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FCC PART 15 SUBPART C TEST REPORT

FCC PART 15B

Report Reference No. **CTL120510412-WFR**

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Date of issue June 08, 2012

Testing Laboratory Name **Shenzhen CTL Electromagnetic Technology Co., Ltd.**

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Test Firm **Bontek Compliance Testing Laboratory Ltd**

Address 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

Applicant's name **Jetrich Electronic Co.,Ltd**

Address 7th Floor Zhixiang Building, 71st District Bao'an, Shenzhen 518101 China

Test specification:

Standard **FCC Part 15B**

ANSI C63.4: 2003

TRF Originator Shenzhen CTL Electromagnetic Technology Co., Ltd.

Master TRF Dated 2011-01

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Test item description Remote Controlled Crate Release

Brand Name Pettags

Operation Frequency 315MHz

Modulation mode: /

Model/Type reference JR-D003

Power Supply DC 6V from battery

Antenna Type Integral without external RF Port

Result **Positive**

FCC ID **OBYJR-D003R**

TEST REPORT

Test Report No. :	CTL120510412-WFR	June 08, 2012
		Date of issue

Equipment under Test : Remote Controlled Crate Release

Model /Type : JR-D003(Receiver)

Listed Models : /

Difference description: /

Applicant : **Jetrich Electronic Co.,Ltd**

Address : 7th Floor Zhixiang Building, 71st District Bao'an, Shenzhen 518101 China

Manufacturer : **Jetrich Electronic Co.,Ltd**

Address : 7th Floor Zhixiang Building, 71st District Bao'an, Shenzhen 518101 China

Test Result according to the standards on page 4:	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15 Subpart B - Unintentional Radiators](#)

[ANSI C63.4: 2003](#)



2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : May 14, 2012

Testing commenced on : May 15, 2012

Testing concluded on : May 25, 2012

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : 120V / 60 Hz 115V / 60Hz
 12 V DC 24 V DC
 Other (specified in blank below)

DC 6 V from Battery

2.3. Short description of the Equipment under Test (EUT)

315MHz Receiver

For more details, refer to the user's manual of the EUT.

Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- supplied by the manufacturer
- supplied by the lab

Manufacturer :

Model No. :

Manufacturer :

Model No. :

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: OBYJR-D003R** filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Test Result Summary

Test Item	Test Requirement	Standard Paragraph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	N/A



3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Bontek Compliance Testing Laboratory Ltd
1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 22/EN 55022 requirements

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 338263

Bontek Compliance Testing Laboratory 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. Registration 338263, March 24, 2008.

IC Registration No.: 7631A

The 3m alternate test site of Bontek Compliance Testing Laboratory Ltd EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on March, 2011.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 °C

Humidity: 30-60 %

Atmospheric pressure: 950-1050mbar

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

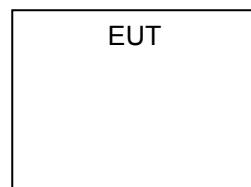


Table 2-1 Equipment Used in Tested System

1.1. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Bontek Compliance Testing Laboratory Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Bontek laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10dB	(1)
Radiated Emission	1~12.75GHz	4.32dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.2. Equipments Used during the Test

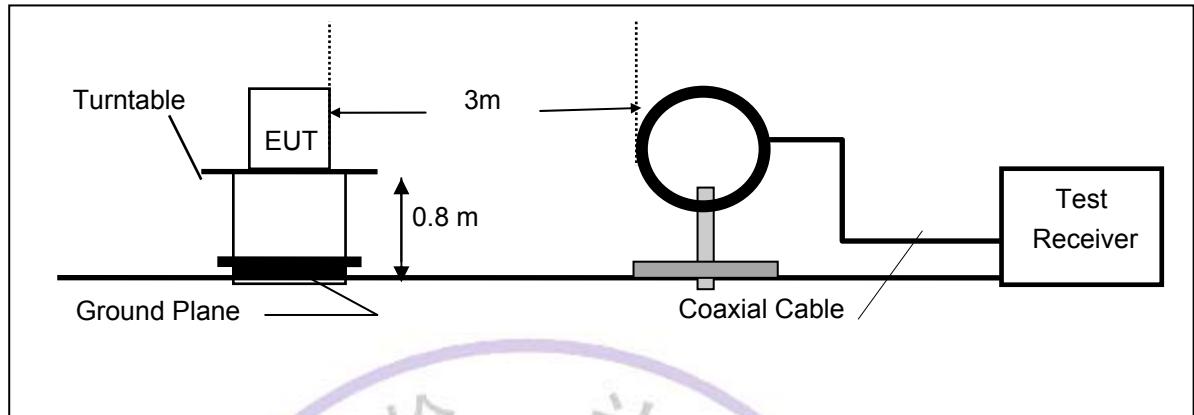
Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
1	ULTRA-BRODBAN D ANTENNA	ROHDE & SCHWARZ	HL562	100015	2012/04/11	2013/04/10
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2012/04/10	2013/04/09
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2012/04/10	2013/04/09
4	TURNTABLE	ETS	2088	2149	2012/04/10	2013/04/09
5	ANTENNA MAST	ETS	2075	2346	2012/04/13	2013/04/12
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2012/04/10	2013/04/09
7	Loop Antenna	ROHDE & SCHWARZ	HFH2-Z2	8335211/0035	2012/04/15	2013/04/14
8	Horn Antenna	Schwarzbeck	BBHA9120 A	512	2012/04/15	2013/04/14
9	Signal Generator	Beiwan	DT315-AG-203	2522	2012/04/15	2013/04/14

4. TEST CONDITIONS AND RESULTS

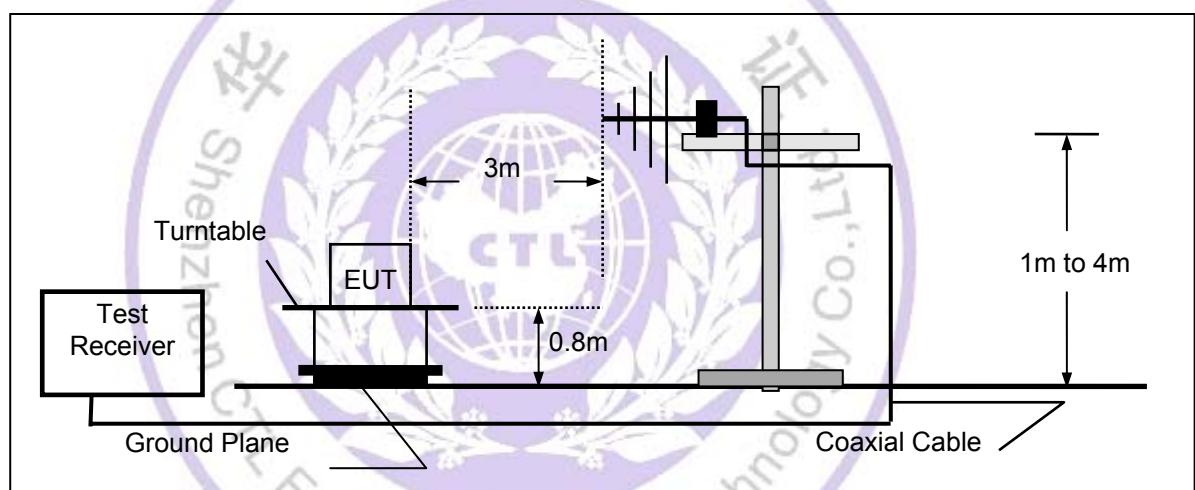
4.1. Radiated Emission Test

Test Configuration

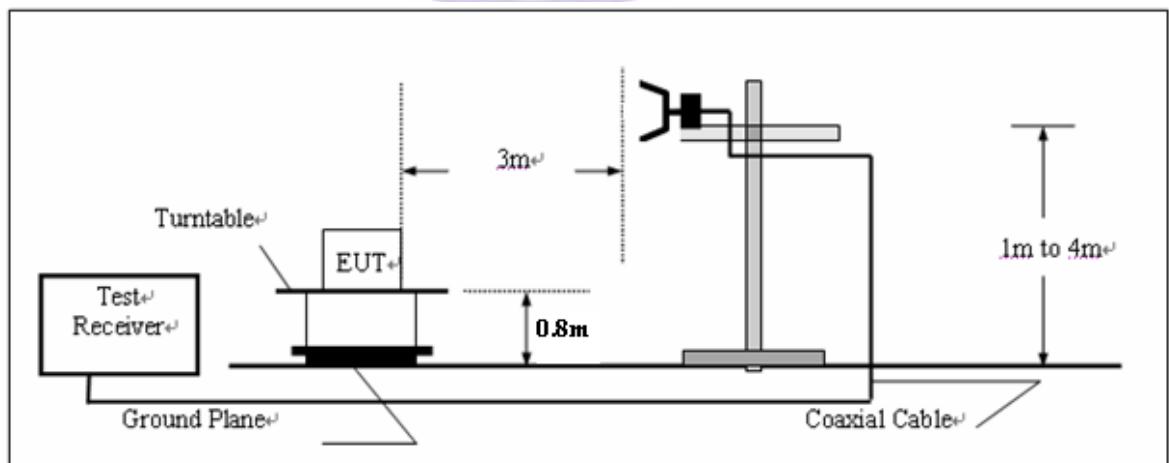
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Radiation Limit

