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Ke Mei Ou Lab Corp.
FEDERAL COMMUNICATIONS COMMISSION
Registration Number: 125782

FCC TEST REPORT

Under :
FCC 15 Subpart C, Paragraph 15.231

Prepared For :

Guangdong Sansong Technology Co., Ltd.

9th Building, Yinhai Industrial Center, Henggang Town, Shenzhen, China

FCC ID: RRN-BHSS270A
EUT: Car Alarm
Model: BHSS-270A

February 2, 2004

Report Type: Original Report
Test Engineer: Peter Lin
Test Date: December 28, 2003
Review By: Apollo Liu / Manager

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1. General Information

1. 1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1. 2 Testing Laboratory

Ke Mei Ou Laboratory Co., Ltd.

7A, Jiaxiangge, Jiahuixincheng, No.3027, Shennan Rd., Futian, Shenzhen, Guangdong, P.R.China.

Tel: +86 755 83642690 Fax: +86 755 83297077

Email: kmolab@tom.com

Internet: www.kmolab.com

1. 3 Details of Applicant

Name	**: Guangdong Sansong Technology Co., Ltd.**
Address	**: 9th Building, Yinhai Industrial Center, Henggang Town, Shenzhen, China**
Contact	**: David Guo / Vice General Manager**
Tel	**: + 86 755 28621777**
Fax	**: + 86 755 28621867**

1. 4 Application Details

Date of Receipt of Application	: November 14, 2003
Date of Receipt of Test Item	: December 26, 2003
Date of Test	: December 28 ~ January 18, 2004

1. 5 Test Item

Manufacturer	: See Applicant
Brand Name	: BHSS, SNA
Model No.	: BHSS-270A, BHSS-270B, BHSS-270C, BMW-2-WAY, XR-7025
Description	: Car Alarm

Additional Information

Frequency	: 433.92MHz
Transmission Range	: N/A
Number of Channels	: 1
Antenna	: Internal
Power Supply	: DC 3V
Extreme Temp. Tolerance	: N/A

1. 6 Test Standards

Title 47 CFR, FCC Part 15, including: 15.203, 15.205, 15.207, 15.209, 15.231a, 15.231b and 15.231c.

Note: All radiated measurements were made in all three orthogonal planes. The values reported are the maximum values.

2. Technical Test

2. 1 Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.203	Antenna Requirement	PASS	Complies
FCC Part 15, Paragraph 15.207	Conducted Test	N/A	Owing to the DC operation of EUT, this test item is not performed.
FCC Part 15 Subpart C Paragraph 15.231(a)	Periodic Operation Characteristics	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.231(b) Limit	Field Strength of Fundamental	PASS	Minimum passing margin is -14.6 dB at 433.92 MHz Horizontal
FCC Part 15, Subpart C Paragraph 15.231(b) Limit & Paragraph 15.209, Paragraph 15.205(b)	Radiated Test	PASS	Meets Class B Limit Minimum passing margin is -11.5 dB at 1302.000 MHz Horizontal
FCC Part 15 Subpart C Paragraph 15.231(c) Limit	Measured 20 dB Bandwidth	PASS	Complies.

3. EUT Modifications

No modification by Ke Mei Ou Laboratory Co., Ltd.

4. Conducted Power Line Test

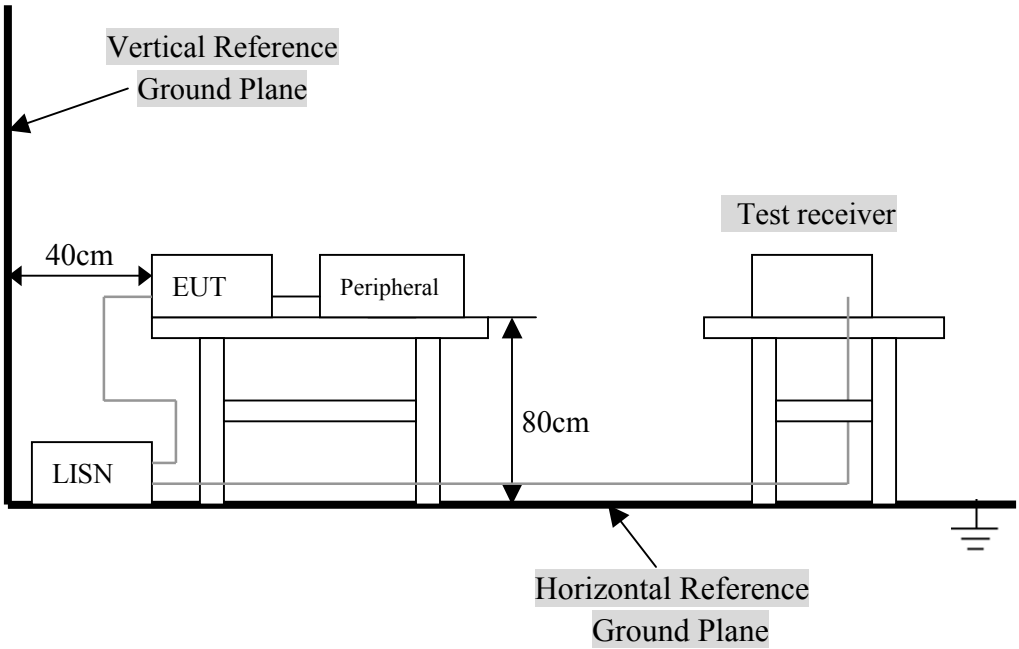
4. 1 Test Equipment

Please refer to Section 9 this report.

4. 2 Test Procedure

The EUT was tested according to ANSI C63.4 - 2001. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by section 5.1 of ANSI C63.4 - 2001. cables and peripherals were moved to find the maximum emission levels for each frequency.

4. 3 Test Setup



For the actual test configuration, Please refer to the related items– Photos of Testing.

4. 4 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2001. EUT was used 3V battery. Press any key of the EUT. Once the button releasing, the transmission will be stopped within 1 second. The EUT transmitted continuously and the duty cycle of transmitting was set to worst case condition, which provided by manufacturer during all the tests. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model #	FCC ID
Car Alarm	Guangdong Sansong Technology Co., Ltd.	BHSS-270A	RRN-BHSS270A

B. Internal Devices

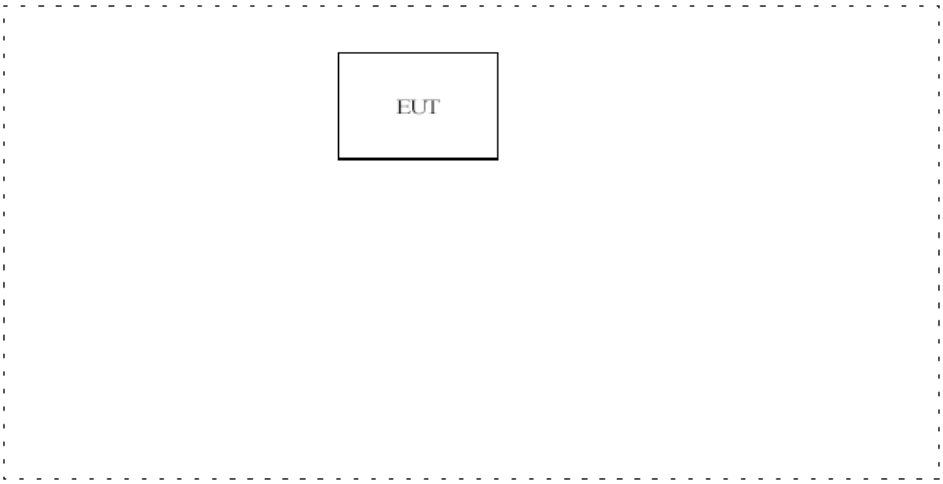
Device	Manufacturer	Model #	FCCID / DoC
N/A			

C. Peripherals

Device	Manufacturer	Model # Serial #	FCC ID/ DoC	Cable
N/A				

4. 5 EUT Operating Condition

Operating condition is according to ANSI C63.4 - 2001.
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.



4. 6 Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)		
Frequency Range (MHz)	**Class A QP/AV**	**Class B QP/AV**
0.15 – 0.5	79/66	66-56/56-46
0.5 – 5.0	73/60	56/46
5.0 - 30	73/60	60/50

NOTE ：In the above table, the tighter limit applies at the band edges.

