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TEST REPORT

Ordinance Article 2 paragraph 1 item (19)

Report Reference No.: CTL2605222091-MIC01

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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 Date of issue
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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 *
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* 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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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

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	$\pm 1.62 \cdot 10^{-6}$
Total RF power, conducted	$\pm 0.8\text{dB}$
Spurious emissions, conducted	$\pm 0.8\text{dB}$
DC and low frequency voltages	$\pm 0.05\%$
Humidity	$\pm 5\%$
Temperature	$\pm 1^\circ\text{C}$

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 $\pm 10\%$, the fluctuation of input voltage to the circuit of RF unit of test equipment is exceed $\pm 1\%$. 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 Input: 100-240VAC, 50/60Hz, 1.5-0.8A 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, $\pi/4$ DQPSK, 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	WIDEBAND RADIO COMMUNICATION TESTER	RS	CMW500	1201.000 2K50-107 930-CD	Guangdong Jingheng Detection Tecanology Co.,Ltd.	2025/07/03	2026/07/02
3	Power Measurement 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	Temperature 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

- $\leq 3 \text{ mW /MHz}$ (FHSS from 2402-2480 MHz)
- $\leq 10 \text{ mW/MHz}$ (OFDM, DSSS from 2400-2483.5 MHz)
- $\leq 10 \text{ mW}$ (other from 2400-2483.5 MHz)

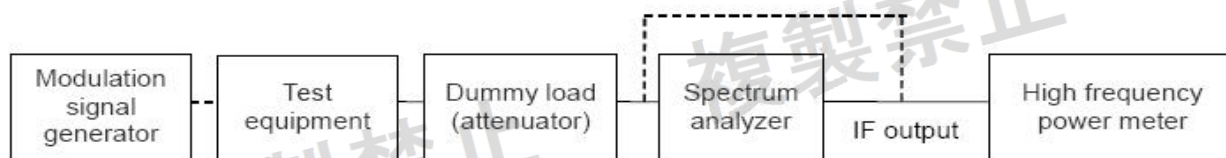
The Output Power Tolerance must be within 20%.

E.i.r.p:

- $\leq 6.91 \text{ dBm/MHz}$ (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 follow:
- 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) $\div$ (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 $\leq$ 83.5 MHz; OFDM $\leq$ 40 MHz, DS $\leq$ 26 MHz; Others $\leq$ 26 MHz
- Spread Bandwidth: $\geq$ 500 kHz(FH,DS)
- Spread factor $>$ 5.

TEST CONFIGURATION



TEST PROCEDURE

1. Setting of SA is following as follow:
 - 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: 2.5 μ W/MHz or less

2387 to 2400 MHz: 25 μ W/MHz or less

2483.5 Through 2496.5 MHz: 25 μ W/MHz or less

Over 2496.5 MHz: 2.5 μ W/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

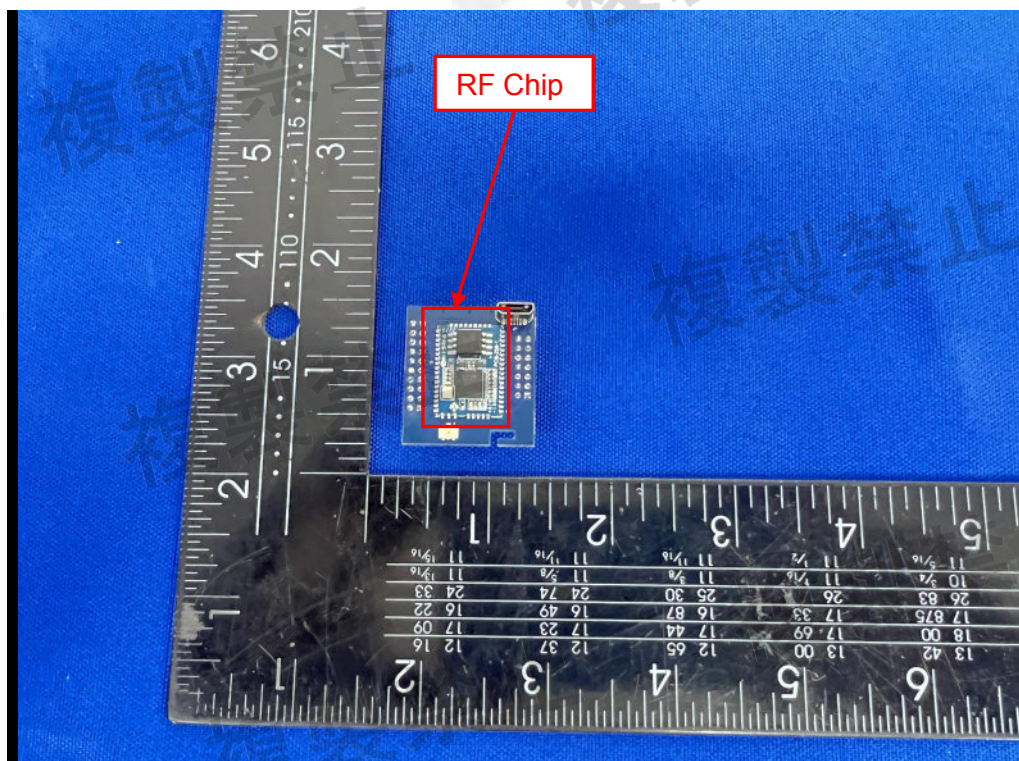
Confirmation method

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).

