# *CERTIFICATE OF EMC*

**CERTIFICATE NO.: SET2015-01559**

| | |
|---|---|
| **Product:** | Landing call and display board |
| **Model:** | BL2000-HBH-C* (*=9-9.99, 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. **SET2015-01559**, 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

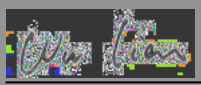
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# EMC TEST REPORT

| | |
|---|---|
| Report No. ! | SET2015-01559 |
| Product ! | Landing call and display board |
| Model No ! | BL2000-HBH-C* (*=9-9.99, 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 |
| Issued by ! | CCIC Southern Electronic Product Testing (Shenzhen)CO., Ltd. |
| Lab location ! | Building 28/29, Shigudong, Xili Industrial Area, Xili Street, Nanshan District, Shenzhen, Guangdong, China |
| Tel ! | 86 755 26627338 Fax: 86 755 26627238 |

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# Report

| | |
|---|---|
| Product. .....: | Landing call and display board |
| Model No. ……..: | BL2000-HBH-C* (*=9-9.99, 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+A1:2011 Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments<br>EN61000-6-2:2005 Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments |
| Test Result……: | Pass |
| Tested by ……..: | Feb. 06. 2015<br>Signature, Date |
| Reviewed by……: | Feb. 06. 2015<br>Signature, Date |
| Approved by……: |  Feb. 06. 2015<br>Signature, Date |

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# 1 General Information

## 1.1 Description of EUT

| | |
|---|---|
| Product: | Landing call and display board |
| Model No.: | BL2000-HBH-C9 |
| 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-HBH-C* (*=9-9.99, indicate the different customer or/and Software function number). Models differences do not affect the performance of EMC. All tests were performed on Model BL2000-HBH-C9 and results represented other models.
3. The highest frequency of the internal source of the EUT is below 108 MHz, so the radiated emission measurement shall be made up to 1GHz.

## 1.2 Objective

Perform ElectroMagnetic Interference (EMI) and ElectroMagnetic Susceptibility (EMS) tests for CE Marking.

# 2 Test Facilities and Configuration

## 2.1 Environmental Conditions

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

- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

## 2.2 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Radiated Emission, Uc = ±4.7dB

## 2.3 Test Standards and Results

The EUT has been tested according to the following specifications:

| EMISSION | | |
|---|---|---|
| Standard | Test Type | Result |
| EN61000-6-4:2007+A1:2011 | Radiated disturbance | PASS |
| IMMUNITY (EN61000-6-2:2005) | | |
| Basic Standard | Test Type | Result |
| IEC 61000-4-2 | Electrostatic discharge immunity | PASS |
| IEC 61000-4-3 | Radiated, radio frequency electromagnetic field immunity | PASS |
| IEC 61000-4-4 | Electrical fast transient/burst immunity | PASS |
| IEC 61000-4-5 | Surge immunity | PASS |
| IEC 61000-4-6 | Immunity to conducted disturbances induced by RF fields | PASS |
| IEC 61000-4-8 | Power frequency magnetic field immunity | PASS |

# 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(dBμV/m), 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.

### 3.2.2Test 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

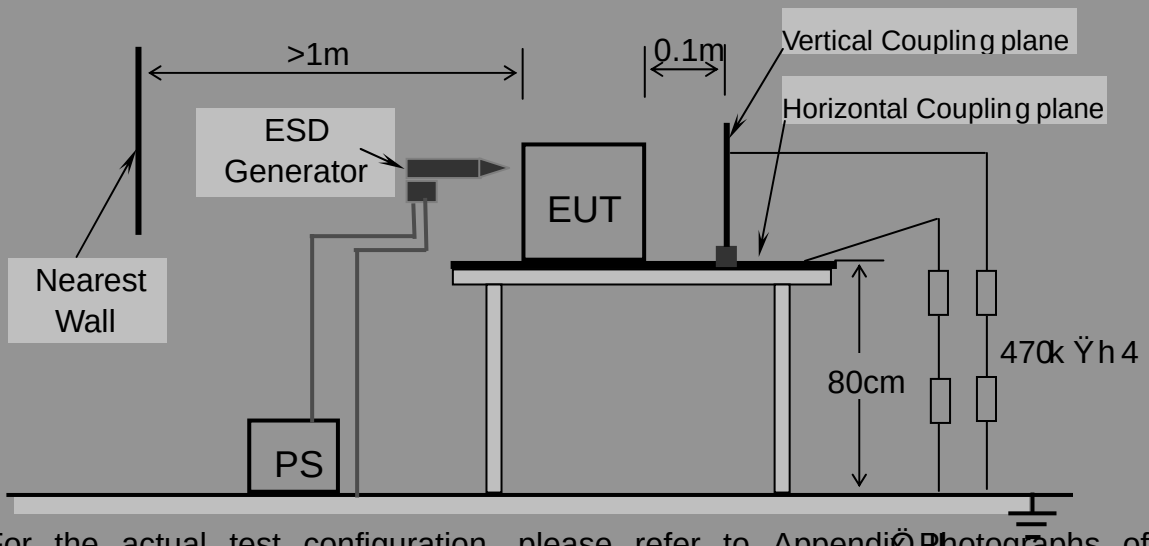
| | |
|---|---|
| Criterion A | The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. |
| Criterion B | The apparatus shall continue to operate 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. |
| Criterion C | 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

