

# TEST REPORT

**FCC ID: 2ACT9ES-77279RX**

**Product: EZ-Wireless Command**

**Model No.: ES-77279**

**Additional Model No.: N/A**

**Trade Mark: N/A**

**Report No.: TCT151222E014**

**Issued Date: Dec. 25, 2015**

Issued for:

**Zhe Jiang Eastsun Autocar Things Co., Ltd.**

**No. 97 North Chezhan Road, Jiashan County, zhejiang, China.**

Issued By:

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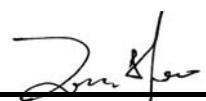
## 1. Test Certification

|                              |   |
|------------------------------|---|
| <b>Product:</b>              | EZ-Wireless Command   |
| <b>Model No.:</b>            | ES-77279  |
| <b>Applicant:</b>            | Zhe Jiang Eastsun Autocar Things Co., Ltd.                  |
| <b>Address:</b>              | No. 97 North Chezhan Road, Jiashan County, zhejiang, China. |
| <b>Manufacturer:</b>         | Zhe Jiang Eastsun Autocar Things Co., Ltd.                  |
| <b>Address:</b>              | No. 97 North Chezhan Road, Jiashan County, zhejiang, China. |
| <b>Test Voltage:</b>         | DC 12V from Battery   |
| <b>Date of Test:</b>         | Dec. 21, 2015~ Dec. 25, 2015                                |
| <b>Applicable Standards:</b> | 47 CFR FCC Part 15 Subpart B: 2014<br>ANSI C63.4: 2014      |

The above equipment has been tested by Shenzhen Tongce Testing Lab and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: 

Date: Dec. 25, 2015

Check By: 

Date: Dec. 26, 2015

Approved By: 

Tomsin

Date: Dec. 26, 2015

## 2. Test Result Summary

| Emission                     |                                       |        |
|------------------------------|---------------------------------------|--------|
| Test Method                  | Item                                  | Result |
| FCC 47 CFR Part 15 Subpart B | Conducted Emission at Mains Terminals | N/A    |
|                              | Radiated Emission                     | Pass   |

**Note:**

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. The information of measurement uncertainty is available upon the customer's request.

### 3. EUT Description

|                               |                     |
|-------------------------------|---------------------|
| <b>Product Name:</b>          | EZ-Wireless Command |
| <b>Model No.:</b>             | ES-77279            |
| <b>Power supply:</b>          | DC 12V from battery |
| <b>Operation Frequency:</b>   | 433.92MHz           |
| <b>Modulation Technology:</b> | ASK                 |
| <b>Antenna Type:</b>          | Integral Antenna    |
| <b>Antenna Gain:</b>          | 0dBi                |
| <b>Power Supply:</b>          | DC 12V from battery |

## 4. Test Methodology

### 4.1. Decision of Final Test Mode

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed:

|                        |
|------------------------|
| Test Mode              |
| Rx(433.92MHz)+Charging |

### 4.2. EUT System Operation

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

## 5. Setup of Equipment under Test

### 5.1. Description of Support Units

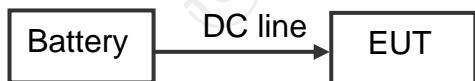
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Equipment | Model No. | Serial No. | FCC ID | Trade Name |
|-----------|-----------|------------|--------|------------|
| Battery   | 95D31R    | /          | /.     | FEIFAN     |

**Note:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### 5.2. Configuration of System Under Test



(EUT: EZ-Wireless Command)

## 6. Facilities and Accreditations

### 6.1. Facilities

All measurement facilities used to collect the measurement data are located at TCT Lab.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 6.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| No. | Item                          | MU                      |
|-----|-------------------------------|-------------------------|
| 1.  | Temperature                   | $\pm 0.1^\circ\text{C}$ |
| 2.  | Humidity                      | $\pm 1.0\%$             |
| 3.  | Spurious Emissions, Conducted | $\pm 2.56\text{ dB}$    |
| 4.  | All Emissions, Radiated       | $\pm 4.28\text{ dB}$    |

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

## 7. Emission Test

### 7.1. Conducted Emission at Mains Terminals

#### 7.1.1. Test Specification

|                          |                              |
|--------------------------|------------------------------|
| <b>Test Requirement:</b> | FCC 47 CFR Part 15 Subpart B |
| <b>Test Method:</b>      | ANSI C63.4:2014              |
| <b>Frequency Range:</b>  | 150 kHz to 30 MHz            |

#### 7.1.2. Limits

| Frequency<br>(MHz) | Class B dB(uV)       |                      |
|--------------------|----------------------|----------------------|
|                    | Quasi-peak           | Average              |
| 0.15 - 0.5         | 66 – 56 <sup>a</sup> | 56 – 46 <sup>a</sup> |
| 0.50 - 5.0         | 56                   | 46                   |
| 5.0 - 30.0         | 60                   | 50                   |

a. Decreases with the logarithm of the frequency

#### 7.1.3. Test Instruments

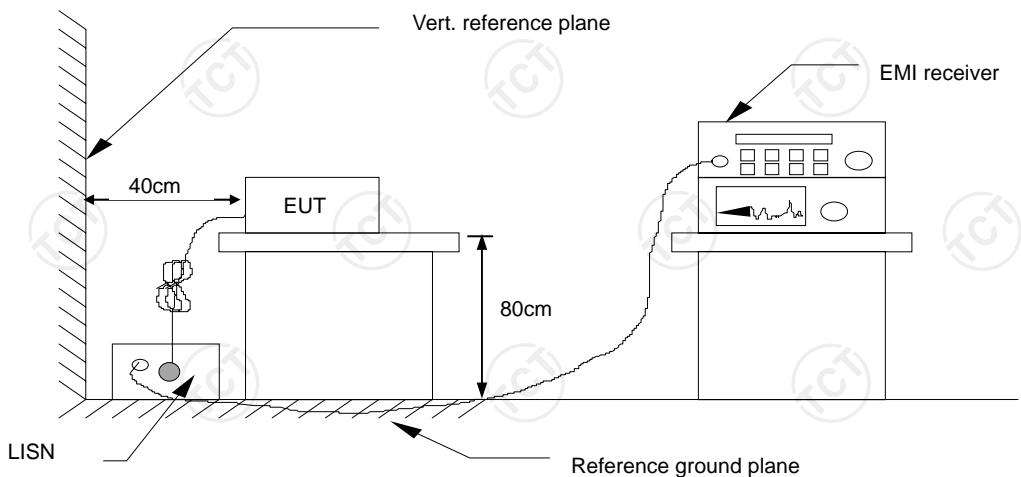
| Conducted Emission Shielding Room Test Site (843) |              |           |               |                 |
|---|--------------|-----------|---------------|-----------------|
| Equipment   | Manufacturer | Model     | Serial Number | Calibration Due |
| EMI Test Receiver                                 | R&S          | ESCS30    | 100139        | Sep. 11, 2016   |
| LISN  | Schwarzbeck  | NSLK 8126 | 8126453       | Sep. 16, 2016   |

