

## ANNEX D TEST DATA

For

|                |                                      |
|----------------|--------------------------------------|
| Project No.:   | 8326EU010303W                        |
| Client:        | Woan Technology (Shenzhen) Co., Ltd. |
| Product Name:  | SwitchBot Hub 3                      |
| Model No.:     | W7202100                             |
| FCC ID:        | 2AKXB-W7202100                       |
| Technology:    | Bluetooth BDR&EDR                    |
| Test Engineer: | <i>Mikoy zhu</i>                     |
| Test Date:     | 2025-01-16                           |

## 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

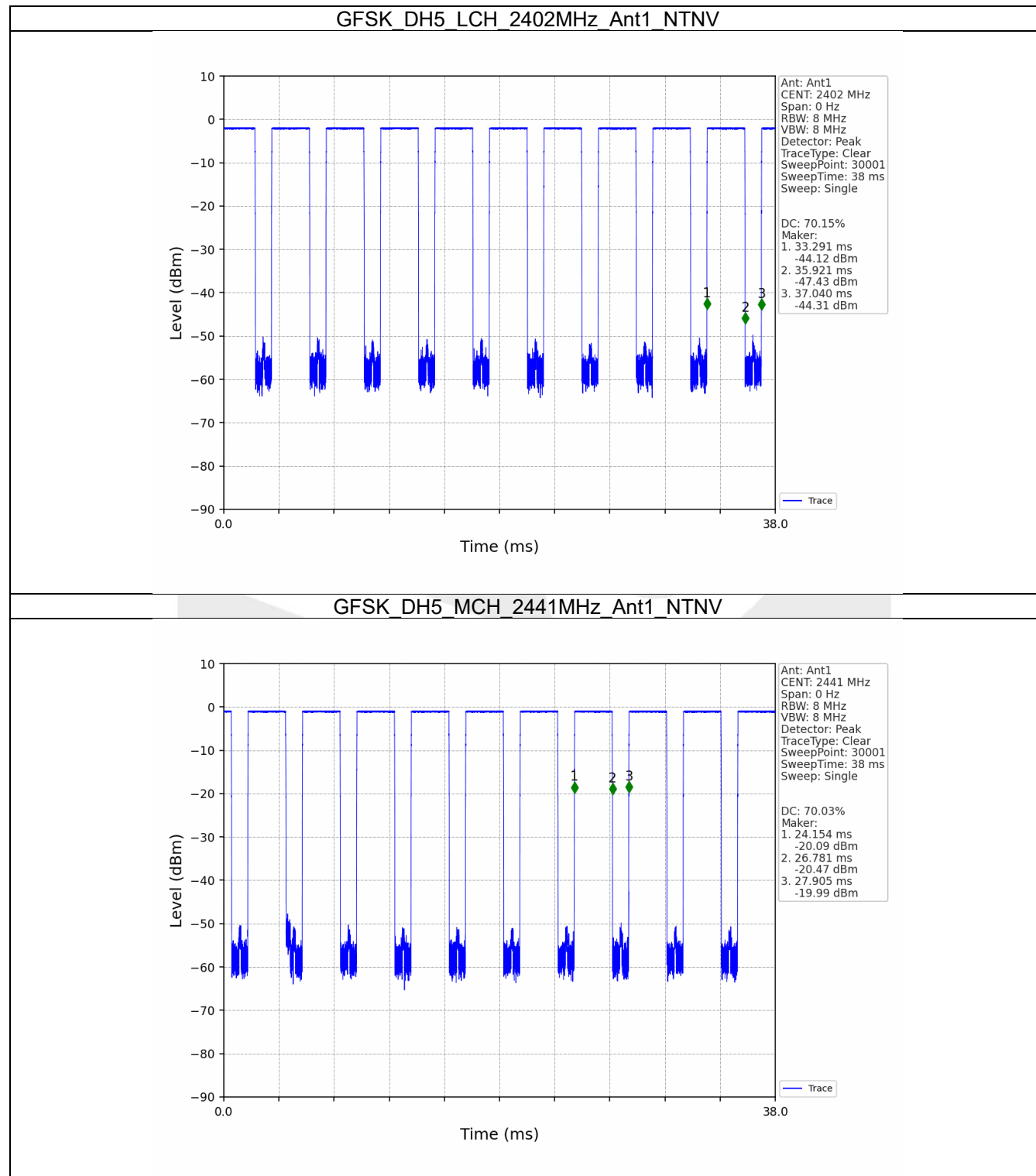
### 1.1 Test Result

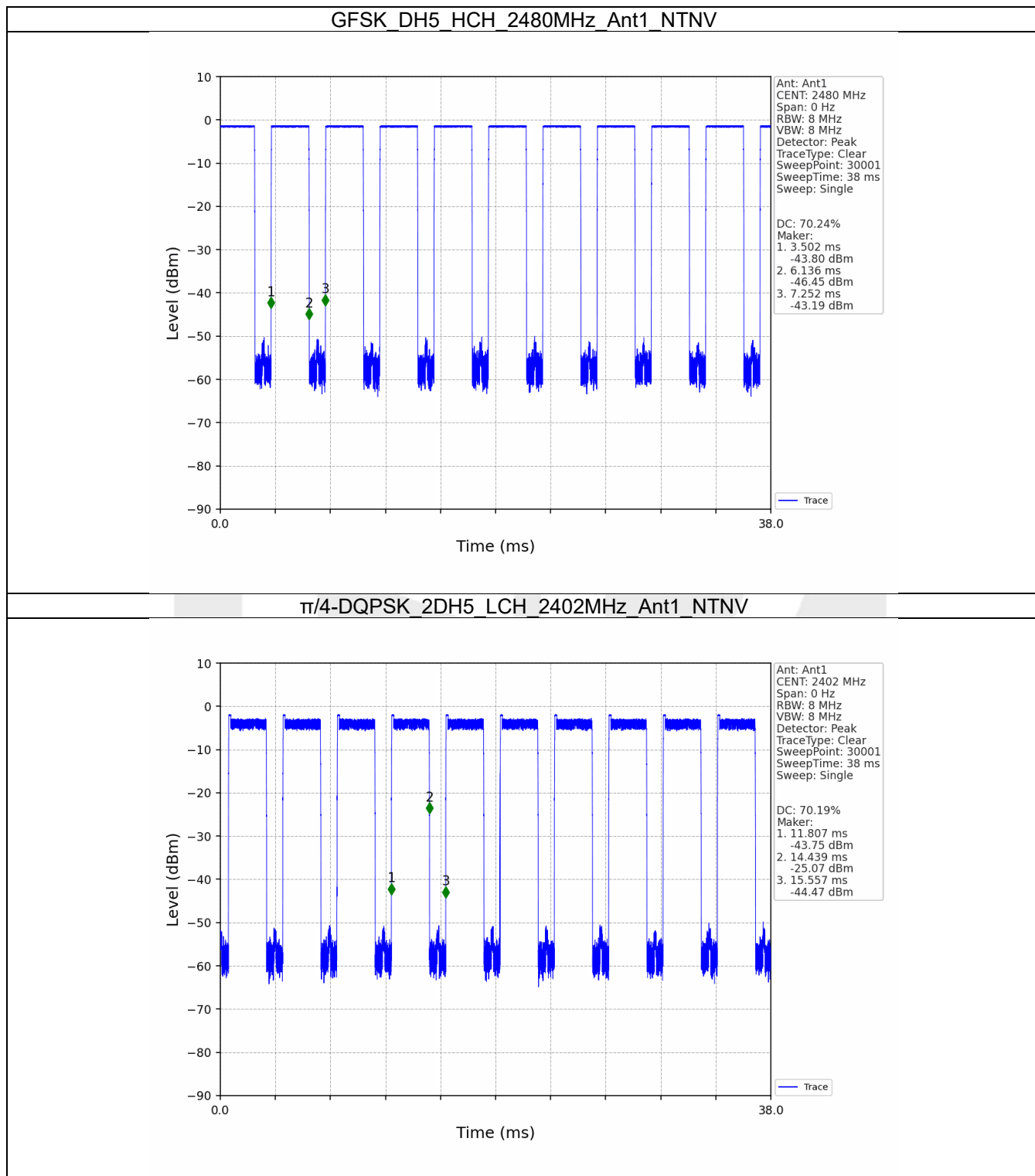
#### 1.1.1 Ant1

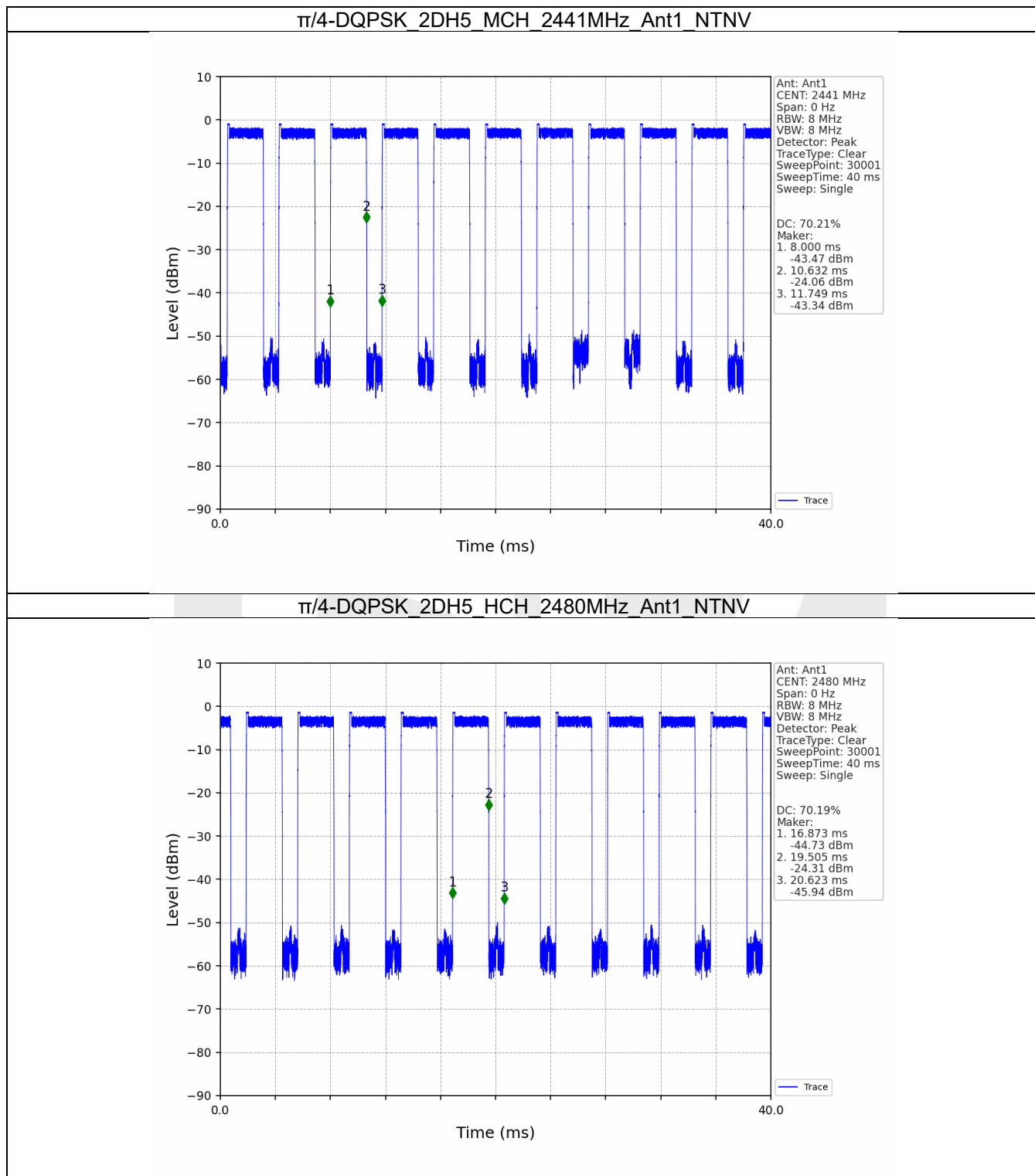
| Ant1           |         |                 |             |           |             |                |                                   |                       |
|----------------|---------|-----------------|-------------|-----------|-------------|----------------|-----------------------------------|-----------------------|
| 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         | 2.630     | 3.749       | 70.15          | 1.54                              | 0.08                  |
|                |         | 2441            | DH5         | 2.627     | 3.751       | 70.03          | 1.55                              | 0.03                  |
|                |         | 2480            | DH5         | 2.634     | 3.750       | 70.24          | 1.53                              | 0.01                  |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | 2.632     | 3.750       | 70.19          | 1.54                              | 0.44                  |
|                |         | 2441            | 2DH5        | 2.632     | 3.749       | 70.21          | 1.54                              | 0.11                  |
|                |         | 2480            | 2DH5        | 2.632     | 3.750       | 70.19          | 1.54                              | 0.11                  |
| 8DPSK          | SISO    | 2402            | 3DH5        | 2.626     | 3.749       | 70.05          | 1.55                              | 0.11                  |
|                |         | 2441            | 3DH5        | 2.626     | 3.751       | 70.01          | 1.55                              | 0.13                  |
|                |         | 2480            | 3DH5        | 2.626     | 3.751       | 70.01          | 1.55                              | 0.09                  |

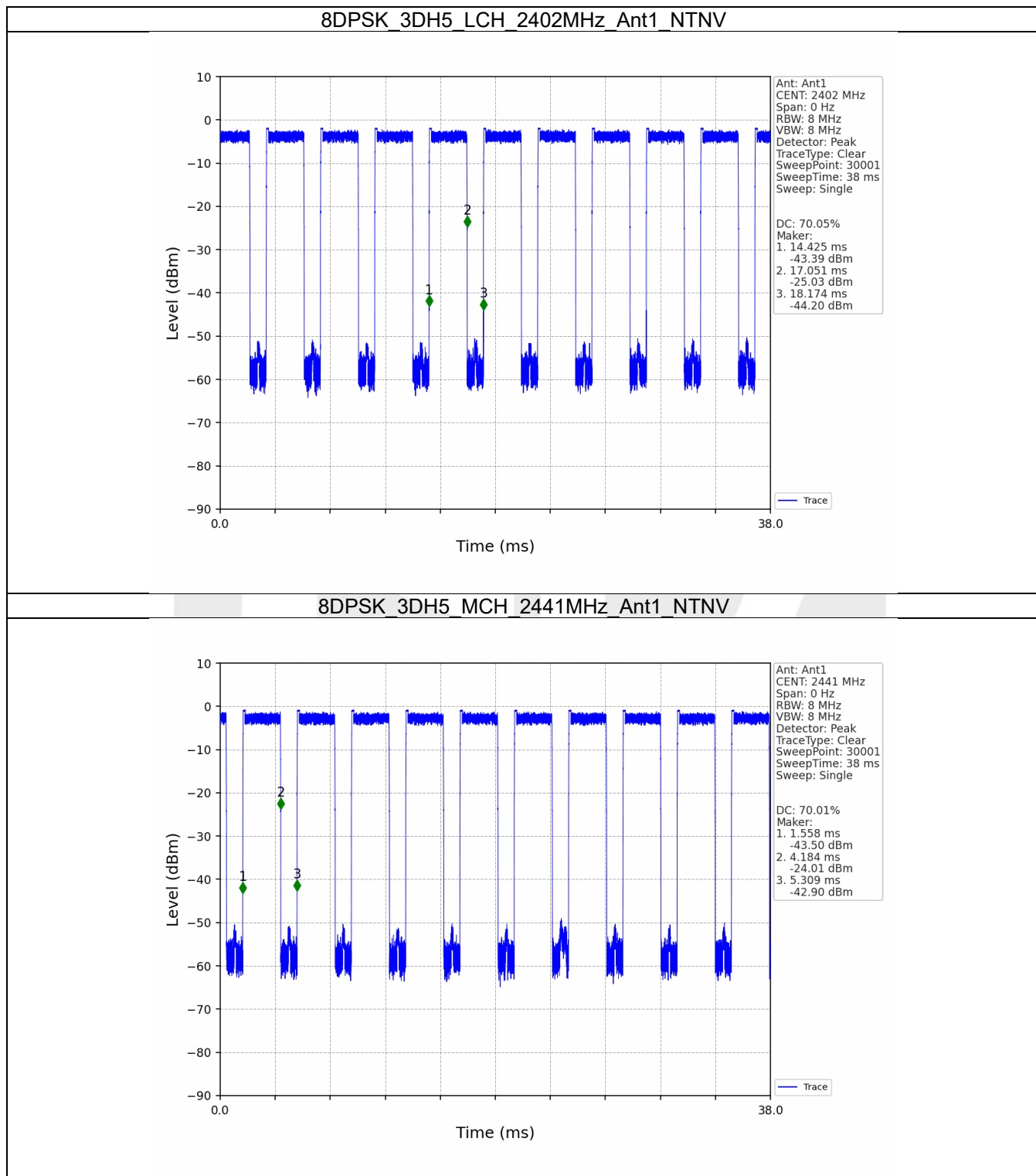
## 1.2 Test Graph

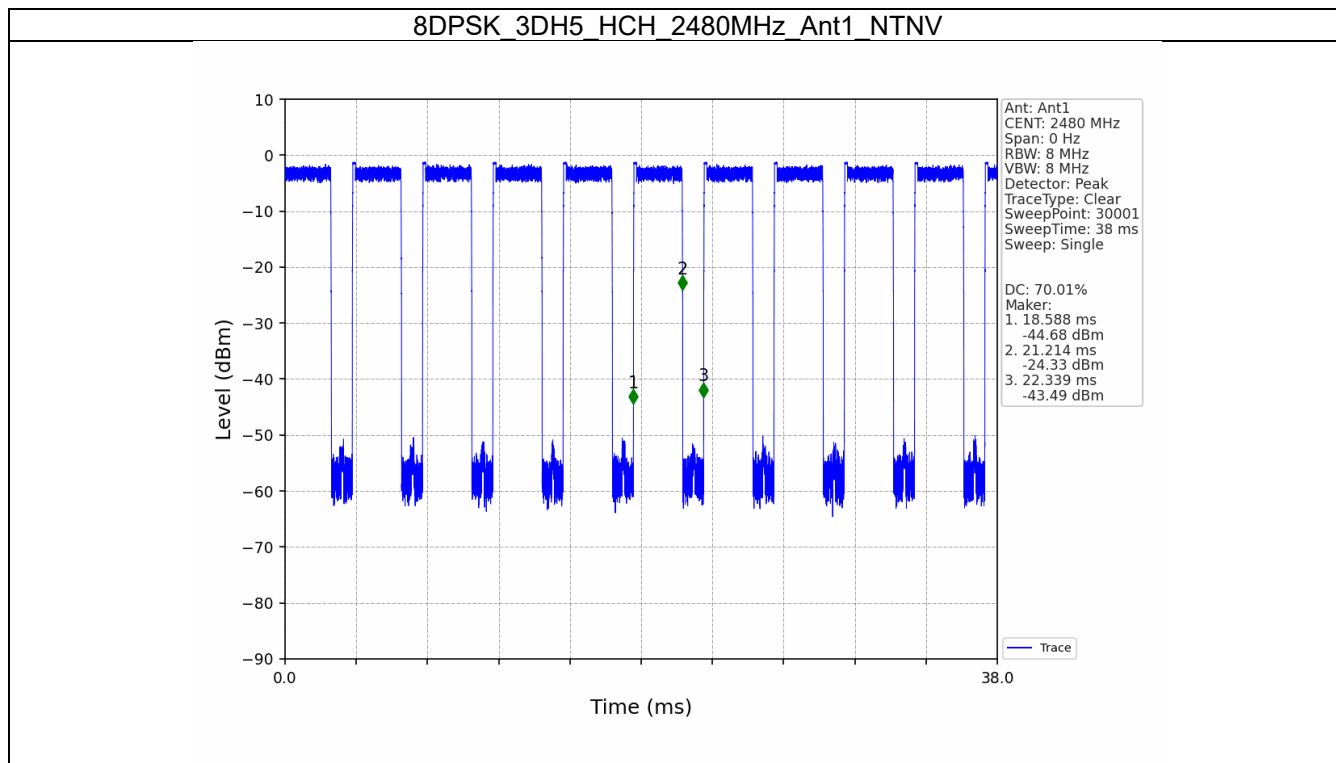
### 1.2.1 Ant1













## 2. Bandwidth

### 2.1 Test Result

#### 2.1.1 OBW

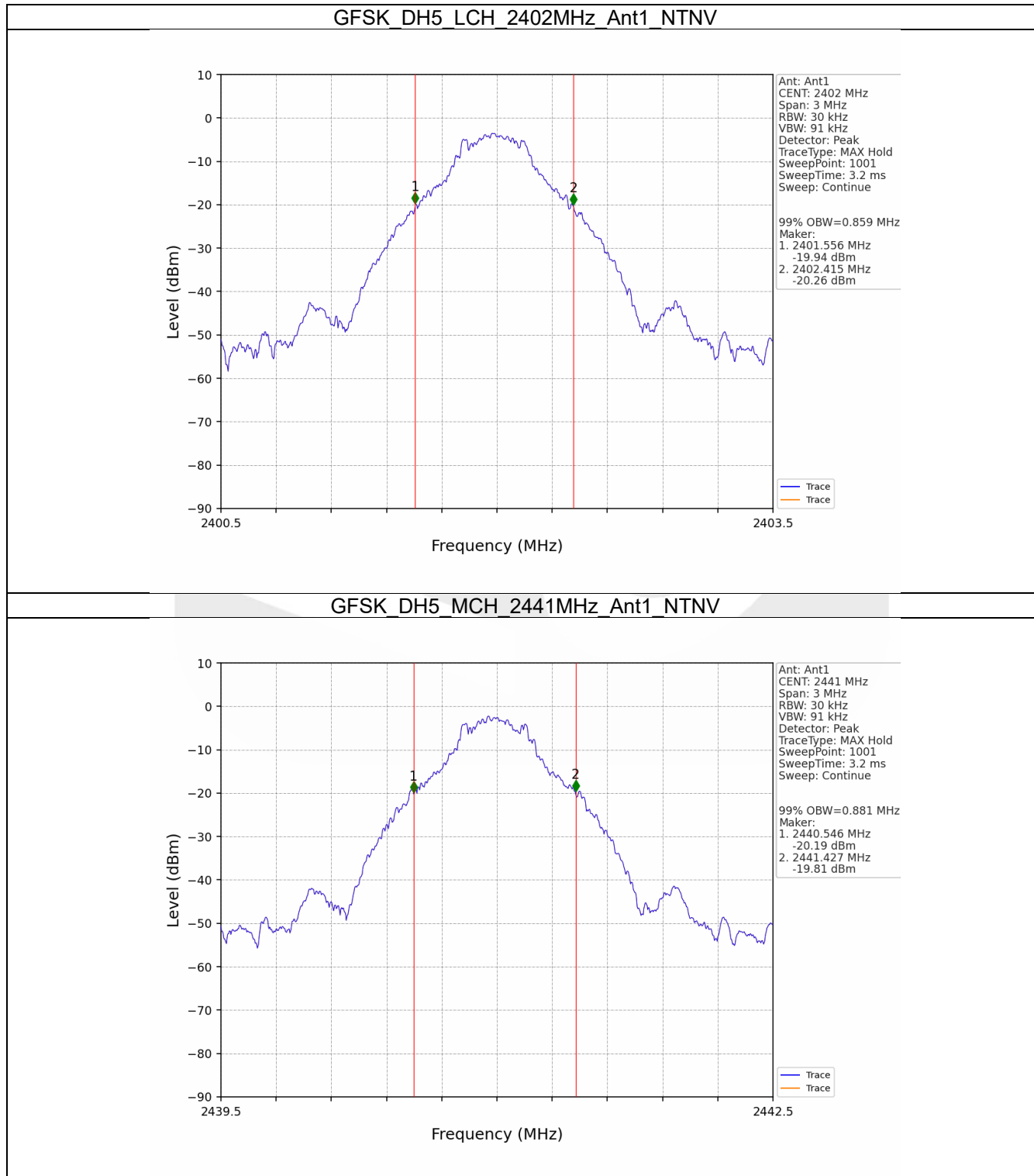
| Mode           | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|----------------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|                |         |                 |             |     | Result                       | Limit |         |
| GFSK           | SISO    | 2402            | DH5         | 1   | 0.859                        | /     | Pass    |
|                |         | 2441            | DH5         | 1   | 0.881                        | /     | Pass    |
|                |         | 2480            | DH5         | 1   | 0.867                        | /     | Pass    |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.157                        | /     | Pass    |
|                |         | 2441            | 2DH5        | 1   | 1.163                        | /     | Pass    |
|                |         | 2480            | 2DH5        | 1   | 1.158                        | /     | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | 1   | 1.159                        | /     | Pass    |
|                |         | 2441            | 3DH5        | 1   | 1.151                        | /     | Pass    |
|                |         | 2480            | 3DH5        | 1   | 1.157                        | /     | Pass    |

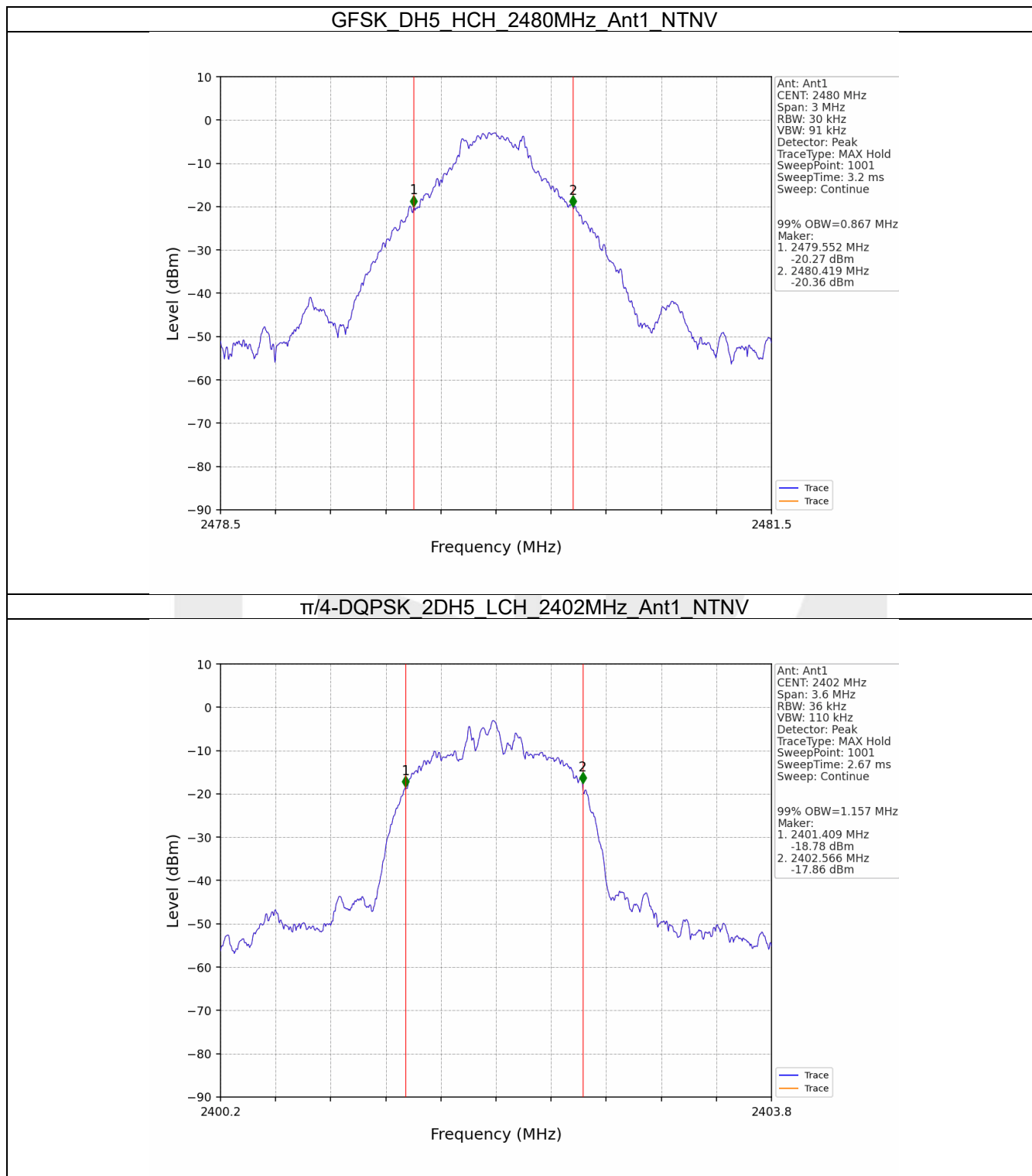
#### 2.1.2 20dB BW

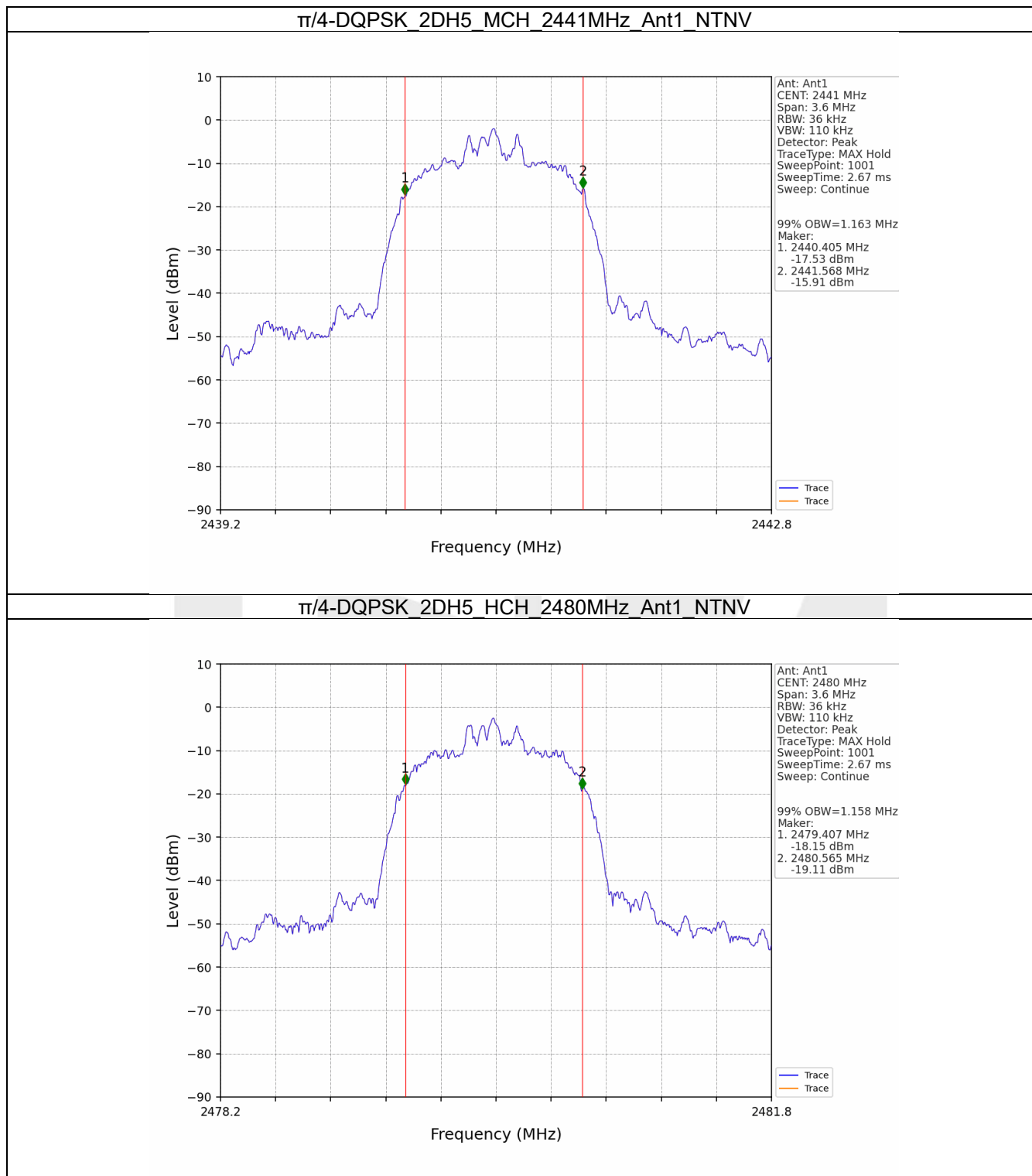
| Mode           | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|----------------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|                |         |                 |             |     | Result               | Limit |         |
| GFSK           | SISO    | 2402            | DH5         | 1   | 0.983                | /     | Pass    |
|                |         | 2441            | DH5         | 1   | 0.985                | /     | Pass    |
|                |         | 2480            | DH5         | 1   | 0.963                | /     | Pass    |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.264                | /     | Pass    |
|                |         | 2441            | 2DH5        | 1   | 1.248                | /     | Pass    |
|                |         | 2480            | 2DH5        | 1   | 1.265                | /     | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | 1   | 1.258                | /     | Pass    |
|                |         | 2441            | 3DH5        | 1   | 1.263                | /     | Pass    |
|                |         | 2480            | 3DH5        | 1   | 1.268                | /     | Pass    |

