



Shenzhen Certification Technology Service Co., Ltd  
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District, ShenZhen, Guang dong, P.R. China.

# TEST REPORT

**FCC ID: WSY-JJRCF**

**Applicant** : GIANT ALARM SYSTEM CO., LTD  
**Address** : No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou City,  
China

**Fundamental Frequency** : 433.92MHz

**Equipment under Test (EUT):**

Name : Remote control& receiver for car  
Model : JJ-RC-F& JJ-JS-081  
**Standards** : FCC PART 15, SUBPART C : 2008 (Section 15.231)

**Report No.** : STE081016495  
**Date of Test** : October 14, 2008  
**Date of Issue** : October 15, 2008

<b>Test Result :</b>	<b>PASS *</b>
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\* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature

(Mark Zhu)

General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report.

If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of ShenZhen Certification Technology Service Co., Ltd. Or test done by ShenZhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by ShenZhen Certification Technology Service Co., Ltd. Approvals in writing.

## TABLE OF CONTENT

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>3</b>
1.1. DESCRIPTION OF DEVICE (EUT) .....	3
1.2. DESCRIPTION OF TEST FACILITY .....	3
<b>2. SUMMARY OF MEASUREMENT.....</b>	<b>4</b>
<b>3. TEST RESULTS .....</b>	<b>5</b>
3.1. E.U.T. OPERATION.....	5
3.2. LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	5
3.3. TEST PROCEDURE & MEASUREMENT DATA .....	6
3.3.1 RADIATED EMISSIONS TEST.....	6
3.3.2 OCCUPIED BANDWIDTH .....	9
3.3.3 DWELL TIME.....	10
<b>4. PHOTOGRAPHS OF TEST SETUP .....</b>	<b>12</b>
<b>5. PHOTOGRAPHS OF EUT .....</b>	<b>13</b>

## 1. General Information

### 1.1. Description of Device (EUT)

Trade Name	: N/A
EUT	: Remote control& receiver for car
Model No.	: JJ-RC-F& JJ-JS-081
Type of Antenna	: Integral Antenna
Operation Frequency	: 433.92MHz
Power Supply	: Battery operated DC 12V
Applicant	: GIANT ALARM SYSTEM CO., LTD
Address	: No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou City, China
Manufacturer	: GIANT ALARM SYSTEM CO., LTD
Address	: No.5 Mansion, Jingpin Park, Huinan Industry Zone, Quanzhou City, China

### 1.2. Description of Test Facility

#### Site Description

All tests were performed at:  
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC  
Laboratory, No.198 Kezhu Road, Science Town Economic& Technology  
Development District Guangzhou, China 510663

## 2. Summary of Measurement

Test	Test Requirement	Stanadard Paragraph	Result
Radiated Emission (30MHz to 1000MHz)	FCC PART 15 : 2008	Section 15.231	PASS
Occupied Bandwidth	FCC PART 15 : 2008	Section 15.231	PASS
Dwell Time	FCC PART 15 : 2008	Section 15.231	PASS

### 3. Test Results

#### 3.1. E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C  
Humidity: 50 % RH  
Atmospheric Pressure: 1010 mbar

EUT Operation:

Pre-test in transmitting mode.

#### 3.2. List of Test and Measurement Instruments

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (dd-mm-yy)	Cal.Due date (dd-mm-yy)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	16-06-2007	15-06-2009
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	12-12-2007	11-12-2008
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	18-06-2008	17-06-2009
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0014	12-08-2008	11-08-2009
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	18-06-2008	17-06-2009
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0005	12-08-2008	11-08-2009
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	12-08-2008	11-08-2009
9	Pre-amplifier (1-18GHz)	Rohde & Schwarz	AFS42-00101 800-25-S-42	SEL0081	18-06-2008	17-06-2009
10	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33- 18002650-30- 8P-44	SEL0080	18-06-2008	17-06-2009
11	Band filter	Amindeon	82346	SEL0094	18-06-2008	17-06-2009
12	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	15-06-2008	14-06-2009

### 3.3. Test Procedure & Measurement Data

#### 3.3.1 Radiated Emissions Test

Test Requirement: FCC Part15 C

Test Method: ANSI C63.4 :2003

Measurement Distance: 3m (Semi-Anechoic Chamber and OATS)

Frequency range 30 MHz – 5.0GHz for transmitting mode.

Test instrumentation resolution bandwidth 120 kHz (30 MHz - 1000 MHz)

1 MHz (1000 MHz – 5GHz)

Receive antenna scan height 1 m - 4 m, polarization Vertical/Horizontal

#### Requirements:

Fundamental Frequency MHz	Field Strength of Fundamental (dBμV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBμV/m @ 3m)
40.66 to 40.70	67.04	47.04
70 to 130	61.94	41.94
130 to 174	61.94 to 71.48	41.94 to 51.48
174 to 260	71.48	51.48
260 to 470	71.48 to 81.94	51.48 to 61.94
470 and above	81.94	61.94

The fundamental frequency of the EUT is 433.92MHz

The limit for average field strength dBuv/m for the fundamental frequency= 80.8dBuv/m.

No fundamental is allowed in the restricted bands.

The limit for average field strength dBuv/m for the harmonics and spurious frequencies = 60.8dBuv/m. Spurious in the restricted bands must be less than 54.0 dBuv/m or 15.209.

#### Test Procedure:

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
- 7 The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
8. The EUT is pre-scan from 30MHz to 10<sup>th</sup> harmonics

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier . The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Peramplifier Factor

An initial pre-scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The following test results were performed on the EUT:

### 3.3.1.1 Fundamental emission

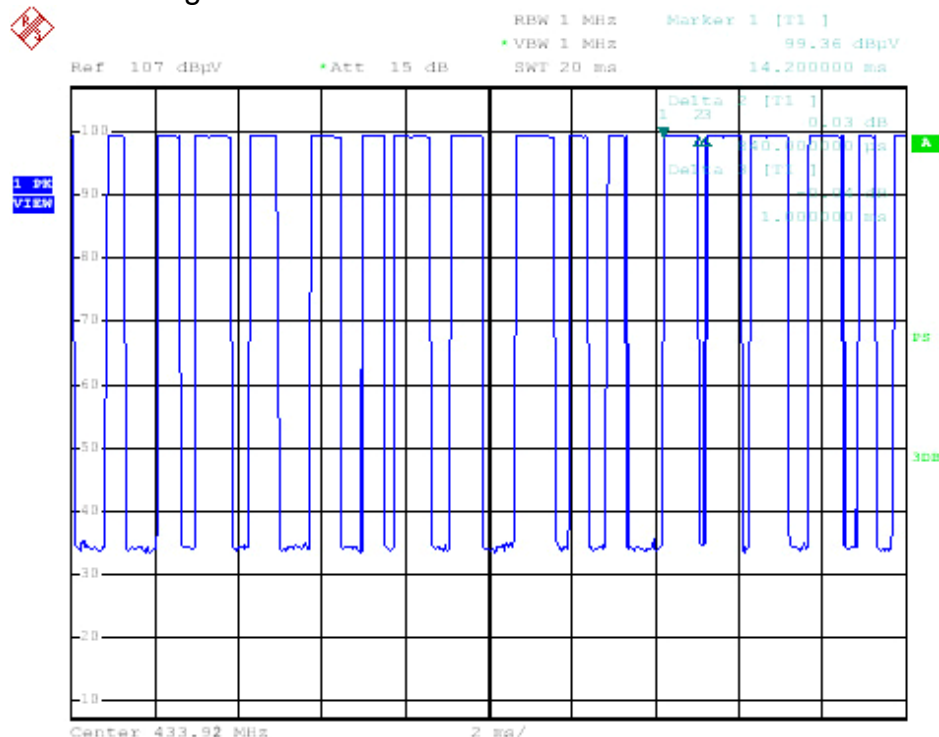
Test Frequency (MHz)	Peak (dBµV/m)		Limits (dBµV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
433.92	69.59	63.46	100.8	31.21	37.34

## Duty Cycle Calculation

Calculation according to RF burst Para 15.35(c)

$$20\log^*(0.84\text{msec}/1\text{msec})=-1.51\text{dB}$$

See below fig.



**Average data=Peak data + Duty cycle**

Test Frequency (MHz)	Avergae (dBµV/m)		Limits (dBµV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
433.92	68.09	61.96	80.08	11.99	18.12

