Shenzhen CTL Testing Technology Co., Ltd.
Tel: +86-755-89486194 E-mail: ctl@ctl-lab.com

# TEST REPORT

## Ordinance Article 2 paragraph 1 item (19)

**Report Reference No.**.....: **CTL2605222091-MIC01**

| | | |
|---|---|---|
| Compiled by: (printed name+signature) | Jayden Zhuo | |
| Reviewed by: (printed name+signature) | Happy Guo | |
| Approved by: (printed name+signature) | Ivan Xie | |

| | |
|---|---|
| **Product Name**.....: | Flex |
| **Model/Type reference**.....: | Flex TRS |
| **List Model(s)**.....: | Flex RCA, Flex Digital, Flex 8, Flex 8N, Flex HT, Flex HTN, Flex HTx, Flex HPA |
| **Trade Mark**.....: | miniDSP |
| **Applicant's name**.....: | **miniDSP LTD** |
| **Address of applicant**.....: | Unit 307, Kingsford Industrial Centre, 13 Wang Hoi Road, Kowloon Bay, Kowloon, Hong Kong |
| **Test Firm**.....: | **Shenzhen CTL Testing Technology Co., Ltd.** |
| **Address of Test Firm**.....: | Unit 01A&B&C&D-1, Building A3, Guangming Sci-Tech Park, Guan Guang Road, Fenghuang Subdistrict, Guangming District, Shenzhen, Guangdong, China |
| **Test specification**.....: | |
| Standard.....: | **Ordinance Article 2 paragraph 1 item (19)** |
| TRF Originator.....: | Shenzhen CTL Testing Technology Co., Ltd. |
| Master TRF.....: | Dated 2011-01 |
| **Date of receipt of test item**.....: | May. 25, 2026 |
| **Date of Test Date**.....: | May. 25, 2026-June. 10, 2026 |
| **Date of Issue**.....: | June. 11, 2026 |
| **Result**.....: | **Pass** |

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# TEST REPORT

| Test Report No. : | CTL2605222091-MIC01 | June. 11, 2026<br>Date of issue |
|---|---|---|

| | | |
|---|---|---|
| Equipment under Test | : | Flex |
| Sample No | : | CTL260522209001, CTL260522209002 |
| Model /Type | : | Flex TRS |
| Listed Models | : | Flex RCA, Flex Digital, Flex 8, Flex 8N, Flex HT, Flex HTN, Flex HTx, Flex HPA |
| **Applicant** | : | **miniDSP LTD** |
| Address | : | Unit 307, Kingsford Industrial Centre, 13 Wang Hoi Road, Kowloon Bay, Kowloon, Hong Kong |
| **Manufacturer** | : | **miniDSP LTD** |
| Address | : | Unit 307, Kingsford Industrial Centre, 13 Wang Hoi Road, Kowloon Bay, Kowloon, Hong Kong |

| Test result | Pass * |
|---|---|

∗ In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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# ** Modified History **

| Revision | Description | Issued Data | Report No. | Remark |
|---|---|---|---|---|
| Version 1.0 | Initial Test Report Release | June. 11, 2026 | CTL2605222091-MIC01 | Tracy Qi |
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# 1. SUMMARY

## 1.1. Test Standards

The tests were performed according to following standards:

MIC Notice No.88 Appendix No.43

## 1.2. Test Description

| Test Item | Result |
|---|---|
| Frequency Error | Pass |
| Antenna Output Power and Output Power Tolerance | Pass |
| Occupied Bandwidth and Spread spectrum bandwidth | Pass |
| Dwell time | Pass |
| Unwanted Emission Strength | Pass |
| Secondary Radiated Emission Strength | Pass |
| Construction protection method | Pass |
| Interference Prevention Function | Pass |

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## 1.3. Test Facility

### 1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Unit 01A&B&C&D-1, Building A3, Guangming Sci-Tech Park, Guan Guang Road, Fenghuang Subdistrict, Guangming District, Shenzhen, Guangdong, China

There is one 3m semi-anechoic chamber and one line conducted lab for final test. The Test Sites meet the requirements in documents ANSI C63.10 and ETSI EN301 489-1 requirements

### 1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

**CNAS-Lab Code: L7497**

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

**A2LA-Lab Cert. No. 4343.01**

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**IC Registration No.: 9618B**

**CAB identifier: CN0041**

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B.

**FCC-Registration No.: 399832**

**Designation No.: CN1216**

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832.

## 1.4. Measurement Uncertainty

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR100028-1 [2] and shall correspond to an expansion factor (coverage factor) K=1.96 or K=2 (which provide confidence levels of respectively 95% and 95.5% in the case where the distributions characterizing the actual measurement uncertainties are normal.

| Parameter | Uncertainty |
|---|---|
| Frequency error / 99%&90% bandwidth | ±1.62*$10^{-6}$ |
| Total RF power, conducted | ±0.8dB |
| Spurious emissions, conducted | ±0.8dB |
| DC and low frequency voltages | ±0.05% |
| Humidity | ±5% |
| Temperature | ±1℃ |

# 2. GENERAL INFORMATION

## 2.1. Environmental conditions

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

| | | | |
|---|---|---|---|
| Voltage | DC Power | Normal Voltage | DC:12.0V |
| | | High Voltage | DC:13.2V |
| | | Low Voltage | DC:10.8V |
| | DC RF Module | Normal Voltage | DC:3.30V |
| | | High Voltage | DC:3.63V |
| | | Low Voltage | DC:2.97V |
| Other | | Normal Temperature | 25°C |
| | | Relative Humidity | 55 % |
| | | Air Pressure | 989 hPa |

During the input supply voltage to the EUT from the external power source is varied by ±10%, the fluctuation of input voltage to the circuit of RF unit of test equipment is exceed ±1%. So, all measurement has been conducted by normal and limit voltage.

## 2.2. General Description of EUT

| | |
|---|---|
| Product Name: | Flex |
| Model/Type reference: | Flex TRS |
| EUT Rated Voltage: | Adapter Model:NGE65I12<br>Input: 100-240VAC, 50/60Hz, 1.5-0.8A<br>Output: 12V⎓4.88A, 58.5W MAX. |
| Test Voltage: | DC 12V from Adapter |
| Hardware version: | V1.0 |
| Software version: | V1.0 |
| **Bluetooth:** | |
| Version: | Supported BR/EDR |
| Modulation: | GFSK, π/4DQPSK, 8DPSK |
| Operation frequency: | 2402MHz~2480MHz |
| Channel number: | 79 |
| Channel separation: | 1MHz |
| Antenna type: | External Antenna |
| Antenna gain: | 0dBi |

Note 1: For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
Note 2: Antenna gain provided by the applicant.
Note 3:The model Flex TRS is selected as representative model for full tests

## 2.3. Description of Test Modes

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

**Operation Frequency List Bluetooth：**

| Channel | Frequency (MHz) |
|---|---|
| **00** | **2402** |
| 01 | 2403 |
| ⋮ | ⋮ |
| 38 | 2440 |
| **39** | **2441** |
| 40 | 2442 |
| ⋮ | ⋮ |
| 77 | 2479 |
| **78** | **2480** |

Note: Test performed at the lowest/middle/highest frequencies selected in the list above for EUT supported while working on specified mode.

## 2.4. Measurement Instruments List

| RF conducted | | | | | | | |
|---|---|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Institution | Calibration Date | Calibration Due Date |
| 1 | Spectrum Analyzer | Keysight | N9020 A | MY53420 874 | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |
| 2 | WIDEBAN D RADIO COMMUNI CATION TESTER | RS | CMW5 00 | 1201.000 2K50-107 930-CD | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |
| 3 | Power Measurem ent Module | TSTPASS | TSPS2 023R | TSCB220 016 | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |
| 4 | DC Source | Agilent | E3632 A | MY40015 577 | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |
| 5 | Temperatur e Humidity Chamber | JingBang | TLHW-64B | / | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Temperature/Humidity Meter | Ji Yu | MC501 | / | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |
| 7 | Oscilloscope | Tektronix Inc. Beaverton, OR, U.S.A. | TDS 3012C | C011550 | Guangdong Jingheng Detection Tecanology Co.,Ltd. | 2025/07/03 | 2026/07/02 |

| Test Software | |
|---|---|
| Name of Software | Version |
| TST-PASS | V2.0.1 |

Calibration by the calibration agencies listed in the table correspond to paragraph 4 (ii) (c) of Article 24-2 in the Radio Law".

□ (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) or a designated calibration agency under Article 102-18-1 of the Radio Act.

□ (b) Calibration conducted based on the regulations of Article 135 or 144 of the Measurement Act.

☒ (c) Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 of the Radio Act.

□ (d) Calibration, etc. conducted by using measuring instruments and other facilities listed at the bottom of appended table 3 of the Radio Act, which is to have been calibrated as described in (a) through (c) above.

# 3. Test conditions and Results

## 3.1. Frequency Error

**LIMIT**

±50ppm

**TEST CONFIGURATION**

**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: non-modulation

Spectrum Condition:

- Frequency: test frequency
- Span: 1 MHz
- RBW: 10 KHz
- VBW: 10 KHz
- Sweep time: Auto
- Detector mode: Positive peak
- Indication mode: max hold

**TEST RESULTS**

Raw data reference to section 1 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.2. Antenna Output Power and Output Power Tolerance

**LIMIT**

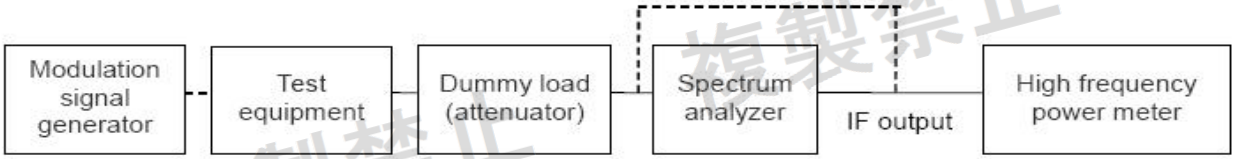
- ≤ 3 mW /MHz(FHSS from 2402-2480 MHz)
- ≤ 10 mW/MHz (OFDM, DSSS from 2400-2483.5 MHz)
- ≤ 10 mW (other from 2400-2483.5 MHz)

The Output Power Tolerance must be within 20%.
E.i.r.p:

- ≤6.91dBm/MHz(FHSS from 2402-2480 MHz)

Note: E.I.R.P will not be applied to the transmission antenna which has a gain of 2.14dBi or less.

**TEST CONFIGURATION**




**TEST PROCEDURE**

Step 1: Connect the UUT to the spectrum analyzer as TEST CONFIGURATION and set the UUT in FHSS mode, use the following settings:

• Setting of SA is following as fellow:

• RBW=1MHz

• VBW=1MHz

• Sweep time: 1ms

• Sweep point: 1001

• Detect mode: Sample

• Trace mode: Clear

Step 2: UUT have transmitted the maximum modulation signal and fixed channelize. SA set to 90% of occupied bandwidth to measure spread bandwidth. When the trace is complete record spread bandwidth in MHz.

Step 3: Connect the UUT to the spectrum analyzer as TEST CONFIGURATION and set the UUT in FHSS mode to measure max measured power in dBm and record.

Step 4: Converting max measured power(in Step 3) from dBm to mW and divided by spread bandwidth, then record this value as antenna output power.The test formula is shown below:

Antenna Power = AVG Power（mW）÷(Spread Bandwidth MHz)

**TEST RESULTS**

Raw data reference to section 4 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.3. OCCUPIED BANDWIDTH AND SPREADING BANDWIDTH

**LIMIT**

- Occupied bandwidth: FH≤83.5 MHz; OFDM≤40 MHz, DS≤26 MHz; Others≤26 MHz
- Spread Bandwidth:≥ 500 kHz(FH,DS)
- Spread factor>5.

**TEST CONFIGURATION**

**TEST PROCEDURE**

1. Setting of SA is following as fellow:
   - RBW: under 3% of OBW
   - RBW=1MHz
   - VBW=1MHz
   - Sweep time: 1ms
   - Sweep point:: 1001
   - Detect mode: Positive peak
   - Trace mode: Max hold
2. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 99% of occupied bandwidth to measure occupied bandwidth.
3. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 90% of occupied bandwidth to measure spread bandwidth.
4. Spread Factor=Spread Bandwidth/modulation rate. The modulation rate: MR=1Mbps (declare by client)

**TEST RESULTS**

Raw data reference to section 2 and section 3 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.4. Dwell time

**LIMIT**

0.4 second or less

*Note 1: Dwell time= (0.4(s) x spreading rate x sending time of 1burst (s)/(burst cycle(s) x No. of hopping channel)

Spreading rate: Spreading Bandwidth/symbol rate

**TEST CONFIGURATION**

**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

- Frequency: test channel
- RBW: 1MHz
- VBW: 1MHz
- Sweep point: 30001
- Sweep time: 20ms
- Trace: Clear
- Detector mode: Positive peak

**TEST RESULTS**

Raw data reference to section 5 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.5. Unwanted Emission Strength

**LIMIT**

Below 2387 MHz: 2.5μW/MHz or less
2387 to 2400 MHz: 25μW/MHz or less
2483.5 Through 2496.5 MHz: 25μW/MHz or less
Over 2496.5 MHz: 2.5μW/MHz or less

**TEST CONFIGURATION**

**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

- Frequency: 30MHz-12.5GHz
- RBW: 1MHz (30MHz-1GHz), 1MHz (1GHz-12.5GHz)
- VBW: 1MHz (30MHz-1GHz), 1MHz (1GHz-12.5GHz)
- Sweep time: Auto
- Detector mode: Positive peak
- Indication mode: max hold

**TEST RESULTS**

Raw data reference to section 6 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.6. Secondary Radiated Emission Strength

**LIMIT**

Below 1GHz: 4.0nW or less
Above 1GHz: 20nW or less

**TEST CONFIGURATION**

**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

EUT Condition: modulation

Spectrum Condition:

- Frequency: 30MHz-12.75GHz
- RBW: 100 KHz (30MHz-1GHz), 1MHz (1GHz-12.75GHz)
- VBW: 100 KHz (30MHz-1GHz), 1MHz (1GHz-12.75GHz)
- Sweep time: Auto
- Detector mode: Positive peak
- Indication mode: max hold

**TEST RESULTS**

Raw data reference to section 7 from CTL2605222091-MIC01_Bluetooth_Appendix.

## 3.7. Construction protection method

**Requirement**

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily

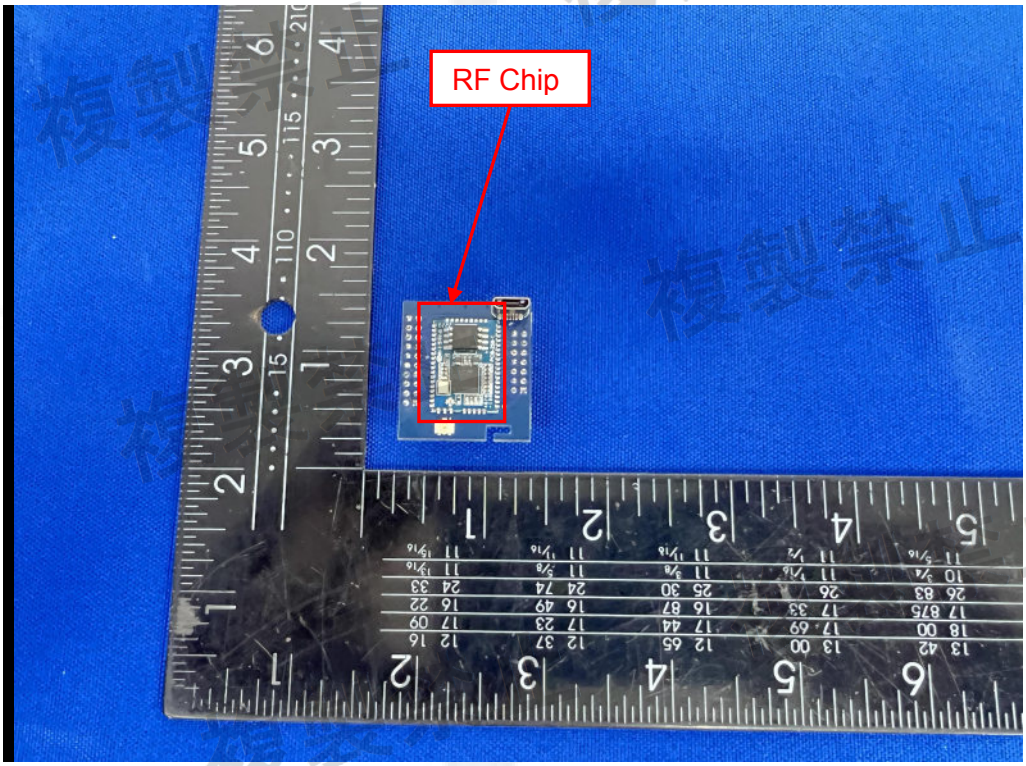
**Confirmation method**

All high-frequency section and modulation section packet in one IC, End user can not modify easily.

The BTM-QC5124 package dimensions is shown below, as we can see:

- Number of terminals: 53
- Terminal pitch: 0.5mm

It can meet the requirements of MIC structure protection.



## 3.8. Interference Prevention Function

**Requirement**

Clarify, the one automatically to transmit and to receive identification code with the wireless equipment of the wireless station used in the same premises.

**Interference Prevention Function Confirm**

A communication link was made where the ID code is correct (Identical).

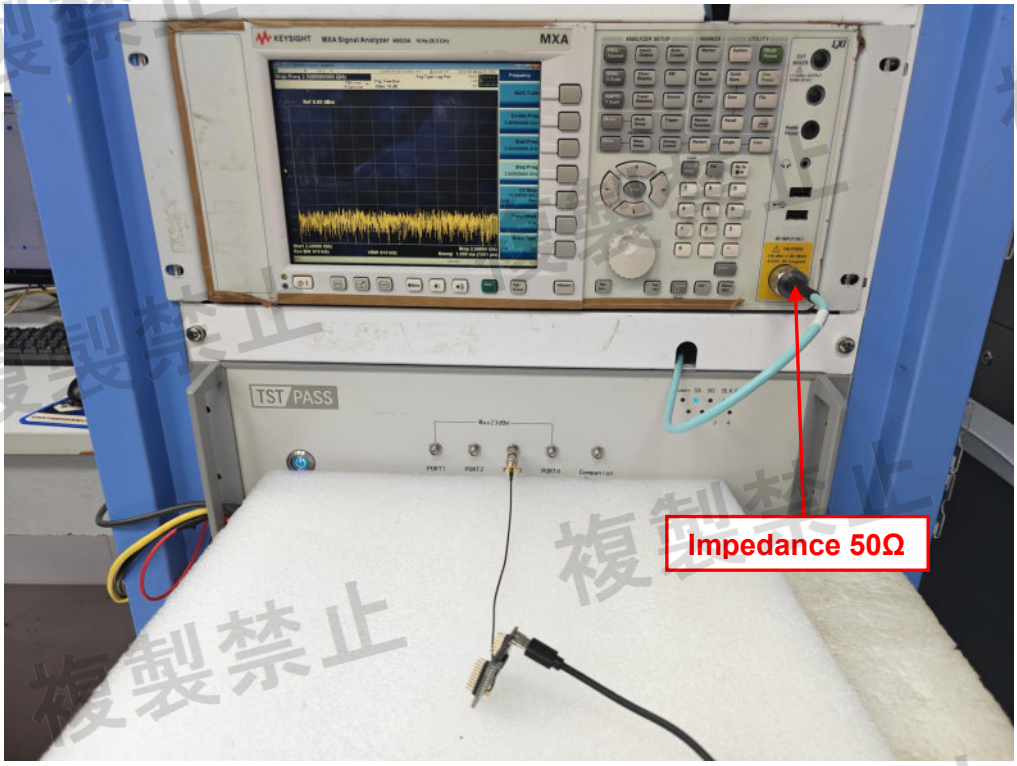
**TEST PROCEDURE**

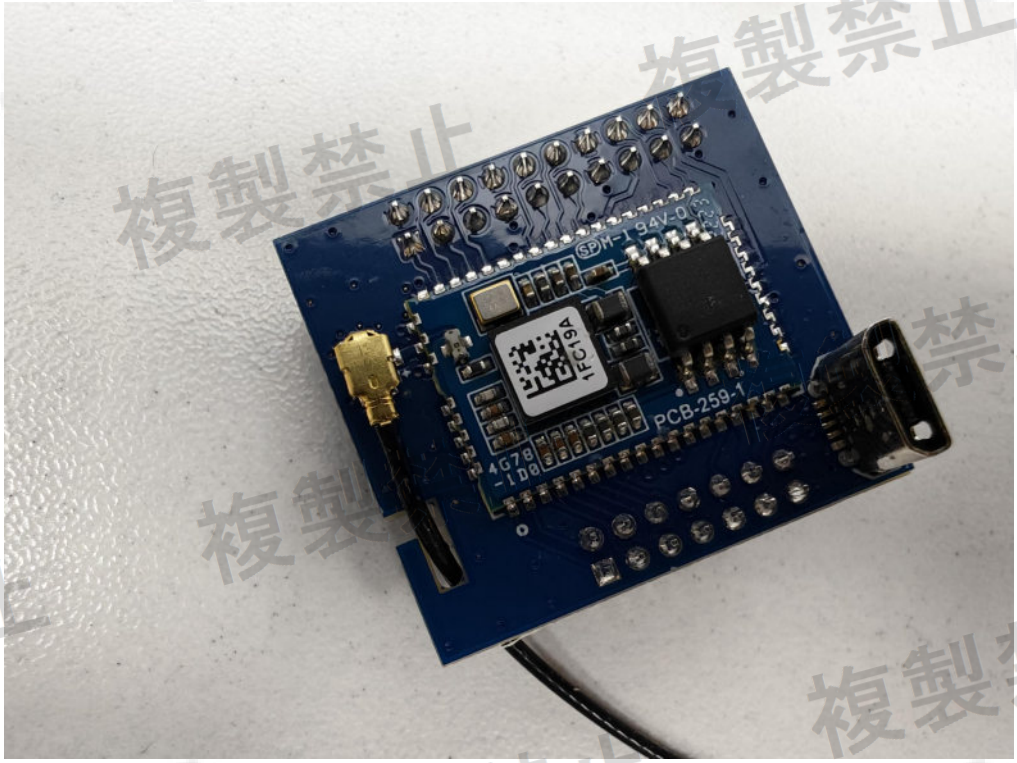
1. Connect the EUT in network
2. Open the software
3. We can get the information as follows:

**TEST RESULTS**

BT MAC: 42:44:12:A4:74:82

# 4. Test Setup Photos of the EUT

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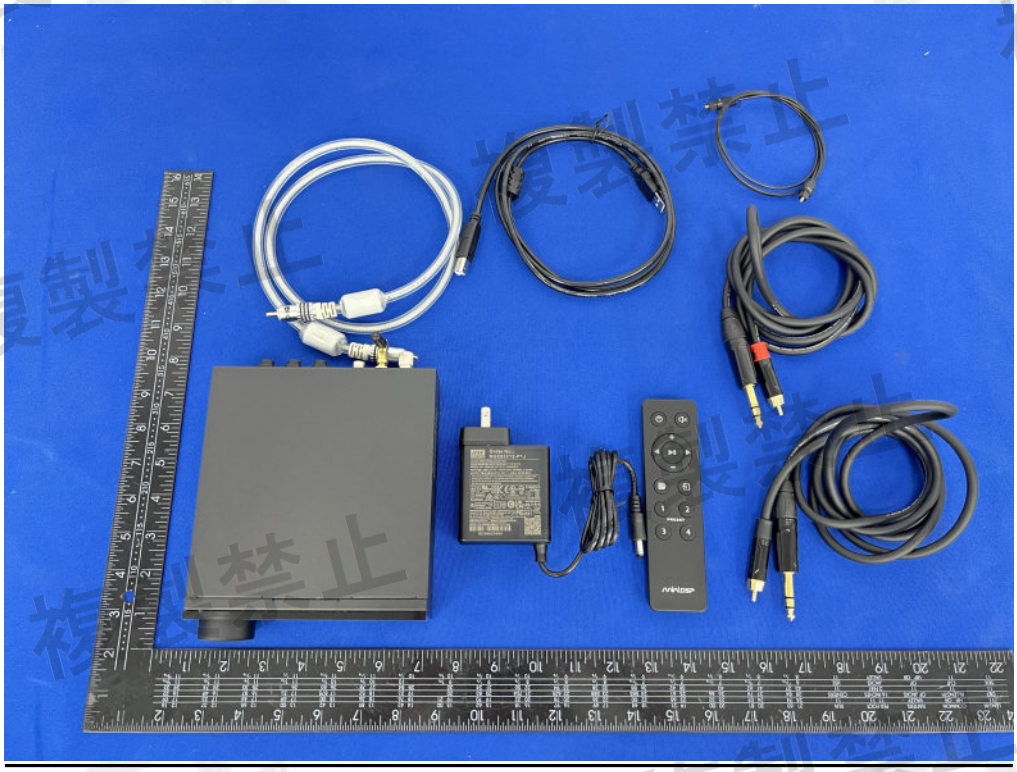
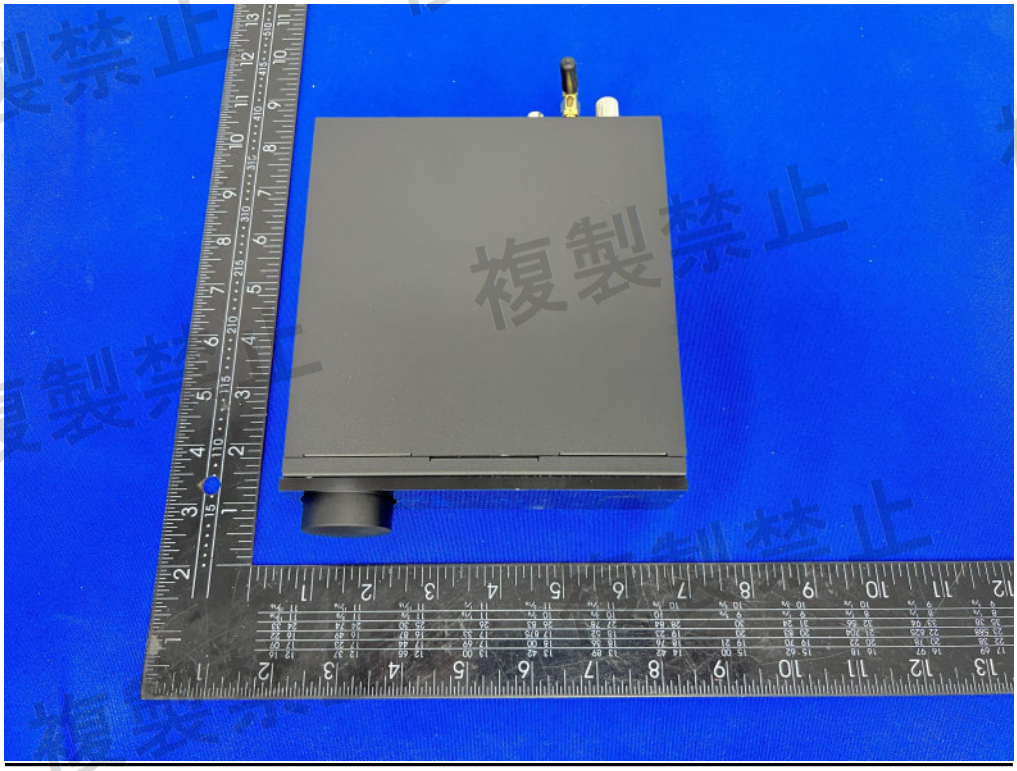
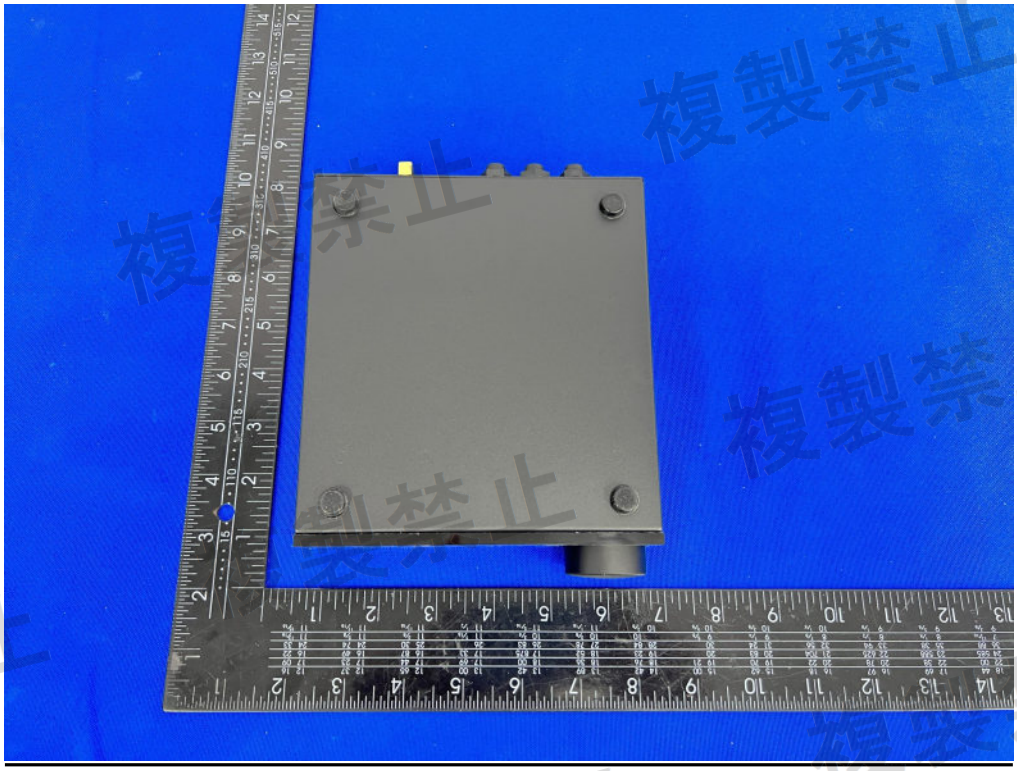
# 5. External and Internal Photos of the EUT

