



TEST REPORT

Electromagnetic compatibility of Household appliances, electrical tools & similar apparatus

Report Number.	90708-18-70-18-EMCPP001	
Date of issue	Sep. 13, 2018	
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Manufacturer's name	Grobman International Limited	
Address	No.158, East Wuxiang Road,Wuxiang Town, Yinzhou District, Ningbo 315111, Zhejiang Province, China	
Standard(s)	EN 55014-1:2006+A1:2009+A2:2011 EN 55014-2:2015 EN 61000-3-2:2014 EN 61000-3-3:2013	
Test item description	SOLAR CARZ(sports car; muscle car; monster truck)	
Trade Mark	/	
Model/Type reference	71090	
Rating(s)	DC From Solar	
Date of receipt of test item	Sep. 13, 2018	
Date (s) of performance of test:	Sep. 13, 2018	
Summary of Test Results	Pass	
The Summary of Test Results based on a technical opinion belongs to the standard(s).		
General disclaimer:		
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1. General Information

1.1. Description of device (EUT)

Test item description..... :	SOLAR CARZ(sports car; muscle car; monster truck)
Model/Type reference..... :	71090
Rating(s)..... :	DC From Solar
AC Line..... :	<input type="checkbox"/> Shielded <input type="checkbox"/> Unshielded, <input type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input checked="" type="checkbox"/> No applicable <input type="checkbox"/> Length:
DC Line..... :	<input type="checkbox"/> Shielded <input type="checkbox"/> Unshielded, <input type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input checked="" type="checkbox"/> No applicable <input type="checkbox"/> Length:

1.2. Difference between model numbers

None

1.3. EUT Operation modes

Mode #	Description	Test voltage
1	Normal Operation	DC From Solar
2	/	/
3	/	/

The Worst Test Mode		
Emission	Limits of radiated electromagnetic disturbances	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3

1.4. Description of support units

Product Type	Manufacturer	Model	Serial No.
/	/	/	/

1.5. Block diagram of test set-up



EUT: SOLAR CARZ(sports car; muscle car; monster truck)



1.6. General test conditions

Environmental reference conditions

If not defined otherwise by the Technical Committee responsible for the generic standard and/or the product standard the climatic conditions during the tests are to be 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:

Ambient Temperature	Relative Humidity	Air pressure
15 to 35 °C	30 to 60 %	86 kPa – 106 kPa

If explicitly required in the test base (basic) the climatic values are recorded and documented separately for the respective test.

Measurement uncertainties

Test Item	Uncertainty
Uncertainty for Disturbance voltage at the mains terminals	2.98 dB
Uncertainty for Disturbance power	4.12 dB
Uncertainty for Radiated electromagnetic disturbances	4.18 dB

All tests are subject to measurement uncertainties. The overall measurement uncertainty of a measurement is defined as the range of which can be supposed that it contains the true value with a specified probability.

This probability is 95 % for the generally specified measurement uncertainty (so-called expanded measurement uncertainty).

The limits for emission measurements and the test levels for immunity tests in the applied standards were defined taking into consideration the accuracy limits for measurement and testing equipment required by the basic standards.

All measurement and test results of the EMC laboratory of SLG-CPC Testlaboratory Co., Ltd. fulfil the requirements for measurement uncertainties according to the standards applied.

1.7. Performance criteria

Performance criterion A
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.
Performance criterion B
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 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 derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
Performance criterion C
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.

**1.8. Specific information EN 55014-2**

Category acc. EN 55014-2 (7.2) :	<input type="checkbox"/>	CAT I (Category I)
	<input type="checkbox"/>	CAT II (Category II)
	<input checked="" type="checkbox"/>	CAT III (Category III)
	<input type="checkbox"/>	CAT IV (Category IV)



