

# TEST REPORT

**Report No.:** 8432EU011601W1

**Applicant:** Guangzhou MUNBYN Information Technology Co., Ltd.

**Address:** Unit L3A01-4, No. 31-6, Xicha Road, Baiyun District,  
Guangzhou, Guangdong Province, China

**Product Name:** Portable Thermal Printer

**Model No.:** ITP06 (refer to clause 2.4)

**Trademark:** N/A

**Test Standard(s):** MIC Notice No.88 Appendix No.43  
Ordinance of MPT No.37, 1981:  
Article 2 paragraph 1 item (19)

**Test Result:** Pass

**Date of Receipt:** Jun. 16, 2026

**Test Date:** Jun. 17, 2026 – Jul. 24, 2026

**Date of Issue:** Aug. 11, 2026

**ISSUED BY:**

SHENZHEN EU TESTING LABORATORY LIMITED



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## 2 General Information

### 2.1 Applicant Information

|           |                                                                                           |
|-----------|-------------------------------------------------------------------------------------------|
| Applicant | Guangzhou MUNBYN Information Technology Co., Ltd.                                         |
| Address   | Unit L3A01-4, No. 31-6, Xicha Road, Baiyun District, Guangzhou, Guangdong Province, China |

### 2.2 Manufacturer Information

|              |                                                                                           |
|--------------|-------------------------------------------------------------------------------------------|
| Manufacturer | Guangzhou MUNBYN Information Technology Co., Ltd.                                         |
| Address      | Unit L3A01-4, No. 31-6, Xicha Road, Baiyun District, Guangzhou, Guangdong Province, China |

### 2.3 Factory Information

|         |                                                                                           |
|---------|-------------------------------------------------------------------------------------------|
| Factory | Guangzhou MUNBYN Information Technology Co., Ltd.                                         |
| Address | Unit L3A01-4, No. 31-6, Xicha Road, Baiyun District, Guangzhou, Guangdong Province, China |

### 2.4 General Description of E.U.T.

|                                      |                                                                                                                                                                                   |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name                         | Portable Thermal Printer                                                                                                                                                          |
| Model No. Under Test                 | ITP06                                                                                                                                                                             |
| List Model No.                       | ITP05, ITP05S, ITP06S, ITP07, ITP07S, ITP08, ITP08S, ITP09, ITP09S, ITP10, ITP10S, ITP11, ITP12, ITP13, ITP14, ITP15                                                              |
| Description of Model differentiation | All models are same with electrical parameters and internal circuit structure, but only differ in appearance color and model name.<br>(this information provided by the customer) |
| Rating(s)                            | Input: 5VDC, 2A<br>Battery Capacity: 7.4VDC, 2600mAh, 19.24Wh                                                                                                                     |
| Product Type                         | <input type="checkbox"/> Mobile<br><input checked="" type="checkbox"/> Portable<br><input type="checkbox"/> Fix Location                                                          |
| Test Sample No.                      | 8432EU011601W-1/2(Normal), 8432EU011601W-2/2(Engineering)                                                                                                                         |
| Hardware Version                     | LJ_A49_V100_V1.6 2024-01-10                                                                                                                                                       |
| Software Version                     | V1.3.34                                                                                                                                                                           |
| Remark                               | For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.                                                                 |

## 2.5 Technical Information of E.U.T.

|                                                                                               |                                                                                                                                        |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Network and Wireless Connectivity                                                             | Bluetooth (BDR+EDR+BLE)                                                                                                                |
| The requirement for the following technical information of the EUT was tested in this report: |                                                                                                                                        |
| Technology                                                                                    | <b>Bluetooth</b>                                                                                                                       |
| Operation Mode                                                                                | <input checked="" type="checkbox"/> BDR <input type="checkbox"/> EDR <input type="checkbox"/> BLE                                      |
| Modulation Type                                                                               | GFSK                                                                                                                                   |
| Operating Frequency                                                                           | 2402-2480MHz                                                                                                                           |
| Transfer Rate                                                                                 | 1 Mbps                                                                                                                                 |
| Number of Channel                                                                             | 79                                                                                                                                     |
| Antenna Type                                                                                  | PCB Antenna                                                                                                                            |
| Antenna Gain(Peak)                                                                            | -2.18 dBi                                                                                                                              |
| Antenna Impedance                                                                             | 50Ω                                                                                                                                    |
| Rated output Power                                                                            | 0.200 mW/MHz                                                                                                                           |
| Remark                                                                                        | The above information are declared by the applicant, EU-LAB is not responsible for the information accuracy provided by the applicant. |

All channels were listed on the following table:

| Channel Number | Freq. (MHz) | Channel Number | Freq. (MHz) | Channel Number | Freq. (MHz) | Channel Number | Freq. (MHz) |
|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|
| <b>00</b>      | <b>2402</b> | 21             | 2423        | 42             | 2444        | 63             | 2465        |
| 01             | 2403        | 22             | 2424        | 43             | 2445        | 64             | 2466        |
| 02             | 2404        | 23             | 2425        | 44             | 2446        | 65             | 2467        |
| 03             | 2405        | 24             | 2426        | 45             | 2447        | 66             | 2468        |
| 04             | 2406        | 25             | 2427        | 46             | 2448        | 67             | 2469        |
| 05             | 2407        | 26             | 2428        | 47             | 2449        | 68             | 2470        |
| 06             | 2408        | 27             | 2429        | 48             | 2450        | 69             | 2471        |
| 07             | 2409        | 28             | 2430        | 49             | 2451        | 70             | 2472        |
| 08             | 2410        | 29             | 2431        | 50             | 2452        | 71             | 2473        |
| 09             | 2411        | 30             | 2432        | 51             | 2453        | 72             | 2474        |
| 10             | 2412        | 31             | 2433        | 52             | 2454        | 73             | 2475        |
| 11             | 2413        | 32             | 2434        | 53             | 2455        | 74             | 2476        |
| 12             | 2414        | 33             | 2435        | 54             | 2456        | 75             | 2477        |
| 13             | 2415        | 34             | 2436        | 55             | 2457        | 76             | 2478        |
| 14             | 2416        | 35             | 2437        | 56             | 2458        | 77             | 2479        |
| 15             | 2417        | 36             | 2438        | 57             | 2459        | <b>78</b>      | <b>2480</b> |
| 16             | 2418        | 37             | 2439        | 58             | 2460        | -              | -           |
| 17             | 2419        | 38             | 2440        | 59             | 2461        | -              | -           |
| 18             | 2420        | <b>39</b>      | <b>2441</b> | 60             | 2462        | -              | -           |
| 19             | 2421        | 40             | 2442        | 61             | 2463        | -              | -           |
| 20             | 2422        | 41             | 2443        | 62             | 2464        | -              | -           |

### 3 Test Summary

#### 3.1 Test Standard

The tests were performed according to following standards:

| No. | Identity                                                                                            | Document Title                                          |
|-----|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 1   | MIC Notice No.88 Appendix No.43<br>Ordinance of MPT No.37, 1981:<br>Article 2 paragraph 1 item (19) | Low power data communications system in the 2.4GHz band |

Remark:

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission should be checked to ensure compliance has been maintained.

#### 3.2 Test Verdict

| No. | Description                                               | Test Mode | Data Rate (Mbps) | Verdict    | Remark            |
|-----|-----------------------------------------------------------|-----------|------------------|------------|-------------------|
| 1   | Frequency Tolerance                                       | GFSK      | 1                | Pass       | --                |
| 2   | Occupied Bandwidth and Spread-spectrum Bandwidth / Factor | GFSK      | 1                | Pass       | --                |
| 3   | Antenna power                                             | GFSK      | 1                | Pass       | --                |
| 4   | EIRP Antenna Power                                        | GFSK      | 1                | N/A        | Note <sup>2</sup> |
| 5   | Dwell Time                                                | GFSK      | 1                | Pass       | --                |
| 6   | Spurious Emission Intensity                               | GFSK      | 1                | Pass       | --                |
| 7   | Secondary Radiated Emission                               | GFSK      | 1                | Pass       | --                |
| 8   | Spurious Emissions                                        | GFSK      | 1                | Pass       | --                |
| 9   | Interference prevention function                          | GFSK      | 1                | Pass       | --                |
| 10  | Transmission Radiated Angle Width (3dB Beam Bandwidth)    | GFSK      | 1                | N/A        | Note <sup>3</sup> |
| 11  | Construction Protection Confirmation                      | GFSK      | 1                | Compliance | --                |

Note 1: The tests were performed according to the method of measurements prescribed in MIC Notice No.88 Appendix No.43.

Note 2: Application to transmitting devices which E.I.R.P. is less than (2.14dBi+antenna power limit) and the shortage of E.I.R.P. is compensated by the antenna power.

Note 3: It is unnecessary to testing, when a E.I.R.P. is less than the variable E.I.R.P. limit of minimum (DSSS: 12.14dBm/MHz) or less, FHSS (2427-2470.75 MHz): 6.91dBm/MHz or less, etc.)

#### 3.3 Test Laboratory

|                 |                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------|
| Test Laboratory | Shenzhen EU Testing Laboratory Limited                                                                                 |
| Address         | 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China |

## 4 Test Configuration

### 4.1 Test Environment

During the measurement, the normal environmental conditions were within the listed ranges:

|                            |                         |         |
|----------------------------|-------------------------|---------|
| Relative Humidity          | 54 %                    |         |
| Atmospheric Pressure       | 102 kPa                 |         |
| Temperature                | NT (Normal Temperature) | 22°C    |
| Working Voltage of the EUT | NV (Normal Voltage)     | 7.40VDC |
|                            | LV (Low Voltage)        | 6.66VDC |
|                            | HV (High Voltage)       | 8.14VDC |

#### Power Supply Voltage Fluctuation Test

| Voltage Fluctuation Test | Normal Voltage | High Voltage +10% of Normal Voltage | Low Voltage -10% of Normal Voltage |
|--------------------------|----------------|-------------------------------------|------------------------------------|
| Input To EUT             | 7.40VDC        | 8.14VDC                             | 6.66VDC                            |
| Output To RF Module      | 3.3VDC         | 3.3VDC                              | 3.3VDC                             |
| Voltage Variation (%)    | --             | 0.00%                               | 0.00%                              |

Note:

Voltage Variation (%)=(Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage\* 100%  
For extreme voltage test, we have tested the relationship between the external power supply and RF IC power supply. Base on the test results, only the normal voltage was selected to perform all items.

