

Appendix Test Data

| | | | |
|----------------|-----------------|--------------------|-------------------|
| Project No.: | 18220WC10147501 | Test Date: | 2021.7.2 |
| Test Engineer: | <i>Jomy He</i> | Auditor: | <i>Edward Pan</i> |
| Temperature: | 24.5°C | Relative Humidity: | 56.5% |
| Pressure: | 1012 hPa | | |

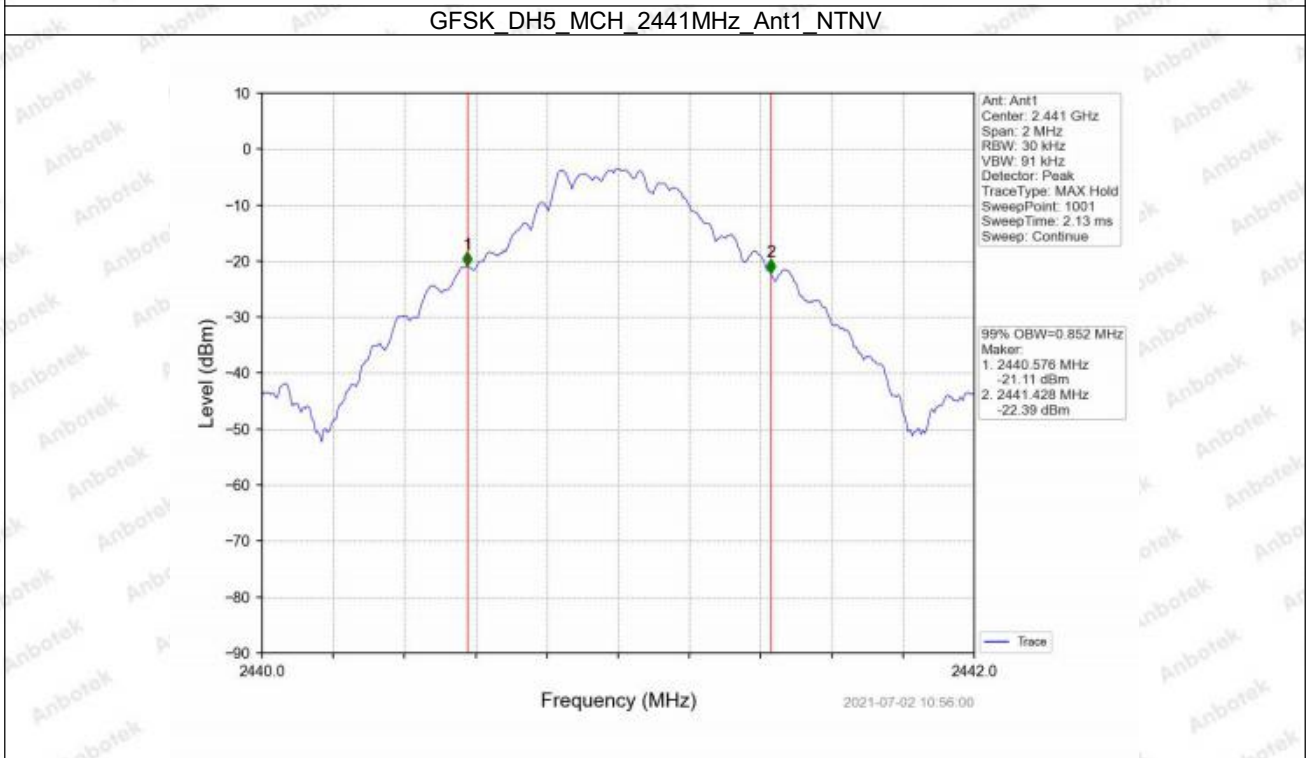
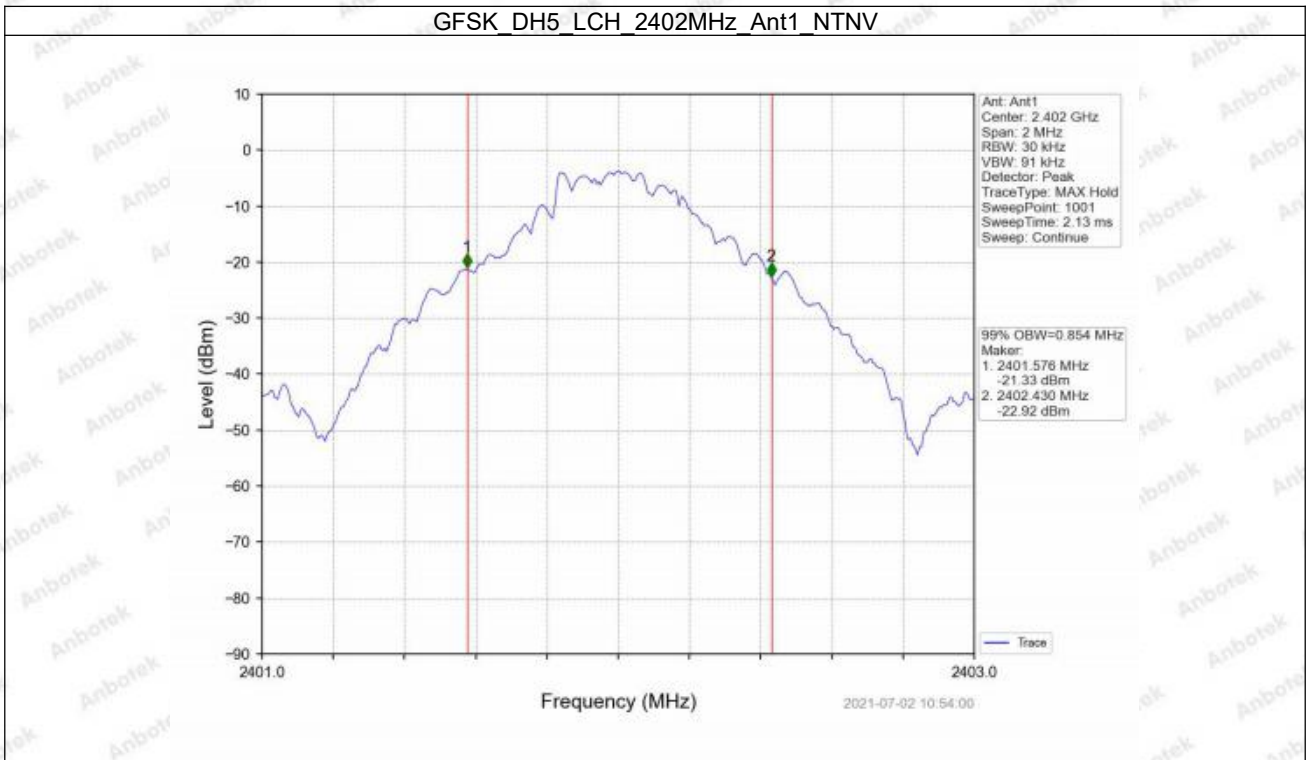
1. Bandwidth

1.1 OBW

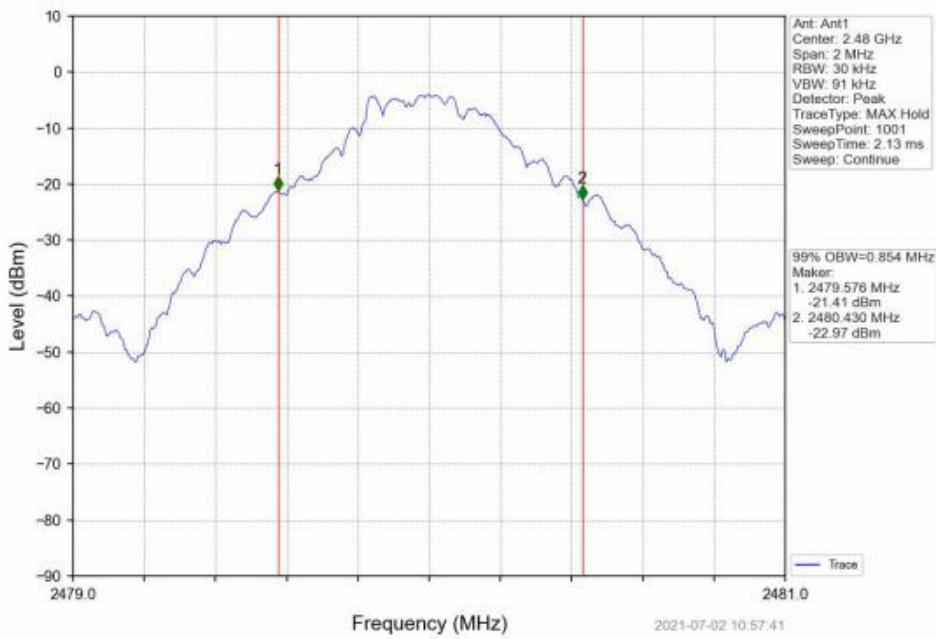
1.1.1 Test Result

| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Ant | 99% Occupied Bandwidth (MHz) | Limit | Verdict |
|------|-----------|---------|-----------------|-------------|-----|------------------------------|-------|---------|
| NTNV | GFSK | SISO | 2402 | DH5 | 1 | 0.85 | / | Pass |
| | | | 2441 | DH5 | 1 | 0.85 | / | Pass |
| | | | 2480 | DH5 | 1 | 0.85 | / | Pass |
| | Pi/4DQPSK | SISO | 2402 | 2DH5 | 1 | 1.17 | / | Pass |
| | | | 2441 | 2DH5 | 1 | 1.17 | / | Pass |
| | | | 2480 | 2DH5 | 1 | 1.17 | / | Pass |
| | 8DPSK | SISO | 2402 | 3DH5 | 1 | 1.18 | / | Pass |
| | | | 2441 | 3DH5 | 1 | 1.18 | / | Pass |
| | | | 2480 | 3DH5 | 1 | 1.18 | / | Pass |

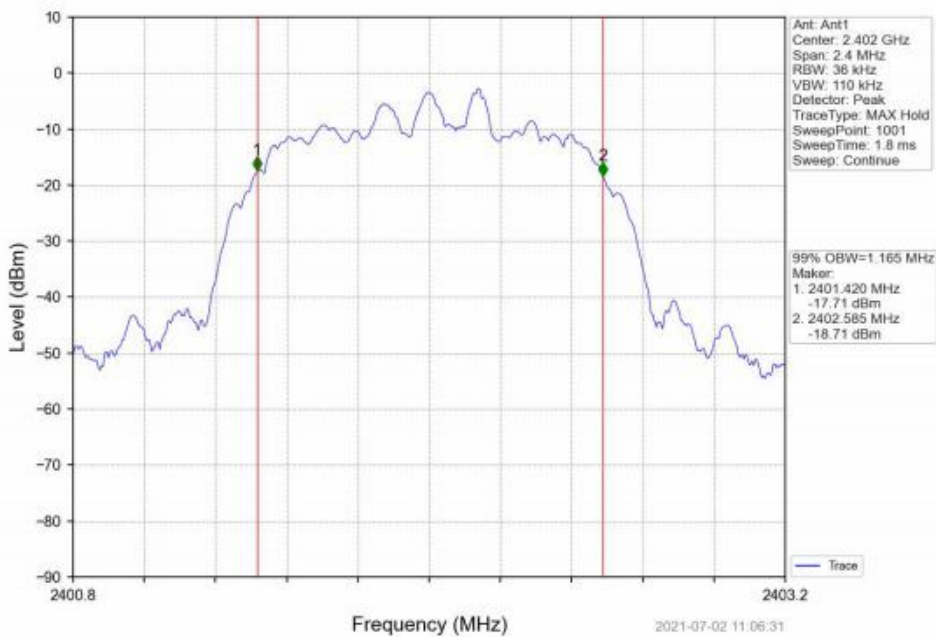
1.1.2 Test Graph



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



PI/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



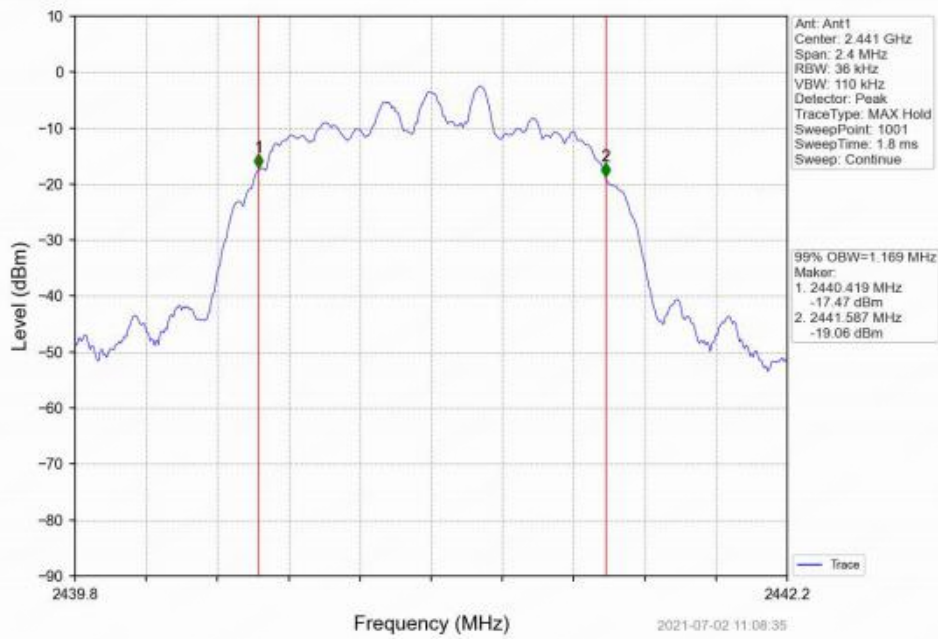
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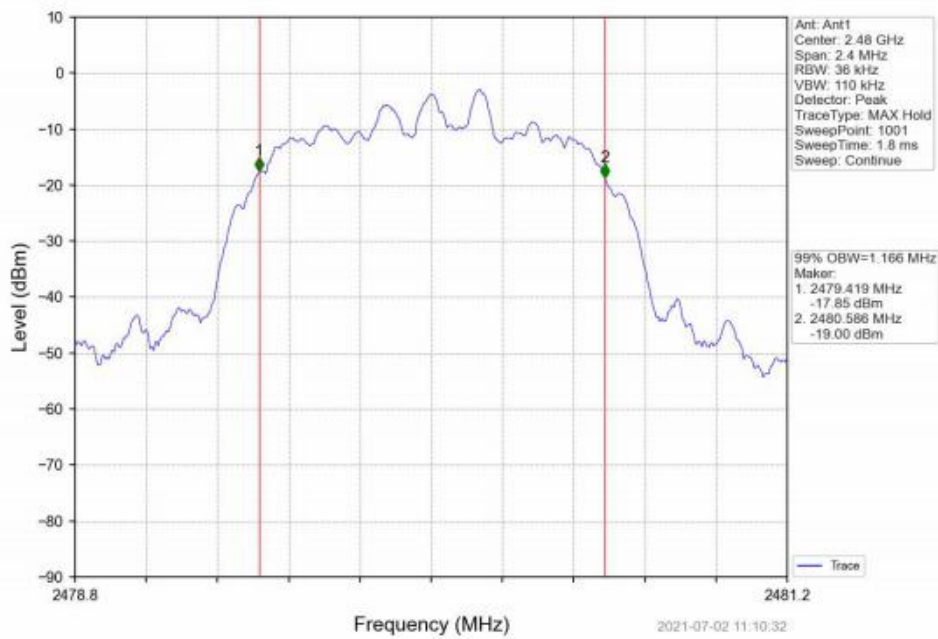
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Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



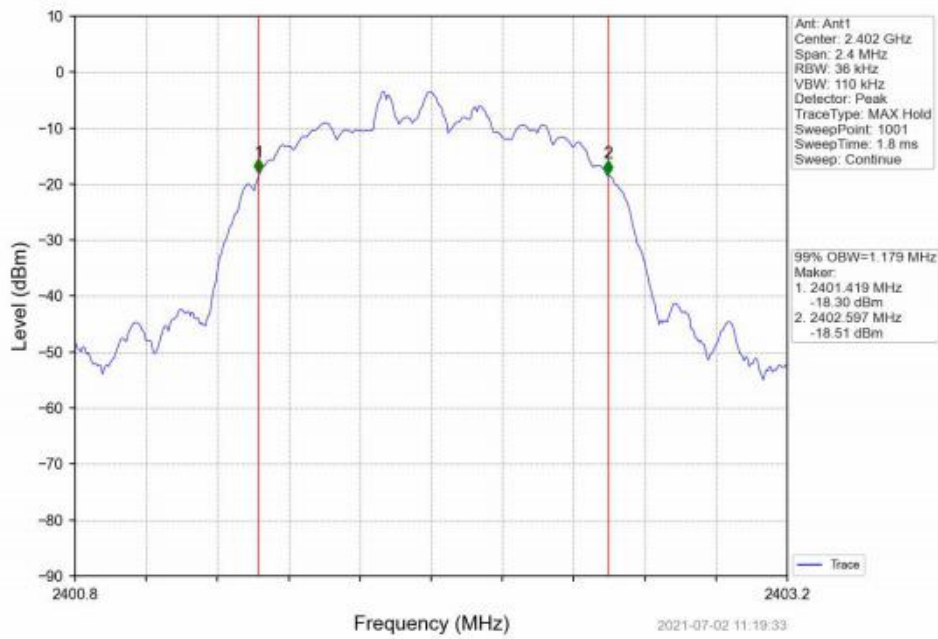
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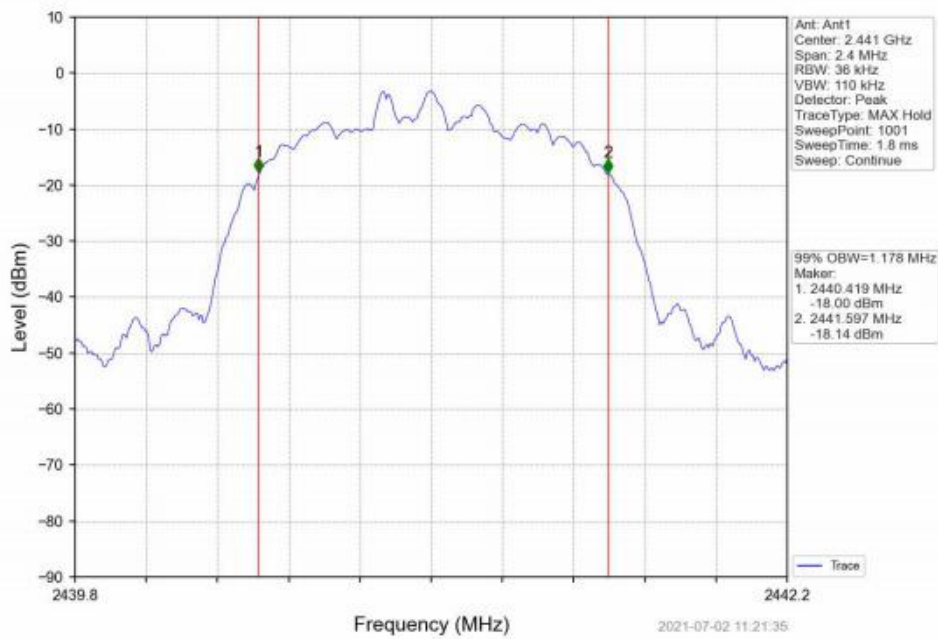
Tel: (86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com

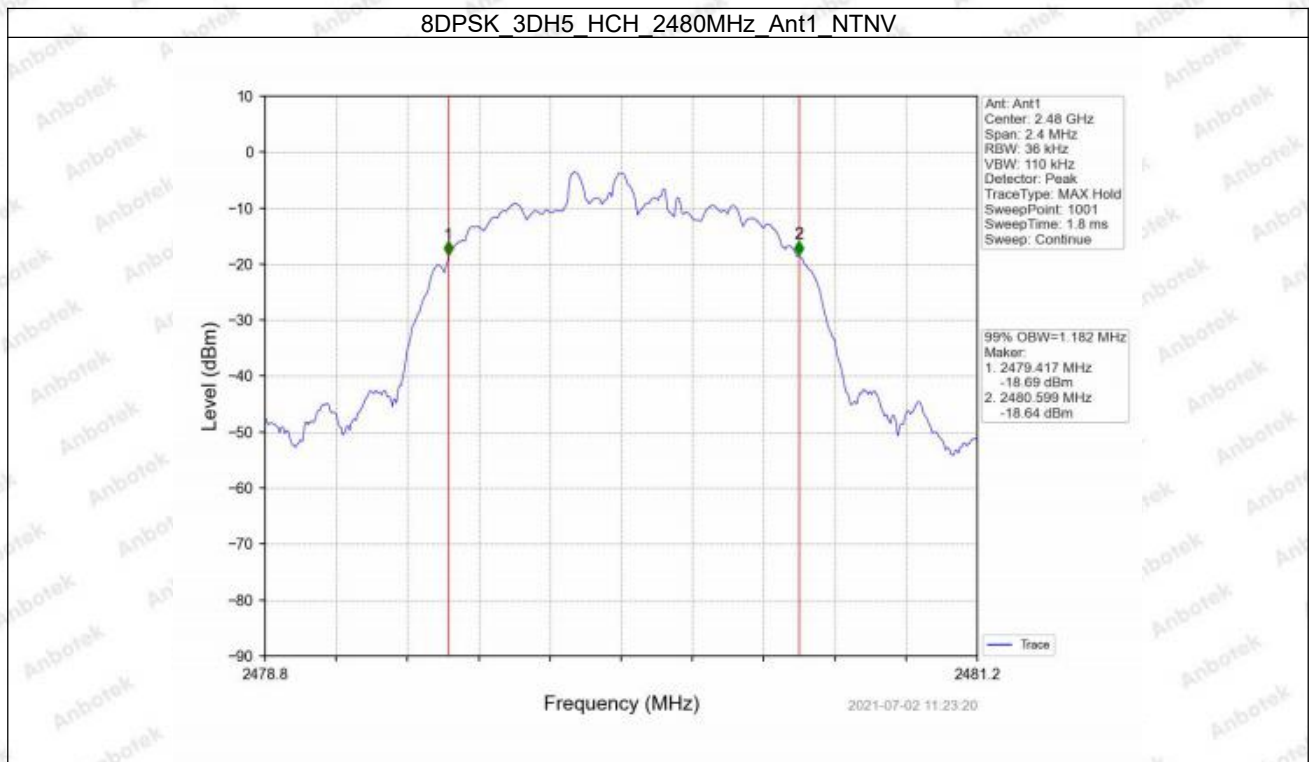
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8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV





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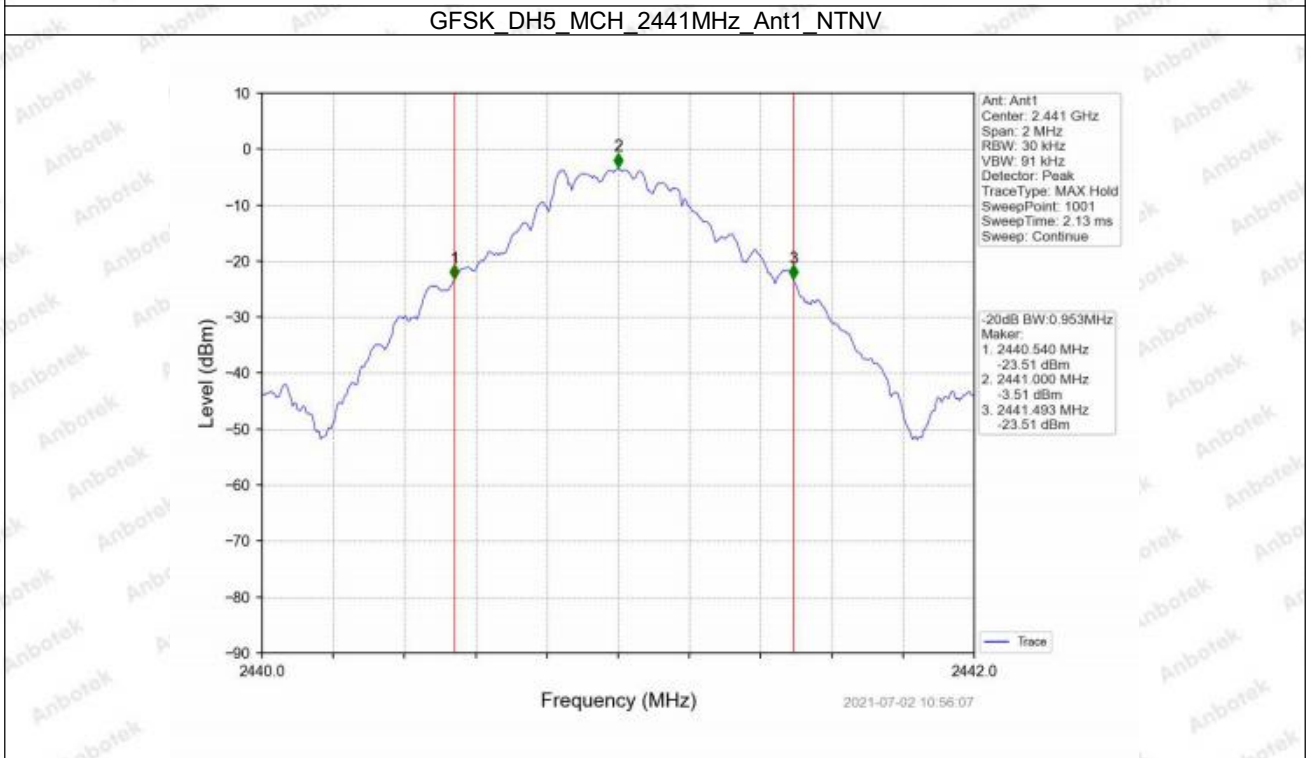
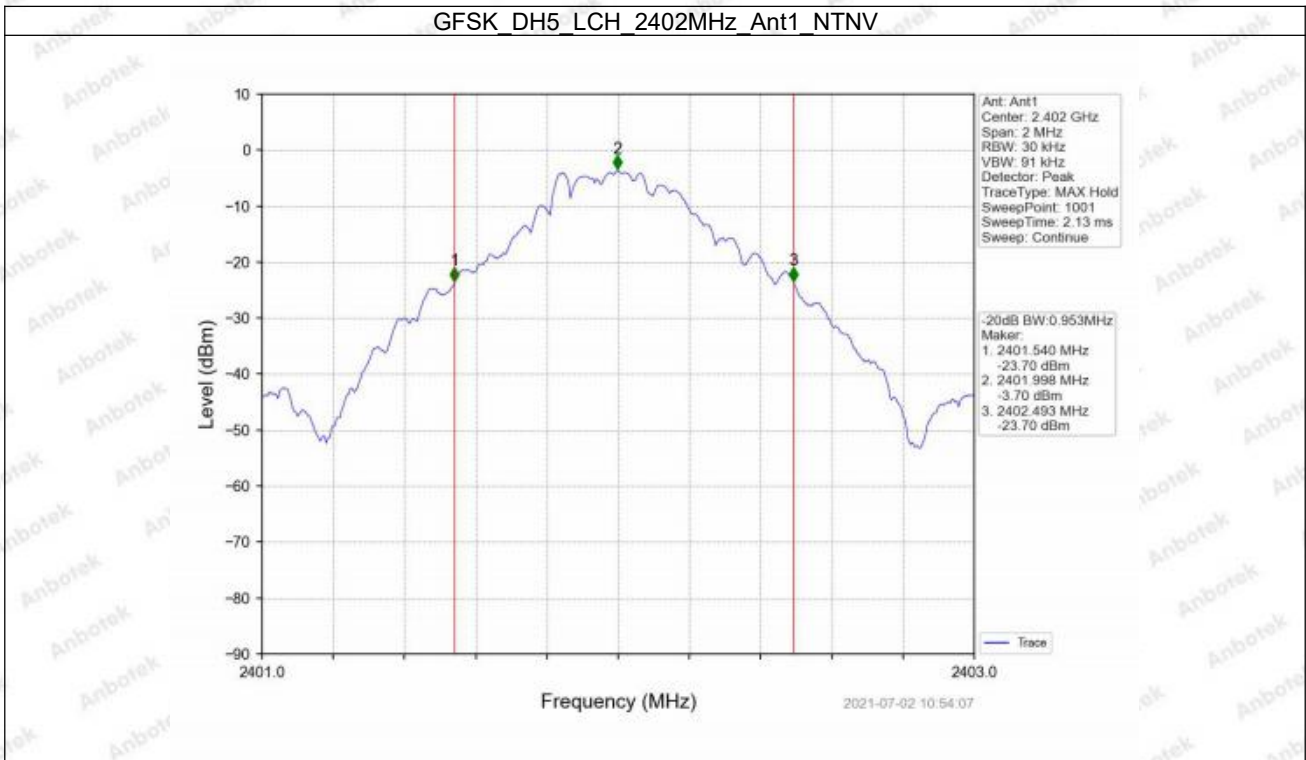
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1.2 20dB BW

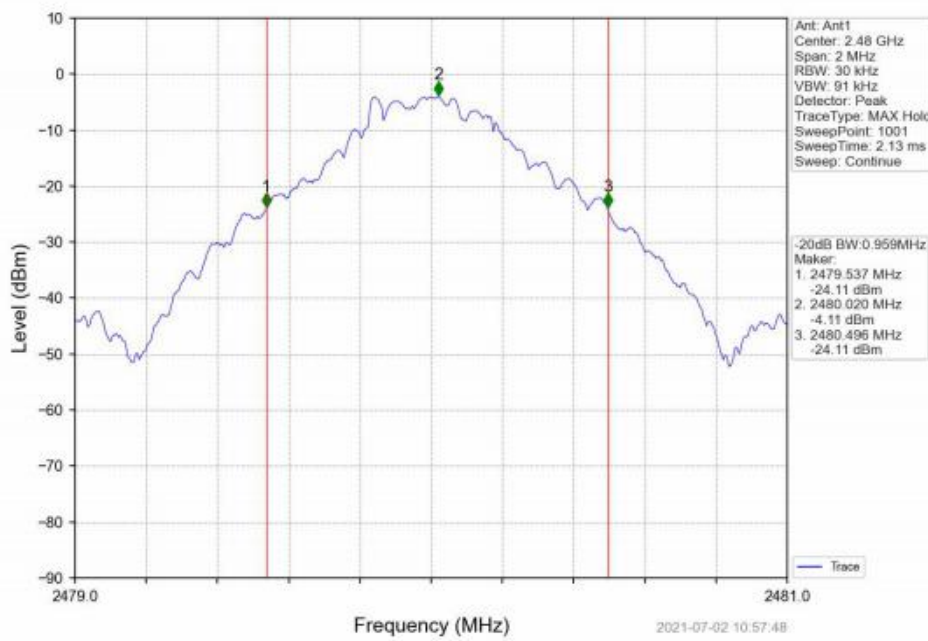
1.2.1 Test Result

| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Ant | 20dB Bandwidth (MHz) | Limit | Verdict |
|------|-----------|---------|-----------------|-------------|-----|----------------------|-------|---------|
| NTNV | GFSK | SISO | 2402 | DH5 | 1 | 0.95 | / | Pass |
| | | | 2441 | DH5 | 1 | 0.95 | / | Pass |
| | | | 2480 | DH5 | 1 | 0.96 | / | Pass |
| | Pi/4DQPSK | SISO | 2402 | 2DH5 | 1 | 1.28 | / | Pass |
| | | | 2441 | 2DH5 | 1 | 1.28 | / | Pass |
| | | | 2480 | 2DH5 | 1 | 1.28 | / | Pass |
| | 8DPSK | SISO | 2402 | 3DH5 | 1 | 1.31 | / | Pass |
| | | | 2441 | 3DH5 | 1 | 1.31 | / | Pass |
| | | | 2480 | 3DH5 | 1 | 1.31 | / | Pass |

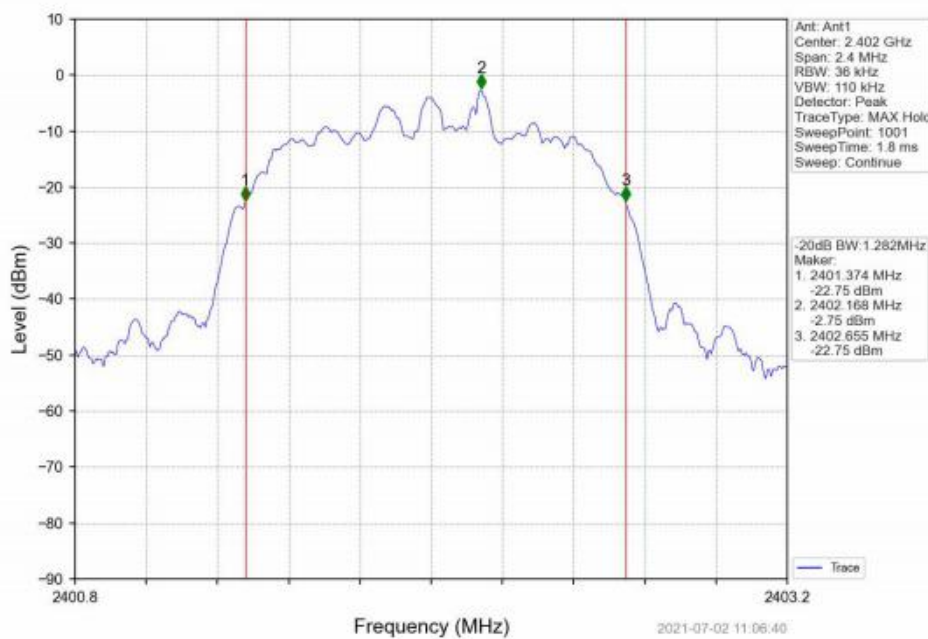
1.2.2 Test Graph



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



PI/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



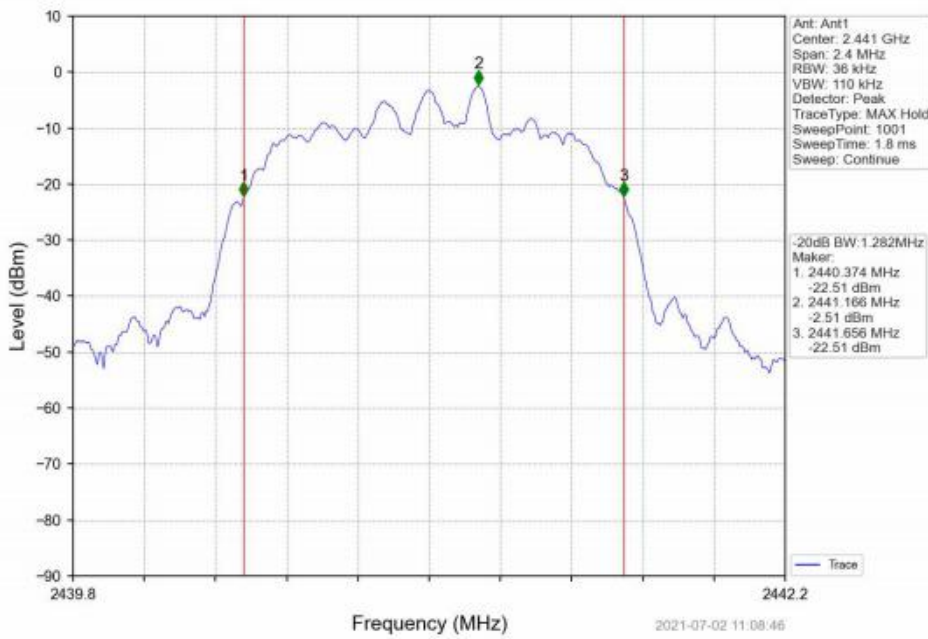
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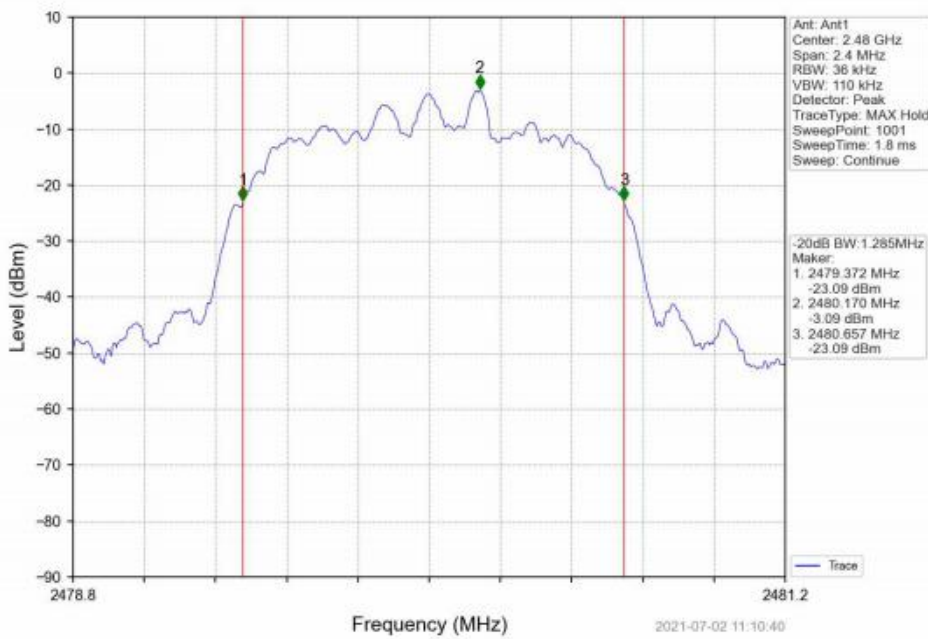
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Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



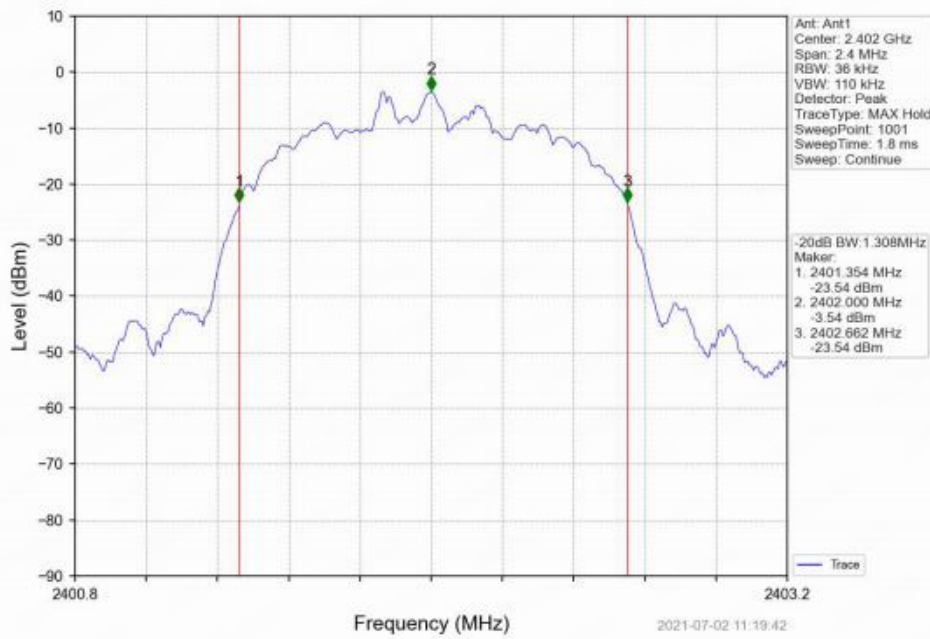
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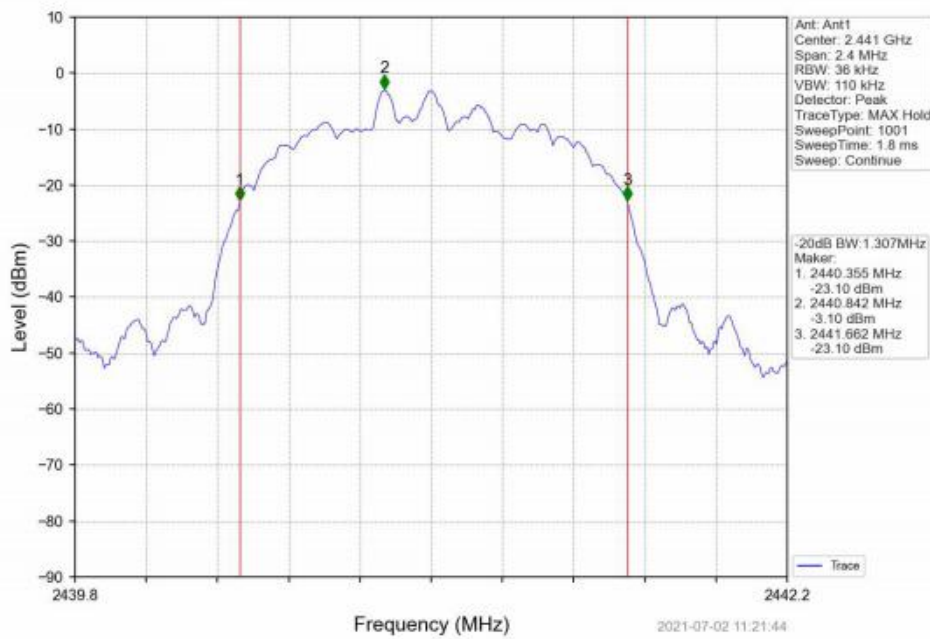
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8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

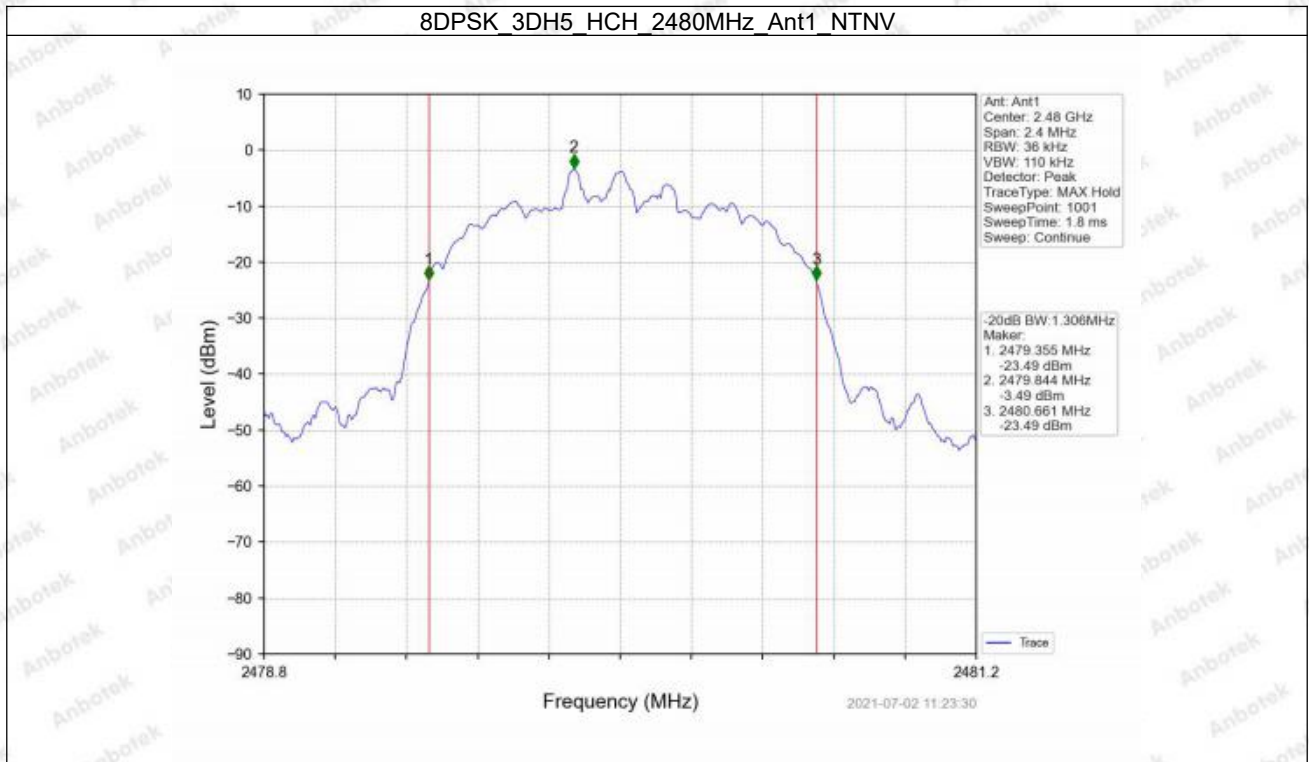


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2. Maximum Conducted Output Power

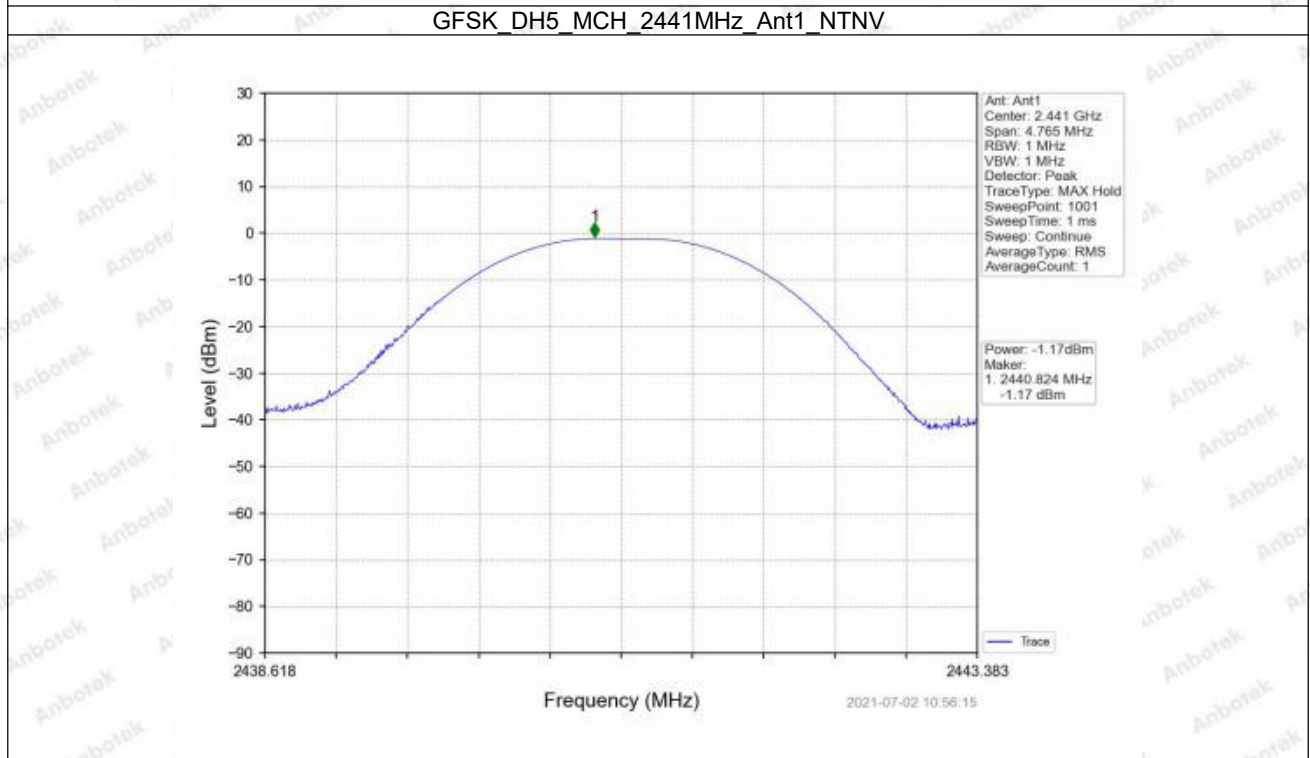
2.1 Power

2.1.1 Test Result

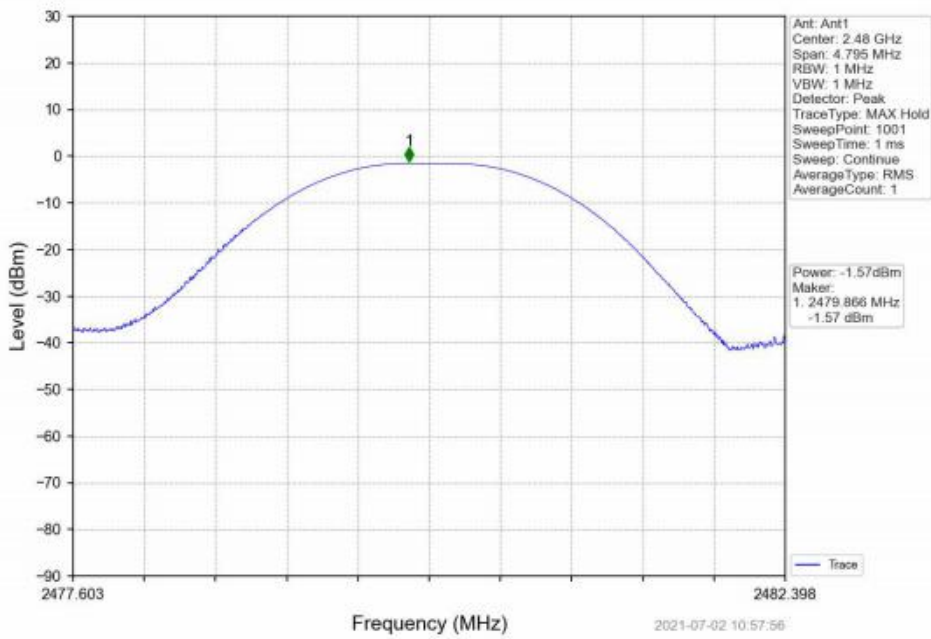
| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Measured Peak Output Power (dBm) | | Verdict |
|------|-----------|---------|-----------------|-------------|----------------------------------|---------|---------|
| | | | | | Ant1 | Limit | |
| NTNV | GFSK | SISO | 2402 | DH5 | -1.41 | <=30 | Pass |
| | | | 2441 | DH5 | -1.17 | <=30 | Pass |
| | | | 2480 | DH5 | -1.57 | <=30 | Pass |
| | PI/4DQPSK | SISO | 2402 | 2DH5 | -0.46 | <=20.97 | Pass |
| | | | 2441 | 2DH5 | -0.23 | <=20.97 | Pass |
| | | | 2480 | 2DH5 | -0.65 | <=20.97 | Pass |
| | 8DPSK | SISO | 2402 | 3DH5 | -0.06 | <=20.97 | Pass |
| | | | 2441 | 3DH5 | 0.15 | <=20.97 | Pass |
| | | | 2480 | 3DH5 | -0.30 | <=20.97 | Pass |

