

EMC Measurement and Test Report

For

GlobTek, Inc.

186 Veterans Dr. Northvale, NJ 07647 USA

Test Standards:	EN 55022:2010 EN 61000-3-2:2006+A1:2009+A2:2009 EN 61000-3-3:2008 <u>EN 55024:2010</u>
Product Description:	<u>Power Supply</u>
Tested Model:	<u>GT-43001130505</u>
Report No.:	<u>STR12078169E</u>
Tested Date:	<u>2012-07-16 to 2012-07-21</u>
Issued Date:	<u>2012-07-23</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd

TABLE OF CONTENTS

1. GENERAL INFORMATION4

 1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)4

 1.2 TEST STANDARDS5

 1.3 TEST METHODOLOGY5

 1.4 TEST FACILITY5

 1.5 EUT SETUP AND OPERATION MODE6

 1.6 PERFORMANCE CRITERIA FOR EMS6

2. SUMMARY OF TEST RESULTS7

3. CONDUCTED DISTURBANCE8

 3.1 MEASUREMENT UNCERTAINTY8

 3.2 TEST EQUIPMENT LIST AND DETAILS8

 3.3 TEST PROCEDURE8

 3.4 BASIC TEST SETUP BLOCK DIAGRAM8

 3.5 ENVIRONMENTAL CONDITIONS9

 3.6 SUMMARY OF TEST RESULTS/PLOTS9

 3.7 CONDUCTED EMISSIONS TEST DATA9

4. RADIATED DISTURBANCE12

 4.1 MEASUREMENT UNCERTAINTY12

 4.2 TEST EQUIPMENT LIST AND DETAILS12

 4.3 TEST PROCEDURE12

 4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION13

 4.5 ENVIRONMENTAL CONDITIONS13

 4.6 SUMMARY OF TEST RESULTS/PLOTS13

5. HARMONIC CURRENT EMISSIONS16

 5.1 TEST EQUIPMENT LIST AND DETAILS16

 5.2 TEST PROCEDURE16

 5.3 TEST STANDARDS16

 5.4 HARMONIC CURRENT EMISSIONS TEST DATA16

6. VOLTAGE FLUCTUATION AND FLICKER22

 6.1 TEST EQUIPMENT LIST AND DETAILS22

 6.2 TEST PROCEDURE22

 6.3 TEST STANDARDS22

 6.4 VOLTAGE FLUCTUATION AND FLICKER TEST DATA22

7. ELECTROSTATIC DISCHARGES (ESD)24

 7.1 TEST EQUIPMENT LIST AND DETAILS24

 7.2 TEST PROCEDURE24

 7.3 ELECTROSTATIC DISCHARGE IMMUNITY TEST DATA24

8. CONTINUOUS RADIATED DISTURBANCES (R/S)26

 8.1 TEST EQUIPMENT LIST AND DETAILS26

 8.2 TEST PROCEDURE26

 8.3 CONTINUOUS RADIATED DISTURBANCES TEST DATA26

9. ELECTRICAL FAST TRANSIENTS (EFT)27

 9.1 TEST EQUIPMENT LIST AND DETAILS27

 9.2 TEST PROCEDURE27

 9.3 ELECTRICAL FAST TRANSIENTS TEST DATA27

10. SURGES28

 10.1 TEST EQUIPMENT LIST AND DETAILS28

 10.2 TEST PROCEDURE28

 10.3 SURGE TEST DATA28

11. CONTINUOUS CONDUCTED DISTURBANCES (C/S)29

 11.1 TEST EQUIPMENT LIST AND DETAILS29

 11.2 TEST PROCEDURE29

 11.3 CONTINUOUS CONDUCTED DISTURBANCES TEST DATA29

12. POWER-FREQUENCY MAGNETIC FIELDS (PFMF)30
12.1 TEST EQUIPMENT LIST AND DETAILS30
12.2 TEST PROCEDURE30
12.3 POWER-FREQUENCY MAGNETIC FIELD TEST DATA30

13. VOLTAGE DIPS AND INTERRUPTIONS.....31
13.1 TEST EQUIPMENT LIST AND DETAILS31
13.2 TEST PROCEDURE31
13.3 VOLTAGE DIPS AND INTERRUPTIONS TEST DATA31

EXHIBIT 1- PRODUCT LABELING32
PROPOSED CE LABEL FORMAT32
PROPOSED LABEL LOCATION ON EUT32

EXHIBIT 2 - EUT PHOTOGRAPHS.....33

EXHIBIT 3 - TEST SETUP PHOTOGRAPHS36

SEM. Test Compliance

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: GlobTek, Inc.
 Address of applicant: 186 Veterans Dr. Northvale, NJ 07647 USA
 Manufacturer: 1. GlobTek, Inc.
 2. GlobTek (Suzhou) Co., Ltd
 Address of manufacturer: 1. 186 Veterans Dr. Northvale, NJ 07647 USA
 2. Building 4, No. 76, Jin Ling East Rd., Suzhou Industrial Park, Suzhou, JiangSu 215021, China

General Description of EUT	
Product Name:	Power Supply
Trade Name:	GlobTek
Model No.:	GT-43001130505
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	Input: AC 200-240V Output: DC 4.5V
Rated Current:	2.2A
Rated Power:	10W
Power Adaptor Model:	/
Highest Internal Frequency:	/
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the GlobTek, Inc. in accordance with EN55022, Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement, and EN61000-3-2, Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and EN61000-3-3, Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection, and EN55024, Immunity characteristics Limits and methods of measurement.

The objective of the manufacturer is to demonstrate compliance with the standards EN55022, EN61000-3-2, EN61000-3-3, and EN55024 for Information Technology Equipment.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN55022, EN61000-3-2, EN61000-3-3, and EN55024 for Information Technology Equipment, and all related testing and measurement techniques intentional standards.

1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Working	Full Load

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Power Line	0.5	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN55022	Conducted Disturbance	Compliant
	Radiated Disturbance	Compliant
EN61000-3-2	Harmonic Current Emission	Compliant
EN61000-3-3	Voltage Fluctuation and Flicker	Compliant
EN55024	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Compliant
	Continuous Radiated Disturbances Immunity in accordance with IEC 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	Compliant
	Surges Immunity in accordance with IEC 61000-4-5	Compliant
	Continuous Conducted Disturbances Immunity in accordance with IEC 61000-4-6	Compliant
	Power-frequency Magnetic Fields Immunity in accordance with IEC 61000-4-8	Compliant
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	Compliant

