

# ***EXHIBIT B***

## ***Test Report***

Report No.

V1115573

Specifications

FCC Part 15 - Certification

Test Method

ANSI C63.4 1992

Applicant

Address

17811 Sky Park Circle Suite D&E,  
Irvine, CA 92614-6109

Applicant

Items tested

Model No.

Seco-Larm USA INC.  
High Frequency Transmitter  
SLI259A

Results

Sample received  
dateAs detailed within this report  
05 / 01 / 1998 (month / day / year )

Prepared by

project engineer

Authorized by

Vice General Manager

Issue date

(Jacob Lin )

(month / day / year )

Modifications

Tested by

Office at

Open site at

**Appendix A**

Training Research Co., Ltd.

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No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec.4, Taipei Taiwan

**Conditions of issue:**

- (1). **This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.**
- (2). **This report must not be used by the client to claim product endorsement by NVLAP or nay agency of U.S. Government.**

★ FCC ID : ERY259A

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## ***Chapter 1 Introduction***

### ***Description of EUT :***

This device is a 2.4 GHz microwave sensor that detects the movement of mass through a protected area . It does this by transmitting and receiving a high-frequency RF signal . When an object moving towards the vehicle is detected, the high-frequency RF signal will change . This change will cause the microwave sensor to send a trigger signal to the alarm .

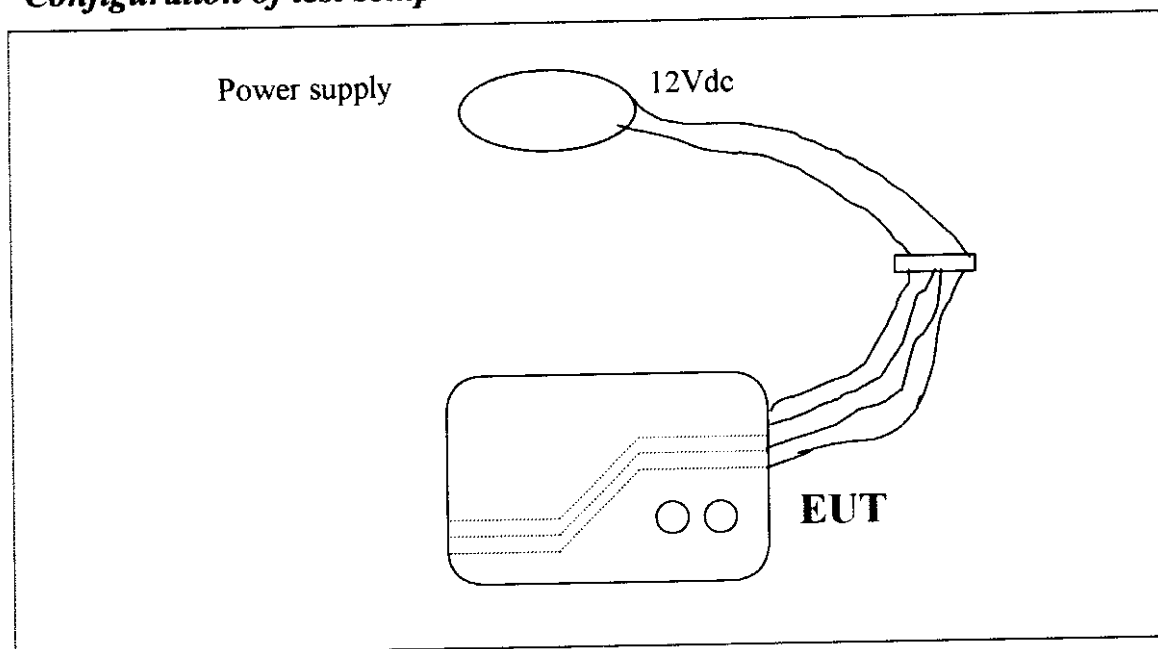
### ***Connection of EUT :***

- (1)Connect a 4 pins colored cable to the EUT .
- (2)Connect the red and black cable to the power supply .

### ***Test method :***

Turn on power supply and send a 12Vdc to the EUT . Make sure the EUT is working and can detect the movement of mass . The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

***The testing configuration of test setup is showing in the next page.***

**Configuration of test setup****Connections :**

**\* The 4 pins colored cable is 70cm long , non-shielded .**

## Chapter 2 Conducted emission test

### Test condition and setup :

All the equipment is placed and setup according to the ANSI C63.4 - 1992 .  
The EUT is assembled on a wooden table which is 80 cm high , is placed 40 cm from the back-wall which is a vertical conducting plane . One LISN is for EUT ,the other LISN is for support equipment. They are all placed on the conductive ground . The EUT's LISN connect a line switch box for selecting L1 or L2 ,then connect to a preamplifier and spectrum.

