



REPORT

For

SEON Design Inc.

Unit 111, 3B Burbidge Street
Coquitlam, British Columbia
V3K 7B2, Canada

Date: January 21, 2009
Report No.: 9323-1E
Revision No.: 0
Project No.: 9323
Equipment: Wireless Bridge
Model No.: Smart-Reach Mobile



ONE STOP GLOBAL CERTIFICATION SOLUTIONS



3133-20800 Westminster Hwy, Richmond, BC
V6V 2W3, Canada
Phone: 604-247-0444
Fax: 604-247-0442
www.labtestcert.com

TABLE OF CONTENTS

Device Under Test Description.....	4
List of ancillary and/or support equipment provided by the applicant	4
Markings	5
Test Summary	6
Summary of the Product.....	7
Reviewed Modification:.....	7
Test of Conducted Emissions.....	8
Test Limits.....	8
Test Setup.....	8
Test Result.....	9
Test of Radiated Emissions.....	12
Test Limits.....	12
Test Setup for Pre-scan.....	12
Test Setup for Open Area Test Site(OATS)	15
Test Results:	15
Appendix A: Test Equipment Used	18
Appendix B: Photographs.....	19

CFR 47 §15.107 & §15.109/IC-RSS 210 Issue 7, 2007		
Report reference No.....:	9323-1E	
Report Revision History:	➤ Rev.0 – January 21, 2009	
Tested by (printed name and signature)	Jeremy LEE	
Approved by (printed name and signature)	Kavinder Dhillon, Eng.L.	
Date of issue	January 21, 2009	
<p>Note: By signing this report, both the Testing Technician and the Reviewer hereby declare to abide by the applicable LabTest policies:</p> <p>1.) Statement of Independence # 3014 (LabTest Employees), 2.) Independence, Impartiality, and Integrity #1039, clause 11 (Engineering Service Subcontractors), or 3.) Independence, Impartiality, and Integrity #1019, clause 3.5 (Testing Subcontractors).</p>		
FCC Site Registration No.:	444229	
IC Site Registration No.:	5970A	
Testing Laboratory Name	LabTest Certification Inc.	
Address	3133 – 20800 Westminster Hwy, Richmond, B.C. V6V-2W3	
OATS Test Location Name	LabTest Certification Inc.	
Address	17325-48 Ave., Surrey, BC, Canada	
Applicant's Name	SEON Design Inc.	
Address	Unit 111, 3B Burrbridge St. Coquitlam, B.C. V3K 7B2	
Manufacturer's Name	Same as Applicant	
Address	Same as Applicant	
Test specification		
Standards	Title 47 of the CFR:2007, Part15 IC-RSS 210 Issue 7, 2007	
Date Test sample received	Jan. 14, 2009	
Date of Testing	Jan. 15 to 19, 2009	
Test item description		
Manufacturer	SEON Design Inc.	
Model and/or type reference	Smart-Reach Mobile	
Serial numbers	N/A	
Rating(s)	12VDC	

