

## ANNEX D TEST DATA

For

|                |                    |
|----------------|--------------------|
| Project No.:   | 8326EU122101W      |
| Client:        | Sudio AB           |
| Product Name:  | Bluetooth earphone |
| Model No.:     | Sudio N3           |
| FCC ID:        | 2AF9P-SUDIOAN3     |
| Technology:    | Bluetooth BDR&EDR  |
| Test Engineer: | <i>Mikoy zhu</i>   |
| Test Date:     | 2025-02-06         |

## Test Summary

| Item                                                 | Result |
|------------------------------------------------------|--------|
| Duty Cycle                                           | Pass   |
| Bandwidth                                            | Pass   |
| Maximum Conducted Output Power                       | Pass   |
| Carrier Frequency Separation                         | Pass   |
| Number of Hopping Frequencies                        | Pass   |
| Time of Occupancy (Dwell Time)                       | Pass   |
| Unwanted Emissions In Non-restricted Frequency Bands | Pass   |

## 1. Duty Cycle

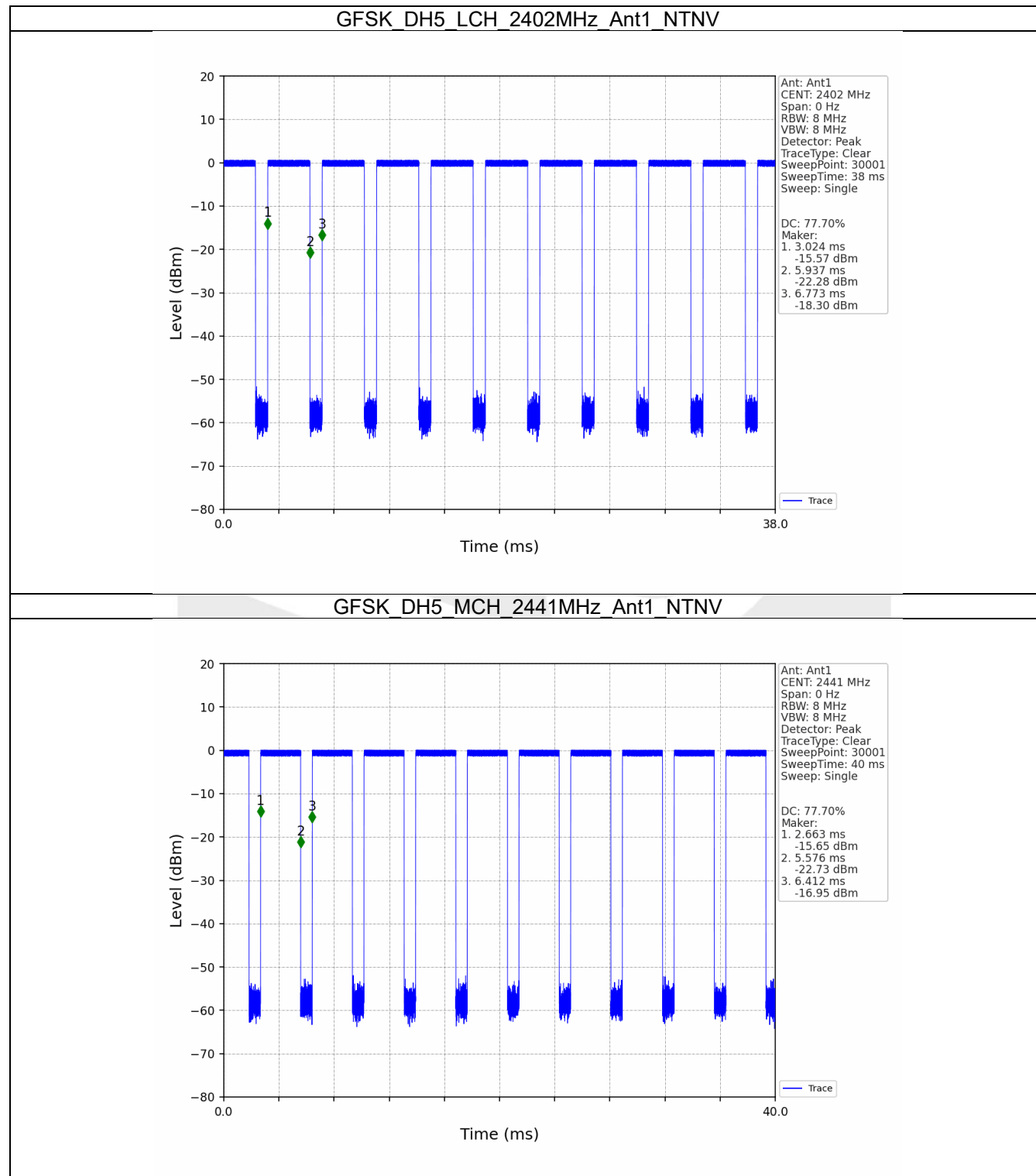
### 1.1 Test Result

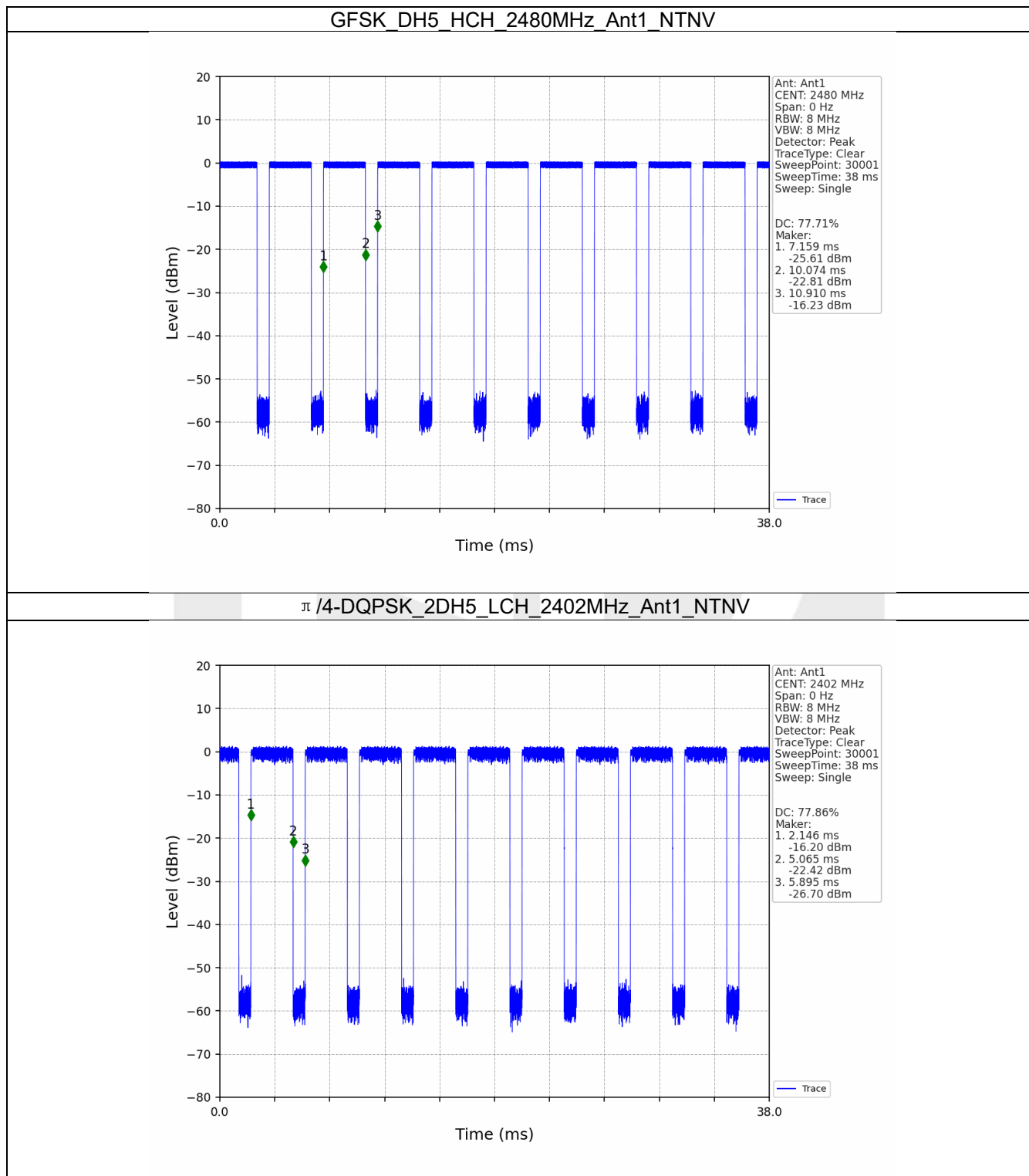
#### 1.1.1 Ant1

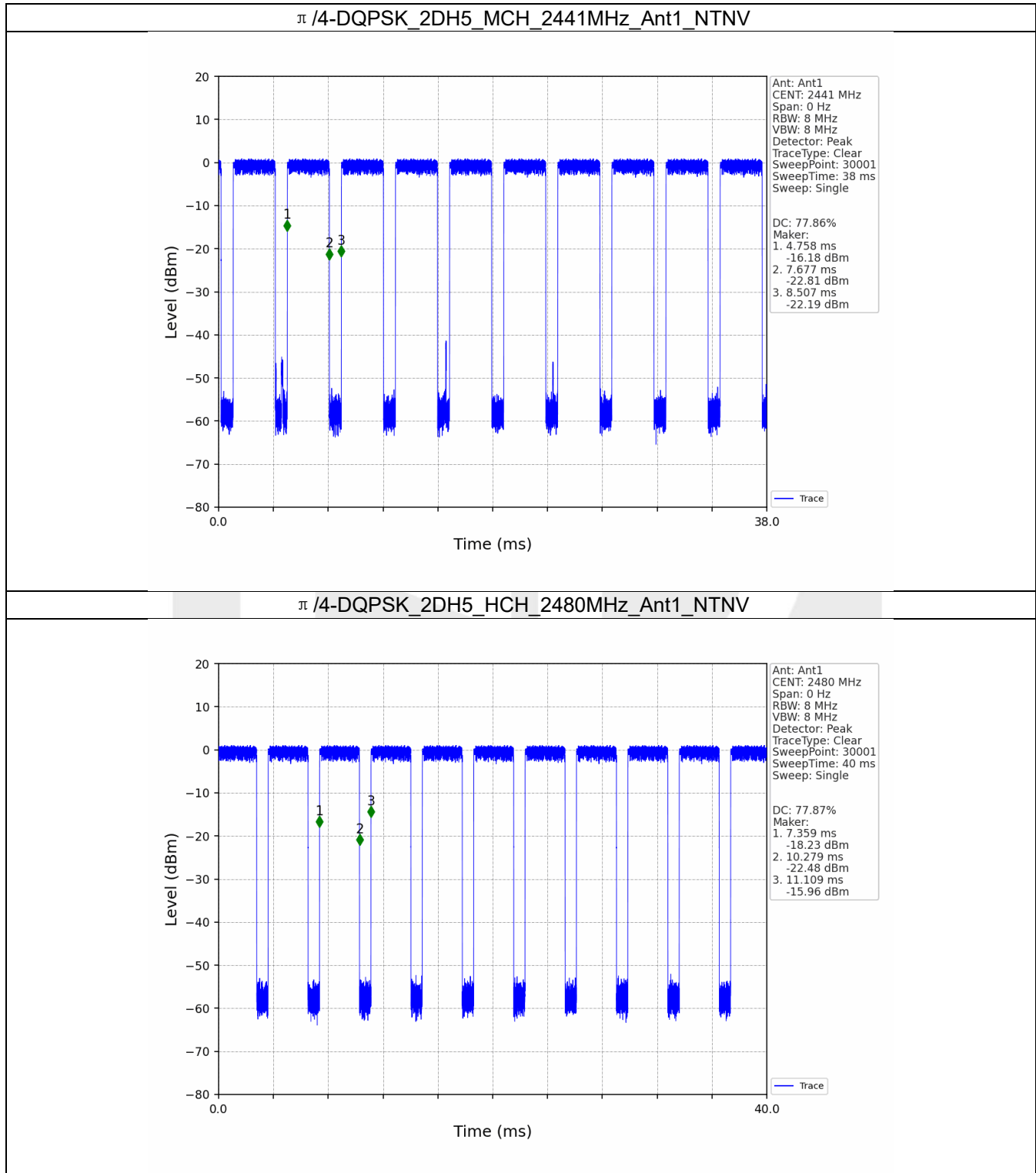
| Ant1           |         |                 |             |           |             |                |                                   |                       |
|----------------|---------|-----------------|-------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| 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         | 2.913     | 3.749       | 77.70          | 1.10                              | 0.03                  |
|                |         | 2441            | DH5         | 2.913     | 3.749       | 77.70          | 1.10                              | 0.04                  |
|                |         | 2480            | DH5         | 2.915     | 3.751       | 77.71          | 1.10                              | 0.03                  |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | 2.919     | 3.749       | 77.86          | 1.09                              | 0.03                  |
|                |         | 2441            | 2DH5        | 2.919     | 3.749       | 77.86          | 1.09                              | 0.01                  |
|                |         | 2480            | 2DH5        | 2.920     | 3.750       | 77.87          | 1.09                              | 0.03                  |
| 8DPSK          | SISO    | 2402            | 3DH5        | 2.923     | 3.749       | 77.97          | 1.08                              | 0.01                  |
|                |         | 2441            | 3DH5        | 2.924     | 3.751       | 77.95          | 1.08                              | 0.03                  |
|                |         | 2480            | 3DH5        | 2.923     | 3.750       | 77.95          | 1.08                              | 4.02                  |

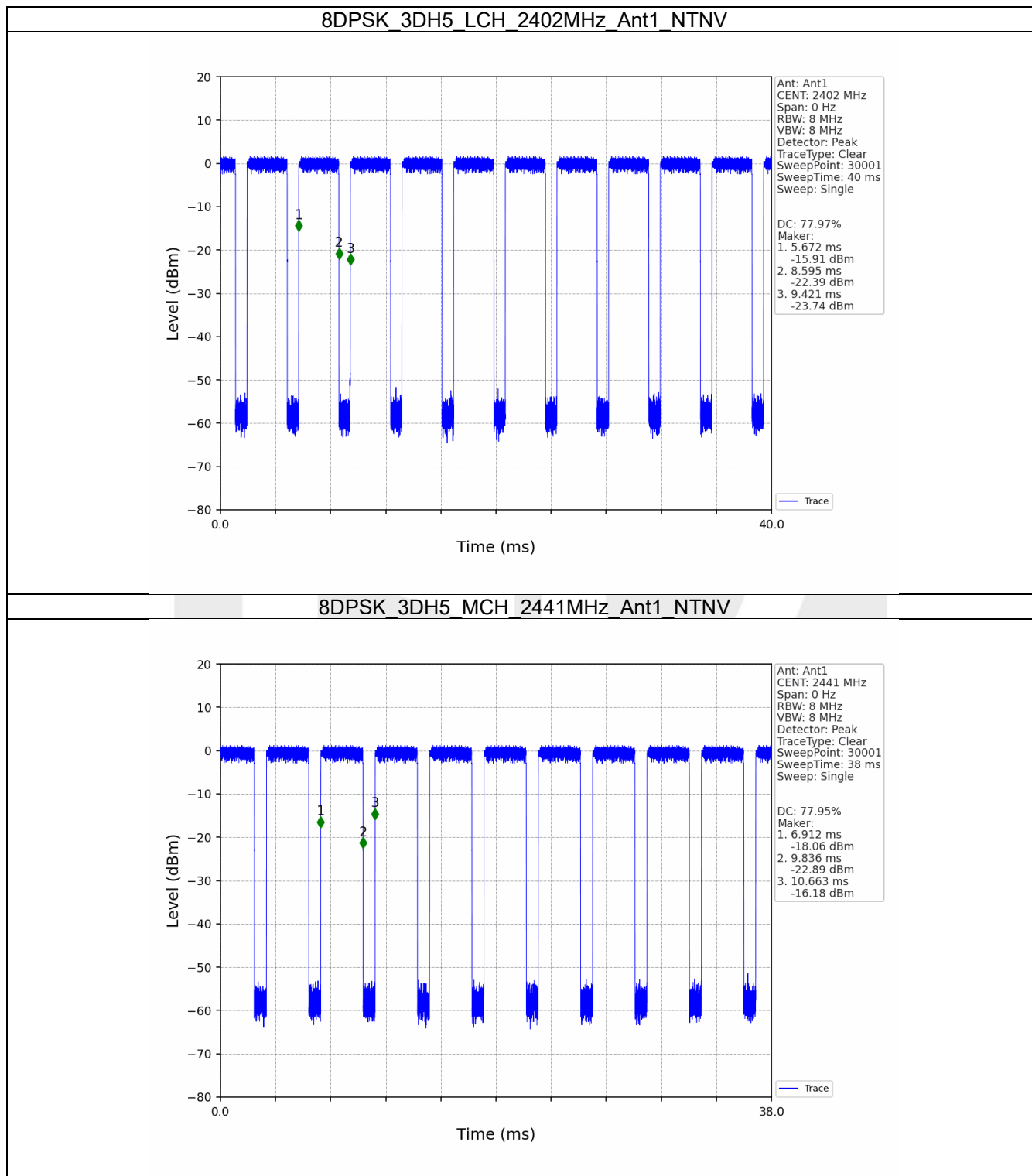
## 1.2 Test Graph

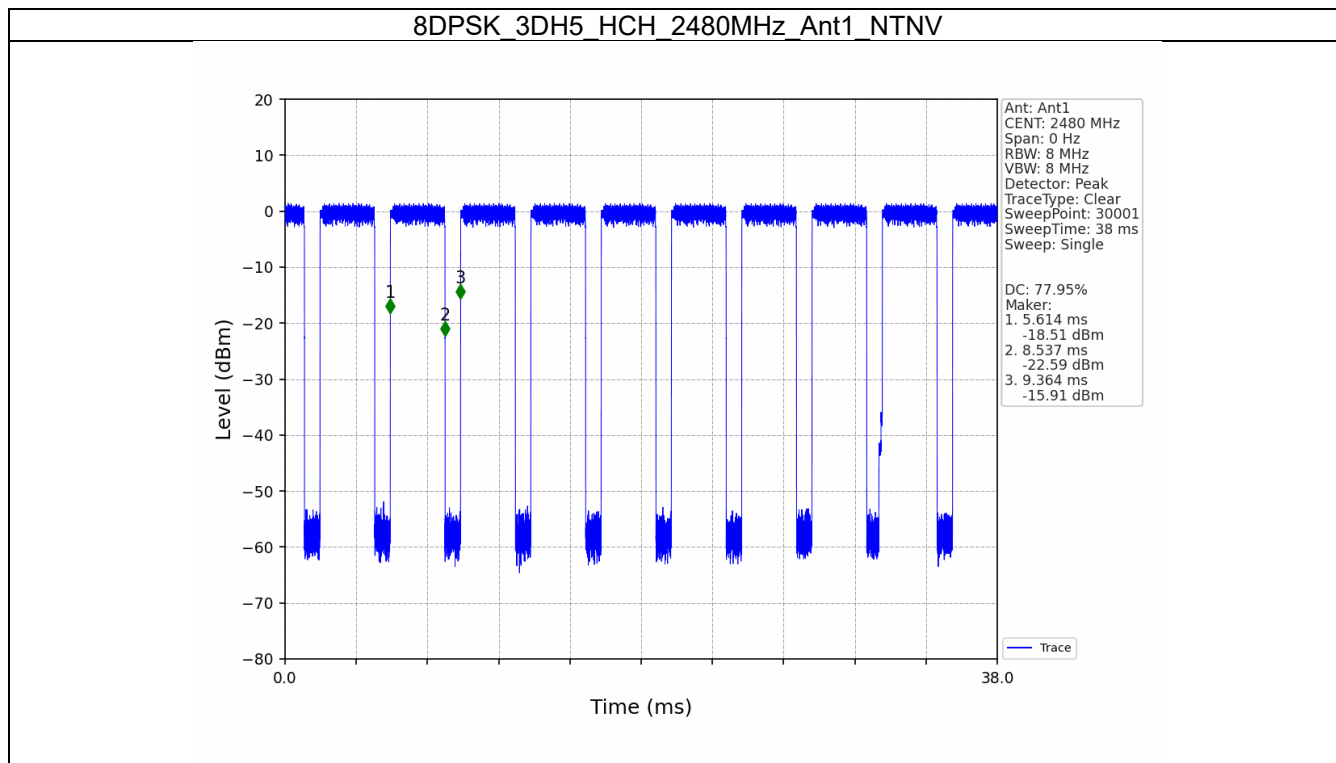
### 1.2.1 Ant1











## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

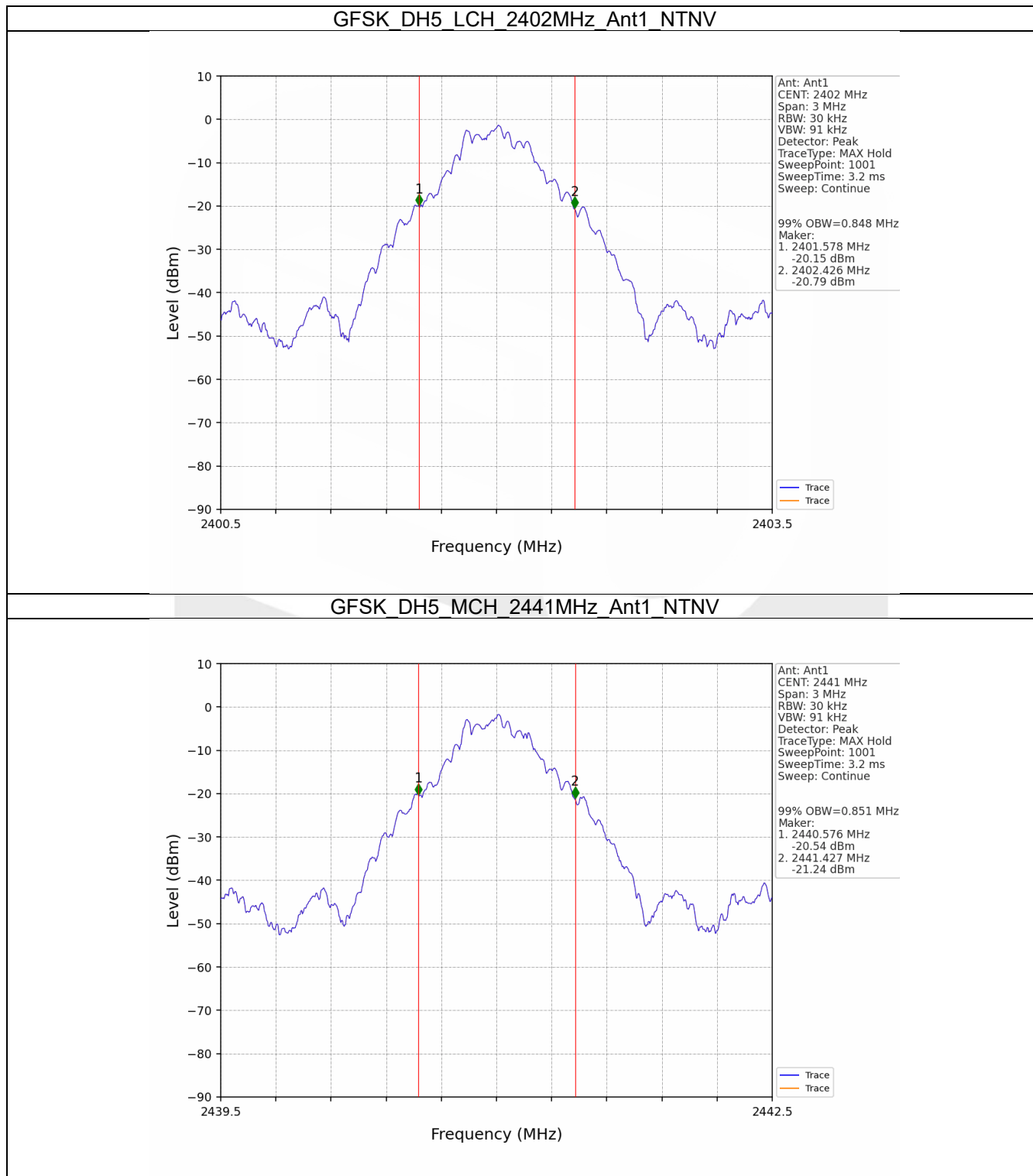
| Mode           | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|----------------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|                |         |                 |             |     | Result                       | Limit |         |
| GFSK           | SISO    | 2402            | DH5         | 1   | 0.848                        | /     | Pass    |
|                |         | 2441            | DH5         | 1   | 0.851                        | /     | Pass    |
|                |         | 2480            | DH5         | 1   | 0.853                        | /     | Pass    |
| $\pi$ /4-DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.155                        | /     | Pass    |
|                |         | 2441            | 2DH5        | 1   | 1.158                        | /     | Pass    |
|                |         | 2480            | 2DH5        | 1   | 1.158                        | /     | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | 1   | 1.171                        | /     | Pass    |
|                |         | 2441            | 3DH5        | 1   | 1.171                        | /     | Pass    |
|                |         | 2480            | 3DH5        | 1   | 1.171                        | /     | Pass    |

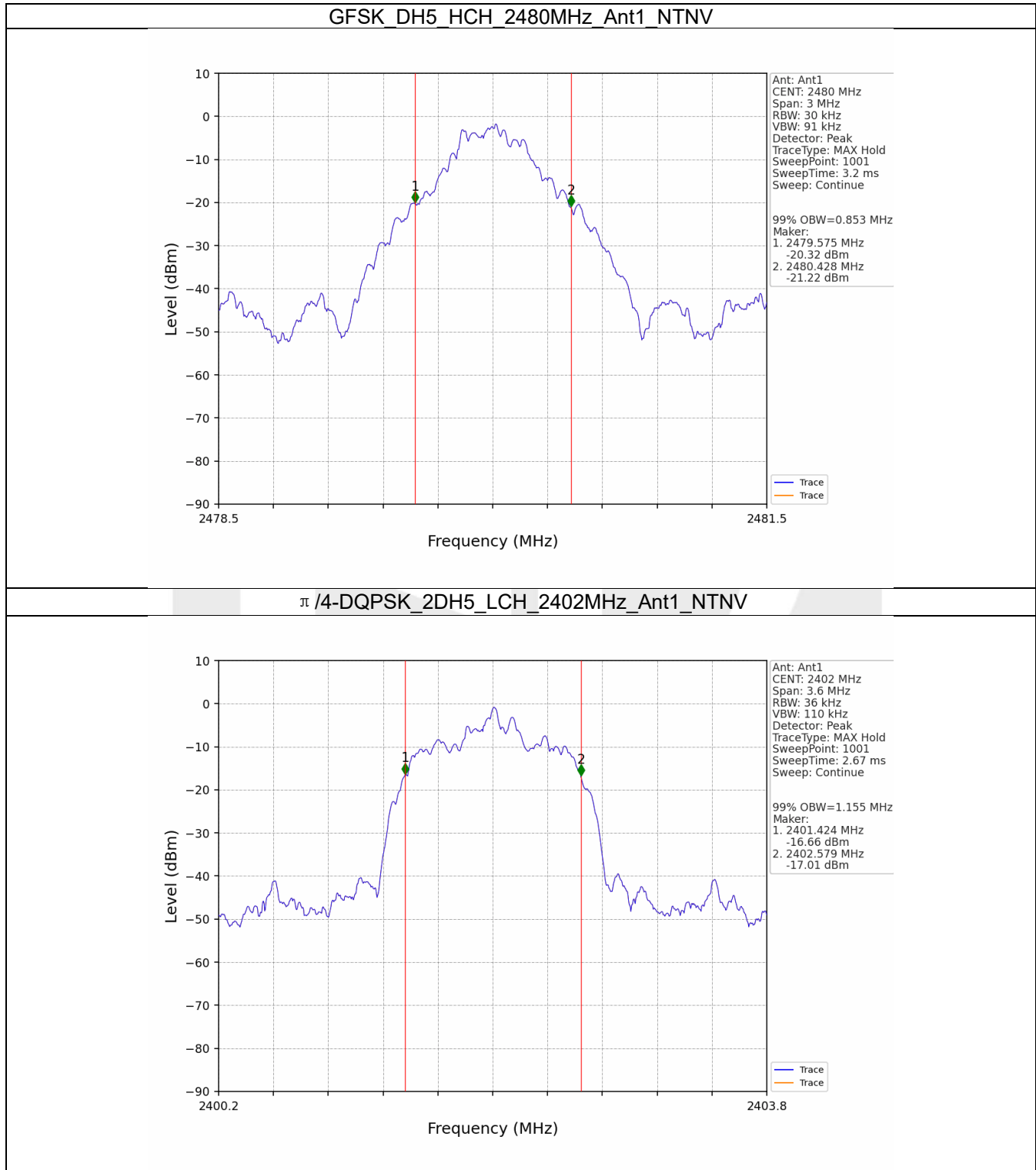
#### 2.1.2 20dB BW

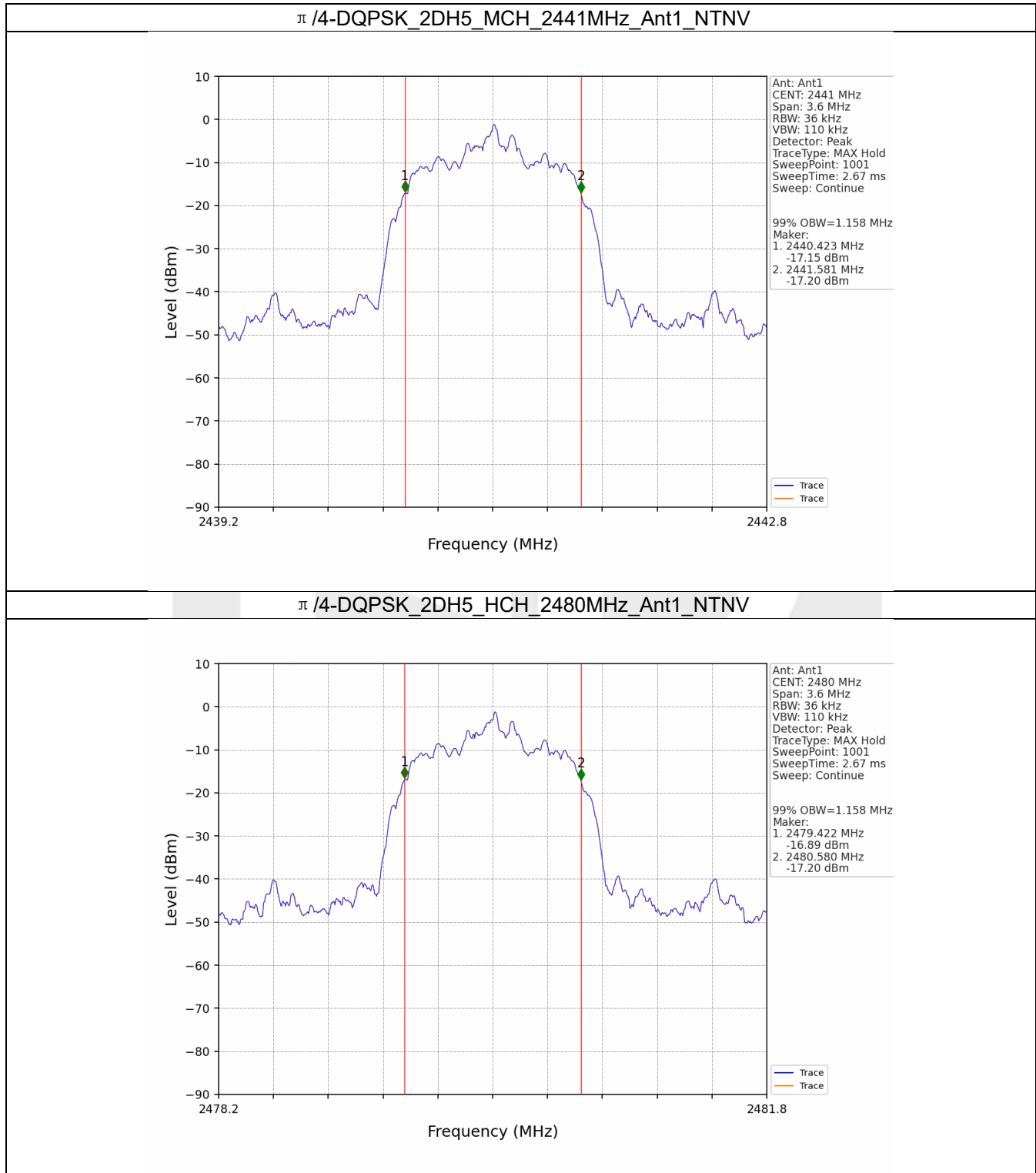
| Mode           | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|----------------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|                |         |                 |             |     | Result               | Limit |         |
| GFSK           | SISO    | 2402            | DH5         | 1   | 0.948                | /     | Pass    |
|                |         | 2441            | DH5         | 1   | 0.950                | /     | Pass    |
|                |         | 2480            | DH5         | 1   | 0.943                | /     | Pass    |
| $\pi$ /4-DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.262                | /     | Pass    |
|                |         | 2441            | 2DH5        | 1   | 1.270                | /     | Pass    |
|                |         | 2480            | 2DH5        | 1   | 1.266                | /     | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | 1   | 1.281                | /     | Pass    |
|                |         | 2441            | 3DH5        | 1   | 1.285                | /     | Pass    |
|                |         | 2480            | 3DH5        | 1   | 1.287                | /     | Pass    |