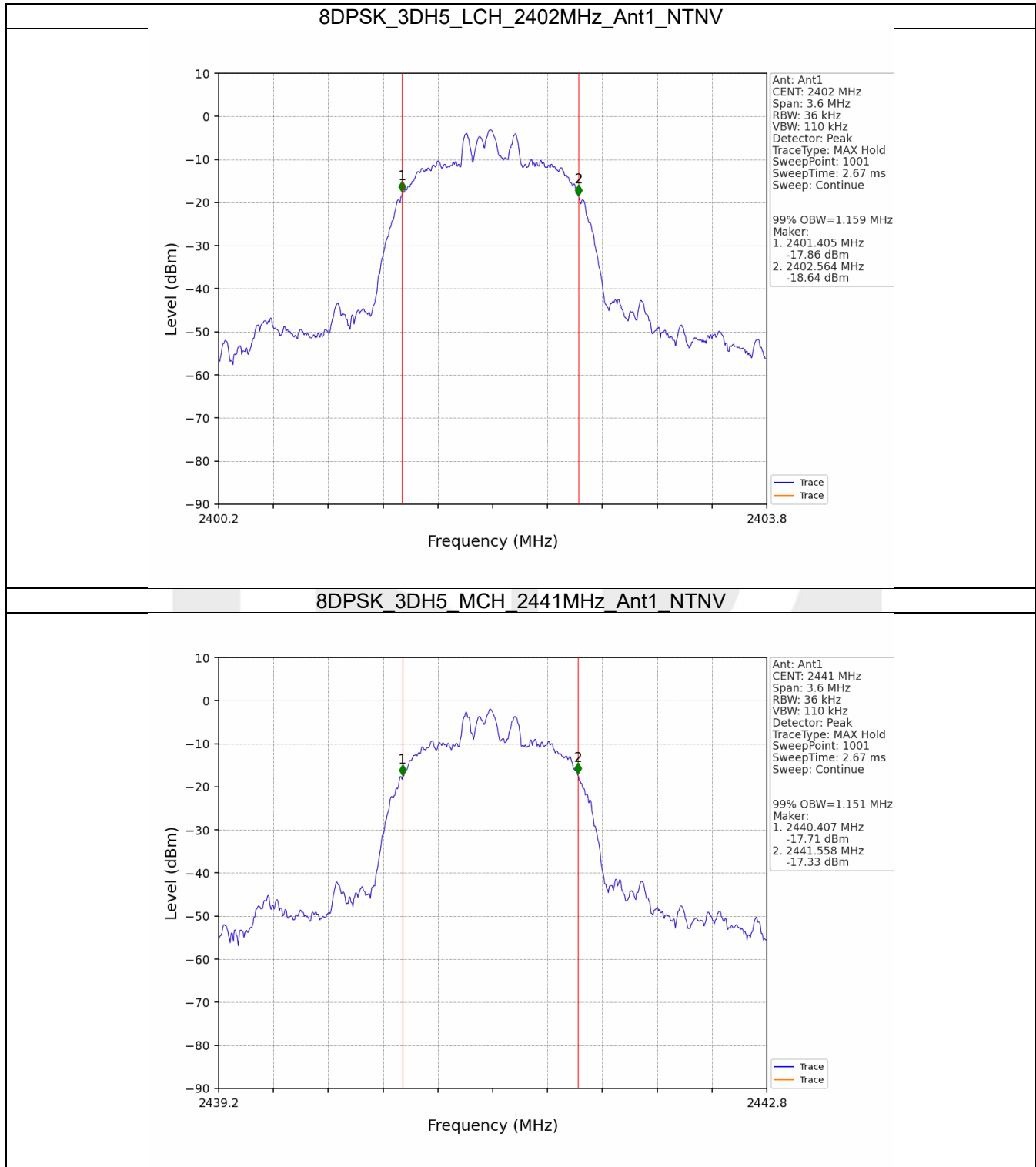
## 2.2 Test Graph

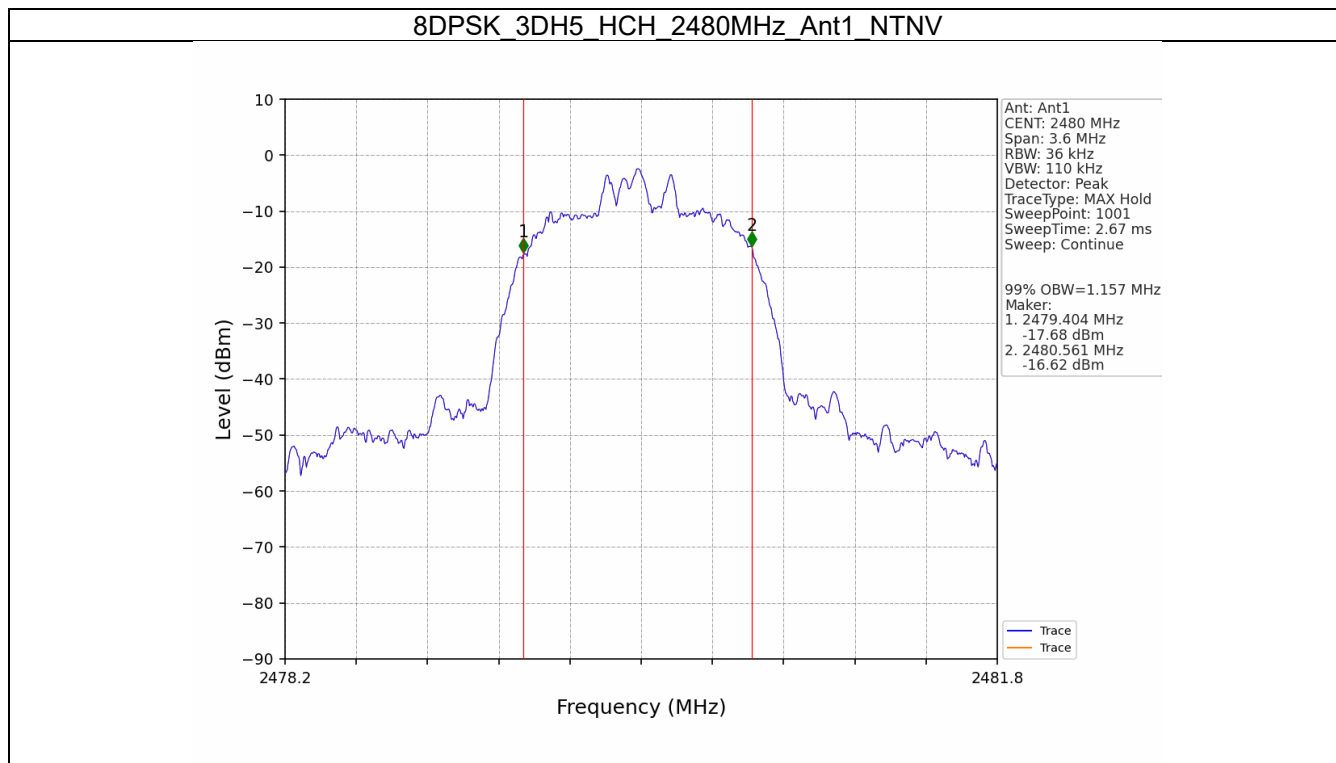
### 2.2.1 OBW



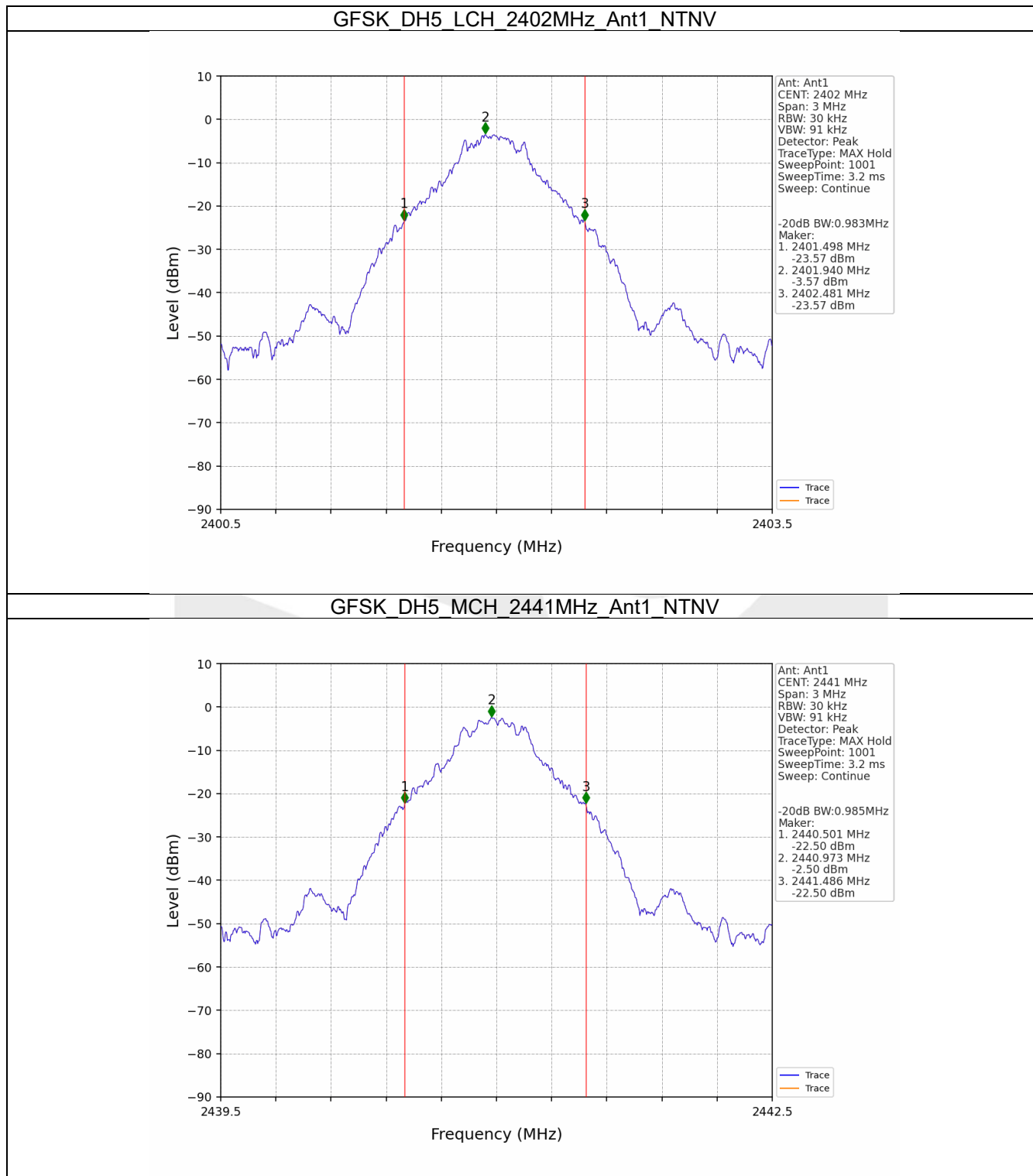


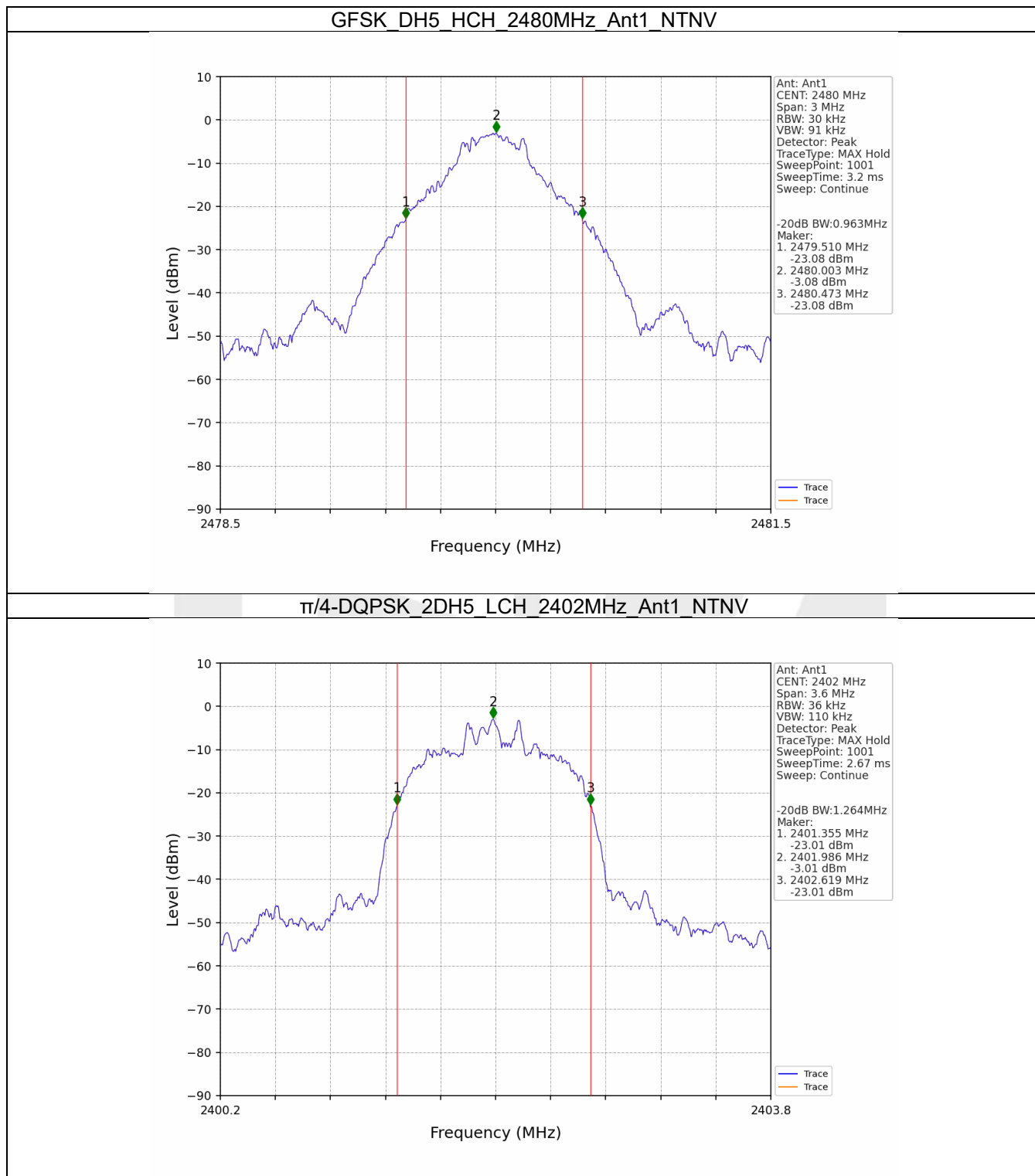




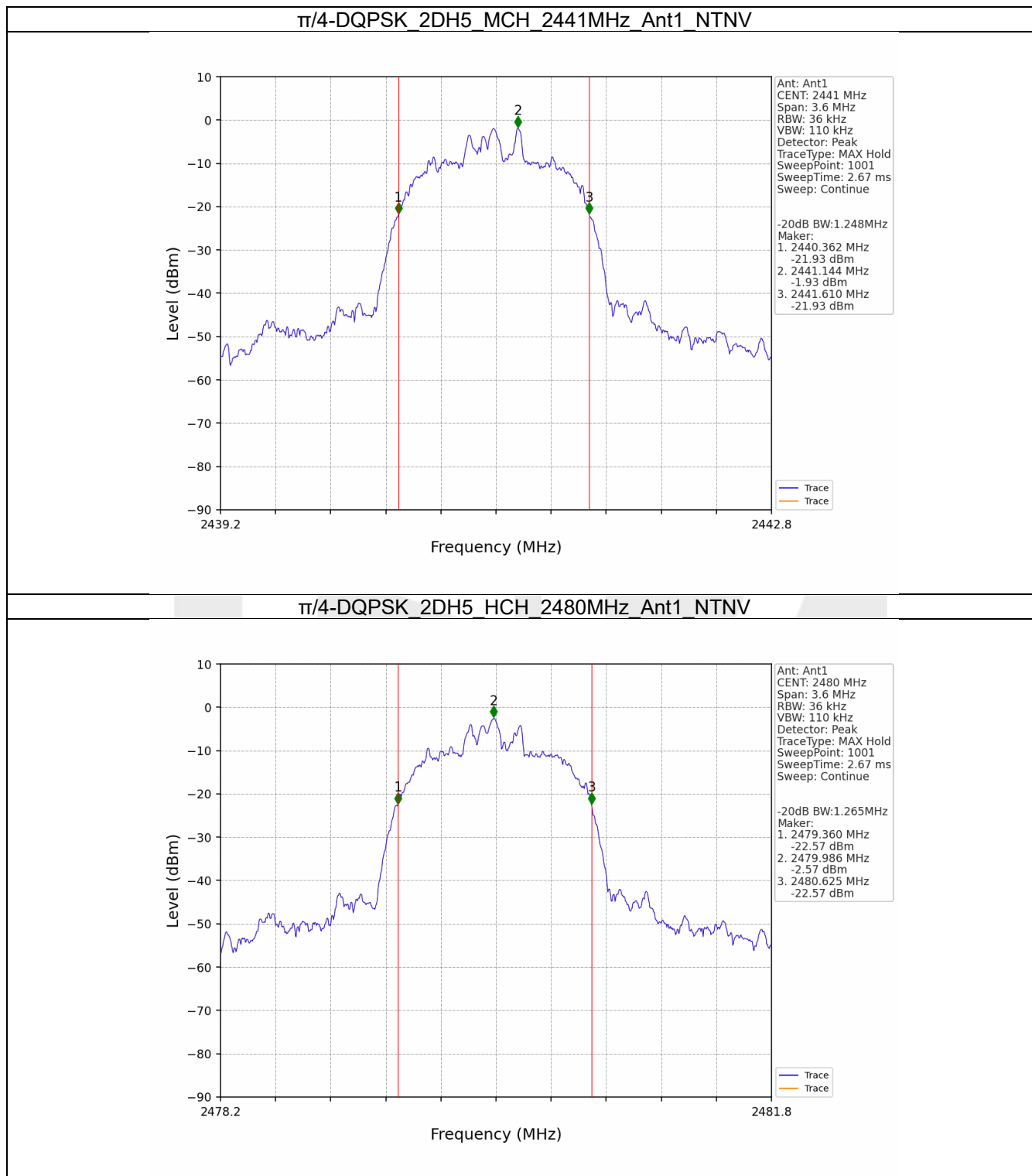


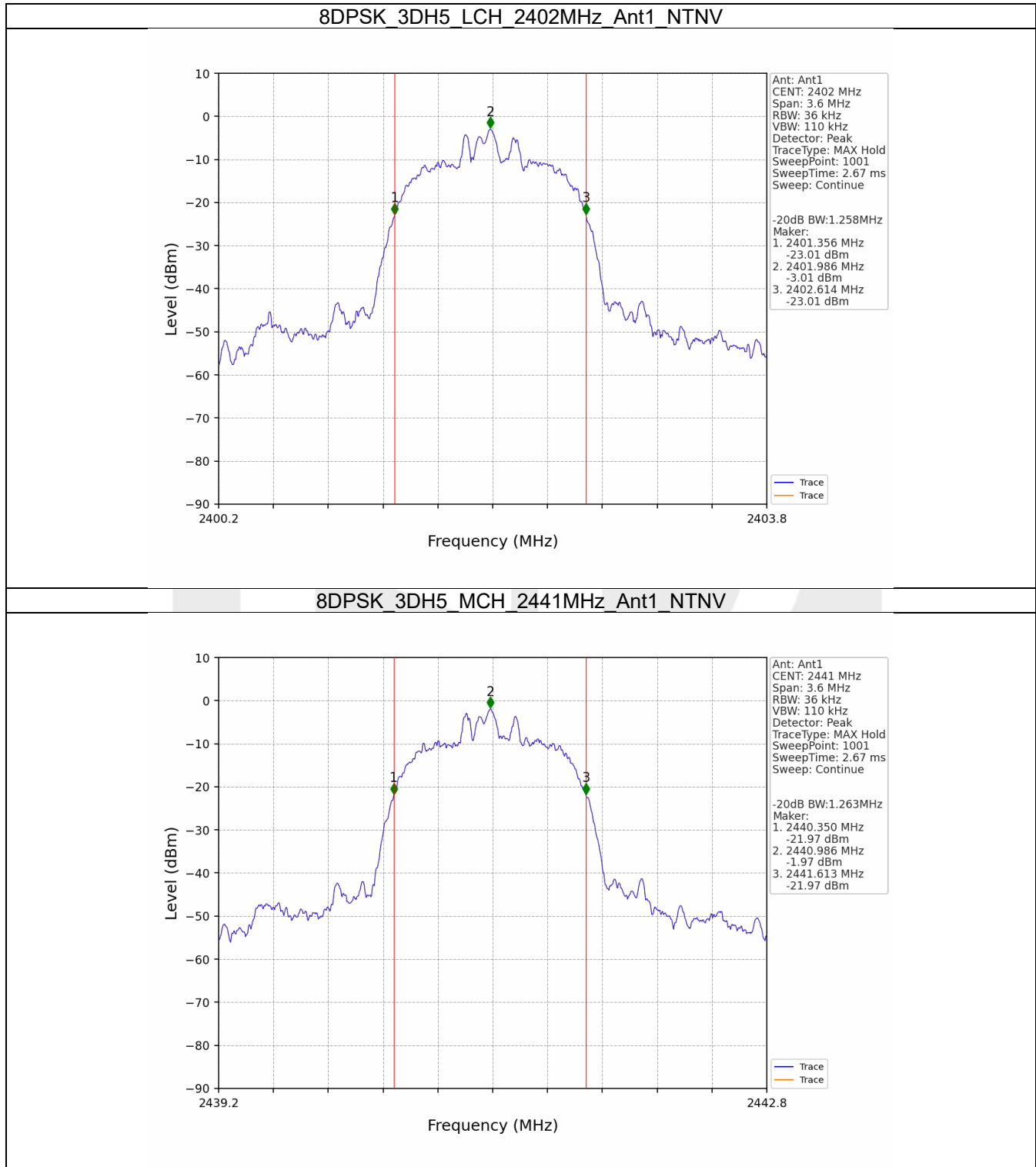
## 2.2.2 20dB BW

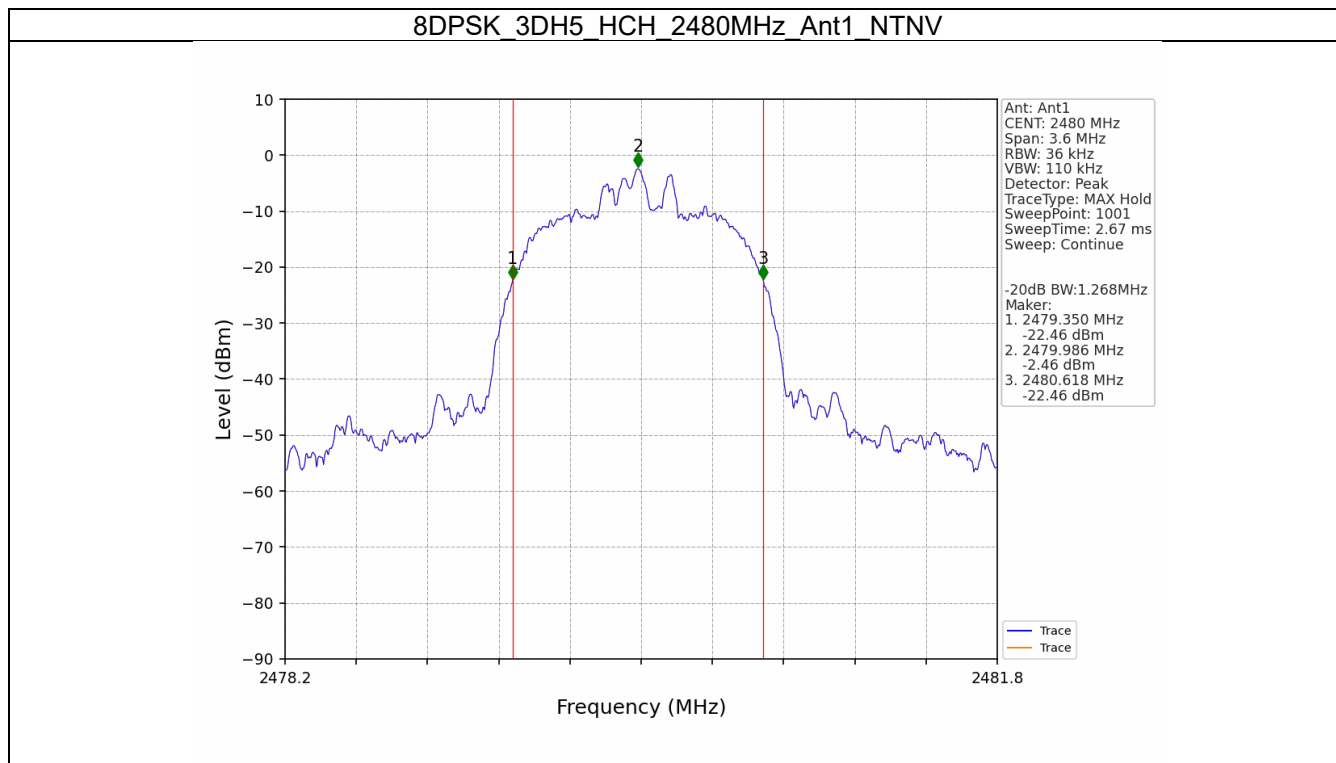












### 3. Maximum Conducted Output Power

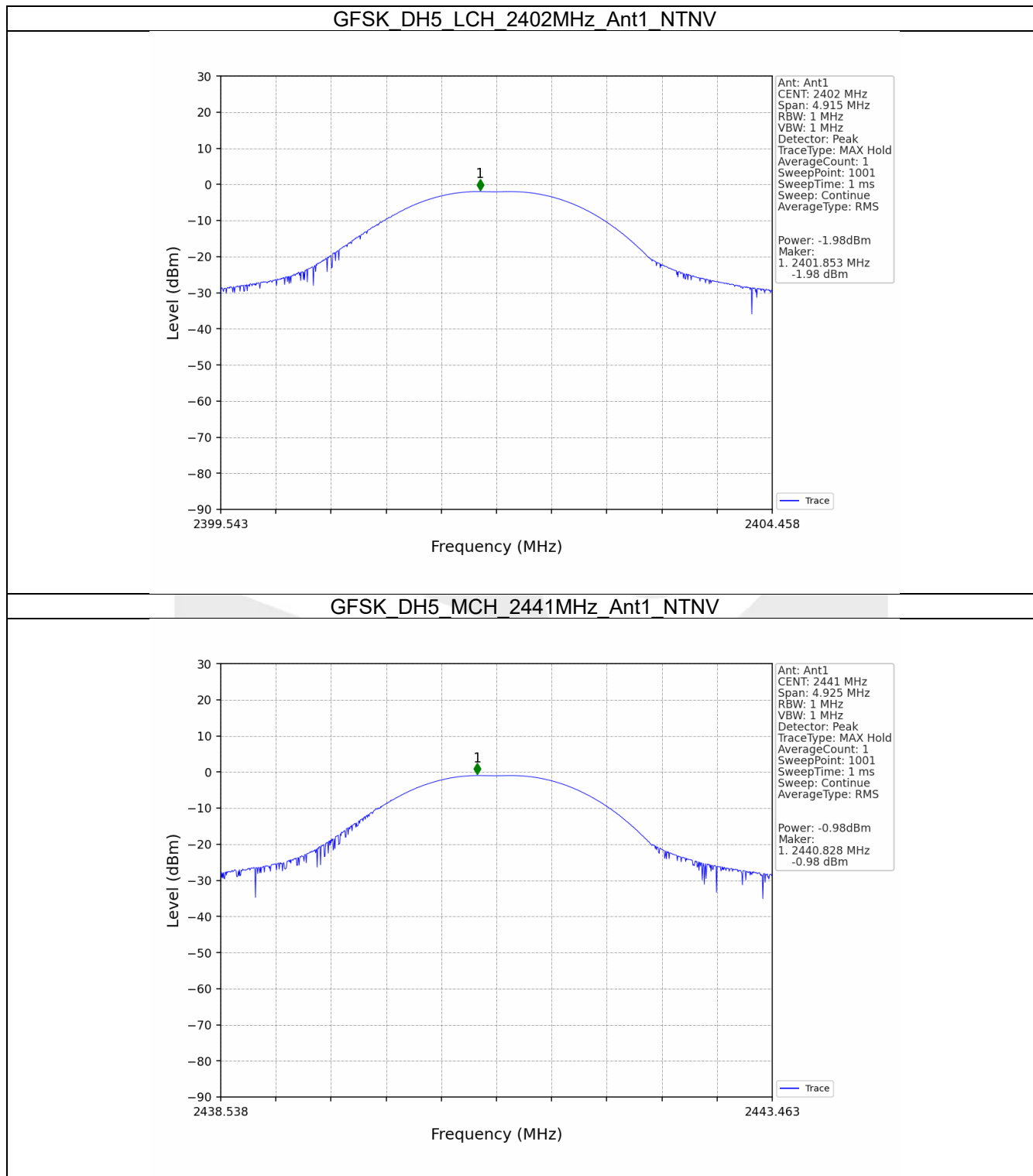
#### 3.1 Test Result

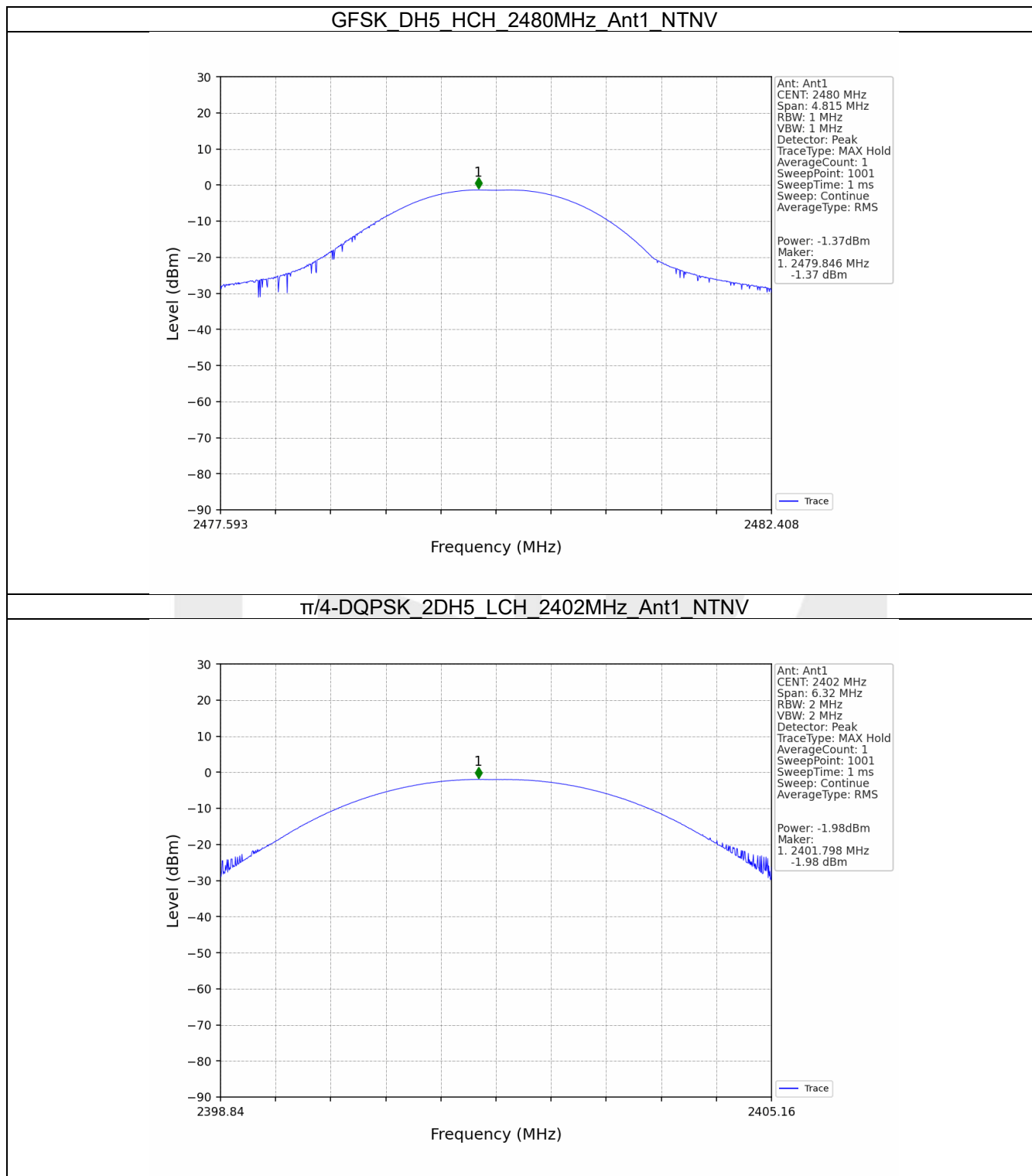
##### 3.1.1 Power

| Mode           | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |              | Verdict |
|----------------|---------|-----------------|-------------|-------------------------------------------|--------------|---------|
|                |         |                 |             | ANT1                                      | Limit        |         |
| GFSK           | SISO    | 2402            | DH5         | -1.98                                     | $\leq 30$    | Pass    |
|                |         | 2441            | DH5         | -0.98                                     | $\leq 30$    | Pass    |
|                |         | 2480            | DH5         | -1.37                                     | $\leq 30$    | Pass    |
| $\pi/4$ -DQPSK | SISO    | 2402            | 2DH5        | -1.98                                     | $\leq 20.97$ | Pass    |
|                |         | 2441            | 2DH5        | -0.92                                     | $\leq 20.97$ | Pass    |
|                |         | 2480            | 2DH5        | -1.35                                     | $\leq 20.97$ | Pass    |
| 8DPSK          | SISO    | 2402            | 3DH5        | -1.92                                     | $\leq 20.97$ | Pass    |
|                |         | 2441            | 3DH5        | -0.86                                     | $\leq 20.97$ | Pass    |
|                |         | 2480            | 3DH5        | -1.28                                     | $\leq 20.97$ | Pass    |