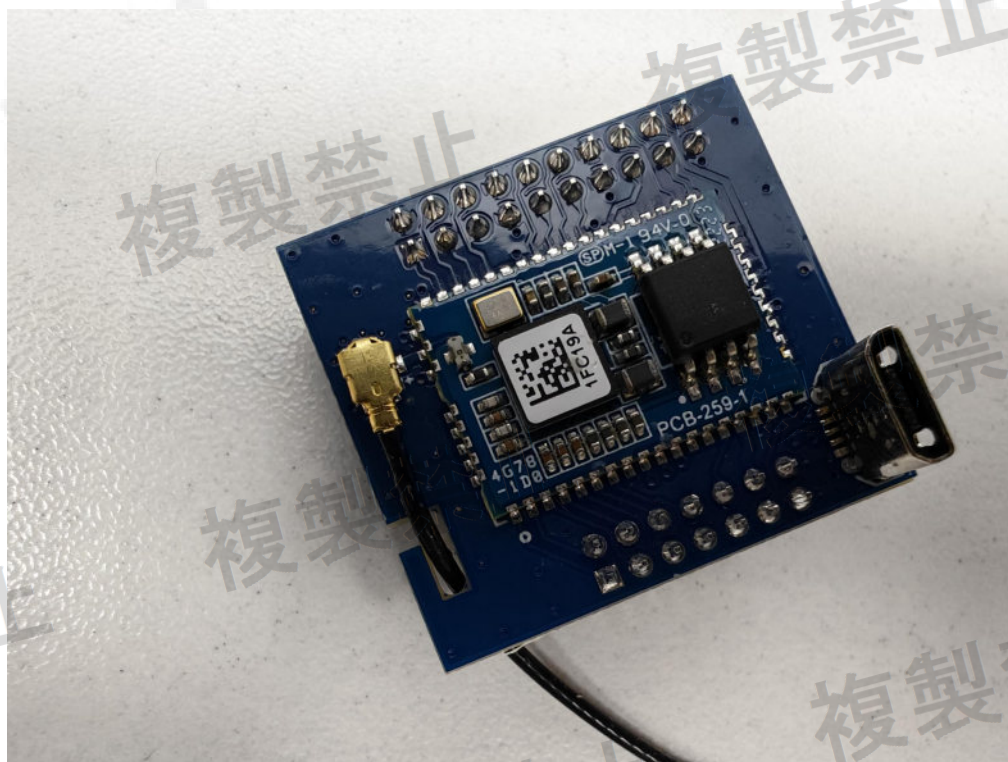
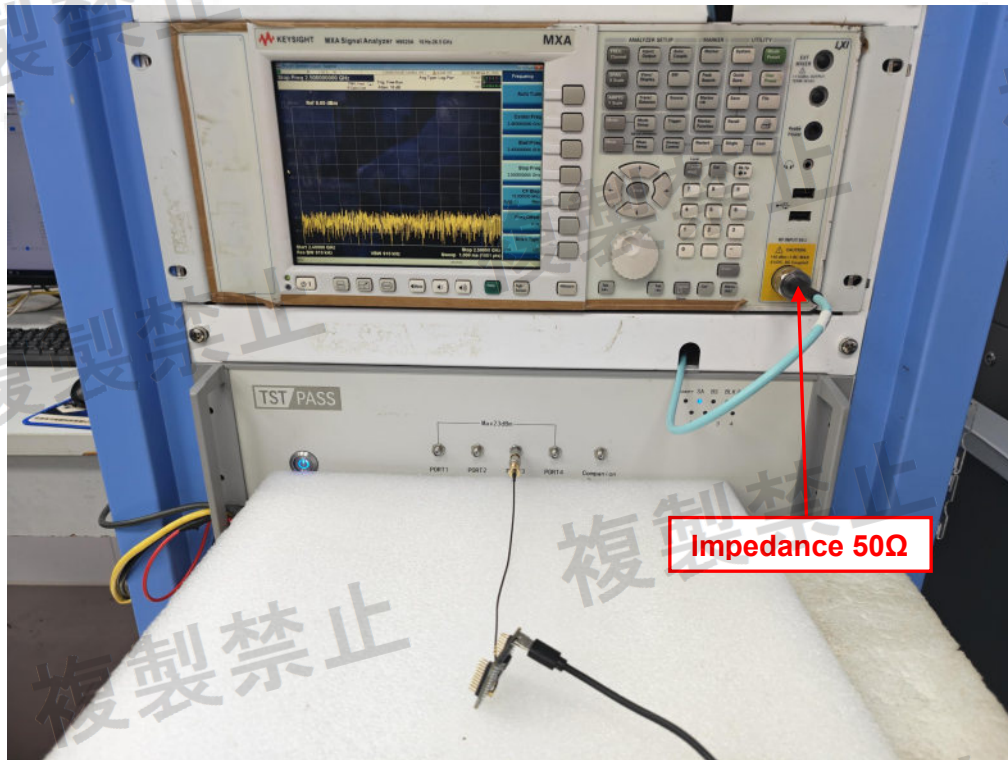
TEST PROCEDURE

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

TEST RESULTS

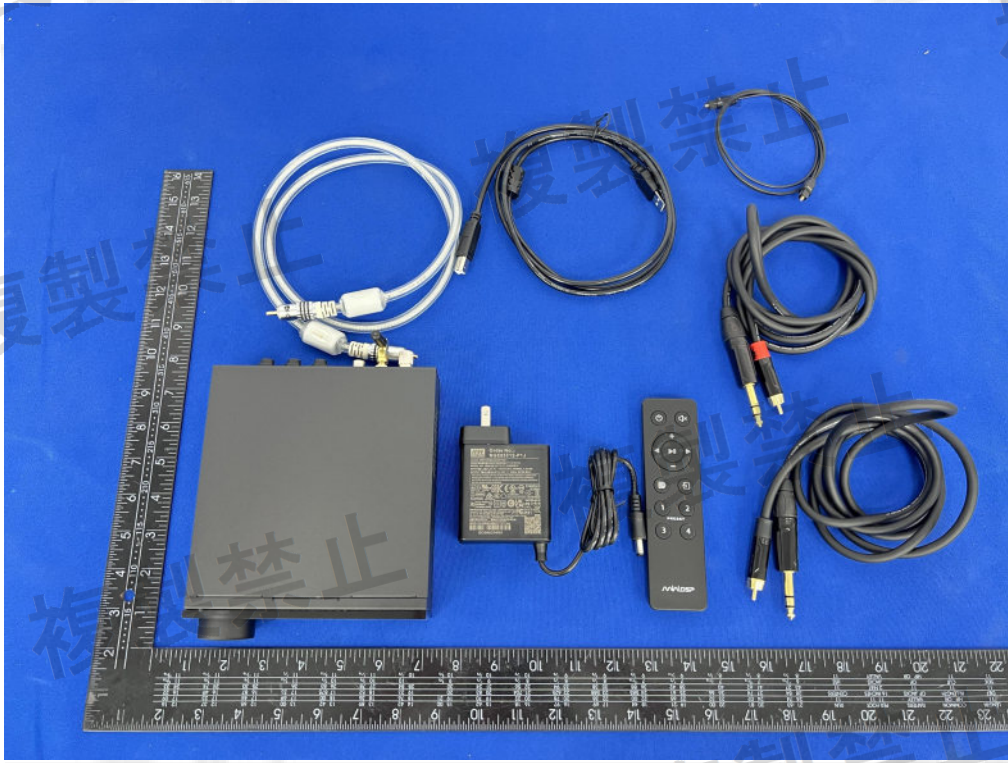
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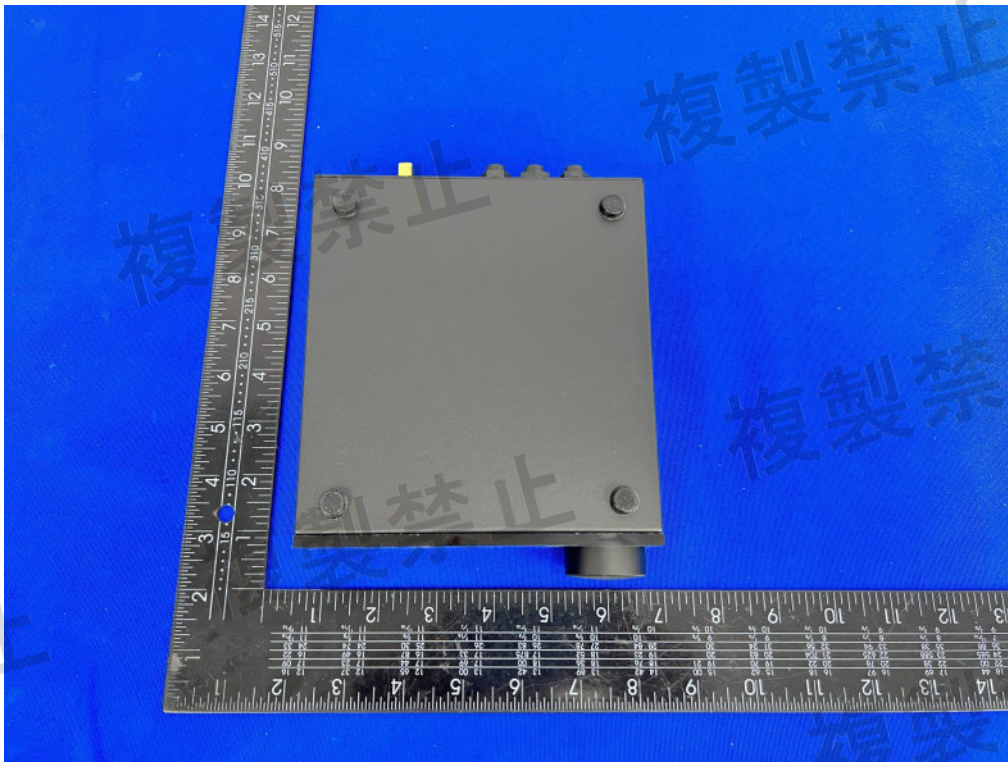
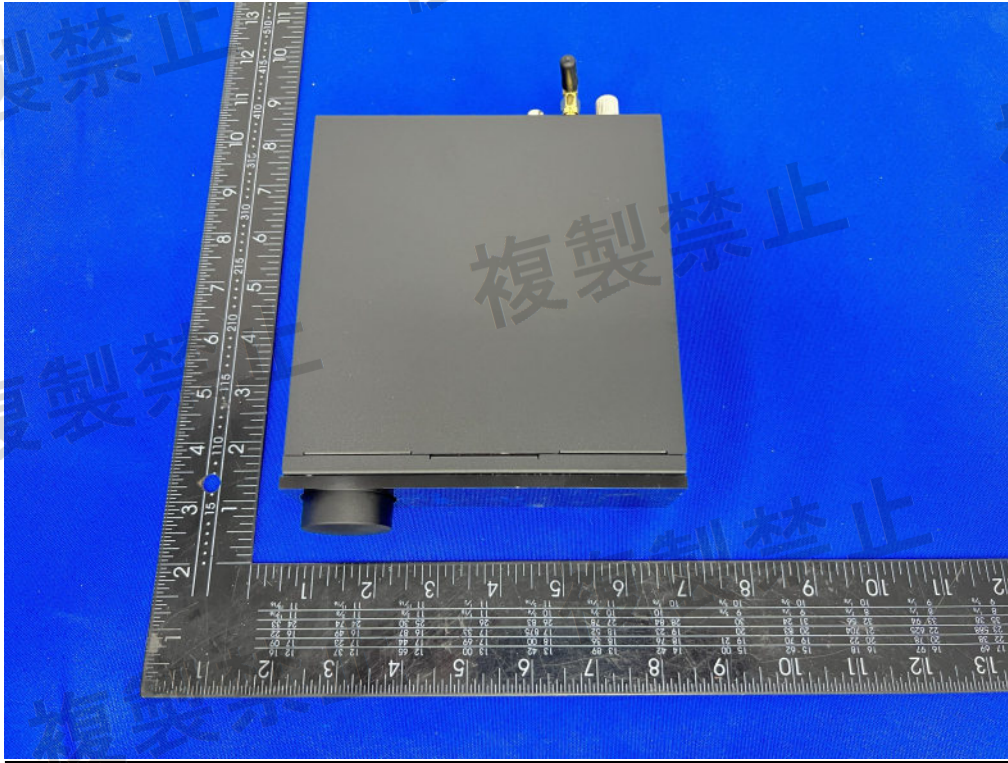
4. Test Setup Photos of the EUT

