FCC Test Report

Add value.
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Product: Remote Control
Model: RC4803202/01R,
RC480XXXX/XXR,
RC480XXXX/XXBR
('X'=0-9, 'B' means packed with battery)
Applicant: HCS (Suzhou) Limited

19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, 215011, China

In accordance with

FCC 47 CFR Part 15 Subpart B

COMMERCIAL-IN-CONFIDENCE

Issue Date: January 16, 2025
Report No. 709502410258-00A

RESPONSIBLE FOR	NAME	SIGNATURE	DATE
Approved By	Hui Tong	Hui Tong	Jan. 16. 2025
Prepared By	Wenqiang LU	Wenqiang LU	Jan. 16. 2025

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service control rules.

EXECUTIVE SUMMARY
The product was tested and found to be in compliance with test specification in chapter 1.2.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai branch
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ID Number: EMC_SHA_F_B_02.37E
Revision:24.00
Effective:01/01/2024

Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Report No.	Description of Change	Date of Issue
709502410258-00A	First Issue	Jan. 16, 2025

1.2 Introduction

The information contained in this report is intended to show verification of the EMC Qualification Approval Testing of the requirements of the standards for the tests listed in Section 1.3.

Applicant	HCS (Suzhou) Limited
Address	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, 215011, China
Manufacturer	HCS (Suzhou) Limited
Address	19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, 215011, China
Factory	Himit (Yueyang) Technology Ltd.
Address	Building 4, Lingang High-tech Industrial Park, Yueyang Area, China (Hunan) Free Trade Pilot Zone, China
Model Number(s)	RC4803202/01R, RC480XXXX/XXR, RC480XXXX/XXBR ('X'=0-9, 'B' means packed with battery)
FCC ID	2AGOFRC480F
Ratings	DC 3V
Standards	FCC Part 15 Subpart B, 10-1-2023 Edition
Sample Source	Samples delivered by manufacturer
Sample Number(s)	SHA-855590-1
Sample received	12/25/2024
Start of Test	12/25/2024
Finish of Test	12/25/2024
Name of Engineer(s)	Wenqiang LU

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

1.3 Test Specification and Results Summary

Summary of the tests is shown below:

Specification	Clause	Test Description	Result	Comments/Base Standard
FCC Part 15 Subpart B,10-1-2023 Edition	FCC Part 15 Subpart B §15.109	Radiated Emission	Pass (Min. Margin: >6 dB)	ANSI C63.4a-2017 (Amendment to ANSI C63.4-2014)

1.4 Product Information

The EUT is a Remote Control supports BLE function.

According to the client's declaration, all models are identical to electrical structure, mechanical structure. There are cosmetic differences (color /painting/printed). Basic software architecture remains unchanged.

So model RC4803202/01R was chosen to perform all the tests.

According to the Section 15.33 of FCC part 15, the highest work frequency is 2480MHz, so the radiated emission range is 30MHz to 12400MHz (we tested it up to 13000MHz).

We listed the worst data in this report.
The test modes refer to clause 1.4.2

1.4.1 EUT Port/Cable Identification

Port	Specified Cable Length	Screened (Yes/No)
DC mains port	NA	NA

1.4.2 Modes of Operation

Mode No.	Mode Description	Test Item
Mode1	Power on by battery, let the RF module woring normally (by remote and BLE), DC 3V	Radiated Emission

1.4.3 Auxiliary Equipment (cable) Used during Test

Equipment	Brand	Model/Type No.	Remark
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1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.6 Environmental Conditions

Ambient Temperature	15-35 °C
Relative Humidity	30-60 %
Atmospheric Pressure	860 – 1060 hPa

1.7 Test Location

Test Site 1:
TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai branch
No.16, Lane 1951, Duhui Road Shanghai, 201108, P.R.China

Test Name	Test date	Name of Engineer(s)	Test Area
Radiated Emission	2024.12.25	Tianji XU	Z116

