



EMC TEST REPORT For

Mid Ocean Brands B.V.

USB powered induction warmer

Test Model: MO2066

Prepared for : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : April 27, 2023
Number of tested samples : 2
Sample No. : A041923145-1, A041923145-2
Date of Test : April 27, 2023 ~ May 04, 2023
Date of Report : May 05, 2023

CE





EMC TEST REPORT	
EN IEC 55014-1:2021	
Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission	
EN IEC 55014-2:2021	
Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard	
Report Reference No. :	LCSA041923145E
Date Of Issue	May 05, 2023
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 <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing method <input type="checkbox"/>
Applicant's Name	Mid Ocean Brands B.V.
Address	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Test Specification:	
Standard.....	EN IEC 55014-1:2021 EN IEC 61000-3-2:2019/A1:2021 EN 61000-3-3:2013/A2:2021 EN IEC 55014-2:2021
Test Report Form No.....	LCSEMC-1.0
TRF Originator.....	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	Dated 2011-03
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Test Item Description.....	USB powered induction warmer
Trade Mark	N/A
Test Model.....	MO2066
Ratings	Please Refer To Page 8
Result	Pass

Compiled by:*Coco Song*

Coco Song/ File administrators

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Baron Wen/Technique principal

Approved by:*Gavin Liang*

Gavin Liang/ Manager





EMC -- TEST REPORT

Test Report No. : LCSA041923145E	<u>May 05, 2023</u> Date of issue
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Test Model.....	: MO2066
EUT.....	: USB powered induction warmer
Applicant.....	: Mid Ocean Brands B.V.
Address.....	: 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: 114628
Address.....	: /
Telephone.....	: /
Fax.....	: /
Factory.....	: 114628
Address.....	: /
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 6:	Pass
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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 Content	Revised By
000	May 05, 2023	Initial Issue	/





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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 IEC 55014-1:2021)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN IEC 55014-1:2021	-----	PASS
Disturbance Power	EN IEC 55014-1:2021	-----	PASS
Radiated disturbance	EN IEC 55014-1:2021	-----	N/A
Harmonic current emissions	EN IEC 61000-3-2:2019/A1:2021	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3:2013/A2:2021	-----	PASS
IMMUNITY (EN IEC 55014-2:2021)			
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 IEC 61000-4-3:2020	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
Conducted disturbances induced by radio-frequency fields	EN 61000-4-6: 2014/AC:2015	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	N/A
Voltage dips, 60% reduction	EN IEC 61000-4-11:2020	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
Mode 2	Charging	Pre-scan
***Note: All test modes were tested, but we only recorded the worst case in this report.		





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.





2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : USB powered induction warmer

Trade Mark : N/A

Test Model : MO2066

Power Supply : USB Voltage:DC 5V
Power:10W

Highest internal freq. : Fx≤15MHz

2.2. Support equipment List

Name	Manufacturer	M/N	S/N
Adapter	--	--	--

2.3. Test Facility

EMC Lab. : NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.





2.4. 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.

2.5. Measurement Uncertainty

Test	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucisp)
Conducted Emission	Level accuracy (9kHz to 150kHz)	± 2.63 dB	± 3.8 dB
	(150kHz to 30MHz)	± 2.35 dB	± 3.4 dB
Power Disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 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%.





3. MEASURING DEVICES AND TEST EQUIPMENT

LINE CONDUCTED EMISSION

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2023-02-25	2024-02-24
3	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
4	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2022-08-17	2023-08-16

DISTURBANCE POWER

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2023-02-25	2024-02-24
3	Power Absorbing Clamp	R&S	MDS21	4033	2022-06-28	2023-06-27
4	6dB Attenuator	DC-3G	/	/	2022-10-29	2023-10-28

VOLTAGE FLUCTUATION AND FLICKER/HARMONIC CURRENT EMISSIONS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	HARMONICS&FLICKER MEASUREMENT SYSTEM	EVERFINE	HFM-3000	P630850CD141116	2023-02-25	2024-02-24
2	HARMONICS&FLICKER TESTING POWER SOURCE	EVERFINE	HFS-4000	P624486CD1411124	2023-02-25	2024-02-24

ELECTROSTATIC DISCHARGE

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	ESD Simulator	SCHLODER	SESD 230	604035	2022-07-18	2023-07-17

ELECTRICAL FAST TRANSIENT IMMUNITY

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2022-08-17	2023-08-16
2	Electric fast pulse group generator	3ctest	EFT-4001G	EC0461044	2022-10-31	2023-10-30

SURGES, LINE TO LINE AND LINE TO GROUND

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Immunity Simulative Generator	EM TEST	UCS500-M4	0101-34	2022-08-17	2023-08-16





Conducted disturbances induced by radio-frequency fields						
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2022-08-17	2023-08-16
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2022-06-16	2023-06-15
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2022-06-16	2023-06-15

