

# EMC TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results are contained in this test report. Dongguan Nore Testing Center Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Applicant : Maxxsonics USA Inc  
Address : 851 E. Park Avenue Libertyville, IL 60048 USA  
Manufacturer/ Factory : HASDA ELECTRIC LTD.  
Address : No.4, Xianglong Street, Changlong Village, Huangjiang Town, Dongguan City, Guangdong Province, China  
E.U.T. : WATERPROOF MP3 RADIO RECEIVER  
Brand Name : POLARIS  
Model No. : 2636364  
Measurement Standard : CFR 47 FCC Part 15, Subpart B, Class B 2014  
Date of Receiver : January 16, 2016  
Date of Test : January 16, 2016 to January 29, 2016  
Date of Report : January 29, 2016

This Test Report is Issued Under the Authority of :

Prepared by



Rose Hu / Engineer

Approved & Authorized Signer



Iori Fan / Authorized Signatory

This report shows that the E.U.T. is technically compliant with the CFR 47 FCC Part 15, Subpart B, Class B. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

TEL: +86-769-22022444 FAX: +86-769-22022799 Web: [www.ntc-c.com](http://www.ntc-c.com)

Address: Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District,  
Dongguan, Guangdong, China.

## **Revision History of This Test Report**

---

## TABLE OF CONTENTS

|   |           |
|---|-----------|
| <b>1. SUMMARY OF TEST RESULTS .....</b>             | <b>4</b>  |
| <b>2. GENERAL INFORMATION.....</b>                  | <b>5</b>  |
| 2.1 Details of E.U.T. .....                         | 5         |
| 2.2 Description of Support Device .....             | 5         |
| 2.3 Block Diagram of Test Setup .....               | 6         |
| 2.4 Test Facility .....                             | 7         |
| 2.5 Abnormalities from Standard Conditions .....    | 7         |
| <b>3. MEASURING DEVICES AND TEST EQUIPMENT.....</b> | <b>8</b>  |
| 3.1 For Radiated Emission Measurement .....         | 8         |
| <b>4. RADIATED EMISSION MEASUREMENT.....</b>        | <b>9</b>  |
| 4.1 Block Diagram of Test .....                     | 9         |
| 4.2 Limit of Radiated Emission Measurement .....    | 9         |
| 4.3 Test Procedure .....                            | 10        |
| 4.4 Operating Condition of E.U.T. .....             | 10        |
| 4.5 Radiated Emission Measurement Result.....       | 10        |
| <b>5. PHOTOGRAPH.....</b>                           | <b>13</b> |
| 5.1 Photo of Radiation Emission Measurement .....   | 13        |

Appendix I (Photos of E.U.T.) (7 pages)

## 1. SUMMARY OF TEST RESULTS

The E.U.T. has been tested according to the following specifications:

| EMISSION  |                        |        |                    |
|---|------------------------|--------|--------------------|
| Standard  | Test Type              | Result | Remarks            |
| CFR 47 FCC Part 15,<br>Subpart B, Class B<br>2014 | Radiated Emission Test | PASS   | Uncertainty: 3.4dB |

## 2. GENERAL INFORMATION

### 2.1 Details of E.U.T.

E.U.T. : WATERPROOF MP3 RADIO RECEIVER

Model No. : 2636364

Brand name : POLARIS

Rating : DC 12V

Adapter : None

E.U.T. Type : Class B

Operation Frequency : Below 108MHz (Except BT function)

Test Voltage : DC 12V

Cable : None

Description of model : None  
difference

Remark : None

### 2.2 Description of Support Device

FM : Manufacturer: LEADER  
Signal Generator M/N: 3214  
S/N: 1100164

USB Flash Disk : Manufacturer: Kingston  
M/N: 4GB

iPod : Manufacturer: Apple  
M/N: A1446

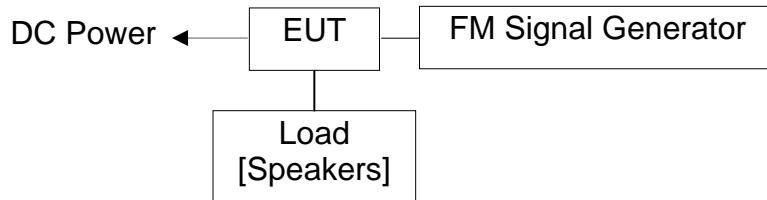
Speakers : Manufacturer: Fenda  
M/N: A530

Speakers : Manufacturer: Fenda  
M/N: M2

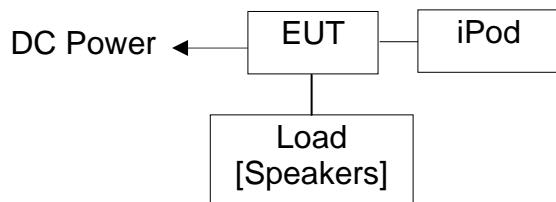
## 2.3 Block Diagram of Test Setup

Block diagram of connection between the E.U.T. and simulators

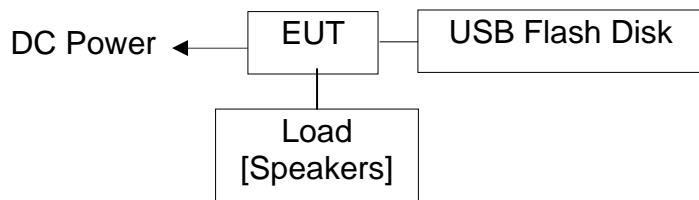
### (1) FM Mode



### (2) AUX IN



### (3) USB Playing



## 2.4 Test Facility

|                  |   |
|------------------|---|
| Site Description |   |
| EMC Lab          | : Listed by CNAS, August 14, 2015<br>The certificate is valid until August 13, 2018<br>The Laboratory has been assessed and proved to<br>be in compliance with CNAS/CL01<br>The Certificate Registration Number is L5795. |
|                  | Listed by FCC, July 03, 2014<br>The Certificate Number is 665078.   |
|                  | Listed by Industry Canada, June 18, 2014<br>The Certificate Registration Number. Is 46405-9743  |
| Name of Firm     | : Dongguan Nore Testing Center Co., Ltd.<br>(Dongguan NTC Co., Ltd.)  |
| Site Location    | : Building D, Gaosheng Science & Technology Park,<br>Zhouxi Longxi Road, Nancheng District, Dongguan,<br>Guangdong, China.  |

## 2.5 Abnormalities from Standard Conditions

None

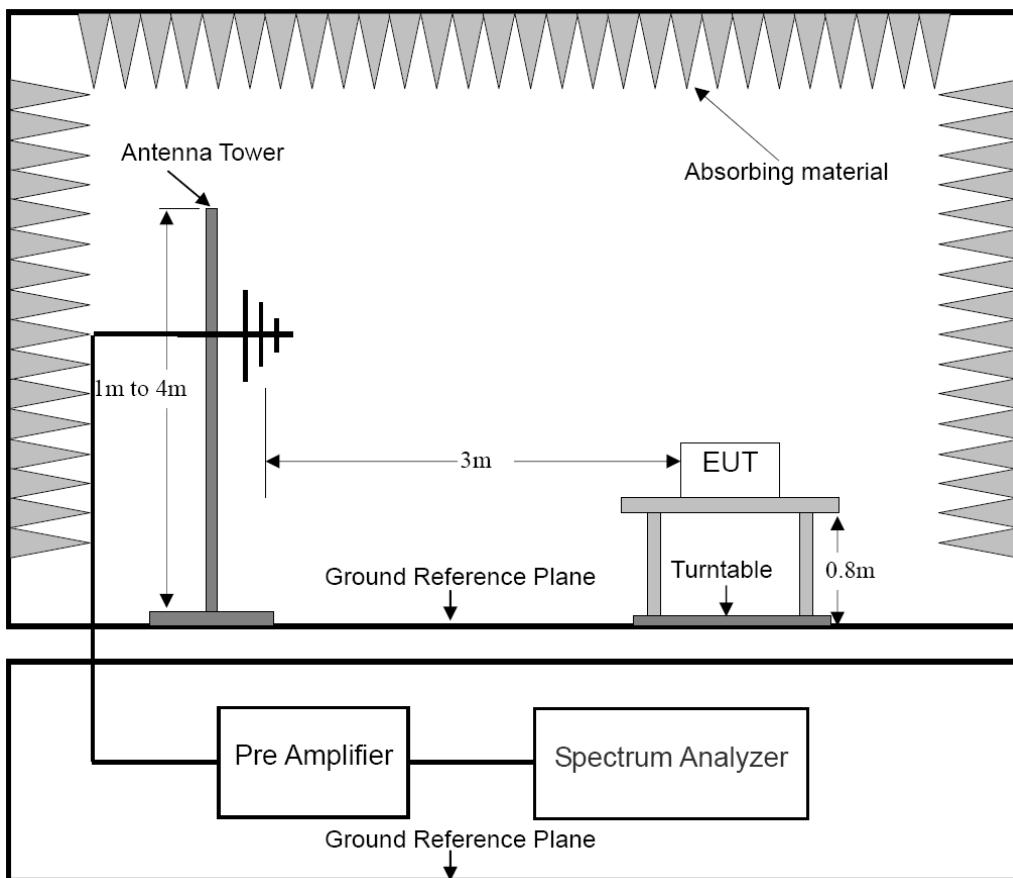
### 3. MEASURING DEVICES AND TEST EQUIPMENT

#### 3.1 For Radiated Emission Measurement

| Item | Equipment                      | Manufacturer    | Model No.  | Serial No. | Last Cal.     | Cal. Interval |
|------|--------------------------------|-----------------|------------|------------|---------------|---------------|
| 1.   | Test Receiver                  | Rohde & Schwarz | ESCI7      | 100837     | Mar. 07, 2015 | 1 Year        |
| 2.   | Antenna                        | Schwarzbeck     | VULB9162   | 9162-010   | Mar. 14, 2015 | 1 Year        |
| 3.   | Positioning Controller         | UC              | UC 3000    | N/A        | N/A           | N/A           |
| 4.   | Color Monitor                  | SUNSPO          | SP-140A    | N/A        | N/A           | N/A           |
| 5.   | Single Phase Power Line Filter | SAEMC           | PF201A-32  | 110210     | N/A           | N/A           |
| 6.   | 3 Phase Power Line Filter      | SAEMC           | PF401A-200 | 110318     | N/A           | N/A           |
| 7.   | DC Power Filter                | SAEMC           | PF301A-200 | 110245     | N/A           | N/A           |
| 8.   | Cable                          | Huber+Suhner    | CBL3-NN-9M | 21490001   | Mar. 07, 2015 | 1 Year        |
| 9.   | Cable                          | Huber+Suhner    | RG223U     | N/A        | Mar. 07, 2015 | 1 Year        |
| 10.  | Power Amplifier                | HP              | HP 8447D   | 1145A00203 | Mar. 07, 2015 | 1 Year        |

## 4. RADIATED EMISSION MEASUREMENT

### 4.1 Block Diagram of Test



### 4.2 Limit of Radiated Emission Measurement

Test Standard: CFR 47 FCC Part 15, Class B

| Frequency range<br>MHz | Distance<br>Meters | Field Strengths Limit |                                   |
|------------------------|--------------------|-----------------------|-----------------------------------|
|                        |                    | $\mu\text{V/m}$       | $\text{dB}(\mu\text{V})/\text{m}$ |
| 30 ~ 88                | 3                  | 100                   | 40.0                              |
| 88 ~ 216               | 3                  | 150                   | 43.5                              |
| 216 ~ 960              | 3                  | 200                   | 46.0                              |
| 960 ~ 1000             | 3                  | 500                   | 54.0                              |

- Remark : (1) Emission level ( $\text{dB}\mu\text{V}$ ) =  $20 \log$  Emission level  $\mu\text{V/m}$   
(2) The smaller limit shall apply at the cross point between two frequency bands.  
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

### 4.3 Test Procedure

E.U.T. 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. E.U.T. is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to FCC ANSI C63.4-2014 on radiated emission measurement.

The bandwidth of the EMI test receiver is set at 120 KHz.

The frequency range from 30 MHz to 1 GHz is checked.

### 4.4 Operating Condition of E.U.T.

4.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

4.4.2 Turn on the power of all equipments.

4.4.3 Let the E.U.T. work in test modes (FM Mode, USB Playing, AUX IN) and test it.

### 4.5 Radiated Emission Measurement Result

**PASS.**

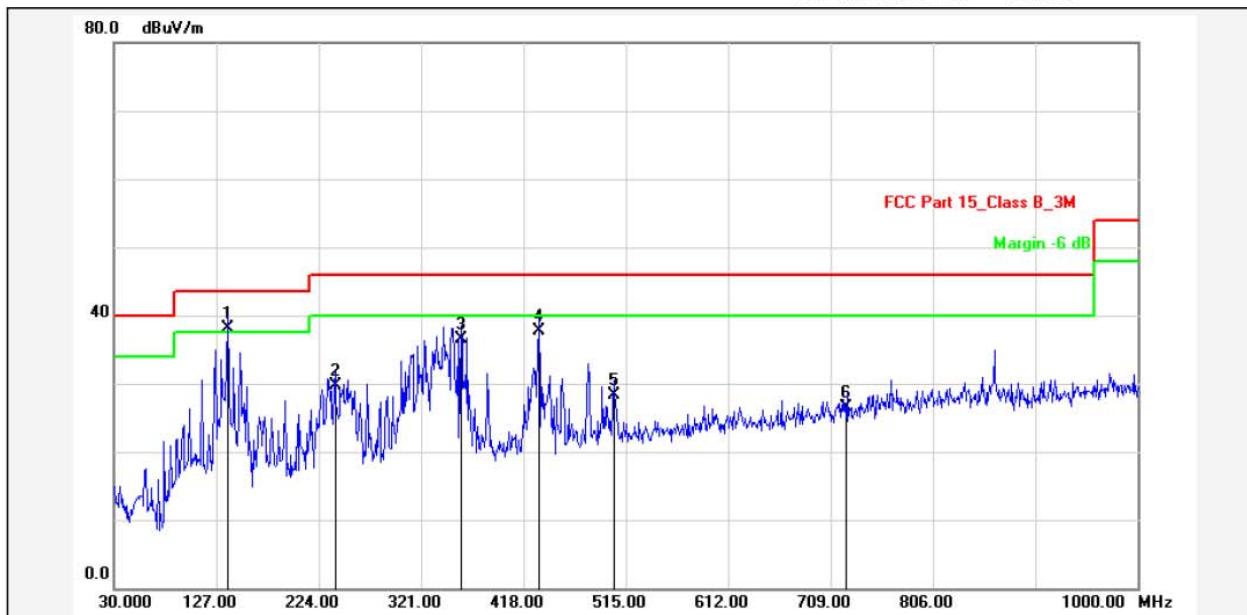
Please refer to the following pages of the worst case: AUX IN.



**Dongguan NTC Co., Ltd.**  
Tel:+86-769-22022444 Fax:+86-769-22022799  
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Radiation

Test Time: 2016-1-21 13:43:52



Report No.: 2636364

Test Standard: FCC Part 15\_Class B\_3M

Test Distance: 3m

Test item: Radiation Emission

Ant. Polarization: Horizontal

Applicant: Maxxonics USA Inc

Temp.(C)/Hum.(%): 22(C) / 54 %

Product: WATERPROOF MP3 RADIO RECEIVER

Power Rating: DC 12V

Model No.: 2636364

Test Engineer: Frank

Test Mode: AXU IN

Remark:

| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|---------------|----------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1   | 137.6700        | -15.48        | 53.58          | 38.10          | 43.50          | -5.40       | QP       |             |                | P   |        |
| 2   | 239.5200        | -12.06        | 41.86          | 29.80          | 46.00          | -16.20      | QP       |             |                | P   |        |
| 3   | 358.8299        | -9.14         | 45.64          | 36.50          | 46.00          | -9.50       | QP       |             |                | P   |        |
| 4   | 432.5500        | -8.37         | 46.07          | 37.70          | 46.00          | -8.30       | QP       |             |                | P   |        |
| 5   | 503.3600        | -6.75         | 35.15          | 28.40          | 46.00          | -17.60      | QP       |             |                | P   |        |
| 6   | 724.5198        | -3.19         | 29.69          | 26.50          | 46.00          | -19.50      | QP       |             |                | P   |        |

Note: Level=Reading+Factor.