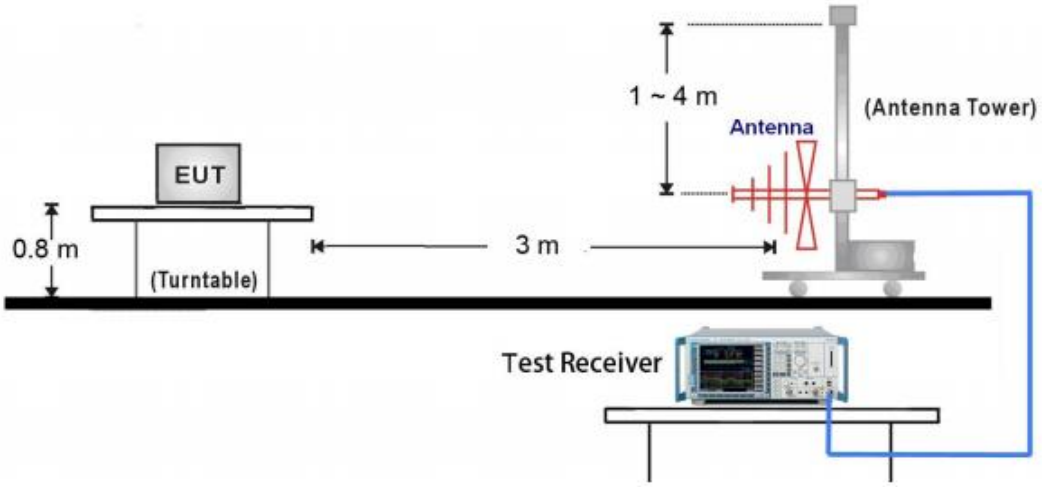
2 Test Details

2.1 Radiated Emission

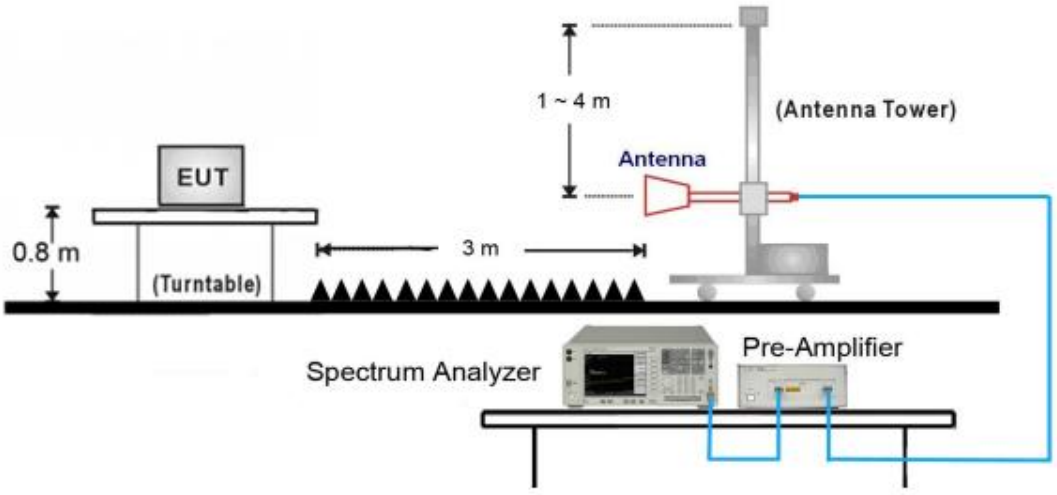
2.1.1 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive support above a reference ground plane.
A prescan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarization using a peak detector; measurements were taken at a 3m distance. Using the prescan list of the highest emissions detected, their bearing and associated antenna polarization, the EUT was then formally measured using a proper detector. The readings were maximized by adjusting the antenna height, polarization and turntable azimuth, in accordance with the specification.

30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



Note：W: The dimension of the line tangent to the EUT formed by $\theta_{3\,dB}$ at the measurement distance 3m

W value	Measurement frequency band	Antenna Model
1.6m	1~18GHz	HF907
1.95m	18~26.5GHz	3116C-PA
0.74m	26.5~40GHz	3116C-PA

2.1.2 Specification Limits

Class B Radiated emission at a measuring distance of 3 m FCC Part 15 Subpart B,10-1-2023 Edition			
Frequency range MHz	limits dB(μV/m)		
	QP	PK	AV
30-88	40	---	---
88-216	43.5	---	---
216-960	46	---	---
960-1000	54	---	---
Above 1000	---	74	54

Remark:
Level=Reading Level + Correction Factor
Correction Factor=Antenna Factor + Cable Loss-Amplifier Factor
(The Reading Level is recorded by software which is not shown in the sheet)

2.1.3 Test Setup Photos

Mode1 For 30 MHz to 1000 MHz

Refer to the < Setup Photos for Part15B>.

