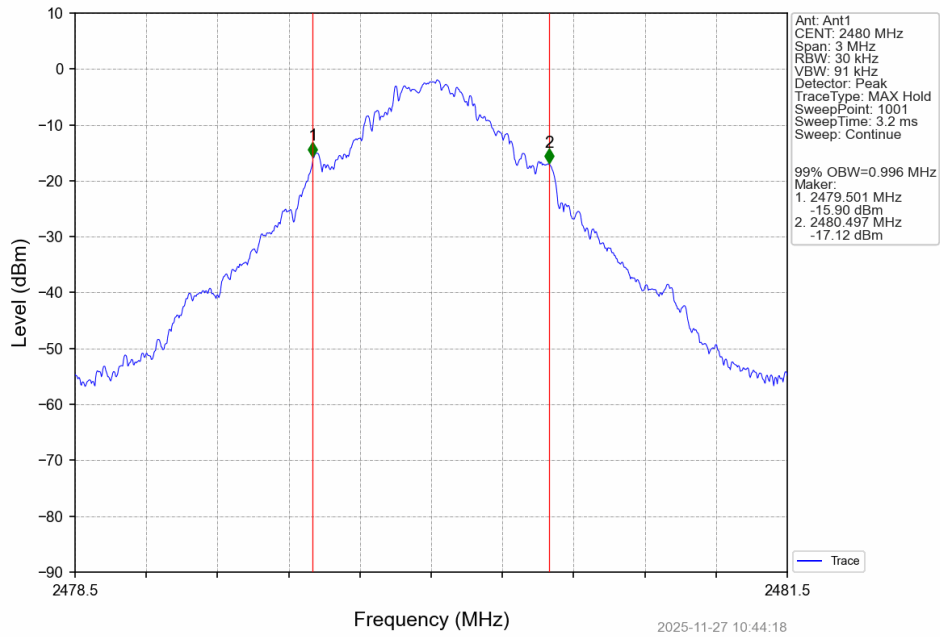
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|           |         |                 |             |     | Result               | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 1.051                | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 1.069                | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 1.057                | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.350                | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.359                | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.389                | /     | Pass    |

2.2 Test Graph

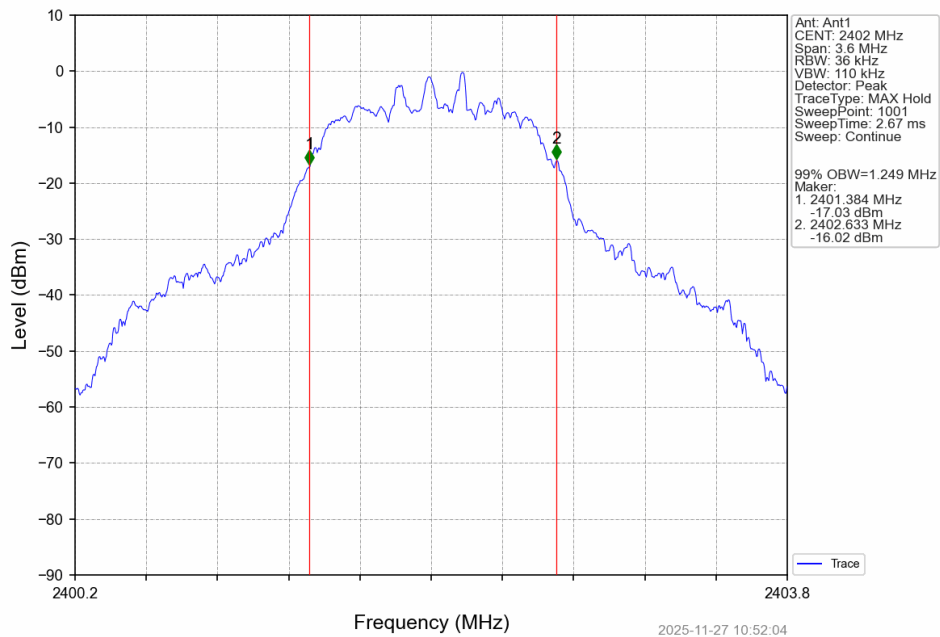
2.2.1 OBW



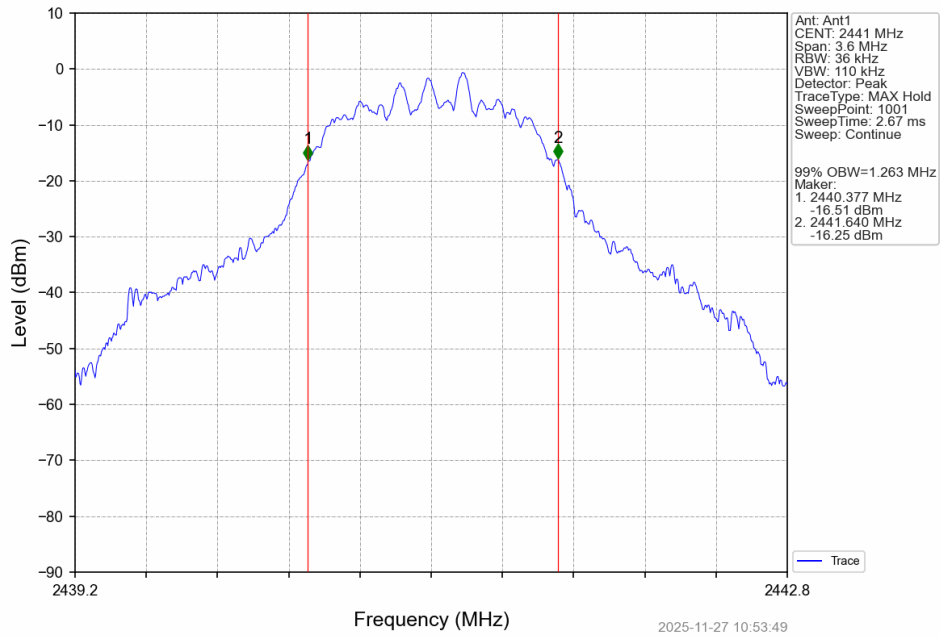
# GFSK DH5\_HCH\_2480MHz\_Ant1\_NTNV



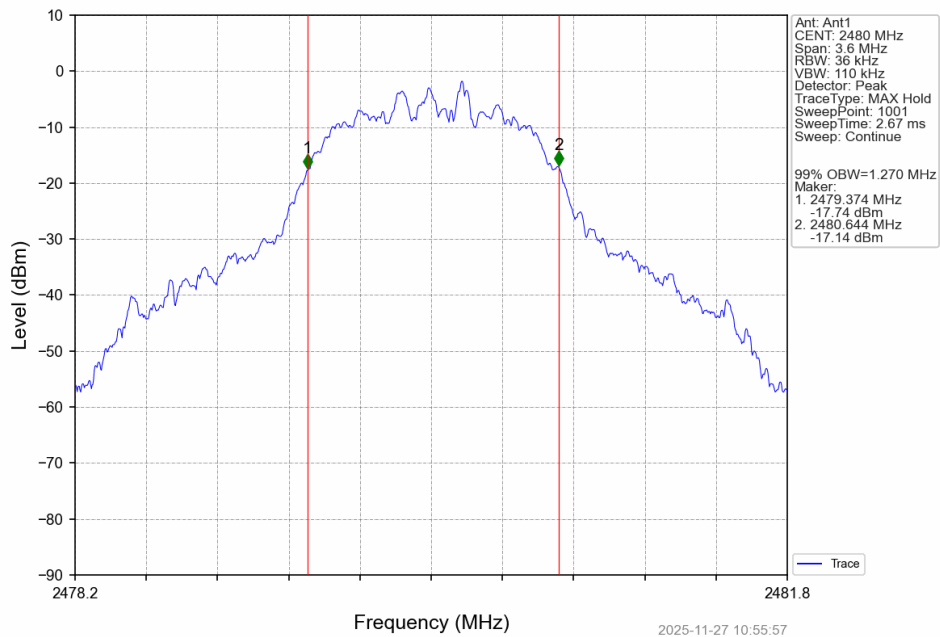
# PI/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



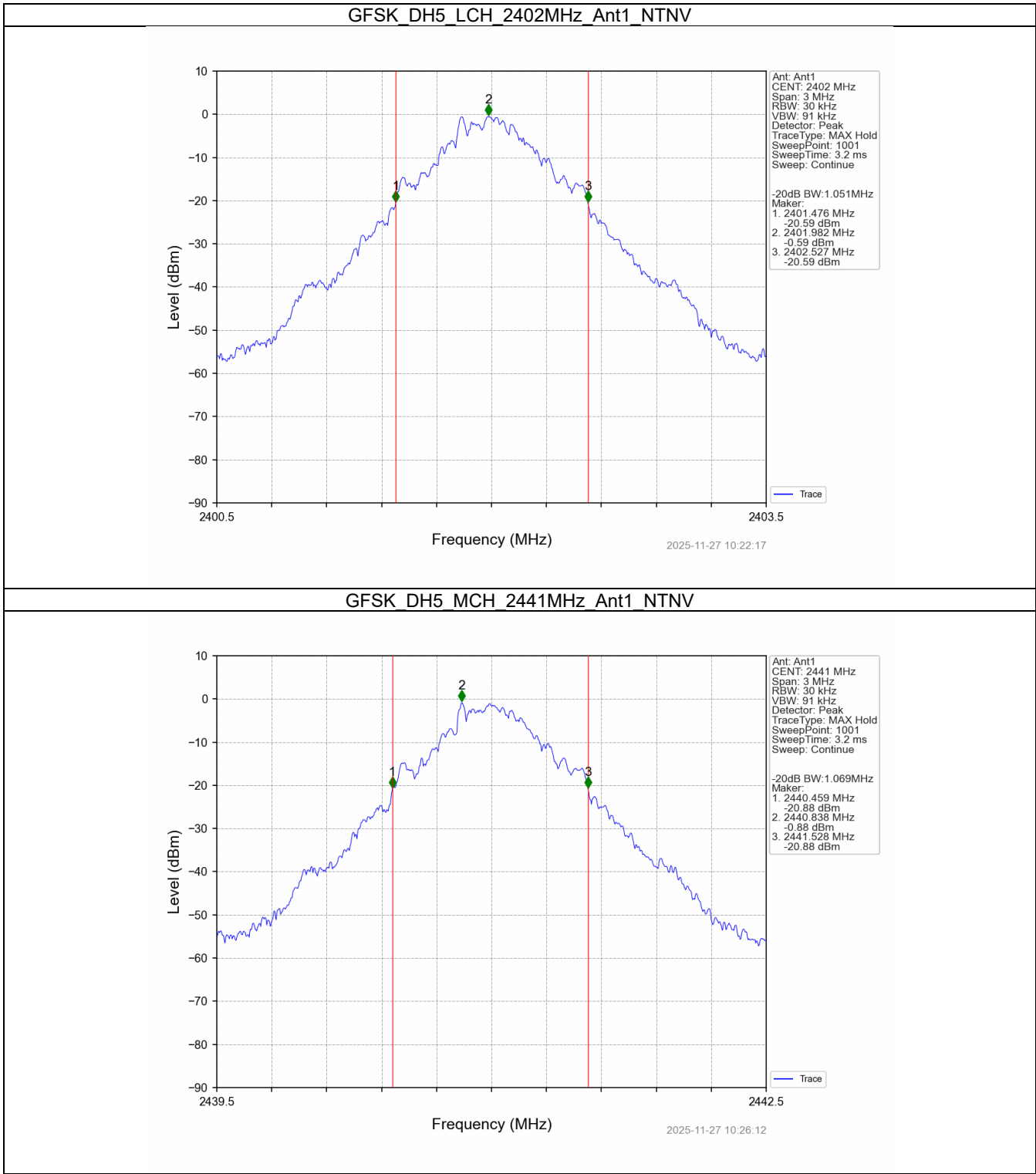
# Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