4. 7 Conducted Power Line Test Result

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

5. Radiated Emission Test

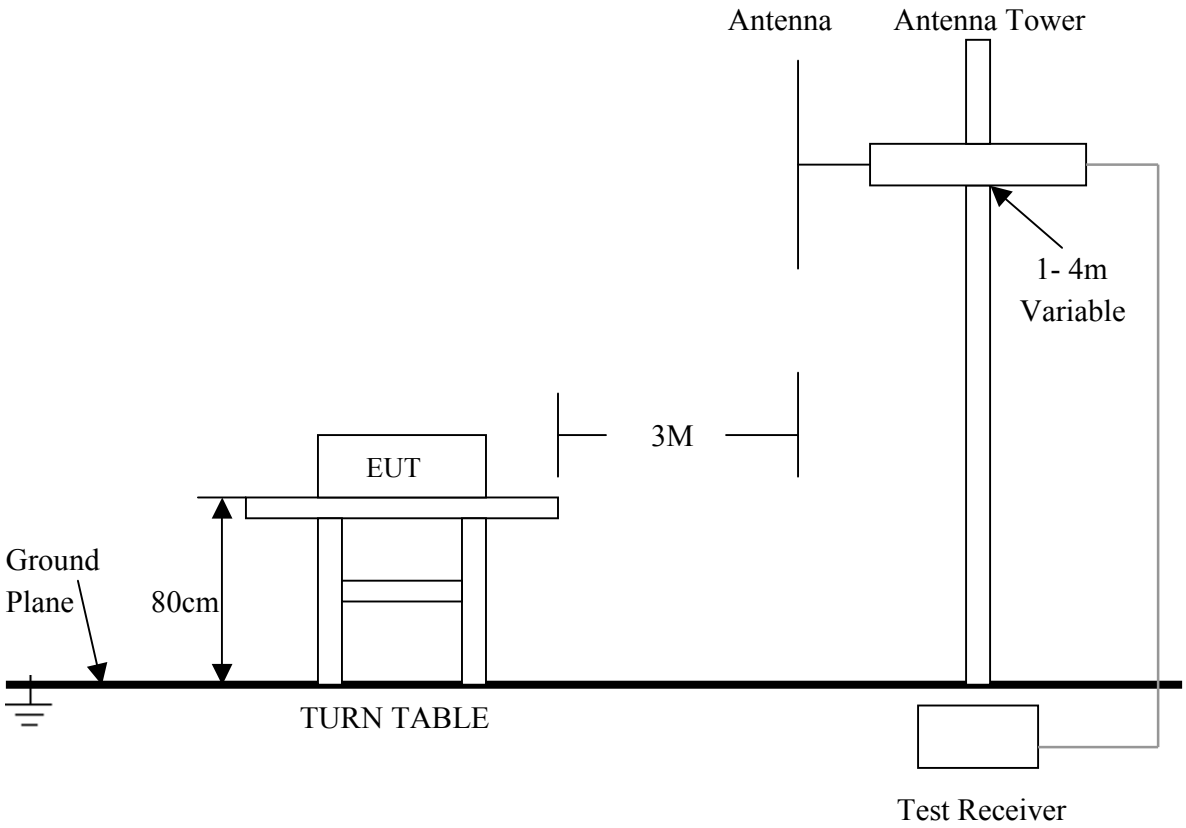
5. 1 Test Equipment

Please refer to Section 9 this report.

5. 2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 2001. The radiated test was performed at Ke Mei Ou Laboratory. This site is on file with the FCC laboratory division, Registration No. 125782.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2001.
3. The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
4. The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. 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 of specification limit), and are distinguished with a " **QP**" in the data table.
6. The antenna polarization : Vertical polarization and Horizontal polarization.

5. 3 Radiated Test Setup



For the actual test configuration , please refer to the related items– Photos of Testing.

5. 4 Configuration of The EUT

Same as section 4 . 4 of this report

5. 5 EUT Operating Condition

Same as section 4 . 5 of this report.

5. 6 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below ：

A. FCC Part 15 Subpart C Paragraph 15.231(b) Limit

Calculation of Radiated Emissions limits for FCC Part 15.231b (260-470MHz)
Field Strength of Fundamental / Harmonic Frequencies:

The calculation involves a linear interpolation of 3750 to 12500 uV/m over 260 – 470 MHz, where field strength of the fundamental frequency (f_0) when, 260δf_0δ470 MHz, can be found by: 41.6667(f_0) – 7083.3333, where f_0 is in MHz.

Field Strength of Spurious / Harmonic Frequencies:

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
where f_0 = 433.92MHz

Fundamental: 41.6667(433.92) – 7083.3333 = 10996.7uV/m

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)		Field Strength of Harmonics (3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
433.92	10996.7	80.8	1099.7	60.8

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 and the

5. 7 Radiated Emission Test Result

A. Fundamental Radiated Emission Data

Product	: Car Alarm	Test Mode	: Normal
Test Item	: Fundamental Radiated Emission Data	Temperature	: 25 ℃
Test Voltage	: DC 3V (Power by Battery)	Humidity	: 56%RH
Test Result	: **PASS**		

Freq. (MHz)	Emission Peak (dBuV/m)	Calculated Average Level (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
433.92	66.2	66.2	HORIZ	80.8	-14.6
433.92	62.0	62.0	VERT	80.8	-18.8

Note: (1) Emission Level = Reading Level + Probe Factor + Cable Loss + Duty Cycle.
(2) The Duty Cycle = 0 dB, Refer to section 6.2 of this report.

B. General Radiated Emission Data & Harmonics Radiated Emission Data

Product	: Car Alarm	Test Mode	: Normal
Test Item	: General Radiated Emission Data & Harmonics Radiated Emission Data	Temperature	: 25 ℃
Test Voltage	: DC 3V (Power by Battery)	Humidity	: 56%RH
Test Result	: **PASS**		

Freq. (MHz)	Emission Peak (dBuV/m)	Calculated Average Level (dBuV/m)	HORIZ / VERT	Limits (dBuV/m)	Margin (dB)
867.770	39.2	39.2	HORIZ	60.8	-21.6
867.770	36.5	36.5	VERT	60.8	-24.3
1302.000	49.3	49.3	HORIZ	60.8	-11.5
1302.000	49.0	49.0	VERT	60.8	-11.8
1736.000	49.1	49.1	HORZ	60.8	-11.7
1736.000	48.6	48.6	VERT	60.8	-12.2
2170.000	45.3	45.3	HORIZ	60.8	-15.5
2170.000	45.1	45.1	VERT	60.8	-15.7
2604.000	42.6	42.6	HORIZ	60.8	-18.2
2604.000	41.2	41.2	VERT	60.8	-19.6

Note: (1) Emission Level = Reading Level + Probe Factor + Cable Loss + Duty Cycle.
(2) The Duty Cycle = 0 dB, Refer to section 6.2 of this report.

