TECHNICAL REPORT

卓時檢測 TIMEWAY TESTING LABORATORY

ISO/IEC17025 Accredited Lab.

Report No: FCC 0812045
File reference No: 2009-01-06

Applicant: FUZHOU EMAX ELECTRONIC CO.,LTD

Product: Receiver

Brand Name: N/A

Model No: EM2213

Test Standards: FCC Part 15 Subpart B: 2006

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: January 06. 2009

**Results appearing herein relate only to the sample tested**
**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**


**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD**

East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. Chegongmiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688 Fax (755) 83442996

## Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

**CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

**FCC-Registration No.: 899988**

The 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 No.: 899988.

**IC- Registration No.: IC5205A-01**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

Test Report Conclusion

Content

**1.0 General Details** ……..……..……..…. 4
1.1 Test Lab Details……..……..…… 4
1.2 Applicant Details……..……..…….. 4
1.3 Description of EUT ……..……..……..…… 4
1.4 Test Uncertainty……..……..…….. 4
1.5 Submitted Sample……..……..…… 4
1.6 Test Duration……..…… 4
**2.0 List of Measurement Equipment**…… 5
2.1 Conducted Emission Test……..…….. 5
2.2 Radiated electromagnetic disturbance test……..……. 5
**3.0 Technical Details**…… 6
3.1 Investigations Requested……..…… 6
3.2 Test Standards……..……. 6
**4.0 Power line Conducted Emission Test**……..……. 7
**5.0 Radiated Disturbance Test**……..……..…….... 10
**6.0 FCC ID LABEL**……. 13
**7.0 Photo of testing…**.....…….....  14

## 1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD
Address: East 5/Block 4, Anhua Industrial Zone, No.8,Tairan Rd. CheGongMiao, FuTian District, Shenzhen, CHINA.
Telephone: (755) 83448688
Fax: (755) 83442996

1.2 Applicant Details

Applicant: ZHONG SHAN FAMA ELECTRONIC TECHNOLOGY CO.,LTD
Address: D2 Fu Wan Industrial Park, East District , Shiqi , Zhongshan City , Guangdong, China
Telephone: 0760-87337092
Fax: 0760-87337093

1.3 Description of EUT

Product: Receiver
Manufacturer: FUZHOU EMAX ELECTRONIC CO.,LTD
Address: Building #12-#16,CangShan Industrial Area,JuYuanZhou JinShan District,FuZhou China
Brand Name: N/A
Model Number: EM2213
Additional Model Number: N/A
Rating: Input: DC 3V(2 pcs AAA Batteries)
Adaptor: Model: N/A
Operation Frequency: 433.92MHz (Rx)

1.4 Submitted Sample: 2 Sample

1.5 Test Duration: 2008-12-20 to 2009-01-06

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB
Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Henry Ding

Print Name: Henry Ding

## 2.0 List of Measurement Equipment

2.1 Conducted Emission Test

| Name | Model No. | Serial No. | Manufacturer | Calibration Date | Calibration Cycle |
|---|---|---|---|---|---|
| EMI Test Receiver | ESCS30 | 830245/009 | RS | 2008.2.23 | 1Year |
| Coaxial Switch | MP59B | M70585 | ANRITSU | N/A | N/A |
| LISN | NTFM8132 | 8132137 | SCHWARZBECK | 2008.2.24 | 1Year |
| LISN | NTFM8134 | 8134109 | SCHWARZBECK | 2008.2.24 | 1Year |
| LISN | NTFM8136 | 8136102 | SCHWARZBECK | 2008.2.24 | 1Year |

2.2 Radiated electromagnetic disturbance test

| Name | Model No. | Serial No. | Manufacturer | Calibration Date | Calibration Cycle |
|---|---|---|---|---|---|
| EMI Test Receiver | ESCS30 | 830245/009 | RS | 2008.2.23 | 1Year |
| Coaxial Switch | MP59B | M70585 | ANRITSU | N/A | N/A |
| Spectrum Analyzer(with Tracking Generator) | MS2661C | MT72089 | ANRITSU | 2008.2.23 | 1Year |
| Amplifier | MH648A | M20494 | ANRITSU | 2008.2.24 | 1Year |
| Bilog Antenna | CBL6101C | 2576 | CHASE | 2008.2.23 | 1Year |

## 3.0 Technical Details

3.1 Investigations Requested

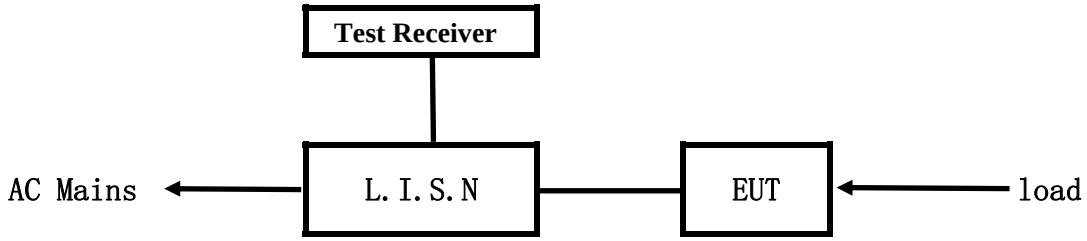
Perform Electromagnetic Interference [EMI] tests for FCC Requirement.

3.2 Test Standards

**FCC Part 15 Subpart B: 2006**

**4.0 Conducted Power line Test**

4.1 Schematics of the test

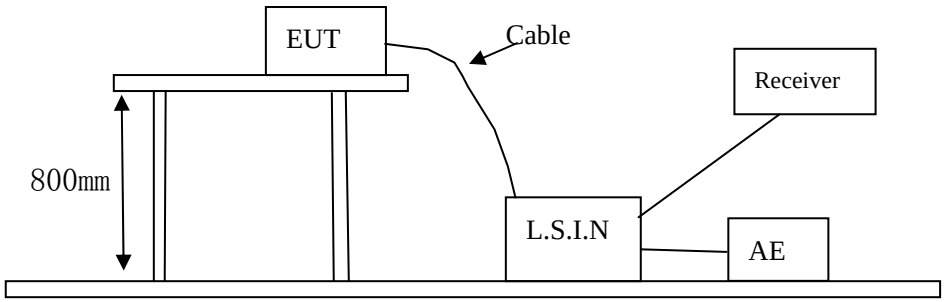



EUT: Equipment Under Test

4.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.Cables and peripherals were moved to find the maximum emission levels for each frequency.

Block diagram of Test setup




4.3 Power line conducted Emission Limit

| Frequency(MHz) | Class A Limits dB(μV) | | Class B Limits dB(μV) | |
|---|---|---|---|---|
| | Quasi-peak Level | Average Level | Quasi-peak Level | Average Level |
| 0.15 ～ 0.50 | 79.00 | 66.00 | 66.00～56.00* | 56.00～46.00* |
| 0.50 ～ 5.00 | 73.00 | 60.00 | 56.00 | 46.00 |
| 5.00 ～ 30.00 | 73.00 | 60.00 | 60.00 | 50.00 |

Notes: 1. *decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

4.4 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Test Data:

EUT set Condition: Receiving

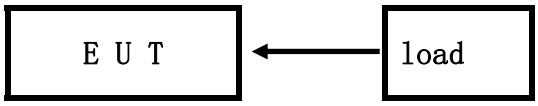
**Results:** **N/A**

Please refer to following diagram for individual

| Frequency (MHz) | Reading(dB μ V) | | | | Limit (dB μ V) | |
|---|---|---|---|---|---|---|
| | Line | | Neutral | | | |
| | Quasi-peak | Average | Quasi-peak | Average | Quasi-peak | Average |
| | | | | | | |
| | | | | | | |

**5.0 Radiated Disturbance Test**

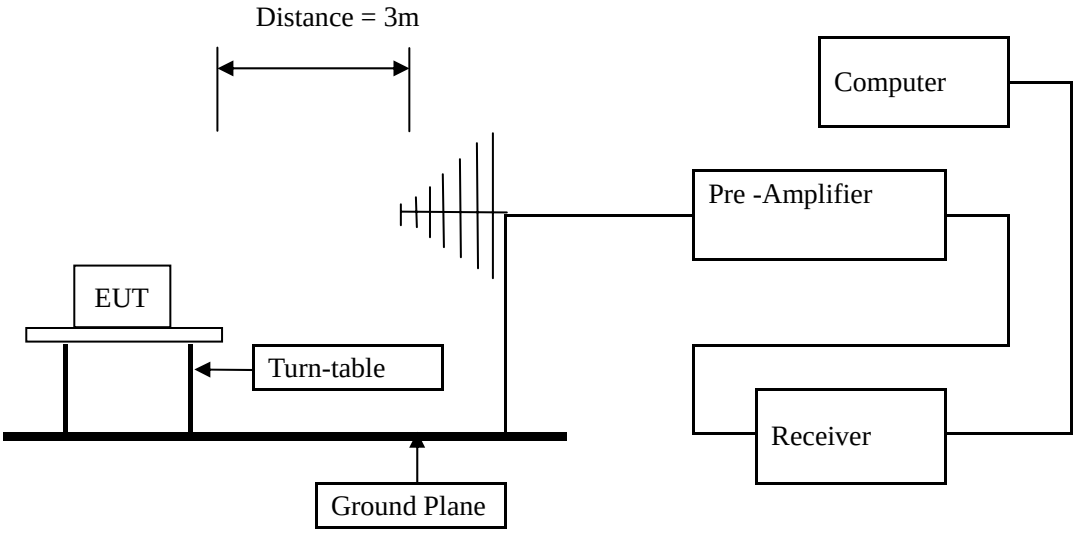
5.1 Schematics of the test




5.2 Test Method and test Procedure:

The EUT was tested according to ANSI C63.4 –2003, The frequency spectrum from 30MHz to 1GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak 0values with a resolution bandwidth of 120KHz. All readings are above 1GHz, peak values with a resolution bandwidth of 1MHz. Measurements were made at 3 meters.

**Block diagram of Test setup**




5.3 Radiated Emission Limit

| Frequency Range (MHz) | Distance (m) | Field strength (dB μ V/m) |
|---|---|---|
| 30-88 | 3 | 40.00 |
| 88-216 | 3 | 43.50 |
| 216-960 | 3 | 46.00 |
| Above 960 | 3 | 54.00 |

Note: The lower limit shall apply at the transition frequencies

5.4 Test result

The frequency spectrum from 30MHz to 1GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120KHz. All readings are above 1GHz, peak values with a resolution bandwidth of 1MHz. Measurements were made at 3 meters.

**A: Radiated Disturbance In Horizontal (30MHz----1000MHz)**

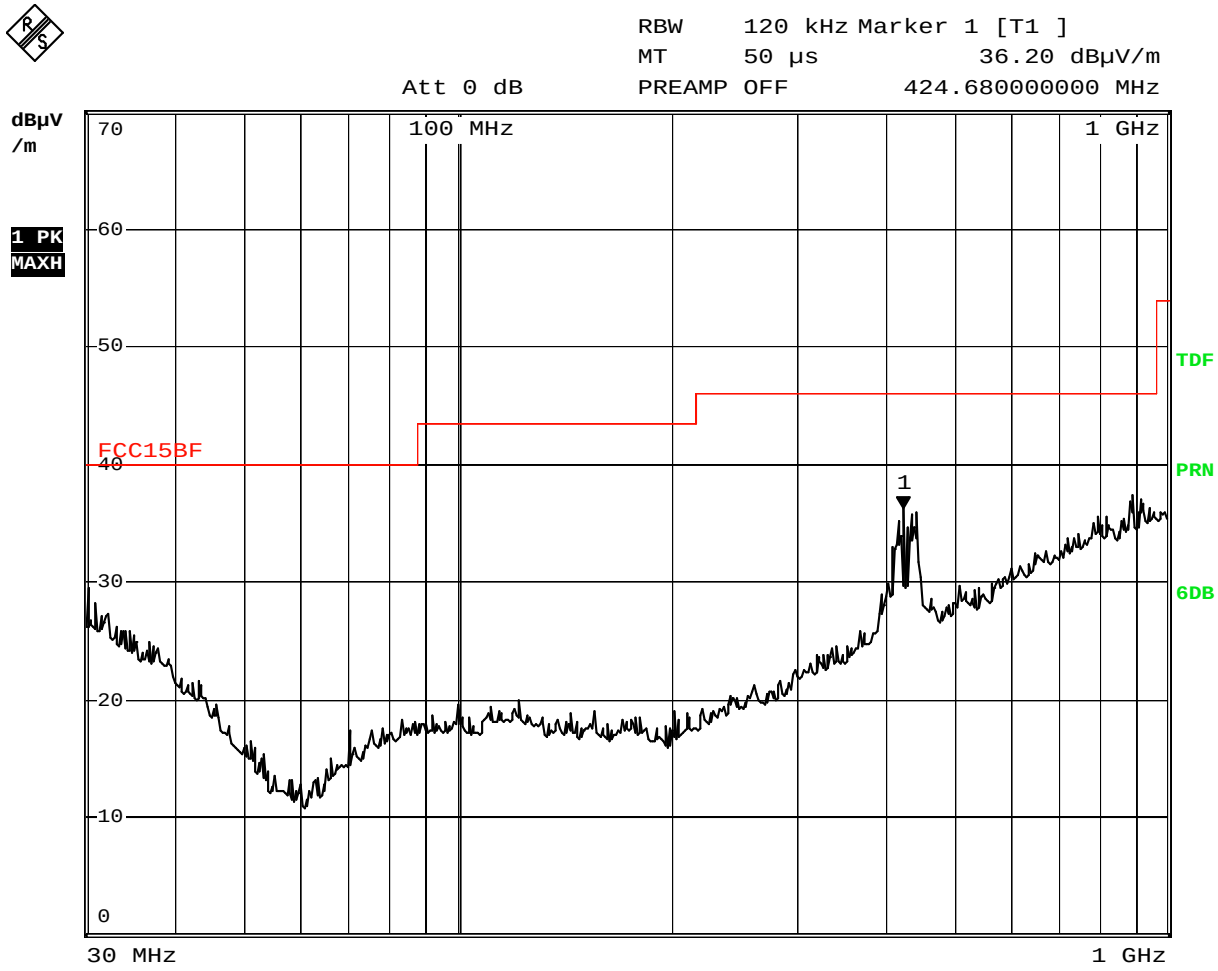
EUT set Condition: Receiving

**Level:** **Class B**

**Results:** **PASS**

Please refer to following diagram for individual

Picture of the test




Date: 12.DEC.2008 09:29:48

| Frequency (MHz) | Level@3m (dBµV/m) | Antenna Polarity | Limit@3m (dBµV/m) |
|---|---|---|---|
| 424.68 | 36.20 | H | 46.00 |