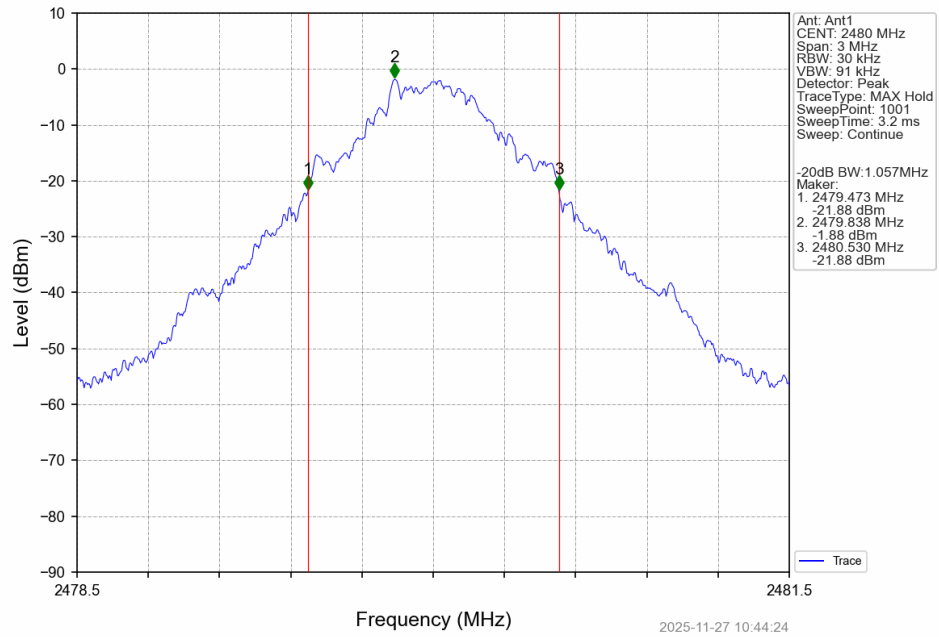
# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



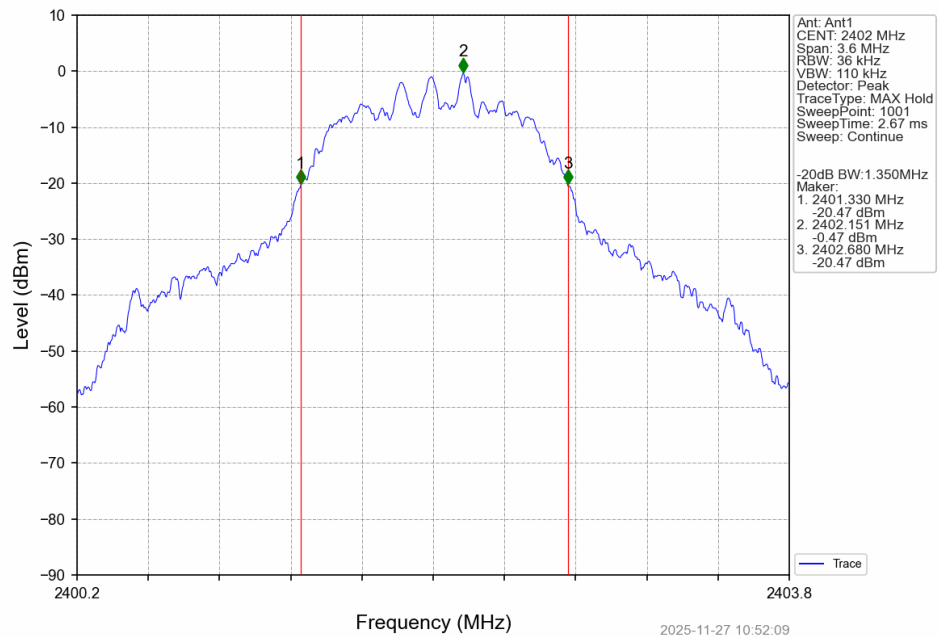
2.2.2 20dB BW



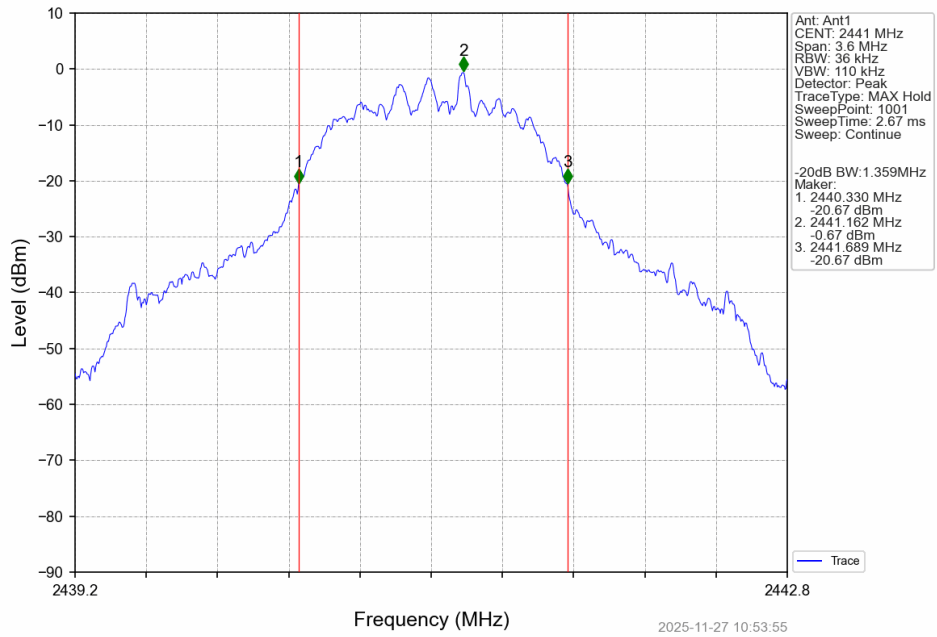
# GFSK DH5\_HCH\_2480MHz\_Ant1\_NTNV



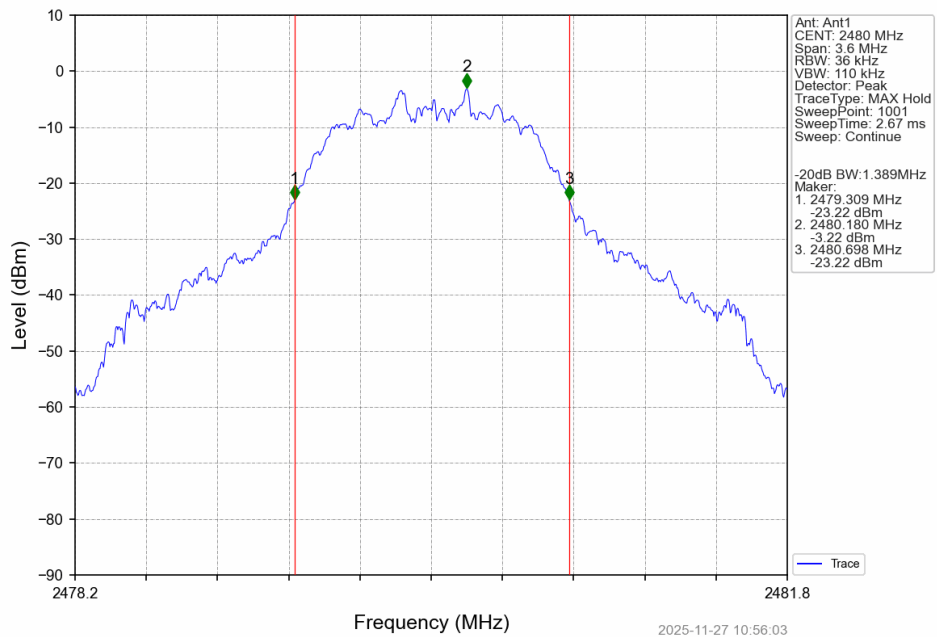
# Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



### 3. Maximum Conducted Output Power

#### 3.1 Test Result

##### 3.1.1 Power

| Mode      | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |         | Verdict |
|-----------|---------|-----------------|-------------|-------------------------------------------|---------|---------|
|           |         |                 |             | ANT1                                      | Limit   |         |
| GFSK      | SISO    | 2402            | DH5         | 1.77                                      | <=20.97 | Pass    |
|           |         | 2441            | DH5         | 1.48                                      | <=20.97 | Pass    |
|           |         | 2480            | DH5         | 0.65                                      | <=20.97 | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 2.42                                      | <=20.97 | Pass    |
|           |         | 2441            | 2DH5        | 2.19                                      | <=20.97 | Pass    |
|           |         | 2480            | 2DH5        | 1.39                                      | <=20.97 | Pass    |

## 4. Carrier Frequency Separation

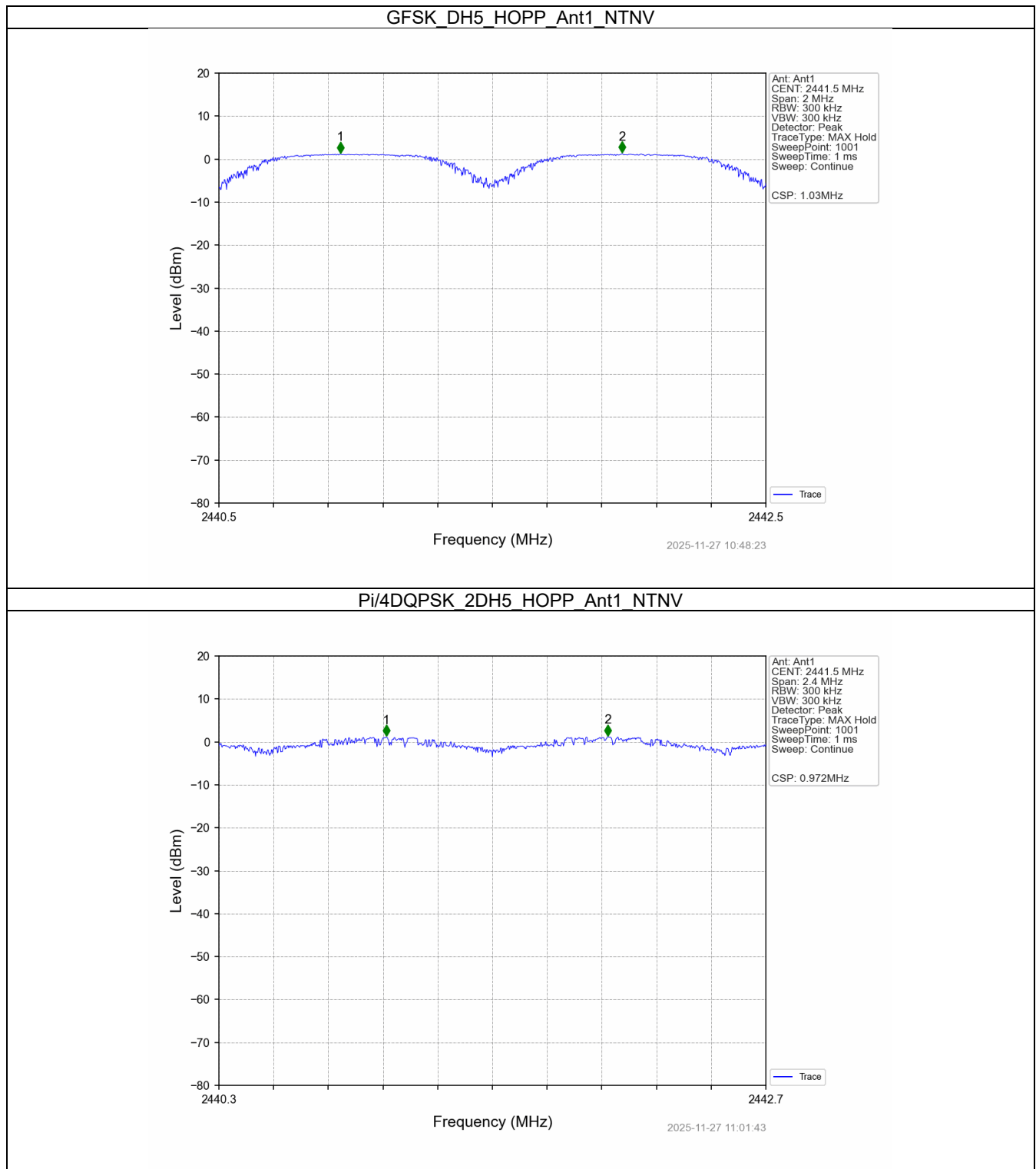
### 4.1 Test Result

#### 4.1.1 Ant1

| Ant1      |         |                 |             |                          |                      |              |         |
|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 1.030                    | 1.069                | $\geq 0.713$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 0.972                    | 1.389                | $\geq 0.926$ | Pass    |

