

Appendix Test Data

| | | | |
|----------------|-----------------|--------------------|-------------------|
| Report No.: | 18220WC10104201 | Test Date: | 2021.6.2 |
| Test Engineer: | <i>Jony He</i> | Auditor: | <i>Edward Pan</i> |
| Temperature: | 21.3°C | Relative Humidity: | 56 % |
| Pressure: | 1012 hPa | | |

1. Bandwidth

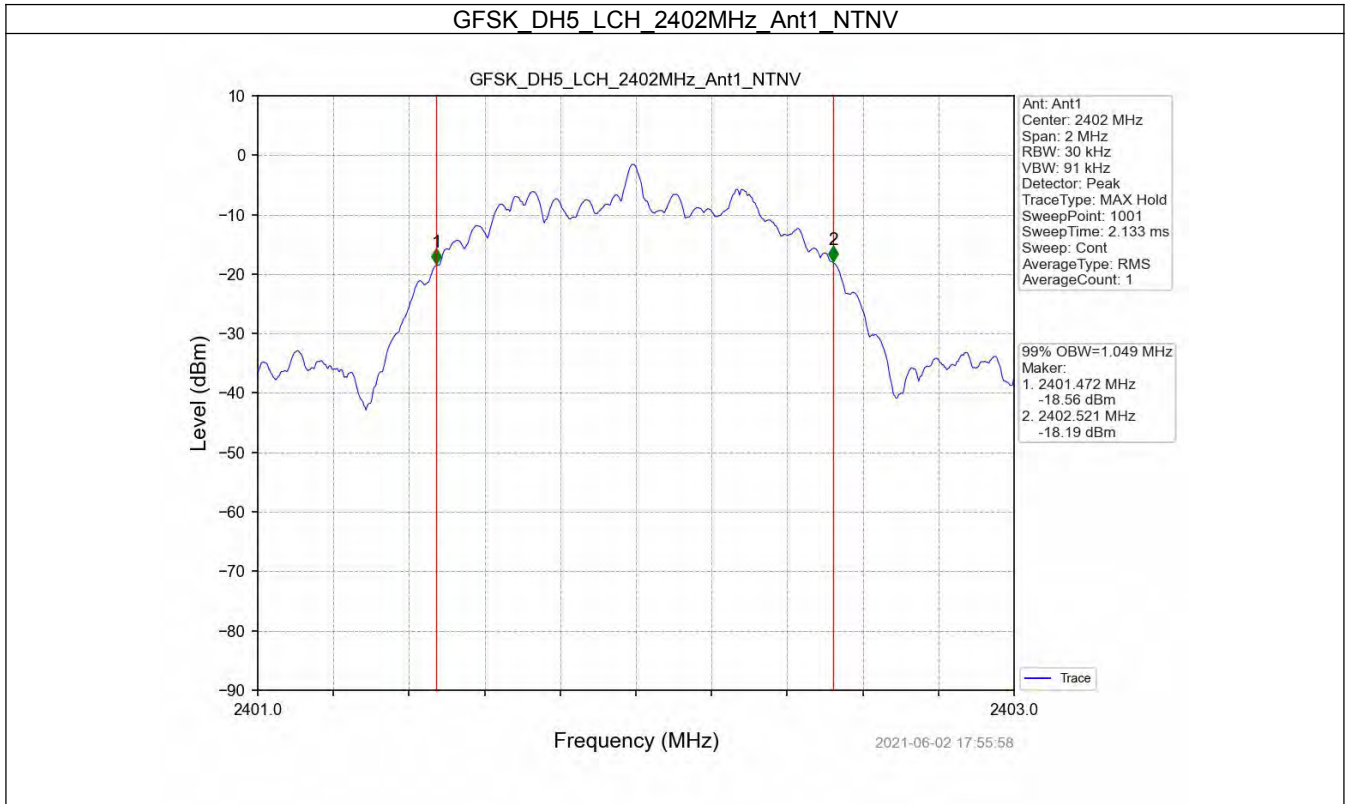
1.1 OBW

1.1.1 Test Result

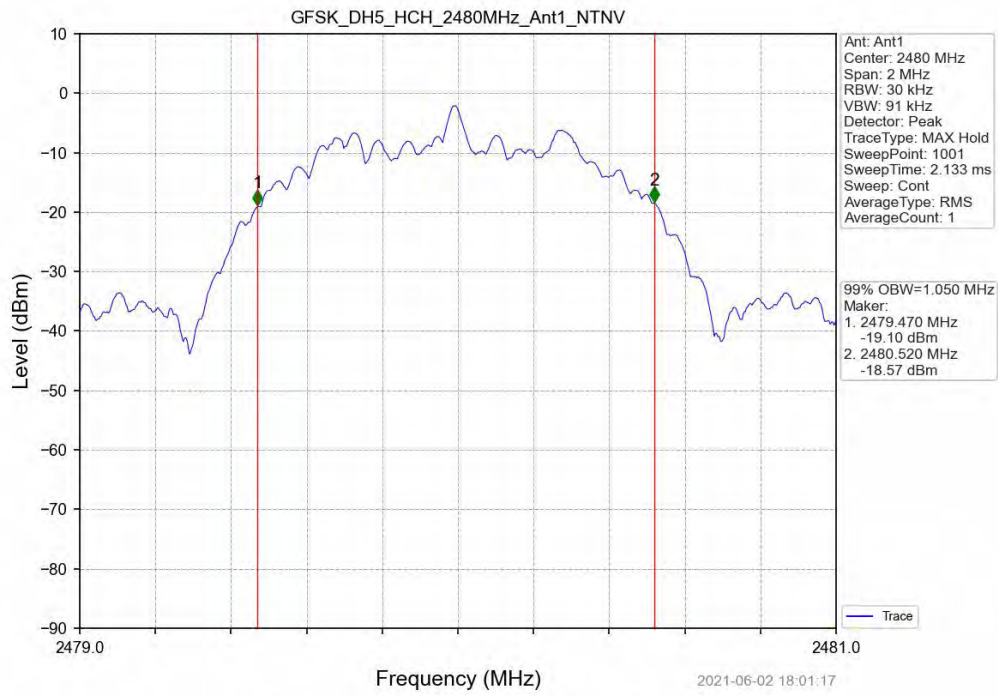
| Mode | TX Type | Frequency (MHz) | Packet Type | 99% Occupied Bandwidth (MHz) | Limit (MHz) | Verdict |
|----------|---------|-----------------|-------------|------------------------------|-------------|---------|
| | | | | Ant1 | | |
| GFSK | SISO | 2402 | DH5 | 1.049 | / | Note1 |
| | | 2441 | DH5 | 1.050 | / | Note1 |
| | | 2480 | DH5 | 1.050 | / | Note1 |
| π/4-QPSK | SISO | 2402 | 2DH5 | 1.172 | / | Note1 |
| | | 2441 | 2DH5 | 1.171 | / | Note1 |
| | | 2480 | 2DH5 | 1.170 | / | Note1 |
| 8DPSK | SISO | 2402 | 3DH5 | 1.164 | / | Note1 |
| | | 2441 | 3DH5 | 1.165 | / | Note1 |
| | | 2480 | 3DH5 | 1.165 | / | Note1 |

Note1: Only for Report Use

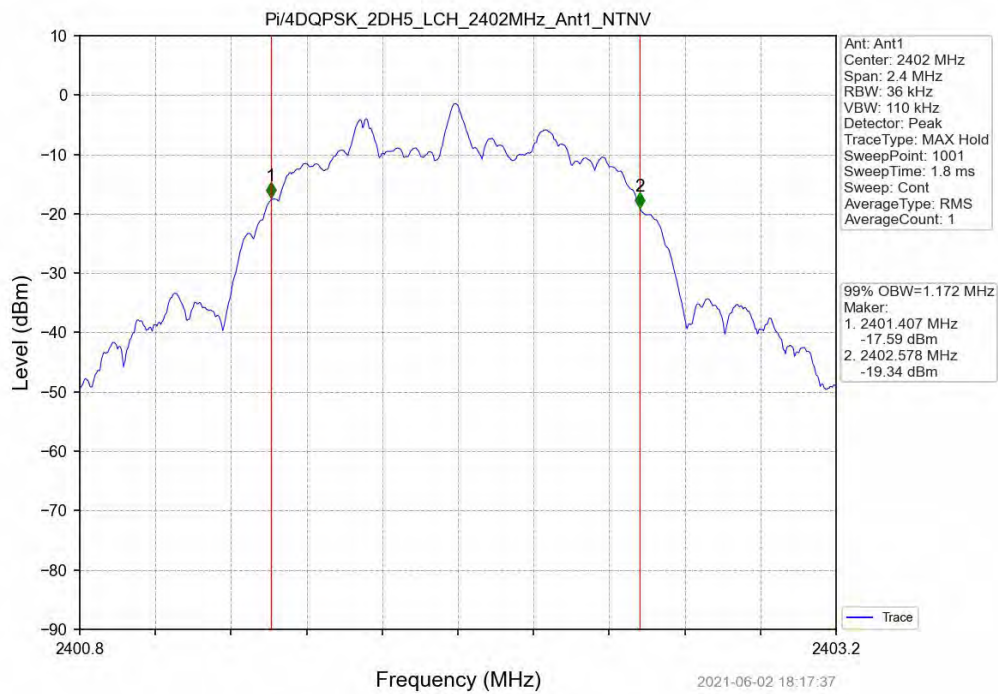
1.1.2 Test Graph



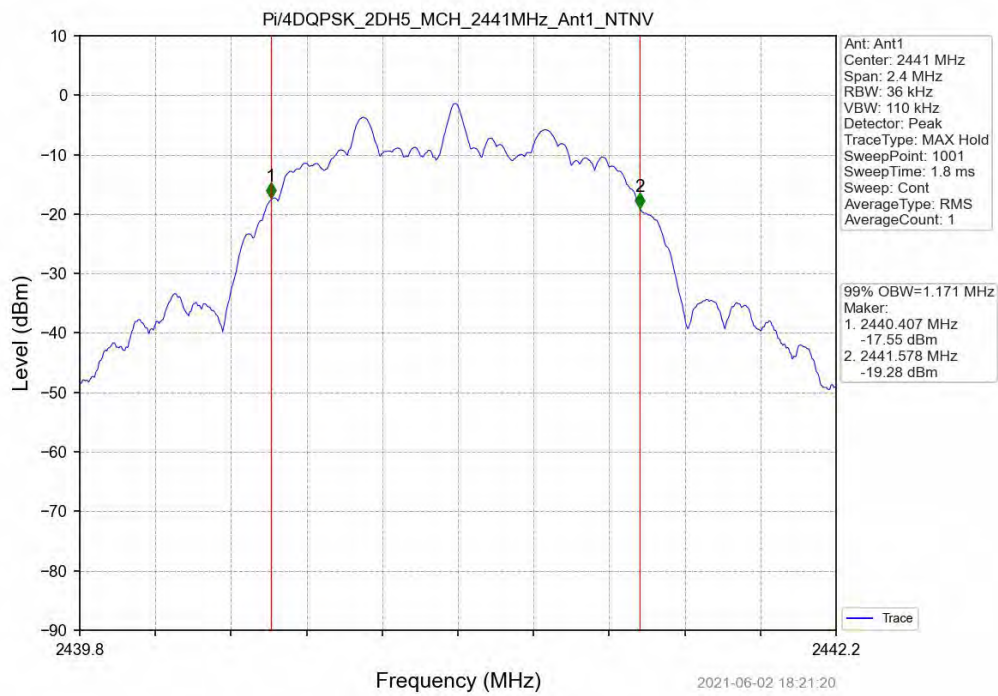
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



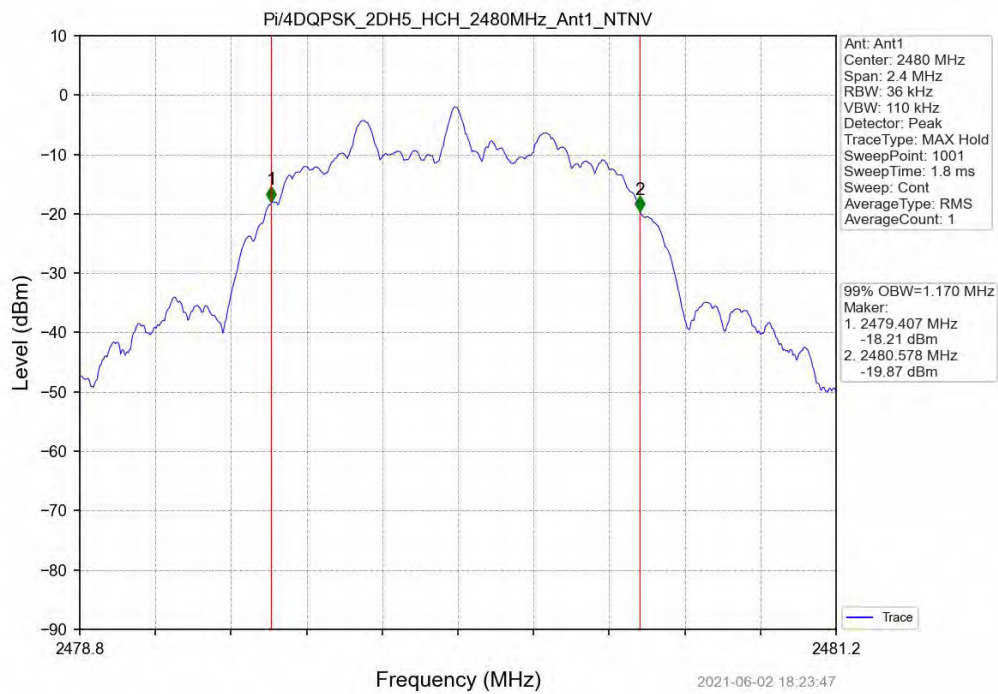
$\pi/4$ -DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



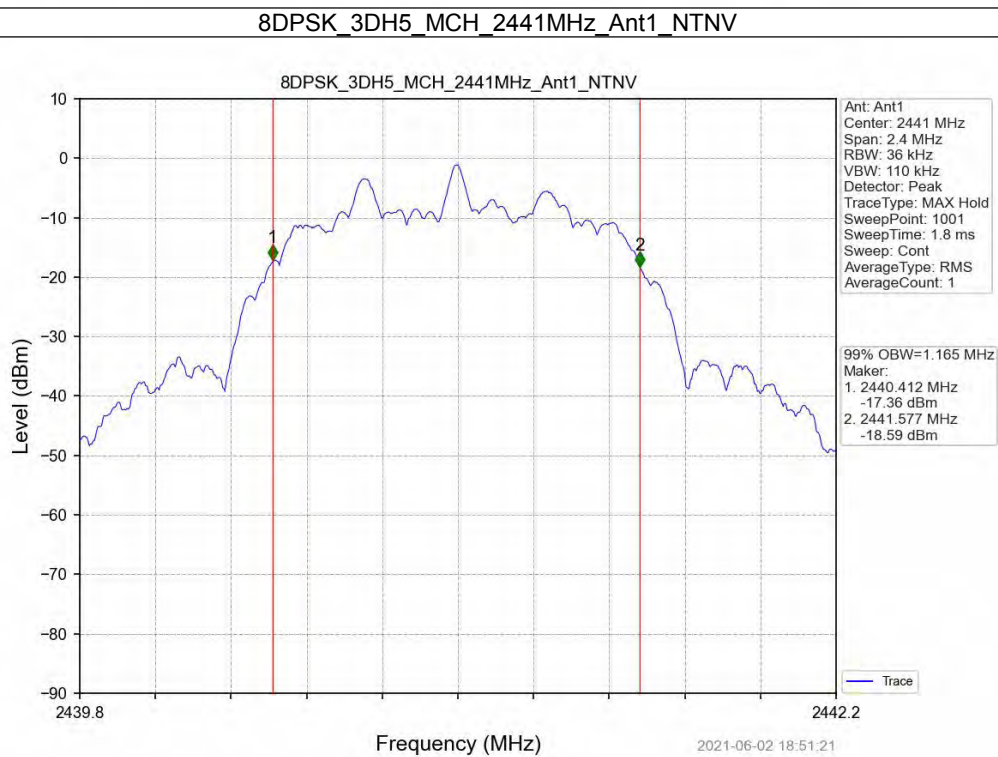
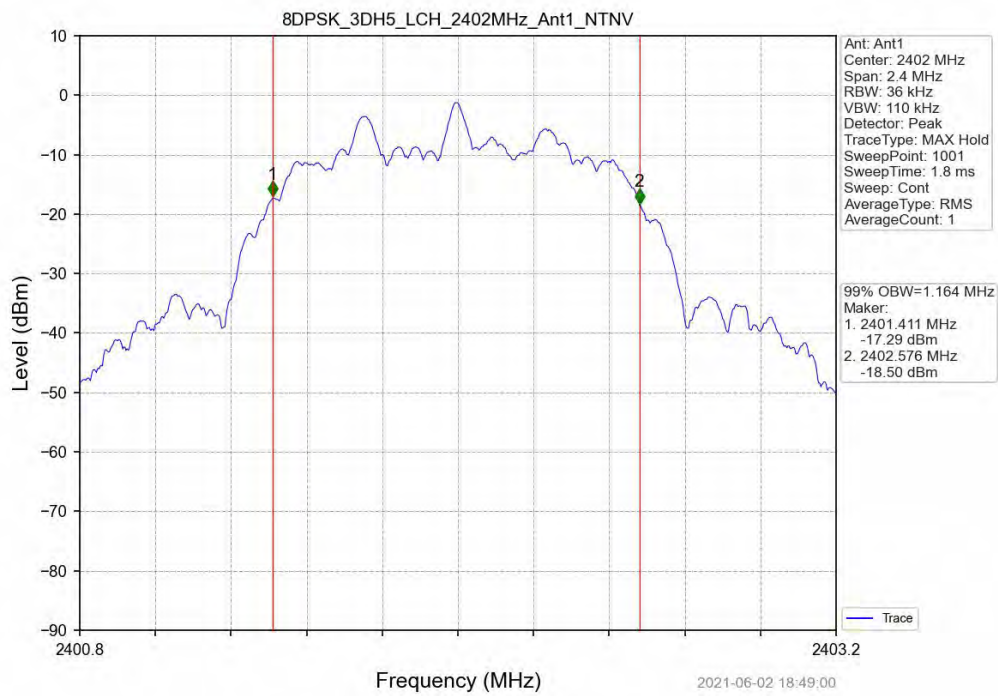
$\pi/4$ -DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



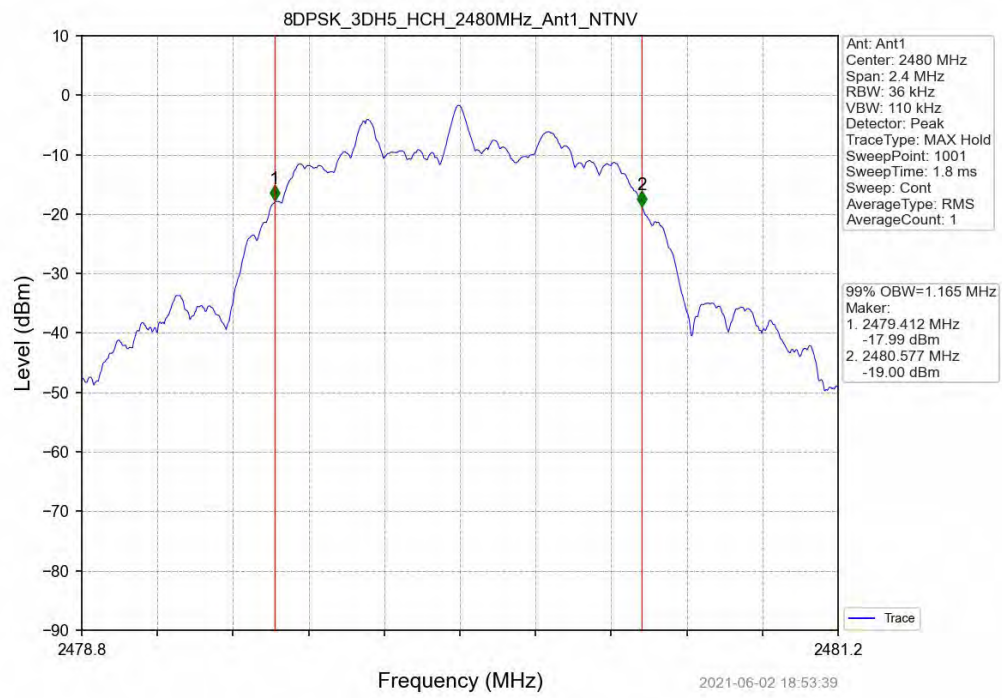
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



