FCC TEST REPORT

FCC ID : UYPS227

Applicant : **ZHONGSHAN RD AUTO ACCESSORIES MANUFACTURING FACTORY**
NO.111 BAOYUAN ROAD,ZHUYUAN,XIAOLAN,ZHONGSHAN

Equipment Under Test (EUT) :

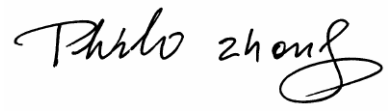
Product description :CAR ALARM

Model No. : S223, S226, S227

Standards : FCC 15 Subpart C Paragraph 15.231

Date of Test : January 30, 2007

Test Engineer : **Tiger Su**

Reviewed By : 

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2 Contents

3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 5GHz)	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:	ZHONGSHAN RD AUTO ACCESSORIES MANUFACTURING FACTORY
Address:	NO.111 BAOYUAN ROAD, ZHUYUAN, XIAOLAN, ZHONGSHAN
Manufacturer:	ZHONGSHAN RD AUTO ACCESSORIES MANUFACTURING FACTORY
Address:	NO.111 BAOYUAN ROAD, ZHUYUAN, XIAOLAN, ZHONGSHAN

4.2 General Description of E.U.T.

Product description:	CAR ALARM
Model No.:	S223, S226, S227

4.3 Details of E.U.T.

Power Supply: DC 9V 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 CAR ALARM. The standards used were FCC 15 Paragraph 15.231, Paragraph 15.205, Paragraph 15.31,Paragraph 15.33, Paragraph 15.35.

4.6 Test Facility

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

- **FCC – Registration No.: 97379**

  Shenzhen Academy Of Metrology and Quality Inspection 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 97379, April 20, 2006.

4.7 Test Location

All Emissions testswere performed at:-

Bldg,of Metrology and Quality Inspection ,Longzhu Road ,Nanshan District ,Shenzhen ,Guangdong ,China

5 Equipment Used during Test

	Conducted Emission Test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Due date**
1	CE Variac	GZ Debao Factory	TS/DGC$_2$-5	N/A	N/A	N/A
2	LISN	SCHAFFNER CHASE	MNZ050D 11	100002	18-11-2006	17-11-2007
3	Shielding Room	Frankonia	12 x 4 x 4 m^3	N/A	N/A	N/A
4	EMI Receiver	ROHDE & SCHWARZ	ESCS30	830245/009	18-11-2006	17-11-2007
5	Coaxial Cable	SMQ	2m	N/A	18-11-2006	17-11-2007
	Radiated Emission Test					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Due date**
1	3m Semi- Anechoic Chamber	Albatross Projects	9X6X6	N/A	18-11-2006	17-11-2007
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	830245/009	18-11-2006	17-11-2007
3	EMI Test Software	ROHDE & SCHWARZ	ES-K1	N/A	N/A	N/A
4	Coaxial cable	SMQ	N/A	N/A	18-11-2006	17-11-2007
5	Bilog Antenna	Chase	CBL6112B	2591	18-11-2006	17-11-2007
6	Horn Antenna	ROHDE & SCHWARZ	HF906	100014	18-11-2006	17-11-2007
	Common Used Equipment					
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Series No.**	**Cal. Date**	**Due date**
1	Temperature, Humidity & Barometer	OREGON SCIENTIFIC	BA-888	EMC0001 to EMC0004	11-11-2006	10-11-2007
2	DMM	FLUKE	73	70681569 or 70671122	11-11-2006	10-11-2007

6 Conducted Emission Test

Product Name:	CAR ALARM
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.

