



深圳华通威国际检验有限公司
SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO., LTD



TEST REPORT

Report number: TR04080023

Issue date: Nov 20, 2004

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

FCC Rules and Regulations Part 15 Subpart C

Applicant: Zhongshan Giordon Audio & Alarm Equipment Co., Ltd

East Tongxing Road, Dongsheng Town, Zhongshan City, Guangdong, China

Tel: 86-760-2228786 Fax: 86-760-2828129

Manufacturer: Zhongshan Giordon Audio & Alarm Equipment Co., Ltd

East Tongxing Road, Dongsheng Town, Zhongshan City, Guangdong, China

Tel: 86-760-2228786 Fax: 86-760-2828129

Equipment under test: Main Unit of Car Alarm System

Model number: 686

FCC ID No.: SOUGIORDONALARM01

Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

FCC Registration Number: 662850

Laboratory Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Tel: 86-755-26748099 Fax: 86-755-26748089

The results in this report are applicable only to the equipment tested.

This report shall not be re-produced except in full without the written approval of Shenzhen Huatongwei International Inspection Co., Ltd.

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Peggy Zuo

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Jimmy Li

For and on behalf of
Shenzhen Huatongwei International Inspection Co., Ltd.

Authorized by:

Irene Zhou
Authorized Signature(s)



Table of Contents

1 General Information	1
1.1 FCC ID:GIORDONALARM-01	1
1.2 Test Standards.....	1
1.3 EUT(Equipment Under Test) Information	1
1.4 Test Uncertainty	1
1.5 Ambient condition for test.....	2
1.6 Principle of Configuration Selection.....	2
1.7 Test Summary	2
1.8 Test Location	2
2 Radiated Emission Test.....	3
2.1 Test Standards.....	3
2.2 Diagram of Test Setup	3
2.3 Test Equipments Used	3
2.4 Test Description.....	3
2.5 Test Results.....	4
Appendix Data.....	5
3 Dwell Time	6
3.1 Test Standards.....	6
3.2 Diagram of Test Setup	6
3.3 Test Equipments Used	6
3.4 Test Description.....	6
3.5 Test Results.....	6
Appendix Data.....	7
4 Bandwidth	8
4.1 Test Standards.....	8
4.2 Diagram of Test Setup	8
4.3 Test Equipments Used	8
4.4 Test Description.....	8
4.5 Test Results.....	8
Appendix Data.....	9



5 Configuration Photographs.....	10
5.1 Photo of Radiated Emission Test.....	10
5.2 Outline, framework and Components photos of EUT.....	11
Appendix Data.....	16
Report End.....	23



1 General Information

1.1 FCC ID: SOUGIORDONALARMO1

1.2 Test Standards

All the test configuration and procedures are strictly according to the requirement of the following standards:

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

1.3 EUT(Equipment Under Test) Information

1.3.1 Client Information

Applicant: **Zhongshan Giordon Audio & Alarm Equipment Co., Ltd**

Address of applicant: East Tongxing Road, Dongsheng Town, Zhongshan City, Guangdong, China

Tel: 86-760-2228786 Fax: 86-760-2828129

Manufacturer: **Zhongshan Giordon Audio & Alarm Equipment Co., Ltd**

Address of manufacturer: East Tongxing Road, Dongsheng Town, Zhongshan City, Guangdong, China

Tel: 86-760-2228786 Fax: 86-760-2828129

1.3.2 General Description of E.U.T.

Name: Main Unit of Car Alarm System

Model No.: 686

Power Supply: DC 12V (Battery)

Product Class: Low Power Communication Device Transmitter

Working Frequency: 433.92 MHz

Function Modulation: FSK and FM

Remark: The EUT is used to emanate and receive control commands.

1.4 Test Uncertainty

Radiated Emission Test: $\pm 4.22\text{dB}$



1.5 Ambient condition for test

Item	Required	Actual
Temperature ()	15~35	22~23
Humidity (%RH)	25~75	50~54
Barometric Pressure (mbar)	860~1060	950~1000

1.6 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.7 Test Summary

Test Items	Test Result
Conducted Emission	N/A
Radiated Emission	PASS
Dwell Time	PASS
Emissions Bandwidth	PASS

1.8 Test Location

The device described above is tested by Shenzhen Huatongwei International Inspection Co., Ltd at: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

(FCC Registration Number: 662850)

The maximum emission levels emanating from the device are compared to the **FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators** limits for radiated emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

Shenzhen Huatongwei International Inspection Co., Ltd will assumed full responsibility for the accuracy and completeness of these measurements.



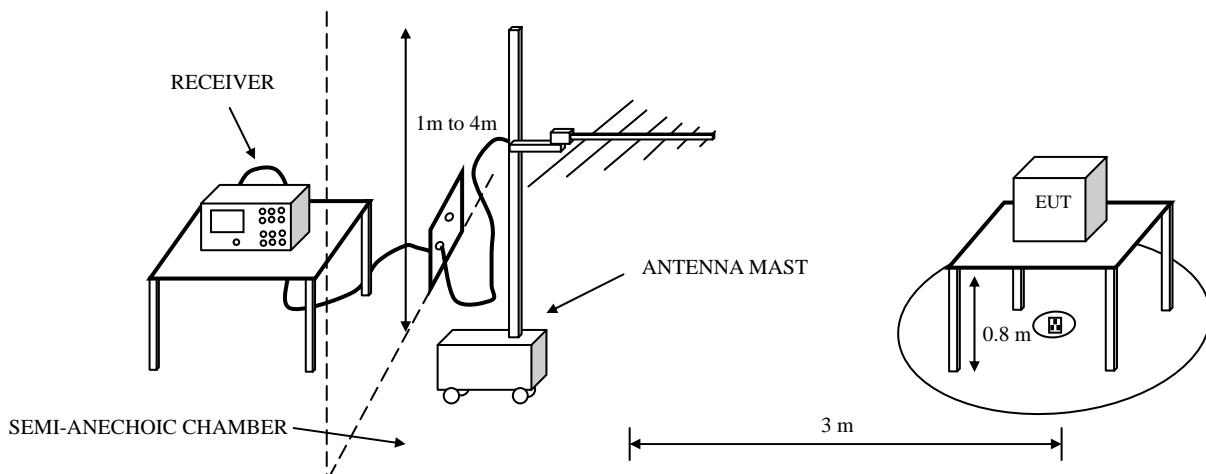
2 Radiated Emission Test

2.1 Test Standards

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

According to 15.231 (b), in addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this section shall not be exceed the limits listed in section 2.4.2 of this report.

2.2 Diagram of Test Setup



2.3 Test Equipments Used

EQP. Description	Manufacturer	Model No.	Serial No.	Last Cal
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2004/11
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2004/11
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A
TURNTABLE	ETS	2088	2149	N/A
ANTENNA MAST	ETS	2075	2346	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	NA	N/A

2.4 Test Description

2.4.1 Configuration of Instruments

Test Receiver Setting:

- Detector: Quasi-Peak
- Band Width:120KHz
- Frequency Range: 30MHz to 1000MHz
- Detector: Peak&Average
- Band Width:1MHz



- Frequency Range: 1000MHz to 5000MHz

Remark: Because the intentional radiator operates below 10GHz, the scanned frequency range is to the tenth harmonic of its fundamental frequency. (Refer to FCC Rules and Regulations Part 15 Subpart A section 15.33)

- Turntable Rotated: 0 to 360 degrees

Antenna Position:

- Height: 1m to 4m
- Polarity: Horizontal and Vertical

Arrangement of EUT:

- During the test, EUT was operated at rating power supply voltage. Maximum emission configuration was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

2.4.2 Radiated Emission Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960~1000	3	54
Above 1000	3	54

Remark: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

2.4.3 Operating Condition of EUT

The EUT is working with the maximum disturbance during the test.

2.4.4 Test Procedure

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna, The antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test. (Details refer to the relevant sections of the standard ANSI C63.4-1992 'Methods of Measurement of Radio Noise Emissions from Low –Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz'.)

2.5 Test Results

Test Results: PASS

Test data see following pages

Remark: When PK reading is less than relevant limit 20dB, the QP reading will not be recorded.



Radiation Measurement Results

a. Fundamental Frequency

Frequency (MHz)	Level (dB μ V/m)	Transd (dB)	Limit (dB μ V/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Polarization
433.926295	78.9	20.2	80.8	1.9	QP	126.0	237.00	Vertical
433.926295	71.5	20.2	80.8	9.3	QP	100.0	173.00	Horizontal

Remark: According to 15.231 (b) (2), as an alternative, compliance with the limits of spurious emissions may be based on the use of measurement instrumentation with a CISPR quasi-peak detector.

b. Harmonic frequency and spurious frequency can be seen in the appendix data pages(from page 16 to 23).



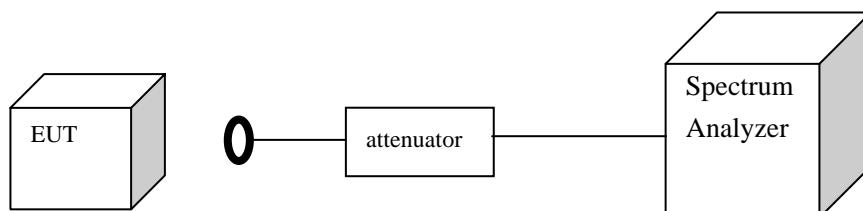
3 Dwell Time

3.1 Test Standards

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

According to 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.

3.2 Diagram of Test Setup



Remark: the attenuator is the built-in part of spectrum analyzer.

3.3 Test Equipments Used

EQP. Description	Manufacturer	Model No.	Serial No.	Last Cal
SHIELDED ROOM	ETS.LINDGREN	RFD-100	2391	N/A
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2004/11

3.4 Test Description

3.4.1 Test Receiver Setting:

RBW (KHz)	VBW (KHz)	Detector	Comment
20	200	Peak	

3.4.2 Operating Condition of EUT

As stated in sec 2.4.3 of this report.

3.4.3 Test Procedure

The EUT was set up per the test configuration figured in Sec 3.2 of this test report to simulate the typical usage per the user's manual.

The transmitter output of EUT was connected to the spectrum analyzer through an attenuator.

Set the spectrum analyzer into zero span and perform the dwell time bandwidth measurement. Record the dwell time and compare with the required limit.

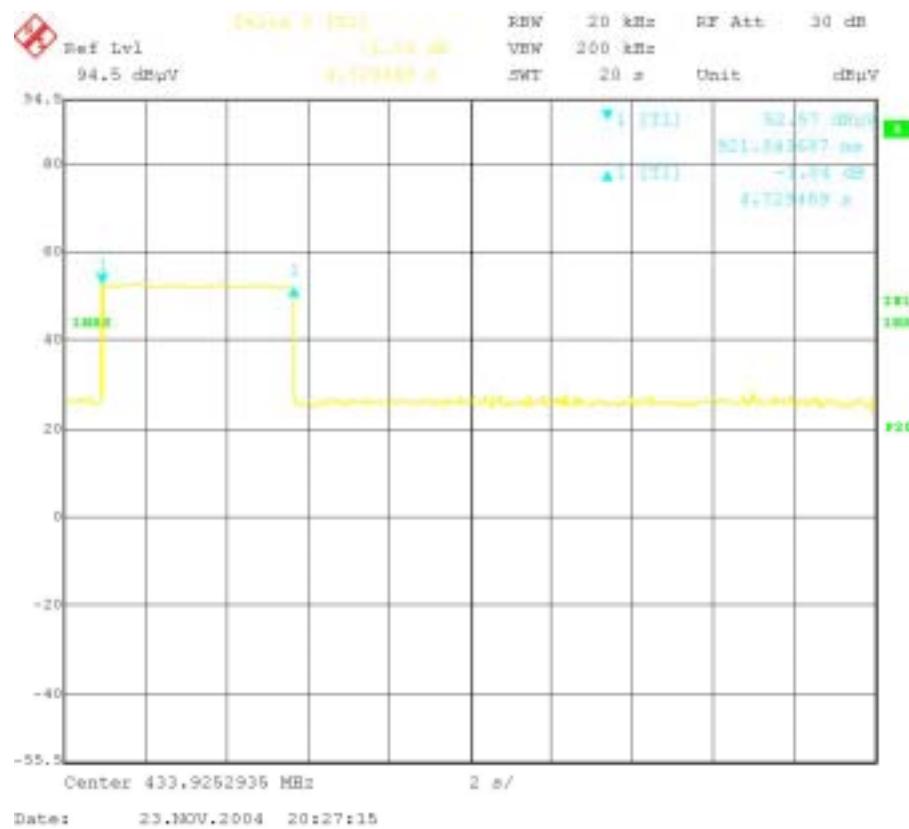
3.5 Test Results

Test Results: PASS

Test data see following pages



Measurement Data of Dwell Time





4 Bandwidth

4.1 Test Standards

FCC Rules and Regulations Part 15 Subpart C –Intentional Radiators

According to 15.231 (c), 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.

