# FCC Test Report

**Test report**
**On Behalf of**

**Guangzhou Jufung Audio Technology Co., LTD.**

**For**
**true diversity wireless microphone**

**Model No.: C-9200, C-6700, JF-9200, JF-9400, JF-9500, JF-7600, JF-6700, JF-7800, JF-5004, JF-9002, JF-9004, JF-7002, JF-700, JF-7008**

**FCC ID: 2BH4H-C-9200**

| | |
|---|---|
| **Prepared For :** | **Guangzhou Jufung Audio Technology Co., LTD.**<br>**Second Floor, No.5 Factory Building, No.17 Heyun Road, Jianggao Town, Baiyun District, Guangzhou City, Guangdong Province, China** |
| **Prepared By :** | **Shenzhen HUAK Testing Technology Co., Ltd.**<br>**1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China** |
| **Date of Test:** | **May 31, 2024 ~ Jun. 12, 2024** |
| **Date of Report:** | **Jun. 12, 2024** |
| **Report Number:** | **HK2405312878-E** |

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# Test Result Certification

| | |
|---|---|
| **Applicant's name** ..... : | Guangzhou Jufung Audio Technology Co., LTD. |
| Address..... : | Second Floor, No.5 Factory Building, No.17 Heyun Road, Jianggao Town, Baiyun District, Guangzhou City, Guangdong Province, China |
| **Manufacturer's Name** ..... : | Guangzhou Jufung Audio Technology Co., LTD. |
| Address..... : | Second Floor, No.5 Factory Building, No.17 Heyun Road, Jianggao Town, Baiyun District, Guangzhou City, Guangdong Province, China |

**Product description**

| | |
|---|---|
| Trade Mark .....: | JUFENG |
| Product name.....: | true diversity wireless microphone |
| Model and/or type reference : | C-9200, C-6700, JF-9200, JF-9400, JF-9500, JF-7600, JF-6700, JF-7800, JF-5004, JF-9002, JF-9004, JF-7002, JF-700, JF-7008 |
| **Standards** ..... : | FCC Rules and Regulations Part 15 Subpart C Section 15.236<br>ANSI C63.4: 2014 |

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**Date of Test** .....:

| | |
|---|---|
| Date (s) of performance of tests.....: | May 31, 2024 ~ Jun. 12, 2024 |
| Date of Issue.....: | Jun. 12, 2024 |
| Test Result.....: | **Pass** |

Testing Engineer : Len Liao

(Len Liao)

Technical Manager : Sliver Wan

(Sliver Wan)

Authorized Signatory : Jason Zhou

(Jason Zhou)

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# ** Modified History **

| Revision | Description | Issued Data | Remark |
|---|---|---|---|
| Revision 1.0 | Initial Test Report Release | Jun. 12, 2024 | Jason Zhou |
| | | | |
| | | | |

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# 1 Test Summary

## 1.1 Test Procedures and Results

| Requirement | CFR 47 Section | Result |
|---|---|---|
| Conducted Emission | 15.207 | N/A |
| Conducted Peak Output Power | 15.236(d)(1) | PASS |
| Occupied Bandwidth Emission | 15.236(f)(2) | PASS |
| Radiated Spurious Emission | 15.236(g) | PASS |
| Frequency Stability | 15.236(f)(3) | PASS |
| Antenna requirement | 15.203 | PASS |

***Note:***

*1. PASS: Test item meets the requirement.*

*2. Fail: Test item does not meet the requirement.*

*3. N/A: Test case does not apply to the test object.*

*4. The test result judgment is decided by the limit of test standard.*

## 1.2 Test Facility

### Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd.
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：

A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

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## 1.3 Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

| No. | Item | MU |
|---|---|---|
| 1 | Conducted Emission | ±2.71dB |
| 2 | RF power, conducted | ±0.37dB |
| 3 | Spurious emissions, conducted | ±0.11dB |
| 4 | All emissions, radiated(<1G) | ±3.90dB |
| 5 | All emissions, radiated(>1G) | ±4.28dB |
| 6 | Temperature | ±0.1°C |
| 7 | Humidity | ±1.0% |

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# 2 General Information

## 2.1 General Description of EUT

| | |
|---|---|
| Equipment | true diversity wireless microphone |
| Model Name | C-9200 |
| Series Models | C-6700, JF-9200, JF-9400, JF-9500, JF-7600, JF-6700, JF-7800, JF-5004, JF-9002, JF-9004, JF-7002, JF-700, JF-7008 |
| Model Difference | All model's the function, software and electric circuit are the same, only with a product model named different. Test sample model: C-9200. |
| Trade Mark | JUFENG |
| FCC ID | 2BH4H-C-9200 |
| Hardware Version | V1.0 |
| Software Version | V1.0 |
| Operation Frequency | 657MHz-663MHz |
| Number of Channels | 3 |
| Antenna Type | Spring Antenna |
| Antenna Gain | 5.15dBi |
| Modulation Type | FM |
| Power Source | DC 3V From Battery |

Note:
1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Antenna gain Refer to the antenna specifications.
3. The cable loss data is obtained from the supplier.
4. The test results in the report only apply to the tested sample.

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## 2.2 Carrier Frequency of Channels

| Description of Channel: | | | | | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 1 | 657 | 2 | 660 | 3 | 663 |

## 2.3 Operation of EUT During Testing

Operating Mode
The mode is used: **Transmitting mode**
Low channel: 657MHz
Middle channel: 660MHz
High channel: 663MHz

## 2.4 Description of Test Setup

Operation of EUT during testing:

EUT

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.

