

## **Appendix RF test data for BT**

## 1. Bandwidth

### 1.1 Test Result

#### 1.1.1 OBW

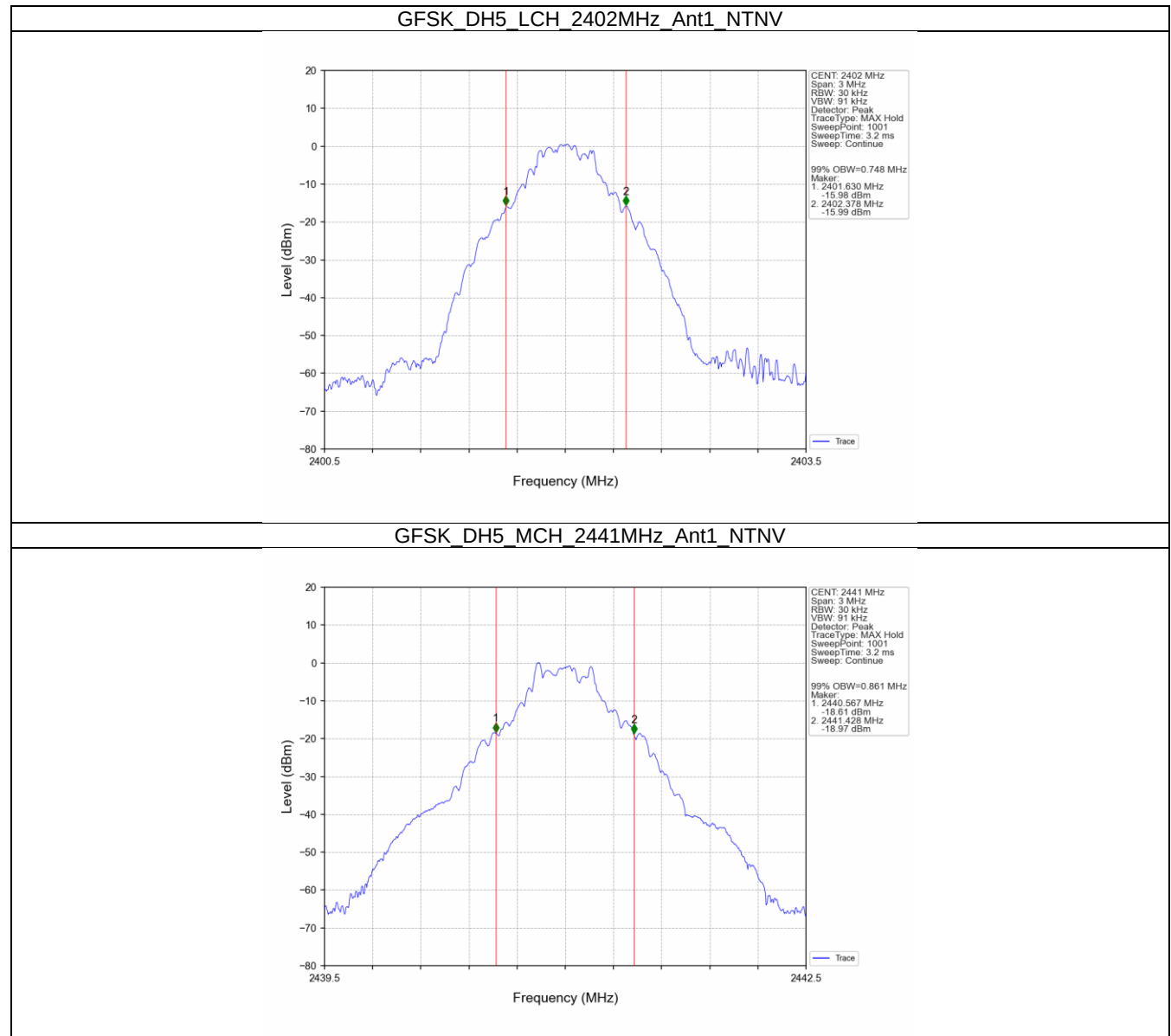
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 99% Occupied Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
|           |         |                 |             |     | Result                       | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.748                        | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.861                        | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 0.747                        | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.146                        | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.141                        | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.145                        | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.163                        | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.157                        | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.154                        | /     | Pass    |

#### 1.1.2 20dB BW

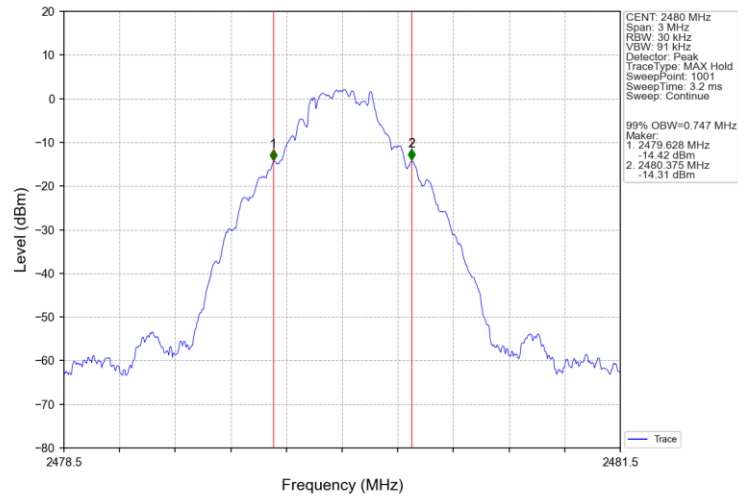
| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | 20dB Bandwidth (MHz) |       | Verdict |
|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
|           |         |                 |             |     | Result               | Limit |         |
| GFSK      | SISO    | 2402            | DH5         | 1   | 0.849                | /     | Pass    |
|           |         | 2441            | DH5         | 1   | 0.848                | /     | Pass    |
|           |         | 2480            | DH5         | 1   | 0.848                | /     | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | 1.276                | /     | Pass    |
|           |         | 2441            | 2DH5        | 1   | 1.279                | /     | Pass    |
|           |         | 2480            | 2DH5        | 1   | 1.275                | /     | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | 1.297                | /     | Pass    |
|           |         | 2441            | 3DH5        | 1   | 1.279                | /     | Pass    |
|           |         | 2480            | 3DH5        | 1   | 1.280                | /     | Pass    |

## 1.2 Test Graph

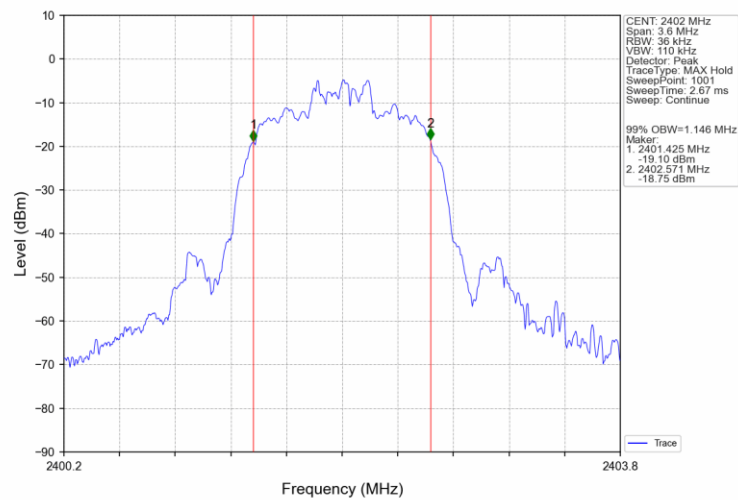
### 1.2.1 OBW



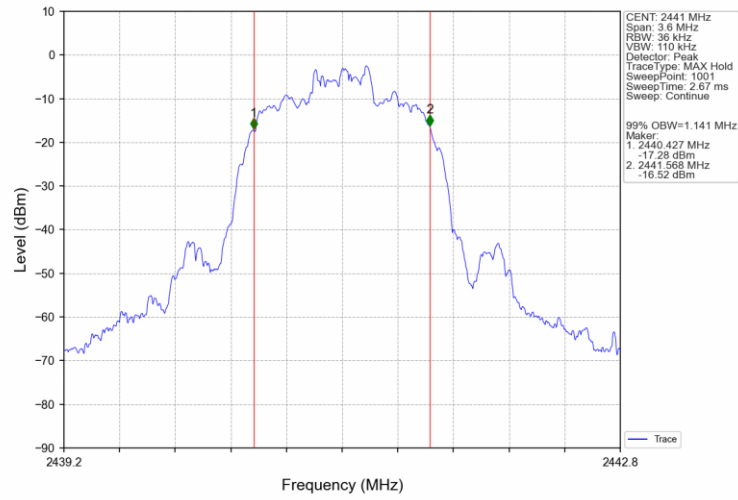
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



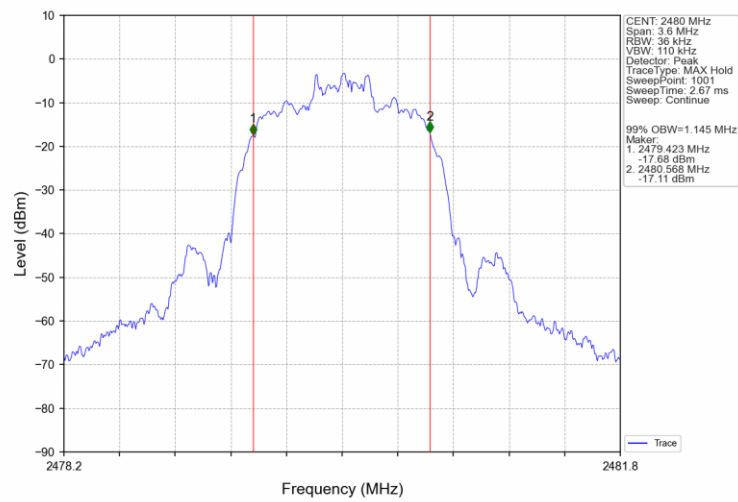
### Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



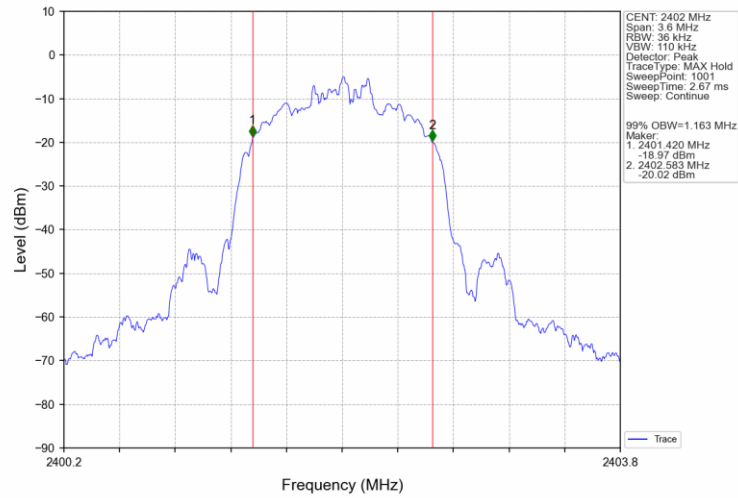
### Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



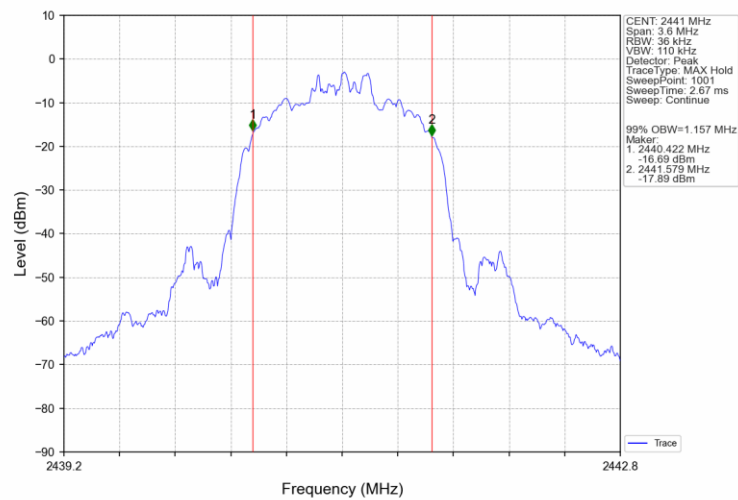
### Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



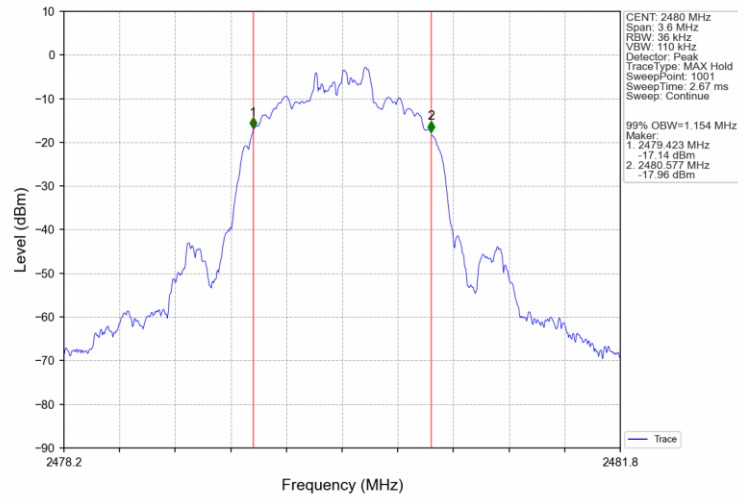
### 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



