

# Appendix - BT

## 1. Bandwidth

### 1.1 Test Result

#### 1.1.1 OBW

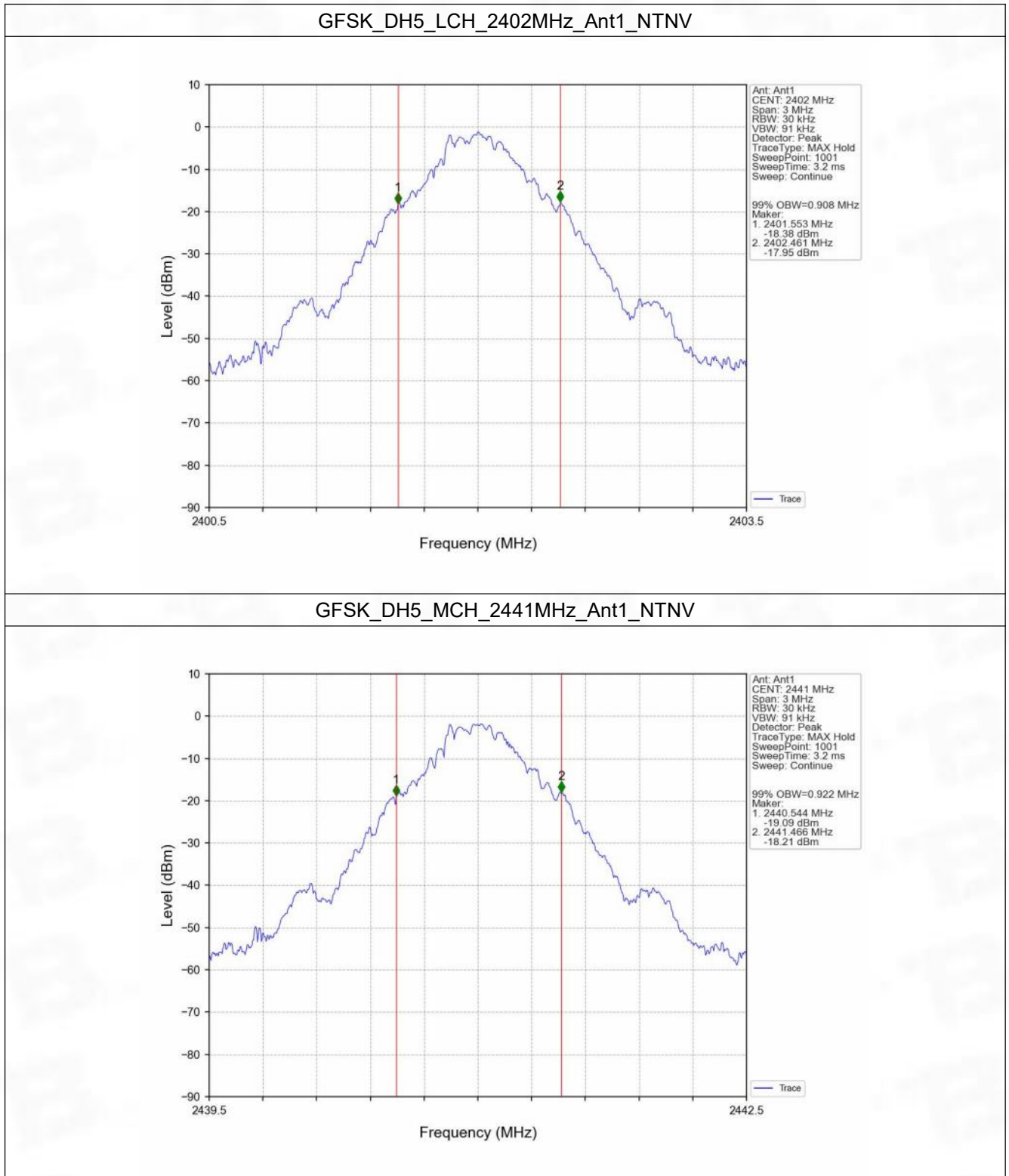
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|           |         |                 |             |     | Result                       | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.908                        | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.922                        | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 0.935                        | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.204                        | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.207                        | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.209                        | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.213                        | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.220                        | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.218                        | /     | Pass    |

#### 1.1.2 20dB BW

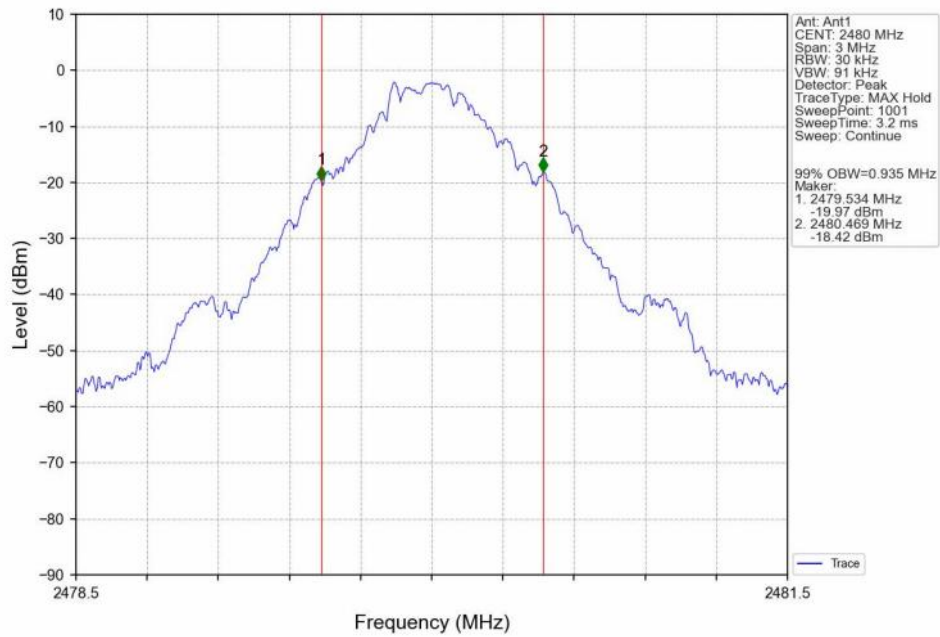
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|           |         |                 |             |     | Result               | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 1.031                | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 1.037                | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 1.058                | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.319                | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.315                | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.332                | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.315                | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.320                | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.317                | /     | Pass    |

## 1.2 Test Graph

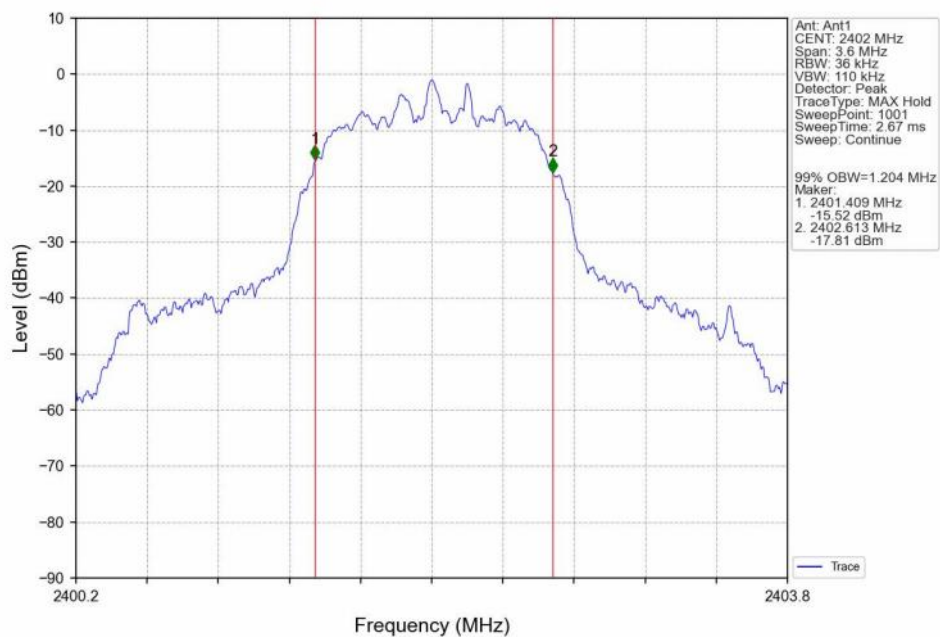
### 1.2.1 OBW



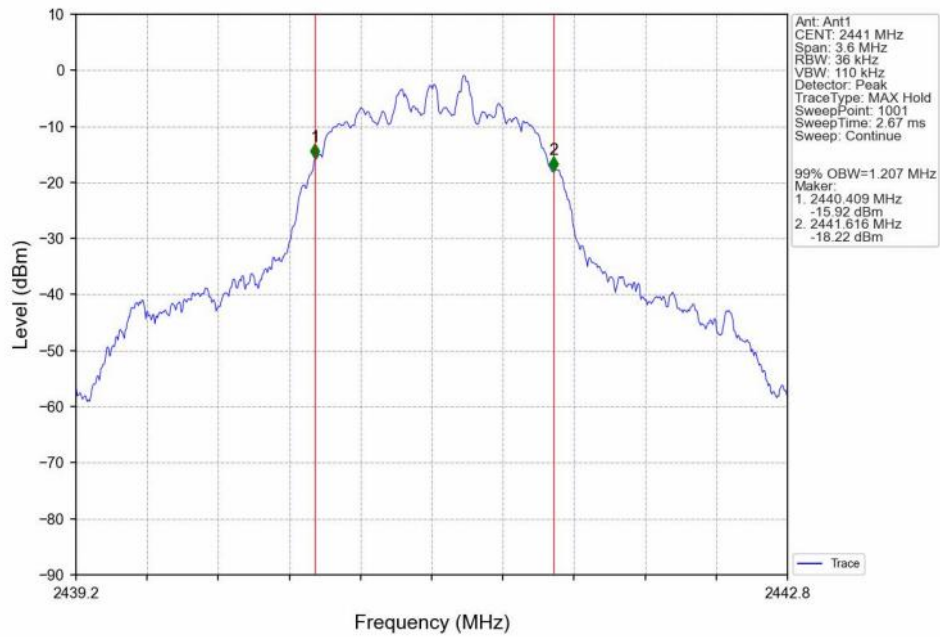
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



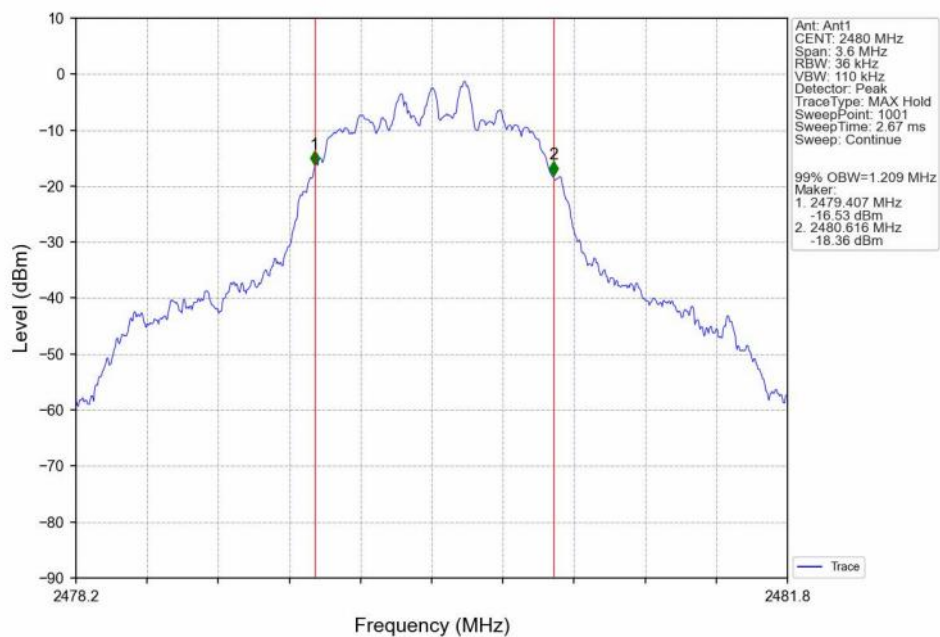
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



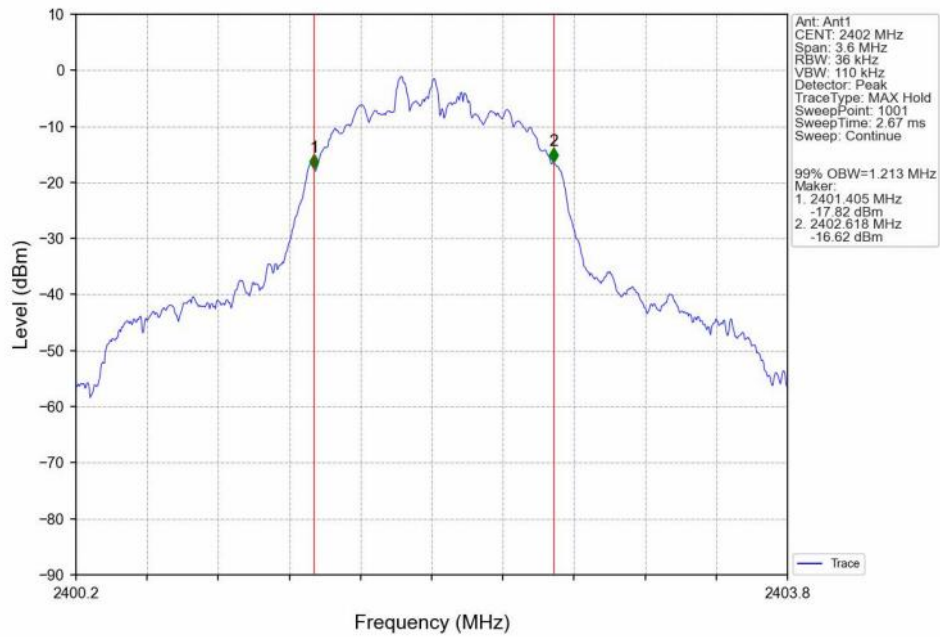
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



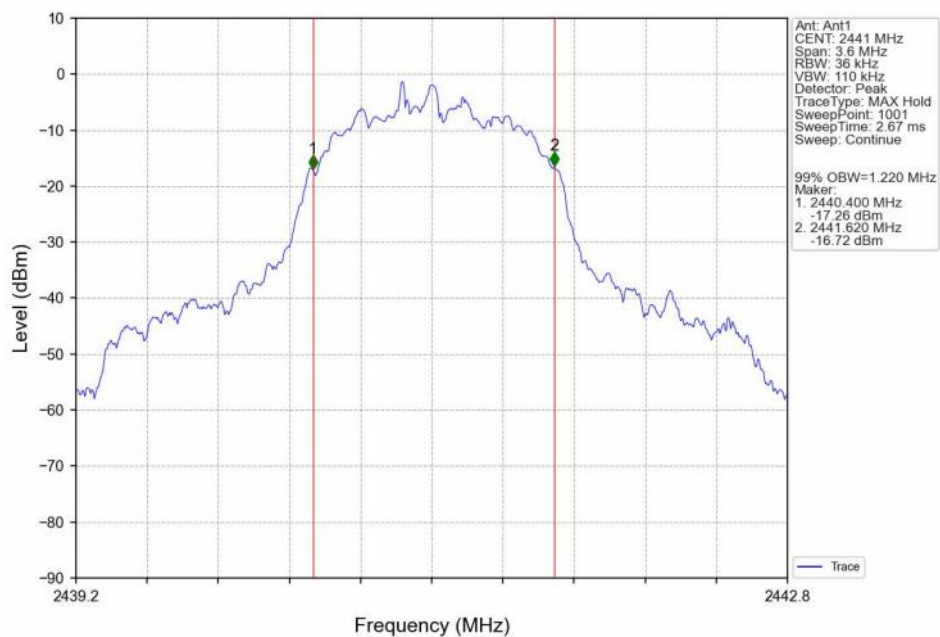
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



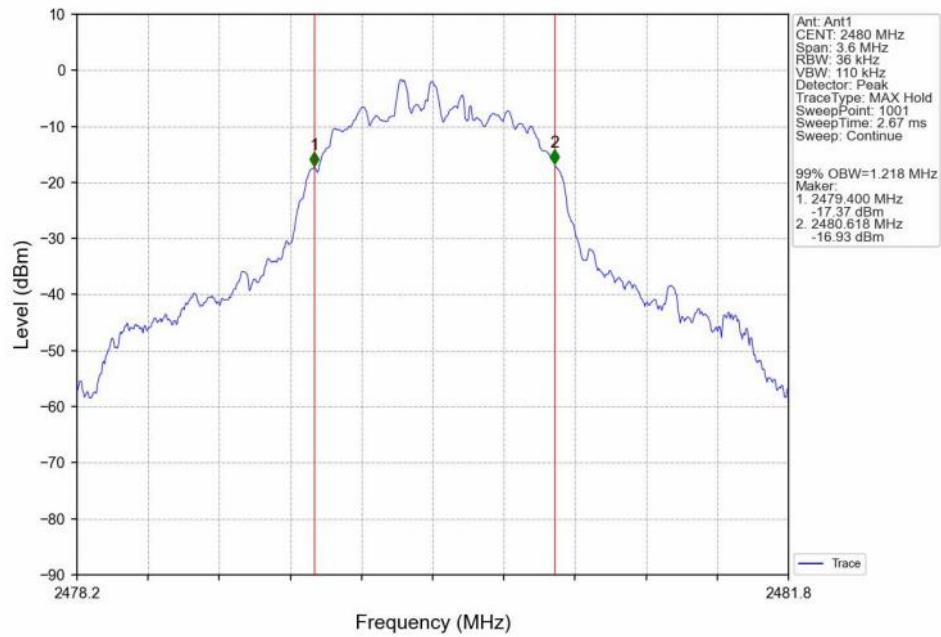
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV

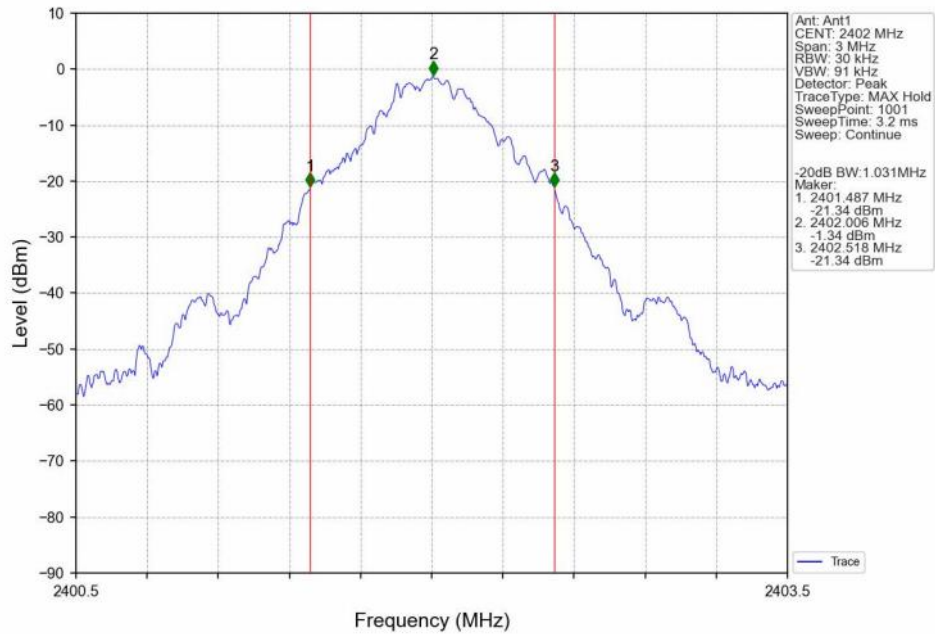


## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV

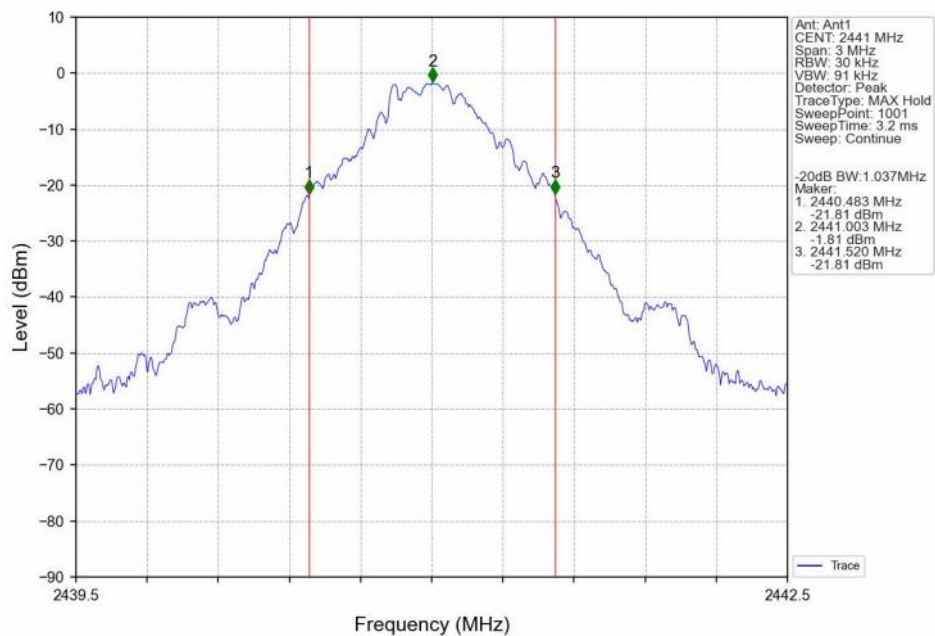


## 1.2.2 20dB BW

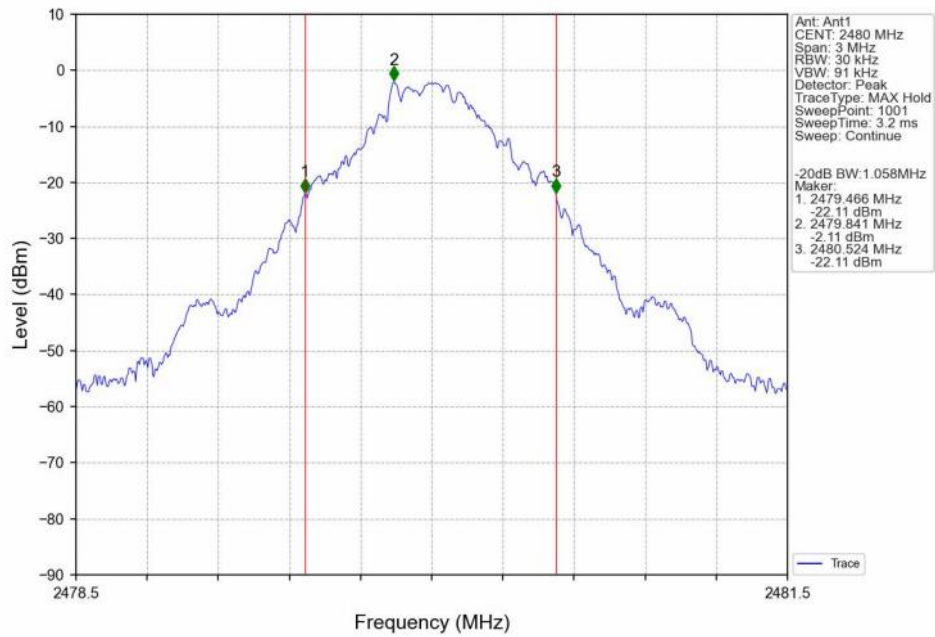
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



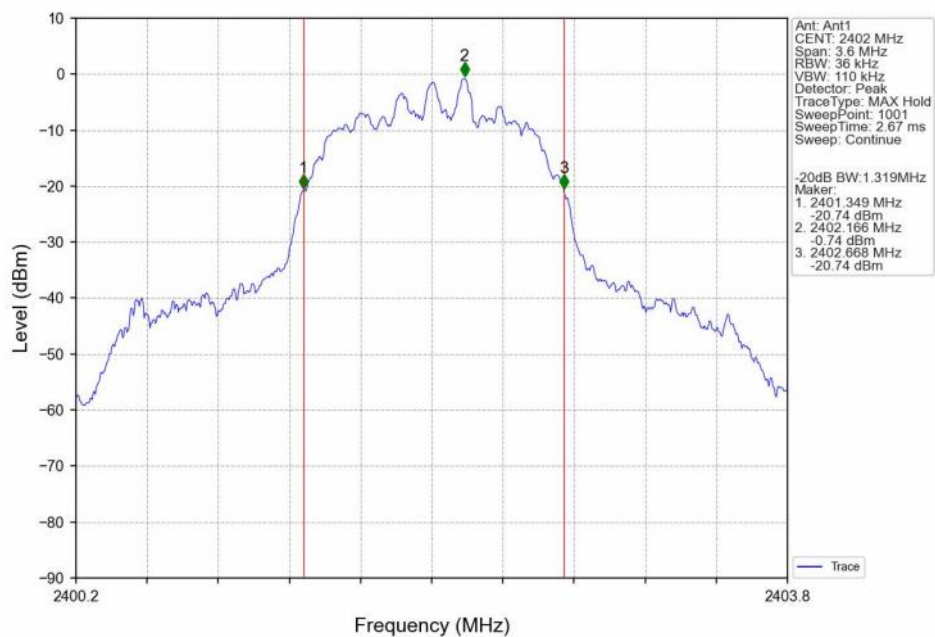
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



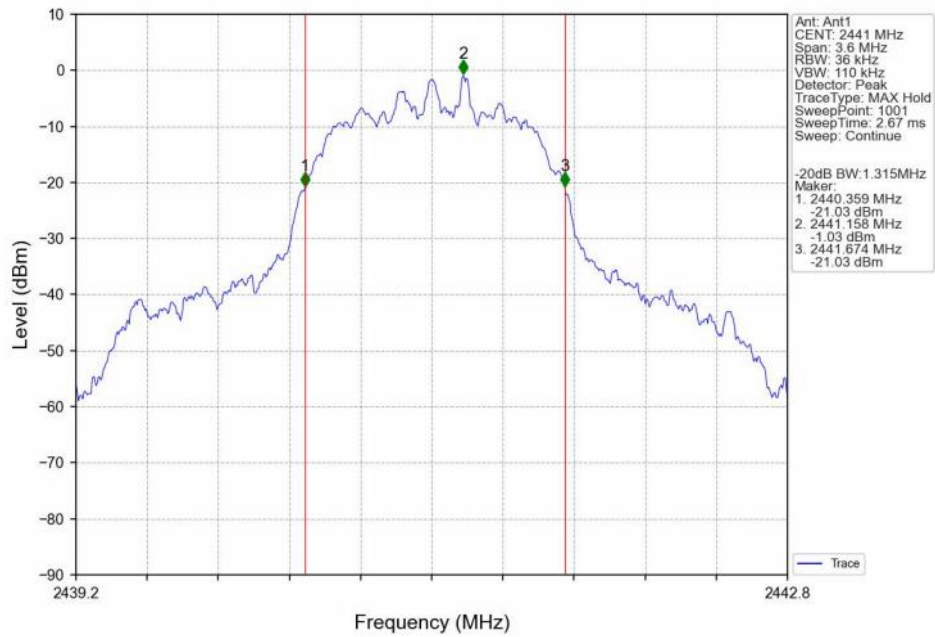
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