**A1: Radiated Disturbance In Horizontal (1000MHz----2000MHz)**

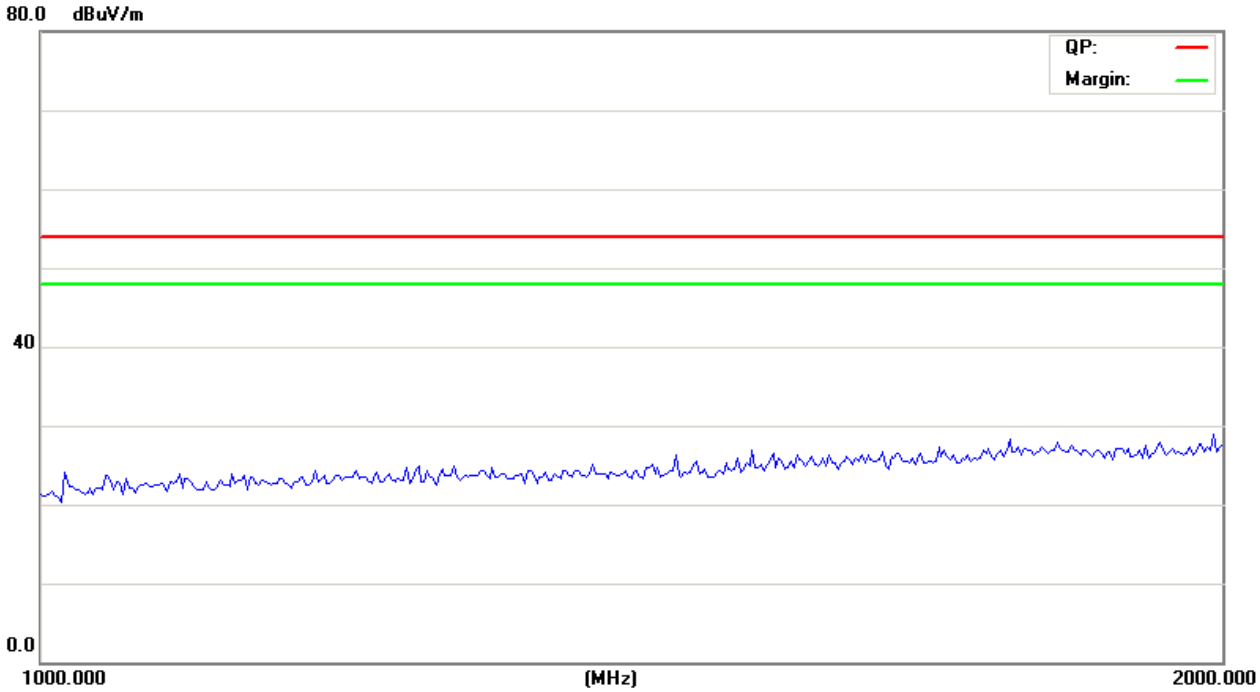
EUT set Condition: Receiving

**Level:** **Class B**

**Results:** **PASS**

Please refer to following diagram for individual

Picture of the test




| Frequency (MHz) | Level@3m (dBμV/m) | Antenna Polarity | Limit@3m (dBμV/m) |
|---|---|---|---|
| -- | -- | H | 54（AV）/74（PK） |

**B: Radiated Disturbance In Vertical (30MHz----1000MHz)**

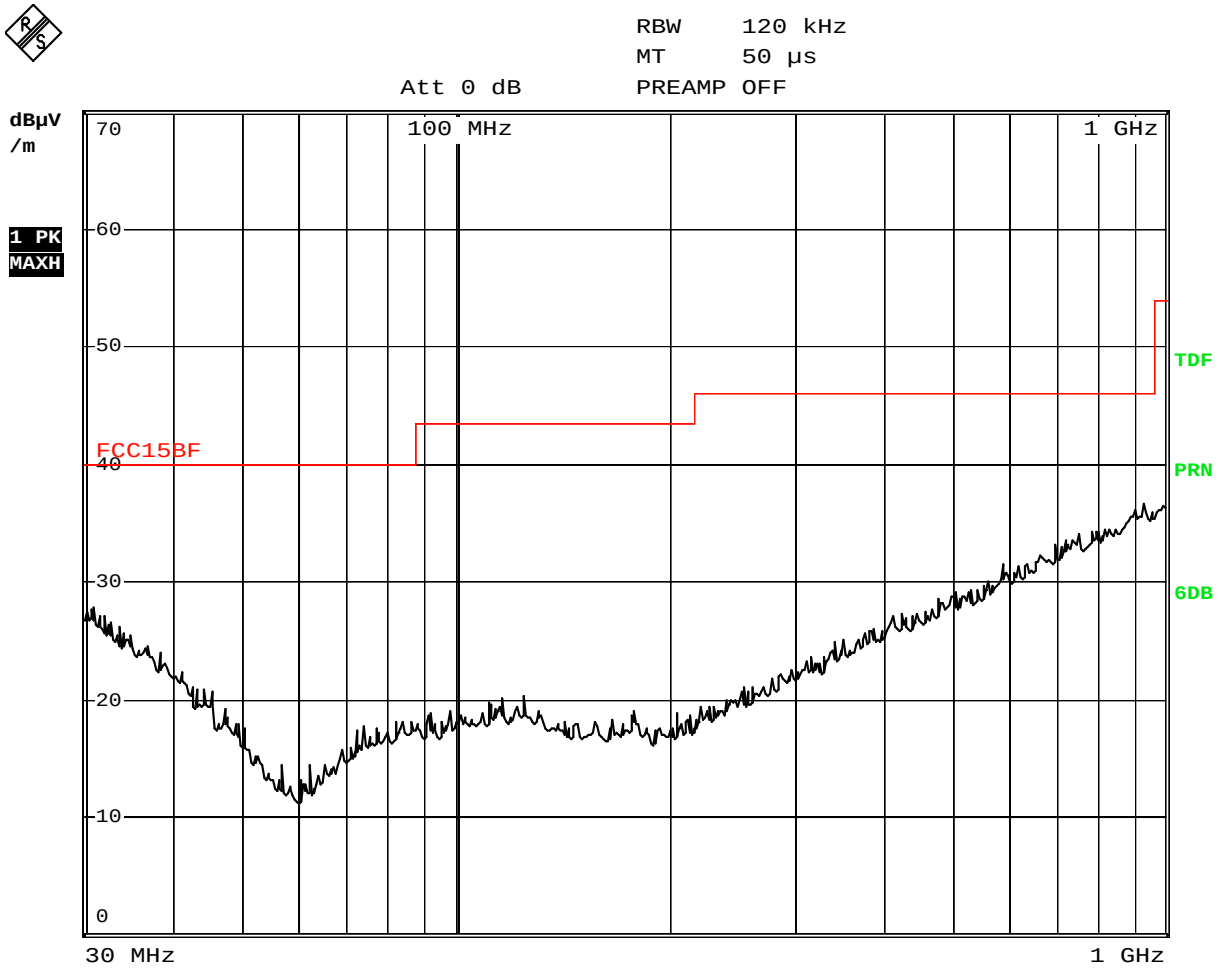
EUT set Condition: Receiving

**Level:** **Class B**

**Results:** **PASS**

Please refer to following diagram for individual

Picture of the test




Date: 12.DEC.2008 09:28:15

| Frequency (MHz) | Level@3m (dBµV/m) | Antenna Polarity | Limit@3m (dBµV/m) |
|---|---|---|---|
| -- | -- | V | -- |

**B1: Radiated Disturbance In Vertical (1000MHz----2000MHz)**

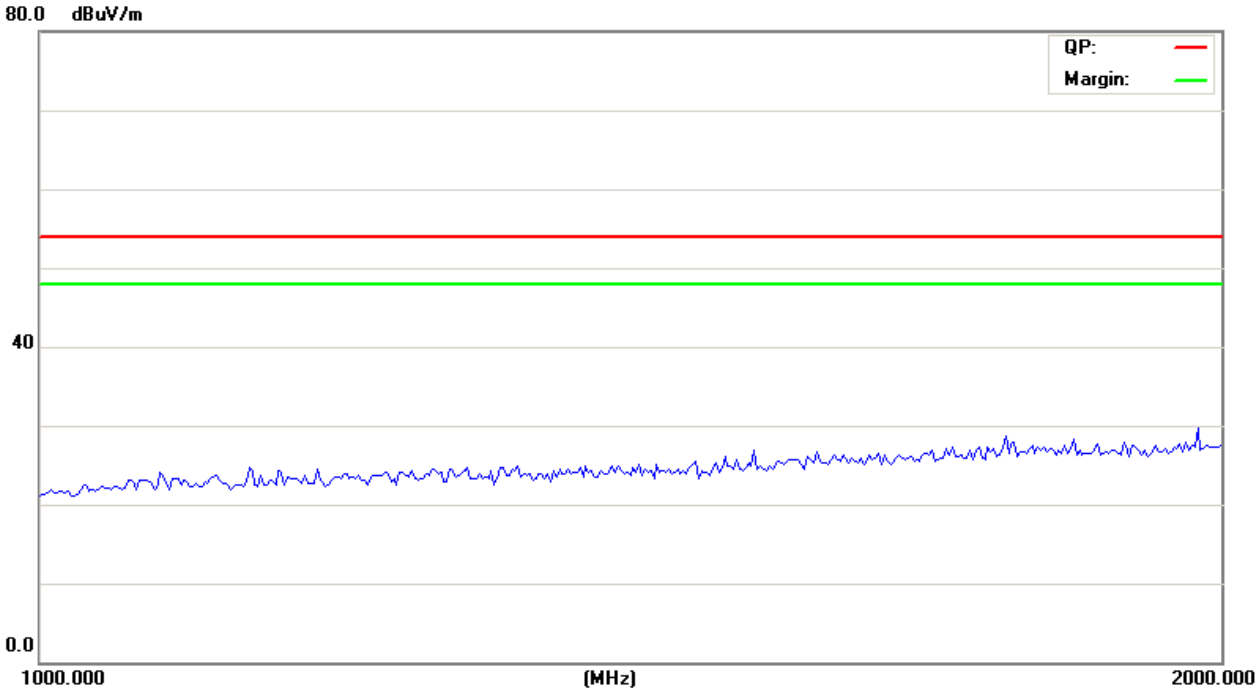
EUT set Condition: Receiving

**Level:** **Class B**

**Results:** **PASS**

Please refer to following diagram for individual

Picture of the test




| Frequency (MHz) | Level@3m (dBμV/m) | Antenna Polarity | Limit@3m (dBμV/m) |
|---|---|---|---|
| -- | -- | V | 54（AV）/74（PK） |

**Note: for the emission test, A 433.92 MHz CW signal was injected (radiated) from a nearby signal generator using a rod antenna**

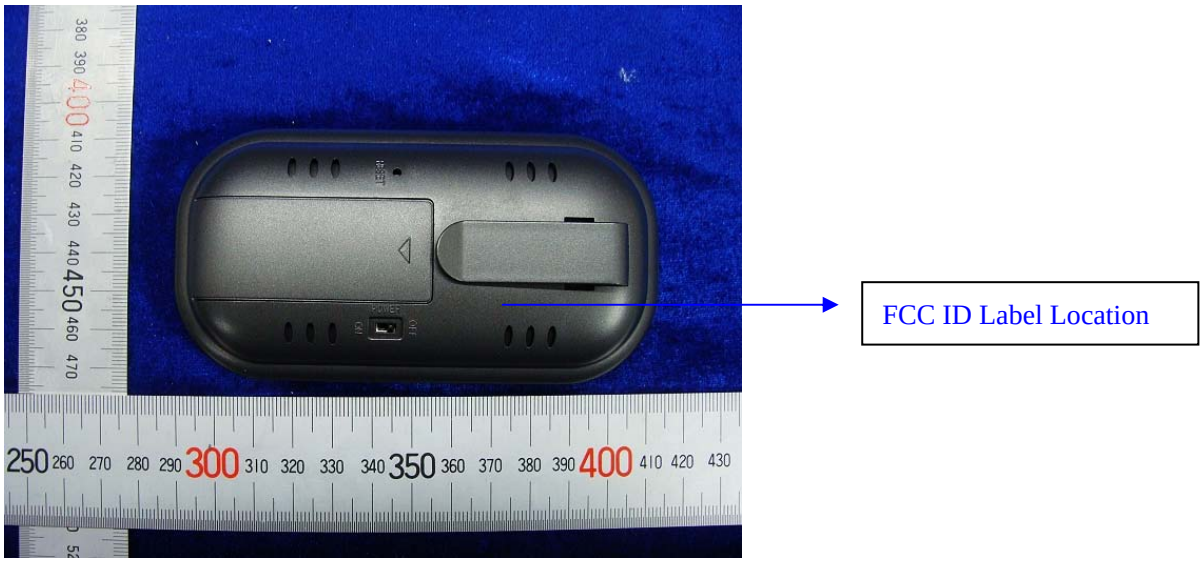
## 6.0 FCC ID Label

**FCC ID: WEC-1215**

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

**Mark Location:**



7.0 **Photo of testing**

7.1 Conducted test View

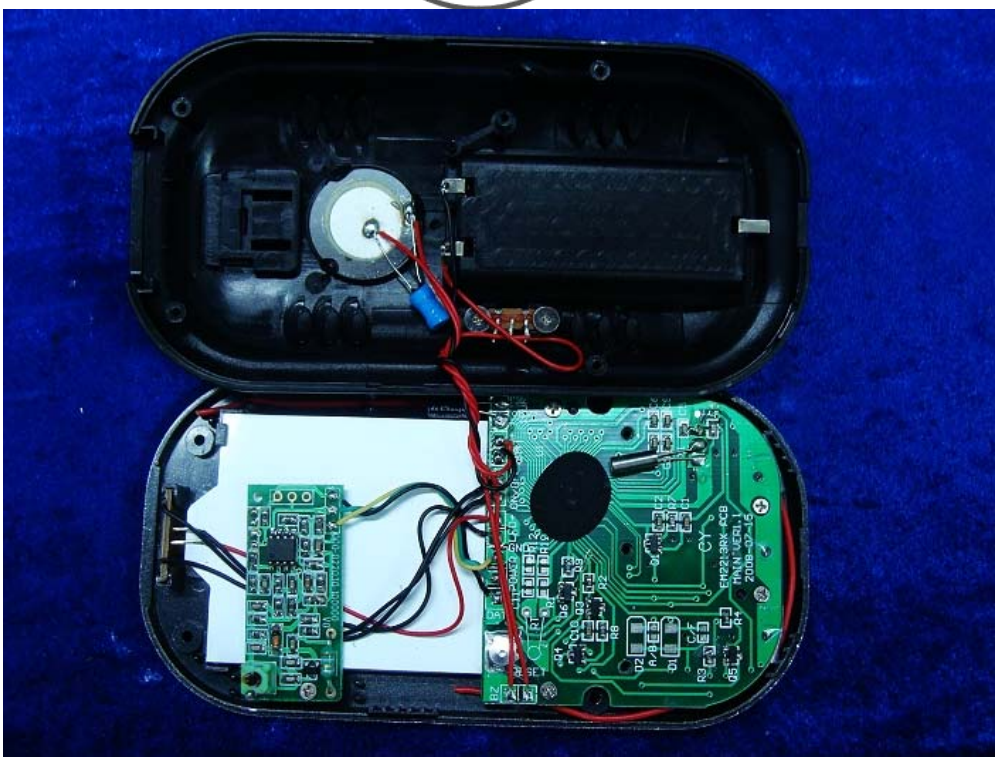
7.2 Radiated emission test view--

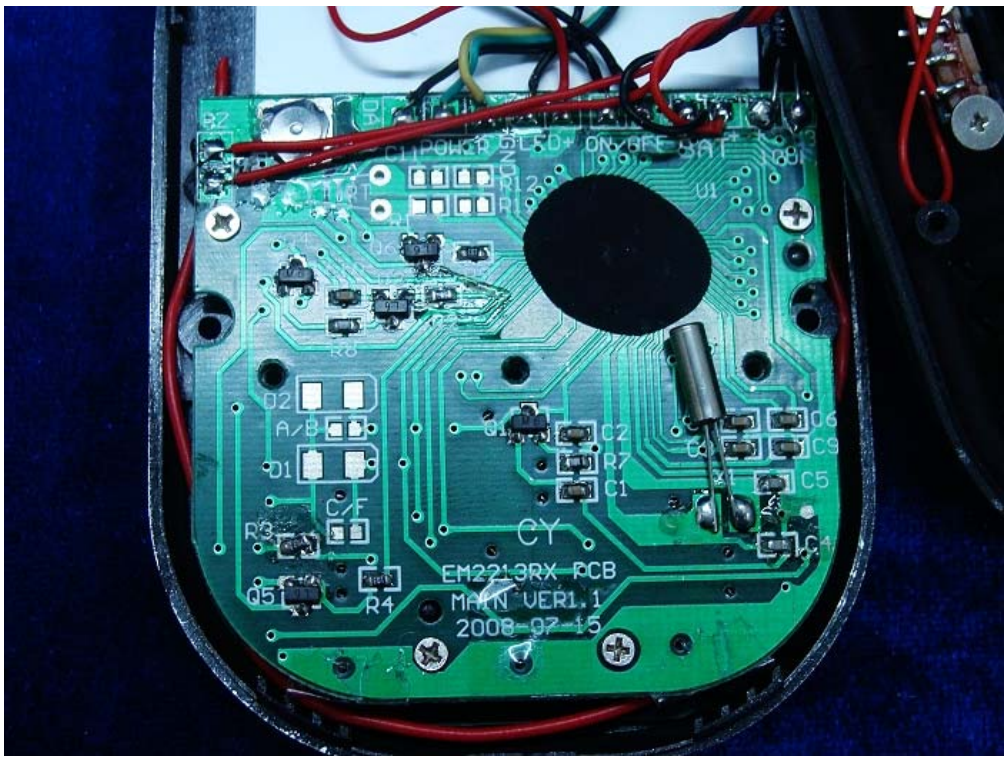
7.3 Photo for the EUT

Front View

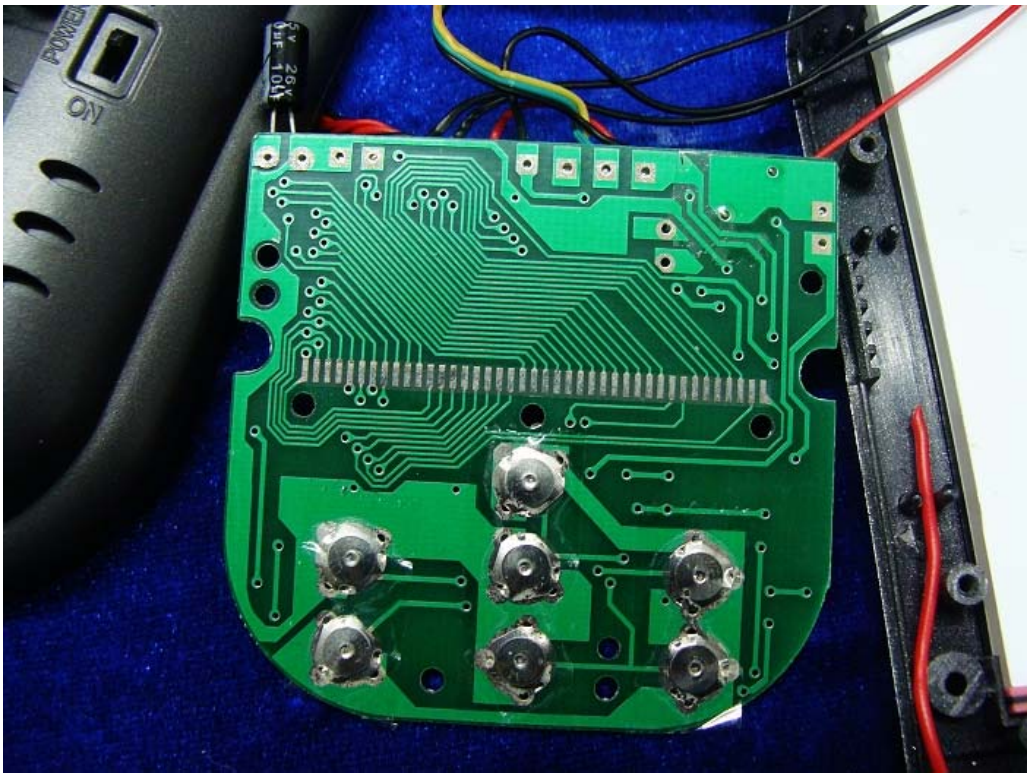

Back View

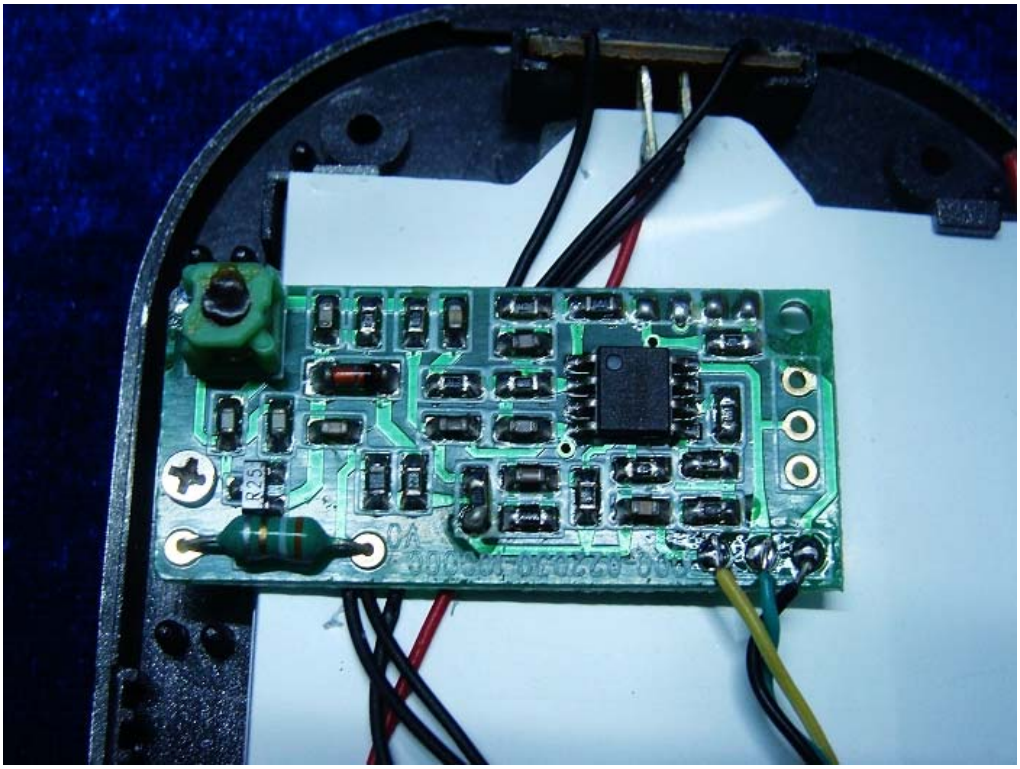

Inside View1



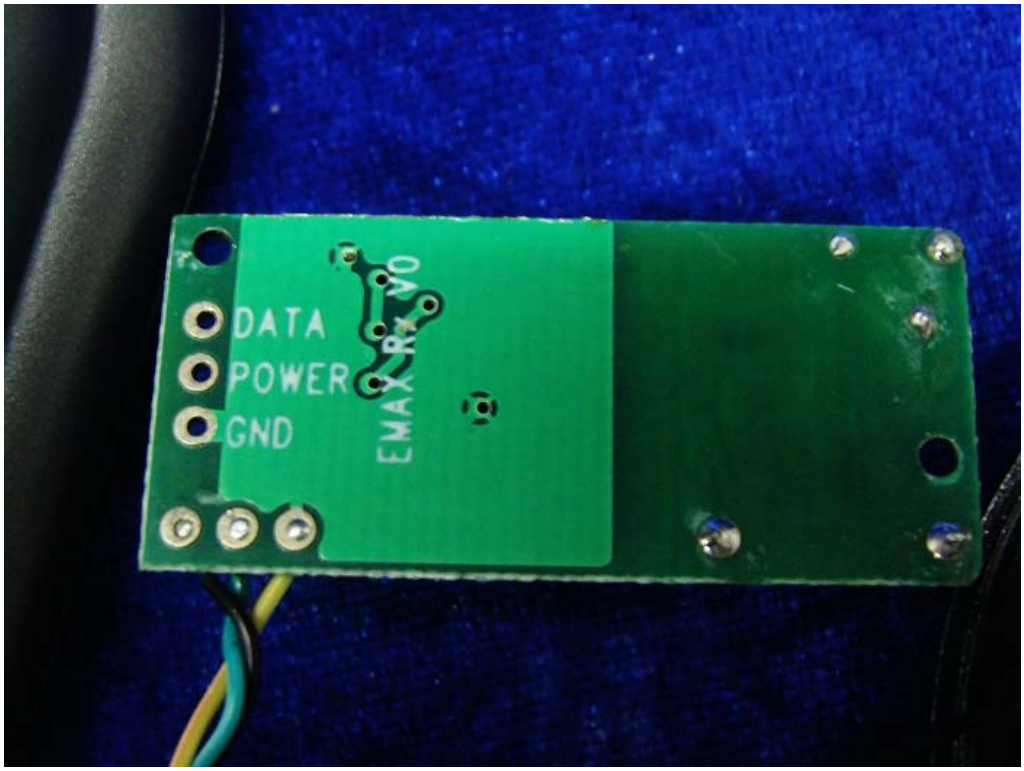


Inside View2



Inside View3




**-End of the report-**