

# Appendix - BT

## 1. Bandwidth

### 1.1 Test Result

#### 1.1.1 OBW

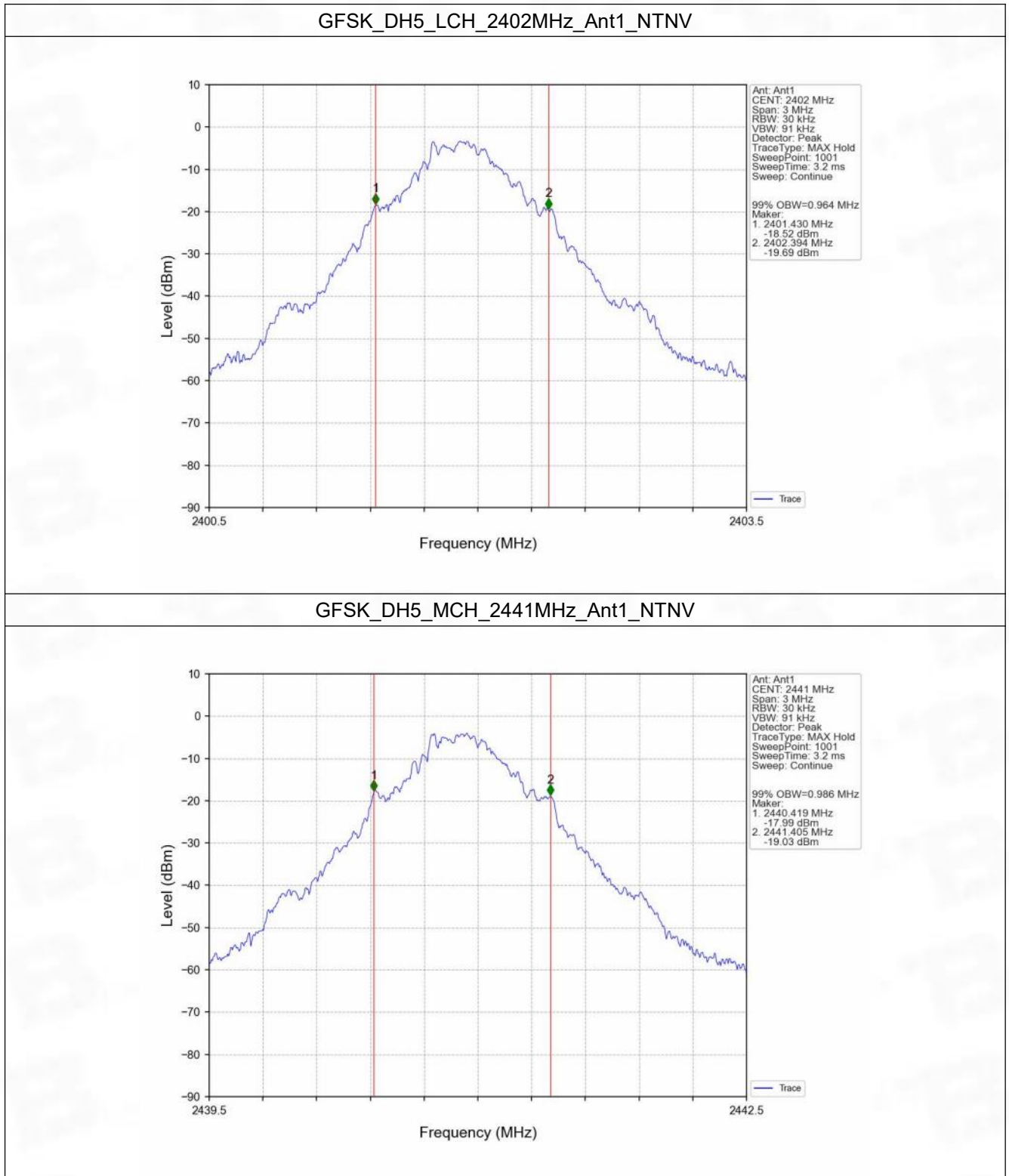
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|           |         |                 |             |     | Result                       | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.964                        | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.986                        | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 1.000                        | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.229                        | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.251                        | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.269                        | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.232                        | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.243                        | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.244                        | /     | Pass    |

#### 1.1.2 20dB BW

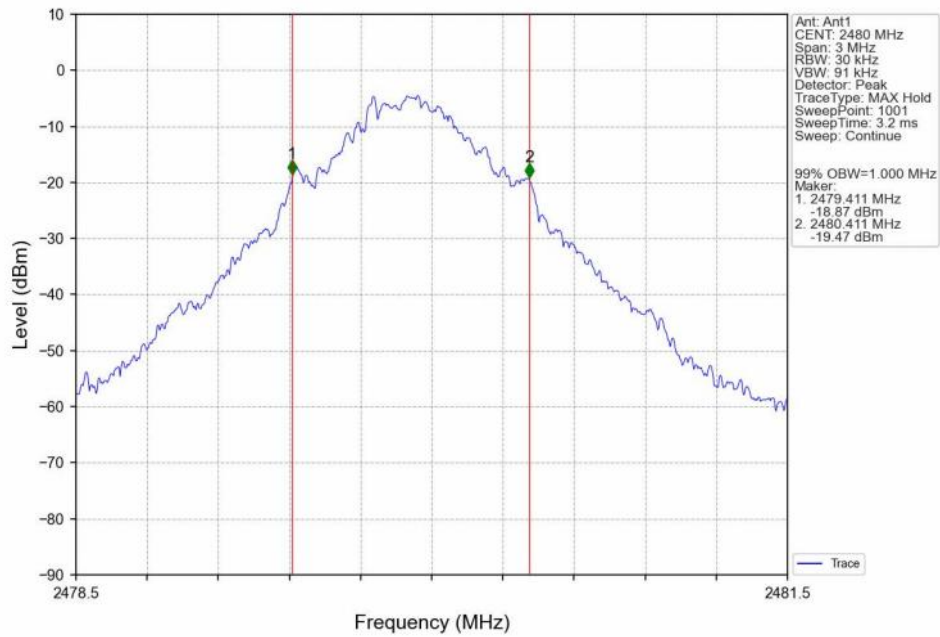
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|           |         |                 |             |     | Result               | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 1.070                | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 1.064                | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 1.082                | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.342                | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.352                | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.383                | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.324                | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.312                | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.301                | /     | Pass    |

## 1.2 Test Graph

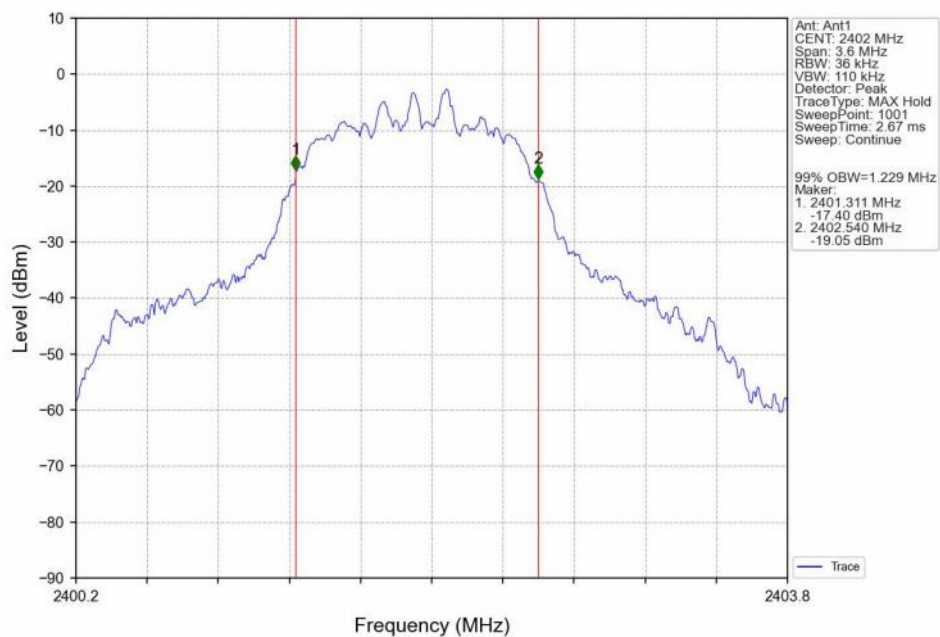
### 1.2.1 OBW



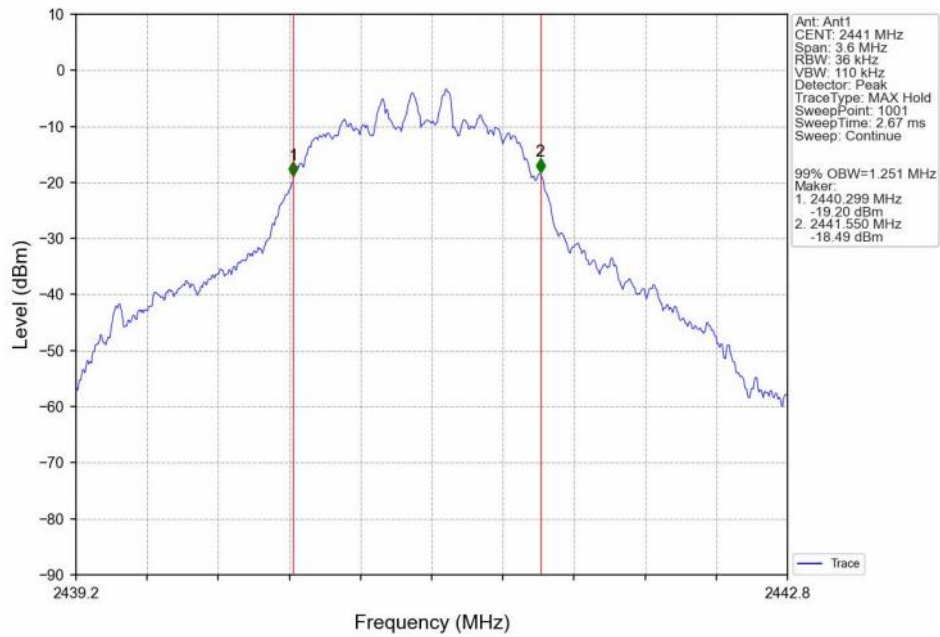
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



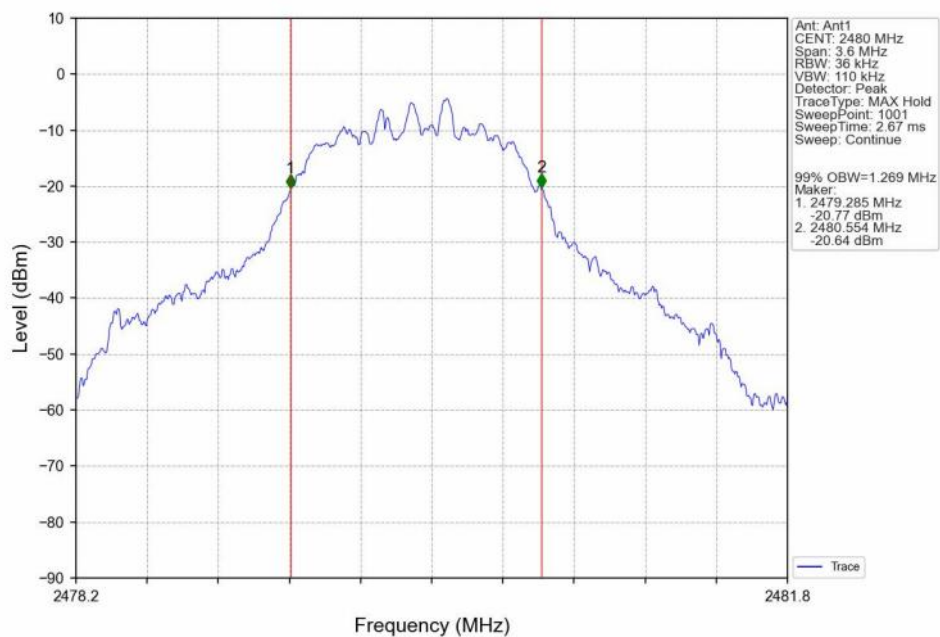
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



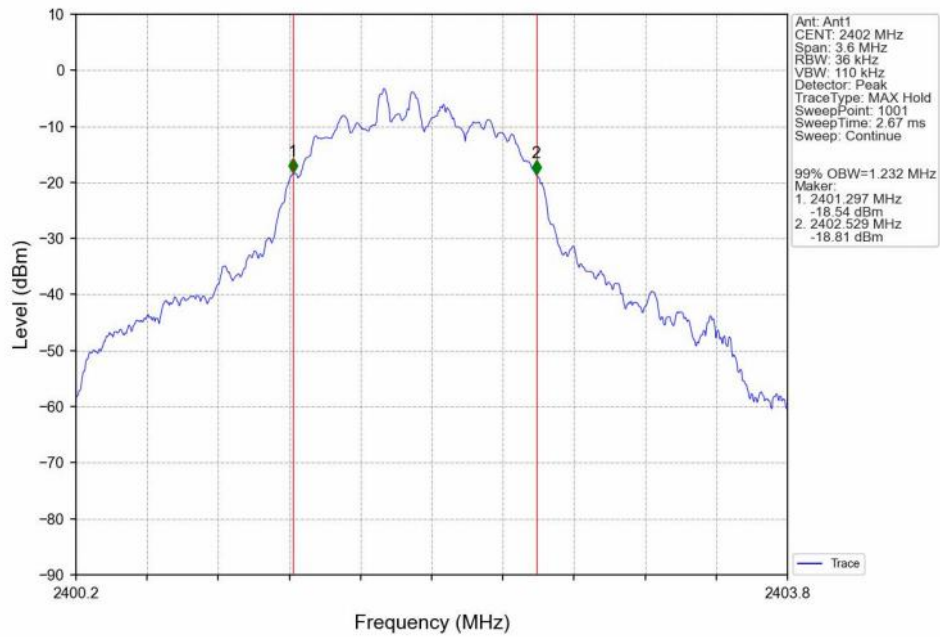
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



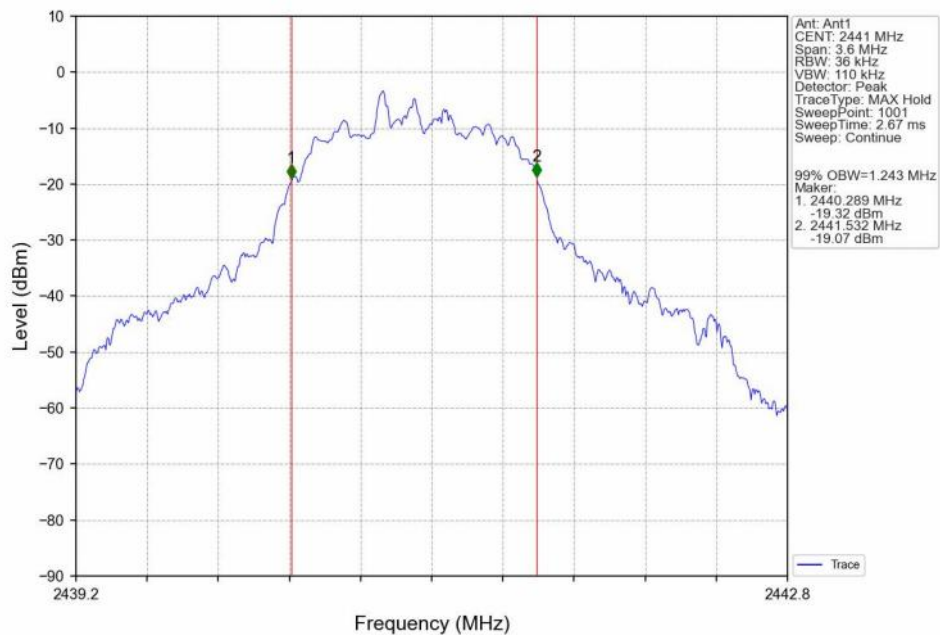
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



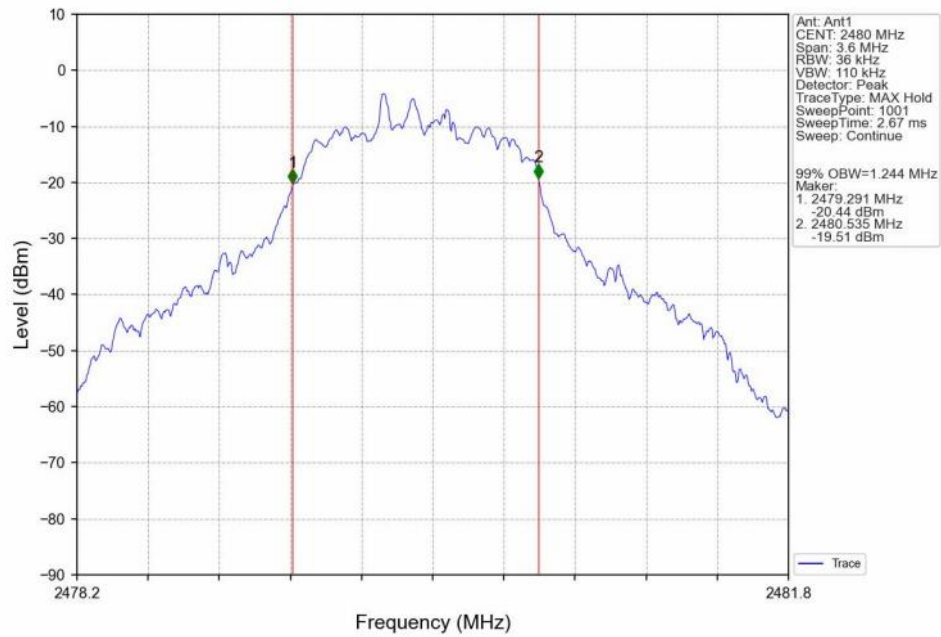
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



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

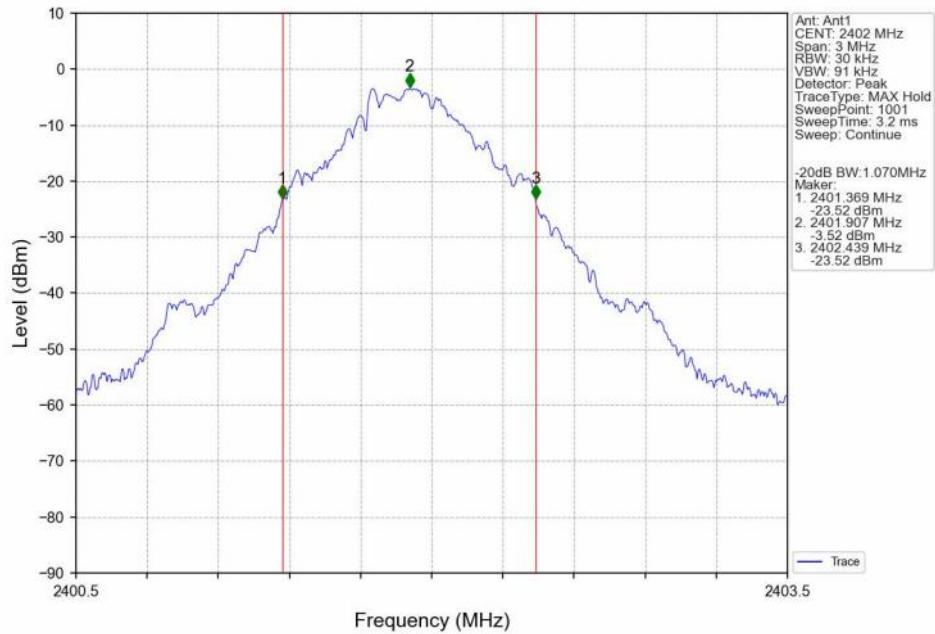


## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV

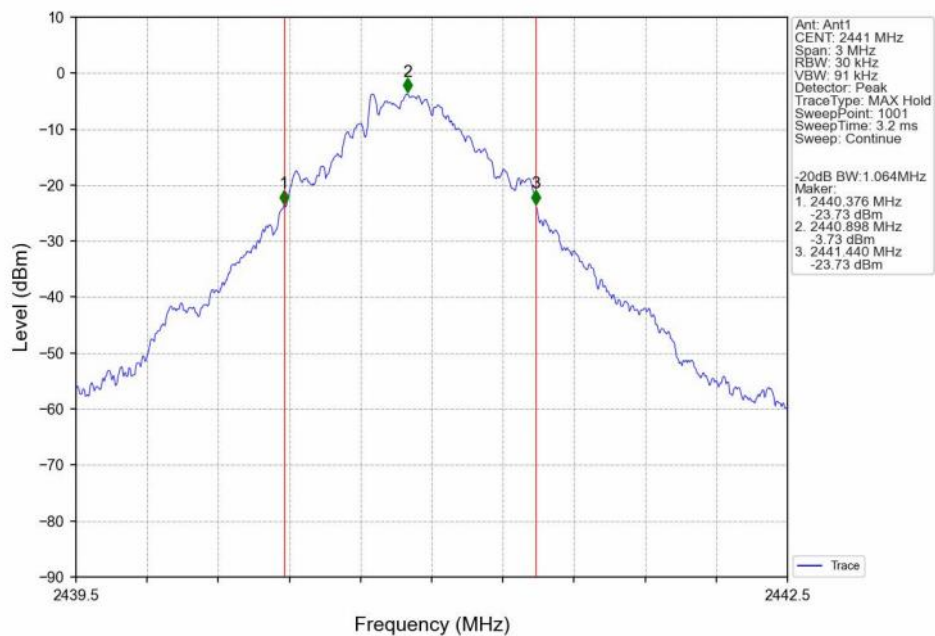


### 1.2.2 20dB BW

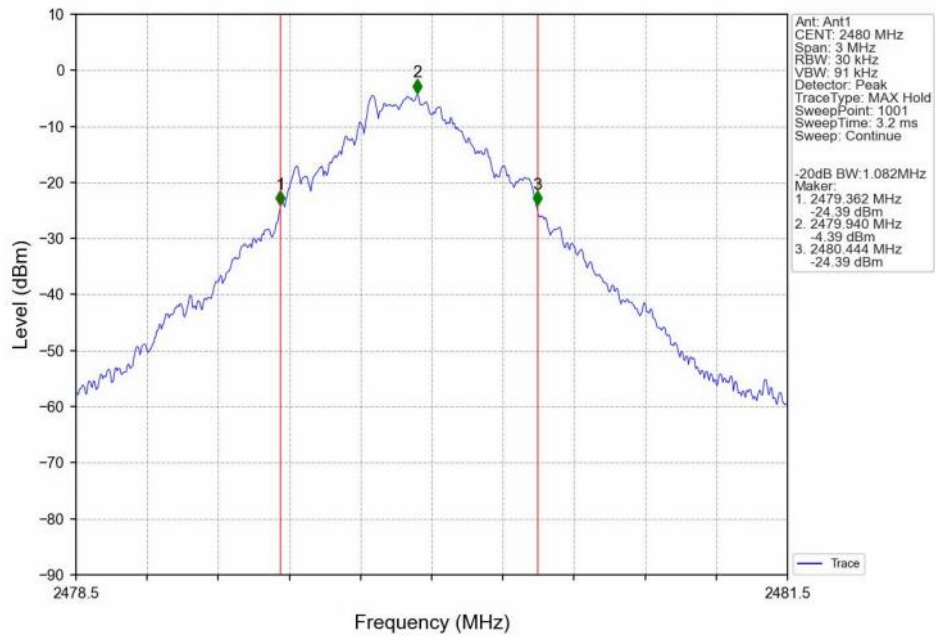
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



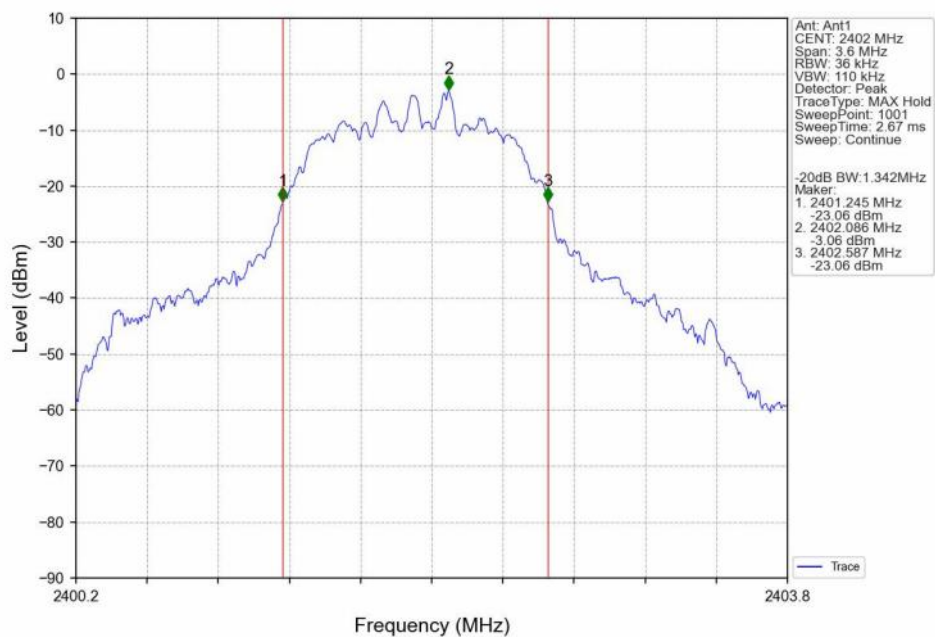
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



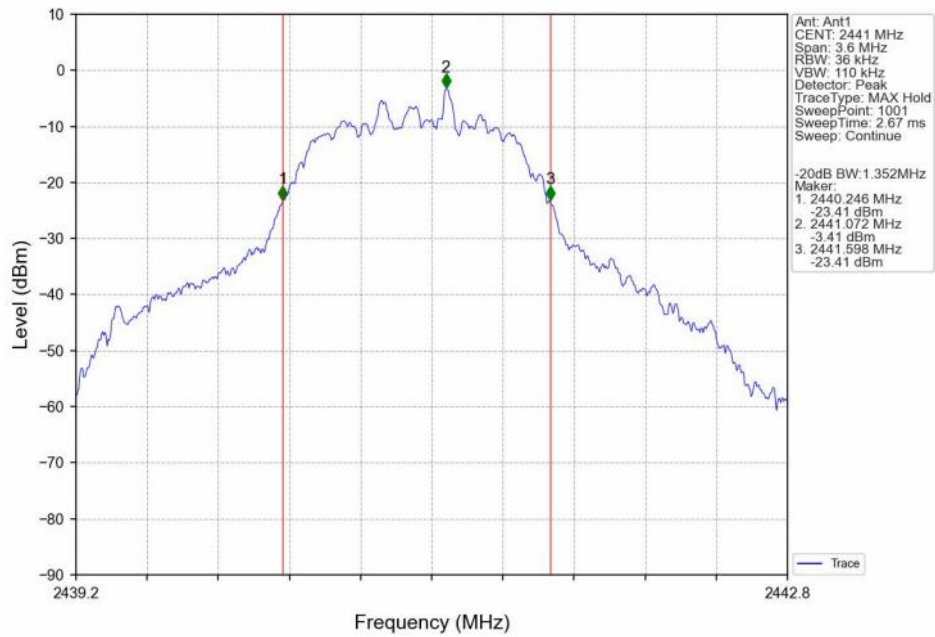
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



