

FCC TEST REPORT

FCC ID : T5Q5026

Applicant : Shenzhen Zowee Technology Development Co.,Ltd.

Address : Block 5,Science&Technology Industrial Park of Privately Qwned
Enterprises,Pingshan,Xili,Nanshan Distrit,Shenzhen,Guangdong

Equipment Under Test (EUT) :

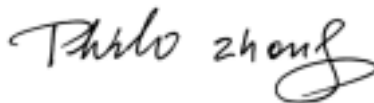
Product : Wireless FM Transmitter

Model No. : 5026

Standards : FCC 15 Paragraph 15.203,Paragraph 15.205, Paragraph 15.209,
Paragraph 15.31,Paragraph 15.33, Paragraph 15.35, Paragraph 15.239

Date of Test : April 3, 2006

Test Engineer : Tiger Su

Reviewed By : 

PERPARED BY:

Waltek Services (Shenzhen) Co., Ltd.

8C,West Tower, Aidi Building, No.5003 Binhe Rd, Futian District, Shenzhen518045,
Guangdong, China.

Tel: 86-755-83551033

Fax: 86-755-83552400

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3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15: 2003	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2003	ANSI C63.4: 2003	Class B	N/A

4 General Information

4.1 Client Information

Applicant: Shenzhen Zowee Technology Development Co.,Ltd.
Address of Applicant: Block 5,Science&Technology Industrial Park of Privately Qwned Enterprises,Pingshan,Xili,Nanshan Distrit,Shenzhen,Guangdong
Manufacturer: Shenzhen Zowee Technology Development Co.,Ltd.
Address of Manufacturer: Block 5,Science&Technology Industrial Park of Privately Qwned Enterprises,Pingshan,Xili,Nanshan Distrit,Shenzhen,Guangdong

4.2 General Description of E.U.T.

Product description: Wireless FM Transmitter
Model No.: 5026

4.3 Details of E.U.T.

Power Supply: 3.0 VDC Battery

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Wireless FM Transmitter. The standards used were FCC 15 Paragraph 15.209 and Paragraph 15.239.

4.6 Test Facility

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

- **FCC – Registration No.: 759357**

Solid Industrial (Shenzhen) Co., Ltd. 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 759357, November 04, 2003.

4.7 Test Location

All Emissions tests were performed at:-

Solid Industrial (Shenzhen) Co., Ltd. at 333 Bulong Highway Buji Longgang, Shenzhen, Guangdong, China.

Its' **VCCI – Registration No.: 2153**

5 Equipment Used during Test

Equipment	Brand Name	Model	Cal. Int Months	Last Cal. Date
3m Anechoic chamber				
EMC Analyzer	Agilent	E7402A	12	2005-08
EMI Test Receiver	R&S	ESS	12	2005-08
Pre Amplifier	Anritsu	MH648A	12	2005-08
Bilog Antenna	SCHAFFNER	CBL6111C	12	2005-08
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	12	2005-08
Signal Generator	R&S	SMG	12	2005-08
RF Selector	TOYO	NS4901A	-	-
Turn Disc	HD	DS4150S	-	-
Antenna Mast	HD	MA2400	-	-
EMI Shielded Room				
Spectrum analyzer	ADVANTEST	R3261C	12	2005-08
EMI Test Receiver	R&S	ESS	12	2005-08
Pre Amplifier	Anritsu	MH648A	12	2005-08
LISN	Kyoritsu	KNW-403D	12	2005-08
LISN	Kyoritsu	KNW-407	12	2005-08
LISN	Kyoritsu	KNW-242C	12	2005-08
Absorbing Clamp	R&S	MDS-21	12	2005-08
Absorbing Clamp	R&S	MDS-21	12	2005-08
Absorbing Clamp	Kyoritsu	KT-20	12	-
Distortion Meter	MEGURO	MAK-6578A	12	2005-08
AM/FM Stereo Signal Generator	Panasonic	VP-8122A	12	2005-08
Oscilloscope	LEADER	LS1020	12	2005-08
Function Generator	National	VP-7422A	12	2005-08
Signal Generator	R&S	SMG	12	2005-08
RF Selector	TOYO	NS4000	-	-
Remote Controller	TOYO	MAC	-	-

6 Conducted Emission Test

Product:	Wireless FM Transmitter
Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	Based on FCC Part15 Paragraph 15.207
Test Date:	-----
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

