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

CERTIFICATION TEST REPORT

FOR

WIRELESS TAKEOVER MODULE

MODEL NUMBER: SW-ATT-TAKRF

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

REPORT NUMBER: SR8786080-T001

ISSUE DATE: 2012-06-27
REVISION DATE: 2012-10-03

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

Prepared by
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1285 WALT WHITMAN RD.
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NVLAP LAB CODE 100255-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	2012-06-22	Initial Issue	B. DeLisi
1	2012-09-07	Added Conducted emissions data with AC/DC power adapter.	B. DeLisi
2	2012-10-03	Updated duty cycle and duty cycle correction factor to show declared worst case duration of 80ms.	B. DeLisi

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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: Wireless Takeover Module

MODEL: SW-ATT-TAKRF

SERIAL NUMBER: Non-Serialized production unit

DATE TESTED: 2012-05-30 through 2012-06-21

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:

Joe 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 C63.10-2009, 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 Takeover Module intended for security applications.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of approximately -15 dBi.

5.3. WORST-CASE CONFIGURATION AND MODE

The EUT was configured by the manufacturer to continuously transmit at the fundamental frequency. The configuration for test was as would be in normal use in the worst case orientation. Worst case data is reported.

5.4. MODIFICATIONS

L2 &C31value change for better harmonic rejection. L3 & C36 for higher insertion loss and better harmonic rejection. C40 and R 76 interchanged to reduce E field on antenna radiating harmonics. Exchanged C37 & C33 , C34 & C38 for improved bypassing. Increased R75 to bring fundamental power level into compliance. Decreased C39 for increased antenna load and better match for U7.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Power Supply	ZB	ZB-A140017	NA	NA

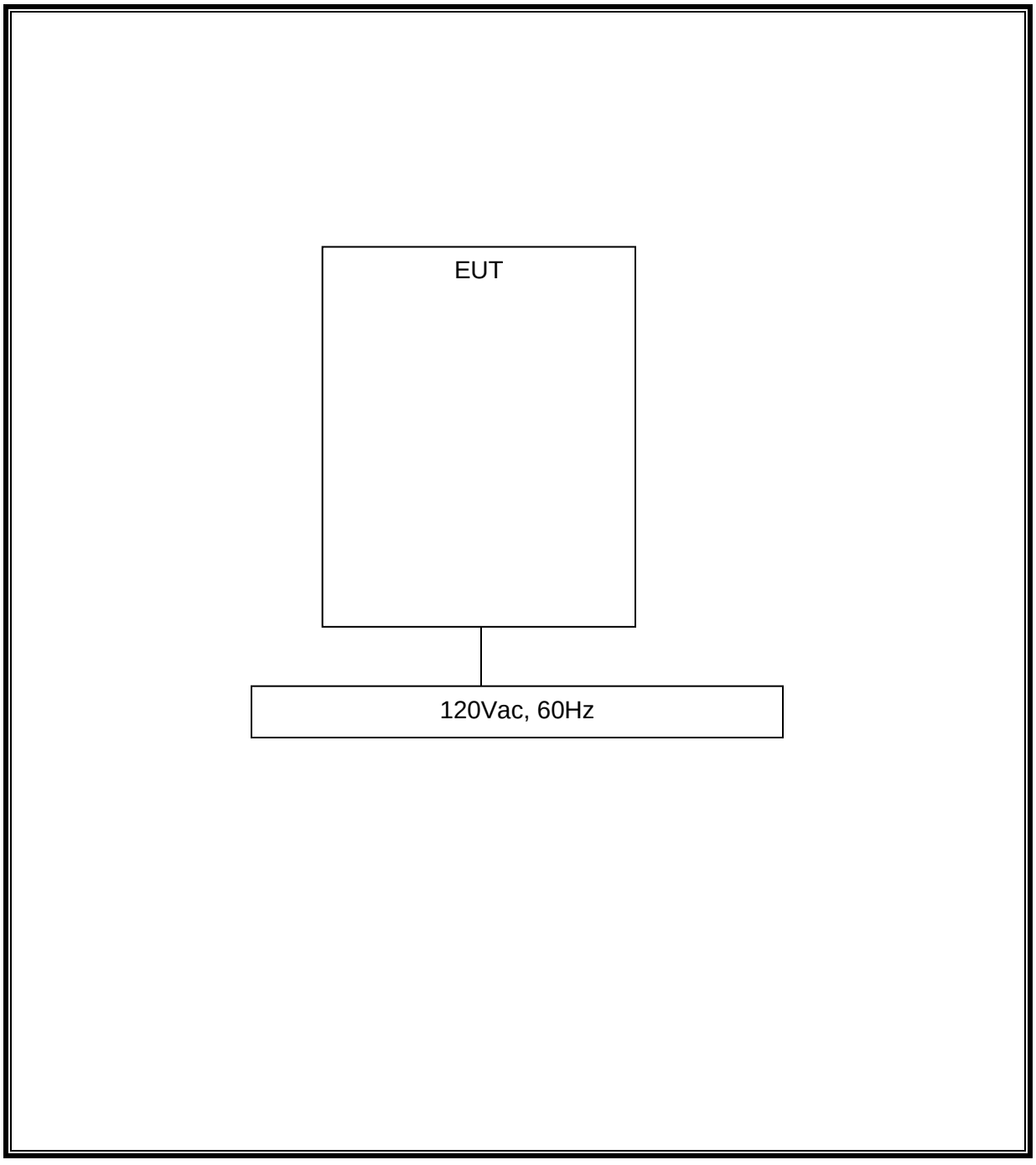
I/O CABLES

Not applicable.

TEST SETUP

The EUT was powered by two 3V batteries and an AC/DC adapter and tested as a standalone device.

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	2013-01-03
Bicon Antenna	Schaffner	VBA6106A	54	2012-04-10	2013-04-10
Log-P Antenna	Schaffner	UPA6109	44067	2012-05-16	2013-05-16
Switch Driver	HP	11713A	ME7A-627	N/A	N/A
Preamp	Schaffner	CPA9231A	31613	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)					
EMI Receiver	Rohde & Schwarz	ESIB40	34968	2012-03-01	2013-03-01
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	E4446A	72823	2012-01-31	2013-02-29
Dipole Antenna	EMCO	3121C	3359	2011-12-16	2012-12-16
Temp/Humidity/Pressure Meter	Cole Parmer	99760-00	43733	2012-03-13	2014-03-13
Multimeter	Fluke	87V	64386	2012-01-31	2013-02-29

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:

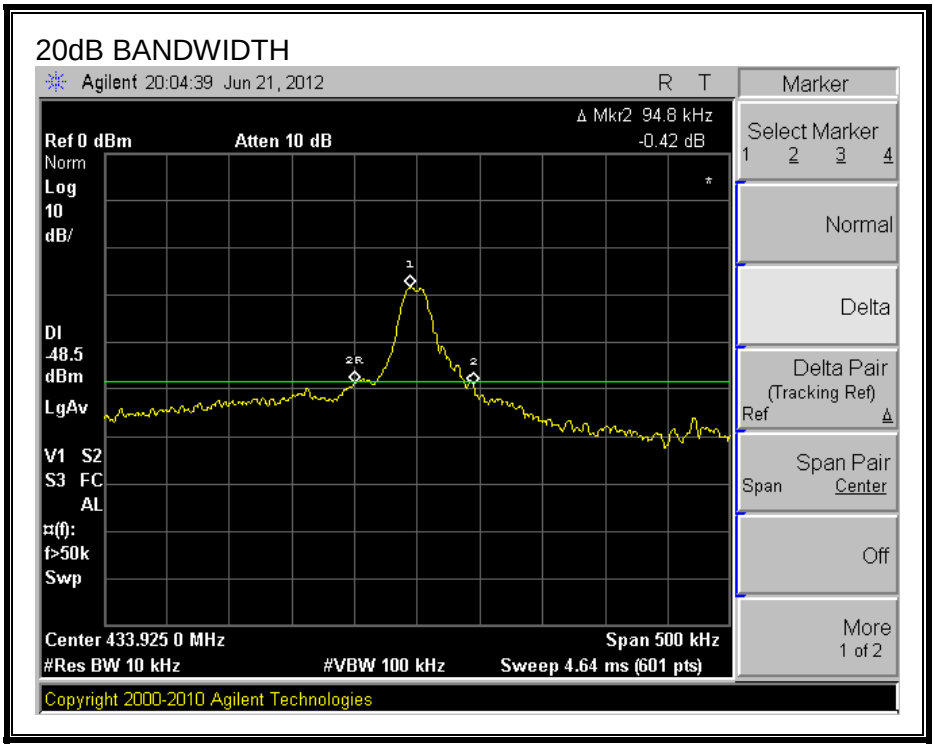
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.925	94.8	1084.8125	-990.0125

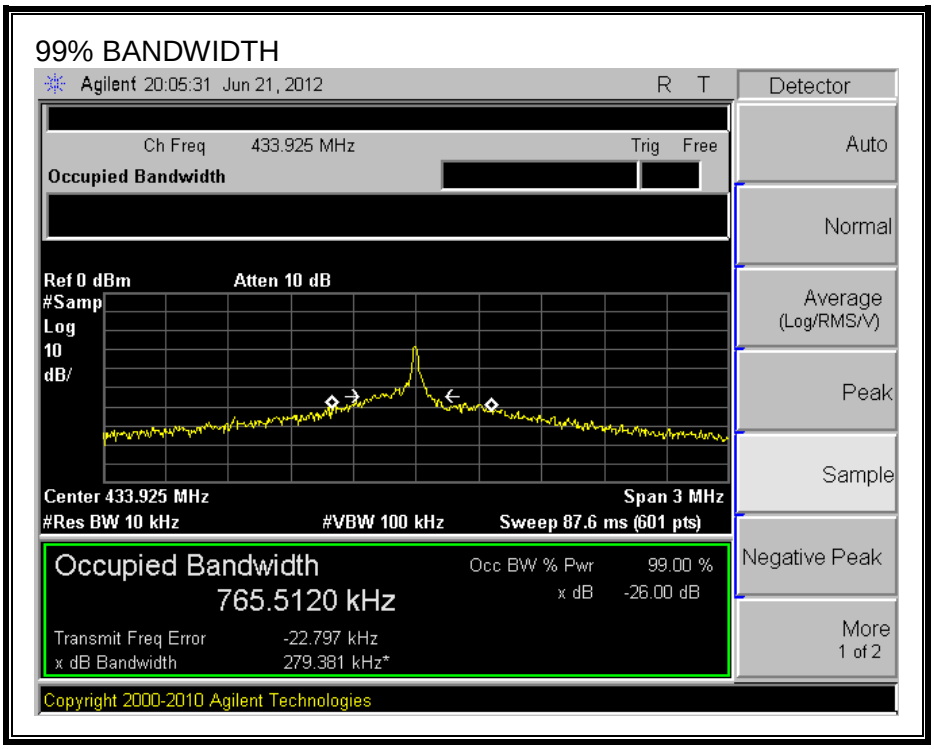
99% Bandwidth

Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
433.925	765.5	1084.8125	-319.3125

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

One Period (ms)	Medium Width (ms)	# of Medium Pulses	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
80	0.23	4	0.27	8	0.13	51	0.123	-18.18

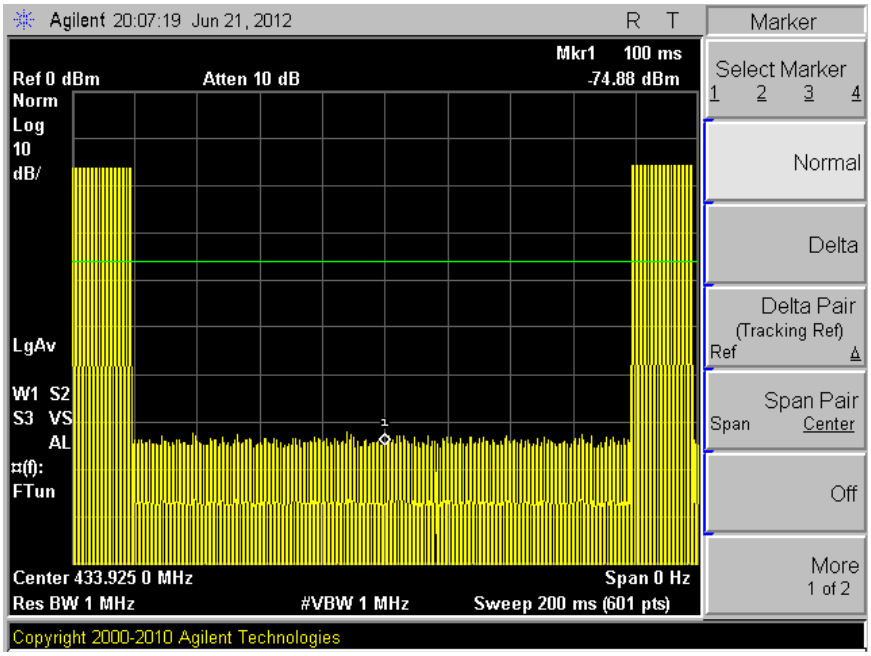
Note: Period is declared as worst case.

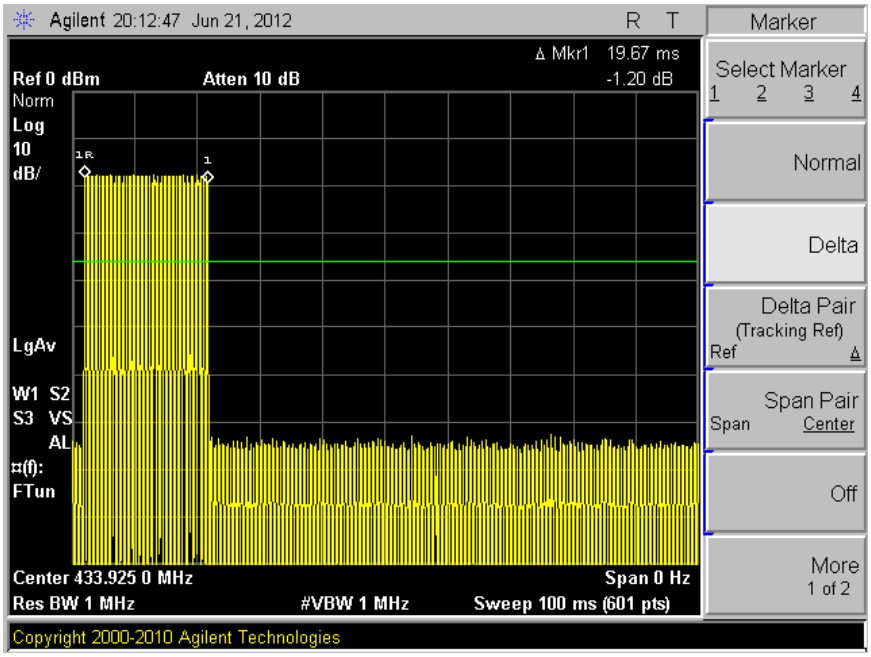
RESULTS

No non-compliance noted:

ONE PERIOD

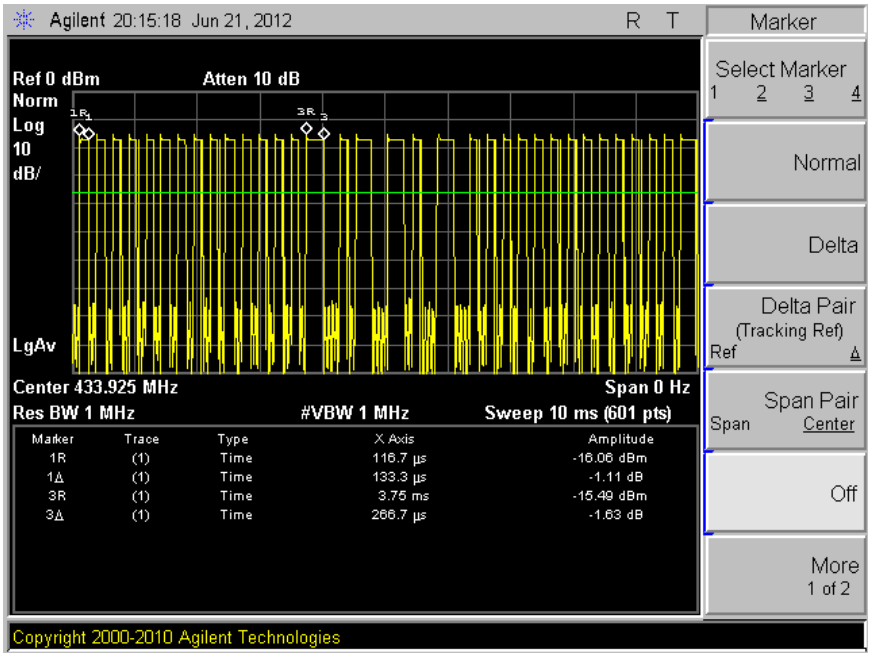
ONE PERIOD



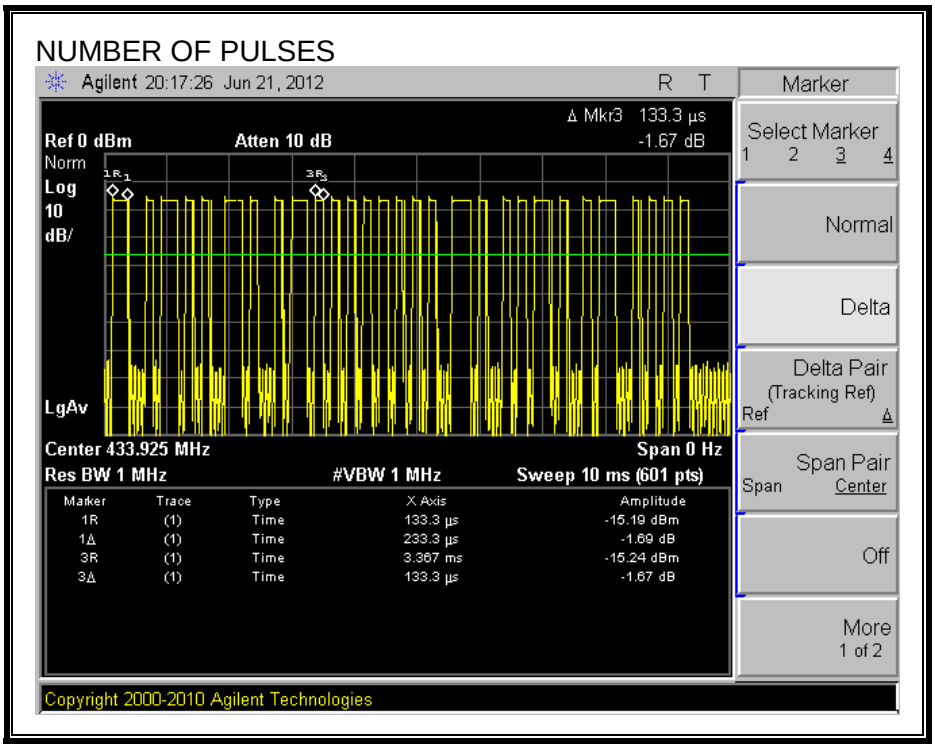


NUMBER OF PULSES – 1st Set

NUMBER OF PULSES



NUMBER OF PULSES – 2nd Set



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.

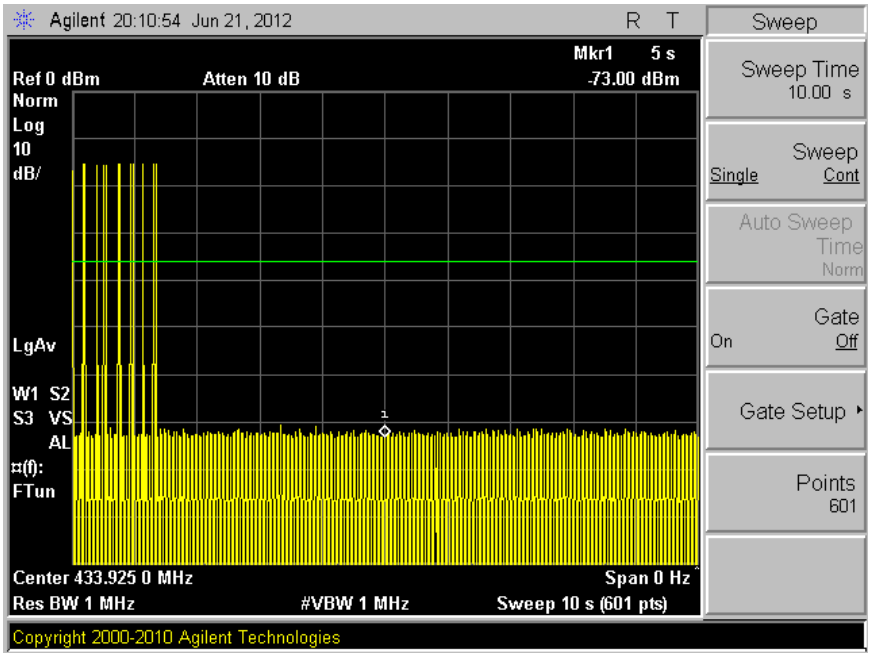
TEST PROCEDURE

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.