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## 2.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Trade Mark | Model/Type No. | Specification | Remark |
|---|---|---|---|---|---|
| 1 | true diversity wireless microphone | JUFENG | C-9200 | N/A | EUT |
| | | | | | |
| | | | | | |
| | | | | | |

***Note:***

*1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*

*2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

*3. For conducted measurements (Output Power, Emission Bandwidth, Necessary Bandwidth, Frequency Stability), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.*

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## 2.6 Measurement Instruments List

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|
| 1 | L.I.S.N. | R&S | ENV216 | HKE-002 | 2024/02/20 | 1 Year |
| 2 | L.I.S.N. | R&S | ENV216 | HKE-059 | 2024/02/20 | 1 Year |
| 3 | EMI Test Receiver | R&S | ESR | HKE-005 | 2024/02/20 | 1 Year |
| 4 | Spectrum analyzer | Agilent | N9020A | HKE-025 | 2024/02/20 | 1 Year |
| 5 | Spectrum analyzer | R&S | FSV3044 | HKE-126 | 2024/02/20 | 1 Year |
| 6 | Preamplifier | EMCI | EMC051845S | HKE-006 | 2024/02/20 | 1 Year |
| 7 | Preamplifier | Schwarzbeck | BBV 9743 | HKE-016 | 2024/02/20 | 1 Year |
| 8 | Preamplifier | A.H. Systems | SAS-574 | HKE-182 | 2024/02/20 | 1 Year |
| 9 | 6d Attenuator | Pasternack | 6db | HKE-184 | 2024/02/20 | 1 Year |
| 10 | EMI Test Receiver | Rohde & Schwarz | ESR-7 | HKE-010 | 2024/02/20 | 1 Year |
| 11 | Broadband Antenna | Schwarzbeck | VULB9168 | HKE-167 | 2024/02/21 | 2 Year |
| 12 | Loop Antenna | COM-POWER | AL-130R | HKE-014 | 2024/02/21 | 2 Year |
| 13 | Horn Antenna | Schwarzbeck | 9120D | HKE-013 | 2024/02/21 | 2 Year |
| 14 | EMI Test Software | Tonscend | JS32-CE 2.5.0.6 | HKE-081 | / | / |
| 15 | EMI Test Software | Tonscend | JS32-RE 5.0.0 | HKE-082 | / | / |
| 16 | RF Automatic control unit | Tonscend | JS0806-2 | HKE-060 | 2024/02/20 | 1 Year |
| 17 | High pass filter unit | Tonscend | JS0806-F | HKE-055 | 2024/02/20 | 1 Year |
| 18 | Wireless Communication Test Set | R&S | CMU200 | HKE-026 | 2024/02/20 | 1 Year |
| 19 | Wireless Communication Test Set | R&S | CMW500 | HKE-027 | 2024/02/20 | 1 Year |
| 20 | High-low temperature chamber | Guangke | HT-80L | HKE-118 | 2024/06/10 | 1 Year |
| 21 | Temperature and humidity meter | Boyang | HTC-1 | HKE-075 | 2024/06/10 | 1 Year |
| 22 | RF Test Software | Tonscend | JS1120-3 Version 3.3.23 | HKE-083 | / | / |
| 23 | 10dB Attenuator | Schwarzbeck | VTSD9561F | HKE-153 | 2024/02/20 | 1 Year |
| 24 | RSE Test Software | Tonscend | JS36-RSE 5.0.0 | HKE-184 | / | / |

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# 3 Test Results and Measurement Data

## 3.1 Conducted Emissions Test

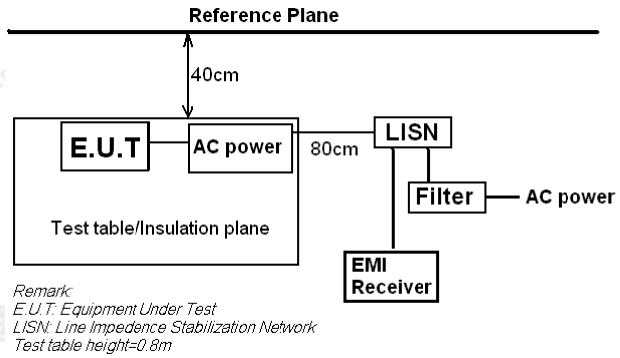
**LIMIT**

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus as below:

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

**TEST CONFIGURATION**




**TEST PROCEDURE**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

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## TEST RESULTS

Not applicable.
Note: EUT power supply by DC Power, so this test item not applicable.

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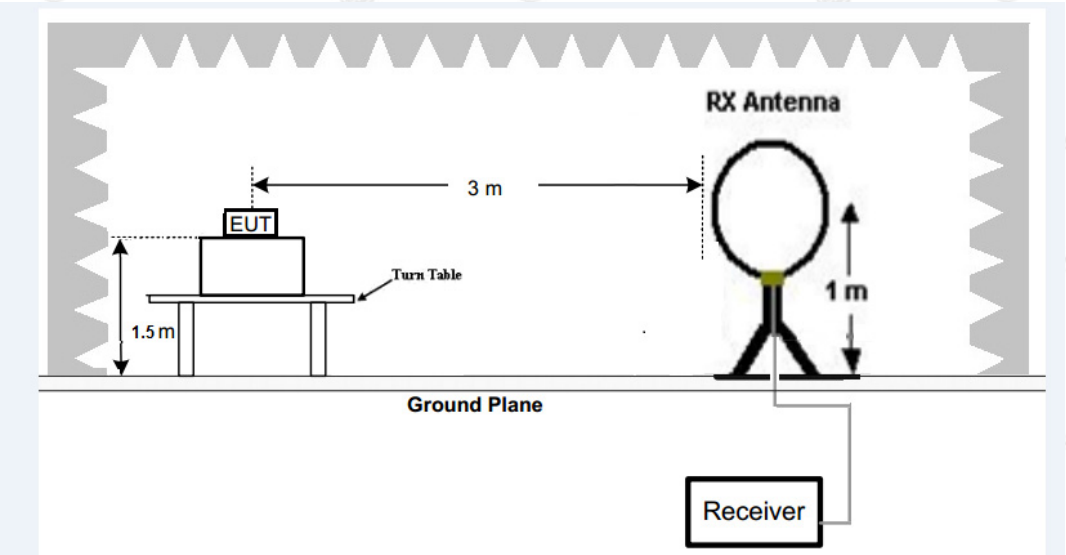
## 3.2 Radiated Emission Test

**Limit**

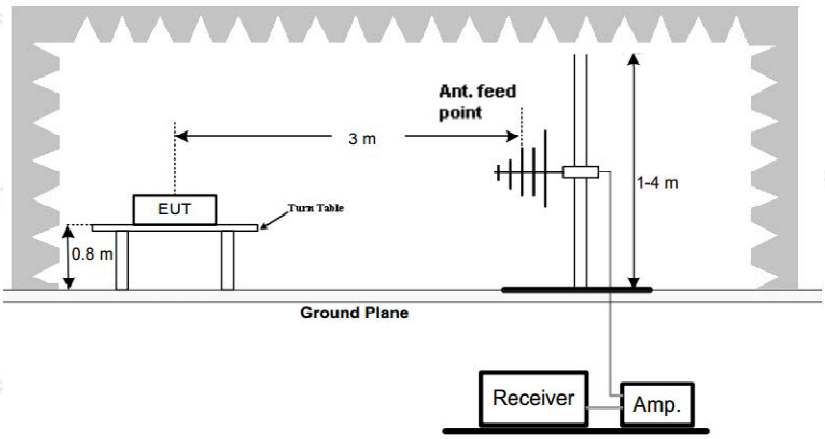
Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08).
Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

**TEST CONFIGURATION**

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.




(B) Radiated Emission Test Set-Up, Frequency below 1000MHz.

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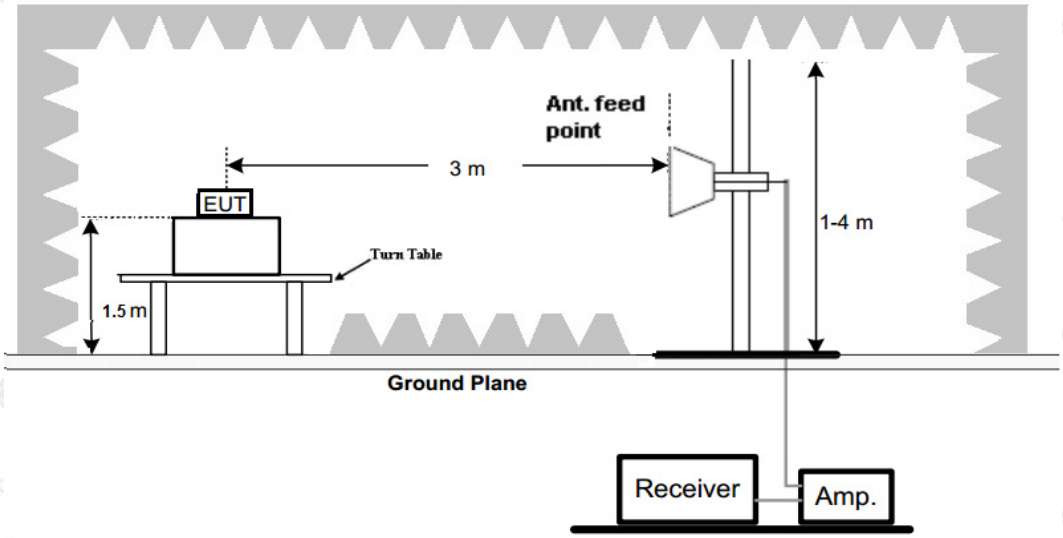
(C) Radiated Emission Test Set-Up, Frequency above 1000MHz.




| | | |
|---|---|---|
| Frequency: 9kHz-30MHz | Frequency: 30MHz-1GHz | Frequency: Above 1GHz |
| RBW=10KHz | RBW=120KHz | RBW=1MHz |
| VBW =30KHz | VBW=300KHz | VBW=3MHz(Peak) |
| Sweep time= Auto | Sweep time= Auto | Sweep time= Auto |
| Trace = max hold | Trace = max hold | Trace = max hold |
| Detector function = peak | Detector function = peak | Detector function = peak |

**Test Procedure**

1.The setup of EUT is according with per TIA/EIA Standard 603 and ANSI C63.4-2014 measurement procedure.

2.The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna heightand polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from theEUT. The test was performed by placing the EUT on 3-orthogonal axis.

3.The frequency range up to tenth harmonic of the fundamental frequency was investigated.

4.Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable.

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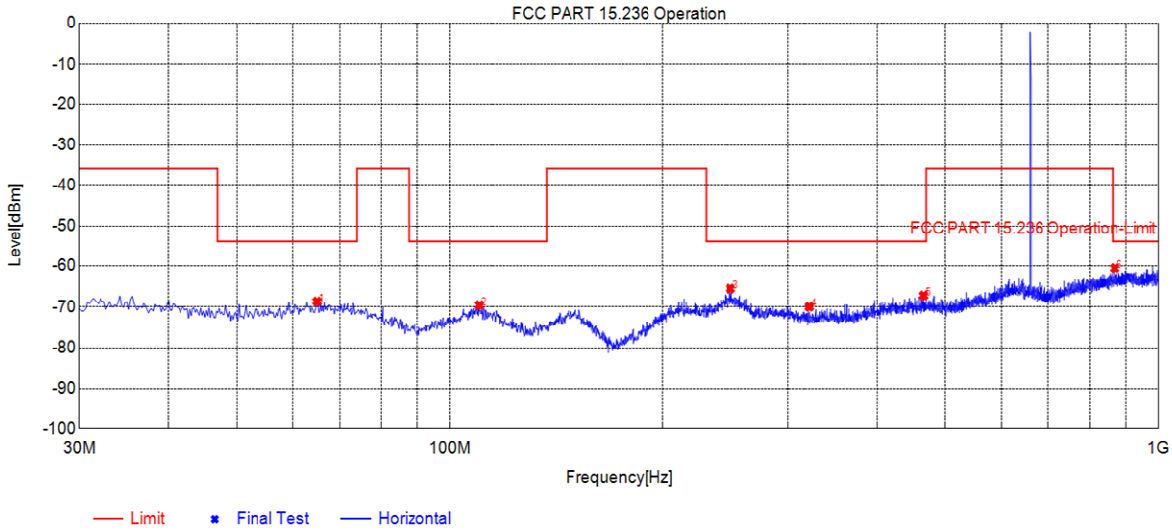
## TEST RESULTS

Below 1GHz Test Results: (Show only the worst test results)

All modes have been tested, and only the worst mode is recorded.