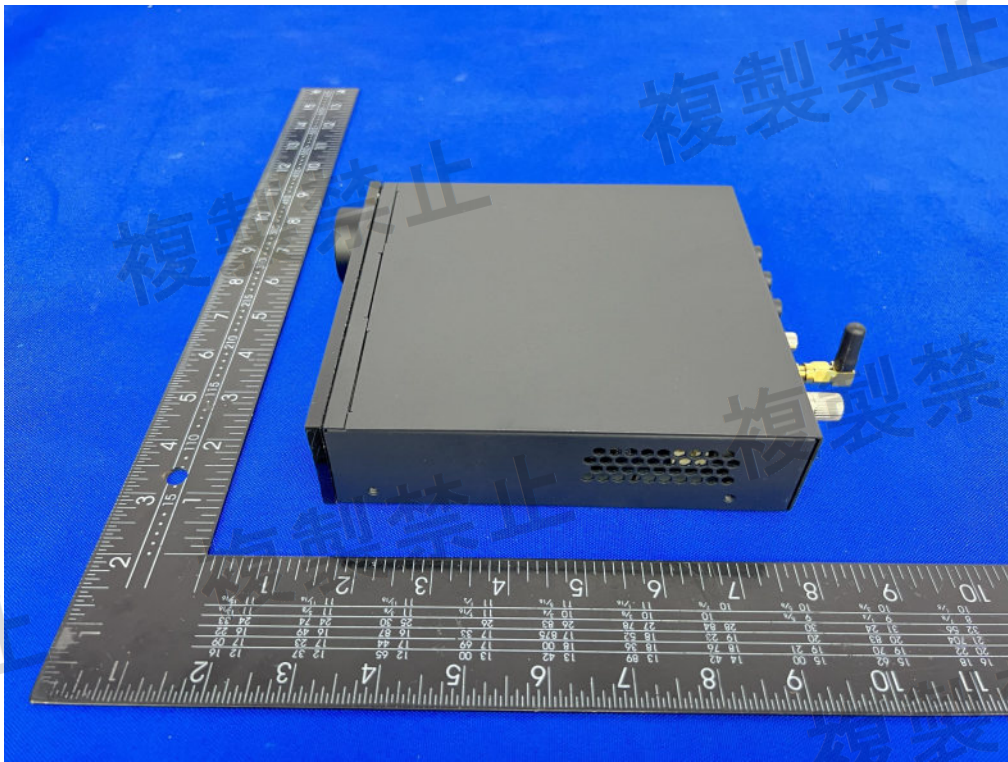
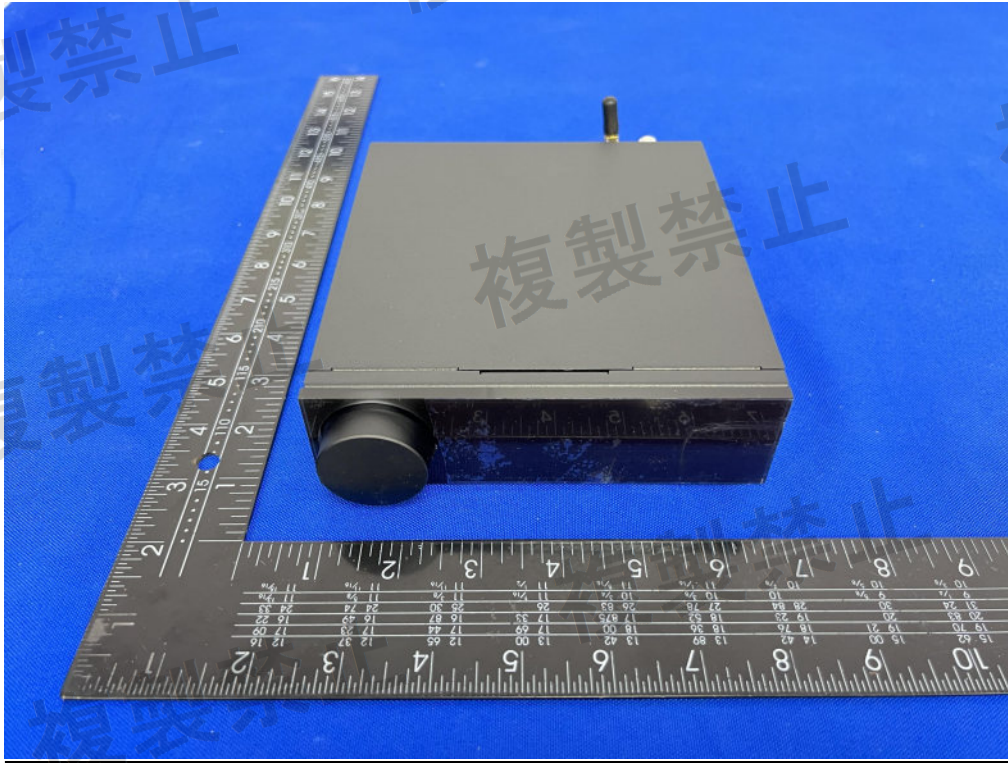


