Shenzhen Wuxiang Testing (Group) Co., Ltd.
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TEST REPORT

EN 55014-1 / EN 55014-2

Electromagnetic compatibility – Requirements for household appliances, electric tools and similar apparatus.

Part 1: Emission / Part 2: Immunity – Product family standard

Report Reference No..... :	WUX202107193587E
Compiled by (position+printed name+signature).. :	File administrators Bailey Luo
Supervised by (position+printed name+signature).. :	Test Engineer Alison Liu
Approved by (position+printed name+signature).. :	Manager Tony Bi
Date of issue..... :	July 23, 2021
Testing Laboratory Name..... :	Shenzhen Wuxiang Testing (Group) Co., Ltd.
Address..... :	Building B, Xinbaosheng, No.233, Xixiang Street, Bao'an District, Shenzhen, China.
Testing location/ procedure..... :	Full application of Harmonised standards ☒ Partial application of Harmonised standards ☐ Other standard testing methods ☐
Applicant's name..... :	Yuyao Acceleration Auto Accessories Co., Ltd.
Address..... :	No. 8 Maosheng Road, Economic Development Zone, Yuyao City, Zhejiang Province
Test specification:	
Standard..... :	**EN 55014-1: 2017+A11: 2020** **EN 55014-2: 2015** **EN 61000-3-2: 2014** **EN 61000-3-3: 2013+A1:2019**
Non-standard test method..... :	/
TRF Originator..... :	Shenzhen Wuxiang Testing (Group) Co., Ltd.
Master TRF..... :	Dated 2014-08

Test item description.....:	Car air pump
Trade Mark..... :	/
Manufacturer..... :	Yuyao Acceleration Auto Accessories Co., Ltd.
Models..... :	8003,8001,8002,8004,8005,8006,8007,8008,8009,8010,8011, 8012,8013,8014,8015,8016,8017,8018,8019,8020
Ratings..... :	Input: DC 12V,120W
Result..... :	**Positive**

E M C -- T E S T R E P O R T

Test Report No. :	WUX202107193587E	July 23, 2021 Date of issue

Equipment under Test	:	Car air pump
Model No.	:	8003
Listed Models	:	8001,8002,8004,8005,8006,8007,8008,8009,8010,8011, 8012,8013,8014,8015,8016,8017,8018,8019,8020
Applicant	:	Yuyao Acceleration Auto Accessories Co., Ltd.
Address	:	No. 8 Maosheng Road, Economic Development Zone, Yuyao City, Zhejiang Province
Manufacturer	:	Yuyao Acceleration Auto Accessories Co., Ltd.
Address	:	No. 8 Maosheng Road, Economic Development Zone, Yuyao City, Zhejiang Province

Test Result according to the standards on page 4:	**Positive**

The test report merely corresponds to the test sample.

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

EN 55014-1:2017+A11:2020 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus -- Part 1: Emission
EN 55014-2:2015 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus -- Part 2: Immunity - Product family standard
EN 61000-3-2:2014 Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3::2013+A1:2019 Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ⩽ 16 A per phase and not subject to conditional connection

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample : July 19, 2021

Testing commenced on : July 20, 2021

Testing concluded on : July 23, 2021

2.2 Equipment Under Test

Power supply system utilised

Power supply voltage : o 230V / 50 Hz o 115V / 60Hz
■ 12V DC o 3.7 V DC
o Other (specified in blank below)

/

2.3 Short description of the Equipment under Test (EUT)

Insert: Usage of Machine, Place it will be used, Functions
The EUT is Car air pump.

Serial number: 8003

EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test program (customer specific)

Emissions tests…….: According to EN 55014-1, searching for the highest disturbance.
Immunity tests ……..: According to EN 55014-2, searching for the highest susceptivity.
Harmonic current……. : According to EN 61000-3-2, searching for the highest disturbance.
Voltage fluctuation……. : According to EN 61000-3-3, searching for the highest disturbance.

EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

■ - supplied by the manufacturer

o - supplied by the lab

2.4 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

■ based on the used product standard
o based on the declaration of the manufacturer, requestor or purchaser

Criterion A:
Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion B:
Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion C:
Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd

Electronic detection of building, Shahe West Road, Xili Town, Nanshan, Shenzhen, China.

There is one 3m semi-anechoic chamber and two line conducted labs for final test.
The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements.

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 7631A

The 3m alternate test site of CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 126111 on March, 2011.

FCC-Registration No.: 338263

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 338263, March 24, 2008.

3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	900-1050mbar

3.4 Test Description

Emission Measurement		
Conducted Disturbance	EN 55014-1: 2017+A11:2020	N/A
Radiated Emission	EN 55014-1: 2017+A11:2020	PASS
Click Test	EN 55014-1: 2017+A11:2020	N/A
Power Clamp Radiation	EN 55014-1: 2017+A11:2020	N/A
Harmonic Current	EN 61000-3-2: 2014	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3: 2013+A1:2019	N/A
Immunity Measurement		
Electrostatic Discharge	EN 55014-2: 2015 EN 61000-4-2:2009	PASS
RF Field Strength Susceptibility	EN 55014-2: 2015 EN 61000-4-3:2006+A2:2010	N/A
Electrical Fast Transient/Burst Test	EN 55014-2: 2015 EN 61000-4-4:2012	N/A
Surge Test	EN 55014-2: 2015 EN 61000-4-5:2014	N/A
Conducted Susceptibility Test	EN 55014-2: 2015	N/A

	EN 61000-4-6:2014	
Power frequency magnetic field	EN 55014-2: 2015 EN 61000-4-8:2010	N/A
Voltage Dips and Interruptions Test	EN 55014-2: 2015 EN 61000-4-11:2004	N/A

Remark: N/A means “not applicable”.

The measurement uncertainty is not included in the test result.

3.5 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 CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd 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.

Hereafter the best measurement capability for SET laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Conducted Disturbance	0.15~30MHz	3.22dB	(1)
Radiated Emission	30~1000MHz	4.10dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6 Equipments Used during the Test

Harmonic Current/ Voltage Fluctuation and Flicker					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Purified Power Source	MToni	PHF 5010	N/A	2021/05
2	Harmonic And Flicker Analyzer	Voltech	PM6000	N/A	2021/05

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	Sunol Sciences Corp.	JB1 Antenna	A061713	2021/05
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESPI	1164.6407.07	2021/05
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2021/05
4	Controller	EM Electronics	Controller EM 1000	N/A	2021/05
5	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2021/05

Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2021/05
2	LISN	ROHDE & SCHWARZ	ENV216	101034	2021/05
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2021/05

RF Field Strength Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	SIGNAL GENERATOR	IFR	2032	203002/100	2021/05
2	AMPLIFIER	AR	150W1000	301584	2021/05
3	DUAL DIRECTIONAL COUPLER	AR	DC6080	301508	2021/05
4	POWER HEAD	AR	PH2000	301193	2021/05
5	POWER METER	AR	PM2002	302799	2021/05

Electrical Fast Transient/Surge/Dips					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra Compact Simulator	HAEFELY	ECOMPACT4	174887	2021/05

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	SKYLARK	ESD-2000	0220K10251	2021/05

Magnetic Field Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2021/05
2	Triple-Loop Antenna	EVERFINE	LLA-2	1008002	2021/05
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2021/05

Power Frequency Magnetic Field Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA COMPACT SIMULATOR	EM TEST	UCS500M6	202304/060	2021/05
2	MOTOR DRIVEN VOLTAGE TRANSFORMER	EM TEST	MV2616	302205	2021/05
3	CURRENT TRANSFORMER	EM TEST	MC2630	302389	2021/05
4	MAGNETIC COIL	EM TEST	MS100	0010230A	2021/05

Mark: The cal. Due is 1 year.

4 TEST CONDITIONS AND RESULTS

4.1 Conducted disturbance

For test instruments and accessories used see section 3.6.