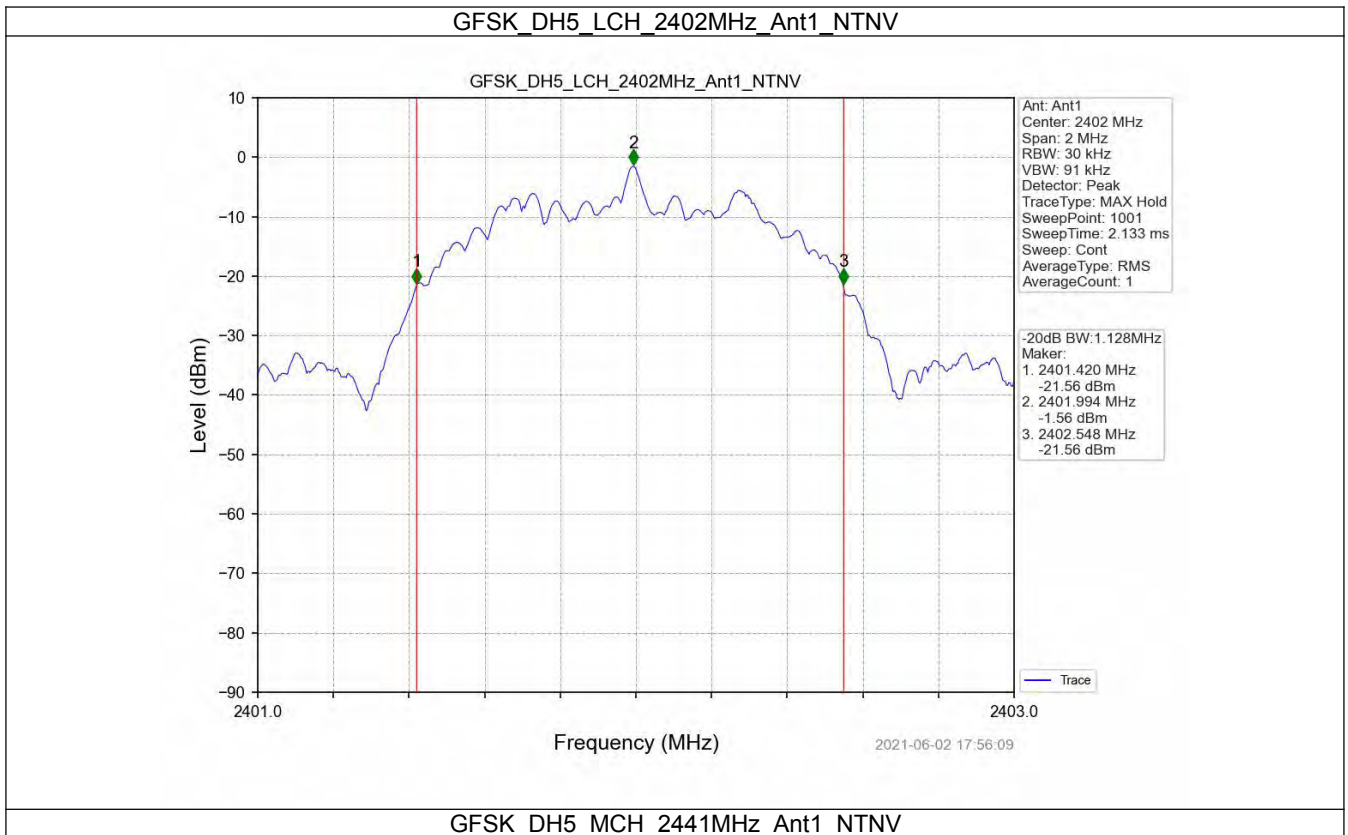
1.2 XDB

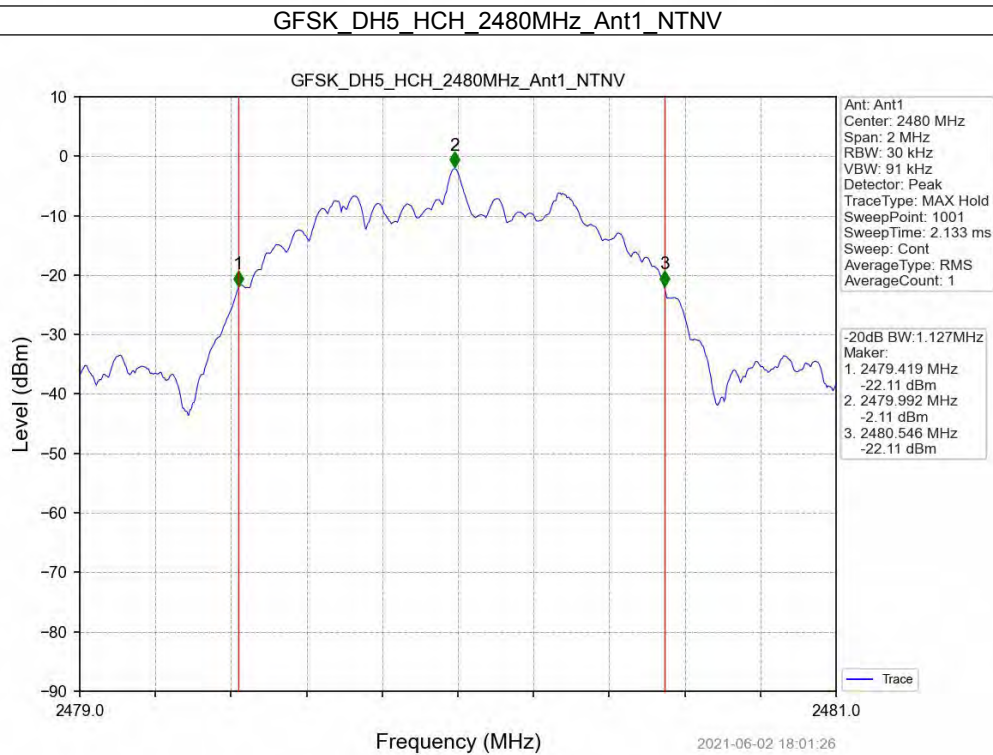
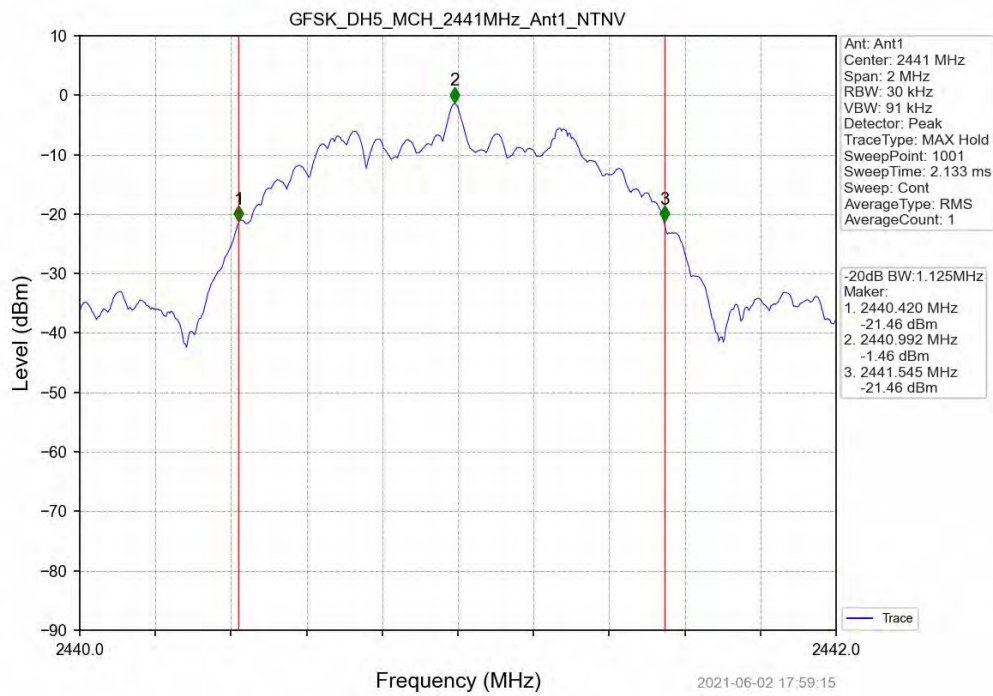
1.2.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | 20dB Bandwidth (MHz) | Limit (MHz) | Verdict |
|-----------|---------|-----------------|-------------|----------------------|-------------|---------|
| | | | | Ant1 | | |
| GFSK | SISO | 2402 | DH5 | 1.128 | / | Note1 |
| | | 2441 | DH5 | 1.125 | / | Note1 |
| | | 2480 | DH5 | 1.127 | / | Note1 |
| π/4-DQPSK | SISO | 2402 | 2DH5 | 1.266 | / | Note1 |
| | | 2441 | 2DH5 | 1.264 | / | Note1 |
| | | 2480 | 2DH5 | 1.265 | / | Note1 |
| 8DPSK | SISO | 2402 | 3DH5 | 1.261 | / | Note1 |
| | | 2441 | 3DH5 | 1.265 | / | Note1 |
| | | 2480 | 3DH5 | 1.264 | / | Note1 |

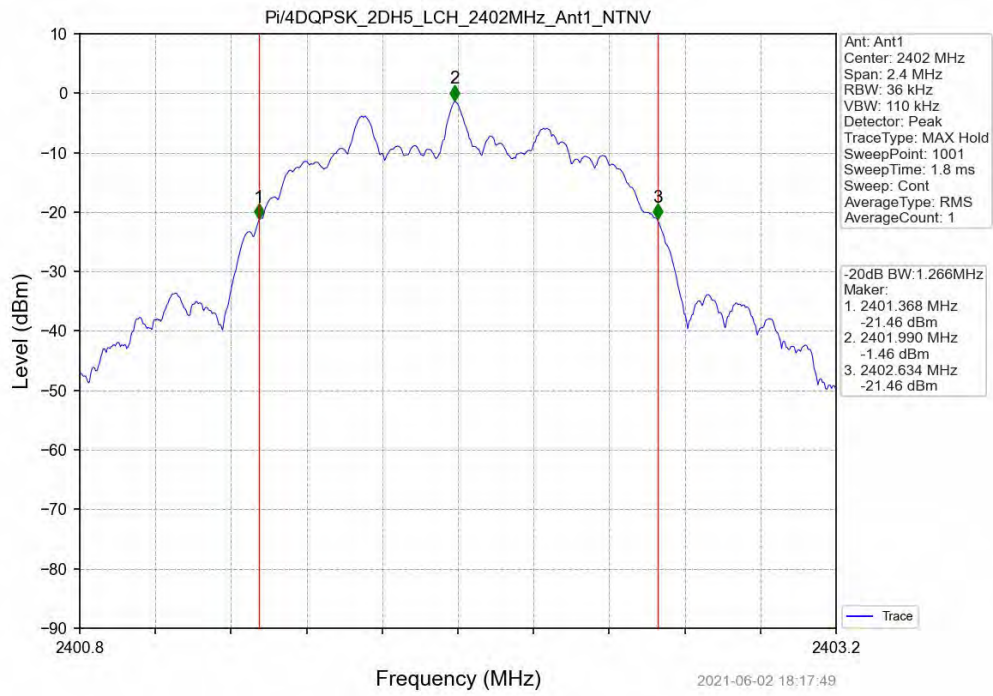
Note1: Only for Report Use

1.2.2 Test Graph

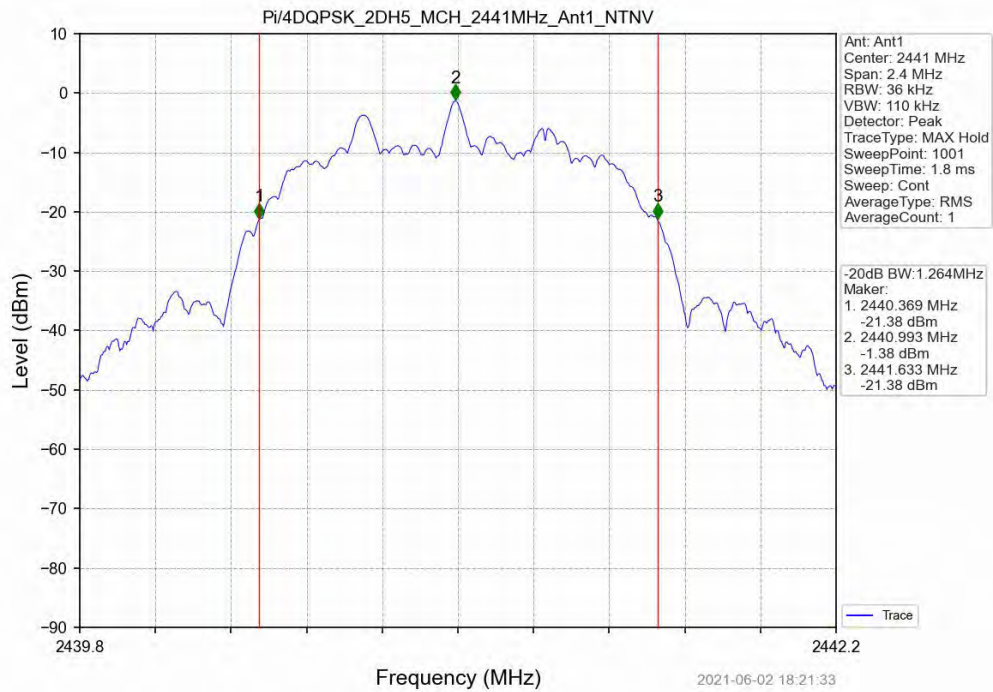




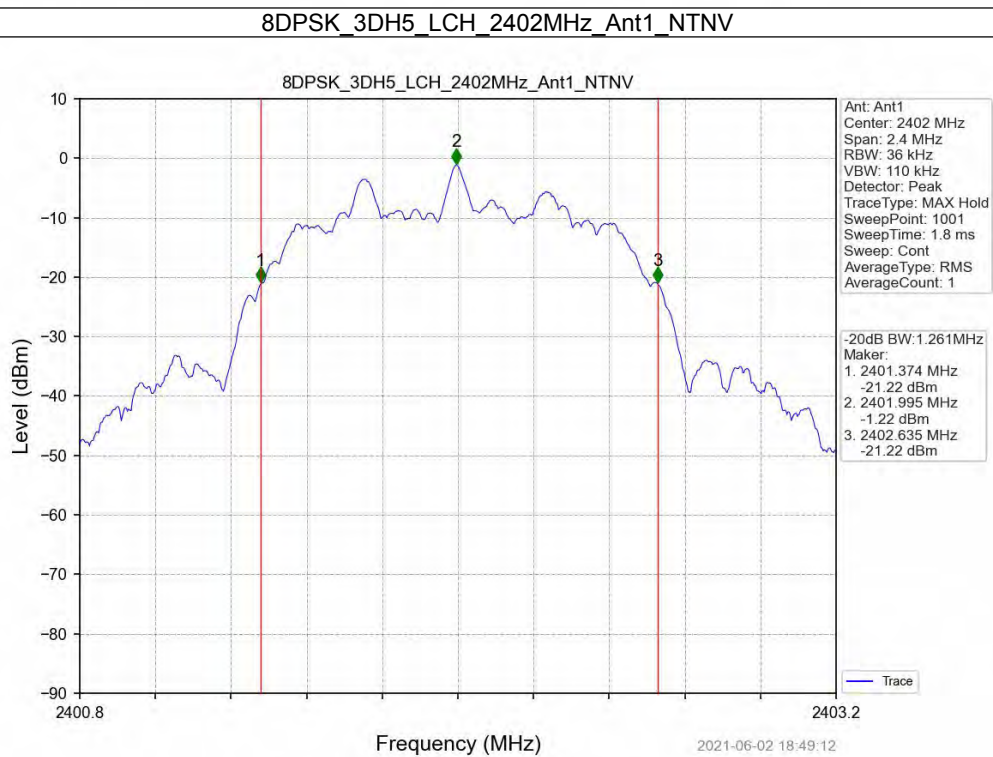
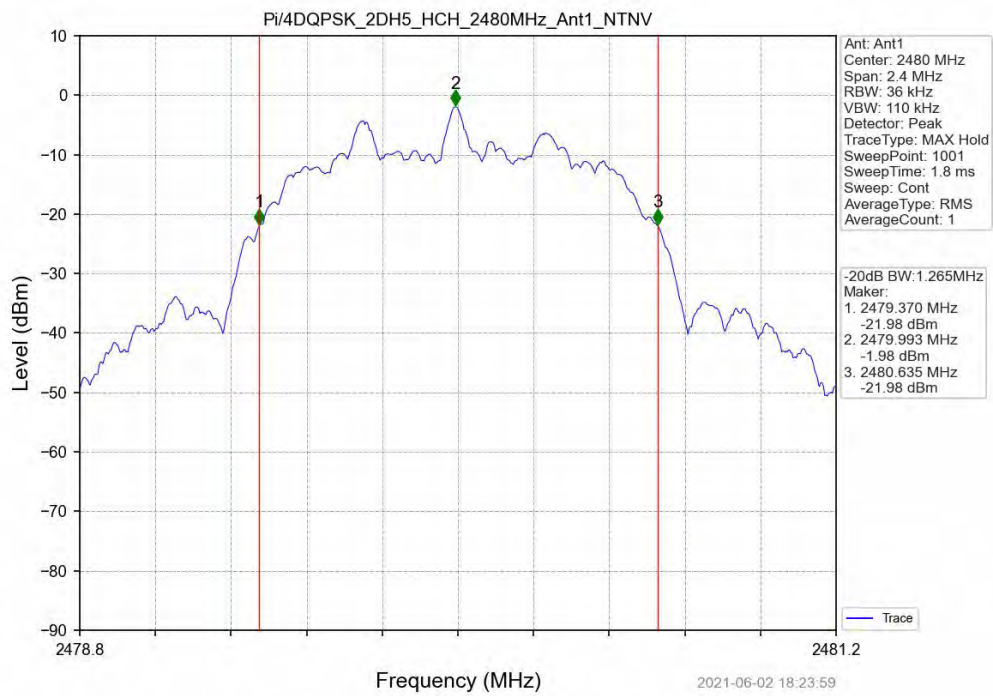
π /4-QPSK_2DH5_LCH_2402MHz_Ant1_NTNV



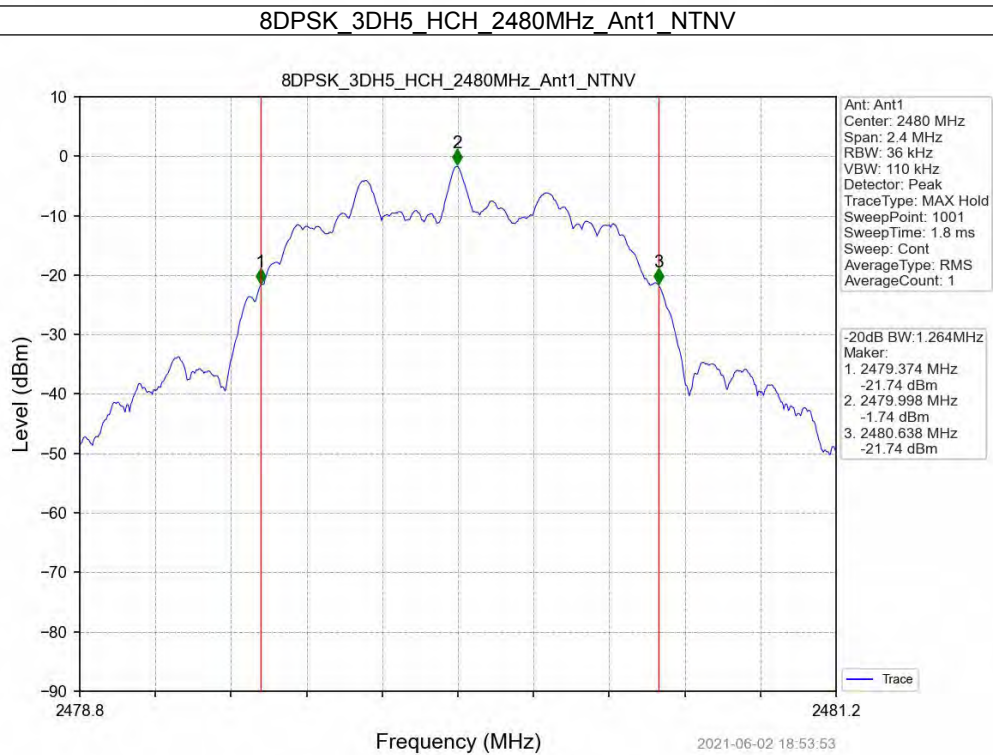
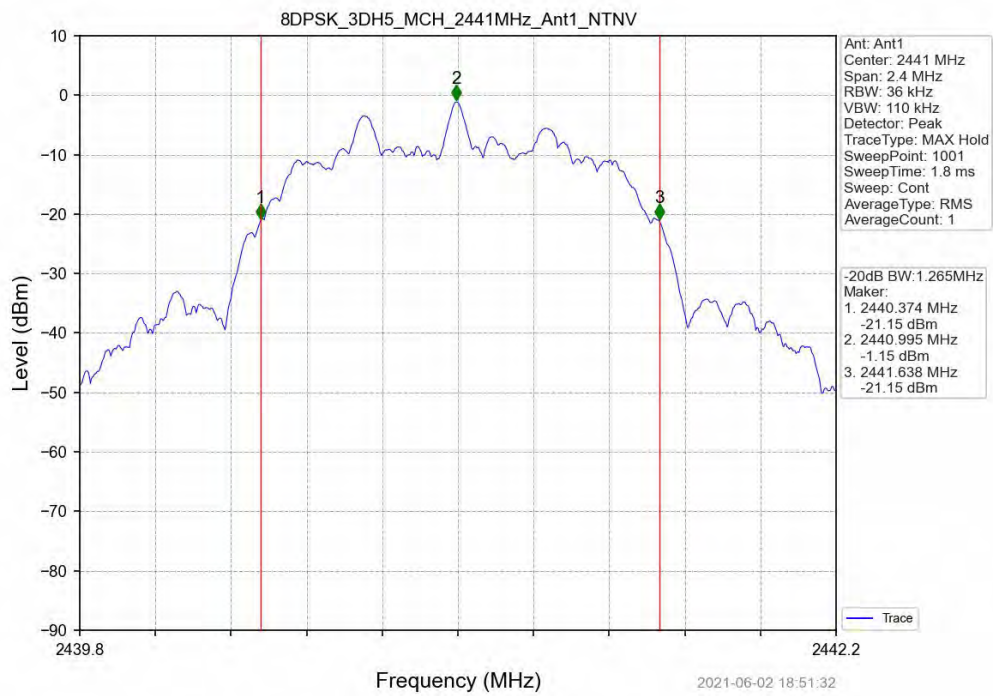
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



2. Maximum Conducted Output Power

2.1 Power

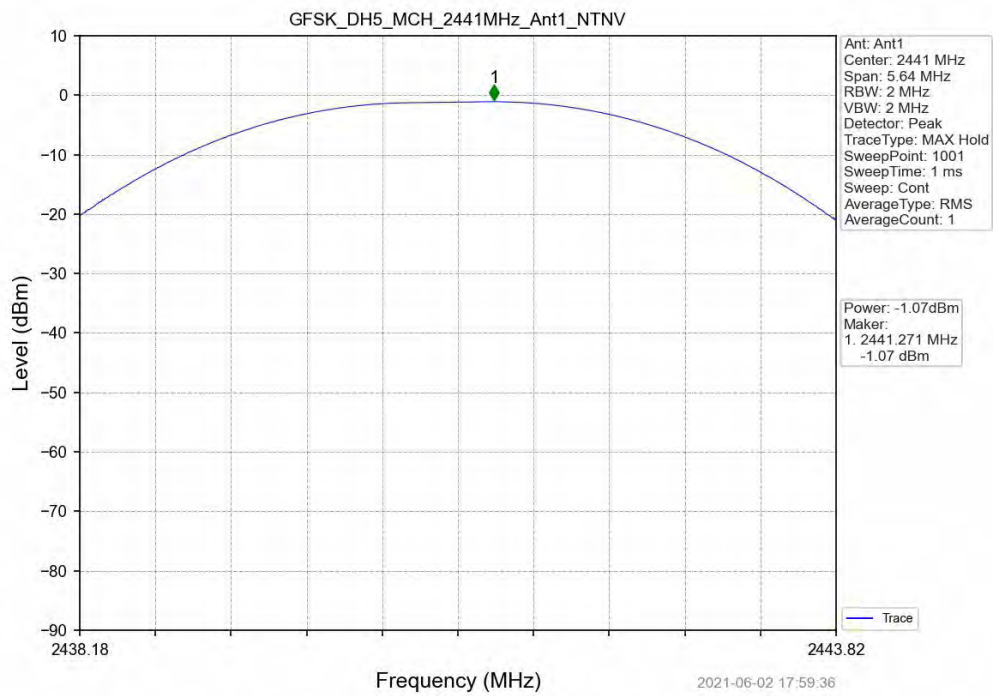
2.1.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | Measured Peak Output Power (dBm) | Limit (dBm) | Verdict |
|----------------|---------|-----------------|-------------|----------------------------------|-------------|---------|
| | | | | Ant1 | | |
| GFSK | SISO | 2402 | DH5 | -1.12 | <=20.97 | Pass |
| | | 2441 | DH5 | -1.07 | <=20.97 | Pass |
| | | 2480 | DH5 | -1.71 | <=20.97 | Pass |
| $\pi/4$ -DQPSK | SISO | 2402 | 2DH5 | -0.31 | <=20.97 | Pass |
| | | 2441 | 2DH5 | -0.24 | <=20.97 | Pass |
| | | 2480 | 2DH5 | -0.82 | <=20.97 | Pass |
| 8DPSK | SISO | 2402 | 3DH5 | -0.10 | <=20.97 | Pass |
| | | 2441 | 3DH5 | -0.03 | <=20.97 | Pass |
| | | 2480 | 3DH5 | -0.62 | <=20.97 | Pass |