**External Photos of the EUT**







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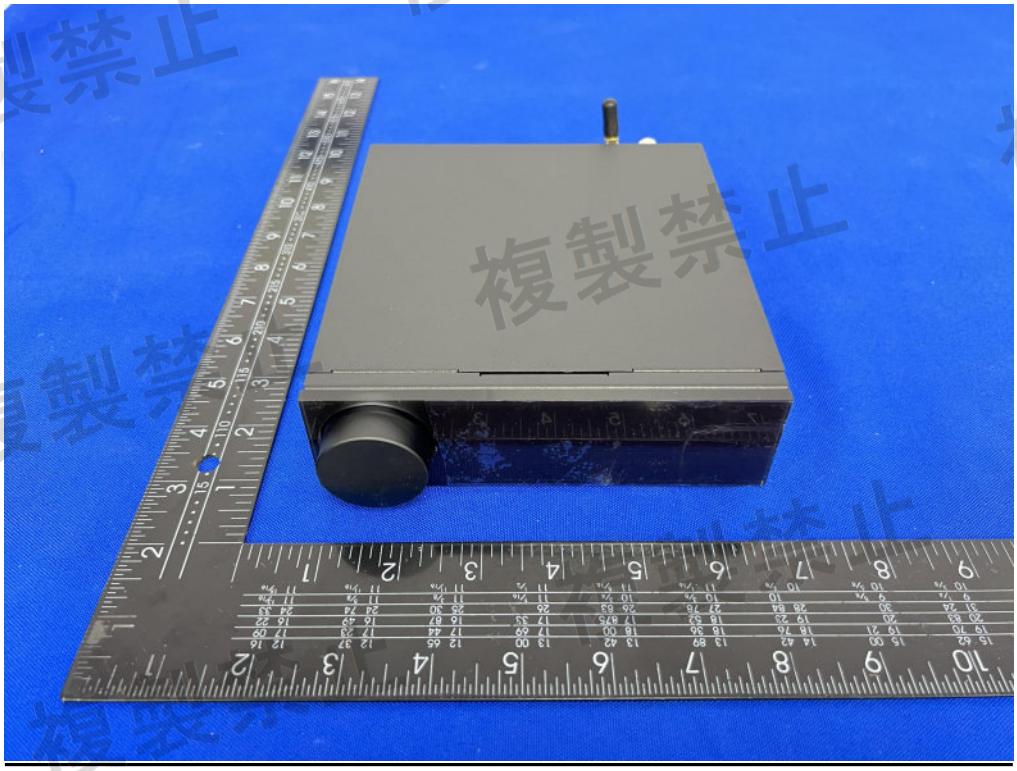