N/A: not applicable

3. Conducted Disturbance

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

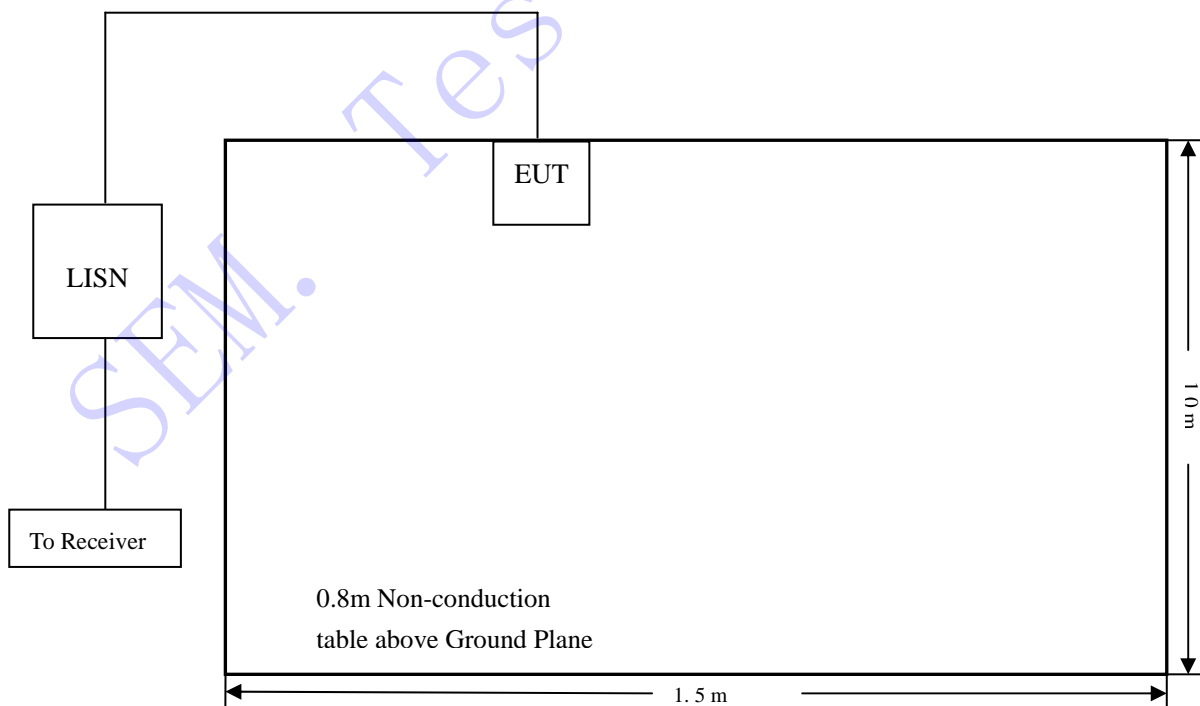
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2012-03-28	2013-03-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2012-03-28	2013-03-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2012-03-28	2013-03-27
Current Probe	FCC	F-33-4	091684	2012-03-28	2013-03-27

3.3 Test Procedure

Test is conducting under the description of EN55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55 %
ATM Pressure:	1015 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the EN55022 Conducted margin for a Class B device, with the *worst* margin reading of:

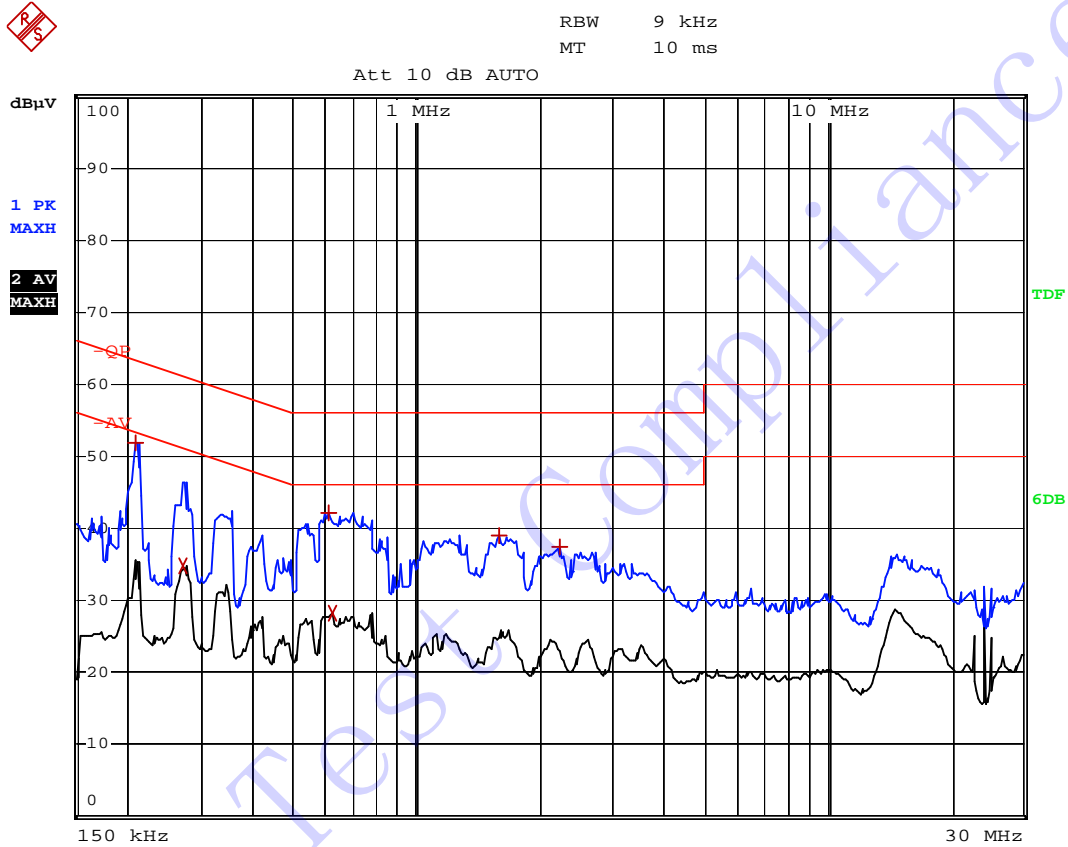
-7.36 dB μ V at 0.202 MHz in the Neutral mode, Peak detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