2. Result Summary

EN 55014-1:2006+A1:2009+A2:2011		
Requirement – Test	Result - Remark	Verdict
Limits of disturbance voltage at mains terminals	See 4.1	N/A
Limits of disturbance power	See 4.2	N/A
Limits of radiated electromagnetic disturbances	See 4.3	Pass
Limits for discontinuous disturbance (clicks)	See 4.4	N/A
EN 55014-2:2015		
Requirement – Test	Result - Remark	Verdict
Electrostatic discharge immunity (ESD)	See 5.1	N/A
Radiated, radio-frequency, electromagnetic field immunity (RS)	See 5.2	N/A
Electrical fast transient/burst immunity (EFT/B)	See 5.3	N/A
Surge immunity	See 5.4	N/A
Immunity to conducted disturbances, induced by radio-frequency fields (CS)	See 5.5	N/A
Voltage dips, short interruptions and voltage variations immunity (DIPS)	See 5.6	N/A
EN 61000-3-2:2014		
Requirement – Test	Result - Remark	Verdict
Harmonic current emissions	See 4.5	N/A
EN 61000-3-3:2013		
Requirement – Test	Result - Remark	Verdict
Voltage Fluctuations and Flicker	See 4.6	N/A

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)



3. List of Test and Measurement Equipment

Equipment	Manufacturer	Model	Serial Number	Cal. Due
<input type="checkbox"/> Disturbance voltage at the mains terminals				
LISN	Schwarzbeck	NSLK 8127	8127-892	2019-04-03
EMI Test Receiver	R&S	ESR3	102124	2018-12-22
Pulse Limiter	R&S	ESH3-Z2	357.8810.52	2019-04-03
<input type="checkbox"/> Discontinuous disturbance (click)				
Clicker	Schwarzbeck	DIA1512D	21554	2018-10-10
LISN	Schwarzbeck	NSLK 8126	8126453	2018-10-10
<input type="checkbox"/> Disturbance power				
EMI Test Receiver	R&S	ESR3	102124	2018-12-22
Absorbing Clamp	R&S	MDS-21	832231/015	2019-04-04
<input checked="" type="checkbox"/> Radiated electromagnetic disturbances				
RF Preamp Amplifier	EMEC	EM330	060676	2018-12-22
Broadband Antenna	Schwarzbeck	9162	139	2019-04-21
EMI Test Receiver	R&S	ESVS30	829673/011	2018-09-04
EXA signal analyzer	KEYSIGHT	MY56070465	N9010A	2018-12-22
<input type="checkbox"/> Harmonic current emissions & Voltage Fluctuations and Flicker				
Harmonic/Flicker Test System	AMETEK	5001ix-CTS-40 0-413	1642A03401	2019-04-03
<input type="checkbox"/> Electrostatic discharge immunity (ESD)				
ESD Simulator	TESTQ	NSG437	1097	2018-12-22
<input type="checkbox"/> Radiated, radio-frequency, electromagnetic field immunity (RS)				
Signal Generator	R&S	SML02	100904	2019-04-09
Amplifier	Milmega	80RF1000-300	1074126	2018-12-22
Periodic Antenna	Schwarzbeck	STLP 9129	00017	/
Field probe	PMM(Narda)	EP 601	511wx51163	2018-12-22
Power Meter	R&S	NRVD	833235/008	2019-04-03
<input type="checkbox"/> Electrical fast transient/burst immunity (EFT/B)				
IMU4000 Test System	EMC-PARTNER	IMU4000 F-D-V	1501	2018-12-22
<input type="checkbox"/> Surge immunity				
Surge Impulse Generator	EMC-PARTNER	MIG0603IN2	1517	2018-12-22
<input type="checkbox"/> Immunity to conducted disturbances, induced by radio-frequency fields (CS)				
Conducted Immunity Test System	FRANKONIA	CIT-10-75	126B1435/2016	2018-12-22
6db attenuator	FRANKONIA	75-A-FFN-06	1628	2018-12-22
Coupling/Decoupling Network	FRANKONIA	CDN M2+3	A2210421/2016	2018-12-22
EM-Clamp	FRANKONIA	EMCL-20	132A1290/2016	2018-12-22
<input type="checkbox"/> Voltage dips, short interruptions and voltage variations immunity (DIPS)				
IMU4000 Test System	EMC-PARTNER	IMU4000 F-D-V	1501	2018-12-22
External 16A Variac for Dips and Variations	EMC-PARTNER	VAR-EXT1000	1545	2018-12-22