Note1: Antenna Gain: Ant1: 3.30dBi;

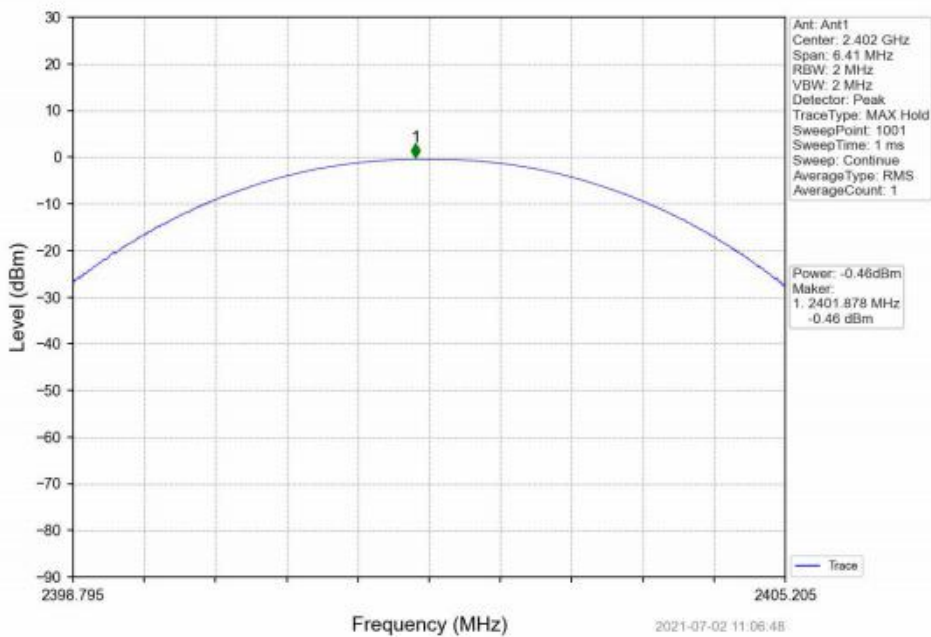
2.1.2 Test Graph



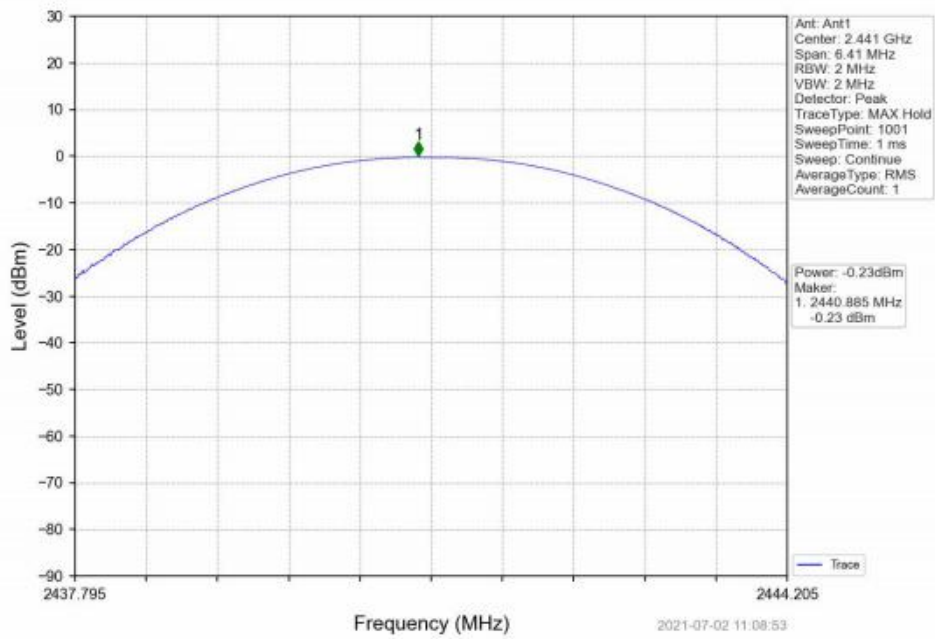
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



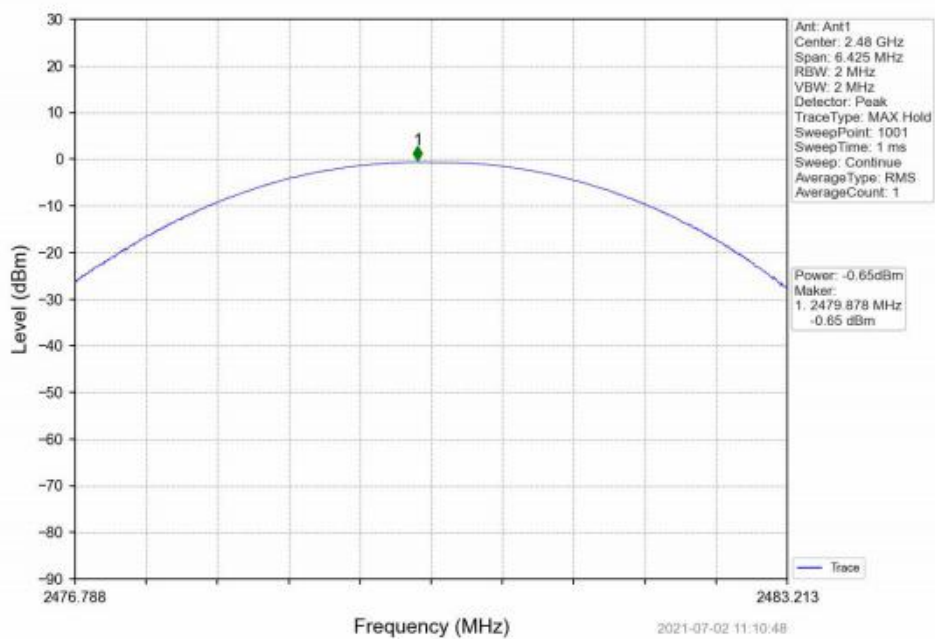
PI/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



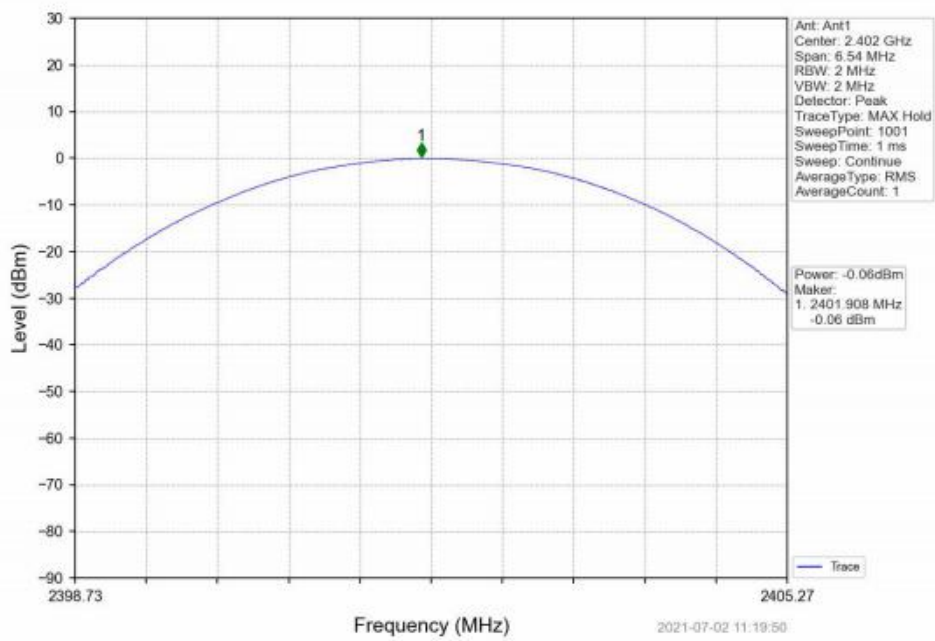
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



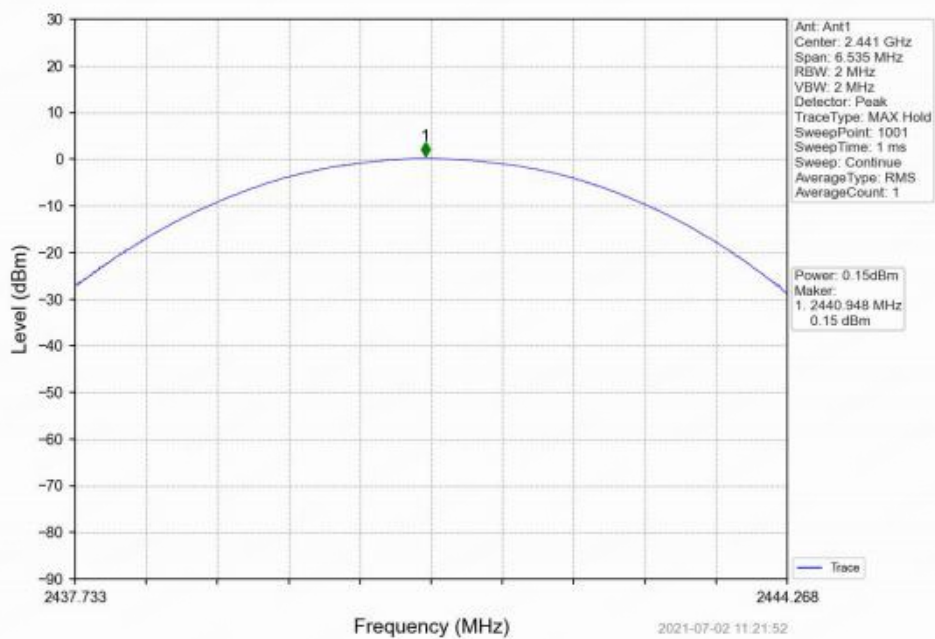
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

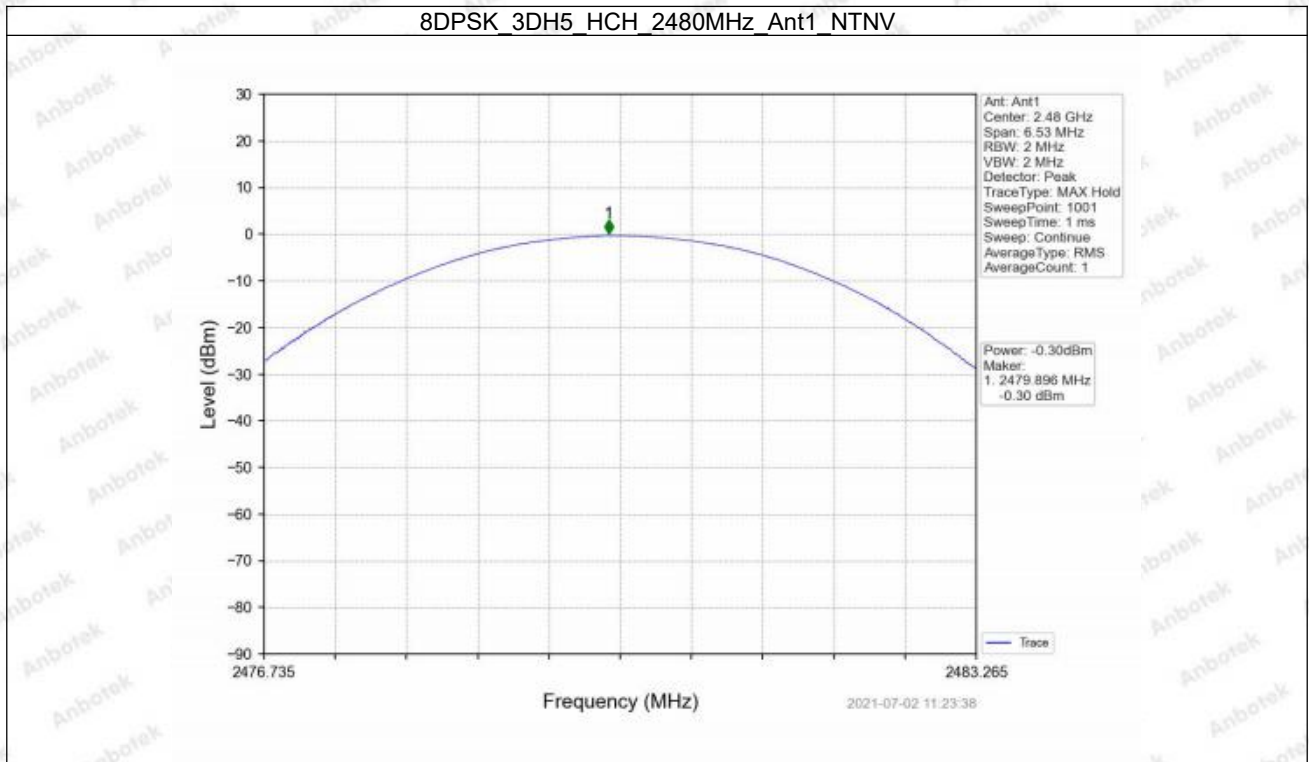


8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV





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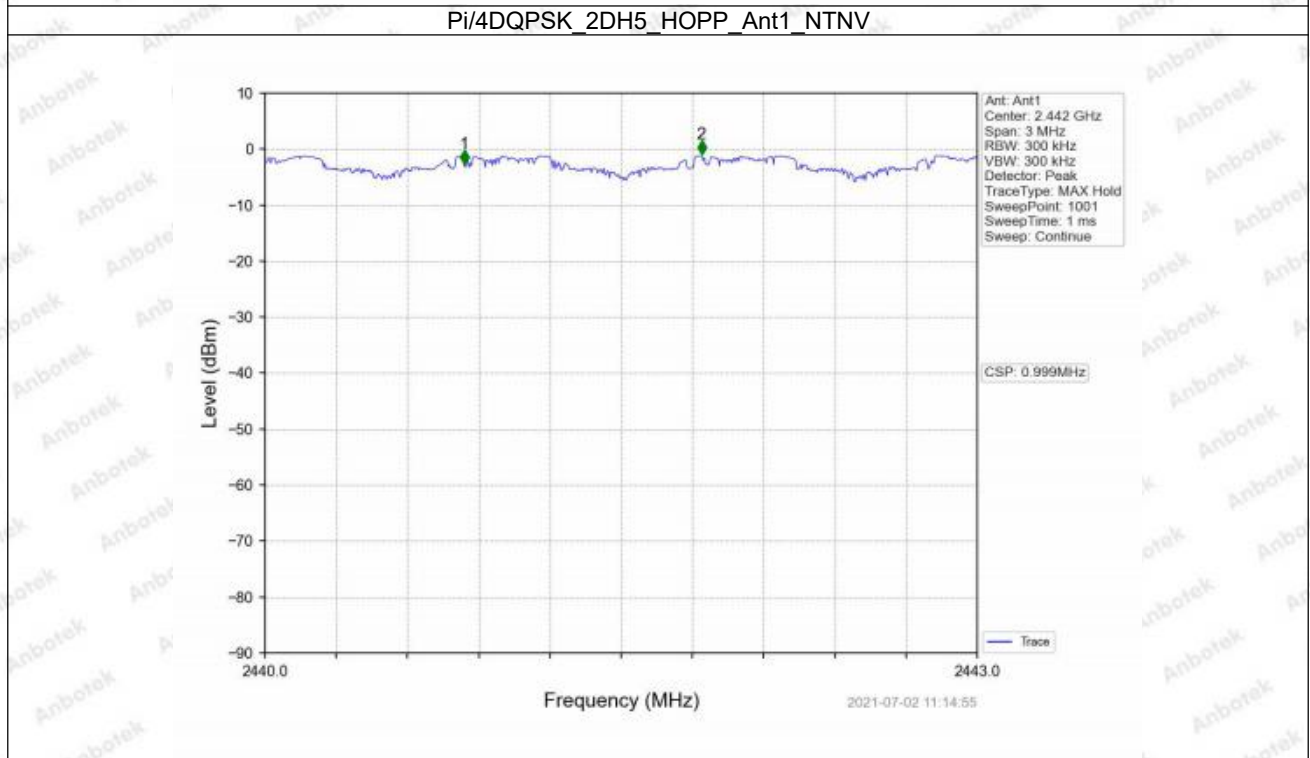
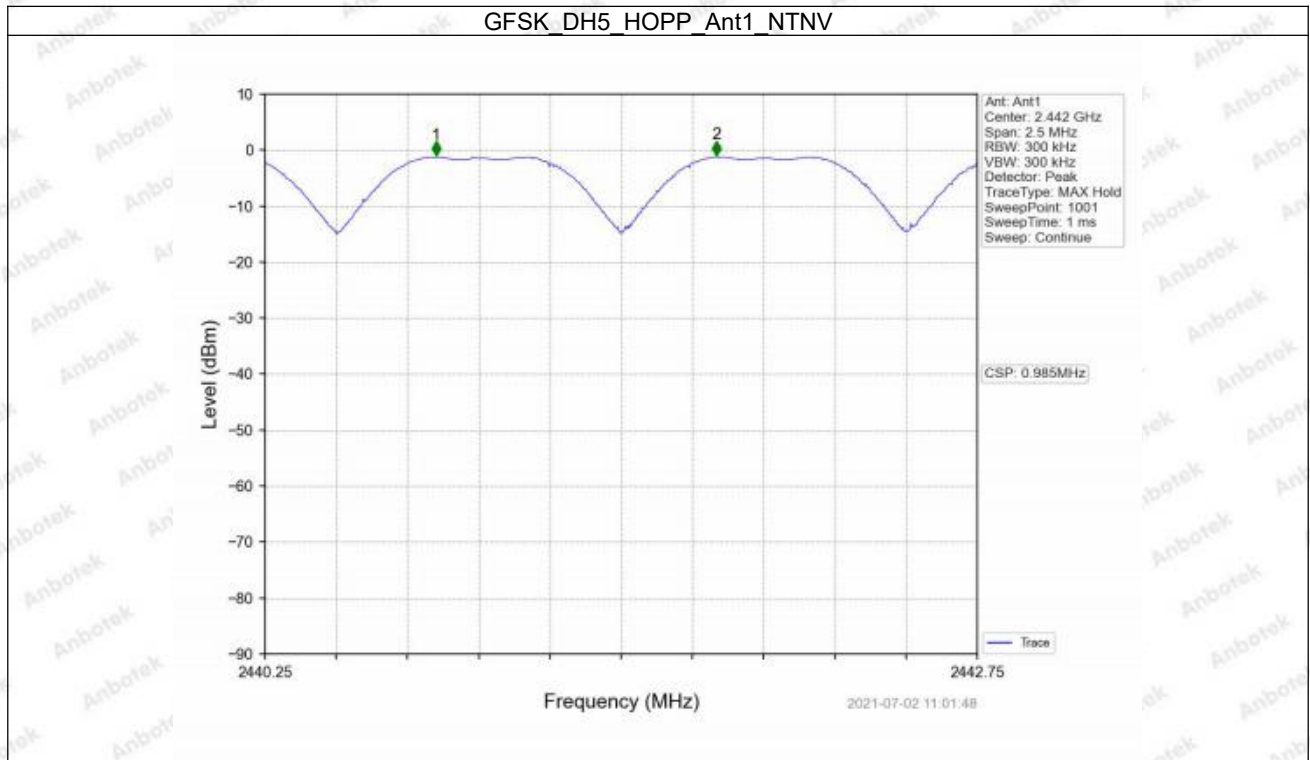
3. Carrier Frequency Separation

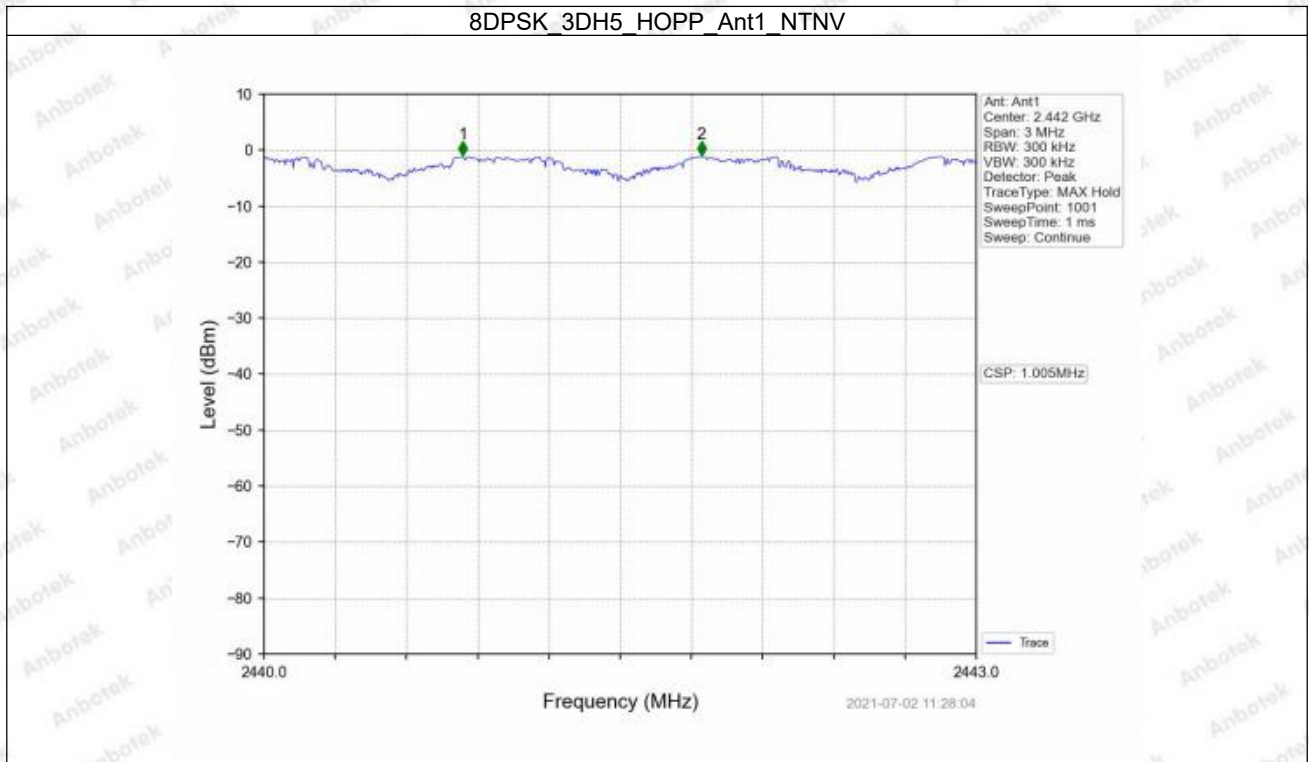
3.1 Ant1

3.1.1 Test Result

| Ant1 | | | | | | | | |
|------|-----------|---------|-----------------|-------------|--------------------------|----------------------|--------------|---------|
| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Channel Separation (MHz) | 20dB Bandwidth (MHz) | Limit (MHz) | Verdict |
| NTNV | GFSK | SISO | HOPP | DH5 | 0.98 | 0.95 | ≥ 0.953 | Pass |
| | Pi/4DQPSK | SISO | HOPP | 2DH5 | 1.00 | 1.28 | ≥ 0.855 | Pass |
| | 8DPSK | SISO | HOPP | 3DH5 | 1.00 | 1.31 | ≥ 0.872 | Pass |

3.1.2 Test Graph





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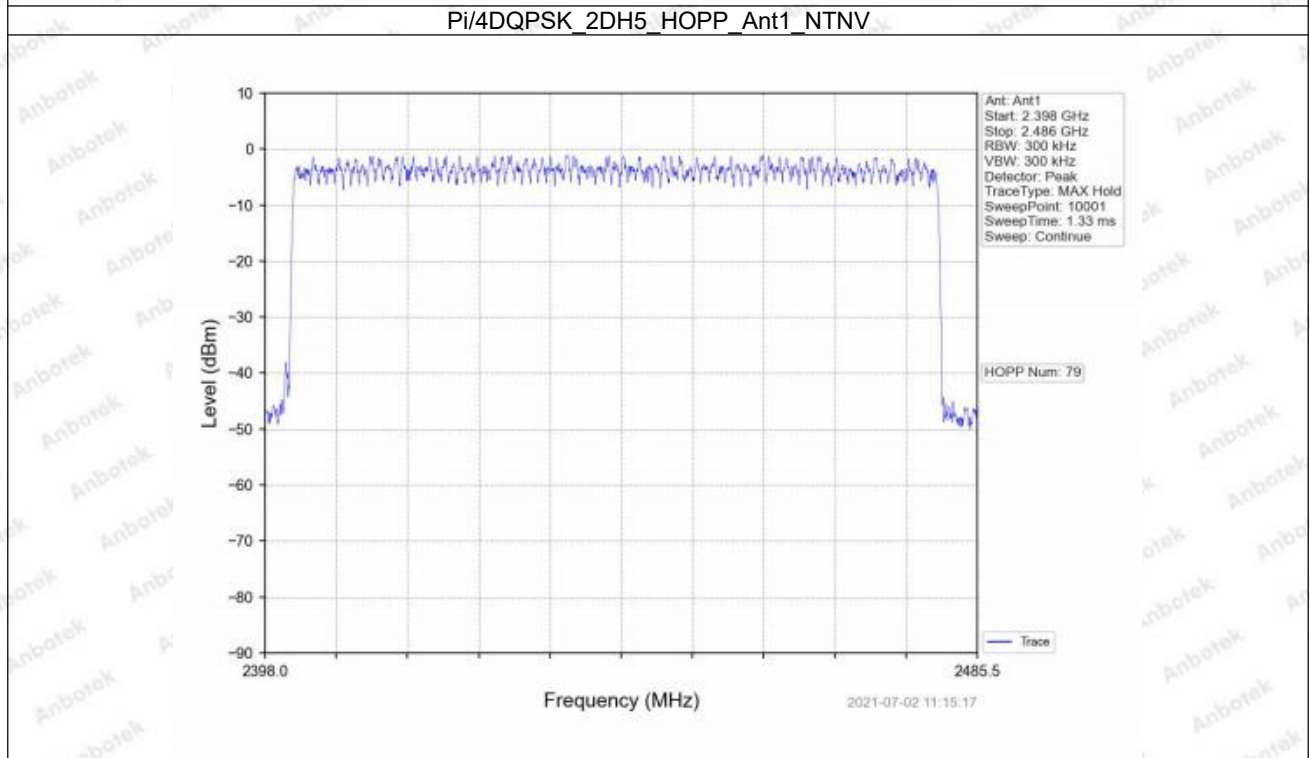
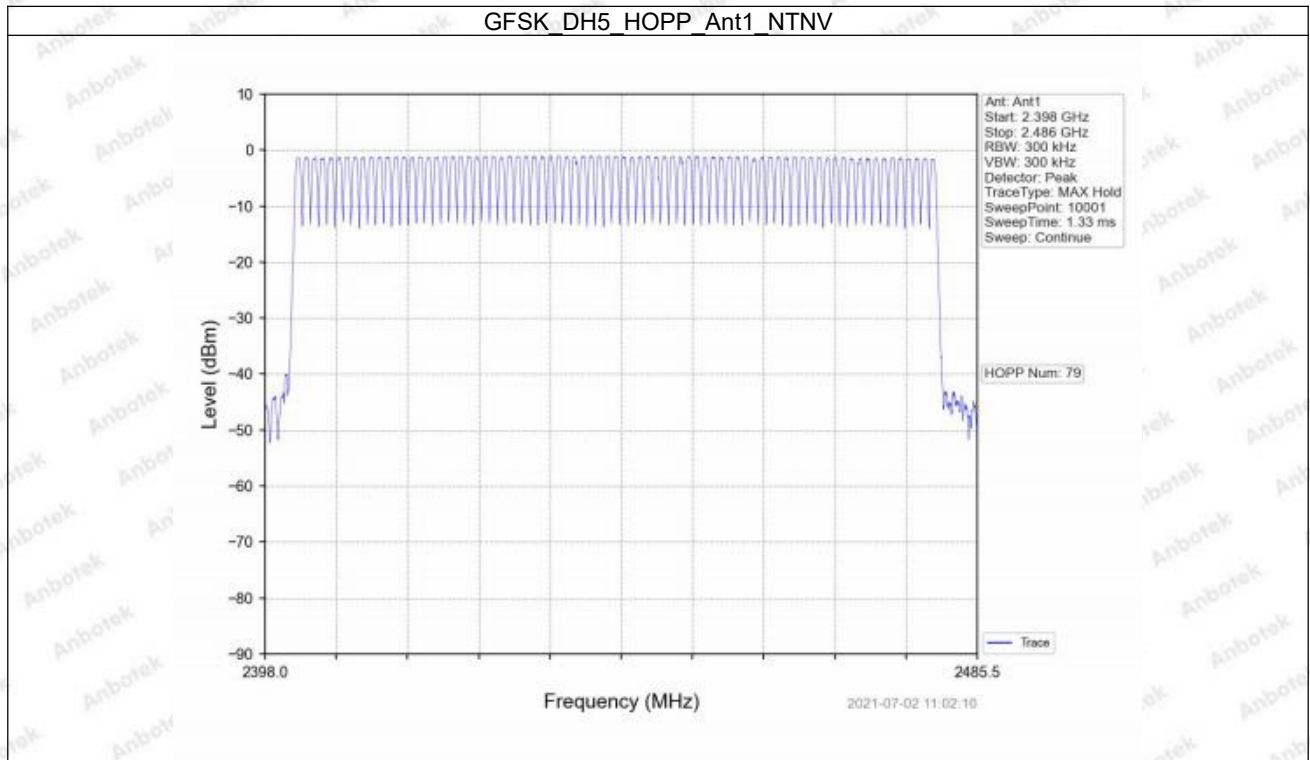
4. Number of Hopping Frequencies

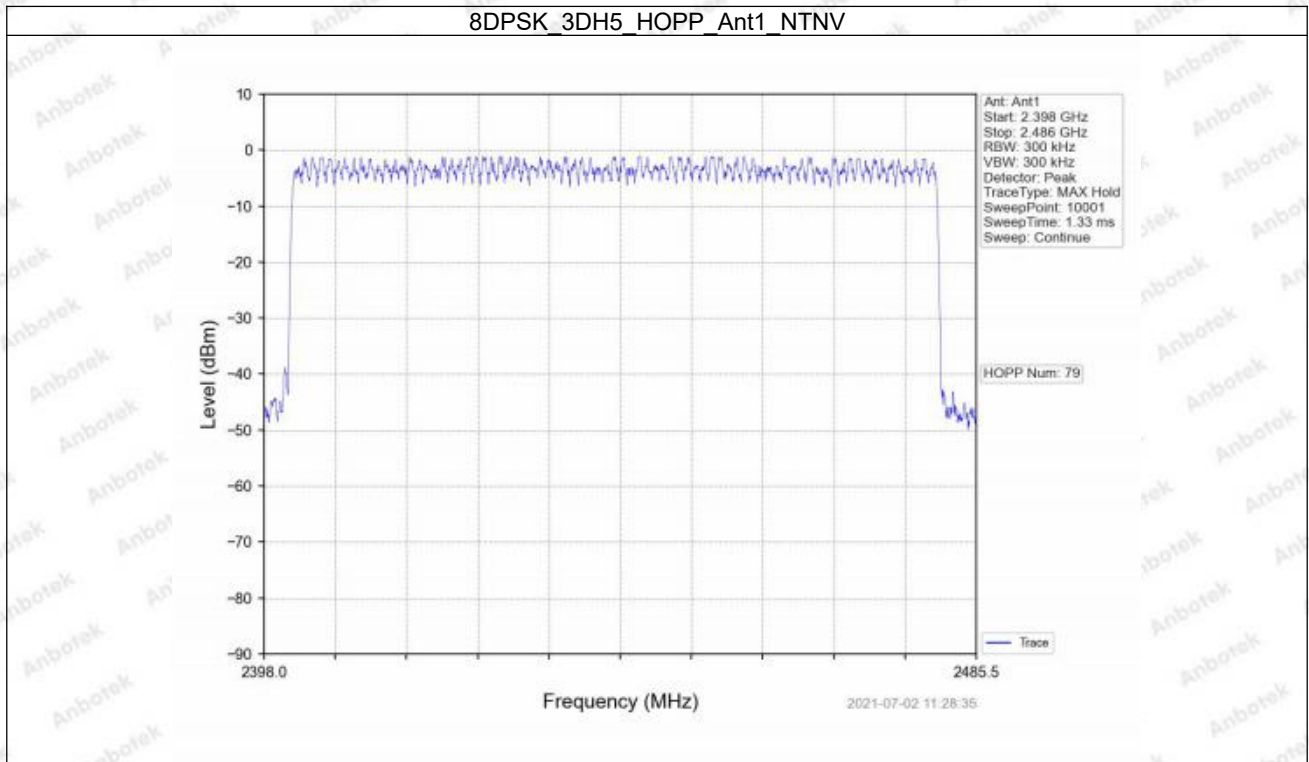
4.1 HopNum

4.1.1 Test Result

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

4.1.2 Test Graph





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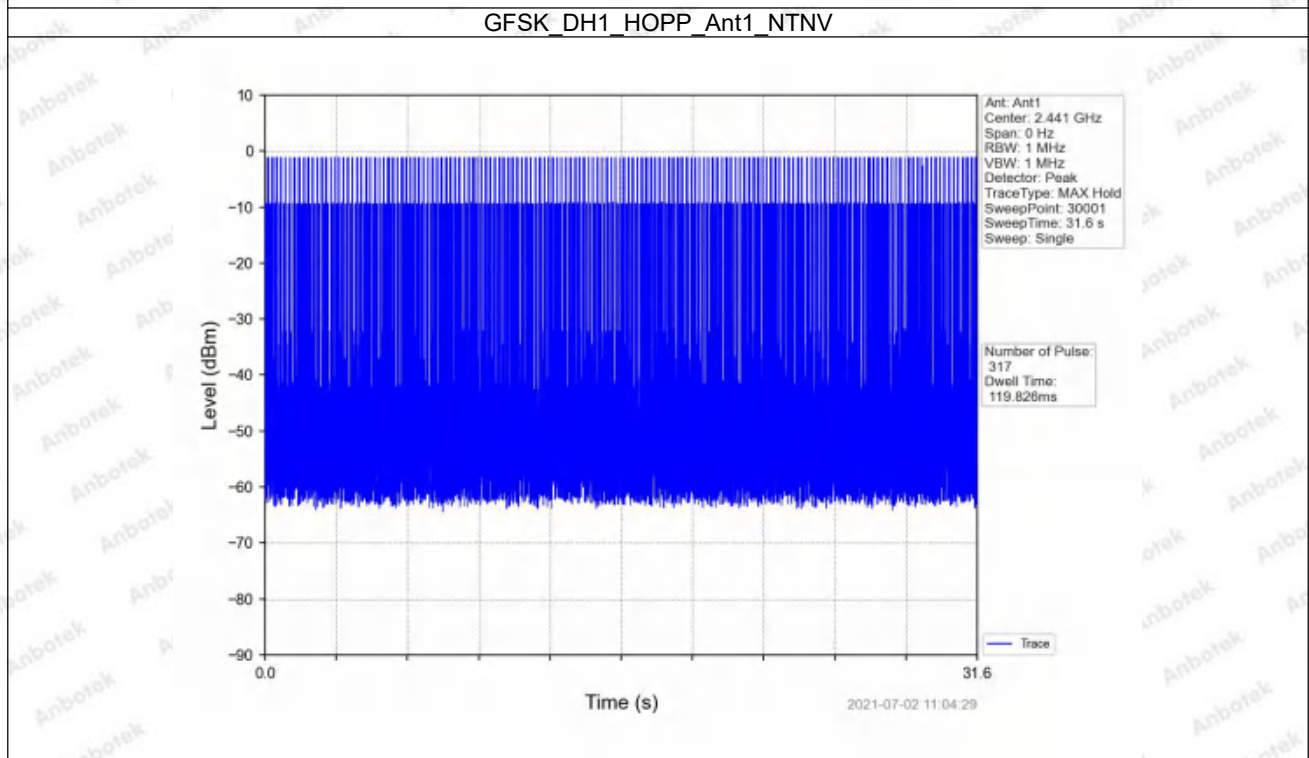
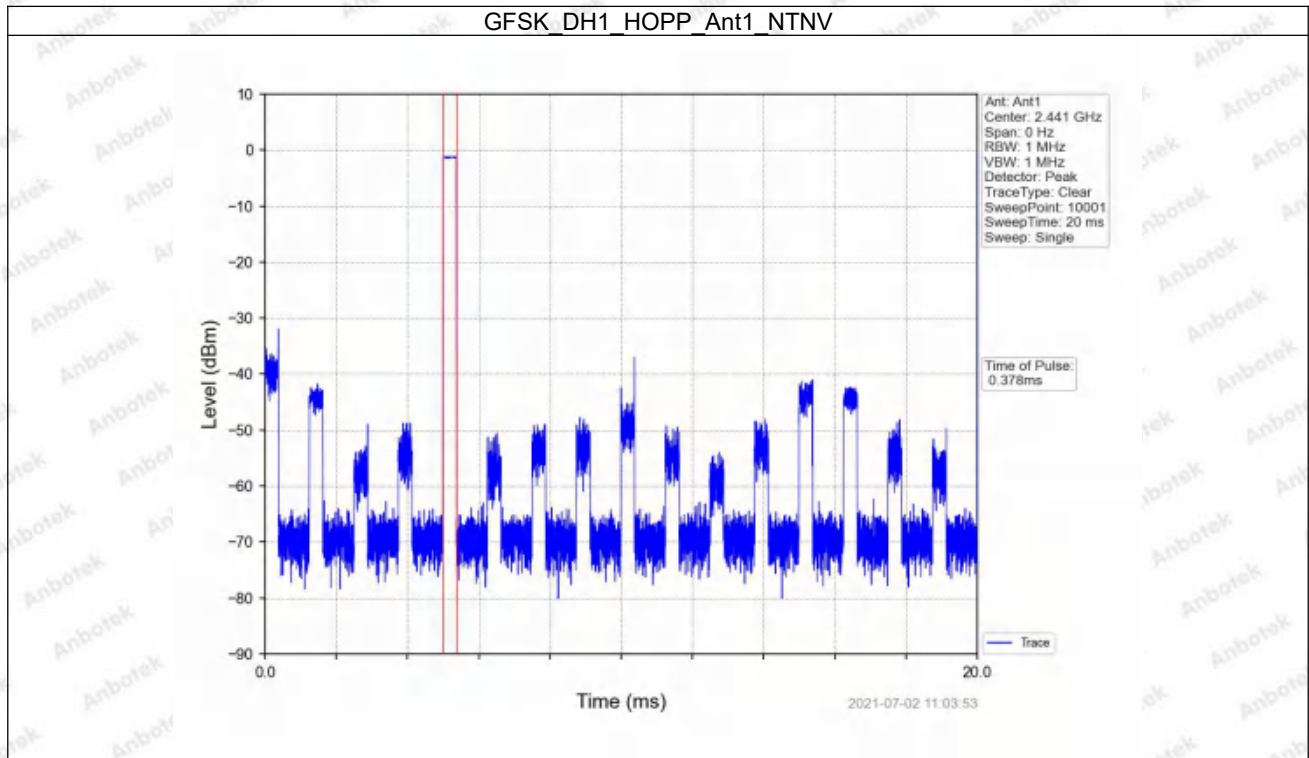
5. Time of Occupancy (Dwell Time)

5.1 Ant1

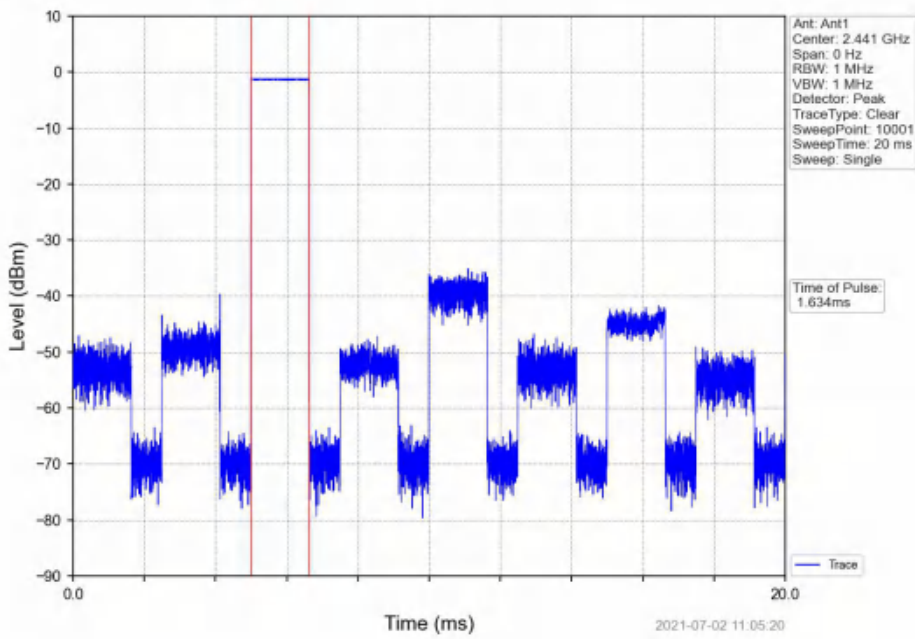
5.1.1 Test Result

| Ant1 | | | | | | | | | | |
|--------|--------|---------|-----------------|-------------|-------------------------------|------------------------|------------------------------------|-----------------|------------|---------|
| ENV | 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 |
| NTNVPi | GFSK | SISO | HOPP | DH1 | 0.38 | 31.60 | 317 | 119.83 | <=400 | Pass |
| | | | | DH3 | 1.63 | 31.60 | 157 | 256.54 | <=400 | Pass |
| | | | | DH5 | 2.88 | 31.60 | 114 | 328.55 | <=400 | Pass |
| | 4DQPSK | SISO | HOPP | 2DH1 | 0.39 | 31.60 | 319 | 123.13 | <=400 | Pass |
| | | | | 2DH3 | 1.64 | 31.60 | 164 | 268.96 | <=400 | Pass |
| | | | | 2DH5 | 2.89 | 31.60 | 106 | 306.13 | <=400 | Pass |
| | 8DPSK | SISO | HOPP | 3DH1 | 0.39 | 31.60 | 319 | 123.77 | <=400 | Pass |
| | | | | 3DH3 | 1.64 | 31.60 | 161 | 263.72 | <=400 | Pass |
| | | | | 3DH5 | 2.89 | 31.60 | 104 | 300.56 | <=400 | Pass |

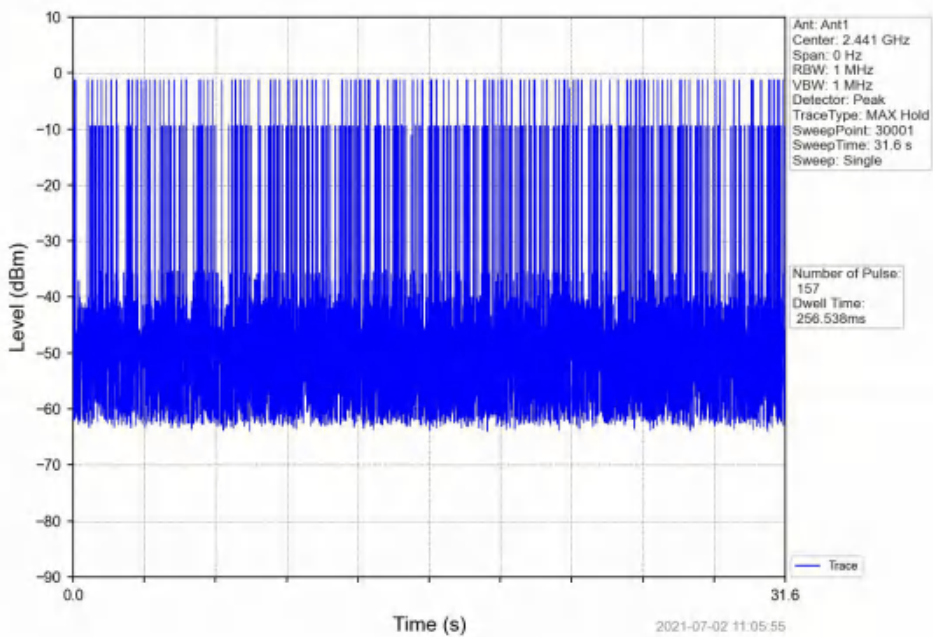
5.1.2 Test Graph



GFSK DH3_HOPP_Ant1_NTNV



GFSK DH3_HOPP_Ant1_NTNV



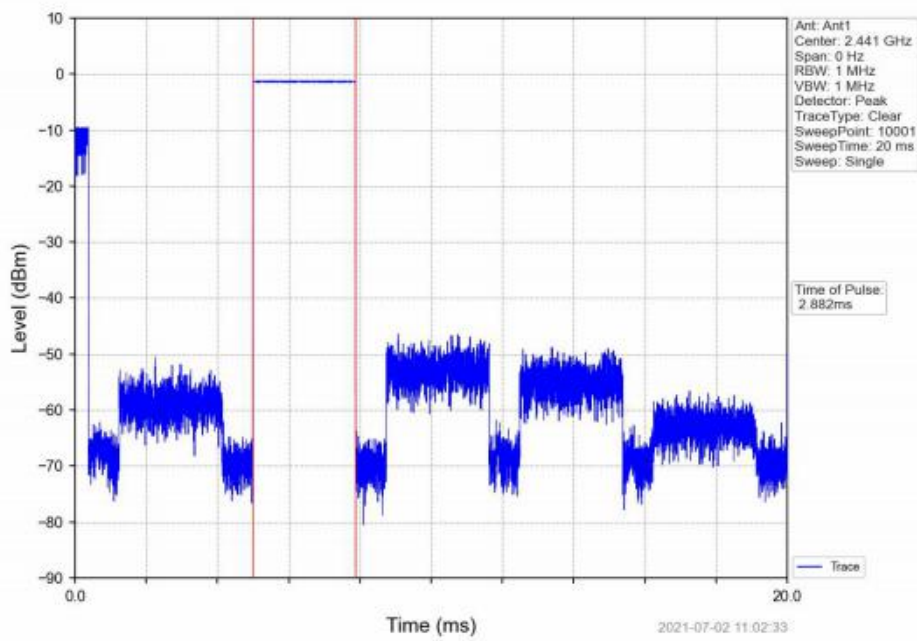
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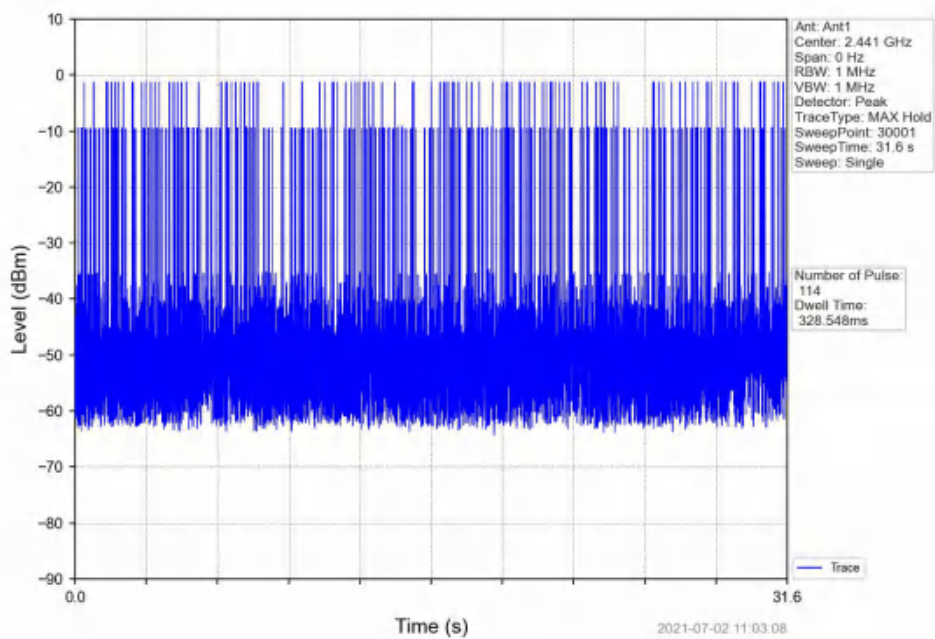
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GFSK DH5_HOPP_Ant1_NTNV