## 4.2 Test Equipment

| Radiated Emission and RF Test                                                                                                                                                                                                                          |                 |              |           |            |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|-----------|------------|--------------|
| Equipment                                                                                                                                                                                                                                              | Manufacturer    | Model No     | Serial No | Cal Date   | Cal Due Date |
| EMI Test Receiver                                                                                                                                                                                                                                      | ROHDE & SCHWARZ | ESPI         | EE-006    | 2026-04-08 | 2027-04-07   |
| Bilog Broadband Antenna                                                                                                                                                                                                                                | SCHWARZBECK     | VULB 9163    | EE-007    | 2026-04-12 | 2027-04-11   |
| Double Ridged Horn Antenna                                                                                                                                                                                                                             | A-INFOMW        | LB-10180-NF  | EE-008    | 2026-04-12 | 2027-04-11   |
| Pre-amplifier                                                                                                                                                                                                                                          | Agilent         | 8447D        | EE-009    | 2026-04-08 | 2027-04-07   |
| Pre-amplifier                                                                                                                                                                                                                                          | Agilent         | 8449B        | EE-010    | 2026-04-07 | 2027-04-06   |
| MXA Signal Analyzer                                                                                                                                                                                                                                    | Agilent         | N9020A       | EE-011    | 2026-04-07 | 2027-04-06   |
| MXG RF Vector Signal Generator                                                                                                                                                                                                                         | Agilent         | N5182A       | EE-012    | 2026-04-07 | 2027-04-06   |
| Test Software                                                                                                                                                                                                                                          | Farad           | EZ-EMC       | EE-015    | /          | /            |
| MIMO Power Measurement Module                                                                                                                                                                                                                          | TSTPASS         | TSPS 2023R   | EE-016    | 2026-04-11 | 2027-04-10   |
| RF Test Software                                                                                                                                                                                                                                       | TSTPASS         | TS32893 V2.0 | EE-017    | /          | /            |
| Wideband Radio Communication Tester                                                                                                                                                                                                                    | ROHDE & SCHWARZ | CMW500       | EE-402    | 2026-02-13 | 2027-02-12   |
| Loop Antenna                                                                                                                                                                                                                                           | TESEQ           | HLA6121      | EE-403    | 2026-02-13 | 2027-02-12   |
| MXG RF Analog Signal Generator                                                                                                                                                                                                                         | Agilent         | N5181A       | EE-406    | 2026-02-13 | 2027-02-12   |
| Constant Temperature Humidity Chamber                                                                                                                                                                                                                  | Guangxin        | GXP-401      | ES-002    | 2025-07-29 | 2026-07-28   |
| Power Sensor                                                                                                                                                                                                                                           | ROHDE&SCHWA RZN | NRP18S       | ES-052    | 2026-02-13 | 2027-02-12   |
| DC Power Source                                                                                                                                                                                                                                        | QJE             | QJ3020E      | ES-037    | 2025-07-29 | 2026-07-28   |
| Note <sup>1</sup> : Calibration Company: Shenzhen Academy Of Metrology& Quality inspection.                                                                                                                                                            |                 |              |           |            |              |
| Note <sup>2</sup> : Calibration method: Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 and Article 24-2, Paragraph 4 of the Radio Act. |                 |              |           |            |              |

## 4.3 Description of Support Unit

| No. | Title | Manufacturer | Model No. | Serial No. |
|-----|-------|--------------|-----------|------------|
| 1   | --    | --           | --        | --         |

#### 4.4 Measurement Uncertainty

| Parameters                      | Uncertainty                        |
|---------------------------------|------------------------------------|
| Frequency Error / 99% Bandwidth | $(3.2 \times f \times 10^{-6})$ Hz |
| Antenna Power                   | 1.82 dB                            |
| Dwell Time                      | 1.8 %                              |
| TX-RX Spurious Emissions        | 1.84 dB                            |
| Transmission Antenna Gain       | 5.36 dB                            |
| Temperature                     | 0.82 °C                            |
| Humidity                        | 4.1%                               |
| DC / AC Power Source            | 0.04%                              |

Noet: "f" is the nominal signal frequency in Hz.

Note: This uncertainty represents as expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 5 Test Items

### 5.1 Frequency Tolerance Test

#### 5.1.1 Test Requirement

| Item                | Limits            |
|---------------------|-------------------|
| Frequency Tolerance | $\leq \pm 50$ ppm |

#### 5.1.2 Test Setup Diagram



#### 5.1.3 Test Procedure

1. Test Frequency= test channel  
RBW=VBW=100KHz  
Span=2MHz  
Sweep time=Auto  
Detector mode=Positive peak  
Indication mode=Max hold
2. EUT have transmitted unmodulated signal and fixed channelize. f is using the mark cursor to mark the peak frequency value, fc is declaring of channel frequency.

#### 5.1.4 Test Deviation

There is no deviation with the original standard.

#### 5.1.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, carrier mode.

#### 5.1.6 Test Data

PASS.

Please refer to Annex D for details.

## 5.2 Occupied Bandwidth and Spread-spectrum Bandwidth / Factor

### 5.2.1 Test Requirement

| Item                | Limits                                                                         |
|---------------------|--------------------------------------------------------------------------------|
| Occupied Band Width | FHSS $\leq$ 83.5MHz; OFDM $\leq$ 40MHz, DSSS $\leq$ 26MHz; Others $\leq$ 26MHz |

### 5.2.2 Test Setup Diagram



### 5.2.3 Test Procedure

- Set the spectrum analyzer as follows:  
Center frequency: Test frequency  
Span: Approximately 2 to 3.5 times nominal bandwidth  
Resolution bandwidth: Within 3% of the technical standard  
Video bandwidth: equivalent to resolvable bandwidth  
Sweep time: auto  
Sweep mode: Continuous sweep  
Detection: Positive peak  
Trace mode: Maximum hold
- After repeating sweeps until the display shows steady data, store the values at all data points into the computer array variables.
- Convert the dB values at all data points to antilogarithm on the power dimension.
- Obtain sum total of the power at all data points, and store it as "total power".
- Accumulate the power at each data point sequentially upward from the lowest frequency and obtain the limit data point where the accumulated power becomes 0.5% (5% for spreading bandwidth) of the "total power". Then convert the limit data point into frequency and store it as "lower limit frequency".
- Accumulate the power at each data point sequentially downward from the highest frequency and obtain the limit data point where the accumulated power becomes 0.5% (5% for spreading bandwidth) of the "total power". Then convert the limit data point into frequency and store it as "upper limit frequency".
- Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.

### 5.2.4 Test Deviation

There is no deviation with the original standard.

### 5.2.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.2.6 Test Data

PASS.

Please refer to Annex D for details.

### 5.3 Antenna Power Test

#### 5.3.1 Test Requirement

| Item                  | Limits                                                                                                                                                                                                                                                                                                          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antenna Power Density | a) FH, FH+DS, or FH+OFDM form 2427 - 2470.75 MHz: $\leq 3$ mW/MHz<br>b) DS but other than a) from 2400~2483.5 MHz: $\leq 10$ mW/MHz<br>c) OFDM, but other than a): For OCB of 26MHz or less: $\leq 10$ mW/MHz<br>For OCB of over 26 MHz to 40 MHz: $\leq 5$ mW/MHz<br>d) Other than a), b) and c): $\leq 10$ mW |
| Antenna Power Error   | +20% (Base on manufacturer declare antenna power density)                                                                                                                                                                                                                                                       |
| EIRP Power            | 6.91 dBm/MHz                                                                                                                                                                                                                                                                                                    |

#### 5.3.2 Test Setup Diagram



#### 5.3.3 Test Procedure

1. Measure the total power by the Power Meter in a state of hopping mode.
2. Calculate the mean power per 1MHz by dividing the reading level by spread bandwidth.  
 Output power Density (mW/MHz) = Total power (mW) / spread bandwidth (MHz)

#### 5.3.4 Test Deviation

There is no deviation with the original standard.

#### 5.3.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

#### 5.3.6 Test Data

PASS.

Please refer to Annex D for details.

## 5.4 Dwell Time

### 5.4.1 Test Requirement

| Item       | Limits                                                                                                                                                                                                                                                                                                |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dwell Time | For the radio equipment that uses the frequency hopping method excluding a combination of the spread spectrum method and OFDM, the total sum of the frequency retention time in any frequency within the time obtained by multiplying the diffusion rate by 0.4 second shall be 0.4 second or shorter |

### 5.4.2 Test Setup Diagram



### 5.4.3 Test Procedure

| Spectrum Parameter | Setting    |
|--------------------|------------|
| Attenuation        | Auto       |
| Span Frequency     | 0 MHz      |
| RBW&VBW            | 1 MHz      |
|                    | 1 MHz      |
| Detector           | Peak       |
| Trace              | Max Hold   |
| Sweep              | Continuous |

- The transmitter output (antenna port) was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse
- Dwell time = [spreading rate/79 x duty-cycle x 0.4 seconds. (to be determined for each mode DH1, DH3, DH5)]

### 5.4.4 Test Deviation

There is no deviation with the original standard.

### 5.4.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.4.6 Test Data

PASS.

Please refer to Annex D for details.

