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SGS

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FEDERAL COMMUNICATIONS COMMISSION

Registration number: 282399

Report No.: **03.06.1008EF**

Page: 1 of 13

FCC ID: QNMSK8031

FCC TEST REPORT

Application No. : 03.06.1008E
Applicant : SPACKEY AUTO ELECTRONIC CO., LTD.
FCC ID : QNMSK8031
Fundamental Frequency : 433.92 MHz
Equipment under Test (EUT):
 Name : Auto Security System
 Model No. : VB-131
Standards : FCC PART 15, SUBPART C : 2002
Date of Receipt : 24 June 2003
Date of Test : 27 June to 01 July 2003
Date of Issue : 03 July 2003

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Kent Hsu
Laboratory Manager
SGS-CSTC Co., Ltd

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the SGS PRODUCT CERTIFICATION MARK.. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. 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 SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

2 Contents

	Page
1 COVER PAGE.....	1
2 CONTENTS.....	2
3 GENERAL INFORMATION.....	3
3.1 CLIENT INFORMATION	3
3.2 DETAILS OF E.U.T.	3
3.3 DESCRIPTION OF SUPPORT UNITS	3
3.4 TEST LOCATION.....	3
3.5 OTHER INFORMATION REQUESTED BY THE CUSTOMER	3
3.6 TEST FACILITY.....	4
4 TEST RESULTS.....	5
4.1 TEST INSTRUMENTS	5
4.2 E.U.T. OPERATION	5
4.3 TEST PROCEDURE & MEASUREMENT DATA	6
4.3.1 <i>Radiated Emissions</i>	6
4.3.2 <i>Occupied Bandwidth</i>	8
4.3.3 <i>Calculation Of Duty Cycle:</i>	9
4.4 PHOTOGRAPHS - RADIATED EMISSION TEST SETUP IN CHAMBER	10
5 PHOTOGRAPHS - EUT CONSTRUCTIONAL DETAILS.....	11-13

3 General Information

3.1 Client Information

Applicant: SPACKEY AUTO ELECTRONIC CO., LTD.
Address of Applicant: XIAMAO INDUSTRIAL ZONE 18, BAIYUN DIST.,
GUANGZHOU CITY CHINA
Name: Auto Security System
Model No.: VB-131

3.2 Details of E.U.T.

Power Supply: 1.5V DC (1 x 'AAA' Size Battery)
Power Cord: N/A-

3.3 Description of Support Units

The EUT was tested as an independent unit.

3.4 Test Location

All tests were performed at:-

SGS-CSTC Standards Technical Services Ltd., Guangzhou Safety & EMC Laboratory, 1/F,
Building No. 1, Agriculture Machinery Materials Company Warehouse Ltd., Wushan Road
Shipai, Tianhe District, Guangzhou, China. P.C. 510630.

Tel: +86 20 3848 1001

Fax: +86 20 3848 1006

3.5 Other Information Requested by the Customer

None.

3.6 Test Facility

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

- **NVLAP – Lab Code: 200611-0**
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 2000611-0. Effective through February 2, 2003.
- **ACA**
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
Date of Registration: February 28, 2003. Valid until May 30, 2005
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FINKO**
Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
SGS-CSTC Standards Technical Services 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 282399, May 31, 2002. With the above and NVLAP, SGS-CSTC is an authorized test laboratory for the DoC process.

4 Test Results

4.1 Test Instruments

Description	Manufacturer	Model No.	Asset No.	Date of Cal.
3M Semi-Anechoic Chamber	Frankonia	11.5 x 7.5 x 6 m ³	EMC1001	21-01-2002
Temperature, Humidity & Barometer	Oregon Scientific	BA-888	EMC0003	25-07-2003
3m Semi- Anechoic Chamber	Frankonia	N/A	EMC0501	04-11-2003
EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	EMC0506	17-11-2003
Bilog Type Antenna	Schaffner Chase	CBL6143	EMC0519	01-12-2003
Horn Antenna	ROHDE & SCHWARZ	HF906	EMC0517	01-04-2002
Coaxial cable	SGS	N/A	EMC0514	04-11-2003

4.2 E.U.T. Operation

Input voltage: 1.5V DC (1 x 'AAA' Size Battery)

Operating Environment:

Temperature: 24.0 °C

Humidity: 58 % RH

Atmospheric Pressure: 1012 mbar

EUT Operation:

Test the EUT in On Mode.

4.3 Test Procedure & Measurement Data

4.3.1 Radiated Emissions

Test Requirement: FCC Part15 C
 Test Method: Based on FCC Part15 C Section 15.231
 Test Date: 27 June 2003
 Measurement Distance: 3m (Semi-Anechoic Chamber)

Requirements:

Fundamental Frequency MHz	Field Strength of Fundamental (dBuV/m @ 3m)	Field Strength of Harmonics and Spurious Emissions (dBuV/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 limit for average field strength dBuV/m for the fundamental frequency= 80.83 dBuV/m.
 No fundamental is allowed in the restricted bands.

The limit for average field strength dBuV/m for the harmonics and spurious frequencies = 60.83 dBuV/m. Spurious in the restricted bands must be less than 54 dBuV/m or 15.209.

Test Procedure: The procedure used was ANSI Standard C63.4-2000. The receiver was scanned from 30MHz to 5GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case emissions were reported.

The following test results were performed on the EUT on 27 June 2003:
 Test the EUT in On Mode.

Test Frequency (MHz)	Average (dBuV/m)		Limits (dBuV/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
433.920	46.5	43.8	80.8	34.3	37.0
867.840	34.8	31.5	60.8	26.0	29.3
1301.760	36.2	34.5	60.8	24.6	26.3
1735.680	38.5	38.0	60.8	22.3	22.8
2169.600	39.5	40.2	60.8	21.3	20.6
2603.520	40.8	42.5	60.8	20.0	18.3
3037.440	42.5	43.8	60.8	18.3	17.0
3471.360	41.8	42.6	60.8	19.0	18.2
3905.280	43.6	44.0	60.8	17.2	16.8
4339.200	46.8	45.2	60.8	14.0	15.6

SAMPLE CALCULATION OF LIMIT @ 433.92 MHz:

$(470 - 260)\text{MHz} = 210\text{ MHz}$

$(12500 - 3750)\text{uV/m} = 8750\text{ uV/m}$

$8750\text{uV/m}/210\text{MHz} = 41.67\text{ uV/m/MHz}$

$(433.92-260)\text{MHz} = 173.92\text{ MHz}$

$173.92\text{ MHz} * 41.67\text{ uV/m/MHz} = 7247.25\text{ uV/m}$

$(7247.25 + 3750)\text{uV/m} = 10997.25\text{ uV/m limit @ 433.92 MHz}$

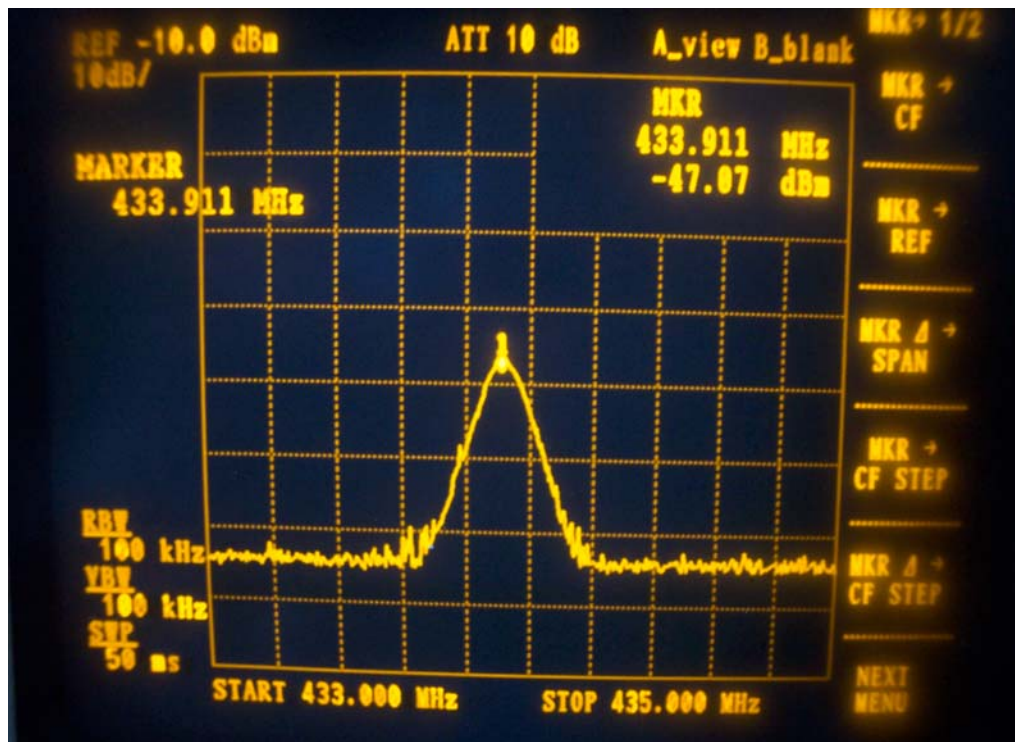
TEST RESULTS: The unit DOES meet the FCC requirements.

4.3.2 Occupied Bandwidth

Test Requirement: FCC Part15 C
 Test Method: Based on FCC Part15 C Section 15.231:
 Test Date: 01 July 2003
 Requirements: The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.231.

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 100KHz per division.

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



The results: The unit does meet the FCC requirements.

4.3.3 Calculation Of Duty Cycle:

Test Requirement: FCC Part15 C
Test Method: Based on FCC Part15 C Section 15.231:
Test Date: 01 July 2003
Method of measurement:

The period of the pulse train is determined by observing it on an oscilloscope or a spectrum analyzer with zero (0) frequency span. A plot is then made of the pulse train with a sweep time of 100 milliseconds. This sweep determines the duration of the pulse train, which in this case is milliseconds. This sweep allows the determination of the number of and type of pulses, i.e. long & short. Plots are then made showing the duration of each type of pulse and its duration. From the 100millisecond Plot the number of a given type of pulse is then multiplied by the duration of that type pulse. This allows the calculation of the amount of time the UUT is on within 100milliseconds .

DUTY CYCLE PLOT – COMPLETE PULSE TRAIN