GFSK DH5_HOPP_Ant1_NTNV



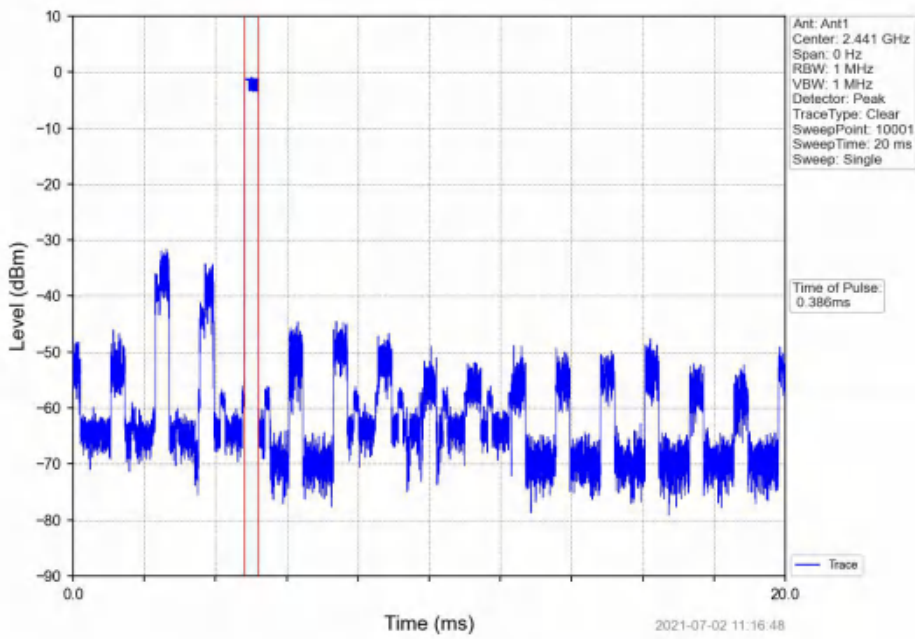
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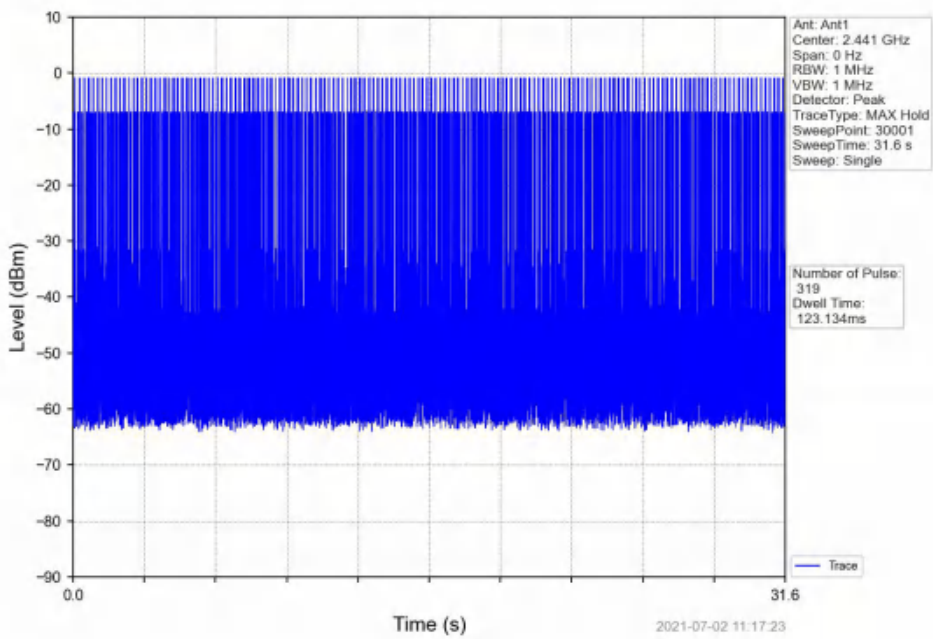
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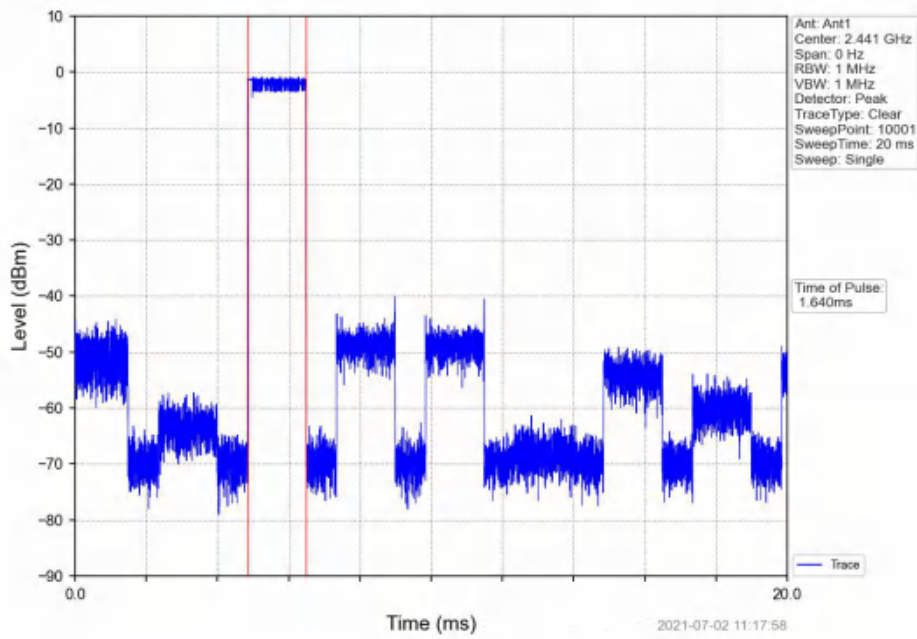
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



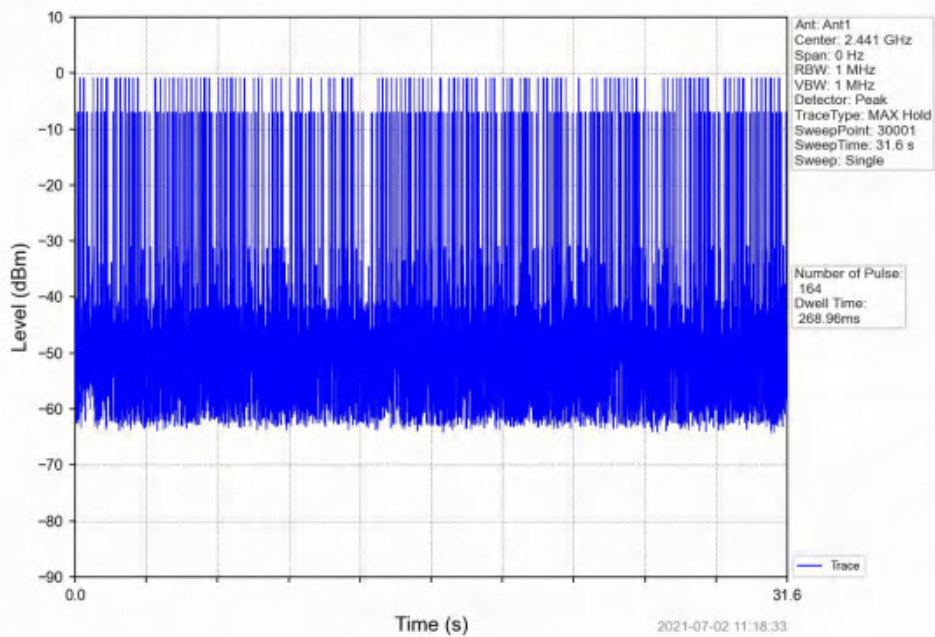
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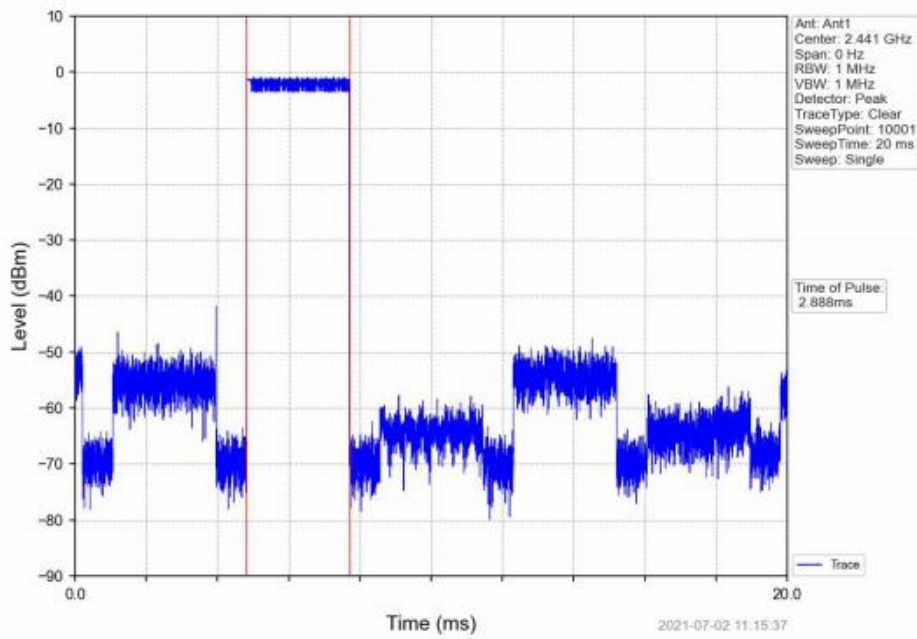
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



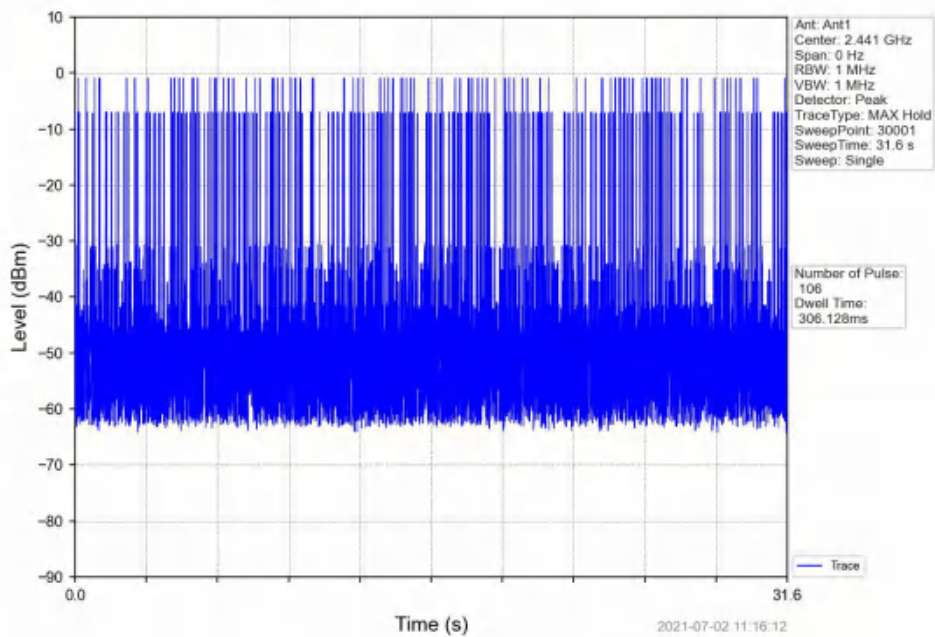
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV

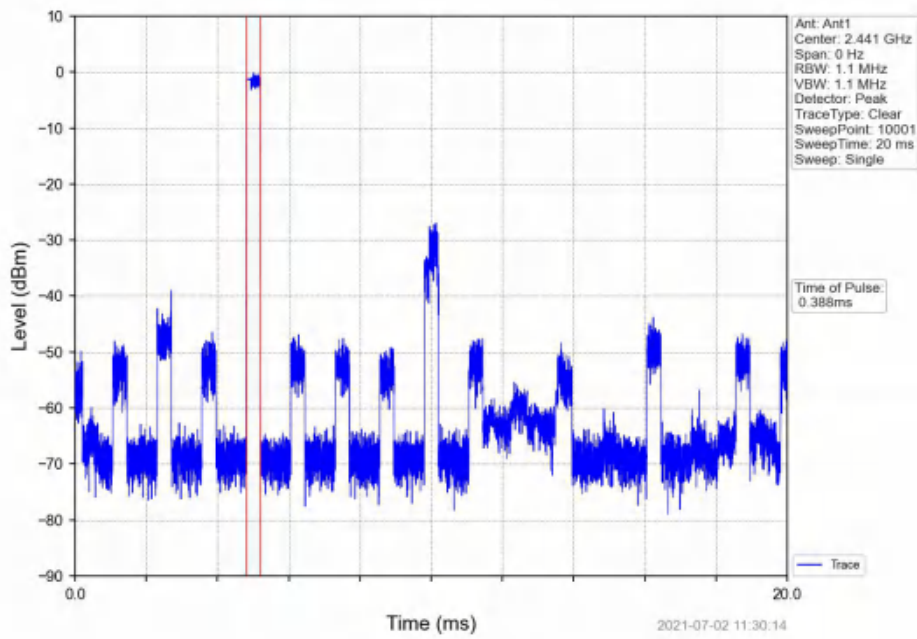


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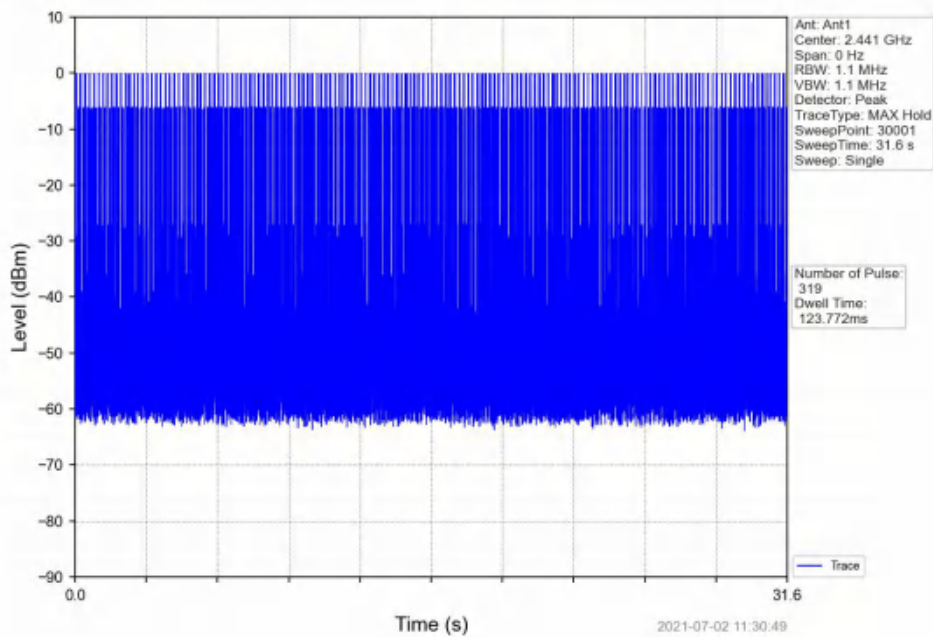
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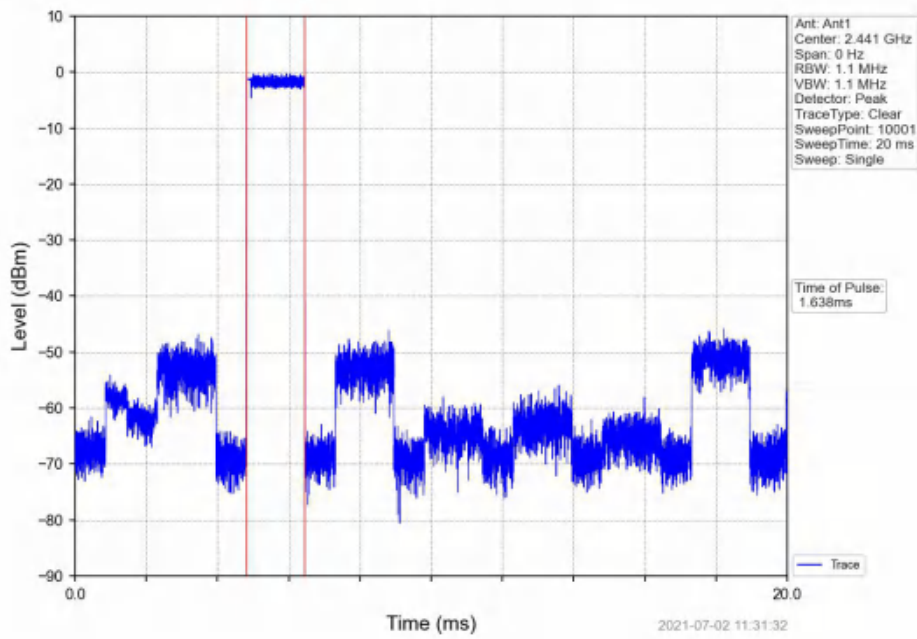
8DPSK 3DH1_HOPP_Ant1_NTNV