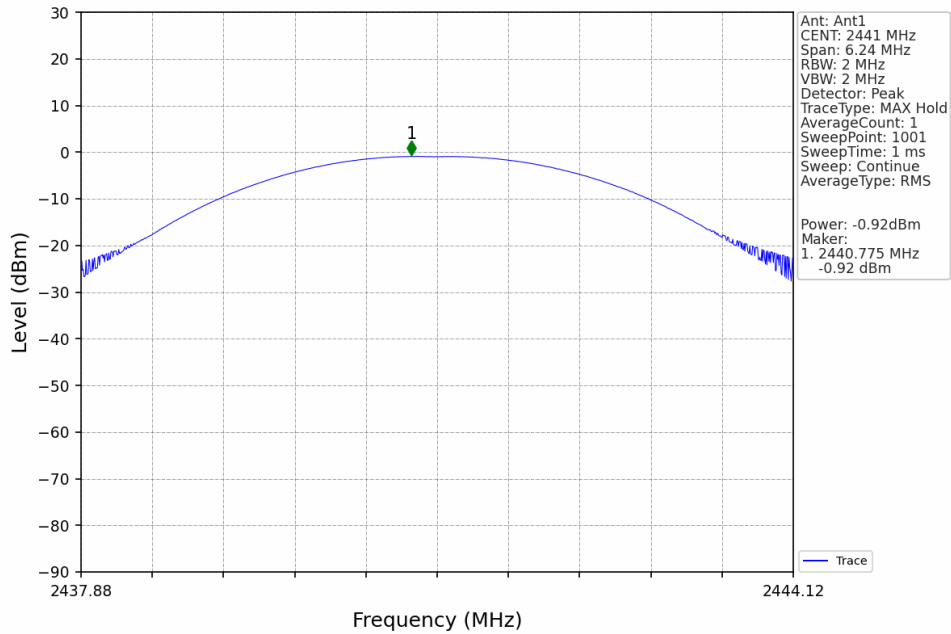
## 3.2 Test Graph

### 3.2.1 Power

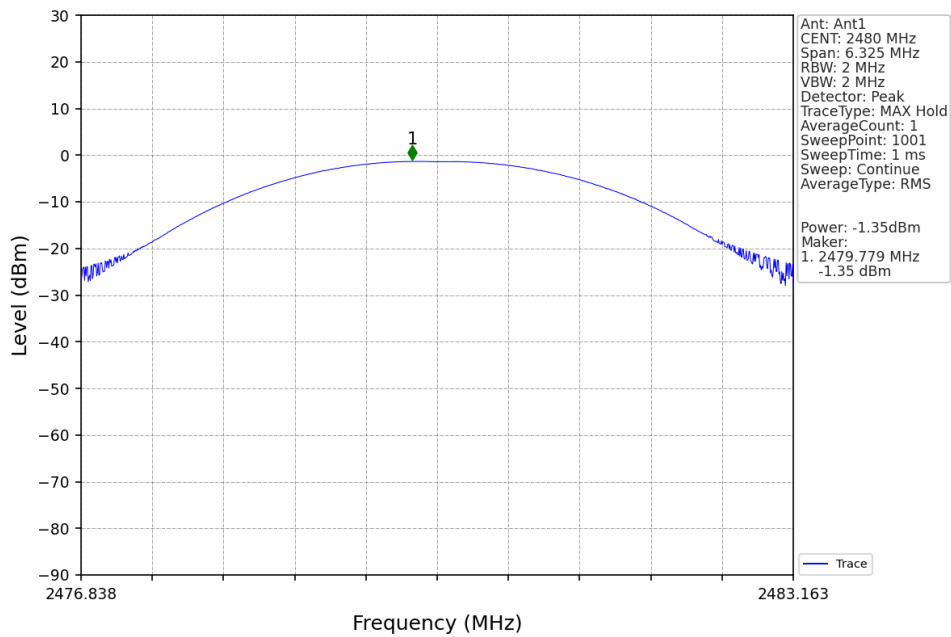


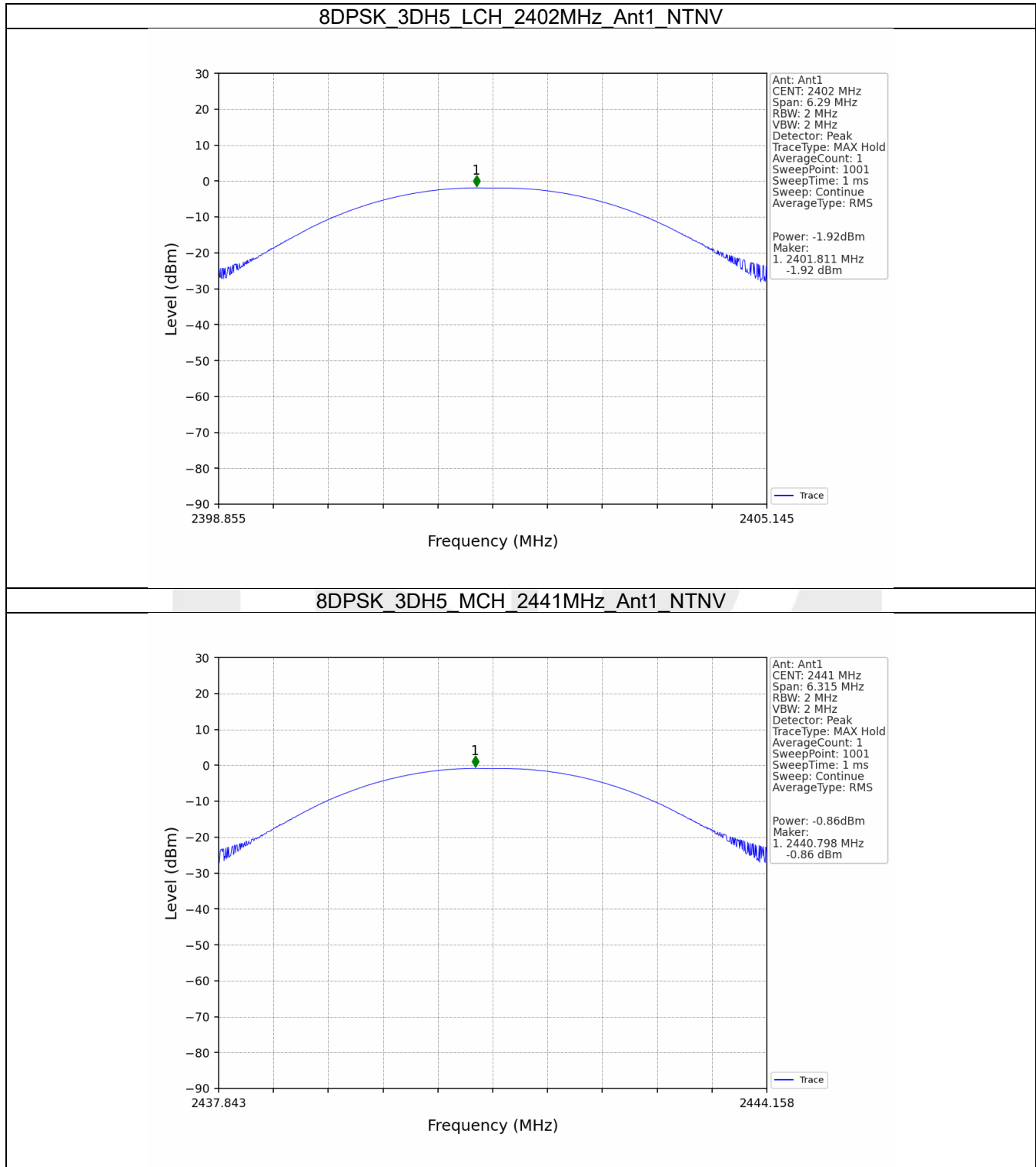


$\pi/4$ -DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV

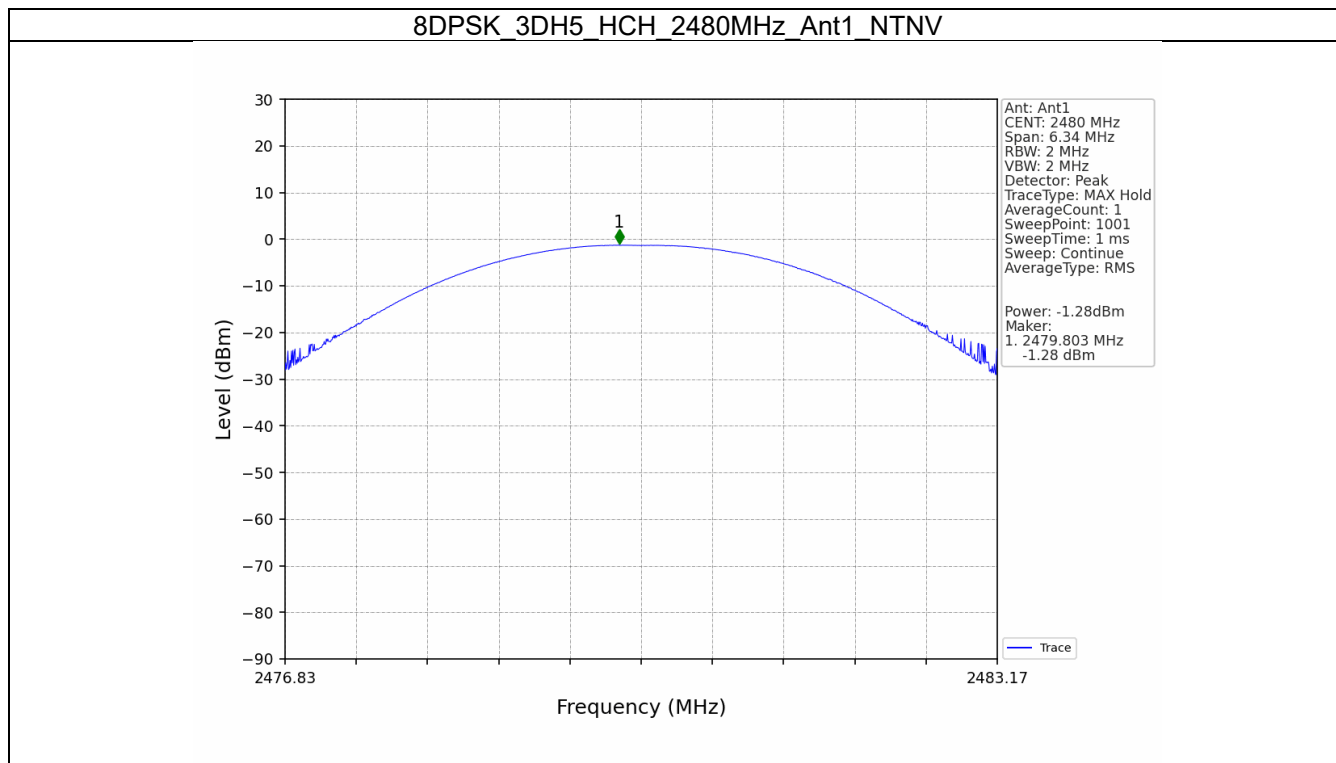


$\pi/4$ -DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV









#### 4. Carrier Frequency Separation

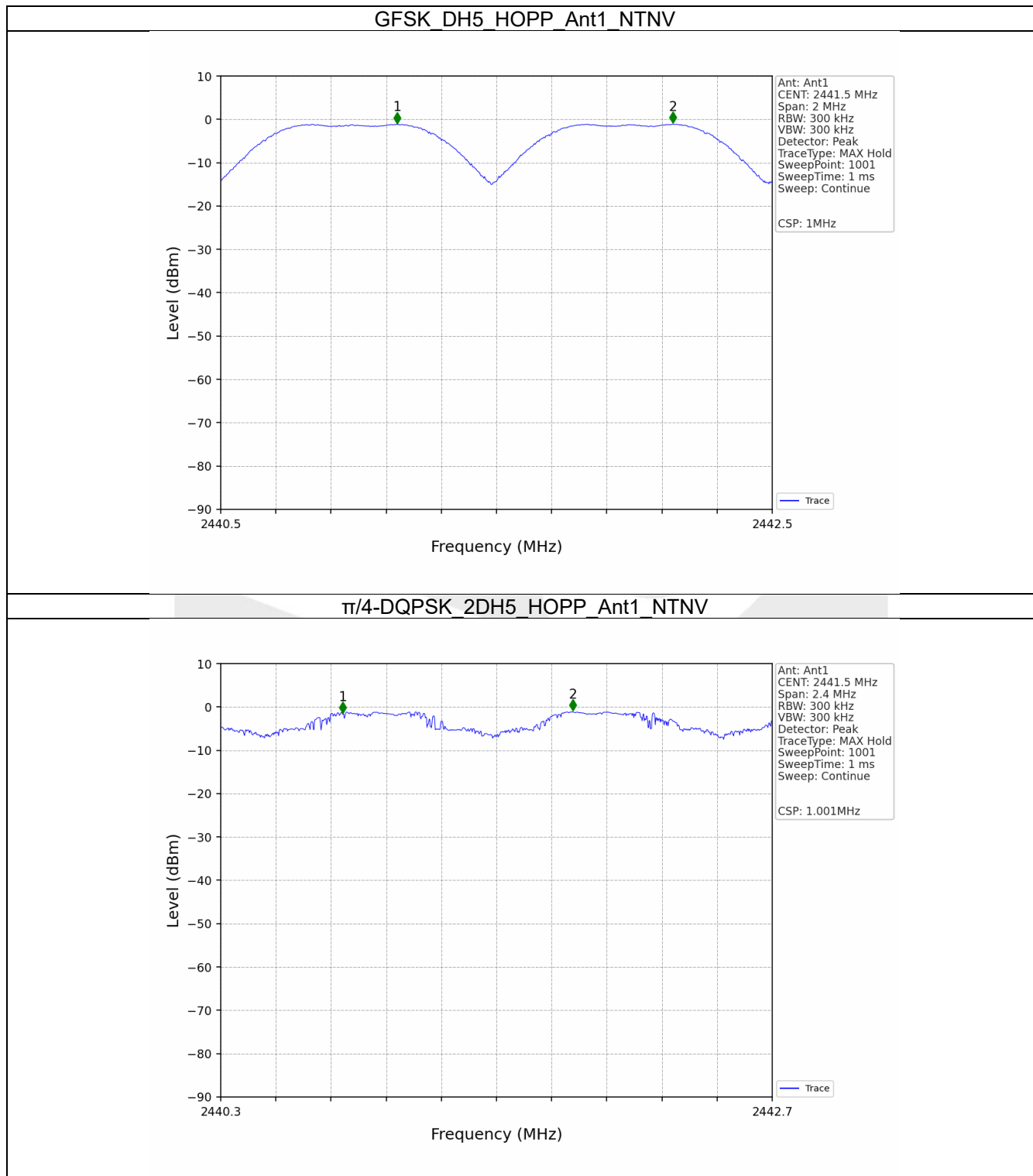
##### 4.1 Test Result

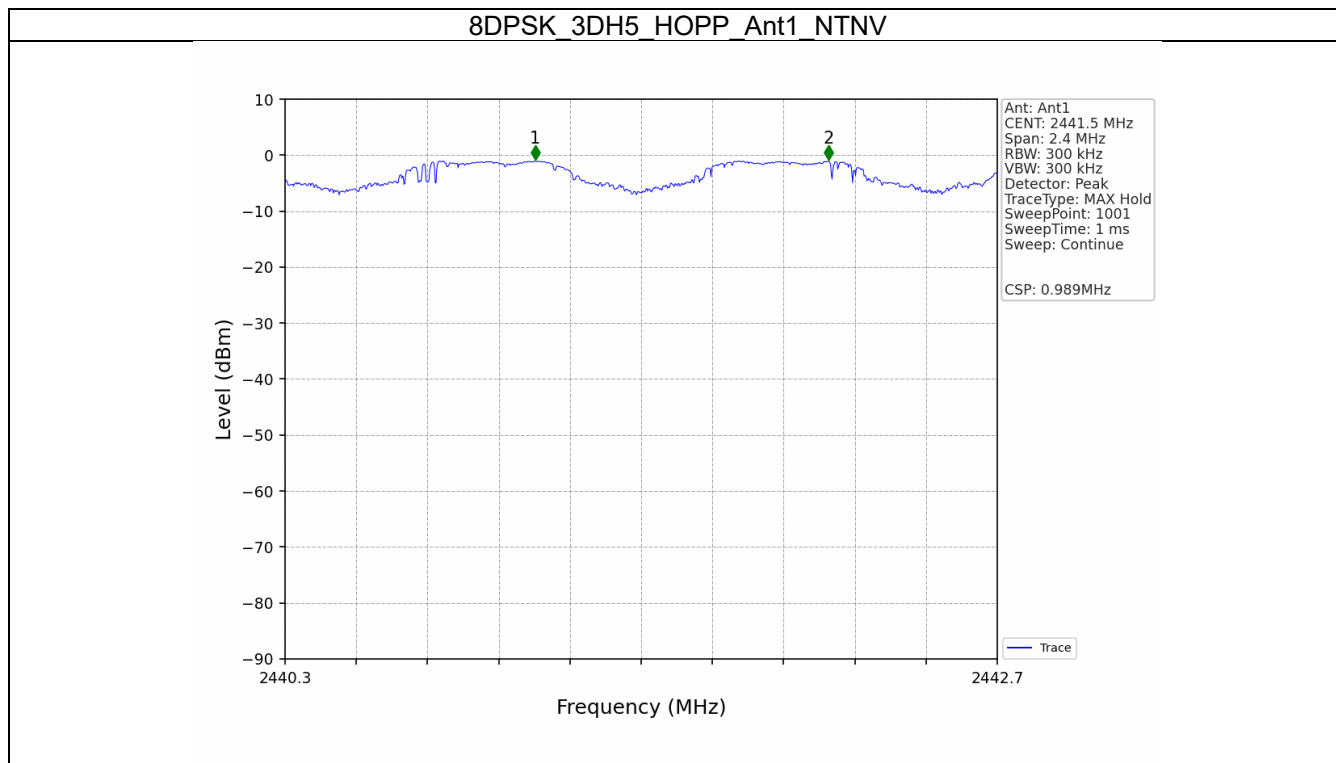
###### 4.1.1 Ant1

| Ant1           |         |                 |             |                          |                      |              |         |
|----------------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode           | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK           | SISO    | HOPP            | DH5         | 1.000                    | 0.985                | $\geq 0.985$ | Pass    |
| $\pi/4$ -DQPSK | SISO    | HOPP            | 2DH5        | 1.001                    | 1.265                | $\geq 0.843$ | Pass    |
| 8DPSK          | SISO    | HOPP            | 3DH5        | 0.989                    | 1.268                | $\geq 0.845$ | Pass    |