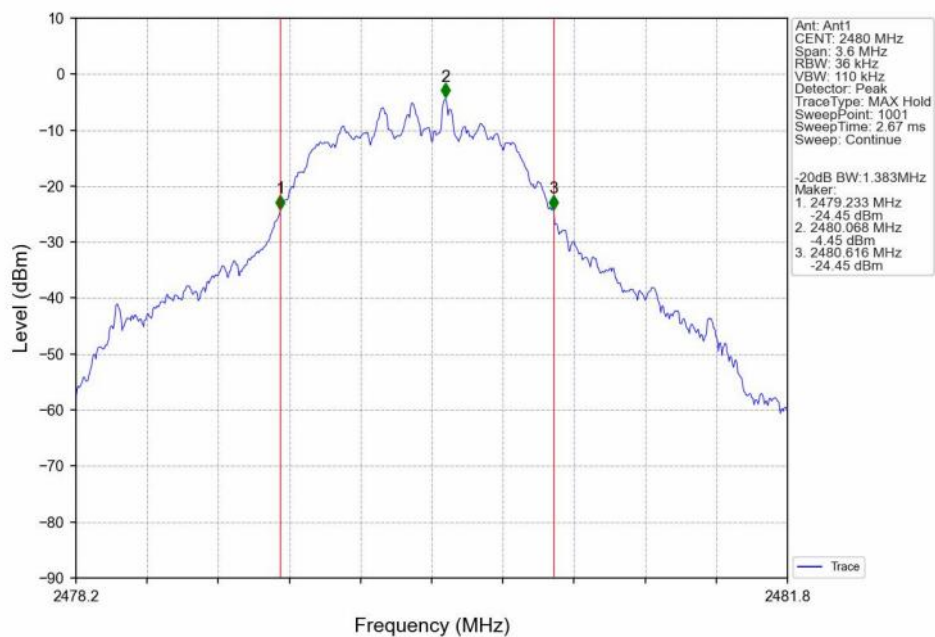
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



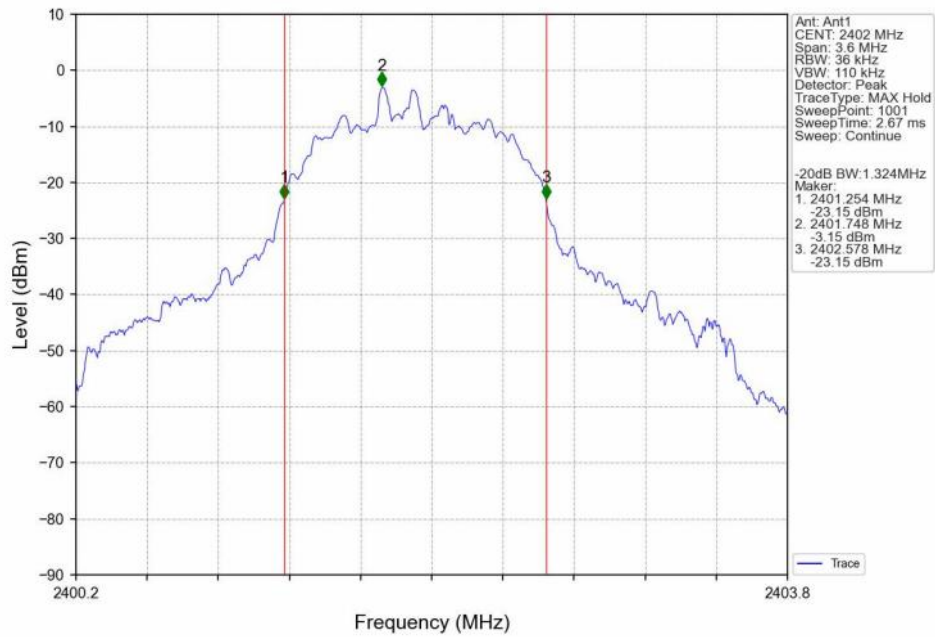
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



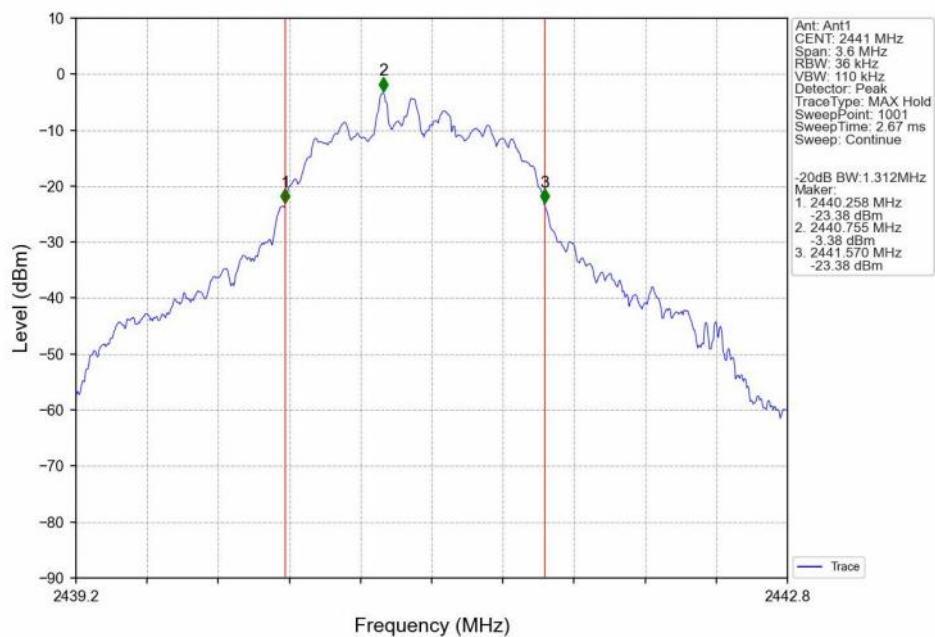
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



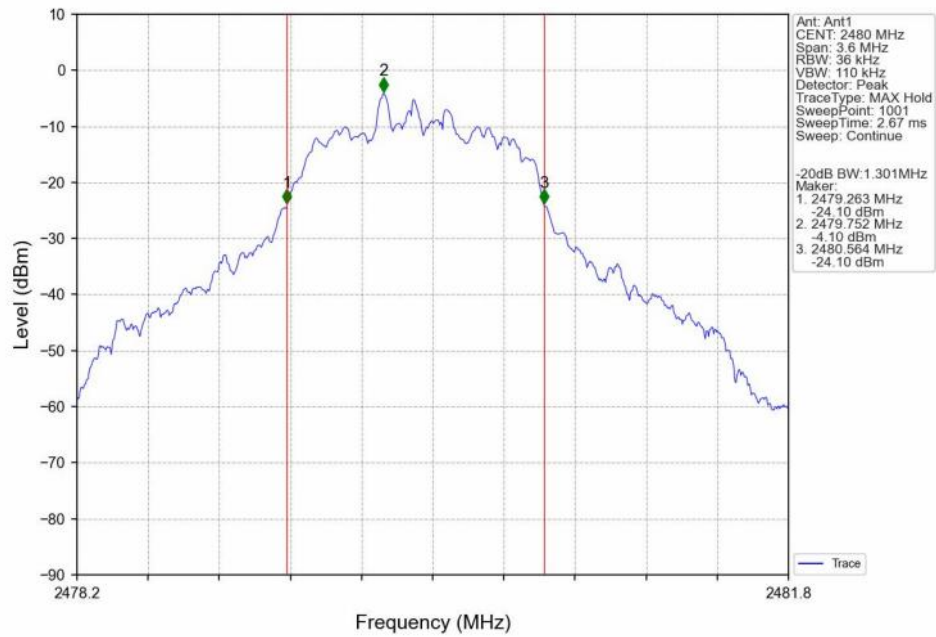
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



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



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



## 2. Maximum Conducted Output Power

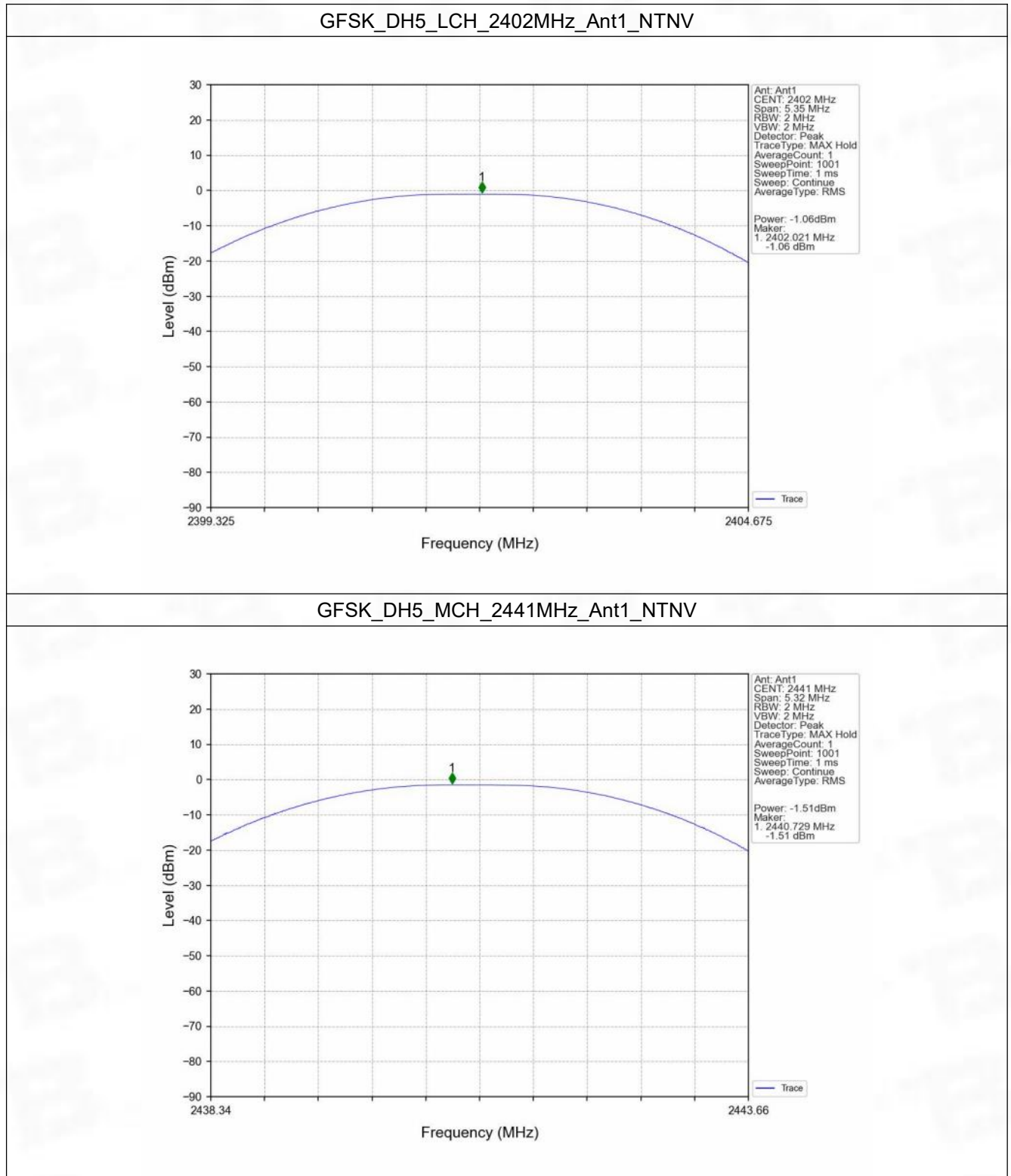
### 2.1 Test Result

#### 2.1.1 Power

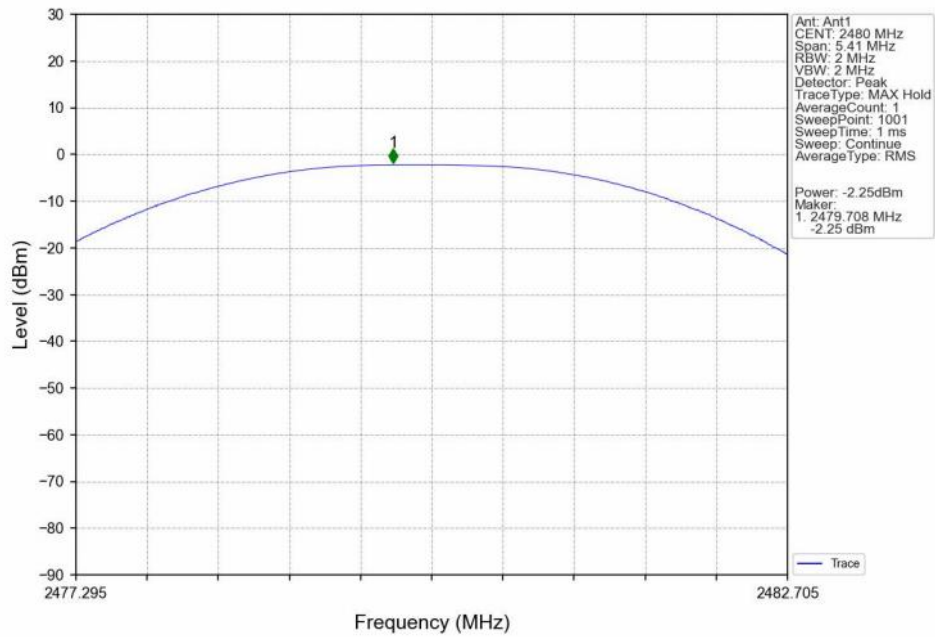
| Mode                                 | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |         | Verdict |
|--------------------------------------|---------|-----------------|-------------|-------------------------------------------|---------|---------|
|                                      |         |                 |             | ANT1                                      | Limit   |         |
| GFSK                                 | SISO    | 2402            | DH5         | -1.06                                     | <=20.97 | Pass    |
|                                      |         | 2441            | DH5         | -1.51                                     | <=20.97 | Pass    |
|                                      |         | 2480            | DH5         | -2.25                                     | <=20.97 | Pass    |
| Pi/4DQPSK                            | SISO    | 2402            | 2DH5        | -0.32                                     | <=20.97 | Pass    |
|                                      |         | 2441            | 2DH5        | -0.79                                     | <=20.97 | Pass    |
|                                      |         | 2480            | 2DH5        | -1.50                                     | <=20.97 | Pass    |
| 8DPSK                                | SISO    | 2402            | 3DH5        | -0.06                                     | <=20.97 | Pass    |
|                                      |         | 2441            | 3DH5        | -0.48                                     | <=20.97 | Pass    |
|                                      |         | 2480            | 3DH5        | -1.18                                     | <=20.97 | Pass    |
| Note1: Antenna Gain: Ant1: -0.58dBi; |         |                 |             |                                           |         |         |

## 2.2 Test Graph

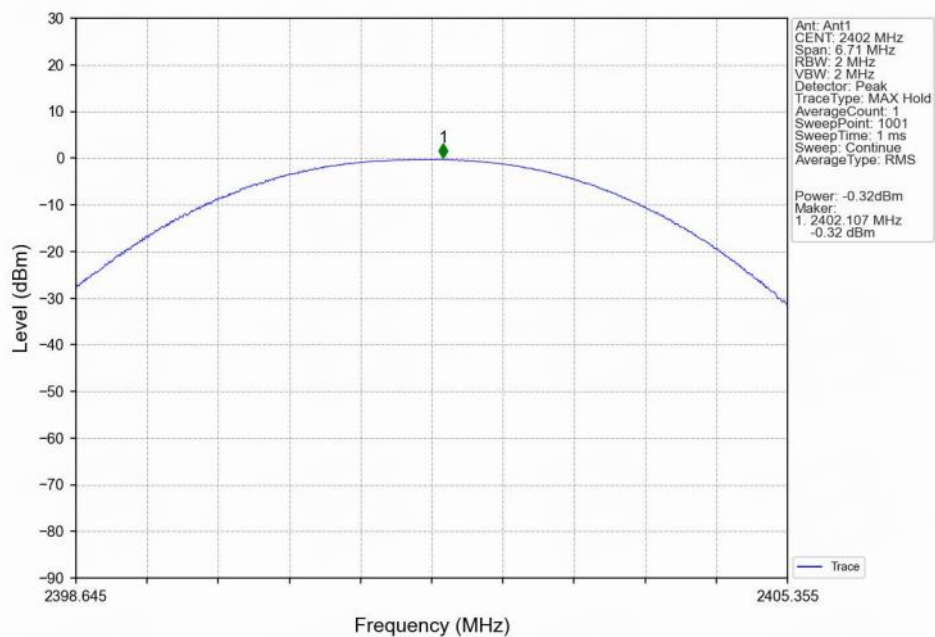
### 2.2.1 Power



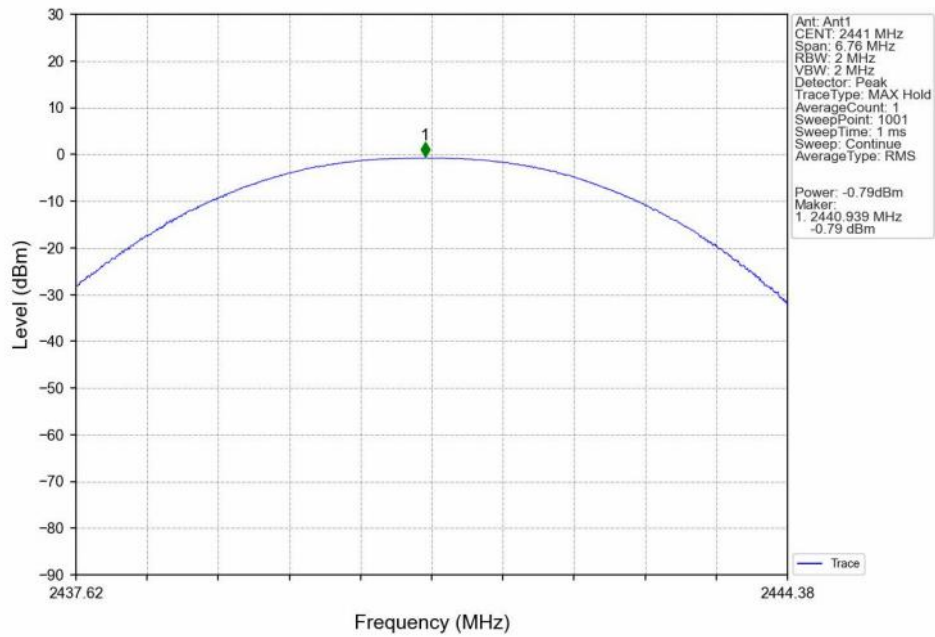
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



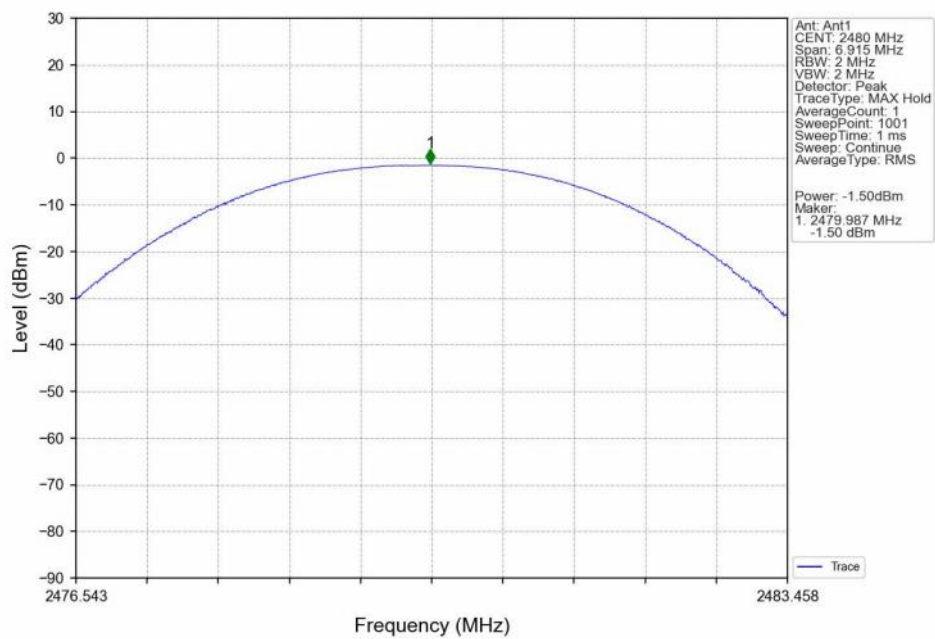
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



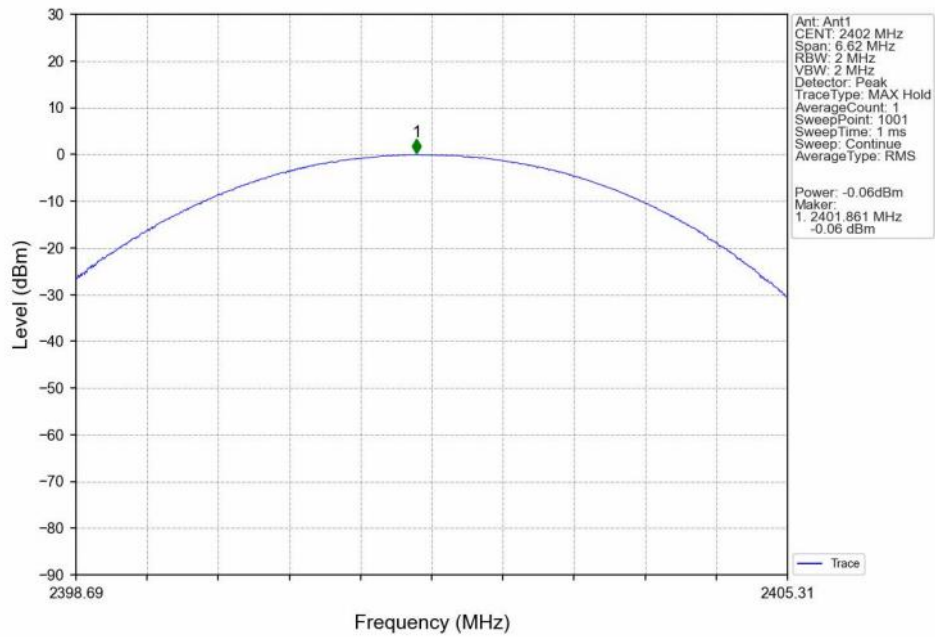
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



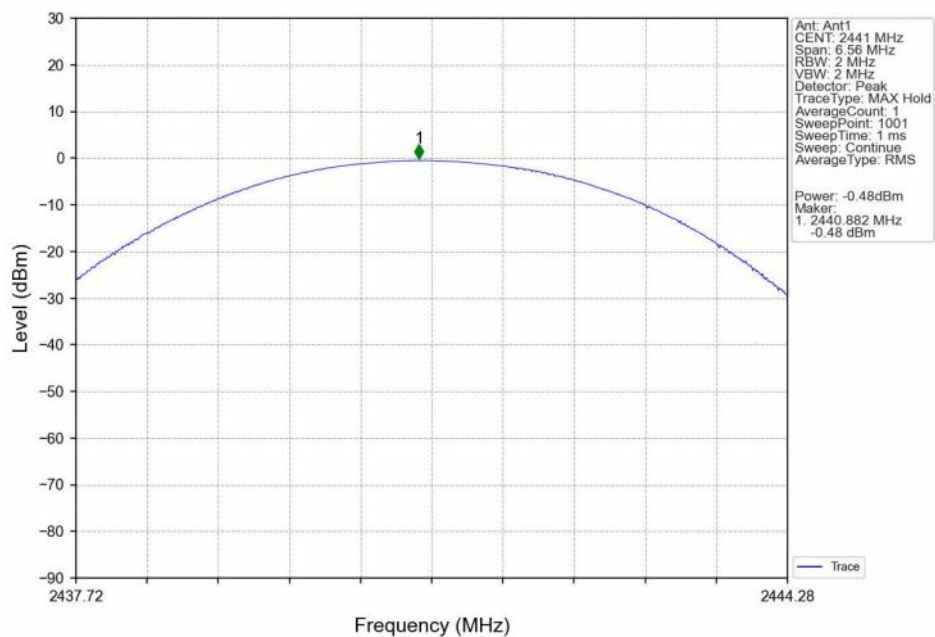
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



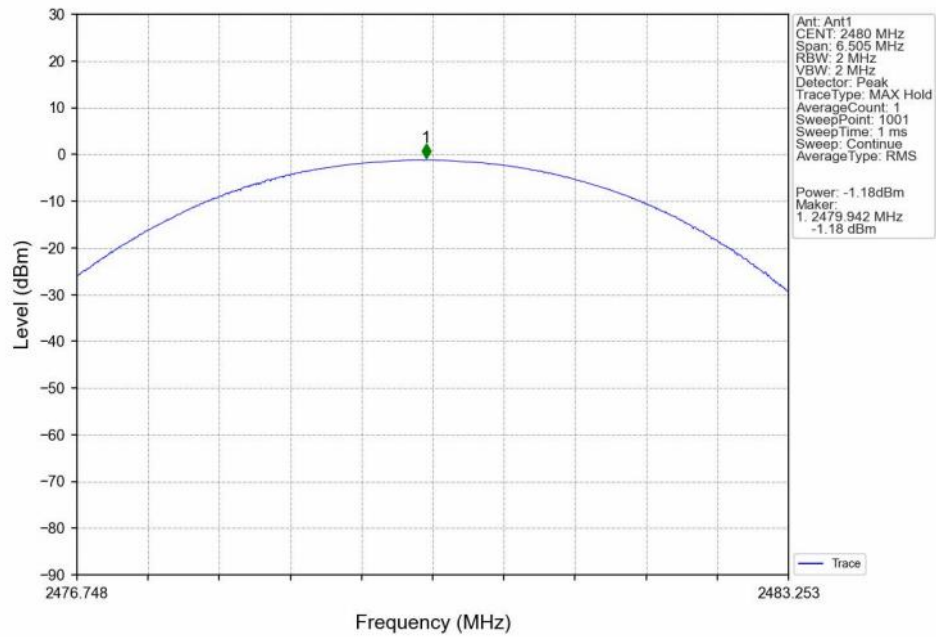
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