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

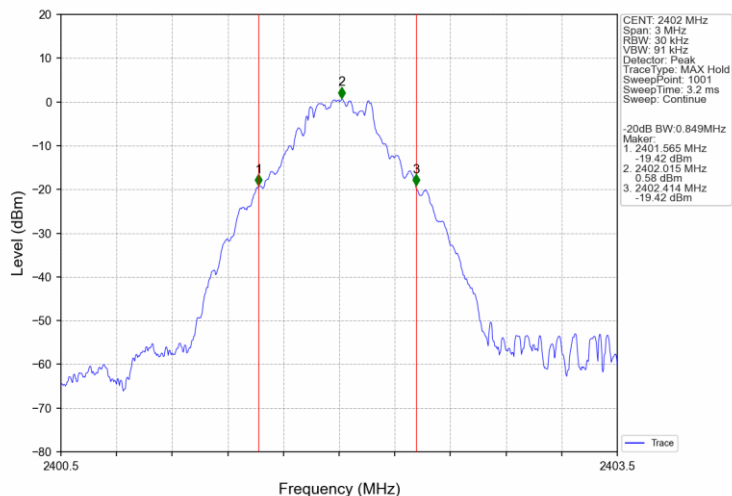


## 8DPSK 3DH5 HCH 2480MHz Ant1 NTV

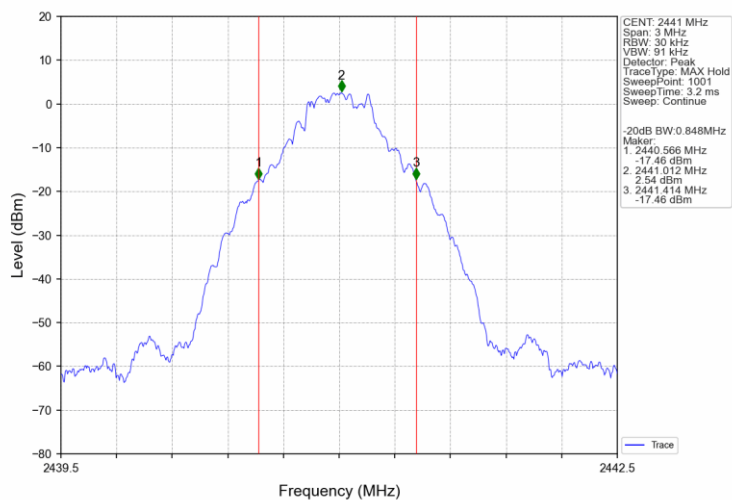


## 1.2.2 20dB BW

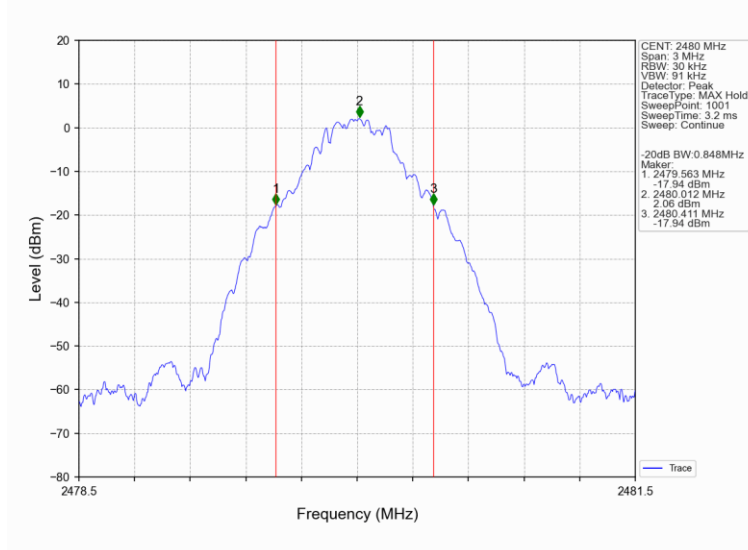
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



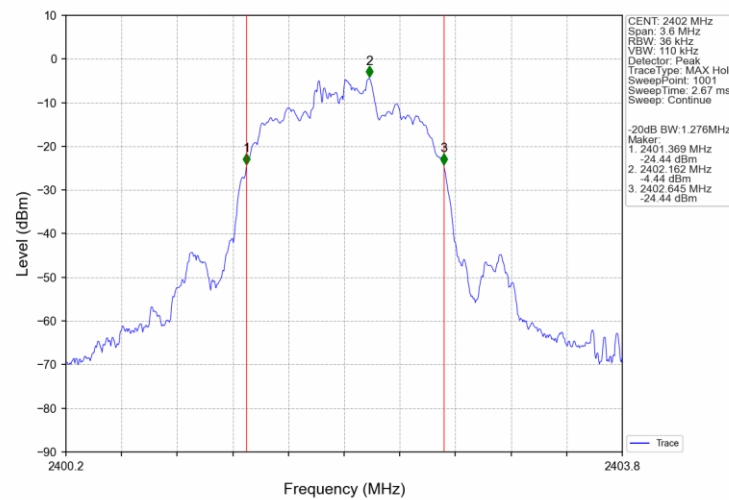
GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



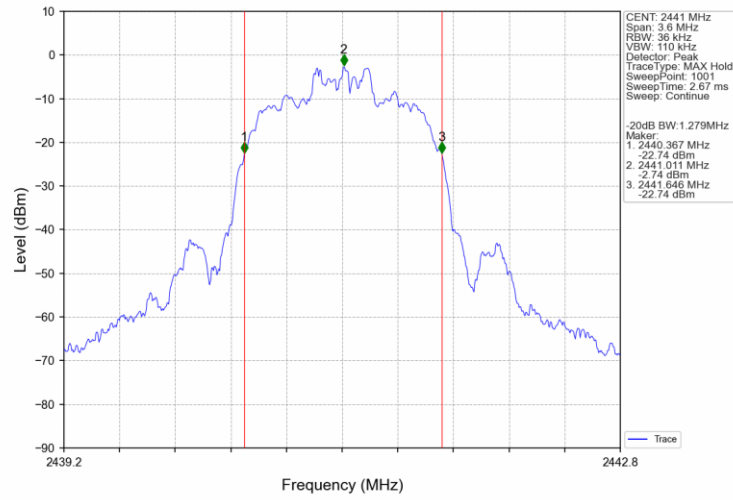
## GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



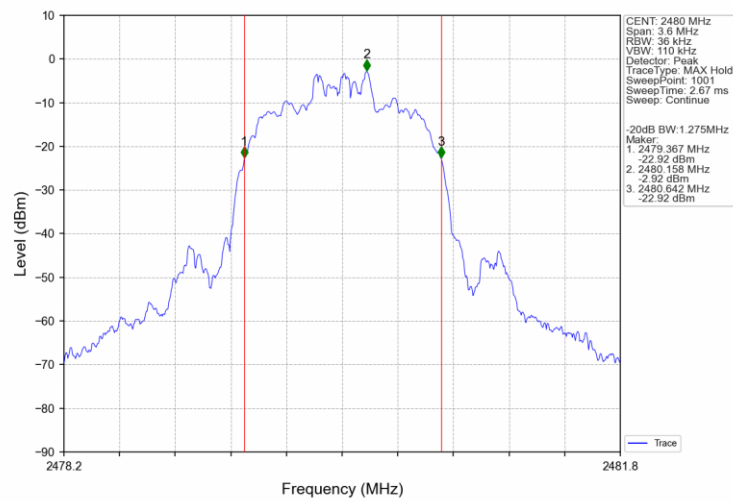
## Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



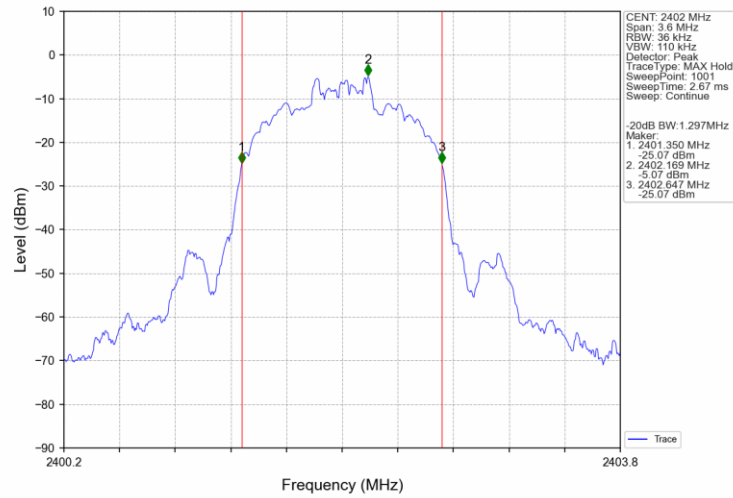
### Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



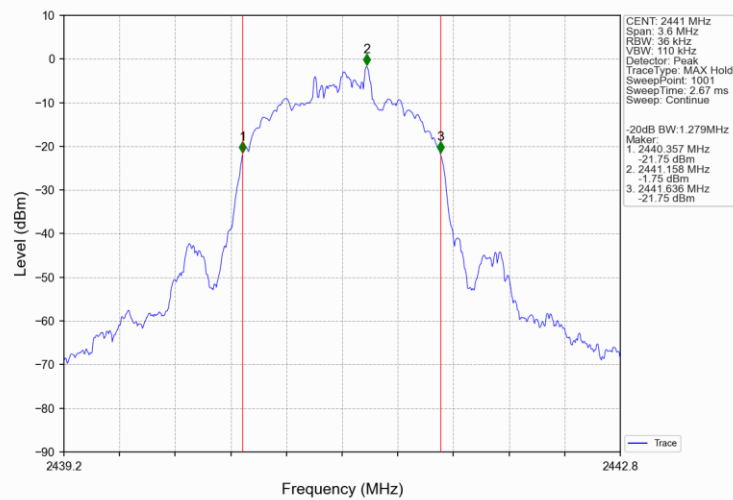
### Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



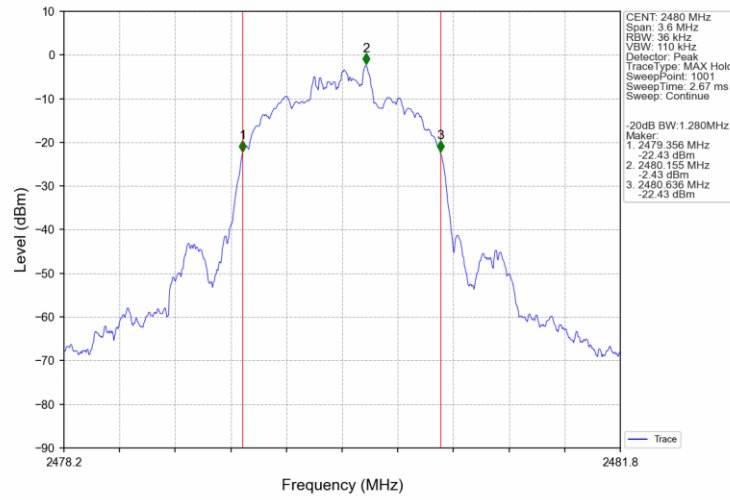
### 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV

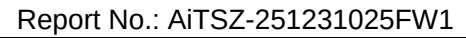


### 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



## 8DPSK 3DH5 HCH 2480MHz Ant1 NTV



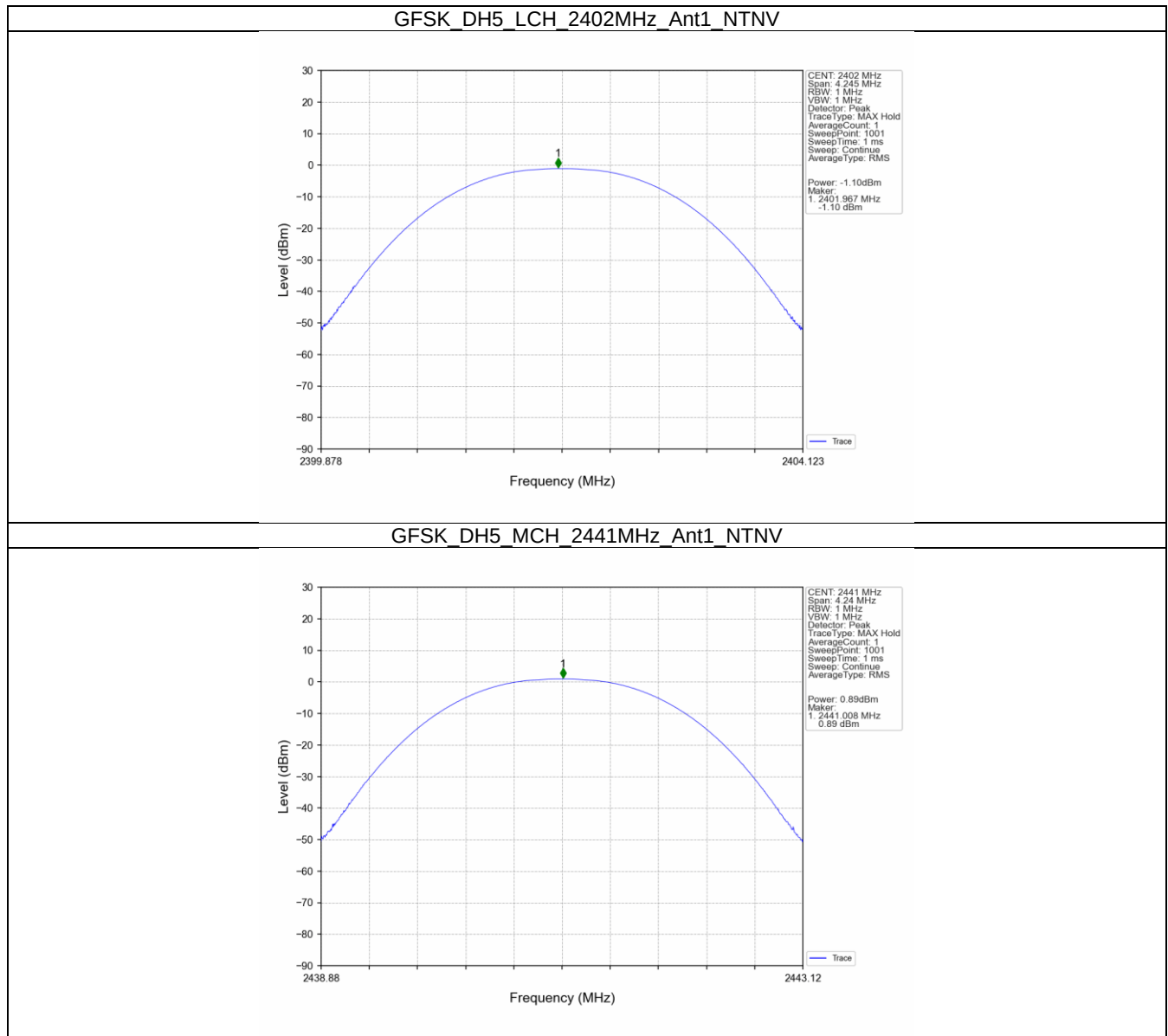


| Mode      | TX Type | Frequency (MHz) | Packet Type | Maximum Peak Conducted Output Power (dBm) |        | Verdict |
|-----------|---------|-----------------|-------------|-------------------------------------------|--------|---------|
|           |         |                 |             | ANT1                                      | Limit  |         |
| GFSK      | SISO    | 2402            | DH5         | -1.10                                     | <=29.4 | Pass    |
|           |         | 2441            | DH5         | 0.89                                      | <=29.4 | Pass    |
|           |         | 2480            | DH5         | 0.43                                      | <=29.4 | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | -1.50                                     | <=29.4 | Pass    |
|           |         | 2441            | 2DH5        | 0.48                                      | <=29.4 | Pass    |
|           |         | 2480            | 2DH5        | 0.02                                      | <=29.4 | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | -1.64                                     | <=29.4 | Pass    |
|           |         | 2441            | 3DH5        | 0.34                                      | <=29.4 | Pass    |
|           |         | 2480            | 3DH5        | -0.14                                     | <=29.4 | Pass    |

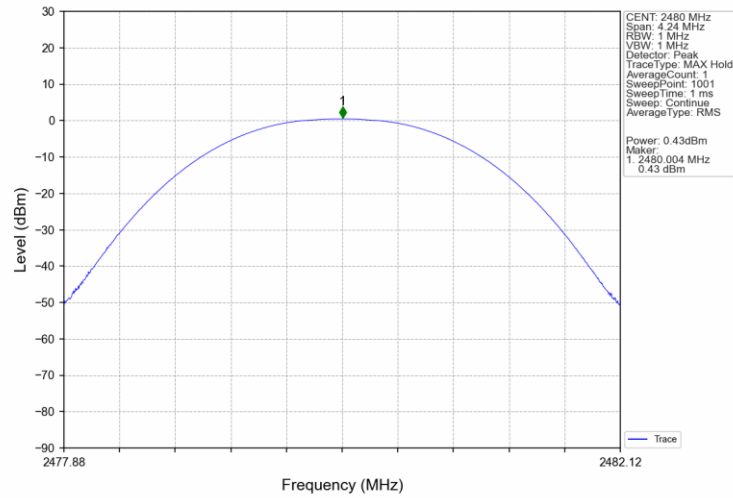
Note1: Antenna Gain: Ant1: 6.60dBi;

## 2.2 Test Graph

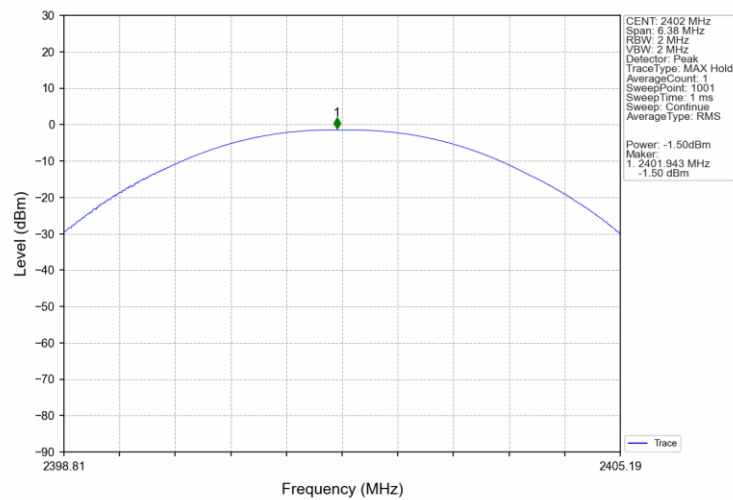
### 2.2.1 Power



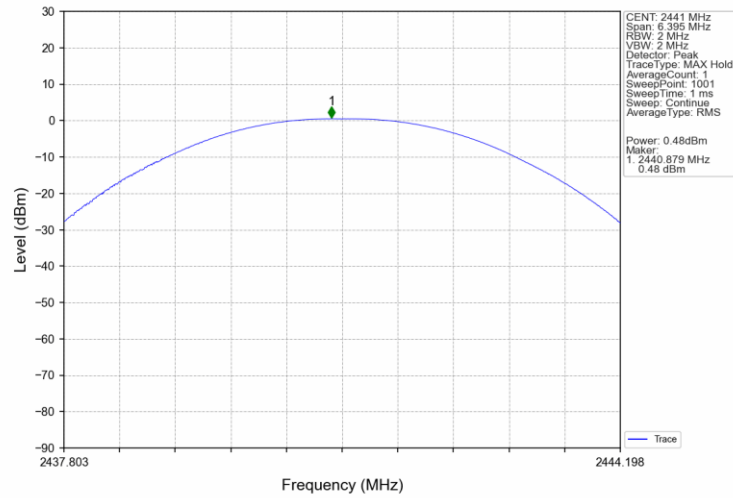
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



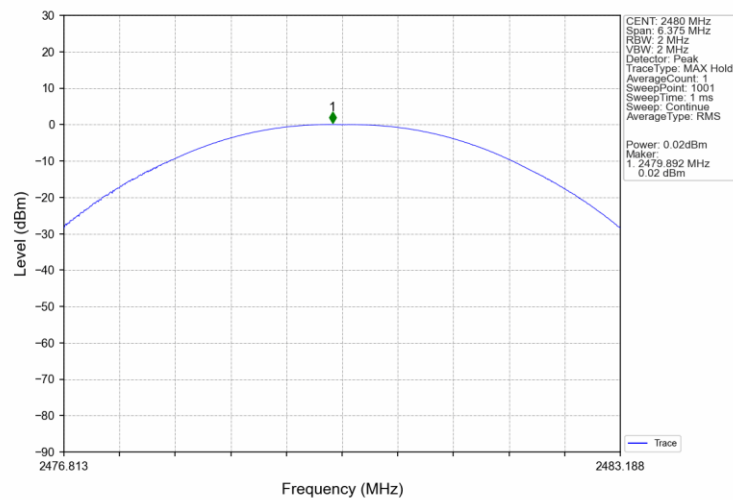
### Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



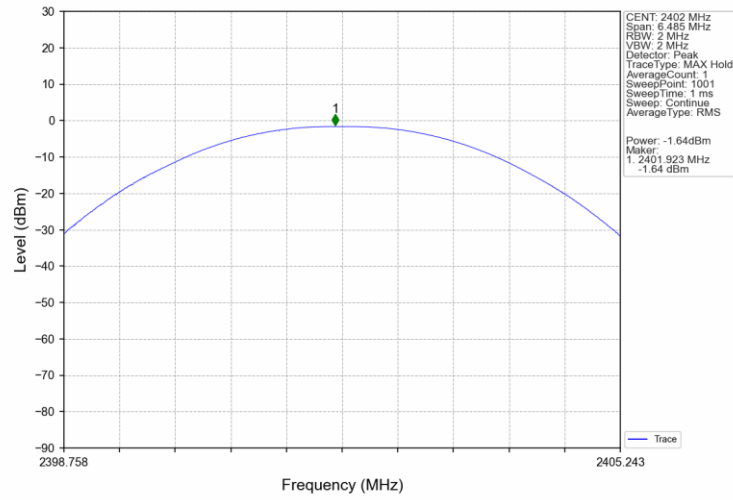
### Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



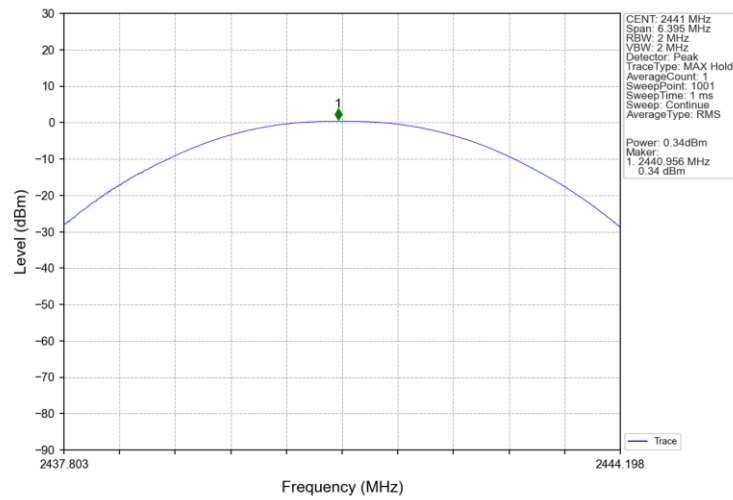
### Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



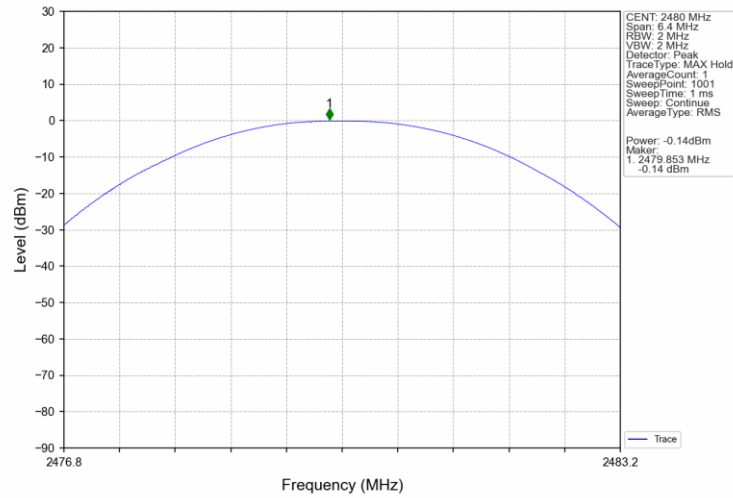
### 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