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Note:

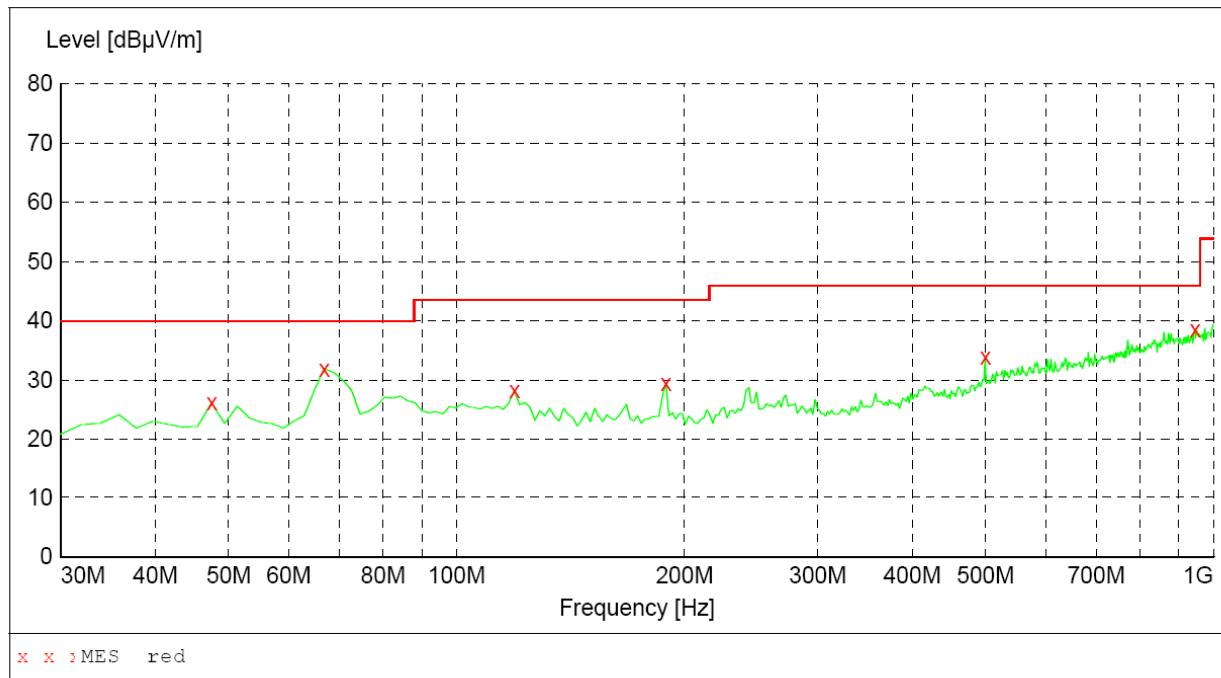
Three axes are chosen for pretest, the Z axis is the worst mode for final test.

For battery operated equipment, the equipment tests shall be performed using a new battery.

The signal Generator supply a cohering signal to the receiver for receiving mode under test.

Radiation Test Result***SWEET TABLE: "test (30M-1G)"***

Short Description: Field Strength
 Start Stop Detector Meas. IF Transducer
 Frequency Frequency Time Bandw.
 30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz VULB9163 NEW