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



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



### 3. Carrier Frequency Separation

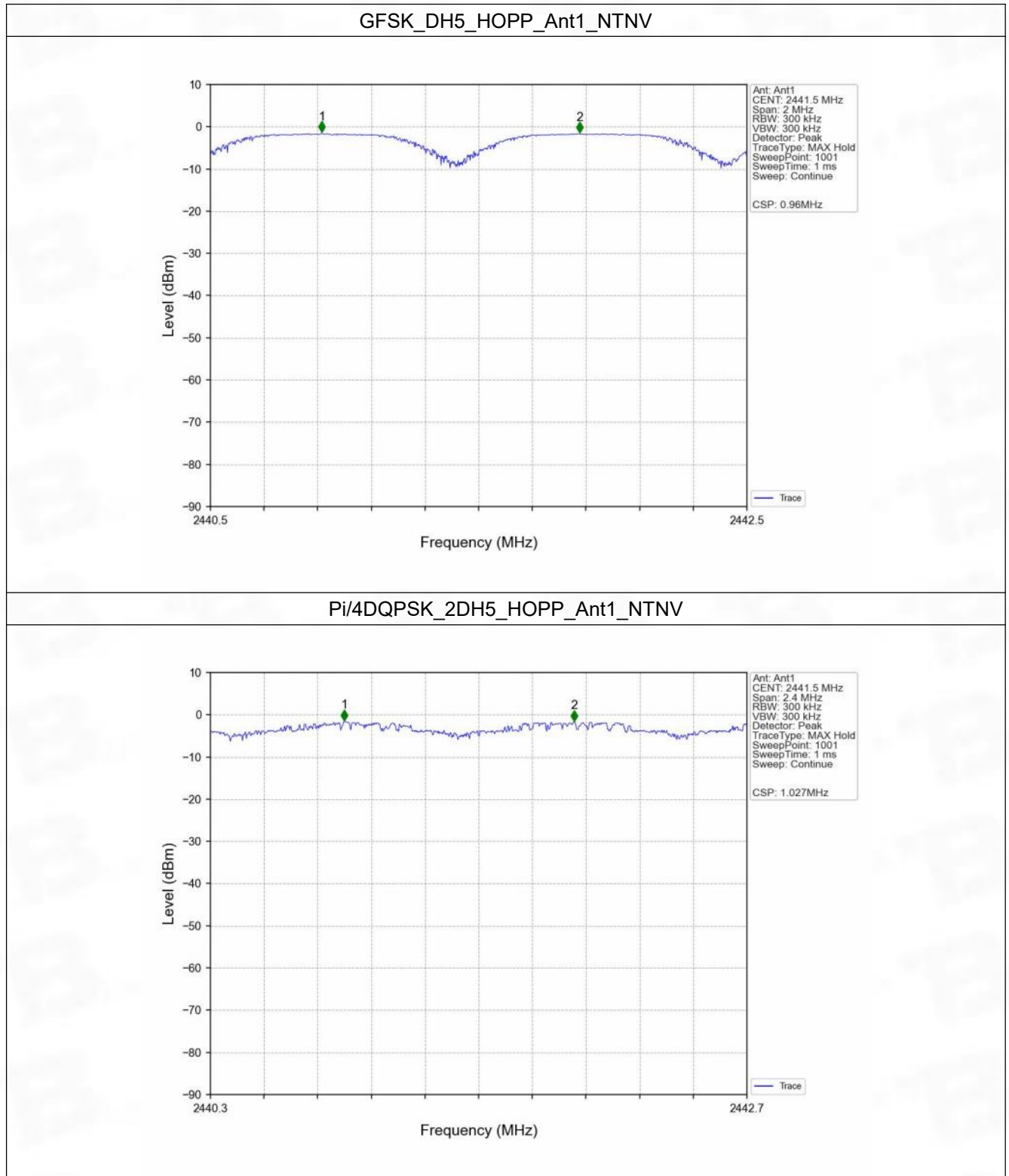
#### 3.1 Test Result

##### 3.1.1 Ant1

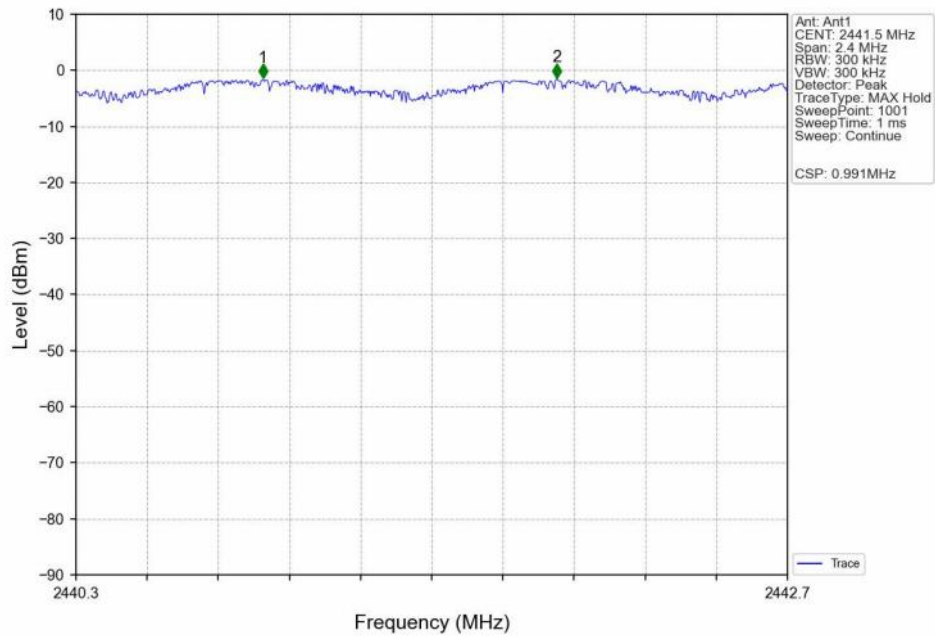
| Ant1      |         |                 |             |                          |                      |              |         |
|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 0.960                    | 1.082                | $\geq 0.721$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 1.027                    | 1.383                | $\geq 0.922$ | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 0.991                    | 1.324                | $\geq 0.883$ | Pass    |

### 3.2 Test Graph

#### 3.2.1 Ant1



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



## 4. Number of Hopping Frequencies

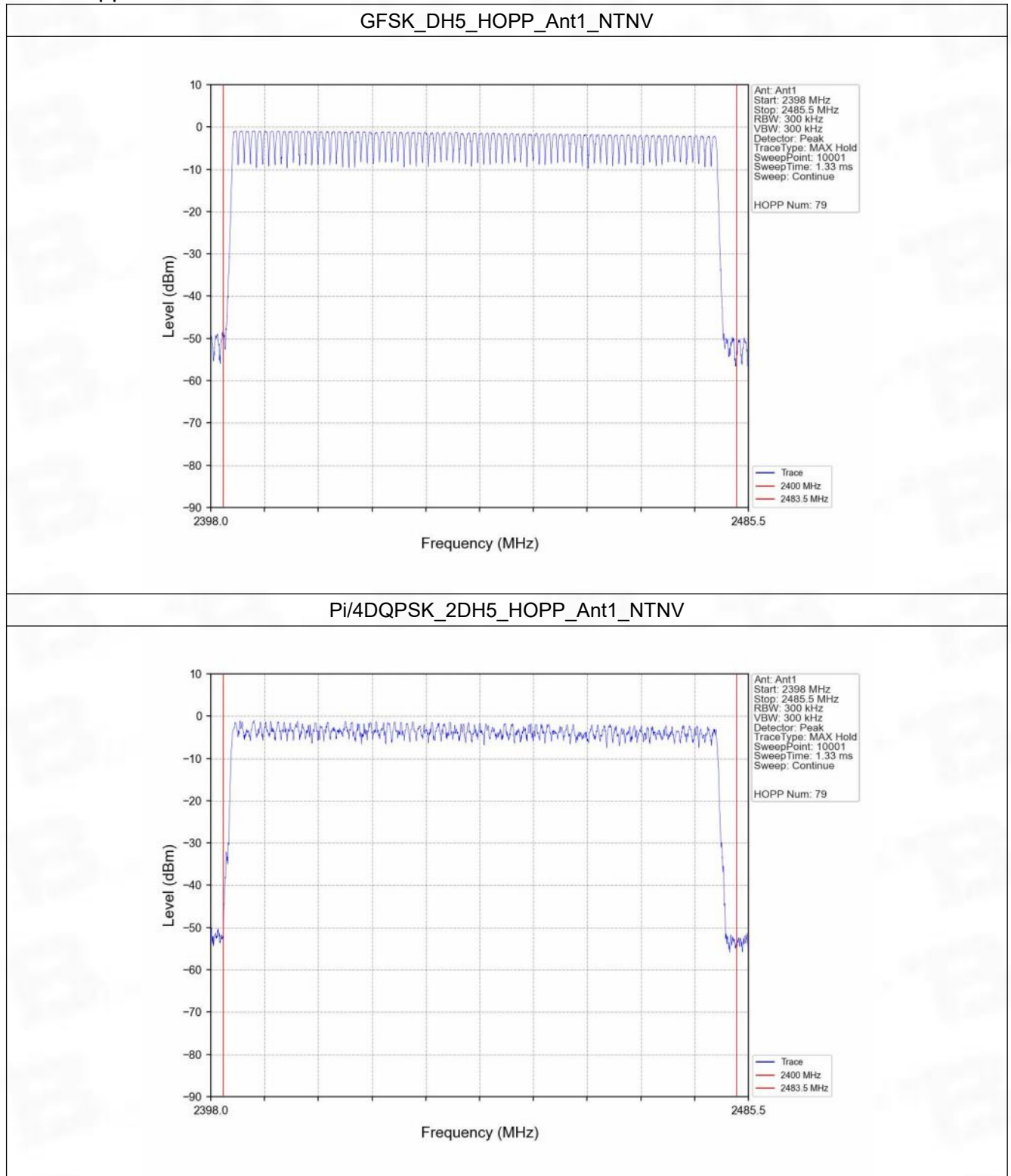
### 4.1 Test Result

#### 4.1.1 HoppNum

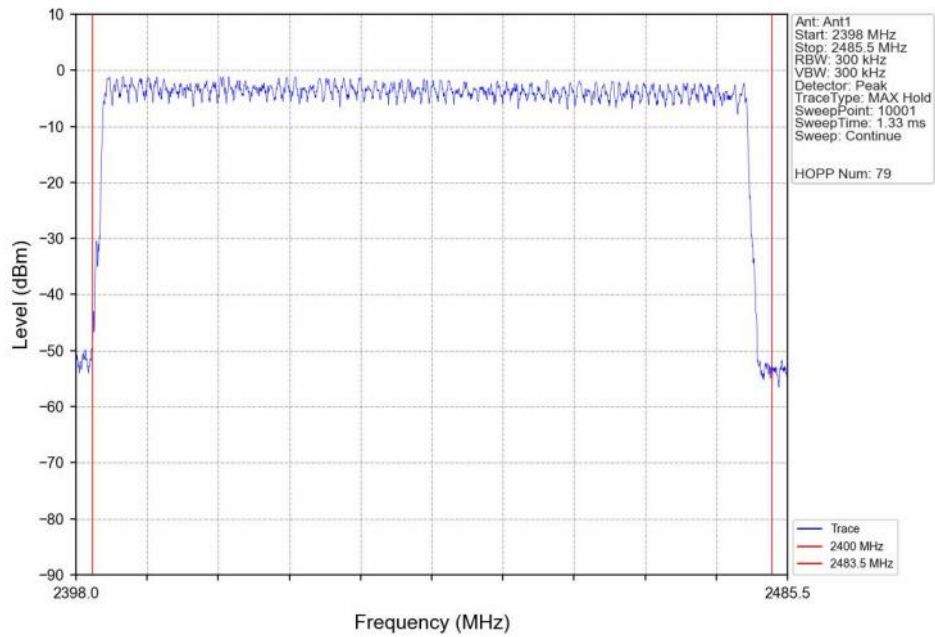
| Mode      | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |           | Verdict |
|-----------|---------|-----------------|-------------|----------------------------|-----------|---------|
|           |         |                 |             | ANT1                       | Limit     |         |
| 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)

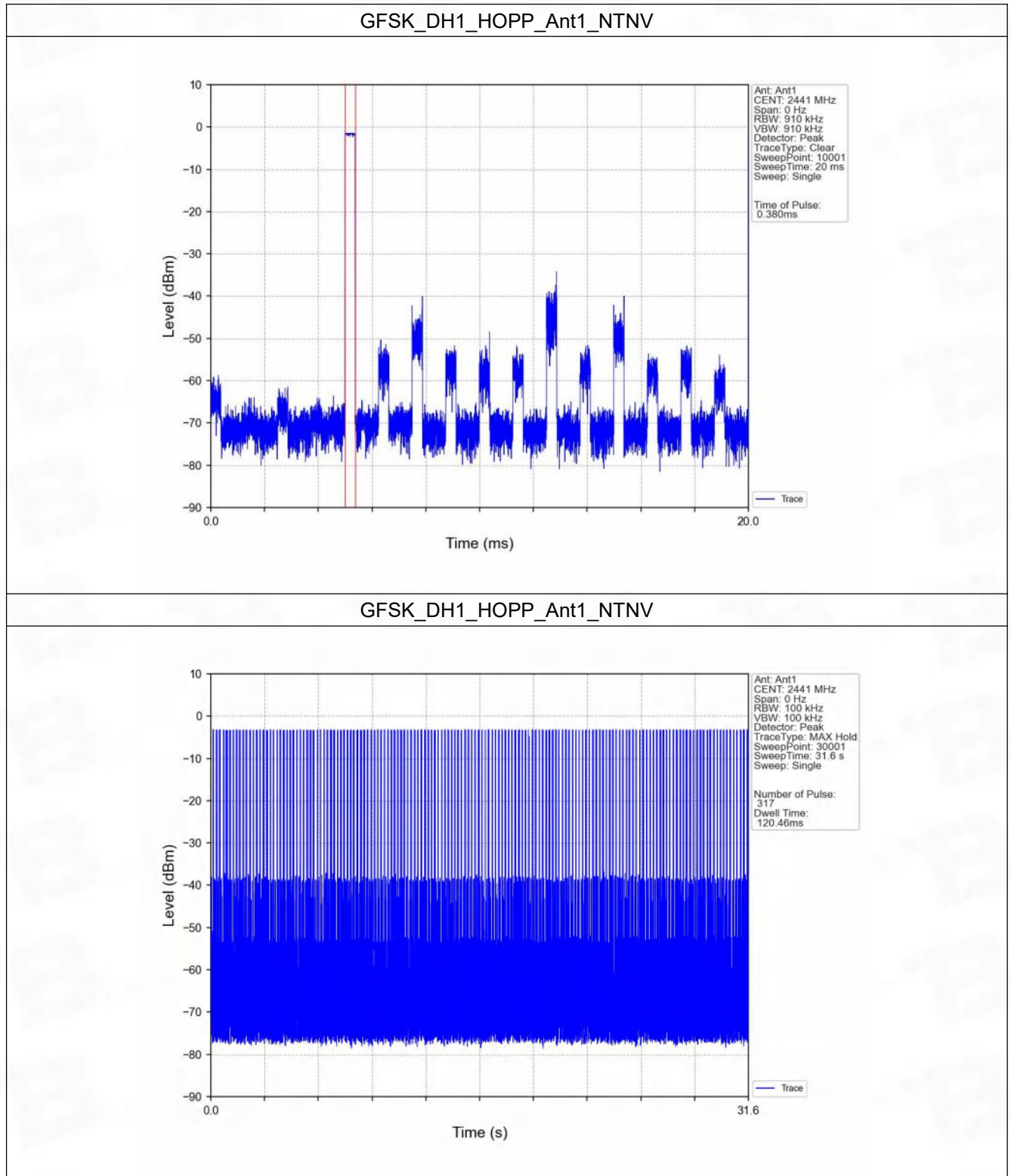
### 5.1 Test Result

#### 5.1.1 Ant1

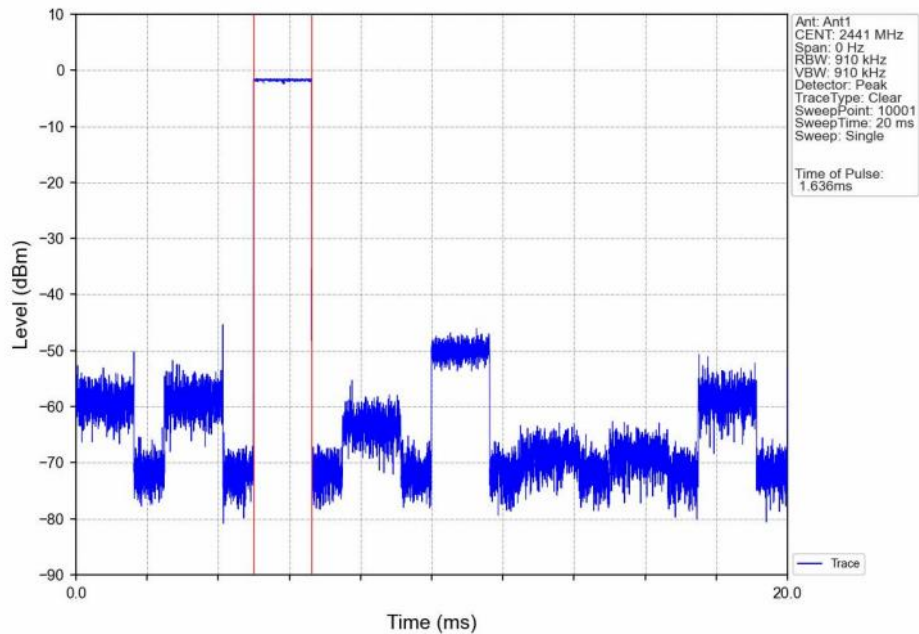
| Ant1      |         |                 |             |                               |                        |                                    |                 |            |         |
|-----------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| 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                 | 317                                | 120.460         | <=400      | Pass    |
|           |         |                 | DH3         | 1.636                         | 31.600                 | 161                                | 263.396         | <=400      | Pass    |
|           |         |                 | DH5         | 2.890                         | 31.600                 | 123                                | 355.470         | <=400      | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH1        | 0.388                         | 31.600                 | 317                                | 122.996         | <=400      | Pass    |
|           |         |                 | 2DH3        | 1.642                         | 31.600                 | 159                                | 261.078         | <=400      | Pass    |
|           |         |                 | 2DH5        | 2.890                         | 31.600                 | 115                                | 332.350         | <=400      | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH1        | 0.390                         | 31.600                 | 319                                | 124.410         | <=400      | Pass    |
|           |         |                 | 3DH3        | 1.640                         | 31.600                 | 152                                | 249.280         | <=400      | Pass    |
|           |         |                 | 3DH5        | 2.894                         | 31.600                 | 93                                 | 269.142         | <=400      | Pass    |

## 5.2 Test Graph

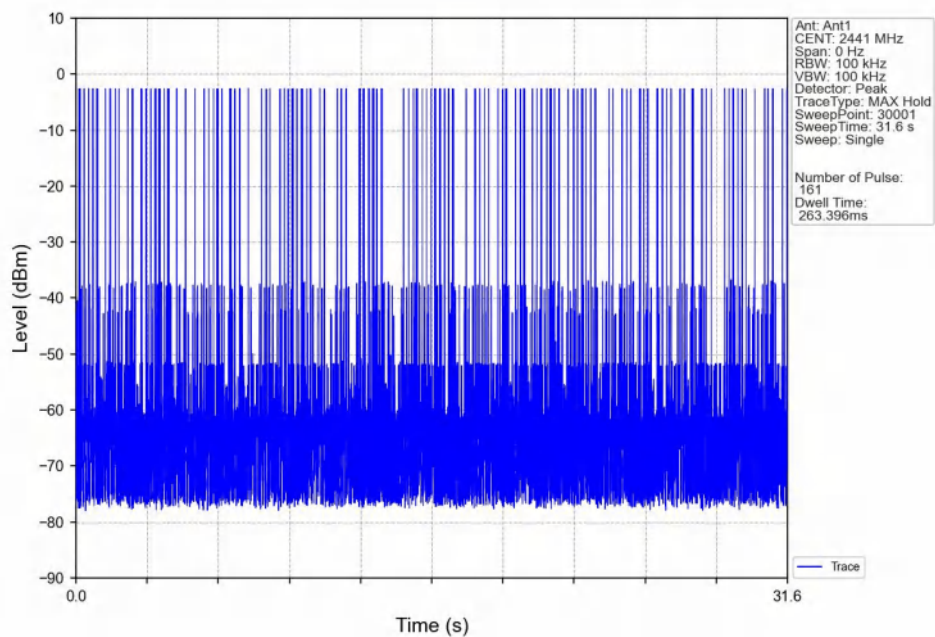
### 5.2.1 Ant1



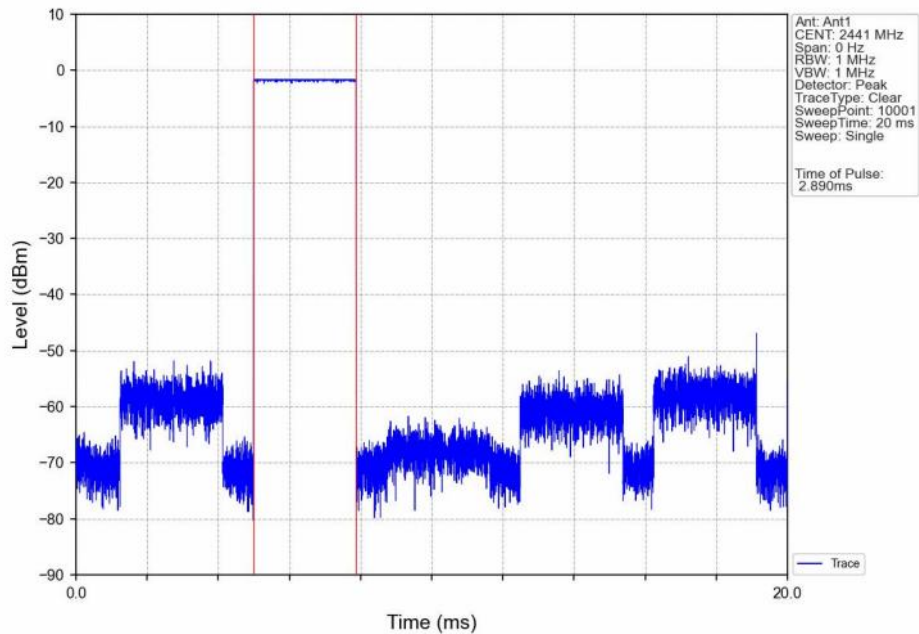
## GFSK\_DH3\_HOPP\_Ant1\_NTNV



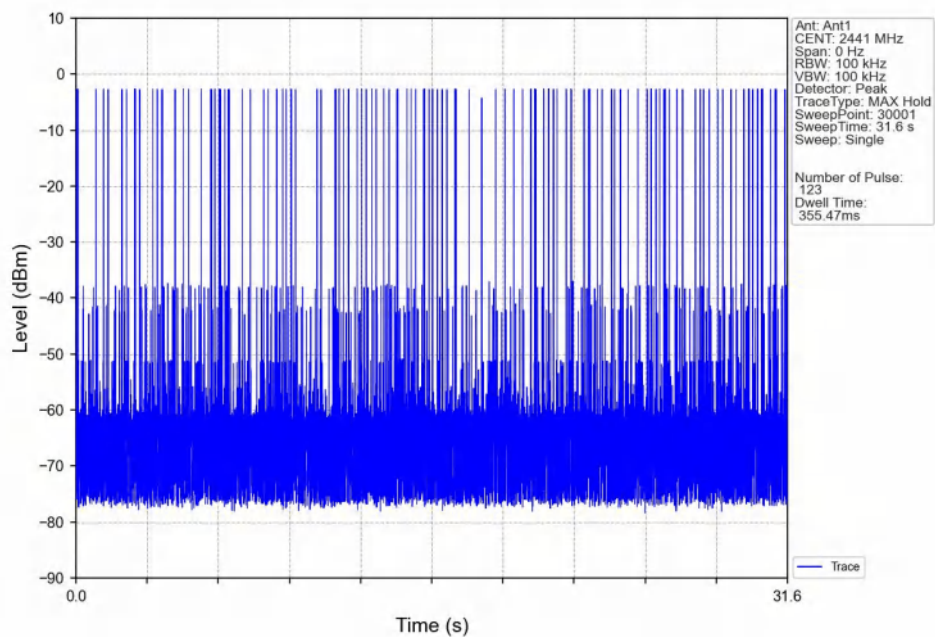
## GFSK\_DH3\_HOPP\_Ant1\_NTNV



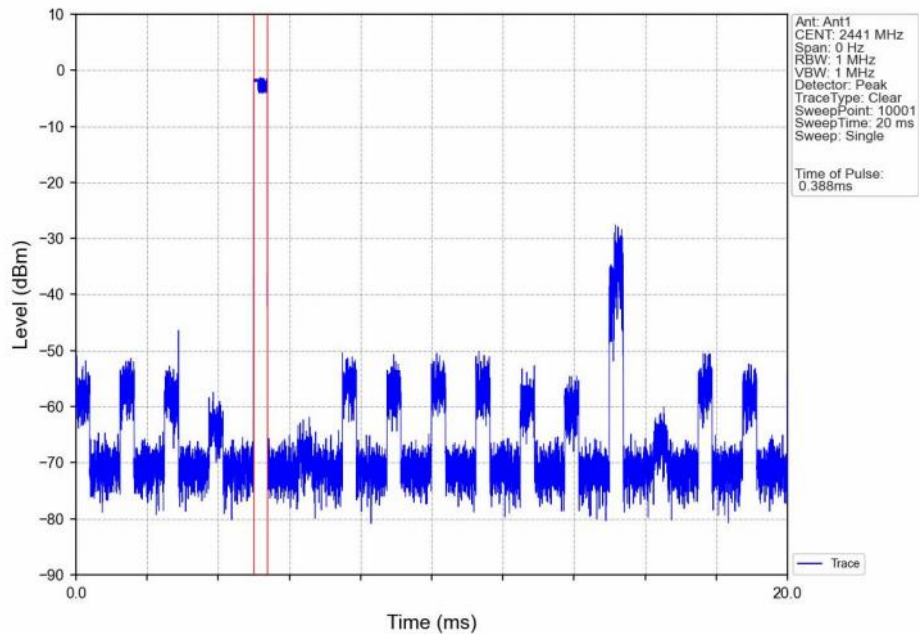
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



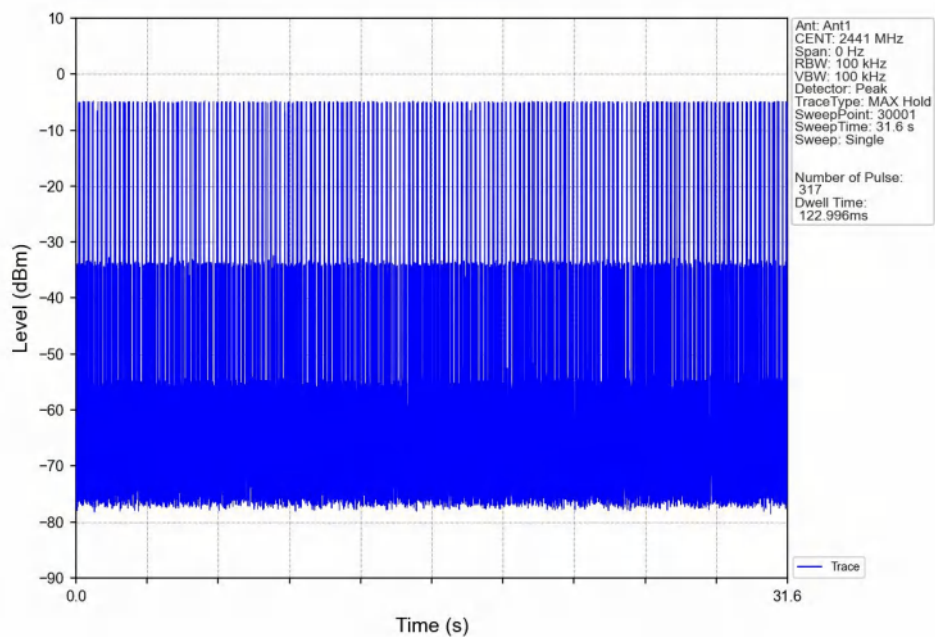
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



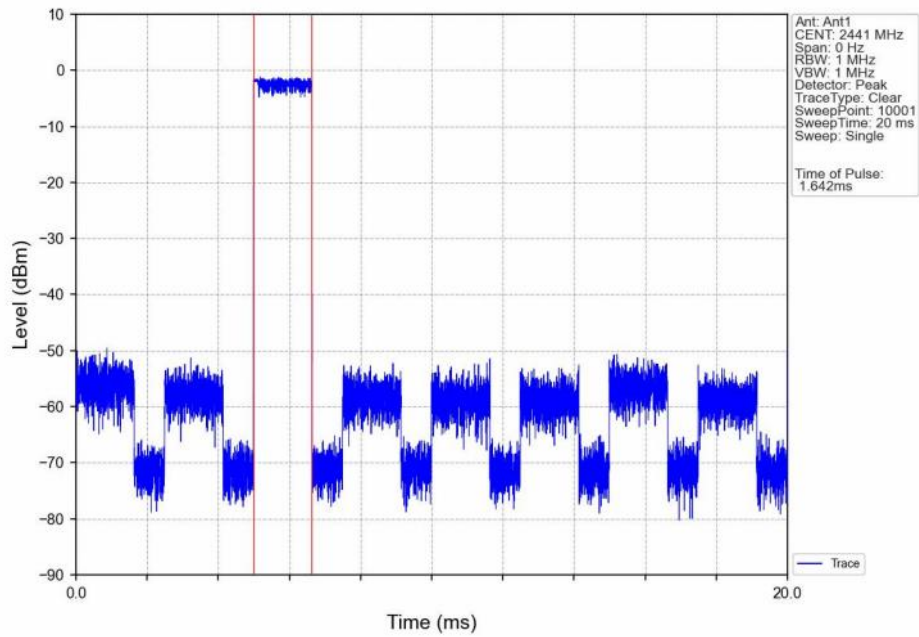
Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



