



EMC Test Report

Application No. : HXT240403290515

Applicant : Huizhou Zhuopu core car industry Co., Ltd.

Equipment Under Test (EUT)

EUT Name : electric scooter

Model No. : X13

Serial No. : See page 4

Trade Mark : TOURSOR

Receipt Date : 2024-04-20

Test Date : 2024-04-20 to 2024-04-30

Issue Date : 2024-04-30

Standards : EN IEC 55014-1: 2021;
EN IEC 61000-3-2: 2019/A1: 2021;
EN 61000-3-3:2013+A2:2021;
EN IEC 55014-2: 2021.

Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above. The EUT technically complies with the 2014/30/EU directive requirements.

Test/Witness Engineer :



Approved & Authorized :

Andy Zhang

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.



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1. General Information

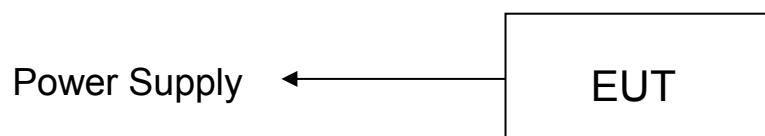
1.1. Client Information

Applicant	:	Huizhou Zhuopu core car industry Co., Ltd.
Address	:	8th floor, Building 1, Yuepu Technology Wisdom Valley Phase I, Xinwei Town, Huiyang District, Huizhou City
Manufacturer	:	Dongguan Zhuopu core energy technology Co., Ltd.
Address	:	No.601, Building B, Bangshou Science Park, No.69 Xiangshan Road, Qingxi Town, Dongguan City

1.2. General Description of EUT (Equipment Under Test)

EUT Name	:	electric scooter
Model No.	:	X13
Serial No.	:	X5, X7, X14, E5B, E8P, E6, T5B
Trade Mark	:	TOURSOR
Power Supply	:	AC 70V, 40A, 50/60Hz
Remark: All above models are identical in schematic, structure and critical components except for only different appearance, therefore, testing was performed with X13 only.		

1.3. Block Diagram Showing the Configuration of System Tested



1.4. Description of Support Units

The EUT has been tested as an independent unit, and with the max power.

1.5. Performance Criterion

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.



Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

1.6. Classification of Apparatus

Category I: Apparatus containing no electronic control circuitry.

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Category II: Transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example-UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15MHz.

Category III: Battery powered apparatus (with built-in batteries or external batteries), which in normal use is not connected to the mains, containing an electronic control circuitry with no internal clock frequency or oscillator frequency higher than 15MHz.

This category includes apparatus provided with rechargeable batteries which can be charged by connecting the apparatus to the mains power. However, this apparatus shall also be tested as an apparatus in category III while it is connected to the mains network.

Category IV: All other apparatus covered by the scope of this standard.

1.7. Test Facility

The testing report were performed by the The testing report were performed by the Shenzhen Huaxu Testing Technology Co., Ltd., in their facilities located at 106, building B12, Yintian Industrial Zone, Yantian community, Xixiang street, Bao'an District, Shenzhen.



2. Test Results Summary

EMISSION		
Description of test items	Standards	Results
Conducted disturbance at mains terminals	EN IEC 55014-1: 2021	Pass
Disturbance Power	EN IEC 55014-1: 2021	Pass
Click measurement	EN IEC 55014-1: 2021	N/A
Radiated disturbance	EN IEC 55014-1: 2021	N/A
Harmonic current emissions	EN IEC 61000-3-2: 2019/A1: 2021	Pass
Voltage fluctuation and flicker	EN 61000-3-3:2013+A2:2021	Pass
IMMUNITY		
Description of test items	Basic Standards	Results
Electrostatic Discharge (ESD)	EN 61000-4-2: 2009	Pass
Radio-frequency, Continuous Radiated Disturbance	EN IEC 61000-4-3:2020	Pass
EFT/B Immunity	EN 61000-4-4: 2012	Pass
Surge Immunity	EN 61000-4-5: 2014/A1:2017	Pass
Conducted RF Immunity	EN 61000-4-6: 2014	Pass
Voltage dips, 40% reduction	EN IEC 61000-4-11:2020	Pass
Voltage dips, 70% reduction		
Voltage interruptions		
Note: N/A is an abbreviation for Not Applicable.		



3. Test Equipment Used

3.1. Test Equipment Used to Measure Conducted Emission					
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC001	EMI Test Receiver	Rohde & Schwarz	ESCS30	Dec. 29, 2023	1 Year
HXT-EMC002	AMN	Rohde & Schwarz	ENV216	Dec. 29, 2023	1 Year
HXT-EMC003	AMN	SCHWARZBECK	NNBL 8226	Dec. 29, 2023	1 Year
3.2. Test Equipment Used to Measure Disturbance Power					
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC001	EMI Test Receiver	Rohde & Schwarz	ESCS30	Dec. 29, 2023	1 Year
HXT-EMC028	Power Clamp	Luthi	MDS-21	Dec. 29, 2023	1 Year
3.3. Test Equipment Used to Measure Radiated Emission					
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC004	EMI Test Receiver	Rohde & Schwarz	ESI26	Dec. 29, 2023	1 Year
HXT-EMC005	Bilog Antenna	SCHWARZBECK	VULB9163	Dec. 29, 2023	1 Year
HXT-EMC006	Positioning Controller	C&C	CC-C-1F	N/A	N/A
3.4. Test Equipment Used to Measure Harmonic Current/ Voltage Fluctuation and Flicker					
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC007	Harmonic Flicker Test System	CI	5001ix-CTS-40	Dec. 29, 2023	1 Year
3.5. Test Equipment Used to Measure Electrostatic Discharge Immunity					
No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC008	ESD Tester	TESEQ	NSG437	Dec. 29, 2023	1 Year
3.6. Test Equipment Used to Measure Conducted Immunity					
HXT-EMC009	RF Generator	FRANKONIA	CIT-10/75	Dec. 29, 2023	1 Year
HXT-EMC010	Attenuator	FRANKONIA	59-6-33	Dec. 29, 2023	1 Year
HXT-EMC011	M-CDN	LUTHI	M2/M3	Dec. 29, 2023	1 Year
HXT-EMC012	CDN	LUTHI	AF2	Dec. 29, 2023	1 Year
HXT-EMC013	EM Injection Clamp	LUTHI	EM101	Dec. 29, 2023	1 Year

**3.7. Test Equipment Used to Measure Radio Frequency Electromagnetic Fields Immunity**

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC014	Signal Generator	Rohde & Schwarz	SMT03	Dec. 29, 2023	1 Year
HXT-EMC015	Power Meter	Rohde & Schwarz	NRVD	Dec. 29, 2023	1 Year
HXT-EMC016	Voltage Probe	Rohde & Schwarz	URV5-Z2	Dec. 29, 2023	1 Year
HXT-EMC017	Voltage Probe	Rohde & Schwarz	URV5-Z2	Dec. 29, 2023	1 Year
HXT-EMC018	Power Amplifier	AR	150W1000	Dec. 29, 2023	1 Year
HXT-EMC019	Bilog Antenna	Chase	CBL6111C	Dec. 29, 2023	1 Year

3.8. Test Equipment Used to Measure Electrical Fast Transient/Burst Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC020	Simulator	EMTEST	UCS500N5	Dec. 29, 2023	1 Year
HXT-EMC021	Auto-transformer	EMTEST	V4780S2	Dec. 29, 2023	1 Year

3.9. Test Equipment Used to Measure Surge Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC022	Simulator	EMTEST	UCS500N5	Dec. 29, 2023	1 Year
HXT-EMC023	Coupling Clamp	EMTEST	HFK	Dec. 29, 2023	1 Year

3.10. Test Equipment Used to Measure Voltage Dips and Interruptions Immunity

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
HXT-EMC022	Simulator	EMTEST	UCS500N5	Dec. 29, 2023	1 Year
HXT-EMC023	Coupling Clamp	EMTEST	HFK	Dec. 29, 2023	1 Year

4. Conducted Emission Test

4.1. Test Standard and Limit

4.1.1. Test Standard

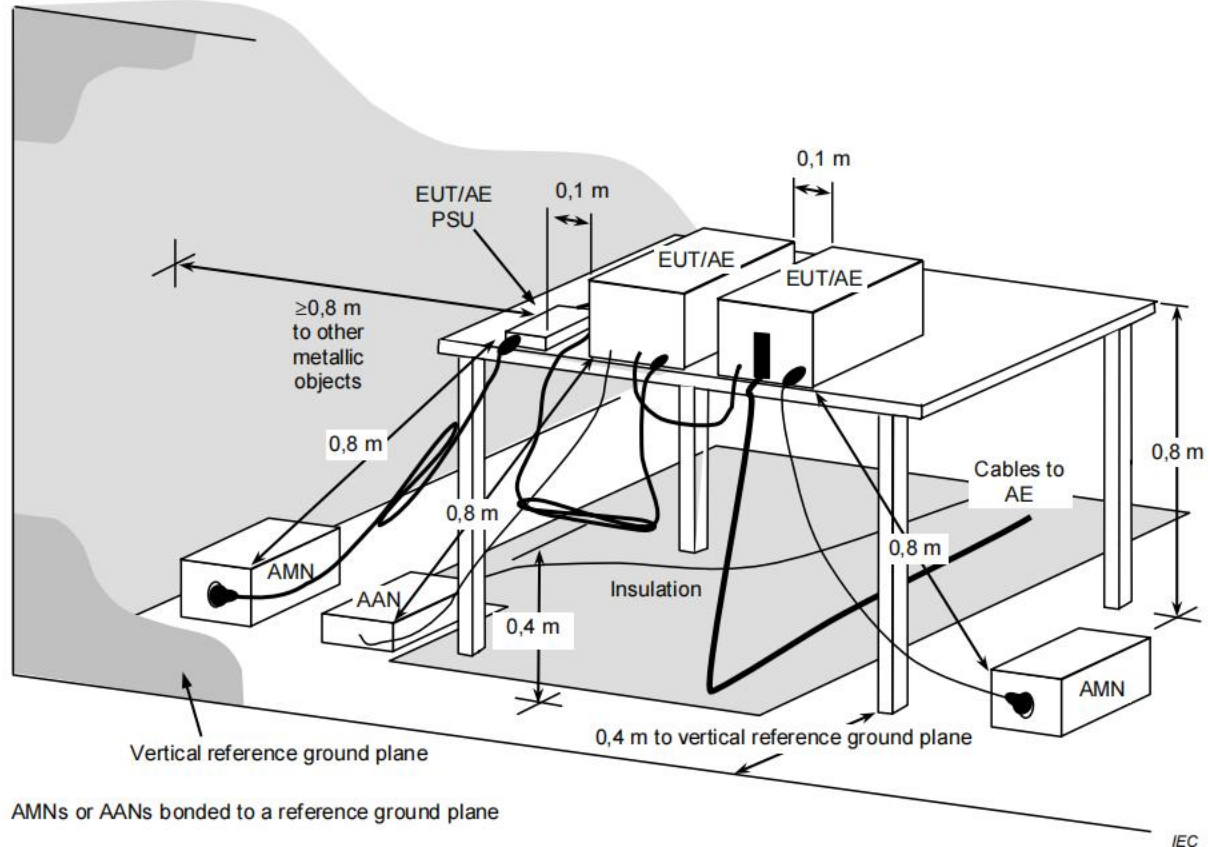
EN IEC 55014-1: 2021.

4.1.2. Test Limit

Conducted Disturbance Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~350kHz	66 ~ 56*	56 ~ 46 *
350kHz~5MHz	56	46
5MHz~30MHz	60	50
Remark: “*” Decreasing linearly with logarithm of the frequency		

4.2. Test Setup





4.3. Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4. Test Condition

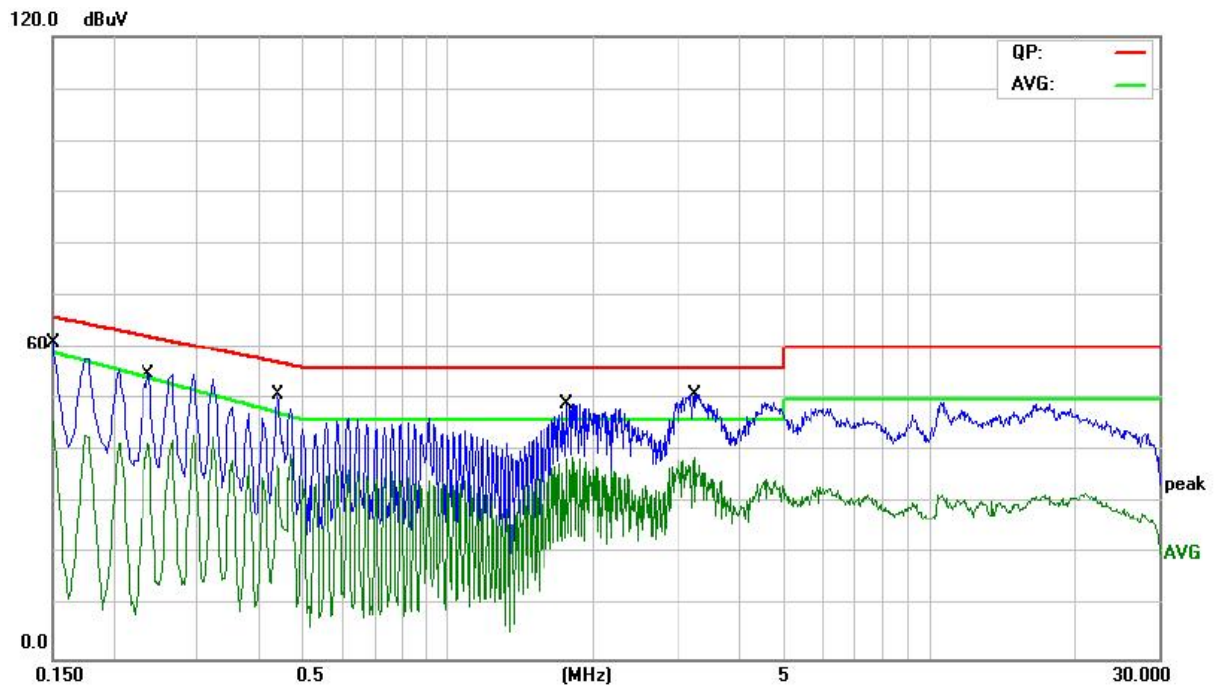
Temperature	:	25 °C
Relative Humidity	:	48 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

4.5. Test Data

Please refer to the following pages.