## 4.2 Test Graph

### 4.2.1 Ant1



## 5. Number of Hopping Frequencies

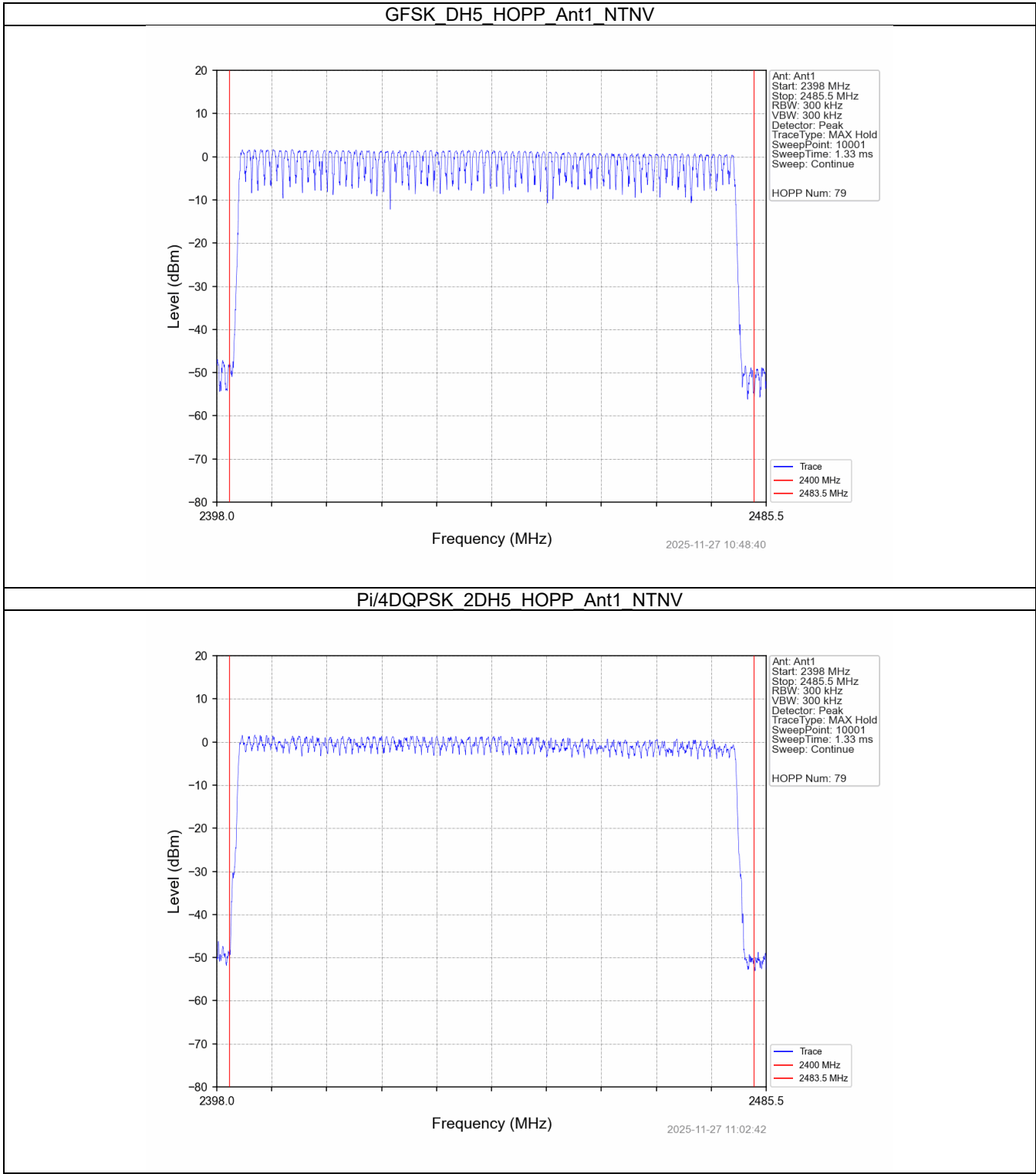
### 5.1 Test Result

#### 5.1.1 HoppNum

| Mode      | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |       | Verdict |
|-----------|---------|-----------------|-------------|----------------------------|-------|---------|
|           |         |                 |             | ANT1                       | Limit |         |
| GFSK      | SISO    | HOPP            | DH5         | 79                         | >=15  | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 79                         | >=15  | Pass    |

5.2 Test Graph

5.2.1 HoppNum



## 6. Time of Occupancy (Dwell Time)

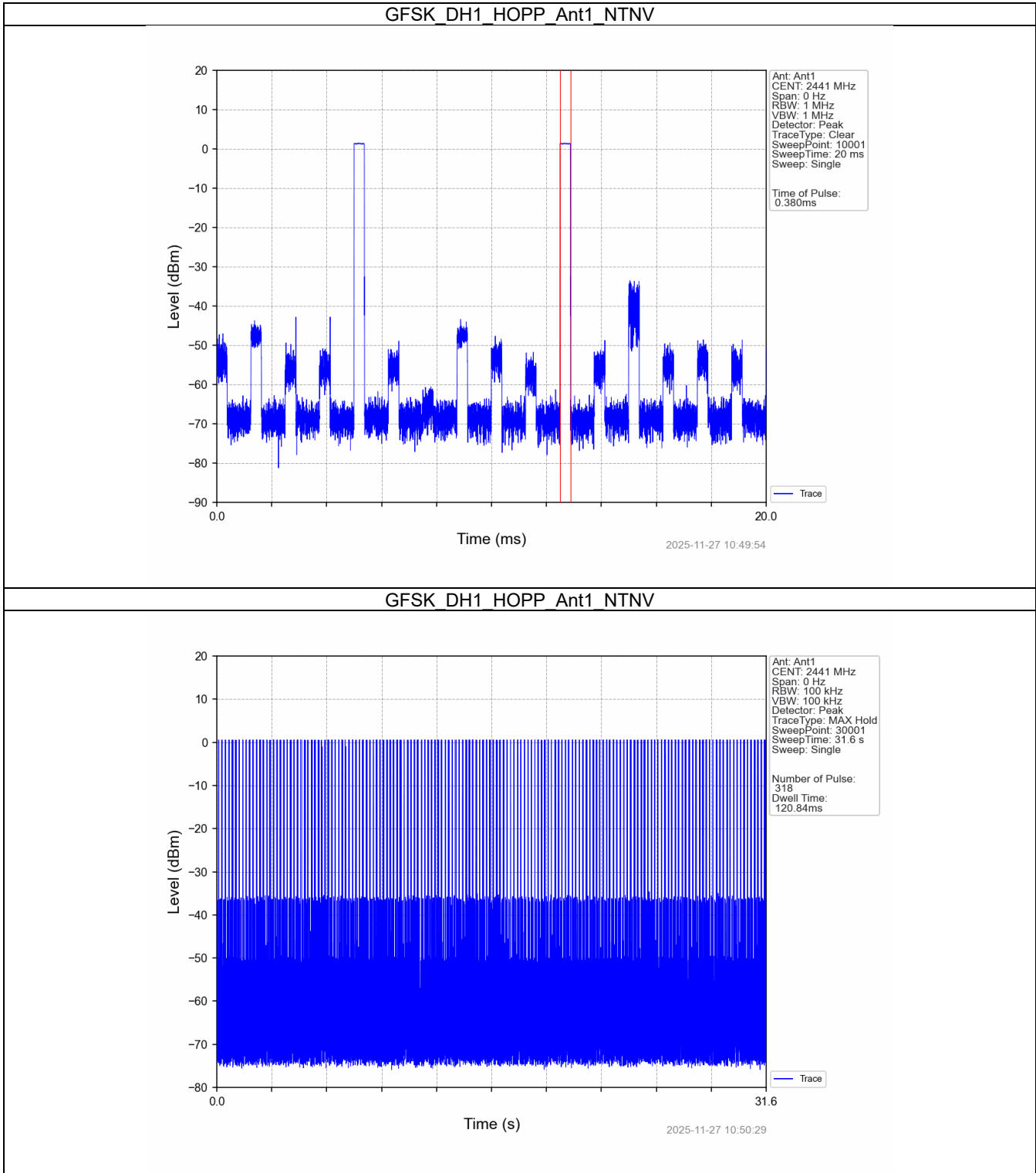
### 6.1 Test Result

#### 6.1.1 Ant1

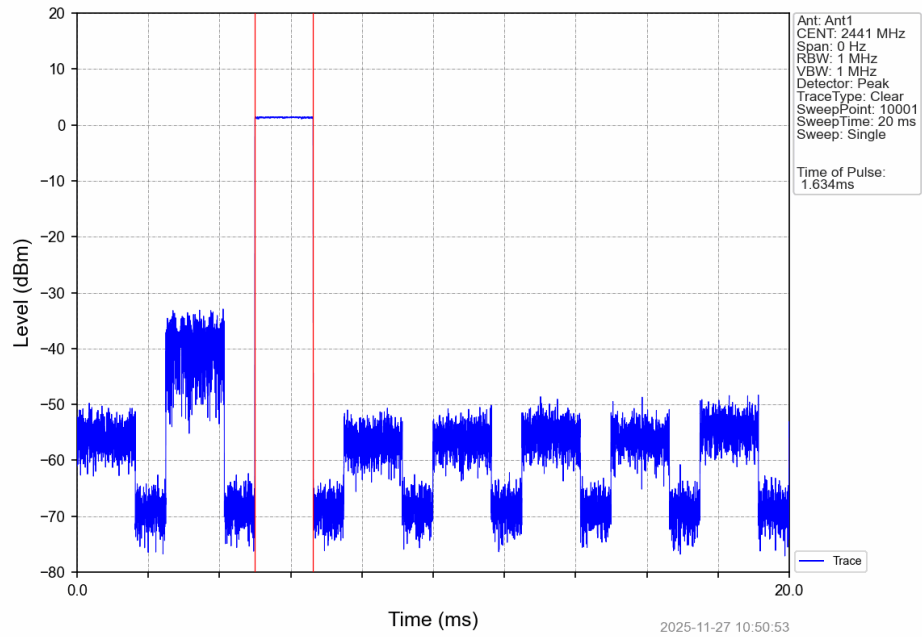
| Ant1      |         |                 |             |                               |                        |                                    |                 |            |         |
|-----------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Duration of Single Pulse (ms) | Observation Period (s) | Num of Pulse in Observation Period | Dwell Time (ms) | Limit (ms) | Verdict |
| GFSK      | SISO    | HOPP            | DH1         | 0.380                         | 31.600                 | 318                                | 120.840         | <=400      | Pass    |
|           |         |                 | DH3         | 1.634                         | 31.600                 | 164                                | 267.976         | <=400      | Pass    |
|           |         |                 | DH5         | 2.890                         | 31.600                 | 110                                | 317.900         | <=400      | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH1        | 0.394                         | 31.600                 | 318                                | 125.292         | <=400      | Pass    |
|           |         |                 | 2DH3        | 1.642                         | 31.600                 | 168                                | 275.856         | <=400      | Pass    |
|           |         |                 | 2DH5        | 2.894                         | 31.600                 | 109                                | 315.446         | <=400      | Pass    |