4.2 Diagram of Test Setup

As stated in sec 3.2.

4.3 Test Equipments Used

As stated in sec 3.3.

4.4 Test Description

4.4.1 Test Equipment Setting:

RBW (KHz)	VBW (KHz)	Detector	Comment
20	200	Peak	

4.4.2 Operating Condition of EUT

As stated in sec 2.4.3 of this report.

4.4.3 Test Procedure

The EUT was set up per the test configuration figured in Sec 4.2 of this test report to simulate the typical usage per the user's manual.

The transmitter output of EUT was connected to the spectrum analyzer through an attenuator.

Measure the 20dB bandwidth and compare with the required limit.

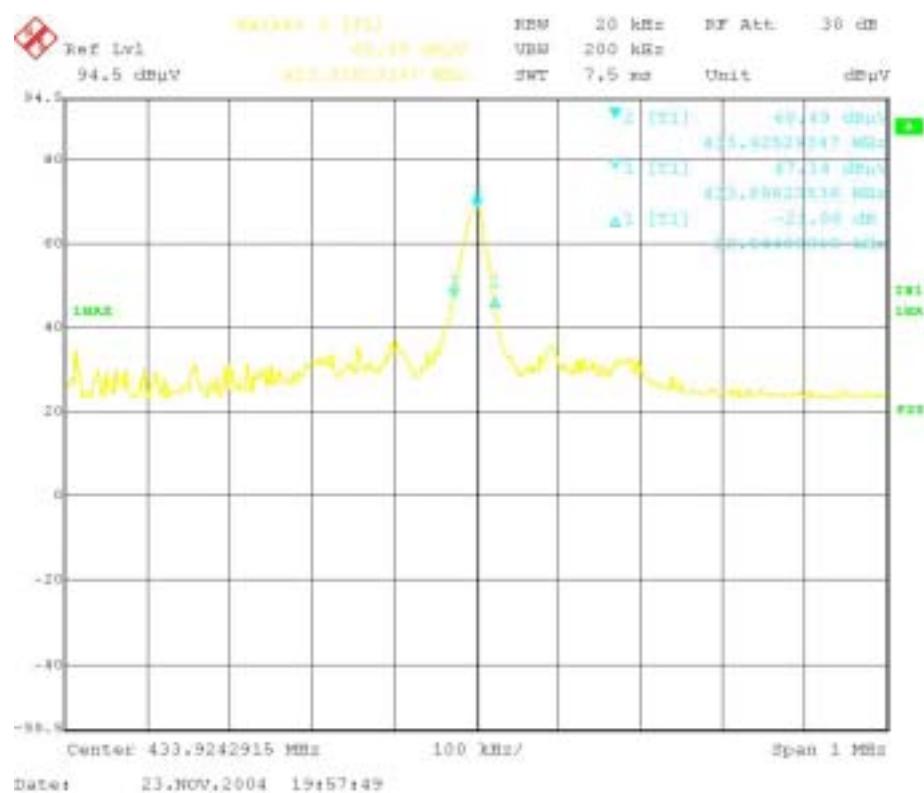
4.5 Test Results

Test Results: PASS

Test data see following pages



Measurement Data of Bandwidth

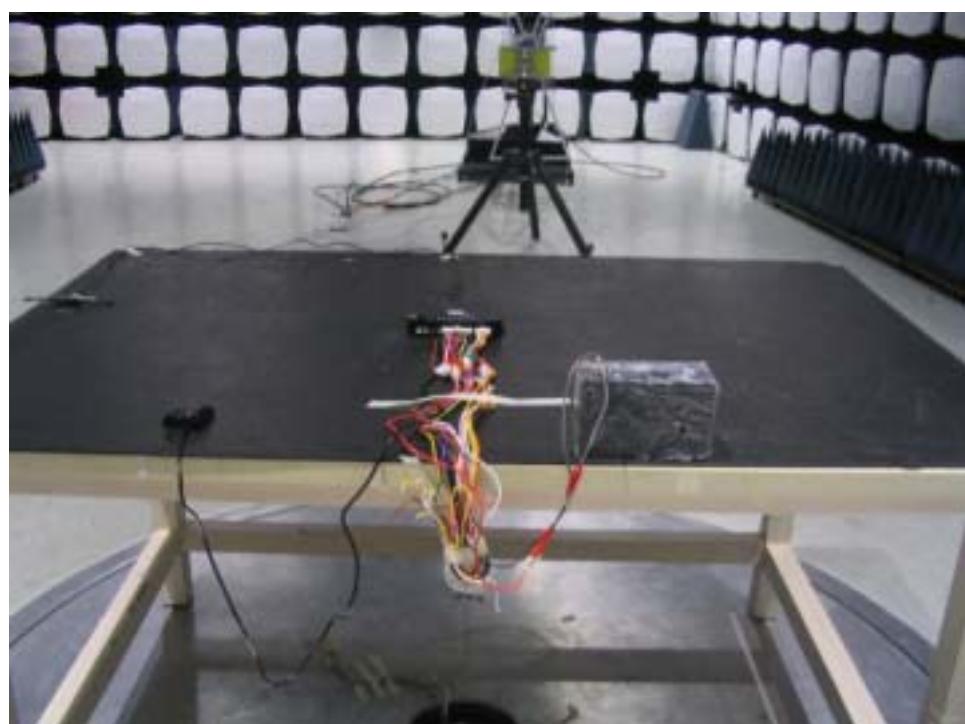
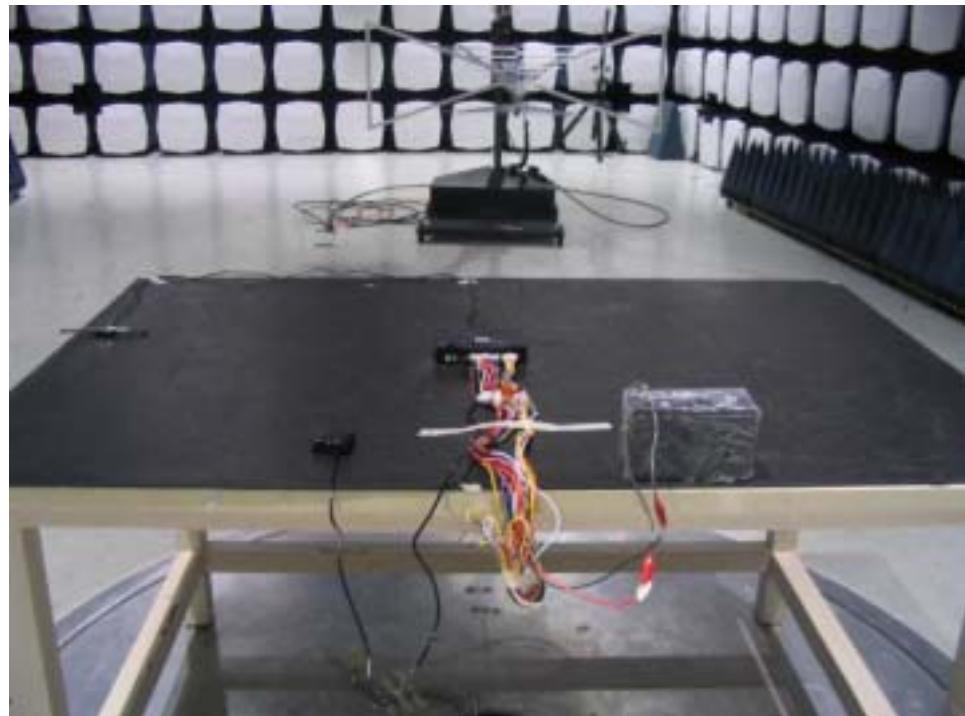


Measured bandwidth is $51.102 \text{ KHz} < 433.92 \text{ MHz} \times 0.25\% = 1.0848 \text{ MHz}$



5 Configuration Photographs

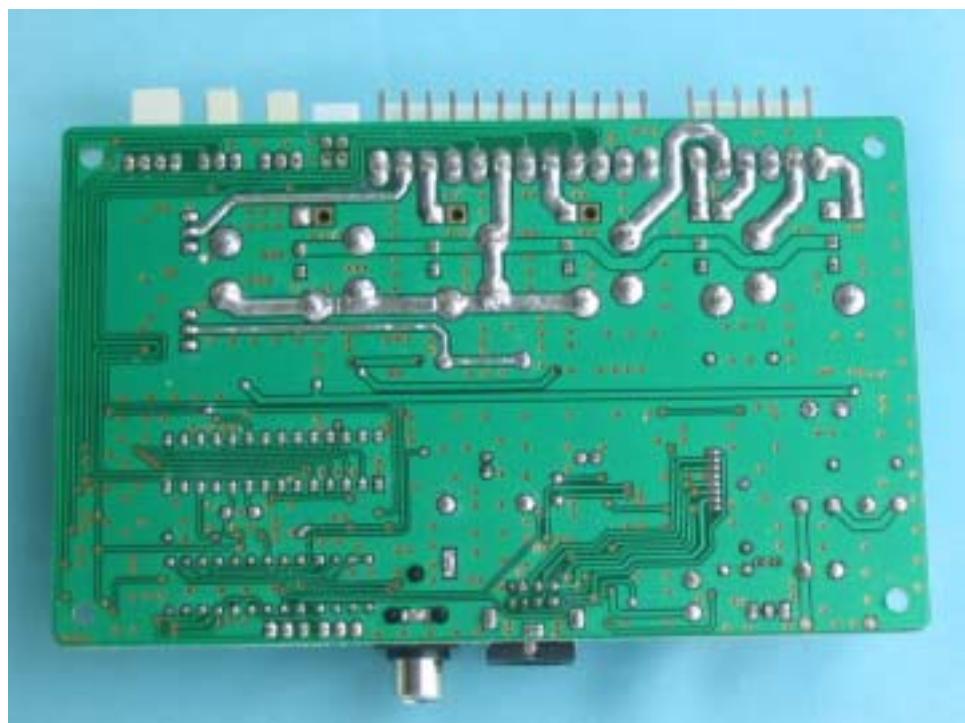
5.1 Photo of Radiated Emission Test

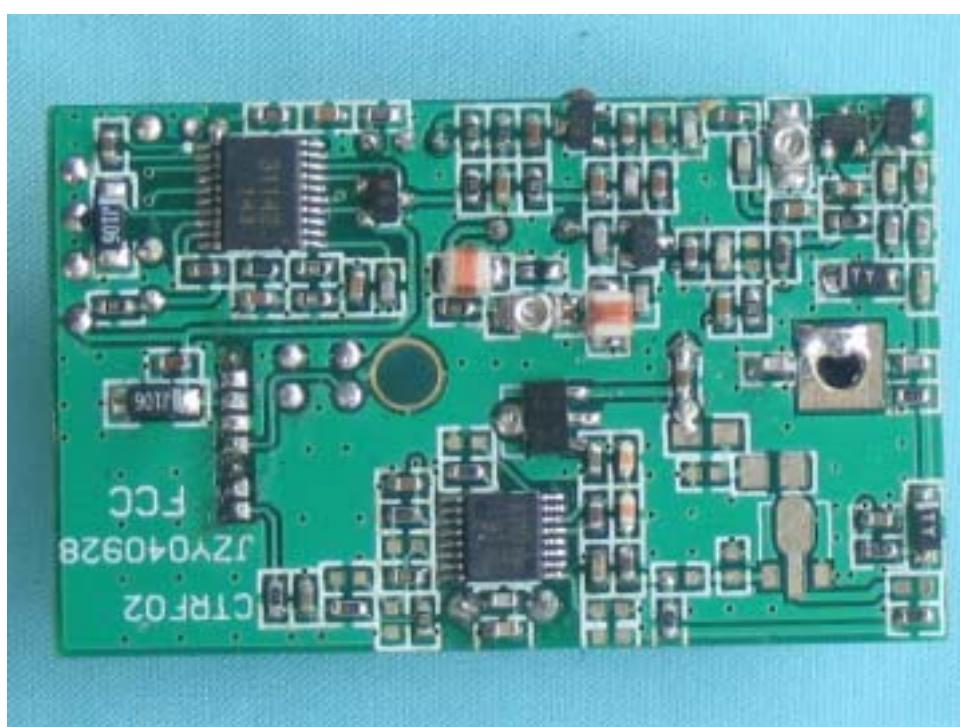
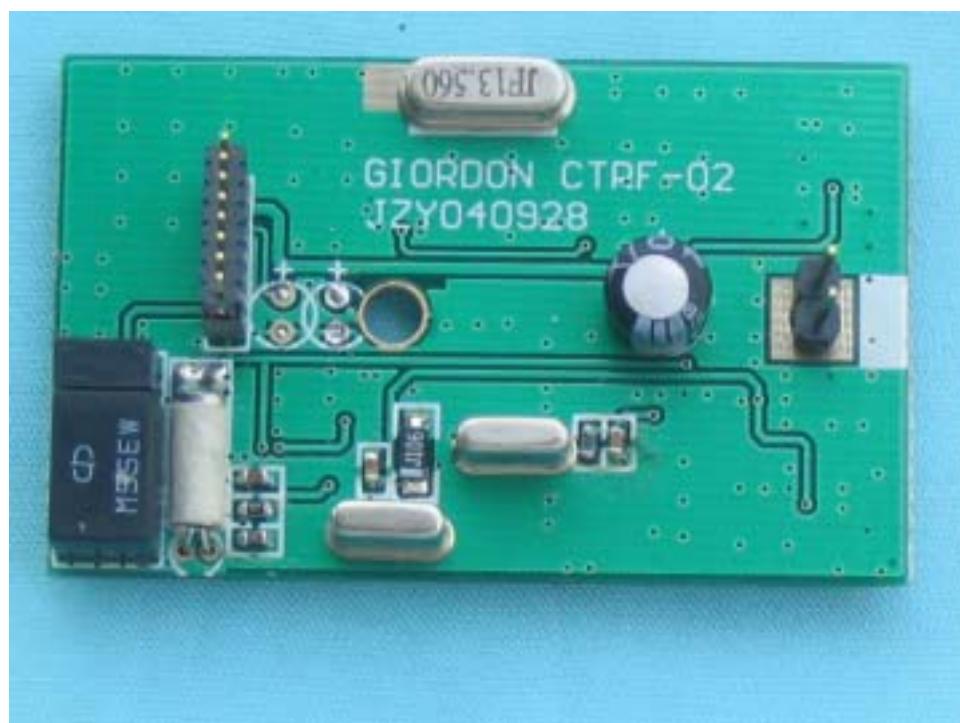




5.2 Outline, framework and Components photos of EUT











Following pages are the measurement data of EUT (8 pages from page 16 to page 23).

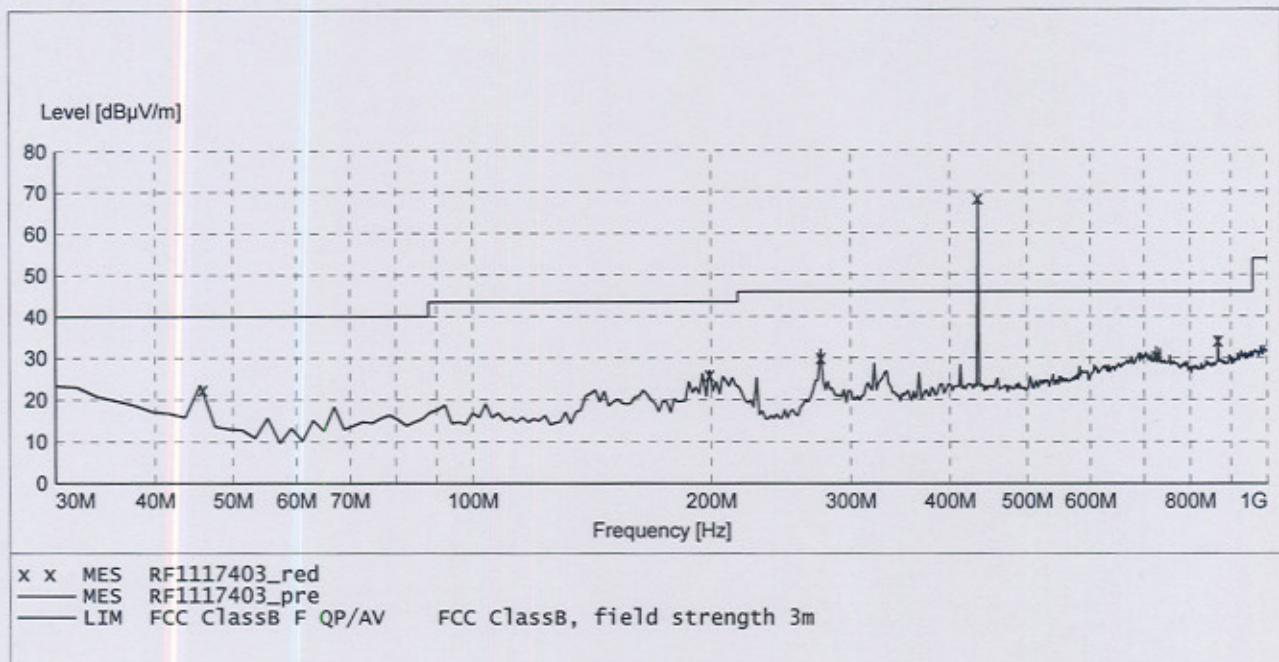


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: TRANSMITTING
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:H
 Temp:22'C Humi:50%

SCAN TABLE: "test Field(30M-1G)OP"
 Short Description: Field Strength(30M-1G)

Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF Time	Transducer
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	500.0 ms	120 kHz	HL562new



MEASUREMENT RESULT: "RF1117403_fin"

11/22/04 9:34AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det. QP	Height cm	Azimuth deg	Polarization
45.833102	22.50	12.2	40.0	17.5	QP	100.0	281.00	HORIZONTAL
199.118236	26.00	10.7	43.5	17.5	QP	100.0	73.00	HORIZONTAL
274.929860	30.10	13.2	46.0	15.9	QP	100.0	198.00	HORIZONTAL
433.925293	68.50	20.2	80.8	12.3	QP	100.0	156.00	HORIZONTAL
725.911824	30.60	26.0	46.0	15.4	QP	100.0	94.00	HORIZONTAL
867.850586	34.20	24.8	60.8	26.6	QP	100.0	31.00	HORIZONTAL