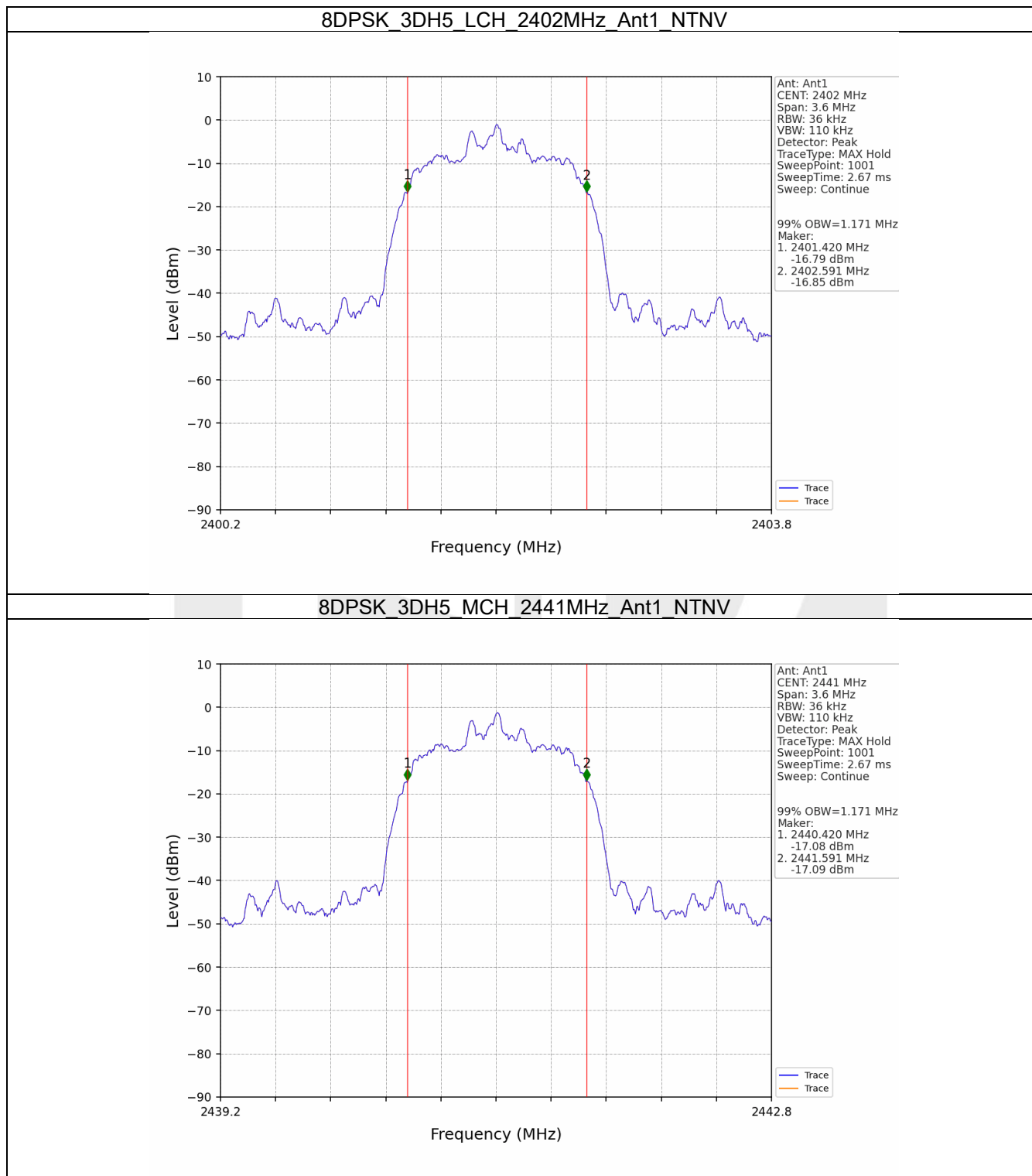
## 2.2 Test Graph

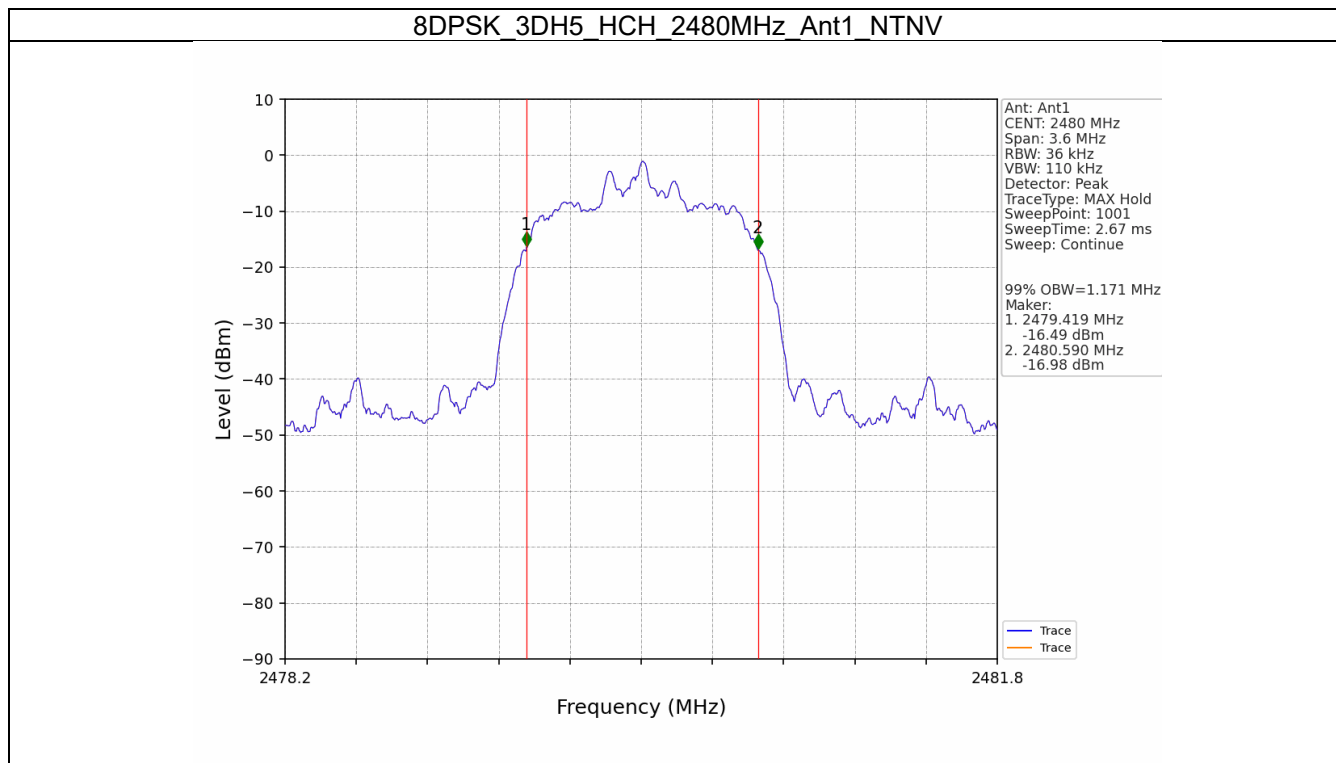
### 2.2.1 OBW



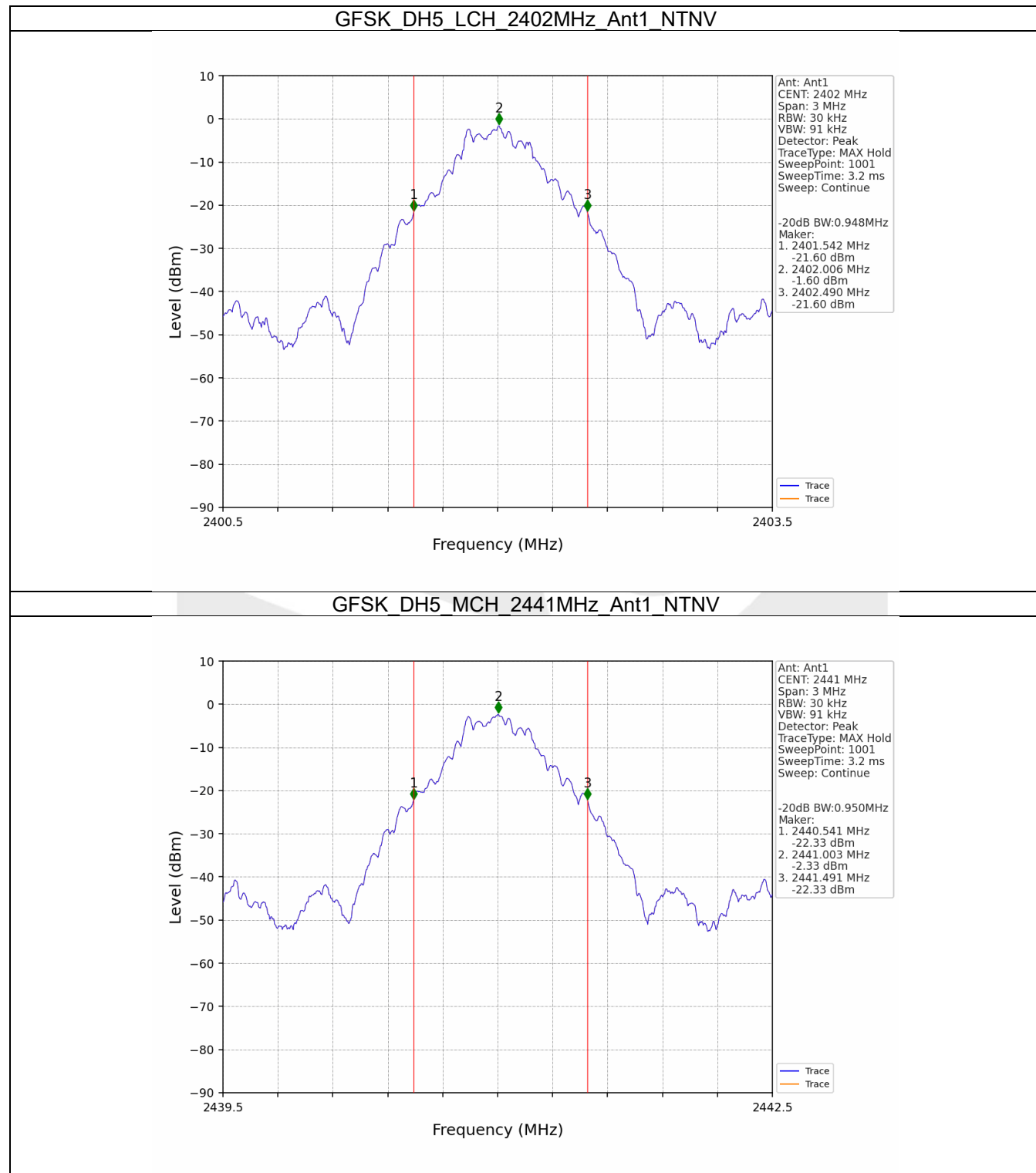


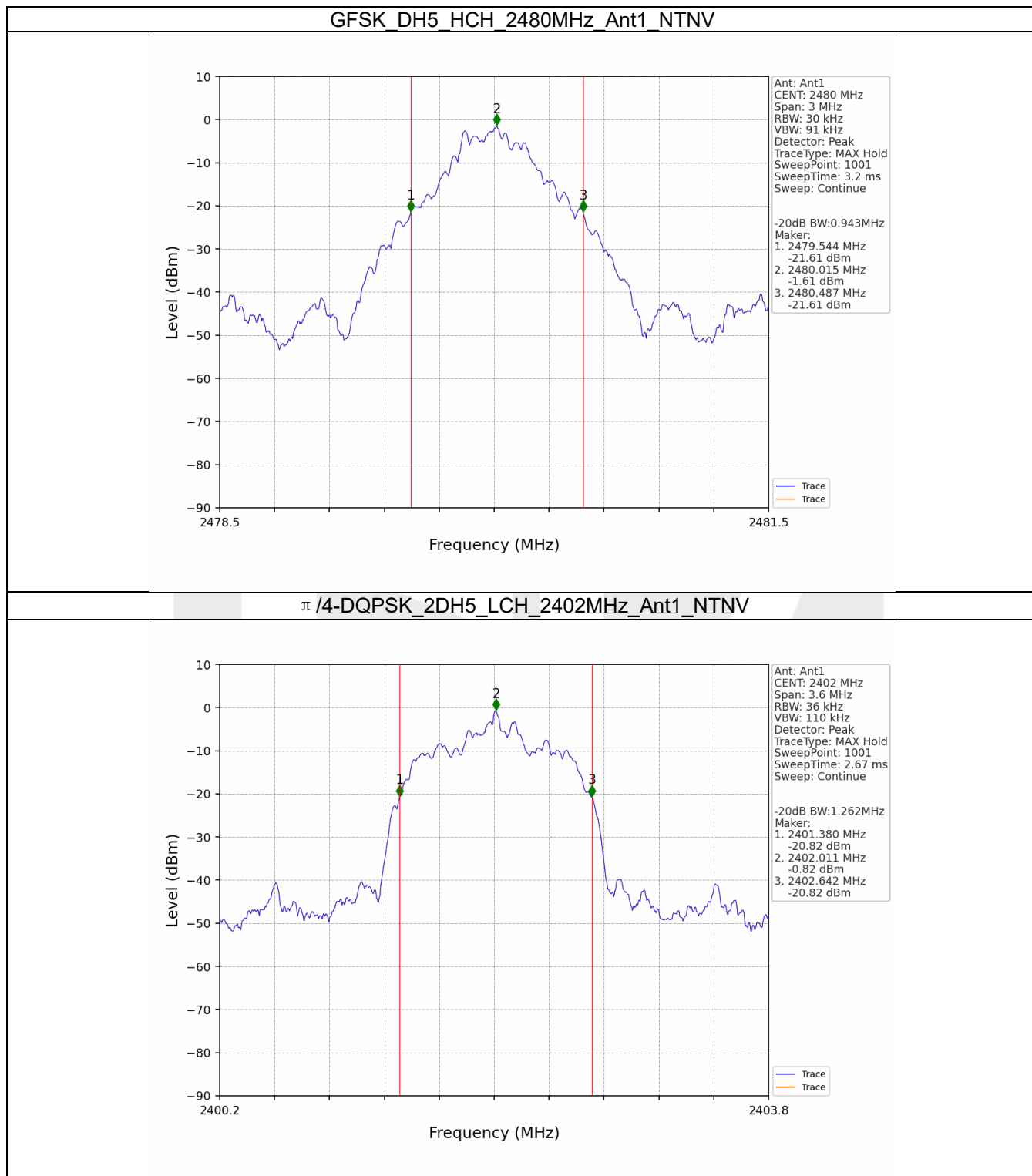


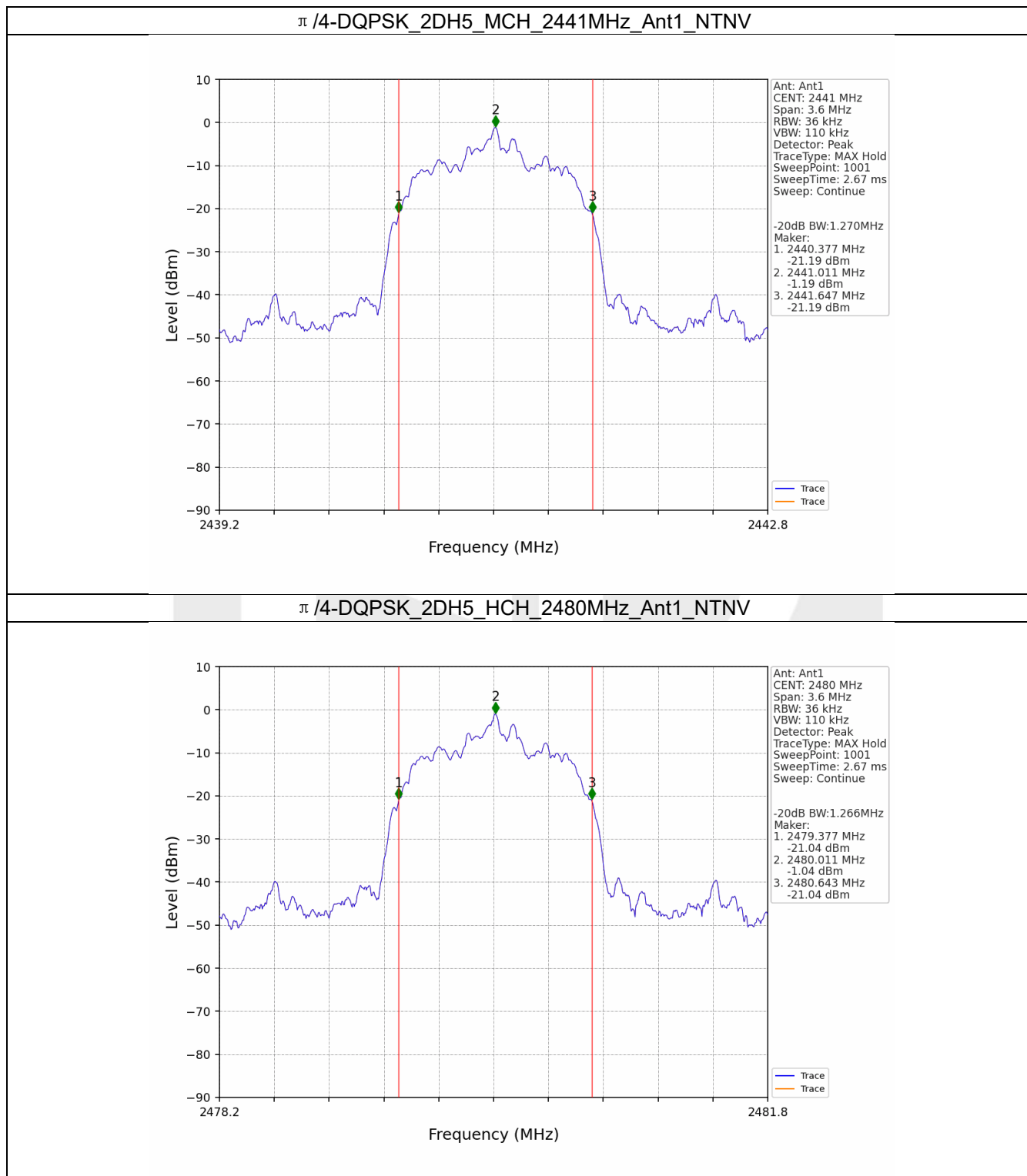


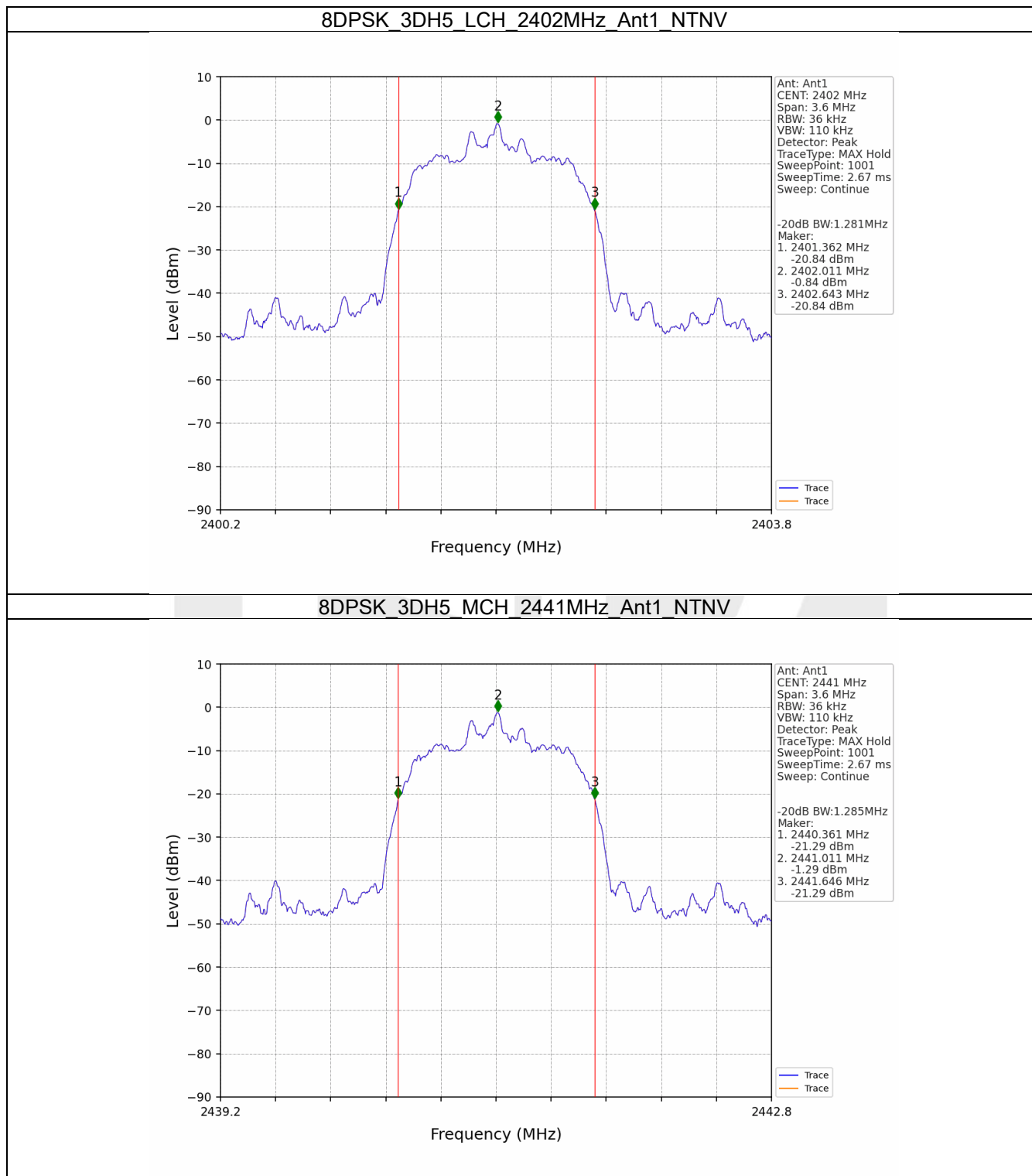


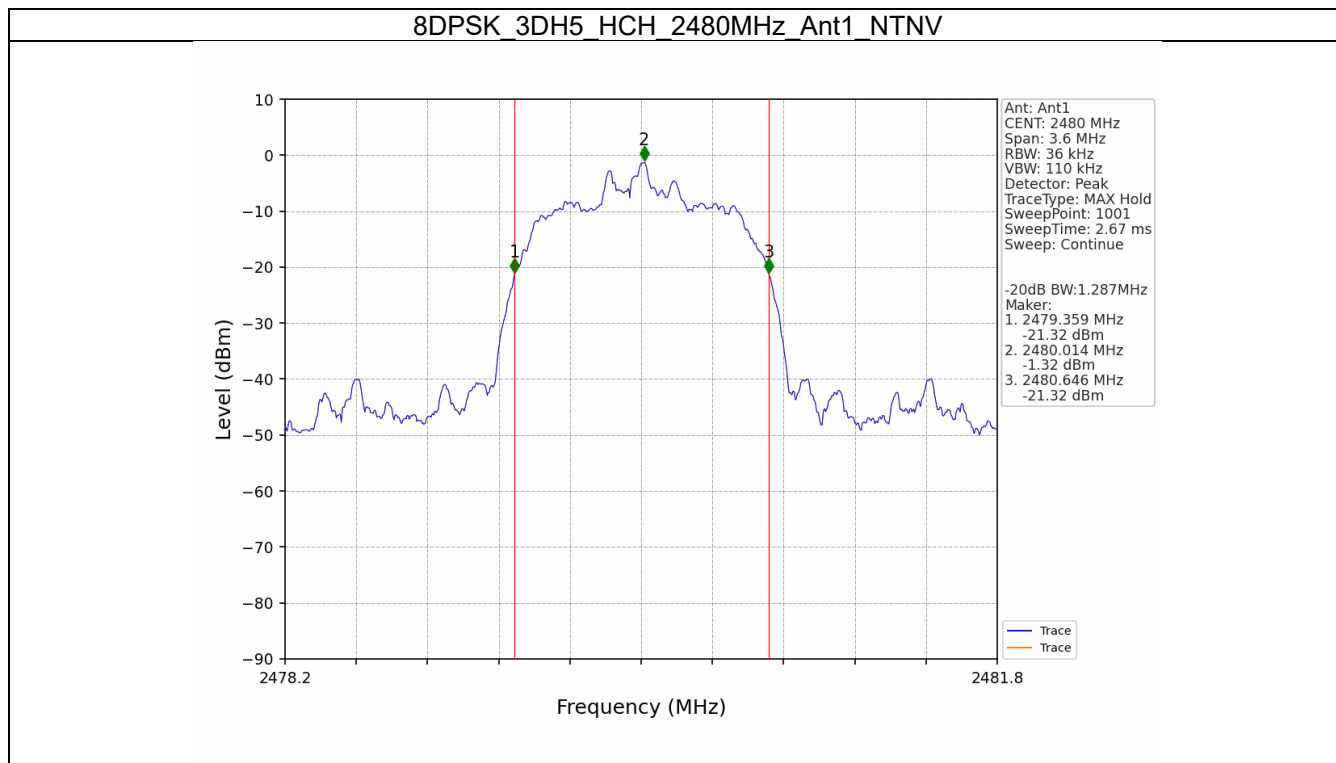
## 2.2.2 20dB BW











### 3. Maximum Conducted Output Power

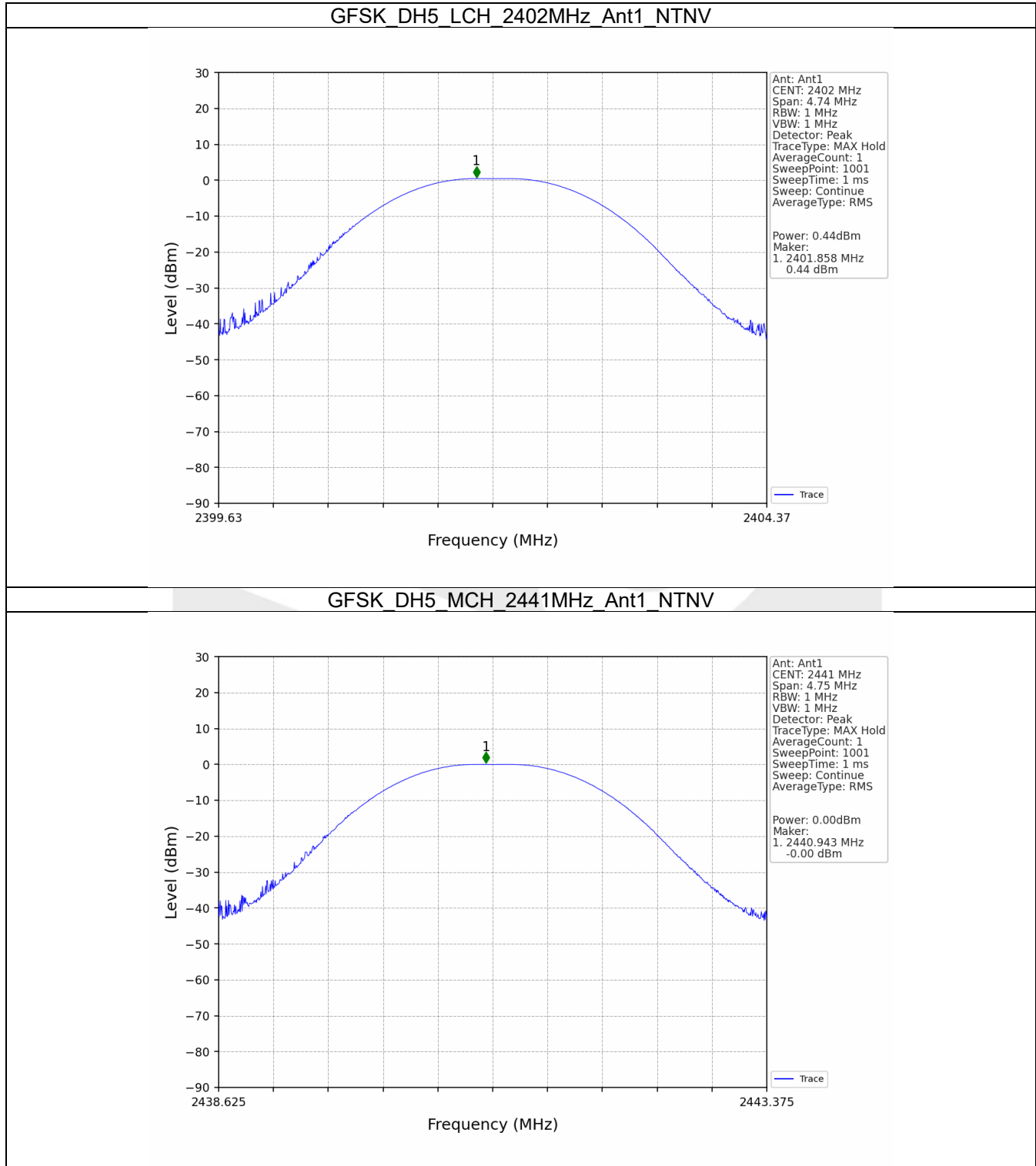
#### 3.1 Test Result

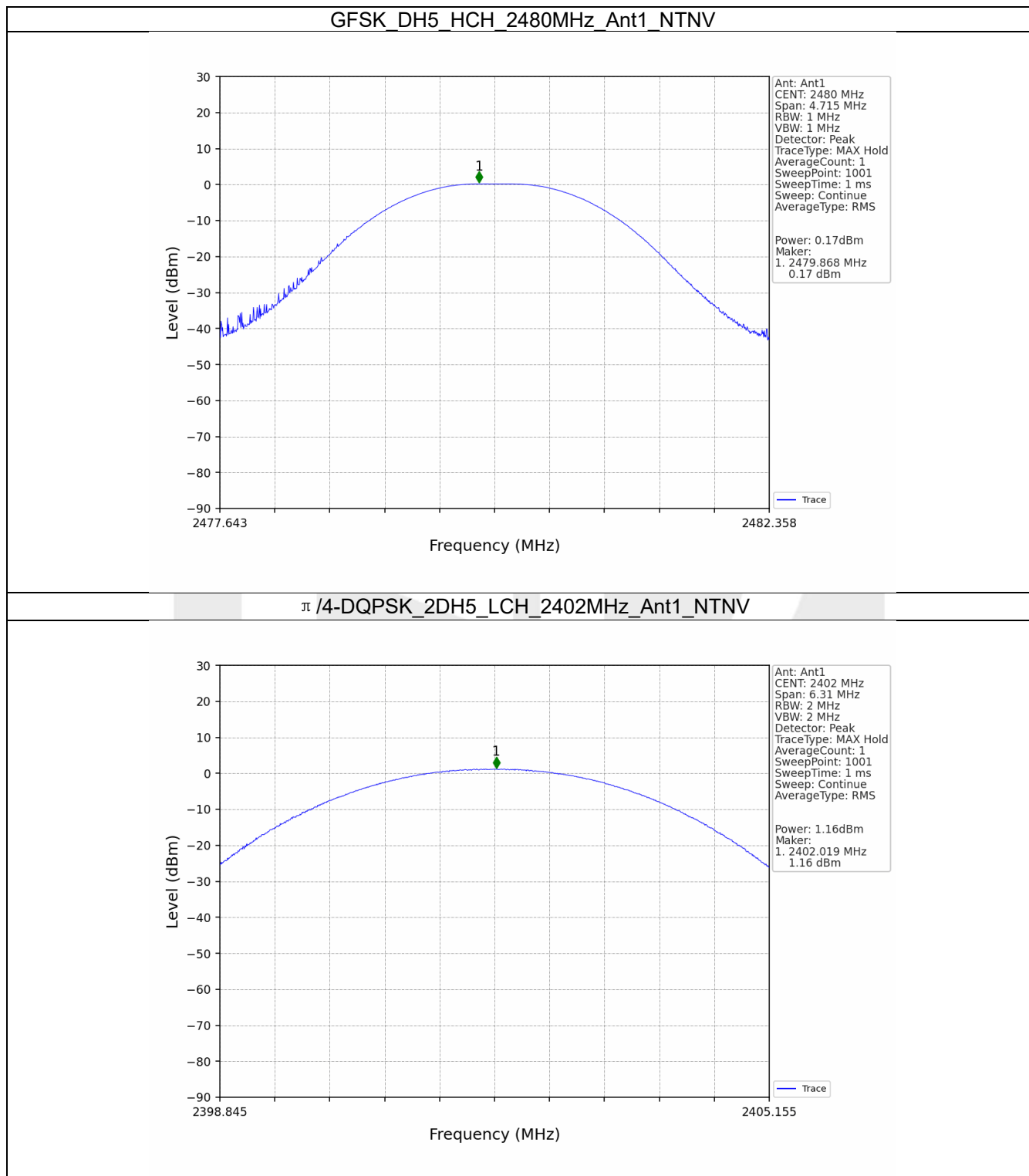
##### 3.1.1 Power

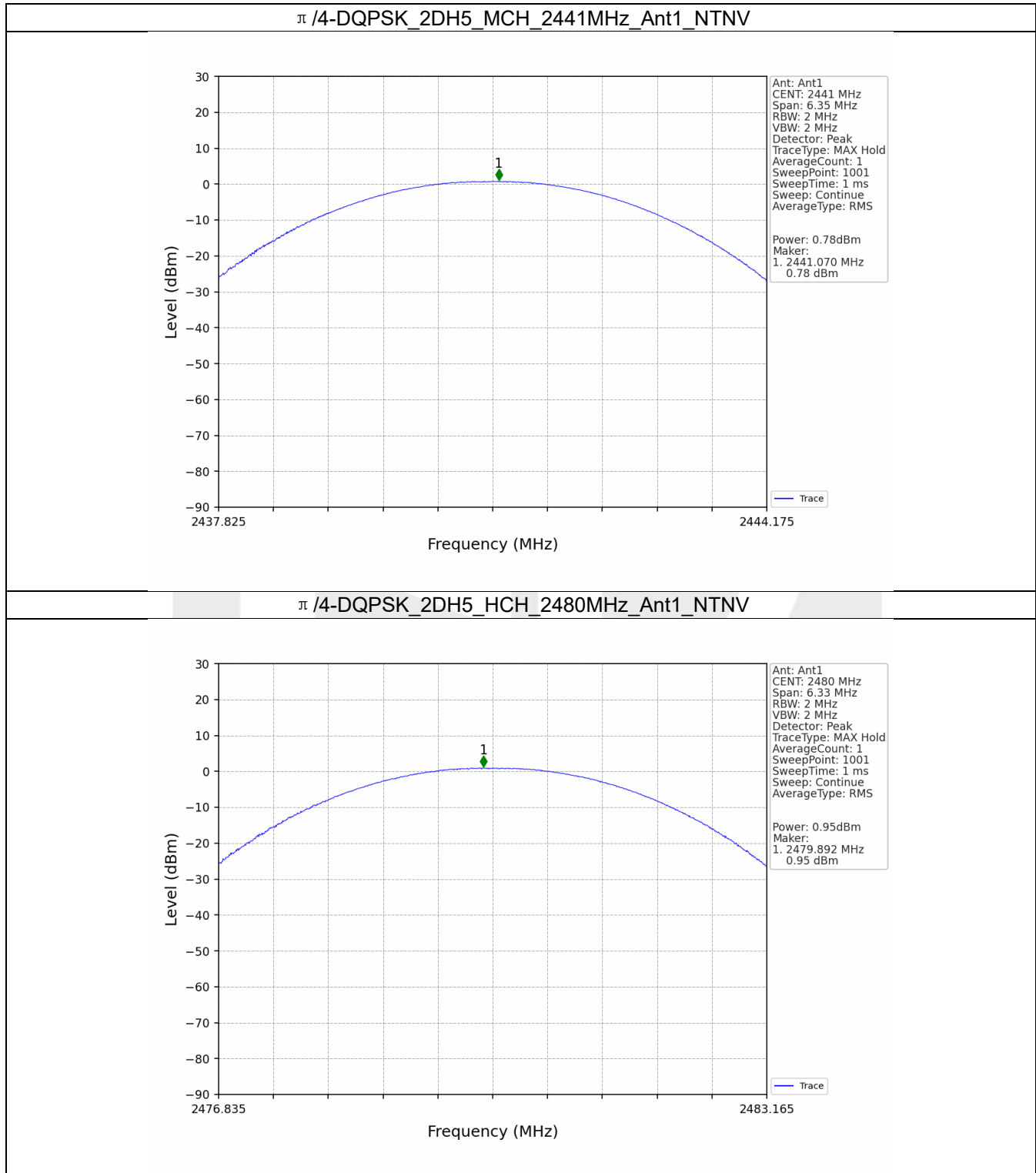
| Mode           | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |              | Verdict |
|----------------|---------|-----------------|-------------|-------------------------------------------|--------------|---------|
|                |         |                 |             | ANT1                                      | Limit        |         |
| GFSK           | SISO    | 2402            | DH5         | 0.44                                      | $\leq 30$    | Pass    |
|                |         | 2441            | DH5         | 0.00                                      | $\leq 30$    | Pass    |
|                |         | 2480            | DH5         | 0.17                                      | $\leq 30$    | Pass    |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | 1.16                                      | $\leq 20.97$ | Pass    |
|                |         | 2441            | 2DH5        | 0.78                                      | $\leq 20.97$ | Pass    |
|                |         | 2480            | 2DH5        | 0.95                                      | $\leq 20.97$ | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | 1.49                                      | $\leq 20.97$ | Pass    |
|                |         | 2441            | 3DH5        | 1.08                                      | $\leq 20.97$ | Pass    |
