

# CERTIFICATE OF EMC

CERTIFICATE NO.: SET2015-01557

**Product:** Car board

**Model:** BL2000-CZB-V\* (\*=10-10.99, indicate the different customer or/and Software function number)

**Applicant:** ShenYang Bluelight Automatic Technology Co., Ltd.

**Address:** No. 37 Shiji Road, Hunnan New District, Shenyang, China

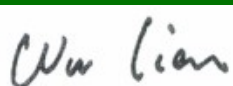
This is to certify that, on the basis of the tests undertaken as per Report No. SET2015-01557, the submitted sample of the above item complies with:

EN61000-6-4:2007+A1:2011

EN61000-6-2:2005

and fulfils testing requirement of the EMC directive 2004/108/EC

Signed for and on behalf of  
CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.



Wu Li An, Vice Director

Date of Issue: Feb. 06, 2015

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# EMC TEST REPORT

**Report No.:** SET2015-01557

**Product:**





## Report

**Product**.....: Car board  
**Model No.** .....: BL2000-CZB-V\* (\*=10-10.99, indicate the different customer or/and Software function number)  
**Brand Name**.....: /  
**Applicant**.....: ShenYang Bluelight Automatic Technology Co., Ltd.  
**Applicant Address**.....: No. 37 Shiji Road, Hunnan New District, Shenyang, China  
**Manufacturer**.....: ShenYang Bluelight Automatic Technology Co., Ltd.  
**Manufacturer Address**.....: No. 37 Shiji Road, Hunnan New District, Shenyang, China  
**Test Standards**.....: EN61000-6-4:2007+A1:201 6s

Chen Weichang

Zhu Qi

Wu Lian





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## 1 General Information

### 1.1 Description of EUT

**Product:** Car board  
**Model No.:** BL2000-CZB-V10  
**Brand Name:** /  
**Serial No.:** /  
**Rating:** Input: 24V DC  
**Accessories:** /

**NOTE:**

1. For more detailed features description about the EUT, please refer to User's Manual.
2. Application model is BL2000-CZB-V\* (\*=10-10.99, indicate the different customer or/and Software function number). Models differencUT



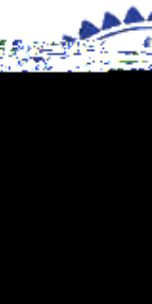
## 2.3 Test Standards and Results

The EUT has been tested according to the following specifications:





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### 3 Emission Test

#### 3.1 EUT Setup and Operating Conditions

The EUT was powered by 24V DC mains. The EUT was continuously operated during the test.

#### 3.2 Radiated Disturbance Measurement

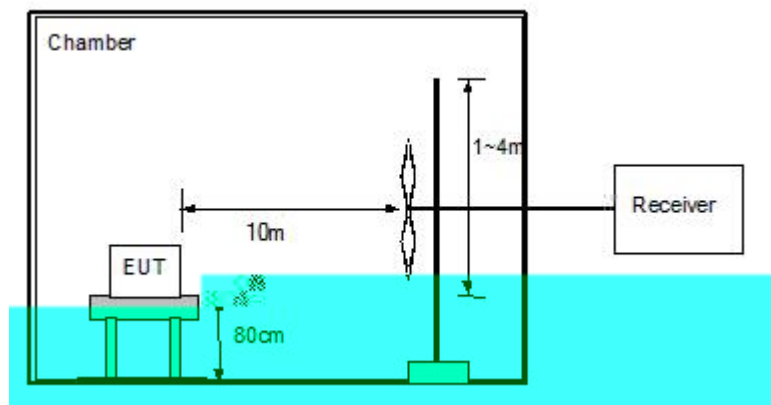
##### 3.2.1 Limits of Radiated Disturbance

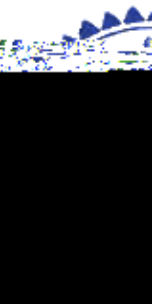
| Frequency range (MHz) | Quasi peak limits(dB $\mu$ V/m),<br>at 10m measurement distance |
|-----------------------|-----------------------------------------------------------------|
| 30 – 230              | 40                                                              |
| 230 - 1000            | 47                                                              |

##### Notes:

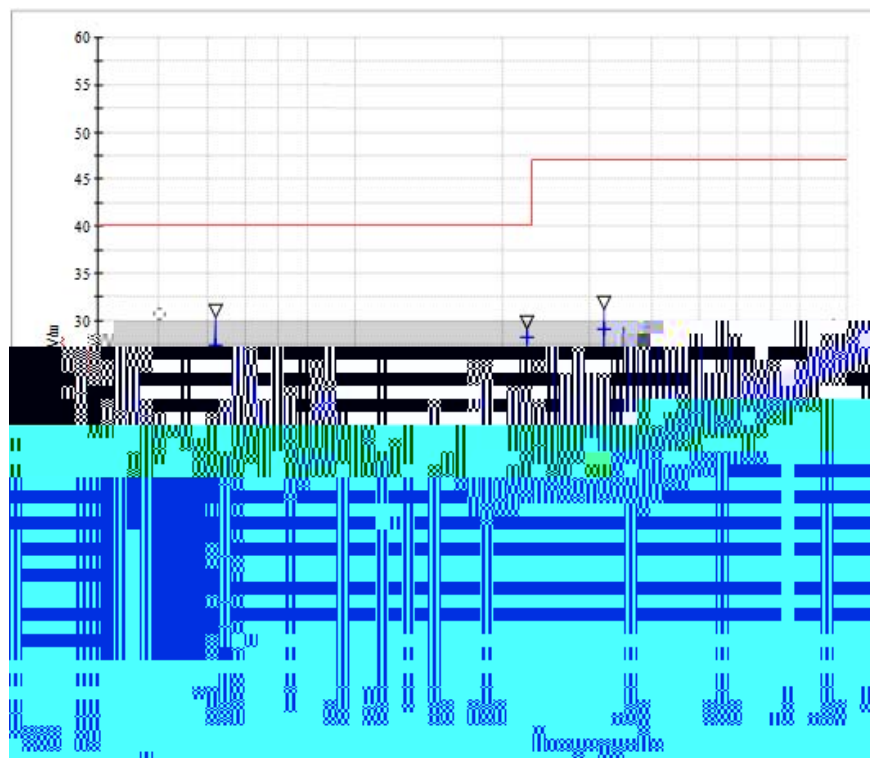
- (1) The lower limit shall apply at the transition frequency.
- (2) Additional provisions may be required for cases where interference occurs.

##### 3.2.2 Test Setup

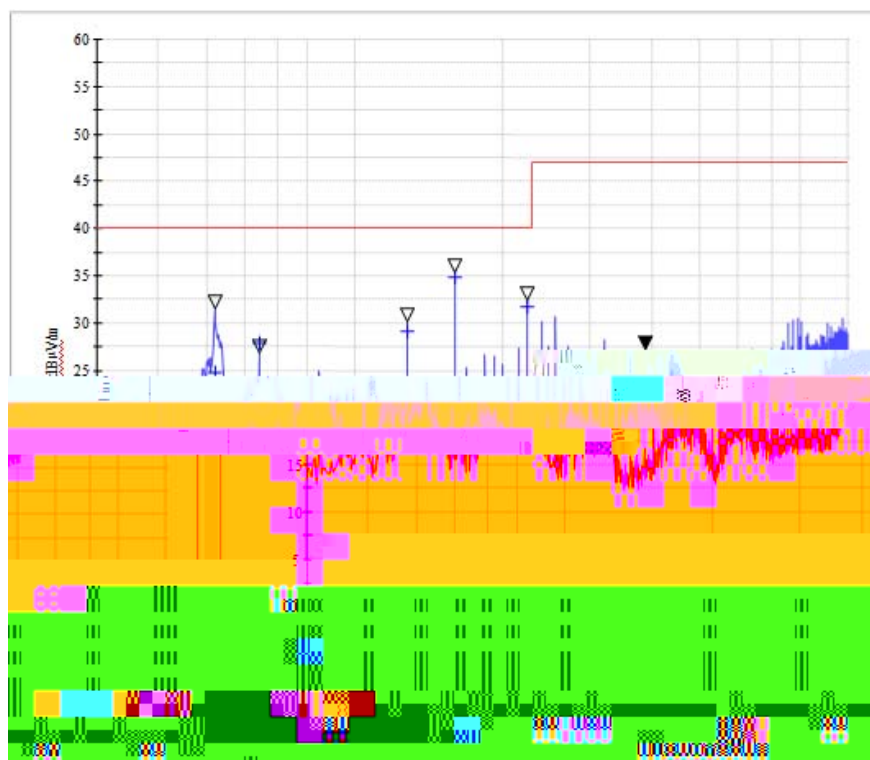




1. Electromagnetic radiation disturbances, max peak detector, antenna polarization: Vertical



2. Electromagnetic radiation disturbances, max peak detector, antenna polarization: Horizontal



## 4 Immunity Test

### 4.1 EUT Setup and Operating Conditions

Same as 3.1.

### 4.2 Performance Criteria

|                    |                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Criterion A</b> | The apparatus shall continue to operate as intended. 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.                |
| <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. |
| <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.                                                                                             |

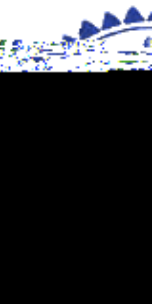
### 4.3 Electrostatic Discharge Immunity Test

#### 4.3.1 Test Specification

|                             |                                               |
|-----------------------------|-----------------------------------------------|
| <b>Basic Standard:</b>      | IEC 61000-4-2                                 |
| <b>Discharge Impedance</b>  | 330 / 150 pF                                  |
| <b>Discharge Voltage:</b>   | Air Discharge: 8 kV<br>Contact Discharge: 4kV |
| <b>Polarity:</b>            | Positive / Negative                           |
| <b>Number of Discharge:</b> | Minimum 20 times at each test point           |
| <b>Discharge Mode:</b>      | Single discharge                              |
| <b>Discharge Period:</b>    | 1-second minimum                              |
| <b>Criterion:</b>           | B                                             |



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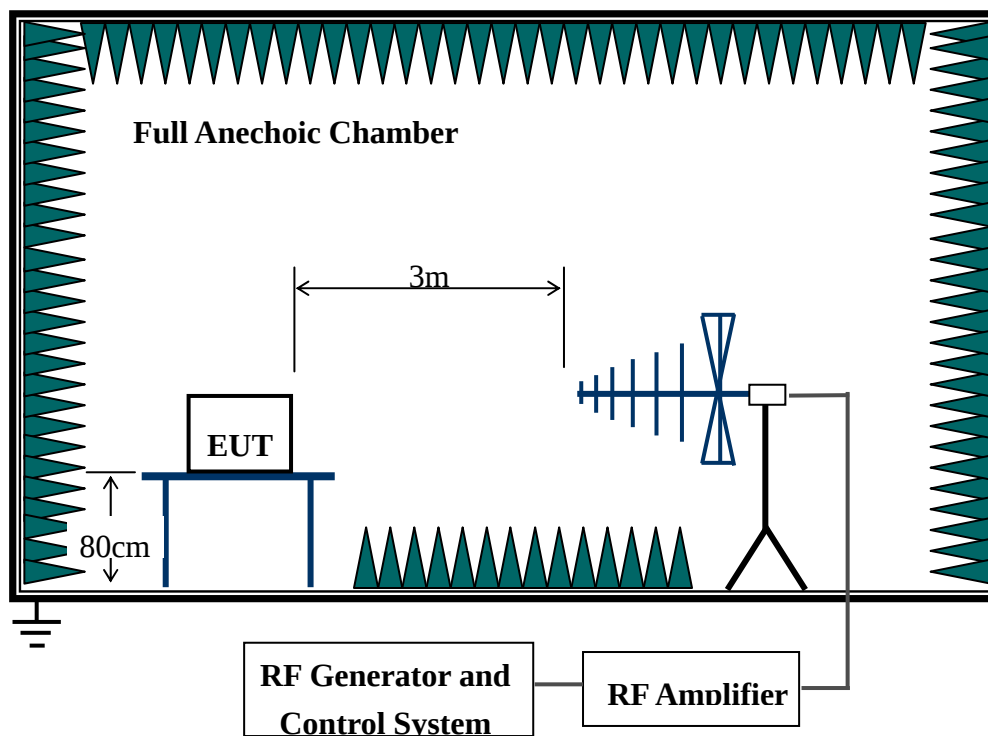


## 4.4 Radiated, Radio Frequency Electromagnetic Field Immunity Test

### 4.4.1 Test Specification

|                            |                                    |                 |                 |
|----------------------------|------------------------------------|-----------------|-----------------|
| <b>Basic Standard:</b>     | EN 61000-4-3                       |                 |                 |
| <b>Frequency Range:</b>    | 80 MHz – 1000MHz                   | 1.4GHz – 2.0GHz | 2.0GHz – 2.7GHz |
| <b>Field Strength:</b>     | 10V/m                              | 3V/m            | 1V/m            |
| <b>Modulation:</b>         | 1kHz sine wave, 80%, AM modulation |                 |                 |
| <b>Frequency Step:</b>     | 1% of fundamental                  |                 |                 |
| <b>Polarity of Antenna</b> | Horizontal and Vertical            |                 |                 |
| <b>Test Distance:</b>      | 3m                                 |                 |                 |
| <b>Antenna Height:</b>     | 1.5m                               |                 |                 |
| <b>Dwell Time:</b>         | 3 seconds                          |                 |                 |
| <b>Criterion:</b>          | A                                  |                 |                 |

