

Prüfbericht-Nr.: <i>Test report no.:</i>	CN228P8V 001	Auftrags-Nr.: <i>Order no.:</i>	170314148	Seite 1 von 18 <i>Page 1 of 18</i>																								
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-07-21																									
Auftraggeber: <i>Client:</i>	Dongguan Hengyue Industrial Co., Ltd. No.6, Fuzhu 3rd Street, Zhangyang District, Zhangmutou Town, Dongguan Guangdong P.R. China																											
Prüfgegenstand: <i>Test item:</i>	Variable Speed Controller																											
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	VSC-RC01																											
Auftrags-Inhalt: <i>Order content:</i>	FCC ID approval																											
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.249 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 2: Section 2.1091																											
Wareneingangsdatum: <i>Date of receipt:</i>	2022-08-03	See Photo Documentation for detail.																										
Prüfmuster-Nr.: <i>Test sample No.:</i>	A003363200-001																											
Prüfzeitraum: <i>Testing period:</i>	2022-11-04 – 2022-11-10																											
Ort der Prüfung: <i>Place of testing:</i>	Refer to section 2.1																											
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.																											
Prüfergebnis*: <i>Test result*:</i>	Pass																											
geprüft von: <i>tested by:</i> Storm Shu Datum: <i>Date:</i> 2023-03-27			genehmigt von: <i>authorized by:</i> Amy Wang Ausstellungsdatum: <i>Issue date:</i> 2023-03-27																									
Stellung / Position	Project Manager	Stellung / Position	Reviewer																									
Sonstiges / Other: FCC ID: 2A9I8-221212																												
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>																										
<table border="0"> <tr> <td>* Legende:</td> <td>1 = sehr gut</td> <td>2 = gut</td> <td>3 = befriedigend</td> <td>4 = ausreichend</td> <td>5 = mangelhaft</td> </tr> <tr> <td></td> <td>P(ass) = entspricht o.g. Prüfgrundlage(n)</td> <td>F(ail) = entspricht nicht o.g. Prüfgrundlage(n)</td> <td>N/A = nicht anwendbar</td> <td>N/T = nicht getestet</td> <td></td> </tr> <tr> <td>Legend:</td> <td>1 = very good</td> <td>2 = good</td> <td>3 = satisfactory</td> <td>4 = sufficient</td> <td>5 = poor</td> </tr> <tr> <td></td> <td>P(ass) = passed a.m. test specifications(s)</td> <td>F(ail) = failed a.m. test specifications(s)</td> <td>N/A = not applicable</td> <td>N/T = not tested</td> <td></td> </tr> </table>					* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft		P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet		Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor		P(ass) = passed a.m. test specifications(s)	F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested	
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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 a. m. 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>																												

V05

Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 FUNDAMENTAL & HARMONICS RADIATED EMISSION

RESULT: Pass

5.1.3 20dB BANDWIDTH

RESULT: Pass

5.1.4 RADIATED SPURIOUS EMISSION & BAND EDGE

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

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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: Photographs of the Test Set-up

Appendix B: Test Results of General 2.4GHz wireless

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd.

No.102, 1F of Southwest and No.205, 2F No.767 Tianyuan Road, Tianhe District, Guangzhou 510663,
Guangdong Province P.R. China

FCC Accreditation Designation No.: CN1207

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

For the measurement Equipment list, refer to the appendix B.

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.

Item		Extended Uncertainty
Conducted Emission		± 2.68 dB
Radiated Emission (30-1000MHz)	Field strength (dBμV/m)	± 5.16 dB
Radiated Emission (above 1000MHz)	Field strength (dBμV/m)	± 2.22 dB
Radio Spectrum		± 4.51 dB

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Guangdong) Ltd. Test facility located at No.102, 1F of Southwest and No.205, 2F No.767 Tianyuan Road, Tianhe District, Guangzhou 510663, Guangdong Province P.R. 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 controller operating in 2402MHz. and it's powered by DC 3.0V via 2 X 1.5 V AAA Battery.

Therefore, full tests were performed on **VSC-RC01**.

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

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Variable Speed Controller
Type Designation	VSC-RC01
FCC ID	2A9I8-221212
Operating Voltage	DC 3.0V
Testing Voltage	DC 3.0V
Type of Modulation	ASK
Channel Number	1 channel
Antenna Type	Integral Antenna (Copper wire Antenna)
Antenna number	1
Antenna Gain	2.5 dBi for 2402MHz

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, General 2.4GHz wireless transmitting mode
- B. Standby mode
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location Info
- Operation Description
- Photo Document
- 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.

According to clause 3.1, all tests were performed on model VSC-RC01 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 3: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
N/A	N/A	N/A	N/A	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)

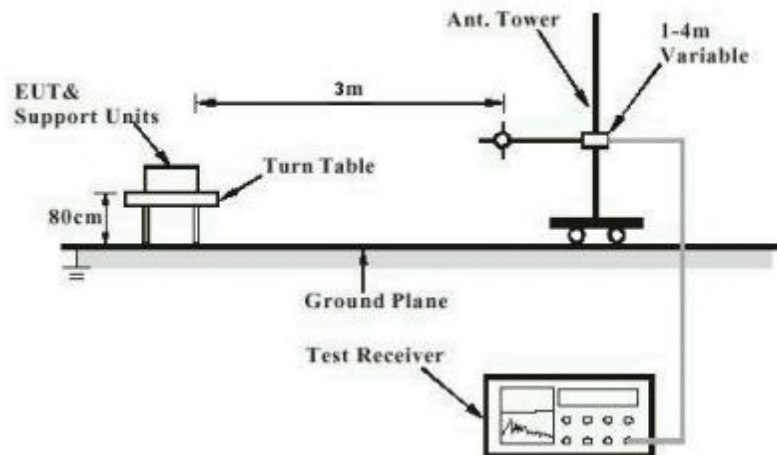


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

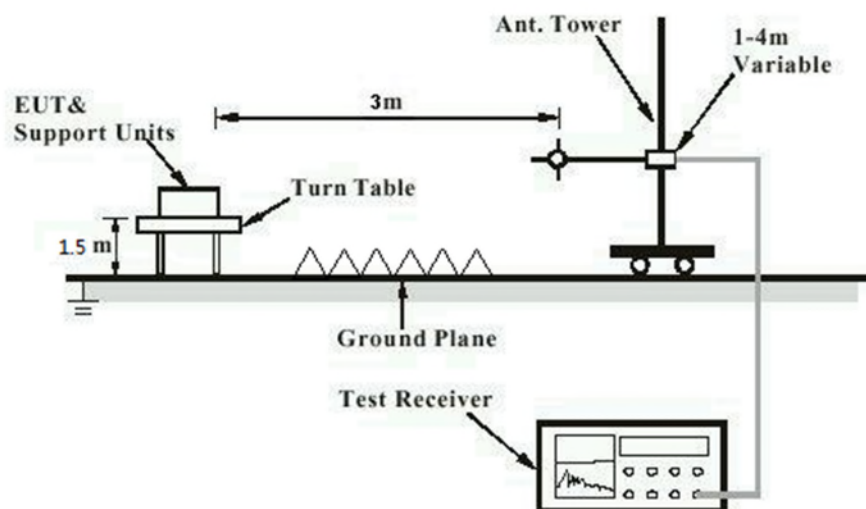
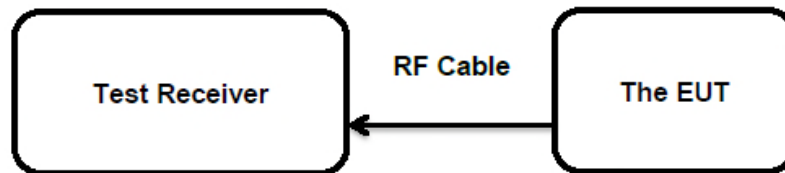


Diagram of Measurement Configuration for Conducted Transmitter Measurement

5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

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

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 2.5dBi, 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.

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

Refer to EUT Photo for further details.

5.1.2 Fundamental & Harmonics Radiated Emission

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

Test standard	: FCC Part 15.249(a)
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to FCC Part 15.209(a)
Kind of test site	: SAR

Test Setup

Date of testing	: 04.11.2022
Input voltage	: DC 3.0V
Operation mode	: A
Test channel	: 2402MHz
Ambient temperature	: 23 °C
Relative humidity	: 51 %
Atmospheric pressure	: 100 kPa

For the measurement records, refer to the appendix B.

5.1.3 20dB Bandwidth

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

Test standard : FCC Part 15.215
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded Room

Test Setup

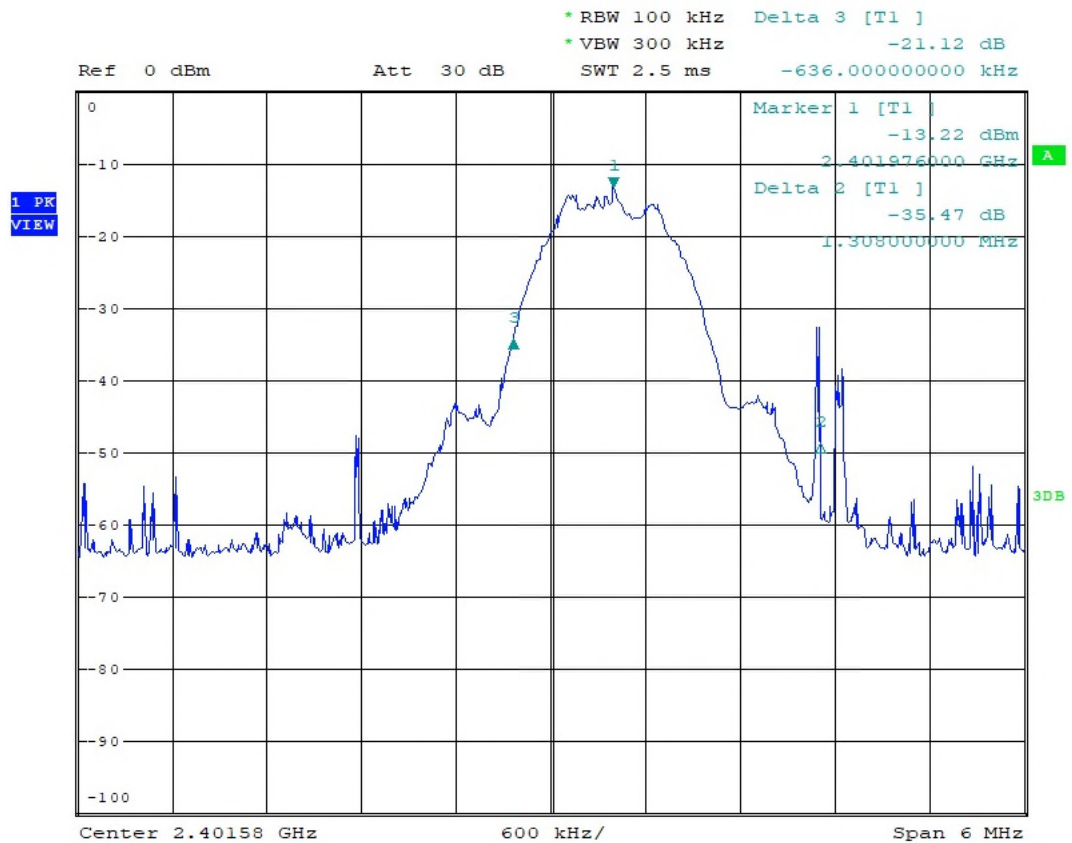
Date of testing : 04.11.2022
Input voltage : DC 3.0V
Operation mode : A
Test channel : 2402MHz
Ambient temperature : 23 °C
Relative humidity : 51 %
Atmospheric pressure : 100 kPa

For details refer to following test result.

Table 4: Test Result of 20dB Bandwidth, General 2.4GHz

Channel	Test Mode Test Channel (MHz)	20dB Bandwidth (kHz)	Limit (MHz)
CH1	2402	1944.00	Within the assigned frequency band 2400~2483.5MHz
Maximum Measured Value	Maximum Measured Value	1944.00	

For the measurement records, refer to following test plot:

Test Plot of 20dB Bandwidth


5.1.4 Radiated Spurious Emission & Band Edge

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

Test standard	: FCC Part 15.249 (d) & FCC Part 15.205
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: Refer to test result
Input voltage	: DC 3.0V
Operation mode	: A
Test channel	: 2402MHz
Ambient temperature	: 23 °C
Relative humidity	: 51 %
Atmospheric pressure	: 100 kPa

Remark:

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 B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test standard

: CFR47 FCC Part 2: Section 2.1093
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 D01 v06

➤ **FCC requirements**

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

Measurement Record for CFR47 FCC Part 2.1093

The minimum distance for the EUT is less than 5mm.

The maximum specified e.i.r.p.: 85.285dBu/m @3m = -9.94dBm=0.0184mW

Antenna Gain: 0dBi max

According to KDB 447498 D01 v06 4.3.1 a)

Exempted Power: 9.5mW, hence the EUT is compliance with the RF exposure.

7 Photographs of the Test Set-Up

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

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Appendix B: Test Results of General 2.4GHz

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Appendix B.1: Measurement Equipment List

Radiated disturbances (9KHz – 30 MHz)					☒
Loop Antenna	Rohde &Schwarz	HFH2-Z2	100111	2023-05-13	
EMI Test Receiver	Rohde&Schwarz	ESCI 3	100216	2023-03-05	
Radiated disturbances (30 MHz – 1000 MHz)					☒
EMI Test Receiver	Rohde&Schwarz	ESCI 3	100216	2023-03-05	
Trilog-Broadband Antenna	Schwarzbeckmess-elektronik	VULB9168	684	2023-08-24	
Coupling/Decoupling Net work	Schwarzbeck	CDNE M2	00102	2023-07-05	
Coupling/Decoupling Net work	Schwarzbeck	CDNE M3	00097	2023-07-05	
Radiated disturbances (1GHz – 18 GHz)					☒
Double-Ridged Horn Antenna	Rohde & Schwarz	HF907	100377	2023-10-27	
Pre-Amplifier(1-18GHz)	MITEQ	AFS44-00101800-25-10P-44	1934457	2023-03-05	
Band Reject Filter	Micro-Tronics	BRM50702	023	2023-07-20	
Highpass Filter	Micro-Tronics	HPM50115-03	001	2023-03-05	
Spectrum Analyzer	Rohde & Schwarz	FSP30	100286	2023-11-05	
Radiated disturbances (18GHz – 26.6 GHz)					☒
Horn Antenna	EMCO	3160-09	21642	2023-01-19	
Pre-Amplifier(18-26GHz)	MITEQ	AFS33-18002650-30-8P-44	1108282	2023-07-28	
Spectrum Analyzer	Rohde & Schwarz	FSP30	100286	2023-11-05	
EMI Test Receiver	Rohde & Schwarz	ESU 26	100209	2023-03-30	

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 26GHz were reported.

Appendix B.2: Fundamental & Harmonics Radiated Emission 30MHz - 1GHz

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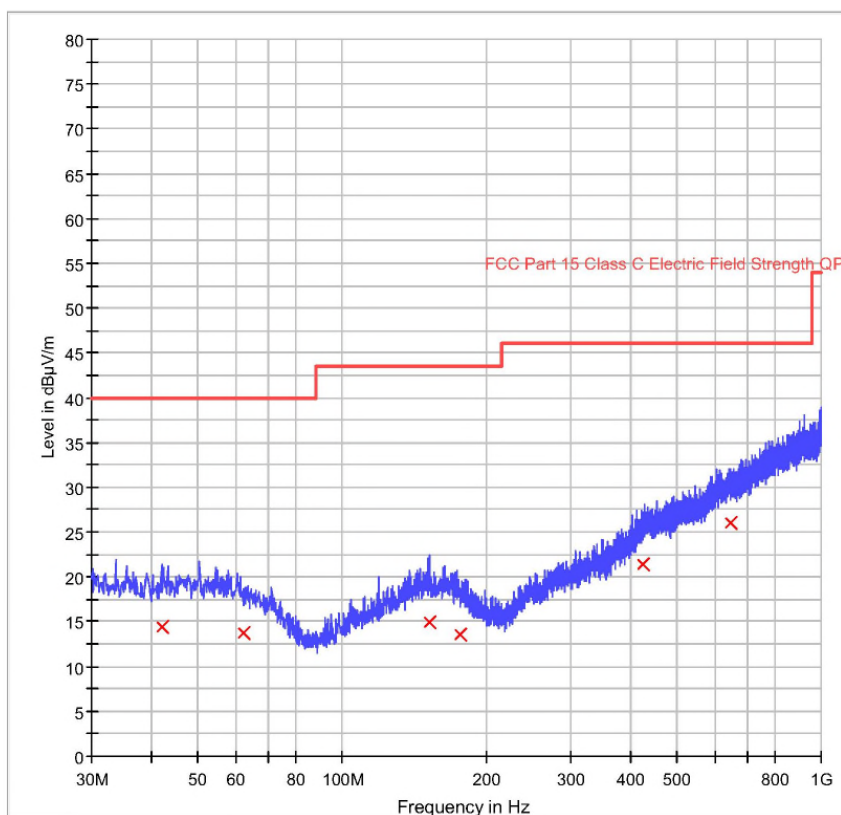
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	21 °C, 52 %, 101 kPa
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

Subrange 1	
Frequency range:	30M-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: *Jason Li*
20221104

Reviewed by: *Jacky Chen*
20221110

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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
42.120000	14.4	1000.0	120.000	H	20.2	25.6	40.0
62.480000	13.8	1000.0	120.000	H	19.9	26.2	40.0
152.720000	14.9	1000.0	120.000	H	21.3	28.6	43.5
176.600000	13.5	1000.0	120.000	H	20.0	30.0	43.5
425.280000	21.5	1000.0	120.000	H	25.5	24.6	46.0
647.280000	26.1	1000.0	120.000	H	30.6	19.9	46.0

Tested by:

Janson Li

20221104

Reviewed by:

Jacky Chen

20221110

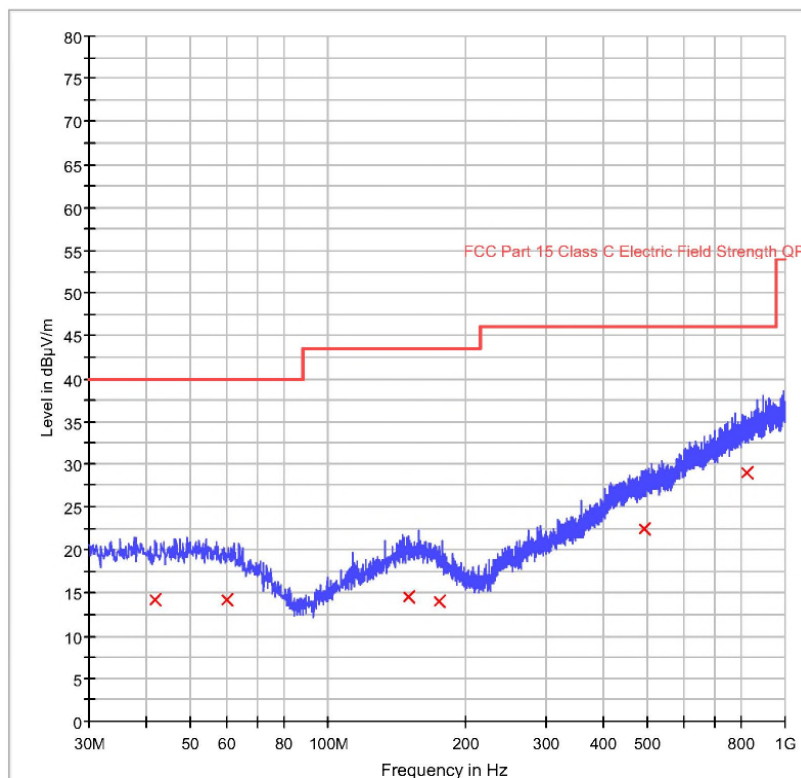
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	21 °C, 52 %, 101 kPa
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30M-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by:

Jason Li

20221104

Reviewed by:

Jacky Chen

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
41.760000	14.2	1000.0	120.000	V	20.2	25.8	40.0
60.080000	14.3	1000.0	120.000	V	20.2	25.8	40.0
150.160000	14.6	1000.0	120.000	V	21.3	28.9	43.5
174.880000	14.0	1000.0	120.000	V	20.1	29.5	43.5
491.360000	22.4	1000.0	120.000	V	27.2	23.6	46.0
827.960000	28.9	1000.0	120.000	V	33.8	17.1	46.0

Tested by:

Janson Li

Reviewed by:

Jacky Chen

20221104

20221110

1GHz - 18GHz

TUV Rheinland (Guangdong) Ltd.

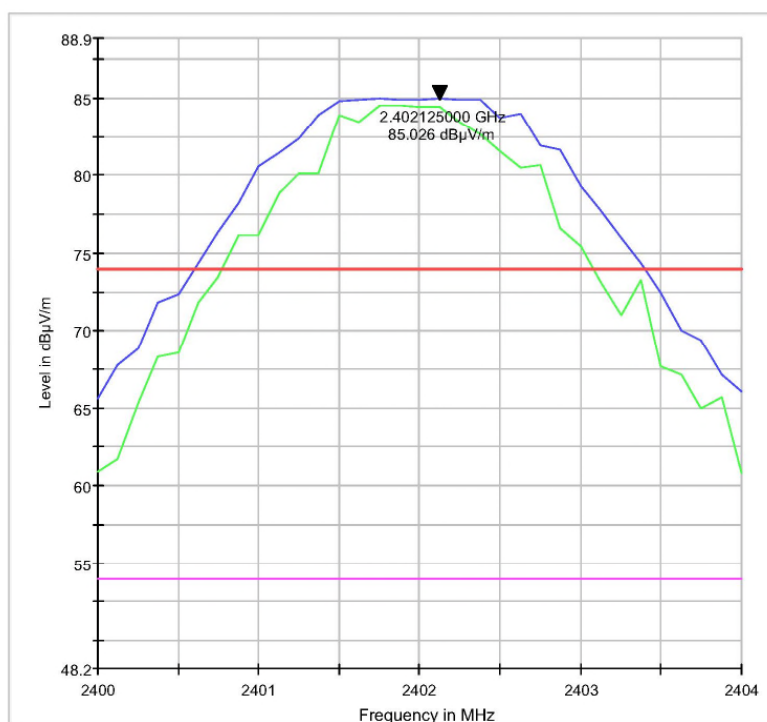
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal, Field Strength of Fundamental
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_EREFO11-A02-04_1GHz-18GHz



Tested by:
20221104

Reviewed by:
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

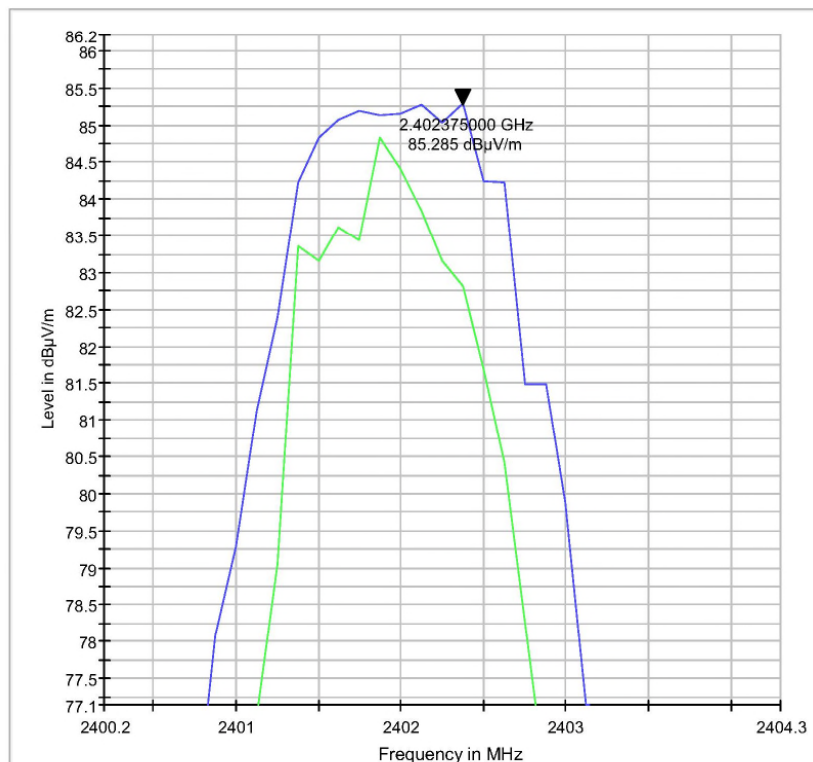
EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Vertical, Field Strength of Fundamental