|                |         | 2480            | 3DH5        | 1.24                                      | $\leq 20.97$ | Pass    |

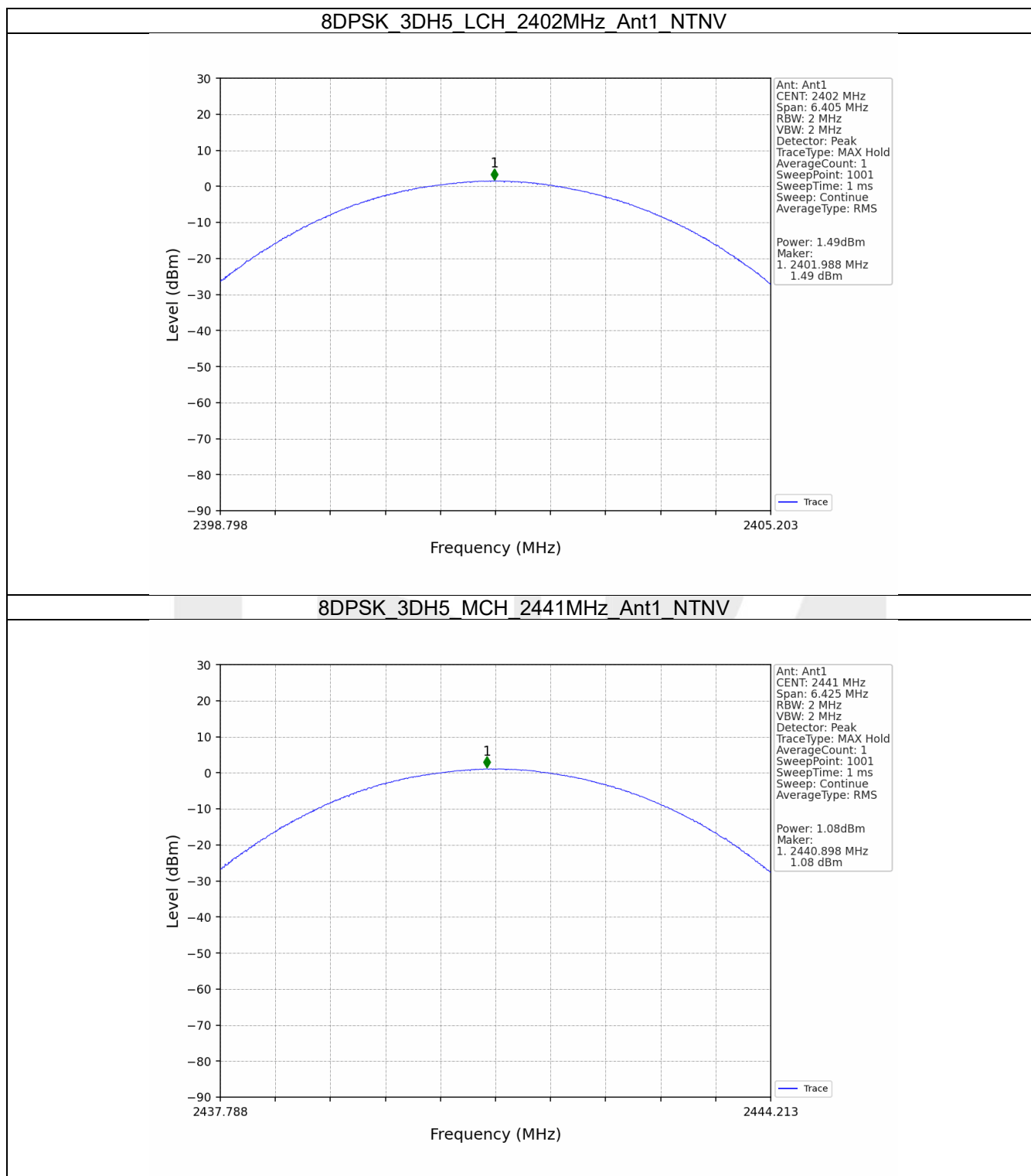
### 3.2 Test Graph

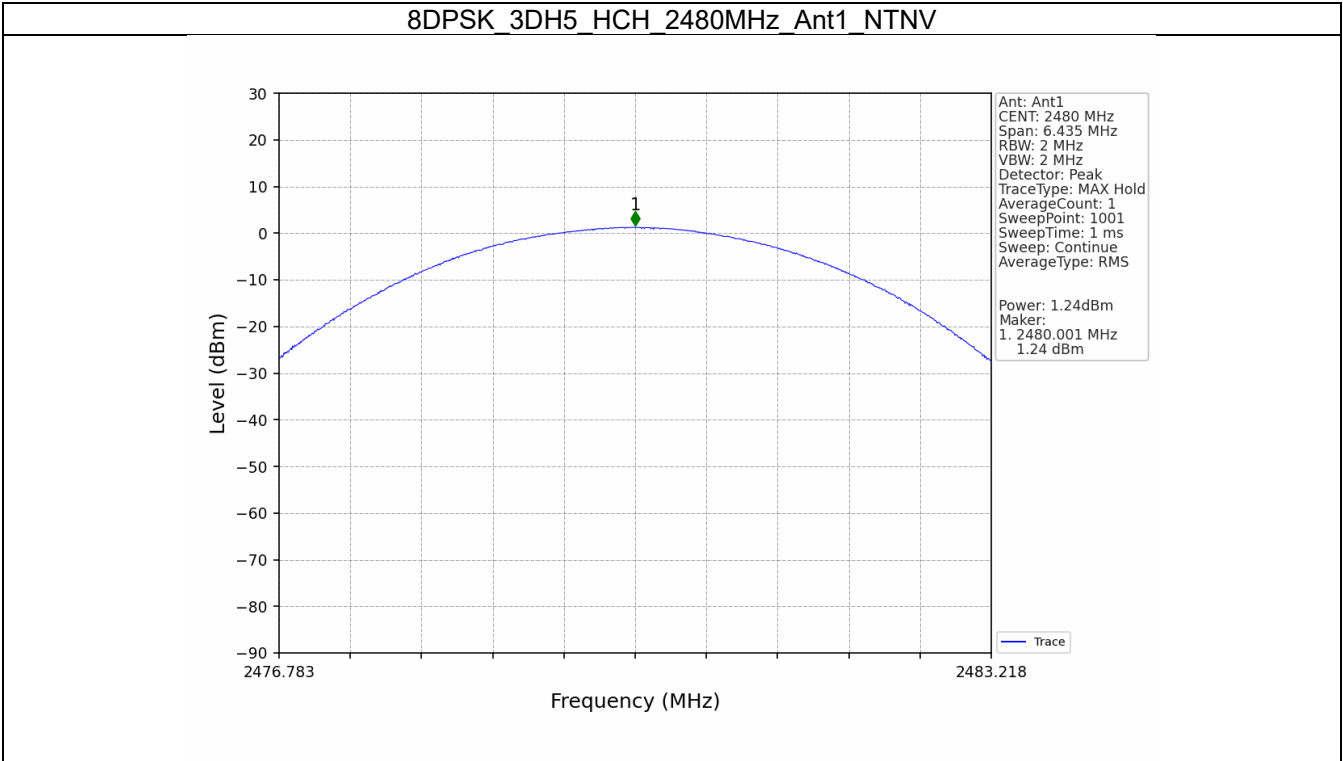
#### 3.2.1 Power











#### 4. Carrier Frequency Separation

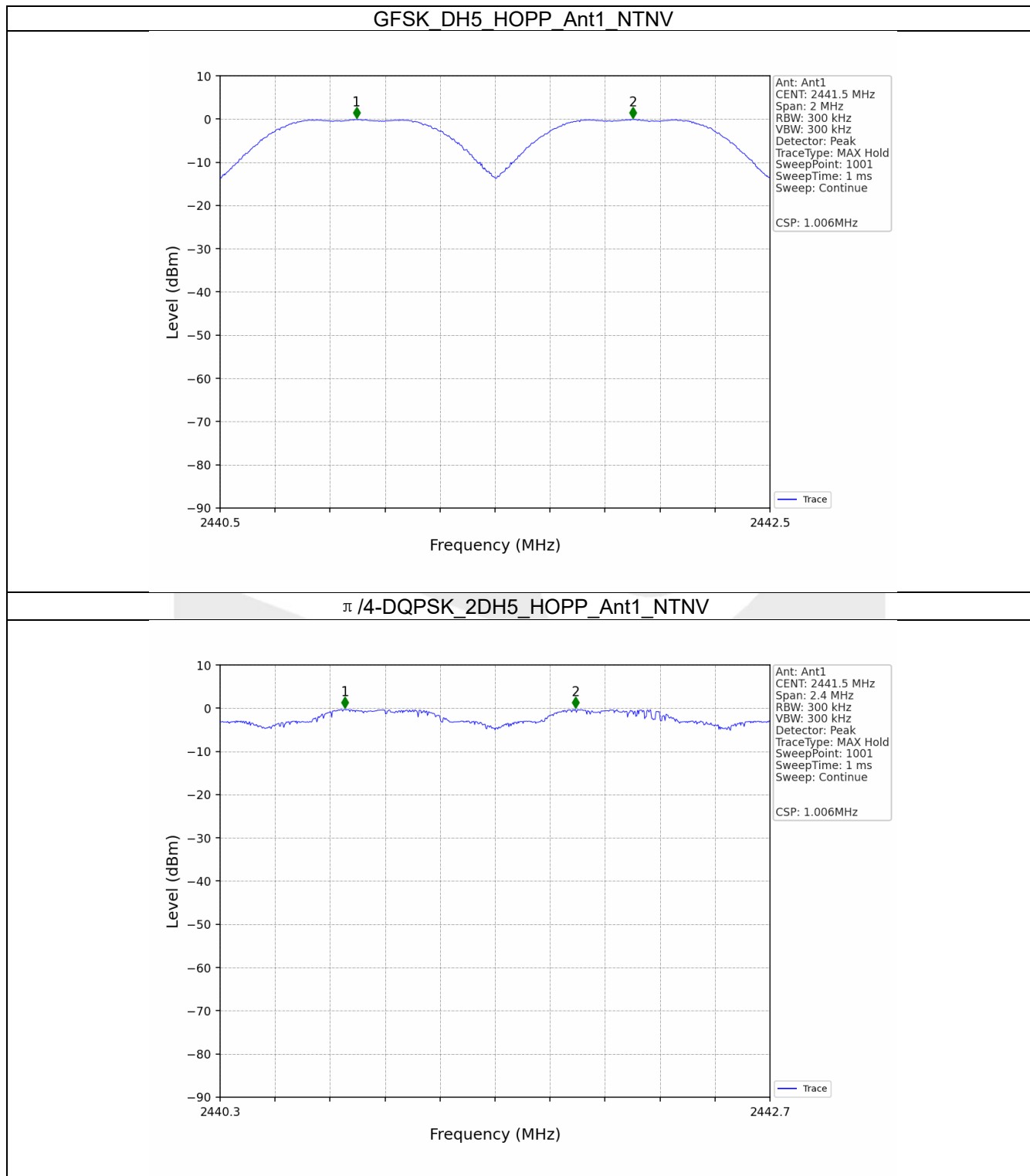
##### 4.1 Test Result

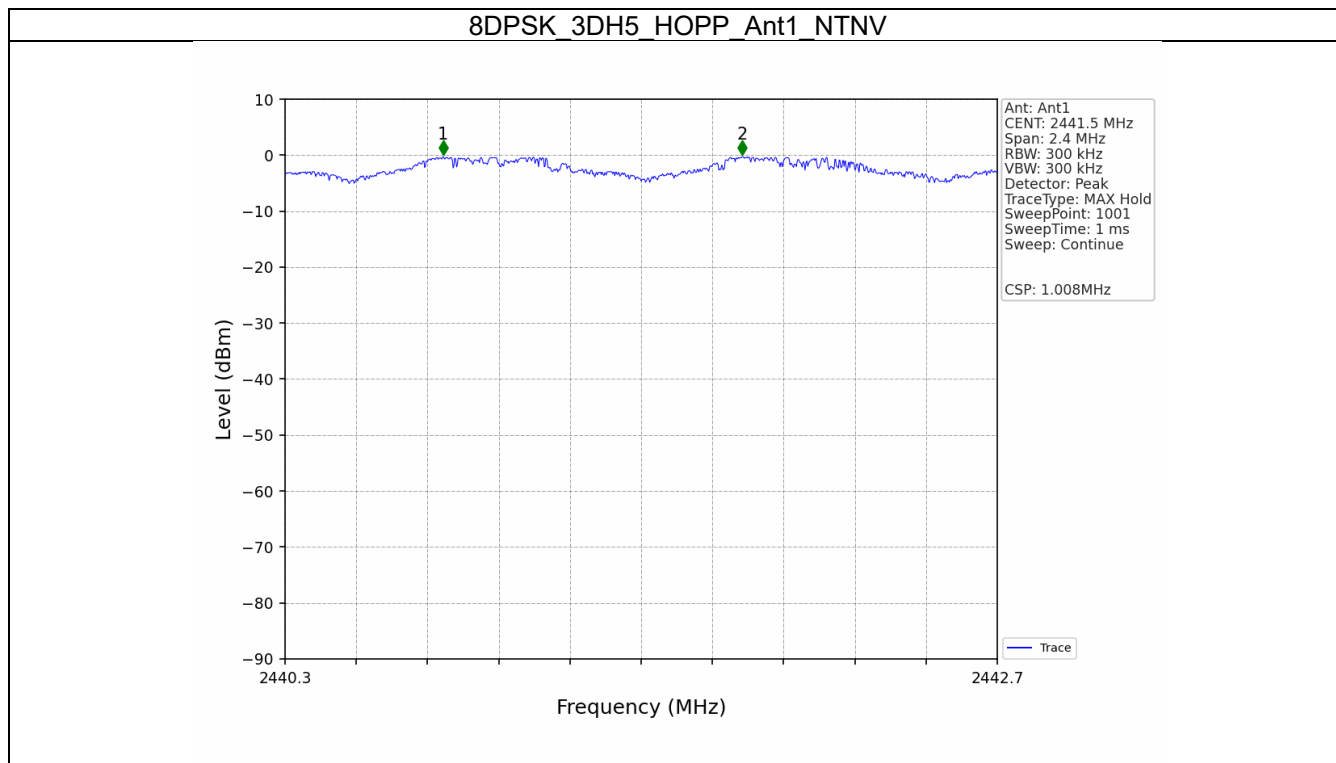
###### 4.1.1 Ant1

| Ant1           |         |                 |             |                          |                      |              |         |
|----------------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode           | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK           | SISO    | HOPP            | DH5         | 1.006                    | 0.950                | $\geq 0.95$  | Pass    |
| $\pi/4$ -DQPSK | SISO    | HOPP            | 2DH5        | 1.006                    | 1.270                | $\geq 0.847$ | Pass    |
| 8DPSK          | SISO    | HOPP            | 3DH5        | 1.008                    | 1.287                | $\geq 0.858$ | Pass    |

## 4.2 Test Graph

### 4.2.1 Ant1





## 5. Number of Hopping Frequencies

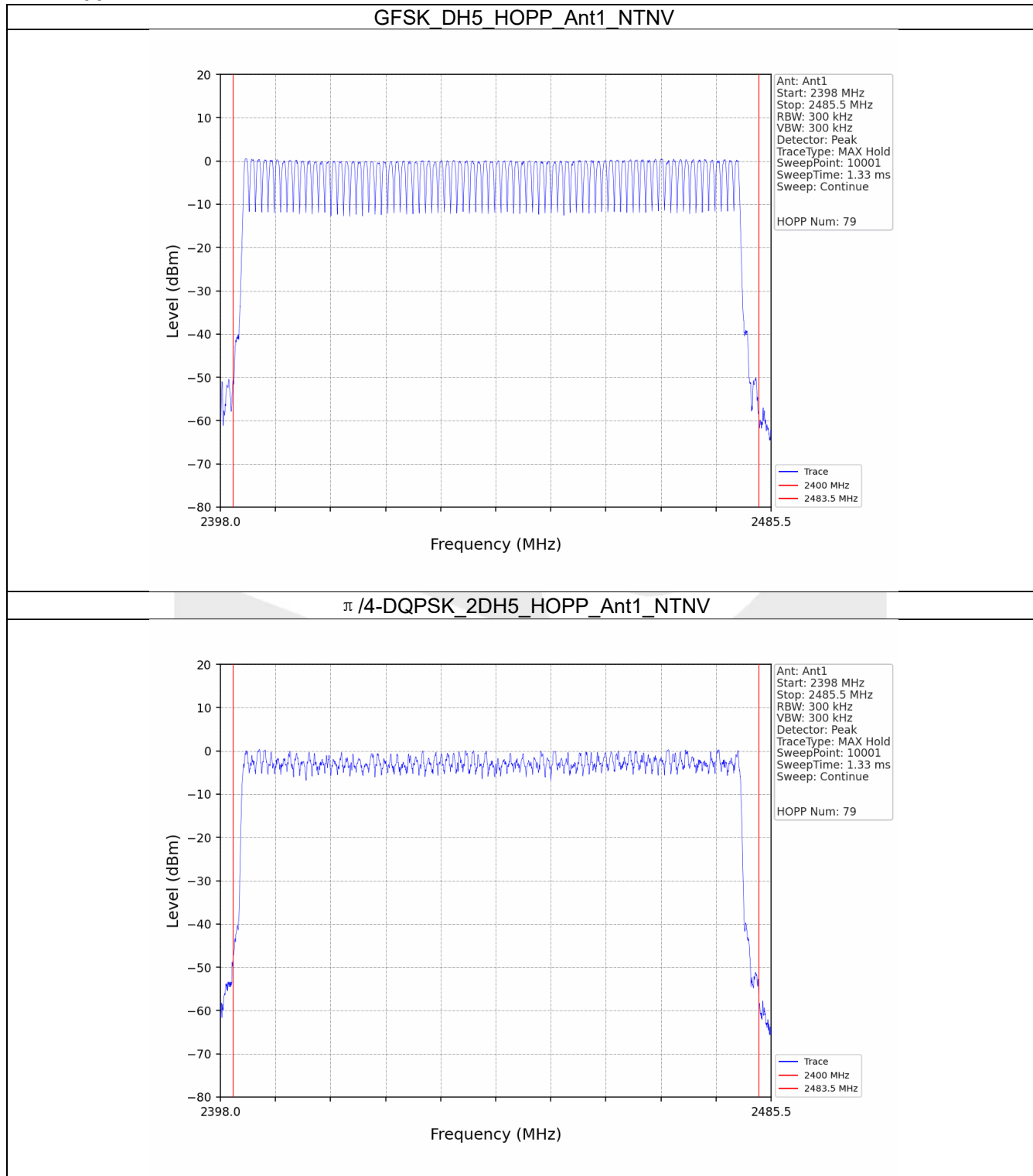
### 5.1 Test Result

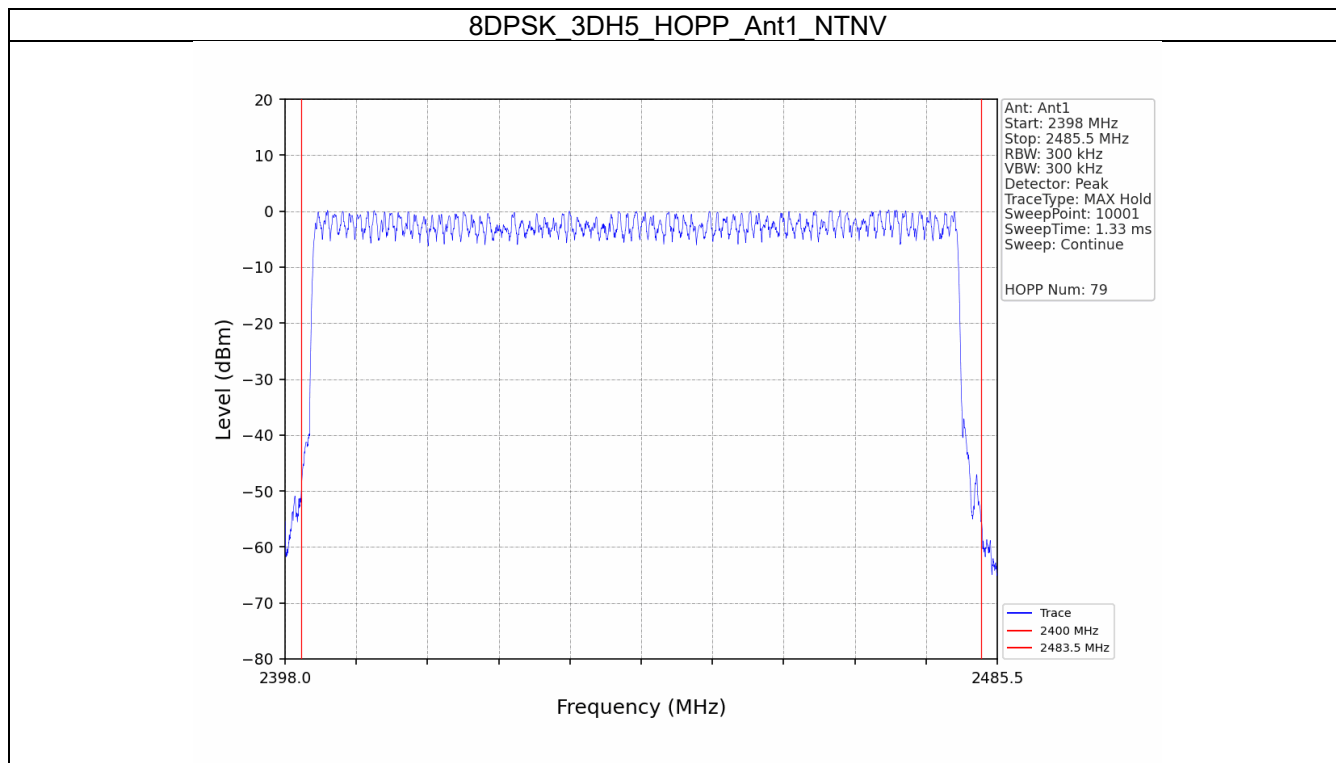
#### 5.1.1 HoppNum

| Mode           | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |           | Verdict |
|----------------|---------|-----------------|-------------|----------------------------|-----------|---------|
|                |         |                 |             | ANT1                       | Limit     |         |
| GFSK           | SISO    | HOPP            | DH5         | 79                         | $\geq 15$ | Pass    |
| $\pi/4$ -DQPSK | SISO    | HOPP            | 2DH5        | 79                         | $\geq 15$ | Pass    |
| 8DPSK          | SISO    | HOPP            | 3DH5        | 79                         | $\geq 15$ | Pass    |

