



FCC 47 CFR PART 15 SUBPART B

TEST REPORT

For

CAR ALARM RECEIVER

Model: RF-215

Trade Name: Advance Security Inc.

Issued to

Advance Security Inc.

**3F, 48 Ta An Street, Hsi Chih, Taipei Hsien,
TAIWAN R.O.C.**

Issued by



**Compliance Certification Services Inc.
Hsintien Lab.**

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1 TEST RESULT CERTIFICATION

Applicant: Advance Security Inc.
3F, 48 Ta An Street, Hsi Chih, Taipei Hsien,
TAIWAN R.O.C.

Manufacturer: Advance Security Inc.
3F, 48 Ta An Street, Hsi Chih, Taipei Hsien,
TAIWAN R.O.C.

Equipment Under Test: CAR ALARM RECEIVER

Trade Name: Advance Security Inc.

Model: RF-215

Detailed EUT Description: See Item 2 of this report

Date of Test: February 06, 2006 & February 08, 2006

Applicable Standard	Class / Limit	Test Result
FCC Part 15 Subpart B IC ICES-003	Class B	No non-compliance noted
Deviation from Applicable Standard		
None		

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedures were according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

Approved by:

Reviewed by:

David Wang
Manager of Hsintien Laboratory
Compliance Certification Services Inc.

Vince Chiang
Assistant Manager of Hsintien Laboratory
Compliance Certification Services Inc.



2 EUT DESCRIPTION

Product	CAR ALARM RECEIVER
Trade Name	Advance Security Inc.
Model	RF-215
Housing Type	Plastic
EUT Power Rating	12VDC from DC Power Supply
OSC/Clock Frequencies	4MHz
Receiver Frequency	433.92MHz
Number of Channels	1 Channel
Operating Mode	Point-to-Point
Antenna Type	Internal loop, which is built in EUT

Note: The product is a composite system includes Transmitter and Receiver. This submittal(s) (test report) is intended for FCC ID: H5OR49 filing to comply with FCC Part 15 Subpart B Rules. The composite system (Transmitter) is intended for FCC ID: H5OT21 is compliance with FCC Part 15 Subpart C Rules.

I/O PORT OF EUT

I/O Port Type	Q'TY	TESTED WITH

Note: Client consigns only one model sample (Model Number is RF-215) to test.



3 TEST METHODOLOGY

3.1 EUT SYSTEM OPERATION

1. Turn on the EUT by connect to DC power supply.
2. EUT receive the data from transmitter by pressing and hold the button.

Note: Test program is self-repeating throughout the test.

3.2 DECISION OF FINAL TEST MODE

1. The following test mode were scanned during the preliminary test:

Mode:

- 1. NORMAL MODE**

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Radiation: Mode 1

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.



4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

Support Equipment

No	Device Type	Model	Serial No.	FCC/ BSMI ID	Brand	Data Cable	Power Cord
1.	DC Power Supply	PS140YA	N/A	N/A	DAIWA	Unshielded, 0.9m X2	Unshielded, 1.8m
2.	Transceiver Engine	RST560	N/A	N/A	Advance Security Inc.	Unshielded, 2.4m	N/A

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

5 FACILITIES AND ACCREDITATIONS








5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at CCS Taiwan Hsintien Lab at No. 165, Chungshen Road, Hsintien City, Taipei Hsien, Taiwan.

The measurement facilities are constructed in conformance with the requirements of CISPR 16-1, ANSI C63.4 and other equivalent standards.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform Electromagnetic compatibility tests are registered or accredited by the organizations listed in the following table which includes the recognized scope specifically.

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part 15/18 using ANSI 63.4; AS/NZS 3548; VCCI V3; CNS 13438; CNS 13439; CNS 13783; CNS 14115; CISPR 11/EN 55011; CISPR 14-1/EN 55014-1; CISPR 15/EN 55015; CISPR 22/EN 55022; EN 50081-1/EN 61000-6-3; EN 50082-1/EN 61000-6-4; IEC/EN 61000-4-2, IEC/EN 61000-4-3, IEC/EN 61000-4-4, IEC/EN 61000-4-5, IEC/EN 61000-4-6, IEC/EN 61000-4-8, IEC/EN 61000-4-11, IEC/EN 61000-3-2, IEC/EN 61000-3-3; CISPR 24/EN 55024; CISPR 14-2/EN 55014-2; EN 50081-2/EN 61000-6-1; EN 50082-2/EN 61000-6-2.	 ACCREDITED 824.01
USA	FCC	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 250366
Japan	VCCI	3/10 meter Open Area Test Sites and Line Conducted Test Room to perform conducted/radiated measurements	 R-1434/1630~4 C-1511/1882
Norway	NEMKO	EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2/3/4, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, Cispr 16-1/2/3/4	 ELA 103
Taiwan	CNLA	47 CFR FCC Part 15 Subpart B, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 13438, AS/NZS 3548, VCCI, CNS 13022-1/2/3, EN 55022, EN 55013, EN 55014-1, EN 61000-4-2/3/4/5/6/8/11, ENV 50204, ENV 50141, ENV 50142	 1108 ILAC MRA
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439	 SL2-IN-E-0005 SL2-A1-E-0005 SL2-R1-E-0005 SL2-R2-E-0005
Canada	Industry Canada	RSS212, Issue 1	 IC 5742

Note: No part of this report may be used to claim or imply product endorsement by CNLA, A2LA or other government agency.



6 INSTRUMENT AND CALIBRATION

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

6.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other equivalent standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

Open Area Test Site # K				
EQUIPMENT	MFR	MODEL	SERIAL NUMBER	CAL. DUE
SITE NSA	CCS	K Site	N/A	10/01/2006
MEASURE RECEIVER	R&S	ESVS30	828488/004	09/26/2006
SPECTRUM ANALYZER	ADVANTEST	R3132	120900029	No Calibration Required
ANTENNA	SCHAFFNER	CBL 6112B	2846	05/27/2006
PRE-AMPLIFIER	SCHAFFNER	CPA9231A	3639	10/08/2006
CABLE	SUHNER	RG 214	N-TYPE #K2	02/18/2006
THERMO-HYGRO METER	TFA	N/A	NO.4	02/17/2006

Note: The measurement uncertainty is less than +/- 3.36dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



7 LINE CONDUCTED & RADIATED EMISSION TEST

7.1 LIMIT

Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 3 meter

FREQUENCY (MHz)	Class B (dBuV/m)
	Peak
30-88	40
88-216	43.5
216-960	46
Above 960	54

Note: The lower limit shall apply at the transition frequency.



7.2 TEST PROCEDURE OF LINE CONDUCTED EMISSION

Procedure of Preliminary Test

- The EUT was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test system with EUT received AC power, 120V/60Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.
- All support equipment received power from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a EMI Test Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to the Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Receiver.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission level were recorded for reference of the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the test bench as per step 10 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the AV. limit in Q.P. mode, then the emission signal was re-checked using an AV. detector.
- The test data of the worst-case condition(s) was recorded.

Data Sample:

Freq. MHz	Read Level dBuV	Factor dB	Level dBuV	Limit dBuV	Over Limit dB	Reading Type (P/Q/A)	Line (L1/L2)
x.xx	42.95	0.55	43.50	56	-12.50	Q	L1

- Freq. = Emission frequency in MHz
 Read Level = Uncorrected Analyzer/Receiver reading
 Factor = Insertion loss of LISN + Cable Loss
 Level = Read Level + Factor
 Limit = Limit stated in standard
 Over Limit = Reading in reference to limit
 P = Peak Reading
 Q = Quasi-peak Reading
 A = Average Reading
 L1 = Hot side
 L2 = Neutral side

Calculation Formula

$$\text{Over Limit (dB)} = \text{Level (dBuV)} - \text{Limit (dBuV)}$$



7.3 TEST PROCEDURE OF RADIATED EMISSION

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC power source, 120VAC/60Hz, from the outlet socket under the turntable. All support equipment received power from another socket under the turntable.
- The antenna was placed at 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 2000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

**Procedure of Final Test**

- EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 2000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst case condition(s) was recorded.

Data Sample:

Freq. MHz	Amptd dBuV/m	Margin dB	Limit dBuV/m	Reading dBuV	Factor dB/m	Reading Type (P/Q/A)	Pol. (H/V)
x.xx	26.2	-3.8	30	14	12.2	Q	H

- Freq. = Emission frequency in MHz
 Reading = Uncorrected Analyzer/Receiver reading
 Factor = Antenna Factor + Cable Loss + Attenuator (3/6/10dB) – Amplifier Gain
 Amptd = Uncorrected Analyzer/Receiver reading + Factor
 Limit = Limit stated in standard
 Margin = Reading in reference to limit
 P = Peak Reading
 Q = Quasi-peak Reading
 A = Average Reading
 H = Antenna Polarization: Horizontal
 V = Antenna Polarization: Vertical

Calculation Formula

Margin (dB) = Amptd (dBuV/m) – Limit (dBuV/m)



7.4 TEST RESULTS

Line Conducted Emission

Model: N/A

Test Mode: N/A

Temperature: N/A

Humidity: N/A

Test Results: N/A

Tested by: N/A

Six Highest Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq (MHz)	Read Level (dBuV)	Factor (dB)	Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Reading Type (P/Q/A)	Line (L1/L2)

NOTE: The subject equipment is not intended to be connected to AC mains supply. Therefore, this test is not applicable.

**Radiated Emission****Model:** RF-215**Test Mode:** Mode 1**Temperature:** 20°C**Humidity:** 49% RH**Test Results:** Passed**Tested by:** Kevin Chang

(The chart below shows the highest readings taken from the final data.)

Six Highest Radiated Emission Readings							
Frequency Range Investigated				30 MHz to 1000 MHz at 10m			
Freq (MHz)	Amptd (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Reading (dBuV)	Factor (dB/m)	Reading Type (P/Q/A)	Pol. (H/V)
423.8800	21.13	-24.87	46.00	27.25	-6.12	P	V
433.1200	21.91	-24.09	46.00	27.81	-5.90	P	V
435.6800	28.40	-17.60	46.00	34.23	-5.83	P	V
437.7200	26.34	-19.66	46.00	32.12	-5.78	P	V
440.0800	22.51	-23.49	46.00	28.23	-5.72	P	V
447.6800	22.48	-23.52	46.00	28.02	-5.54	P	V
420.0000	24.27	-21.73	46.00	30.49	-6.22	P	H
423.7200	22.63	-23.37	46.00	28.76	-6.13	P	H
433.2400	26.04	-19.96	46.00	31.93	-5.89	P	H
436.5200	23.85	-22.15	46.00	29.66	-5.81	P	H
440.1200	22.50	-23.50	46.00	28.22	-5.72	P	H
449.3200	22.88	-23.12	46.00	28.38	-5.50	P	H

NOTE: No other emissions were found within 20dB below the limits from 30-2000MHz.



APPENDIX I - PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST

