# TEST REPORT

| | |
|---|---|
| **Application No.:** | GZEM2007014013CR |
| **Applicant:** | IDEA INTERNATIONAL CO., LTD. |
| **Address of Applicant:** | 3F ICHIGO-MITA BLDG., 5-13-18 SHIBA, MINATO-KU, TOKYO. |
| **Manufacturer:** | ANHUI LIGHT INDUSTRIES INTERNATIONAL CO., LTD. |
| **Address of Manufacturer:** | ALIC Center 8 Tianda Road, Hefei, Anhui, China. 230088 |
| **Factory:** | ANHUI LIGHT INDUSTRIES INTERNATIONAL CO., LTD. |
| **Address of Factory:** | ALIC Center 8 Tianda Road, Hefei, Anhui, China. 230088 |
| **Equipment Under Test (EUT):** | |
| **EUT Name:** | Waterproof Bluetooth Speaker |
| **Model No.:** | BDE045 (HOUSE) |
| **Standard(s):** | MIC Item 19 of Article 2 Paragraph 1 |
| **Date of Receipt:** | 2020-07-27 |
| **Date of Test:** | 2020-08-07 |
| **Date of Issue:** | 2020-08-13 |
| **Test Result:** | **Pass*** |

* In the configuration tested, the EUT complied with the standards specified above.

Kobe Jian
EMC Laboratory Manager

| Revision Record | | | | |
|---|---|---|---|---|
| **Version** | **Chapter** | **Date** | **Modifier** | **Remark** |
| 01 | | 2020-08-13 | | Original |
| | | | | |
| | | | | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **Authorized for issue by:** | | | | |
| **Tested By** | | Jackson_Yuan /Project Engineer | | 2020-08-07<br>**Date** |
| **Checked By** | | Jerry_Chan /Reviewer | | 2020-08-13<br>**Date** |



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# 2 Test Summary

| Radio Spectrum Technical Requirement | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Antenna Requirement | MIC Item 19 of Article 2 Paragraph 1 | N/A | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Interference prevention capability | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | pass |
| RF accessibility | MIC Item 19 of Article 2 Paragraph 1 | N/A | MIC Item 19 of Article 2 Paragraph 1 | pass |

| Radio Spectrum Matter Part | | | | |
|---|---|---|---|---|
| **Item** | **Standard** | **Method** | **Requirement** | **Result** |
| Frequency Error | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Occupied Bandwidth(99%) | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Spread spectrum Bandwidth(90%) | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Antenna Power | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Dwell time | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Spurious emission Intensity | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |
| Limit of secondary radiated emissions | MIC Item 19 of Article 2 Paragraph 1 | MIC Notice No.88 Appendix No.43 | MIC Item 19 of Article 2 Paragraph 1 | Pass |



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# 3 Contents

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# 4 General Information

## 4.1 Details of E.U.T.

| | |
|---|---|
| Power Supply: | DC 3.7 V powered by built-in battery as below:<br>Model: CXS 602025<br>Rated: DC 3.7 V, 230mAh, 0.85Wh |
| Test Voltage: | Refer to section 6.1 |
| Cable/Ports: | Micro USB charging ports |
| Antenna Gain: | 1.75 dBi |
| Antenna Type: | Integral antenna |
| Channel Spacing: | 1MHz |
| Modulation Type: | GFSK, π/4DQPSK, 8DPSK |
| Number of Channels: | 79 |
| Operation Frequency: | 2402MHz to 2480MHz |
| Spectrum Spread Technology: | Frequency Hopping Spread Spectrum(FHSS) |

## 4.2 Environment Parameter

| Environment Parameter | Selected Values During Tests | |
|---|---|---|
| Relative Humidity | Ambient | |
| Value | Temperature(℃) | Voltage(V) |
| NTNV | 25 | 3.7 |
| NTLV | 25 | 3.33 |
| NTHV | 25 | 4.07 |

Note:

NV: Normal Voltage
NT: Normal Temperature
LV: Low Extreme Voltage
HV: High Extreme Voltage

| Operation Frequency each of channel | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 0 | 2402MHz | 20 | 2422MHz | 40 | 2442MHz | 60 | 2462MHz |
| 1 | 2403MHz | 21 | 2423MHz | 41 | 2443MHz | 61 | 2463MHz |
| 2 | 2404MHz | 22 | 2424MHz | 42 | 2444MHz | 62 | 2464MHz |
| 3 | 2405MHz | 23 | 2425MHz | 43 | 2445MHz | 63 | 2465MHz |
| 4 | 2406MHz | 24 | 2426MHz | 44 | 2446MHz | 64 | 2466MHz |
| 5 | 2407MHz | 25 | 2427MHz | 45 | 2447MHz | 65 | 2467MHz |
| 6 | 2408MHz | 26 | 2428MHz | 46 | 2448MHz | 66 | 2468MHz |
| 7 | 2409MHz | 27 | 2429MHz | 47 | 2449MHz | 67 | 2469MHz |
| 8 | 2410MHz | 28 | 2430MHz | 48 | 2450MHz | 68 | 2470MHz |
| 9 | 2411MHz | 29 | 2431MHz | 49 | 2451MHz | 69 | 2471MHz |
| 10 | 2412MHz | 30 | 2432MHz | 50 | 2452MHz | 70 | 2472MHz |
| 11 | 2413MHz | 31 | 2433MHz | 51 | 2453MHz | 71 | 2473MHz |
| 12 | 2414MHz | 32 | 2434MHz | 52 | 2454MHz | 72 | 2474MHz |
| 13 | 2415MHz | 33 | 2435MHz | 53 | 2455MHz | 73 | 2475MHz |
| 14 | 2416MHz | 34 | 2436MHz | 54 | 2456MHz | 74 | 2476MHz |
| 15 | 2417MHz | 35 | 2437MHz | 55 | 2457MHz | 75 | 2477MHz |
| 16 | 2418MHz | 36 | 2438MHz | 56 | 2458MHz | 76 | 2478MHz |
| 17 | 2419MHz | 37 | 2439MHz | 57 | 2459MHz | 77 | 2479MHz |
| 18 | 2420MHz | 38 | 2440MHz | 58 | 2460MHz | 78 | 2480MHz |
| 19 | 2421MHz | 39 | 2441MHz | 59 | 2461MHz | | |