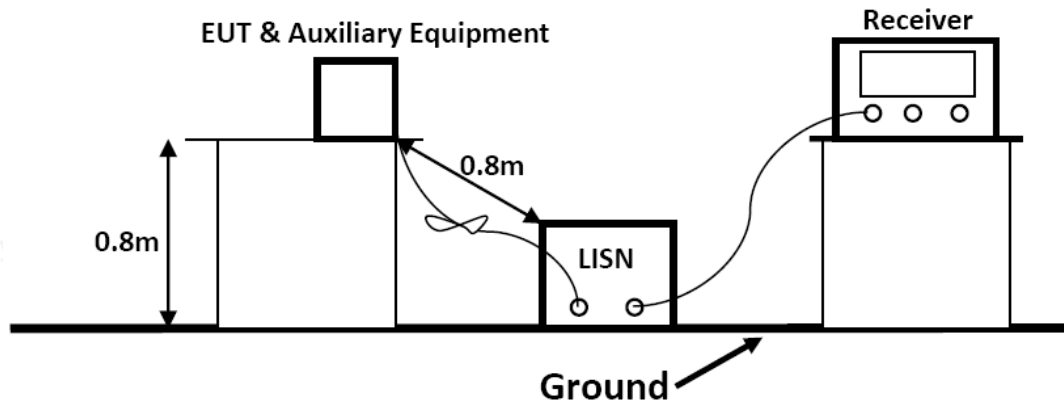
VOLTAGE DIPS/INTERRUPTIONS IMMUNITY TEST						
Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2022-06-16	2023-06-15



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 (dB μ V)	
	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 IEC 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 Working and measure it.





4.1.5. Test Procedure

The EUT is put on the plane 0.1m 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 IEC 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

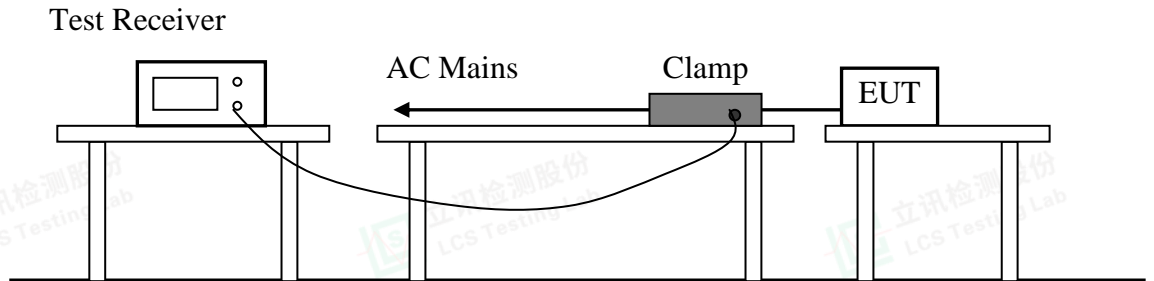
PASS.

Refer to attached Annex B.1



4.2. Disturbance Power Measurement

4.2.1. Block Diagram of Test Setup



4.2.2. Test Standard

EN IEC 55014-1:2021

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

1	Household and similar appliances		Tools					
	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).





4.2.4.EUT Configuration on Test

The EN IEC 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 0.1m 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

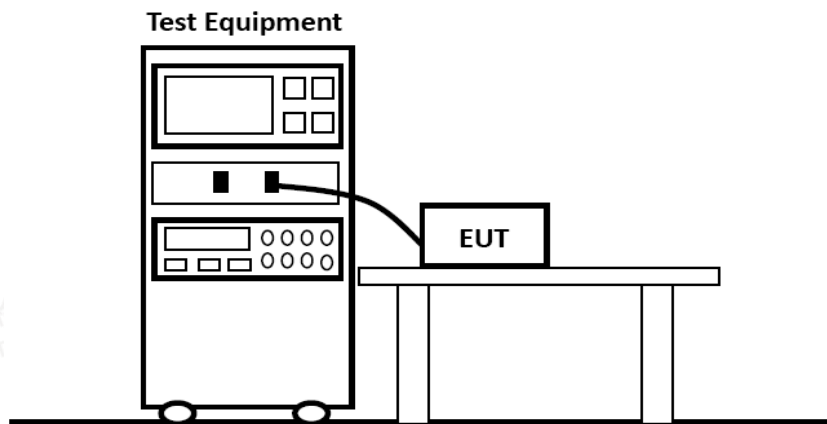
PASS.

Refer to attached Annex B.2



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/A1:2021, 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

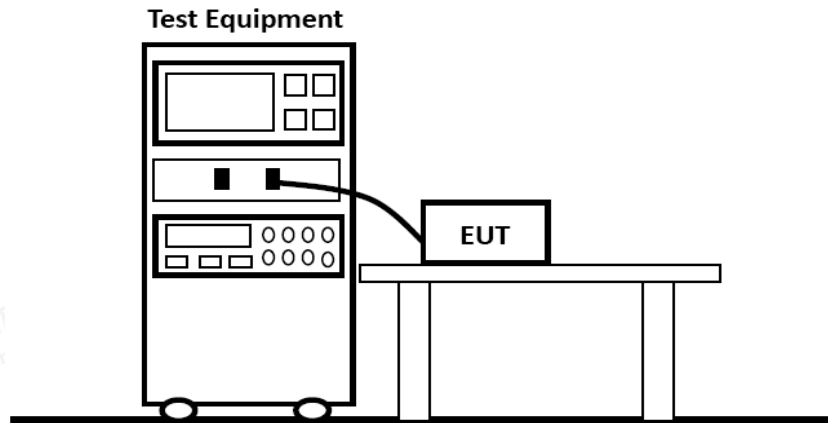
PASS.

