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Job Number:	11U13641
Project Number:	SR7342936-T001
Date:	2011-02-17
Revision Date:	2011-04-18
Model:	SW-NAP-SDW
FCC ID:	QNP-SDW319

Electromagnetic Compatibility Test Report

For

Secure Wireless, Inc

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Job Number: 11U13641
Model Number: SW-NAP-SDW
Client Name: Secure Wireless, Inc
FCC ID: QNP-SDW319

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Test Report Details

Tests Performed By: **Underwriters Laboratories Inc.
1285 Walt Whitman Rd.
Melville, NY 11747**

Tests Performed For: **Secure Wireless, Inc
5817 Dryden Place, Suite D
Carlsbad, CA 92008**

Applicant Contact: **Jay Stone**
Phone: **(866) 966-9473**
E-mail: **jay@mysecurewireless.com**

Test Report Date: **2011-02-17**
Test Report Revision Date: **2011-04-18**

Product Type: **Door Window Sensor**

Product standards **FCC Part 15, Subpart C, 15.231, RSS-GEN, Issue 3, RSS-210,
Issue 8**

Model Number: **SW-NAP-SDW**

Sample Serial Number: **Non-serialized production unit**

EUT Category: **Periodic Low Power Transmitter**

Testing Start Date: **2011-02-05**

Date Testing Complete: **2011-02-15**

Overall Results: Compliant

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Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None	Original	-	-
2011-04-15	Updated Equipment description	B. DeLisi	M. Antola

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The SW-NAP-SDW is a door window sensor for security use.

Per FCC Part 2.1093 (C) this device is not required to undergo testing for radio-frequency radiation exposure.

Antenna description: Permanently attached internal loop on the RF circuit board.

The transmissions are triggered by the placement or removal of a magnet which operates an internal switch. The device does transmit at predetermined intervals. According to the applicant, a single transmission occurs every 70 minutes. A single transmission on time is less than 2 seconds in duration. A single transmission can be seen in Figure 4 of this report.

1.2 Equipment Marking Plate

Not available at time of test.

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1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Door Window Sensor	Secure Wireless, Inc	SW-NAP-SDW	None
Note: EUT - Equipment Under Test, AE - Auxiliary/Associated Equipment, or SIM - Simulator (Not Subjected to Test)				

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	Batt	NA	NA	3V Lithium batteries
Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port (Not Involved in Process Control) Batt = Battery TP = Telecommunication Ports					

1.3.3 EUT Internal Operating Frequencies:

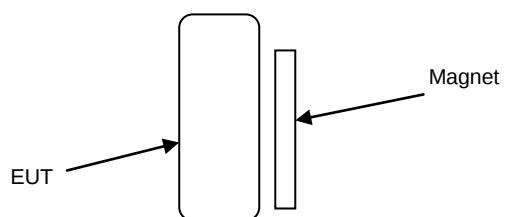
Frequency (MHz)	Description
9.984375	Crystal
319.5	Transmit frequency

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	3	-	-	DC	-	3Vdc Lithium Battery

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



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1.5 EUT Configurations

Mode #	Description
1	Stand-alone

1.6 EUT Operation Modes

Mode #	Description
1	Continuously transmitting
2	Transmitting on magnet trigger

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2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

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2.3 Reference Standards

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C, 15.231	Code of Federal Regulations, Part 15, Radio Frequency Devices	2011
RSS-GEN, Issue 3	General Requirements and Information for the Certification of Radiocommunication Equipment	2010
RSS-210, Issue 8	Low-power License-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	2010

2.4 Results Summary

This product is considered a Periodic Operating Transmitter

Requirement – Test	Result (Compliant / Non-Compliant)*
Cease Operation	Compliant
Radiated Emissions	Compliant
Occupied Bandwidth	Compliant
Pulse Train - Averaging Factor	Compliant

Test Engineer:

Reviewer:



Bob DeLisi (Ext.22452)
Senior Staff Engineer
International EMC Services
Conformity Assessment Services-

Michael Antola (Ext. 23053)
Senior Project Engineer
International EMC Services
Conformity Assessment Services

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

----- North America -----

Code of Federal Regulations Title 47	Part 15, Subpart C, Radio Frequency Devices
Industry Canada	RSS-GEN, RSS-210

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150
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Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)

Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)

Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.1 Test Conditions and Results – Occupied Bandwidth

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.	
Basic Standard		FCC Part 15, 15.215
Occupied Bandwidth Limits		
0.25% Fo		

Table 1 Occupied Bandwidth Configuration Settings

Power Interface Mode	EUT Configurations Mode	EUT Operation Mode
1	1	2
Supplementary information: None		

Table 2 Occupied Bandwidth Spectrum Analyzer Settings

Resolution Bandwidth (MHz)	Occupied Bandwidth Requirements	
	dBc	%
0.010	-20	99
Supplementary information: None		

Table 3 Occupied Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2011-01-27	2012-01-27
Dipole Antenna	EMCO	3121C	3359	2010-12-08	2011-12-08
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2010-03-08	2012-03-08

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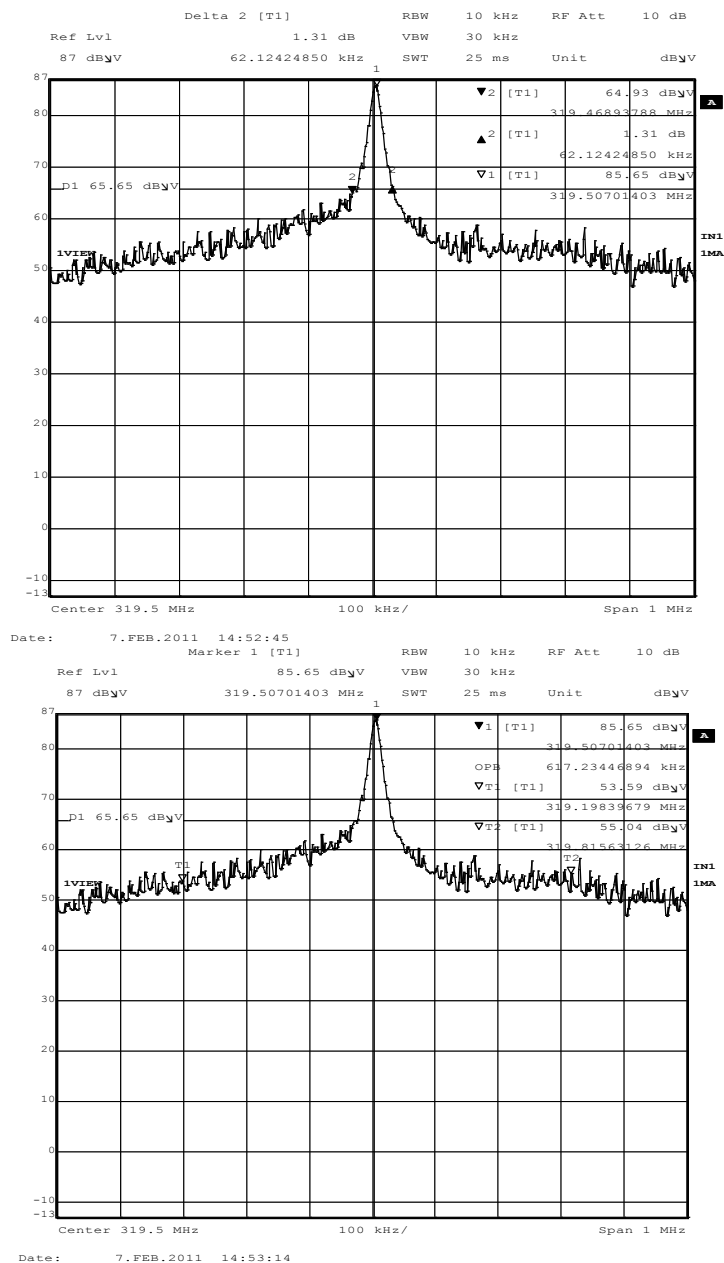
Figure 1 Test Setup for Occupied Bandwidth



Table 4 Occupied Bandwidth Results

Power Mode	Frequency (MHz)	20dB OBW (kHz)	99% OBW (kHz)	Limit (MHz)	Result
Battery	319.5	62.12	617.23	0.799	Pass

Figure 2 Occupied Bandwidth Graph



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4.2 Test Conditions and Results – Cease Operation

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the transmission time measured with the spectrum analyzer set to zero span at the fundamental frequency.
Basic Standard	FCC Part 15, 15.215
Cease Operation Limits	
The transmissions shall stop within 5 seconds of either a button being released or if automatically controlled transmissions shall be stopped 5 seconds after transmissions begin.	

Table 5 Cease Operation Configuration Settings

Power Interface Mode	EUT Configurations Mode	EUT Operation Mode
1	1	2
Supplementary information: None		

Table 6 Cease Operation Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2011-01-27	2012-01-27
Dipole Antenna	EMCO	3121C	3359	2010-12-08	2011-12-08
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2010-03-08	2012-03-08

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Figure 3 Test Setup for Cease Operation

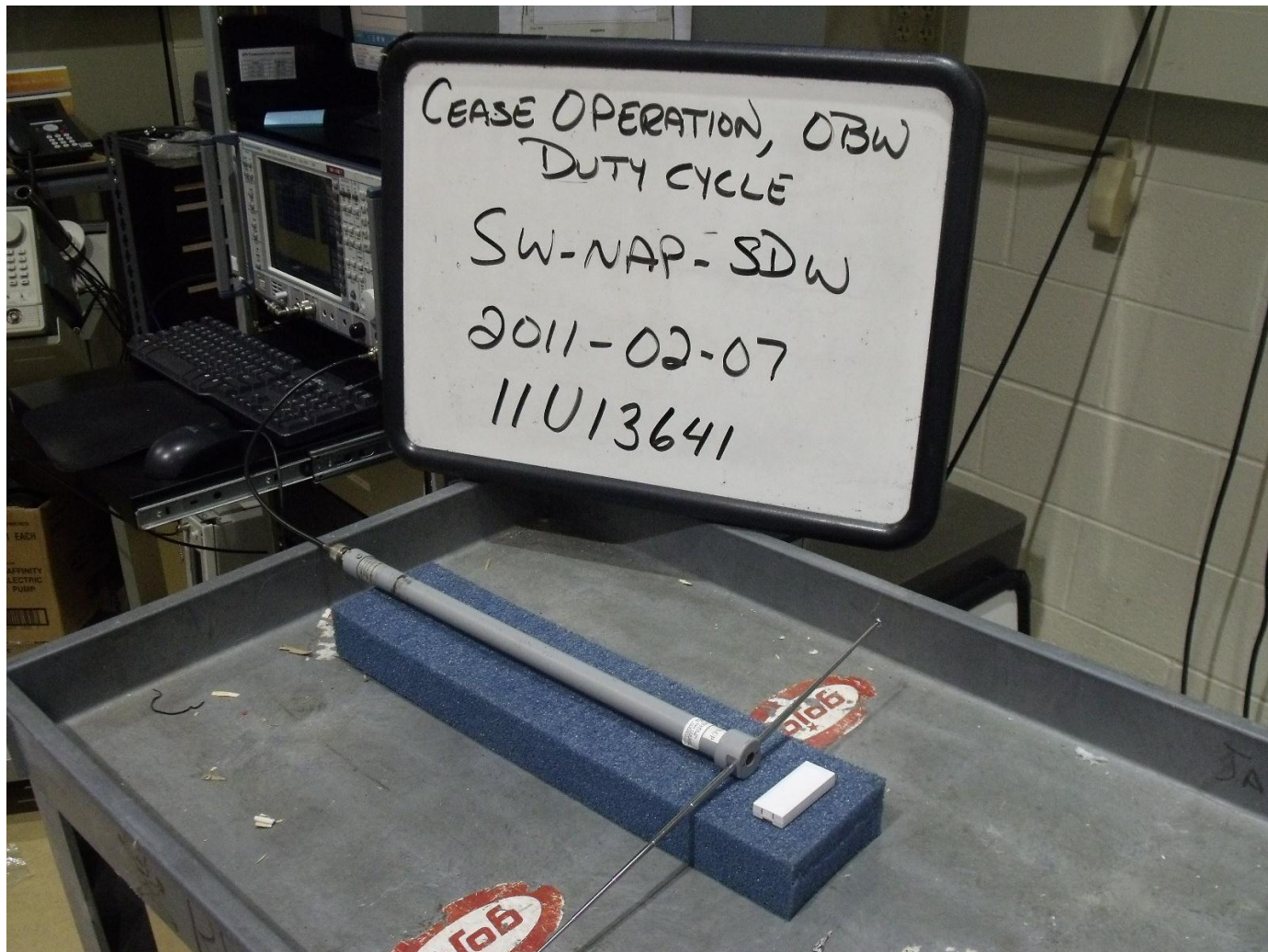
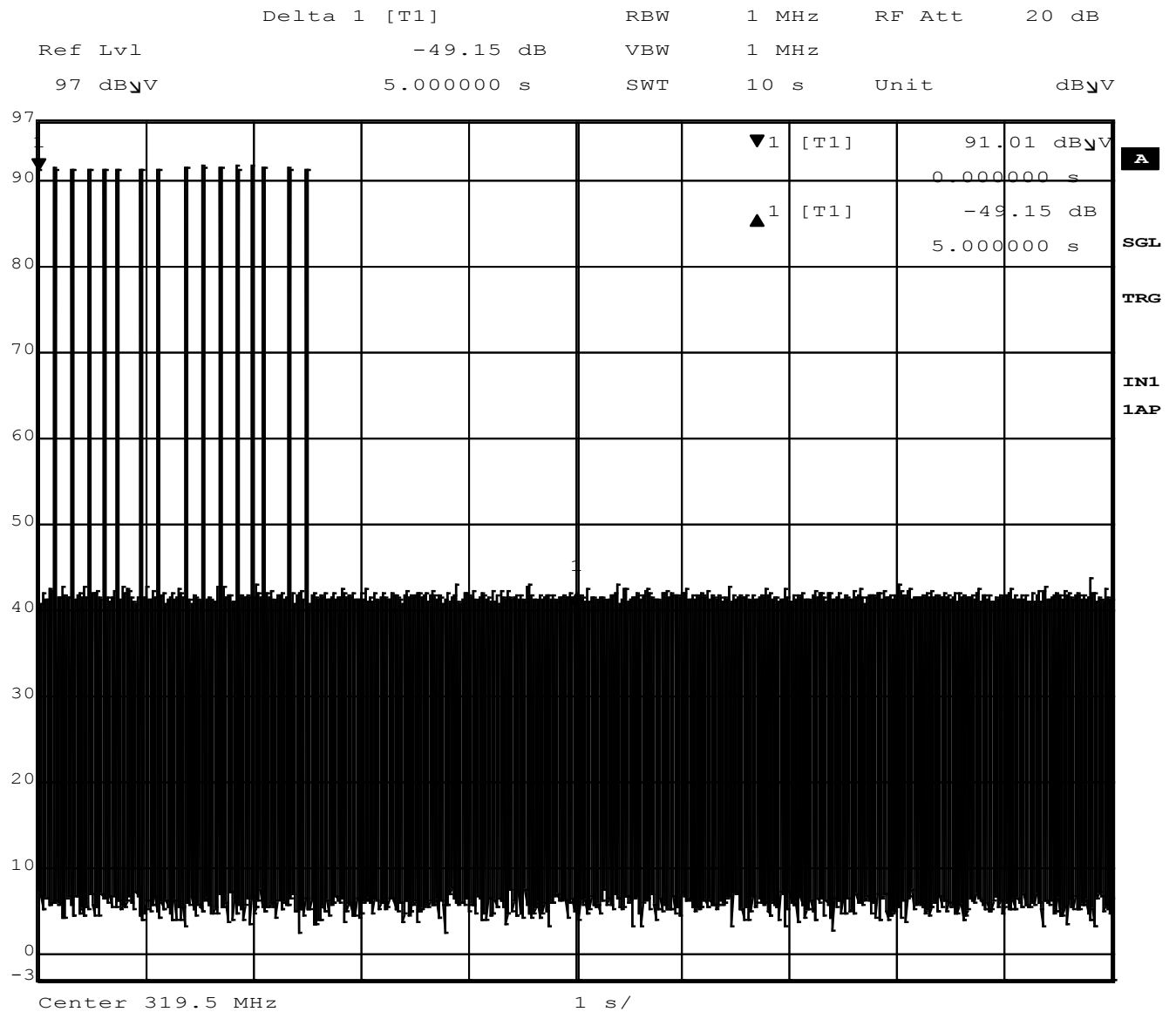


Figure 4 Cease Operation Graph



Date: 7.FEB.2011 14:59:53

4.3 Test Conditions and Results – Pulse Train

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The pulse train was measured with the spectrum analyzer set to zero span at the fundamental frequency.		
Basic Standard		FCC Part 15 Subpart A, 15.35	
Pulse Train Limits			
There are no limits for this test. This data is used to calculate the averaging correction factor that is applied to the measured peak radiated emissions results.			

Table 7 Pulse Train Configuration Settings

Power Interface Mode	EUT Configurations Mode	EUT Operation Mode
1	1	2
Supplementary information: None		

Table 8 Pulse Train Calculation

Pulse Width (mS)	Total Transmission time or 100ms which ever is lesser	Average Correction Factor (dB) $20 \log \left(\frac{PulseWidth}{TotalTransmissionTime} \right)$
$31 \times 0.120 = 3.72$ $14 \times 0.281 = 3.934$ $3.72 + 2.934 = 7.654$	100	-22.3

Table 9 Pulse Train Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2011-01-27	2012-01-27
Dipole Antenna	EMCO	3121C	3359	2010-12-08	2011-12-08
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43734	2010-03-08	2012-03-08

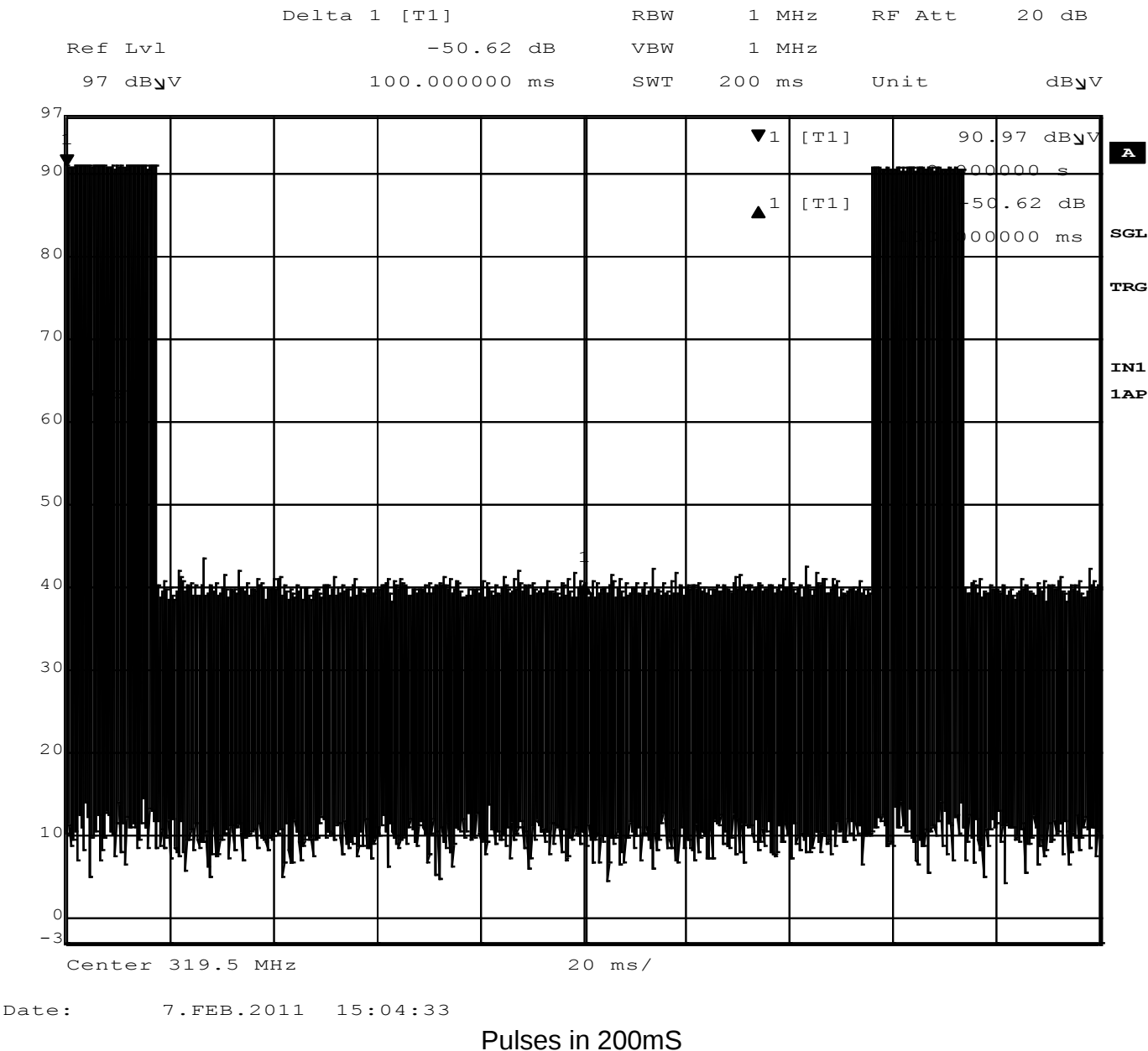
Job Number: 11U13641
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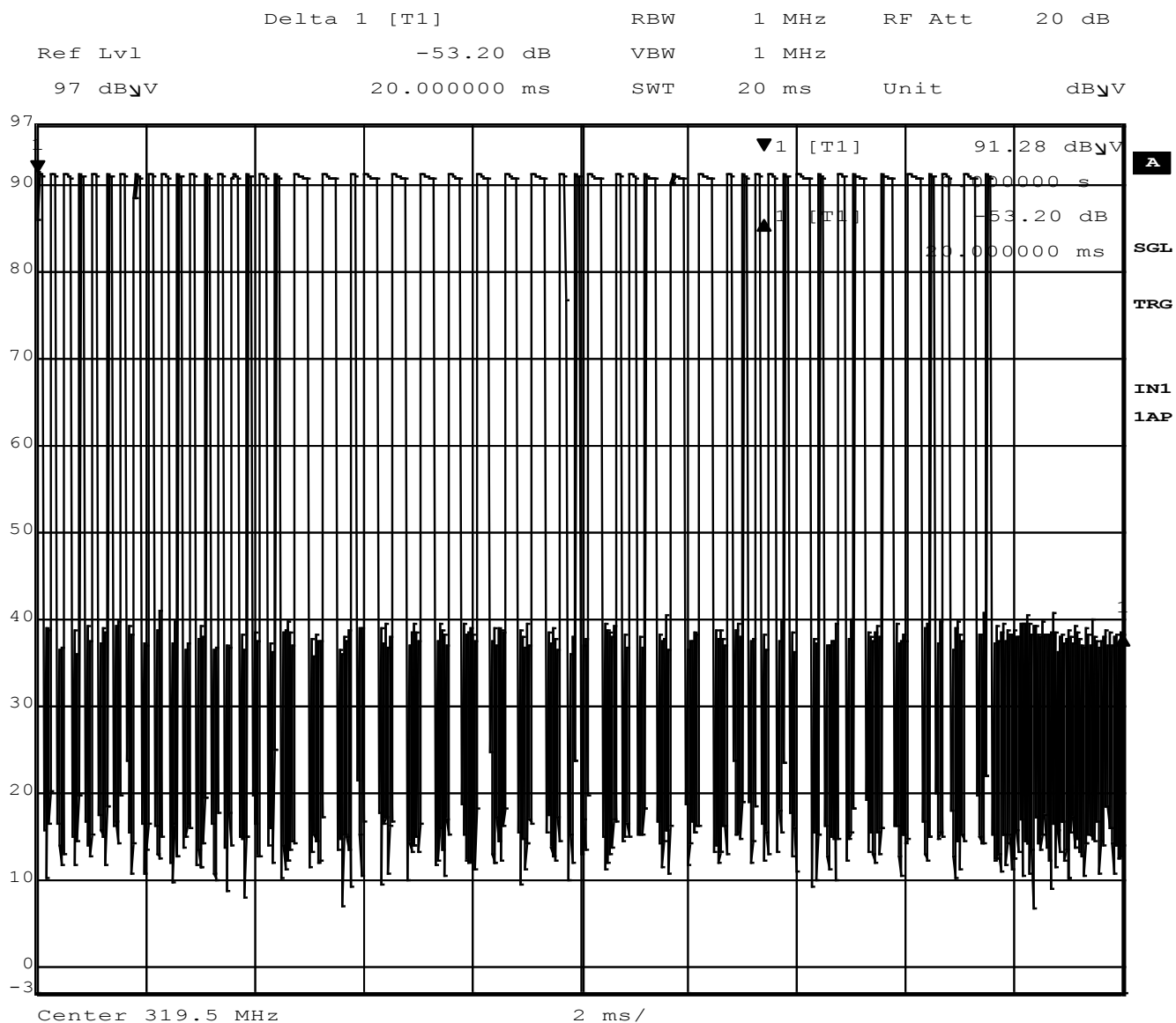
Figure 5 Test Setup for Pulse Train



Figure 6 Pulse Train Graph



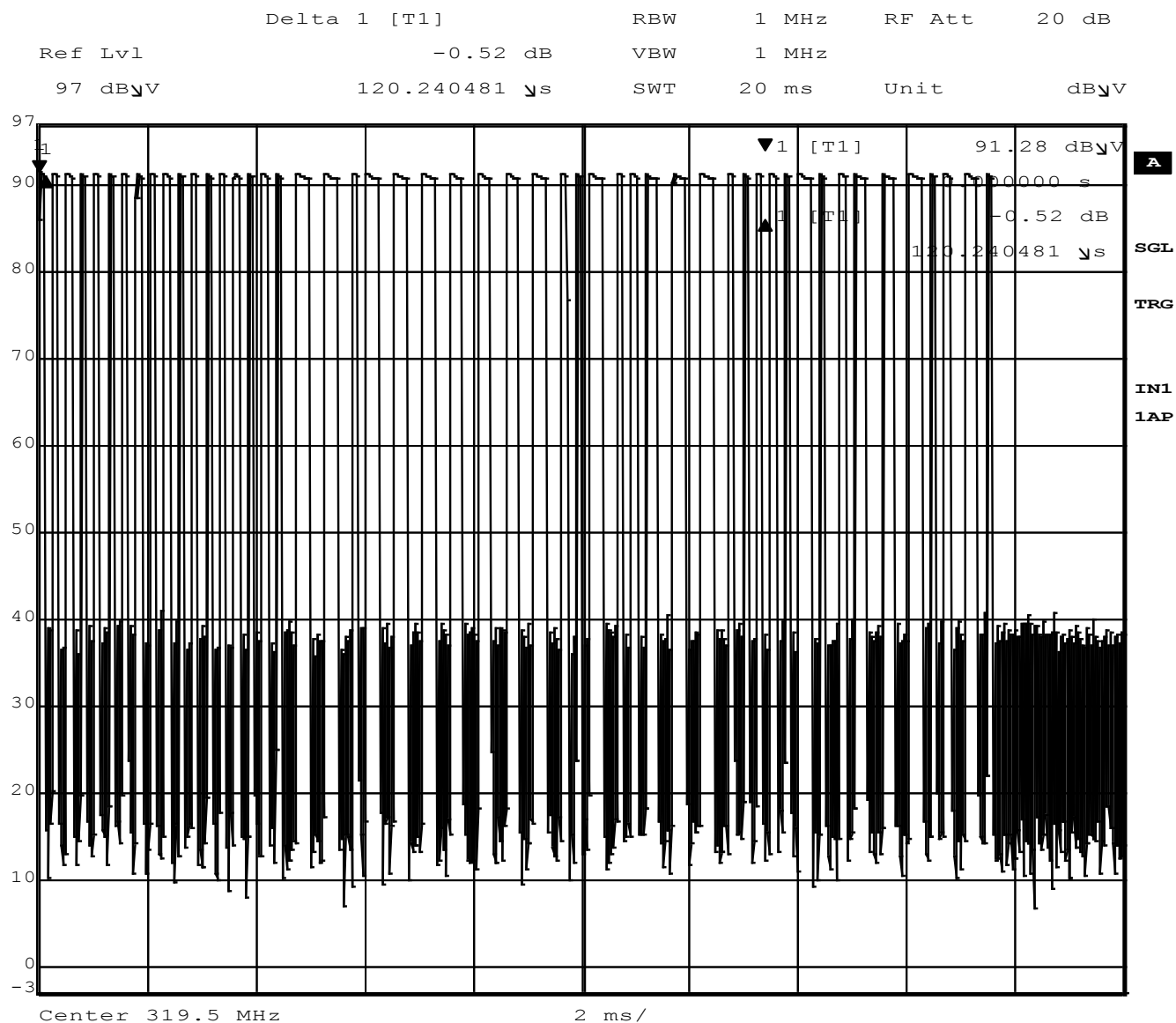
Job Number: 11U13641
 Model Number: SW-NAP-SDW
 Client Name: Secure Wireless, Inc
 FCC ID: QNP-SDW319



Date: 7.FEB.2011 15:01:07

Number of pulses

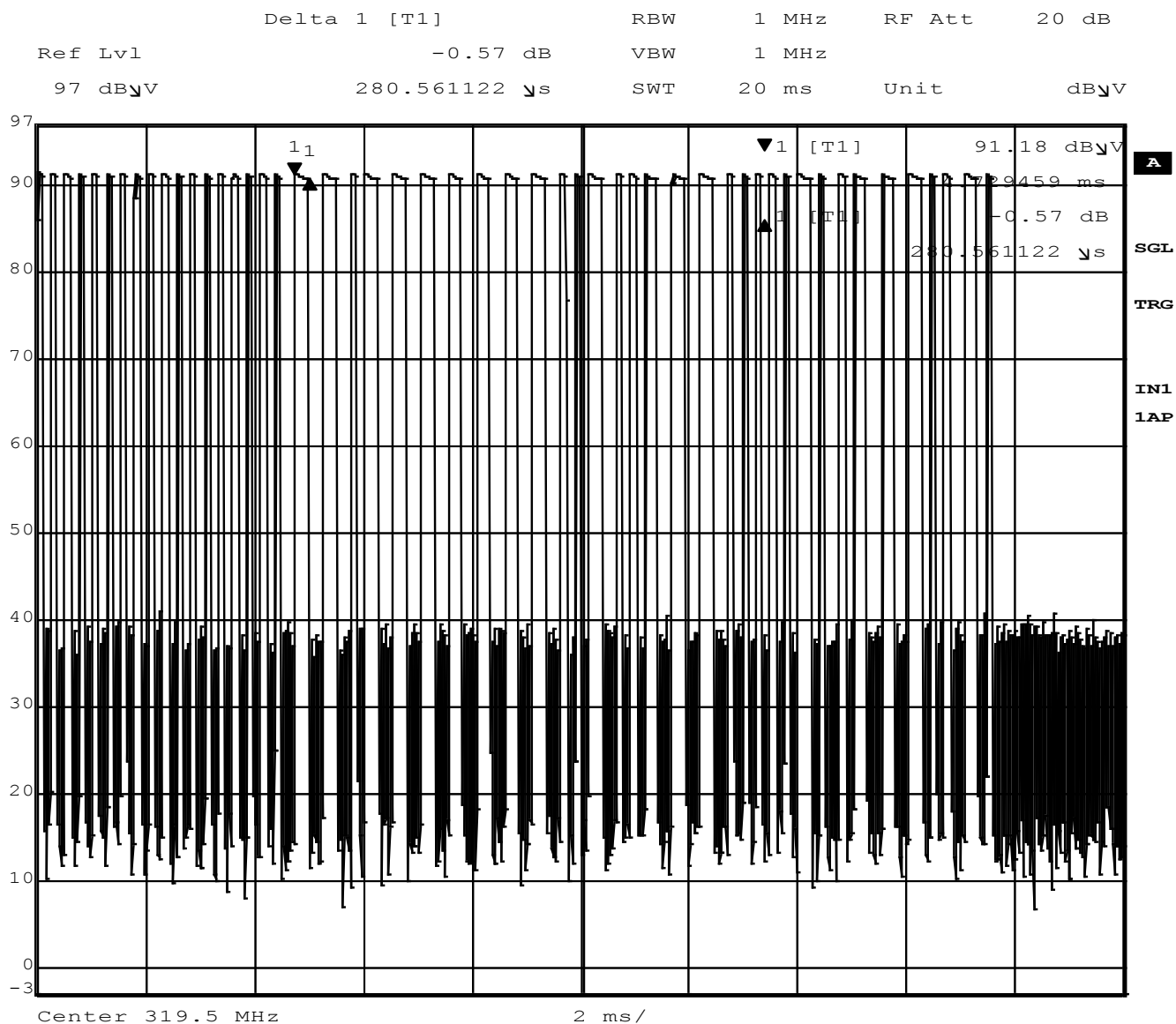
Job Number: 11U13641
 Model Number: SW-NAP-SDW
 Client Name: Secure Wireless, Inc
 FCC ID: QNP-SDW319



Date: 7.FEB.2011 15:01:51

First pulse width – 120.24μS

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Date: 7.FEB.2011 15:02:26

Second pulse train – 280.56μS

4.4 Test Conditions and Results – RADIATED EMISSIONS

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.		
Basic Standard		FCC Part 15, Subpart C 15.209/15.231	
UL LPG		80-EM-S0029	
	Frequency range	Measurement Point	
Fully configured sample scanned over the following frequency range	30 MHz – 1GHz	(3 meter measurement distance)	
Fully configured sample scanned over the following frequency range	1GHz – 3.1 GHz	(3 meter measurement distance)	
Limits			
Frequency (MHz)	Limit (dBµV/m)		
	Quasi-Peak	Peak	Average
	General Emissions		
0.009 – 0.490	128.5 – 93.8	-	-
0.490 – 1.705	73.8 – 63	-	-
1.705 – 30	69.5	-	-
30 – 88	40	-	-
88 – 216	43.5	-	-
216-960	46	-	
960-1000	46	-	
1000-10000	-	74	54
Fundamental - 418	NA	95.89	75.89
Spurious	NA	75.89	55.89
Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits.			

Table 10 Radiated Emissions EUT Configuration Settings

Power Interface Mode	EUT Configurations Mode	EUT Operation Mode
1	1	1
Supplementary information: Device checked for maximum emissions in 3 orthogonal axis. Worst case emissions are reported.		

Table 11 Radiated Emissions Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
30-1000MHz					
EMI Receiver	Rohde & Schwarz	ESIB40	34968	2010-02-22	2011-02-22
Bicon Antenna	Schaffner	VBA6106A	43441	2010-09-09	2011-09-09
Log-P Antenna	Schaffner	UPA6109	44067	2010-04-26	2011-04-26
Switch Driver	HP	11713A	ME7A-627	N/A	N/A
System Controller	Sunol Sciences	SC99V	44396	N/A	N/A
Camera Controller	Panasonic	WV-CU254	44395	N/A	N/A
RF Switch Box	UL	1	44398	N/A	N/A
Measurement Software	UL	Version 9.3	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2010-12-07	2012-12-07
Multimeter	Fluke	83III	ME5B-305	2011-02-01	2012-02-29
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E7405A	19695	2010-02-22	2011-02-22
Horn Antenna (1-2 GHz)	ETS	3161-01	51442	2008-03-28	See * below
Horn Antenna (2-4 GHz)	ETS	3161-02	48107	2007-09-27	See * below
Signal Path Controller	HP	11713A	50250	N/A	N/A
Gain Controller	HP	11713A	50251	N/A	N/A
RF Switch / Preamp Fixture	UL	BOMS1	50249	N/A	N/A
System Controller	UL	BOMS2	50252	N/A	N/A
Measurement Software	UL	Version 9.3	44740	N/A	N/A
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	4268	2010-12-07	2012-12-07
Multimeter	Fluke	87V	44547	2011-02-01	2012-02-29
* - Note: As allowed by the calibration standard ANSI C63.4 Section 4.4.2, standard gain horns need only a one-time calibration. Only if physical damage occurs will the horn antenna require re-calibration. * Gain standard horn antennas (sometimes called standard gain horn antennas) need not be calibrated beyond that which is provided by the manufacturer unless they are damaged or deterioration is suspected, or they are used at a distance closer than $2D^2/\lambda$. Gain standard horn antennas have gains that are fixed by their dimensions and dimensional tolerances.					

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Figure 7 Test setup for Radiated Emissions

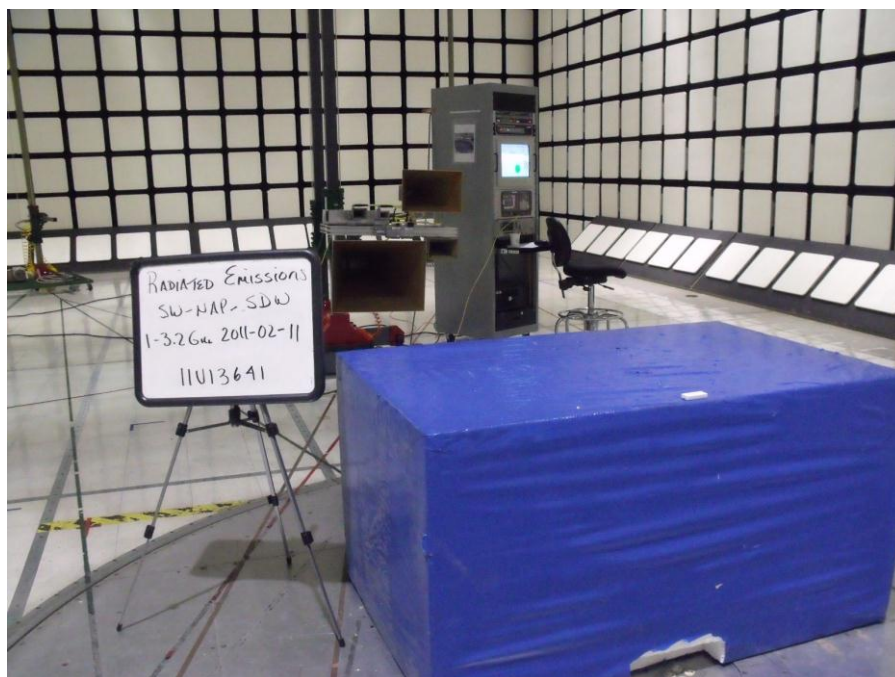
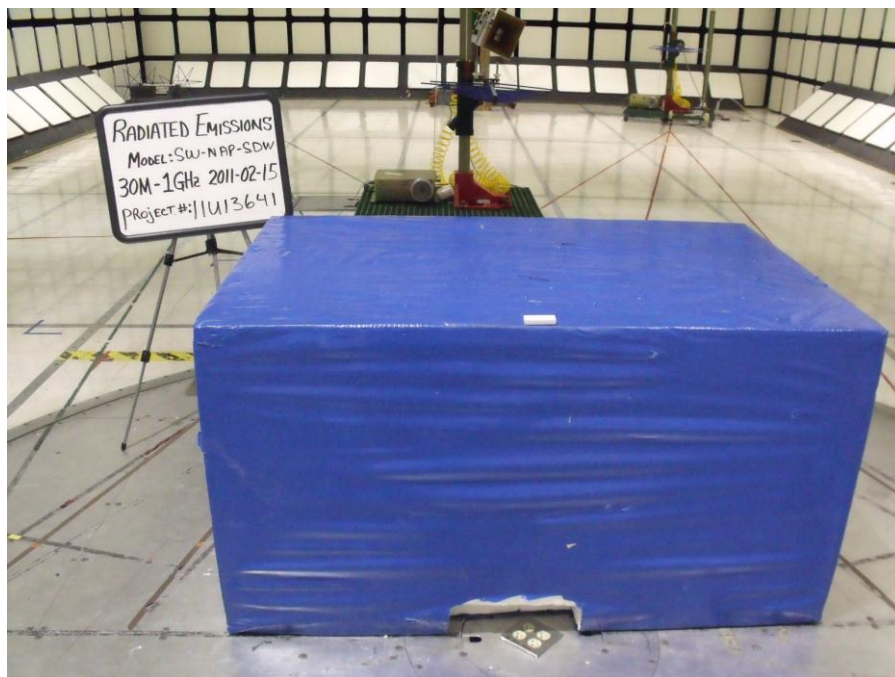
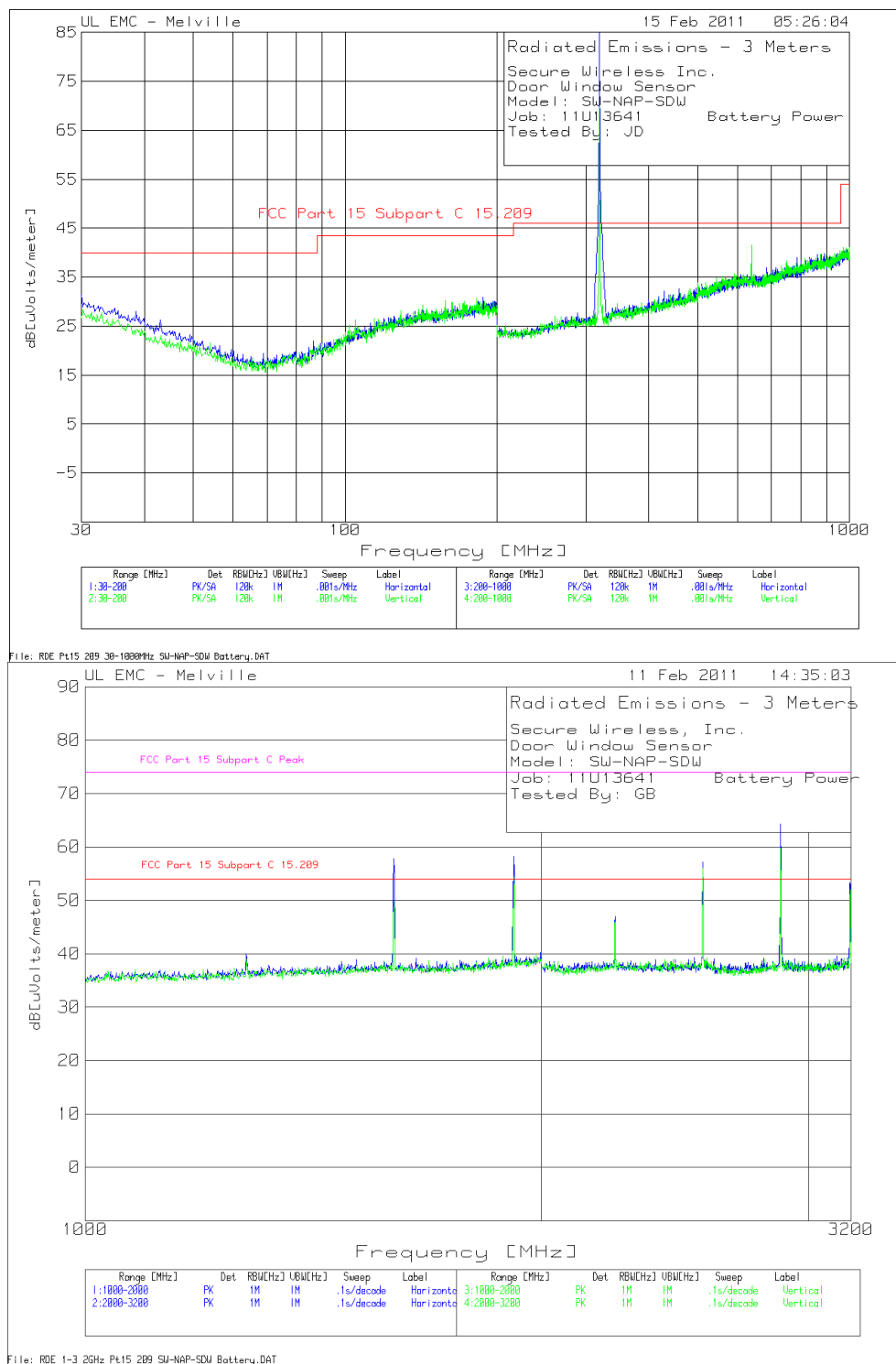


Figure 8 Radiated Emissions Graph



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Table 12 Radiated Emissions Data Points

Secure Wireless Inc.														
Door Window Sensor														
Model: SW-NAP-SDW														
Job: 11U13641 Battery Power														
Tested By: JD														
Test	Meter	Detector	Gain/Loss	Transducer	Level	DCF	Corrected	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth	Height [cm]	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts/ meter]	dB	dB[uVolts/ meter]					[deg]		
[MHz]	[dB(uV)]		[dB]	[dB]										
Horizontal 200 - 1000MHz														
319.4881	72.7	PK	1	14.2	87.9	-22.3	65.6	-	-	75.89	-10.29	221	108	Horz
Vertical 200 - 1000MHz														
319.4966	55.69	PK	1	14.1	70.79	-	-	-	-	75.89	-5.1	151	155	Vert
639	14.59	PK	1.4	20.6	36.59			46	-9.41	-	-	244	189	Vert
LIMIT 1: FCC Part 15 Subpart C 15.209														
LIMIT 2: FCC Part 15 Subpart C 15.231 Fundamental														
LIMIT 3: NONE														
LIMIT 4: NONE														
LIMIT 5: NONE														
LIMIT 6: NONE														
PK - Peak detector (maximized)														
QP - Quasi-Peak detector														
LnAv - Linear Average detector														
LgAv - Log Average detector														
Av - Average detector														
CAV - CISPR Average detector														
RMS - RMS detection														
CRMS - CISPR RMS detection														

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Secure Wireless, Inc.														
Door Window Sensor														
Model: SW-NAP-SDW														
Job: 11U13641 Battery Power														
Tested By: GB														
Test	Meter	Detector	Gain/Loss	Transducer	Level	DCF	Corrected Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]	dB	dB[uVolts/meter]							
[MHz]	[dB(uV)]		[dB]	[dB]										
Horizontal 1000 - 2000MHz														
1278.225	67.2	PK	-45.04	20.3	42.46	-22.3	20.2	54	-33.84	74	-31.54	178	312	Horz
1597.525	83.27	PK	-44.53	21.2	59.94	-22.3	37.6	54	-16.36	74	-14.06	186	329	Horz
1917.175	82.45	PK	-44.09	21.7	60.06	-22.3	37.8	54	-16.24	74	-13.94	359	318	Horz
Horizontal 2000 - 3200MHz														
2236.65	71.67	PK	-43.94	21.4	49.13	-22.3	26.8	54	-27.17	74	-24.87	359	314	Horz
2556.025	84.15	PK	-43.55	21.3	61.9	-22.3	39.6	54	-14.4	74	-12.1	323	341	Horz
2875.375	87.48	PK	-43.35	21.7	65.83	-22.3	43.5	54	-10.47	74	-8.17	170	353	Horz
3195.025	78.8	PK	-43.26	22	57.54	-22.3	35.2	54	-18.76	74	-16.46	143	278	Horz
Vertical 1000 - 2000MHz														
1278	65.33	PK	-45.04	20.3	40.59	-22.3	18.3	54	-35.71	74	-33.41	15	399	Vert
1597.575	77.45	PK	-44.53	21.2	54.12	-22.3	31.8	54	-22.18	74	-19.88	233	361	Vert
1917.025	77.49	PK	-44.09	21.7	55.1	-22.3	32.8	54	-21.2	74	-18.9	70	358	Vert
Vertical 2000 - 3200MHz														
2236.75	70.84	PK	-43.94	21.3	48.2	-22.3	25.9	54	-28.1	74	-25.8	64	383	Vert
2556.1	80.71	PK	-43.56	21.6	58.75	-22.3	36.5	54	-17.55	74	-15.25	228	381	Vert
2875.425	84.06	PK	-43.35	21.9	62.61	-22.3	40.3	54	-13.69	74	-11.39	96	377	Vert
3195	80.51	PK	-43.26	22.1	59.35	-22.3	37.1	54	-16.95	74	-14.65	90	340	Vert
LIMIT 1: FCC Part 15 Subpart C 15.209														
LIMIT 2: FCC Part 15 Subpart C Peak														
LIMIT 3: None														
LIMIT 4: NONE														
LIMIT 5: NONE														
LIMIT 6: NONE														
PK - Peak detector (maximized)														
QP - Quasi-Peak detector														
LnAv - Linear Average detector														
LgAv - Log Average detector														
Av - Average detector														
CAV - CISPR Average detector														
RMS - RMS detection														
CRMS - CISPR RMS detection														

Appendix A

Accreditations and Authorizations



NVLAP Lab code: 100255-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see <http://ts.nist.gov/ts/htdocs/210/214/scopes/1002550.htm>



FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91040).



Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: IC 2181



VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: (Radiated Emissions) R-797, (Conducted Emissions) C-832, C-83400, and C-81879 and (Conducted Emissions - Telecommunications Ports) T-1582 and T-1583.

Job Number: 11U13641
Model Number: SW-NAP-SDW
Client Name: Secure Wireless, Inc
FCC ID: QNP-SDW319

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ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).



NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 2004/108/EC, Annex III (2-3). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.

NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).

NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6

