FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

RECESSED DOOR WINDOW SENSOR
MODEL NUMBER: SW-ATT-RDW

FCC ID: QNP-433RDW
IC: 4676A-433RDW

REPORT NUMBER: SR8481794-T001

ISSUE DATE: 2012-03-15

Prepared for
SECURE WIRELESS, INC
5817 DRYDEN PLACE, SUITE D
CARLSBAD
CA, 92008, USA

Prepared by
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NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2012-03-15	Initial Issue	B. DeLisi

UL LLC. FORM NO: CCSUP4701D
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TABLE OF CONTENTS

UL LLC. FORM NO: CCSUP4701D
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Secure Wireless, Inc
5817 Dryden Place, Suite D
Carlsbad, CA 92008, USA

EUT DESCRIPTION: Recessed Door Window Sensor

MODEL: SW-ATT-RDW

SERIAL NUMBER: Non-serialized production unit

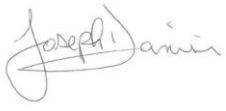
DATE TESTED: 2012-02-22 through 2012-03-05

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	Pass
INDUSTRY CANADA RSS-210 Issue 8, Annex 1	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards, using test results reported in the test report documents referenced below and/or documentation furnished by the applicant. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations of these calculations. The results show that the equipment 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 by the referenced documents. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL By:



Joseph Danisi
Lead Engineering Associate
UL LLC

Tested By:

Bob DeLisi
Sr. Staff Engineer
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.3-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1285 Walt Whitman Rd. Melville, NY 11747, USA.

UL Melville is accredited by NVLAP, Laboratory Code 100255-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/1002550.htm.

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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.3 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.00 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a wireless recessed door/window sensor intended for security applications. The EUT is powered by 3VDC nominal, from 1 CR2 battery

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal loop antenna. The gain is estimated by the manufacturer to be -15 dBi.

5.3. SOFTWARE AND FIRMWARE

Not Applicable

5.4. WORST-CASE CONFIGURATION AND MODE

The worst case configuration was in the Y-axis. The EUT only has one mode of operation.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Not Applicable