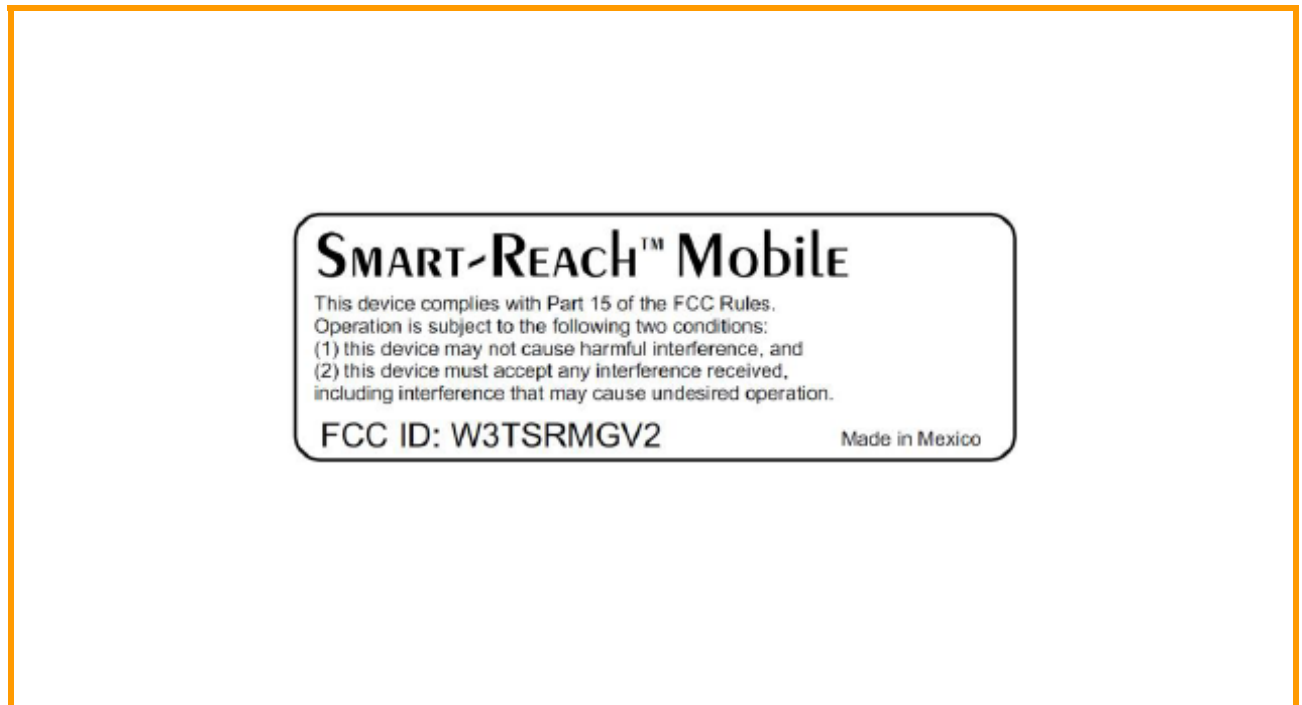
Device Under Test Description

Application for	Wireless Bridge
Nominal Voltages for:	<input type="checkbox"/> stand-alone equipment <input checked="" type="checkbox"/> combined (or host) equipment <input type="checkbox"/> test jig
Supply Voltage:	<input type="checkbox"/> AC <input type="checkbox"/> Amps <input checked="" type="checkbox"/> 12V DC <input type="checkbox"/> Amps
If DC Power:	<input type="checkbox"/> Internal Power Supply <input checked="" type="checkbox"/> External Power Supply or AC/DC adapter <input type="checkbox"/> Battery <ul style="list-style-type: none"> <input type="checkbox"/> Nickel Cadmium <input type="checkbox"/> Alkaline <input type="checkbox"/> Nickel-Metal Hydride <input type="checkbox"/> Lithium-Ion <input type="checkbox"/> Lead Acid (Vehicle regulated) <input type="checkbox"/> Other
General Product Information:	The EUT is a Wireless 802.11 a/b/g Client Bridge. The EUT operates in the frequency bands of 2.412-2.462GHz, 5.180-5.240GHz, 5.745-5.805GHz, 5.260-5.320GHz and 5.500-5.700GHz, and is powered by 12VDC from Vehicle or by AC/DA adapter. The EUT was modified its DC power input module to applying for installation in Vehicle from WCB-200 Wireless Client Bridge FCC ID: RTPWCB-200, manufactured by Colubris Networks Inc.

List of ancillary and/or support equipment provided by the applicant

Model:	Description:	Ratings:	Approvals/Standards
DPD12005P5P-SZ	AC ADAPTOR	Input: 120VAC/60Hz 10W Output: 12VDC 500mA	UL E140898

Markings



You should refer to the clause of FCC Part 2 Section 2.295 and FCC Part 15 Section 15.19 for information to be contained on the label as well as information about the label. Any other statements or labelling requirements may appear on a separate label at the option of the applicant/grantee.

According to FCC Section 2.925(a),

"(a) Each equipment covered in an application for equipment authorization shall bear a nameplate or label listing the following:

(1) FCC Identifier consisting of the two elements in the exact order specified in §2.926. The FCC Identifier shall be preceded by the term *FCC ID* in capital letters on a single line, and shall be a type size large enough to be legible without the aid of magnification.

Example: FCC ID XXX123. XXX-Grantee Code 123-Equipment Product Code"

According to FCC Section 15.19(a)(3), the following statement must be included on the identification label: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Test Summary