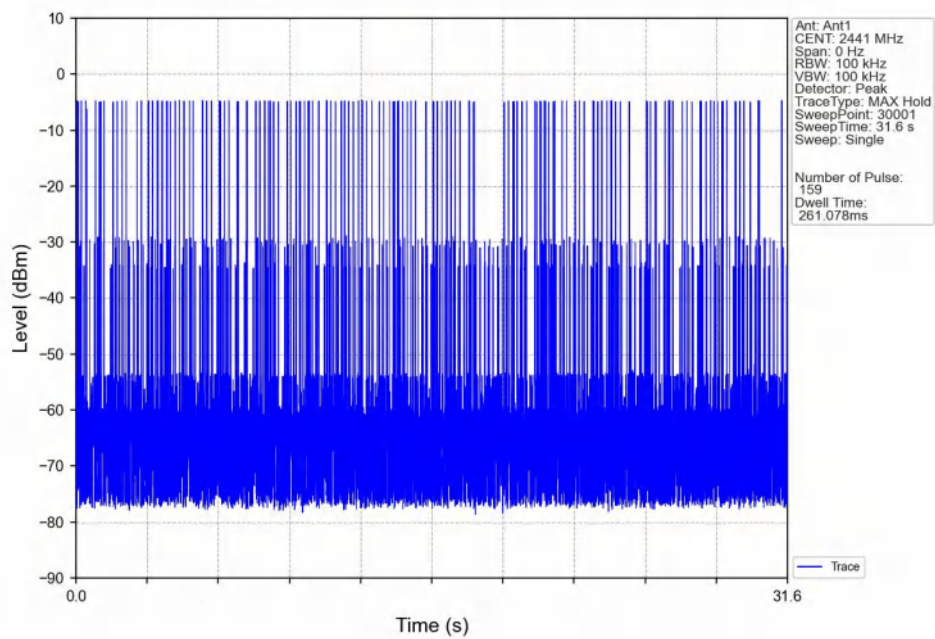
Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



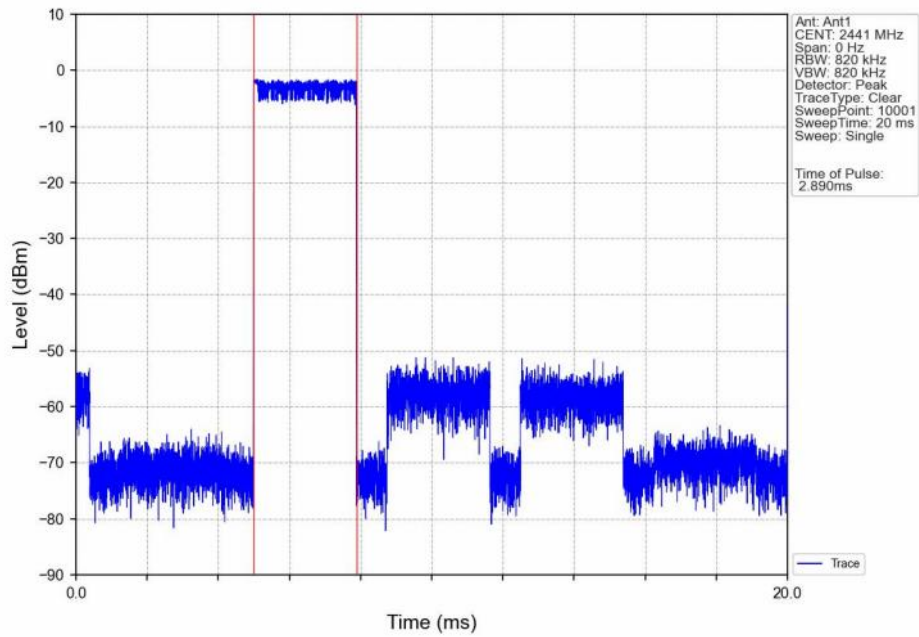
Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



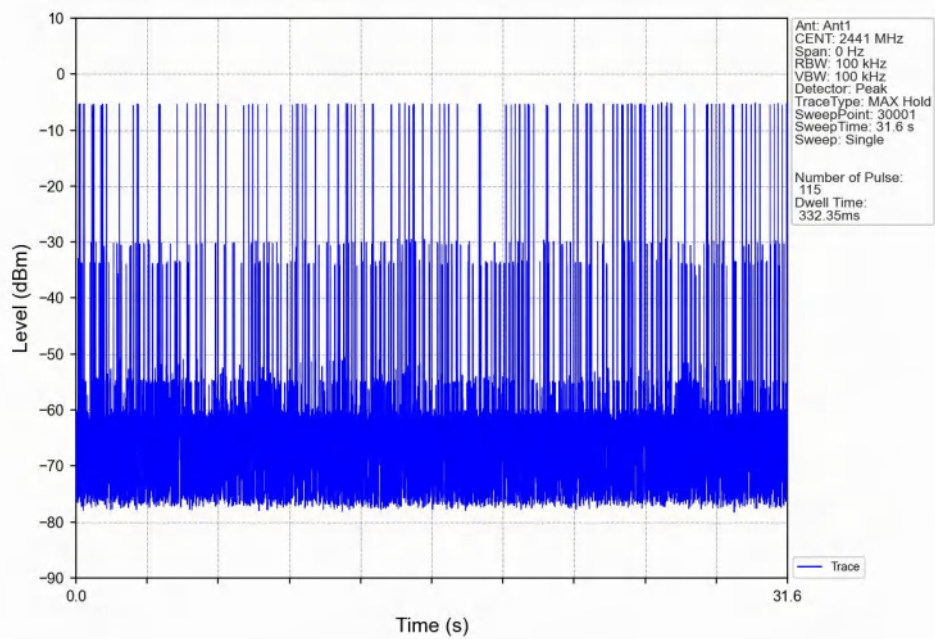
Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



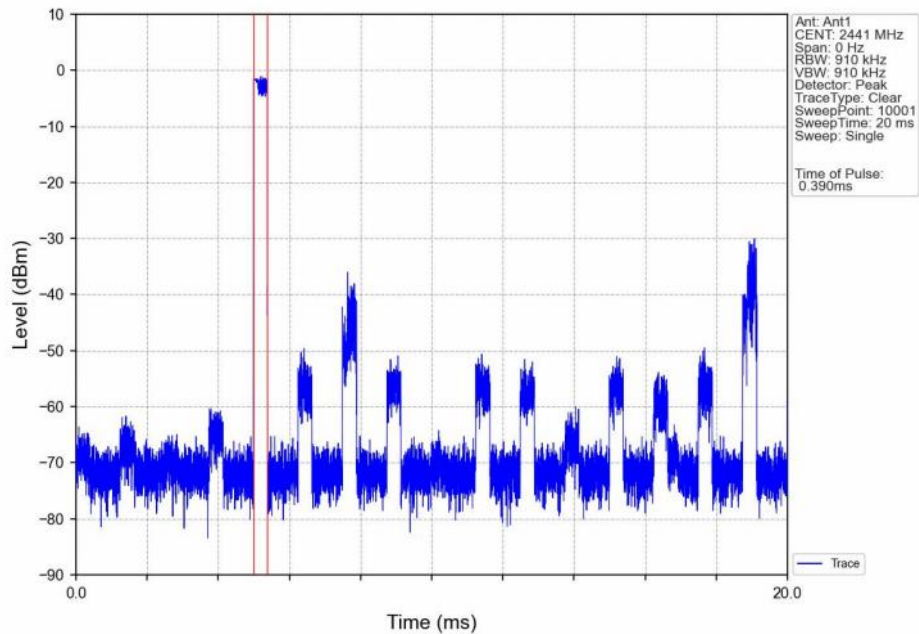
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



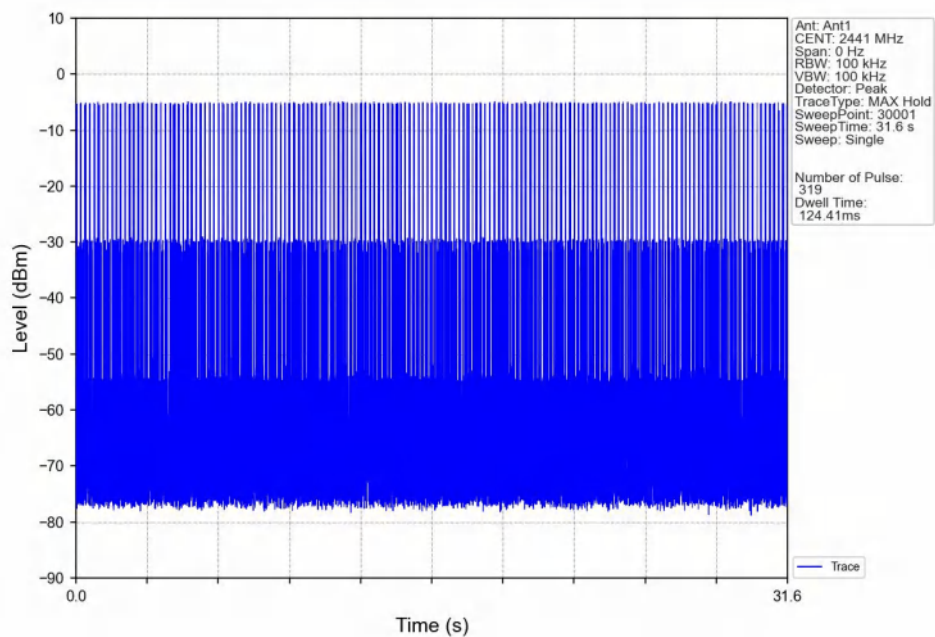
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



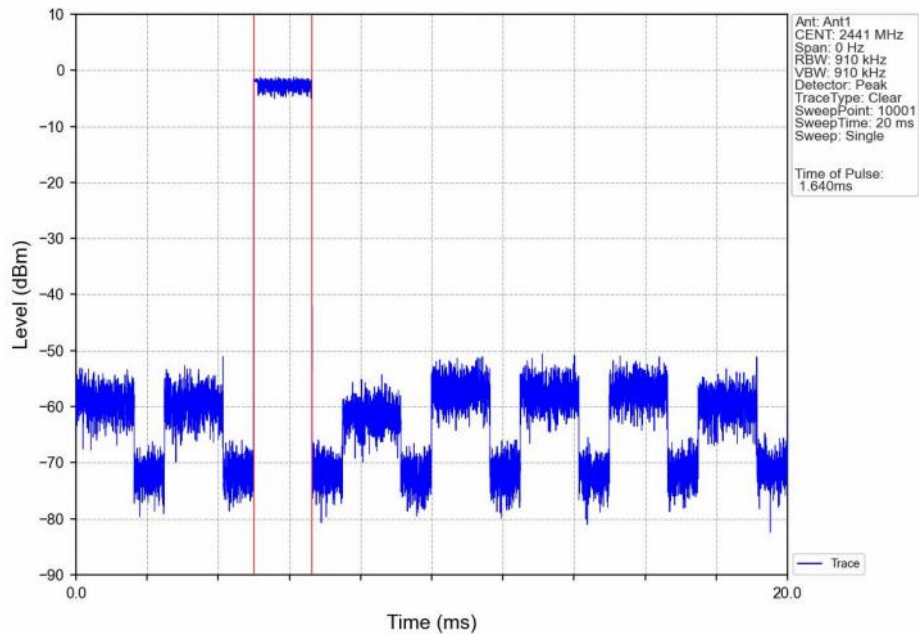
## 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



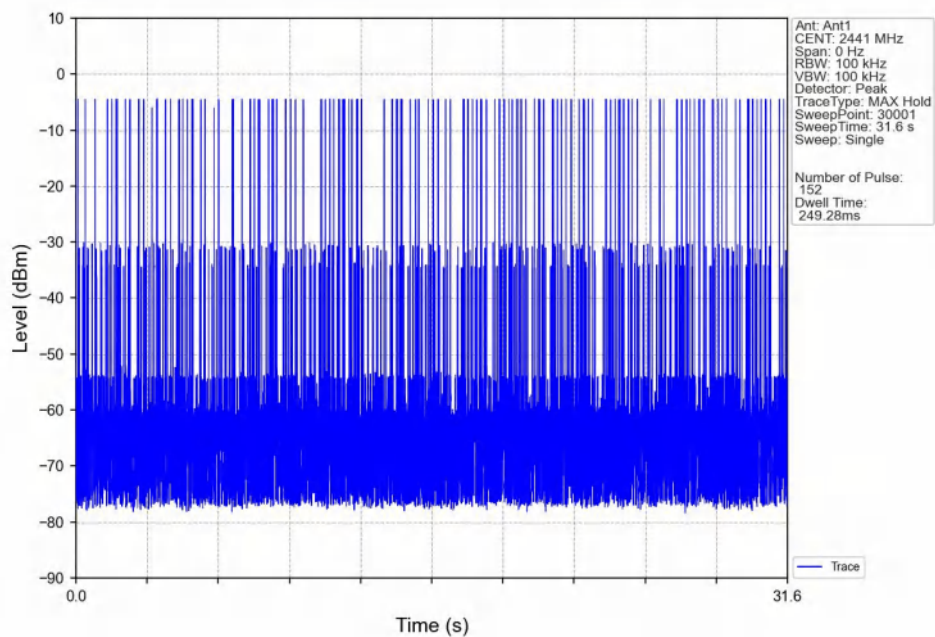
## 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



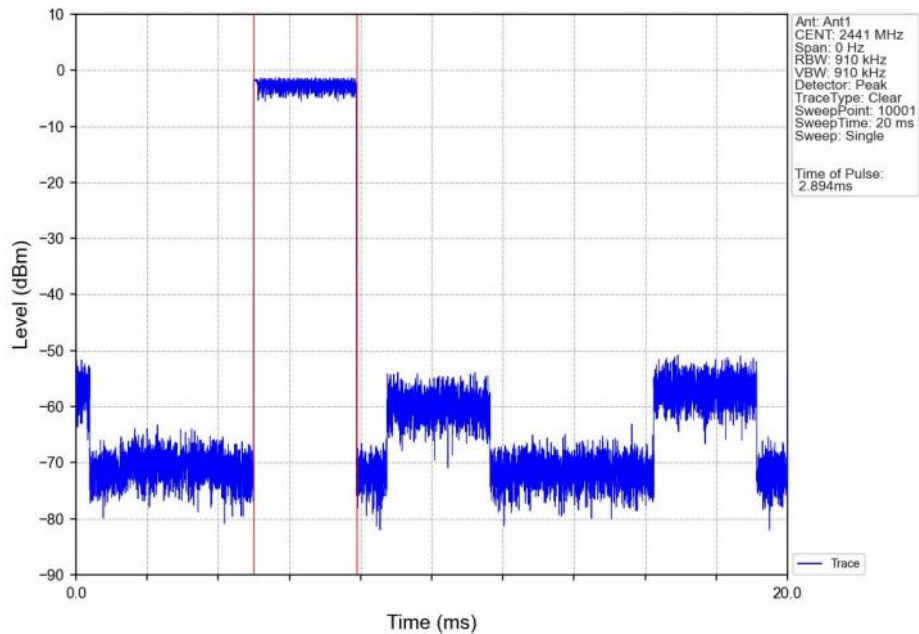
## 8DPSK\_3DH3\_HOPP\_Ant1\_NTNV



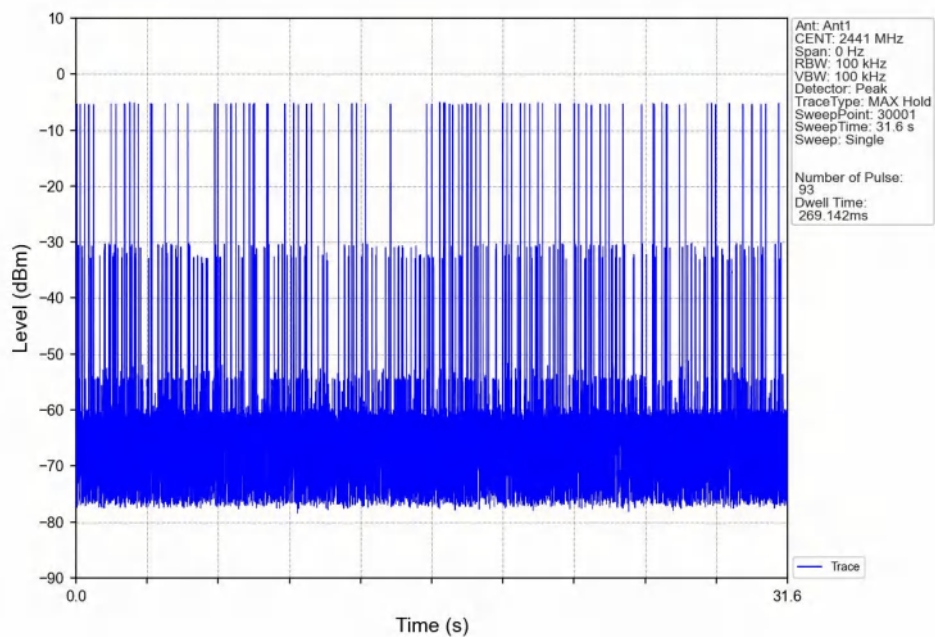
## 8DPSK\_3DH3\_HOPP\_Ant1\_NTNV



## 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   | -1.34                    |
|           |         | 2441            | DH5         | 1   | -1.96                    |
|           |         | 2480            | DH5         | 1   | -2.81                    |
|           |         | HOPP            | DH5         | 1   | -1.40                    |
|           |         |                 |             |     | -1.40                    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | -1.39                    |
|           |         | 2441            | 2DH5        | 1   | -1.98                    |
|           |         | 2480            | 2DH5        | 1   | -2.82                    |
|           |         | HOPP            | 2DH5        | 1   | -1.58                    |
|           |         |                 |             |     | -1.58                    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | -1.44                    |
|           |         | 2441            | 3DH5        | 1   | -2.03                    |
|           |         | 2480            | 3DH5        | 1   | -2.86                    |
|           |         | HOPP            | 3DH5        | 1   | -1.39                    |
|           |         |                 |             |     | -1.39                    |

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.

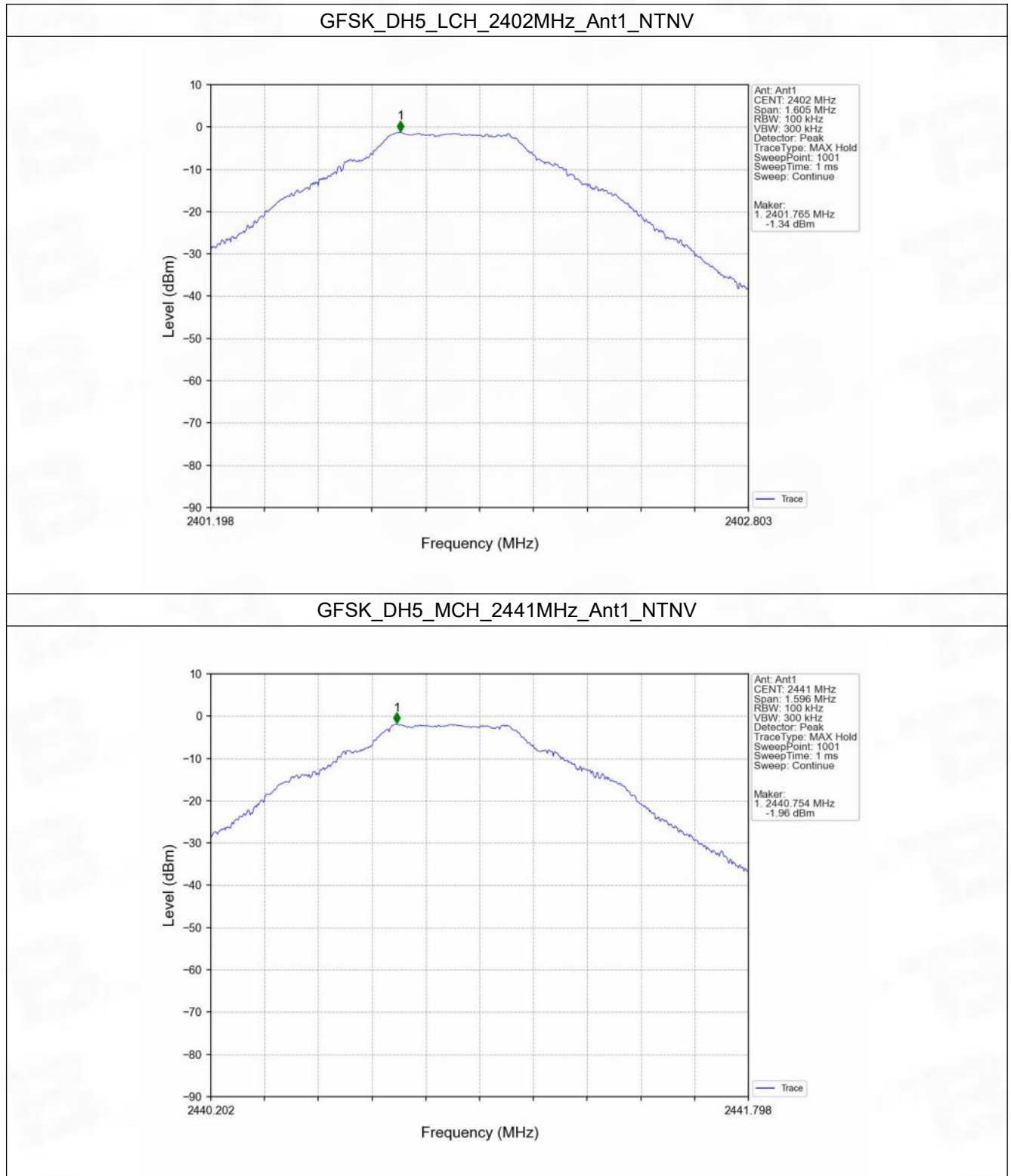
#### 6.1.2 CSE

| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK      | SISO    | 2402            | DH5         | 1   | -1.34                    | -21.34      | Pass    |
|           |         | 2441            | DH5         | 1   | -1.96                    | -21.96      | Pass    |
|           |         | 2480            | DH5         | 1   | -2.81                    | -22.81      | Pass    |
|           |         | HOPP            | DH5         | 1   | -1.40                    | -21.40      | Pass    |
|           |         |                 |             |     | -1.40                    | -21.40      | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | -1.39                    | -21.39      | Pass    |
|           |         | 2441            | 2DH5        | 1   | -1.98                    | -21.98      | Pass    |
|           |         | 2480            | 2DH5        | 1   | -2.82                    | -22.82      | Pass    |
|           |         | HOPP            | 2DH5        | 1   | -1.58                    | -21.58      | Pass    |
|           |         |                 |             |     | -1.58                    | -21.58      | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | -1.44                    | -21.44      | Pass    |
|           |         | 2441            | 3DH5        | 1   | -2.03                    | -22.03      | Pass    |
|           |         | 2480            | 3DH5        | 1   | -2.86                    | -22.86      | Pass    |
|           |         | HOPP            | 3DH5        | 1   | -1.39                    | -21.39      | Pass    |

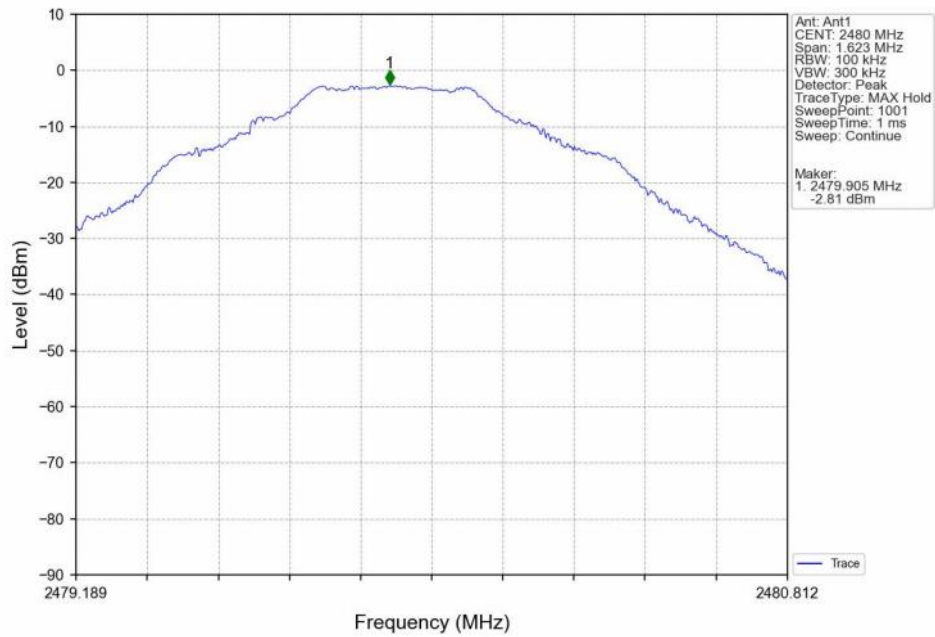
|                                                                                                                                                 |  |  |  |  |       |        |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|-------|--------|------|
|                                                                                                                                                 |  |  |  |  | -1.39 | -21.39 | 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. |  |  |  |  |       |        |      |

## 6.2 Test Graph

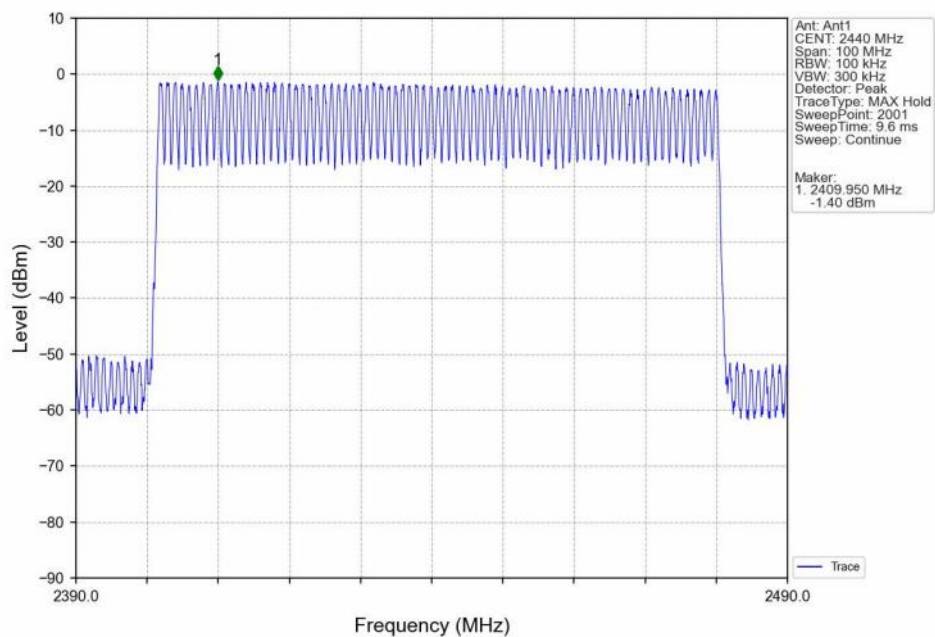
### 6.2.1 Ref



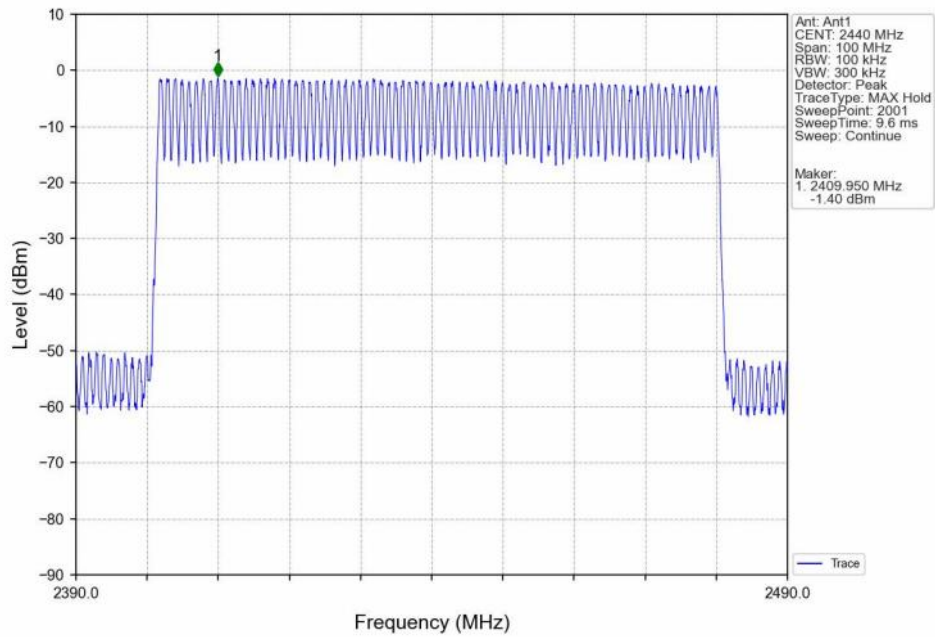
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



