# FCC Test Report

**Test Report**
**On Behalf of**
**JIHUANG TOYS FACTORY**
**For**
**car toy**
**Model No.: 19-3B, 19-1B, 19-1A,19-3A, 23-5GB, 23-5GA, 23-6GB**

**FCC ID: 2BMXD-19-3B**

| | |
|---|---|
| **Prepared For:** | **JIHUANG TOYS FACTORY**<br>**(Lianxia town Jiangyang park), Chenghai District, Shantou 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:** | **Dec. 09, 2024 ~ Dec. 23, 2024** |
| **Date of Report:** | **Dec. 23, 2024** |
| **Report Number:** | **HK2412097565-E** |

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# Test Result Certification

**Applicant's Name**.....: JIHUANG TOYS FACTORY

Address .....: (Lianxia town Jiangyang park), Chenghai District, Shantou City, Guangdong Province, China

**Manufacturer's Name** .....: JIHUANG TOYS FACTORY

Address .....: (Lianxia town Jiangyang park), Chenghai District, Shantou City, Guangdong Province, China

**Product Description**

Trade Mark .....: N/A

Product Name .....: car toy

Model and/or Type Reference: 19-3B, 19-1B, 19-1A,19-3A, 23-5GB, 23-5GA, 23-6GB

**Standards** .....: 47 CFR Part15, Subpart C 15.227

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

Date (s) of Performance of Tests .....: **Dec. 09, 2024 ~ Dec. 23, 2024**

Date of Issue.....: **Dec. 23, 2024**

Test Result.....: **Pass**

Testing Engineer

Len Liao

Technical Manager

Sliver Wan

Authorized Signatory

Jason Zhou

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# ** Modified History **

| Revision | Description | Issued Data | Remark |
|---|---|---|---|
| Revision 1.0 | Initial Test Report Release | Dec. 23, 2024 | Jason Zhou |
| | | | |
| | | | |

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

# 1. Test Result Summary

## 1.1. Test Facility

| Requirement | CFR 47 Section | Result |
|---|---|---|
| Conduction Emission, 0.15MHz to 30MHz | §15.207 | N/A |
| Radiation Emission | §15.227, §15.205, §15.209 | PASS |
| Occupied Bandwidth | §15.215 | 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. 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.

## 1.3. Measurement Uncertainty

Measurement Uncertainty

| | | |
|---|---|---|
| Conducted Emission Expanded Uncertainty | = | 2.71dB, k=2 |
| Radiated Emission Expanded Uncertainty(9kHz-30MHz) | = | 3.90dB, k=2 |
| Radiated Emission Expanded Uncertainty(30MHz-1000MHz) | = | 3.90dB, k=2 |
| Radiated Emission Expanded Uncertainty(Above 1GHz) | = | 4.28dB, k=2 |

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# 2. EUT Description

## 2.1. General Description of EUT

| | |
|---|---|
| Equipment | car toy |
| Model Name | 19-3B |
| Serial Model | 19-1B, 19-1A,19-3A, 23-5GB, 23-5GA, 23-6GB |
| Model Difference | All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: 19-3B. |
| FCC ID | **2BMXD-19-3B** |
| Antenna Type | External Antenna |
| Antenna Gain | -0.58dBi |
| Operation Frequency | 27.108MHz |
| Modulation Type | ASK |
| Power Source | DC3V From Battery |
| Power Rating | DC3V From Battery |
| Note:<br>1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.<br>2. Antenna gain Refer to the antenna specifications.<br>3. The cable loss data is obtained from the supplier.<br>4. The test results in the report only apply to the tested sample. | |

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## 2.2. Description of Test Setup

Operation of EUT during Radiation testing:

EUT

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# 3. General Information

## 3.1. Test Environment and Mode

| **Operating Environment:** | |
|---|---|
| Temperature: | 24.0 °C |
| Humidity: | 54 % RH |
| Atmospheric Pressure: | 1010 mbar |
| **Test Mode:** | |
| Operation mode: | Keep the EUT in continuous transmitting with modulation |
| 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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## 3.2. 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 | Note |
|---|---|---|---|---|---|
| 1 | car toy | N/A | 19-3B | 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.*