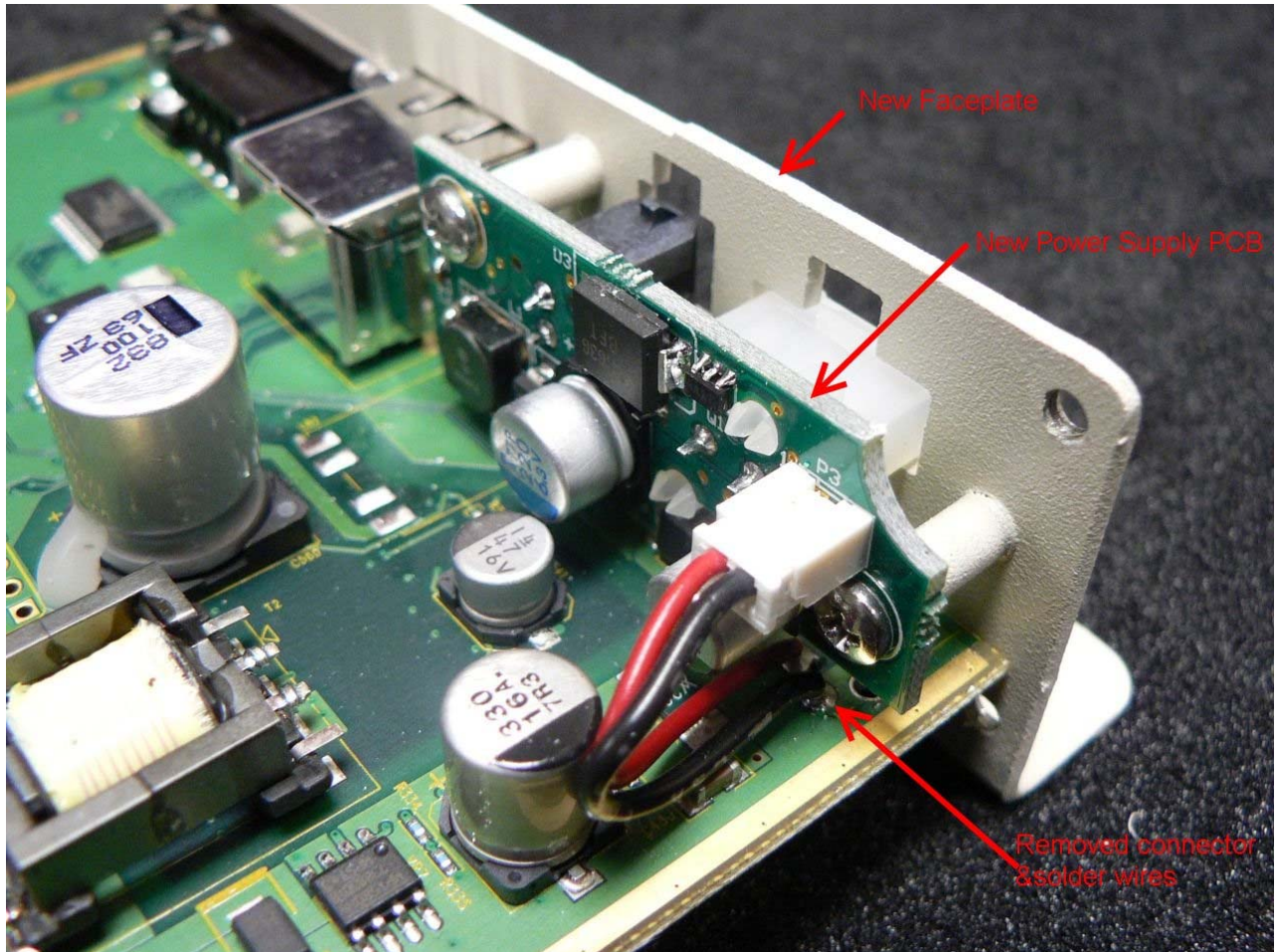
Description of Test	Regulation	Measurement Method	Result
Conducted Emissions-Unintentional radiators	CFR47 §15.107(revised October 1, 2007)/RSS-Gen §7.2.2, Issue 2, 2007, Class A	ANSI C63.4:2003	PASS
Radiated Emissions-Unintentional radiators	CFR47 §15.109(revised October 1, 2007)/RSS-210 Issue 7, 2007, Class A	ANSI C63.4:2003	PASS
RF Exposure	CFR47 §15.407(f), §2.1091 / RSS-Gen §5.5, RSS-102	ANSI C63.4:2003	N/A ¹⁾
Antenna Requirement	CFR47 §15.203 /RSS-Gen §7.1.4	ANSI C63.4:2003	N/A ¹⁾
Conducted Emissions	CFR47 §15.207(a) /RSS-Gen §7.2.2	ANSI C63.4:2003	N/A ¹⁾
Unwanted Emissions	CFR47 §15.407(b) /RSS-210 §2.7, §A9.3	ANSI C63.4:2003	N/A ¹⁾
Spurious Radiated Emissions	CFR47 §15.209 & §15.407(b) §15.205 /RSS-210 §A9.3	ANSI C63.4:2003	N/A ¹⁾
99% & 26dB Bandwidth	CFR47 §15.407(a)(2) /RSS-210 §A9.2	ANSI C63.4:2003	N/A ¹⁾
Maximum Peak Output Power	CFR47 §15.407(a) /RSS-210 §A8.4, A9.2	ANSI C63.4:2003	N/A ¹⁾
Power Spectral Density	CFR47 §15.407(a) /RSS-210 §A9.2	ANSI C63.4:2003	N/A ¹⁾
Peak Excursion	CFR47 §15.407(a)(6)	ANSI C63.4:2003	N/A ¹⁾
Frequency Stability	CFR47 §15.407(g)	ANSI C63.4:2003	N/A ¹⁾

Note1): This has been passed by the test report of FCC ID:RTPWCB-200.

Summary of the Product

Reviewed Modification:

The EUT was modified its power module to install on Vehicle and using 12VDC as below pictures.



Test of Conducted Emissions

FINAL TEST RESULT	PASS
Basic Standard	CFR47 §15.107 (Revised Oct. 1, 2007), Class A
Temperature	16.3 °C
Relative Humidity	43.8 %
Barometric Pressure:	103.11 kPa
Test Date	Jan. 15, 2009
Sample Number	683296
Calibrated Test Equipment (ID)	058, 106, 112, 127, 128
Reference Equipment (ID) (Calibration not required)	059
Electrical Rating	110VAC, 60Hz, Single Phase
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

FCC 15.107:

(b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms LISN. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

Test Setup

The test was performed in accordance with **CFR47 §15.107:2007, Class A & ANSI C63.4, 2003.**

The EUT was placed on a desk 0.8 meters above a metal ground plane and 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

The adaptor was used as a power source. The EUT was operated as normal operating

Initially a scan was made with a Spectrum Analyzer from 150 kHz to 30 MHz on each phase with the receiver in the peak mode. The receiver IF bandwidth was 9 kHz and scan step was about 9 kHz.

Test Result

The EUT passed.

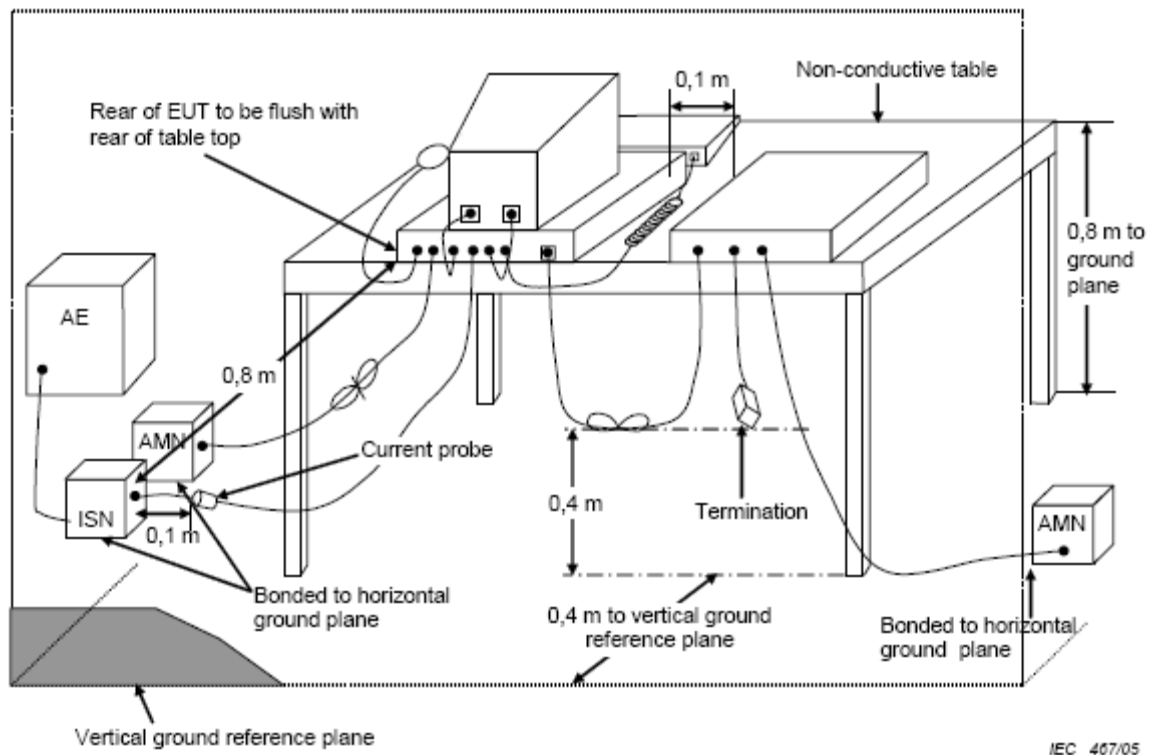
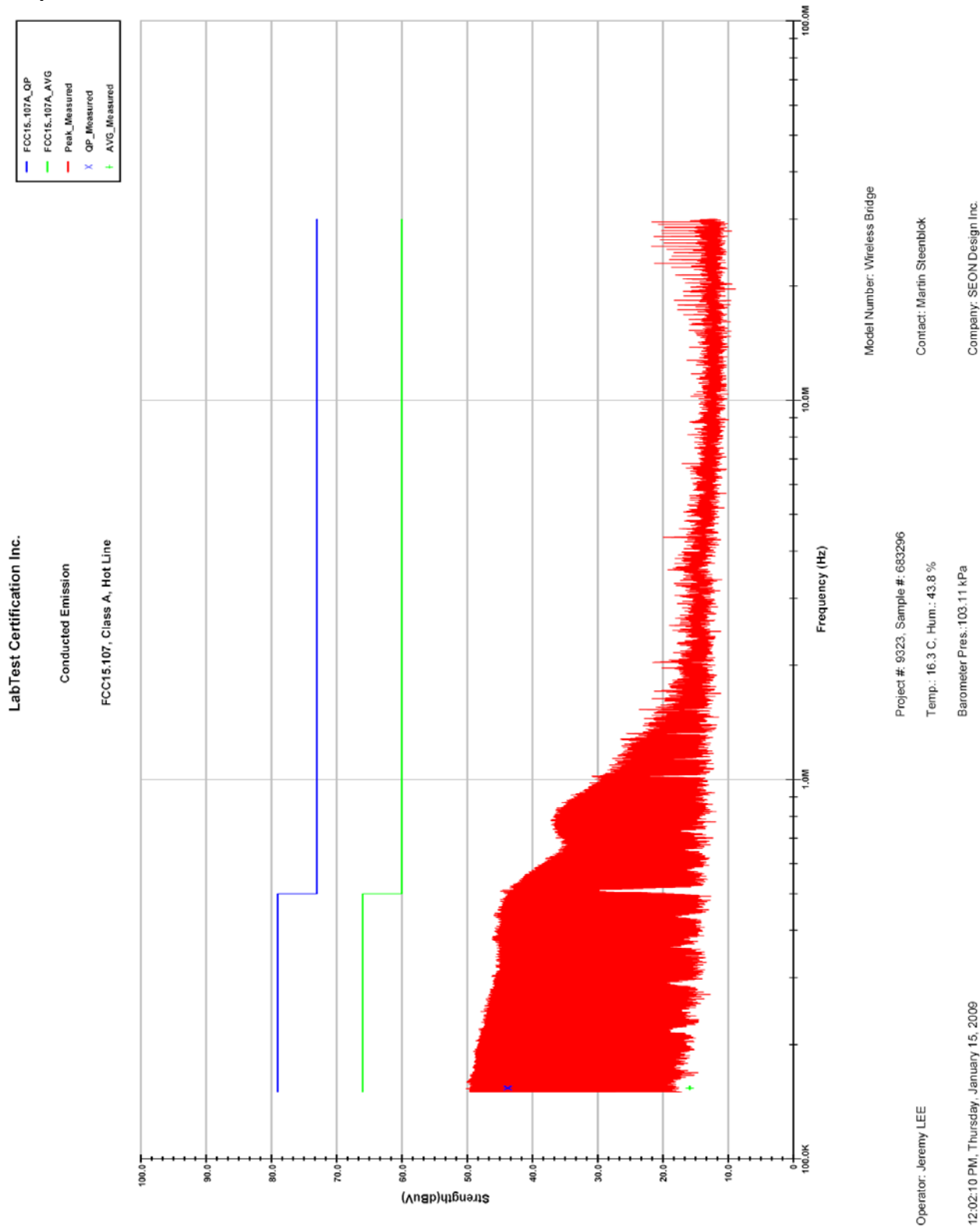