Operating Condition: Normal
Test Specification: L

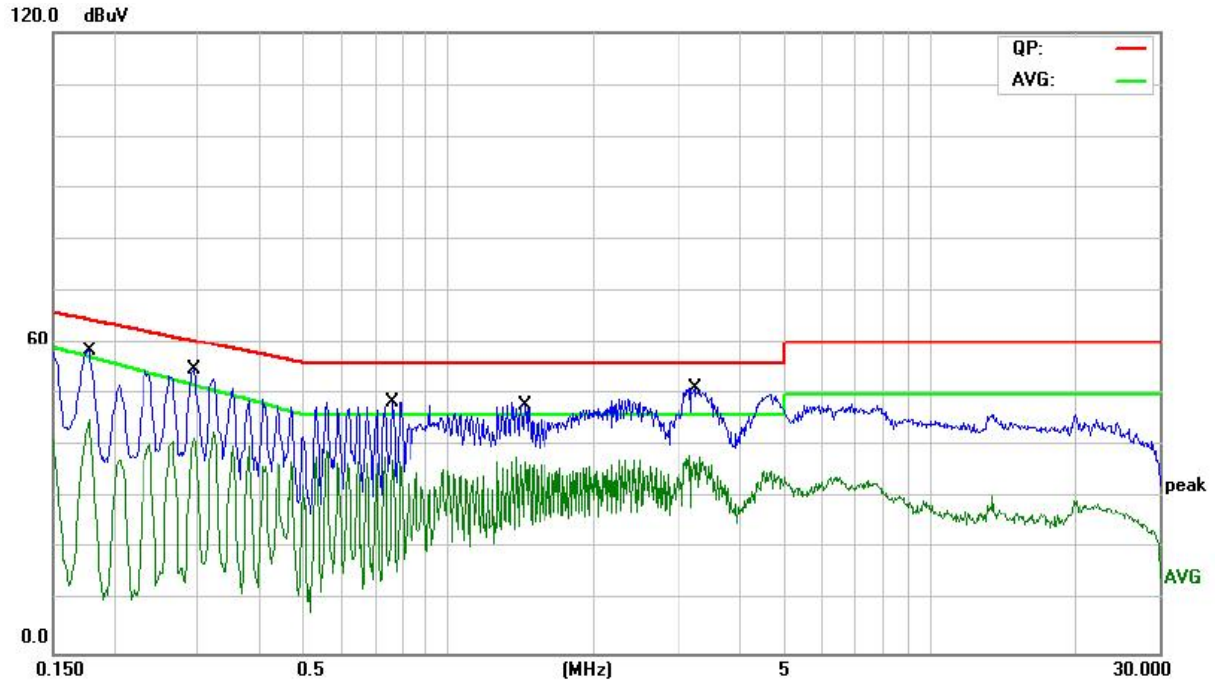


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	50.18	10.90	61.08	65.99	-4.91	QP	
2		0.1500	35.00	10.90	45.90	58.99	-13.09	AVG	
3		0.2366	44.84	10.05	54.89	62.21	-7.32	QP	
4		0.2366	31.41	10.05	41.46	54.07	-12.61	AVG	
5		0.4420	41.19	9.55	50.74	57.02	-6.28	QP	
6		0.4420	27.36	9.55	36.91	47.33	-10.42	AVG	
7		1.7580	39.73	9.33	49.06	56.00	-6.94	QP	
8		1.7660	22.33	9.33	31.66	46.00	-14.34	AVG	
9		3.2580	41.45	9.39	50.84	56.00	-5.16	QP	
10		3.2620	21.08	9.39	30.47	46.00	-15.53	AVG	



Operating Condition: Normal

Test Specification: N



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1780	47.67	10.60	58.27	64.57	-6.30	QP	
2		0.1785	32.53	10.60	43.13	57.12	-13.99	AVG	
3		0.2940	45.05	9.81	54.86	60.41	-5.55	QP	
4		0.2940	31.61	9.81	41.42	51.73	-10.31	AVG	
5		0.7620	39.03	9.45	48.48	56.00	-7.52	QP	
6		0.7620	27.98	9.45	37.43	46.00	-8.57	AVG	
7		1.4380	38.49	9.34	47.83	56.00	-8.17	QP	
8		1.4380	27.84	9.34	37.18	46.00	-8.82	AVG	
9	*	3.2540	41.71	9.42	51.13	56.00	-4.87	QP	
10		3.2620	24.39	9.42	33.81	46.00	-12.19	AVG	

5. Disturbance Power Measurement

5.1. Test Standard and Limit

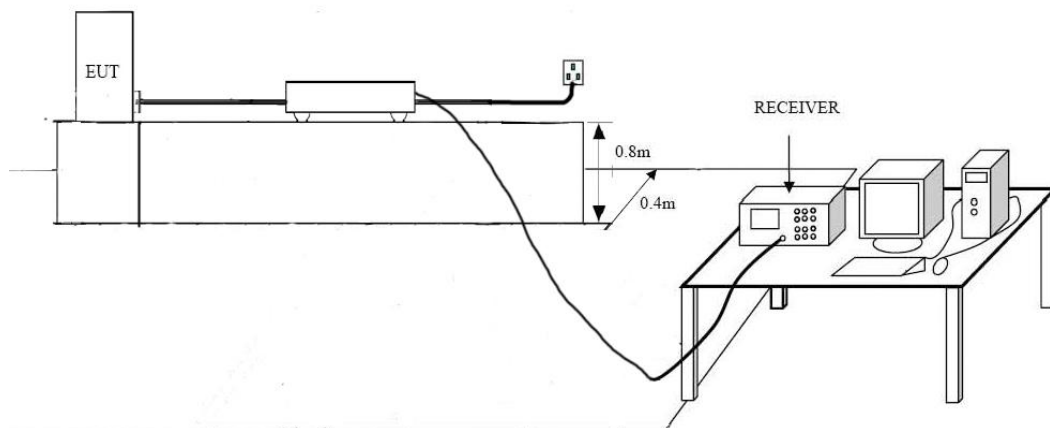
5.1.1. Test Standard

EN IEC 55014-1: 2021.

5.1.2. Test Limit

Household and similar appliances			Tools					
1	2	3	4	5	6	7	8	9
Frequency range			Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1000W		Rated motor power above 1000W	
(MHz)	dB(pW) Quasi-pesk	dB(pW) Avergge ^a	dB(pW) Quasi-pesk	dB(pW) Avergge ^a	dB(pW) Quasi-pesk	dB(pW) Avergge ^a	dB(pW) Quasi-pesk	dB(pW) Avergge ^a
30 to 300	Increasing linearly with the frequency from:							
	45 to 55	35 to 45	45 to 55	35 to 45	49 to 59	39 to 49	55 to 65	45 to 55
^a If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out. At the transition frequency the lower limit applies.								

5.2. Test Setup



5.3. Test Procedure

The EUT is placed on the plane 0.8m high above the ground by insulating support and away from other metallic surface at least 0.4m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

The bandwidth of the field strength meter is set at 120kHz.



5.4. Test Condition

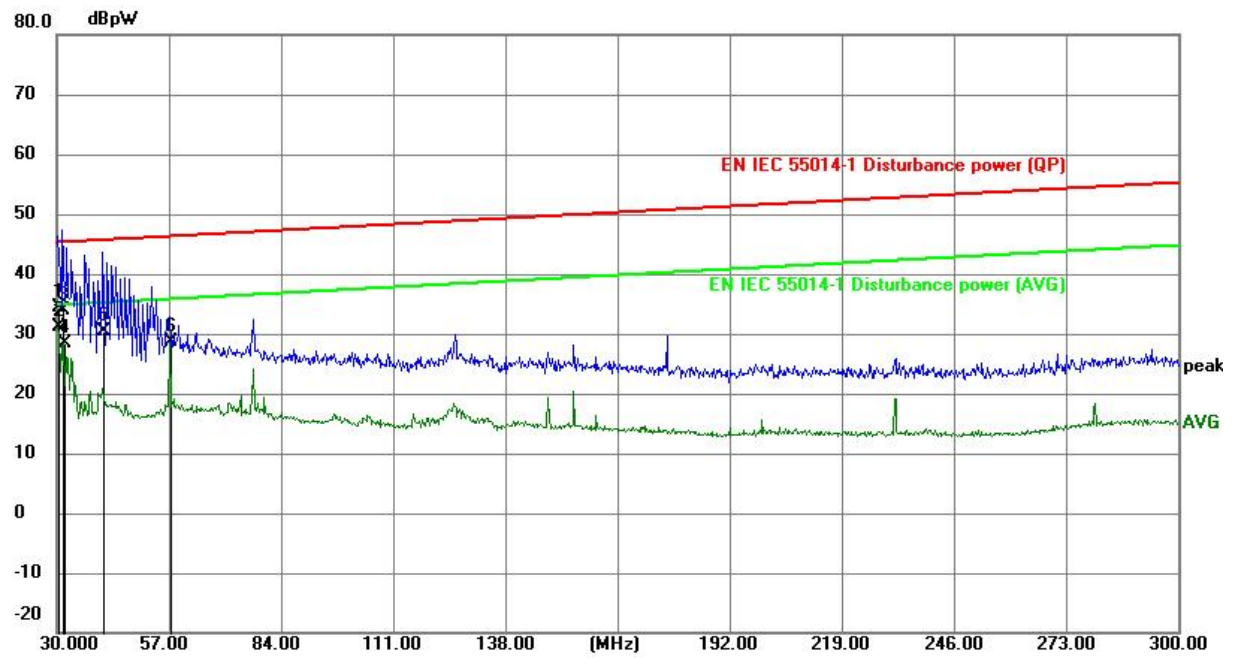
Temperature	:	25 °C
Relative Humidity	:	48 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

