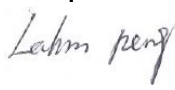


EMC
Measurement and Test Report
For
GlobTek, Inc.

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>5 Bay Lithium-Ion Battery Charger</u>
Tested Model:	<u>GT-93023-12012</u>
Report No.:	<u>STR13078206E</u>
Tested Date:	<u>2013-07-15 to 2013-07-23</u>
Issued Date:	<u>2013-07-23</u>
Tested By:	<u>Daniel Liu / Engineer</u> 
Reviewed By:	<u>Lahm Peng / EMC Manager</u> 
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> 
Prepared By:	

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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

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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:	5 Bay Lithium-Ion Battery Charger
Trade Name:	GlobTek
Model No.:	GT-93023-12012
Adding Model(s):	MBC-001

Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model GT-93023-12012, but the circuit and the electronic construction do not change, declared by the manufacturer.

Technical Characteristics of EUT

Rated Voltage:	Input: AC 100-240V Output: DC 24V
Rated Current:	Input: 2.0A Output: 6.25A
Rated Power:	150W
Power Adaptor Model:	GT-43004P15024-T3
Highest Internal Frequency:	Below 108MHz
Classification of ITE:	Class A

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	Charging	Full Load, Half Load, Empty Load

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Power Cable	2.0	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

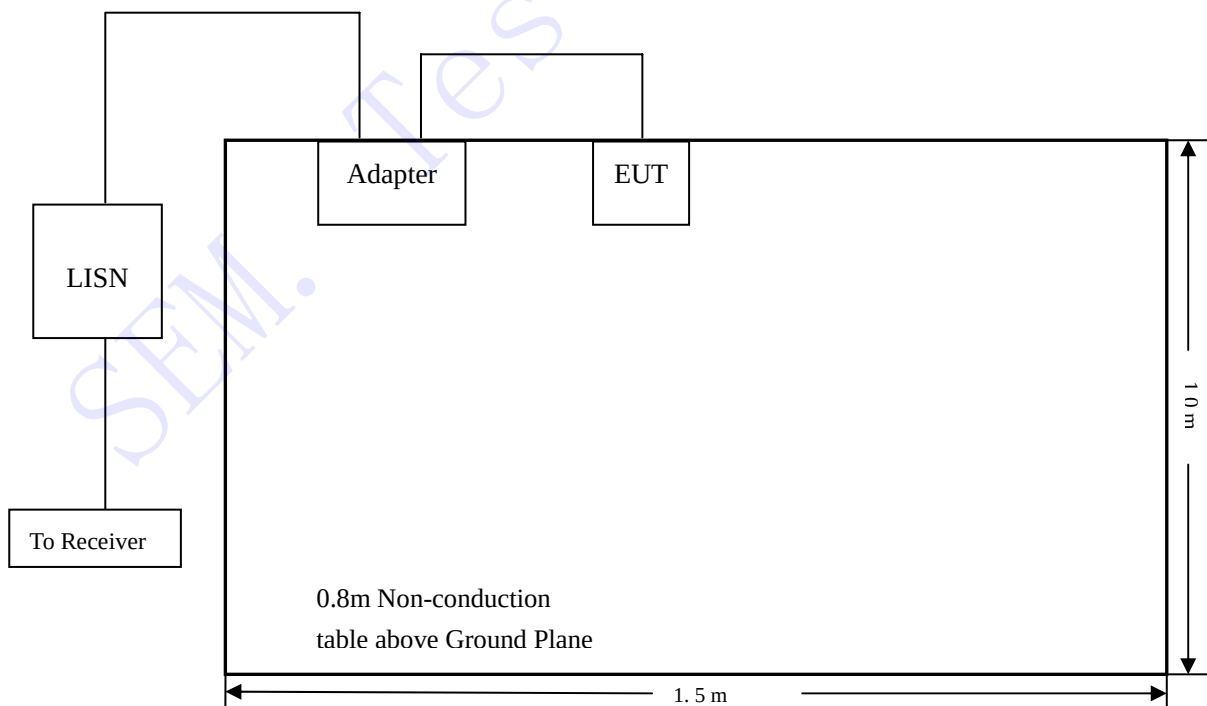
N/A: not applicable

3.1 Measurement Uncertainty

3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2013-05-07	2014-05-06
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2013-05-07	2014-05-06
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2013-05-07	2014-05-06
Current Probe	FCC	F-33-4	091684	2013-05-07	2014-05-06

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 A device, with the *worst* margin reading of:

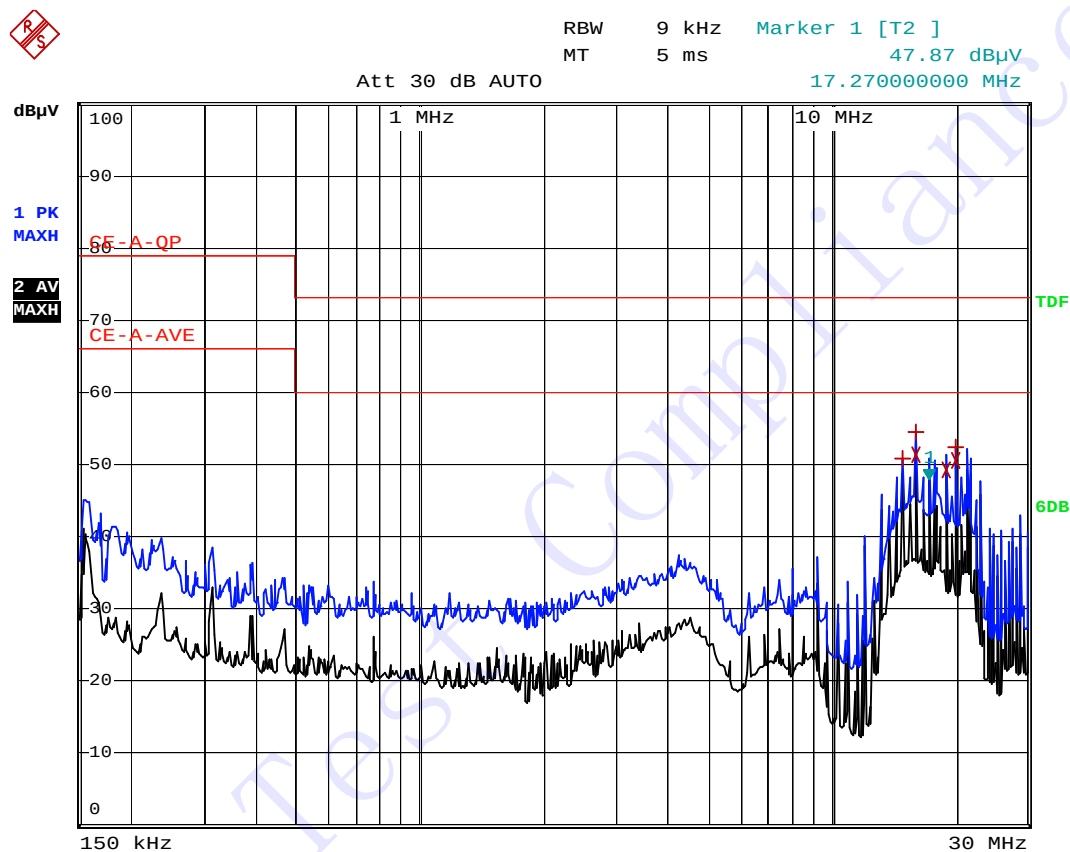
-8.57 dB at 16.118 MHz in the **Line** mode, **Average** detector, **TM1(Full Load)** Model, **0.15-30MHz**

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

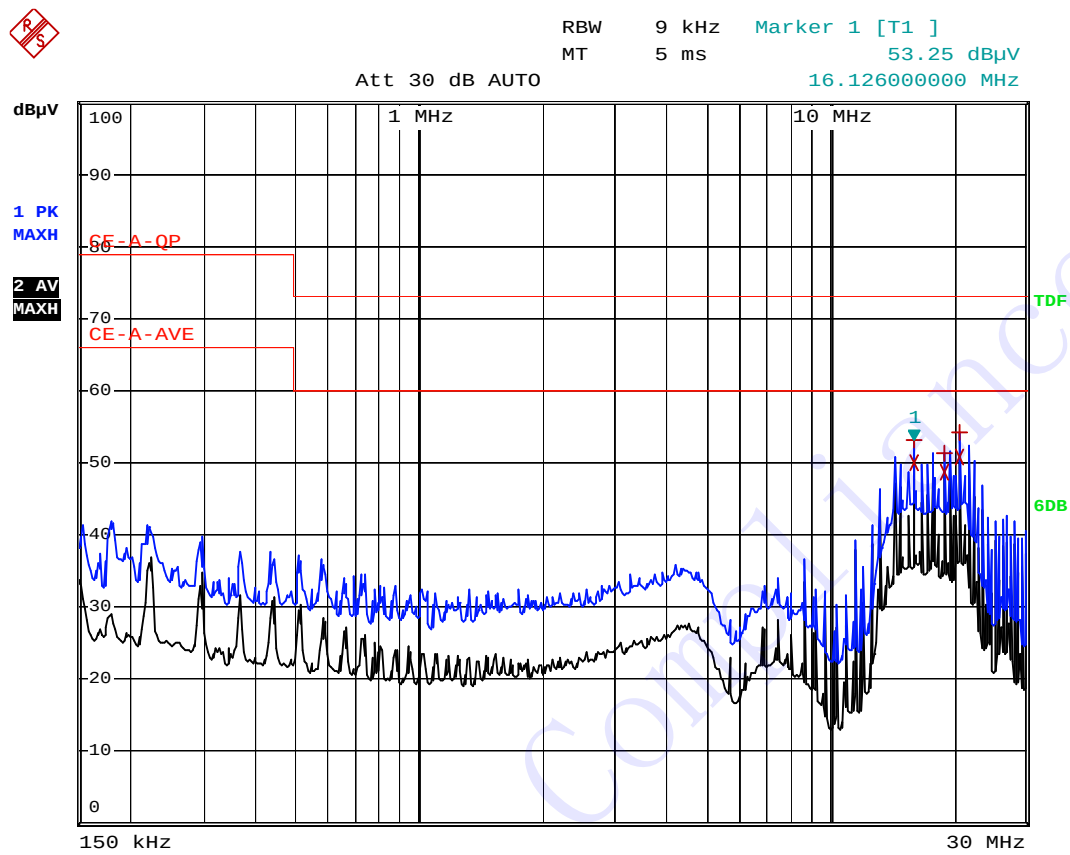
EUT: 5 Bay Lithium-Ion Battery Charger
Tested Model: GT-93023-12012
Operating Condition: TM1(Full Load)
Comment: AC 230V/50Hz; Adapter DC 24V

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
Trace1:	CE-A-QP		
Trace2:	CE-A-AVE		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	14.966 MHz	50.86	-22.13
1 Max Peak	16.118 MHz	54.49	-18.51
2 Average	16.118 MHz	51.42	-8.57
2 Average	18.998 MHz	49.19	-10.80
2 Average	20.15 MHz	50.50	-9.49
1 Max Peak	20.15 MHz	52.40	-20.59