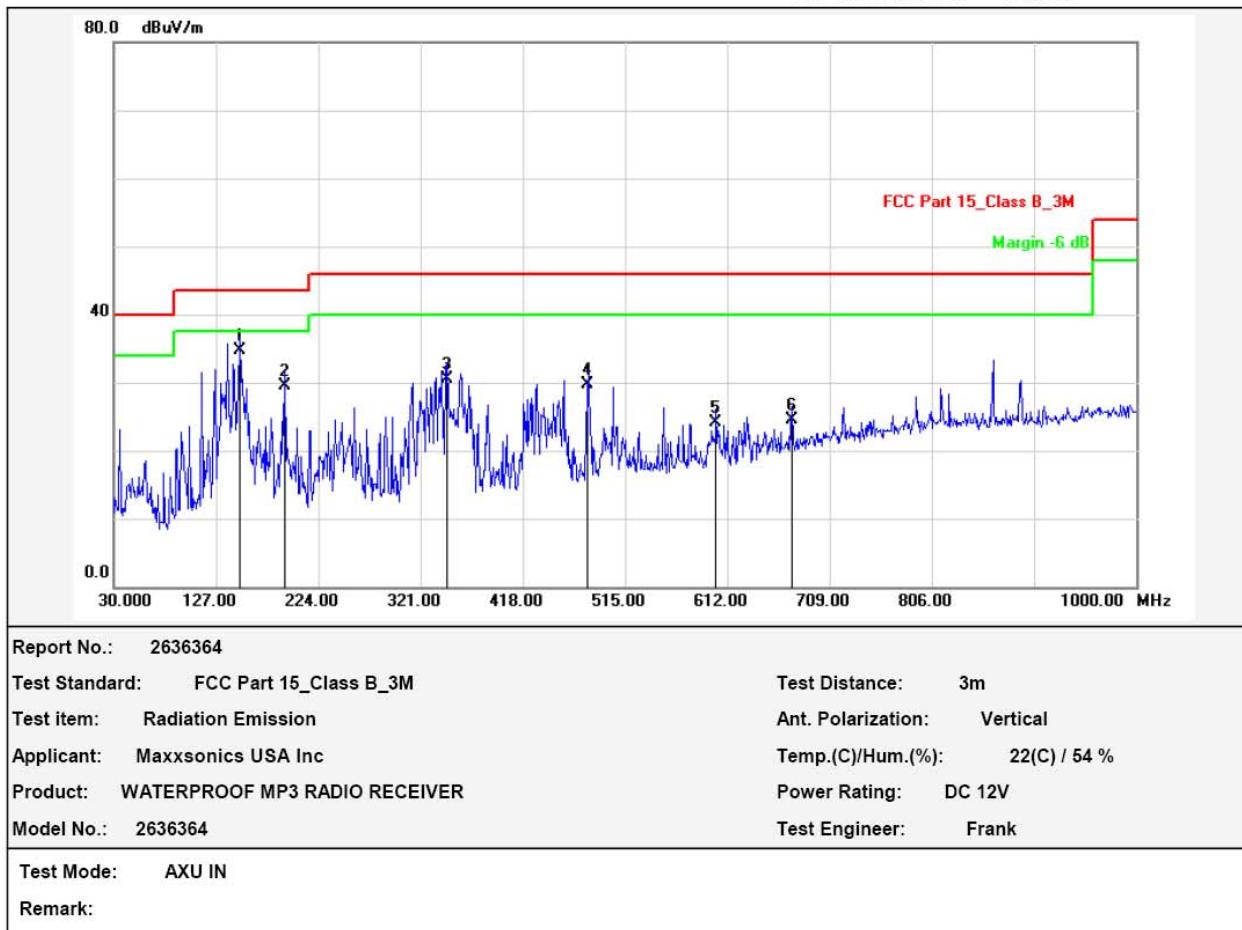
Margin=Limit-Level.



**Dongguan NTC Co., Ltd.**  
Tel:+86-769-22022444 Fax:+86-769-22022799  
Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Radiation

Test Time: 2016-1-21 13:49:16



| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|-----|-----------------|---------------|----------------|----------------|----------------|-------------|----------|-------------|----------------|-----|--------|
| 1   | 149.3100        | -18.52        | 53.22          | 34.70          | 43.50          | -8.80       | QP       |             |                | P   |        |
| 2   | 191.9900        | -16.51        | 46.01          | 29.50          | 43.50          | -14.00      | QP       |             |                | P   |        |
| 3   | 346.2200        | -11.19        | 41.79          | 30.60          | 46.00          | -15.40      | QP       |             |                | P   |        |
| 4   | 480.0799        | -9.21         | 38.91          | 29.70          | 46.00          | -16.30      | QP       |             |                | P   |        |
| 5   | 601.3300        | -7.00         | 31.10          | 24.10          | 46.00          | -21.90      | QP       |             |                | P   |        |
| 6   | 673.1100        | -4.53         | 29.03          | 24.50          | 46.00          | -21.50      | QP       |             |                | P   |        |

Note: Level=Reading+Factor.

Margin=Limit-Level.

## 5. PHOTOGRAPH

### 5.1 Photo of Radiation Emission Measurement



---

# APPENDIX I

## (Photos of E.U.T.)

**Figure 1**  
General Appearance of the E.U.T.



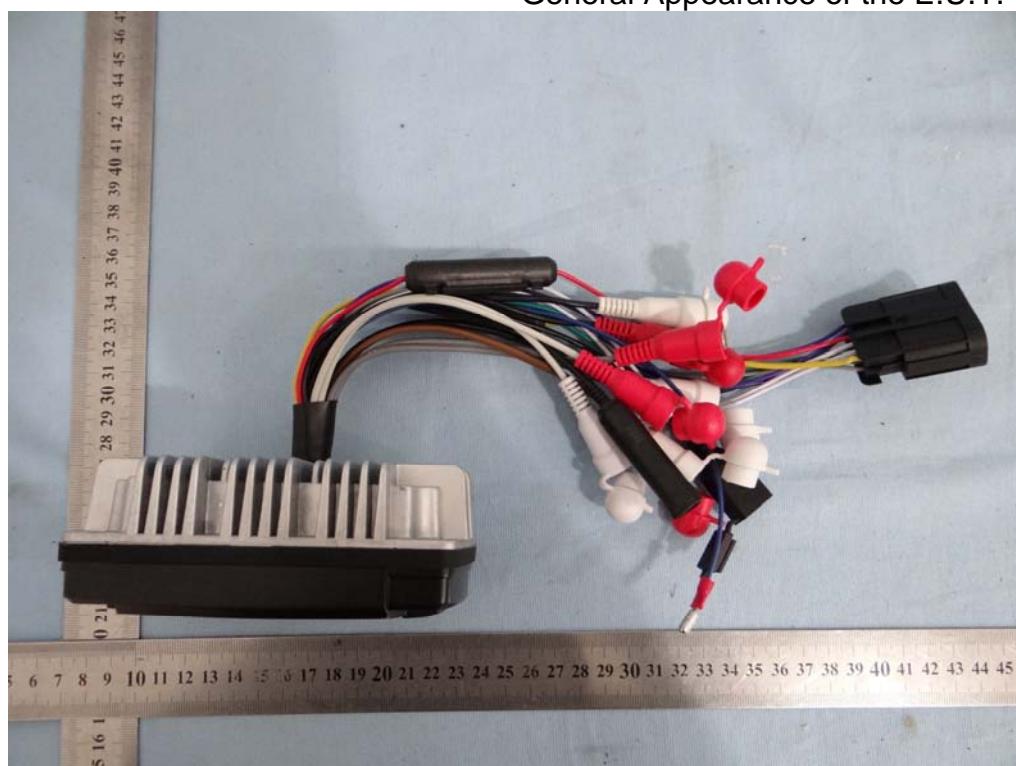
**Figure 2**  
General Appearance of the E.U.T.



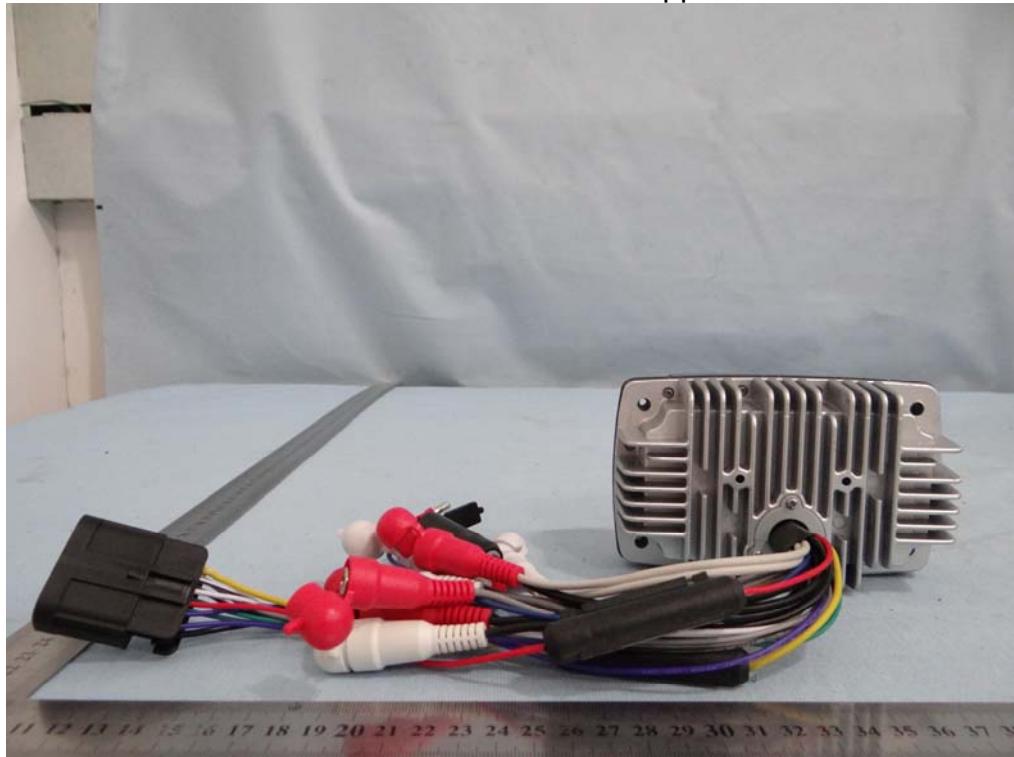
**Figure 3**  
General Appearance of the E.U.T.



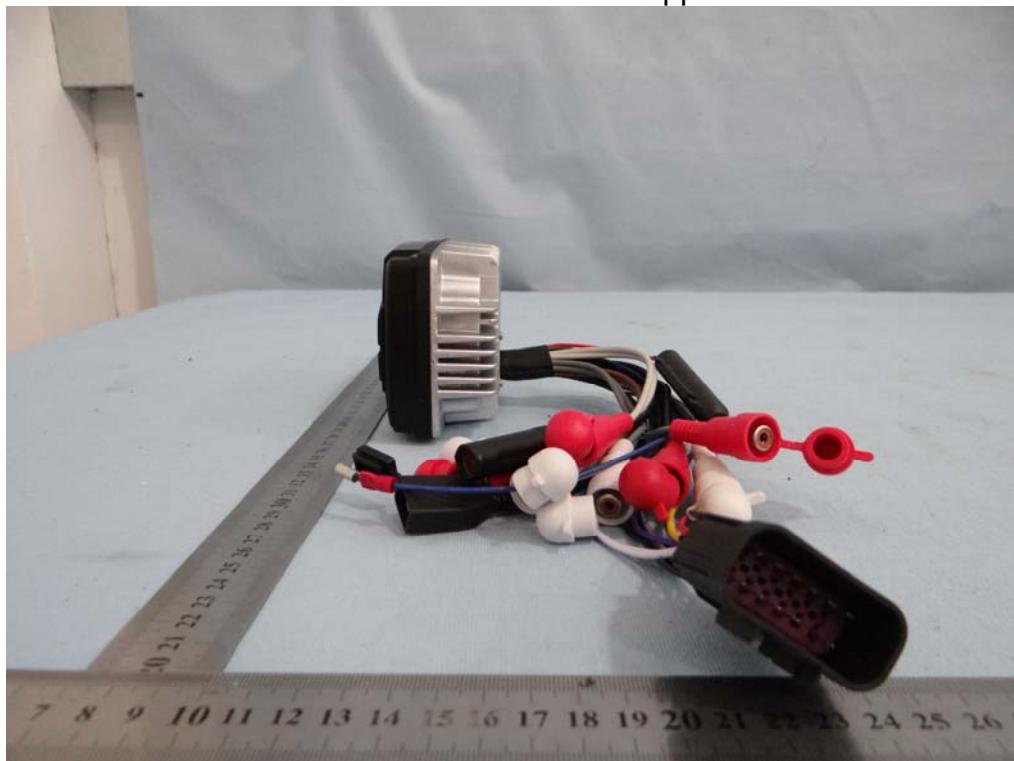
**Figure 4**  
General Appearance of the E.U.T.



**Figure 5**  
General Appearance of the E.U.T.



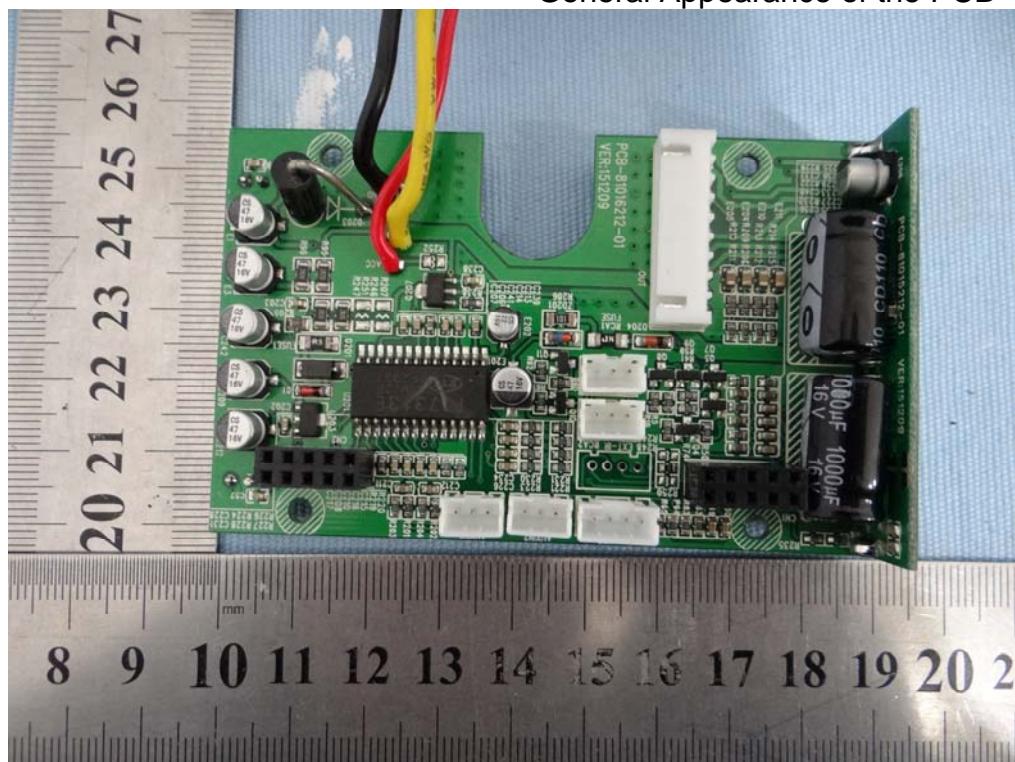
**Figure 6**  
General Appearance of the E.U.T.



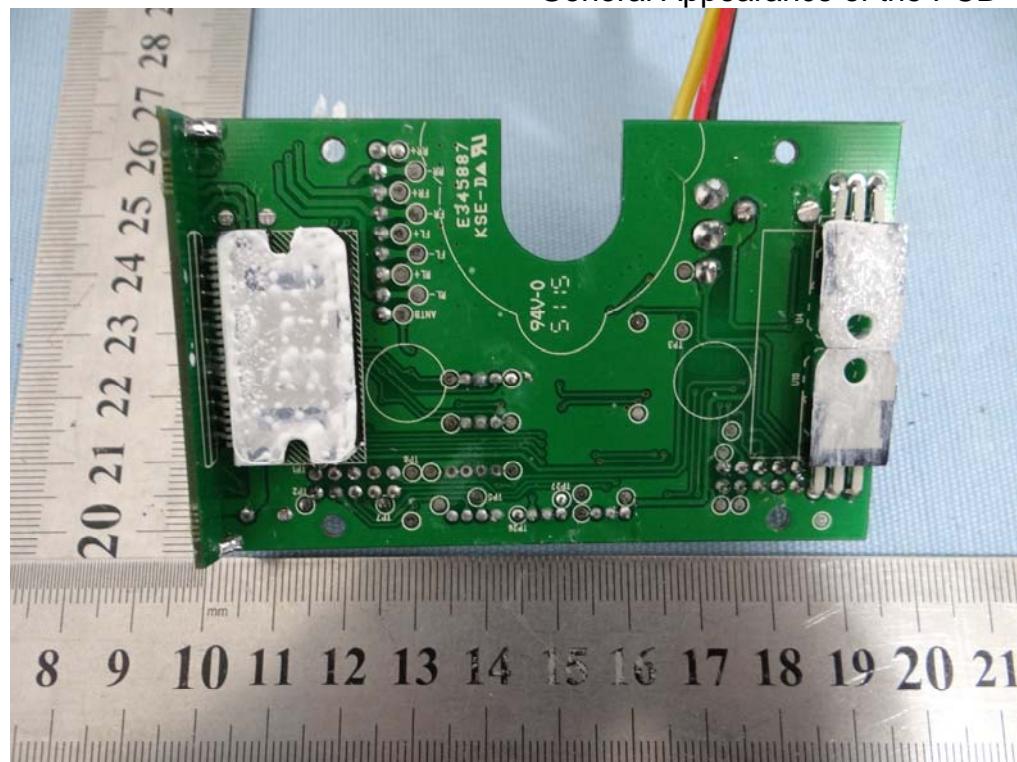
**Figure 7**  
General Internal of the E.U.T.