Refer to attached Annex B.3



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/A2:2021

4.4.3. Operation Condition of EUT

4.5.3.1. Setup the EUT as shown Section 4.4.1.

4.5.3.2. Turn on the power of all equipments.

4.5.3.3. Let EUT work in test mode (Working) and measure it.

4.4.4. Test Results

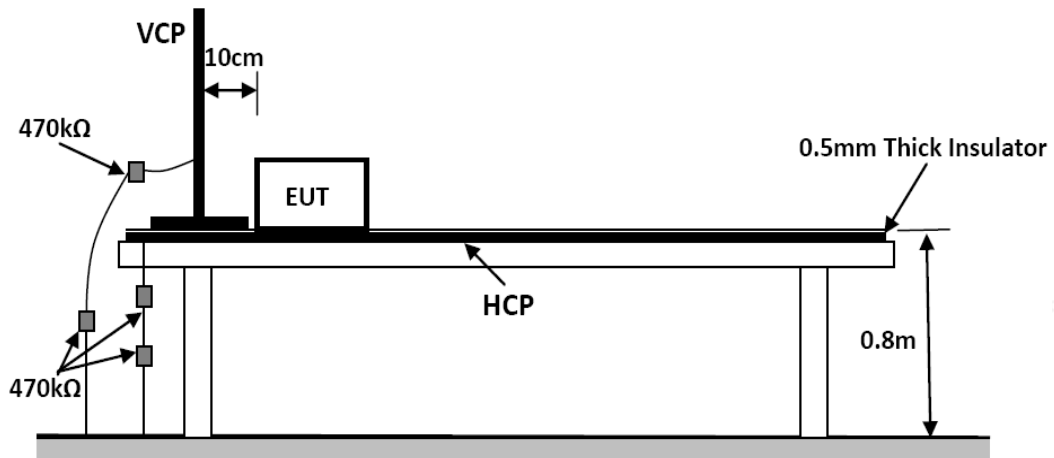
PASS.

Refer to attached Annex B.4



4.5. Electrostatic Discharge Immunity Test

4.5.1. Block Diagram of Test Setup



4.5.2. Test Standard

EN IEC 55014-2:2021(EN 61000-4-2: 2009, Severity Level: 3 / Air Discharge: $\pm 8KV$; Level: 2 / Contact Discharge: $\pm 4KV$)

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.





4.5.6. Test Procedure

4.5.6.1. 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 4.6.6.1. 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

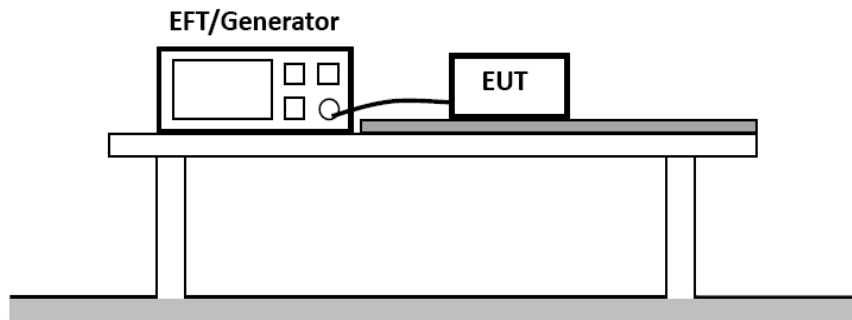
PASS.

Refer to attached Annex B.5



4.6. Electrical Fast Transient/Burst Immunity Test

4.6.1. Block Diagram of Test Setup



4.6.2. Test Standard

EN IEC 55014-2:2021 (EN 61000-4-4: 2012, Severity Level: Level 2: 1KV)

4.6.3. Severity Levels and Performance Criterion

4.6.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
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 Working and measure it.





4.6.6. Test Procedure

The EUT is put on the table which is 0.1 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

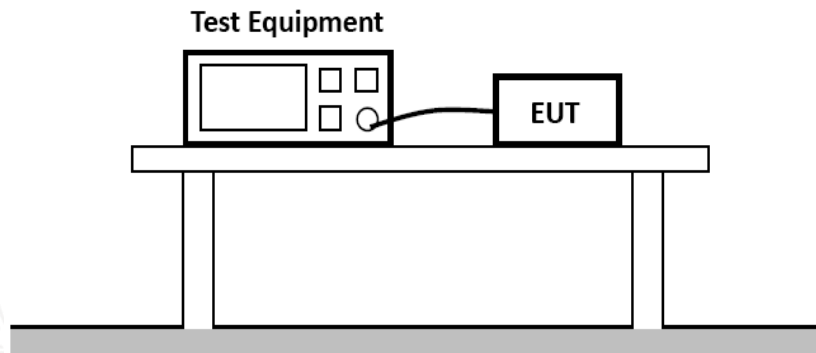
PASS.

Refer to attached Annex B.6



4.7. Surge Immunity Test

4.7.1. Block Diagram of Test Setup



4.7.2. Test Standard

EN IEC 55014-2:2021

(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

4.7.3.1. 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 Working and measure it.





