EMC TEST REPORT
For

JIAXING VIRPOL TRADING CO., LTD

Shower Panel

Test Model: RL-P01

Additional Model No.: Please Refer To Page 8

Prepared for	:	JIAXING VIRPOL TRADING CO., LTD
Address	:	Room 201, 2nd Floor, Building 1, No. 362, Fuxing Road, Dongzha Street, Nanhu District, Jiaxing City, Zhejiang Province
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	February 22, 2021
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	February 22, 2021 ~ February 25, 2021
Date of Report	:	March 19, 2021

CE

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

EMC TEST REPORT
EN 55014-1: 2017
Requirements for household appliances, electric tools and similar apparatus -- Part 1: Emission
EN 55014-2: 2015
Requirements for household appliances, electric tools and similar apparatus -- Part 2: Immunity - Product family standard

Report Reference No. .....:	**LCS210130039AE**
Date Of Issue .....:	March 19, 2021
Testing Laboratory Name ....:	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address .....:	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure ..:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name .....:	**JIAXING VIRPOL TRADING CO., LTD**
Address .....:	Room 201, 2nd Floor, Building 1, No. 362, Fuxing Road, Dongzha Street, Nanhu District, Jiaxing City, Zhejiang Province
Test Specification:	
Standard .....:	EN 55014-1: 2017 EN IEC 61000-3-2: 2019 EN 61000-3-3: 2013+A1: 2019 EN 55014-2: 2015
Test Report Form No. .....:	LCSEMC-1.0
TRF Originator .....:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF .....:	Dated 2011-03

SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. All rights reserved.
This publication may be reproduced in whole or in part for non-commercial purposes as long as the SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. is acknowledged as copyright owner and source of the material. SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description.....:	**Shower Panel**
Trade Mark.....:	VIRPOL
Test Model .....:	RL-P01
Ratings.....:	DC12V, 6W, 0.5A
Result .....:	Positive

Compiled by:	**Supervised by:**	**Approved by:**
Cindy Nie	Jason Deng	
Cindy Nie/ File administrators	Jason Deng/ Technique principal	Gavin Liang/ Manager

EMC -- TEST REPORT

Test Report No. : LCS210130039AE	March 19, 2021 Date of issue

Test Model.....	: RL-P01
EUT.....	: Shower Panel
Applicant.....	**: JIAXING VIRPOL TRADING CO., LTD**
Address.....	: Room 201, 2nd Floor, Building 1, No. 362, Fuxing Road, Dongzha Street, Nanhu District, Jiaxing City, Zhejiang Province
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: JIANG SU RELAX SANITARY WARE CO., LTD**
Address.....	: No.76 Golden Batan Street, Batan Private Pioneer Park. Batan Town, Binhail City, Yancheng City, Jiangsu Province, China
Telephone.....	: /
Fax.....	: /
Factory.....	**: /**
Address.....	: /
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 8:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
000	March 19, 2021	Initial Issue	Gavin Liang

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

TABLE OF CONTENT

Test Report Description Page

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (EN 55014-1: 2017)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 55014-1: 2017	--------	PASS
Disturbance Power	EN 55014-1: 2017	--------	PASS
Radiated disturbance	EN 55014-1: 2017	--------	N/A
Harmonic current emissions	EN IEC 61000-3-2: 2019	Class A	PASS
Voltage fluctuations & flicker	EN 61000-3-3: 2013+A1: 2019	--------	PASS
IMMUNITY (EN 55014-2: 2015)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	N/A
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014+A1：2017	B	PASS
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	N/A
Voltage dips, 60% reduction	EN 61000-4-11: 2004+A1：2017	C	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Working	Record

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

1.2.Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

─ essential operational modes and states;

─ tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);

─ quality of software execution;

─ quality of data display and transmission;

─ quality of speech transmission.

1.2.1.Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2.Performance criterion B

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacture, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operation state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3.Performance criterion C

Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

EUT : Shower Panel

Trade Mark : VIRPOL

Test Model : RL-P01

Additional Model No. : RL-P02, RL-P03, RL-P04, RL-P05, RL-P06, RL-P07, RL-P08, RL-P09, RL-P10, RL-P210, RL-P211, RL-212, RL-P213, RL-P214, RL-P215, RL-P216, RL-P217, RL-P217B, RL-P217W, RL-P218, RL-P219, RL-P219B RL-P219W, RL-P220, RL-Series

Model Declaration :PCB board, structure and internal of these model(s) are the same, So no additional models were tested.

Power Supply :DC12V, 6W, 0.5A

EUT Clock Frequency :≤15MHz

2.2.Test Facility

EMC Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.

2.3.Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

2.4.Measurement Uncertainty

Test	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucispr)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Power Disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Mains Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1.Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	EMI Test Software	EZ	EZ-EMC	/	N/A	N/A
2	EMI Test Receiver	R&S	ESPI	101840	2020-06-22	2021-06-21
3	Artificial Mains	R&S	ENV216	101288	2020-06-22	2021-06-21
4	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2020-06-22	2021-06-21
5	Impedance Stabilization Network	TESEQ	ISN T800	45130	2020-10-20	2021-10-19

3.2.Disturbance Power

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	EMI Test Software	EZ	EZ-EMC	/	N/A	N/A
2	EMI Test Receiver	R&S	ESPI	101840	2020-06-22	2021-06-21
3	Absorbing clamp	R&S	MDS 21	4033	2020-07-22	2021-07-21
4	6dB Attenuator	/	/	50FP-006-H3B	2020-06-22	2021-06-21

3.3.Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-22	2021-06-21

3.4.Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2020-06-22	2021-06-21

3.5.Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	ESD Simulator	SCHLODER	SESD 230	604035	2020-07-21	2021-07-20

3.6.Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500 M4	0101-34	2020-06-22	2021-06-21

3.7.Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Immunity Simulative Generator	EM test	UCS500 M4	0101-34	2020-06-22	2021-06-21

3.8.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2020-06-22	2021-06-21
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2020-06-22	2021-06-21
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2020-06-22	2021-06-21