6. Technical Characteristic

6. 1 Band Edge

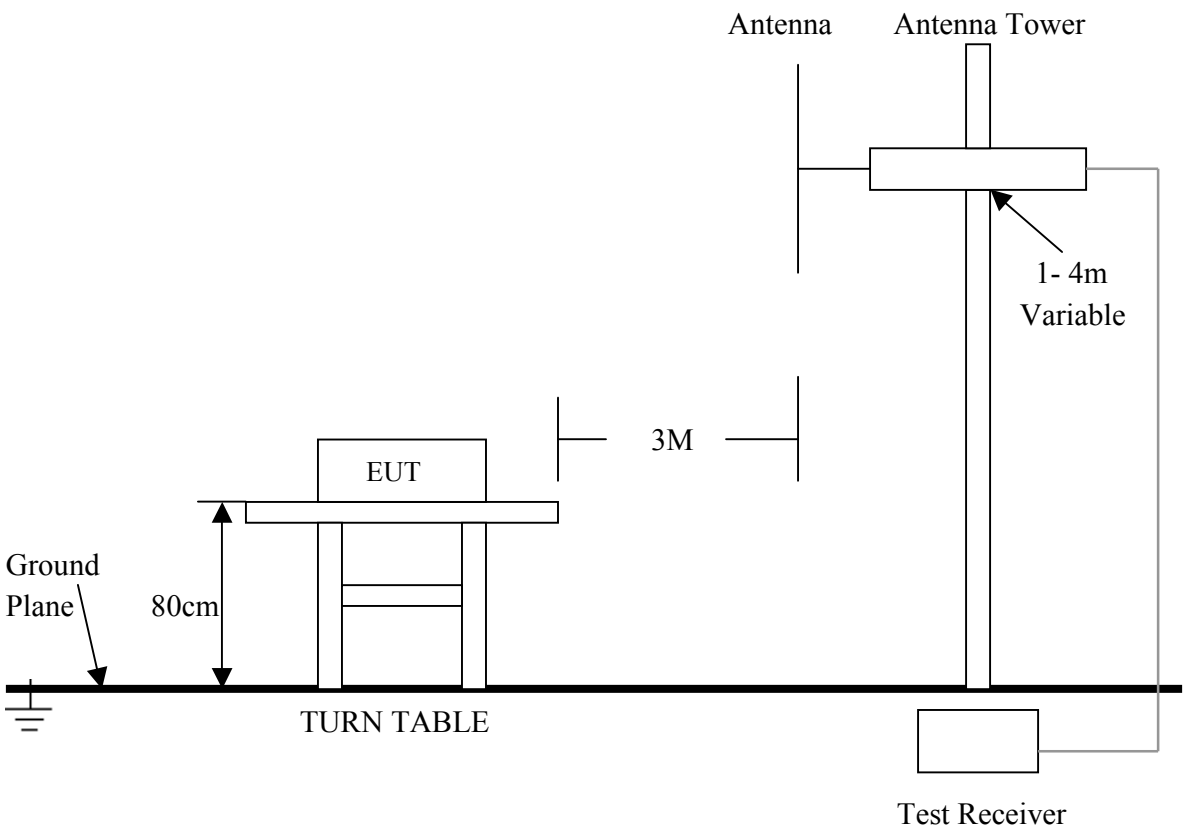
6.1.1 Test Equipment

Please refer to Section 9 this report.

6.1.2 Test Procedure

1. The EUT was tested according to ANSI C63.4 - 2001. The radiated test was performed at Ke Mei Ou Laboratory. This site is on file with the FCC laboratory division, Registration No. 125782.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2001.
3. The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
4. The antenna high were varied from 1 m to 4 m high to find the maximum emission for each frequency.
5. The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement. The bandwidth below 30MHz setting on the field strength meter is 10 kHz, above 1GHz are 1 MHz.
6. 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 readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.
7. The antenna polarization ： Vertical polarization and horizontal polarization.

6.1.3 Radiated Test Setup



For the actual test configuration , please refer to the related items– Photos of Testing

6.1.4 Configuration of The EUT

Same as section 4 . 4 of this report

6.1.5 EUT Operating Condition

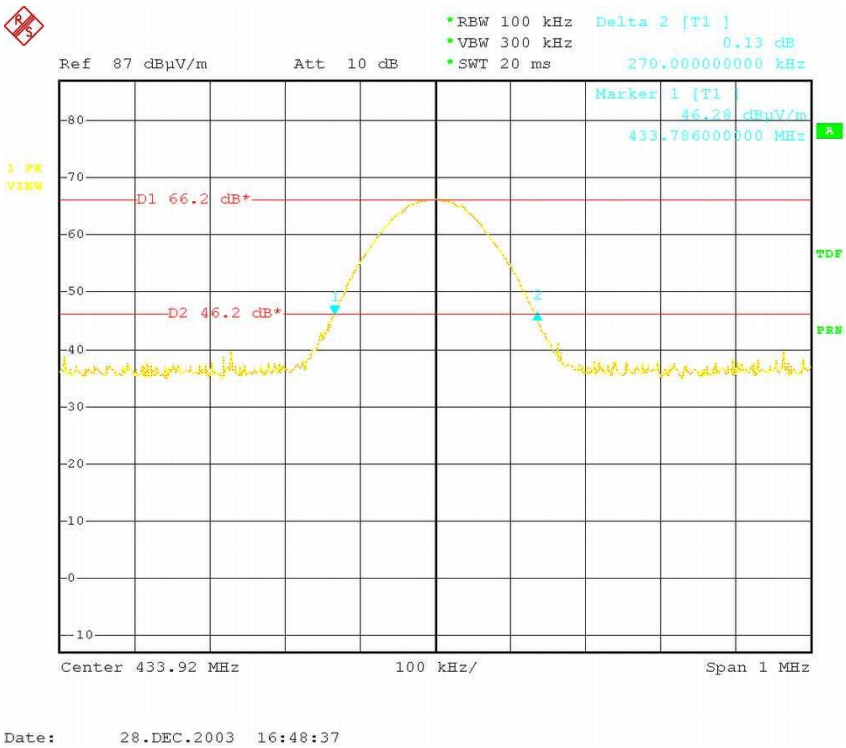
Same as section 4 . 5 of this report.

6.1.6 Band Edge FCC 15.231 Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20dB down from the modulated carrier.
B.W(20dBc) Limit = 0.25% x f (MHz) = 0.25% x 433.92MHz = 1.0848MHz
From the plot, the bandwidth is observed to be 0.270 MHz, at 20dBc where the bandwidth limit is 1.0848MHz.

6.1.7 Band Edge Test Result

Product	: Car Alarm	Test Mode	: Normal
Test Item	: Band Edge Data	Temperature	: 25 ℃
Test Voltage	: DC 3V (Power by Battery)	Humidity	: 56%RH
Test Result	: **PASS**		



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.

6. 2 Calculation of Average Factor

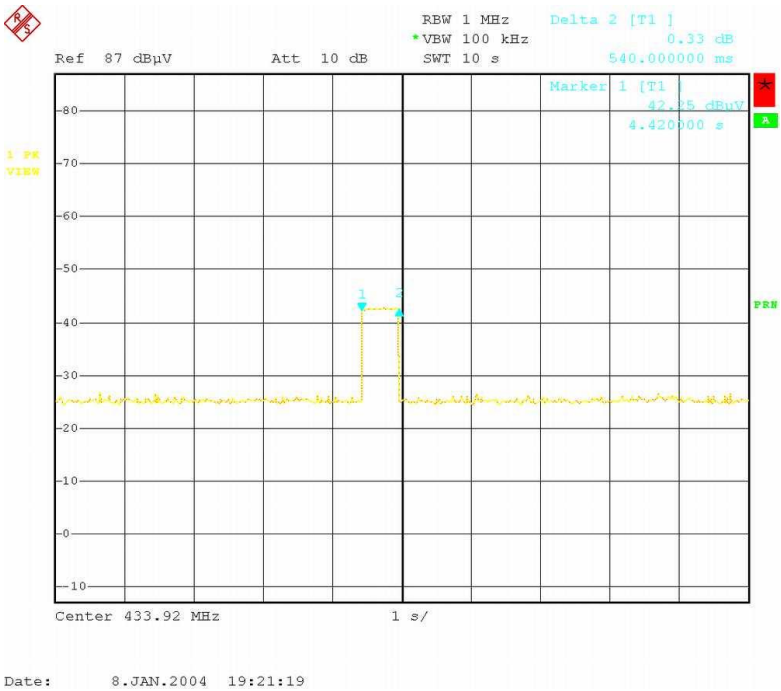
The device use a 100% duty factor and the pulse width is more than 100 msec(Provided by Guangdong Sansong), So this means that the duty cycle correction factor is Zero. Since the average level for pulsed emissions is obtained from the peak level by subtracting the duty cycle correction factor from the peak level, the peak level would be the same as the average level. The device would comply only if the peak level is below the average limit.

Averaging Factor = 0 dB

6. 3 Manually Operated Transmitter Deactivation

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

Tranmitter Turn-Off Relaese Time, Upon Momentary Activation of Push Switch
(Showing release time less than 1 second)



6. 4 Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user , but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

The EUT's antenna is a internal. The EUT meets the requirements of this section.

