**Shenzhen CTA Testing Technology Co., Ltd.**
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

# TEST REPORT

## Ordinance Article 2 paragraph 1 item (19)

| | |
|---|---|
| **Report Reference No.....** : | **CTA26031700202** |
| Compiled by ( position+printed name+signature) : | File administrators Zoey Cao |
| Supervised by ( position+printed name+signature) : | Project Engineer Ace Chai |
| Approved by ( position+printed name+signature) : | RF Manager Eric Wang |
| Date of issue..... : | Mar. 24, 2026 |
| **Testing Laboratory Name .....:** | **Shenzhen CTA Testing Technology Co., Ltd.** |
| Address..... : | Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China |
| **Applicant's name**..... : | **HISONG Music Technology Inc.** |
| Address ..... : | 27 Hathaway, Irvine, CA 92620, United States |
| **Test specification .....:** | |
| Standard ..... : | **Ordinance Article 2 paragraph 1 item (19)** |

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| | |
|---|---|
| **Test item description .....:** | **HISONG AirStudio S1** |
| Trade Mark ..... : | HISONG |
| Manufacturer ..... : | Sichuan Chuansheng Technology Co., Ltd. |
| Model/Type reference..... : | HS-AS1 |
| Listed Models ..... : | HS-AS1-M-JP, HS-AS1-C-JP, HS-AS1-X-JP |
| Frequency..... : | From 2402MHz-2480MHz |
| Modulation ..... : | GFSK, π/4DQPSK, 8DPSK |
| Ratings ..... : | DC 3.85V (battery powered) and DC 5.0V (powered via external circuit) |
| Result..... : | **PASS** |

# TEST REPORT

| | | |
|---|---|---|
| Equipment under Test | : | HISONG AirStudio S1 |
| Model /Type | : | HS-AS1 |
| Listed Models | : | HS-AS1-M-JP, HS-AS1-C-JP, HS-AS1-X-JP |
| Model difference | : | The PCB board, circuit, structure and internal of these models are the same, Only model number and colour is different for these model. |
| **Applicant** | : | **HISONG Music Technology Inc.** |
| Address | : | 27 Hathaway, Irvine, CA 92620, United States |
| **Manufacturer** | : | **Sichuan Chuansheng Technology Co., Ltd.** |
| Address | : | No.385, Kezhi Avenue, Qingyi Town, Fucheng District, Mianyang City, Sichuan Province, China |

| | |
|---|---|
| **Test Result**: | **PASS** |

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:
ARIB STD-T66: Second-Generation Low-Power Data Communication System/Wireless LAN System
MIC Notice No.88 Appendix No. 43: 2.4 GHz band wide-band low-power data communication system

## 1.2 Test Description

| ARIB STD-T66 | | |
|---|---|---|
| ARIB STD-T66 | Test Description | Test Results |
| 3.2 (2) | Antenna Power | Complies |
| 3.2 (3) | Tolerances for Antenna Power | Complies |
| 3.2 (4) | Frequency Tolerance | Complies |
| 3.2 (5) | Transmission Rate | Complies |
| 3.2 (7) | Occupied Frequency Bandwidth | Complies |
| 3.2 (8) | Spread Bandwidth | Complies |
| 3.2 (11) | Dwell Time | Complies |
| 3.2 (6) | Spurious Emissions | Complies |
| 3.6 | Transmission Antenna Gain (EIRP Antenna Power) | N/A |
| 3.6 | Transmission Radiated Angle Width (3dB Beam width) | N/A |
| / | Interference prevention function | Complies |
| / | Carrier Sensing function | N/A |
| Receiver Parameters | | |
| 3.3 (1) | Secondary Radiated Emissions | Complies |
| *(1) N/A is an abbreviation for Not Applicable.* | | |

*Note: 1: "N/A" denotes test is not applicable in this Test Report*
*2: MIC Public Notice 88:2004, annex 1 and annex 43*
*3: MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20*
*4: Referenced in the standard ARIB STD-T66*

## 1.3 the test laboratory

### 1.3.1 Address of the test laboratory

**Shenzhen CTA Testing Technology Co., Ltd.**
Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community,Fuhai Street, Bao'an District, Shenzhen, China

### 1.3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
**FCC-Registration No.: 517856 Designation Number: CN1318**

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

**A2LA-Lab Cert. No.: 6534.01**

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2

## 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 | $\pm 1.62*10^{-6}$ |
| 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 General Remarks

| | | |
|---|---|---|
| Date of receipt of test sample | : | Mar. 17, 2026 |
| | | |
| Testing commenced on | : | Mar. 17, 2026 |
| | | |
| Testing concluded on | : | Mar. 24, 2026 |

## 2.2 Environmental conditions

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

| | | |
|---|---|---|
| Voltage | Normal Voltage | DC 3.85V |
| | High Voltage | DC 4.20V |
| | Low Voltage | DC 3.40V |
| Other | Normal Temperature | 25°C |
| | Relative Humidity | 55 % |
| | Air Pressure | 989 hPa |

Note: As the EUT was powered by DC 3.85V (battery powered) and DC 5.0V (powered via external circuit), and with the voltage stabilizing circuit used, the floating chip voltage does not exceed ±1% of nominal condition when working on extreme voltage, so all test performed at nominal voltage only.

## 2.3 General Description of EUT

| | |
|---|---|
| Product Name: | HISONG AirStudio S1 |
| Model/Type reference: | HS-AS1 |
| Power supply: | DC 3.85V (battery powered) and DC 5.0V (powered via external circuit) |
| Hardware version: | V4.3 |
| Software version: | V2.01.01.88 |
| Testing sample: | CTA260317002-1# (Engineer sample)<br>CTA260317002-2# (Normal sample) |
| Bluetooth | |
| Supported type: | Supported Bluetooth BR/EDR |
| Modulation: | GFSK, π/4DQPSK, 8DPSK |
| Operation frequency: | 2402MHz~2480MHz |
| Channel number: | 79 |
| Channel separation: | 1MHz |
| Rated power: | 0.000010 W/MHz |
| Antenna type: | Internal antenna |
| Antenna Gain: | 0.24 dBi |

Note: For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 2.4 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:**

| Channel | Frequency (MHz) |
|---|---|
| 0 | 2402 |
| 1 | 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.

| Tested channel, Frequency and Modulation Information | | |
|---|---|---|
| CH0 | 2402MHz | GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps) |
| CH39 | 2441MHz | GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps) |
| CH78 | 2480MHz | GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps) |
| Hopping Mode | | GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps) |
| Note: According exploratory test, EUT has maximum output power for GFSK modulation, All the test modes were tested, but only the worst case was recorded in this report. | | |

## 2.5 Measurement Instruments List

| Item | Test Equipment | Manufacturer | Model No. | Equipment No. | Cal. Institution | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer | Agilent | N9020A | CTA-301 | LISAI | 2025/07/30 | 2026/07/29 |
| 2 | Vector Signal generator | Agilent | N5182A | CTA-305 | LISAI | 2025/07/30 | 2026/07/29 |
| 3 | Spectrum analyzer | R&S | FSV40-N | CTA-344 | LISAI | 2025/05/17 | 2026/05/16 |
| 4 | Power Meter | R&S | NRVS | CTA-354 | LISAI | 2025/07/30 | 2026/07/29 |
| 5 | DC Power Supply | LongWei | LW-K3010D | CTA-033 | LISAI | 2025/07/30 | 2026/07/29 |
| 6 | Oscilloscope | Tektronix | TDS3052 | CTA-010 | LISAI | 2025/07/30 | 2026/07/29 |
| 7 | Automatic control unit | Tonscend | JS0806-2 | CTA-351 | LISAI | 2025/07/30 | 2026/07/29 |

Cal. Institution: LiSai-Guangzhou LiSai Calibration and Testing Co.,LTD.
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.

## 2.6 Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.
Power Parameters:

| Test Software Version | ADB command | | |
|---|---|---|---|
| Frequency | 2402MHz | 2441MHz | 2480MHz |
| Bluetooth | Default | Default | Default |

## 2.7 Test Voltage

**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 | DC 3.85V | DC 4.20V | DC 3.40V |
| Output To RF Module | DC 3.30V | DC 3.30V | DC 3.30V |
| Voltage Variation(%) | -- | -- | -- |

Note:

Voltage Variation (%)
= (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100
When the input supply voltage to the EUT from the external power source is varied by ±10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than ±1%. Exempt extremely high and low supply voltage condition test, EUT only operated in normal voltage to test all regulations.
The sample power supply was confirmed that input voltage variation at the radio unit in the radio equipment to be tested is less than +1% against a variation of +10% at the input voltage from the external power supply to the radio equipment, and the radio equipment was designed so as to be operated in a specified voltage variation limit within +10%, Radio can only tested at rated voltage.

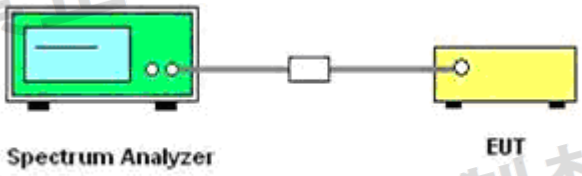
# 3 Test conditions and Results

## 3.1 Frequency Error

**LIMIT**

Tolerance of frequency shall be ±50x10$^{-6}$.

**TEST CONFIGURATION**




**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyser and antenna output port as show in the block diagram as TEST CONFIGURATION shows.
EUT Condition: non-modulation
Spectrum Condition:
Frequency: test frequency
Span: 300 KHz
RBW: 10 KHz
VBW: 10 KHz
Sweep time: Auto
Detector mode: Positive peak
Indicator mode: max hold

**TEST RESULTS**

Please refer to the Appendix RF Test Data for BR-EDR

## 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%.

EIRP:

- ≤ 6.91dBm/MHz(FHSS)

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

**TEST CONFIGURATION**

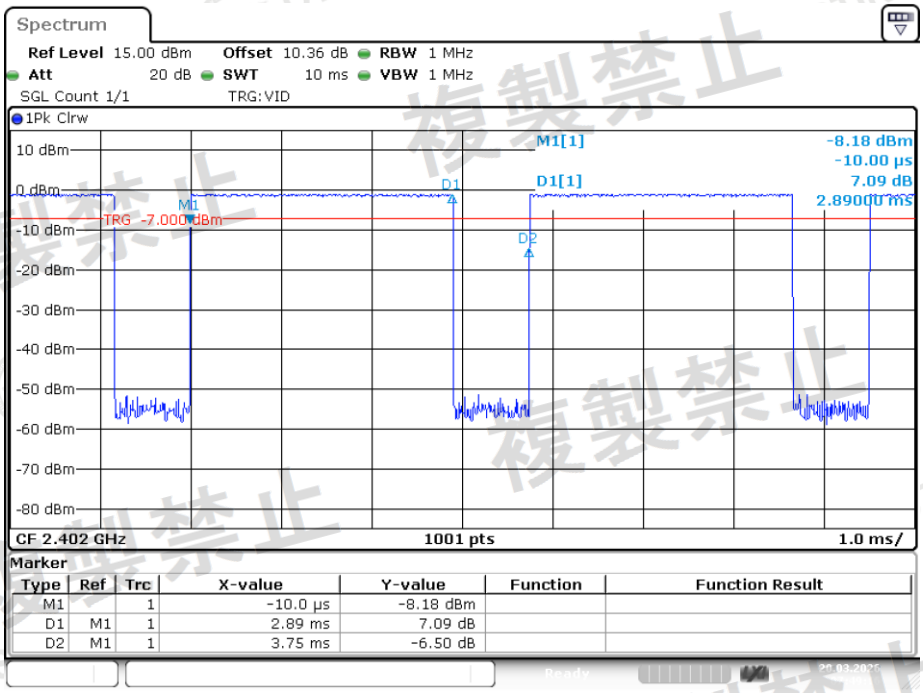
**TEST PROCEDURE**

1. The EUT was placed on a table which is 0.8m above ground plane.
2. The EUT was directly connected to the Power meter.
3. EUT have transmitted continuous maximum power of hopping mode (For FHSS Device);
4. The Antenna Power Density (PD) is equal to the:
PD= Average value / (Duty Cycle * Spreading bandwidth);
5. Antenna Power Error is definition that actual measure antenna power tolerance within +20% power range that base on manufacturer declare the conducted power density.

**TEST RESULTS**

| Mode | Packet | Declared power | Measured Value | Result | Tolerance | Limit |
|---|---|---|---|---|---|---|
| | | (W/MHz) | (dBm) | (W/MHz) | / | / |
| Tx (1Mbps) | DH5 | 0.00001 | -2.94 | 0.000009 | -10.00% | +20% |
| Tx (2Mbps) | 2DH5 | 0.00001 | -3.10 | 0.000009 | -10.00% | +20% |
| Tx (3Mbps) | 3DH5 | 0.00001 | -3.10 | 0.000009 | -10.00% | +20% |
| **Conclusion: PASS** | | | | | | |

Result power= Average value / (Duty Cycle * Spreading bandwidth)
Spread Bandwidth (DH5) = 71.229MHz, Spread Bandwidth (2DH5) =71.728MHz,
Spread Bandwidth (3DH5) = 71.628MHz
Duty cycle = 77.07%
Duty cycle= [Ton/ (Ton+Toff)]*100% = 2.89/3.75*100% = 77.07%

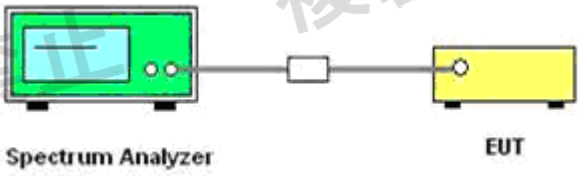


## 3.3 Occupied Bandwidth and Spreading Bandwidth

**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 follows:
   • RBW: under 3% of Occupied Bandwidth
   • VBW: = RBW
   • Sweep time: Auto
   • Sweep Mode: Continuous sweep
   • Detector 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: GFSK=1Mbps / π/4DQPSK= 1Mbps / 8DPSK=1Mbps (declare by client).

**TEST RESULTS**

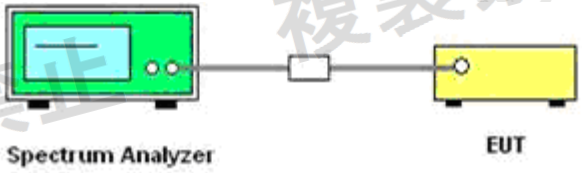
Please refer to the Appendix RF Test Data for BR-EDR

## 3.4 Dwell Time

**LIMIT**

Frequency dwell time (time during which radio waves continue to be emitted at a specified frequency) of a transmitting equipment using the FH system shall be 0.4 seconds or less.

**TEST CONFIGURATION**




**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyser and antenna output port as show in the block diagram as TEST CONFIGURATION shows.
EUT Condition: modulation
Spectrum Condition:
• Frequency: test channel
• Span=0MHz
• RBW: 1MHz
• VBW: 1MHz
• Sweep time: Auto
• Detector mode: Positive peak

**TEST RESULTS**

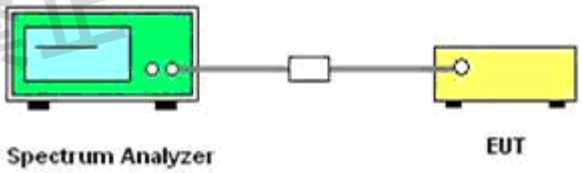
Please refer to the Appendix RF Test Data for BR-EDR

## 3.5 Unwanted Emission Strength

**LIMIT**

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows:
a. 2,387MHz ≤ f ≤ 2,400MHz and 2,483.5MHz < f ≤ 2,496.5MHz 25 μW or less
b. 2,387MHz > f and 2,496.5MHz < f 2.5 μW or less

**TEST CONFIGURATION**




**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyser and antenna output port as show in the block diagram as TEST CONFIGURATION shows.
EUT Condition: modulation
Spectrum Condition:
Frequency: 30MHz-13GHz
RBW: 1 MHz (30MHz-1GHz), 1 MHz (1GHz-13GHz)
VBW: 1 MHz (30MHz-1GHz), 1 MHz (1GHz-13GHz)
Sweep time: Auto
Detector mode: Positive peak
Indicator mode: max hold

**TEST RESULTS**

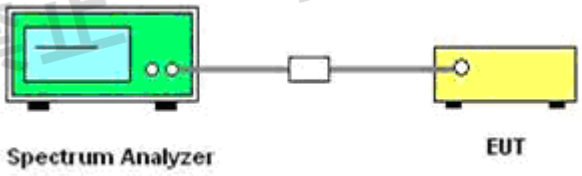
Please refer to the Appendix RF Test Data for BR-EDR

## 3.6 Secondary Radiated Emission Strength

**LIMIT**

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz or higher as measured using the circuit.

**TEST CONFIGURATION**




**TEST PROCEDURE**

The EUT was directly connected to the spectrum analyser and antenna output port as show in the block diagram as TEST CONFIGURATION shows.
EUT Condition: modulation
Spectrum Condition:
Frequency: 30MHz-13GHz
RBW: 100 KHz (30MHz-1GHz), 1 MHz (1GHz-13GHz)
VBW: 100 KHz (30MHz-1GHz), 1 MHz (1GHz-13GHz)
Sweep time: Auto
Detector mode: Positive peak
Indicator mode: max hold

**TEST RESULTS**

Please refer to the Appendix RF Test Data for BR-EDR

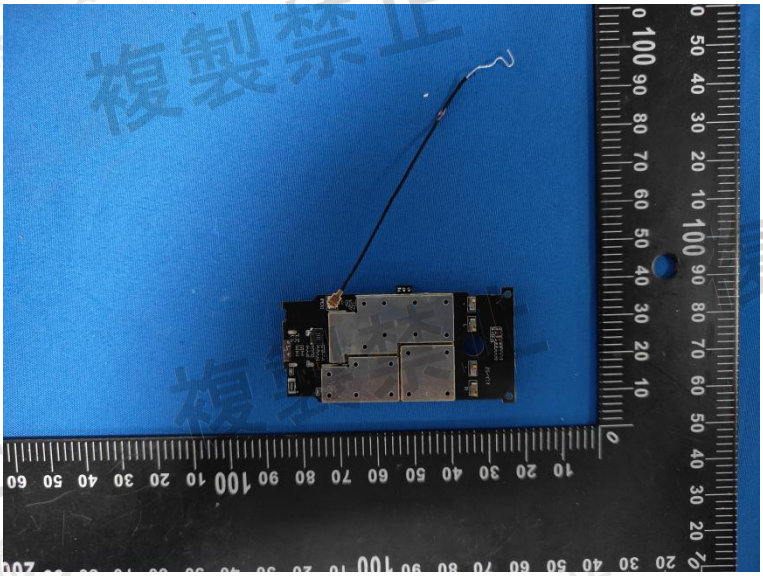
## 3.7 Construction Protection Method

**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 sections and modulation sections were shielded by metal shields.



## 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.

| Item | Limits |
|---|---|
| Identification code | ≧ 48 bits |

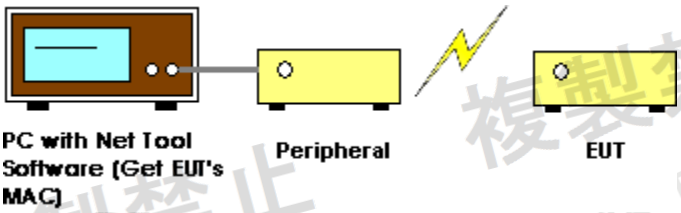
**CONFIRMATION METHOD**

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

**TEST PROCEDURE**

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

**TEST CONFIGURATION**




**TEST RESULTS**

PASS

MAC: 2A: C4: 6B: 1E: 5D: 3C

## 3.9 Carrier Sensing Function

**LIMIT**

| Item | Limits |
|---|---|
| Carrier Sense | Good – EUT stop RF transmission signal after carrier inject to EUT.<br>(On 22.79+Gr-20*log (f)[dBm] (Gr: dBi; f: MHz) or 100mV/m) |