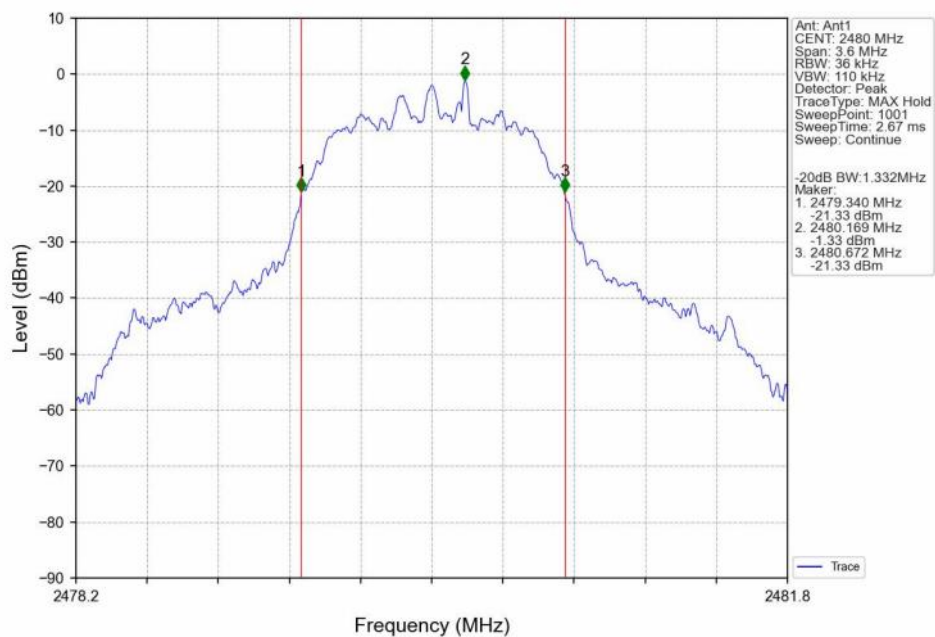
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



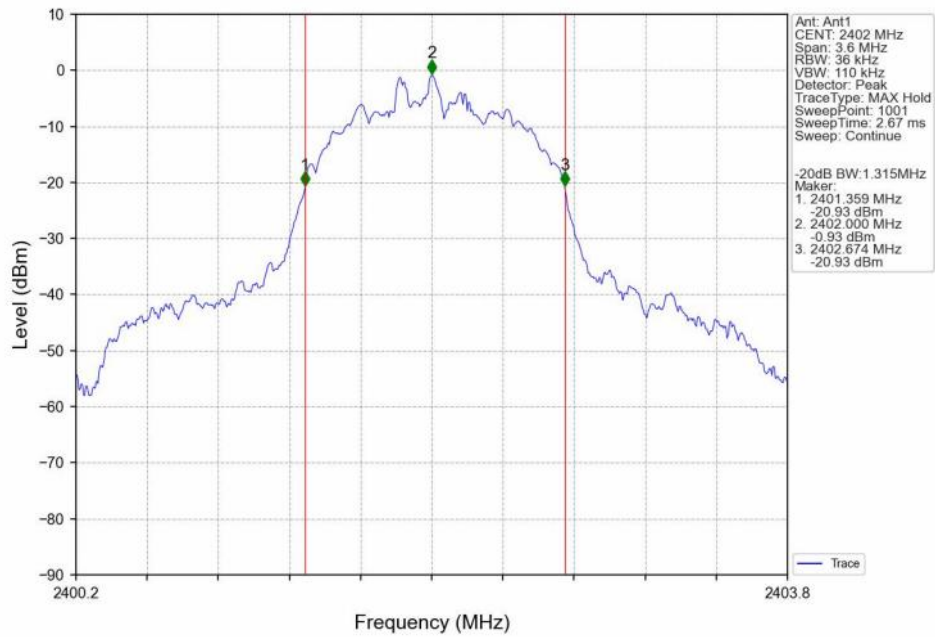
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



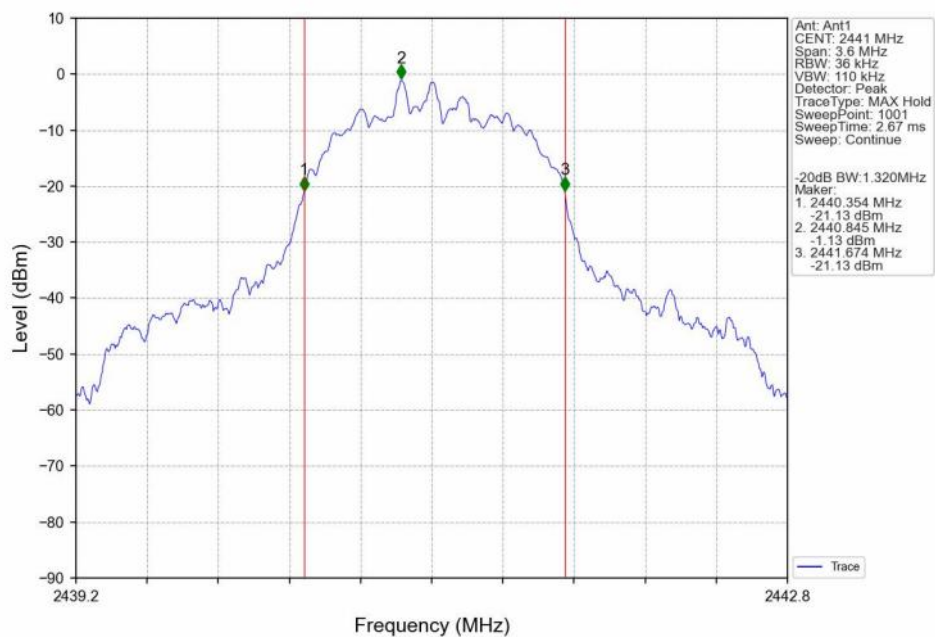
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



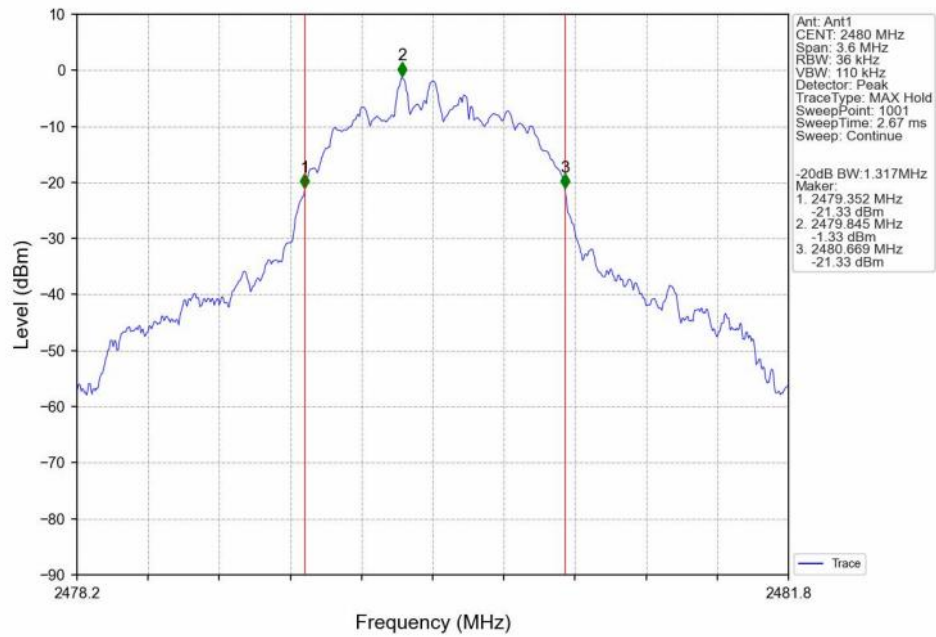
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 2. Maximum Conducted Output Power

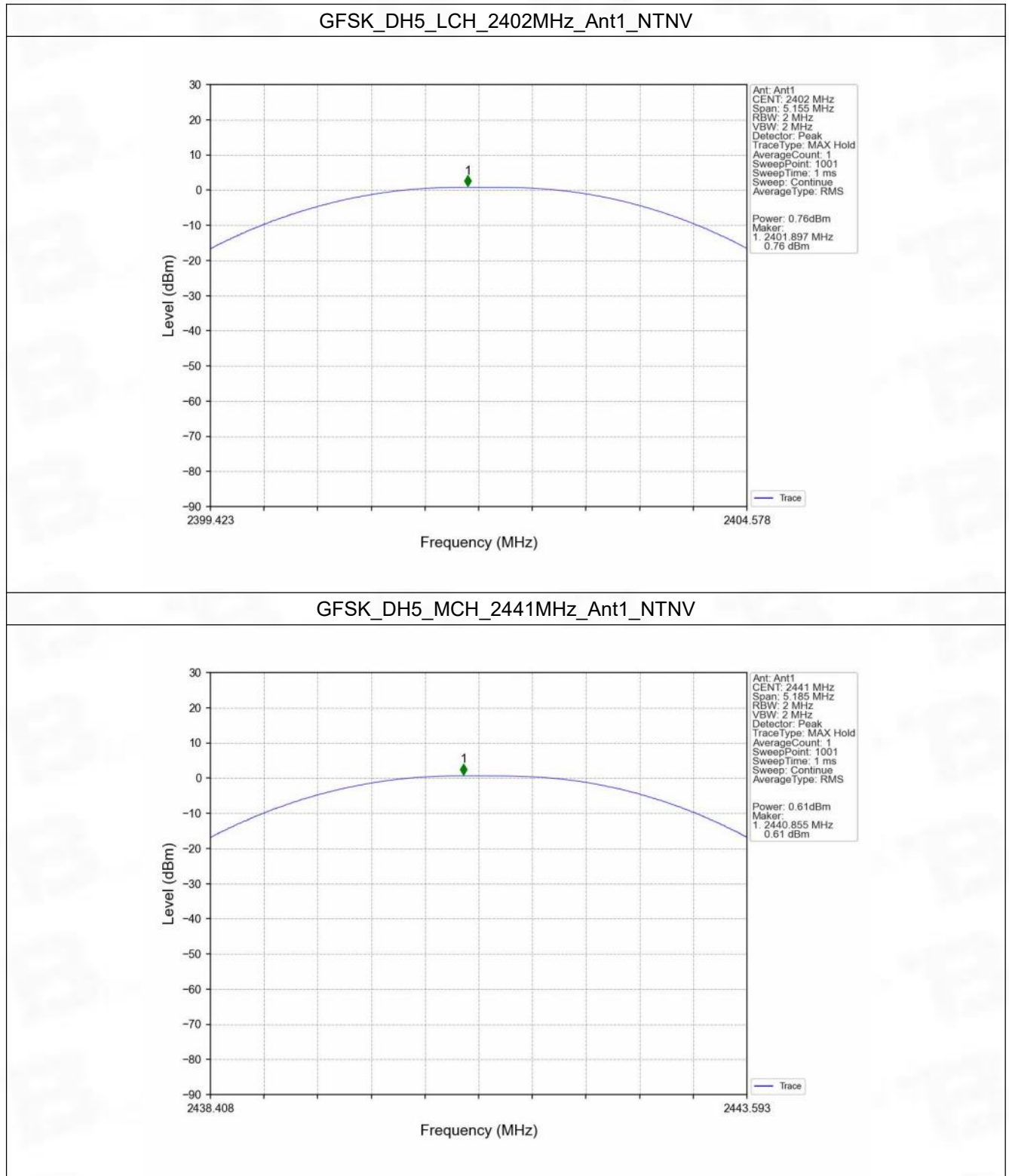
### 2.1 Test Result

#### 2.1.1 Power

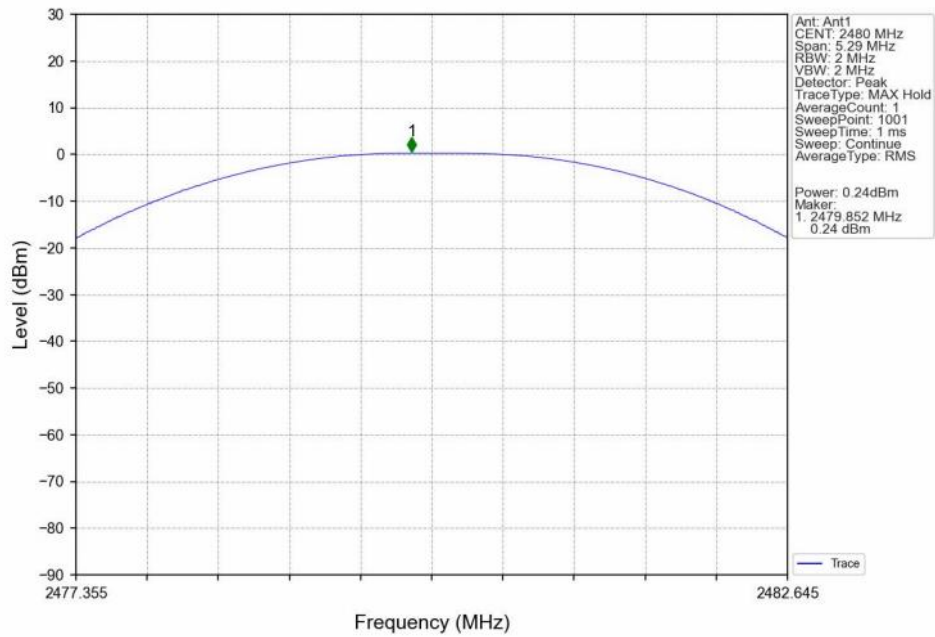
| Mode                                 | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |         | Verdict |
|--------------------------------------|---------|-----------------|-------------|-------------------------------------------|---------|---------|
|                                      |         |                 |             | ANT1                                      | Limit   |         |
| GFSK                                 | SISO    | 2402            | DH5         | 0.76                                      | <=20.97 | Pass    |
|                                      |         | 2441            | DH5         | 0.61                                      | <=20.97 | Pass    |
|                                      |         | 2480            | DH5         | 0.24                                      | <=20.97 | Pass    |
| Pi/4DQPSK                            | SISO    | 2402            | 2DH5        | 1.46                                      | <=20.97 | Pass    |
|                                      |         | 2441            | 2DH5        | 1.31                                      | <=20.97 | Pass    |
|                                      |         | 2480            | 2DH5        | 0.99                                      | <=20.97 | Pass    |
| 8DPSK                                | SISO    | 2402            | 3DH5        | 1.94                                      | <=20.97 | Pass    |
|                                      |         | 2441            | 3DH5        | 1.82                                      | <=20.97 | Pass    |
|                                      |         | 2480            | 3DH5        | 1.49                                      | <=20.97 | Pass    |
| Note1: Antenna Gain: Ant1: -0.58dBi; |         |                 |             |                                           |         |         |

## 2.2 Test Graph

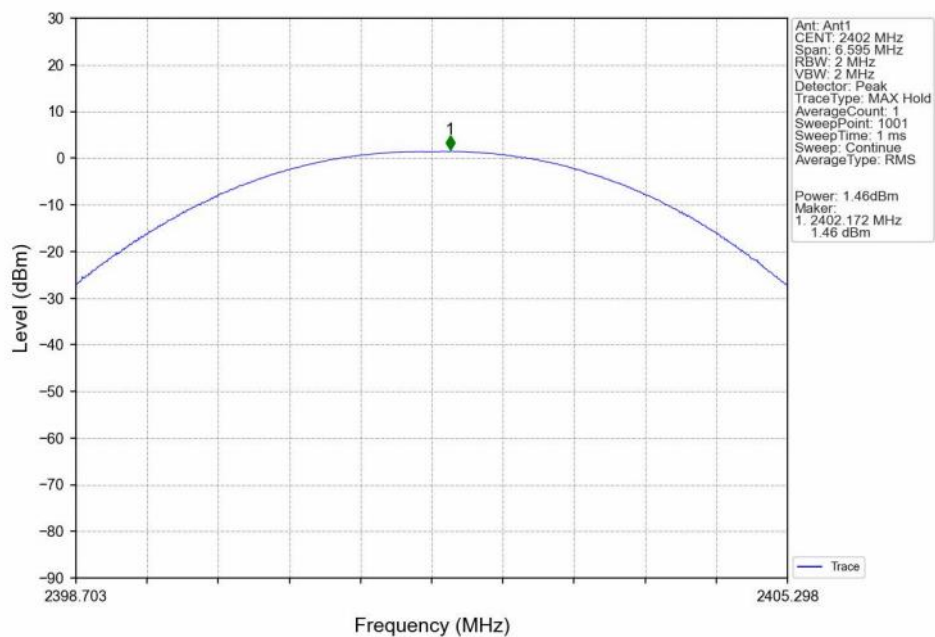
### 2.2.1 Power



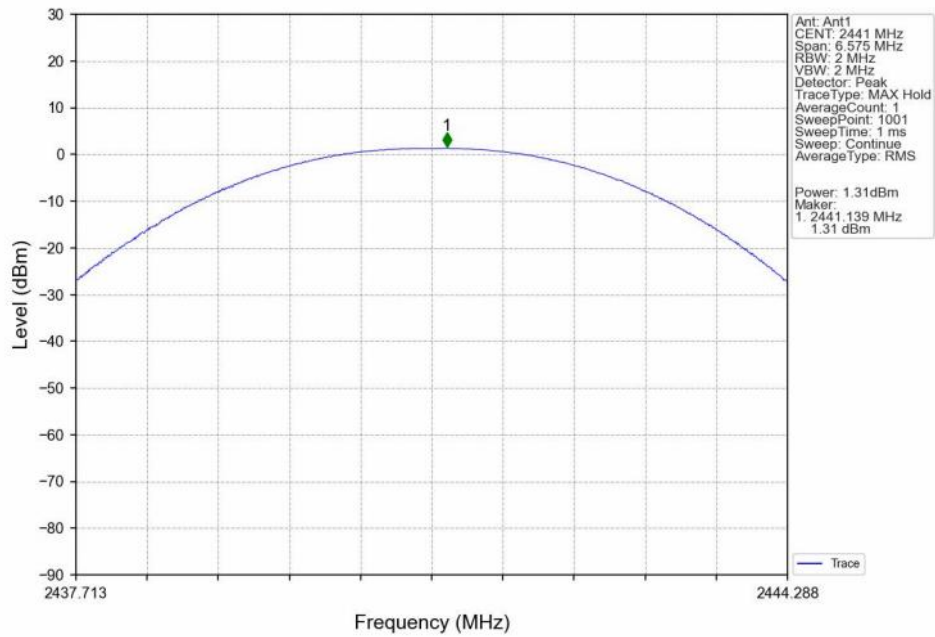
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



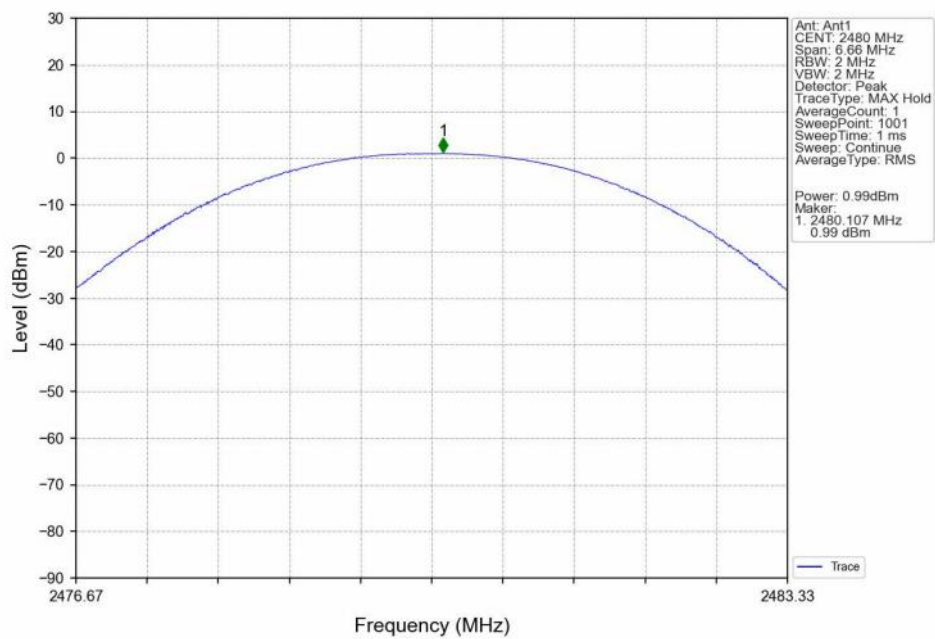
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



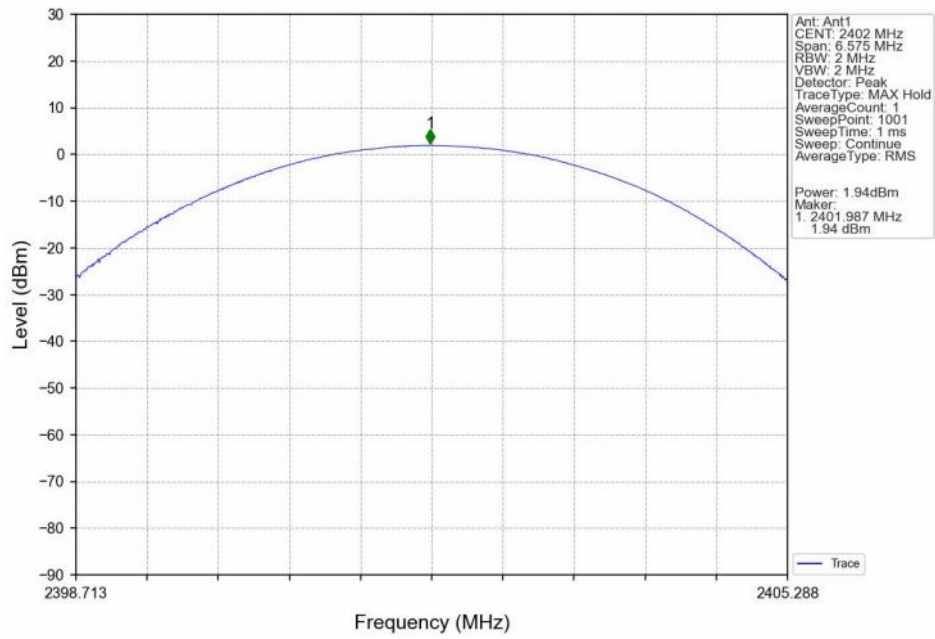
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



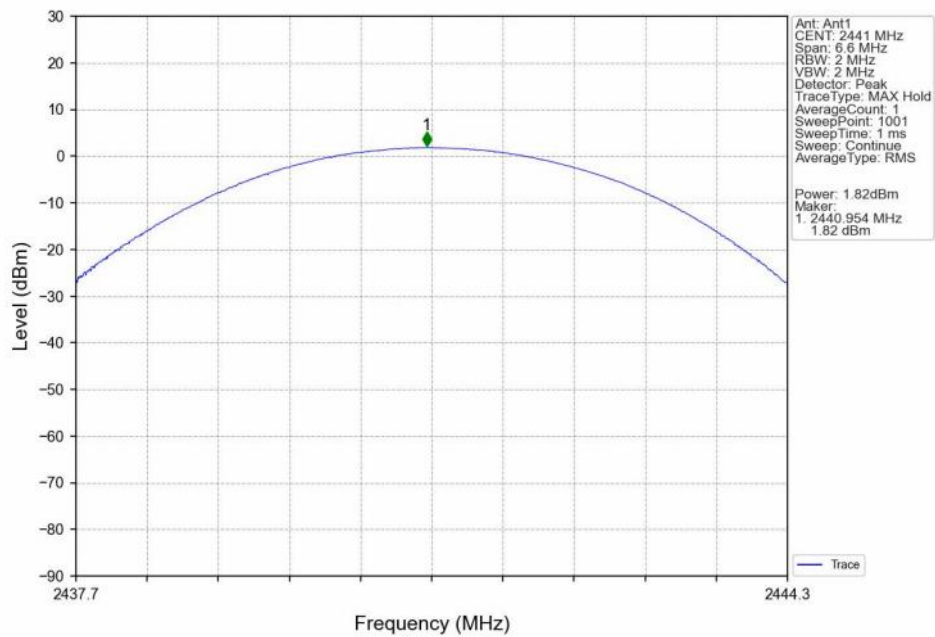
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



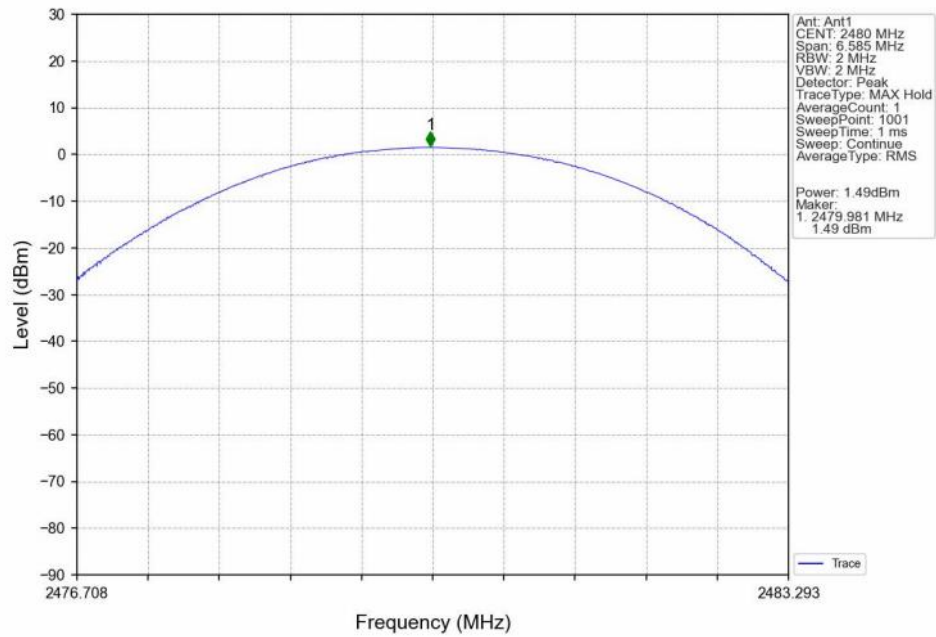
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



### 3. Carrier Frequency Separation

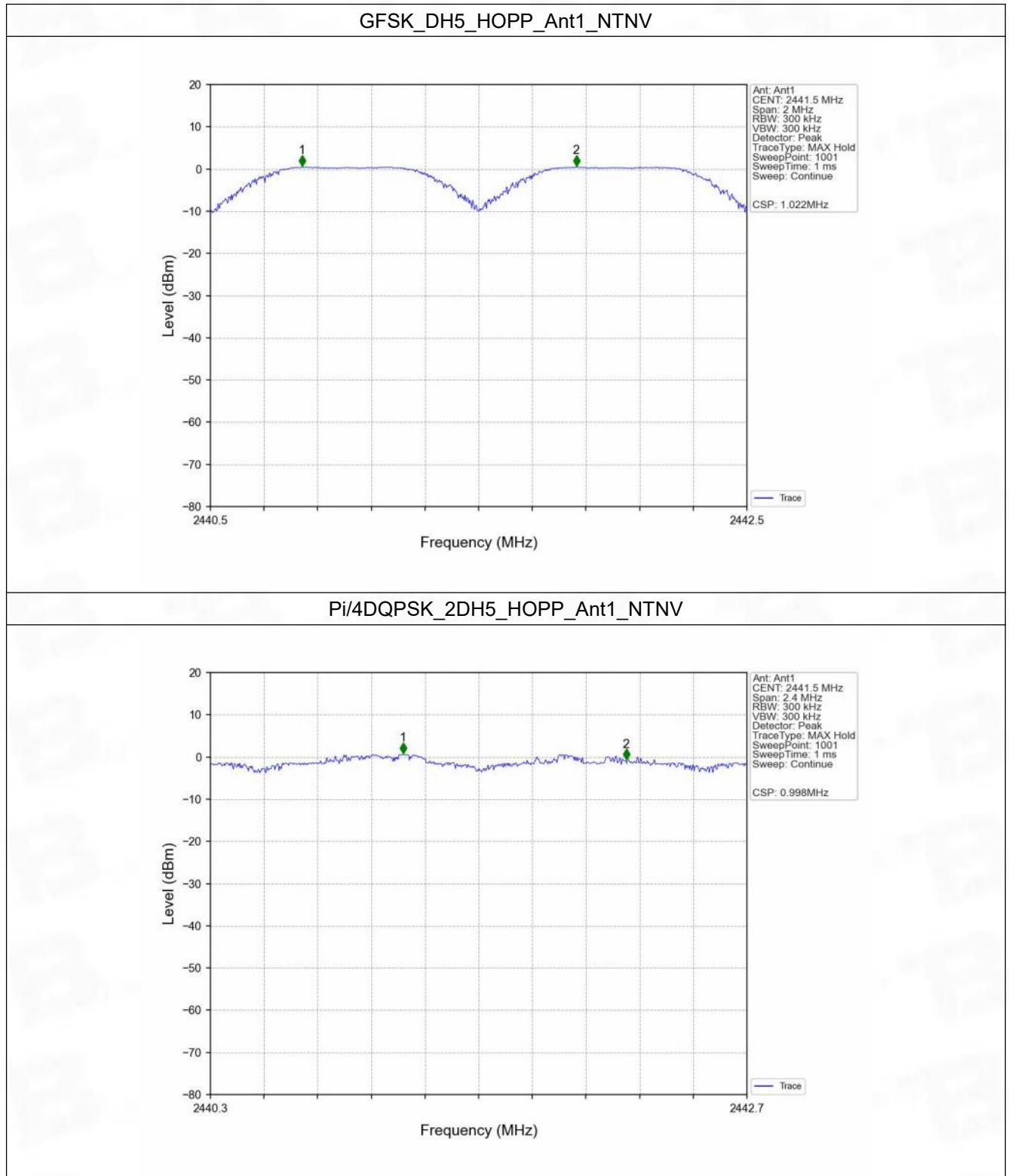
#### 3.1 Test Result

##### 3.1.1 Ant1

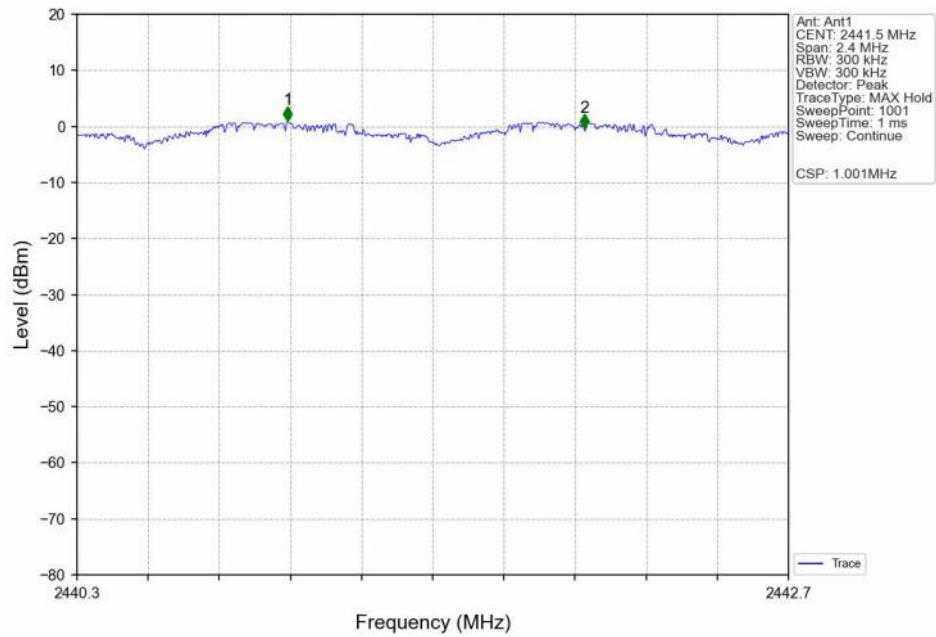
| Ant1      |         |                 |             |                          |                      |              |         |
|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 1.022                    | 1.058                | $\geq 0.705$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 0.998                    | 1.332                | $\geq 0.888$ | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 1.001                    | 1.320                | $\geq 0.88$  | Pass    |

### 3.2 Test Graph

#### 3.2.1 Ant1



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 4. Number of Hopping Frequencies

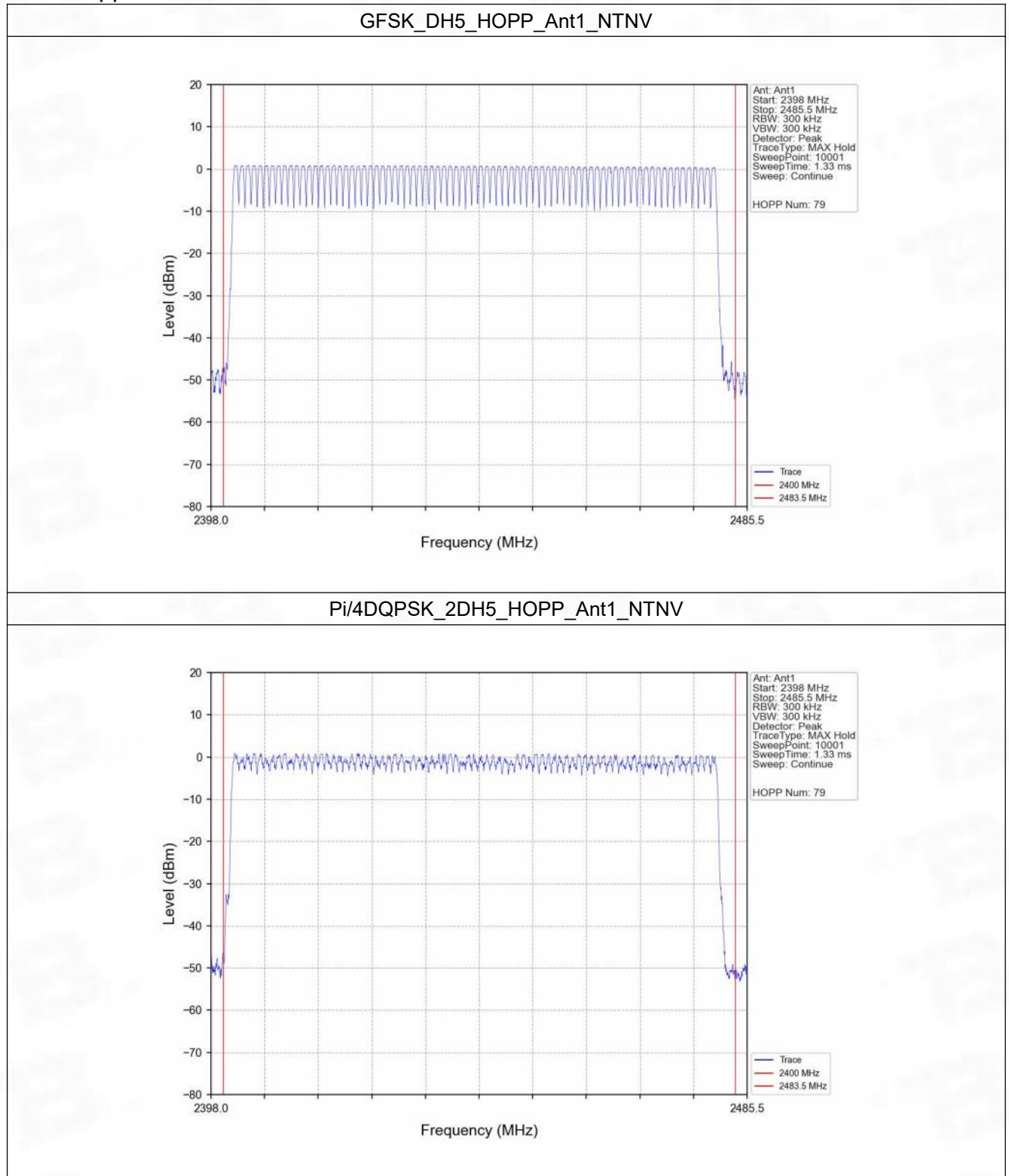
### 4.1 Test Result

#### 4.1.1 HoppNum

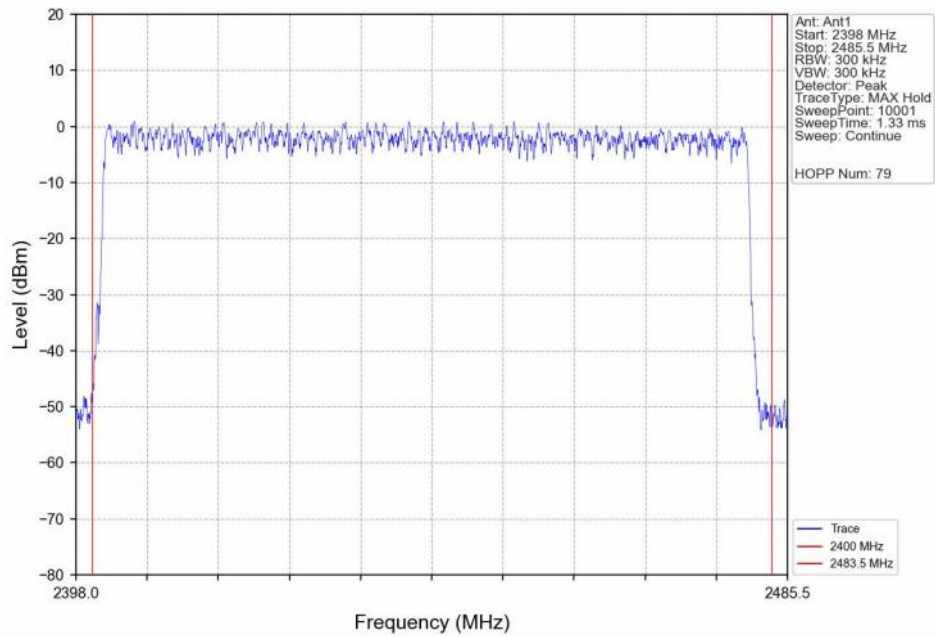
| Mode      | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |           | Verdict |
|-----------|---------|-----------------|-------------|----------------------------|-----------|---------|
|           |         |                 |             | ANT1                       | Limit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

## 4.2 Test Graph

### 4.2.1 HoppNum



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 5. Time of Occupancy (Dwell Time)

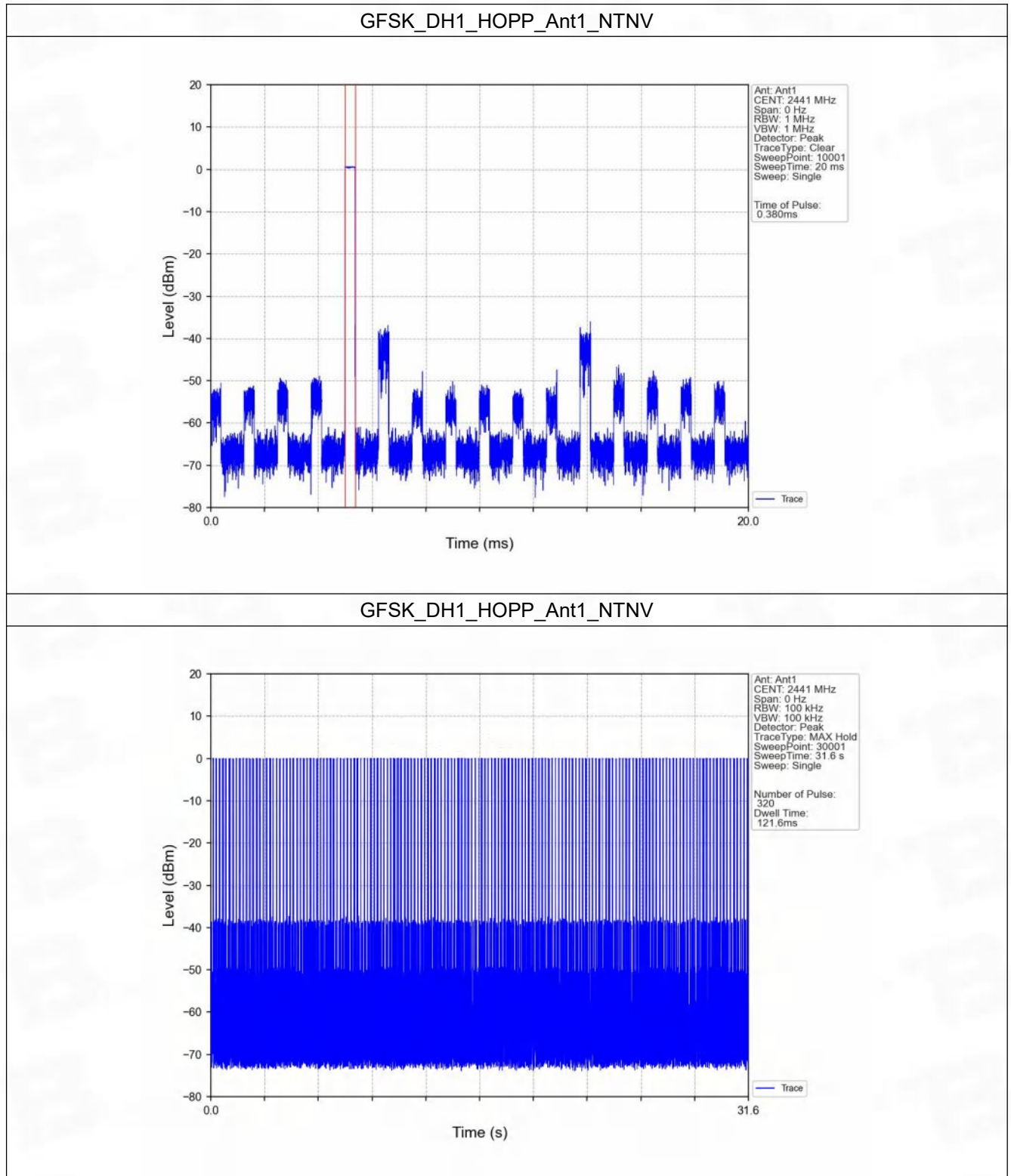
### 5.1 Test Result

#### 5.1.1 Ant1

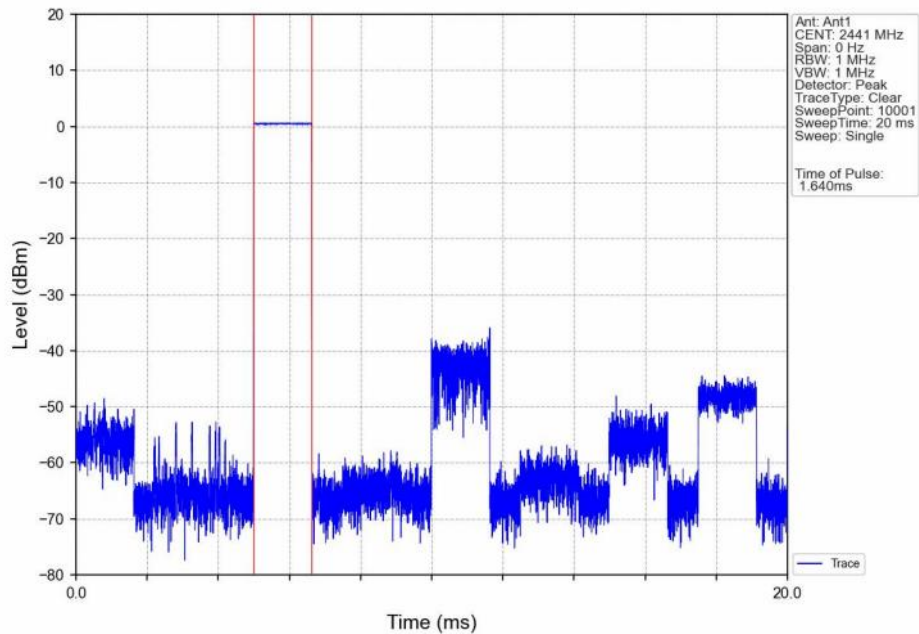
| Ant1      |         |                 |             |                               |                        |                                    |                 |            |         |
|-----------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| 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                 | 320                                | 121.600         | <=400      | Pass    |
|           |         |                 | DH3         | 1.640                         | 31.600                 | 173                                | 283.720         | <=400      | Pass    |
|           |         |                 | DH5         | 2.888                         | 31.600                 | 111                                | 320.568         | <=400      | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH1        | 0.390                         | 31.600                 | 320                                | 124.800         | <=400      | Pass    |
|           |         |                 | 2DH3        | 1.646                         | 31.600                 | 155                                | 255.130         | <=400      | Pass    |
|           |         |                 | 2DH5        | 2.890                         | 31.600                 | 108                                | 312.120         | <=400      | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH1        | 0.390                         | 31.600                 | 320                                | 124.800         | <=400      | Pass    |
|           |         |                 | 3DH3        | 1.640                         | 31.600                 | 151                                | 247.640         | <=400      | Pass    |
|           |         |                 | 3DH5        | 2.892                         | 31.600                 | 112                                | 323.904         | <=400      | Pass    |

## 5.2 Test Graph

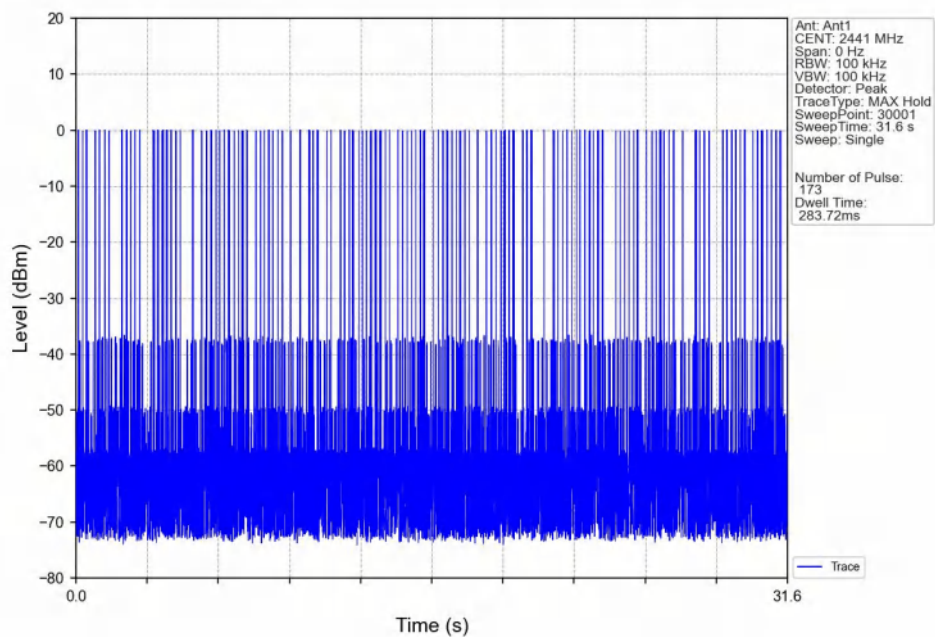
### 5.2.1 Ant1



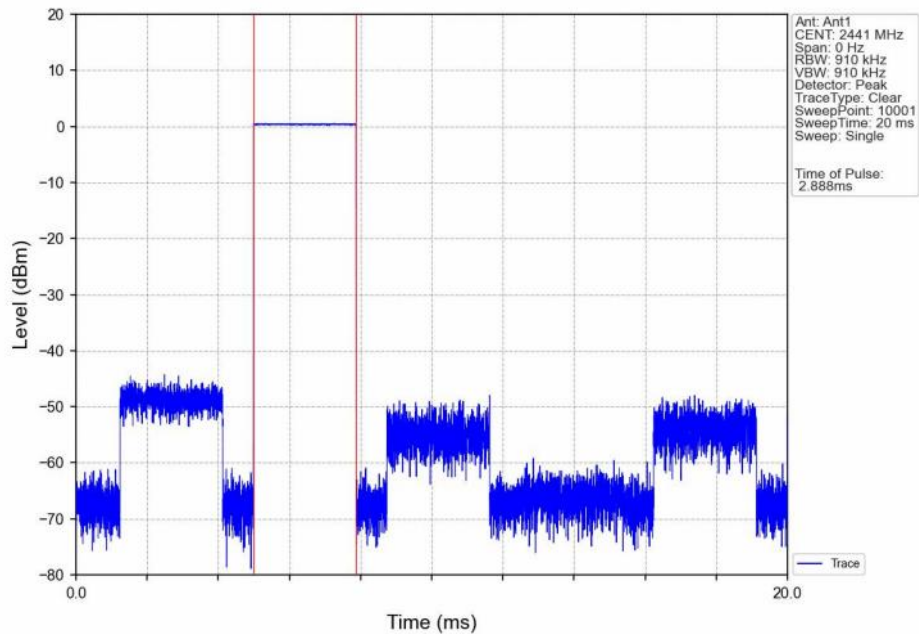
## GFSK\_DH3\_HOPP\_Ant1\_NTNV



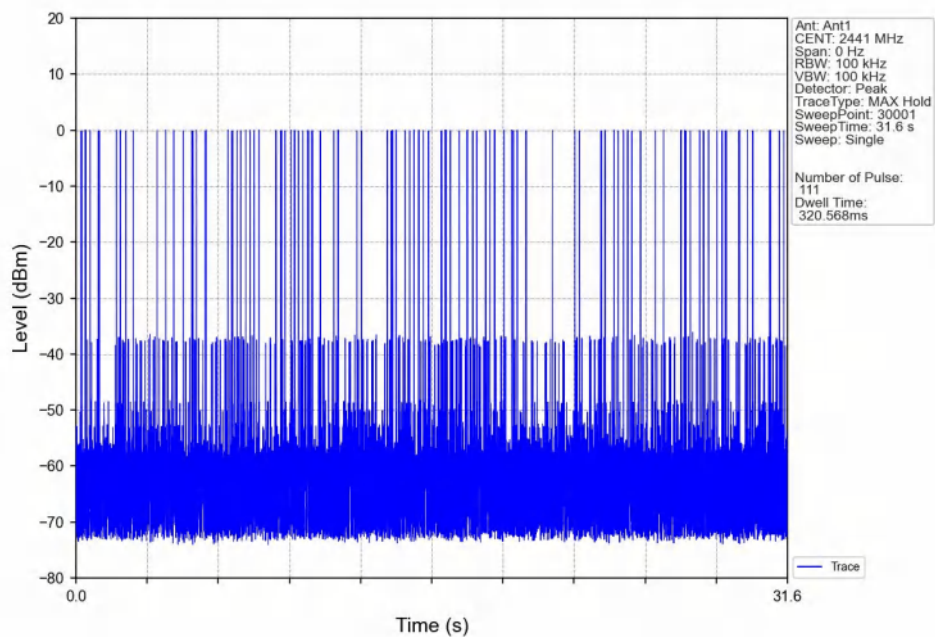
## GFSK\_DH3\_HOPP\_Ant1\_NTNV



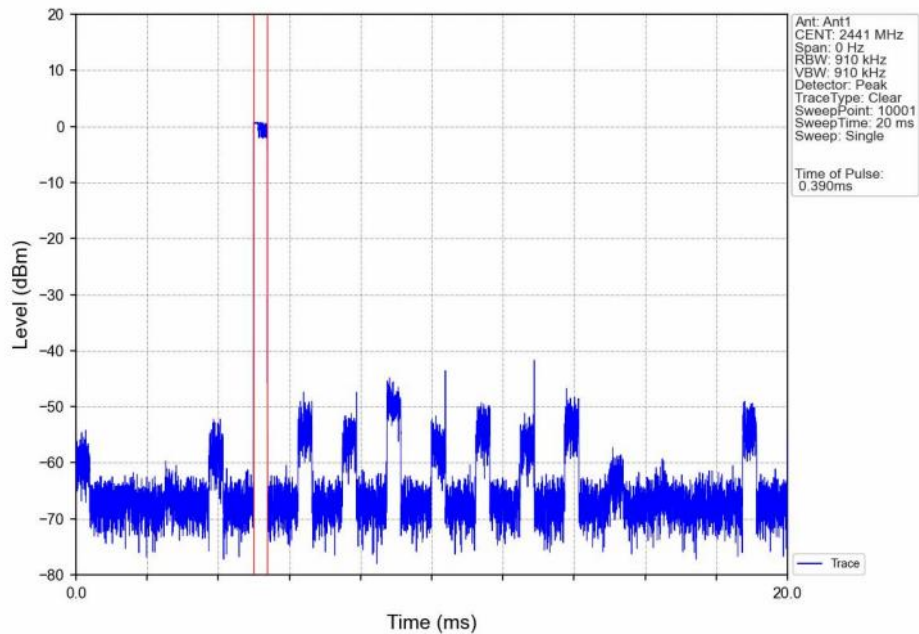
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



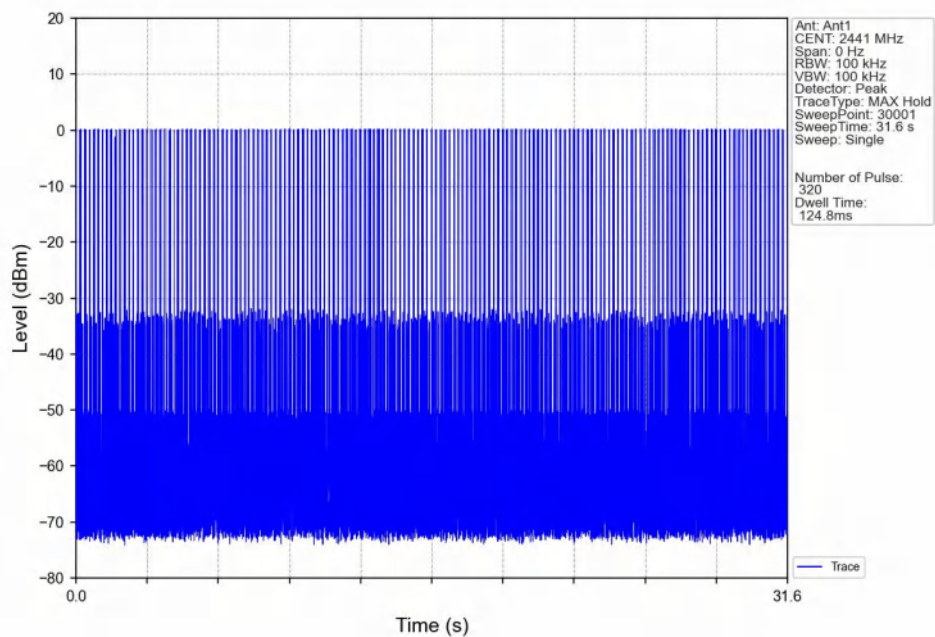
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



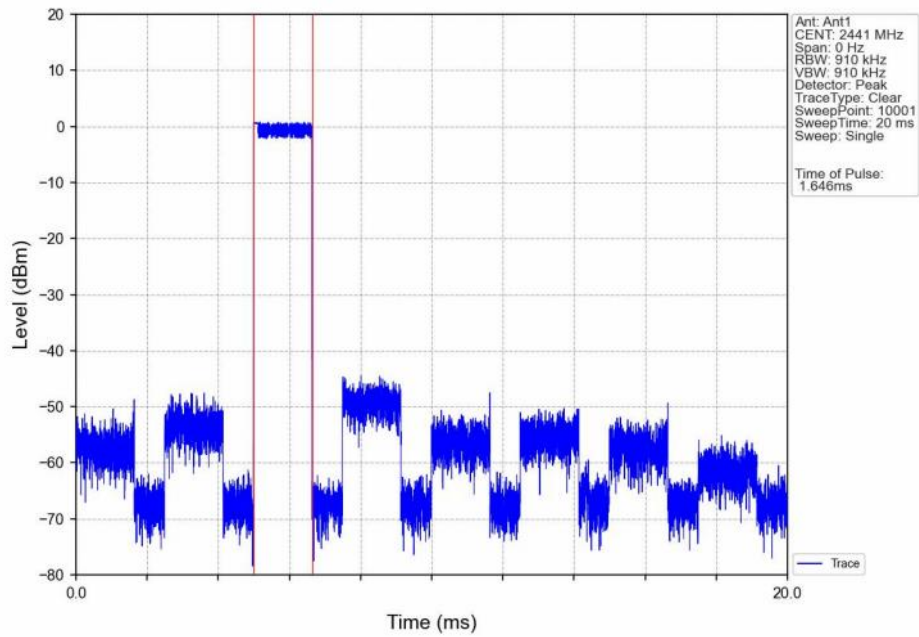
Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



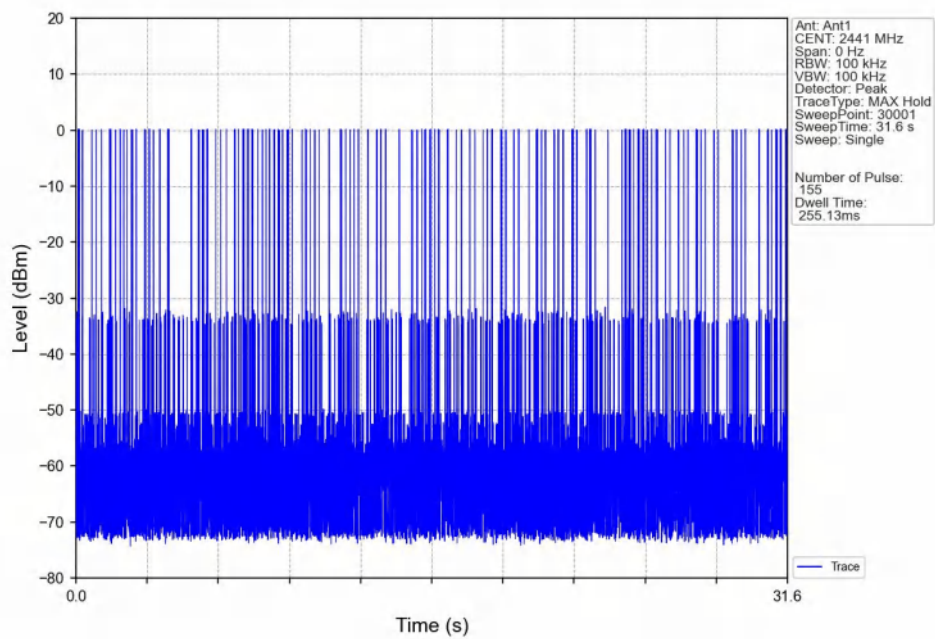
Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



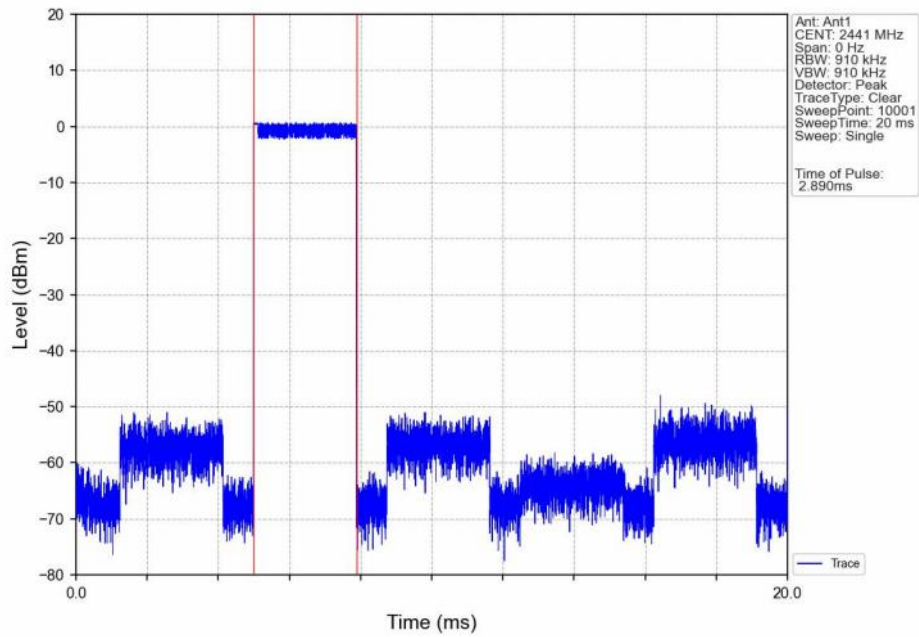
Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



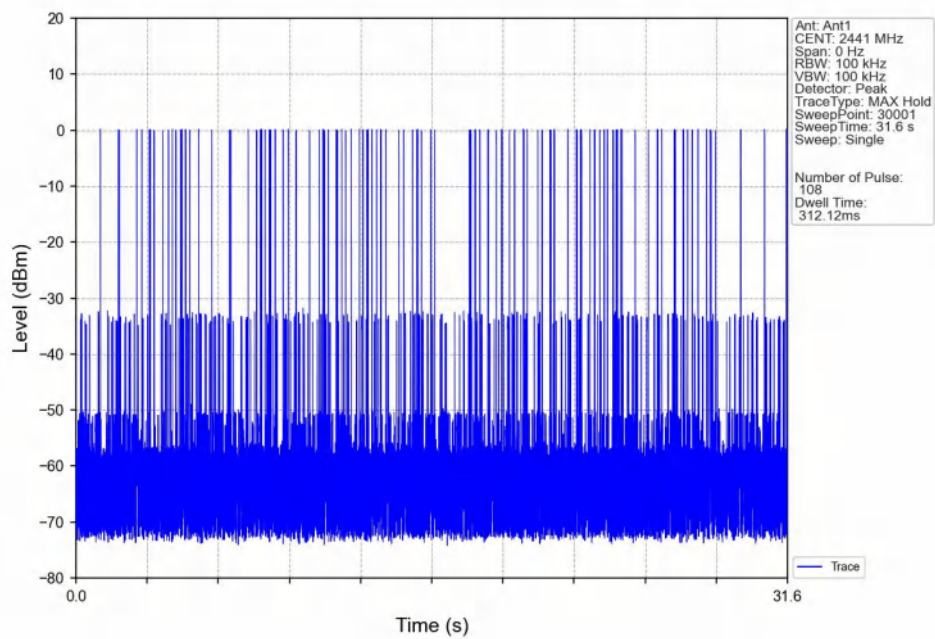
Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



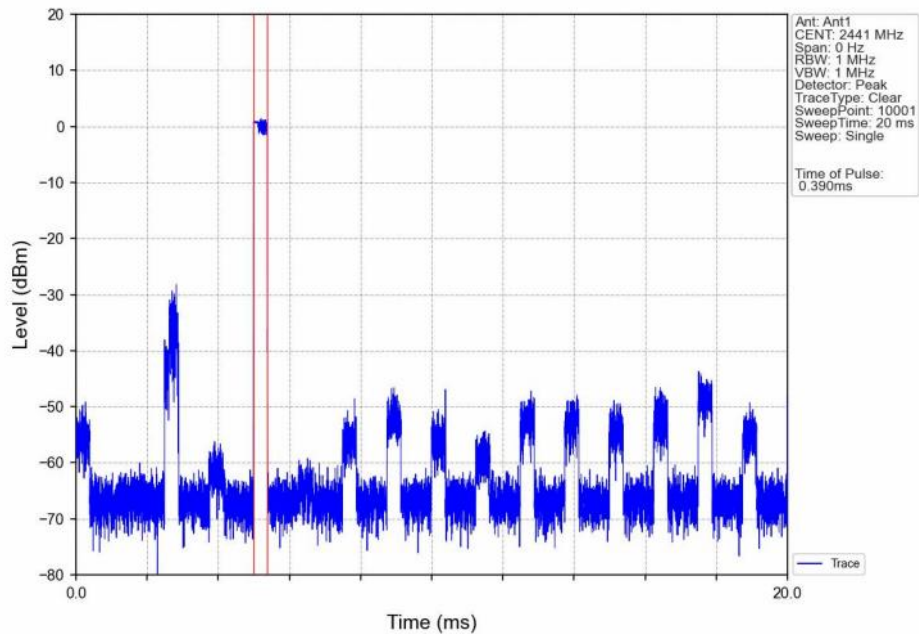
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



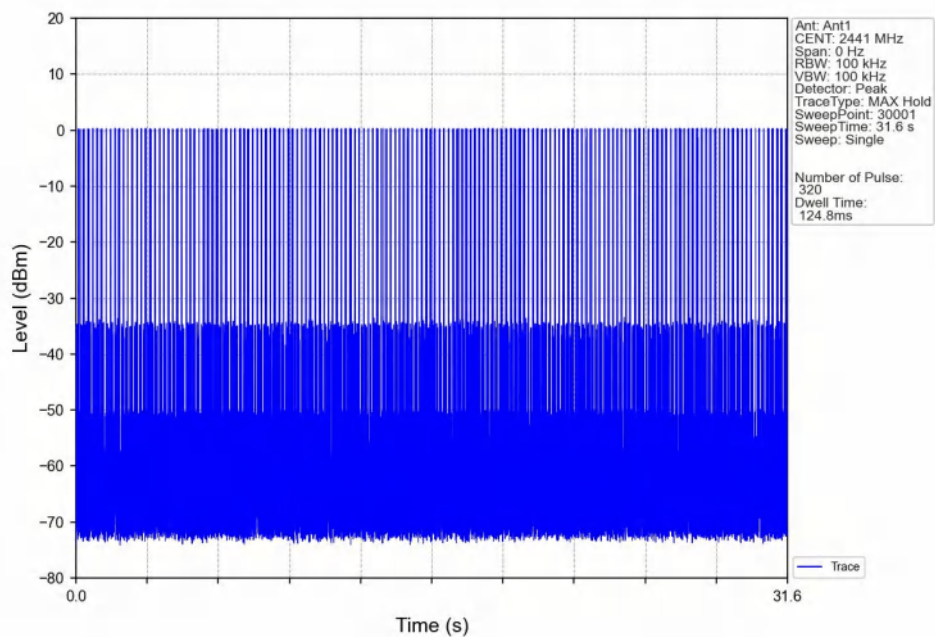
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



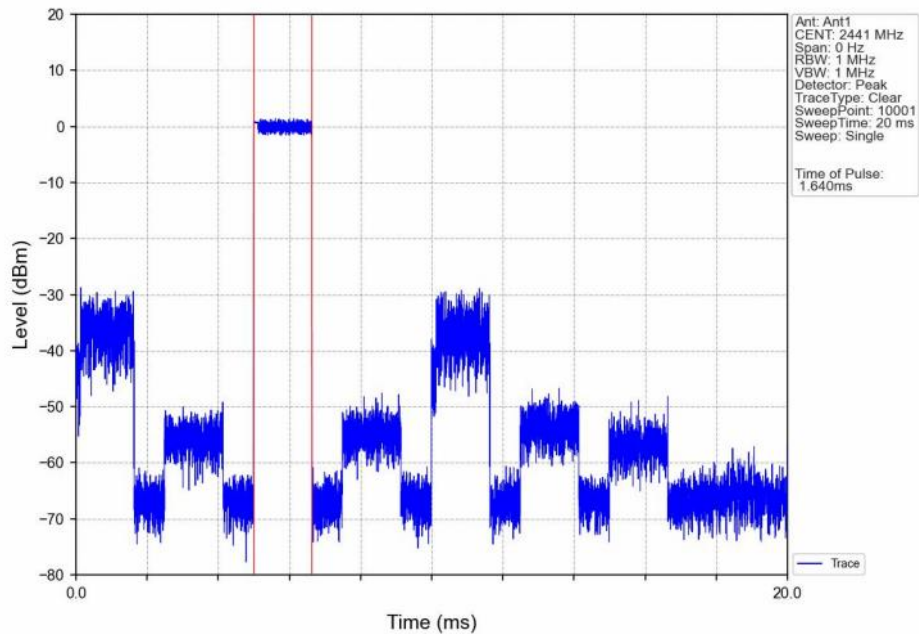
## 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



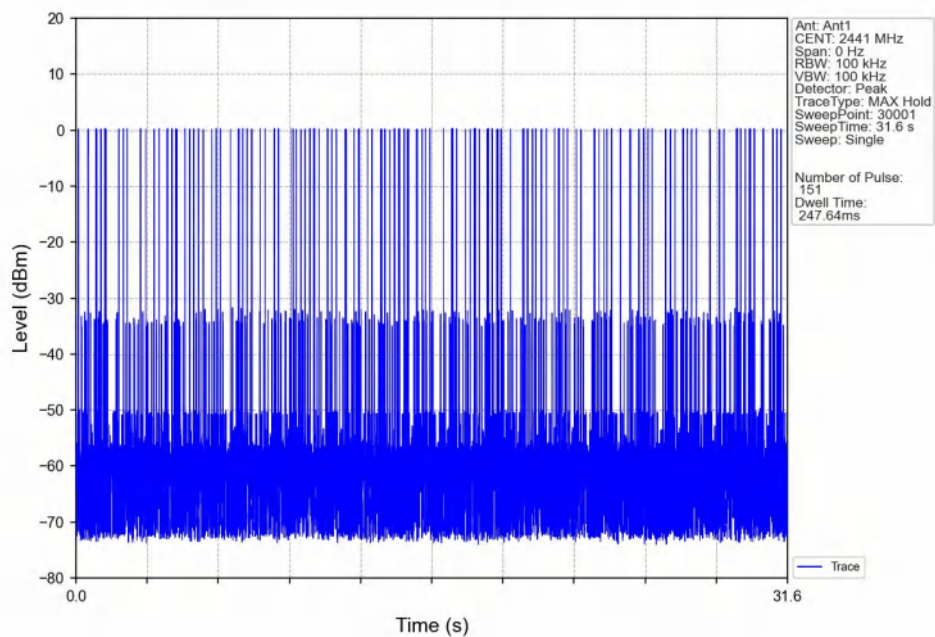
## 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



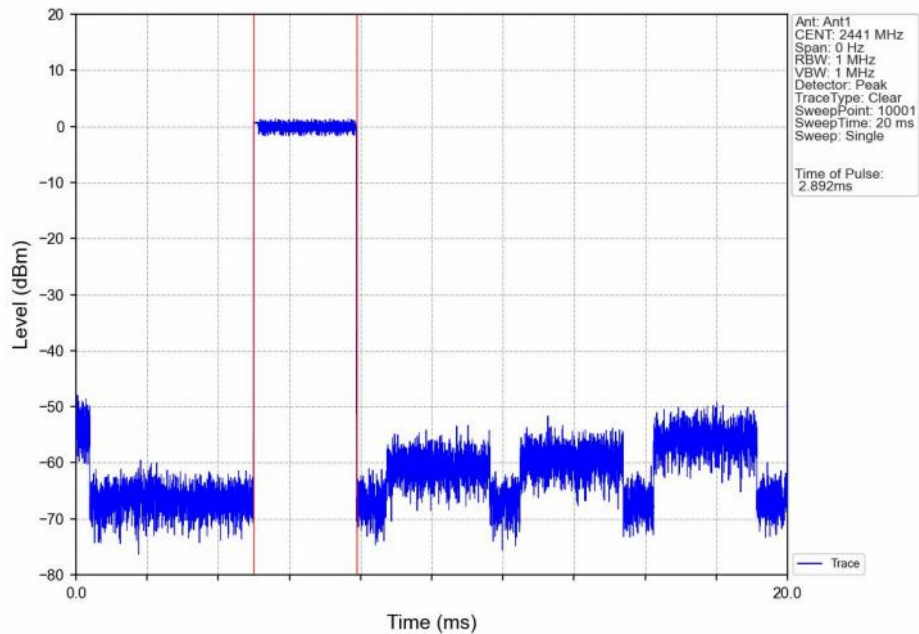
## 8DPSK\_3DH3\_HOPP\_Ant1\_NTNV



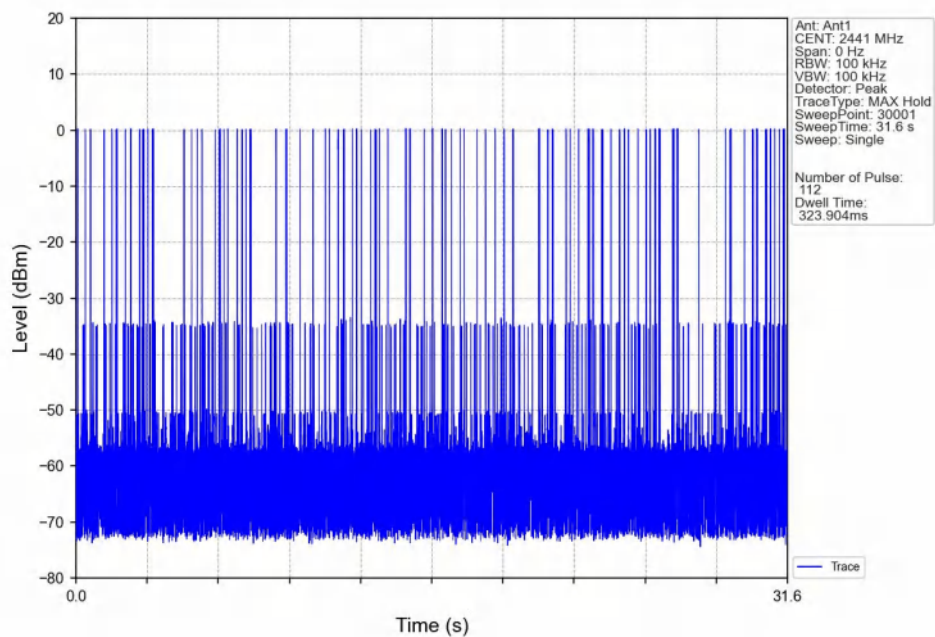
## 8DPSK\_3DH3\_HOPP\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



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

### 6.1 Test Result

#### 6.1.1 Ref

| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) |
|-----------|---------|-----------------|-------------|-----|--------------------------|
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.60                     |
|           |         | 2441            | DH5         | 1   | 0.45                     |
|           |         | 2480            | DH5         | 1   | 0.07                     |
|           |         | HOPP            | DH5         | 1   | 0.70                     |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 0.61                     |
|           |         | 2441            | 2DH5        | 1   | 0.45                     |
|           |         | 2480            | 2DH5        | 1   | 0.05                     |
|           |         | HOPP            | 2DH5        | 1   | 0.67                     |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 0.77                     |
|           |         | 2441            | 3DH5        | 1   | 0.62                     |
|           |         | 2480            | 3DH5        | 1   | 0.23                     |
|           |         | HOPP            | 3DH5        | 1   | 0.86                     |

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020+Cor.1-2023, the channel contains the maximum PSD level was used to establish the reference level.

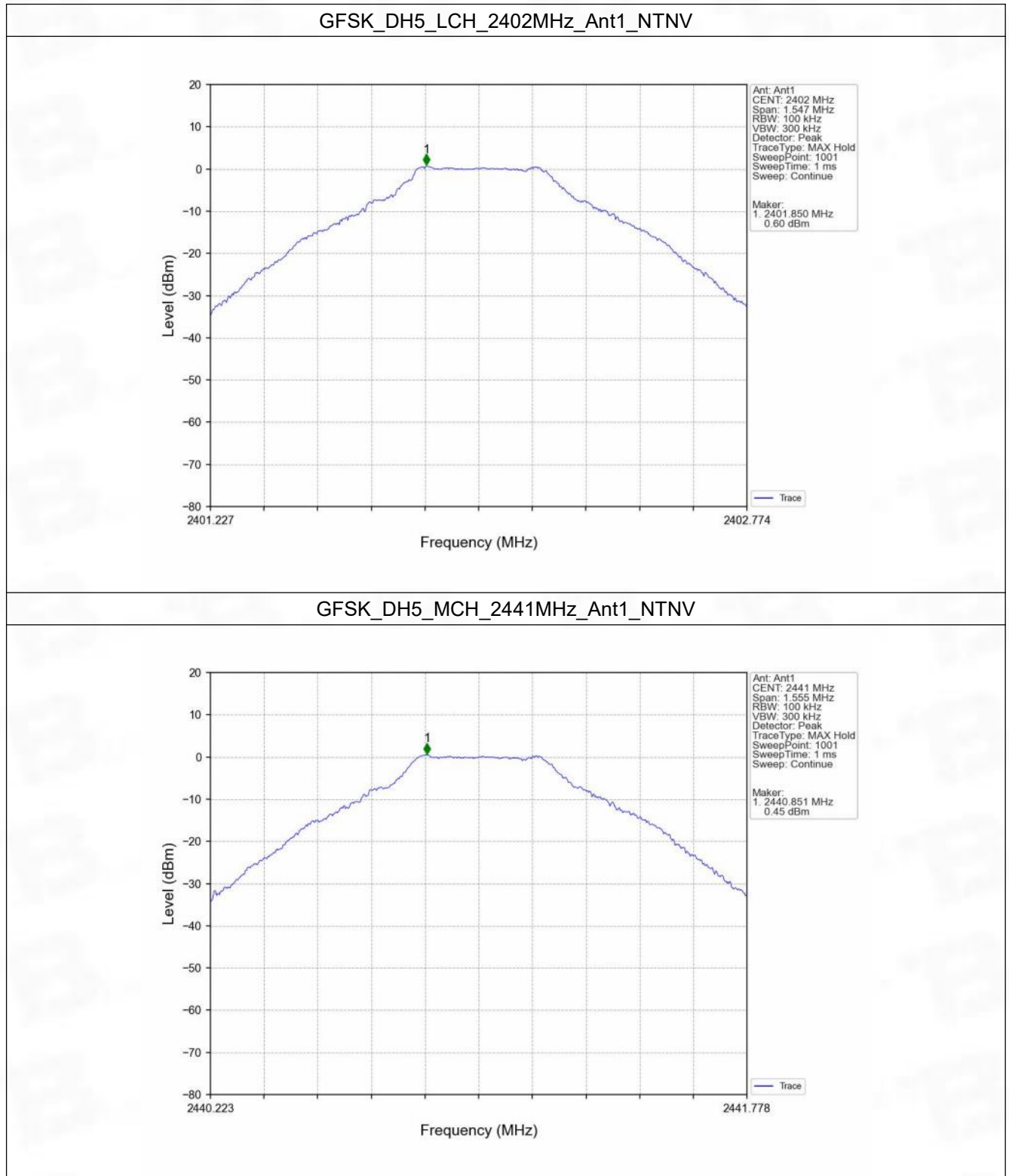
#### 6.1.2 CSE

| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.60                     | -19.40      | Pass    |
|           |         | 2441            | DH5         | 1   | 0.45                     | -19.55      | Pass    |
|           |         | 2480            | DH5         | 1   | 0.07                     | -19.93      | Pass    |
|           |         | HOPP            | DH5         | 1   | 0.70                     | -19.30      | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 0.61                     | -19.39      | Pass    |
|           |         | 2441            | 2DH5        | 1   | 0.45                     | -19.55      | Pass    |
|           |         | 2480            | 2DH5        | 1   | 0.05                     | -19.95      | Pass    |
|           |         | HOPP            | 2DH5        | 1   | 0.67                     | -19.33      | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 0.77                     | -19.23      | Pass    |
|           |         | 2441            | 3DH5        | 1   | 0.62                     | -19.38      | Pass    |
|           |         | 2480            | 3DH5        | 1   | 0.23                     | -19.77      | Pass    |
|           |         | HOPP            | 3DH5        | 1   | 0.86                     | -19.14      | Pass    |

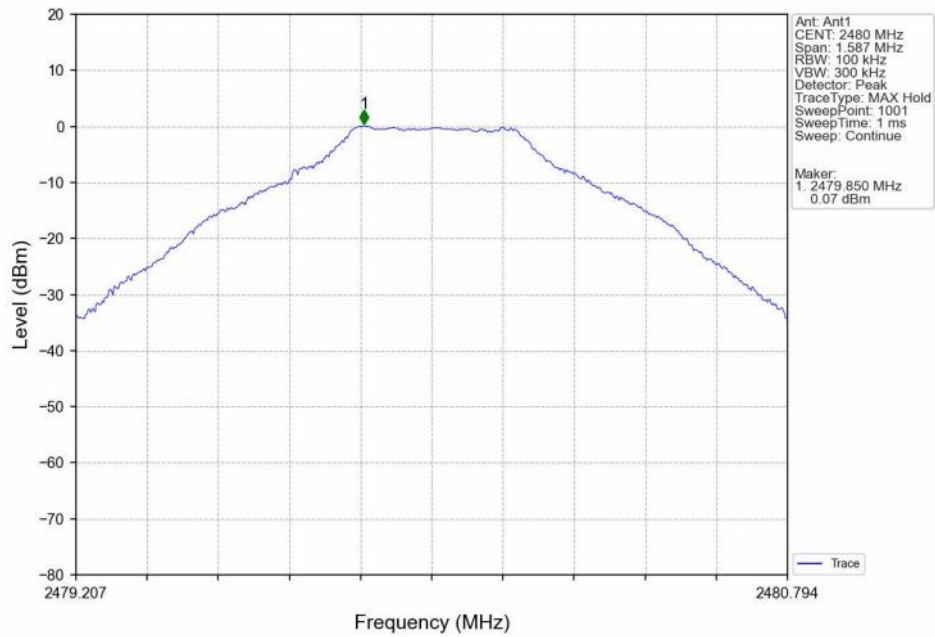
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020+Cor.1-2023, the channel contains the maximum PSD level was used to establish the reference level.

## 6.2 Test Graph

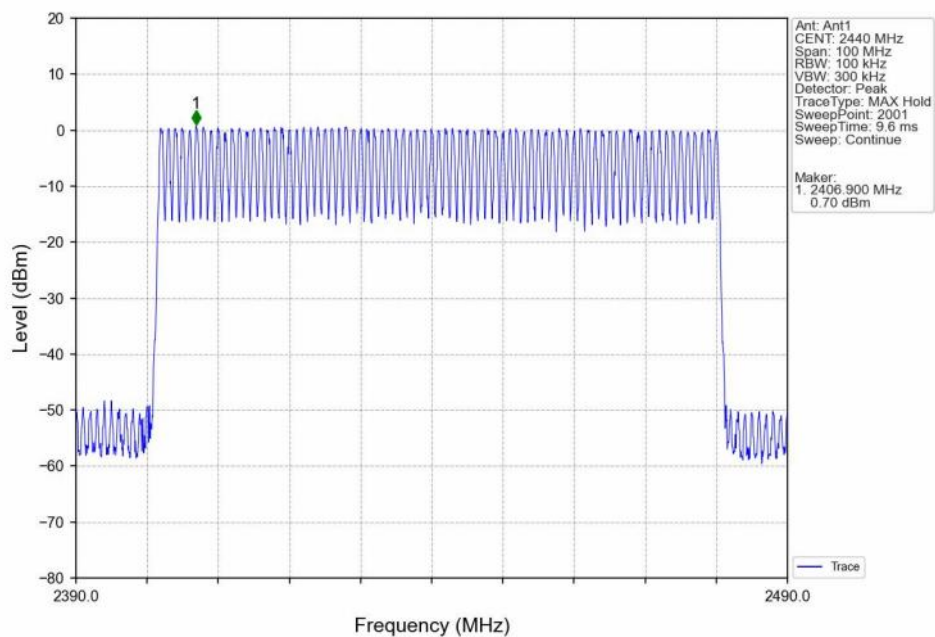
### 6.2.1 Ref



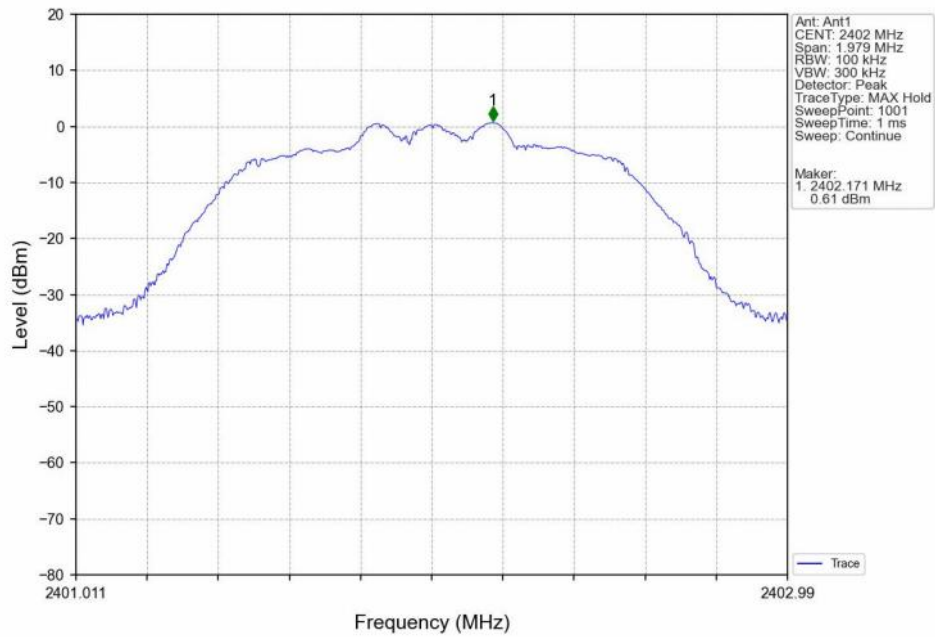
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



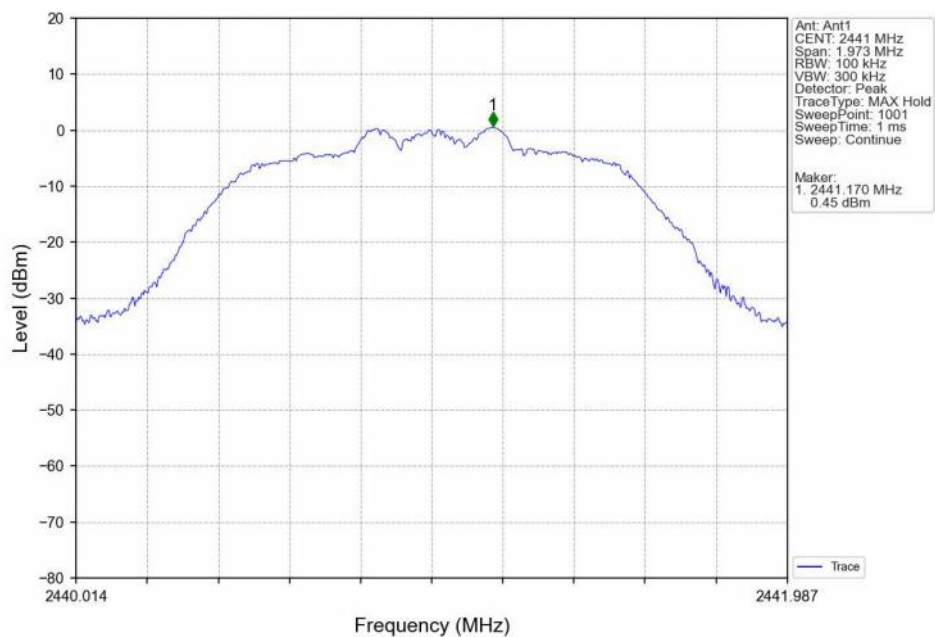
GFSK\_DH5\_HOPP\_2440MHz\_Ant1\_NTNV



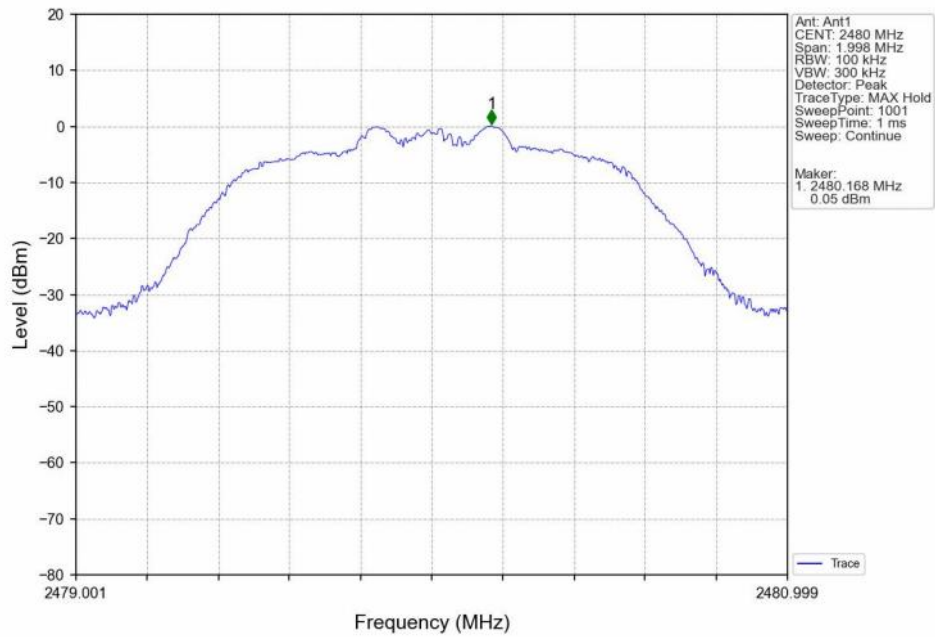
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



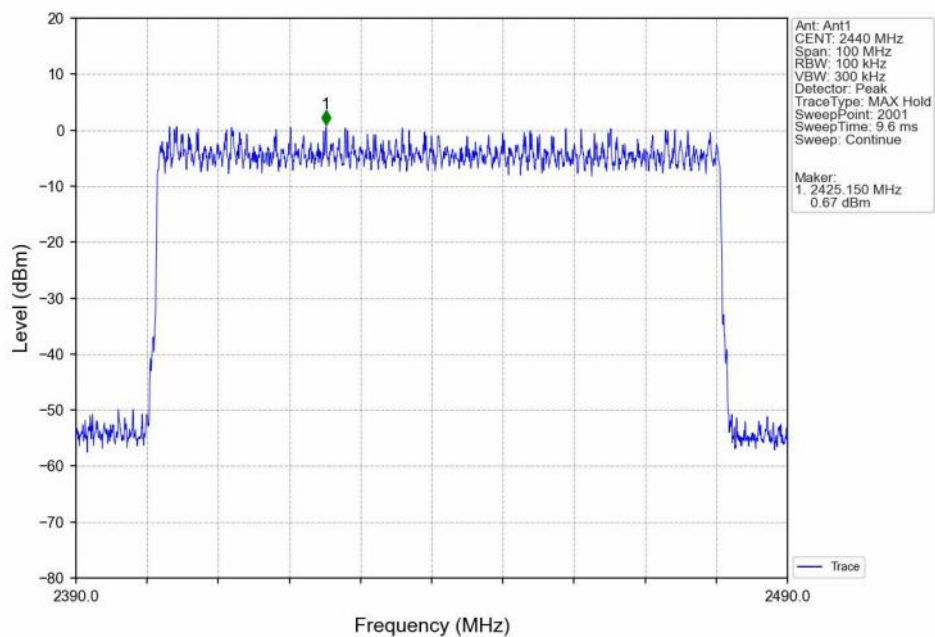
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



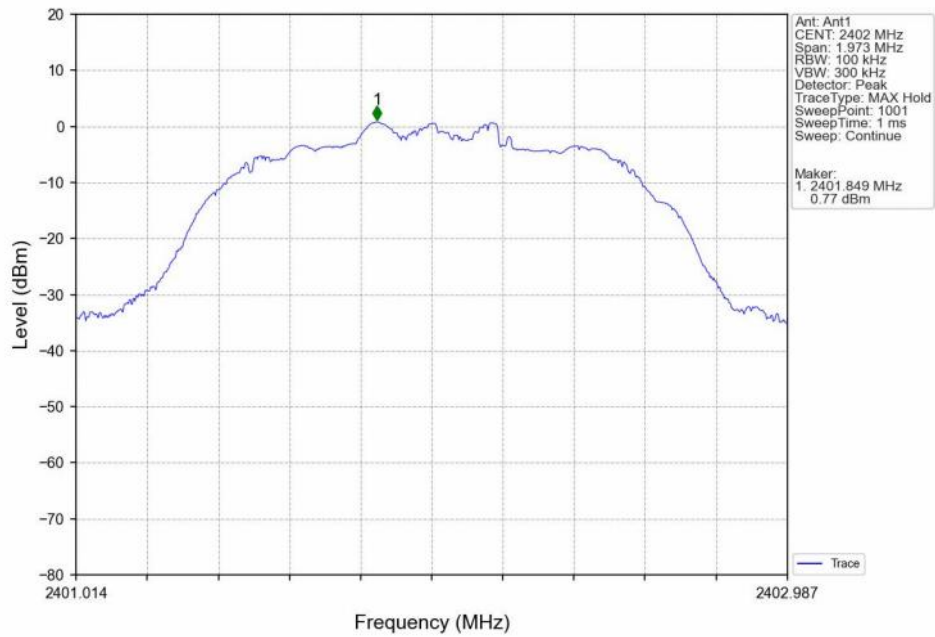
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



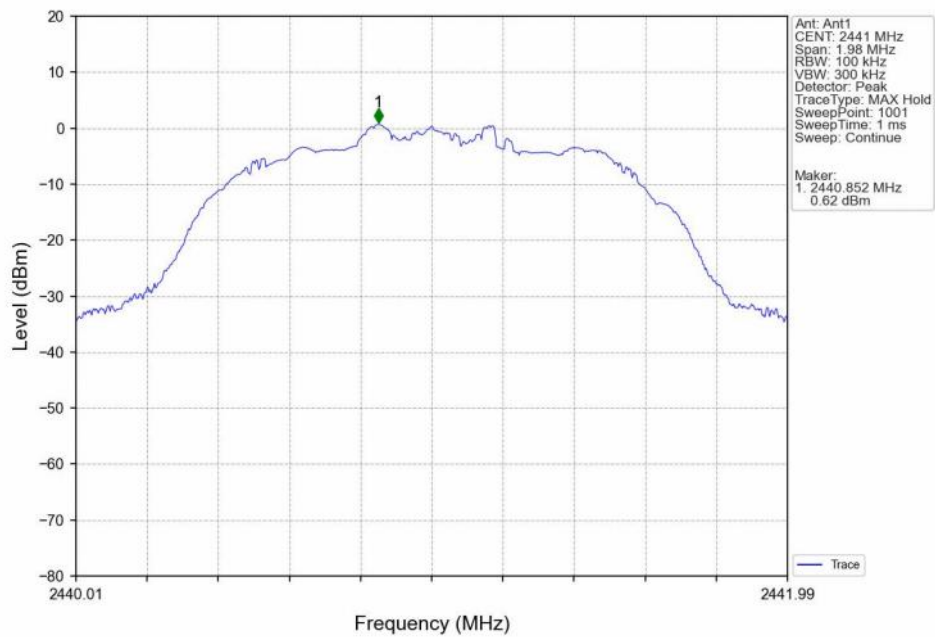
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



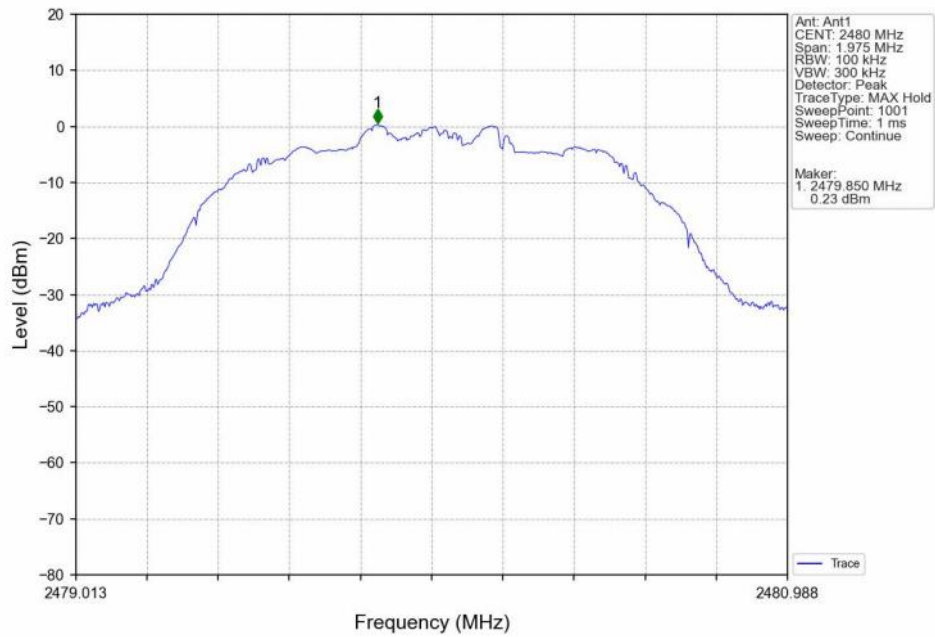
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



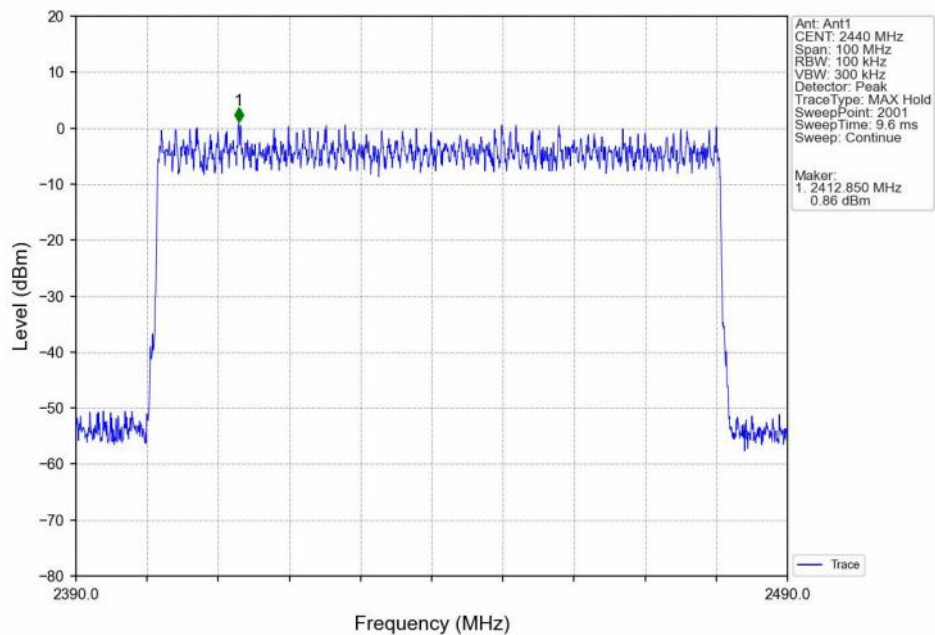
8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV

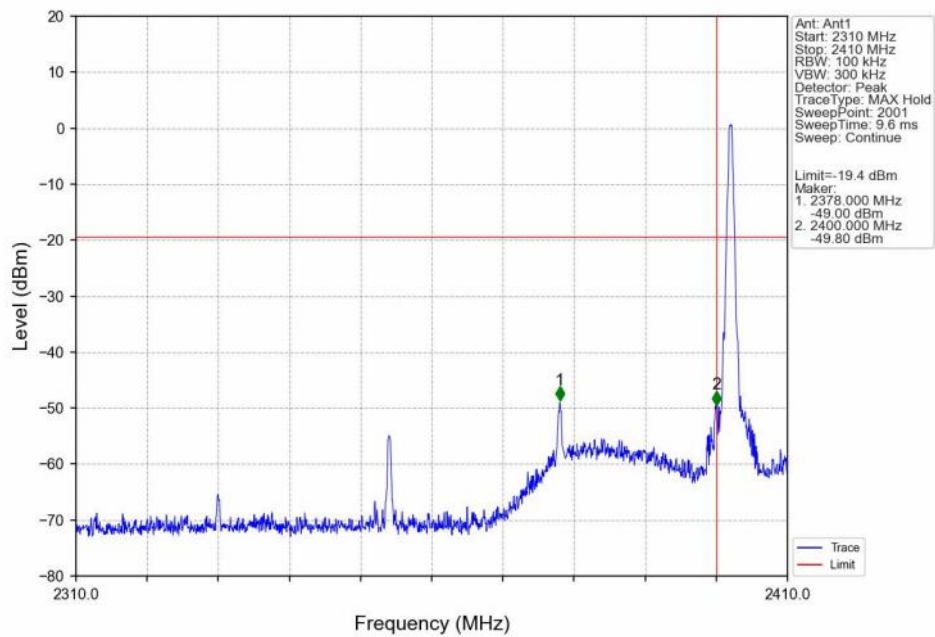


8DPSK\_3DH5\_HOPP\_Ant1\_NTNV

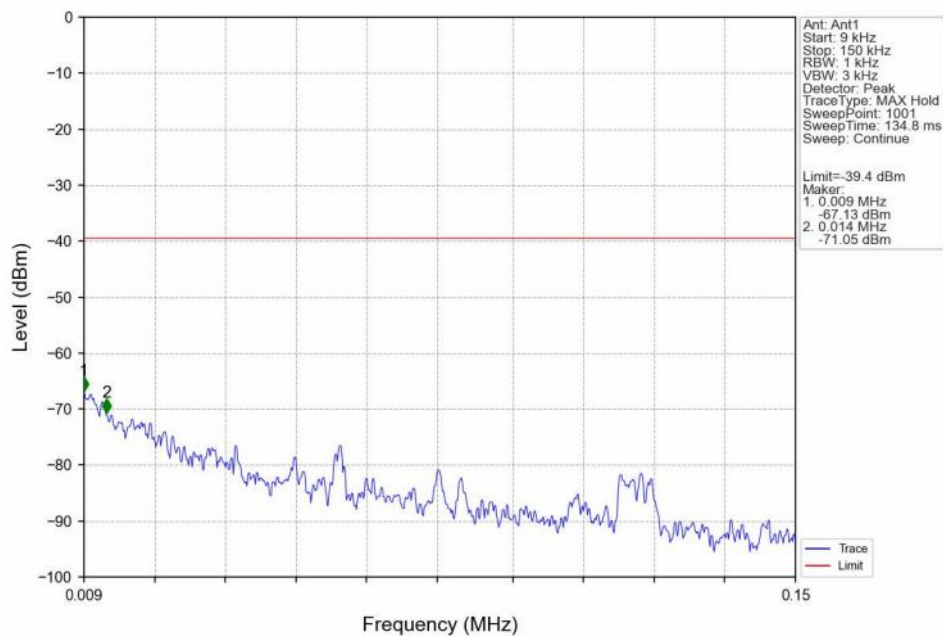


## 6.2.2 CSE

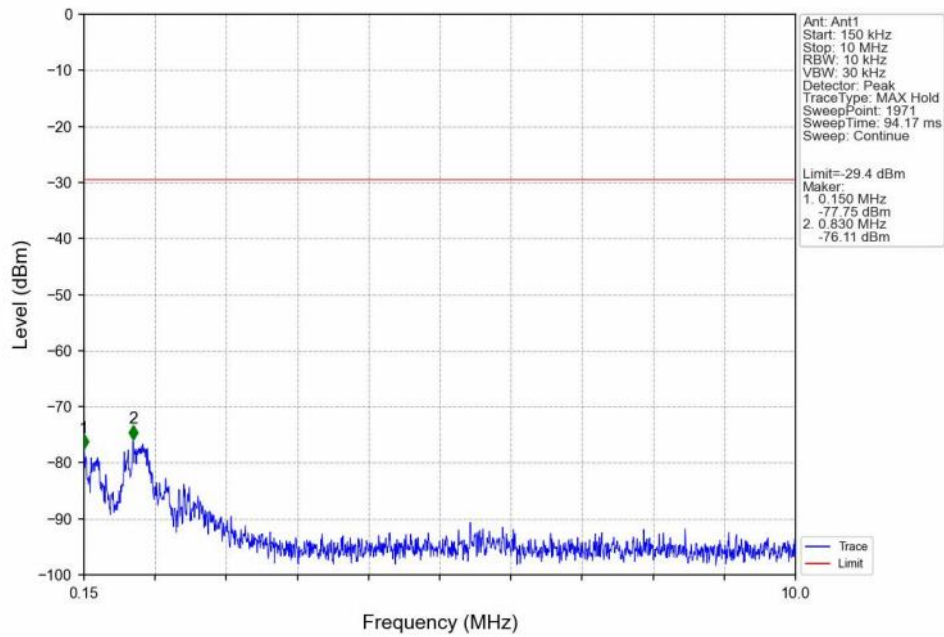
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



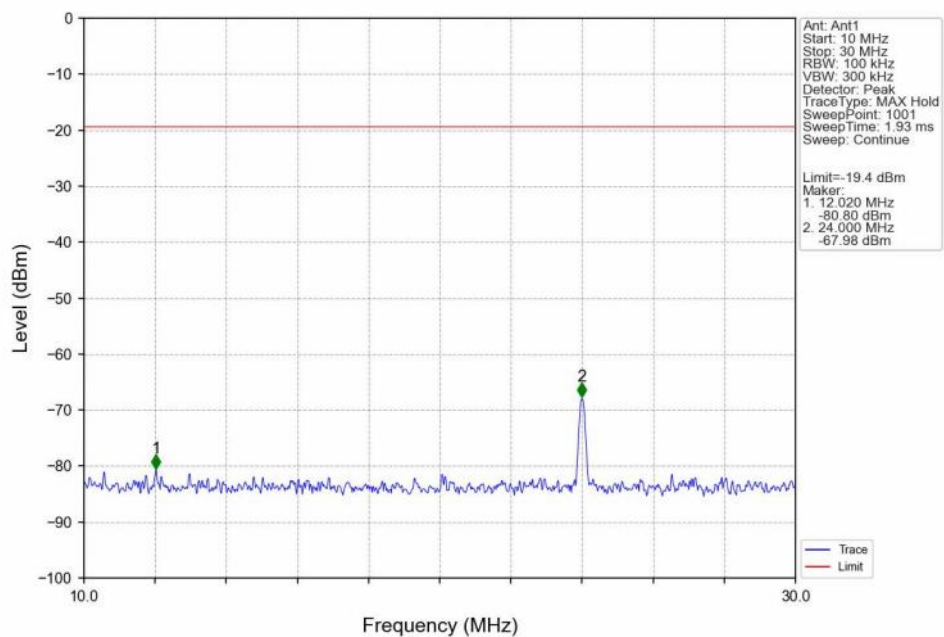
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



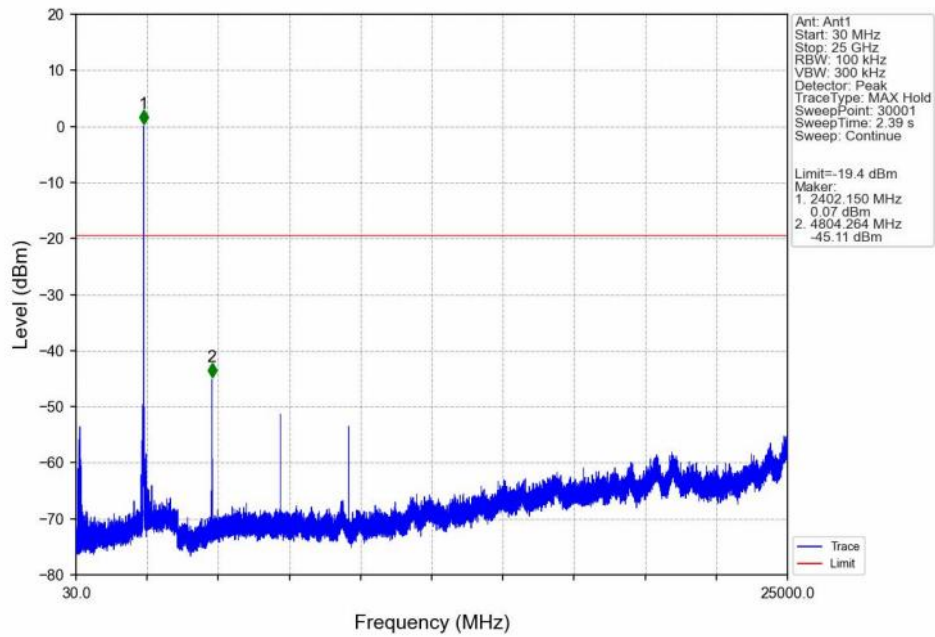
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



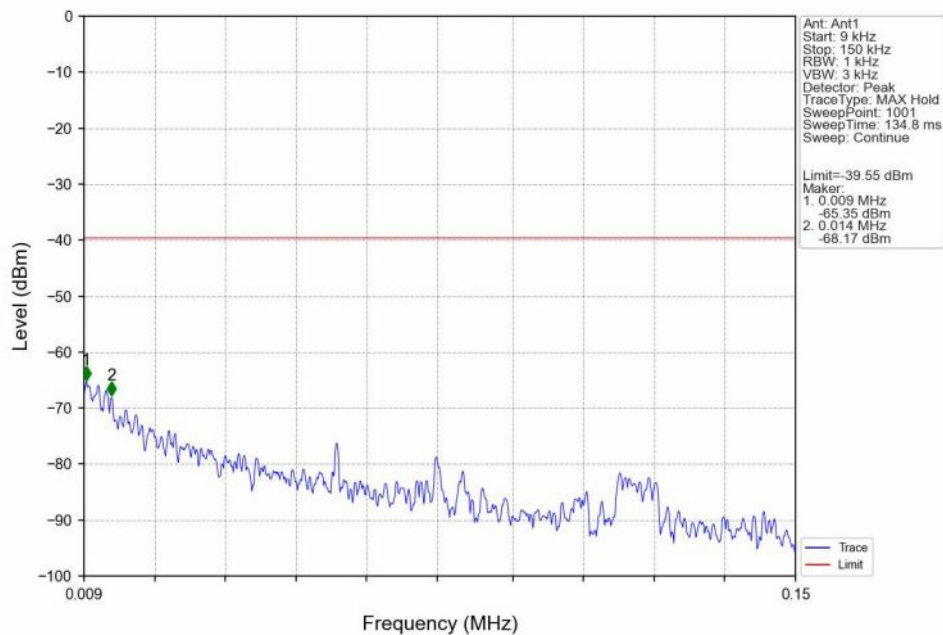
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



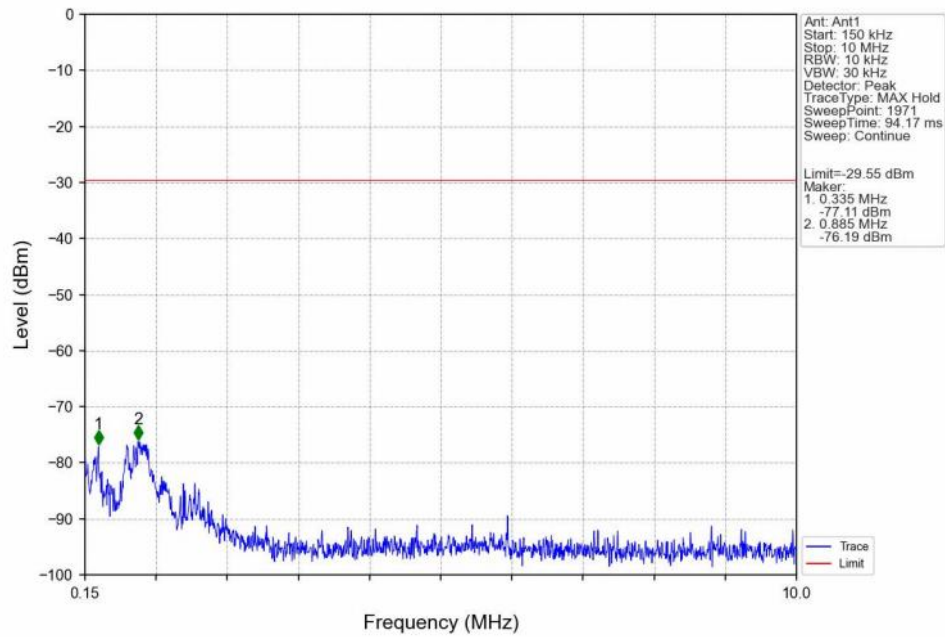
## GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



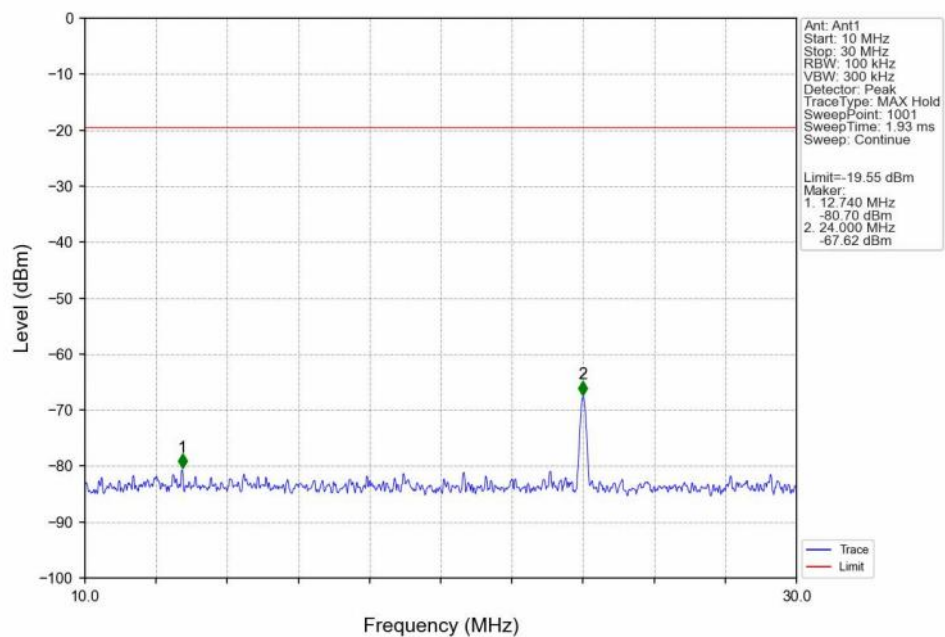
## GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



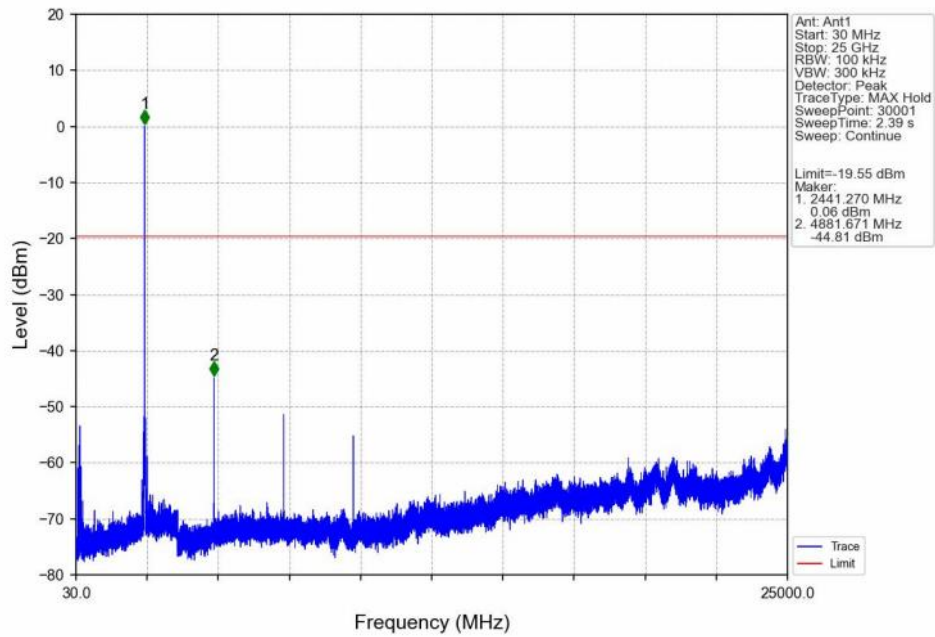
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



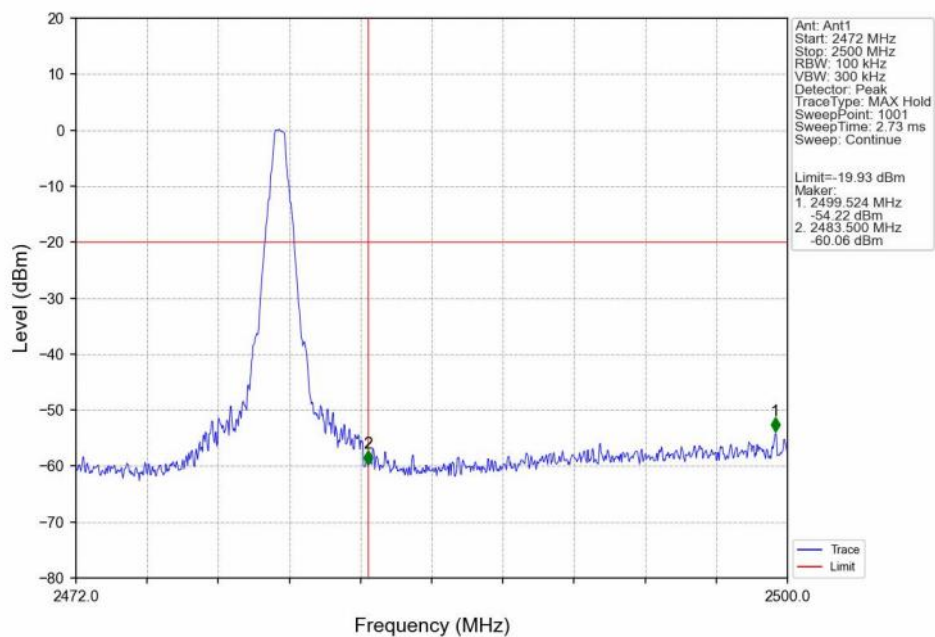
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



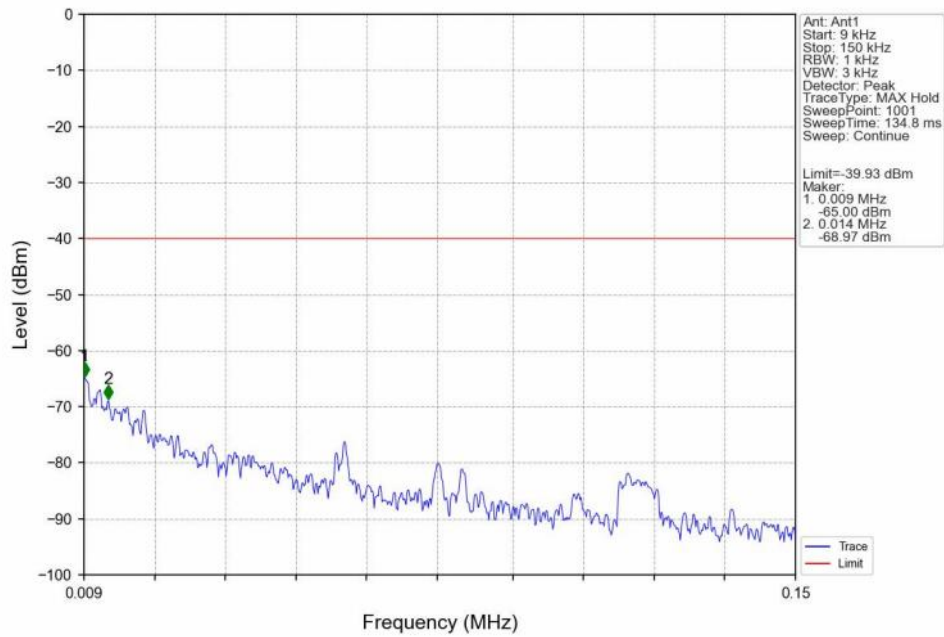
## GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



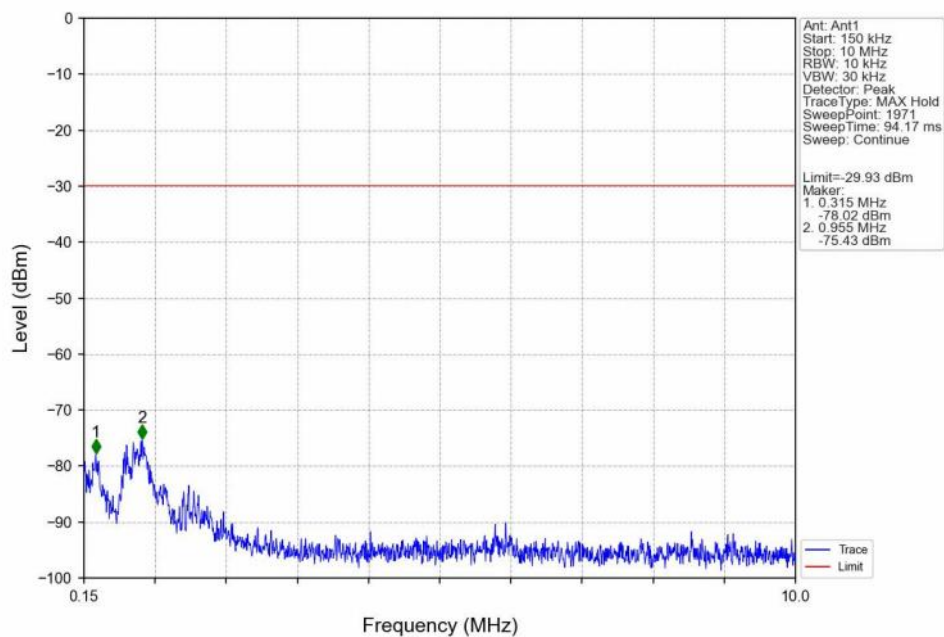
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



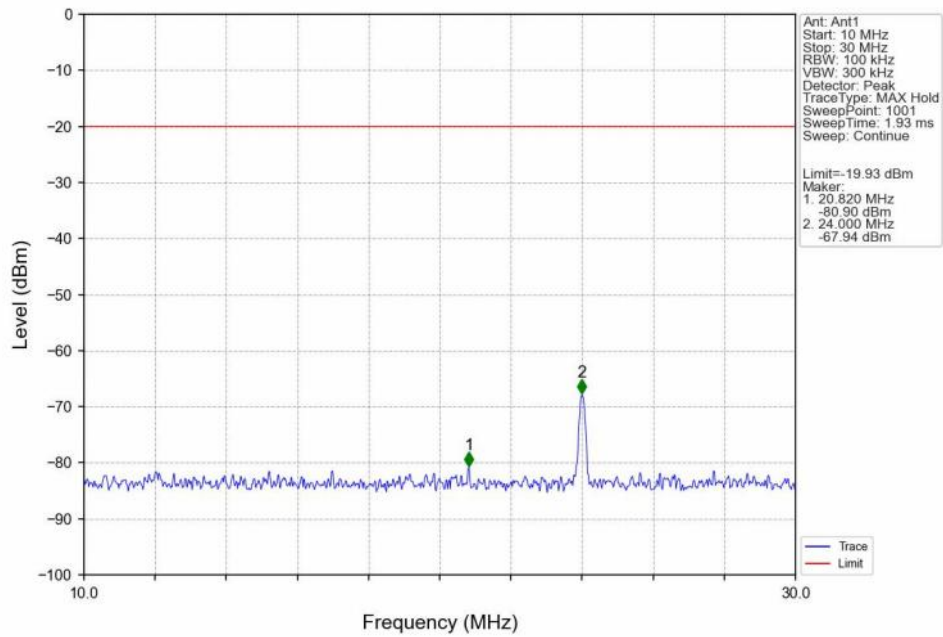
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



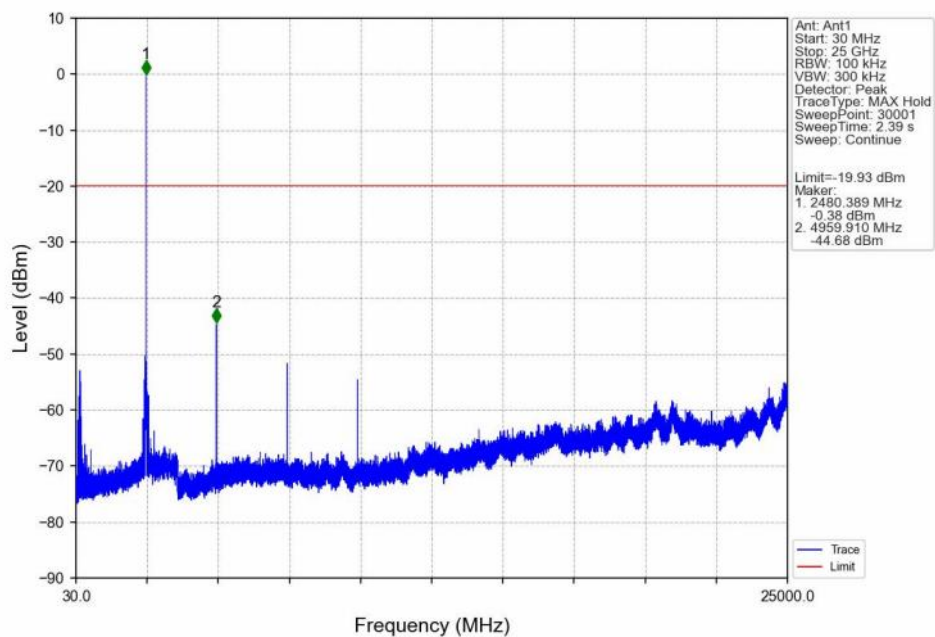
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



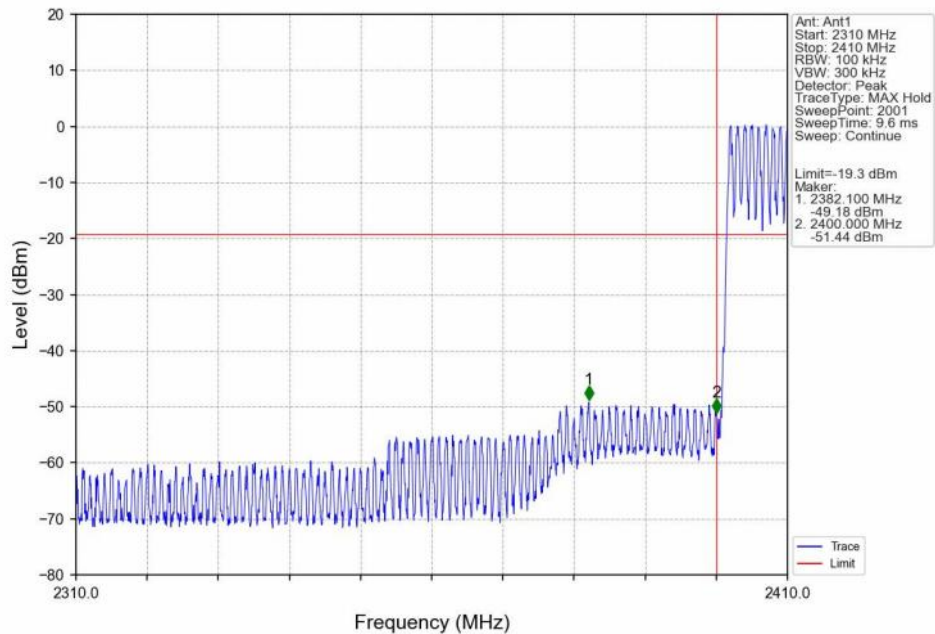
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



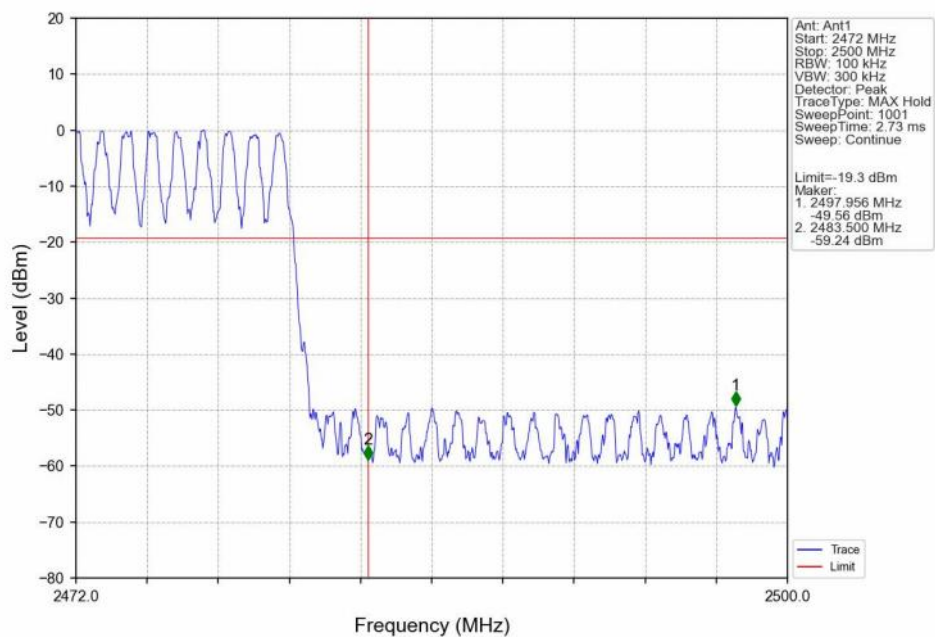
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



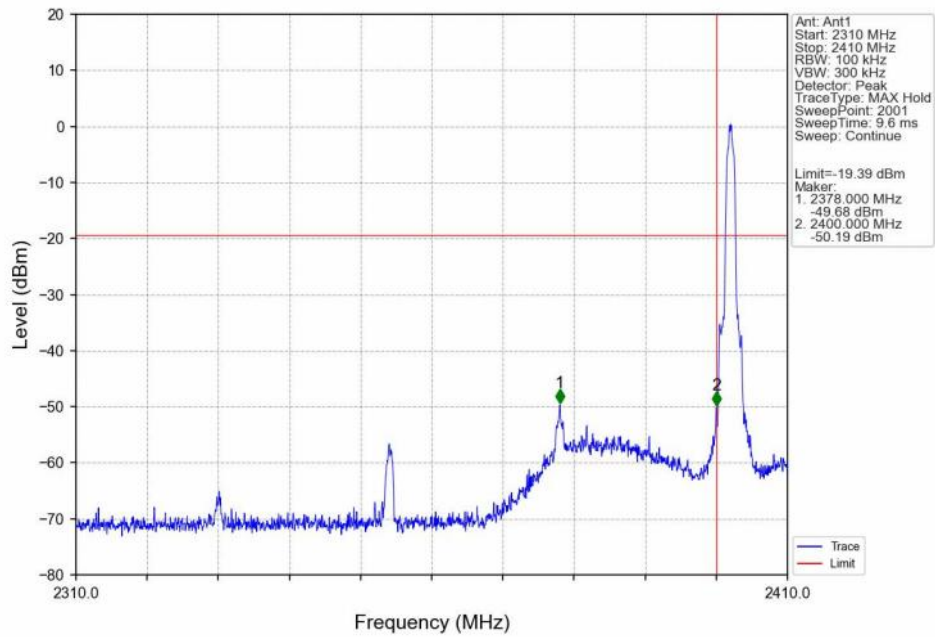
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



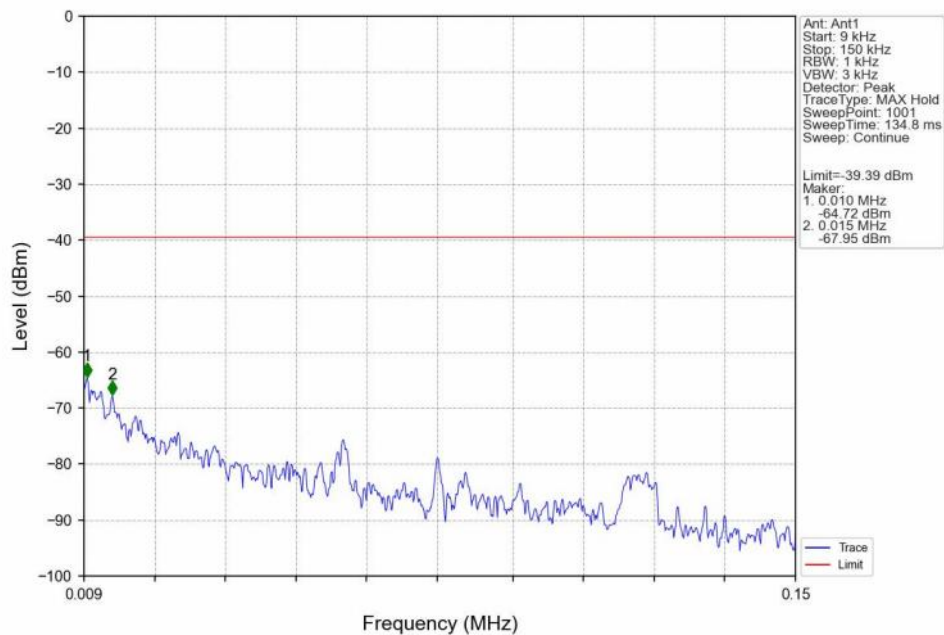
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



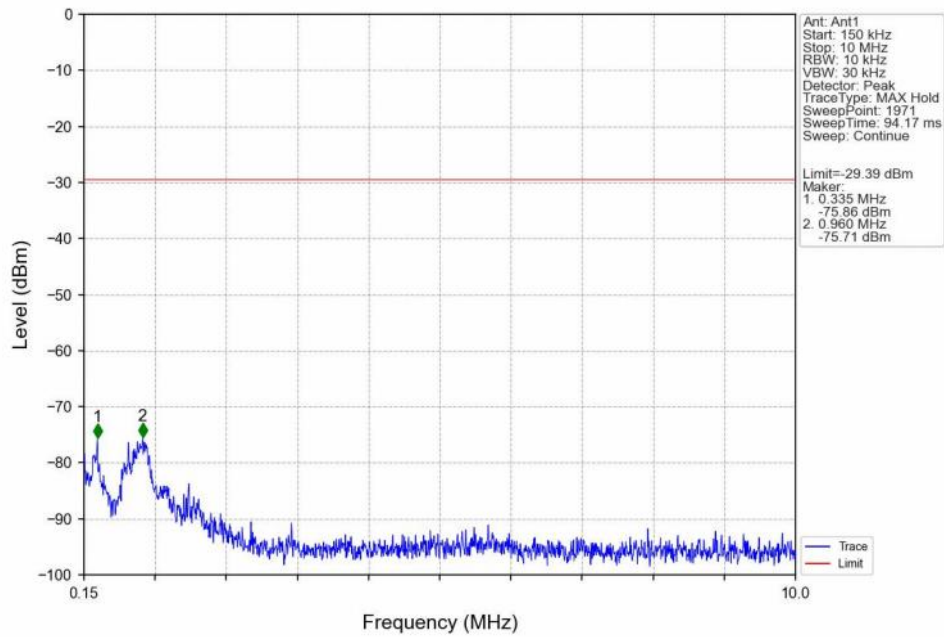
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



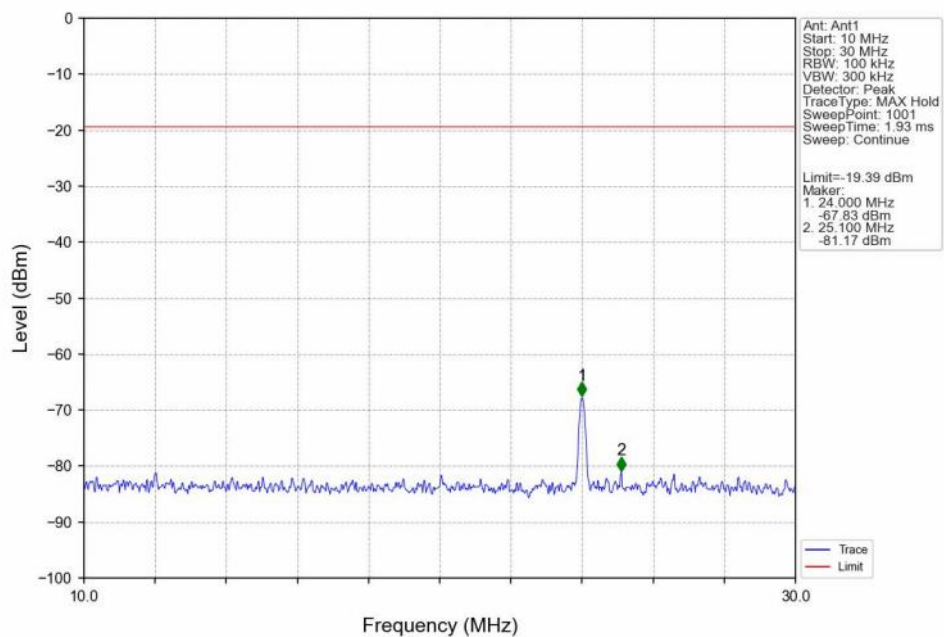
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