Note1: Antenna Gain: 1:2.7dBi;

2.1.2 Test Graph





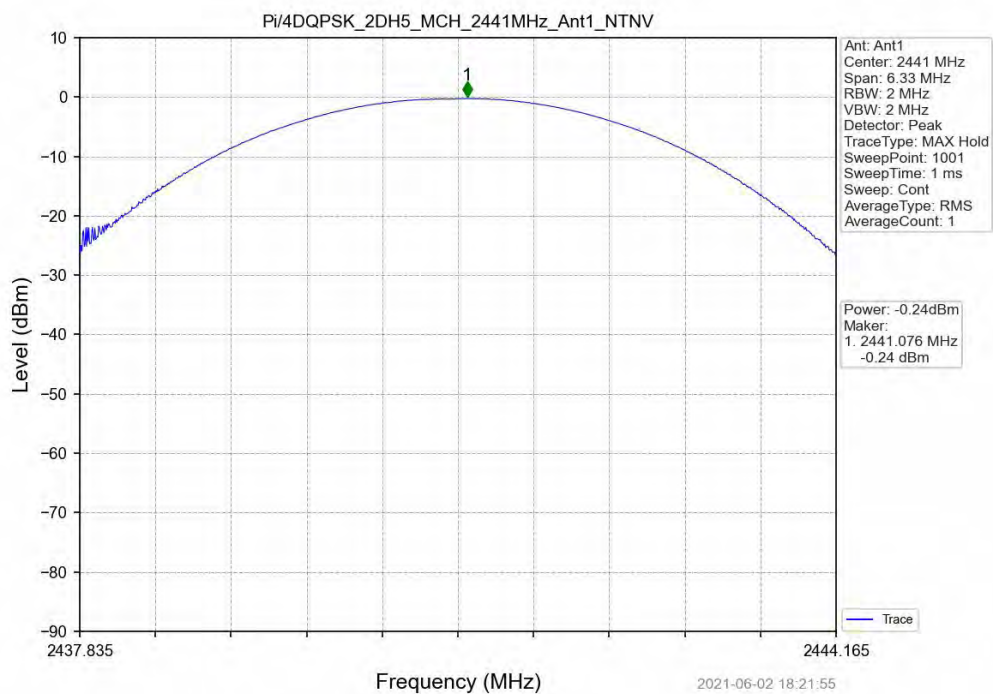
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



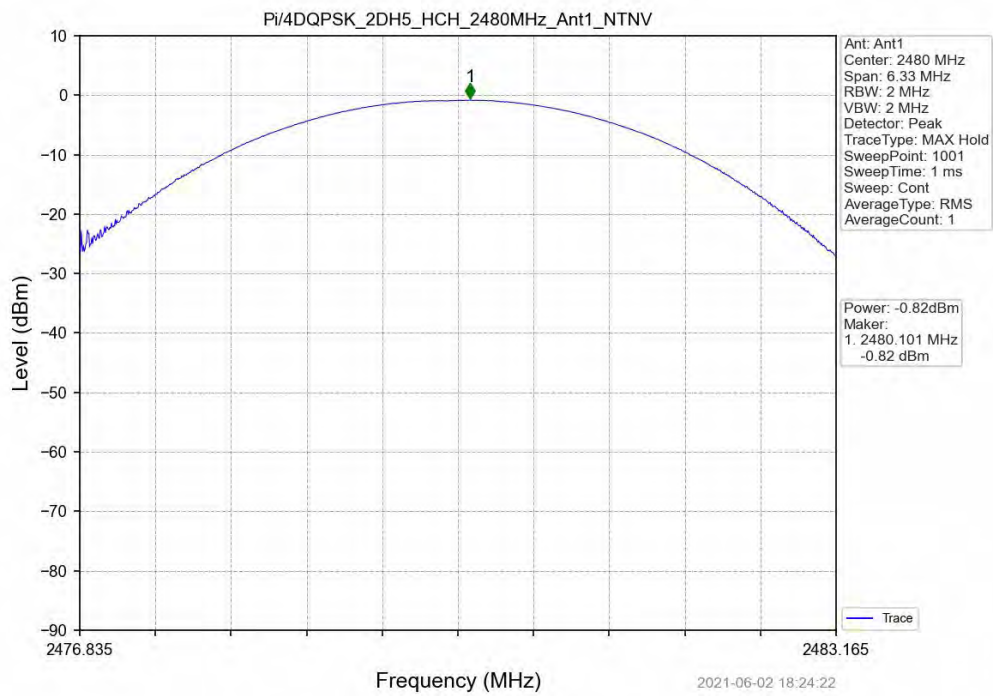
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



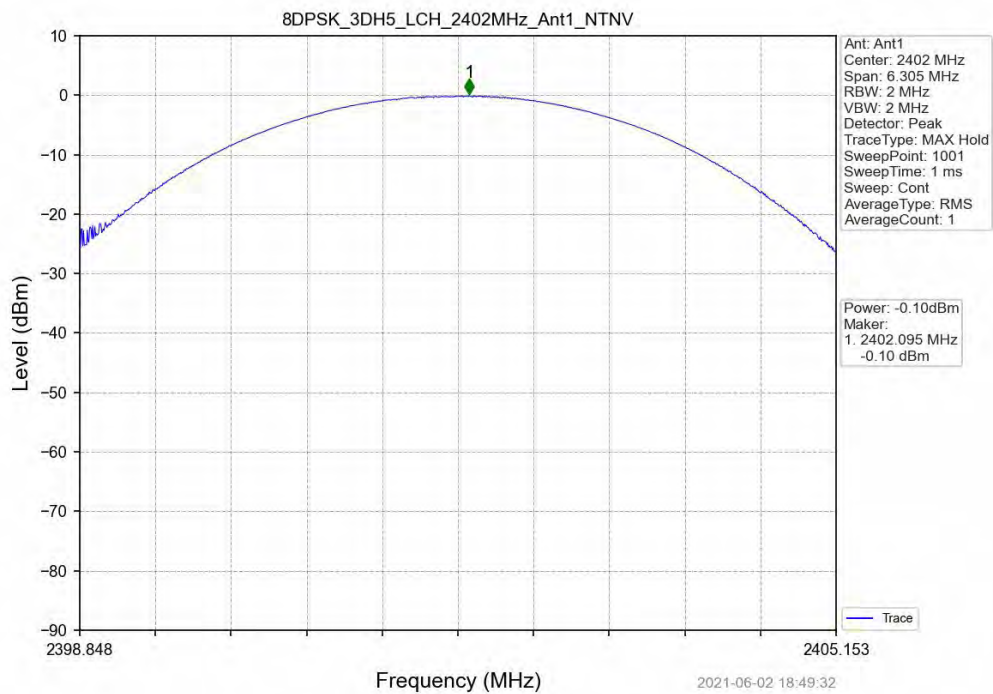
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



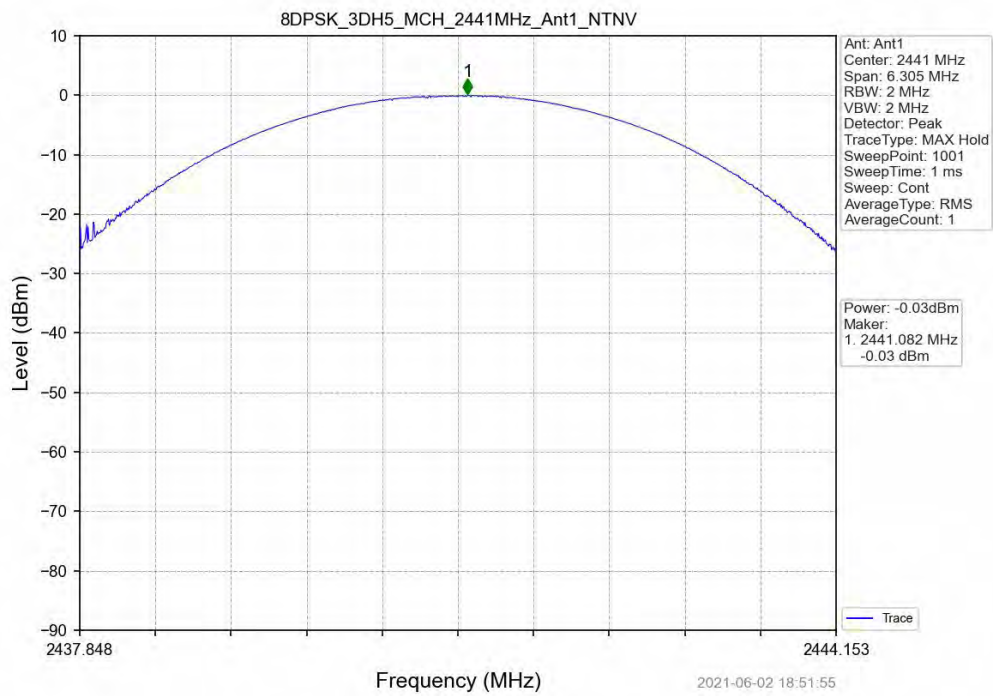
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



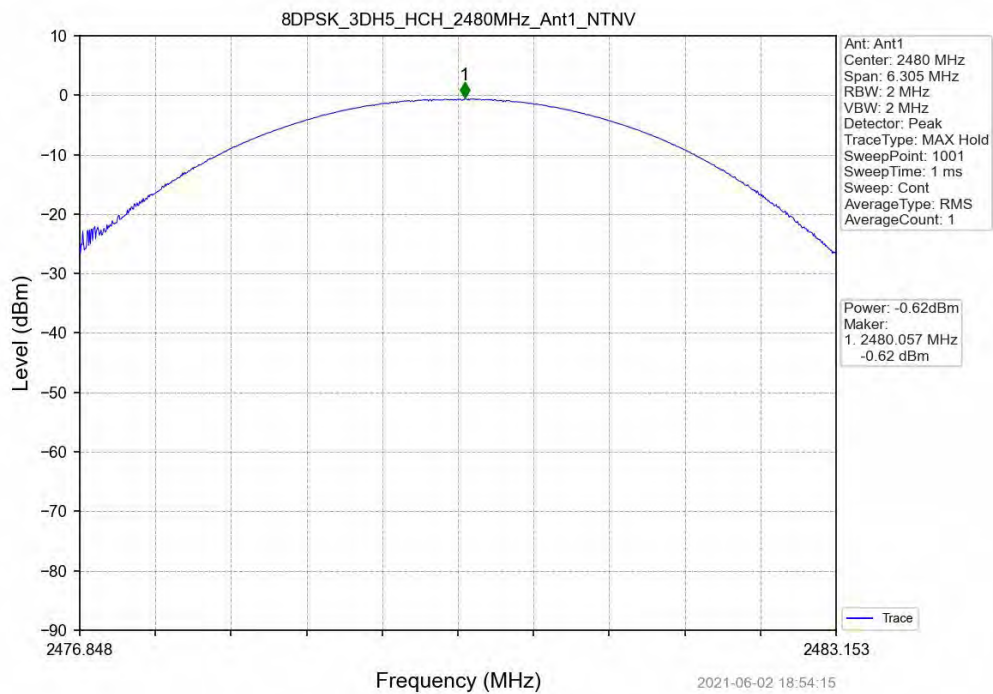
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



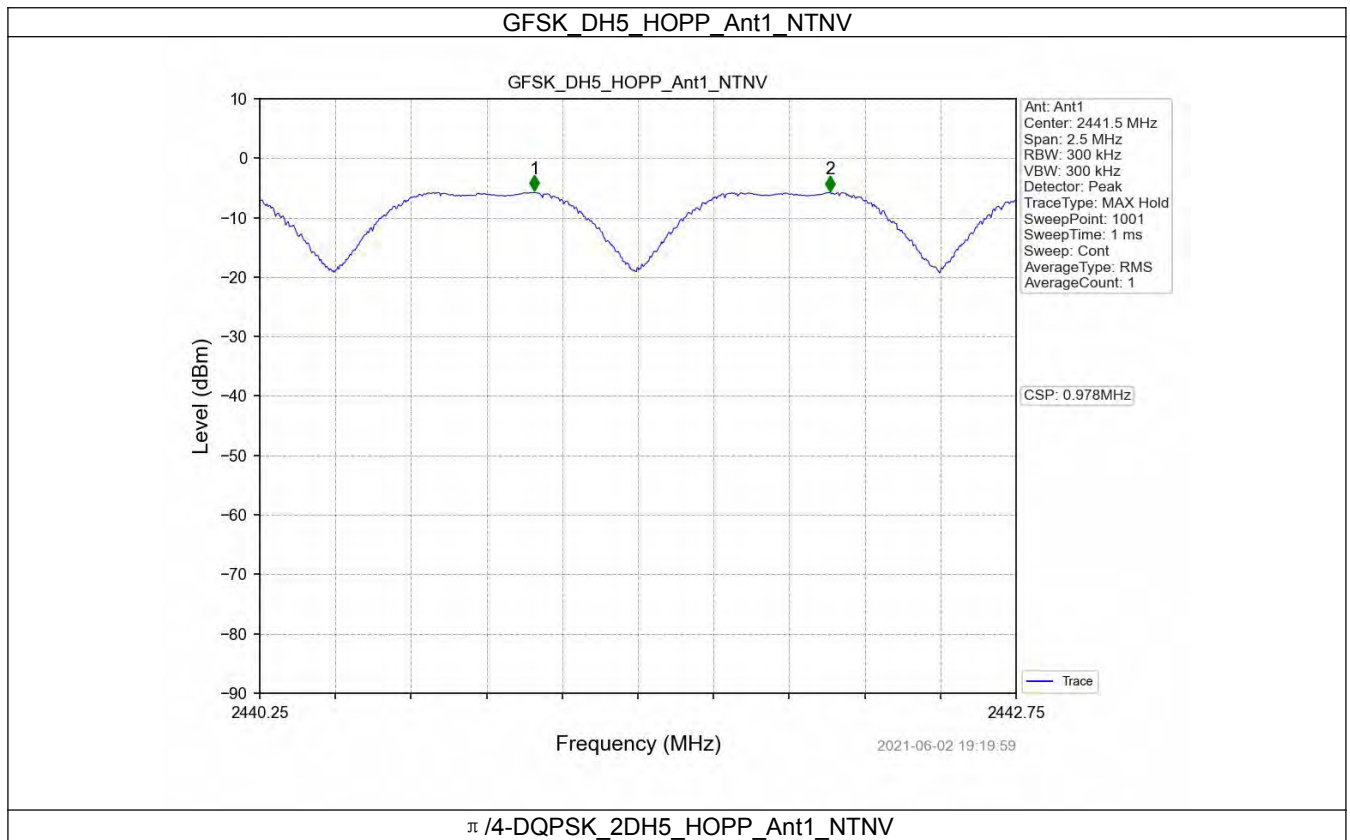
3. Carrier Frequency Separation

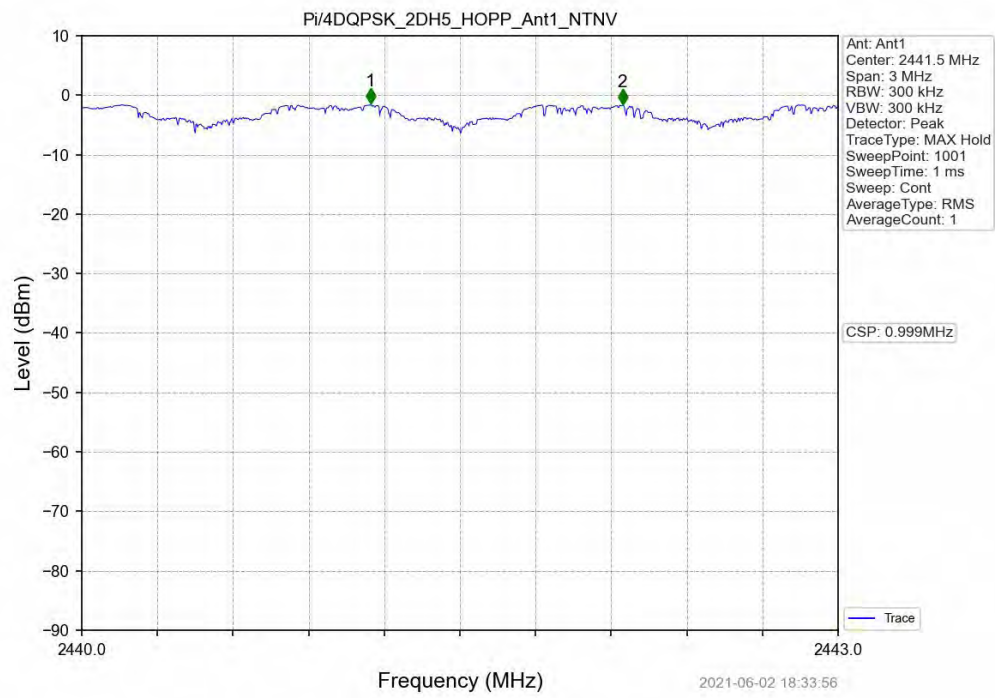
3.1 Ant1

3.1.1 Test Result

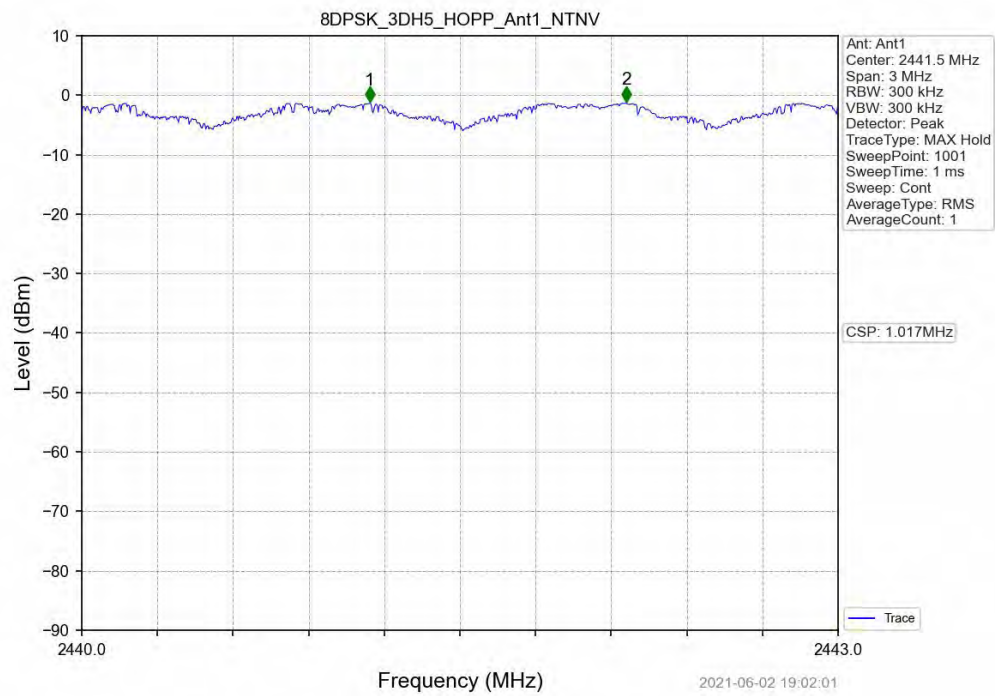
| Ant1 | | | | | | | |
|----------------|---------|-----------------|-------------|--------------------------|----------------------|-------------|---------|
| Mode | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz) | Verdict |
| GFSK | SISO | 2441 | DH5 | 0.98 | 1.13 | >=0.752 | Pass |
| $\pi/4$ -DQPSK | SISO | 2441 | 2DH5 | 1.00 | 1.27 | >=0.844 | Pass |
| 8DPSK | SISO | 2441 | 3DH5 | 1.02 | 1.26 | >=0.841 | Pass |

3.1.2 Test Graph





8DPSK_3DH5_HOPP_Ant1_NTNV



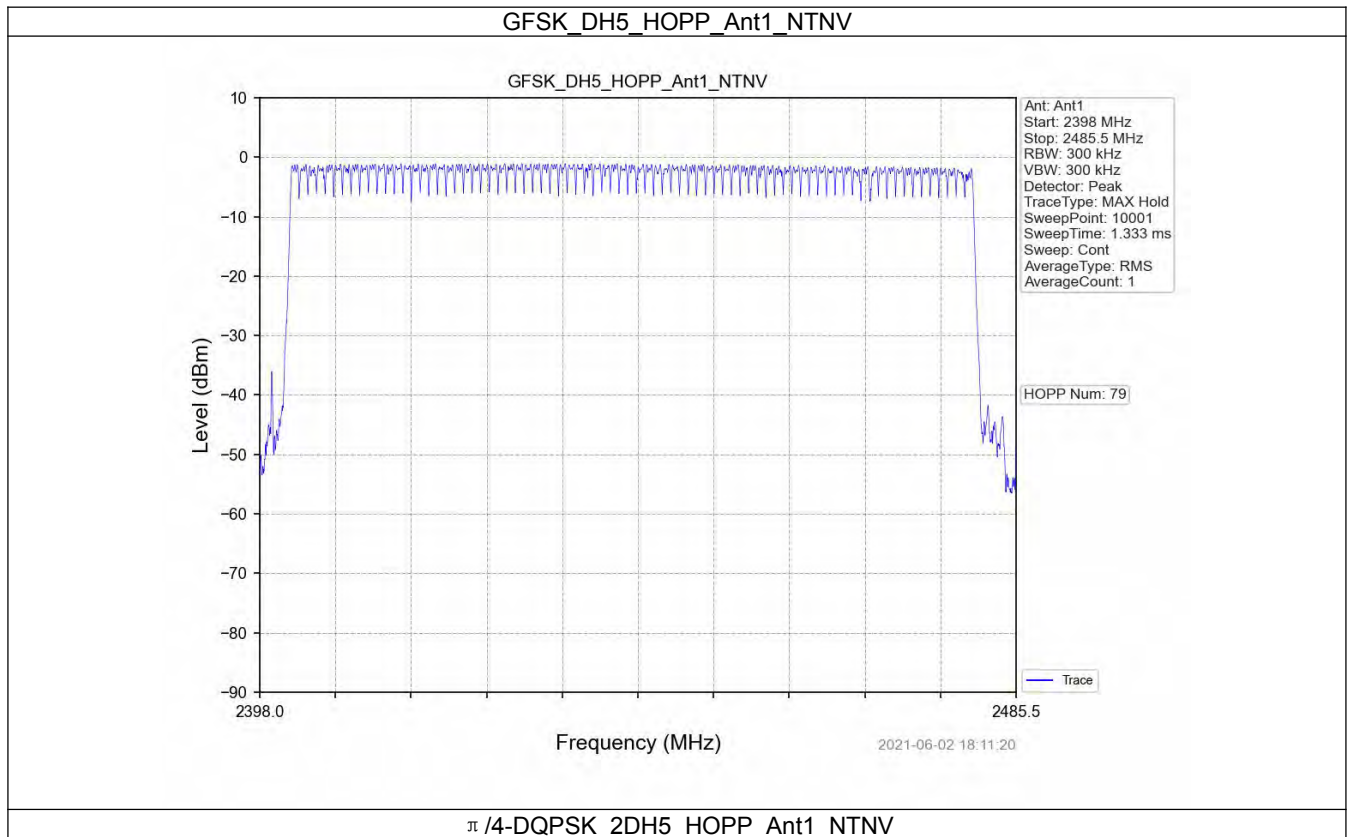
4. Number of Hopping Frequencies

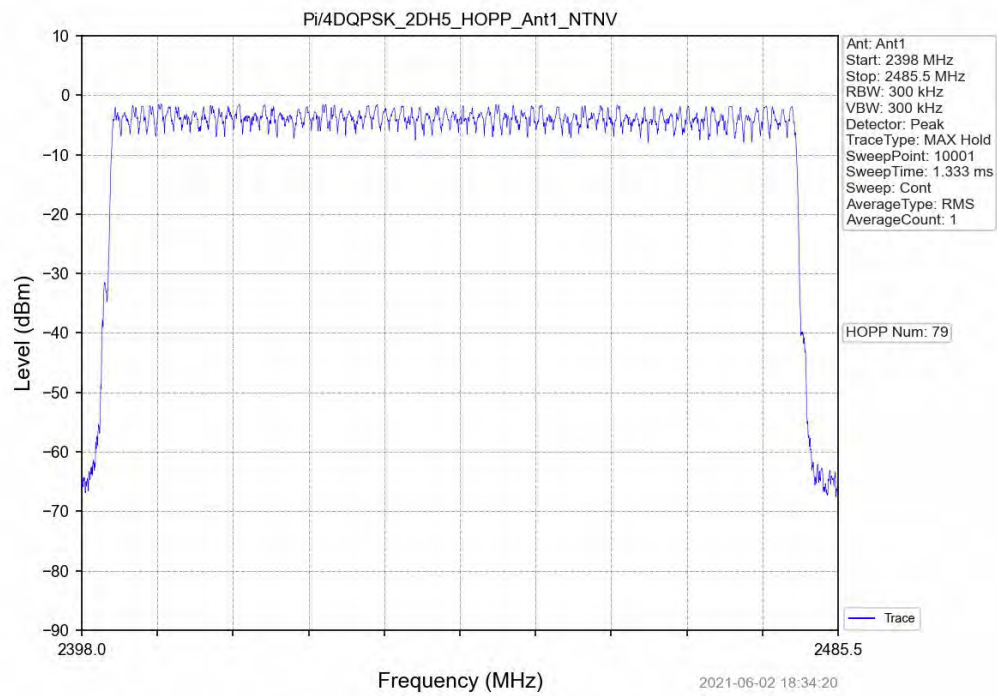
4.1 HoppNum

4.1.1 Test Result

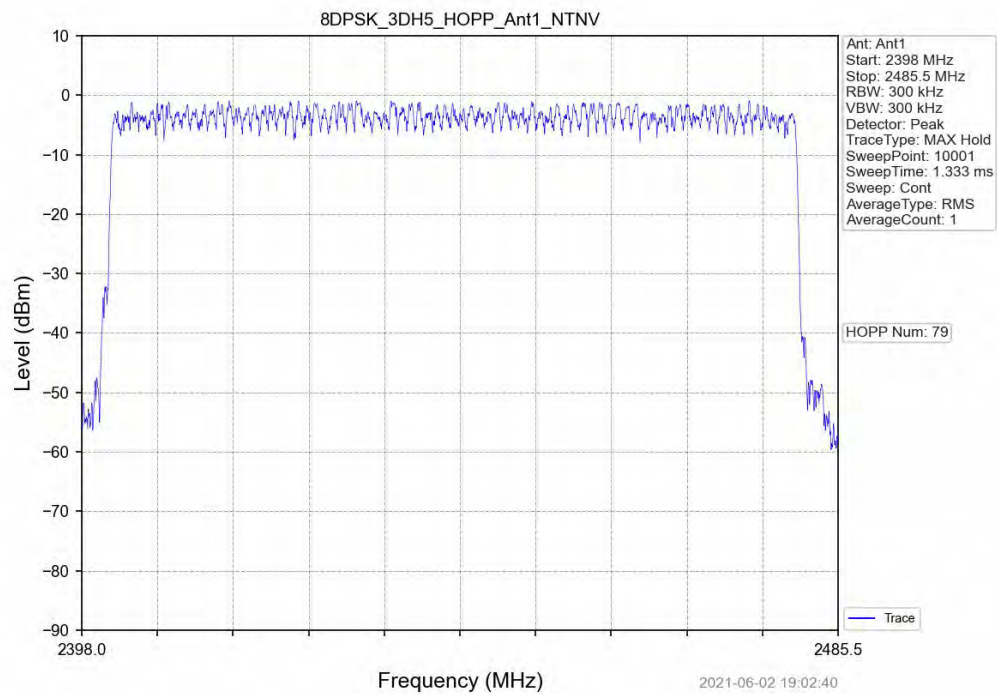
| Mode | TX Type | Frequency (MHz) | Packet Type | Num of Hopping Frequencies | Limit | Verdict |
|----------------|---------|-----------------|-------------|----------------------------|-------|---------|
| | | | | Ant1 | | |
| GFSK | SISO | 2441 | DH5 | 79 | >=15 | Pass |
| $\pi/4$ -DQPSK | SISO | 2441 | 2DH5 | 79 | >=15 | Pass |
| 8DPSK | SISO | 2441 | 3DH5 | 79 | >=15 | Pass |

4.1.2 Test Graph





8DPSK_3DH5_HOPP_Ant1_NTNV



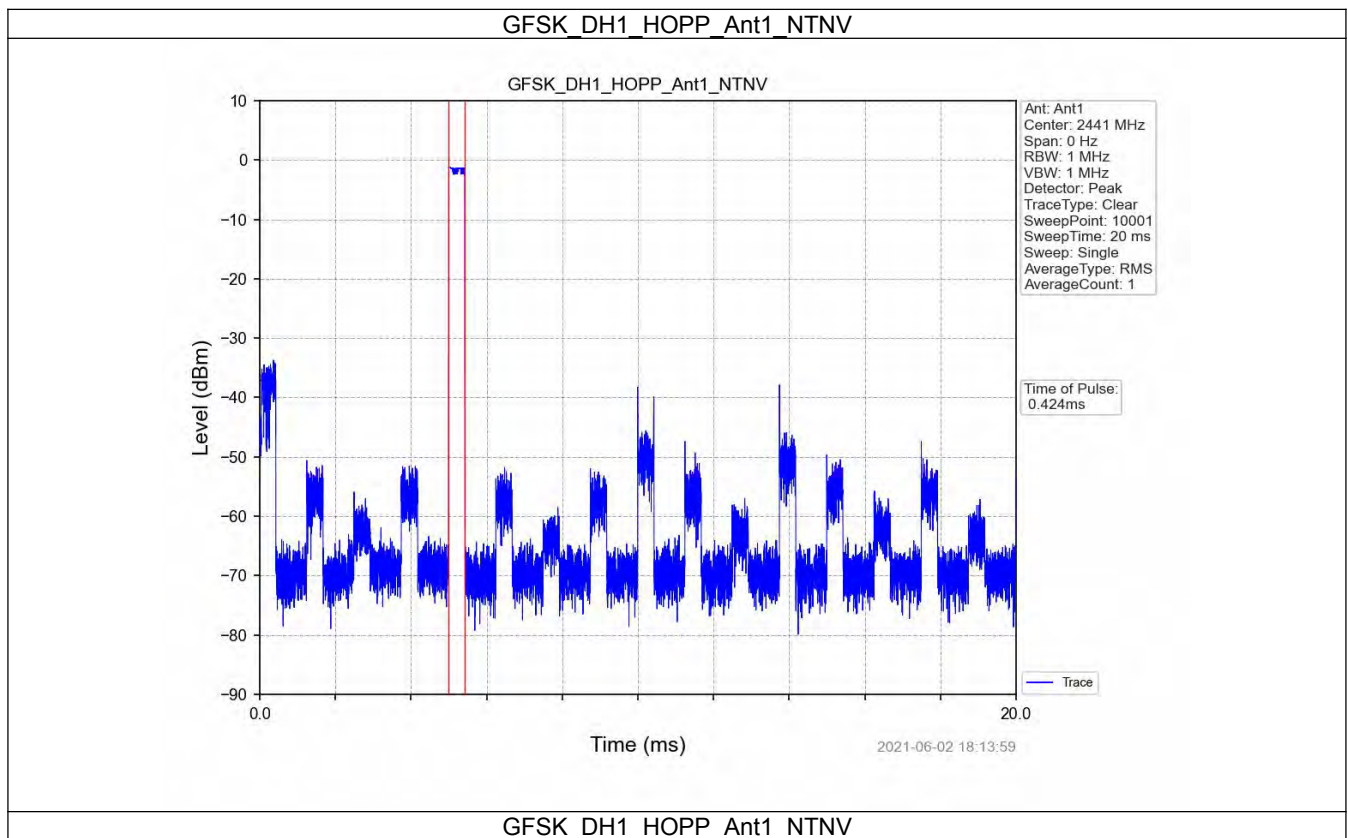
5. Time of Occupancy (Dwell Time)

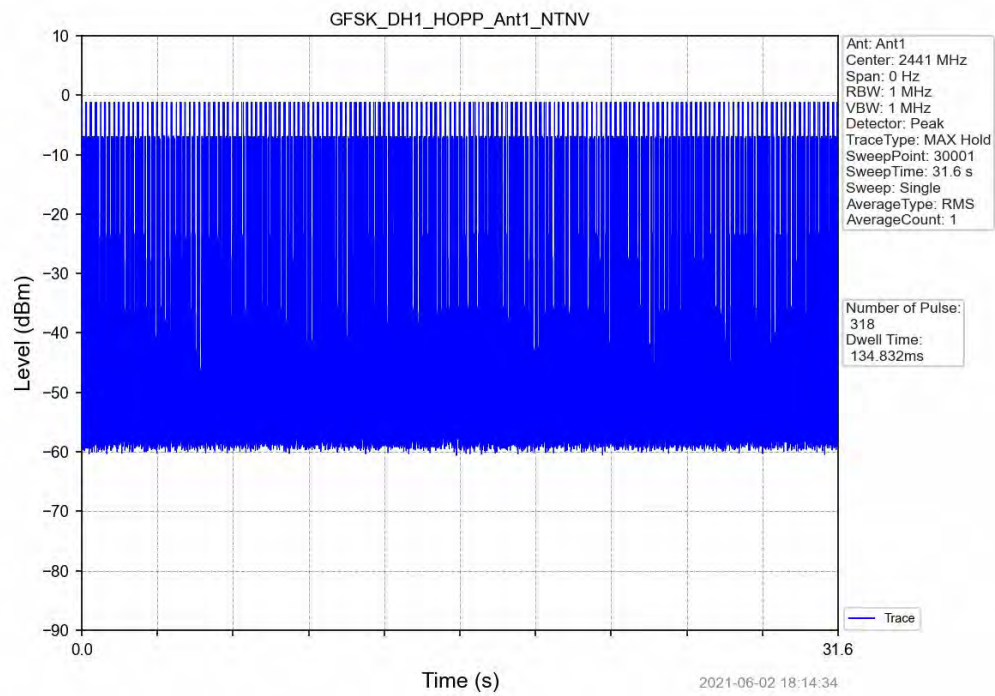
5.1 Ant1

5.1.1 Test Result

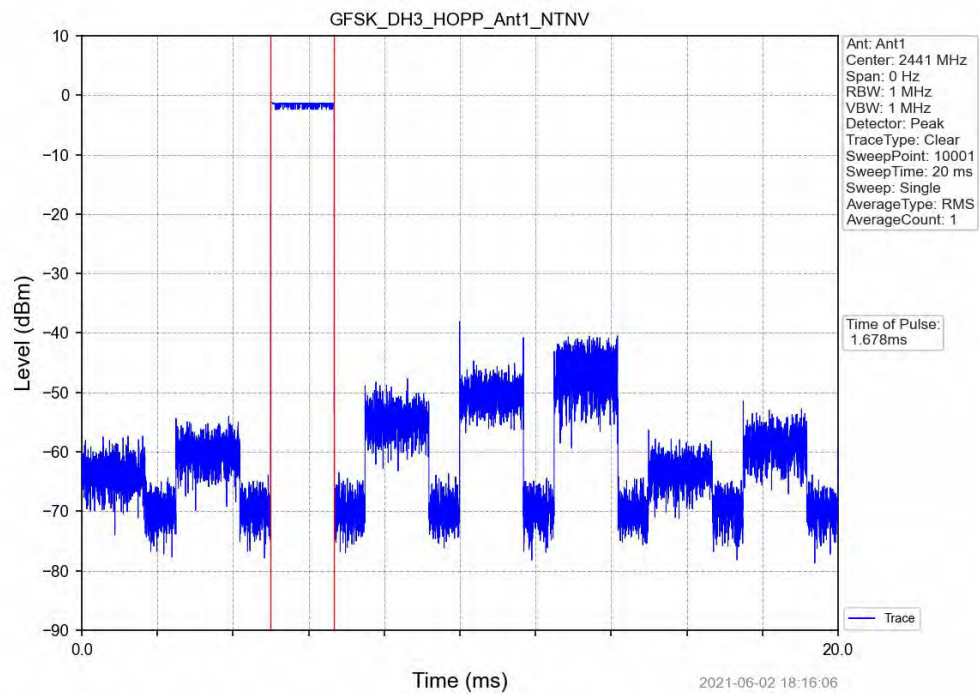
| Ant1 | | | | | | | | | |
|----------------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| Mode | TX Type | Frequency (MHz) | Packet Type | Duration of Single Pulse (ms) | Observation Period (s) | Num of Pulse in Observation Period | Dwell Time (ms) | Limit (ms) | Verdict |
| GFSK | SISO | 2441 | DH1 | 0.42 | 31.60 | 318 | 134.83 | <=400 | Pass |
| | | | DH3 | 1.68 | 31.60 | 153 | 256.73 | <=400 | Pass |
| | | | DH5 | 2.93 | 31.60 | 101 | 295.73 | <=400 | Pass |
| π /4-DQPSK | SISO | 2441 | 2DH1 | 0.43 | 31.60 | 318 | 138.01 | <=400 | Pass |
| | | | 2DH3 | 1.69 | 31.60 | 161 | 271.45 | <=400 | Pass |
| | | | 2DH5 | 2.93 | 31.60 | 101 | 296.33 | <=400 | Pass |
| 8DPSK | SISO | 2441 | 3DH1 | 6.71 | 31.60 | 56 | 375.76 | <=400 | Pass |
| | | | 3DH3 | 0.69 | 31.60 | 167 | 115.56 | <=400 | Pass |
| | | | 3DH5 | 0.94 | 31.60 | 110 | 102.96 | <=400 | Pass |

5.1.2 Test Graph

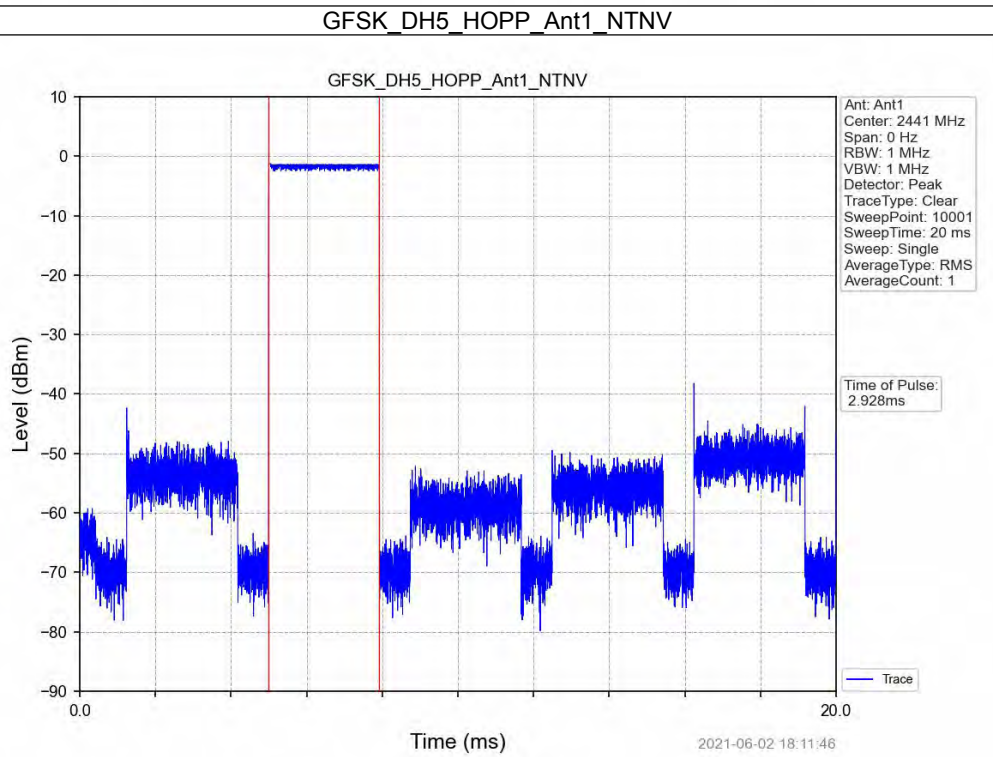
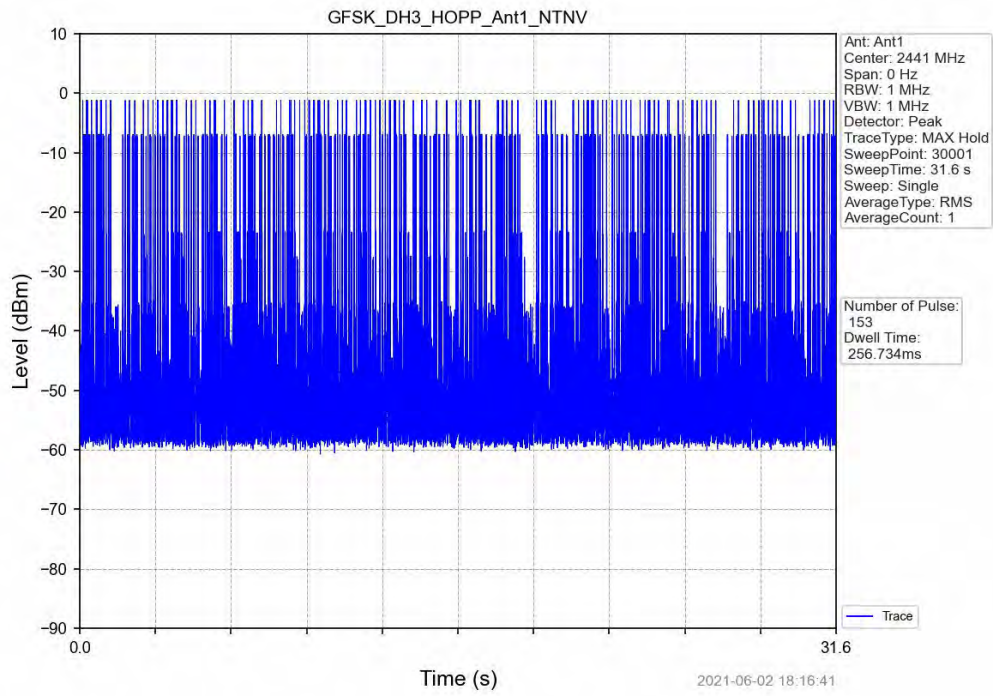