4.1.1 Description of the test location

Test location: Shielded room no. 3

4.1.2 Limits of disturbance

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66~56	59~46
0.500～5.000	56	46
5.000~30.000	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

4.1.3 Description of the test set-up

According to clause 5.2.2.2 in EN 55014-1: 2017+A11:2020 “the general principle to be followed in the application of the artificial hand is that the metal foil shall be wrapped around all handles” and “when the casing of the appliance is of insulating material, metal foil shall be wrapped round the handles”, application of the artificial hand is used.

4.1.3.1 Operating Condition

The EUT is turned on during the test, and the maximum emanating results are recorded.

4.1.4 Test result

The test is not applicable

4.2 Radiated Emission

For test instruments and accessories used see section 3.6.

4.2.1 Description of the test location

Test location: Shielded room No. 2

4.2.2 Limits of disturbance(EN55022 B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

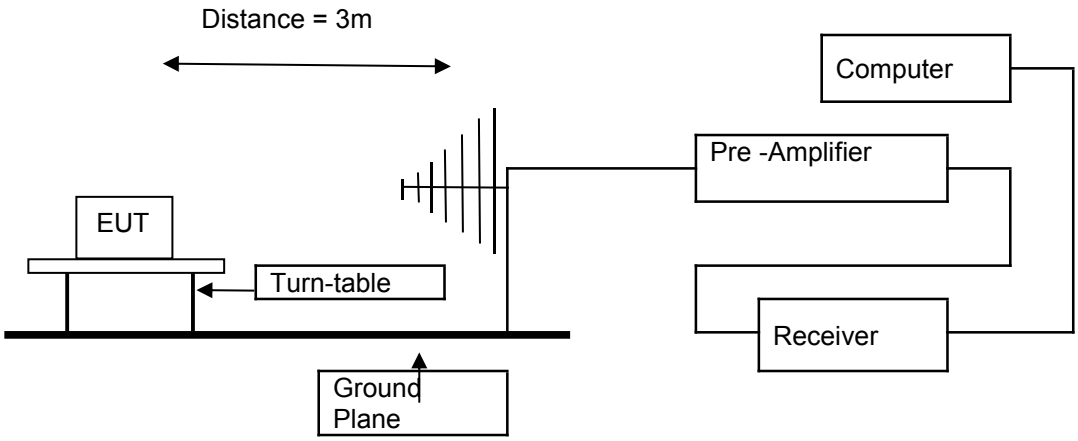
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.2.3 Description of the test set-up

4.2.3.2 Operating Condition

The EUT is set to work shall be carried out with full load mode during the test, and the maximum emanating results are recorded.