Antenna polarity: H




| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 64.927 | -72.86 | -68.69 | -54.00 | 14.69 | 4.17 | Horizontal |
| 2 | 109.944 | -72.88 | -69.59 | -54.00 | 15.59 | 3.29 | Horizontal |
| 3 | 248.875 | -71.55 | -65.55 | -54.00 | 11.55 | 6.00 | Horizontal |
| 4 | 322.028 | -71.41 | -69.96 | -54.00 | 15.96 | 1.45 | Horizontal |
| 5 | 466.005 | -71.54 | -67.23 | -54.00 | 13.23 | 4.31 | Horizontal |
| 6 | 867.665 | -70.12 | -60.55 | -54.00 | 6.55 | 9.57 | Horizontal |

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

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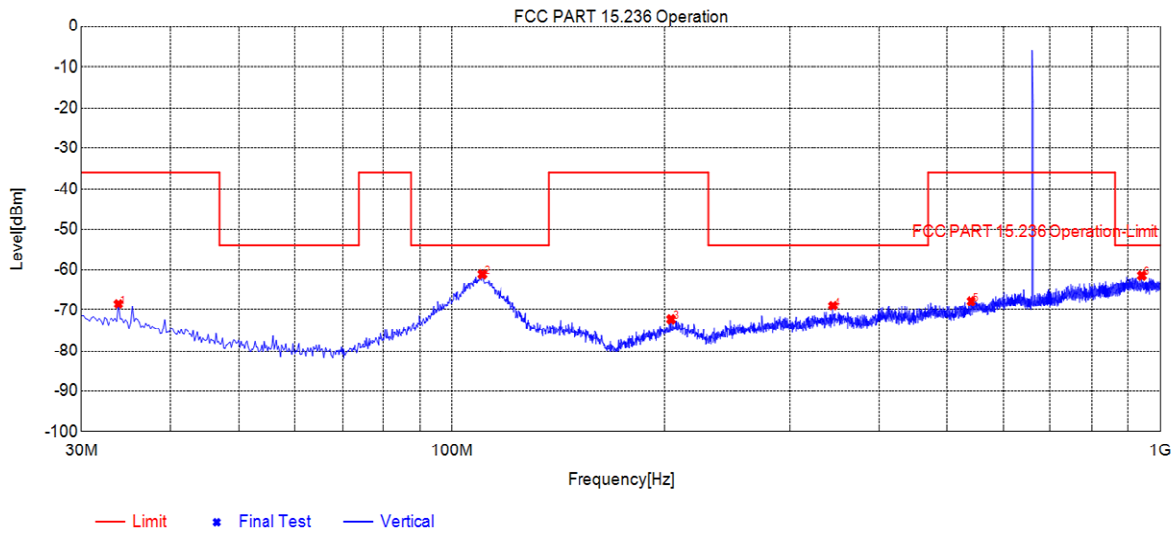
Antenna polarity: V




| Suspected List | | | | | | | |
|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Reading [dBm] | Level [dBm] | Limit [dBm] | Margin [dB] | Factor [dB] | Polarity |
| 1 | 33.8808 | -70.23 | -68.56 | -36.00 | 32.56 | 1.67 | Vertical |
| 2 | 110.332 | -73.42 | -61.03 | -54.00 | 7.03 | 12.39 | Vertical |
| 3 | 204.052 | -71.70 | -72.29 | -36.00 | 36.29 | -0.59 | Vertical |
| 4 | 345.313 | -70.81 | -68.98 | -54.00 | 14.98 | 1.83 | Vertical |
| 5 | 540.516 | -72.07 | -67.84 | -36.00 | 31.84 | 4.23 | Vertical |
| 6 | 942.370 | -70.40 | -61.34 | -54.00 | 7.34 | 9.06 | Vertical |

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

## Harmonics and Spurious Emissions

### Frequency Range (9 kHz-30MHz)

| Frequency (MHz) | Level@3m (dBμV/m) | Limit@3m (dBμV/m) |
|---|---|---|
| -- | -- | -- |
| -- | -- | -- |
| -- | -- | -- |
| -- | -- | -- |

***Note:*** *1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.*

*2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.*

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ABOVE 1GHz test results:

All modes have been tested, and only the worst mode is recorded.

Transmitting at 657MHz

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| 1314.00 | -34.75 | -5.81 | -40.56 | -30 | -10.56 | Horizontal |
| 1314.00 | -33.25 | -5.81 | -39.06 | -30 | -9.06 | Vertical |
| 1971.00 | -34.69 | -6.06 | -40.75 | -30 | -10.75 | Vertical |
| 1971.00 | -34.13 | -5.81 | -39.94 | -30 | -9.94 | Horizontal |
| Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit. | | | | | | |

Transmitting at 660MHz

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| 1320.00 | -36.42 | -5.81 | -42.23 | -30 | -12.23 | Horizontal |
| 1320.00 | -33.62 | -5.81 | -39.43 | -30 | -9.43 | Vertical |
| 1980.00 | -35.12 | -6.06 | -41.18 | -30 | -11.18 | Vertical |
| 1980.00 | -34.13 | -5.81 | -39.94 | -30 | -9.94 | Horizontal |
| Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit. | | | | | | |

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Transmitting at 663MHz

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBm) | (dB) | (dBm) | (dBm) | (dB) | |
| 1326.00 | -36.42 | -5.81 | -42.23 | -30 | -12.23 | Horizontal |
| 1326.00 | -35.24 | -5.81 | -41.05 | -30 | -11.05 | Vertical |
| 1989.00 | -36.06 | -6.06 | -42.12 | -30 | -12.12 | Vertical |
| 1989.00 | -34.13 | -5.81 | -39.94 | -30 | -9.94 | Horizontal |
| Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit. | | | | | | |

Remark：
(1) Measuring frequencies from 1 GHz to the 18 GHz.
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency; “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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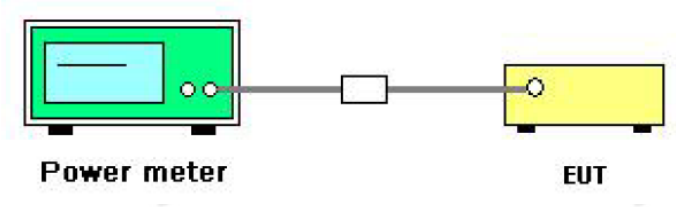
## 3.3 Conducted Output Power

**Limit**

According to FCC 15.236(d)(1), for low power auxiliary station operating in the 470-608, and 614-698 MHz bands, In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

**TEST CONFIGURATION**




**Test Procedure:**

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

**Test Results:**

| Frequency (MHz) | Conducted Output Power (dBm) | ANT Gain (dBi) | EIRP (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 657 | 5.73 | 5.15 | 10.88 | 17 | PASS |
| 660 | 5.07 | 5.15 | 10.22 | 17 | PASS |
| 663 | 4.86 | 5.15 | 10.01 | 17 | PASS |

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## 3.4 Occupied Bandwidth Measurement

**Limit**

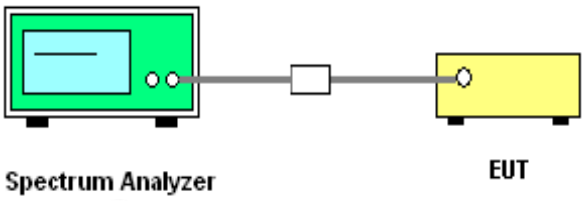
According to FCC 15.236(f)(2), The operating frequency within a permissible band of operation as defined in paragraph (c) must comply with the following requirements.