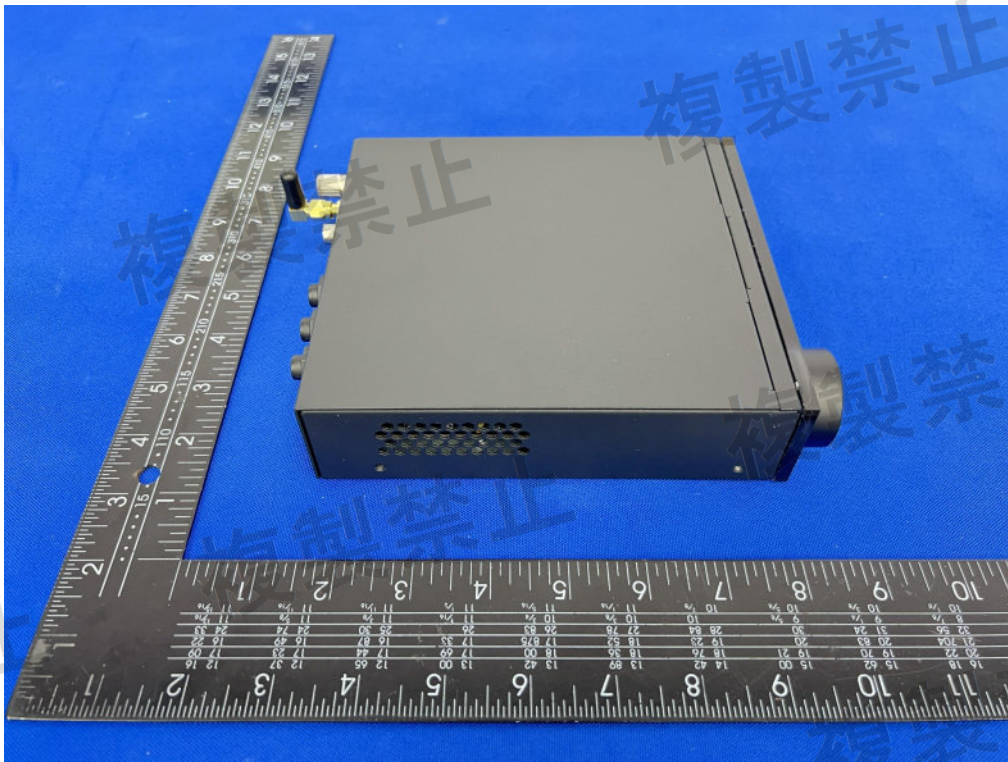
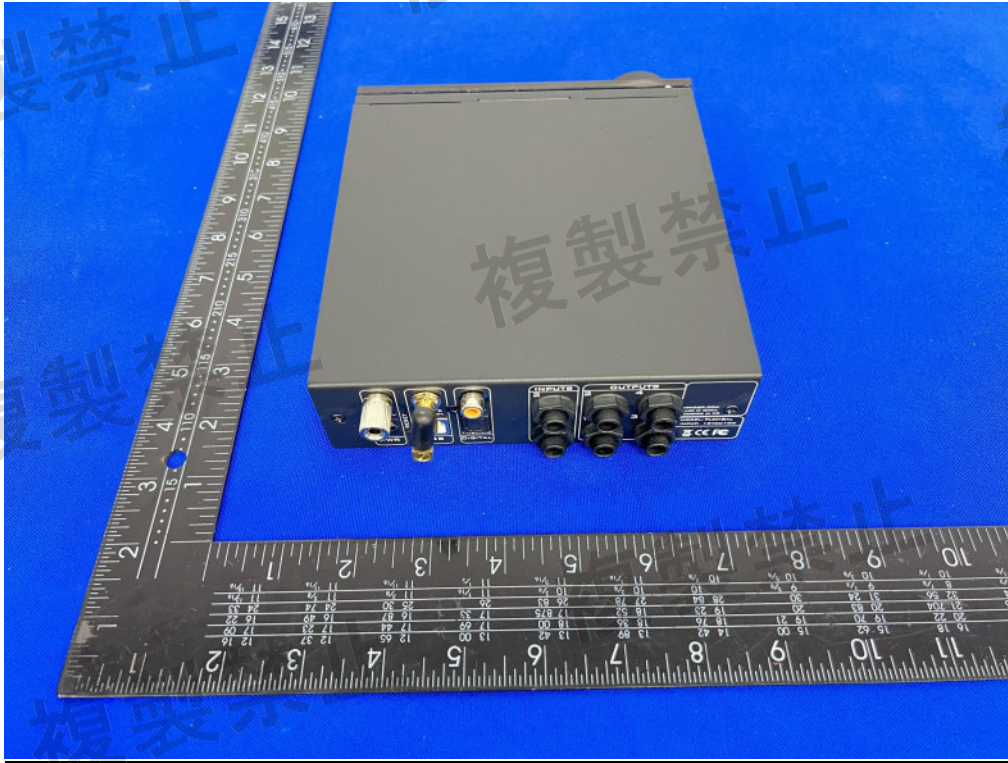
5. External and Internal Photos of the EUT