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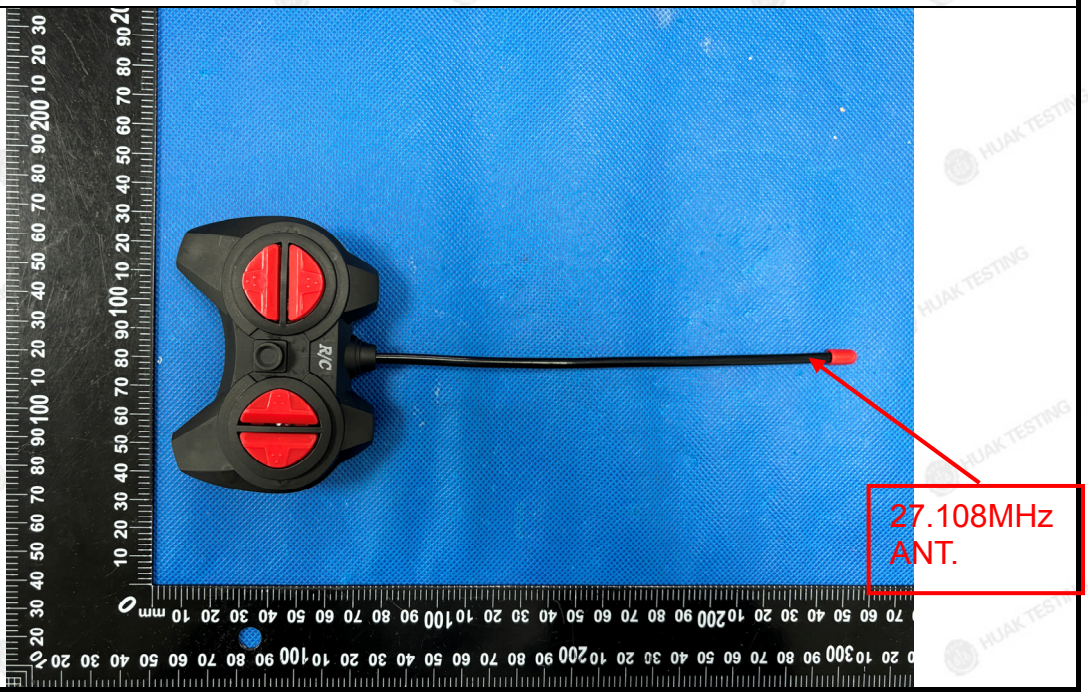
# 4. Test Results and Measurement Data

## 4.1. Antenna Requirement

| **Standard requirement:** | FCC Part15 C Section 15.203 |
|---|---|
| 15.203 requirement:<br>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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. | |
| **E.U.T Antenna:** | External Antenna |
| The antenna used in this product is an External Antenna which use a special interface and cannot easily replace, The directional gains of antenna used for transmitting is -0.58dBi. | |

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## 4.2. Conducted Emission

### 4.2.1. Conducted Power Line Emission Limit

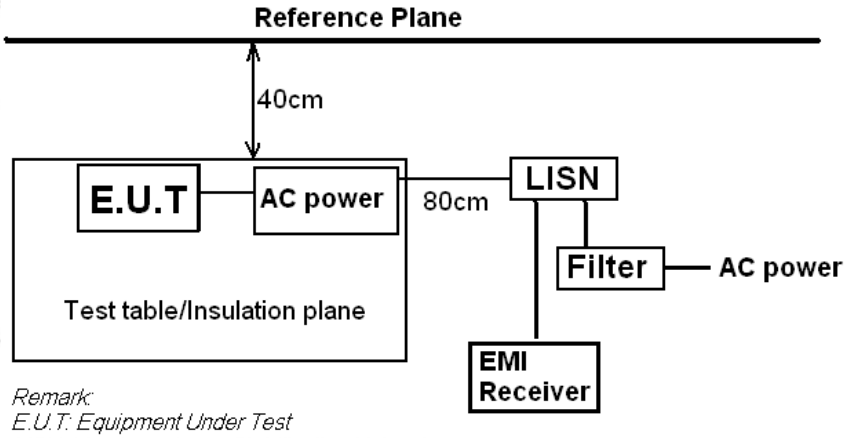
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

| Frequency (MHz) | Maximum RF Line Voltage (dBμV) | | | |
|---|---|---|---|---|
| | CLASS A | | CLASS B | |
| | Q.P. | Ave. | Q.P. | Ave. |
| 0.15 - 0.50 | 79 | 66 | 66-56* | 56-46* |
| 0.50 - 5.00 | 73 | 60 | 56 | 46 |
| 5.00 - 30.0 | 73 | 60 | 60 | 50 |

