

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
CERTIFICATION TO FCC PART 15 REQUIREMENTS**

*for*

**INTENTIONAL RADIATOR**

**434 MHz CAR ALARM TRANSMITTER**

**MODEL NO: 6905S**

**FCC ID NO: H5OT13**

**REPORT NO: 00E9053**

**ISSUE DATE: NOVEMBER 01, 2000**

*Prepared for*

**ADVANCE SECURITY INC.  
3F, 48, TA AN STREET, HSI CHIH,  
TAIPEI HSIEN, TAIWAN, R. O. C.**

*Prepared by*

**COMPLIANCE ENGINEERING SERVICES, INC.**

*d.b.a.*

**COMPLIANCE CERTIFICATION SERVICES**

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**1. VERIFICATION OF COMPLIANCE**

COMPANY NAME: ADVANCE SECURITY INC.  
3F, 48, TA AN STREET, HSI CHIH,  
TAIPEI HSIEN, TAIWAN, R. O. C.

CONTACT PERSON: MICHAEL CHEN / PRESIDENT

TELEPHONE NO.: (886-2) 2643-8192

EUT DESCRIPTION: 434 MHz CAR ALARM TRANSMITTER

MODEL NAME/NUMBER: 6905S

FCC ID: H5OT13

DATE TESTED: OCTOBER 16, 2000 & OCTOBER 19, 2000

REPORT NUMBER: 00E9053

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	434 MHz CAR ALARM TRANSMITTER
MEASUREMENT PROCEDURE	ANSI C63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Certification Services for compliance with the requirements set forth in the FCC CFR 47, PART 15. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties. **Warning** : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification will constitute fraud and shall nullify the document.

*Rick Yeo*

RICK YEO / EMC MANAGER  
COMPLIANCE ENGINEERING SERVICES, INC.

PAGE NO: 1

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## 2. Product Description

Fundamental Frequency	<b>434 MHz</b>
Power Source	<b>12V Battery</b>
Transmitting Time	<b>Periodic <math>\leq</math> 5 seconds</b>
Associated Receiver	<b>FCC ID: H5OR31</b>

## 3. Test Facility

The 3/10/30 meter open area test site and conducted measurement facility used to collect the radiated data is located at 561F Monterey Road, Morgan Hill, California, U.S.A. A detailed description of the test facility was submitted to the Commission on May 27, 1994.

## 4. Measurement Standards

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

## 5. Test Methodology

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

## 6. Measurement Equipment Used

Manufacturer	Model Number	Description	Cal Due Date
H.P.	8566B	Spectrum Analyzer (100Hz – 22GHz)	12/00
H.P.	8595EM	Spectrum Analyzer (9KHz – 6.5GHz)	01/01
EMCO	3115	Antenna (1-18GHz)	09/01
EMCO	3142	Antenna (30-2000MHz)	06/01
T.E.C.	PA-102	Amplifier(30-2000MHz)	05/01
MITEQ	NSP2600-44	Amplifier(1-26GHz)	12/00

**7. POWERLINE RFI LIMIT**

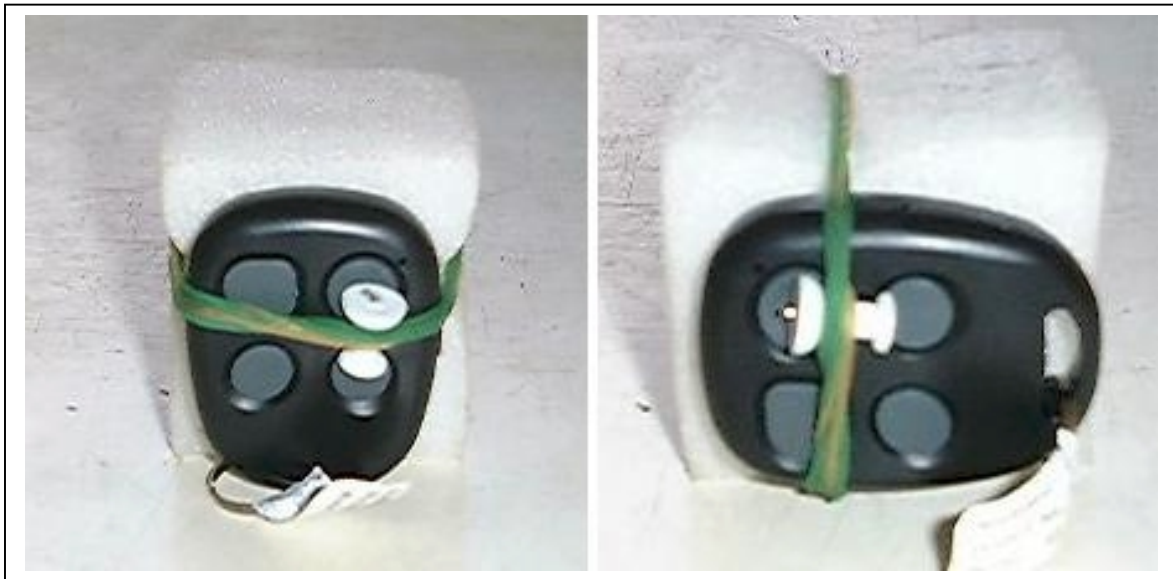
CONNECTED TO AC POWER LINE	SECTION 15.207
CARRIER CURRENT SYSTEM IN THE FREQUENCY RANGE OF 450 kHz TO 30 MHz	SECTION 15.205 AND SECTION 15.209, 15.221, 15.223, 15.225 OR 15.227, AS APPROPRIATE.
BATTERY POWER	NO REQUIRED.

**8. RADIATED EMISSION LIMITS**

GENERAL REQUIREMENTS	SECTION 15.209
RESTRICTED BANDS OF OPERATION	SECTION 15.205
PERIODIC OPERATION IN THE BAND 40.66 -40.70 MHz AND ABOVE 70 MHz.	SECTION 15.231

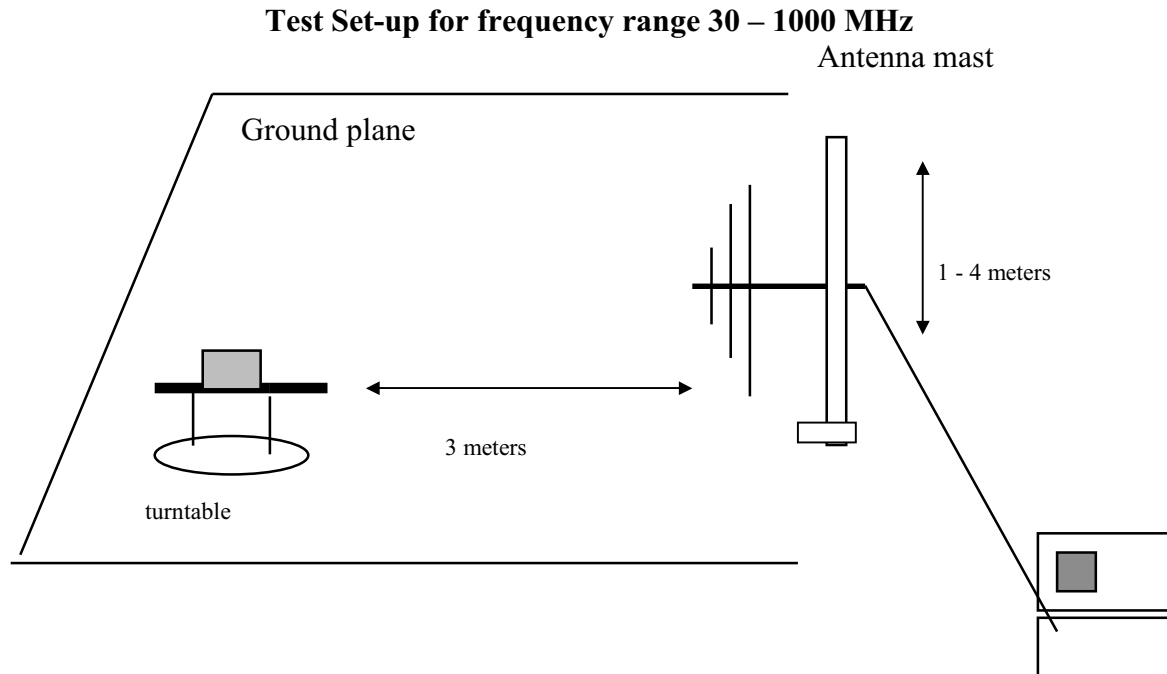
## 9. SYSTEM TEST CONFIGURATION

Use a block of foam and combined it with EUT wrapping rubber band around it. This way it can test X.Y, and Z axis. To activate continuous transmission, place a small plastic block between rubber band and EUT push button.



## 10. Test Procedure

### Radiated Emissions, 15.231(4)(b)



preamplifier/spectrum analyzer

**Fig. 1**

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3-meters from the EUT.
2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.
3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

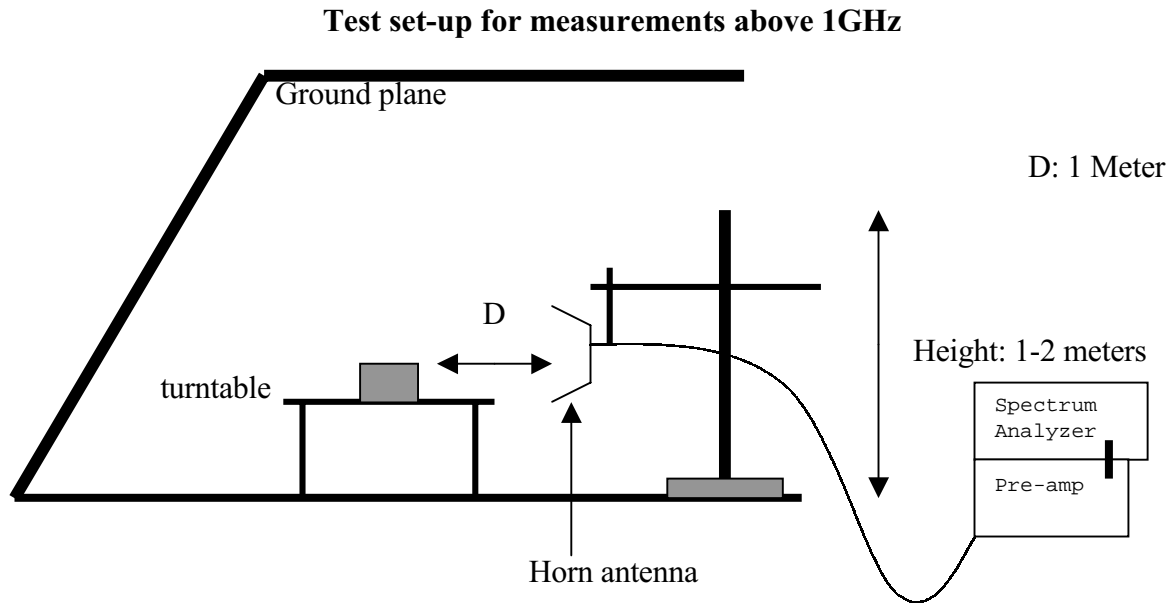


FIG. 2

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 1-meters from the EUT. The EUT antenna was mounted vertically as per normal installation.
2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.
3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

## 11. Equipment Modifications

To achieve compliance to FCC Section 15.231 technical limits, the following change(s) were made during compliance testing:

**NONE**



**12. TEST RESULT**

<b>Powerline RFI Class B</b>	<b>Eut</b>	<b>Radiated Emission Limits</b>	<b>Eut</b>
SECTION 15.207		SECTION 15.209	X
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	
BATTERY POWER	X	SECTION 15.231 (b)	X
		SECTION 15.231 (e)	

**12.1 Maximum Modulation Percentage (M%)**

CALCULATION:

Average Reading = Peak Reading (dBuV/m)+ 20log (Duty Cycle)

In order to determine possible Maximum Modulation percentage, alternations are made to the EUT. We measured:

WHERE      1 Period                      =143.000 mS. >100 mS. use 100 mS for calculation  
               Long pulse                      =1.355 mS  
               Short pulse                      =0.211 mS  
               No of Long pulse                =27  
               No of Short pulse                =29

Duty Cycle = ( N1L1+N2L2+...+Nn-1Ln-1+NnLn)/100 or T

Duty Cycle = ((27X1.355)+(29x0.211))/100=0.4270=42.70% or -7.39dB

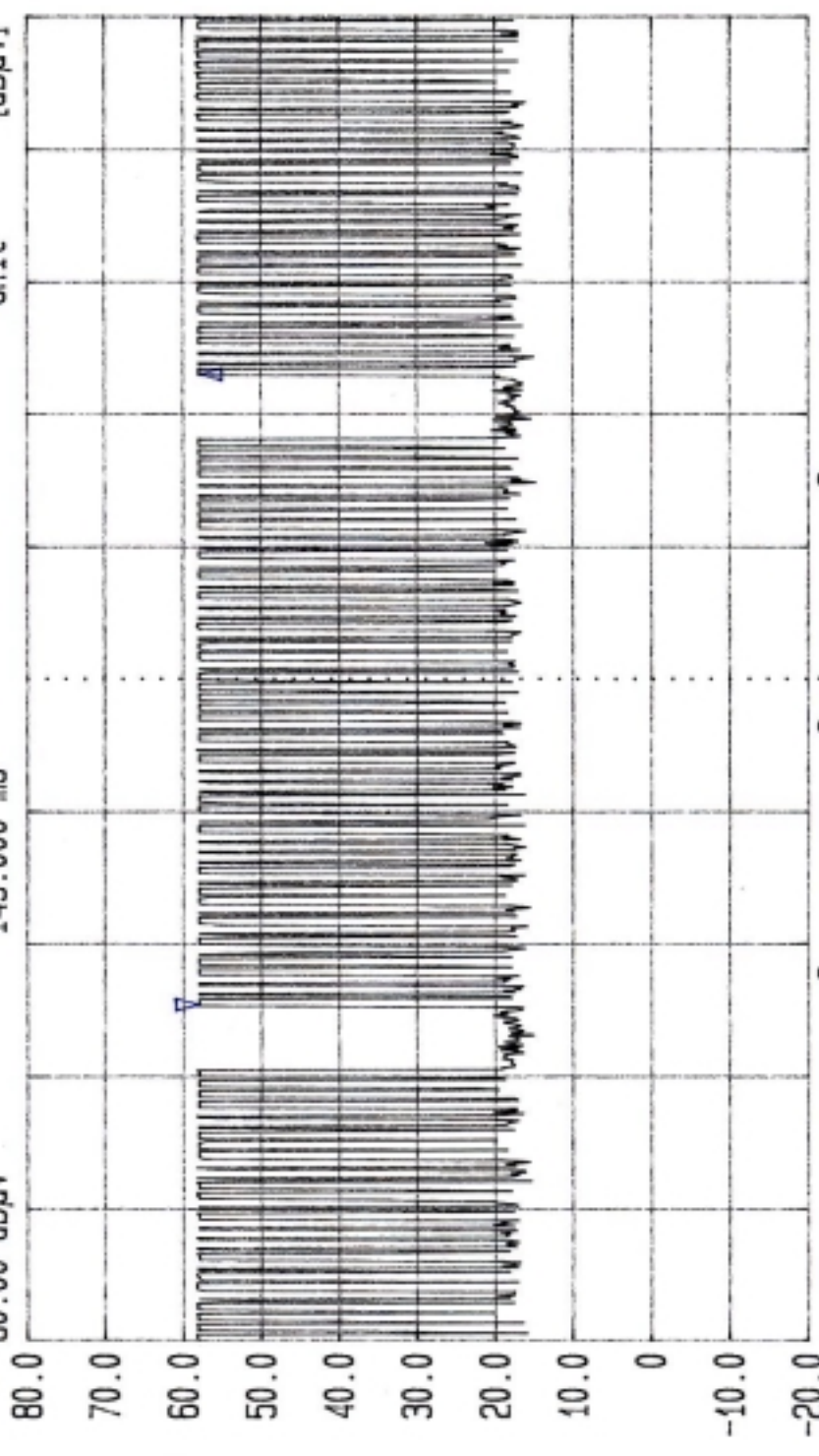
**12.2 The Emissions Bandwidth**

The bandwidth of the emissions were investigated per 15.231(c)

<b>Center Frequency</b>	<b>Measured</b>	<b>Limits</b>
<b>434 MHz</b>	<b>273.3 kHz &lt; (refer to plot)</b>	<b>434X0.25%=1085 kHz</b>



Date 16.Oct.'00 Time 18:17:30 TRG  
Ref.Lvl 80.00 dB $\mu$ V Delta 143.000 ms  
Res.Bw 120 kHz [imp] Vid.Bw 300 kHz  
TG.Lvl off RF.Att 10 dB  
CF.Stp Unit [dB $\mu$ V]



Span 0 Hz Center 434.025655 MHz Sweep 300 ms

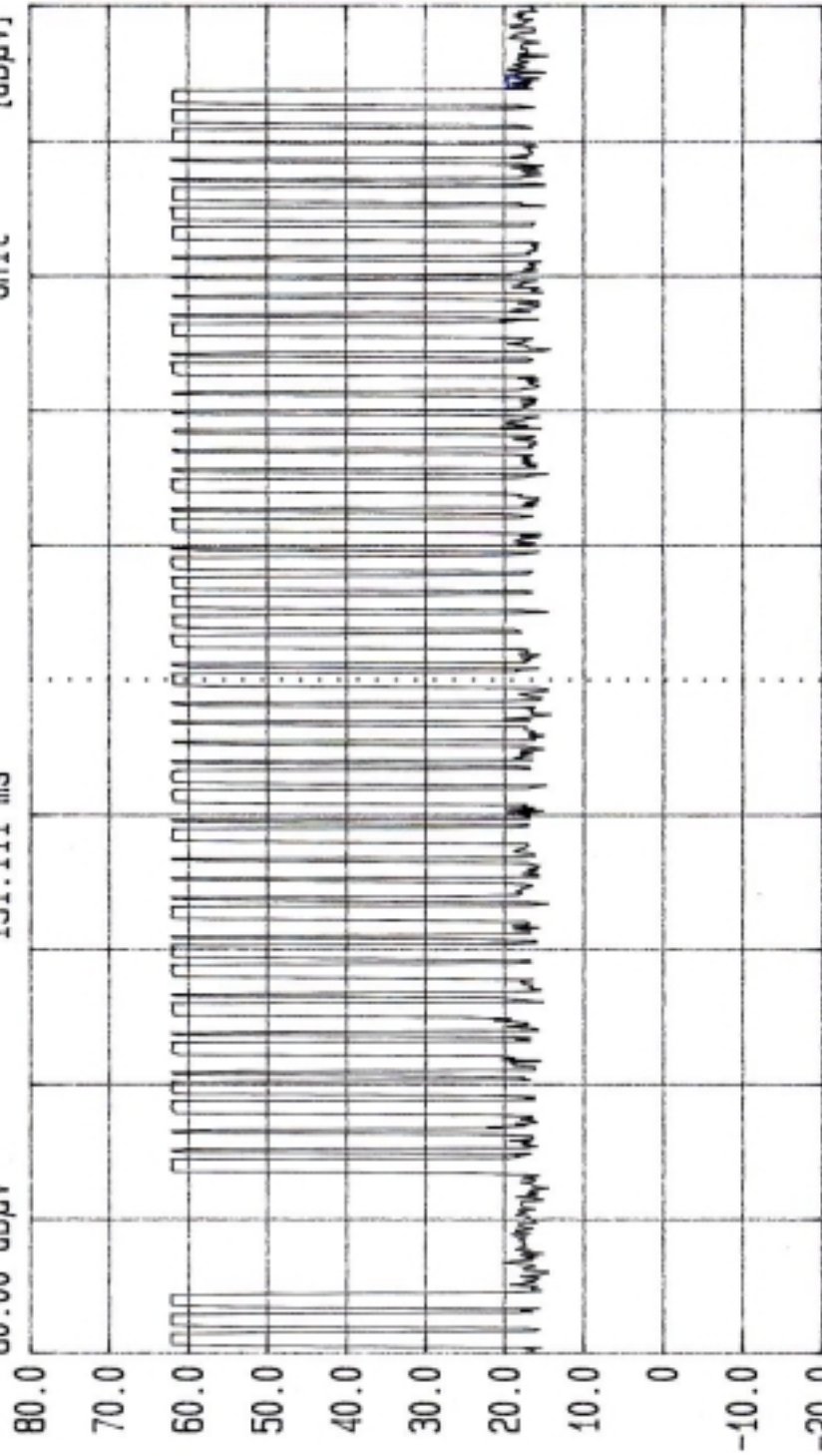


Date 16.Oct.'00 Time 18:07:35  
Ref.Lvl 80.00 dB $\mu$ V  
Marker 16.72 dB $\mu$ V  
151.111 ms

Res.Bw 120 kHz [imp]  
TG.Lvl Off  
CF.Stp 2.000 MHz

Vid.Bw 300 kHz  
AF.Att 10 dB  
Unit [dB $\mu$ V]