6.2 Test Graph

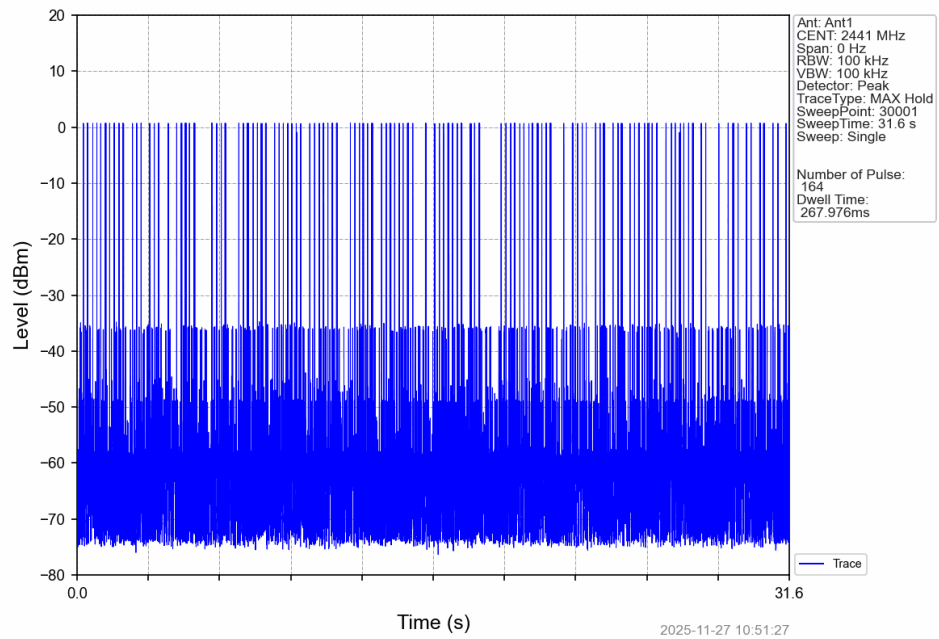
6.2.1 Ant1



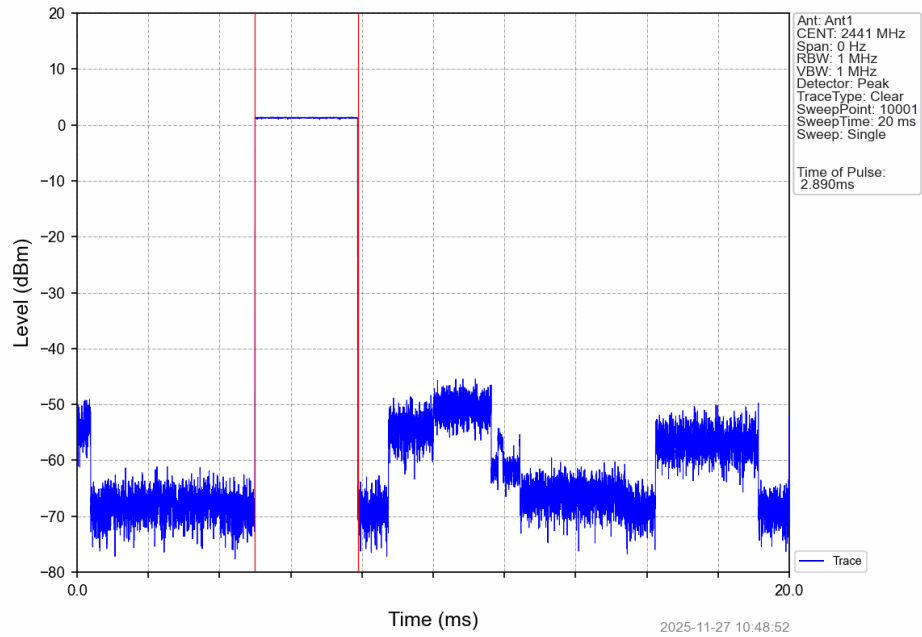
# GFSK\_DH3\_HOPP\_Ant1\_NTNV



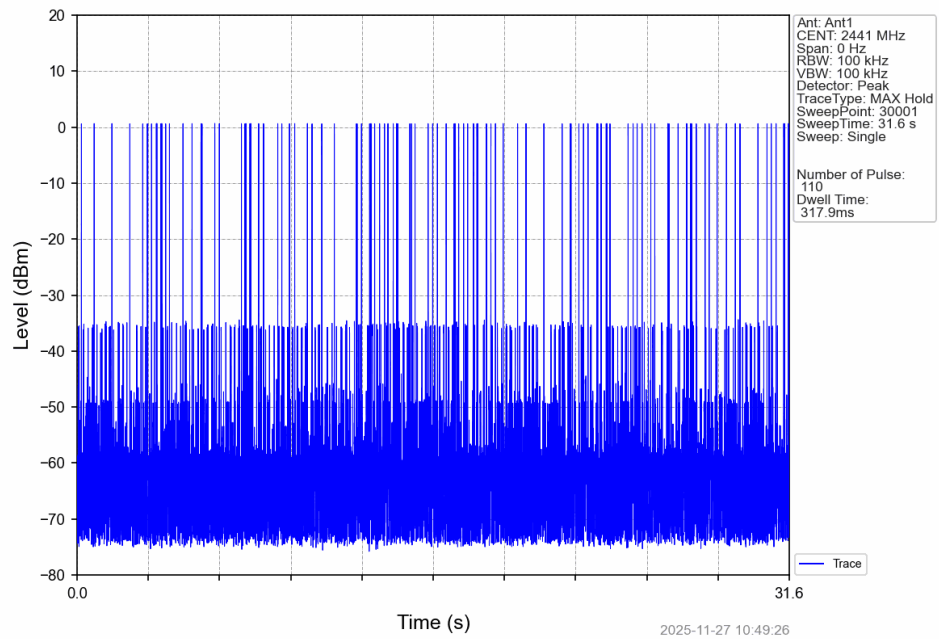
# GFSK\_DH3\_HOPP\_Ant1\_NTNV



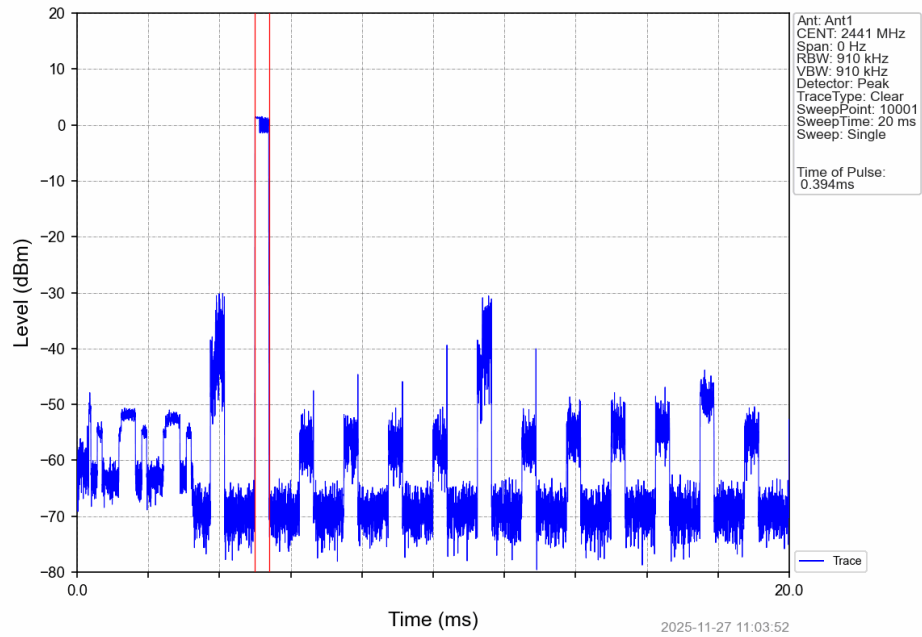
# GFSK\_DH5\_HOPP\_Ant1\_NTNV



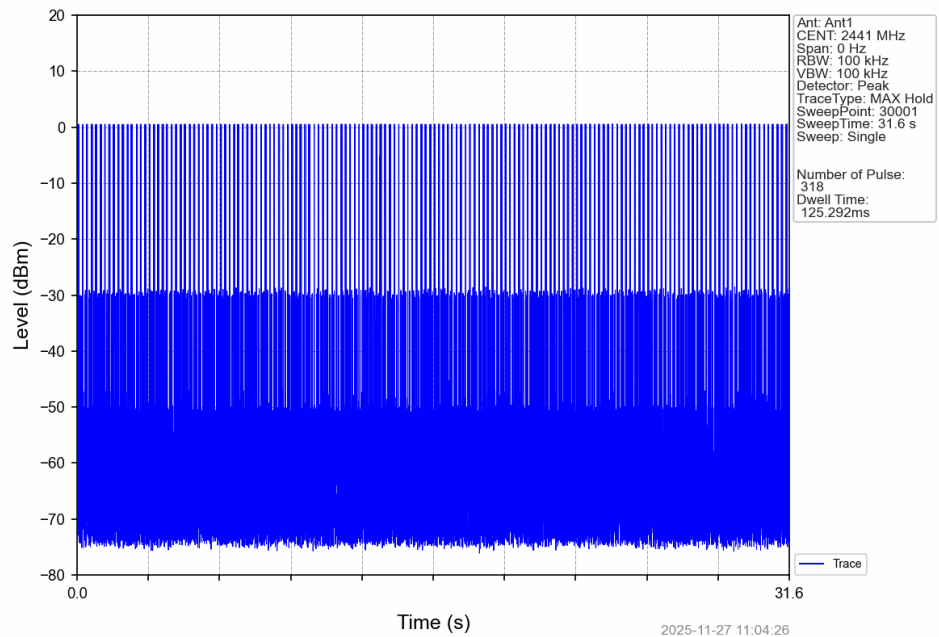
# GFSK\_DH5\_HOPP\_Ant1\_NTNV



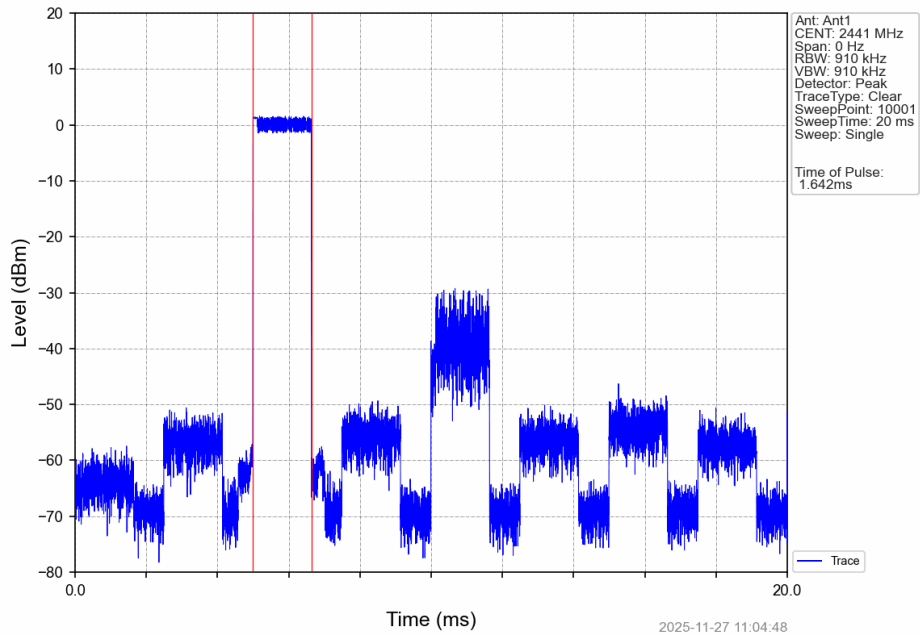
# Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



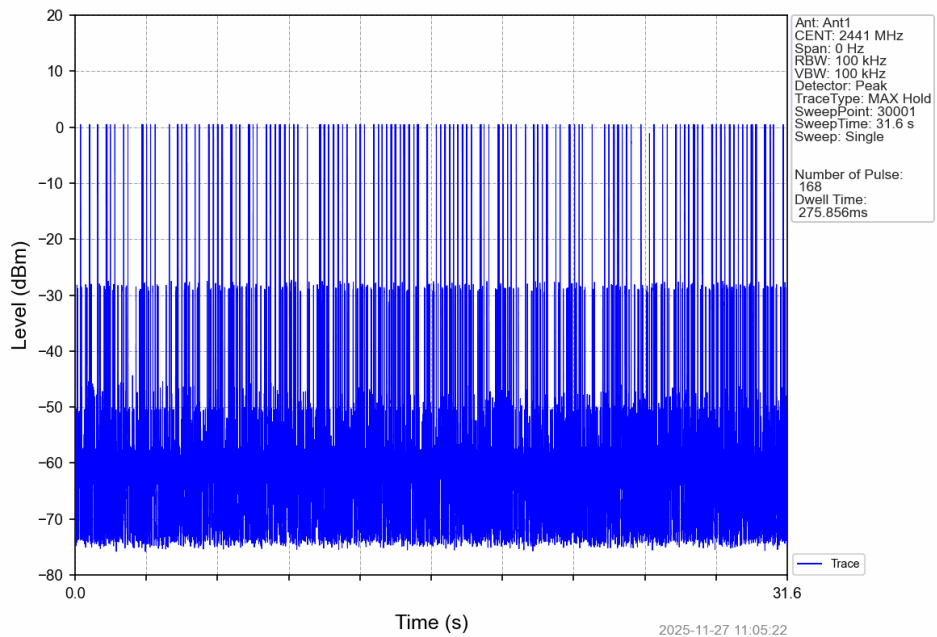
# Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



