

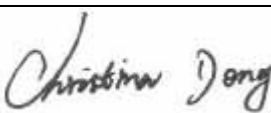


FCC PART 15 CLASS B
EMI MEASUREMENT AND TEST REPORT
For

Creative Werks Inc.
1434 East Fleming Ave Des Moines, Iowa 50313

FCC ID: W99RL31

November 27, 2012

This Report Concerns: Original Report		Equipment Type: Relay	
Test Engineer:	Eric Li 		
Test Engineer of performing the tests:	Adam Yang 		
Report No.:	BST12111006Y		
Receive EUT Date/Test Date:	November 20, 2012/ November 20, 2012- November 27, 2012		
Reviewed By:	Christina Deng 		
Prepared By:	Shenzhen BST Technology Co.,Ltd. 3F, Weames Technology Building, No. 10 Kefa Road, Science Park, Nanshan District, Shenzhen, Guangdong, China Tel: 0755-26747751-3 Fax: 0755-26747751-3 ext.826		

Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Creative Werks Inc. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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1. GENERAL INFORMATION

1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that Creative Werks Inc. approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that Creative Werks Inc. in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, Creative Werks Inc. therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through Creative Werks Inc., unless the applicant has authorized Creative Werks Inc. in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of
Shenzhen Certification Technology Service Co., Ltd
(FCC Registered Test Site Number: 197647) on
2F, Building B, East Area of Nanchang Second Industrial Zone, Gushu 2nd Road,
Bao'an District, shenzhen 518126, China
The Test Site is constructed and calibrated to meet the FCC requirements.


2. PRODUCT DESCRIPTION

2.1. EUT Description

Applicant : Creative Werks Inc.
 Address : 1434 East Fleming Ave Des Moines, Iowa 50313

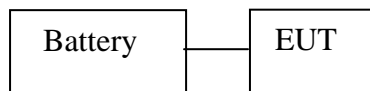
 Manufacturer : Creative Werks Inc.
 Address : 1434 East Fleming Ave Des Moines, Iowa 50313

 EUT Description : Relay

 Trade Name : 

 Model Number : RL031
 Receiver frequency : 433.92MHz
 modulation type : ASK
 Antenna gain : 0dBi
 Power Supply : DC 12V (Powered by Battery)

2.2. Block Diagram of EUT Configuration



2.3. Support Equipment List

Name	Model No	S/N	Manufacturer	Used (Y/N)
/	/	--	/	N

2.4. Test Conditions

Temperature: 23~27°C

Relative Humidity: 50~63 %

3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	N/A
Radiated disturbance	Pass

Remark: "N/A" means "Not applicable."

4. TEST EQUIPMENT USED

EQUIPMENT/FACILITIES	MANUFACTURER	MODEL	SERIAL NO.	DATE OF CAL.	CAL. INTERVAL
3m Semi-Anechoic Chamber	Changzhou Chengyu	EC3048	N/A	May 5, 2012	1 Year
Broadband antenna	SCHWARZBECK	VULB 9168	VULB9168-438	Aug. 14, 2012	1 Year
Horn antenna	R&S	HF906	10027	Aug. 14, 2012	1 Year
ETS Horn Antenna	ETS	3160	SEL0076	May 8, 2012	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4443A	MY46185649	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4440A	MY46187335	Apr. 6, 2012	1 Year
Spectrum analyzer	Agilent	E4446A	MY45300103	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	100492	Apr. 6, 2012	1 Year
Test receiver	R&S	ESCI	101202	Apr. 6, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Apr. 6, 2012	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126487	Apr. 6, 2012	1 Year
Cable	Resenberger	N/A	NO.1	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr. 6, 2012	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr. 6, 2012	1 Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Apr. 6, 2012	1 Year
Pre-amplifier	R&S	AFS33-1800 2650-30-8P-44	SEL0080	Apr. 6, 2012	1 Year