5.5. Test Data

Please refer to the following pages.



Operating Condition: Normal
Test Specification: AC Mains



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBpW)	Limit (dBpW)	Margin (dB)	Detector	Position (cm)	P/F	Remark
1	30.4800	26.22	8.08	34.30	45.02	-10.72	QP		P	
2	30.4800	23.02	8.08	31.10	35.02	-3.92	AVG		P	
3	31.5000	25.67	8.13	33.80	45.06	-11.26	QP		P	
4	31.6800	20.26	8.15	28.41	35.06	-6.65	AVG		P	
5	41.2800	21.76	8.74	30.50	45.42	-14.92	QP		P	
6	57.3000	19.69	9.01	28.70	36.01	-7.31	AVG		P	

6. Harmonic Current Emission Test

6.1. Test Standard and Limit

6.1.1. Test Standard

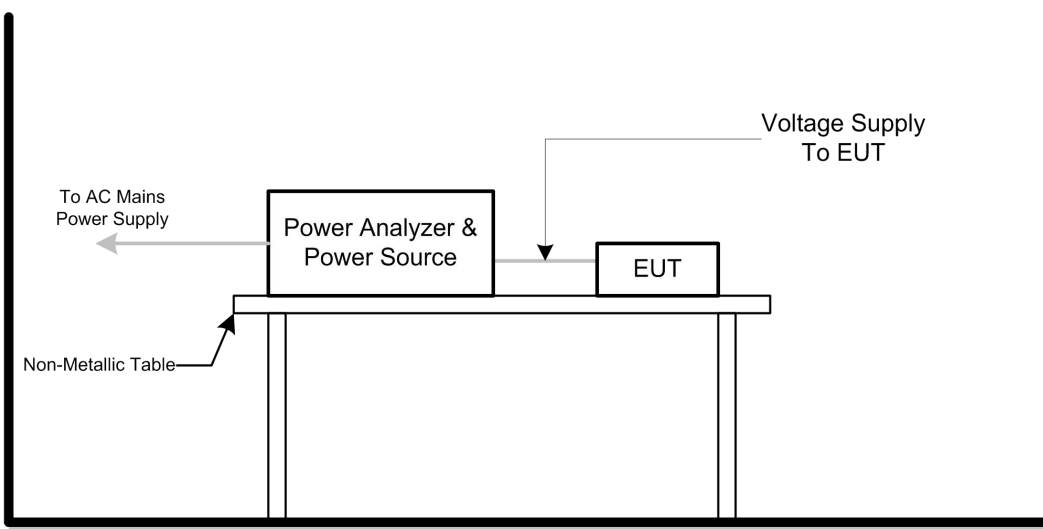
EN IEC 61000-3-2: 2019/A1: 2021

6.1.2. Limits

Harmonic Current Test Limit (Class A)

Harmonic order (n)	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \times 15/n$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \times 8/n$

6.2. Test Setup





6.3. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.

The classification of EUT is according to section 5 of EN IEC 61000-3-2. The EUT is classified as follows:

Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.

Class B: Portable tools. Arc welding equipment which is not professional equipment.

Class C: Lighting equipment.

Class D: Equipment having a specified power less than or equal to 600 W of the following types:
Personal computers and personal computer monitors and television receivers.

6.4. Test Condition

Temperature	:	25 °C
Relative Humidity	:	48 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

6.5. Test Data

Please refer to the following pages.

**Harmonics – Class-A per Ed. 3.0 (2014)(Run time)**

Test category: Class-A per Ed. 3.0 (2014) (European limits)

Test Margin: 100

Tested by: HX

Start time: 10:54:53

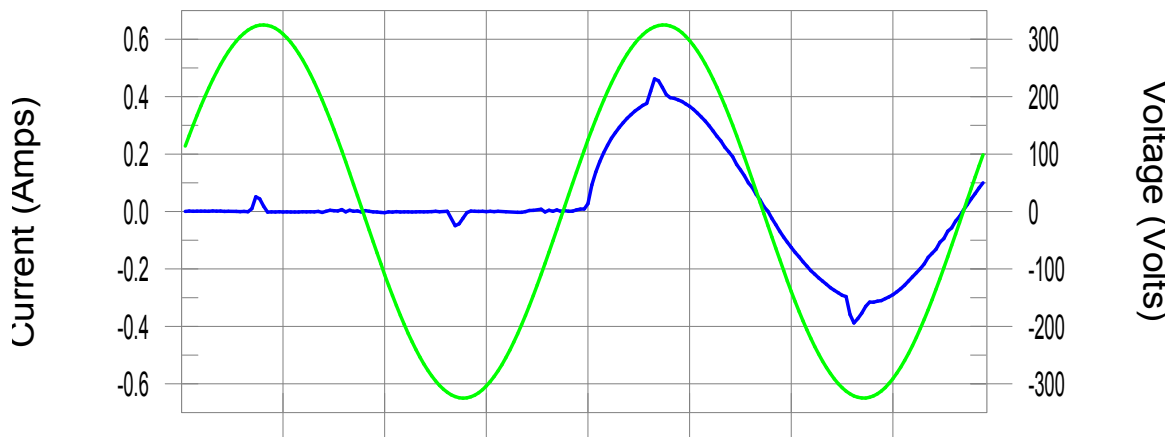
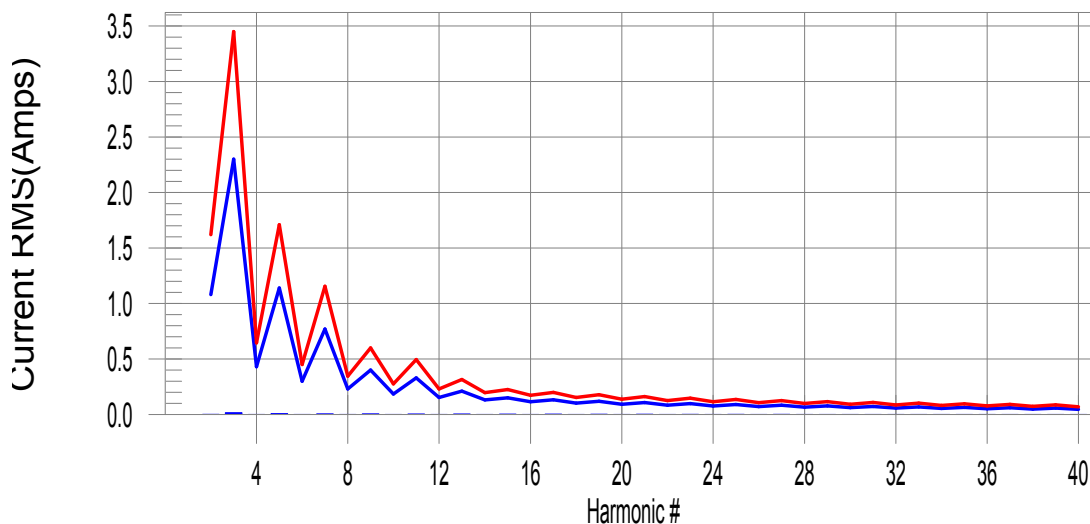
End time: 10:05:14

Test duration (min): 10

Data file name: H-000108.cts_data

Test Result: Pass

Source qualification: Normal

Current & voltage waveforms**Harmonics and Class A limit line****European Limits**

Test result: Pass Worst harmonic was #9 with 1.37% of the limit.

**Current Test Result Summary (Run time)**

Test category: Class-A per Ed. 3.0 (2014) (European limits)
Test Margin: 100 Tested by: HX
Start time: 10:54:53 End time: 10:05:14
Test duration (min): 10 Data file name: H-000108.cts_data

Test Result: Pass Source qualification: Normal
THC(A): 0.02 I-THD(%): 7.76 POHC(A): 0.000 POHC Limit(A): 0.320
Highest parameter values during test:
V_RMS (Volts): 229.92 Frequency(Hz): 50.00
I_Peak (Amps): 0.594 I_RMS (Amps): 0.237
I_Fund (Amps): 0.236 Crest Factor: 5.523
Power (Watts): 53.7 Power Factor: 0.990

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.002	1.620	0.11	Pass
3	0.015	2.300	0.6	0.016	3.450	0.46	Pass
4	0.001	0.430	0.0	0.001	0.645	0.14	Pass
5	0.007	1.140	0.6	0.007	1.710	0.43	Pass
6	0.000	0.300	0.0	0.000	0.450	0.08	Pass
7	0.006	0.770	0.7	0.006	1.155	0.50	Pass
8	0.000	0.230	0.0	0.000	0.345	0.07	Pass
9	0.005	0.400	1.4	0.006	0.600	0.94	Pass
10	0.000	0.184	0.0	0.000	0.276	0.12	Pass
11	0.005	0.330	0.0	0.005	0.495	0.97	Pass
12	0.000	0.153	0.0	0.000	0.230	0.09	Pass
13	0.004	0.210	0.0	0.004	0.315	1.42	Pass
14	0.000	0.131	0.0	0.000	0.197	0.09	Pass
15	0.004	0.150	0.0	0.004	0.225	1.73	Pass
16	0.000	0.115	0.0	0.000	0.173	0.10	Pass
17	0.003	0.132	0.0	0.003	0.199	1.68	Pass
18	0.000	0.102	0.0	0.000	0.153	0.17	Pass
19	0.003	0.118	0.0	0.003	0.178	1.52	Pass
20	0.000	0.092	0.0	0.000	0.138	0.09	Pass
21	0.002	0.107	0.0	0.002	0.161	1.35	Pass
22	0.000	0.084	0.0	0.000	0.125	0.10	Pass
23	0.002	0.098	0.0	0.002	0.147	1.18	Pass
24	0.000	0.077	0.0	0.000	0.115	0.11	Pass
25	0.001	0.090	0.0	0.001	0.135	0.97	Pass
26	0.000	0.071	0.0	0.000	0.106	0.10	Pass
27	0.001	0.083	0.0	0.001	0.125	0.88	Pass
28	0.000	0.066	0.0	0.000	0.099	0.12	Pass
29	0.001	0.078	0.0	0.001	0.116	0.83	Pass
30	0.000	0.061	0.0	0.000	0.092	0.10	Pass
31	0.001	0.073	0.0	0.001	0.109	0.79	Pass
32	0.000	0.058	0.0	0.000	0.086	0.16	Pass
33	0.001	0.068	0.0	0.001	0.102	0.90	Pass
34	0.000	0.054	0.0	0.000	0.081	0.11	Pass
35	0.001	0.064	0.0	0.001	0.096	0.94	Pass
36	0.000	0.051	0.0	0.000	0.077	0.17	Pass
37	0.001	0.061	0.0	0.001	0.091	0.94	Pass
38	0.000	0.048	0.0	0.000	0.073	0.12	Pass
39	0.001	0.058	0.0	0.001	0.087	0.97	Pass
40	0.000	0.046	0.0	0.000	0.069	0.18	Pass

**Voltage Source Verification Data (Run time)**

Test category: Class-A per Ed. 3.0 (2014) (European limits)
Test Margin: 100 Tested by: HX
Start time: 10:54:53 End time: 10:05:14
Test duration (min): 10 Data file name: H-000108.cts_data

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.92	Frequency(Hz):	50.00
I_Peak (Amps):	0.594	I_RMS (Amps):	0.237
I_Fund (Amps):	0.236	Crest Factor:	5.523
Power (Watts):	53.7	Power Factor:	0.990

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.061	0.460	13.18	OK
3	0.537	2.069	25.95	OK
4	0.055	0.460	11.86	OK
5	0.051	0.919	5.50	OK
6	0.019	0.460	4.18	OK
7	0.024	0.690	3.47	OK
8	0.009	0.460	2.06	OK
9	0.024	0.460	5.22	OK
10	0.012	0.460	2.56	OK
11	0.011	0.230	4.86	OK
12	0.008	0.230	3.54	OK
13	0.010	0.230	4.48	OK
14	0.004	0.230	1.77	OK
15	0.009	0.230	3.83	OK
16	0.009	0.230	3.71	OK
17	0.007	0.230	2.97	OK
18	0.008	0.230	3.48	OK
19	0.009	0.230	4.13	OK
20	0.009	0.230	3.94	OK
21	0.006	0.230	2.50	OK
22	0.003	0.230	1.18	OK
23	0.005	0.230	2.23	OK
24	0.003	0.230	1.33	OK
25	0.004	0.230	1.75	OK
26	0.002	0.230	0.84	OK
27	0.006	0.230	2.47	OK
28	0.003	0.230	1.18	OK
29	0.004	0.230	1.94	OK
30	0.003	0.230	1.31	OK
31	0.002	0.230	1.03	OK
32	0.002	0.230	0.82	OK
33	0.002	0.230	0.96	OK
34	0.002	0.230	0.78	OK
35	0.002	0.230	0.85	OK
36	0.002	0.230	0.78	OK
37	0.003	0.230	1.44	OK
38	0.002	0.230	0.89	OK
39	0.004	0.230	1.70	OK
40	0.004	0.230	1.85	OK

