MEASUREMENT/TECHNICAL REPORT

APPLICTNT: ADVANCE SECURITY INC.

MODEL NO.: ALA-520

FCC ID: H5OR34

This report concerns (check one) : **Original Grant** ✓
Class II Change _____

Equipment type: 433.92MHz AUTO ALARM SYSTEM RECEIVER (Receiver)

Deferred grant requested per 47CFR 0.457(d)(1)(ii)?
Yes _____ No ✓ If yes, defer until: _____ (date)
We, the undersigned, agree to notify the Commission by (date) _____ / _____ / _____ of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes _____ No ✓
If no, assumed Part 15, Subpart B for unintentional radiator the new 47 CFR (10-1-90 Edition) provision.

Report Prepared

by Testing House : Neutron Engineering Inc.

for Company :

Name ADVANCE SECURITY INC.

Address 3F., No. 48, TA AN ST., HIS CHIH CITY, TAIPEI, TAIWAN, R.O.C.

Applicant Signature :

Michael Chen

Michael Chen / President

CERTIFICATION

We hereby certify that:

The test data, data evaluation , test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (1992) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15 , Subpart B.

Prepared by :	Carol Chen	Carol Chen
Reviewed by :	Vincent Su	Vincent Su
Approved by :	George Yao	George Yao
Issued Date :	July 03, 1998	
Report No. :	NEI-FCCB-01217	
Company Stamp :		NEUTRON ENGINEERING INC. 耐斯股份有限公司

NEUTRON ENGINEERING INC.

No. 132-1, Lane 329, Sec. 2, Palain Rd.,
Shijr Jen, Taipei, Taiwan
TEL: (02) 2646-5426 FAX : (02) 2646-6815

Table of Contents

1. GENERAL INFORMATION

1-1. Product Description

The ADVANCE SECURITY INC. Model: ALA-520 (referred to as the EUT in this report) is a Receiver of car alarm security system which offers wireless remote control, ideal for use in vehicle security system to activate the function of center door lock control system and car searching except the alarm system.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 433.92 MHz

B). Antenna Designation: Non User Replaceable (Fixed)

C). Type : Super regenerative Receiver

D). Power Supply : DC 12V, Battery Operated

Fundamental Frequency	433.92MHz
Power Source	12V Battery
Transmitting Time	Periodic ≤ 5 seconds
Associated Receiver	FCC DOC

1-2. Related Submittal(s) / Grant (s)

This is an equipment authorization for filing, the Receiver portion of wireless remote control car alarm security system, FCC ID : H5OR34

1-3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992). Radiated testing was performed at an antenna to EUT distance 3 meters.

1-4. Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of No. 132-1, Lane 329, Sec. 2, Palain Road, Shijr Jen, Taipei, Taiwan, R.O.C. of NEUTRON ENGINEERING INC. This site has been fully described in report dated Jun. 4, 1999 Submitted to your office, and accepted in a letter dated Sep. 02, 1999 (Reg. No. 95335).

2. System Test Configuration

2-1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission chararteristics in a normal application.

2-2. EUT Exercise Software

The EUT was measured according to the guidance of Section 12.1.1.1 of ANSI C63.4-1992.
A signal generator, HP model 8648A, was used to radiate an Un-modulated continuous wave (CW) signal to EUT at its operating frequency(433.92MHz) in order to "Cohere" the emissions from EUT.

2-3. Test Procedure

(1) Conducted Emissions (Not applicable in this report)

Conducted emission on the 60 Hz power interface of the EUT were measured in the frequency range of 450 KHz to 30 MHz.
The measurements was performed using a Receiver which has CISPR characteristic bandwidth and Quasi-Peak detection, and a LISN with 50 ohms / 50uH (CISPR 16) characteristics. Table-top type EUT was placed on a non-conductive table 80 cm above the horizontal ground plane (floor) and positioned at 40 cm from the vertical reference ground plane (wall of the screen room). In some case, a pre-scan using a Spectrum Analyzer was initially performed on all units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 6 dB with a Peak mode measurement, the emissions are re-measured using the receiver in Quasi-Peak mode measurement and recorded on the data sheets.

(2) Radiated Emissions

The EUT is placed on a turn table which is 1.0 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of EUT should be changed according to the requirements of Rule.

2-4. Limitation

(1) Conducted Emission (Not applicable in this report)

For a EUT which is designed to be connected to the public utility (AC) power line, the conducted emission shall not exceed the following:

Frequency (MHz)	Emission (uV)	Emission (dBuV)
0.45 - 30	250	48.0

Remark : 1. Emission level in dBuV = 20 log (uV)

2. The limit was accordance with section 15.107 of FCC part 15, Subpart B

(2) Radiated Emission

The field strength of emissions from EUT shall not exceed following:

Frequency (MHz)	Field Strength (uV/m) @3m	Field Strength (dBuV/m) @3m
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
above 960	500	54.0

Remark:
1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of 3 meters.
3. The limit was accordance with section 15.109 of FCC part 15 Subpart B

2-5. Special Accessories

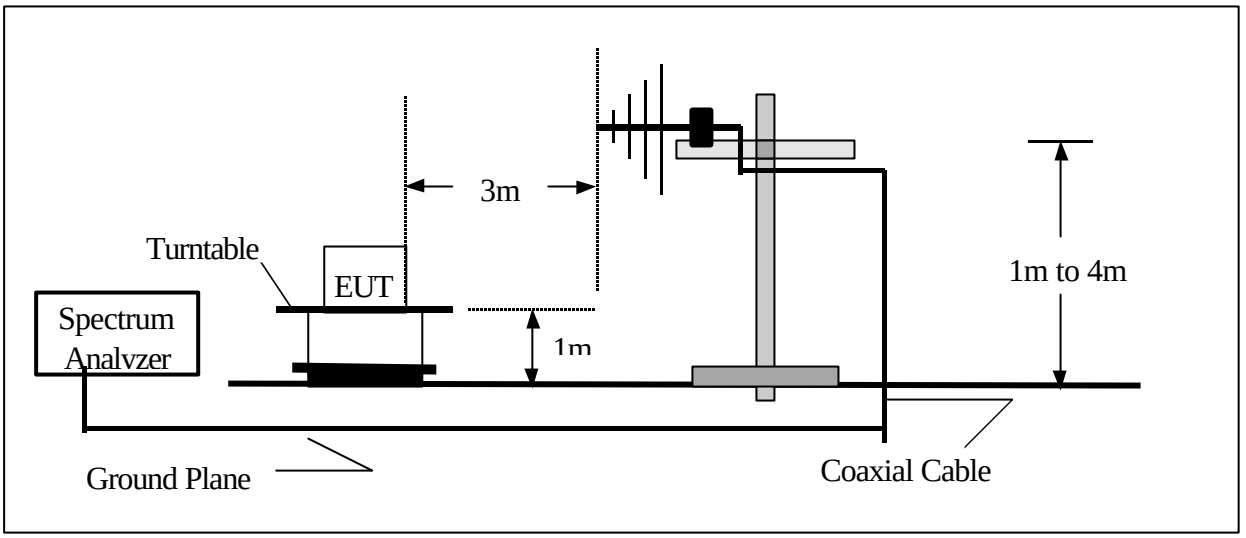
Not available for this EUT intended for grant.

2-6. Equipment Modifications

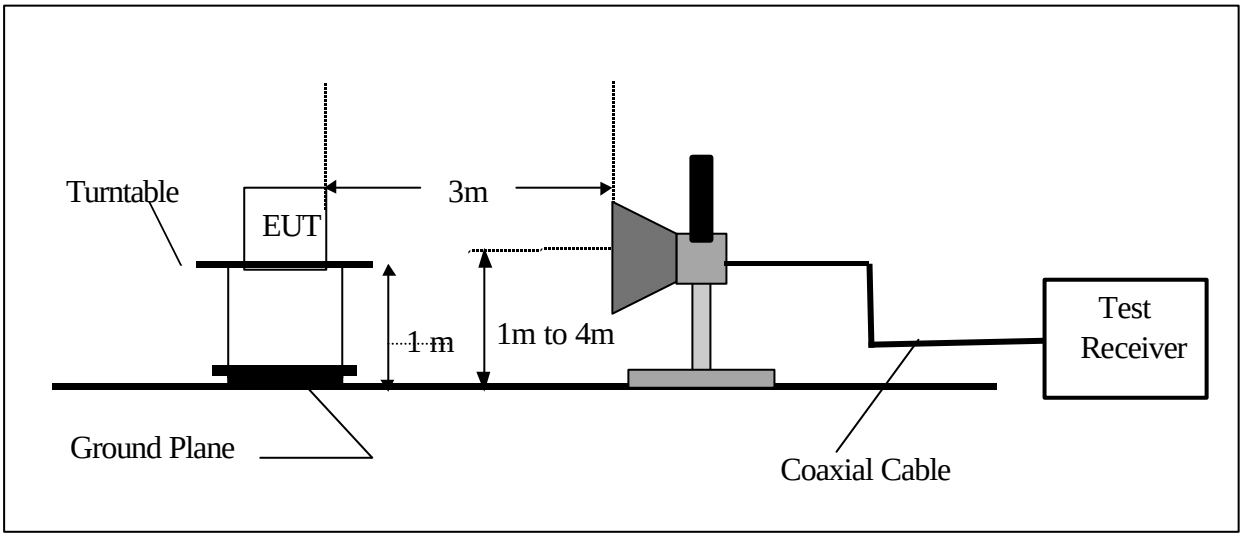
Not available for this EUT intended for grant.

2-7. Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1GHz



2-8. Tested Equipment

Item	Instruments	Mfr/Brand	Model/Type No.	Serial No.	Calibrated Date	Next Cali. Date	Note
1	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3058	2001-10-27	2002-10-26	
2	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9160	3060	2001-10-20	2002-10-19	✓
3	Log-Bicon Antenna	MESS-ELEKTRONIK	VULB 9161	4022	2001-07-04	2002-07-03	✓ (TX)
4	LISN	EMCO	3825/2	9605-2539	2001-06-22	2002-06-21	
5	LISN	Rolf Heine	NNB-2/16Z	98083	2001-10-20	2002-10-19	
6	LISN	Rolf Heine	NNB-2/16Z	98053	2000-11-23	2001-11-22	
7	Horn Antenna	EMCO	3115	9605-4803	2001-05-09	2002-05-08	
8	Quasi-Peak Adapter	HP	85650A	2521A00844	2001-09-24	2002-03-23	✓
9	RF Pre-Selector	HP	85685A	2648A00417	2001-09-24	2002-03-23	✓
10	Spectrum Analyzer	HP	85680B	2634A03025	2001-09-24	2002-03-23	✓
11	Spectrum Monitor	HP	85662B	2648A13616	2001-09-24	2002-03-23	✓
12	Pre-Amplifier	Anritsu	MH648A	M09961	2000-12-04	2001-12-03	✓
13	Test Receiver	R&S	ESMI	843977/005	2000-11-07	2001-11-06	
14	Pre-Amplifier	R&S	ESMI-Z7	1045.5020	2001-05-21	2002-05-20	
15	Test Receiver	R&S	ESH3	860156/018	2001-10-23	2002-10-22	
16	Test Receiver	R&S	ESVP	860687/009	2001-10-23	2002-10-22	
17	Test Receiver	MEB	SMV41	130	2000-12-20	2001-12-19	
18	Absorbing Clamp	R&S	MDS-21	841077/011	2001-08-18	2002-08-17	
19	Voltage Probe	R&S	ESH2-Z3	841.800/023	2001-08-20	2002-08-19	
20	Pulse Limiter	Electro-Metrics	EM-7600	112644	2001-02-09	2002-02-08	
21	Spectrum Analyzer	ADVAN TEST	R3261C	81720298	2001-08-17	2002-08-16	
22	Oscilloscope	Tektronix	2465B	J305135	2000-11-02	2001-11-01	
23	Impedance PAD	HRS	HI-NNF-PJ-50/75	0264	2001-03-15	2002-03-14	
24	Attenuator	Stack	10dB	1	2001-03-15	2002-03-14	
25	Audio Generator	Good Will	GAG808A	21845	N/A	N/A	
26	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
27	Turn Table	Chance Most	CMTB-1.5	N/A	N/A	N/A	✓
28	Signal Generator	HP	8648A	3426A01034	2000-02-10	2002-02-09	✓
29	Test Receiver	PMM	PMM 9000	4310J01002	2000-11-26	2001-11-27	

Remark :

(1) ✓ indicates the instrument used in Test Report.

(2) N/A denotes No Model No. / Serial No. and No Calibration specified.

3. Block Diagram(s)

4. Radiated Measurement Photos

4-1. Radiated Measurement Photos

5. Radiated Emission Datas

5-1. The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by –6.49 **dB** in Antenna Polarity of **Horizon** 433.51 **MHz**, EUT Cohered

Freq. (MHz)	Ant. H/V	Reading(dBuV) (Peak)	Factor	Level (dBuV)	Limits (dBuV)	Margins
109.90	V	42.20	-12.81	29.39	43.50	-14.11
147.30	V	43.04	- 9.91	33.13	43.50	-10.37
148.50	H	42.50	- 9.83	32.67	43.50	-10.83
161.10	V	39.02	- 9.21	29.81	43.50	-13.69
162.60	H	42.90	- 9.44	33.46	43.50	-10.04
187.60	H	45.10	-12.36	32.74	43.50	-10.76
202.18	V	47.53	-12.70	34.83	43.50	- 8.67
433.51	H	44.61	- 5.10	39.51	46.00	- 6.49
433.94	V	40.72	- 5.08	35.64	46.00	-10.36
510.48	V	41.03	- 2.95	38.08	46.00	- 7.92
511.45	H	40.78	- 2.93	37.85	46.00	- 8.15
702.94	H	30.52	2.32	32.84	46.00	-13.16

Remark：

(1) Measuring frequency range from 30MHz to the 1GHz.
(2) Test Spectrum Analyzer measurement condition setting are RBW=100KHz, VBW=100KHz, Sweep. Time=0.2 sec./MHz
(3) Measurements made with an instrument using peak detector mode express as "Peak", Measurements made with an instrument using Average detector mode express as "AV".
(4) * denotes the emissions from EUT are too small to be measured.
(5) Signal Generator used for testing is HP Model 8648A.

Review： Vincent Test Engr.： David Data: Jan. 04, 2002

5. Radiated Emission Datas

5-1. The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

Judgement: Passed by –6.5 **dB** in Antenna Polarity of **Vertical** 1828.0 **MHz**, EUT Cohered

Freq. (MHz)	Ant. H/V	Reading(dBuV) (Peak)	Factor	Level (dBuV)	Limits (dBuV)	Margins
1011.00	H	36.07	7.59	43.66	54.00	-10.34
1014.00	V	36.83	7.86	44.69	54.00	- 9.31
1130.00	H	34.24	9.07	43.31	54.00	-10.69
1208.00	V	35.21	9.13	44.34	54.00	- 9.66
1347.00	H	33.83	9.81	43.64	54.00	-10.36
1429.00	V	33.38	10.20	43.58	54.00	-10.42
1827.00	H	34.39	12.52	46.91	54.00	- 7.09
1828.00	V	34.98	12.52	47.50	54.00	- 6.50

Remark：

(1) Measuring frequency range from 1GHz to 2GHz.
(2) Test Spectrum Analyzer measurement condition setting are RBW=1MHz, VBW=1MHz, Sweep. Time=0.2 sec./MHz
(3) Measurements made with an instrument using peak detector mode express as "Peak", Measurements made with an instrument using Averge detector mode express as "AV".
(4) * denotes the emissions from EUT are too small to be measured.
(5) Signal Generator used for testing is HP Model 8648A.

Review： Vincent Test Engr.： David Data: Jan. 04, 2002

6-2. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor (1)

CL = Cable Attenuation Factor (1)

AG = Amplifier Gain (1) (2)

Remark :

(1) The Correction Factor = AF + CL - AG, as shown in the data tables' Correction Factor column.

(2) AG is not available for Neutron's Open Site Facility

Example of Calculation:

Assume a Receiver Reading of 23.7 dBuV is obtained with an Antenna Factor of 7.2 dB and a Cable Factor of 1.1 dB. Then:

1. The Correction Factor will be caculated by

Correction Factor = AF + CF - AG = 7.2 + 1.1 - 0 = 8.3 (dB)

as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

FS = RA + Correction Factor = 23.7 + 8.3 = 32 (dBmV/m).

FS is the value shown in the data tables' Corrected Reading column and RA is the value shown in the data tables' Receiver Reading column. The 32 dBuV/m value was mathematically conver-ted to its corresponding level in uV/m as:

$$\mathbf{Log^{-1}【(32.0dBuV/m)/20】 = 39.8\ (uV/m)}$$

6-3. Correction Factor VS Frequency

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30.00	11.60	0.10
35.00	10.80	0.20
40.00	11.20	0.20
45.00	11.30	0.20
50.00	11.10	0.40
55.00	10.50	0.50
60.00	9.90	0.60
65.00	8.70	0.60
70.00	7.70	0.60
75.00	6.60	0.60
80.00	6.30	0.60
85.00	7.20	0.70
90.00	8.60	0.70
95.00	10.10	0.70
100.00	11.40	0.70
110.00	12.90	0.90
120.00	13.40	1.00
130.00	13.20	1.00
140.00	12.50	1.00
150.00	12.20	1.10
160.00	13.00	1.10
170.00	14.50	1.10
180.00	15.90	1.10
190.00	17.00	1.10
200.00	17.50	1.20
225.00	12.20	1.20
250.00	13.30	1.30
275.00	14.20	1.40
300.00	15.90	1.30
325.00	14.80	1.40
350.00	15.90	1.50
375.00	20.80	1.60
400.00	17.10	1.60
450.00	18.10	1.70
500.00	19.40	1.60
550.00	19.70	2.00
600.00	20.10	2.10
650.00	21.00	2.00
700.00	22.30	2.30
750.00	22.20	2.40
800.00	22.20	2.50
850.00	23.50	2.50
900.00	24.30	2.70
950.00	24.60	2.60
1000.00	25.70	2.80

Attachment A

Photos of Tested EUT

1. Photo EUT 1. Front View Rear View

2. Photo EUT 2-7. Unit partially Disassembled

Attachment B

User Manual