



中国认可  
国际互认  
检测  
TESTING  
CNAS L0446



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# Test Report

Verified code: 264714

Report No.: E202407119376-1

Customer: Xiamen Hongfa Automotive Electronics Co.,Ltd.

Address: No.560, No.562, No.564, No.570, Donglin Rd. Jimei North Ind. Dist. Xiamen City,  
Fujian Province, China

Sample Name: KEY FOB

Sample Model: EEP30209059(40137580028-40137580035, HF3758/3-RKE-VF35-434-CS)

Receive Sample Date: Jul.18,2024

Test Date: Jul.22,2024 ~ Jul.22,2024

Reference Document: ANSI IEEE 149-2021 Part 7、Part 8、Part 10

Test Result: Refer to the following report

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Reviewed by: Wang Guodong

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Approved by: Zhao Zetian

Zhao Zetian

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-07-24

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REPORT ISSUED HISTORY

| Report Version | Report No.      | Description    | Compile Date |
|----------------|-----------------|----------------|--------------|
| 1.0            | E202407119376-1 | Original Issue | 2024-07-24   |

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1. TEST RESULT SUMMARY

| Test Item       | Test Frequency | Test Method                   | Test limit | Test Result |
|-----------------|----------------|-------------------------------|------------|-------------|
| Gain            | 433.9 MHz      | ANSI IEEE 149-2021<br>Part 8  | /          | /           |
| Efficiency      | 433.9 MHz      | ANSI IEEE 149-2021<br>Part 10 | /          | /           |
| Antenna pattern | 433.9 MHz      | ANSI IEEE 149-2021<br>Part 7  | /          | /           |

Note 1): Customer-defined test, test results do not make judgment.

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## 2. GENERAL DESCRIPTION OF EUT

### 2.1 APPLICANT INFORMATION

|          |                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| Name:    | Xiamen Hongfa Automotive Electronics Co.,Ltd.                                                         |
| Address: | No.560, No.562, No.564, No.570, Donglin Rd. Jimei NorthInd. Dist. Xiamen City, Fujian Province, China |

### 2.2 MANUFACTURER

|          |                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| Name:    | Xiamen Hongfa Automotive Electronics Co.,Ltd.                                                         |
| Address: | No.560, No.562, No.564, No.570, Donglin Rd. Jimei NorthInd. Dist. Xiamen City, Fujian Province, China |

### 2.3 FACTORY

|          |                                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| Name:    | Xiamen Hongfa Automotive Electronics Co.,Ltd.                                                         |
| Address: | No.560, No.562, No.564, No.570, Donglin Rd. Jimei NorthInd. Dist. Xiamen City, Fujian Province, China |

### 2.4 BASIC DESCRIPTION OF EUT

|                        |                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Product Name:          | KEY FOB                                                                                                                              |
| Product Model:         | EEP30209059(40137580028-40137580035, HF3758/3-RKE-VF35-434-CS)                                                                       |
| Trade Name:            | /                                                                                                                                    |
| Software Version:      | /                                                                                                                                    |
| Hardware Version:      | /                                                                                                                                    |
| Antenna Type:          | /                                                                                                                                    |
| Test frequency:        | 433.9 MHz                                                                                                                            |
| Frequency Band:        | 433.92 MHz                                                                                                                           |
| Sample submitting way: | <input checked="" type="checkbox"/> Provided by customer <input type="checkbox"/> Sampling                                           |
| Sample No:             | E202407119376-0001                                                                                                                   |
| Note:                  | The laboratory does not bear any consequences for the authenticity, completeness and effectiveness of the above product information. |

### 2.5 TEST SCENE

| Scene        | Scene description |
|--------------|-------------------|
| Test scene 1 | Free space        |

### 2.6 SAMPLE WORK DESCRIPTION

| Serial No. | Work description                                                                                         |
|------------|----------------------------------------------------------------------------------------------------------|
| a)         | The sample is erected according to the standard, so that the sample can be tested under normal operation |

**2.7 ASSISTIVE DEVICE INFORMATION**

| No. | Name of Equipment | Manufacturer           | Model No.                                             | Serial No. |
|-----|-------------------|------------------------|-------------------------------------------------------|------------|
| 1)  | RF cable          | Jun you radiofrequency | Amplitude stabilization and phase stabilization cable | /          |
| 2)  | Calibrated parts  | R&S                    | ZV-Z270                                               | /          |

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### 3. LABORATORY

The tests and measurements refer to this report were performed by ReportLabEMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

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Fax : 0755-61180008

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#### 4. MEASUREMENT UNCERTAINTY

