



**FCC CFR47 PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 7  
CERTIFICATION TEST REPORT**

**FOR**

**VANISHING DOOR/WINDOW SENSOR**

**MODEL NUMBER: EV-DWV2**

**FCCID: QNPEV-DWV2  
IC: 4676A-EVDWV2**

**REPORT NUMBER: 08U11882-1**

**ISSUE DATE: JUNE 16, 2008**

*Prepared for*

**SECURE WIRELESS, INC.  
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*Prepared by*

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**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Issue Date	Revisions	Revised By
---	06/16/08	Initial Issue	T. C.

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SECURE WIRELES SYSTEMS INC  
5817 DRYDEN PLACE, SUITE D  
CARLSBAD, CA 92008 U.S.A.

**EUT DESCRIPTION:** VANISHING DOOR/WINDOW SENSOR

**MODEL:** EV-DWV2

**SERIAL NUMBER:** 02182

**DATE TESTED:** JUNE 13, 2008

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	PASS
RSS-210 ISSUE 7	PASS

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:



THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

Tested By:



TOM CHEN  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15, IC RSS-210 and IC RSS-212.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

<b>Equipment Type</b>	433.92MHz Transmitter
<b>Fundamental Frequency</b>	433.92 MHz
<b>Power Source</b>	Lithium Battery 3V, Type CR2032
<b>Transmitting Time</b>	Periodic $\leq 5$ seconds
<b>Manufacturer</b>	Secure Wireless, Inc.

### 5.2. SOFTWARE AND FIRMWARE

EUT is modified to transmit continuously.

### 5.3. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined by X, Y, and Z-axis. The highest measured output power was at X-Axis.

## **5.4. DESCRIPTION OF TEST SETUP**

### **SUPPORT EQUIPMENT**

N/A

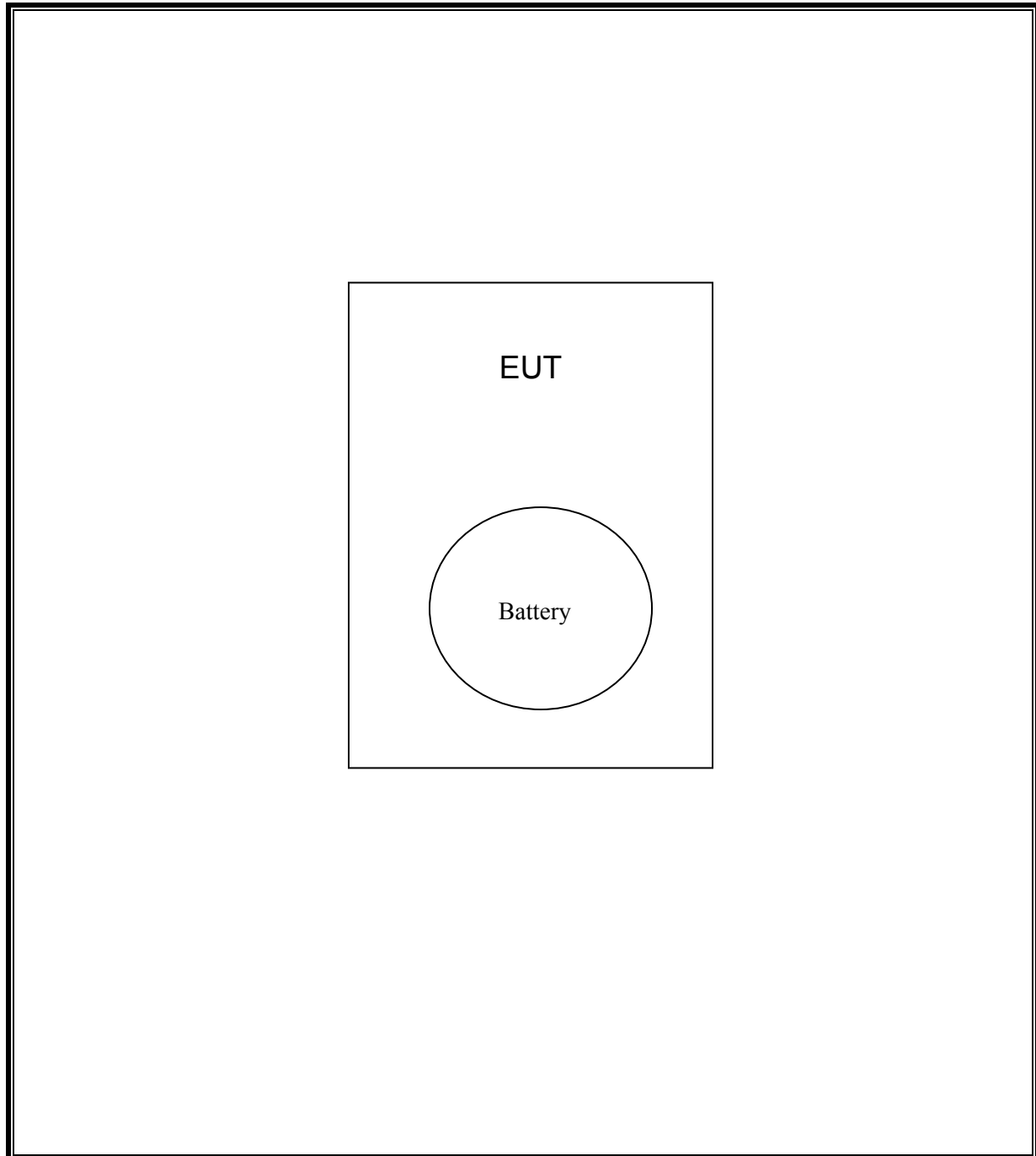
### **I/O CABLES**

N/A

### **TEST SETUP**

The EUT is stand-alone unit and is battery operated.

**SETUP DIAGRAM FOR TESTS**





## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
Antenna, Horn, 18 GHz	ETS	3117	C01005	04/22/08	04/22/09
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	05/02/06	08/07/08
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	C01052	08/03/07	08/03/08
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	09/28/07	09/28/08
Preamp, 1000MHz	Sonoma	310N	N02891	03/31/08	03/31/09

## 7. LIMITS AND RESULTS

### 7.1. 20dB & 99% BANDWIDTHS

#### LIMIT

§15.231 (c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC RSS-210 Issue 6 A1.1.3 For the purpose of Section A1.1, the 99% bandwidth shall be no wider than 0.25% of the centre frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the centre frequency. The test report shall indicate the measured bandwidth of the emission.

#### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 100 KHz. The VBW is set to 100 KHz. The sweep time is coupled. Bandwidth is determined at the points 20 dB down from the modulated carrier.

99% Bandwidth: The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

#### RESULTS

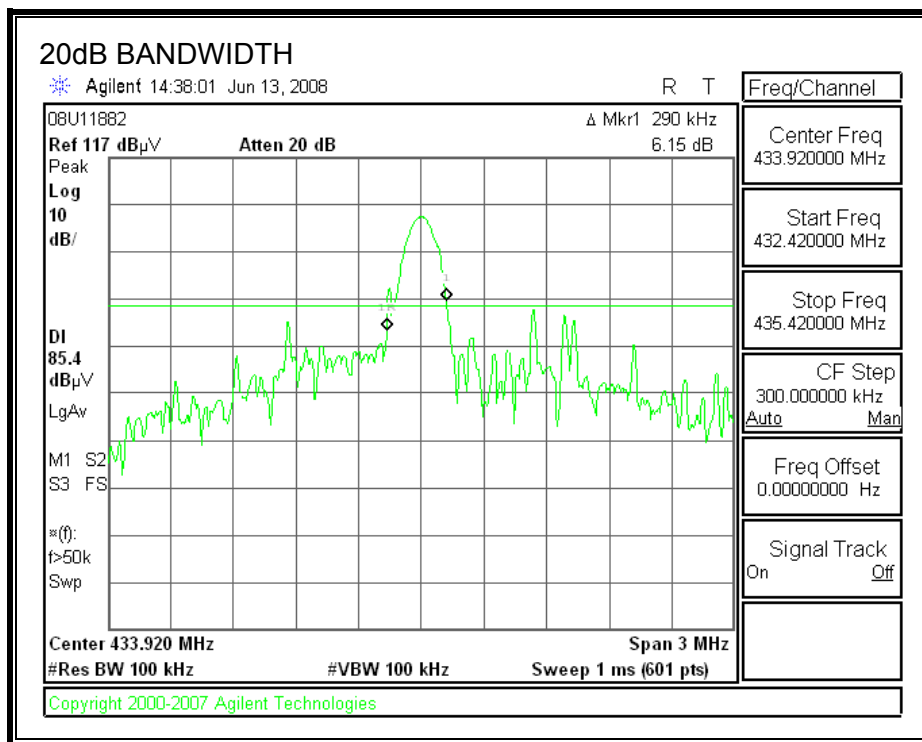
##### 20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (KHz)	Limit (KHz)	Margin (KHz)
433.92	290	1084.8	-794.8

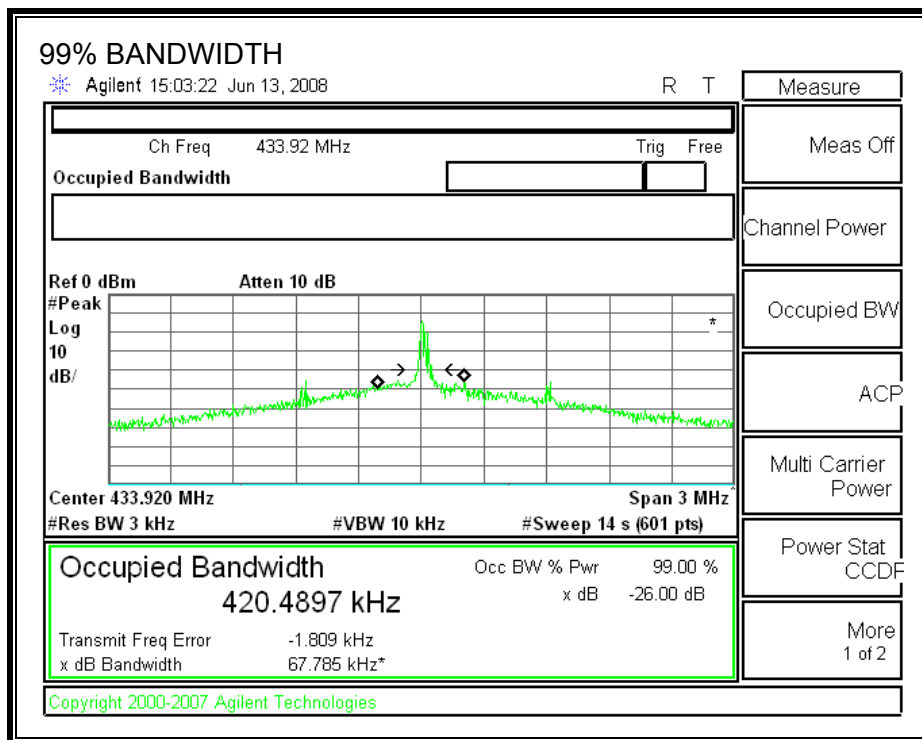
##### 99% Bandwidth

Frequency (MHz)	99% Bandwidth (KHz)	Limit (KHz)	Margin (KHz)
433.92	420.5	1084.8	-664.3

## 20dB BANDWIDTH



# **99% BANDWIDTH**



## 7.2. MAXIMUM MODULATION PERCENTAGE (M%)

### LIMIT

§15.35 (c)

IC RSS-Gen Issue 1 §4.3 When the field strength (or envelope power) is not constant or when it is in pulses, and an averaging detector is specified to be used, the current or voltage over one complete pulse train, including blanking intervals, shall be averaged as long as the pulse train does not exceed 0.1 second. Where the pulse train exceeds 0.1 second, the average value (of field strength or output power) shall be determined over the 0.1 second interval during which the field strength is at its maximum.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled and the span is set to 0 Hz. The number of pulses is measured and calculated in a 100 ms scan.

### CALCULATION:

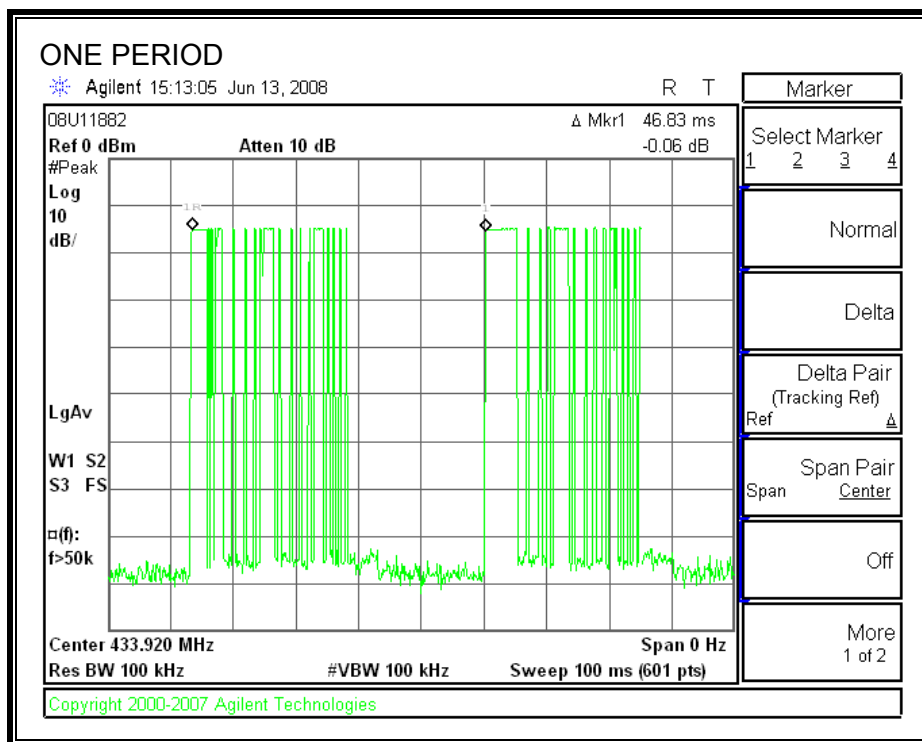
Average Reading = Peak Reading (dBuV/m) +  $20\log$  (Duty Cycle), Where Duty Cycle is  $(\# \text{ of long pulses} * \text{long pulse width}) + (\# \text{ of short pulses} * \text{short pulse width}) / 100$  or T

### RESULTS

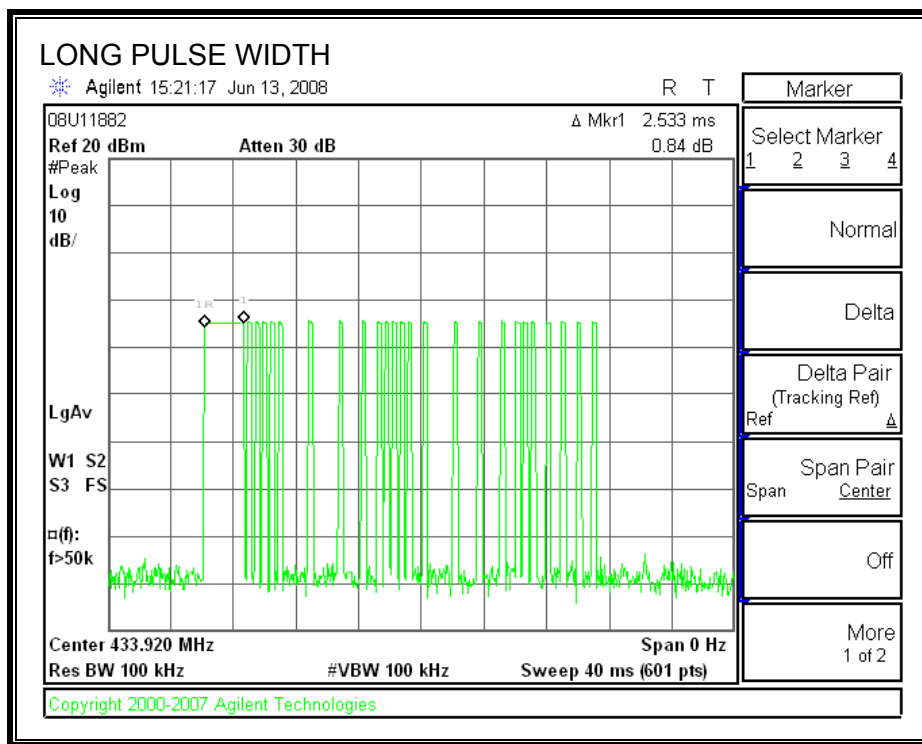
#### MAXIMUM MODULATION PERCENTAGE

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
46.83	2.533	1	0.23	24	0.169	-15.42

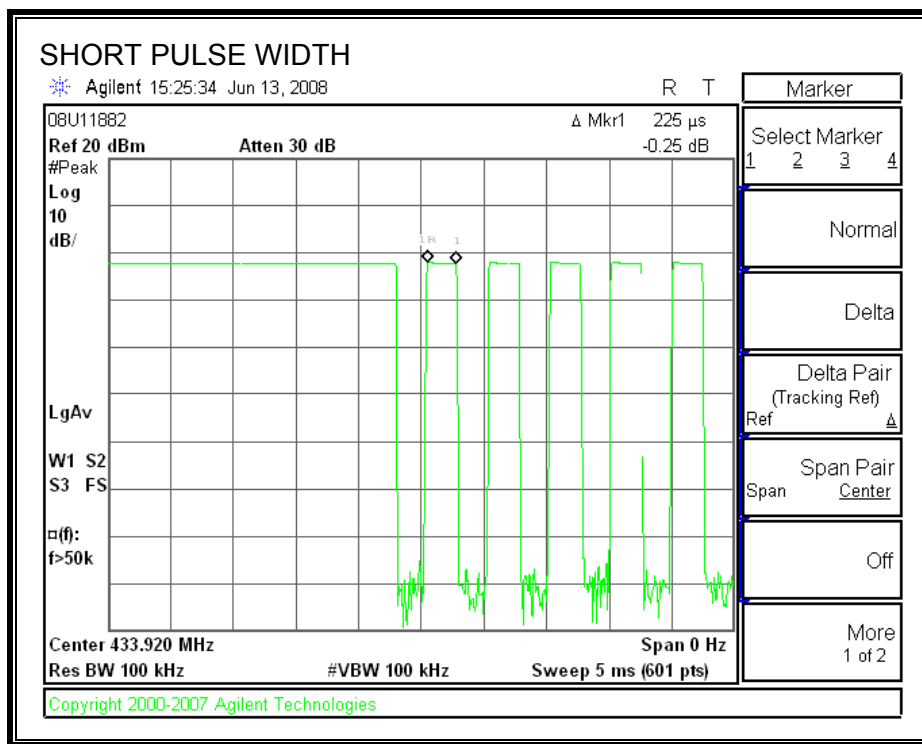
ONE PERIOD



## LONG PULSE WIDTH



## SHORT PULSE WIDTH





### **7.3. LESS THAN 5 SECONDS PLOT**

#### **LIMIT**

§15.231 (a) (1); (a) (2)

RSS210 A1.1.1 (1) A manually operated transmitter shall employ a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds is permitted).

#### **TEST PROCEDURE**

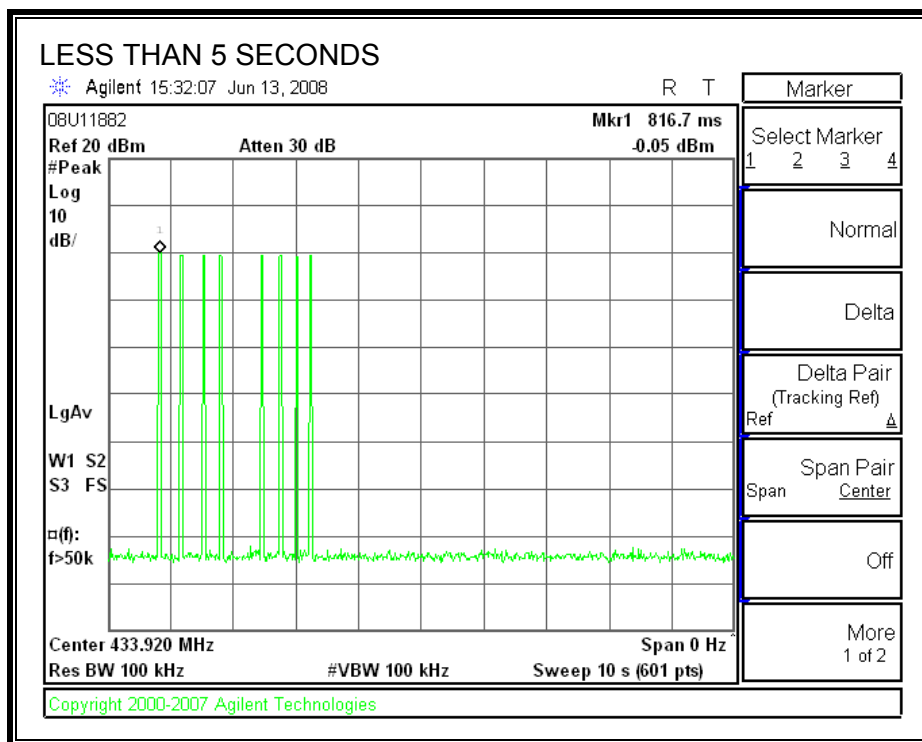
The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

#### **RESULTS**

No non-compliance noted:

Transmission begins approximately 1.00 seconds after activation and transmission ceases approximately 3.45 seconds after activation.

## LESS THAN 5 SECONDS



## 7.4. RADIATED EMISSIONS

### 7.4.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

#### LIMITS

§15.231 (b) In addition to the provisions of § 15.205, the field strength of emissions from Intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Frequency (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 <sup>1</sup>	125 to 375 <sup>1</sup>
174 - 260	3,750	375
260 - 470	3,750 to 12,500 <sup>1</sup>	375 to 1,250 <sup>1</sup>
Above 470	12,500	1,250

<sup>1</sup> Linear interpolation

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(2)
13.36 - 13.41	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

RSS210 Table 4 same as limits FCC applied above.

### **TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions

as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

**FUNDAMENTAL, HARMONICS AND SPURIOUS EMISSIONS 30 – 1000 MHz**

**30 - 1000MHz Substitution Measurement**  
**Compliance Certification Services, Fremont 5m A-Chamber**

*Project #:* 08U11882  
*Report #:* 08U11882-1  
*Date & Time:* 06/13/08  
*Test Engr:* Tom Chen

*Company:* Secure Wireless, Inc.  
*EUT Description:* Vanishing2 Door/window sensor operates in 433.92MHz  
*Test Configuration :* EUT stand alone  
*Type of Test:* FCC 15.231b  
*Mode of Operation:* Transmitting

$$M\% = ((t1+t2+t3+...)/T) * 66.83\% = 16.90\%$$

$$\begin{aligned} \text{Av Reading} &= \text{Pk Reading} + 20 \cdot \log(M\%) \\ 20 \cdot \log(M\%) &= -15.44 \end{aligned}$$

Freq. (MHz)	Pk Rdg (dBuV)	Av Rdg (dBuV)	AF (dB)	Closs 0	Pre-amp (dB)	Pk Level (dBuV/m)	Av Level (dBuV/m)	Pk Limit FCC_B	Av Limit FCC_B	Pk Margin (dB)	Avg Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)
433.92MHz Fundamental frequency														
X-Position ( EUT Lay down ) Worst Position														
433.92	45.90	30.46	17.00	1.82	0.00	64.72	49.28	100.83	80.83	-36.11	-31.55	V	0.00	2.25
433.92	69.60	54.16	17.00	1.82	0.00	88.42	72.98	100.83	80.83	-12.41	-7.85	H	0.00	1.00
Y-Position ( EUT Standup )														
433.92	68.60	53.16	17.00	1.82	0.00	87.42	71.98	100.83	80.83	-13.41	-8.85	V	0.00	1.30
433.92	61.90	46.46	17.00	1.82	0.00	80.72	65.28	100.83	80.83	-20.11	-15.55	H	0.00	1.48
Z-Position														
433.92	66.90	51.46	17.00	1.82	0.00	85.72	70.28	100.83	80.83	-15.11	-10.55	V	0.00	2.25
433.92	50.10	34.66	17.00	1.82	0.00	68.92	53.48	100.83	80.83	-31.91	-27.35	H	0.00	1.00
The Data shows that X-Position is the worst case														
867.84	49.30	29.30	22.39	3.37	27.20	47.86	27.86	80.825	60.825	-32.97	-32.97	V	0.00	1.30
867.84	56.30	36.30	22.39	3.37	27.20	54.86	34.86	80.825	60.825	-25.97	-25.97	H	0.00	1.48

# HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

High Frequency Measurement																
Compliance Certification Services, Fremont 5m Chamber																
Company: Secure Wireless, Inc.																
Project #: 08U11882																
Date: 06-13-2008																
Test Engineer: Tom Chen																
Configuration: EUT Only																
Mode: Continuous Transmit																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T120; S/N: 29310 @3m			T144 Miteq 3008A00931									FCC 15.209				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz	
						A-5m Chamber										
f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Ftr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
1.302	3.0	57.3	41.0	29.0	3.4	-39.1	0.0	0.0	50.6	34.3	74	54	-23.4	-19.7	V	
1.736	3.0	49.2	35.1	30.6	4.0	-38.4	0.0	0.0	45.3	31.2	74	54	-28.7	-22.8	V	
2.170	3.0	53.1	39.1	31.6	4.5	-37.8	0.0	0.0	51.4	37.4	74	54	-22.6	-16.6	V	
2.604	3.0	55.4	41.4	32.0	5.0	-37.4	0.0	0.0	55.0	41.0	74	54	-19.0	-13.0	V	
3.037	3.0	50.9	36.9	32.8	5.4	-37.3	0.0	0.0	51.8	37.8	74	54	-22.2	-16.2	V	
3.471	3.0	47.9	33.9	32.9	5.7	-37.0	0.0	0.0	49.5	35.5	74	54	-24.5	-18.5	V	
3.905	3.0	51.7	37.7	32.9	6.1	-36.7	0.0	0.0	54.0	40.0	74	54	-20.0	-14.0	V	
4.339	3.0	45.4	31.4	33.2	6.5	-36.5	0.0	0.0	48.6	34.6	74	54	-25.4	-19.4	V	
1.302	3.0	54.2	40.2	29.0	3.4	-39.1	0.0	0.0	47.5	33.5	74	54	-26.5	-20.5	H	
1.736	3.0	49.4	35.4	30.6	4.0	-38.4	0.0	0.0	45.5	31.5	74	54	-28.5	-22.5	H	
2.170	3.0	46.1	32.1	31.6	4.5	-37.8	0.0	0.0	44.4	30.4	74	54	-29.6	-23.6	H	
2.604	3.0	57.3	43.3	32.0	5.0	-37.4	0.0	0.0	56.9	42.9	74	54	-17.1	-11.1	H	
3.037	3.0	47.5	33.5	32.8	5.4	-37.3	0.0	0.0	48.4	34.4	74	54	-25.6	-19.6	H	
3.471	3.0	50.0	36.0	32.9	5.7	-37.0	0.0	0.0	51.6	37.6	74	54	-22.4	-16.4	H	
3.905	3.0	52.7	38.7	32.9	6.1	-36.7	0.0	0.0	55.0	41.0	74	54	-19.0	-13.0	H	
4.339	3.0	47.1	33.1	33.2	6.5	-36.5	0.0	0.0	50.3	36.3	74	54	-23.7	-17.7	H	
Rev. 4127																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

#### **7.4.2. RECEIVER SPURIOUS EMISSIONS LIMIT**

Not applicable, this EUT is transmitter only.