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



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



### 3. Carrier Frequency Separation

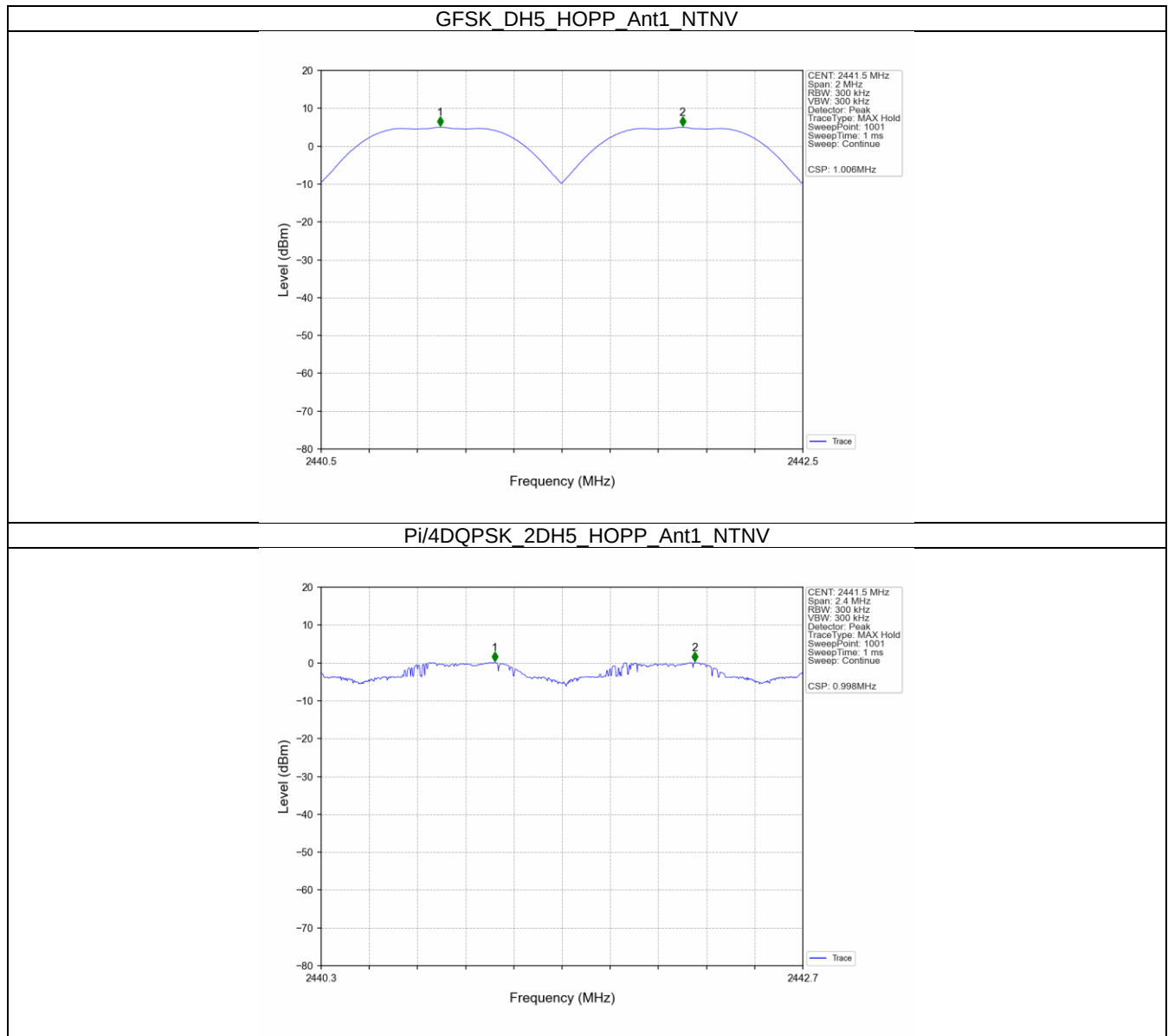
#### 3.1 Test Result

##### 3.1.1 Ant1

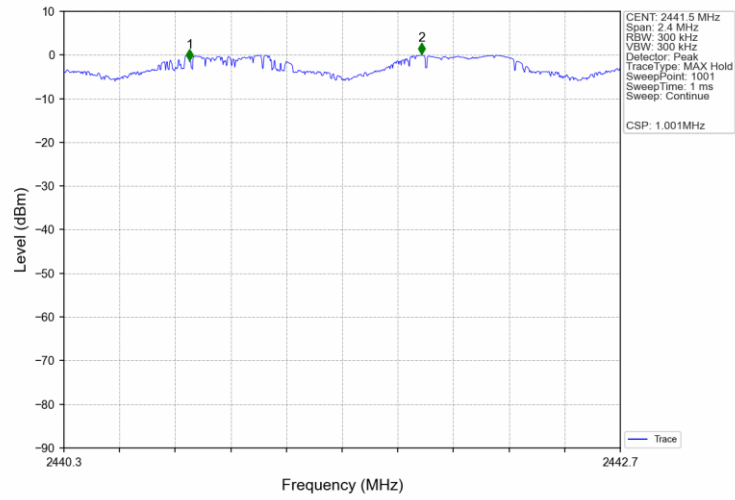
| Ant1      |         |                 |             |                          |                      |              |         |
|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| Mode      | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz)  | Verdict |
| GFSK      | SISO    | HOPP            | DH5         | 1.006                    | 0.849                | $\geq 0.849$ | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH5        | 0.998                    | 1.279                | $\geq 0.853$ | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH5        | 1.001                    | 1.297                | $\geq 0.865$ | Pass    |

## 3.2 Test Graph

### 3.2.1 Ant1



## 8DPSK 3DH5 HOPP Ant1 NTNV



## 4. Number of Hopping Frequencies

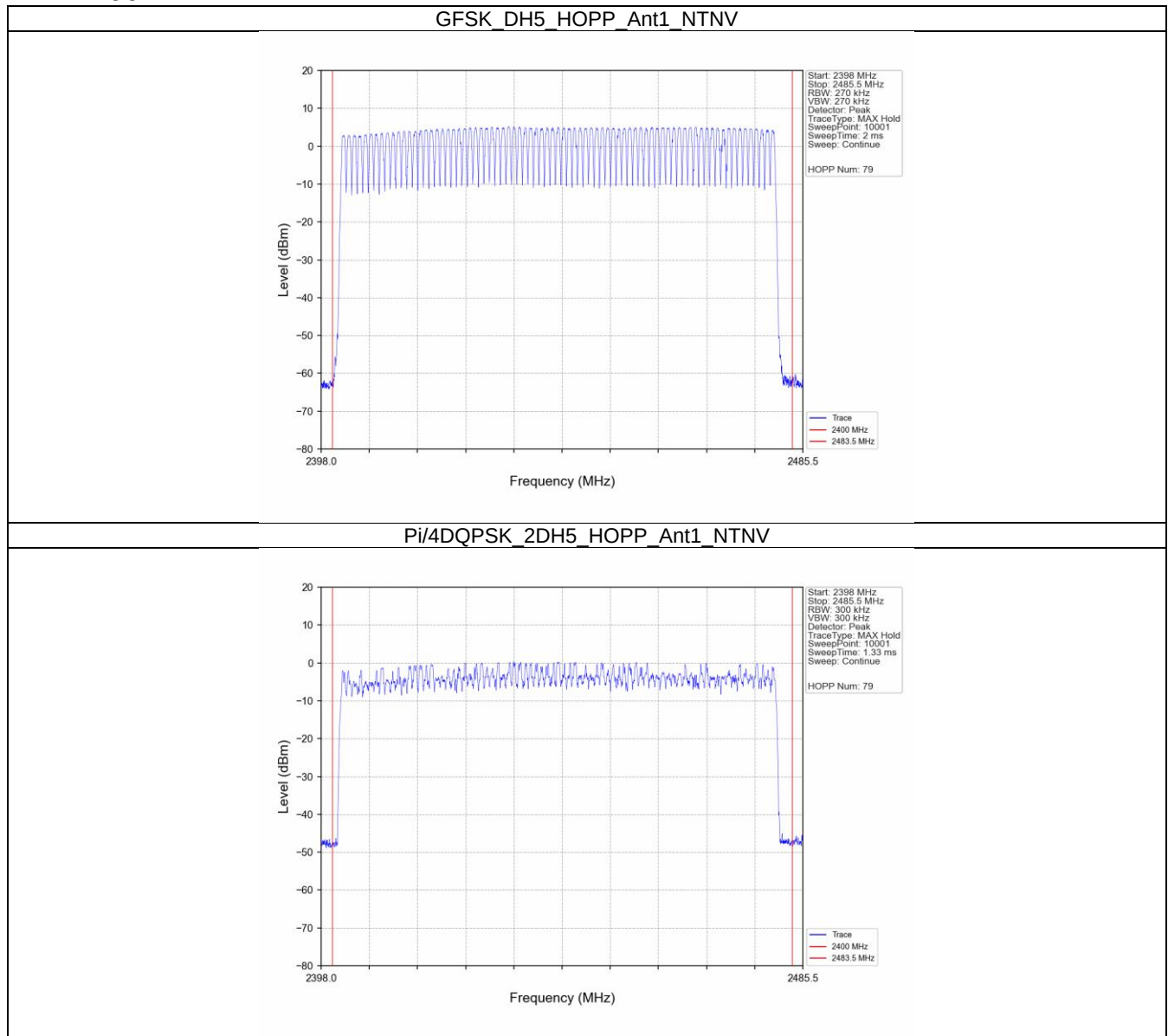
### 4.1 Test Result

#### 4.1.1 HoppNum

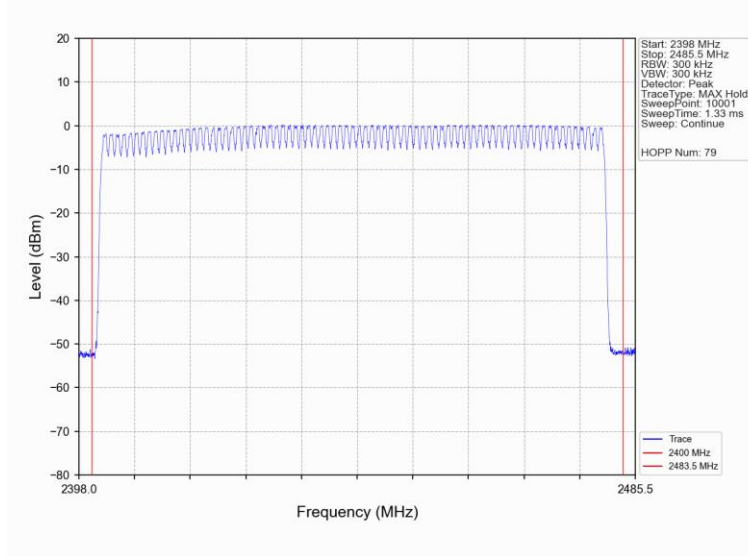
| Mode      | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies |           | Verdict |
|-----------|---------|-----------------|-------------|----------------------------|-----------|---------|
|           |         |                 |             | ANT1                       | Limit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

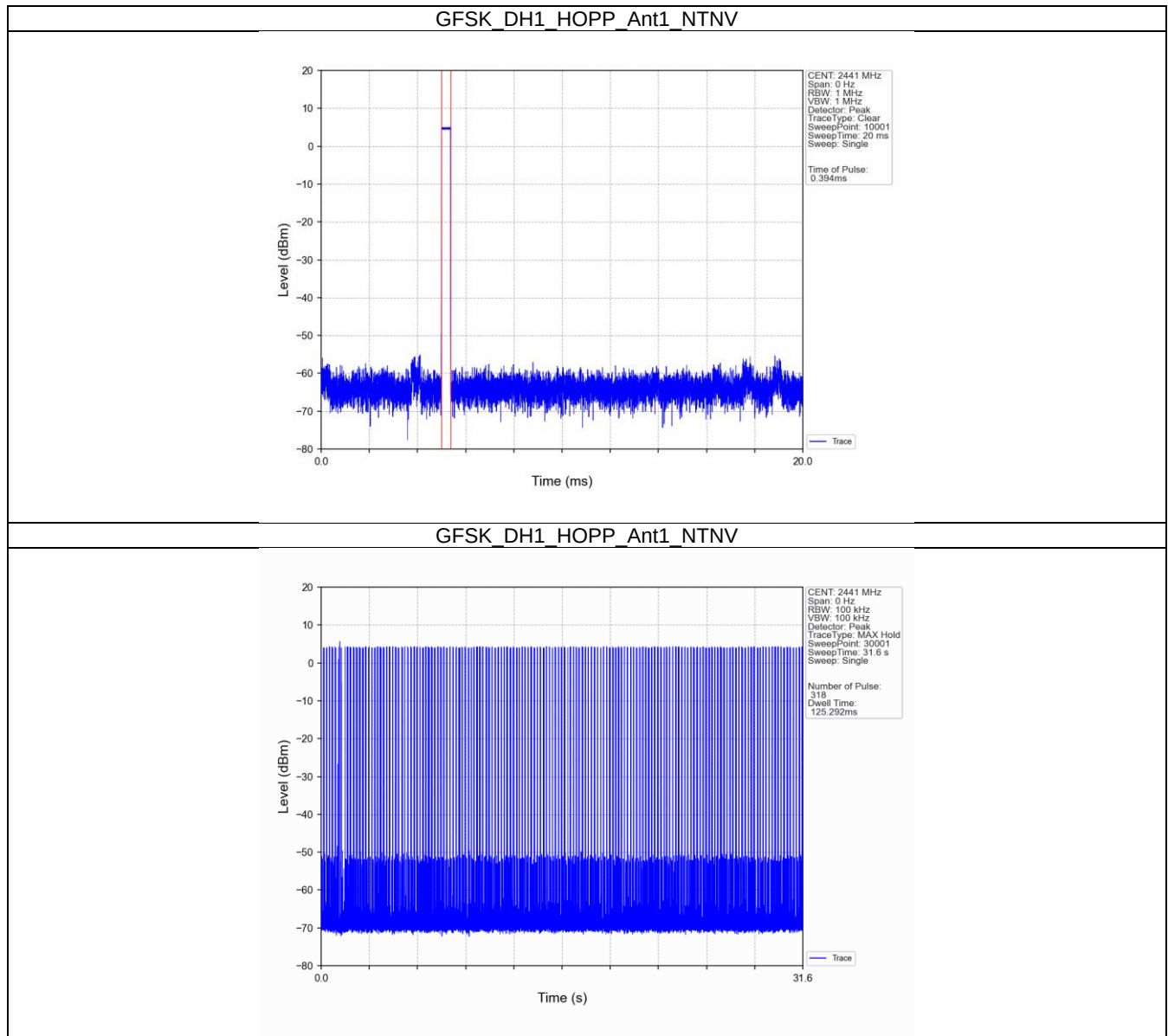
### 5.1 Test Result

#### 5.1.1 Ant1

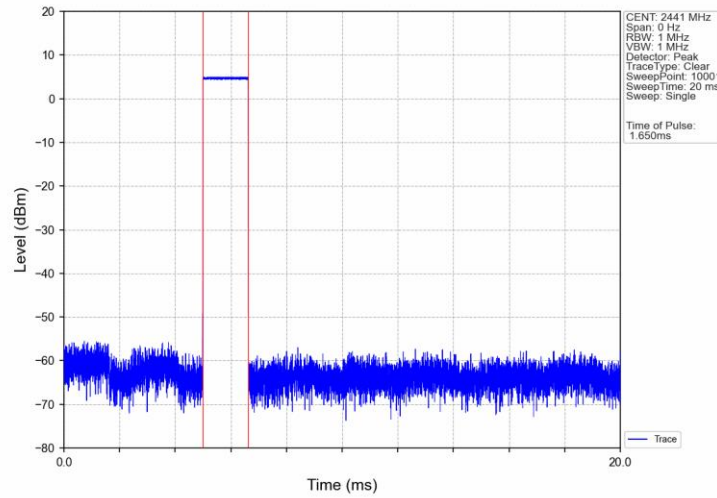
| Ant1      |         |                 |             |                               |                        |                                    |                 |            |         |
|-----------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| 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         | 0.394                         | 31.600                 | 318                                | 125.292         | <=400      | Pass    |
|           |         |                 | DH3         | 1.650                         | 31.600                 | 160                                | 264.000         | <=400      | Pass    |
|           |         |                 | DH5         | 2.884                         | 31.600                 | 103                                | 297.052         | <=400      | Pass    |
| Pi/4DQPSK | SISO    | HOPP            | 2DH1        | 0.388                         | 31.600                 | 320                                | 124.160         | <=400      | Pass    |
|           |         |                 | 2DH3        | 1.640                         | 31.600                 | 13                                 | 21.320          | <=400      | Pass    |
|           |         |                 | 2DH5        | 2.888                         | 31.600                 | 11                                 | 31.768          | <=400      | Pass    |
| 8DPSK     | SISO    | HOPP            | 3DH1        | 0.400                         | 31.600                 | 320                                | 128.000         | <=400      | Pass    |
|           |         |                 | 3DH3        | 1.638                         | 31.600                 | 160                                | 262.080         | <=400      | Pass    |
|           |         |                 | 3DH5        | 2.902                         | 31.600                 | 11                                 | 31.922          | <=400      | Pass    |