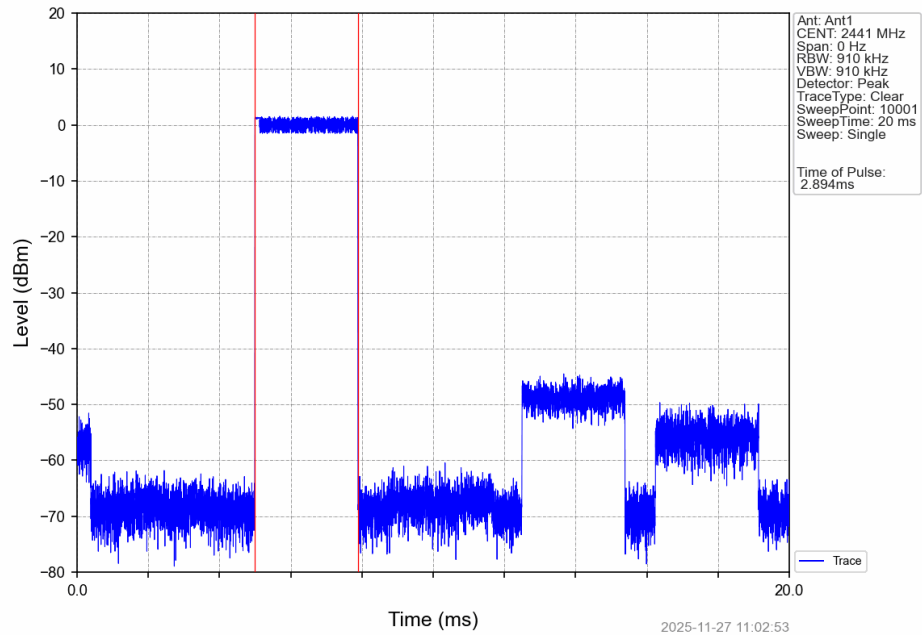
# Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



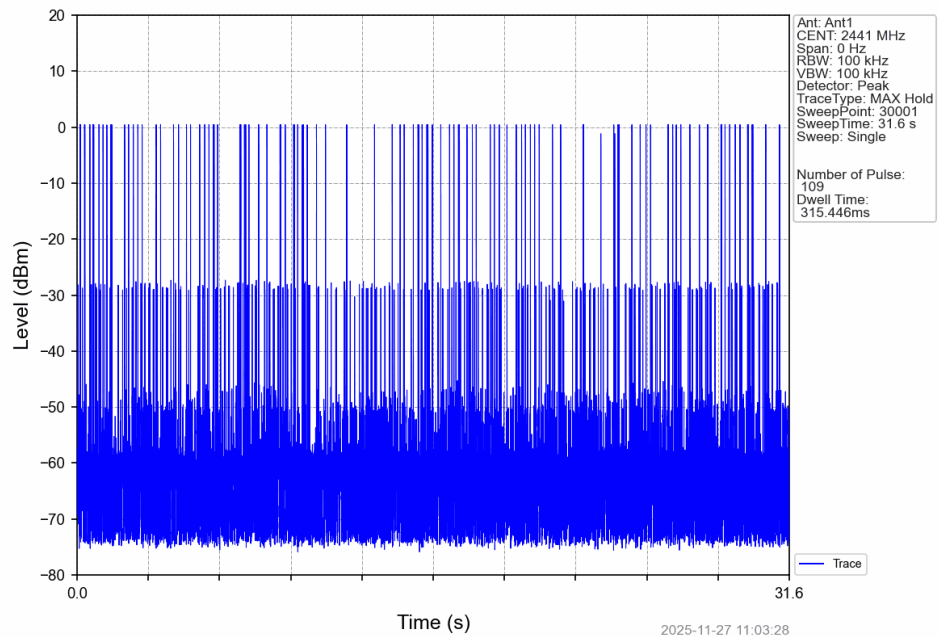
# Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



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

### 7.1 Test Result

#### 7.1.1 Ref

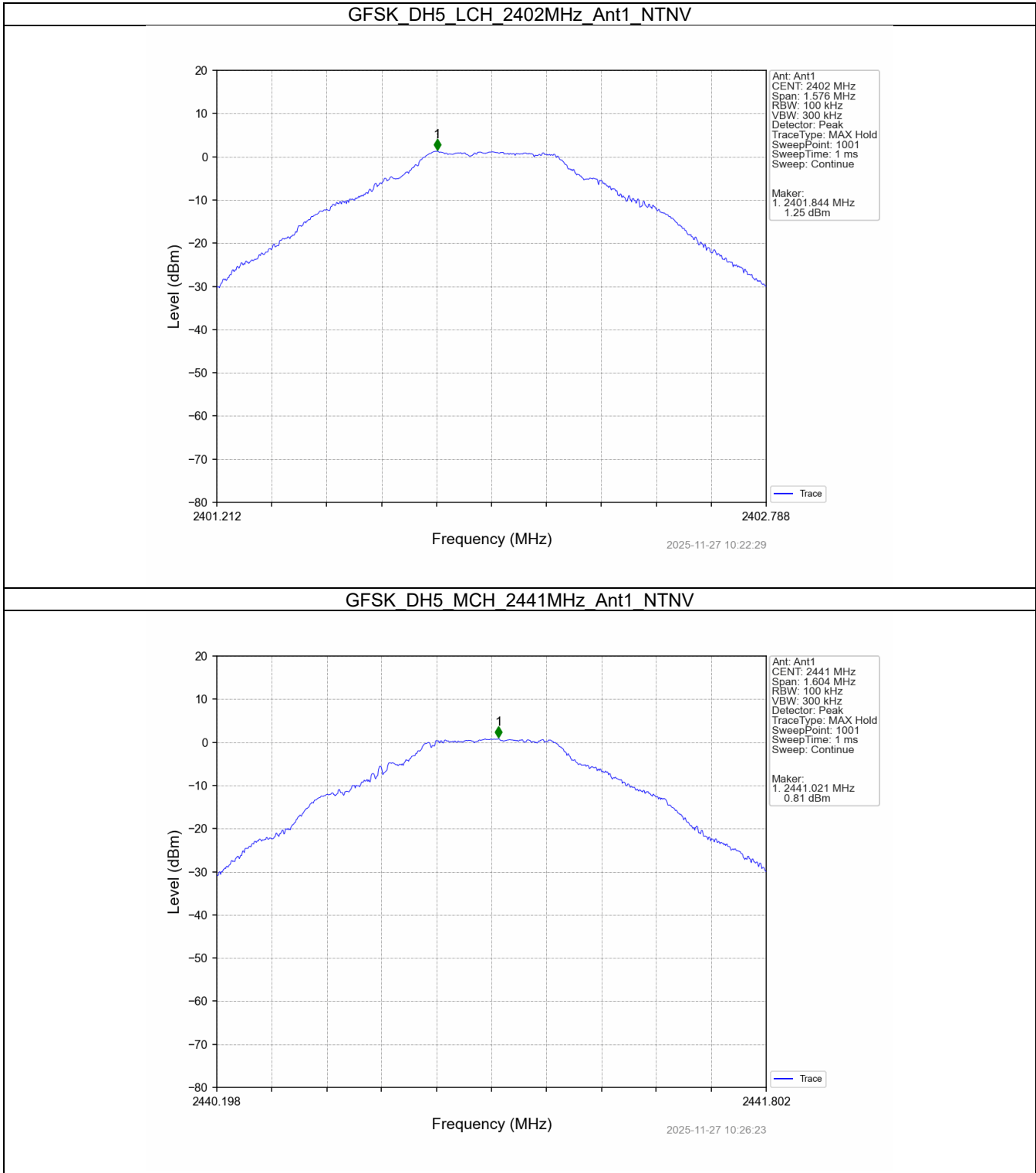
| Mode                                                                                                                                            | Tx Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | 1.25                     |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | 0.81                     |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | 0.03                     |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | 1.29                     |
|                                                                                                                                                 |         |                 |             |     | 1.29                     |
| Pi/4DQPSK                                                                                                                                       | SISO    | 2402            | 2DH5        | 1   | 1.16                     |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | 0.84                     |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -0.08                    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | 1.13                     |
|                                                                                                                                                 |         |                 |             |     | 1.13                     |
| 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. |         |                 |             |     |                          |

#### 7.1.2 CSE

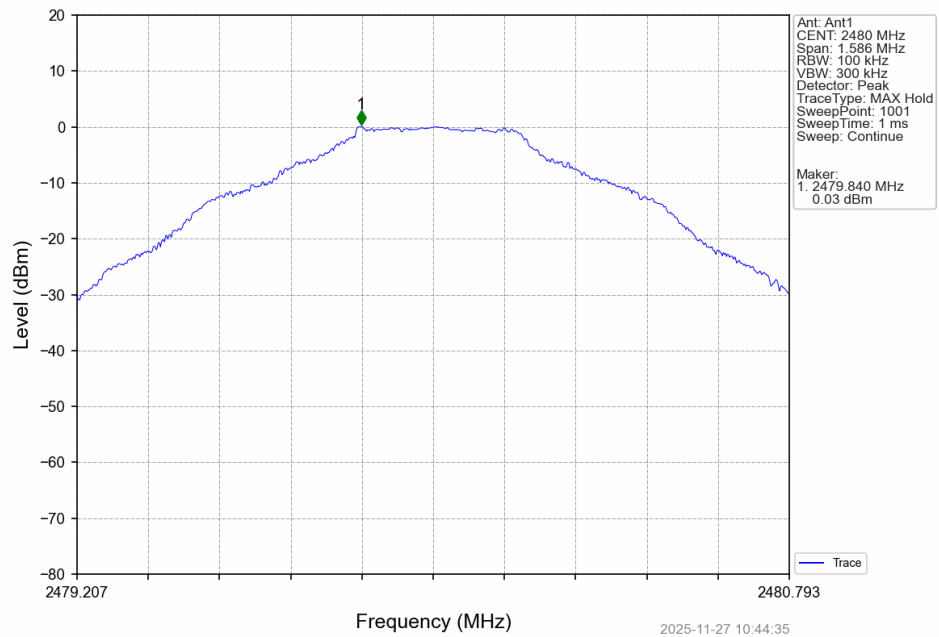
| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | 1.25                     | -18.75      | Pass    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | 0.81                     | -19.19      | Pass    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | 0.03                     | -19.97      | Pass    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | 1.29                     | -18.71      | Pass    |
|                                                                                                                                                 |         |                 |             |     | 1.29                     | -18.71      | Pass    |
| Pi/4DQPSK                                                                                                                                       | SISO    | 2402            | 2DH5        | 1   | 1.16                     | -18.84      | Pass    |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | 0.84                     | -19.16      | Pass    |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -0.08                    | -20.08      | Pass    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | 1.13                     | -18.87      | Pass    |
|                                                                                                                                                 |         |                 |             |     | 1.13                     | -18.87      | 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. |         |                 |             |     |                          |             |         |

7.2 Test Graph

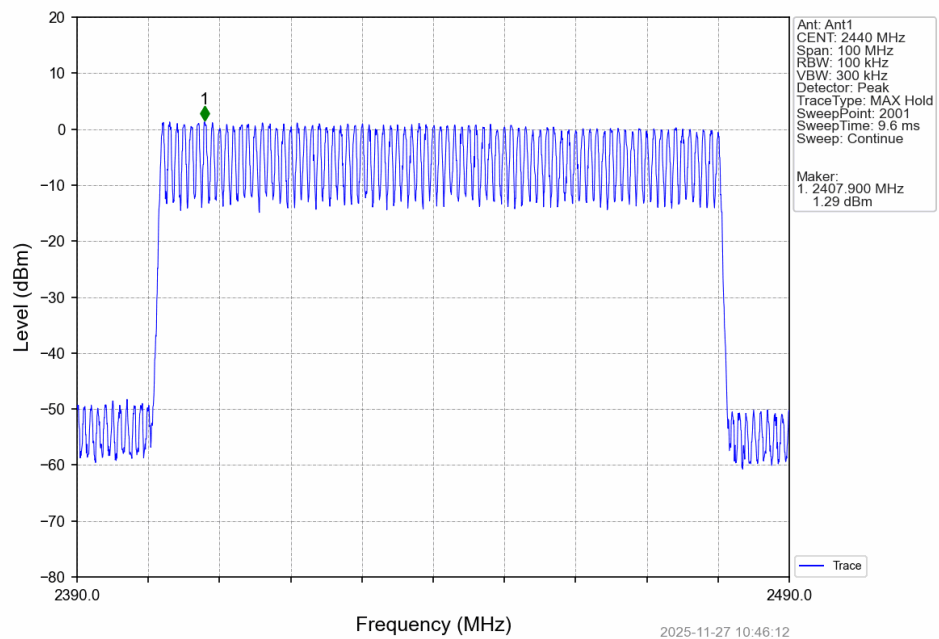
7.2.1 Ref



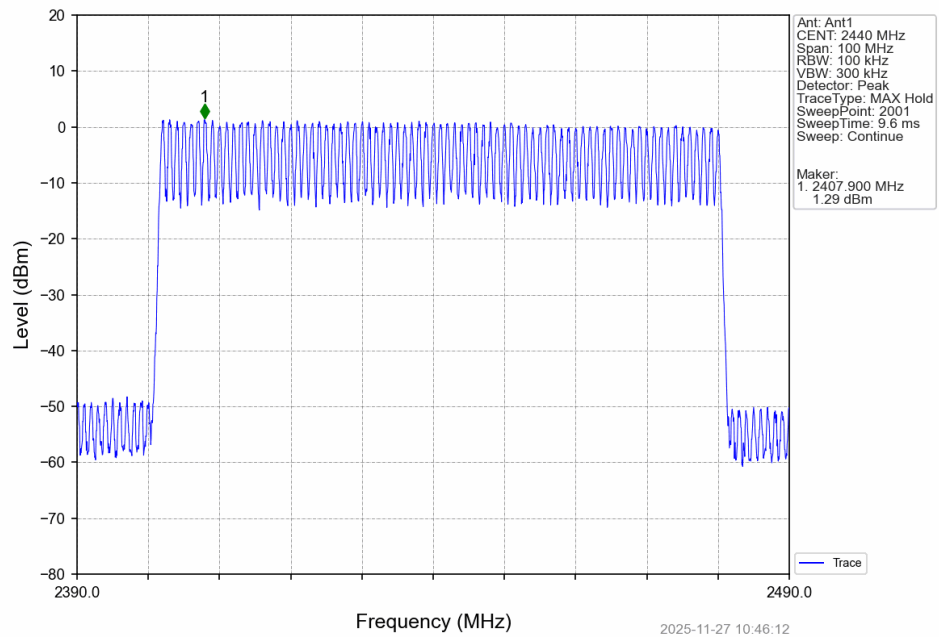
# GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



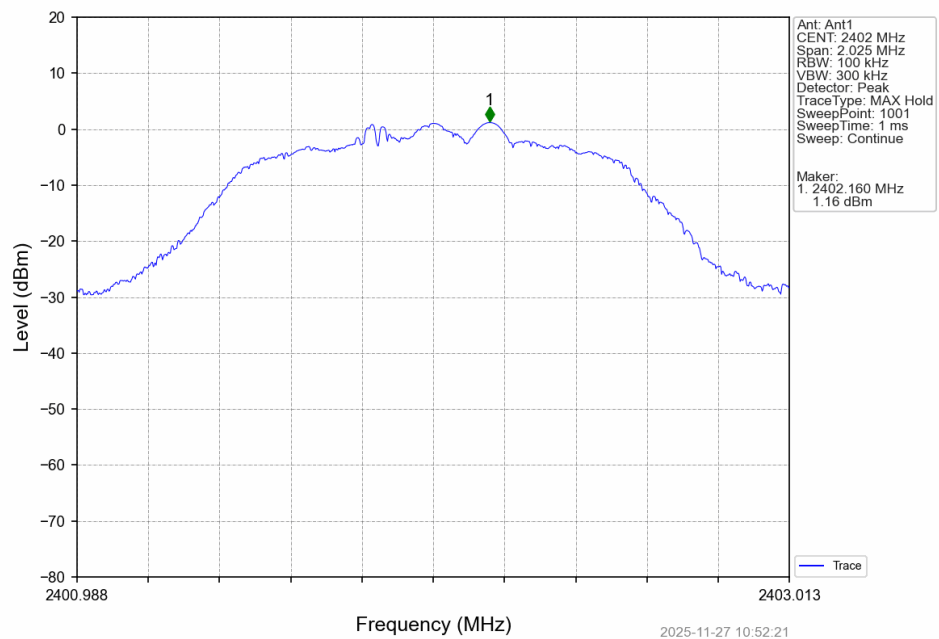
# GFSK\_DH5\_HOPP\_Ant1\_NTNV



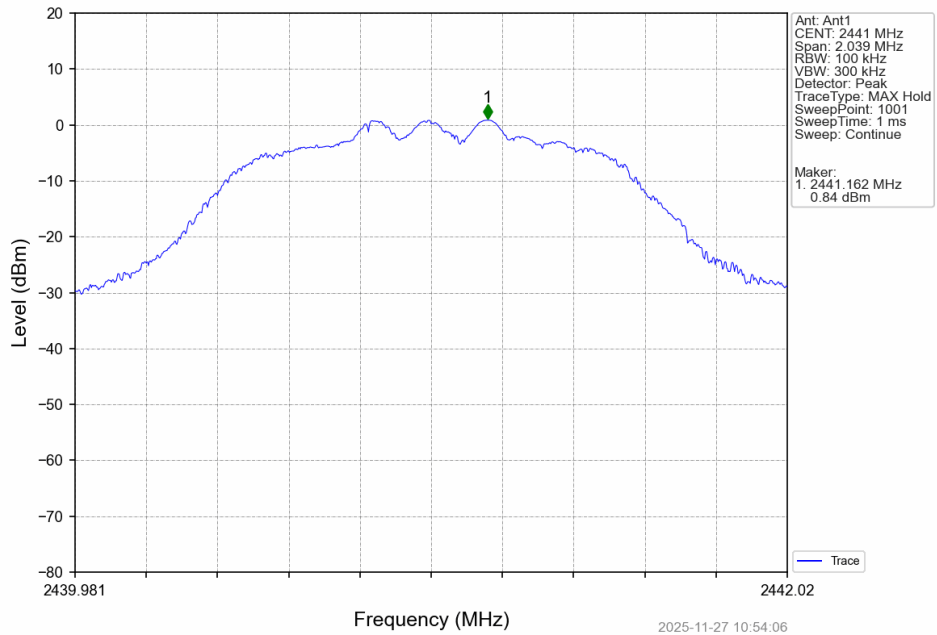
# GFSK\_DH5\_HOPP\_Ant1\_NTNV



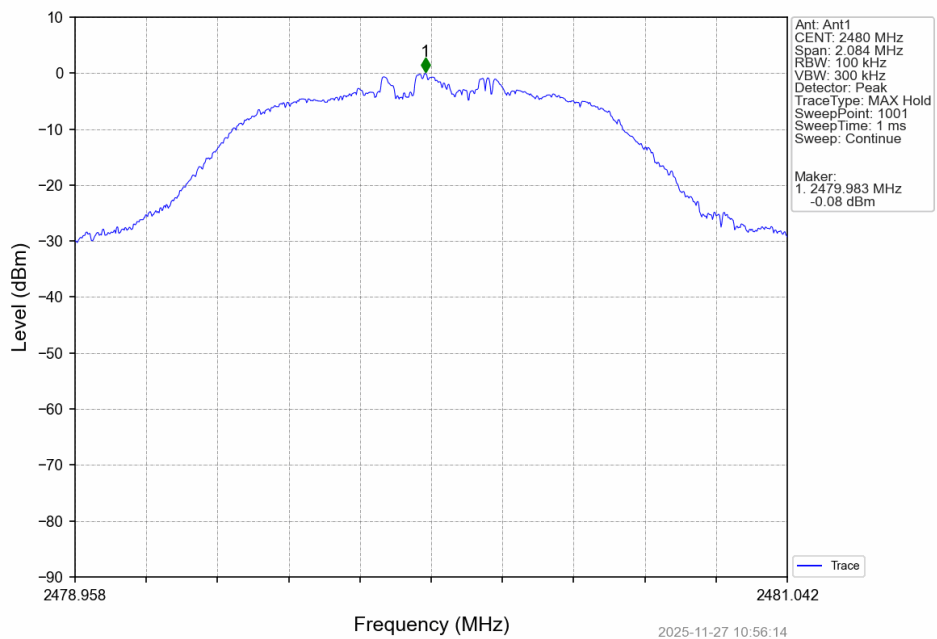
# Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



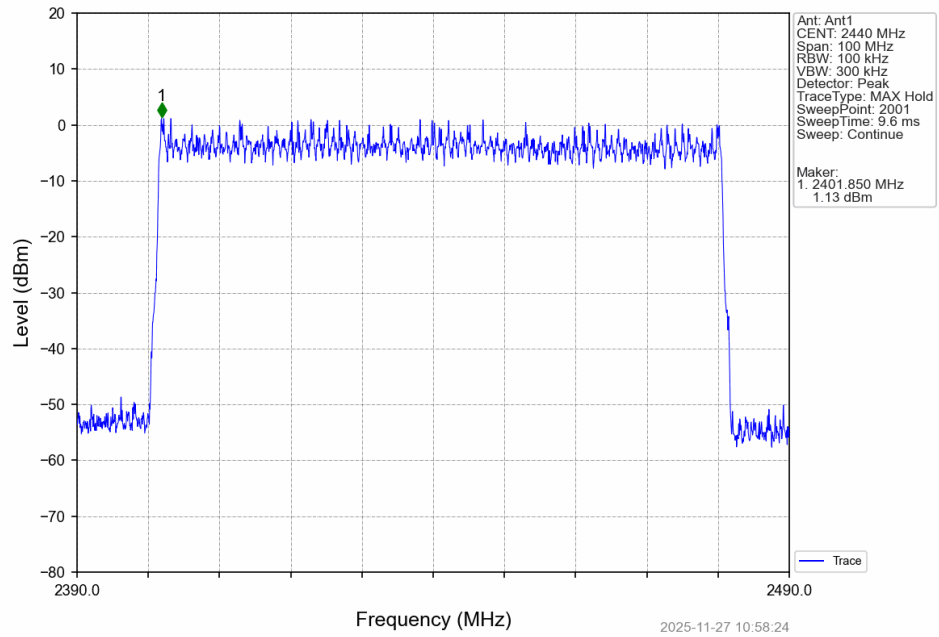
# Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



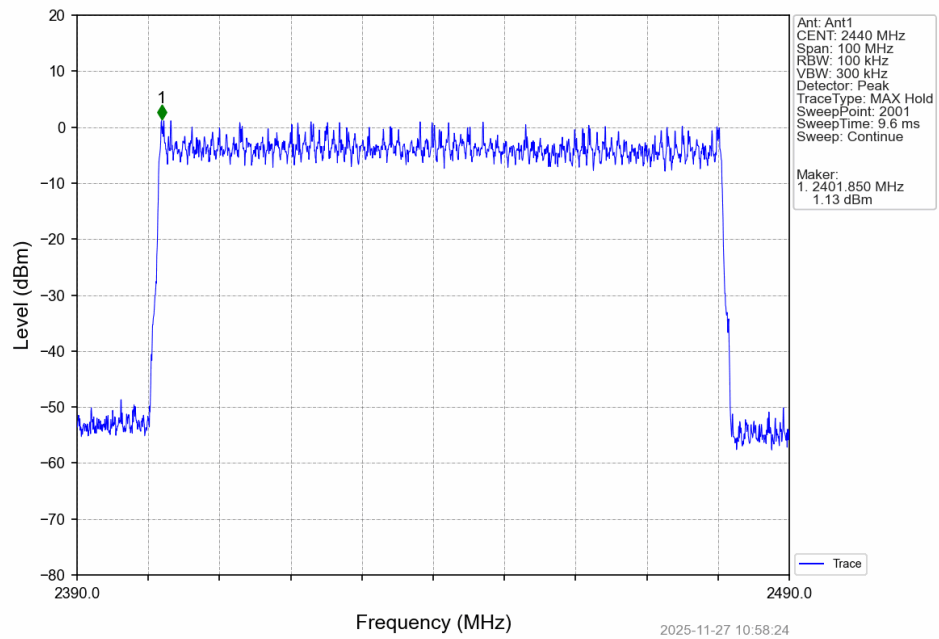
# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



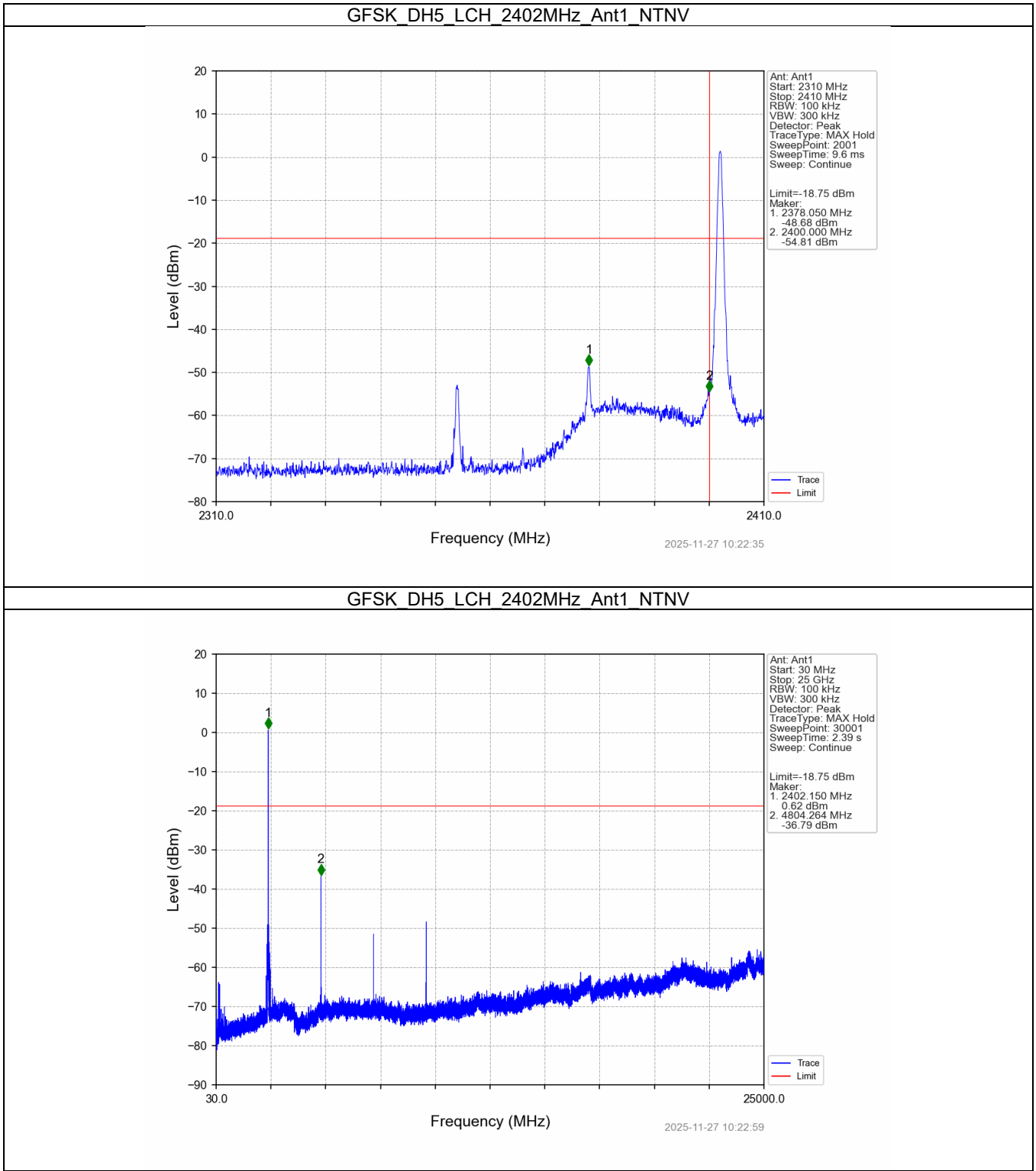
# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



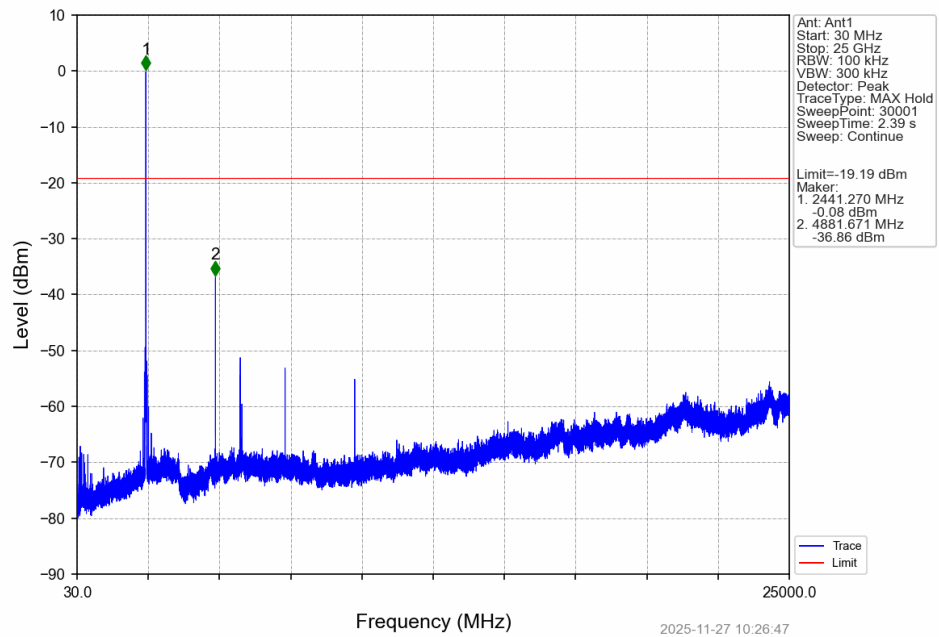
# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



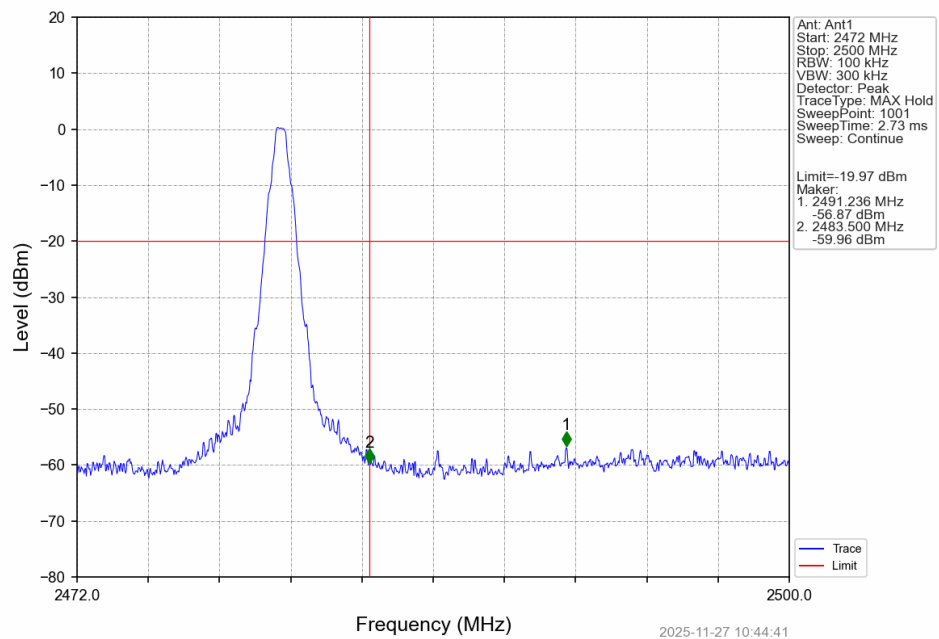
7.2.2 CSE



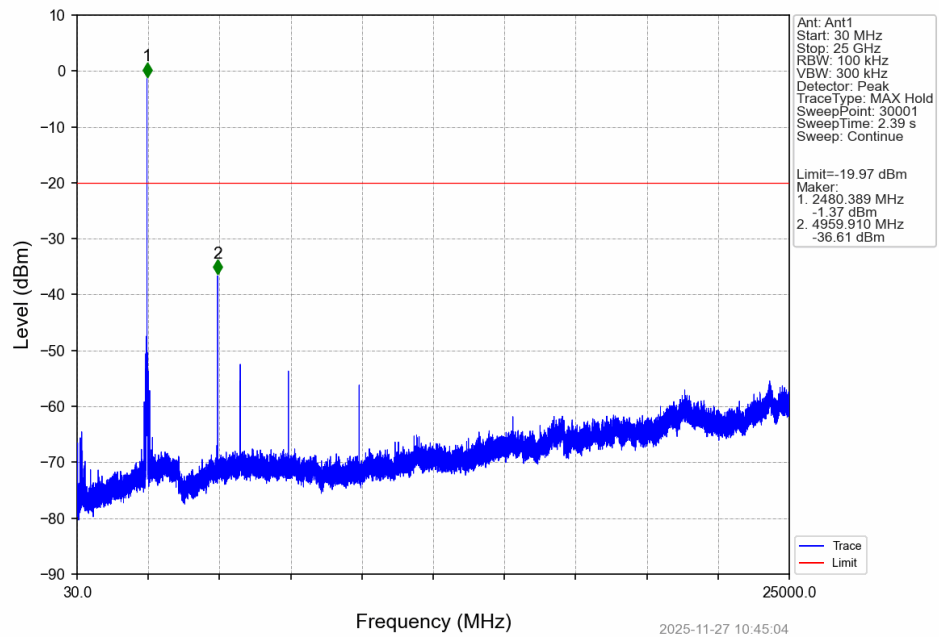
### GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



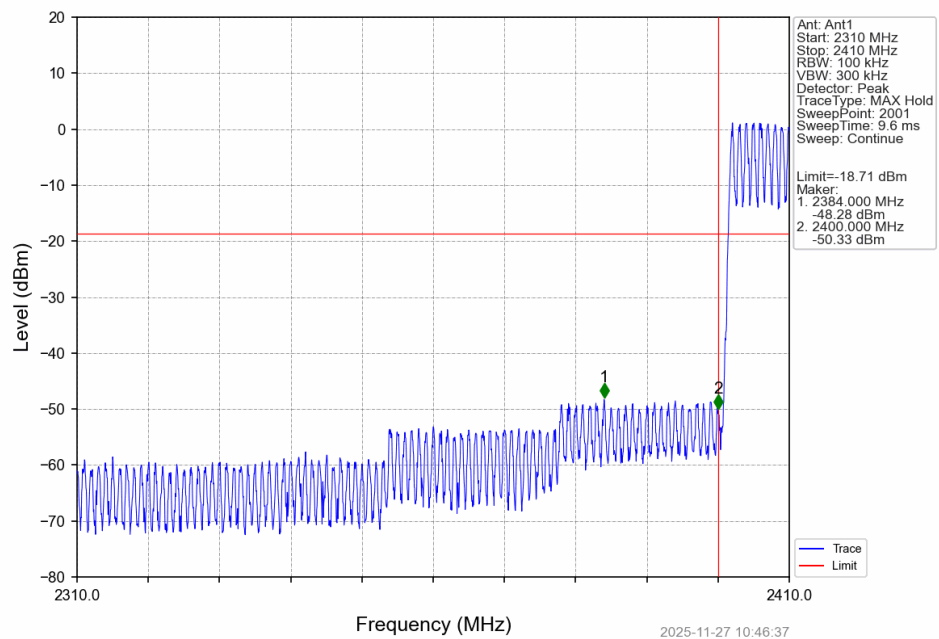
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



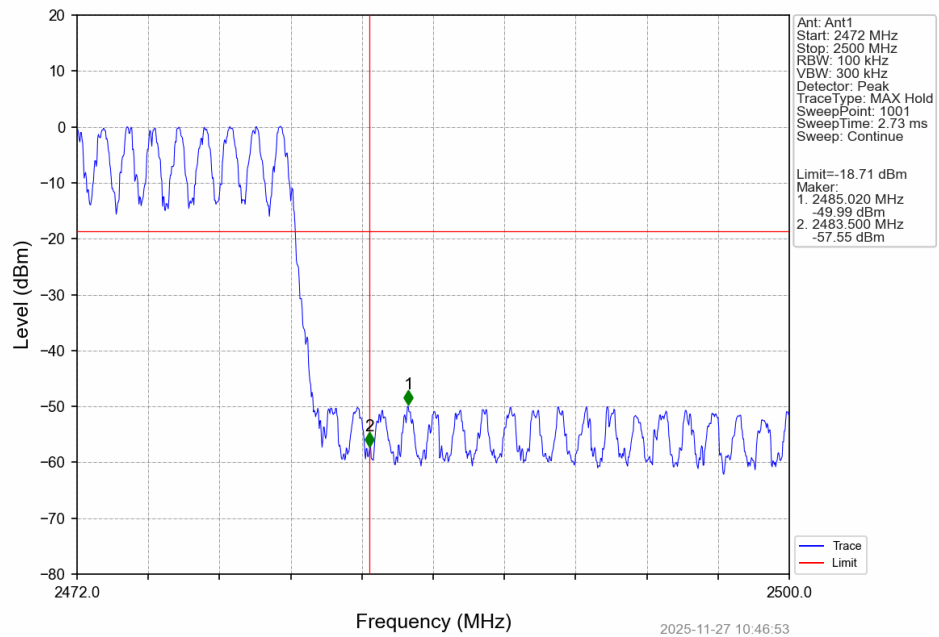
# GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