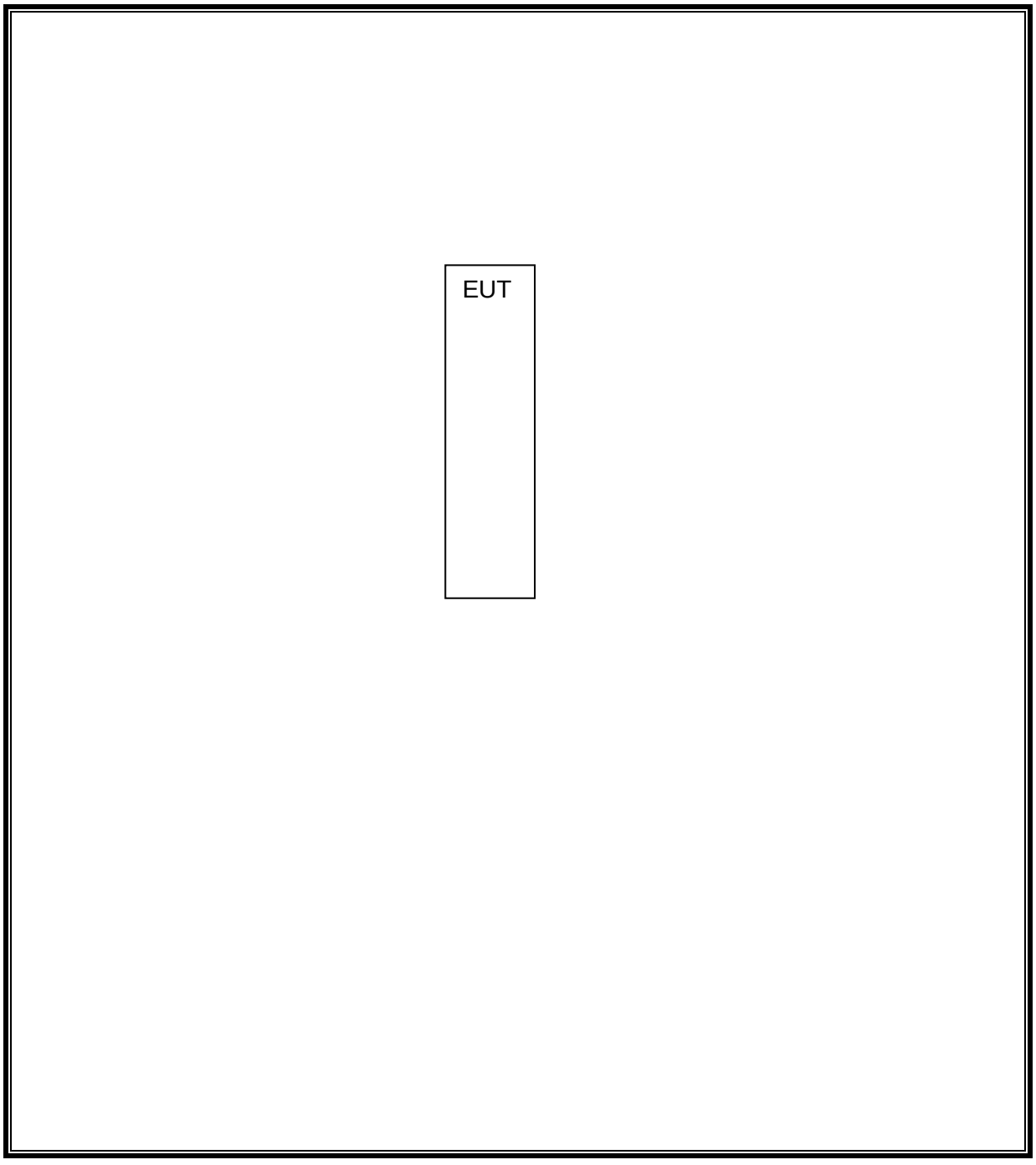
I/O CABLES

Not Applicable

TEST SETUP

The EUT was tested as stand-alone device. The manufacturer configured the device to continuously transmit for emissions data and to operate as intended (periodic) for all other tests

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 Used – Radiated Emissions					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
30-1000MHz					
EMI Receiver	Rohde & Schwarz	ESIB26	ME5B-081	2012-01-03	2013-01-30
Bicon Antenna	Schaffner	VBA6106A	43441	2011-10-11	2012-10-11
Log-P Antenna	Schaffner	UPA6109	44067	2011-04-29	2012-04-29
Preamp (10kHz - 1.3GHz)	Schaffner	CPA9231A	31613	N/A	N/A
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	2012-02-01	2013-02-28
Above 1GHz (Band Optimized System)					
Spectrum Analyzer	Agilent	E4446A	72822	2012-01-31	2013-02-28
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
Horn Antenna (4-8 GHz)	ETS	3161-03	48106	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	83III	ME5B-305	2012-02-01	2013-02-28

* - 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.

Test Equipment Used – Occupied Bandwidth/Cease Operation/Duty Cycle					
Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Spectrum Analzyer	Agilent	E44446A	72823	2012-01-31	2013-02-28
Dipole Antenna	EMCO	3121C	3359	2011-12-16	2012-12-16
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43733	2010-03-08	2012-03-08

7. ANTENNA PORT TEST RESULTS

7.1. 20 dB AND 99% BW

LIMITS

FCC §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 A1.1.3
For the purpose of Section A1.1, the 99% Bandwidth shall be no wider than 0.25% of the center 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 center frequency.

TEST PROCEDURE

ANSI C63.4

The transmitter output is connected to the spectrum analyzer.

20dB Bandwidth: The RBW is set to 10 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

No non-compliance noted:

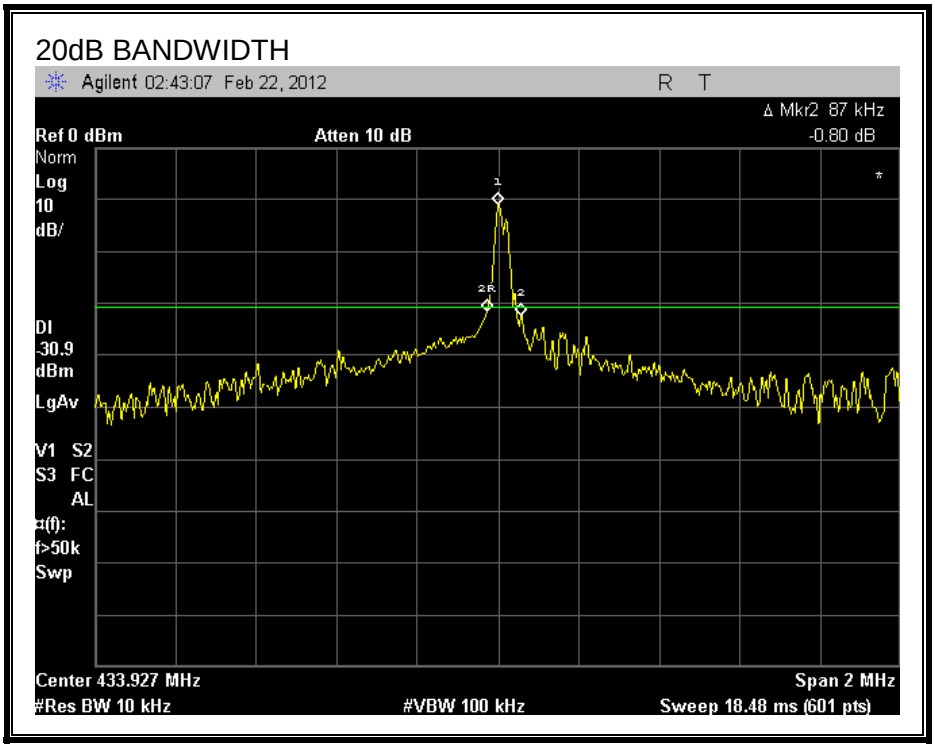
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.9	87	1084.75	-997.75

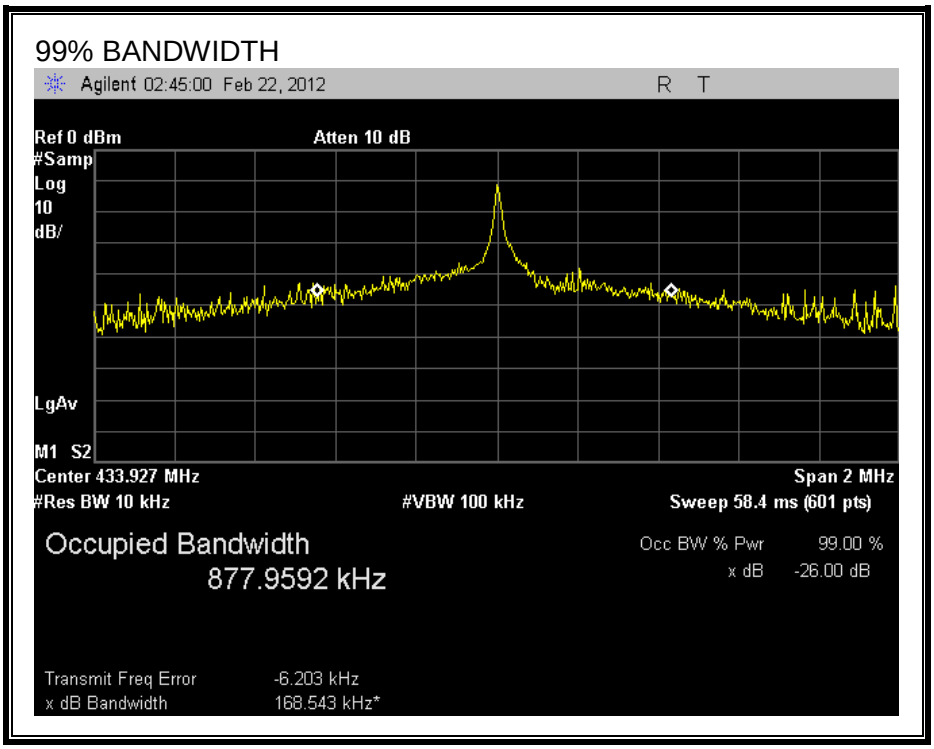
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.9	877.9	1084.75	-206.85

20dB BANDWIDTH



99% BANDWIDTH



7.2. DUTY CYCLE

LIMITS

FCC §15.35 (c)
The measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. 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) + 20log (Duty Cycle), Where Duty Cycle is
(# of long pulses * long pulse width) + (# of short pulses * short pulse width) / 100 or T

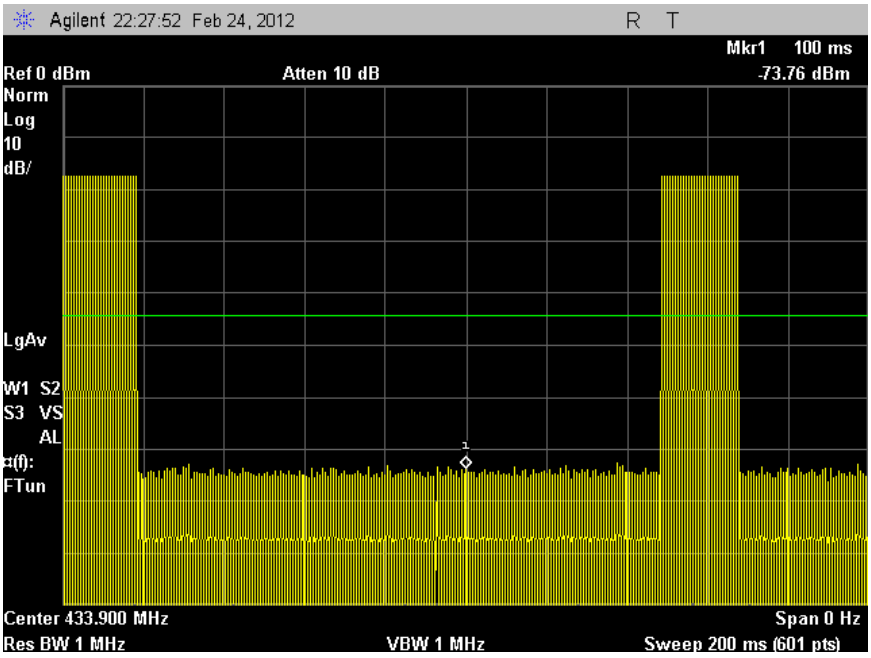
RESULTS

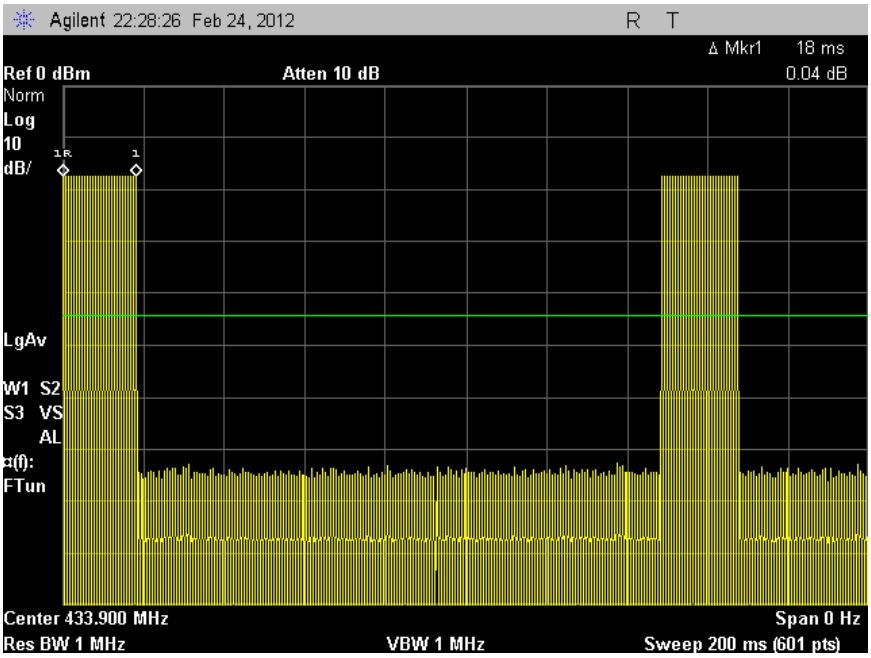
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	0.2667	14	0.1330	48	0.101	-19.90

ONE PERIOD

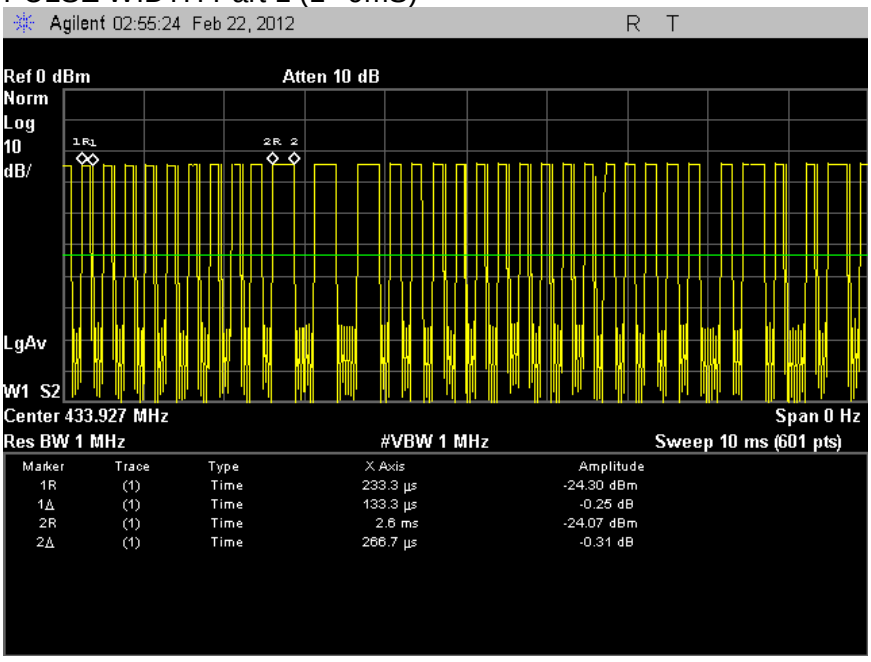
ONE PERIOD





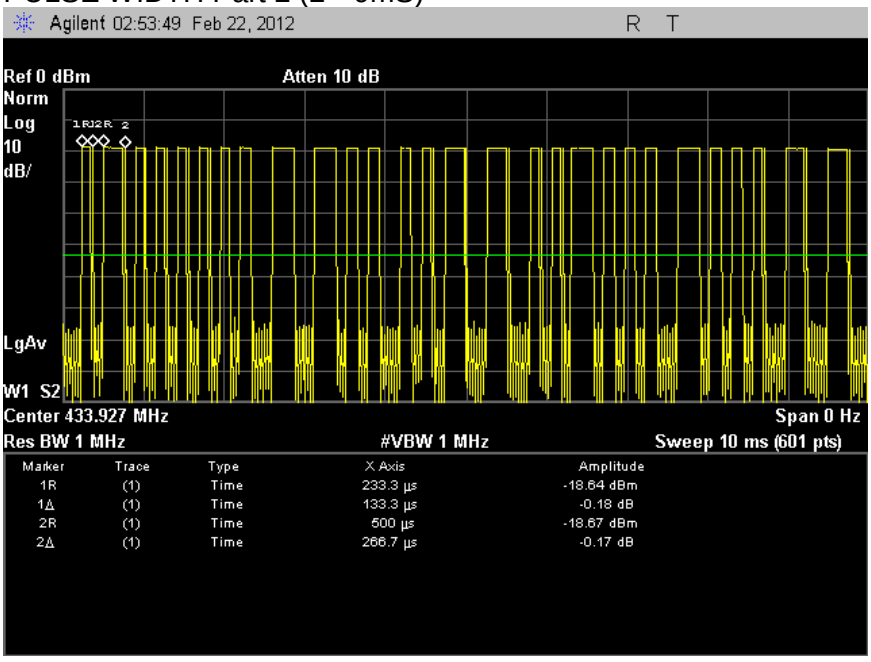
PULSE WIDTH

PULSE WIDTH Part 1 (1st 9mS)



PULSE WIDTH

PULSE WIDTH Part 2 (2nd 9mS)



7.3. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)

IC A1.1.1 (b)

A transmitter activated automatically shall cease transmission within 5 seconds after activation.

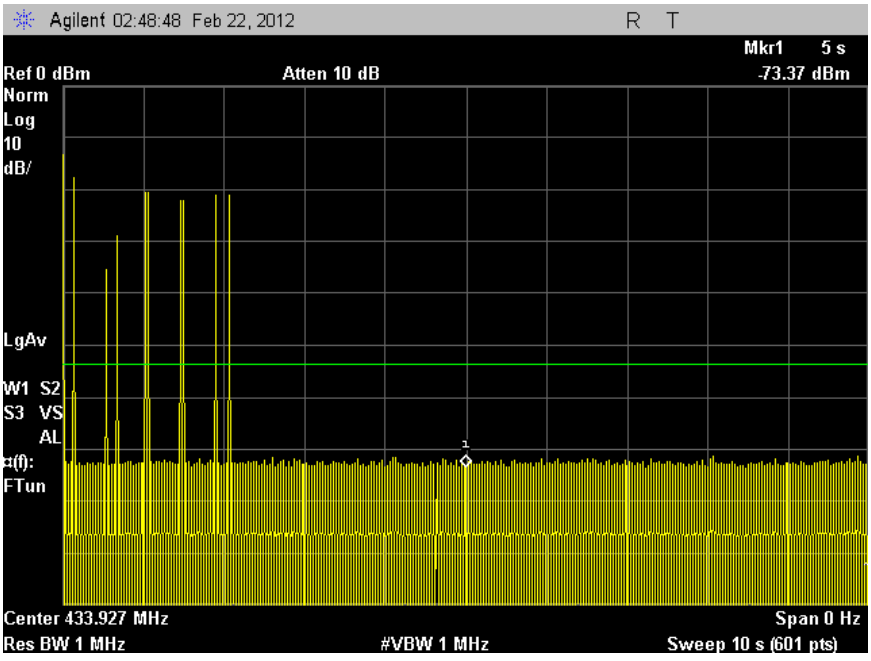
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

RESULTS

No non-compliance noted:

LESS THAN 5 SECONDS



8. RADIATED EMISSION TEST RESULTS

8.1. TX RADIATED SPURIOUS EMISSION

LIMITS

FCC §15.231 (b)
IC A1.1.2
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 3,7501	125 to 3751
174 - 260	3,750	375
260 - 470	3,750 to 12,5001	375 to 1,2501
Above 470	12,500	1,250

1 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
[1]0.495 - 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		

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2 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.

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.

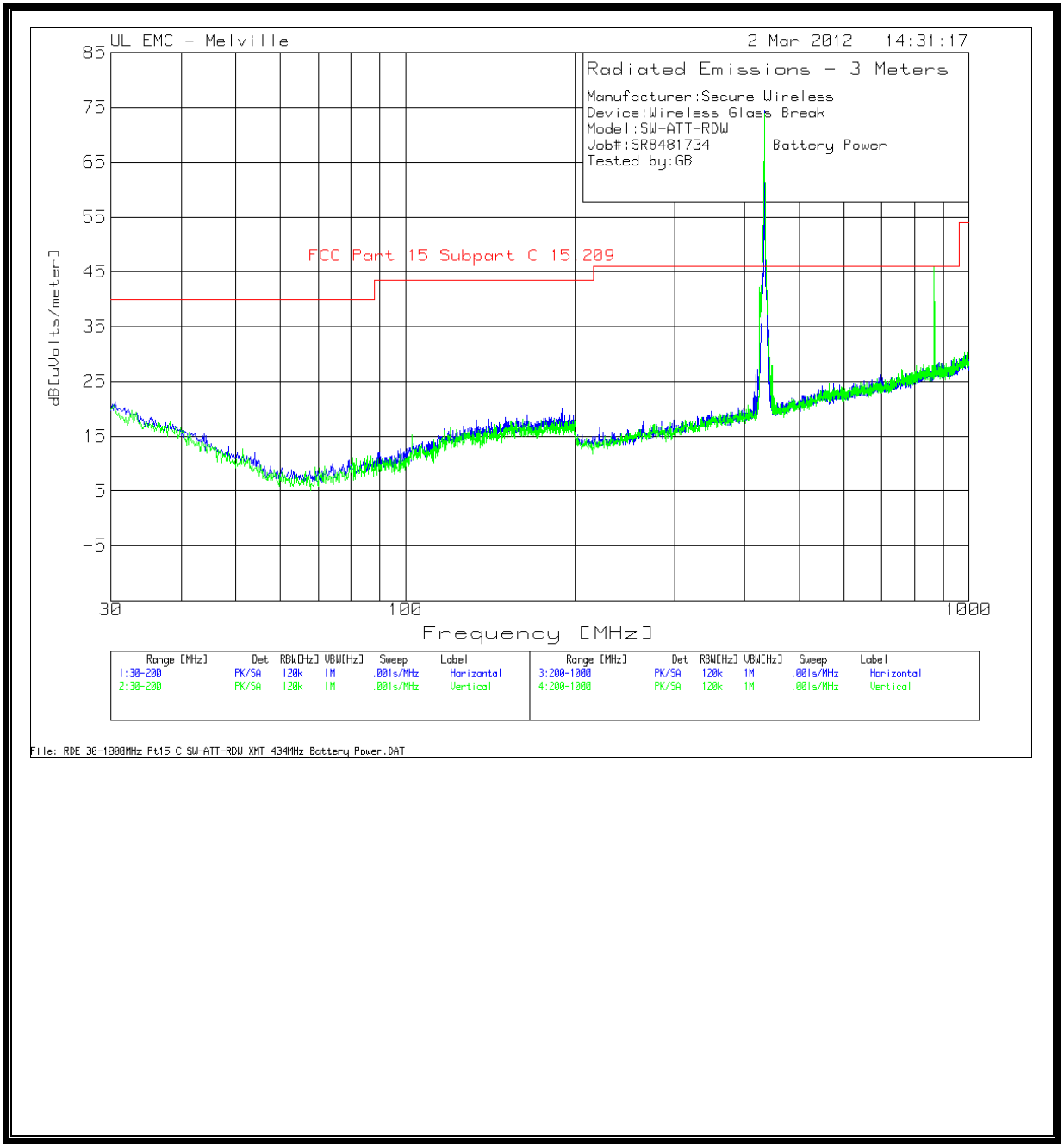
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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.