(1) The frequency selection shall be offset from the upper or lower band limits by 25 kHz or an integral multiple thereof.

(2) One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200kHz.

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in Section 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08) (incorporated by reference, see §15.38). Emissions outside this band shall comply with the limit specified at the edges of the ETSI mask.

**TEST CONFIGURATION**




**Test Procedure:**

According to TIA-603 for additional Test Set-Up procedures, the occupied bandwidth of emission was measured with a Spectrum Analyzer connected to the antenna terminal while EUT was operating in 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. Then mark the -26dB Bandwidth and record it.

**Test Results:**

| Frequency (MHz) | -20Bandwidth (kHz) | 99%Bandwidth (kHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| 657 | 67.61 | 73.930 | 200 | PASS |
| 660 | 72.34 | 76.153 | 200 | PASS |
| 663 | 73.69 | 72.488 | 200 | PASS |

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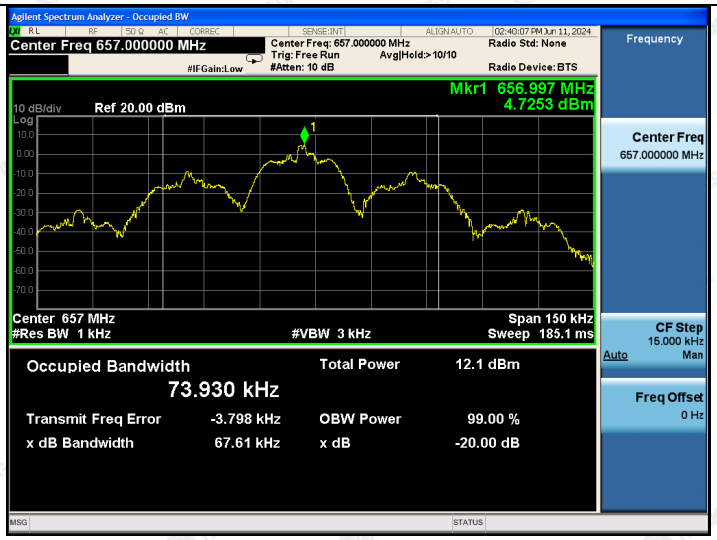
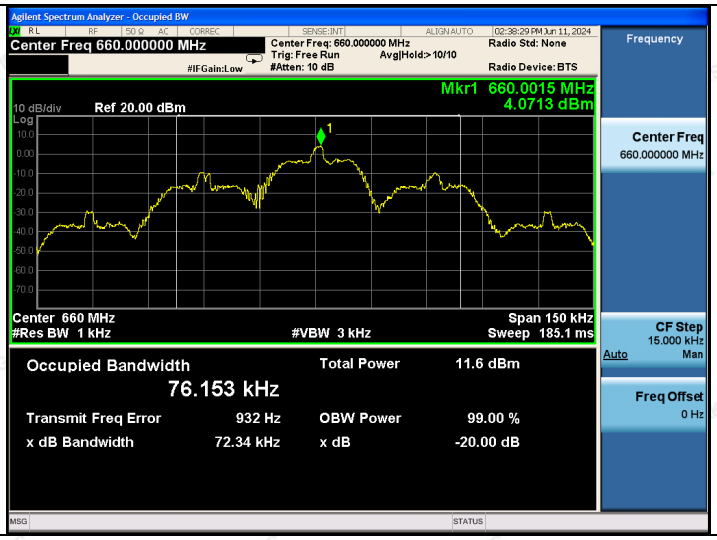
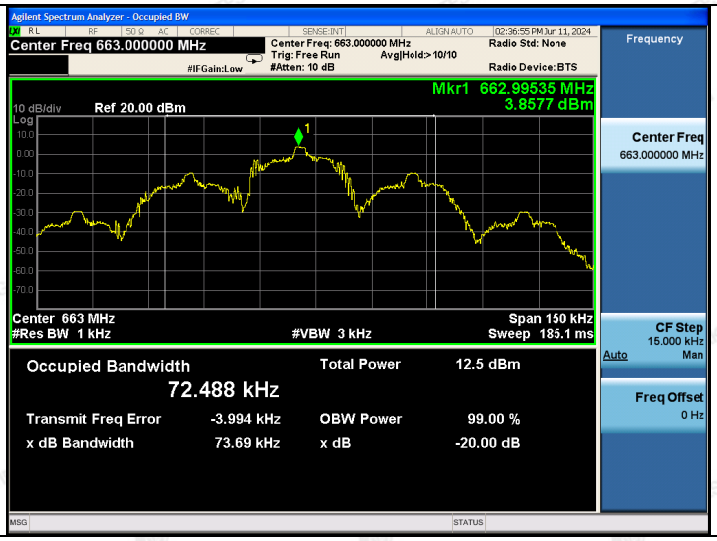
657MHz