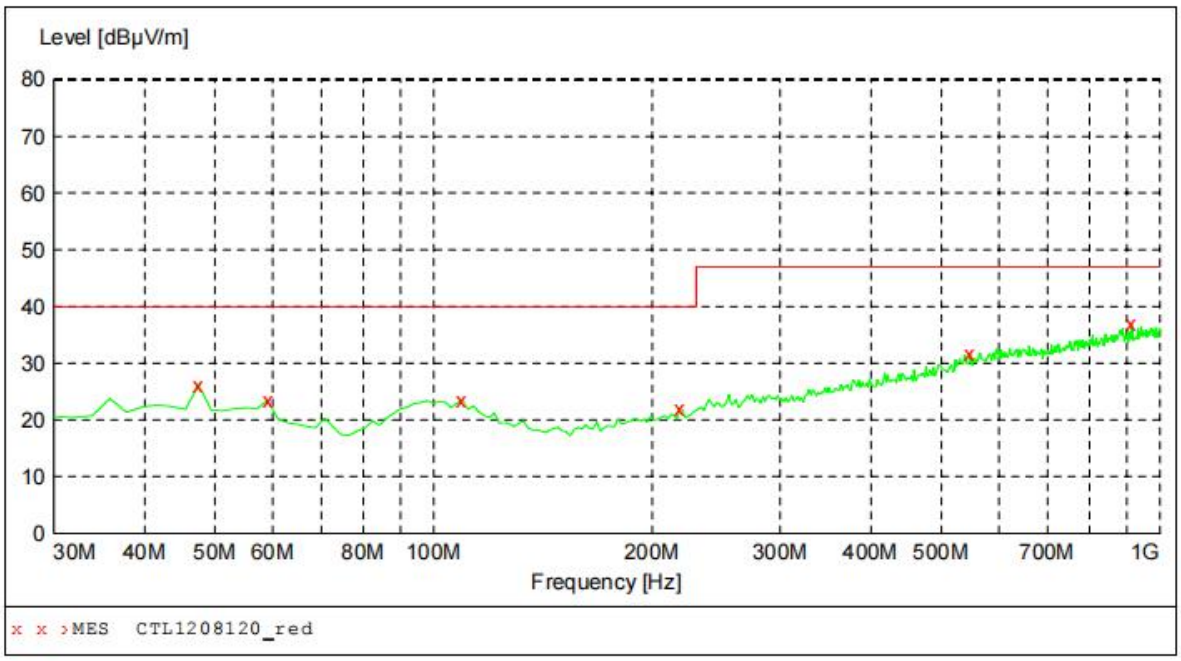
4.2.3.2 Configuration of test setup



4.2.4 Test result

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



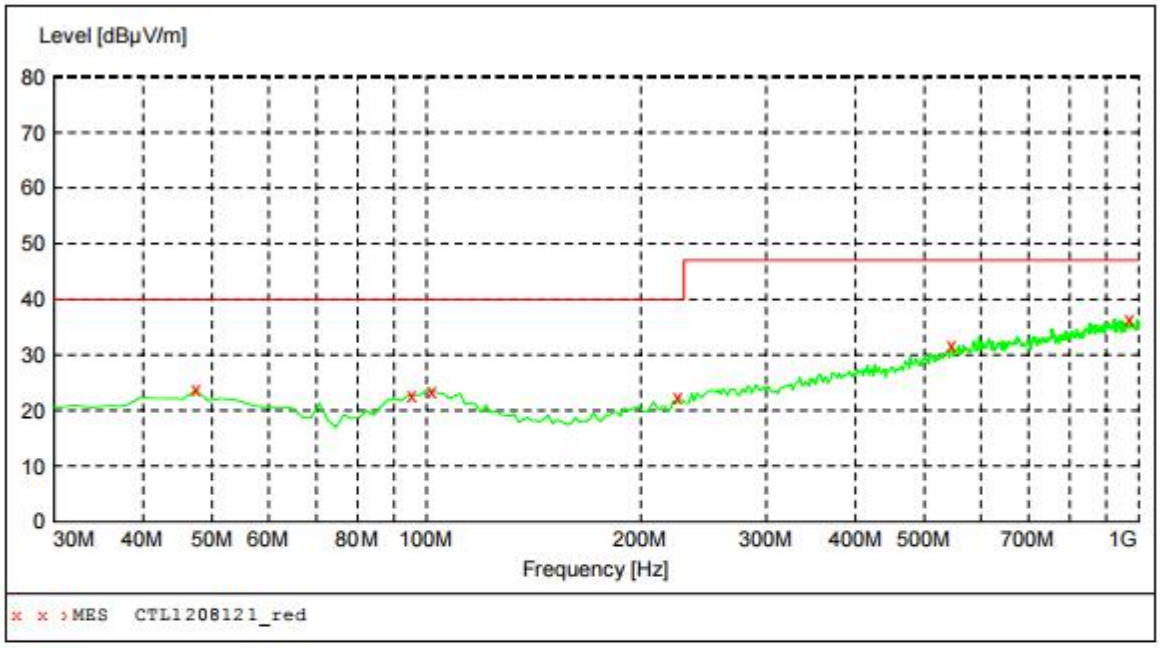
MEASUREMENT RESULT: "CTL1208120_red"

12/8/2011 20:00

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	26.20	15.8	40.0	13.8	---	100.0	0.00	VERTICAL
59.100000	23.40	14.6	40.0	16.6	---	100.0	0.00	VERTICAL
109.540000	23.40	16.6	40.0	16.6	---	100.0	0.00	VERTICAL
218.180000	21.90	15.3	40.0	18.1	---	100.0	0.00	VERTICAL
547.980000	31.70	24.9	47.0	15.3	---	100.0	0.00	VERTICAL
914.640000	37.00	29.3	47.0	10.0	---	100.0	0.00	VERTICAL