## 5.2 Test Graph

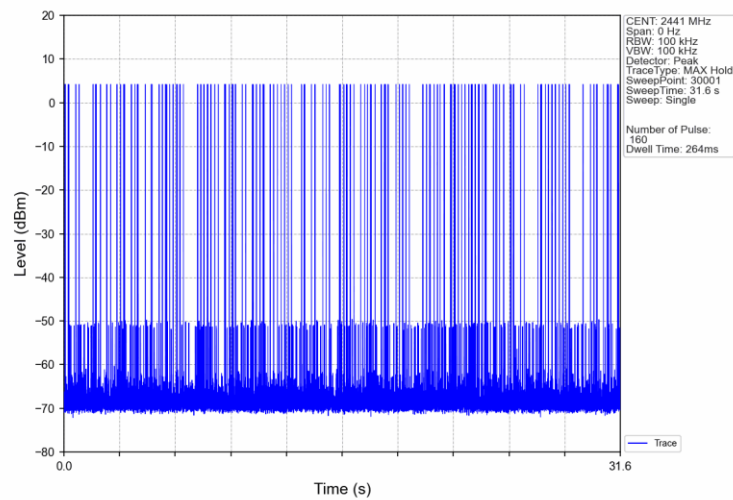
### 5.2.1 Ant1



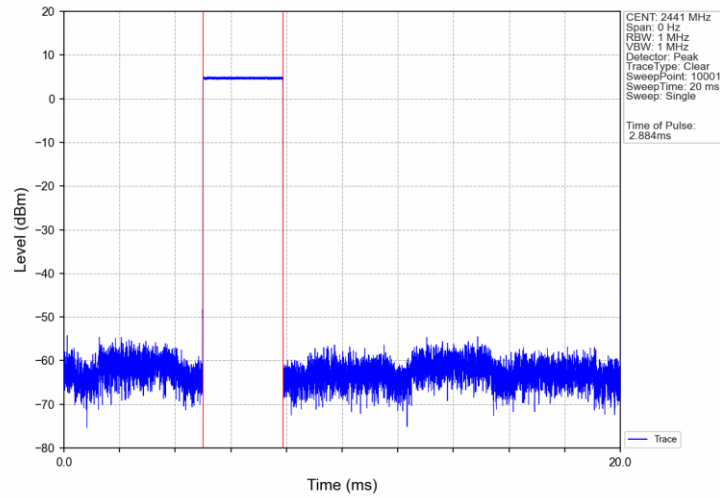
### GFSK\_DH3\_HOPP\_Ant1\_NTNV



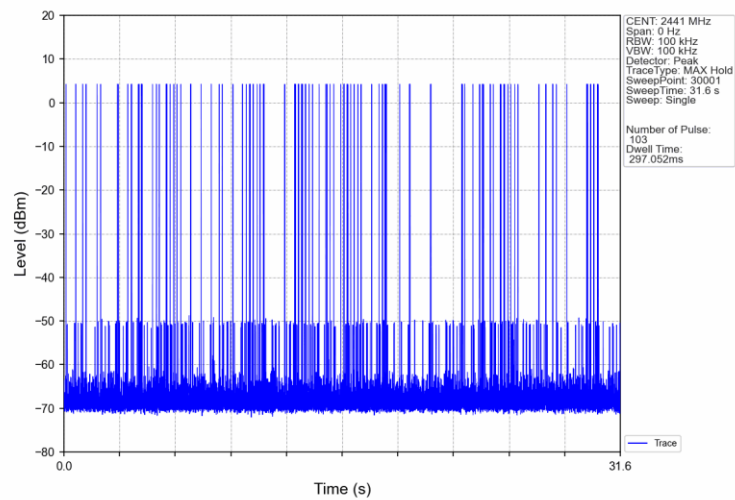
### GFSK\_DH3\_HOPP\_Ant1\_NTNV



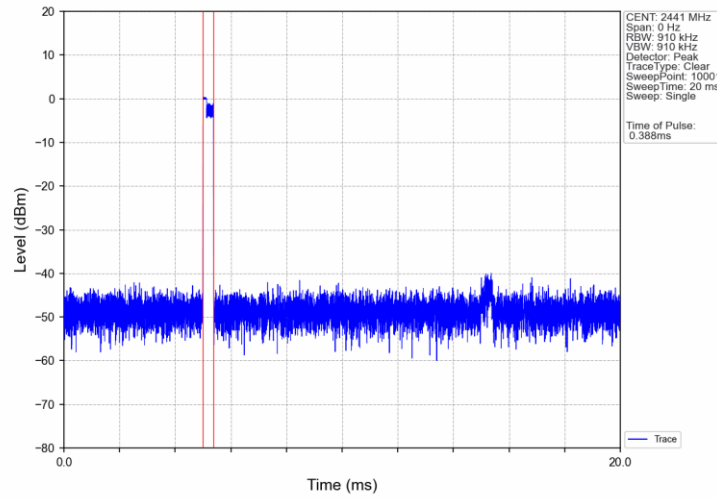
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



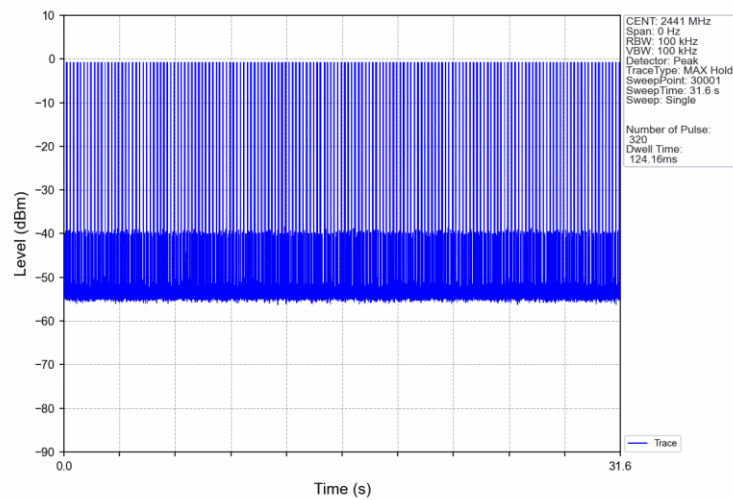
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



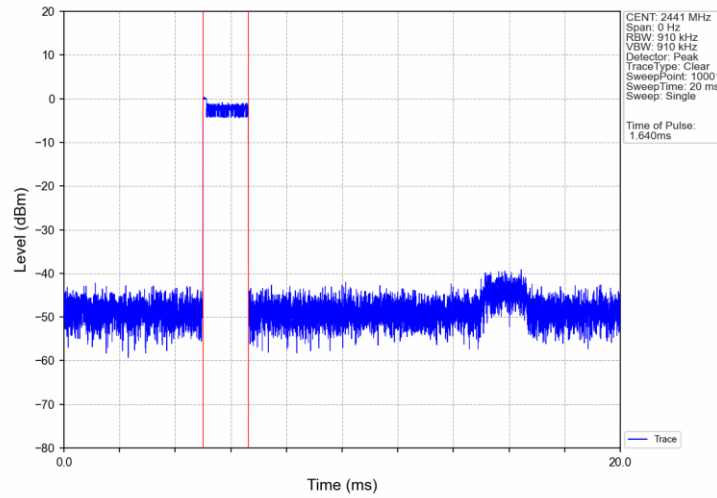
### Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



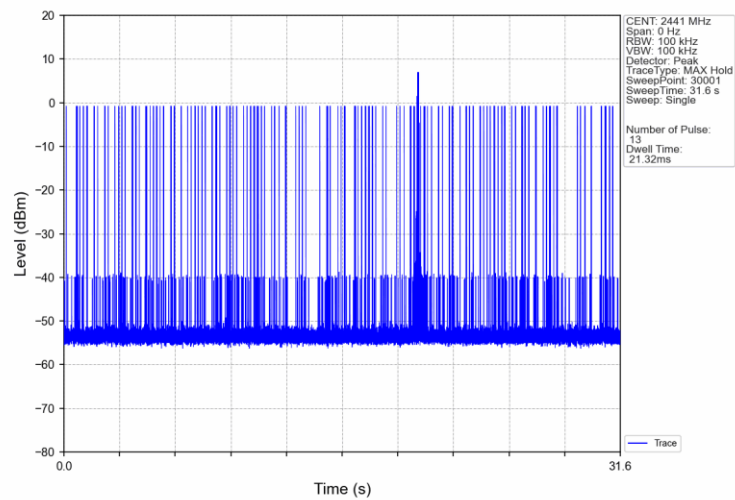
### Pi/4DQPSK\_2DH1\_HOPP\_Ant1\_NTNV



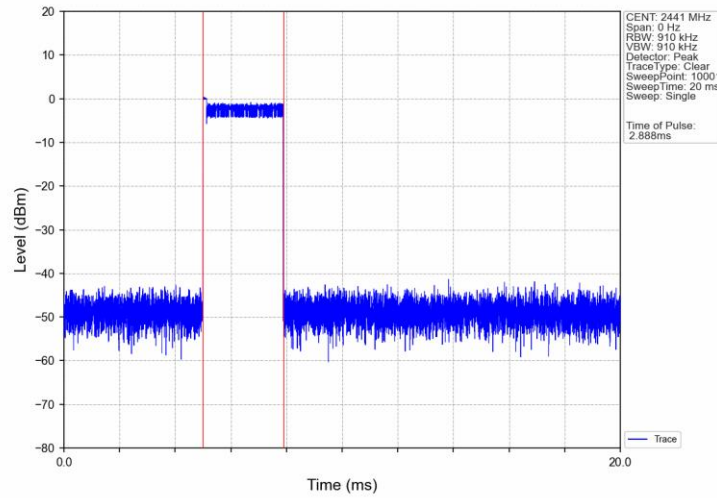
### Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



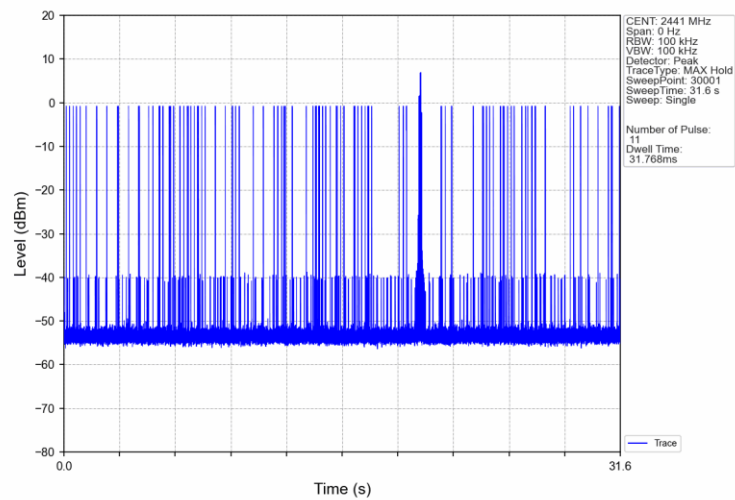
### Pi/4DQPSK\_2DH3\_HOPP\_Ant1\_NTNV



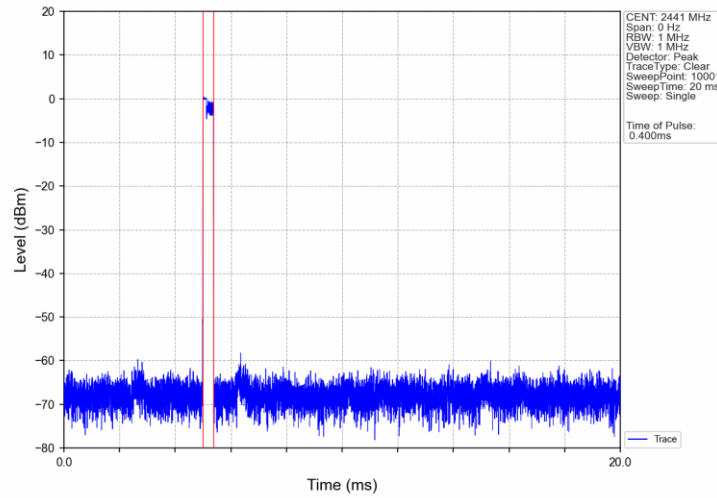
### Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