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

### 4.2.2. Test Setup




*Remark:*
*E.U.T: Equipment Under Test*
*LISN: Line Impedence Stabilization Network*
*Test table height=0.8m*

### 4.2.3. 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.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. If a EUT received DC power from the USB Port of Notebook PC, the PC's 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.

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### 4.2.4. Test Result

Not applicable.
Note: EUT Power Supply by Battery Powered, so this test item not applicable.

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## 4.3. Radiated Emission Measurement

### 4.3.1. Test Specification

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.227 and 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10:2013</td></tr>
<tr><td>Frequency Range:</td><td>9 kHz to 1 GHz</td></tr>
<tr><td>Measurement Distance:</td><td>3 m</td></tr>
<tr><td>Antenna Polarization:</td><td>Horizontal & Vertical</td></tr>
<tr><td>Receiver Setup:</td><td>
<table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>9kHz-150kHz</td><td>Quasi-peak</td><td>200Hz</td><td>1kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>150kHz-30MHz</td><td>Quasi-peak</td><td>9kHz</td><td>30kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td></td><td>1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber in below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.<br>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</td></tr>
</table>

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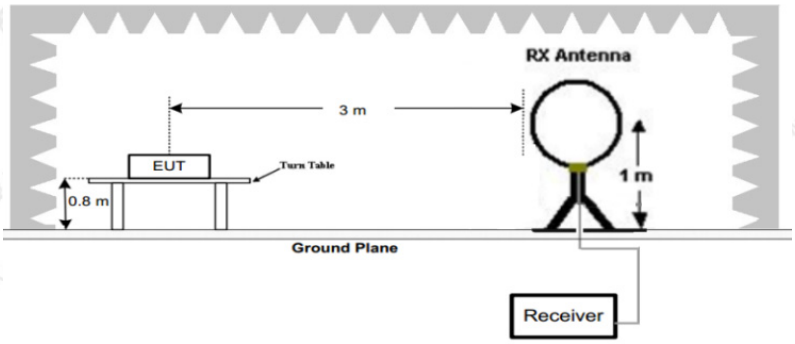
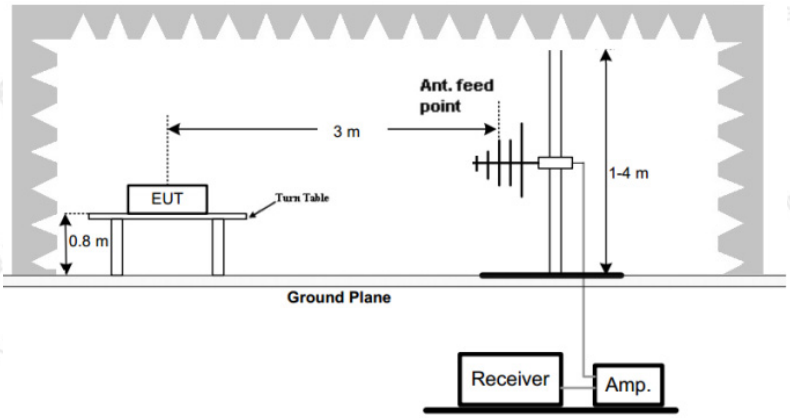
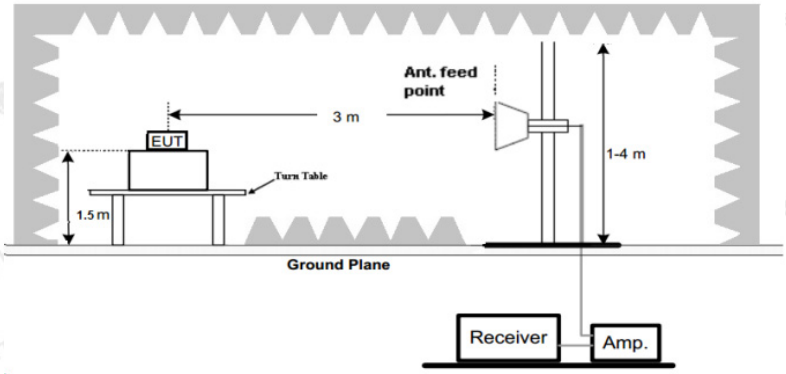
| | |
|---|---|
| **Test Setup:** | For Radiated Emissions<br>  <br><br>30MHz to 1GHz<br>  <br><br>Above 1GHz<br>  <br> |
| **Test Mode:** | Transmitting Mode |
| **Test Results:** | PASS |