## 5.5 Spurious Emissions Intensity Test

### 5.5.1 Test Requirement

| Item                 | Limits                                                                                                                 |
|----------------------|------------------------------------------------------------------------------------------------------------------------|
| TX Spurious Emission | $\leq 2.5\mu\text{W}$ ( $2387\text{MHz} > f$ ; $2496.5\text{MHz} < f$ )                                                |
|                      | $\leq 25\mu\text{W}$ ( $2387\text{MHz} \leq f < 2400\text{MHz}$ ) and ( $2483.5\text{MHz} < f \leq 2496.5\text{MHz}$ ) |

### 5.5.2 Test Setup Diagram



### 5.5.3 Test Procedure

| Spectrum Parameter | Setting                  |
|--------------------|--------------------------|
| Attenuation        | Auto                     |
| RBW&VBW            | 30-1000 MHz: 1 MHz/1 MHz |
|                    | Above 1GHz: 1 MHz/1 MHz  |
| Detector           | Peak                     |
| Trace              | Max Hold                 |
| Sweep              | Auto                     |

1. The EUT is placed in transmit mode at maximum power/modulation at a fixed channel.
2. Setting of SA is following as: RBW/VBW = 1MHz; / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. Setting of SA is following as 30 MHz and stop frequency 2387 MHz Then to mark peak reading value + cable loss shall be less than 2.5  $\mu\text{W}$
4. SA adjusted to start frequency 2387 MHz and stop frequency 2400 MHz. Then to mark peak reading value + cable loss shall be less than 25  $\mu\text{W}$ .
5. SA adjusted to start frequency 2483.5 MHz and stop frequency 2496.5 MHz Then to mark peak reading value + cable loss shall be less than 25  $\mu\text{W}$
6. SA adjusted to start frequency 2496.5 MHz and stop frequency 12500 MHz Then to mark peak reading value + cable loss shall be less than 2.5  $\mu\text{W}$
7. If the Result\_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result\_Value.

### 5.5.4 Test Deviation

There is no deviation with the original standard.

### 5.5.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.5.6 Test Data

PASS.

Please refer to Annex D for details.

## 5.6 Secondary Radiated Emissions Test

### 5.6.1 Test Requirement

| Item                 | Limits                                      |
|----------------------|---------------------------------------------|
| RX Spurious Emission | $\leq 4\text{nW}$ ( $f < 1\text{GHz}$ )     |
|                      | $\leq 20\text{nW}$ ( $1\text{GHz} \leq f$ ) |

### 5.6.2 Test Setup Diagram



### 5.6.3 Test Procedure

| Spectrum Parameter | Setting                    |
|--------------------|----------------------------|
| Attenuation        | Auto                       |
| RBW&VBW            | 30-1000 MHz: 100KHz/100KHz |
|                    | Above 1GHz: 1 MHz/1 MHz    |
| Detector           | Peak                       |
| Trace              | Max Hold                   |
| Sweep              | Auto                       |

1. The EUT is placed in Rx mode and set to a fixed channel.
2. Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) / AT:10 dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
3. SA set RB: 100 kHz and VB: 100 kHz. Then adjust to start frequency 30 MHz and stop frequency 1000 MHz. Search to mark peak reading value + cable loss shall be less than 4 nW
4. SA set RB: 1 MHz and VB: 1 MHz. Then adjust to start frequency 1000 MHz and stop frequency 12500 MHz. Search to mark peak reading value + cable loss shall be less than 20 nW
5. If power level of lower emissions are more than 1/10 of limit (0.4nW for  $f < 1\text{GHz}$ , 2 nW for  $f \geq 1\text{GHz}$ ), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated

### 5.6.4 Test Deviation

There is no deviation with the original standard.

### 5.6.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.6.6 Test Data

PASS.

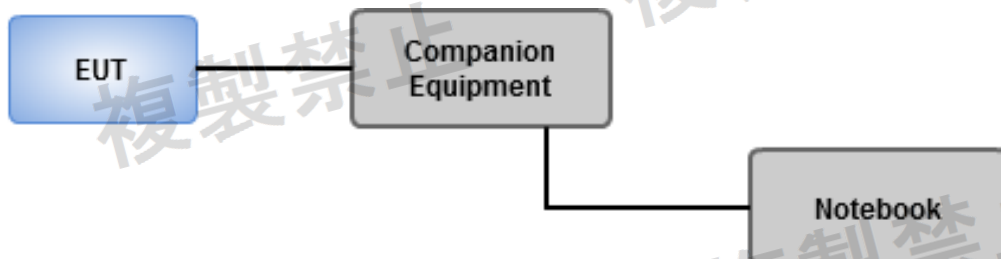
Please refer to Annex D for details.

## 5.7 Interference Prevention Function

### 5.7.1 Test Requirement

| Item           | Limits    |
|----------------|-----------|
| Identification | ≥ 48 bits |

### 5.7.2 Test Setup Diagram



### 5.7.3 Test Procedure

- In the case that the EUT has the function of automatically transmitting the identification code:
  - Transmit the predetermined identification codes from EUT.
  - Check the transmitted identification codes with the demodulator.
- In the case of receiving the identification code:
  - Transmit the predetermined identification codes from the counterpart.
  - Check if communication is normal.
  - Transmit the signals other than predetermined ID codes from the counterpart.
  - check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

### 5.7.4 Test Deviation

There is no deviation with the original standard.

### 5.7.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.7.6 Test Data

PASS.

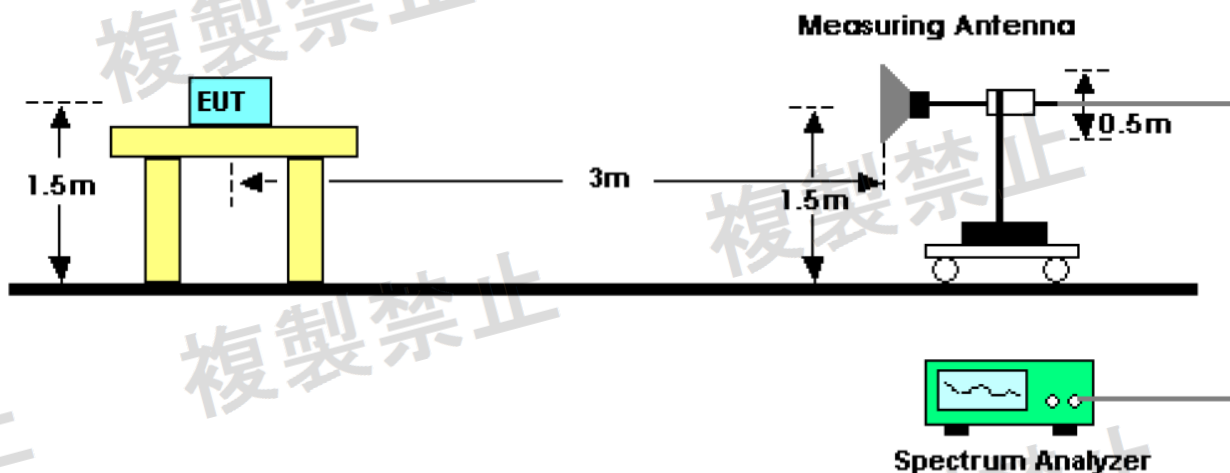
| Mode | ID Code           | Test Results |
|------|-------------------|--------------|
| BT   | 64:B7:23:9A:C3:51 | Pass         |

## 5.8 Transmission Radiation Angle Width (3dB Beamwidth) Measurement

### 5.8.1 Test Requirement

| Item                                                                                                      | Limits                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3dB antenna beam width                                                                                    | $360/A$ (If $A < 1$ ; then $A = 1$ ) $A = \{ \text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM} \}$ or $A = \{ \text{EIRP Power [mW]} / 4.9 \text{ for FH} \}$ |
| Note: This test item will not be applied to the transmission antenna which has a gain of 2.14dBi or less. |                                                                                                                                                                 |

### 5.8.2 Test Setup Diagram



### 5.8.3 Test Procedure

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with RBW=1 MHz, VBW=1 KHz, Y scale=5 dB, Detector=Peak, Trace mode=Max Hold, and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within  $\pm 50\text{cm}$  of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E".
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below  $360/A$  (If  $A < 1$ ; then  $A = 1$ ).  $A = \{ \text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM} \}$  or  $A = \{ \text{EIRP Power [mW]} / 4.9 \text{ for FH} \}$

### 5.8.4 Test Deviation

There is no deviation with the original standard.