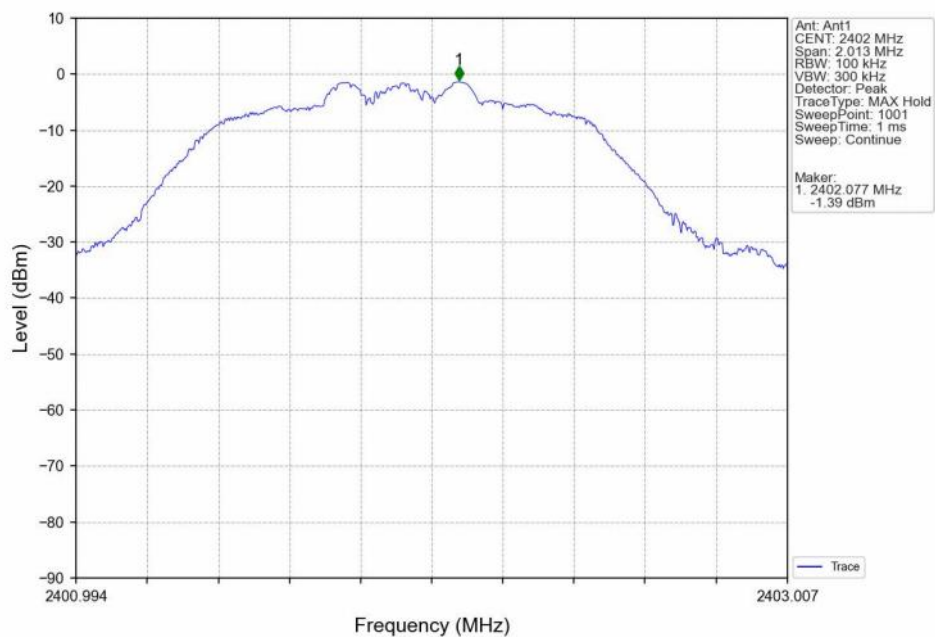
GFSK\_DH5\_HOPP\_2440MHz\_Ant1\_NTNV



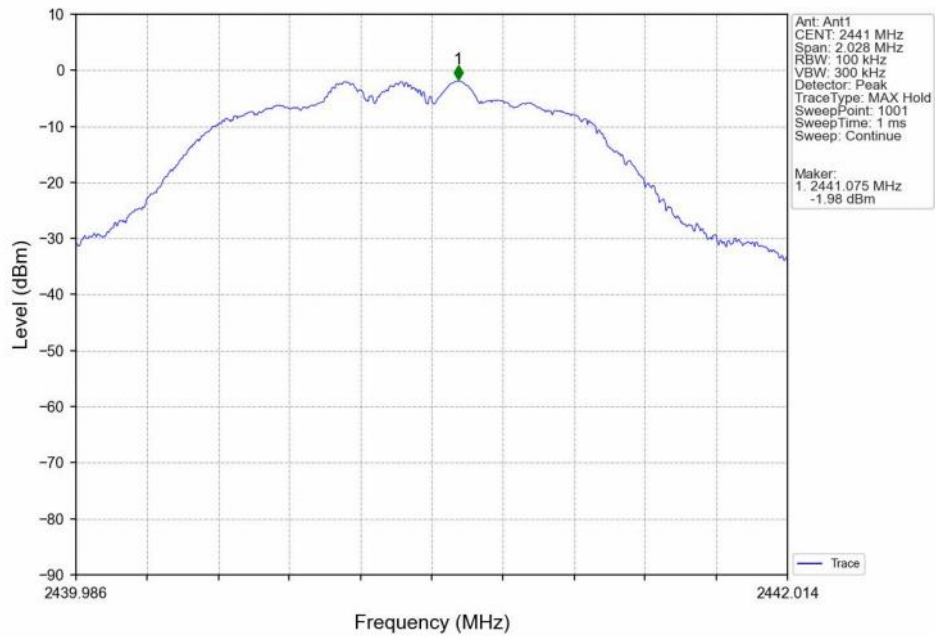
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



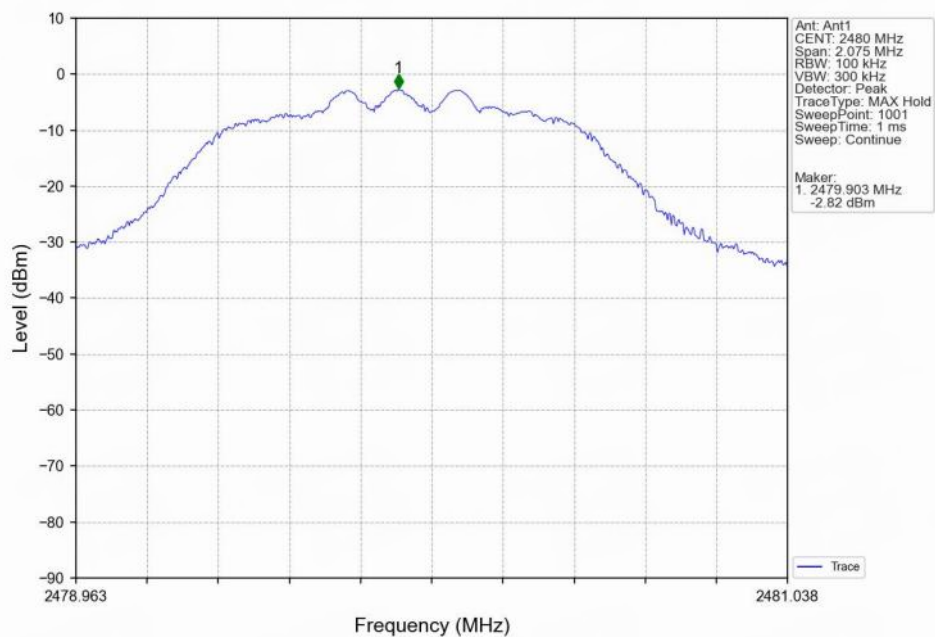
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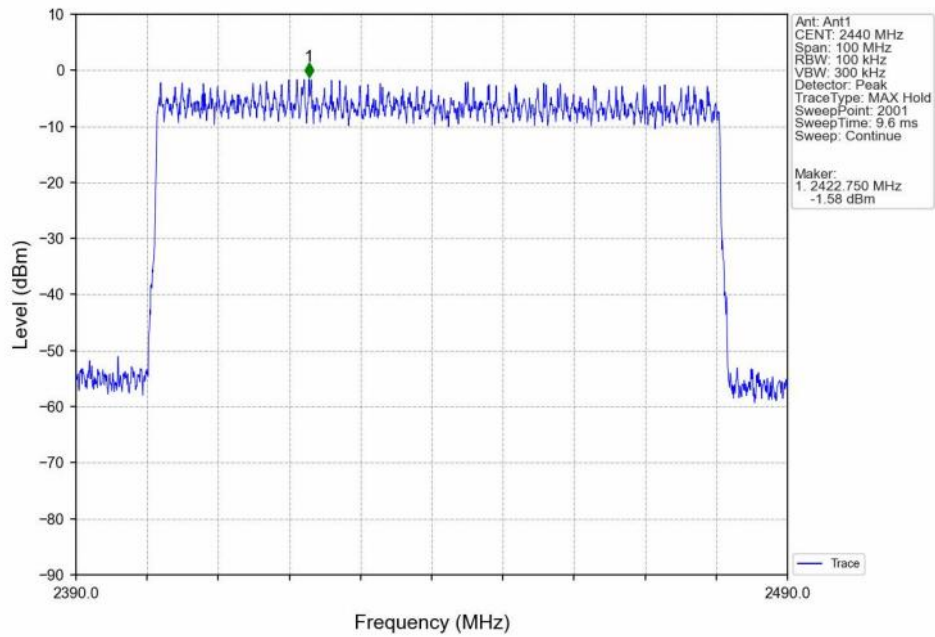
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



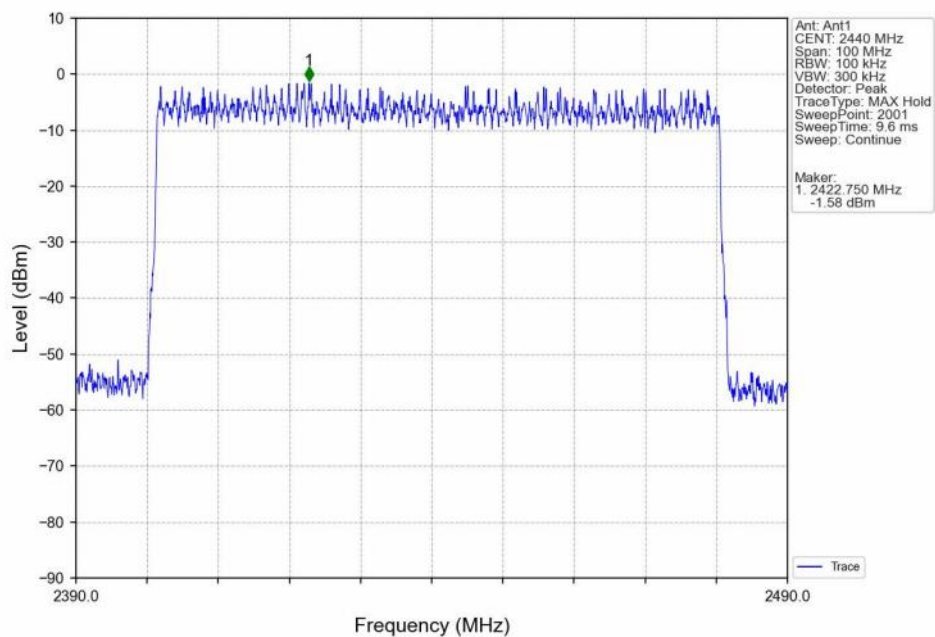
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



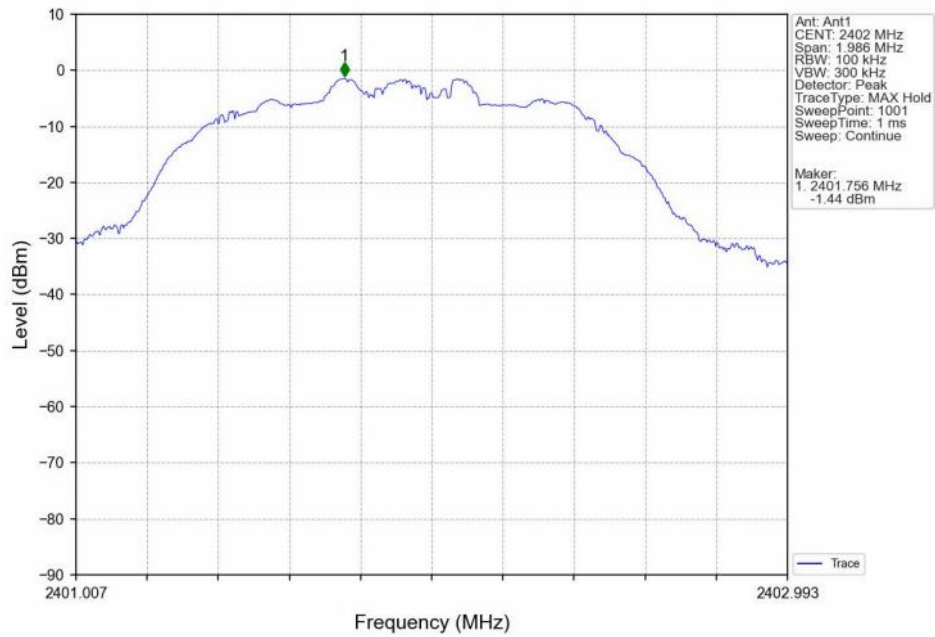
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



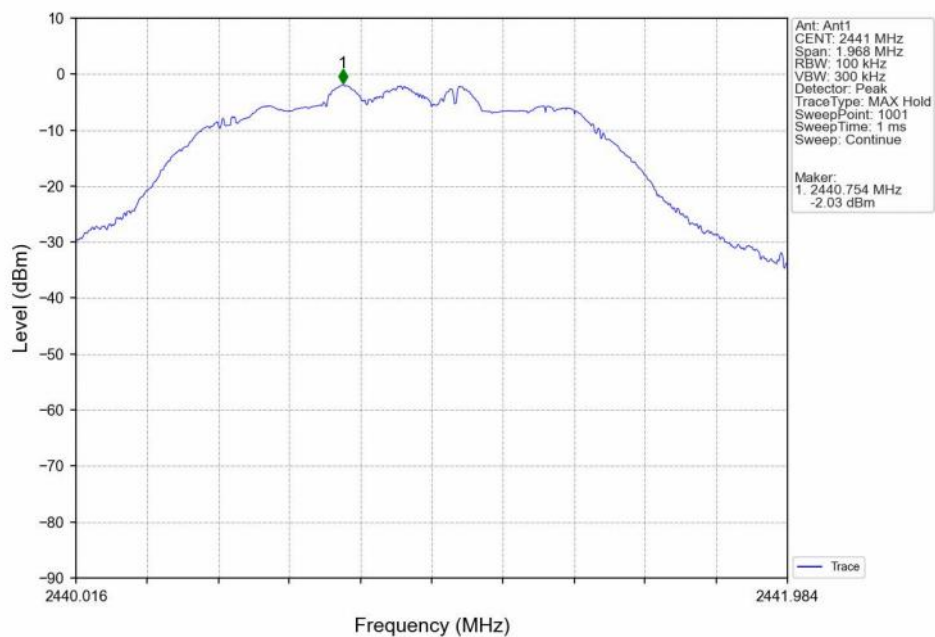
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



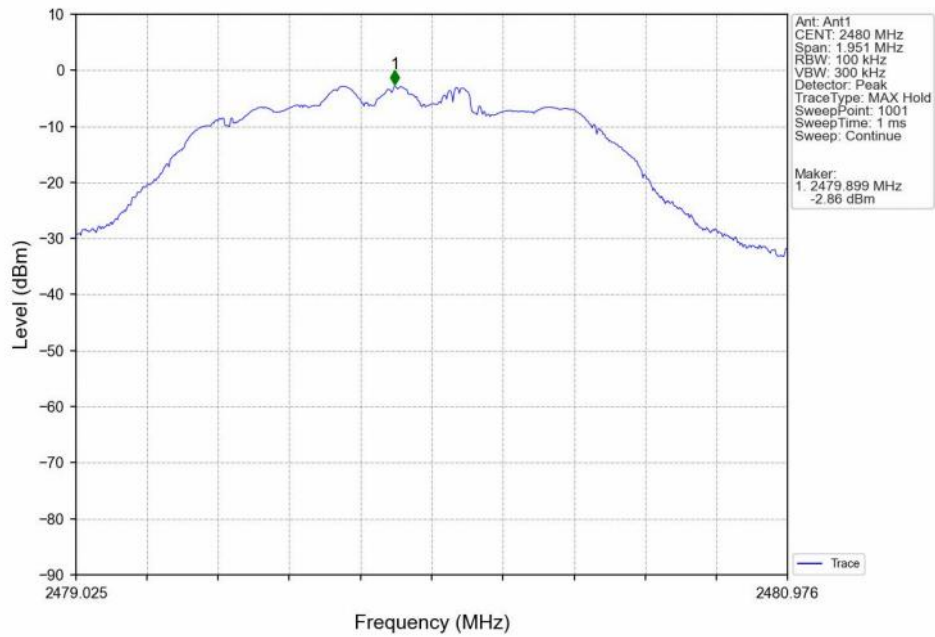
8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



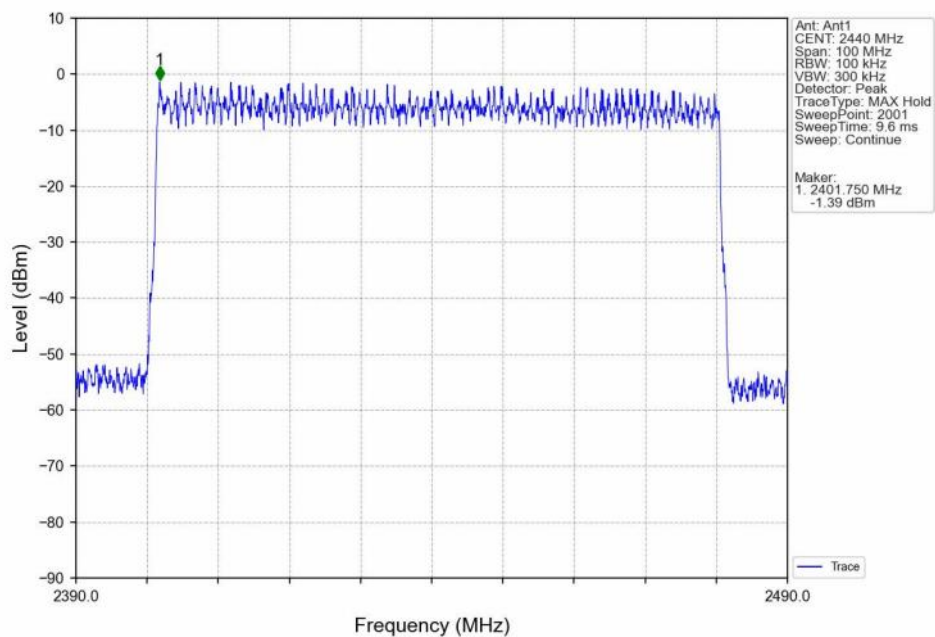
8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



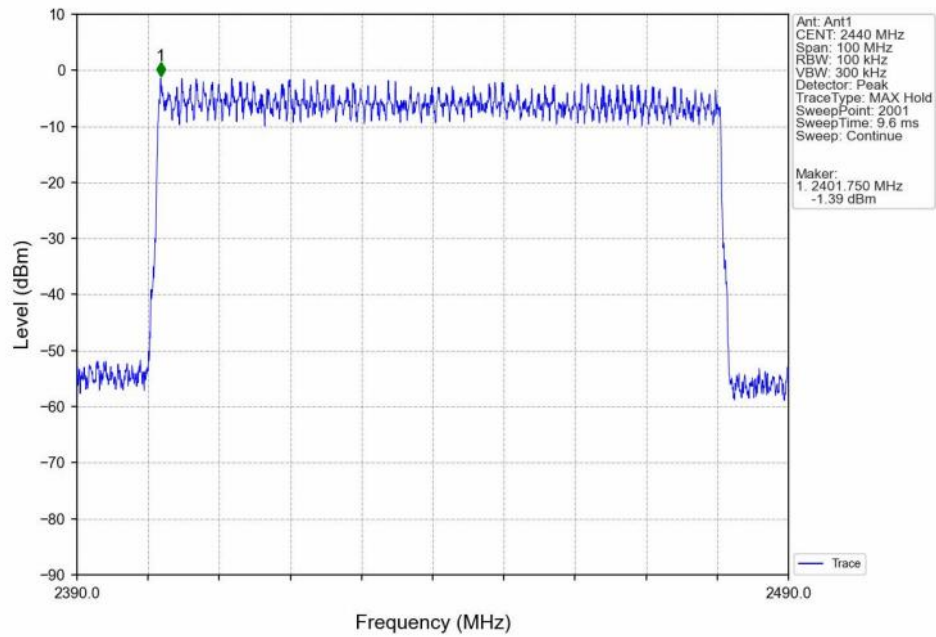
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



8DPSK\_3DH5\_HOPP\_Ant1\_NTNV

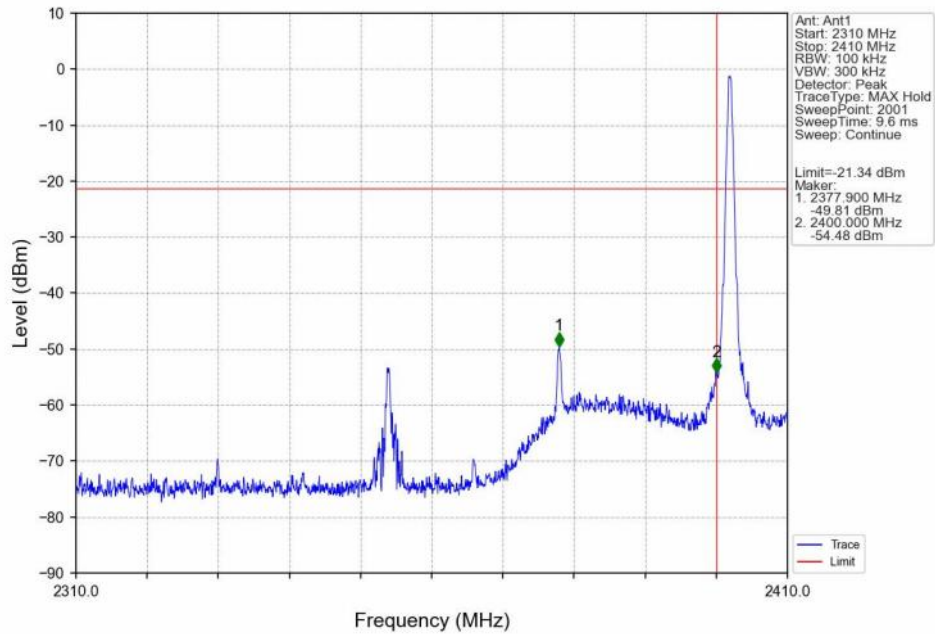


## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV

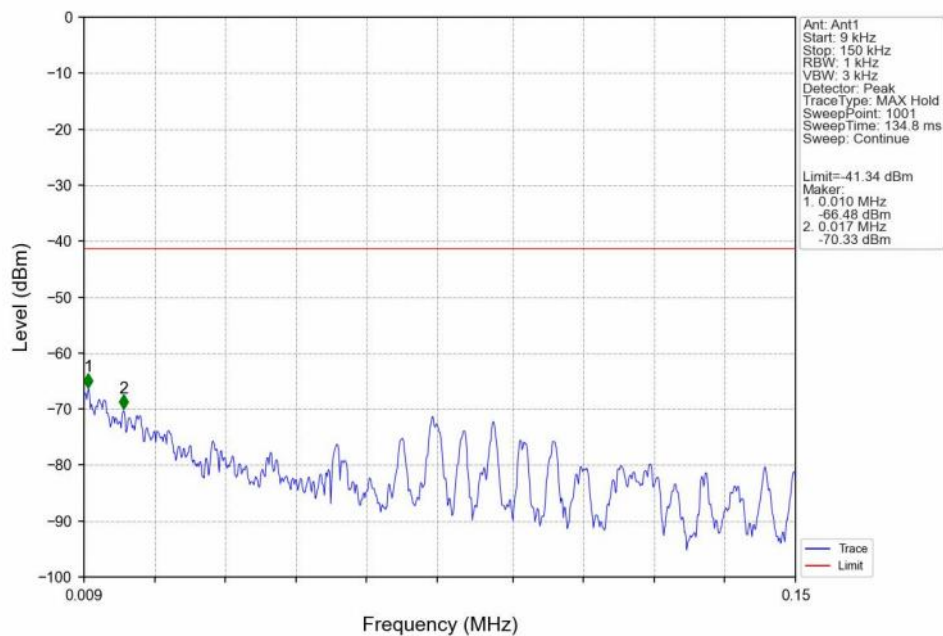


## 6.2.2 CSE

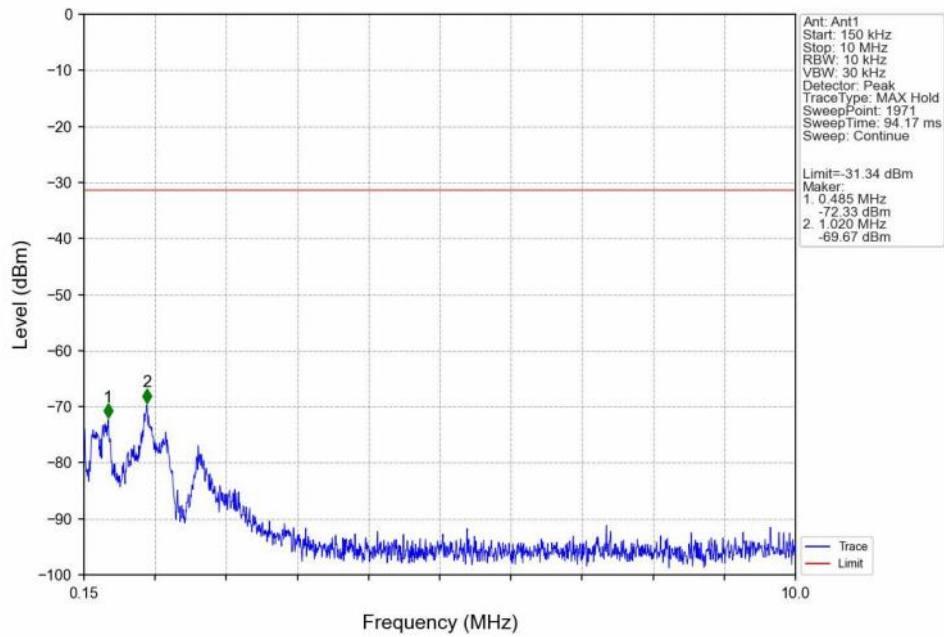
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



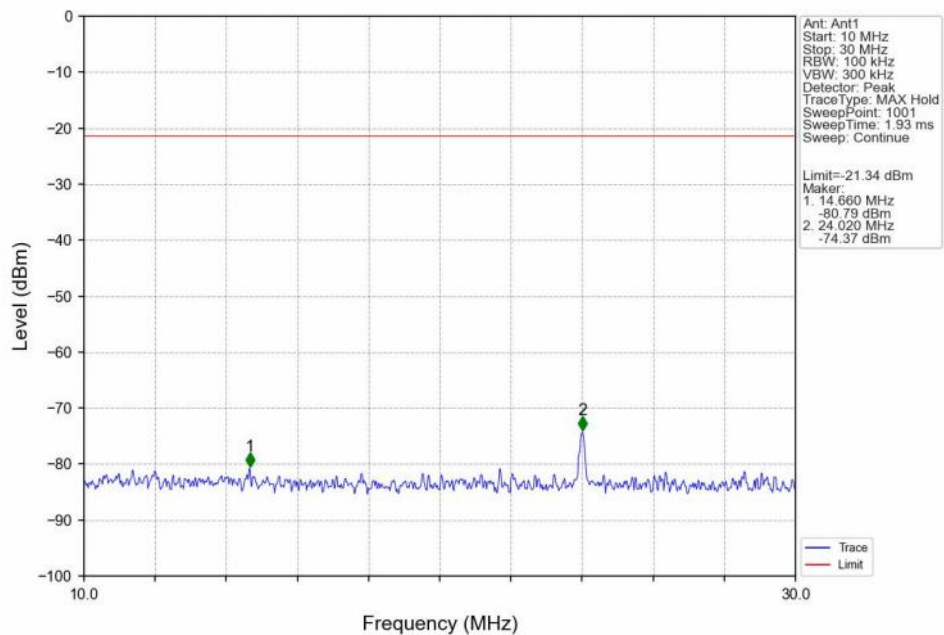
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