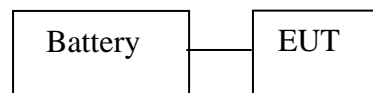
5. CONDUCTED EMISSION TEST

5.1. Measurement Uncertainty

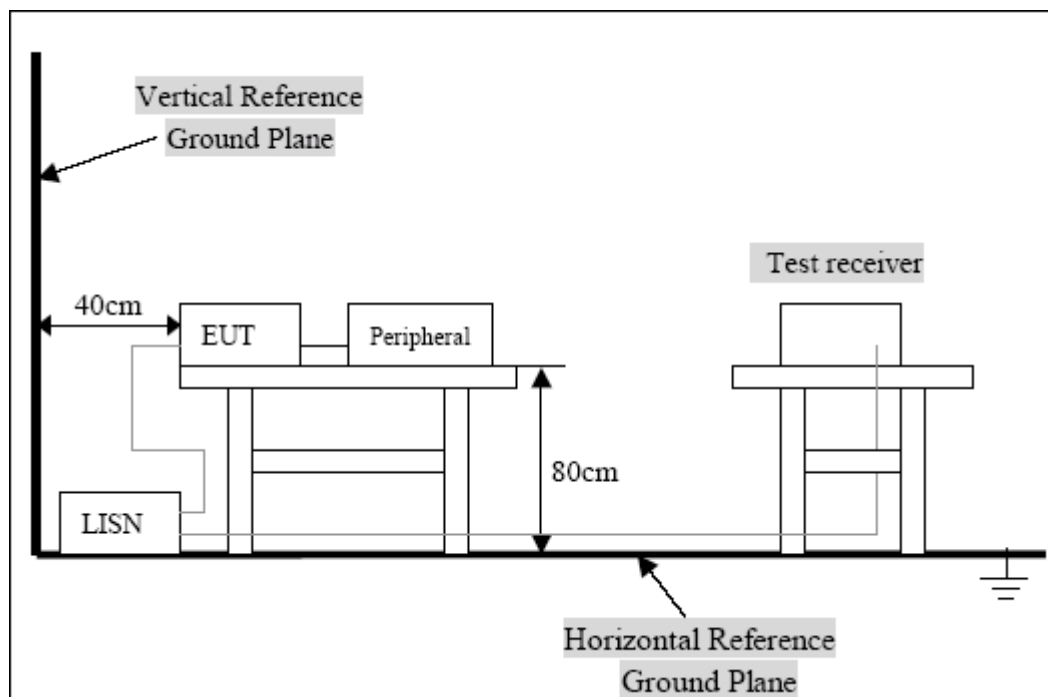
The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is + 2.88 dB.

5.2. Block Diagram of Test Setup

5.2.1. Block Diagram of connection between the EUT and the simulators



5.2.2. Test Setup Diagram



5.3. Test Standard

FCC Part 15 CLASS B

ANSI C63.4 2003

5.4. Conducted Emission Limit(Class B)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.5. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC Part 15 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.6. Operating Condition of EUT

5.6.1. Setup the EUT and simulators as shown in Section 6.1.

5.6.2. Turn on the power of all equipments.

5.6.3. Let the EUT work in test mode and test it.

5.7. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

5.8. Test Result

N/A

Not Applicable, the sample operating by Battery.

