



Shenzhen CTL Testing Technology Co., Ltd.

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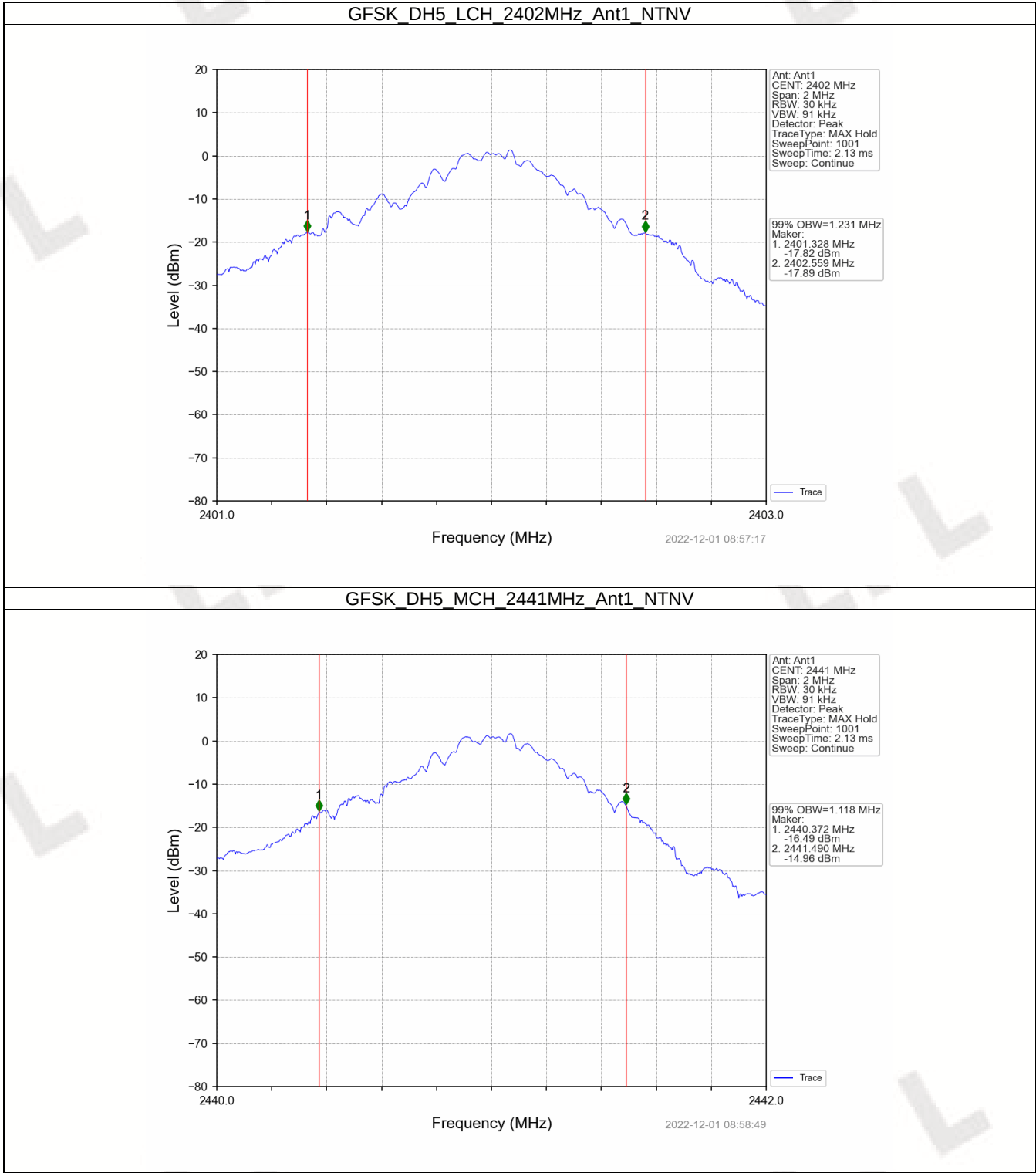
## 1. Bandwidth