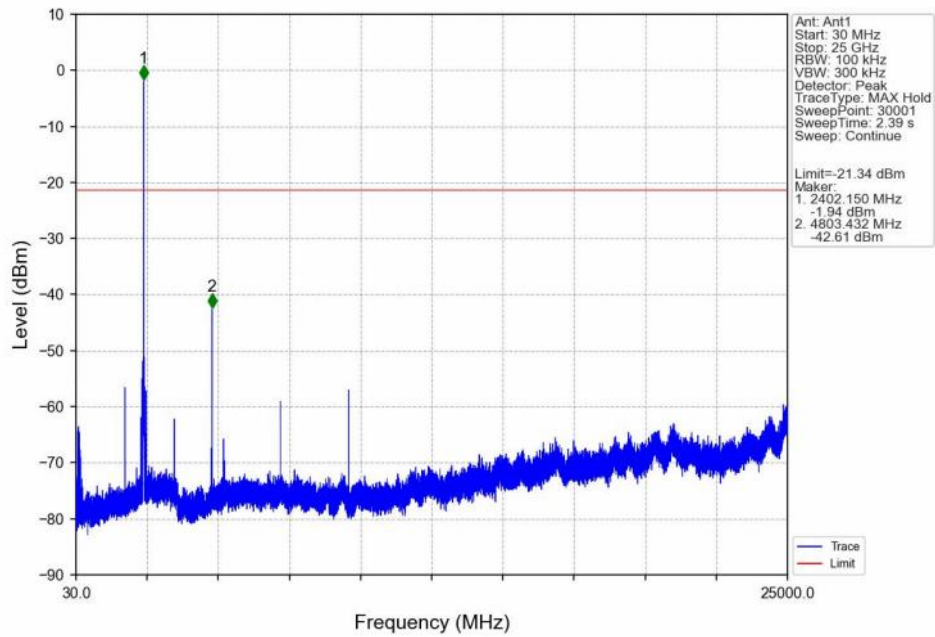
## GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



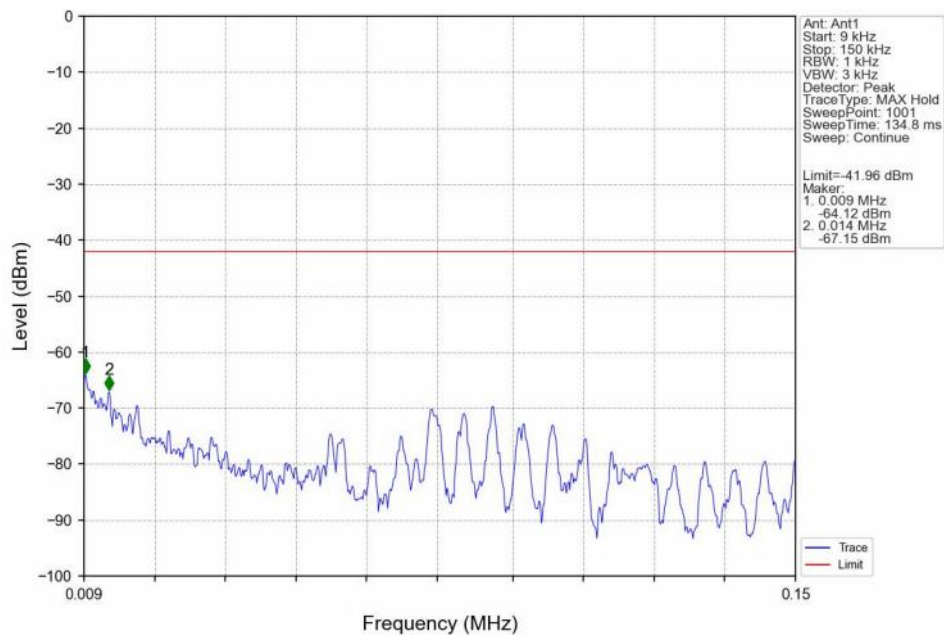
## GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



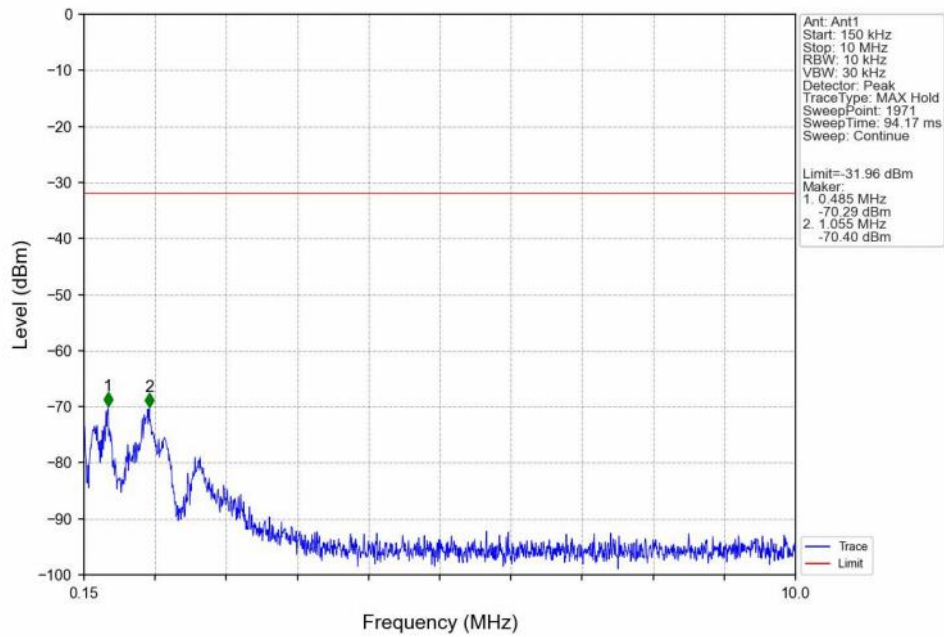
## GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



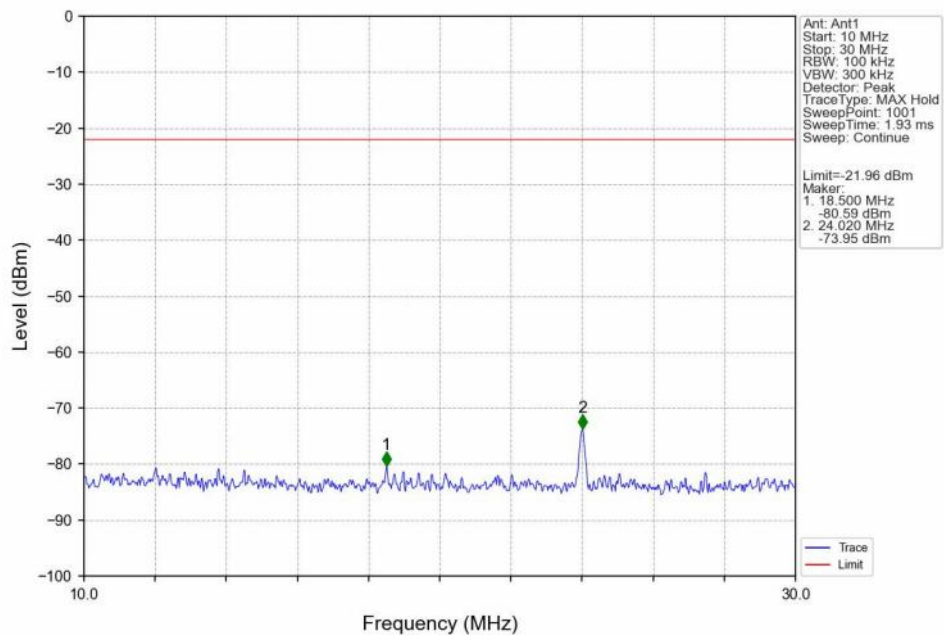
## GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



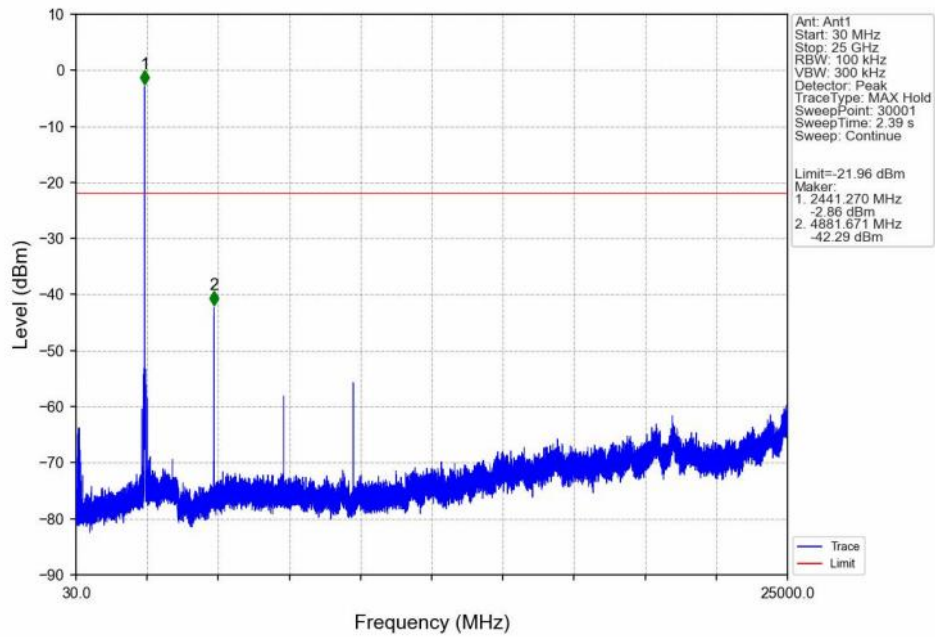
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



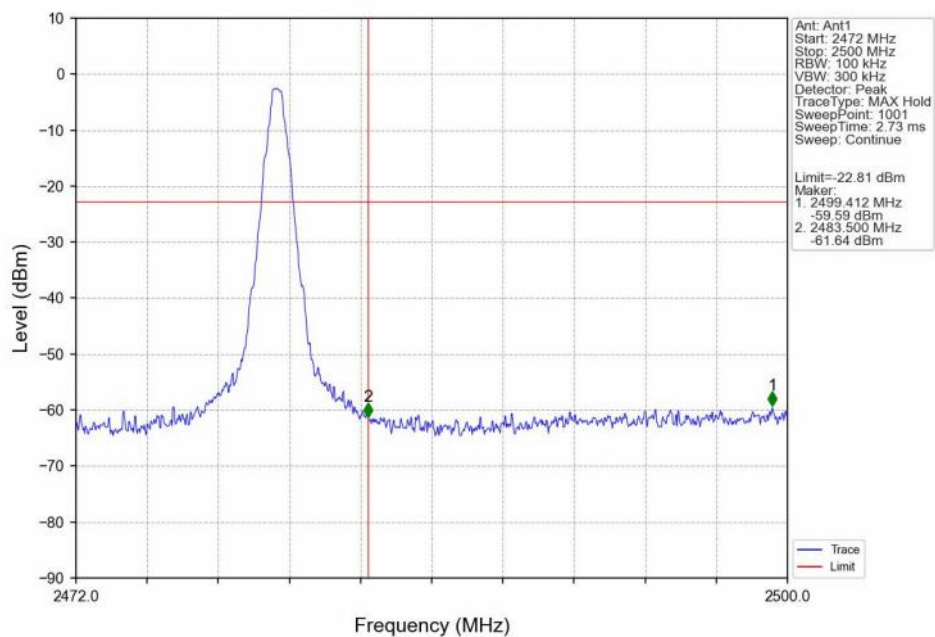
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



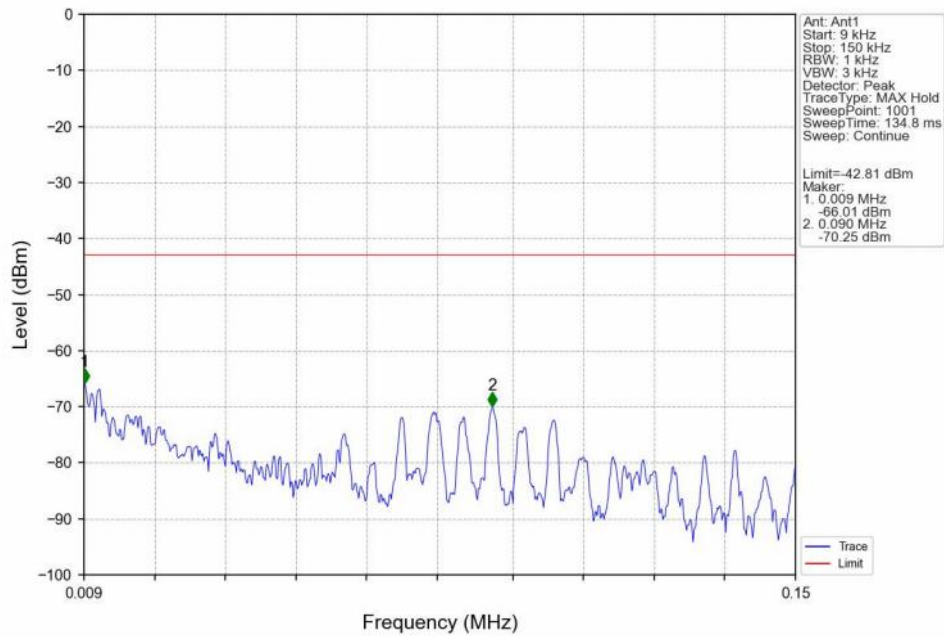
## GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



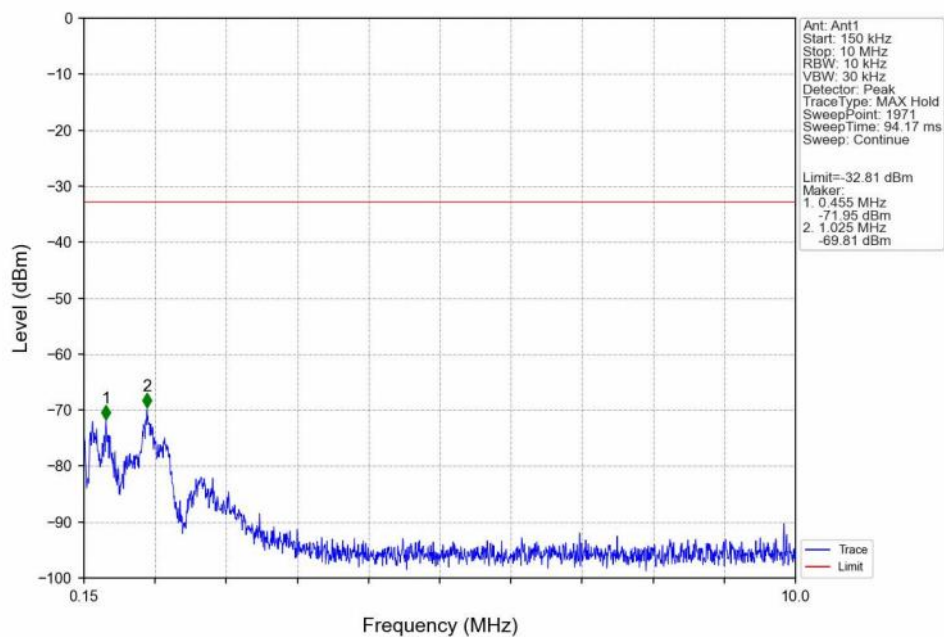
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



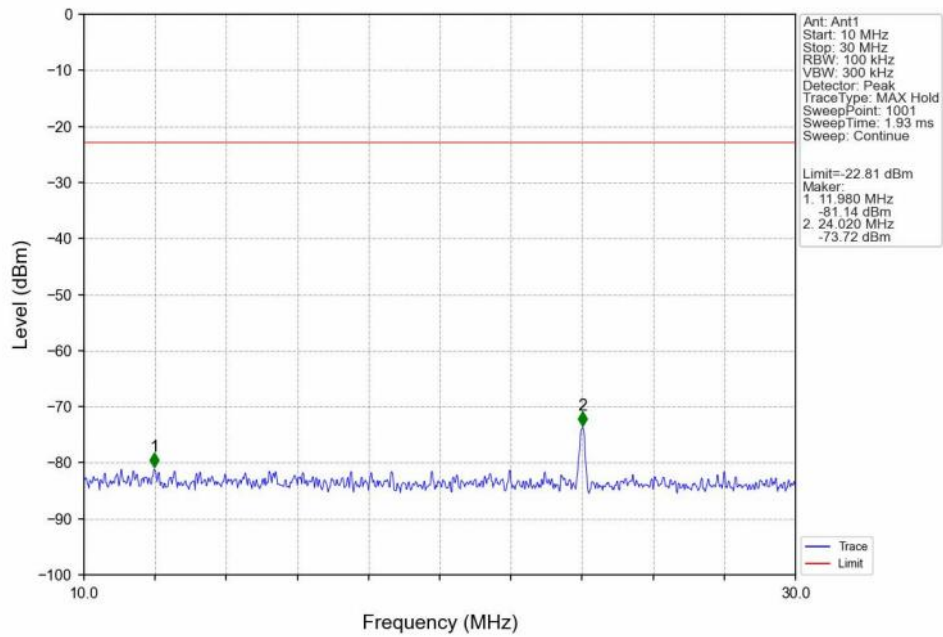
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



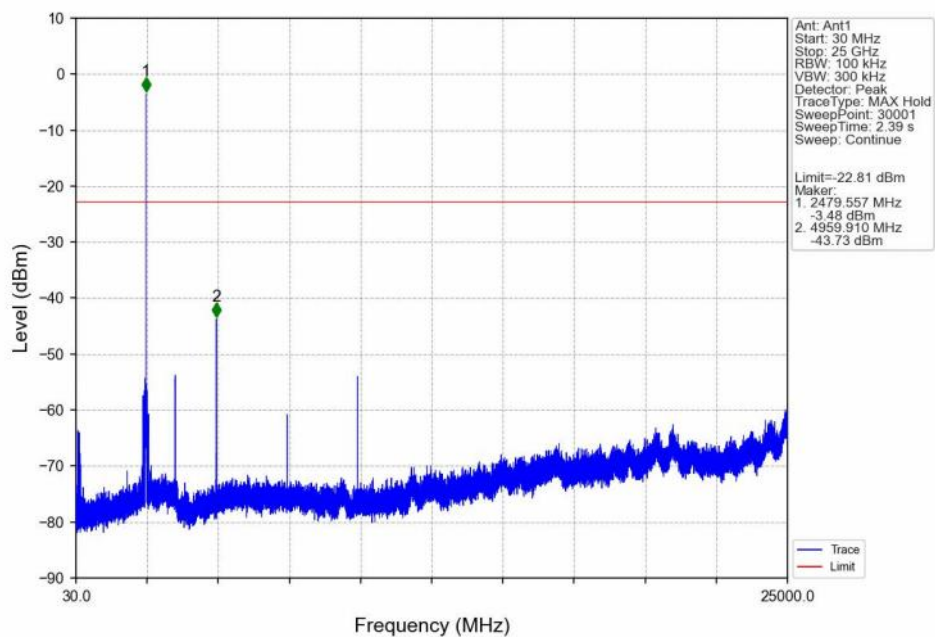
GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



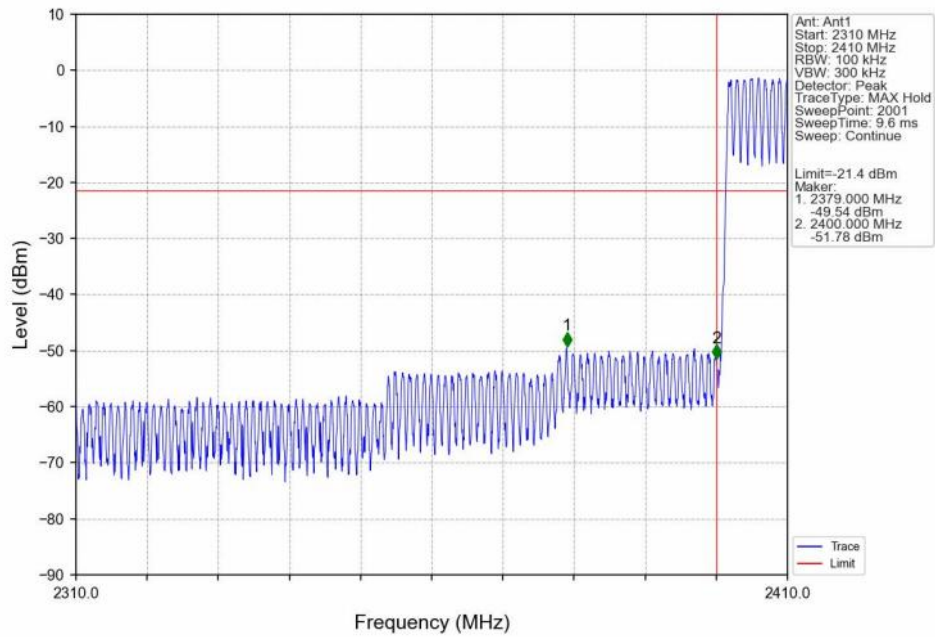
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



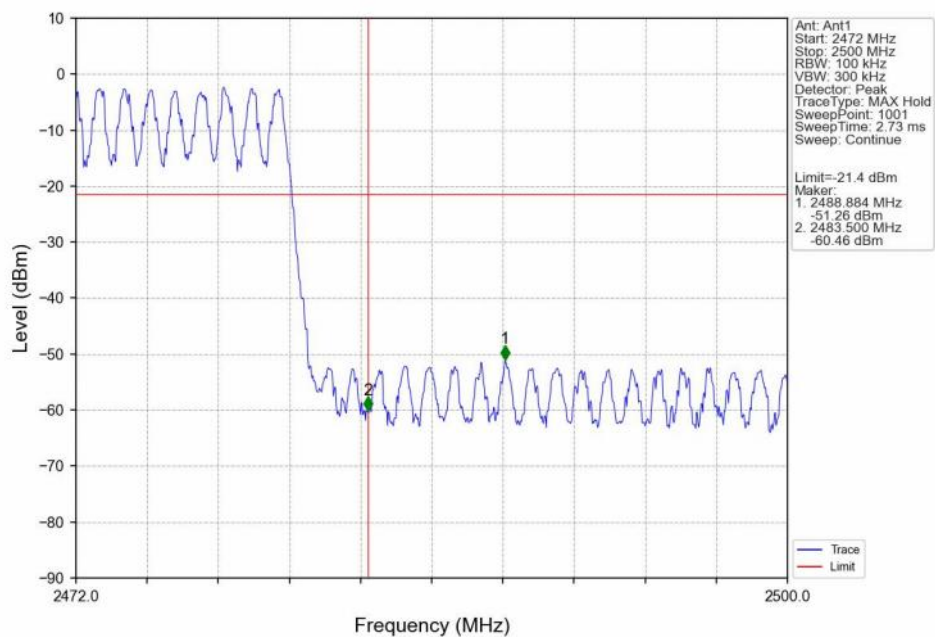
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



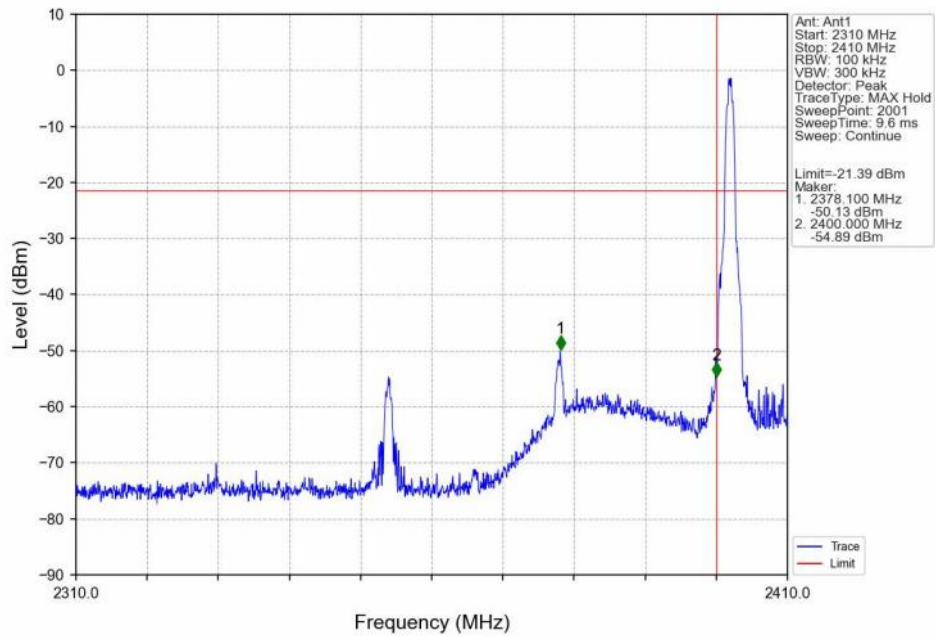
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



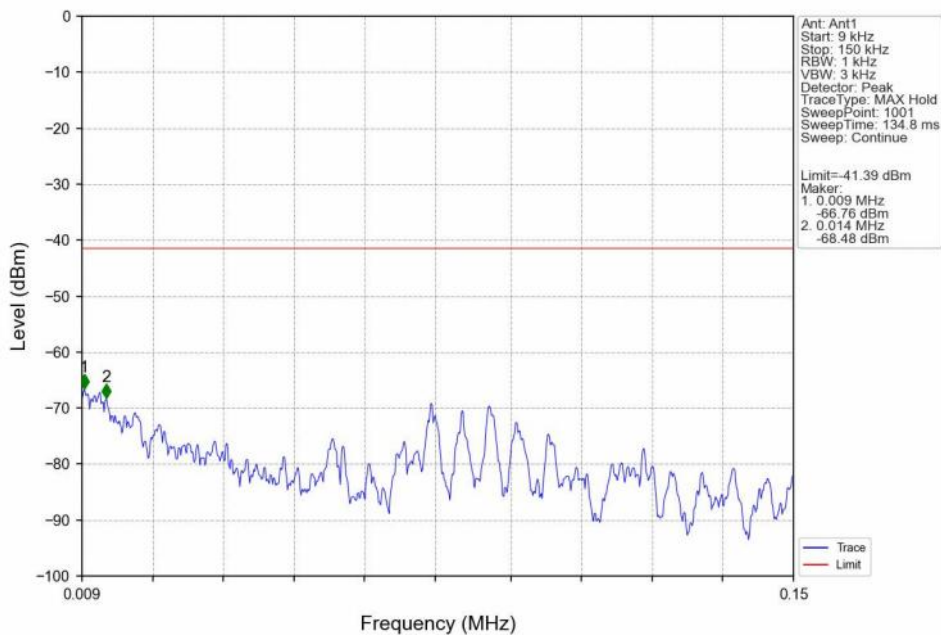
## GFSK\_DH5\_HOPP\_Ant1\_NTNV



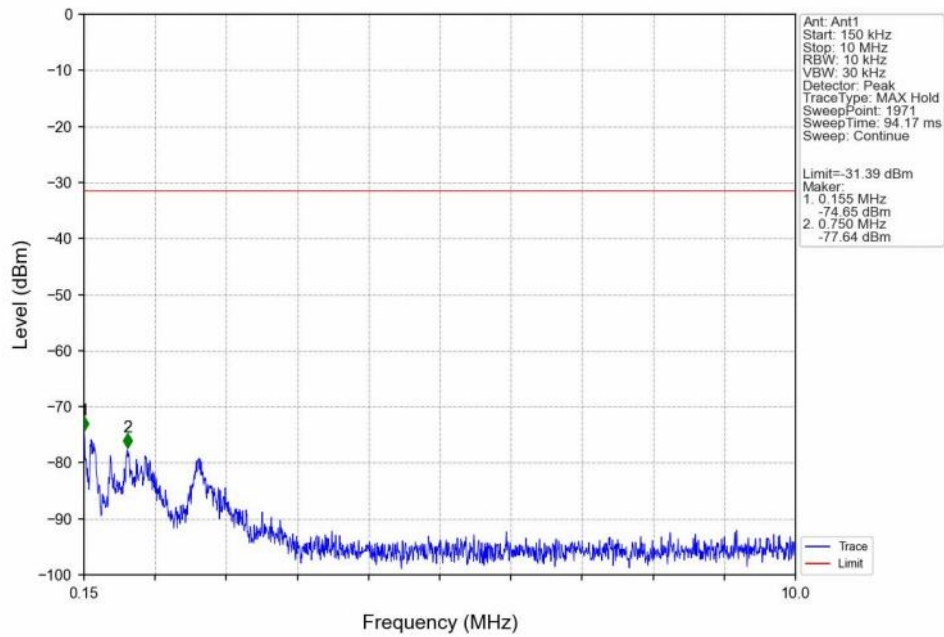
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



