

Prüfbericht-Nr.: <i>Test report no.:</i>	CN240IJQ 001	Auftrags-Nr.: <i>Order no.:</i>	168486939	Seite 1 von 15 <i>Page 1 of 15</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2024-06-03	
Auftraggeber: <i>Client:</i>	Xiamen Hongfa Electroacoustic Co.,Ltd. No.91-101, Sunban South Rd., Jimei North Ind. Dist., Xiamen 361021, China			
Prüfgegenstand: <i>Test item:</i>	KEY FOB			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	HF3758R35			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	FCC 47 CFR Part 15.231			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2024-07-30	Please refer to Photo Document		
Prüfmuster-Nr.: <i>Test sample no.:</i>	EST-P24072701DX			
Prüfzeitraum: <i>Testing period:</i>	2024-07-31 - 2024-08-15			
Ort der Prüfung: <i>Place of testing:</i>	EST Technology Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>		Hardy	
Datum: <i>Date:</i>	Ausstellungsdatum: <i>Issue date:</i>		Suo	
Stellung / Position:	Sachverständige(r)/Expert		Sachverständige(r)/Expert	
Sonstiges / <i>Other:</i>	FCC ID: 2A9J4-3758R35434			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende: <i>* Legend:</i>	P(ass) = entspricht o.g. Prüfgrundlage(n) <i>P(ass) = passed a.m. test specification(s)</i>			
	F(ail) = entspricht nicht o.g. Prüfgrundlage(n) <i>F(ail) = failed a.m. test specification(s)</i>			
	N/A = nicht anwendbar <i>N/A = not applicable</i>			
	N/T = nicht getestet <i>N/T = not tested</i>			
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht-Nr.: CN24OIJQ 001
Test report no.:

Seite 2 von 15
Page 2 of 15

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: go.tuv.com/digital-signature <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: go.tuv.com/digital-signature</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

Prüfbericht - Nr.: CN24OIJQ 001
Test Report No.:

Seite 3 von 15
Page 3 of 15

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 DEACTIVATION OF THE TRANSMISSION

RESULT: Pass

5.1.3 20dB EMISSION BANDWIDTH AND 99%dB BANDWIDTH

RESULT: Pass

5.1.4 FIELD STRENGTH OF FUNDAMENTAL AND UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

RESULT: Pass

Contents

1	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS	5
2	TEST SITES	6
2.1	TEST FACILITIES	6
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	6
2.3	TRACEABILITY	6
2.4	CALIBRATION	6
2.5	MEASUREMENT UNCERTAINTY.....	7
2.6	LOCATION OF ORIGINAL DATA.....	7
2.7	STATUS OF FACILITY USED FOR TESTING.....	7
3	GENERAL PRODUCT INFORMATION	8
3.1	PRODUCT FUNCTION AND INTENDED USE.....	8
3.2	RATINGS AND SYSTEM DETAILS	8
3.3	INDEPENDENT OPERATION MODES	8
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS.....	8
3.5	SUBMITTED DOCUMENTS.....	8
4	TEST SET-UP AND OPERATION MODES	9
4.1	PRINCIPLE OF CONFIGURATION SELECTION	9
4.2	TEST OPERATION AND TEST SOFTWARE.....	9
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	9
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	9
4.5	TEST SETUP DIAGRAM	10
5	TEST RESULTS	11
5.1	ESSENTIAL REQUIREMENTS OF STANDARD	11
5.1.1	<i>Antenna Requirement</i>	<i>11</i>
5.1.2	<i>Deactivation of the Transmission</i>	<i>12</i>
5.1.3	<i>20dB Emission Bandwidth and 99%dB Bandwidth</i>	<i>13</i>
5.1.4	<i>Field strength of fundamental and Unwanted Emissions in the Spurious Domain</i>	<i>14</i>
6	PHOTOGRAPHS OF THE TEST SET-UP	15
7	LIST OF TABLES.....	15

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results.

Appendix B: Photographs of the Test Set-up.

2 Test Sites

2.1 Test Facilities

EST Technology Co., Ltd.

Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

A2LA Certificate Number: 4366.01

FCC Accreditation Designation No.: CN1215

ISED Company Number: 9405A

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

For radiated emission test (1# 966 radiation) (30MHz-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	Jun. 11, 2024	Jun. 10, 2025
Bilog Antenna	Teseq	CBL 6111D	EST-E034	Jun. 11, 2024	Jun. 10, 2025
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

For radiated emission test (above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	EST-E047	Jun. 11, 2024	Jun. 10, 2025
Horn Antenna	SCHWARZBECK	BBHA 9120 D	EST-E031	Jun. 11, 2024	Jun. 10, 2025
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

For RF conducted test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV 30	EST-E037	Jun. 11, 2024	Jun. 10, 2025

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission, 30MHz - 1000MHz	H: ± 4.36 dB V: ± 4.72 dB
Radiated Emission, 1GHz - 6GHz	± 4.72 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The EST Technology Co., Ltd. Test facility located at Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No.362, Huanguan Middle Road, Songyuansha Community, Guanhu Subdistrict, Longhua District, Shenzhen 518110, Guangdong, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is Remote Keyless Entry, which supports 433MHz wireless technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	KEY FOB
Type Designation:	HF3758R35
FCC ID:	2A9J4-3758R35434
Operating Voltage:	DC 3V, Battery (CR2032)
Operating Temperature Range:	-20°C ~ +60°C
Technical Specification of 433MHz	
Operating Frequencies:	433.92 MHz
Modulation Type:	FSK
Antenna Number:	1
Antenna Type:	Integral Antenna
Antenna Gain :	0.26 dBi (Provided by the Client)