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

3.9.Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-22	2021-06-21

3.10.Voltage Short Interruptions

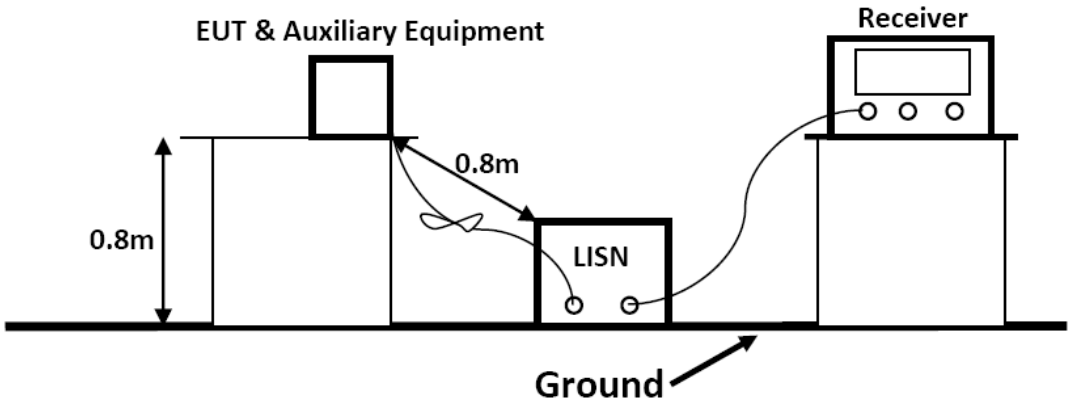
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-22	2021-06-21

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4. TEST RESULTS

4.1.Power Line Conducted Emission Measurement

4.1.1.Block Diagram of Test Setup



4.1.2.Power Line Conducted Emission Limits

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	59.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

Remark: * means decreasing linearly with logarithm of frequency.

4.1.3.EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to meet EN 55014–1 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

4.1.4.Operating Condition of EUT

4.1.4.1.Setup the EUT as shown on Section 4.1.1.

4.1.4.2.Turn on the power of all equipments.

4.1.4.3.Let the EUT work in measuring Mode 1 and measure it.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.1.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through a Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55014-1 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz.

The frequency range from 150kHz to 30MHz is investigated. The scanning waveform please refer to the next page.

4.1.6.Test Results

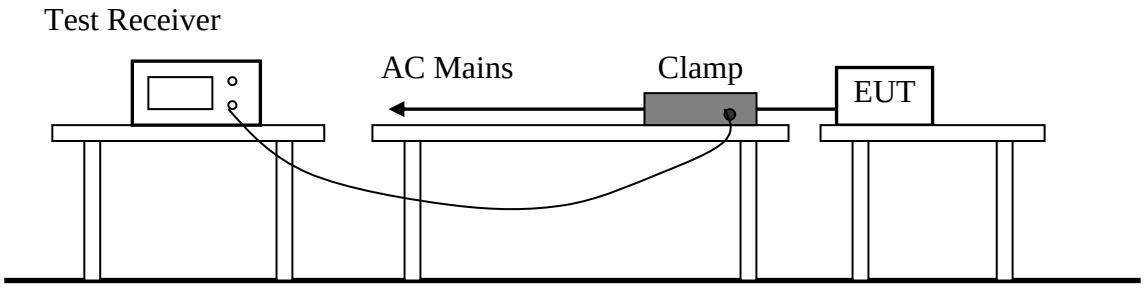
PASS.

Refer to attached Annex B.1

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.2. Disturbance Power Measurement

4.2.1.Block Diagram of Test Setup



4.2.2.Test Standard

EN 55014-1: 2017

4.2.3.Disturbance Power Limits

All emanations from devices or system including any network of conductors and apparatus connected there to, shall not exceed the level of field strengths specified below:

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
30 ~ 300	45 Increasing Linearly with Frequency to 55	35 Increasing Linearly with Frequency to 45

	Household and similar appliances		Tools					
1	2	3	4	5	6	7	8	9
Frequency range			Rated motor power not exceeding 700 W		Rated motor power above 700 W and not exceeding 1000 W		Rated motor power above 1000 W	
(MHz)	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average	dB (pW) Quasi-peak	dB (pW) Average
Increasing linearly with the frequency from:								
200 to 300	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-	0 to 10 dB	-
NOTE 1 This table only applies if specified in 4.1.2.3.2. NOTE 2 The measured result at a particular frequency shall be less than the relevant limit minus the corresponding margin (at that frequency).								

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.2.4.EUT Configuration on Test

The EN 55014-1 Regulations test method must be used to find the maximum emission during radiated emission measurement. The configuration of the EUT is the same as used in conducted emission measurement.

4.2.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.1.1 except the test set up replaced as Section 4.2.1.

4.2.6.Test Procedure

The EUT is placed on the plane 0.8m high above the ground by insulating support and away from other metallic surface at least 0.4m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

The bandwidth of the field strength meter is set at 120kHz.
All the test results are listed in Section 4.2.7.

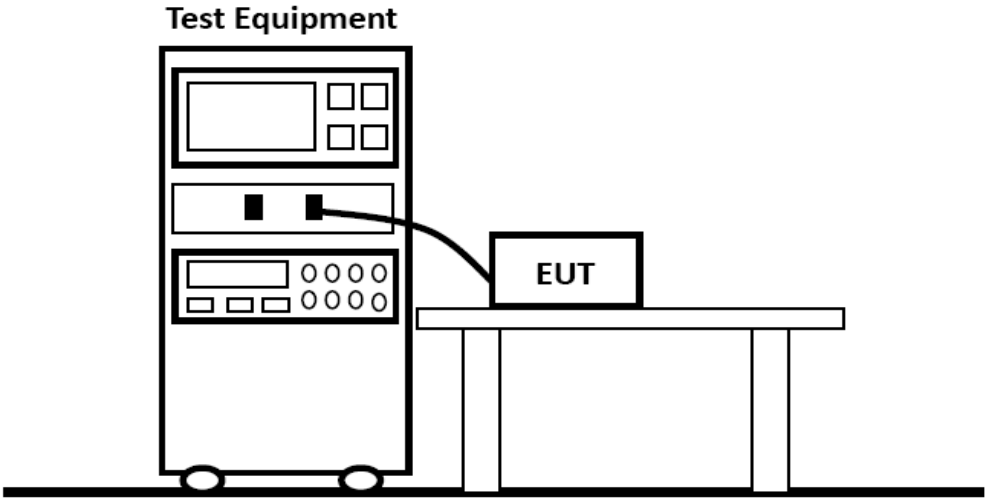
4.2.7.Test Results

PASS.
Refer to attached Annex B.2

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.3. Harmonic Current Emission Measurement

4.3.1.Block Diagram of Test Setup



4.3.2.Test Standard

EN IEC 61000-3-2: 2019, Class A

4.3.3.Operation Condition of EUT

Same as Section 4.1.4 except the test setup replaced as Section 4.3.1.

4.3.4.Test Results

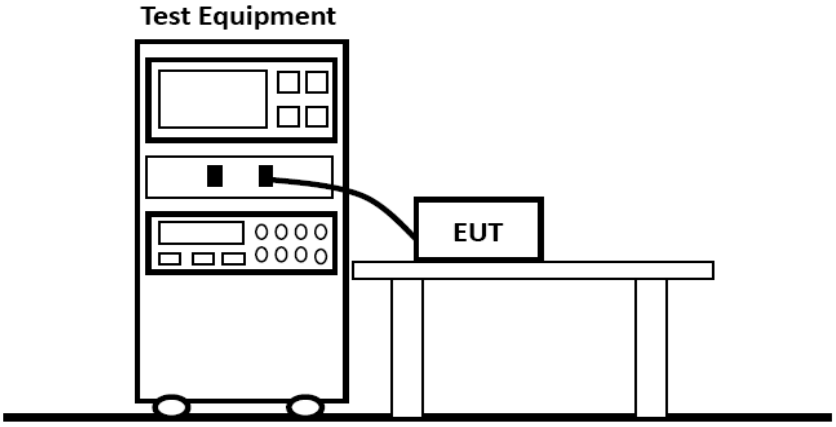
Pass.

Refer to attached Annex B.3

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.4. Voltage Fluctuation And Flicker Measurement

4.4.1.Block Diagram of Test Setup



4.4.2.Test Standard

EN 61000-3-3: 2013+A1: 2019

4.4.3.Operation Condition of EUT

4.4.3.1.Setup the EUT as shown Section 4.4.1.

4.4.3.2.Turn on the power of all equipments.

4.4.3.3.Let EUT work in test mode (On/Off) and measure it.

4.4.4.Test Results

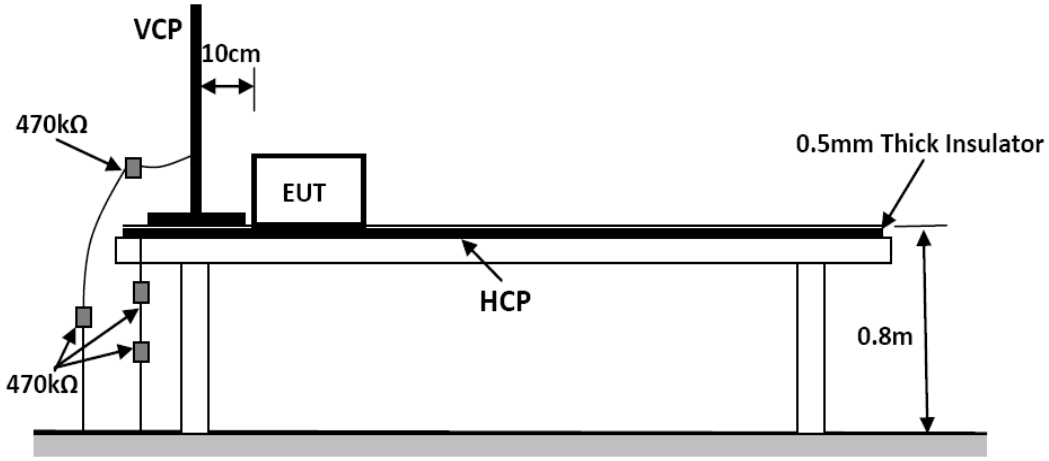
PASS.

Refer to attached Annex B.4

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.5. Electrostatic Discharge Immunity Test

4.5.1.Block Diagram of Test Setup



4.5.2.Test Standard

EN 55014-2: 2015(EN 61000-4-2: 2009, Severity Level: 3 / Air Discharge: ±8KV; Level: 2 / Contact Discharge: ±4KV)

4.5.3.Severity Levels and Performance Criterion

4.5.3.1.Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

4.5.3.2.Performance criterion: **B**

4.5.4.EUT Configuration on Test

The configuration of EUT are listed in Section 4.5.1.

4.5.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.1.4, except the test set up replaced by Section 4.5.1.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.5.6.Test Procedure

4.6.6.1.Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

4.5.6.2.Contact Discharge

All the procedure shall be same as Section 4.5.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

4.5.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

4.5.6.4.Indirect Discharge For Vertical Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

4.5.7.Test Results

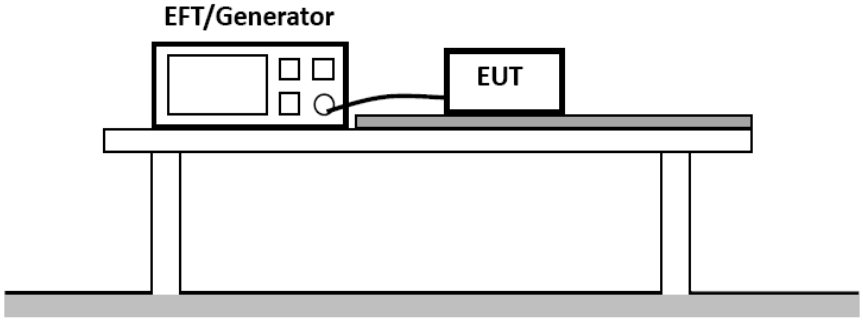
PASS.

Refer to attached Annex B.5

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.6. Electrical Fast Transient/Burst Immunity Test

4.6.1.Block Diagram of Test Setup



4.6.2.Test Standard

EN 55014-2: 2015 (EN 61000-4-4: 2012, Severity Level: Level 2: 1KV)

4.6.3.Severity Levels and Performance Criterion

4.7.3.1.Severity level

Open Circuit Output Test Voltage ± 10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.50KV	0.25KV
2.	1.00KV	0.50KV
3.	2.00KV	1.00KV
4.	4.00KV	2.00KV
X	Special	Special

4.6.3.2.Performance criterion: **B**

4.6.4.EUT Configuration on Test

The configuration of EUT are listed in Section 4.6.1.

4.6.5.Operating Condition of EUT

4.6.5.1.Setup the EUT as shown in Section 4.6.1.

4.6.5.2.Turn on the power of all equipments.

4.6.5.3.Let the EUT work in test Mode 1 and measure it.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.6.6.Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

4.6.6.1.For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

4.6.6.2.For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

4.6.6.3.For DC output line ports:

No DC output ports. It's unnecessary to test.

4.6.7.Test Results

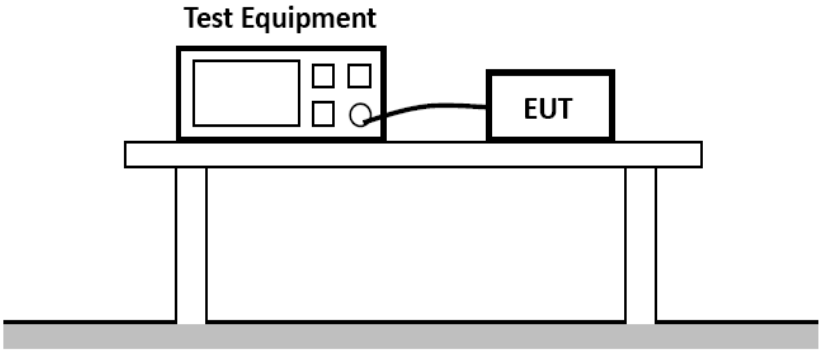
PASS.

Refer to attached Annex B.6

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.7. Surge Immunity Test

4.7.1.Block Diagram of Test Setup



4.7.2.Test Standard

EN 55014-2: 2015

(EN 61000-4-5: 2014+A1：2017, Severity Level: Level 2, Line to Line: 1.0KV; Level 3: Line to Ground: 2.0KV)

4.7.3.Severity Levels and Performance Criterion

4.8.3.1.Severity level

Severity Level	Open-Circuit Test Voltage (KV)
1	0.5
2	1.0
3	2.0
4	4.0
X	Special

4.7.3.2.Performance criterion: **B**

4.7.4.EUT Configuration on Test

The configuration of EUT are listed in Section 4.7.1.

4.7.5.Operating Condition of EUT

4.7.5.1.Setup the EUT as shown in Section 4.7.1.

4.7.5.2.Turn on the power of all equipments.

4.7.5.3.Let the EUT work in test Mode 1 and measure it.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.7.6.Test Procedure

4.7.6.1.Set up the EUT and test generator as shown on Section 4.7.1.

4.7.6.2.For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.

4.7.6.3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test

4.7.6.4.Different phase angles are done individually.

4.7.6.5.Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

4.7.7.Test Results

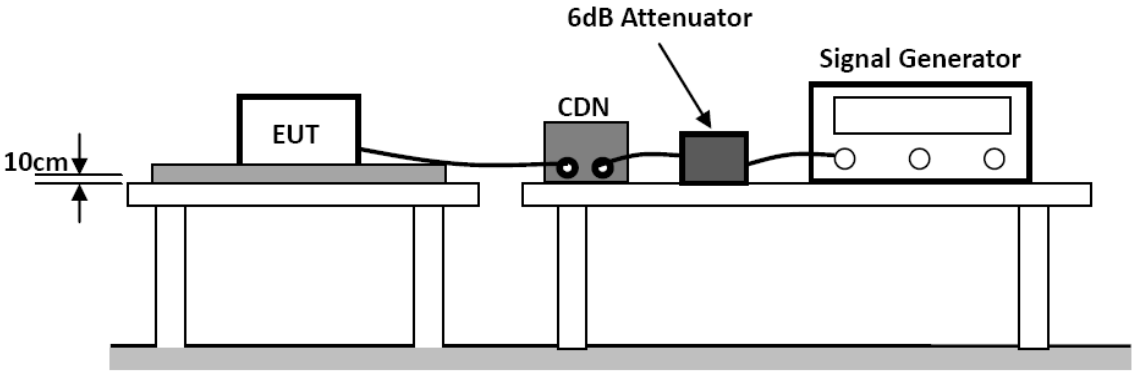
PASS.

Refer to attached Annex B.7

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.8. Injected Currents Susceptibility Test

4.8.1.Block Diagram of Test Setup



4.8.2.Test Standard

EN 55014-2: 2015(EN 61000-4-6: 2014, Severity Level: 3V (rms), (0.15MHz ~ 230MHz))

4.8.3.Severity Levels and Performance Criterion

4.8.3.1.Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

4.8.3.2.Performance criterion: **A**

4.8.4.EUT Configuration on Test

The configuration of EUT are listed in Section 4.8.1.

4.8.5.Operating Condition of EUT

4.8.5.1.Setup the EUT as shown in Section 4.8.1.

4.8.5.2.Turn on the power of all equipments.

4.8.5.3.Let the EUT work in test Mode 1 and measure it.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.8.6.Test Procedure

4.8.6.1.Set up the EUT, CDN and test generators as shown on Section 4.8.1.

4.8.6.2.Let the EUT work in test mode and measure it.

4.8.6.3.The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

4.8.6.4.The disturbance signal described below is injected to EUT through CDN.

4.8.6.5.The EUT operates within its operational mode(s) under intended climatic conditions after power on.

4.8.6.6.The frequency range is swept from 150kHz to 230MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

4.8.6.7.The rate of sweep shall not exceed 1.5*10-3 decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

4.8.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

4.8.7.Test Results

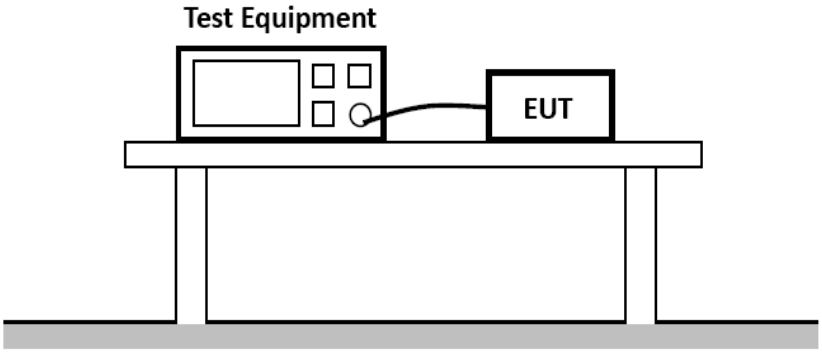
PASS.

Refer to attached Annex B.8

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.9. Voltage Dips And Interruptions Test

4.9.1.Block Diagram of Test Setup



4.9.2.Test Standard

EN 55014-2: 2015 (EN 61000-4-11: 2004+A1：2017)

4.9.3.Severity Levels and Performance Criterion

4.9.3.1.Severity level

Test Level (%U_T)	Voltage dip and short interruptions (%U_T)	Duration (in period)	
0	100	0.5	0.6
40	60	10	12
70	30	25	60

4.9.3.2.Performance criterion: **C&C**

4.9.4.EUT Configuration on Test

The configuration of EUT are listed in Section 4.9.1.

4.9.5.Operating Condition of EUT

4.9.5.1.Setup the EUT as shown in Section 4.9.1.

4.9.5.2.Turn on the power of all equipments.

4.9.5.3.Let the EUT work in test Mode 1 and measure it.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

4.9.6.Test Procedure

4.9.6.1.Set up the EUT and test generator as shown on Section 4.9.1.

4.9.6.2.The interruptions is introduced at selected phase angles with specified duration.

4.9.6.3.Record any degradation of performance.

4.9.7.Test Results

PASS.

Refer to attached Annex B.9

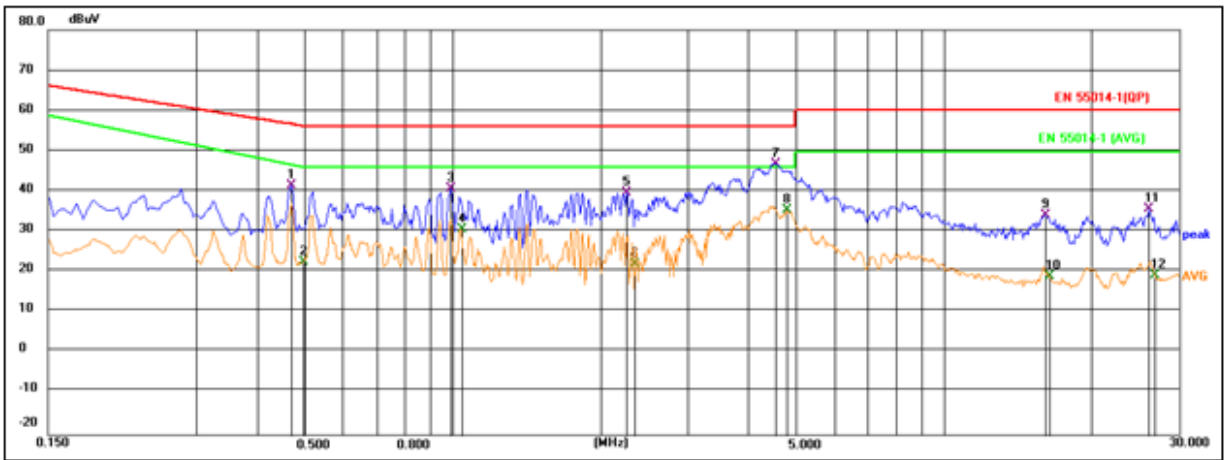
This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

ANNEX A

（Emission and Immunity test results）

A.1 POWER LINE CONDUCTED EMISSION MEASUREMENT

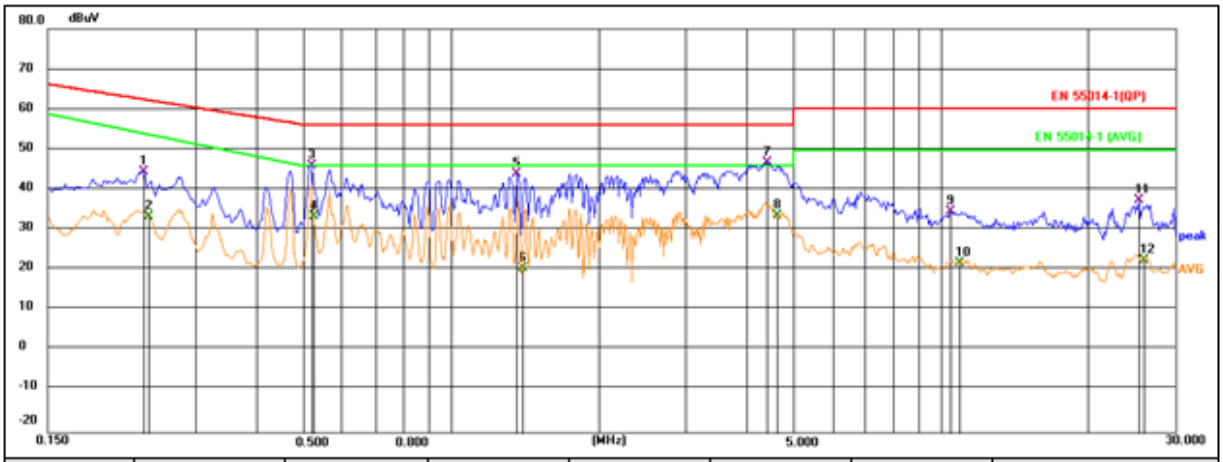
Environmental Conditions:	23.3℃, 53.7% RH
Test Voltage:	AC 230V,50Hz
Test Model:	RL-P01
Test Mode:	Mode 1
Test Engineer:	ZQ Pang
Pol:	Line
Detailed results are shown below	



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4696	20.50	21.05	41.55	56.52	-14.97	QP
2	0.4965	1.88	20.93	22.81	46.08	-23.27	AVG
3	0.9915	21.45	19.26	40.71	56.00	-15.29	QP
4	1.0409	11.50	19.27	30.77	46.00	-15.23	AVG
5	2.2650	20.48	19.43	39.91	56.00	-16.09	QP
6	2.3549	2.74	19.43	22.17	46.00	-23.83	AVG
7	4.5510	27.49	19.49	46.98	56.00	-9.02	QP
8	4.7805	15.94	19.49	35.43	46.00	-10.57	AVG
9	16.0080	14.04	20.22	34.26	60.00	-25.74	QP
10	16.4311	-1.09	20.23	19.14	50.00	-30.86	AVG
11	26.0971	15.70	20.15	35.85	60.00	-24.15	QP
12	26.8531	-0.72	20.14	19.42	50.00	-30.58	AVG

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Environmental Conditions:	23.3℃, 53.7% RH
Test Voltage:	AC 230V,50Hz
Test Model:	RL-P01
Test Mode:	Mode 1
Test Engineer:	ZQ Pang
Pol:	Neutral
Detailed results are shown below	

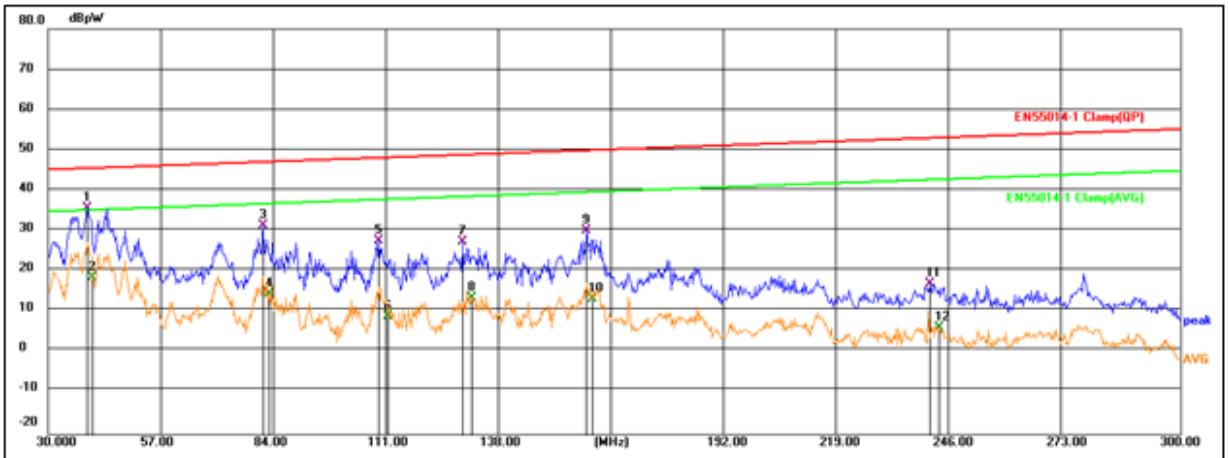


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2356	24.00	20.57	44.57	62.25	-17.68	QP
2	0.2416	13.07	20.53	33.60	53.85	-20.25	AVG
3	0.5191	25.25	20.83	46.08	56.00	-9.92	QP
4	0.5237	12.82	20.81	33.63	46.00	-12.37	AVG
5	1.3649	24.83	19.32	44.15	56.00	-11.85	QP
6	1.4010	1.40	19.33	20.73	46.00	-25.27	AVG
7	4.4025	27.48	19.47	46.95	56.00	-9.05	QP
8	4.6140	14.33	19.49	33.82	46.00	-12.18	AVG
9	10.4686	15.16	19.73	34.89	60.00	-25.11	QP
10	10.8645	2.26	19.77	22.03	50.00	-27.97	AVG
11	25.3455	17.35	20.20	37.55	60.00	-22.45	QP
12	25.9619	2.57	20.15	22.72	50.00	-27.28	AVG

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.2 Disturbance Power Measurement

Environmental Conditions:	23.3℃, 53.7% RH
Test Voltage:	AC 230V,50Hz
Test Model:	RL-P01
Test Mode:	Mode 1
Test Engineer:	ZQ Pang
Detailed results are shown below	



No.	Frequency (MHz)	Reading (dBpW)	Correct (dB)	Result (dBpW)	Limit (dBpW)	Margin (dB)	Remark
1	39.5400	25.00	10.69	35.69	45.35	-9.66	QP
2	40.7400	7.92	10.71	18.63	35.40	-16.77	AVG
3	81.3000	20.18	11.44	31.62	46.90	-15.28	QP
4	83.1600	3.21	11.48	14.69	36.97	-22.28	AVG
5	109.0800	15.87	11.79	27.66	47.93	-20.27	QP
6	111.2400	-2.91	11.88	8.97	38.01	-29.04	AVG
7	129.0000	15.38	12.10	27.48	48.67	-21.19	QP
8	131.2200	1.52	12.08	13.60	38.75	-25.15	AVG
9	158.5800	18.19	11.98	30.17	49.76	-19.59	QP
10	159.9000	1.49	12.00	13.49	39.81	-26.32	AVG
11	240.4200	6.57	10.63	17.20	52.79	-35.59	QP
12	242.5200	-4.23	10.64	6.41	42.87	-36.46	AVG

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.3 Harmonic Current Emission Measurement

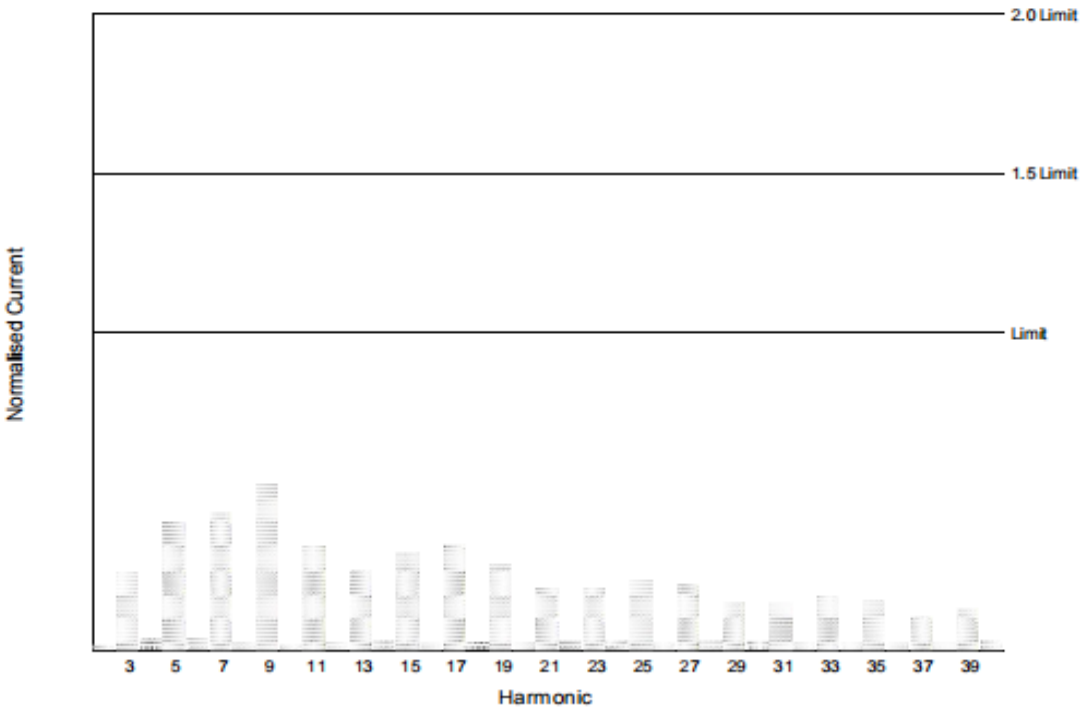
Harmonic Results Against Chosen Limits:	Notes:
PASS	

Test Parameter Details	User Entered	Measured
Operating Frequency:	50	48.84440
Operating Voltage:	230	229.2213
Specified Power:	0.0000	3013.5525
Fundamental Current:	0.0000	0.6200
Power Factor:	0.0000	0.9515
Average Input Current:		1.0420
Maximum POHC:		0.0462
POHC Limit:		0.2514
Maximum THC:		0.8451
Minimum Power:	75	
Class Multiplier:	1.0000	
Test Duration:	00:02:30	

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Overall Result:	
PASS	

Class	Class A
Class Multiplier	1



Overall Result:	
PASS	

	Nominal	Measured	Deviation	Allowed Deviation	Result
Supply Voltage	230.00V	229.22V	0.78V	4.60V	Pass
Supply Frequency	50.00Hz	49.98Hz	0.02Hz	0.25Hz	Pass
Crest Factor	1.4100	1.4173	0.0073	+/- 0.01	Pass

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.08%	0.20%	Pass	3	0.06%	0.90%	Pass
4	0.03%	0.20%	Pass	5	0.08%	0.40%	Pass
6	0.02%	0.20%	Pass	7	0.04%	0.30%	Pass
8	0.02%	0.20%	Pass	9	0.04%	0.20%	Pass
10	0.01%	0.20%	Pass	11	0.06%	0.10%	Pass
12	0.01%	0.10%	Pass	13	0.02%	0.10%	Pass
14	0.01%	0.10%	Pass	15	0.04%	0.10%	Pass
16	0.01%	0.10%	Pass	17	0.02%	0.10%	Pass
18	0.01%	0.10%	Pass	19	0.03%	0.10%	Pass
20	0.01%	0.10%	Pass	21	0.03%	0.10%	Pass
22	0.01%	0.10%	Pass	23	0.01%	0.10%	Pass
24	0.01%	0.10%	Pass	25	0.02%	0.10%	Pass
26	0.01%	0.10%	Pass	27	0.04%	0.10%	Pass
28	0.01%	0.10%	Pass	29	0.02%	0.10%	Pass
30	0.00%	0.10%	Pass	31	0.01%	0.10%	Pass
32	0.01%	0.10%	Pass	33	0.02%	0.10%	Pass
34	0.01%	0.10%	Pass	35	0.01%	0.10%	Pass
36	0.01%	0.10%	Pass	37	0.03%	0.10%	Pass
38	0.01%	0.10%	Pass	39	0.03%	0.10%	Pass
40	0.01%	0.10%	Pass				

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Overall Result:	
PASS	

Class	Class A
Class Multiplier	1

Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL	Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL
2	1.0800A	1.6200A	17.71mA	✓ ✓	20.89mA	✓	Pass	3	2.3000A	3.4500A	562.8mA	✓ ✓	566.4mA	✓	Pass
4	430.0mA	645.0mA	14.58mA	✓ ✓	17.10mA	✓	Pass	5	1.1400A	1.7100A	460.1mA	✓ ✓	462.7mA	✓	Pass
6	300.0mA	450.0mA	10.22mA	✓ ✓	11.74mA	✓	Pass	7	770.0mA	1.1550A	333.9mA	✓ ✓	335.4mA	✓	Pass
8	230.0mA	345.0mA	6.286mA	✓ ✓	6.929mA	✓	Pass	9	400.0mA	600.0mA	208.9mA	✓ ✓	209.5mA	✓	Pass
10	184.0mA	276.0mA	3.973mA	✓ ✓	4.352mA	✓	N/A	11	330.0mA	495.0mA	108.4mA	✓ ✓	108.7mA	✓	Pass
12	153.3mA	230.0mA	3.616mA	✓ ✓	4.093mA	✓	N/A	13	210.0mA	315.0mA	52.81mA	✓ ✓	53.02mA	✓	Pass
14	131.4mA	197.1mA	3.457mA	✓ ✓	3.972mA	✓	N/A	15	150.0mA	225.0mA	46.51mA	✓ ✓	46.84mA	✓	Pass
16	115.0mA	172.5mA	2.803mA	✓ ✓	3.234mA	✓	N/A	17	132.3mA	198.5mA	44.24mA	✓ ✓	44.42mA	✓	Pass
18	102.2mA	153.3mA	2.425mA	✓ ✓	2.823mA	✓	N/A	19	118.4mA	177.6mA	32.45mA	✓ ✓	32.58mA	✓	Pass
20	92.00mA	138.0mA	2.301mA	✓ ✓	2.710mA	✓	N/A	21	107.1mA	160.7mA	21.14mA	✓ ✓	21.24mA	✓	Pass
22	83.63mA	125.4mA	2.253mA	✓ ✓	2.655mA	✓	N/A	23	97.83mA	146.7mA	19.29mA	✓ ✓	19.48mA	✓	Pass
24	76.66mA	115.0mA	2.025mA	✓ ✓	2.423mA	✓	N/A	25	90.00mA	135.0mA	19.85mA	✓ ✓	19.99mA	✓	Pass
26	70.76mA	106.1mA	1.867mA	✓ ✓	2.010mA	✓	N/A	27	83.33mA	125.0mA	17.29mA	✓ ✓	17.39mA	✓	Pass
28	65.71mA	98.57mA	1.707mA	✓ ✓	2.026mA	✓	N/A	29	77.58mA	116.3mA	11.99mA	✓ ✓	12.05mA	✓	Pass
30	61.33mA	92.00mA	1.720mA	✓ ✓	2.032mA	✓	N/A	31	72.58mA	108.8mA	10.84mA	✓ ✓	10.97mA	✓	Pass
32	57.50mA	86.25mA	1.426mA	✓ ✓	1.700mA	✓	N/A	33	68.18mA	102.3mA	11.57mA	✓ ✓	11.68mA	✓	Pass
34	54.11mA	81.17mA	1.335mA	✓ ✓	1.572mA	✓	N/A	35	64.28mA	96.42mA	10.01mA	✓ ✓	10.07mA	✓	Pass
36	51.11mA	76.66mA	1.220mA	✓ ✓	1.442mA	✓	N/A	37	60.81mA	91.21mA	6.726mA	✓ ✓	6.790mA	✓	Pass
38	48.42mA	72.63mA	1.193mA	✓ ✓	1.399mA	✓	N/A	39	57.69mA	86.53mA	7.792mA	✓ ✓	7.856mA	✓	Pass
40	46.00mA	69.00mA	1.227mA	✓ ✓	1.409mA	✓	N/A								

<L1 : Reading is below limit 1.

<L2 : Reading is below limit 2.

N/A: Harmonic current below 0.6% of rated current or 5mA, whichever is greater, are disregarded.

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.4 Voltage Fluctuation And Flicker Measurement

Test Voltage:	AC 230V,50Hz
Test Model:	RL-P01
Test Engineer:	ZQ Pang
Detailed results are shown below	

Overall Result:	Notes:
PASS	Measurement method - Voltage

	Pst	dc (%)	dmax (%)	Tmax(> 3.3%)(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.094	0.026	0.277	0

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.5 Electrostatic Discharge Immunity Test

Electrostatic Discharge Test Results

Standard	☐ IEC 61000-4-2 ☑ EN 61000-4-2		
Applicant	JIAXING VIRPOL TRADING CO., LTD		
EUT	Shower Panel	**Temperature**	22.5℃
M/N	RL-P01	**Humidity**	53.1%
Criterion	B	**Pressure**	1021mbar
Test Mode	Mode 1	**Test Engineer**	ZQ Pang
Test Voltage	AC 230V/50Hz		

Air Discharge

Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☒	☐	☐A ☒B

Contact Discharge

Test Points	Test Levels		Results		
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B
Top	☒	☒	☒	☐	☐A ☒B
Bottom	☒	☒	☒	☐	☐A ☒B

Discharge To Horizontal Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	☒	☒	☒	☐	☐A ☒B
Back	☒	☒	☒	☐	☐A ☒B
Left	☒	☒	☒	☐	☐A ☒B
Right	☒	☒	☒	☐	☐A ☒B

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.6 Electrical Fast Transient/Burst Immunity Test

Electrical Fast Transient/Burst Test Results			
Standard	☐ IEC 61000-4-4 ☑ EN 61000-4-4		
Applicant	JIAXING VIRPOL TRADING CO., LTD		
EUT	Shower Panel	**Temperature**	22.5℃
M/N	RL-P01	**Humidity**	53.1%
Test Mode	Mode 1	**Criterion**	B
Test Engineer	ZQ Pang	**Test Voltage**	AC 230V/50Hz

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
PE			
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			

Note:

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.7 Surge Immunity Test

Surge Immunity Test Result			
Standard	☐ IEC 61000-4-5 ☑ EN 61000-4-5		
Applicant	JIAXING VIRPOL TRADING CO., LTD		
EUT	Shower Panel	**Temperature**	22.5℃
M/N	RL-P01	**Humidity**	53.1％
Test Mode	Mode 1	**Criterion**	B
Test Engineer	ZQ Pang	**Test Voltage**	AC 230V/50Hz

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	90º	5	1.0	PASS
	-	270º	5	1.0	PASS
L-PE					
N-PE					
Signal Line					
Note					

A.8 Injected Currents Susceptibility Test

Injected Currents Susceptibility Test Results			
Standard	☐ IEC 61000-4-6 ☑ EN 61000-4-6		
Applicant	JIAXING VIRPOL TRADING CO., LTD		
EUT	Shower Panel	**Temperature**	23.9℃
M/N	RL-P01	**Humidity**	52.8%
Test Mode	Mode 1	**Criterion**	A
Test Engineer	ZQ Pang	**Test Voltage**	AC 230V/50Hz

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 230	AC Mains	3V	A	PASS

Remark:
1. Modulation Signal:1kHz 80% AM
2. Measurement Equipment :
Simulator: CIT-10 (FRANKONIA)
CDN : ☑CDN-M2 (SWITZERLAND EMTEST)
☐CDN-M3 (SWITZERLAND EMTEST)

Note:

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

A.9 Voltage Dips And Interruptions Test

Voltage Dips And Interruptions Test Results			
Standard	☐ IEC 61000-4-11 ☑ EN 61000-4-11		
Applicant	JIAXING VIRPOL TRADING CO., LTD		
EUT	Shower Panel	**Temperature**	22.5℃
M/N	RL-P01	**Humidity**	53.1%
Test Mode	Mode 1	**Criterion**	C&C
Test Engineer	ZQ Pang	**Test Voltage**	AC 230V/50Hz

Test Level % U_T	**Voltage Dips & Short Interruptions % U_T**	**Duration (in periods)**		**Criterion**	**Result**
		50Hz	**60Hz**		
40	60	10P	12P	C	PASS
70	30	25P	60P	C	PASS
0	100	0.5P	0.6P	C	PASS

Note:

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

ANNEX B

（External and internal photos of the EUT）

Fig. 1

Fig. 2

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Fig. 3

Fig. 4

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Fig. 5

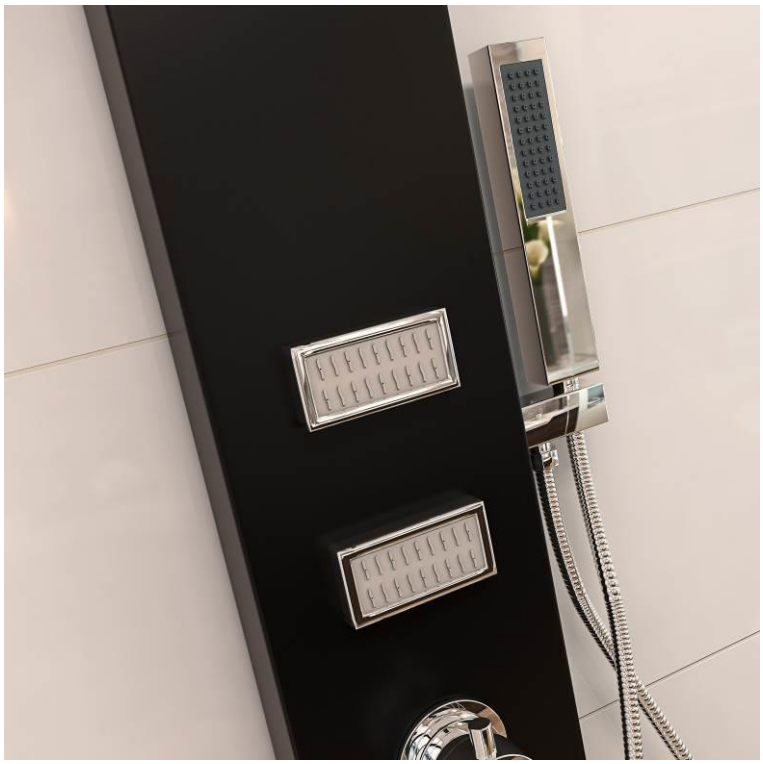


Fig. 6

Fig. 7

Fig. 8

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.

Fig. 9

Fig. 10

----------THE END OF TEST REPORT----------

This report shall not be reproduced except in full, without the written approval of Shenzhen LCS Compliance Testing Laboratory Ltd.