### 3.3.1.2 Harmonics & Spurious Emissions

Measure with Peak Detector

#### Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector
40.67	0.61	10.93	28.09	40.97	24.42	40	-15.58	QP
63.95	0.80	7.07	28.03	42.82	22.66	40	-17.34	QP
70.74	0.83	6.97	28.00	42.41	22.21	40	-17.79	QP
141.55	1.30	8.24	27.51	46.94	28.97	43.5	-14.53	QP
227.88	1.56	11.59	27.01	50.70	36.84	46	-9.16	QP
433.92	1.91	14.03	26.75	88.61	69.59			Peak
867.15	2.72	19.99	27.59	41.42	36.54	46	-9.46	QP
1312	1.29	27.67	44.76	50.91	35.11	74	-38.89	PK
1801	1.64	30.49	44.69	55.78	43.22	74	-30.78	PK
1978	1.74	31.83	44.66	51.69	40.60	74	-33.40	PK
2857	2.14	33.10	44.87	57.48	47.85	74	-26.15	PK

#### Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector
82.38	1.10	7.95	27.99	36.06	17.12	40	-22.88	QP
229.82	1.57	11.64	27.00	39.76	25.97	46	-20.03	QP
248.25	1.67	12.24	26.92	38.52	25.51	46	-20.49	QP
433.92	1.91	13.99	26.74	74.30	63.46			Peak
867.15	2.72	19.99	27.59	46.23	41.35	46	-4.65	QP
1252	1.24	27.62	44.76	49.58	33.68	74	-40.32	PK
1804	1.64	30.49	44.69	56.11	43.55	74	-30.45	PK
1978	1.74	31.83	44.66	52.06	40.97	74	-33.03	PK
2428	1.96	32.26	44.76	48.75	38.21	74	-35.79	PK

#### Remark:

According to the standards used, Where limits are specified by agencies for both average and peak (or quasi-peak) detection ,if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.

TEST RESULTS: The unit does meet the FCC Part 15 C Section 15.231 requirements.