Mode1 For above 1000MHz

Refer to the < Setup Photos for Part15B>.

2.1.4 Test Results

30-1000MHz Radiated Emission

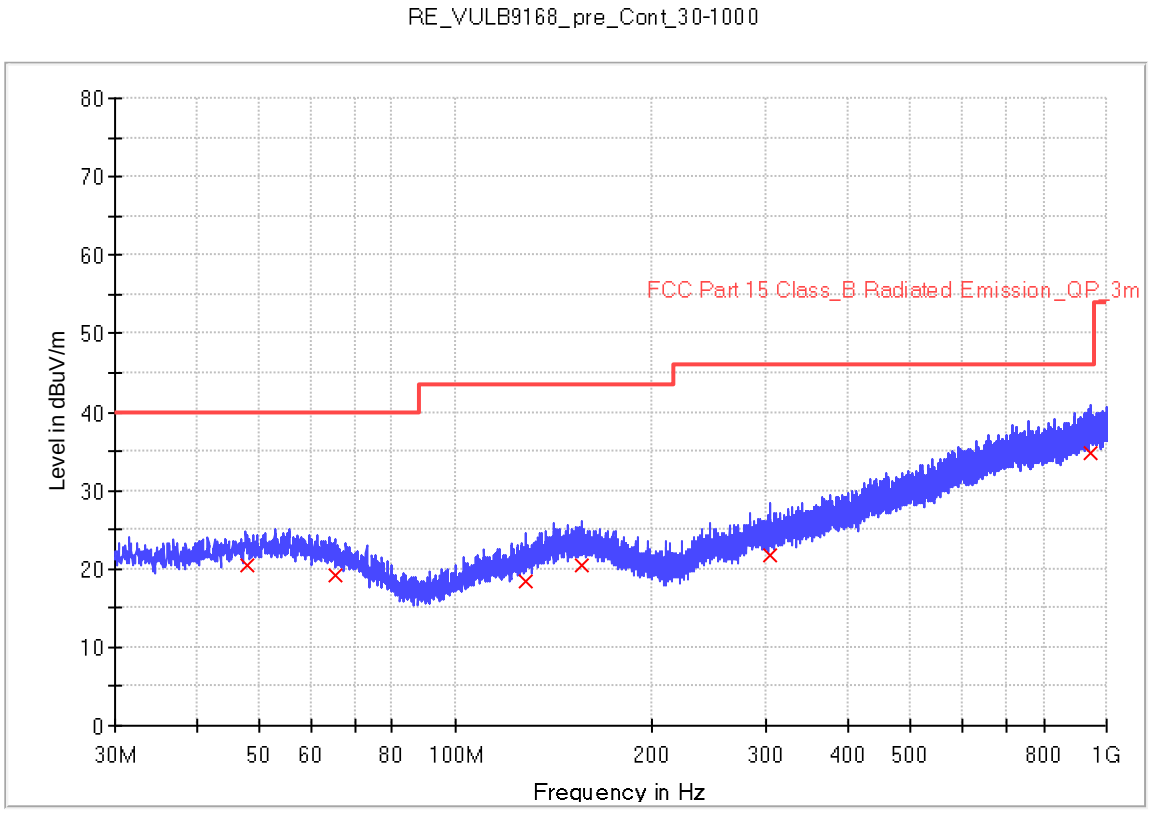
EUT Information

EUT Name:	Remote Control
Model:	RC4803202/01R
Client:	HCS (Suzhou) Limited
Op Cond:	Mode 1
Operator:	Tianji XU
Test Spec:	FCC Part 15B Class B
Sample No:	SHA-855590-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup:	RE_VULB9168
Receiver:	[ESR 3]
Level Unit:	dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)
47.720000	20.4	1000.0	120.000	133.0	H	132.0	20.7	19.6
65.240000	19.3	1000.0	120.000	157.0	H	174.0	19.7	20.7
128.560000	18.4	1000.0	120.000	142.0	H	69.0	19.3	25.1
156.640000	20.5	1000.0	120.000	150.0	H	21.0	21.1	23.0
303.800000	21.8	1000.0	120.000	122.0	H	140.0	21.9	24.3
943.480000	34.7	1000.0	120.000	267.0	H	267.0	34.8	11.3

(continuation of the "Limit and Margin" table from column 16 ...)

