



## SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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Report No.: SHEM170500285201

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# TEST REPORT

**Application No.:** SHEM1705002852MD  
**Applicant:** ZHEJIANG XINZHENG INDUSRY AND TRADE CO., LTD  
**Address of Applicant:** MACHINERY INDUSTRY ZONE, NANMA TOWN, DONGYANG CITY, ZHEJIANG  
**Manufacturer:** ZHEJIANG XINZHENG INDUSRY AND TRADE CO., LTD  
**Address of Manufacturer:** MACHINERY INDUSTRY ZONE, NANMA TOWN, DONGYANG CITY, ZHEJIANG  
**Factory:** ZHEJIANG XINZHENG INDUSRY AND TRADE CO., LTD  
**Address of Factory:** MACHINERY INDUSTRY ZONE, NANMA TOWN, DONGYANG CITY, ZHEJIANG  
**Equipment Under Test (EUT):**  
**EUT Name:** Electric Scooter  
**Model No.:** XZ-E008A, XZ-E008B, XZ-E008C  
Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Standards:** EN 61000-6-3:2007 +A1:2011  
EN 61000-6-1:2007  
**Date of Receipt:** 2017-05-18  
**Date of Test:** 2017-05-18 to 2017-06-05  
**Date of Issue:** 2017-06-06

<b>Test Result :</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Parlam Zhan  
E&E Section Manager



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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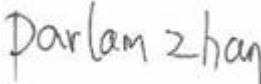


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Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2017-06-06		Original

Authorized for issue by:				
Tested By				2017-06-01
		Zenger_zhang /Project Engineer		Date
Checked By				2017-06-05
		Parlam_zhan /Reviewer		Date



## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Disturbance at Mains Terminals(150kHz-30MHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-1	N/A	Pass
Radiated Disturbance(30MHz-1GHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-3	N/A	Pass
Harmonic Current Emission	EN 61000-6-3:2007 +A1:2011	EN 61000-3-2:2014	Class A	Pass
Voltage Fluctuations and Flicker	EN 61000-6-3:2007 +A1:2011	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass
Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 61000-6-1:2007	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients/Burst at Power Port	EN 61000-6-1:2007	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 61000-6-1:2007	EN 61000-4-5:2014	1.2/50µs Tr/Td 0.5kV Line to Line 0.5kV Line to Ground	Pass
Conducted Immunity at Power Port(150kHz-80MHz)	EN 61000-6-1:2007	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 61000-6-1:2007	EN 61000-4-11:2004	0 % UT for 0.5per 0 % UT for 1per 70 % UT for 25per 0 % UT for 250per UT is Supply Voltage	Pass
Radiated Immunity(80MHz-2.7GHz)	EN 61000-6-1:2007	EN 61000-4-3:2006+A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod. 1V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable

### Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model XZ-E008A was tested since their differences are model number and appearance.



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: EUT DC 24V  
Adapter model: HGCS16VATS  
Adapter input: AC 100-240V 50/60Hz  
Adapter output: DC 24V, 500mA  
Test voltage: AC 230V  
Cable: Adapter output cable 1.5m;

### 4.2 Description of Support Units

None.

### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	3.2dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
	Conducted Emission at mains port using VP	1.9 dB(9kHz to 30MHz)
	Conducted Emission at telecommunication port using AAN	2.4 dB(150kHz to 30MHz)
2	Radiated Power	3.5dB
3	Radiated emission	4.4dB (30MHz-1GHz )
		4.6dB (1GHz-6GHz )
4	Radiated Immunity	1.64dB
5	Conducted Immunity	0.96dB
6	ESD	6 %
7	EFT (Electrical Fast Transients)	5 %
8	Surge Immunity	5 %
9	Voltage Dips and Interruptions	4 %
10	20 system	1.5dB
11	Temperature test	1 °C
12	Humidity test	3%
13	DC power test	0.5 %



#### 4.4 Standards Applicable for Testing

**Table 1 : Tests Carried Out Under EN 61000-6-3:2007 +A1:2011**

Item	Status
Conducted Disturbance at Mains Terminals(150kHz-30MHz)	√
Conducted Disturbance at Telecommunication Port(150kHz-30MHz)	×
Discontinuous Disturbance(150kHz-30MHz)	×
Radiated Disturbance(30MHz-1GHz)	√
Radiated Disturbance(above 1GHz)	×
Harmonic Current Emission	√
Voltage Fluctuations and Flicker	√
Conducted Disturbance at DC Terminals(150kHz-30MHz)	×

**Table 2 : Tests Carried Out Under EN 61000-6-1:2007**

Item	Status
Electrostatic Discharge	√
Electrical Fast Transients/Burst at Power Port	√
Electrical Fast Transients/Burst at Signal Port	×
Surge at Power Port	√
Conducted Immunity at Power Port(150kHz-80MHz)	√
Conducted Immunity at Signal Port(150kHz-80MHz)	×
Power Frequency Magnetic Field	×
Voltage Dips and Interruptions	√
Radiated Immunity(80MHz-2.7GHz)	√
Electrical Fast Transients/Burst at DC port	×
Surge at DC Port	×
Conducted Immunity at DC Port(150kHz-80MHz)	×

× Indicates that the test is not applicable  
√ Indicates that the test is applicable



#### **4.5 Test Location**

All tests were performed at:  
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab  
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China  
Tel: +86 21 6191 5666 Fax: +86 21 6191 5678  
No tests were sub-contracted.

#### **4.6 Test Facility**

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868,C-4336,T-2221,G-830 respectively.

#### **4.7 Deviation from Standards**

None

#### **4.8 Abnormalities from Standard Conditions**

None

#### **4.9 Monitoring of EUT for All Immunity Test**

Visual: Monitor the EUT working status.

Audio: None





## 5 Equipment List

Conducted Disturbance at Mains Terminals(150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESR7	SHEM162-1	2016-12-29	2017-12-28
Line impedance stabilization network	SCHWARZBECK	NSLK8127	SHEM061-1	2016-12-29	2017-12-28
Line impedance stabilization network	EMCO	3816/2	SHEM019-1	2016-12-29	2017-12-28
Pulse limiter	Rohde & Schwarz	ESH3-Z2	SHEM029-1	2016-08-12	2017-08-11
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2016-08-17	2017-08-16

Radiated Disturbance(30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2016-08-12	2017-08-11
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2016-12-29	2017-12-28
Low Frequency Amplifier	CLAVIO	BDLNA-0001-412010	SHEM164-1	2016-08-12	2017-08-11
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16

Harmonic & Voltage Fluctuations and Flicker					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Harmonic&Flicker analyzer	AMETEK	PACS-1	SHEM024-2	2016-09-06	2017-09-05
AC Power Source 5KVA	AMETEK	5001iX	SHEM025-2	2016-09-06	2017-09-05

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-1	2016-08-15	2017-08-14

Electrical Fast Transients/Burst at Power Port					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2016-12-29	2017-12-28
Matching resistors for EFT/burst generators	EM test	KW50	SHEM026-4	2016-12-29	2017-12-28
Matching resistors for EFT/burst generators	EM test	KW1000	SHEM026-5	2016-12-29	2017-12-28