: **Used**

: **Not Used**



4. Test Conditions and Results (Emission)

4.1. Limits of disturbance voltage at the mains terminals

Test Requirement:	EN 55014-1:2006+A1:2009+A2:2011		
Test Frequency Range:	150 kHz to 30 MHz		
Limit:	Household appliances		
	Frequency (MHz)	Limit dB (μV)	
		Quasi-Peak	Average
	0.15 to 0.5	66 to 56	59 to 46
	0.5 to 5	56	46
	5 to 30	60	50
	Mains terminal of tools ≤ 700 W		
	Frequency (MHz)	Limit dB (μV)	
		Quasi-Peak	Average
	0.15 to 0.35	66-59	59-49
	0.35 to 5	59	49
	5 to 30	64	54
	Mains terminal of tools 700 W < P ≤ 1000 W		
	Frequency (MHz)	Limit dB (μV)	
		Quasi-Peak	Average
	0.15 to 0.35	70 to 63	63 to 53
	0.35 to 5	63	53
	5 to 30	68	58
Mains terminal of tools > 1000 W			
Frequency (MHz)	Limit dB (μV)		
	Quasi-Peak	Average	
0.15 to 0.35	76 to 69	69 to 59	
0.35 to 5	69	59	
5 to 30	74	64	
Test Method:	The AMN placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	This test isn't applicable because the EUT doesn't have relative function.		



4.2. Limits of disturbance power

Test Requirement:	EN 55014-1:2006+A1:2009+A2:2011		
Test Frequency Range:	30 MHz to 300 MHz		
Limit:	Household appliances		
	Frequency (MHz)	Limit dB(pW)	
		Quasi-Peak	Average
	30 to 300	45 to 55	35 to 45
	Mains terminal of tools ≤ 700 W		
	Frequency (MHz)	Limit dB(pW)	
		Quasi-Peak	Average
	30 to 300	45 to 55	35 to 45
	Mains terminal of tools 700 W < P ≤ 1000 W		
	Frequency (MHz)	Limit dB(pW)	
		Quasi-Peak	Average
	30 to 300	49 to 59	39 to 49
Mains terminal of tools > 1000 W			
Frequency (MHz)	Limit dB(pW)		
	Quasi-Peak	Average	
30 to 300	55 to 65	45 to 55	
Test Method:	<p>The distance between the clamp test set-up (the appliance, the lead to be measured and the absorbing clamp) and any other conductive objects (including persons, walls and ceiling, but excluding the floor) shall be at least 0.8 m. The appliance to be tested shall be placed on a non-metallic support table parallel to the floor. The height of the table shall be 0.1 m ± 0.025 m for appliances primarily intended to be positioned on the floor in normal use, and 0.8 m ± 0.05 m for other appliances.</p> <p>The lead to be measured is placed in a straight line for a distance sufficient to accommodate the absorbing clamp, and to permit the necessary measuring adjustment of position for tuning. The clamp is placed around the lead.</p>		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	This test isn't applicable because the EUT doesn't have relative function.		