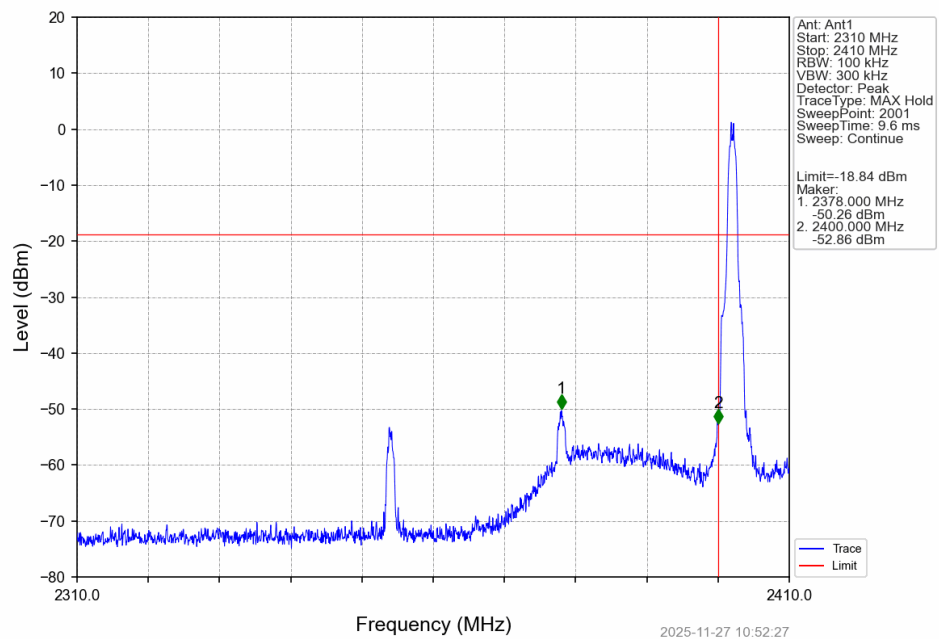
# GFSK\_DH5\_HOPP\_Ant1\_NTNV



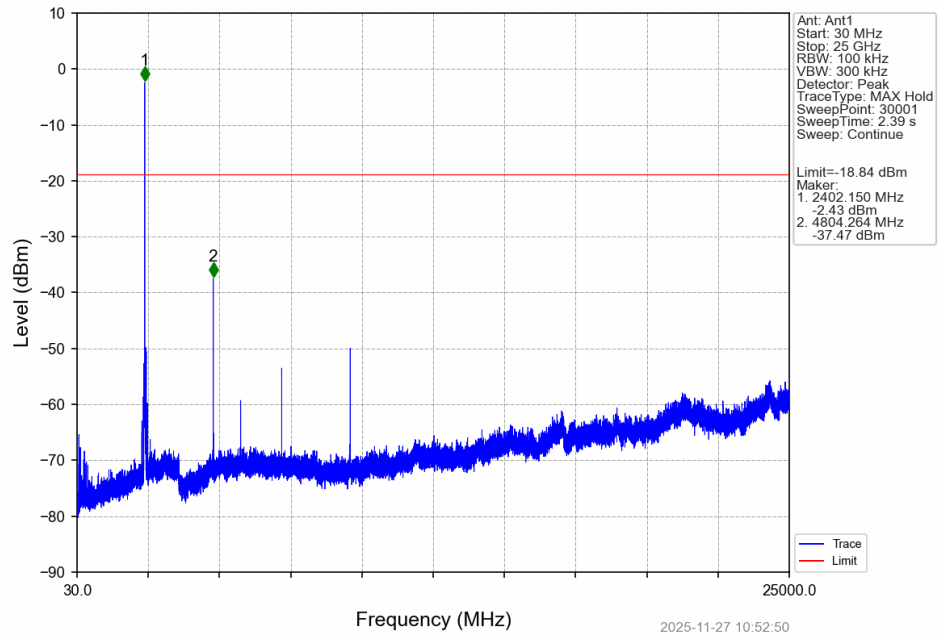
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



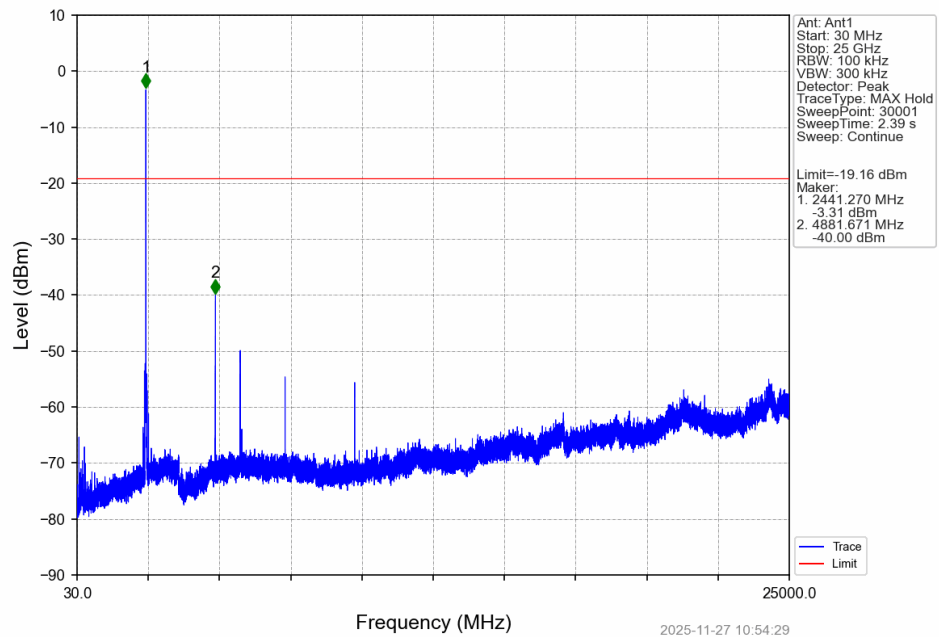
### Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



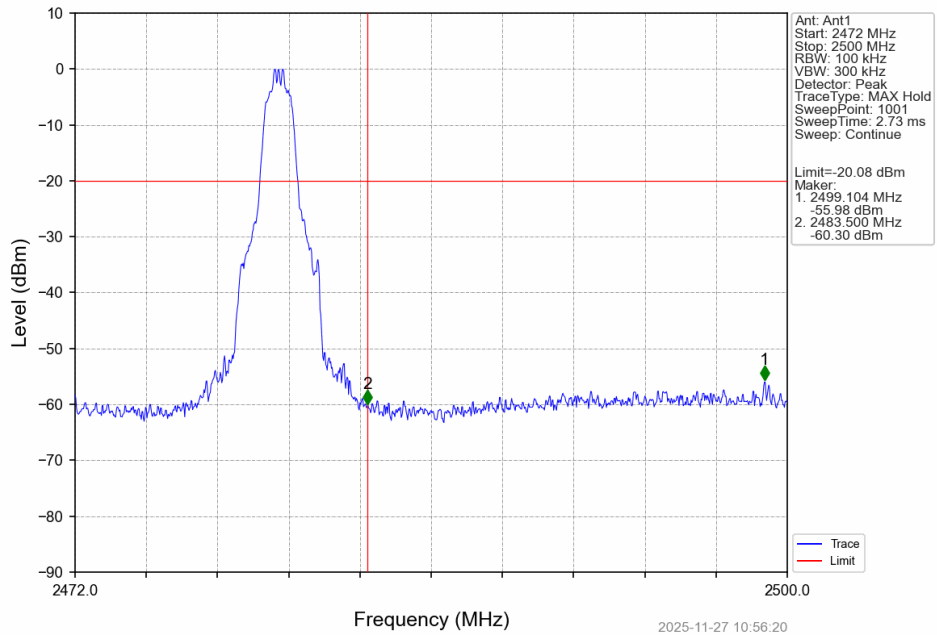
# Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



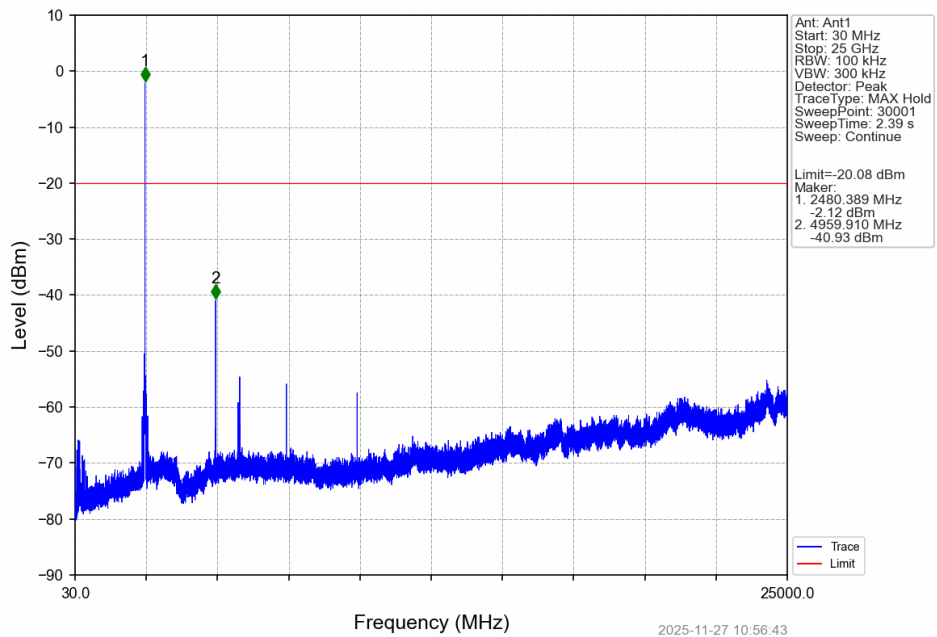
# Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



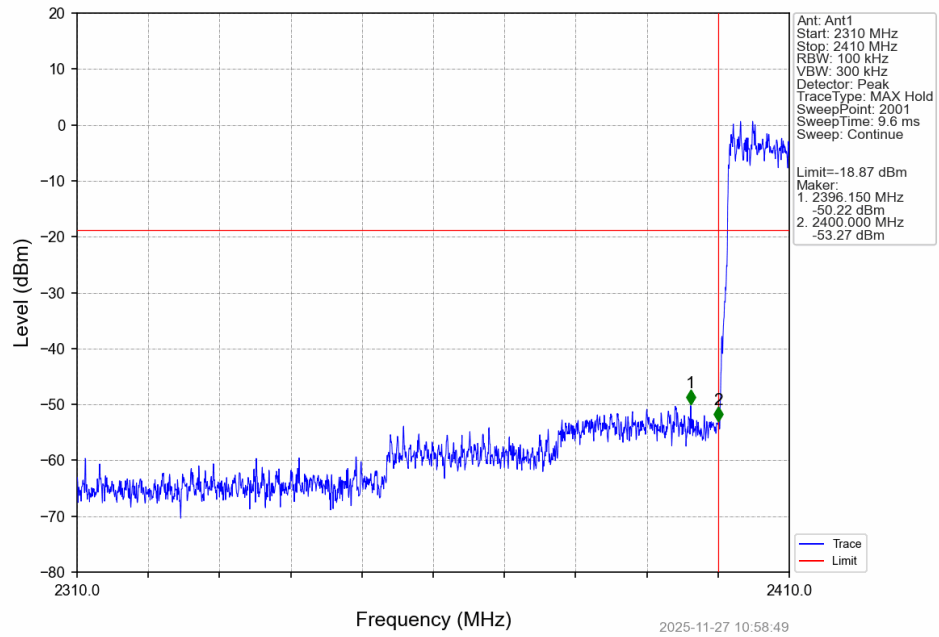
# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



# Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV