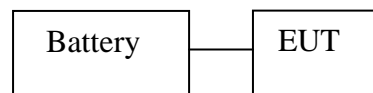
6. RADIATED EMISSION MEASUREMENT

6.1. Measurement Uncertainty

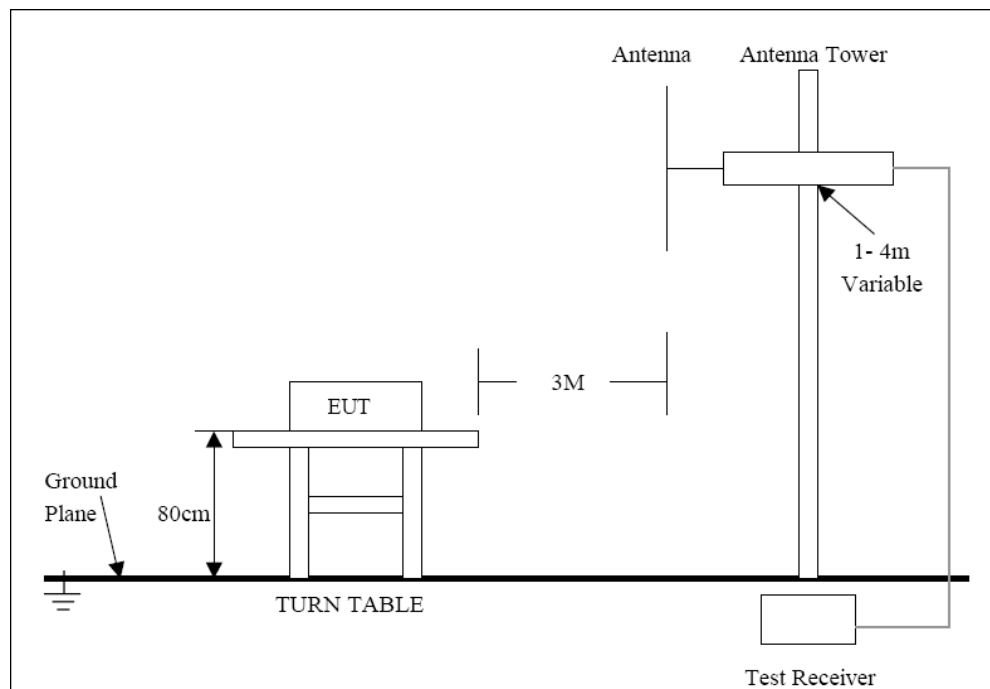
The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is + 5.10 dB.

6.2. Block Diagram of EUT Configuration

6.2.1. Block Diagram of connection between the EUT and the simulators



6.2.2. Semi-anechoic Chamber Test Setup Diagram



6.3. Test Standard

FCC Part 15 CLASS B
ANSI C63.4 2003

6.4. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
Above 1000	3	54.0

Note:(1) The smaller limit shall apply at the edge 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 or system.

6.5. EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the Commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

6.6. Operating Condition of EUT

6.6.1.Setup the EUT as shown on Section 7.1

6.6.2.Turn on the power of all equipments.

6.6.3.Let the EUT work in test mode and test it.

6.7. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz. and set at 1000kHz above 1000MHz.

The final measurement in band above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The frequency range from 30MHz to 2000MHz is checked. All the test results are listed in Section 6.8. The measurements greater than 20dB below the limit are not report.

6.8. Test Result

PASS

The frequency range from 30MHz to 2000MHz is checked.

**For 30MHz-1000MHz Spurious
Horizontal**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
30,97	13,90	11.93	25,83	40,00	-14,17	QP
434.048	27.67	7.98	35.65	46.00	-10.35	QP
868.096	22.2	10.06	32.26	46.00	-13.74	QP

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
31,94	17,86	8.72	26,58	40,00	-13,42	QP
434.048	24.76	13.99	38.75	46.00	-7.25	QP
868.096	22.31	10.87	33.18	46.00	-12.82	QP

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

For Above 1000MHz Spurious**Horizontal**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1057.114	32.92	10.31	43.23	74.00	-30.77	PK
1057.114	19.93	10.31	30.24	54.00	-23.76	AV
1302.144	34.85	11.32	46.17	74.00	-27.83	PK
1302.144	20.21	11.32	31.53	54.00	-22.47	AV
1736.192	35.14	10.25	45.39	74.00	-28.61	PK
1736.192	17.72	10.25	27.97	54.00	-26.03	AV

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1057.114	32.78	10.31	43.09	74.00	-30.91	PK
1057.114	18.71	10.31	29.02	54.00	-24.98	AV
1302.144	34.09	11.23	45.32	74.00	-28.68	PK
1302.144	18.08	11.23	29.31	54.00	-24.69	AV
1736.192	35.75	9.32	45.07	74.00	-28.93	PK
1736.192	19.00	9.32	28.32	54.00	-25.68	AV

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.