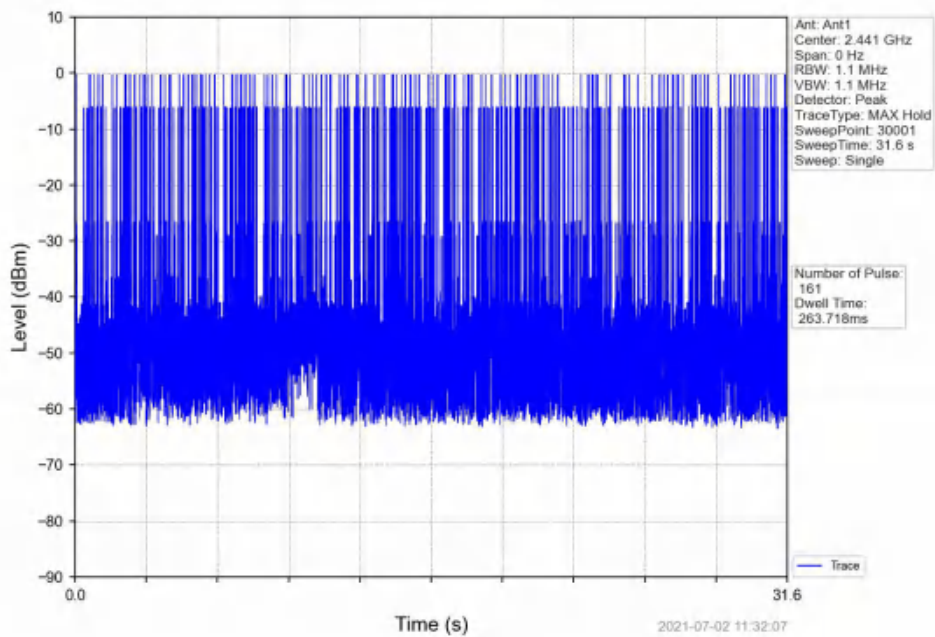
8DPSK 3DH1_HOPP_Ant1_NTNV



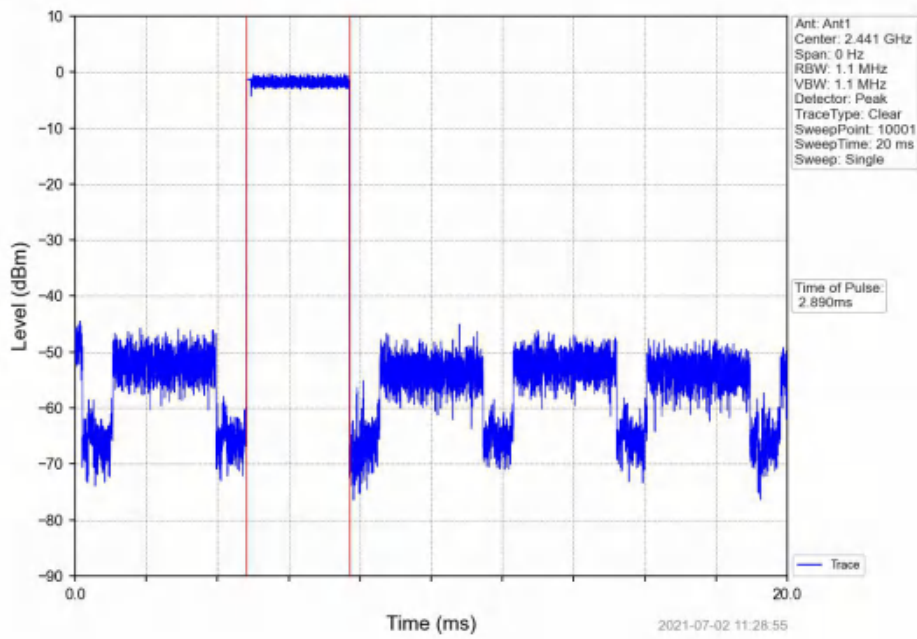
8DPSK 3DH3_HOPP_Ant1_NTNV



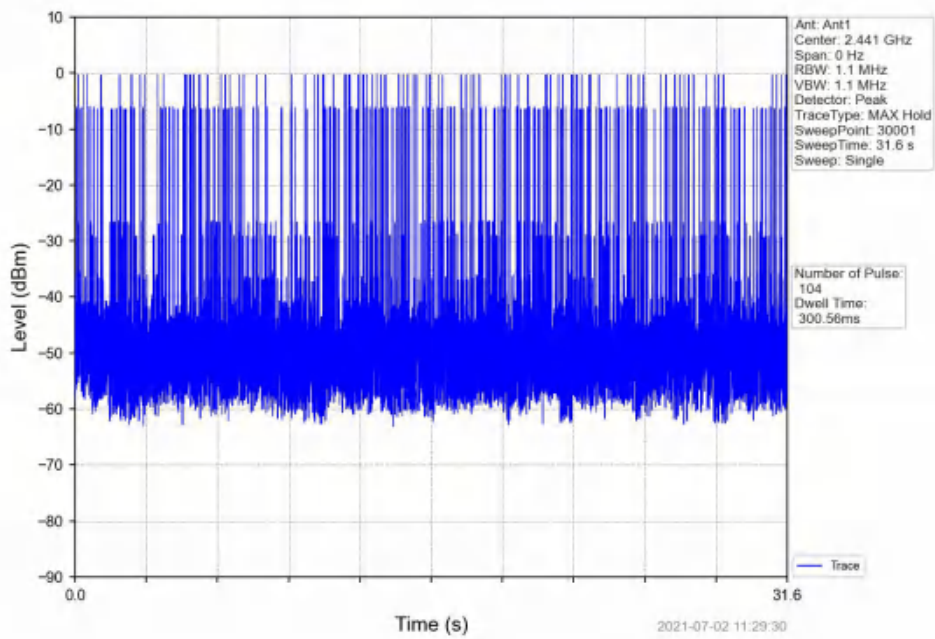
8DPSK 3DH3_HOPP_Ant1_NTNV



8DPSK 3DH5_HOPP_Ant1_NTNV



8DPSK 3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

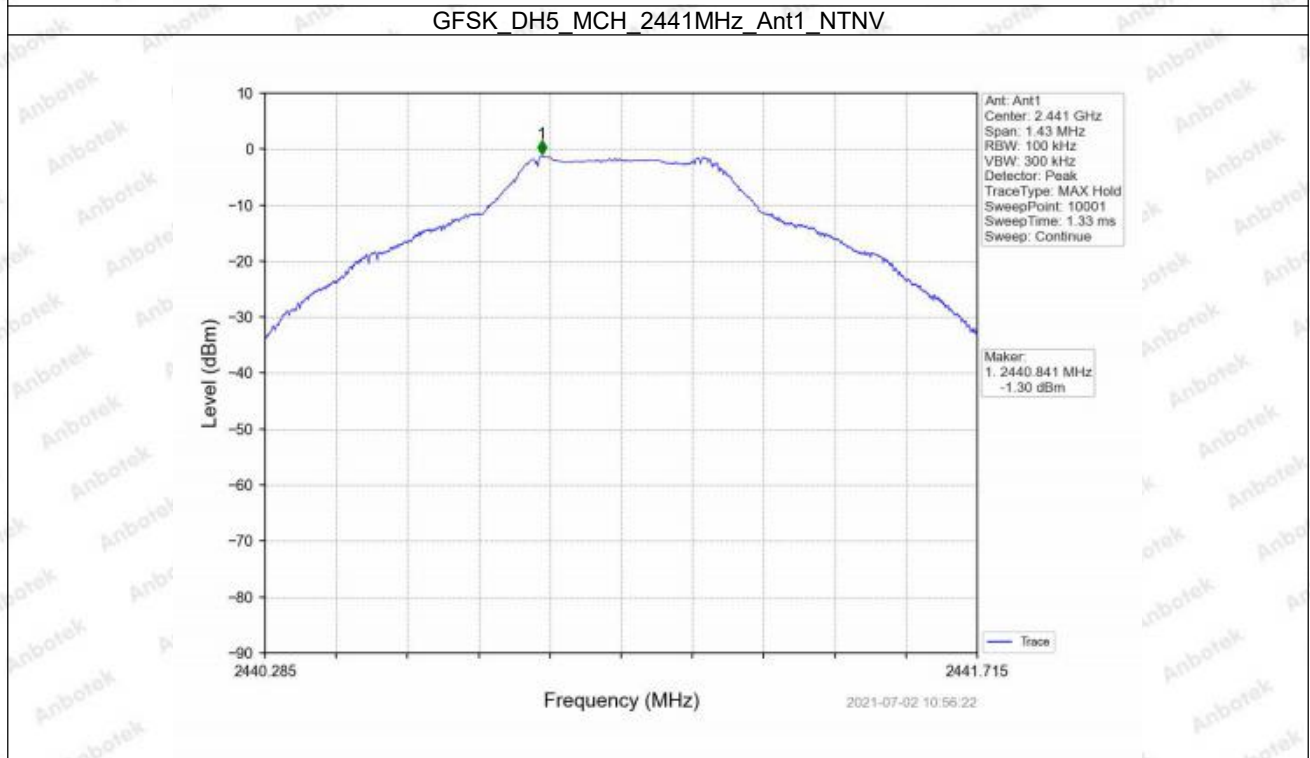
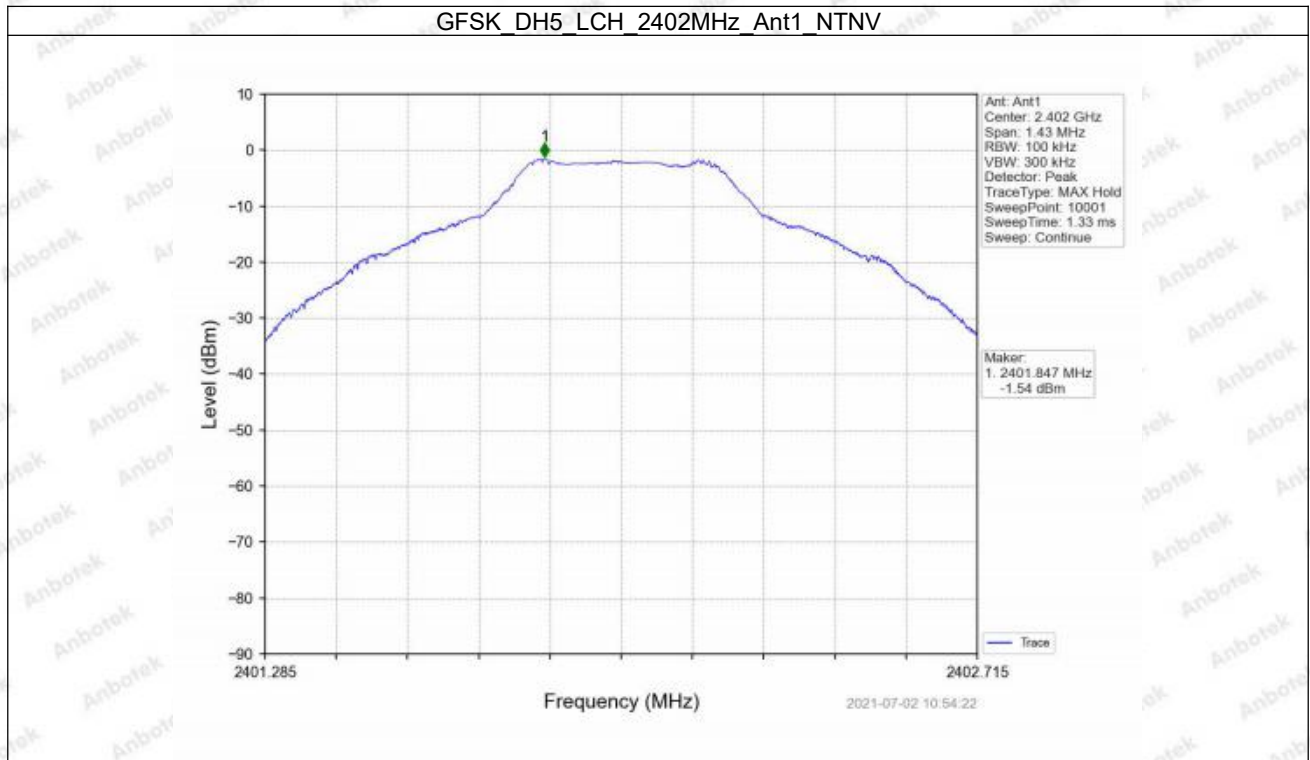
6.1 Ref

6.1.1 Test Result

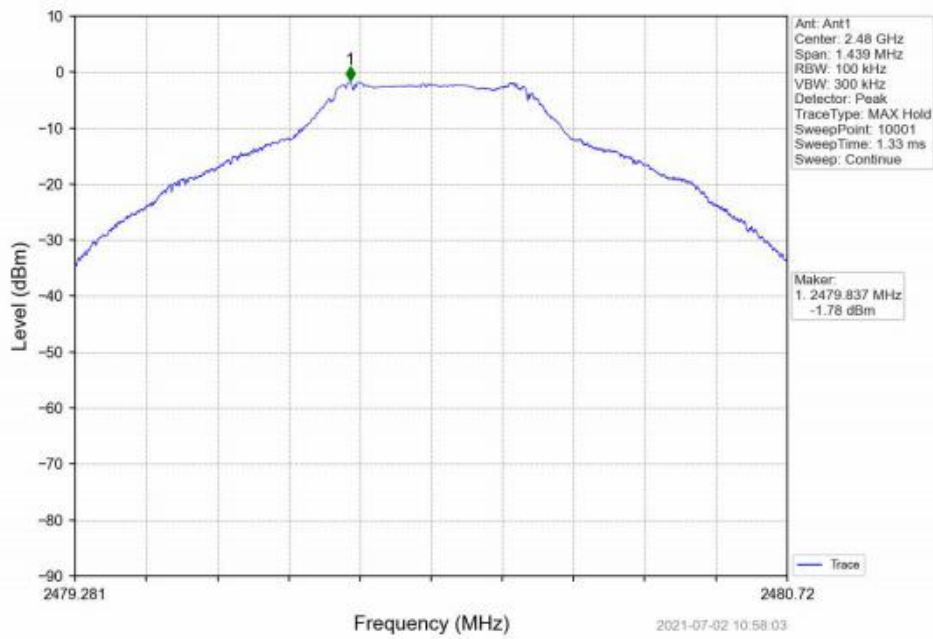
| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Ant | Level of Reference (dBm) | Limit (dBm) | Verdict |
|------|----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| NTNV | GFSK | SISO | 2402 | DH5 | 1 | -1.54 | / | / |
| | | | 2441 | DH5 | 1 | -1.30 | / | / |
| | | | 2480 | DH5 | 1 | -1.78 | / | / |
| | Pi/4QPSK | SISO | 2402 | 2DH5 | 1 | -1.58 | / | / |
| | | | 2441 | 2DH5 | 1 | -1.35 | / | / |
| | | | 2480 | 2DH5 | 1 | -1.74 | / | / |
| | 8DPSK | SISO | 2402 | 3DH5 | 1 | -1.53 | / | / |
| | | | 2441 | 3DH5 | 1 | -1.32 | / | / |
| | | | 2480 | 3DH5 | 1 | -1.72 | / | / |

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.

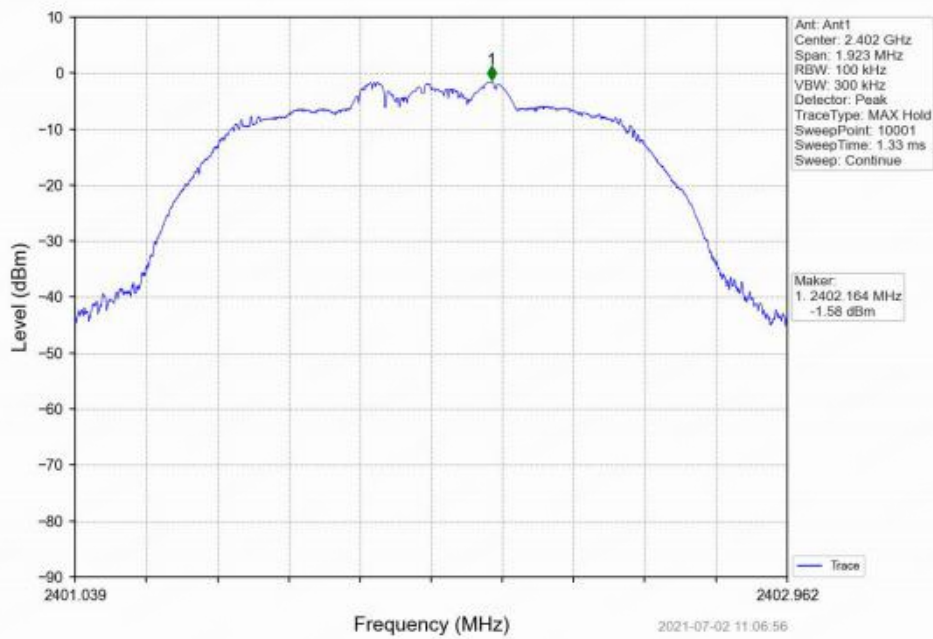
6.1.2 Test Graph



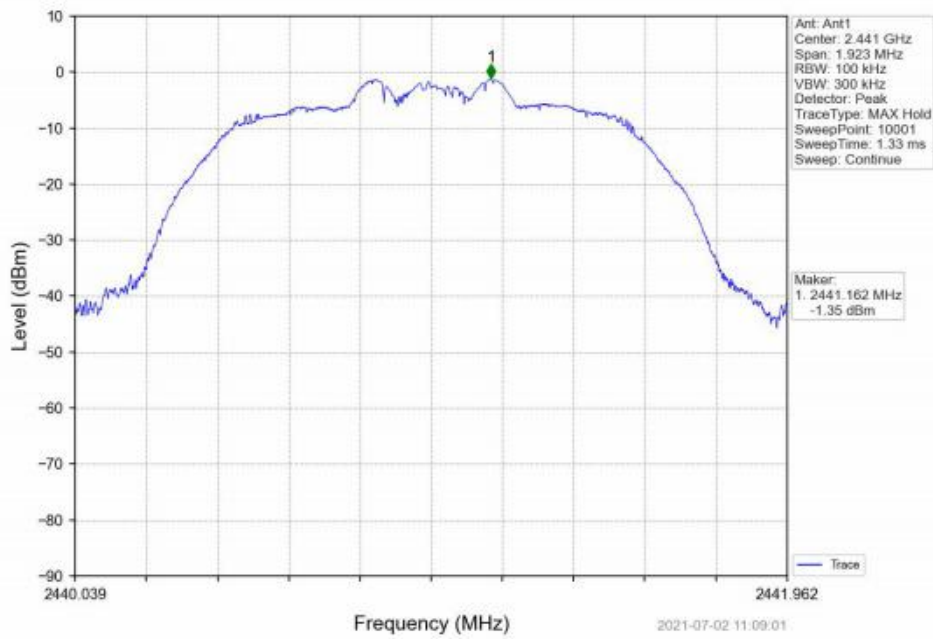
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



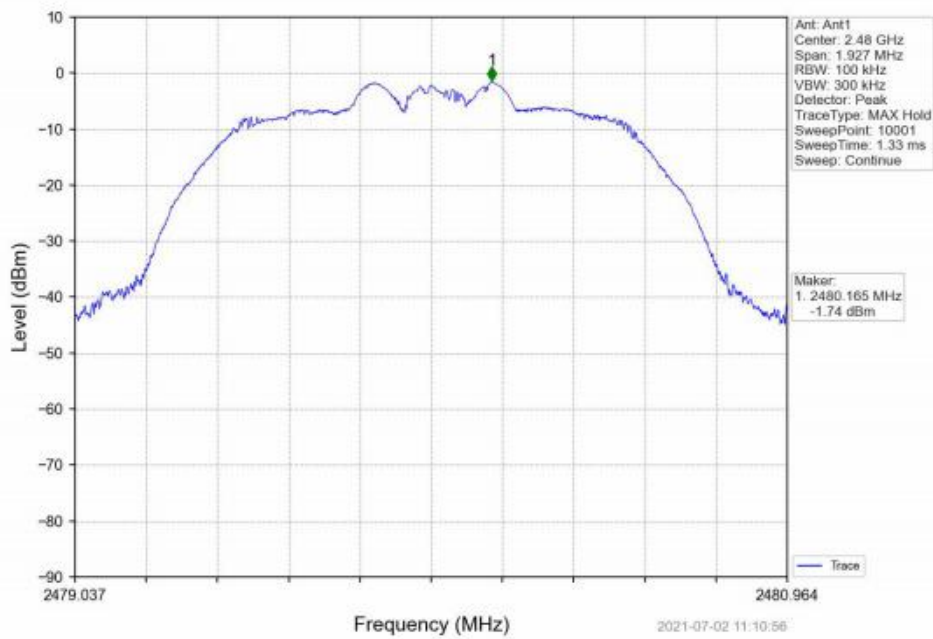
PI/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



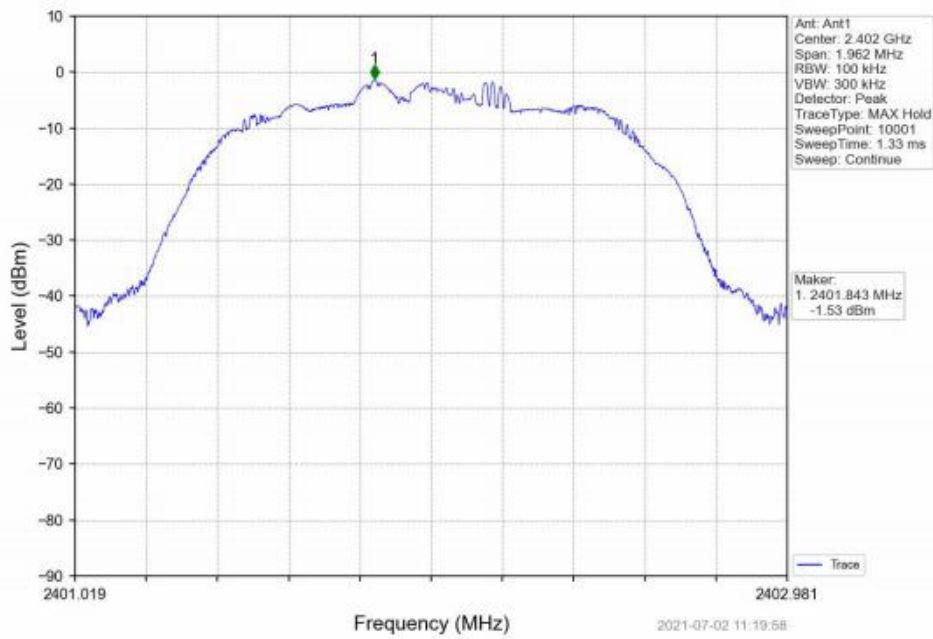
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



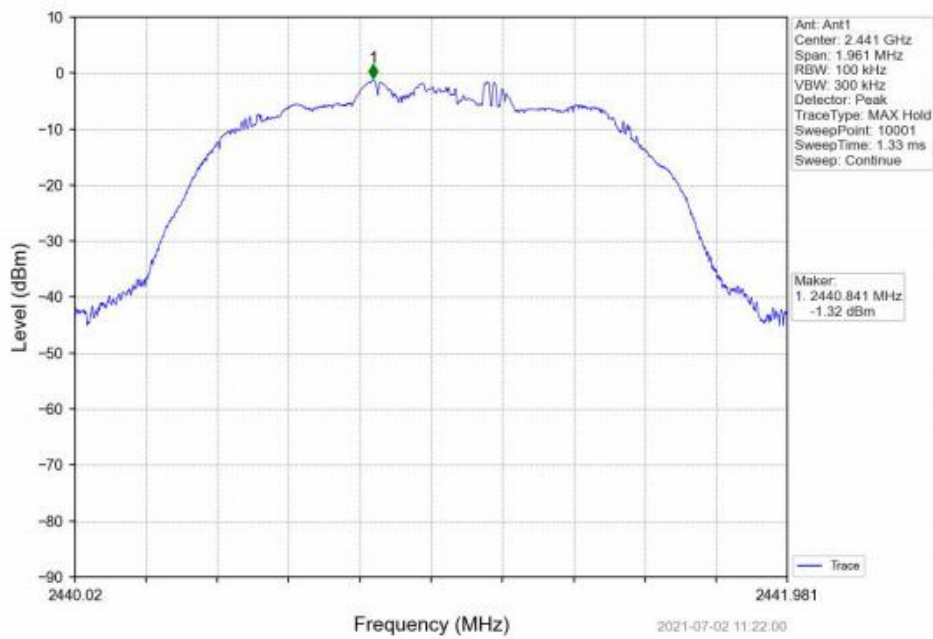
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

