

Current Test Result Summary (Run time)

EUT: HYPERVOLT M/N: 53000 001-00
Test category: Class-A per Ed. 4.0 (2014) (European limits)
Test date: 2018/3/1 Start time: 8:47:49
Test duration (min): 2.5 Data file name: H-000346.cts_data
Comment: CHARGING Report NO.: ATE20180230
Manufacturer: ESINO

Tested by: Ben
Test Margin: 100
End time: 8:50:31

Test Result: Pass Source qualification: Normal
THC(A): 0.257 I-THD(%): 184.0 POHC(A): 0.059 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 229.98 Frequency(Hz): 50.00
I_Peak (Amps): 1.355 I_RMS (Amps): 0.301
I_Fund (Amps): 0.140 Crest Factor: 4.692
Power (Watts): 30.5 Power Factor: 0.443

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.002	1.620	N/A	Pass
3	0.126	2.300	5.5	0.131	3.450	3.8	Pass
4	0.001	0.430	N/A	0.002	0.645	N/A	Pass
5	0.117	1.140	10.3	0.121	1.710	7.1	Pass
6	0.001	0.300	N/A	0.002	0.450	N/A	Pass
7	0.105	0.770	13.6	0.108	1.155	9.3	Pass
8	0.001	0.230	N/A	0.002	0.345	N/A	Pass
9	0.090	0.400	22.6	0.092	0.600	15.4	Pass
10	0.001	0.184	N/A	0.002	0.276	N/A	Pass
11	0.075	0.330	22.7	0.076	0.495	15.4	Pass
12	0.001	0.153	N/A	0.002	0.230	N/A	Pass
13	0.060	0.210	28.7	0.061	0.315	19.3	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.047	0.150	31.5	0.047	0.225	21.1	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.037	0.132	28.2	0.037	0.198	18.9	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.031	0.118	25.8	0.031	0.178	17.4	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.027	0.107	25.2	0.028	0.161	17.2	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.025	0.098	25.5	0.026	0.147	17.6	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.023	0.090	26.0	0.024	0.135	17.9	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.021	0.083	25.8	0.022	0.125	17.6	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.019	0.078	24.7	0.020	0.116	16.8	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.017	0.073	22.7	0.017	0.109	15.4	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.014	0.068	20.3	0.014	0.102	13.7	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.012	0.064	17.9	0.012	0.096	12.1	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.010	0.061	15.8	0.010	0.091	10.7	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.008	0.058	14.3	0.008	0.087	9.8	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: HYPERVOLT M/N: 53000 001-00 Tested by: Ben
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2018/3/1 Start time: 8:47:49 End time: 8:50:31
Test duration (min): 2.5 Data file name: H-000346.cts_data
Comment: CHARGING Report NO.: ATE20180230
Manufacturer: ESINO

Test Result: Pass Source qualification: Normal

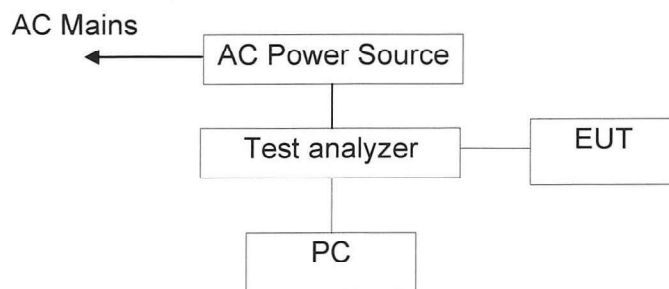
Highest parameter values during test:

Voltage (Vrms): 229.98	Frequency(Hz): 50.00
I _{Peak} (Amps): 1.355	I _{RMS} (Amps): 0.301
I _{Fund} (Amps): 0.140	Crest Factor: 4.692
Power (Watts): 30.5	Power Factor: 0.443

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.158	0.460	34.25	OK
3	0.577	2.070	27.88	OK
4	0.068	0.460	14.88	OK
5	0.047	0.920	5.10	OK
6	0.072	0.460	15.61	OK
7	0.066	0.690	9.50	OK
8	0.035	0.460	7.61	OK
9	0.035	0.460	7.50	OK
10	0.033	0.460	7.21	OK
11	0.058	0.230	25.28	OK
12	0.021	0.230	9.03	OK
13	0.034	0.230	14.76	OK
14	0.012	0.230	5.19	OK
15	0.041	0.230	17.95	OK
16	0.012	0.230	5.38	OK
17	0.036	0.230	15.76	OK
18	0.016	0.230	6.97	OK
19	0.025	0.230	11.06	OK
20	0.015	0.230	6.62	OK
21	0.030	0.230	13.11	OK
22	0.009	0.230	3.97	OK
23	0.024	0.230	10.50	OK
24	0.007	0.230	3.09	OK
25	0.031	0.230	13.27	OK
26	0.009	0.230	4.10	OK
27	0.028	0.230	12.14	OK
28	0.007	0.230	3.24	OK
29	0.022	0.230	9.63	OK
30	0.007	0.230	3.19	OK
31	0.026	0.230	11.18	OK
32	0.006	0.230	2.58	OK
33	0.017	0.230	7.41	OK
34	0.003	0.230	1.45	OK
35	0.018	0.230	7.87	OK
36	0.004	0.230	1.58	OK
37	0.018	0.230	7.88	OK
38	0.003	0.230	1.29	OK
39	0.015	0.230	6.56	OK
40	0.006	0.230	2.66	OK

8. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

8.1. Block Diagram of Test Setup



(EUT: HYPERVOLT)

8.2. Measuring Standard

EN61000-3-3: 2013

8.3. Operation Condition of EUT

- 8.3.1. Setup the EUT as shown on Section 8.1.
- 8.3.2. Turn on the power of all equipments.
- 8.3.3. Let the EUT work in test mode (Charging) and measure it.

8.4. Measuring Results

PASS.

Please see the following page.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: HYPERVOLT M/N: 53000 001-00
Test category: All parameters (European limits)
Test date: 2018/3/1 Start time: 8:36:31
Test duration (min): 10 Data file name: F-000345.cts_data
Comment: CHARGING Report NO.: ATE20180230
Manufacturer: ESINO

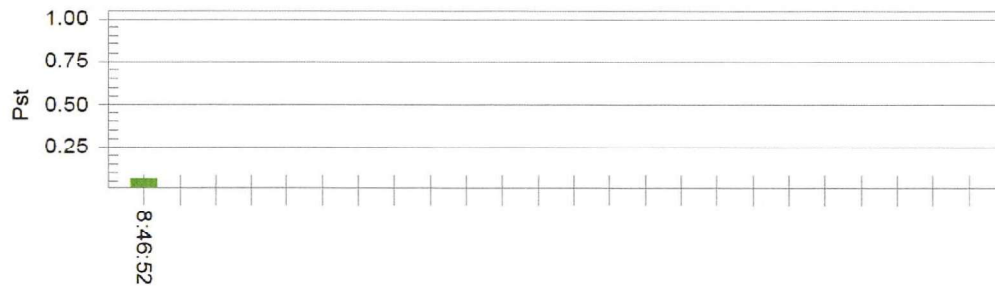
Tested by: Ben
Test Margin: 100
End time: 8:46:58

Test Result: Pass

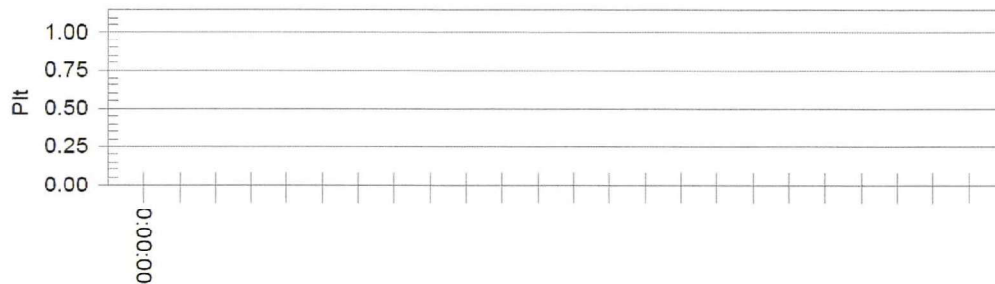
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