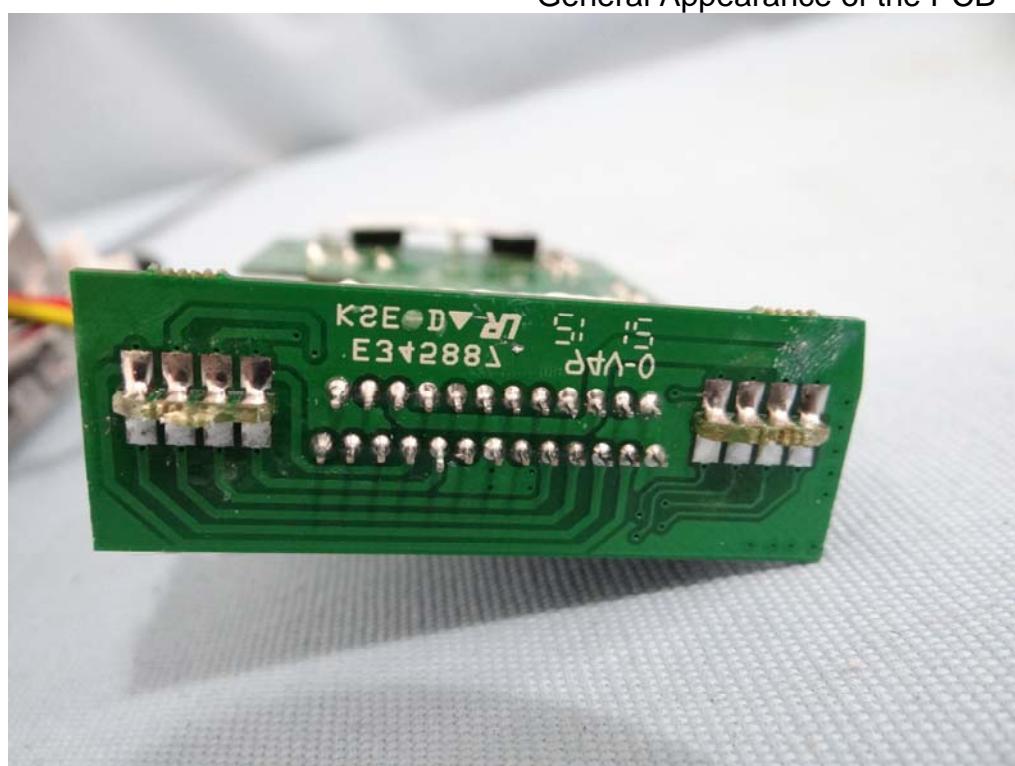
**Figure 8**  
General Appearance of the PCB



**Figure 9**  
General Appearance of the PCB



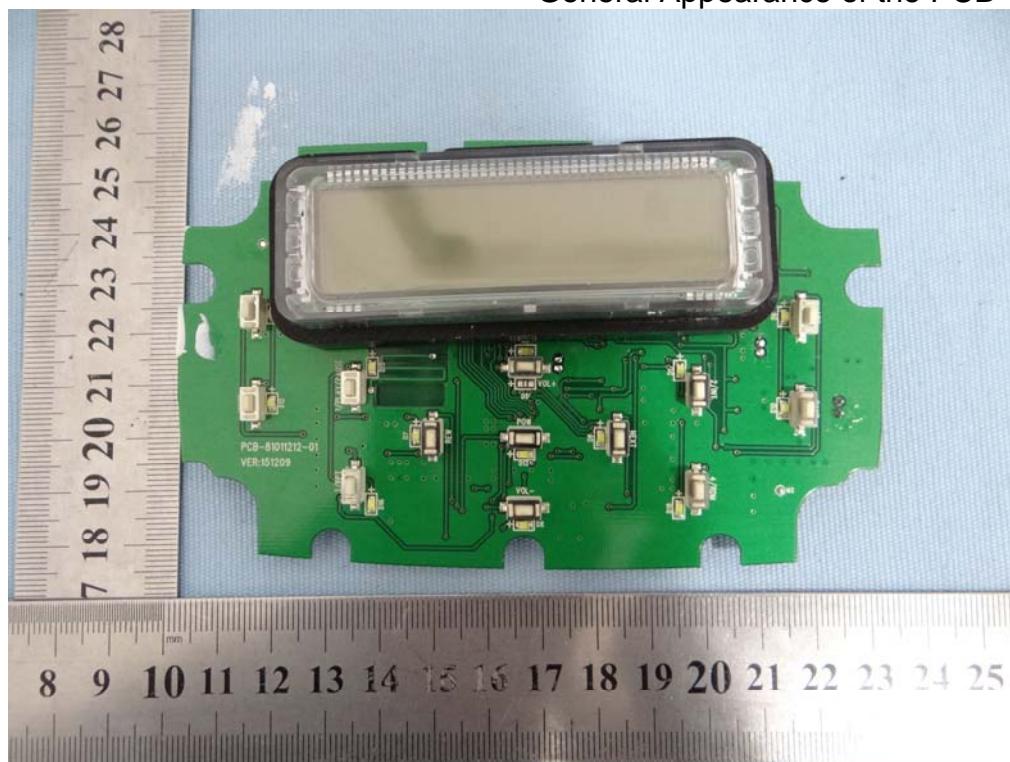
**Figure 10**  
General Appearance of the PCB