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

## 4.3.2 Test Setup




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

## 4.3.3 Test Result

| Test Points | Discharge Level (kV) | Discharge Mode | Observation | Comply with Criterion |
|---|---|---|---|---|
| Screen | ±2, 4, 6, 8 | Air | Note(1) | A |
| HCP | ± 2, 4 | Contact | Note(1) | A |
| VCP | ± 2, 4 | Contact | Note(1) | A |

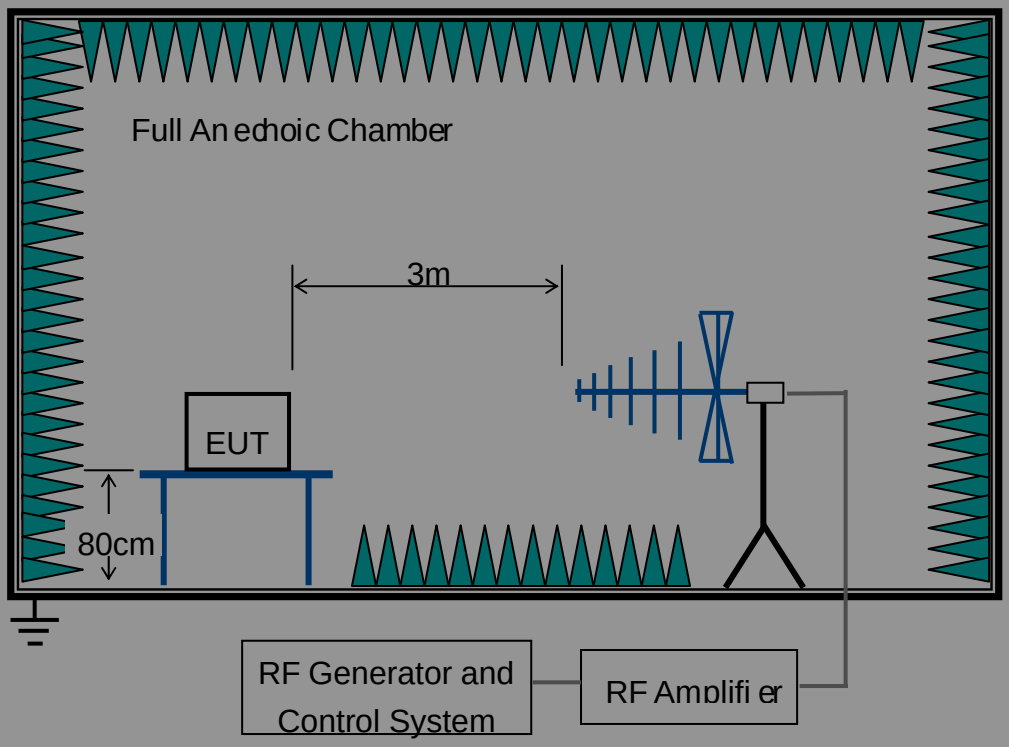
NOTE:
(1). The EUT continued to operate as intended. No degradation of performance was observed.

## 4.4 Radiated, Radio Frequency Electromagnetic Field Immunity Test

### 4.4.1 Test Specification

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

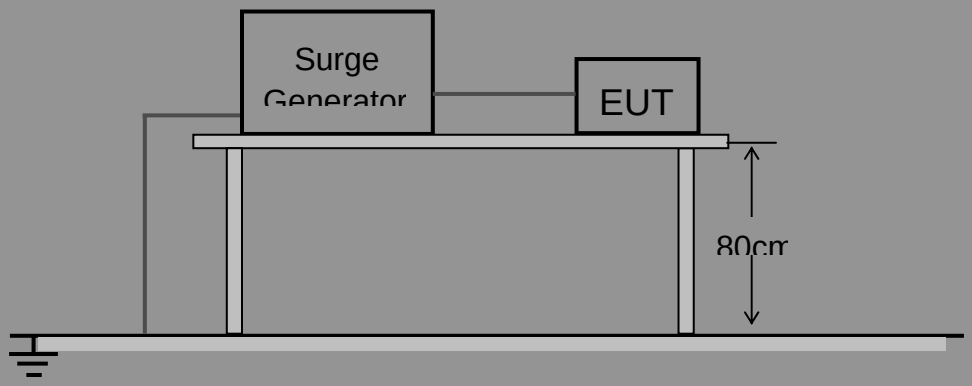
(1). The EUT continued to operate as intended. No degradation of performance was observed.

## 4.6 Surge Immunity Test

### 4.6.1 Test Specification

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

| | |
|---|---|
| Basic Standard: | IEC 61000-4-6 |
| Frequency Range: | 0.15 MHz – 80 MHz |
| Field Strength: | 10V |
| Modulation: | 1 kHz Sine Wave, 80%, AM Modulation |

## 4.8 Power Frequency Magnetic Field Immunity Test

### 4.8.1 Test Specification

| | |
|---|---|
| Basic Standard: | IEC 61000-4-8 |
| Frequency Range: | 50Hz |
| Field Strength: | 30A/m |
| Observation Time: | 2 minute |
| Inductance Coil: | Rectangular type, 1m*1m |
| Criterion: | A |

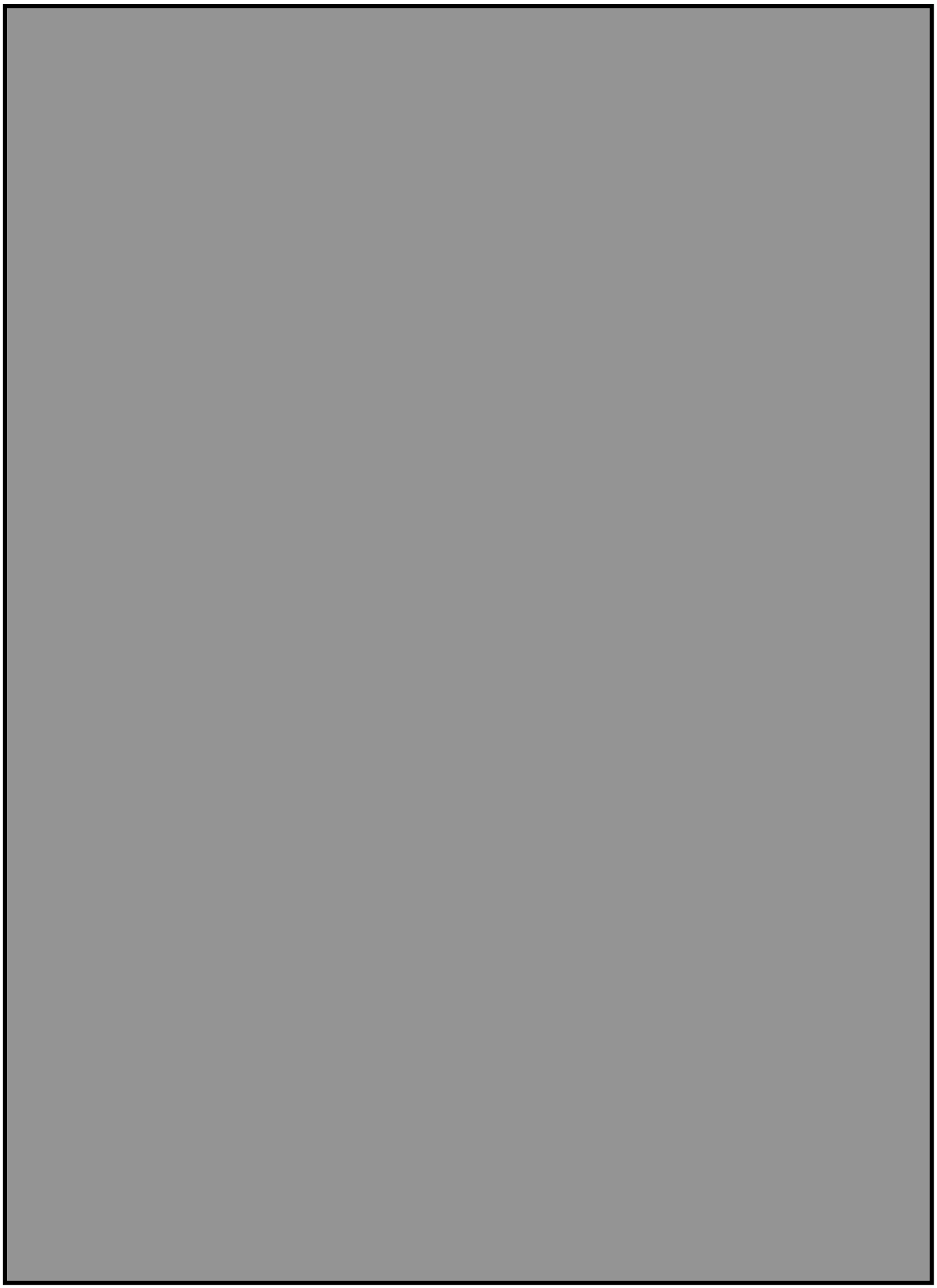
### 4.8.2 Test Setup

### 4.8.3 Test Result

| Direction | Field Strength(A/m) | Observation | Comply with Criterion |
|---|---|---|---|
| X | 30 | Note(1) | A |
| Y | 30 | Note(1) | A |
| Z | 30 | Note(1) | A |

NOTE:

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



# Appendix II ÖPhotographs of EMC Test Configuration

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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3. The test report is invalid without signature of person(s) testing and authorizing.
4. The test report is invalid if erased and corrected.
5. Test results of the report is valid to the test samples if sampling by client.
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