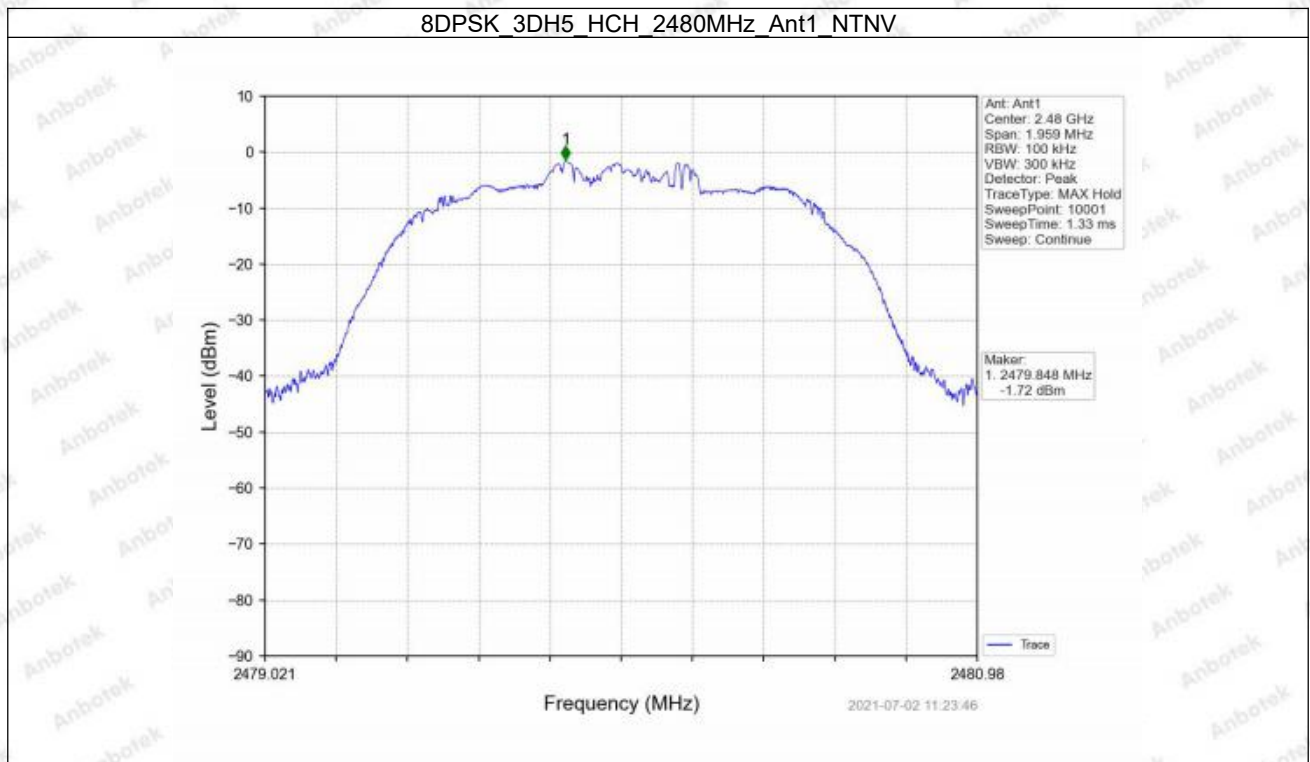


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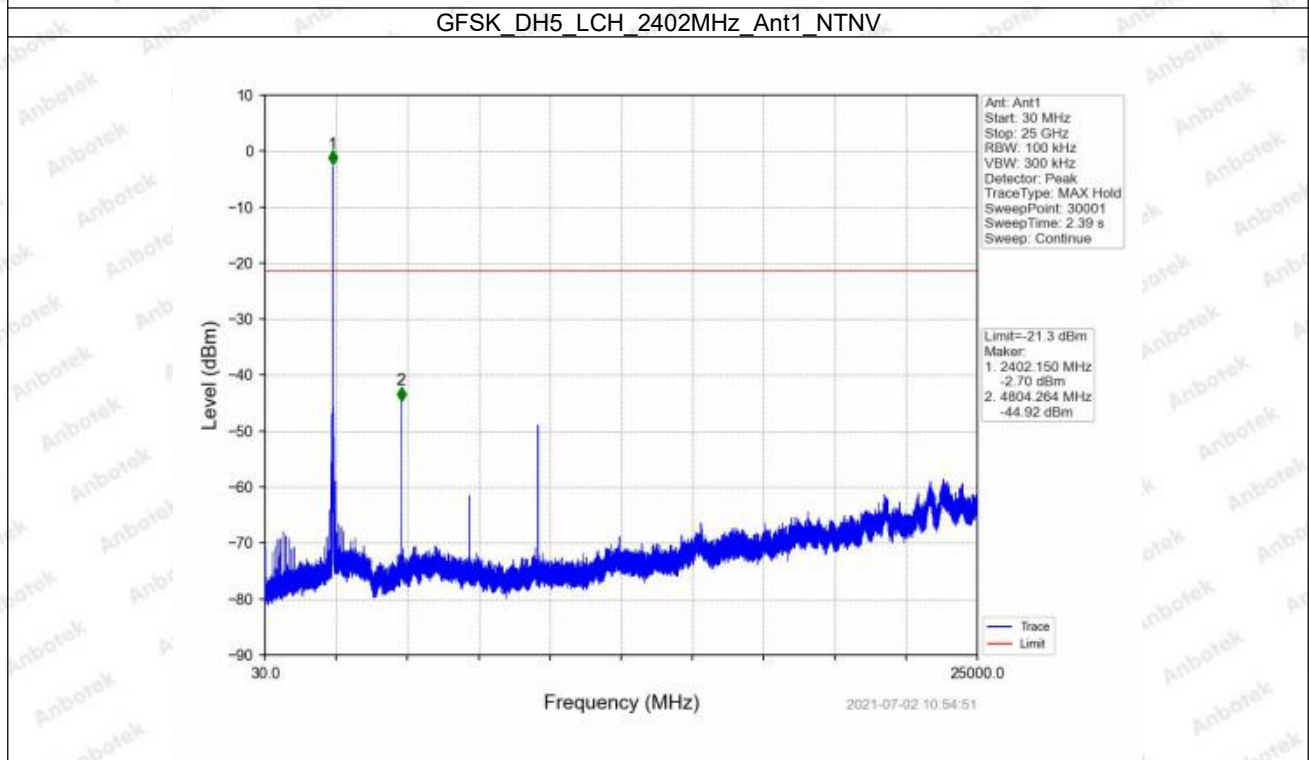
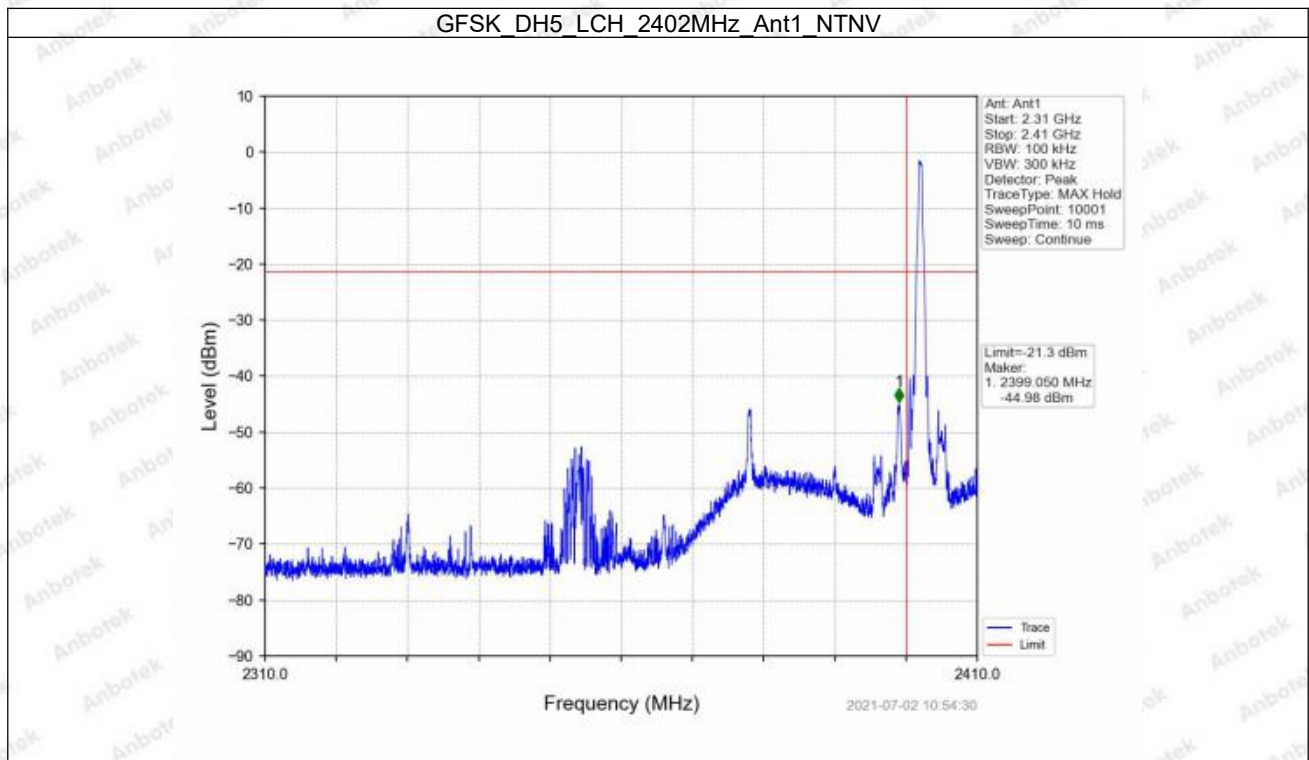
6.2 CSE

6.2.1 Test Result

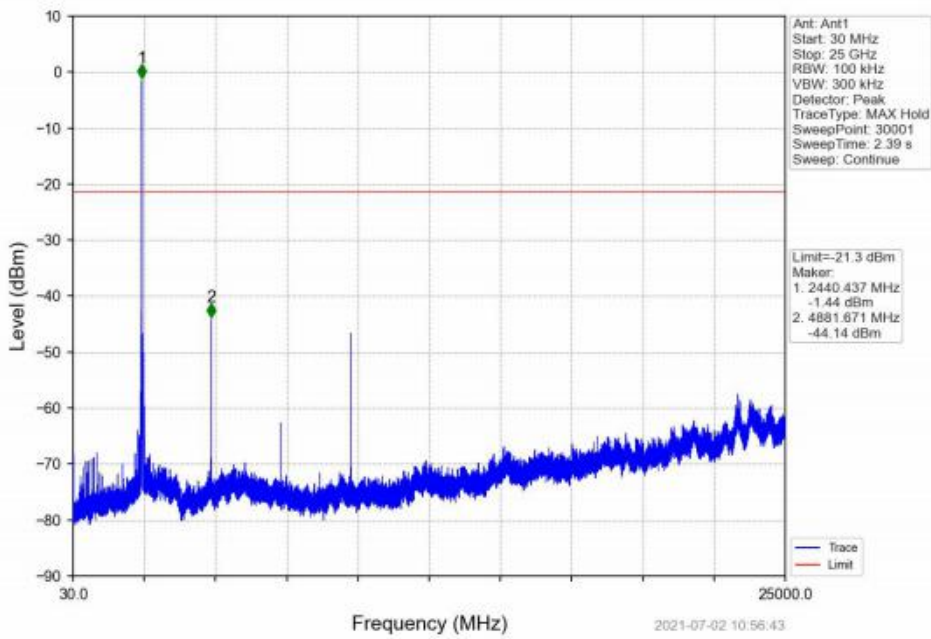
| ENV | Mode | TX Type | Frequency (MHz) | Packet Type | Ant | Level of Reference (dBm) | Limit (dBm) | Verdict |
|------|-----------|---------|-----------------|-------------|-----|--------------------------|-------------|---------|
| NTNV | GFSK | SISO | 2402 | DH5 | 1 | -44.98 | / | Pass |
| | | | 2441 | DH5 | 1 | -77.78 | -78.48 | Pass |
| | | | 2480 | DH5 | 1 | -45.37 | / | Pass |
| | | | HOPP | DH5 | 1 | -44.98 | / | Pass |
| | Pi/4DQPSK | SISO | 2402 | 2DH5 | 1 | -45.59 | / | Pass |
| | | | 2441 | 2DH5 | 1 | -78.83 | -78.82 | Pass |
| | | | 2480 | 2DH5 | 1 | -45.44 | / | Pass |
| | | | HOPP | 2DH5 | 1 | -46.60 | / | Pass |
| | 8DPSK | SISO | 2402 | 3DH5 | 1 | -45.53 | / | Pass |
| | | | 2441 | 3DH5 | 1 | -79.71 | -80.12 | Pass |
| | | | 2480 | 3DH5 | 1 | -45.42 | / | Pass |
| | | | HOPP | 3DH5 | 1 | -46.72 | / | 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.

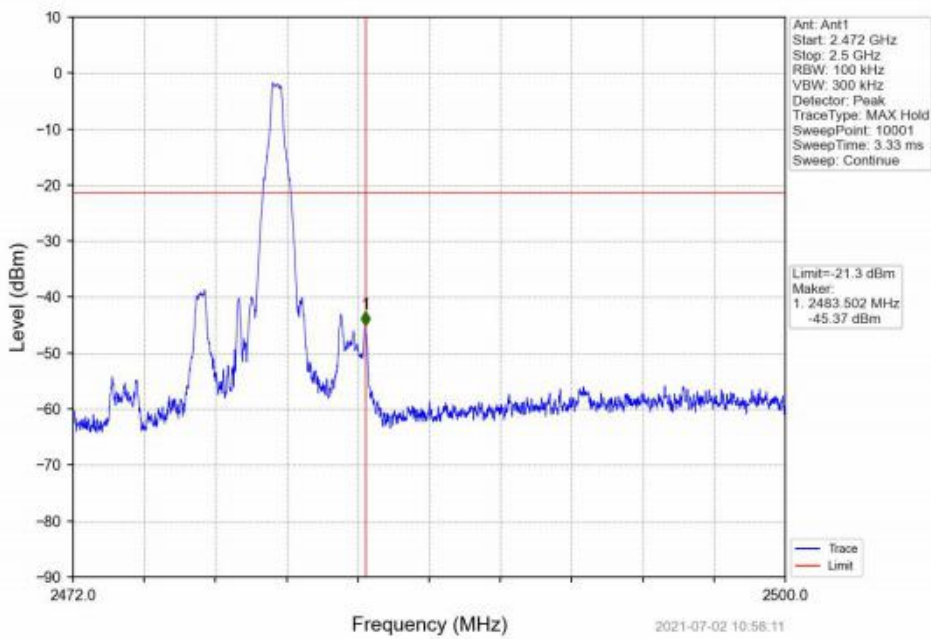
6.2.2 Test Graph

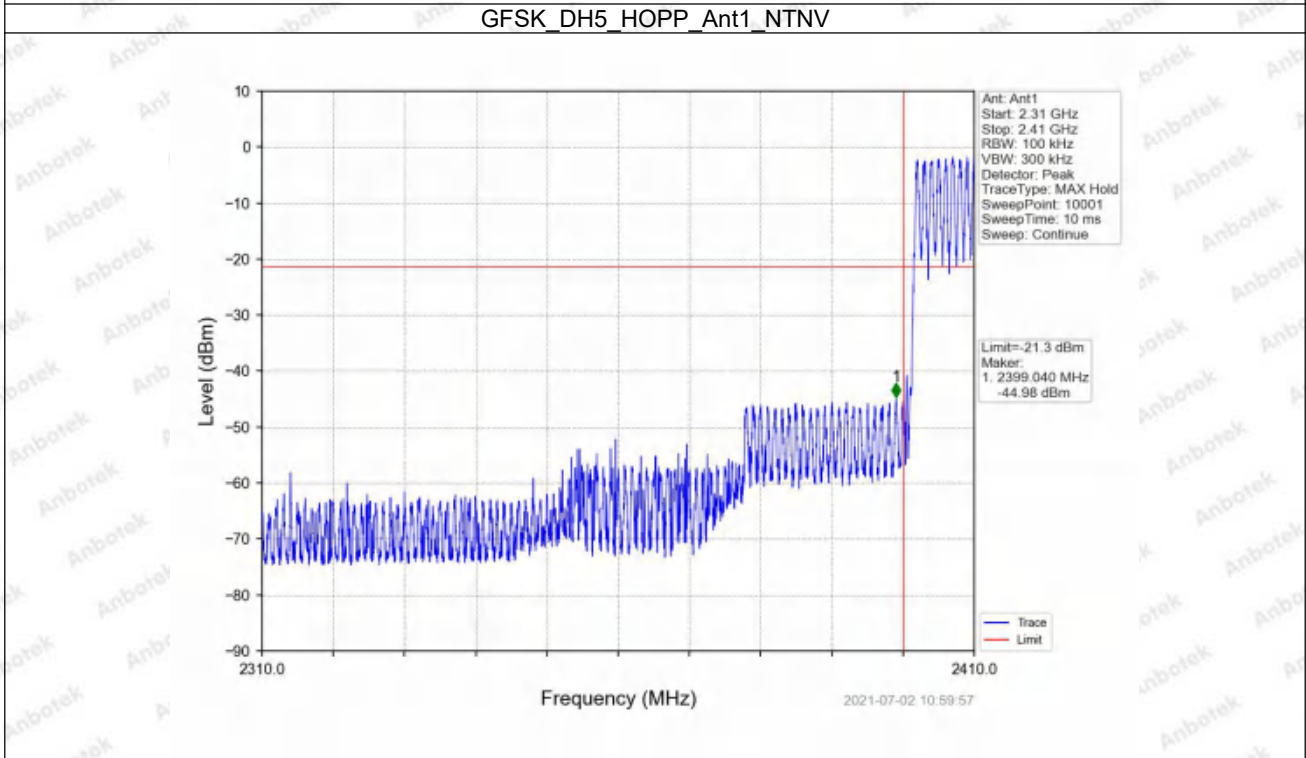
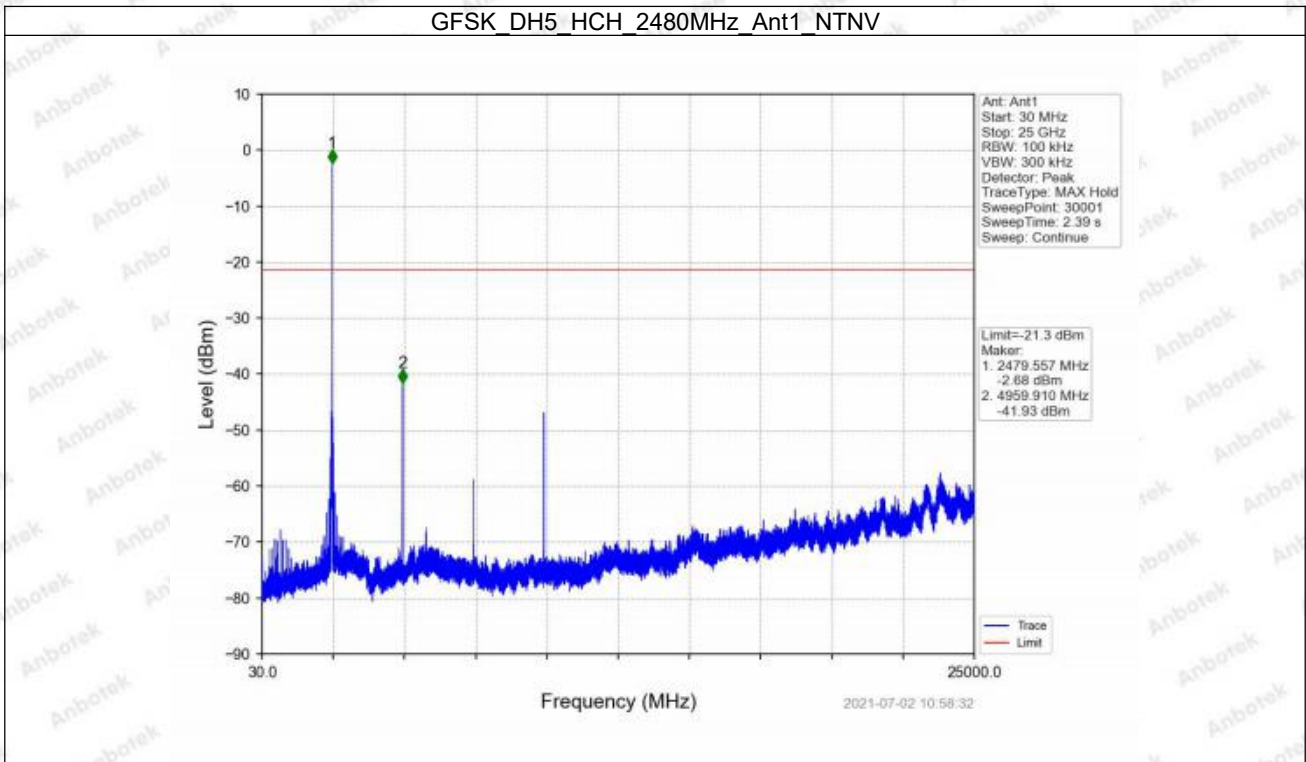


GFSK_DH5_MCH_2441MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



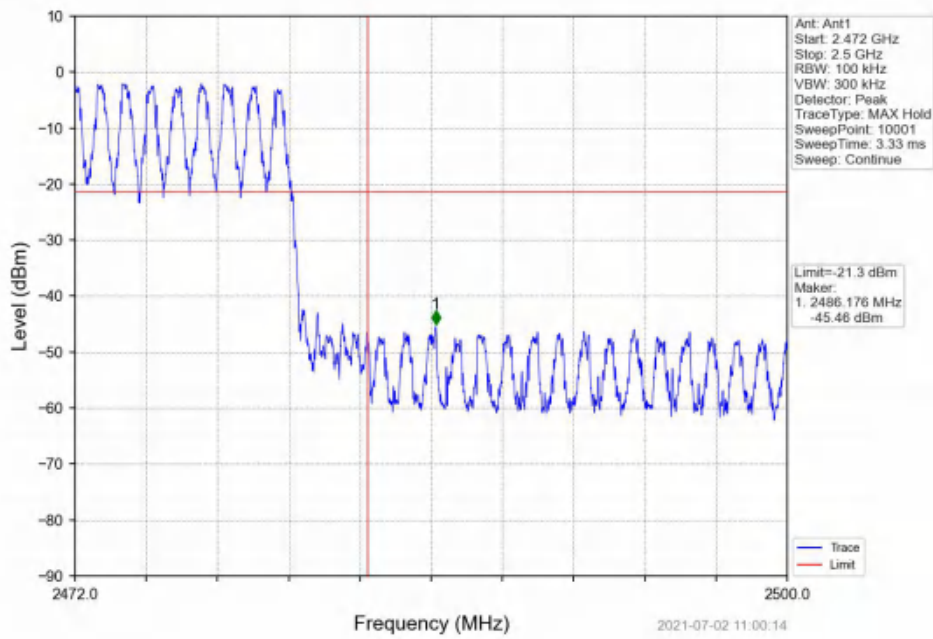


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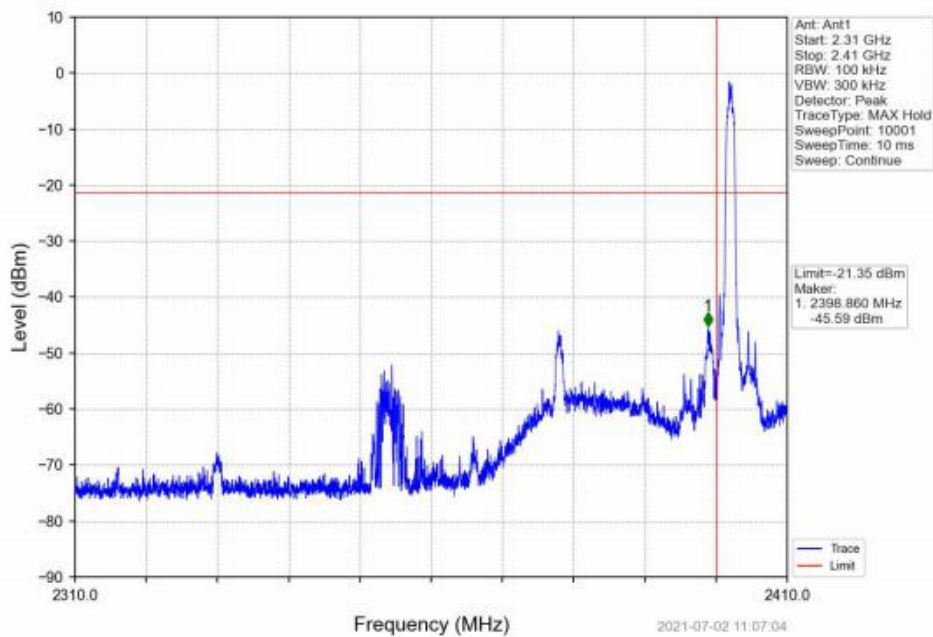
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PI/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



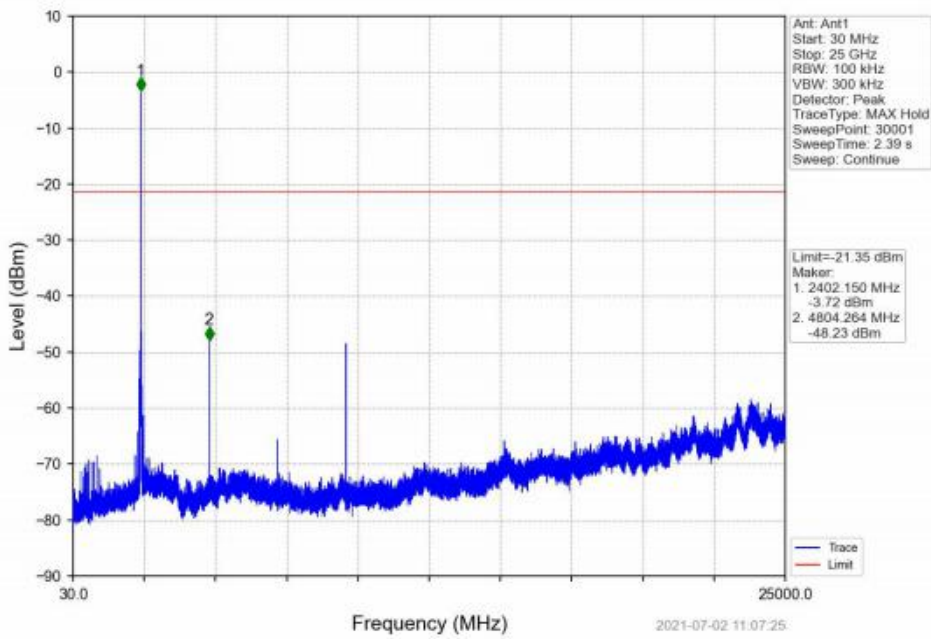
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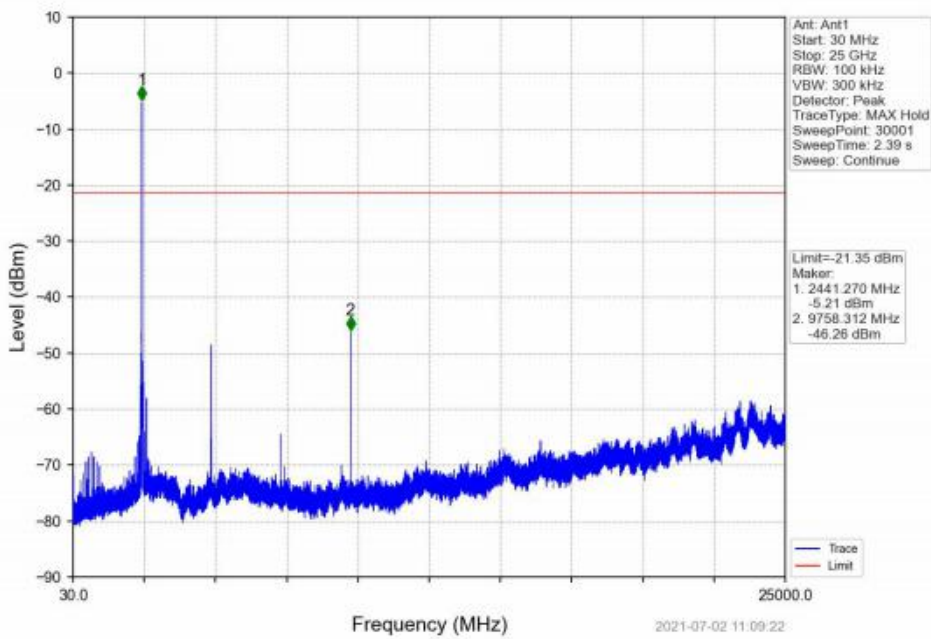
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Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