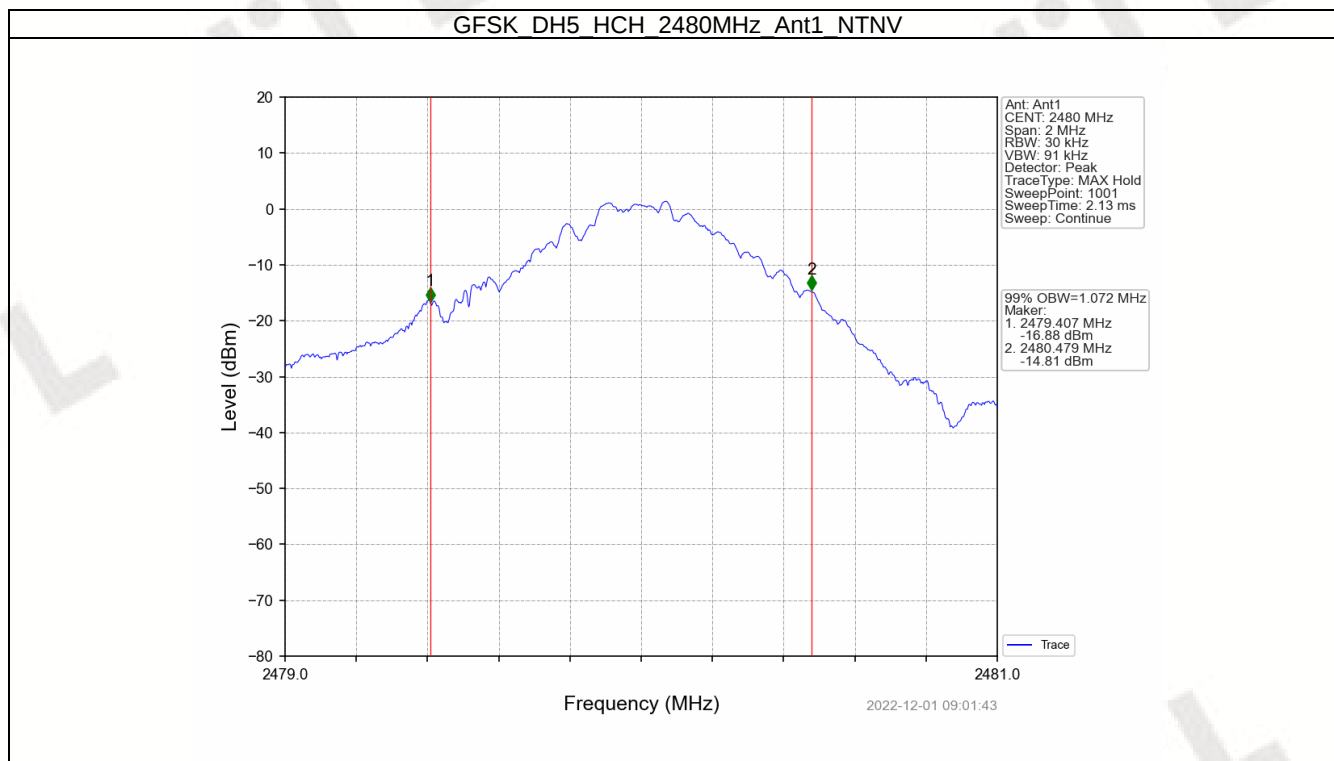
### 1.1 OBW

#### 1.1.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) | Verdict |
|------|---------|-----------------|-------------|-----|------------------------------|---------|
|      |         |                 |             |     | Result                       |         |
| GFSK | SISO    | 2402            | DH5         | 1   | 1.231                        | Pass    |
|      |         | 2441            | DH5         | 1   | 1.118                        | Pass    |
|      |         | 2480            | DH5         | 1   | 1.072                        | Pass    |