Using test software was control EUT work in continuous transmitter and receiver mode.and select test channel as below:

| Channel | Frequency |
|---|---|
| The lowest channel (CH0) | 2402MHz |
| The middle channel (CH39) | 2441MHz |
| The highest channel (CH78) | 2480MHz |

## 4.3 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|---|---|---|---|
| Laptop | Lenovo | T430u | REF. No.SEA1800 |
| BT test board | SGS EMC | RF 07 | RF 07 |
| DC Power supply(EMC 0008) | Instek | PS-6010 | L9905E037.11 |

## 4.4 Measurement Uncertainty

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Radio Frequency | ±5.5 x $10^{-8}$ |
| 2 | Duty cycle | ±0.57% |
| 3 | Occupied Bandwidth | ±3% |
| 4 | RF Conducted power | ±0.68dB |
| 5 | RF Power Density | ±1.50dB |
| 6 | Conducted Spurious Emissions | ±1.04dB |
| 7 | RF Radiated Power | ±4.5dB (below 1GHz) |
| | | ±4.8dB (above 1GHz) |
| 8 | Radiated Spurious Emission Test | ±4.5dB (30MHz-1GHz) |
| | | ±4.8dB (1GHz-18GHz) |
| 9 | Temperature | ±0.4°C |
| 10 | Humidity | ±1.3% |
| 11 | Supply Voltages | ±1.5% |
| 12 | Time | ±3% |

## 4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

## 4.6 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services 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 282399, May 31, 2002.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

- **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584，G-10449 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

## 4.7 Deviation from Standards

None

## 4.8 Abnormalities from Standard Conditions

None



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# 5 Equipment List

| Frequency Error | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Occupied Bandwidth(99%) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Spread spectrum Bandwidth(90%) | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Antenna Power | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

| Dwell time | | | | | |
|---|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No** | **Inventory No** | **Cal Date** | **Cal Due Date** |
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |

| | | | | | |
|---|---|---|---|---|---|
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

**Spurious emission Intensity**

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|---|---|---|---|---|---|
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

**Limit of secondary radiated emissions**

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|---|---|---|---|---|---|
| MXA Signal Analyzer | AgilentTechnologies | N9020A | SEM004-10 | 2020-03-02 | 2021-03-01 |
| 6dB Attenuator | HP | 8491A | EMC2062 | 2020-04-15 | 2022-04-14 |
| Test Software JS1120-3 | HangTianXing | V2.6 | GZE100-69 | N/A | N/A |
| MI CABLE | SGS-EMC | 0.8M | EMC2136 | 2019-11-02 | 2021-11-01 |
| MI CABLE | SGS-EMC | 0.8M | EMC2137 | 2019-11-02 | 2021-11-01 |

**General used equipment**

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|---|---|---|---|---|---|
| DMM | Fluke | 73 | EMC0006 | 2020-07-09 | 2021-07-08 |
| DMM | Fluke | 73 | EMC0007 | 2020-07-09 | 2021-07-08 |



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# 6 Radio Spectrum Technical Requirement

## 6.1 E.U.T. Test Conditions

**Power supply:** INPUT: DC 3.7 V; the RF unit supplied by 3.7V.

The EUT has the input voltage to the circuit of RF unit complies with output voltage limitation (±1%) against input voltage fluctuation (±10%).

So, all measurements were conducted at rated voltage DC 3.33 V, DC 3.7 V and DC 4.07 V.

The measurement result of the voltage fluctuation at RF circuit when DC 3.7 V +/- 10%.

| Mains input | Measured value | Voltage Deviation |
|---|---|---|
| DC 3.7 V | 3.70V | 0% |
| DC 3.33 V | 3.32V | -10.3% |
| DC 4.07 V | 4.06V | 9.7% |

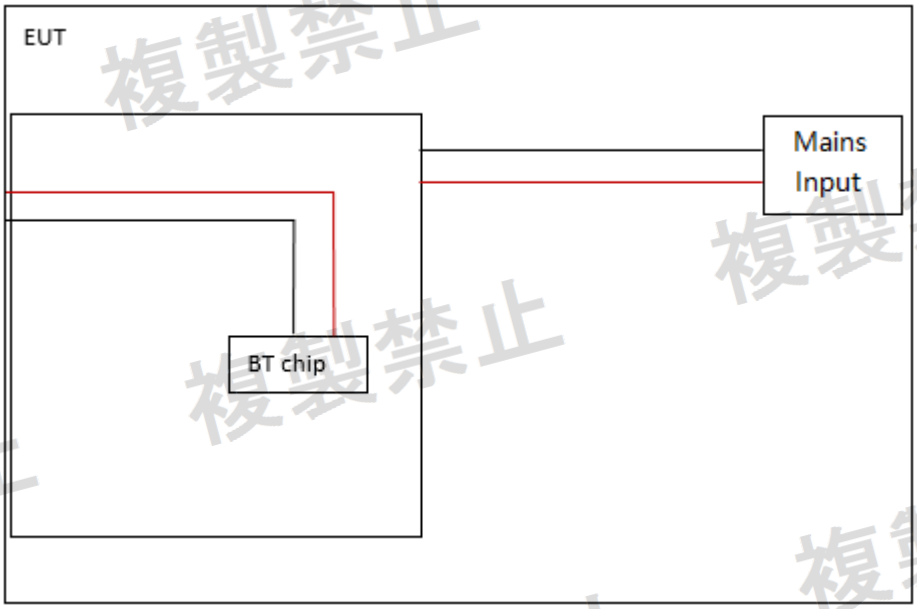
**Temperature:** 5.0 -35.0 °C

**Humidity:** 45-85 % RH

**Atmospheric Pressure:** 1000 -1010 mbar

**Test frequencies:** If the EUT can be set to 3 of more different (carrier) frequencies in 1 allocated band, testing shall be performed using the Lowest, Middle and the Highest frequency (L, M and H). If there are 2 or fewer frequencies, testing shall be performed with the available frequencies.

### 6.1.1 Test Setup Diagram & test point



## 6.2 Antenna Requirement

### 6.2.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

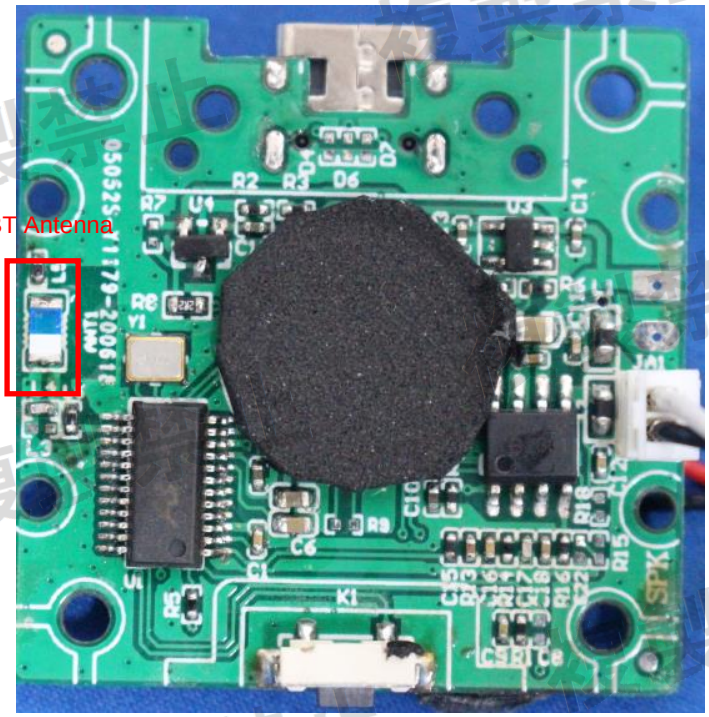
### 6.2.2 Conclusion

Standard requirement:

Applicable for equipment with an antenna terminal, including testing terminals. If an antenna connector is available, all relevant tests will be carried out conducted. If not, tests will be carried out in an anechoic room or with a suitable test-fixture.

EUT Details:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.75 dBi. The dimension of the antenna is 3.23*1.66(mm, L*W).




Result:

An antenna connector is available, all relevant tests will be carried out conducted.

## 6.3 Interference prevention capability

### 6.3.1 Test Requirement:

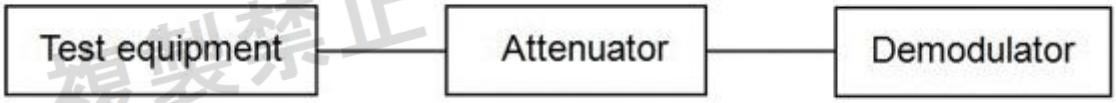
MIC Item 19 of Article 2 Paragraph 1

Limit:

Article 2, Item (19) Notice 88 Appendix 43, 44, 45

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.

### 6.3.2 Test Setup Diagram




### 6.3.3 Conclusion

Standard Requirement:

1) Measurement system diagram as shown above and test equipment keep transmitting identification code.

2) Condition of measuring instrument

(1) Demodulator must be able to demodulate the transmitting signal emitted by test equipment and to indicate the identification code.

3) Condition of test equipment The mode of normal use.

4) Measuring operation procedure

(1) When test equipment has the function to transmit identification code automatically:

A) Transmit the predetermined identification code from test equipment.

B) Confirm the transmitted identification code by demodulator.

77:AD:6D:F2:9F:E7

EUT Details:

The unit does meet the requirements (Good).

## 6.4 RF accessibility

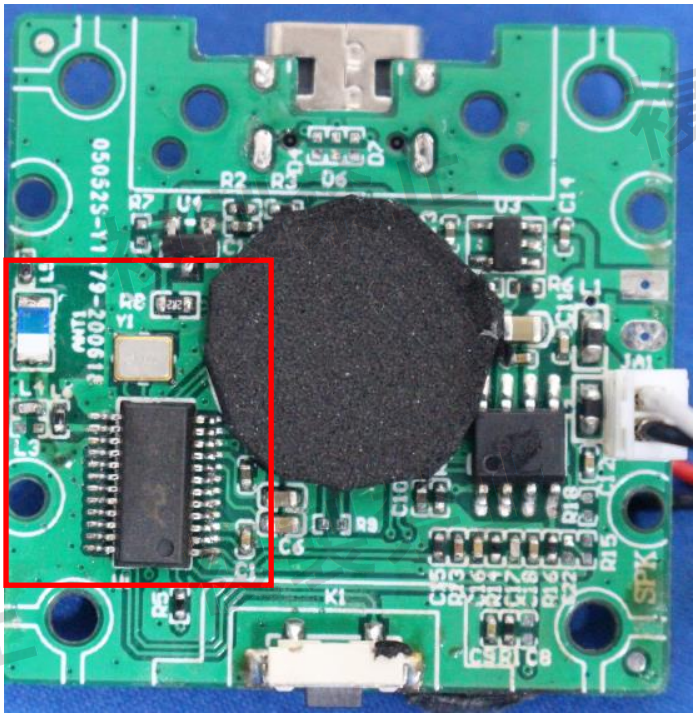
### 6.4.1 Test Requirement:

MIC Item 19 of Article 2 Paragraph 1

### 6.4.2 Conclusion

Standard Requirement:

The EUT shall be constructed in such a way that sensitive RF parts, (like modulation and oscillator parts) cannot be reached easily by the user. These parts shall be covered by soldered metal caps or glue or by other mechanical covers. If the covers are fixed with screws, these shall be not the common type(s) like a Phillips, but special versions like Torx, so that the user cannot open the device with common tools.



EUT Details:

RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.

# 7 Radio Spectrum Matter Test Results

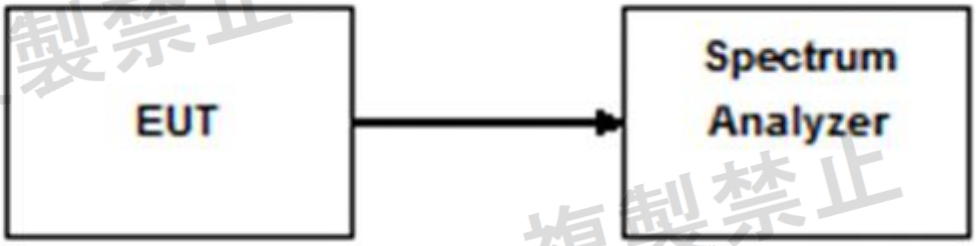
## 7.1 Frequency Error

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: Tolerance of frequency: ±50E-6

### 7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 26.6 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.1.2 Test Setup Diagram



### 7.1.3 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping OFF, CW Tx
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 1MHz
RBW 10 kHz (Modulation OFF),
VBW 10 kHz (Modulation OFF),
Sweep Time Auto
Detector mode Positive peak
Indication mode Max hold
Alternative method:
Frequency: Test Frequency
Span 2 times channel bandwidth
RBW 100 kHz (Modulation ON),
VBW 100 kHz (Modulation ON),
Sweep Time Auto
Detector mode Positive peak
Indication mode Max hold

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

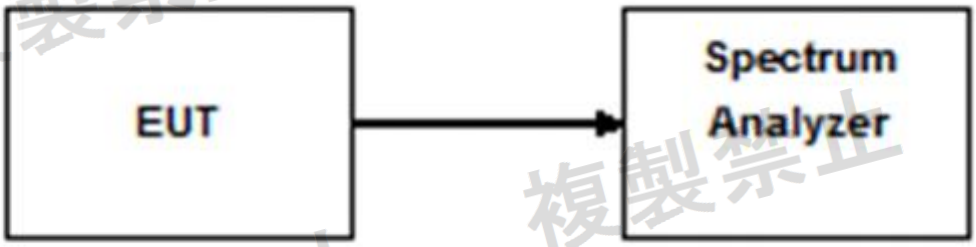
## 7.2 Occupied Bandwidth(99%)

Test Requirement: MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: FH: 83.5MHz or less
FH + DS: 83.5MHz or less
FH + OFDM: 83.5MHz or less
OFDM: 38MHz or less
Others: 26MHz or less

### 7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 26.6 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.2.2 Test Setup Diagram




### 7.2.3 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping ON, Modulation Tx
For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 83.5 MHz (FHSS); 40/60 MHz (OFDM; DSSS); 2-5 times OBW (Others)
RBW 1 MHz (FHSS); 300kHz (OFDM; DSSS); 3% OBW (Others)
VBW 1 MHz (FHSS); 300kHz (OFDM; DSSS); 3 times RBW (Others)
Sweep Time Auto
detector mode Positive peak
Indication mode Max hold
OBW 99%

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

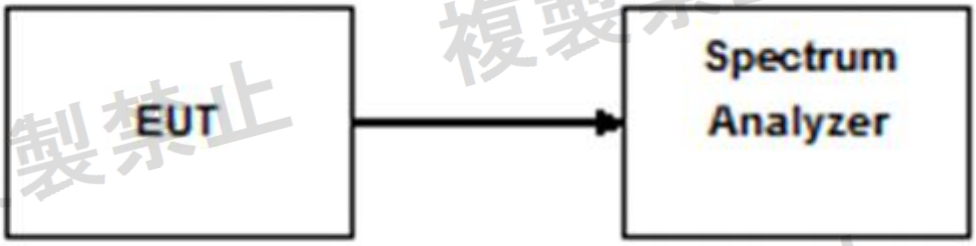
## 7.3 Spread spectrum Bandwidth(90%)

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: DS,FH,FH+DS,FH+OFDM: 500kHz or more

### 7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 26.6 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.3.2 Test Setup Diagram




### 7.3.3 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping ON, Modulation Tx
For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 83.5 MHz (FHSS); 40/60 MHz (OFDM; DSSS)
RBW 1 MHz (FHSS); 300kHz (OFDM; DSSS)
VBW 1 MHz (FHSS); 300kHz (OFDM; DSSS)
Sweep Time Auto
detector mode Positive peak
Indication mode Max hold
OBW 90%

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

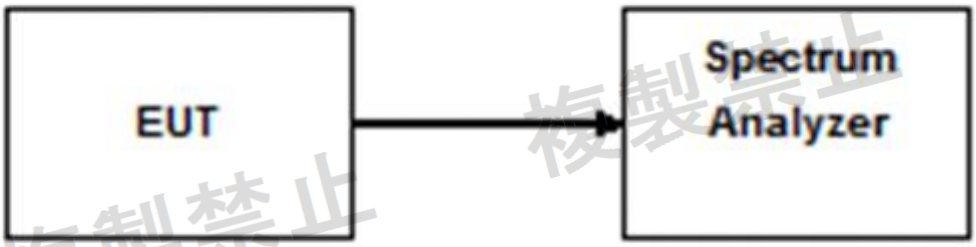
## 7.4 Antenna Power

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: Designated value
(1) FH, FH+DS, FH+OFDM: 3mW/MHz
(used in the range of 2427 - 2470.75 MHz)
(2) OFDM, DS other than (1) 10mW/MHz
(3) Other than (1) & (2) 10mW
(4) OFDM OBW 26 - 38MHz: 5mW/MHz
Tolerance:+20%,-80%

### 7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 26.7 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.4.2 Test Setup Diagram




### 7.4.3 Measurement Procedure and Data

1. Test Conditions:
Spectrum Analyzer is used for measurement.
2. EUT conditions:
Modulation/Spread/Hopping ON, Modulation Tx
For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.
3. Spectrum Analyzer conditions:
Frequency: Test Frequency
Span 25 MHz(FHSS); 40/60 MHz (OFDM; DSSS); Enough to capture the emisson (Others)
RBW 1 MHz (FHSS; OFDM; DSSS); More than OBW (Others)
VBW 1 MHz (FHSS; OFDM; DSSS); More than RBW (Others)
Sweep Time Auto
detector mode RMS
Indication mode Max hold

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

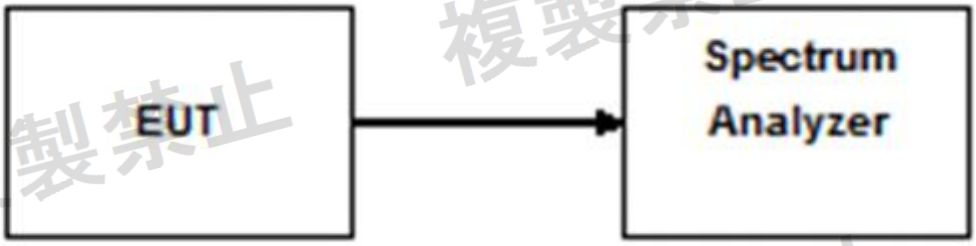
## 7.5 Dwell time

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: less than 0.4sec

### 7.5.1 E.U.T. Operation

Operating Environment:
Temperature: 26.6 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.5.2 Test Setup Diagram




### 7.5.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON, Hopping frequency is fixed, Bluetooth equipment is setting DH5 mode

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Frequency: Test Frequency (fixed hopping frequency)

Span 0 Hz

RBW 1 MHz

VBW 1 MHz

Sweep Time EUT condition

Trigger Video Trigger

Measures the Transmission time of 1 burst (sec)

Measures the Burst cycle (sec)

4. Calculation procedure:

Dwell time = (0.4(s) x [spreading rate] x [Transmission time of 1 burst(s)]) / ([burst cycle(s)] x [No. of hopping channel])

Note:

* Spreading rate = [Spread bandwidth (actual measurement value)] / [Transmission rate]

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

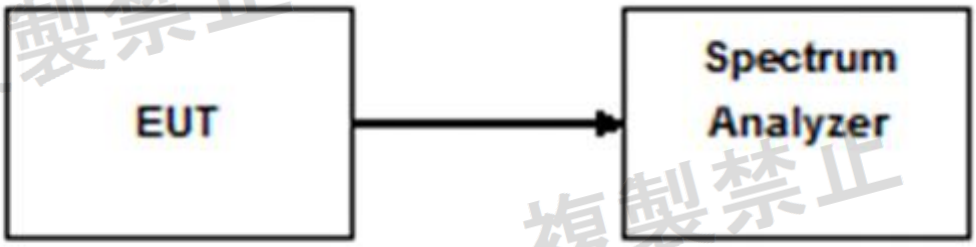
## 7.6 Spurious emission Intensity

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: (1) Below 2387 MHz: 2.5μW/MHz
(2) 2387 to 2400 MHz: 25μW/MHz
(3) 2483.5 through 2496.5 MHz: 25μW/MHz
(4) Over 2496.5 MHz: 2.5μW/MHz

### 7.6.1 E.U.T. Operation

Operating Environment:
Temperature: 26.7 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: TX_Keep the EUT in transmitting mode

### 7.6.2 Test Setup Diagram



### 7.6.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON, , Modulation Tx

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Step 1

All spurious are measured from 30 MHz to 13 GHz by peak mode.

Step 2

IF the value measured by Step1 is 2 dB or less, measure in average mode.

Test setup for Step 1:

Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Test setup for Step 2:

Frequency: Spurious Frequency

RBW 1 MHz

VBW 1 MHz

Sweep Time Auto

detector mode Sample

Indication mode Max hold

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

## 7.7 Limit of secondary radiated emissions

Test Requirement MIC Item 19 of Article 2 Paragraph 1
Test Method: MIC Notice No.88 Appendix No.43
Limit: (1) Below 1 GHz : 4 nW or less
(2) 1 GHz and over : 20 nW or less

### 7.7.1 E.U.T. Operation

Operating Environment:
Temperature: 26.6 °C Humidity: 55.7 % RH Atmospheric Pressure: 1020 mbar
Test Mode: b: RX_Keep the EUT in receiving mode

### 7.7.2 Test Setup Diagram

### 7.7.3 Measurement Procedure and Data

1. Test Conditions:

Spectrum Analyzer is used for measurement.

2. EUT conditions:

Modulation/Spread/Hopping ON

For equipment using diffusion code, set to the test diffusion code and modulate with standard coding test signal.

3. Spectrum Analyzer conditions:

Step 1

All spurious are measured from 30 MHz to 13 GHz by peak mode.

Step 2

IF the value measured by Step1 is 2 dB or less, measure in average mode.

Test setup for Step 1:

Frequency: 30 MHz – 2400 MHz , 2483.5 MHz –13 GHz

RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

Sweep Time Auto

detector mode Positive peak

Indication mode Max hold

Test setup for Step 2:

Frequency: Spurious Frequency

Span 0 Hz

RBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

VBW 100 kHz (30 – 1GHz) , 1 MHz (over 1GHz)