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## Surge at Power Port

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2016-12-29	2017-12-28

## Conducted Immunity at Power Port(150kHz-80MHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2016-12-29	2017-12-28
PAMP Conducted RF test system	HAEFFLY	PAMP250	SHEM023-1	2016-12-29	2017-12-28
6dB Attenuator	HUAXIANG	TST-150-761	SHEM151-1	N/A	N/A
Coupling clamp	LIITHI	EM 101	SHEM027-1	2016-12-29	2017-12-28
CDN impedance and K-factor	LUTHI	L-801 M1	SHEM023-5	2016-12-29	2017-12-28
CDN impedance and K-factor	LUTHI	L-801 M2/M3	SHEM023-6	2017-01-14	2018-01-13
Shielding Room	ZHONGYU	5*5*3M	SHEM079-6	2016-08-17	2017-08-16

## Voltage Dips and Interruptions

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Immunity Test System	EMC PARTNER	TRA3000 F-S-D-V	SHEM163-1	2016-12-29	2017-12-28

## Radiated Immunity(80MHz-2.7GHz)

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2016-12-29	2017-12-28
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2016-12-29	2017-12-28
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2016-12-29	2017-12-28
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Antenna	SCHWARZBECK	STLP9149	SHEM131-1	N/A	N/A
Amplifier	MILMEGA	80RF1000-250	SHEM132-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	N/A	N/A
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2016-08-12	2017-08-11
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6113	SHEM134-1	2016-08-12	2017-08-11
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2016-08-17	2017-08-16



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General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2017-03-03	2018-03-02
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2016-08-19	2017-08-18
Digital Multimeter	FLUKE	17B	SHEM043-5	2016-08-15	2017-08-14
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2017-01-29	2018-01-28

## 6 Emission Test Results

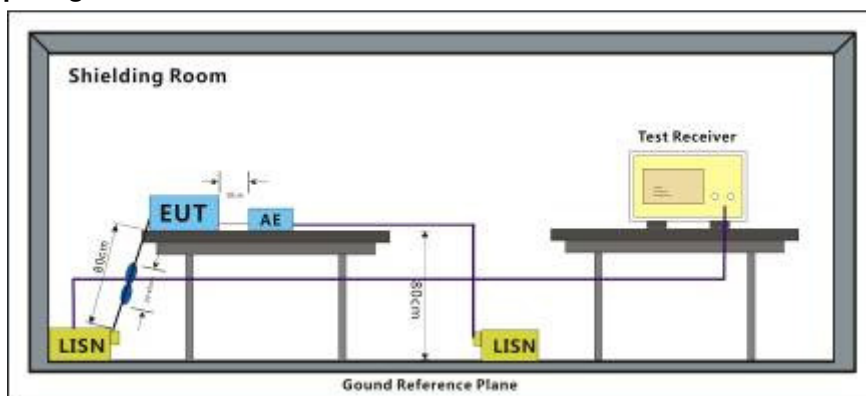
### 6.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz)

Test Requirement: EN 61000-6-3:2007 +A1:2011  
Test Method: CISPR 16-2-1  
Frequency Range: 150kHz to 30MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:  
Temperature: 21 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar  
Test mode a:Charging mode\_Keep the EUT on charging with the adapter.

#### 6.1.2 Test Setup Diagram

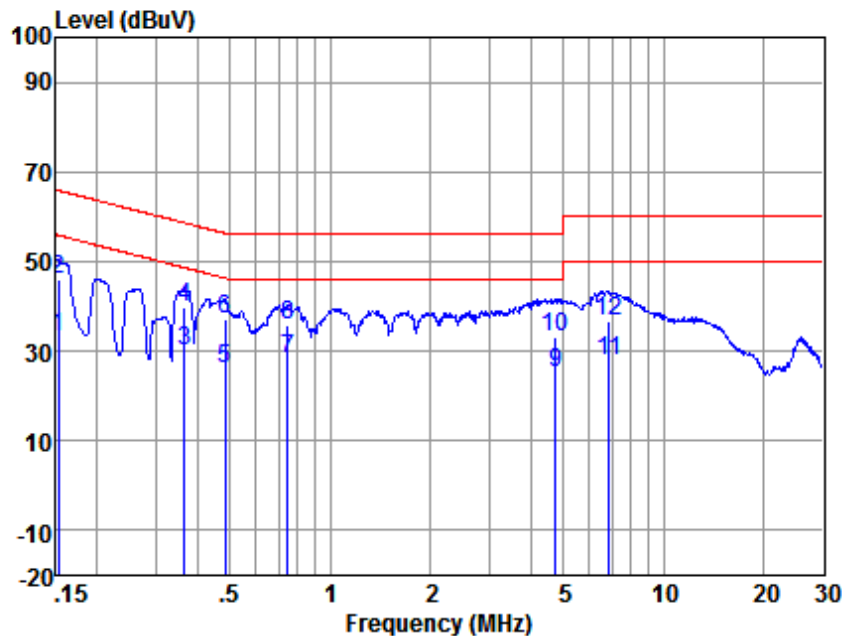


#### 6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.



Mode:a; Line:Live Line

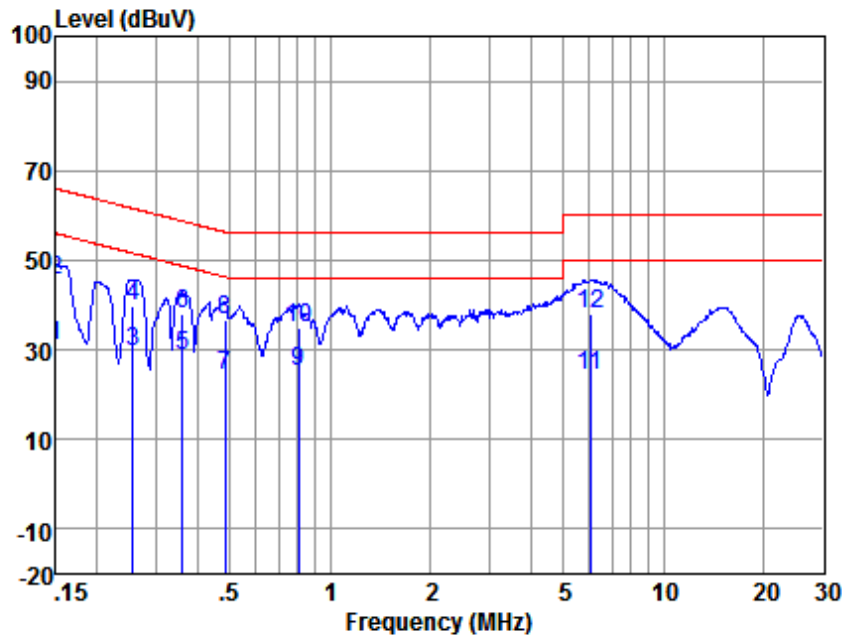


Site : chamber  
Condition : LISN-L-2016  
EUT/Project No: 2852MD  
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.152	23.14	0.05	9.81	33.00	55.87	-22.87	Average
2	0.152	35.97	0.05	9.81	45.83	65.87	-20.04	QP
3	0.365	20.04	0.09	9.81	29.94	48.61	-18.67	Average
4	0.365	29.86	0.09	9.81	39.76	58.61	-18.85	QP
5	0.484	16.03	0.10	9.82	25.95	46.27	-20.32	Average
6	0.484	27.42	0.10	9.82	37.34	56.27	-18.93	QP
7	0.747	18.50	0.10	9.83	28.43	46.00	-17.57	Average
8	0.747	25.84	0.10	9.83	35.77	56.00	-20.23	QP
9	4.746	15.14	0.15	9.86	25.15	46.00	-20.85	Average
10	4.746	23.18	0.15	9.86	33.19	56.00	-22.81	QP
11	6.878	17.75	0.17	9.86	27.78	50.00	-22.22	Average
12	6.878	26.59	0.17	9.86	36.62	60.00	-23.38	QP