Uncertainty is calculated according to ISO's "Guide to the Expression of Uncertainty in Measurement" (GUM), and the extended uncertainty is expressed using an inclusion factor of  $k=2$  and a 95% confidence level.

| Measurement | Uncertainty |
|-------------|-------------|
| Gain        | 0.7 dB      |

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5. EQUIPMENT AND TOOLS USED DURING TEST

| Name of Equipment                                      | Manufacturer                      | ModelNo.               | Serial No.        | Calibration date | Calibration expiration date |
|--------------------------------------------------------|-----------------------------------|------------------------|-------------------|------------------|-----------------------------|
| Spherical near-field test system full anechoic chamber | SUZHOU EM-PRO TECHNOLOGY CO.,LTD. | EMT-GD001              | EP128-20210710-01 | 2022-03-28       | 2025-03-27                  |
| Network analyzer                                       | Kesight                           | E5071C                 | MY46901661        | 2023-09-05       | 2024-09-04                  |
| Spherical near-field test system                       | SUZHOU EM-PRO TECHNOLOGY CO.,LTD. | software version: v3.2 | /                 | /                | /                           |

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## 6. ANTENNA RADIATION PERFORMANCE MEASUREMENT

### 6.1 LIMITS

| Test Item                                            | Test Frequency | Limits |
|------------------------------------------------------|----------------|--------|
| Gain                                                 | 433.9 MHz      | /      |
| Efficiency                                           | 433.9 MHz      | /      |
| Antenna pattern                                      | 433.9 MHz      | /      |
| Note: Customer-defined tests, unlimited definitions. |                |        |

### 6.2 TEST PROCEDURE

a) Adjust the ambient temperature of the test system to within 20 °C-30 °C.

b) System gain calibration:

1) Set up the standard antenna so that the apparent phase center of the standard antenna is consistent with the geometric center of the system, rotate the turntable by 90 °, and adjust the phase center of the standard antenna again;

2) Start the test after setting the test frequency;

3) Gain calibration data is calculated and stored on the control computer.

c) Antenna test:

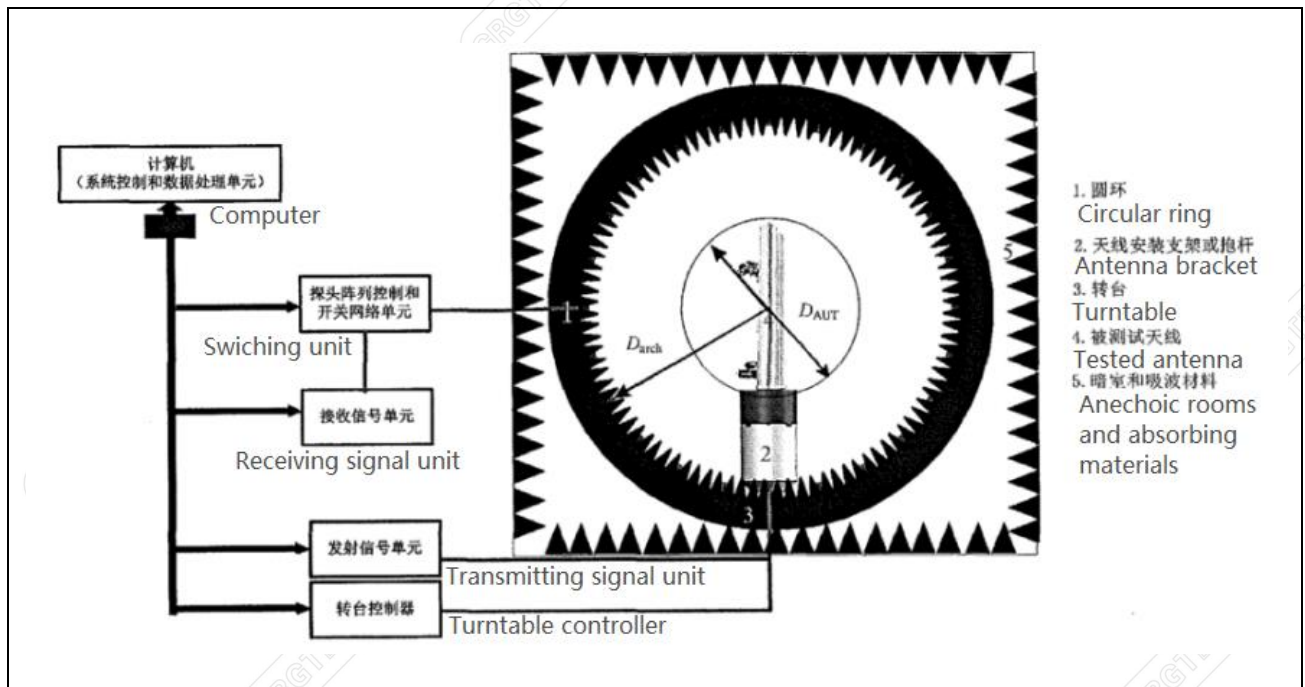
1) The antenna to be measured is erected on the test fixture, and the antenna phase center coincides with the center of the probe array ring by adjusting the antenna;

