

Prüfbericht-Nr.: <i>Test report no.:</i>	CN24Q70G 001	Auftrags-Nr.: <i>Order no.:</i>	168501957	Seite 1 von 16 Page 1 of 16
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2024-08-29	
Auftraggeber: <i>Client:</i>	Xiamen R&T Plumbing Technology Co.,LTD. No.18, HouXiang Road, HaiCang District, Xiamen, 361028, China			
Prüfgegenstand: <i>Test item:</i>	Remote Control			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	VC380 (Trademark: R&T)			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	FCC CFR Title 47, Part 15, Subpart C, Section 15.249 RSS-210 Issue 10 April 2020 RSS-Gen Issue 5 February 2021			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2024-09-02	Please refer to Photo Document		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003806410-001~003			
Prüfzeitraum: <i>Testing period:</i>	2024-09-04 - 2024-09-05			
Ort der Prüfung: <i>Place of testing:</i>	Shenzhen PSI Testing 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>	
Datum: <i>Date:</i>	2024-09-23	Signed by: Chris Chen	Ausstellungsdatum: <i>Issue date:</i>	2024-09-23 Signed by: Lin Lin
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / <i>Other:</i>	FCC ID: 2AW23-VC380 IC: 31226-VC380, HVIN: DR-B458			
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:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
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Prüfbericht-Nr.: CN24Q70G 001
Test report no.:

Seite 2 von 16
Page 2 of 16

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>
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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.: CN24Q70G 001
Test Report No.:

Seite 3 von 16
Page 3 of 16

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS

RESULT: Pass

5.1.3 20dB AND 99% BANDWIDTH

RESULT: Pass

5.1.4 BAND EDGE

RESULT: Pass

Table of 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	7
2.4	CALIBRATION	7
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	9
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS.....	9
3.5	SUBMITTED DOCUMENTS.....	9
4	TEST SET-UP AND OPERATION MODES	10
4.1	PRINCIPLE OF CONFIGURATION SELECTION	10
4.2	TEST OPERATION AND TEST SOFTWARE.....	10
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	10
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	10
4.5	TEST SETUP DIAGRAM	11
5	TEST RESULTS	12
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	12
5.1.1	<i>Antenna Requirement</i>	<i>12</i>
5.1.2	<i>Field strength of fundamental and harmonics</i>	<i>13</i>
5.1.3	<i>20dB and 99% Bandwidth</i>	<i>14</i>
5.1.4	<i>Band Edge.....</i>	<i>15</i>
6	PHOTOGRAPHS OF THE TEST SET-UP	16
7	LIST OF TABLES.....	16

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

Shenzhen PSI Testing Co., Ltd.

1-2F, Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

FCC Registration Number: 916281

IC Registration Number: 31123 and the CAB identifier: CN0158

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2023.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2023.12.19	1 Year
3.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2023.04.03	2 Year
4.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2022.12.26	2 Year
5.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2023.12.19	1 Year
6.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2022.12.26	2 Year
7.	Amplifier	SKET	LAPA_01G18 G-45dB	SK2022032901	/	2023.12.19	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2022.12.26	2 Year
9.	Amplifier	SKET	LNPA_0118G- 45	SK2020010801	/	2023.12.19	1 Year
10.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02- 117725-vh	/	2023.12.19	1 Year
11.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.02- 1111533-Fz	/	2023.12.19	1 Year
12.	Vector Signal Generator	Agilent	N5182A	MY47420724	/	2023.12.19	1 Year
13.	Analog signal generator	Agilent	N5181A	MY50145363	/	2023.12.19	1 Year
14.	Comprehensive Test Instrument	Rohde&Schwarz	CMW 500	145266	/	2023.12.19	1 Year
15.	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2023.12.19	1 Year
16.	Temp. & Humid Chamber	Auchno	9606	/	/	2023.12.19	1 Year
17.	Regulated DC Power Supply	Xinouhua	ADC120V10A	202211251638		2023.12.19	1 Year

For Test Software Information

Item	Software Name	Manufacturer	Version
RE	EZ EMC	Farad	PSI-3A1
RF	RTS	TACHOY	V1.0.0

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 measurements as below table.

Table 2: Measurement Uncertainty

Parameter	Frequency Range	Uncertainty
RF output power, conducted	100KHz~6GHz	0.41
Unwanted Emissions, conducted	9KHz~18GHz	0.59
Radiated Emission of Transmitter & Receiver	0.009~30 MHz	3.50
	30~1000 MHz(V)	4.17
	30~1000 MHz(H)	4.08
	1~18 GHz(V)	4.29
	1~18 GHz(H)	4.82
	18~40 GHz(V)	4.31
	18~40 GHz(H)	4.30

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) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Shenzhen PSI Testing Co., Ltd. Test facility located at 1-2F, Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104 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 a **Remote Control**, which supports General 2.4GHz transmitter 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:	Remote Control
Type Designation:	VC380
Trademark:	R&T
FCC ID:	2AW23-VC380
IC:	31226-VC380
HVIN:	DR-B458
Operating Voltage:	DC 3V (2pcs AAA) by battery
Testing Voltage:	Fully battery
Operating Temperature Range:	5 °C ~ 40 °C
Technical Specification of 2.4GHz	
Frequency Range:	2465 - 2480 MHz
Type of Modulation:	GFSK
Channel Number:	4 channels
Channel Separation:	5MHz
Antenna Type:	PCB Layout Antenna
Antenna Gain:	2.0 dBi (Provided by the Client)

3.3 Independent Operation Modes

The basic operation modes are:

A. On, 2.4GHz transmitting mode

1. Low channel
2. Middle channel
3. High channel

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 |
| - Operation Description | - Block Diagram |
| - Schematics | - User Manual |

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 tests were performed according to the procedures in ANSI C63.10: 2013.

Table 4: Test Environments

Environment Parameter	Values During Tests		
	Temperature	Voltage (Battery operated)	Relative Humidity
NTNV	25°C±2°C	3.0Vdc	Ambient

Table 5: Test Channel and Frequency

Mode	Test Channels (MHz)	Remark
Transmitting	L/M/H: 2465MHz, 2470MHz, 2480MHz	--

4.3 Special Accessories and Auxiliary Equipment

N/A

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)