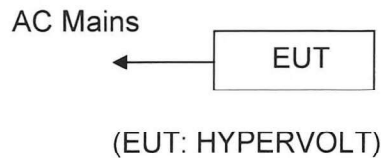
Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.55		
T-max (mS):	0	Test limit (mS):	500.0 Pass
Highest dc (%):	0.00	Test limit (%):	3.30 Pass
Highest dmax (%):	0.00	Test limit (%):	4.00 Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000 Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650 Pass

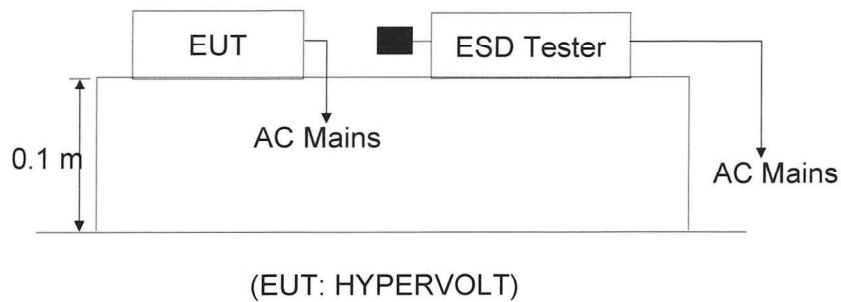
9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



9.1.2. ESD Test Setup



9.2. Test Standard

EN 55014-2: 2015 (IEC61000-4-2: 2008)

Severity Level: 3 / Air Discharge: $\pm 8\text{kV}$, Level: 2 / Contact Discharge: $\pm 4\text{kV}$

Testing shall also be satisfied at the lower levels

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

9.3.2. Performance Criterion : **B**

9.4. EUT Configuration

The configuration of EUT is listed in Section 4.4.

9.5. Operating Condition of EUT

9.5.1. Setup the EUT as shown in Section 9.1.

9.5.2. Turn on the power of all equipments.

9.5.3. Let the EUT work in test mode (Charging) and measure it.

9.6. Test Procedure

9.6.1. 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 20 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

9.6.2. Contact Discharge

All the procedure shall be same as Section 9.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.6.3. Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

9.6.4. Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m * 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.

9.7. Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

Shenzhen Accurate Technology Co., Ltd.

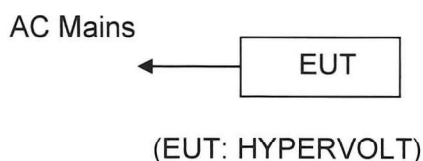
Manufacturer: DONGGUAN ESINO Technology Co., Ltd		Test Date : Mar. 1, 2018
EUT : HYPERVOLT		Temperature : 25°C
M/N : 53000 001-00		Humidity : 42%
Power Supply AC 264V/50Hz		Test Engineer : Ben
Test Modes : Charging		
Air Discharge: $\pm 2\text{kV}$; $\pm 4\text{kV}$; $\pm 8\text{kV}$		
Contact Discharge: $\pm 2\text{kV}$; $\pm 4\text{kV}$ # For each point positive 10 times and negative 10 times discharge		
Location	Kind A-Air Discharge C-Contact Discharge	Result
All non-conducted enclosure	A	PASS
All conducted enclosure	C	PASS
HCP	C	PASS
VCP of the front	C	PASS
VCP of the rear	C	PASS
VCP of the left	C	PASS
VCP of the right	C	PASS
Remark :		Test Equipment : ESD Simulator (TESEQ, NSG 437)

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

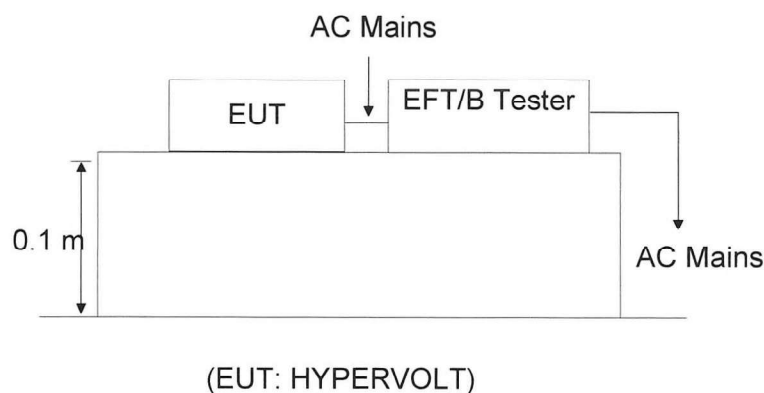
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1. Block Diagram of Test Setup