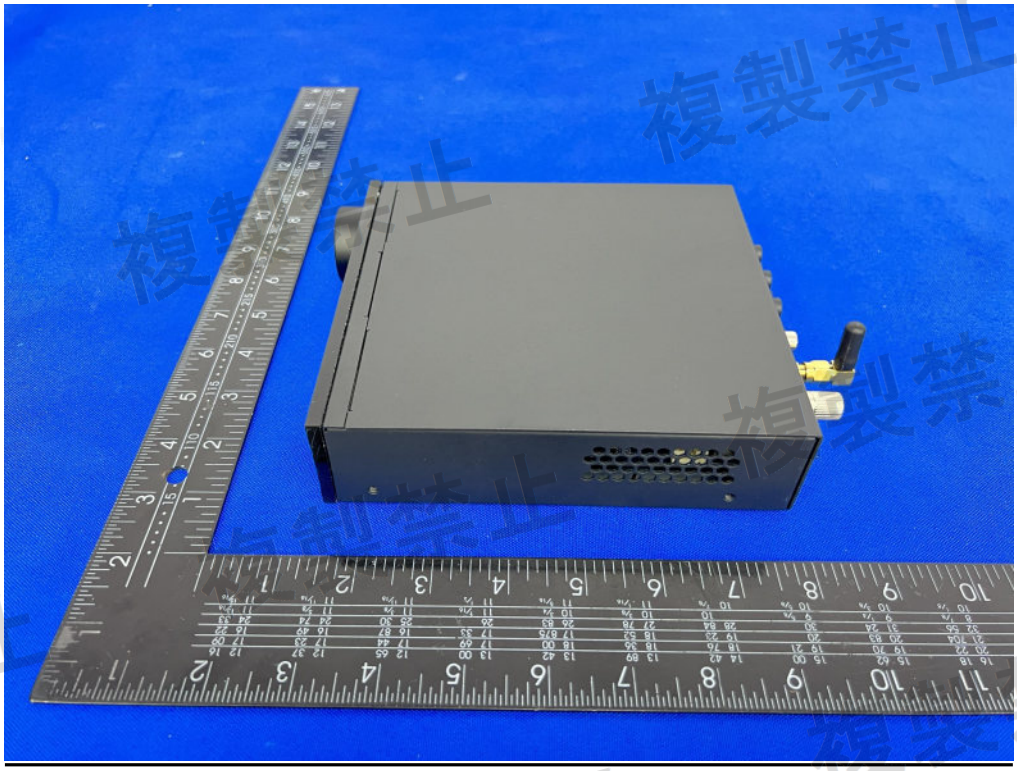

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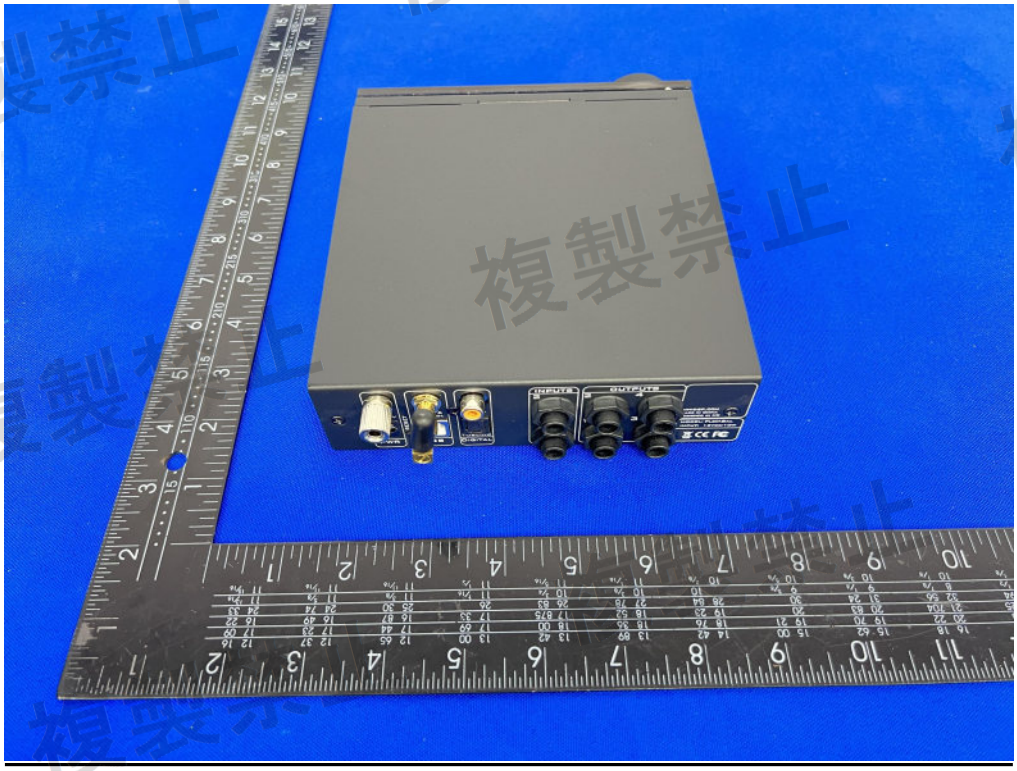


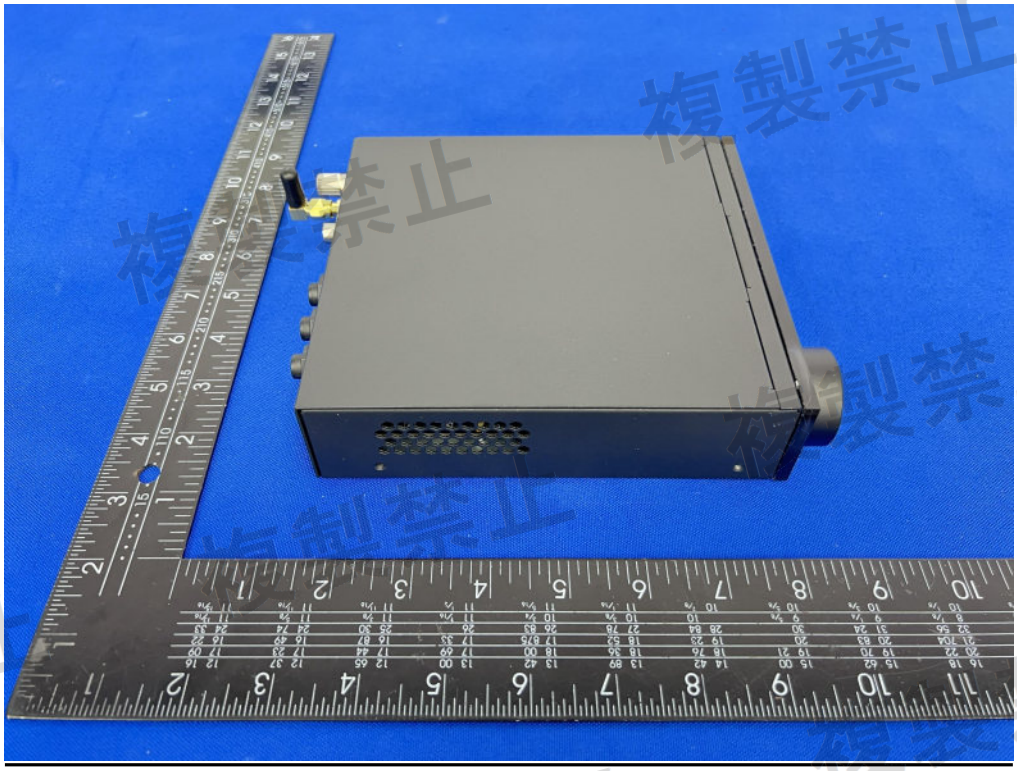

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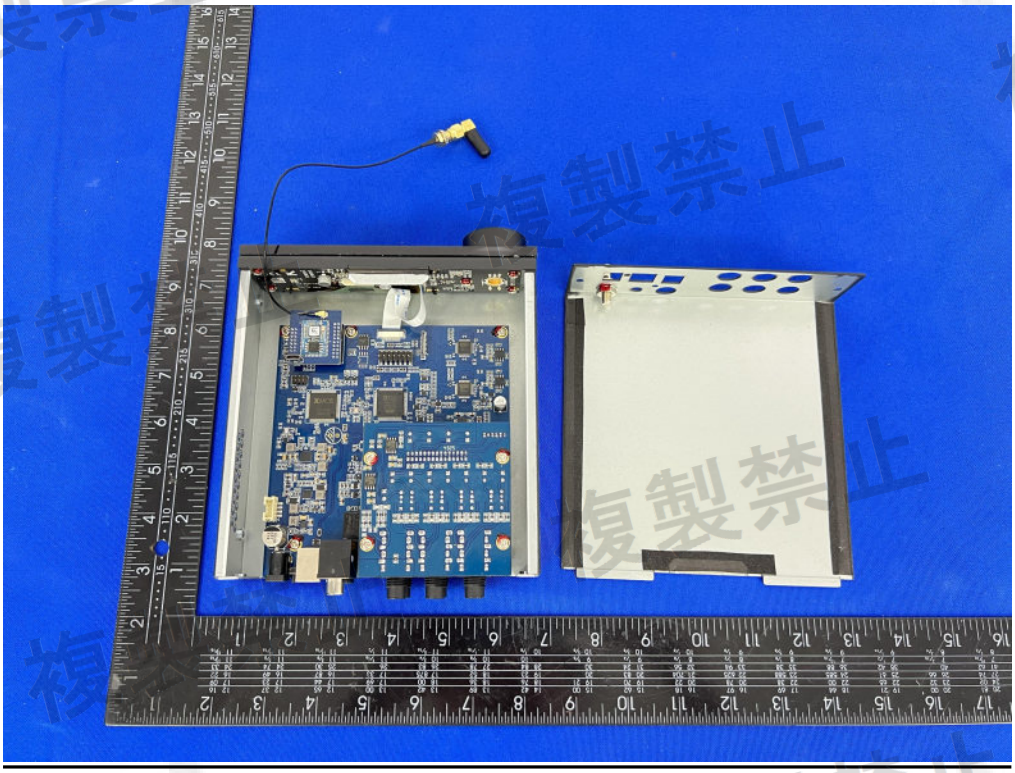
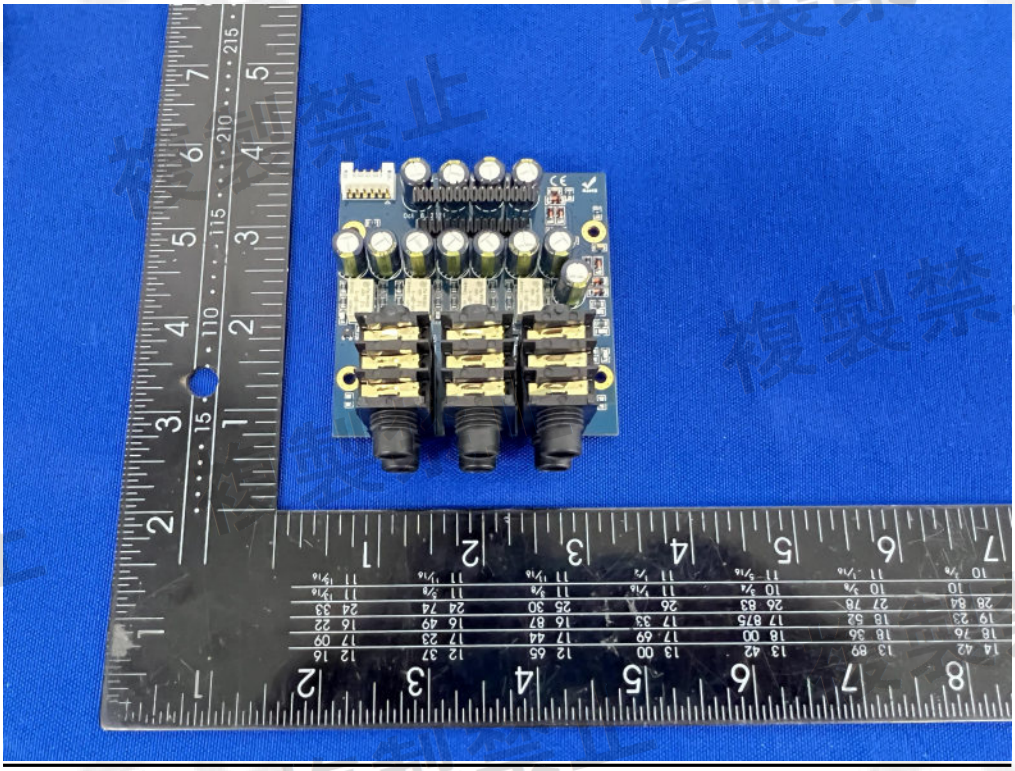
## Internal Photos of EUT





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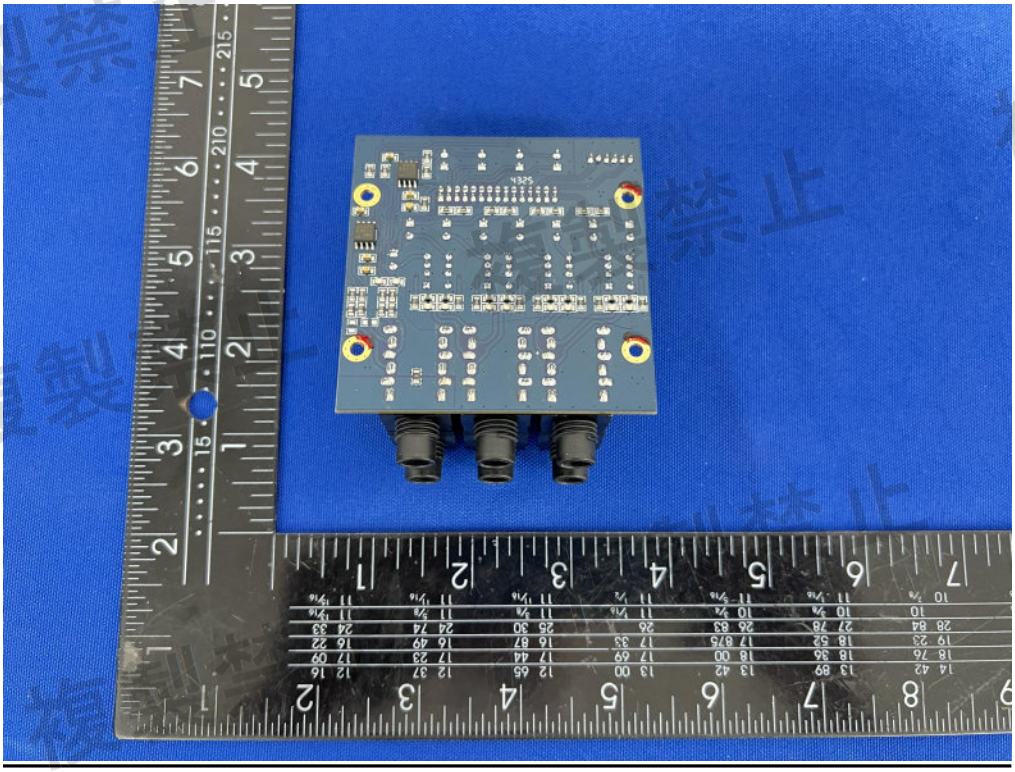

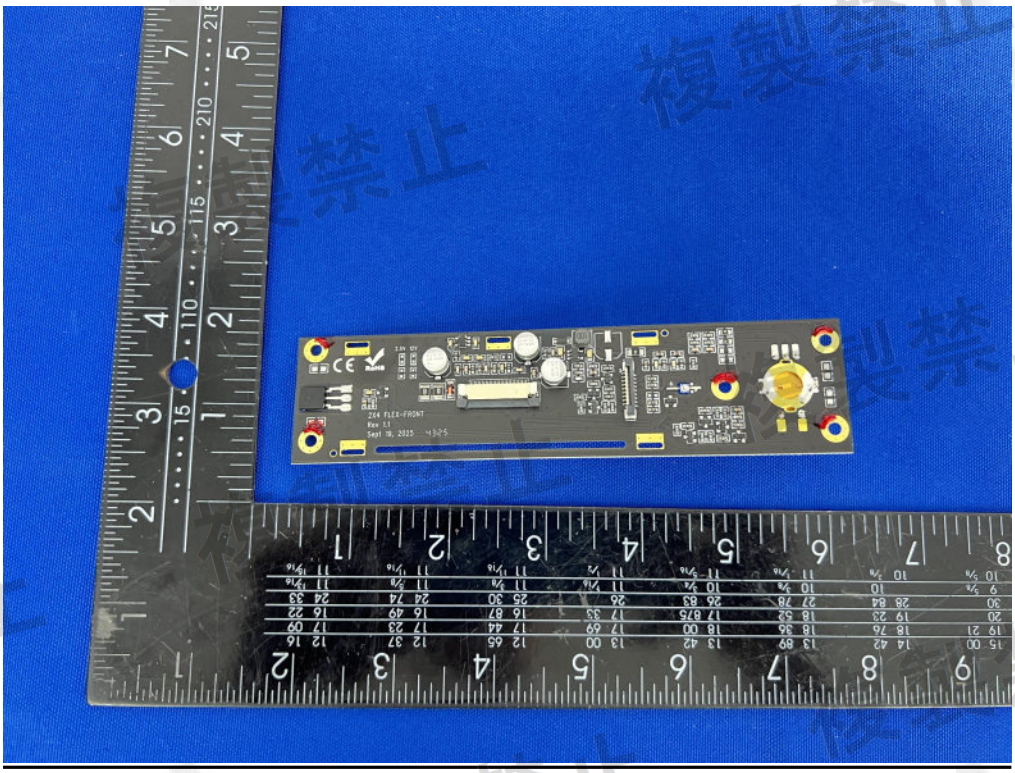


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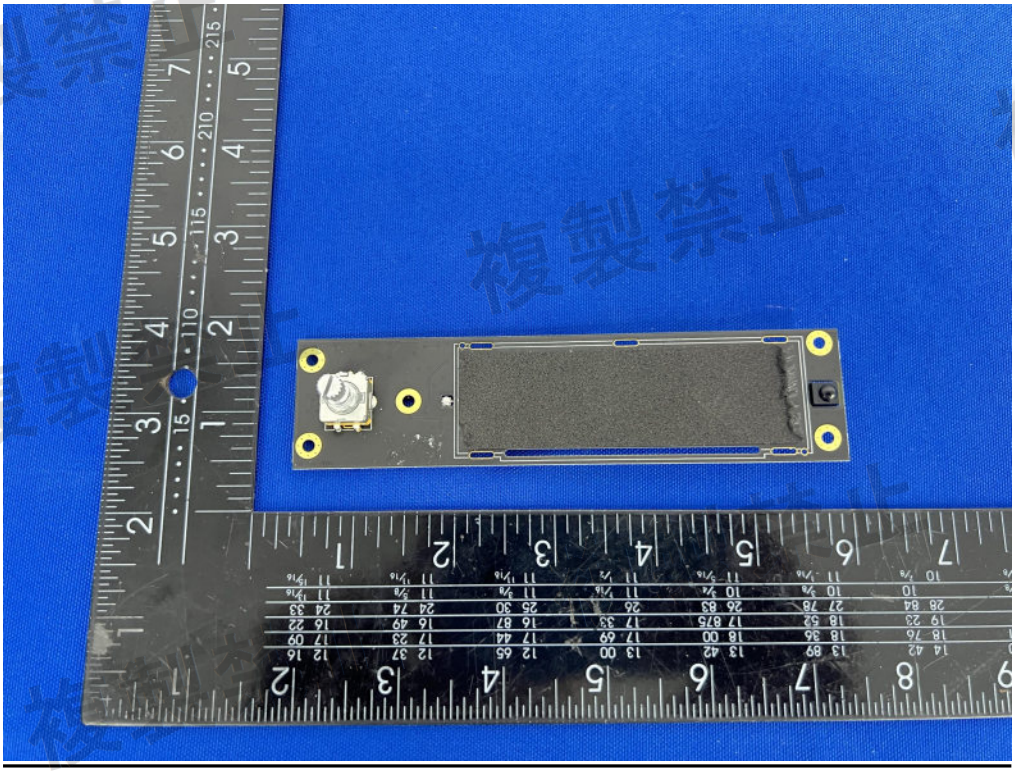

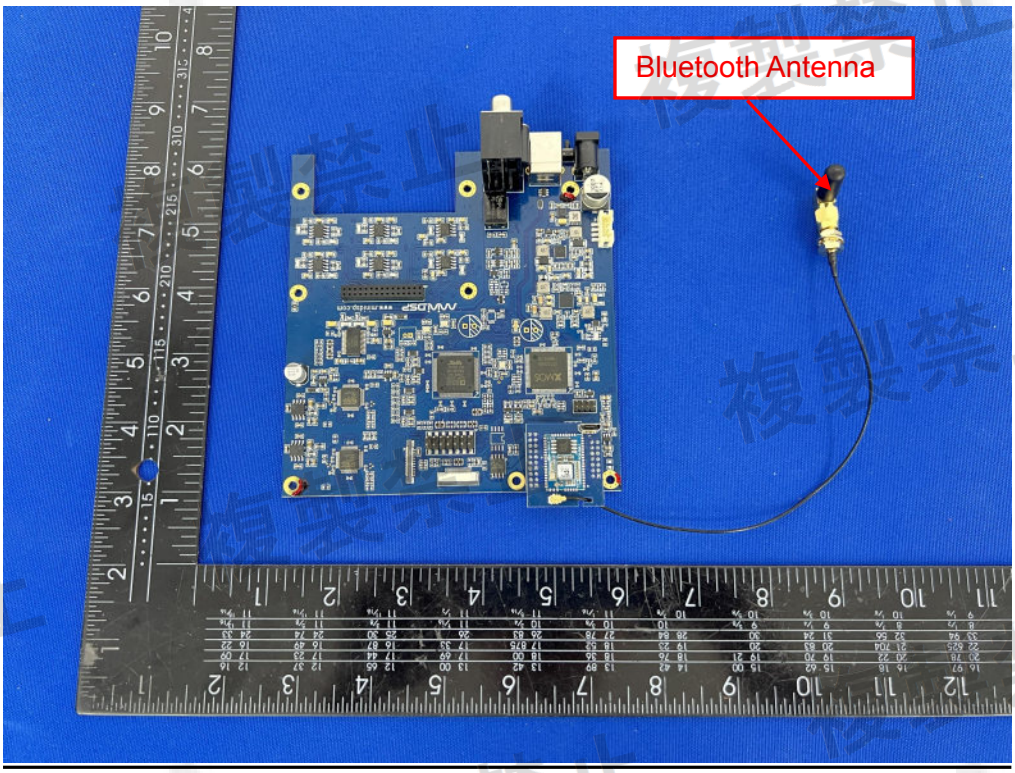


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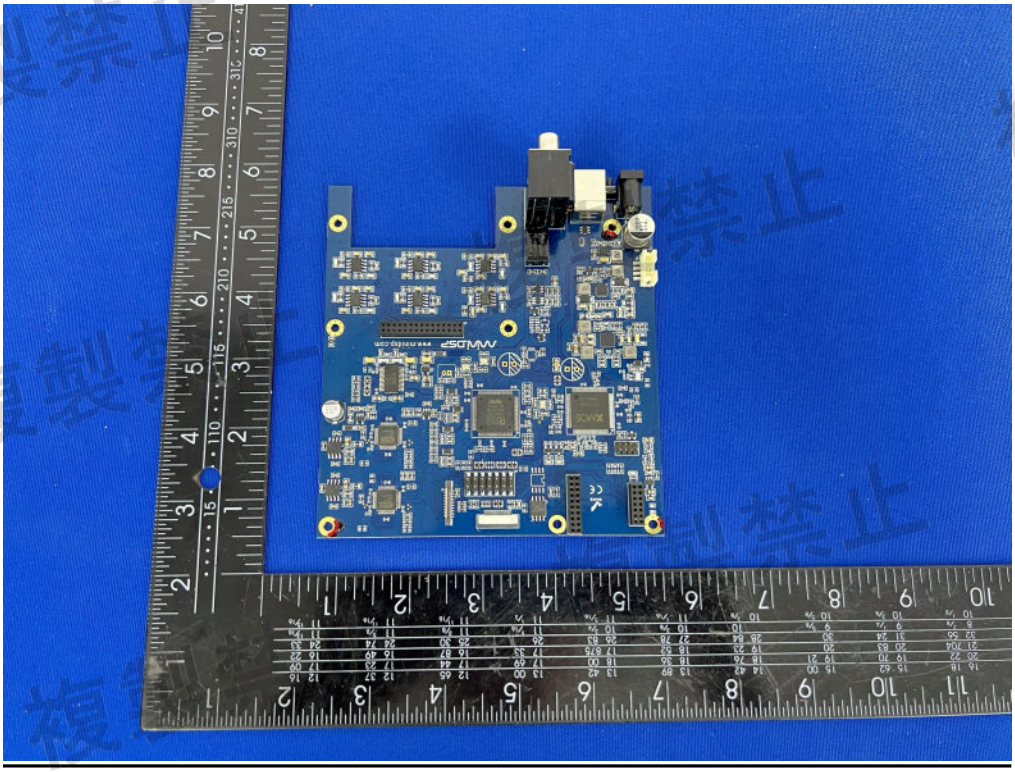

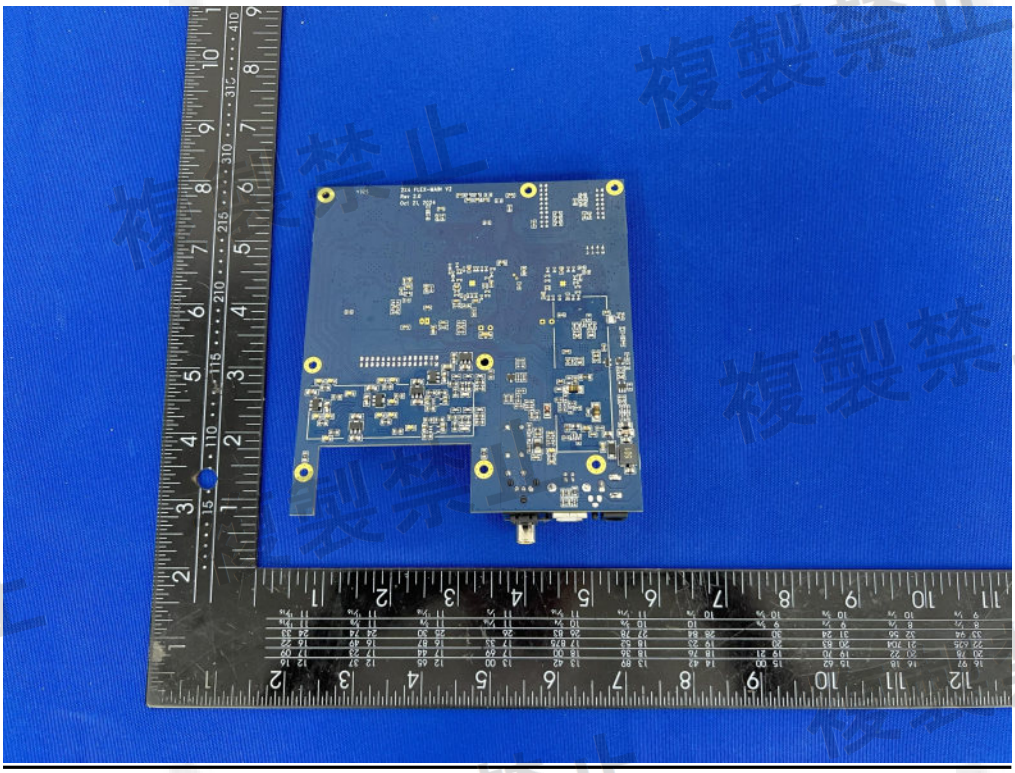

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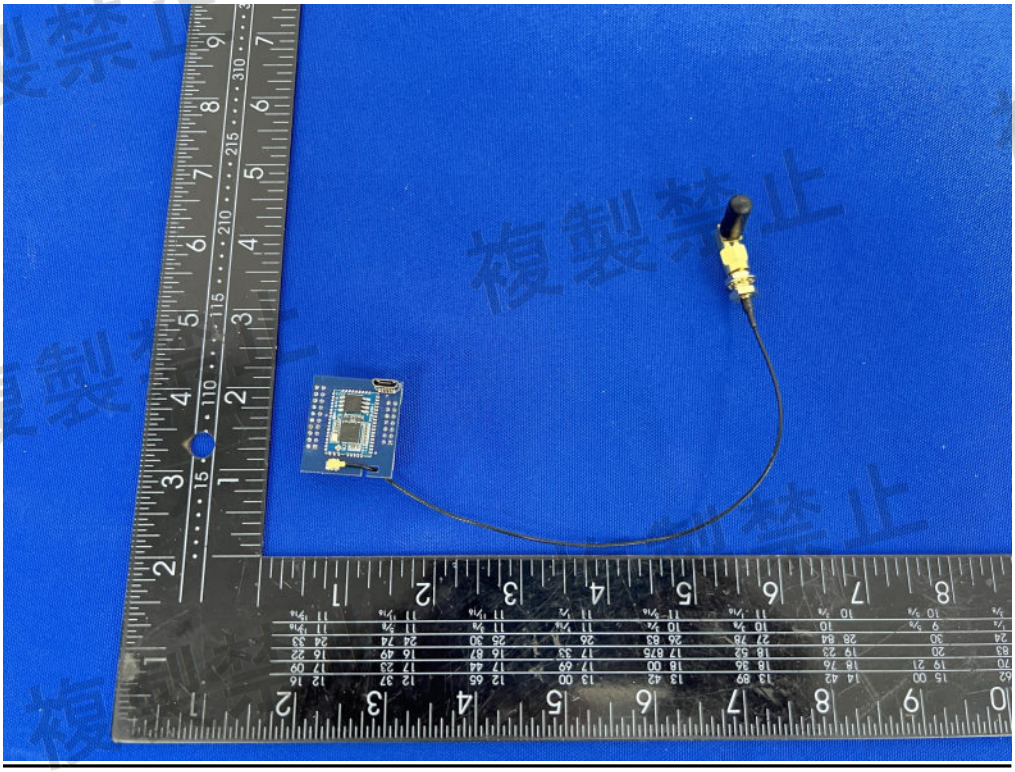

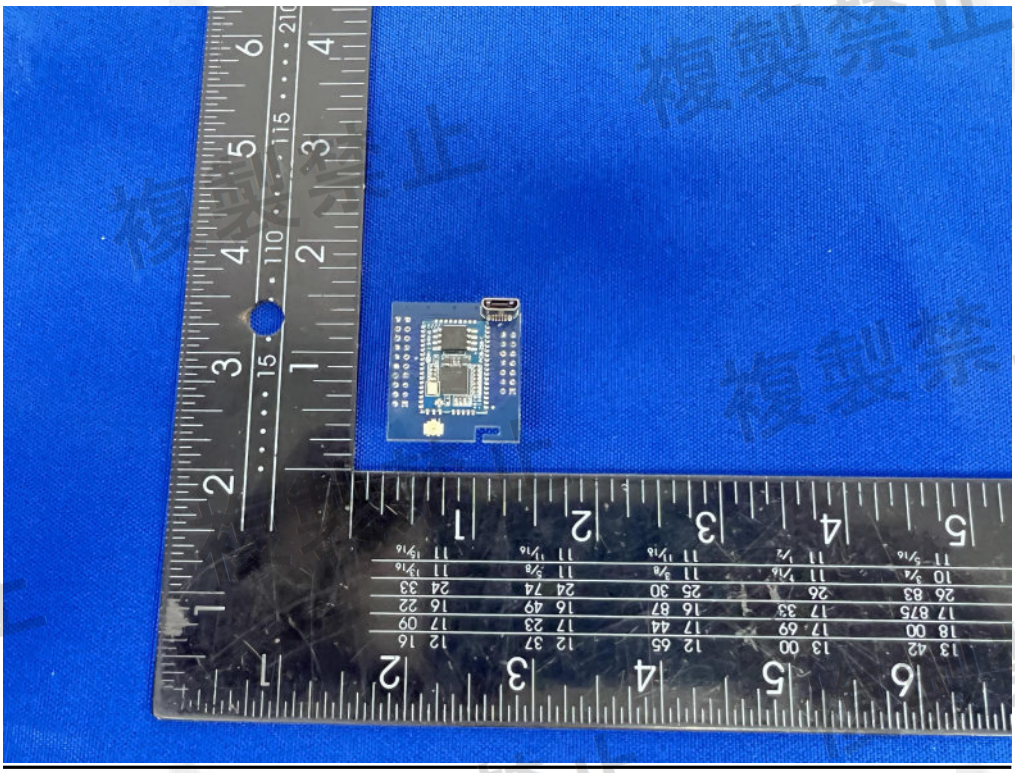

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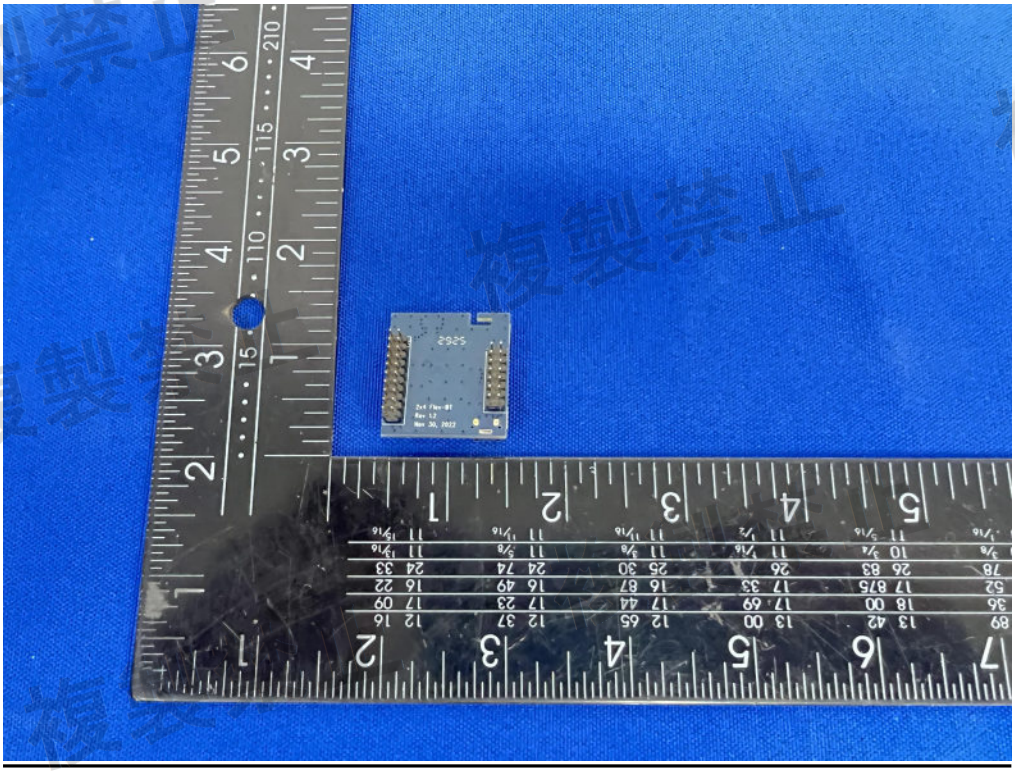

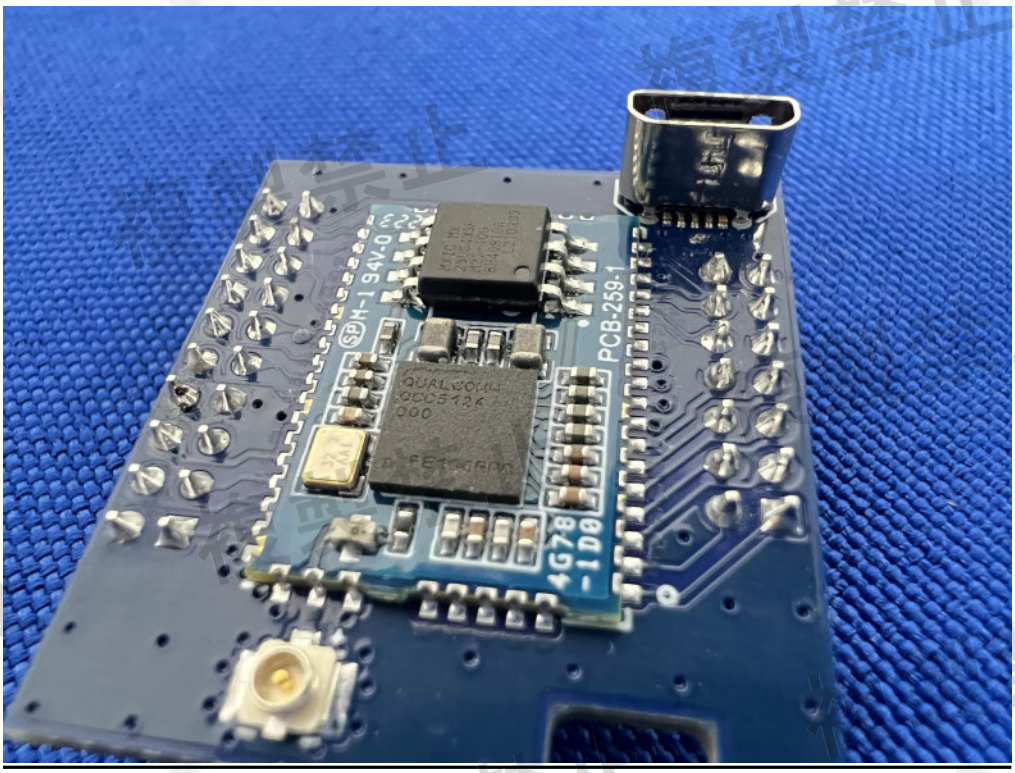


**********THE END**********

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