

EMC TEST REPORT
FOR
VOLTRONIC POWER Solar Charger Controller

Report Number : EMC-E20120303E

Model/Type : SCC-MPPT 600

Prepared for : VOLTRONIC POWER TECHNOLOGY CORP.

Address : 1st Floor, Building 1, HengChangRong Industrial Park,
Private Industrial Zone, Shilongzai Community,
Shiyan Street, Bao An District, Shenzhen, China

Prepared by : VOLTRONIC POWER TECHNOLOGY CORP.

Address : 1st Floor, Building 1, HengChangRong Industrial Park,
Private Industrial Zone, Shilongzai Community,
Shiyan Street, Bao An District, Shenzhen, China

Tel: +86-755-29182809

Fax: +86-755-29182982

Date of Test : July.2011

Date of Report:Feb.2012

TABLE OF CONTENT

- 1. GENERAL INFORMATION.....**
 - 1.1 Description of Device (EUT).....
 - 1.2 Description of Test Facility.....
 - 1.3 Measurement Uncertainty.....
- 2. MEASURING DEVICE AND TEST EQUIPMENT.....**
 - 2.1 For Radiated Emission Measurement.....
 - 2.2 For Electrostatic Discharge Immunity Test.....
 - 2.3 For RF Strength Susceptibility Test.....
 - 2.4 For Electrical Fast Transient / Burst Immunity Test.....
 - 2.5 For Surge Immunity Test.....
 - 2.6 For Injected Current Susceptibility Test.....
 - 2.7 For Magnetic Field Immunity Test.....
- 3. RADIATED EMISSION MEASUREMENT.....**
 - 3.1 Block Diagram of Test Setup.....
 - 3.2 Measuring Standard.....
 - 3.3 Radiated Emission Limits.....
 - 3.4 EUT Configuration on Test.....
 - 3.5 Operating Condition of EUT.....
 - 3.6 Test Procedure.....
 - 3.7 Measuring Results.....
- 4. ELECTROSTATIC DISCHARGE IMMUNITY TEST.....**
 - 4.1 Block Diagram of Test Setup.....
 - 4.2 Test Standard.....
 - 4.3 Severity Levels and Performance Criterion.....
 - 4.4 Operating Condition of EUT.....
 - 4.5 Test Procedure.....
 - 4.6 Test Results.....
- 5. RF FIELD STRENGTH SUSCEPTIBILITY TEST.....**
 - 5.1 Block Diagram of Test Setup.....
 - 5.2 Test Standard.....
 - 5.3 Severity Levels and Performance Criterion.....
 - 5.4 Operating Condition of EUT.....
 - 5.5 Test Procedure.....
 - 5.6 Test Results.....
- 6. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST.....**
 - 6.1 Block Diagram of Test Setup.....
 - 6.2 Test Standard.....
 - 6.3 Severity Levels and Performance Criterion.....
 - 6.4 Operating Condition of EUT.....
 - 6.5 Test Procedure.....
 - 6.6 Test Result.....

- 7. SURGE IMMUNITY TEST.....**
 - 7.1 Block Diagram of Test Setup.....
 - 7.2 Test Standard.....
 - 7.3 Severity Levels and Performance Criterion.....
 - 7.4 Operating Condition of EUT.....
 - 7.5 Test Procedure.....
 - 7.6 Test Result.....
- 8. INJECTED CURRENTS SUSCEPTIBILITY TEST.....**
 - 8.1 Block Diagram of Test Setup.....
 - 8.2 Test Standard.....
 - 8.3 Severity Levels and Performance Criterion.....
 - 8.4 Operating Condition of EUT.....
 - 8.5 Test Procedure.....
 - 8.6 Test Results.....
- 9. MAGNETIC FIELD SUSCEPTIBILITY TEST.....**
 - 9.1 Block Diagram of Test Setup.....
 - 9.2 Test Standard.....
 - 9.3 Severity Levels and Performance Criterion.....
 - 9.4 Operating Condition of EUT.....
 - 9.5 Test Procedure.....
 - 9.6 Test Results.....
- 10. TEST PHOTOGRAPHS.....**
 - 10.1 Photo of Radiation Emission Measurement.....
 - 10.2 Photo of Electrostatic Discharge Test.....
 - 10.3 Photo of RF field Strength Susceptibility Test.....
 - 10.4 Photo of Electrical Fast Transient / Burst Test.....
 - 10.5 Photo of Surge Test.....
 - 10.6 Photo of Injected currents Susceptibility Test.....
 - 10.7 Photo of Magnetic Field Immunity Test.....

APPENDIX I
APPENDIX II
APPENDIX III

TEST REPORT DESCRIPTION

The device (EUT) is tested by VOLTRONIC POWER TECHNOLOGY CORP. to Determine the maximum emission levels emanating from the device and severe levels of the device can endure and its performance criterion. The test results are contained in this test report and VOLTRONIC POWER TECHNOLOGY CORP. is assumed full responsible for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with below procedure.