660MHz




663MHz

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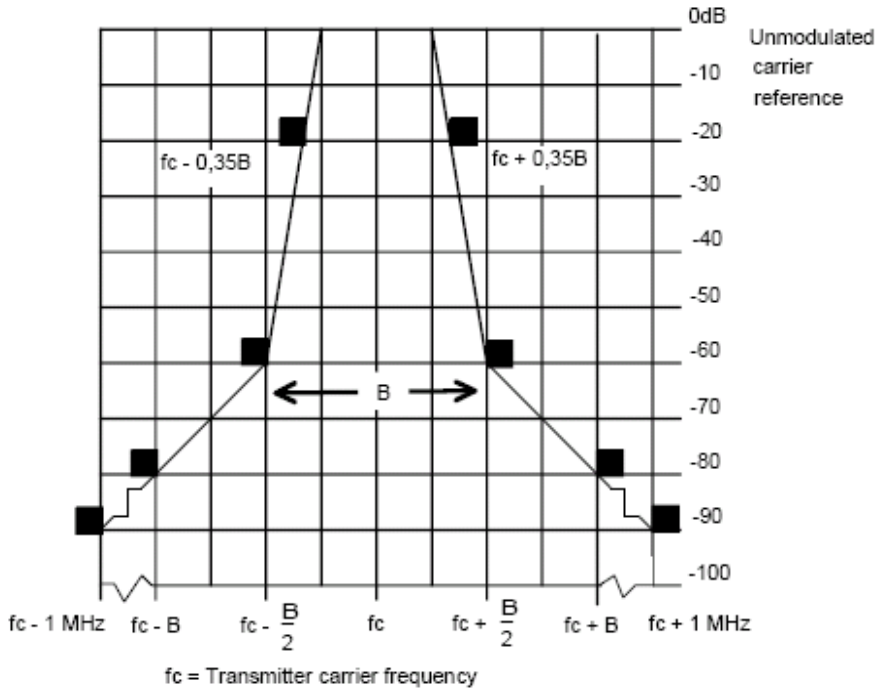
## 3.5. Necessary Bandwidth

**Limit**

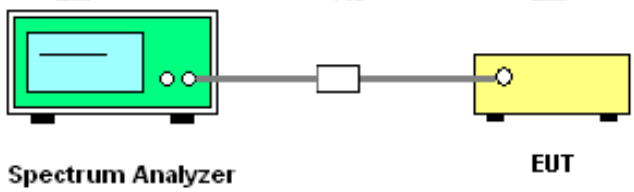



Standard Applicable

According to §15.236 (g) Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in §8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08),Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless UHF Microphone s in the 25 MHz to 3GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to ETSI EN 300 422-2 V2.1.1 section 8.3, the transmitter output spectrum shall be within the mask defined in the following figure.

**TEST CONFIGURATION**




**Test Procedure:**

The arrangement of test equipment as shown in figure B.1 shall be used. Note that the noise meter conforms to (quasi peak) without weighting filter (flat).

With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the DUT shall be adjusted to 8 dB below the limiting threshold (-8 dB (lim)) as declared by the manufacturer.

The corresponding audio output level from the demodulator shall be measured and recorded.

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The input impedance of the noise meter shall be sufficiently high to avoid more than 0.1 dB change in input level when the meter is switched between input and output.

The audio input level shall be increased by 20 dB, i.e. to +12 dB (lim), and the corresponding change in output level shall be measured.

It shall be checked that the audio output level has increased by ≤ 10 dB.

If this condition is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8 dB (lim).

Measure the input level at the transmitter required to give +12 dB (lim).

The LF generator shall be replaced with the weighted noise source to Recommendation ITU-R BS.559-2 [i.3], band-limited to 15 kHz as described in IEC 60244-13 [2], and the level shall be adjusted such that the measured input to the transmitter corresponds to +12 dB (lim).

If the transmitter incorporates any ancillary coding or signalling channels (e.g. pilot-tones), these shall be enabled prior to any spectral measurements.

If the transmitter incorporates more than one audio input, e.g. stereo systems, the second and subsequent channels shall be simultaneously driven from the same noise source, attenuated to a level of -6 dB (lim).

- centre frequency: fc: Transmitter (Tx) nominal frequency;
- dispersion (Span): fc - 1 MHz to fc + 1 MHz;
- Resolution Bandwidth (RBW):1 kHz;
- Video Bandwidth (VBW): 3 kHz;
- detector: Peak hold.

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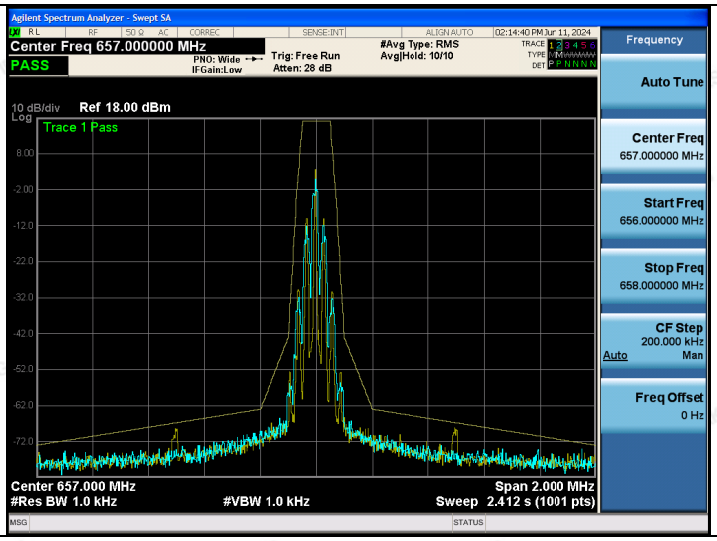
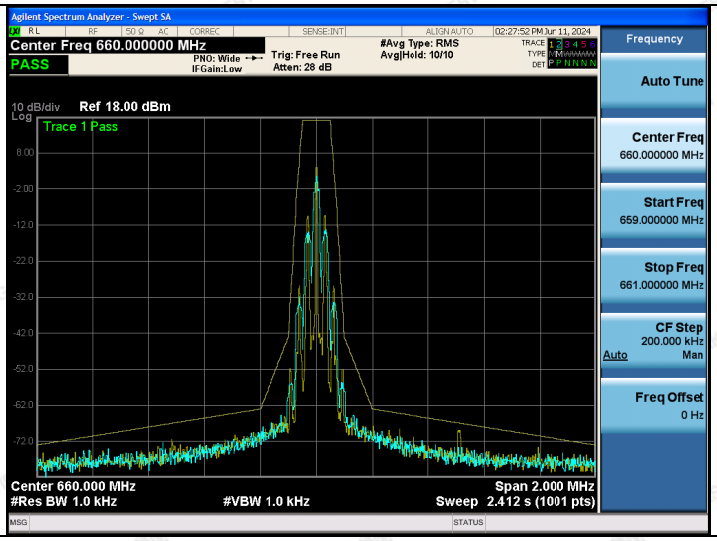
## Test Result