### 4.3.2. Limit

(a) The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

(b) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

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### 4.3.3. Frequencies in restricted band are complied to limit on Paragraph 15.209

| Frequency Range (MHz) | Distance (m) | Field strength (dBμV/m) | Field strength (microvolts/meter) |
|---|---|---|---|
| 0.009-0.490 | 300 | 20log 2400/F (kHz) | 2400/F (kHz) |
| 0.490-1.705 | 30 | 20log 24000/F (kHz) | 24000/F (kHz) |
| 1.705-30 | 30 | 20log 30 | 30 |
| 30-88 | 3 | 40.0 | 100** |
| 88-216 | 3 | 43.5 | 150** |
| 216-960 | 3 | 46.0 | 200** |
| Above 960 | 3 | 54.0 | 500 |

NOTE:
**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., S 15.231 and 15.241.

### 4.3.4. Test Instruments

| Radiated Emission Test Site (966) | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| ESPI Test Receiver | ROHDE&SCHWARZ | ESVD | 100008 | 2024/02/20 |
| Spectrum Analyzer | ROHDE&SCHWARZ | FSEM | 848597/001 | 2024/02/20 |
| Pre-amplifier | EM Electronics Corporation CO.,LTD | EM30265 | 07032613 | 2024/02/20 |
| Pre-amplifier | HP | 8447D | 2727A05017 | 2024/02/20 |
| Loop antenna | ZHINAN | ZN30900A | 12024 | 2024/02/20 |
| Broadband Antenna | Schwarzbeck | VULB9163 | 340 | 2024/02/20 |
| Horn Antenna | Schwarzbeck | BBHA 9120D | 631 | 2024/02/20 |
| Coax cable | HUAK | N/A | N/A | 2024/02/20 |
| Coax cable | HUAK | N/A | N/A | 2024/02/20 |
| Coax cable | HUAK | N/A | N/A | 2024/02/20 |
| Coax cable | HUAK | N/A | N/A | 2024/02/20 |
| EMI Test Software | Shurple Technology | EZ-EMC | N/A | N/A |

***Note:*** *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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### 4.3.5. Test Data

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

**Field Strength of Fundamental**

| Frequency (MHz) | Reading (dBuV/m) | Correction Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Polar (H/V) | Detector |
|---|---|---|---|---|---|---|---|
| 26.96 | 30.88 | -10.82 | 20.06 | 69.5 | -49.44 | H | Peak |
| 26.96 | 31.96 | -10.82 | 21.14 | 69.5 | -48.36 | V | Peak |
| 27.108 | 36.47 | -12.65 | 23.82 | 100 | -76.18 | H | Peak |
| 27.108 | 36.41 | -12.65 | 23.76 | 100 | -76.24 | V | Peak |
| 27.28 | 32.83 | -10.82 | 22.01 | 69.5 | -47.49 | H | Peak |
| 27.28 | 33.57 | -10.82 | 22.75 | 69.5 | -46.75 | V | Peak |

Remark: Margin = Result - Limit
Result = Reading +Correction Factor
Correction Factor = Antenna Factor + Cable Factor

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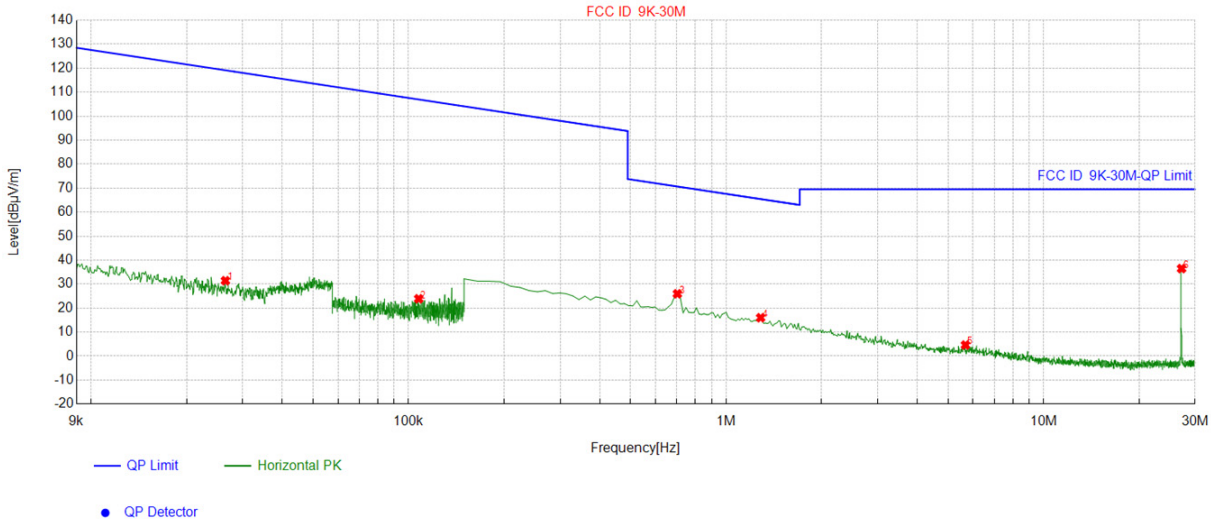
For 9KHz - 30MHz




| Suspected List | | | | | | |
|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
| 1 | 0.026493 | -10.74 | 42.16 | 31.42 | 119.13 | 87.71 |
| 2 | 0.107608 | -10.61 | 34.50 | 23.89 | 106.96 | 83.07 |
| 3 | 0.702501 | -10.95 | 36.92 | 25.97 | 70.68 | 44.71 |
| 4 | 1.284867 | -10.51 | 26.50 | 15.99 | 65.45 | 49.46 |
| 5 | 5.675013 | -10.87 | 15.48 | 4.61 | 69.50 | 64.89 |
| 6 | 27.207629 | -12.58 | 49.05 | 36.47 | 69.50 | 33.03 |

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

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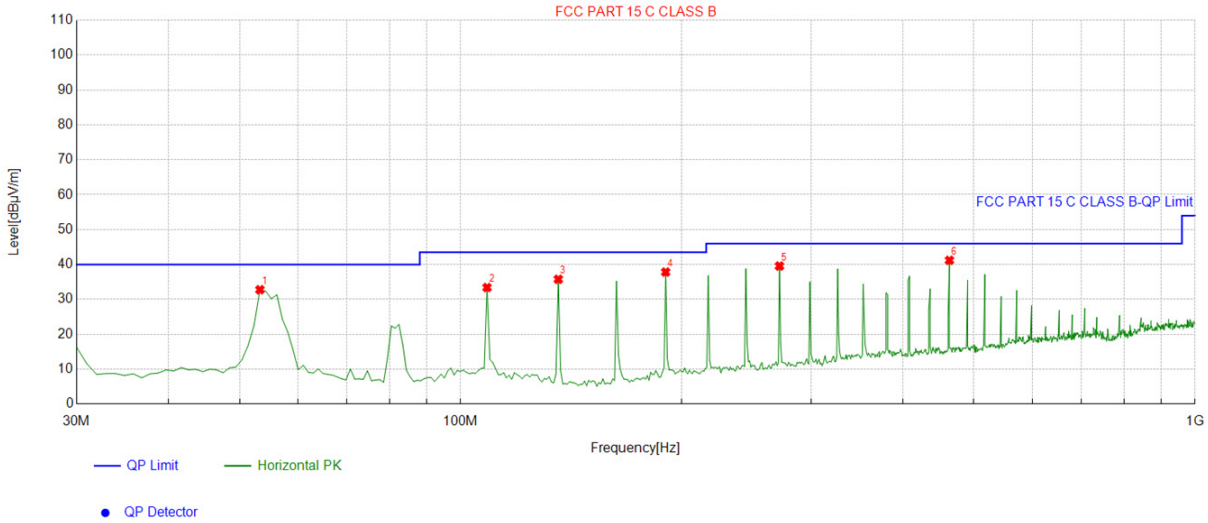
About 30MHz-1GHz