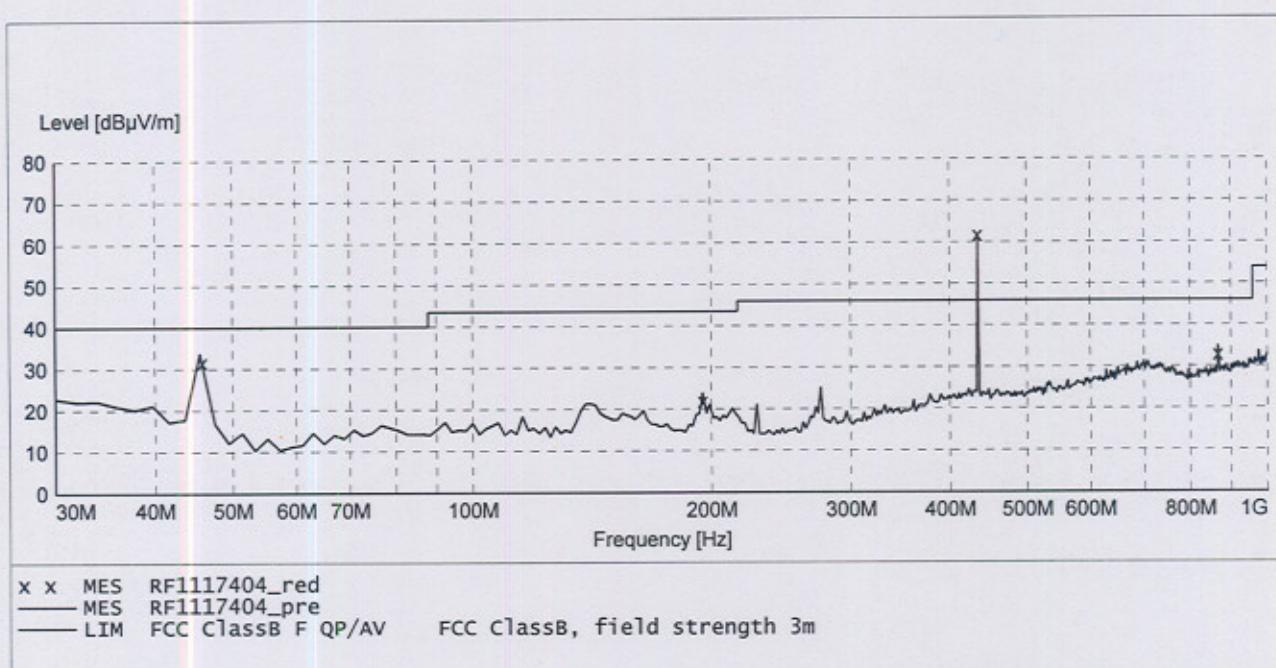


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: TRANSMITTING
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:V
 Temp:22'C Humi:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start Frequency	Stop Frequency	Detector	Meas.	IF	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Time Coupled	Bandw.	HL562new
				120 kHz	



MEASUREMENT RESULT: "RF1117404_fin"

11/22/04 9:47AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.833102	31.70	12.2	40.0	8.3	QP	100.0	358.00	VERTICAL
195.230461	21.90	10.5	43.5	21.6	QP	100.0	72.00	VERTICAL
433.925293	61.80	20.2	80.8	19.0	QP	100.0	133.00	VERTICAL
867.850586	32.90	24.8	60.8	27.9	QP	100.0	92.00	VERTICAL



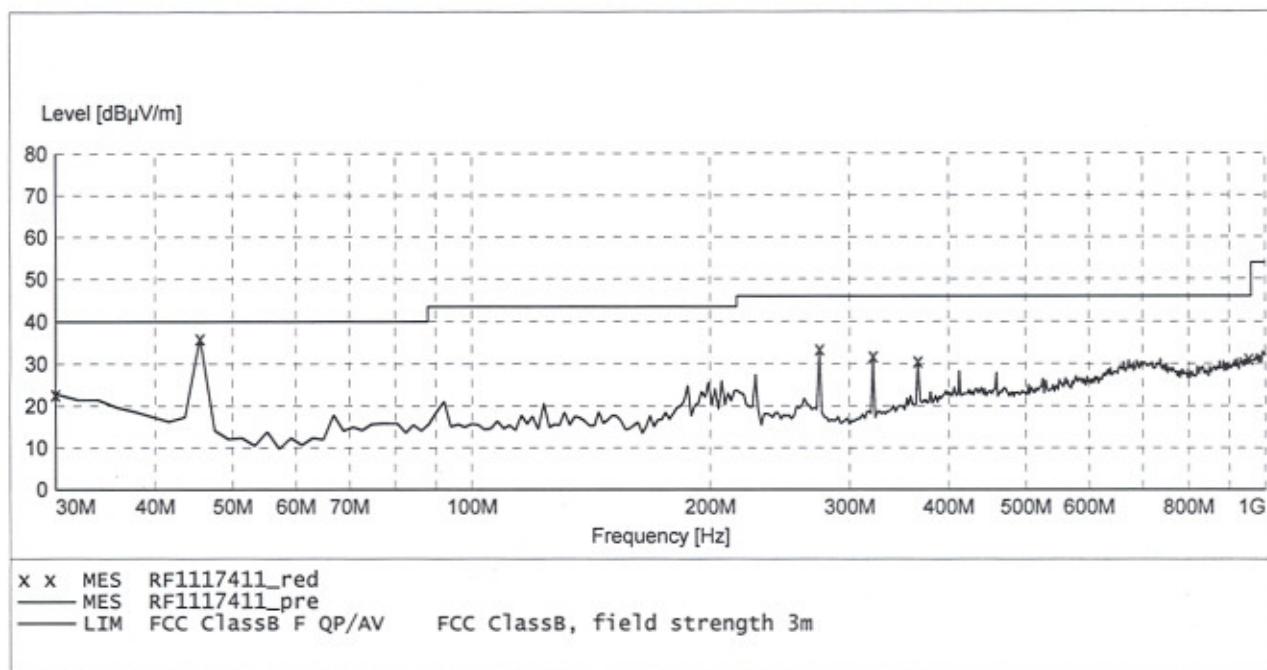


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: STANDBY
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:H
 Temp:22'C Humi:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength		
Start Frequency	Stop Frequency	Detector	Meas.	IF
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz
				HL562new



MEASUREMENT RESULT: "RF1117411_fin"

11/22/04 2:34PM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det. QP	Height cm	Azimuth deg	Polarization
45.833102	34.10	12.2	40.0	5.9	QP	100.0	127.00	HORIZONTAL
274.929860	32.60	13.2	46.0	13.4	QP	100.0	215.00	HORIZONTAL
321.583166	30.90	15.5	46.0	15.1	QP	100.0	127.00	HORIZONTAL
366.292585	29.70	18.1	46.0	16.3	QP	100.0	237.00	HORIZONTAL