10.1.1. Block Diagram of the EUT



10.1.2. Block Diagram of Test Setup



10.2. Test Standard

EN 55014-2: 2015

(IEC61000-4-4: 2012 Severity Level, Level 2: 1kV & 0.5kV)

10.3. Severity Levels and Performance Criterion

10.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.50 KV	0.25 KV
2.	1.0 0KV	0.50 KV
3.	2 .00KV	1 .00KV
4.	4 .00KV	2.00 KV
X	Special	Special

10.3.2. Performance Criterion : **B**

10.4. EUT Configuration

The configuration of EUT is listed in Section 4.4.

10.5. Operating Condition of EUT

10.5.1. Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (Charging) and measure it.

10.6. Test Procedure

The EUT is put on the table, which is 0.1 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT shall be more than 0.5m.

10.6.1. 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 2 mins.

10.6.2. For signal lines and control lines ports:

It's unnecessary to test.

10.6.3. For DC line ports:

It's unnecessary to test.

10.7. Test Result

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

Shenzhen Accurate Technology Co., Ltd.

Standard	IEC 61000-4-4: 2012		Result : ☒ PASS / ☐ FAIL	
Manufacturer : <u>DONGGUAN ESINO Technology Co., Ltd</u> EUT : <u>HYPERVOLT</u> M/N : <u>53000 001-00</u> Power Supply : <u>AC 264V/50Hz</u> Test Mode : <u>Charging</u>			Test Date : <u>Mar. 1, 2018</u> Temperature : <u>25°C</u> Humidity : <u>42%</u> Test Engineer : <u>Ben</u> Criterion : <u>B</u>	
Line : ☒ AC Mains		Line : ☐ Signal Line ☐ DC Output Line		
Coupling : ☒ Direct		Coupling : ☐ Capacitive		
Test Time : 120s				
Line	Test Voltage	Result(+)	Result(-)	
L, N	1KV	PASS	PASS	
Note :				
Test Equipment		Burst Tester Model : ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) CAPACITIVE CLAMP: HFK (EM TEST) Transformer: V4780S2 (EM TEST)		

Shenzhen Accurate Technology Co., Ltd.

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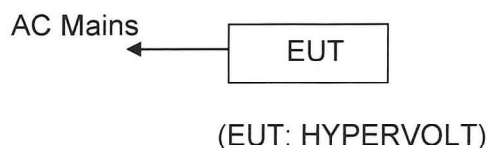
Hyper Ice, Inc. Ex. 1054-Page 46

Hyper Ice, Inc. v. Therabody, Inc.

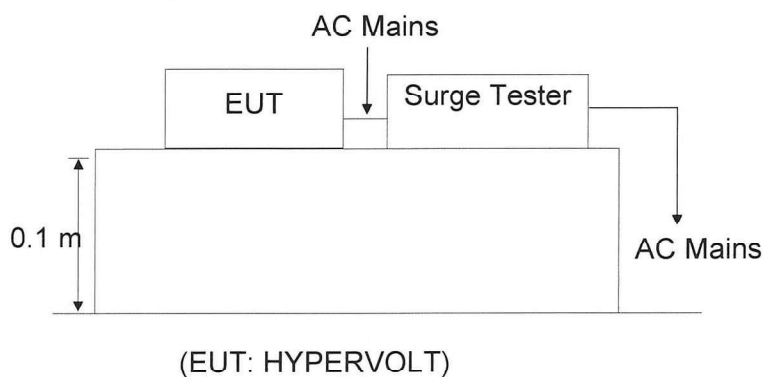
11. SURGE IMMUNITY TEST

11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of the EUT



11.1.2. Surge Test Setup



11.2. Test Standard

EN 55014-2: 2015

(IEC61000-4-5: 2014+A1: 2017, Severity Level: Level 2, 1.0kV)

Testing shall also be satisfied at the lower levels

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

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

11.3.2. Performance Criterion : B

11.4. EUT Configuration

The configuration of EUT is listed in Section 4.4.