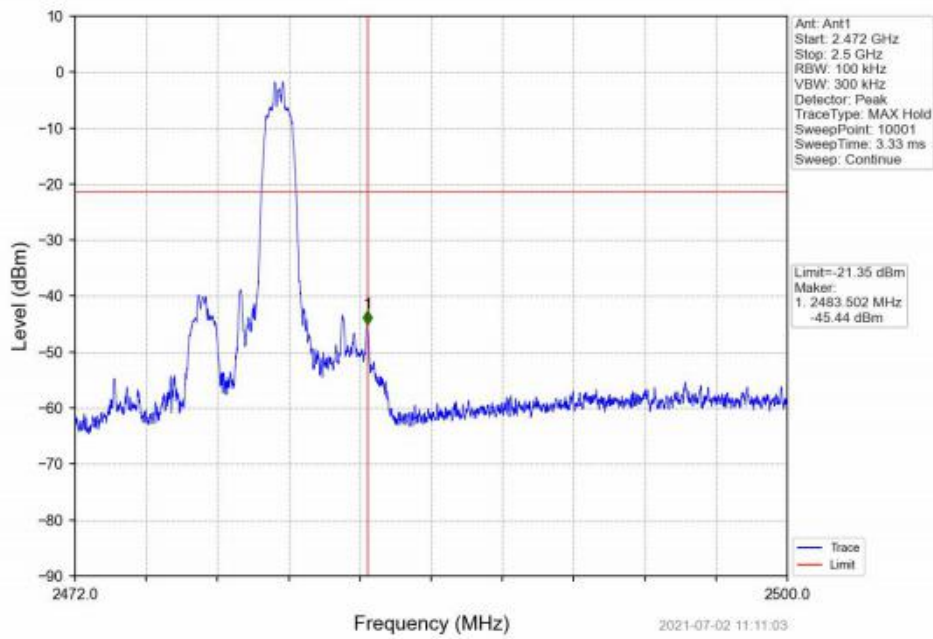
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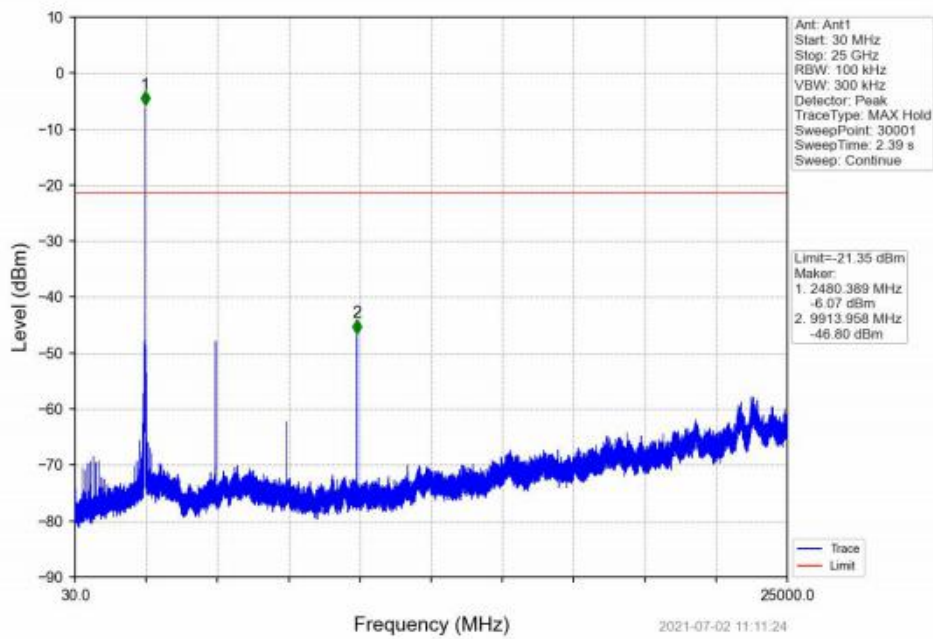
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Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



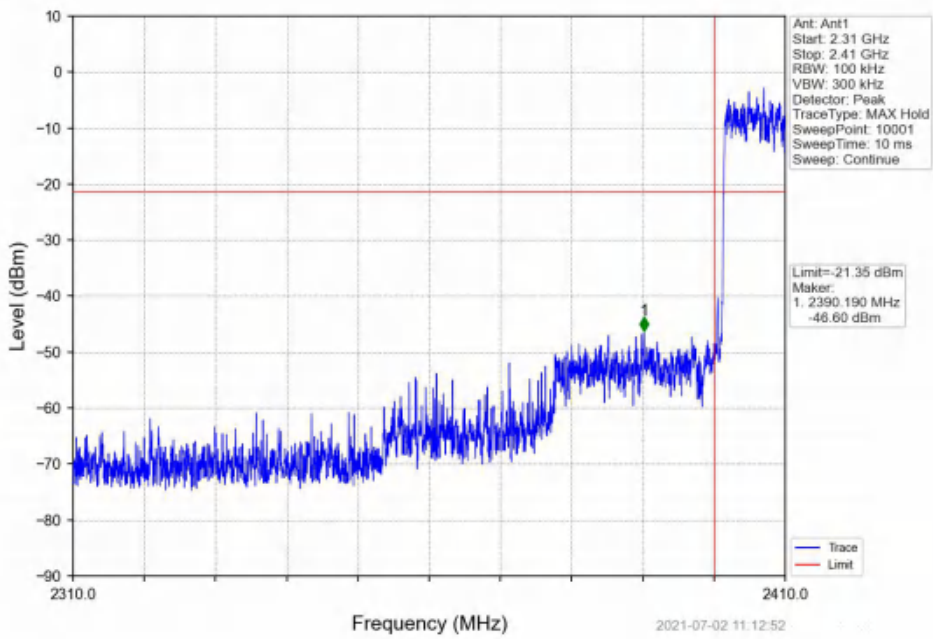
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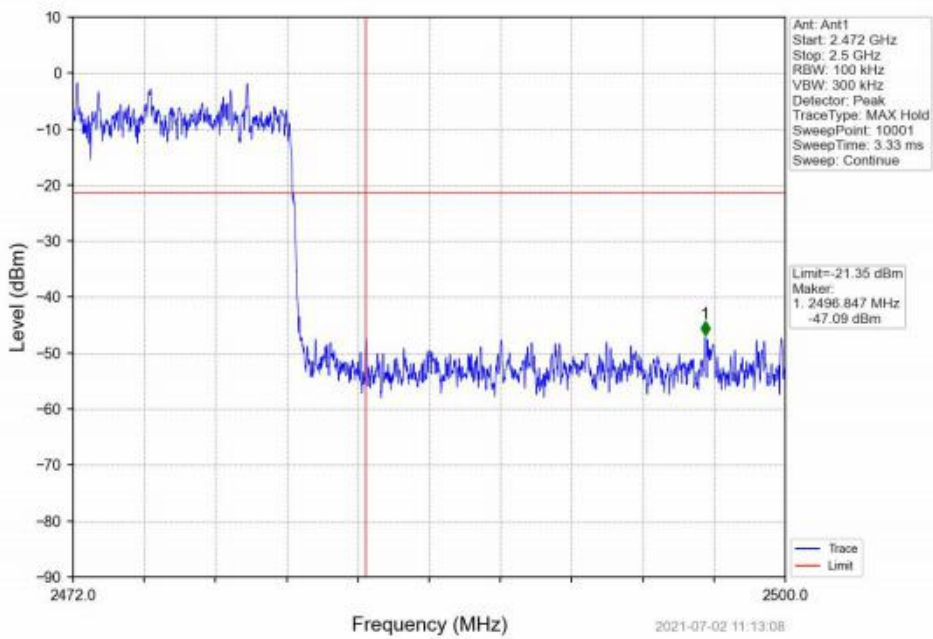
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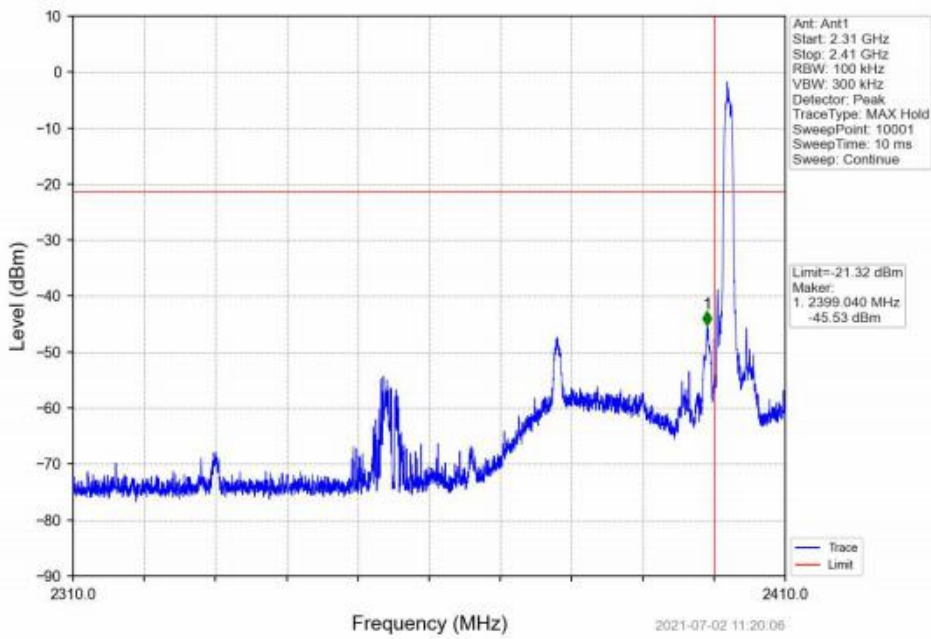
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



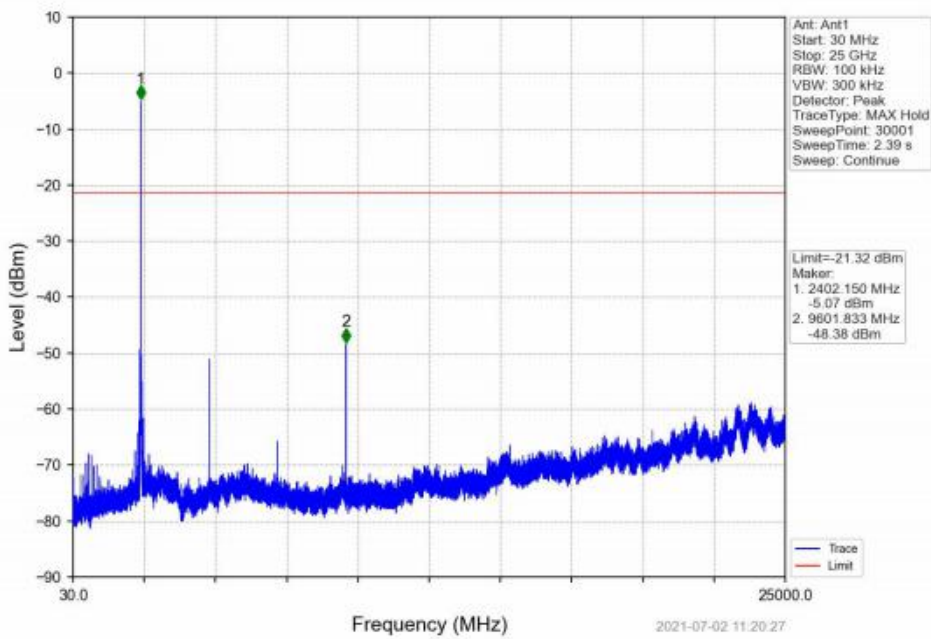
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

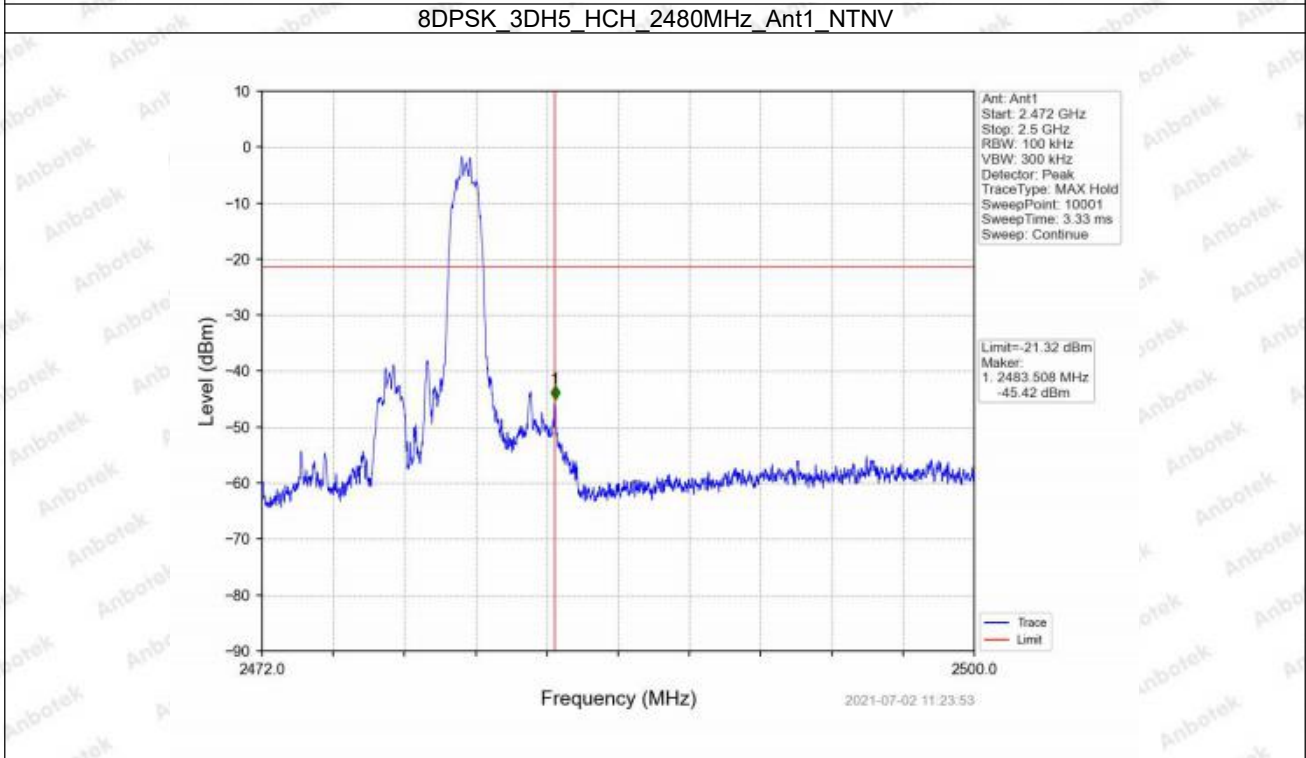
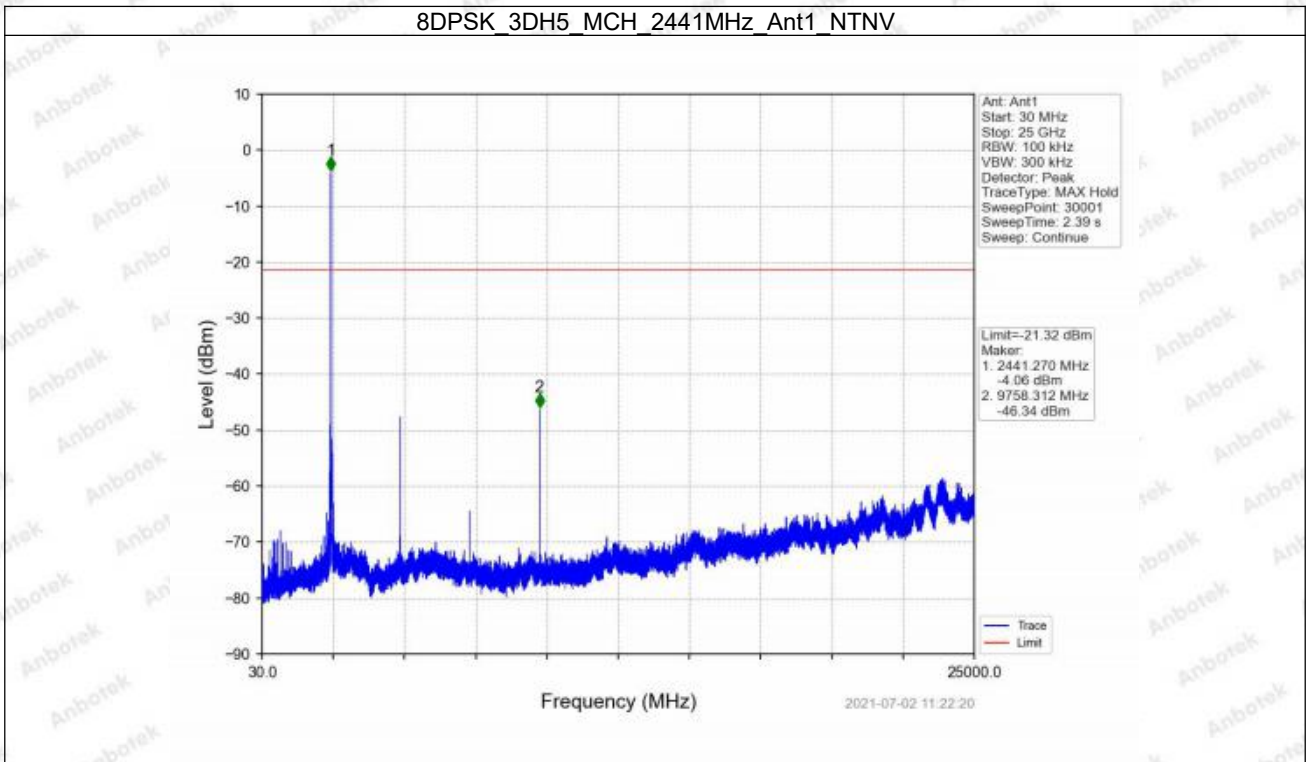


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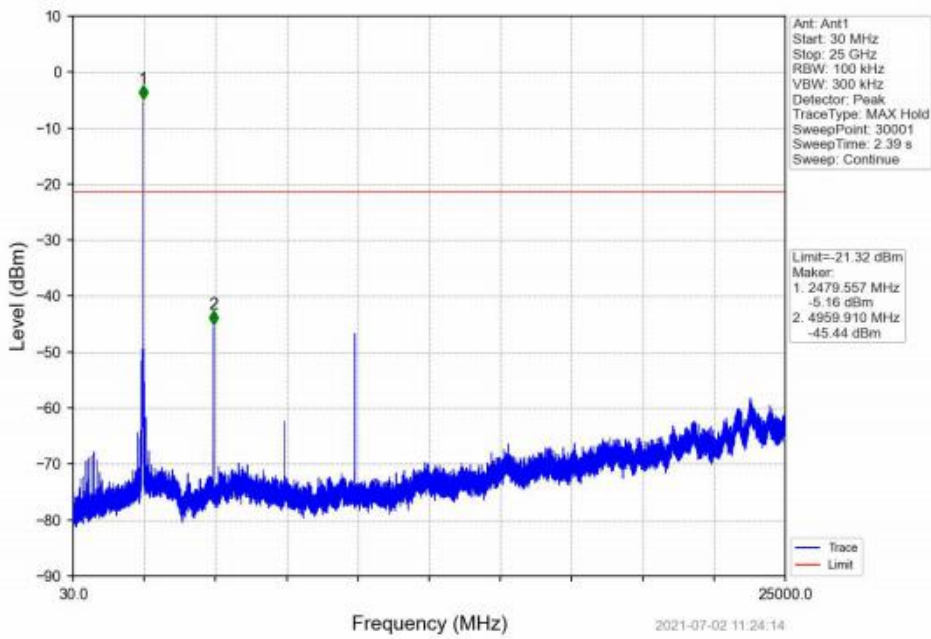


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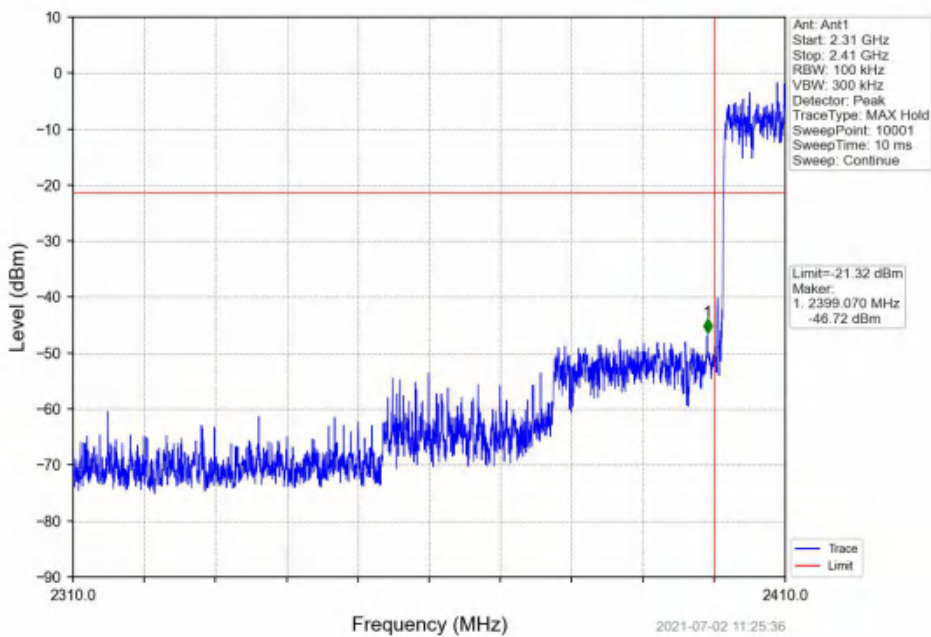
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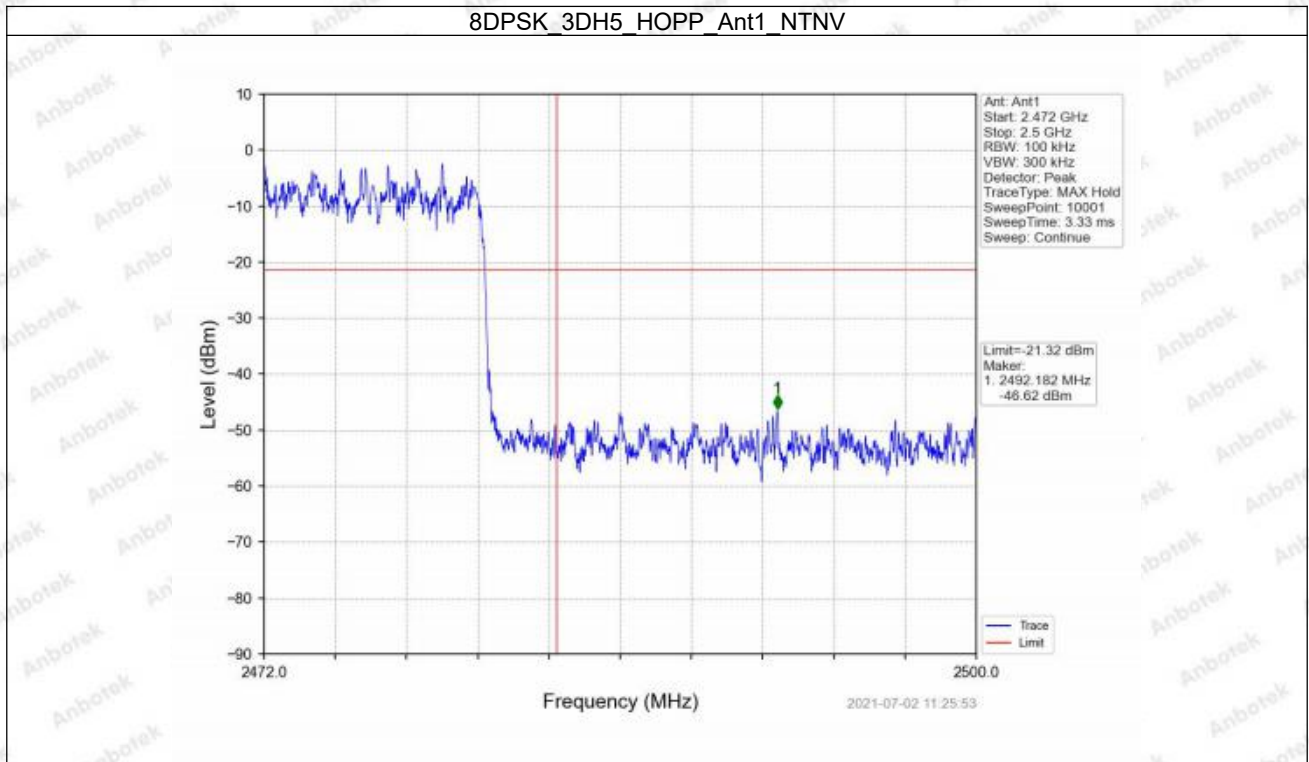


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