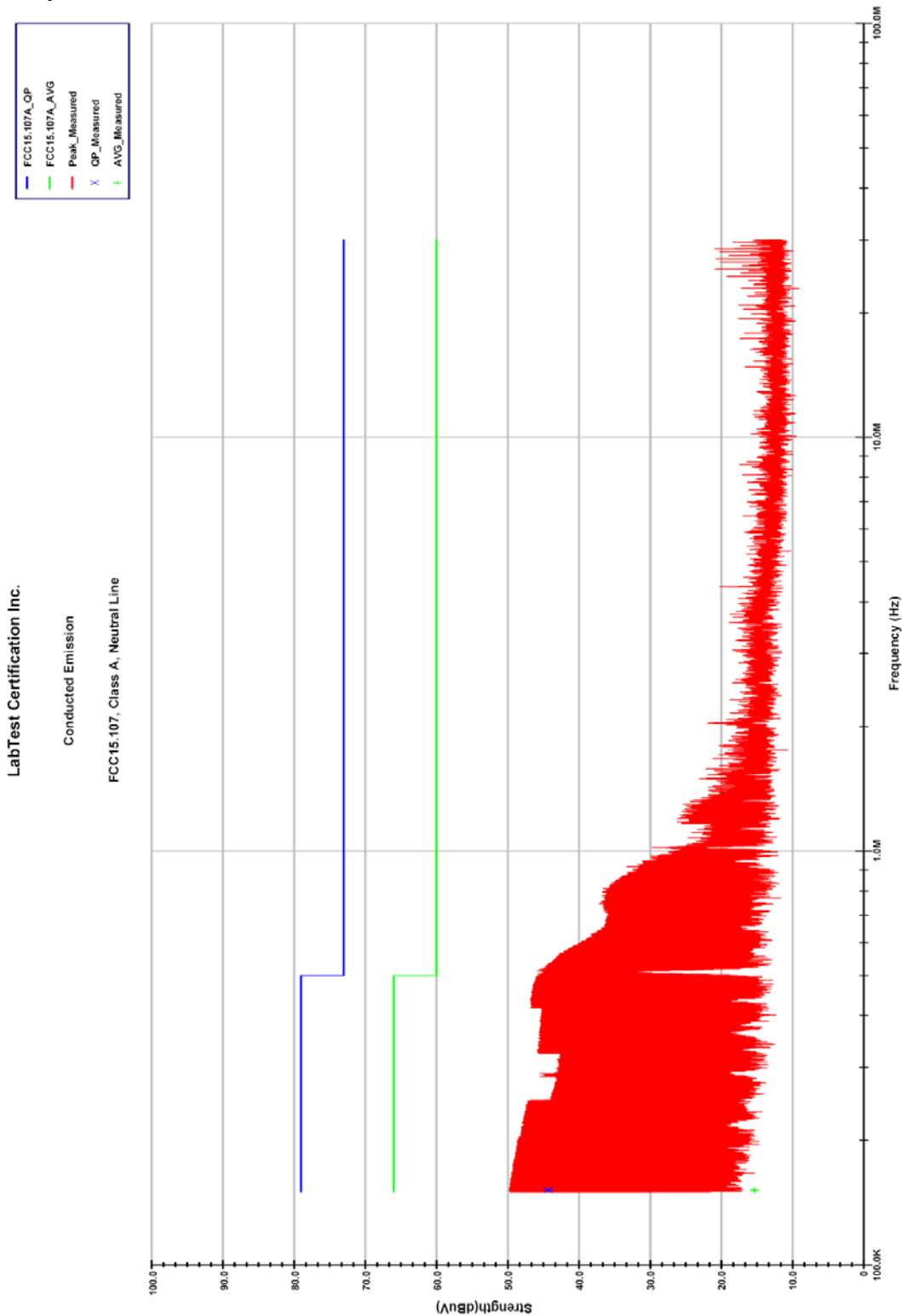


Figure – 1 Test setup for Conducted emissions

- Graph of Conducted Emission: HOT Line



- Graph of Conducted Emission: Neutral Line



Model Number: Wireless Bridge

Contact: Martin Steenblok

Company: SEON Design Inc.

Project #: 9323, Sample #: 683296

Temp.: 16.3 C, Hum.: 43.8 %

Barometer Pres.: 103.11 kPa

Operator: Jeremy LEE

11:57:30 AM, Thursday, January 15, 2009

Test of Radiated Emissions

FINAL TEST RESULT	PASS
Regulation	CFR47 §15.109 (Revised Oct. 1, 2007)
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	°C
Relative Humidity	%
Barometric Pressure:	kPa
Test Date	Jan. 19, 2009
Sample Number	683296
Calibrated Test Equipment (ID)	106, 112, 227-1, 228
Reference Equipment (ID) (Calibration not required)	124, 233, 235
Electrical Rating	12VDC
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/CABC0308>

Test Limits

FCC 15.109:

(b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the following:

Frequency of Emission (MHz)	Field Strength (microvolts/meter)
30 - 88	90
88 - 216	150
216 - 960	210
Above 960	300

Test Setup for Pre-scan

The test was performed in accordance with **CFR47 §15.31, §15.33, §15.35, §15.109:2007 and ANSI C63.4, 2003.**

The setup for pre-scan the radiated emissions in a GTEM cell is shown in Figure - 2. The EUT is placed inside the GTEM and its radiation is measured with a receiver - spectrum analyzer. The receiver was software controlled. Pre-scan tests were occurred at normal operating mode.

Radiated Emission Setup

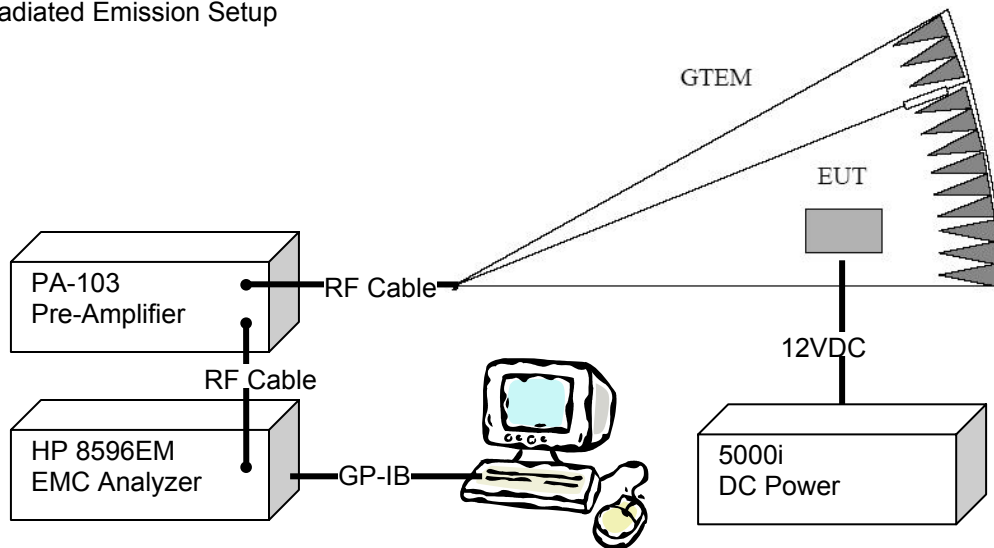
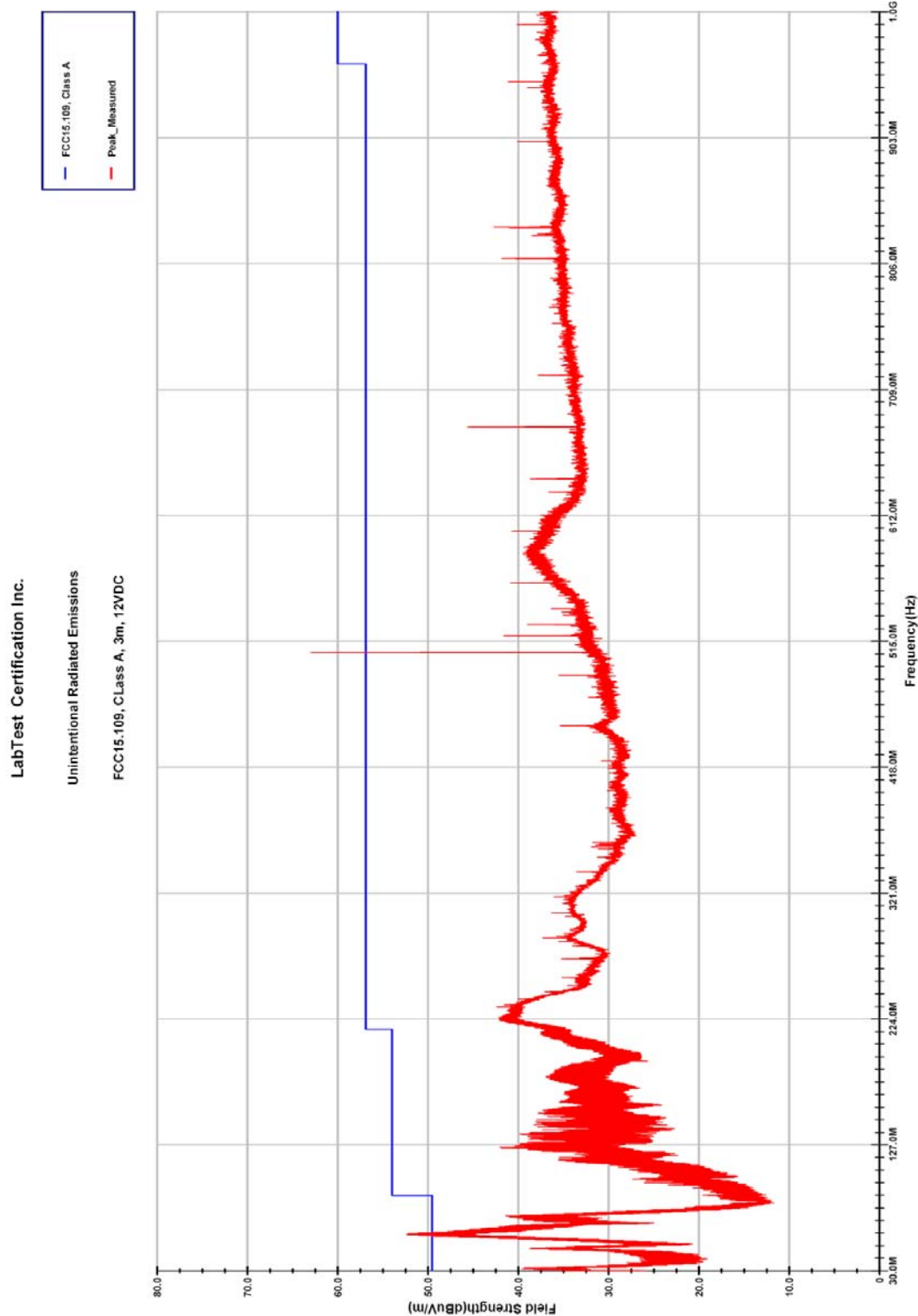