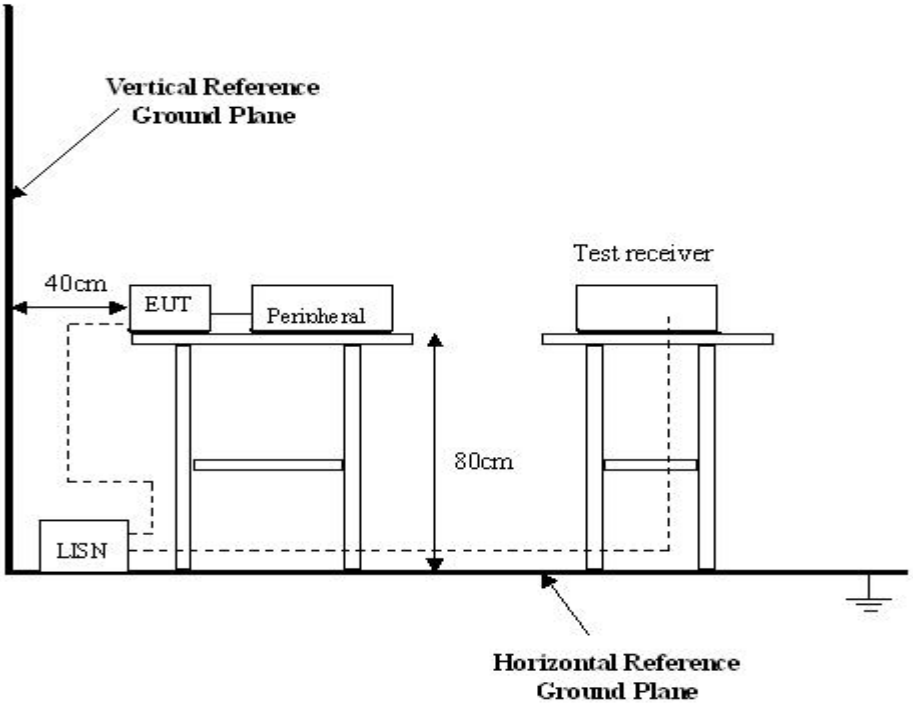
6.2 Test Procedure

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

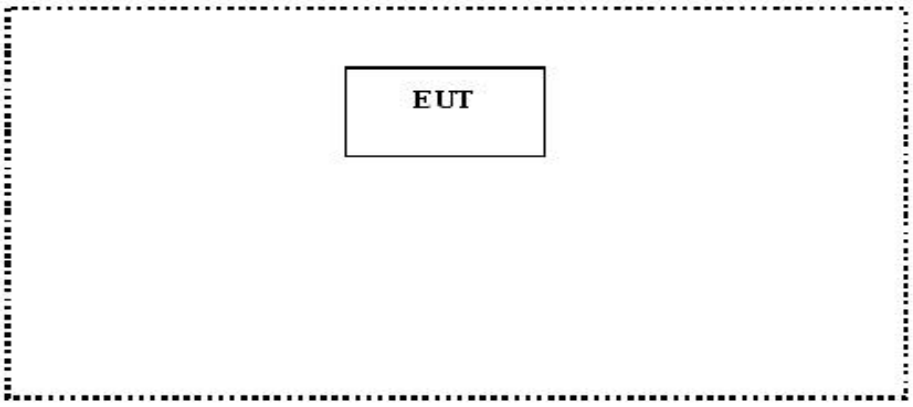
The conducted emission tests were performed using the setup accordance with the ANSI C63.4: 2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



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 dBμV/m between 0.15MHz & 0.5MHz
56 dBμV/m between 0.5MHz & 5MHz
60 dBμV/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:	CAR ALARM
Test Requirement:	FCC Part15 Paragraph 15.231
Test Method:	Based on FCC Part15 Paragraph 15.33
Test Date:	January 30, 2007
Frequency Range:	30MHz to 5GHz
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.

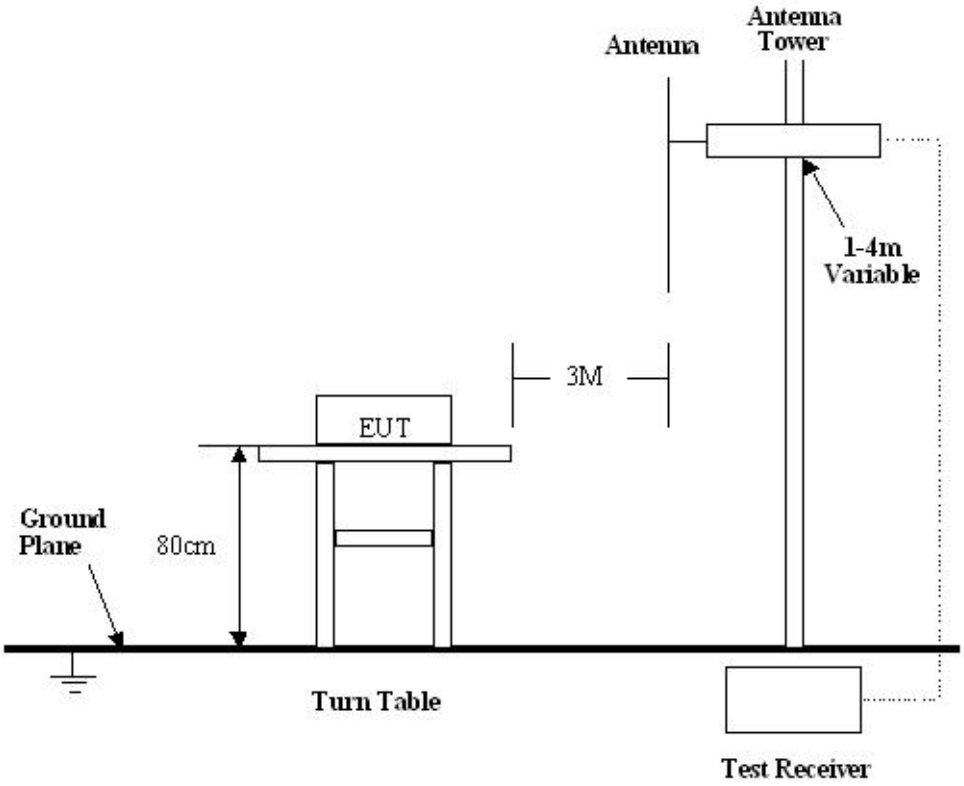
Based on ANSI C63.4: 2003, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at SMQ EMC Lab is +4.0 dB.

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 dBμV 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 15.231, Paragraph 15.209 limits.



7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.231 Rules, the system was tested to 5000 MHz.

Start Frequency.....30 MHz
Stop Frequency.....5000 MHz
Sweep Speed Auto
IF Bandwidth.....100 kHz
Video Bandwidth.....1 MHz
Quasi-Peak Adapter Bandwidth .....120 kHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth 1MHz

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:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

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

Margin = Corr. Ampl. – 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 15.231 standards.

7.8 EUT Operating Condition

Same as section 6.4 of this report.

7.9 Radiated Emissions Limit

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	\1\ 1,250 to 3,750	\1\ 125 to 375
174-260	3,750	375
260-470	\1\ 3,750 to 12,500.	\1\ 375 to 1,250
Above 470	12,500	1,250

7.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding
The meter reading of the spectrum analyer (which is set to read in units of dBuV)
To the antenna correction factor supplied by the antenna manufacturer. The antenna
Correction factors are stared in terms of dB.The gain of the pressletor was accounted
For in the spectrum analyser meter reading.

Example:

Freq(MHz)	Meter Reading +ACF=FS
33	20dBuV+10.36dB=30.36dBuV/m @3m

7.10.1 Radiated Emission Test Data

Test Item:	Radiated Emission Test Data
Test Voltage:	DC 9V
Test Mode:	TX On
Temperature:	24 °C
Humidity:	52%RH
Test Result:	PASS

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
315.00	Vertical	69.73	75.62	5.89	1.5	90
315.00	Horizontal	68.29	75.62	7.33	1.5	180
630.00	Vertical	42.10	46.00	3.90	1.2	90
945.00	Vertical	41.30	46.00	4.70	2.0	90
1260.0	Vertical	39.60	54.00	14.4	1.8	45
1575.0	Vertical	38.70	54.00	15.3	2.0	60
630.00	Horizontal	41.92	46.00	4.08	1.5	180
945.00	Horizontal	40.55	46.00	5.45	1.6	60
1260.0	Horizontal	39.16	54.00	14.84	2.0	45
1575.0	Horizontal	38.00	54.00	16.00	2.0	90

Where F is the frequency in MHz,The formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1). For the band 130-174MHz,uV/m at 3 meters=56.81818(F)-6136.3636;

(2). For the band 260-470MHz,uV/m at 3 meters=41.6667(F)-7083.3333.

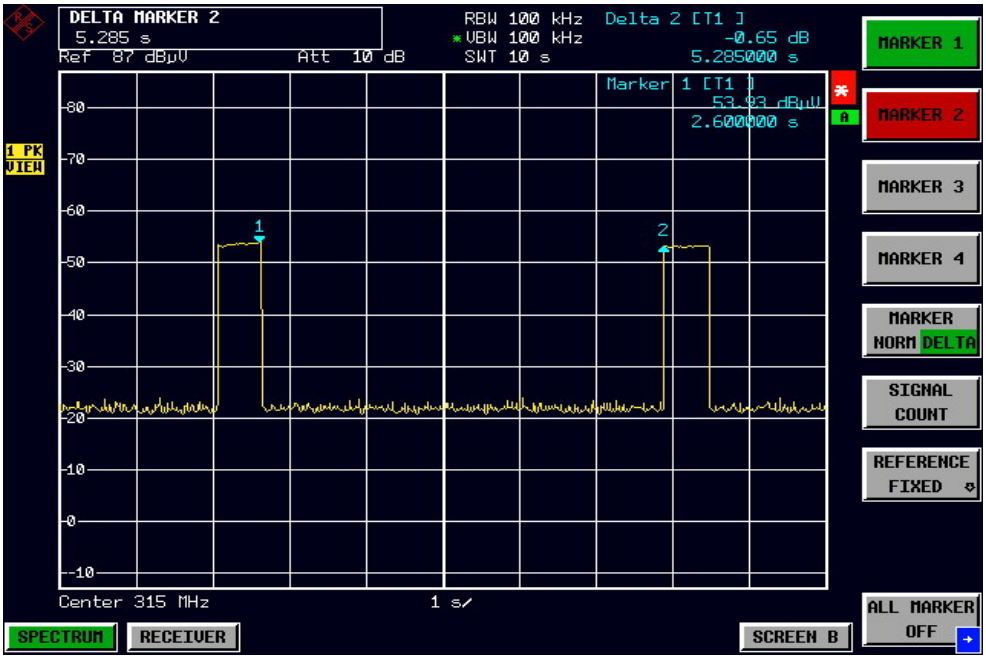
Sample calculation of limit @ 315MHz

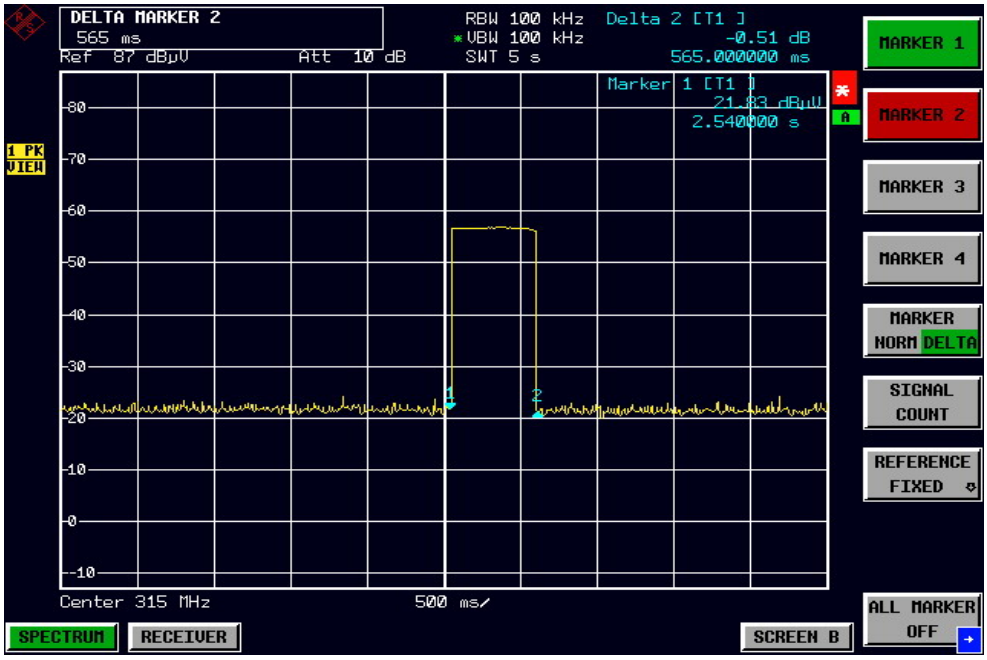
41.6667 (315)- 7083.3333=6041.677uV/m

20log(6041.677)=75.62 dBuV/m limit @ 315MHz

8 Periodic Operation

Refer to the plot (as below),This device does meet the FCC requirement.





9 Band Edge

Test Requirement:	FCC Part15 C
Test Method:	Based on FCC Part15 Paragraph 15.231
Test Date:	January 30, 2007
Test mode:	TX On
Temperature:	24 °C
Humidity:	52%RH

9.1 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 bandwidth of the fundamental frequency was measure by spectrum analyser with 10KHz RBW and 10KHz VBW.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power 20dB.

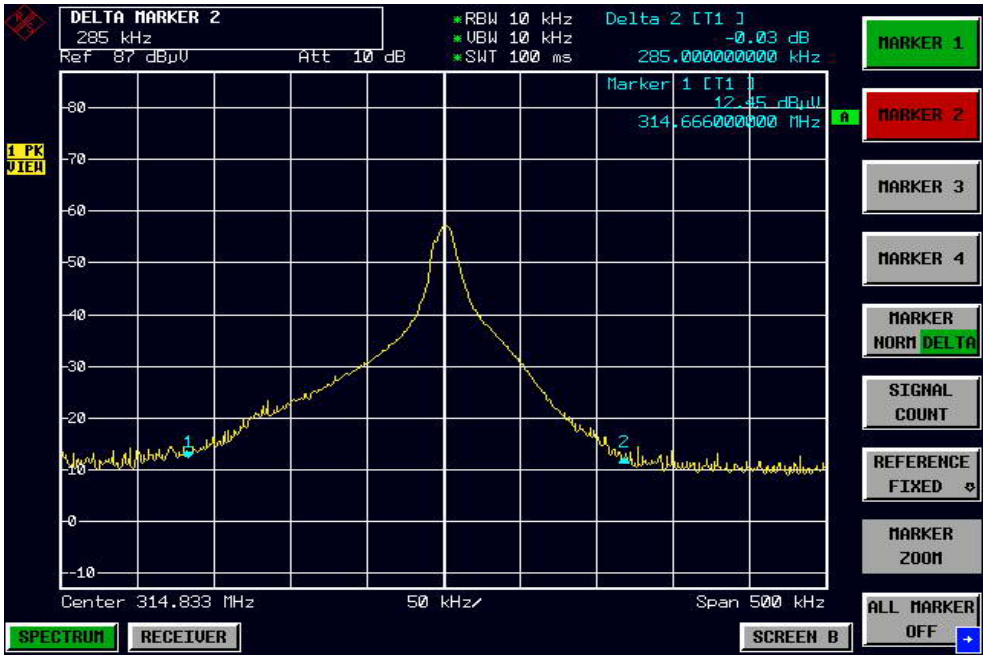
9.2 Band Edge

Requirements: 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.

Frequency (MHz)	Bandwidth Emission (KHz)	Limit (KHz)	Result
315.00	285	787	Pass

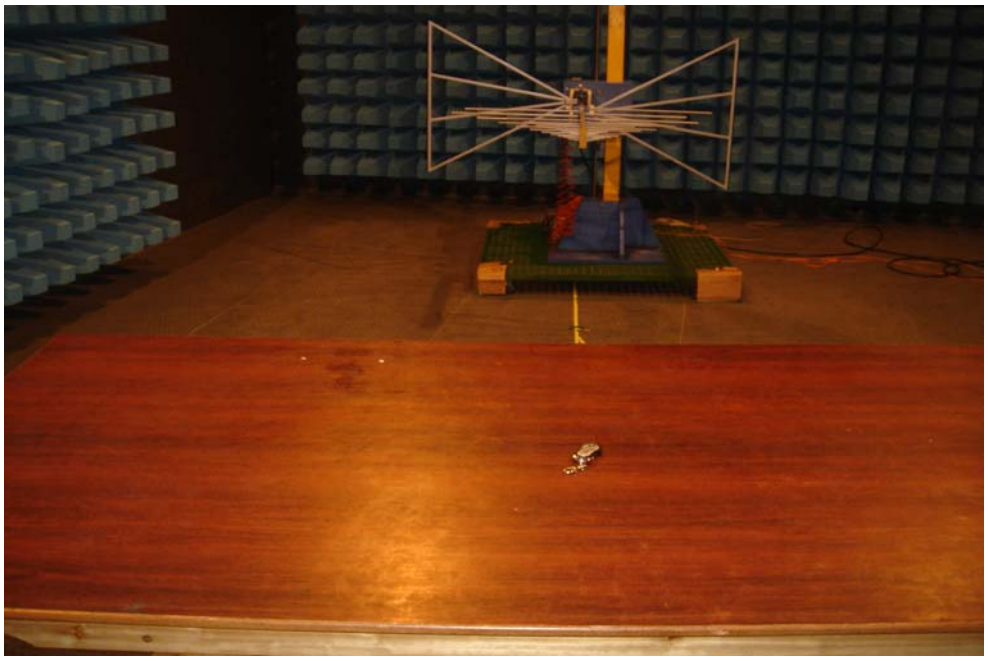
9.3 Band Edge Test Result

315MHz TX

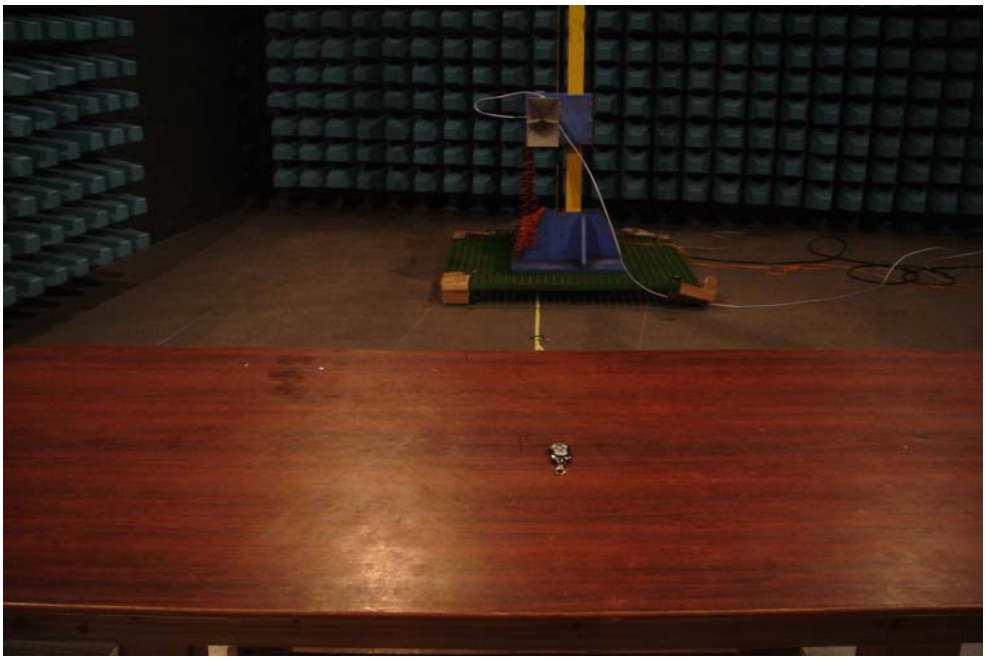


10 Photographs of Testing

10.1 Radiation Emission Test View For 30MHz-1000MHz



10.2 Radiation Emission Test View For 1GHz-5GHz

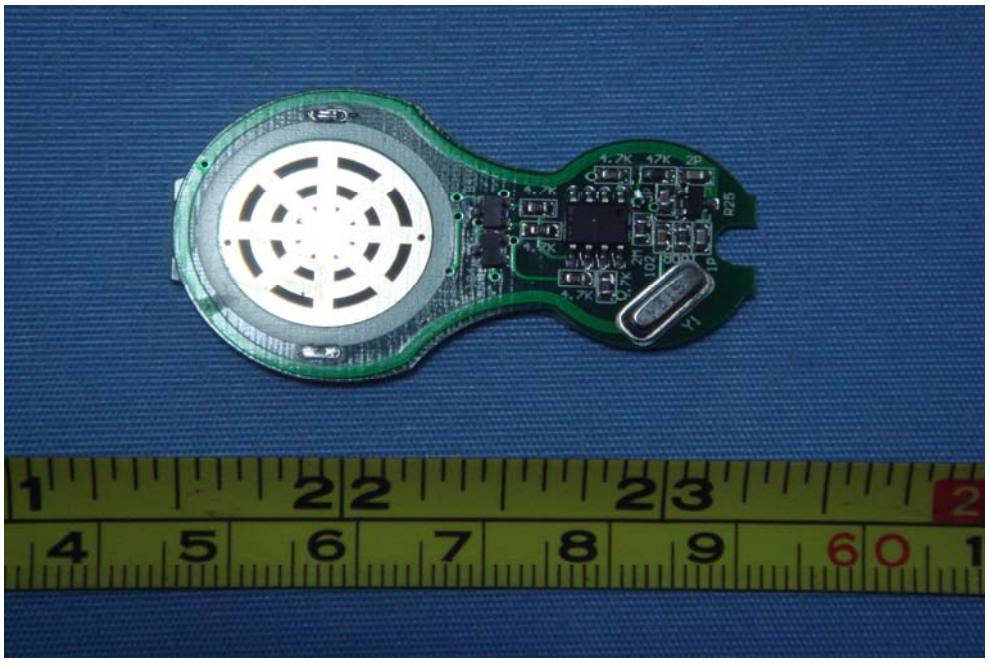


11 Photographs - Constructional Details

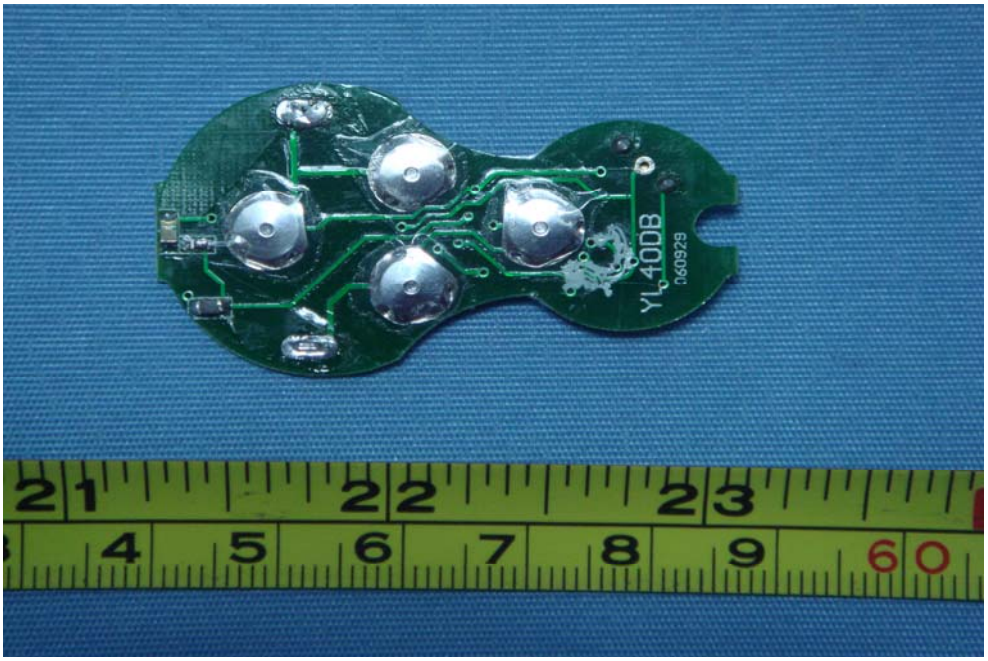
11.1 EUT - Front View

11.2 EUT - Back View

11.3 PCB-Front View



11.4 PCB-Back View



12 FCC ID Label

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. 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