Frequency (MHz)	Limit - QPK (dBuV/m)	Comment
47.720000	40.0	
65.240000	40.0	
128.560000	43.5	
156.640000	43.5	
303.800000	46.0	
943.480000	46.0	

30-1000MHz Radiated Emission

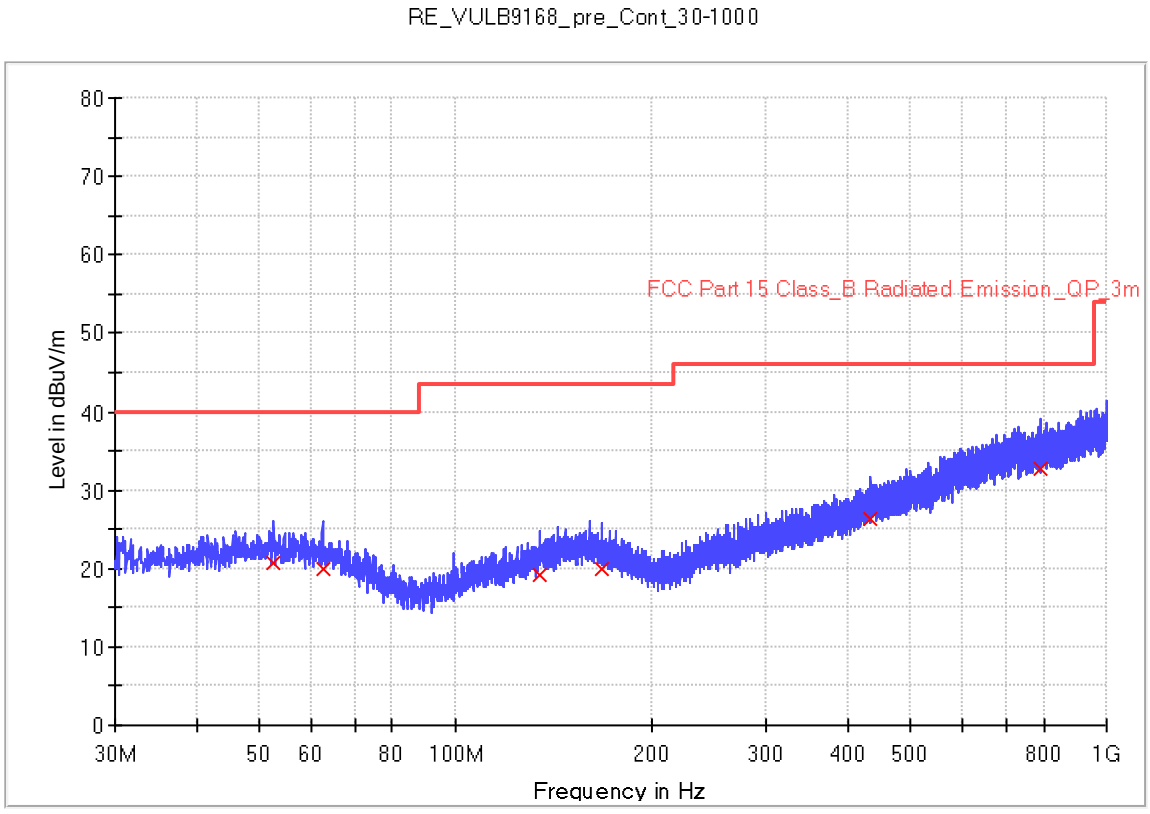
EUT Information

EUT Name:	Remote Control
Model:	RC4803202/01R
Client:	HCS (Suzhou) Limited
Op Cond:	Mode 1
Operator:	Tianji XU
Test Spec:	FCC Part 15B Class B
Sample No:	SHA-855590-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup:	RE_VULB9168
Receiver:	[ESR 3]
Level Unit:	dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)
52.600000	20.6	1000.0	120.000	188.0	V	175.0	20.9	19.4
62.480000	20.0	1000.0	120.000	165.0	V	145.0	20.3	20.0
134.560000	19.2	1000.0	120.000	142.0	V	120.0	20.0	24.3
168.240000	20.0	1000.0	120.000	158.0	V	258.0	20.5	23.5
434.960000	26.3	1000.0	120.000	245.0	V	25.0	25.7	19.8
789.640000	32.7	1000.0	120.000	264.0	V	268.0	32.7	13.3

(continuation of the "Limit and Margin" table from column 16 ...)