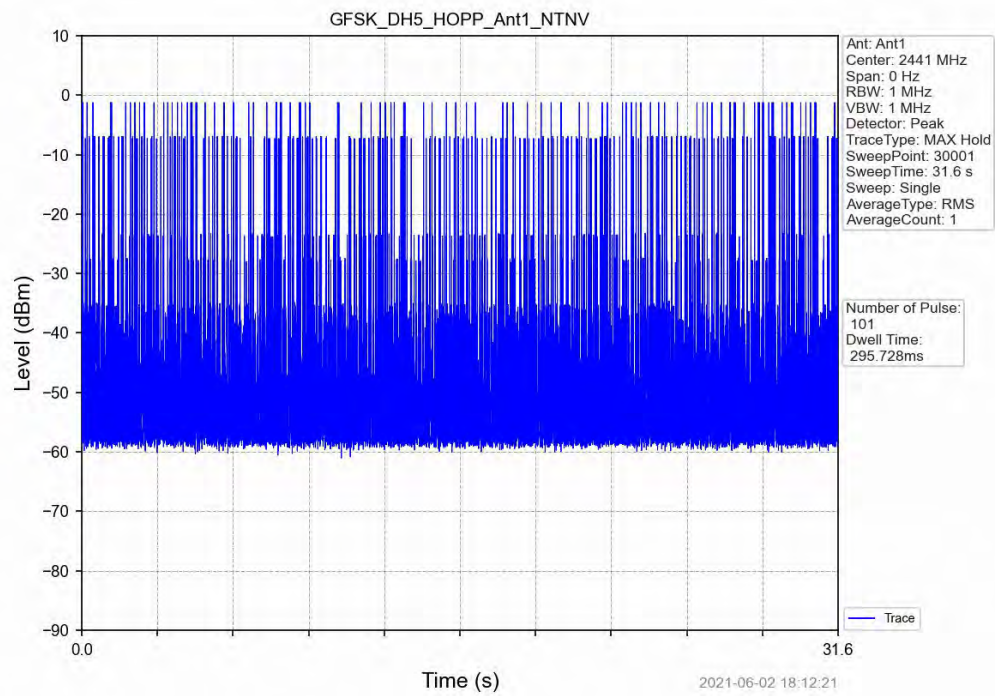
GFSK_DH3_HOPP_Ant1_NTNV



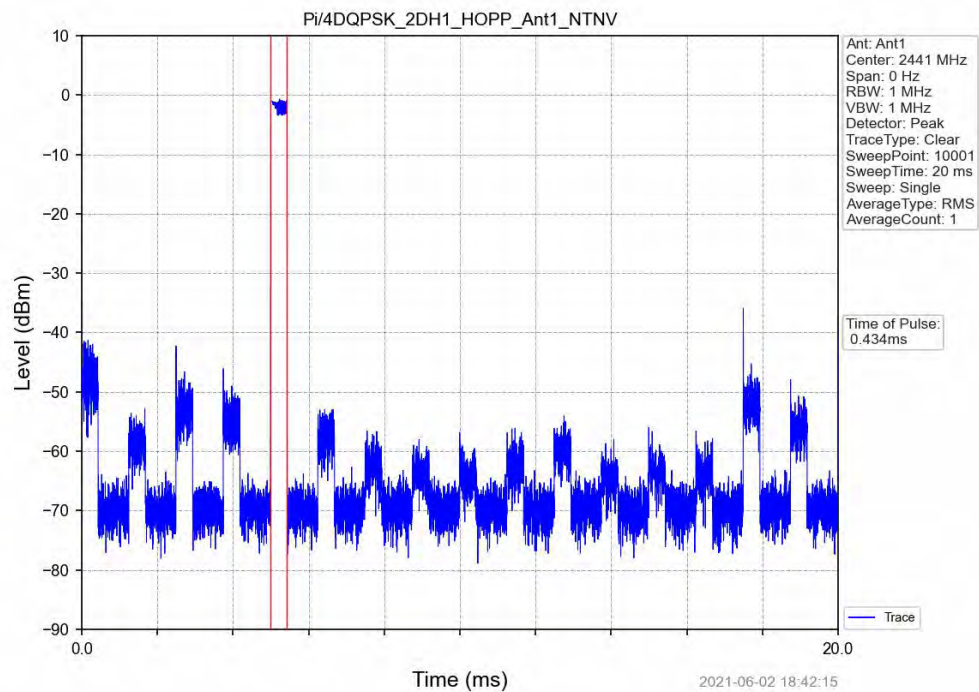
GFSK_DH3_HOPP_Ant1_NTNV



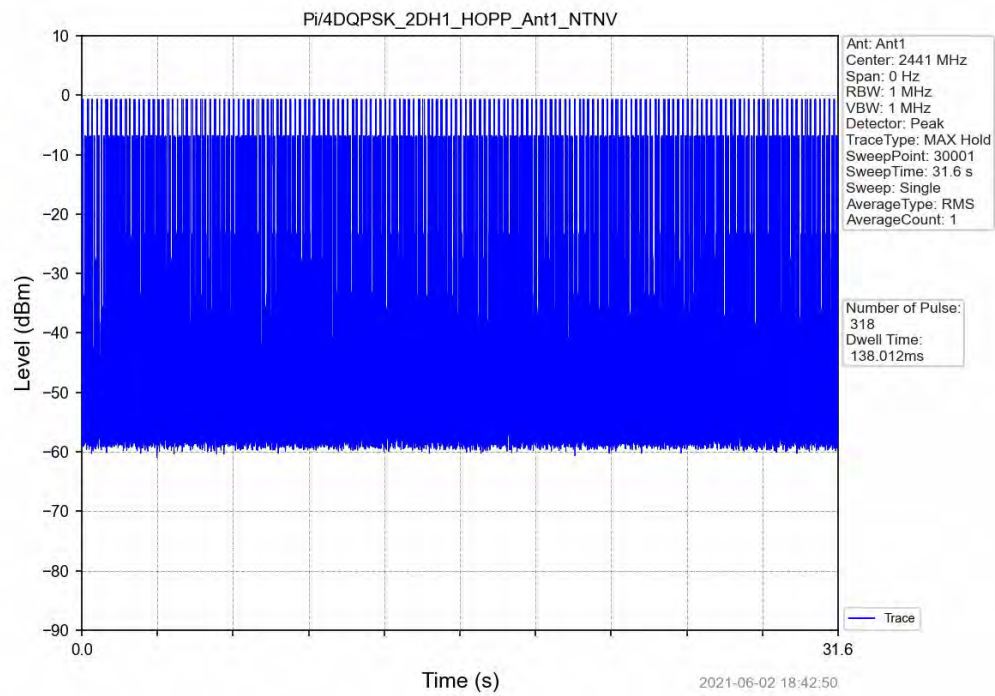
GFSK_DH5_HOPP_Ant1_NTNV



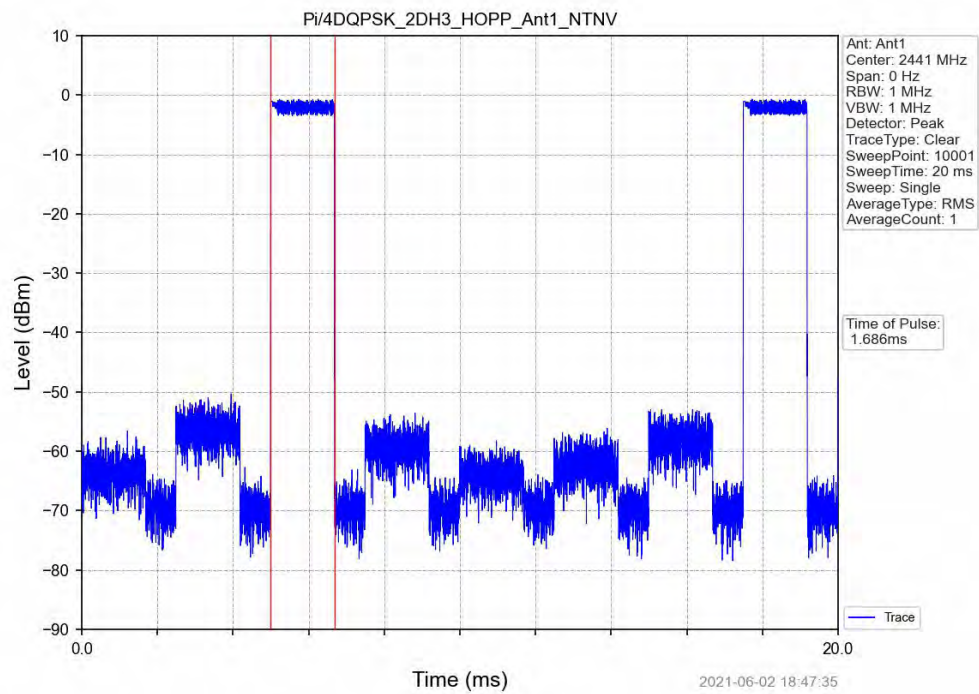
$\pi/4$ -DQPSK_2DH1_HOPP_Ant1_NTNV



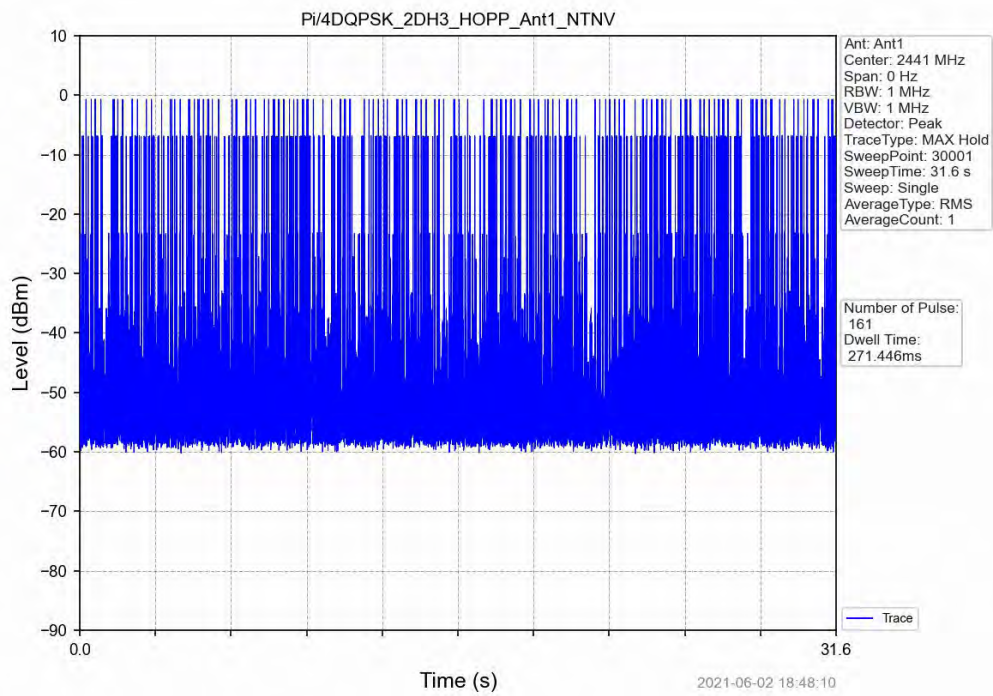
$\pi/4$ -DQPSK_2DH1_HOPP_Ant1_NTNV



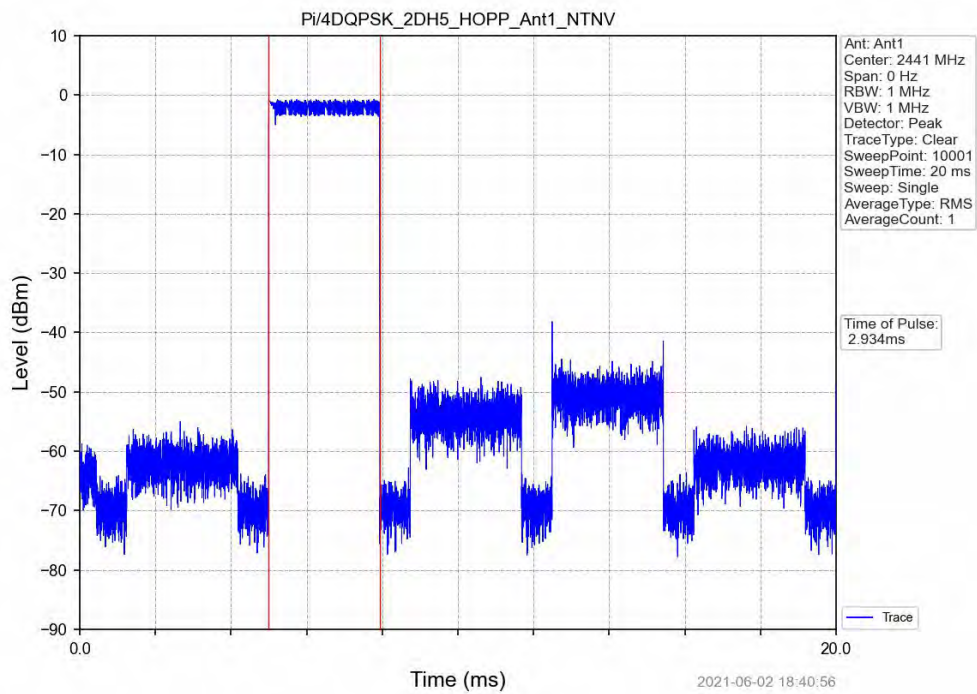
$\pi/4$ -DQPSK_2DH3_HOPP_Ant1_NTNV



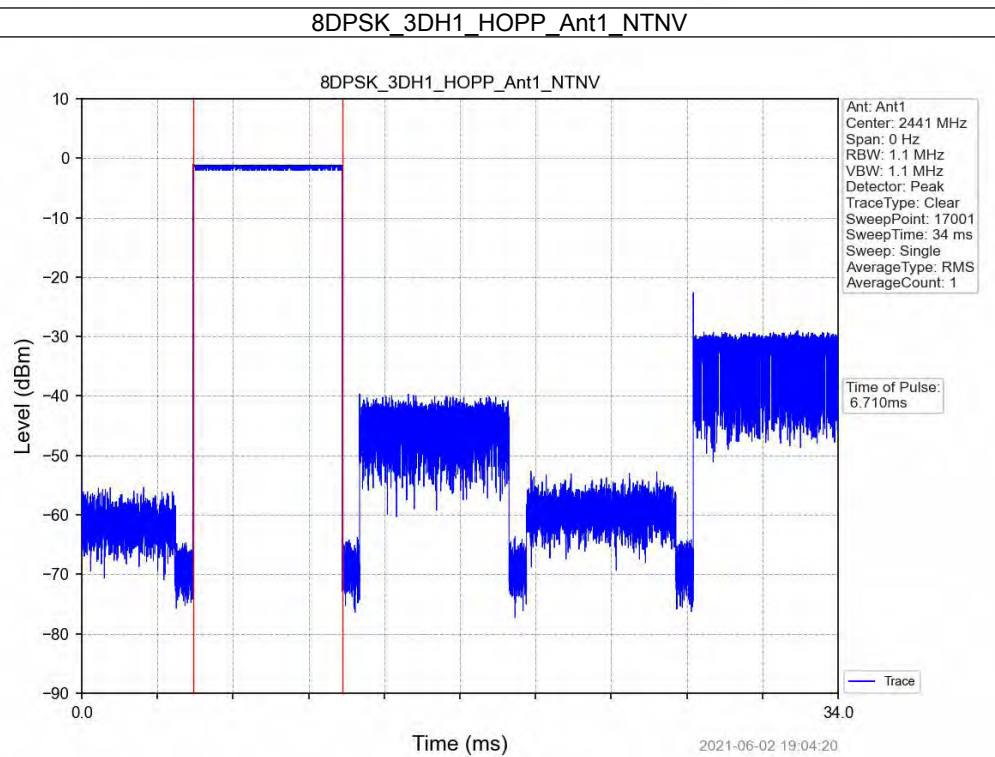
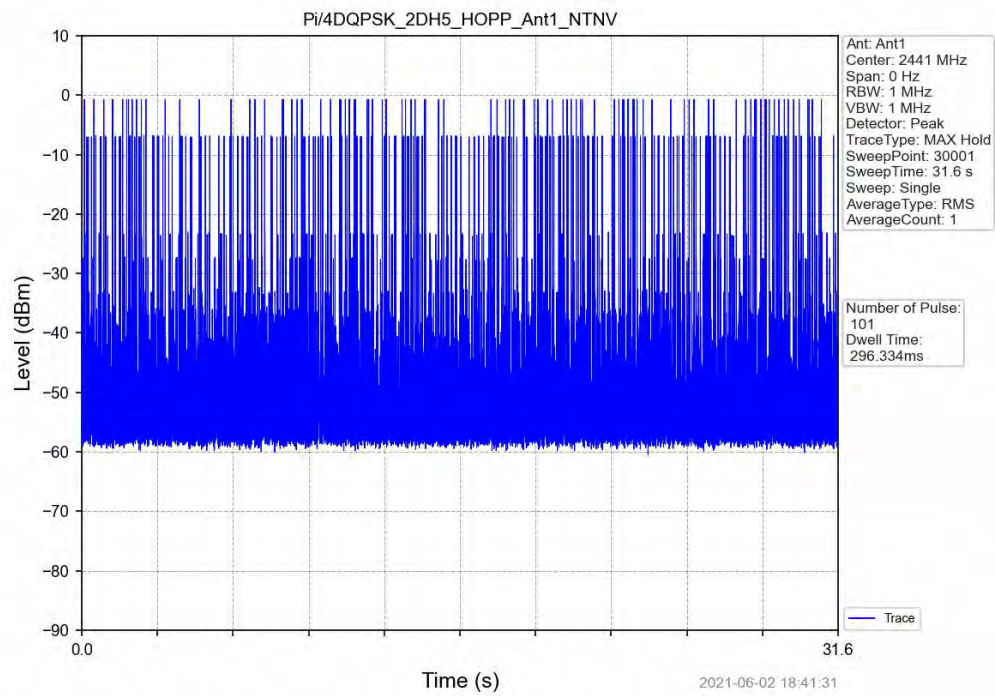
$\pi/4$ -DQPSK_2DH3_HOPP_Ant1_NTNV