2) Connect the test cable, set the test frequency, start the test, during the test, the system supporting software should be able to automatically complete the acquisition, storage and calculation of the antenna amplitude and phase data to be measured.

d) Data processing:

The Spherical near-field test system is used to test the antenna, and all the radiation information on the spherical surface of the antenna (including the polarization mode, gain, efficiency, pattern of the antenna, etc.) can be obtained through one test. Therefore, the antenna radiation indicators described in this standard can be obtained by a single test, the difference is that the data of different indicators are extracted differently.

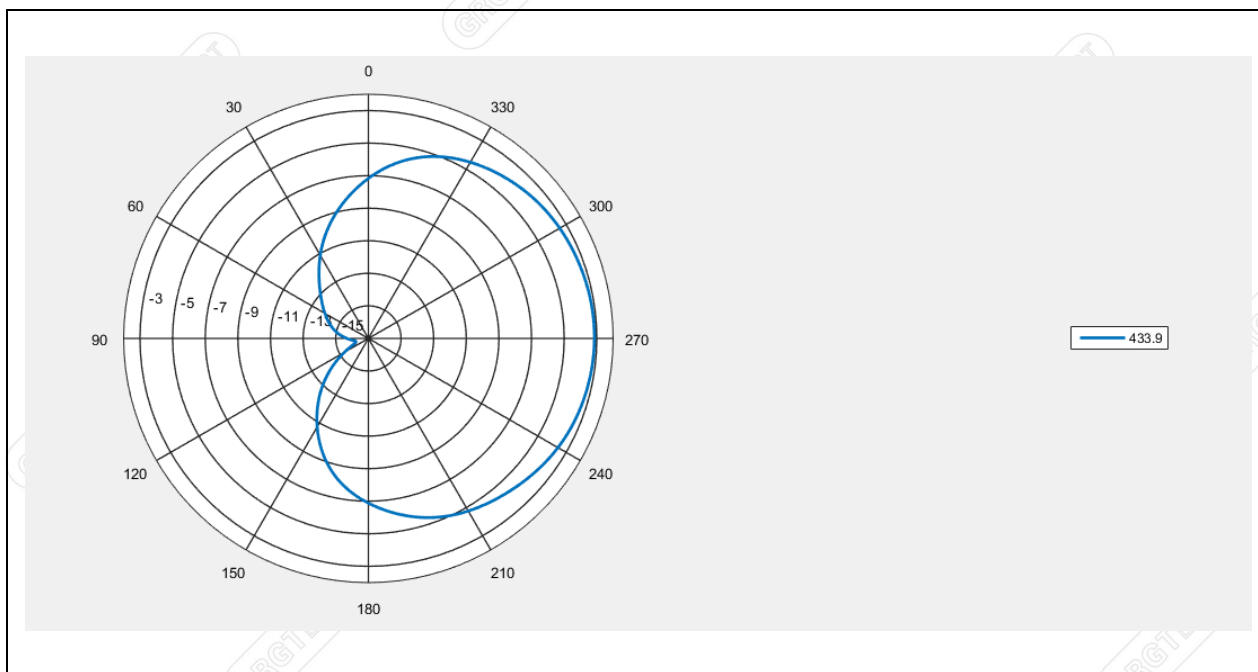
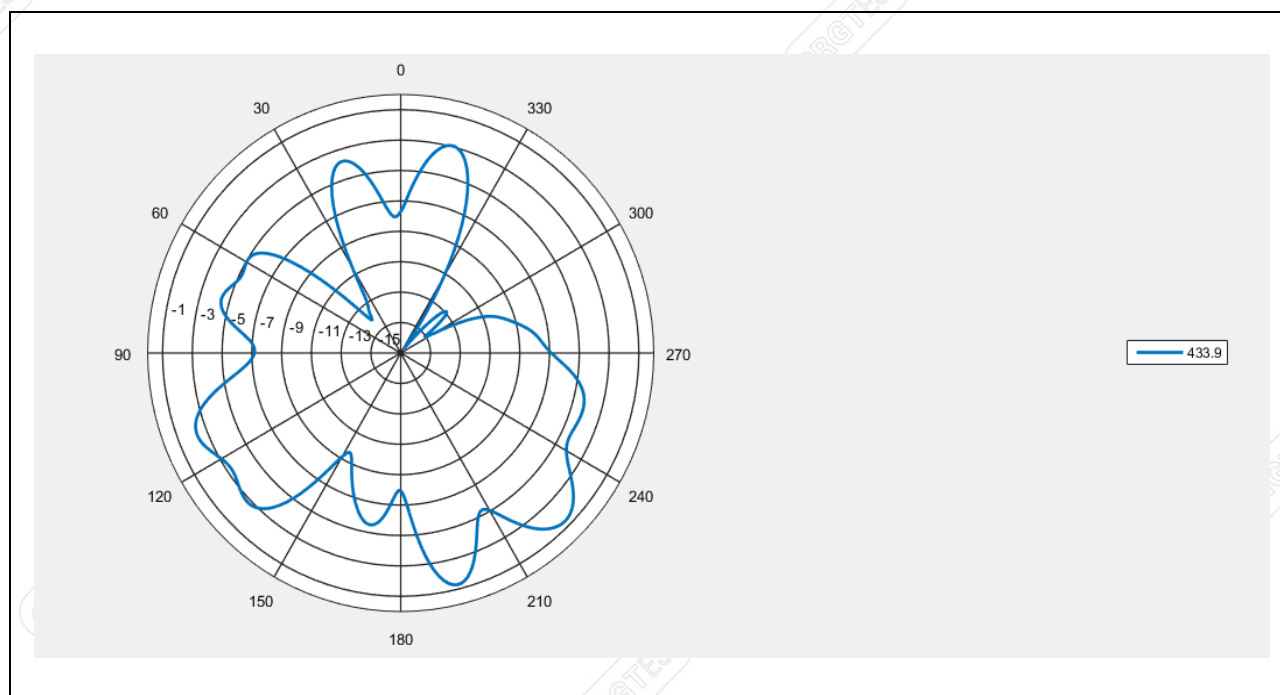
### 6.3 CONFIGURATION OF SYSTEM UNDER TEST

