

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

for

**INTENTIONAL RADIATOR**

of

**Wireless Door/Window Transmitter**

**FCC ID Number** : QNP-EVDW345

**Trade Name** : Evolution

**Model Number** : EV-DW345

**Agency Series** : N/A

**Report Number** : C30710403-RP

**Date** : July 18, 2003

Prepared for :

**Secure Wireless, Inc.**

**1185 Park Center Dr Suite A/B**

**Vista, CA 92083, United States**

Prepared by :

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Lab. Code: 200617-0



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## 1. VERIFICATION OF COMPLIANCE

COMPANY NAME : Secure Wireless, Inc.  
1185 Park Center Dr Suite A/B  
Vista, CA 92083, United States

CONTACT PERSON : Michael Lamb / Jeff Christensen

TELEPHONE NO. : 866-966-9473

EUT DESCRIPTION : Wireless Door/Window Transmitter

MODEL NAME/NUMBER : EV-DW345

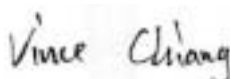
FCC ID : QNP-EVDW345

DATE TESTED : July 14, 2003

REPORT NUMBER : C30710403-RP

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	345 MHz Wireless Door/Window Transmitter
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by C&C Laboratory Co., Ltd. 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 Engineering Services, Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by C&C Laboratory Co., Ltd. will constitute fraud and shall nullify the document.



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Vince Chiang / Supervisor  
C&C Laboratory Co., Ltd.

## 2. PRODUCT DESCRIPTION

Fundamental Frequency	<b>345 MHz</b>
Power Source	<b>3V Battery</b>
Transmitting Time	<b>Periodic <math>\leq 5</math> seconds</b>
Associated Receiver	<b>Model: N/A</b>

## 3. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at No. 165 & No. 199, Chung Sheng Road, Hsin Tien City, Taipei, Taiwan R.O.C. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 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
R&S	ESVS30	MEASURE RECEIVER	09/13/03
ADVANTEST	R3132	SPECTRUM ANALYZER	09/11/03
SCHAFFNER	CBL 6112B	ANTENNA	11/11/03
BELDEN	9913	CABLE	10/13/03
SCHAFFNER	CPA9231A	PRE-AMPLIFIER	10/30/03
EMCO	3115	ANTENNA (1-18GHz)	02/24/04
HP	8449B	AMPLIFIER (1-26.5GHz)	02/20/04
HUBER+SUHNER	SUCOFLEX 104	CABLE (1-18GHz)	02/20/04
JYEBAO	LL143	CABLE (1-18GHz)	02/20/04
JYEBAO	LL142	CABLE (1-18GHz)	02/20/04
HP	8566B	EMC ANALYZER (100Hz-22GHz)	06/25/04

## 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

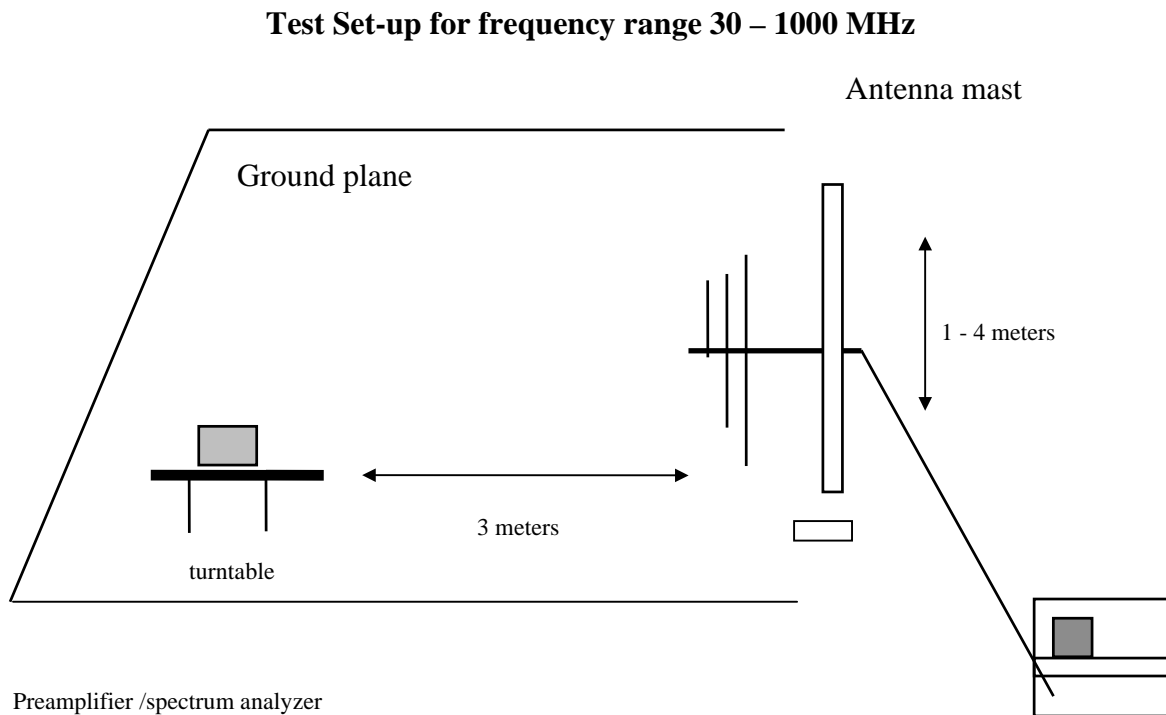
Use a block of foam and combined it with EUT wrapping rubber band around it. This way it can test X.Y, and Z axis. To activate continuous transmission, place a small plastic block between rubber band and EUT push button.



**Radiated Open Site Test Set-up**

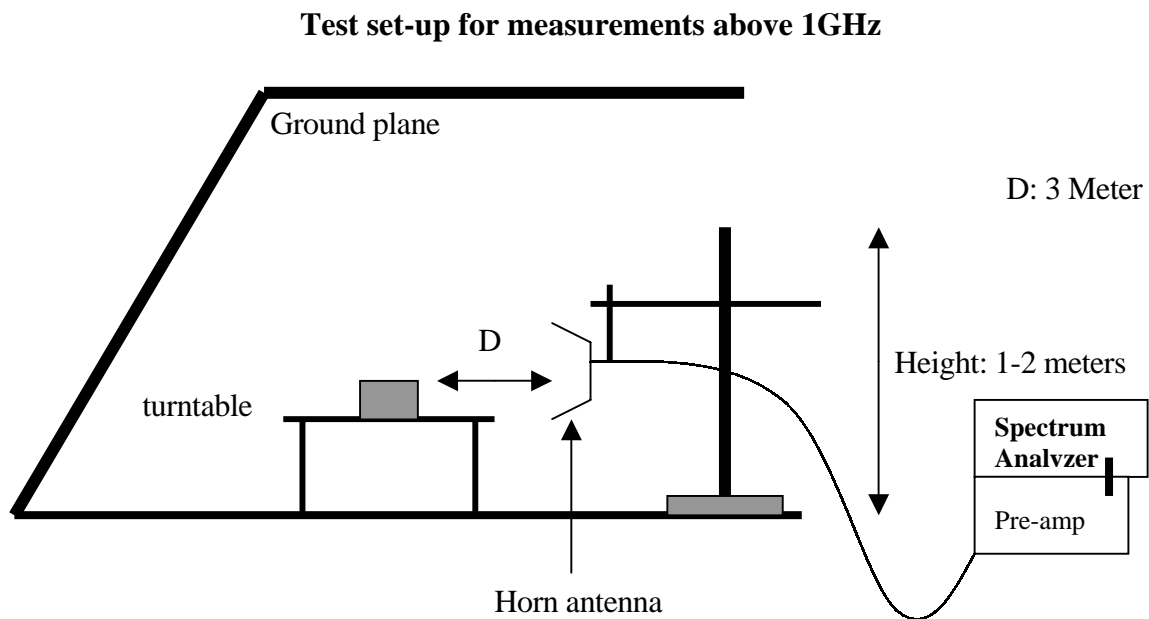
## 10. TEST PROCEDURE

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



**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

Powerline RFI Class B	Eut	Radiated Emission Limits	Eut
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 = 101.6 mS  
Long pulse = 0.23 mS  
Short pulse = 0.09 mS  
No of Long pulse = 11  
No of Short pulse = 42

Duty Cycle = (N1L1+N2L2+...+Nn-1Ln-1+NnLn)/100 or T  
Duty Cycle = [(11x0.23)+(42x0.09)]/100 =0.0631 = 6.31 % or -23.999dB

### 12.2 The Emissions Bandwidth

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

Center Frequency	Measured	Limits
345 MHz	444.0 kHz < (refer to plot)	345 MHzX0.25%=862.5 kHz

Mon 2003 Jul 14 11:08

REF 107.0 dB $\mu$ V

MK $\Delta$  101.6 ms

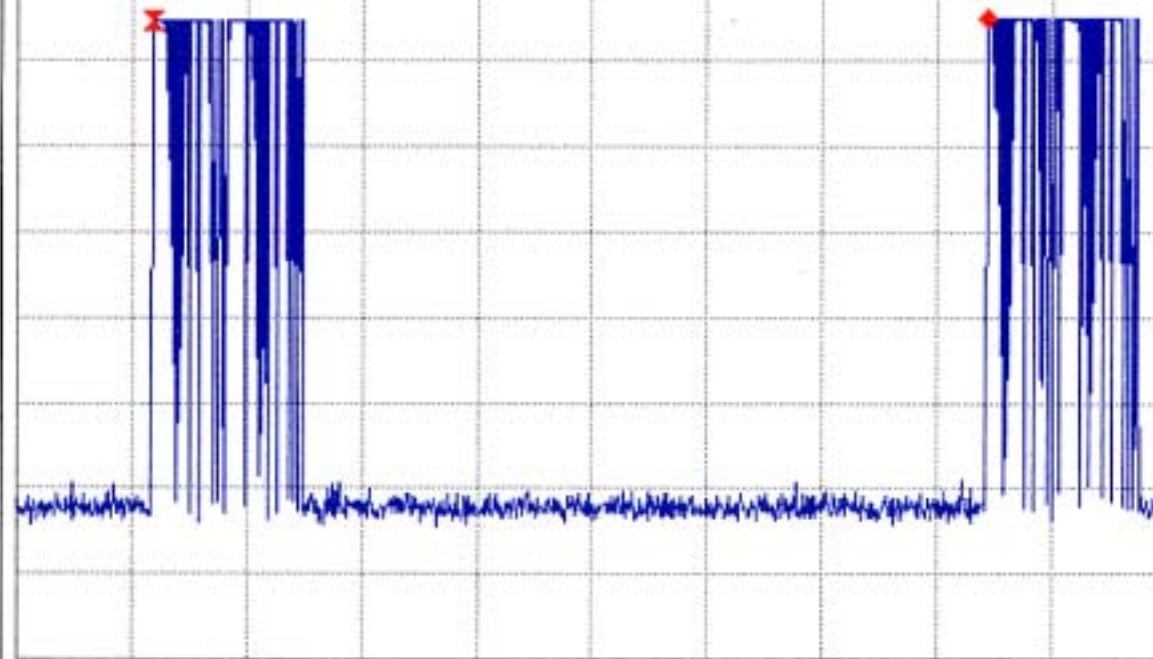
10dB/

A\_Write Posi

B\_Blank Posi

0.02 dB

DELTA MKR  
101.6 ms



CENTER 344.976000 MHz

SPAN 0.000 kHz

\*RBW 100 kHz

\*VBW 100 kHz

\*SWP 140 ms

\*ATT 10dB

Mon 2003 Jul 14 11:29

REF 107.0 dB $\mu$ V

MK $\Delta$  230.0  $\mu$ s

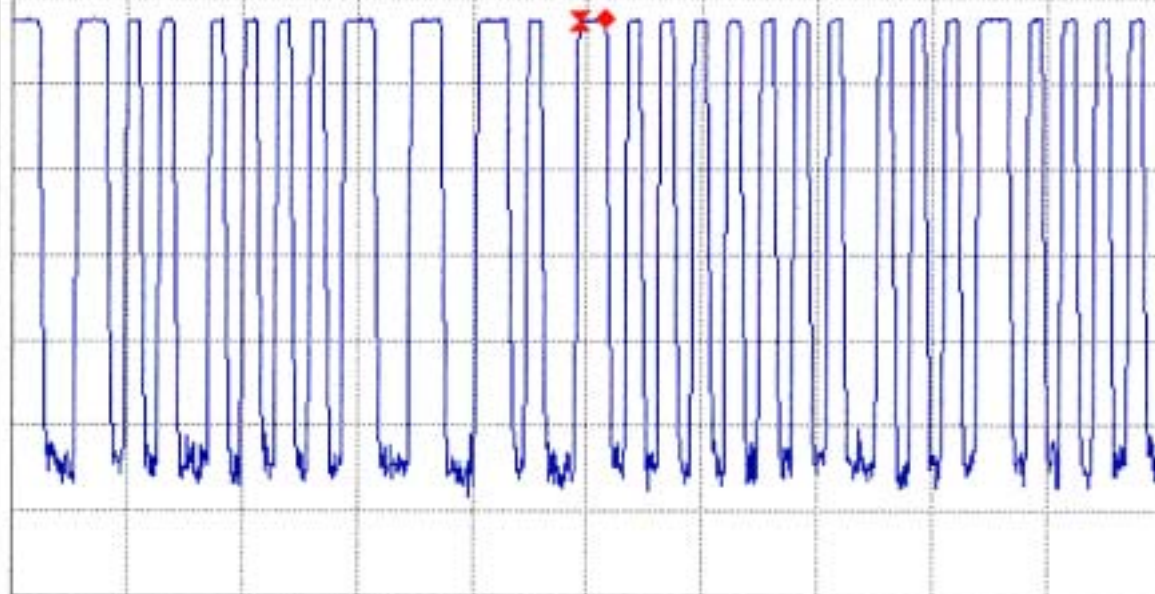
10dB/

A\_Write Posi

B\_Blank Posi

0.15 dB

DELTA MKR  
230.0  $\mu$ s



CENTER 344.980000 MHz

SPAN 0.000 kHz

\*RBW 100 kHz

\*VBW 100 kHz

\*SWP 10 ms

\*ATT 10dB

Mon 2003 Jul 14 11:32

REF 107.0 dB $\mu$ V

MK $\Delta$  90.00  $\mu$ s

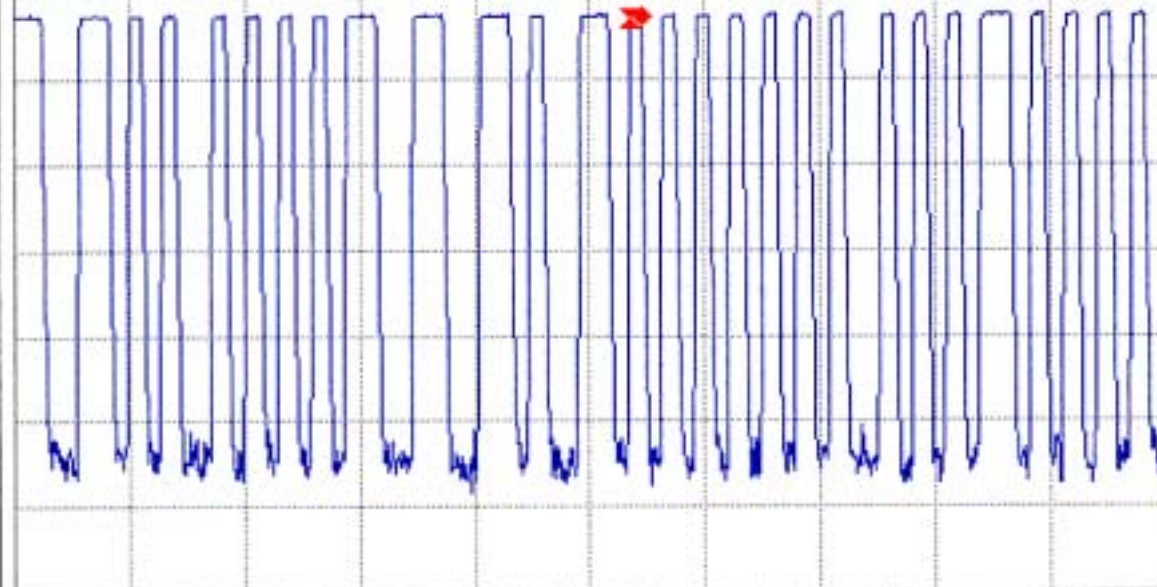
10dB/

A\_Write Posi

B\_Blank Posi

0.42 dB

DELTA MKR  
90.00  $\mu$ s



CENTER 344.980000 MHz

SPAN 0.000 kHz

\*RBW 100 kHz

\*VBW 100 kHz

\*SMP 10 ms