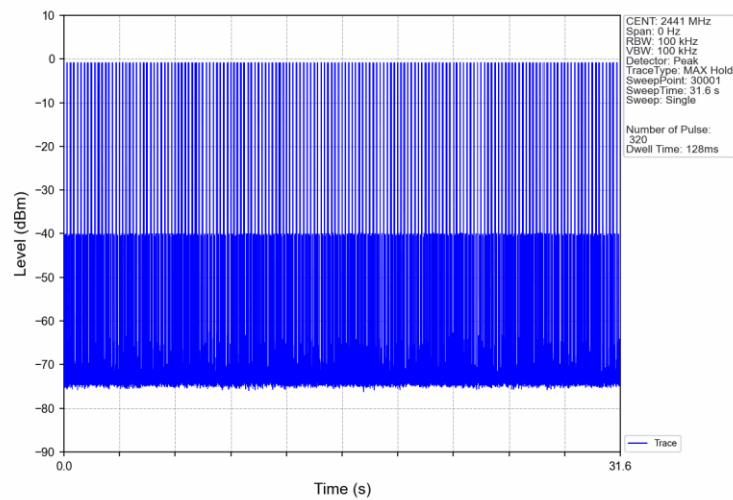
### Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



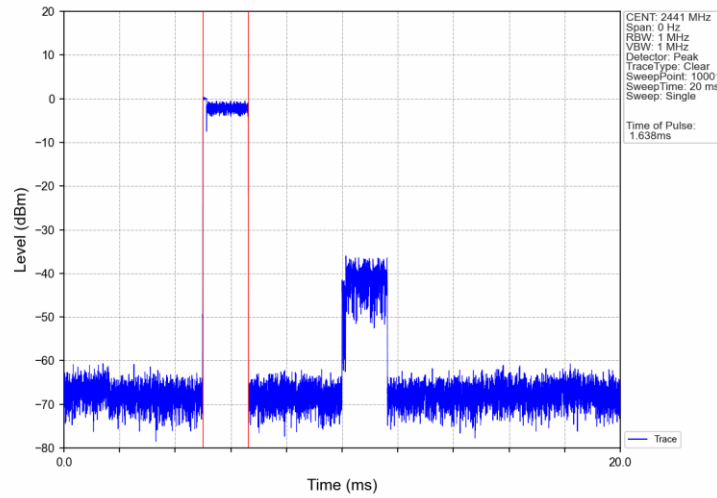
### 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



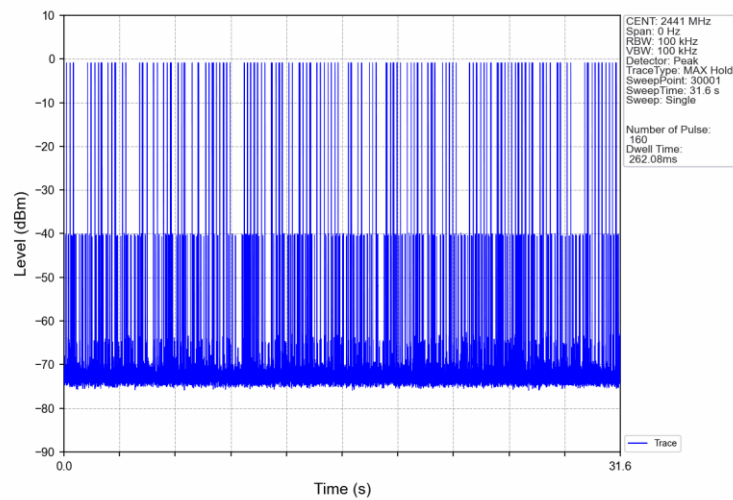
### 8DPSK\_3DH1\_HOPP\_Ant1\_NTNV



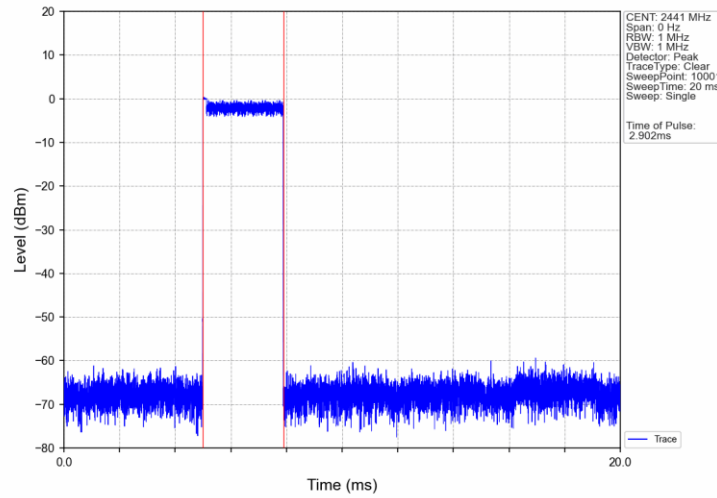
### 8DPSK 3DH3 HOPP\_Ant1\_NTNV



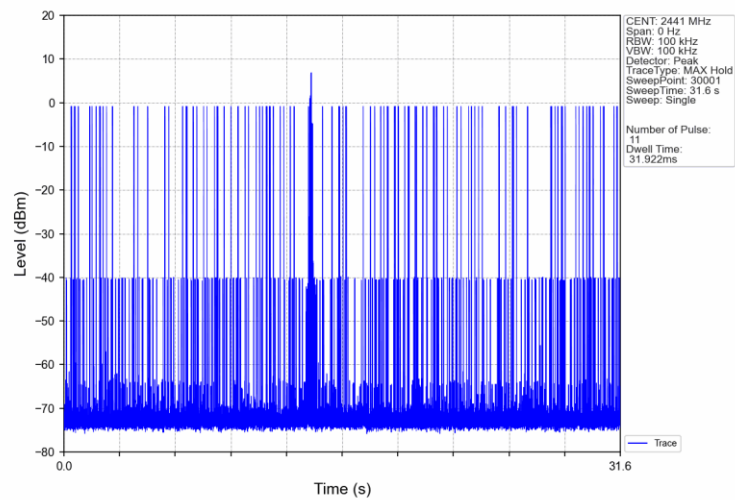
### 8DPSK 3DH3 HOPP\_Ant1\_NTNV



### 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   | 2.56                     |
|           |         | 2441            | DH5         | 1   | 4.60                     |
|           |         | 2480            | DH5         | 1   | 4.09                     |
|           |         | HOPP            | DH5         | 1   | 4.94                     |
|           |         |                 |             |     | 4.94                     |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | -1.80                    |
|           |         | 2441            | 2DH5        | 1   | -0.97                    |
|           |         | 2480            | 2DH5        | 1   | -0.31                    |
|           |         | HOPP            | 2DH5        | 1   | 0.22                     |
|           |         |                 |             |     | 0.22                     |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | -1.97                    |
|           |         | 2441            | 3DH5        | 1   | 0.01                     |
|           |         | 2480            | 3DH5        | 1   | -0.48                    |
|           |         | HOPP            | 3DH5        | 1   | 0.09                     |
|           |         |                 |             |     | 0.09                     |

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.

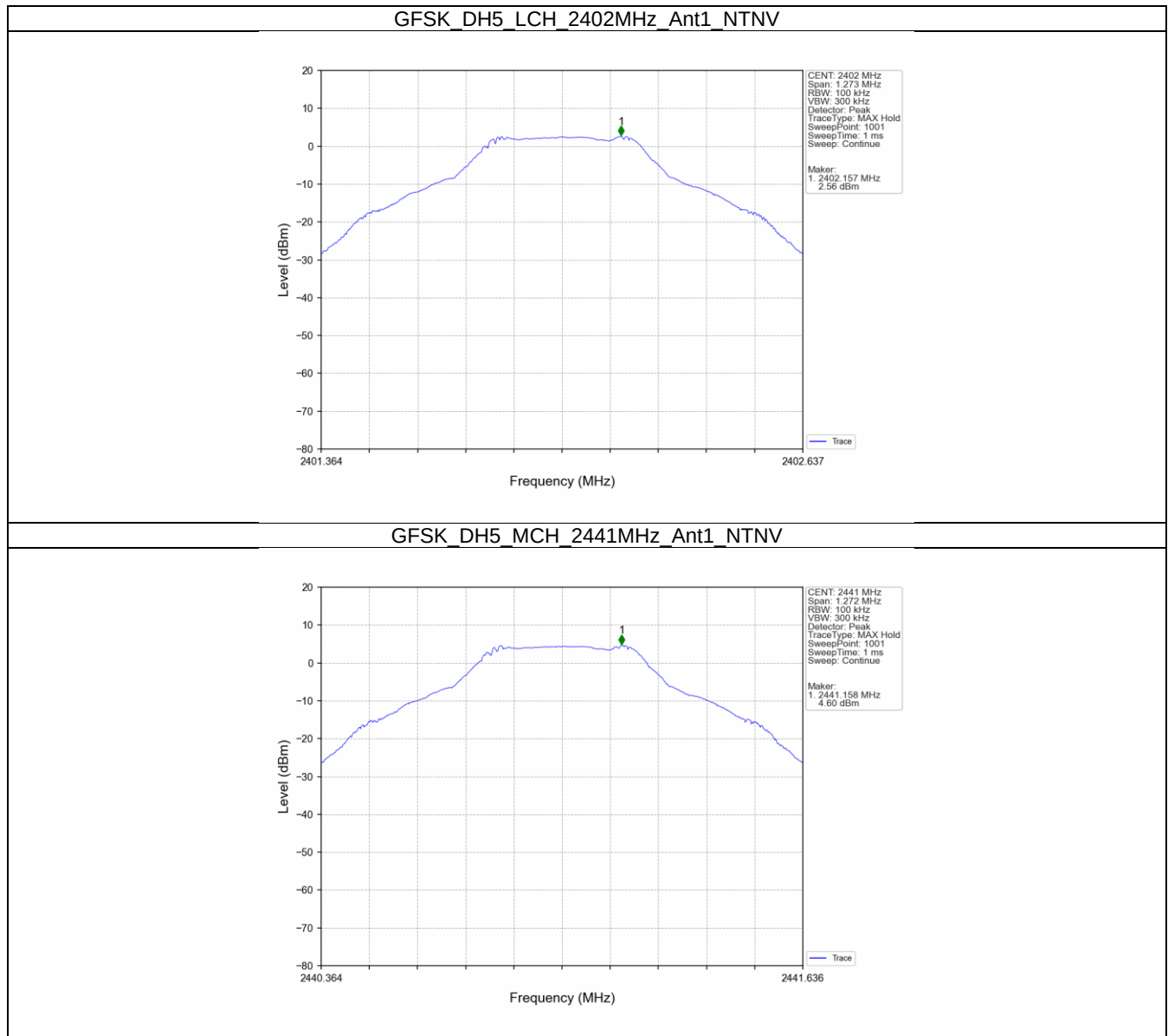
#### 6.1.2 CSE

| Mode      | TX Type | Frequency (MHz) | Packet Type | ANT | Level of Reference (dBm) | Limit (dBm) | Verdict |
|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK      | SISO    | 2402            | DH5         | 1   | 2.56                     | -17.44      | Pass    |
|           |         | 2441            | DH5         | 1   | 4.60                     | -15.40      | Pass    |
|           |         | 2480            | DH5         | 1   | 4.09                     | -15.91      | Pass    |
|           |         | HOPP            | DH5         | 1   | 4.94                     | -15.06      | Pass    |
|           |         |                 |             |     | 4.94                     | -15.06      | Pass    |
| Pi/4DQPSK | SISO    | 2402            | 2DH5        | 1   | -1.80                    | -21.80      | Pass    |
|           |         | 2441            | 2DH5        | 1   | -0.97                    | -20.97      | Pass    |
|           |         | 2480            | 2DH5        | 1   | -0.31                    | -20.31      | Pass    |
|           |         | HOPP            | 2DH5        | 1   | 0.22                     | -19.78      | Pass    |
|           |         |                 |             |     | 0.22                     | -19.78      | Pass    |
| 8DPSK     | SISO    | 2402            | 3DH5        | 1   | -1.97                    | -21.97      | Pass    |
|           |         | 2441            | 3DH5        | 1   | 0.01                     | -19.99      | Pass    |
|           |         | 2480            | 3DH5        | 1   | -0.48                    | -20.48      | Pass    |
|           |         | HOPP            | 3DH5        | 1   | 0.09                     | -19.91      | Pass    |
|           |         |                 |             |     | 0.09                     | -19.91      | Pass    |

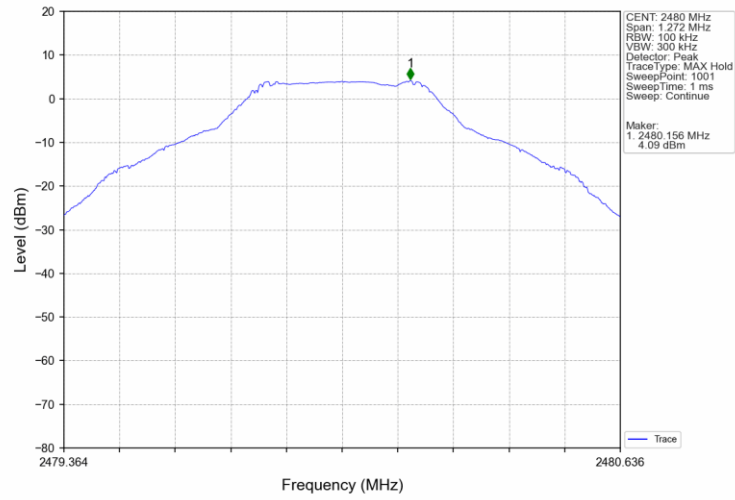
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

