Underwriters Laboratories Inc.
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Melville, NY 11747

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Job Number:	11U13793
Project Number:	SR7635490-T001
Date:	2011-05-09
Model:	SW-NAP-GB / 4676A-GB319
FCC ID: QNP-GB319	IC Number: 4676A-GB319

Electromagnetic Compatibility Test Report

For

Secure Wireless, Inc

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: Phone: E-mail:	**Greg Hancock (866) 966-9473 greg@mysecurewireless.com**
Test Report Date:	**2011-05-09**
Product Type:	**Wireless Glass Break**
Product standards	**FCC Part 15, Subpart C, 15.231**
Model Number:	**US Model: SW-NAP-GB; Canada Model: 4676A-GB319**
Sample Serial Number:	**Non-serialized Production Unit**
EUT Category:	**Periodic Low Power Transmitter**
Testing Start Date:	**2011-04-29**
Date Testing Complete:	**2011-05-09**
Overall Results:	**Compliant**

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the US government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None	Original	-	-

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The SW-NAP-GB Glass Break Detector is a low power wireless motion detection device which operates on a single fixed frequency of 319.5MHz.

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 antenna.

The device does transmit at predetermined intervals. According to the applicant, a single transmission occurs every 70 minutes. A single transmission is less than 2 seconds in duration.

1.2 Equipment Marking Plate

Not available at time of test.

1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Wireless Glass Break	Secure Wireless, Inc	US Model:SW-NAP-GB, Canada Model: 4676A-GB319	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	3VDC nominal, from two CR123A 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:

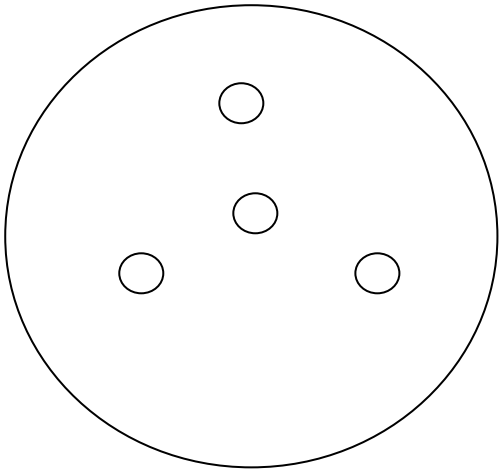
Frequency (MHz)	Description
9.984375	Crystal
319.5	Transmit frequency

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	3	-	-	DC	-	3VDC nominal, from two CR123A batteries

1.4 Block Diagram:

The diagram below illustrates the configuration of the equipment above.



1.5 EUT Configurations

Mode #	Description
1	Stand-alone

1.6 EUT Operation Modes

Mode #	Description
1	Continuously transmitting
2	Transmitting on break detection

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

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:

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

Reviewer:

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 B, 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

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, RSS-GEN, RSS-210
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

Figure 1 Test Setup for Occupied Bandwidth

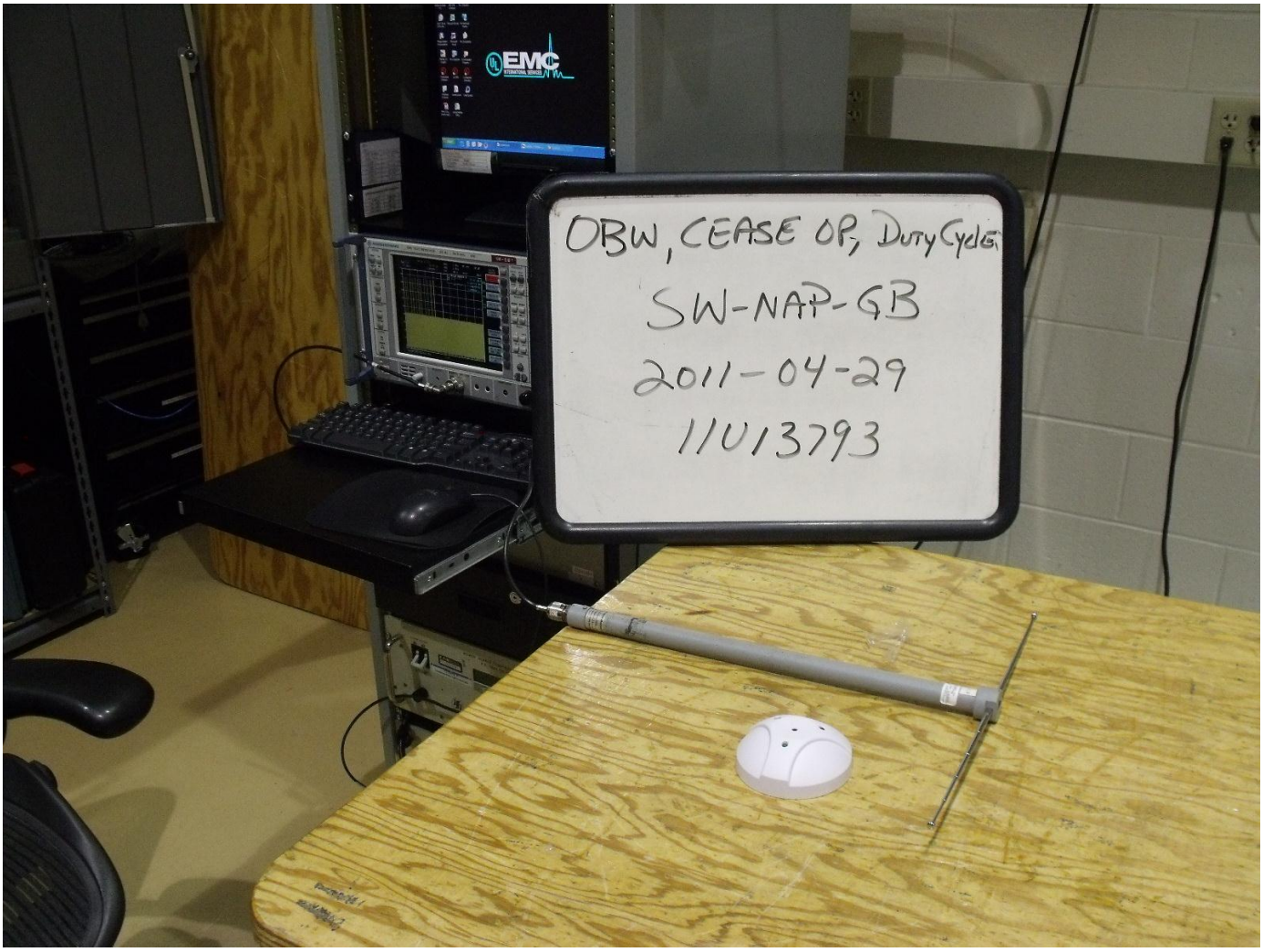
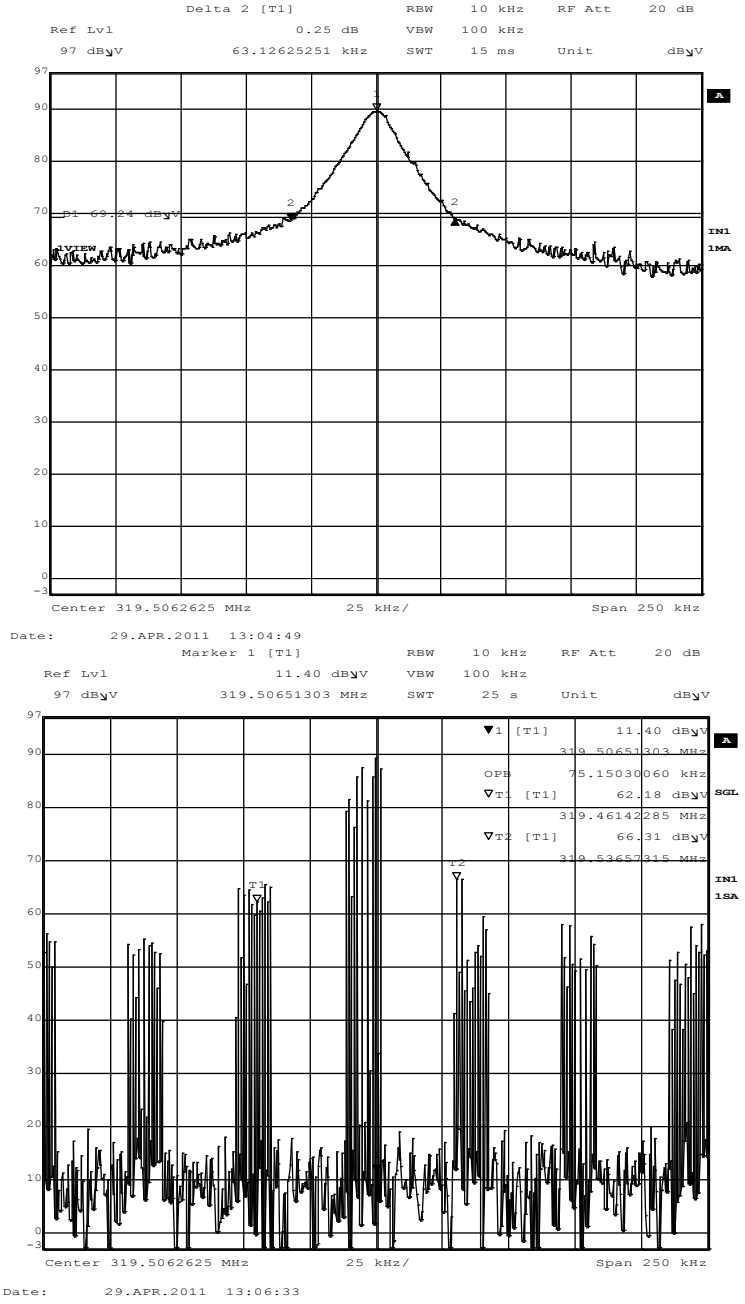


Table 4 Occupied Bandwidth Results

Power Mode	Frequency (MHz)	20dB OBW (kHz)	99% OBW (kHz)	Limit (MHz)	Result
Battery	319.5	63.13	75.15	0.799	Pass

Figure 2 Occupied Bandwidth Graph



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, 15.231, RSS-GEN, RSS-210
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

Figure 3 Test Setup for Cease Operation

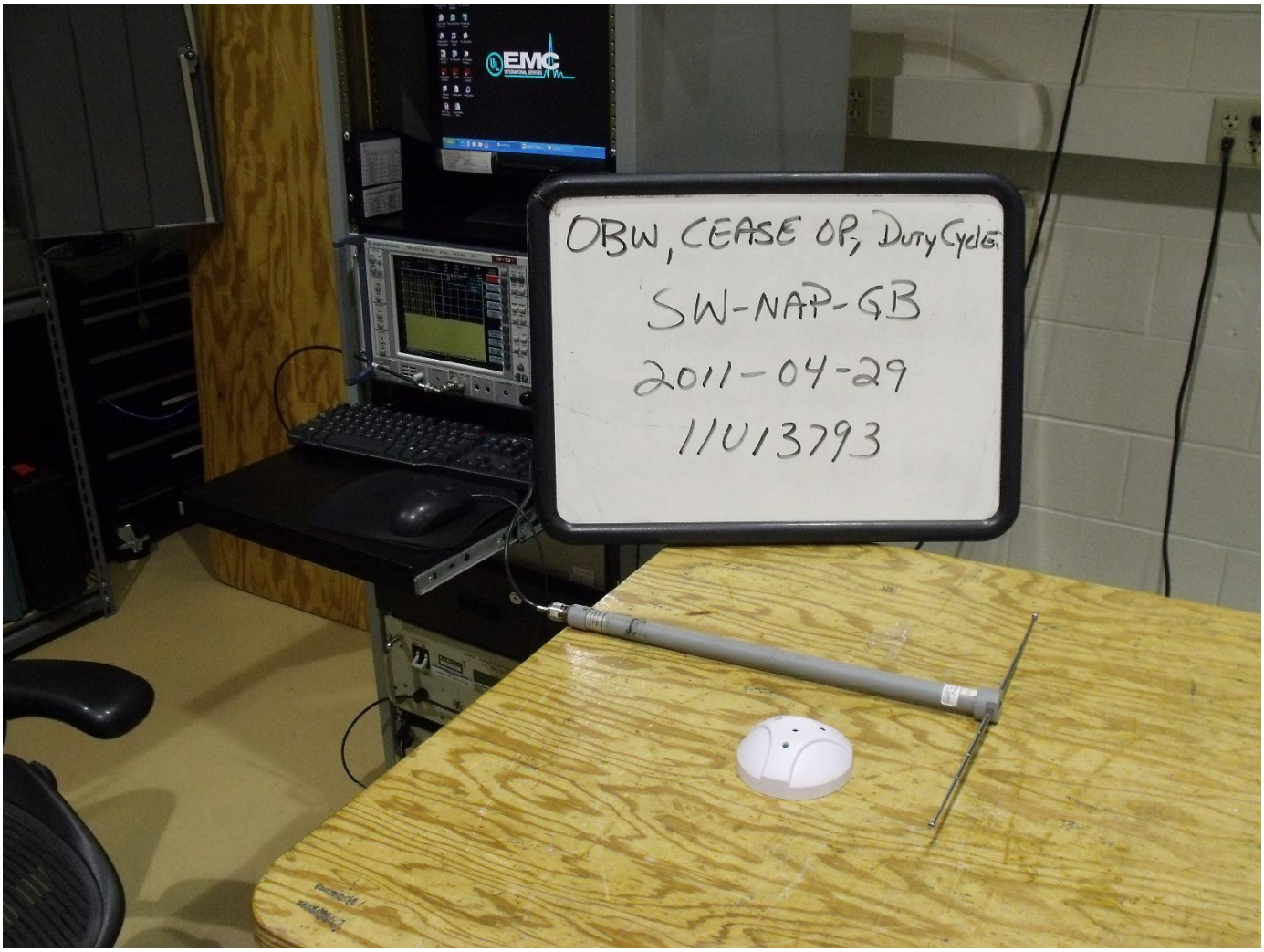
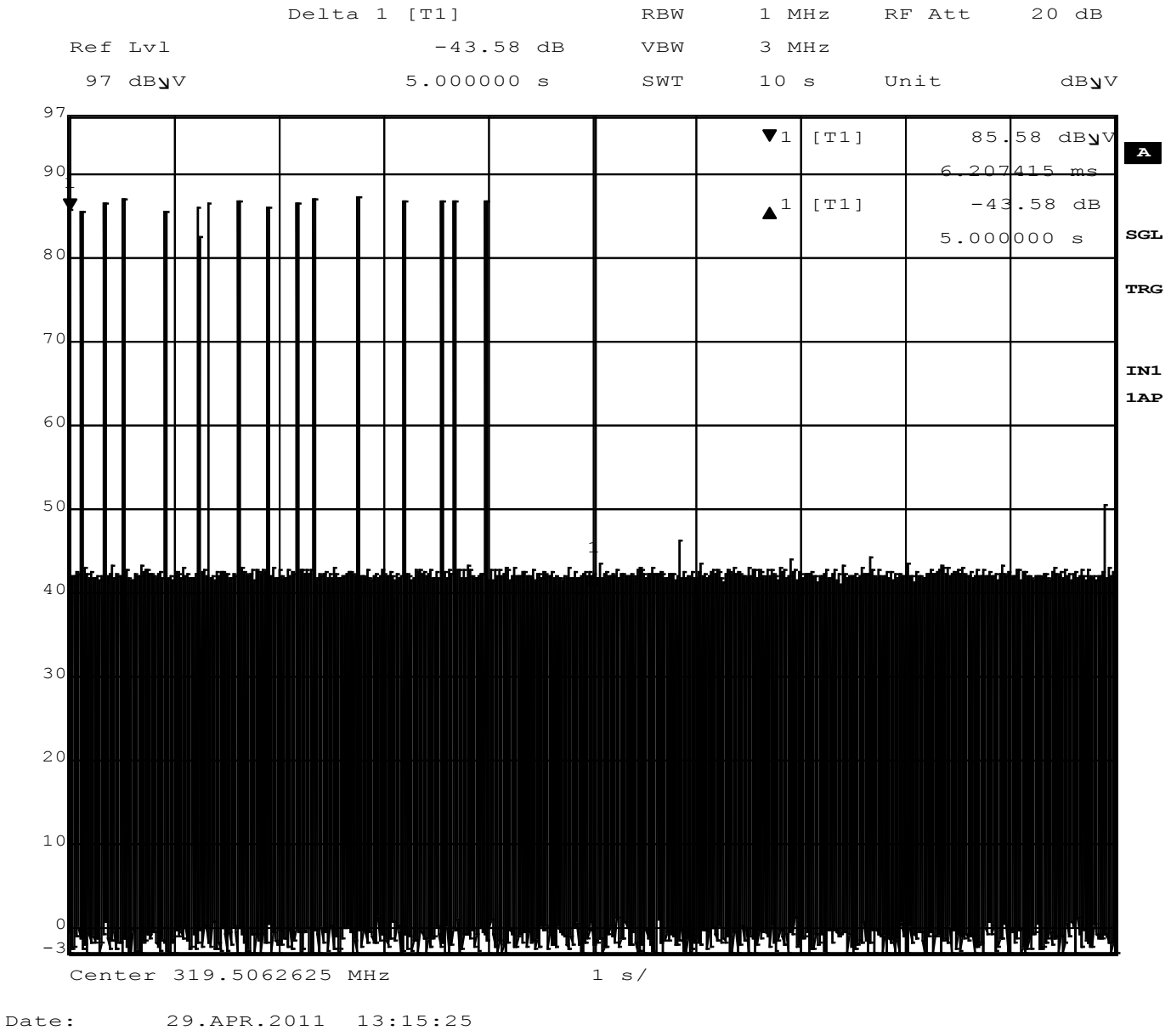


Figure 4 Cease Operation Graph



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, RSS-GEN, RSS-210
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) $20\log\left(\frac{PulseWidth}{TotalTransmissionTime}\right)$
33 * 108 = 3.564 18 * 252.5 = 4.545	98.2	-21.66

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

Figure 5 Test Setup for Pulse Train

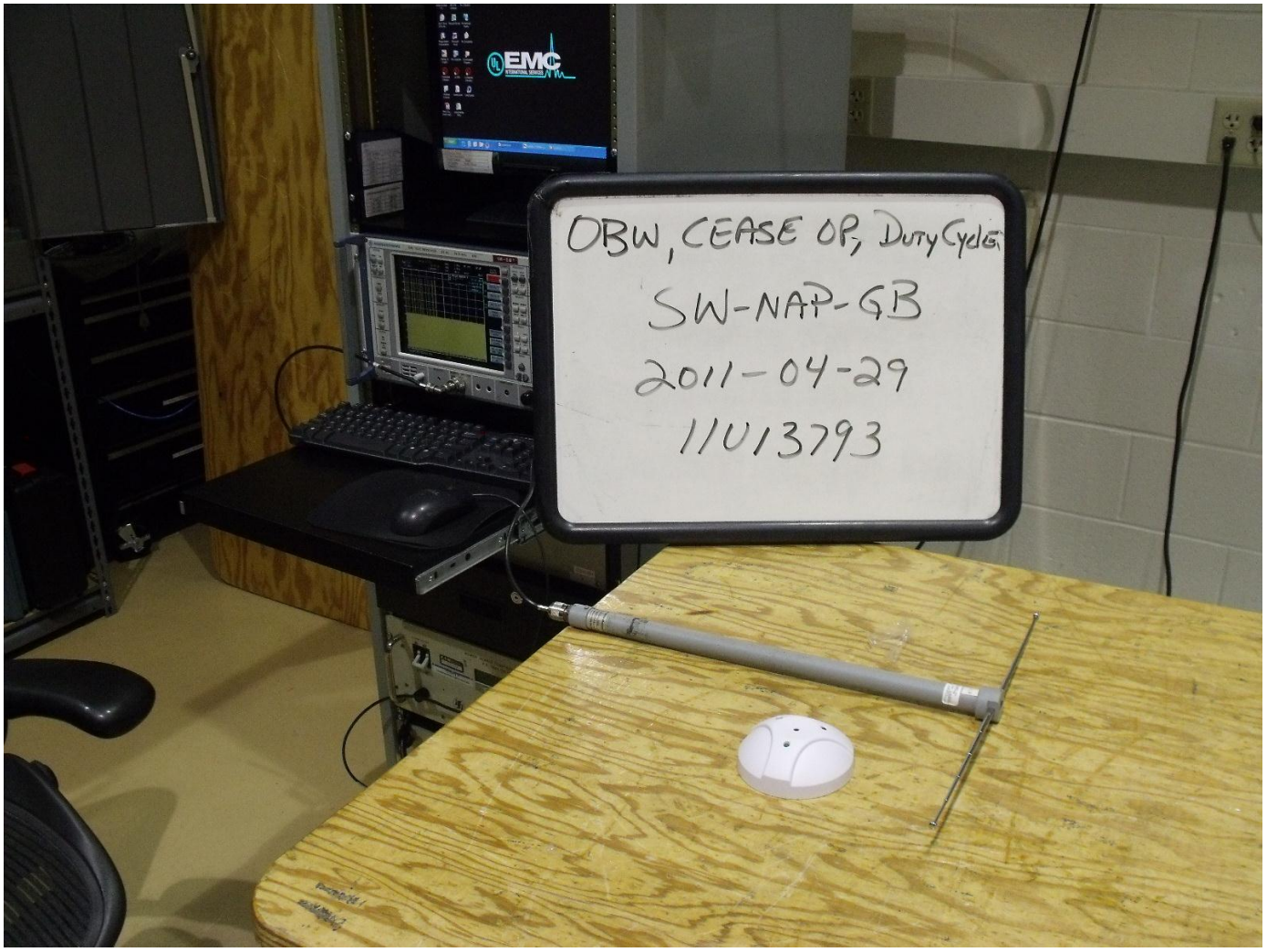
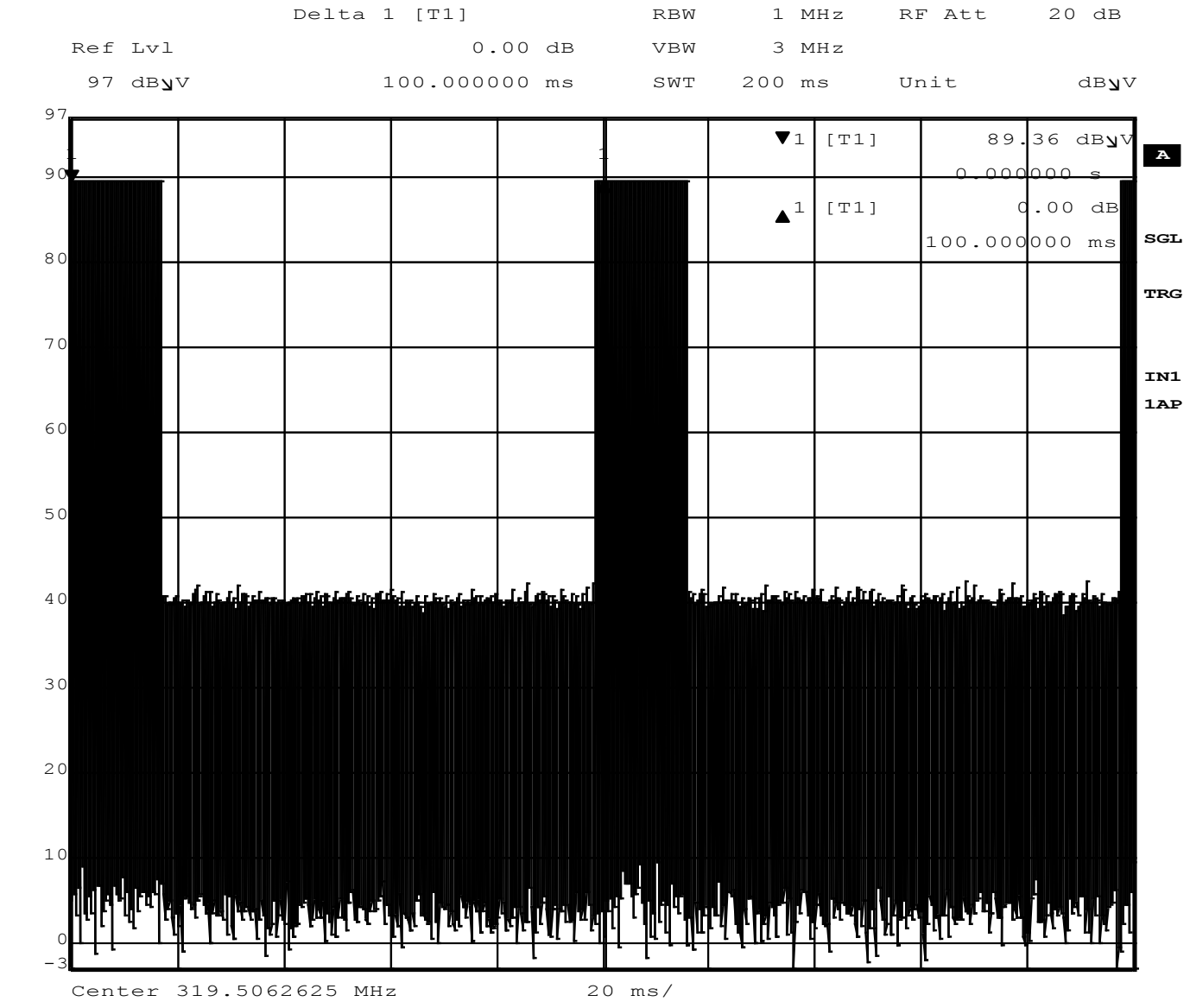
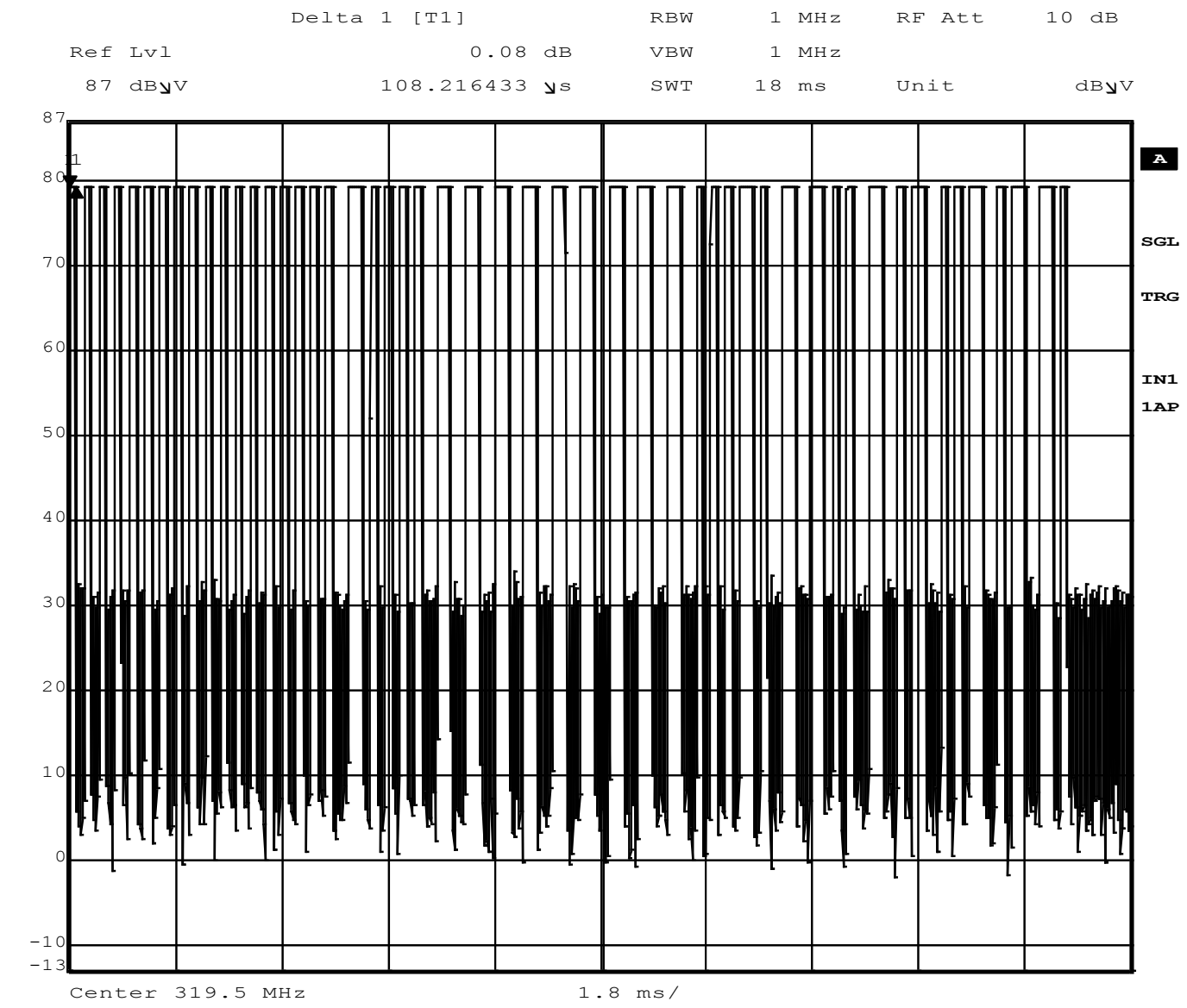


Figure 6 Pulse Train Graph

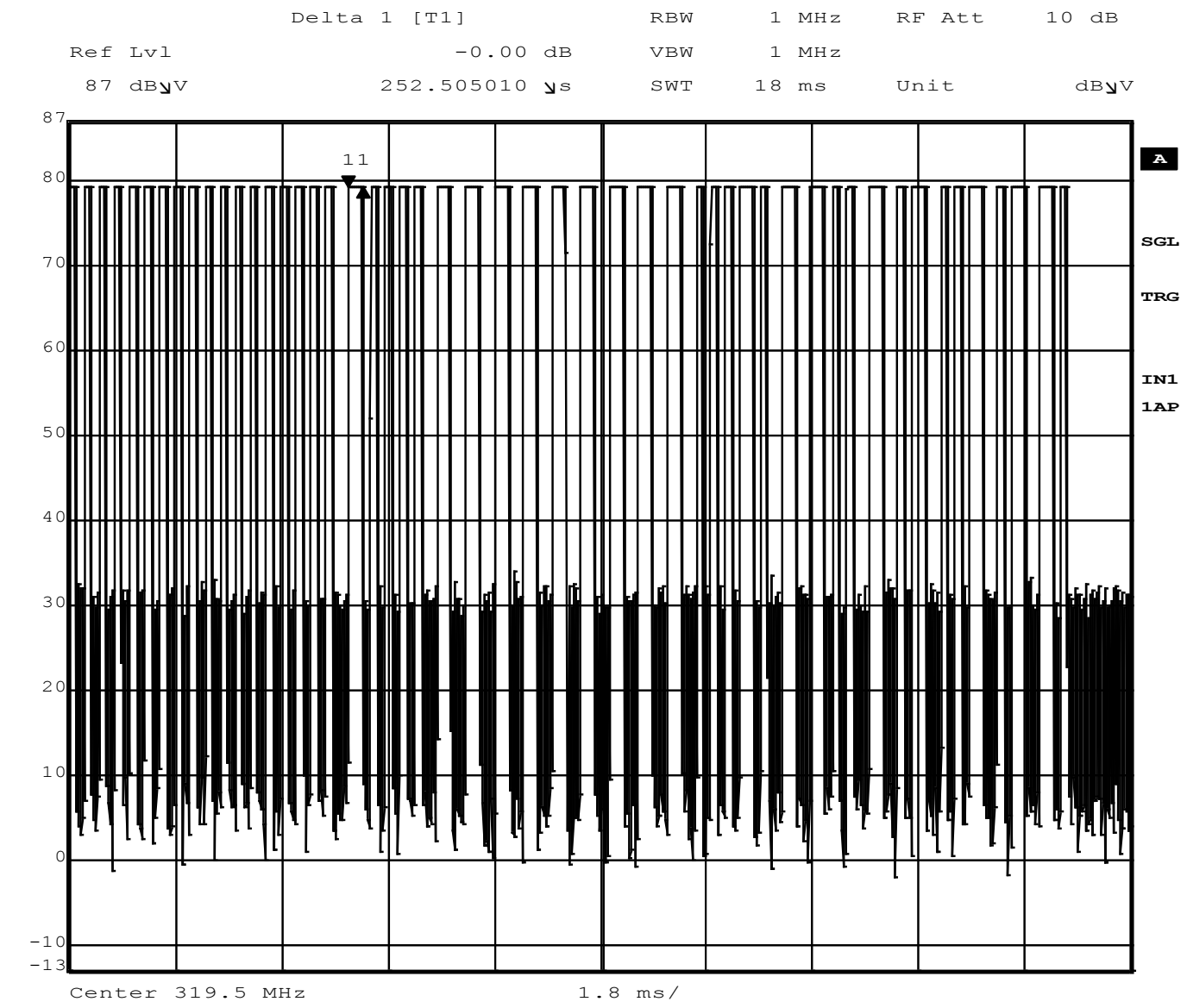


Date: 29.APR.2011 13:08:45

Pulses in 100mS



First Pulse – 108.2uS



Second pulse width – 252.5uS

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 C63.4:2003. 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, 15.231, ANSI C63.10, , RSS-GEN, RSS-210	
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 – 3.4 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	54	-	1
1000-10000	-	74	54
Fundamental – 319.5	NA	95.89	75.89
Spurious and Harmonics	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

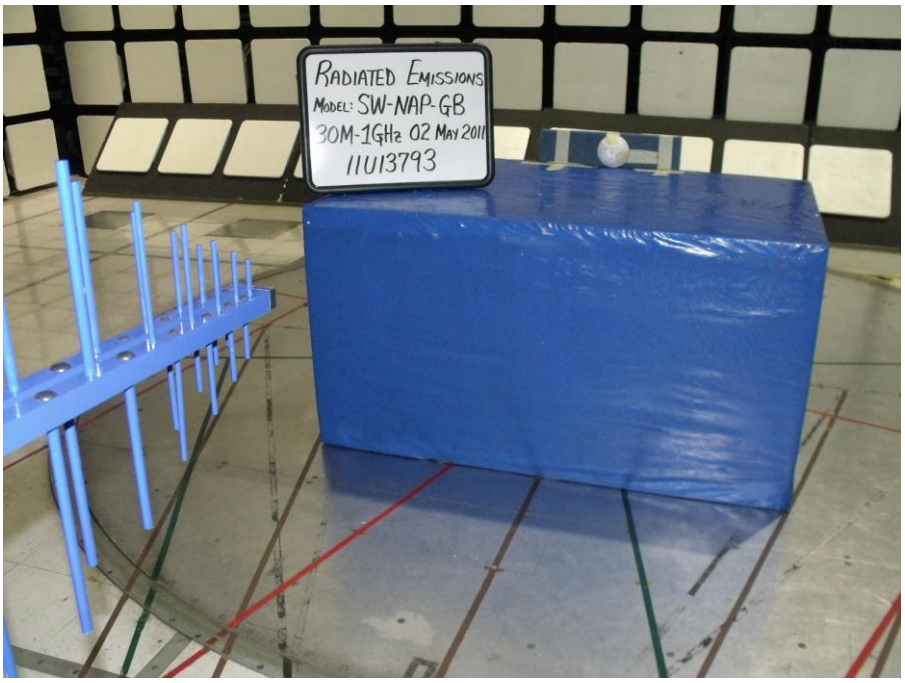
Supplementary information: Device is intended to be mounted to a wall for proper operation.

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	2011-03-01	2012-03-01
Bicon Antenna	Schaffner	VBA6106A	43441	2010-09-09	2011-09-09
Log-P Antenna	Schaffner	UPA6109	44068	2011-04-05	2012-04-05
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)					
EMI Receiver	Rohde & Schwarz	ESIB40	34968	2011-03-01	2012-03-01
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
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	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.

Figure 7 Test setup for Radiated Emissions



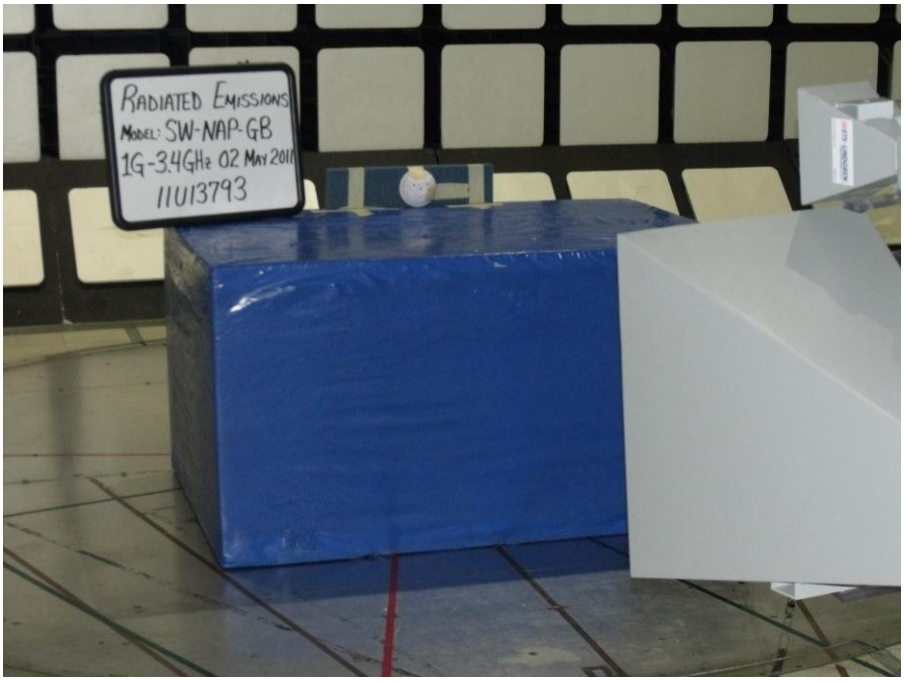


Figure 8 Radiated Emissions Graph

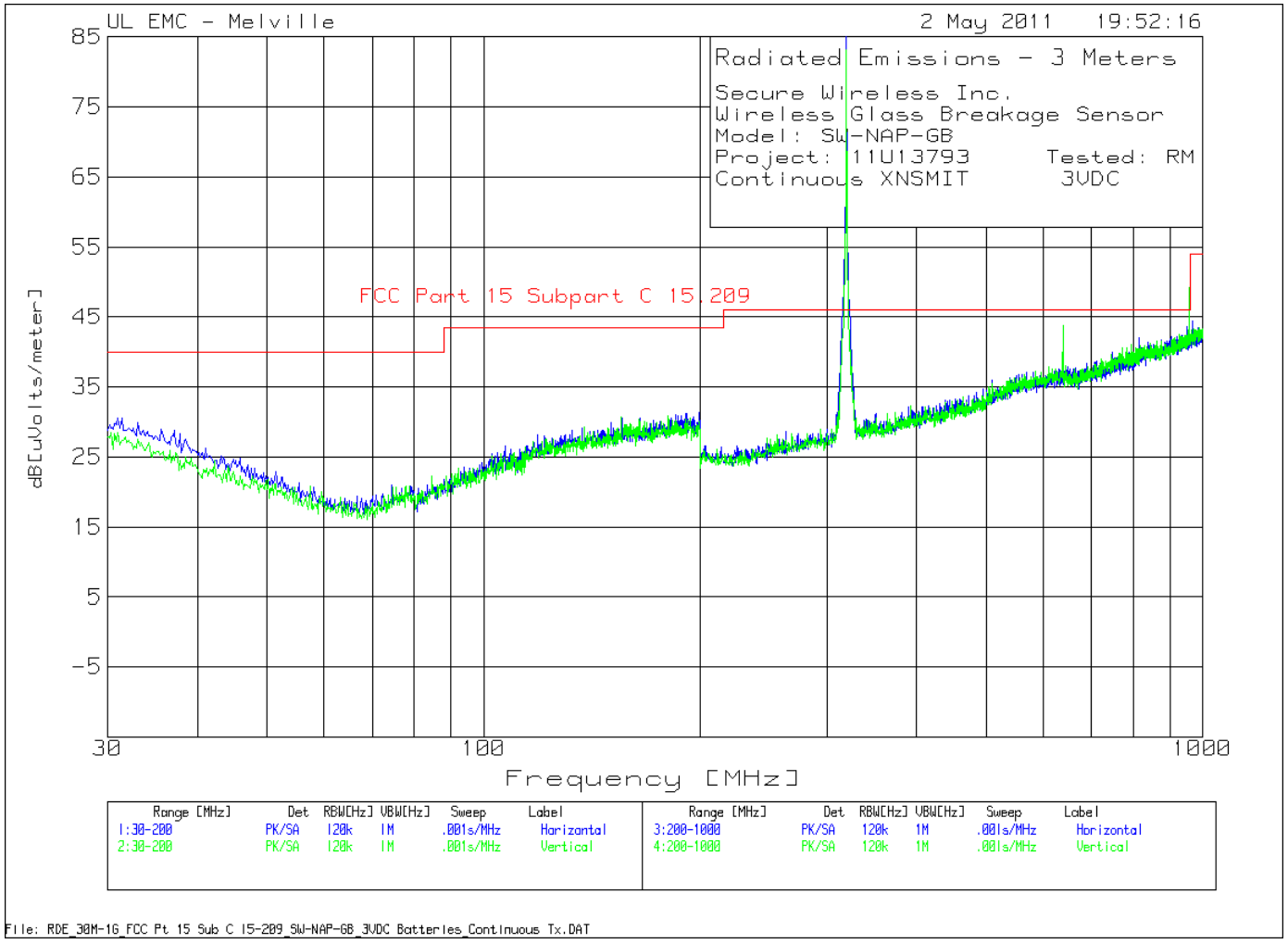


Table 12 Radiated Emissions Data Points

Secure Wireless Inc.
Wireless Glass Breakage Sensor
Model: SW-NAP-GB
Project: 11U13793 Tested: RM
Continuous XNSMIT 3VDC

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	DCF [dB]	Corrected Level dB[uVolts/meter]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
Horizontal 200 - 1000MHz														
319.5011	71.29	PK	2	14.3	87.59	-21.66	65.93	75.89	-9.96	95.89	-8.3	15	101	Horz
639.0125	26.15	PK	2.9	20.5	49.55	-21.66	27.89	55.89	-28	75.89	-26.34	338	145	Horz
958.5192	22.57	PK	3.6	24.2	50.37	-21.66	28.71	55.89	-27.18	75.89	-25.52	171	157	Horz
Vertical 200 - 1000MHz														
319.4992	69.16	PK	2	14.1	85.26	-21.66	63.6	75.89	-12.29	95.89	-10.63	40	141	Vert
639.0082	20.63	PK	2.9	20.6	44.13	-21.66	22.47	55.89	-33.42	75.89	-31.76	59	300	Vert
958.5175	24.96	PK	3.6	24.6	53.16	-21.66	31.5	55.89	-24.39	75.89	-22.73	61	123	Vert

Note: Limit 1 is compared to the corrected leve and Limit 2 is compared to the Peak Level

LIMIT 1: FCC Part 15 Subpart C 15.231
LIMIT 2: 15.35 Peak to Average

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

Figure 9 Radiated Emissions Graph

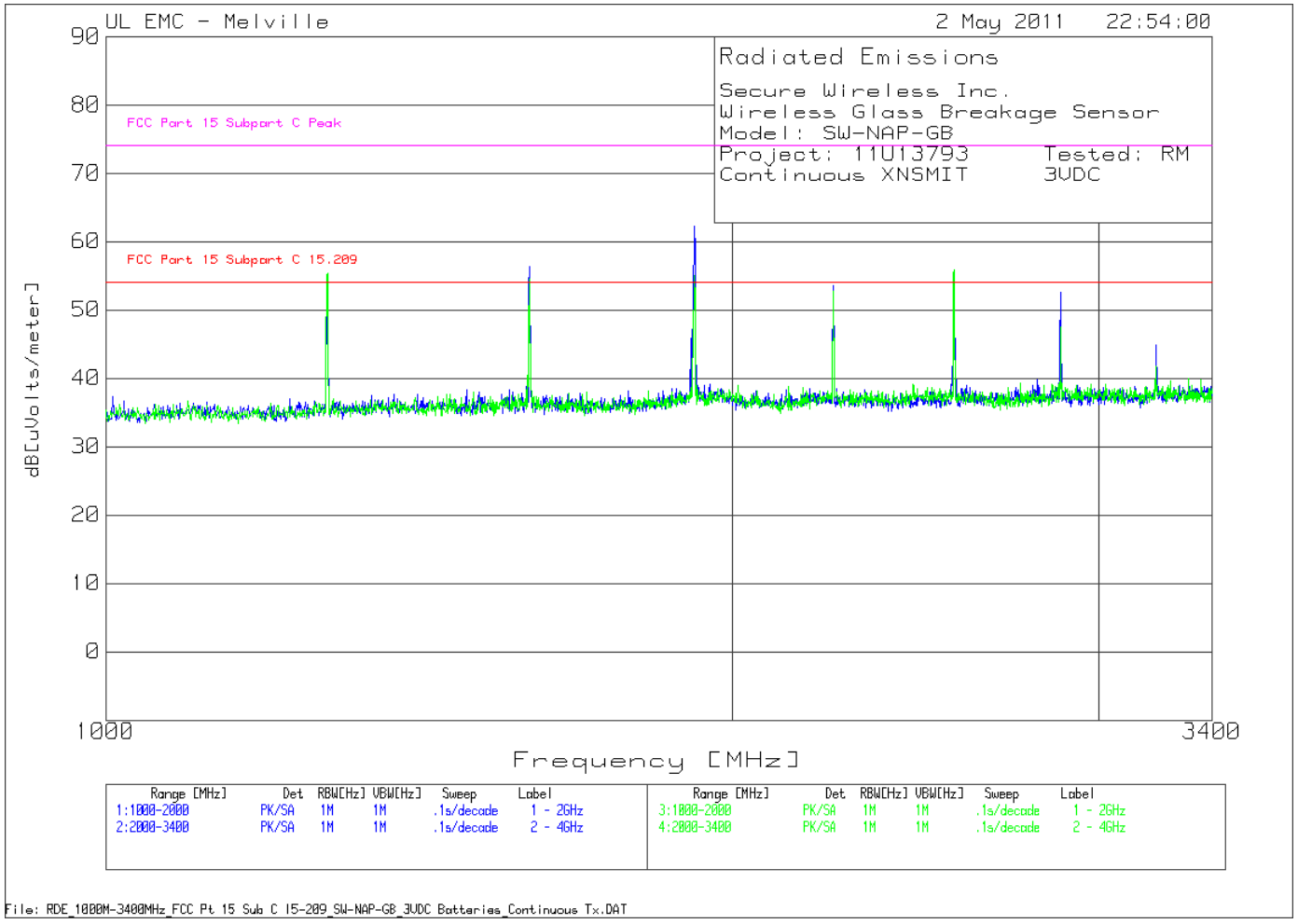


Table 13 Radiated Emissions Data Points

Secure Wireless Inc.
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Model: SW-NAP-GB
Project: 11U13793 Tested: RM
Continuous XNSMIT 3VDC

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	DCF [dB]	Corrected Level dB[uVolts/meter]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
1 - 2GHz 1000 - 2000MHz														
1278.0796	79.84	PK	-44.36	20.3	55.78	-21.66	34.12	54	-19.88	74	-18.22	6	371	Horz
1597.5619	83.57	PK	-44.15	21.2	60.62	-21.66	38.96	54	-15.04	74	-13.38	337	395	Horz
1917.0623	88.19	PK	-43.78	21.7	66.11	-21.66	44.45	54	-9.55	74	-7.89	360	378	Horz
2 - 4GHz 2000 - 3400MHz														
2236.5514	80.71	PK	-43.07	21.4	59.04	-21.66	37.38	54	-16.62	74	-14.96	6	370	Horz
2556.0594	80.22	PK	-42.62	21.3	58.9	-21.66	37.24	54	-16.76	74	-15.1	2	348	Horz
2875.6095	75.82	PK	-42.27	21.7	55.25	-21.66	33.59	54	-20.41	74	-18.75	12	222	Horz
3195.0994	69.33	PK	-42.13	22	49.2	-21.66	27.54	54	-26.46	74	-24.8	17	215	Horz
1 - 2GHz 1000 - 2000MHz														
1278.0996	82.04	PK	-44.36	20.3	57.98	-21.66	36.32	54	-17.68	74	-16.02	79	377	Vert
1597.5579	80.33	PK	-44.15	21.2	57.38	-21.66	35.72	54	-18.28	74	-16.62	219	378	Vert
1917.0783	81.42	PK	-43.78	21.7	59.34	-21.66	37.68	54	-16.32	74	-14.66	232	140	Vert
2 - 4GHz 2000 - 3400MHz														
2236.5644	80.14	PK	-43.07	21.3	58.37	-21.66	36.71	54	-17.29	74	-15.63	101	394	Vert
2556.0343	79.05	PK	-42.62	21.6	58.03	-21.66	36.37	54	-17.63	74	-15.97	110	371	Vert
2875.6095	72.95	PK	-42.27	21.9	52.58	-21.66	30.92	54	-23.08	74	-21.42	83	295	Vert
3195.1094	68.55	PK	-42.13	22.1	48.52	-21.66	26.86	54	-27.14	74	-25.48	76	324	Vert

Note: Limit 1 is compared to the corrected leve and Limit 2 is compared to the Peak Level

LIMIT 1: FCC Part 15 Subpart C 15.209
LIMIT 2: FCC Part 15 Subpart C Peak

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.

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

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