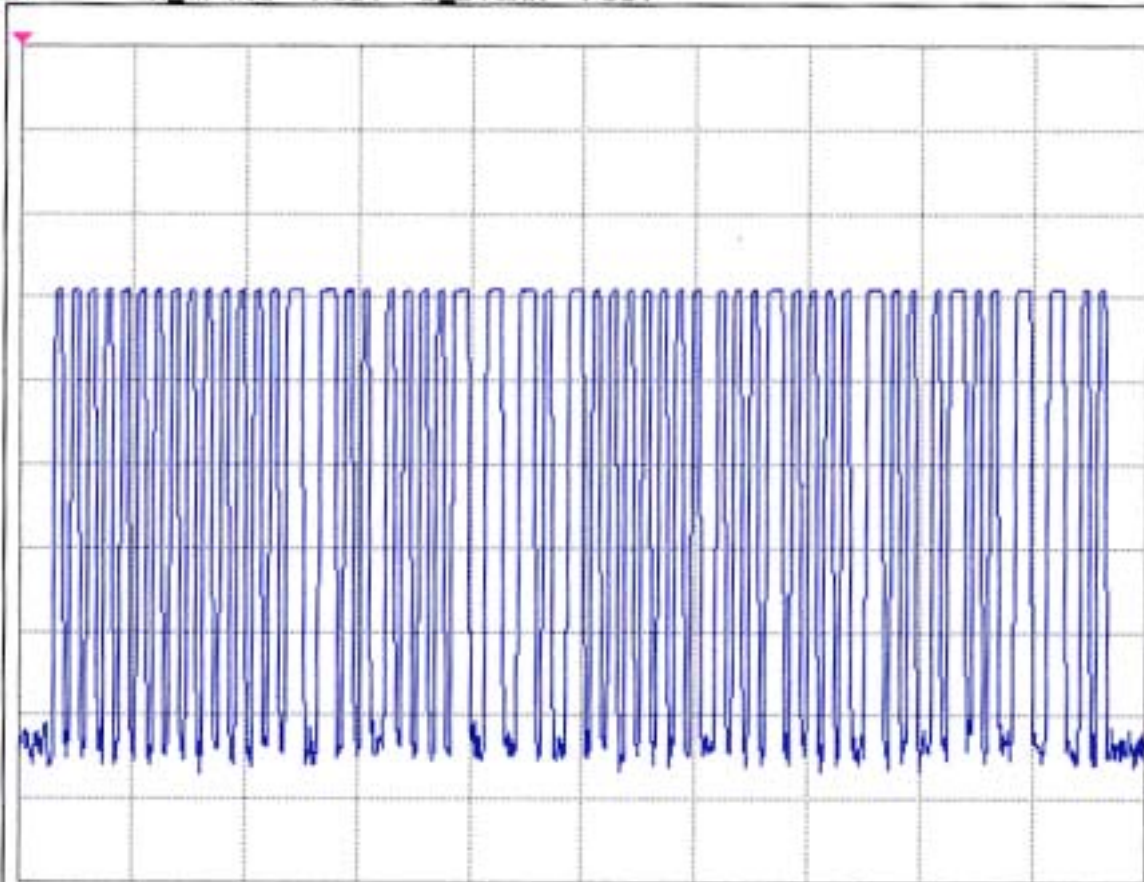
\*ATT 10dB

Mon 2003 Jul 14 11:22

REF 107.0 dB $\mu$ V

10dB/

A\_Write Posi B\_Blank Posi



CENTER 344.980000 MHz

SPAN 0.000 kHz

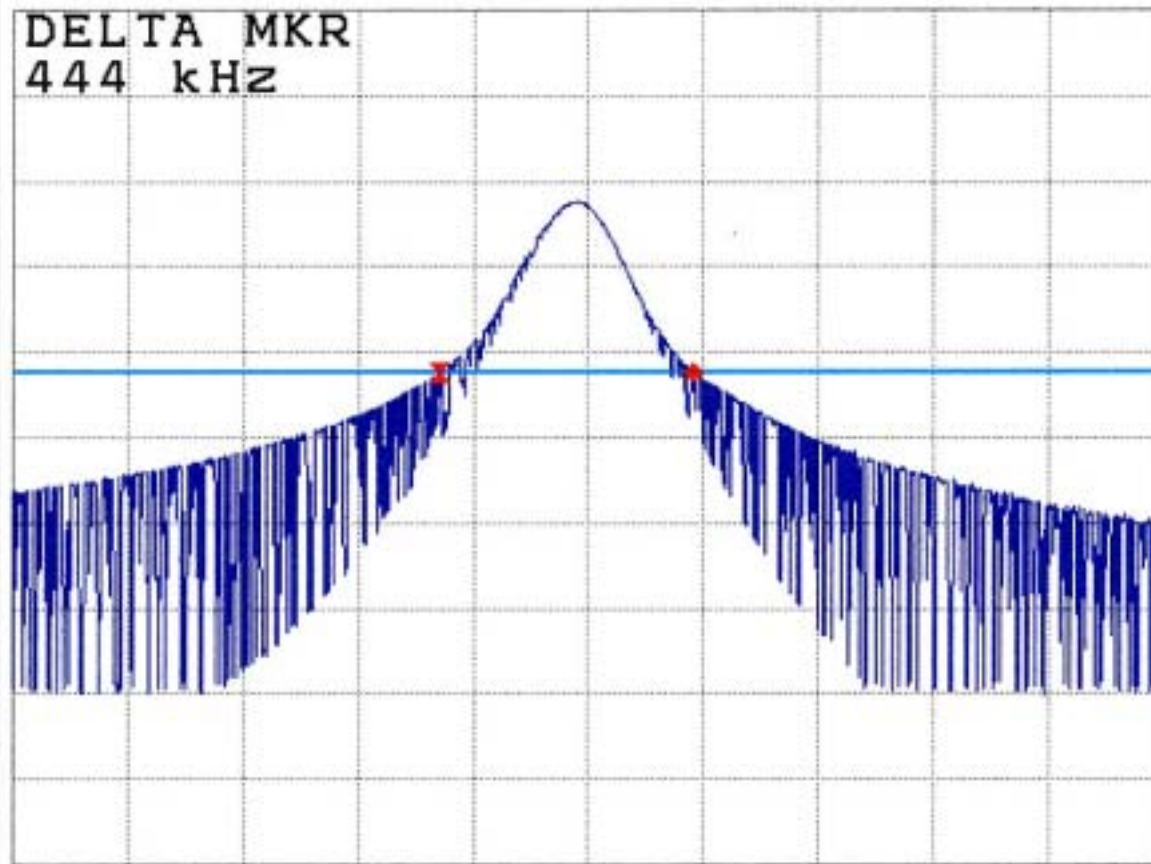
\*RBW 100 kHz \*VBW 100 kHz \*SWP 20 ms \*ATT 10dB



Mon 2003 Jul 14 11:12

REF 107.0 dB $\mu$ V    DL 64.8 dB $\mu$ V    MK $\Delta$  444 kHz  
10dB/    A\_Max    Posi B\_Blank    Posi    0.18 dB

DELTA MKR  
444 kHz



CENTER 345.000 MHz    SPAN 2.000 MHz  
\*RBW 100 kHz    \*VBW 100 kHz    SWP 20 ms    \*ATT 10dB

# C&C Laboratory CO., LTD.

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

No. 163-1, Chung Sheng Road,  
Hsin Tien City, Taipei, Taiwan, R.O.C.  
PHONE: 02-2217-0894 FAX: 02-2217-1029

**Project #:** C30710403  
**Report #:** C30710403-RP  
**Date& Time:** 2003/07/14  
**Test Engr:** JIMMY CHEN

**Company:** Secure Wireless, Inc.  
**EUT Description:** EV-DW345 (Wireless Door/Window Transmitter)  
**Test Configuration :** EUT ONLY  
**Type of Test:** FCC 15.231(b)  
**Mode of Operation:** NORMAL MODE