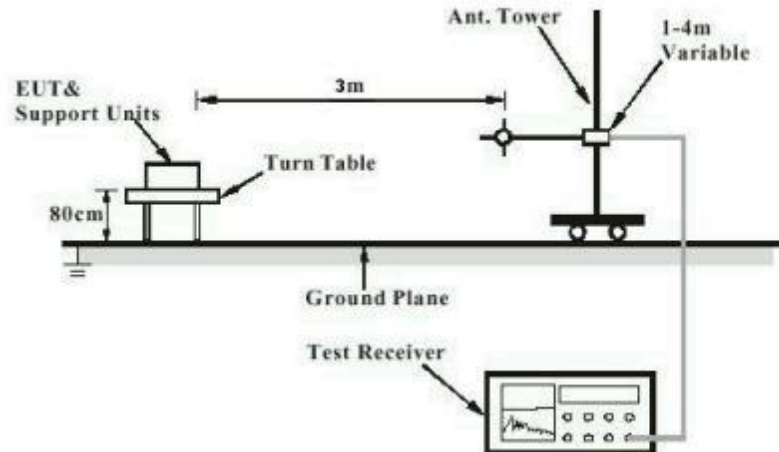


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

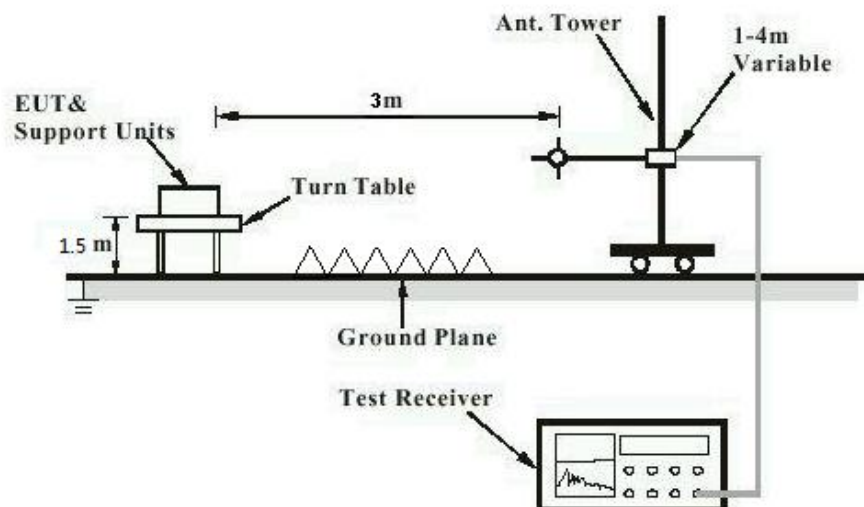
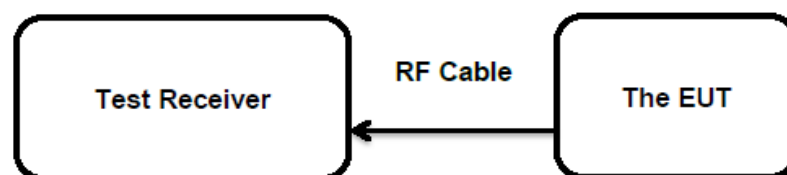


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.203
RSS-Gen Section 6.8

According to the manufacturer declared, the EUT has a PCB Layout antenna, the gain of antenna is 2.0 dBi, which that 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.

Prüfbericht - Nr.: **CN24Q70G 001**
Test Report No.:Seite 13 von 16
Page 13 of 16

5.1.2 Field strength of fundamental and harmonics

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

Test standard	: FCC Part 15.249(a) (d) (e) RSS-210 Section B.10
Basic standard	: ANSI C63.10: 2013
Limits	: FCC Part 15.249(a) (d) (e) & 15.209(a) RSS-210 Section B.10 (a) & (b) RSS-Gen Section 8.9
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2024-09-04 to 2024-09-05
Input voltage	: Fully battery
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 26 °C
Relative humidity	: 54 %
Atmospheric pressure	: 101.3 kPa

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

Prüfbericht - Nr.: CN24Q70G 001
Test Report No.:

Seite 14 von 16
Page 14 of 16

5.1.3 20dB and 99% Bandwidth

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.215 RSS-Gen Section 6.7
Basic standard	: ANSI C63.10: 2013
Limits	: Within assigned band
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2024-09-04
Input voltage	: Fully battery
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 24 °C
Relative humidity	: 56 %
Atmospheric pressure	: 101.3 kPa

For the measurement records, refer to the appendix A.

Prüfbericht - Nr.: CN24Q70G 001
Test Report No.:

Seite 15 von 16
Page 15 of 16

5.1.4 Band Edge

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.249(a) (d) (e) & 15.209 & 15.205 RSS-210 Section B.10 (a) & (b) RSS-Gen Section 8.9 & 8.10
Basic standard	: ANSI C63.10: 2013
Limits	: FCC Part 15.249(a) (d) (e) & 15.209 & 15.205 RSS-Gen Table 5 & 7
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2024-09-04
Input voltage	: Fully battery
Operation mode	: A
Test channel	: Low / Middle / High
Ambient temperature	: 26 °C
Relative humidity	: 54 %
Atmospheric pressure	: 101.3 kPa

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: Test Environments.....	10
Table 5: Test Channel and Frequency.....	10