Emission Measurement	
Description	Standard
Radiated Emission	EN 61000-6-3:2007
Immunity Measurement	
Electrostatic discharge immunity test	EN 61000-4-2:2009
Radio-frequency, Continuous Radiated Disturbance	EN61000-4-3:2006+A1:2008+A2:2010
Electrical fast transients/burst immunity test	EN61000-4-4:2004+A1:2010
Surge immunity test	EN61000-4-5:2006
Conducted RF Immunity	EN 61000-4-6:2009
Power Frequency Magnetic Field	EN 61000-4-8:2010

This report only applies to above tested sample and shall not be reproduced in part without written approval from VOLTRONIC POWER TECHNOLOGY CORP.

Date of Test: July.2011

Prepared By: Jinming

Reviewer : Yinxiang

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT : Solar Charger Controller

Model Number : SCC-MPPT 600

Power Supply : Input: 30Vdc-75Vdc
Output: 24Vdc, 25A

Test Voltage : DC 36V

Applicant : VOLTRONIC POWER TECHNOLOGY CORP.

Address : 1st Floor, Building 1, HengChangRong Industrial Park,
Private Industrial Zone, Shilongzai Community, Shiyan
Street, Bao An District, Shenzhen, China

Manufacturer : VOLTRONIC POWER TECHNOLOGY CORP.

Address : 1st Floor, Building 1, HengChangRong Industrial Park,
Private Industrial Zone, Shilongzai Community, Shiyan
Street, Bao An District, Shenzhen, China

Date of Test : July.2011

Date of Received : Feb.2012

1.2 Description of Support Device

N/A

1.3 Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2010.10.29
The certificate is valid until 2013.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

1.4 Measurement Uncertainty

Radiation Uncertainty : $U_r = 3.3\text{dB}$ (3m Chamber)

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1 For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 29, 2011	1 Year
2.	Pre-Amplifier	HP	8447D	2944A07999	May 29, 2011	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2011	1 Year
4.	Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2011	1 Year
5.	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA91703 99	May 29, 2011	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2011	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	May 29, 2011	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	May 29, 2011	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2011	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2011	1 Year

2.2 For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQAG	NSG 437	000409	May 29, 2011	1 Year

2.3 For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 29, 2011	1 Year
2.	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/34238	May 29, 2011	1 Year
3.	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 L3F	332	May 29, 2011	1 Year
4.	Power Amplifier	PRANA	AP32MT215	N/A	May 29, 2011	1 Year
5.	Power Amplifier	MILMEGA	AS0102-55	N/A	May 29, 2011	1 Year
6.	Signal Generator	AEROFLEX	2023B	N/A	May 29, 2011	1 Year
7.	Field Strength Meter	HOLADAY	HI-6005	N/A	May 29, 2011	1 Year
8.	RS232 Fiber Optic Modem	HOLADAY	HI-4413P	N/A	May 29, 2011	1 Year
9.	Log.-Per. Antenna	Schwarzbeck	VULP 9118E	N/A	May 29, 2011	1 Year

2.4 For Electrical Fast Transient / Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT4010	080981-16	May 29, 2011	1 Year
2.	Coupling Clamp	HAEFELY	IP-4A	147147	May 29, 2011	1 Year

EMC TEST REPORT

2.5 For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Controller	HAEFELY	Psurge 8000	174031	May 29, 2011	1 Year
2.	Impulse Module	HAEFELY	PIM 100	174124	May 29, 2011	1 Year
3.	Coupling Decoupling Filter	HAEFELY	PCD 130	172181	May 29, 2011	1 Year
4.	Coupling Module	HAEFELY	PCD122	174354	May 29, 2011	1 Year
5.	Surge Impulse Module	HAEFELY	PIM 120	174435	May 29, 2011	1 Year
6.	Coupling Module	HAEFELY	PCD 126A	174387	May 29, 2011	1 Year
7.	Impulse Module	HAEFELY	PIM 110	174391	May 29, 2011	1 Year

2.6 For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS500C	0900-12	May 29, 2011	1 Year
2.	CDN	EMTEST	CDN-M2	5100100100	May 29, 2011	1 Year
3.	CDN	EMTEST	CDN-M3	0900-11	May 29, 2011	1 Year
4.	Injection Clamp	EMTEST	F-2031-23 MM	368	May 29, 2011	1 Year
5.	Attenuator	EMTEST	ATT6	0010222A	May 29, 2011	1 Year

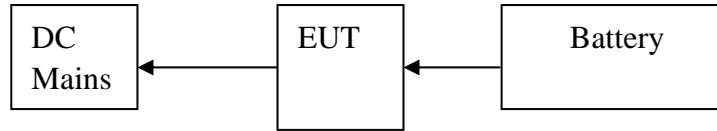
2.7 For Magnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 29, 2011	1 Year

3. RADIATED EMISSION MEASUREMENT

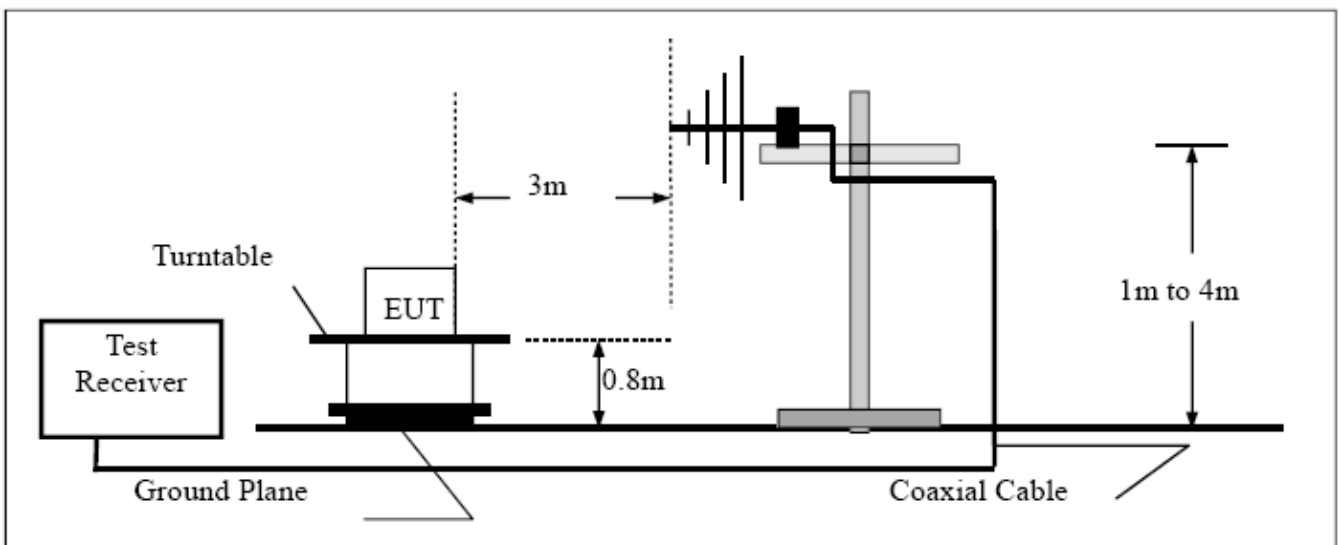
3.1 Block Diagram of Test Setup

3.1.1 Block diagram of connection between the EUT and simulators



(EUT: Solar charger Controller)

3.1.2 Block diagram of test setup (In chamber)



(EUT: Solar Charger Controller)

3.2 Measuring Standard

EN 61000-6-3:2007

3.3 Radiated Emission Limits

FREQUENCY Y (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBuV/m)
30~230	3	40
230~1000	3	47

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

3.4 EUT Configuration on Test

The EN 61000-6-3 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT : Solar charger Controller
Model Number : SCC-MPPT 600

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and the simulators as shown on 3.1.

3.5.2 Turn on the power of all equipments.

3.5.3 Let the EUT work in measuring mode(ON) and measure it.

3.6 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The Turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the receiver (ESCS30) is 120KHz.

All the scanning curves are attached in Appendix I .

3.7 Radiated Emission Test Results

PASS

The frequency range from 30MHz to 1000MHz is investigated.

Please refer to Appendix I .

4. ELECTROSTATIC DISCHARGE IMMUNITY TEST

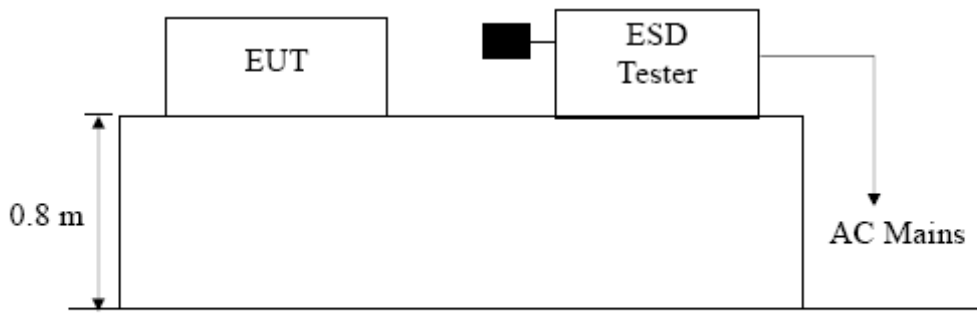
4.1 Block Diagram of Test Setup

4.1.1 Block diagram of connection between the EUT and simulators



(EUT: Solar charger Controller)

4.1.2 Block diagram of ESD test setup



(EUT: Solar Charger Controller)

4.2 Test Standard

EN 61000-6-1:2007

(EN 61000-4-2:2009 Severity Level:3 / Air Discharge: $\pm 8\text{kV}$,
Level:2/ Contact Discharge: $\pm 4\text{kV}$)

4.3 Severity Levels and Performance Criterion

4.3.1 Severity level

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

4.3.2 Performance criterion: B

4.4 Operating Condition of EUT

4.4.1 Setup the EUT as shown on Section 4.1

4.4.2 Turn on the power of all equipments.

4.4.3 Let the EUT work in measuring mode (ON) and measure it.

4.5 Test Procedure

4.5.1 Air Discharge:

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

4.5.2 Contact Discharge:

All the procedure shall be same as Section 4.5.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

4.5.3 Indirect discharge for horizontal coupling plane

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

4.5.4 Indirect discharge for vertical coupling plane

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

4.6 Test Results

PASS

Please refer to the following pages.