Sweep Time Auto

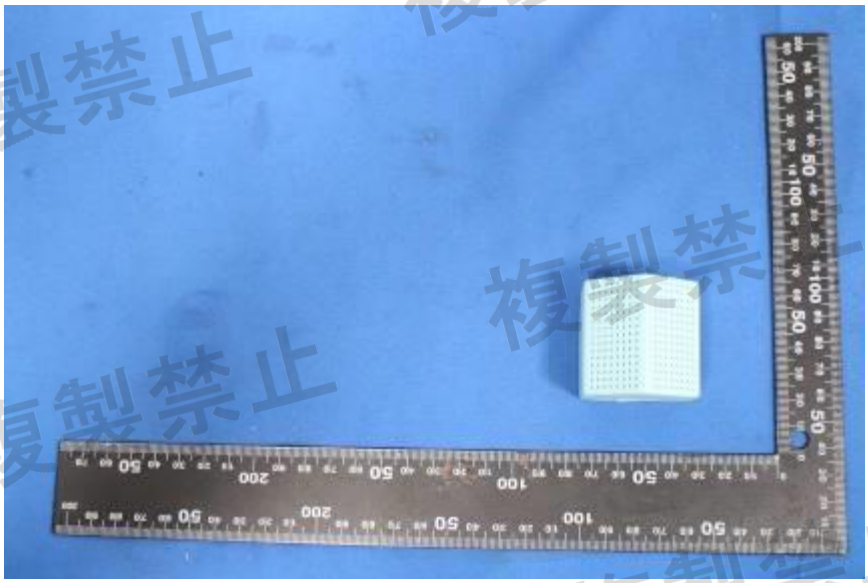
detector mode Sample

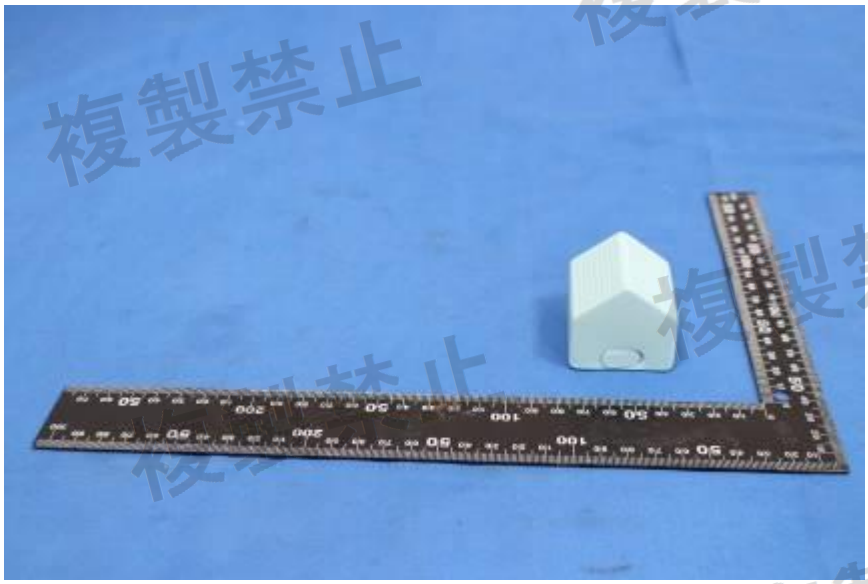
Indication mode Max hold

The detailed test data see: Appendix MIC Test result for GZEM2007014013CR

# 8 Photographs

## 8.1 EUT Constructional Details







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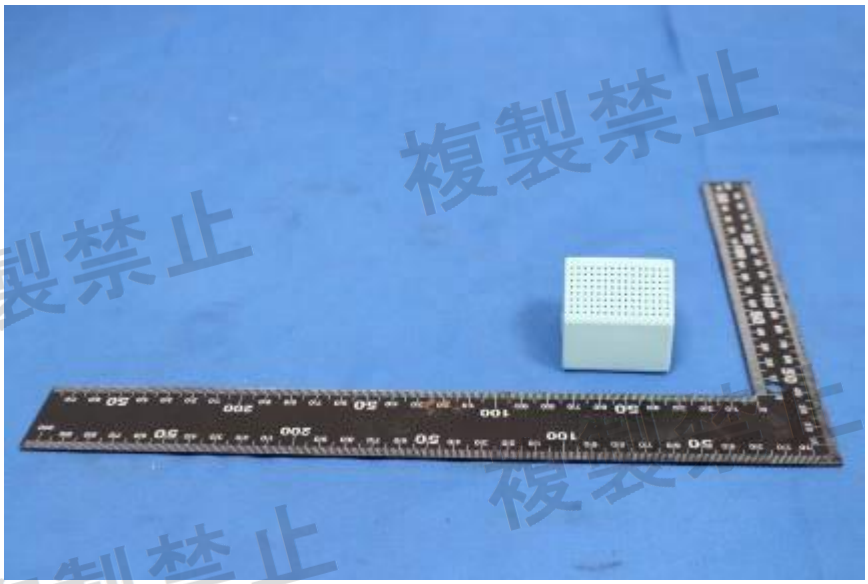

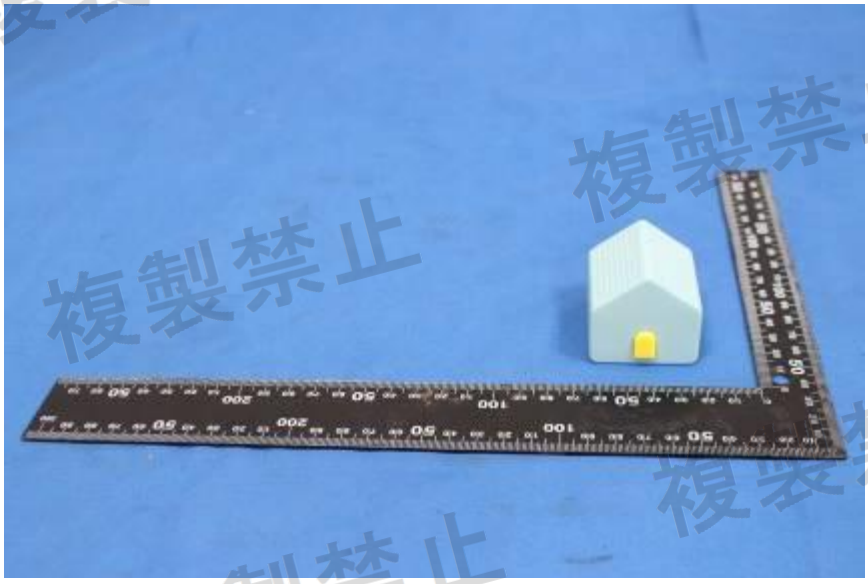



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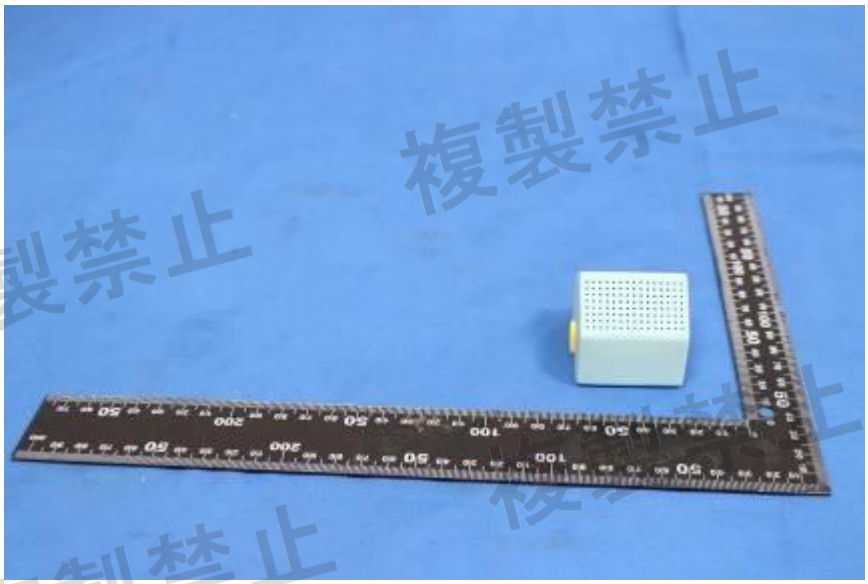