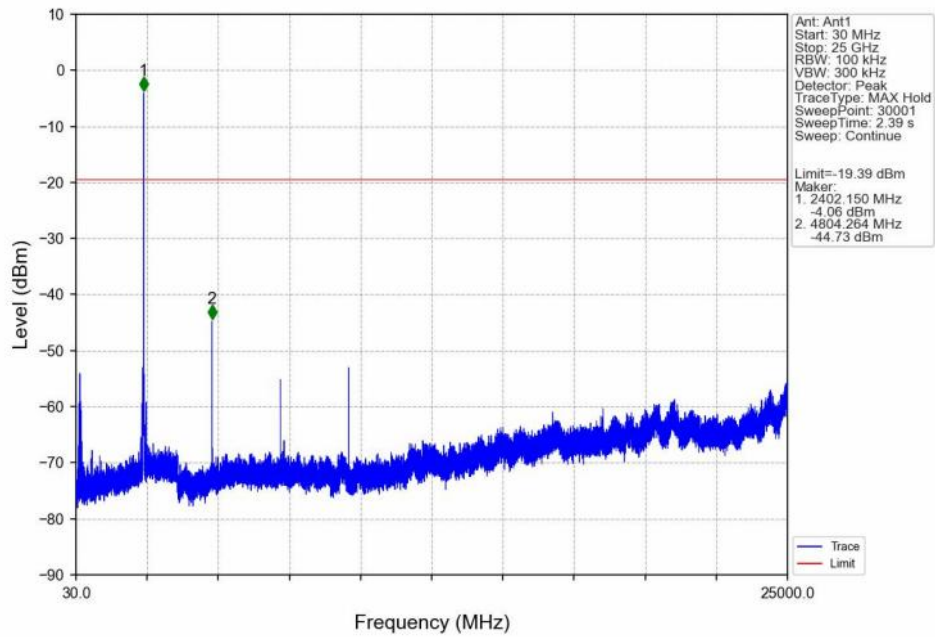
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



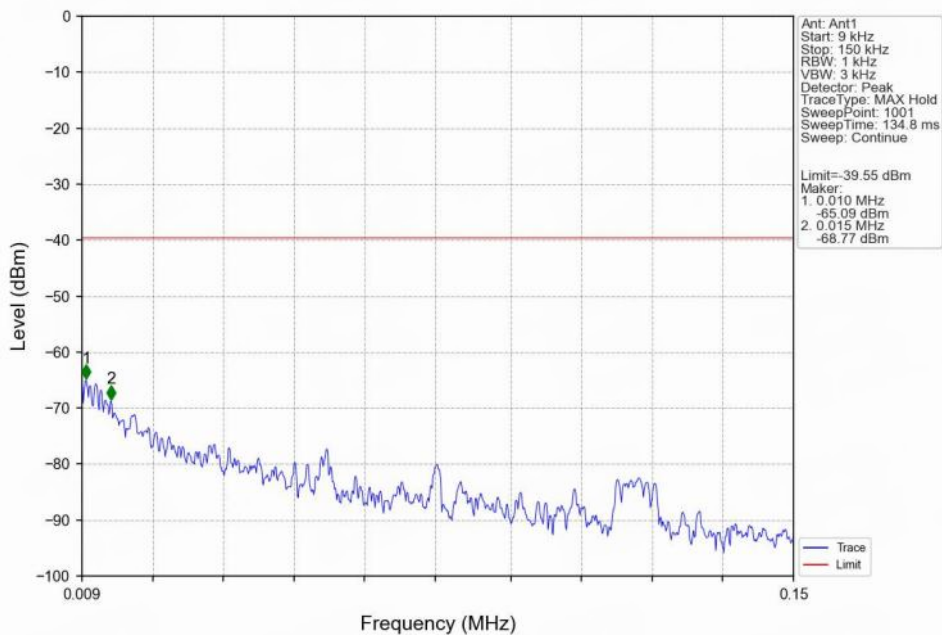
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



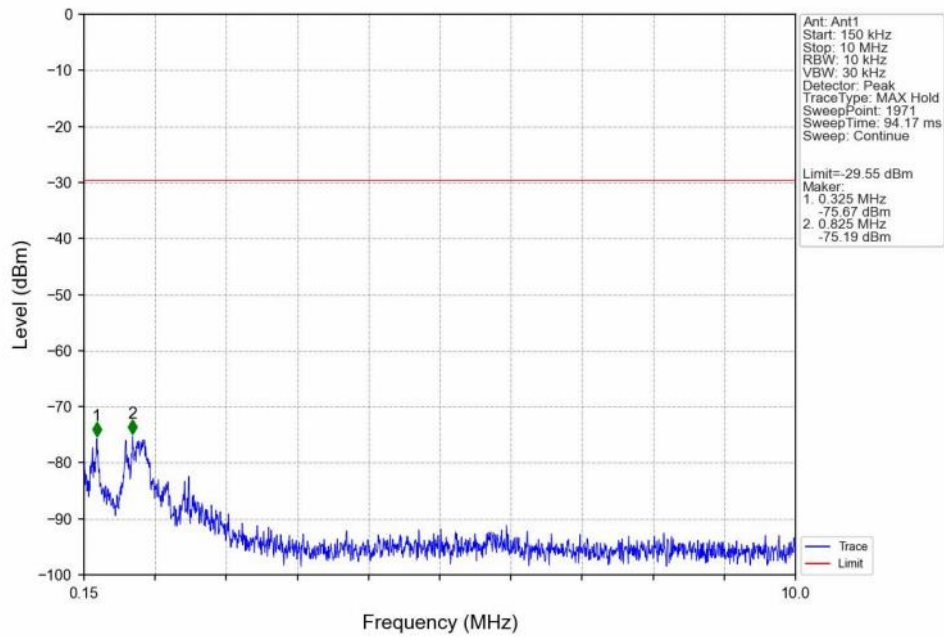
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



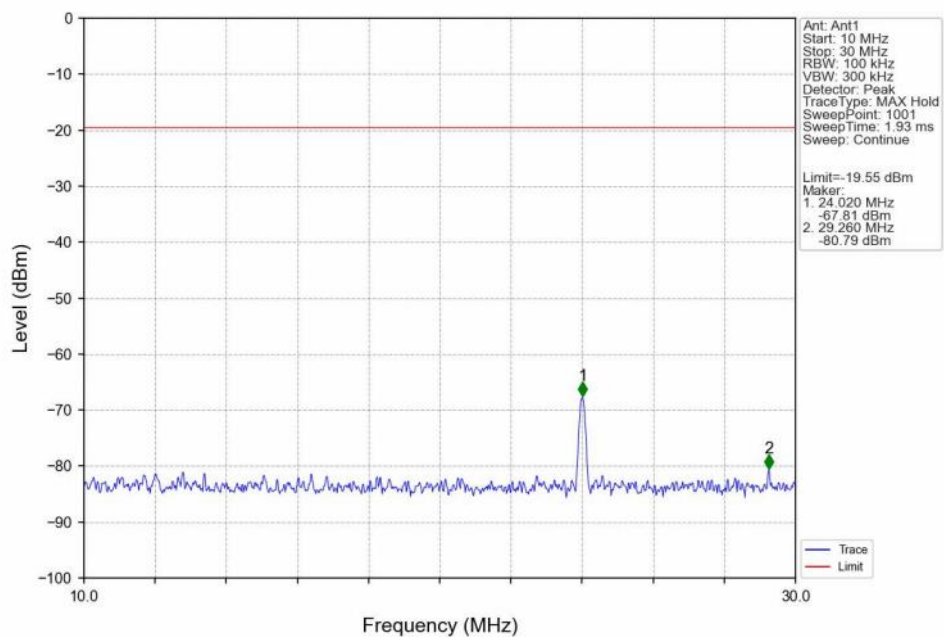
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



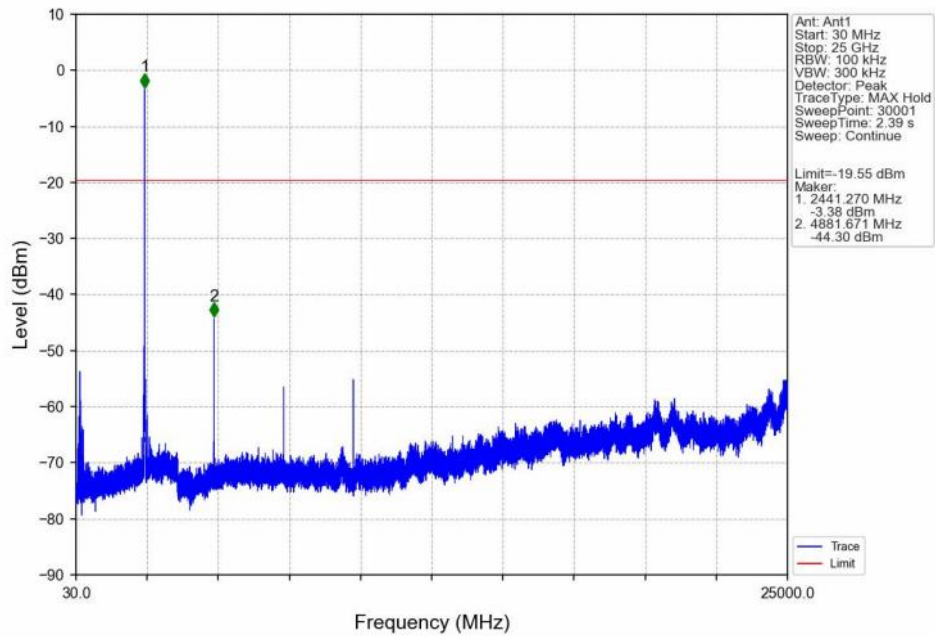
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



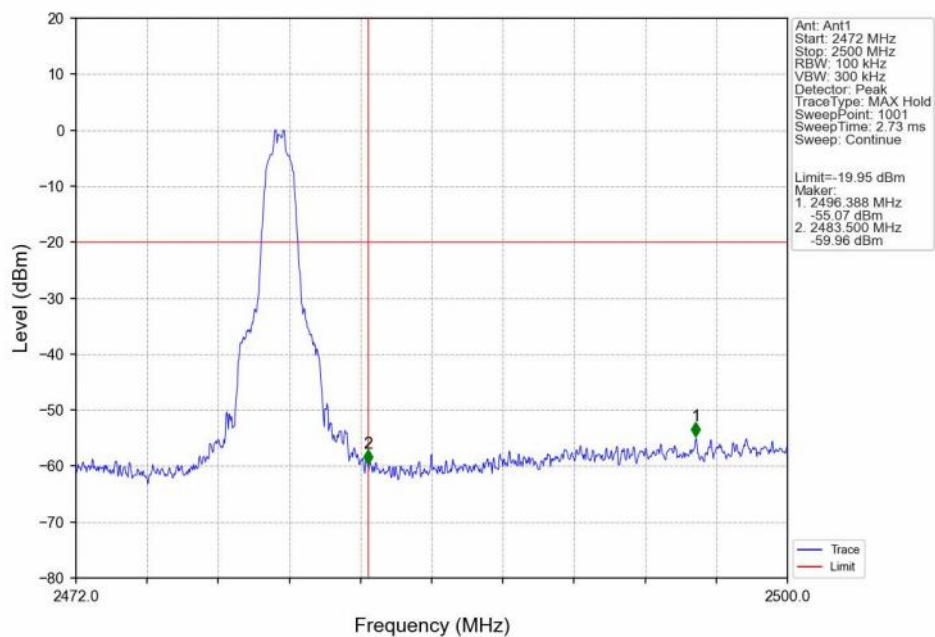
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



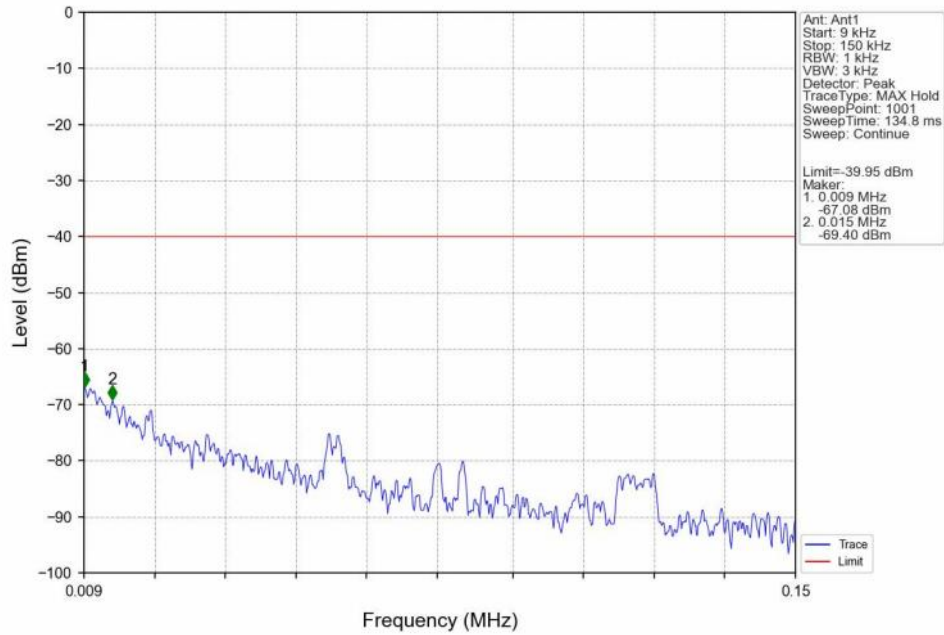
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



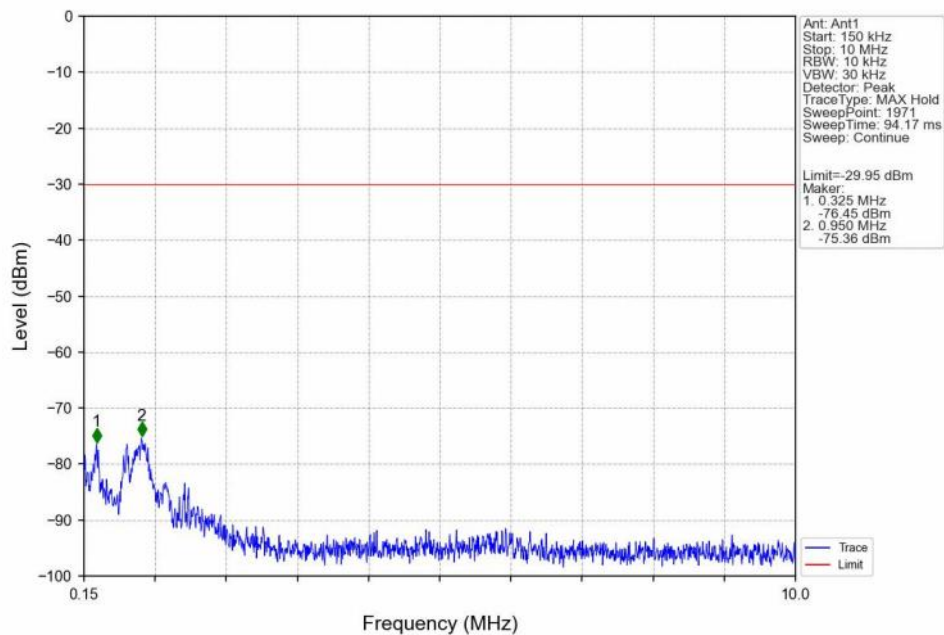
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



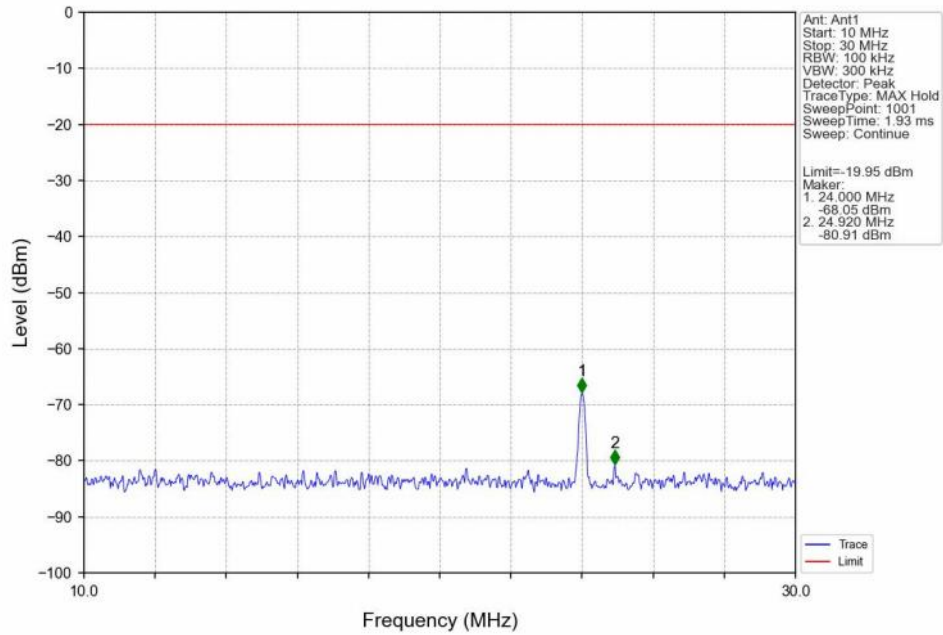
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



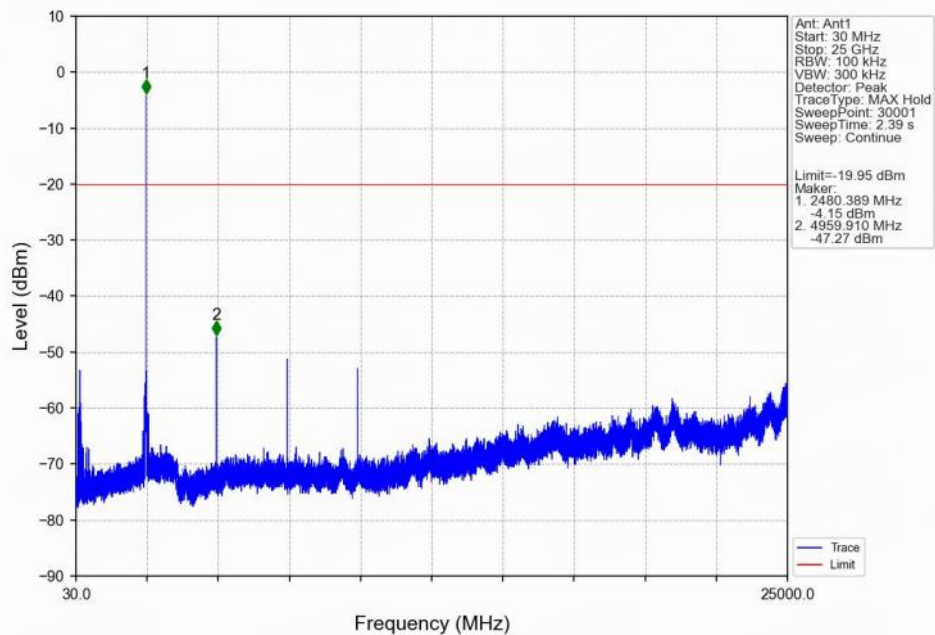
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



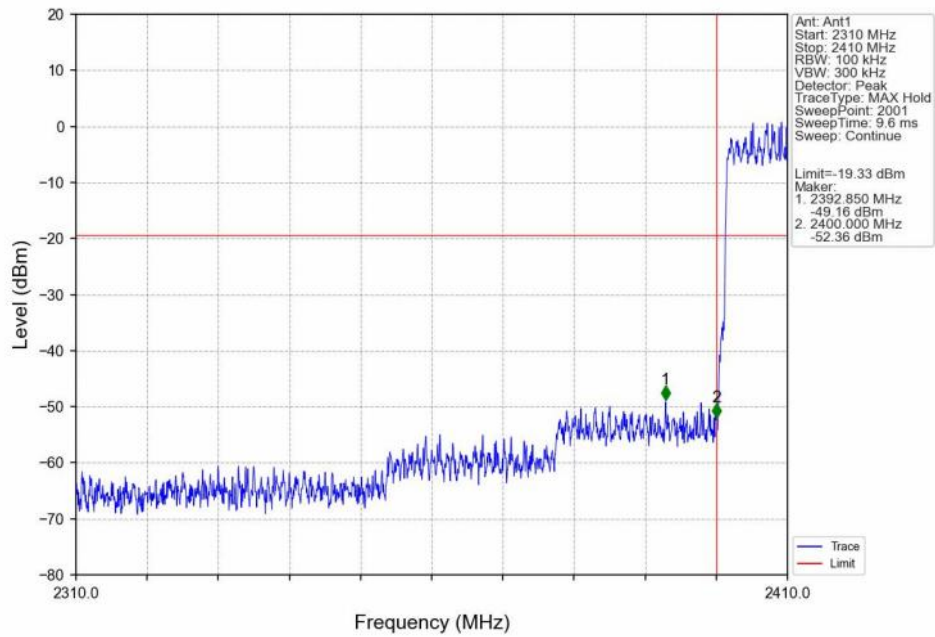
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



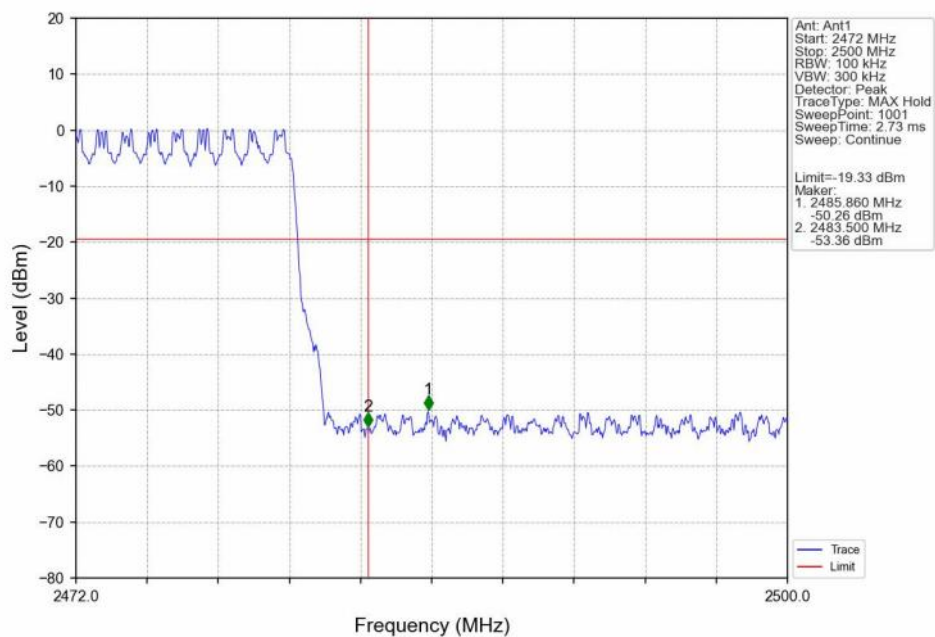
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



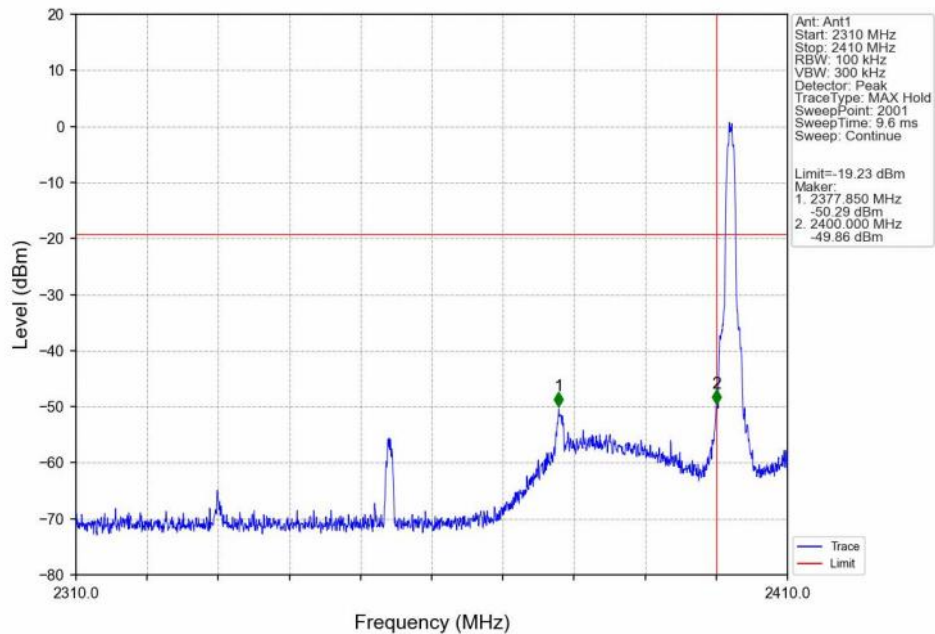
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



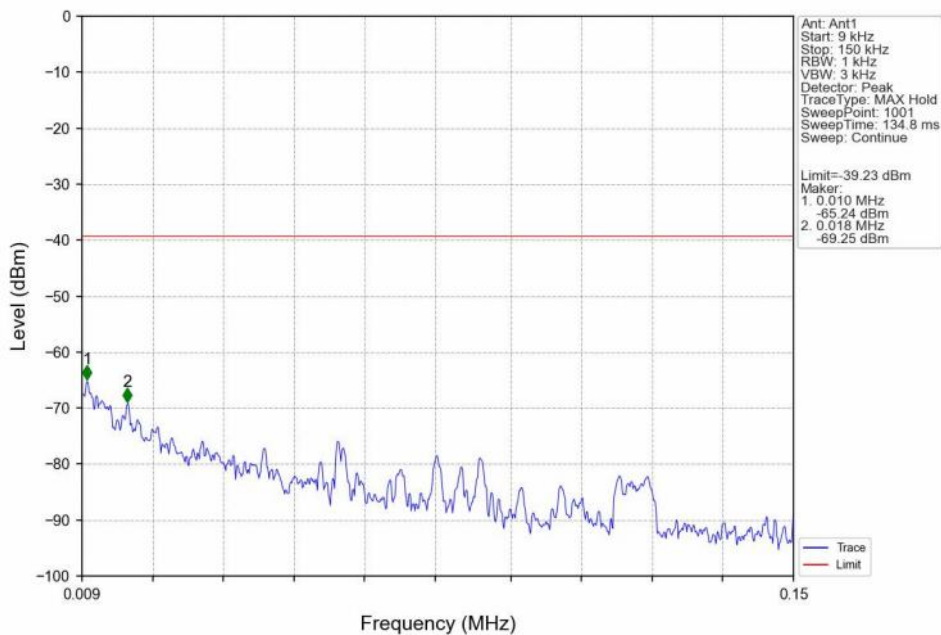
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