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_ERE011-A02-04_1GHz-18GHz



Tested by: 
20221104

Reviewed by: 
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

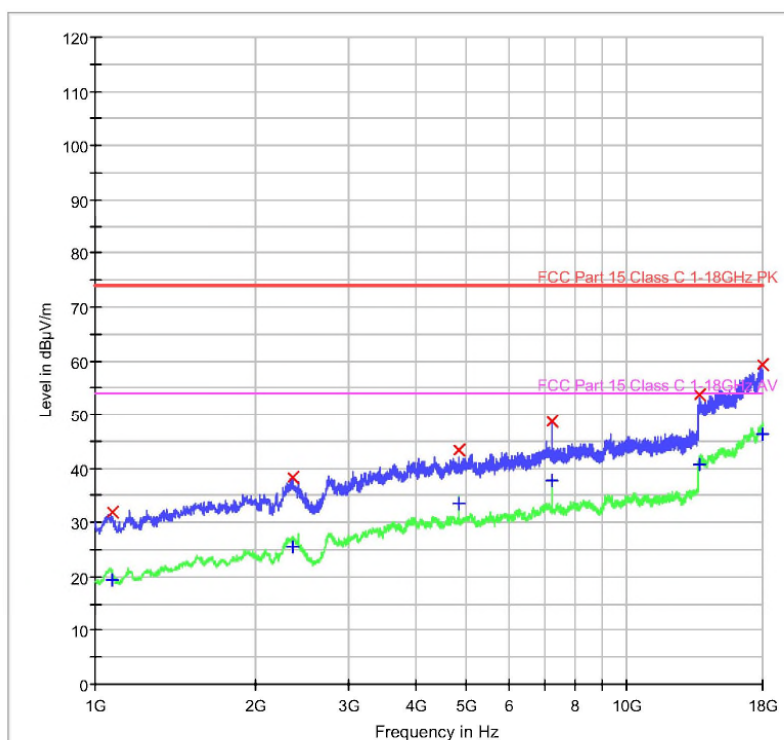
EMC Test Record (Emission)

Common Information

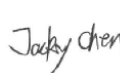
Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_EREFO11-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: 
20221104

Reviewed by: 
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1076.000000	32.0	1000.0	1000.000	H	-18.2	42.0	74.0
2349.000000	38.2	1000.0	1000.000	H	-12.6	35.8	74.0
4823.000000	43.2	1000.0	1000.000	H	-4.5	30.8	74.0
7235.000000	48.6	1000.0	1000.000	H	0.2	25.4	74.0
13729.000000	53.9	1000.0	1000.000	H	7.0	20.1	74.0
17960.000000	59.3	1000.0	1000.000	H	14.9	14.7	74.0

Limit and Margin AV

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1076.000000	19.3	1000.0	1000.000	H	-18.2	34.7	54.0
2349.000000	25.7	1000.0	1000.000	H	-12.6	28.3	54.0
4823.000000	33.6	1000.0	1000.000	H	-4.5	20.4	54.0
7235.000000	37.7	1000.0	1000.000	H	0.2	16.3	54.0
13729.000000	40.7	1000.0	1000.000	H	7.0	13.3	54.0
17960.000000	46.3	1000.0	1000.000	H	14.9	7.7	54.0

Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

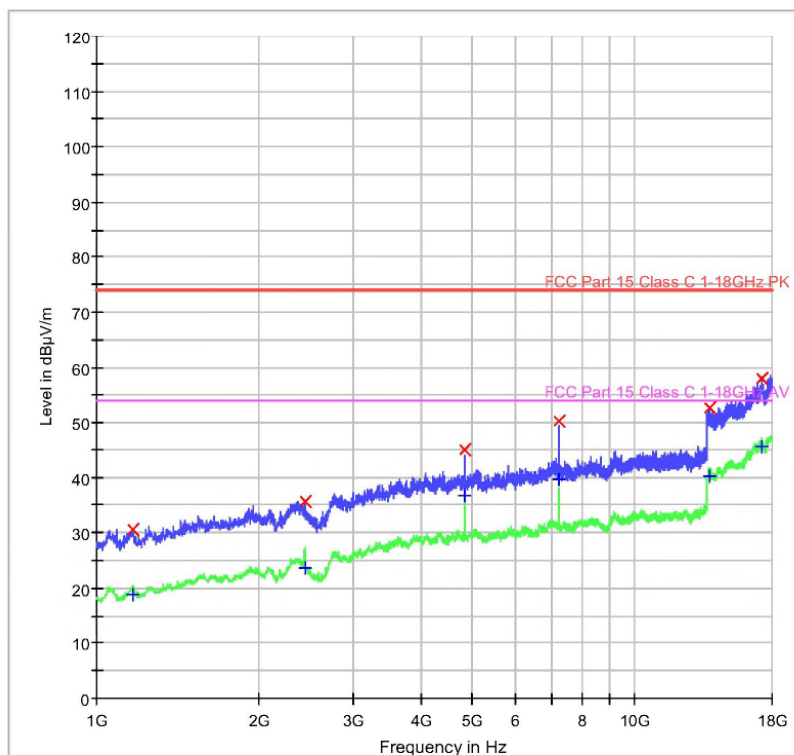
EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Vertical

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_EREFO11-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1170.000000	30.6	1000.0	1000.000	V	-17.8	43.4	74.0
2439.000000	35.7	1000.0	1000.000	V	-12.3	38.4	74.0
4823.000000	45.0	1000.0	1000.000	V	-4.5	29.0	74.0
7235.000000	50.3	1000.0	1000.000	V	0.2	23.7	74.0
13748.000000	52.7	1000.0	1000.000	V	7.0	21.3	74.0
17239.000000	58.1	1000.0	1000.000	V	14.2	15.9	74.0

Limit and Margin AV

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1170.000000	18.8	1000.0	1000.000	V	-17.8	35.2	54.0
2439.000000	23.6	1000.0	1000.000	V	-12.3	30.4	54.0
4823.000000	36.8	1000.0	1000.000	V	-4.5	17.2	54.0
7235.000000	39.7	1000.0	1000.000	V	0.2	14.3	54.0
13748.000000	40.3	1000.0	1000.000	V	7.0	13.7	54.0
17239.000000	45.5	1000.0	1000.000	V	14.2	8.5	54.0

Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

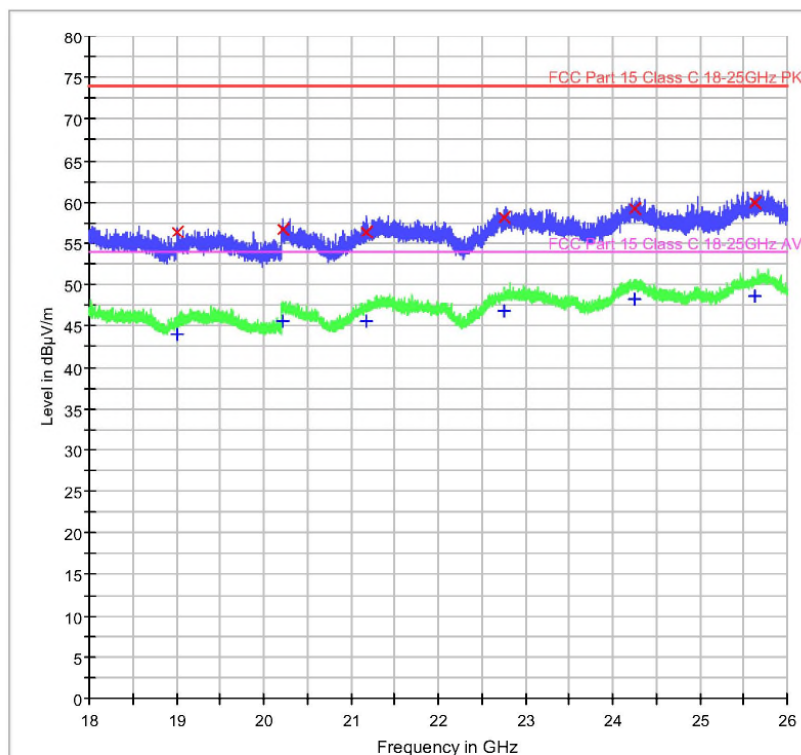
EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	174060690
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal

Subrange 1	
Frequency Range:	18GHz-26GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC Horn 3160-09

EMCTT_EREFO11-A02-08_18GHz-25GHz_With PreAMP EXT



Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
19012.000000	56.4	1000.0	1000.000	H	14.2	17.7	74.0
20214.000000	56.8	1000.0	1000.000	H	14.1	17.2	74.0
21184.000000	56.4	1000.0	1000.000	H	14.5	17.6	74.0
22761.000000	58.2	1000.0	1000.000	H	15.0	15.8	74.0
24254.000000	59.2	1000.0	1000.000	H	15.0	14.8	74.0
25633.000000	60.0	1000.0	1000.000	H	15.7	14.0	74.0

Limit and Margin AV

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
19012.000000	43.9	1000.0	1000.000	H	14.2	10.1	54.0
20214.000000	45.6	1000.0	1000.000	H	14.1	8.4	54.0
21184.000000	45.5	1000.0	1000.000	H	14.5	8.5	54.0
22761.000000	46.8	1000.0	1000.000	H	15.0	7.2	54.0
24254.000000	48.2	1000.0	1000.000	H	15.0	5.8	54.0
25633.000000	48.7	1000.0	1000.000	H	15.7	5.3	54.0

Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

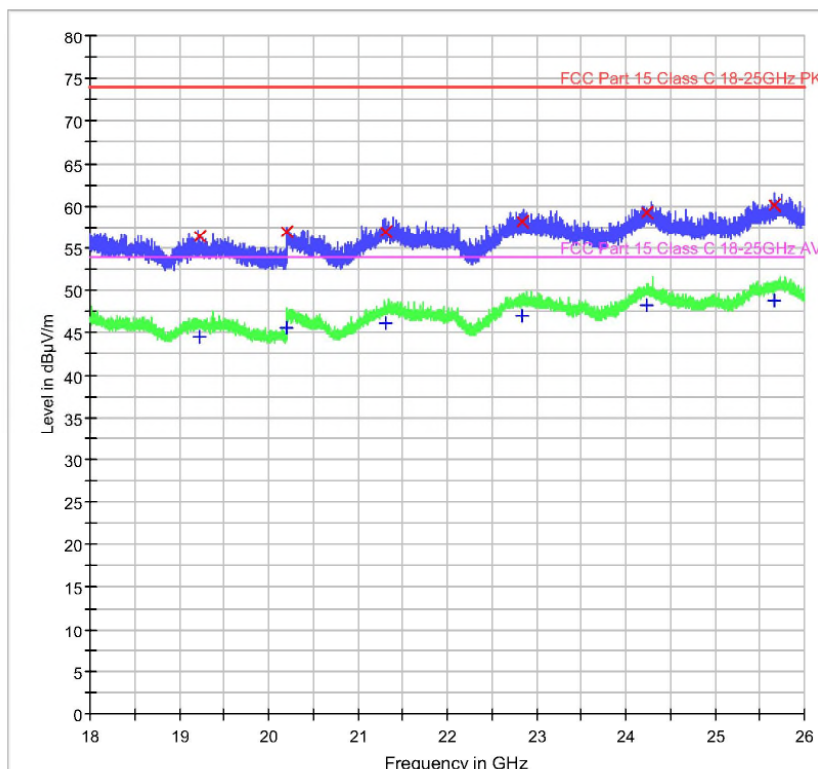
EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	174060690
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal

Subrange 1	
Frequency Range:	18GHz-26GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC Horn 3160-09

EMCTT_EREFO11-A02-08_18GHz-25GHz_With PreAMP EXT



Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dB μ V/m)
19224.000000	56.4	1000.0	1000.000	V	14.0	17.6	74.0
20203.000000	57.0	1000.0	1000.000	V	14.1	17.0	74.0
21310.000000	57.0	1000.0	1000.000	V	14.6	17.0	74.0
22840.000000	58.3	1000.0	1000.000	V	15.1	15.7	74.0
24243.000000	59.3	1000.0	1000.000	V	15.0	14.7	74.0
25667.000000	60.2	1000.0	1000.000	V	15.7	13.8	74.0

Limit and Margin AV

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB/m)	Margin - AVG (dB)	Limit - AVG (dB μ V/m)
19224.000000	44.5	1000.0	1000.000	V	14.0	9.6	54.0
20203.000000	45.6	1000.0	1000.000	V	14.1	8.4	54.0
21310.000000	46.0	1000.0	1000.000	V	14.6	8.0	54.0
22840.000000	47.0	1000.0	1000.000	V	15.1	7.0	54.0
24243.000000	48.3	1000.0	1000.000	V	15.0	5.8	54.0
25667.000000	48.8	1000.0	1000.000	V	15.7	5.2	54.0

Tested by:

Jason Li

20221104

Reviewed by:

Jacky Chen

20221110

Appendix B.3: Test Results of Radiated Emissions in Restricted Bands

TUV Rheinland (Guangdong) Ltd.