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Transmitting with operating frequency 433.92MHz
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- User Manual
- Operation Description

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All testing were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model HF3758R35 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
--	--	--	--

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

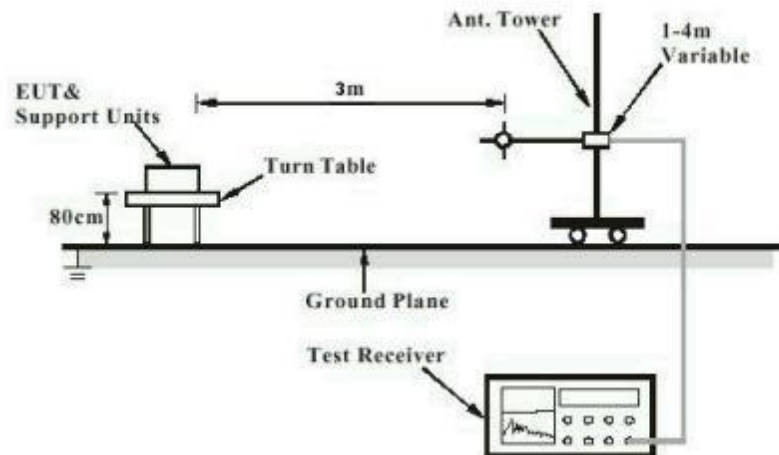


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

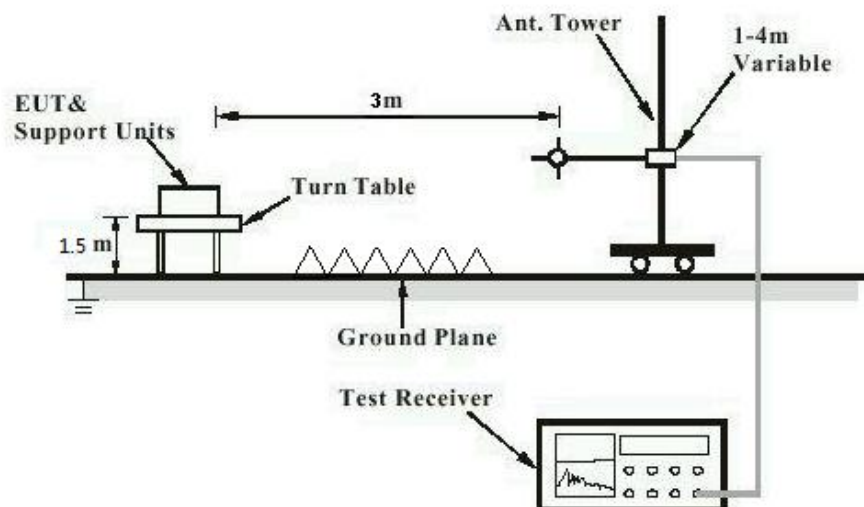


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Essential Requirements of Standard

5.1.1 Antenna Requirement

RESULT:**Pass****Test Specification**

Test standard	:	FCC Part 15.203
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT have an Integral Antenna, the directional gain of antenna is 0.26 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Deactivation of the Transmission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.231
Basic standard	: ANSI C63.10: 2013
Test requirement	: FCC Part 15.231 (a)(1)
Limits	: A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-08-01
Input voltage	: DC 3V by battery
Operation mode	: A
Ambient temperature	: 22.4 °C
Relative humidity	: 57 %
Atmospheric pressure	: 101.1 kPa

For the measurement records, refer to the appendix A.

Prüfbericht - Nr.: CN24OIJQ 001
Test Report No.:Seite 13 von 15
Page 13 of 15

5.1.3 20dB Emission Bandwidth and 99%dB Bandwidth

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.231
Basic standard	: ANSI C63.10: 2013
Test requirement	: FCC Part 15.231 (c)
Limit	: FCC Part 15.231 (c)
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-07-31 to 2024-08-01
Input voltage	: DC 3V by battery
Operation mode	: A
Ambient temperature	: 22.4 °C
Relative humidity	: 57 %
Atmospheric pressure	: 101.1 kPa

For the measurement records, refer to the appendix A.

5.1.4 Field strength of fundamental and Unwanted Emissions in the Spurious Domain

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.231 & FCC Part 15.205 & FCC Part 15.209
Basic standard	: ANSI C63.10: 2013
Test requirement	: CFR47 FCC Part 15.231 (b)(1)(2)(3)
Limits	: FCC Part 15.231 (b)
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2024-08-14 to 2024-08-15
Input voltage	: DC 3V by battery
Operation mode	: A
Ambient temperature	: Refer to test result
Relative humidity	: Refer to test result
Atmospheric pressure	: Refer to test result

For the measurement records, refer to the appendix A.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix B.

7 List of Tables

Table 1: List of Test and Measurement Equipment.....	6
Table 2: Measurement Uncertainty.....	7
Table 3: Technical Specification of EUT	8
Table 4: List of Accessories and Auxiliary Equipment.....	9