## 4.2 Test Graph

### 4.2.1 Ant1





## 5. Number of Hopping Frequencies

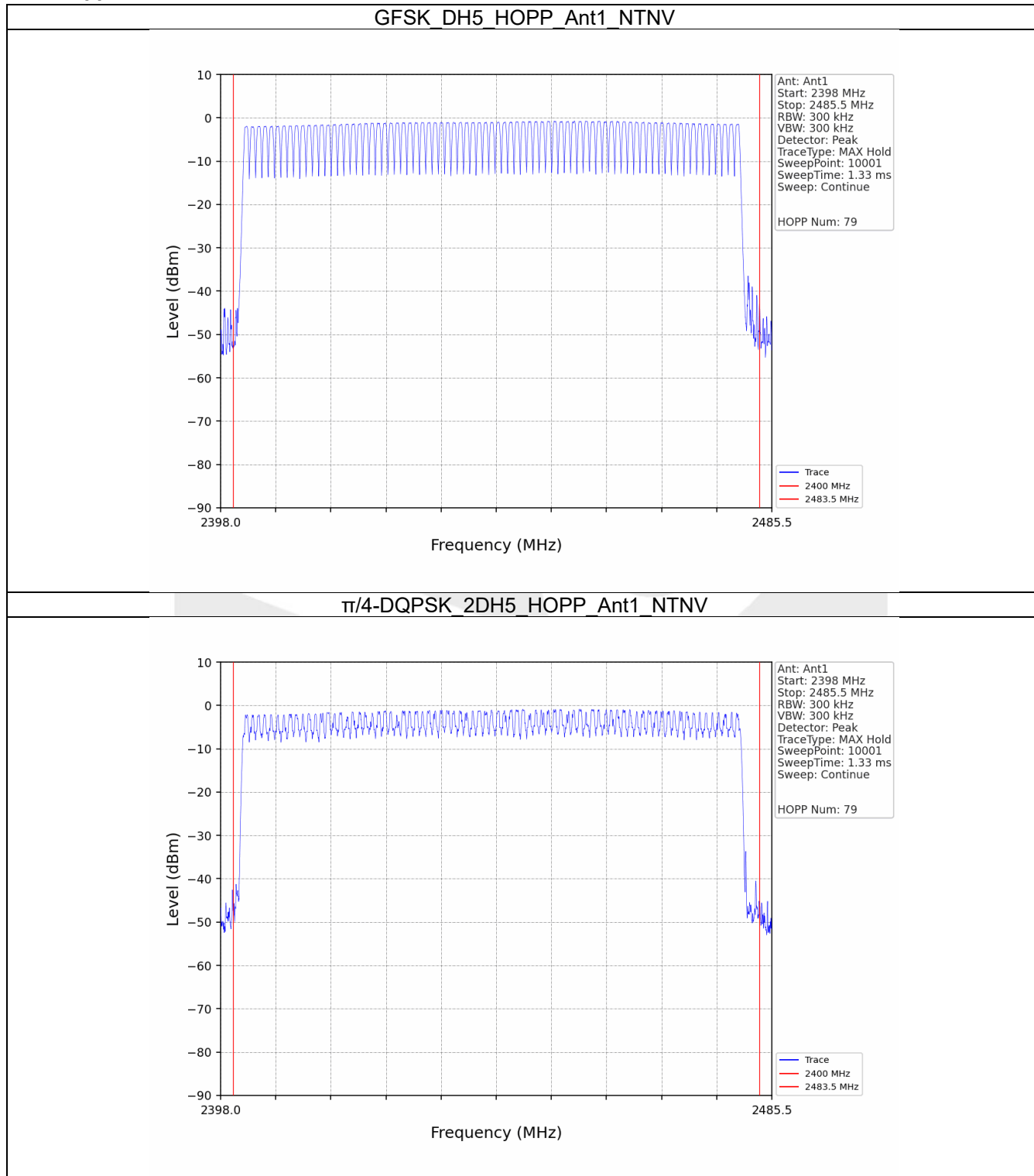
### 5.1 Test Result

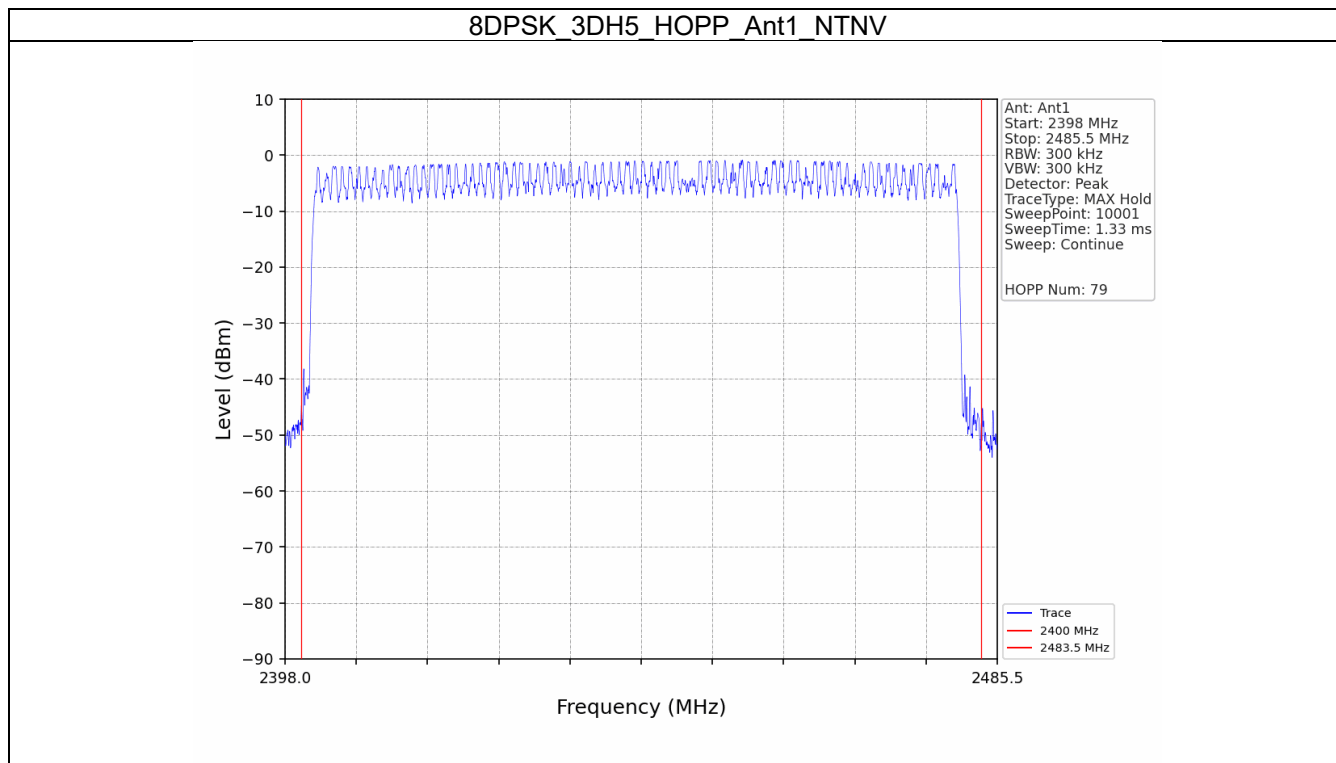
#### 5.1.1 HoppNum

| 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

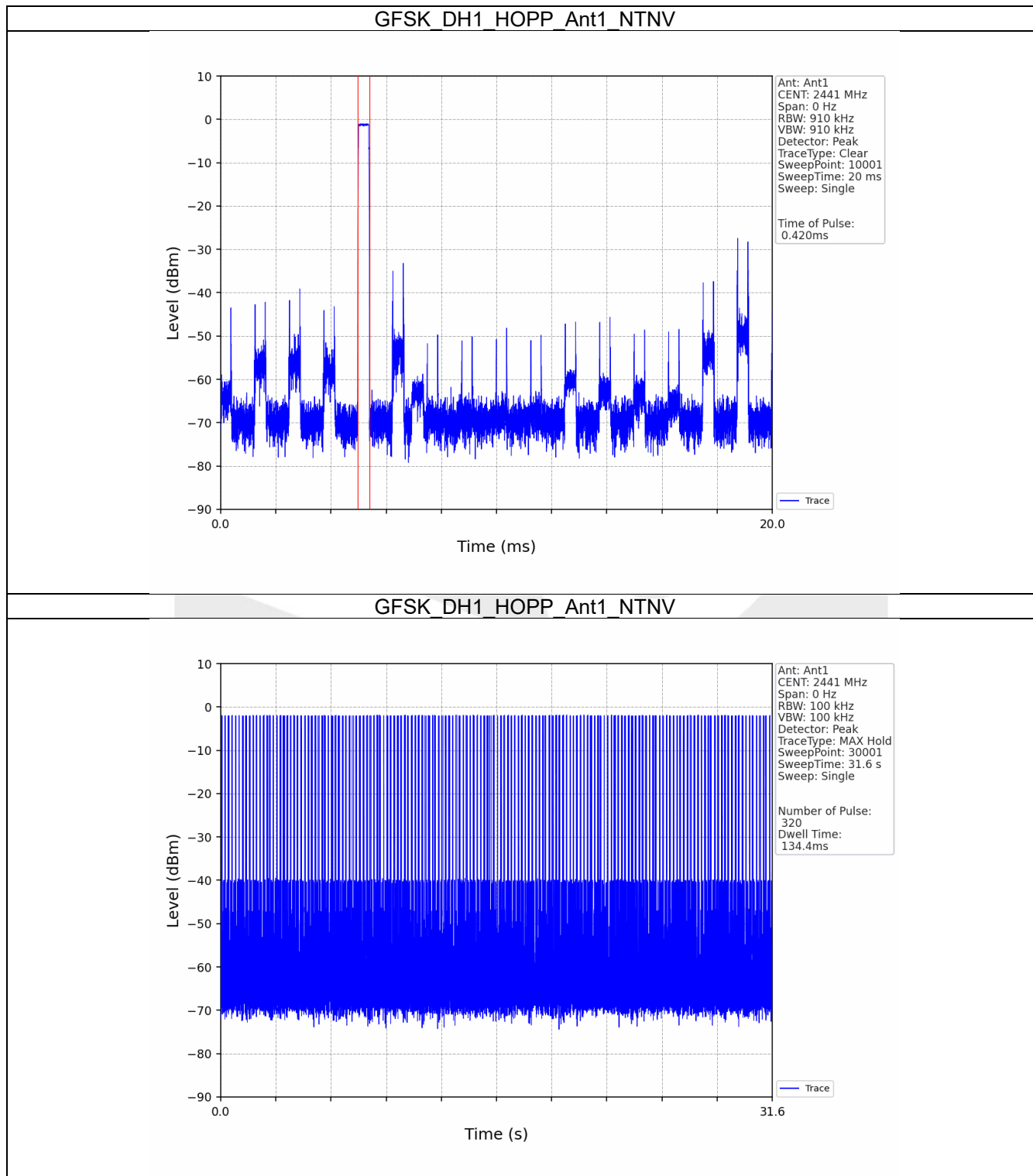
#### 6.1.1 Ant1

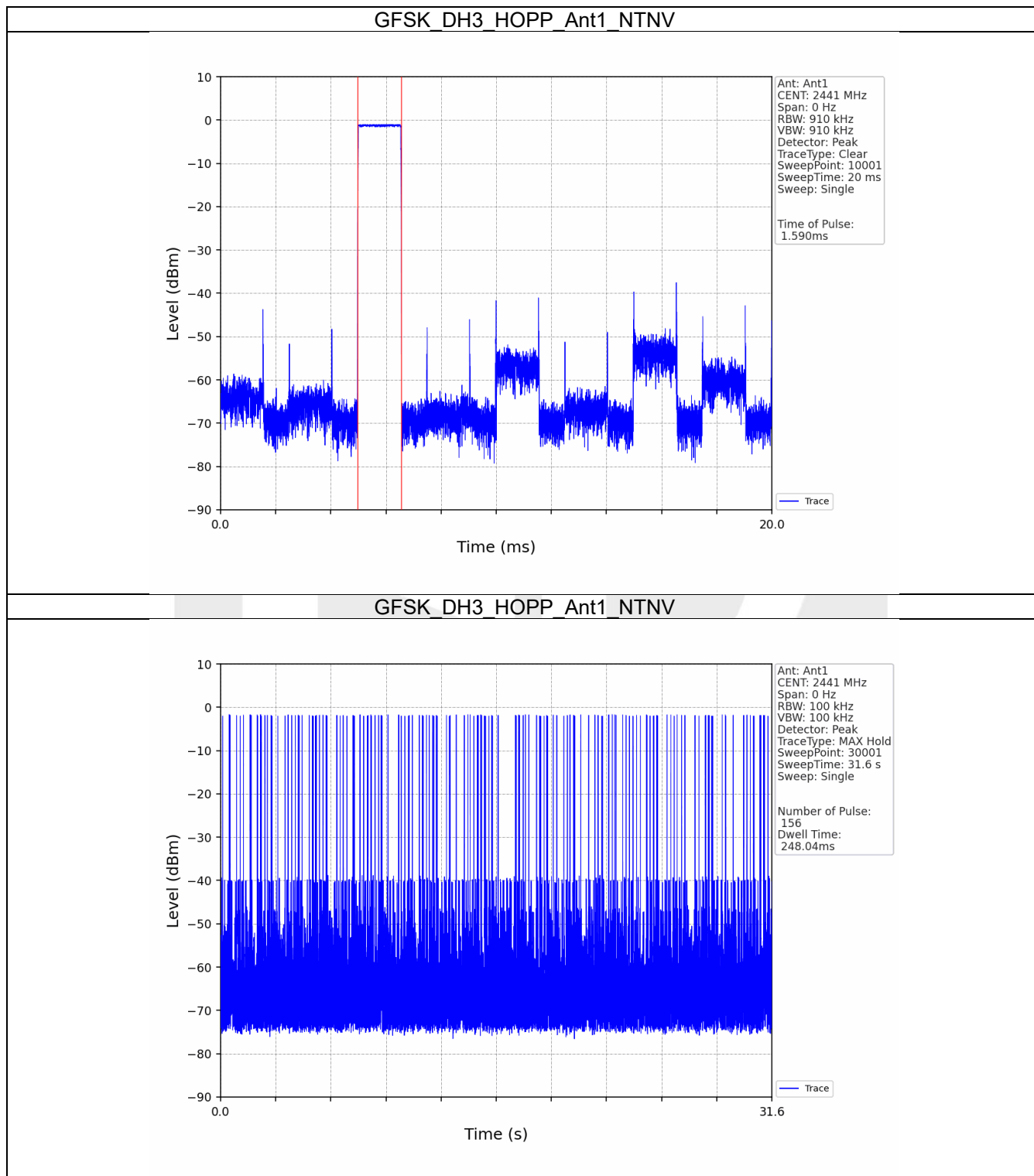
| Ant1           |         |                 |             |                               |                        |                                    |                 |            |         |
|----------------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| 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         | 0.420                         | 31.600                 | 320                                | 134.400         | <=400      | Pass    |
|                |         |                 | DH3         | 1.590                         | 31.600                 | 156                                | 248.040         | <=400      | Pass    |
|                |         |                 | DH5         | 2.630                         | 31.600                 | 98                                 | 257.740         | <=400      | Pass    |
| $\pi/4$ -DQPSK | SISO    | HOPP            | 2DH1        | 0.430                         | 31.600                 | 320                                | 137.600         | <=400      | Pass    |
|                |         |                 | 2DH3        | 1.632                         | 31.600                 | 156                                | 254.592         | <=400      | Pass    |
|                |         |                 | 2DH5        | 2.632                         | 31.600                 | 91                                 | 239.512         | <=400      | Pass    |
| 8DPSK          | SISO    | HOPP            | 3DH1        | 0.440                         | 31.600                 | 319                                | 140.360         | <=400      | Pass    |
|                |         |                 | 3DH3        | 1.426                         | 31.600                 | 153                                | 218.178         | <=400      | Pass    |
|                |         |                 | 3DH5        | 2.626                         | 31.600                 | 122                                | 320.372         | <=400      | Pass    |