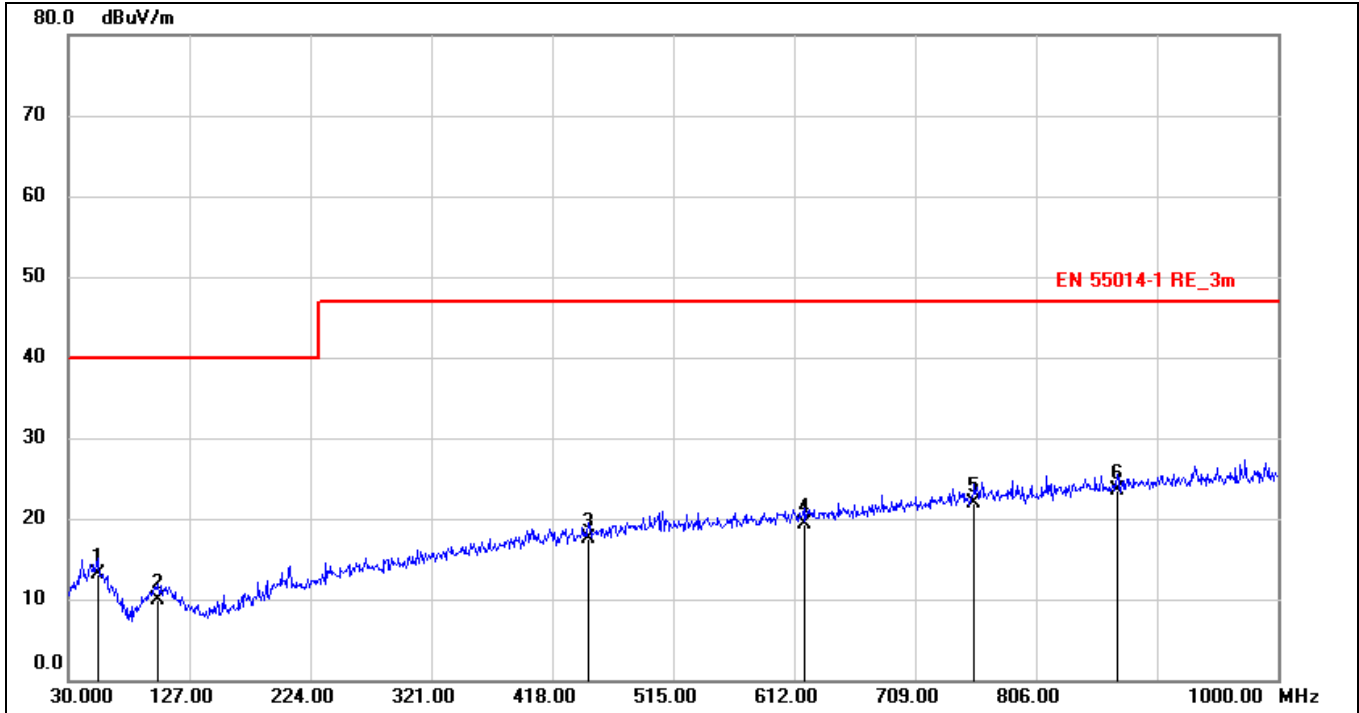
4.3. Limits of radiated electromagnetic disturbances

Test Requirement:	EN 55014-1:2006+A1:2009+A2:2011	
Test Frequency Range:	30 MHz to 1 GHz	
Limit:	Limit dB (μV/m) at 3m	
	Frequency (MHz)	Quasi-Peak
	30 to 230	40
	230 to 1000	47
Test Method:	Measurements were made in a 3-meter semi-anechoic chamber that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meters with the receive antenna located at 1 meter height in both horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Test Information		
Ambient Temperature:	15 to 35 °C	
Relative Humidity:	30 to 60 %	
Test model(s):	71090	
Test by:	Bill LIANG	
Test date:	Sep. 13, 2018	
Test Location:	No. 2, Wusong Road, Yuwu Industrial Area, Dongcheng District, Dongguan, Guangdong, China 523117	
Test mode:	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3	
Test results:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> N/A	
Remark:	/	