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

#### 7.1.4. Test Method

The AMN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN

### 7.1.5. Block Diagram of Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

### 7.1.6. Test Results

|                          |   |              |                |
|--------------------------|---|--------------|----------------|
| <b>Test Environment:</b> | Temp.: 22 °C  | Humid.: 54 % | Press.: 96 kPa |
| <b>Test Mode:</b>        | N/A   |              |                |
| <b>Test Voltage:</b>     | AC 120 V/60 Hz  |              |                |
| <b>Test Result:</b>      | N/A, The EUT powered by battery DC 12V, so this test item is not applicable |              |                |

**Note:**

L1 = Live Line / N = Neutral Line

“---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level dB( $\mu$ V) = Receiver reading

Corr. Factor (dB) = Attenuator factor + Cable loss

Level dB( $\mu$ V) = Reading level dB( $\mu$ V) + Corr. Factor (dB)

Limit dB( $\mu$ V) = Limit stated in standard

Margin (dB) = Level dB( $\mu$ V) – Limits dB( $\mu$ V)

Q.P. =Quasi-Peak

AVG=Average

## 7.2. Radiated Emission

### 7.2.1. Test Specification

|                              |                              |
|------------------------------|------------------------------|
| <b>Test Requirement:</b>     | FCC 47 CFR Part 15 Subpart B |
| <b>Test Method:</b>          | ANSI C63.4:2014              |
| <b>Frequency Range:</b>      | 30 MHz to 5000 MHz           |
| <b>Measurement Distance:</b> | 3 m                          |
| <b>Antenna Polarization:</b> | Horizontal & Vertical        |

### 7.2.2. Limits

| <b>Frequency (MHz)</b> | <b>Class B (at 3m)</b>   |
|------------------------|--------------------------|
|                        | <b>dB<sub>UV</sub>/m</b> |
| 30 ~ 88                | 40.0                     |
| 88 ~ 216               | 43.5                     |
| 216 ~ 960              | 46.0                     |
| 960 ~ 1000             | 54.0                     |
| Above 1GHz             | 74.0(PK)                 |
|                        | 54.0(AV)                 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level  $dB(\mu V/m) = 20 \log$  Emission level ( $\mu V/m$ ).

**7.2.3. Test Instruments**

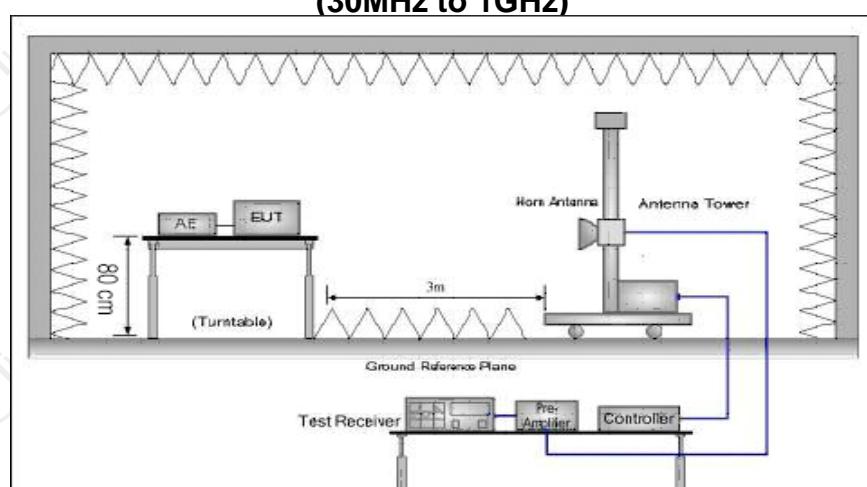
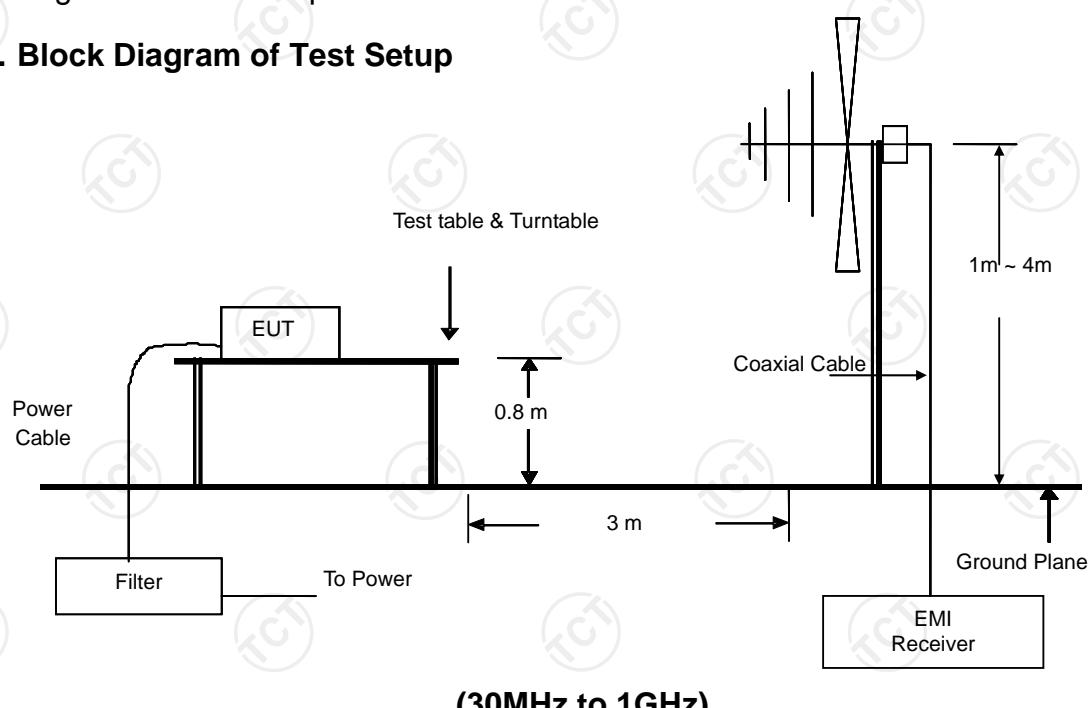
| Radiated Emission Test Site (966) |              |            |               |                 |
|-----------------------------------|--------------|------------|---------------|-----------------|
| Name of Equipment                 | Manufacturer | Model      | Serial Number | Calibration Due |
| EMI Test Receiver                 | R&S          | ESVD       | 100008        | Sep. 16, 2016   |
| Spectrum Analyzer                 | R&S          | FSEM       | 848597-001    | Sep. 16, 2016   |
| Amplifier                         | HP           | 8447D      | 2727A05017    | Sep. 16, 2016   |
| Amplifier                         | EM           | EM30265    | 07032613      | Sep. 16, 2016   |
| Broadband Antenna                 | Schwarzbeck  | VULB9163   | 340           | Sep. 17, 2016   |
| Horn Antenna                      | Schwarzbeck  | BBHA 9120D | 631           | Sep. 17, 2016   |
| Antenna Mater                     | CCS          | CC-A-4M    | N/A           | Sep.15 , 2016   |
| Coax cable                        | TCT          | RE-low-01  | N/A           | Sep.15 , 2016   |
| Coax cable                        | TCT          | RE-high-02 | N/A           | Sep.15 , 2016   |
| Coax cable                        | TCT          | RE-low-03  | N/A           | Sep.15 , 2016   |
| Coax cable                        | TCT          | RE-high-04 | N/A           | Sep.15 , 2016   |

**Note:** The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

#### 7.2.4. Test Method

Measurements were made in a 3-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. Block Diagram of Test Setup.

#### 7.2.5. Block Diagram of Test Setup



**(Above 1GHz)**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

### 7.2.6. Test Results

|                          |                        |              |                |
|--------------------------|------------------------|--------------|----------------|
| <b>Test Environment:</b> | Temp.: 23 °C           | Humid.: 53 % | Press.: 96 kPa |
| <b>Test Mode:</b>        | Rx(433.92MHz)+Charging |              |                |
| <b>Test Voltage:</b>     | DC 12 V                |              |                |
| <b>Test Result:</b>      | Pass                   |              |                |

**Note:**

Freq. = Emission frequency in MHz

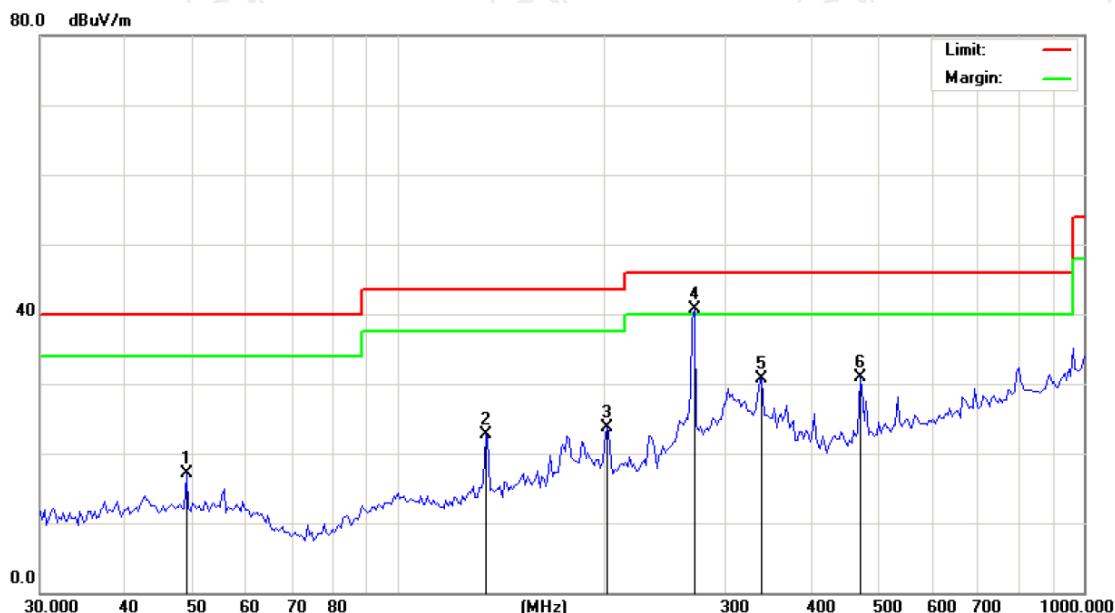
Reading level dB( $\mu$ V) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement dB( $\mu$ V/m) = Reading level dB( $\mu$ V) + Corr. Factor (dB)Limit dB( $\mu$ V/m) = Limit stated in standardMargin (dB) = Measurement dB( $\mu$ V/m) – Limits dB( $\mu$ V/m)