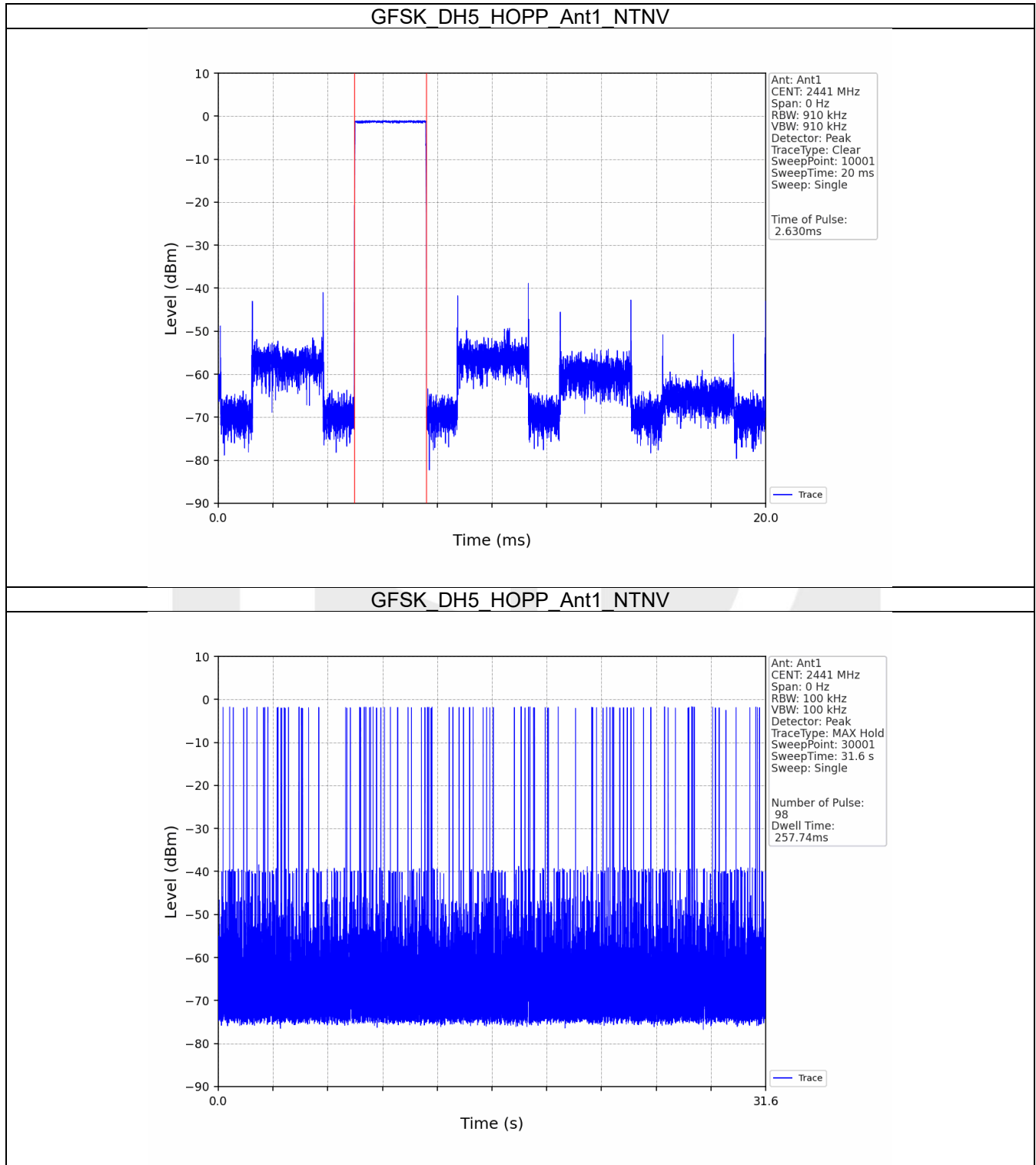


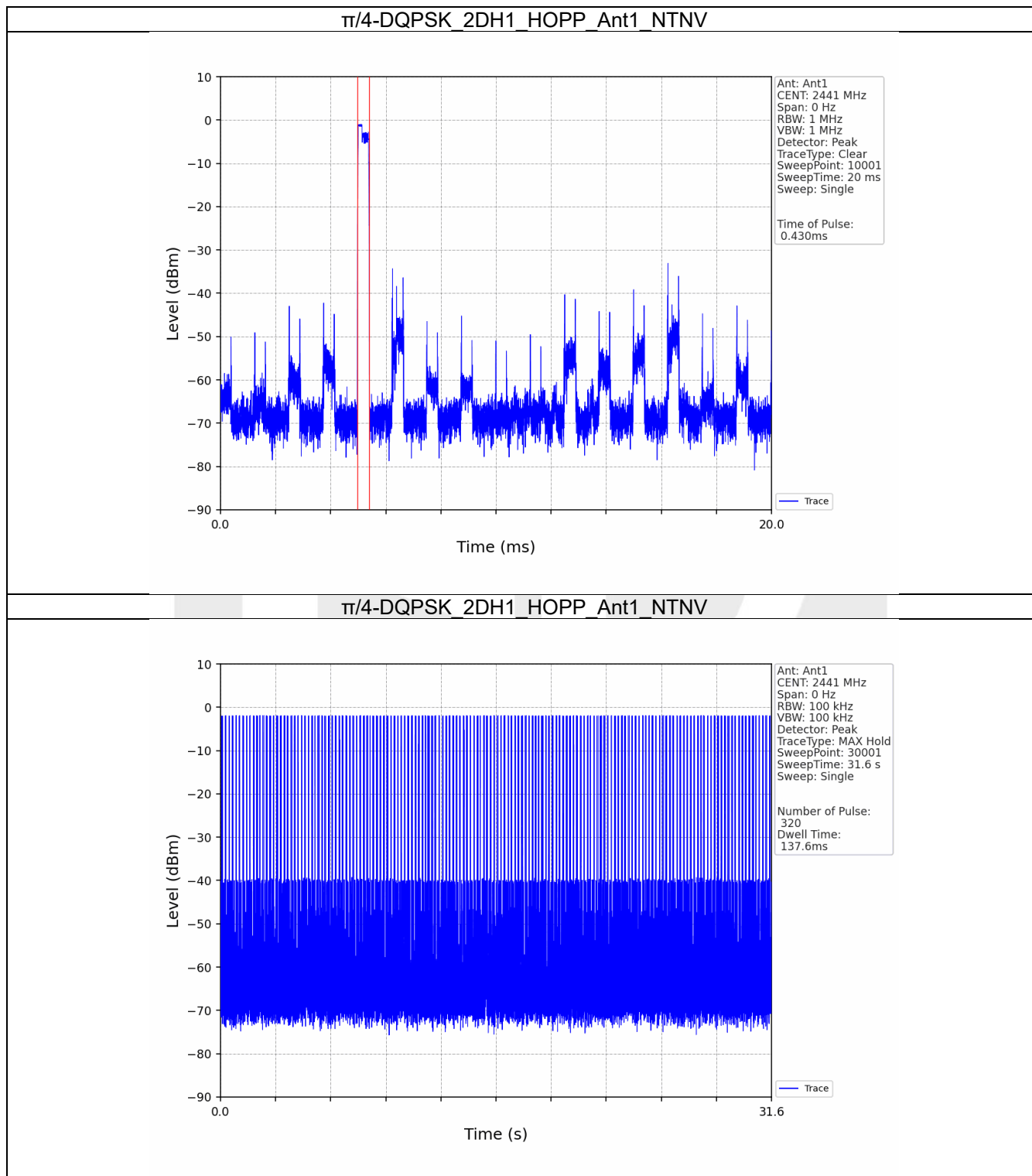
## 6.2 Test Graph

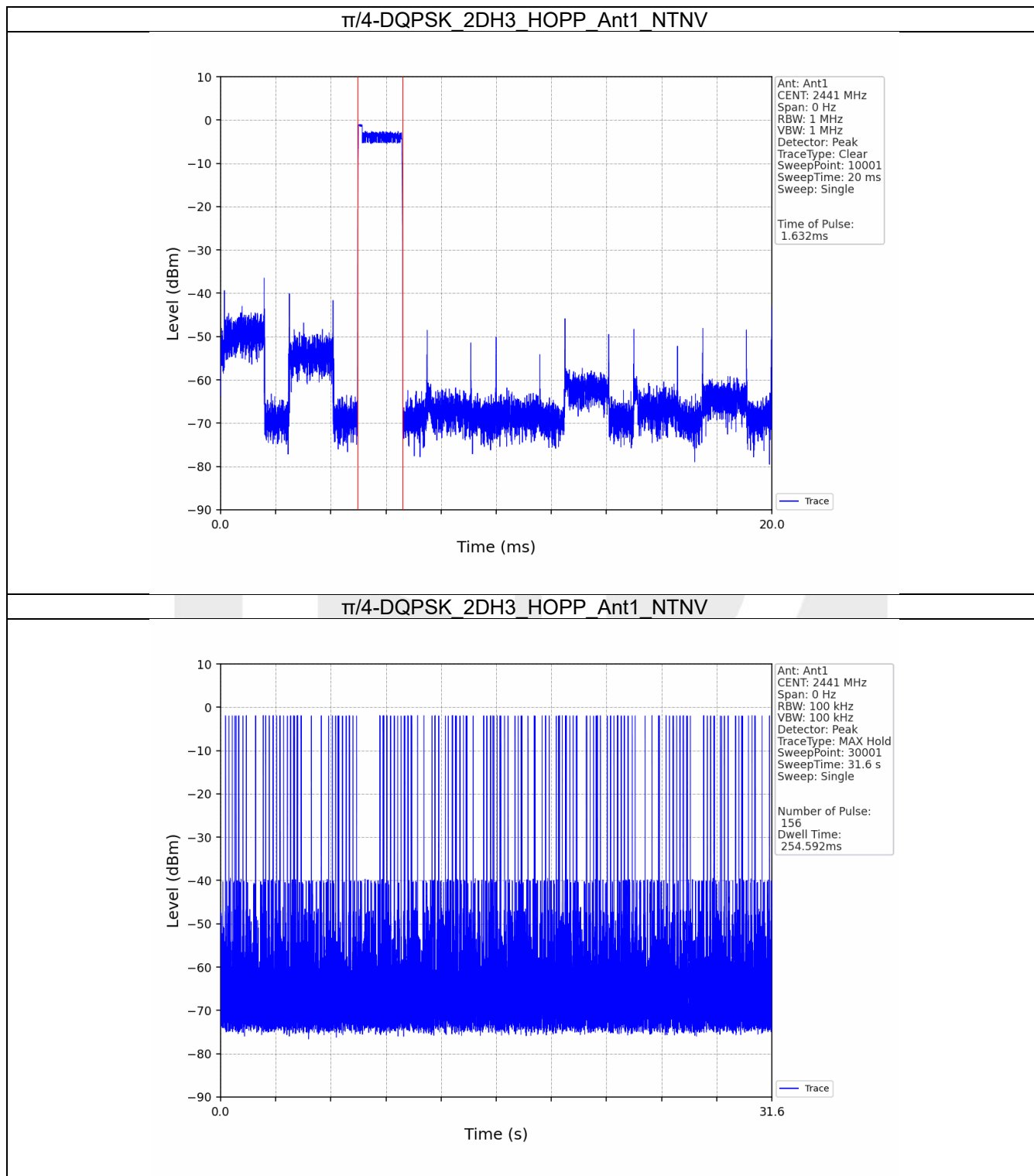
### 6.2.1 Ant1

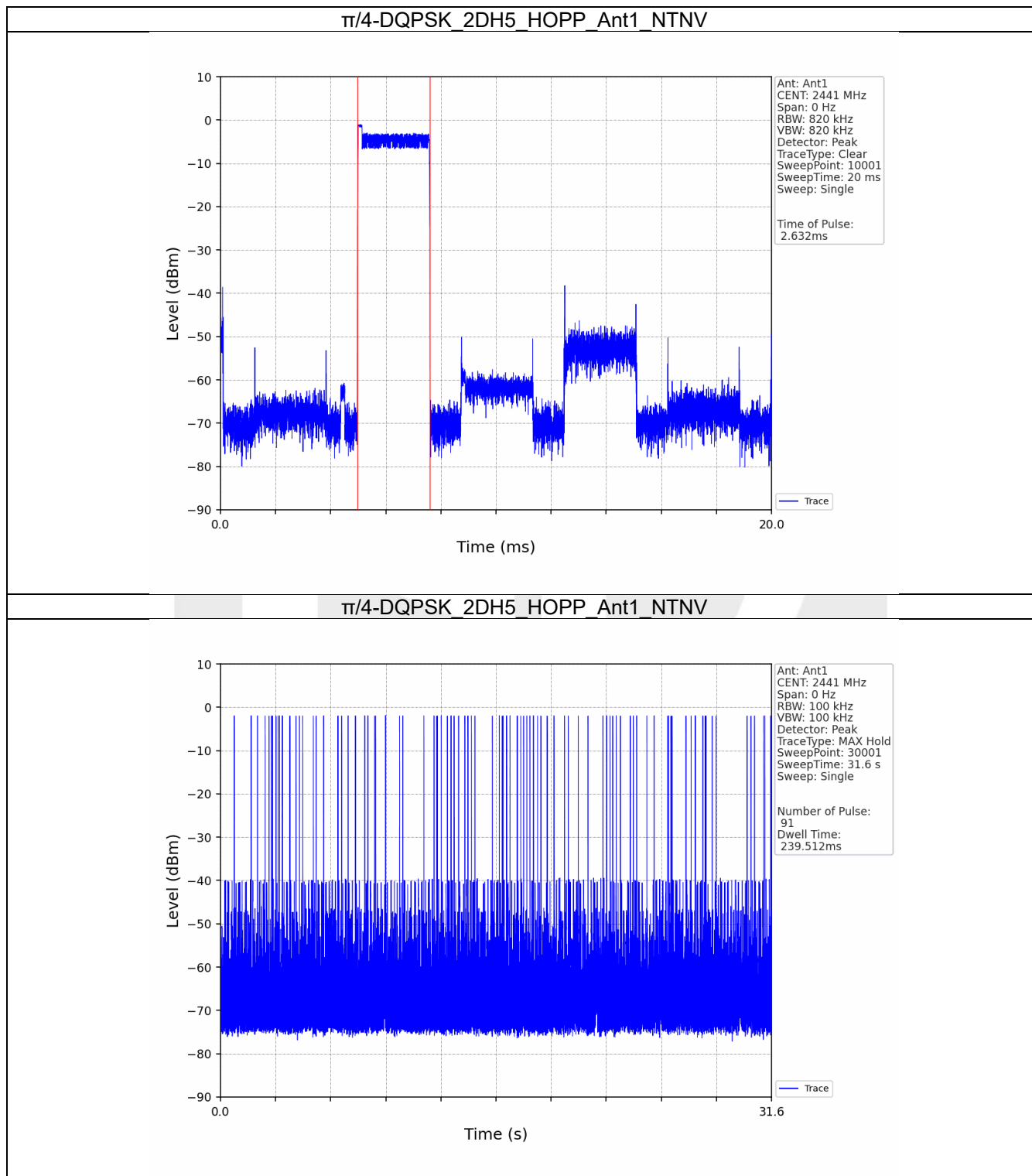


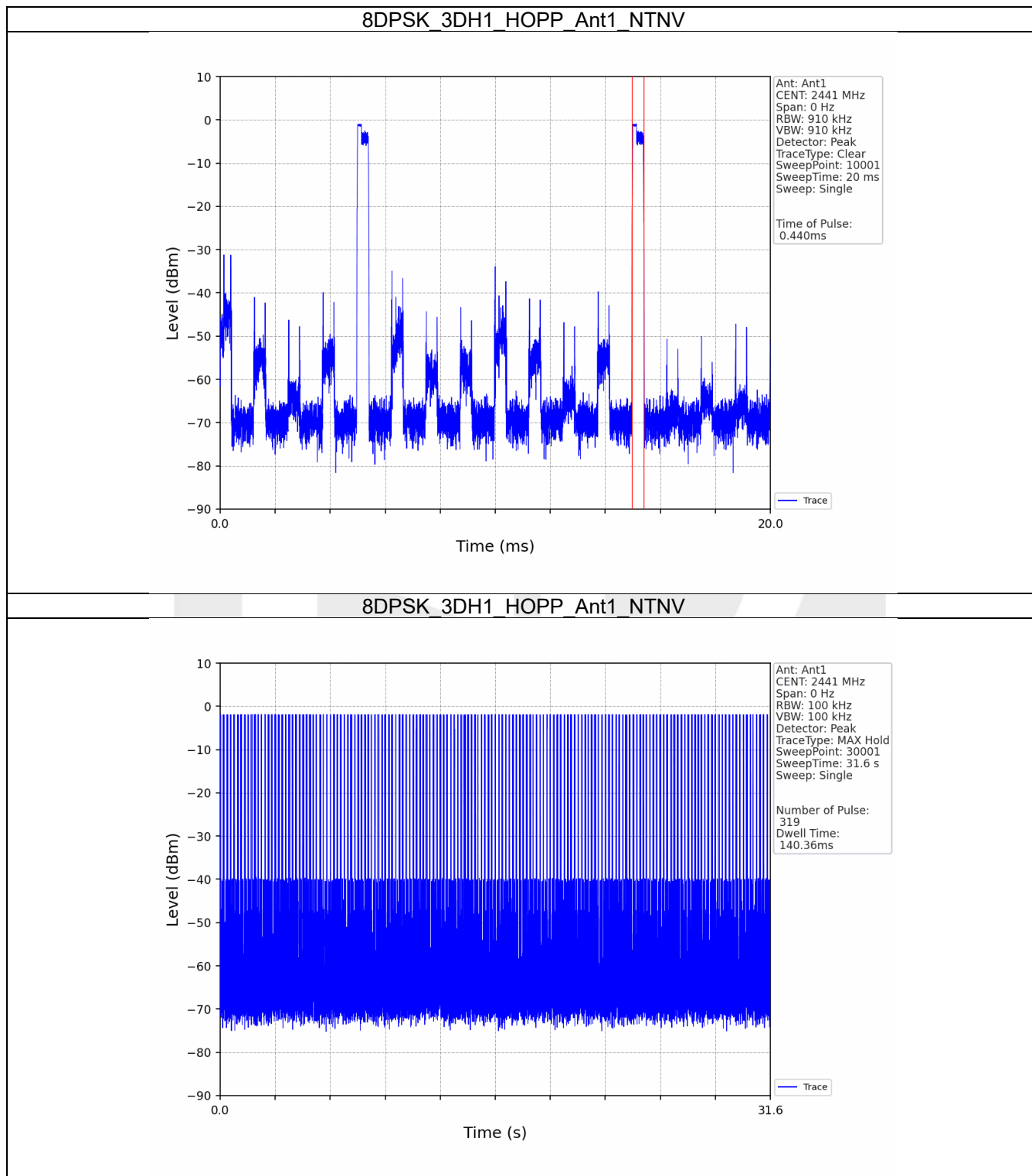


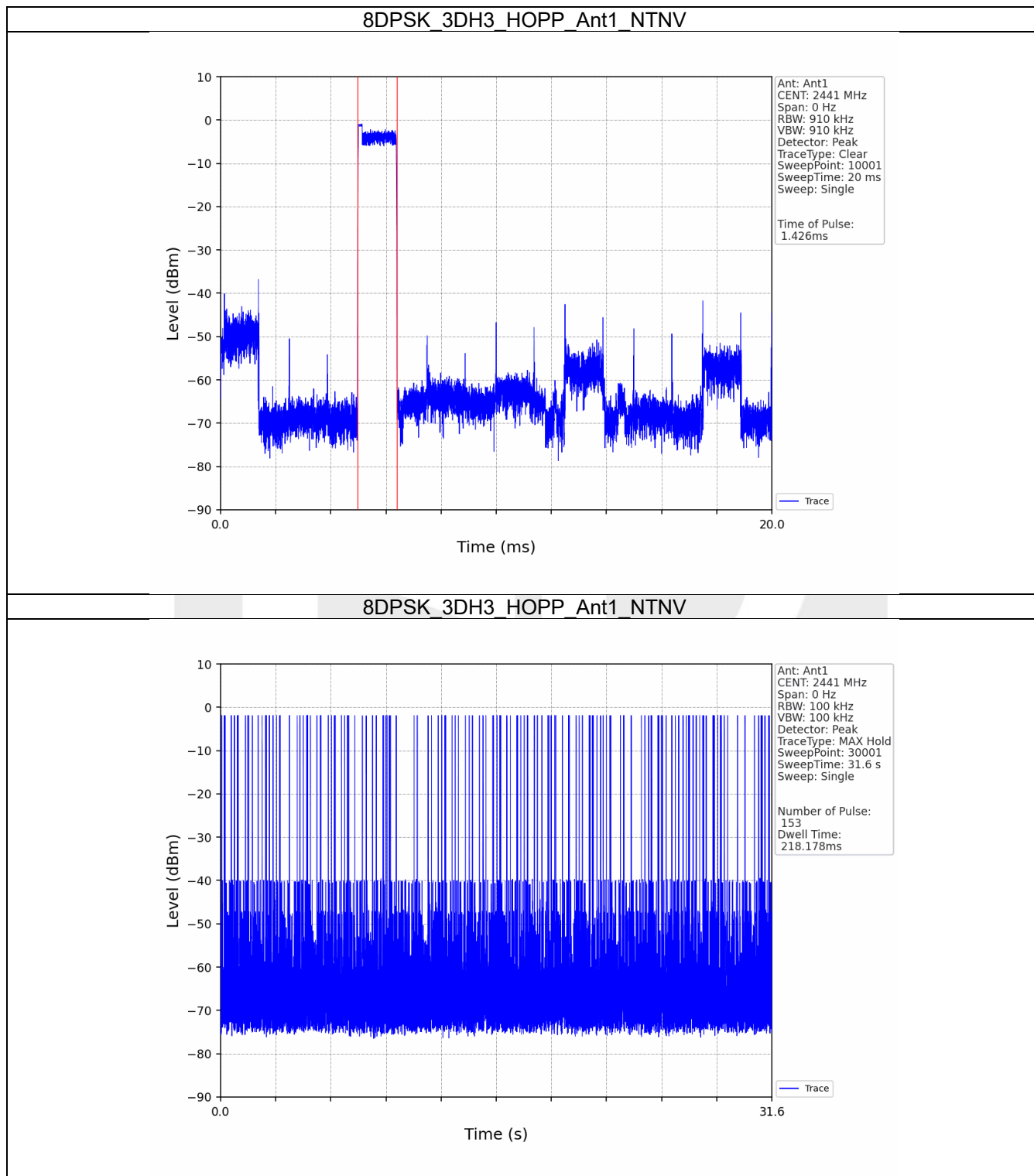




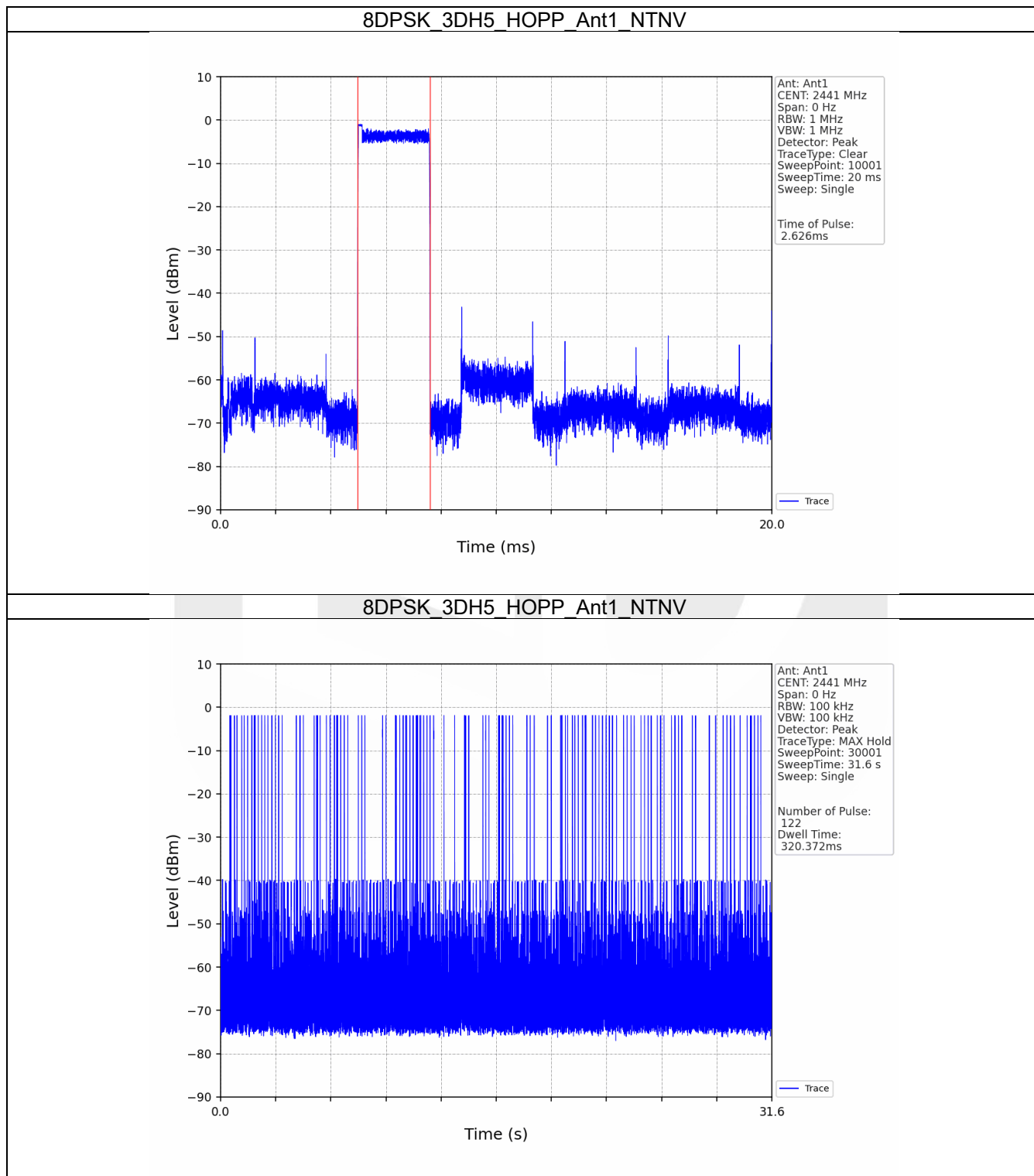












## 7. Unwanted Emissions In Non-restricted Frequency Bands

### 7.1 Test Result

#### 7.1.1 Ref

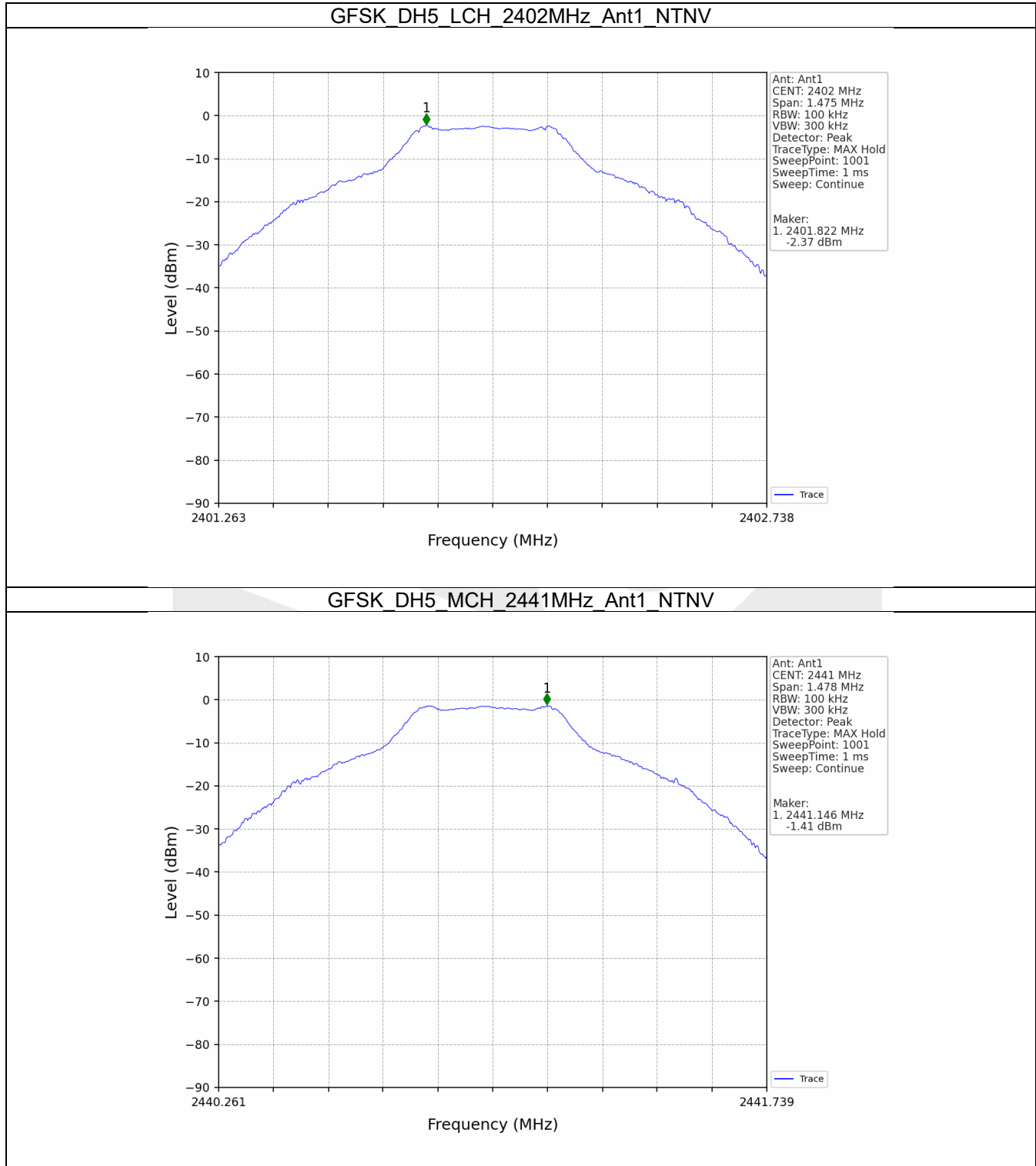
| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | -2.37                    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | -1.41                    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | -1.80                    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | -1.16                    |
|                                                                                                                                                 |         |                 |             |     | -1.16                    |
| $\pi/4$ -DQPSK                                                                                                                                  | SISO    | 2402            | 2DH5        | 1   | -2.38                    |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | -1.34                    |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -1.82                    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | -1.13                    |
|                                                                                                                                                 |         |                 |             |     | -1.13                    |
| 8DPSK                                                                                                                                           | SISO    | 2402            | 3DH5        | 1   | -2.34                    |
|                                                                                                                                                 |         | 2441            | 3DH5        | 1   | -1.33                    |
|                                                                                                                                                 |         | 2480            | 3DH5        | 1   | -1.74                    |
|                                                                                                                                                 |         | HOPP            | 3DH5        | 1   | -0.97                    |
|                                                                                                                                                 |         |                 |             |     | -0.97                    |
| 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. |         |                 |             |     |                          |

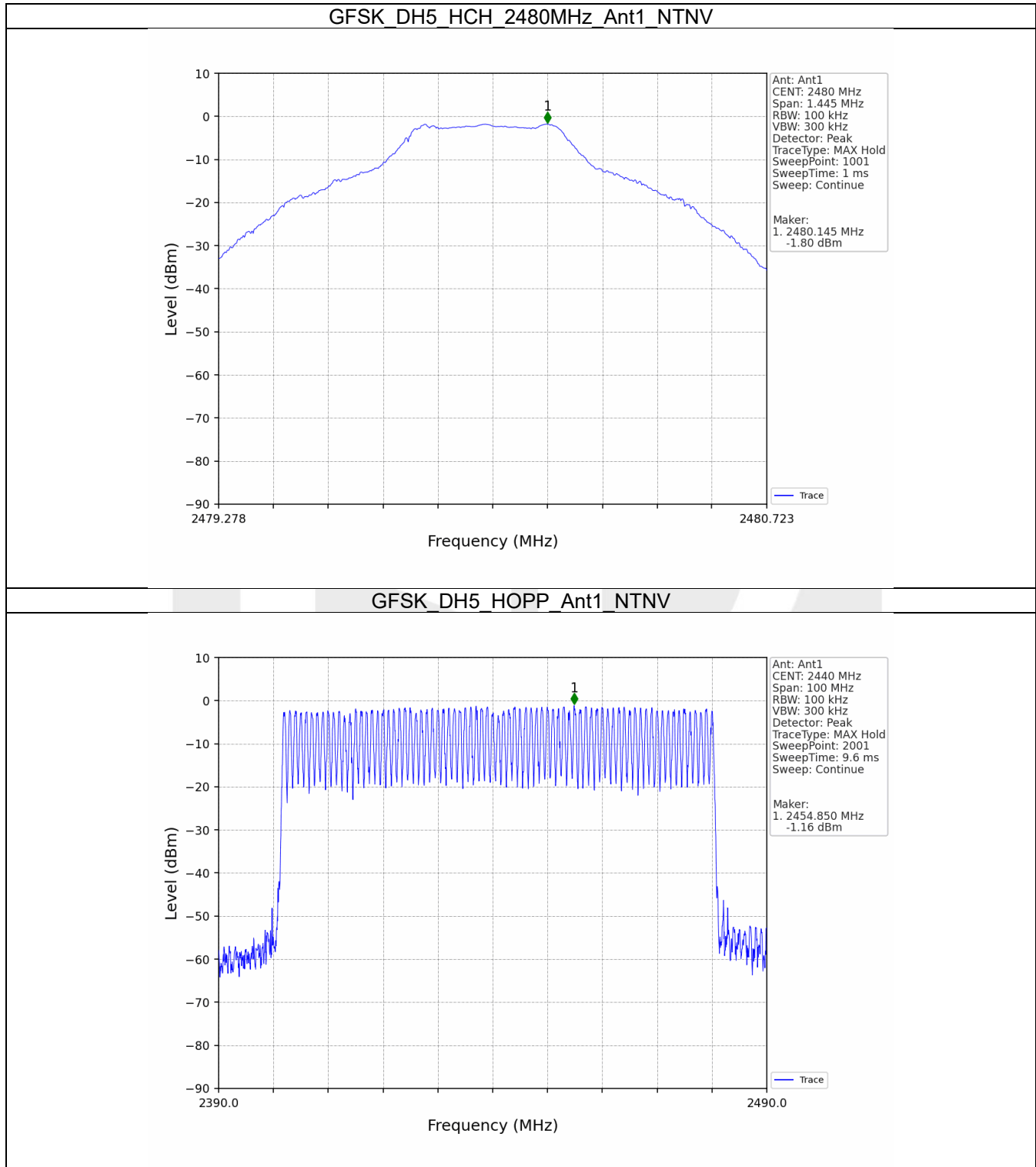
#### 7.1.2 CSE

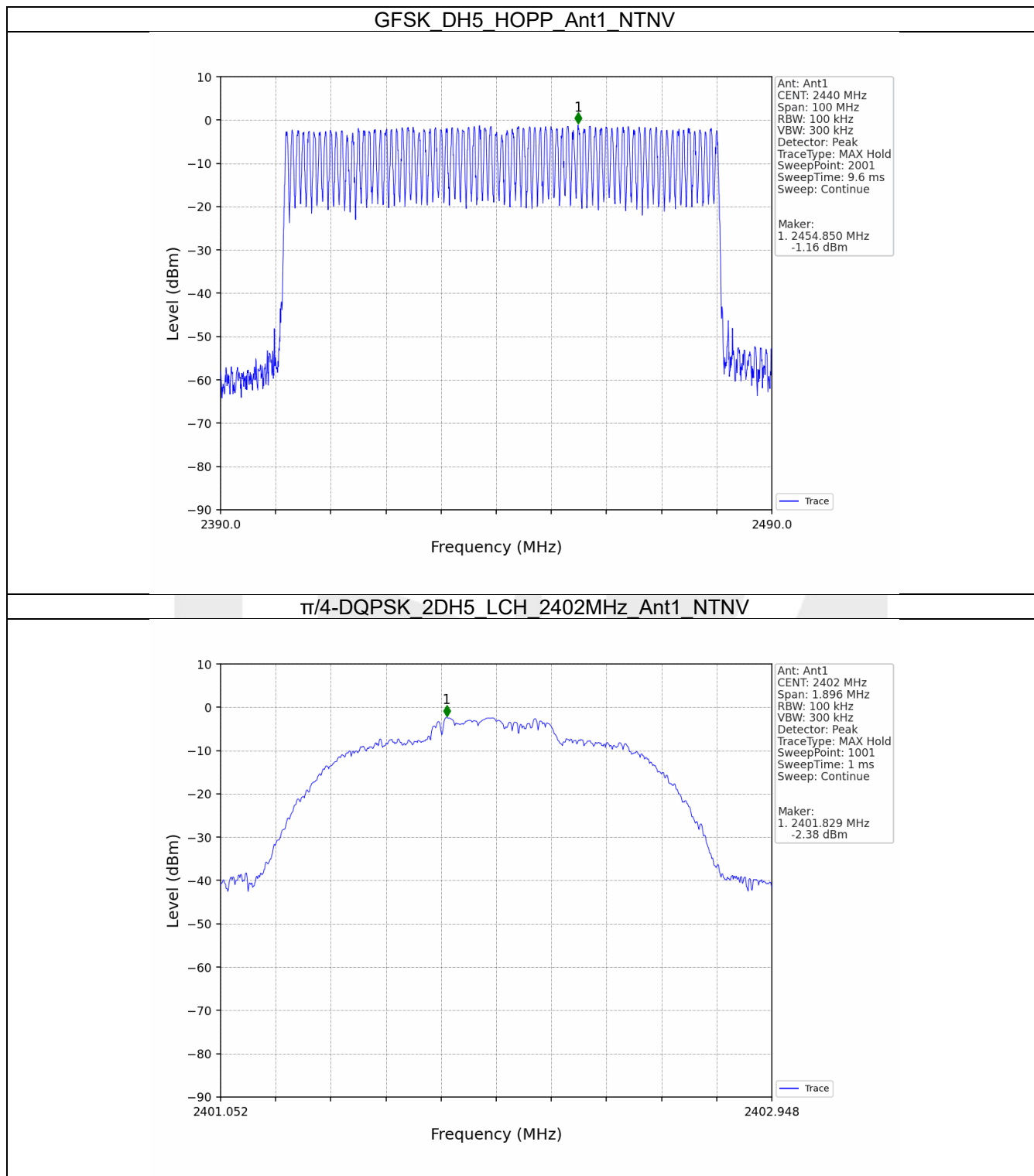
| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | -2.37                    | -22.37      | Pass    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | -1.41                    | -21.41      | Pass    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | -1.80                    | -21.80      | Pass    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | -1.16                    | -21.16      | Pass    |
|                                                                                                                                                 |         |                 |             |     | -1.16                    | -21.16      | Pass    |
| π/4-DQPSK                                                                                                                                       | SISO    | 2402            | 2DH5        | 1   | -2.38                    | -22.38      | Pass    |
|                                                                                                                                                 |         | 2441            | 2DH5        | 1   | -1.34                    | -21.34      | Pass    |
|                                                                                                                                                 |         | 2480            | 2DH5        | 1   | -1.82                    | -21.82      | Pass    |
|                                                                                                                                                 |         | HOPP            | 2DH5        | 1   | -1.13                    | -21.13      | Pass    |
|                                                                                                                                                 |         |                 |             |     | -1.13                    | -21.13      | Pass    |
| 8DPSK                                                                                                                                           | SISO    | 2402            | 3DH5        | 1   | -2.34                    | -22.34      | Pass    |
|                                                                                                                                                 |         | 2441            | 3DH5        | 1   | -1.33                    | -21.33      | Pass    |
|                                                                                                                                                 |         | 2480            | 3DH5        | 1   | -1.74                    | -21.74      | Pass    |
|                                                                                                                                                 |         | HOPP            | 3DH5        | 1   | -0.97                    | -20.97      | Pass    |
|                                                                                                                                                 |         |                 |             |     | -0.97                    | -20.97      | 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. |         |                 |             |     |                          |             |         |