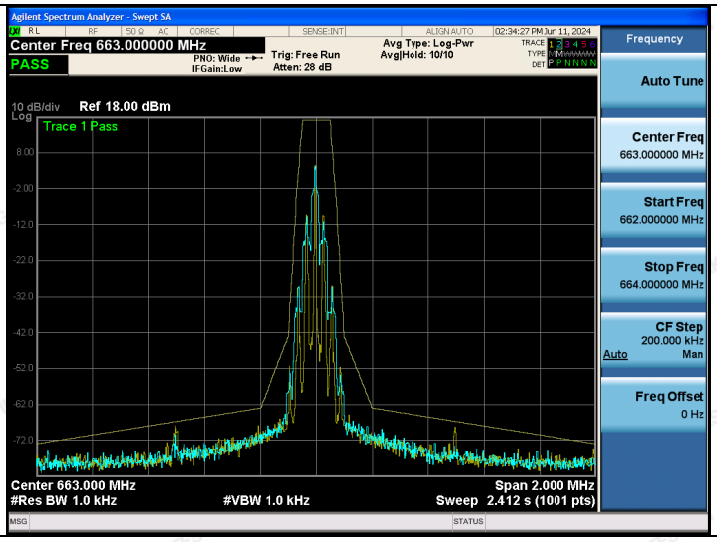
657MHz




660MHz




663MHz

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## 3.6. Frequency Stability

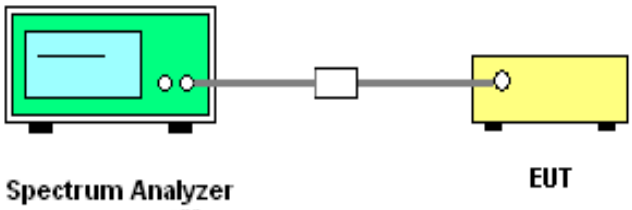
**Limit**

±50ppm

**Standard Applicable**

According to FCC 15.236(f)(3), The frequency tolerance of the carrier signal shall be maintained within ±0.005%of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

**TEST CONFIGURATION**




**Test Procedure:**

1. Setup the configuration of the ambient temperature form -20ºC to 50ºC with sufficient time. And measure the different power of the EUT with an artificial power from highest to end point voltage.
2. Set frequency counter center frequency to the right frequency needs to be measured band.

**Test Result**

| Test Frequency | Test Conditions | | Measure Frequency | Frequency Error | | Limit | Result |
|---|---|---|---|---|---|---|---|
| (MHz) | Voltage (V) | Temperature (ºC) | (MHz) | (MHz) | ppm | ppm | |
| 657MHz | N | N | 656.9982 | -0.0018 | -2.74 | ±50ppm | PASS |
| | | L | 656.9974 | -0.0026 | -3.96 | | |
| | | H | 656.9963 | -0.0037 | -5.63 | | |
| | L | N | 656.9979 | -0.0021 | -3.20 | | |
| | | L | 656.9954 | -0.0046 | -7.00 | | |
| | | H | 656.9966 | -0.0034 | -5.18 | | |
| | H | N | 656.9943 | -0.0057 | -8.68 | | |
| | | L | 656.9961 | -0.0039 | -5.94 | | |
| | | H | 656.9985 | -0.0015 | -2.28 | | |

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| Test Frequency | Test Conditions | | Measure Frequency | Frequency Error | | Limit | Result |
|---|---|---|---|---|---|---|---|
| (MHz) | Voltage (V) | Temperature (ºC) | (MHz) | (MHz) | ppm | ppm | |
| 660MHz | N | N | 659.9991 | -0.0009 | -1.36 | ±50ppm | PASS |
| | | L | 659.9985 | -0.0015 | -2.27 | | |
| | | H | 659.9961 | -0.0039 | -5.91 | | |
| | L | N | 659.9954 | -0.0046 | -6.97 | | |
| | | L | 659.9975 | -0.0025 | -3.79 | | |
| | | H | 659.9983 | -0.0017 | -2.58 | | |
| | H | N | 659.9971 | -0.0029 | -4.39 | | |
| | | L | 659.9969 | -0.0031 | -4.70 | | |
| | | H | 659.9958 | -0.0042 | -6.36 | | |

| Test Frequency | Test Conditions | | Measure Frequency | Frequency Error | | Limit | Result |
|---|---|---|---|---|---|---|---|
| (MHz) | Voltage (V) | Temperature (ºC) | (MHz) | (MHz) | ppm | ppm | |
| 663MHz | N | N | 662.9982 | -0.0018 | -2.71 | ±50ppm | PASS |
| | | L | 662.9969 | -0.0031 | -4.68 | | |
| | | H | 662.9978 | -0.0022 | -3.32 | | |
| | L | N | 662.9949 | -0.0051 | -7.69 | | |
| | | L | 662.9963 | -0.0037 | -5.58 | | |
| | | H | 662.9991 | -0.0009 | -1.36 | | |
| | H | N | 662.9972 | -0.0028 | -4.22 | | |
| | | L | 662.9963 | -0.0037 | -5.58 | | |
| | | H | 662.9955 | -0.0045 | -6.79 | | |

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Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