Measurement Data

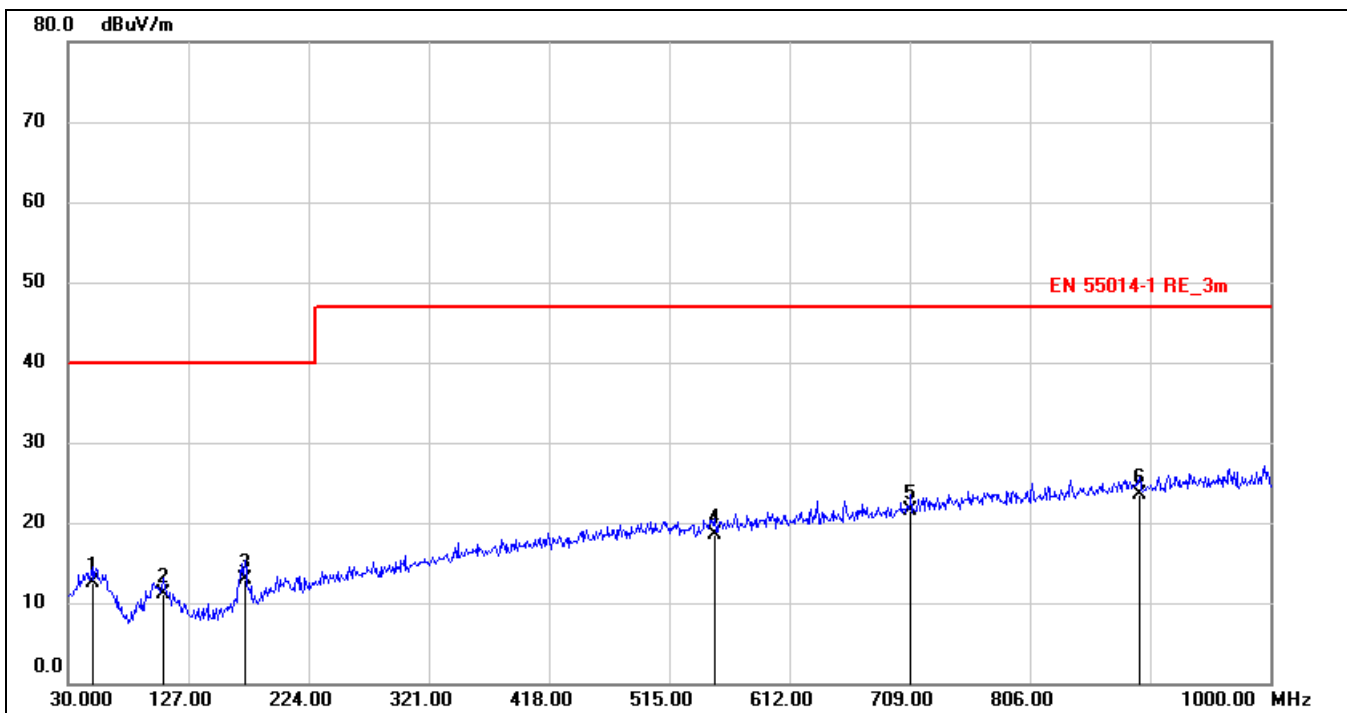
EUT:	SOLAR CARZ(sports car; muscle car; monster truck)	Polarization:	Horizontal
Model:	71090	Power Source:	DC From Solar
Mode:	Normal Operation	Date:	2018/9/13
Temp./Hum.(%RH):	23/52%RH	Time:	11:25:17
Standard:	EN 55014-1 RE_3m	Test By:	Bill LIANG
Test item:	Radiation Test	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	53.2800	30.89	-17.76	13.13	40.00	-26.87	QP
2	101.7800	29.87	-19.87	10.00	40.00	-30.00	QP
3	447.1000	31.40	-13.92	17.48	47.00	-29.52	QP
4	619.7600	30.57	-11.25	19.32	47.00	-27.68	QP
5	756.5300	31.58	-9.59	21.99	47.00	-25.01	QP
6	870.9900	31.70	-8.21	23.49	47.00	-23.51	QP



EUT:	SOLAR CARZ(sports car; muscle car; monster truck)	Polarization:	Vertical
Model:	71090	Power Source:	DC From Solar
Mode:	Normal Operation	Date:	2018/9/13
Temp./Hum.(%RH):	23/52%RH	Time:	11:30:07
Standard:	EN 55014-1 RE_3m	Test By:	Bill LIANG
Test item:	Radiation Test	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	49.4000	29.89	-17.44	12.45	40.00	-27.55	QP
2	106.6300	31.05	-19.95	11.10	40.00	-28.90	QP
3	172.5900	34.78	-21.89	12.89	40.00	-27.11	QP
4	551.8600	30.74	-12.21	18.53	47.00	-28.47	QP
5	709.9699	31.70	-10.12	21.58	47.00	-25.42	QP
6	894.2700	31.50	-7.95	23.55	47.00	-23.45	QP



4.4. Limits for discontinuous disturbance (clicks)

Test Requirement:	EN 55014-1:2006+A1:2009+A2:2011	
Test Frequency Range:	150 kHz to 30 MHz	
Limit:	Frequency (MHz)	Limit dB (μV)
		Quasi-Peak
	0.15	66
	0.5	56
	1.4	56
	30	60
Test Method:	Measurement of a disturbance, the amplitude of which exceeds the quasi-peak limit of continuous disturbance, the duration of which is not longer than 200 ms which is separated from a subsequent disturbance by at least 200 ms.	
Test Information		
Ambient Temperature:	/	
Relative Humidity:	/	
Test model(s):	/	
Test by:	/	
Test date:	/	
Test Location:	/	
Test mode:	/	
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A	
Remark:	This test isn't applicable because the EUT doesn't have relative function.	