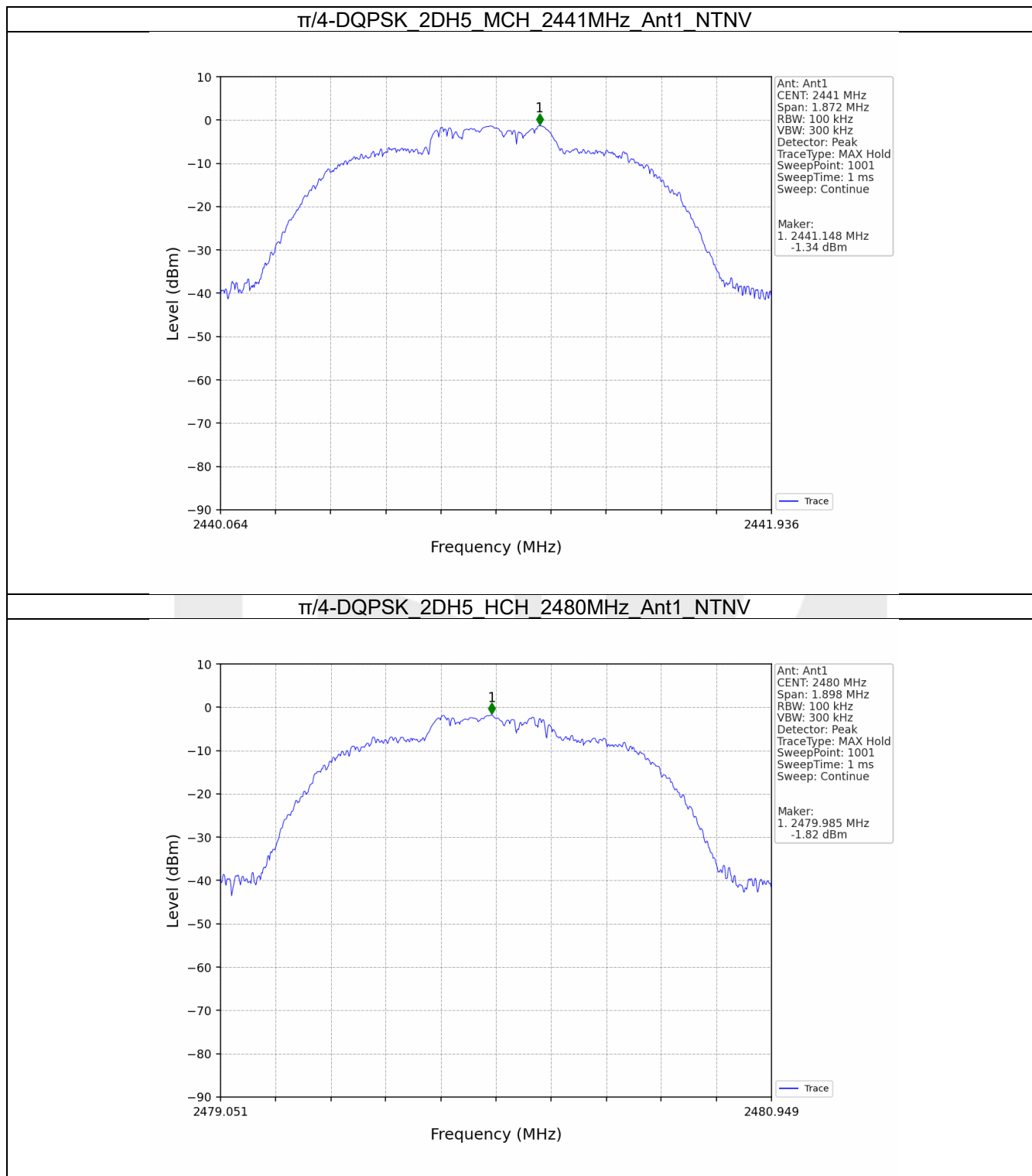
## 7.2 Test Graph

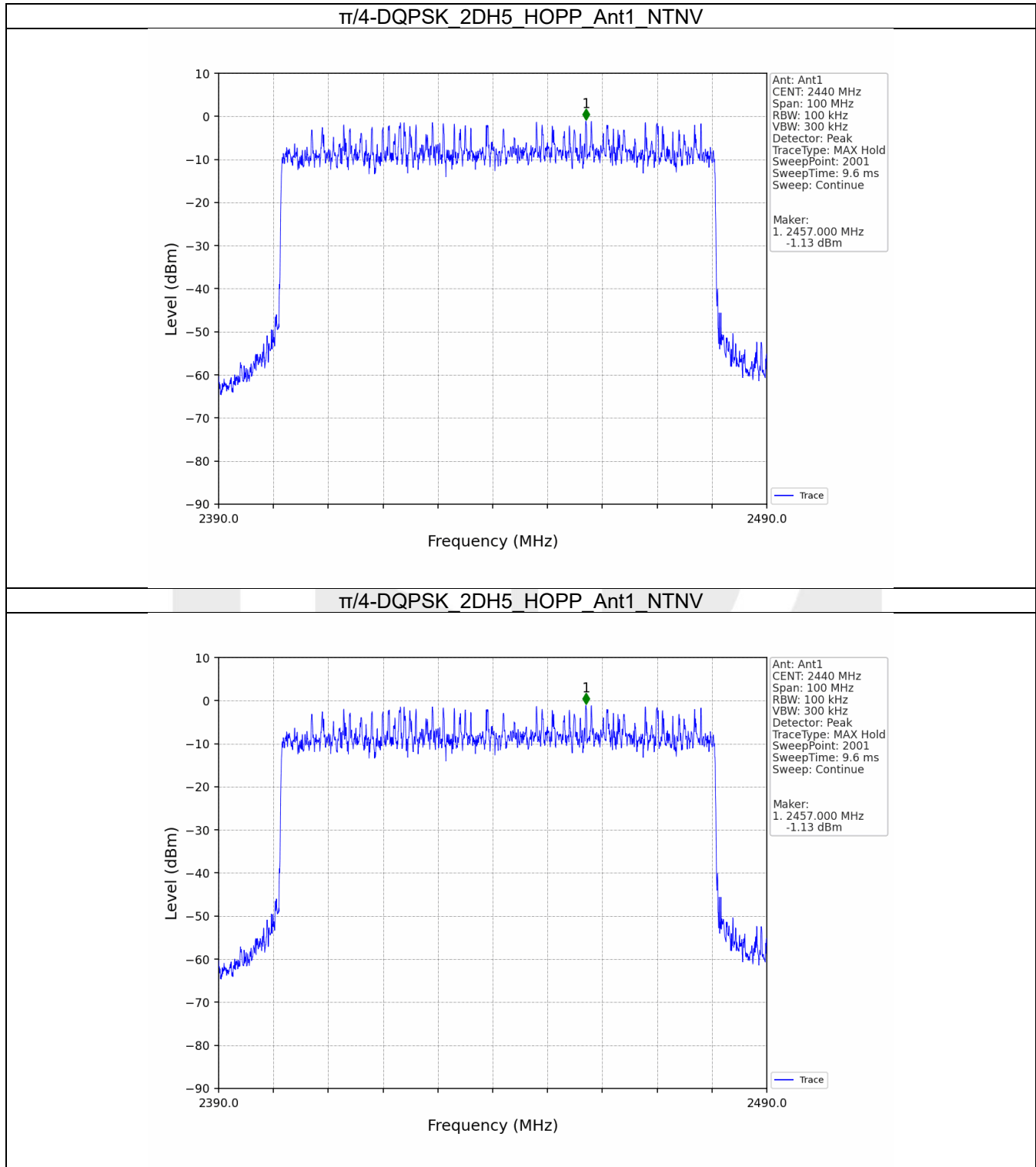
### 7.2.1 Ref

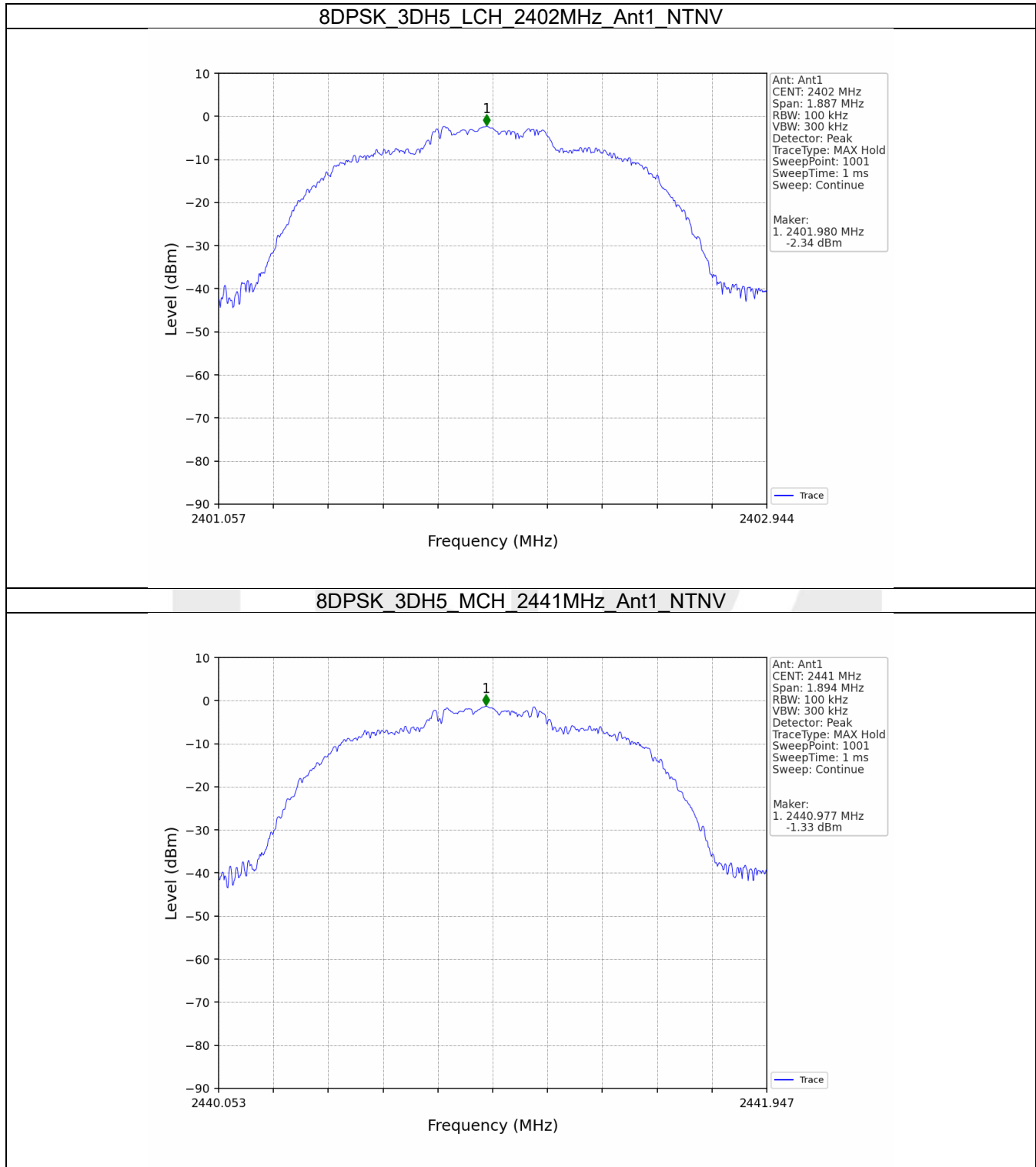




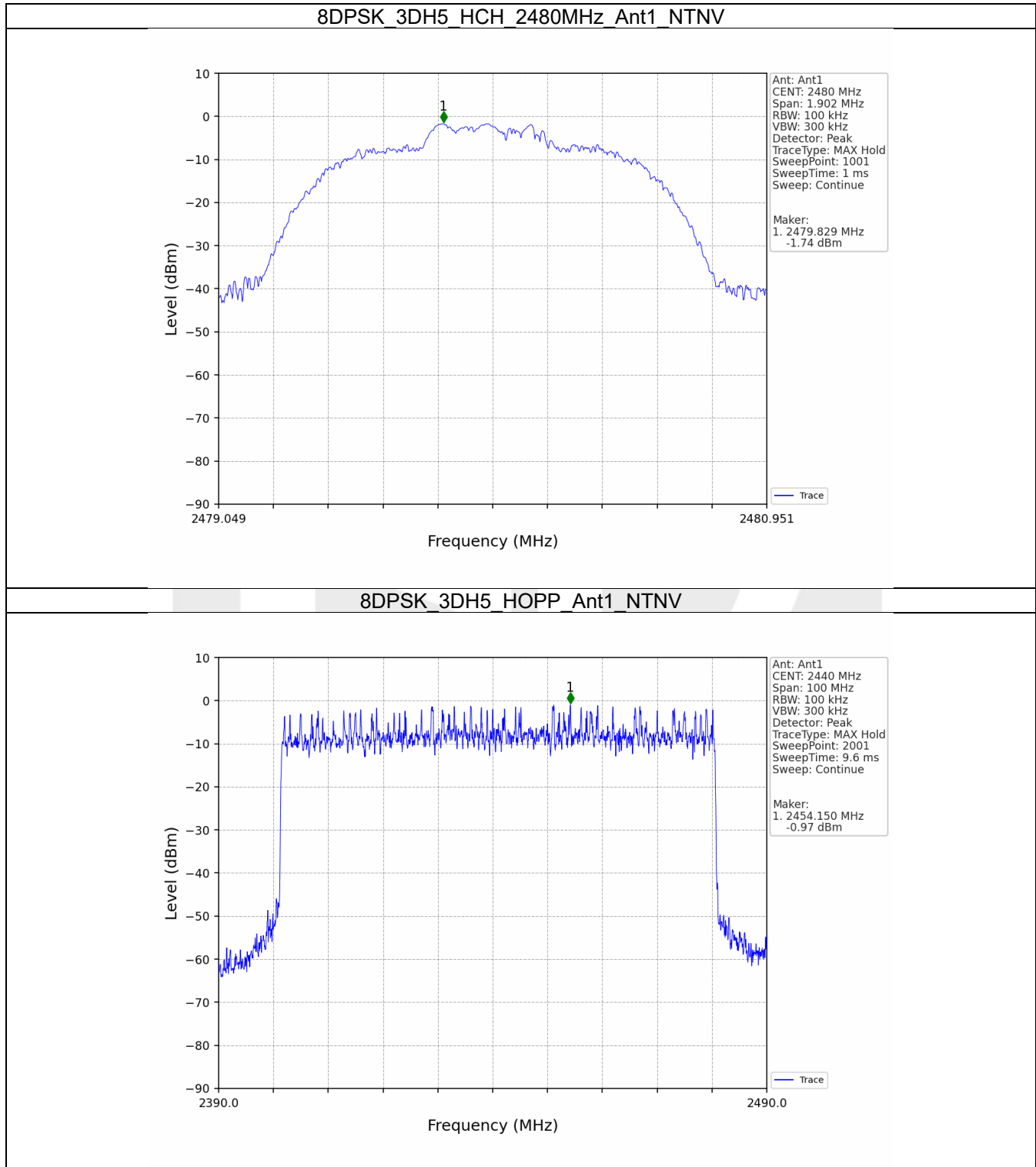


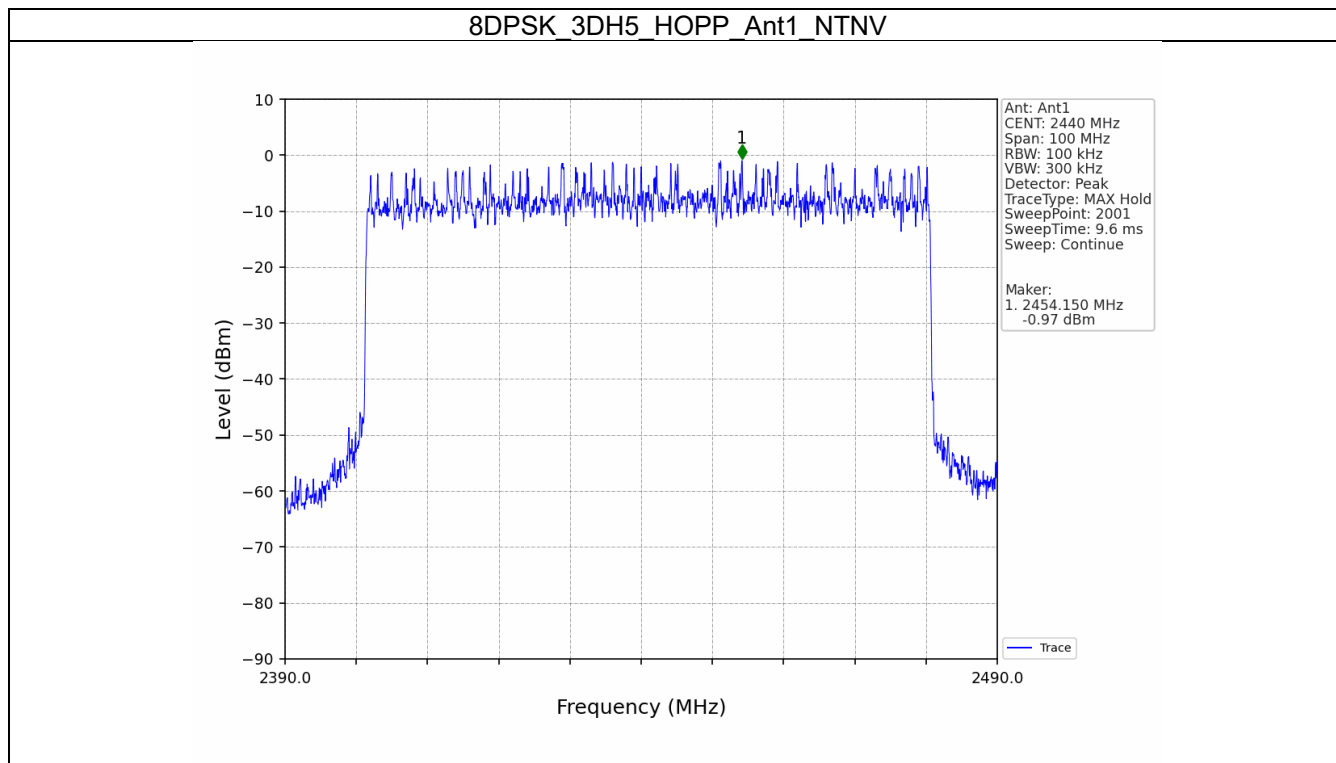




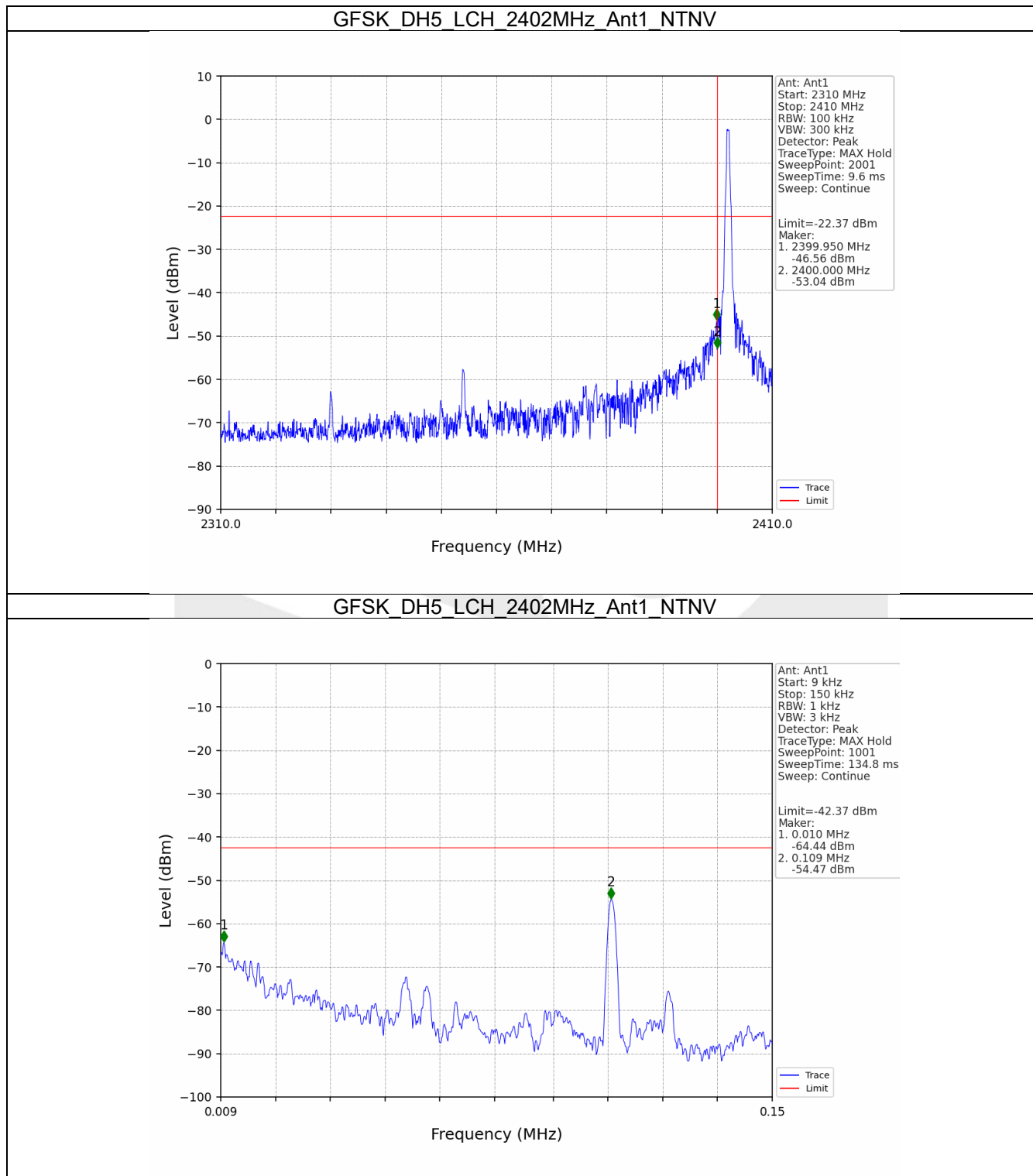


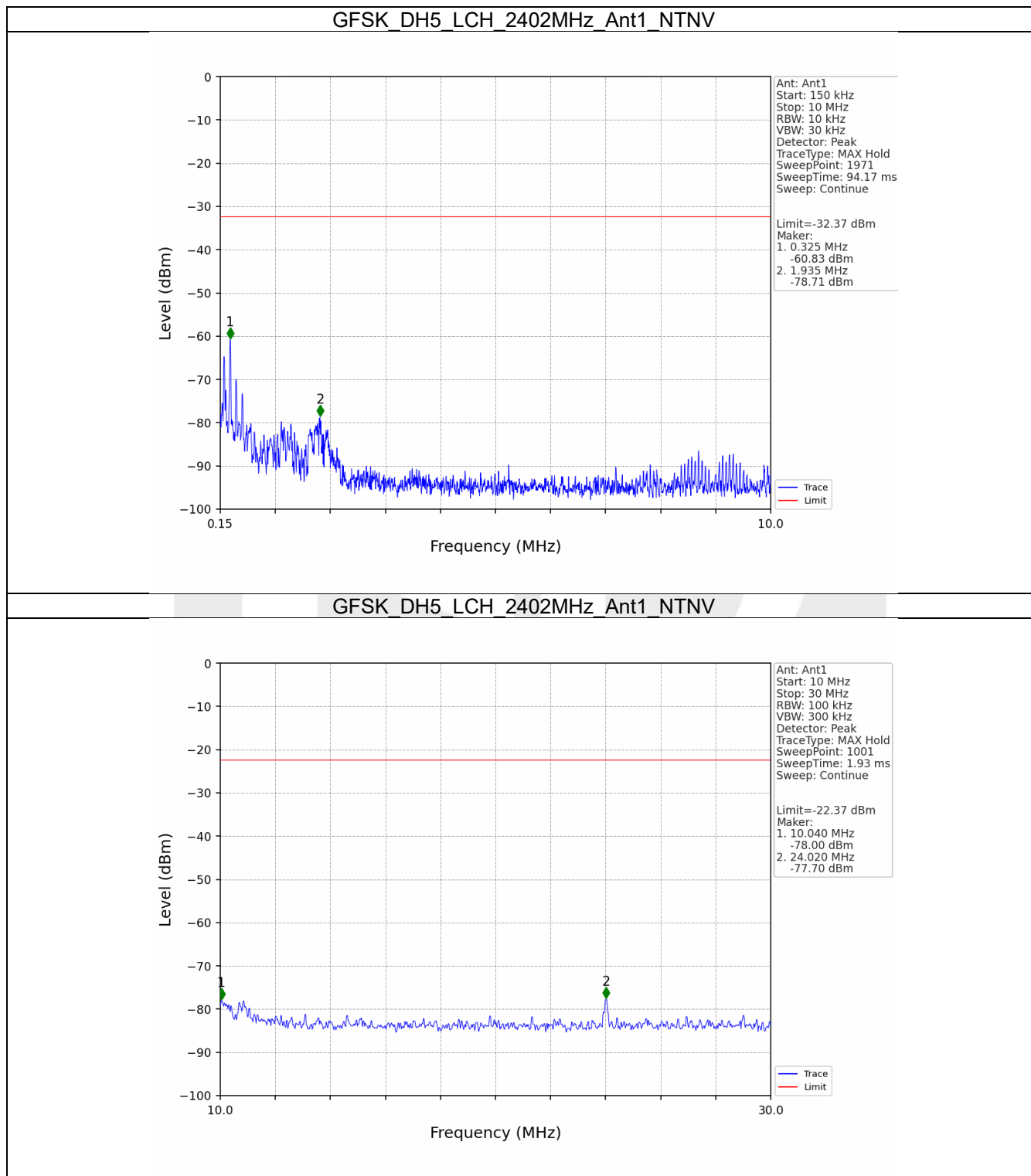


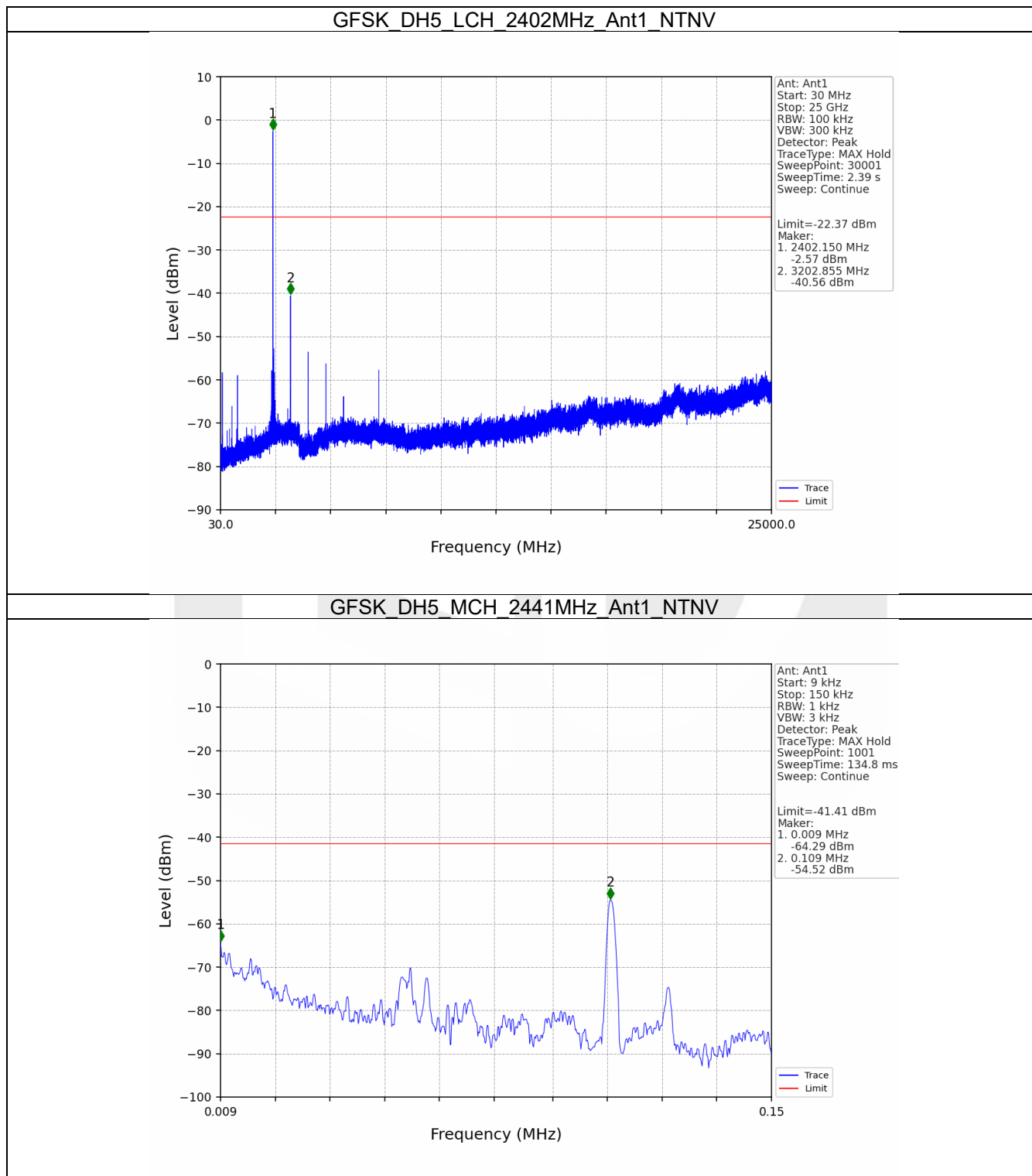


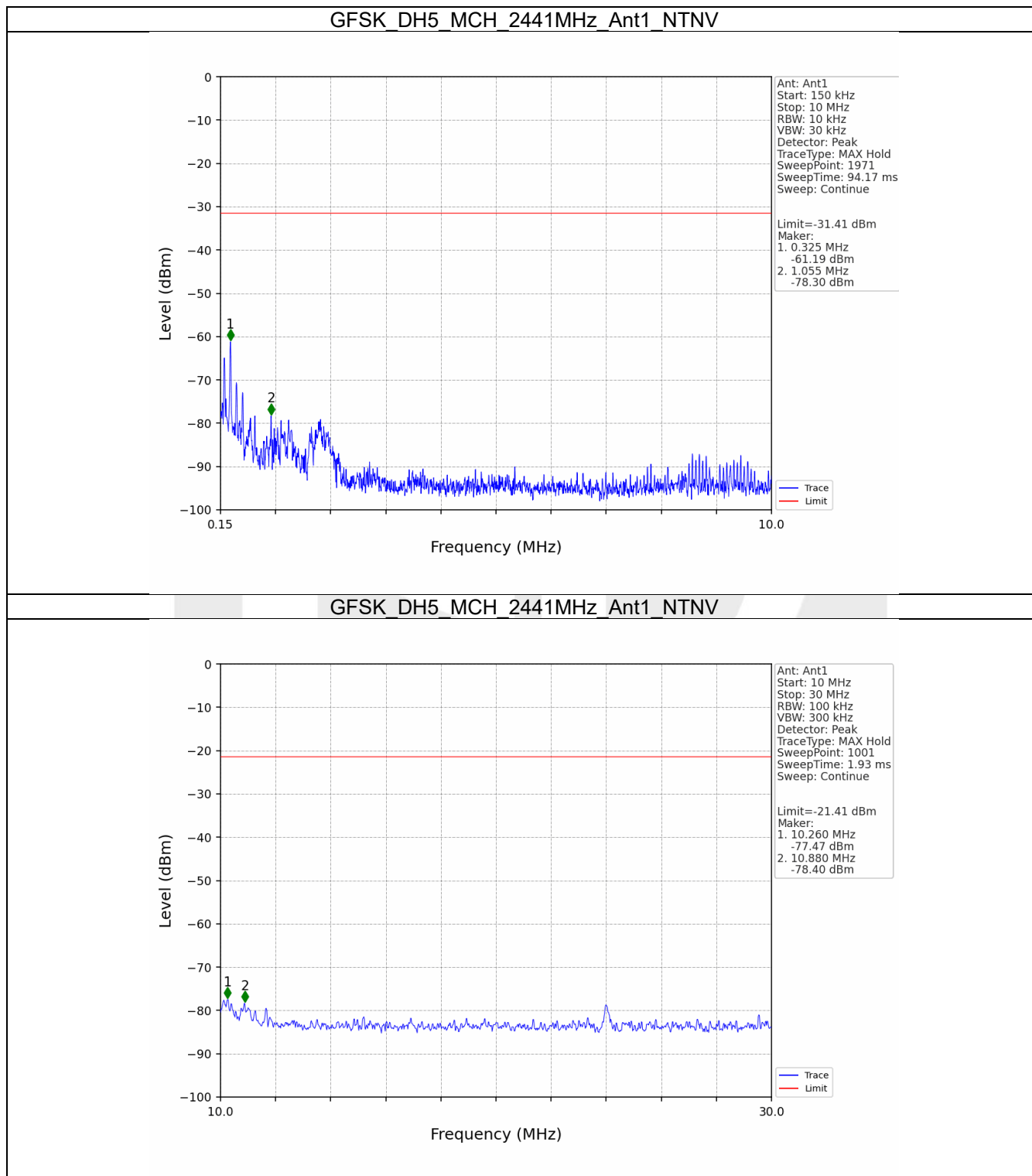


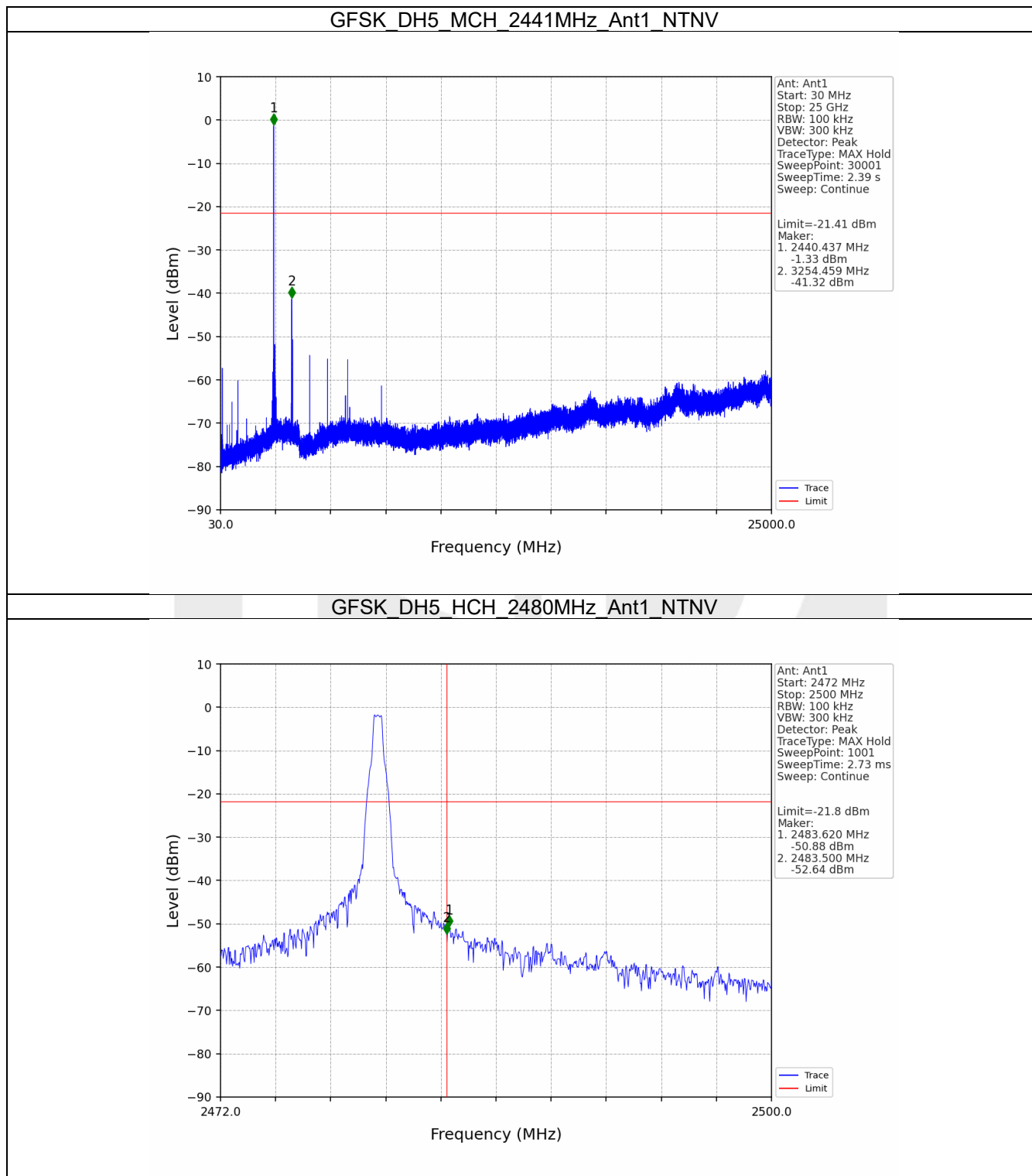
