



## EMC TEST REPORT

**Product** : Smart Solar Charger  
**Trade mark** : N/A  
**Model/Type reference** : SZ-PSC2010  
**Serial Number** : N/A  
**Ratings** : DC 5V  
**Report Number** : EESZG10150012  
**Date** : Oct. 21, 2014  
**Regulations** : See below

Test Standards	Results
<input checked="" type="checkbox"/> EN 61000-6-3: 2007+A1:2011	PASS
<input checked="" type="checkbox"/> EN 61000-6-1: 2007	PASS

Prepared for:

**Smart Zone Technology Limited**  
**Flat A01, 5/F., Great Wall Factory Building,**  
**11 Cheung Shun St., Lai Chi Kok, Kowloon, HK**

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Date: Oct. 21, 2014

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*(Note: N/A means not applicable)*

## 1. GENERAL INFORMATION

**Applicant:** Smart Zone Technology Limited  
 Flat A01, 5/F., Great Wall Factory Building, 11 Cheung Shun St., Lai Chi Kok, Kowloon, HK  
**Manufacturer:** Shenzhen XinJunMeng Technology Limited  
 Flat A, 3/F., XuTai Industrial Park, Longwo Road, Longtian Village, Kengzi Sub-District, Pingshan District, Shenzhen Guangdong  
**EMC Directive:** 2004/108/EC  
**Product:** Smart Solar Charger  
**Trade mark:** N/A  
**Model/Type reference:** SZ-PSC2010  
**Serial Number:** N/A  
**Report Number:** EESZG10150012  
**Sample Received Date:** Oct. 15, 2014  
**Sample tested Date:** Oct. 15, 2014 to Oct. 21, 2014

## 2. TEST SUMMARY

The Product has been tested according to the following specifications:

EMISSION		
Standard	Test Item	Test
EN 61000-6-3	Conducted Emission	N/A <sup>1</sup>
EN 61000-6-3	Radiated Emission	Yes
EN 61000-3-2	Harmonic current emission	N/A <sup>1</sup>
EN 61000-3-3	Voltage fluctuations & flicker	N/A <sup>1</sup>

IMMUNITY (EN 61000-6-1)		
Standard	Test Item	Test
IEC 61000-4-2	Electrostatic discharge	Yes
IEC 61000-4-3	Radio-frequency electromagnetic field	Yes
IEC 61000-4-4	Fast transients	N/A <sup>1</sup>
IEC 61000-4-5	Surges	N/A <sup>1</sup>
IEC 61000-4-6	Radio-frequency common mode	N/A <sup>1</sup>
IEC 61000-4-8	Power-frequency magnetic fields	N/A <sup>2</sup>
IEC 61000-4-11	Voltage dips and voltage interruptions	N/A <sup>1</sup>

Remark:

1. The Product is powered by USB port.
2. The Product doesn't contain any device susceptible to magnetic fields.

### 3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Test item	Value (dB)
Radiated disturbance (30MHz to 1GHz)	4.9
Radiated disturbance (1GHz to 6GHz)	4.7

### 4. PRODUCT INFORMATION AND TEST SETUP

#### 4.1 PRODUCT INFORMATION

Ratings: DC 5V

#### 4.2 TEST SETUP CONFIGURATION

See test photographs attached in APPENDIX 1 PHOTOGRAPHS OF TEST SETUP for the actual connections between Product and support equipment.

#### 4.3 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	PC	LENOVO	SY2	SS05223608	---	Detachable
2.	PC	LENOVO	SY2	SS046999071	---	Detachable
3.	Monitor	LENOVO	D150C	3M0245174703 095	Shiled1.4m	Detachable
4.	Monitor	LENOVO	L151	4M0188163703 221	Shiled1.4m	Detachable
5.	Keyboard	LENOVO	SK-1788	83154300	Shiled1.4m	---
6.	Mouse	L.Selectron	OP-200	C1009029250D BNE	Shiled1.5m	---

#### Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### 5. FACILITIES AND ACCREDITATIONS

#### 5.1 TEST FACILITY

All measurement facilities used to collect the measurement data are located at Hongwei Industrial Zone, 70 Area, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

#### 5.2 TEST EQUIPMENT LIST

**Instrumentation:** The following list contains equipments used at CTI for testing.

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

**Equipment used during the tests:**

<b>3M Semi-anechoic Chamber (1)- Radiated disturbance Test</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Due Date</b>
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/12/2016
Spectrum Analyzer	Agilent	E4443A	MY45300910	01/15/2015
Receiver	R&S	ESCI	100435	07/08/2015
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	618	06/17/2015
Multi device Controller	ETS-LINGREN	2090	00057230	N/A

<b>Shielding Room No. 3 - Electrostatic discharge Test (IEC 61000-4-2)</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Due Date</b>
ESD Simulator	TESEQ	NSG437	478	10/16/2015

<b>3M Full-anechoic Chamber - Radio-frequency electromagnetic field Test (IEC 61000-4-3)</b>				
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Serial No.</b>	<b>Due Date</b>
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/12/2016
ESG Vector signal generators	Agilent	E4438C	MY45095744	01/15/2015
Power Amplifier	AR	150W1000	0322288	07/08/2015
Power Amplifier	AR	25S1G4A	0321112	07/08/2015
Stacked double Log.-Per. Antenna	schwarzbeck	STLP 9128 E special	9128ES-110	06/25/2015
Horn Antenna	AR	ATH800M5GA	0342530	06/25/2015

**5.3 LABORATORY ACCREDITATIONS AND LISTINGS**

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.



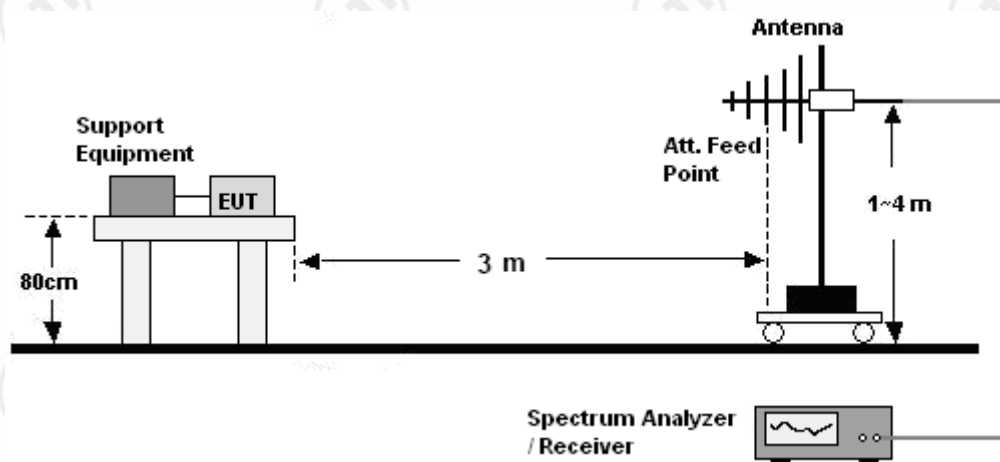
## 6. RADIATED EMISSION

### 6.1 LIMITS

Frequency (MHz)	Quasi-peak limits at 3m dB(μV/m)
30-230	40
230-1000	47

NOTE: The lower limit shall apply at the transition frequencies.

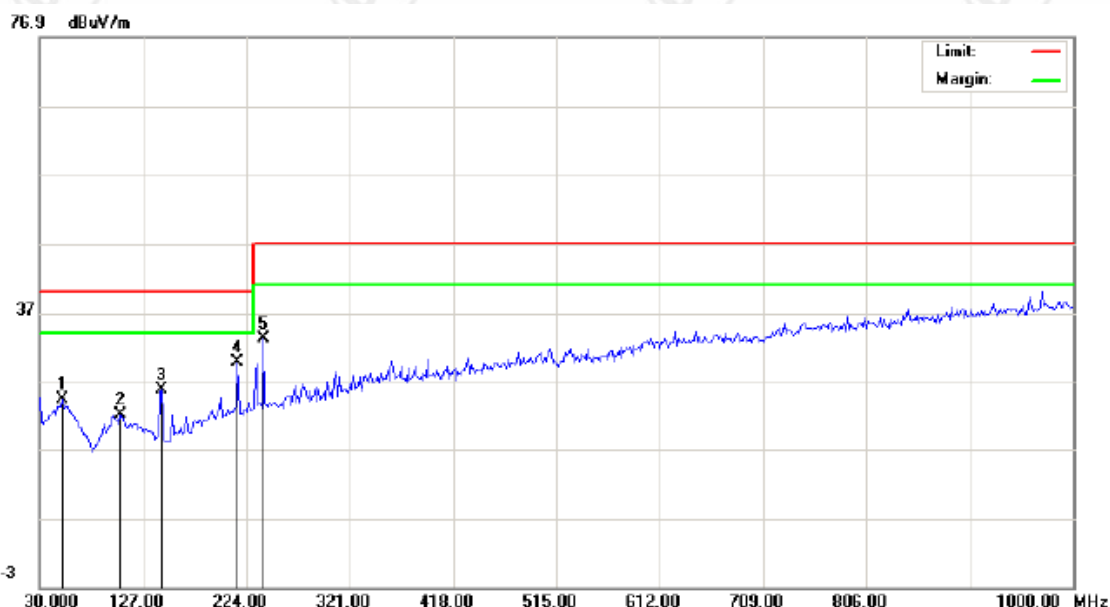
### 6.2 BLOCK DIAGRAM OF TEST SETUP



### 6.3 TEST PROCEDURE

- The Product was placed on the non-conductive turntable 0.8m above the ground at a chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

## 6.4 GRAPHS AND DATA



Site site #1

Polarization: **Horizontal**

Temperature: 22

Limit: EN 55022 Class B Radiation

Power: DC 5V

Humidity: 52 %

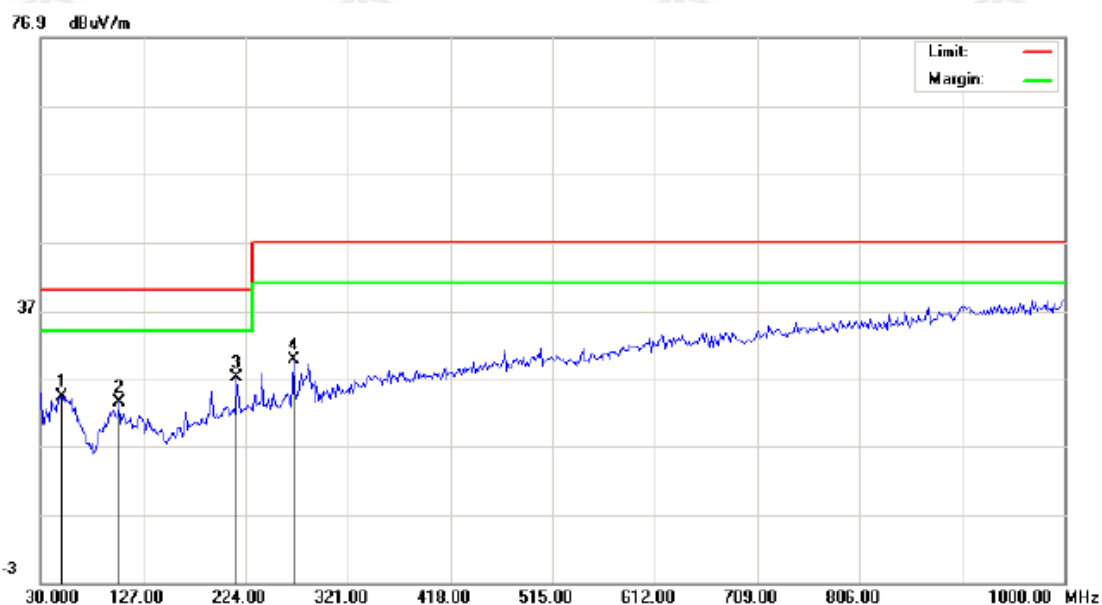
EUT: Smart Solar Charger

M/N: SZ-PSC2010

Mode: Charging

Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	51.0167	8.61			15.77	24.38			40.00		-15.62		P	
2	105.9833	8.90			13.32	22.22			40.00		-17.78		P	
3	144.7833	15.01			10.83	25.84			40.00		-14.16		P	
4	215.9167	15.11			14.75	29.86			40.00		-10.14		P	
5	240.1667	17.85			15.28	33.13			47.00		-13.87		P	



Site site #1

Limit: EN 55022 Class B Radiation

EUT: Smart Solar Charger

M/N: SZ-PSC2010

Mode: Charging

Note:

Polarization: **Vertical**

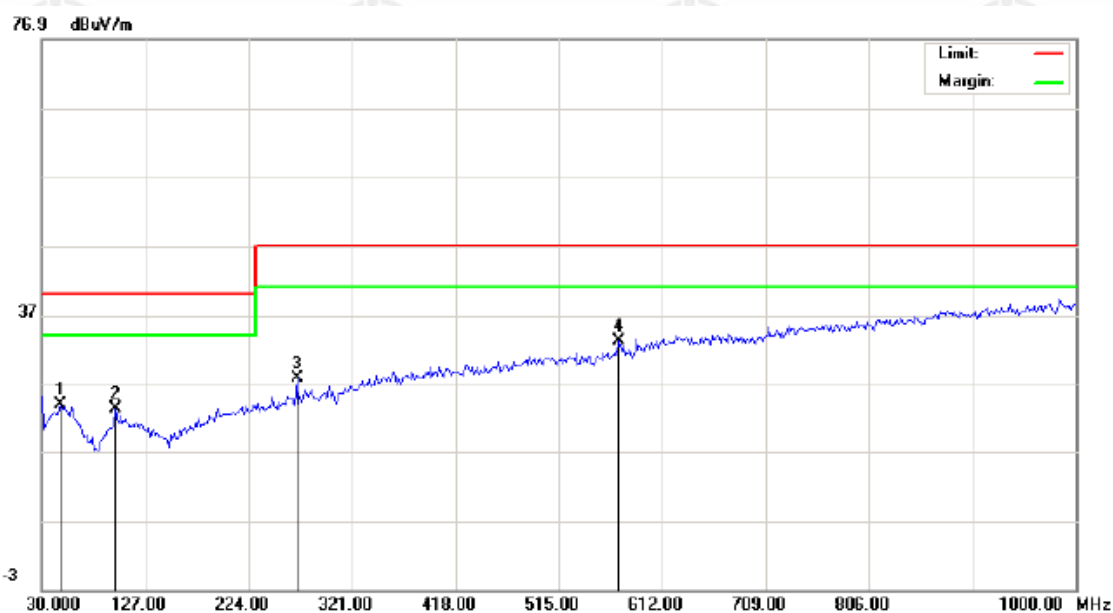
Power: DC 5V

Temperature: 22

Humidity: 52 %

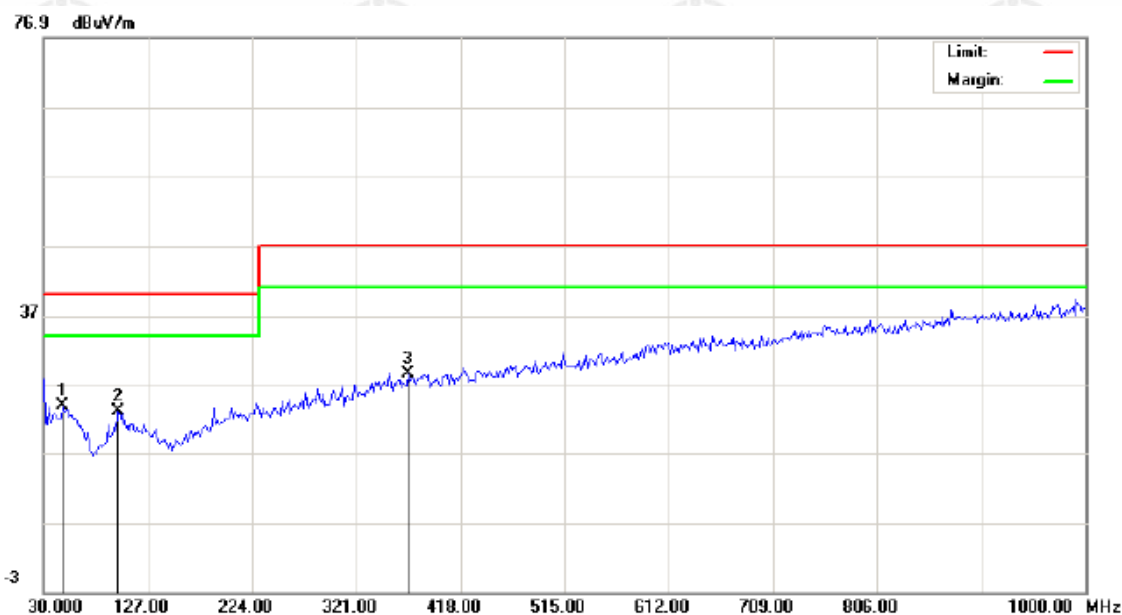
No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	49.4000	8.68			15.81	24.49			40.00		-15.51		P	
2	104.3667	10.28			13.42	23.70			40.00		-16.30		P	
3	215.9167	12.52			14.75	27.27			40.00		-12.73		P	
4	269.2667	13.80			15.96	29.76			47.00		-17.24		P	





Site site #1 Polarization: **Horizontal** Temperature: 22  
Limit: EN 55022 Class B Radiation Power: DC 5V Humidity: 52 %  
EUT: Smart Solar Charger  
M/N: SZ-PSC2010  
Mode: Discharging  
Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	47.7833	8.34			15.57	23.91			40.00		-16.09		P	
2	99.5167	9.82			13.59	23.41			40.00		-16.59		P	
3	269.2667	11.90			15.96	27.86			47.00		-19.14		P	
4	571.5833	10.49			22.76	33.25			47.00		-13.75		P	



Site site #1 Polarization: **Vertical** Temperature: 22  
Limit: EN 55022 Class B Radiation Power: DC 5V Humidity: 52 %  
EUT: Smart Solar Charger  
M/N: SZ-PSC2010  
Mode: Discharging  
Note:

No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	47.7833	8.35			15.57	23.92			40.00		-16.08		P	
2	99.5167	9.67			13.59	23.26			40.00		-16.74		P	
3	369.5000	9.29			19.26	28.55			47.00		-18.45		P	

**Remark:**

The highest frequency of the internal sources of the EUT is less than 108 MHz, so the measurement shall only be made up to 1 GHz.

## 7. IMMUNITY TEST

General Performance Criteria	
Product Standard	EN 61000-6-1:2007
<b>CRITERION A</b>	The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
<b>CRITERION B</b>	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
<b>CRITERION C</b>	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



#### 7.1.4 RESULTS & PERFORMANCE

**Product** : Smart Solar Charger  
**Power** : DC 5V  
**Mode** : Charging/Discharging

**Model/Type reference** : SZ-PSC2010  
**Temperature** : 25°C  
**Humidity** : 52%

Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Performance Criterion
Contact Discharge	Conductive Surfaces	4	10	B	A
	Indirect Discharge HCP	4	10	B	A
	Indirect Discharge VCP	4	10	B	A
Air Discharge	Slots, Apertures, and Insulating Surfaces	2, 4, 8	10	B	A

☒ There was no observable degradation in performance.



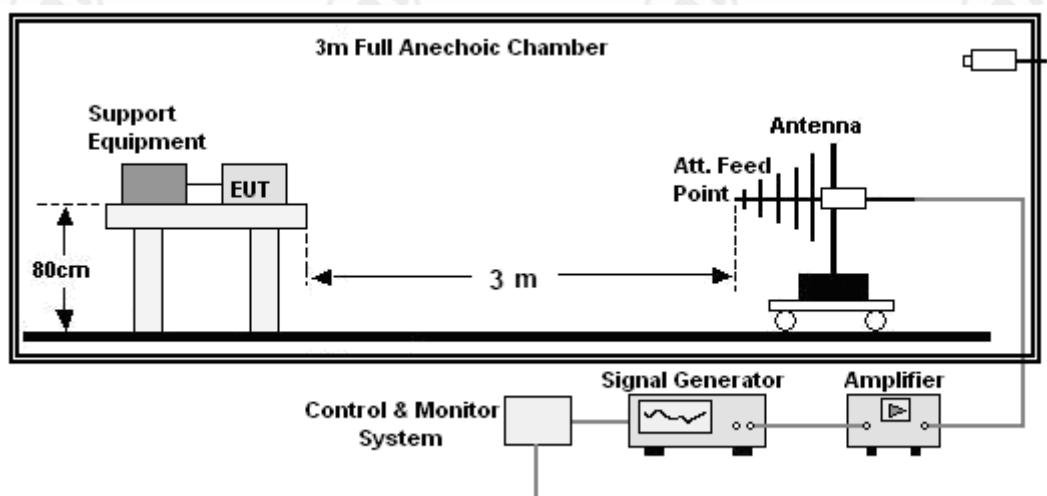
## 7.2 RADIO-FREQUENCY ELECTROMAGNETIC FIELD

### 7.2.1 TEST SPECIFICATION

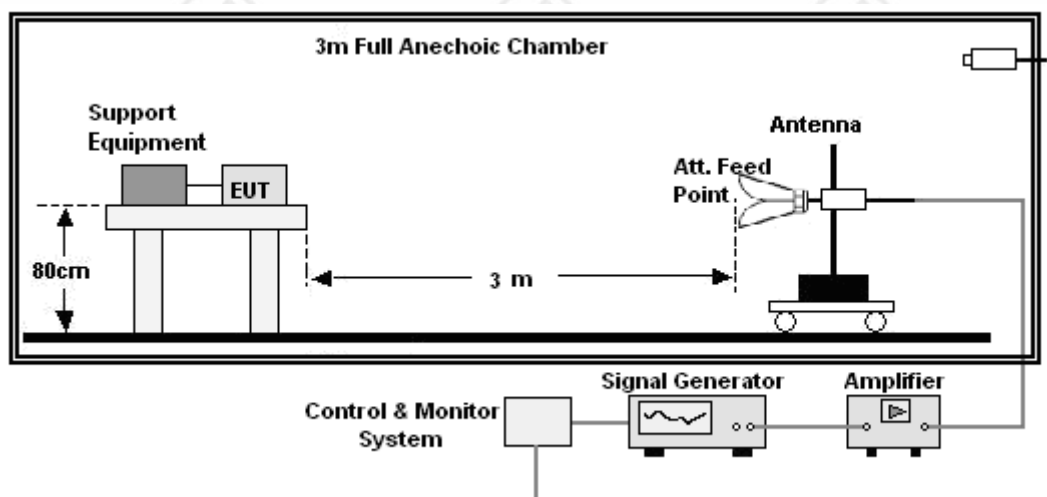
<b>Basic Standard</b>	: EN 61000-6-1 & IEC 61000-4-3
<b>Test Port</b>	: Enclosure port
<b>Step Size</b>	: 1%
<b>Modulation</b>	: 1kHz, 80% AM
<b>Dwell Time</b>	: 1 second
<b>Polarization</b>	: Horizontal & Vertical

### 7.2.2 BLOCK DIAGRAM OF TEST SETUP

Below 1GHz:



Above 1GHz:



### 7.2.3 TEST PROCEDURE

a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3m or 1m from the Product.

b. The frequency range is swept from 80MHz to 1000MHz and 1400MHz to 2700MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed  $1.5 \times 10^{-3}$  decade/s. Where the frequency range is swept incrementally, the step size was 1%.

c. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

### 7.2.4 RESULT & PERFORMANCE

**Product** : Smart Solar Charger

**Model/Type reference** : SZ-PSC2010

**Power** : DC 5V

**Temperature** : 22°C

**Mode** : Charging/Discharging

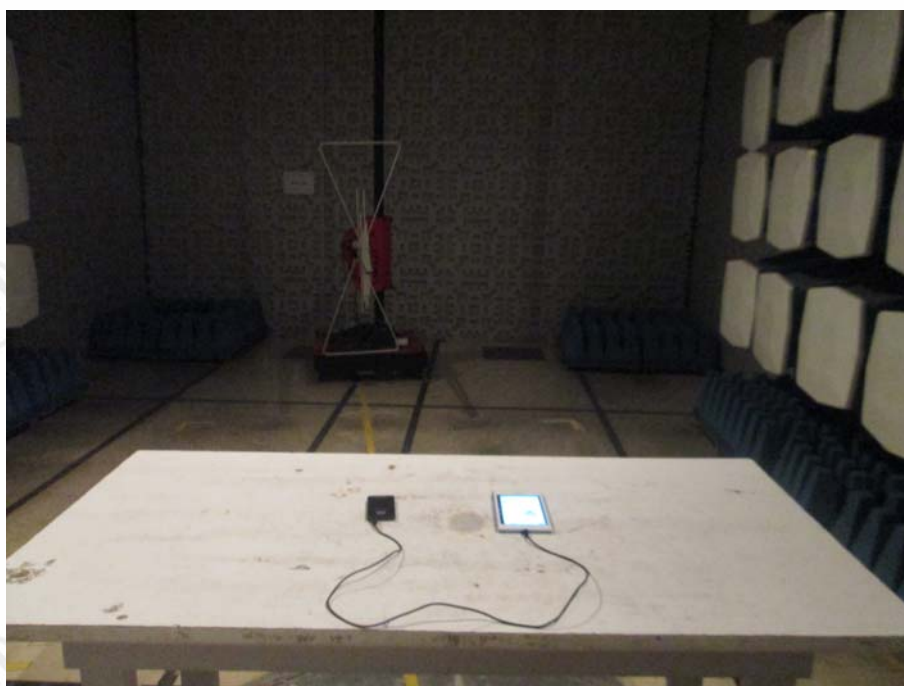
**Humidity** : 52%

Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Performance Criterion
80 - 1000	Front, Right, Back, Left	3	A	A
1400 - 2000	Front, Right, Back, Left	3	A	A
2000 - 2700	Front, Right, Back, Left	1	A	A

## APPENDIX 1 PHOTOGRAPHS OF TEST SETUP



**RADIATED EMISSION TEST SETUP (CHARGING)**



**RADIATED EMISSION TEST SETUP (DISCHARGING)**

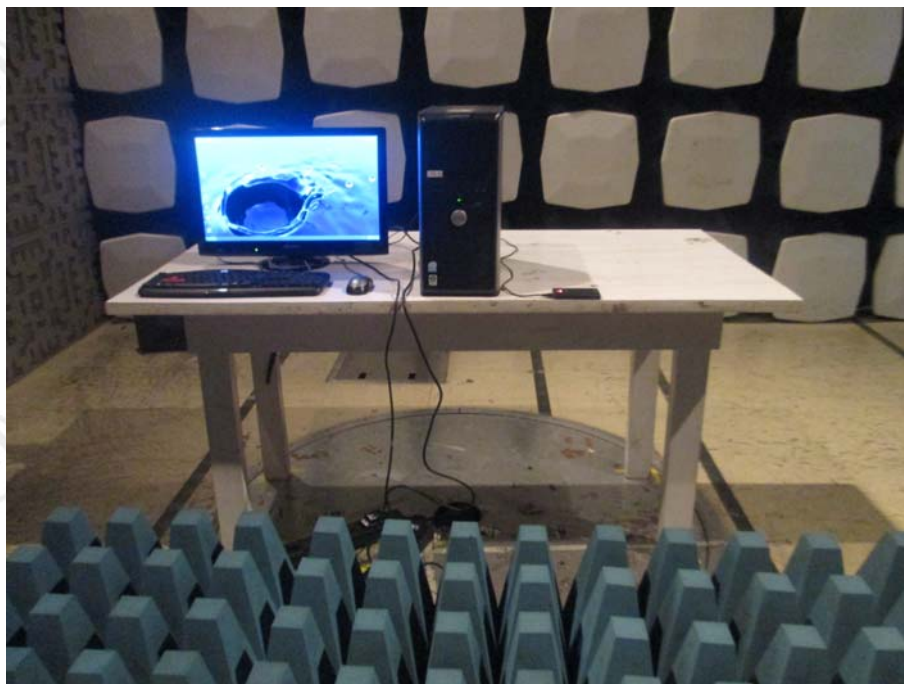


**ELECTROSTATIC DISCHARGE TEST SETUP (CHARGING)**



**ELECTROSTATIC DISCHARGE TEST SETUP (DISCHARGING)**





**RADIO-FREQUENCY ELECTROMAGNETIC FIELD TEST SETUP (CHARGING)**



**RADIO-FREQUENCY ELECTROMAGNETIC FIELD TEST SETUP (DISCHARGING)**



## APPENDIX 2 PHOTOGRAPHS OF PRODUCT



View of Product-1



View of Product-2



View of Product-3

\*\*\* End of Report \*\*\*

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.