K-Site

$$M\% = ((t1+t2+t3+...)/T) * 100\% = 6.31 \%$$

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

$$20 * \log(M\%) = -23.999$$

	Freq.	Pk Rdg	Av Rdg	AF/AT	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height
	(MHz)	(dBuV)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)
X	Button #1:											
	345.01	70.38	46.38	25.39	2.66	29.61	44.82	77.26	-32.44	3mV	270	1.10
Y	690.02	52.34	28.34	30.91	4.56	29.25	34.57	57.26	-22.69	3mV	0	1.20
	345.01	79.66	55.66	25.39	2.66	29.61	54.10	77.26	-23.16	3mV	0	1.10
Z	690.03	62.20	38.20	30.91	4.56	29.25	44.43	57.26	-12.83	3mV	180	1.30
	345.01	80.59	56.59	25.39	2.66	29.61	55.03	77.26	-22.23	3mV	90	1.10
	690.01	61.04	37.04	30.91	4.56	29.25	43.27	57.26	-13.99	3mV	90	1.00
X	345.01	85.50	61.50	25.39	2.66	29.61	59.94	77.26	-17.32	3mH	270	1.10
	690.03	58.13	34.13	30.91	4.56	29.25	40.36	57.26	-16.90	3mH	0	1.00
Y	345.02	79.83	55.83	25.39	2.66	29.61	54.27	77.26	-22.99	3mH	0	1.10
	690.03	60.38	36.38	30.91	4.56	29.25	42.61	57.26	-14.65	3mH	180	1.10
Z	345.01	78.83	54.83	25.39	2.66	29.61	53.27	77.26	-23.99	3mH	270	1.20
	690.03	52.55	28.55	30.91	4.56	29.25	34.78	57.26	-22.48	3mH	0	1.40

AF/AT=AF+10dB(ATTENUATOR)  
Peak: RBW= 100KHz  
VBW= 100KHz  
A(Average): Pk Reading - 23.999dB

Total Data #12

# C&C Laboratory CO., LTD.

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

No. 163-1, Chung Sheng Road,  
Hsin Tien City, Taipei, Taiwan, R.O.C.  
PHONE: 02-2217-0894 FAX: 02-2217-1029

**Project #:** C30710403  
**Report #:** C30710403-RP  
**Date & Time:** 2003/07/14  
**Test Engr:** JIMMY CHEN

**Company:**  
**EUT Description:**  
**Test Configuration :**  
**Type of Test:**  
**Mode of Operation:**

Secure Wireless, Inc.

EV-DW345 (Wireless Door/Window Transmitter)

EUT ONLY

FCC 15.231(b)

NORMAL MODE

☒ K-Site

Freq.	Pk Rdg	Av Rdg	AF	Closs	Pre-amp	Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
1035	63.90	39.90	24.59	4.20	31.48	37.21	54.00	-16.79	3mV	270	1.1	A
1380	56.80	32.80	25.36	4.91	32.20	30.87	54.00	-23.13	3mV	90	1.0	A
1725	46.40	22.40	26.39	5.57	32.75	21.61	57.26	-35.65	3mV	0	1.2	A
2070	44.50	20.50	27.49	6.15	33.13	21.01	57.26	-36.25	3mV	180	1.2	A
2415	47.70	23.70	28.41	6.52	33.21	25.42	57.26	-31.84	3mV	270	1.0	A
2760	46.80	22.80	29.35	7.01	33.12	26.04	54.00	-27.96	3mV	270	1.0	A
3105	45.90	21.90	30.26	7.56	33.01	26.71	57.26	-30.55	3mV	90	1.4	A
3450	46.20	22.20	31.10	8.15	32.97	28.48	57.26	-28.78	3mV	180	1.5	A
1035	53.80	29.80	24.59	4.21	31.49	27.11	54.00	-26.89	3mH	90	1.5	A
1381	55.50	31.50	25.36	4.91	32.20	29.57	54.00	-24.43	3mH	0	1.0	A
1725	46.50	22.50	26.39	5.57	32.75	21.71	57.26	-35.55	3mH	180	1.1	A
2070	47.10	23.10	27.49	6.15	33.13	23.61	57.26	-33.65	3mH	0	1.5	A
2415	46.60	22.60	28.41	6.52	33.21	24.32	57.26	-32.94	3mH	180	1.0	A
2760	46.90	22.90	29.35	7.01	33.12	26.14	54.00	-27.86	3mH	90	1.3	A
3105	46.10	22.10	30.26	7.56	33.01	26.91	57.26	-30.35	3mH	180	1.1	A
3450	46.50	22.50	31.10	8.15	32.97	28.78	57.26	-28.48	3mH	270	1.2	A

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

Total data #16  
V.2d

P(Peak): RBW=VBW=1MHz  
A(Average): Pk Reading -23.999dB