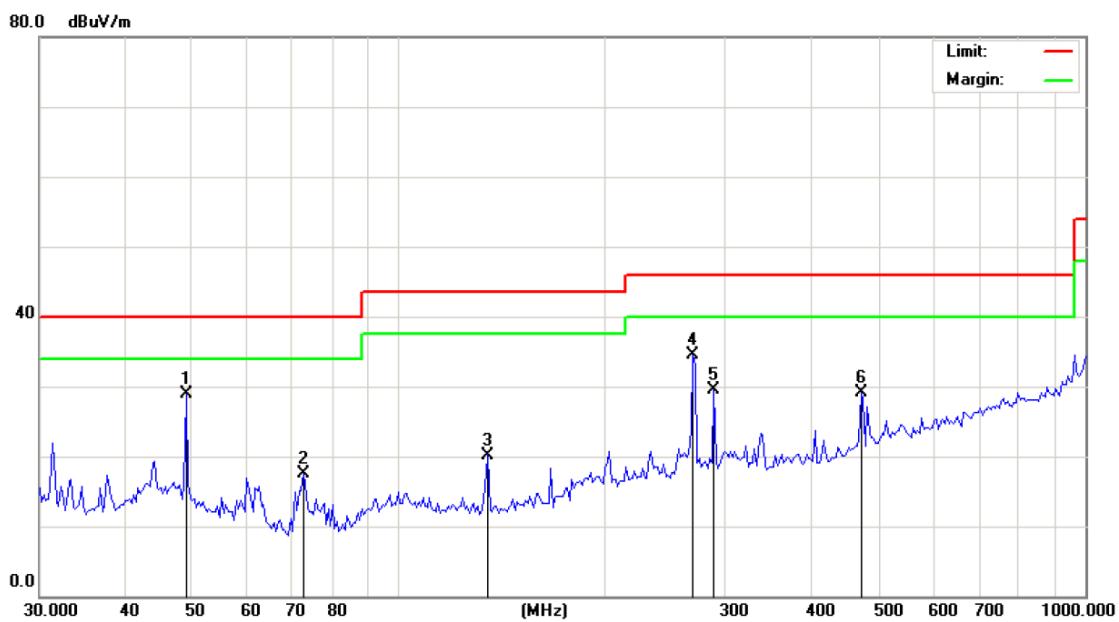
Q.P. =Quasi-Peak

Please refer to following diagram for individual



|                                    |                                 |                 |
|------------------------------------|---------------------------------|-----------------|
| Site                               | Polarization: <b>Horizontal</b> | Temperature: 23 |
| Limit: FCC Part 15B Class B RE_3 m | Power: DC 120V/60Hz             | Humidity: 54 %  |

| No. Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Antenna<br>Height<br>cm |    |        | Table<br>Degree |
|---------|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|-------------------------|----|--------|-----------------|
|         |              |                          |                         |                            |                 |            | Detector                | cm | degree |                 |
| 1       | 49.0627      | 29.21                    | -12.08                  | 17.13                      | 40.00           | -22.87     | peak                    |    | 0      |                 |
| 2       | 134.0194     | 37.95                    | -15.17                  | 22.78                      | 43.50           | -20.72     | peak                    |    | 0      |                 |
| 3       | 201.4540     | 35.27                    | -11.62                  | 23.65                      | 43.50           | -19.85     | peak                    |    | 0      |                 |
| 4 *     | 270.6162     | 49.97                    | -9.25                   | 40.72                      | 46.00           | -5.28      | peak                    |    | 0      |                 |
| 5       | 338.8546     | 38.15                    | -7.45                   | 30.70                      | 46.00           | -15.30     | peak                    |    | 0      |                 |
| 6       | 471.4665     | 34.86                    | -3.89                   | 30.97                      | 46.00           | -15.03     | peak                    |    | 0      |                 |



Site

Polarization: **Vertical**

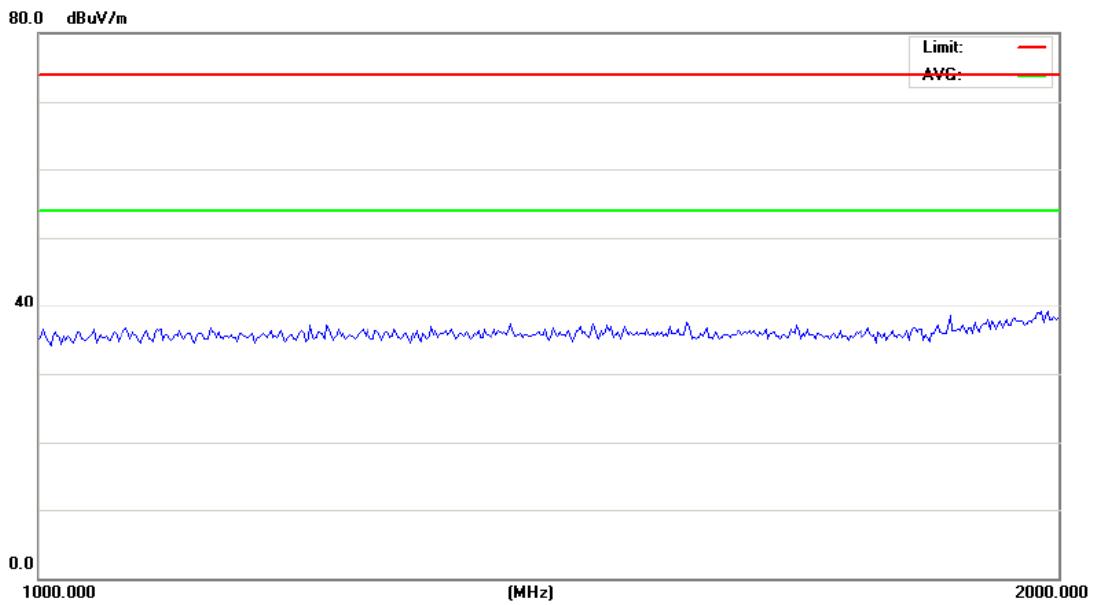
Temperature: 23

Limit: FCC Part 15B Class B RE\_3 m

Power: DC 120V/60Hz

Humidity: 54 %

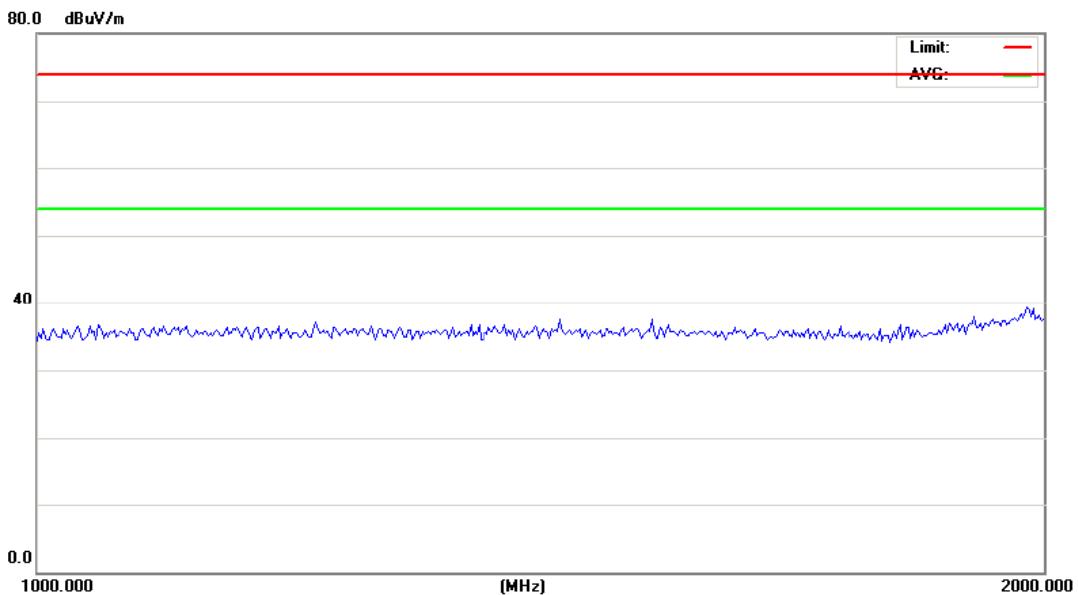
| No. | Mk. | Freq.    | Reading | Correct | Measure- | Limit  | Over   | Antenna | Table  |         |
|-----|-----|----------|---------|---------|----------|--------|--------|---------|--------|---------|
|     |     |          | Level   | Factor  | ment     |        |        |         |        |         |
|     |     |          | MHz     | dBuV    | dB       | dBuV/m | dBuV/m | cm      | degree | Comment |
| 1   | *   | 49.0627  | 40.95   | -12.08  | 28.87    | 40.00  | -11.13 | peak    | 0      |         |
| 2   |     | 72.7203  | 33.91   | -16.46  | 17.45    | 40.00  | -22.55 | peak    | 0      |         |
| 3   |     | 134.9645 | 35.41   | -15.21  | 20.20    | 43.50  | -23.30 | peak    | 0      |         |
| 4   |     | 268.7212 | 43.89   | -9.32   | 34.57    | 46.00  | -11.43 | peak    | 0      |         |
| 5   |     | 288.2840 | 38.20   | -8.65   | 29.55    | 46.00  | -16.45 | peak    | 0      |         |
| 6   |     | 471.4665 | 33.03   | -3.89   | 29.14    | 46.00  | -16.86 | peak    | 0      |         |



Site Polarization: **Horizontal** Temperature: 23

Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: DC 12V Humidity: 54 %

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-<br>ment | Limit  | Over | Antenna Height | Table Degree | Comment |
|-----|-----|-------|---------------|----------------|------------------|--------|------|----------------|--------------|---------|
|     |     | MHz   | dBuV          | dB             | dBuV/m           | dBuV/m | dB   | Detector       | cm           | degree  |



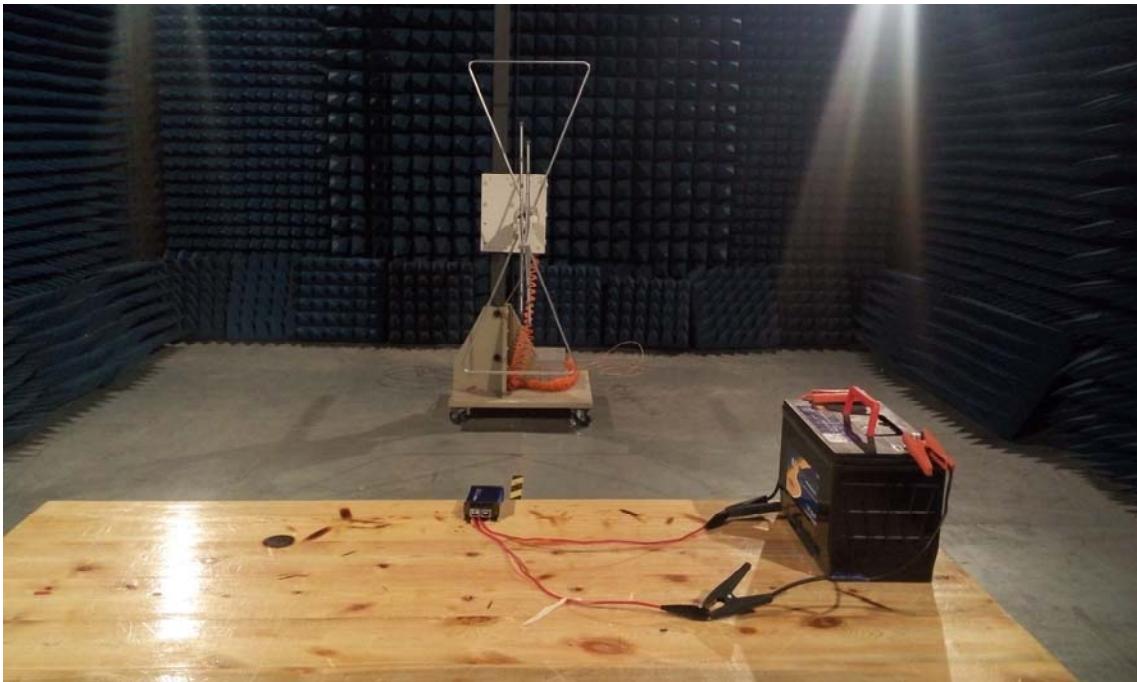
| Site  | Polarization: <i>Horizontal</i> | Temperature: 23          |                         |                            |                 |            |                     |                       |                           |         |
|---|---------------------------------|--------------------------|-------------------------|----------------------------|-----------------|------------|---------------------|-----------------------|---------------------------|---------|
| Limit: FCC Part 15B Class B Above 1GHz RE(PK) | Power: DC 12V                   | Humidity: 54 %           |                         |                            |                 |            |                     |                       |                           |         |
| <hr/>   |                                 |                          |                         |                            |                 |            |                     |                       |                           |         |
| No. Mk.                                       | Freq.<br>MHz                    | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Antenna<br>Detector | Table<br>Height<br>cm | Table<br>Degree<br>degree | Comment |

Note: 1. Any value more than 10 dB below limit have not been specifically reported.

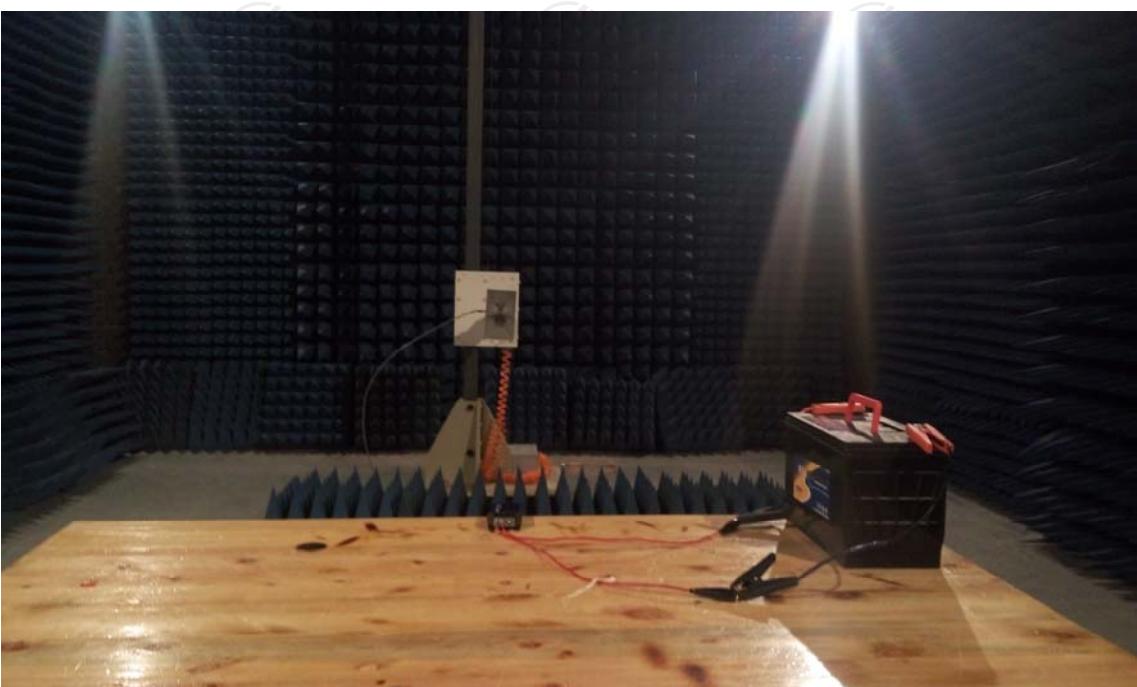
2. The emission level which started from 2GHz~5GHz was 20dB lower than the limit line, so not reported

## 8. Photographs of Test Configuration

Radiated Emission Test View (Below 1 GHz)



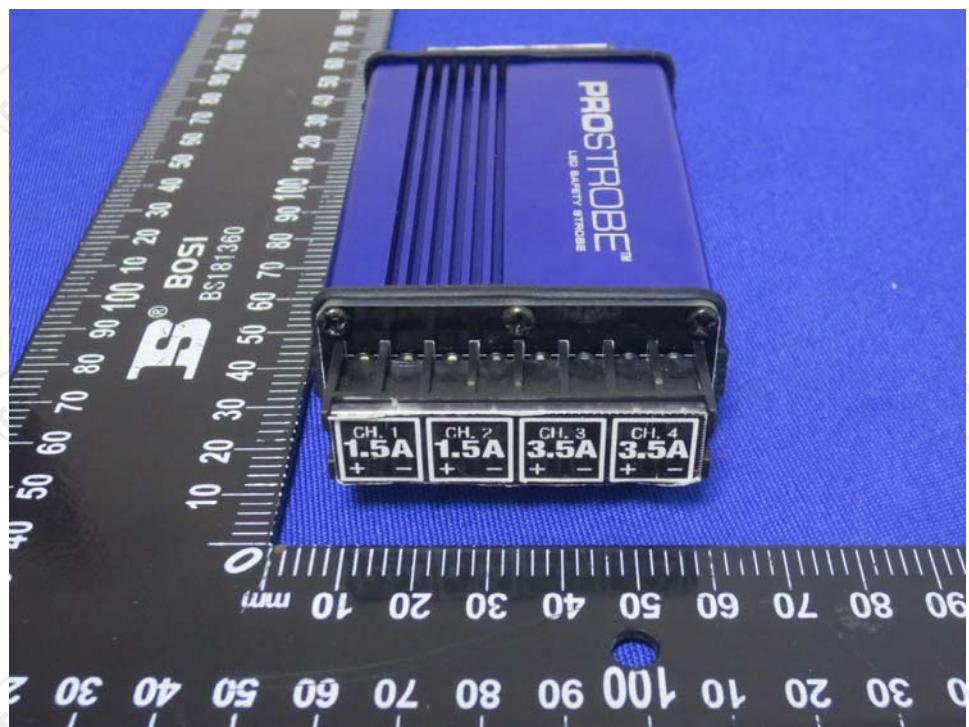
Radiated Emission Test View (Above 1 GHz)