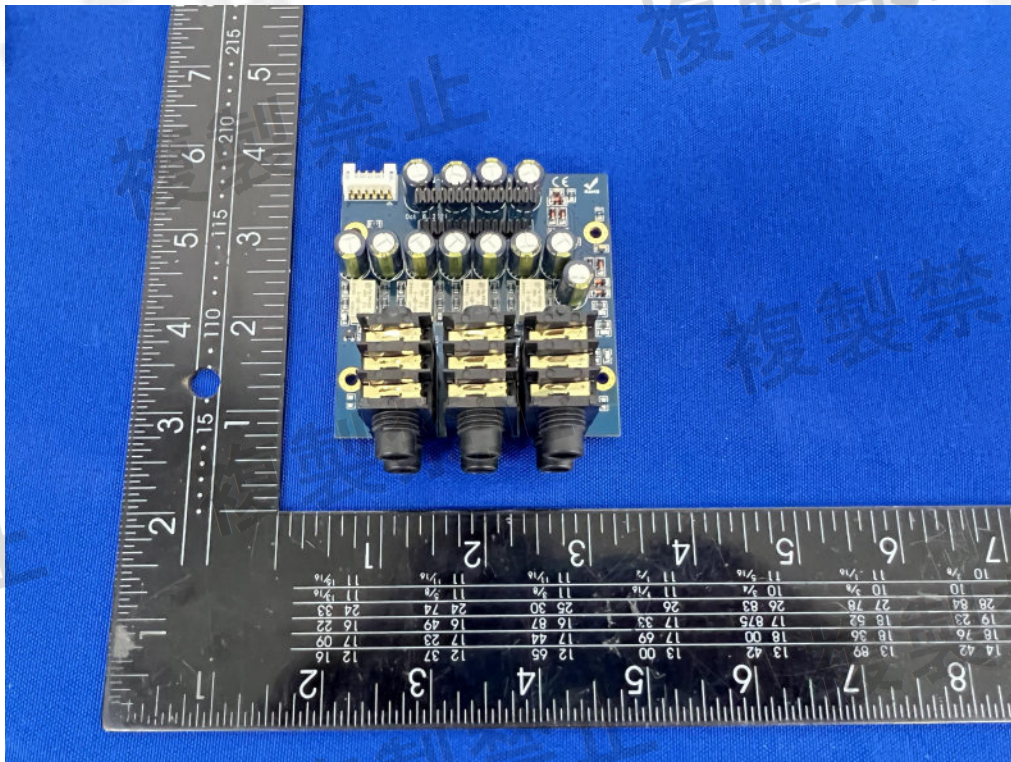
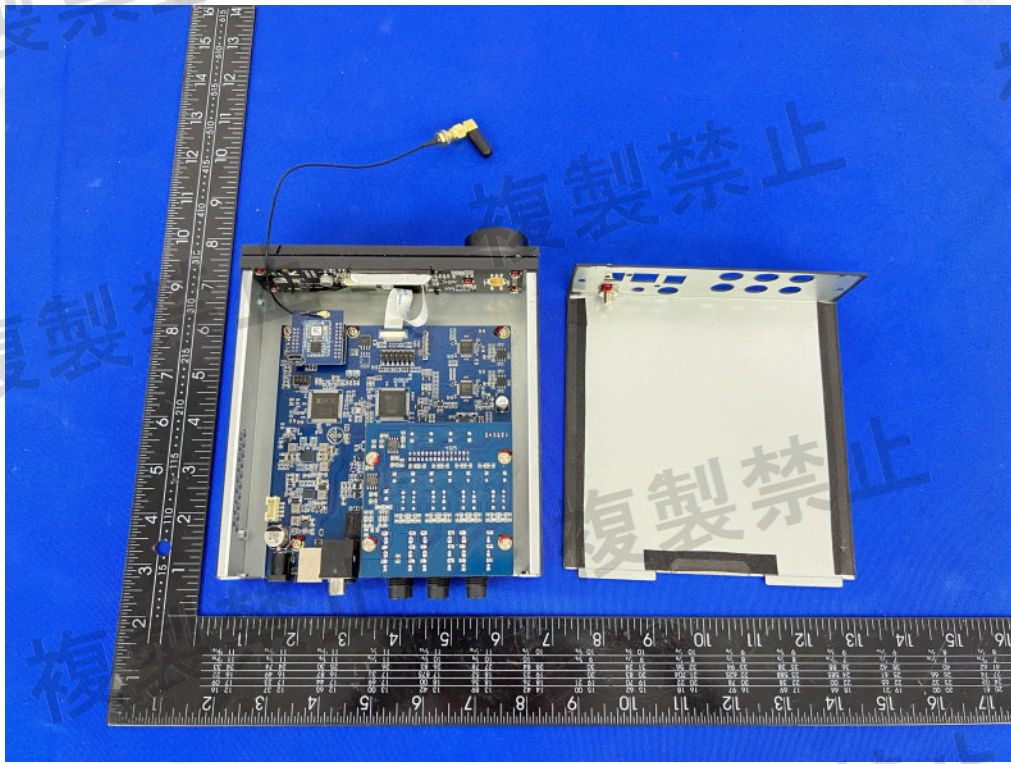
External Photos of the EUT

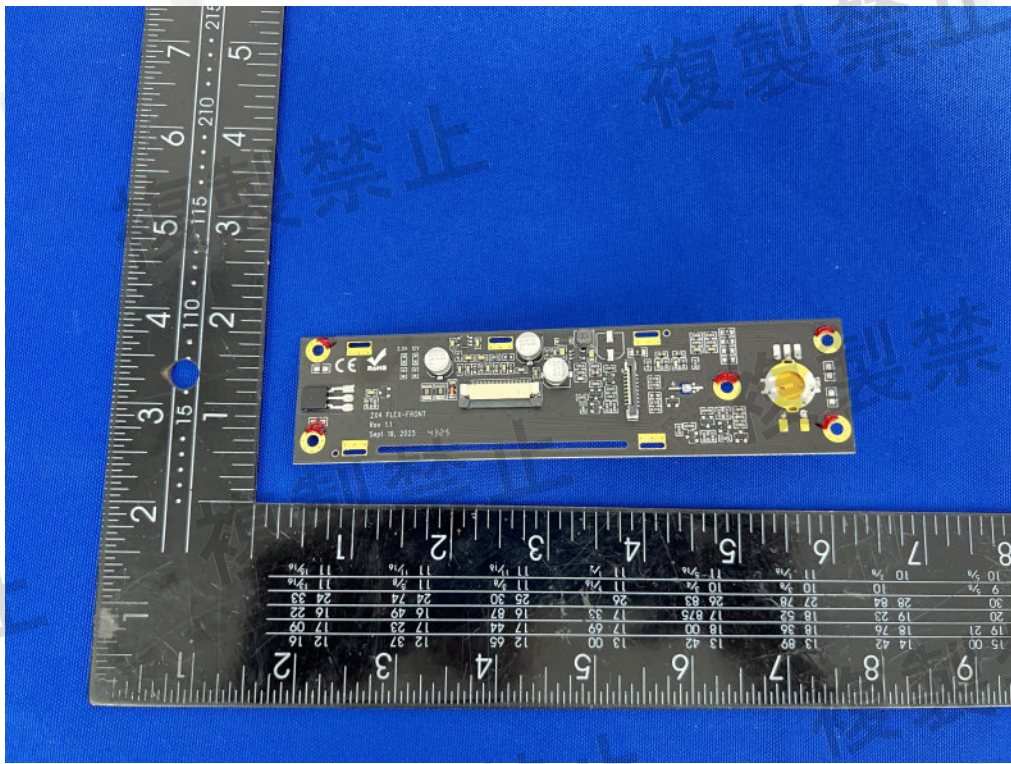
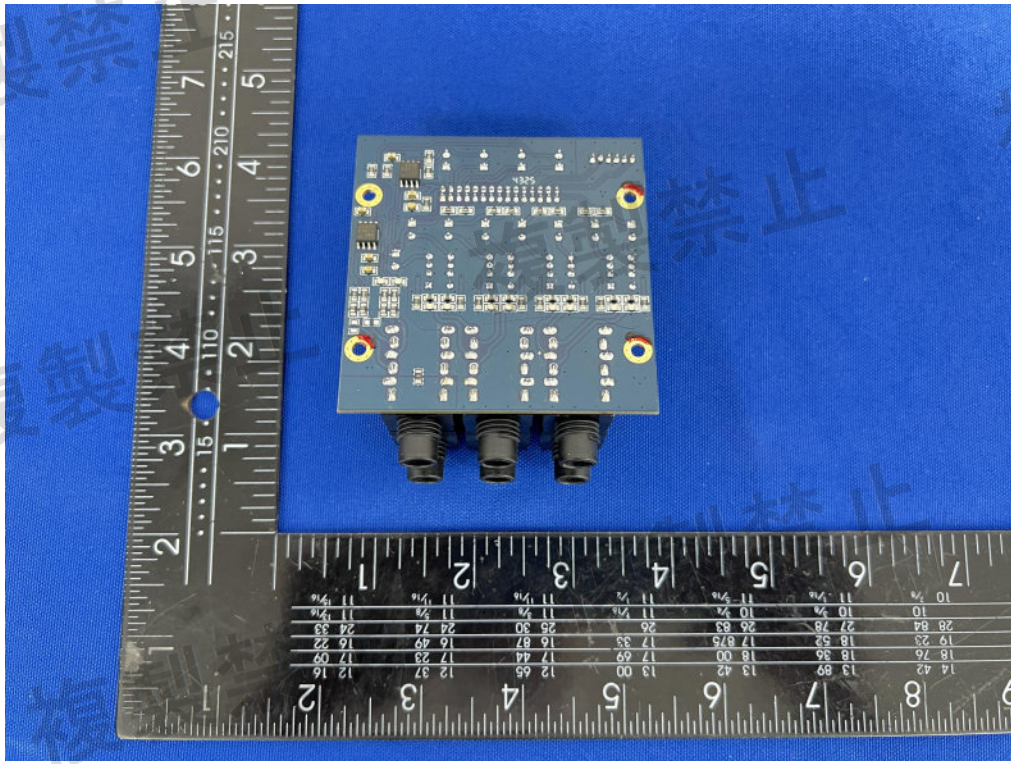