### 4.4.2 Test Setup





#### 4.4.3 Test Result

| Frequency   | Polarity | Azimuth       | Field Strength (V/m) | Observation | Comply with Criterion |
|-------------|----------|---------------|----------------------|-------------|-----------------------|
| 80-1000 MHz | V&H      | 0,90, 80, 270 | 10                   | Note(1)     | A                     |
| 1.4-2.0GHz  | V&H      | 0,90, 80, 270 | 3                    | Note(1)     | A                     |
| 2.0-2.7GHz  | V&H      | 0,90, 80, 270 | 1                    | Note(1)     | A                     |

For the actual test configuration, please refer to Appendix II Photographs of the Test Configuration.

### 4.5.3 Test Result

| Test Point  | Polarity | Test Level (kV) | Observation | Comply with Criterion |
|-------------|----------|-----------------|-------------|-----------------------|
| DC. power   | +/-      | 2               | Note (1)    | A                     |
| Signal port | +/-      | 1               | Note (1)    | A                     |

#### NOTE:

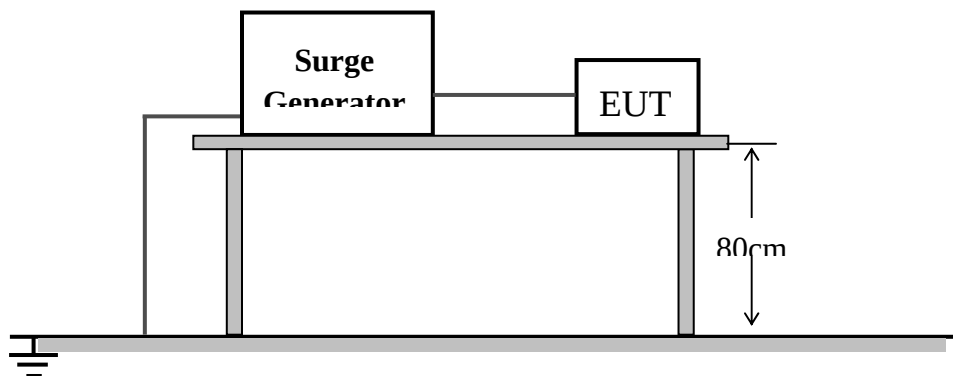
(1). The EUT continued to operate as intended. No degradation of performance was observed.

## 4.6 Surge Immunity Test

### 4.6.1 Test Specification

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| <b>Basic Standard:</b>  | IEC 61000-4-5                                            |
| <b>Waveform:</b>        | Voltage 1.2/50 $\mu$ s; Current 8/20 $\mu$ s             |
| <b>Test Voltage:</b>    | DC power port: line to line 0.5 kV, line to earth 0.5 kV |
| <b>Polarity:</b>        | Positive/Negative                                        |
| <b>Repetition Rate:</b> | 60sec                                                    |
| <b>Times:</b>           | 5 time/each condition.                                   |
| <b>Criterion:</b>       | B                                                        |

### 4.6.2 Test Setup



### 4.6.3 Test Result

| Coupling Line       | Polarity | Voltage (kV) | Observation | Comply with Criterion |
|---------------------|----------|--------------|-------------|-----------------------|
| DC power, Line-Line | +/-      | 0.5          | Note (1)    | B                     |

#### NOTE:

(1). The EUT continued to operate as intended. No degradation of performance was observed.



## 4.7 Immunity to Conducted Disturbances Induced by RF Fields

### 4.7.1 Test Specification

|                         |                                     |
|-------------------------|-------------------------------------|
| <b>Basic Standard:</b>  | IEC 61000-4-6                       |
| <b>Frequency Range:</b> | 0.15 MHz – 80 MHz                   |
| <b>Field Strength:</b>  | 10V                                 |
| <b>Modulation:</b>      | 1 kHz Sine Wave, 80%, AM Modulation |
| <b>Frequency Step:</b>  | 1% of fundamental                   |