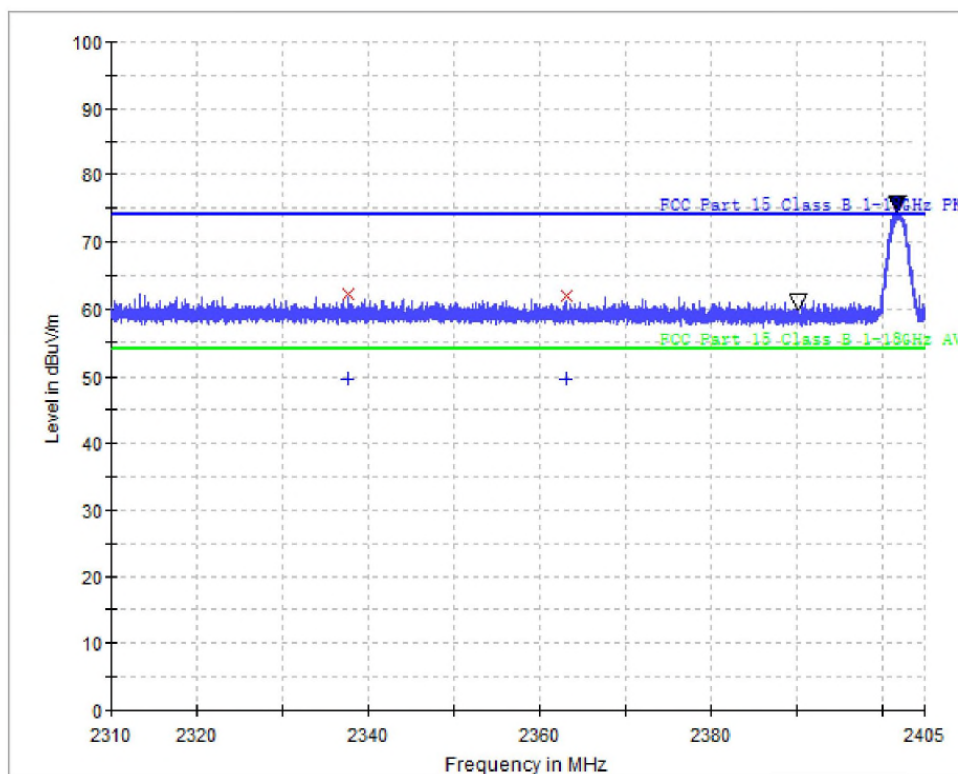
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal, Band-edge
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_EREFO11-A02-04_1GHz-18GHz



Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2337.640000	62.2	1000.0	1000.000	H	35.1	11.8	74.0	
2363.200000	61.9	1000.0	1000.000	H	35.2	12.1	74.0	
2400.000000	63.3	1000.0	1000.000	H	35.4	10.7	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2337.640000	49.7	1000.0	1000.000	H	35.1	4.3	54.0	
2363.200000	49.6	1000.0	1000.000	H	35.2	4.4	54.0	
2400.000000	49.6	1000.0	1000.000	H	35.4	4.4	54.0	

Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

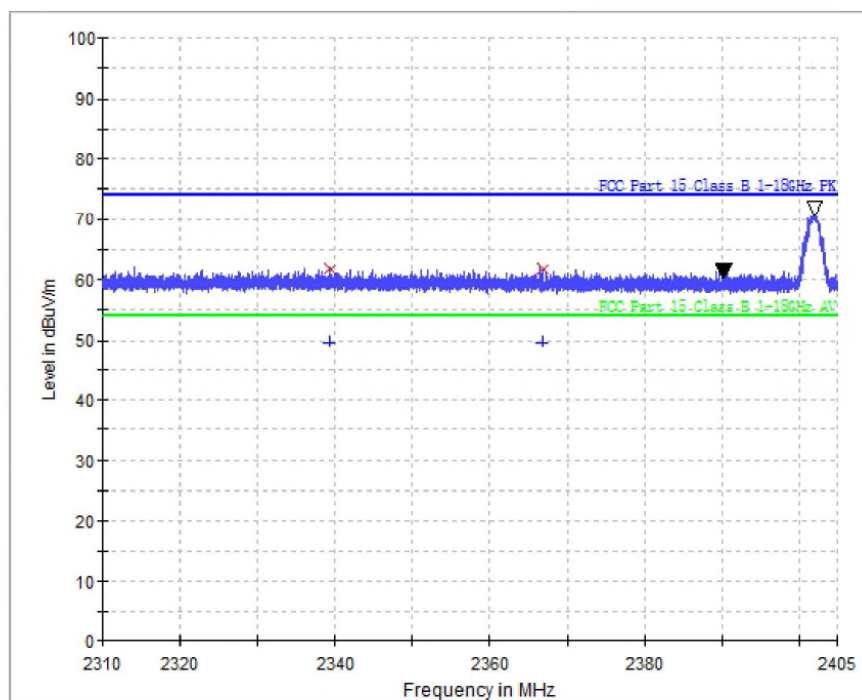
EMC Test Record (Emission)

Common Information

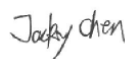
Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Vertical, Field Strength of Fundamental

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30

EMCTT_ERE011-A02-04_1GHz-18GHz



Tested by: 
20221104

Reviewed by: 
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2339.440000	61.8	1000.0	1000.000	V	35.1	12.2	74.0	
2366.920000	61.7	1000.0	1000.000	V	35.3	12.3	74.0	
2400.000000	64.5	1000.0	1000.000	V	35.4	9.5	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2339.440000	49.7	1000.0	1000.000	V	35.1	4.3	54.0	
2366.920000	49.5	1000.0	1000.000	V	35.3	4.5	54.0	
2400.000000	49.6	1000.0	1000.000	V	35.4	4.4	54.0	

Tested by: 
20221104

Reviewed by: 
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

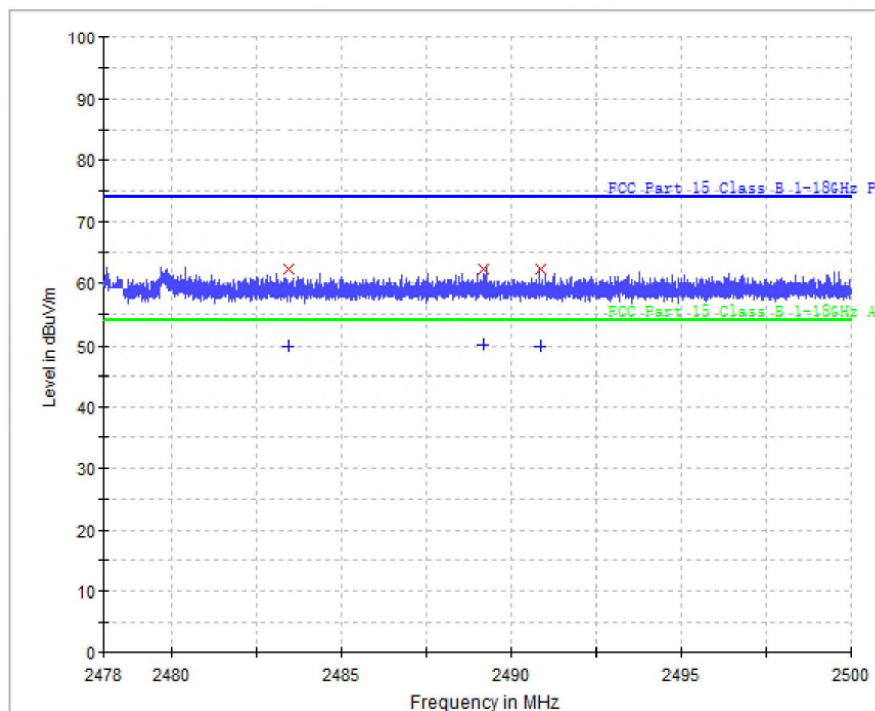
EMC Test Record (Emission)

Common Information

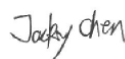
Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Vertical, Field Strength of Fundamental

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30

EMCTT_ERE011-A02-04_1GHz-18GHz



Tested by: 
20221104

Reviewed by: 
20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2483.440000	62.3	1000.0	1000.000	V	36.1	11.7	74.0	
2489.200000	62.1	1000.0	1000.000	V	36.2	11.9	74.0	
2490.880000	62.2	1000.0	1000.000	V	36.2	11.8	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2483.440000	50.0	1000.0	1000.000	V	36.1	4.1	54.0	
2489.200000	50.1	1000.0	1000.000	V	36.2	3.9	54.0	
2490.880000	49.9	1000.0	1000.000	V	36.2	4.1	54.0	

Tested by:

Jason Li

20221104

Reviewed by:

Jacky Chen

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

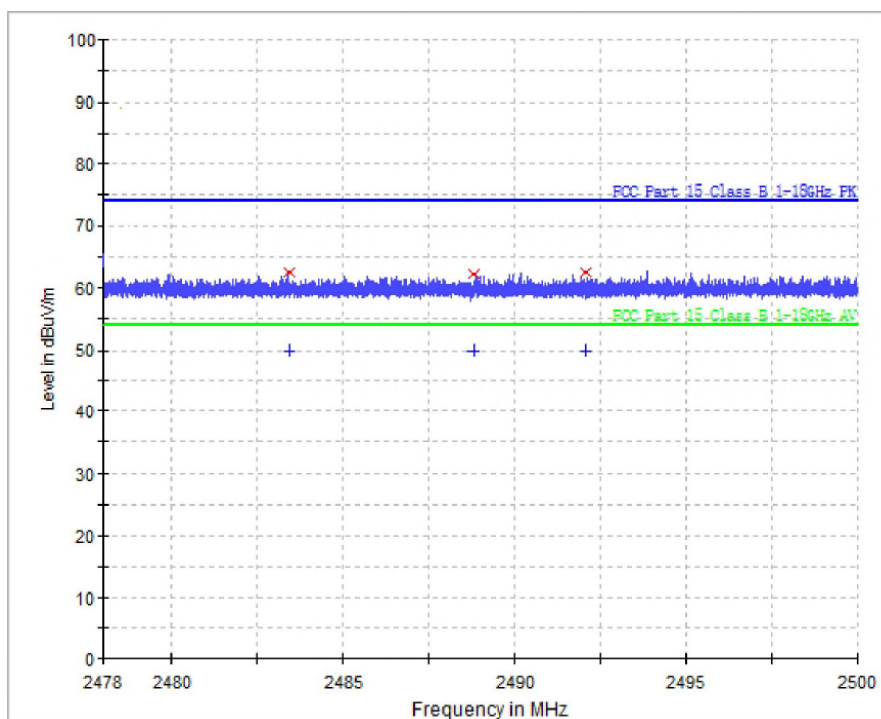
EMC Test Record (Emission)

Common Information

Manufacturer:	
Test Item:	Remote controller
Identification:	
Test Standard:	FCC Part 15C
Test Detail:	Radiated Emission
Operation Mode:	Tx
Climate Condition:	23°C ; 51 %RH; 101 kPa.
Test Voltage/ Freq:	DC 3V
Receipt No:	170314148
Report No:	/
Result:	Pass
Comment:	Test distance is 3m, Horizontal, Band-edge

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP 30
Transducer:	TUV SAC HF907/ TUV FSP 30-TUV SAC HF907

EMCTT_ERE011-A02-04_1GHz-18GHz



Tested by:

20221104

Reviewed by:

20221110

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2483.440000	62.5	1000.0	1000.000	H	36.1	11.5	74.0	
2488.840000	62.3	1000.0	1000.000	H	36.2	11.7	74.0	
2492.080000	62.6	1000.0	1000.000	H	36.2	11.4	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2483.440000	49.9	1000.0	1000.000	H	36.1	4.1	54.0	
2488.840000	49.9	1000.0	1000.000	H	36.2	4.2	54.0	
2492.080000	50.0	1000.0	1000.000	H	36.2	4.0	54.0	

Tested by:

20221104

Reviewed by:

20221110