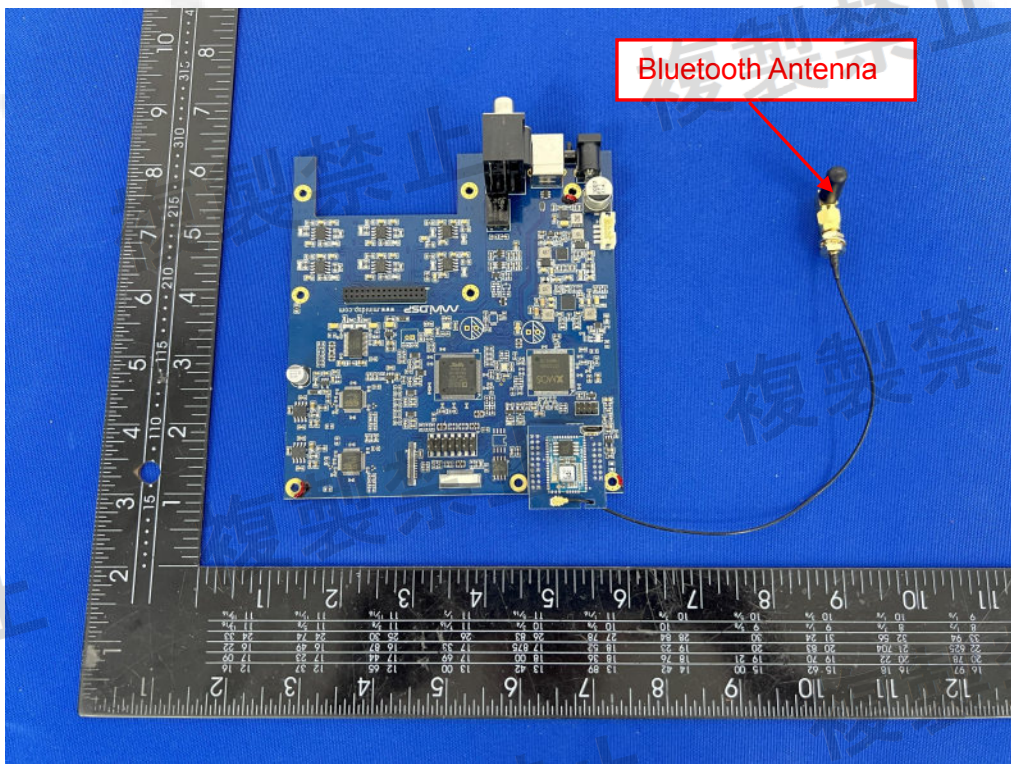
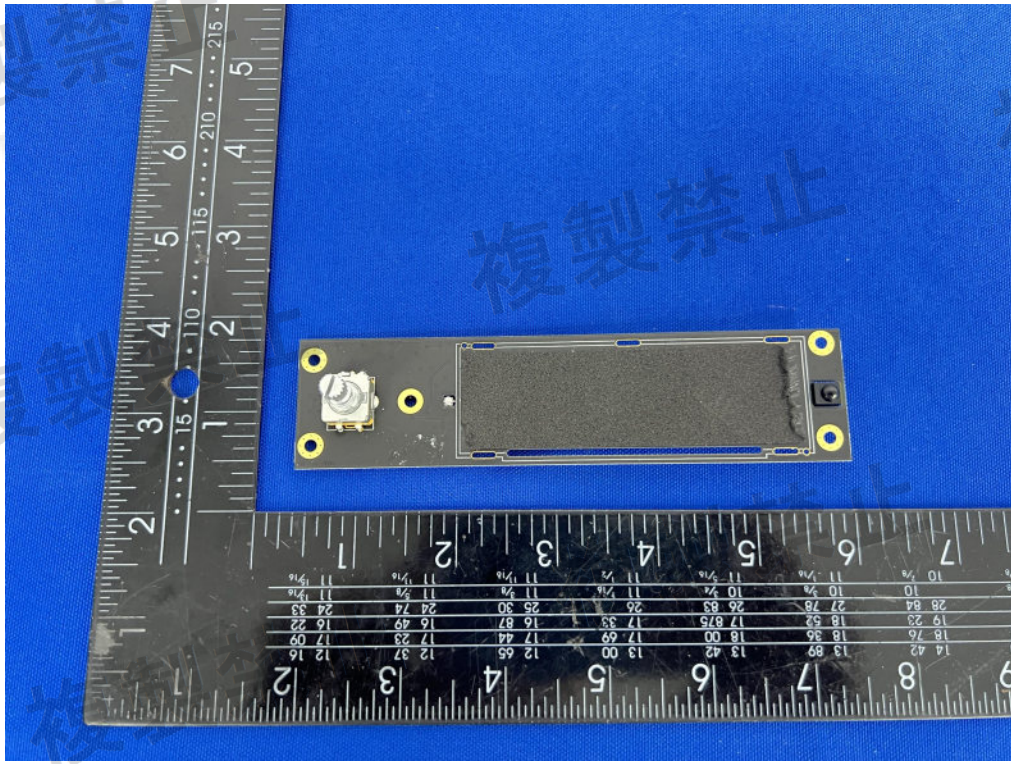