Frequency (MHz)	Limit - QPK (dBuV/m)	Comment
52.600000	40.0	
62.480000	40.0	
134.560000	43.5	
168.240000	43.5	
434.960000	46.0	
789.640000	46.0	

1-13GHz Radiated Emission

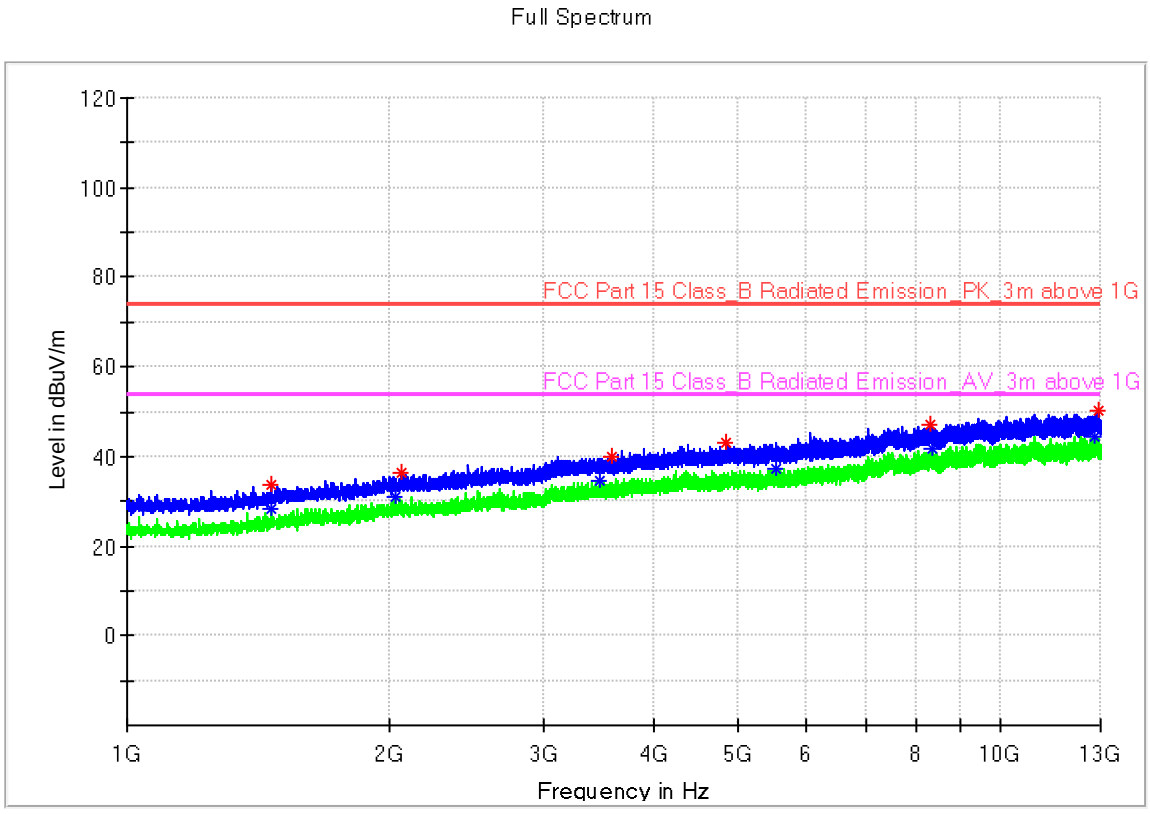
EUT Information

EUT Name:	Remote Control
Model:	RC4803202/01R
Client:	HCS (Suzhou) Limited
Op Cond:	Mode 1
Operator:	Tianji XU
Test Spec:	FCC Part 15B Class B
Sample No:	SHA-855590-1