1.1.2 Test Graph



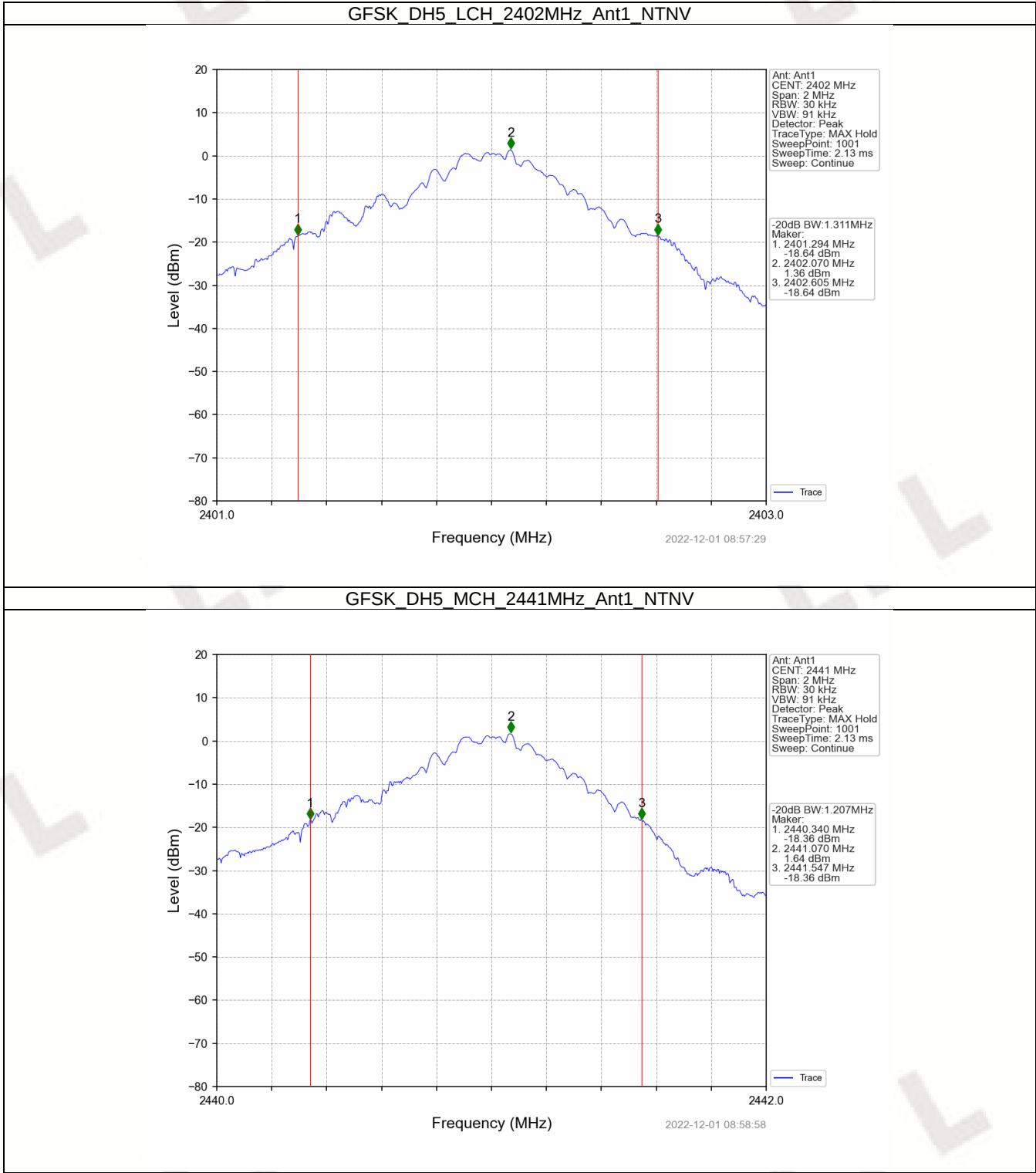


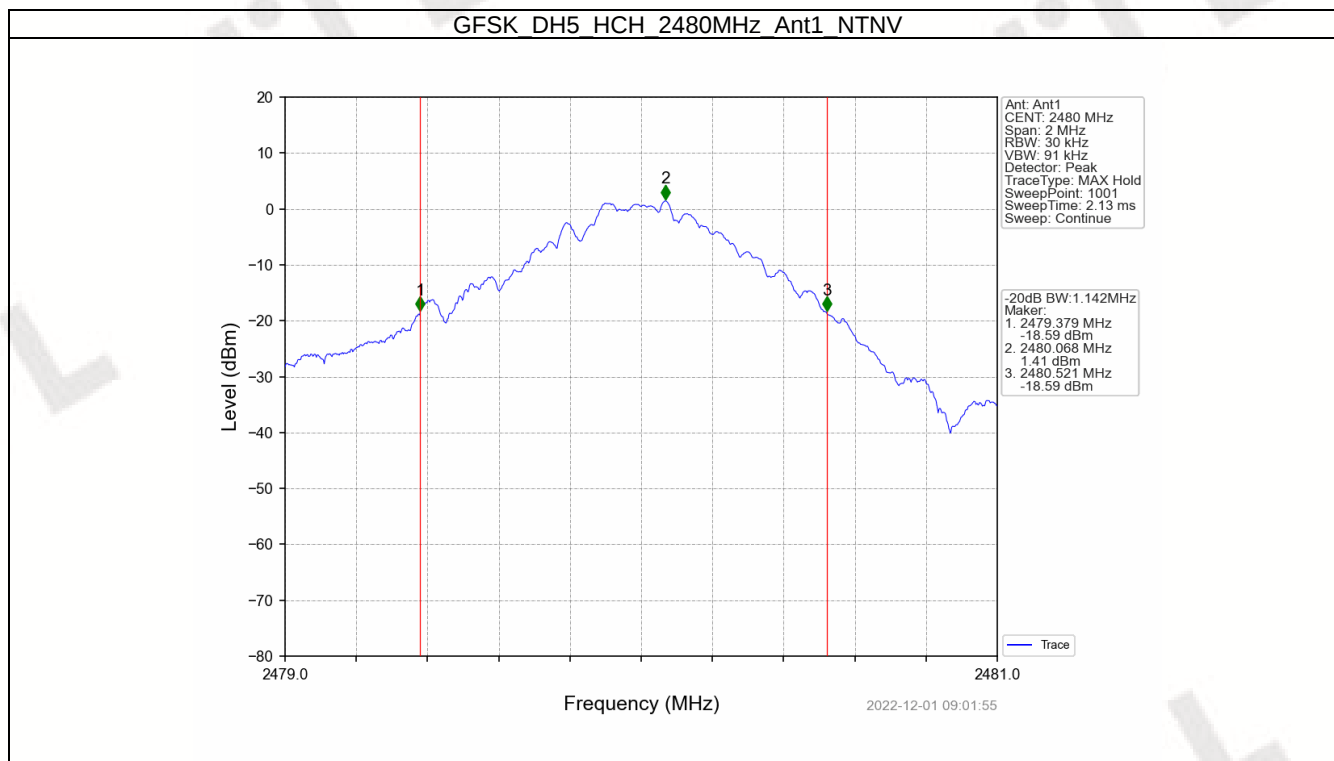
## 1.2 20dB BW

## 1.2.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) | Verdict |
|------|---------|-----------------|-------------|-----|----------------------|---------|
|      |         |                 |             |     | Result               |         |
| GFSK | SISO    | 2402            | DH5         | 1   | 1.311                | Pass    |
|      |         | 2441            | DH5         | 1   | 1.207                | Pass    |
|      |         | 2480            | DH5         | 1   | 1.142                | Pass    |