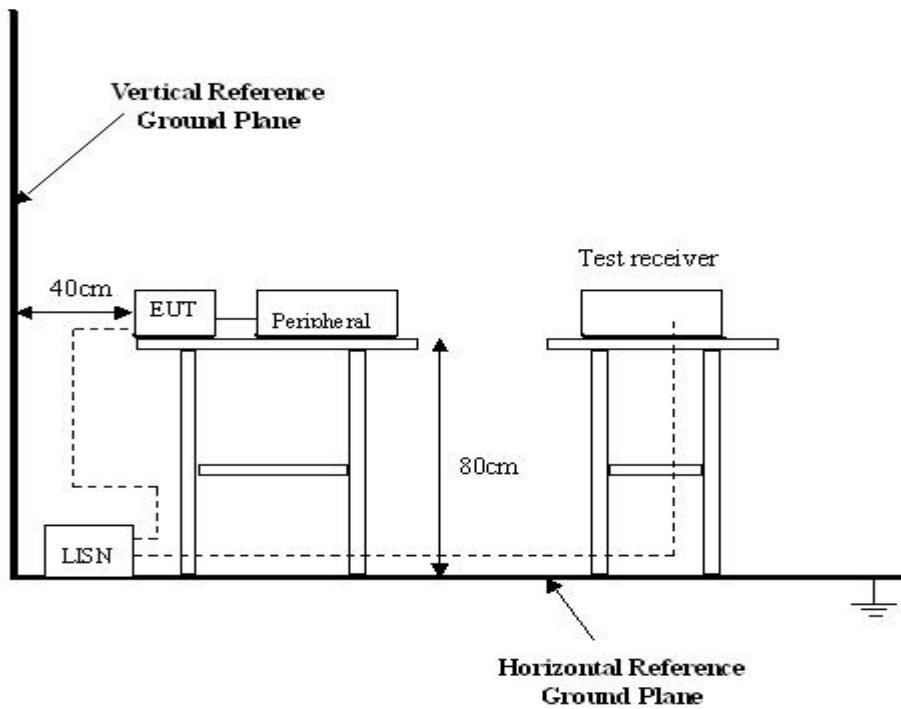
Please refer to Section 5 this report.

6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.3 Conducted Test Setup

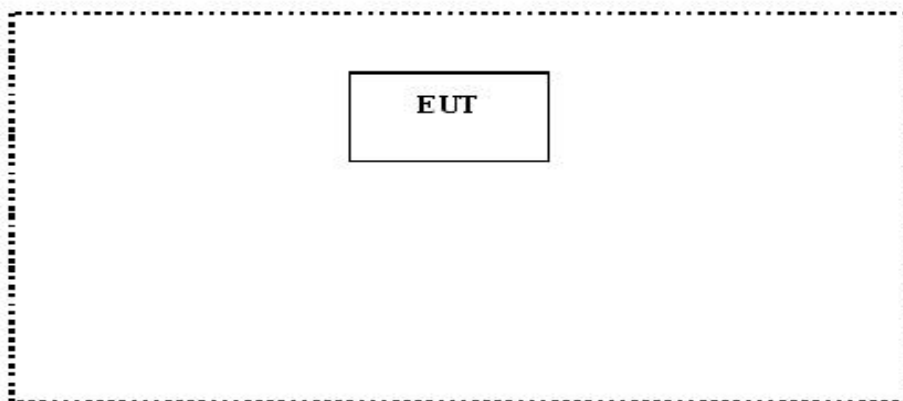
The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4:2003.

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- C. Modulate output capacity of EUT up to specification.



6.5 Conducted Emission Limits

66-56 dB μ V/m between 0.15MHz & 0.5MHz

56 dB μ V/m between 0.5MHz & 5MHz

60 dB μ V/m between 5MHz & 30MHz

Note: In the above limits, the tighter limit applies at the band edges.

6.6 Conducted Emission Test Result

Owing to the DC operation of EUT, this test is not performed.

7 Radiation Emission Test

Product Name:	Wireless FM Transmitter
Test Requirement:	FCC Part15 Paragraph 15.209 and Paragraph 15.239
Test Method:	Based on FCC Part15 Paragraph 15.209 and Paragraph 15.239
Test Date:	April 3,2006
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

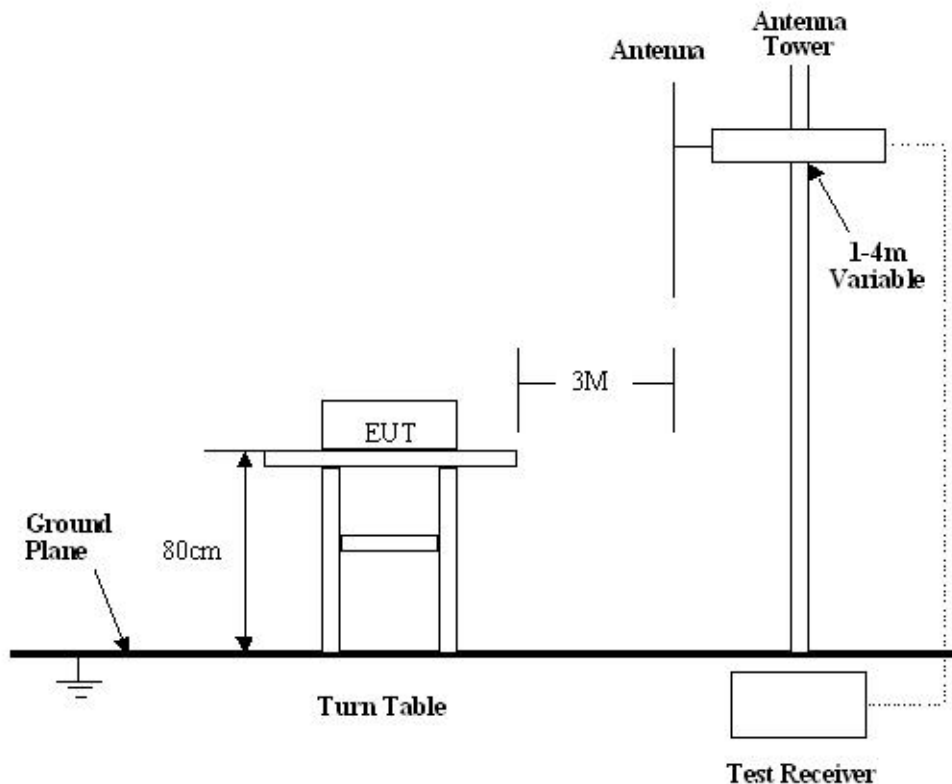
Based on ANSI C63.4:2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Solid EMC Laboratory is +4.0 dB.

7.3 Test Procedure

1. For the radiated emissions test, since the EUT does not have a power source, there was no connection to AC outlets.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
3. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "Qp" in the data table.
4. The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.209 and Paragraph 15.239 limits.



7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.209 and Paragraph 15.239 Rules, the system was tested to 1000 MHz.

Start Frequency30 MHz
 Stop Frequency1000 MHz
 Sweep Speed Auto
 IF Bandwidth100 kHz
 Video Bandwidth1 MHz
 Quasi-Peak Adapter Bandwidth120 kHz
 Quasi-Peak Adapter Mode.....Normal
 Resolution Bandwidth1MHz

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.209 and Paragraph 15.239 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report.

7.9 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.239 Limit

Fundamental Frequency(MHZ)	Field Strength of Fundamental	
	uV/m	dBuV/m
88-108	250	48

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)
 (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 (3)The emission limit in this paragraph is based on measurement instrumentation employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency(MHZ)	Distance(m)	Field strength(dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)
 (2) In the Above Table,the tighter limit applies at the band edges.
 (3) Distance refers to the distance in meters between the measuring instrument antenna.

As shown in 15.35(b),for frequencies above 1000MHz,the field strength limits are based on average detector,however,the peak field strength of any emission shall not exceed the maximum permitted average limits,specified above by more than 20dB under any condition of modulation.

B. General Radiated Emission Data

Test Item: General Radiated Emission Data
 Test Voltage: 3.0 VDC Battery
 Test Mode: ON TX
 Temperature: 24 °C
 Humidity: 52%RH
 Test Result: PASS

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°C)
182.400	Horizontal	32.1	43.5	11.4	1.5	90
269.600	Horizontal	23.6	46.0	22.4	1.0	45
417.920	Horizontal	20.5	46.0	25.5	1.8	180
142.500	Vertical	13.6	43.5	29.9	2.0	270
180.620	Vertical	20.2	43.5	23.3	1.5	45
274.880	Vertical	18.4	46.0	27.6	1.0	180

Note: (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 (2) Emission Level = Reading Level + Probe Factor + Cable Loss.

8 Band Edge

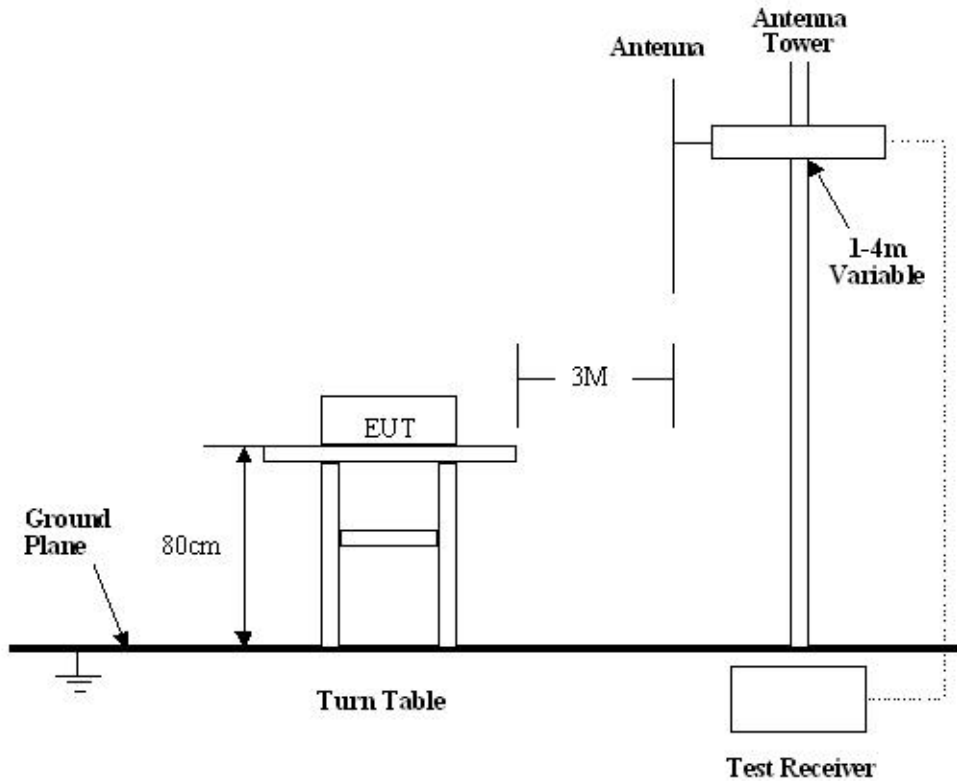
8.1 Test Equipment

Please refer to Section 5 this report.

8.2 Test Procedure

- 1.The EUT, peripherals were put on the turntable which table size is 1mX1.5m, table high 0.8m. All set up is according to ANSI C63.4:2003.
2. 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 reading are above 1GHz, peak values with a resolution bandwidth of 1MHz. Measurements were made at 3 meters.
3. The antenna high were varied from 1m to 4m high to find the maximum emission for each frequency.
4. Maximizing procedure was performed on the highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak reading was performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "QP" in the data table.
5. The antenna polarization: Vertical polarization and horizontal polarization.

8.3 Radiated Test Setup



8.3 EUT Operation

Same as section 6.4 of this report.

8.4 Band Edge Limit

Attenuation below the general limits specified in section 15.231 (e) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.231(e), must also comply with the radiated emission limits specified in Section 15.231(e).

8.5 Band Edge Test Result

Product: Wireless FM Transmitter
 Test Item: Band Edge Test
 Test Voltage: 3.0 VDC Battery
 Test Mode: ON TX
 Temperature: 24 °C
 Humidity: 52%RH



- Note:** (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.
- (2) The average measurement was not performed when the peak measured data under the limit of average detection.