## 5.2 Test Graph

### 5.2.1 HoppNum





## 6. Time of Occupancy (Dwell Time)

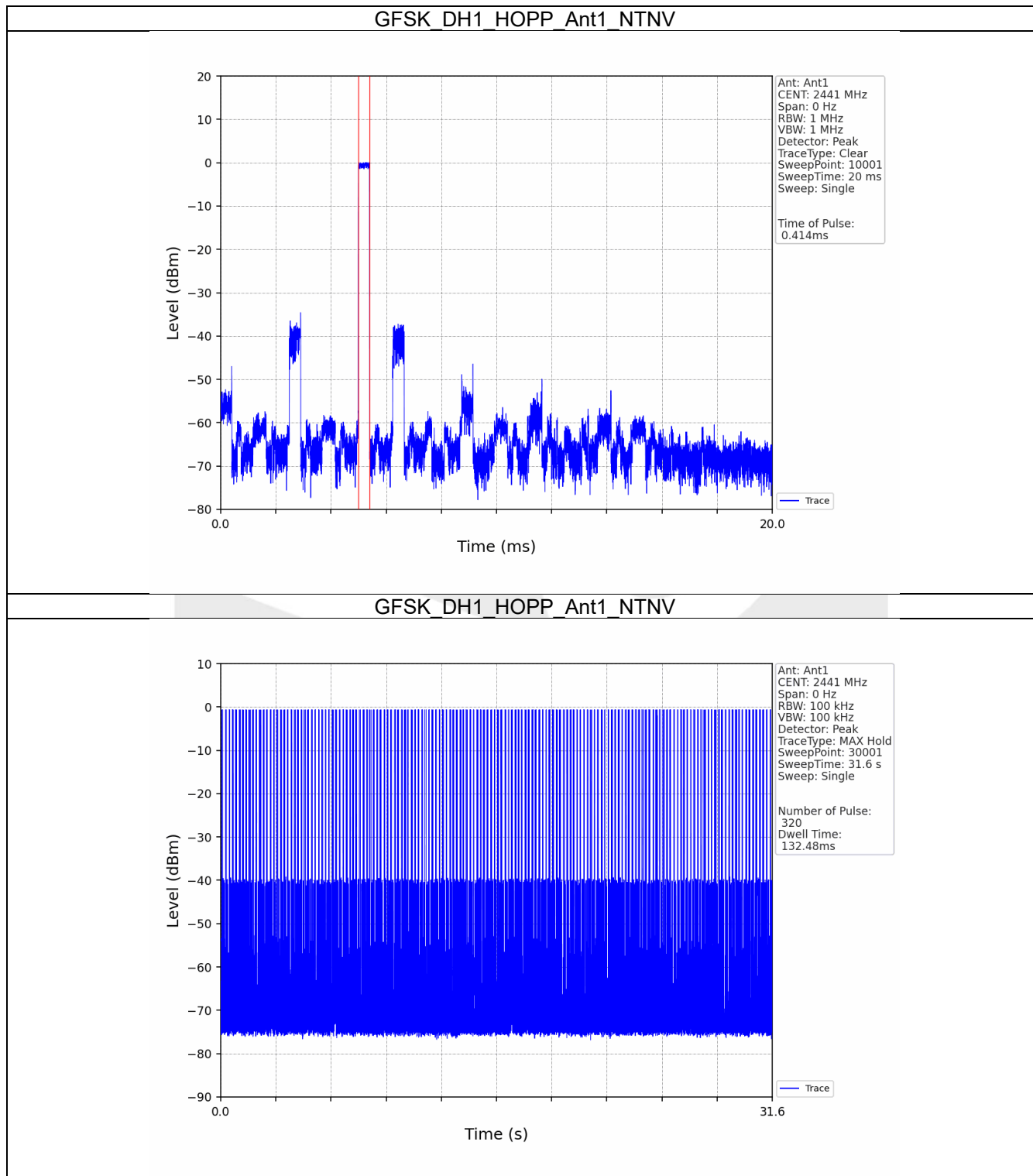
### 6.1 Test Result

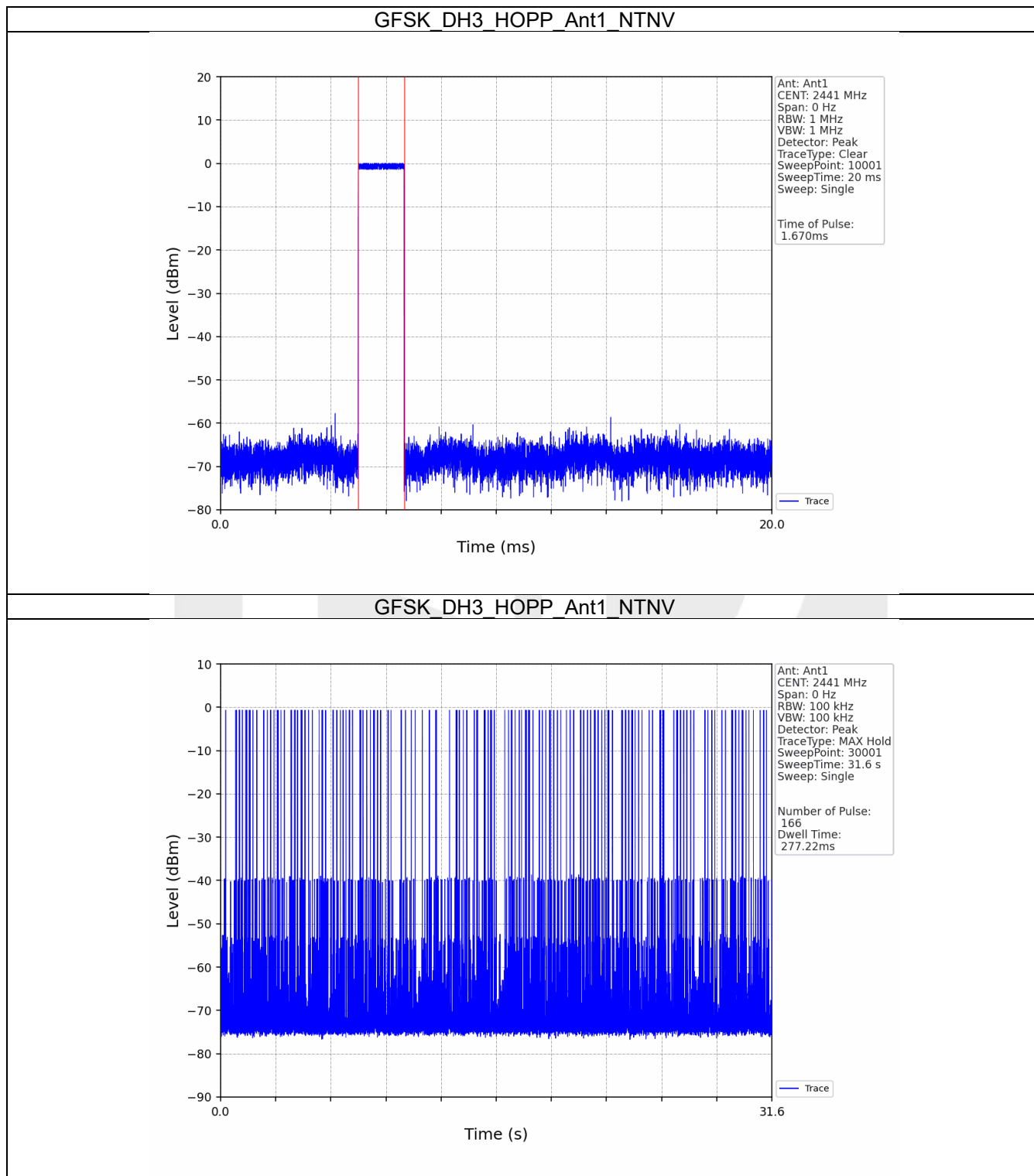
#### 6.1.1 Ant1

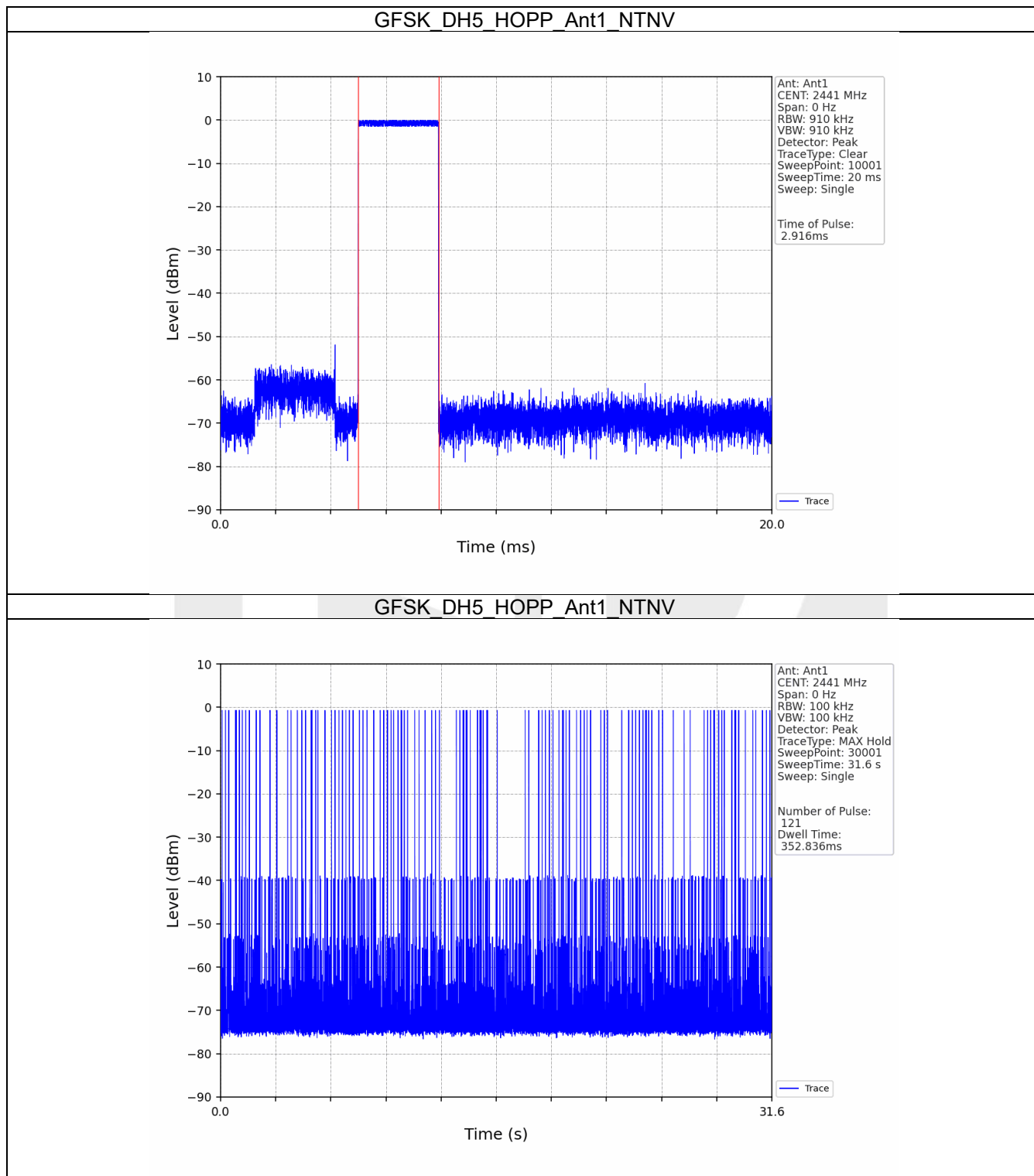
| Ant1           |         |                 |             |                               |                        |                                    |                 |            |         |
|----------------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| 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         | 0.414                         | 31.600                 | 320                                | 132.480         | <=400      | Pass    |
|                |         |                 | DH3         | 1.670                         | 31.600                 | 166                                | 277.220         | <=400      | Pass    |
|                |         |                 | DH5         | 2.916                         | 31.600                 | 121                                | 352.836         | <=400      | Pass    |
| $\pi/4$ -DQPSK | SISO    | HOPP            | 2DH1        | 0.424                         | 31.600                 | 320                                | 135.680         | <=400      | Pass    |
|                |         |                 | 2DH3        | 1.676                         | 31.600                 | 167                                | 279.892         | <=400      | Pass    |
|                |         |                 | 2DH5        | 2.924                         | 31.600                 | 114                                | 333.336         | <=400      | Pass    |
| 8DPSK          | SISO    | HOPP            | 3DH1        | 0.424                         | 31.600                 | 320                                | 135.680         | <=400      | Pass    |
|                |         |                 | 3DH3        | 1.674                         | 31.600                 | 154                                | 257.796         | <=400      | Pass    |
|                |         |                 | 3DH5        | 2.926                         | 31.600                 | 94                                 | 275.044         | <=400      | Pass    |

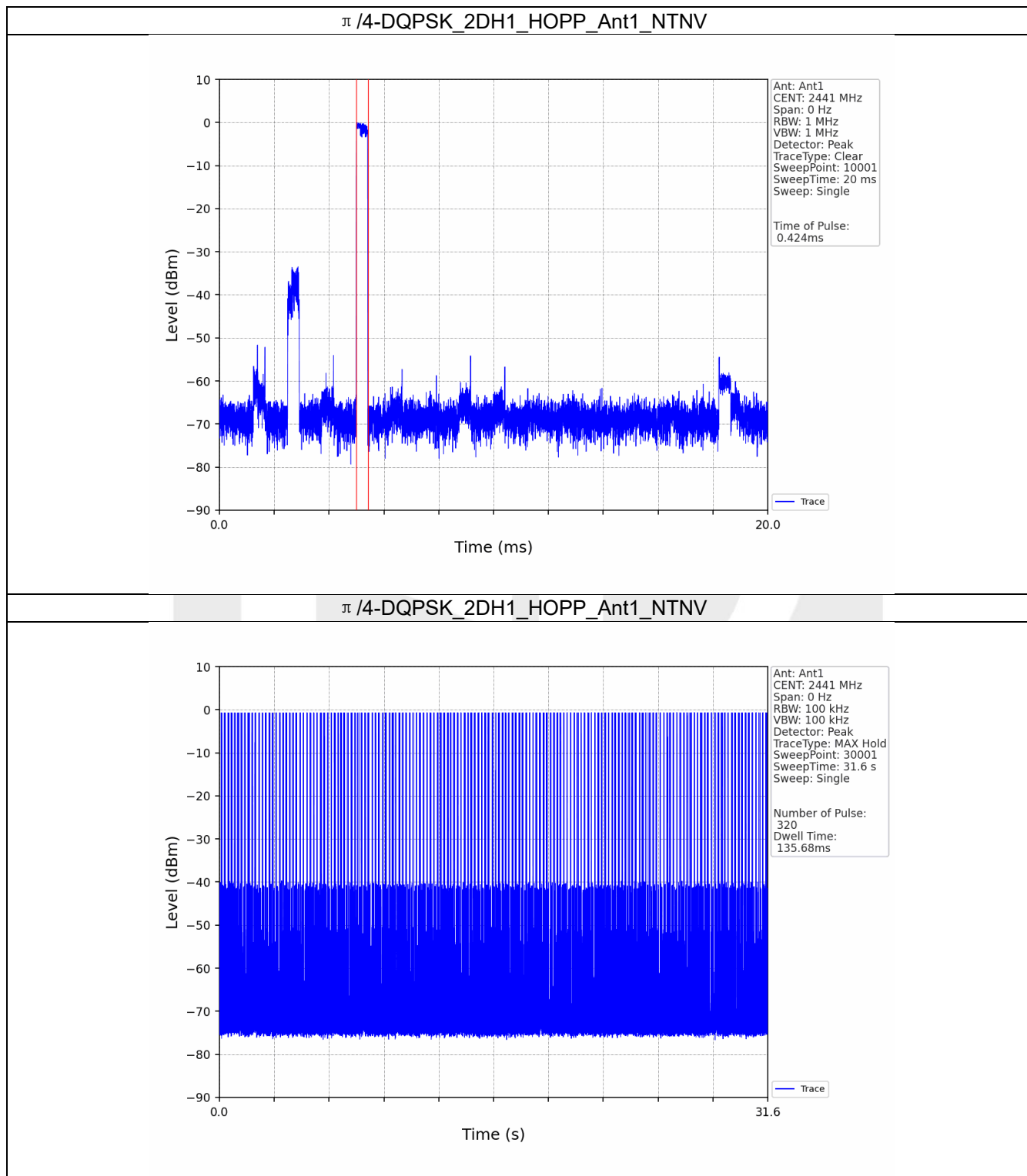
## 6.2 Test Graph

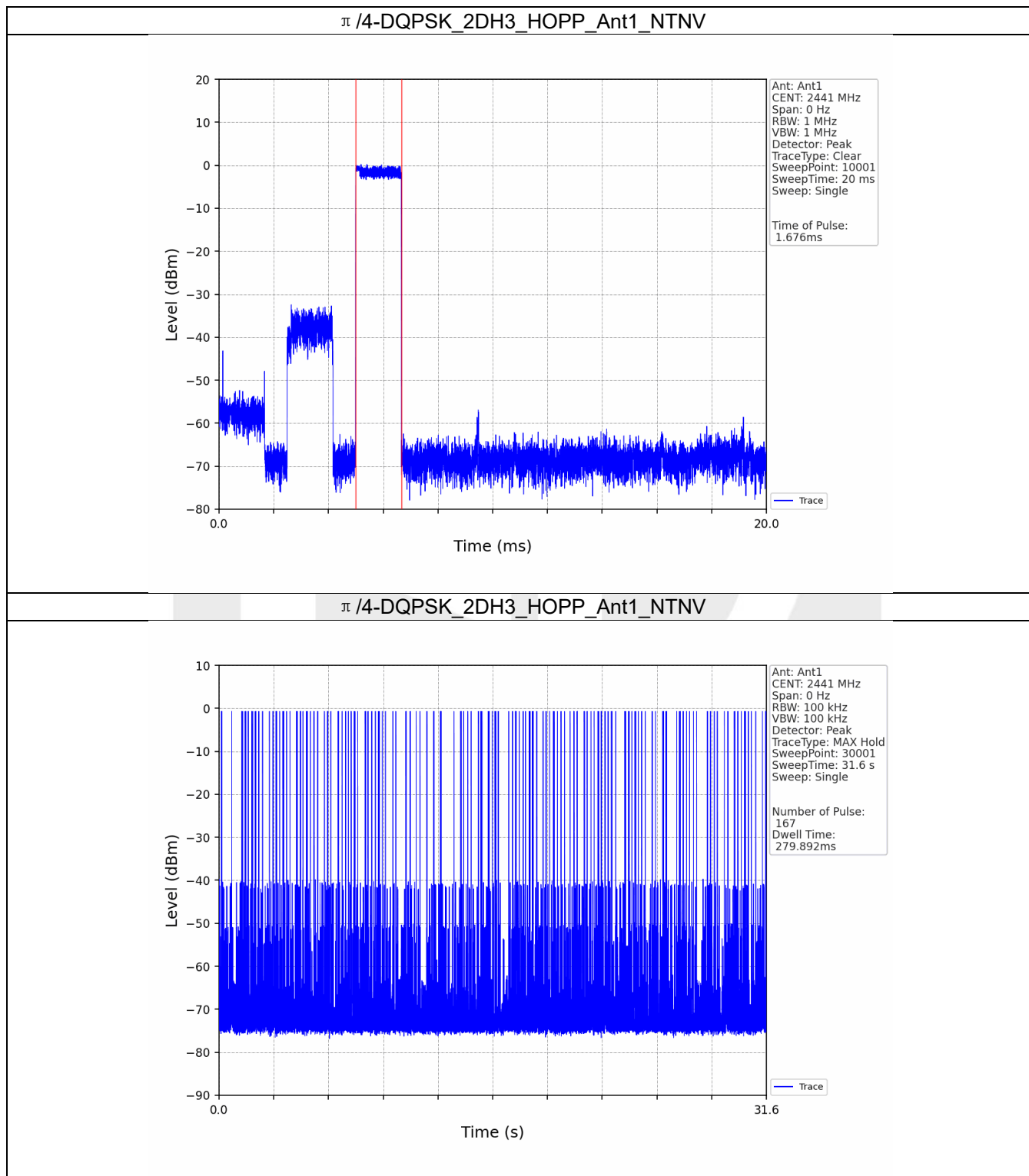
### 6.2.1 Ant1

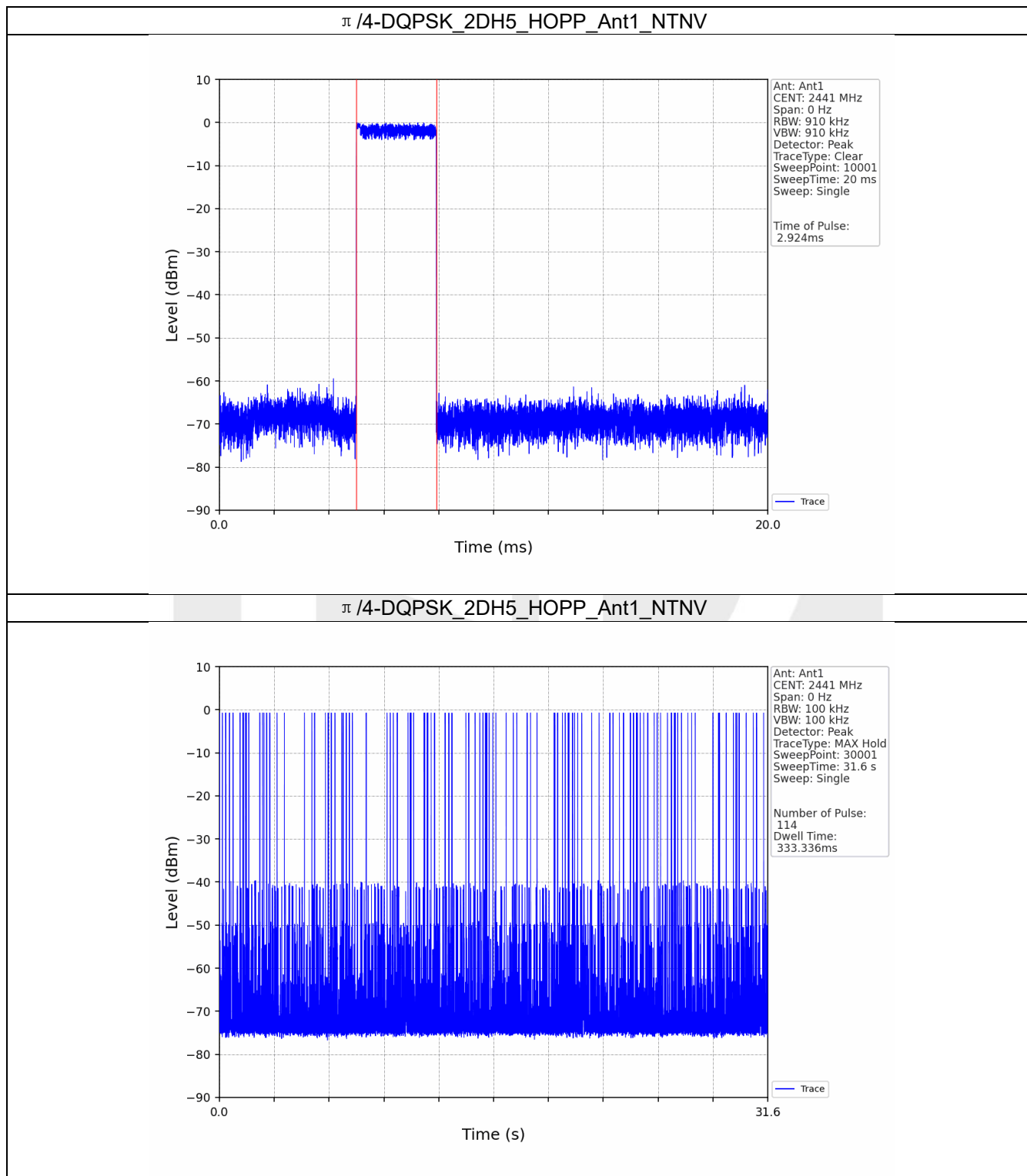


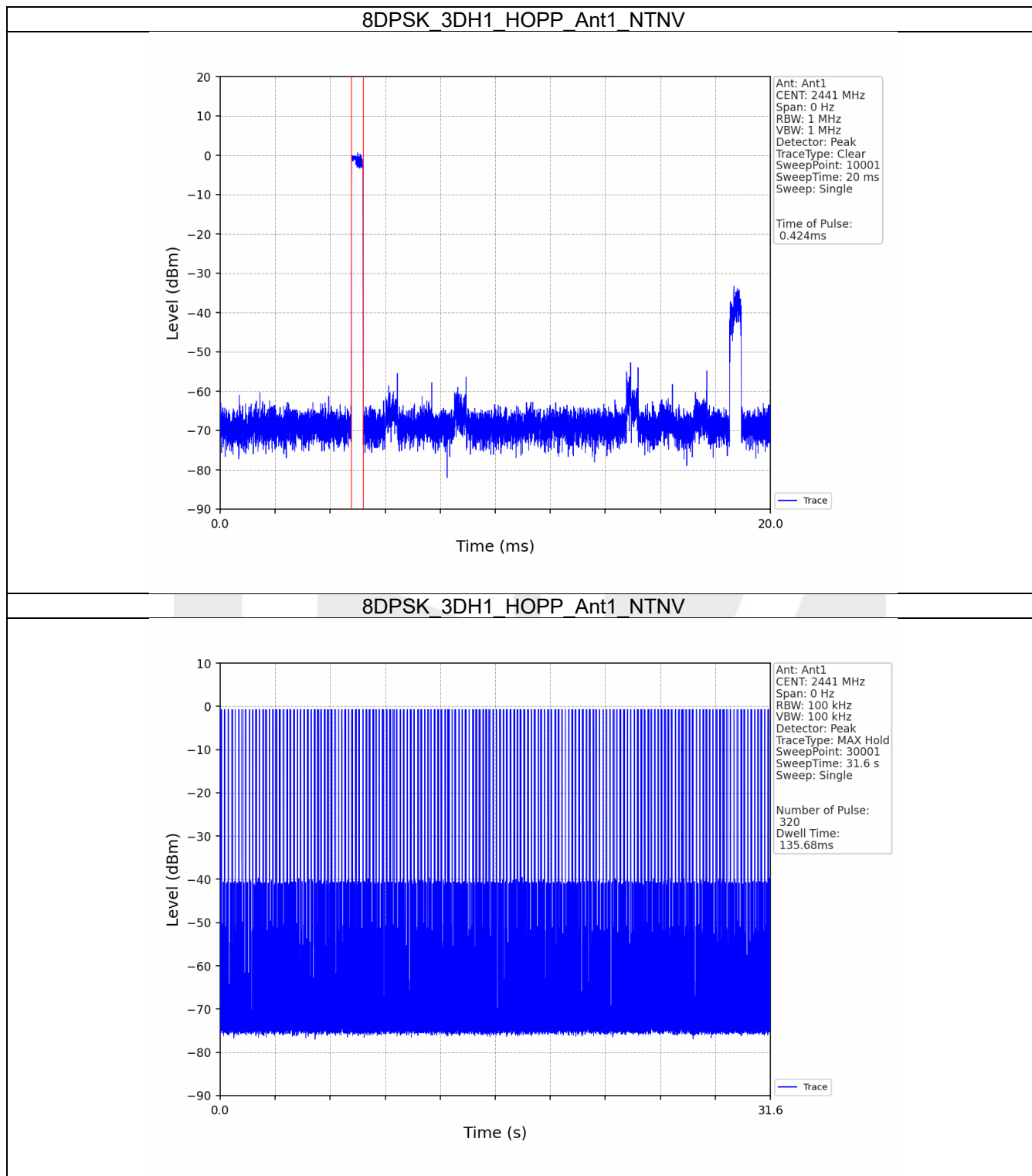


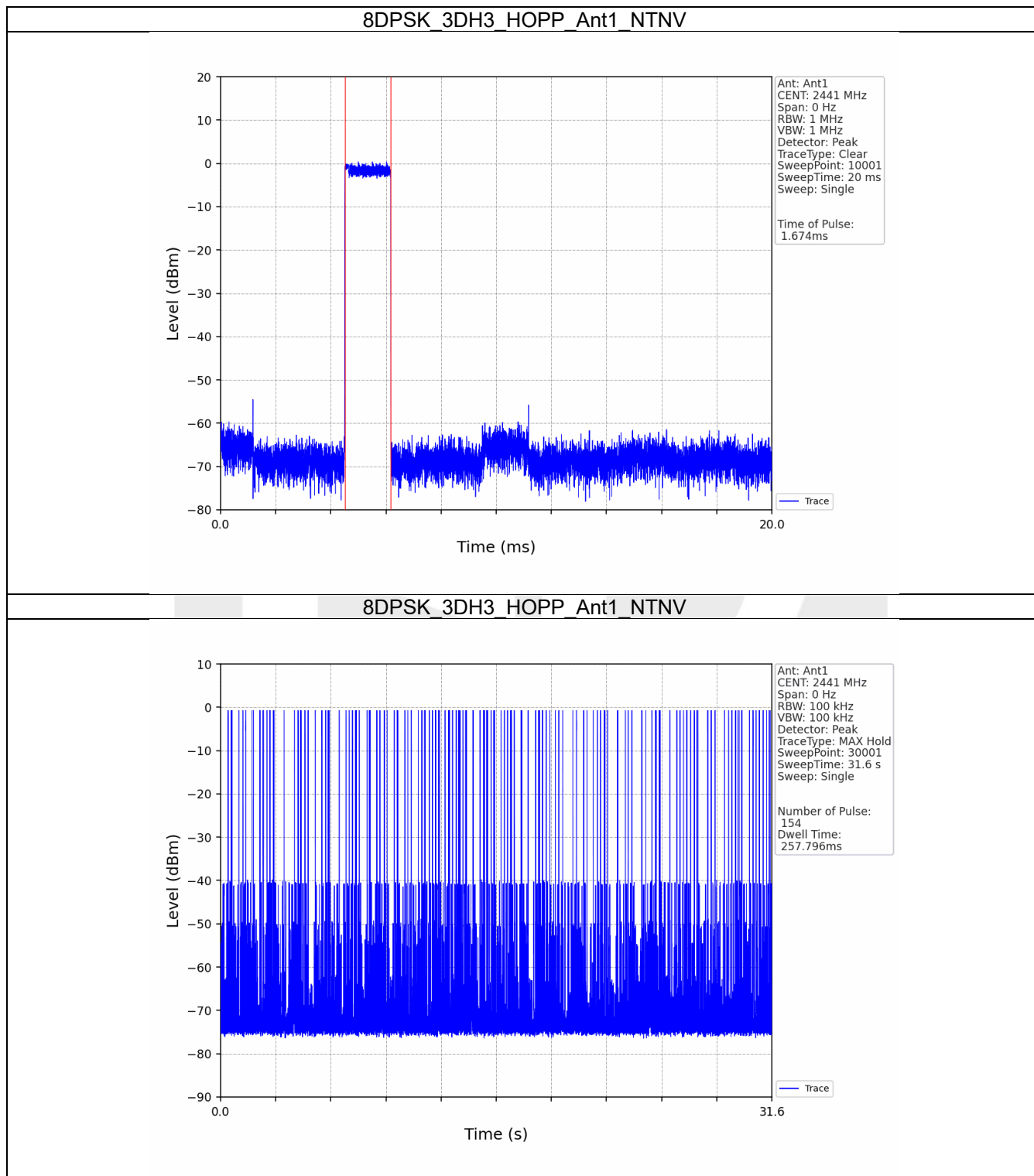


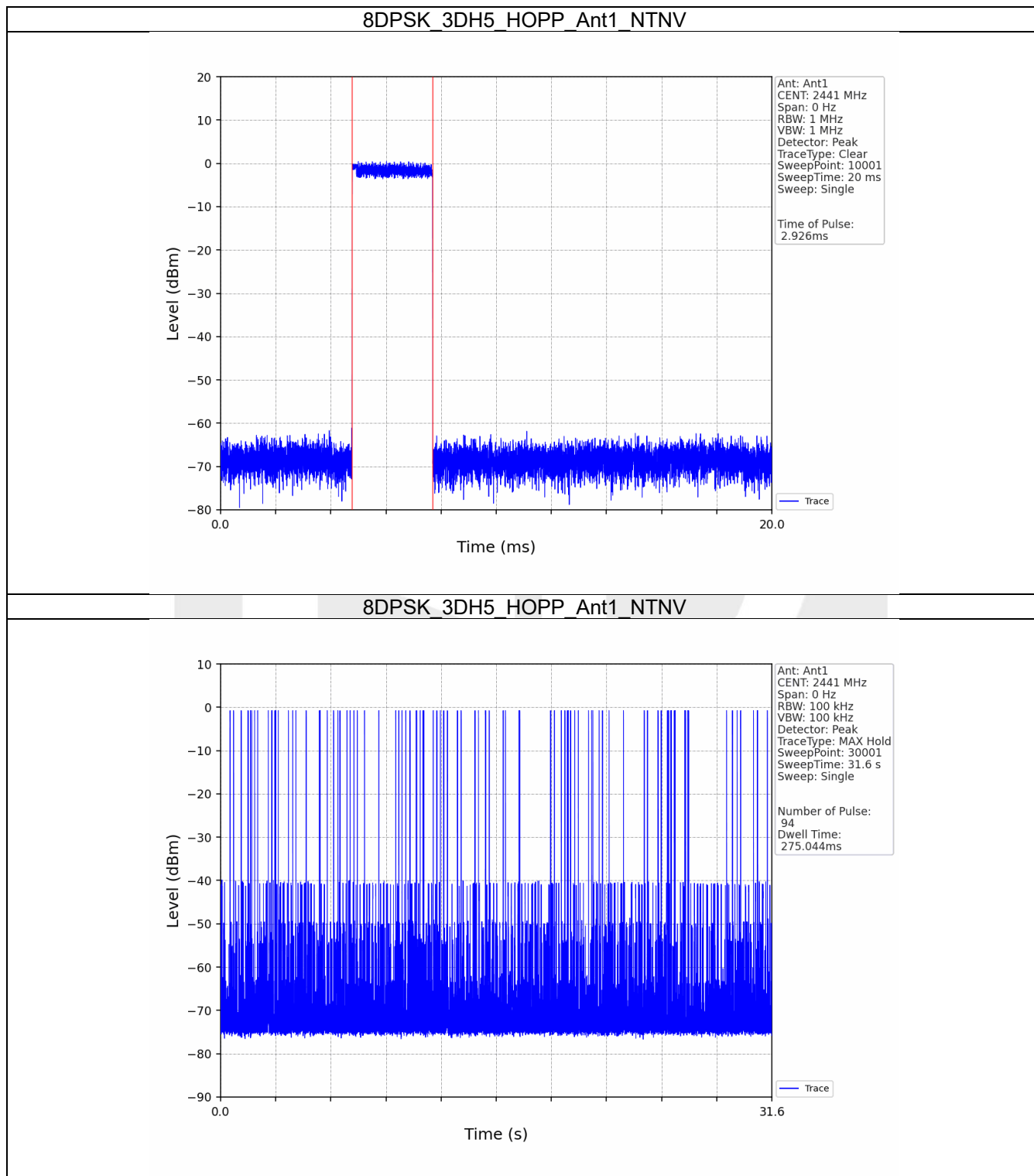












## 7. Unwanted Emissions In Non-restricted Frequency Bands

### 7.1 Test Result

#### 7.1.1 Ref

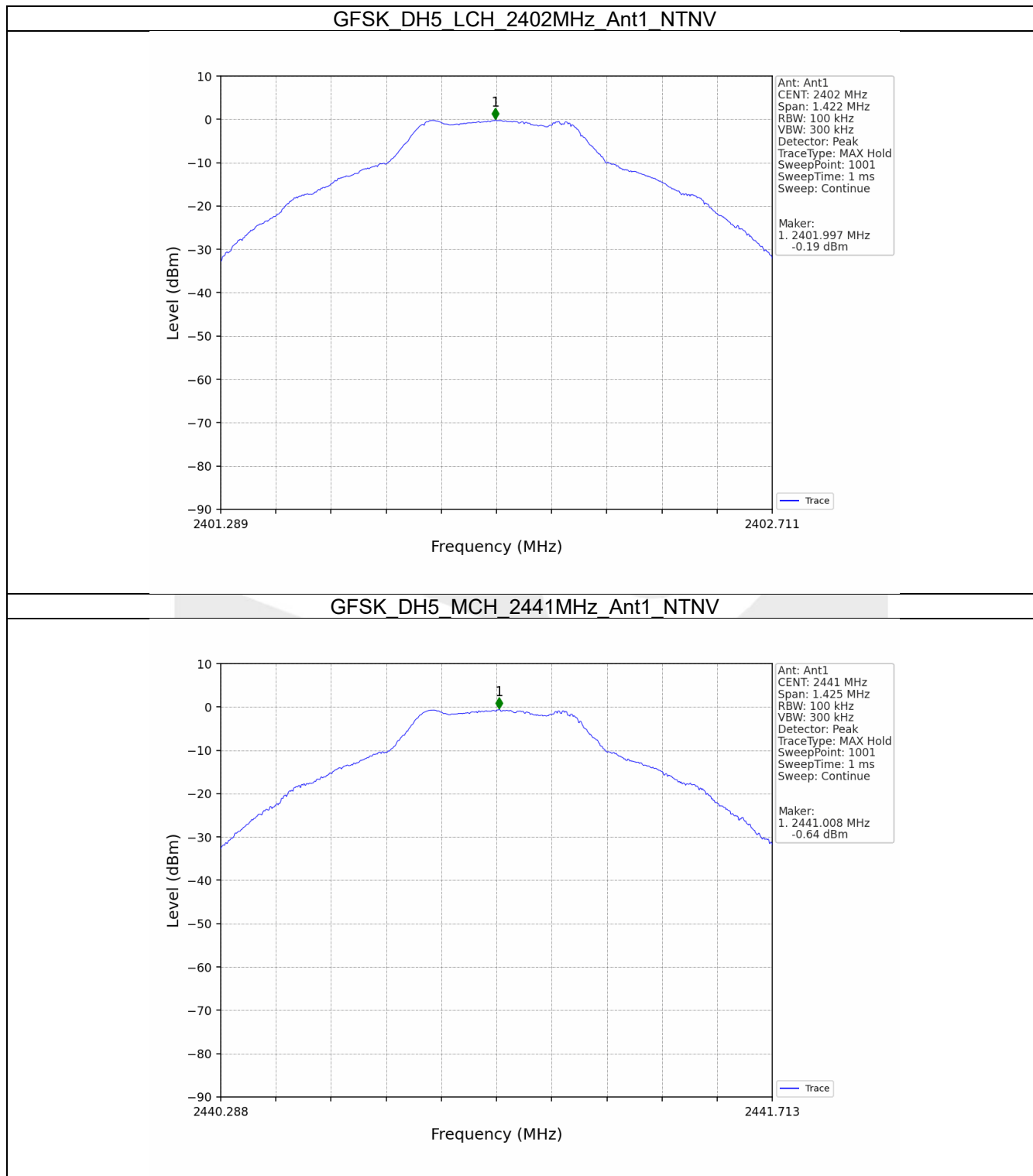
| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | -0.19                    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | -0.64                    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | -0.47                    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | 0.08                     |
|                                                                                                                                                 |         |                 |             |     | 0.08                     |
| $\pi/4$ -DQPSK                                                                                                                                  | SISO    | 2402            | 2DH5        | 1   | -0.46                    |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | -0.64                    |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -0.54                    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | -0.15                    |
|                                                                                                                                                 |         |                 |             |     | -0.15                    |
| 8DPSK                                                                                                                                           | SISO    | 2402            | 3DH5        | 1   | -0.32                    |
|                                                                                                                                                 |         | 2441            | 3DH5        | 1   | -0.68                    |
|                                                                                                                                                 |         | 2480            | 3DH5        | 1   | -0.52                    |
|                                                                                                                                                 |         | HOPP            | 3DH5        | 1   | -0.13                    |
|                                                                                                                                                 |         |                 |             |     | -0.13                    |
| 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. |         |                 |             |     |                          |

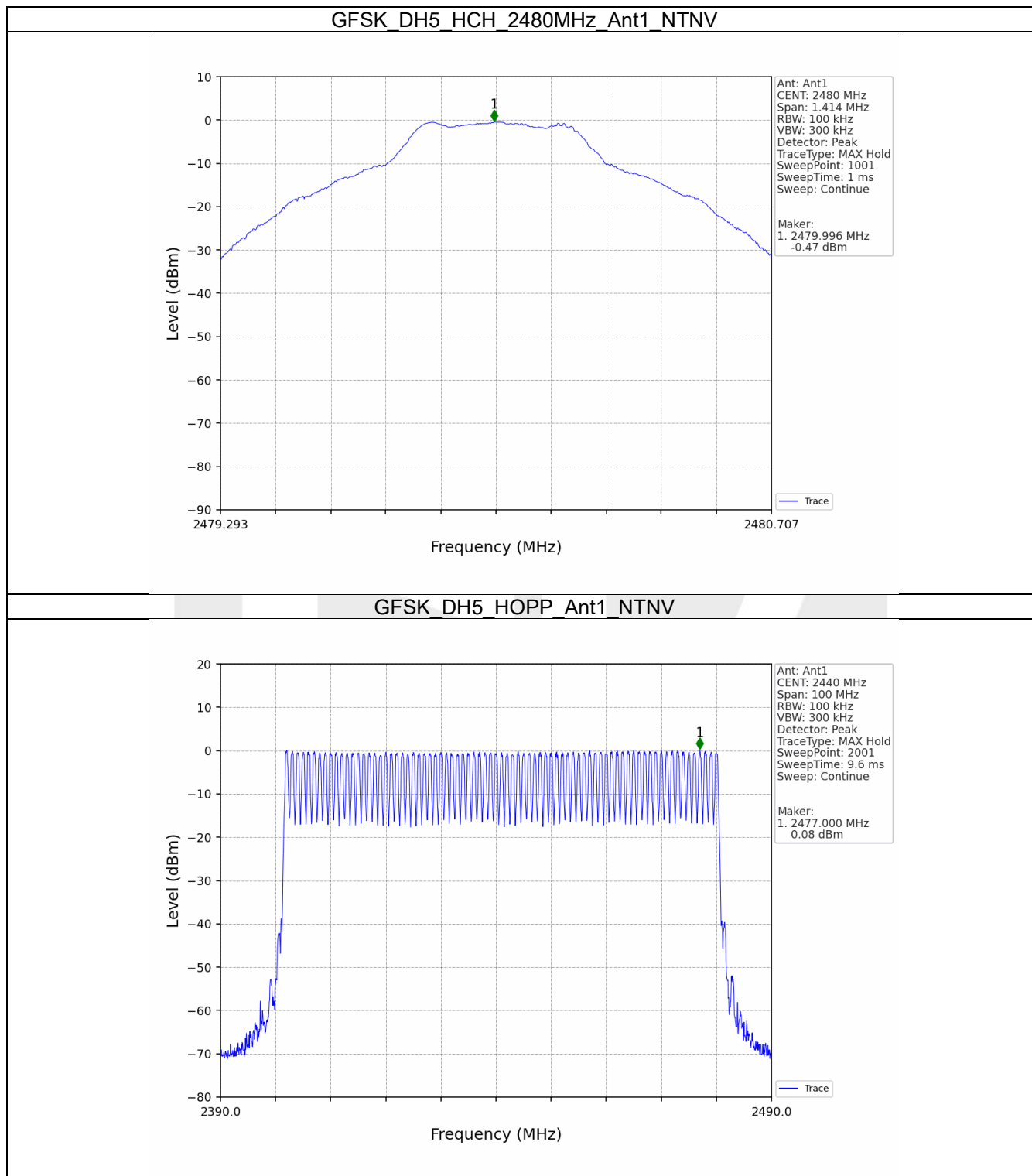
#### 7.1.2 CSE

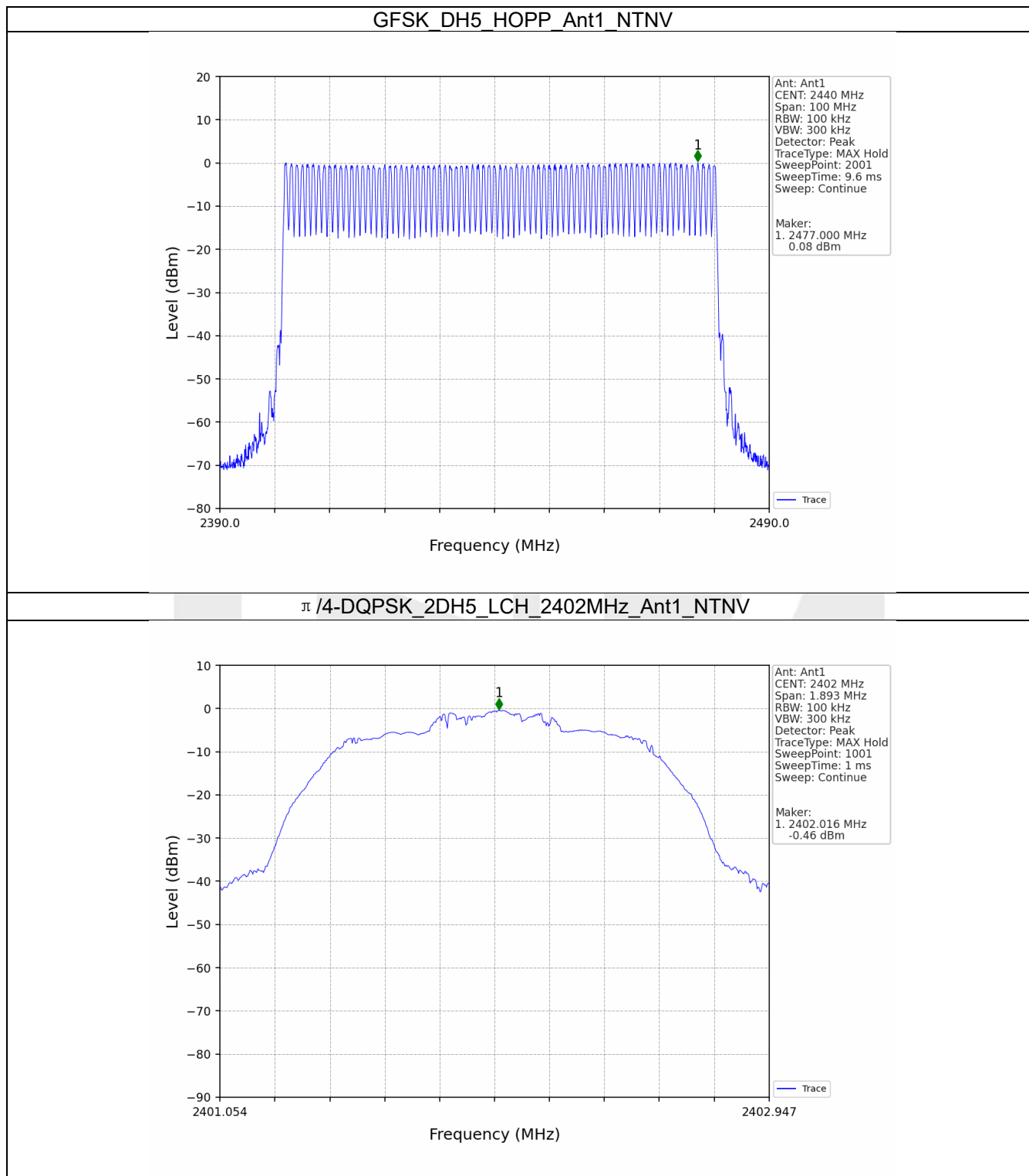
| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | -0.19                    | -20.19      | Pass    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | -0.64                    | -20.64      | Pass    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | -0.47                    | -20.47      | Pass    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | 0.08                     | -19.92      | Pass    |
|                                                                                                                                                 |         |                 |             |     | 0.08                     | -19.92      | Pass    |
| $\pi/4$ -DQPSK                                                                                                                                  | SISO    | 2402            | 2DH5        | 1   | -0.46                    | -20.46      | Pass    |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | -0.64                    | -20.64      | Pass    |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -0.54                    | -20.54      | Pass    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | -0.15                    | -20.15      | Pass    |
|                                                                                                                                                 |         |                 |             |     | -0.15                    | -20.15      | Pass    |
| 8DPSK                                                                                                                                           | SISO    | 2402            | 3DH5        | 1   | -0.32                    | -20.32      | Pass    |
|                                                                                                                                                 |         | 2441            | 3DH5        | 1   | -0.68                    | -20.68      | Pass    |
|                                                                                                                                                 |         | 2480            | 3DH5        | 1   | -0.52                    | -20.52      | Pass    |
|                                                                                                                                                 |         | HOPP            | 3DH5        | 1   | -0.13                    | -20.13      | Pass    |
|                                                                                                                                                 |         |                 |             |     | -0.13                    | -20.13      | 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. |         |                 |             |     |                          |             |         |