Horizontal:




| Suspected List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 53.303303 | -13.66 | 46.43 | 32.77 | 40.00 | 7.23 | 100 | 107 | Horizontal |
| 2 | 108.64864 | -14.02 | 47.42 | 33.40 | 43.50 | 10.10 | 100 | 115 | Horizontal |
| 3 | 135.83583 | -17.57 | 53.33 | 35.76 | 43.50 | 7.74 | 100 | 306 | Horizontal |
| 4 | 190.21021 | -15.90 | 53.73 | 37.83 | 43.50 | 5.67 | 100 | 132 | Horizontal |
| 5 | 271.77177 | -12.57 | 52.12 | 39.55 | 46.00 | 6.45 | 100 | 267 | Horizontal |
| 6 | 463.05305 | -8.80 | 50.00 | 41.20 | 46.00 | 4.80 | 100 | 207 | Horizontal |

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

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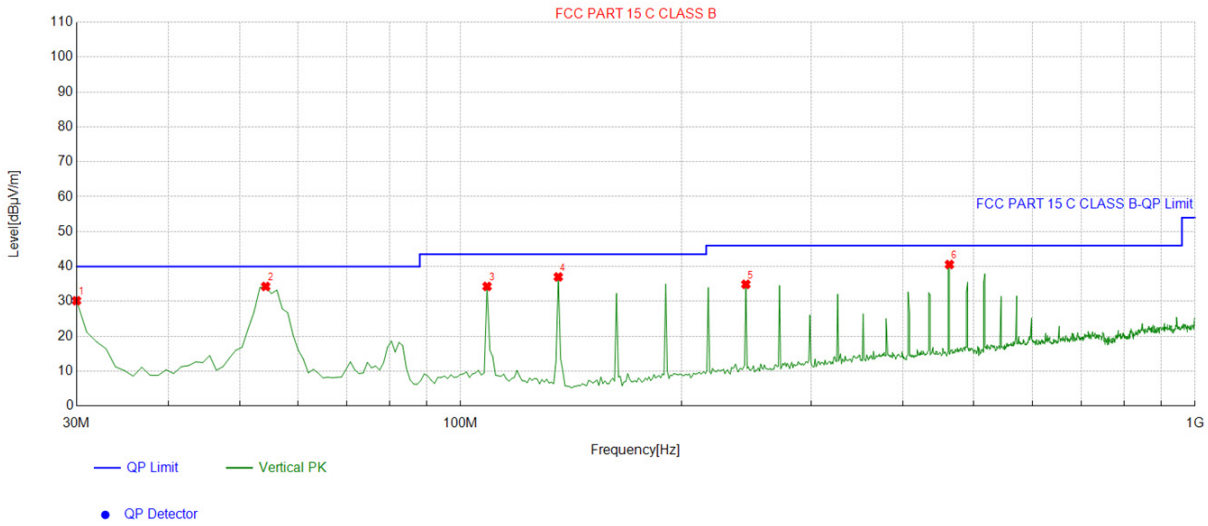
Vertical:




| Suspected List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Factor [dB] | Reading [dBµV/m] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 30 | -15.74 | 45.93 | 30.19 | 40.00 | 9.81 | 100 | 316 | Vertical |
| 2 | 54.274274 | -13.50 | 47.77 | 34.27 | 40.00 | 5.73 | 100 | 6 | Vertical |
| 3 | 108.64864 | -14.02 | 48.31 | 34.29 | 43.50 | 9.21 | 100 | 282 | Vertical |
| 4 | 135.83583 | -17.57 | 54.58 | 37.01 | 43.50 | 6.49 | 100 | 359 | Vertical |
| 5 | 244.58458 | -13.21 | 48.10 | 34.89 | 46.00 | 11.11 | 100 | 181 | Vertical |
| 6 | 463.05305 | -8.80 | 49.37 | 40.57 | 46.00 | 5.43 | 100 | 357 | Vertical |

