



SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd

Application
For
Certification
FCC ID: YGB-PDV3600S

PANOVIEW 360°Camera

Model: 1002929

Brand name: N/A

Class B Personal Computer Peripherals

Report No.: 170502012GZU-002

Prepared and Checked by:

Approved by:

Sign on file

Sunny Zhou
Project Engineer

Kidd Yang
Senior Project Engineer
Date: June 26, 2017

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF No.: FCC 15C_PC_b

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MEASUREMENT / TECHNICAL REPORT

SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd
MODEL: 1002929

Brand name: N/A

FCC ID: YGB-PDV3600S

This report concerns (check one:) Original Grant ☒ Class II Change ☐

Equipment Type: JBP-Class B Computing Device Peripheral

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ☐ No ☒

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes ☐ No ☒

If no, assumed Part 15, Subpart B for unintentional radiator – the new 47 CFR [10-01-15 Edition] provision.

Report prepared by:

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List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted photos	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Confidential Letter	request.pdf
Cover Letter	Letter of Agency	agency.pdf

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EXHIBIT 1

GENERAL DESCRIPTION

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1.0 **General Description**

1.1 Product Description

The Equipment Under Test (EUT) is a PANOVIEW 360°Camera with WiFi function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing and 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing. The EUT was powered by DC 3.8V internal rechargerable battery which was charged by USB port (DC 5V). The personal computers can through this PANOVIEW 360°Camera to read and write data. For more detail information pls. refer to the user manual.

1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral for the PANOVIEW 360°Camera.

Remaining portions are subject to the following procedures:

1. WiFi Transceiver (2.4G band): 170502012GZU-001
2. Other function: 170502016GZU-001

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1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2014). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Guangzhou Branch** and located at Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD Guangzhou, China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number:549654).

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EXHIBIT 2

SYSTEM TEST CONFIGURATION

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2.0 **System Test Configuration**

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2014).

The device was powered by a fully charged battery which was charged by PC USB Port, and the PC was powered by AC 120V/60Hz during the test.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency range from 30MHz to 12GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

2.2 EUT Exercising Software

N/A

2.3 Special Accessories

USB cable with two ferrites.

2.4 Equipment Modification

Any modifications installed previous to testing by SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Guangzhou Branch.

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2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in the following configuration:

Refer List:

Description	Manufacturer	Model No.
Laptop	Lenovo	X1
USB Cable	SHUOYING DIGITAL SCIENCE&TECHNOLO GY (CHINA)Co.,Ltd	Shielded, Length 35cm
Micro SD Card	SanDisk	1GB

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EXHIBIT 3

EMISSION RESULTS

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3.0 **Emission Results**

Data included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG$$

where FS = Field Strength in dB μ V/m

RA = Receiver Amplitude (including preamplifier) in dB μ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB/m

AG = Amplifier Gain in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG$$

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3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dB μ V is obtained. The antenna factor of 7.4dB/m and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The net field strength for comparison to the appropriate emission limit is 32dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB/m}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 = 42\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(42\text{dB}\mu\text{V/m})/20] = 125.9\mu\text{V/m}$$

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3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

At

30.537MHz (USB Data transfer Mode)

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

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3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 6.2dB margin (USB Data transfer Mode)

TEST PERSONNEL:

Sign on file

Sunny Zhou Project Engineer
Typed/Printed Name

May 12, 2017
Date

INTERTEK TESTING SERVICES

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd

Date of Test: May 12, 2017

Worst Model: 1002929

Operating Mode: USB Data transfer

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	113.420	35.0	20.0	17.5	32.5	43.5	-11.0
Horizontal	304.510	30.6	20.0	21.7	32.3	46.0	-13.7
Horizontal	780.035	33.4	20.0	22.4	35.8	46.0	-10.2
Horizontal	5883.000	25.0	20.0	35.5	40.5	54.0	-13.5
Horizontal	11832.453	25.0	20.0	35.5	40.5	54.0	-13.5
Vertical	30.537	45.0	20.0	8.8	33.8	40.0	-6.2
Vertical	469.895	36.8	20.0	17.5	34.3	46.0	-11.7
Vertical	598.420	36.5	20.0	21.7	38.2	46.0	-7.8
Vertical	5878.200	25.8	20.0	35.0	40.8	54.0	-13.2
Vertical	11826.232	25.8	20.0	35.0	40.8	54.0	-13.2

NOTES:

1. Quasi-Peak detector is used for frequency up to 1GHz and Peak detector is used for frequency from 1-12GHz.
2. All measurements were made at 3 meters.
3. Negative value in the margin column shows emission below limit.
4. All emissions up to 1GHz are below the QP limit and all emissions between 1-12GHz are below the AV limit.

Test Engineer: Sunny Zhou

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3.4 Conducted Emission at Mains Terminal

3.5 Conducted Emission Configuration Photograph

Worst Case Conducted Configuration
at
0.586 MHz(USB Data transfer Mode)

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

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3.6 Conducted Emission Data

Judgement: Passed by 30.7 dB margin(USB Data transfer Mode)

TEST PERSONNEL:

Sign on file

Sunny Zhou Project Engineer

Typed/Printed Name

May 12, 2017

Date

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Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd

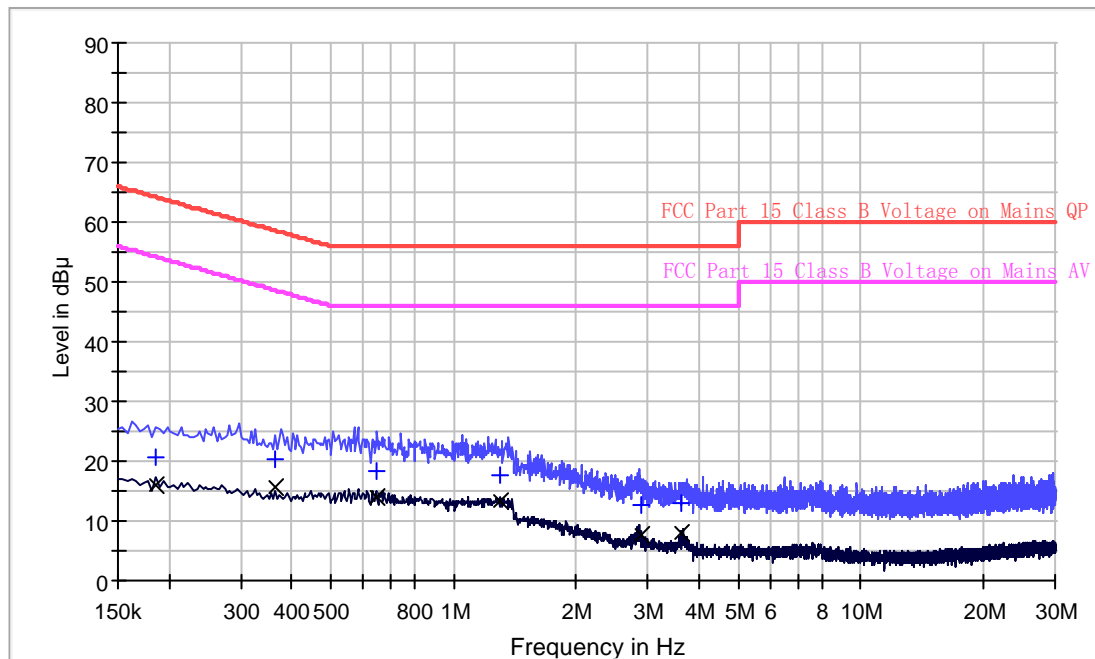
Date of Test: May 12, 2017

Worst Model: 1002929

Operating Mode: USB Data transfer

Phase: Live

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.186000	20.6	L1	9.7	43.6	64.2
0.366000	20.4	L1	9.7	38.2	58.6
0.650000	18.3	L1	9.7	37.7	56.0
1.306000	17.6	L1	9.7	38.4	56.0
2.878000	12.8	L1	9.7	43.2	56.0
3.630000	13.1	L1	9.8	42.9	56.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.186000	16.0	L1	9.7	38.2	54.2
0.366000	15.7	L1	9.7	32.9	48.6
0.650000	13.9	L1	9.7	32.1	46.0
1.306000	13.3	L1	9.7	32.7	46.0
2.878000	7.8	L1	9.7	38.2	46.0
3.630000	8.0	L1	9.8	38.0	46.0

Test Engineer: Sunny Zhou

TRF No.: FCC 15C_PC_b

FCC ID: YGB-PDV3600S

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Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA)Co.,Ltd

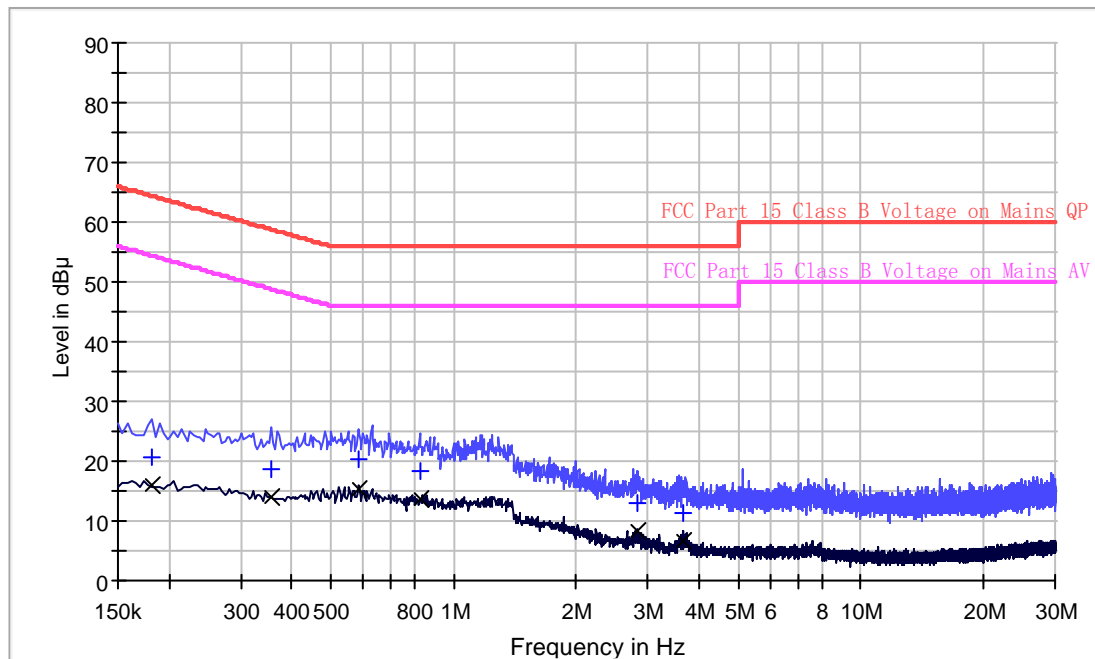
Date of Test: May 12, 2017

Worst Model: 1002929

Operating Mode: Data transfer

Phase: Neutral

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.182000	20.5	N	9.7	43.9	64.4
0.358000	18.6	N	9.7	40.2	58.8
0.586000	20.4	N	9.7	35.6	56.0
0.826000	18.3	N	9.7	37.7	56.0
2.830000	12.9	N	9.8	43.1	56.0
3.666000	11.4	N	9.8	44.6	56.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.182000	15.9	N	9.7	38.5	54.4
0.358000	13.9	N	9.7	34.9	48.8
0.586000	15.3	N	9.7	30.7	46.0
0.826000	13.6	N	9.7	32.4	46.0
2.830000	8.3	N	9.8	37.7	46.0
3.666000	6.7	N	9.8	39.3	46.0

Test Engineer: Sunny Zhou

TRF No.: FCC 15C_PC_b

FCC ID: YGB-PDV3600S

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EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

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EXHIBIT 5

PRODUCT LABELLING

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5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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EXHIBIT 6

TECHNICAL SPECIFICATIONS

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6.0 **Technical Specifications**

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

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EXHIBIT 7

INSTRUCTION MANUAL

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7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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EXHIBIT 8

MISCELLANEOUS INFORMATION

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8.0 **Miscellaneous Information**

This miscellaneous information includes emission measuring procedure.

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8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2014.

The computer peripheral equipment under test (EUT) is placed on a styrene turntable which is four feet in diameter and approximately 0.8 meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The antenna height and polarization are varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz and in PK & AV mode from frequency band 1GHz to 12GHz with RBW setting 1MHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 12GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz with RBW 9KHz.

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8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2014.

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EXHIBIT 9

TEST EQUIPMENT LIST

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9.0 Test Equipment List

Radiated Emission

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS•LINDGREN	5/9/2018	1Y
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	6/7/2017	1Y
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	6/3/2017	1Y
EM011-04	Loop antenna (9 kHz-30 MHz)	HFH2-Z2	R&S	6/6/2017	1Y
EM061-03	TRILOG Super Broadband test Antenna (30 MHz-1.5 GHz) (TX)	VULB 9161	SCHWARZBECK	6/6/2017	1Y
EM033-01	TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX)	VULB 9163	SCHWARZBECK	9/8/2017	1Y
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX)	R&S HF907	R&S	6/6/2017	1Y
EM033-03	High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX)	R&S SCU-26	R&S	4/1/2018	1Y
EM033-04	High Frequency Antenna & preamplifier (26 GHz-40 GHz)	R&S SCU-40	R&S	4/1/2018	1Y
EM031-02-01	Coaxial cable(9 kHz-1 GHz)	N/A	R&S	5/30/2017	1Y
EM033-02-02	Coaxial cable(1 GHz-18 GHz)	N/A	R&S	5/30/2017	1Y
EM033-04-02	Coaxial cable(18 GHz~40 GHz)	N/A	R&S	4/1/2018	1Y
EM022-03	2.45 GHz Filter	BRM50702	Micro-Tronics	5/9/2018	1Y

Conducted emission at the mains terminals

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM080-05	EMI receiver	ESCI	R&S	7/26/2017	1Y
EM006-05	LISN	ENV216	R&S	9/18/2017	1Y
EM006-06	LISN	ENV216	R&S	9/18/2017	1Y
EM006-06-01	Coaxial cable	/	R&S	4/11/2018	1Y
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu	1/25/2018	1Y