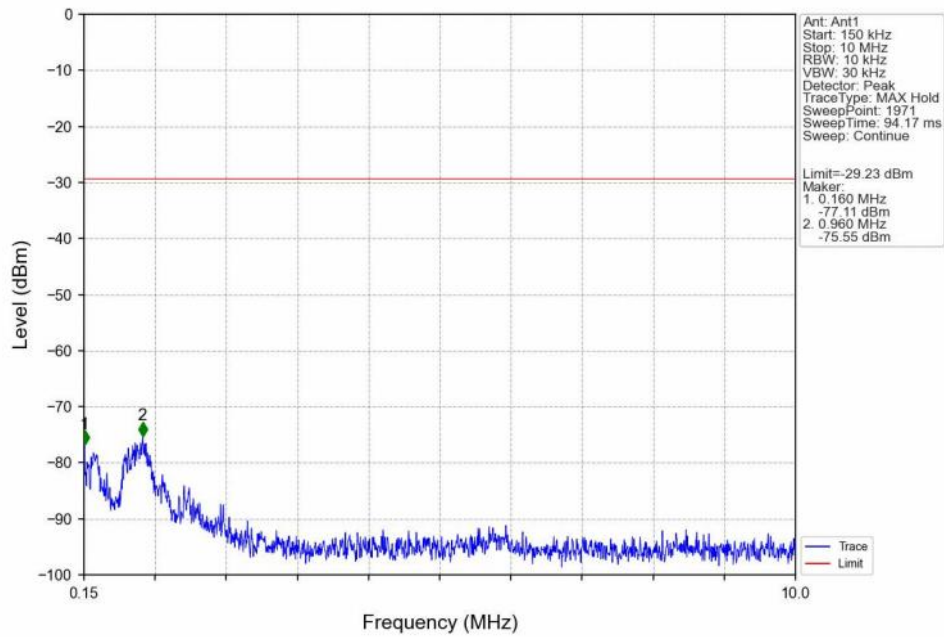
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



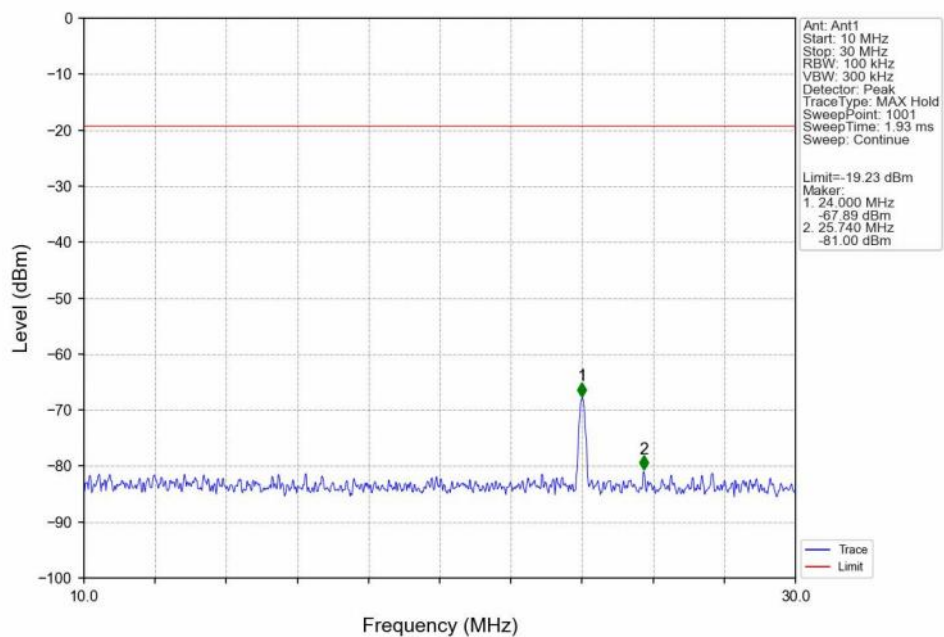
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



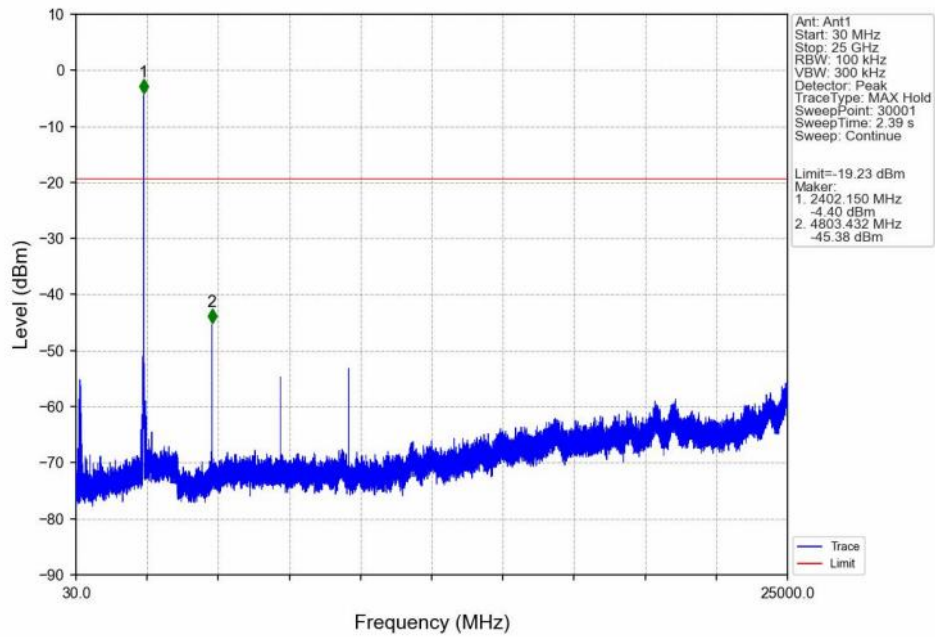
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



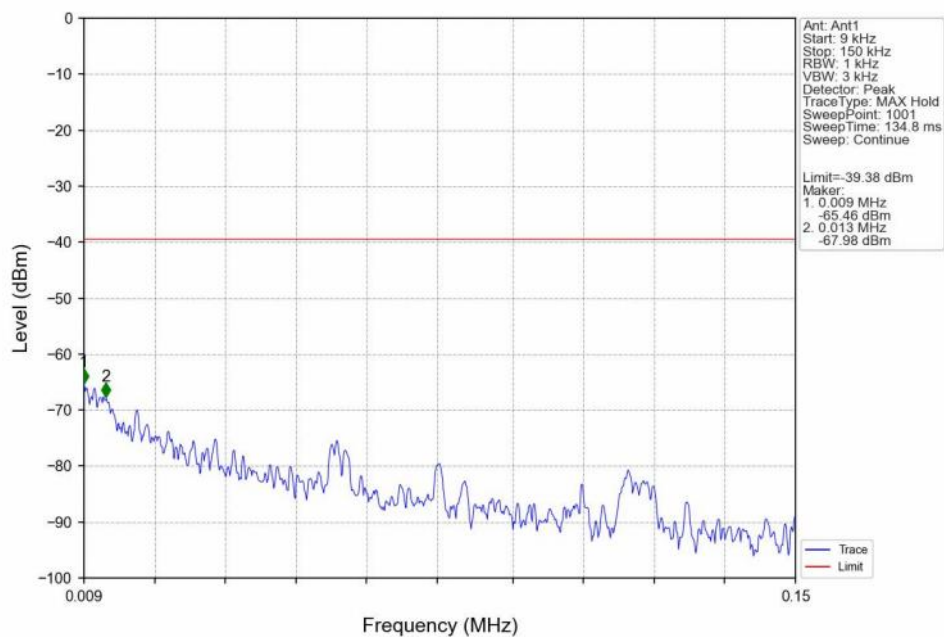
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



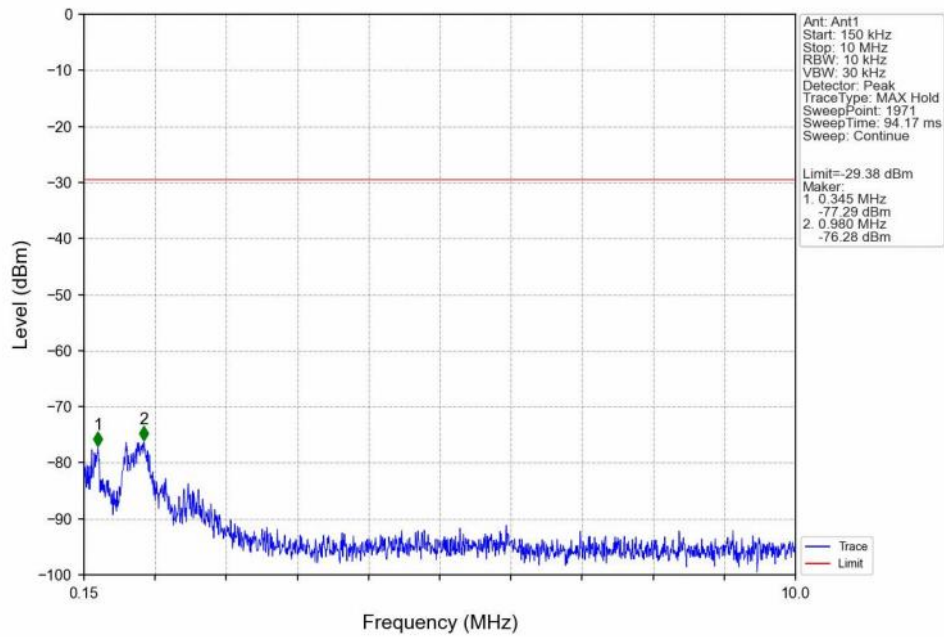
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



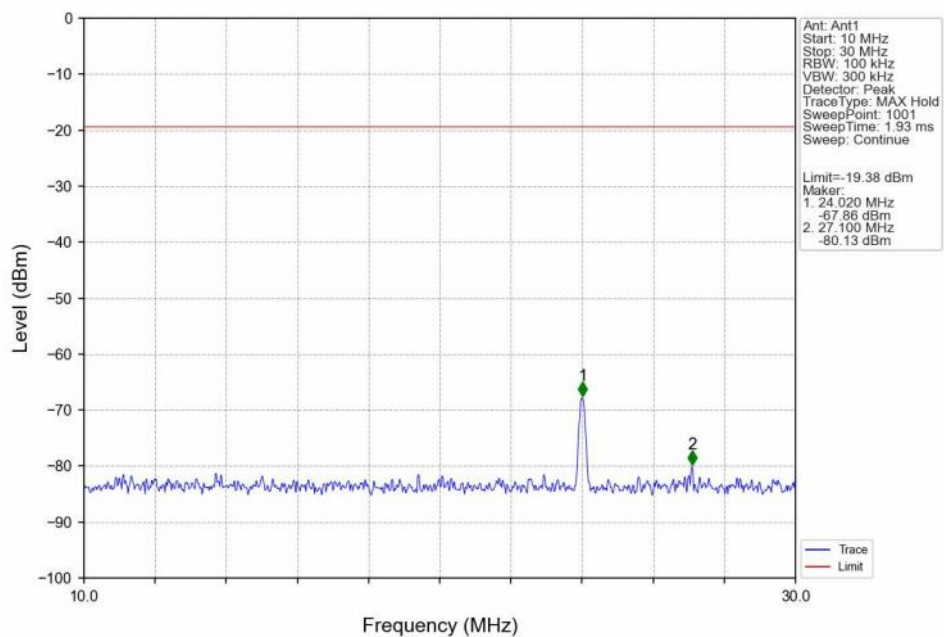
## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



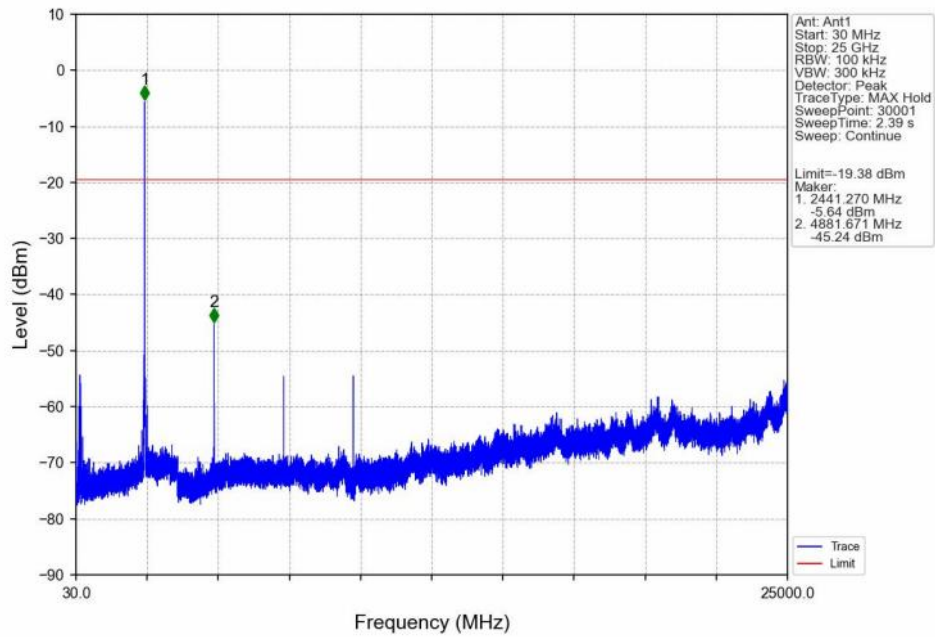
## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



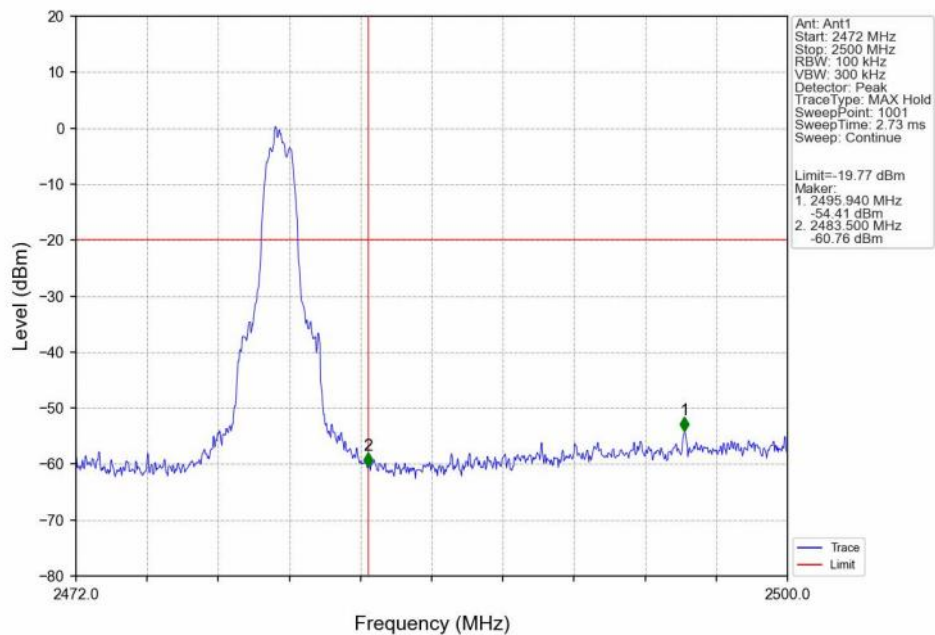
## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



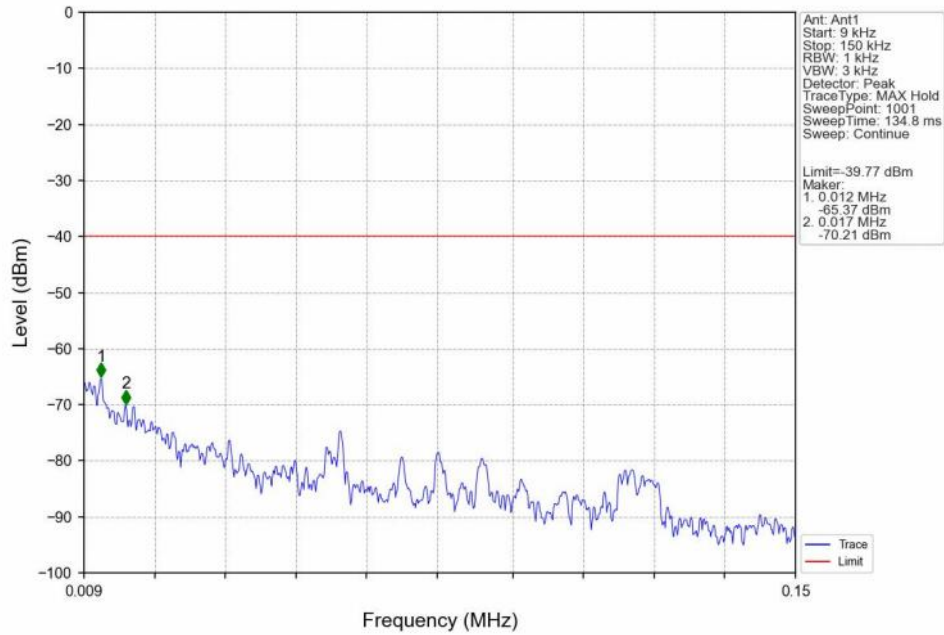
## 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



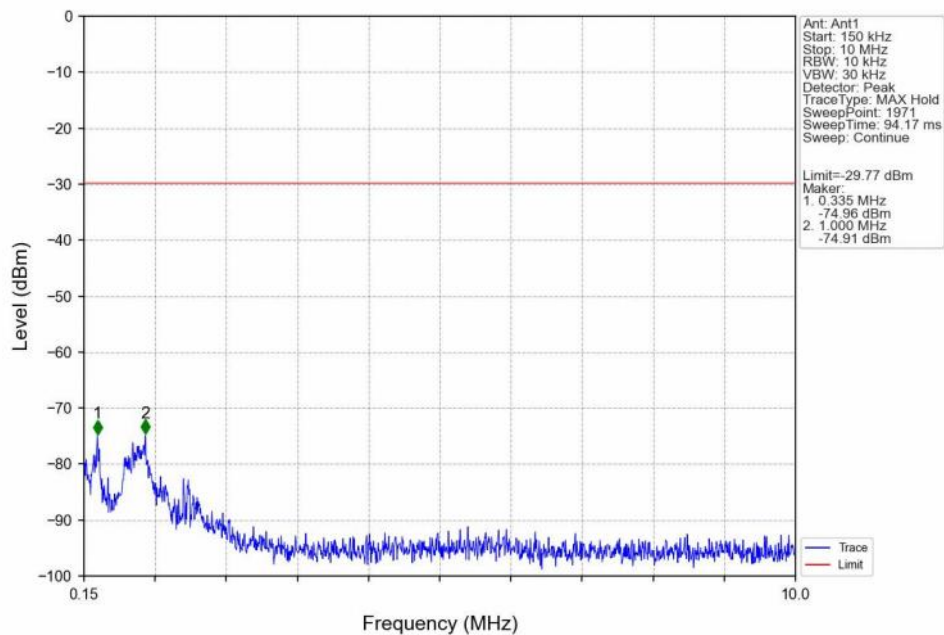
## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



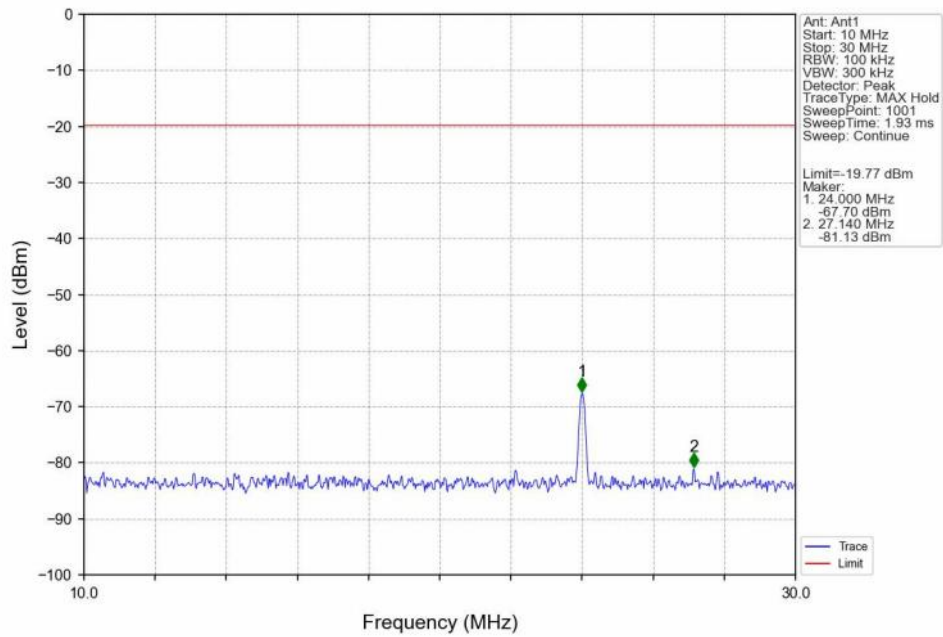
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



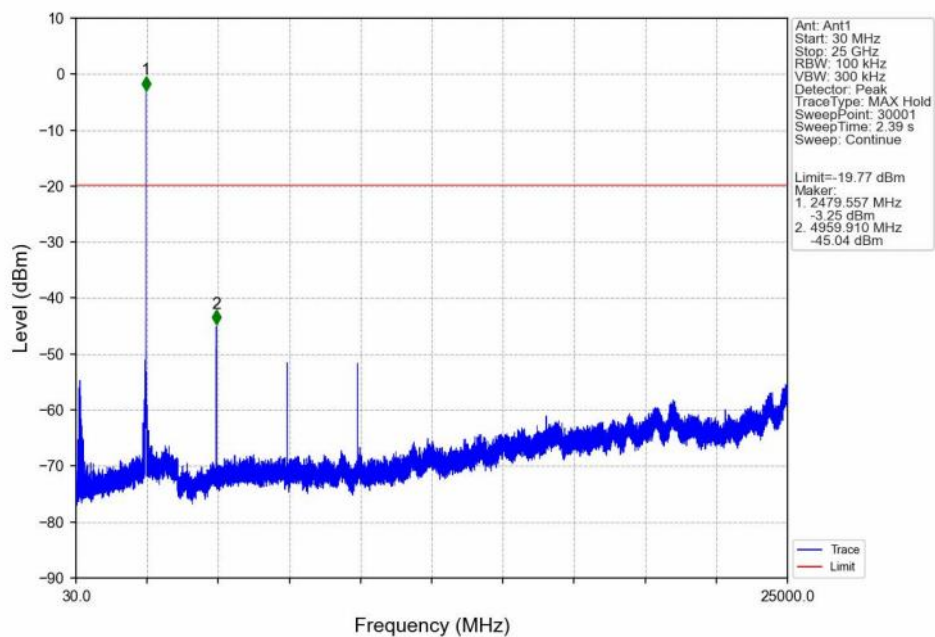
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



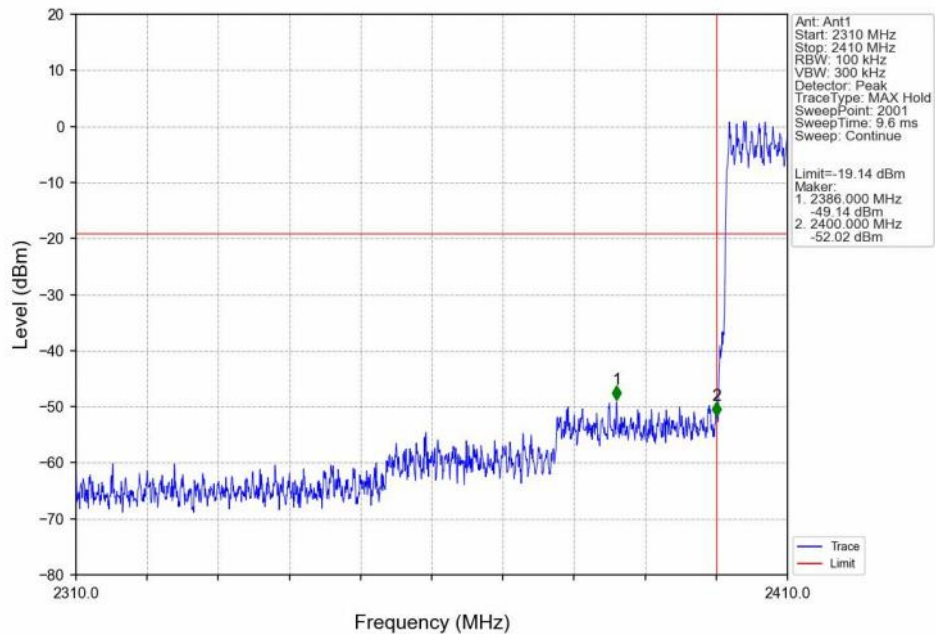
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



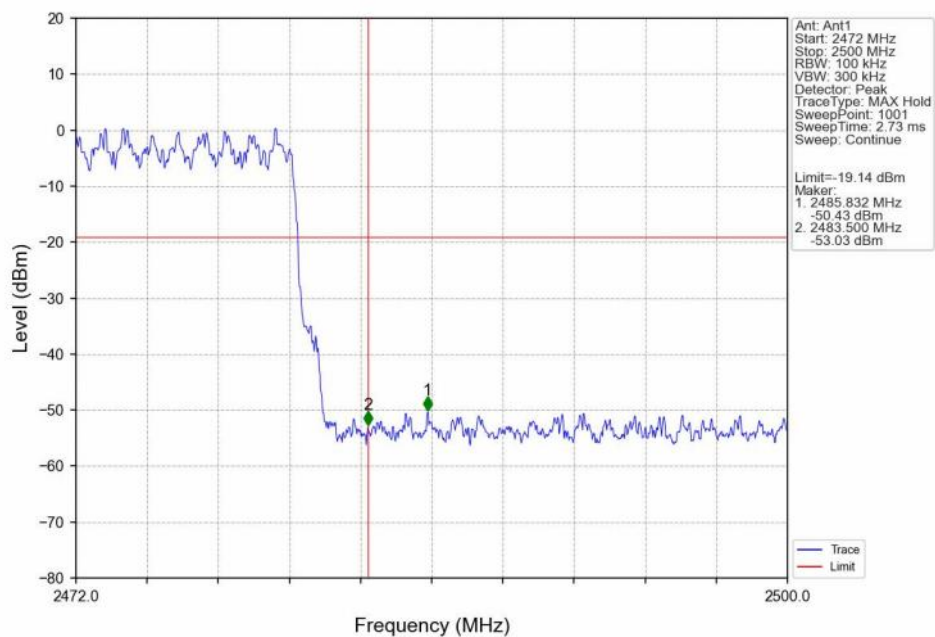
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV



## 7. Form731

### 7.1 Test Result

#### 7.1.1 Form731

| Lower Freq (MHz) | High Freq (MHz) | MAX Power (W) | MAX Power (dBm) |
|------------------|-----------------|---------------|-----------------|
| 2402             | 2480            | 0.0016        | 1.94            |



BTF Testing Lab (Shenzhen) Co., Ltd.

Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street,  
Bao'an District, Shenzhen, Guangdong, China

[www.btf-lab.com](http://www.btf-lab.com)

**-- END OF REPORT --**