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

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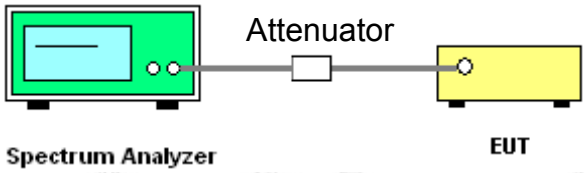
## 4.4. Occupied Bandwidth

### 4.4.1. Test Specification

| | |
|---|---|
| **Test Requirement:** | FCC Part15 C Section 15.215 |
| **Test Method:** | ANSI C63.10: 2013 |
| **Limit:** | N/A |
| | 1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.<br>2. Set to the maximum power setting and enable the EUT transmit continuously.<br>3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.<br>Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel; RBW=1% to 5% of the Occupied Bandwidth; VBW=3RBW; Sweep = auto; Detector function = peak; Trace = max hold.<br>4. Measure and record the results in the test report. |
| **Test Setup:** |  |
| **Test Mode:** | Transmitting Mode |
| **Test Results:** | PASS |

### 4.4.2. Test Instruments

| RF Test Room | | | | |
|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | N9020A | MY49100060 | 2024/02/20 |

***Note:*** *The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).*

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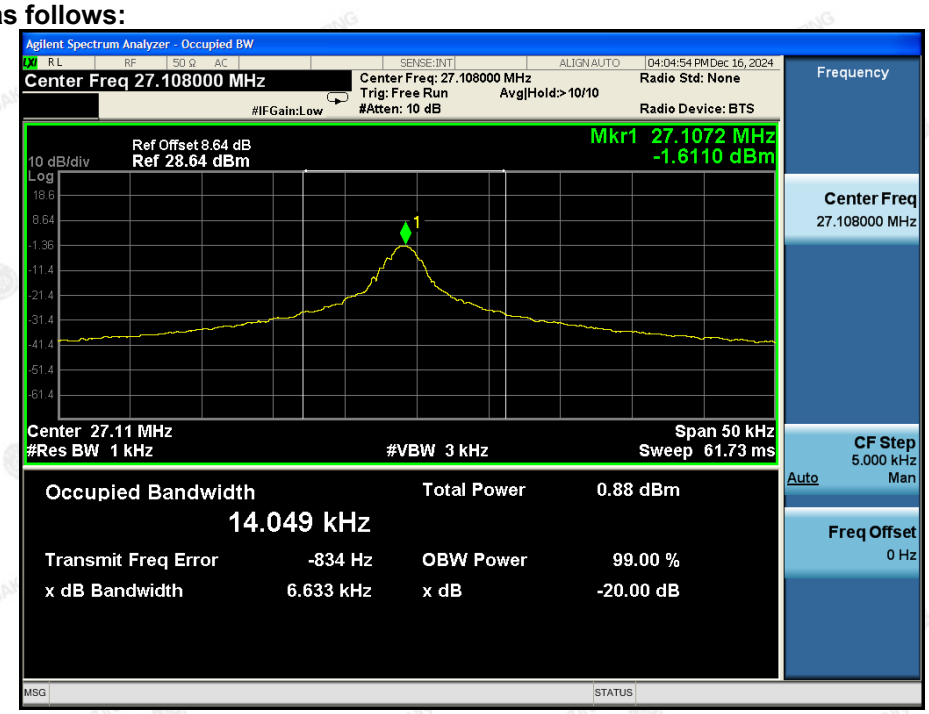
### 4.4.3. Test data

| Test Channel (MHz) | 20dB Occupy Bandwidth (kHz) | Limit (kHz) | Conclusion |
|---|---|---|---|
| 27.108 | 6.633 | N/A | PASS |