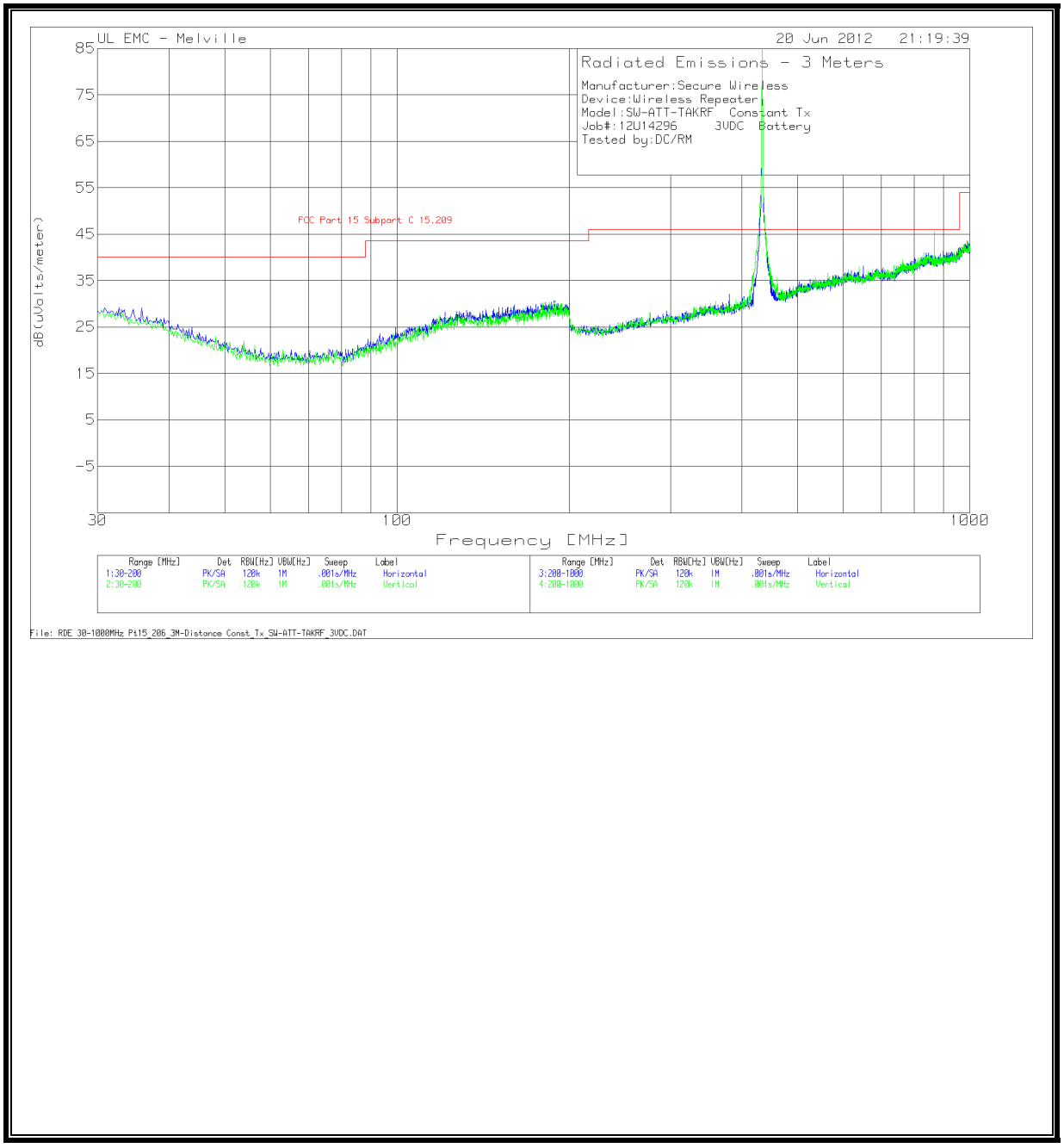
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

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)

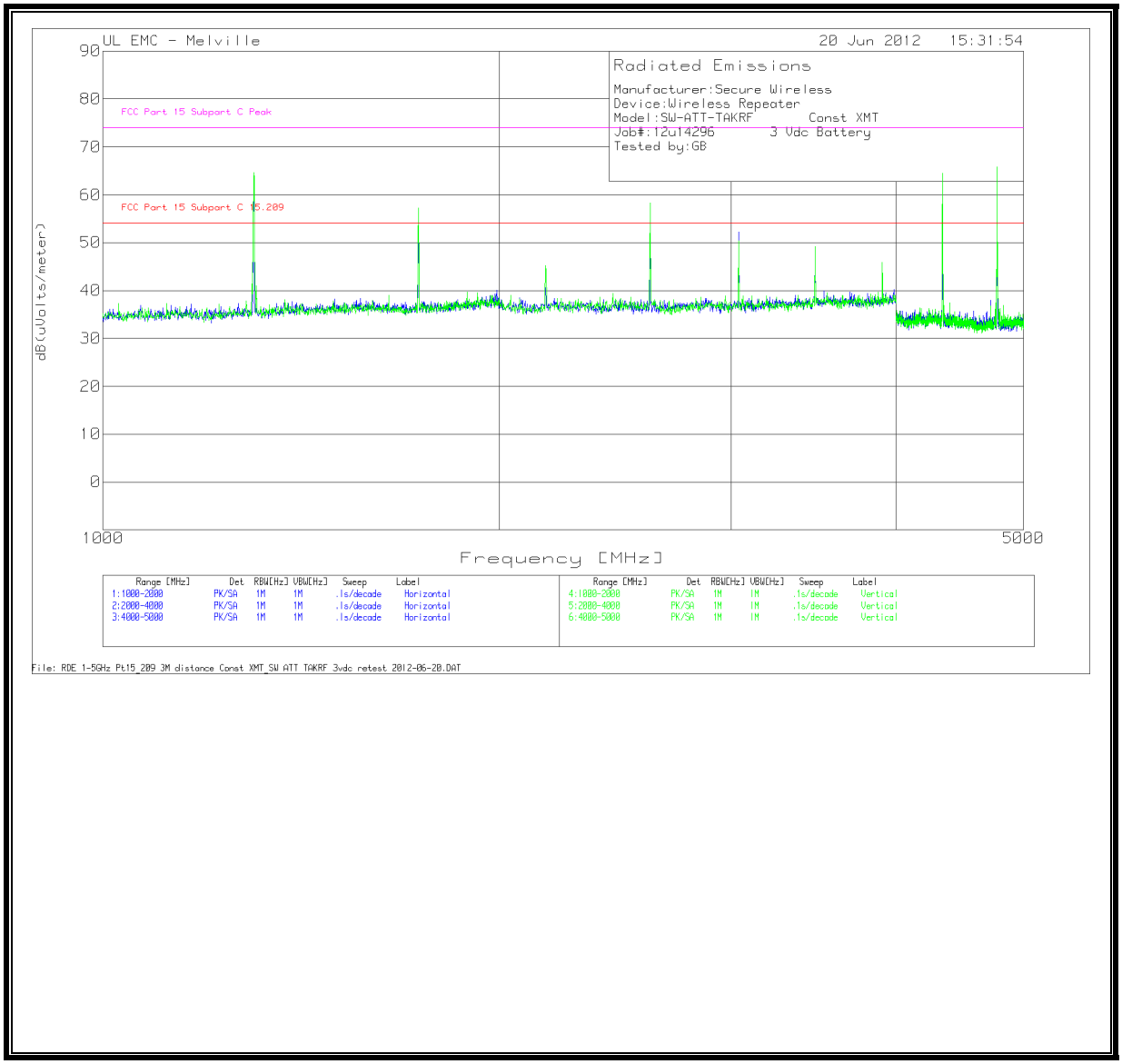


Manufacturer:Secure Wireless
Device:Wireless Repeater
Model:SW-ATT-TAKRF Constant Tx
Job#:12U14296 3VDC Battery
Tested by:DC/RM