Electrostatic Discharge Test Result

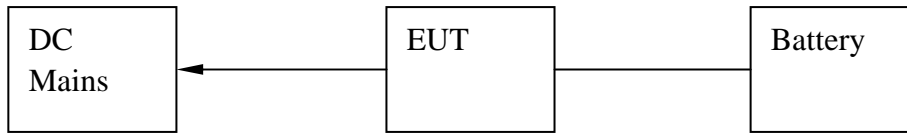
SHENZHEN EMTEK CO., LTD.

Applicant	: VOLTRONIC POWER TECHNOLOGY (SHENZHEN) CORP.	
EUT	: Solar Charger Controller	Test Date : June 30, 2011
M/N	: SCC-MPPT-600	Temperature : 22°C
Power Supply	: DC 36V	Humidity : 50%
Air discharge	: ± 8.0kV	Test Mode : ON
Contact discharge:	± 4.0kV	Criterion : B
Location	Kind A-Air Discharge C-Contact Discharge	Result
Slot	A	PASS
Screen	A	PASS
Button	A	PASS
Metal	C	PASS
Screw	C	PASS
HCP	C	PASS
VCP of front	C	PASS
VCP of rear	C	PASS
VCP of left	C	PASS
VCP of right	C	PASS
Note:		

5. RF FIELD STRENGTH SUSCEPTIBILITY TEST

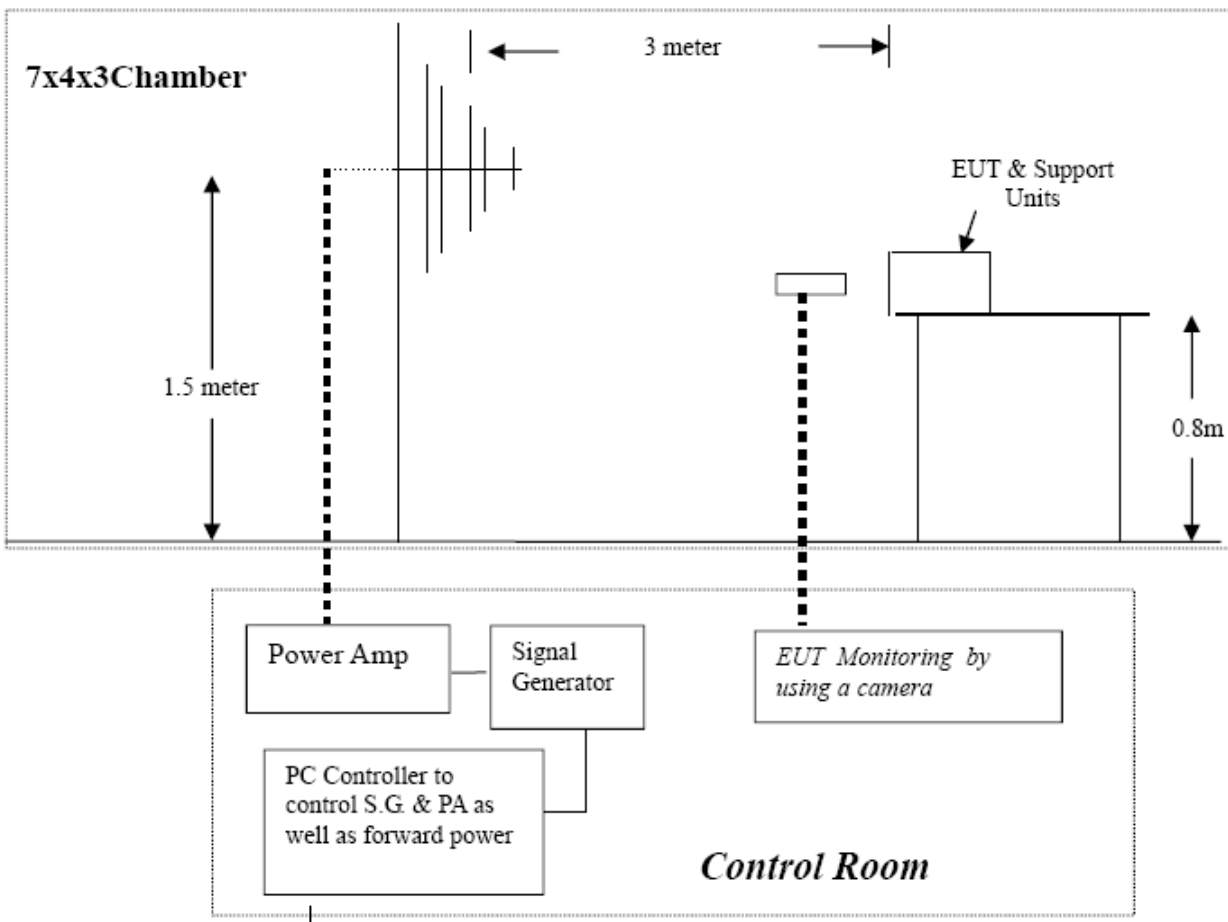
5.1 Block Diagram of Test Setup

5.1.1 Block diagram of connection between the EUT and Load



(EUT: Solar charger Controller)

5.1.2 Block diagram of RS test setup



(EUT: Solar Charger Controller)

5.2 Test Standard

EN 61000-6-1:2007

(EN 61000-4-3:2006+A1:2008+A2:2010 (Level 2: 3V/m))

5.3. Severity Levels and Performance Criterion

5.3.1 Severity Levels

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

5.3.2 Performance Criterion: A

5.4 Operating Condition of EUT

5.4.1 Setup the EUT as shown on Section 5.1

5.4.2 Turn on the power of all equipments.

5.4.3 Let the EUT work in measuring mode (ON) and measure it.

5.5 Test Procedure

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

All the scanning conditions are as following:

Condition of Test

Remarks

1. Fielded Strength

3V/m (Severity Level 2)

2. Radiated Signal

Modulated

3. Scanning Frequency

80-1000MHz

4. Sweeping time of radiated

0.0015 decade/s

5. Dwell Time

1 Sec.

5.6 Test Results

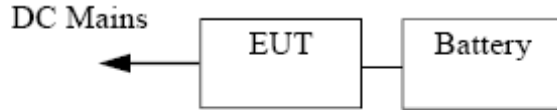
PASS.

Please refer to the following page.

6 .ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

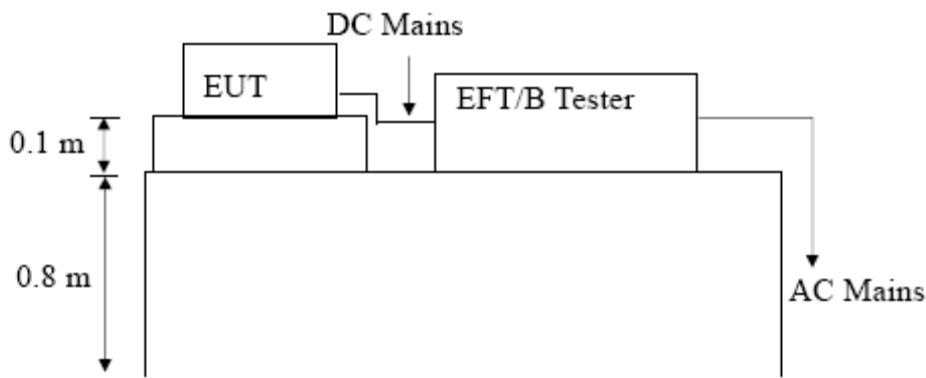
6.1 Block Diagram of Test Setup

6.1.1 Block Diagram of the EUT



(EUT: Solar Charger Controller)

6.1.2 EFT Test Setup



(EUT: Solar Charger Controller)

6.2 Test Standard

EN 61000-6-1:2007

(EN 61000-4-4:2004+A1:2010 (Level 1 : 0.5kV))

6.3 Severity Levels and Performance Criterion

6.3.1 Severity level

Open Circuit Output Voltag+10%		
Level	On Power Supply Lines	On I/O(Input/Output) Signal data and control lines
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X	Special	Special

6.3.2 Performance criterion: B

6.4 Operating Condition of EUT

6.4.1 Setup the EUT as shown in Section 6.1.

6.4.2 Turn on the power of all equipments.

6.4.3 Let the EUT work in test mode (ON) and measure it.

6.5 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

6.5.1 For input and output DC power ports:

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

6.5.2 For signal lines and control lines ports:

No I/O ports.

It's unnecessary to test.

6.5.3 For DC output line ports:

It's unnecessary to test.

6.6 Test Result

PASS.

Please refer to the following page.

EMC TEST REPORT

Electrical Fast Transient/Burst Test Results

SHENZHEN EMTEK CO., LTD.

