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 NorthInd. 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

Prepared by: Xu Xingqiu Reviewed by: Wang Guodong Approved by: Zhao Zetian

Xu Xingqiu Wang Guodong Zhao Zetian

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-07-24

GRG METROLOGY & TEST GROUP CO., LTD.
Address: No.163,Pingyun Road, West of Huangpu Avenue, Guangzhou, Guangdong, China
Tel：（+86）400-602-0999 FAX：（+86）020-38698685 Web：http://www.grgtest.com

Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.

2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.

5. This testing report is only for scientific research, teaching, internal quality control, etc.

——Blank space below this page——

TABLE OF CONTENTS

1. TEST RESULT SUMMARY 5
2. GENERAL DESCRIPTION OF EUT 6
2.1 APPLICANT INFORMATION 6
2.2 MANUFACTURER 6
2.3 FACTORY 6
2.4 BASIC DESCRIPTION OF EUT 6
2.5 TEST SCENE 6
2.6 SAMPLE WORK DESCRIPTION 6
2.7 ASSISTIVE DEVICE INFORMATION 7
3. LABORATORY 8
4. MEASUREMENT UNCERTAINTY 9
5. EQUIPMENT AND TOOLS USED DURING TEST 10
6. ANTENNA RADIATION PERFORMANCE MEASUREMENT 11
6.1 LIMITS 11
6.2 TEST PROCEDURE 11
6.3 CONFIGURATION OF SYSTEM UNDER TEST 12
6.4 TEST RESULTS 12
APPENDIX A. TEST PHOTOS OF THE EUT 15
APPENDIX B.PHOTOGRAPH OF THE EUT 15

——Blank space below this page——

REPORT ISSUED HISTORY

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

——Blank space below this page——

1. TEST RESULT SUMMARY

Test Item	Test Frequency	Test Method	Test limit	Test Result
Gain	433.9 MHz	ANSI IEEE 149-2021 Part 8	/	/
Efficiency	433.9 MHz	ANSI IEEE 149-2021 Part 10	/	/
Antenna pattern	433.9 MHz	ANSI IEEE 149-2021 Part 7	/	/
Note 1)：Customer-defined test, test results do not make judgment.				

——Blank space below this page——

.

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:	■Provided by customer □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	/

——Blank space below this page——

3. LABORATORY

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

Add	:	No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China
P.C.	:	518110
Tel	:	0755-61180008
Fax	:	0755-61180008

——Blank space below this page——

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

——Blank space below this page——

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	/	/	/

——Blank space below this page——

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℃-30 ℃.

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:

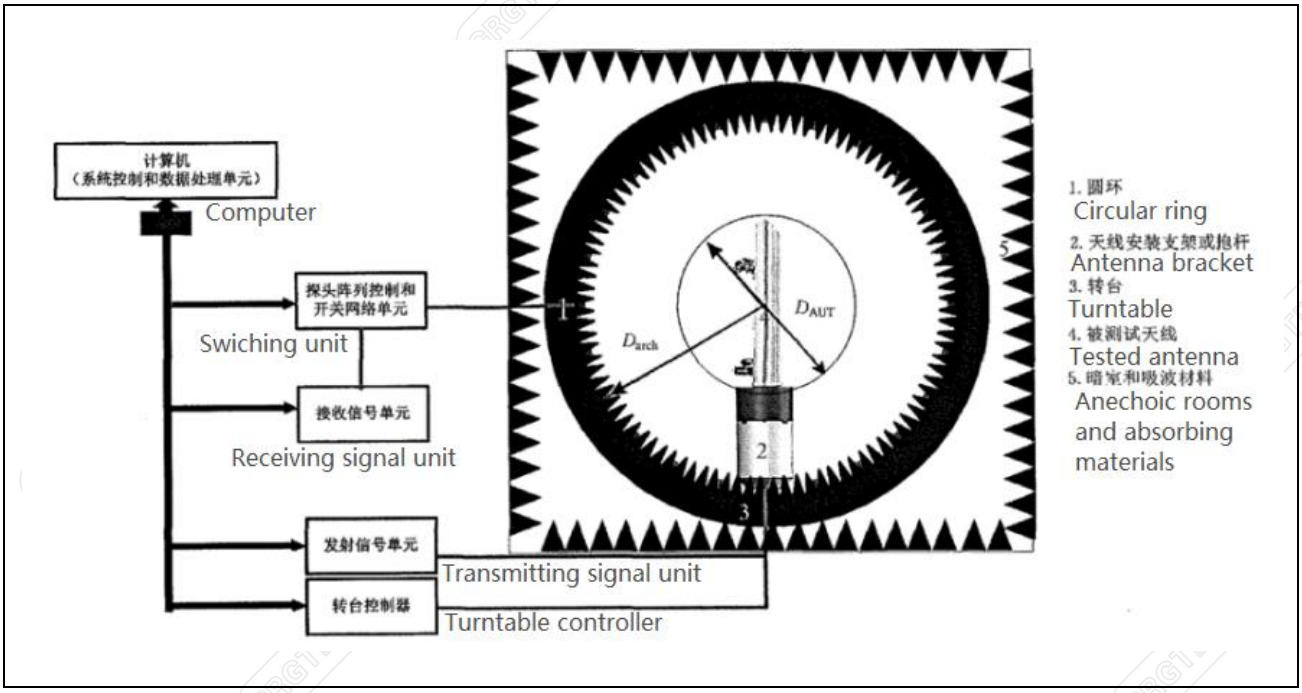
1) The antenna to be measured is erected on the test fixture, and the antenna phase center coincides with the center of the probe array ring by adjusting the antenna;

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

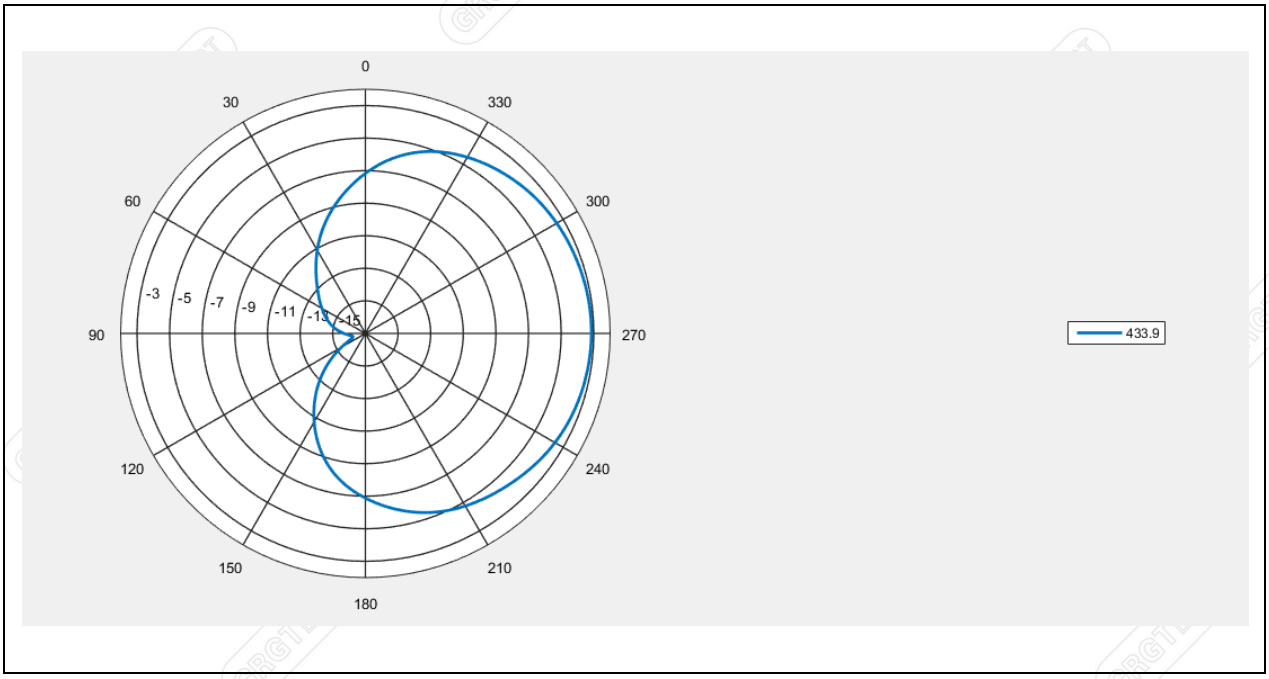


6.4 TEST RESULTS

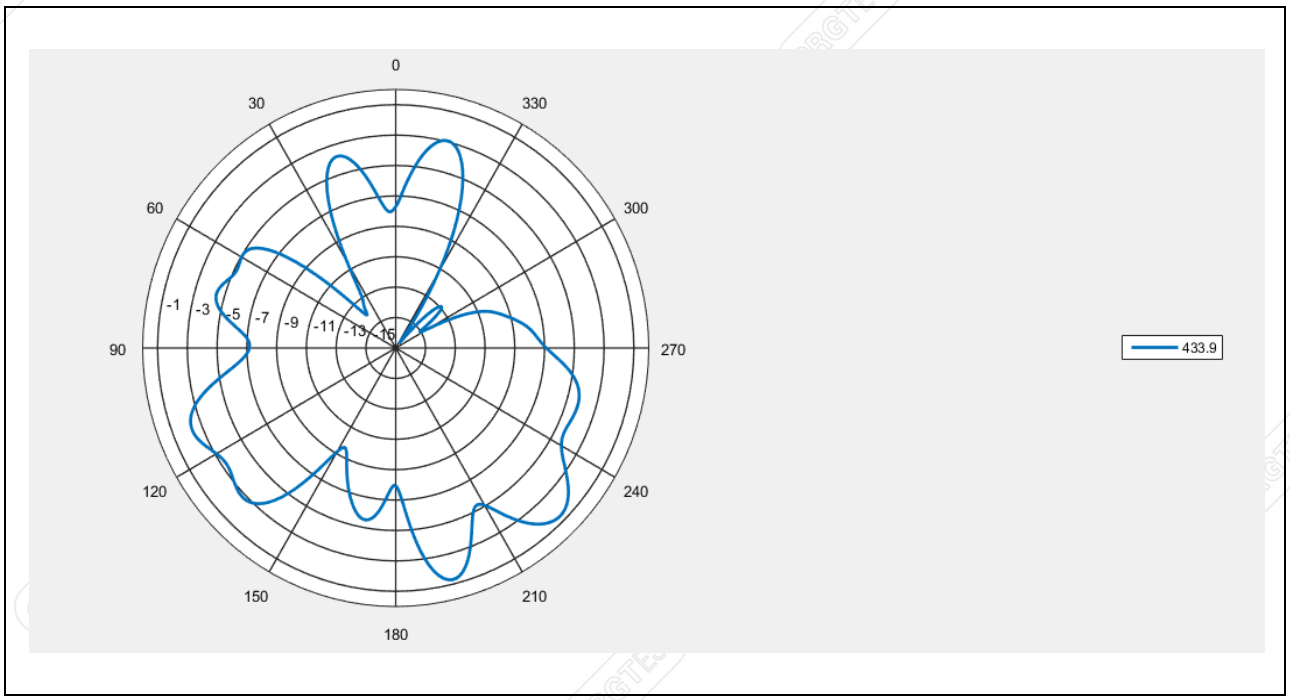
EUT Name	KEY FOB	**Model No.**	EEP30209059(40137580028-40137580035，HF3758/3-RKE-VF35-434-CS)
Environmental Conditions	23.2 ℃ / 56%RH / 100 kPa	**Test Scene**	Free space
Power Supply	/	**Tested By**	Ma Lintao
Test Date	2024-07-22	**Sample No.**	E202407119376-0001
Antenna polarization	/	**Impedance**	50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