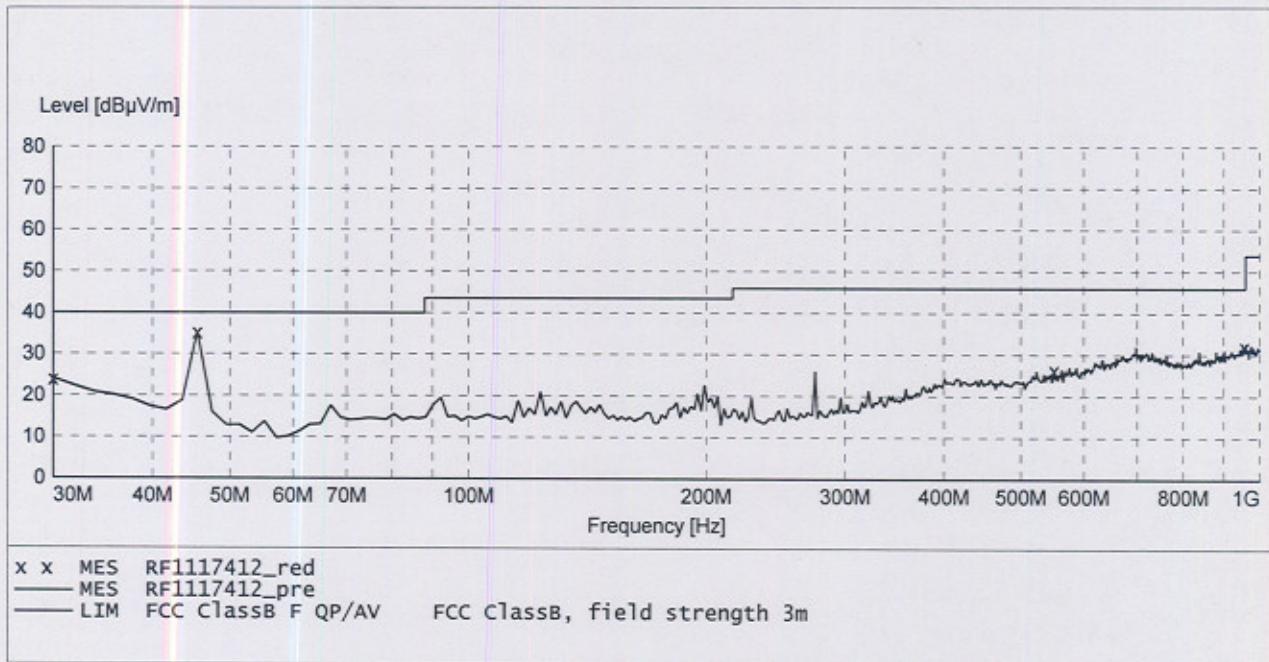


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: STANDBY
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:V
 Temp:22'C Humi:50%

SCAN TABLE: "test Field(30M-1G)"

Short Description: Field Strength(30M-1G)
 Start Frequency: 30.0 MHz Stop Frequency: 1.0 GHz Step Width: 60.0 kHz
 Detector: QuasiPeak Meas. Time: 1.0 s IF: 120 kHz Transducer: HL562new



MEASUREMENT RESULT: "RF1117412_fin"

11/22/04 2:48PM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det. QP	Height cm	Azimuth deg	Polarization
45.833102	35.30	12.2	40.0	4.7	QP	100.0	54.00	VERTICAL
274.929860	26.30	13.2	46.0	19.7	QP	100.0	280.00	VERTICAL



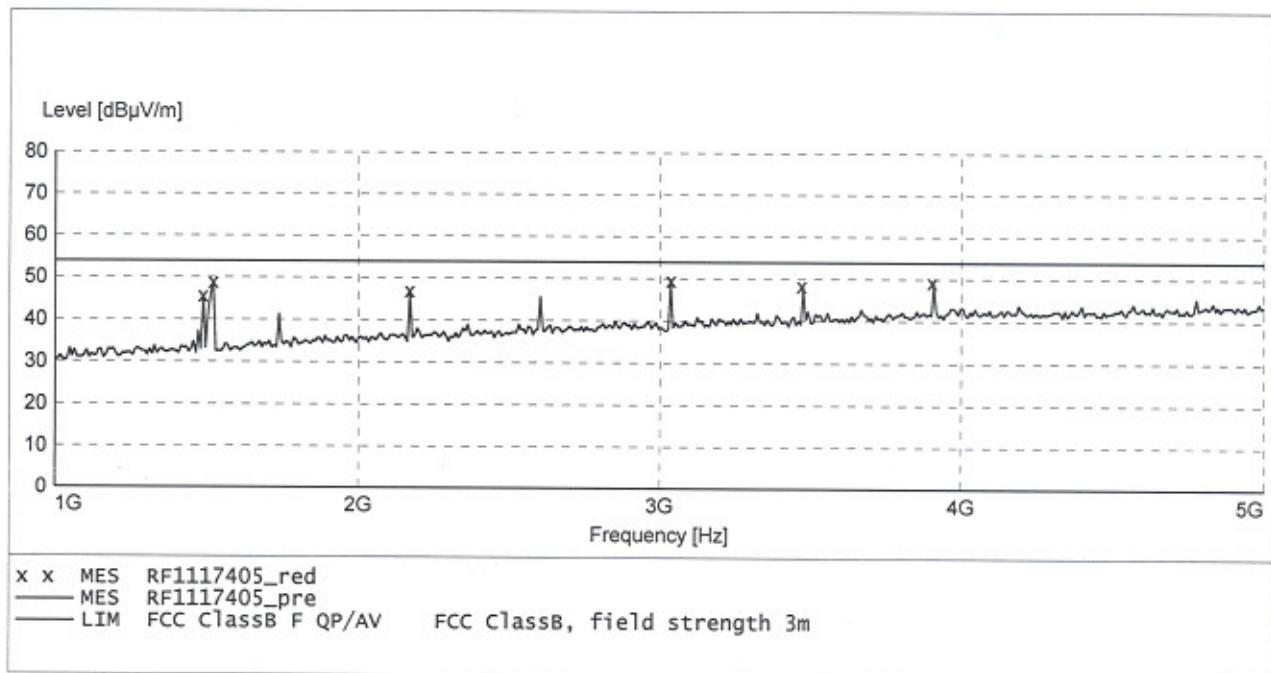


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: TRANSMITTING
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:V
 Temp:22'C Humi:50%