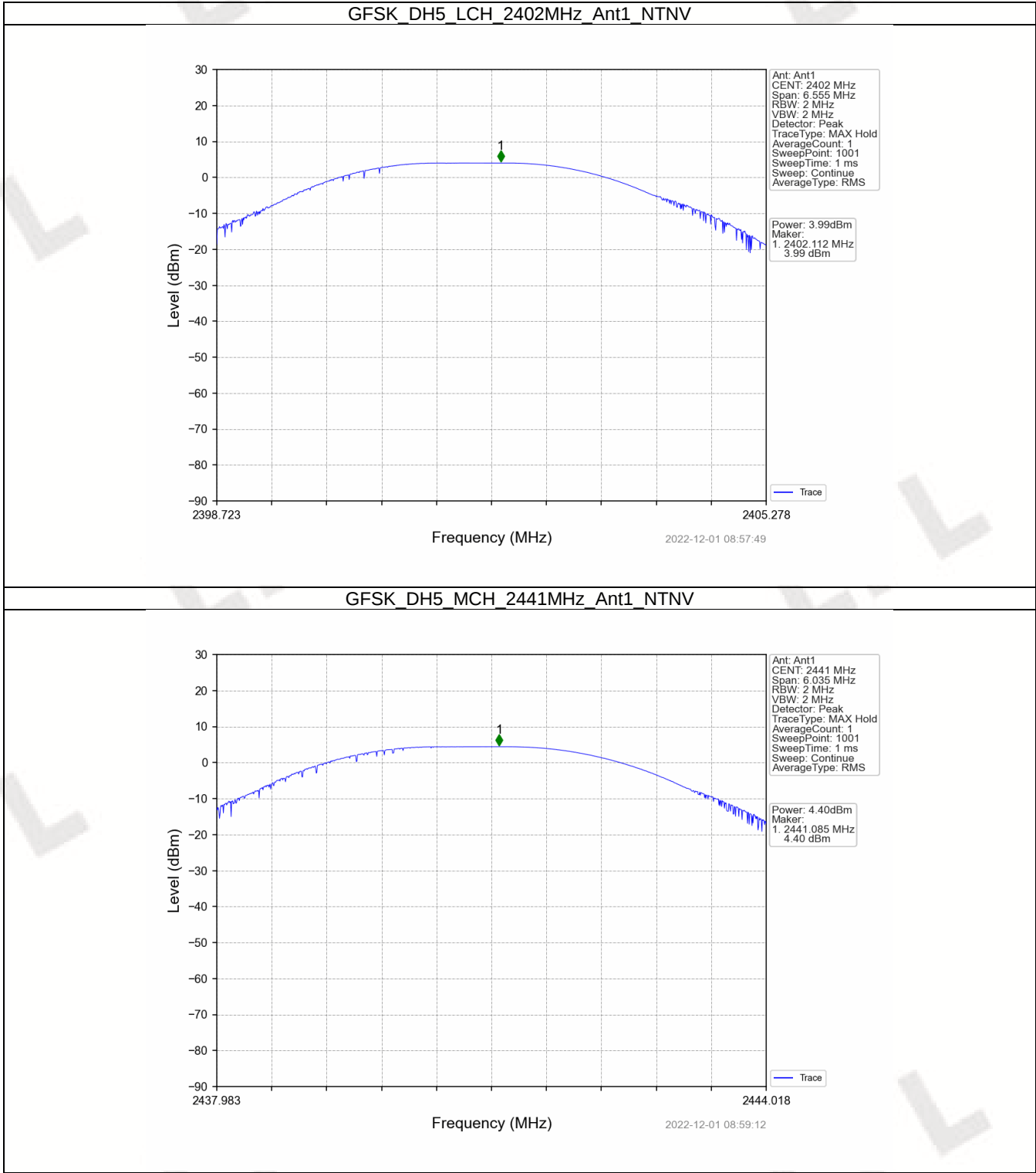
1.2.2 Test Graph

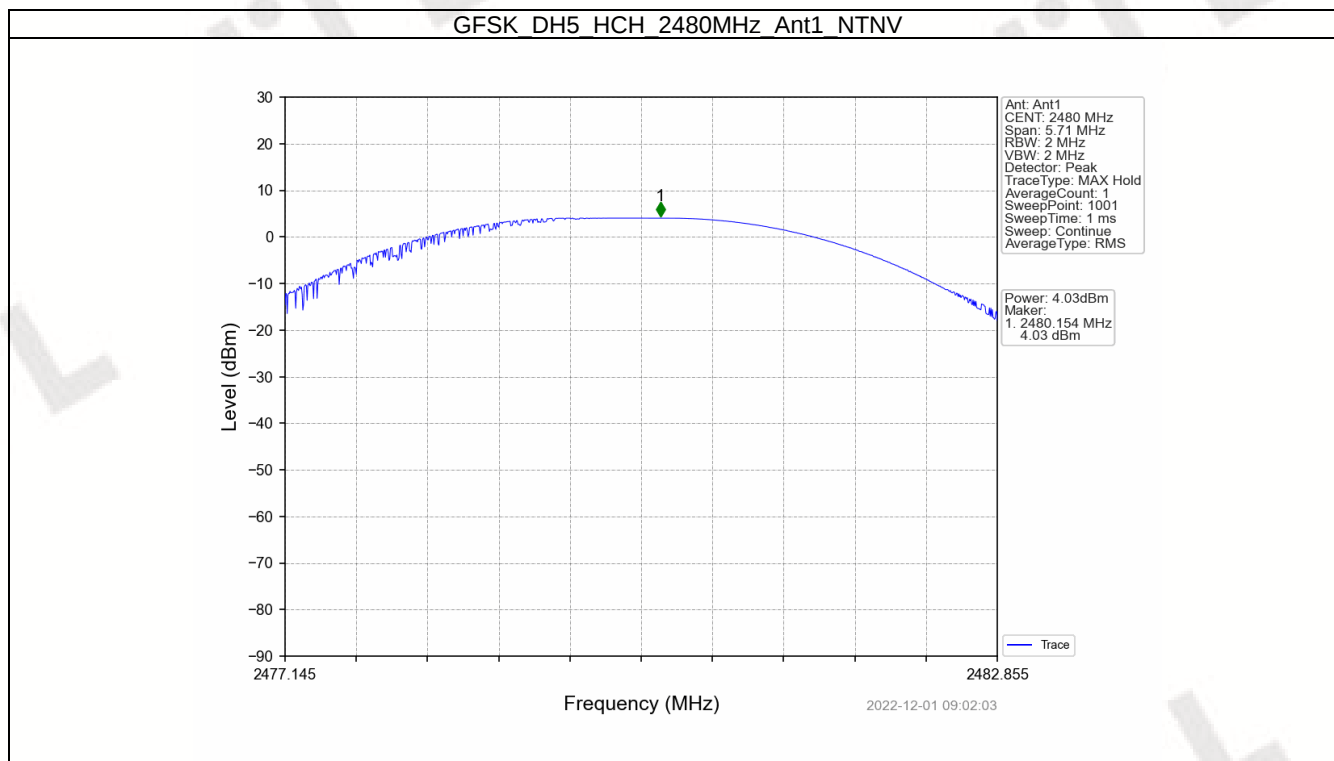




| Mode                                 | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |         | Verdict |
|--------------------------------------|---------|-----------------|-------------|-------------------------------------------|---------|---------|
|                                      |         |                 |             | ANT1                                      | Limit   |         |
| GFSK                                 | SISO    | 2402            | DH5         | 3.99                                      | <=20.97 | Pass    |
|                                      |         | 2441            | DH5         | 4.40                                      | <=20.97 | Pass    |
|                                      |         | 2480            | DH5         | 4.03                                      | <=20.97 | Pass    |
| Note1: Antenna Gain: Ant1: -4.73dBi: |         |                 |             |                                           |         |         |