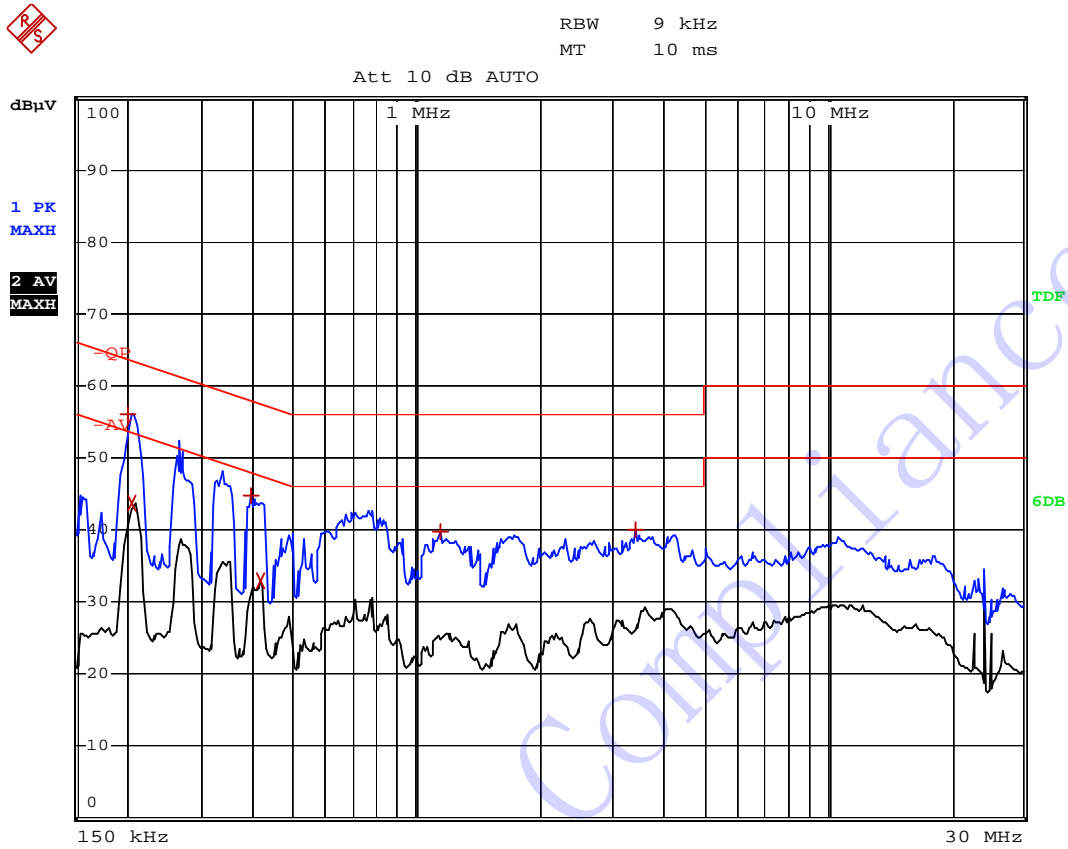
EUT: Power Supply
 Tested Model: GT-43001130505
 Operating Condition: Working
 Comment: AC 230V/50Hz

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
1 Max Peak	210 kHz	51.93	-11.26
2 Average	274 kHz	34.77	-16.22
1 Max Peak	610 kHz	42.18	-13.81
2 Average	622 kHz	28.22	-17.78
1 Max Peak	1.594 MHz	38.91	-17.08
1 Max Peak	2.234 MHz	37.51	-18.48

Test Specification: Neutral



EDIT PEAK LIST (Prescan Results)				
Trace1:		-QP		
Trace2:		-AV		
Trace3:		---		
TRACE		FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1	Max Peak	202 kHz	56.16	-7.36
2	Average	206 kHz	43.61	-9.75
1	Max Peak	394 kHz	44.86	-13.11
2	Average	414 kHz	32.87	-14.69
1	Max Peak	1.146 MHz	39.64	-16.35
1	Max Peak	3.406 MHz	40.11	-15.88

4. Radiated Disturbance

4.1 Measurement Uncertainty

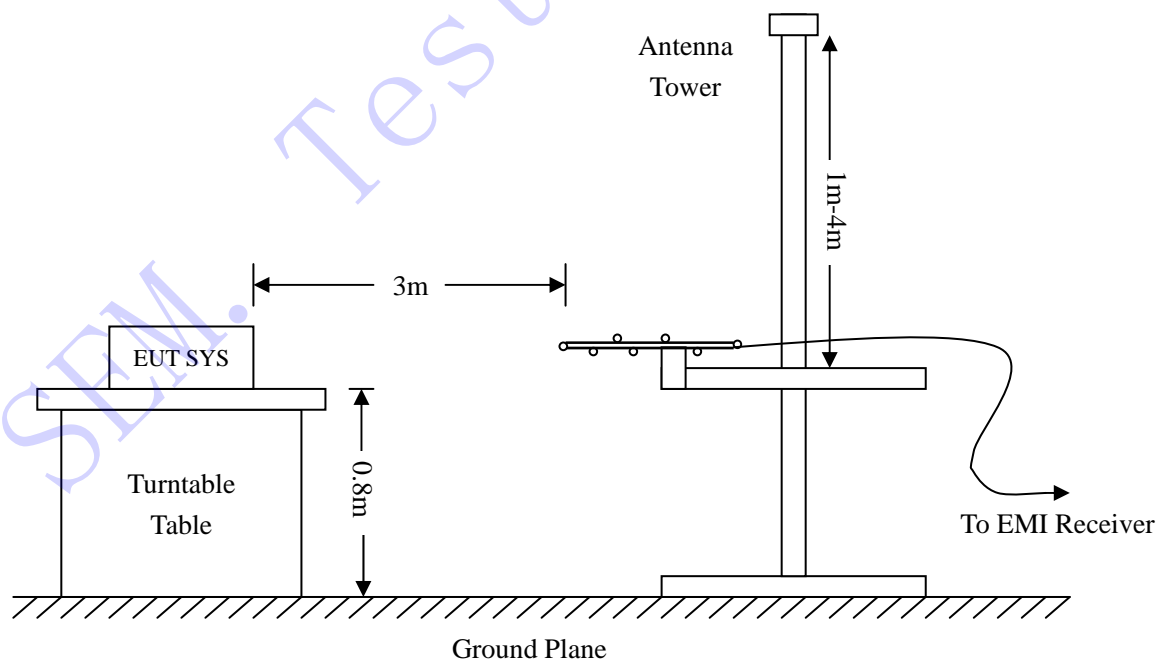
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24

4.3 Test Procedure

Test is conducting under the description of EN55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement.



4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN55022 Class B Limit}$$

4.5 Environmental Conditions

Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

4.6 Summary of Test Results/Plots

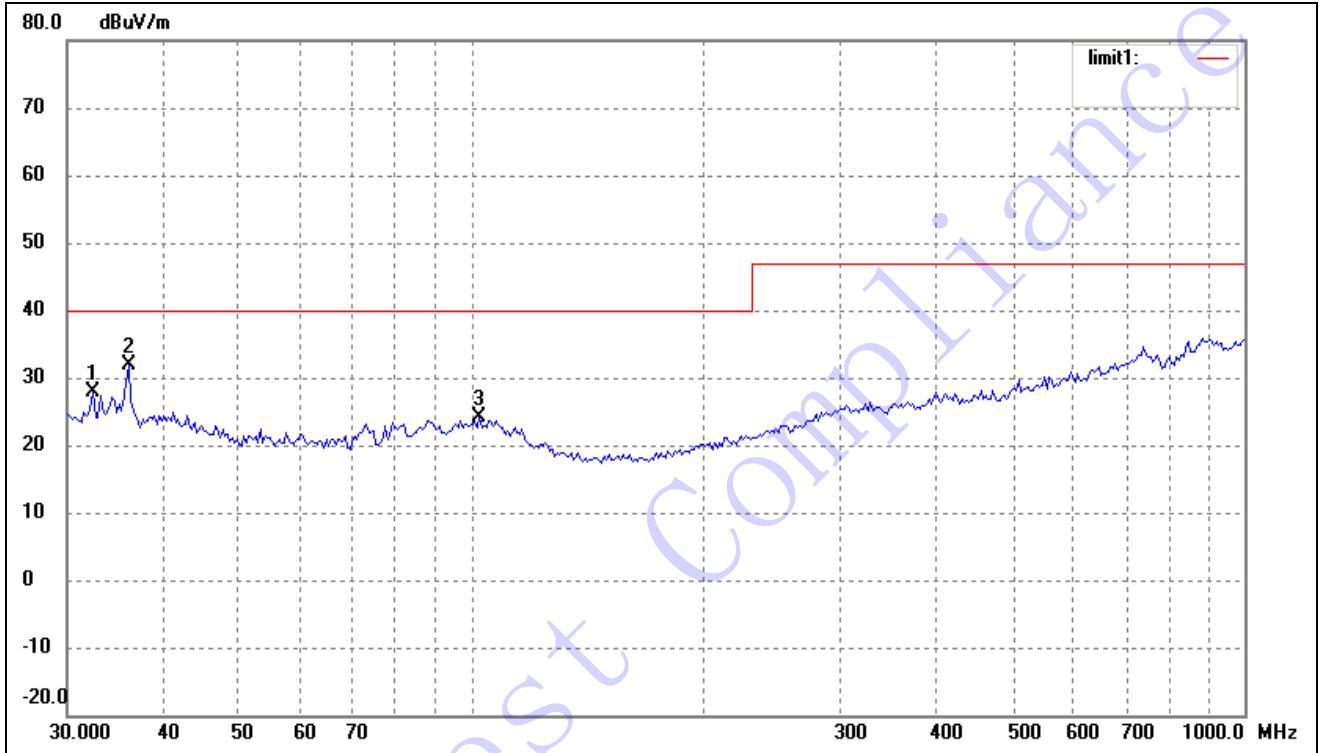
According to the data in section 4.6, the EUT complied with the EN55022 Class B standards, and had the worst margin is:

-8.23 dB μ V at 36.0007 MHz in the, Horizontal polarization 30 MHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

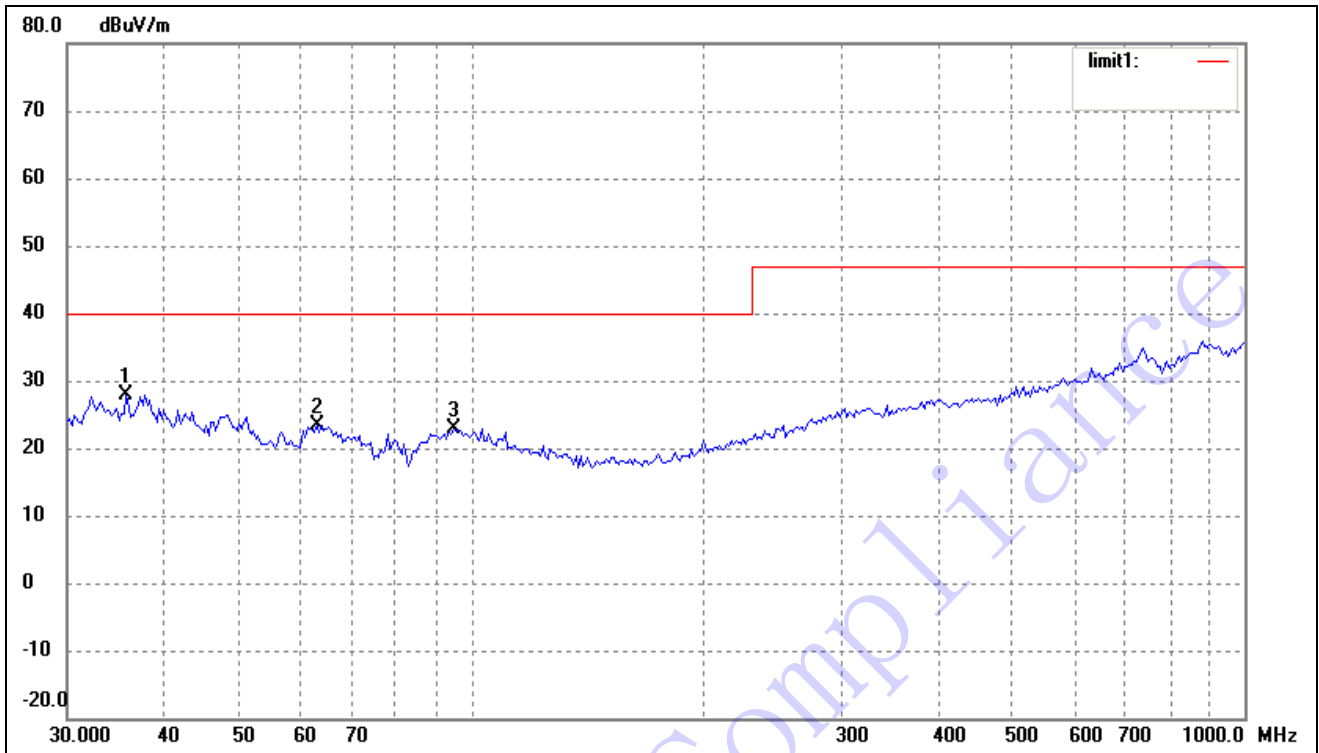
EUT: Power Supply
 Tested Model: GT-43001130505
 Operating Condition: Working
 Comment: AC 230V/50Hz

 Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	32.4059	19.44	8.44	27.88	40.00	-12.12	360	100	peak
2	36.0007	22.73	9.04	31.77	40.00	-8.23	360	100	peak
3	102.3597	17.40	6.61	24.01	40.00	-15.99	360	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	35.7491	18.92	9.00	27.92	40.00	-12.08	360	100	peak
2	63.0916	18.74	4.71	23.45	40.00	-16.55	360	100	peak
3	94.7601	17.39	5.54	22.93	40.00	-17.07	360	100	peak

5. Harmonic Current Emissions

5.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2012-03-28	2013-03-27
Power Source	California Instrument	5001IX-CTS-400	60077	2012-03-28	2013-03-27

5.2 Test Procedure

Test is conducting under the description of EN61000-3-2.

5.3 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

5.4 Harmonic Current Emissions Test Data

Result: The EUT is compliance with the requirements of this section.

Harmonics – Class-A per Ed. 3.2 (2009)(Run time)

EUT: Power Supply

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits)

Test Margin: 100

Test date: 2011-7-19

Start time: 10:27:43 AM

End time: 10:30:27 AM

Test duration (min): 2.5

Data file name: H-000151.cts_data

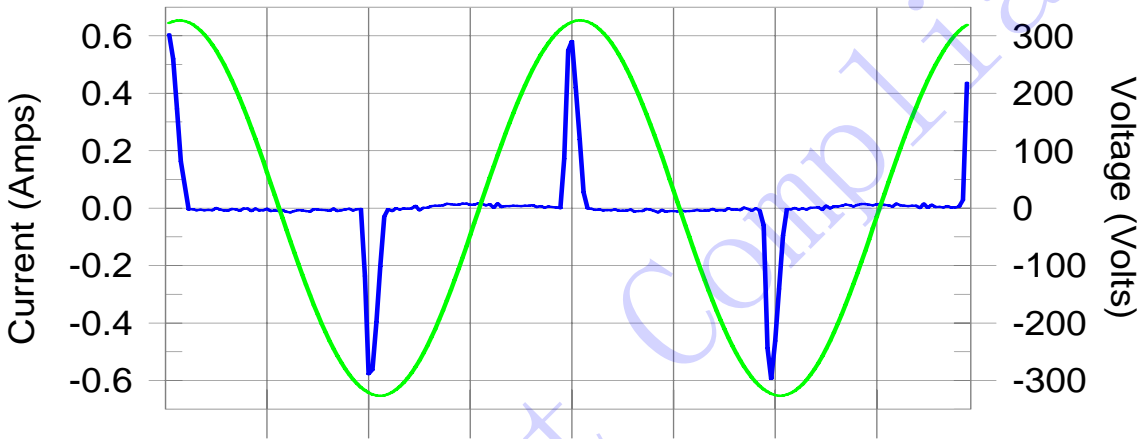
Comment: Working

Customer: GlobTek

Test Result: Pass

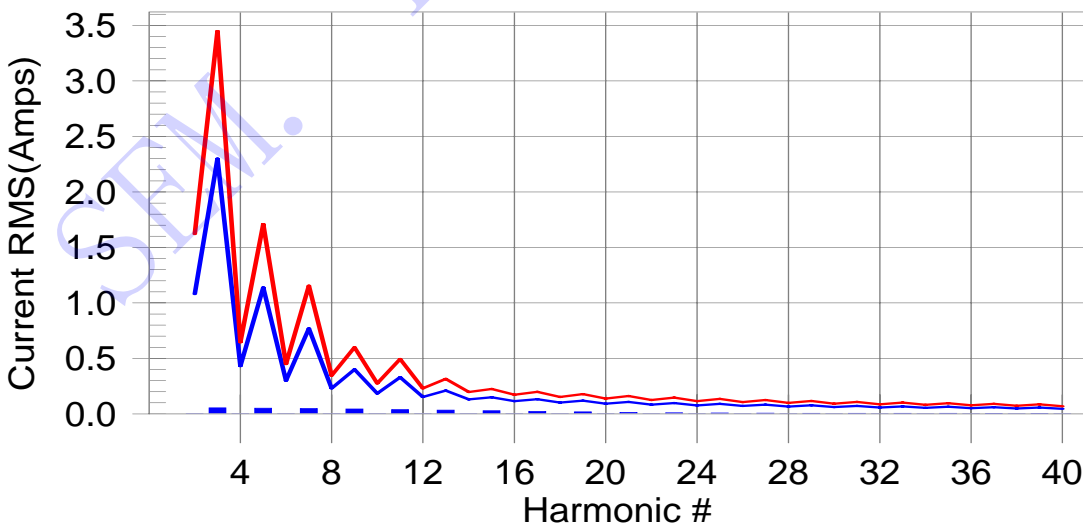
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #15 with 18.79% of the limit.

Current Test Result Summary (Run time)

EUT: Power Supply Tested by: Daniel
 Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100
 Test date: 2011-7-19 Start time: 10:27:43 AM End time: 10:30:27 AM
 Test duration (min): 2.5 Data file name: H-000151.cts_data
 Comment: Working
 Customer: GlobTek

Test Result: Pass Source qualification: Normal
 THC(A): 0.12 I-THD(%): 214.86 POHC(A): 0.023 POHC Limit(A): 0.260

Highest parameter values during test:

V_RMS (Volts): 231.15	Frequency(Hz): 50.00
I_Peak (Amps): 0.627	I_RMS (Amps): 0.134
I_Fund (Amps): 0.057	Crest Factor: 4.711
Power (Watts): 12.7	Power Factor: 0.414

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.001	1.620	0.07	Pass
3	0.054	2.300	2.3	0.055	3.450	1.58	Pass
4	0.001	0.430	0.0	0.001	0.645	0.16	Pass
5	0.051	1.140	4.5	0.052	1.710	3.01	Pass
6	0.000	0.300	0.0	0.001	0.450	0.18	Pass
7	0.048	0.770	6.2	0.048	1.155	4.17	Pass
8	0.000	0.230	0.0	0.001	0.345	0.24	Pass
9	0.044	0.400	10.9	0.044	0.600	7.31	Pass
10	0.001	0.184	0.0	0.001	0.276	0.29	Pass
11	0.039	0.330	11.7	0.039	0.495	7.88	Pass
12	0.001	0.153	0.0	0.001	0.230	0.35	Pass
13	0.034	0.210	16.0	0.034	0.315	10.72	Pass
14	0.000	0.131	0.0	0.001	0.197	0.40	Pass
15	0.028	0.150	18.8	0.028	0.225	12.60	Pass
16	0.000	0.115	0.0	0.001	0.173	0.43	Pass
17	0.023	0.132	17.4	0.023	0.199	11.60	Pass
18	0.000	0.102	0.0	0.001	0.153	0.44	Pass
19	0.018	0.118	15.2	0.018	0.178	10.19	Pass
20	0.000	0.092	0.0	0.001	0.138	0.41	Pass
21	0.014	0.107	12.8	0.014	0.161	8.58	Pass
22	0.000	0.084	0.0	0.001	0.125	0.41	Pass
23	0.010	0.098	10.4	0.010	0.147	7.02	Pass
24	0.000	0.077	0.0	0.000	0.115	0.42	Pass
25	0.008	0.090	8.6	0.008	0.135	5.83	Pass
26	0.000	0.071	0.0	0.000	0.106	0.43	Pass
27	0.006	0.083	7.8	0.007	0.125	5.25	Pass

28	0.000	0.066	0.0	0.000	0.099	0.49	Pass
29	0.006	0.078	7.7	0.006	0.116	5.27	Pass
30	0.000	0.061	0.0	0.000	0.092	0.50	Pass
31	0.006	0.073	8.1	0.006	0.109	5.49	Pass
32	0.000	0.058	0.0	0.000	0.086	0.53	Pass
33	0.006	0.068	8.4	0.006	0.102	5.67	Pass
34	0.000	0.054	0.0	0.000	0.081	0.51	Pass
35	0.005	0.064	8.2	0.005	0.096	5.59	Pass
36	0.000	0.051	0.0	0.000	0.077	0.47	Pass
37	0.005	0.061	0.0	0.005	0.091	5.16	Pass
38	0.000	0.048	0.0	0.000	0.073	0.45	Pass
39	0.004	0.058	0.0	0.004	0.087	4.46	Pass
40	0.000	0.046	0.0	0.000	0.069	0.43	Pass

SEM. Test Compliance

Voltage Source Verification Data (Run time)

EUT: Power Supply **Tested by: Daniel**
Test category: Class-A per Ed. 3.2 (2009) (European limits) **Test Margin: 100**
Test date: 2011-7-19 **Start time: 10:27:43 AM** **End time: 10:30:27 AM**
Test duration (min): 2.5 **Data file name: H-000151.cts_data**
Comment: Working
Customer: GlobTek

Test Result: Pass **Source qualification: Normal**

Highest parameter values during test:

Voltage (Vrms): 231.15	Frequency(Hz): 50.00
I_Peak (Amps): 0.627	I_RMS (Amps): 0.134
I_Fund (Amps): 0.057	Crest Factor: 4.711
Power (Watts): 12.7	Power Factor: 0.414

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.047	0.462	10.23	OK
3	0.576	2.080	27.72	OK
4	0.052	0.462	11.30	OK
5	0.070	0.925	7.54	OK
6	0.033	0.462	7.18	OK
7	0.026	0.693	3.75	OK
8	0.018	0.462	3.94	OK
9	0.030	0.462	6.53	OK
10	0.012	0.462	2.58	OK
11	0.033	0.231	14.43	OK
12	0.011	0.231	4.72	OK
13	0.028	0.231	11.98	OK
14	0.006	0.231	2.67	OK
15	0.024	0.231	10.50	OK
16	0.009	0.231	3.88	OK
17	0.018	0.231	7.95	OK
18	0.011	0.231	4.59	OK
19	0.027	0.231	11.64	OK
20	0.016	0.231	6.75	OK
21	0.019	0.231	8.04	OK
22	0.004	0.231	1.90	OK
23	0.014	0.231	6.27	OK
24	0.003	0.231	1.39	OK
25	0.011	0.231	4.96	OK
26	0.002	0.231	0.91	OK
27	0.014	0.231	6.06	OK

28	0.004	0.231	1.76	OK
29	0.007	0.231	2.97	OK
30	0.003	0.231	1.22	OK
31	0.009	0.231	3.91	OK
32	0.003	0.231	1.14	OK
33	0.009	0.231	3.84	OK
34	0.002	0.231	1.00	OK
35	0.009	0.231	4.02	OK
36	0.002	0.231	0.88	OK
37	0.009	0.231	3.91	OK
38	0.003	0.231	1.23	OK
39	0.010	0.231	4.11	OK
40	0.008	0.231	3.33	OK

SEM. Test Compliance

6. Voltage Fluctuation and Flicker

6.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2012-03-28	2013-03-27
Power Source	California Instrument	5001IX-CTS-400	60077	2012-03-28	2013-03-27

6.2 Test Procedure

Test is conducting under the description of EN61000-3-3.

6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

6.4 Voltage Fluctuation and Flicker Test Data

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: Power Supply

Tested by: Daniel

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2011-7-19

Start time: 10:33:36 AM

End time: 10:43:50 AM

Test duration (min): 10

Data file name: F-000152.cts_data

Comment: Working

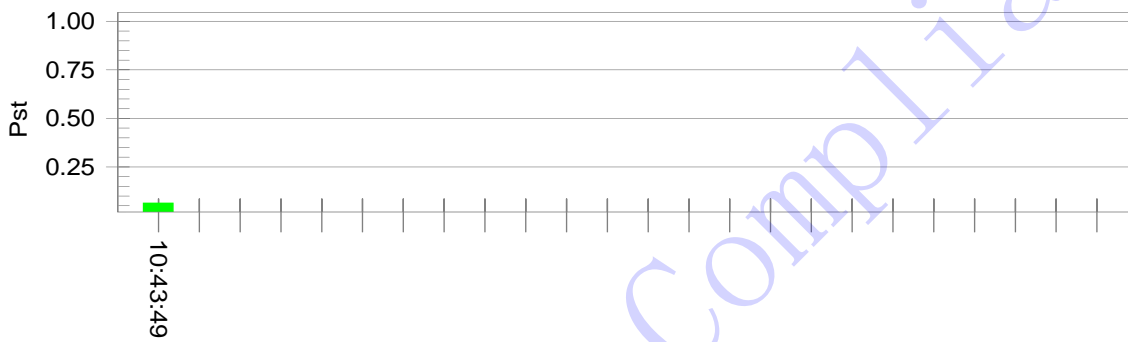
Customer: GlobTek

Test Result: Pass

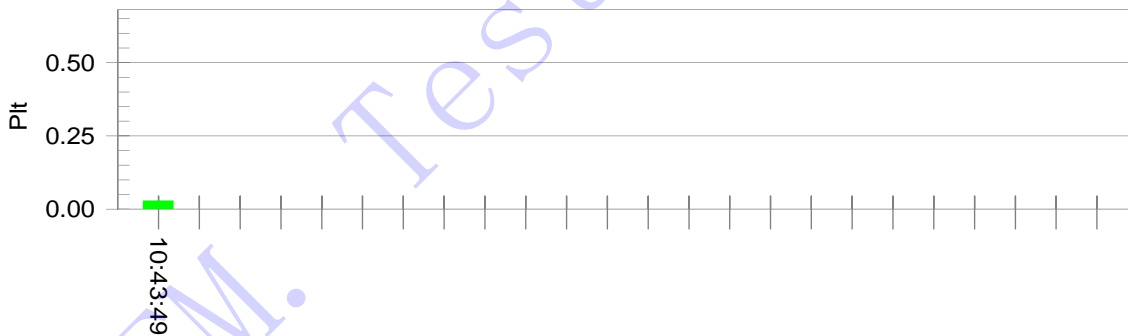
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	231.08			
Highest dt (%):	0.00	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	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

7. Electrostatic Discharges (ESD)

7.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
ESD Generator	TESQ AG	NSG 437	161	2012-03-28	2013-03-27

7.2 Test Procedure

Test is conducting under the description of IEC61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.3 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Shell	A	A	A	A	A	A	A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Port	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

8. Continuous Radiated Disturbances (R/S)

8.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Signal Generator	Rohde & Schwarz	SMT03	100059	2012-03-28	2013-03-27
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2012-03-28	2013-03-27
Power Amplifier	AR	150W1000	300999	2012-03-28	2013-03-27
Power Amplifier	AR	25S1G4AM1	305993	2012-03-28	2013-03-27
Trilog Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Anechoic chamber	Albatross Projects	MCDC	----	2012-03-20	2014-03-19

8.2 Test Procedure

Test is conducting under the description of IEC61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.3 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

9. Electrical Fast Transients (EFT)

9.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2012-03-28	2013-03-27
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2012-03-28	2013-03-27

9.2 Test Procedure

Test is conducting under the description of IEC61000-4-4.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.3 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE	/	/	/	/	/	/	/	/
	L2 + PE	/	/	/	/	/	/	/	/
	L1+L2+PE	/	/	/	/	/	/	/	/
Signal ports		/	/	/	/	/	/	/	/

Test Result: Pass

10. Surges

10.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2012-03-28	2013-03-27

10.2 Test Procedure

Test is conducting under the description of IEC 61000-4-5.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.3 Surge Test Data

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-N, L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

11. Continuous Conducted Disturbances (C/S)

11.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
CS Immunity Tester	EMTEST	CWS500	0900-03	2012-03-28	2013-03-27
Attenuator	EMTEST	MA-500	1009	2012-03-28	2013-03-27
CDN	Luthi	L-801M2/M3	2665	2012-03-28	2013-03-27

11.2 Test Procedure

Test is conducting under the description of IEC 61000-4-6.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.3 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second

Level	Voltage Level (e.m.f.) U_0	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Result: Pass

12. Power-Frequency Magnetic Fields (PFMF)

12.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMC PRO	KEYTEK	EMC Pro	0509124	2012-03-28	2013-03-27
Coil	KEYTEK	F-1000-4-8	0533	2012-03-28	2013-03-27

12.2 Test Procedure

Test is conducting under the description of IEC 61000-4-8.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

12.3 Power-Frequency Magnetic Field Test Data

Level	Magnetic Field Strength (r.m.s) A/m	Frequency Hz	Induction Coil Position	Pass	Fail
1	1	50	X, Y, Z	A	/
2	3	50	X, Y, Z	/	/
3	10	50	X, Y, Z	/	/
X	Special	/		/	/

Test Result: Pass

13. Voltage Dips and Interruptions

13.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2012-03-28	2013-03-27

13.2 Test Procedure

Test is conducting under the description of IEC 61000-4-11.

