FCC 47 CFR PART 15 SUBPART B

TEST REPORT

For

Car Alarm Receiver

Model: CA6150RX

Brand 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.
Sindian BU.
No.163-1, Jhongsheng Rd., Sindian City,
Taipei County 23151, Taiwan
TEL: (02) 2217-0894
FAX: (02) 2217-1029

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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
Brand Name:	Advance Security Inc.
Model:	CA6150RX
Detailed EUT Description:	See Item 2 of this report
Date of Test:	May 25, 2010

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:

Sam Hu
Section Manager

Reviewed by:

Vesta Hsu
Supervisor of report document dept.

2 EUT DESCRIPTION

Product	Car Alarm Receiver
Brand Name	Advance Security Inc.
Model	CA6150RX
Housing Type	Plastic
EUT Power Rating	12VDC
Receiver Frequency	433.92MHz
Number of Channels	1 Channel
Operating Mode	Point-to-Point

Note: *The product is a composite system includes Transmitter and Receiver. This submittal(s) (test report) is intended for FCC ID: H5OR54 filing to comply with FCC Part 15 Subpart B Rules. The composite system (Transmitter) is intended for FCC ID: H5OT49 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 CA6150RX) to test.*

3 TEST METHODOLOGY

3.1 EUT SYSTEM OPERATION

1. Turn on the EUT to test.

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

3.2 DECISION OF FINAL TEST MODE

1. The following test mode(s) 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 ID/ BSMI ID	Trade Name	Data Cable	Power Cord
1	Tool	CA6550RX	N/A	N/A	Advance Security Inc.	To EUT: Unshielded, 2.5m 3 pin Cable: Unshielded, 0.85m	N/A
2	Adaptor	91-56809	N/A	N/A	N/A	N/A	Unshielded, 1.3m

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 Sindian BU at No.163-1, Jhongsheng Rd., Sindian City, Taipei County 23151, 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.

This accredited organization maintains A2LA accreditation to ISO/IEC 17025 for the specific test listed in A2LA Certificate # 0824-01. The test results included in this report, however, are not covered by this accreditation.

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part 15/18; 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 TESTING CERT #0824.01
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-2265/1630~4 C-1882/2146
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	Testing Laboratory 1108
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 SL2-R1-F-0008
Canada	Industry Canada	RSS212, Issue 1	IC 2324D-1

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 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	0.15MHz ~ 30MHz	N/A
Radiated emissions	30MHz ~ 1000MHz	± 3.98

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22: 2005, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

6.2 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.

6.3 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 required 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 Chamber # D				
EQUIPMENT	**MFR**	**MODEL**	**SERIAL NUMBER**	**CAL. DUE**
MEASURE RECEIVER	SCHAFFNER	SCR3501	342	06/21/2010
SPECTRUM ANALYZER (9kHz-30GHz)	R&S	FSP 30	100112	10/19/2010
ANTENNA (30-1000MHz)	SUNOL	JB1	A022310	03/07/2011
ANTENNA (1-18GHz)	EMCO	3115	00022256	01/14/2011
PRE-AMPLIFIER	EMCI	EMC330	980022	02/04/2011
AMPLIFIER (1-18GHz)	HP	8449B	3008A01266	01/14/2011
RF SWITCH	EMEC	EMSW18	60432	01/21/2011
CABLE (30-1000MHz)	HUBER +SUHNER	SUCOFLEX 102	33105/2	01/21/2011
CABLE (1-40GHz)	HUBER +SUHNER	SUCOFLEX 102	33106/2	12/23/2010
CABLE (18-40GHz)	HUBER +SUHNER	SUCOFLEX 102	33633/2	12/23/2010
CABLE (1-26.5GHz)	HUBER +SUHNER	SUCOFLEX 104PEA	33959/4PEA	12/23/2010
CABLE (1-26.5GHz)	HUBER +SUHNER	SUCOFLEX 104PEA	33960/4PEA	01/21/2011
CABLE (30-1000MHz)	EMCI	EMCI-C-14	CH-D#13	04/05/2011
ATTENUATOR	MCL	BW-S6W5	CH-D#14	04/05/2011
THERMO-HYGRO METER	TECPEL	DTM-303	NO.3	11/23/2010
LOOP ANTENNA	EMCO	6502	8905-2356	05/28/2010
Test S/W	EZ-EMC			