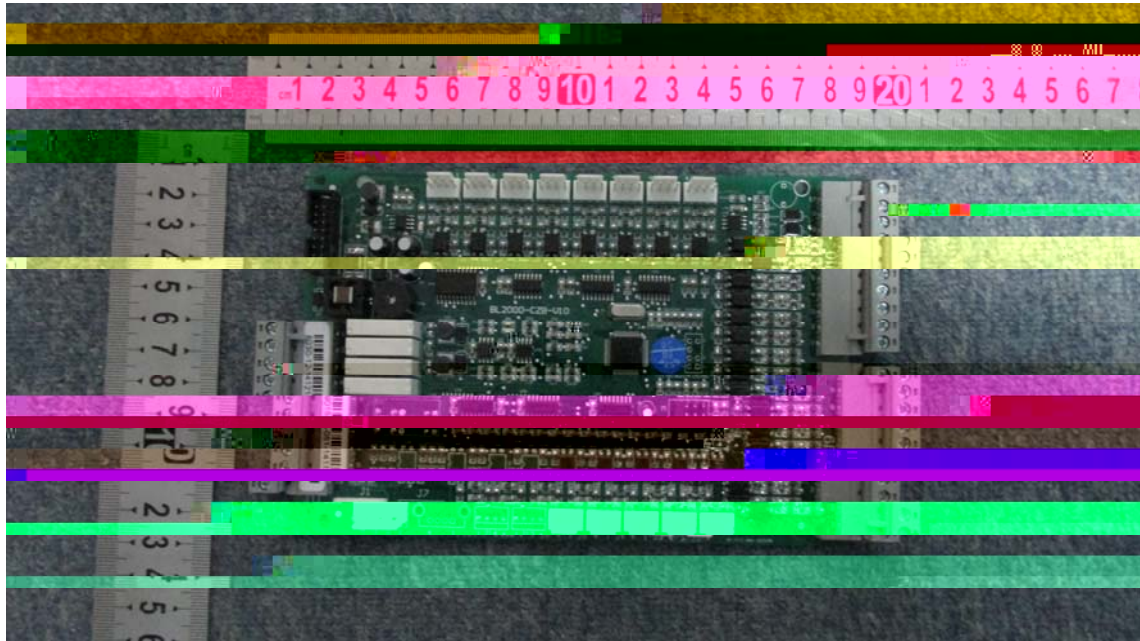


## 4.8 Power Frequency Magnetic Field Immunity Test

### 4.8.1 Test Specification

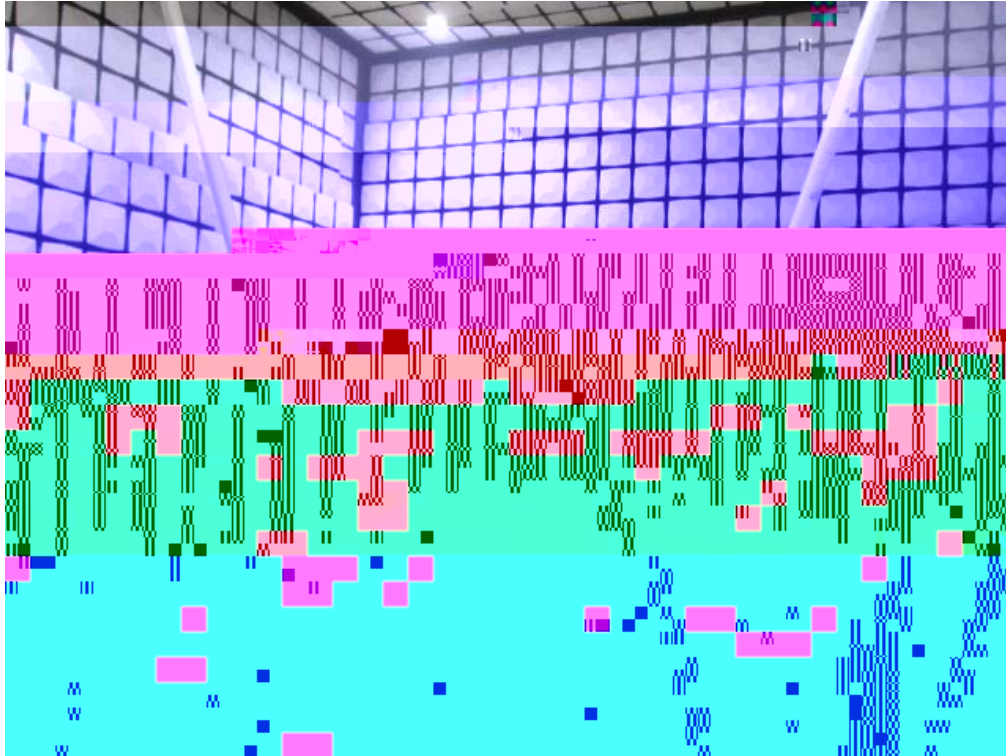
|                  |               |
|------------------|---------------|
| Basic Standard:  | IEC 61000-4-8 |
| Frequency Range: | 50Hz          |
|                  |               |

## Appendix I Photographs of the EUT



## Appendix II Photographs of EMC Test Configuration

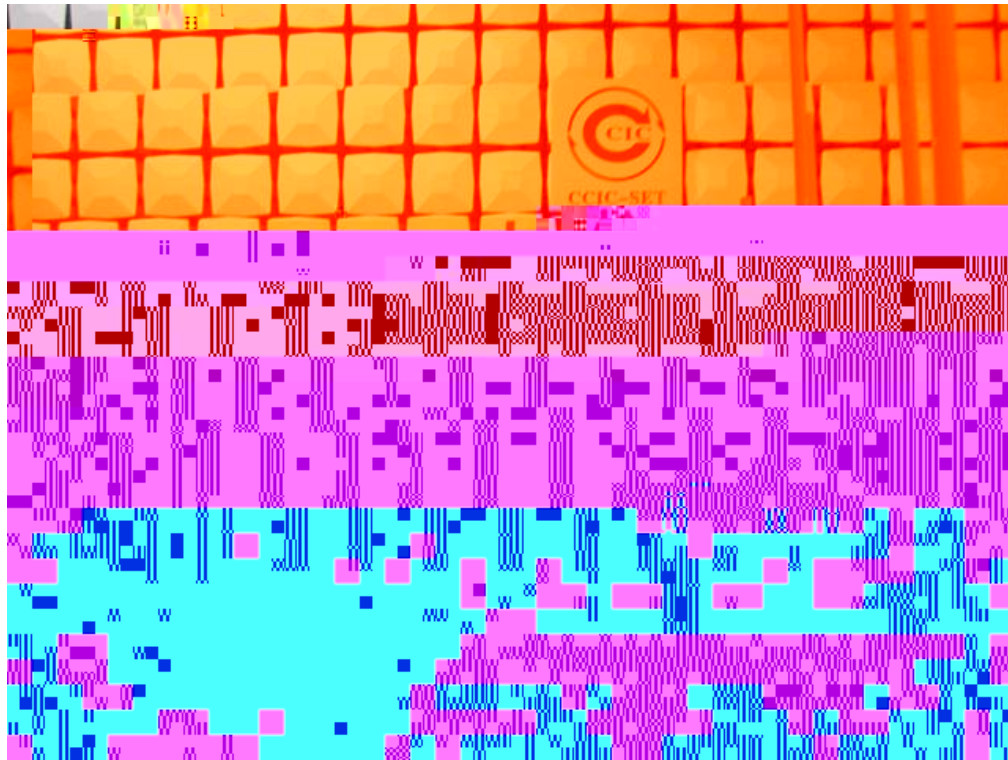
### 1. Radiated Field Strength Measurement



### 2. Electrostatic Discharge Immunity Test



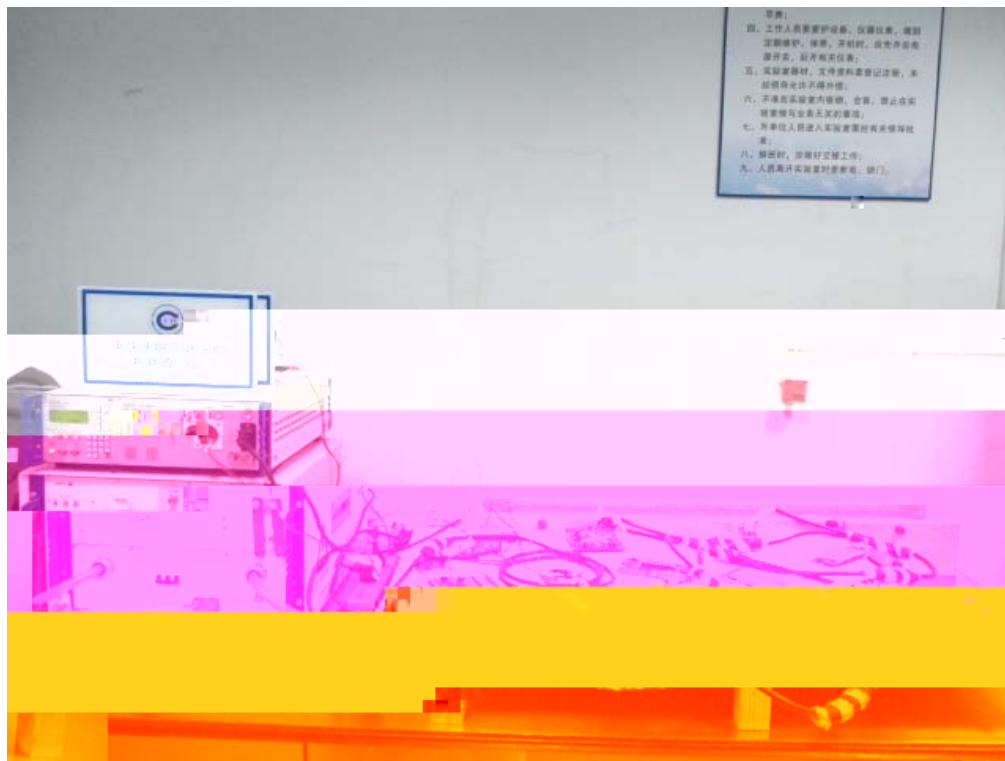
### 3. Radiated, Radio Frequency Electromagnetic Field Immunity Test (below 1GHz)