4.5. Harmonic current emissions

Test Requirement:	EN 61000-3-2:2014	
Limit classification in accordance with the standard:	<input type="checkbox"/>	Class A
	<input type="checkbox"/>	Class B
	<input type="checkbox"/>	Class C with active input power > 25 W
	<input type="checkbox"/>	Class C with active input power ≤ 25 W
	<input type="checkbox"/>	Class D
	<input checked="" type="checkbox"/>	N/A (Not Applicable)
Test Method:	This test consists on the measurement of harmonics components of the input current which may be produced by equipment having an input current up to and including 16 A per phase, and intended to be connected to public low-voltage distribution systems. The equipment is tested under specified conditions of operation.	
Test Information		
Ambient Temperature:	/	
Relative Humidity:	/	
Test model(s):	/	
Test by:	/	
Test date:	/	
Test Location:	/	
Test mode:	/	
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A	
Remark:	This test isn't applicable because the EUT doesn't have relative function.	



4.6. Voltage changes, voltage fluctuations and flicker

Test Requirement:	EN 61000-3-3:2013
Limits:	<p>The value of Pst shall be not greater than 1.0 The value of Plt shall be not greater than 0.65 The value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms The relative steady-state voltage change, dc shall not exceed 3.3 % The maximum relative voltage change d_{max} shall not exceed:</p> <p>a) 4 % without additional conditions b) 6 % for equipment which is: - switched manually, or - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption c) 7 % for equipment which is - attended whilst in use (for example : hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as mowers, portable tools such as electric drills), or - switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.</p>
Test Method:	This test consists on the measurement of voltage changes, voltage fluctuations and flicker which may be produced by equipment having an input current ≤ 16 A per phase, and intended to be connected to public low-voltage distribution systems. The equipment is tested under specified conditions of operation.
Test Information	
Ambient Temperature:	/
Relative Humidity:	/
Test model(s):	/
Test by:	/
Test date:	/
Test Location:	/
Test mode:	/
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A
Remark:	This test isn't applicable because the EUT doesn't have relative function.



5. Test Conditions and Results (Immunity)

5.1. Electrostatic discharge immunity (ESD)

Test Requirement:	EN 55014-2:2015		
Basic Standard:	EN 61000-4-2:2009		
Test Levels:	Discharge type	Discharge Level (kV)	Number of discharges per location (each polarity)
	Air – Direct	±2, 4, 8	10
	Contact – Direct	±2, 4	10
	Contact – Indirect	±2, 4	10
Performance Criteria:	B		
Test Method:	<p>The test is intended to demonstrate the immunity of equipment subjected to static electricity discharges from operators directly and to adjacent objects. The table-top equipment under test is placed on a wooden table, 0.8 m high, standing on the ground reference plane. A horizontal coupling plane (HCP), 1.6 x 0.8 m, is placed on the table. The EUT and the cables are isolated from the coupling plane by an insulating support 0.5 mm thick. The floor standing equipment is isolated from the ground reference plane by an insulating support about 0.1 m thick. The vertical coupling plane (VCP) of dimensions 0.5 m x 0.5 m is placed parallel to, and positioned at a distance of 0.1 m from, the EUT.</p>		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Air pressure:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	<p>This test item has no electronic control circuitry and is Immunity Category I equipment (EN 55014-2:2015 clause 4.2). Category I apparatus is deemed to fulfill the relevant immunity requirements without testing (EN 55014-2: 2015 clause 7.2.1).</p>		



5.2. Radiated, radio-frequency, electromagnetic field immunity (RS)

Test Requirement:	EN 55014-2:2015		
Basic Standard:	EN 61000-4-3:2006+A1:2008+A2:2010		
Test Levels:	Frequency (MHz)	(V/m)	Modulation
	80 - 1000	3	80% AM (1 kHz)
Performance Criteria:	A		
Test Method:	Measurements were made in a fully anechoic chamber and the indicated field strength was pre-calibrated prior to placement of the system under test. Tests were performed in both the horizontal and vertical polarities, where applicable. The antenna was placed 3 meters from the product under test. All sides of the EUT were investigated for anomalies.		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Air pressure:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	This test item has no electronic control circuitry and is Immunity Category I equipment (EN 55014-2:2015 clause 4.2). Category I apparatus is deemed to fulfill the relevant immunity requirements without testing (EN 55014-2: 2015 clause 7.2.1).		