7. Voltage Fluctuation and Flicker test

7.1. Test Standard and Limit

7.1.1. Test Standard

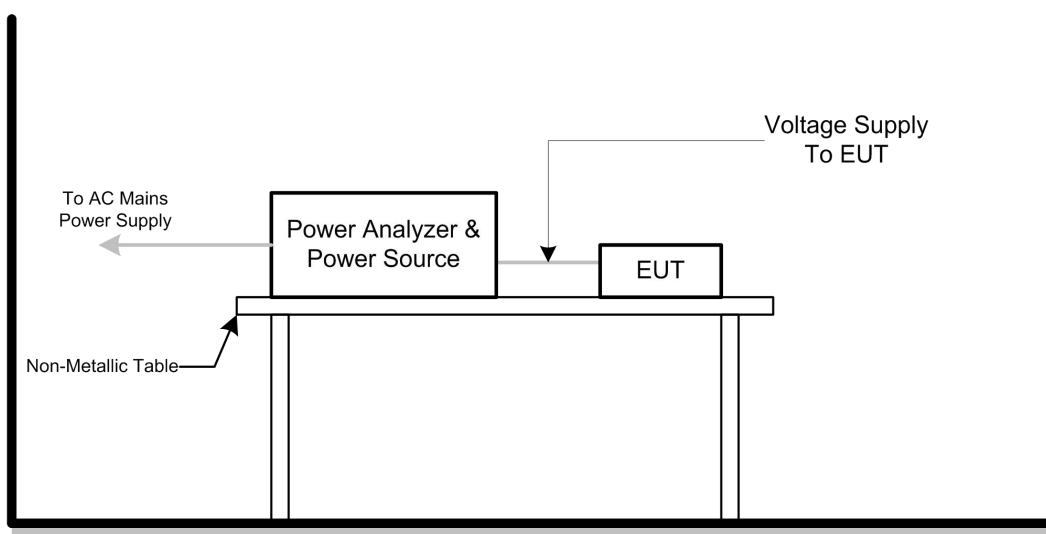
EN 61000-3-3:2013+A2:2021

7.1.2. Limit

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

7.2. Test Setup



7.3. Test Procedure

7.3.1. Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.

7.3.2. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

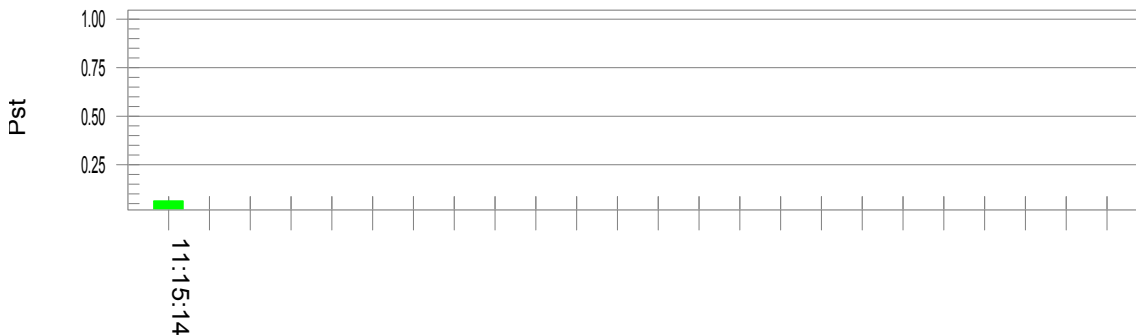
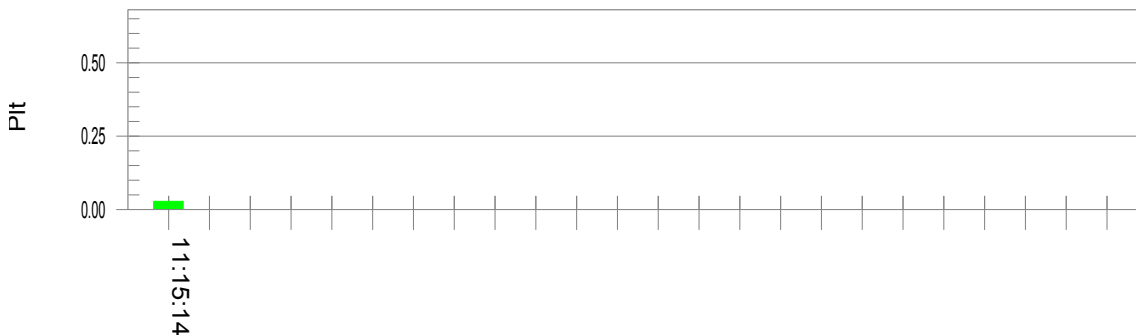
7.3.3. For the actual test configuration, please refer to the related Item –Block Diagram of system tested.



7.4. Test Condition

Temperature	:	25 °C
Relative Humidity	:	48 %
Pressure	:	1010 hPa
Test Power	:	AC 230V/50Hz

7.5. Test Data

**Flicker Test Summary per EN/IEC61000-3-3 (Run time)****Test category: All parameters (European limits)****Test Margin: 100****Tested by: HX****Start time: 11:04:54****End time: 11:15:15****Test duration (min): 10****Data file name: F-000110.cts_data****Test Result: Pass****Status: Test Completed****Pst and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 229.94****Highest dt (%): 0.00****Time(mS) > dt: 0.0****Highest dc (%): 0.00****Highest dmax (%): 0.00****Highest Pst (10 min. period): 0.064****Highest Plt (2 hr. period): 0.028****Test limit (%): 3.30****Test limit (mS): 500.0****Test limit (%): 3.30****Test limit (%): 4.00****Test limit: 1.000****Test limit: 0.650****Pass****Pass****Pass****Pass****Pass****Pass**

8. Electrostatic Discharge Immunity Test

8.1. Test Requirements

8.1.1. Test Standard

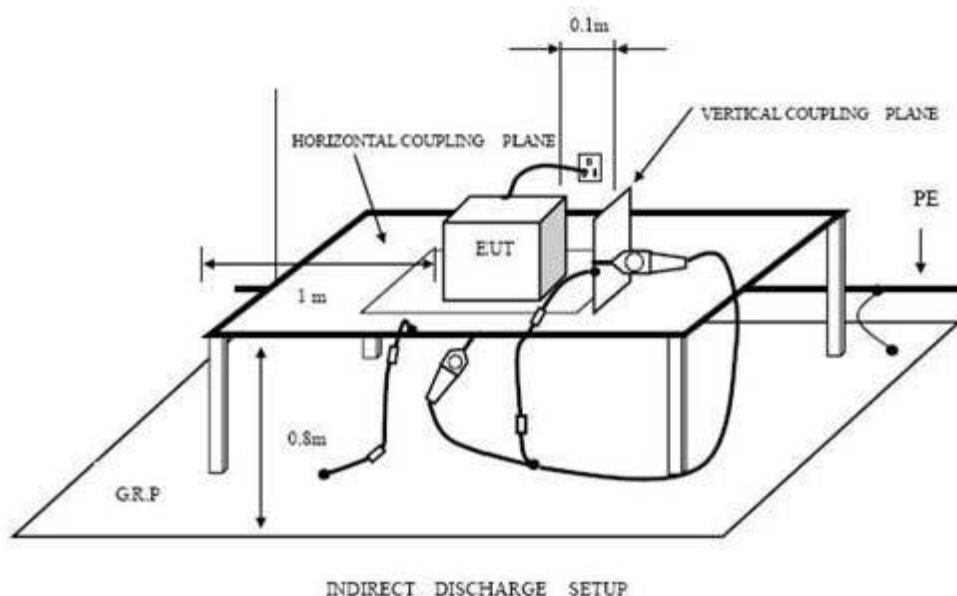
EN IEC 55014-2: 2021 (EN 61000-4-2: 2009)

8.1.2. Test Level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.0	±2	±2
2.0	±4	±4
3.0	±6	±8
4.0	±8	±15
X	Special	Special

8.1.3. Performance criterion: B

8.2. Test Setup



8.3. Test Procedure

8.3.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.



8.3.2. Contact Discharge:

All the procedure shall be same as air discharge. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

8.3.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.3.4. Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

8.4. Test Data

Please refer to the following page.



Electrostatic Discharge Test Result

EUT	: electric scooter	M/N	: X13
Temperature	: 22°C	Humidity	: 50%
Power supply	: AC 230V/50Hz	Test Mode	: Normal
Criterion: B			
Air Discharge: $\pm 8\text{kV}$ Contact Discharge: $\pm 4\text{kV}$			
For each point positive 10 times and negative 10 times discharge.			
Location	Kind A-Air Discharge C-Contact Discharge	Result	
Slot of the EUT	A	PASS	
Button	A	PASS	
Switch	A	PASS	
Screw	C	PASS	
Metal	C	PASS	
HCP	C	PASS	
VCP of front	C	PASS	
VCP of rear	C	PASS	
VCP of left	C	PASS	
VCP of right	C	PASS	
Remark:			

9. Radiated Electromagnetic Field Immunity test

9.1. Test Requirements

9.1.1. Test Standard

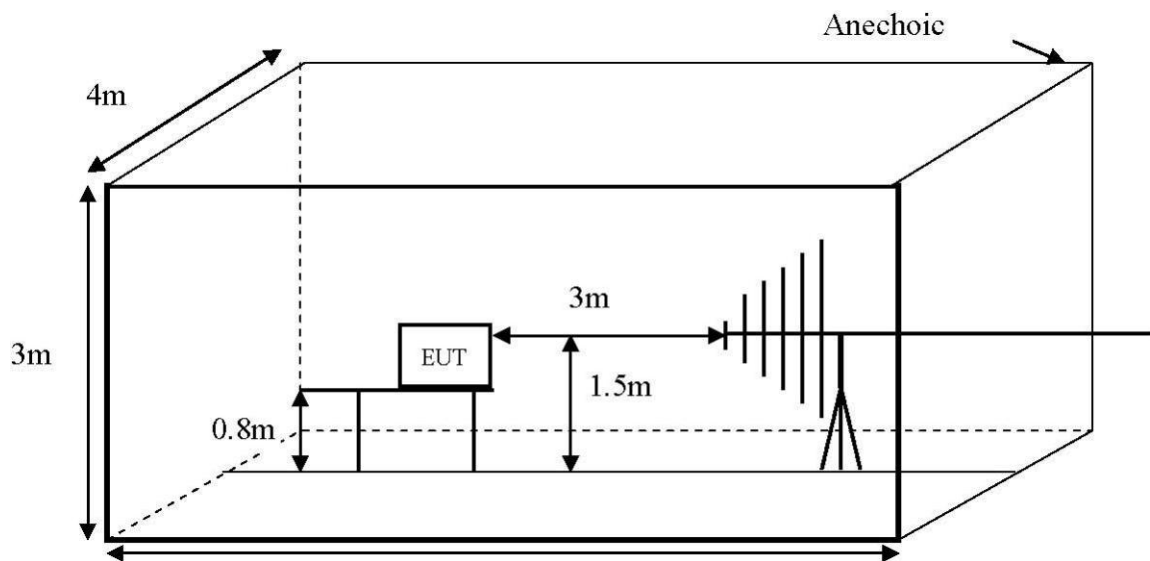
EN IEC 55014-2: 2021 (EN IEC 61000-4-3:2020)

9.1.2. Test Level

Level	Field Strength V/m
1.0	1
2.0	3
3.0	10
X	Special

9.1.3. Performance criterion: A

9.2. Test Setup



9.3. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a camera is used to monitor its screen.



All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

9.4. Test Data

Please refer to the following page.

The EUT is of Category II product, so this item is not applicant.

10. Electrical Fast Transient/Burst Test

10.1. Test Requirements

10.1.1. Test Standard

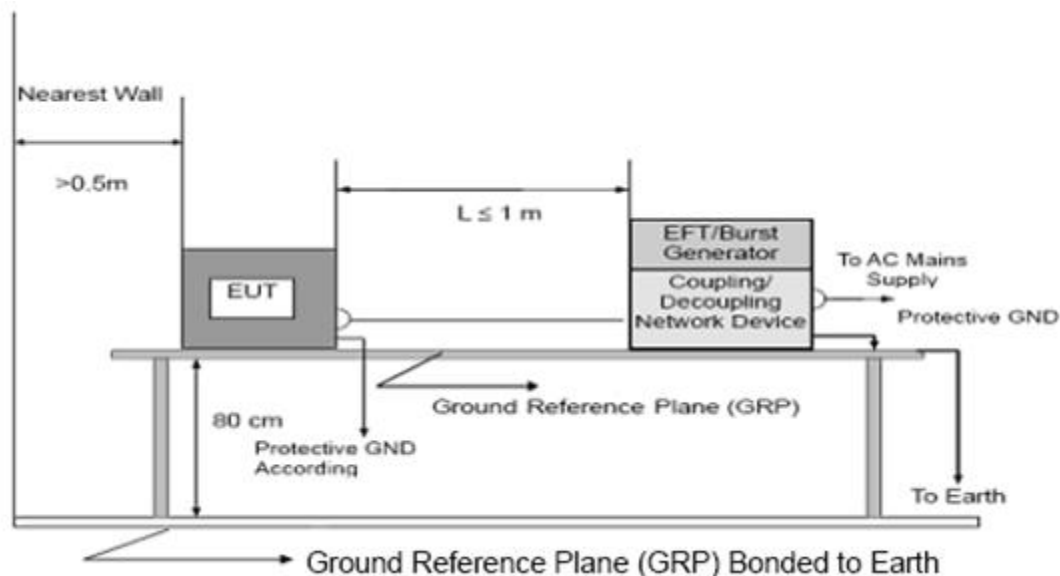
EN IEC 55014-2: 2021 (EN 61000-4-4: 2012)

10.1.2. Level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Switching Adapter Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

10.1.3. Performance criterion: B

10.2. Test Setup



10.3. Test Procedure

10.3.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2minute.



10.3.2. For signal lines and control lines ports:

A coupling clamp is use to couple the EFT interference signal to the signal and control lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minute.

10.3.3. For DC input and DC output power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to DC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minute.

10.4. Test Data

Please refer to the following page.



Electrical Fast Transient/Burst Test Results

EUT	: electric scooter	M/N	: X13
Temperature	: 22°C	Humidity	: 50%
Power supply	: AC 230V/50Hz	Test Mode	: Normal
Criterion: B			
Line : ☒ AC Mains Coupling : ☒ Direct			
Line : ☐ Signal ☐ I/O Cable Coupling : ☐ Capacitive			
Line	Voltage(kV)	Result(+)	Result(-)
L	1	PASS	PASS
N	1	PASS	PASS
L-N	1	PASS	PASS
PE	1	PASS	PASS
L-PE	1	PASS	PASS
N-PE	1	PASS	PASS
L-N-PE	1	PASS	PASS

11. Surge Immunity Test

11.1. Test Requirements

11.1.1. Test Standard

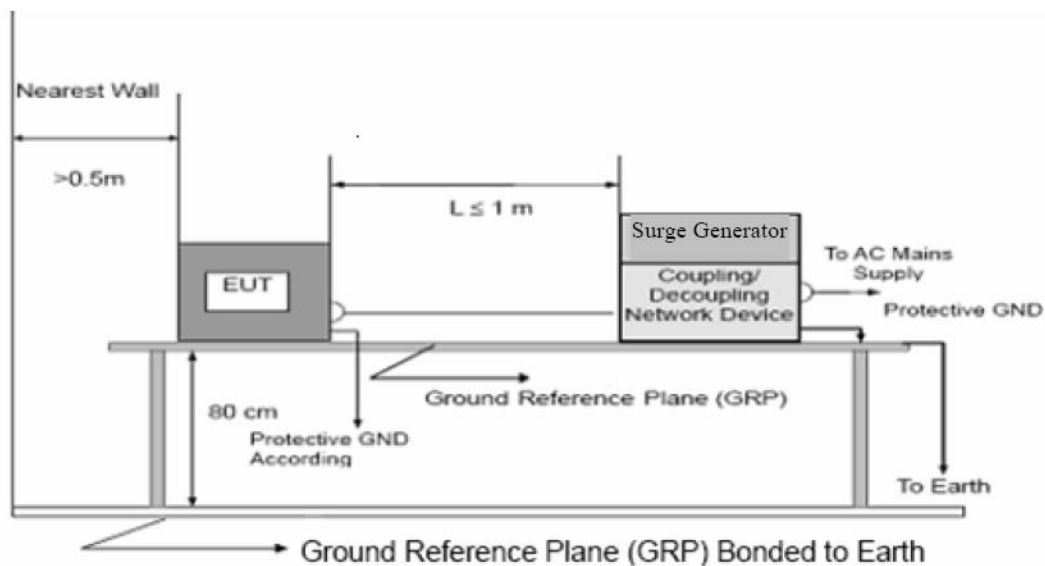
EN IEC 55014-2: 2021 (EN 61000-4-5: 2014/A1:2017)

11.1.2. Level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.1.3. Performance criterion: B

11.2. Test Setup



11.3. Test Procedure

11.3.1. Set up the EUT and test generator.

11.3.2. For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge

11.3.3. (at open-circuit condition) and 8/20us current surge to EUT selected points.

