

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
INTENTIONAL RADIATOR CERTIFICATION TO  
FCC PART 15 SUBPART C REQUIREMENT**

*OF*

**Solar Powered LED Security Light**

**MODEL No.: XP-2H38WC**

**FCC ID: Y9K-2H38WC**

**REPORT NO: ES110124163F**

**ISSUE DATE: February 11, 2011**

*Prepared for*

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**VERIFICATION OF COMPLIANCE**

Applicant:	TOEC TECHNOLOGY CO., LTD. NO.6 Taishan Rd., Hexi District, Tianjin-City, China 300211
Product Description:	Solar Powered LED Security Light
Model Number:	XP-2H38WC
File Number:	ES110124163F
Date of Test:	January 25, 2011 to January 30, 2011

**We hereby certify that:**

The above equipment was tested by SHENZHEN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.249.

The test results of this report relate only to the tested sample identified in this report.

*Approved By*



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*David Lee / Q.A. Manager*  
**SHENZHEN EMTEK CO., LTD.**

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## **1. GENERAL INFORMATION**

### **1.1 Product Description**

The TOEC TECHNOLOGY CO., LTD. Model: XP-2H38WC (referred to as the EUT in this report) The EUT is an short range, lower power. It is designed by way of utilizing the FM modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 906MHz
- B). Modulation: FM
- C). Number of Channel: 1
- D). Antenna Designation: PCB trace antenna
- E).Power Supply: DC 2\*3.7V Battery

### **1.2 Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for FCC ID: Y9K-2H38WC filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules, The composite system (receiver) is compliance with Subpart B is authorized under a VoC procedure.

### **1.3 Test Methodology**

Both conducted and radiated testing performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

### **1.4 Special Accessories**

Not available for this EUT intended for grant.

### **1.5 Equipment Modifications**

Not available for this EUT intended for grant.

## 1.6 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/IEC17025: 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, May 24, 2008  
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

## 2. System Test Configuration

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The Tx frequency was fixed which was for the purpose of the measurements.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009. Conducted emissions from the EUT measured in the **frequency range between 0.15 MHz and 30MHz** using **CISPR Quasi-Peak and average detector mode**.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

### 2.4 Limitation

#### (1) Conducted Emission (Not apply in the report)

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

**Note:**

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

**(2) Radiated Emissions****FCC Rule: 15.249(d)(e)**

FCC Part 15, Subpart C Section 15.209 limit of radiated emission for frequency below 1000GHz. The emissions from an intentional radiator shall not exceed the field strength level specified in the following table:

Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance(m)	Field strength at 3m $\text{dB}\mu\text{V/m}$
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Rem 1. Emission level in  $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$

ark: 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

**FCC Part 15, Section 15.35(b) limit of radiated emission for frequency above 1000MHz**

Frequency(MHz)	Class A( $\text{dB}\mu\text{V/m}$ )(at 3m)		Class B( $\text{dB}\mu\text{V/m}$ )(at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

**Peak Output Power (Transmitter)**

FCC Part 15, Subpart C Section 15.249. The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency(MHz)	Filed Strength of Fundamental(at 3m)		Filed Strength of Harmonics(at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
902-928	114	94	74.0	54.0
2400-2483.5	114	94	74.0	54.0
5725-5875	114	94	74.0	54.0
24000-24250	128	108	88.0	68.0

**(3) Band edge**

Emission radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lesser attenuation.

<b>Frequency Range(MHz)</b>	<b>Limit(dBuV/m)</b>	
	<b>Peak</b>	<b>AV</b>
902-928		
2400-2483.5	74	54
5725-5850		
24000-24250		

## 2.5 Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Solar Powered LED Security Light	N/A	XP-2H38WC	Y9K-2H38WC	N/A	<b><i>EUT</i></b>

**Note:**

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.

### 3. Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.249(e), (b), § 15.209	Radiated Emission	Compliant
§ 15.203	Antenna Requirement	Compliant

### 4. Description of test modes

The EUT (Solar Powered LED Security Light) has been tested under normal operating condition. Only channel of EUT has been chosen for testing under Normal Operating condition. In this report, all the measured datum of the channel has been reported. No software used to control the EUT for staying in continuous transmitting mode for testing.

Channel	Frequency(MHz)
1	906MHz

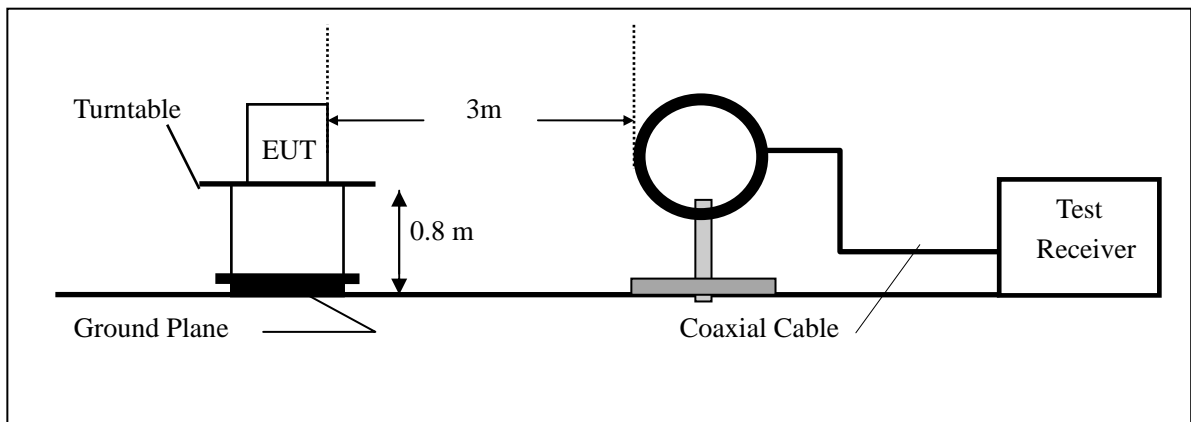
## 5. Radiated Emission Test

### 5.1 Measurement Procedure

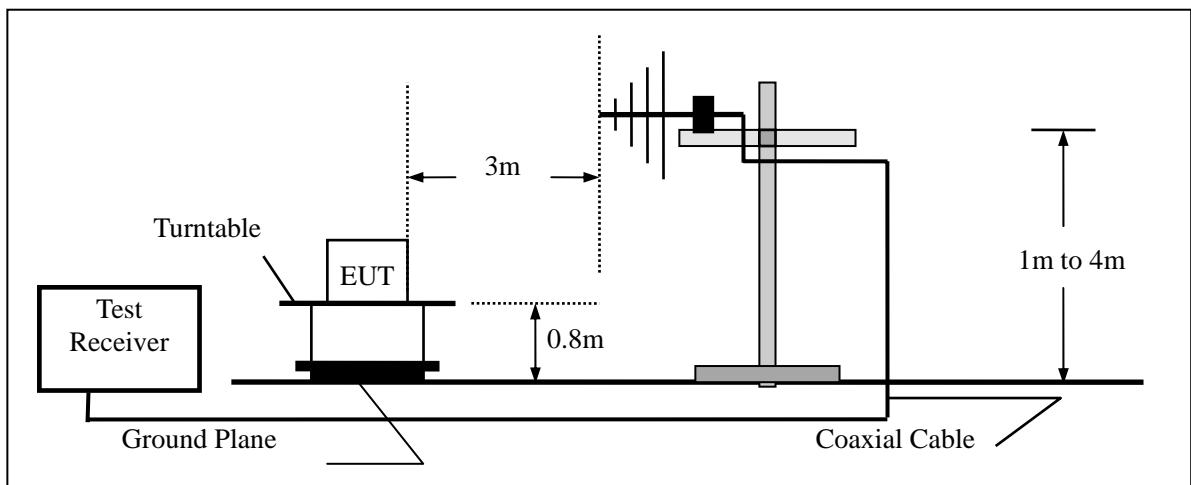
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

### 5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



### 5.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSP7	839511/010	05/29/2010	05/29/2011
EMI Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2010	05/29/2011
Pre-Amplifier	HP	8447D	2944A07999	05/29/2010	05/29/2011
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2010	05/29/2011
Loop Antenna	ARA	PLA-1030/B	1029	05/29/2010	05/29/2011

### 5.4 Out of Band Radiated Measurement Result

Operation Mode: TX                      Test Date : January 26, 2011  
Frequency Range: 30~1000MHz              Temperature : 28  
Test Result: PASS                      Humidity : 65 %  
Measured Distance: 3m                      Test By: King

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV)	Limit 3m (dBuV/m)	Margin (dB)	Note
70.42	H	22.61	40.00	-17.39	PK
132.60	H	23.87	43.50	-19.63	PK
180.79	H	29.65	43.50	-13.85	PK
196.33	H	28.51	43.50	-14.99	PK
404.63	H	31.84	46.00	-14.16	PK
905.17	H	80.21	114	-33.79	PK
70.42	V	25.34	40.00	-14.66	PK
157.47	V	27.57	43.50	-15.93	PK
180.79	V	29.95	43.50	-13.55	PK
196.33	V	31.01	43.50	-12.49	PK
539.87	V	26.28	46.00	-19.72	PK
905.17	V	80.91	114	-33.09	PK

**Note:** (1) All Readings are Peak Value.  
(2) Emission Level= Reading Level+Probe Factor +Cable Loss  
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

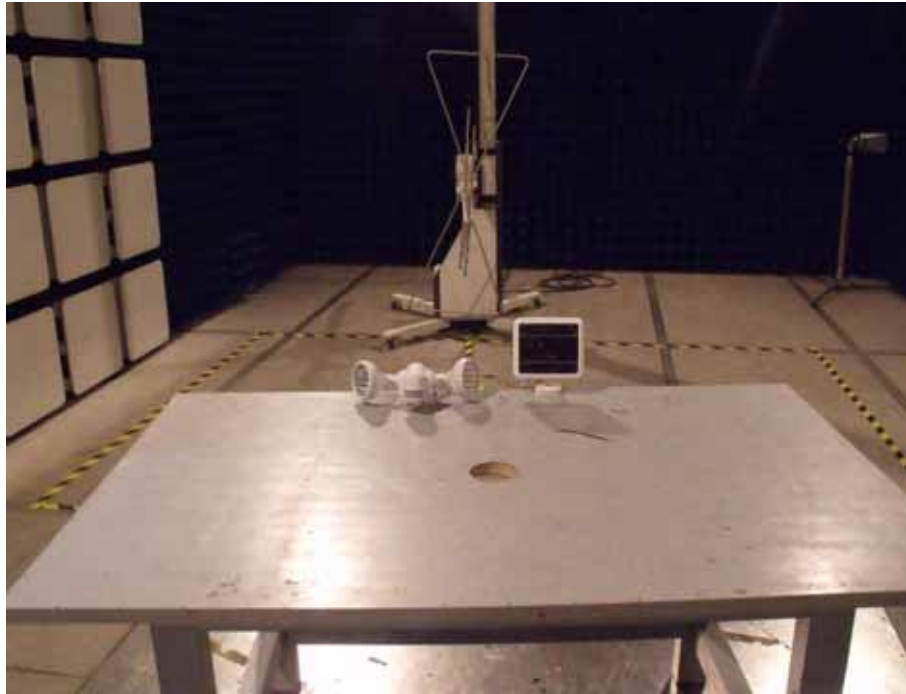
Operation Mode: TX  
 Frequency Range: 1-10GHz  
 Test Result: PASS  
 Measured Distance: 3m

Test Date : January 26, 2011  
 Temperature : 28  
 Humidity : 65 %  
 Test By: King

Freq. (GHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
5644.23	V	47.21	33.81	74	54	-26.79	-20.19
7230.77	V	52.13	38.93	74	54	-21.87	-15.07
8875.00	V	53.41	40.6	74	54	-20.59	-13.4
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6538.46	H	49.01	36.16	74	54	-24.99	-17.84
7245.19	H	51.65	38.87	74	54	-22.35	-15.13
8860.58	H	53.18	40.61	74	54	-20.82	-13.39
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- Note:**
- (1) All Readings are Peak Value and AV.
  - (2) Emission Level= Reading Level+Probe Factor +Cable Loss
  - (3) The average measurement was not performed when the peak measured data under the limit of average detection.

### 5.5 Radiated Measurement Photos:



## **6. Antenna Application**

### **6.1 Antenna requirement**

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.240.

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by responsible party shall be used with the device.

The EUT has a built in antenna which is a short wire solder on the PCB, this is permanently attached antenna and meets the requirements of this section.