Test Specification: Neutral

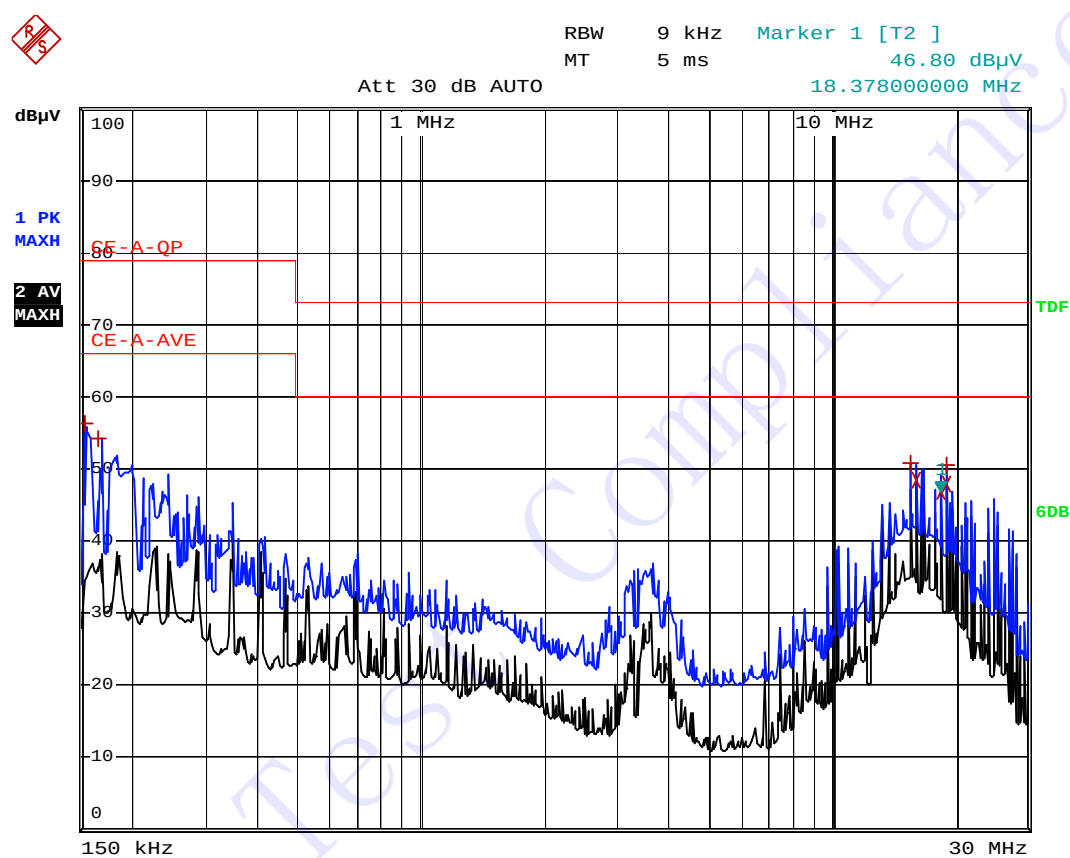


EDIT PEAK LIST (Prescan Results)			
Trace1:	CE-A-QP		
Trace2:	CE-A-AVE		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	16.126 MHz	49.86	-10.13
1 Max Peak	16.126 MHz	53.24	-19.75
2 Average	19.006 MHz	48.79	-11.20
1 Max Peak	19.01 MHz	51.35	-21.64
1 Max Peak	20.738 MHz	54.21	-18.78
2 Average	20.738 MHz	50.71	-9.28

Plot of Conducted Emissions Test Data

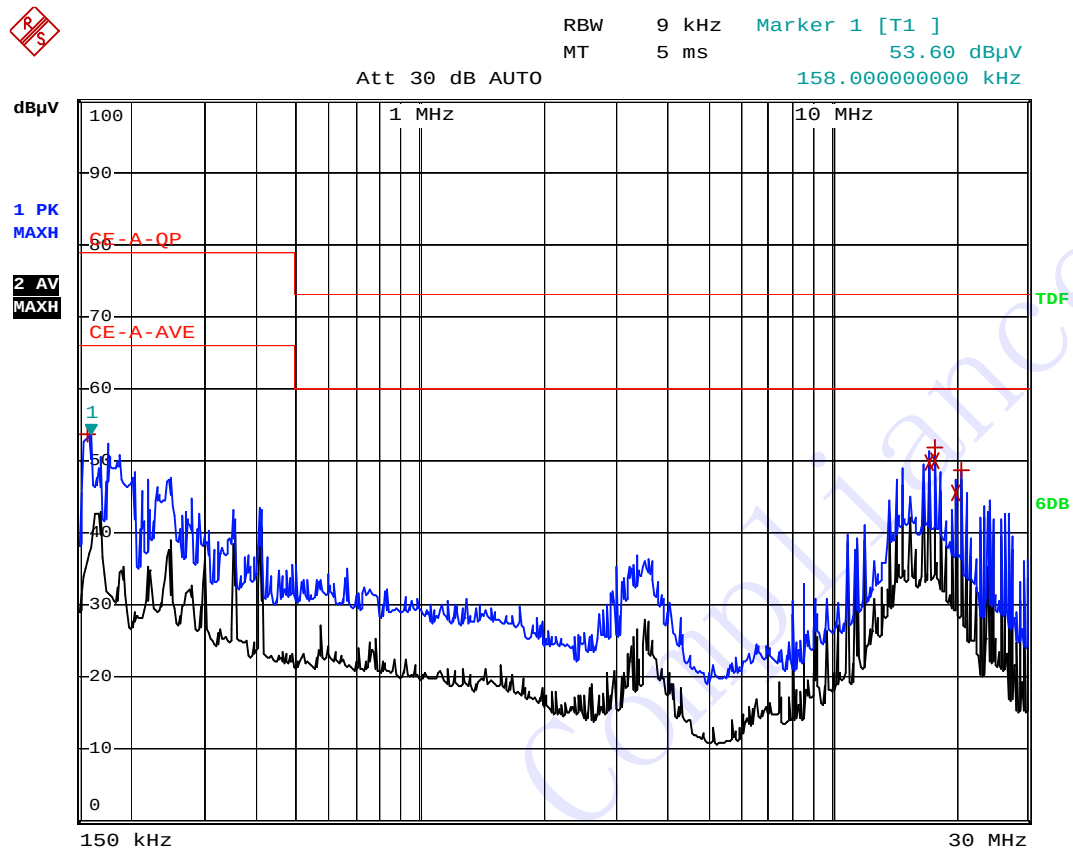
EUT: 5 Bay Lithium-Ion Battery Charger
Tested Model: GT-93023-12012
Operating Condition: TM1(Half Load)
Comment: AC 230V/50Hz; Adapter DC 24V

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
Trace1:	CE-A-QP		
Trace2:	CE-A-AVE		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Max Peak	154 kHz	56.22	-22.77
1 Max Peak	166 kHz	54.29	-24.70
1 Max Peak	15.506 MHz	50.65	-22.34
2 Average	16.082 MHz	48.31	-11.68
2 Average	18.378 MHz	46.80	-13.20
1 Max Peak	18.954 MHz	50.41	-22.58
2 Average	18.958 MHz	47.98	-12.01

Test Specification: Neutral

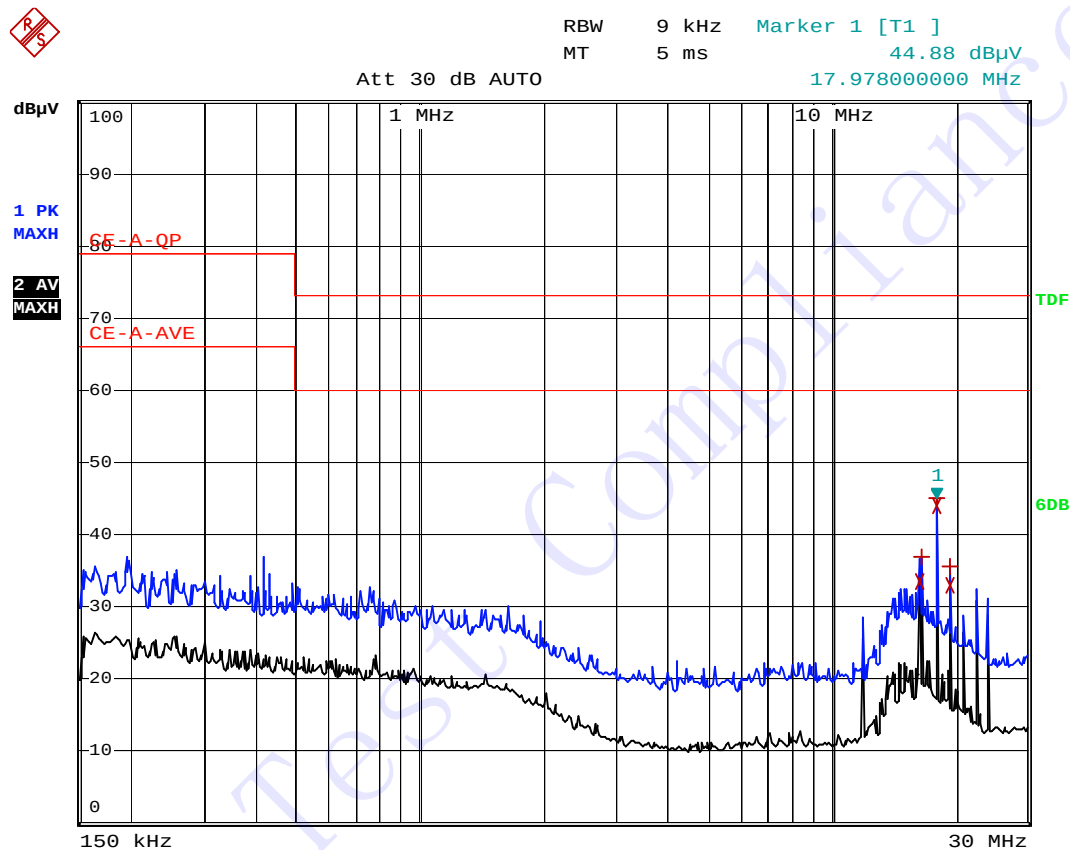


EDIT PEAK LIST (Prescan Results)			
Trace1:	CE-A-QP		
Trace2:	CE-A-AVE		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	158 kHz	53.59	-25.40
2 Average	17.246 MHz	49.70	-10.29
1 Max Peak	17.822 MHz	51.86	-21.13
2 Average	17.822 MHz	50.00	-9.99
2 Average	20.122 MHz	45.65	-14.34
1 Max Peak	20.698 MHz	48.76	-24.24

Plot of Conducted Emissions Test Data

EUT: 5 Bay Lithium-Ion Battery Charger
Tested Model: GT-93023-12012
Operating Condition: TM1(Empty Load)
Comment: AC 230V/50Hz; Adapter DC 24V