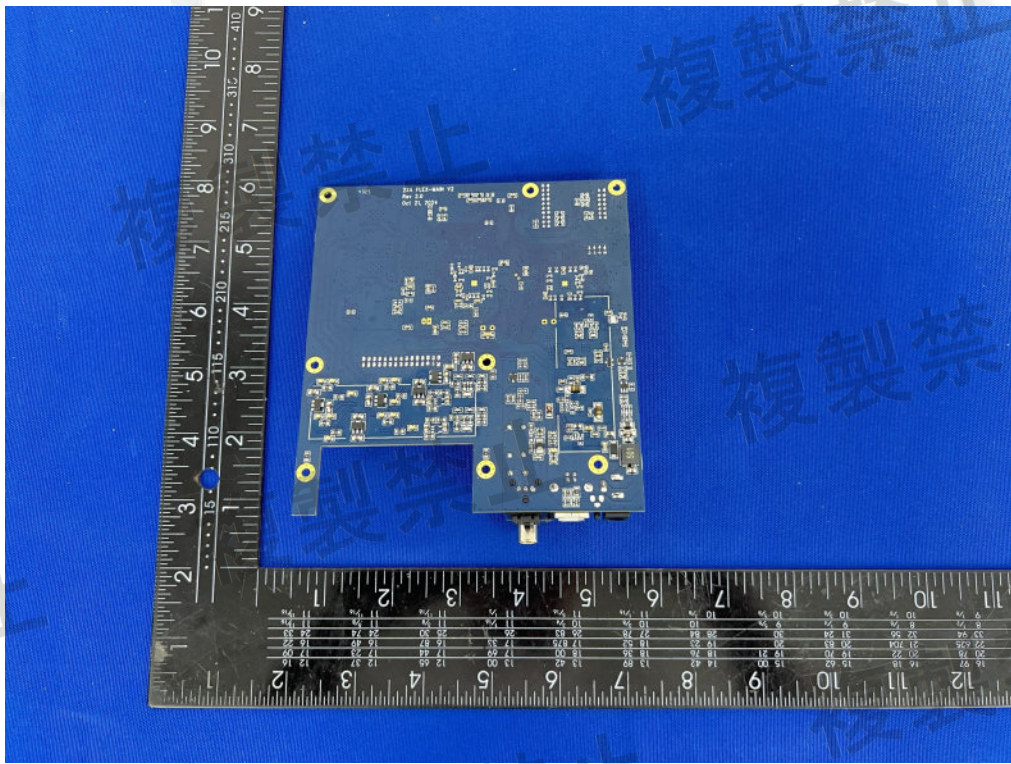
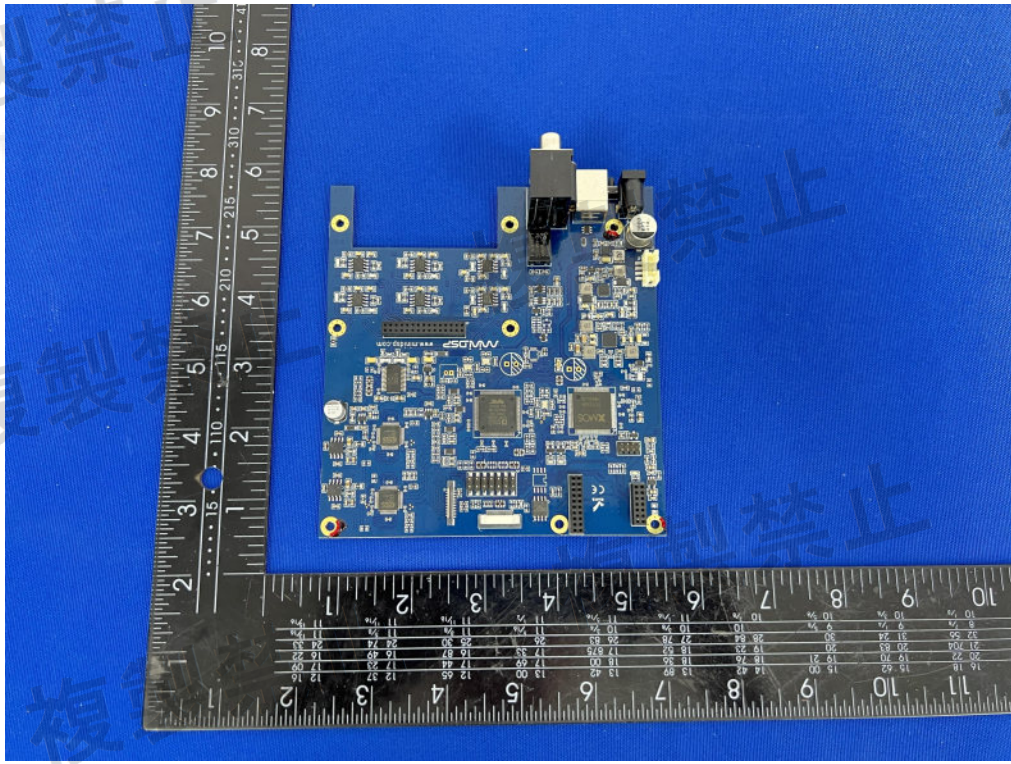


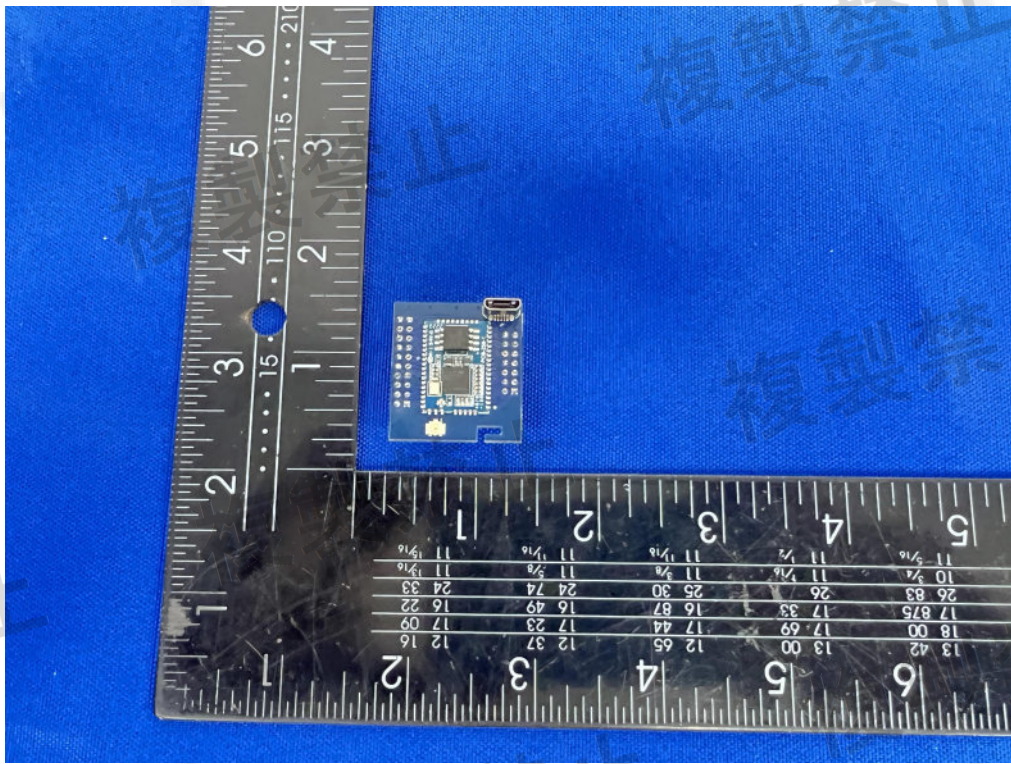
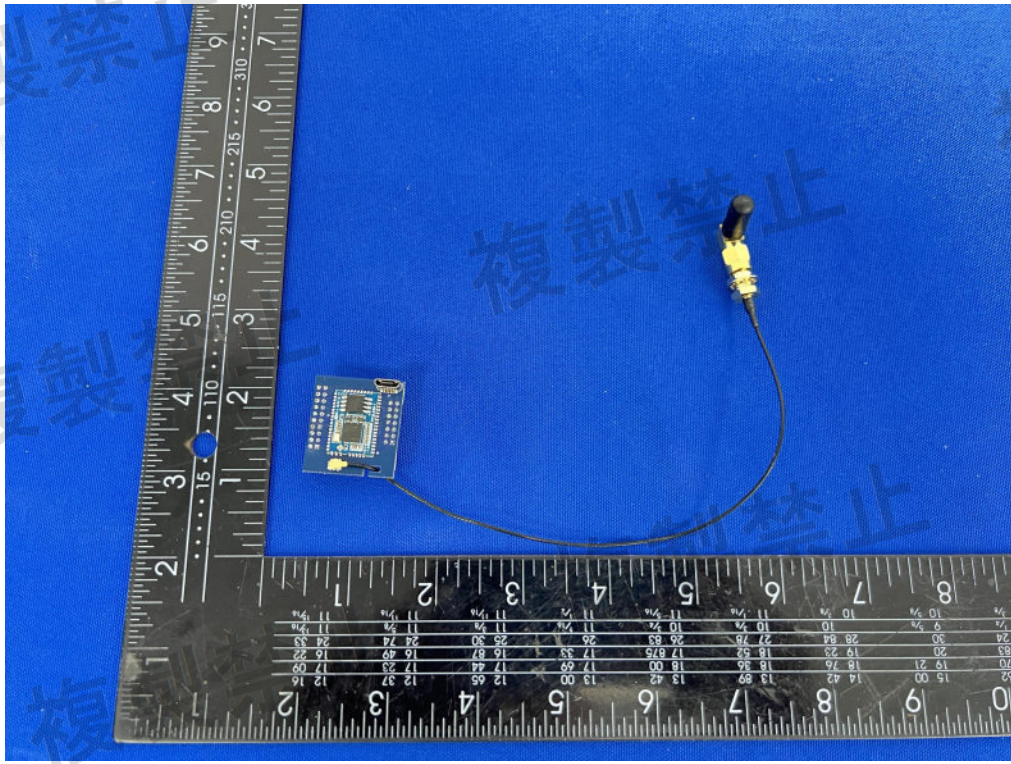