Mode:a; Line:Neutral Line



Site : chamber  
Condition : LISN-N-2016  
EUT/Project No: 2852MD  
Test mode : a

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	21.09	0.05	9.81	30.95	56.00	-25.05	Average
2	0.150	35.59	0.05	9.81	45.45	66.00	-20.55	QP
3	0.256	19.79	0.05	9.81	29.65	51.56	-21.91	Average
4	0.256	30.08	0.05	9.81	39.94	61.56	-21.62	QP
5	0.360	18.80	0.04	9.81	28.65	48.74	-20.09	Average
6	0.360	28.15	0.04	9.81	38.00	58.74	-20.74	QP
7	0.484	14.38	0.04	9.82	24.24	46.27	-22.03	Average
8	0.484	26.91	0.04	9.82	36.77	56.27	-19.50	QP
9	0.804	15.50	0.05	9.83	25.38	46.00	-20.62	Average
10	0.804	25.18	0.05	9.83	35.06	56.00	-20.94	QP
11	6.056	14.40	0.19	9.86	24.45	50.00	-25.55	Average
12	6.056	27.86	0.19	9.86	37.91	60.00	-22.09	QP

## 6.2 Radiated Disturbance(30MHz-1GHz)

Test Requirement:	EN 61000-6-3:2007 +A1:2011
Test Method:	CISPR 16-2-3
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB( $\mu$ V/m) quasi-peak
230MHz-1GHz	47 dB( $\mu$ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

### 6.2.1 E.U.T. Operation

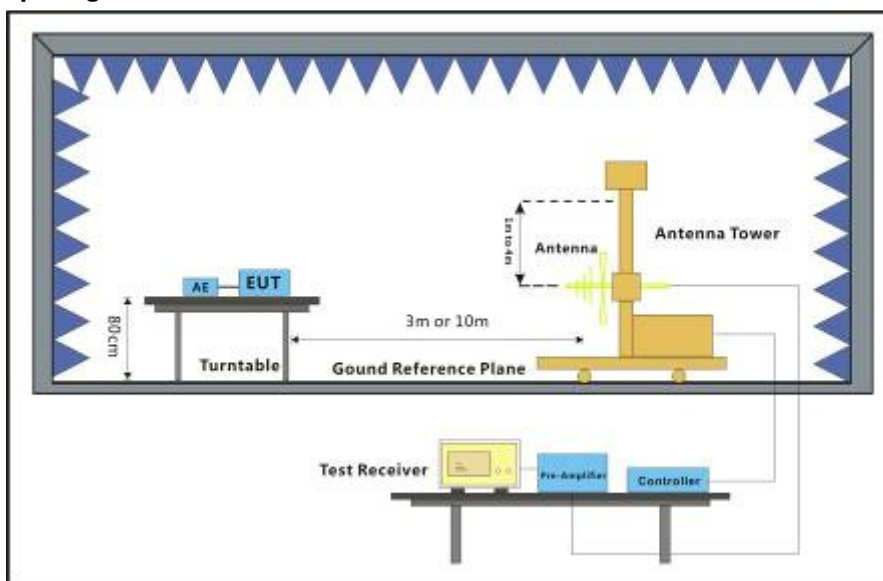
Operating Environment:

Temperature: 22 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

The worst case for a:Charging mode\_Keep the EUT on charging with the adapter;

final test: b: Running mode\_Keep the EUT on running continuously.

### 6.2.2 Test Setup Diagram



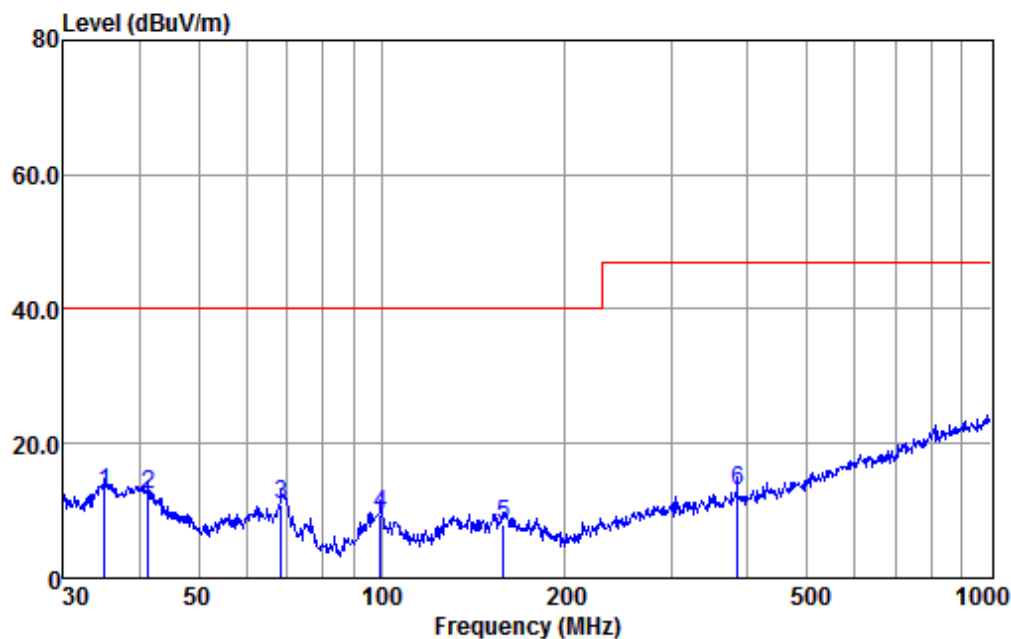
### 6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.