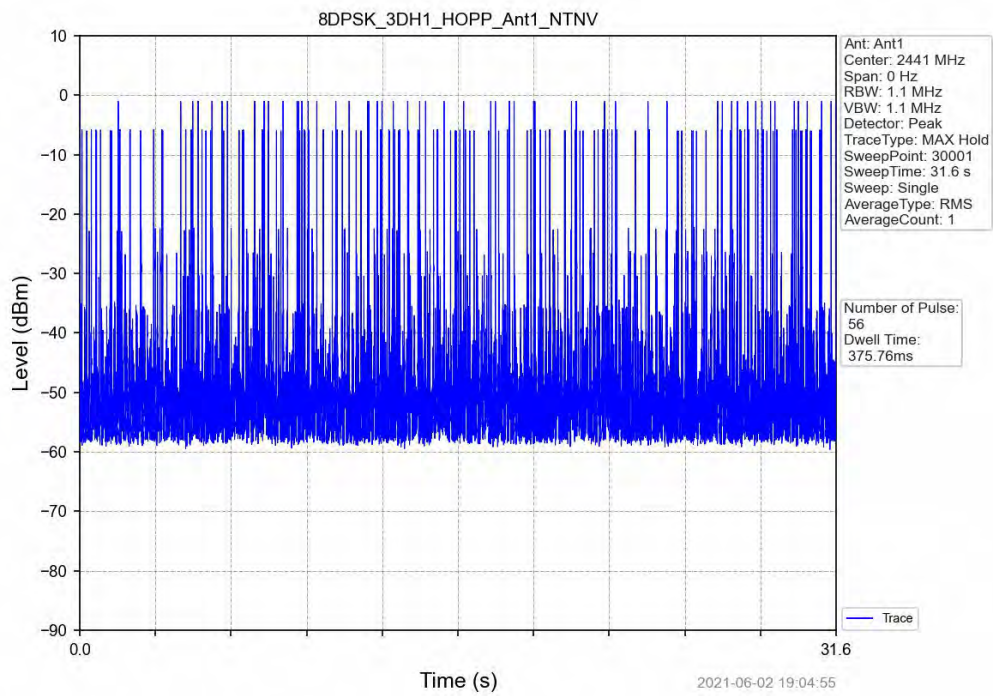
π /4-DQPSK_2DH5_HOPP_Ant1_NTNV



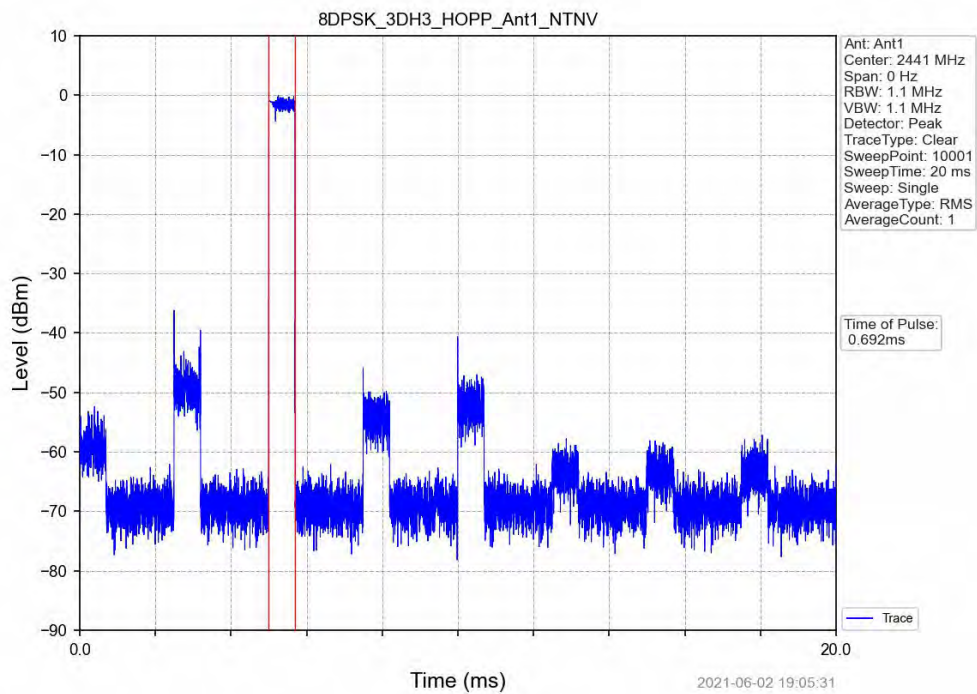
π /4-DQPSK_2DH5_HOPP_Ant1_NTNV



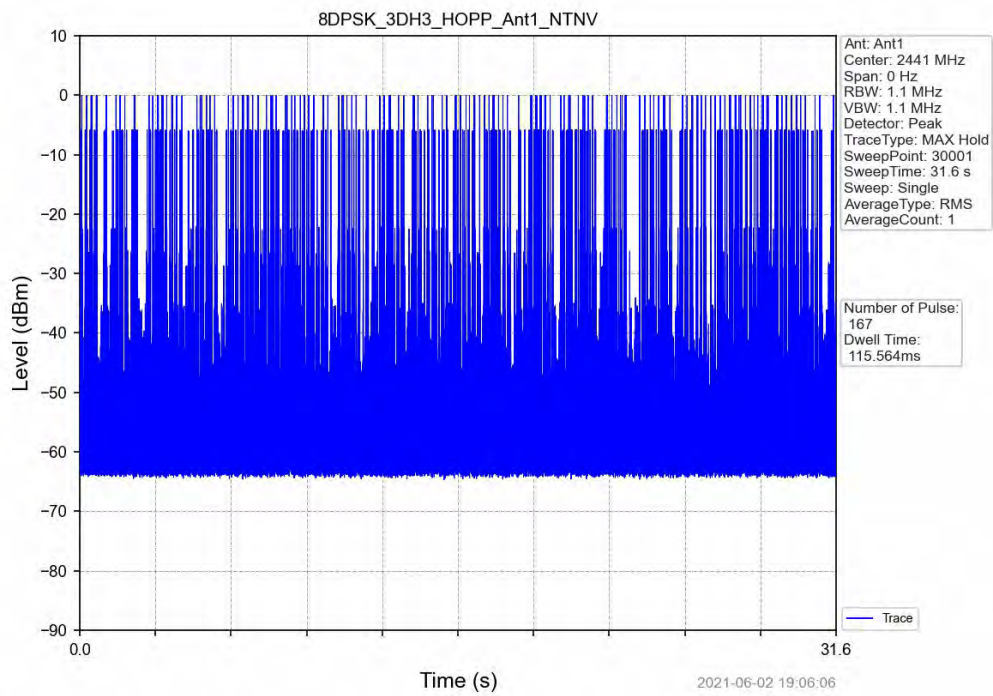
8DPSK_3DH1_HOPP_Ant1_NTNV



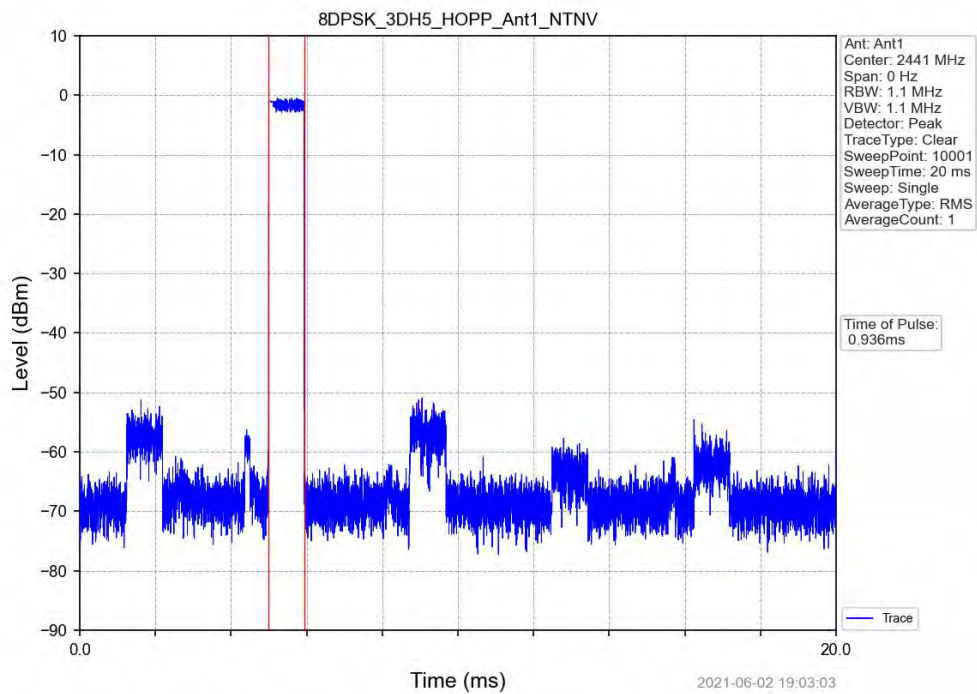
8DPSK_3DH3_HOPP_Ant1_NTNV



8DPSK_3DH3_HOPP_Ant1_NTNV

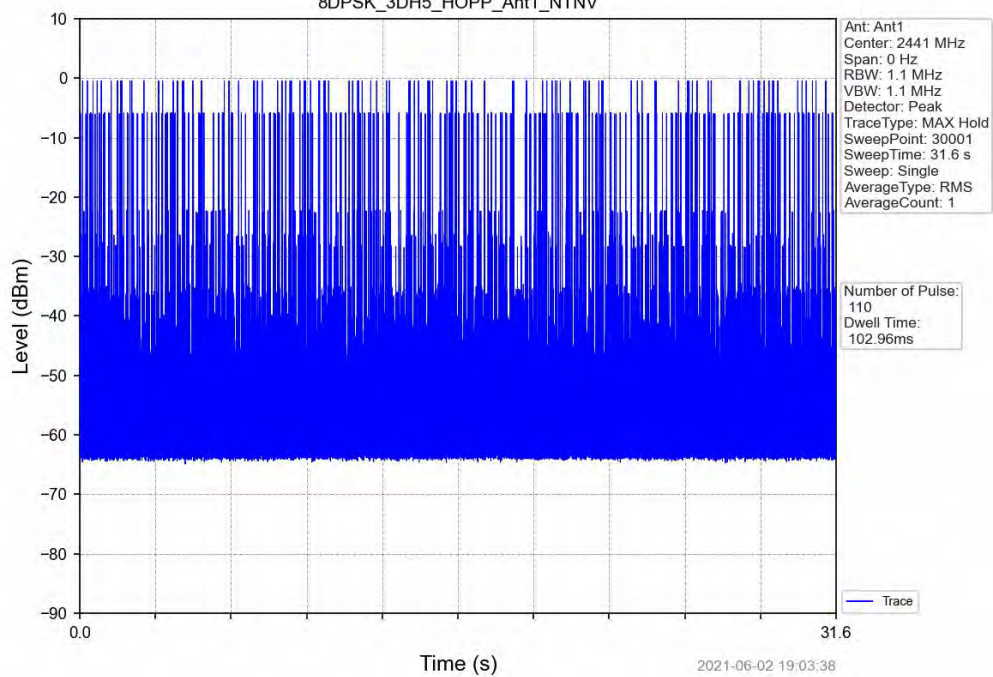


8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV

8DPSK_3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Ref

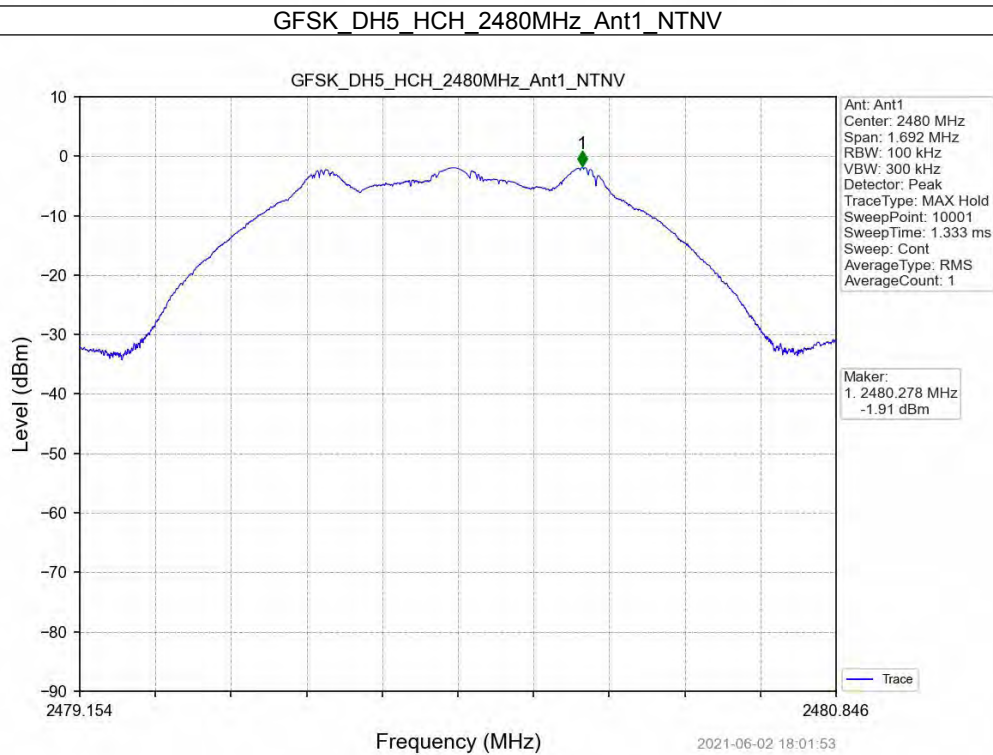
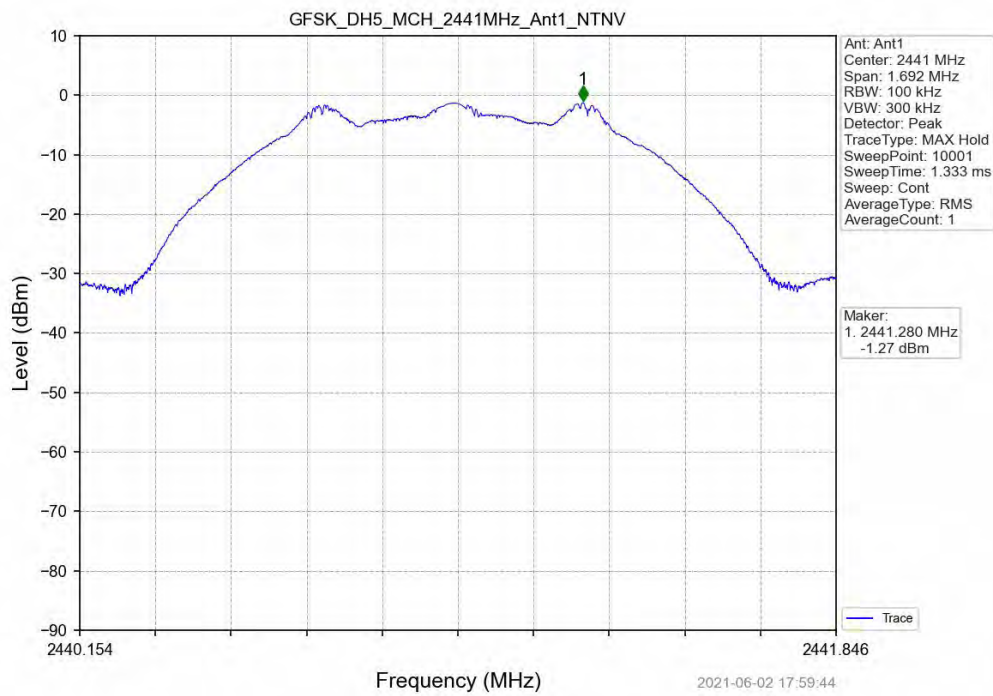
6.1.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | Ant | Level of Reference (dBm) | Limit (dBm) | Verdict |
|----------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK | SISO | 2402 | DH5 | 1 | -1.32 | / | / |
| | | 2441 | DH5 | 1 | -1.27 | / | / |
| | | 2480 | DH5 | 1 | -1.91 | / | / |
| π /4-DQPSK | SISO | 2402 | 2DH5 | 1 | -1.37 | / | / |
| | | 2441 | 2DH5 | 1 | -1.29 | / | / |
| | | 2480 | 2DH5 | 1 | -1.89 | / | / |
| 8DPSK | SISO | 2402 | 3DH5 | 1 | -1.14 | / | / |
| | | 2441 | 3DH5 | 1 | -1.06 | / | / |
| | | 2480 | 3DH5 | 1 | -1.66 | / | / |

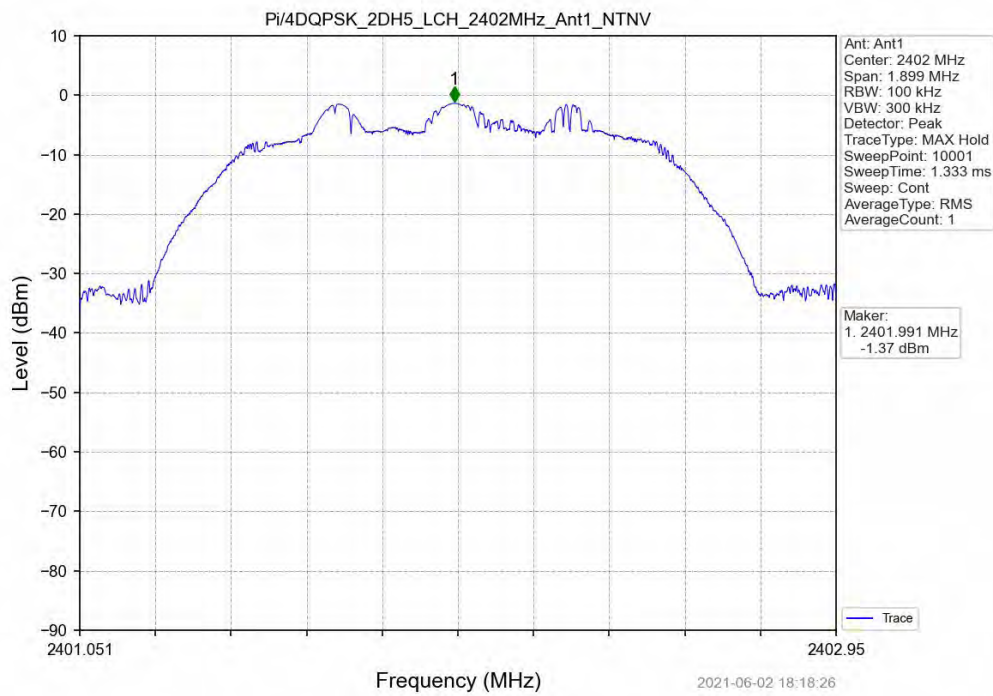
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

6.1.2 Test Graph

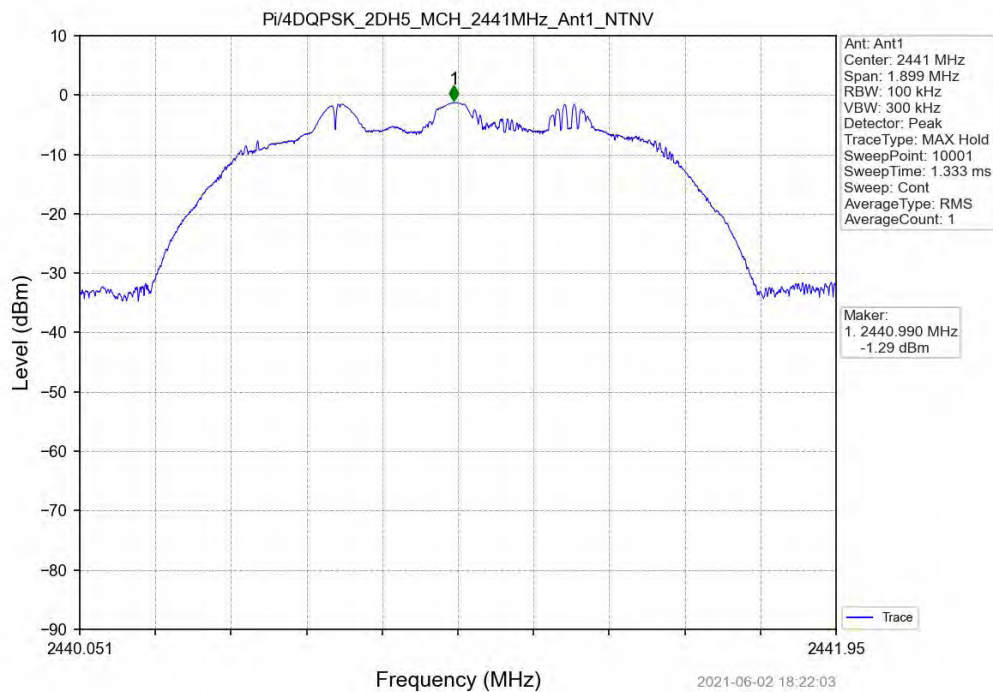




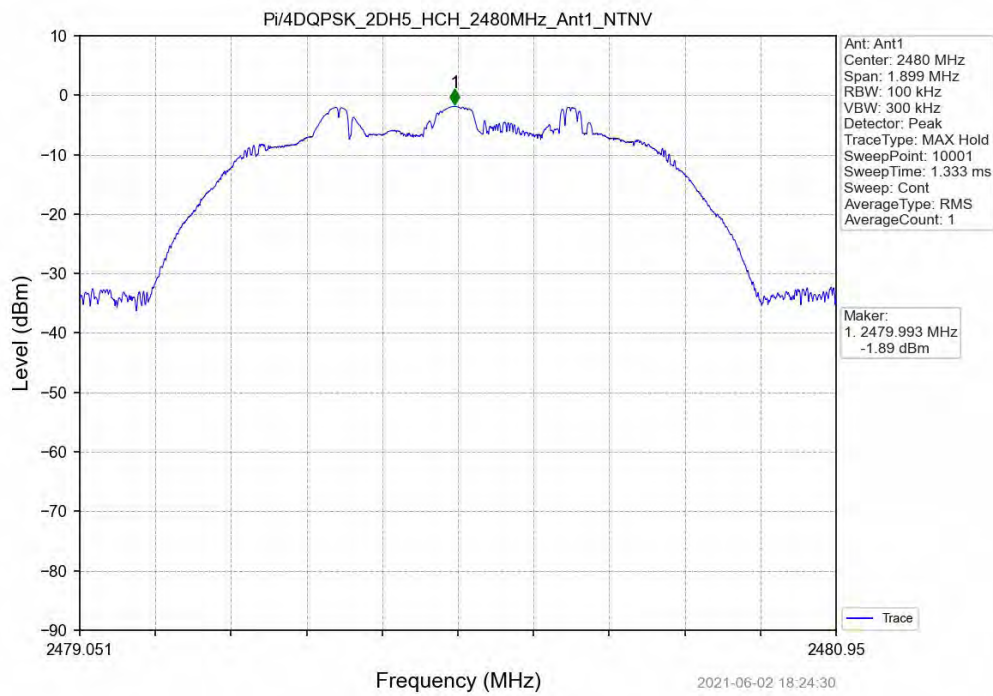
π /4-DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



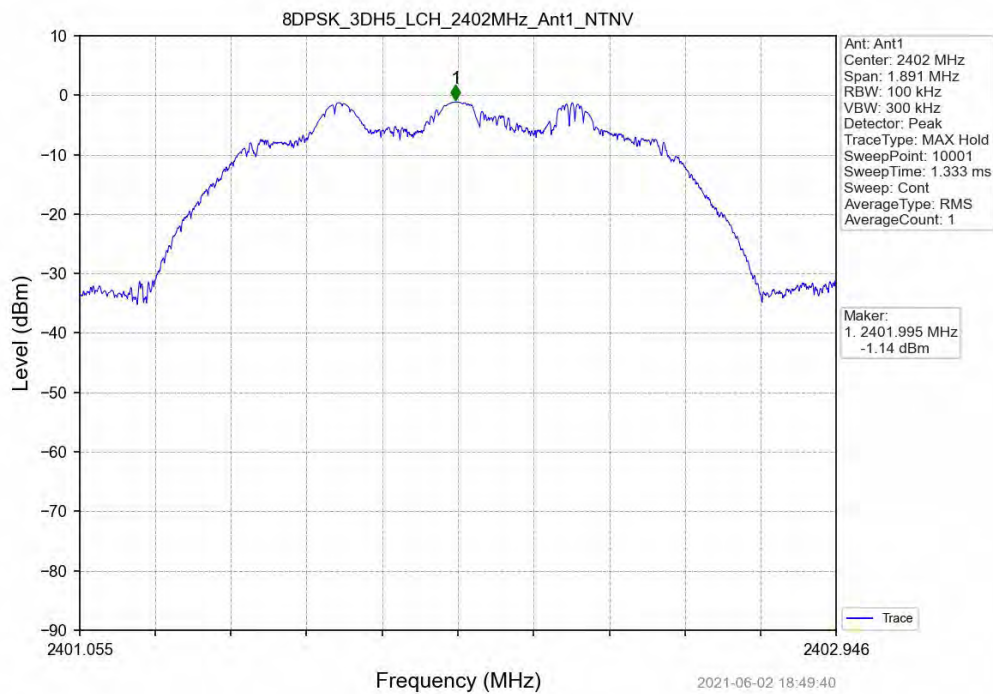
π /4-DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



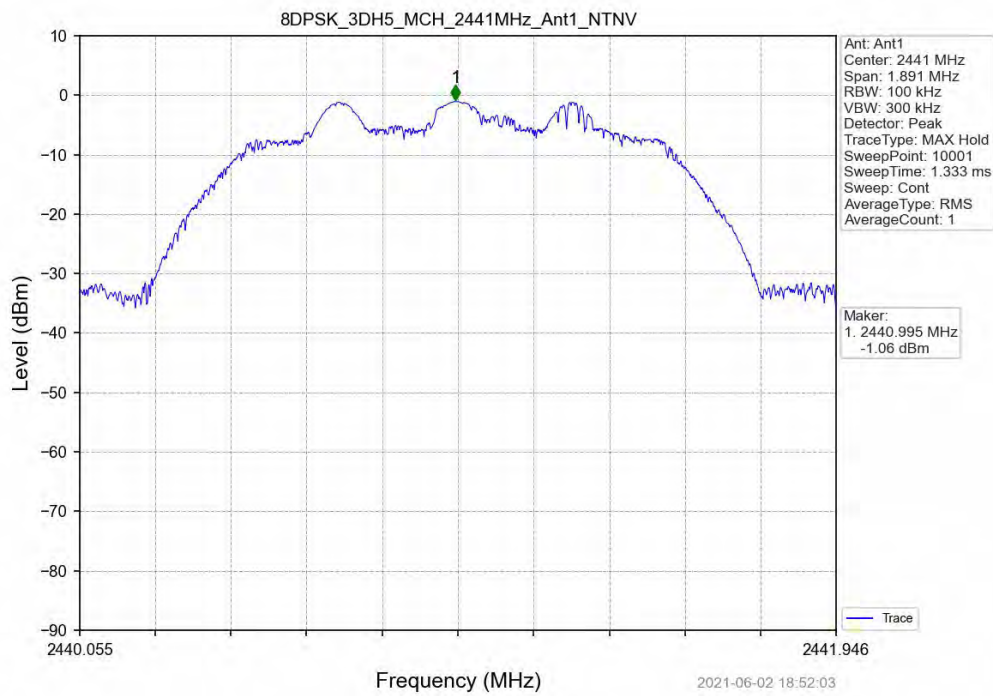
π /4-DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



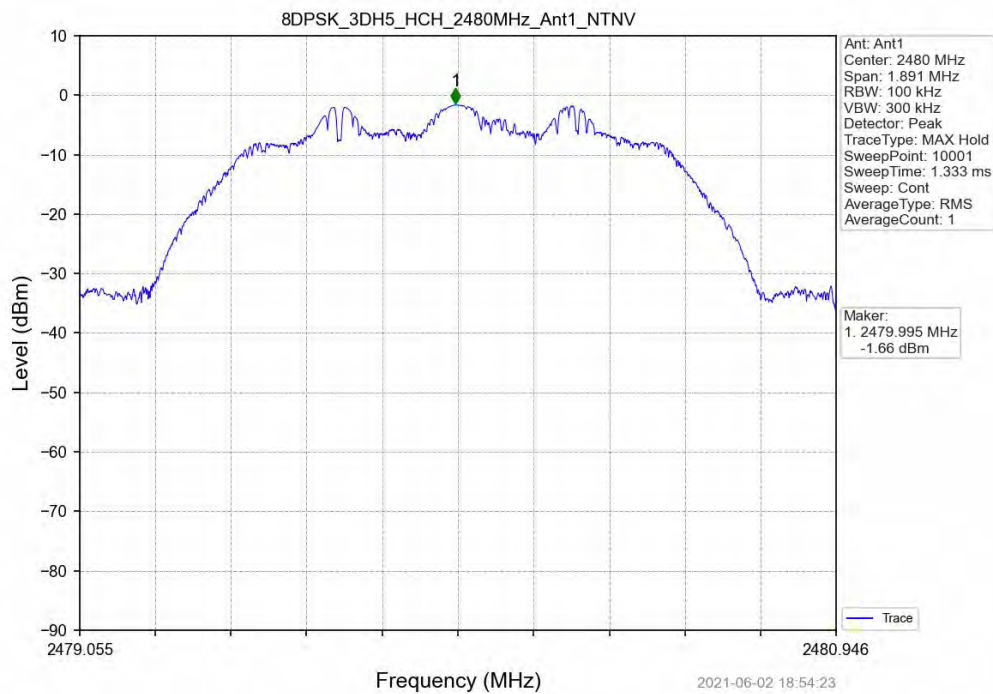
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