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VULB9163 NEW



MEASUREMENT RESULT: "CTL1208121_red"

12/8/2011 20:02

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	23.70	15.8	40.0	16.3	---	100.0	0.00	HORIZONTAL
95.960000	22.70	17.2	40.0	17.3	---	100.0	0.00	HORIZONTAL
101.780000	23.60	17.3	40.0	16.4	---	100.0	0.00	HORIZONTAL
225.940000	22.30	15.8	40.0	17.7	---	100.0	0.00	HORIZONTAL
546.040000	31.60	24.9	47.0	15.4	---	100.0	0.00	HORIZONTAL
974.780000	36.50	29.8	47.0	10.5	---	100.0	0.00	HORIZONTAL

4.3 Disturbance power

For test instruments and accessories used see section 3.6.

4.3.1 Description of the test location

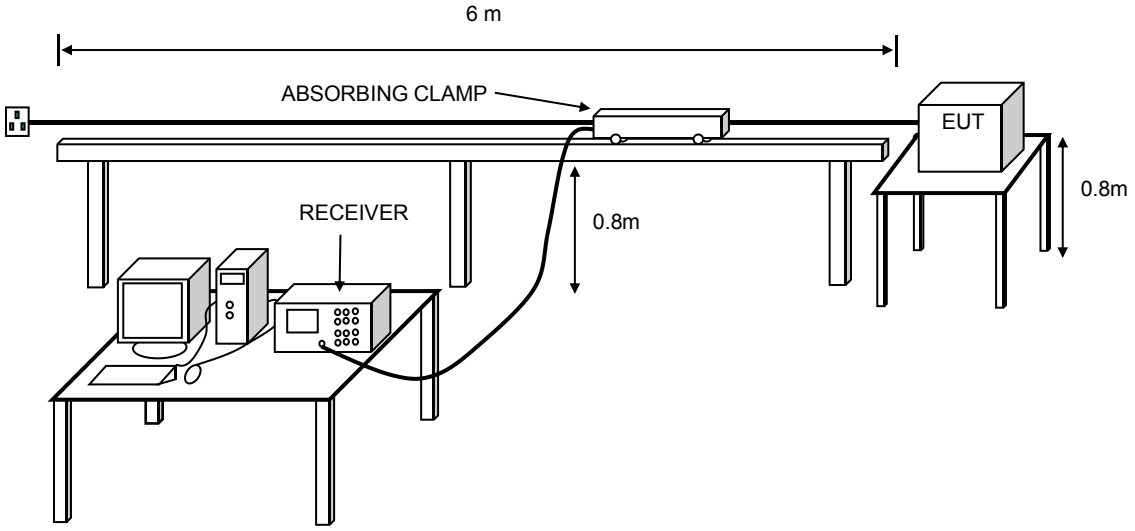
Test location: Shielded room No. 3

4.3.2 Limits of disturbance

Frequency Range (MHz)	Limits (dBpW)	
	Quasi-Peak	Average
30～300	45～55	35～45

Note: (1) The limit line is a linear line.

4.3.3 Description of the test set-up



4.3.4 Test result

The requirements are **Fulfilled**

Band Width: 120 KHz

Frequency Range: 30 MHz to 300 MHz

Remarks: The limits are kept. For detailed results, please see the following page(s).

4.3.5 Test Results

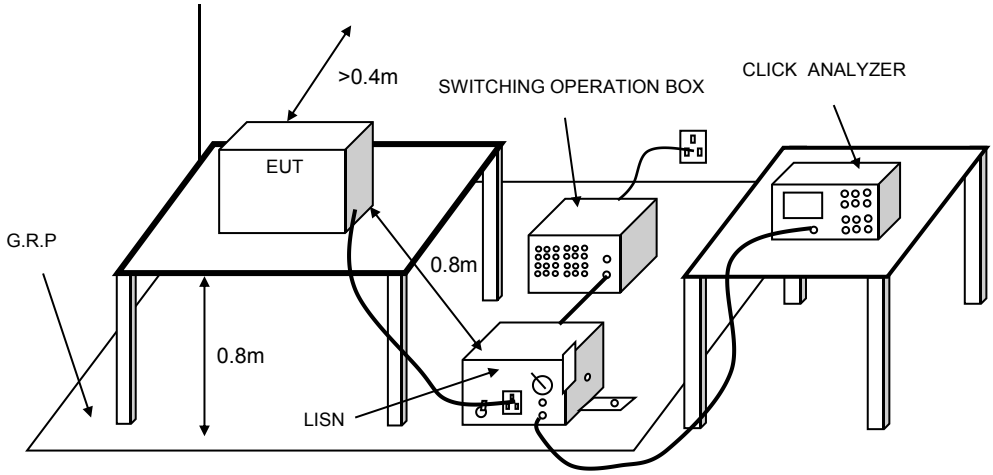
The test is not applicable.

4.4 Click

4.4.1 Description of the test location

Test location: Shielded room no. 2

4.4.2 Diagram of Test Setup



4.4.3 Test Description

4.4.3.2 Operating Condition of EUT

The operation mode of EUT is same as Section 2.4.3, except the test setup.

4.4.3.2 Test Configuration and Procedure

Test Configuration and Procedure see clause 7.4.2 of standard EN 55014-1

4.4.4 Test Results

The test is not applicable

4.5 Harmonic current

Not applicable. The EUT is less than 75w.

4.6 Voltage fluctuations and flicker

For test instruments and accessories used see section 3.6.

4.6.1 Description of the test location

Test location: Shielded room No. 3

4.6.2 Limits of Voltage Fluctuation and Flicker

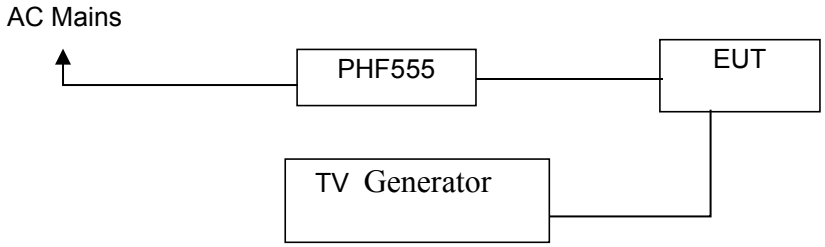
Test configuration and procedure see clause 5 of standard EN 61000-3-3: 2013+A1:2019.

4.6.3 Description of the test set-up

4.6.3.1 Operating Condition

The EUT is set to work shall be carried out with Play mode during the test, and the maximum emanating results are recorded.

4.6.3.2 Configuration of test setup



4.6.4 Test result

The test is not applicable

4.7 Electrostatic discharge

For test instruments and accessories used see section 3.6.

4.7.1 Description of the test location and date

Test location: Shielded room No. 3

Date of test: July 20, 2021

Operator: Sam

4.7.2 Severity levels of electrostatic discharge

4.7.3.2 Severity level: Contact Discharge at ±4KV Air Discharge at±8KV

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

4.7.3.2 Performance criterion: **B**

4.7.3 Description of the test set-up

4.7.3.2 Operating Condition

The EUT is on mode during the test, and the results of the maximum susceptivity are recorded.

4.7.3.2 Test Configuration and Procedure:

Air Discharge:

－This test is done on a non-conductive surfaces. The round discharge tip of the Electrostatic Discharge simulator shall be approached as fast as possible then to touch the EUT. After each discharge, the simulator shall be removed from the EUT. The simulator 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

Contact Discharge**:**

－All the procedure shall be same as air discharge, except using the acute discharge tip. The top end of the Electrostatic Discharge simulator is touch the EUT all the time when the simulator is re-triggered for a new single discharge and repeated 10 times for each pre-selected test point.