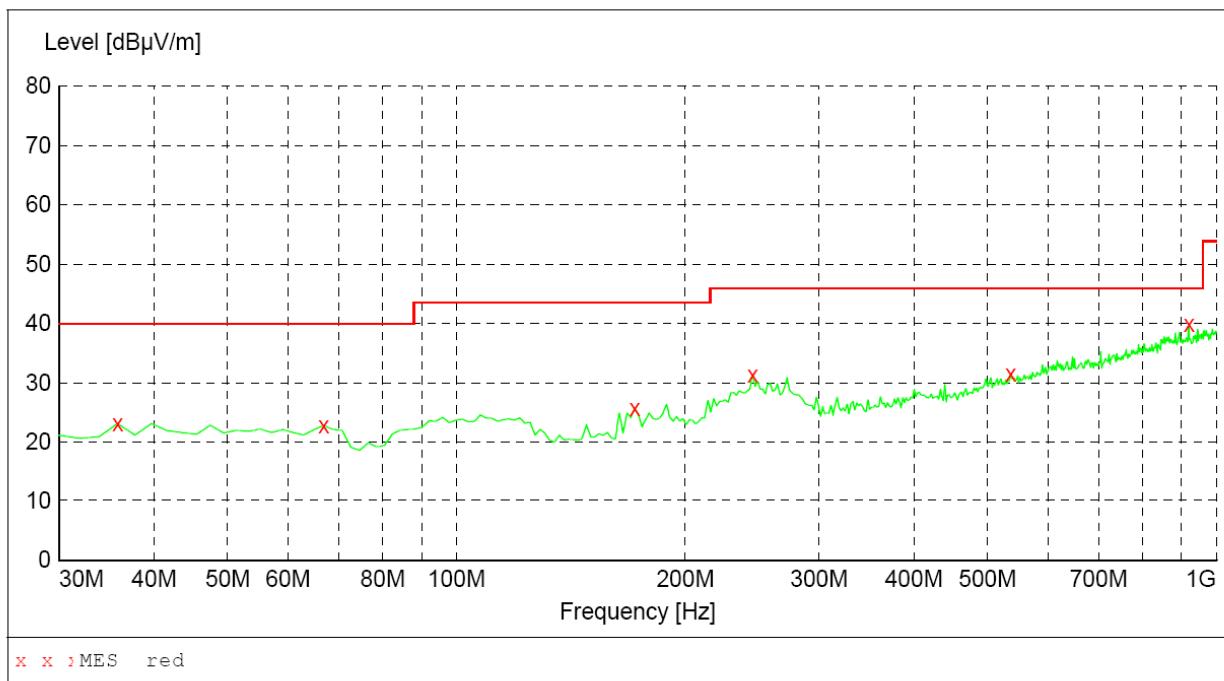
***MEASUREMENT RESULT:***

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
47.460000	26.10	15.8	40.0	13.9	Peak	100.0	150.00	VERTICAL
66.860000	31.90	13.1	40.0	8.1	Peak	100.0	70.00	VERTICAL
119.240000	28.30	15.2	43.5	15.2	Peak	100.0	87.00	VERTICAL
189.080000	29.40	16.0	43.5	14.1	Peak	100.0	112.00	VERTICAL
499.480000	33.90	23.8	46.0	12.1	Peak	100.0	232.00	VERTICAL
945.680000	38.50	31.7	46.0	7.5	Peak	100.0	76.00	VERTICAL

romagnetic

SWEET TABLE: "test (30M-1G)"

Short Description: Field Strength
 Start Stop Detector Meas. IF Transducer
 Frequency Frequency Time Bandw.
 30.0 MHz 1.0 GHz MaxPeak Coupled 100 kHz VULB9163 NEW

***MEASUREMENT RESULT:***

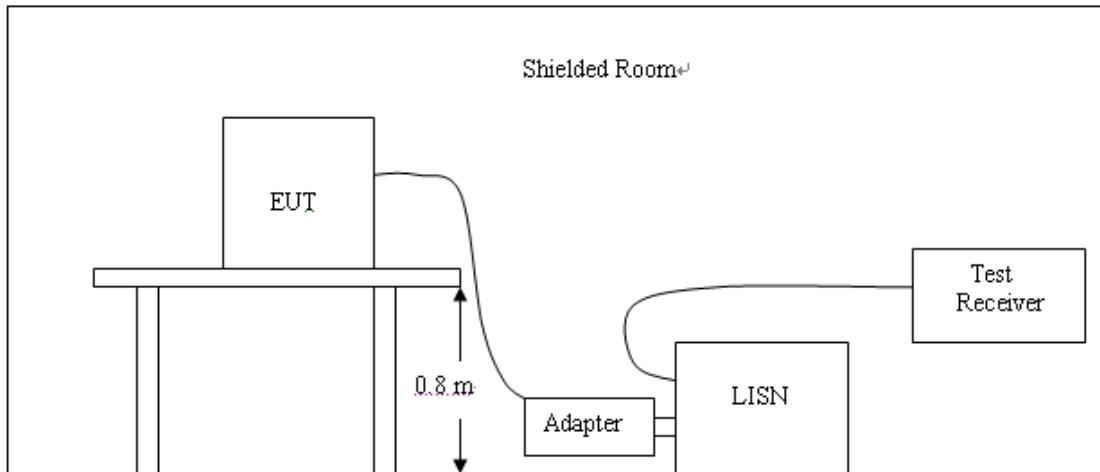
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	23.10	14.7	40.0	16.9	Peak	100.0	210.00	HORIZONTAL
66.860000	22.80	13.1	40.0	17.2	Peak	300.0	41.00	HORIZONTAL
171.620000	25.70	14.4	43.5	17.8	Peak	300.0	58.00	HORIZONTAL
245.340000	31.40	17.2	46.0	14.6	Peak	100.0	222.00	HORIZONTAL
536.340000	31.50	24.8	46.0	14.5	Peak	100.0	36.00	HORIZONTAL
920.460000	39.90	31.4	46.0	6.1	Peak	100.0	76.00	HORIZONTAL