2.1.2 Test Graph





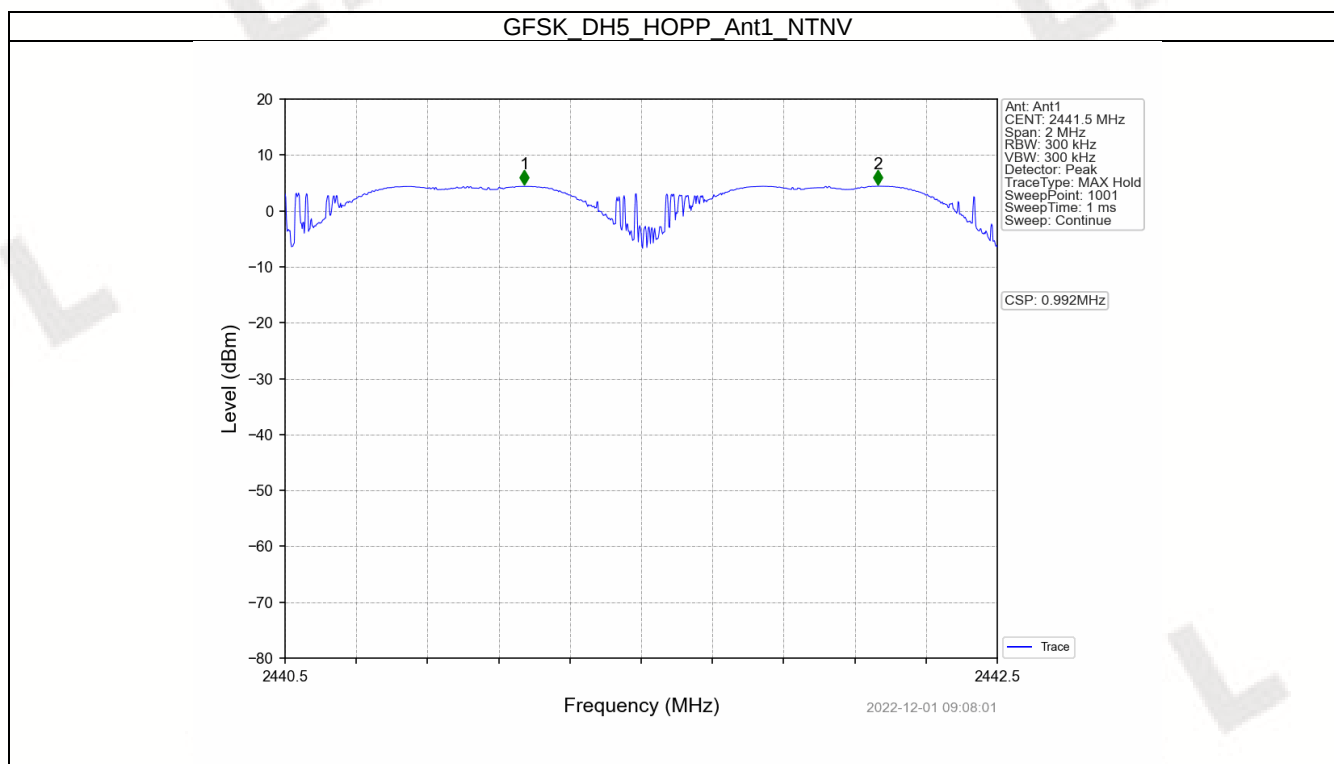
### 3. Carrier Frequency Separation

#### 3.1 Ant1

##### 3.1.1 Test Result

| Ant1 |         |                 |             |                          |                      |              |         |
|------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK | SISO    | HOPP            | DH5         | 0.992                    | 1.311                | $\geq 0.874$ | Pass    |

## 3.1.2 Test Graph



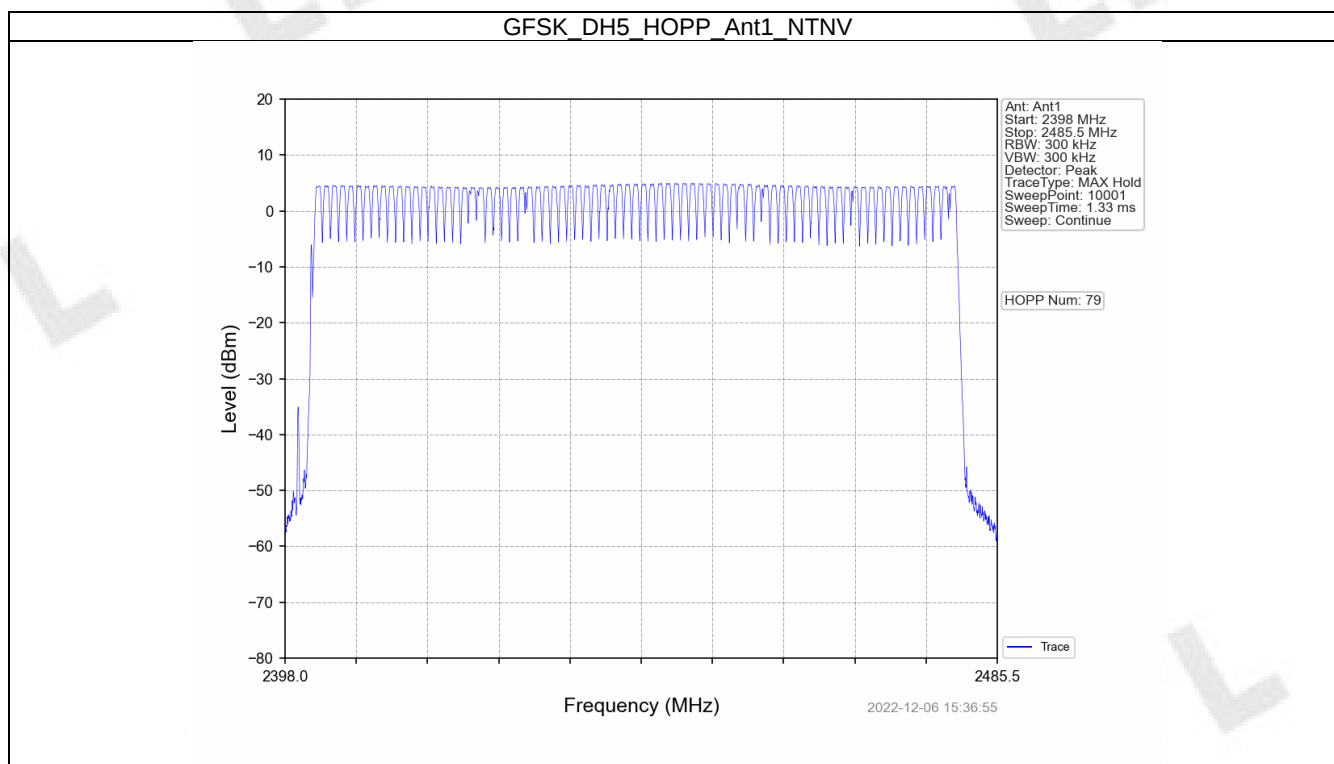
#### 4. Number of Hopping Frequencies

##### 4.1 HoppNum

##### 4.1.1 Test Result

| Mode | TX<br>Type | Frequency<br>(MHz) | Packet<br>Type | Num of Hopping Frequencies |       | Verdict |
|------|------------|--------------------|----------------|----------------------------|-------|---------|
|      |            |                    |                | ANT1                       | Limit |         |
| GFSK | SISO       | HOPP               | DH5            | 79                         | >=15  | Pass    |