Figure – 2 Test setup for pre-scanned radiated emissions

- Pre-scan test results of Radiated Emission: 30 to 1,000MHz



Model Number: Wireless Bridge

Contact: Martin Steenblok

Company: Seon Design Inc.

Project #: 9323, Sample #: 883296

Temp.: 16.4 C, Hum.: 42.6 %

B.P.: 103.10 kPa

Operator: Jeremy LEE

11:29:40 AM, Thursday, January 15, 2009

Test Setup for Open Area Test Site(OATS)

The setup for Radiated emission measurements at OATS is shown in Figure - 3.

- a) The EUT was placed on a wooden table, and it was put on the turning ground plate.
- b) The EUT was set up on 1 or 3 meter(s) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- c) The EUT was connected all connectors as shown Appendix B: Cable configuration and was operated at "the Stress mode, the worst case of operating".
- d) It is measured with a receiver - spectrum analyzer, was software controlled.
- e) Test frequencies under 1GHz were detected by the results of pre-scan at Normal operating.

Test Results:

Emission level (dBuV/m) = Quasi-Peak detected level (dBuV) + Cable Loss (dB)
+ Antenna Factor (dB/m) - Pre-amplifier's Gain (dB)

There was no signal over limit.

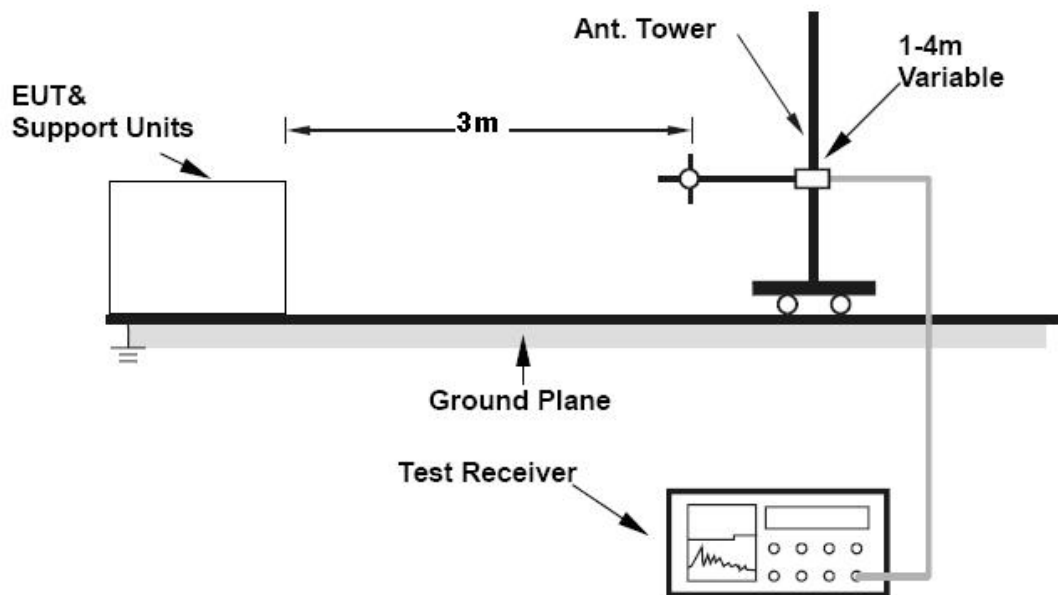


Figure – 3 Test setup for radiated emissions at OATS

Prepared by: LabTest Certification Inc.
 Date Issued: January 21, 2009
 Project No.: 9323