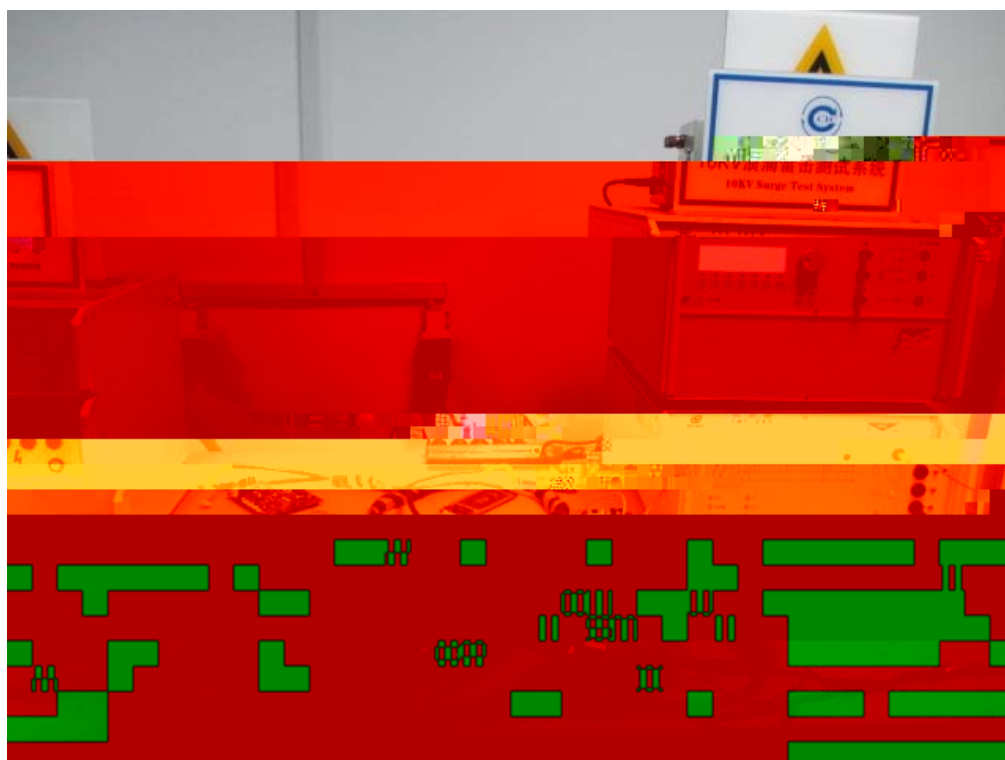
### 4. Radiated, Radio Frequency Electromagnetic Field Immunity Test (above 1GHz)