## 7.2.2 CSE

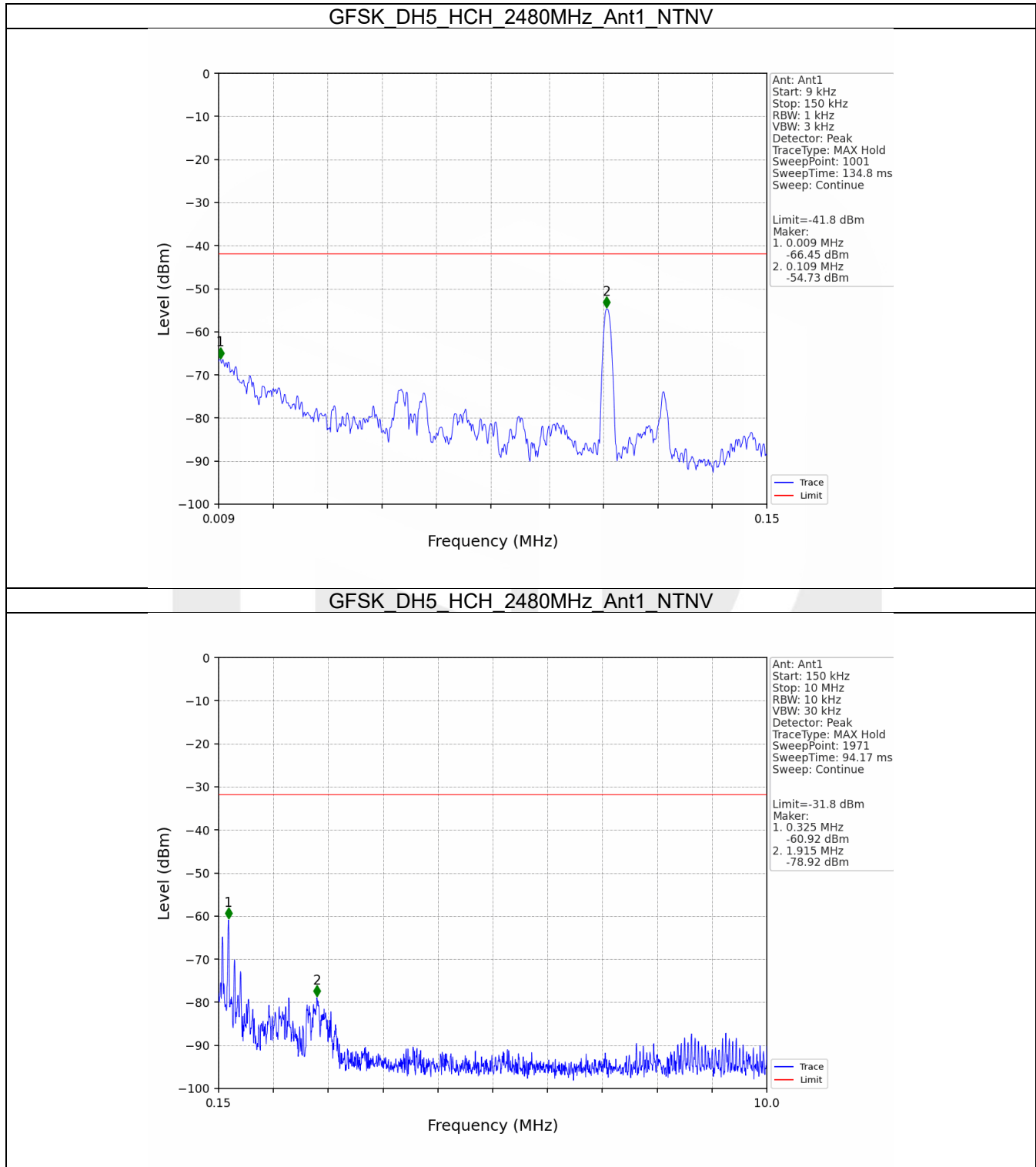




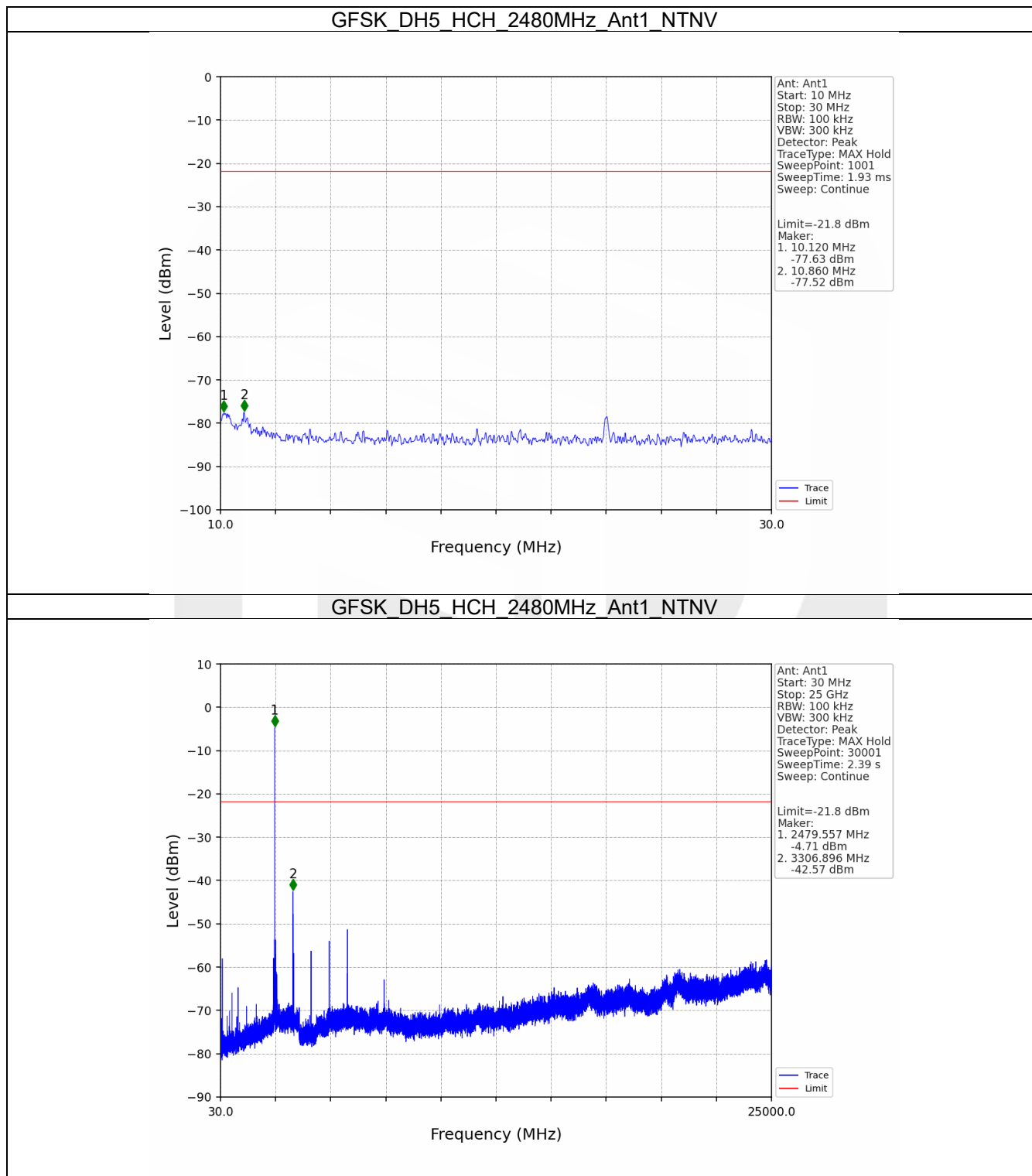


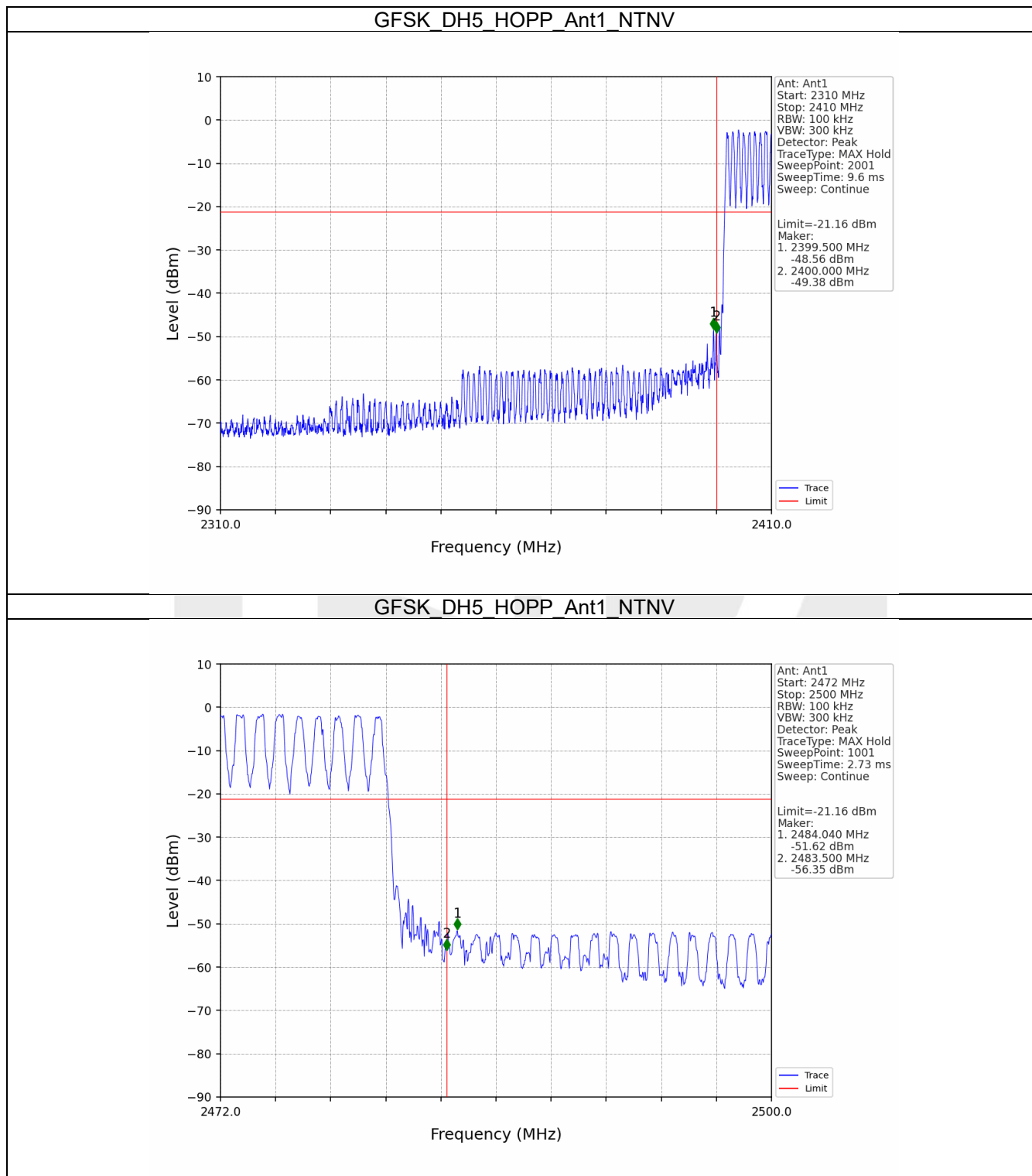


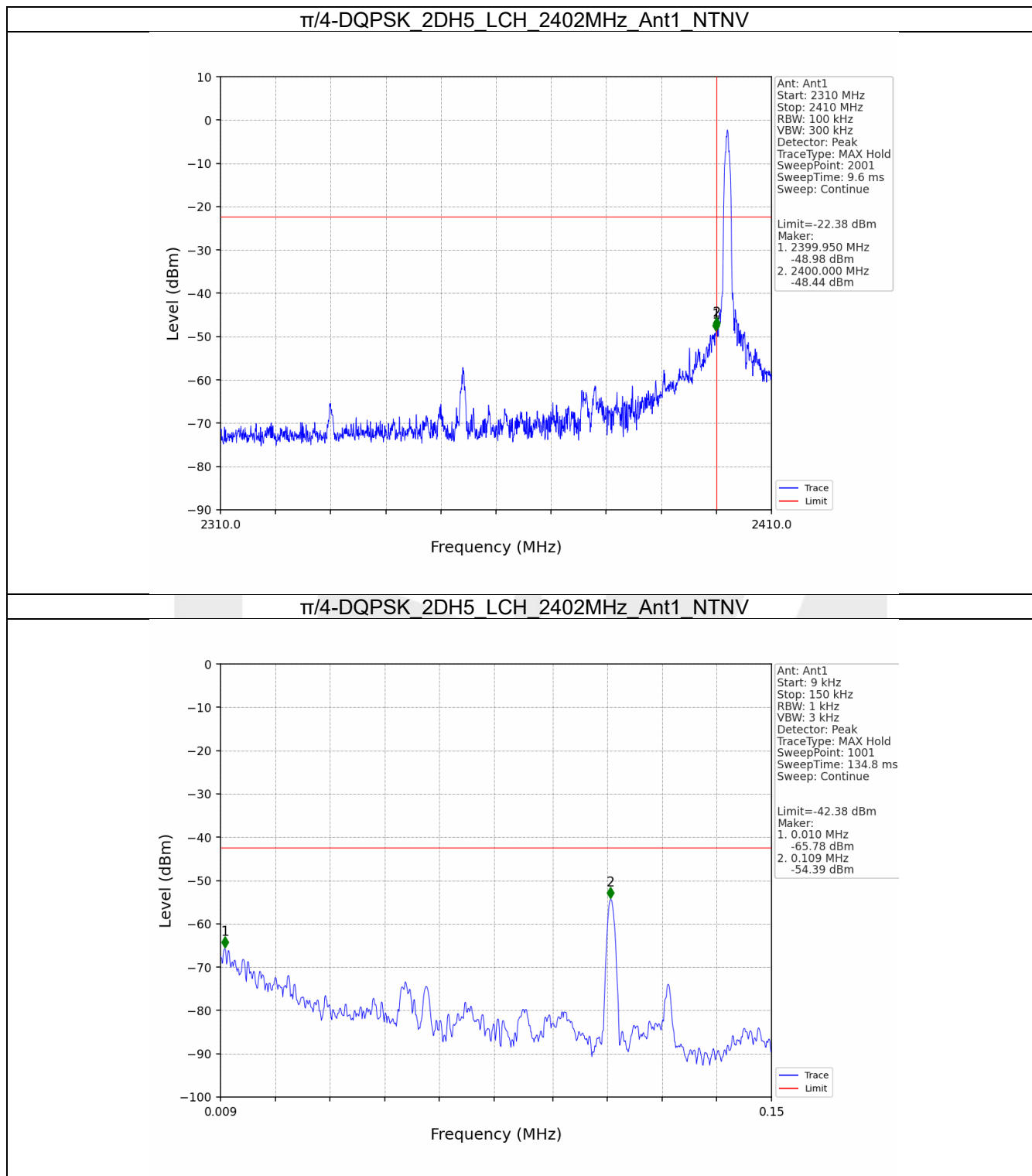


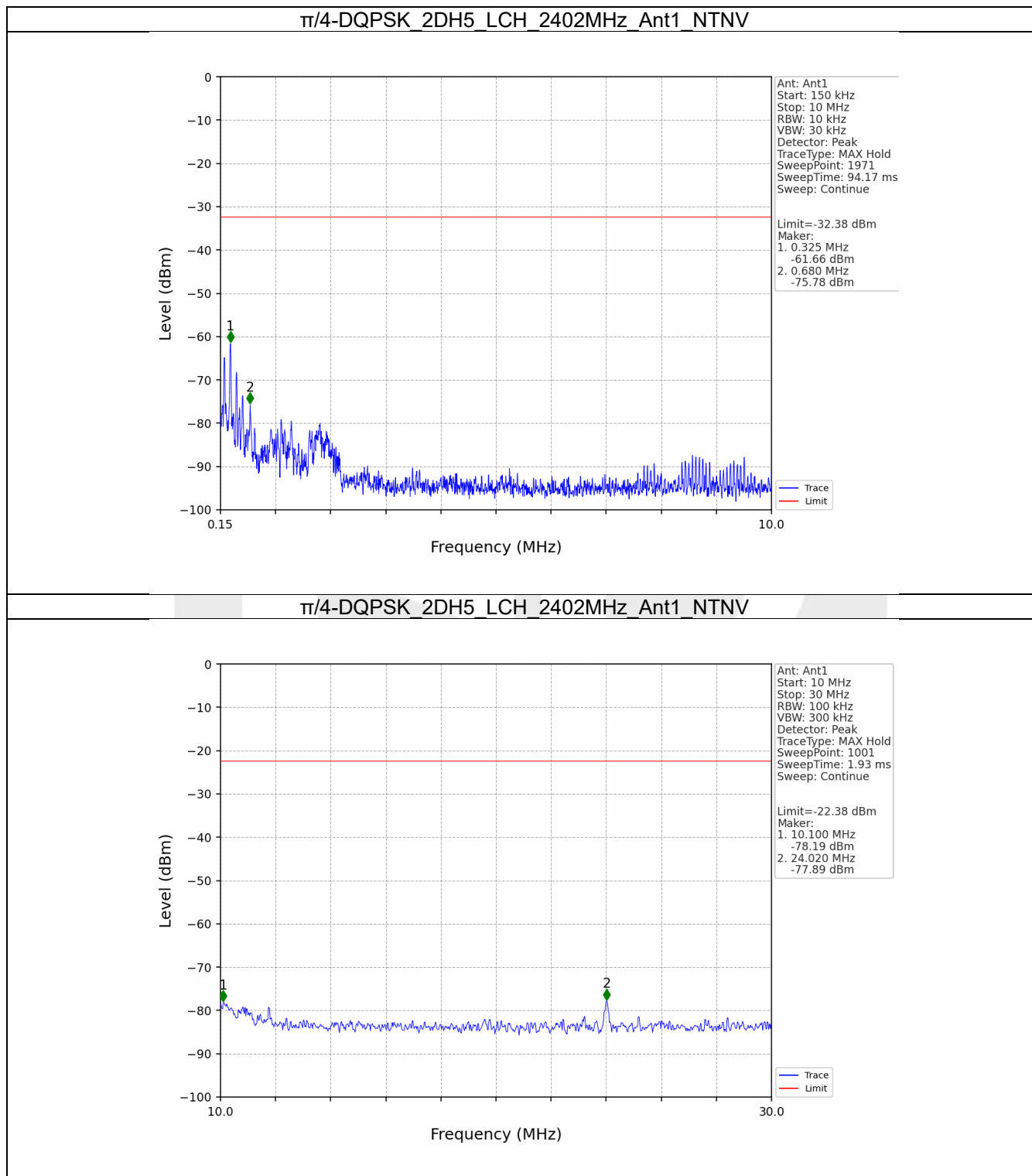


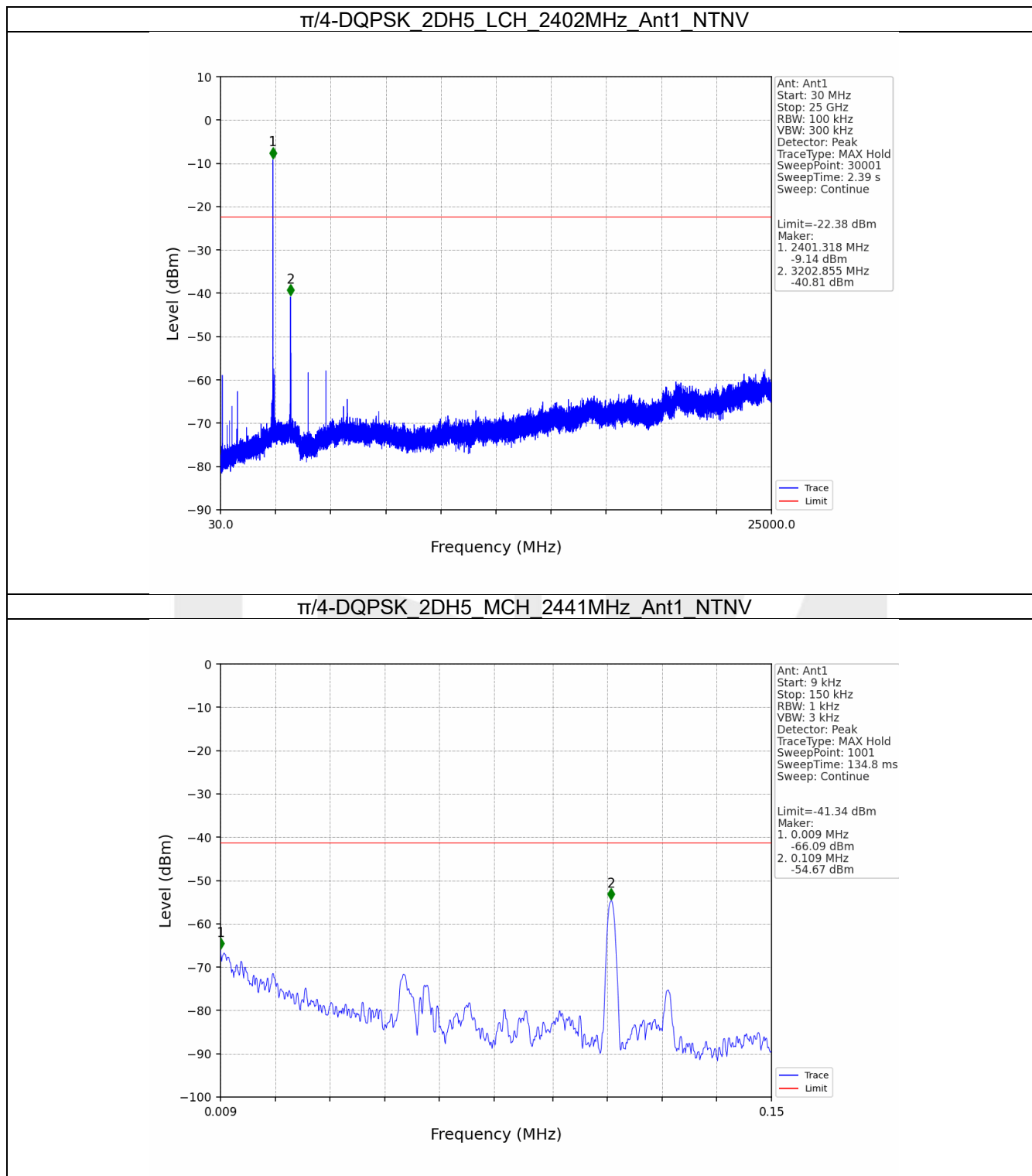


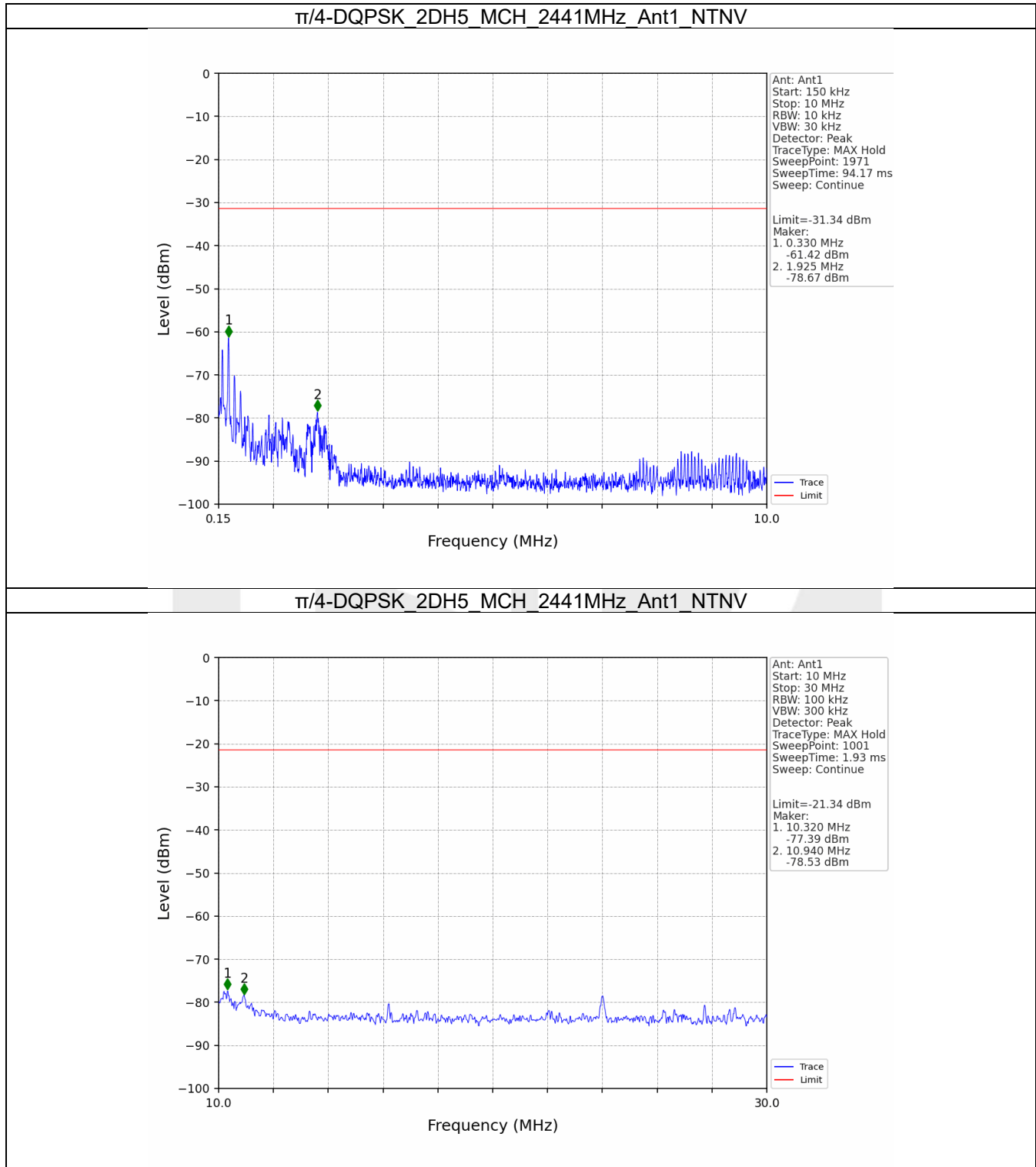


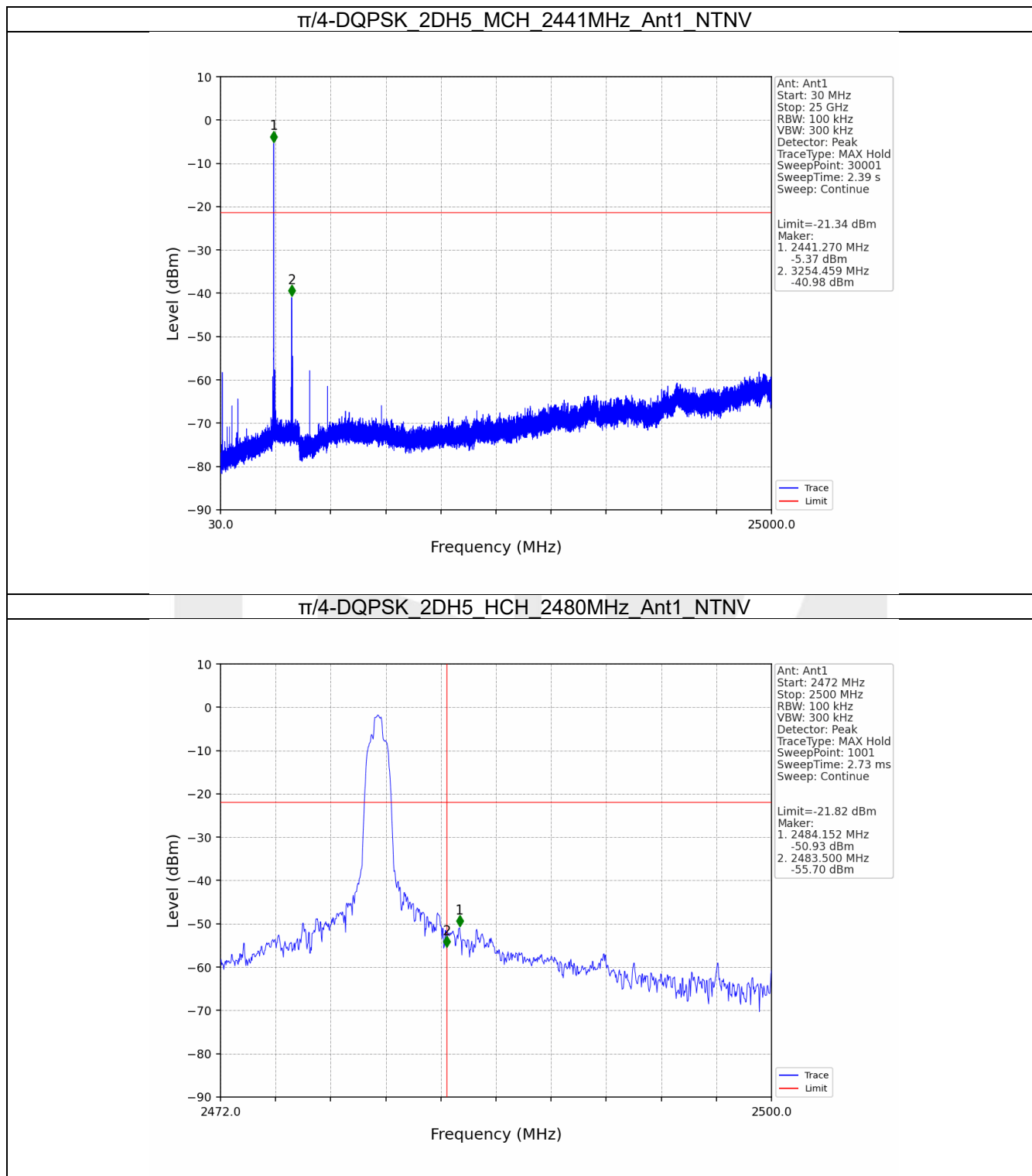


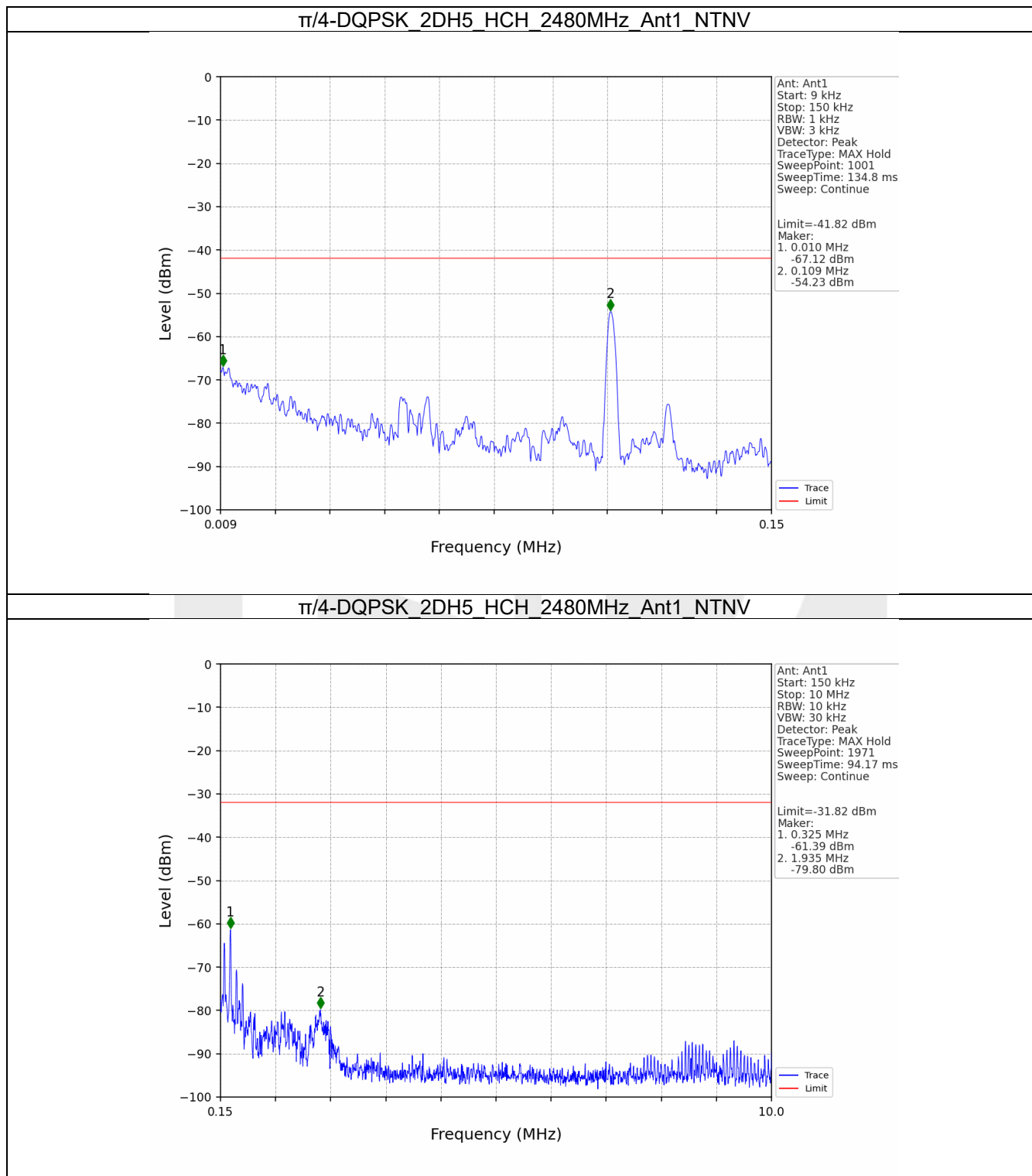




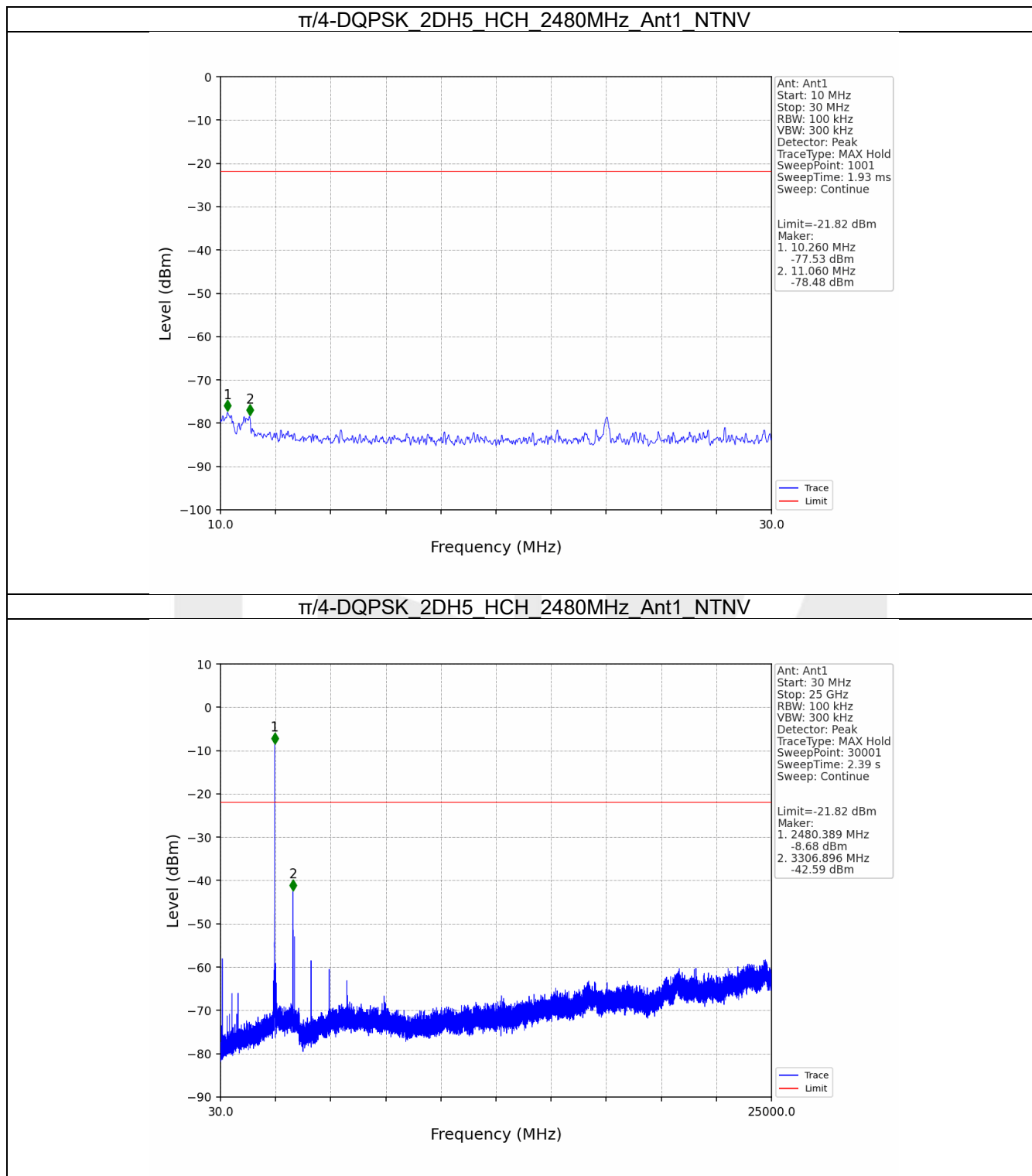