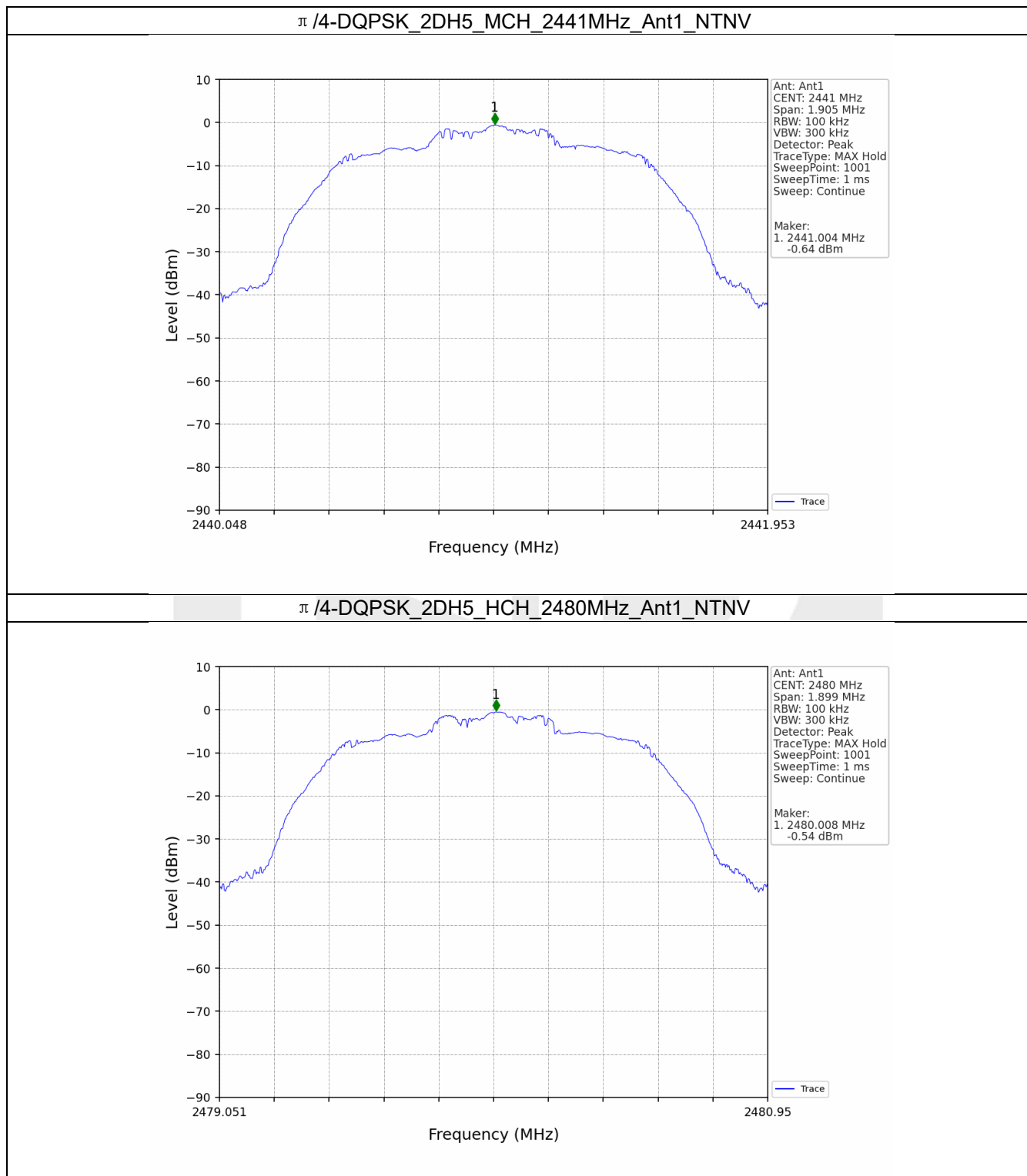
## 7.2 Test Graph

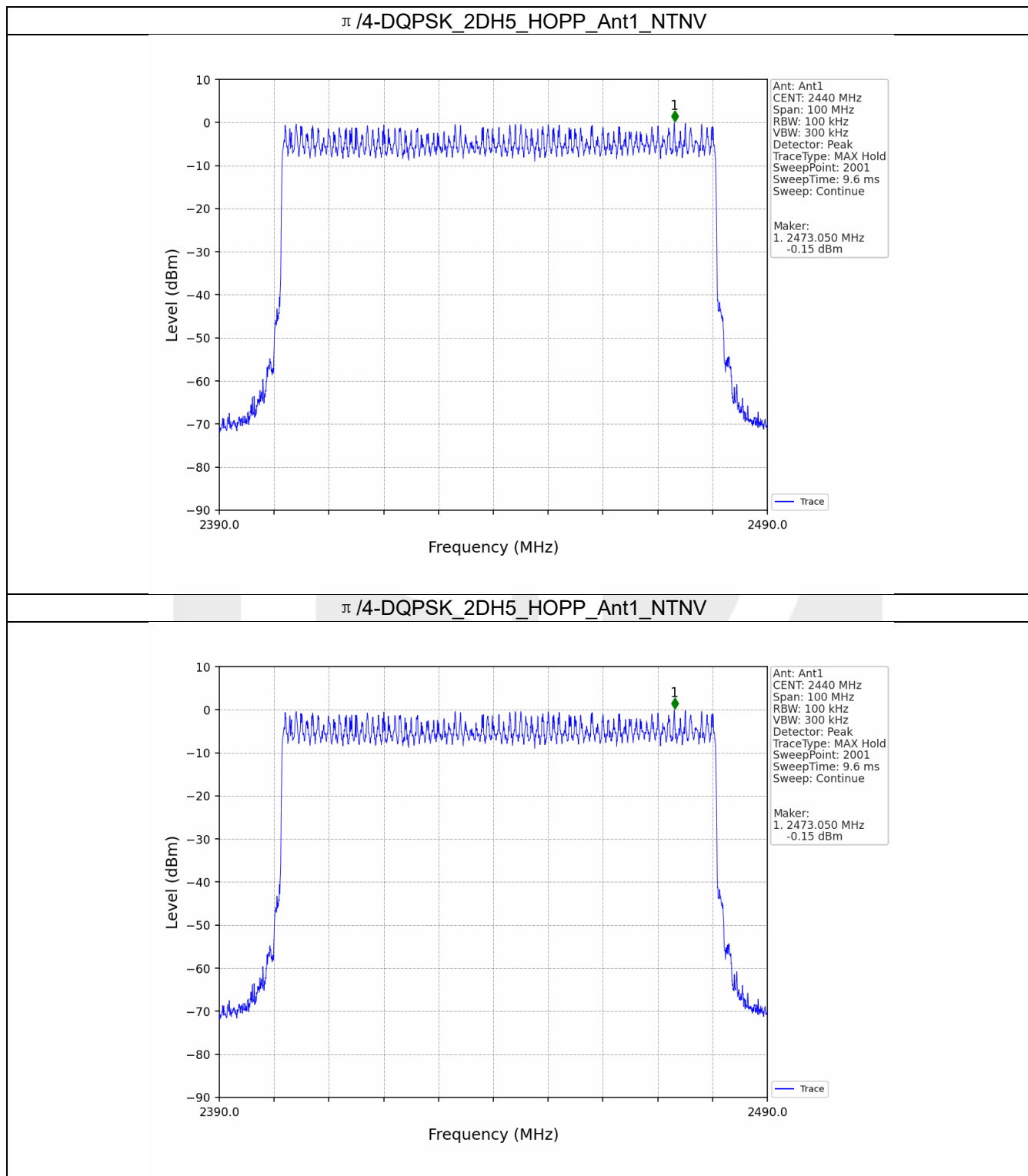
### 7.2.1 Ref

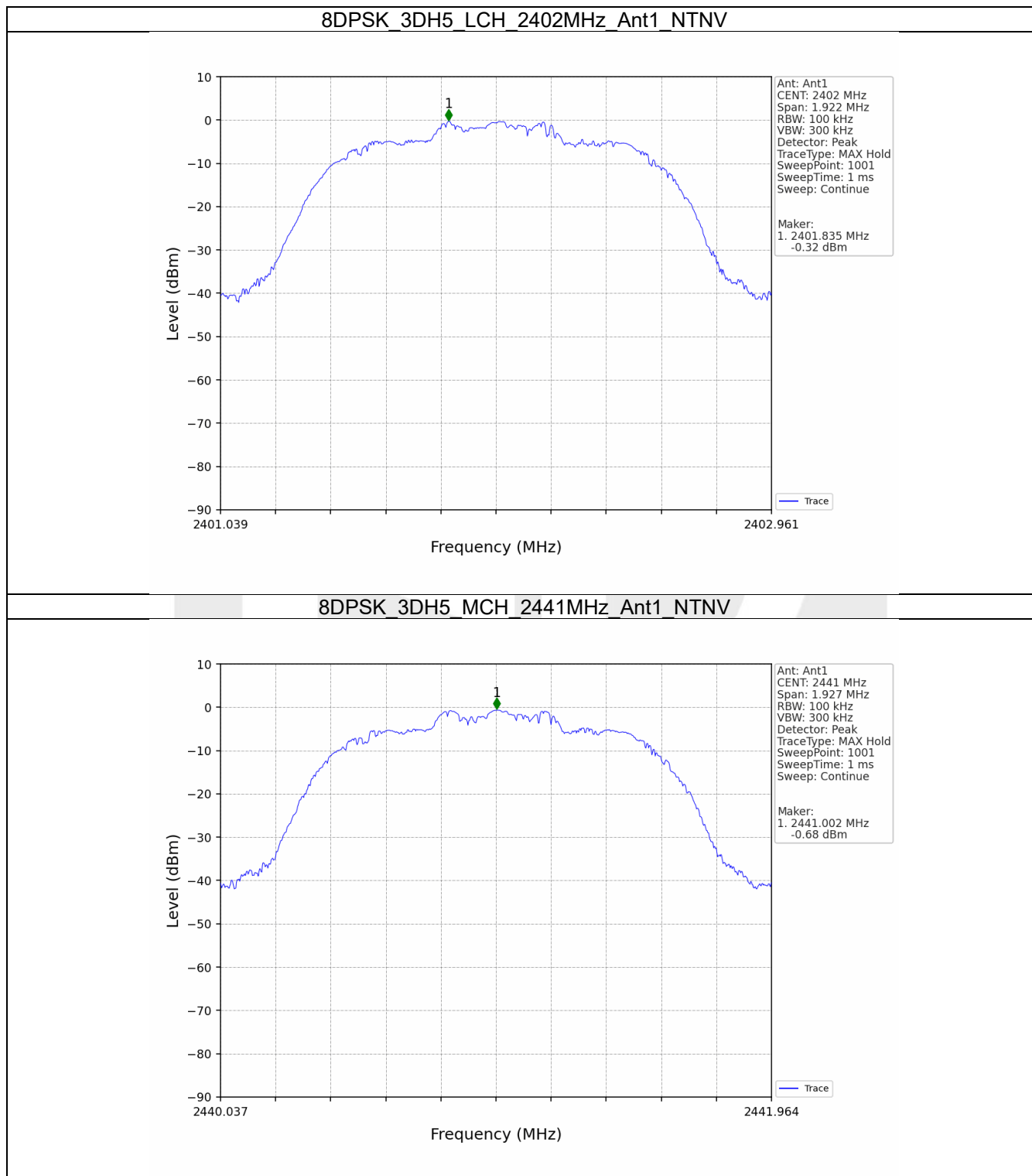


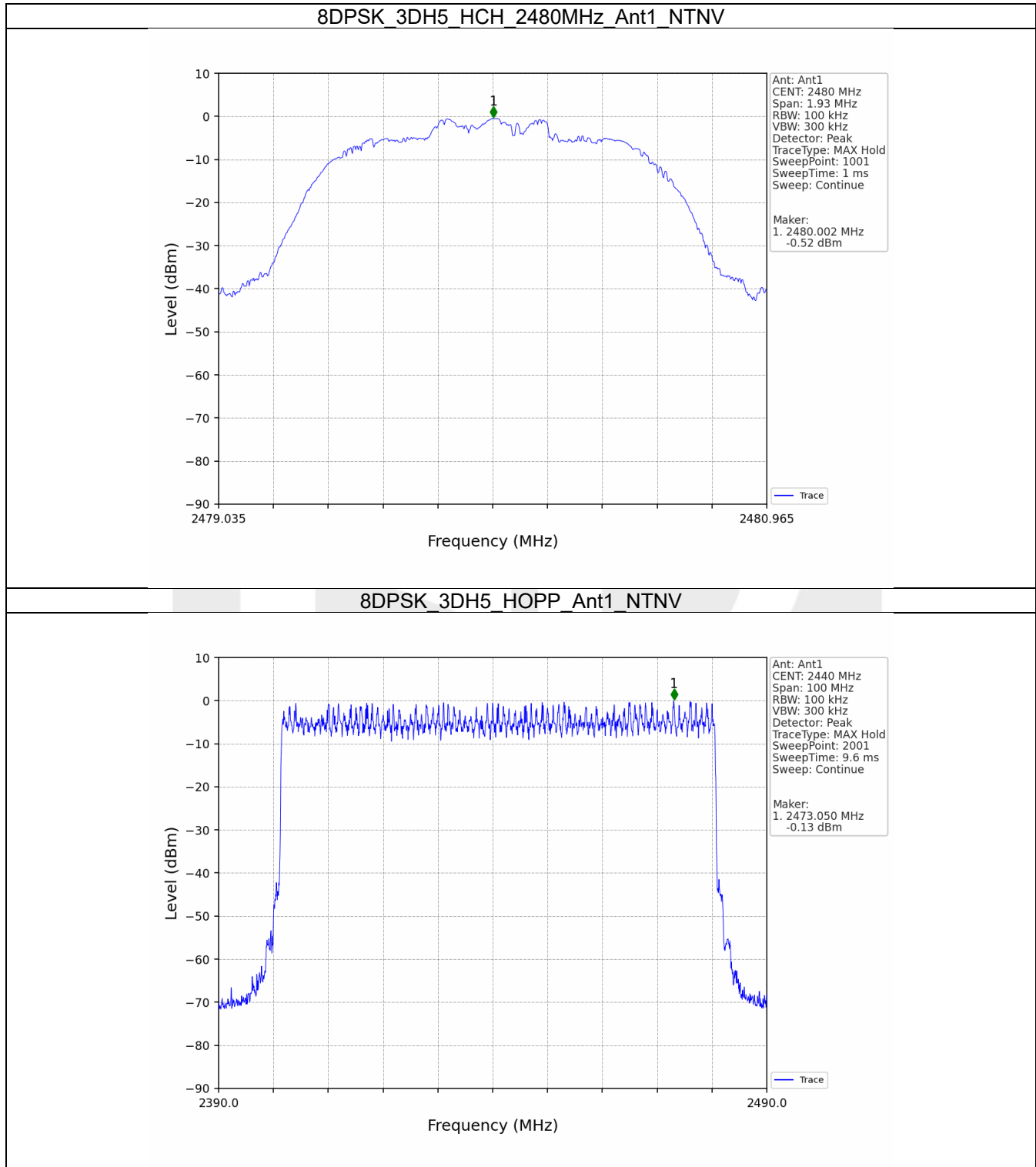


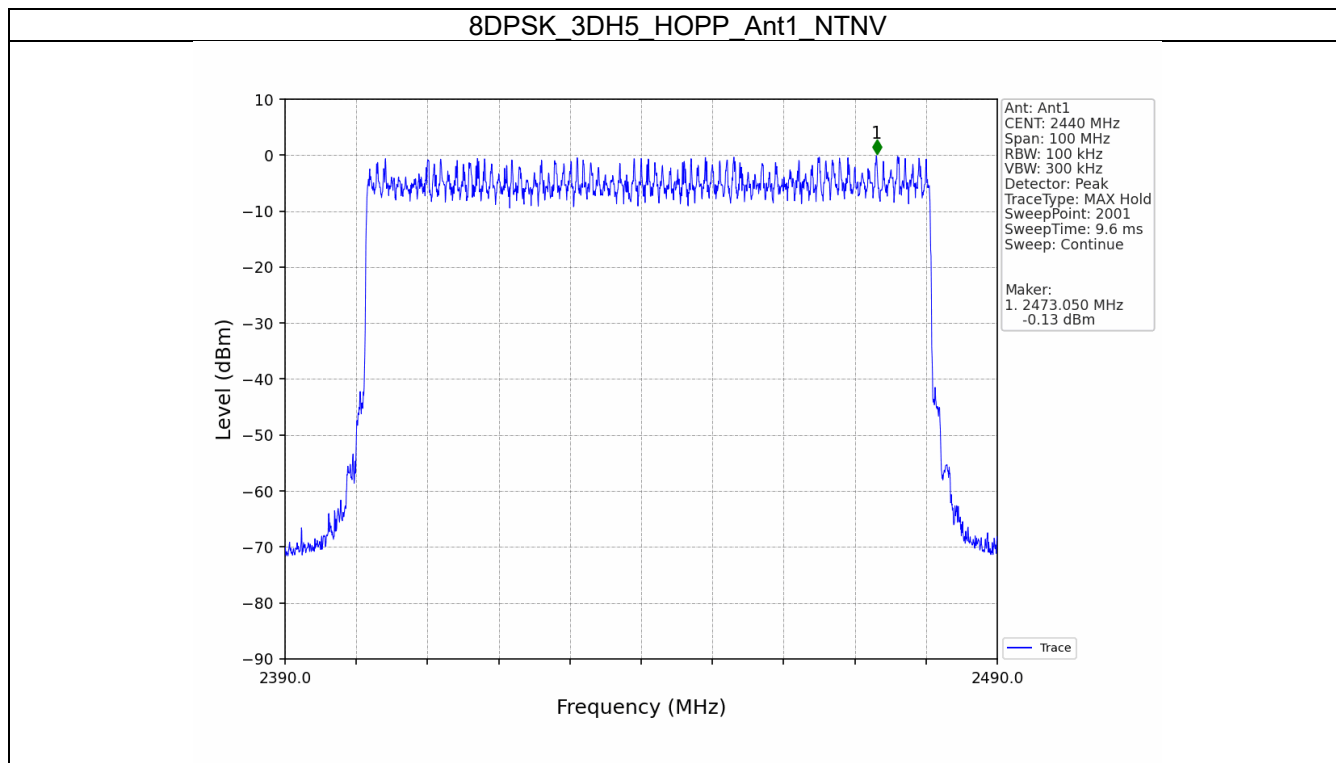




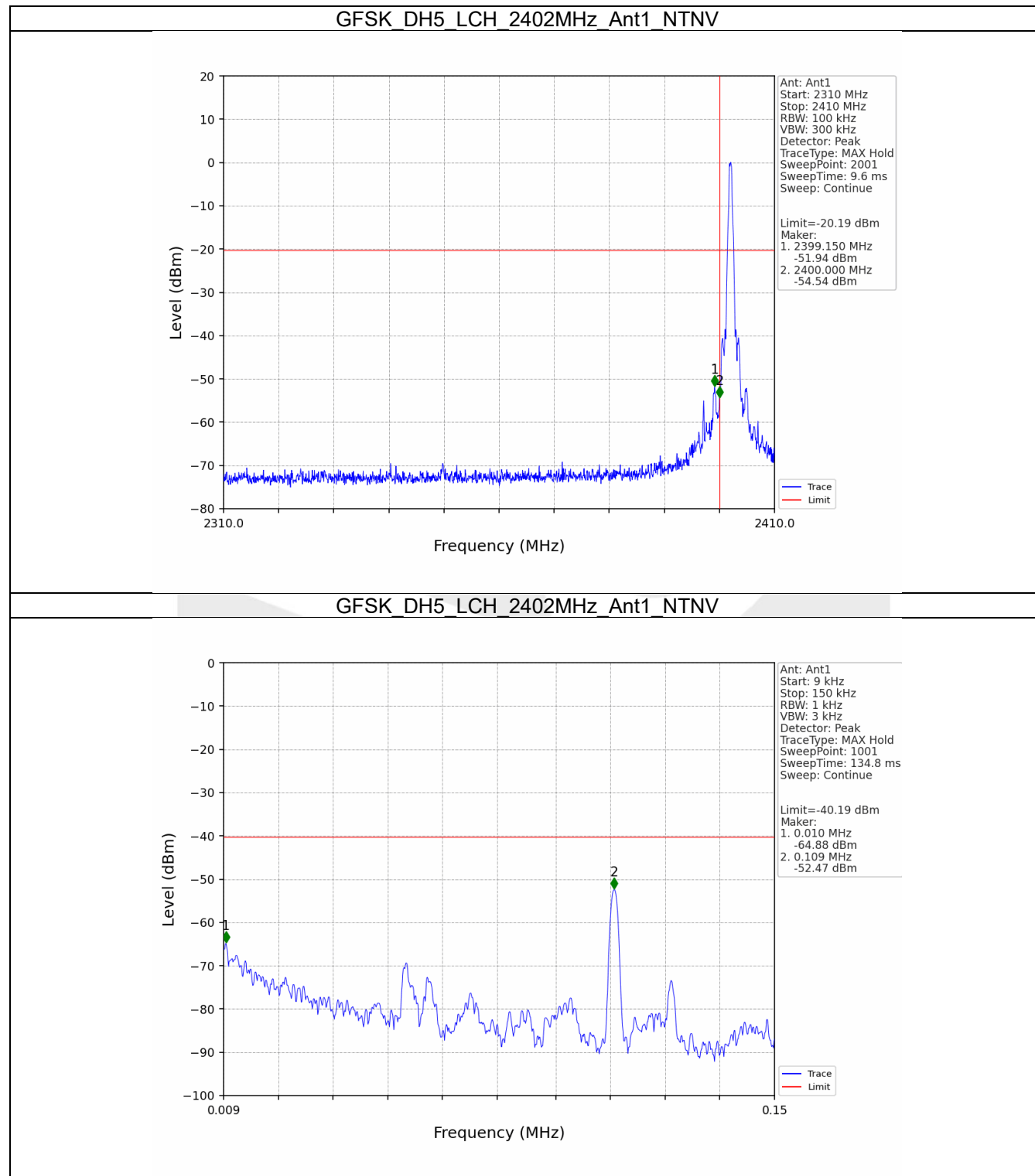


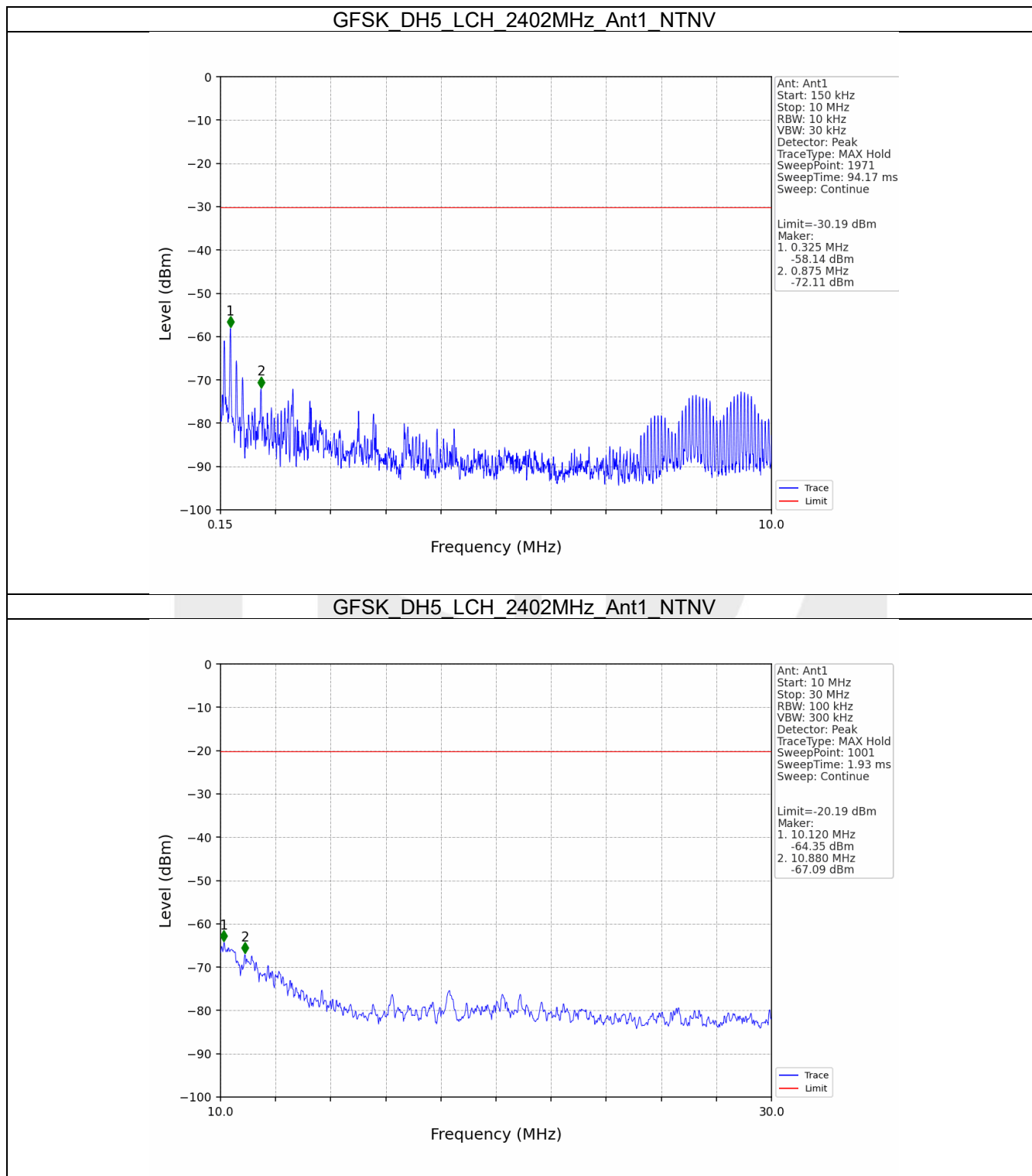


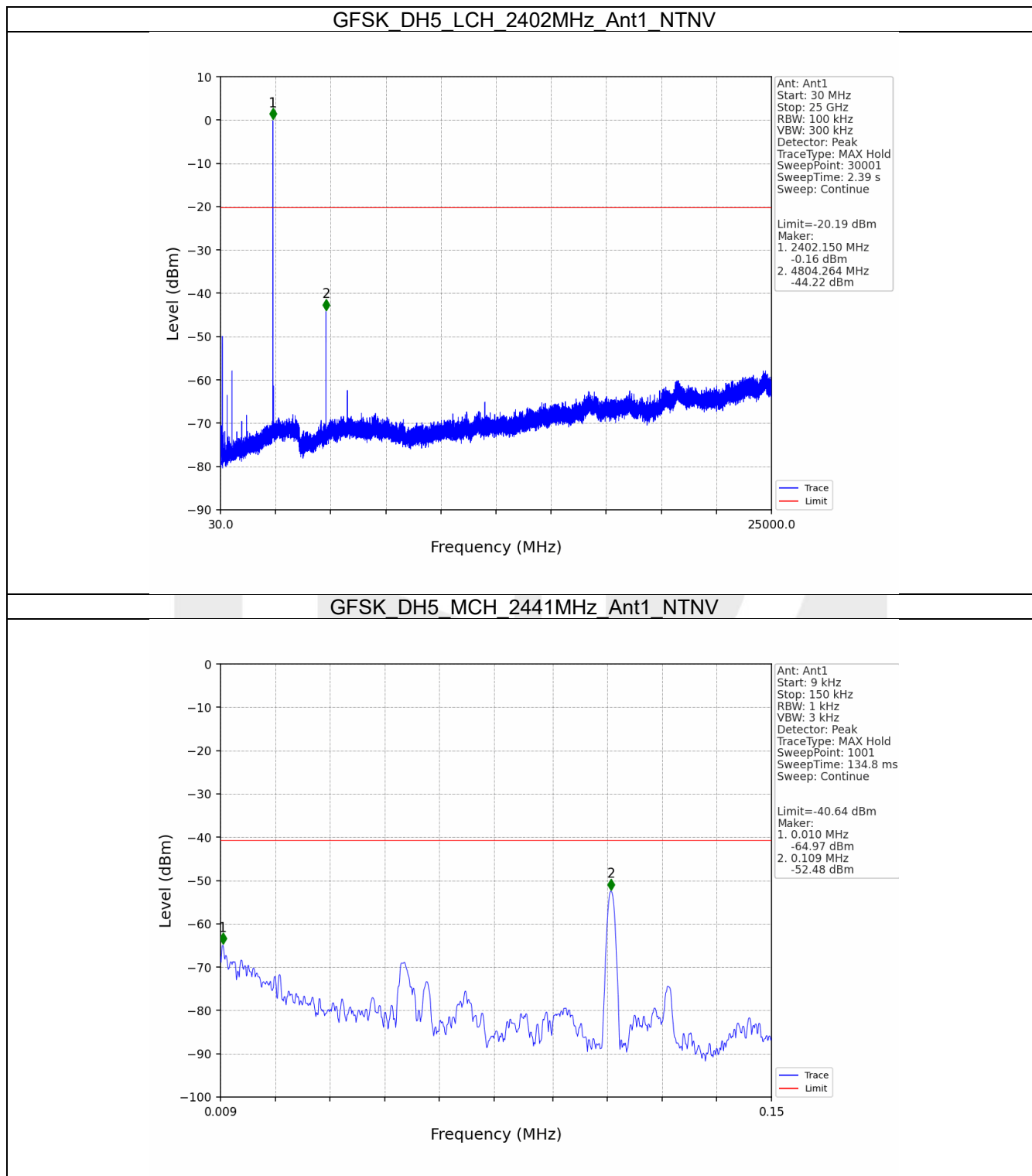


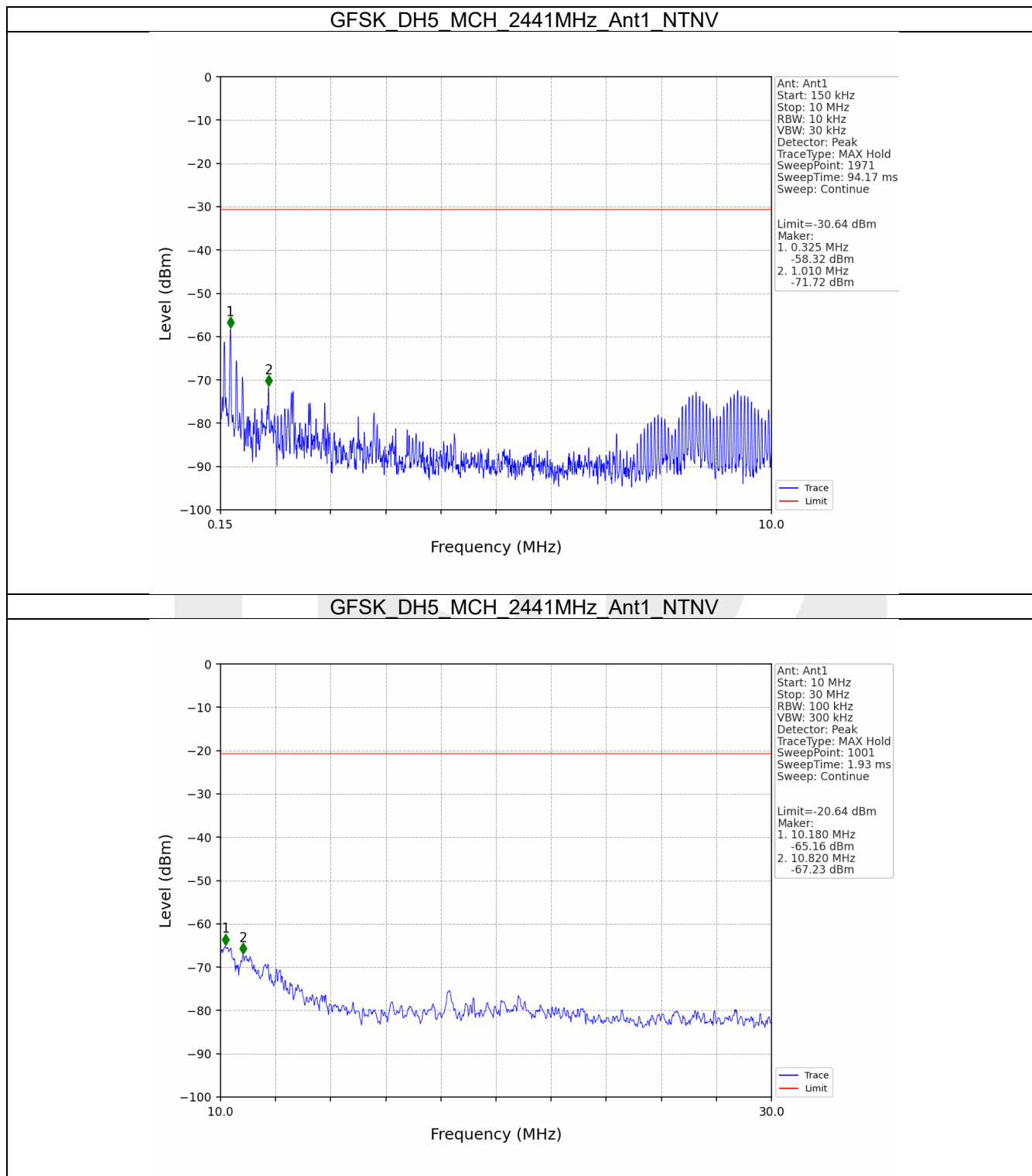


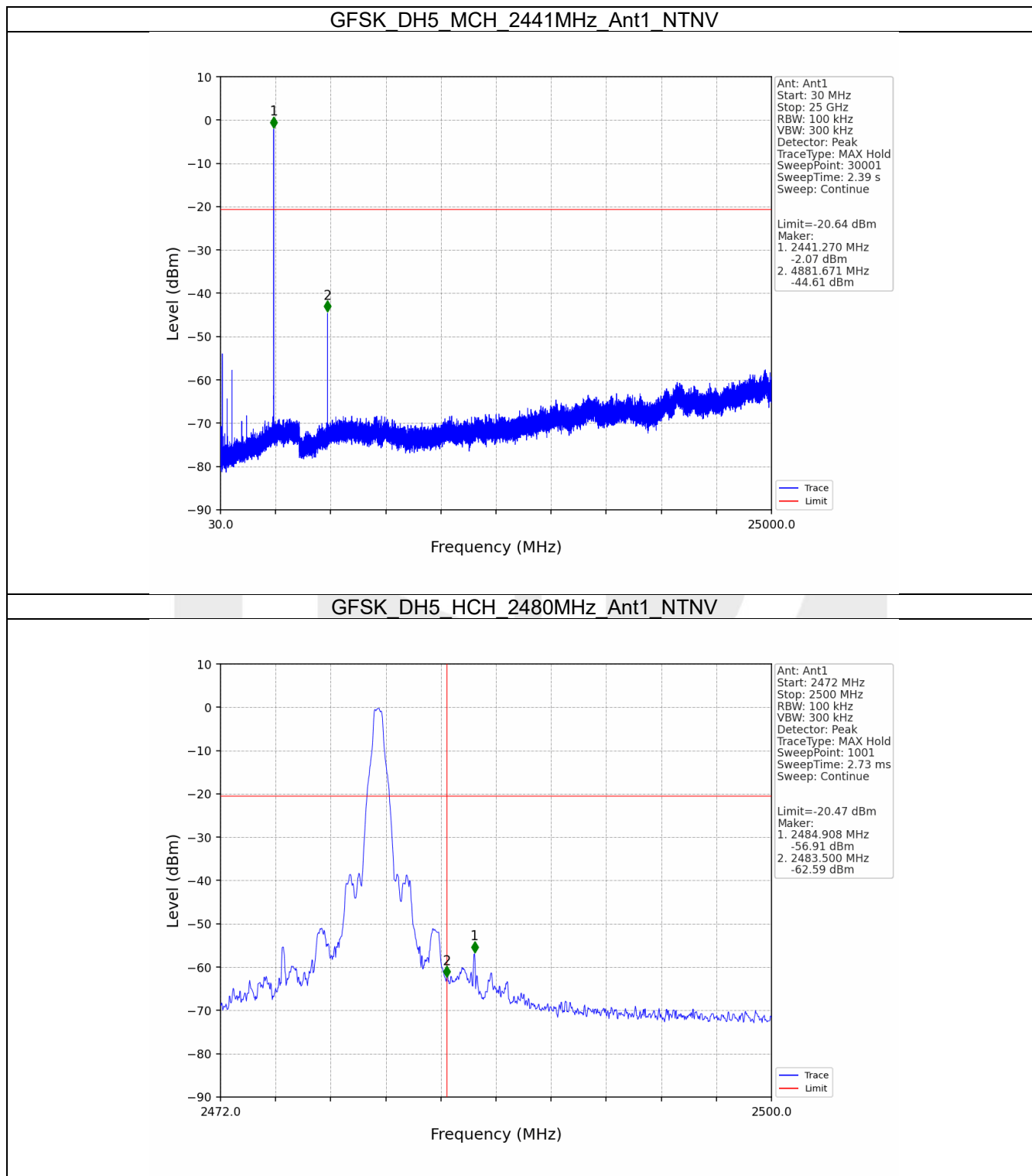