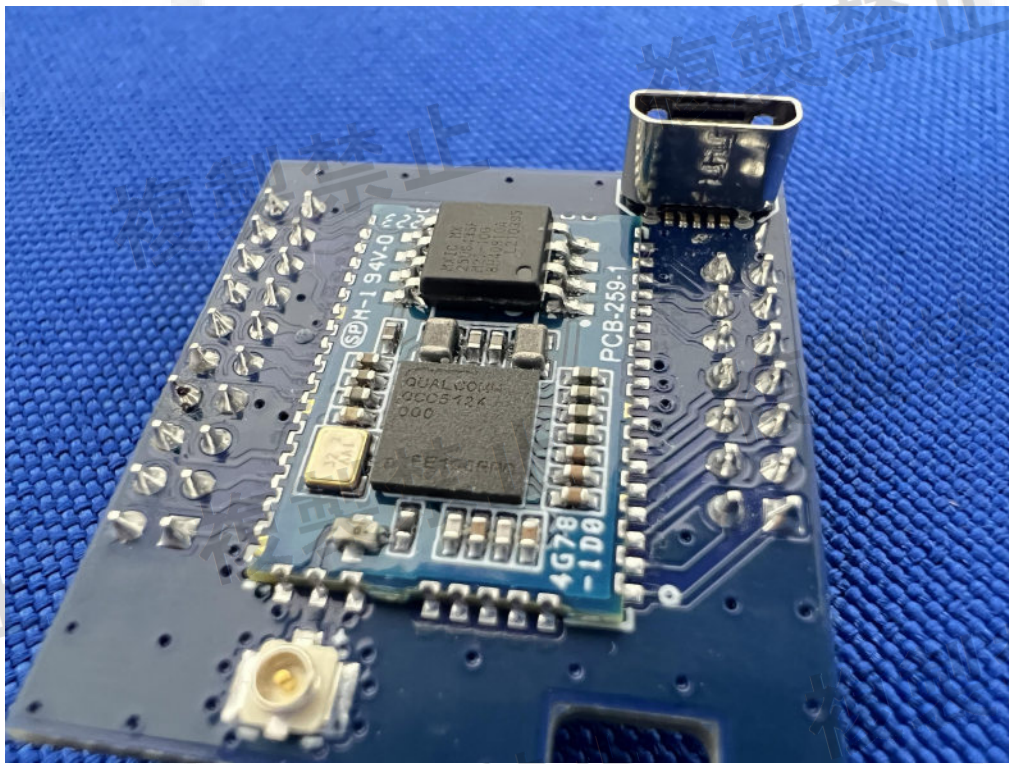
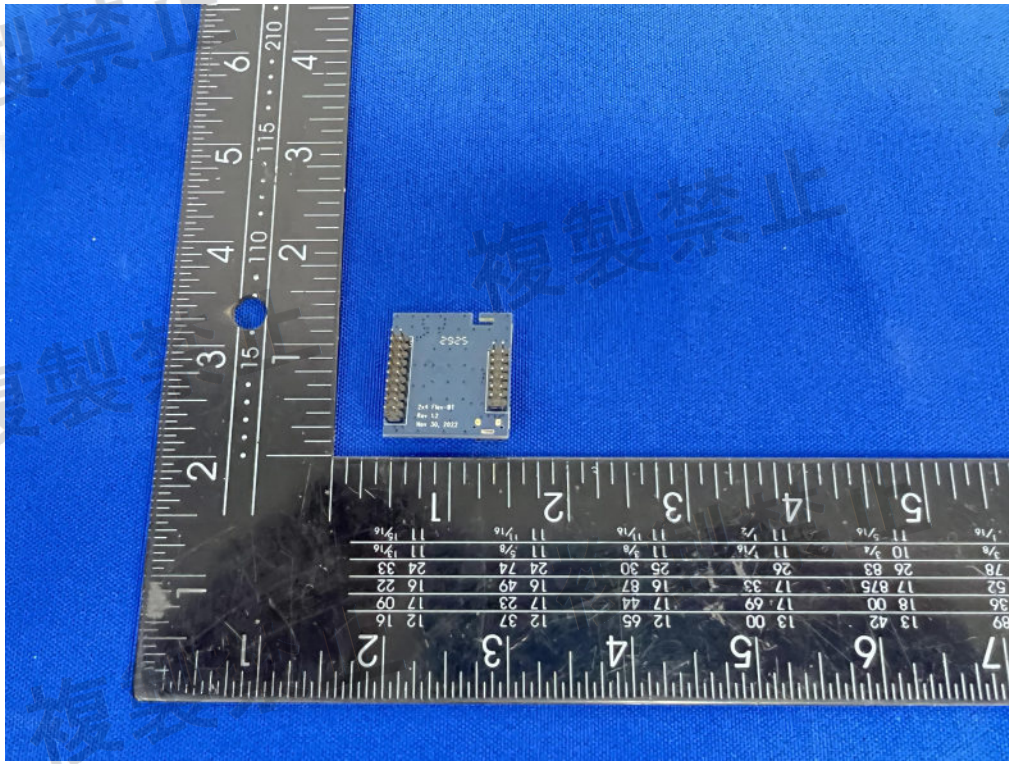
Internal Photos of EUT











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