Mode:a; Polarization:Horizontal



Condition : HORIZONTAL

EUT/Project: 2852MD

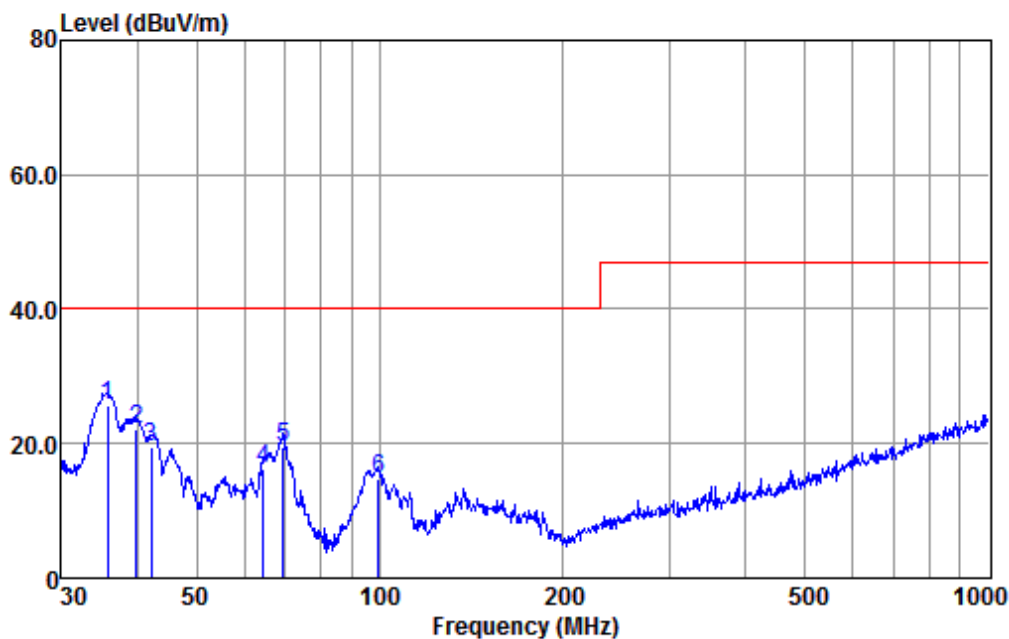
Test Mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 q	35.13	25.06	15.85	0.20	28.37	12.74	40.00	-27.26	QP
2	41.42	25.12	15.41	0.23	28.34	12.42	40.00	-27.58	QP
3	68.39	27.20	11.59	0.33	28.22	10.90	40.00	-29.10	QP
4	99.53	27.71	9.45	0.45	28.13	9.48	40.00	-30.52	QP
5	158.67	22.64	12.97	0.63	28.38	7.86	40.00	-32.14	QP
6	383.93	25.05	14.82	0.97	27.86	12.98	47.00	-34.02	QP





Mode:a; Polarization:Vertical

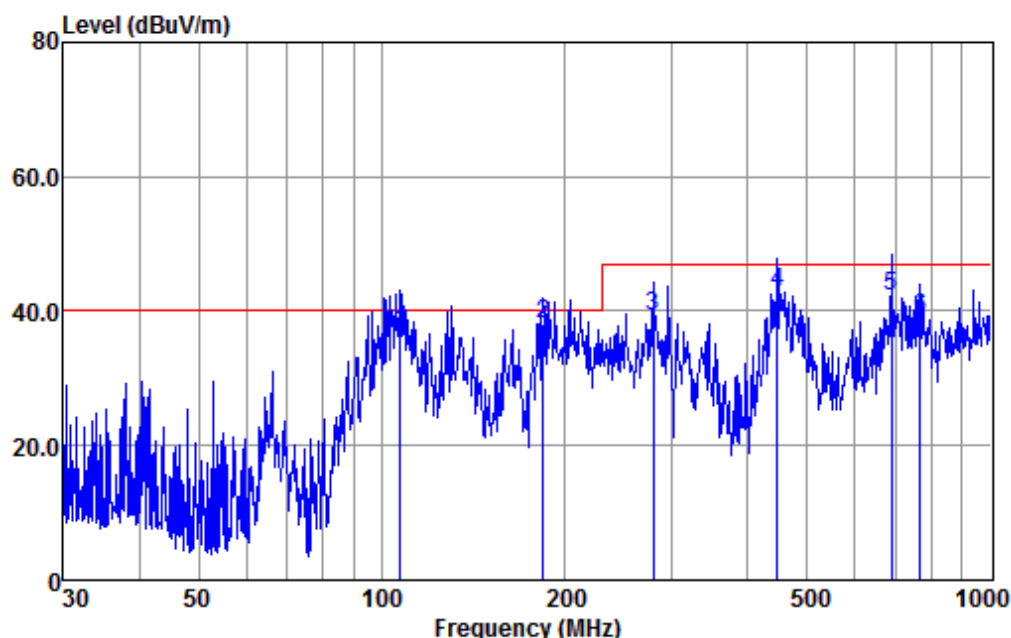


Condition : VERTICAL  
EUT/Project: 2852MD  
Test Mode : a

		ReadAntenna		Cable Preamp			Limit	Over	
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 q	35.75	38.07	15.91	0.21	28.37	25.82	40.00	-14.18	QP
2	39.85	33.92	16.29	0.22	28.34	22.09	40.00	-17.91	QP
3	42.15	32.49	14.96	0.23	28.33	19.35	40.00	-20.65	QP
4	64.43	32.01	12.05	0.32	28.24	16.14	40.00	-23.86	QP
5	69.36	35.88	11.48	0.34	28.22	19.48	40.00	-20.52	QP
6	99.53	32.88	9.45	0.45	28.13	14.65	40.00	-25.35	QP



Mode:b; Polarization:Horizontal

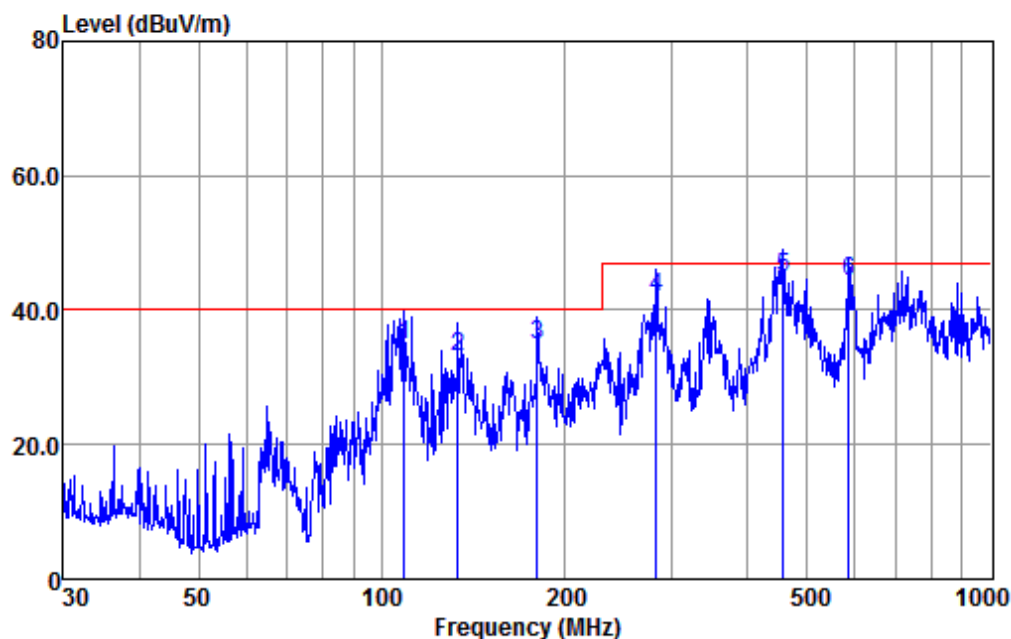


Condition : HORIZONTAL  
EUT/Project: 2852MD  
Test Mode : b

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
		Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	107.13	69.67	9.57	0.49	42.70	37.03	40.00	-2.97 QP
2 q	184.49	68.68	11.15	0.67	42.52	37.98	40.00	-2.02 QP
3	279.04	68.35	12.51	0.81	42.38	39.29	47.00	-7.71 QP
4	446.41	67.59	16.13	1.08	42.06	42.74	47.00	-4.26 QP
5	687.15	62.82	20.11	1.65	42.28	42.30	47.00	-4.70 QP
6	766.06	58.46	21.36	1.91	42.62	39.11	47.00	-7.89 QP



Mode:b; Polarization:Vertical



Condition : VERTICAL  
EUT/Project: 2852MD  
Test Mode : b

	Freq	ReadAntenna	Cable	Preamp		Limit	Over	
		Level	Factor	Loss	Factor	Level	Line	Limit
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	109.03	67.43	9.59	0.49	42.70	34.81	40.00	-5.19 QP
2	133.62	62.77	12.23	0.59	42.61	32.98	40.00	-7.02 QP
3	180.02	64.92	11.90	0.67	42.53	34.96	40.00	-5.04 QP
4	282.99	70.96	12.64	0.82	42.37	42.05	47.00	-4.95 QP
5 q	457.51	69.61	16.37	1.10	42.09	44.99	47.00	-2.01 QP
6	584.79	66.14	19.10	1.35	42.18	44.41	47.00	-2.59 QP



### 6.3 Harmonic Current Emission

Test Requirement: EN 61000-6-3:2007 +A1:2011

Test Method: EN 61000-3-2:2014

Frequency Range: 100Hz to 2kHz

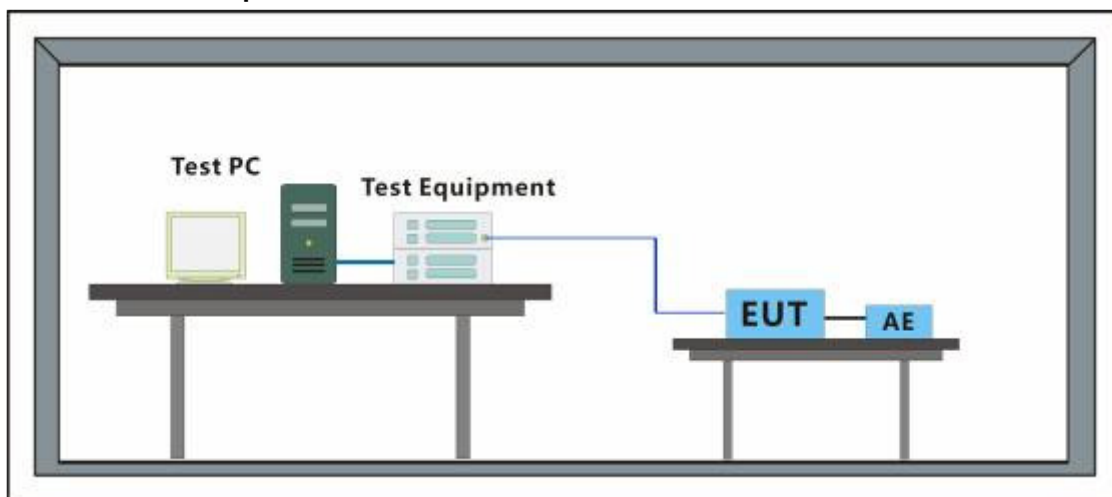
#### 6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

Test mode a: Charging mode\_Keep the EUT on charging with the adapter.

#### 6.3.2 Test Setup



#### 6.3.3 Measurement Data



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Mode:a

Highest parameter values during test:

V_RMS (Volts):	229.98	Frequency(Hz):	50.00
I_Peak (Amps):	0.898	I_RMS (Amps):	0.178
I_Fund (Amps):	0.076	Crest Factor:	5.062
Power (Watts):	17.2	Power Factor:	0.421

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.001	1.620	N/A	Pass
3	0.074	2.300	3.2	0.074	3.450	2.2	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.069	1.140	6.1	0.070	1.710	4.1	Pass
6	0.000	0.300	N/A	0.001	0.450	N/A	Pass
7	0.064	0.770	8.3	0.064	1.155	5.5	Pass
8	0.000	0.230	N/A	0.001	0.345	N/A	Pass
9	0.057	0.400	14.2	0.057	0.600	9.5	Pass
10	0.001	0.184	N/A	0.001	0.276	N/A	Pass
11	0.049	0.330	14.9	0.049	0.495	9.9	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.041	0.210	19.6	0.041	0.315	13.1	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.033	0.150	22.3	0.033	0.225	14.9	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.027	0.132	20.1	0.027	0.198	13.5	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.021	0.118	17.8	0.021	0.178	11.9	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.018	0.107	16.4	0.018	0.161	10.9	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.016	0.098	16.0	0.016	0.147	10.7	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.015	0.090	16.6	0.015	0.135	11.1	Pass
26	0.000	0.071	N/A	0.001	0.107	N/A	Pass
27	0.015	0.083	17.5	0.015	0.125	11.7	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.014	0.078	18.1	0.014	0.116	12.1	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.013	0.073	18.0	0.013	0.109	12.1	Pass
32	0.000	0.058	N/A	0.001	0.086	N/A	Pass
33	0.012	0.068	17.2	0.012	0.102	11.5	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.010	0.064	15.8	0.010	0.096	10.6	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.009	0.061	14.2	0.009	0.091	9.6	Pass
38	0.000	0.048	N/A	0.001	0.073	N/A	Pass
39	0.007	0.058	12.8	0.007	0.087	8.6	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

**Note:** Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.



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Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.073	0.460	15.89	OK
3	0.383	2.069	18.51	OK
4	0.073	0.460	15.77	OK
5	0.040	0.920	4.40	OK
6	0.022	0.460	4.73	OK
7	0.031	0.690	4.52	OK
8	0.011	0.460	2.39	OK
9	0.043	0.460	9.33	OK
10	0.017	0.460	3.73	OK
11	0.030	0.230	12.88	OK
12	0.013	0.230	5.63	OK
13	0.024	0.230	10.47	OK
14	0.006	0.230	2.81	OK
15	0.025	0.230	10.77	OK
16	0.008	0.230	3.29	OK
17	0.022	0.230	9.64	OK
18	0.007	0.230	3.13	OK
19	0.018	0.230	7.94	OK
20	0.011	0.230	4.69	OK
21	0.015	0.230	6.34	OK
22	0.005	0.230	2.29	OK
23	0.017	0.230	7.28	OK
24	0.005	0.230	2.22	OK
25	0.016	0.230	7.13	OK
26	0.005	0.230	2.15	OK
27	0.019	0.230	8.31	OK
28	0.005	0.230	2.24	OK
29	0.021	0.230	8.96	OK
30	0.005	0.230	2.28	OK
31	0.019	0.230	8.22	OK
32	0.004	0.230	1.78	OK
33	0.019	0.230	8.34	OK
34	0.004	0.230	1.68	OK
35	0.018	0.230	7.70	OK
36	0.004	0.230	1.58	OK
37	0.016	0.230	6.95	OK
38	0.003	0.230	1.46	OK
39	0.013	0.230	5.87	OK
40	0.006	0.230	2.68	OK

## 6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-6-3:2007 +A1:2011

Test Method: EN 61000-3-3:2013

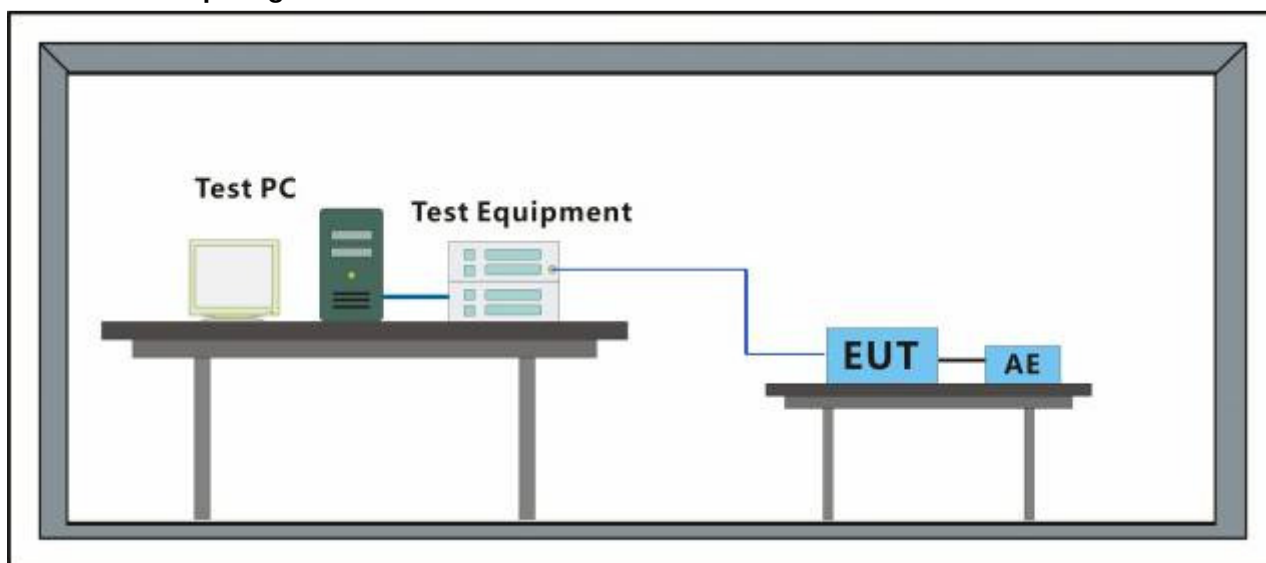
### 6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1001 mbar

Test mode a:Charging mode\_Keep the EUT on charging with the adapter.

### 6.4.2 Test Setup Diagram



### 6.4.3 Measurement Data

Mode:a

Vrms at the end of test (Volt):	229.90	Test limit (mS):	500.0	Pass
T-max (mS):	0	Test limit (%):	3.30	Pass
Highest dc (%):	0.00	Test limit (%):	4.00	Pass
Highest dmax (%):	0.00	Test limit:	1.000	Pass
Highest Pst (10 min. period):	0.219	Test limit:	0.650	Pass
Highest Plt (2 hr. period):	0.096			



## **7 Immunity Test Results**

### **7.1 Performance Criteria Description in EN 61000-6-1:2007**

**Criterion A**

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

**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 specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. 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, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

**Criterion C**

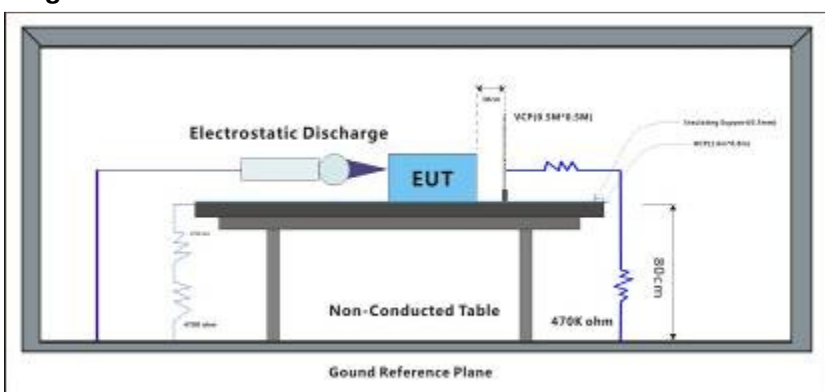
Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



## 7.2 Electrostatic Discharge

Test Requirement: EN 61000-6-1:2007  
Test Method: EN 61000-4-2:2009  
Performance Criterion: B  
Discharge Impedance: 330Ω/150pF  
Number of Discharge: Minimum 10 times at each test point  
Discharge Mode: Single Discharge  
Discharge Period: 1 second minimum

### 7.2.1 Test Setup Diagram



### 7.2.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1004 mbar  
Test mode: a:Charging mode\_Keep the EUT on charging with the adapter;  
b: Running mode\_Keep the EUT on running continuously.

### 7.2.3 Test Results:

Observations:

Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

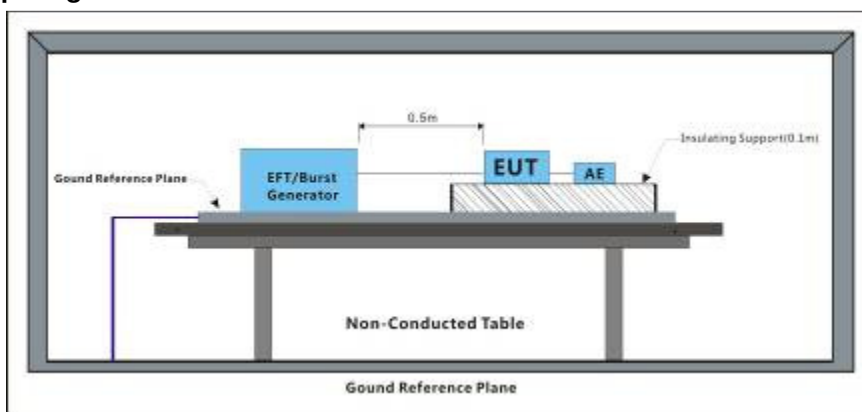
### Results:

A: No degradation in the performance of the EUT was observed.

### 7.3 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 61000-6-1:2007  
Test Method: EN 61000-4-4:2012  
Performance Criterion: B  
Repetition Frequency: 5kHz  
Burst Period: 300ms  
Test Duration: 2 minute per level & polarity

#### 7.3.1 Test Setup Diagram



#### 7.3.2 E.U.T. Operation

Operating Environment:  
Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1004 mbar  
Test mode: a:Charging mode\_Keep the EUT on charging with the adapter.

#### 7.3.3 Test Results:

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

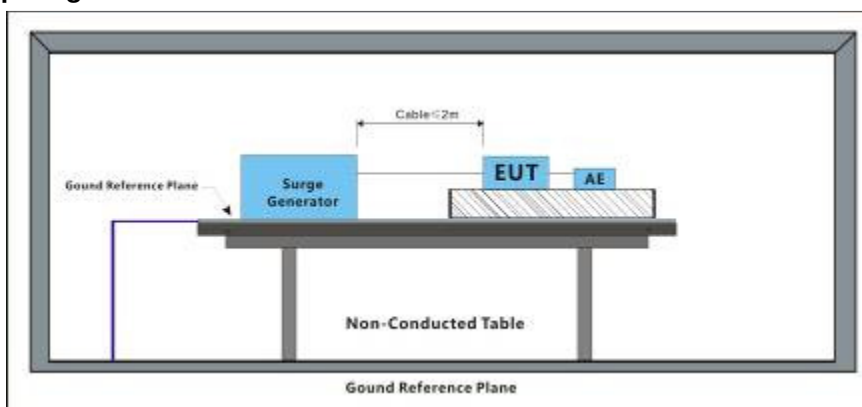
#### Results:

A: No degradation in the performance of the EUT was observed.

## 7.4 Surge at Power Port

Test Requirement: EN 61000-6-1:2007  
Test Method: EN 61000-4-5:2014  
Performance Criterion: B  
Interval: 60s between each surge  
No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

### 7.4.1 Test Setup Diagram



### 7.4.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1004 mbar  
Test mode: a:Charging mode\_Keep the EUT on charging with the adapter.

### 7.4.3 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	+	90°	A
L-N	1	-	90°	A
L-N	1	+	180°	A
L-N	1	-	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

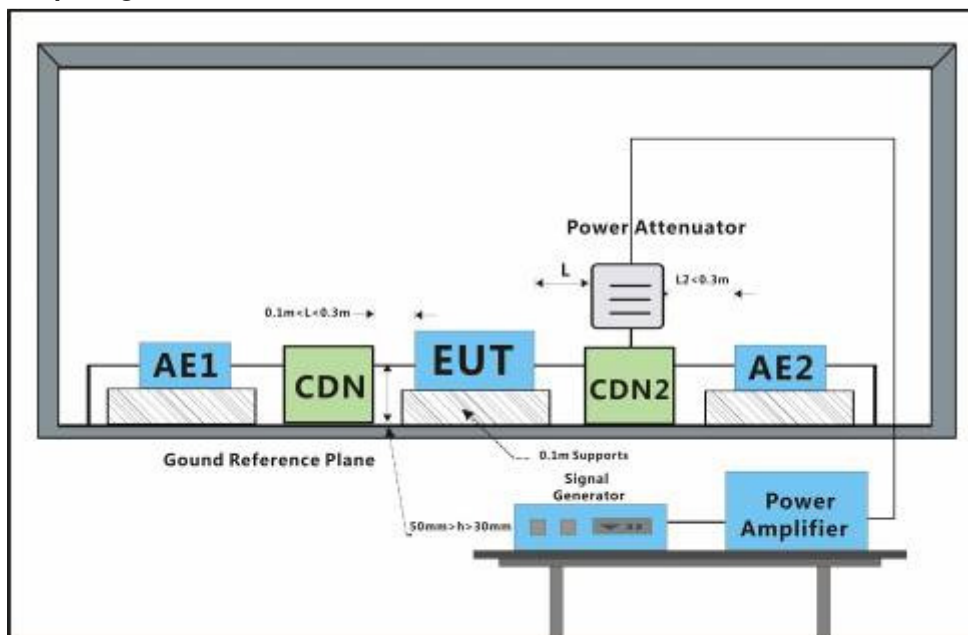
### Results:

A: No degradation in the performance of the EUT was observed.

## 7.5 Conducted Immunity at Power Port(150kHz-80MHz)

Test Requirement: EN 61000-6-1:2007  
Test Method: EN 61000-4-6:2014  
Performance Criterion: A  
Frequency Range: 0.15MHz to 80MHz  
Modulation: 80%, 1kHz Amplitude Modulation  
Step Size: 1%

### 7.5.1 Test Setup Diagram



### 7.5.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode: a:Charging mode\_Keep the EUT on charging with the adapter.

### 7.5.3 Test Results:

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

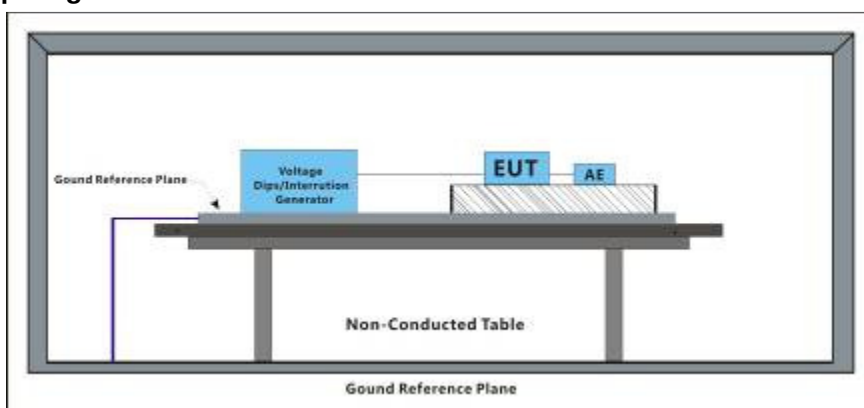
#### Results:

A: No degradation in the performance of the EUT was observed.

## 7.6 Voltage Dips and Interruptions

Test Requirement: EN 61000-6-1:2007  
Test Method: EN 61000-4-11:2004  
Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods:B; 0% of UT for 1 Periods:B;  
0% of UT for 250 Periods:C; 70% of UT for 25 Periods:C;  
No. of Dips / Interruptions: 3 per Level  
Time between dropout 10s

### 7.6.1 Test Setup Diagram



### 7.6.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1004 mbar  
Test mode: a:Charging mode\_Keep the EUT on charging with the adapter.

### 7.6.3 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	180°	0.5 Cycles	3	A
0	0°	1 Cycles	3	A
0	180°	1 Cycles	3	A
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B

### Results:

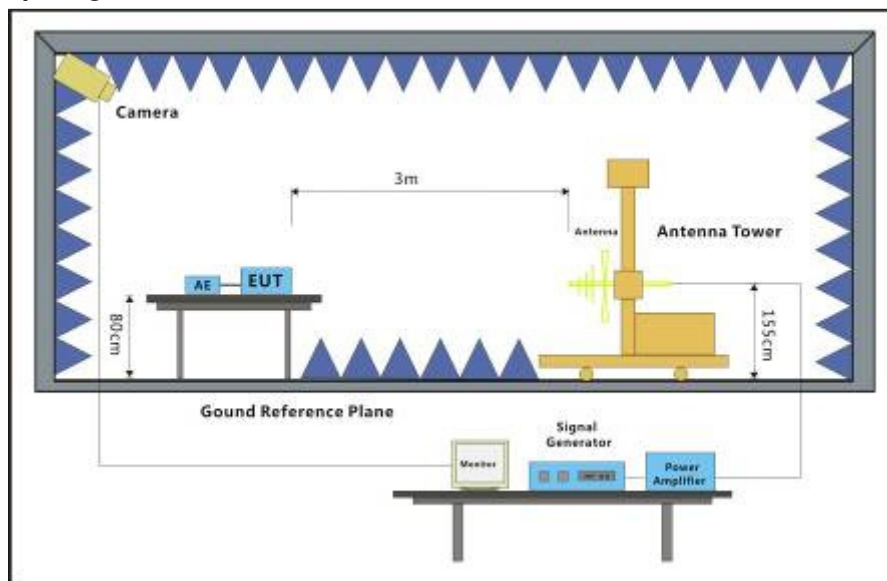
A: No degradation in the performance of the EUT was observed.

B: During test, EUT stop work, After test, which the equipment under test recovers its normal Performance.

## 7.7 Radiated Immunity(80MHz-2.7GHz)

Test Requirement:	EN 61000-6-1:2007
Test Method:	EN 61000-4-3:2006+A1:2008+A2:2010
Performance Criterion:	A
Frequency Range:	80MHz to 1GHz, 1.4GHz to 2GHz, 2GHz to 2.7GHz
Antenna Polarisation:	Vertical and Horizontal
Modulation	1kHz,80% Amp. Mod,1% increment

### 7.7.1 Test Setup Diagram



### 7.7.2 E.U.T. Operation

Operating Environment:

Temperature:	22 °C	Humidity:	48 % RH	Atmospheric Pressure:	1010 mbar
Test mode:	a:Charging mode_Keep the EUT on charging with the adapter; b: Running mode_Keep the EUT on running continuously.				



**7.7.3 Test Results:**

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A
1.4GHz-2GHz	3	Front	2s	A
1.4GHz-2GHz	3	Back	2s	A
1.4GHz-2GHz	3	Left	2s	A
1.4GHz-2GHz	3	Right	2s	A
1.4GHz-2GHz	3	Top	2s	A
1.4GHz-2GHz	3	Underside	2s	A
2GHz-2.7GHz	1	Front	2s	A
2GHz-2.7GHz	1	Back	2s	A
2GHz-2.7GHz	1	Left	2s	A
2GHz-2.7GHz	1	Right	2s	A
2GHz-2.7GHz	1	Top	2s	A
2GHz-2.7GHz	1	Underside	2s	A

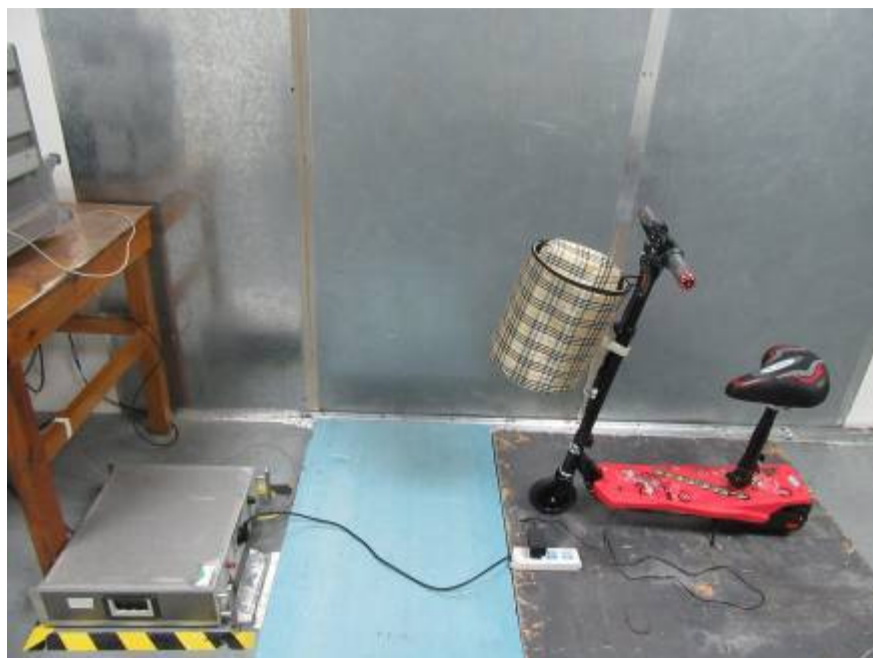
**Results:**

A: No degradation in the performance of the EUT was observed.



## 8 Photographs

### 8.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz) Test Setup



### 8.2 Radiated Disturbance(30MHz-1GHz) Test Setup







### 8.3 Harmonic & Voltage Fluctuations and Flicker Test Setup



#### 8.4 Electrostatic Discharge Test Setup



#### 8.5 Electrical Fast Transients/Burst at Power Port Test Setup



## 8.6 Surge at Power Port Test Setup



## 8.7 Conducted Immunity at Power Port(150kHz-80MHz) Test Setup

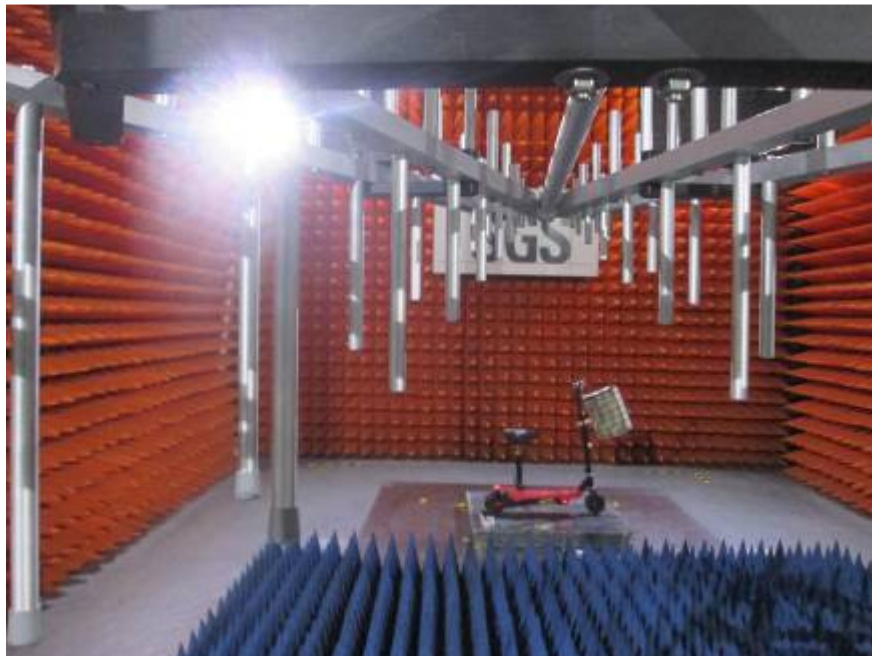


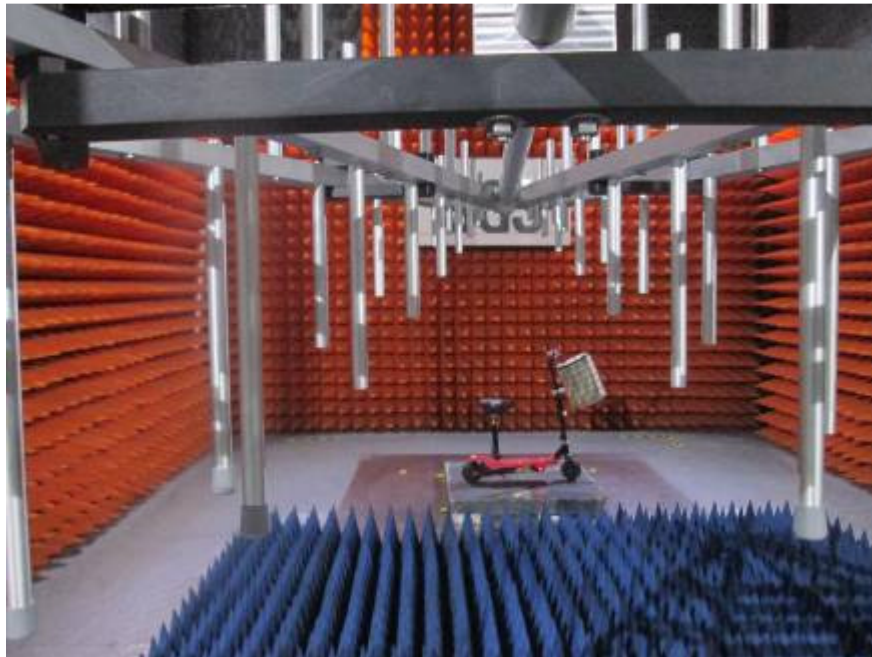


## 8.8 Voltage Dips and Interruptions Test Setup



## 8.9 Radiated Immunity(80MHz-2.7GHz) Test Setup





## 8.10 EUT Constructional Details













**--End of the Report--**