7. Photos of Testing

7. 1 EUT Test Photographs

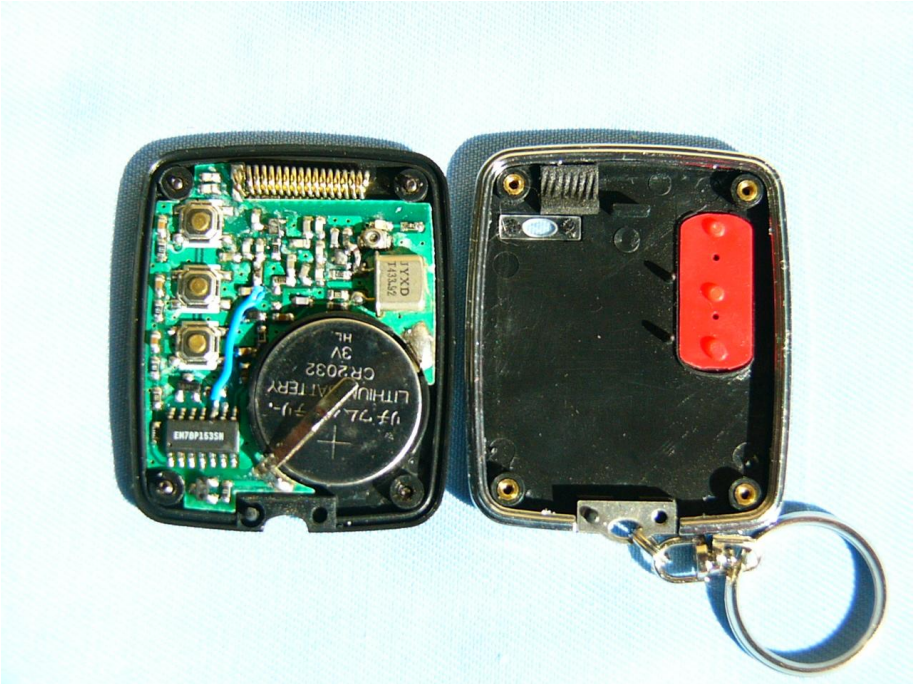
Radiated emission test view

7. 2 EUT Detailed Photographs

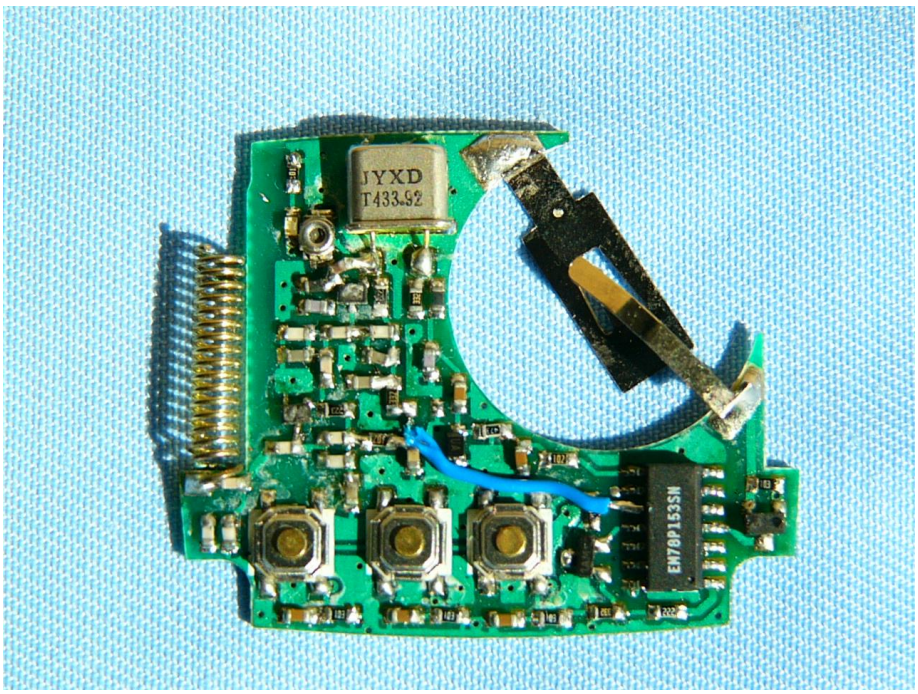
EUT top view

EUT bottom view

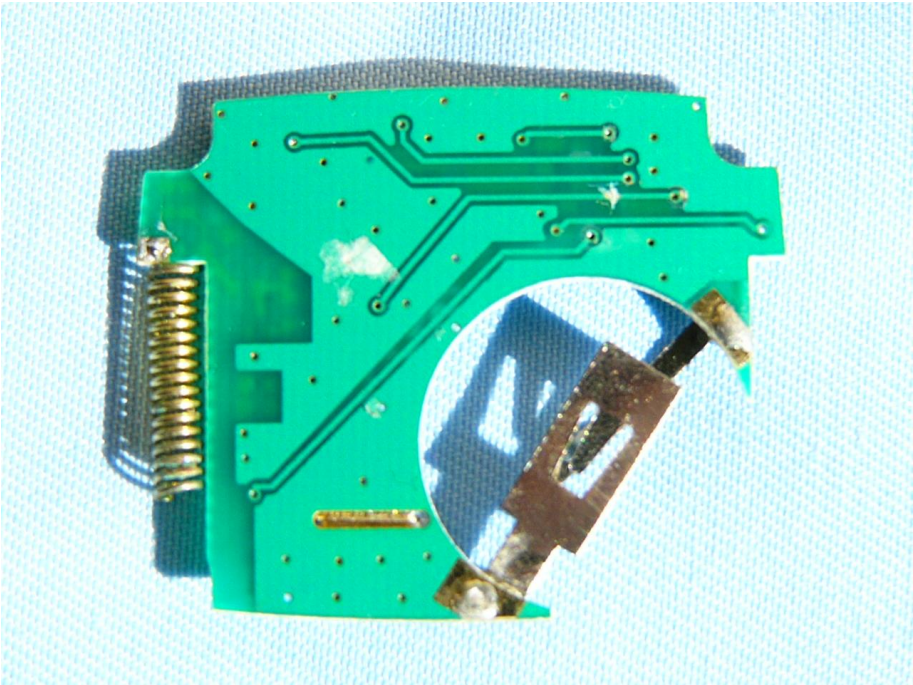
EUT inside whole view



Main board component side



Main board solder side



8. FCC ID Label

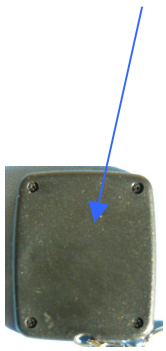
FCC ID: RRN-BHSS270A

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.

Proposed Label Location on EUT

EUT Bottom View/Proposed FCC ID Location



9. Test Equipment

The following test equipments were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Date of Cal.	Due Date
Turntable	KMO	KSZ001T	200306	NCR	NCR
Antenna Tower	KMO	KSZ002AT	200307	NCR	NCR
OATS	KMO	KSZSITE001	N/A	July 06, 2003	July 06, 2004
EMI Test Receiver	Rohde & Schwarz	ESPI3	100180	Oct.18, 2003	Oct.18, 2004
