





Test Report issued under the responsibility of:



TEST REPORT CISPR 14-1	
Report Reference No.	50278206 001
Date of issue:	10.Oct.2019
Total number pages:	27
Applicant's name	i-Team Professional B.V.
Address	Hoppenkuil 27B, 5626DD Eindhoven, Netherlands
Test specification:	
Standard	CISPR 14-1:2016
Test procedure	CB Scheme
Non-standard test method	N/A
Supplementary information	--
Test Report Form No.	IECCISPR14_1F
Test Report Form(s) Originator	VDE Testing and Certification Institute
Master TRF	2017-07-27
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Test item description	I-MOP
Trademark	N/A
Manufacturer	Dongguan Solid Plastic & Mold Co., Ltd. 99 West of Xinfeng Road, Shijie Town, Dongguan City Guangdong Province 523290, P.R. China
Model / Type reference	I-MOP LITE
Rating(s)	DC 18V (battery powered) 380 / 400W Class III

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	TÜV Rheinland (Guangdong) Ltd.
Testing location/ address.....:		No.199 Kezhu Road, Guangzhou Science City, 510663 Guangzhou, CHINA
Tested by (name, signature)		Cherry He 
Approved by (name, function, signature)....:		Jeffery Xie 
<input type="checkbox"/>	Testing procedure: CTF Stage 1:	N/A
Testing location/ address.....:		
Tested by (name, signature)		
Approved by (name, function, signature)....:		
<input type="checkbox"/>	Testing procedure: CTF Stage 2:	N/A
Testing location/ address.....:		
Tested by (name, signature)		
Witnessed by (name, function, signature) ..:		
Approved by (name, function, signature)....:		
<input type="checkbox"/>	Testing procedure: CTF Stage 3:	N/A
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	N/A
Testing location/ address.....:		
Tested by (name, signature)		
Witnessed by (name, function, signature) ..:		
Approved by (name, function, signature)....:		
Supervised by (name, function, signature) :		

List of Attachments (including a total number of pages in each attachment):

Attachment 1: CISPR 14-2:1997 (First Edition) + A1:2001 + A2:2008 22 pages

Attachment 2: Photo documentation 8 pages

Summary of testing:**Tests performed (name of test and test clause):****Clause 4.3 Radiated disturbances – 30 MHz to 1000 MHz****Testing location:**TÜV Rheinland (Guangdong) Ltd. EMC Laboratory
No.102, 1F of Southwest and No.205, 2F of West
Warehouse Building, No.767 Tianyuan Road, Tianhe
District, Guangzhou, Guangdong, P.R.China**Summary of compliance with National Differences (List of countries addressed):**

N/A

 The product fulfils the requirements of CISPR 14-1:2016**Copy of marking plate:****The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.**

Test item particulars			
Possible test case verdicts:			
- test case does not apply to test object.....	N/A		
- test object does meet requirement.....	Pass (P)		
- test object does not meet requirement.....	Fail (F)		
Testing			
Date of receipt of test item	21.Jul.2019		
Date(s) of performance of tests.....	11.Aug.2019-19.Sep.2019		
General remarks:			
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.			
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:			
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided :	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable		
When differences exist; they shall be identified in the General product information section.			
Name and address of factory(ies)	Dongguan Solid Plastic & Mold Co., Ltd. 99 West of Xinfeng Road, Shijie Town, Dongguan City Guangdong Province 523290, P.R. China		
General product information and other remarks:			
The submitted sample I-MOP LITE is a mop with rechargeable batteries. While charging, the batteries need be removed from the cleaner. The model I-MOP LITE applied for below two alternative pancake motors, see below for detailed information:			
Object/part No.	Manufacturer/ trademark	Type/ model	Technical data
Pancake motor	Ruiying	P3500D24	DC 24V, 180W
Pancake motor (alternative)	Speedup Motor	SPM-128SN-A	DC 24V, 180W
According to above information, necessary tests are performed on I-MOP LITE with Ruiying motor, and additional RE test is performed on I-MOP LITE with Speedup Motor. The charger for battery is not included and tested in this approval.			

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1 General description of test item(s)

Description	I-MOP				
Model Number	I-MOP LITE				
Serial Number	N/A				
Brand name	N/A				
Ports	Port name and description	Cable			
		Specified length [m]	Attached during test	Shielded	
	Enclosure	N/A	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
Supplemental information to the ports	---				
Rated power supply		Voltage and Frequency	1 ph/PE	2 ph/N/PE	3 ph/N/PE
	<input type="checkbox"/>	AC: 220-240V, 60Hz	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 18V (battery powered)			
Rated Power	380 / 400W				
Protection Class	III				
Clock frequencies	<15MHz				
Other parameters	N/A				
Software version	N/A				
Hardware version	N/A				
Dimensions in cm (W x H x D) ...	43.5x114x28				
Mounting position	<input type="checkbox"/>	Table top equipment			
	<input type="checkbox"/>	Wall/Ceiling mounted equipment			
	<input checked="" type="checkbox"/>	Floor standing equipment			
	<input checked="" type="checkbox"/>	Hand-held equipment			
	<input type="checkbox"/>	Other:			
Modules/parts	Module/parts of test item		Type	Manufacturer	
	N/A				

Operating modes :	No.	Operating mode of test item	Applied for testing	
			Emission	
	1	A: On	<input checked="" type="checkbox"/>	
	2	B: Off	<input checked="" type="checkbox"/>	
	3		<input type="checkbox"/>	
	4		<input type="checkbox"/>	
	5		<input type="checkbox"/>	
	6		<input type="checkbox"/>	
	7		<input type="checkbox"/>	
8		<input type="checkbox"/>		
Supplemental information to the operating modes..... :	---			
Accessories (not part of the test item)..... :	Accessory	Type	Manufacturer	
	N/A			
Documents as provided by the applicant :	Description	File name	Issue date	
	Describe the electronic diagram of the product	Circuit Diagram	13.Jul.2019	
	Describe the product technical information	Rating Label	13.Jul.2019	
	Describe the functions of the product	User Manual	13.Jul.2019	
	Product external and internal pictures.	Photo Documentation	13.Jul.2019	
Modifications to the test item during testing :	N/A			

1.1 Description of the test item

The submitted sample I-MOP LITE is a mop with rechargeable batteries. While charging, the batteries need be removed from the cleaner.

The model I-MOP LITE applied for below two alternative pancake motors, see below for detailed information:

Object/part No.	Manufacturer/ trademark	Type/ model	Technical data
Pancake motor	Ruiying	P3500D24	DC 24V, 180W
Pancake motor (alternative)	Speedup Motor	SPM-128SN-A	DC 24V, 180W

The charger for battery is not included and tested in this approval.

1.2 Photo of the test item



2 Verdict summary section

CISPR-14-1			
Clause	Requirement – Test case	Basic standard	Verdict
Table 2 Table 4	Continuous disturbances (Induction cooking) (9 kHz to 30 MHz)	CISPR 16-1-1:2015 CISPR 16-1-2:2014 CISPR 16-2-1:2014	N/A
Table 5 Table 6	Continuous disturbances (150 kHz to 30 MHz)	CISPR 16-1-1:2015 CISPR 16-1-2:2014 CISPR 16-2-1:2014 CISPR 32:2015	N/A
Table 3	Magnetic field (Induction cooking) (9 kHz – 30 MHz)	CISPR 16-1-4:2010+AMD1:2012 CISPR 16-2-3:2010 +AMD1:2010+AMD2:2014	N/A
Table 7 Table 8	Radiated emission Disturbance power (30 MHz – 300 MHz)	CISPR 16-1-1:2015 CISPR 16-1-3:2004+AMD1:2016 CISPR 16-2-2:2010	N/A
Table 9	Radiated emission (30 MHz to 1000 MHz)	CISPR 16-1-1:2015 CISPR 16-1-4:2010+AMD1:2012 CISPR 16-2-3:2010 +AMD1:2010+AMD2:2014 IEC 61000-4-20:2010 IEC 61000-4-22:2010	Pass
4.5	Discontinuous disturbance (clicks)	CISPR 16-1-1:2015 CISPR 14-1:2016	N/A
Supplementary information: ---			

3 Test conditions

3.1 General

Environmental reference conditions	The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.		
	The climatic conditions during the tests were within the following limits:		
	Temperature	Humidity	Atmospheric pressure
	15 °C – 35 °C	30 % - 60 %	800 hPa – 1060 hPa
	If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.		
Measurement uncertainties	For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in CISPR 16-4-2 or a product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.		
	In all cases if the test laboratory uncertainty is larger than the value for U_{CISPR} given in CISPR 16-4-2 the uncertainty is included in the test report annex.		

3.2 Specific conditions required by CISPR 14-1

AC or DC mains voltage used during the test if not otherwise specified	DC 18V (battery powered)
--	--------------------------

3.3

4 Emission

4.1 Disturbance voltage – 9 kHz (150 kHz) to 30 MHz

Tested by..... :	N/A	
Test date..... :	N/A	
Test Location (stand)..... :	N/A	
Applied limit class or environment..... :	<input type="checkbox"/>	Table 2 (Induction cooking 100 V rated); Mains terminals
	<input type="checkbox"/>	Table 2 (Induction cooking; Other appliances); Mains terminals
	<input checked="" type="checkbox"/>	Table 5 (Columns 2 and 3); Mains ports
	<input type="checkbox"/>	Table 5 (Columns 4 and 5); Associated ports; disturbance voltage
	<input type="checkbox"/>	Table 5 (Columns 6 and 7); Associated ports; disturbance current
	<input type="checkbox"/>	Table 6 (Columns 2 and 3); Mains port of tools $P \leq 700 \text{ W}$
	<input type="checkbox"/>	Table 6 (Columns 4 and 5); Mains port of tools $700 \text{ W} < P \leq 1000 \text{ W}$
	<input type="checkbox"/>	Table 6 (Columns 6 and 7); Mains port of tools $P > 1000 \text{ W}$
	<input type="checkbox"/>	Wired Network port according CISPR 32 class B
	<input type="checkbox"/>	Other: --
Test set-up description	<input type="checkbox"/>	Set-up Type A (40 cm distance to vertical ground plane, 80 cm o ground plane)
	<input type="checkbox"/>	Set-up Type B (40 cm distance to horizontal ground plane)
	<input checked="" type="checkbox"/>	Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/>	Other:
	<input type="checkbox"/>	Artificial hand applied
Supplementary Test set-up description	---	
Test method applied	<input checked="" type="checkbox"/>	Artificial mains network
	<input type="checkbox"/>	Artificial mains network used as voltage probe
	<input type="checkbox"/>	Voltage probe
	<input type="checkbox"/>	CDN according to IEC 61000-4-6
	<input type="checkbox"/>	Current probe and capacitive voltage probe (CVP)
	<input type="checkbox"/>	ISN according CISPR 32
	<input type="checkbox"/>	In situ CDN (150 Ohm and current probe)
	<input type="checkbox"/>	Other:
Supplementary information	The EUT is powered by battery and has no external cable, and therefore this test is not applicable.	

Test set-up photo

N/A



Results

N/A

4.2 Disturbance power – 30 MHz to 300 MHz

Tested by..... :	N/A	
Test date..... :	N/A	
Test Location (stand)..... :	N/A	
Applied limit class or environment..... :	<input checked="" type="checkbox"/>	Table 7 (Columns 2 and 3); General
	<input type="checkbox"/>	Table 7 (Columns 4 and 5); Tools $P \leq 700 \text{ W}$
	<input type="checkbox"/>	Table 7 (Columns 6 and 7); Tools $700 \text{ W} < P \leq 1000 \text{ W}$
	<input type="checkbox"/>	Table 7 (Columns 8 and 9); Tools $P > 1000 \text{ W}$
Test set-up description	<input type="checkbox"/>	Equipment on table of 80 cm height
	<input checked="" type="checkbox"/>	Equipment on support of 10 cm height
	<input type="checkbox"/>	Other:
Supplementary test set-up description	---	
Conditions for exemption from radiated measurements above 300 MHz	<input checked="" type="checkbox"/>	Table 8 reduction of Table 7 limits applied and passed
	<input checked="" type="checkbox"/>	Maximum clock frequency < 30 MHz
Supplementary information	The EUT is powered by battery and has no external cable, therefore this test is not applicable to EUT.	

Test set-up photo

N/A

Results

N/A

4.3 Radiated disturbances – 30 MHz to 1000 MHz

Tested by	TÜV Rheinland (Guangdong) Ltd.	
Test date.....	12. Aug.2019 / 19.Sep.2019	
Test Location (stand).....	No.102, 1F of Southwest and No.205, 2F of West Warehouse Building, No.767 Tianyuan Road, Tianhe District, Guangzhou, Guangdong, P.R.China	
Radiated test application	<input type="checkbox"/>	Radiated test NOT applied because conditions of 4.3.4.2 are met Only disturbance power measurement applied
	<input type="checkbox"/>	Radiated test applied from 300 MHz to 1000 MHz Disturbance power measurement from 30 MHz to 300 MHz
	<input checked="" type="checkbox"/>	Radiated test applied from 30 MHz to 1000 MHz No disturbance power measurement applied
Applied limits	<input checked="" type="checkbox"/>	Table 9 Radiated disturbance limits
	<input type="checkbox"/>	Other: --
Test set-up description	<input type="checkbox"/>	Equipment on a table of 80 cm height
	<input checked="" type="checkbox"/>	Equipment on the floor (insulated from ground plane)
	<input type="checkbox"/>	Other:
Supplementary test set-up description	---	
Test method applied	<input checked="" type="checkbox"/>	OATS or SAC with measurement distance [m]: 3
	<input type="checkbox"/>	FAR CISPR 16-2-3 with measurement distance [m]: 3
	<input type="checkbox"/>	FAR IEC 61000-4-22 with measurement distance [m]: 3
	<input type="checkbox"/>	TEM Waveguide according IEC 61000-4-20
Supplementary information	---	

Test set-up photo



Results

TUV Rheinland (Guangdong) Ltd.

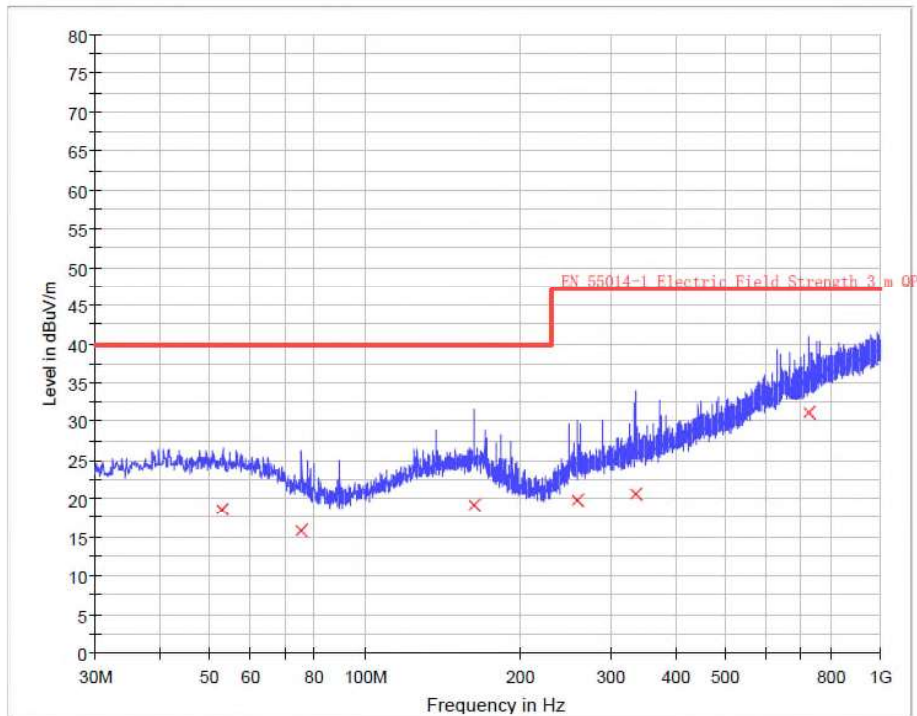
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Future Cleaning Technologies
Test Item:	I-MOP
Identification:	I-MOP LITE
Test Standard:	EN 55014-1
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	21 °C, 52 %, 101 kPa
Test Voltage/ Freq:	DC 18V (battery powered)
Receipt No:	170115792
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

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



Tested by:	<i>Leo Zhu</i>	Reviewed by:	<i>Jason Wu</i>
	20190812		20190816

Ruiying motor

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Po l	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
52.920000	18.7	1000.0	120.000	100.0	H	0.0	20.4	21.3	40.0
75.480000	15.7	1000.0	120.000	100.0	H	20.0	17.4	24.3	40.0
163.240000	19.2	1000.0	120.000	100.0	H	0.0	21.2	20.8	40.0
258.440000	19.8	1000.0	120.000	100.0	H	20.0	20.0	27.2	47.0
336.760000	20.7	1000.0	120.000	100.0	H	0.0	22.7	26.3	47.0
726.960000	31.1	1000.0	120.000	100.0	H	0.0	32.1	15.9	47.0

Tested by: *Leo Zhu* 20190812 Reviewed by: *Jason Wu* 20190816

TUV Rheinland (Guangdong) Ltd.

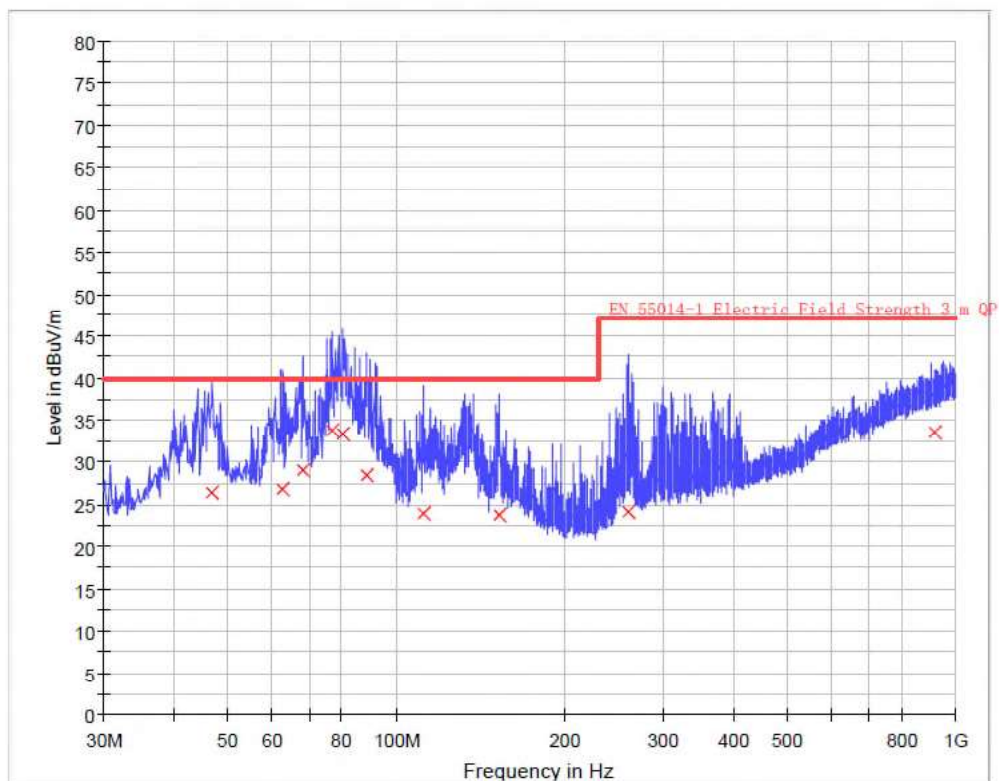
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Future Cleaning Technologies
Test Item:	I-MOP
Identification:	I MOP LITE
Test Standard:	EN 55014-1
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	21 °C, 52 %, 101 kPa
Test Voltage/ Freq:	DC 18V (battery powered)
Receipt No:	170115792
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical

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



Tested by: *Leo Zhu* 20190812
 Reviewed by: *Jason Wu* 20190816

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
46.960000	26.3	1000.0	120.000	100.0	V	0.0	20.5	13.7	40.0
62.840000	26.8	1000.0	120.000	100.0	V	0.0	19.6	13.2	40.0
68.080000	29.0	1000.0	120.000	100.0	V	0.0	18.7	11.0	40.0
76.920000	33.8	1000.0	120.000	130.0	V	0.0	17.1	6.2	40.0
80.320000	33.4	1000.0	120.000	130.0	V	0.0	16.3	6.6	40.0
88.680000	28.5	1000.0	120.000	100.0	V	0.0	16.3	11.5	40.0
111.960000	24.0	1000.0	120.000	100.0	V	0.0	18.3	16.0	40.0
152.720000	23.7	1000.0	120.000	100.0	V	10.0	21.2	16.3	40.0
260.000000	24.1	1000.0	120.000	100.0	V	0.0	20.0	22.9	47.0
918.160000	33.5	1000.0	120.000	100.0	V	0.0	34.8	13.5	47.0

Tested by: *Leo Zhu* 20190812 Reviewed by: *Jason Wu* 20190816

TUV Rheinland (Guangdong) Ltd.