Standard: <input checked="" type="checkbox"/> EN 61000-4-4		Result: <input checked="" type="checkbox"/> PASS / <input type="checkbox"/> FAIL	
Applicant : <u>VOLTRONIC POWER TECHNOLOGY (SHENZHEN) CORP.</u>			
EUT : <u>Solar Charger Controller</u>			
M/N : <u>SCC-MPPT-600</u>			
Input Voltage: <u>DC 36V</u>			
Criterion : B			
Ambient Condition : <u>22 °C</u> <u>50% RH</u>			
Operation Mode: ON			
Line : <input checked="" type="checkbox"/> DC Mains		Line : <input type="checkbox"/> Signal <input type="checkbox"/> I/O Cable	
Coupling : <input checked="" type="checkbox"/> Direct		Coupling : <input type="checkbox"/> Capacitive	
Test Time : 120s			
Line	Test Voltage	Result(+)	Result(-)
L			
N			
PE			
L、N			
L、PE			
N、PE			
L、N、PE			
Signal Line			
DC Line	0.5kV	PASS	PASS
Note:			
Test Equipment		Burst Tester Model : PEFT 4010	

7. SURGE IMMUNITY TEST

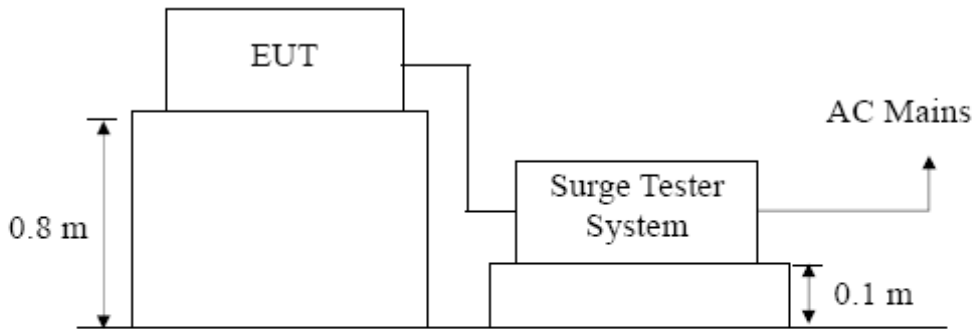
7.1 Block Diagram of Test Setup

7.1.1 Block Diagram of the EUT



(EUT: Solar Charger Controller)

7.1.2 Surge Test Setup



(EUT: Solar Charger Controller)

7.2 Test Standard

EN 61000-6-1:2007

(EN 61000-4-5:2006 (Line to Line: Level 1, 0.5kV))

7.3 Severity Levels and Performance Criterion

7.3.1 Severity level

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

7.3.2 Performance criterion: B

7.4 Operating Condition of EUT

7.4.1 Setup the EUT as shown in Section 7.1.

7.4.2 Turn on the power of all equipments.

7.4.3 Let the EUT work in test mode (ON) and measure it.

7.5 Test Procedure

7.5.1 Set up the EUT and test generator as shown on Section 7.1.2.

7.5.2 For line to line coupling mode, provide a 0.5KV 1.2/50us voltage surge (at open-circuit condition) and 8/10us current surge to EUT selected points.

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

7.5.4 Different phase angles are done individually.

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

7.6 Test Result

PASS.

Please refer to the following page.

8.4 Operating Condition of EUT

8.4.1 Setup the EUT as shown in Section 8.1.

8.4.2 Turn on the power of all equipments.

8.4.3 Let the EUT work in test mode (ON) and measure it.

8.5 Test Procedure

8.5.1 Set up the EUT, CDN and test generators as shown on Section 8.1.2.

8.5.2 Let the EUT work in test mode and measure it.

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

8.5.4 The disturbance signal described below is injected to EUT through CDN.

8.5.5 The EUT operates within its operational mode(s) under intended climatic conditions after power on.

8.5.6 The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.

8.5.7 The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

8.5.8 Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

8.6 Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

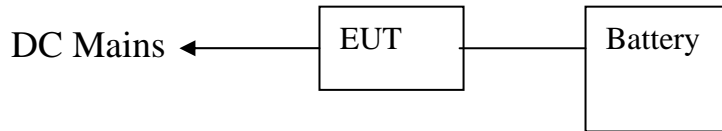
SHENZHEN EMTEK CO., LTD.

Applicant : <u>VOLTRONIC POWER TECHNOLOGY (SHENZHEN) CORP.</u>				
EUT : <u>Solar Charger Controller</u>		Test Date: <u>June 30, 2011</u>		
M/N : <u>SCC-MPPT-600</u>		Temperature : <u>22°C</u>		
Power Supply : <u>DC 36V</u>		Humidity : <u>58%</u>		
Test Engineer : <u>ANDY</u>				
Test Mode: <u>ON</u>				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	DC Line	3V	A	PASS
Test Mode : <u>N/A</u>				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
Remark : 1. Modulation Signal:1kHz 80% AM Measurement Equipment : Simulator: CWS 500 (SWITZERLAND EMTEST) CDN : <input checked="" type="checkbox"/> CDN-M2 (SWITZERLAND EMTEST) <input type="checkbox"/> CDN-M3 (SWITZERLAND EMTEST)		Note:		

9. MAGNETIC FIELD SUSCEPTIBILITY TEST

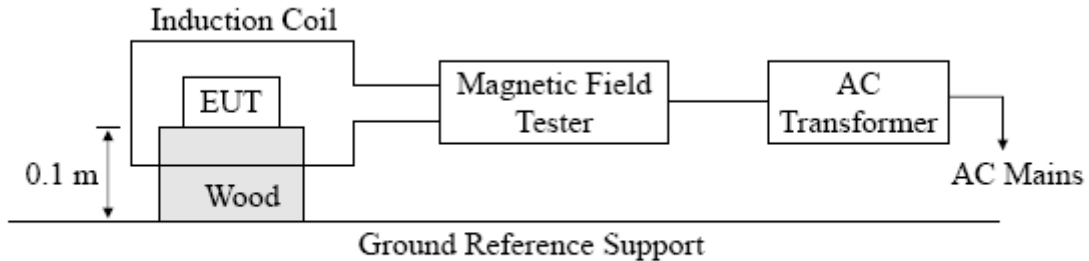
9.1 Block Diagram of Test Setup

9.1.1 Block diagram of test setup



(EUT: Solar Charger controller)

9.1.2 Magnetic field test setup



(EUT: Uninterruptible Power Supply)

9.2 Test Standard

EN 61000-6-1:2007

EN 61000-4-8:2010 (Severity Level 2: 3A/m)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity Levels

Level	Field Strength (V)
1	1
2	3
3	10
4	30
5	100
X	Special

9.3.2 Performance Criterion A

9.4 Operating Condition of EUT

9.4.1 Setup the EUT as shown in Section 9.1.

9.4.2 Turn on the power of all equipments.

9.4.3 Let the EUT work in test mode (ON) and measure it.

9.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. It also can reach the same aim by change the position of the EUT.

9.6 Test Results

PASS.

Please refer to the following page.

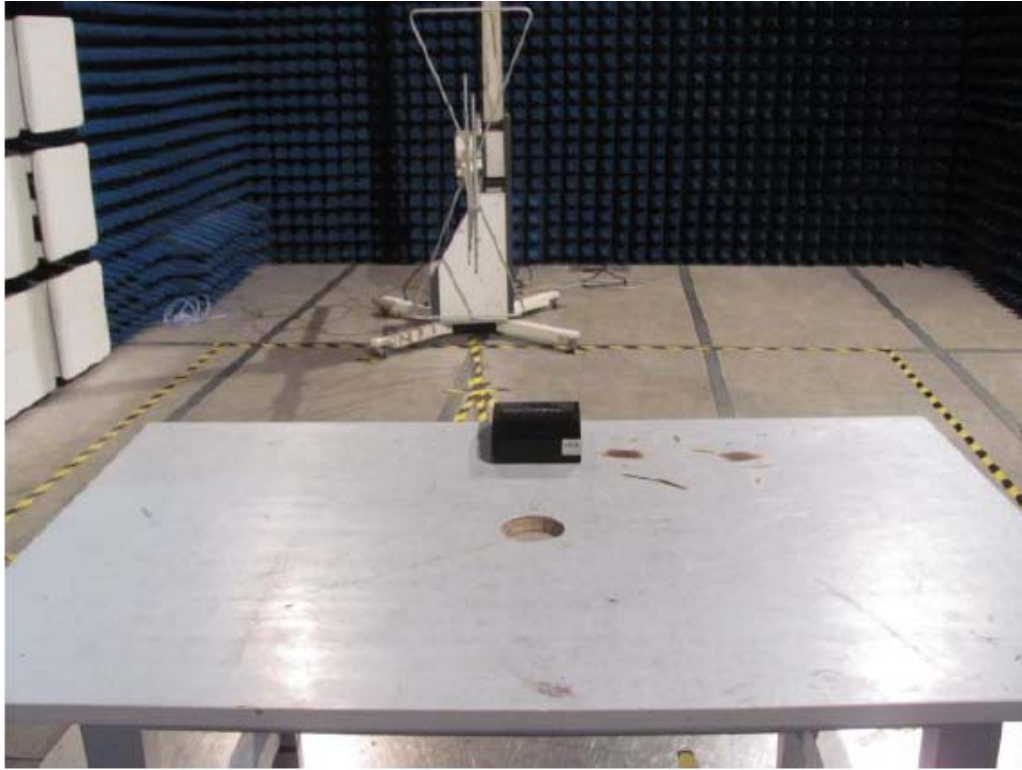
Magnetic Field Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Standard: <input checked="" type="checkbox"/> EN 61000-4-8		Result: <input checked="" type="checkbox"/> PASS / <input type="checkbox"/> FAIL		
Applicant : <u>VOLTRONIC POWER TECHNOLOGY (SHENZHEN) CORP.</u> EUT : <u>Solar Charger Controller</u> M/N : <u>SCC-MPPT-600</u> Input Voltage : <u>DC 36V</u> Date of Test : <u>June 30, 2011</u> Test Engineer: <u>ANDY</u> Ambient Condition : Temp : <u>22°C</u> Humid: <u>55%</u> Criterion: A				
Operation Mode: ON				
Test Level (A/m)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS
Operation Mode: N/A				
Test Level (A/m)	Testing Duration	Coil Orientation	Criterion	Result
Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1			
Note:				

10. TEST PHOTOGRAPHS

10.1 Photo of Radiation Emission Measurement



10.2 Photo of Electrostatic Discharge Test



10.3 Photo of RF Field Strength Susceptibility Test



10.4 Photo of Electrical Fast Transient / Burst Test



10.5 Photo of Surge Test



10.6 Photo of Injected Currents Susceptibility Test



10.7 Photo of Magnetic Field Immunity Test



APPENDIX I

EMC TEST REPORT



Site site #1 Polarization: *Vertical* Temperature: 26
 Limit: (RE)EN61000-6-3 3m Power: BAT Humidity: 60 %
 Mode: ON
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	117.0513	12.90	11.48	24.38	40.00	-15.62	QP		
2		121.7147	8.81	10.89	19.70	40.00	-20.30	QP		
3		135.7051	10.94	9.30	20.24	40.00	-19.76	QP		
4		141.9231	11.66	8.86	20.52	40.00	-19.48	QP		
5		448.1571	3.61	18.47	22.08	47.00	-24.92	QP		

*:Maximum data x:Over limit !:over margin

Operator: FBI

EMC TEST REPORT



Site site #1 Polarization: *Horizontal* Temperature: 26
 Limit: (RE)EN61000-6-3 3m Power: BAT Humidity: 60 %
 Mode: ON
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	117.0513	22.72	11.48	34.20	40.00	-5.80			QP
2		151.2500	21.26	9.06	30.32	40.00	-9.68			QP
3		157.4680	20.95	9.21	30.16	40.00	-9.84			QP

*:Maximum data x:Over limit !:over margin

Operator: FBI

APPENDIX II

Pictures



Fig.1 overview (I)



Fig.2 overview (II)

Pictures



Fig.3 overview (III)

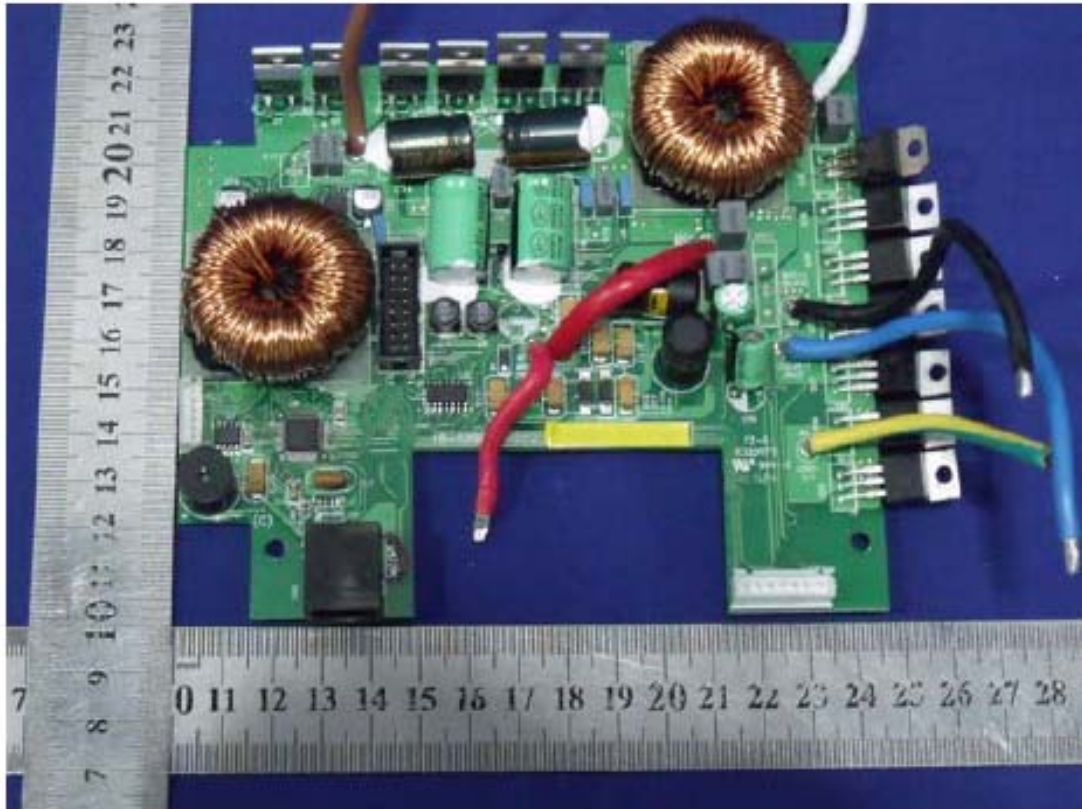


Fig.4 overview (IV)

Pictures



Fig.5 overview (V)