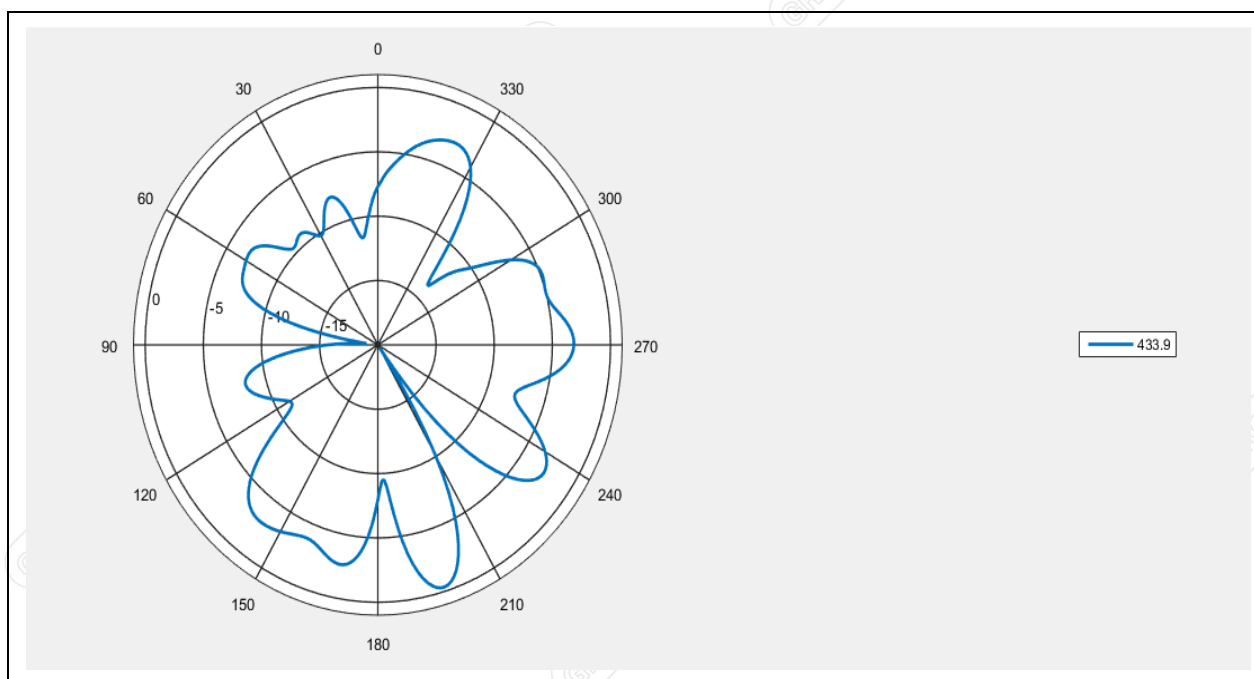
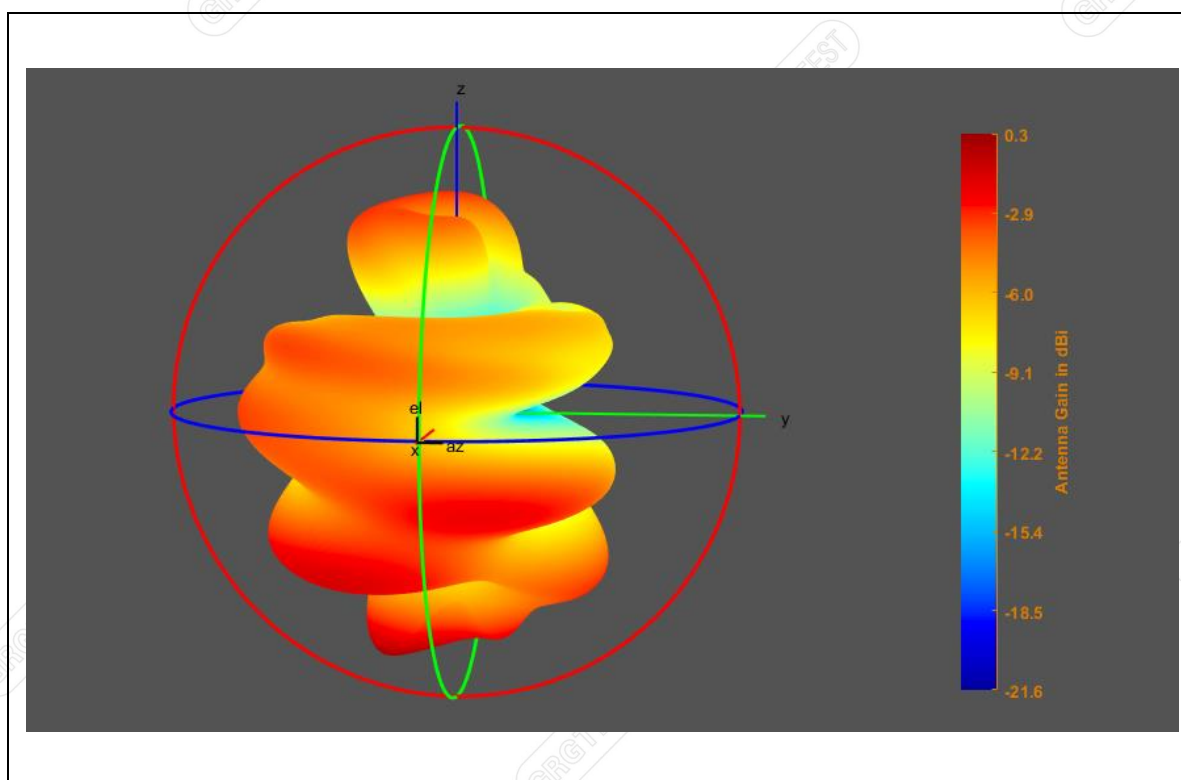