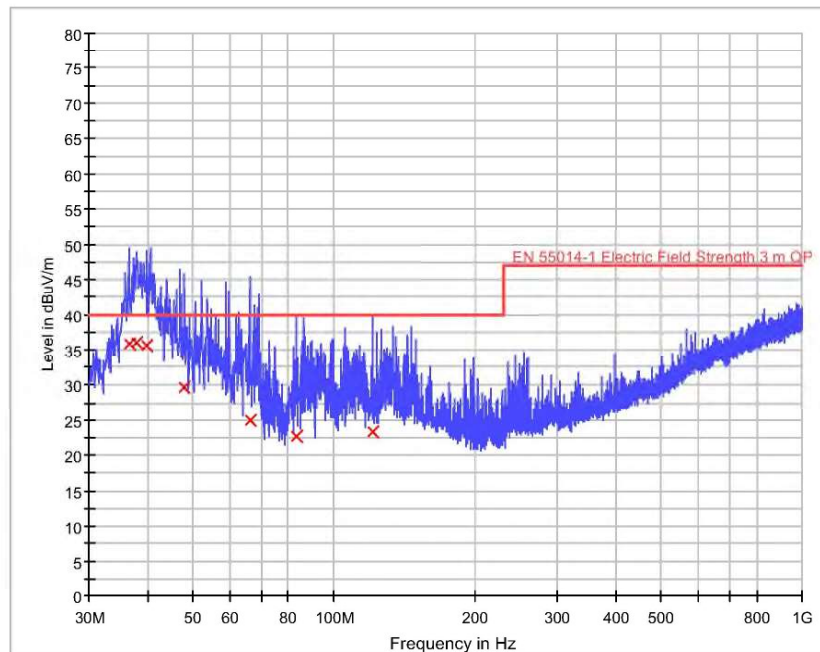
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Future Cleaning Technologies
Test Item:	I-MOP
Identification:	I-MOP LITE
Test Standard:	EN 55014
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	DC 18V (battery powered)
Receipt No:	170115792
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

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



Tested by: *Biu Fang*

20190919

Reviewed by: *Jacky Chen*

20190919

Alternative speedup Motor

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Height (cm)	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
36.560000	35.9	1000.0	120.000	H	100.0	0.0	19.9	4.1	40.0
38.000000	36.0	1000.0	120.000	H	100.0	10.0	20.2	4.0	40.0
39.960000	35.5	1000.0	120.000	H	150.0	0.0	20.6	4.5	40.0
47.960000	29.8	1000.0	120.000	H	140.0	0.0	20.6	10.2	40.0
66.120000	24.9	1000.0	120.000	H	100.0	0.0	19.1	15.1	40.0
83.360000	22.7	1000.0	120.000	H	100.0	0.0	16.3	17.4	40.0
120.920000	23.3	1000.0	120.000	H	100.0	0.0	19.2	16.7	40.0

Tested by: *Biu Fung*

20190919

Reviewed by: *Jacky Chen*

20190919

TUV Rheinland (Guangdong) Ltd.

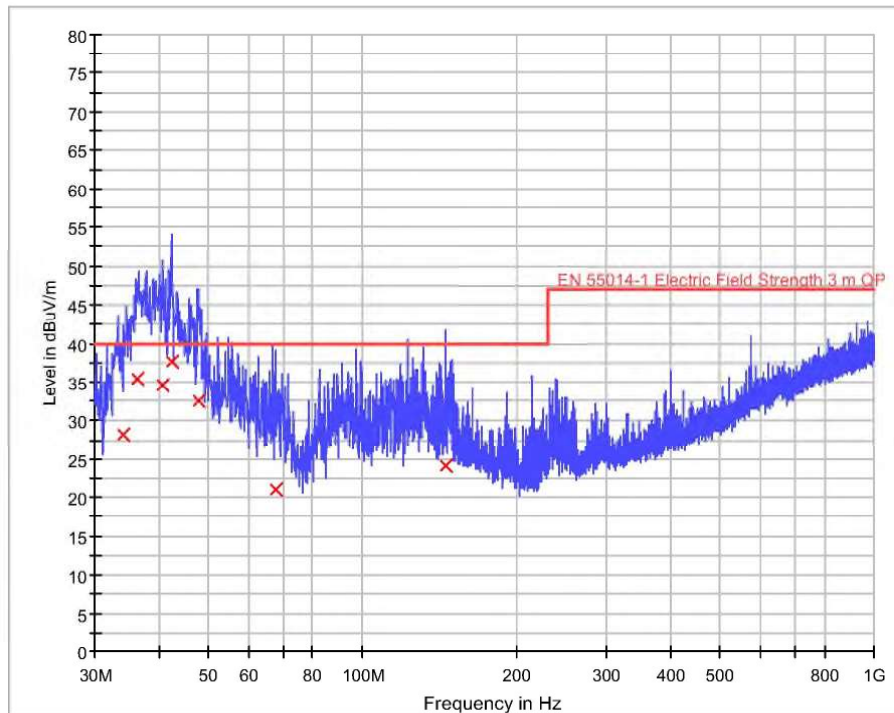
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Future Cleaning Technologies
Test Item:	I-MOP
Identification:	I-MOP LITE
Test Standard:	EN 55014
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	DC 18V (battery powered)
Receipt No:	170115792
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical

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



Tested by: *Biu Feng*

20190919

Reviewed by: *Judy Chen*

20190919

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Height (cm)	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
34.120000	28.3	1000.0	120.000	V	100.0	0.0	19.6	11.8	40.0
36.200000	35.5	1000.0	120.000	V	100.0	10.0	19.8	4.6	40.0
40.560000	34.5	1000.0	120.000	V	150.0	0.0	20.6	5.5	40.0
42.360000	37.7	1000.0	120.000	V	130.0	0.0	20.5	2.3	40.0
47.840000	32.5	1000.0	120.000	V	140.0	10.0	20.6	7.5	40.0
67.600000	21.1	1000.0	120.000	V	100.0	0.0	18.8	18.9	40.0
145.320000	24.2	1000.0	120.000	V	100.0	0.0	20.7	15.9	40.0

Tested by: *Biu Feng*
20190919

Reviewed by: *Jacky Chen*
20190919

4.4 Magnetic field – 9 kHz to 30 MHz

Tested by..... :	N/A	
Test date..... :	N/A	
Test Location (stand)..... :	N/A	
Application..... :	<input checked="" type="checkbox"/>	Not applied because no induction cooking appliance
Applied limit class..... :	<input type="checkbox"/>	Table 3; Magnetic field; Induction cooking appliances with diameter up to 1,6 m and larger
	<input type="checkbox"/>	Table 4; Magnetic field induced current; Induction cooking appliances with diameter up to 1,6 m
	<input type="checkbox"/>	Other: --
Test set-up description..... :	<input type="checkbox"/>	Equipment on a table of 80 cm height
	<input type="checkbox"/>	Equipment on the floor (insulated from ground plane)
	<input type="checkbox"/>	Equipment placed in the centre of the loop antenna system (LAS) according CISPR 16-2-3
	<input type="checkbox"/>	Other: --
Supplementary test set-up description..... :	---	
Test method applied..... :	<input type="checkbox"/>	3 m distance, 0,6 m loop antenna according CISPR 16-1-4:2010
	<input type="checkbox"/>	2 m loop antenna system (LAS) according CISPR 16-2-3:2010
Supplementary information..... :	---	

Test set-up photo

N/A

Results

N/A

4.5 Discontinuous disturbances (clicks)

Tested by	N/A	
Test date	N/A	
Test location (stand)	N/A	
Test set-up description.....	<input type="checkbox"/>	Set-up Type A (40 cm distance to vertical ground plane, 80 cm over ground plane)
	<input type="checkbox"/>	Set-up Type B (40 cm distance to horizontal ground plane)
	<input checked="" type="checkbox"/>	Floor standing equipment set-up (10 cm over ground plane)
	<input type="checkbox"/>	Other: ---
	<input type="checkbox"/>	Artificial hand applied
Supplementary test set-up description.....	---	
CDN applied.....	<input checked="" type="checkbox"/>	Artificial mains network
	<input type="checkbox"/>	Artificial mains network used as voltage probe
	<input type="checkbox"/>	Voltage probe
	<input type="checkbox"/>	Other: ---
Applied method for discontinuous disturbances	<input type="checkbox"/>	Click rate determined on base of switching operations
	<input checked="" type="checkbox"/>	Click rate determined on base of clicks measurements
	<input type="checkbox"/>	Other: ---
Applied interpretation for upper quartile method (ISH 1 to CISPR14-1).....	<input checked="" type="checkbox"/>	Interpretation 1: The click rate at 1,4 MHz and 30 MHz is determined at ¼ of the clicks counted at each frequency (1,4 MHz and 30 MHz)
	<input type="checkbox"/>	Interpretation 2: The click rate at 1,4 MHz and 30 MHz determined at ¼ of the clicks counted at 500 kHz.
Exceptions from the click definition applied.....	<input type="checkbox"/>	Test item only causes single switching events (5.4.3.2)
	<input type="checkbox"/>	Combination of disturbances in a time frame less than 600 ms (5.4.3.3)
	<input type="checkbox"/>	Instantaneous switching (5.4.3.4)
	<input type="checkbox"/>	Separation less than 200 ms (5.4.3.5)
	<input type="checkbox"/>	Thermostatically controlled three-phase switches (5.4.3.6)
	<input type="checkbox"/>	Superposition of clicks with continuous disturbance (5.4.3.7)
	<input type="checkbox"/>	Other: ---
Supplementary information	The EUT is powered by battery and will not directly connect to AC mains, and therefore this test is not applicable.	

Test set-up photo

N/A

Results

N/A

5 List of test equipment

Equipment	Type	Inventory no.	Manufacturer	Last calibration date	Calibration due date
Test stand: CISPR14-1 Radiated disturbances – 30 MHz to 1000 MHz					
EMI Test Receiver	Rohde&Schwarz	ESCI 3	100216	2019-03-13	2020-03-12
Trilog-Broadband Antenna	Schwarzbeckmes s-elektronik	VULB91 68	684	2021-08-28	2021-08-27

* Calibration interval extended based on sufficient calibration data and experience of use (see IEC 61010-1:2015 clause 8.3)

6 Measurement instrumentation uncertainties

Type of disturbance test method	Used test equipment (only main instruments, no details)	Calculated uncertainty	U_{CISPR}
Radiated disturbances 30 MHz to 1000 MHz	Refer to clause 5	5.16 dB	5.2 dB

7 Annex

7.1 Critical components table

Critical components information			
Object	Manufacturer / Trademark	Type/Model	Remark
vacuum motor	Ruiying	RY7025D24	DC 24V, 200W
pancake motor	Ruiying	P3500D24	DC 24V, 180W
pancake motor(alternative)	Speedup Motor	SPM-128SN-A	DC 24V, 180W
Battery	BMZ Company Limited	BL7871	18VDC, 216Wh, 12Ah
Power board	SOLTEK	211-045-101	DC18V, 20A
Keyboard	SOLTEK	211-047-101	DC5V, 1A

7.2 Type designation code

The submitted sample I-MOP LITE is a mop with rechargeable batteries. While charging, the batteries need be removed from the cleaner.

The model I-MOP LITE applied for below two alternative pancake motors, see below for detailed information:

Object/part No.	Manufacturer/ trademark	Type/ model	Technical data
Pancake motor	Ruiying	P3500D24	DC 24V, 180W
Pancake motor (alternative)	Speedup Motor	SPM-128SN-A	DC 24V, 180W

According to above information, necessary tests are performed on I-MOP LITE with Ruiying motor, and additional RE test is performed on I-MOP LITE with Speedup Motor.



The charger for battery is not included and tested in this approval.



Test Report issued under the responsibility of:



TEST REPORT CISPR 14-2 Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus – Part 2: Immunity – Product family standard	
Report Number	50278206 001 Attachment 1
Date of issue	10 Oct.2019
Total number of pages	22
Applicant's name	i-Team Professional B.V.
Address	Hoppenkuil 27B, 5626DD Eindhoven, Netherlands
Test specification:	
Standard	CISPR 14-2:1997 (First Edition) + A1:2001+ A2:2008
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IECCISPR14_2C
Test Report Form(s) Originator	TÜV Rheinland Japan Ltd.
Master TRF	Dated 2014-07
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
General disclaimer:	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.	

Test item description :	I-MOP	
Trade Mark :	N/A	
Manufacturer	Dongguan Solid Plastic & Mold Co., Ltd. 99 West of Xinfeng Road, Shijie Town, Dongguan City Guangdong Province 523290, P.R. China	
Model/Type reference :	I-MOP LITE	
Ratings :	DC 18V (battery powered) 380 / 400W Class III	
Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	TÜV Rheinland (Guangdong) Ltd.
Testing location/ address :	No.199 Kezhu Road, Guangzhou Science City, 510663, Guangzhou, CHINA	
<input type="checkbox"/>	Associated CB Testing Laboratory:	N/A
Testing location/ address :	N/A	
Tested by (name + signature) :	Cherry He	
Approved by (name + signature) :	Jeffery Xie	
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	N/A
Testing location/ address :	N/A	
Tested by (name + signature) :	N/A	N/A
Approved by (name + signature) :	N/A	N/A
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	N/A
Testing location/ address :	N/A	
Tested by (name + signature) :	N/A	N/A
Witnessed by (name + signature) :	N/A	N/A
Approved by (name + signature) :	N/A	N/A
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	N/A
Testing location/ address :	N/A	
Tested by (name + signature) :	N/A	N/A
Witnessed by (name + signature) :	N/A	N/A
Approved by (name + signature) :	N/A	N/A
Supervised by (name + signature) :	N/A	N/A

List of Attachments (including a total number of pages in each attachment): N/A	
Summary of testing:	
Tests performed (name of test and test clause): 2.1 Electrostatic discharge 2.2 Radiated, radio-frequency, electromagnetic field	Testing location: TÜV Rheinland (Guangdong) Ltd. EMC Laboratory No.102, 1F of Southwest and No.205, 2F of West Warehouse Building, No.767 Tianyuan Road, Tianhe District, Guangzhou, Guangdong, P.R. China
Summary of compliance with National Differences: N/A	

Copy of marking plate:

Refer to report 50278206 001.

Test item particulars: Refer to Section 2	
Classification of installation and use: Class III equipment used for residential and commercial environment.	
Supply Connection: Not connect to public AC power network.: DC 18V (battery powered)	
Possible test case verdicts: - test case does not apply to the test object.....: N/A - test object does meet the requirement.....: P (Pass) - test object does not meet the requirement.....: F (Fail)	
Testing:	
Date of receipt of test item: 21.Jul.2019	
Date (s) of performance of tests: 11.Aug.2019-16.Aug.2019	
General remarks:	
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies)	Dongguan Solid Plastic & Mold Co., Ltd. 99 West of Xinfeng Road, Shijie Town, Dongguan City Guangdong Province 523290, P.R. China
General product information:	
The submitted sample I-MOP LITE is a mop with rechargeable batteries. While charging, the batteries should be removed from the cleaner. According to above information, tests are performed on I-MOP LITE. The charger for battery is not included and tested in this approval.	

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1.1. Equipment Used During Test:

Use*	Product Type	Manufacturer	Model	Comments
EUT	I-MOP	Dongguan Solid Plastic & Mold Co., Ltd.	I-MOP LITE	N/A
AE	N/A			
SIM	N/A			
Note: * Use stands for EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)				

1.2. Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
0	Enclosure	—	—	—	—

1.3. EUT Internal Clock Frequencies or Oscillator Frequencies:

Frequency (MHz)	Description
<15	Oscillator on electronic controller

1.4. Power Interface:

Mode #	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Safety Extra Low Voltage	Comments
1	DC 18V (battery powered)	N/A	380 / 400W	N/A	1	N/A	N/A

1.5. EUT Operation Modes:

Mode #	Description
1	A: On
2	B: Off

1.6. Result Summary

CISPR 14-2:1997 + A1:2001 + A2:2008				
Phenomenon	Coupling Port	Operation mode	Verdict	Ref. Standard
Electrostatic discharge	Enclosure	1	P	IEC 61000-4-2
RF electromagnetic field	Enclosure	1	P	IEC 61000-4-3
Fast transient common mode	AC mains	N/A	N/A	IEC 61000-4-4
RF common mode	AC mains	N/A	N/A	IEC 61000-4-6
Surge	AC mains	N/A	N/A	IEC 61000-4-5
Voltage dips and short interruptions	AC mains	N/A	N/A	IEC 61000-4-11

2. Test conditions and results

2.1. Electrostatic discharge

For test instruments and accessories used see section 3 (Test ref. 2.1)

2.1.1. Description of the test location

Test location: TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

2.1.2. Photo documentation of the test set-up

Legend

C: Contact discharge

A: Air discharge



2.1.3. Test specification

Parameters required prior to the test	Laboratory ambient temperature:	22°C
	Relative humidity:	52%
	Air pressure:	101kPa
<u>Contact discharge voltage:</u>	<input type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 4 kV
<u>Air discharge voltage:</u>	<input checked="" type="checkbox"/> 2 kV	<input checked="" type="checkbox"/> 4 kV <input checked="" type="checkbox"/> 8 kV
<u>Discharge impedance:</u>	<input checked="" type="checkbox"/> 330 Ω / 150 pF	
<u>Discharge factor:</u>	<input checked="" type="checkbox"/> ≥ 1 sec	
<u>Number of discharges:</u>	<input checked="" type="checkbox"/> ≥ 10	
<u>Type of discharge:</u>	Direct discharge	<input checked="" type="checkbox"/> Air discharge
	Indirect discharge	<input checked="" type="checkbox"/> Contact discharge
		<input checked="" type="checkbox"/> Contact discharge
<u>Polarity:</u>	<input checked="" type="checkbox"/> Positive	<input checked="" type="checkbox"/> Negative
<u>Discharge location:</u>	<input checked="" type="checkbox"/> see photo documentation of the test set-up	
	<input checked="" type="checkbox"/> all external locations accessible by hand	
	<input checked="" type="checkbox"/> horizontal coupling planes (HCP)	
	<input checked="" type="checkbox"/> vertical coupling planes (VCP)	
	<input type="checkbox"/> <u>Conductive enclosure and screw</u>	
	<input type="checkbox"/> <u>Seam around enclosure and aperture</u>	
	<input type="checkbox"/> <u>Plastic enclosure and power cord</u>	
	<input type="checkbox"/> <u>Control panel and displaying screen</u>	

2.1.4. Modification during the test

N/A

2.1.5. Test ResultThe requirements are **Fulfilled**Performance Criterion: **B (see note)**

EMC Test Record



Receipt No.: 170115792	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? <input checked="" type="checkbox"/> Yes/ <input type="checkbox"/> No	

Immunity	ESD Electrostatic Discharge at Enclosure Port	<input checked="" type="checkbox"/> IEC 61000-4-2
Required criterion: B Test voltage / Freq.: DC 18V (battery powered)		
Climatic conditions: 15°C< 22 °C< 35°C; 30%RH< 52 %RH<60%RH; 86kPa< 101 kPa<106kPa		
The requirements from clause 8.1.1 are complied with.		
<input checked="" type="checkbox"/> Test system has been verified according to MS-0008912 prior to this test.		
Level: Air discharge: <input type="checkbox"/> ± 2kV; <input type="checkbox"/> ± 4kV; <input checked="" type="checkbox"/> ± 8kV; <input type="checkbox"/> ± 15kV; <input type="checkbox"/> ± kV; Contact discharge: <input type="checkbox"/> ± 2kV; <input checked="" type="checkbox"/> ± 4kV; <input type="checkbox"/> ± 6kV; <input type="checkbox"/> ± 8kV; <input type="checkbox"/> ± kV; <input type="checkbox"/> kV;		
Quantity of discharges: 10 times per test point and polarity.		
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab		
Model: I-MOP LITE		Equipment: <input checked="" type="checkbox"/> NSG437 <input type="checkbox"/> NSG438 <input type="checkbox"/> Ditto
Operation Mode: A		
Location		Discharge Kind
Enclosure		<input checked="" type="checkbox"/> Air / <input type="checkbox"/> Contact
Slot		<input checked="" type="checkbox"/> Air / <input type="checkbox"/> Contact
HCP		<input type="checkbox"/> Air / <input checked="" type="checkbox"/> Contact
VCP		<input type="checkbox"/> Air / <input checked="" type="checkbox"/> Contact
Screws		<input type="checkbox"/> Air / <input checked="" type="checkbox"/> Contact
Buttons		<input checked="" type="checkbox"/> Air / <input type="checkbox"/> Contact
		<input type="checkbox"/> Air / <input type="checkbox"/> Contact
		<input type="checkbox"/> Air / <input type="checkbox"/> Contact
Comment: <input checked="" type="checkbox"/> No degradation was found <input type="checkbox"/> Phenomenon Description:		

For indirect discharge: HCP = Horizontal Coupling Plane, VCP = Vertical Coupling Plane

Tested by *Leo Zhu* Reviewed by *Jason Wu*
 Date: 20190812 Date: 20190816

Remarks: During the test no deviation was detected to the selected operation mode(s).

Note: Performance criterion C could be applied to toys not using score or data entered by the user.

2.2. Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 3 (Test ref. 2.3)

2.2.1. Description of the test location

Test location: Test location: TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

2.2.2. Photo documentation of the test set-up



2.2.3. Test specification

Parameters required prior to the test

Laboratory ambient temperature:

22°C

Relative humidity:

53%

Air pressure:

101kPa

Frequency range:

80MHz-1000MHz

Field strength:

3 V/m

EUT – antenna separation:

3 m

Modulation:

AM: 80%

sinusoidal, 1000Hz

Frequency step:

1%

Dwell time:

≥ 0.5 s

Antenna polarization:

horizontal

vertical

TRF No. IECCISPR14_2C

2.2.4. Modification during the test

N/A

2.2.5. Test Result

The requirements are

Performance Criterion: **A**

EMC Test Record 

Receipt No.: 170115792	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	

Immunity	RS		<input checked="" type="checkbox"/> IEC 61000-4-3							
Radiated Susceptibility		at Enclosure Port								
Required criterion: A Test voltage Freq.: DC 18V (battery powered)										
Climatic conditions: 22 °C 53 %RH , The requirements from clause 8.1.1 are complied with.										
<input checked="" type="checkbox"/> Test system has been verified according to MS-0008915 prior to this test.										
Test Site: TUV Rheinland (Guangdong) Ltd. EMC Lab, Full Anechoic Chamber										
Modulation range 1, 2 & 3: <input checked="" type="checkbox"/> 80% AM with 1K Hz Sine Wave										
Modulation range 4, 5 & 6: <input type="checkbox"/> Pulse										
Model: I-MOP LITE			Equipment:							
Operation Mode: A			Antenna: ≤1GHz <input checked="" type="checkbox"/> AT1080; <input type="checkbox"/> STLP9128E							
			>1GHz <input checked="" type="checkbox"/> HF907 <input type="checkbox"/> AT4002A							
Frequency Range 1: 80 MHz - 1000MHz Level: 3 V/m		Frequency Range 2: 1 GHz - 2 GHz Level: 3 V/m		Frequency Range 3: 2 GHz- 3 GHz Level: 1 V/m						
Steps	#		%	#		%	#		%	
		Horizontal	Vertical		Horizontal	Vertical		Horizontal	Vertical	
Front	<input checked="" type="checkbox"/>	Tested	<input checked="" type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Right	<input checked="" type="checkbox"/>	Tested	<input checked="" type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Rear	<input checked="" type="checkbox"/>	Tested	<input checked="" type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Left	<input checked="" type="checkbox"/>	Tested	<input checked="" type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Comment: <input checked="" type="checkbox"/> No degradation was found. <input type="checkbox"/> Phenomenon Description:										
Frequency Range 4: MHz - MHz Level: V/m		Frequency Range 5: GHz- GHz Level: V/m		Frequency Range 6: GHz- GHz Level: V/m						
Steps	#		%	#		%	#		%	
		Horizontal	Vertical		Horizontal	Vertical		Horizontal	Vertical	
Front	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Right	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Rear	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Left	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested	<input type="checkbox"/>	Tested
Comment: <input type="checkbox"/> No degradation was found. <input type="checkbox"/> Phenomenon Description:										

Step Size 1% at standard field strength. / Step Size 4% at doubled field strength, if used.

Tested by LeoZhu Reviewed by Jason Wu
 Date: 20190815 Date: 20190816

Remarks: During the test no deviation was detected to the selected operation mode(s).

2.3. Electrical fast transients / Burst

The equipment under test has no AC mains and any input or output terminals, therefore this test is neglected without testing.

2.3.1. Description of the test location

N/A

2.3.2. Photo documentation of the test set-up

N/A

2.3.3. Test specification

Parameters required prior to the test Laboratory ambient temperature: 22°C
 Relative humidity: 52%
 Air pressure: 101kPa
Burst frequency: 5.0 kHz
Coupling duration: ≥ 60 s

PORT UNDER TEST: **AC Power** **DC Power**
 I/O SIGNAL/CONTROL

Operation Mode	Coupling Mode	Test Level	Pulse Polarity	Performance Criteria	Result
N/A	<input checked="" type="checkbox"/> CDN <input type="checkbox"/> Capacitive clamp	<input type="checkbox"/> 0.5 kV <input type="checkbox"/> 1 kV	Positive(+) Negative(-)	B	N/A

PORT UNDER TEST: **AC Power** **DC Power**
 I/O SIGNAL/CONTROL

N/A

Cable description:	N/A	
Screening:	<input type="checkbox"/> screened	<input type="checkbox"/> unscreened
Status:	<input type="checkbox"/> passive	<input type="checkbox"/> active
Signal transmission:	<input type="checkbox"/> analogue	<input type="checkbox"/> digital
Length:	<input type="checkbox"/> 3 m	

2.3.4. Modification during the test

N/A

2.3.5. Test Result

The requirements are Performance Criterion: **B**

Remarks: N/A

2.4. Surge

The equipment under test has no AC mains, therefore this test is neglected without testing.

2.4.1. Description of the test location

N/A

2.4.2. Photo documentation of the test set-up

N/A

2.5. Conducted Susceptibility

The equipment under test has no AC mains and any input or output terminals, therefore this test is neglected without testing.

2.5.1. Description of the test location

N/A

2.5.2. Photo documentation of the test set-up

N/A

2.6. Voltage dips and short interruptions

The equipment under test has no AC mains, therefore this test is neglected without testing.

2.6.1. Description of the test location

N/A

2.6.2. Photo documentation of the test set-up

N/A

3. List of test equipment**Electrostatic discharge (clause 2.1 of this report)**

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
ESD Gun	TESEQ	NSG437	1813818	2019-07-02	2020-07-01

Radiated Susceptibility (clause 2.2 of this report)

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Signal Generator	Rohde&Schwarz	SMB100A	115613	2019-04-08	2020-04-07
Power Meter	Rohde&Schwarz	NRX	100863	2019-04-08	2020-04-07
Average Power Sensor	Rohde&Schwarz	NRP6A	101980	2019-04-08	2020-04-07
Average Power Sensor	Rohde & Schwarz	NRP6A	101981	2019-04-08	2020-04-07
Power Amplifier	Amplifier Research	250W1000A	0320145	2019-06-10	2020-06-09
Antenna	Amplifier Research	AT1080	0320070	2019-04-12	2020-04-11
Electric Field Sensor	ETS	HI-6105	00219172	2019-06-12	2020-06-11



Picture 1 Appearance



Picture 2 Appearance



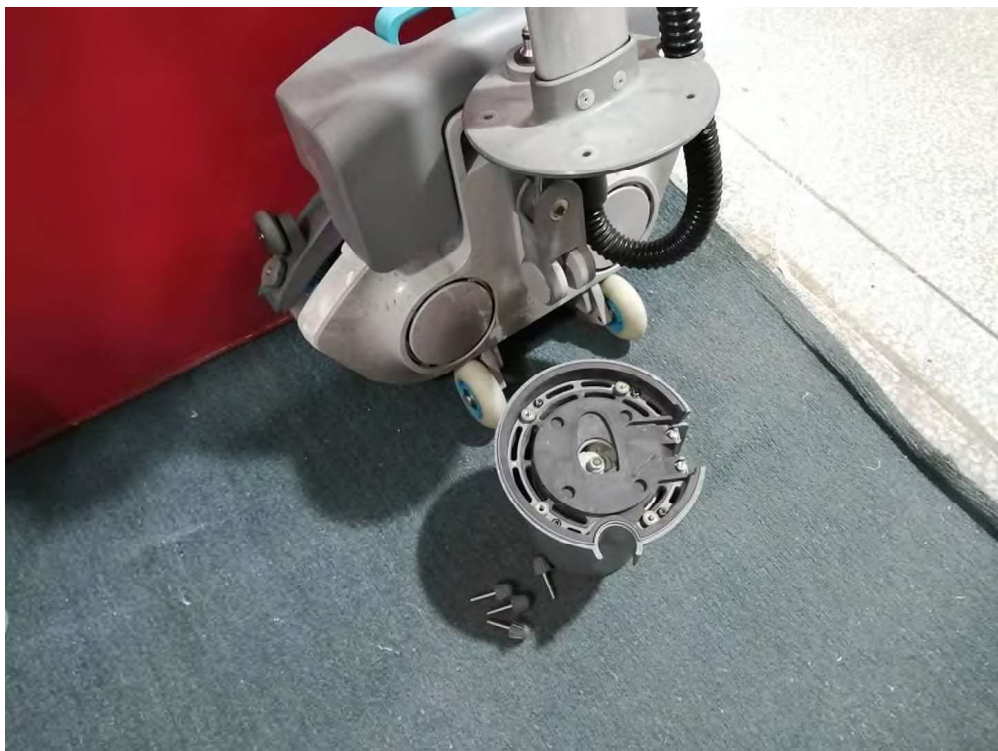
Picture 3 Appearance



Picture 4 Appearance



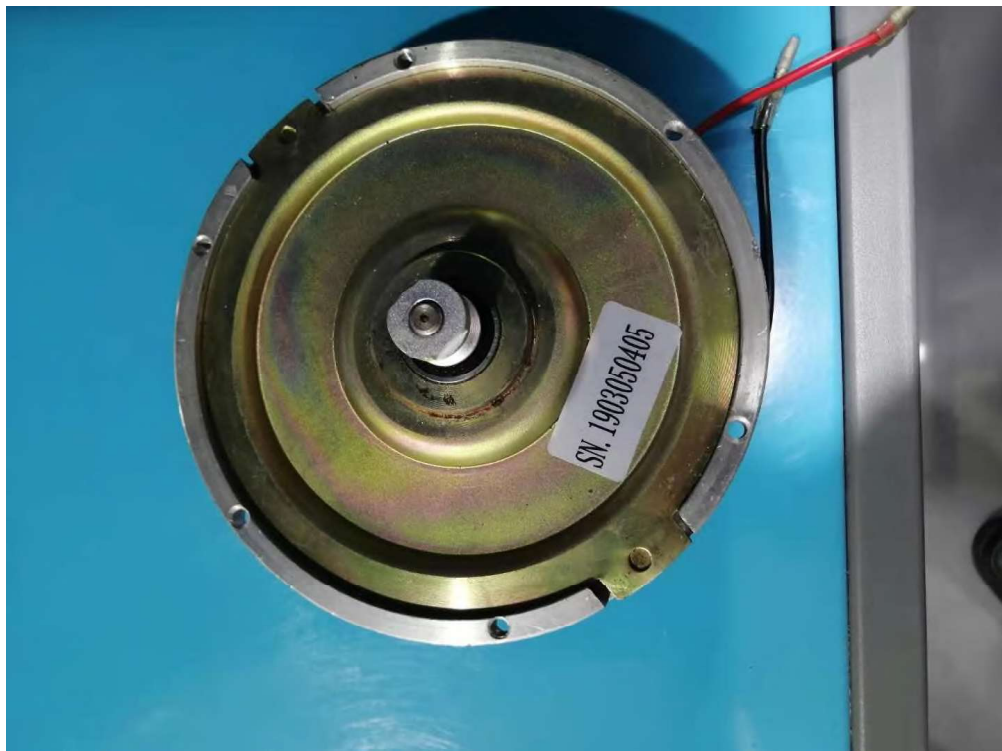
Picture 5 Appearance



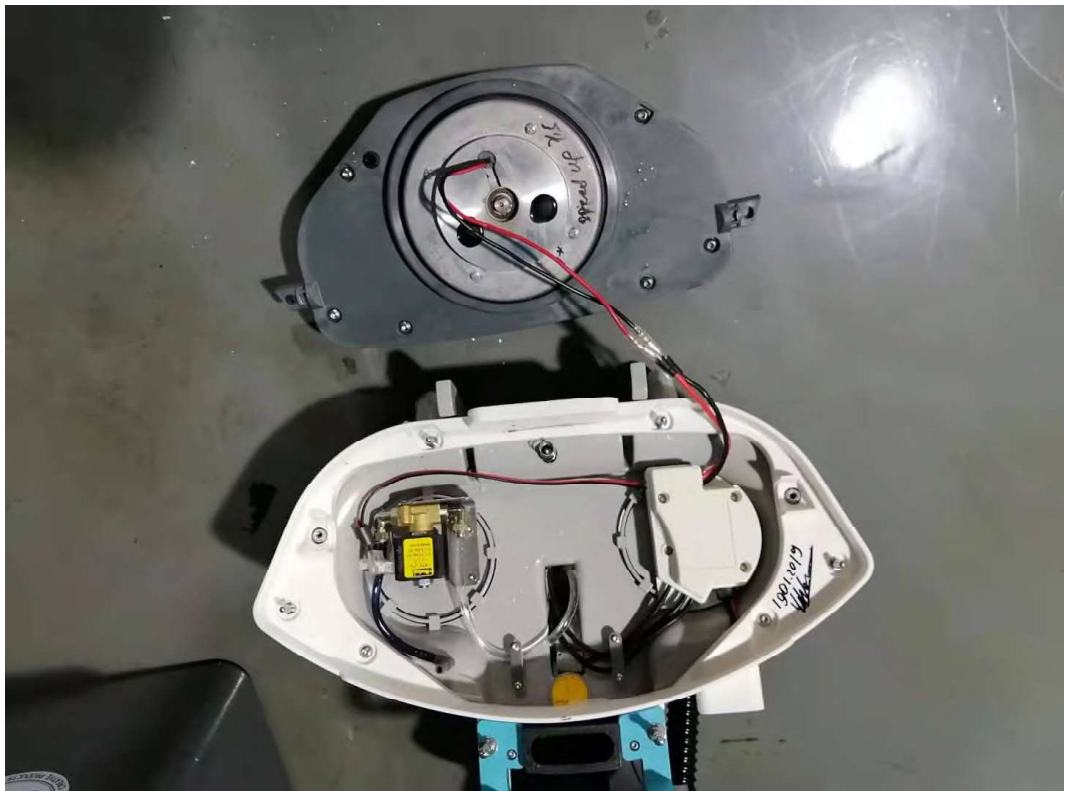
Picture 6 Internal view



Picture 7 Internal view



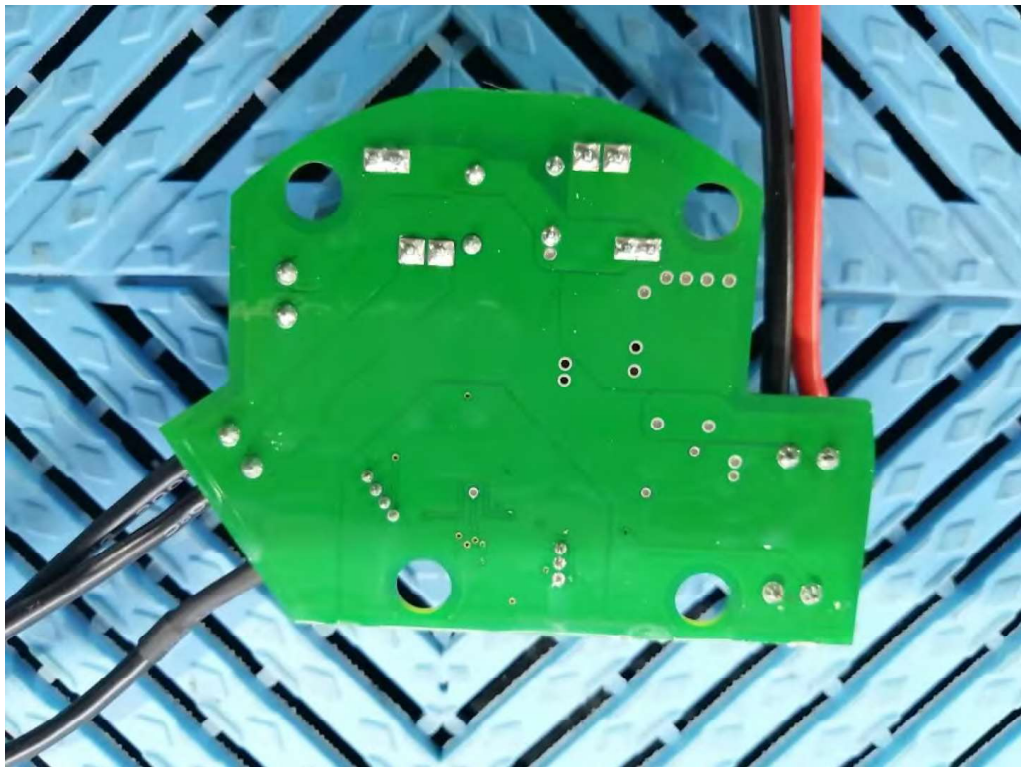
Picture 8 Internal view



Picture 9 Internal view



Picture 10 Internal PCB TOP view



Picture 11 Internal PCB bottom view



Picture 12 Internal PCB Top view



Picture 13 Internal PCB bottom view