Test Frequency	Meter Reading	Detector	AF-44067 [dB]	GL-3M [dB]	dB(uVolts /meter)	DCF [dB]	Corrected Level dB(uVolts /meter)	FCC Part 15 Subpart C 15.209/15.231	Margin	FCC Part 15 Subpart C Peak	Margin	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz														
433.9134	68.06	PK	16.5	2.3	86.86	-18.18	68.68	80.8	-12.12	100.8	-13.94	196	246	Horz
867.8277	22.53	PK	22.5	3.4	48.43	-18.18	30.25	60.8	-30.55	80.8	-32.37	355	138	Horz
954.3772	15.16	PK	23.1	3.6	41.86	-	-	46	-4.14	66	-24.14	312	200	Horz
Vertical 200 - 1000MHz														
433.9134	71.64	PK	16.5	2.3	90.44	-18.18	72.26	80.8	-8.54	100.8	-10.36	272	120	Vert
867.8277	25.46	PK	22.5	3.4	51.36	-18.18	33.18	60.8	-27.62	80.8	-29.44	5	132	Vert
953.1766	15.12	PK	23.1	3.6	41.82	-	-	46	-4.18	66	-24.18	33	357	Vert

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

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz



Manufacturer:Secure Wireless
Device:Wireless Repeater
Model:SW-ATT-TAKRF Const XMT
Job#:12u14296 3 Vdc Battery
Tested by:GB

Test Frequency	Meter Reading	Detector	AF-51442 [dB]	BOMS Factor [dB]	dB(uVolts/ meter)	DCF [dB]	Corrected Value dB(uVolts/ meter)	FCC Part 15 Subpart C 15.209	Margin	FCC Part 15 Subpart C Peak	Margin	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 1000 - 2000MHz														
1301.6257	91.95	PK	20.5	-44.72	67.73	-18.18	49.55	54	-4.45	74	-6.27	0	300	Horz
1735.2792	82.68	PK	20.8	-44.27	59.21	-18.18	41.03	54	-12.97	74	-14.79	340	261	Horz
Vertical 1000 - 2000MHz														
1301.6257	94.13	PK	20.5	-44.72	69.91	-18.18	51.73	54	-2.27	74	-4.09	85	173	Vert
1735.2792	84.57	PK	20.8	-44.27	61.1	-18.18	42.92	54	-11.08	74	-12.9	55	257	Vert
Horizontal 2000 - 4000MHz														
2169.5577	72.24	PK	21.4	-43.87	49.77	-18.18	31.59	54	-22.41	74	-24.23	192	304	Horz
2603.5419	86.4	PK	21.3	-43.43	64.27	-18.18	46.09	54	-7.91	74	-9.73	319	327	Horz
3037.506	76.77	PK	21.6	-42.83	55.54	-18.18	37.36	54	-16.64	74	-18.46	23	291	Horz
3471.3357	77.84	PK	22.2	-42.65	57.39	-18.18	39.21	54	-14.79	74	-16.61	287	274	Horz
3905.386	70.56	PK	22.6	-42.84	50.32	-18.18	32.14	54	-21.86	74	-23.68	136	340	Horz
Vertical 2000 - 4000MHz														
2169.5577	75.43	PK	21.4	-43.87	52.96	-18.18	34.78	54	-19.22	74	-21.04	249	358	Vert
2603.5419	85.23	PK	21.3	-43.43	63.1	-18.18	44.92	54	-9.08	74	-10.9	159	250	Vert
3037.506	76.15	PK	21.6	-42.83	54.92	-18.18	36.74	54	-17.26	74	-19.08	98	397	Vert
3471.3357	78.99	PK	22.2	-42.65	58.54	-18.18	40.36	54	-13.64	74	-15.46	263	397	Vert
3905.386	73.26	PK	22.6	-42.84	53.02	-18.18	34.84	54	-19.16	74	-20.98	308	273	Vert
Horizontal 4000 - 5000MHz														
4339.3257	85.27	PK	27.7	-51.8	61.17	-18.18	42.99	54	-11.01	74	-12.83	23	270	Horz
4773.1296	93.12	PK	27.1	-52.36	67.86	-18.18	49.68	54	-4.32	74	-6.14	300	278	Horz
Vertical 4000 - 5000MHz														
4339.3257	92.21	PK	27.7	-51.8	68.11	-18.18	49.93	54	-4.07	74	-5.89	91	308	Vert
4773.1296	94.06	PK	27.1	-52.36	68.8	-18.18	50.62	54	-3.38	74	-5.2	279	162	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

9. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207 (a)
IC RSS-GEN, Section 7.2.2

Frequency of emission (MHz)	Conducted Limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
* Decreases with the logarithm of the frequency.		

TEST PROCEDURE

ANSI C63.4

RESULTS

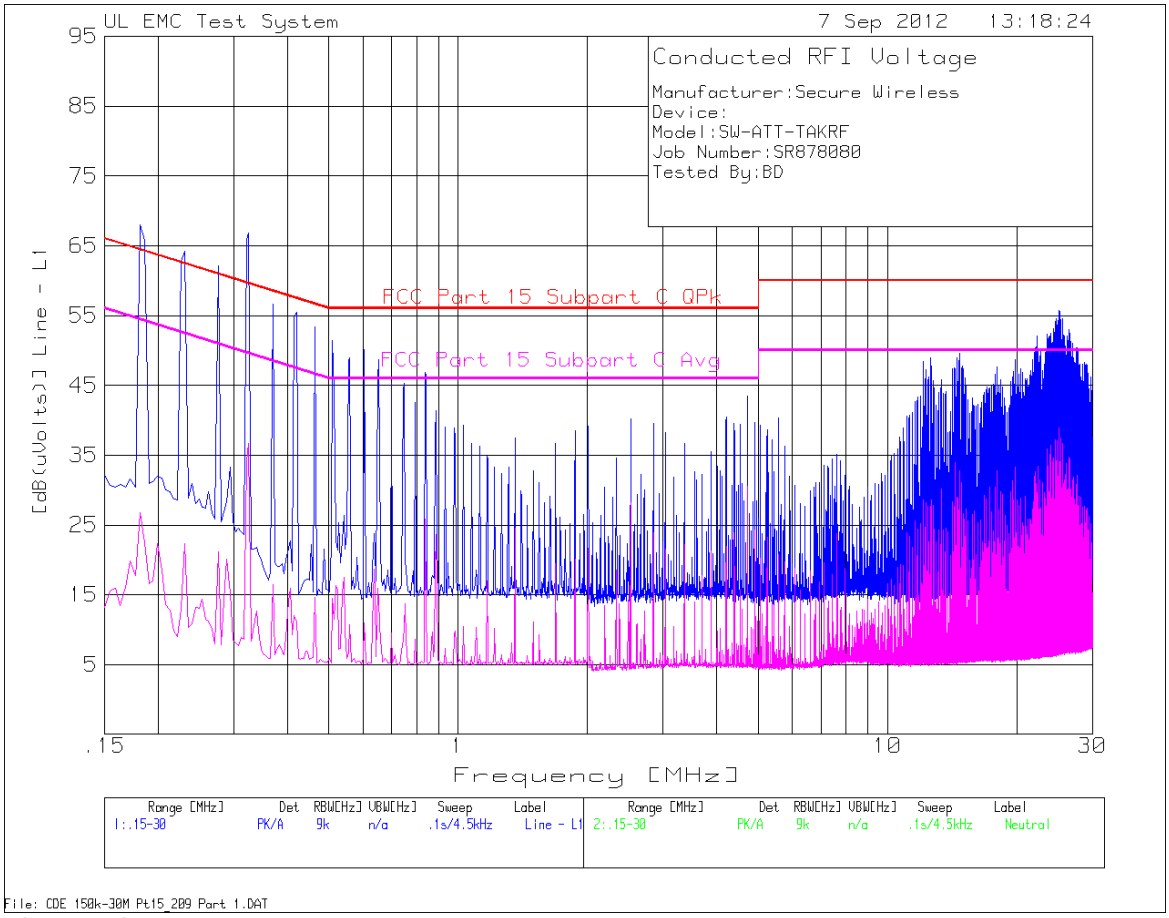
No non-compliance noted:

CONDUCTED EMISSIONS

Manufacturer:Secure Wireless								
Device:								
Model:SW-ATT-TAKRF								
Job Number:SR878080								
Tested By:BD								
Test Frequency	Meter Reading	Detector	LISN 5A636 Line 1 Cab L1 SW TL [dB]	[dB(uVolts)]	FCC Part 15 Subpart C QPk	Margin	FCC Part 15 Subpart C Avg	Margin
Line - L1 .15 - 30MHz								
0.1779	38.27	QP	10.1	48.37	64.58	-16.21	54.58	-6.21
0.2265	35.61	QP	10.1	45.71	62.58	-16.87	52.58	-6.87
0.2751	31.7	QP	10	41.7	60.96	-19.26	50.96	-9.26
0.3219	41.49	QP	10	51.49	59.66	-8.17	49.66	1.83
0.3705	24.4	QP	10	34.4	58.49	-24.09	48.49	-14.09
0.42	23.13	QP	10.1	33.23	57.45	-24.22	47.45	-14.22
0.4695	22.35	QP	10.1	32.45	56.52	-24.07	46.52	-14.07
0.5136	18.85	QP	10.1	28.95	56	-27.05	46	-17.05
0.555	15.59	QP	10.1	25.69	56	-30.31	46	-20.31
0.6	13.29	QP	10.1	23.39	56	-32.61	46	-22.61
0.6585	16.02	QP	10.1	26.12	56	-29.88	46	-19.88
25.026	23.37	QP	11.7	35.07	60	-24.93	50	-14.93
Neutral .15 - 30MHz								
0.186	39.46	QP	10.1	49.56	64.21	-14.65	54.21	-4.65
0.231	35.79	QP	10.1	45.89	62.41	-16.52	52.41	-6.52
0.2751	33.23	QP	10	43.23	60.96	-17.73	50.96	-7.73
0.3237	45.08	QP	10	55.08	59.61	-4.53	49.61	5.47
0.3687	29.34	QP	10	39.34	58.53	-19.19	48.53	-9.19
0.4119	27.35	QP	10.1	37.45	57.61	-20.16	47.61	-10.16
0.4614	24.16	QP	10.1	34.26	56.67	-22.41	46.67	-12.41
0.5055	21.81	QP	10.1	31.91	56	-24.09	46	-14.09
0.555	20.07	QP	10.1	30.17	56	-25.83	46	-15.83
0.6045	19.38	QP	10.1	29.48	56	-26.52	46	-16.52
0.6495	23.39	QP	10.1	33.49	56	-22.51	46	-12.51
0.6945	15.38	QP	10.1	25.48	56	-30.52	46	-20.52
22.3872	30.46	QP	11.5	41.96	60	-18.04	50	-8.04
23.4213	31.43	QP	11.5	42.93	60	-17.07	50	-7.07
24.1305	30.91	QP	11.6	42.51	60	-17.49	50	-7.49
24.3186	27.91	QP	11.6	39.51	60	-20.49	50	-10.49
24.6462	33.22	QP	11.7	44.92	60	-15.08	50	-5.08
24.8343	29.18	QP	11.7	40.88	60	-19.12	50	-9.12
24.972	33.46	QP	11.7	45.16	60	-14.84	50	-4.84
25.161	31.3	QP	11.7	43	60	-17	50	-7
25.3509	29.76	QP	11.7	41.46	60	-18.54	50	-8.54
25.5426	21.19	QP	11.8	32.99	60	-27.01	50	-17.01
25.692	19	QP	11.8	30.8	60	-29.2	50	-19.2
26.3922	27.63	QP	11.8	39.43	60	-20.57	50	-10.57
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								

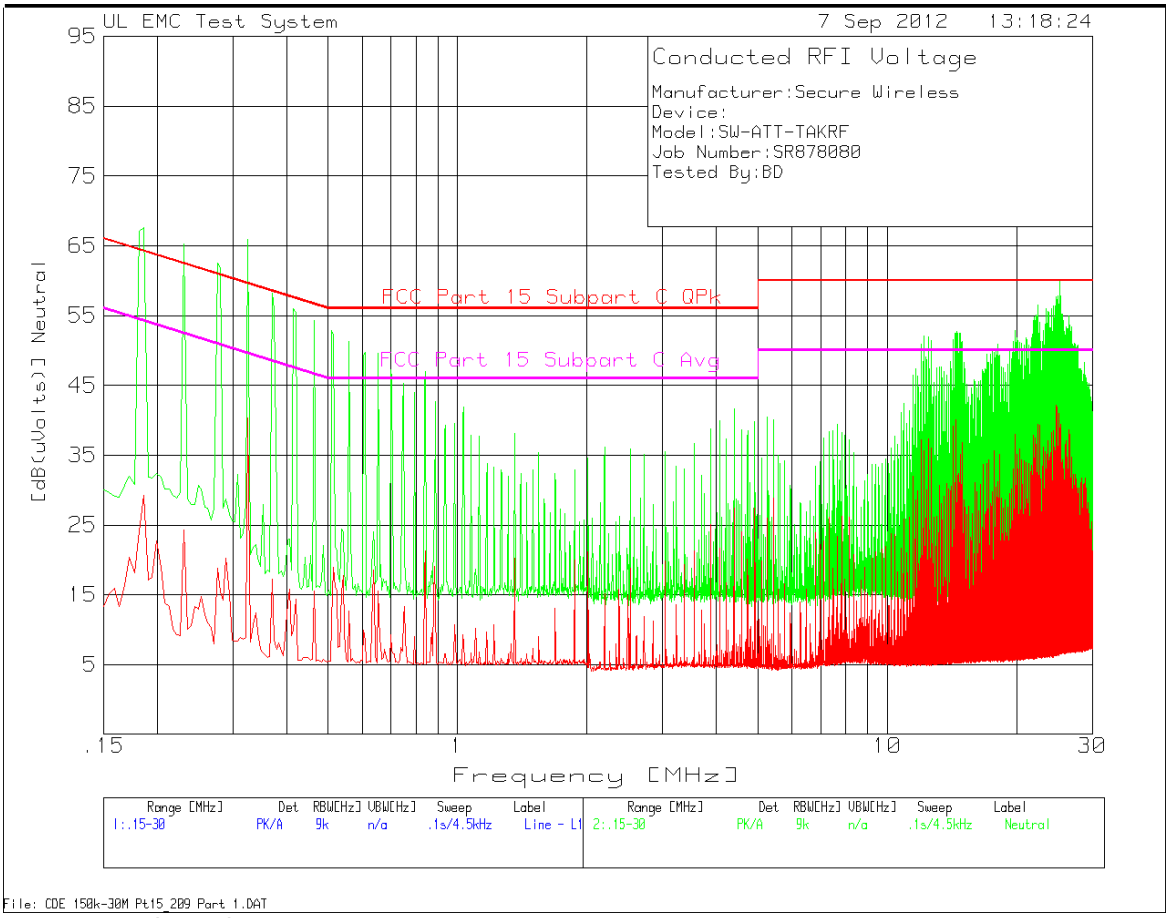
Manufacturer:Secure Wireless								
Device:								
Model:SW-ATT-TAKRF								
Job Number:SR878080								
Tested By:BD								
Test Frequency	Meter Reading	Detector	LISN 5A636 Line 1 Cab L1 SW TL [dB]	[dB(uVolts)]	FCC Part 15 Subpart C QPk	Margin	FCC Part 15 Subpart C Avg	Margin
Line - L1 .15 - 30MHz								
0.1815	16.69	Av	10.1	26.79	64.4	-37.61	54.4	-27.61
0.231	12.17	Av	10.1	22.27	62.4	-40.13	52.4	-30.13
0.276	11.13	Av	10	21.13	60.9	-39.77	50.9	-29.77
0.3255	26.69	Av	10	36.69	59.6	-22.91	49.6	-12.91
0.3705	6.49	Av	10	16.49	58.5	-42.01	48.5	-32.01
0.42	1.2	Av	10.1	11.3	57.4	-46.1	47.4	-36.1
0.465	4.56	Av	10.1	14.66	56.6	-41.94	46.6	-31.94
0.51	4.42	Av	10.1	14.52	56	-41.48	46	-31.48
0.5595	0.66	Av	10.1	10.76	56	-45.24	46	-35.24
0.6045	0.88	Av	10.1	10.98	56	-45.02	46	-35.02
0.654	3.84	Av	10.1	13.94	56	-42.06	46	-32.06
25.026	27.19	Av	11.7	38.89	60	-21.11	50	-11.11
Neutral .15 - 30MHz								
0.186	19.12	Av	10.1	29.22	64.2	-34.98	54.2	-24.98
0.231	14.12	Av	10.1	24.22	62.4	-38.18	52.4	-28.18
0.276	8.78	Av	10	18.78	60.9	-42.12	50.9	-32.12
0.3255	30.28	Av	10	40.28	59.6	-19.32	49.6	-9.32
0.3705	7.3	Av	10	17.3	58.5	-41.2	48.5	-31.2
0.4155	-0.15	Av	10.1	9.95	57.5	-47.55	47.5	-37.55
0.465	5.38	Av	10.1	15.48	56.6	-41.12	46.6	-31.12
0.51	1.29	Av	10.1	11.39	56	-44.61	46	-34.61
0.5595	2.52	Av	10.1	12.62	56	-43.38	46	-33.38
0.609	-1.64	Av	10.1	8.46	56	-47.54	46	-37.54
0.654	5.38	Av	10.1	15.48	56	-40.52	46	-30.52
0.699	-0.79	Av	10.1	9.31	56	-46.69	46	-36.69
22.1955	25.09	Av	11.5	36.59	60	-23.41	50	-13.41
23.9415	23.72	Av	11.6	35.32	60	-24.68	50	-14.68
25.1655	27.13	Av	11.7	38.83	60	-21.17	50	-11.17
26.16	19.93	Av	11.8	31.73	60	-28.27	50	-18.27
27.339	16.81	Av	12	28.81	60	-31.19	50	-21.19
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								

LINE 1 RESULTS



Blue- Peak, Magenta - Average

LINE 2 RESULTS

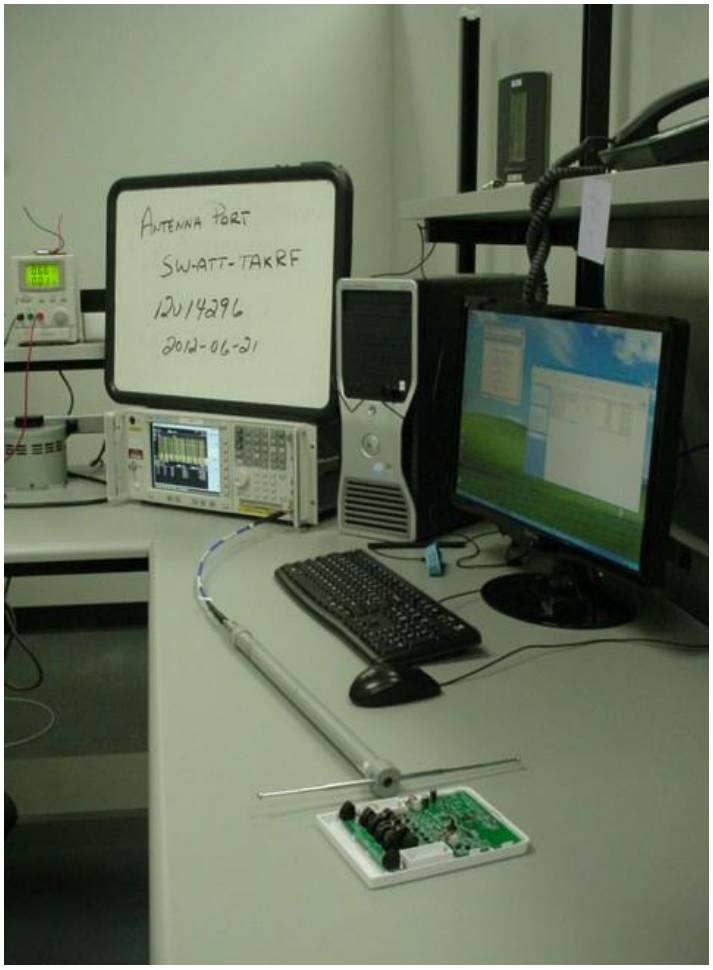


Green – Peak, Red - Average

10. SETUP PHOTOS

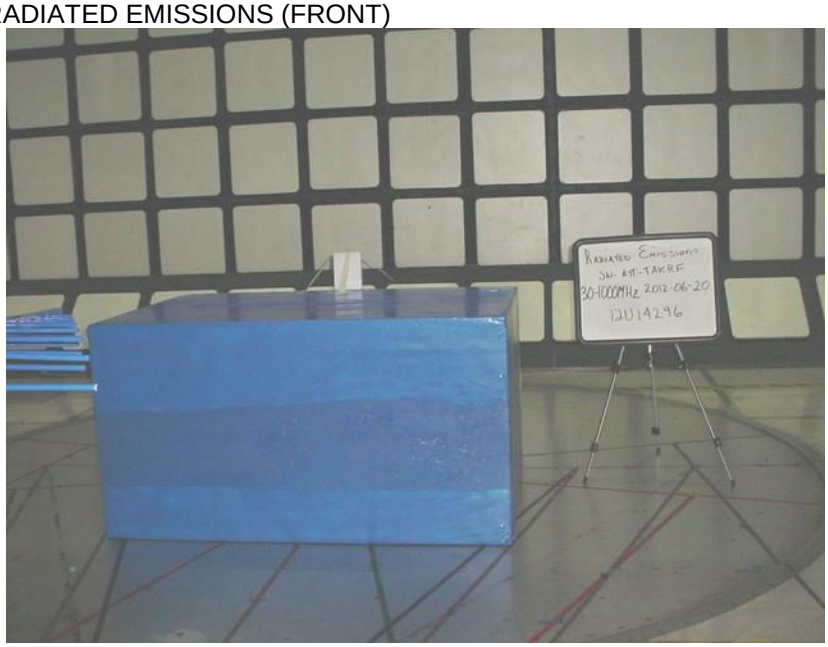
ANTENNA PORT

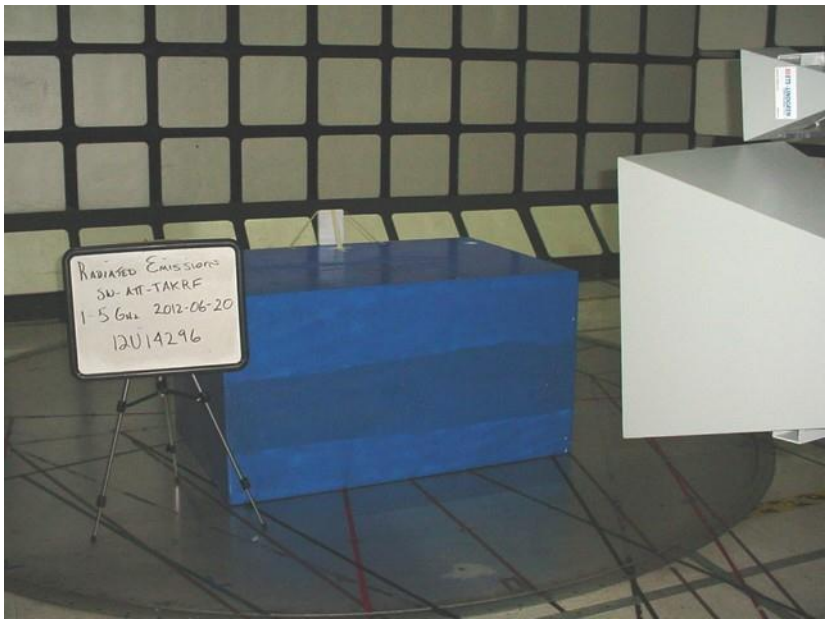
ANTENNA PORT



RADIATED EMISSIONS

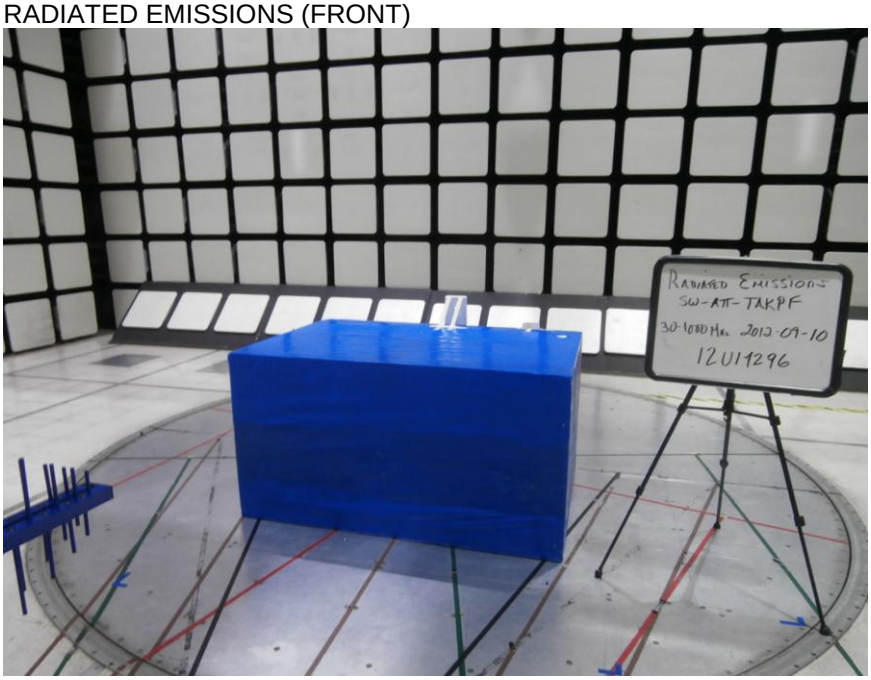
RADIATED EMISSIONS (FRONT)

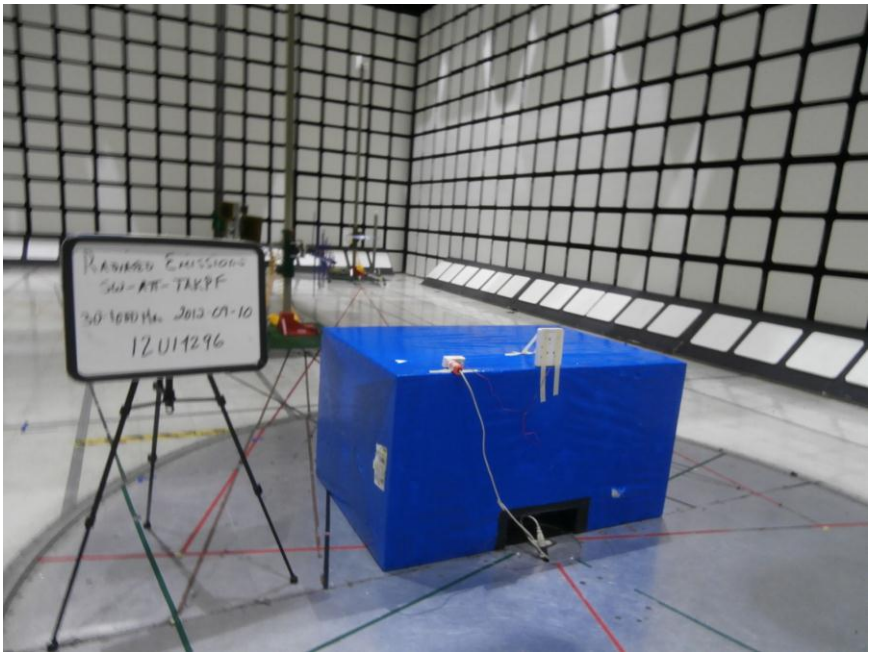




RADIATED EMISSIONS (BACK)

RADIATED EMISSIONS (FRONT)



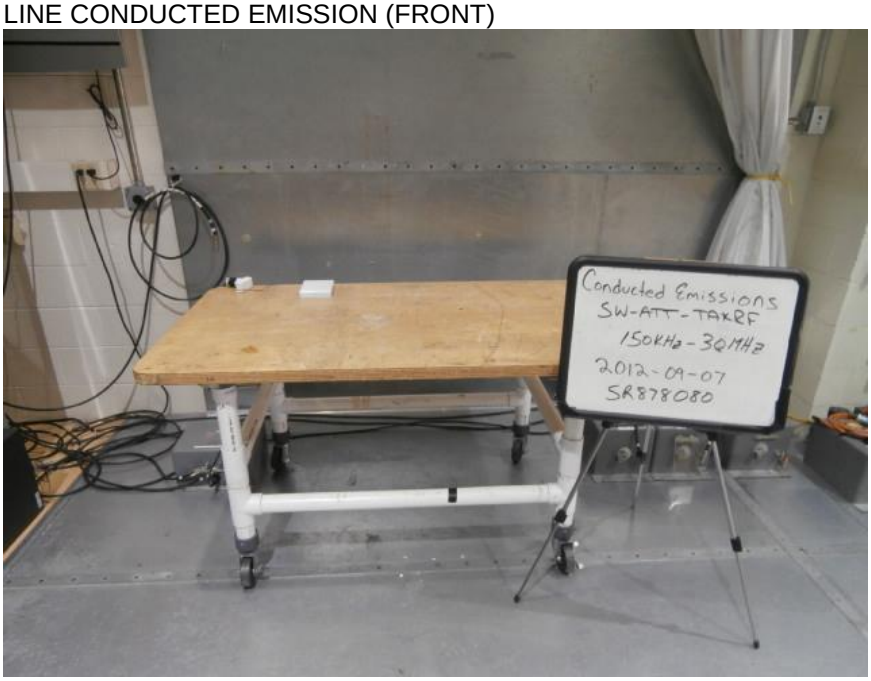


Same configuration used for above 1GHz.

RADIATED EMISSIONS (BACK)

AC MAINS LINE CONDUCTED EMISSION

LINE CONDUCTED EMISSION (FRONT)



LINE CONDUCTED EMISSION (BACK)

END OF REPORT