Test Performance

Performance Criterion: B/C

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

13.3 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	>95%	10ms	0/90/180/270	3	A	/
2	30%	500ms	0/90/180/270	3	B	/
3	>95%	5000ms	0/90/180/270	3	B	/

Test Result: Pass

EXHIBIT 1- PRODUCT LABELING

Proposed CE Label Format



Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The ‘CE’ marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The ‘CE’ marking must have a height of at least 5 mm. If the ‘CE’ marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

Proposed Label Location on EUT

CE Label Location

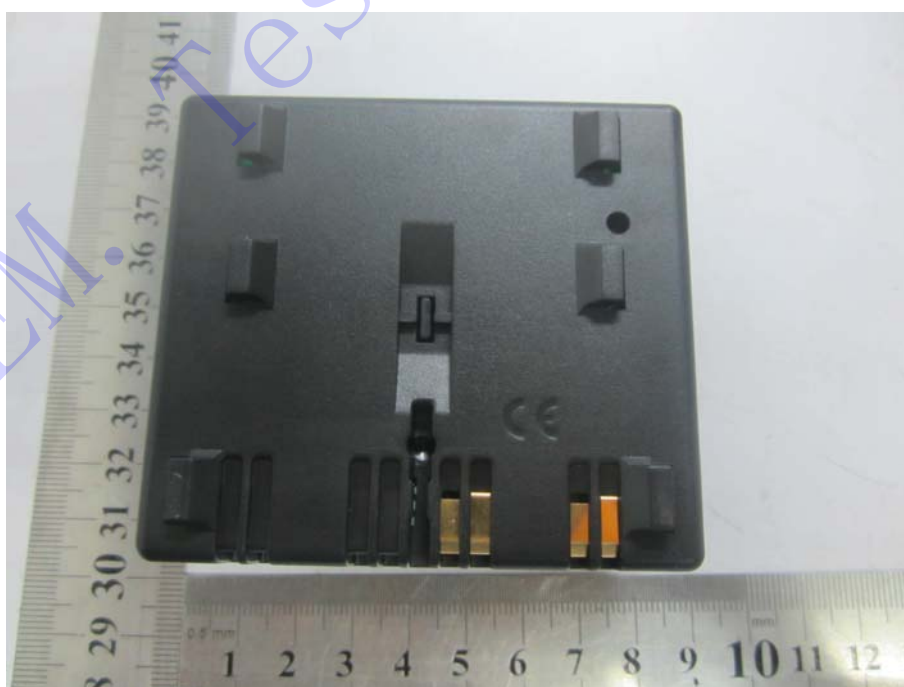


EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



EUT View 2



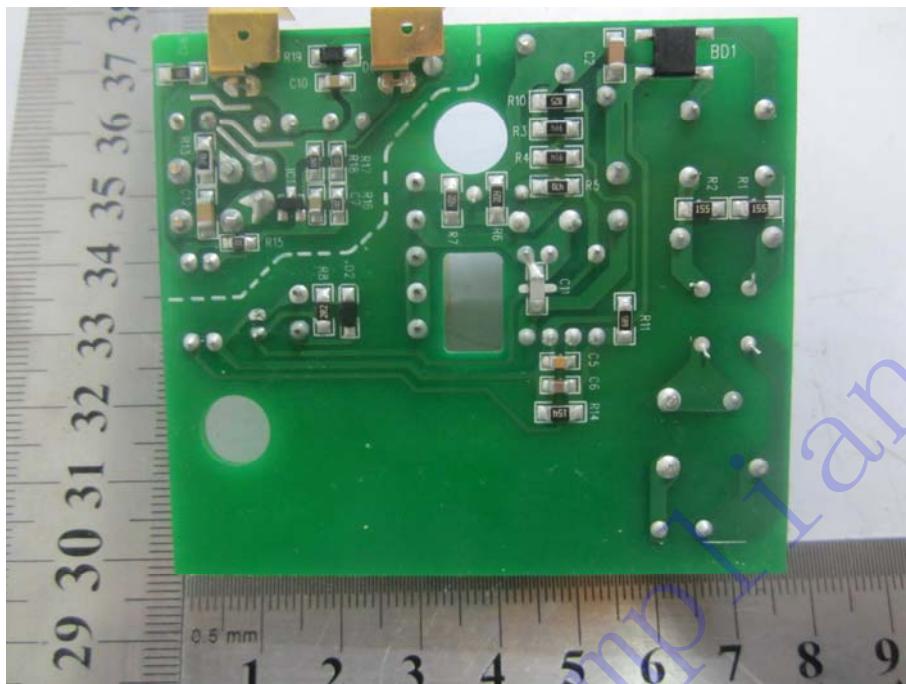
EUT View 3



EUT Housing and Board View 1



Solder Board-Component View 1



Solder Board-Component View 2

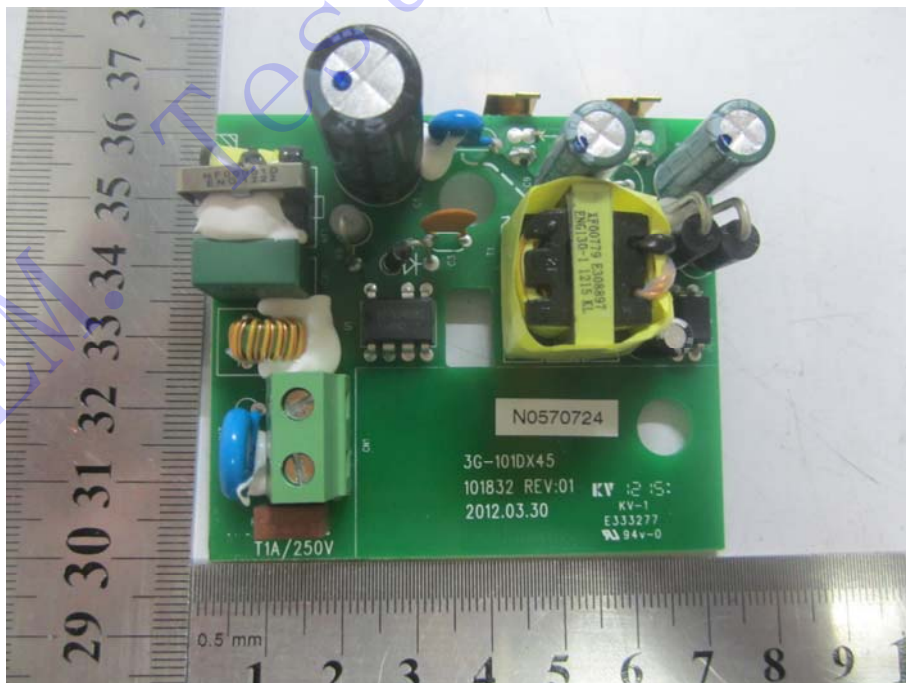
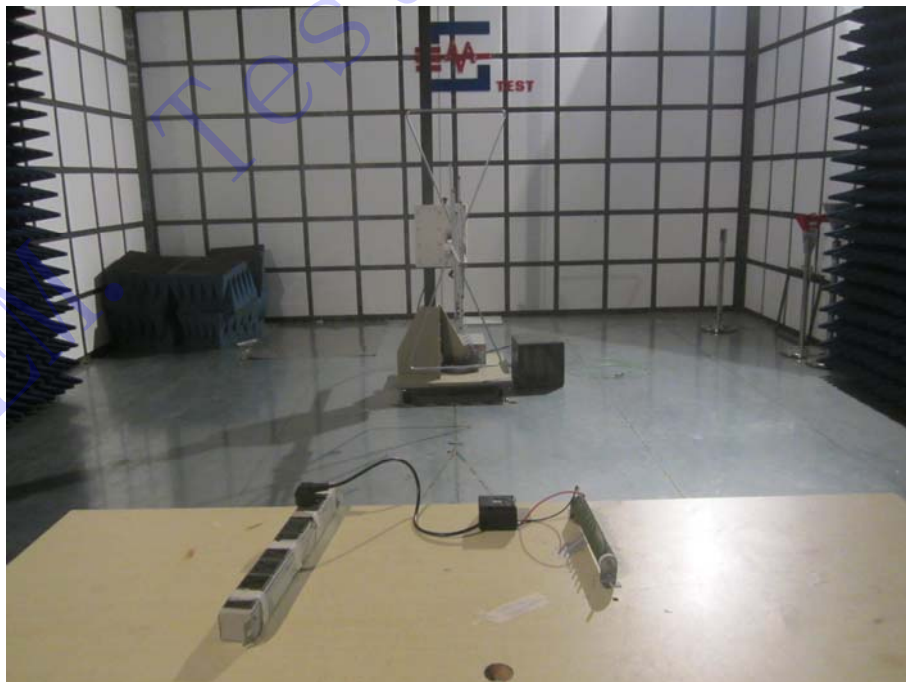


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View



Radiation Emission Test View



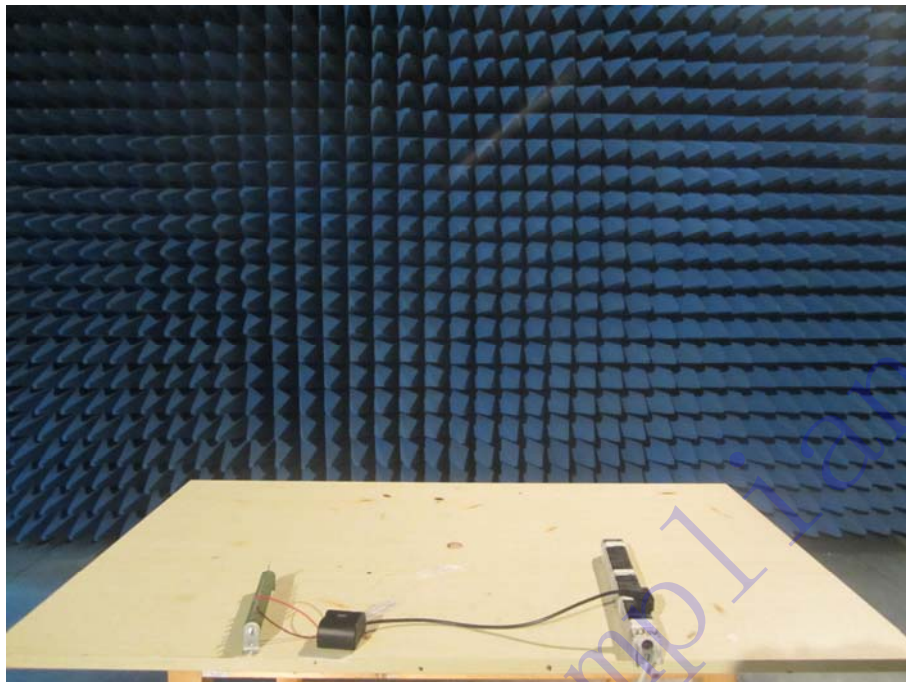
Harmonic/Flicker Test View



IEC61000-4-2 Test View



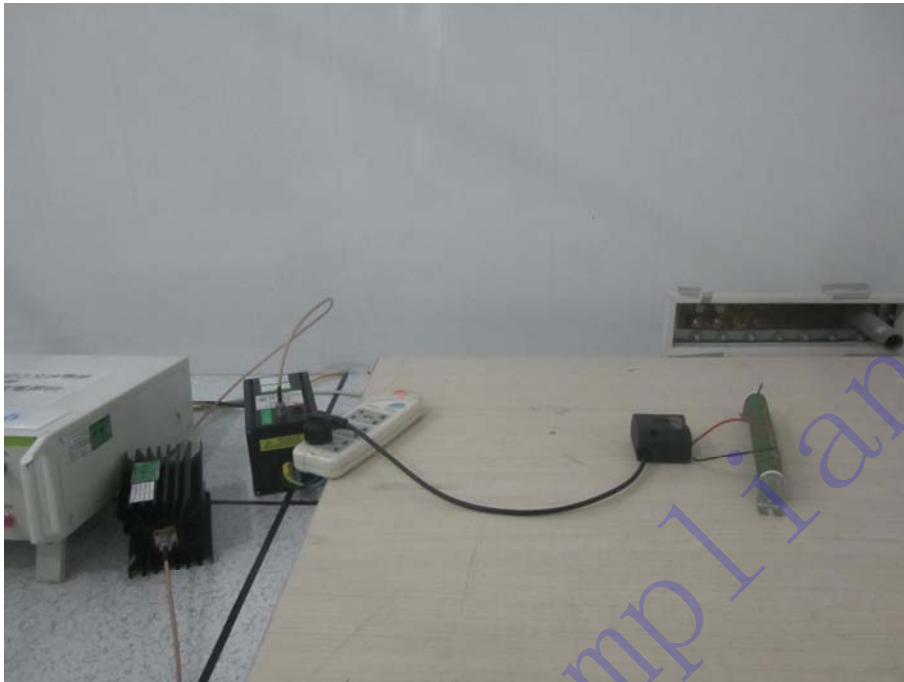
IEC61000-4-3 Test View



IEC61000-4-4/5/11 Test View



IEC61000-4-6 Test View



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