Sweep Setup: RE_HF907_pre [EMI radiated]

Hardware Setup:	RE_HF907
Receiver:	[FSV 40]
Level Unit:	dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
1 GHz - 13 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s	0 dB



Critical_Freqs

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3482.000000	---	34.66	54.00	19.34	100.0	H	42.0	-6.4
8336.000000	---	41.72	54.00	12.28	100.0	H	46.0	1.7
12800.500000	---	44.56	54.00	9.44	100.0	H	93.0	5.3
2056.500000	36.58	---	74.00	37.42	100.0	H	177.0	-11.5
2028.000000	---	30.81	54.00	23.19	100.0	H	182.0	-11.6
8306.500000	47.30	---	74.00	26.70	100.0	H	200.0	1.7
12904.000000	50.16	---	74.00	23.84	100.0	H	210.0	5.3
1460.500000	---	28.28	54.00	25.72	100.0	H	219.0	-14.9
1460.500000	33.53	---	74.00	40.47	100.0	H	219.0	-14.9
5525.000000	---	37.43	54.00	16.57	100.0	H	234.0	-1.4
4833.500000	43.02	---	74.00	30.98	100.0	H	248.0	-2.6
3584.000000	40.10	---	74.00	33.90	100.0	H	284.0	-6.1

1-13GHz Radiated Emission

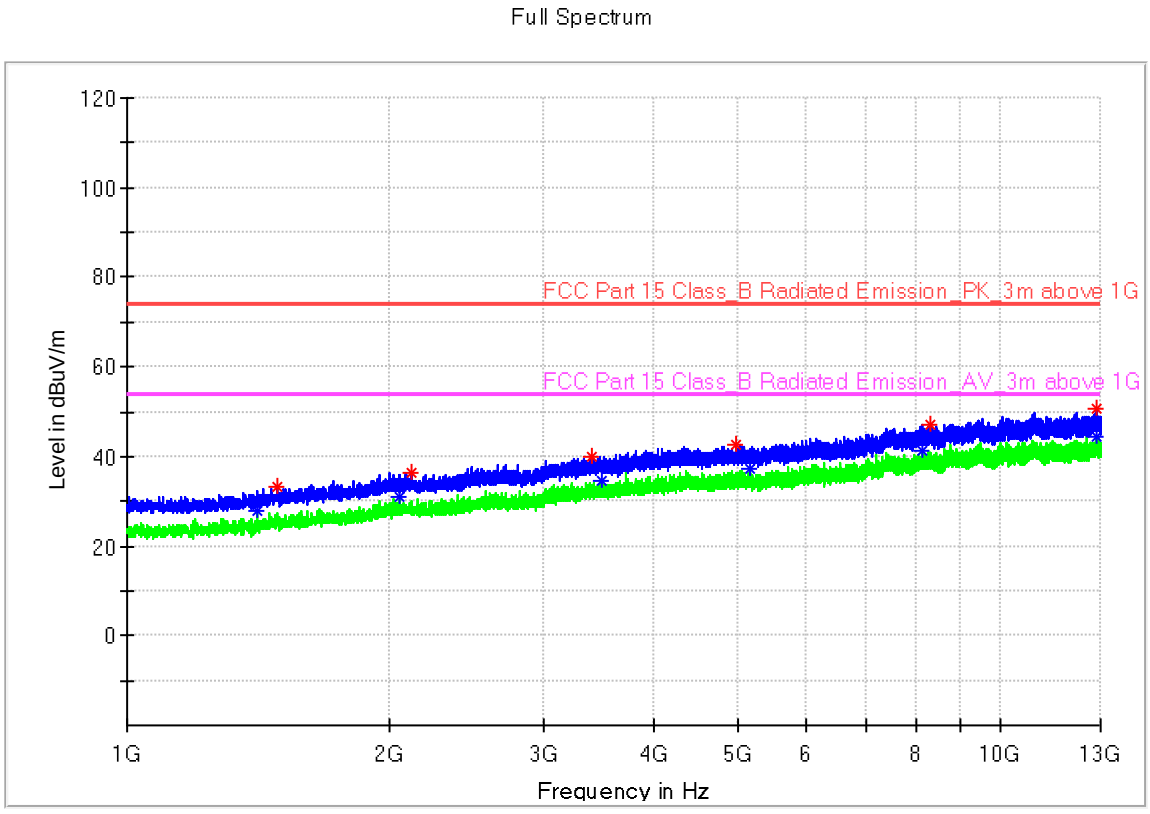
EUT Information

EUT Name:	Remote Control
Model:	RC4803202/01R
Client:	HCS (Suzhou) Limited
Op Cond:	Mode 1
Operator:	Tianji XU
Test Spec:	FCC Part 15B Class B
Sample No:	SHA-855590-1

Sweep Setup: RE_HF907_pre [EMI radiated]

Hardware Setup:	RE_HF907
Receiver:	[FSV 40]
Level Unit:	dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
1 GHz - 13 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s	0 dB



Critical_Freqs

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1411.000000	---	27.69	54.00	26.31	100.0	V	0.0	-15.3
12841.500000	---	44.63	54.00	9.37	100.0	V	60.0	5.3
12841.500000	50.73	---	74.00	23.27	100.0	V	60.0	5.3
5153.500000	---	37.14	54.00	16.86	100.0	V	98.0	-2.3
4982.000000	42.82	---	74.00	31.18	100.0	V	214.0	-2.3
8140.500000	---	41.43	54.00	12.57	100.0	V	246.0	1.6
3405.500000	39.83	---	74.00	34.17	100.0	V	269.0	-6.6
2053.500000	---	30.82	54.00	23.18	100.0	V	278.0	-11.5
8316.000000	47.10	---	74.00	26.90	100.0	V	283.0	1.7
3494.000000	---	34.61	54.00	19.39	100.0	V	296.0	-6.4
2116.000000	36.21	---	74.00	37.79	100.0	V	301.0	-11.4
1487.000000	33.26	---	74.00	40.74	100.0	V	324.0	-14.7

3 Test Equipment Information

Instrument	Manufacturer	Type No	TE No	Calibration Date	Calibration Due
Radiated Disturbance					
EMI test receiver	R & S	ESR3	S1503109-YQ-EMC	2024.8.1	2025.7.31
Trilog super broadband test antenna	SCHWARZBECK	VULB9168	S1808296-YQ-EMC	2024.8.30	2025.8.29
Double-ridged waveguide horn antenna	R & S	HF907	S1503009-YQ-EMC	2024.4.14	2025.4.13
Pre-amplifier	Shenzhen HzEMC	HPAP-9K0130	S2110423b-YQ-EMC	2024.8.1	2025.7.31
Signal and spectrum analyzer	R & S	FSV40	S1503003-YQ-EMC	2024.8.1	2025.7.31
3 meter semi-anechoic chamber	TDK	3m	S1503231-YQ-EMC	2024.5.8	2027.5.7
Coaxial Cable	---	---	RE Cable 01	2024.8.1	2025.7.31
Coaxial Cable	---	---	RE Cable 02	2024.8.1	2025.7.31
Coaxial Cable	---	---	RE Cable 03	2024.8.1	2025.7.31
Coaxial Cable	---	---	RE Cable 04	2024.8.1	2025.7.31
Software	R & S	EMC32 V10.50.40	NA	NA	NA

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty	
Radiated Disturbance	30MHz to 1GHz,	5.03dB (Horizontal) 5.12dB (Vertical)
	1GHz to 18GHz,	5.49dB
	18GHz to 40GHz,	5.63dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3.

5 Photographs

Refer to the < External Photos > & < Internal Photos >.

6 FCC Statements

Subject: FCC Statement

To whom it may concern,

According to FCC CFR 47 § 15.19 Labeling requirements, following statement should be put in the label to the product, When the device is so small, or for such use that it is impracticable to label it with the required compliance statement in a font that is four-point or larger, and the device does not have a display that can show electronic labeling, then the information required shall be placed in the instruction manual, and on the device packaging or on a removable label attached to the device.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The instruction manual shall include the following statement, placed in a prominent location in the text of the manual:

For class B digital device:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
--Reorient or relocate the receiving antenna.
--Increase the separation between the equipment and receiver.
--Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
--Consult the dealer or an experienced radio/TV technician for help.

MODIFICATION: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the device.

----------End of Test Report----------