## 7.2.2 CSE

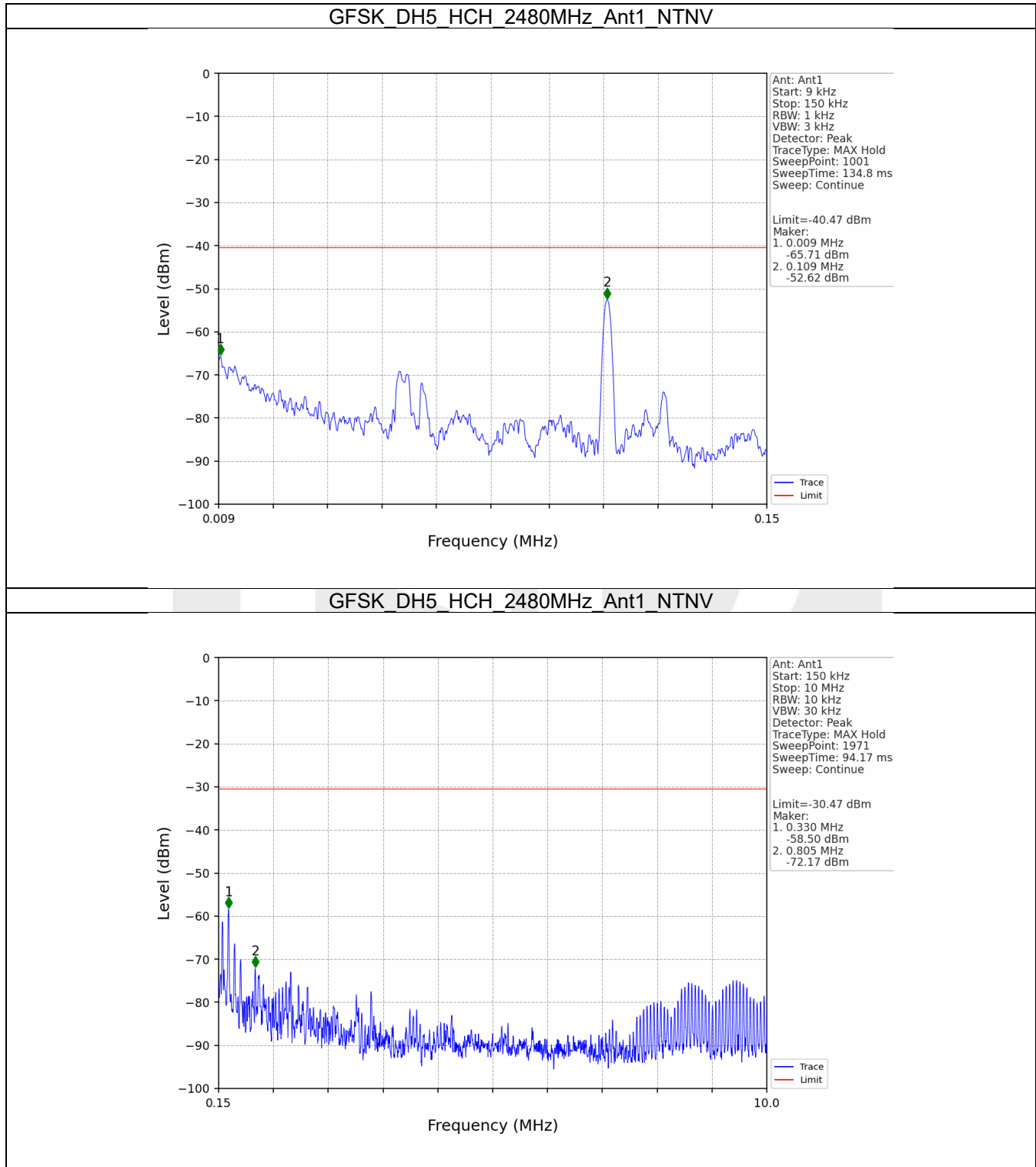


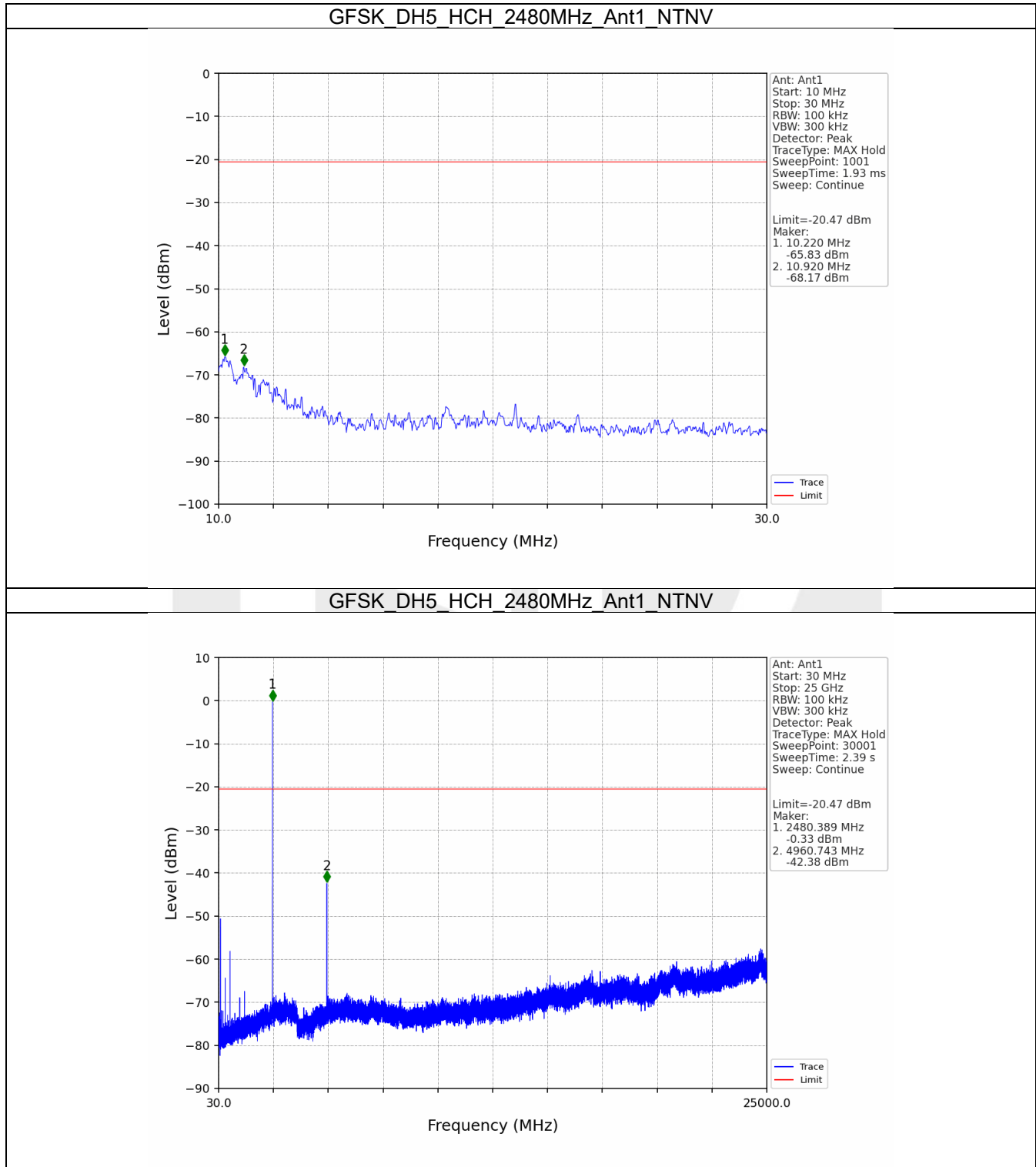


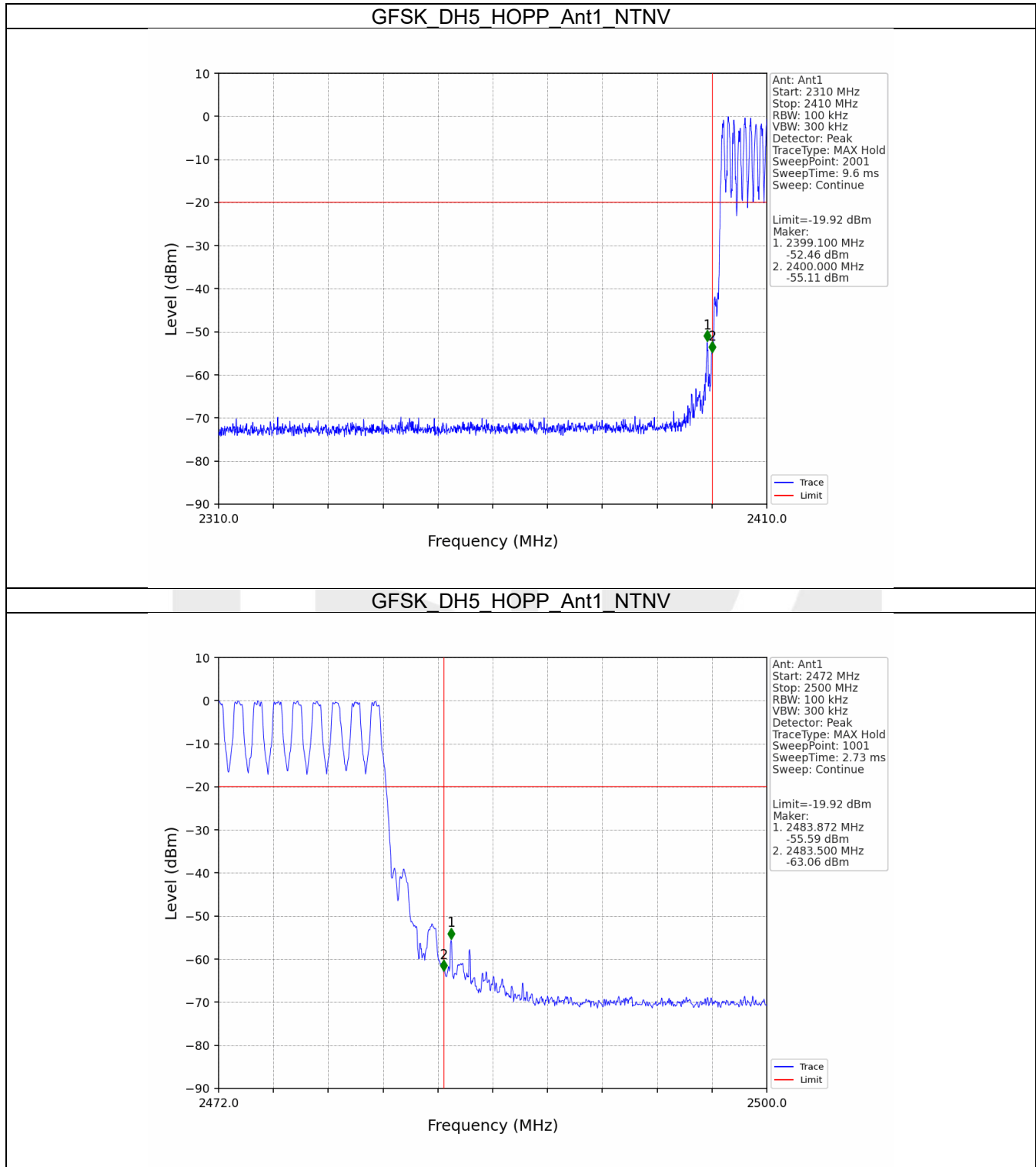


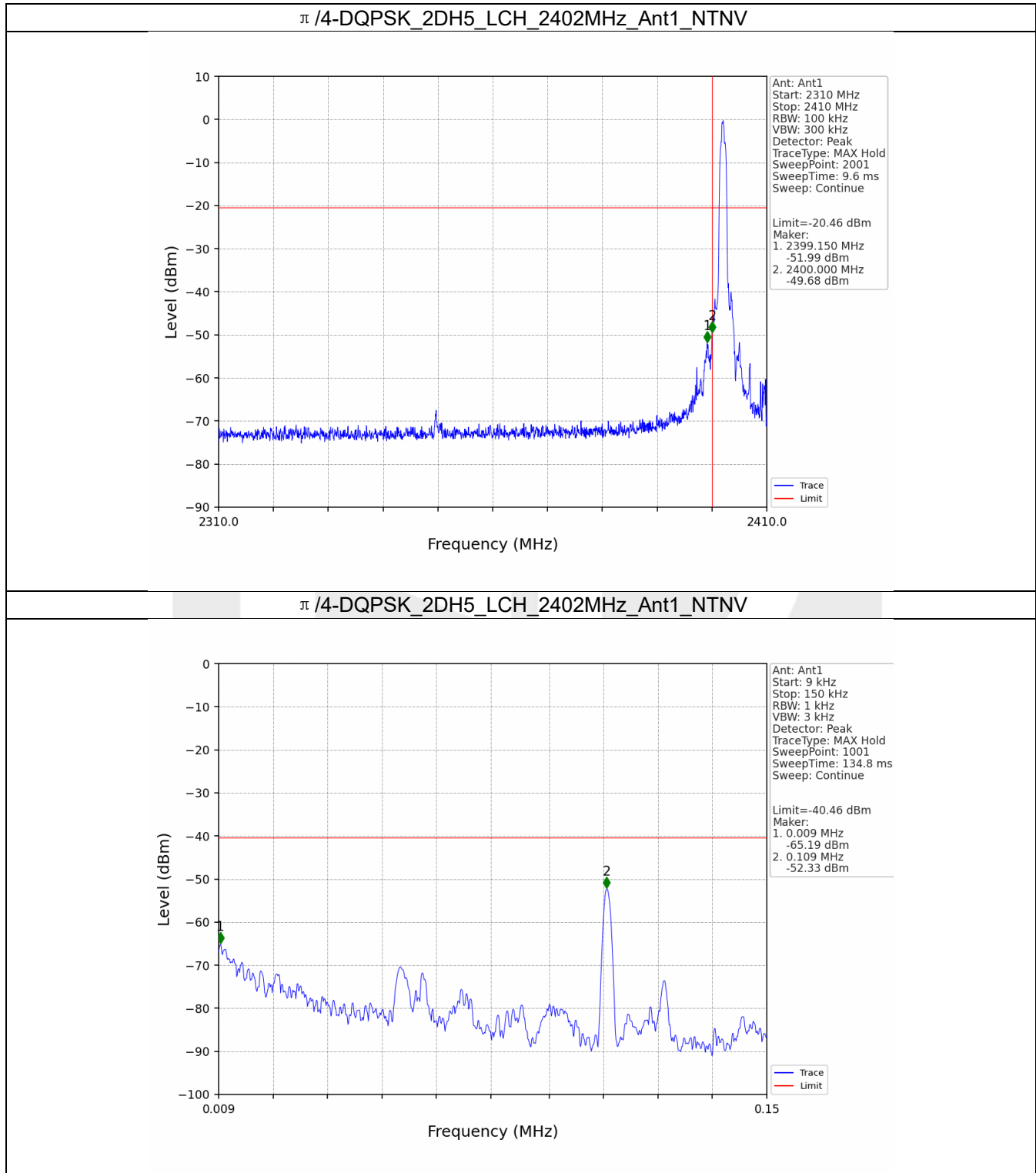


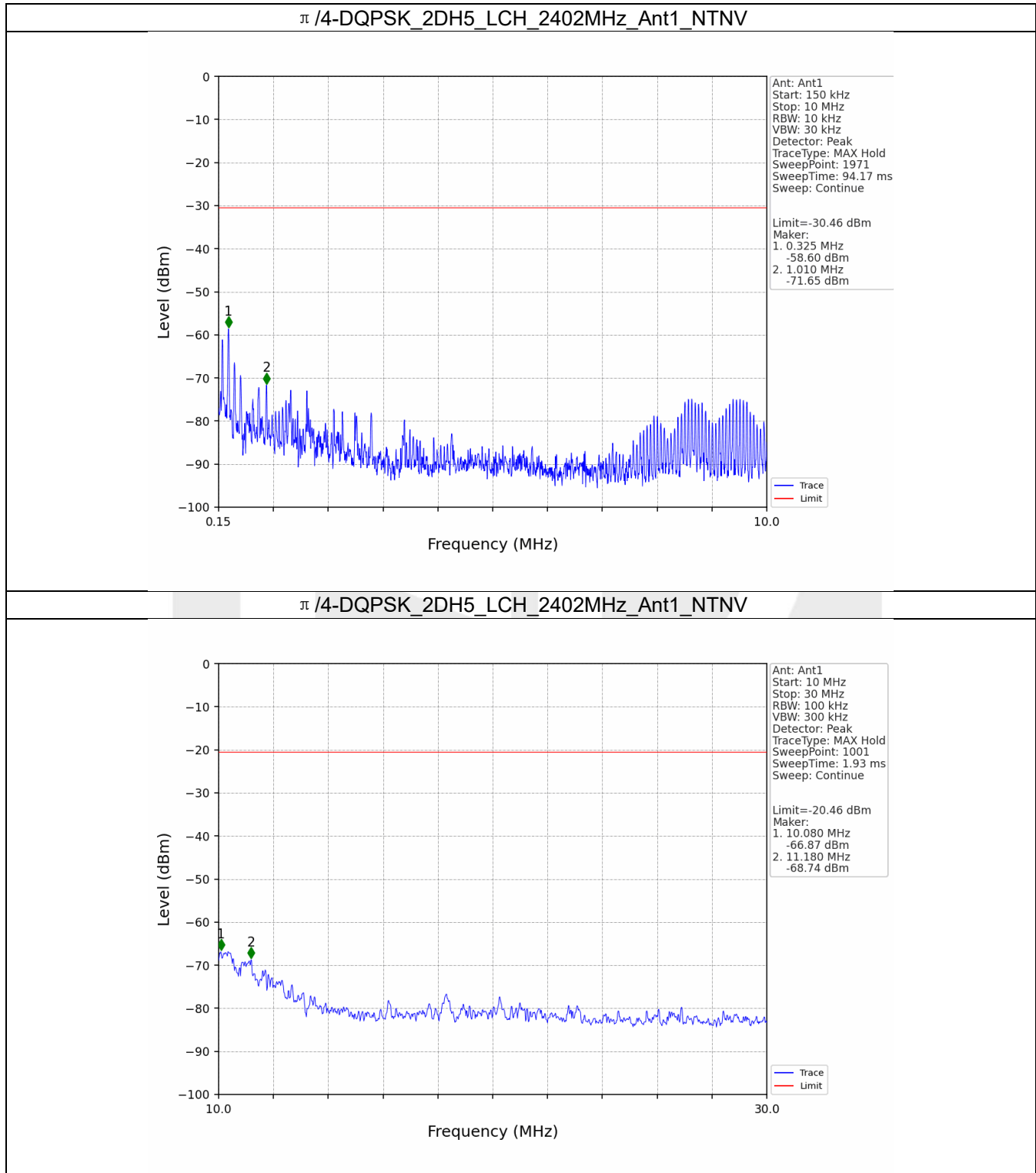


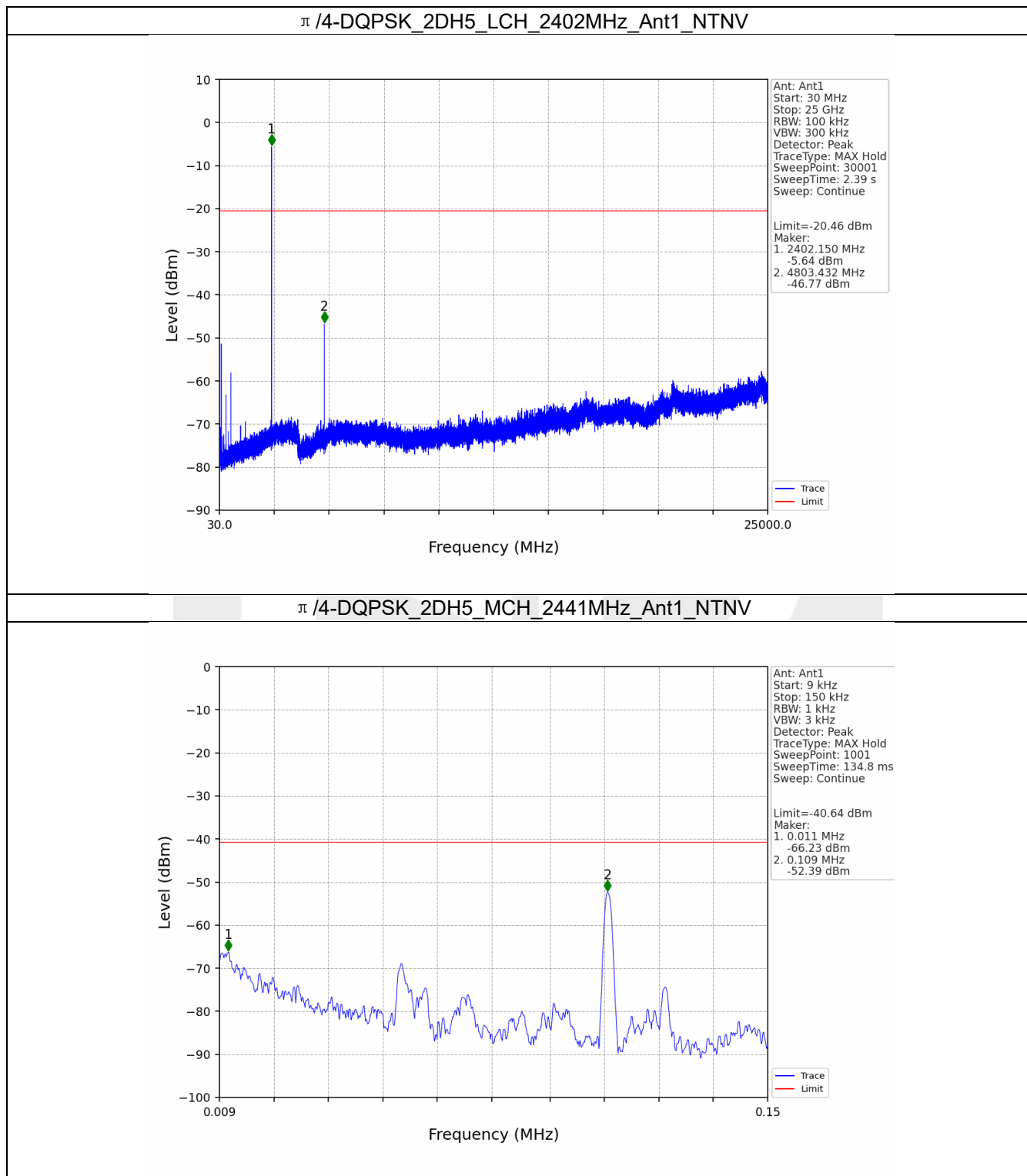


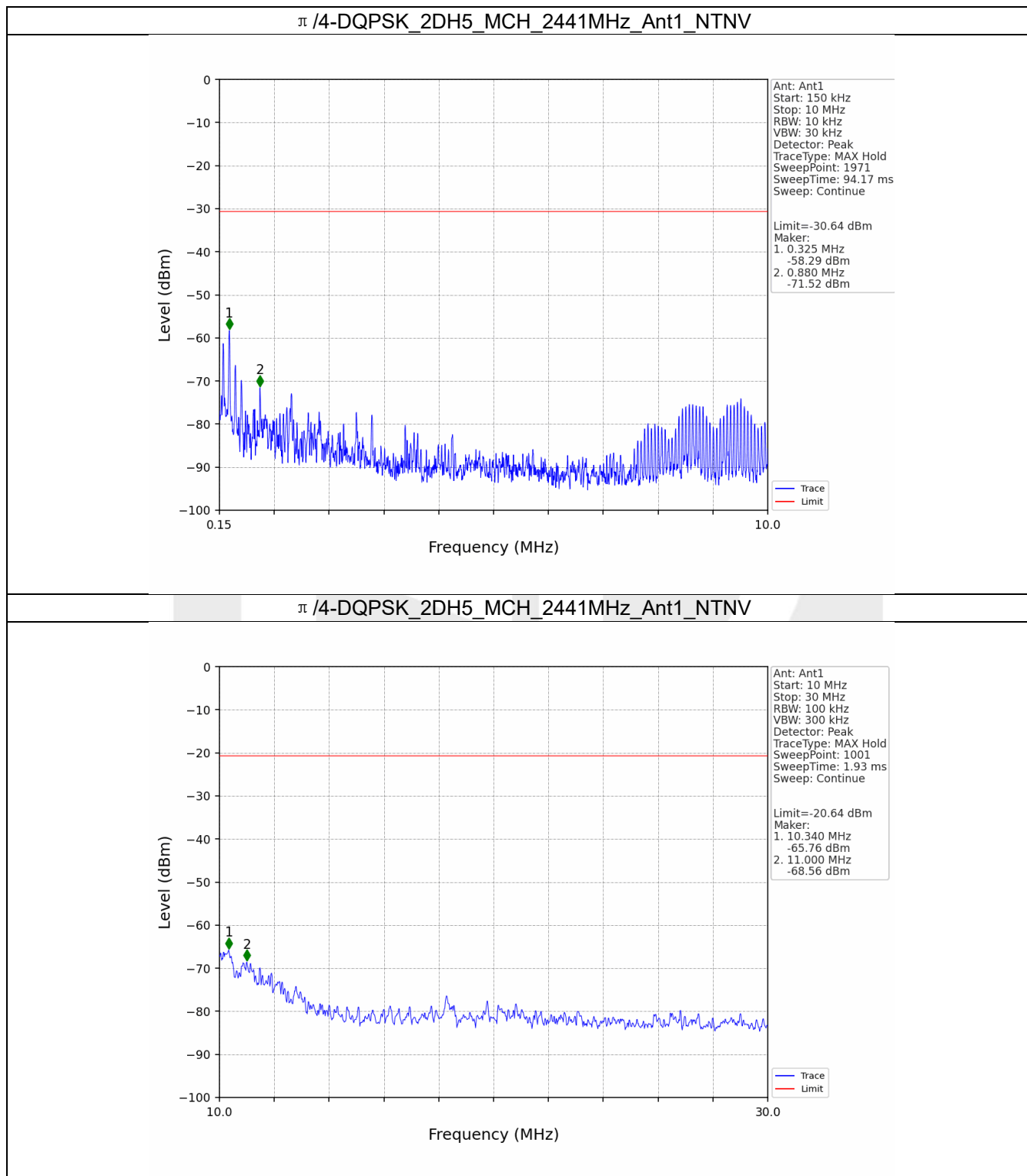


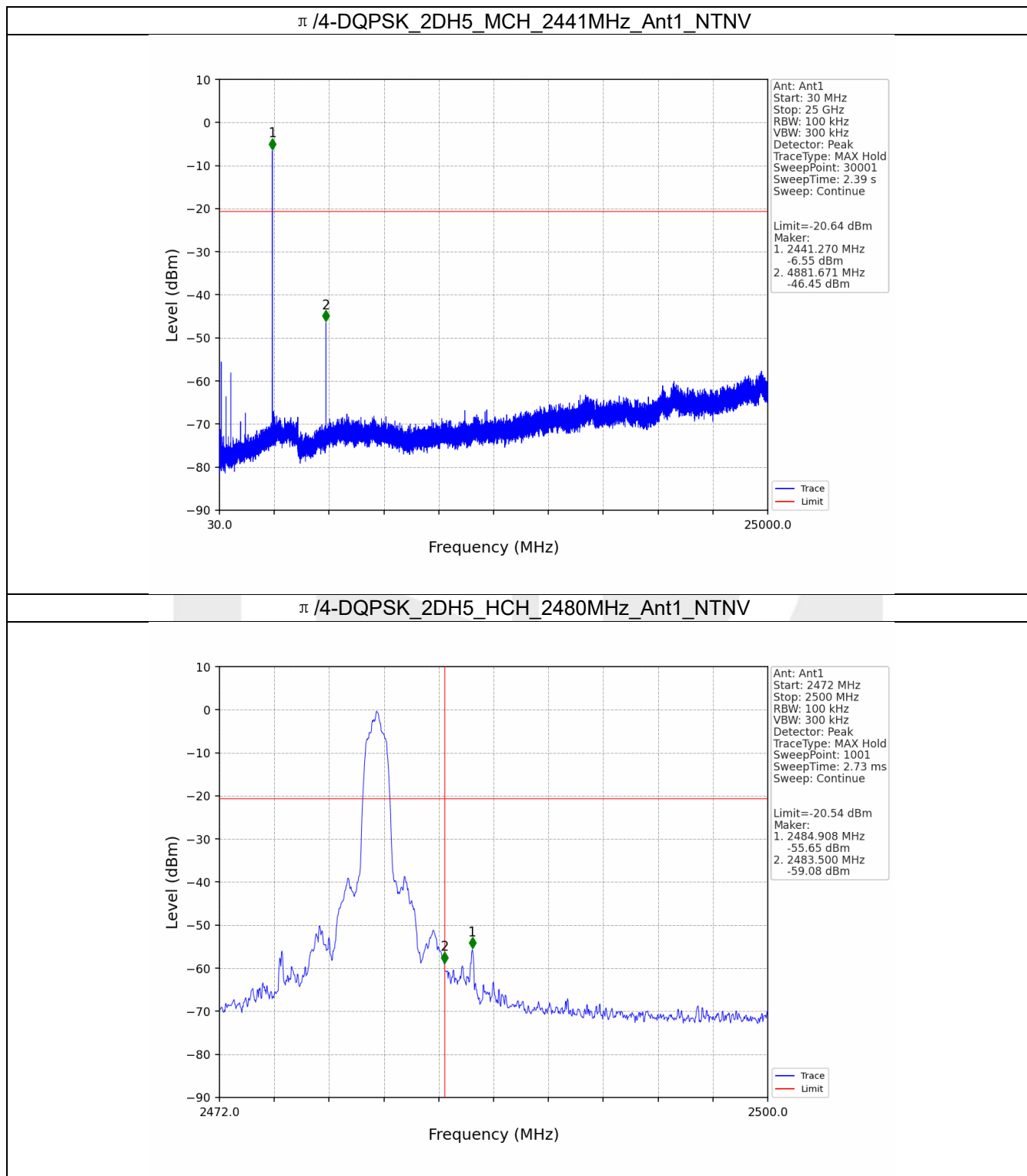


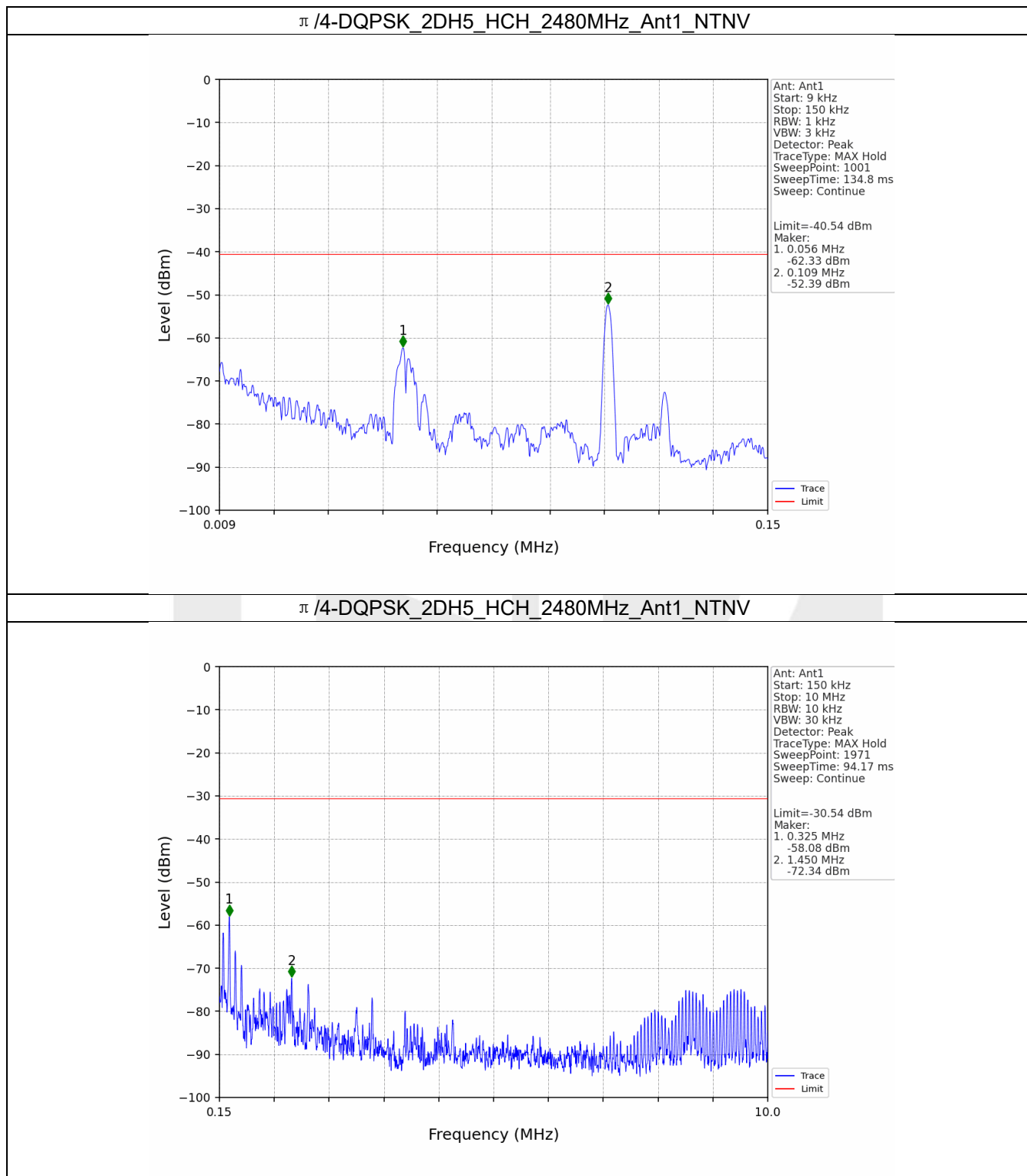


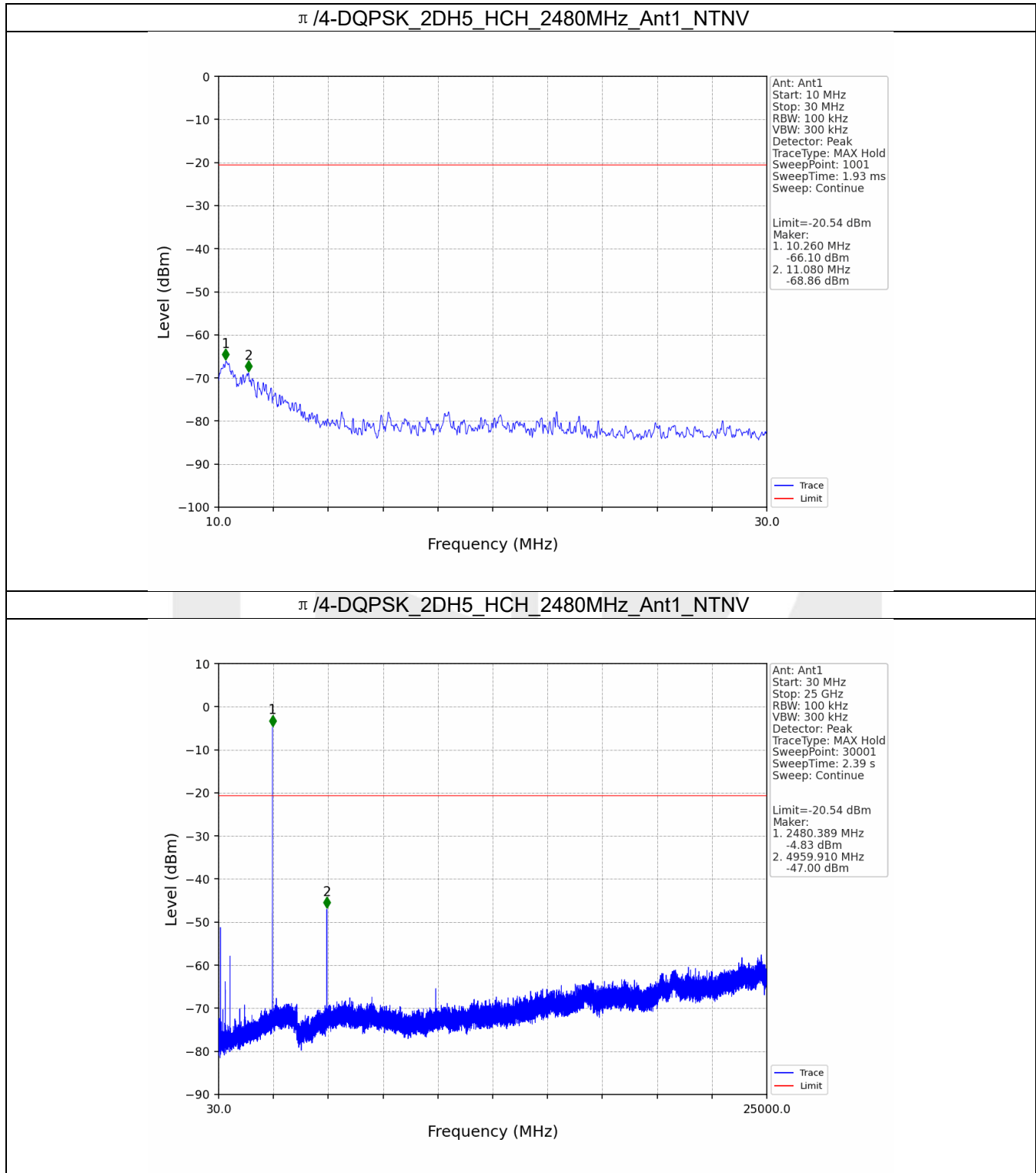