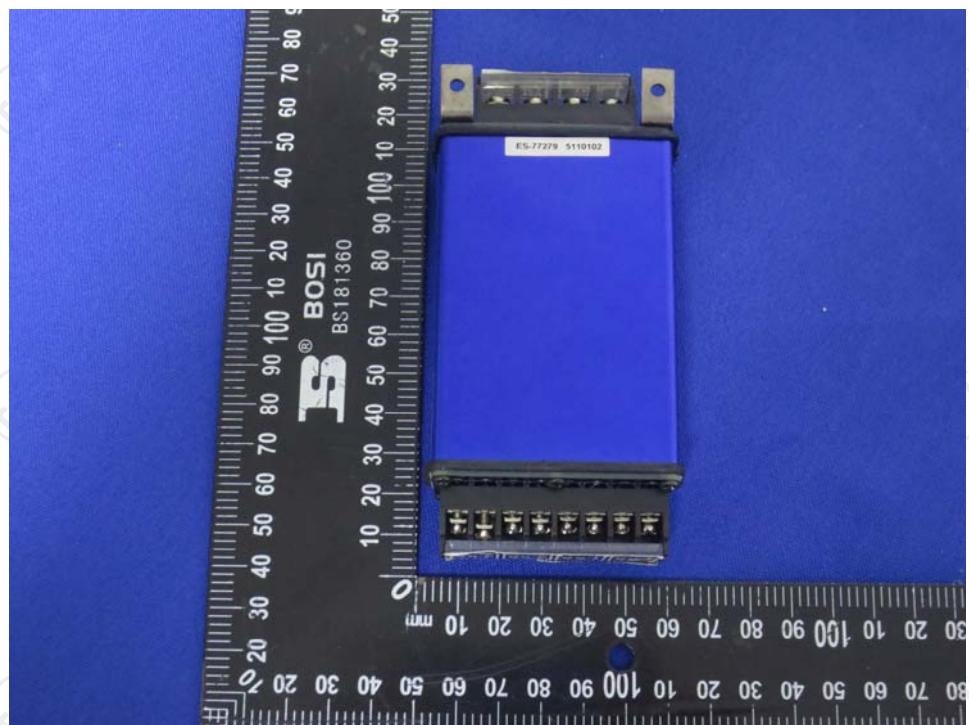
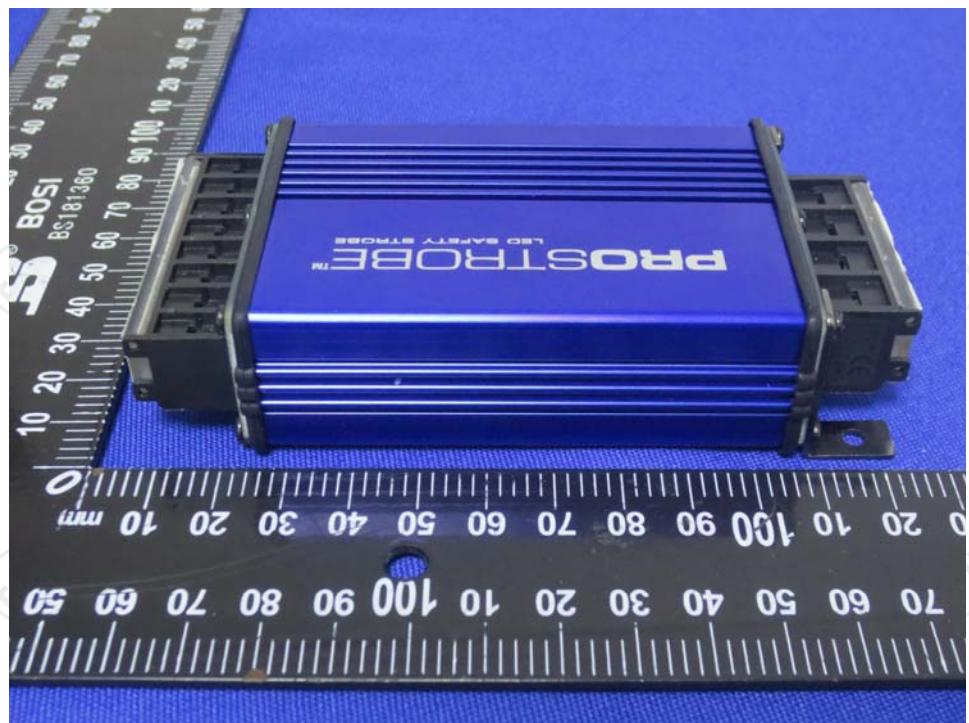