## 6.2 Test Graph

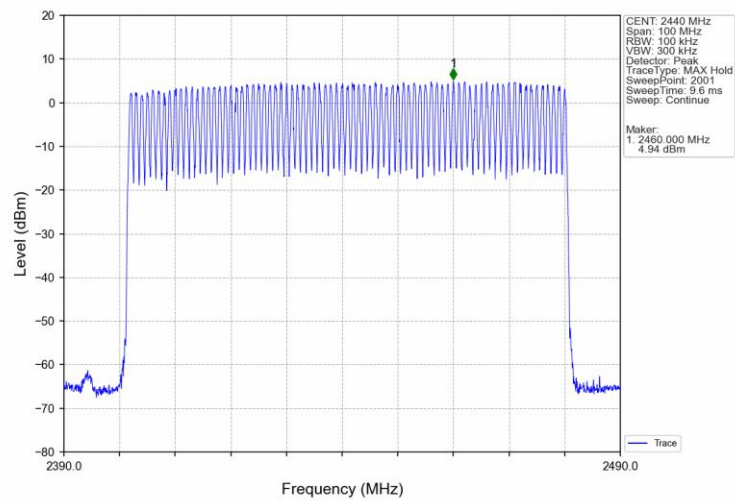
### 6.2.1 Ref



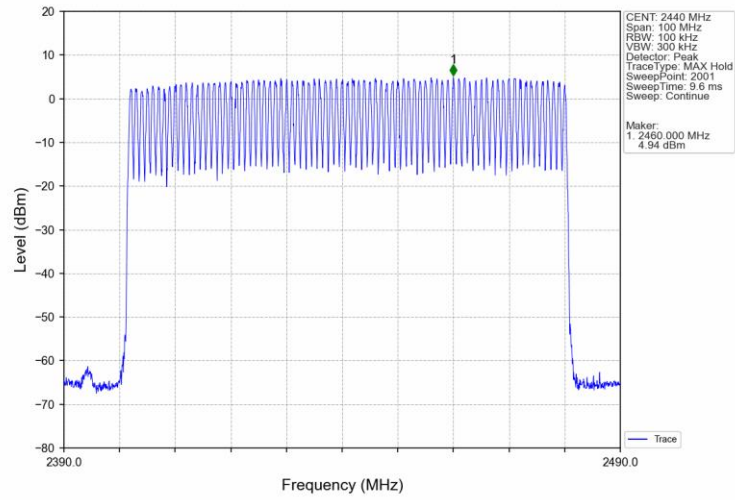
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



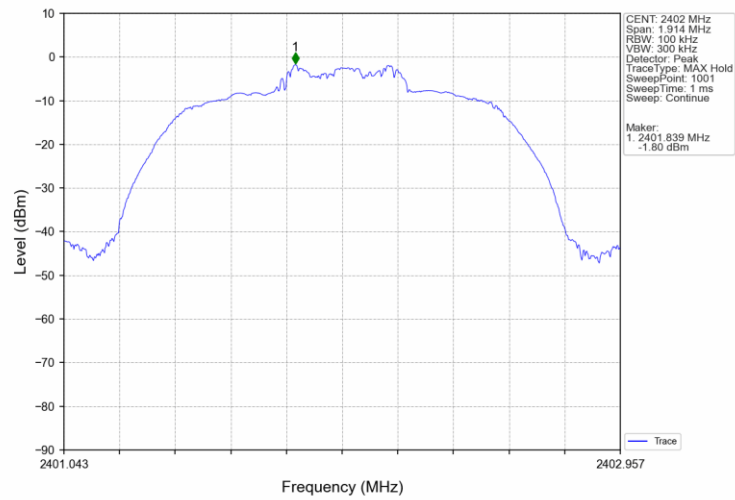
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



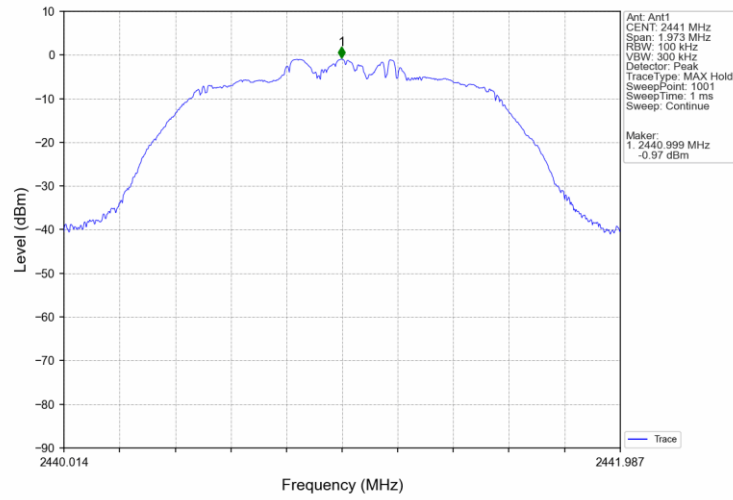
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



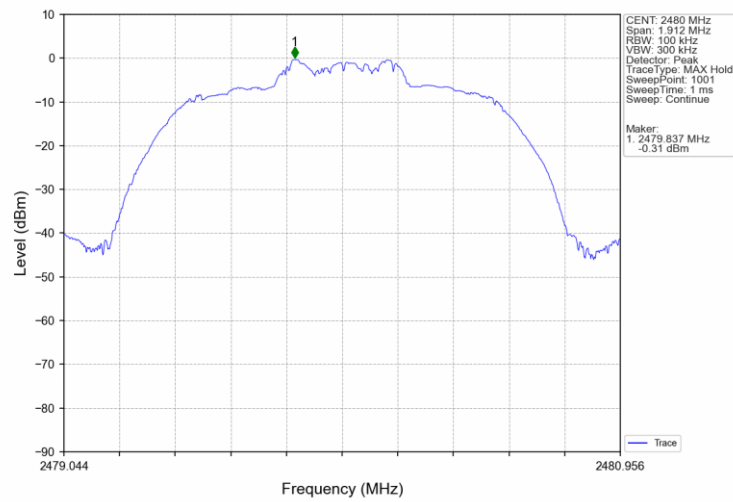
### Pi/4DQPSK\_2DH5\_LCH\_2402MHz\_Ant1\_NTNV



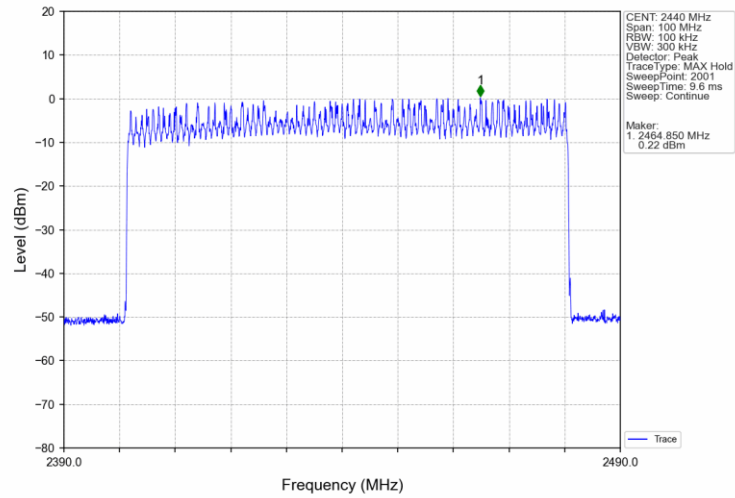
Pi/4DQPSK\_2DH5\_MCH\_2441MHz\_Ant1\_NTNV



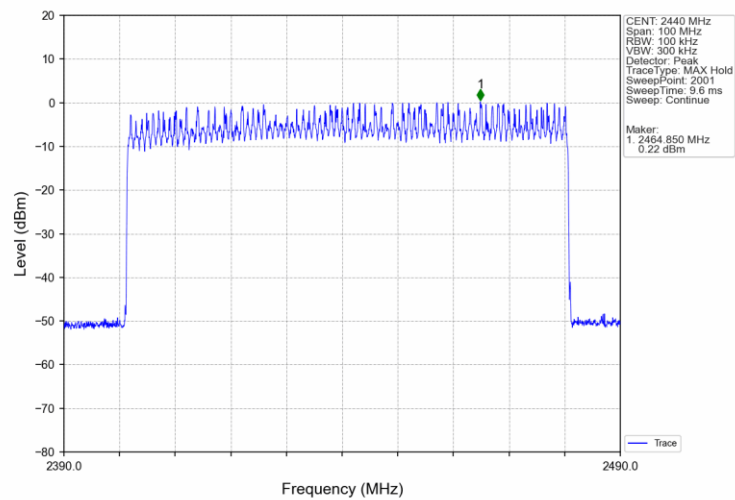
Pi/4DQPSK\_2DH5\_HCH\_2480MHz\_Ant1\_NTNV



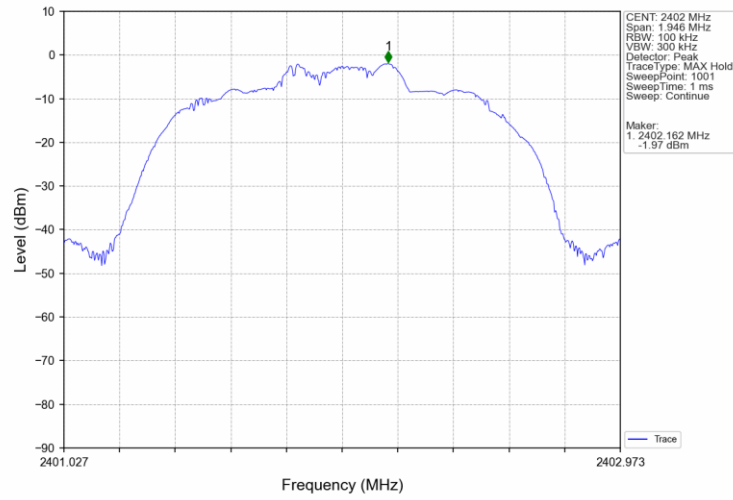
### Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



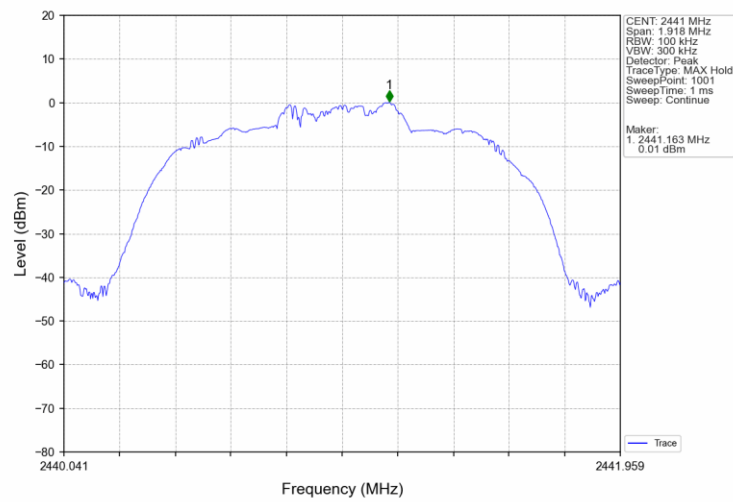
### Pi/4DQPSK\_2DH5\_HOPP\_Ant1\_NTNV



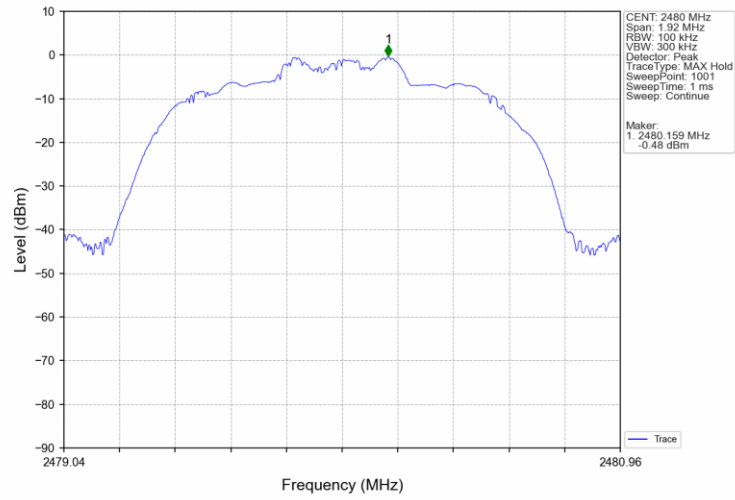
### 8DPSK\_3DH5\_LCH\_2402MHz\_Ant1\_NTNV