4.7.6. Test Procedure

- 4.7.6.1. Set up the EUT and test generator as shown on Section 4.8.1.
- 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

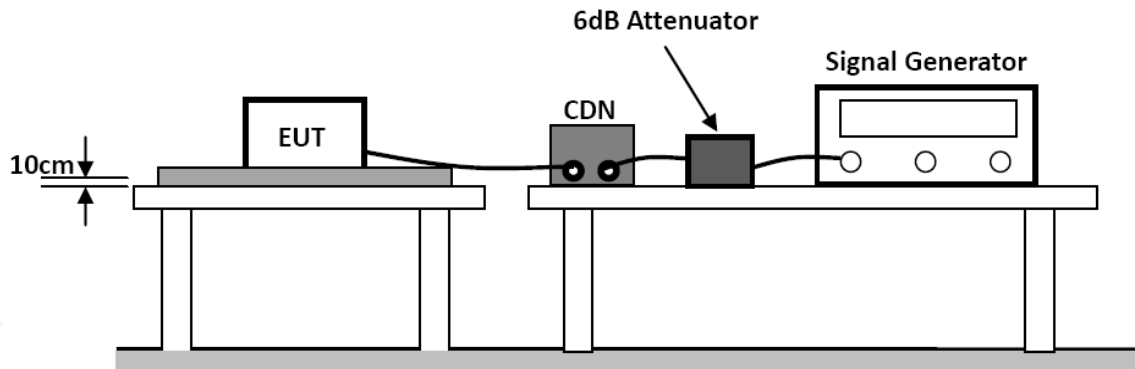
PASS.

Refer to attached Annex B.7



4.8. Conducted disturbances induced by radio-frequency fields Test

4.8.1. Block Diagram of Test Setup



4.8.2. Test Standard

EN IEC 55014-2:2021(EN 61000-4-6: 2014/AC:2015, 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 Working and measure it.





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

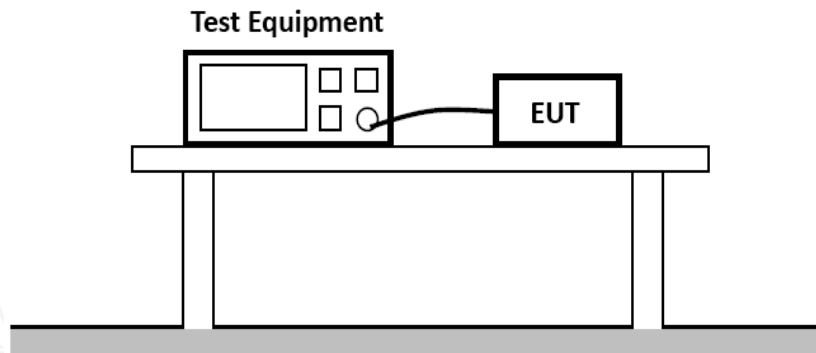
PASS.

Refer to attached Annex B.8



4.9. Voltage Dips And Interruptions Test

4.9.1. Block Diagram of Test Setup



4.9.2. Test Standard

EN IEC 55014-2:2021 (EN IEC 61000-4-11:2020)

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)	
		0.5	0.6
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 Working and measure it.





4.9.6. Test Procedure

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

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

4.10.6.3. Record any degradation of performance.

4.9.7. Test Results

PASS.

Refer to attached Annex B.9





ANNEX A (Test photograph)



Photo of Power Line Conducted Measurement



Photo of Disturbance Power Test





Photo of Harmonic & Flicker Measurement



Photo of Electrostatic Discharge Test





Photo of Electrical Fast Transient/Burst Test & Surge Immunity Test



Photo of Conducted disturbances induced by radio-frequency fields Test



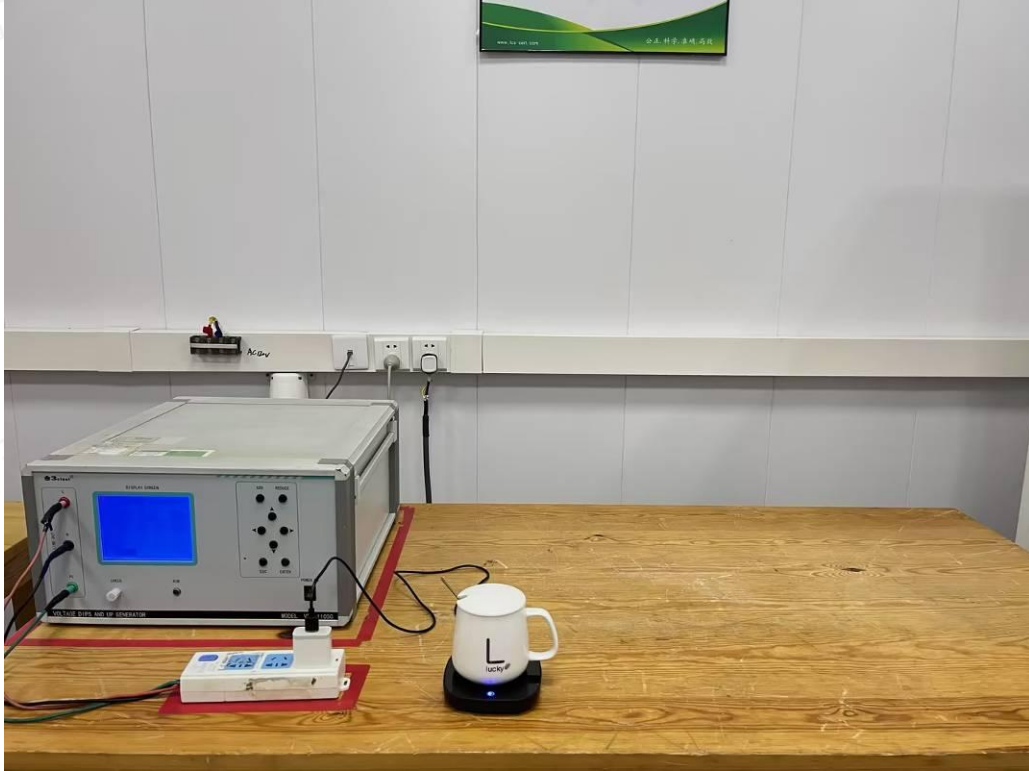


Photo of Voltage Dips and Interruptions Test





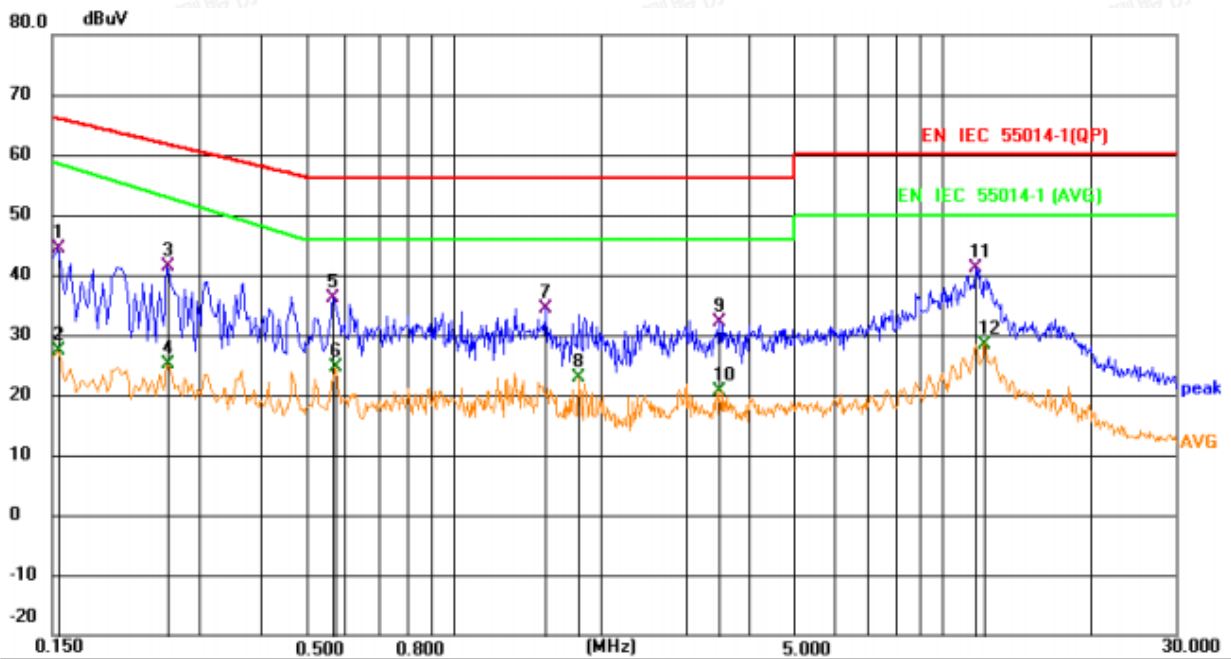
ANNEX B

(Emission and Immunity test results)

B.1 POWER LINE CONDUCTED EMISSION MEASUREMENT

Environmental Conditions:	23.5°C, 53.6% RH
Test Voltage:	AC 230V,50Hz
Test Model:	MO2066
Test Mode:	Mode 1
Test Engineer:	Zi Liao
Pol:	Line

Detailed results are shown below



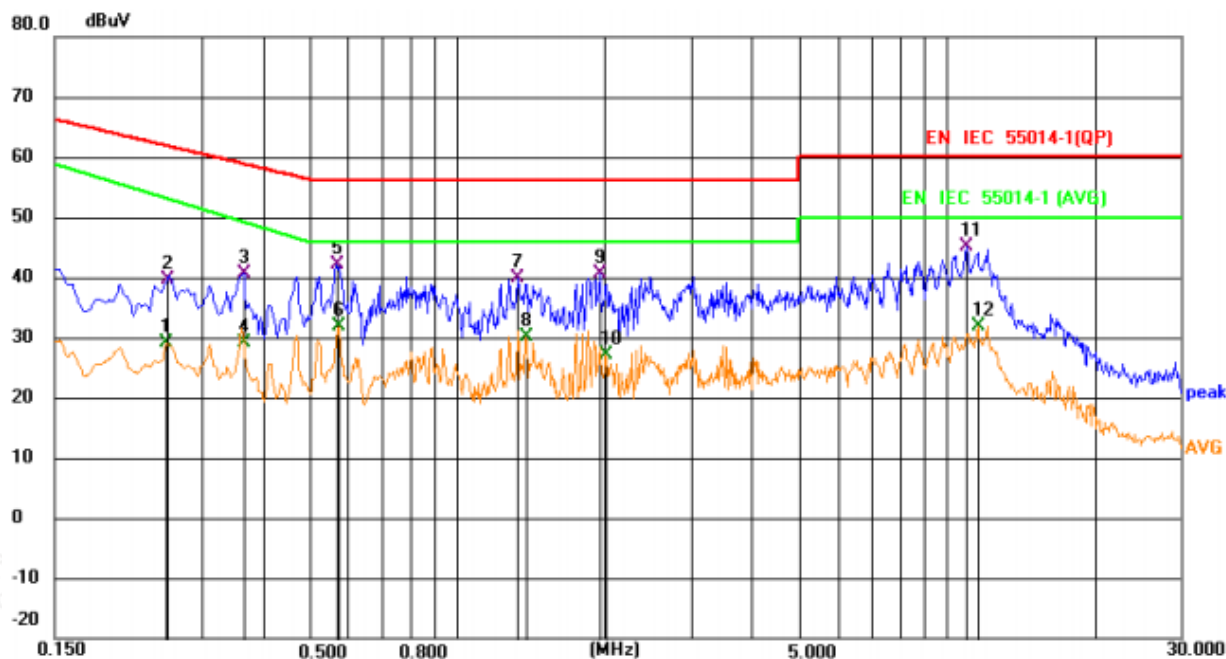
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1545	24.71	19.63	44.34	65.75	-21.41	QP	
2		0.1545	7.78	19.63	27.41	58.68	-31.27	AVG	
3		0.2581	21.76	19.63	41.39	61.49	-20.10	QP	
4		0.2581	5.43	19.63	25.06	53.14	-28.08	AVG	
5		0.5639	16.37	19.65	36.02	56.00	-19.98	QP	
6		0.5730	4.98	19.66	24.64	46.00	-21.36	AVG	
7		1.5360	14.72	19.67	34.39	56.00	-21.61	QP	
8		1.8015	3.28	19.67	22.95	46.00	-23.05	AVG	
9		3.5026	12.41	19.70	32.11	56.00	-23.89	QP	
10		3.5026	0.97	19.70	20.67	46.00	-25.33	AVG	
11	*	11.7375	21.27	19.84	41.11	60.00	-18.89	QP	
12		12.2011	8.66	19.84	28.50	50.00	-21.50	AVG	





Environmental Conditions:	23.5°C, 53.6% RH
Test Voltage:	AC 230V,50Hz
Test Model:	MO2066
Test Mode:	Mode 1
Test Engineer:	Zi Liao
Pol:	Neutral

Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.2536	9.42	19.63	29.05	53.33	-24.28	AVG	
2		0.2548	19.91	19.63	39.54	61.60	-22.06	QP	
3		0.3661	20.98	19.63	40.61	58.59	-17.98	QP	
4		0.3661	9.59	19.63	29.22	49.37	-20.15	AVG	
5	*	0.5641	22.36	19.65	42.01	56.00	-13.99	QP	
6		0.5731	12.16	19.66	31.82	46.00	-14.18	AVG	
7		1.3290	20.28	19.66	39.94	56.00	-16.06	QP	
8		1.3786	10.55	19.66	30.21	46.00	-15.79	AVG	
9		1.9546	20.93	19.68	40.61	56.00	-15.39	QP	
10		2.0086	7.39	19.68	27.07	46.00	-18.93	AVG	
11		10.9726	25.18	19.85	45.03	60.00	-14.97	QP	
12		11.6026	12.01	19.84	31.85	50.00	-18.15	AVG	

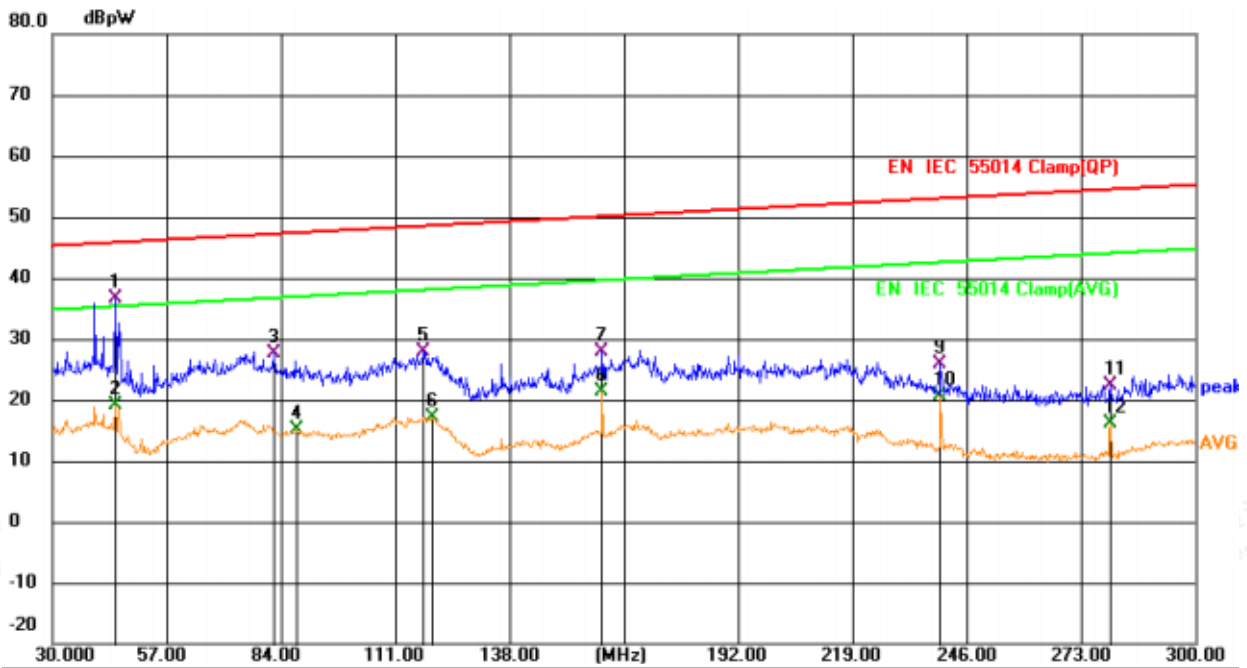




B.2 Disturbance Power Measurement

Environmental Conditions:	23.5°C, 53.6% RH
Test Voltage:	AC 230V,50Hz
Test Model:	MO2066
Test Mode:	Zi Liao
Test Engineer:	Mode 1

Detailed results are shown below



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBpW	Limit dBpW	Margin dB	Detector	Comment
1	*	45.0600	27.42	9.18	36.60	45.56	-8.96	QP	
2		45.0600	9.98	9.18	19.16	35.56	-16.40	AVG	
3		82.5000	20.35	7.34	27.69	46.94	-19.25	QP	
4		87.7800	7.02	8.04	15.06	37.14	-22.08	AVG	
5		117.5400	17.61	10.33	27.94	48.24	-20.30	QP	
6		119.8200	6.60	10.51	17.11	38.33	-21.22	AVG	
7		160.0200	21.51	6.33	27.84	49.82	-21.98	QP	
8		160.0200	14.95	6.33	21.28	39.82	-18.54	AVG	
9		240.0000	21.20	4.78	25.98	52.78	-26.80	QP	
10		240.0000	15.74	4.78	20.52	42.78	-22.26	AVG	
11		280.0200	18.27	4.21	22.48	54.26	-31.78	QP	
12		280.0200	11.93	4.21	16.14	44.26	-28.12	AVG	





B.3 Harmonic Current Emission Measurement

N/A

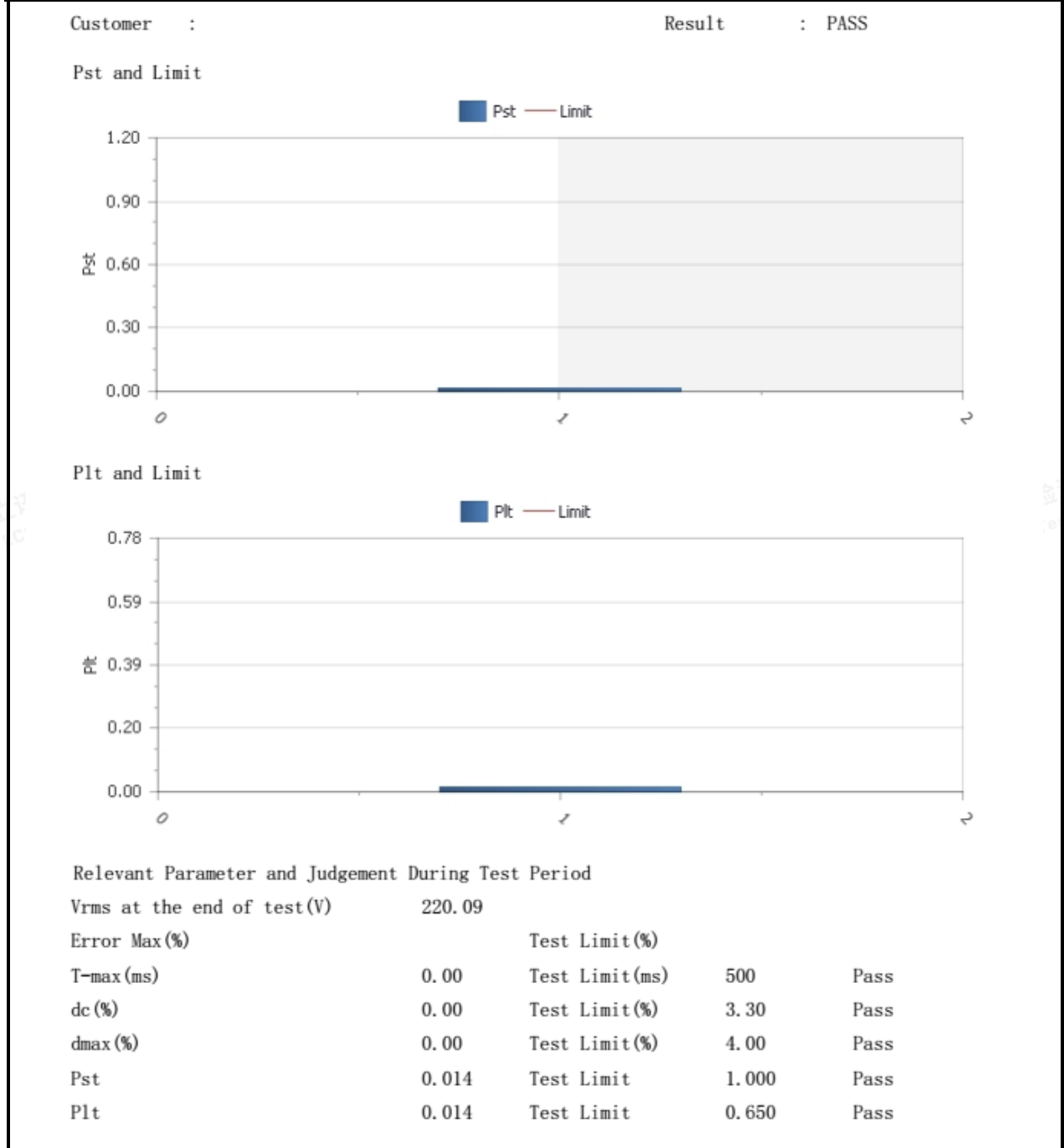
Because the power of EUT is less than 75W, according standard EN 61000-3-2, harmonic current unnecessary to test.





B.4 Voltage Fluctuation And Flicker Measurement

Test Voltage:	AC 230V,50Hz
Test Model:	MO2066
Test Engineer:	Hy Luo
Detailed results are shown below	





B.5 Electrostatic Discharge Immunity Test

Electrostatic Discharge Test Results						
Standard	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2					
Applicant	Mid Ocean Brands B.V.					
EUT	USB powered induction warmer	Temperature	23.6°C			
M/N	MO2066	Humidity	53.1%			
Criterion	B	Pressure	1021mbar			
Test Mode	Mode 1	Test Engineer	Hy Luo			
Test Voltage	AC 230V/50Hz					
Air Discharge						
Test Points	Test Levels			Results		
	± 2kV	± 4kV	± 8kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Contact Discharge						
Test Points	Test Levels		Results			
	± 2 kV	±4 kV	Passed	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Discharge To Horizontal Coupling Plane						
Side of EUT	Test Levels		Results			
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Discharge To Vertical Coupling Plane						
Side of EUT	Test Levels		Results			
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B	



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Scan code to check authenticity



B.6 Electrical Fast Transient/Burst Immunity Test

Electrical Fast Transient/Burst Test Results

Standard	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4		
Applicant	Mid Ocean Brands B.V.		
EUT	USB powered induction warmer	Temperature	23.4°C
M/N	MO2066	Humidity	54.3%
Test Mode	Mode 1	Criterion	B
Test Engineer	Hy Luo	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:





B.7 Surge Immunity Test

Surge Immunity Test Result

Standard	<input type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> EN 61000-4-5		
Applicant	Mid Ocean Brands B.V.		
EUT	USB powered induction warmer	Temperature	23.1 °C
M/N	MO2066	Humidity	54.2%
Test Mode	Mode 1	Criterion	B
Test Engineer	Hy Luo	Test Voltage	AC 230V/50Hz

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

Note



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**B.8 Conducted disturbances induced by radio-frequency fields Test****Conducted disturbances induced by radio-frequency fields Test Results**

Standard	<input type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> EN 61000-4-6		
Applicant	Mid Ocean Brands B.V.		
EUT	USB powered induction warmer	Temperature	22.8°C
M/N	MO2066	Humidity	52.9%
Test Mode	Mode 1	Criterion	A
Test Engineer	Hy Luo	Test Voltage	AC 230V/50Hz

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	PASS

Note:





B.9 Voltage Dips And Interruptions Test

Voltage Dips And Interruptions Test Results			
Standard	<input type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> EN 61000-4-11		
Applicant	Mid Ocean Brands B.V.		
EUT	USB powered induction warmer	Temperature	22.4°C
M/N	MO2066	Humidity	53.5%
Test Mode	Mode 1	Criterion	C&C
Test Engineer	Hy Luo	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	30P	C	PASS
0	100	0.5P	0.5P	C	PASS

Note:





ANNEX C

(External and internal photos of the EUT)



Fig. 1



Fig. 2





Fig. 3



Fig. 4





Fig. 5

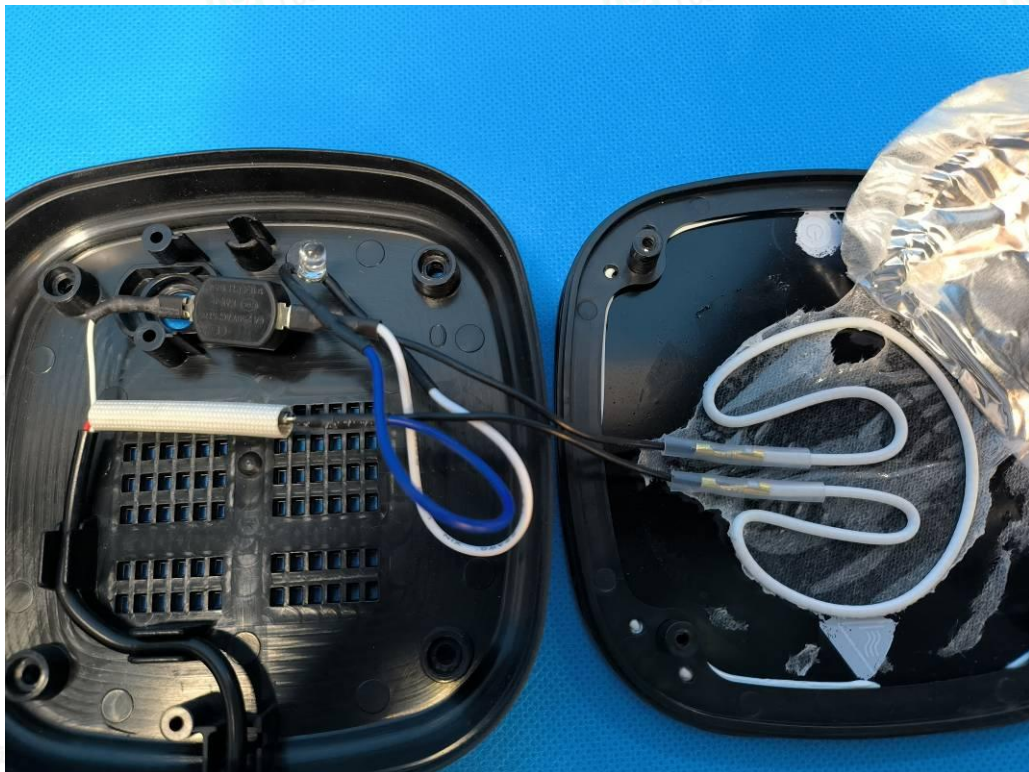


Fig. 6





Fig. 7

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