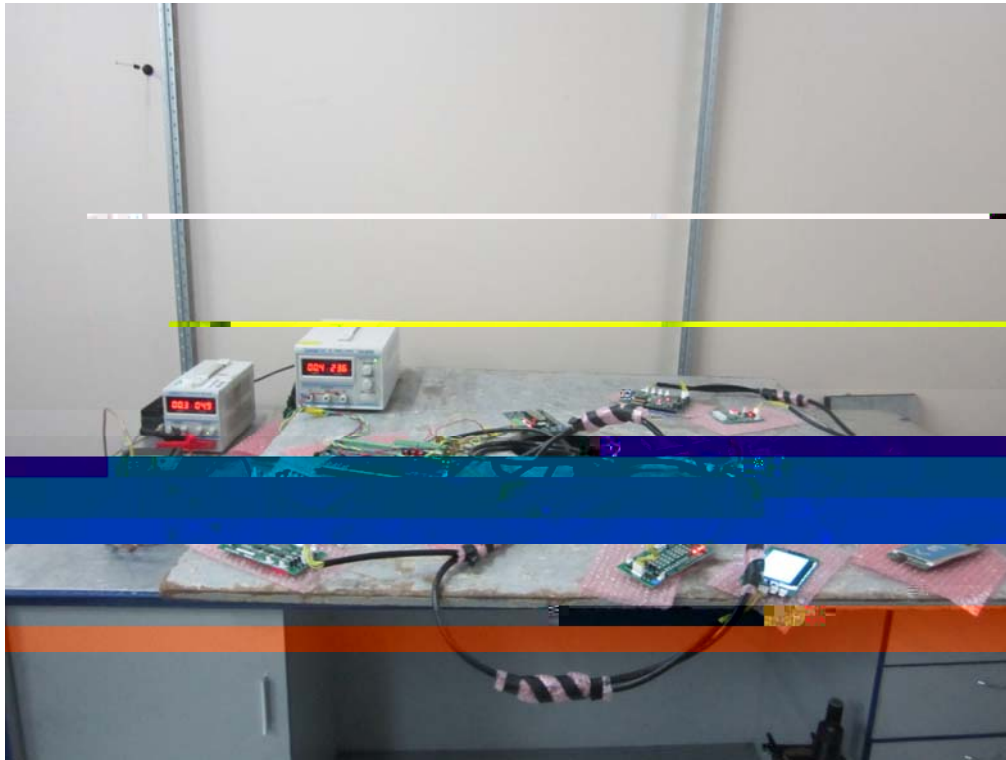
## 5. Electrical Fast Transient/Burst Immunity Test



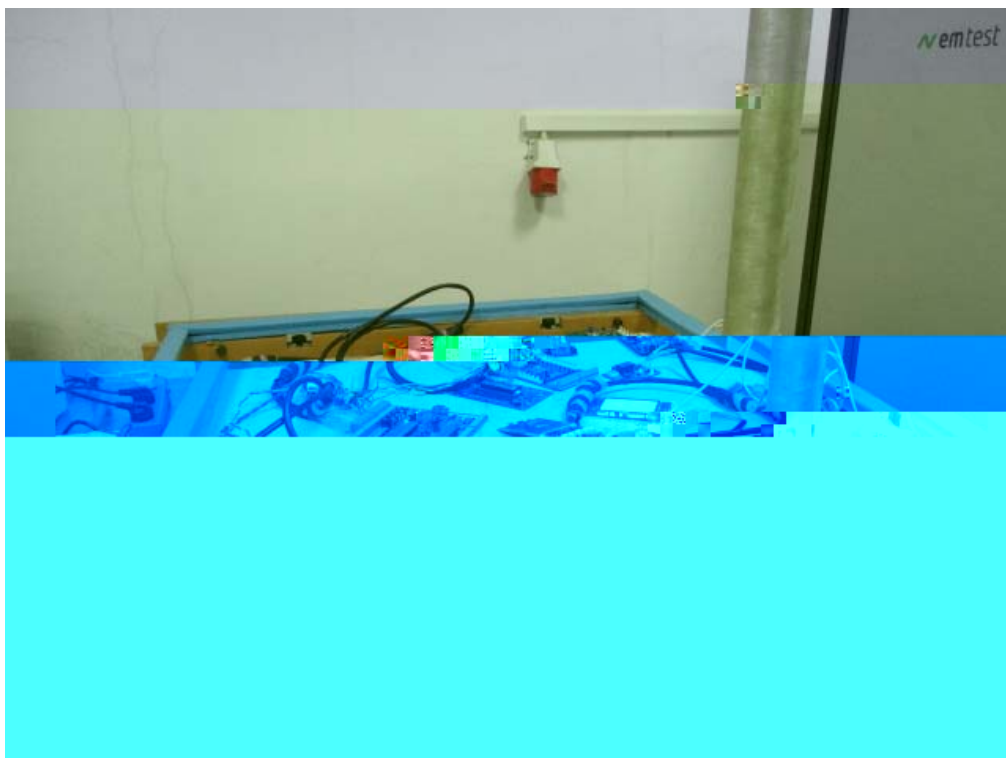
## 6. Surge Immunity Test



## 7. Immunity to Conducted Disturbances Induced by RF Fields



## 8. Power Frequency magnetic Field Immunity





## STATEMENT

**This test laboratory is accredited by CNAS, Accreditation Certificate No.L1659.**

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