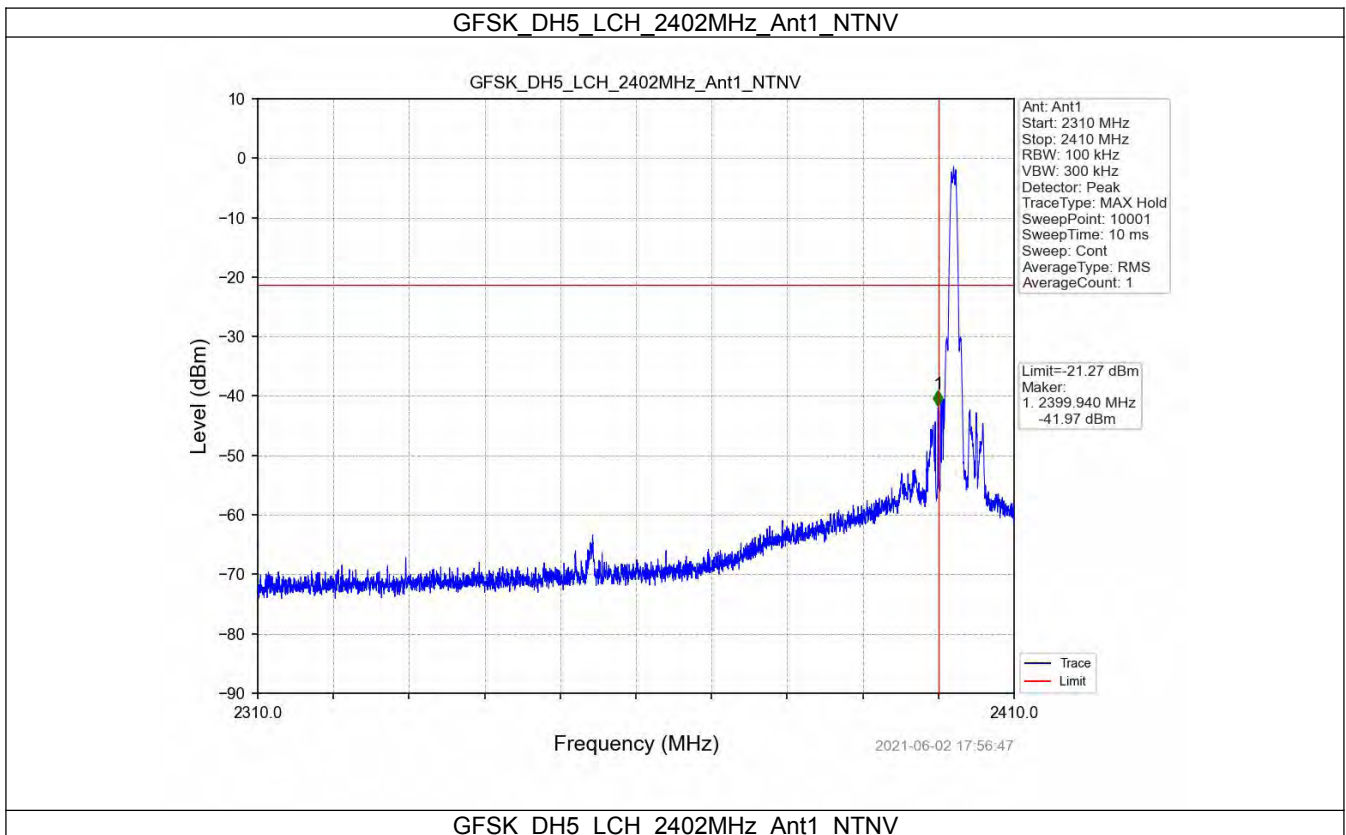
6.2 CSE

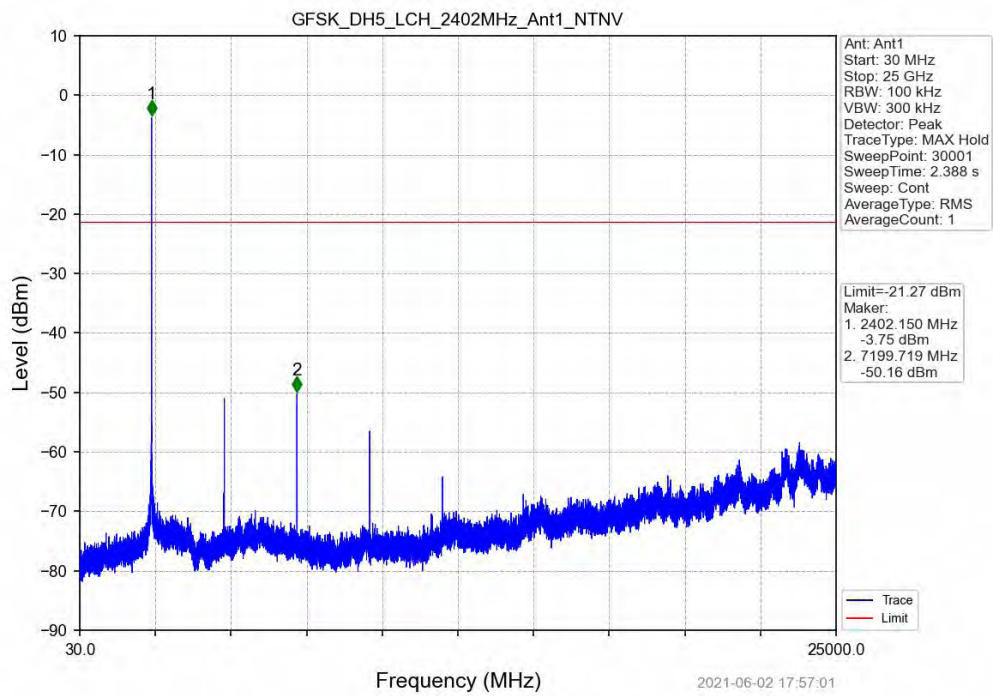
6.2.1 Test Result

| Mode | TX Type | Frequency (MHz) | Packet Type | Ant | Level of Reference (dBm) | Limit (dBm) | Verdict |
|----------------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| GFSK | SISO | 2402 | DH5 | 1 | Refer To Test Graph | <=-21.27 | Pass |
| | | 2441 | DH5 | 1 | Refer To Test Graph | <=-21.27 | Pass |
| | | 2480 | DH5 | 1 | Refer To Test Graph | <=-21.27 | Pass |
| | | 2441 | DH5 | 1 | Refer To Test Graph | <=-21.27 | Pass |
| $\pi/4$ -DQPSK | SISO | 2402 | 2DH5 | 1 | Refer To Test Graph | <=-21.29 | Pass |
| | | 2441 | 2DH5 | 1 | Refer To Test Graph | <=-21.29 | Pass |
| | | 2480 | 2DH5 | 1 | Refer To Test Graph | <=-21.29 | Pass |
| | | 2441 | 2DH5 | 1 | Refer To Test Graph | <=-21.29 | Pass |
| 8DPSK | SISO | 2402 | 3DH5 | 1 | Refer To Test Graph | <=-21.06 | Pass |
| | | 2441 | 3DH5 | 1 | Refer To Test Graph | <=-21.06 | Pass |
| | | 2480 | 3DH5 | 1 | Refer To Test Graph | <=-21.06 | Pass |
| | | 2441 | 3DH5 | 1 | Refer To Test Graph | <=-21.06 | Pass |

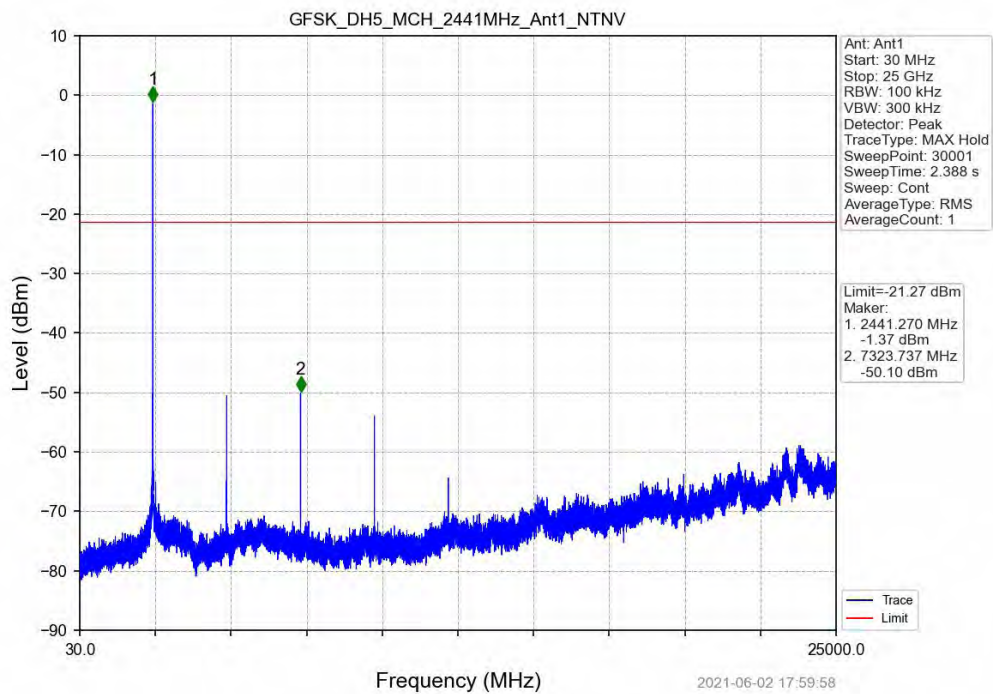
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

6.2.2 Test Graph

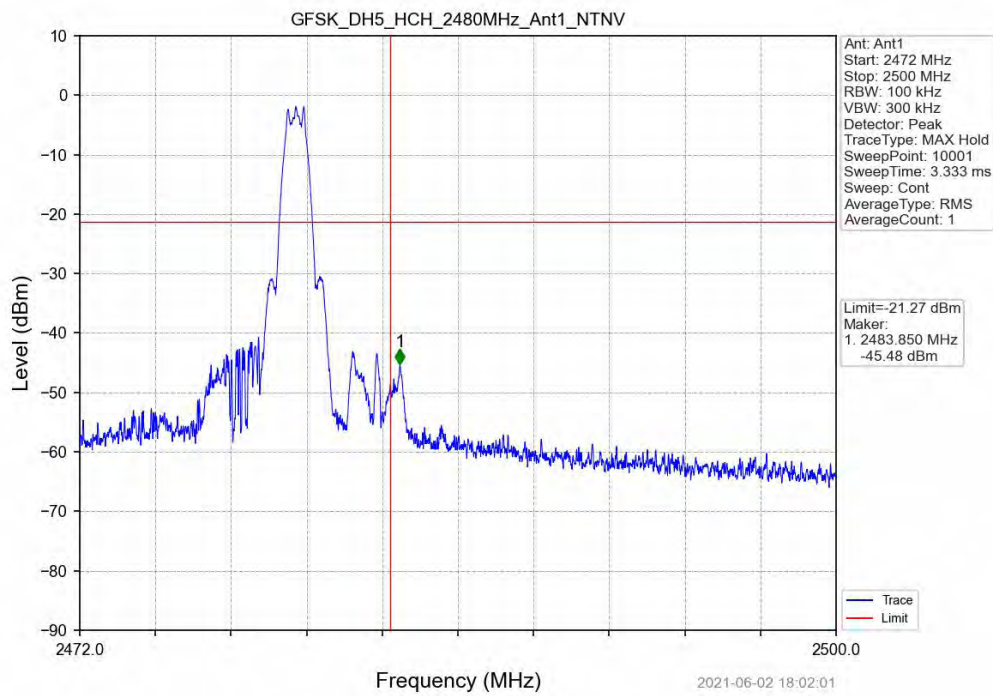




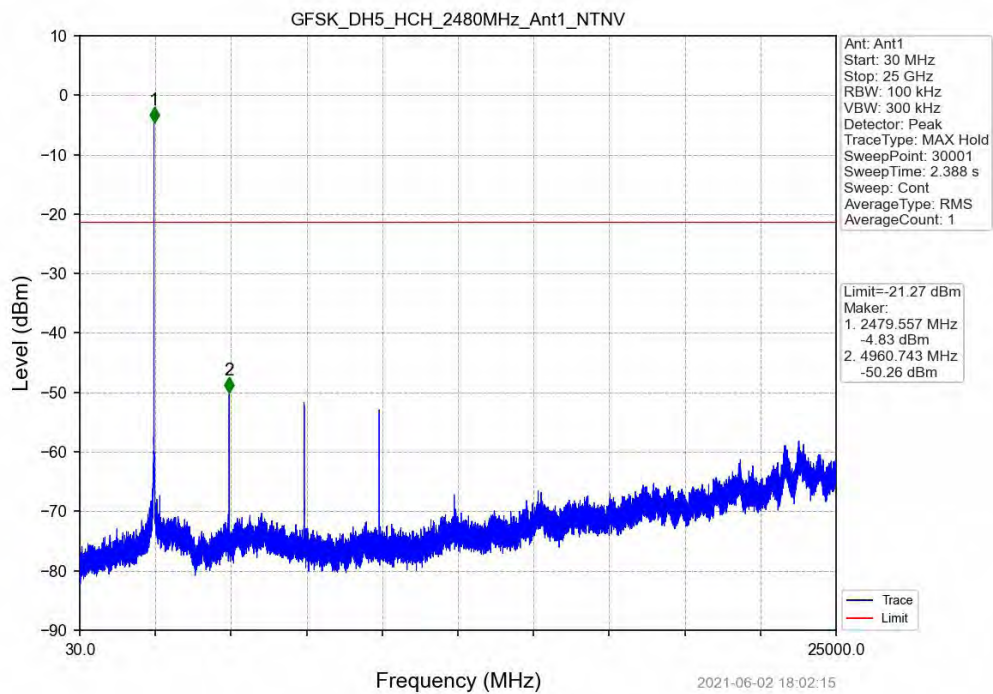
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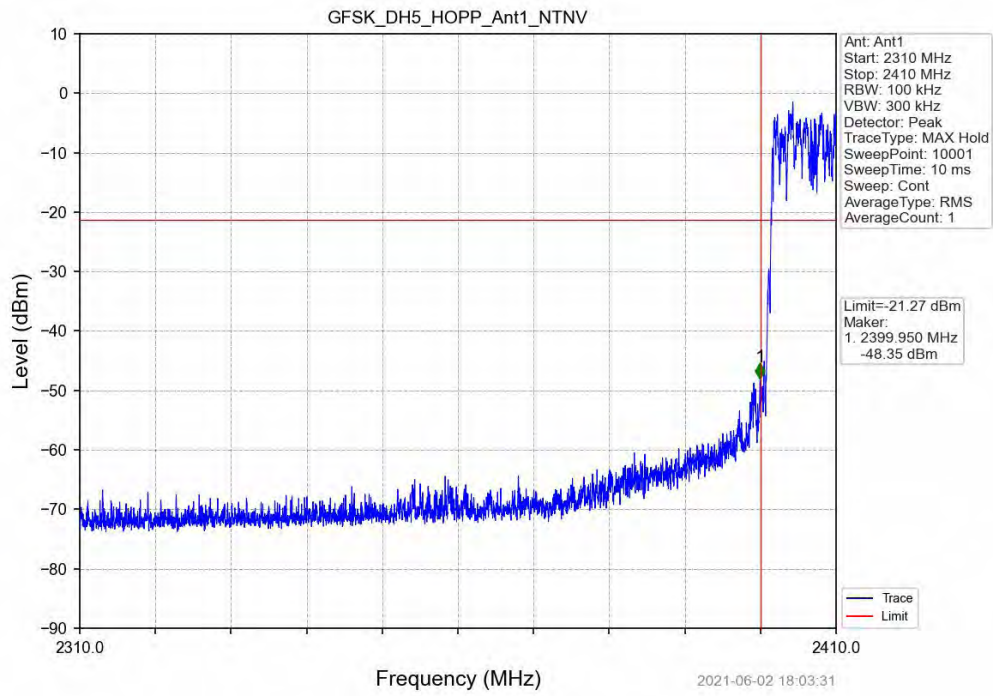
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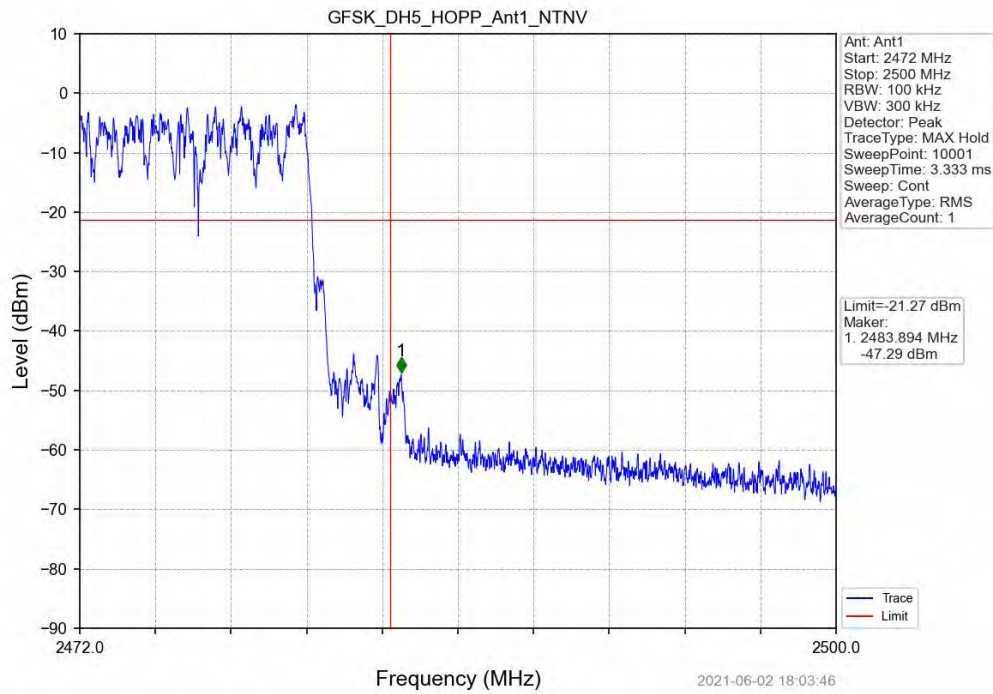
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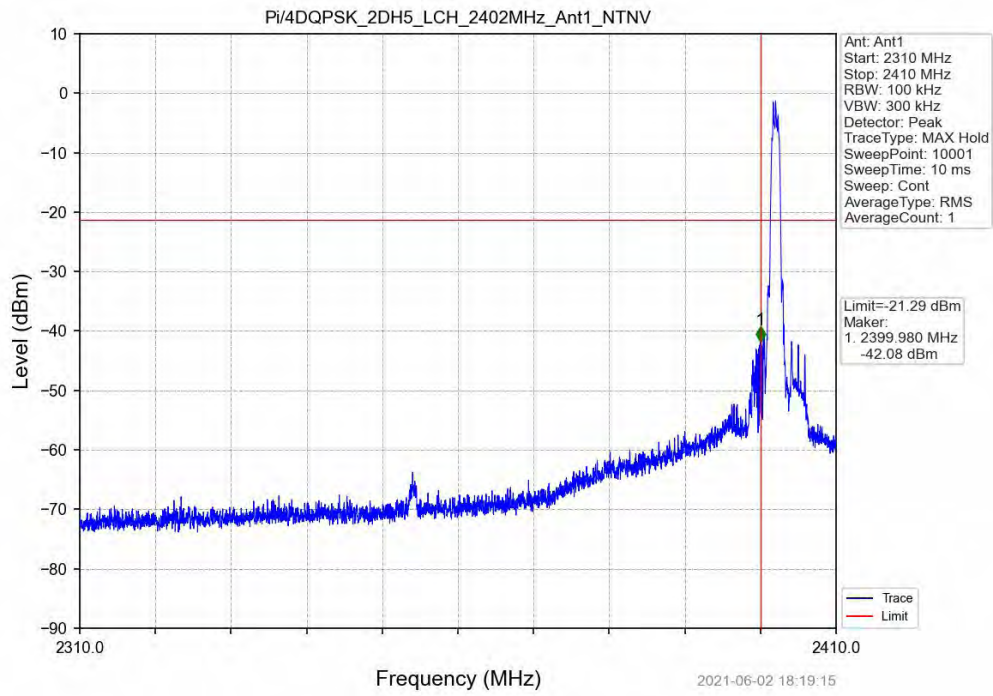
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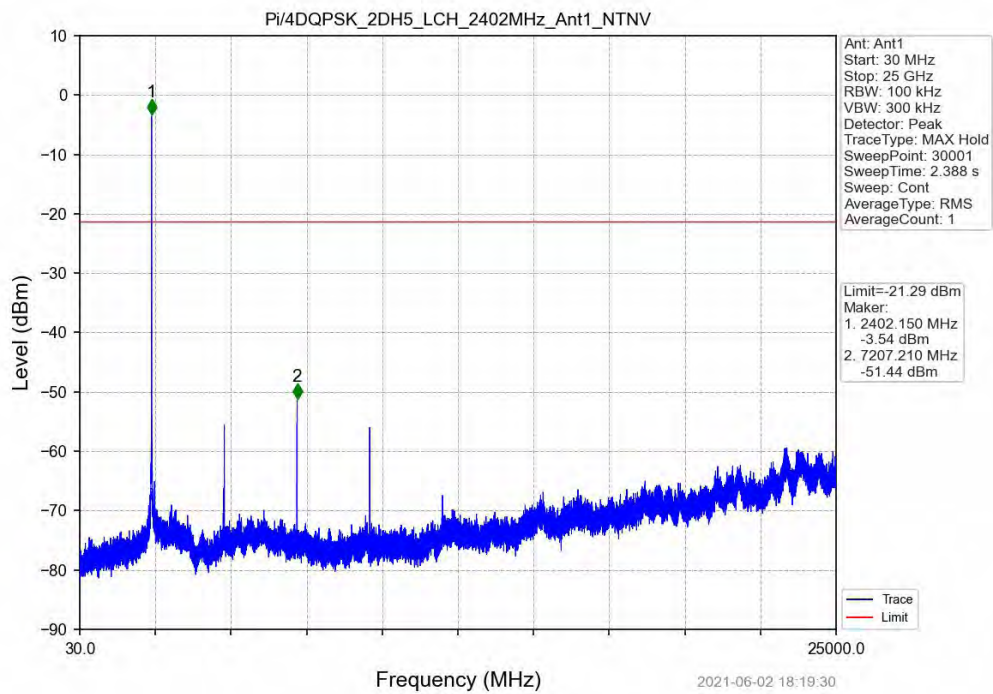
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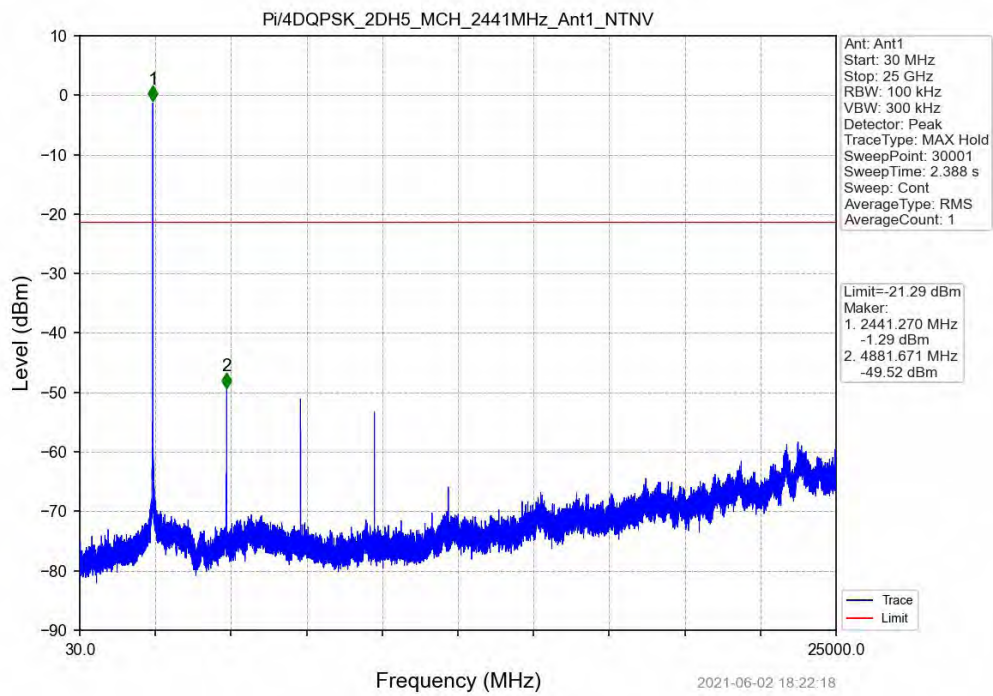
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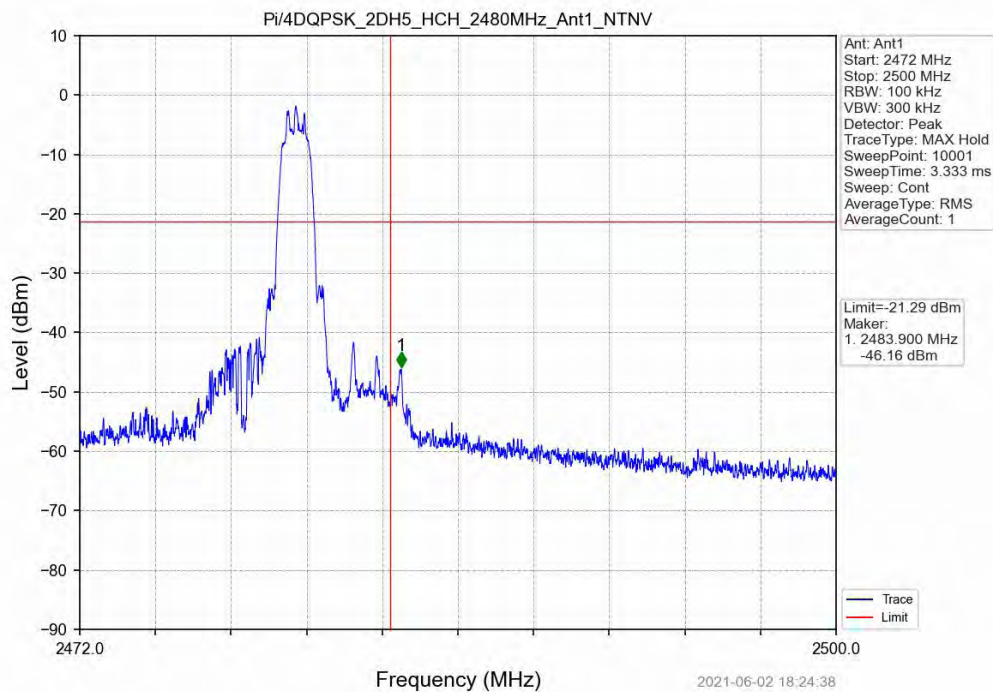
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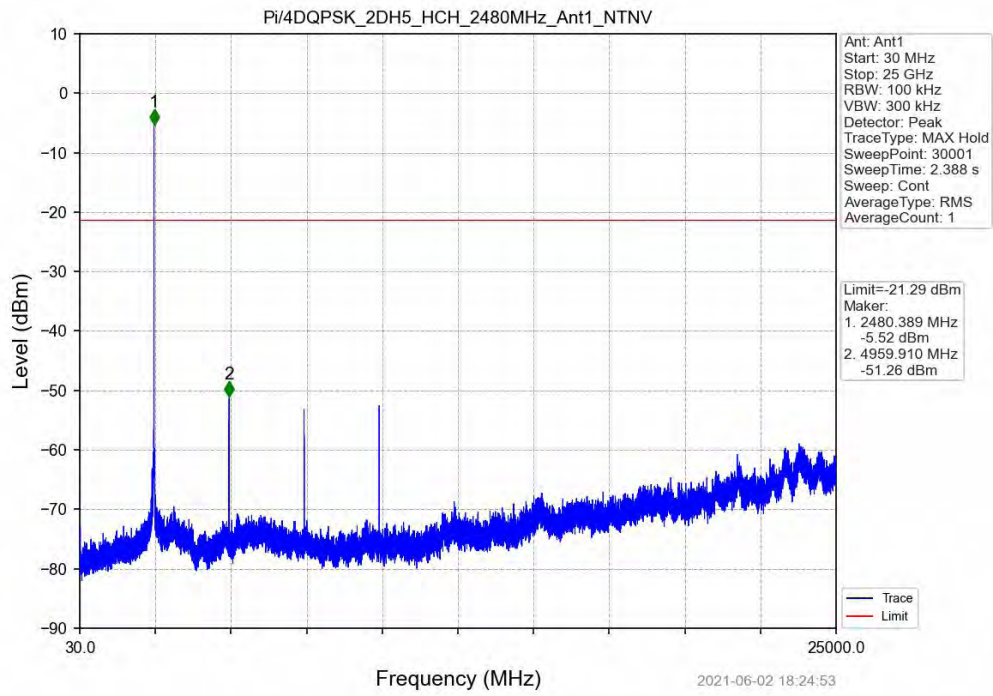
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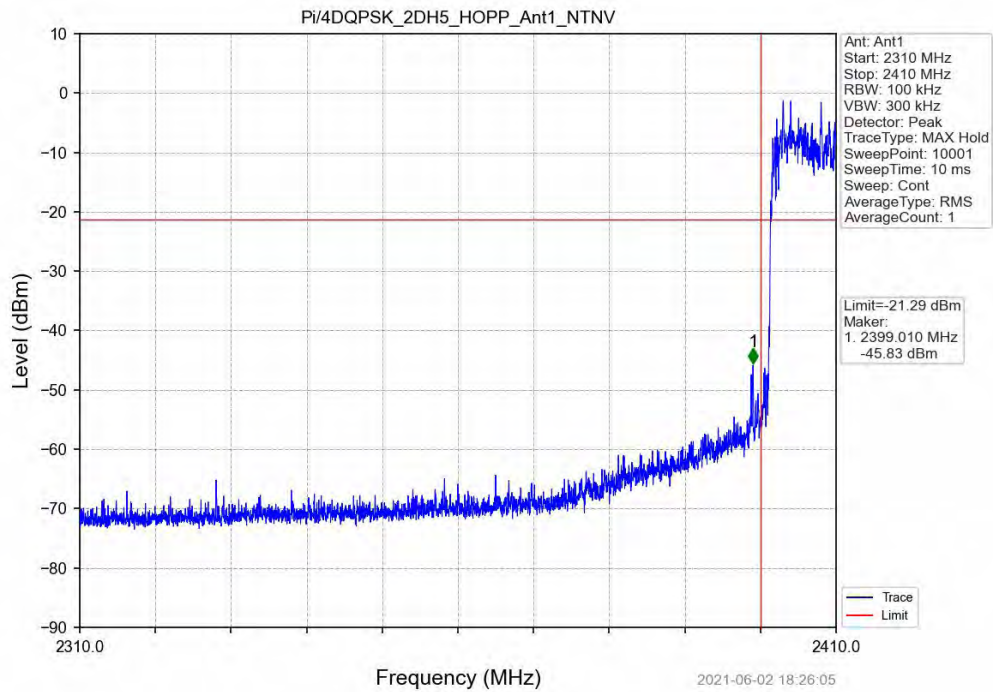
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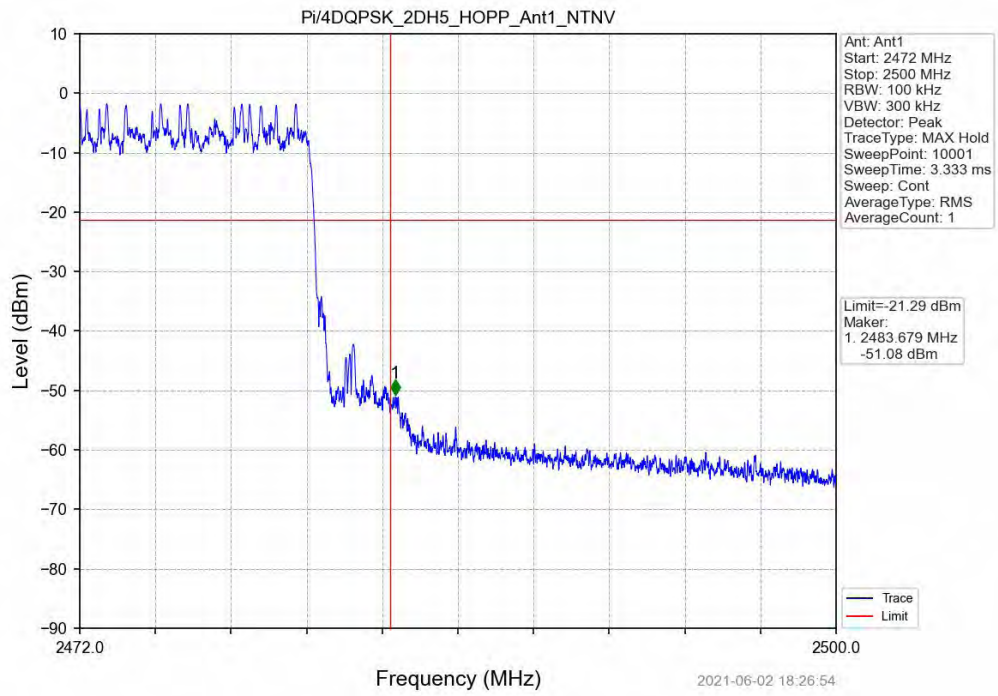
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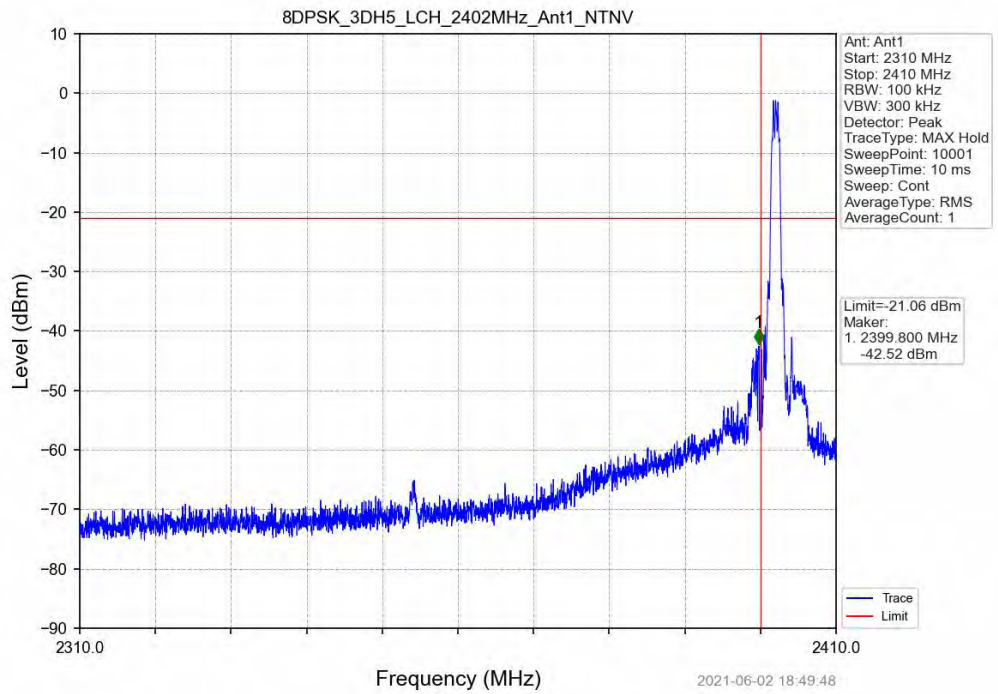
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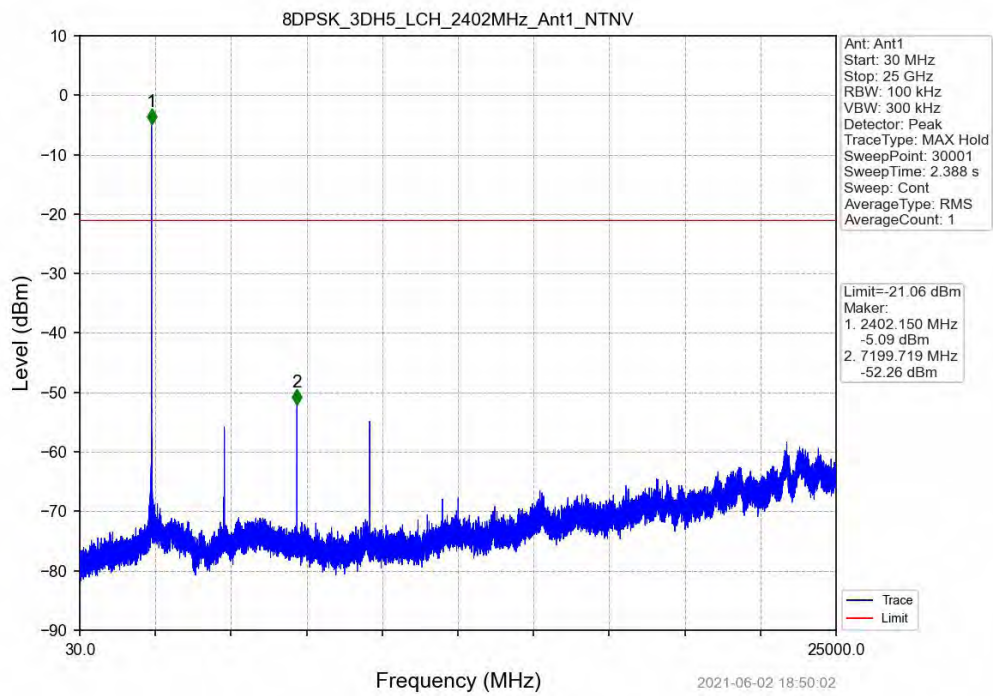
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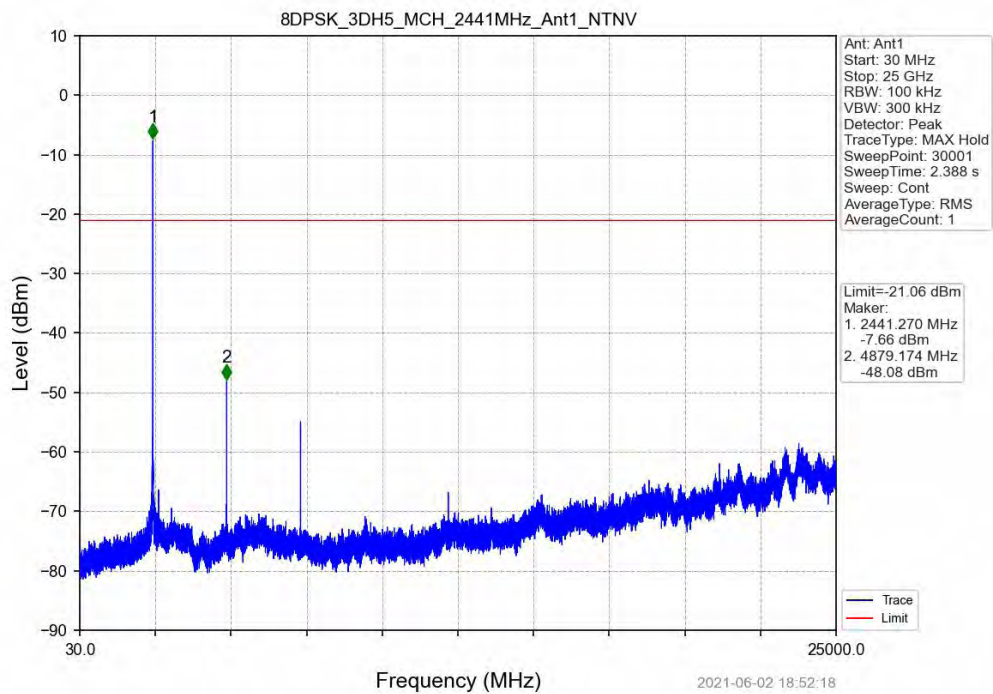
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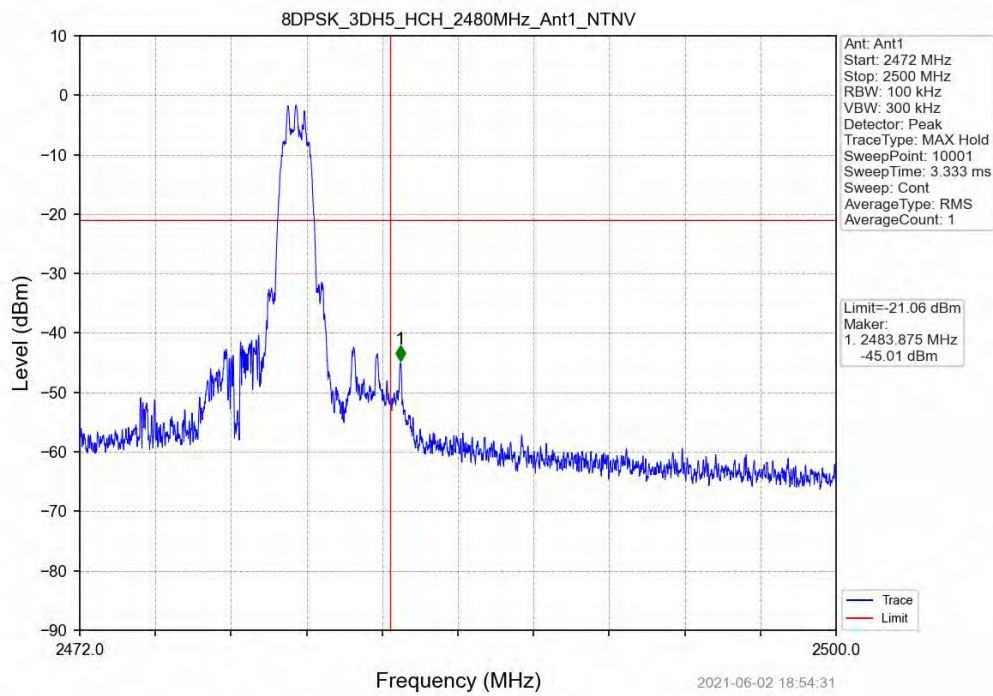
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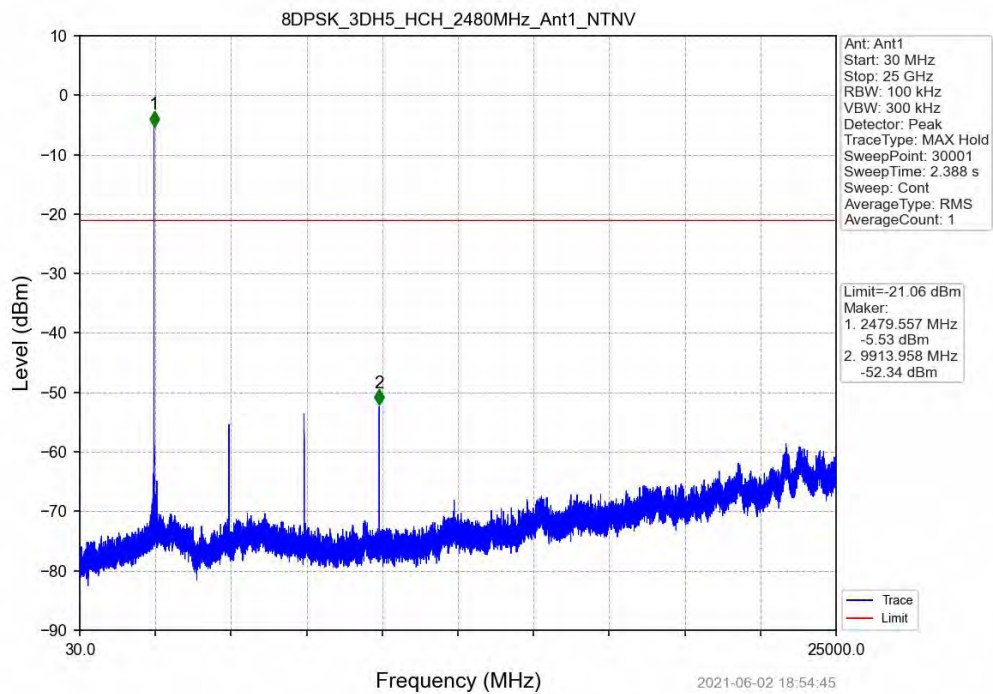
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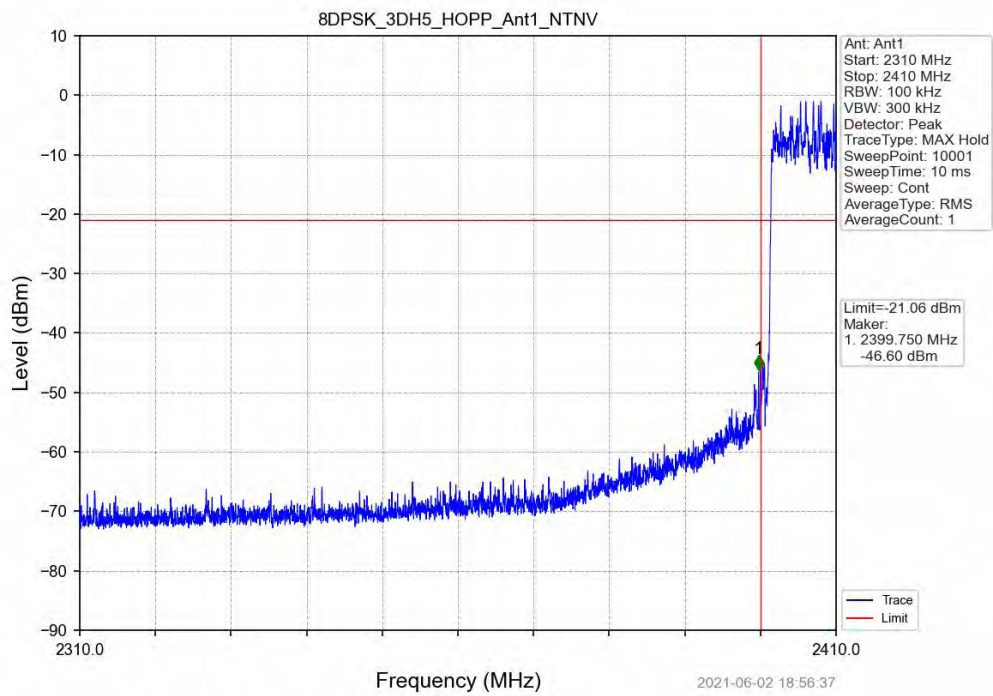
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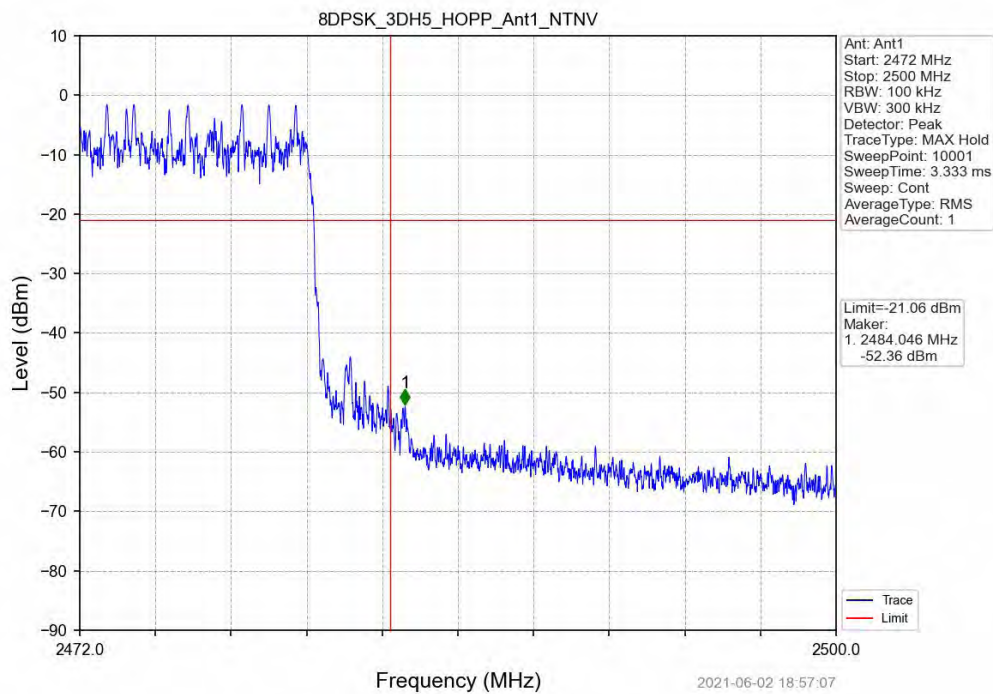
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



---End---