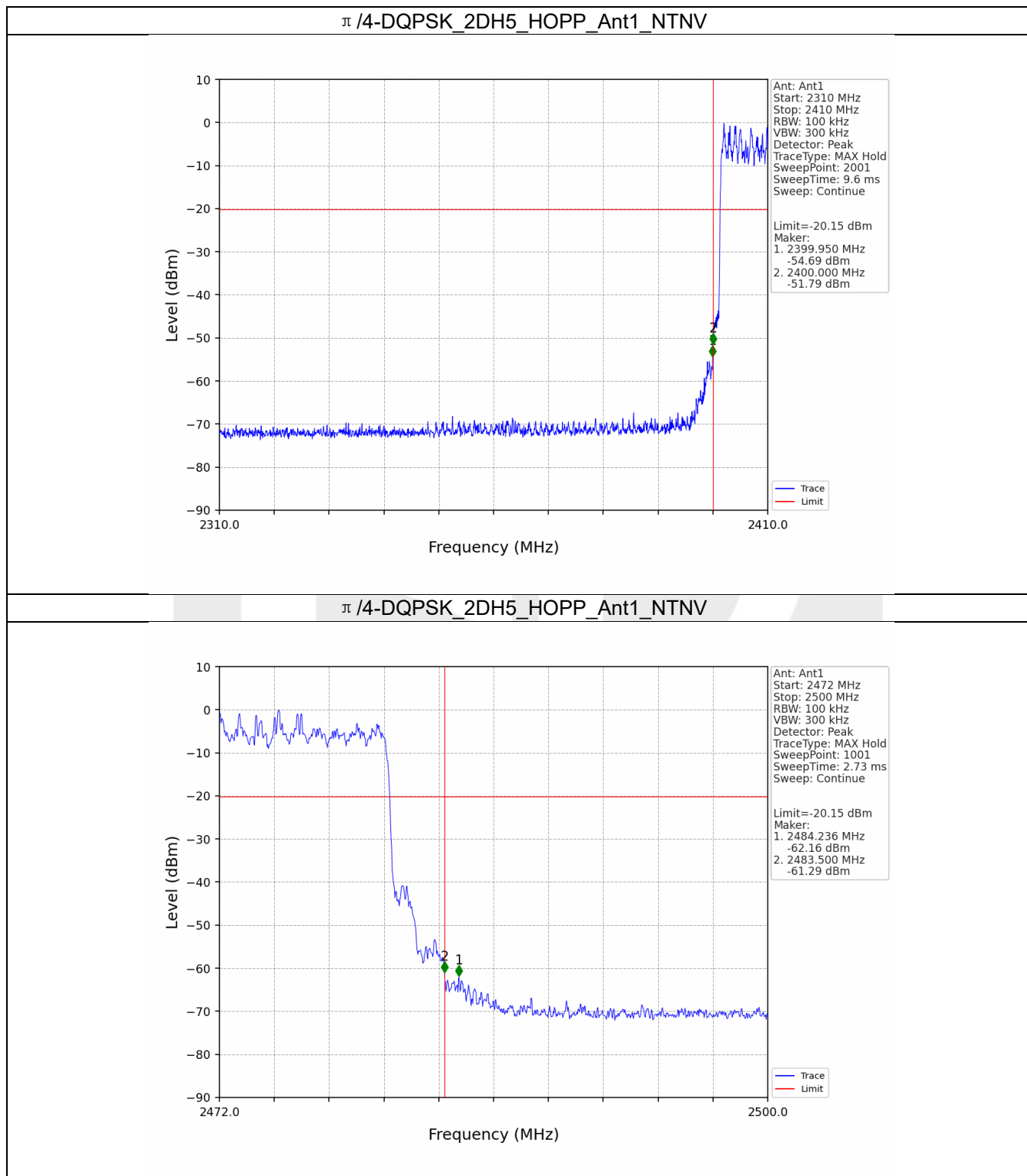


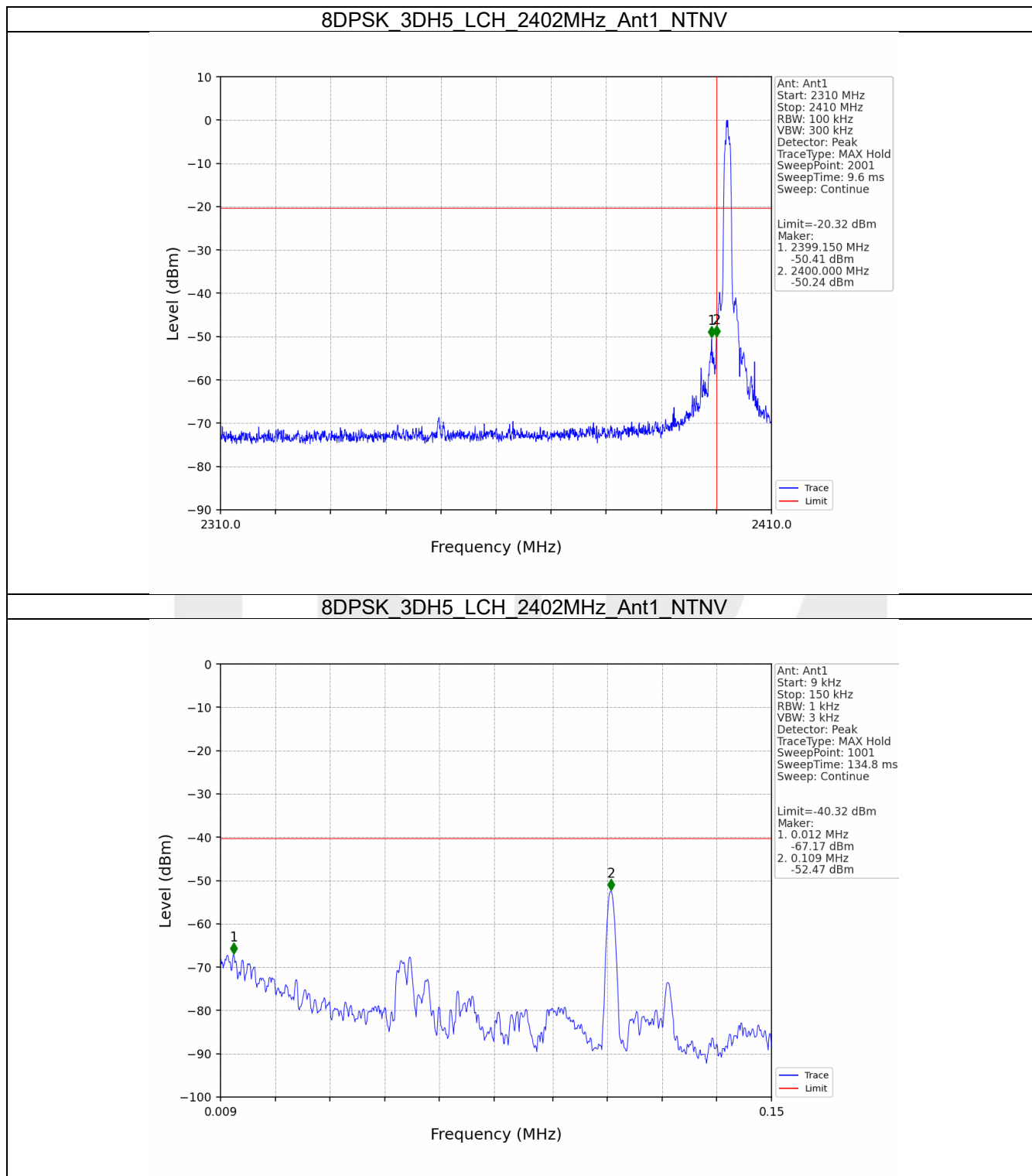


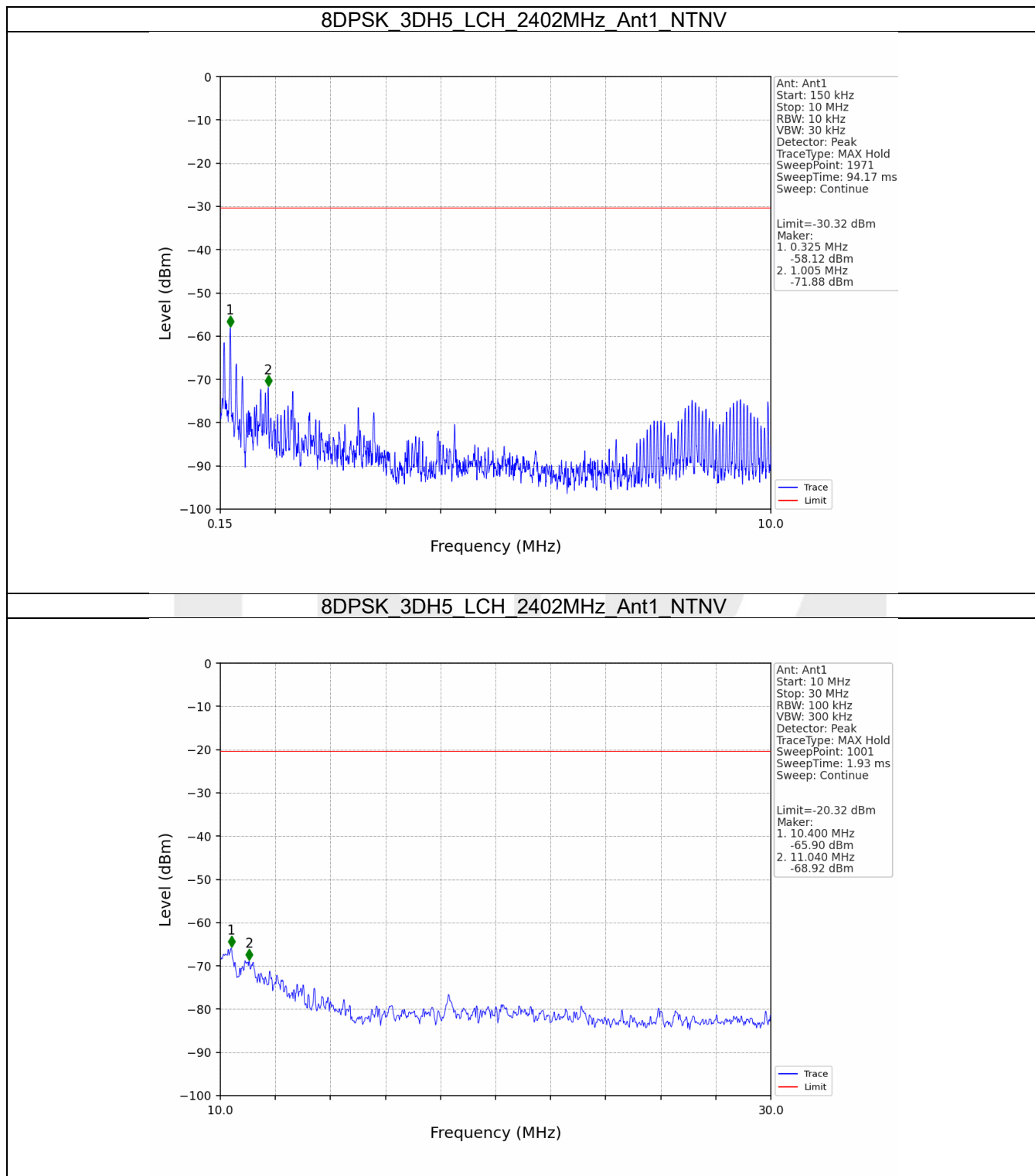


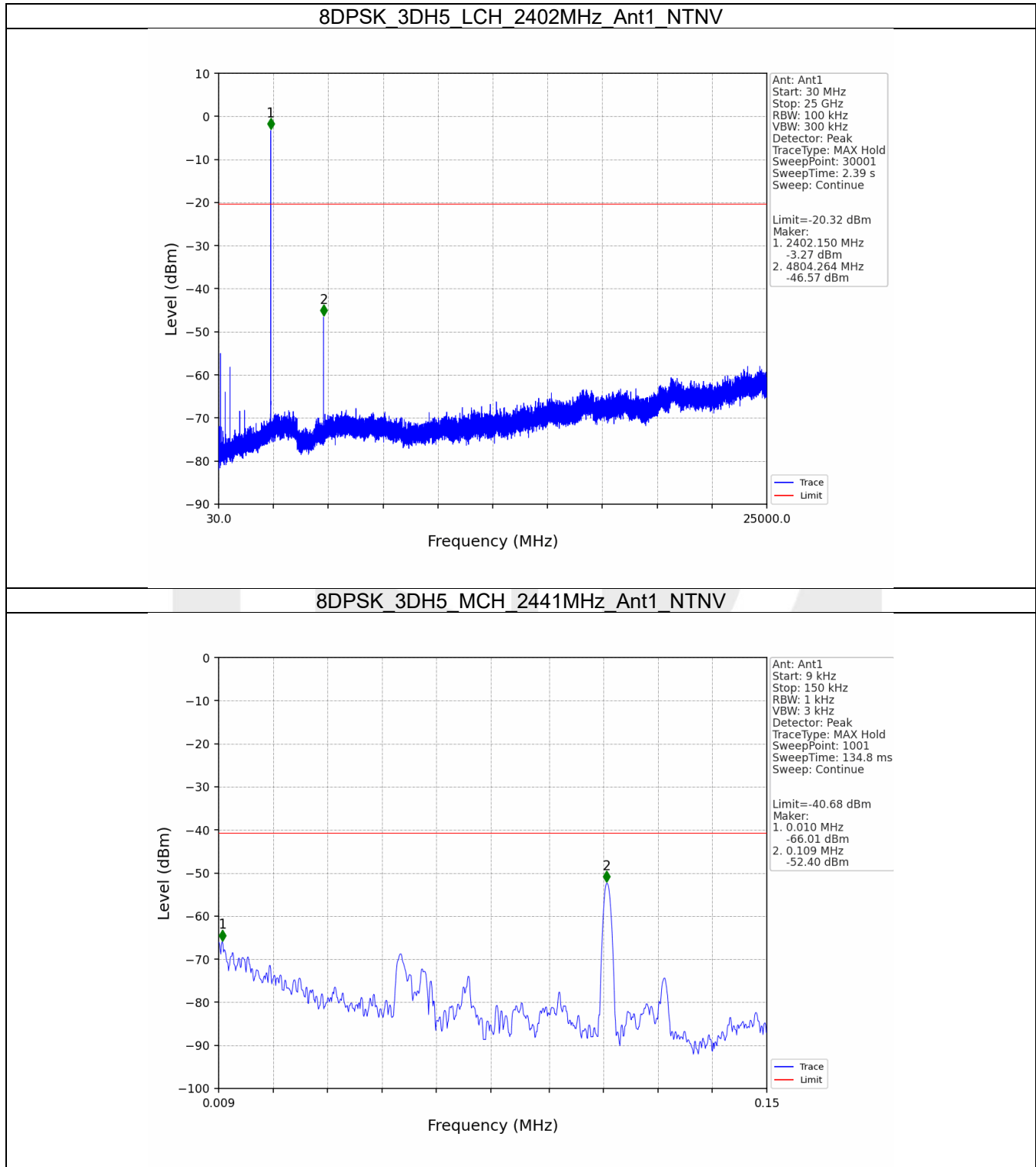


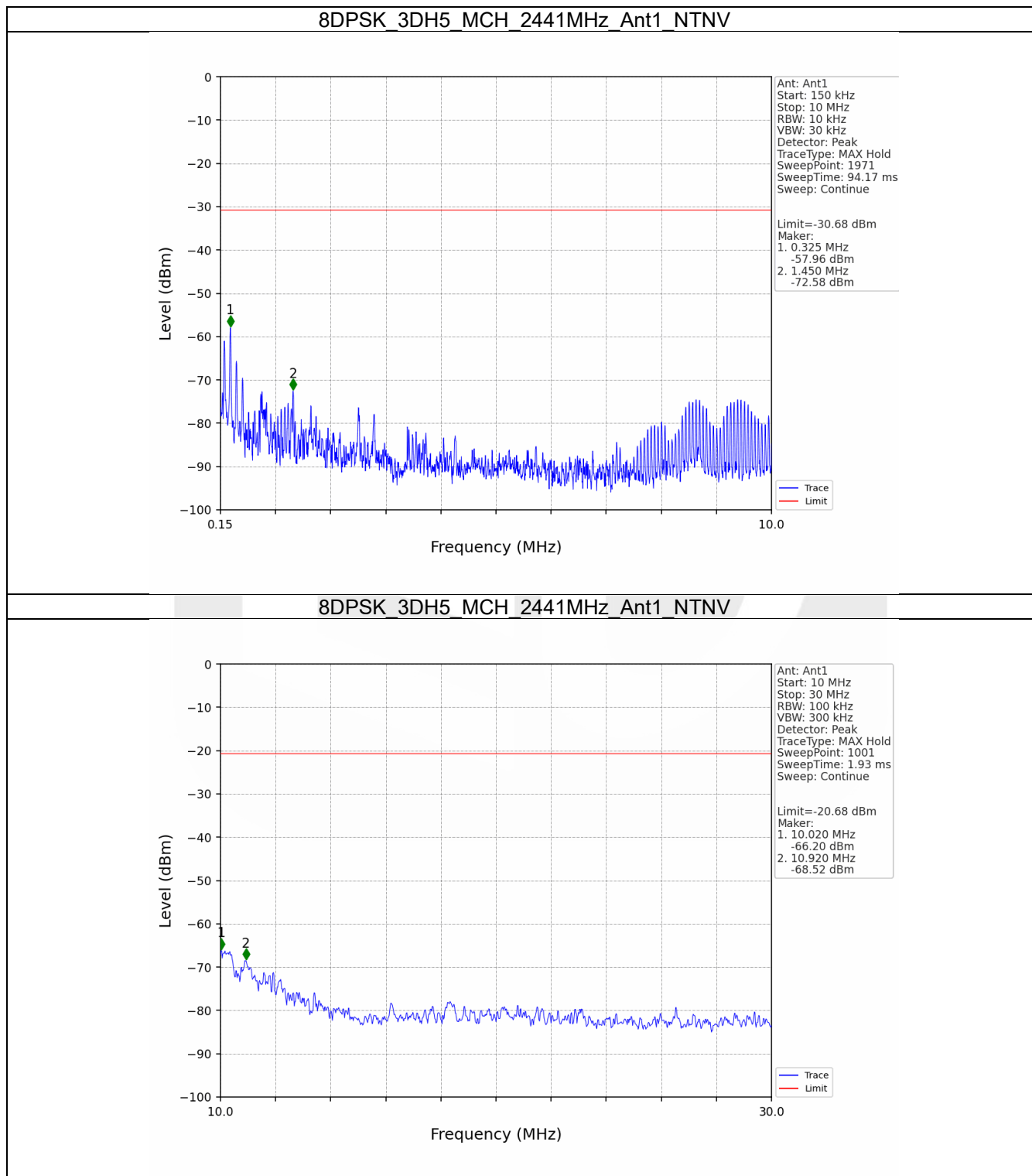


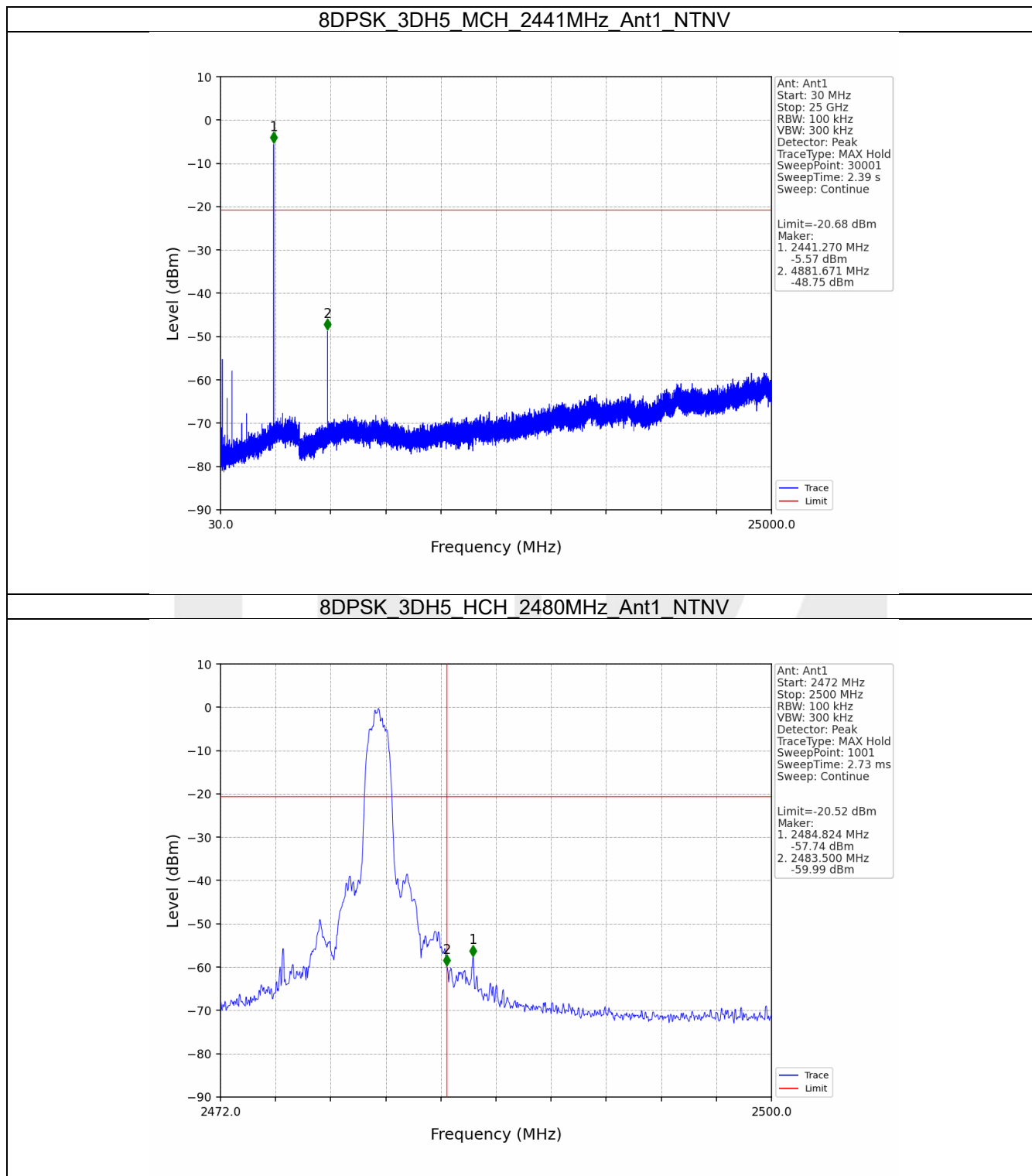


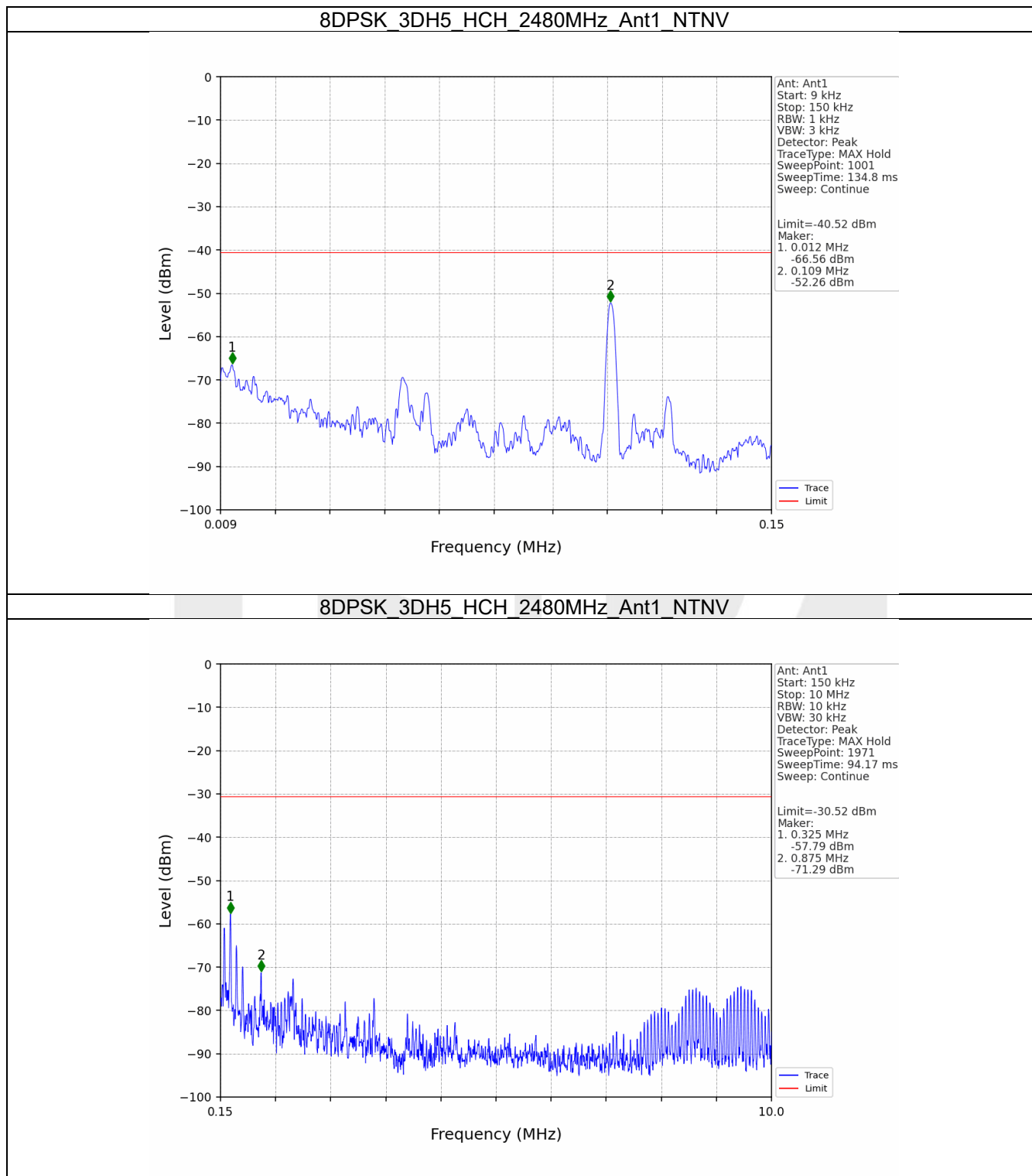


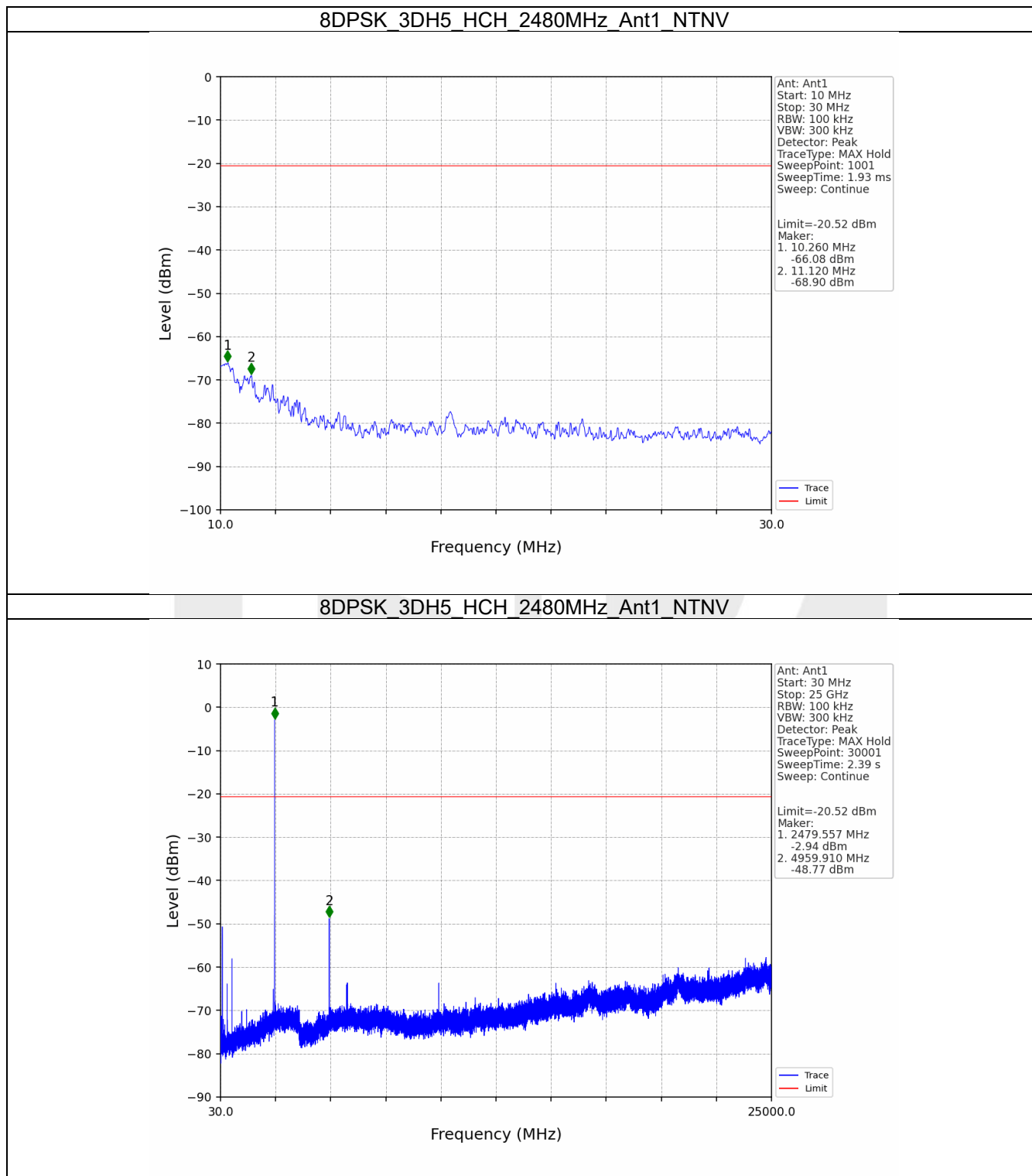


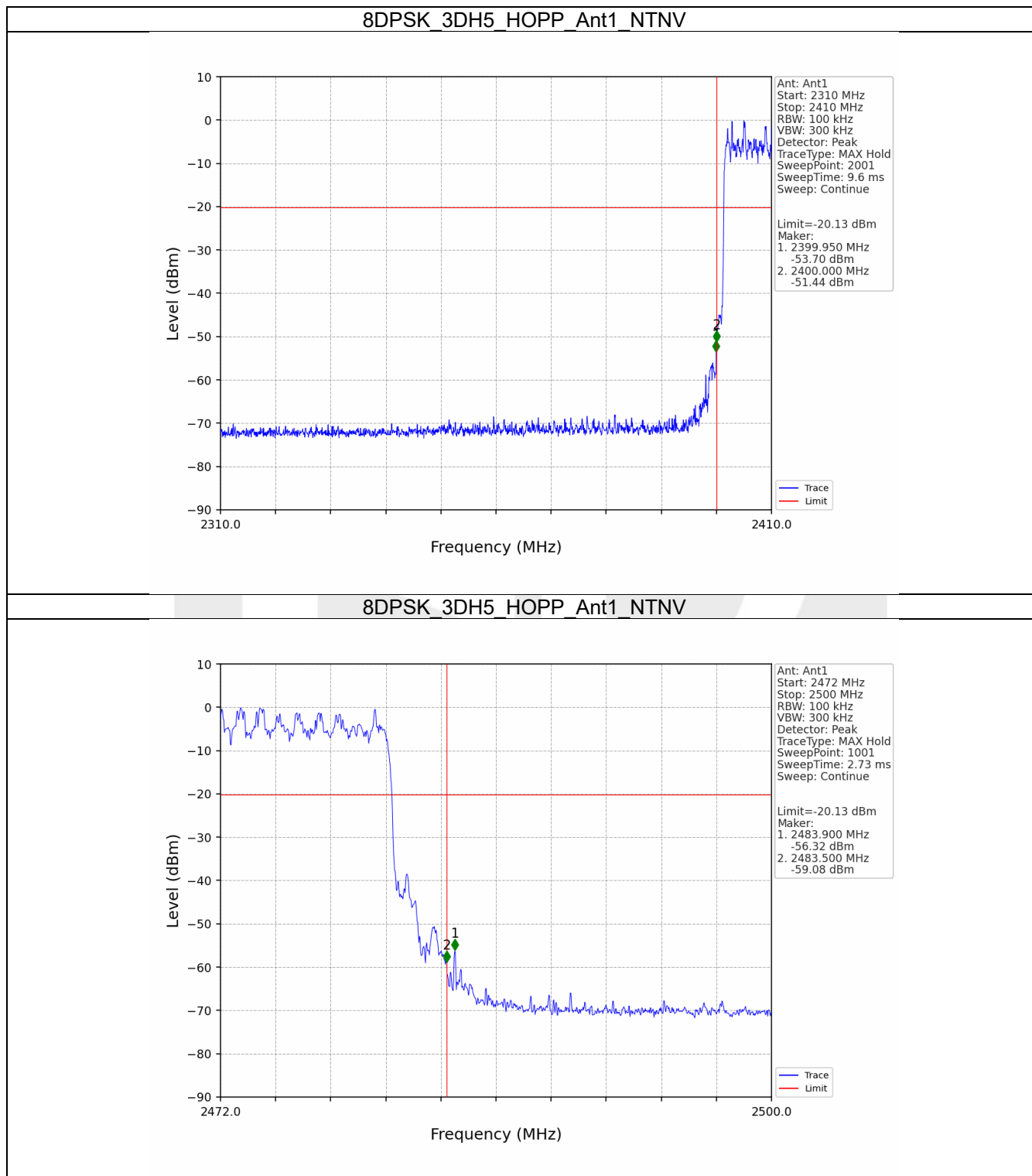












----- End of Report -----