## 4.1.2 Test Graph



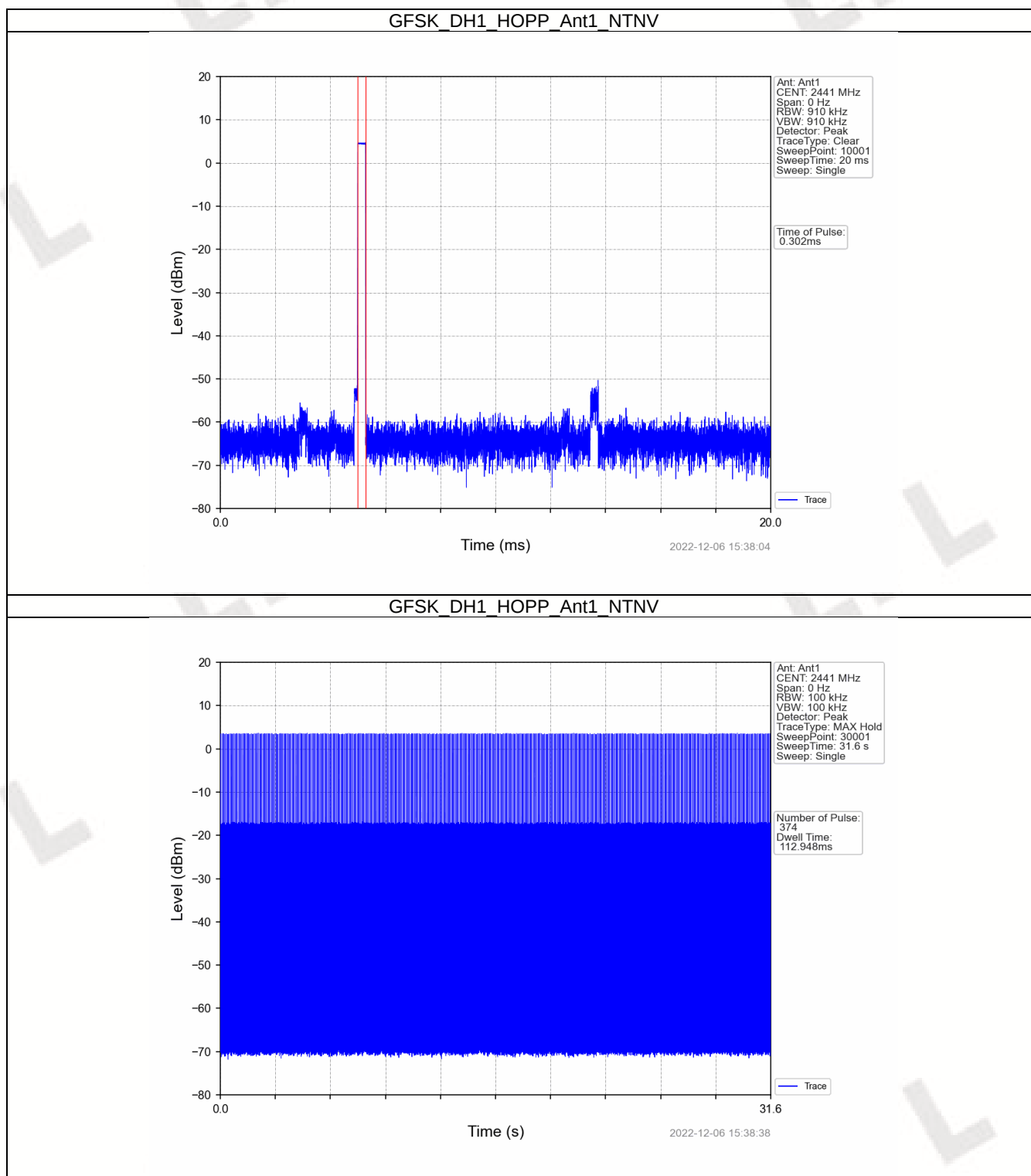
## 5. Time of Occupancy (Dwell Time)

## 5.1 Ant1

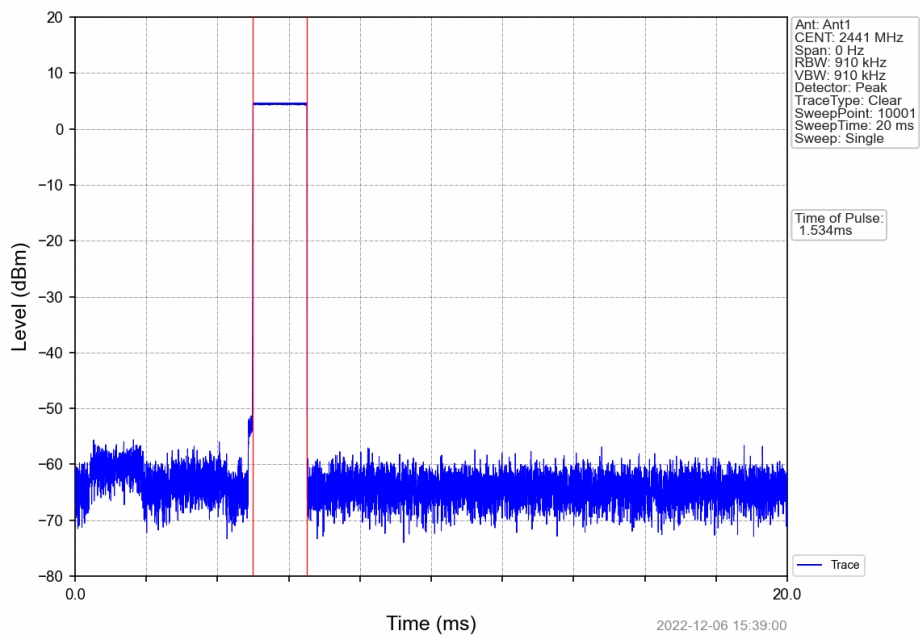
## 5.1.1 Test Result

| 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         | 0.302                         | 31.600                 | 374                                | 112.948         | <=400      | Pass    |
|      |         |                 | DH3         | 1.534                         | 31.600                 | 173                                | 265.382         | <=400      | Pass    |
|      |         |                 | DH5         | 2.756                         | 31.600                 | 113                                | 311.428         | <=400      | Pass    |