### 3.3.2 Occupied Bandwidth

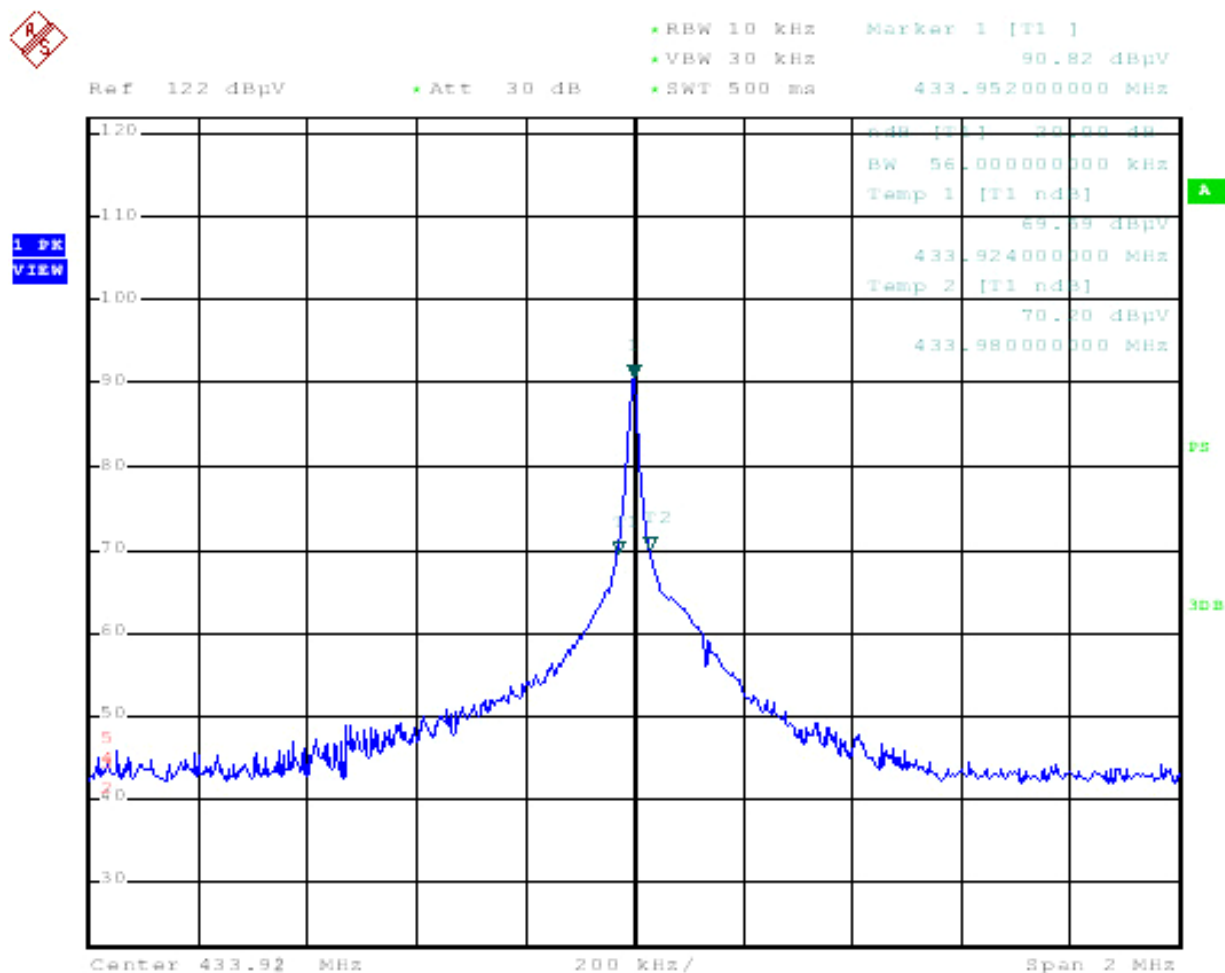
Test Requirement: FCC Part15 C

Test Method: ANSI C63.4 :2003

Requirements: 15.231 (c3) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken. The vertical is set to 10dB per division. The horizontal scale is set to 200KHz per division.

The graph as below, represents the emissions take for this device.



TEST RESULTS: The unit does meet the FCC Part 15 C Section 15.231 requirements.

### 3.3.3 Dwell Time

Test Requirement: FCC Part15 C

Test Method: ANSI C63.4 :2003

Requirements:

**1. Regulation 15.231 (a)** The provisions of this Section are restricted to periodic operation within the band 40.66 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Radio control of toys is not permitted. Continuous transmissions, such as voice or video, and data transmissions are not permitted. The prohibition against data transmissions does not preclude the use of recognition codes. Those codes are used to identify the sensor that is activated or to identify the particular component as being part of the system.

**Result:**

The EUT is a remote switch.

The EUT meets the requirements of this section.

**2. Regulation 15.231 (a1)** A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

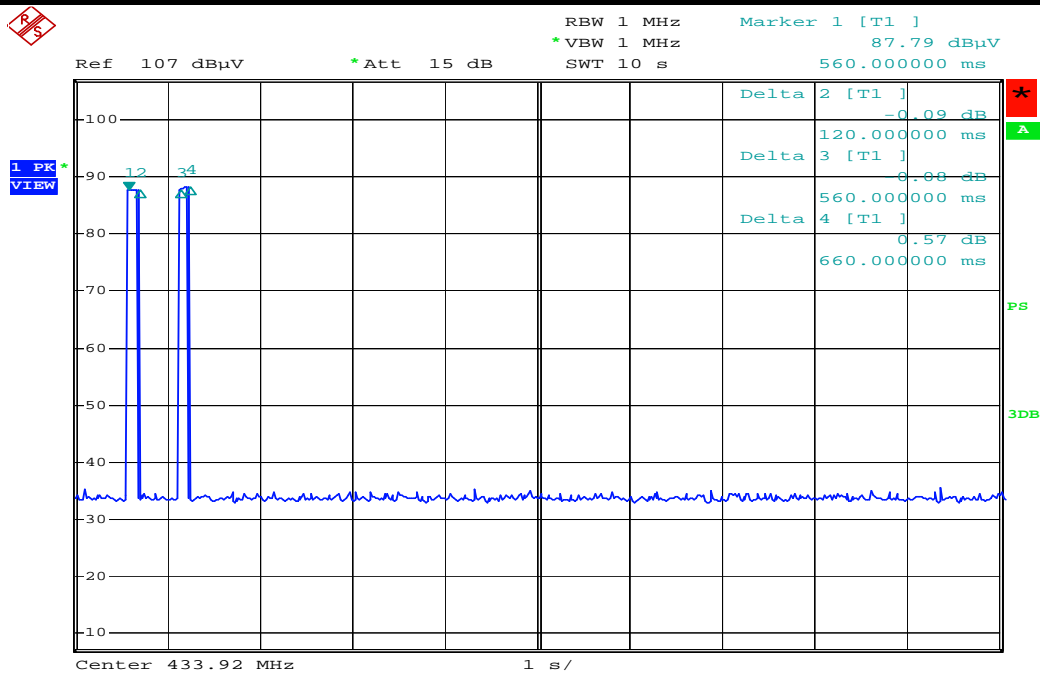
**Test Result:**

Work Status: release after play the remote control button

Dwell time calculation:

$T = T_4 - T_1 = 660\text{ms} = 0.6\text{s} < 5\text{s}$ , so It's comply with the standard requirement.