9 Photographs of Testing

9.1 Radiation Emission Test View



10 Photographs - Constructional Details

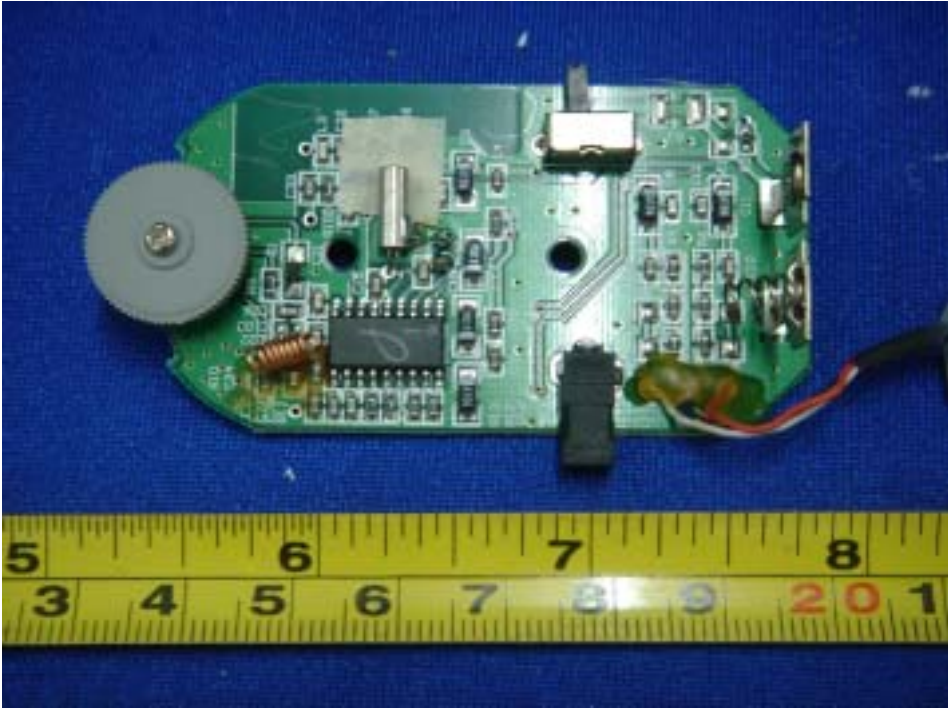
10.1 EUT - Front View



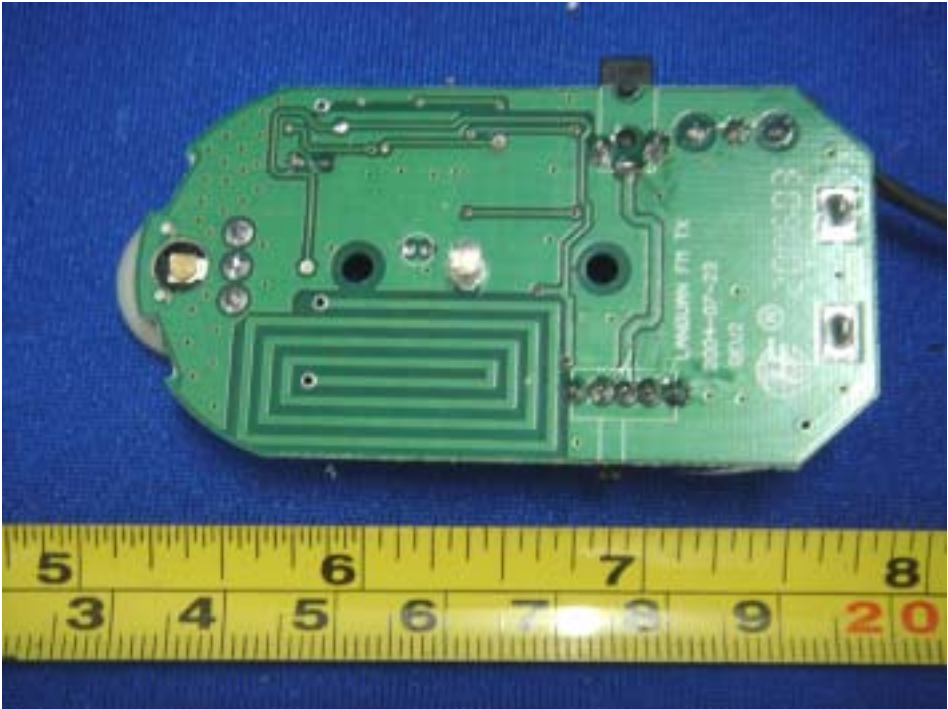
10.2 EUT - Back View



10.3 PCB - Component View



10.4 PCB - Solder View



11 FCC ID Label

This device complies with Part 15 of the FCC Rules. The Label must not be a stick-on paper. 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.

Proposed Label Location on EUT
EUT Bottom View/proposed FCC Mark Location