11.3.4. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.



11.3.5. Different phase angles are done individually.

11.3.6. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.4. Test Data

Please refer to the following page.



Surge Immunity Test Results

EUT : electric scooter M/N : X13				
Temperature : 22°C Humidity : 50%				
Power supply : AC 230V/50Hz Test Mode : Normal				
Criterion: B				
Injected Line	Voltage(kV)	Phase	Result	
			(+)	(-)
L-N	1	0°	PASS	PASS
		90°	PASS	PASS
		180°	PASS	PASS
		270°	PASS	PASS
L-PE	2	0°	PASS	PASS
		90°	PASS	PASS
		180°	PASS	PASS
		270°	PASS	PASS
N-PE	2	0°	PASS	PASS
		90°	PASS	PASS
		180°	PASS	PASS
		270°	PASS	PASS
L-N-PE	2	0°	PASS	PASS
		90°	PASS	PASS
		180°	PASS	PASS
		270°	PASS	PASS

12. Conducted Immunity Test

12.1. Test Requirements

12.1.1. Test Standard

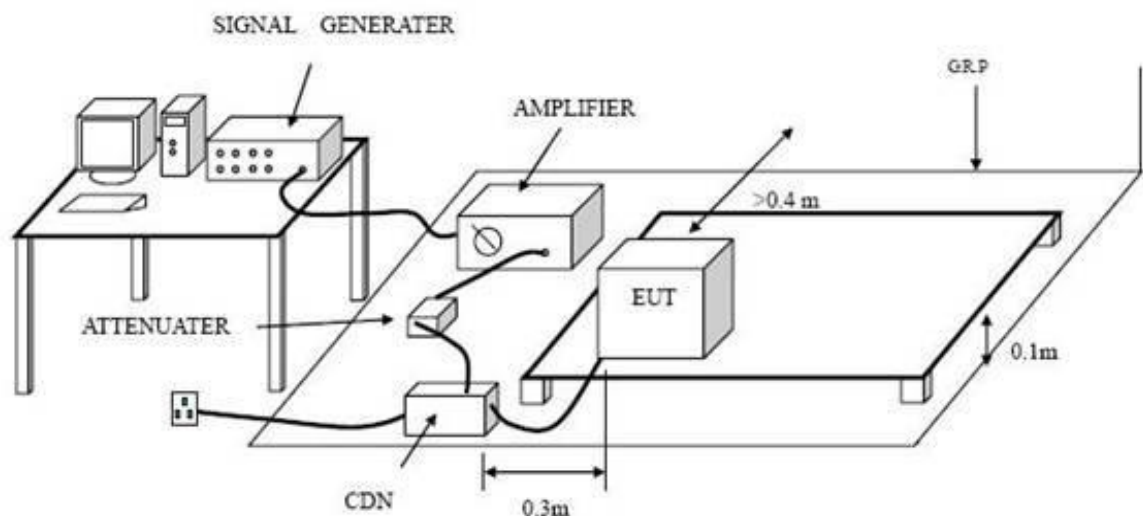
EN IEC 55014-2: 2021 (EN 61000-4-6: 2014)

12.1.2. Level

Level	Voltage Level (e.m.f.) V
1.	1
2.	3
3.	10
X	Special

12.1.3. Performance criterion: A

12.2. Test Setup



12.3. Test Procedure

12.3.1. Set up the EUT, CDN and test generators.

12.3.2. Let the EUT work in test mode and test it.

12.3.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

12.3.4. The disturbance signal description below is injected to EUT through CDN.



- 12.3.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 12.3.6. The frequency range is swept from 0.150MHz to 230MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 12.3.7. The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 12.3.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.4. Test Data

Please refer to the following page.



Injected Currents Susceptibility Test Results

EUT : <u>electric scooter</u>		M/N : <u>X13</u>	
Temperature : <u>22°C</u>		Humidity : <u>50%</u>	
Power supply : <u>AC 230V/50Hz</u>		Test Mode : <u>Normal</u>	
Criterion: A			
Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Result
0.15 ~ 230	AC Mains	3V(rms), Unmodulated	PASS
0.15 ~ 230	DC Mains	1V(rms), Unmodulated	/
0.15 ~ 230	Signal Line	1V(rms), Unmodulated	/

13. Voltage Dips and Interruptions Immunity Test

13.1. Test Requirements

13.1.1. Test Standard

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

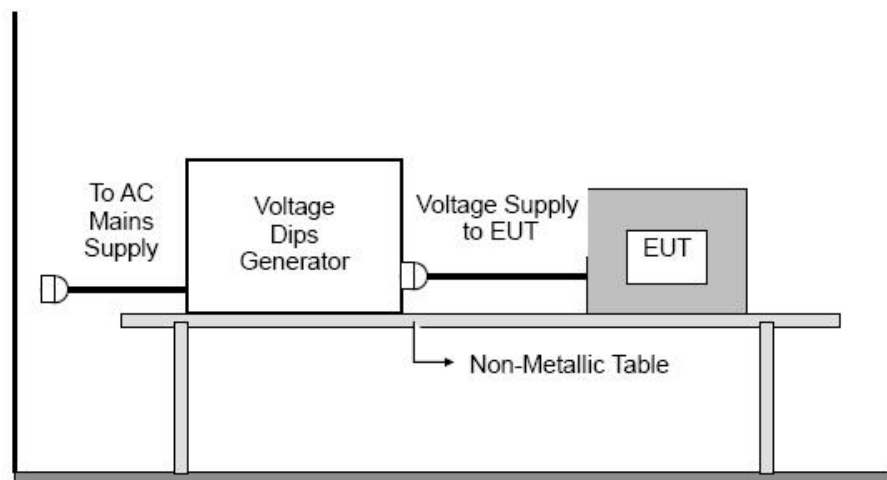
13.1.2. Level

Test Level for Voltage Dips and Interruptions

Test Level %U _T	Voltage dip and short interruptions %U _T	Duration (in period)
0	100	0.5
40	60	10
70	30	25

13.1.3. Performance criterion: C

13.2. Test Setup



13.3. Test Procedure

Set up the EUT and test generator as shown above. The EUT is tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10s minimum.

13.4. Test Data

Please refer to the following page.



Voltage Dips and Interruptions Test Results

EUT : electric scooter M/N : X13

Temperature : 22°C Humidity : 50%

Power supply : AC 230V/50Hz Test Mode : Normal

Criterion: C

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Result
0	100	0.5P	0°~360°	PASS
40	60	10P	0°~360°	PASS
70	30	50P	0°~360°	PASS

Remark: U_T is the rated voltage for the equipment.

14. Photographs - Constructional Details

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



Photo 3 Appearance of EUT



Photo 4 Appearance of EUT



Photo 5 Appearance of EUT



END OF REPORT