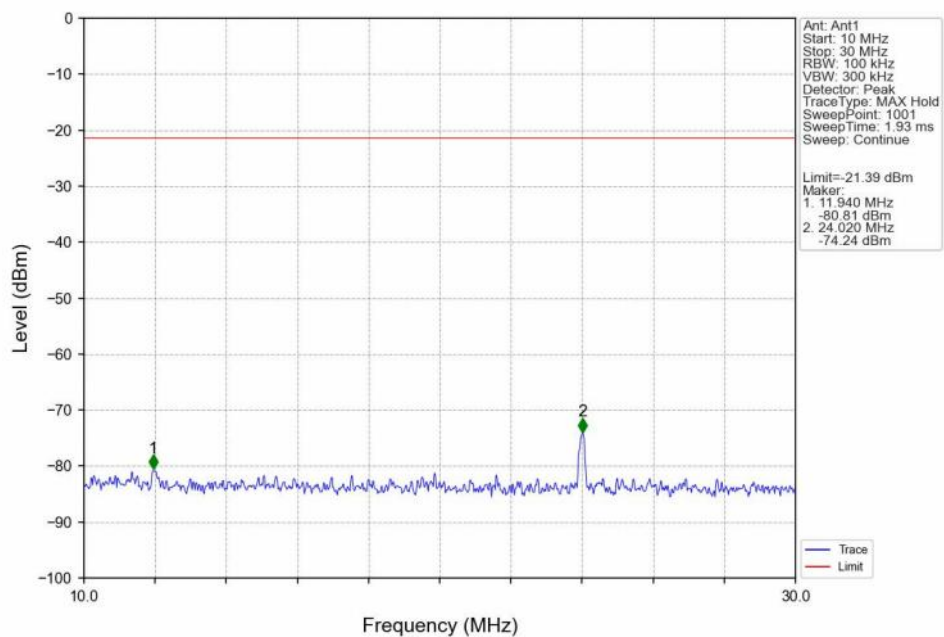
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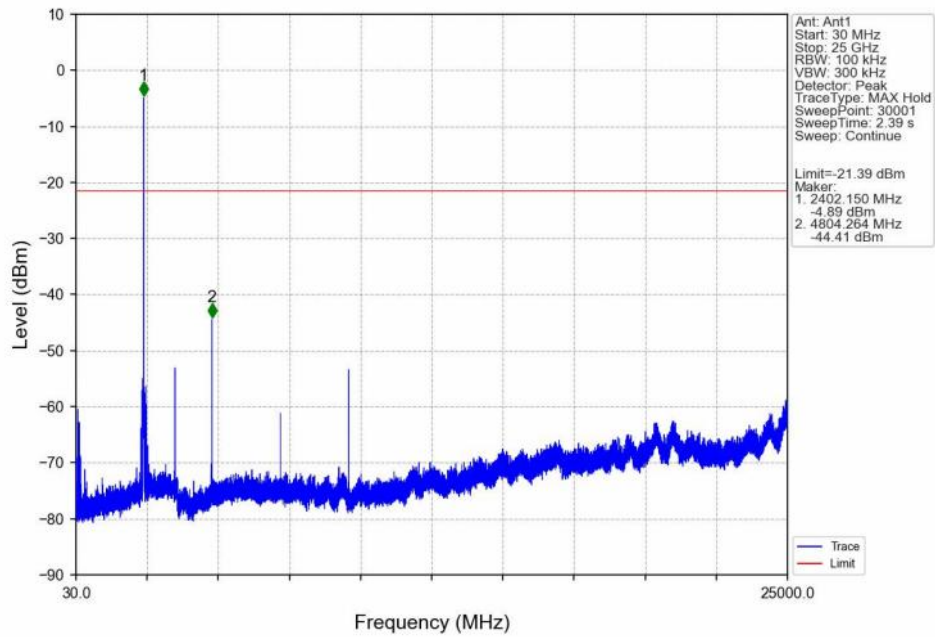
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



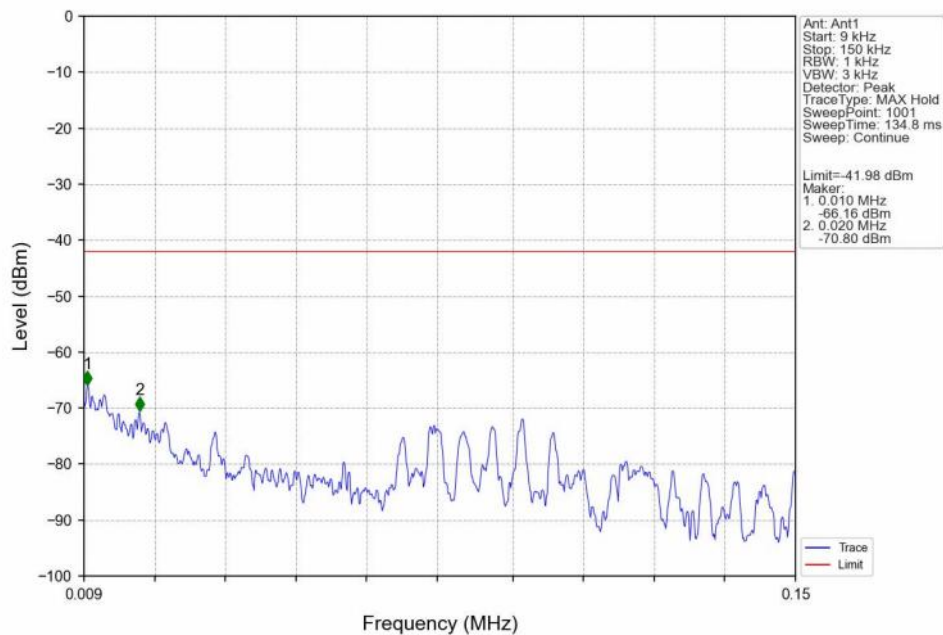
Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



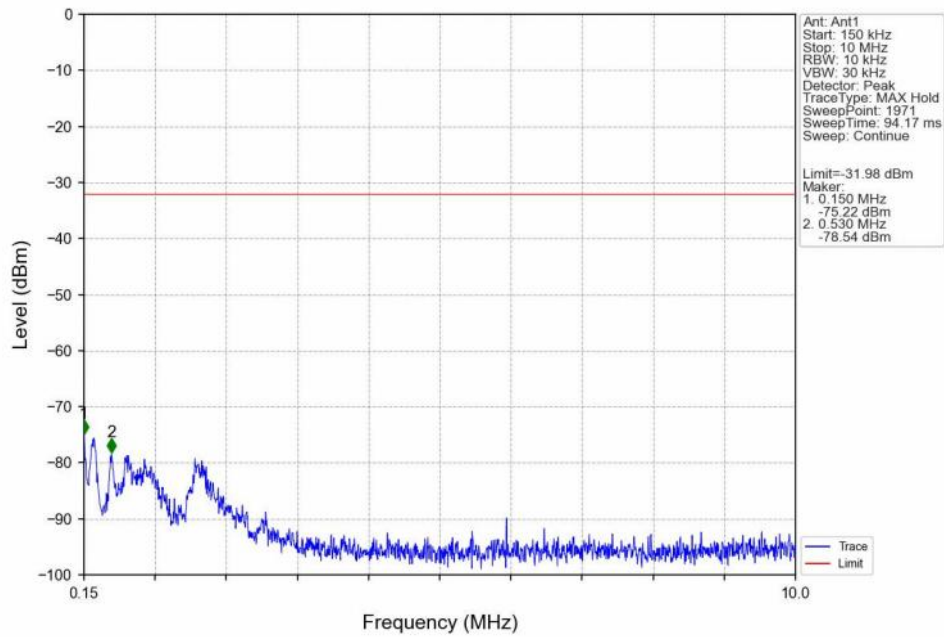
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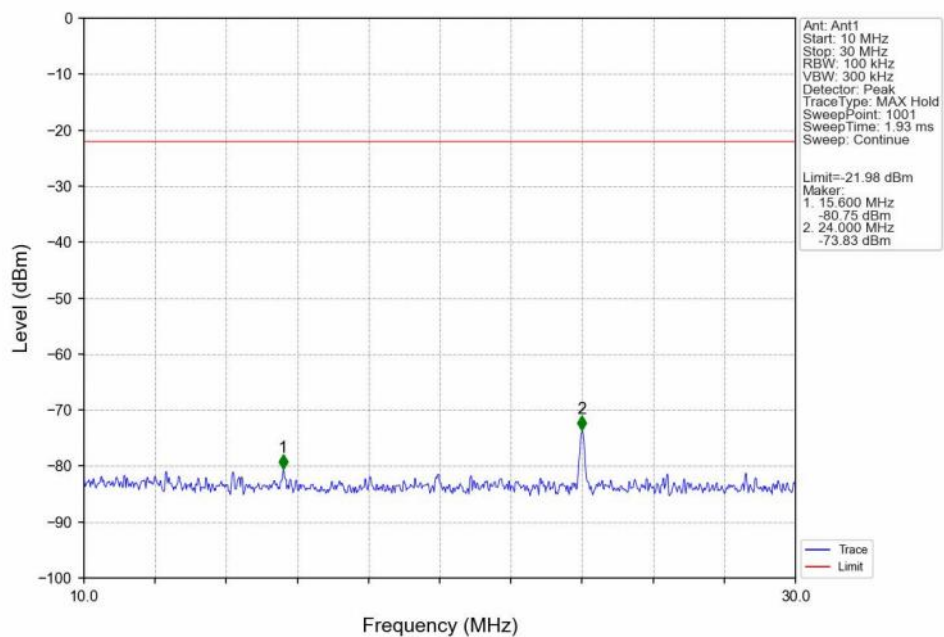
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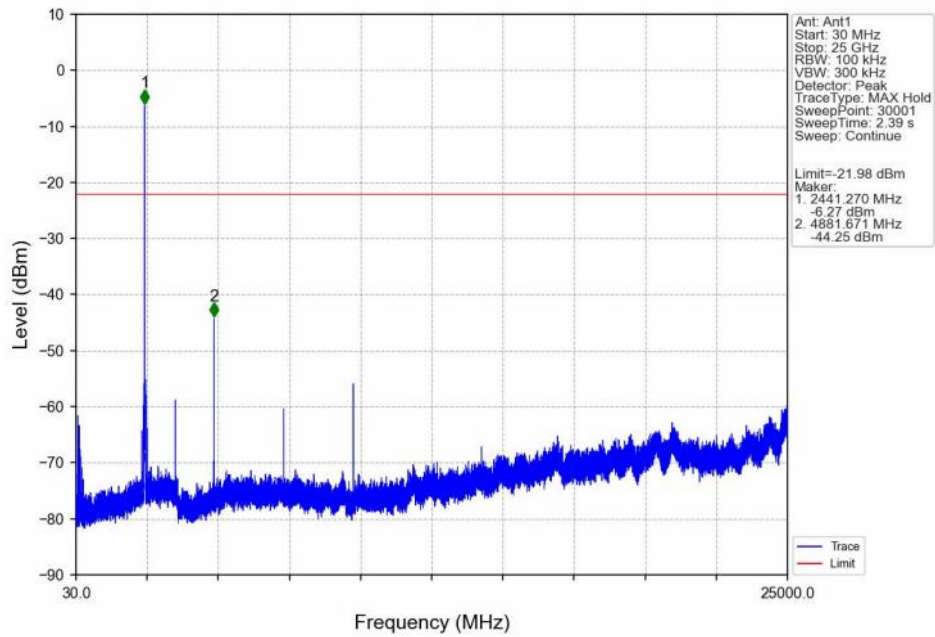
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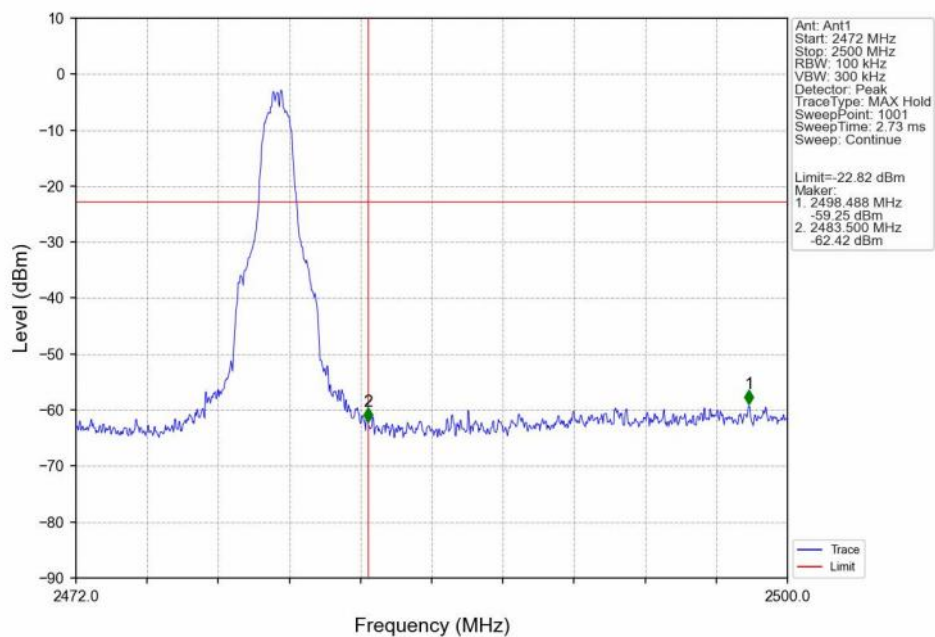
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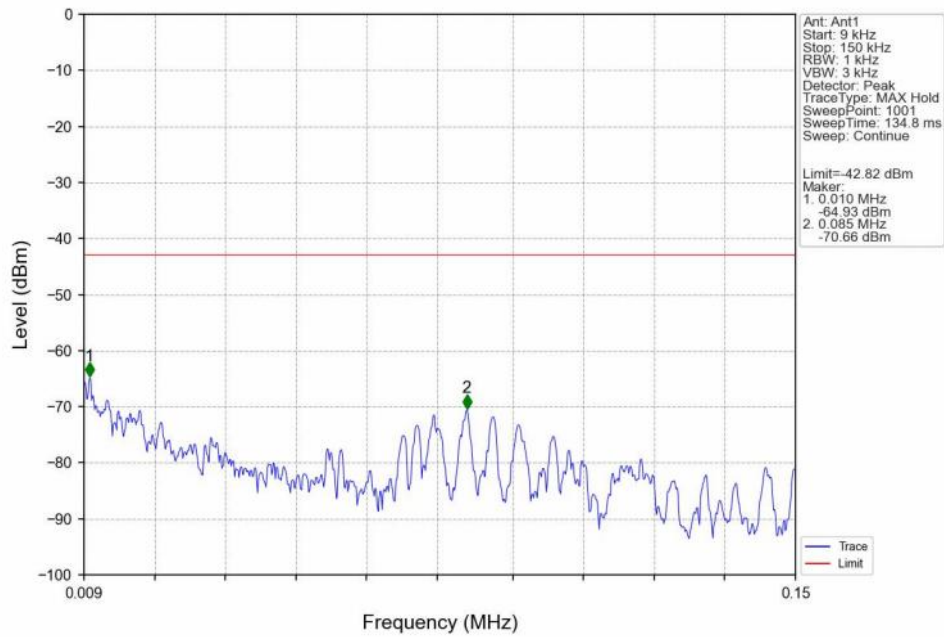
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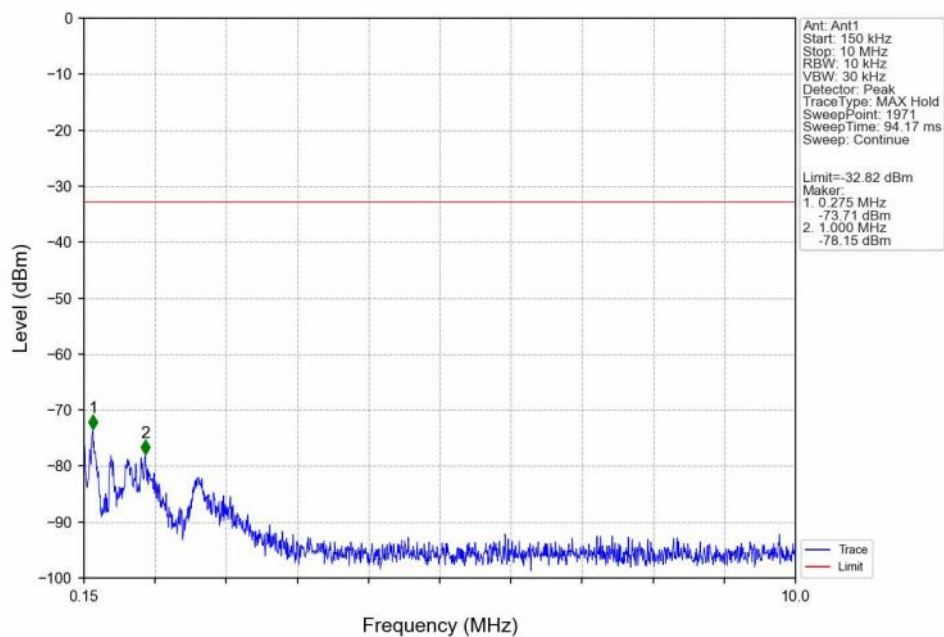
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



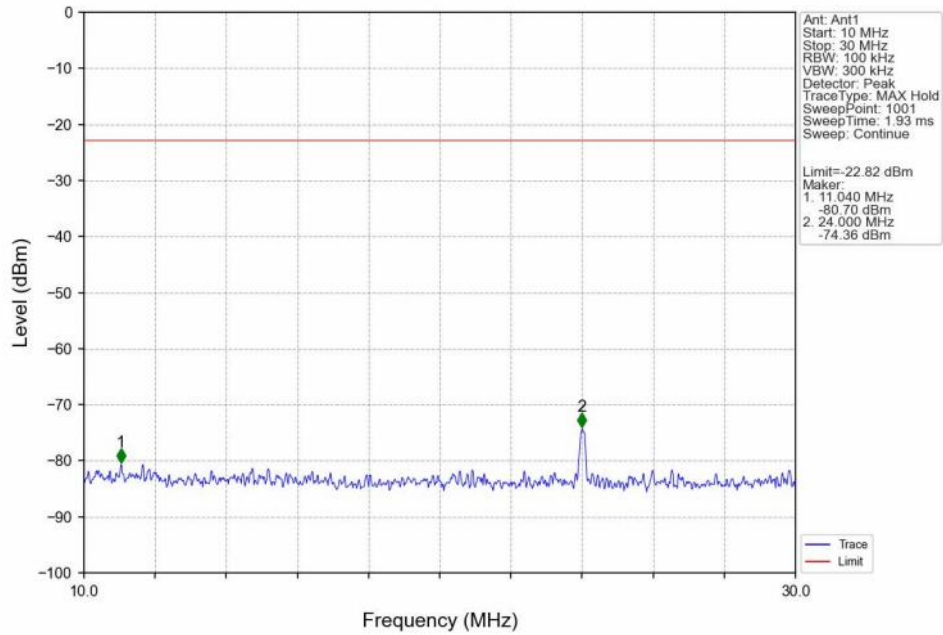
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



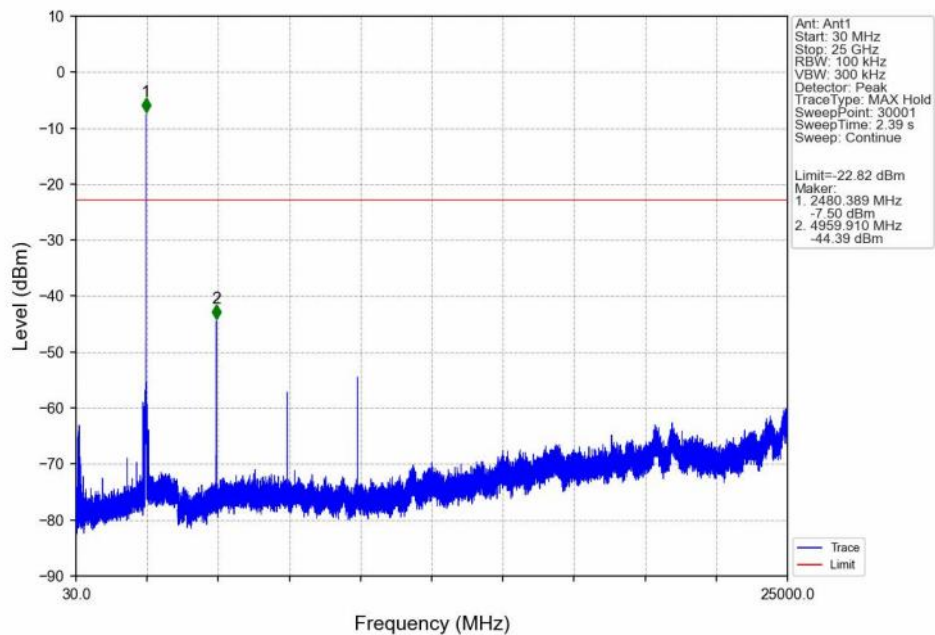
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



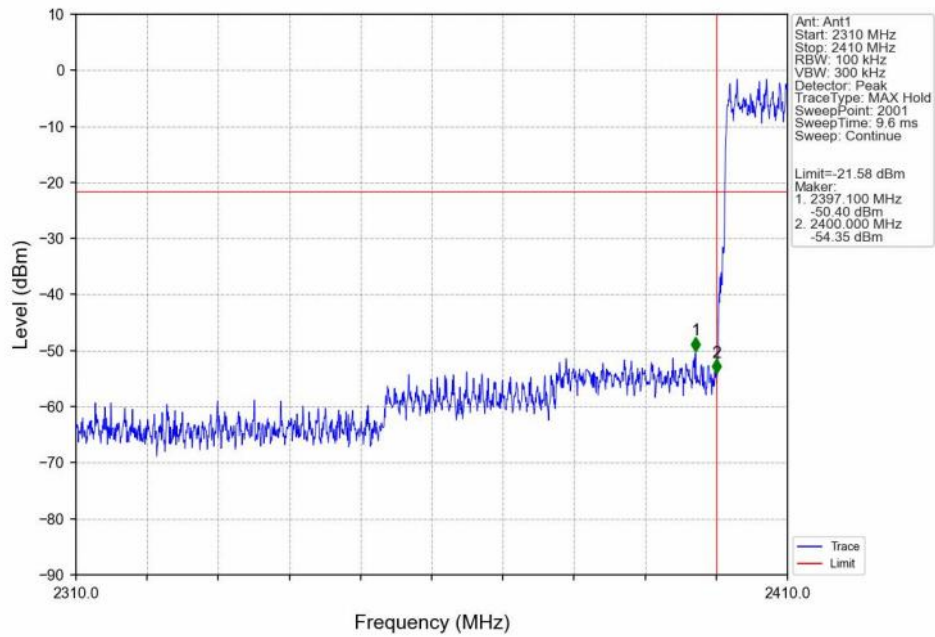
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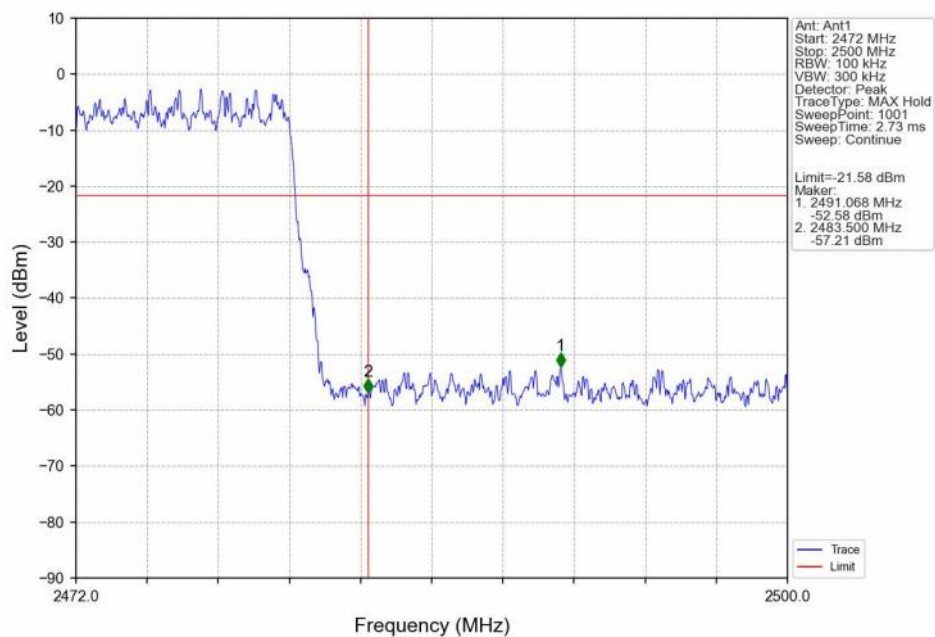
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



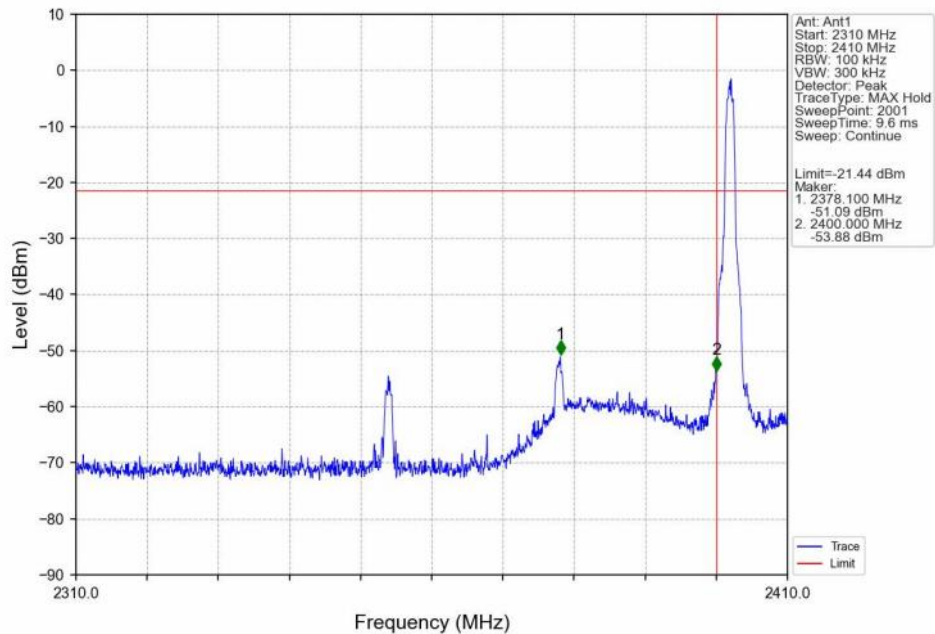
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