5.3. Electrical fast transient/burst immunity (EFT/B)

Test Requirement:	EN 55014-2:2015		
Basic Standard:	EN 61000-4-4:2012		
Test Levels:	Measurement Point	(kV)	Repetition Frequency (kHz)
	Input and output a.c. power ports	±1	5
	Input and output d.c. power ports	±0.5	5
	Signal and control lines	±0.5	5
Performance Criteria:	B		
Test Method:	The test is intended to demonstrate the immunity of equipment subjected to types of transient disturbances such as those originating from switching transients (interruption of inductive loads, relay contact bounce....). The bursts are applied on the mains supply port by using a coupling decoupling network and on signal and control lines ports by using a capacitive clamp.		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Air pressure:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	This test isn't applicable because the EUT doesn't have relative function.		



5.4. Surge immunity

Test Requirement:	EN 55014-2:2015	
Basic Standard:	EN 61000-4-5:2014+A1:2017	
Test Levels:	Wave-shape data	1.2/50 (8/20) μ s
	line to line	± 1 kV
	line to ground	± 2 kV
Performance Criteria:	B	
Test Method:	Mains power tests were conducted with the product connected to a Coupling/Decoupling Network (CDN). The test voltage was increased from the lowest indicated level up to the maximum level. Five positive polarity pulses at the 90° phase angle, five negative polarity pulses at the 270° phase angle. Each surge was applied 60 seconds after the previous surge. Signal and Telecommunications ports were subject to five (5) positive and five (negative) surges applied through the appropriate Coupling/Decoupling Network (CDN).	
Test Information		
Ambient Temperature:	/	
Relative Humidity:	/	
Air pressure:	/	
Test model(s):	/	
Test by:	/	
Test date:	/	
Test Location:	/	
Test mode:	/	
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A	
Remark:	This test isn't applicable because the EUT doesn't have relative function.	



5.5. Immunity to conducted disturbances, induced by radio-frequency fields (CS)

Test Requirement:	EN 55014-2:2015		
Basic Standard:	EN 61000-4-6:2014+AC:2015		
Test Levels:	Measurement Point	(V rms)	Modulation
	Input and output a.c. power ports	3	80% AM (1kHz)
	Input and output d.c. power ports	1	80% AM (1kHz)
	Signal and control lines	1	80% AM (1kHz)
Performance Criteria:	A		
Test Method:	Measurements were made on a ground plane that extends 0.5-meter minimum beyond all sides of the system under test. The EUT was located 10cm above the reference ground plane and any associated I/O cables attached to the EUT were located between 30mm and 50mm above the ground plane. The indicated field was pre-calibrated prior to placement of the system under test.		
Test Information			
Ambient Temperature:	/		
Relative Humidity:	/		
Air pressure:	/		
Test model(s):	/		
Test by:	/		
Test date:	/		
Test Location:	/		
Test mode:	/		
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A		
Remark:	This test isn't applicable because the EUT doesn't have relative function.		



5.6. Voltage dips, short interruptions and voltage variations immunity (DIPS)

Test Requirement:	EN 55014-2:2015				
Basic Standard:	EN 61000-4-11:2004+A1:2017				
Test Levels:	Frequency	Voltage Reduction	Period (Cycles)	Sync Angle	Performance Criteria
	50 Hz	100	0.5	0°; 180°	C
	50 Hz	60	10	0°; 180°	C
	50 Hz	30	25	0°; 180°	C
	60 Hz	100	0.5	0°; 180°	C
	60 Hz	60	12	0°; 180°	C
	60 Hz	30	30	0°; 180°	C
Performance Criteria:	C				
Test Method:	The test allows estimating of the conducted immunity of electrical and electronic equipment connected to low-voltage power supply networks for voltage dips and short interruptions. The interference is applied on mains supply port by using a testing generator.				
Test Information					
Ambient Temperature:	/				
Relative Humidity:	/				
Air pressure:	/				
Test model(s):	/				
Test by:	/				
Test date:	/				
Test Location:	/				
Test mode:	/				
Test results:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> N/A				
Remark:	This test isn't applicable because the EUT doesn't have relative function.				