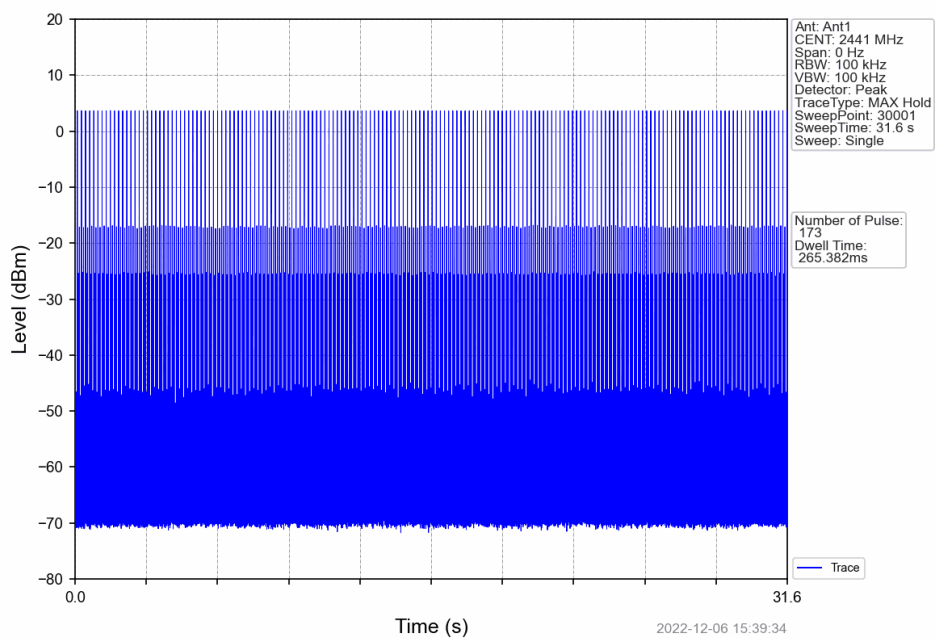
## 5.1.2 Test Graph



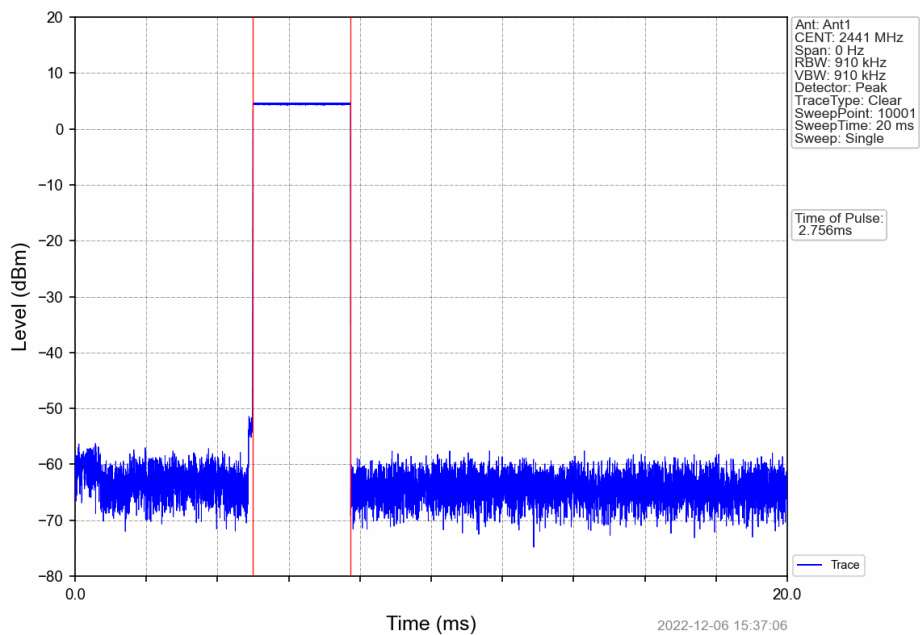
## GFSK DH3 HOPP Ant1 NTN



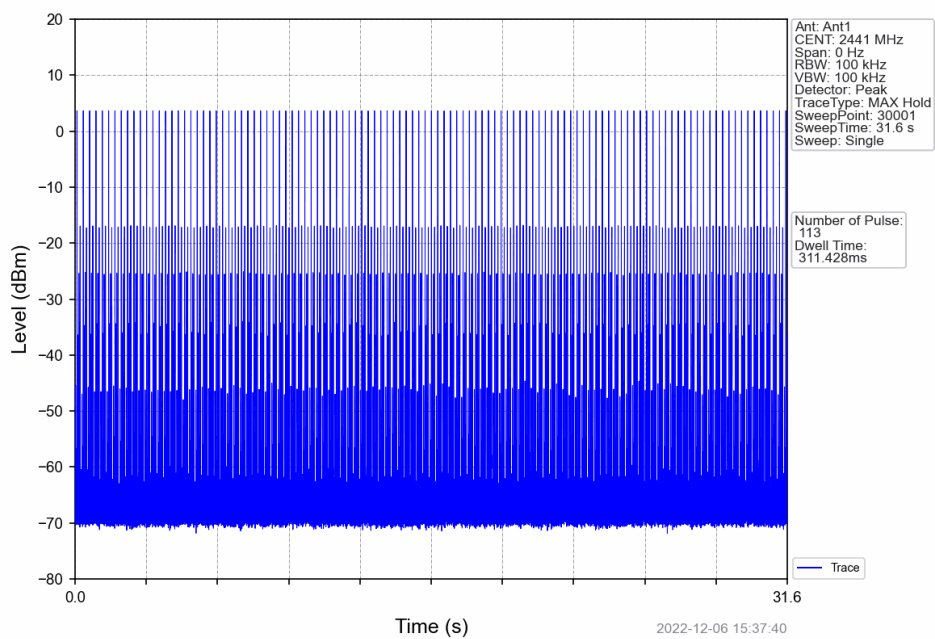
## GFSK\_DH3\_HOPP\_Ant1\_NTNV



## GFSK DH5 HOPP Ant1 NTN



## GFSK\_DH5\_HOPP\_Ant1\_NTNV



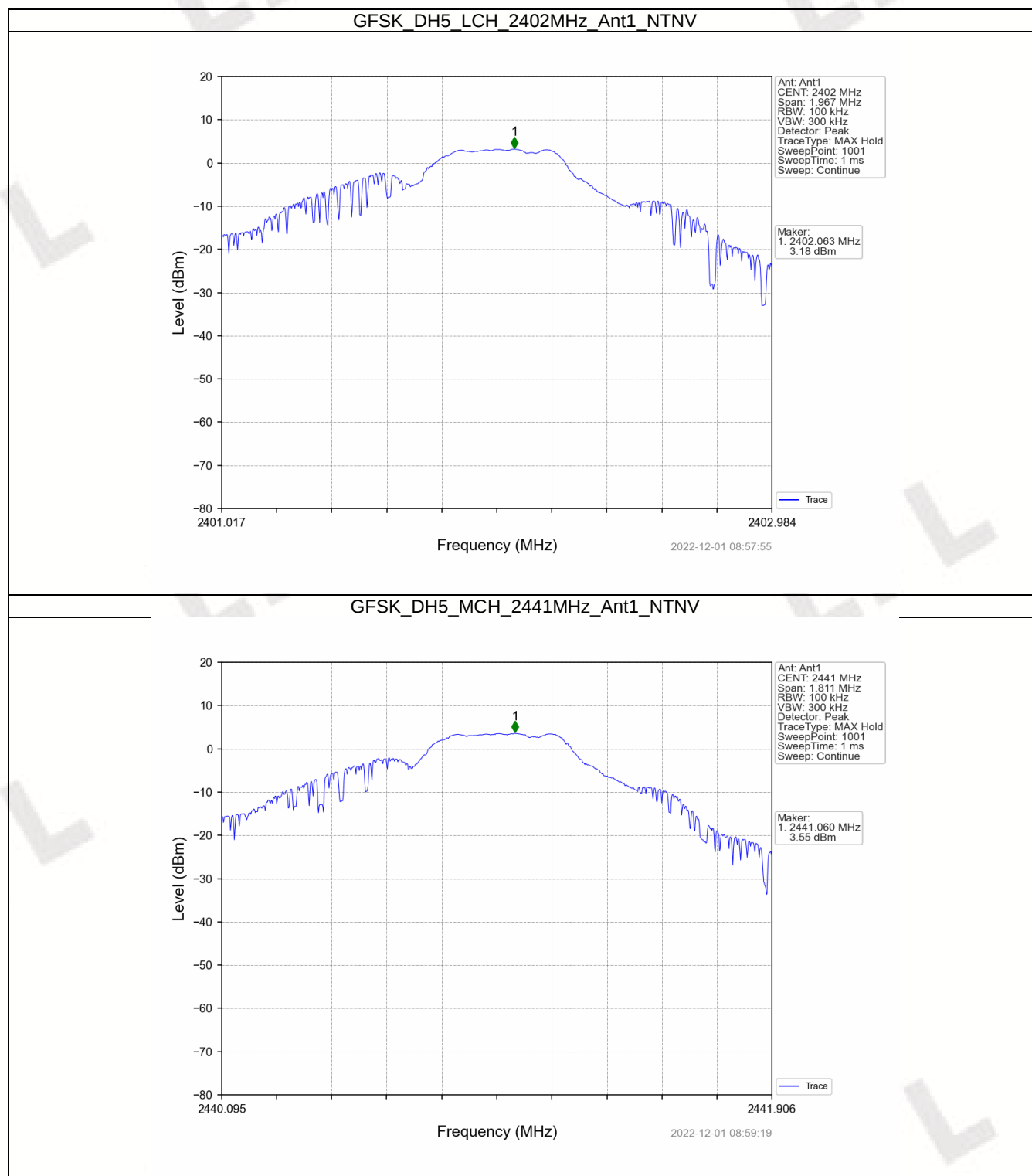
## 6. Unwanted Emissions In Non-restricted Frequency Bands

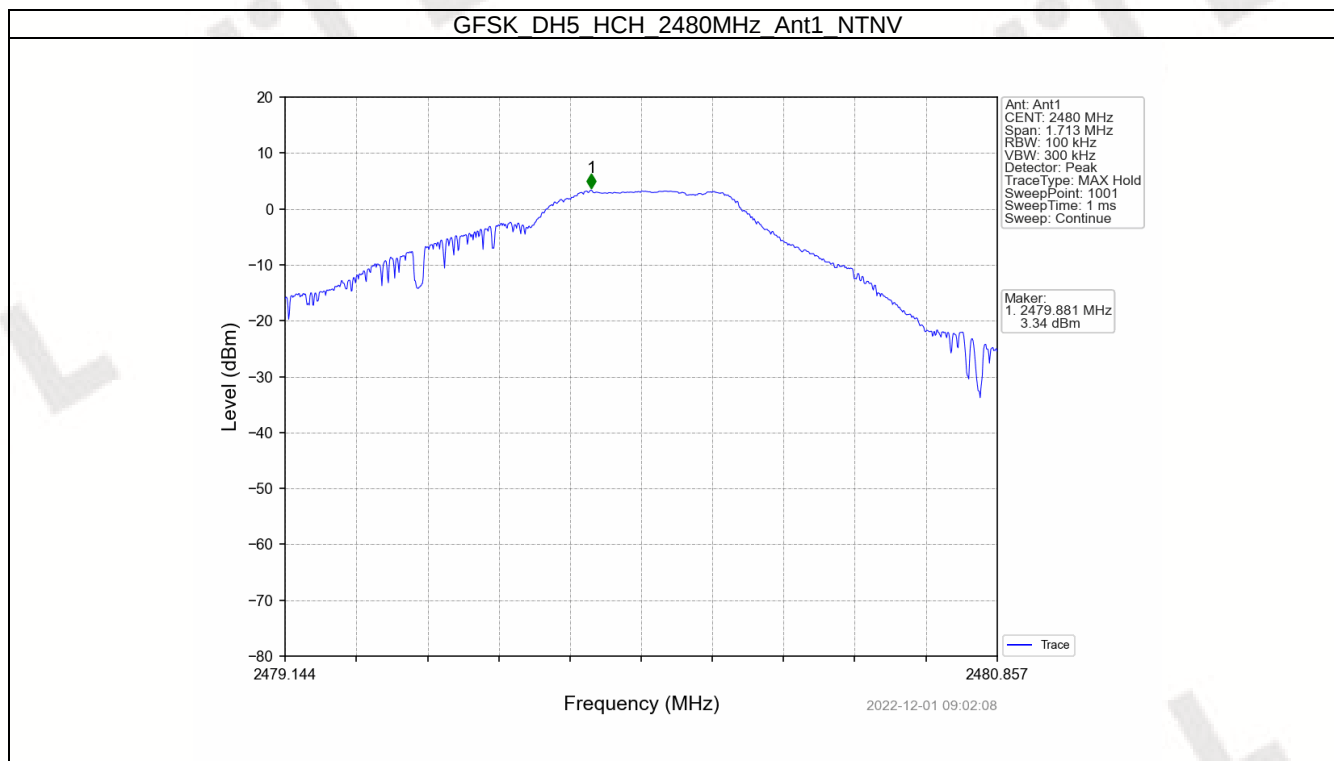
### 6.1 Ref

#### 6.1.1 Test Result

| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | 3.18                     |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | 3.55                     |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | 3.34                     |
| Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level. |         |                 |             |     |                          |

## 6.1.2 Test Graph





## 6.2 CSE

### 6.2.1 Test Result

| Mode                                                                                                                                            | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK                                                                                                                                            | SISO    | 2402            | DH5         | 1   | 3.55                     | -16.45      | Pass    |
|                                                                                                                                                 |         | 2441            | DH5         | 1   | 3.55                     | -16.45      | Pass    |
|                                                                                                                                                 |         | 2480            | DH5         | 1   | 3.55                     | -16.45      | Pass    |
|                                                                                                                                                 |         | HOPP            | DH5         | 1   | 3.55                     | -16.45      | Pass    |
| Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level. |         |                 |             |     |                          |             |         |

6.2.2 Test Graph