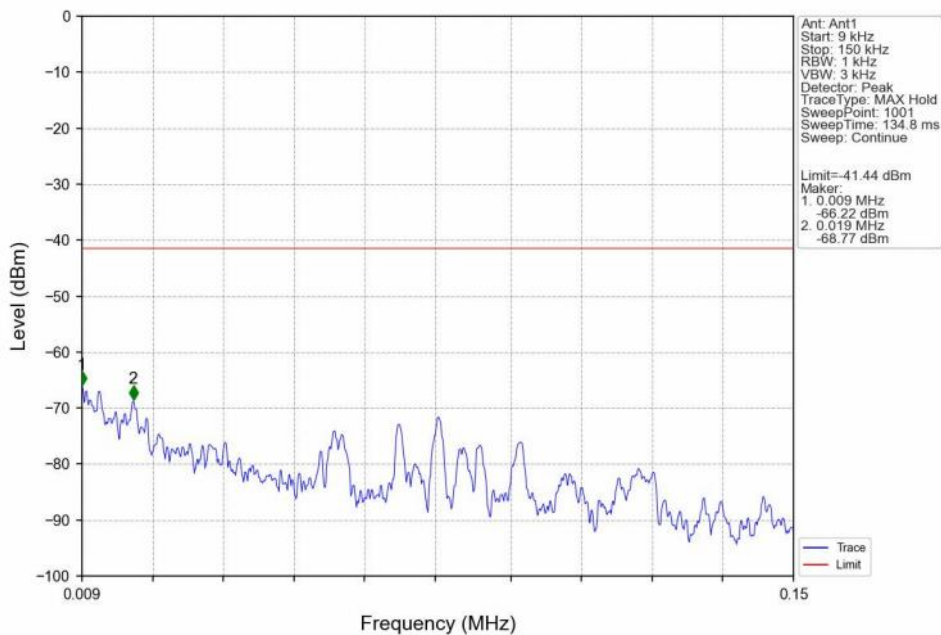
Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



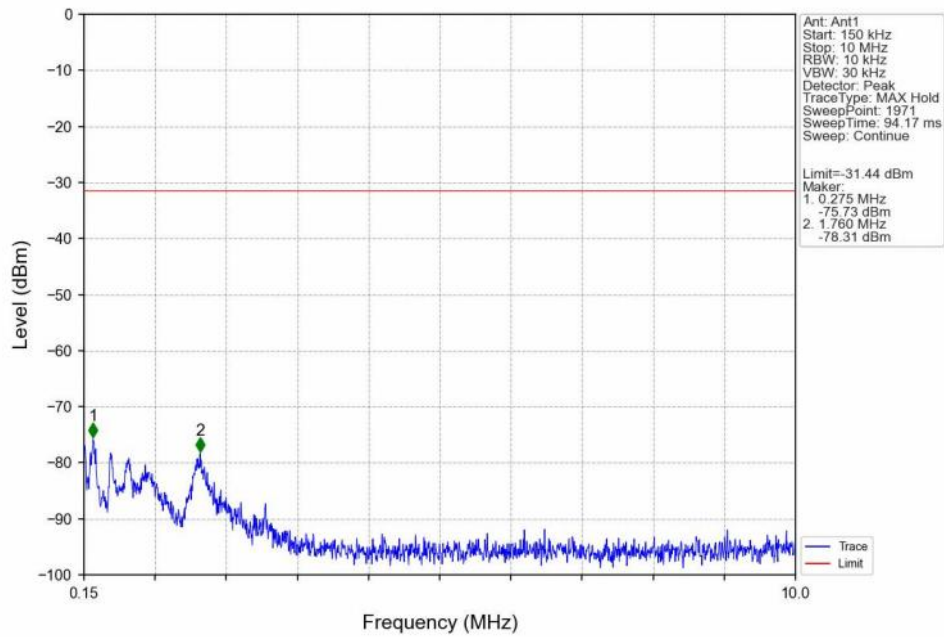
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



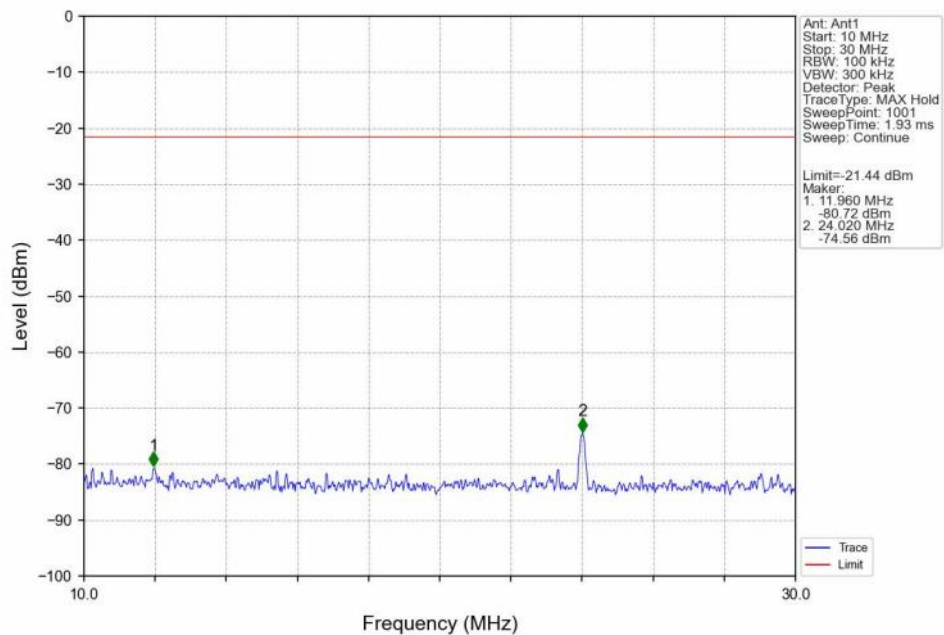
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



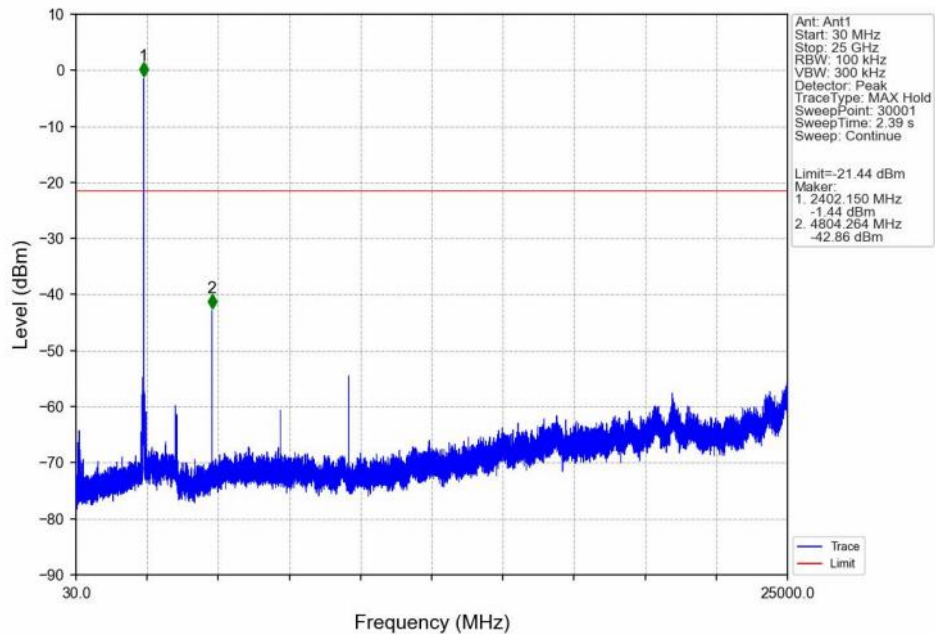
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



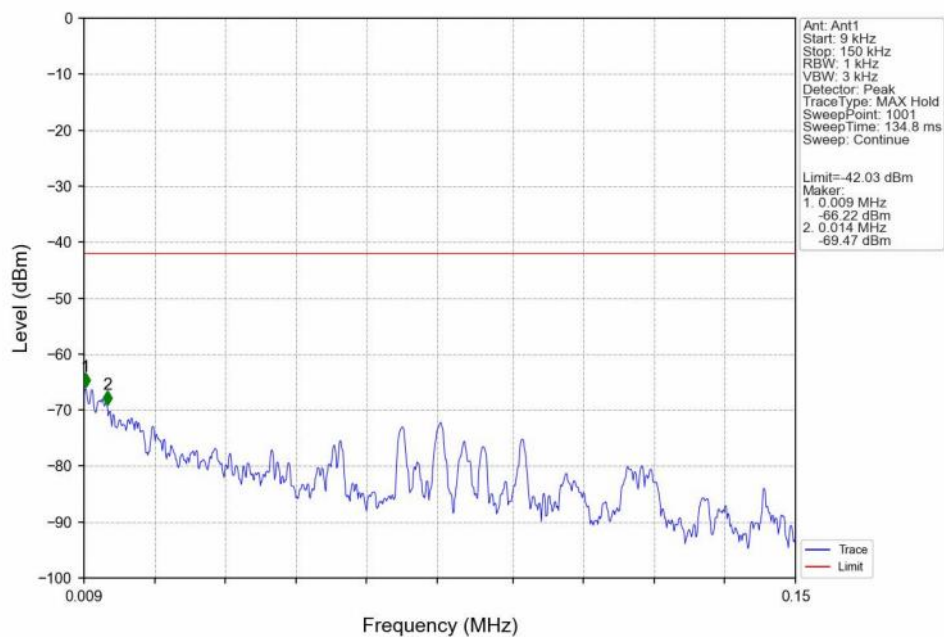
## 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



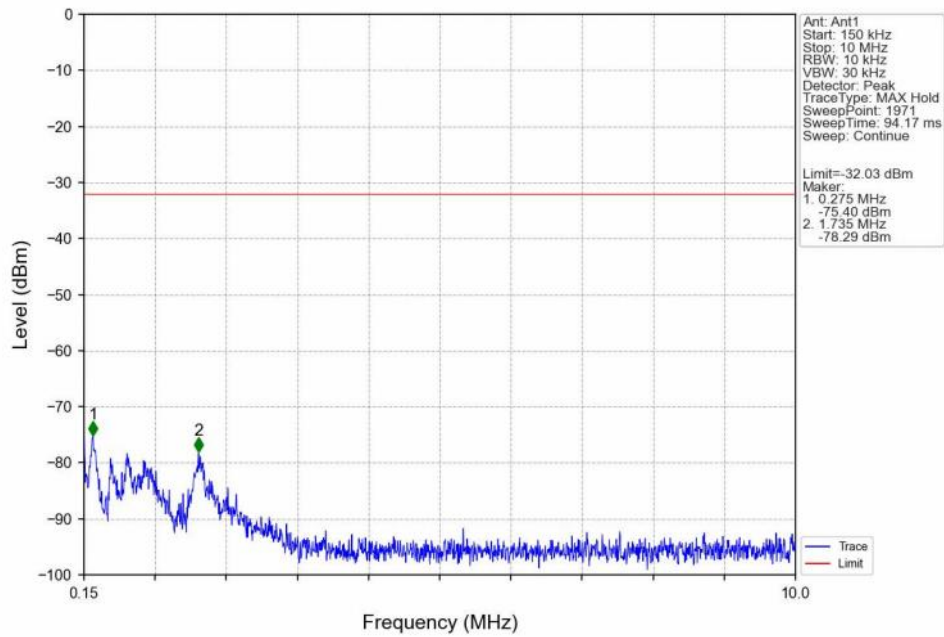
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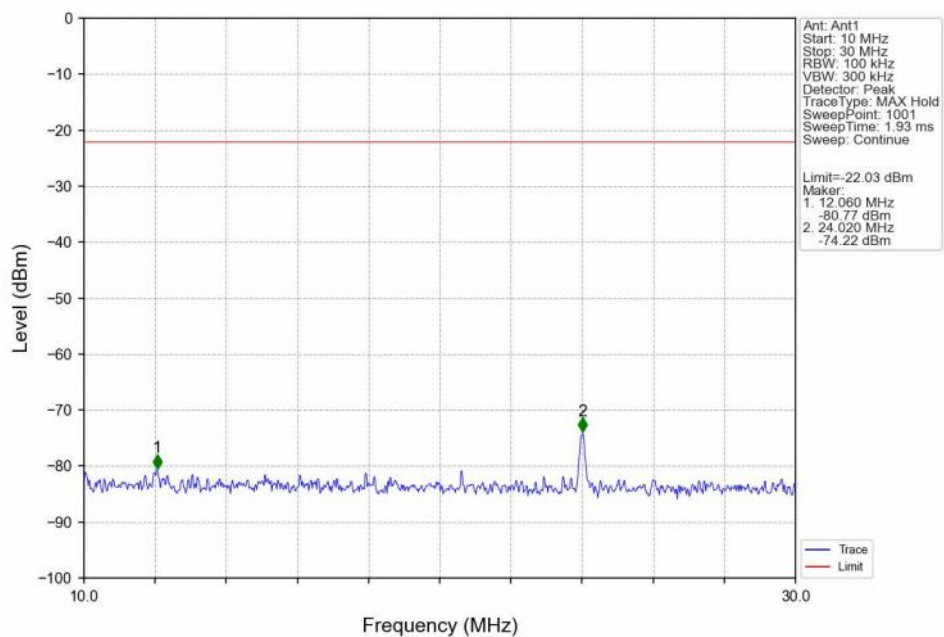
8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



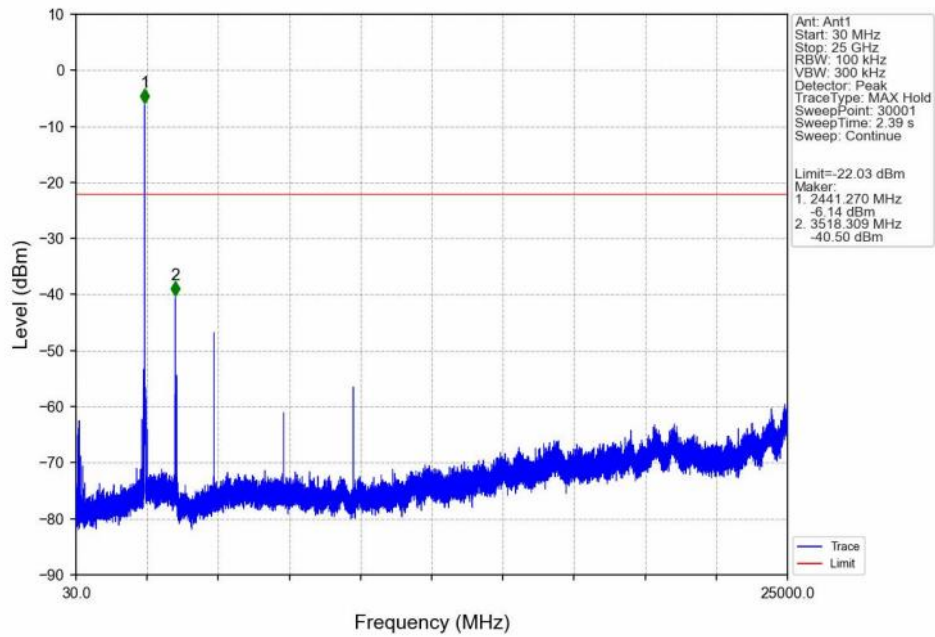
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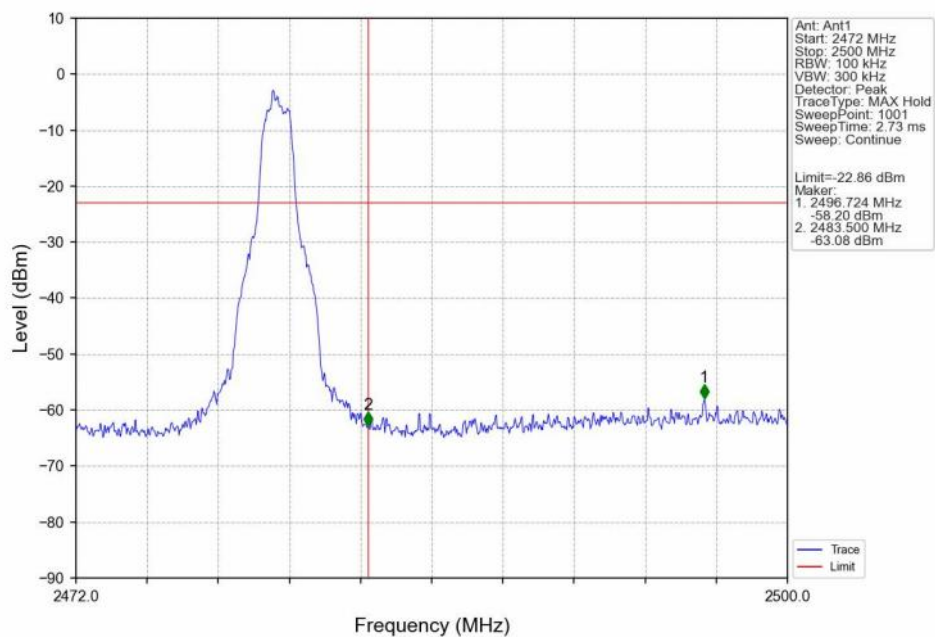
8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



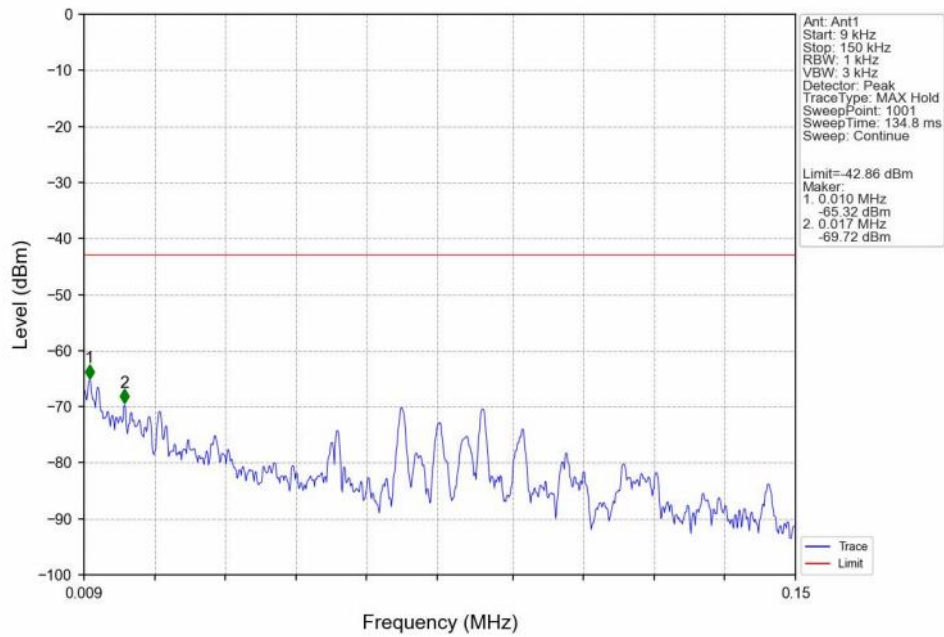
8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



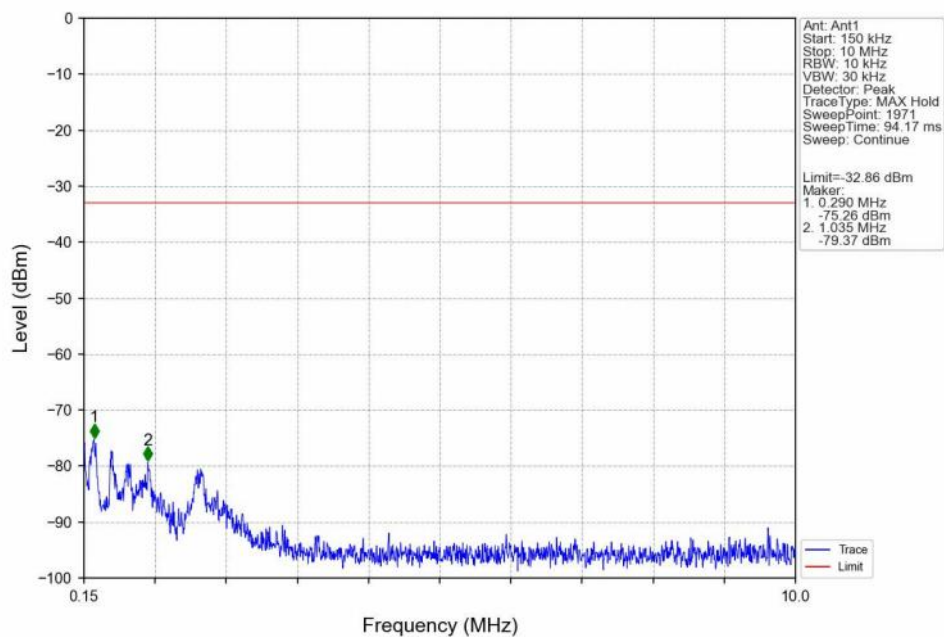
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



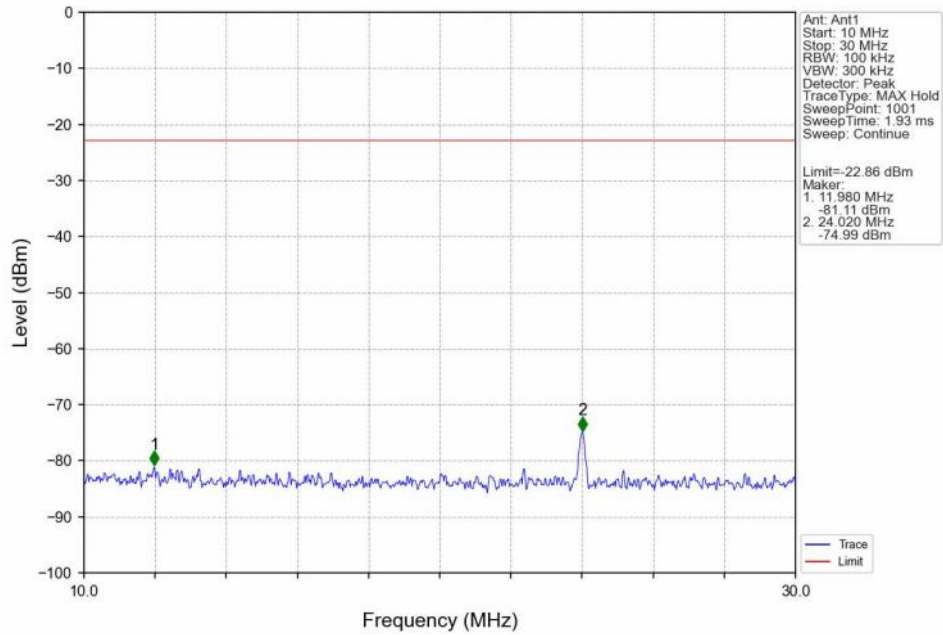
## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



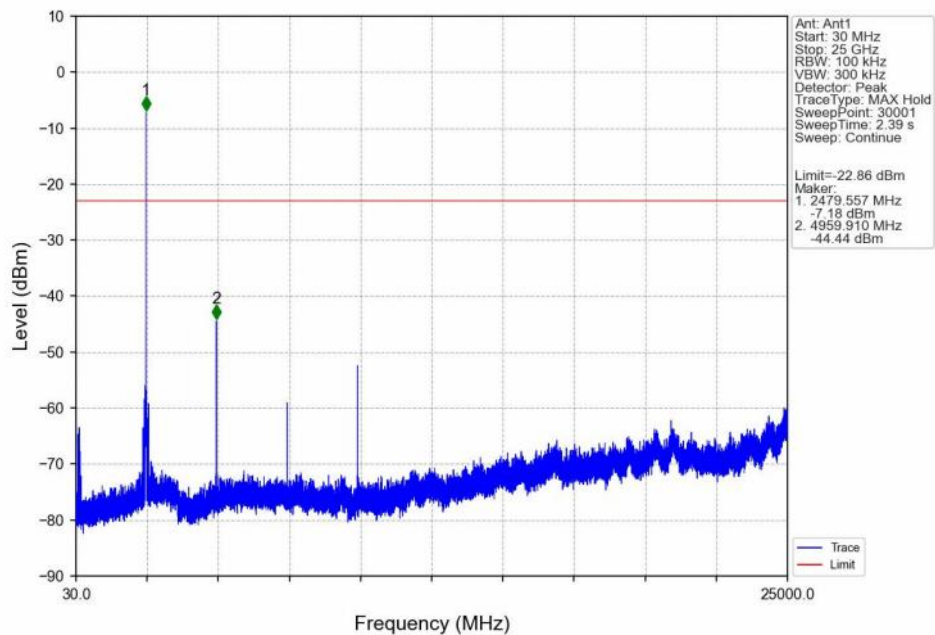
## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



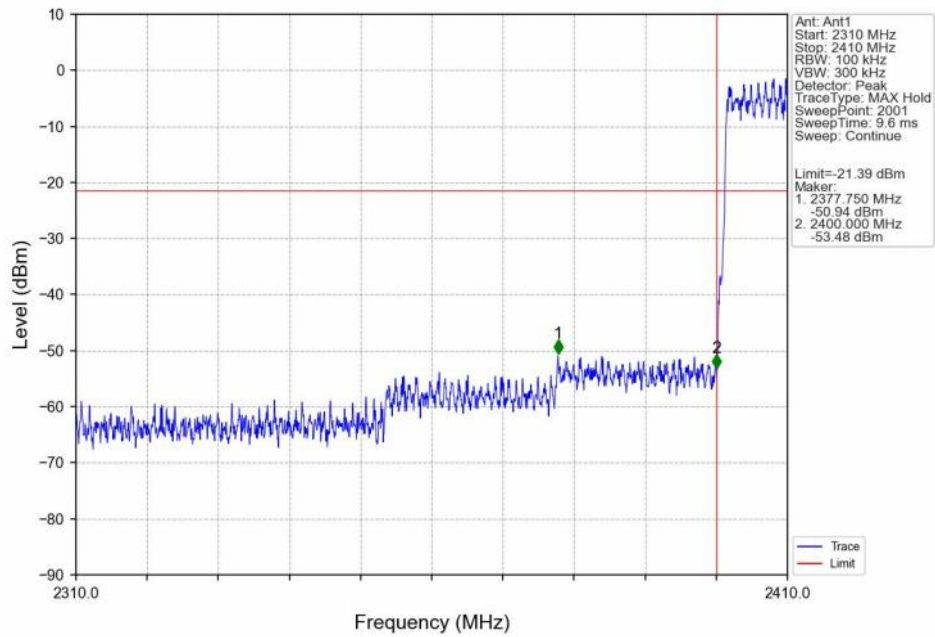
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



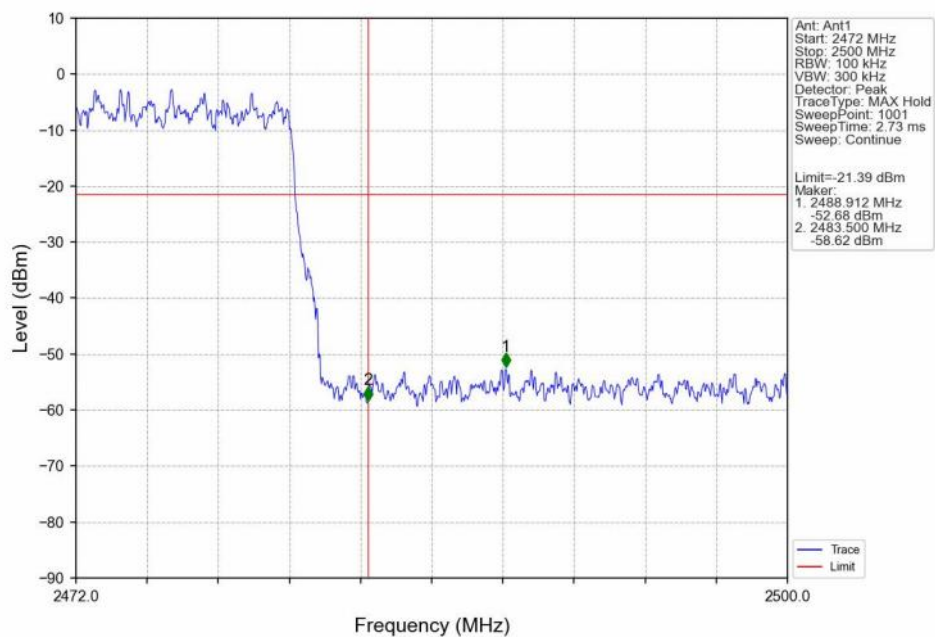
8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



## 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            | 0.0010        | -0.06           |



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

**-- END OF REPORT --**