RESULTS

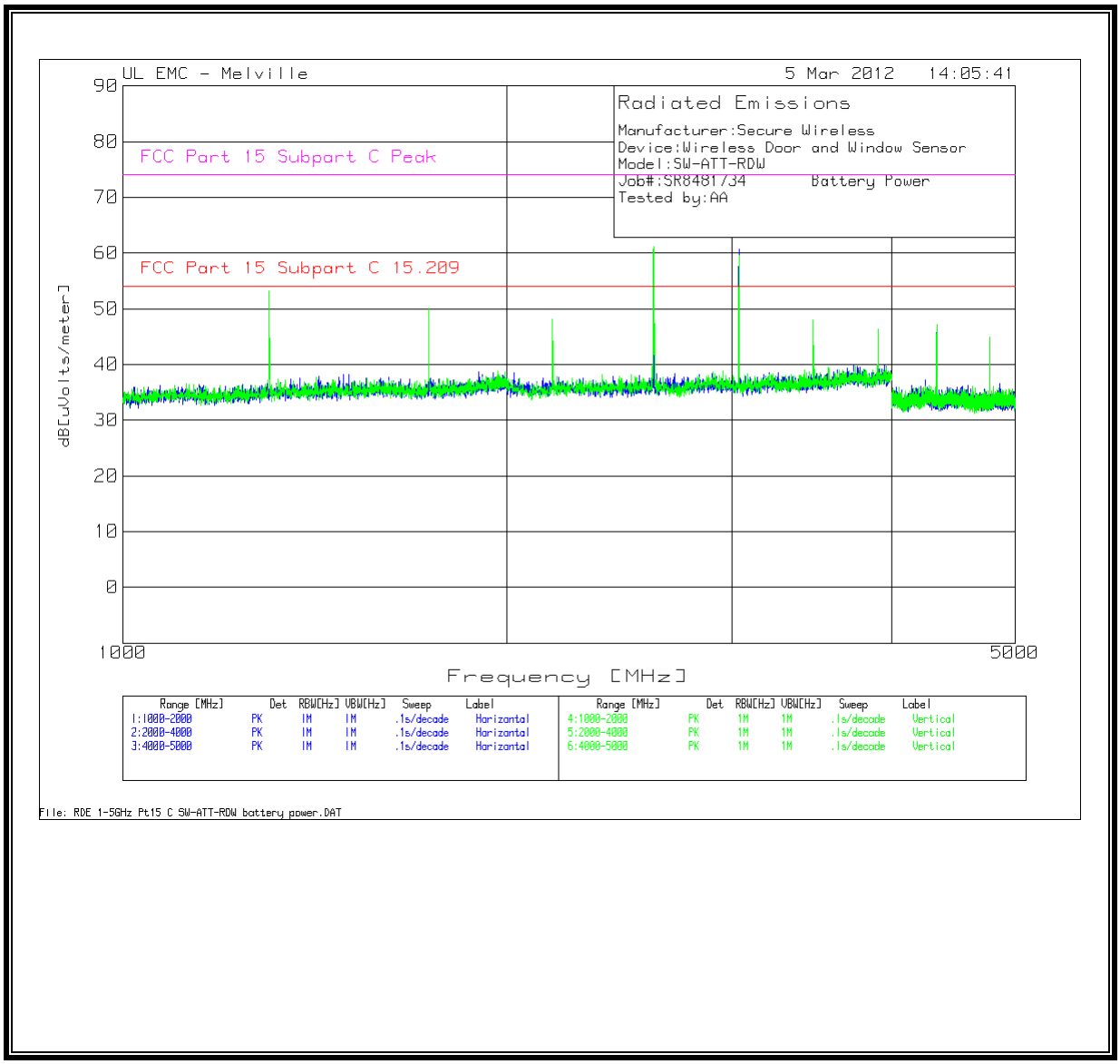
No non-compliance noted:

FUNDAMENTAL, HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz)



Manufacturer:Secure Wireless															
Device:Wireless Door and Window Sensor															
Model:SW-ATT-RDW															
Job#:SR8481734 Battery Power															
Tested by:GB															
Test Frequency	Meter Reading	Detector	AF-44067 [dB]	GL-3M [dB]	dB[uVolts/ meter]	DCF	Corrected dB[uVolts/ meter]	FCC Part 15 Subpart C 15.209	Margin	FCC Part 15 Subpart C 15.231	Margin	FCC Part 15 Subpart C 15.231 Peak	Margin	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz																
433.9248	90.49	PK	17.1	-22.7	84.89	-19.9	64.99	-	-	80.8	-15.81	100.8	-15.91	0	371	Horz
426.9898	35.19	QP	16.9	-22.7	29.39	-	-	46	-16.61	-	-	-	-	0	144	Horz
431.7	49.3	QP	17	-22.7	43.6	-	-	46	-2.4	-	-	-	-	4	365	Horz
435.7	67.71	PK	17.1	-22.6	62.21	-19.9	42.31	-	-	60.8	-18.49	80.8	-18.59	19	142	Horz
437.7	44.08	QP	17.2	-22.6	38.68			46	-7.32					6	158	Horz
867.8578	43.38	PK	23.1	-20.8	45.68	-19.9	25.78	-	-	60.8	-35.02	80.8	-35.12	19	150	Horz
Vertical 200 - 1000MHz																
433.9313	97.86	PK	16.6	-22.7	91.76	-19.9	71.86	-	-	80.8	-8.94	100.8	-9.04	288	124	Vert
425	36.38	QP	16.5	-22.7	30.18	-	-	46	-15.82	-	-	-	-	273	155	Vert
427.3142	43.44	QP	16.5	-22.7	37.24	-	-	46	-8.76	-	-	-	-	281	116	Vert
430.1	50.83	QP	16.5	-22.6	44.73	-	-	46	-1.27	-	-	-	-	327	113	Vert
435.7	77.97	PK	16.6	-22.6	71.97	-19.9	52.07	-	-	60.8	-8.73	80.8	-8.83	253	128	Vert
436.9	45.69	QP	16.6	-22.6	39.69	-	-	46	-6.31	-	-	-	-	297	298	Vert
867.8676	54.56	PK	23.2	-20.8	56.96	-19.9	37.06	-	-	60.8	-23.74	80.8	-23.84	119	134	Vert
PK - Peak detector																
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																

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz



Manufacturer:Secure Wireless
Device:Wireless Door and Window Sensor
Model:SW-ATT-RDW
Job#:SR8481734 Battery Power
Tested by:AA

Test Frequency	Meter Reading	Detector	AF-48107 [dB]	BOMS Factor [dB]	dB[uVolts/ meter]	DCF	Corrected dB[uVolts/ meter]	FCC Part 15 Subpart C 15.209	Margin	FCC Part 15 Subpart C Peak	Margin	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 2000 - 4000MHz														
3037.4332	80.32	PK	21.6	-43.07	58.85	-19.9	38.95	54	-15.05	74	-15.15	7	101	Horz
2603.7	73.08	PK	21.3	-43.65	50.73	-19.9	30.83	54	-23.17	74	-23.27	52	104	Horz
Vertical 1000 - 2000MHz														
1301.84	79.96	PK	20.5	-45.22	55.24	-19.9	35.34	54	-18.66	74	-18.76	72	110	Vert
1735.776	79.12	PK	20.8	-44.71	55.21	-19.9	35.31	54	-18.69	74	-18.79	80	138	Vert
Vertical 2000 - 4000MHz														
2169.7	75.06	PK	21.1	-44.23	51.93	-19.9	32.03	54	-21.97	74	-22.07	104	110	Vert
2603.64	84.37	PK	21.5	-43.65	62.22	-19.9	42.32	54	-11.68	74	-11.78	348	121	Vert
3037.54	83.1	PK	21.7	-43.07	61.73	-19.9	41.83	54	-12.17	74	-12.27	98	112	Vert
3471.504	70.24	PK	22.3	-43.02	49.52	-19.9	29.62	54	-24.38	74	-24.48	3	139	Vert

PK - Peak detector
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