SWEEP TABLE: "test (1G-18G) P"

Short Description:		Field Strength			Transducer
Start Frequency	Stop Frequency	Detector	Meas.	IF Time	
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	HF906



MEASUREMENT RESULT: "RF1117405_red"

11/22/04 10:01AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det. PK	Height cm	Azimuth deg	Polarization
1488.977956	45.70	-7.9	53.9	8.2	PK	100.0	127.00	VERTICAL
1521.042084	49.00	-7.7	53.9	4.9	PK	100.0	359.00	VERTICAL
2169.626467	47.00	-4.4	60.8	13.8	PK	100.0	0.00	VERTICAL
3037.477054	49.60	-1.1	60.8	11.2	PK	100.0	304.00	VERTICAL
3471.402348	48.40	0.4	60.8	12.4	PK	100.0	288.00	VERTICAL
3905.327641	49.30	1.8	60.8	11.5	PK	100.0	288.00	VERTICAL



MEASUREMENT RESULT: "RF1117405_fin"



11/22/04 10:03AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1488.977956	43.70	-7.9	53.9	10.2	AV	100.0	127.00	VERTICAL
1521.042084	46.80	-7.7	53.9	7.1	AV	100.0	359.00	VERTICAL
2169.626467	45.50	-4.4	60.8	15.3	AV	100.0	0.00	VERTICAL
3037.477054	48.00	-1.1	60.8	12.8	AV	100.0	304.00	VERTICAL
3471.402348	47.20	0.4	60.8	13.6	AV	100.0	288.00	VERTICAL
3905.327641	48.80	1.8	60.8	12.0	AV	100.0	288.00	VERTICAL



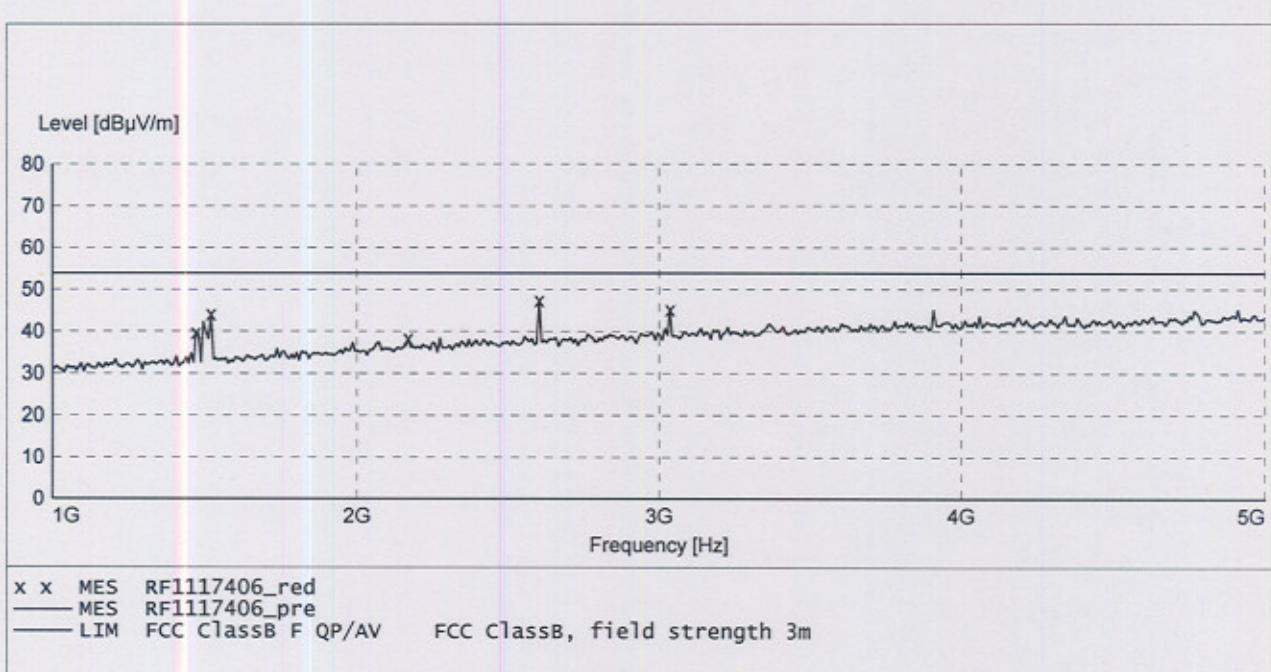


Radiated Emission FCC PART 15 C

EUT: MAIN UNIT OF CAR ALARM SYSTEM M/N:686
 Manufacturer: GIORDON
 Operating Condition: TRANSMITTING
 Test Site: 3m CHAMBER
 Operator: JACKY
 Test Specification: DC 12V
 Comment: Polarisation:H
 Temp:22'C Humi:50%

SWEEP TABLE: "test (1G-18G) P"

Short Description:		Field Strength			Transducer
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	HF906



MEASUREMENT RESULT: "RF1117406_red"

11/22/04 10:09AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1472.945892	39.80	-8.0	53.9	14.1	PK	100.0	229.00	HORIZONTAL
1521.042084	44.20	-7.7	53.9	9.7	PK	100.0	52.00	HORIZONTAL
2169.626456	38.40	-4.4	53.9	15.5	PK	100.0	202.00	HORIZONTAL
2603.551758	47.50	-2.7	53.9	6.4	PK	100.0	21.00	HORIZONTAL
3037.477038	45.30	-1.1	53.9	8.6	PK	100.0	31.00	HORIZONTAL





MEASUREMENT RESULT: "RF1117406_fin"

11/22/04 10:15AM

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1472.945892	37.50	-8.0	53.9	16.4	AV	100.0	229.00	HORIZONTAL
1521.042084	42.20	-7.7	53.9	11.7	AV	100.0	52.00	HORIZONTAL
2169.626467	37.60	-4.4	60.8	23.2	AV	100.0	202.00	HORIZONTAL
2603.551761	46.20	-2.7	60.8	14.6	AV	100.0	21.00	HORIZONTAL
3037.477038	44.10	-1.1	60.8	16.7	AV	100.0	31.00	HORIZONTAL