Indirect Discharge:

－The vertical coupling plane(VCP) is placed 0.1m away from EUT. The top end of Electrostatic Discharge simulator should aim at the center of one border of the VCP for at least 10 times discharge.

－The top end of Electrostatic Discharge simulator should place at the point 0.1m away from EUT on the horizontal coupling plane(HCP). At least 10 times discharge should be done for every pre-selected point around EUT.

Record any performance degradation of the EUT during the test and judge the test result according to performance criterion.

4.7.4 Test specification:

Contact discharge voltage:	■ 2 kV ■ 4 kV	
Air discharge voltage:	■ 2 kV ■ 4 kV	■ 8 kV
Events(every polarity) /per point:	■ 10	
Time between events:	■ 1 s	
Type of discharge:	Direct discharge	■ Air discharge ■ Contact discharge
	Indirect discharge	■ Contact discharge
Polarity:	■ Positive	■ Negative
Discharge location:	■ all external locations accessible by hand	
	■ horizontal coupling plane (HCP)	
	■ vertical coupling plane (VCP)	

4.7.5 Test result

The requirements are **Fulfilled** Performance Criterion: **B**

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

4.8 RF Field Strength Susceptibility

The test is not applicable.

4.9 Electrical fast transients / Burst

The test is not applicable

4.10 Surge

The test is not applicable

4.11 Conducted disturbances induced by radio-frequency fields

The test is not applicable

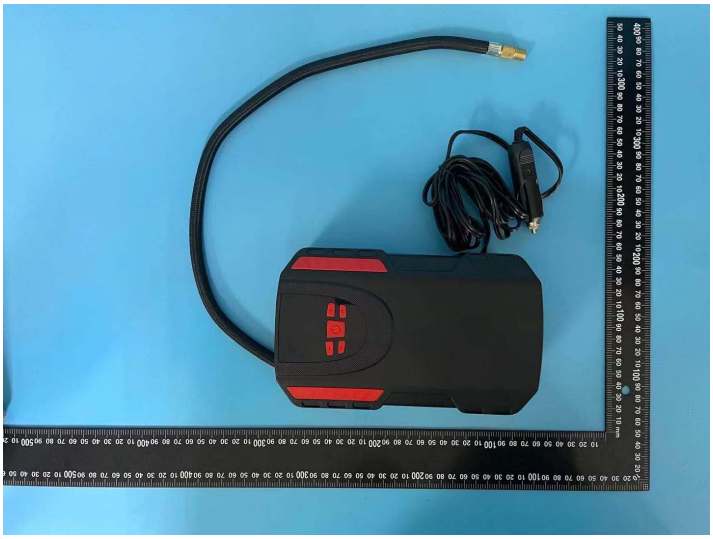
4.12 Magnetic Field Immunity

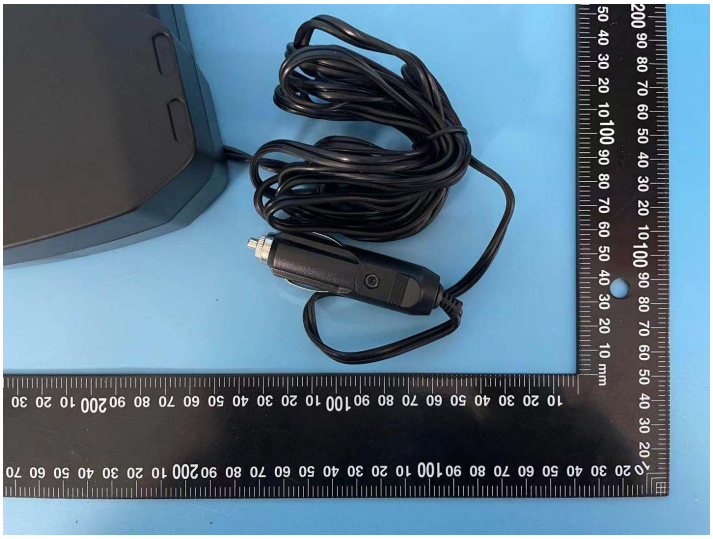
The test is not applicable

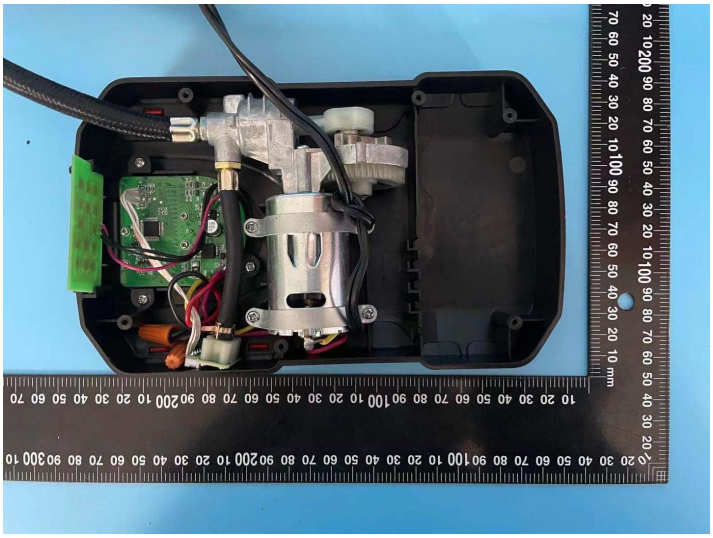
4.13 Voltage dips and short interruptions

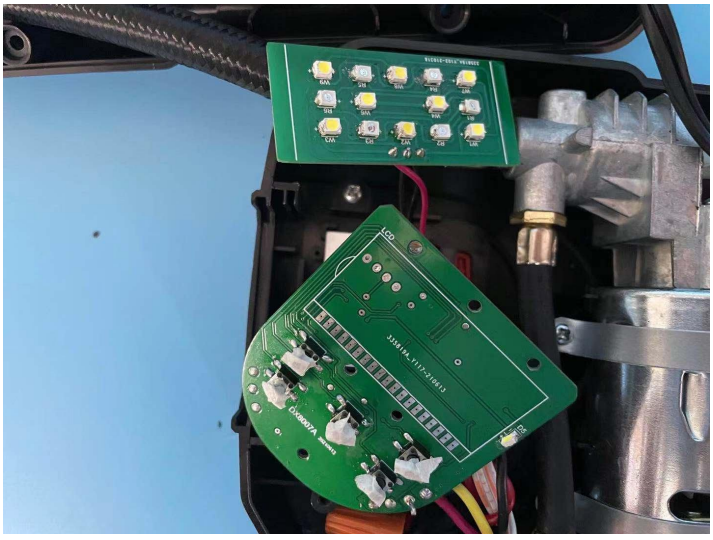
The test is not applicable

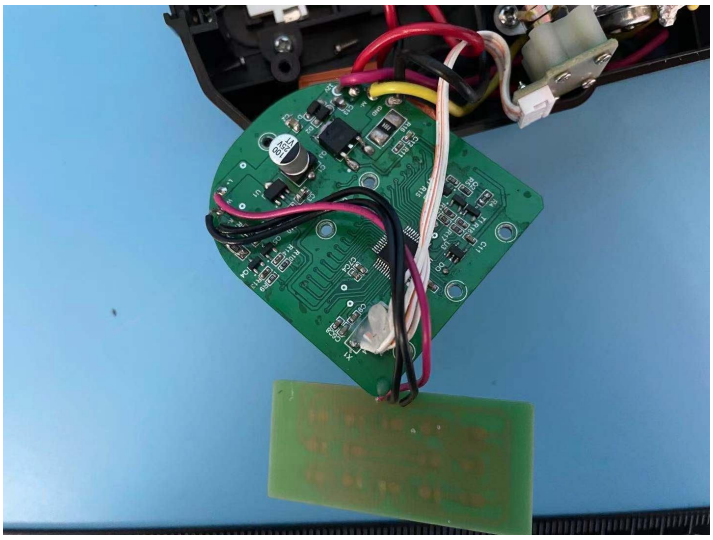
5 Photos of the EUT











.....End of Report.....