For more details, please see the following the plot.



**Dwell time test plot**

**3. Regulation 15.231 (a2)** A transmitter activated automatically shall cease transmission within 5 seconds after activation.

**Result:**

The EUT does not have automatic transmission. It's meet the standard requirement. Please see the a1 test results.

**4. Regulation 15.231 (a3)**

Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

**Result:**

The EUT does not employ periodic transmission. It's used by user at any not certain Time. so it's deemed to comply with the standard requirement.

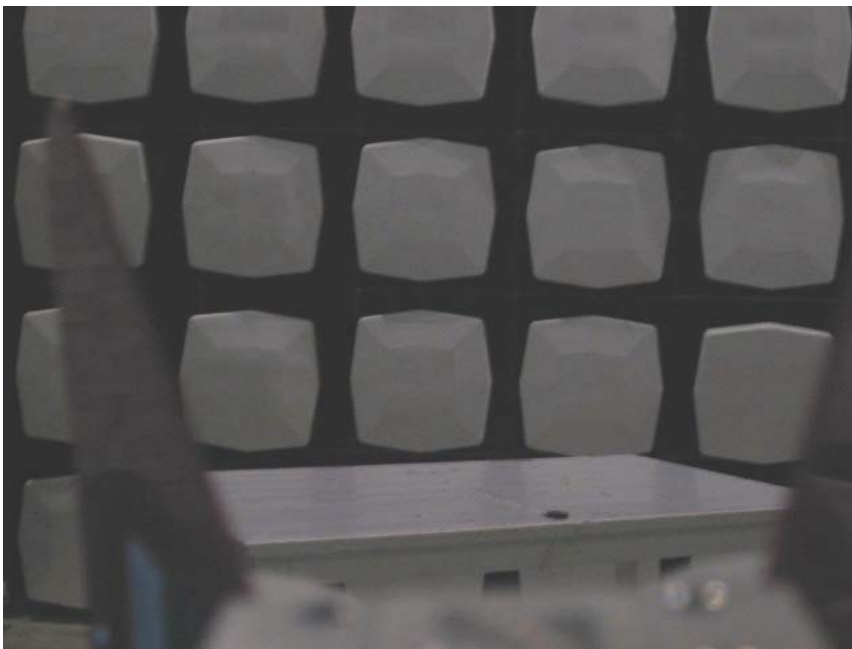
**5. Regulation 15.231 (a4)** Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

**Result:**

The EUT is only used for the car. This section is not applicable for the EUT.