The spectrum scans from 450KHz to 30MHz . Conducted emission levels are detected at max. peak mode . But if the max. peak mode failed ,it will be measured by CISPR's quasi-peak detection mode .

While testing, there is a the worst-emission plot printed at peak detection mode ,and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report .

### List of test Instrument :

Instrument Name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last time	Next time
Spectrum analyzer	8591EM	H P	3619A00821	08/29/96	08/29/98
LISN (EUT)	3825/2	EMCO	9411-2284	05/15/98	05/15/99
Preamplifier	8447F	H P	2944A03706	05/13/98	05/15/99
Line switch box	AC1-003	TRC	-----	05/15/98	05/15/99
Line selector	AC1-002	TRC	-----	05/15/98	05/15/99

The level of confidence of 95% ,the uncertainty of measurement of conducted emission is  $\pm 2.4$  dB .

**Test Result : NA**

### ***Chapter 3 Radiated emission test ( 30 M-1 GHz )***

#### ***Test condition and setup :***

**Pretest :** Prior to the final test (OATS test) ,the EUT is placed in a shielded enclosure ,GTEM, and scan from 30MHz to 1GHz. This is done to ensure the radiation exactly emits form the EUT.

**Final test :** Final radiation measurements is made on a open-field test site. The EUT is placed on a nonconductive table which is 0.8 m height, the top surface is 1.0 x 1.5 meter. All the placement is according to ANSI C63.4 - 1992.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The EMCO whole range Antenna is used to measure frequency from 30 MHz to 1GHz. The final test is used the spectrum HP 8594EM .

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency . The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meter to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading .The spectrum analyzer's 6dB bandwidth is set to 120 K Hz , and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient ,the data will be rechecked by the tester and the corrected data will be written in the test data sheet. If the emission is just within the ambient ,the data from GTEM will be taken as the final data.

#### ***List of test Instrument :***

Instrument name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last	Next
Spectrum analyzer	8568B	H P	3004A18617	05/15/98	05/15/99
Quasi-peak Adapter	85650A	H P	2521A00984	05/15/98	05/15/99
RF Pre-selector	85685A	H P	2947A01011	05/15/98	05/15/99
Spectrum analyzer	8594EM	H P	3619A00198	08/07/97	08/07/98
Antenna(30M-2G Hz)	3142	EMCO	9610-1094	10/30/97	10/30/98
Open test side (Antenna ,Amplify, cable calibrated together )				05/15/98	05/15/99

The level of confidence of 95% ,the uncertainty of measurement of radiated emission is  $\pm 4.96$  dB .

**Test Result : Pass ( All emissions are under limit 20dB )**

## **Chapter 4 Radiated emission test ( Above 1 GHz )**

### **Test condition and setup :**

Final radiation measurements above 1GHz were made on a one-meter, open-field test site. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 9 KHz to 40 GHz using an Hewlett Packard 8564E Spectrum Analyzer, EMCO Horn Antenna (Model 3115) for 1G~ 18 GHz,

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. The preamplifier use on this testing ,HP83051A for frequency 45 MHz to 50 GHz. A HP 3.5 GHz High-Pass filters were used when test the harmonic . The spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 9 KHz to 40 GHz) and the analyzer was operated in the maximum hold mode. The EUT is measured at average mode.

### **List of test Instrument :**

<u>Instrument name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>
Spectrum analyzer( 9K~40GHz)	8564E	H P	
Antenna(1G~18G Hz)	3115	EMCO	SN97045178
Preamplifier( 45M~50GHz)	83051A	HP	VS36433002



**Test Result of Fundamental Emissions**

The peak values of fundamental emissions from the EUT at various antenna heights , antenna polarization, EUT orientation , etc. are recorded on the following .

Frequency (GHz)	A.P. (H/V)	A.H. (CM)	Table (degree)	Amplitude (Peak ) (dBuV/m)	E.R.P.	
					mW	dBm
2.4166	H	100	243	80.57	0.02	-16.98
	V	100	146	80.41	0.02	-16.98

Note :

A.P. means antenna polarization, horizontal and vertical.

A.H. means antenna height.

Table means turntable turning position.

Amplitude means the fundamental emission measured.

Effective Radiation Power ( E.R.P. ) =  $(E d)^2 / 30G$

E is the measured maximum field strength in V/m utilizing the maximum hold mode

RBW ( 1MHz ).

G is the numeric gain of the transmitting antenna over an isotropic radiator (1.64).

d is the distance in meters from which the field strength was measured (3M).