11.5. Operating Condition of EUT

11.5.1. Setup the EUT as shown in Section 11.1.

11.5.2. Turn on the power of all equipments.

11.5.3. Let the EUT work in test modes (Charging) and measure it.

11.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.2.
- 2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7. Test Result

PASS.

Please refer to the following page.

Surge Immunity Test Results

Shenzhen Accurate Technology Co., Ltd.

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Shenzhen Accurate Technology Co., Ltd.

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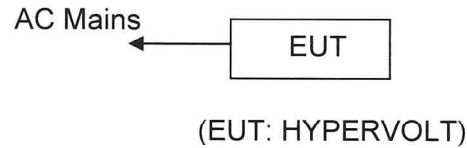
Hyper Ice, Inc. Ex. 1054-Page 49

Hyper Ice, Inc. v. Therabody, Inc.

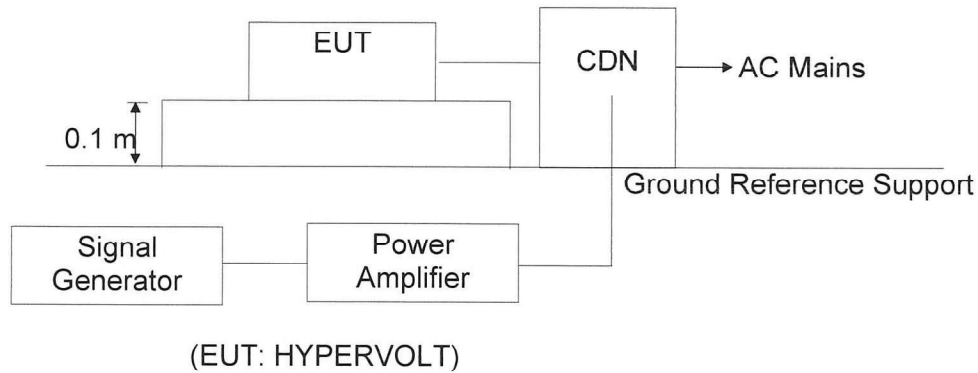
12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1. Block Diagram of Test Setup

12.1.1. Block Diagram of the EUT



12.1.2. Block Diagram of Test Setup



12.2. Test Standard

EN 55014-2: 2015
(IEC61000-4-6: 2013, Severity Level 2: 3V (rms), 0.15MHz - 230MHz)

12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

Level	Field Strength V
1.	1
2.	3
3.	10
X	Special

12.3.2. Performance Criterion: A

12.4. EUT Configuration

The configuration of EUT is listed in Section 4.4.

12.5. Operating Condition of EUT

12.5.1. Setup the EUT as shown in Section 12.1.

12.5.2. Turn on the power of all equipments.

12.5.3. Let the EUT work in test mode (Charging) and measure it.

12.6. Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 12.1.2.
- 2) Let the EUT work in test mode and measure it.
- 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).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 230MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 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.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7. Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

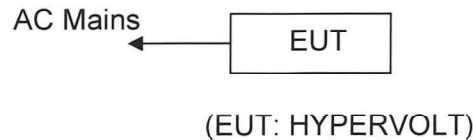
Shenzhen Accurate Technology Co., Ltd.

Manufacturer : <u>DONGGUAN ESINO Technology Co., Ltd</u>			Test Date : <u>Mar. 1, 2018</u>	
EUT : <u>HYPERVOLT</u>			Temperature : <u>25°C</u>	
M/N : <u>53000 001-00</u>			Humidity : <u>41%</u>	
Power Supply : <u>AC 264V/50Hz</u>			Test Engineer : <u>Ben</u>	
Test Modes : Charging				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 - 230	AC Mains	3V	A	PASS
Test Mode :				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
Remark : 1. Modulation Signal:1KHz 80% AM Measurement Equipment : Simulator : CIT-10 (FRANKONIA) CDN : ☒ CDN-M2/3 (FRANKONIA) ☒ Injection Clamp: Injection Clamp-M4 (FCC)			Note:	

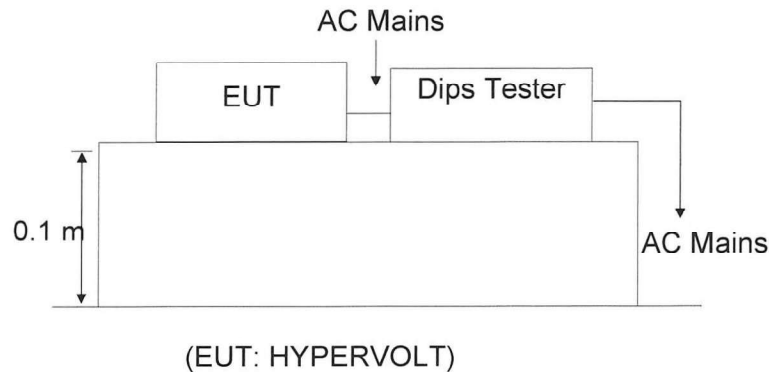
13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1. Block Diagram of Test Setup

13.1.1. Block Diagram of the EUT



13.1.2. Dips Test Setup



13.2. Test Standard

EN 55014-2: 2015 (IEC61000-4-11: 2004 +A1: 2017)

13.3. Severity Levels and Performance Criterion

13.3.1. Severity level

Test Level %U _T	Voltage dip in %U _T	Duration (in period)(50Hz)	Duration (in period)(60Hz)
0	100	0.5 1	0.5 1
40	60	10	12
70	30	25	30
80	20	250	300

13.3.2. Performance Criterion : C

13.4. EUT Configuration

The configuration of EUT is listed in Section 4.4.

13.5. Operating Condition of EUT

13.5.1. Setup the EUT as shown in Section 13.1.

13.5.2. Turn on the power of all equipments.

13.5.3. Let the EUT work in test modes (Charging) and measure it.

13.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruption is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7. Test Result

PASS.

Please refer to the following page.

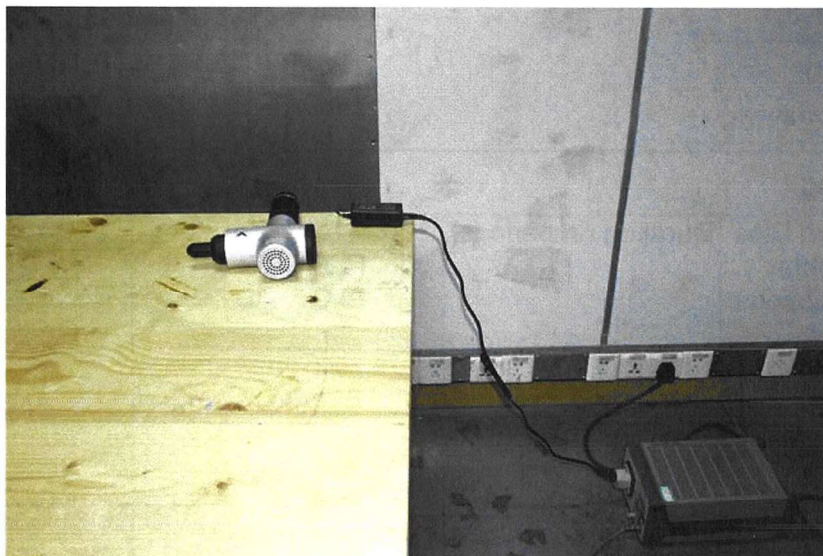
Voltage Dips And Interruptions Test Results

Shenzhen Accurate Technology Co., Ltd.

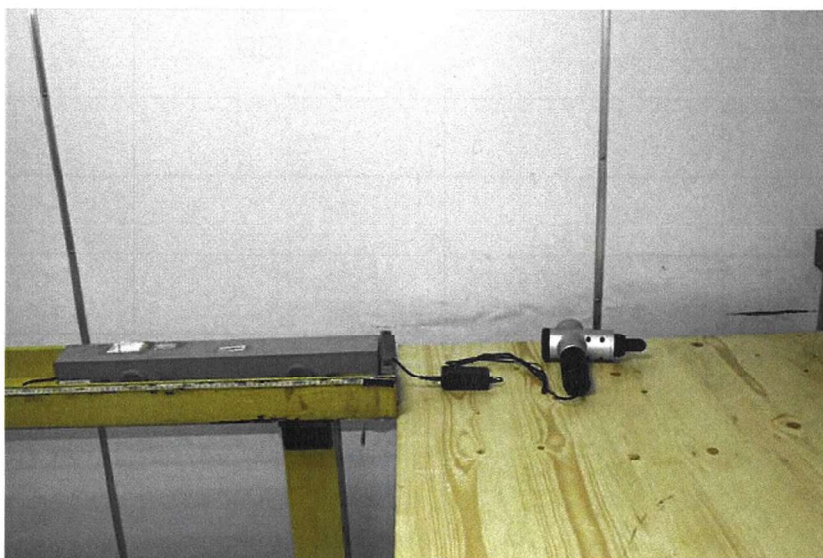
Manufacturer : <u>DONGGUAN ESINO Technology Co., Ltd</u> EUT : <u>HYPERVOLT</u> M/N : <u>53000 001-00</u> Power Supply : <u>AC 264V/50Hz</u>			Test Date : <u>Mar. 1, 2018</u> Temperature : <u>26°C</u> Humidity : <u>42%</u> Test Engineer : <u>Ben</u>	
Test Modes : Charging				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion ☐ A ☐ B ☒ C ☐ D	Result P=Pass F=Fail
0	100	0.5P	C	PASS
40	60	10P/12P ^a	C	PASS
70	30	25P/30P ^a	C	PASS
^a "10P/12P" means "10 cycles for 50Hz test " and "12 cycles for 60 Hz test"				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion ☐ A ☐ B ☐ C ☐ D	Result P=Pass F=Fail
Remark: U _T is the rated voltage for the equipment.			Test Equipment : ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) Transformer: V4780S2 (EM TEST)	

14. PHOTOGRAPHS

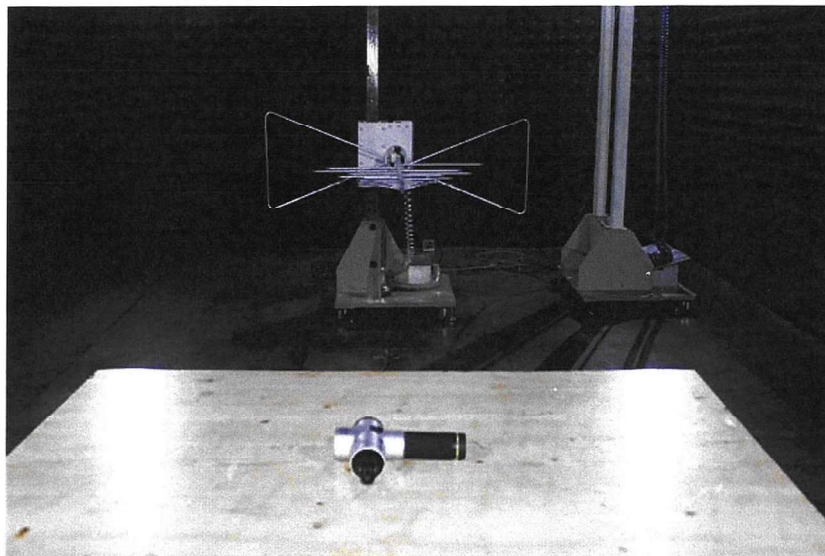
14.1. Photo of Power Line Conducted Emission Measurement



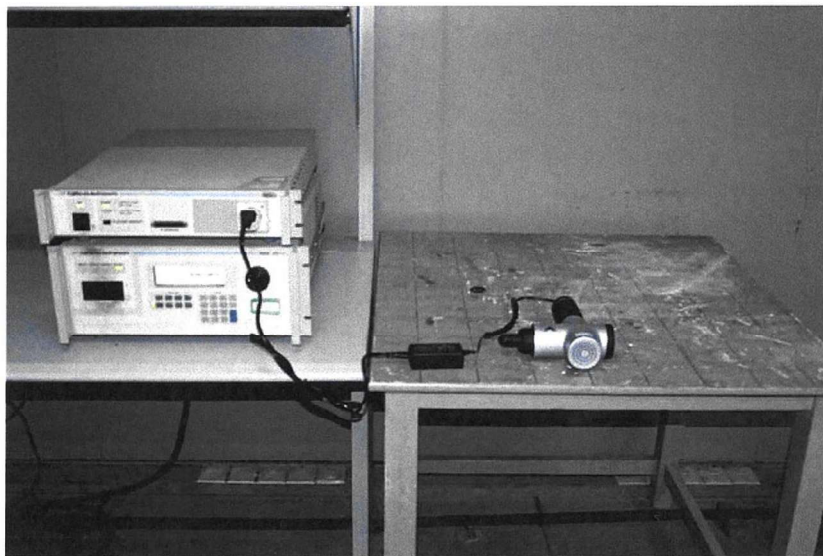
14.2. Photo of Disturbance Power Measurement



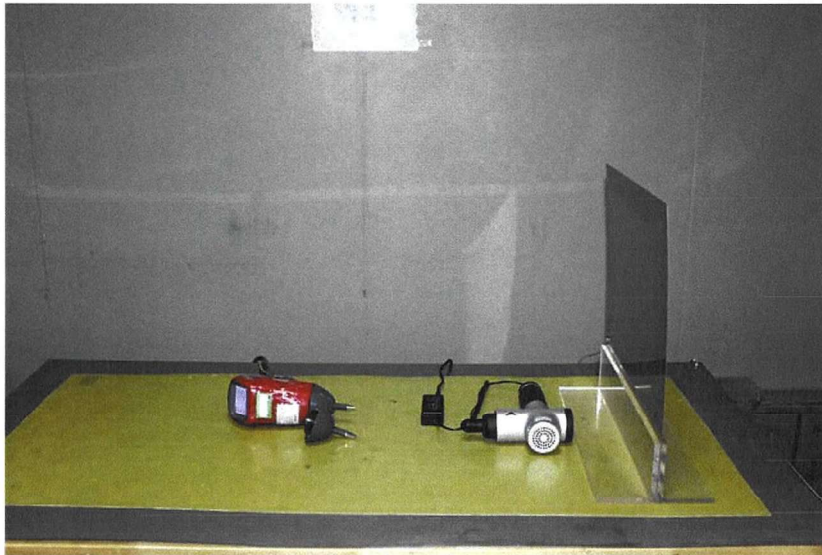
14.3. Photo of Radiation Emission Measurement



14.4. Photo of Harmonic Current / Flicker Measurement



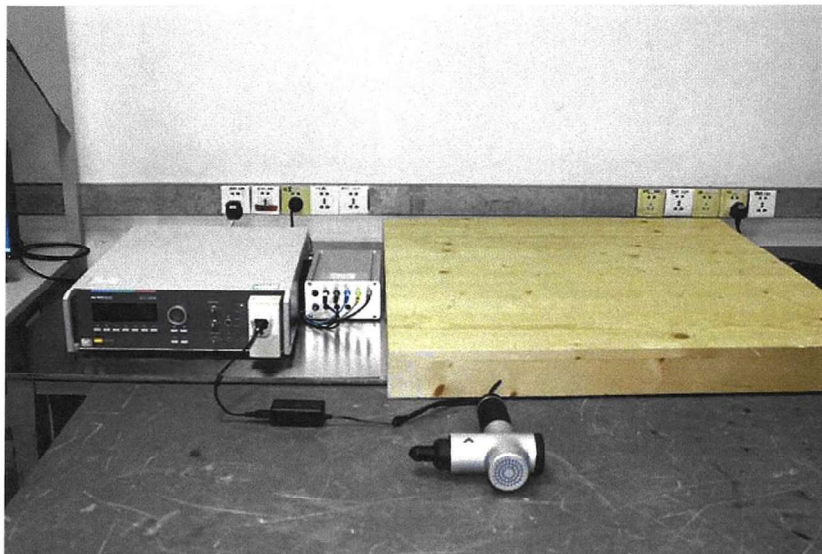
14.5. Photo of Electrostatic Discharge Immunity Measurement



14.6. Photo of Electrical Fast Transient /Burst Immunity Measurement



14.7. Photo of Surge and Voltage Dips and Interruption Immunity Test



14.8. Photo of Injected Current Susceptibility Test



14.9. Photo of EUT