## 4. Photographs of Test Setup

### Photographs-Radiated Emission Test Setup in Chamber

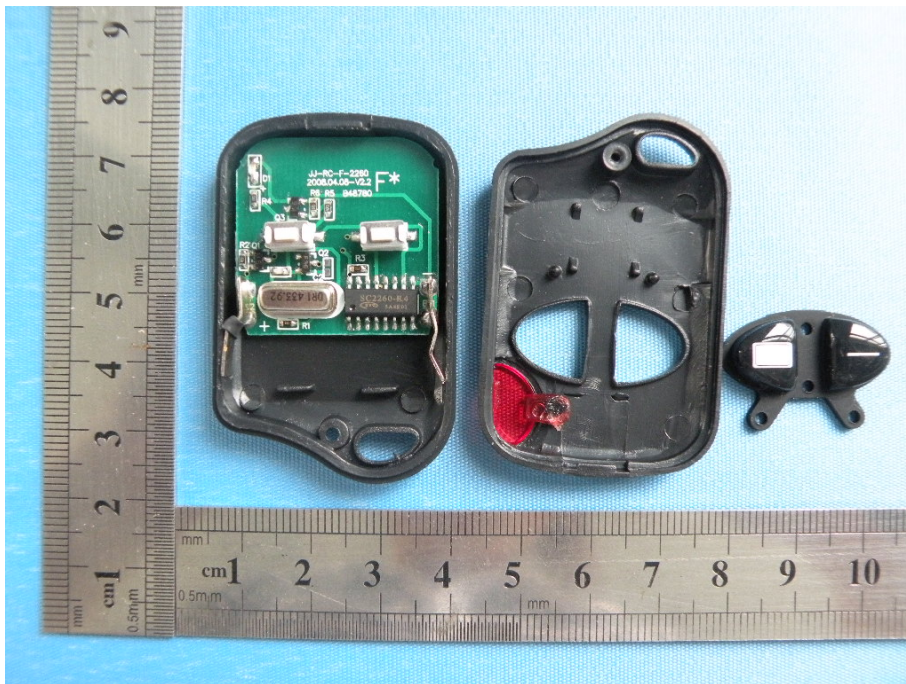


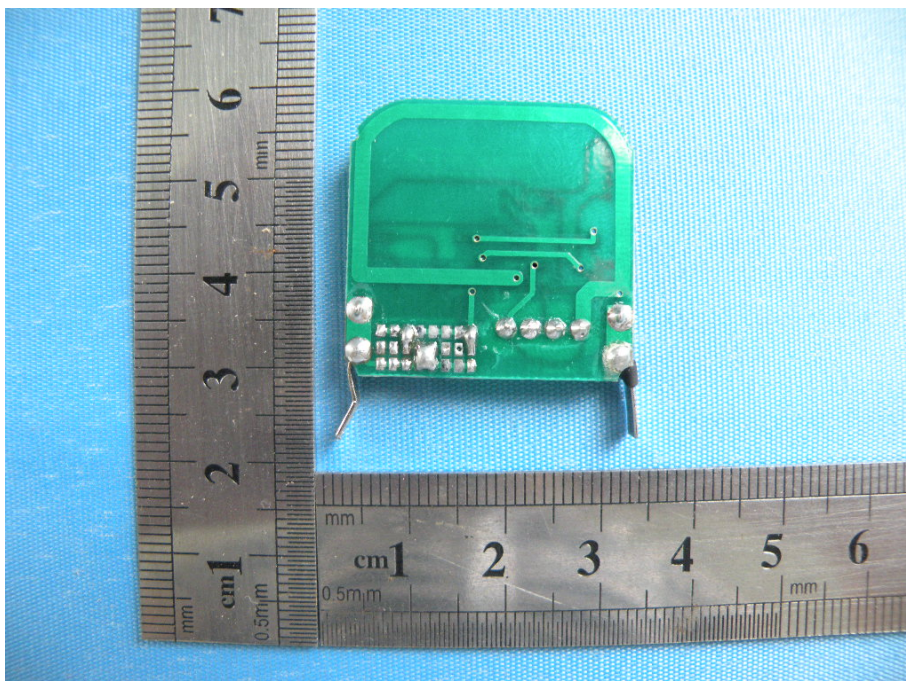
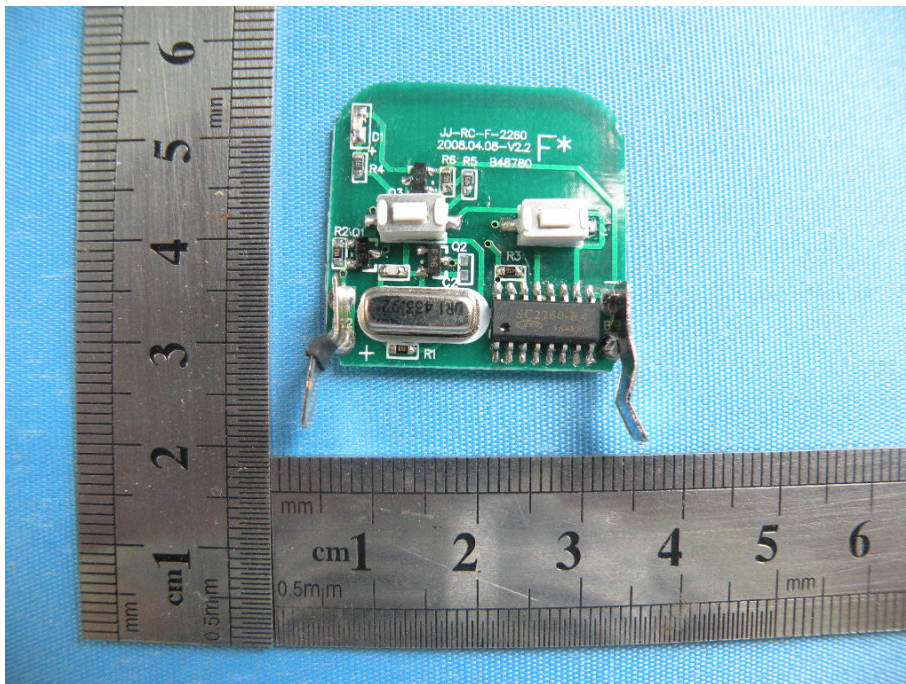
## 5. Photographs of EUT

### Photographs - EUT Constructional Details









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