6. Photo of test setup

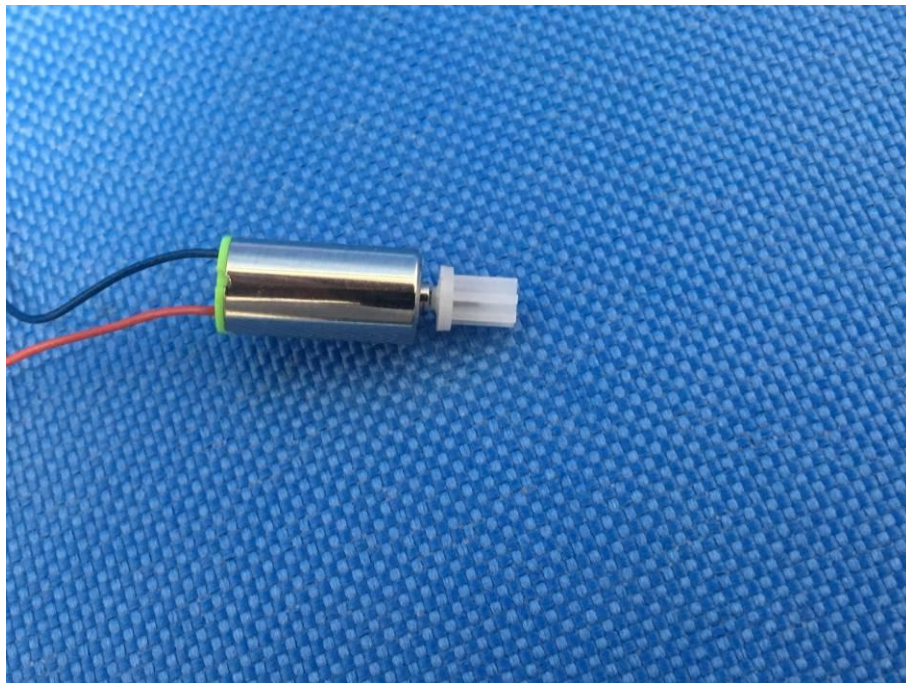
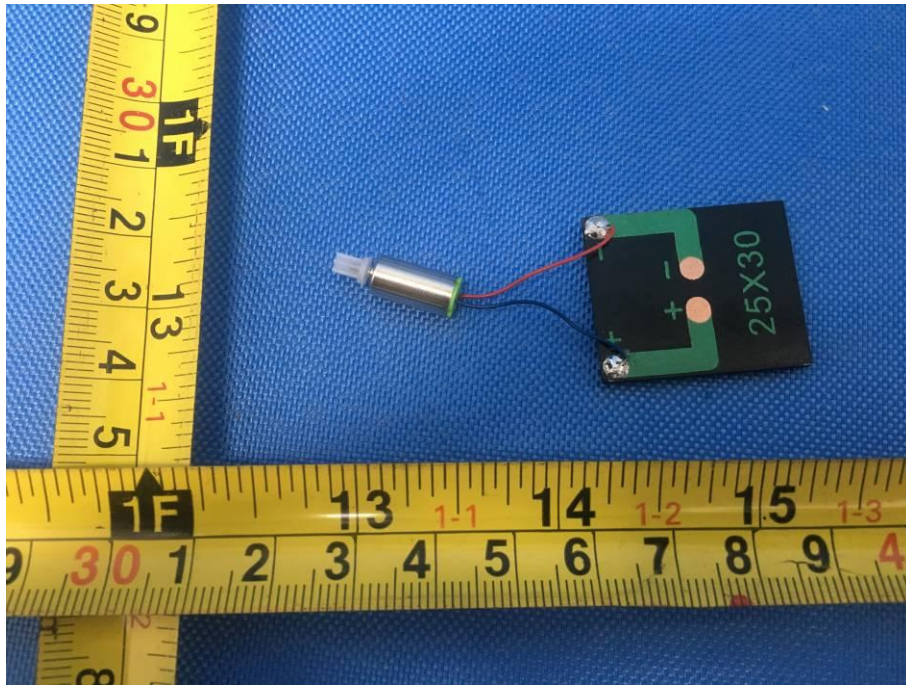
Set-up for radiated electromagnetic disturbances





7. Photo of the EUT







Reference picture



******End of report******