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)	Field Strength Limit (uV/m)Q.P.	Field Strength Limit (dBuV/m)Q.P.
30 - 88	100	40
88 - 216	150	43.5
216 – 960	200	46
Above 960	500	54

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

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 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)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
x.xx	42.95	0.55	43.50	56	-12.50	Q	L1

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

Calculation Formula

Margin (dB) = Result (dBuV) – 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 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 DC power source. All support equipment received power from another socket under the turntable.
- The antenna was placed at 3 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)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q)	Pol. (H/V)
x.xx	14.0	12.2	26.2	40	-13.8	Q	H

Freq. = Emission frequency in MHz
Reading = Uncorrected Analyzer/Receiver reading
Factor = Antenna Factor + Cable Loss - Amplifier Gain
Result = Reading + Factor
Limit = Limit stated in standard
Margin = Reading in reference to limit
P = Peak Reading
Q = Quasi-peak Reading
H = Antenna Polarization: Horizontal
V = Antenna Polarization: Vertical

Calculation Formula

Margin (dB) = Result (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)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (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 (30MHz-1GHz)

Model: CA6150RX **Test Mode:** Mode 1

Temperature: 26°C **Humidity:** 60% RH

Test Results: Passed **Tested by:** Howard Pang

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

Radiated Emission Readings							
Frequency Range Investigated				30 MHz to 1GHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q)	Pol. (H/V)
30.0000	**35.95**	**-6.45**	**29.50**	**40.00**	**-10.50**	**P**	**V**
53.2800	**48.06**	**-20.17**	**27.89**	**40.00**	**-12.11**	**P**	**V**
76.5600	**47.23**	**-19.52**	**27.71**	**40.00**	**-12.29**	**P**	**V**
107.5999	**40.20**	**-14.29**	**25.91**	**43.50**	**-17.59**	**P**	**V**
175.5000	**56.00**	**-15.43**	**40.57**	**43.50**	**-2.93**	**P**	**V**
245.3400	**42.79**	**-14.93**	**27.86**	**46.00**	**-18.14**	**P**	**V**
276.3799	**43.65**	**-12.70**	**30.95**	**46.00**	**-15.05**	**P**	**V**
299.6600	**40.17**	**-12.38**	**27.79**	**46.00**	**-18.21**	**P**	**V**
375.3199	**37.80**	**-10.30**	**27.50**	**46.00**	**-18.50**	**P**	**V**
837.0399	**32.03**	**-2.35**	**29.68**	**46.00**	**-16.32**	**P**	**V**
109.5400	**43.03**	**-14.03**	**29.00**	**43.50**	**-14.50**	**P**	**H**
117.2999	**45.52**	**-12.99**	**32.53**	**43.50**	**-10.97**	**P**	**H**
130.8799	**43.28**	**-13.10**	**30.18**	**43.50**	**-13.32**	**P**	**H**
150.2800	**39.60**	**-14.36**	**25.24**	**43.50**	**-18.26**	**P**	**H**
200.7199	**38.96**	**-14.36**	**24.60**	**43.50**	**-18.90**	**P**	**H**
243.4000	**39.85**	**-14.88**	**24.97**	**46.00**	**-21.03**	**P**	**H**
266.6800	**40.79**	**-13.24**	**27.55**	**46.00**	**-18.45**	**P**	**H**
276.3799	**39.43**	**-12.33**	**27.10**	**46.00**	**-18.90**	**P**	**H**
363.6800	**35.12**	**-10.17**	**24.95**	**46.00**	**-21.05**	**P**	**H**
868.0800	**32.29**	**-1.52**	**30.77**	**46.00**	**-15.23**	**P**	**H**
932.1000	**31.67**	**-0.69**	**30.98**	**46.00**	**-15.02**	**P**	**H**

NOTE: *30MHz to 1000MHz test is Applicable CISPR 22 / EN 55022 standard.*

Radiated Emission (1GHz-2GHz)

Model: CA6150RX **Test Mode:** Mode 1

Temperature: 26°C **Humidity:** 60% RH

Test Results: Passed **Tested by:** Howard Pang

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

Radiated Emission Readings							
Frequency Range Investigated				1GHz-2GHz at 3m			
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector (P/Q)	Pol. (H/V)
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NOTE: *No other emissions were found within 20dB below the limits from 1GHz-2GHz.*

APPENDIX I - PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST