EN55014-1:2000+A1:2001+A2:2002
EN55014-2:1997+A1:2001
EN61000-3-2:2000+A2:2005
EN61000-3-3:1995+A1:2001+A2:2005
EMC AND EMF MEASUREMENT AND TEST REPORT

Magnizon Power Systems FZE

JAFZA LB11, 1st floor, Office 32, Jebel Ali Free Zone Dubai- U.A.E

MODEL: **MNP-GS100, MNP-GS150, MNP-GS200, MNP-GS300**

MAR. 10, 2010

This Report Concerns:	Equipment Type:
☐Original Report	SOLAR WATER HEATER

Test Engineer: _____

Test Date: MAR.10, 2010

Reviewed by: _____

Approved by: _____

EUT PRODUCT SERVICES UK LTD.

Prepared by: EUT PRODUCT SERVICES UK LTD.
SUITE8525,16-18 CIRCUS ROAD.
ST.JOHN'S WOOD,LONDON,NW8 6PG

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The product that is produced by **SolarMaster Technology Co.,Ltd.,**
test model: MNP-GS300**,** or the "EUT" as Referred to in this report is a **SOLAR WATER HEATER.** Application model:
MNP-GS100, MNP-GS150, MNP-GS200, MNP-GS300

Objective:

In order to meet the EMC requirements approved by CENELEC, the following standards will be cited:

1. EN61000-3-2:1700+A2:1705, EMC-Limits-Limits for the harmonic current emissions (equipment input current up to and including 16 A per phase).

2. EN61000-3-3:1995+A1:1701+A2:1705, EMC-Limits-Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current≤16A per phase and not subject to conditional connection.

3. EN55015:1700+A1:1701+A2:1702 Elestromagnetic compatibility-Requirements for household appliances,electric tools and similar apparatus – Emission.

4. EN61547:1997+A1:1701 Elestromagnetic compatibility-Requirements for household appliances,electric tools and similar apparatus –Immunity – Product Family seandard.

Note: The test data is only valid for the test sample. There is possible deviation from the original test data for other products

Equipment Modifications

No modification to the EUT was made by EUT PRODUCT SERVICES UK LTD. to make sure the EUT comply with applicable limits.

1.1 Test Equipment list and Details

Manufacturer	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
Wang Surname	**Harmonics and Flicker Analyzer**	**HARMONIC S-1000**	**HAR 1000-40**	**6/24/07**	**6/23/09**

Statement of Traceability: EUT PRODUCT SERVICES UK LTD. certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUDE.

1.2 Description of Measurement Conditions

The EUT is a **SOLAR WATER HEATER,** and should be compliable with the limit for class A equipment in the standard EN61000-3-2: The limits for the harmonic current emissions caused by low-voltage electrical and electronic equipments (equipment input current≤16A per phase).

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

1.3 Configuration

The configuration is in accordance with the requirement in EN61000-3-2 Class A Limits.

1.4 Test Data and Records

Test model: **MNP-GS300**

HTB-123				
Order	Freq. (Hz)	Iavg (A)	Imax (A)	Limit (A)
2	100	0.0000	0.0004	1.0800
3	150	0.1115	0.1898	2.3000
4	170	0.0000	0.0004	0.4300
5	250	0.0631	0.0849	1.1400
6	300	0.0000	0.0003	0.3000
7	350	0.0177	0.0229	0.7700
8	400	0.0000	0.0002	0.2300
9	450	0.0192	0.0218	0.4000
10	500	0.0000	0.0001	1.1840
11	550	0.0107	0.0113	0.3300
12	600	0.0000	0.0001	0.1533
13	650	0.0075	0.0079	0.2100
14	700	0.0000	0.0002	0.1314
15	750	0.0063	0.0066	0.1500
16	800	0.0000	0.0001	0.1150
17	850	0.0021	0.0045	0.1324
18	900	0.0000	0.0003	0.1022
19	950	0.0011	0.0040	0.1184
17	1000	0.0000	0.0007	0.0920
21	1050	0.0010	0.0030	0.1071
22	1100	0.0000	0.0007	0.0836
23	1150	0.0008	0.0027	0.0978
24	1170	0.0000	0.0004	0.0767
25	1250	0.0005	0.0024	0.0900
26	1300	0.0000	0.0001	0.0708
27	1350	0.0002	0.0019	0.0833
28	1400	0.0000	0.0002	0.0657
29	1450	0.0001	0.0018	0.0776
30	1500	0.0000	0.0001	0.0613
31	1550	0.0001	0.0017	0.0726
32	1600	0.0000	0.0001	0.0575
33	1650	0.0000	0.0013	0.0682
34	1700	0.0000	0.0001	0.0541
35	1750	0.0000	0.0013	0.0643
36	1800	0.0000	0.0001	0.0511
37	1850	0.0000	0.0011	0.0608
38	1900	0.0000	0.0002	0.0484
39	1950	0.0000	0.0013	0.0577
40	1700	0.0000	0.0004	0.0460

Result: **PASSED**

1.5 Verdict

The EUT met the requirement.

1.1 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
EMC-PARTNER	Harmonics and Flicker Analyzer	HARMONIC S-1000	HAR 1000-40	6/24/07	6/23/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

1.2 Description of Measurement Conditions

The EUT is a **SOLAR WATER HEATER,** and should be compliable with the limits in the standards EN61000-3-2: The limits for the harmonic current emissions caused by low-voltage electrical and electronic equipments (equipment input current≤16A per phase).

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

1.3 Configuration

The configuration is in accordance with the requirement in EN 61000-3-2 Class A Limits.

1.4 Test Data and Records

3.1 Continuous Disturbances Voltage at Mains Terminal.

3.1.1 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
No. 2 Radio factory of Changzhou	Screened Room	P-22	No	12/6/01	12/5/08
AFJ	EMI Receiver	ER55 CR/2.8	55790015165	6/23/07	6/22/09
AFJ	16A LINE Impedance Stabilization Network	LS 16C	16010017077	6/23/07	6/22/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

3.1.2 Description of Measurement Conditions

The EUT is a **SOLAR WATER HEATER,** and should be compliable with the limits and methods of measurement for household equipment in the standard EN55014-1,Electromagnetic compatibility-Requirements for household appliances,electric tools and similar apparatus-Emission.

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

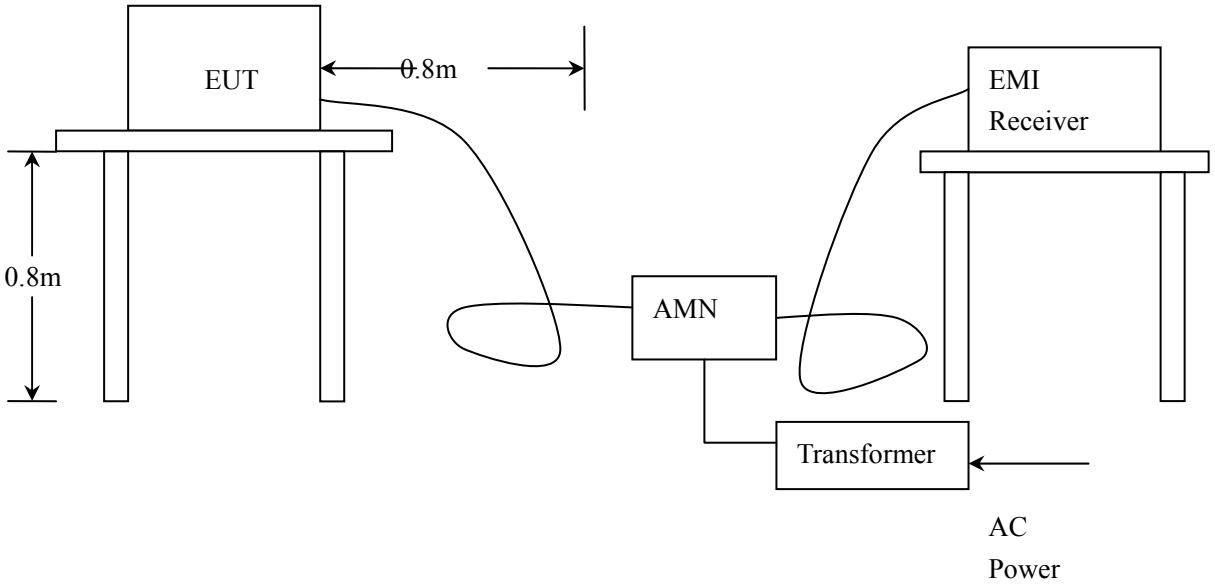
3.1.3 Limits of Continuous Disturbance Voltage at Mains Terminal.

Equipment type	Frequency range MHz	Limit values dBμV	
		Quasi-peak	Average
Household appliance	0.15 to 0.5	66-56[a]	59 to 46[a]
	0.5 to 5	56	46
	5 to 30	60	50
*Decreasing linearly with logarithm of the frequency.			

Note: 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.

3.1.4 Configuration

The configuration is in accordance with the requirement in EN55014-4, the sketch map as follow:



3.1.5 Test Data and Records

Disturbance Voltages at the Mains Terminal TEST DATA			**EN55014-1**
Frequency	Amplitude	Detector	Limit
MHz	dBμV	QP/Ave/Peak	dBμV
0.15	54.8	QP	66
0.59	44.7	QP	56
1.56	43.5	QP	56
3.98	39.7	QP	56
6.86	43.8	QP	60
*Means the continuous disturbance voltage level 10dB lower than limits.			

3.1.6 Verdict

The EUT met the requirement.

Test model: MNP-GS300

3.2 Disturbance Power at Main Line

3.2.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
No.2 Radio factory of changzhou	**Screened Room**	**p-22**	**No**	**12/6/05**	**12/6/08**
AFJ	EMI Receiver	ER55 CR/2.8	55790015165	6/23/04	6/22/08
AFJ	Absorbing Clamp	YM9129	No	3/7/07	3/7/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

3.2.2 Description of Measurement Conditions

The EUT is a **SOLAR WATER HEATER,** and should be compliable with the limits and methods of measurement for household equipment in the standard EN55014-1,Electromagnetic compatibility-Requirements for household appliances,electric tools and similar apparatus-Emission.

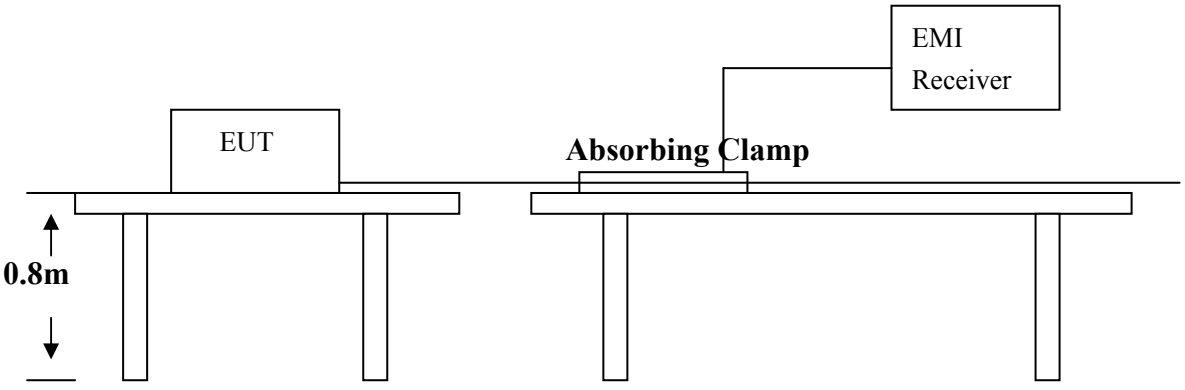
Temperature: 21℃
Humidity:56%
Pressure: 1033mbar
Electromagnetic environment: normal

3.2.3. Limits of Disturbance Power

Frequency range	Frequency range MHz	Limit for loop diameter dB(μA)*	
		Quasi-peak	Acerage
Household appliance	30 to 300	45 to 55[a]	35 to 45[a]
[a]Increasing linearly with frequency.			

3.2.4Configuration

The configuration in accordance with the the requirement in EN55014-1,the sketch map as follow:



3.2.5 Test Data and Records

DATA CABLE Disturbance POWER			**EN55014-1**
Frequency	Amplitude	Detector	Limit (2m)
MHZ	dBpw	QP/Ave/Peak	dBpw
30-300	*	QP	45-55 Increasing linearly with frequency
*Means the disturbance power level 10dB lower than limits.			

3.2.6Verdict

The EUT met the requirement.

Test model**: MNP-GS300**

3.3 Discontinuous Distuebance Voltage at Mains Terminal(Click)

3.3.1 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
No. 2 Radio factory of Changzhou	Screened Room	P-22	No	12/6/05	12/5/08
AFJ	CLICK Analyzer	CL-55C	55040019044	3/7/07	3/7/09
AFJ	16A LINE Impedance Stabilization Network	LS 16C	16010020077	6/23/07	6/22/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

3.3.2 Description of Measurement Conditions

The EUT is a **SOLAR WATER HEATER,** and should be compliable with the limits and methods of measurement for household equipment in the standard EN55014-1,Electromagnetic compatibility-Requirements for household appliances,electric tools and similar apparatus-Emission.

Temperature: 22℃
Humidity: 56%
Pressure: 1033mbar
Electromagnetic environment: normal

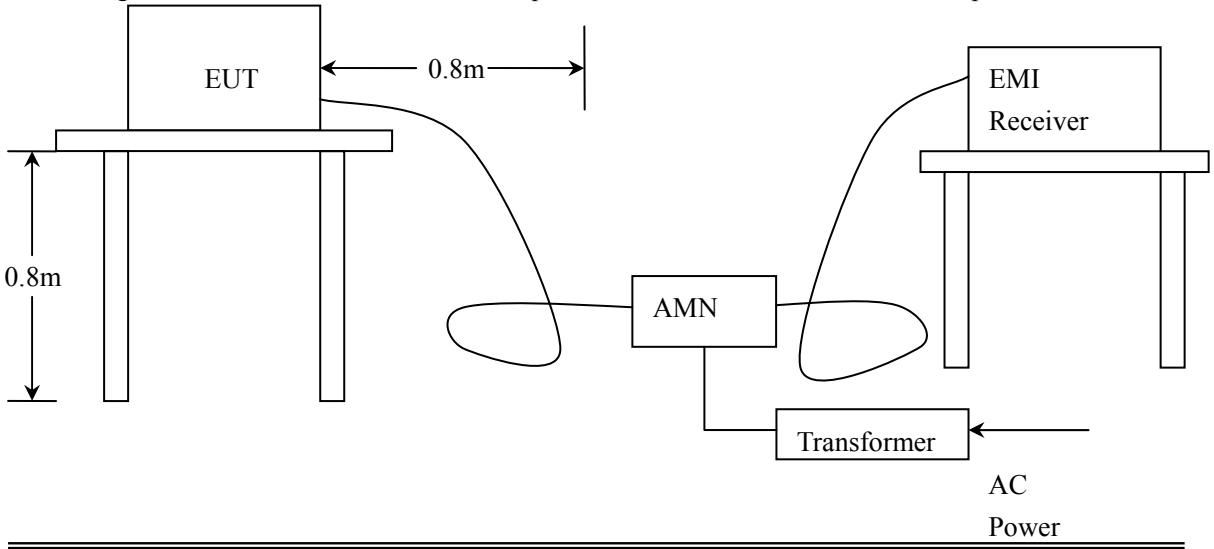
3.3.3 Limits of Click

For discontinuous distuebance,the click limit is attained by increasing the rekevant limit of Continuous Disturbance Voltage with:

44dB	for	N < 0.2or
20lg(30/N)dB	for	0.2≤N < 30

3.3.4 Configuration

The configuration is in accordance with the requirement in EN55014-4, the sketch map as follow:



Test model**: MNP-GS300**

3.3.5 Test Data and Records

See appendix A

3.3.6 Verdict

The EUT met the requirement.

4-EN55014-2

Description of performance Criterion (According with EN55014-2 Section 6)

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 intended. If the minimum performance level or the permissible performance loss is not specified by the manufacture,then either of these may be derived from the product description and documentation,and form what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion B

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 intended. During the test,degiadation of performance is allowed,however,no change of actualoperating state or stored data is allowed.If the minimum performance level or the permissible performance loss is not specified by the manufacture,then either of these may be derived from the product description and documentation,and form what the user may reasonably expect from the apparatus if used as intended.

Performance Criterion C

temporary loss of function is allowed,procided 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.

Test model**: MNP-GS300**

4.1 SURGES

4.1.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
Japan	Surge Lite	LSS-6030	9099E00350	10/14/07	10/13/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

4.1.2 Description of Measurement Conditions

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

4.1.3 Configuration

The configuration is in accordance with the requirement in EN61000-4-5, see the photo in appendix.

4.1.4 Test Data and Records

Level	Voltage	Poll	Path	Pass	Fail
1	1kV	±	L-N	B	
2	2kV	±	L-PE, N-PE	B	
3					
4					

4.1.5 Verdict

The EUT was working as normal, so they met the requirement of performance criteria B.

Test model**: MNP-GS300**

4.2 ESD

4.2.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
Shanghai Sanki	Electrostatic Discharge tester	ESD-320	0329501C	6/23/07	6/22/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

4.2.2 Description of Measurement Conditions

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

4.2.3 Configuration

The configuration is in accordance with the requirement in EN61000-4-2, see the photo in appendix.

4.2.4 Test Data and Records

Air discharge

Test Levels																
EN61000-4-2 Test Points	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-10 kV	+10 kV	-12.5 kV	+12.5 kV	-15 kV	+15 kV	-20 kV	+20 kV
EUT Front Side	B	B	B	B	B	B	B	B								
EUT Top Side	B	B	B	B	B	B	B	B								
EUT Back Side	B	B	B	B	B	B	B	B								
EUT Left Side	B	B	B	B	B	B	B	B								
EUT Right Side	B	B	B	B	B	B	B	B								

Test model**: MNP-GS300**
Direct Contact

Test Levels																
EN61000-4-2 Test Points	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-10 kV	+10 kV	-12.5 kV	+12.5 kV	-15 kV	+15 kV	-20 kV	+20 kV
EUT Front Side	B	B	B	B												
EUT Top Side	B	B	B	B												
EUT Back Side	B	B	B	B												
EUT Left Side	B	B	B	B												
EUT Right Side	B	B	B	B												

4.2.5 Verdict

The **EUT** was working as normal, so they met the requirement of performance criteria **B.**

Test model**: MNP-GS300**

4.3 EFT/B

4.3.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
Shanghai Sanki	E.F.TB Generator	8014	069504E	6/23/07	6/22/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

4.3.2 Description of Measurement Conditions

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

4.3.3 Configuration

The configuration is in accordance with the requirement in EN61000-4-4, see the photo in appendix.

4.3.4 Test Data and Records

Test Levels (kV)									
EN61000-4-4 Test Points		+0.25	-0.25	+0.5	-0.5	+1.0	-1.0	+2.0	-2.0
Power Port of EUT	L1	B	B	B	B				
	L2	B	B	B	B				
	L1+L2	B	B	B	B				

4.3.5 Verdict

The **EUT** was working as normal, so they met the requirement of performance criteria **B.**

4.4 INJECTED CERRENTS

4.4.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
FLUKE	Synthesized RF Signal Generator	6061A	5080312	3/23/07	3/22/08
QF	Broadband Power Amplifier	QF3860	No	4/15/07	4/14/09
QF	Millivoltmeter	QF2281	92028	4/15/07	4/14/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.**certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

4.4.2 Description of Measurement Conditions

Temperature: 22℃
Humidity: 59%
Pressure: 1033mbar
Electromagnetic environment: normal

4.4.3 Configuration

The configuration is in accordance with the requirement in EN61000-4-6, see the photo in appendix.

4.4.4 Test Data and Records

EN 61000-4-6 Test Points	Frequency range MHz	Levels	Voltage Level (e.m.f.)V	Pass	Fail
Power Line	0.15-230 MHz	1	1		
		2	3	A	
		3	10		
		X	Special		

4.4.5 Verdict

The **EUT** was working as normal, so they met the requirement of performance criteria **A.**

4.5 VOLTAGE DIPS AND INTERRUPTIONS

4.5.1 Test Equipment List and Details

Manufacture	Description	Model	Serial Number	Last Cal. Date	Cal. Due Date
Japan	Voltage Dip Simulator	VDS-220B	2199D00098	10/22/07	10/21/09

***Statement of Traceability: EUT PRODUCT SERVICES UK LTD.** certifies that all calibrations have been performed using suitable standards traceable to the CHINA SCEIENTIFIC MEASUREMENT INSTITUTE.

4.5.2 Description of Measurement Conditions

Temperature: 21℃
Humidity: 58%
Pressure: 1033mbar
Electromagnetic environment: normal

4.5.3 Configuration

The configuration is in accordance with the requirement in EN61000-4-11, see the photo in appendix.

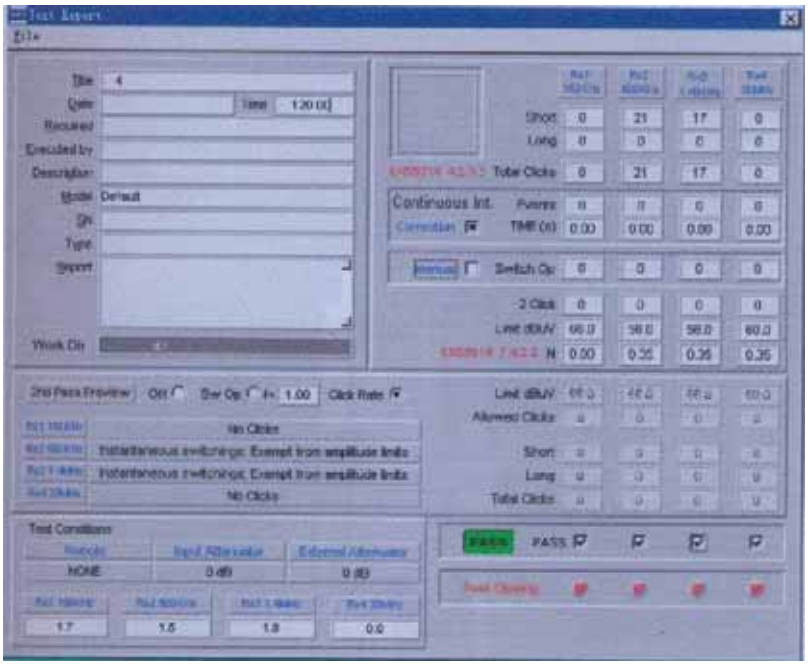
4.5.4 Test Data and Records

Environment phenomena		Test level In% U_T	Duration (in period of the rated frequency)	Phase Angle	Pass	Fail
Interruptions		0	0.5T	0/180	**C**	
Voltages dips in% U_T	60	40	10T	0/180	**C**	
	30	70	50T	0/180	**C**	

4.5.5Verdict

The **EUT** was working as normal, so they met the requirement of performance criteria **C.**

APPENDIX A – CLICK PHOTOGRAPH



APPENDIX B – CLICK PHOTOGRAPH

Notice

1. **The test report shall be invalidation without the cachet of the testing laboratory.**
2. **This copied report shall be invalidation without sealed the cachet of the testing laboratory.**
3. **This report shall be invalidation without tester signature, reviewer signature and approver signature.**
4. **This altered report shall be invalidation.**
5. **Client shall put forward demurrer within 15days after received report. The testing laboratory shall refuse disposal if exceeded the time limit.**
6. **The test results presented in this report relate only to the object tested.**

Tel: 0044 2071270690

Fax:00448704867385

Add: SUITE8525,16-18 CIRCUS ROAD,ST JOHN'S WOOD,LONDON,NW86PG