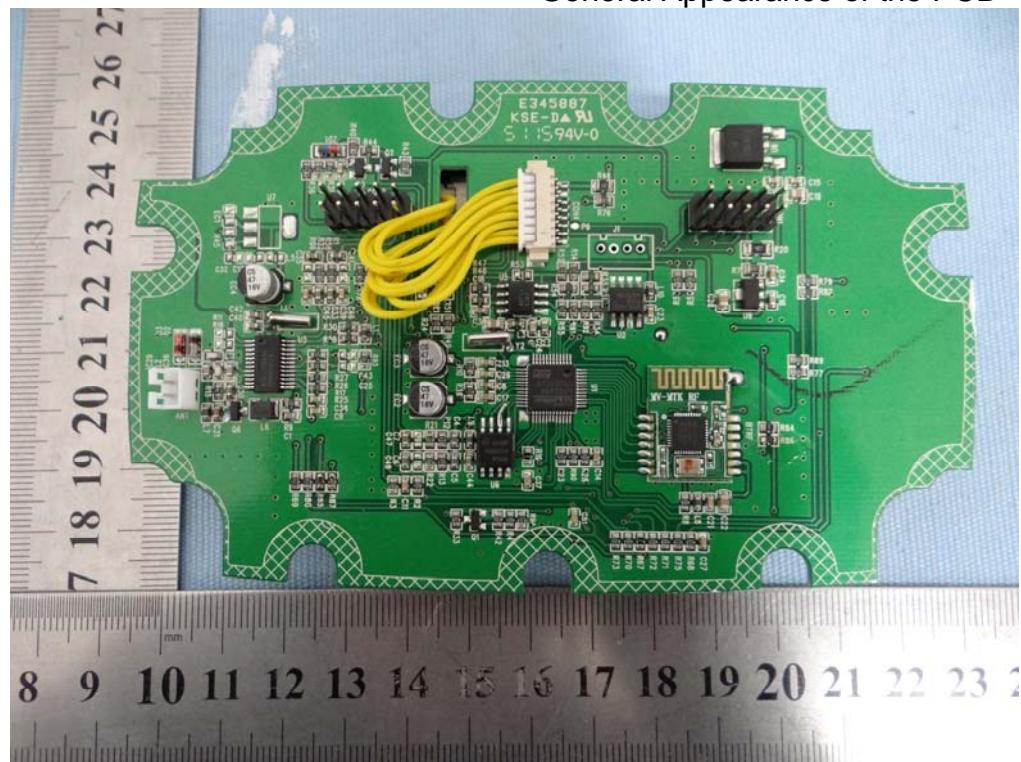
**Figure 11**  
General Appearance of the PCB



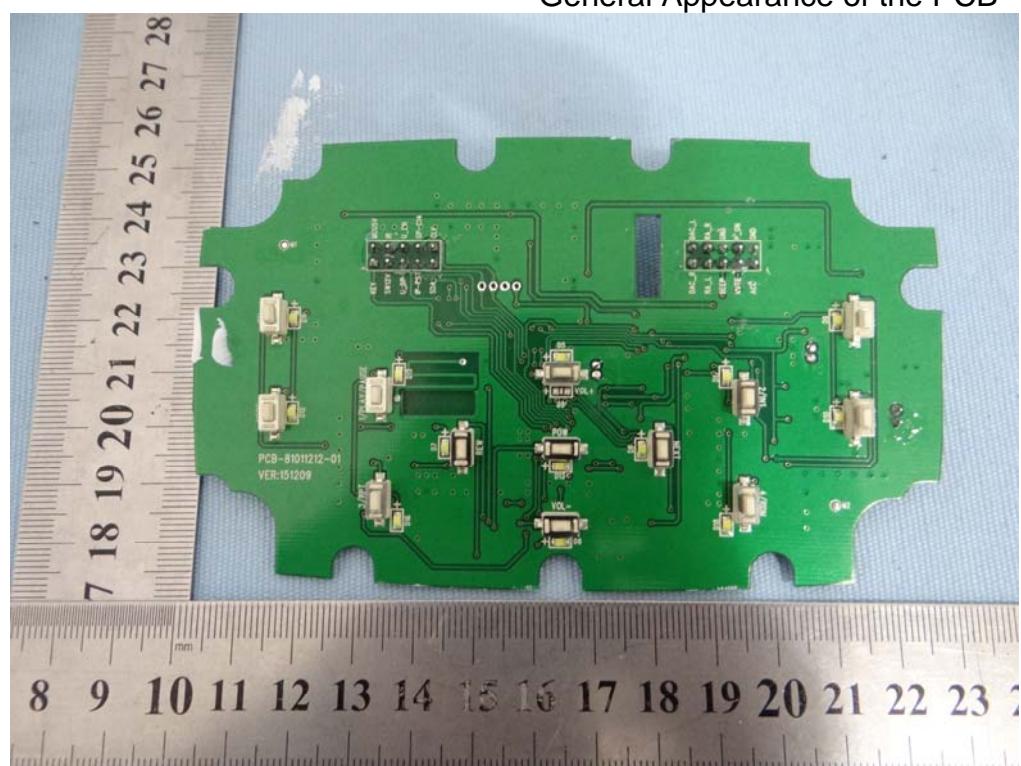
**Figure 12**  
General Appearance of the PCB



**Figure 13**  
General Appearance of the PCB



**Figure 14**  
General Appearance of the PCB



---End---