**INSTRUMENTS SETTING**

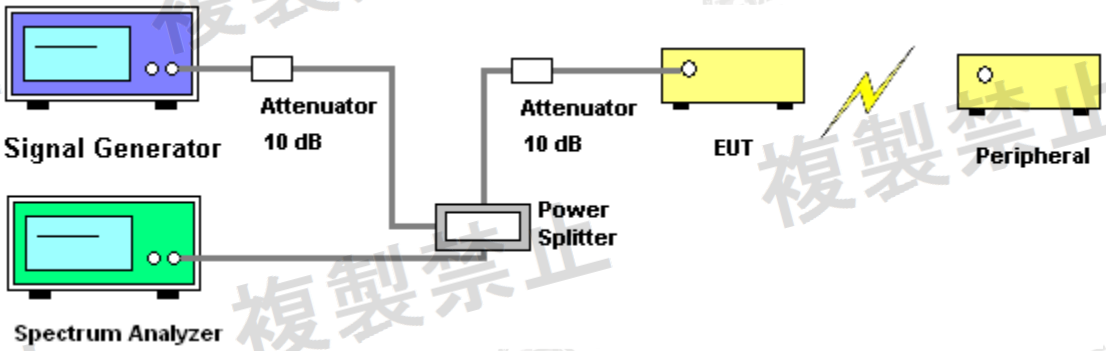
The following table is the setting of spectrum analyser and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| RB / VB | 1 MHz |
| Span | 0 MHz |
| Sweep | Continuous |
| Detector | Peak |
| Trigger mode | Video |

**TEST PROCEDURE**

1. SSG adjusted the frequency as same as the EUT transmitted signal and emitted an unmodulated signal from the SSG and power level is (On 22.79+Gr-20*log (f) [dBm] (Gr: dBi; f: MHz). Then turn off the RF signal of SSG.
2. EUT have transmitted the maximum modulation signal and fixed channelize.
3. Setting of SA is following as: RB: 1MHz / VB: 1MHz / SPAN: 50MHz / AT: 10dB /Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detector mode: Positive peak.
4. SSG RF Signal On.
5. EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

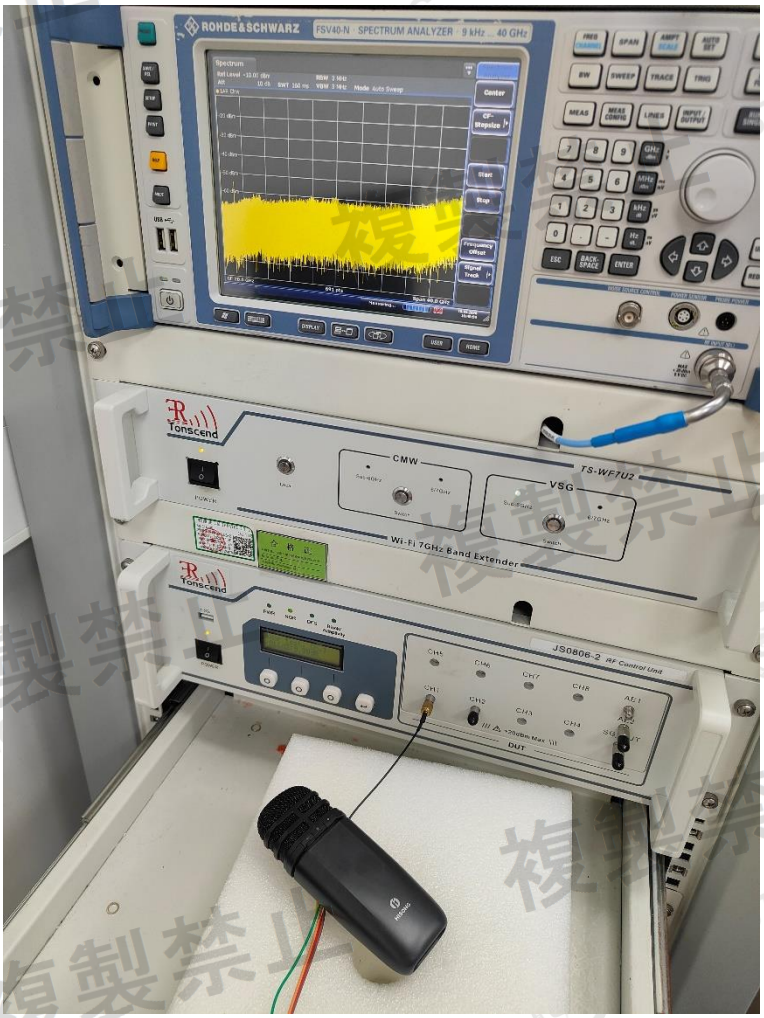
**TEST CONFIGURATION**




**TEST RESULTS**

Not Applicable.

# 4 Test Setup Photos of the EUT




# 5 Photos of the EUT

Reference to the test report No. **CTA26031700201**

**********  End of Report  **********