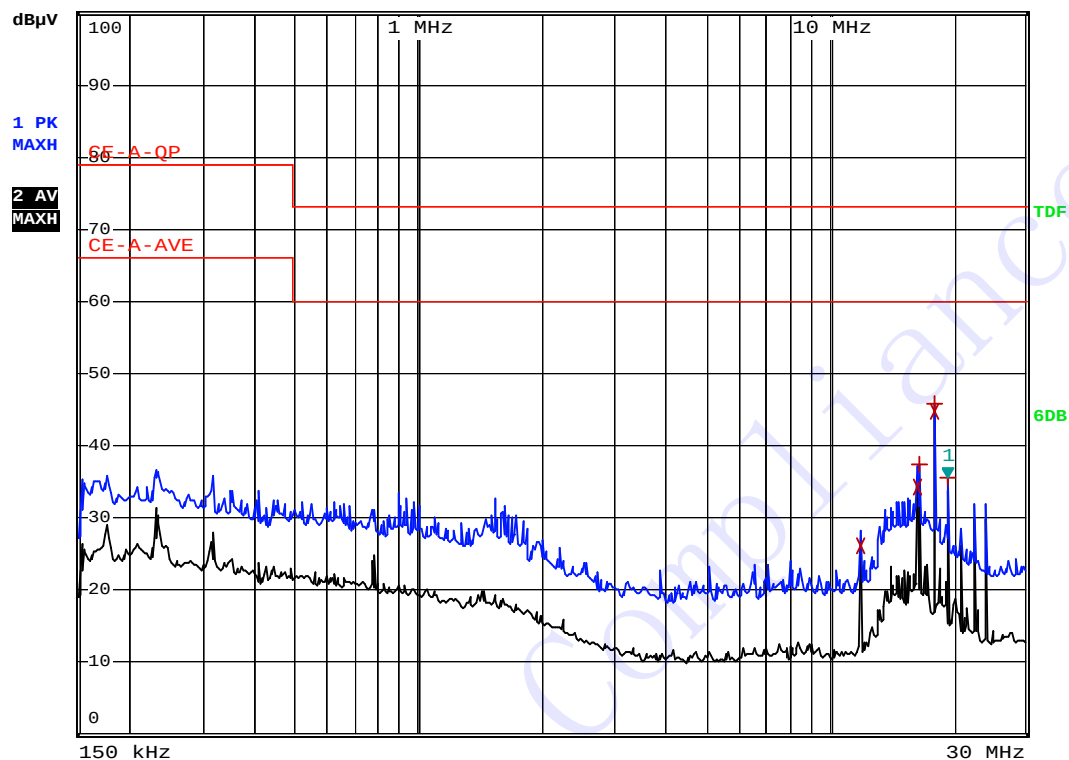
Test Specification: Line



EDIT PEAK LIST (Prescan Results)				
Trace1:	CE-A-QP			
Trace2:	CE-A-AVE			
Trace3:	---			
	TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2	Average	16.478 MHz	33.48	-26.51
1	Max Peak	16.482 MHz	36.91	-36.09
1	Max Peak	17.978 MHz	44.88	-28.11
2	Average	17.978 MHz	44.00	-15.99
2	Average	19.478 MHz	32.92	-27.07
1	Max Peak	19.478 MHz	35.44	-37.56



Att 30 dB AUTO



EDIT PEAK LIST (Prescan Results)			
Trace1:	CE-A-QP		
Trace2:	CE-A-AVE		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	11.986 MHz	26.08	-33.91
2 Average	16.478 MHz	34.32	-25.67
1 Max Peak	16.482 MHz	37.35	-35.64
1 Max Peak	17.978 MHz	45.73	-27.26
2 Average	17.978 MHz	44.87	-15.12
1 Max Peak	19.478 MHz	35.51	-37.48

4. Radiated Disturbance

4.1 Measurement Uncertainty

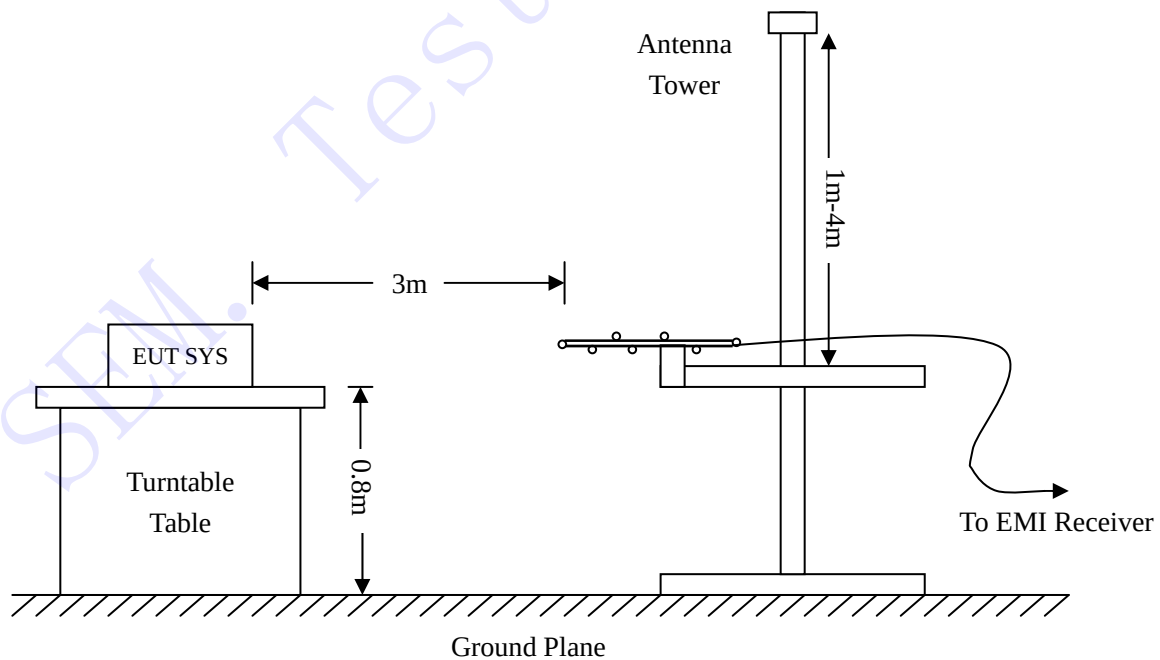
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19

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 A device. The equation for margin calculation is as follows:

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

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 A standards, and had the worst margin is:

-1.92 dB at 193.7728 MHz in the, **Horizontal** polarization, **TM1(Half Load)** Model, **30 MHz to 1 GHz**,
3Meters

Plot of Radiated Emissions Test Data

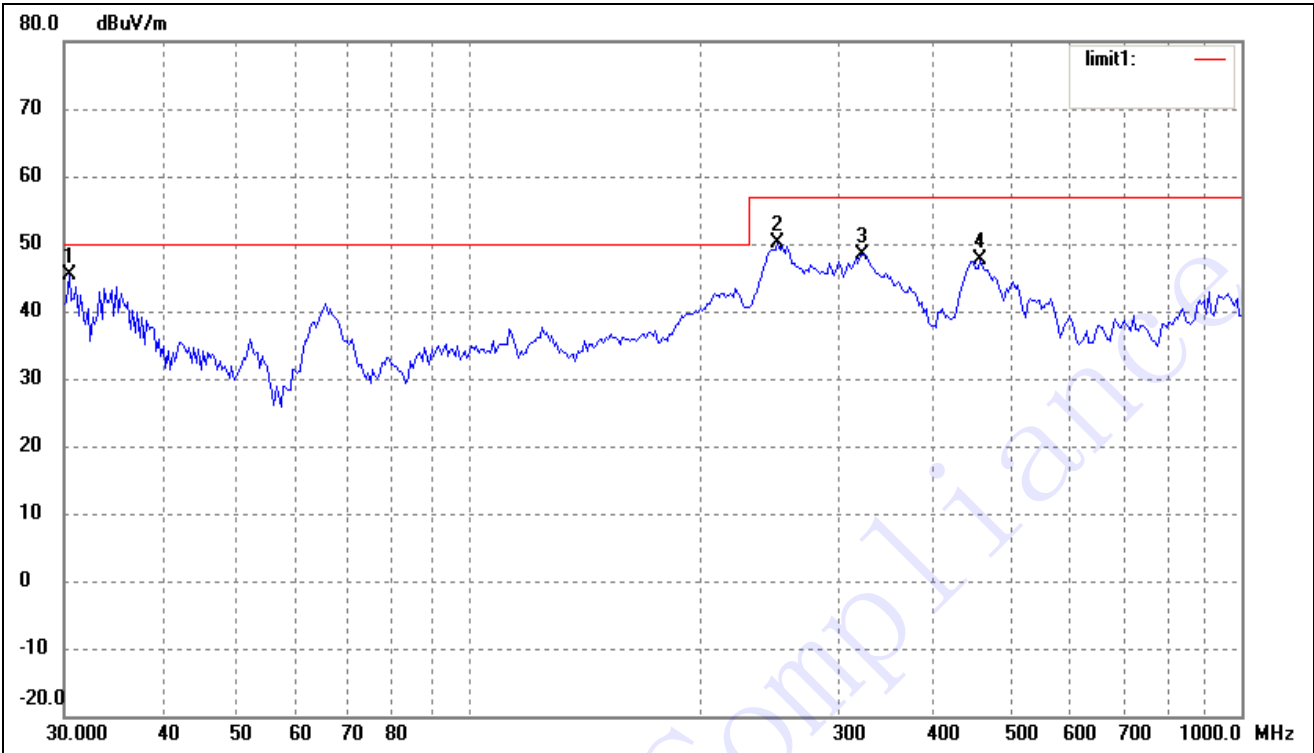
EUT: 5 Bay Lithium-Ion Battery Charger
Tested Model: GT-93023-12012
Operating Condition: TM1(Full Load)
Comment: AC 230V/50Hz; Adapter DC 24V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	193.7728	41.60	4.37	45.97	50.00	-4.03	360	100	peak
2	215.2678	42.09	5.62	47.71	50.00	-2.29	360	100	peak
3	254.7284	47.03	7.48	54.51	57.00	-2.49	360	100	peak
4	321.0608	44.15	10.46	54.61	57.00	-2.39	360	100	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.4238	37.34	8.11	45.45	50.00	-4.55	360	100	peak
2	251.1804	42.71	7.34	50.05	57.00	-6.95	360	100	peak
3	323.3204	38.02	10.41	48.43	57.00	-8.57	360	100	peak
4	459.1144	35.81	11.77	47.58	57.00	-9.42	360	100	peak

Plot of Radiated Emissions Test Data

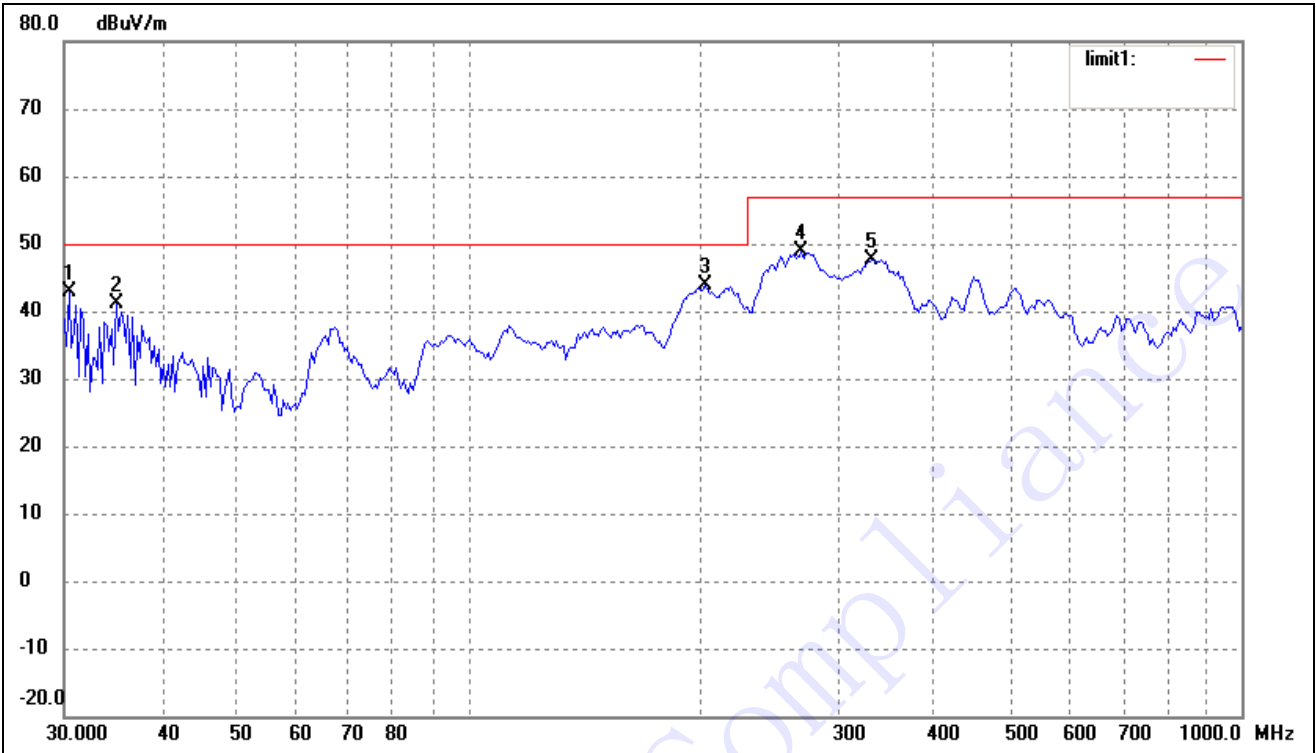
EUT: 5 Bay Lithium-Ion Battery Charger
Tested Model: GT-93023-12012
Operating Condition: TM1(Half Load)
Comment: AC 230V/50Hz; Adapter DC 24V

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	193.7728	43.71	4.37	48.08	50.00	-1.92	360	100	peak
2	215.2678	41.50	5.62	47.12	50.00	-2.88	254	100	QP
3	227.6906	40.60	6.33	46.93	50.00	-3.07	331	100	QP
4	275.1570	44.96	8.88	53.84	57.00	-3.16	360	100	peak
5	323.3204	42.13	10.41	52.54	57.00	-4.46	360	100	peak

Test Specification: Vertical

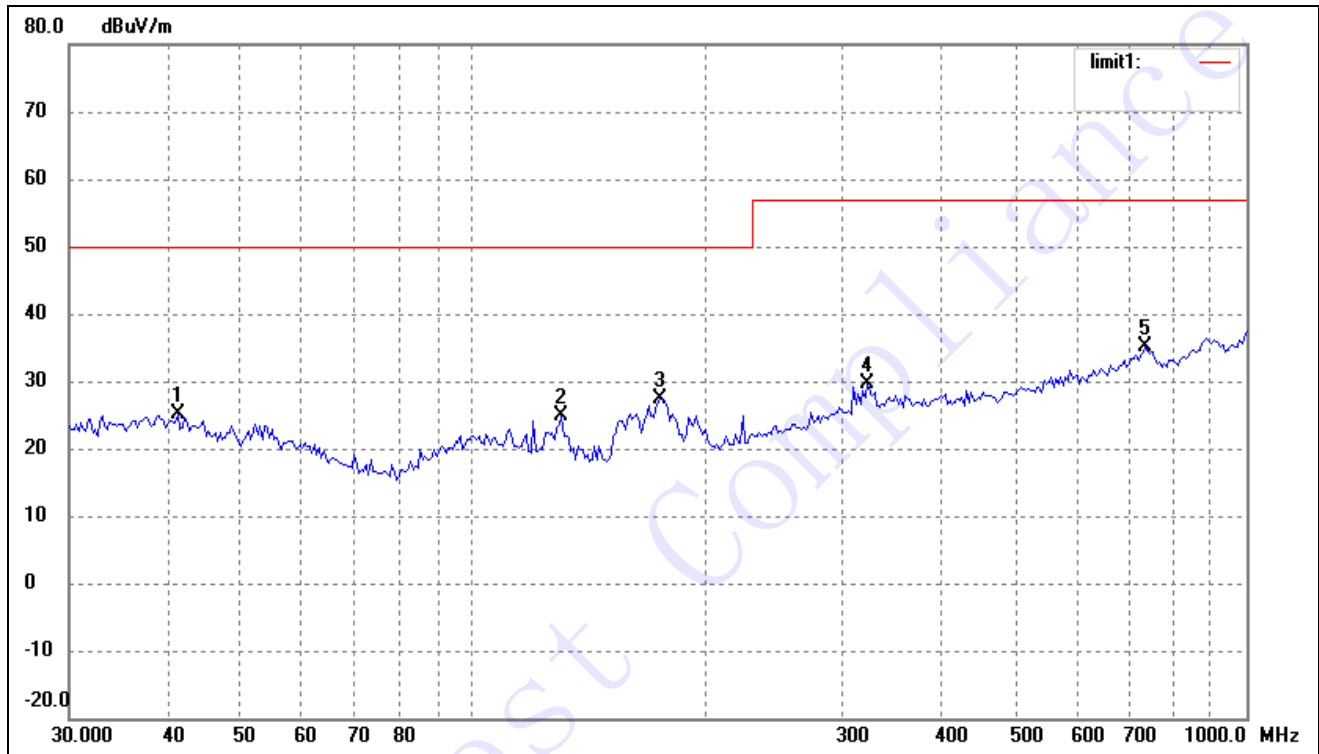


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.4238	34.66	8.11	42.77	50.00	-7.23	360	100	peak
2	35.0048	32.37	8.88	41.25	50.00	-8.75	360	100	peak
3	202.1005	39.03	4.78	43.81	50.00	-6.19	360	100	peak
4	269.4284	40.39	8.43	48.82	57.00	-8.18	360	100	peak
5	332.5187	37.51	10.24	47.75	57.00	-9.25	360	100	peak

Plot of Radiated Emissions Test Data

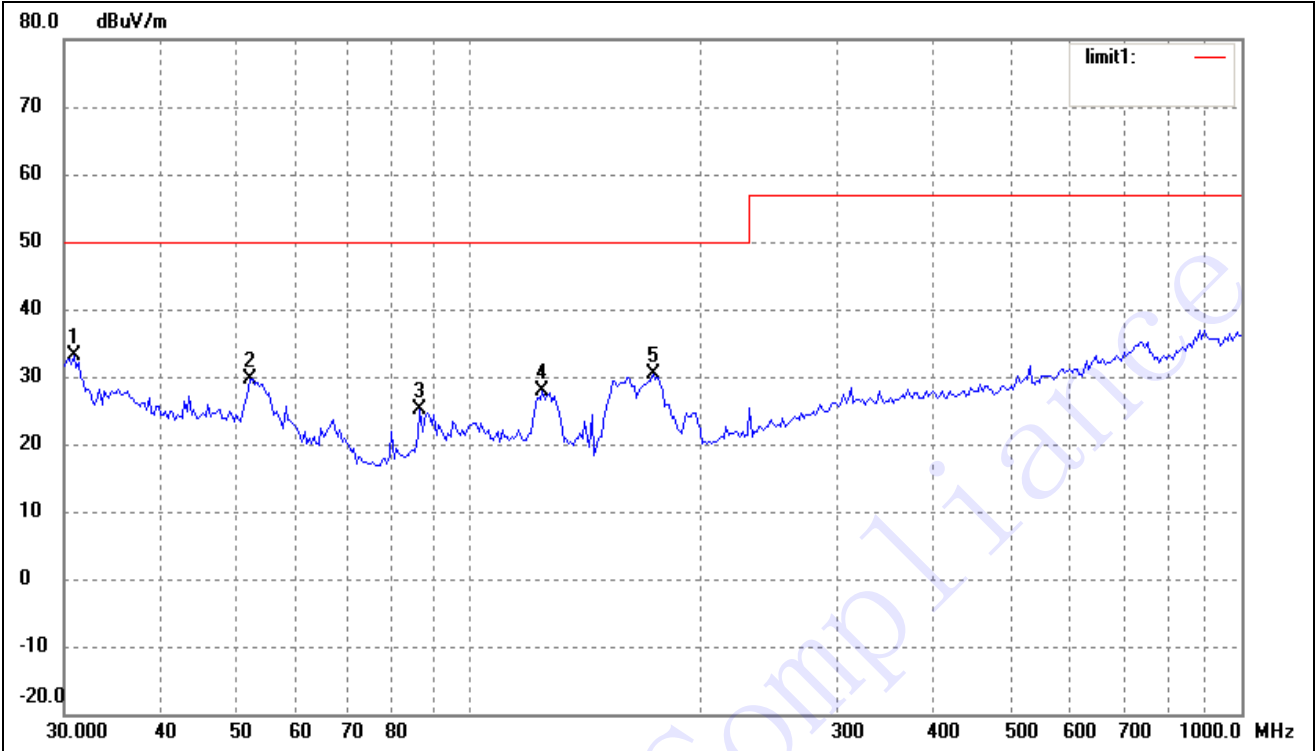
EUT: 5 Bay Lithium-Ion Battery Charger
 Tested Model: GT-93023-12012
 Operating Condition: TM1(Empty Load)
 Comment: AC 230V/50Hz; Adapter DC 24V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	41.4215	15.89	9.24	25.13	50.00	-24.87	360	100	peak
2	129.9226	20.69	4.13	24.82	50.00	-25.18	360	100	peak
3	174.4241	23.61	3.72	27.33	50.00	-22.67	360	100	peak
4	323.3204	19.13	10.41	29.54	57.00	-27.46	360	100	peak
5	739.6605	17.00	18.07	35.07	57.00	-21.93	360	100	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	30.8535	25.06	8.19	33.25	50.00	-16.75	360	100	peak
2	52.2079	23.21	6.42	29.63	50.00	-20.37	360	100	peak
3	86.5029	21.73	3.47	25.20	50.00	-24.80	360	100	peak
4	124.5690	23.38	4.53	27.91	50.00	-22.09	360	100	peak
5	173.2051	26.67	3.72	30.39	50.00	-19.61	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	2013-05-07	2014-05-06
Power Source	California Instrument	5001IX-CTS-400	60077	2013-05-07	2014-05-06