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

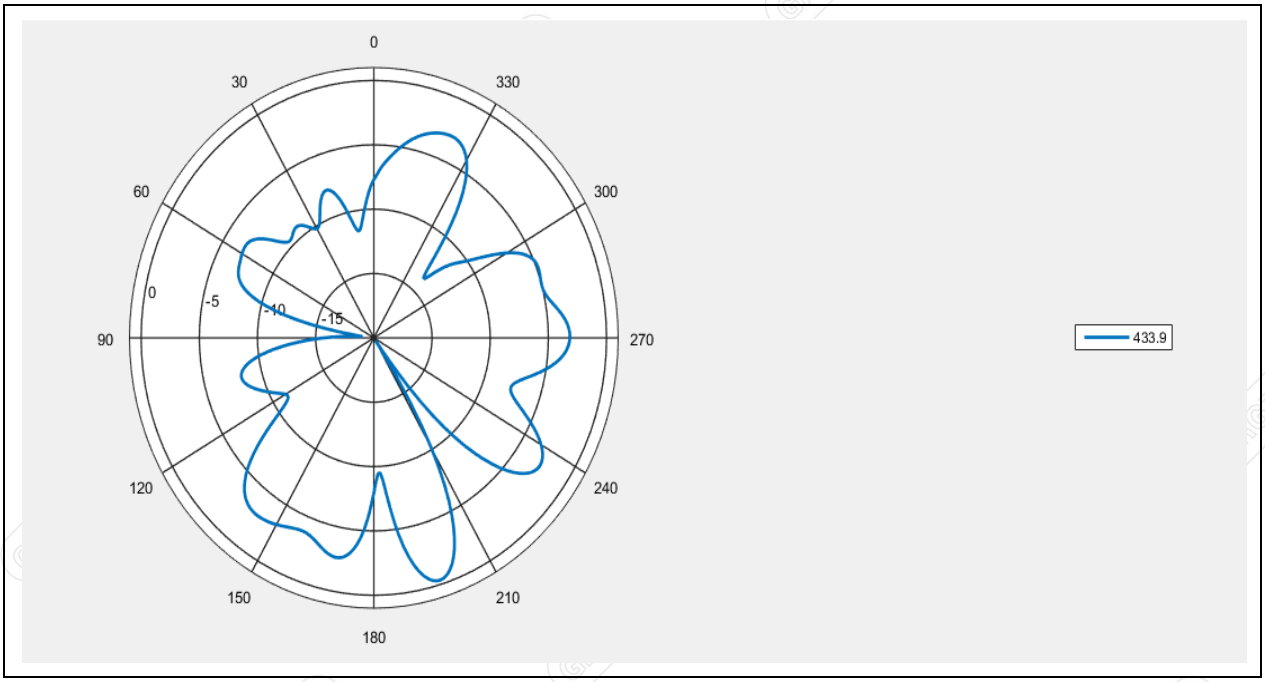
a）2D Radiation pattern



Theta=90 °

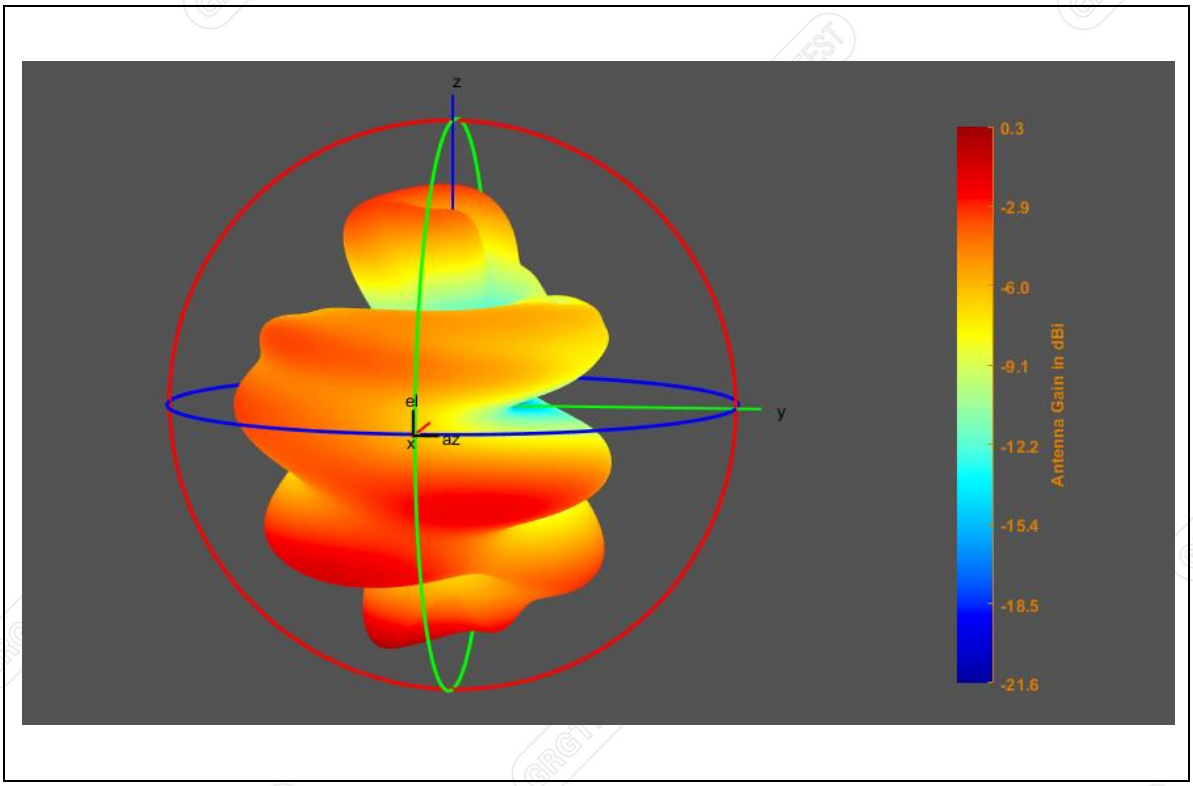


Phi=0 °



Phi=90 °

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——