### 6.4 TEST RESULTS

|                          |                          |            |                                                                |
|--------------------------|--------------------------|------------|----------------------------------------------------------------|
| EUT Name                 | KEY FOB                  | Model No.  | EEP30209059(40137580028-40137580035, HF3758/3-RKE-VF35-434-CS) |
| Environmental Conditions | 23.2 ℃ / 56%RH / 100 kPa | Test Scene | Free space                                                     |
| Power Supply             | /                        | Tested By  | Ma Lintao                                                      |
| Test Date                | 2024-07-22               | Sample No. | E202407119376-0001                                             |
| Antenna polarization     | /                        | Impedance  | 50 Ω                                                           |

| Test Frequency (MHz) | Test item |            |
|----------------------|-----------|------------|
|                      | Gain(dBi) | Efficiency |
| 433.9                | 0.26      | 26.79%     |

**a) 2D Radiation pattern** $\Theta = 90^\circ$  $\Phi = 0^\circ$

 $\Phi = 90^\circ$ **b) 3D Radiation pattern**

433.9MHz

## **APPENDIX A. TEST PHOTOS OF THE EUT**

Please refer to the attached document E202407119376-Test Photo.

## **APPENDIX B. PHOTOGRAPH OF THE EUT**

Please refer to the attached document E202407119376-EUT Photo.

——End of Report——