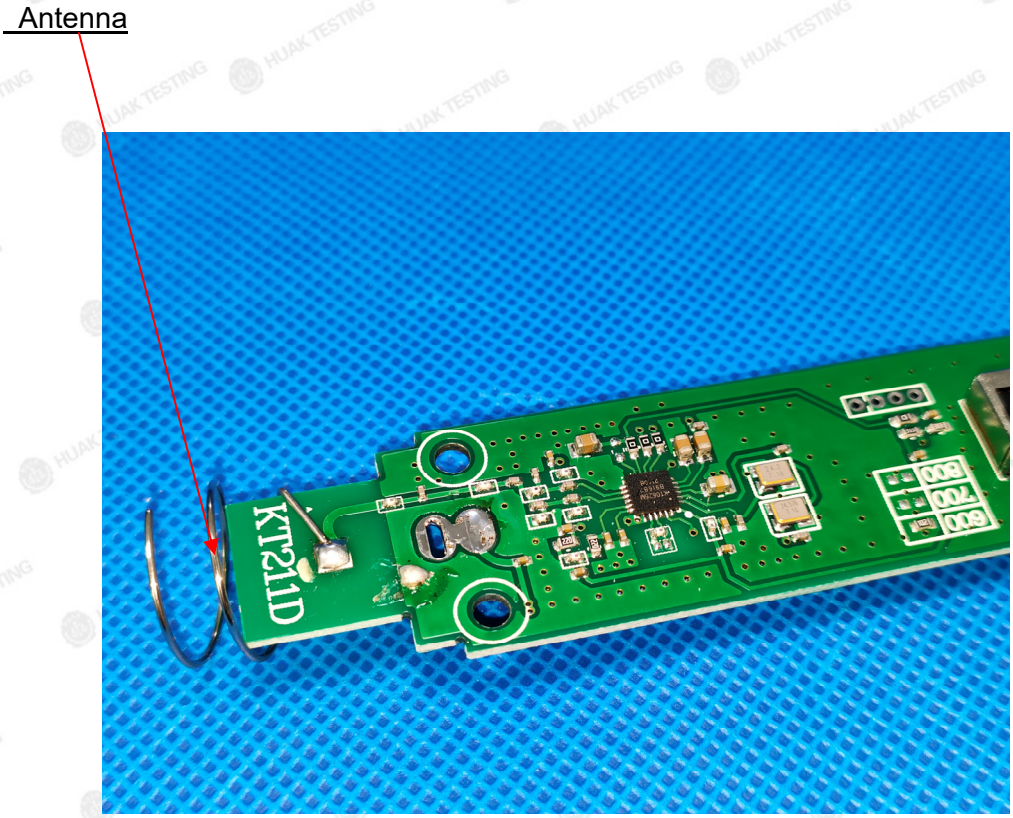
## 3.7. Antenna Requirement

**Standard Applicable**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

**Antenna Connected Construction**

The antenna used in this product is a Spring Antenna, which permanently attached. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 5.15dBi.

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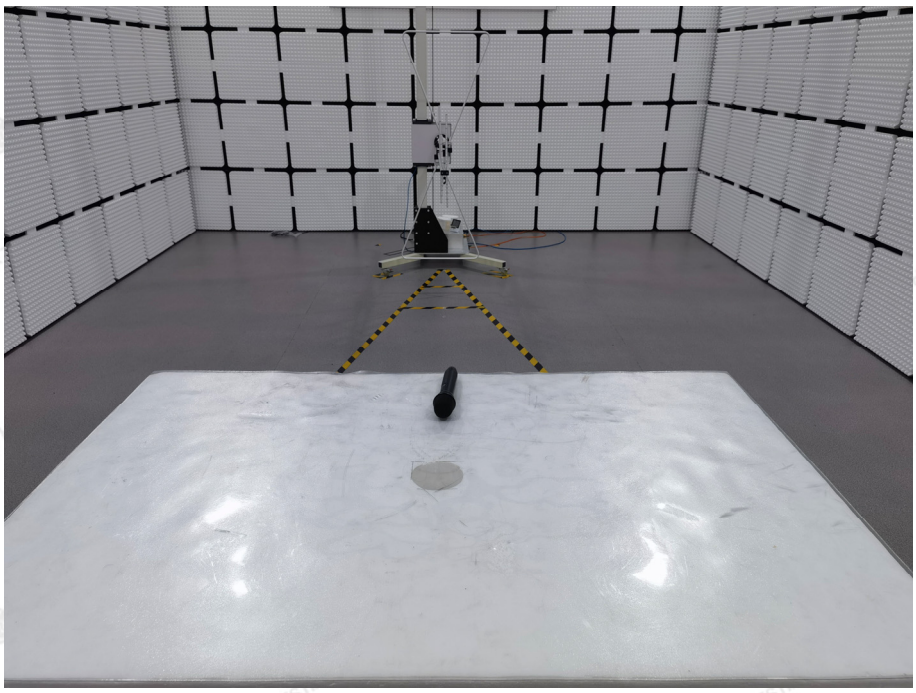
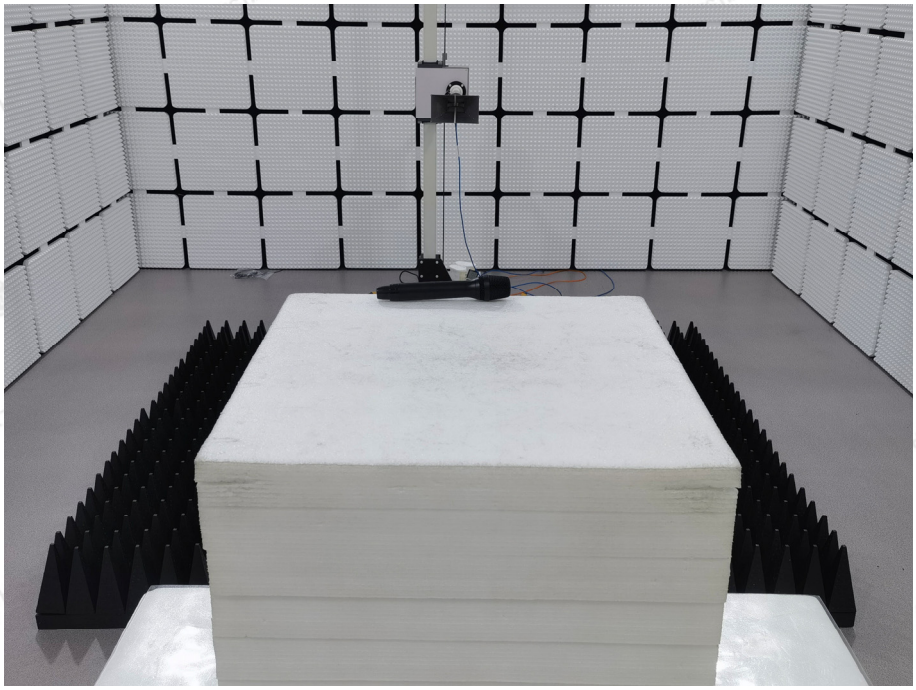
# 4 Photograph of Test

Radiated Emission





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# 5 Photograph of EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

---------End of test report---------

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