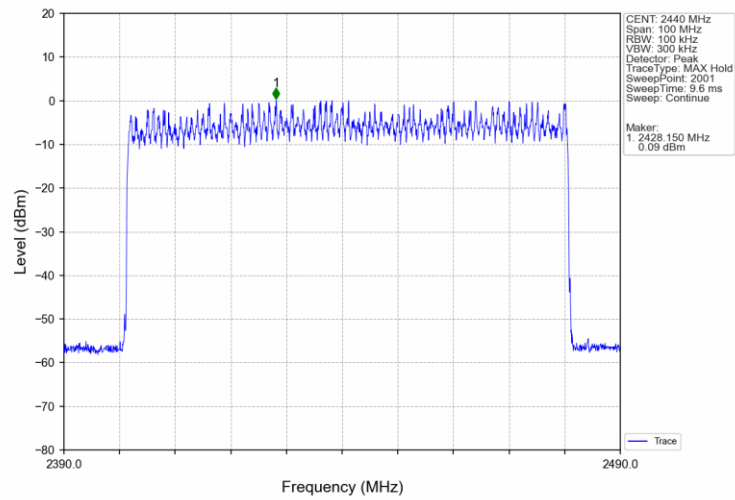
### 8DPSK\_3DH5\_MCH\_2441MHz\_Ant1\_NTNV



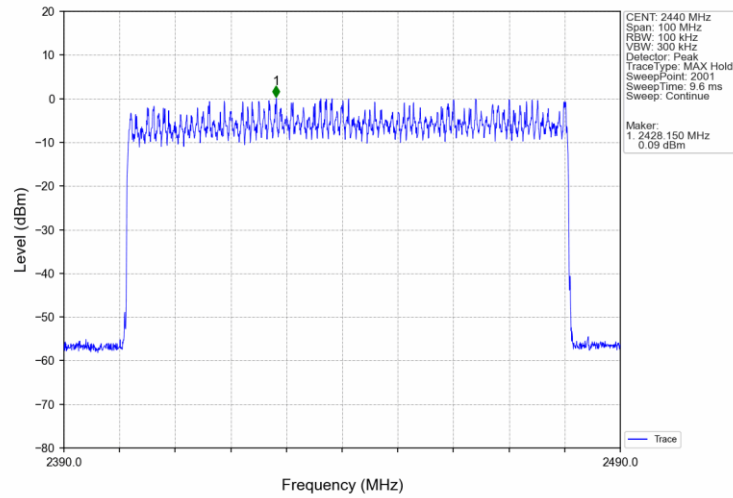
## 8DPSK\_3DH5\_HCH\_2480MHz\_Ant1\_NTNV



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

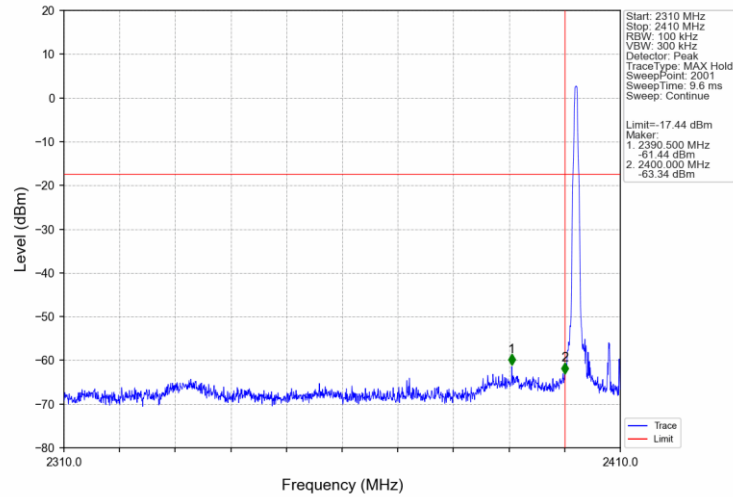


## 8DPSK\_3DH5\_HOPP\_Ant1\_NTNV

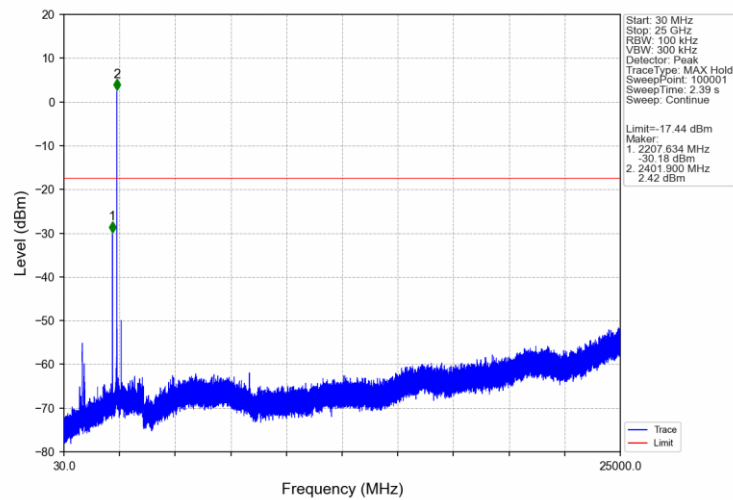


## 6.2.2 CSE

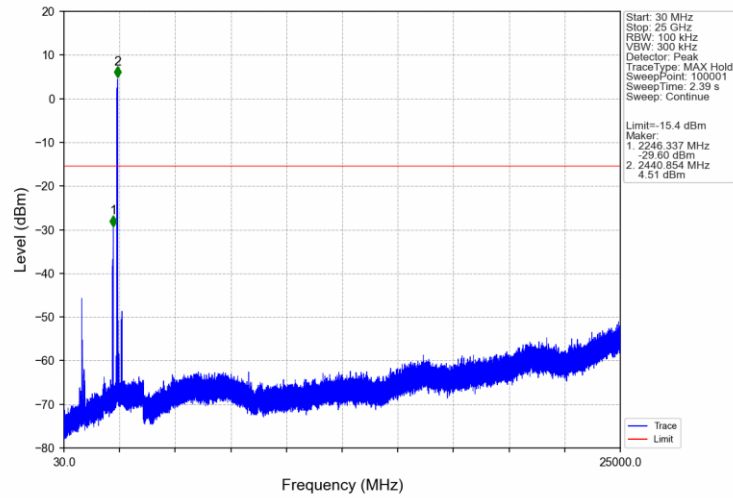
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



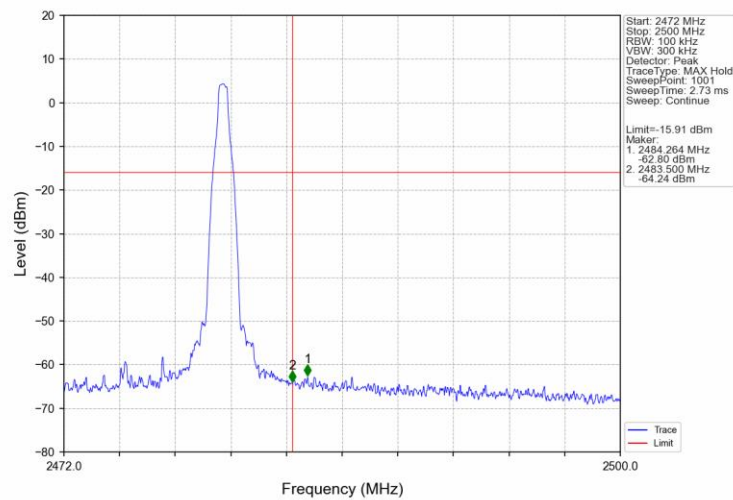
GFSK\_DH5\_LCH\_2402MHz\_Ant1\_NTNV



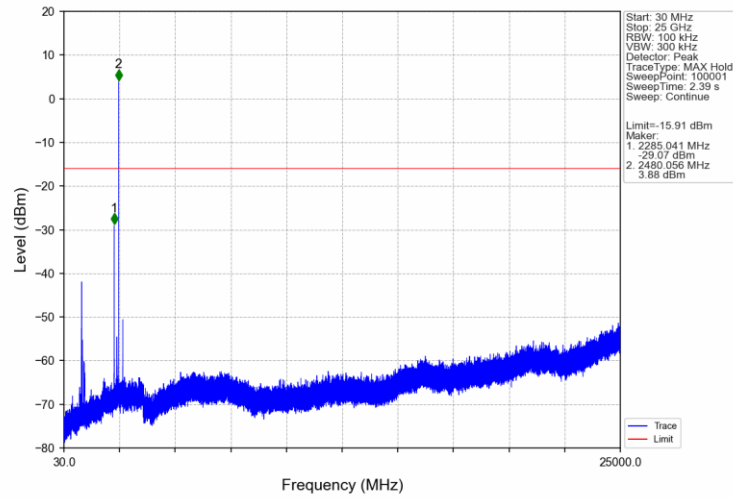
### GFSK\_DH5\_MCH\_2441MHz\_Ant1\_NTNV



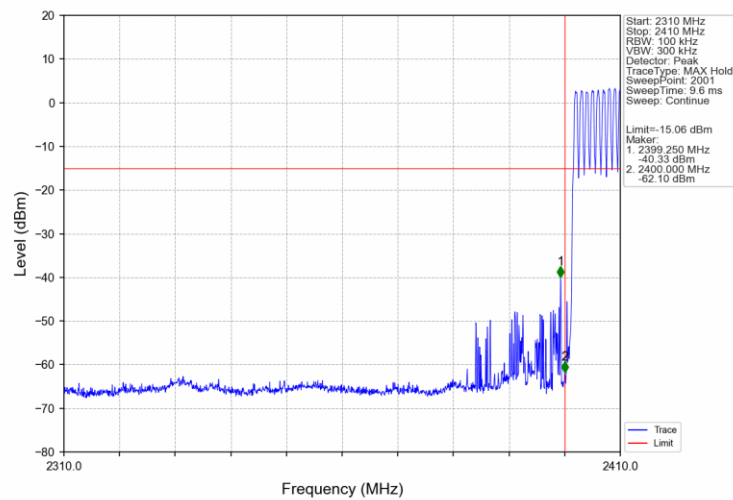
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



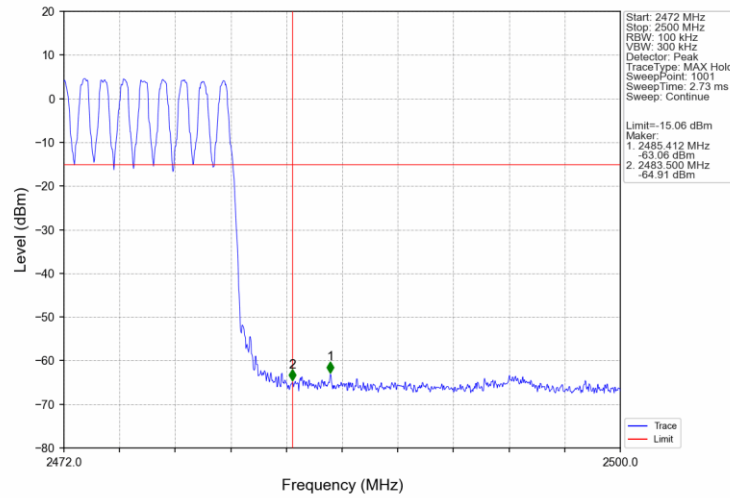
### GFSK\_DH5\_HCH\_2480MHz\_Ant1\_NTNV



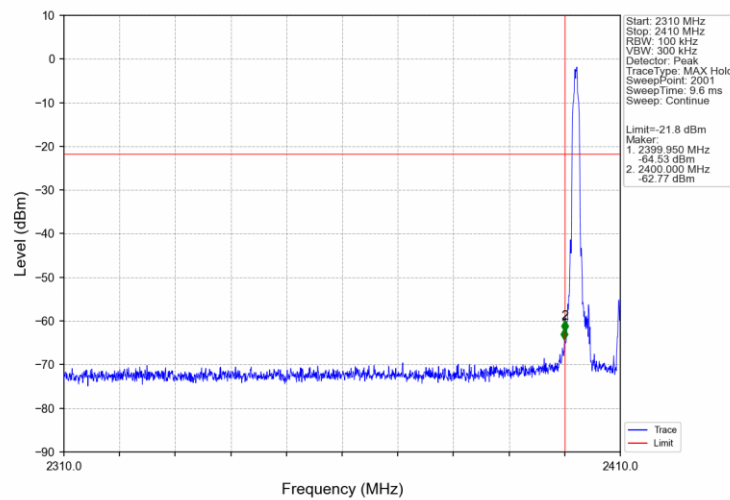
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



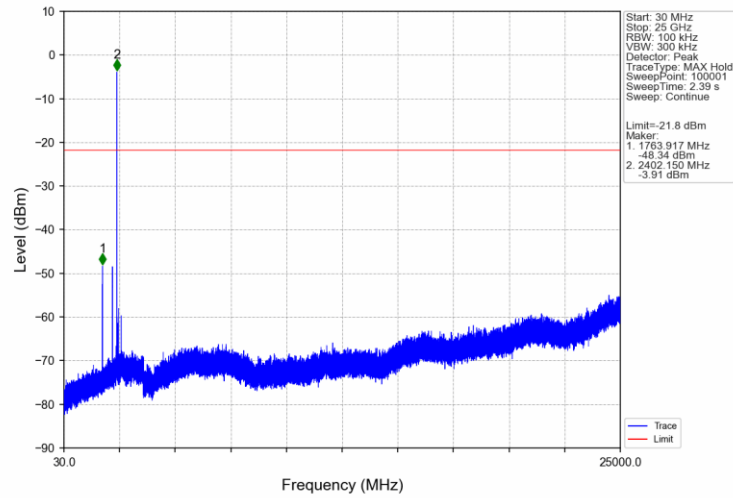
### GFSK\_DH5\_HOPP\_Ant1\_NTNV



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



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



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