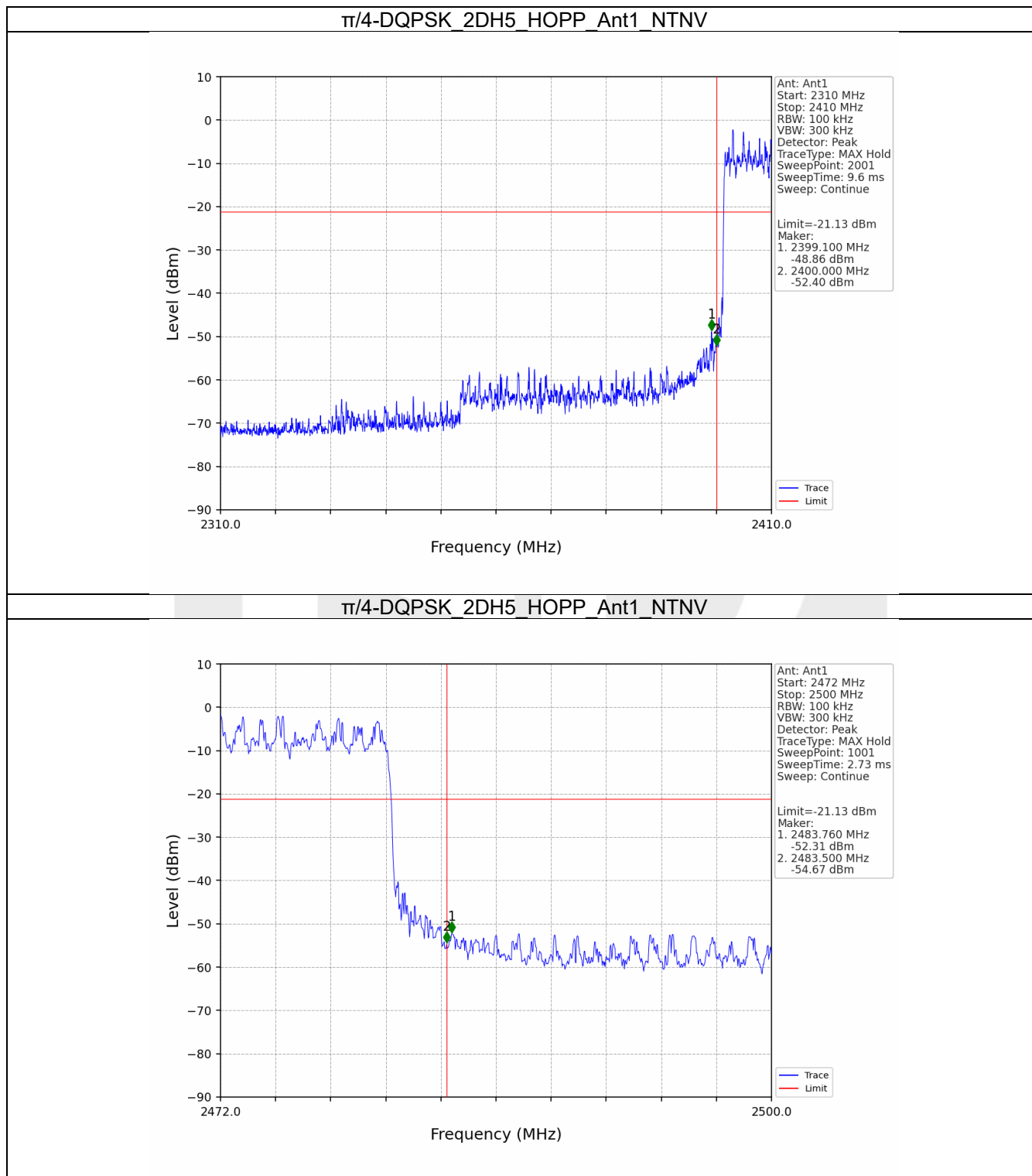


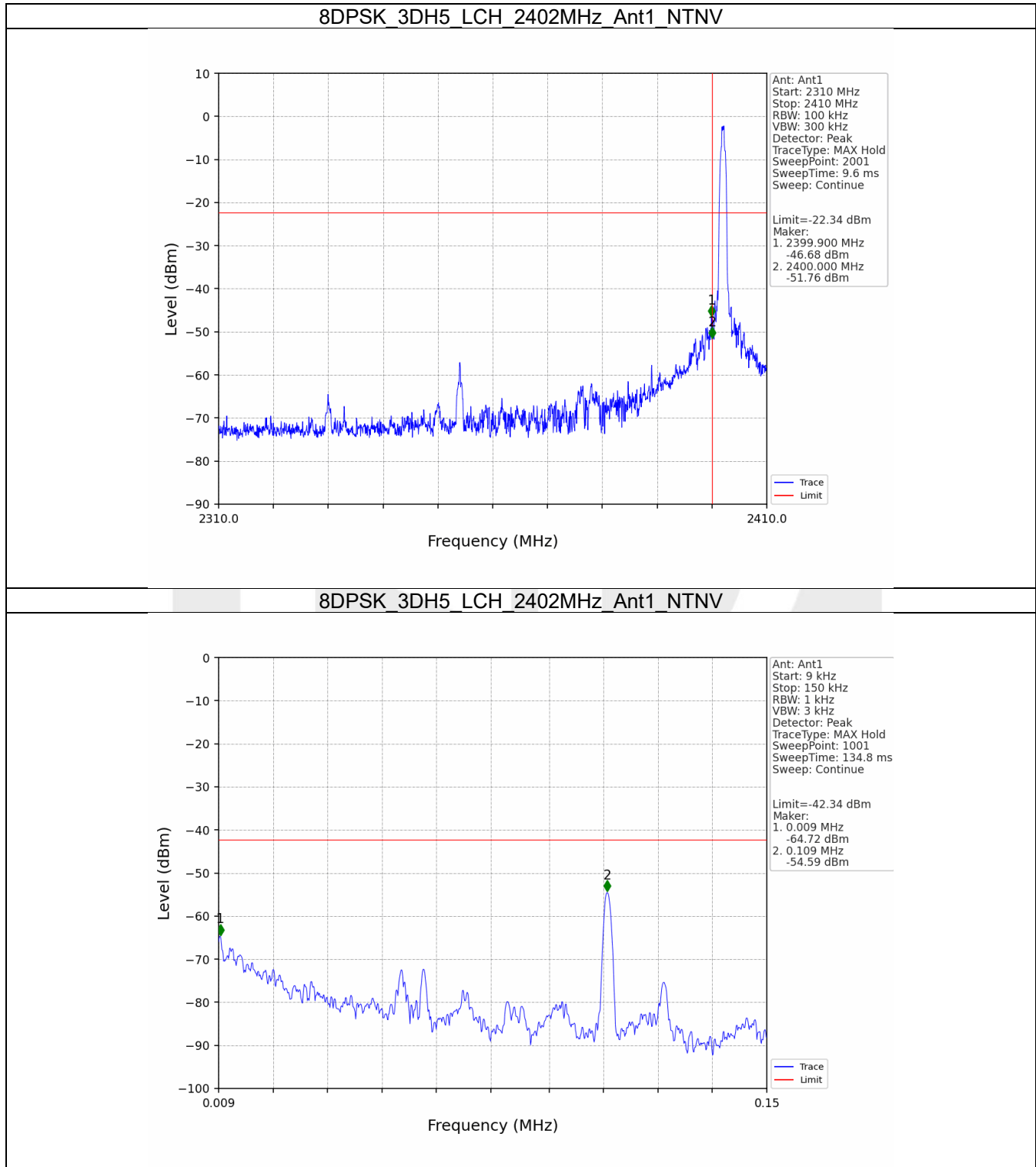


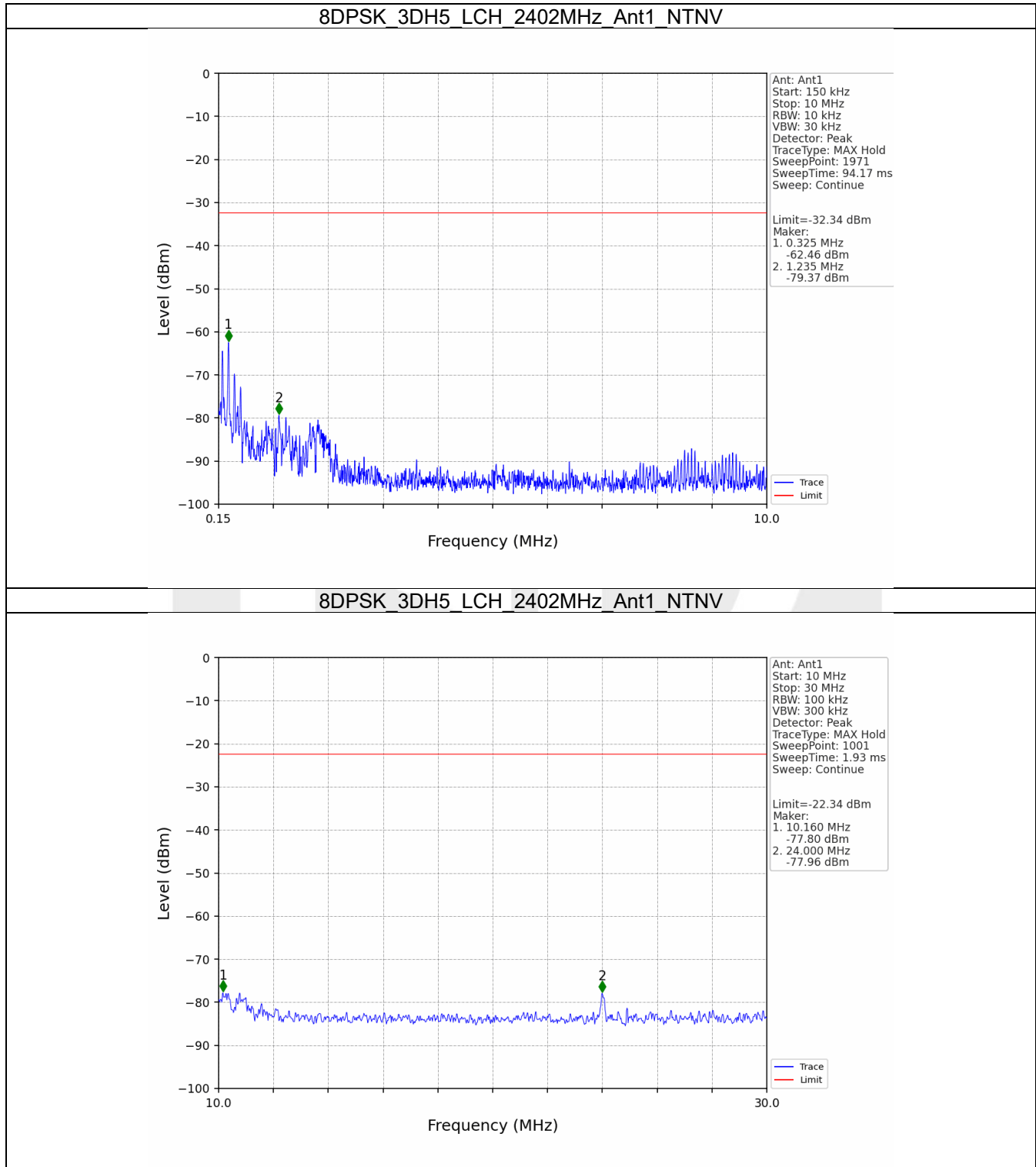


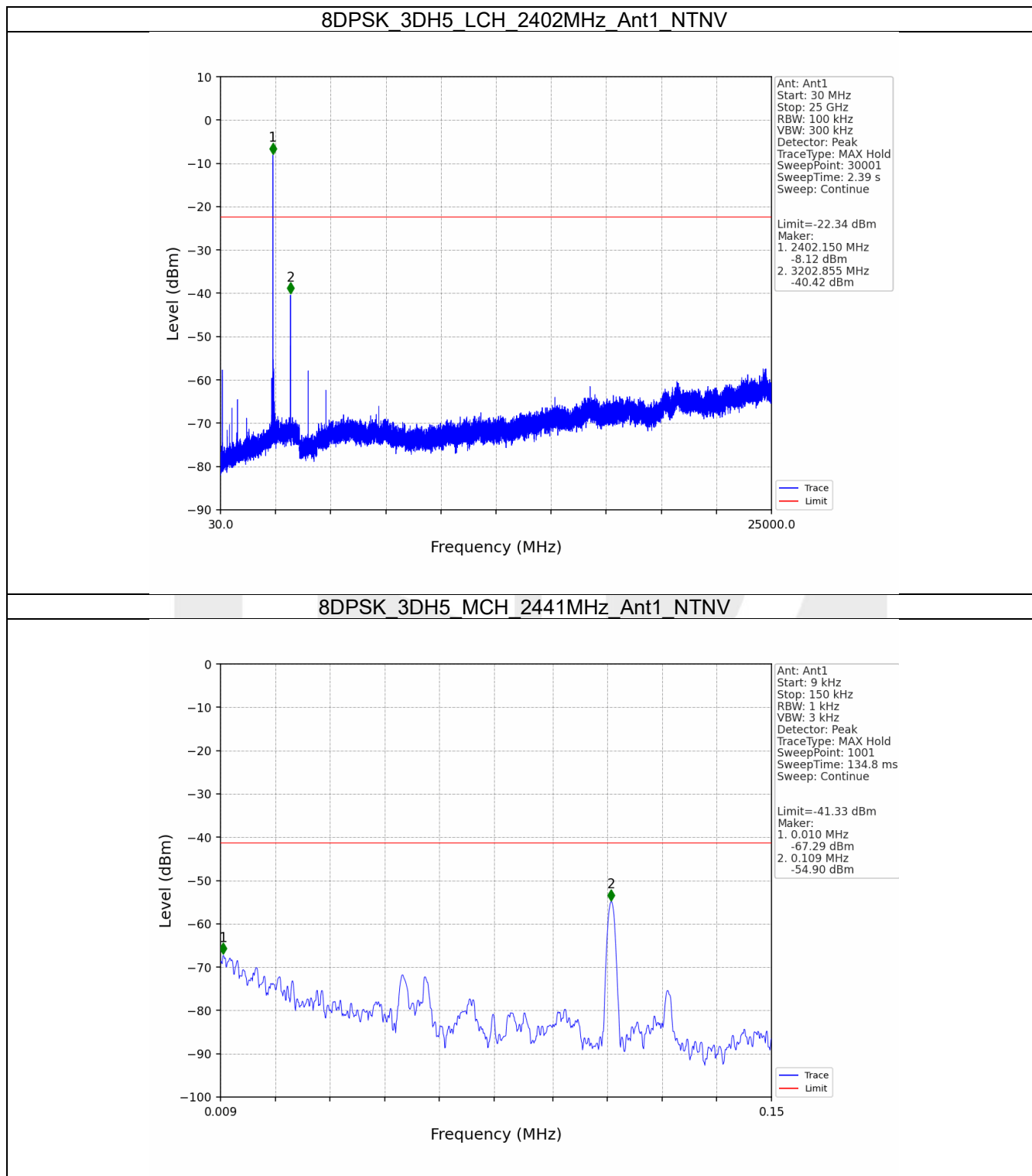


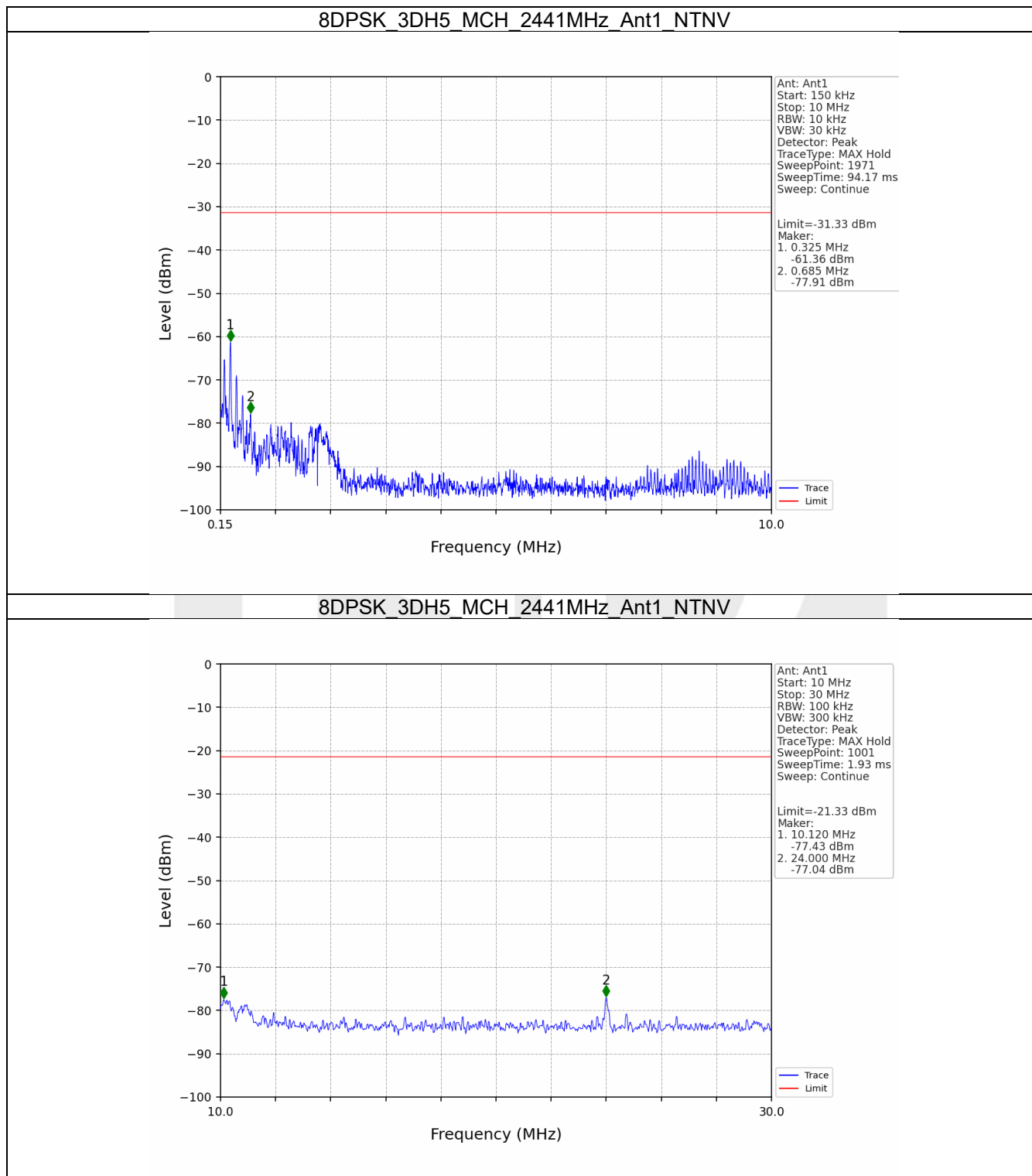


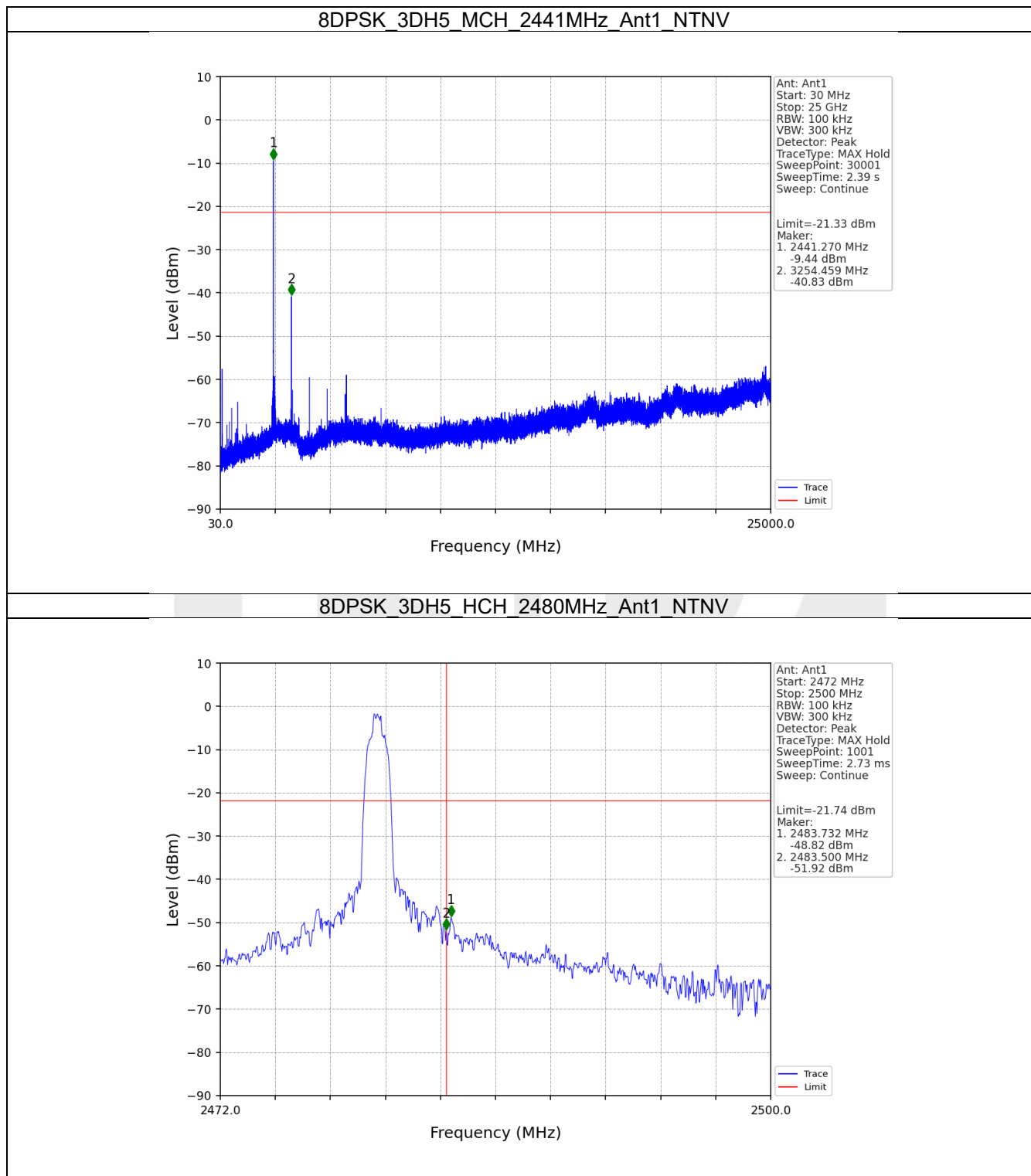


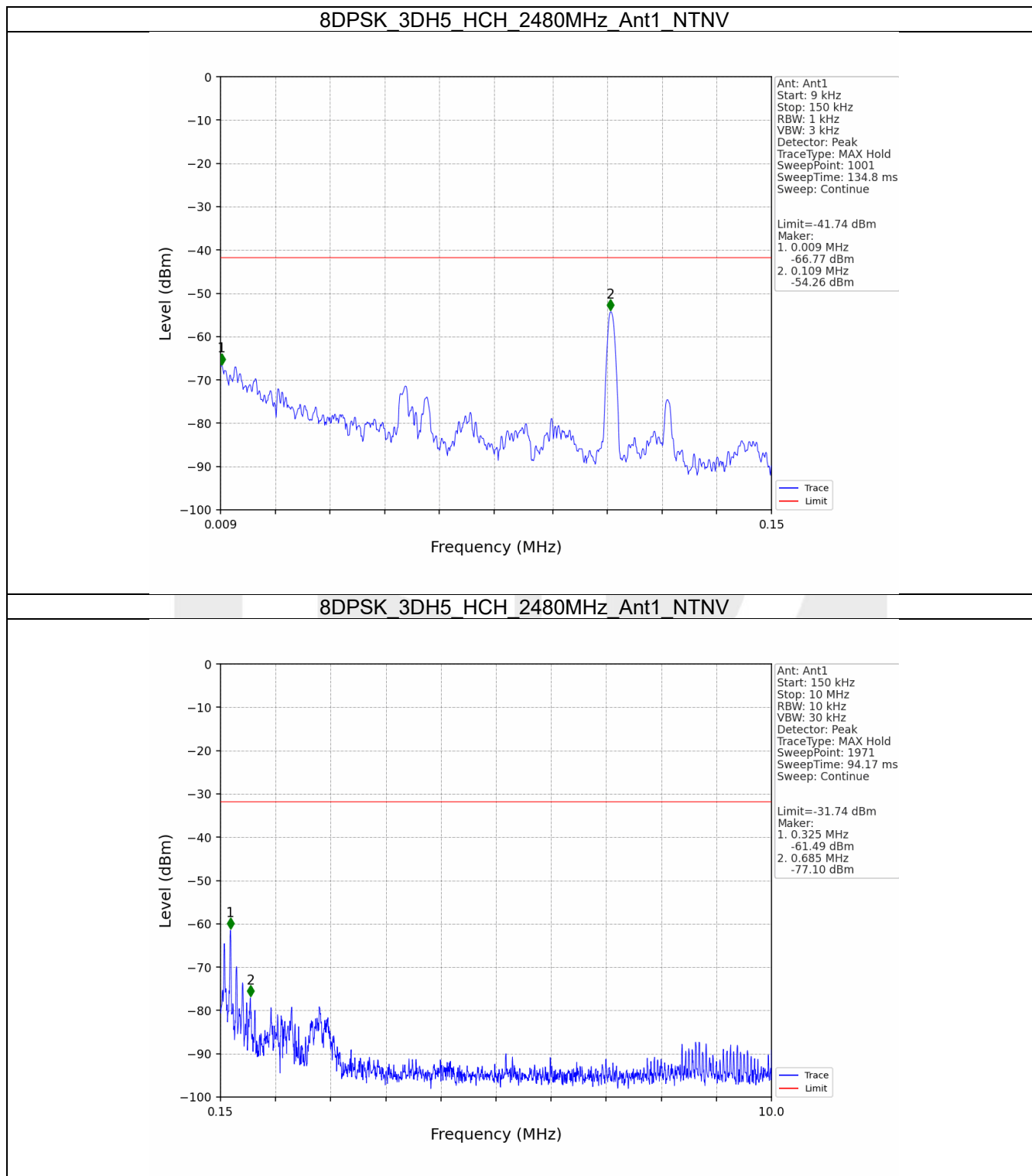




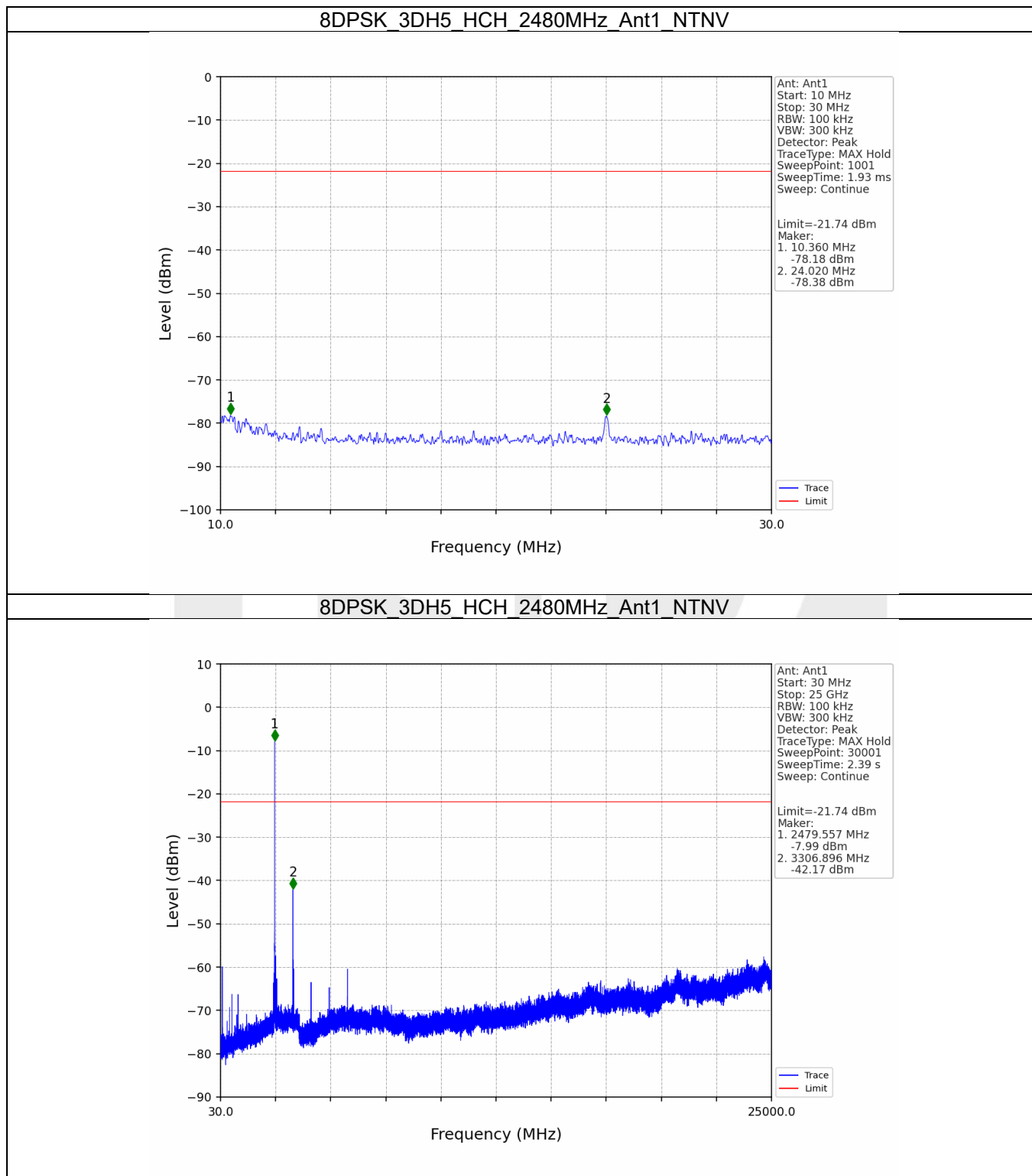


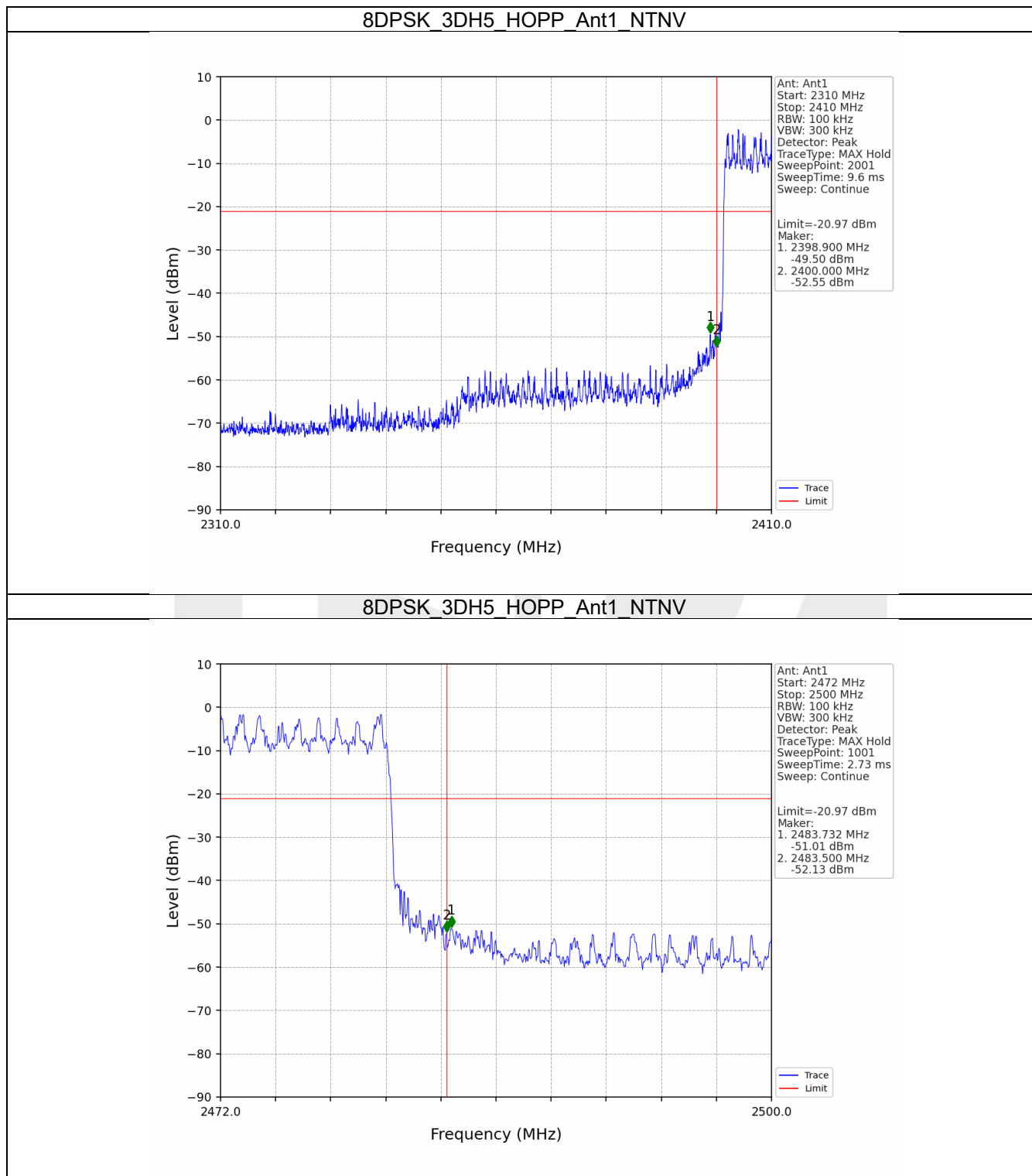












----- End of Report -----