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

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

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

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

Test Margin: 100

Test date: 2013-7-22

Start time: 01:56:12 PM

End time: 01:59:03 PM

Test duration (min): 2.5

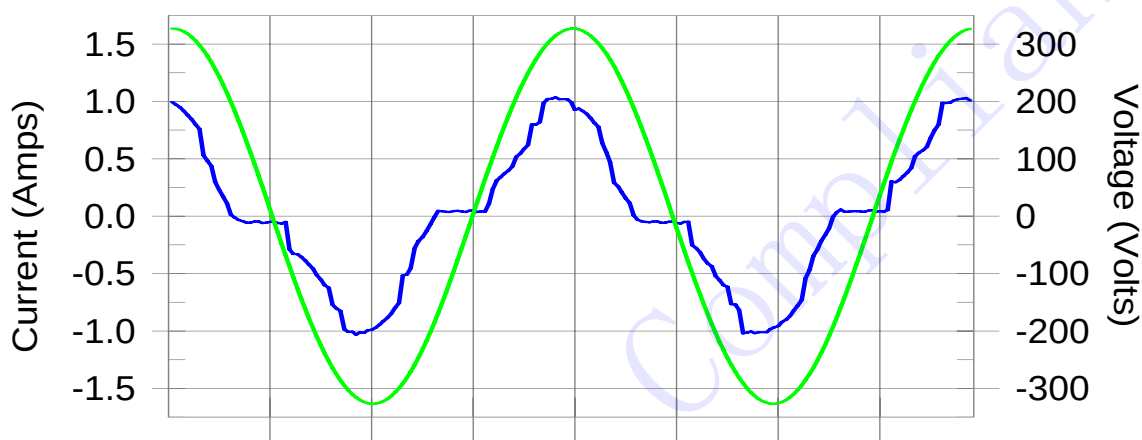
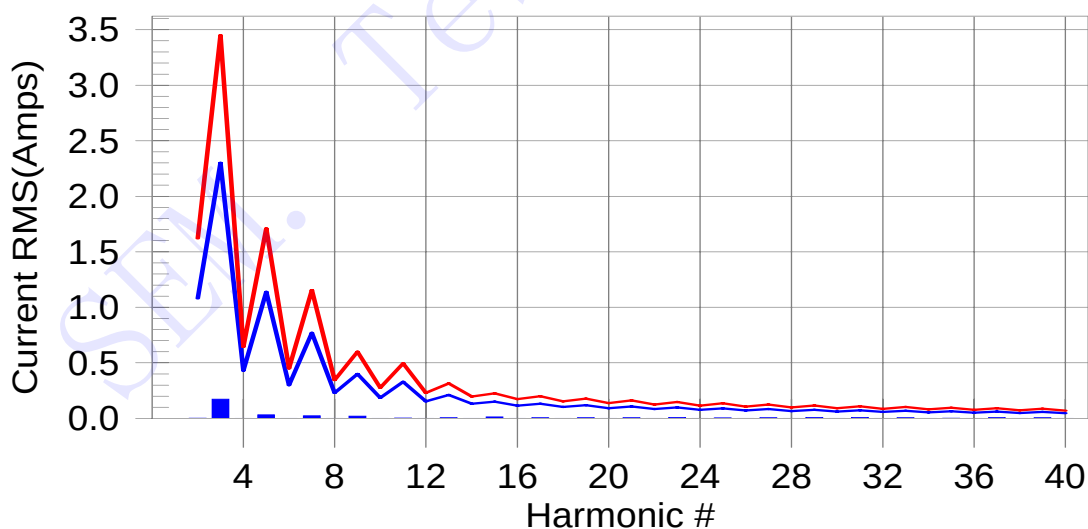
Data file name: H-000096.cts_data

Comment: TM1(Full Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

Current & voltage waveforms**Harmonics and Class A limit line****European Limits****Test result: Pass Worst harmonic was #37 with 11.79% of the limit.**

Current Test Result Summary (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

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

Test Margin: 100

Test date: 2013-7-22

Start time: 01:56:12 PM

End time: 01:59:03 PM

Test duration (min): 2.5

Data file name: H-000096.cts_data

Comment: TM1(Full Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

THC(A): 0.18

I-THD(%): 29.93

POHC(A): 0.017

POHC Limit(A): 0.274

Highest parameter values during test:

V_RMS (Volts): 231.44

Frequency(Hz): 50.00

I_Peak (Amps): 1.089

I_RMS (Amps): 0.633

I_Fund (Amps): 0.606

Crest Factor: 1.795

Power (Watts): 136.8

Power Factor: 0.935

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	0.08	Pass
3	0.171	2.300	7.4	0.173	3.450	5.02	Pass
4	0.000	0.430	0.0	0.001	0.645	0.11	Pass
5	0.031	1.140	2.7	0.032	1.710	1.85	Pass
6	0.000	0.300	0.0	0.000	0.450	0.07	Pass
7	0.023	0.770	2.9	0.024	1.155	2.04	Pass
8	0.000	0.230	0.0	0.000	0.345	0.05	Pass
9	0.020	0.400	4.9	0.020	0.600	3.31	Pass
10	0.000	0.184	0.0	0.000	0.276	0.07	Pass
11	0.003	0.330	0.0	0.004	0.495	0.75	Pass
12	0.000	0.153	0.0	0.000	0.230	0.11	Pass
13	0.006	0.210	2.7	0.007	0.315	2.17	Pass
14	0.000	0.131	0.0	0.000	0.197	0.07	Pass
15	0.014	0.150	9.4	0.014	0.225	6.36	Pass
16	0.000	0.115	0.0	0.000	0.173	0.09	Pass
17	0.005	0.132	3.9	0.005	0.199	2.65	Pass
18	0.000	0.102	0.0	0.000	0.153	0.13	Pass
19	0.006	0.118	5.2	0.006	0.178	3.56	Pass
20	0.000	0.092	0.0	0.000	0.138	0.17	Pass
21	0.007	0.107	6.2	0.007	0.161	4.23	Pass
22	0.000	0.084	0.0	0.000	0.125	0.19	Pass
23	0.007	0.098	7.5	0.008	0.147	5.67	Pass
24	0.000	0.077	0.0	0.000	0.115	0.18	Pass
25	0.003	0.090	0.0	0.004	0.135	3.16	Pass
26	0.000	0.071	0.0	0.000	0.106	0.32	Pass
27	0.004	0.083	6.3	0.006	0.125	4.53	Pass

28	0.001	0.066	0.0	0.001	0.099	0.62	Pass
29	0.008	0.078	10.4	0.009	0.116	7.55	Pass
30	0.000	0.061	0.0	0.000	0.092	0.32	Pass
31	0.007	0.073	10.1	0.009	0.109	8.47	Pass
32	0.001	0.058	0.0	0.001	0.086	0.66	Pass
33	0.005	0.068	7.3	0.006	0.102	6.18	Pass
34	0.000	0.054	0.0	0.000	0.081	0.41	Pass
35	0.002	0.064	0.0	0.003	0.096	2.72	Pass
36	0.000	0.051	0.0	0.000	0.077	0.31	Pass
37	0.007	0.061	11.8	0.008	0.091	8.76	Pass
38	0.000	0.048	0.0	0.000	0.073	0.30	Pass
39	0.004	0.058	6.6	0.005	0.087	6.17	Pass
40	0.000	0.046	0.0	0.000	0.069	0.46	Pass

Voltage Source Verification Data (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2013-7-22

Start time: 01:56:12 PM

End time: 01:59:03 PM

Test duration (min): 2.5

Data file name: H-000096.cts_data

Comment: TM1(Full Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 231.44

Frequency(Hz): 50.00

I_Peak (Amps): 1.089

I_RMS (Amps): 0.633

I_Fund (Amps): 0.606

Crest Factor: 1.795

Power (Watts): 136.8

Power Factor: 0.935

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.062	0.463	13.37	OK
3	0.597	2.082	28.69	OK
4	0.062	0.463	13.33	OK
5	0.071	0.926	7.69	OK
6	0.036	0.463	7.72	OK
7	0.033	0.694	4.69	OK
8	0.016	0.463	3.45	OK
9	0.014	0.463	3.01	OK
10	0.010	0.463	2.22	OK
11	0.016	0.231	6.87	OK
12	0.010	0.231	4.19	OK
13	0.011	0.231	4.77	OK
14	0.005	0.231	2.16	OK
15	0.010	0.231	4.25	OK
16	0.009	0.231	3.88	OK
17	0.010	0.231	4.18	OK
18	0.011	0.231	4.60	OK
19	0.011	0.231	4.80	OK
20	0.015	0.231	6.61	OK
21	0.012	0.231	5.33	OK
22	0.006	0.231	2.67	OK
23	0.011	0.231	4.74	OK
24	0.003	0.231	1.12	OK
25	0.008	0.231	3.41	OK
26	0.003	0.231	1.36	OK
27	0.008	0.231	3.46	OK

28	0.003	0.231	1.44	OK
29	0.012	0.231	5.39	OK
30	0.004	0.231	1.78	OK
31	0.013	0.231	5.48	OK
32	0.003	0.231	1.41	OK
33	0.010	0.231	4.16	OK
34	0.003	0.231	1.33	OK
35	0.007	0.231	3.04	OK
36	0.002	0.231	1.05	OK
37	0.013	0.231	5.80	OK
38	0.003	0.231	1.19	OK
39	0.011	0.231	4.72	OK
40	0.008	0.231	3.46	OK

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

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2013-7-18

Start time: 03:35:17 PM

End time: 03:38:09 PM

Test duration (min): 2.5

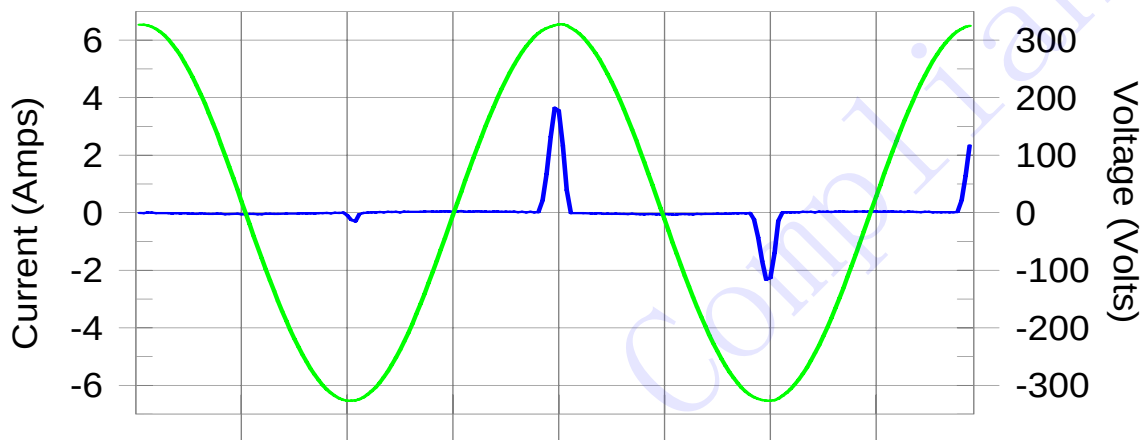
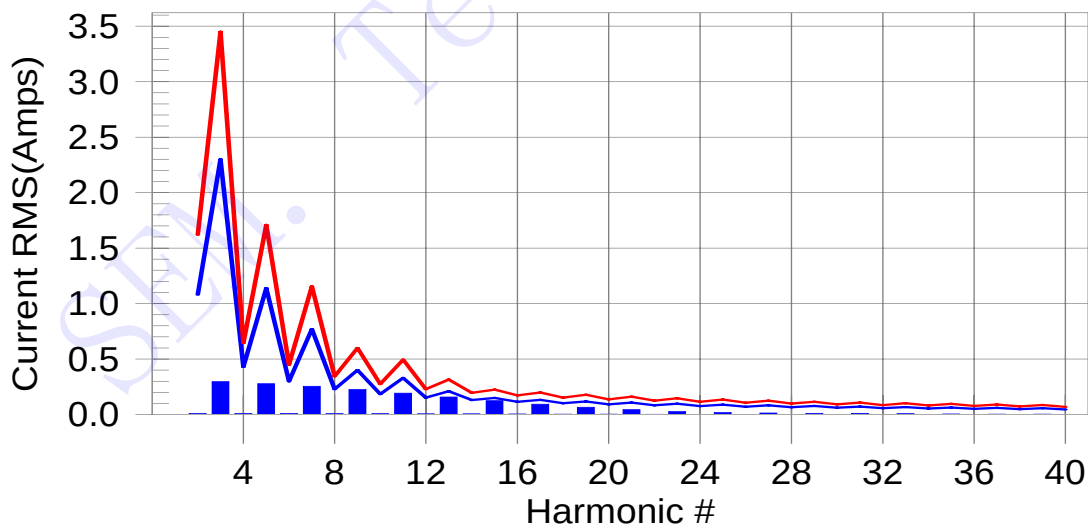
Data file name: H-000114.cts_data

Comment: TM1(Half Load)

Customer: GlobTek, Inc.