## 9. Photographs of EUT

### External Photos

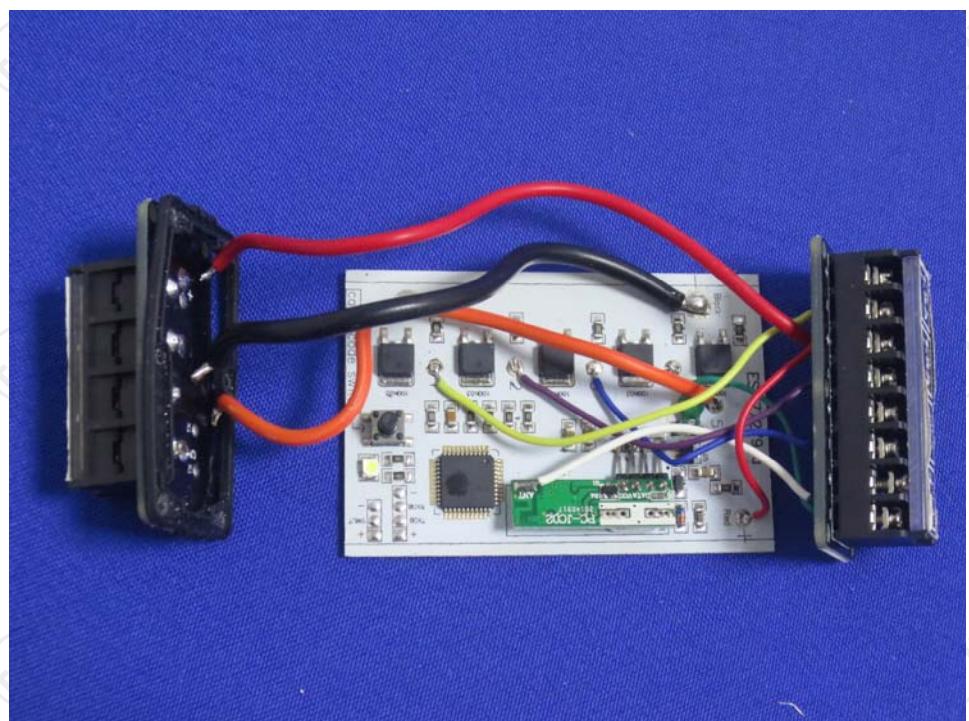


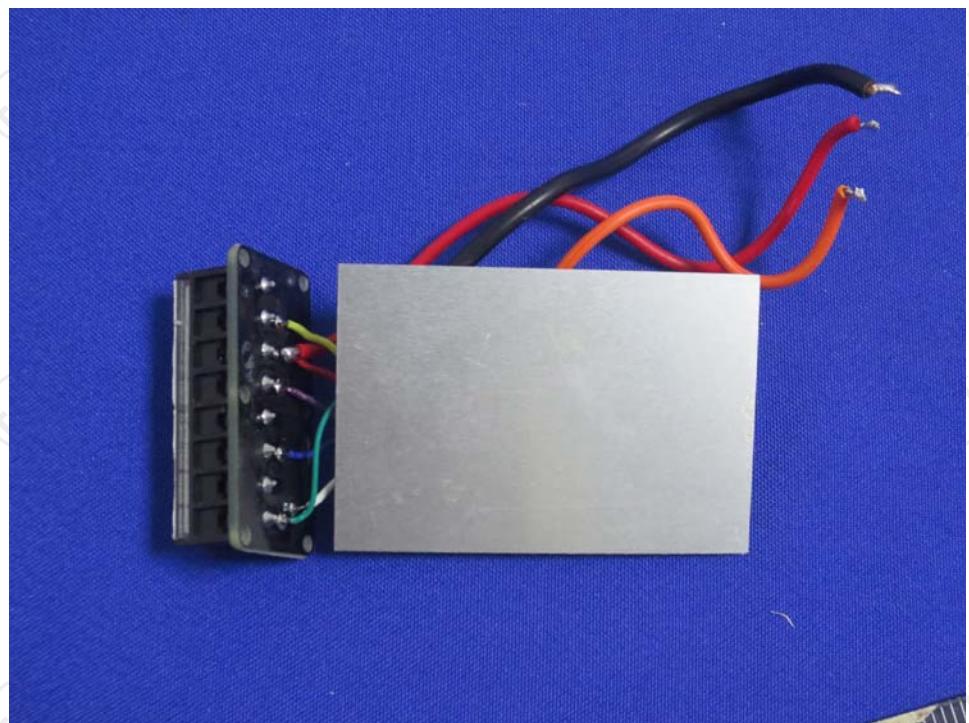
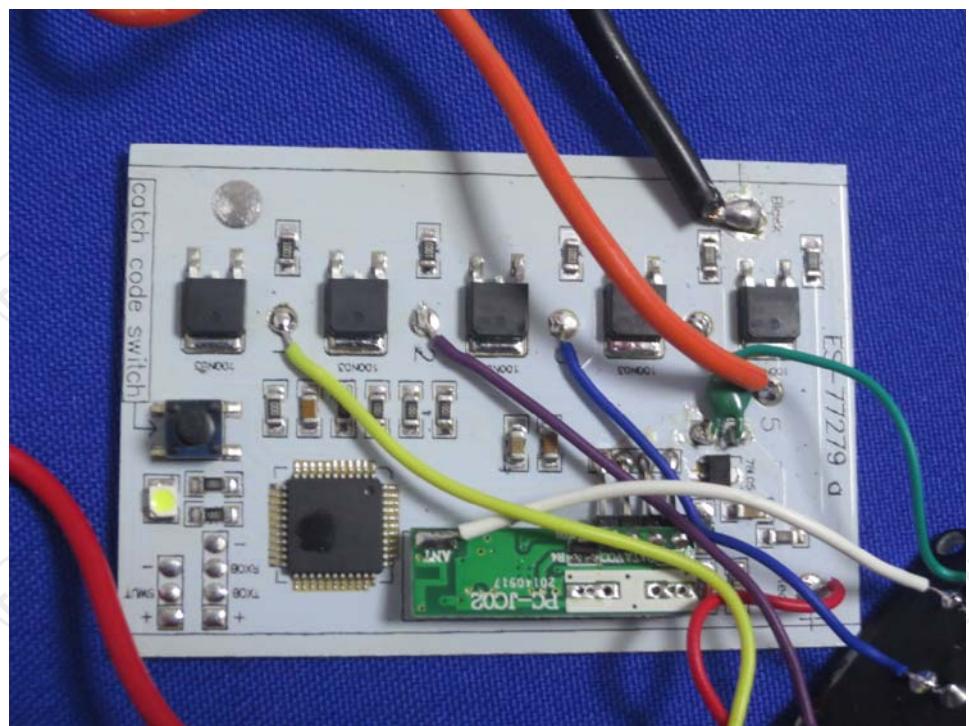


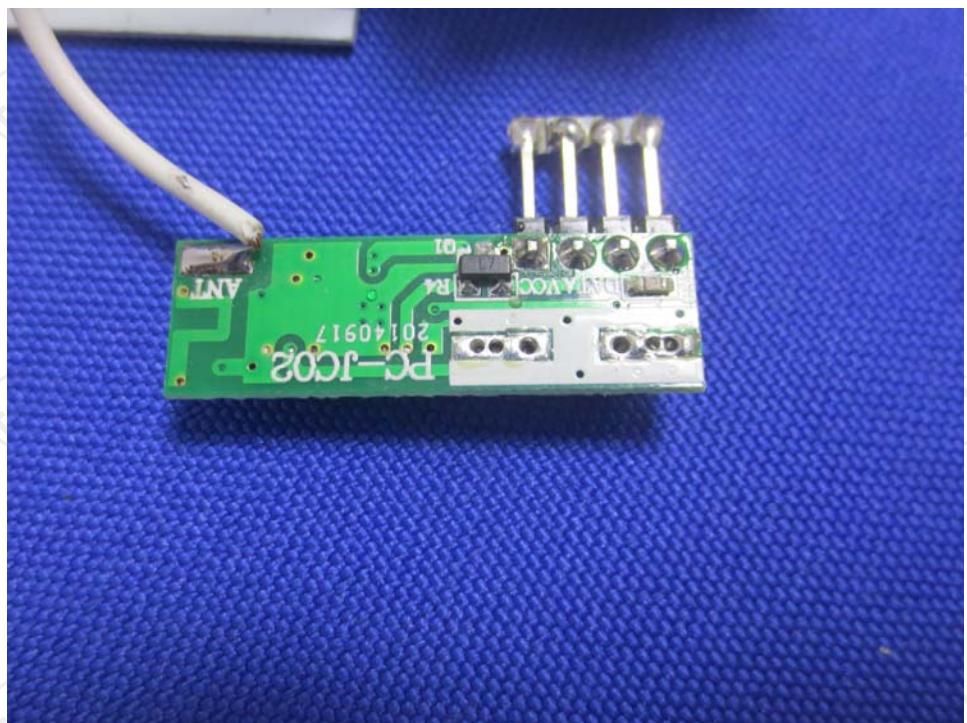




**Model: ES-77279  
Internal Photos**







\*\*\*\*\***END OF REPORT**\*\*\*\*\*