**Test plots as follows:**

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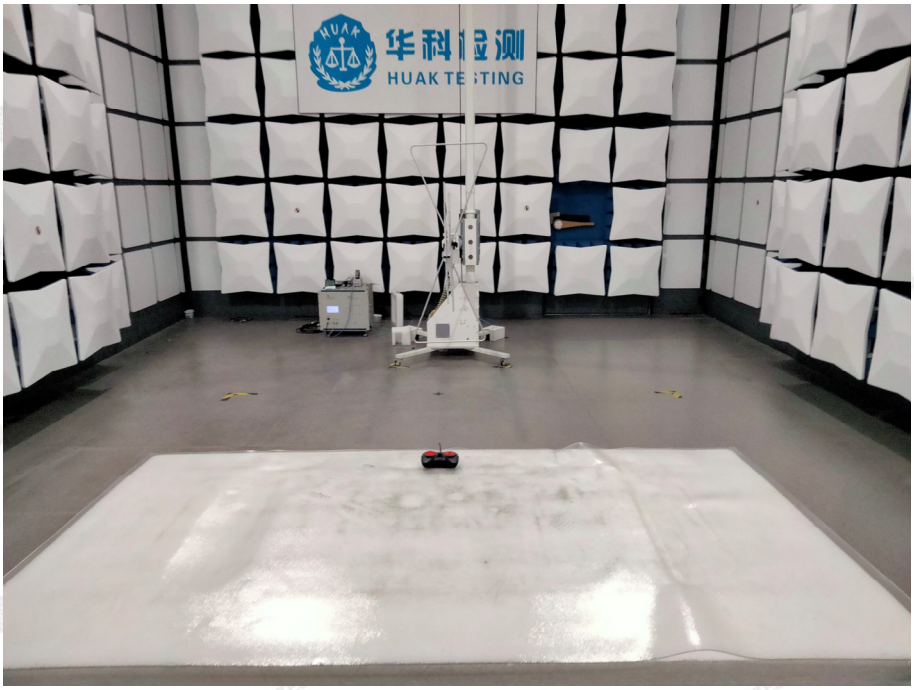
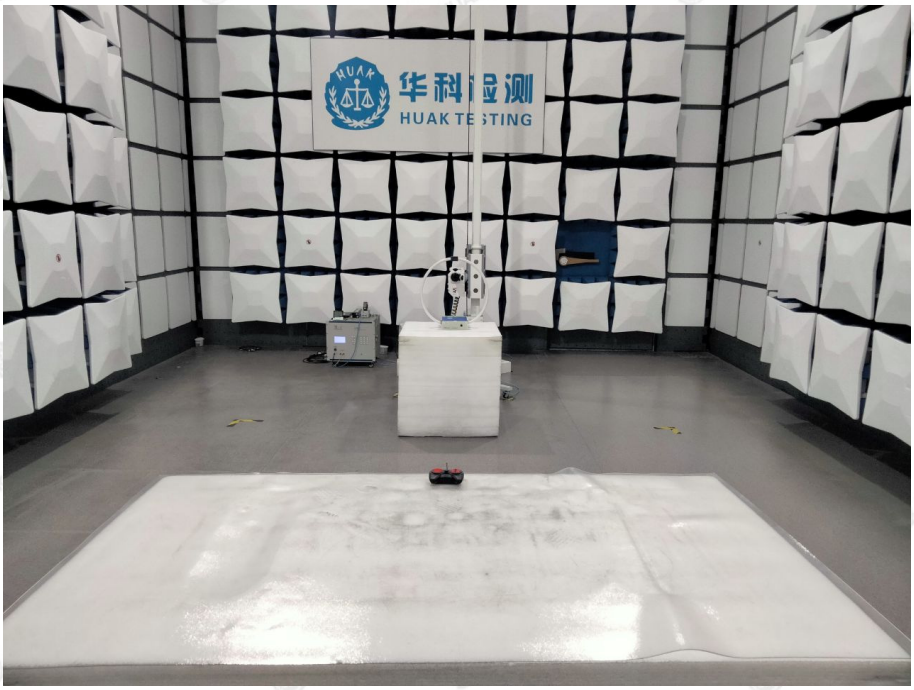
# 5. Photographs of Test

Radiated Emission

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# 6. Photos of the EUT

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

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

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TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China