Client: SEON Design Inc.
 Report No.: 9323-1E
 Revision No.: 0

- Table of Radiated Emissions, 30MHz to 300MHz, EMCO 3110B Log Periodic Antenna

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class A, 3 meters

Operator: Jeremy Lee

12:18:26 PM, Monday, January 19, 2009

Model #: Wireless Bridge
 Contact: Martin Steenblok
 Company: SEON Design Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
56.675 MHz	49.54	24.78	24.76	338.9	400.0	H
57.180 MHz	49.54	16.62	32.92	330.9	308.5	H
57.685 MHz	49.54	16.52	33.02	40.1	305.9	H
58.696 MHz	49.54	19.41	30.13	105.0	303.9	H
125.383 MHz	53.98	23.88	30.10	82.7	153.5	H
233.498 MHz	56.90	23.03	33.87	72.2	148.8	H
Project # : 9323, Sample #: 683296						
Temp.: 3.3 C, Hum.: 62.9 %						
Barometer Pres.: 102.97 kPa						

LabTest Certification Inc.
 Unintentional Radiated Emission
 FCC15.109, Class A, 3 meters

Operator: Jeremy Lee

12:18:26 PM, Monday, January 19, 2009

Model #: Wireless Bridge
 Contact: Martin Steenblok
 Company: SEON Design Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol
56.675 MHz	49.54	11.97	37.57	130.9	245.1	V
57.180 MHz	49.54	11.92	37.62	308.6	207.8	V
57.685 MHz	49.54	11.95	37.59	121.8	169.4	V
58.696 MHz	49.54	11.41	38.13	51.0	201.1	V
125.383 MHz	53.98	16.48	37.50	331.0	205.7	V
233.498 MHz	56.90	21.93	34.97	51.2	198.2	V
Project # : 9323, Sample #: 683296						
Temp.: 3.3 C, Hum.: 62.9 %						
Barometer Pres.: 102.97 kPa						

Prepared by: LabTest Certification Inc.
Date Issued: January 21, 2009
Project No.: 9323

Client: SEON Design Inc.
Report No.: 9323-1E
Revision No.: 0

- Table of Radiated Emissions, 300MHz to 1GHz, SAS-510-2 LP Antenna

LabTest Certification Inc.
Unintentional Radiated Emission
FCC15.109, Class B, 3 meters, Horizontal
Operator: Jeremy Lee
01:20:56 PM, Monday, January 19, 2009

Model #: Wireless Bridge
Contact: Martin Steenblok
Company: SEON Design Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol	
506.715 MHz	56.90	23.10	33.80	154.2	113.6	H	
680.102 MHz	56.90	26.85	30.05	111.3	128.6	H	
Project # : 9323, Sample #: 683296							
Temp.: 3.3 C, Hum.: 62.9 %							
Barometer Pres.: 102.97 kPa							

LabTest Certification Inc.
Unintentional Radiated Emission
FCC15.109, Class B, 3 meters, Vertical
Operator: Jeremy Lee
01:20:56 PM, Monday, January 19, 2009

Model #: Wireless Bridge
Contact: Martin Steenblok
Company: SEON Design Inc.

Frequency MHz	FCC15.109_B	QP_Measured	Margin	T/T	Tower	Pol	
506.715 MHz	56.90	21.26	35.64	161.8	238.6	V	
680.102 MHz	56.90	27.86	29.04	10.0	148.8	V	
Project # : 9323, Sample #: 683296							
Temp.: 3.3 C, Hum.: 62.9 %							
Barometer Pres.: 102.97 kPa							

Appendix A: Test Equipment Used

ID No.	Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date	Calibration Certificate No:	Calibration Laboratory
059	DC Power Source	California Instrument	5000i	HK51870	N/A	N/A	N/A	N/A
106	Spectrum Analyzer	HP	8596EM	3536A00113	30-Sep-2008	30-Sep-2009	280731	Wescan
112	GTEM EMC Chamber	Emco	5317	N/A	04-Oct-2005	04-Oct-2010	1000082343	Wescan
124	Pre-Amplifier	Com-Power	PA-103	161118	N/A	N/A	N/A	N/A
127	LISN	Com-Power	LI-200	12054	08-Sep-2008	07-Sep-2009	CX19714	CMC
128	LISN	Com-Power	LI-200	12216	08-Sep-2008	07-Sep-2009	CX19713	CMC
225	Biconical Antenna	EMCO	3110B	9211-1595	28-Apr-2008	28-Apr-2009	66839	ETS-Lindgren
227-1	Log Periodic Antenna	A.H. Systems	SAS-510-2	1262	30-Apr-2008	30-Apr-2009	66817	ETS-Lindgren
228	Humidity/ Temperature Logger	Veriteq	SP-2000-20R	07072157	16-Sep-2008	16-Sep-2009	0133270	Veriteq
233	Coaxial RF Cable	N/A	LCI-001	N/A	N/A	N/A	N/A	N/A
235	Turn table & Tower System	Sunol Sciences Co.	SC104V	031407-1	N/A	N/A	N/A	N/A

Appendix B: Photographs

- EUT : Top View



- Test configuration for Conducted Emissions



- Test configuration for Radiated Emissions at OATS



END OF REPORT