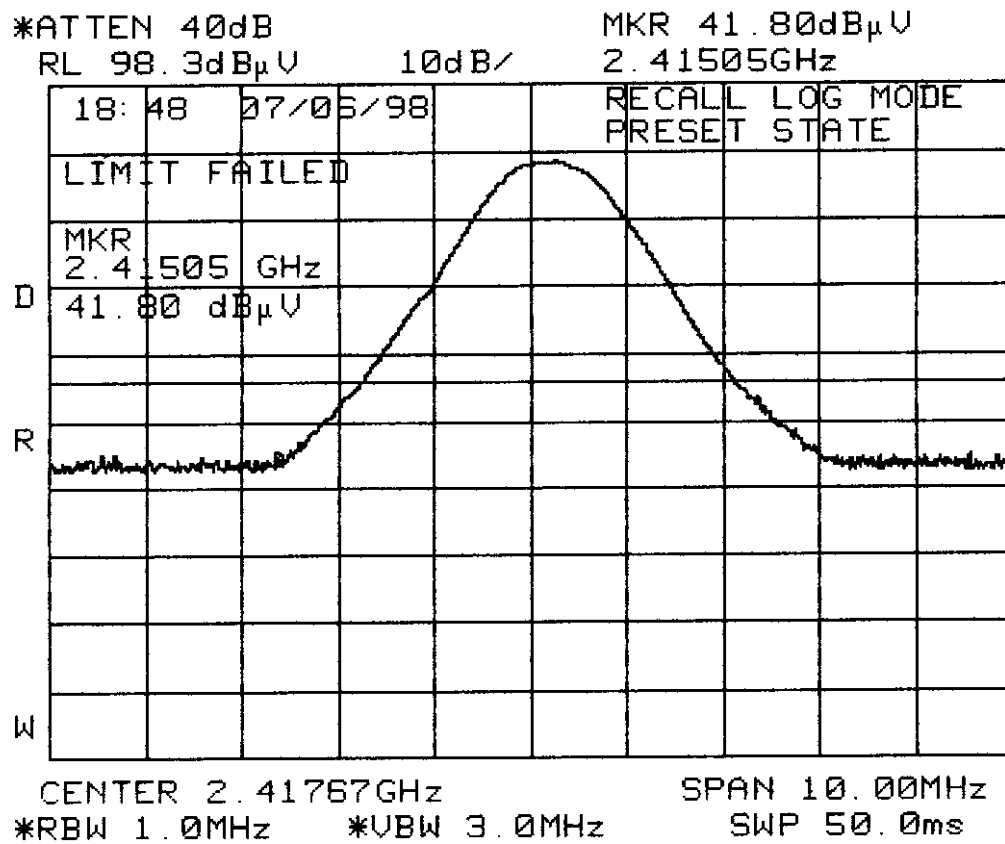
Example : the Max Radiation Emission = 80.57 dBuV/m

$$10^{(80.57/20)} \times 10^{-6} = 0.01067 \text{ V}$$

$$\begin{aligned} \text{E.R.P.} &= (0.01067 \times 3)^2 / 49.2 = 0.02 \text{ mW} = 10 \times \log(0.02 \text{ mW}/1\text{mW}) \\ &= -16.98 \text{ dBm} \end{aligned}$$

***The whole signal of fundamental is not out of 2.4 GHz that showed as next page .***

## The plot of fundamental :



**Test Result of Harmonic Above 1 GHz :**  
**(Horizontal)**

Frequency ( GHz )	A . H . (m)	Table (Degree)	Amplitude ( Peak ) (dBuV/m)	Limit (dBuV/m)	Margin ( dB )
4.83	1.00	247	49.13	54.00	-4.87

**(Vertical)**

Frequency ( GHz )	A . H . (m)	Table (Degree)	Amplitude ( Peak ) (dBuV/m)	Limit (dBuV/m)	Margin ( dB )
4.83	1.00	68	50.29	54.00	-3.71

- \* The peak value are under average limit .
- \* The emissions above the 3<sup>rd</sup> harmonic are under the base of spectrum , about under limit 14dB.

**Final statement:**

***This test report, measurements made by TRC are traceable to the NIST.***

## Appendix A :

### List of Modification :

1.  $R4 = 75 \text{ ohm}$  .
2. Add a bypass SMT 1P cap between C16 ( +5V ) to Gnd .
3. Paste a Core ( A5 FS 23.3 x 3 x 7 ) on the Gnd block beside the U4 .

### Statement of Applicant : Seco-Larm USA INC.

I acknowledge that the modifications made to the EUT for compliance during testing will be incorporated into mass production units .

### Applicant :

By : Howard Yeh  
Signature

Howard Yeh  
Printed

Date : July 08,1998  
Title : General Manager