### 5.8.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-hopping mode.

### 5.8.6 Test Data

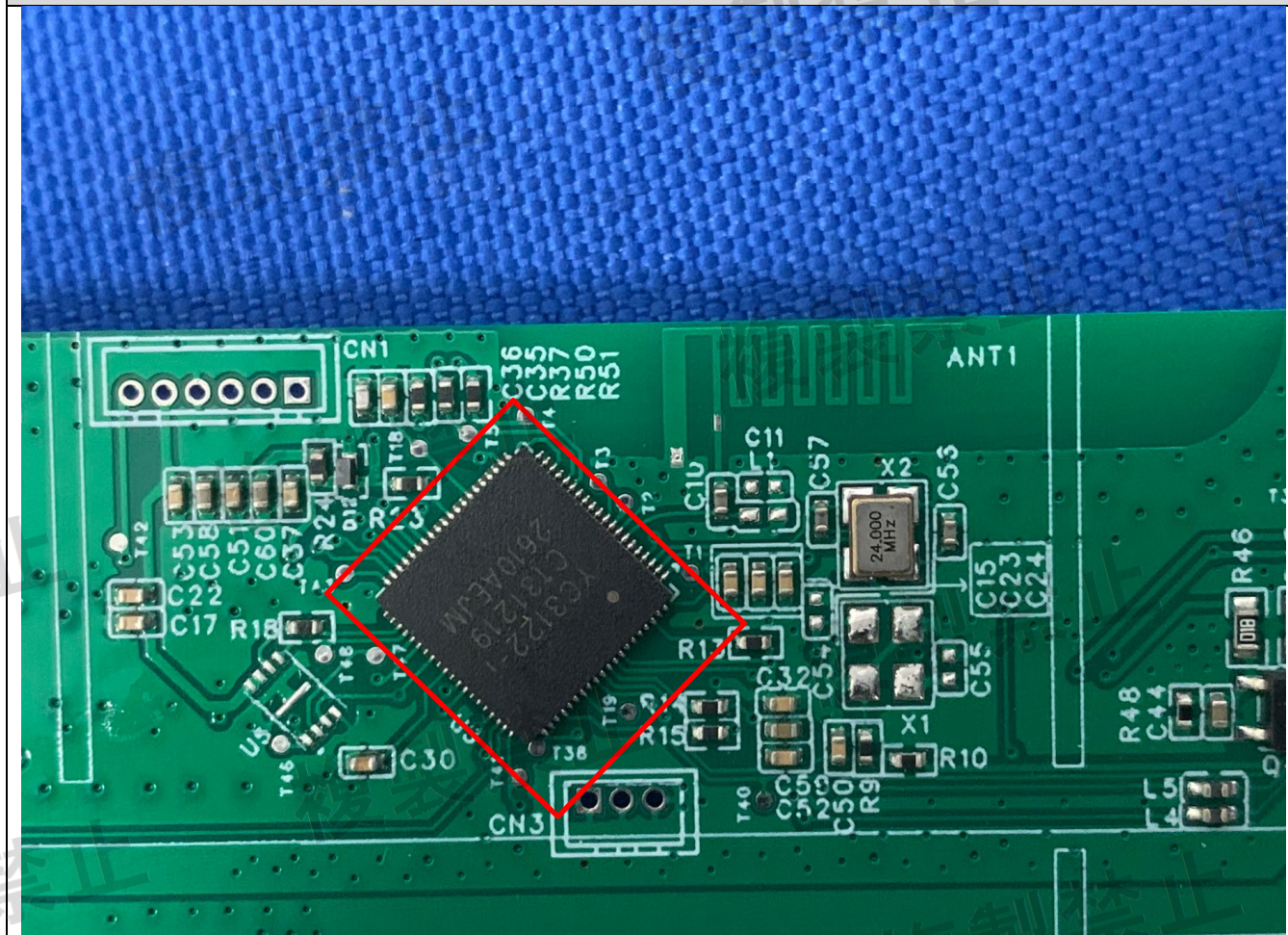
Note: Because the EIRP is less than 6.91dBm/MHz, this item is not applicable.

## 5.9 Construction Protection Confirmation Method

The RF and modulation portions are protected against illegal modification as following method:

| Protected Method     | Description                                                                              |
|----------------------|------------------------------------------------------------------------------------------|
| Structure protection | The terminal number is 81 terminal pitch is 1mm. it can't be easily opened and modified. |

### Reference Photo



## ANNEX A TEST SETUP PHOTOS

Please refer to the document "8432EU011601W1-AA.PDF"

## ANNEX B EXTERNAL PHOTOS

Please refer to the document "8432EU011601W1-AB.PDF"

## ANNEX C INTERNAL PHOTOS

Please refer to the document "8432EU011601W1-AC.PDF"

## ANNEX D TEST DATA

### Test Summary

| Item                        | Result |
|-----------------------------|--------|
| Frequency Error             | Pass   |
| Occupied Bandwidth          | Pass   |
| Antenna Power               | Pass   |
| Dwell Time                  | Pass   |
| Spurious Emission Intensity | Pass   |
| Secondary Radiated Emission | Pass   |

1. Frequency Error

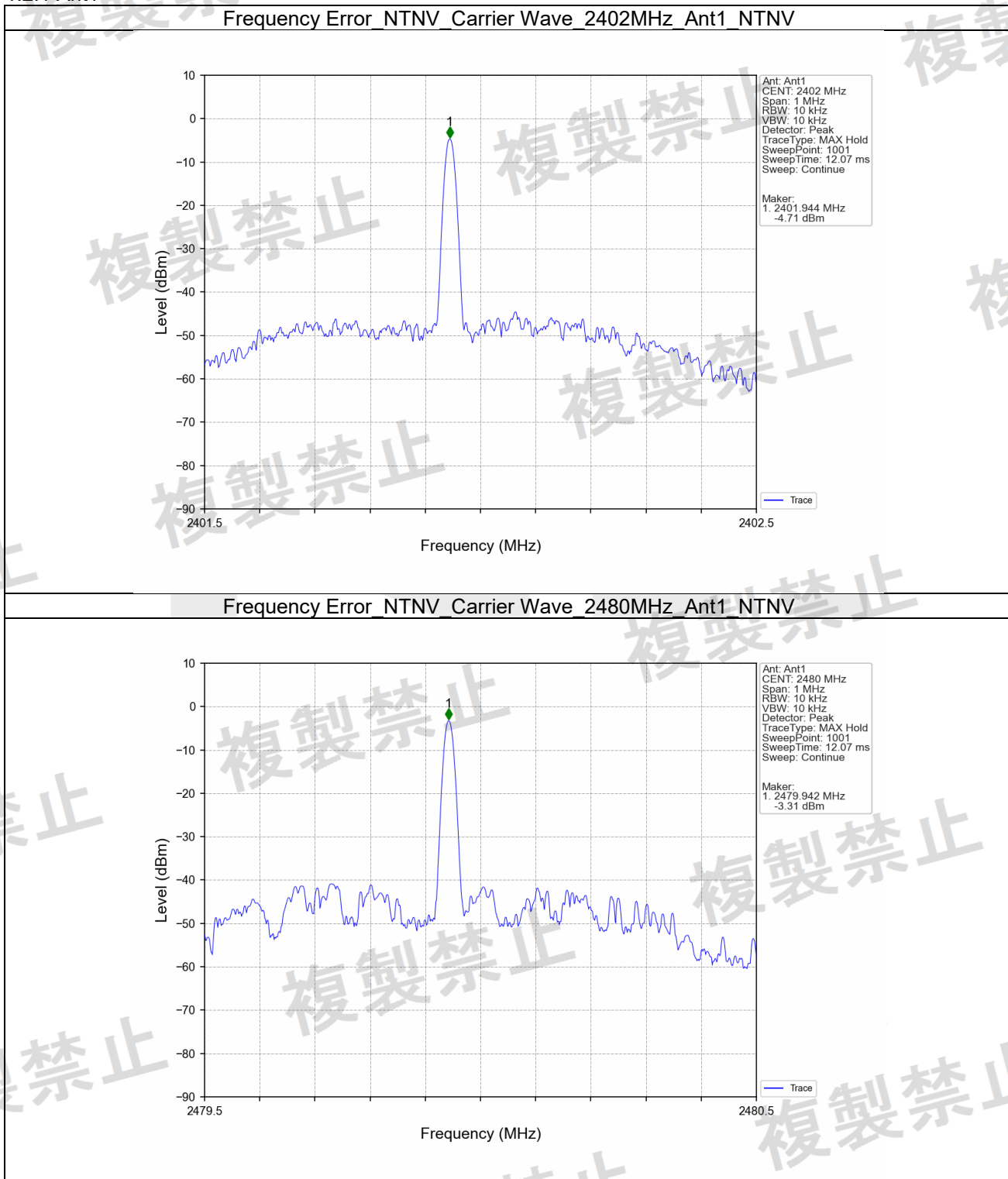
1.1 Test Result

1.1.1 Ant1

| Ant1 |              |         |                 |             |                          |                 |           |         |
|------|--------------|---------|-----------------|-------------|--------------------------|-----------------|-----------|---------|
| ENV  | Mode         | TX Type | Frequency (MHz) | Packet Type | Measured Frequency (MHz) | Tolerance (ppm) |           | Verdict |
|      |              |         |                 |             |                          | Result          | Limit     |         |
| NTNV | Carrier Wave | SISO    | 2402            | DH5         | 2401.944                 | -23.31          | -50 to 50 | Pass    |
|      |              |         | 2480            | DH5         | 2479.942                 | -23.39          | -50 to 50 | Pass    |

## 1.2 Test Graph

### 1.2.1 Ant1



## 2. Occupied Bandwidth

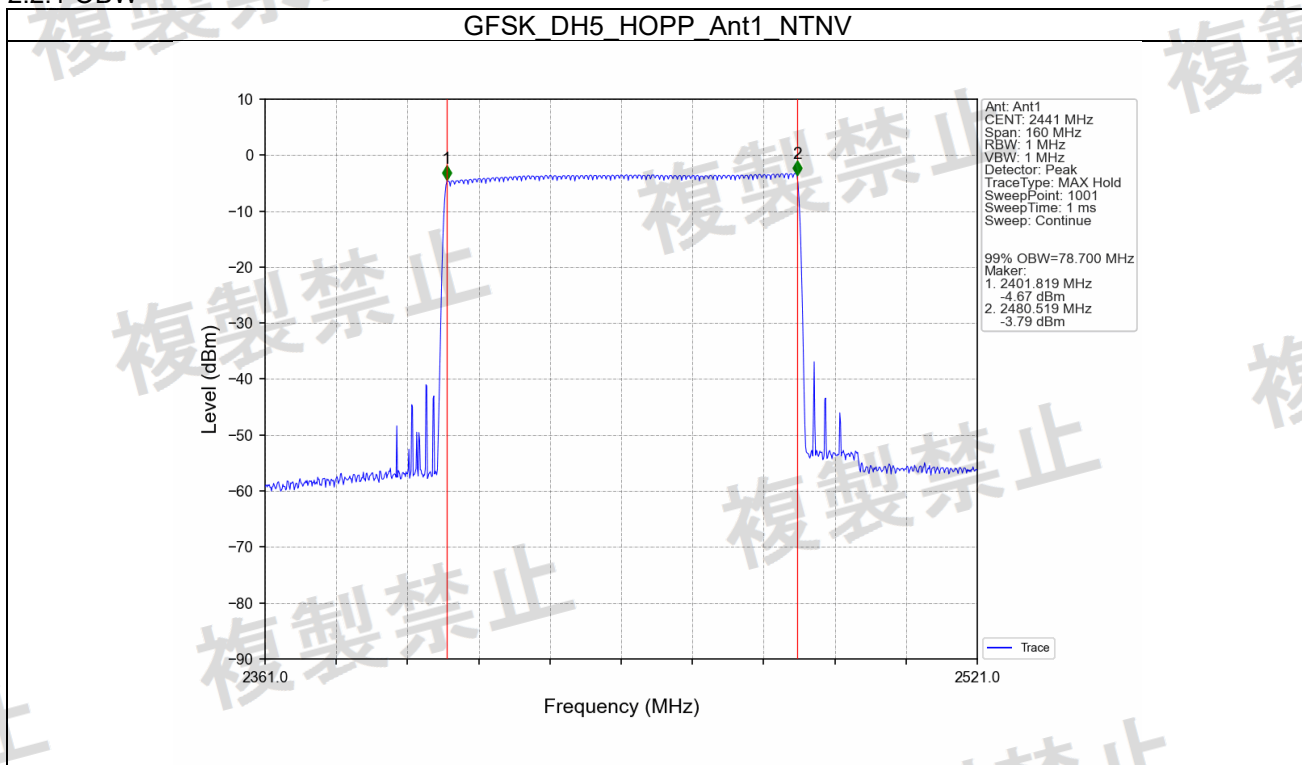
### 2.1 Test Result

#### 2.1.1 OBW

| ENV  | Mode | TX Type | Frequency (MHz) | Packet Type | 99% Occupied Bandwidth (MHz) |        | Verdict |
|------|------|---------|-----------------|-------------|------------------------------|--------|---------|
|      |      |         |                 |             | ANT1                         | Limit  |         |
| NTNV | GFSK | SISO    | HOPP            | DH5         | 78.700                       | <=83.5 | Pass    |

## 2.2 Test Graph

### 2.2.1 OBW



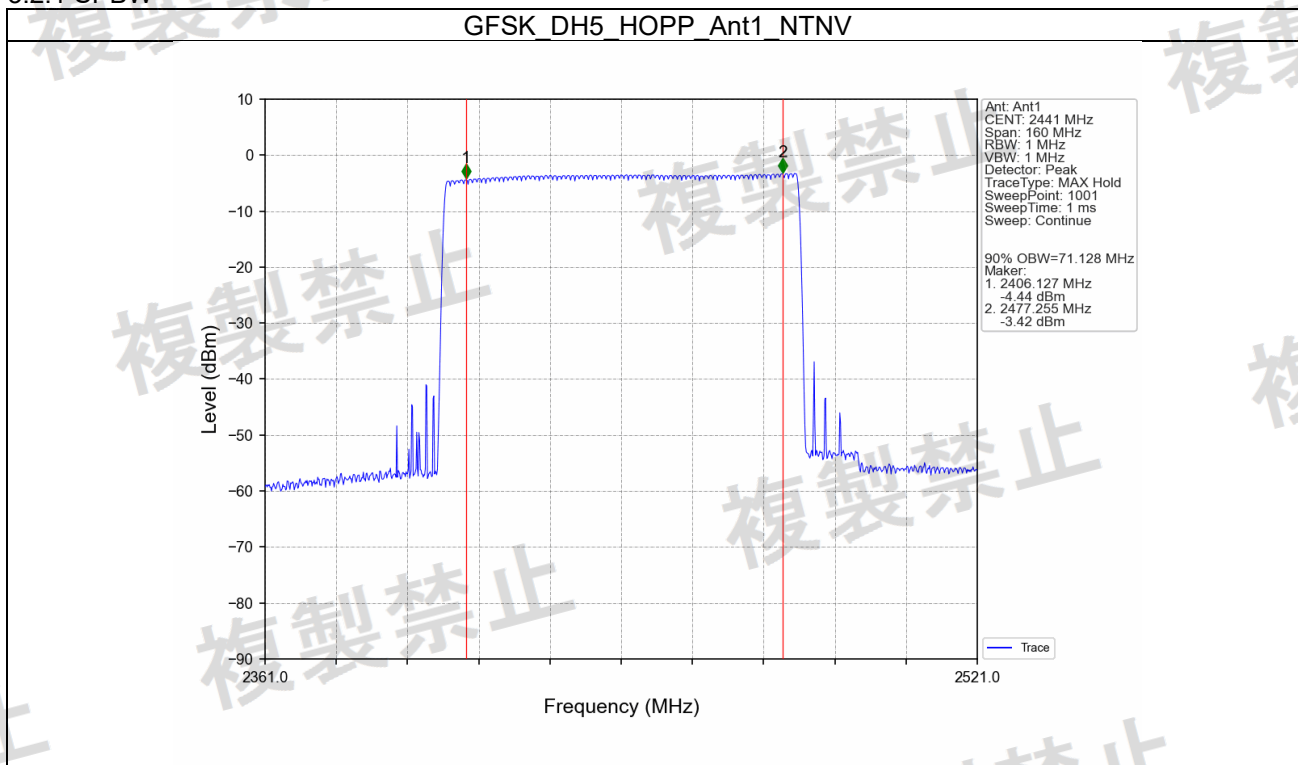
## 3. Spread Bandwidth

## 3.1 Test Result

## 3.1.1 SPBW

| ENV  | Mode | TX Type | Frequency (MHz) | Packet Type | Spread Bandwidth (MHz) |       | Verdict         |
|------|------|---------|-----------------|-------------|------------------------|-------|-----------------|
|      |      |         |                 |             | ANT1                   | Limit |                 |
| NTNV | GFSK | SISO    | HOPP            | DH5         | 71.128                 | /     | Only For Report |

3.2 Test Graph  
3.2.1 SPBW



4. Antenna Power  
4.1 Test Result  
4.1.1 Power

| ENV  | Mode | TX Type | Frequency (MHz) | Packet Type | Total power (mW) |       |                        | Antenna Power Density PD (mW / MHz) | Nominal Power (mW / MHz) | Tolerance (%) |       | Limit (mW / MHz) | Verdict |
|------|------|---------|-----------------|-------------|------------------|-------|------------------------|-------------------------------------|--------------------------|---------------|-------|------------------|---------|
|      |      |         |                 |             | dBm              | mW    | Spread Bandwidth (MHz) |                                     |                          | Measured      | Limit |                  |         |
| NTNV | GFSK | SISO    | HOPP            | DH5         | 7.13             | 5.164 | 71.128                 | 0.073                               | 0.200                    | -64.00        | 20    | 3                | Pass    |

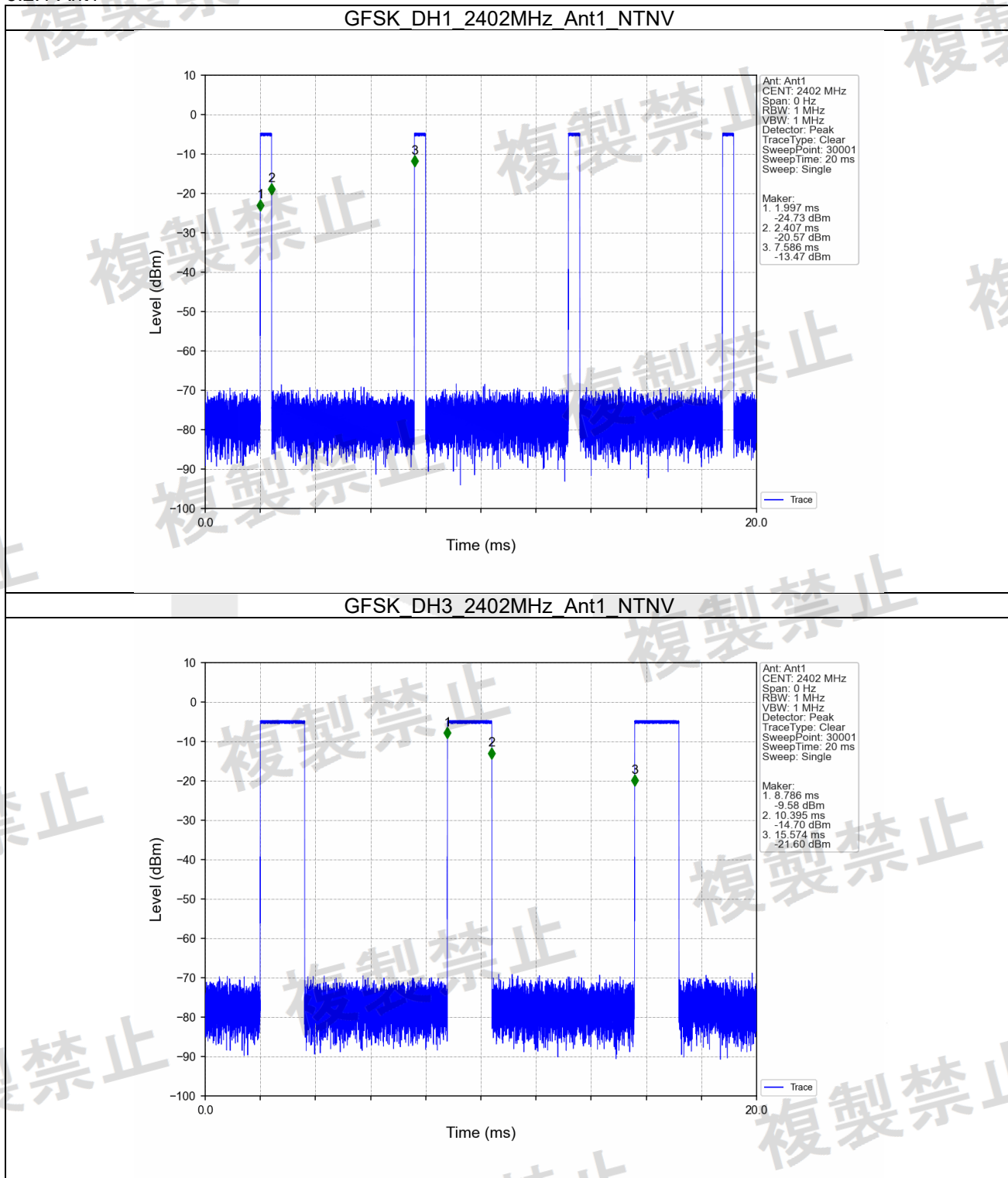
Note:  
1. Antenna Power Density PD = Total power (mW) / Spread Spectrum Bandwidth MHz

5. Dwell Time  
5.1 Test Result  
5.1.1 Ant1

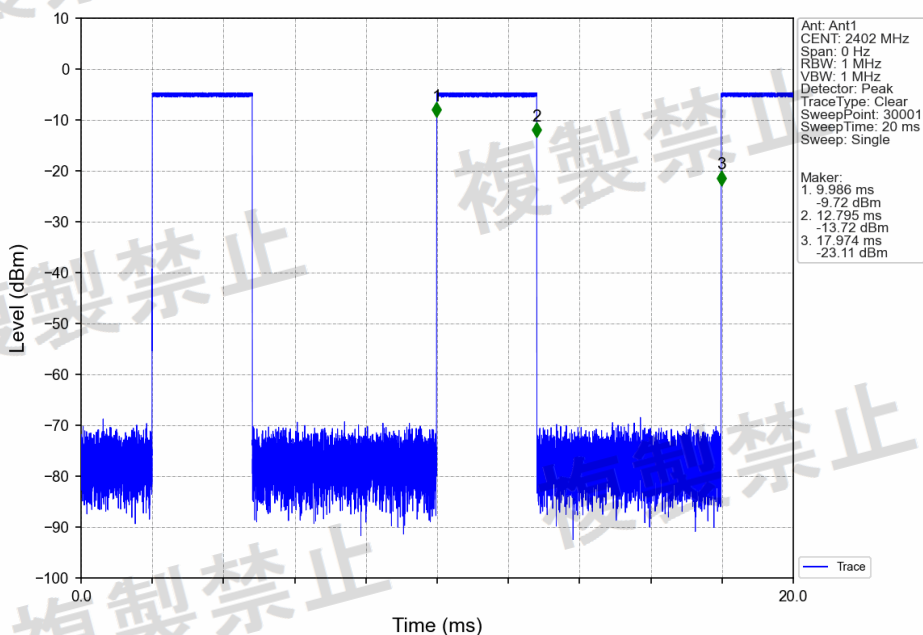
| Ant1 |      |         |                 |             |                |           |             |             |                 |       |         |
|------|------|---------|-----------------|-------------|----------------|-----------|-------------|-------------|-----------------|-------|---------|
| ENV  | Mode | TX Type | Frequency (MHz) | Packet Type | Spreading Rate | T_on (ms) | Period (ms) | Hopp Number | Dwell Time (ms) |       | Verdict |
|      |      |         |                 |             |                |           |             |             | Result          | Limit |         |
| NTNV | GFSK | SISO    | 2402            | DH1         | 71.128         | 0.410     | 5.589       | 79          | 26.419          | <=400 | Pass    |
|      |      |         |                 | DH3         | 71.128         | 1.609     | 6.788       | 79          | 85.367          | <=400 | Pass    |
|      |      |         |                 | DH5         | 71.128         | 2.809     | 7.988       | 79          | 126.645         | <=400 | Pass    |
|      |      |         | 2480            | DH1         | 71.128         | 0.410     | 5.589       | 79          | 26.419          | <=400 | Pass    |
|      |      |         |                 | DH3         | 71.128         | 1.610     | 6.789       | 79          | 85.407          | <=400 | Pass    |
|      |      |         |                 | DH5         | 71.128         | 2.810     | 7.988       | 79          | 126.690         | <=400 | Pass    |

## 5.2 Test Graph

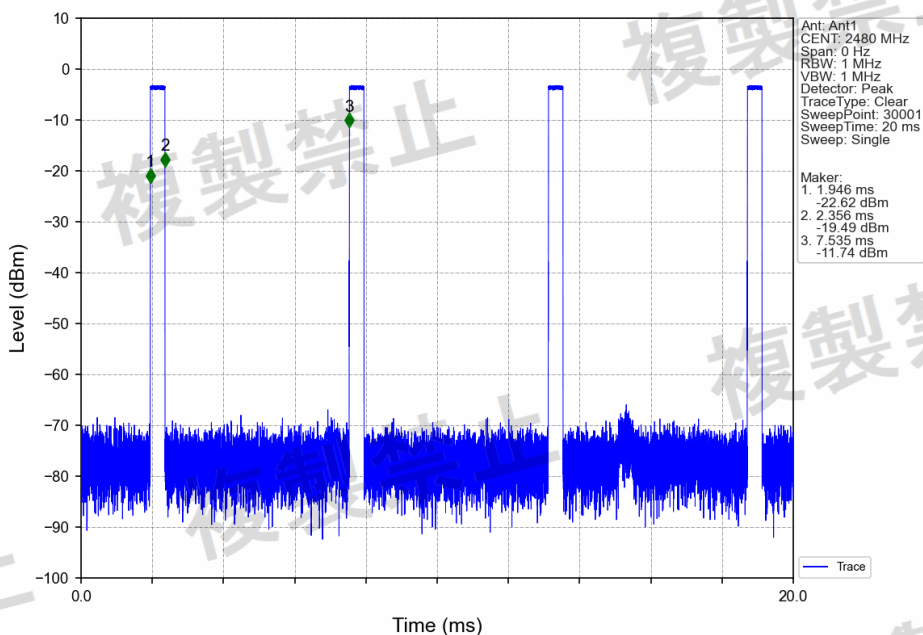
### 5.2.1 Ant1



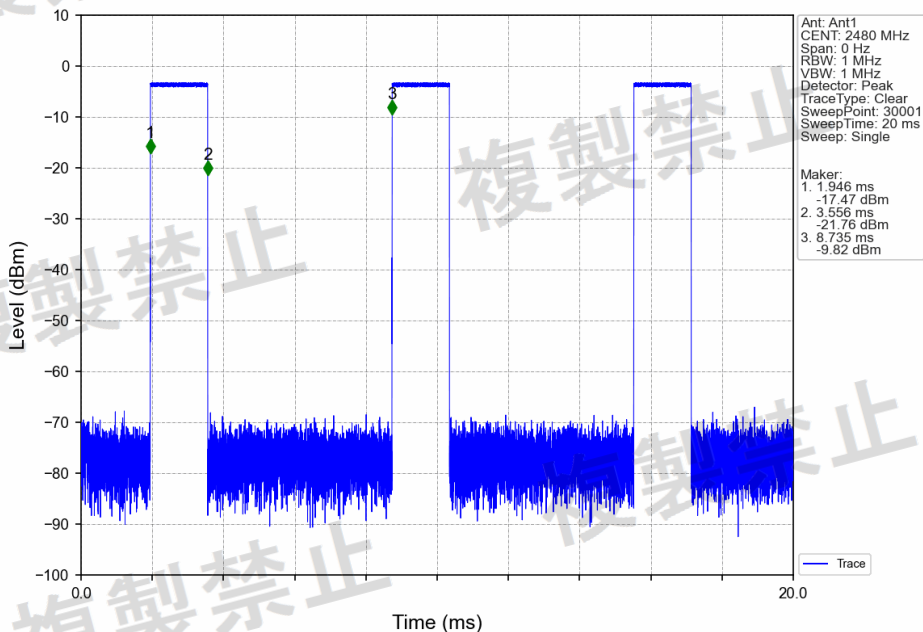
### GFSK DH5\_2402MHz\_Ant1\_NTNV



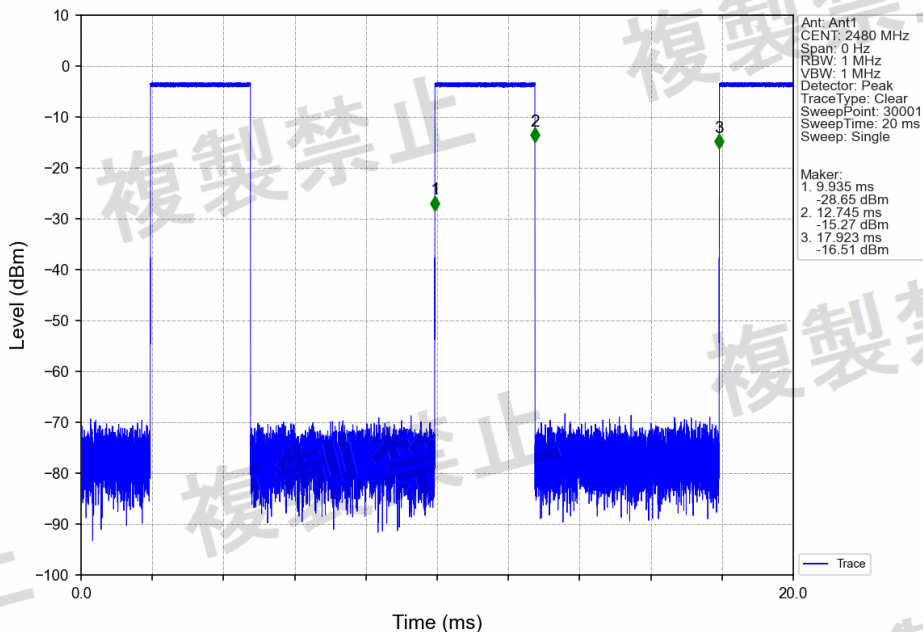
### GFSK DH1\_2480MHz\_Ant1\_NTNV



GFSK DH3\_2480MHz\_Ant1\_NTNV



GFSK DH5\_2480MHz\_Ant1\_NTNV



## 6. Spurious Emission Intensity

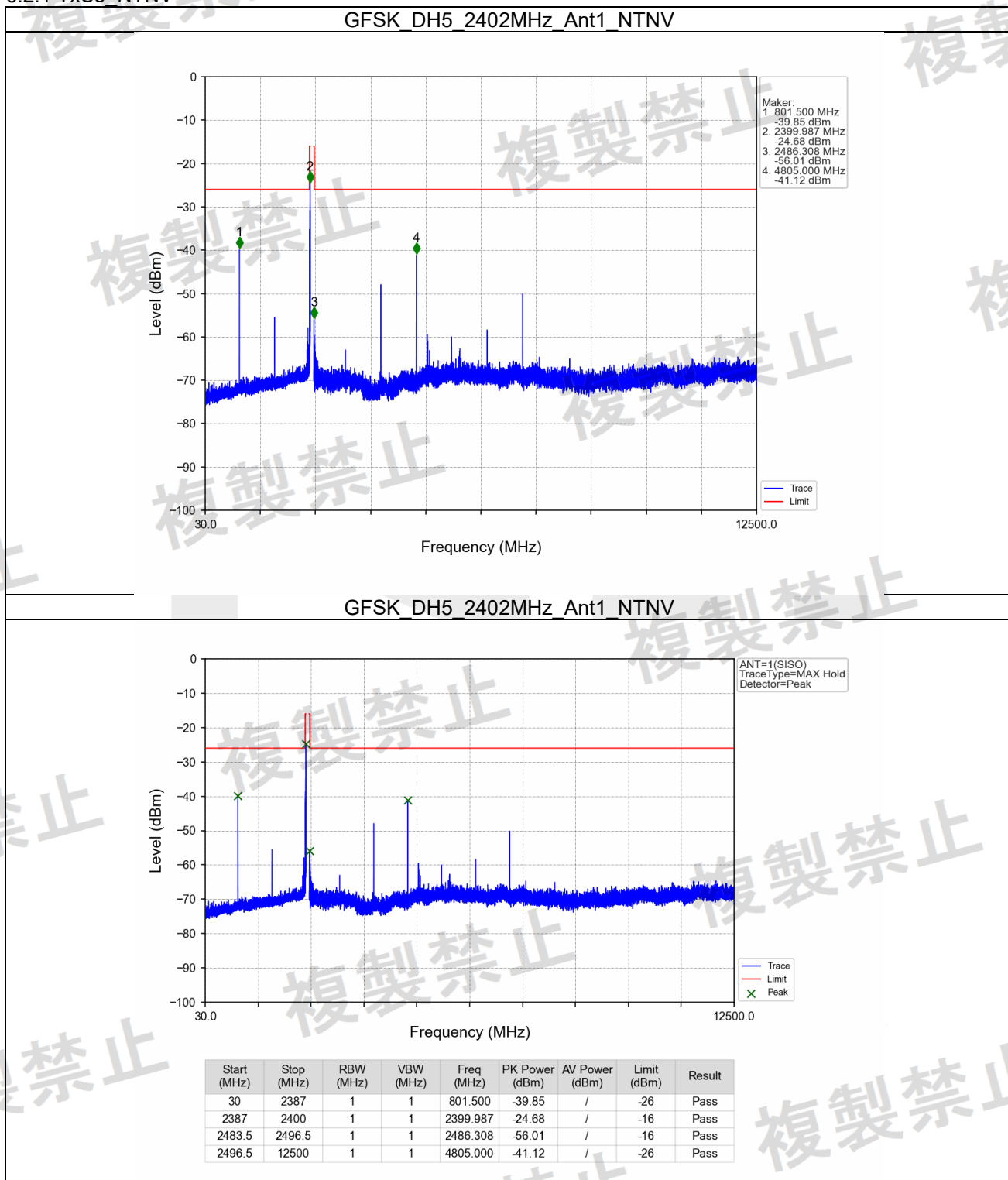
### 6.1 Test Result

#### 6.1.1 TxSe\_NTNV

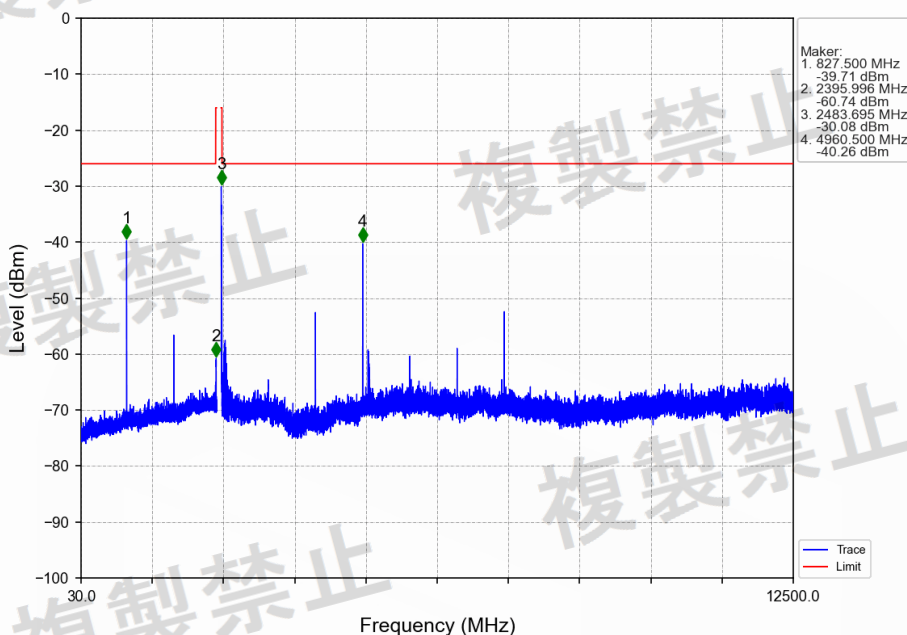
| NTNV |         |             |     |             |            |             |                     |                    |                     |                    |                 |         |
|------|---------|-------------|-----|-------------|------------|-------------|---------------------|--------------------|---------------------|--------------------|-----------------|---------|
| Mode | TX Type | Freq. (MHz) | ANT | Freq. Range |            | Marker      |                     |                    |                     |                    | Limit (uW /MHz) | Verdict |
|      |         |             |     | Start (MHz) | Stop (MHz) | Freq. (MHz) | PK Power (dBm /MHz) | PK Power (uW /MHz) | AV Power (dBm /MHz) | AV Power (uW /MHz) |                 |         |
| GFSK | SISO    | 2402        | 1   | 30          | 2387       | 801.5       | -39.85              | 0.104              | /                   | /                  | 2.5             | Pass    |
|      |         |             |     | 2387        | 2400       | 2399.987    | -24.68              | 3.404              | /                   | /                  | 25              | Pass    |
|      |         |             |     | 2483.5      | 2496.5     | 2486.308    | -56.01              | 0.003              | /                   | /                  | 25              | Pass    |
|      |         |             |     | 2496.5      | 12500      | 4805        | -41.12              | 0.077              | /                   | /                  | 2.5             | Pass    |
|      |         | 2480        | 1   | 30          | 2387       | 827.5       | -39.71              | 0.107              | /                   | /                  | 2.5             | Pass    |
|      |         |             |     | 2387        | 2400       | 2395.996    | -60.74              | 0.001              | /                   | /                  | 25              | Pass    |
|      |         |             |     | 2483.5      | 2496.5     | 2483.695    | -30.08              | 0.982              | /                   | /                  | 25              | Pass    |
|      |         |             |     | 2496.5      | 12500      | 4960.5      | -40.26              | 0.094              | /                   | /                  | 2.5             | Pass    |

## 6.2 Test Graph

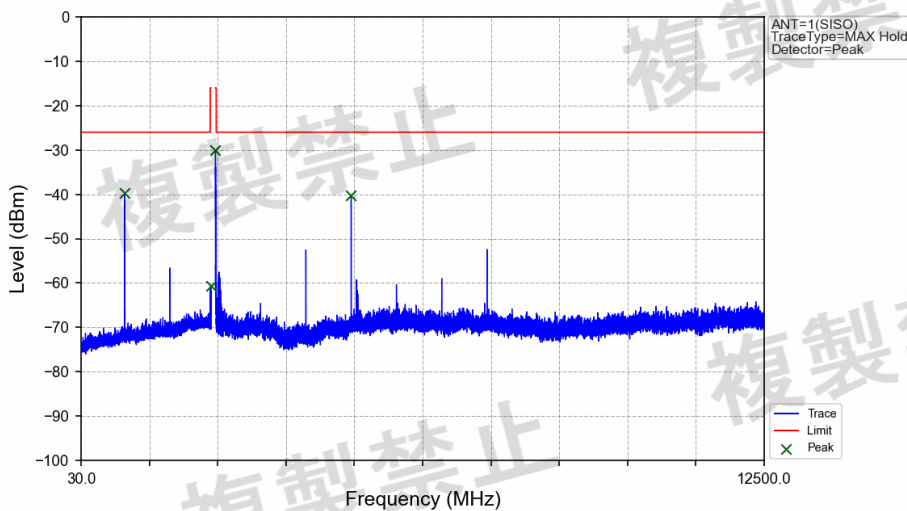
### 6.2.1 TxSe\_NTNV



GFSK DH5\_2480MHz\_Ant1\_NTNV



GFSK DH5\_2480MHz\_Ant1\_NTNV



| Start (MHz) | Stop (MHz) | RBW (MHz) | VBW (MHz) | Freq (MHz) | PK Power (dBm) | AV Power (dBm) | Limit (dBm) | Result |
|-------------|------------|-----------|-----------|------------|----------------|----------------|-------------|--------|
| 30          | 2387       | 1         | 1         | 827.500    | -39.71         | /              | -26         | Pass   |
| 2387        | 2400       | 1         | 1         | 2395.996   | -60.74         | /              | -16         | Pass   |
| 2483.5      | 2496.5     | 1         | 1         | 2483.695   | -30.08         | /              | -16         | Pass   |
| 2496.5      | 12500      | 1         | 1         | 4960.500   | -40.26         | /              | -26         | Pass   |

## 7. Secondary Radiated Emission

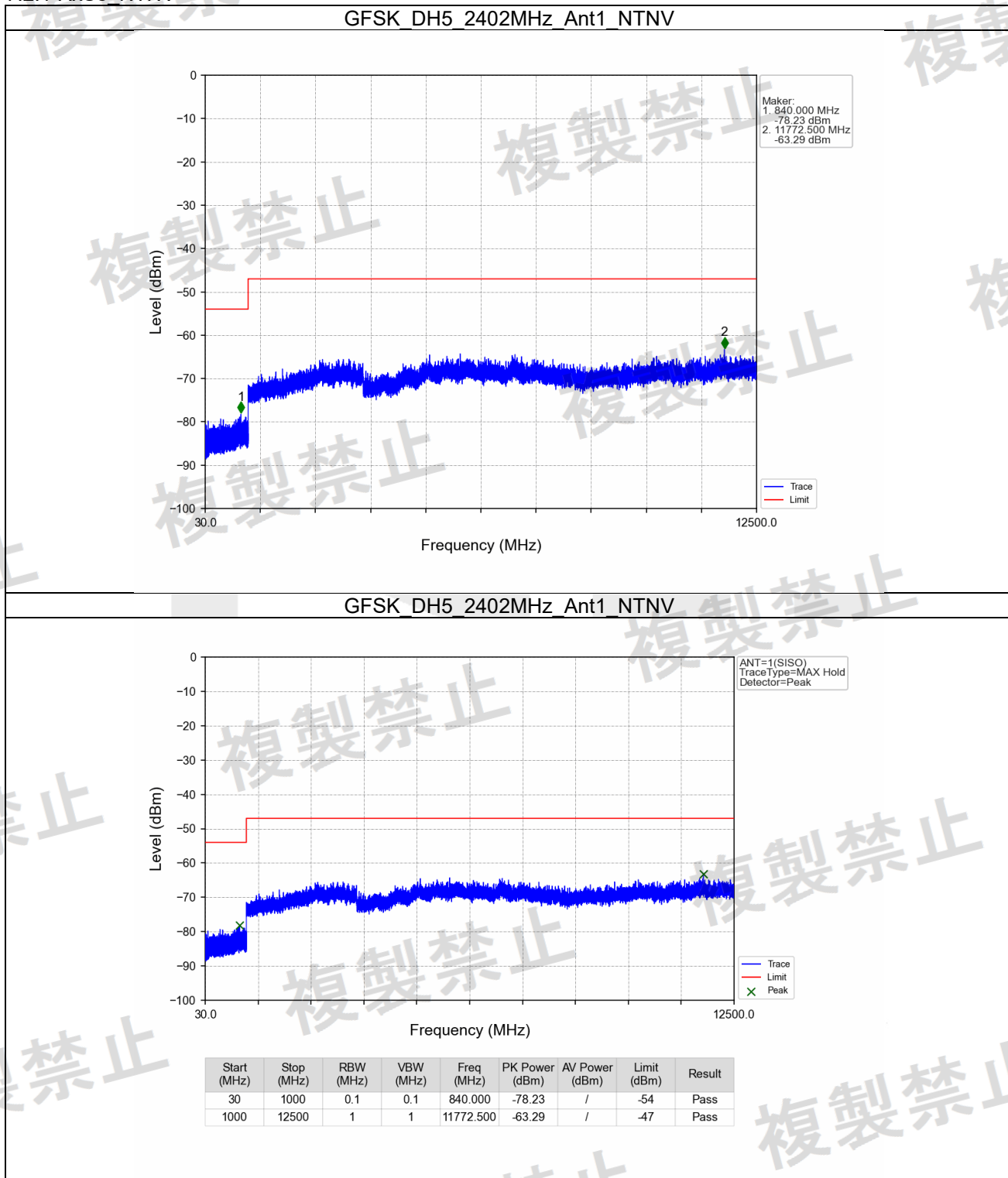
### 7.1 Test Result

#### 7.1.1 RxSe\_NTNV

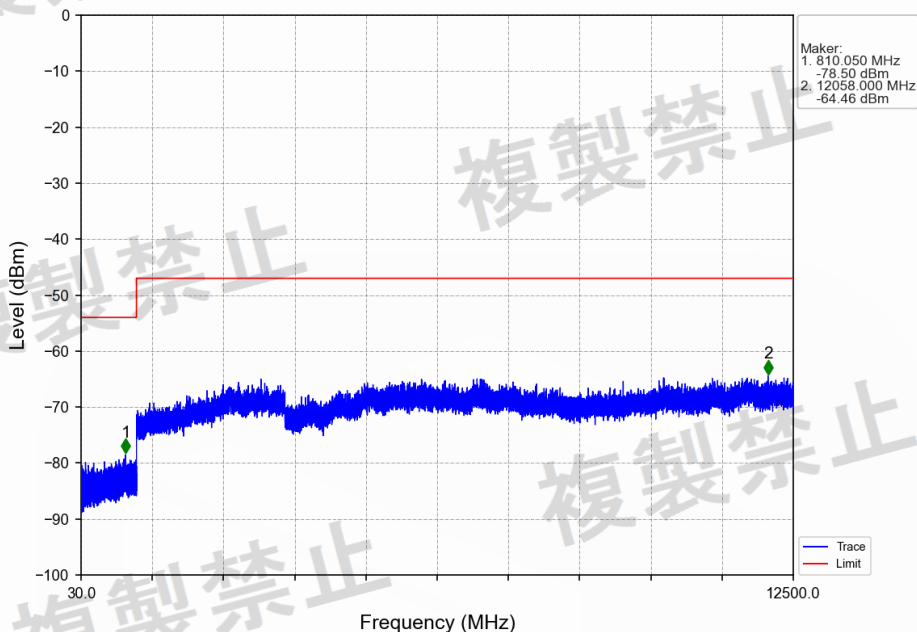
| NTNV |         |             |     |             |            |             |                |               |                |               |            |         |
|------|---------|-------------|-----|-------------|------------|-------------|----------------|---------------|----------------|---------------|------------|---------|
| Mode | TX Type | Freq. (MHz) | ANT | Freq. Range |            | Marker      |                |               |                |               | Limit (nW) | Verdict |
|      |         |             |     | Start (MHz) | Stop (MHz) | Freq. (MHz) | PK Power (dBm) | PK Power (nW) | AV Power (dBm) | AV Power (nW) |            |         |
| GFSK | SISO    | 2402        | 1   | 30          | 1000       | 840         | -78.23         | 0.015         | /              | /             | 4          | Pass    |
|      |         |             |     | 1000        | 12500      | 11772.5     | -63.29         | 0.469         | /              | /             | 20         | Pass    |
|      |         | 2480        | 1   | 30          | 1000       | 810.05      | -78.50         | 0.014         | /              | /             | 4          | Pass    |
|      |         |             |     | 1000        | 12500      | 12058       | -64.46         | 0.358         | /              | /             | 20         | Pass    |

## 7.2 Test Graph

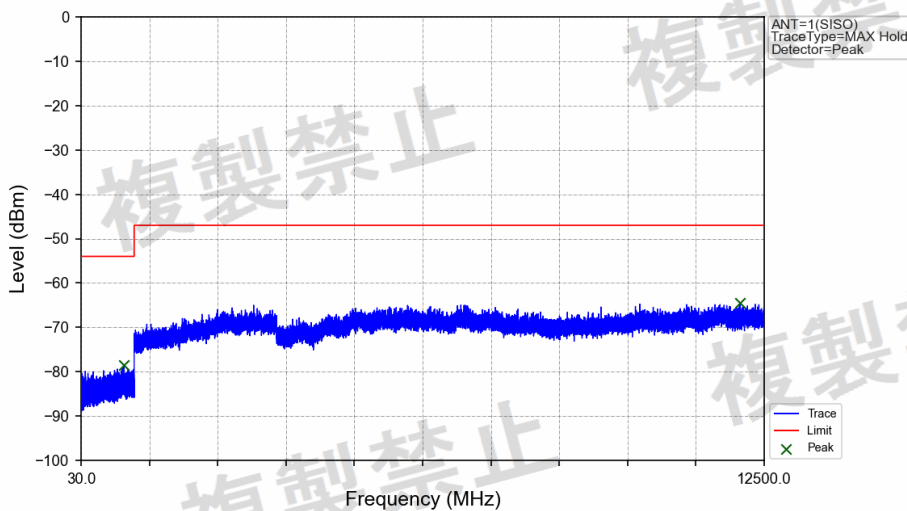
### 7.2.1 RxSe NTN



GFSK DH5\_2480MHz\_Ant1\_NTNV



GFSK DH5\_2480MHz\_Ant1\_NTNV



| Start (MHz) | Stop (MHz) | RBW (MHz) | VBW (MHz) | Freq (MHz) | PK Power (dBm) | AV Power (dBm) | Limit (dBm) | Result |
|-------------|------------|-----------|-----------|------------|----------------|----------------|-------------|--------|
| 30          | 1000       | 0.1       | 0.1       | 810.050    | -78.50         | /              | -54         | Pass   |
| 1000        | 12500      | 1         | 1         | 12058.000  | -64.46         | /              | -47         | Pass   |

## STATEMENT

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the "inspection and testing dedicated stamp" or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--- End of Report ---