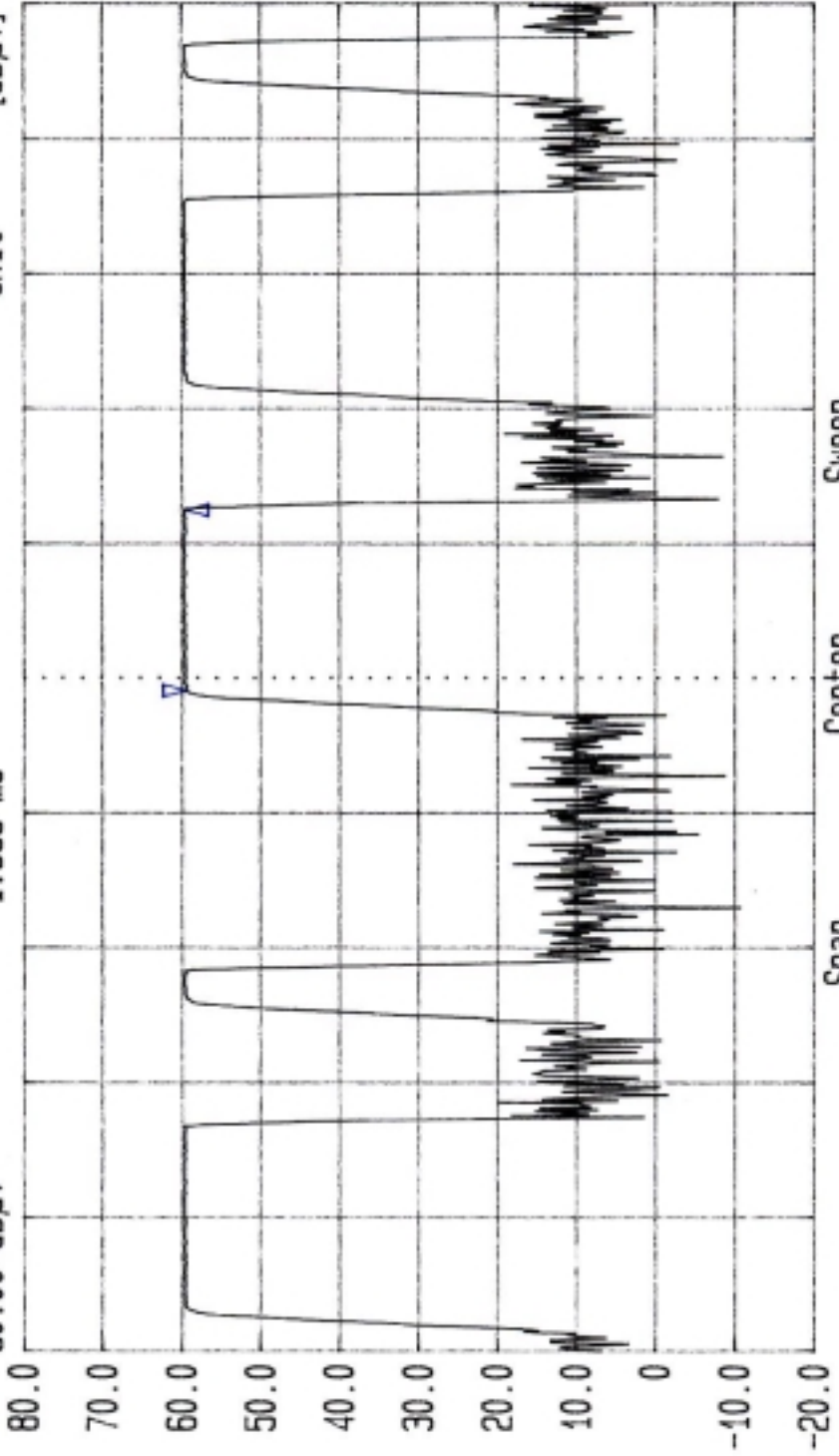
TRG



Span 0 Hz  
Center 434.026665 MHz  
Sweep 160 ms



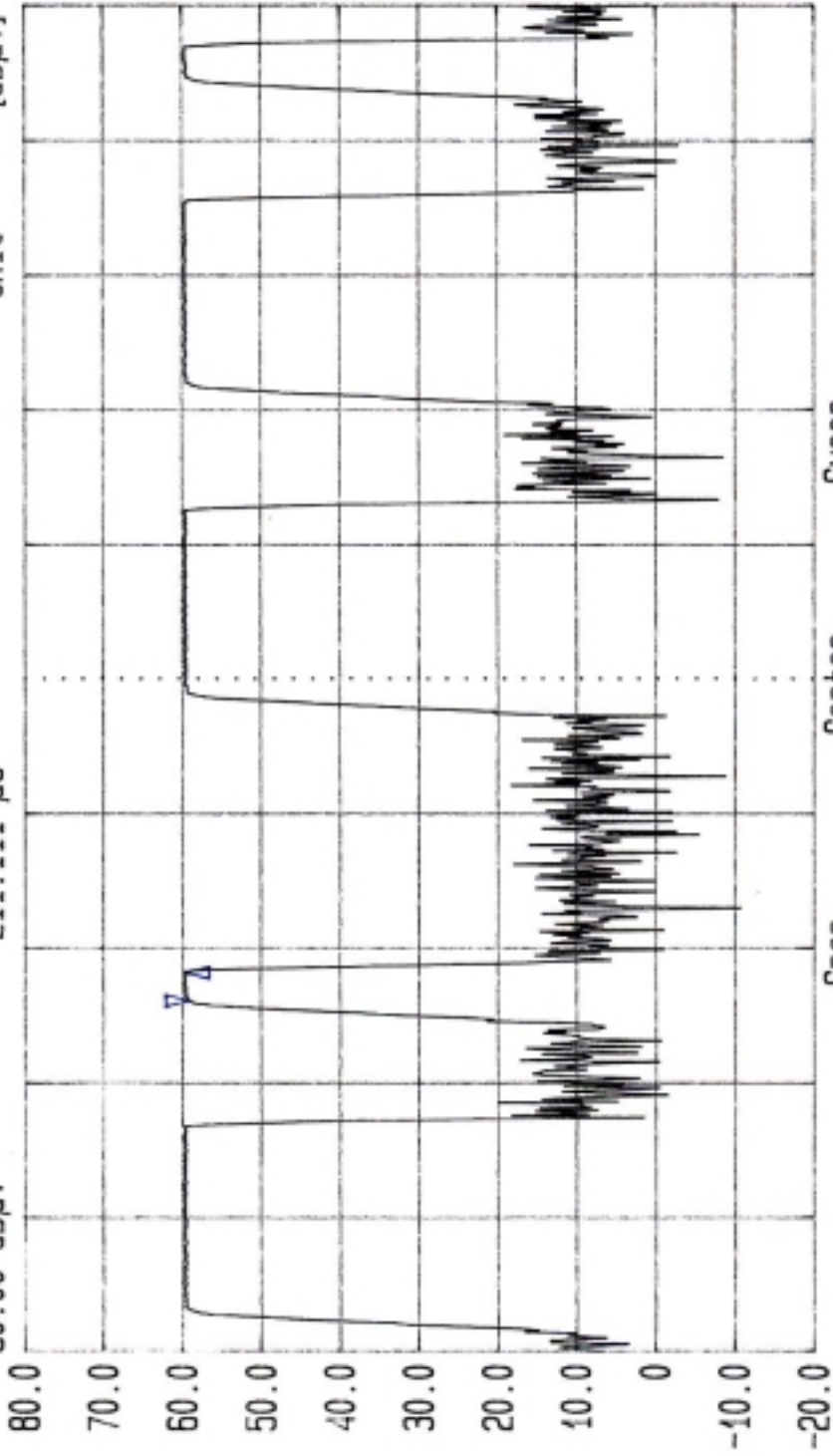
Date 16.Oct.'00 Time 18:22:28 TRG  
Ref.Lvl Delta 0.23 dB  
80.00 dBuV 1.355 ms  
Res.Bw 120 kHz [imp] Vid.Bw 300 kHz  
T6.Lvl Off  
CF.Stp 2.000 MHz RF.Att 10 dB  
Unit [dBuV]