Signal Generator	Rohde & Schwarz	SMT03	100059	Feb.01, 2004	Feb.01, 2005
Bilog Antenna	Chase	CBL6111C	2576	Feb.01, 2004	Feb.01, 2005
Ultra Broadband Antenna	Rohde & Schwarz	HL 562	100110	June.05, 2003	June.05, 2004
AMN	Rohde & Schwarz	ESH3-Z5	100196	Oct. 23,2003	Oct. 23, 2004
AMN	Rohde & Schwarz	ESH3-Z5	100197	Oct. 23,2003	Oct. 23, 2004
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
KMO Shielded Room	KMO	KMO-001	N/A	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb. 27, 2004	Feb.27, 2005
AMN	Rohde & Schwarz	ESH3-Z5	100002	Feb. 01, 2004	Feb.01, 2005
LISN	Kyoritsu	KNW-407	8-1441-8	Feb. 23, 2004	Feb.23, 2005
EMI Test Receiver	Rohde & Schwarz	ESI26	838786/013	Feb. 01, 2004	Feb.01, 2005
Bilog Antenna	Chase	CBL6112B	2591	Feb. 01, 2004	Feb.01, 2005
Horn Antenna	Rohde & Schwarz	HF906	100014	Feb. 01, 2004	Feb.01, 2005
3m Semi-Anechoic Chamber	Albatross Projects	9mX6mX6m	N/A	Feb. 01, 2004	Feb.01, 2005