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 82.43% of the limit.**

Current Test Result Summary (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger Tested by: Daniel
 Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100
 Test date: 2013-7-18 Start time: 03:35:17 PM End time: 03:38:09 PM
 Test duration (min): 2.5 Data file name: H-000114.cts_data
 Comment: TM1(Half Load)
 Customer: GlobTek, Inc.

Test Result: Pass Source qualification: Normal
 THC(A): 0.61 I-THD(%): 199.69 POHC(A): 0.060 POHC Limit(A): 0.260

Highest parameter values during test:

V_RMS (Volts):	231.45	Frequency(Hz):	50.00
I_Peak (Amps):	3.762	I_RMS (Amps):	0.686
I_Fund (Amps):	0.334	Crest Factor:	9.323
Power (Watts):	71.8	Power Factor:	0.878

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	0.4	0.009	1.620	0.59	Pass
3	0.293	2.300	12.7	0.297	3.450	8.61	Pass
4	0.005	0.430	1.1	0.010	0.645	1.53	Pass
5	0.276	1.140	24.2	0.279	1.710	16.31	Pass
6	0.005	0.300	1.6	0.010	0.450	2.17	Pass
7	0.252	0.770	32.7	0.255	1.155	22.07	Pass
8	0.005	0.230	2.0	0.009	0.345	2.70	Pass
9	0.223	0.400	55.8	0.225	0.600	37.57	Pass
10	0.004	0.184	2.4	0.009	0.276	3.19	Pass
11	0.191	0.330	57.8	0.193	0.495	38.90	Pass
12	0.004	0.153	2.7	0.008	0.230	3.54	Pass
13	0.157	0.210	74.7	0.158	0.315	50.28	Pass
14	0.004	0.131	2.8	0.007	0.197	3.75	Pass
15	0.124	0.150	82.4	0.125	0.225	55.44	Pass
16	0.003	0.115	2.7	0.006	0.173	3.54	Pass
17	0.093	0.132	70.3	0.094	0.199	47.05	Pass
18	0.002	0.102	0.0	0.005	0.153	3.18	Pass
19	0.066	0.118	55.6	0.066	0.178	37.28	Pass
20	0.002	0.092	0.0	0.004	0.138	2.63	Pass
21	0.044	0.107	40.9	0.044	0.161	27.44	Pass
22	0.001	0.084	0.0	0.003	0.125	2.21	Pass
23	0.028	0.098	28.2	0.028	0.147	18.94	Pass
24	0.001	0.077	0.0	0.002	0.115	1.80	Pass
25	0.018	0.090	19.6	0.018	0.135	13.25	Pass
26	0.001	0.071	0.0	0.002	0.106	1.42	Pass
27	0.014	0.083	16.3	0.014	0.125	11.03	Pass

28	0.001	0.066	0.0	0.001	0.099	1.41	Pass
29	0.012	0.078	15.8	0.012	0.116	10.69	Pass
30	0.001	0.061	0.0	0.001	0.092	1.30	Pass
31	0.011	0.073	14.9	0.011	0.109	10.08	Pass
32	0.001	0.058	0.0	0.001	0.086	1.32	Pass
33	0.009	0.068	12.6	0.009	0.102	8.60	Pass
34	0.000	0.054	0.0	0.001	0.081	1.02	Pass
35	0.006	0.064	9.1	0.006	0.096	6.28	Pass
36	0.000	0.051	0.0	0.000	0.077	0.60	Pass
37	0.004	0.061	0.0	0.004	0.091	4.08	Pass
38	0.000	0.048	0.0	0.000	0.073	0.48	Pass
39	0.003	0.058	0.0	0.003	0.087	3.79	Pass
40	0.000	0.046	0.0	0.000	0.069	0.59	Pass

Voltage Source Verification Data (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2013-7-18

Start time: 03:35:17 PM

End time: 03:38:09 PM

Test duration (min): 2.5

Data file name: H-000114.cts_data

Comment: TM1(Half Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 231.45

Frequency(Hz): 50.00

I_Peak (Amps): 3.762

I_RMS (Amps): 0.686

I_Fund (Amps): 0.334

Crest Factor: 9.323

Power (Watts): 71.8

Power Factor: 0.878

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.054	0.463	11.62	OK
3	0.621	2.082	29.84	OK
4	0.057	0.463	12.36	OK
5	0.059	0.925	6.33	OK
6	0.035	0.463	7.67	OK
7	0.106	0.694	15.21	OK
8	0.016	0.463	3.43	OK
9	0.121	0.463	26.13	OK
10	0.011	0.463	2.34	OK
11	0.114	0.231	49.44	OK
12	0.011	0.231	4.82	OK
13	0.117	0.231	50.43	OK
14	0.006	0.231	2.53	OK
15	0.094	0.231	40.65	OK
16	0.008	0.231	3.43	OK
17	0.089	0.231	38.38	OK
18	0.012	0.231	5.07	OK
19	0.064	0.231	27.56	OK
20	0.014	0.231	5.86	OK
21	0.049	0.231	21.09	OK
22	0.007	0.231	3.04	OK
23	0.032	0.231	14.01	OK
24	0.003	0.231	1.49	OK
25	0.024	0.231	10.49	OK
26	0.003	0.231	1.11	OK
27	0.023	0.231	10.06	OK

28	0.004	0.231	1.59	OK
29	0.016	0.231	6.93	OK
30	0.003	0.231	1.45	OK
31	0.017	0.231	7.52	OK
32	0.003	0.231	1.48	OK
33	0.016	0.231	6.85	OK
34	0.002	0.231	0.84	OK
35	0.013	0.231	5.56	OK
36	0.002	0.231	0.83	OK
37	0.012	0.231	5.20	OK
38	0.002	0.231	0.87	OK
39	0.013	0.231	5.48	OK
40	0.009	0.231	3.76	OK

SEM. Test Compliance

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

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2013-7-22

Start time: 10:42:08 AM

End time: 10:44:59 AM

Test duration (min): 2.5

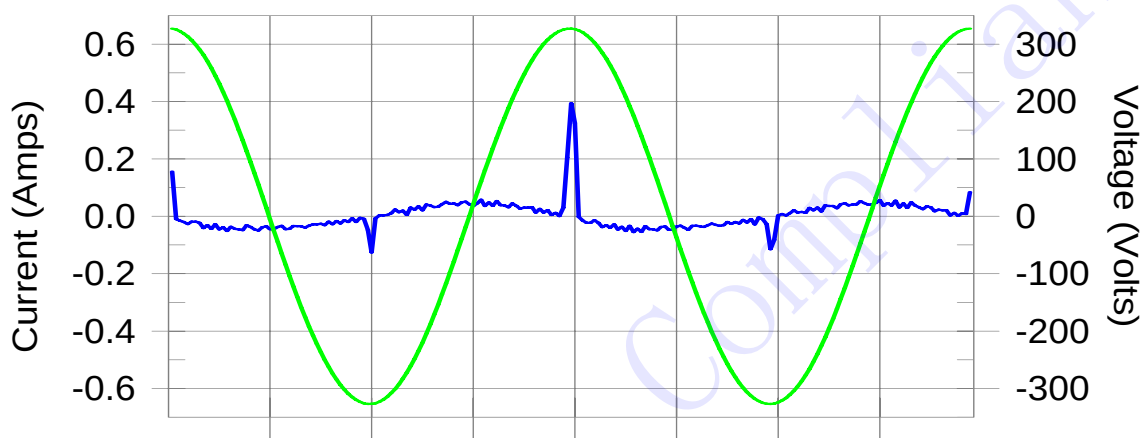
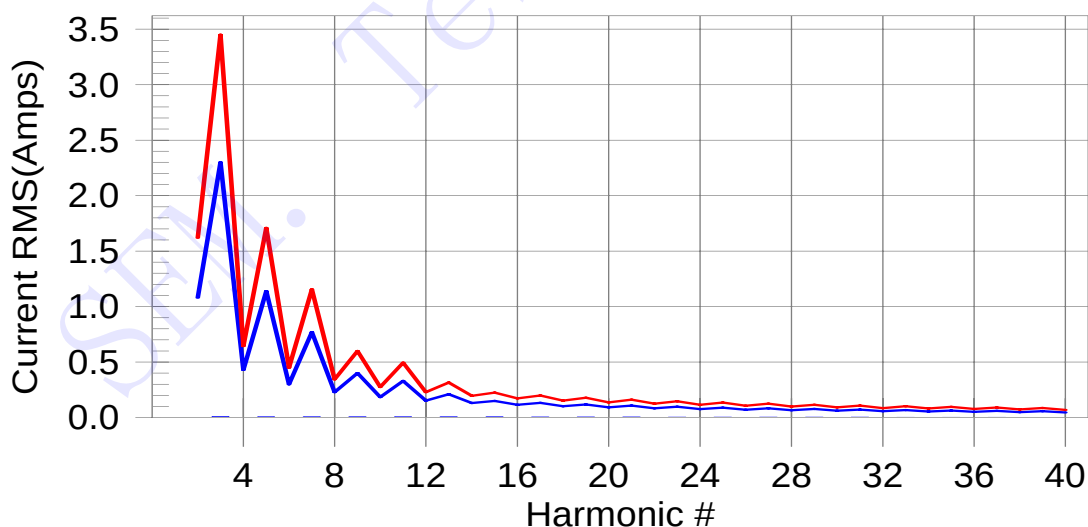
Data file name: H-000134.cts_data

Comment: TM1(Empty Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

Current & voltage waveforms**Harmonics and Class A limit line****European Limits****Test result: Pass Worst harmonic was #21 with 4.79% of the limit.**

Current Test Result Summary (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

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

Test Margin: 100

Test date: 2013-7-22

Start time: 10:42:08 AM

End time: 10:44:59 AM

Test duration (min): 2.5

Data file name: H-000134.cts_data

Comment: TM1(Empty Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

THC(A): 0.02

I-THD(%): 63.71

POHC(A): 0.005

POHC Limit(A): 0.309

Highest parameter values during test:

V_RMS (Volts): 231.45

Frequency(Hz): 50.00

I_Peak (Amps): 0.409

I_RMS (Amps): 0.043

I_Fund (Amps): 0.033

Crest Factor: 9.613

Power (Watts): 1.9

Power Factor: 0.205

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	0.12	Pass
3	0.008	2.300	0.3	0.009	3.450	0.26	Pass
4	0.001	0.430	0.0	0.001	0.645	0.21	Pass
5	0.007	1.140	0.6	0.008	1.710	0.45	Pass
6	0.001	0.300	0.0	0.002	0.450	0.34	Pass
7	0.007	0.770	0.9	0.008	1.155	0.65	Pass
8	0.001	0.230	0.0	0.002	0.345	0.44	Pass
9	0.007	0.400	1.7	0.007	0.600	1.21	Pass
10	0.001	0.184	0.0	0.002	0.276	0.54	Pass
11	0.007	0.330	2.0	0.007	0.495	1.42	Pass
12	0.001	0.153	0.0	0.001	0.230	0.61	Pass
13	0.006	0.210	3.0	0.007	0.315	2.14	Pass
14	0.001	0.131	0.0	0.001	0.197	0.65	Pass
15	0.006	0.150	4.1	0.006	0.225	2.85	Pass
16	0.001	0.115	0.0	0.001	0.173	0.71	Pass
17	0.006	0.132	4.4	0.006	0.199	3.07	Pass
18	0.001	0.102	0.0	0.001	0.153	0.73	Pass
19	0.005	0.118	4.6	0.006	0.178	3.22	Pass
20	0.001	0.092	0.0	0.001	0.138	0.77	Pass
21	0.005	0.107	4.8	0.005	0.161	3.33	Pass
22	0.001	0.084	0.0	0.001	0.125	0.76	Pass
23	0.005	0.098	0.0	0.005	0.147	3.39	Pass
24	0.000	0.077	0.0	0.001	0.115	0.74	Pass
25	0.004	0.090	0.0	0.005	0.135	3.41	Pass
26	0.000	0.071	0.0	0.001	0.106	0.76	Pass
27	0.004	0.083	0.0	0.004	0.125	3.41	Pass

28	0.001	0.066	0.0	0.001	0.099	0.89	Pass
29	0.004	0.078	0.0	0.004	0.116	3.33	Pass
30	0.000	0.061	0.0	0.001	0.092	0.71	Pass
31	0.003	0.073	0.0	0.003	0.109	3.19	Pass
32	0.001	0.058	0.0	0.001	0.086	0.91	Pass
33	0.003	0.068	0.0	0.003	0.102	3.04	Pass
34	0.000	0.054	0.0	0.001	0.081	0.66	Pass
35	0.003	0.064	0.0	0.003	0.096	2.84	Pass
36	0.000	0.051	0.0	0.000	0.077	0.51	Pass
37	0.002	0.061	0.0	0.002	0.091	2.59	Pass
38	0.000	0.048	0.0	0.000	0.073	0.47	Pass
39	0.002	0.058	0.0	0.002	0.087	2.36	Pass
40	0.000	0.046	0.0	0.000	0.069	0.43	Pass

Voltage Source Verification Data (Run time)

EUT: 5 Bay Lithium-Ion Battery Charger

Tested by: Daniel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2013-7-22

Start time: 10:42:08 AM

End time: 10:44:59 AM

Test duration (min): 2.5

Data file name: H-000134.cts_data

Comment: TM1(Empty Load)

Customer: GlobTek, Inc.

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 231.45

Frequency(Hz): 50.00

I_Peak (Amps): 0.409

I_RMS (Amps): 0.043

I_Fund (Amps): 0.033

Crest Factor: 9.613

Power (Watts): 1.9

Power Factor: 0.205

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.059	0.463	12.83	OK
3	0.566	2.083	27.15	OK
4	0.042	0.463	8.98	OK
5	0.077	0.926	8.31	OK
6	0.031	0.463	6.78	OK
7	0.024	0.694	3.52	OK
8	0.016	0.463	3.44	OK
9	0.016	0.463	3.47	OK
10	0.011	0.463	2.33	OK
11	0.012	0.231	5.39	OK
12	0.008	0.231	3.57	OK
13	0.015	0.231	6.62	OK
14	0.006	0.231	2.80	OK
15	0.010	0.231	4.54	OK
16	0.009	0.231	3.99	OK
17	0.016	0.231	6.74	OK
18	0.009	0.231	3.91	OK
19	0.008	0.231	3.62	OK
20	0.017	0.231	7.18	OK
21	0.009	0.231	3.95	OK
22	0.005	0.231	2.31	OK
23	0.008	0.231	3.35	OK
24	0.004	0.231	1.64	OK
25	0.009	0.231	3.97	OK
26	0.002	0.231	1.05	OK
27	0.011	0.231	4.82	OK

28	0.004	0.231	1.74	OK
29	0.004	0.231	1.76	OK
30	0.004	0.231	1.57	OK
31	0.006	0.231	2.55	OK
32	0.003	0.231	1.27	OK
33	0.005	0.231	2.31	OK
34	0.003	0.231	1.26	OK
35	0.005	0.231	2.36	OK
36	0.002	0.231	0.98	OK
37	0.004	0.231	1.53	OK
38	0.002	0.231	0.92	OK
39	0.004	0.231	1.90	OK
40	0.008	0.231	3.63	OK

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	2013-05-07	2014-05-06
Power Source	California Instrument	5001IX-CTS-400	60077	2013-05-07	2014-05-06

6.2 Test Procedure

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

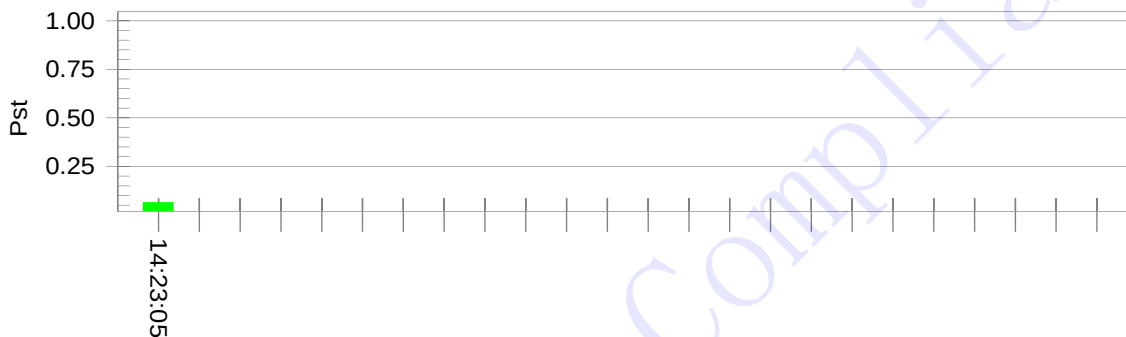
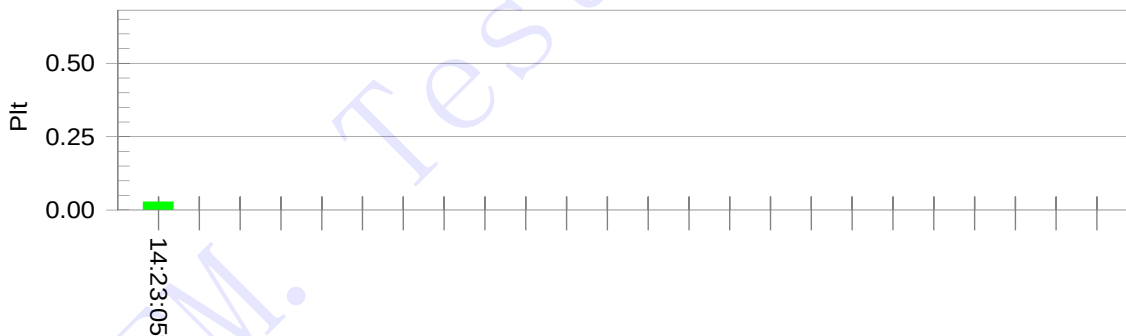
6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

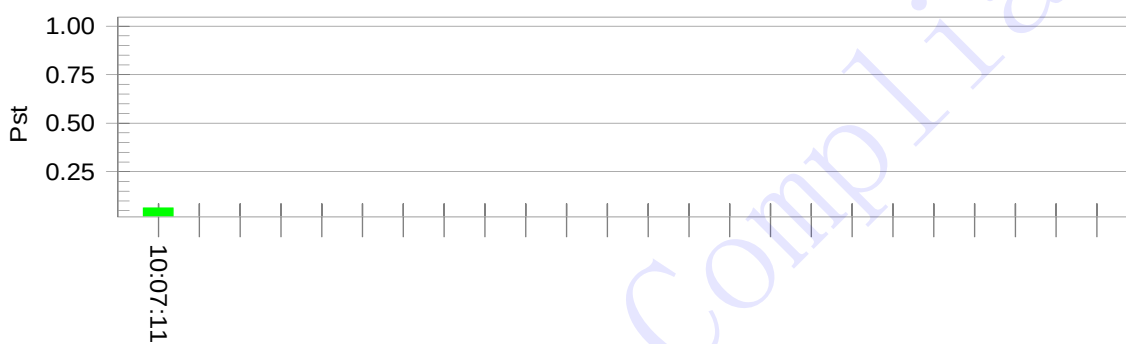
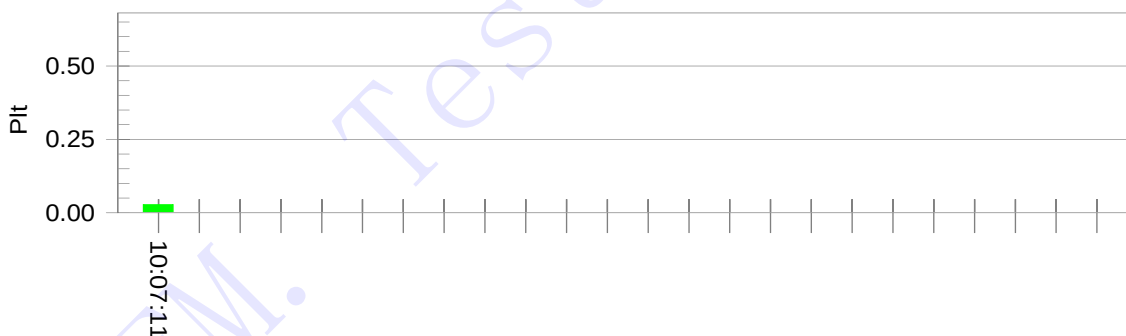
Environmental Conditions

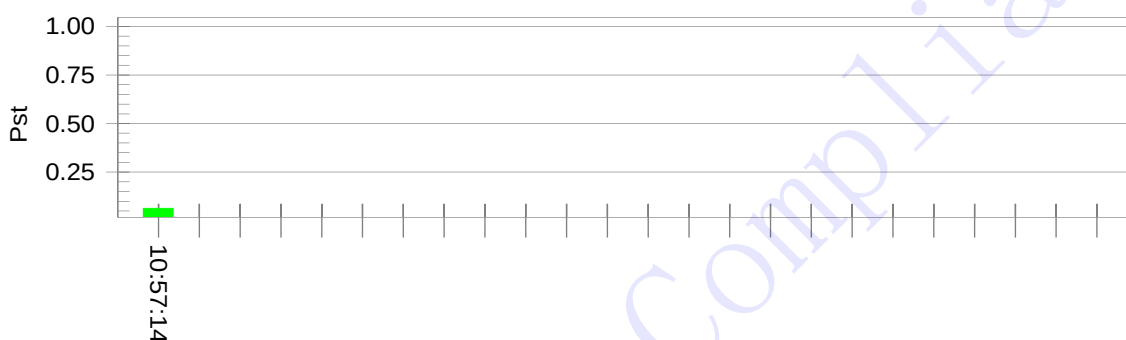
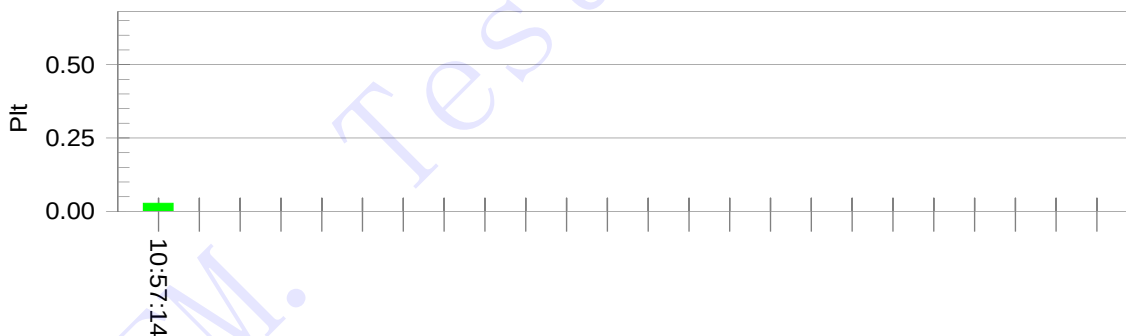
Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

6.4 Voltage Fluctuation and Flicker Test Data

Flicker Test Summary per EN/IEC61000-3-3 (Run time)**EUT: 5 Bay Lithium-Ion Battery Charger****Tested by: Daniel****Test category: All parameters (European limits)****Test Margin: 100****Test date: 2013-7-22****Start time: 02:12:45 PM****End time: 02:23:06 PM****Test duration (min): 10****Data file name: F-000101.cts_data****Comment: TM1(Full Load)****Customer: GlobTek, Inc.****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): 231.13**

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

Flicker Test Summary per EN/IEC61000-3-3 (Run time)**EUT: 5 Bay Lithium-Ion Battery Charger****Tested by: Daniel****Test category: All parameters (European limits)****Test Margin: 100****Test date: 2013-7-18****Start time: 09:56:51 AM****End time: 10:07:12 AM****Test duration (min): 10****Data file name: F-000095.cts_data****Comment: TM1(Half Load)****Customer: GlobTek, Inc.****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): 231.26****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**

Flicker Test Summary per EN/IEC61000-3-3 (Run time)**EUT: 5 Bay Lithium-Ion Battery Charger****Tested by: Daniel****Test category: All parameters (European limits)****Test Margin: 100****Test date: 2013-7-22****Start time: 10:46:54 AM****End time: 10:57:15 AM****Test duration (min): 10****Data file name: F-000135.cts_data****Comment: TM1(Empty Load)****Customer: GlobTek, Inc.****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): 231.46****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	2013-05-07	2014-05-06

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

TM1 (Full Load)

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
Gap	A	A	A	A	A	A	A	A		
Port	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
Metal Shell	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-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 Levels (kV)									
Test Points	-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	2013-05-07	2014-05-06
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2013-05-07	2014-05-06
Power Amplifier	AR	150W1000	300999	2013-05-07	2014-05-06
Power Amplifier	AR	25S1G4AM1	305993	2013-05-07	2014-05-06
Trilog Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
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

TM1 (Full Load)

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	2013-05-07	2014-05-06
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2013-05-07	2014-05-06

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

TM1 (Full Load)

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	A	A	A	A	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE	A	A	A	A	/	/	/	/
	L2 + PE	A	A	A	A	/	/	/	/
	L1+L2+PE	A	A	A	A	/	/	/	/
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	2013-05-07	2014-05-06

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

TM1 (Full Load)

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N, L-PE, N-PE	A	/
2	1kV	±	L-N, L-PE, N-PE	A	/
3	2kV	±	L-PE, N-PE	A	/
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	2013-05-07	2014-05-06
Attenuator	EMTEST	MA-500	1009	2013-05-07	2014-05-06
CDN	Luthi	L-801M2/M3	2665	2013-05-07	2014-05-06

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

TM1 (Full Load)

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	2013-05-07	2014-05-06
Coil	KEYTEK	F-1000-4-8	0533	2013-05-07	2014-05-06

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

TM1 (Full Load)

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	2013-05-07	2014-05-06

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

TM1 (Full Load)

U: Vlotage 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



EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



EUT View 2



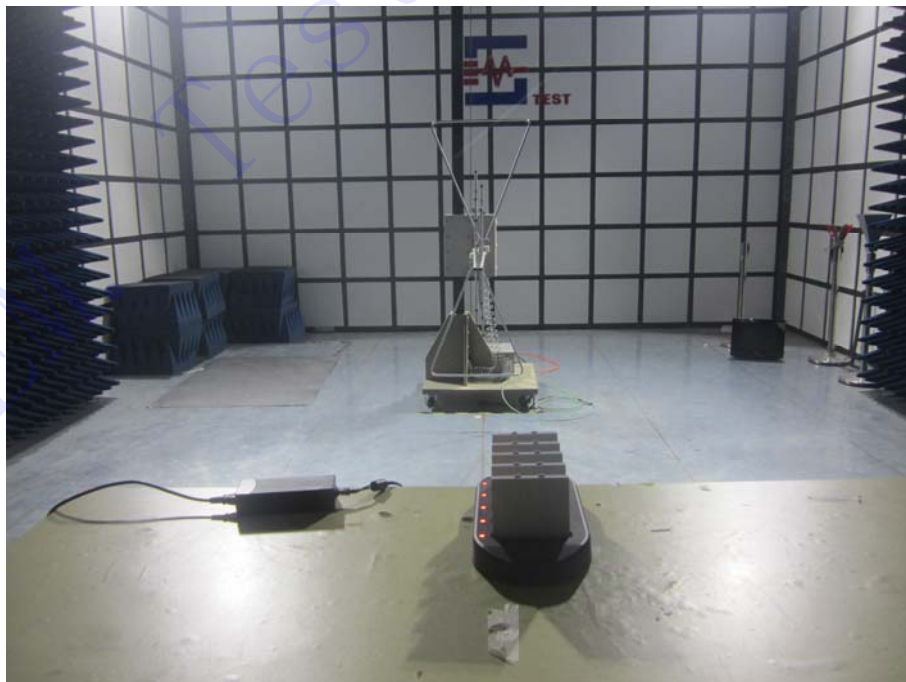
EUT View 3**EUT View 4**

EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View



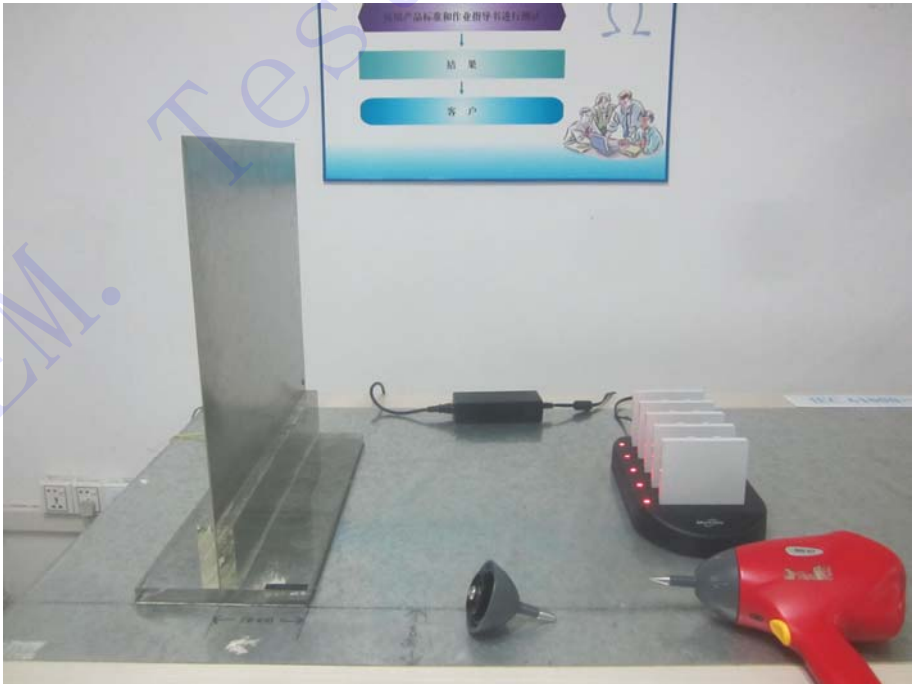
Radiation Emission Test View

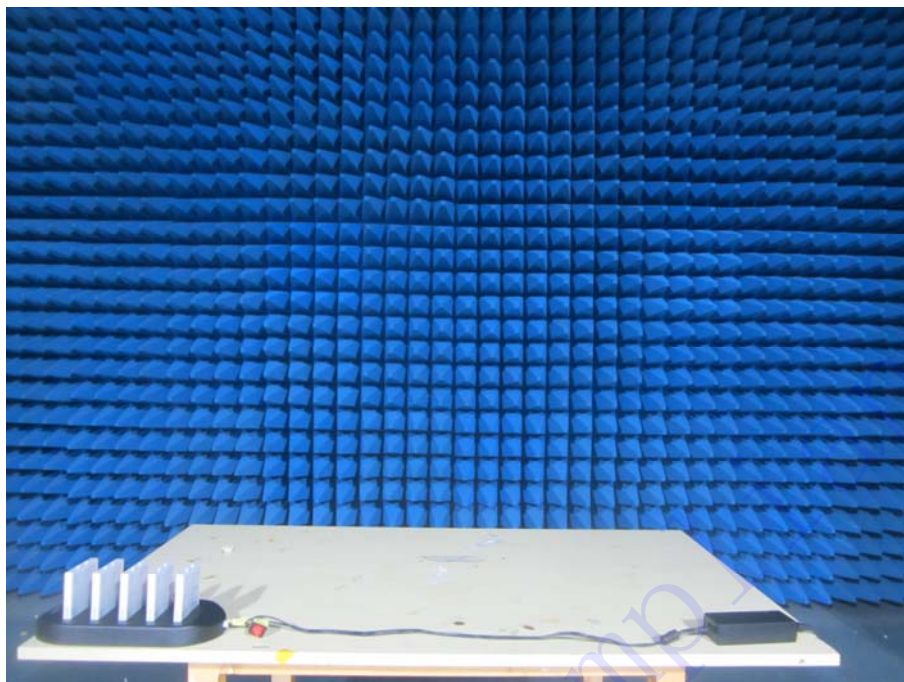


Harmonic/Flicker Test View



IEC61000-4-2 Test View



IEC61000-4-3 Test View**IEC61000-4-4/5/11 Test View**

IEC61000-4-6 Test View



******* END OF REPORT *******