Span 0 Hz Center 434.025665 MHz Sweep 10 ms



Date 16.Oct.'00 Time 18:26:23 TRG  
Ref.Lvl 80.00 dBµV Delta 0.35 dB  
CF.Stp 211.111 µs  
Res.Bw 120 kHz [imp] Vid.Bw 300 kHz  
TG.Lvl Off  
RF.Att 10 dB  
Unit

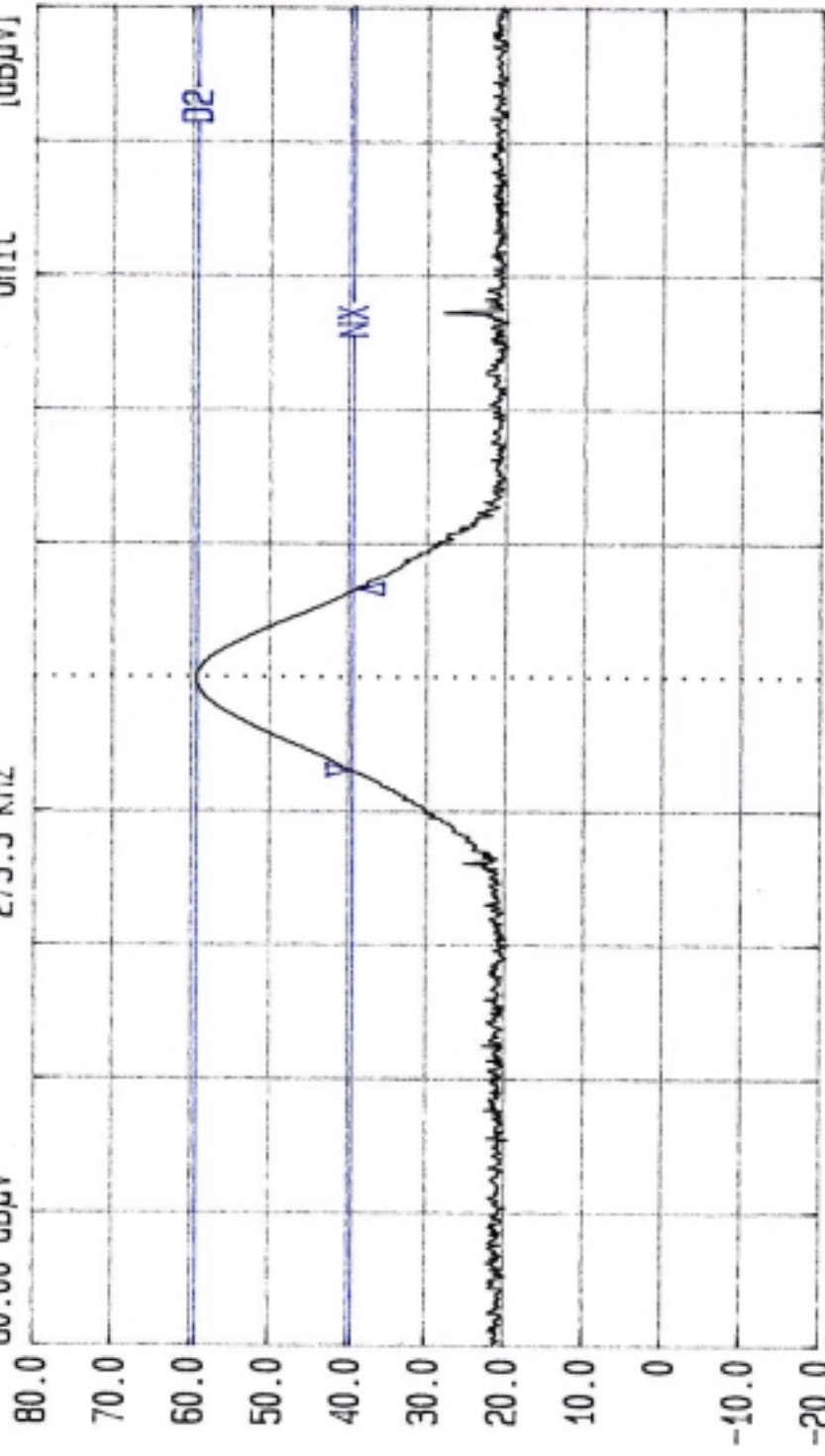


Span 0 Hz  
Center 434.026665 MHz  
Sweep 10 ms



Date 16.Oct.'00 Time 19:06:47  
Ref.Lvl Delta -0.84 dB  
80.00 dB $\mu$ V 273.3 kHz

Res.Bw 120 kHz [imp] 300 kHz  
TG.Lvl off  
CF.Stp 2.000 MHz  
RF.Att 10 dB  
Unit [dB $\mu$ V]



Start 433.038888 MHz Stop 435.038888 MHz  
Span 2 MHz Sweep 20 ms  
Center 434.038888 MHz  
N dB down Level 20.0 dB  
DELTA MARK 273.3 KHz



FCC, VCCI, CISPR, CE, AUSTEL, NZ  
UL, CSA, TUV, BSMI, DHHS, NVLAP

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PHONE: 02-2217-0894 FAX: 02-2217-1254

**Project #:** 00E9053  
**Report #:** 9053D1  
**Date & Time:** 10/16/00  
**Test Engr:** VINCE CHIANG

**Company:** ADVANCE SECURITY INC.  
**EUT Description:** 6905S (Alarm TX / 434 MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC CLASS B  
**Mode of Operation:** NORMAL MODE

D-Ste

E-Ste

$M\% = ((t1+t2+t3+...)/T) * 100\% = 42.7 \%$

$Av\ Reading = Pk\ Reading + 20*\log(M\%)$   
 $20*\log(M\%) = -7.3914$

	Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)
	Button #1:											
X	434.01	46.03	38.64	17.50	2.58	21.28	37.44	80.83	-43.39	3mV	0	1.35
	868.12	29.85	22.46	23.38	4.49	20.70	29.63	60.83	-31.20	3mV	0	1.35
Y	434.03	61.57	54.18	17.50	2.58	21.28	52.98	80.83	-27.85	3mV	90	1.50
	868.11	30.34	22.95	23.38	4.49	20.70	30.12	60.83	-30.71	3mV	90	1.50
Z	434.06	55.73	48.34	17.50	2.58	21.28	47.14	80.83	-33.69	3mV	90	1.25
	868.10	32.19	24.80	23.38	4.49	20.70	31.97	60.83	-28.86	3mV	90	1.50
X	434.05	50.88	43.49	17.50	2.58	21.28	42.29	80.83	-38.54	3mH	180	1.55
	868.11	28.68	21.29	23.38	4.49	20.70	28.46	60.83	-32.37	3mH	180	1.55
Y	434.08	52.17	44.78	17.50	2.58	21.28	43.58	80.83	-37.25	3mH	90	1.30
	868.09	26.17	18.78	23.38	4.49	20.70	25.95	60.83	-34.88	3mH	90	1.30
Z	434.03	51.97	44.58	17.50	2.58	21.28	43.38	80.83	-37.45	3mH	0	1.25
	868.10	29.04	21.65	23.38	4.49	20.70	28.82	60.83	-32.01	3mH	180	1.60
	Button #2:											
X	434.05	54.21	46.82	17.50	2.58	21.28	45.62	80.83	-35.21	3mV	90	1.40
	868.11	29.24	21.85	23.38	4.49	20.70	29.02	60.83	-31.81	3mV	90	1.40
Y	434.04	54.48	47.09	17.50	2.58	21.28	45.89	80.83	-34.94	3mV	180	1.20
	868.11	28.00	20.61	23.38	4.49	20.70	27.78	60.83	-33.05	3mV	180	1.20
Z	434.04	47.30	39.91	17.50	2.58	21.28	38.71	80.83	-42.12	3mV	0	1.10
	868.09	31.07	23.68	23.38	4.49	20.70	30.85	60.83	-29.98	3mV	0	1.10
X	434.05	55.45	48.06	17.50	2.58	21.28	46.86	80.83	-33.97	3mH	90	1.40
	868.10	24.65	17.26	23.38	4.49	20.70	24.43	60.83	-36.40	3mH	180	1.30
Y	434.04	49.99	42.60	17.50	2.58	21.28	41.40	80.83	-39.43	3mH	0	1.20
	868.10	24.52	17.13	23.38	4.49	20.70	24.30	60.83	-36.53	3mH	0	1.20
Z	434.05	47.91	40.52	17.50	2.58	21.28	39.32	80.83	-41.51	3mH	0	1.60
	868.07	24.60	24.60	23.37	4.47	20.69	31.75	60.83	-29.08	3mH	0	1.50
	Total data #: 24											



FCC, VCCI, CISPR, CE, AUSTEL, NZ  
UL, CSA, TUV, BSMI, DHHS, NVLAP

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**Project #:** 00E9053  
**Report #:** 9053D2  
**Date & Time:** 10/16/00  
**Test Engr:** VINCE CHIANG

**Company:** ADVANCE SECURITY INC.  
**EUT Description:** 6905S (Alarm TX / 434 MHz)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC CLASS B  
**Mode of Operation:** NORMAL MODE

D-Ste

E-Ste

$M\% = ((t1+t2+t3+...)/T) * 100\% = 42.7 \%$

$Av \text{ Reading} = Pk \text{ Reading} + 20 * \log(M\%)$   
 $20 * \log(M\%) = -7.3914$

	Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)
	Button #3:											
X	434.05	57.15	49.76	17.50	2.58	21.28	48.56	80.83	-32.27	3mV	0	1.35
	868.10	30.84	23.45	23.38	4.49	20.70	30.62	60.83	-30.21	3mV	0	1.20
Y	434.05	60.22	52.83	17.50	2.58	21.28	51.63	80.83	-29.20	3mV	180	1.30
	868.09	29.27	21.88	23.38	4.49	20.70	29.05	60.83	-31.78	3mV	180	1.30
Z	434.05	56.11	48.72	17.50	2.58	21.28	47.52	80.83	-33.31	3mV	0	1.40
	868.12	28.74	21.35	23.38	4.49	20.70	28.52	60.83	-32.31	3mV	0	1.40
X	434.05	56.95	49.56	17.50	2.58	21.28	48.36	80.83	-32.47	3mH	90	1.40
	868.11	33.53	26.14	23.38	4.49	20.70	33.31	60.83	-27.52	3mH	90	1.40
Y	434.07	53.70	46.31	17.50	2.58	21.28	45.11	80.83	-35.72	3mH	0	1.55
	868.10	28.10	20.71	23.38	4.49	20.70	27.88	60.83	-32.95	3mH	90	1.45
Z	434.07	49.38	41.99	17.50	2.58	21.28	40.79	80.83	-40.04	3mH	90	1.70
	868.09	26.48	19.09	23.38	4.49	20.70	26.26	60.83	-34.57	3mH	90	1.55
	Button #4:											
X	434.06	52.05	44.66	17.50	2.58	21.28	43.46	80.83	-37.37	3mV	90	1.40
	868.10	30.97	23.58	23.38	4.49	20.70	30.75	60.83	-30.08	3mV	90	1.40
Y	434.06	53.62	46.23	17.50	2.58	21.28	45.03	80.83	-35.80	3mV	0	1.55
	868.14	34.12	26.73	23.38	4.49	20.70	33.90	60.83	-26.93	3mV	90	1.45
Z	434.06	55.02	47.63	17.50	2.58	21.28	46.43	80.83	-34.40	3mV	90	1.30
	868.10	32.06	24.67	23.38	4.49	20.70	31.84	60.83	-28.99	3mV	90	1.30
X	434.05	46.89	39.50	17.50	2.58	21.28	38.30	80.83	-42.53	3mH	0	1.40
	868.10	29.07	21.68	23.38	4.49	20.70	28.85	60.83	-31.98	3mH	0	1.40
Y	434.05	51.36	43.97	17.50	2.58	21.28	42.77	80.83	-38.06	3mH	90	1.55
	868.08	28.20	20.81	23.37	4.47	20.69	27.96	60.83	-32.87	3mH	90	1.55
Z	434.08	48.69	41.30	17.50	2.58	21.28	40.10	80.83	-40.73	3mH	0	1.60
	868.08	25.87	18.48	23.37	4.47	20.69	25.63	60.83	-35.20	3mH	0	1.60
	Total data #: 24											





FCC, VCCI, CISPR, CE, AUSTEL, NZ  
UL, CSA, TUV, BSMI, DHHS, NVLAP

1366 BORDEAUX DRIVE, SUNNYVALE, CA 94089  
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*Project #:* 00E9053  
*Report #:* 9053D3  
*Date & Time:* 10/19/00  
*Test Engr:* Vince Chiang

*Company:* ADVANCE SECURITY INC.  
*EUT Description:* 6905S (Alarm TX / 434MHz)  
*Test Configuration :* EUT ONLY  
*Type of Test:* FCC CLASS B  
*Mode of Operation:* NORMAL MODE

D-Site

E-Site

6 Worst

Descending

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Dist (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
<b>1302</b>	<b>64.06</b>	<b>24.8</b>	<b>2.8</b>	<b>43.27</b>	<b>-9.5</b>	<b>38.94</b>	<b>74.0</b>	<b>-35.06</b>	<b>1mV</b>	<b>90</b>	<b>1.2</b>	<b>P</b>
1302	52.20	24.8	2.8	43.27	-9.5	27.07	54.0	-26.93	1mV	90	1.2	A
<b>1736</b>	<b>34.77</b>	<b>25.8</b>	<b>3.3</b>	<b>43.04</b>	<b>-9.5</b>	<b>11.30</b>	<b>74.0</b>	<b>-62.70</b>	<b>1mV</b>	<b>90</b>	<b>1.3</b>	<b>P</b>
1736	27.56	25.8	3.3	43.04	-9.5	4.09	54.0	-49.91	1mV	90	1.3	A
<b>1302</b>	<b>72.88</b>	<b>24.8</b>	<b>2.8</b>	<b>43.27</b>	<b>-9.5</b>	<b>47.76</b>	<b>74.0</b>	<b>-26.24</b>	<b>1mH</b>	<b>270</b>	<b>1.0</b>	<b>P</b>
1302	64.63	24.8	2.8	43.27	-9.5	39.46	54.0	-14.54	1mH	270	1.0	A
<b>1736</b>	<b>40.03</b>	<b>25.8</b>	<b>3.3</b>	<b>43.04</b>	<b>-9.5</b>	<b>16.56</b>	<b>74.0</b>	<b>-57.44</b>	<b>1mH</b>	<b>270</b>	<b>1.0</b>	<b>P</b>
1736	31.40	25.8	3.3	43.04	-9.5	7.93	54.0	-46.07	1mH	270	1.0	A

\* No other emission were found within 20dB under the limits upto 4.5 GHz.

Total data #: 8  
V.2d

Peak: RBW=VBW=1MHz  
Average: RBW=1MHz, VBW=10Hz

Distance =  $20\log(1/3) = -9.5\text{dB}$