Remark:

- (1) Measuring frequencies from 9 KHz to the 2 GHz, loop antenna used below 30MHz. See Section 3.6 table. Radiated emission test 9KHz to 25MHz and above 1GHz was verified, and no any emission was found except system noise floor.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) Data of measurement within this frequency range shown “—” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of EMI Test Receiver was 120KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

4.2. Conducted Emissions Test

Test Configuration



Test Procedure

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4.
- 2 Support equipment, if needed, was placed as per ANSI C63.4.
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4 The EUT received DC6V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dB μ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

Test Results

Owing to the DC operation of EUT, this test item is not performed.

5. Test Setup Photos of the EUT



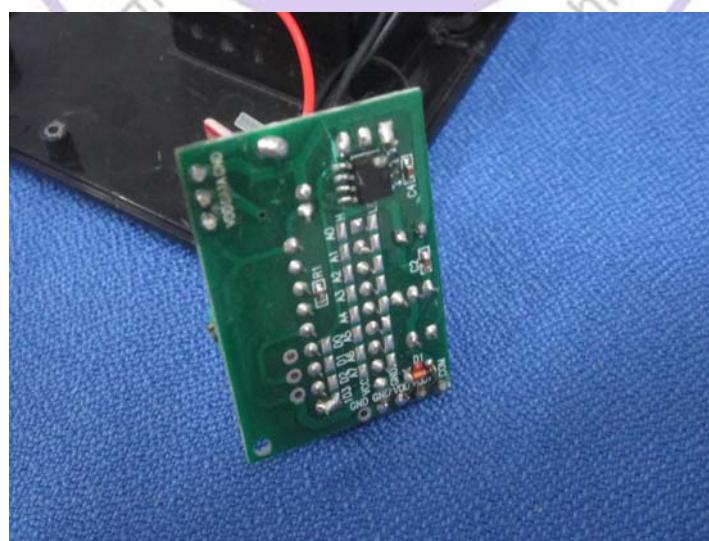
6. External and Internal Photos of the EUT

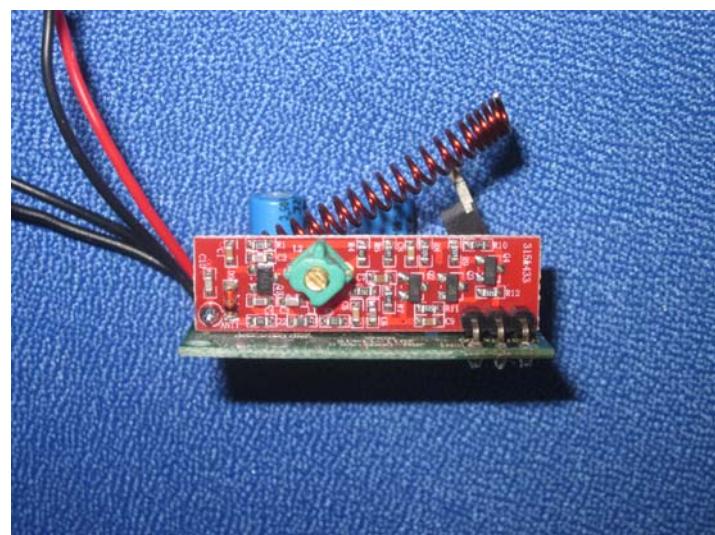
External Photos





Internal Photos





.....End of Report.....