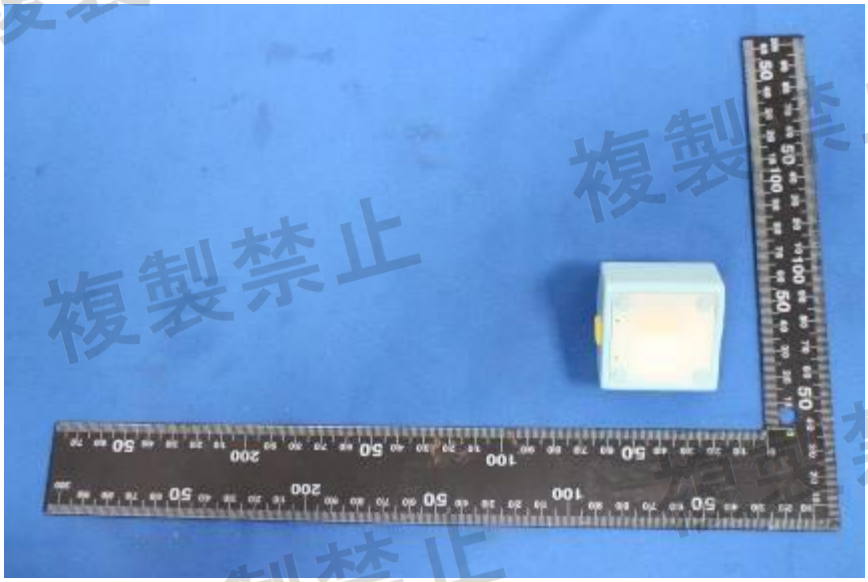



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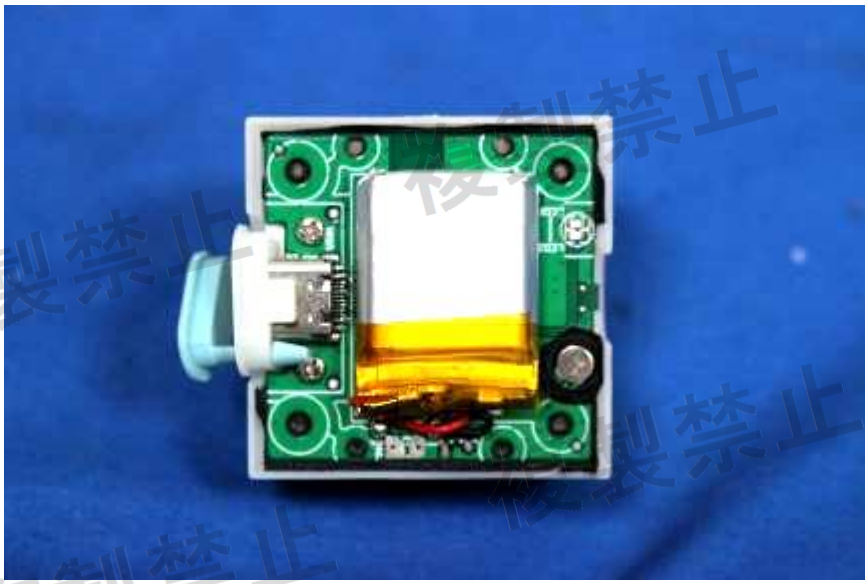

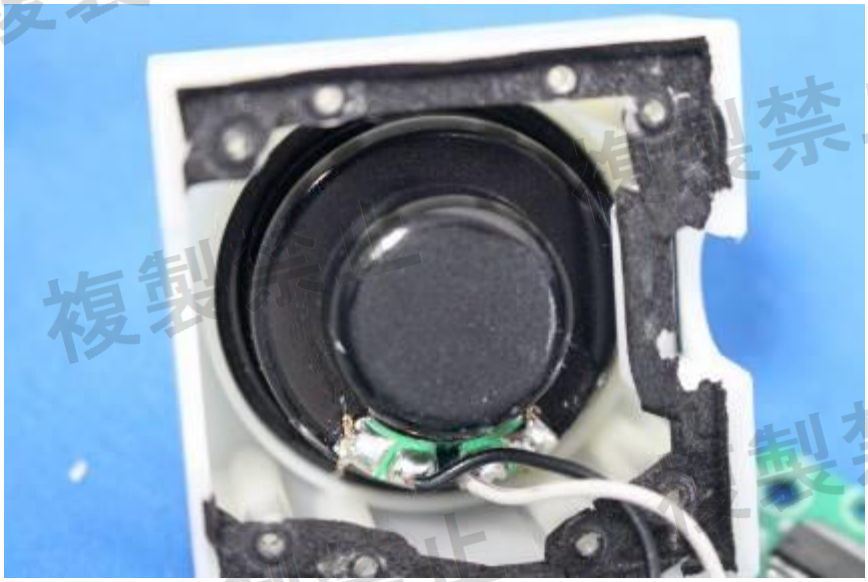



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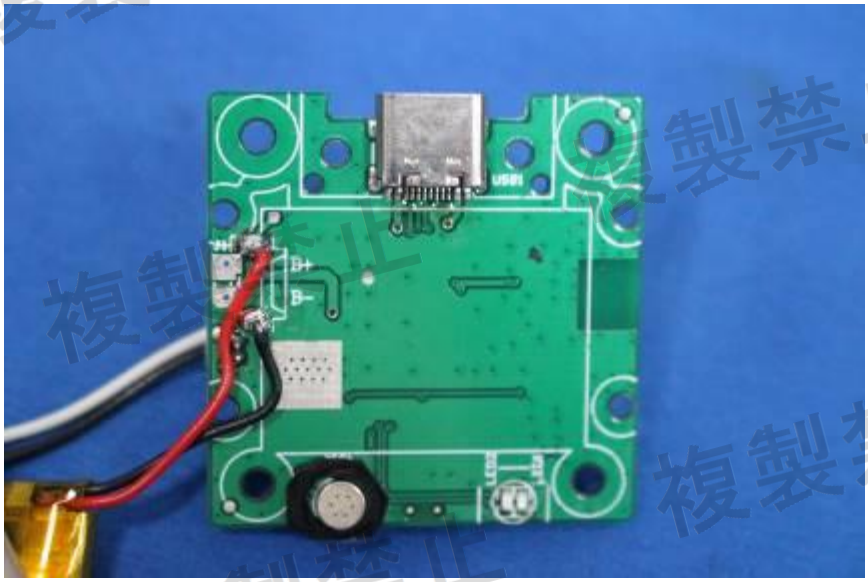

**--End of Report--**



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