



# TEST REPORT

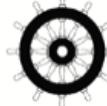
For

## SST Wireless Inc.

#103-7088 Venture Street  
Delta, British Columbia  
V4G 1H5, Canada

Date: JUNE 16, 2014  
Report No.: 12023-1E  
Revision No.: 0  
Project No.: 12023  
Equipment: Radio Remote Controlled Lubricator  
Model No.: WISSLUB-01

### ONE STOP GLOBAL CERTIFICATION SOLUTIONS



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Prepared by:	LabTest Certification Inc.	Client:	SST Wireless Inc.
Date Issued:	June 16, 2014	Report No.:	12023-1E
Project No:	12023	Revision No.:	0

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TEST REPORT	
FCC15 and RSS-210	
Report reference No .....	11239-1E
Report Revision History:	✓ Rev. 0: June 16, 2014
Tested by (printed name and signature) .....	Jeremy Lee 
Approved by (printed name and signature) .....	Kavinder Dhillon, Eng.L 
Date of issue .....	June 16, 2014
<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>	
Testing Laboratory Name .....	LabTest Certification Inc.
Address .....	3133 – 20800 Westminster Hwy, Richmond, B.C. V6V 2W3
FCC Site Registration No.....	373387
IC Site Registration No. ....	5970A-2
Test Location Name .....	LabTest Certification Inc.
Address .....	3133 – 20800 Westminster Hwy, Richmond, B.C. V6V 2W3
Applicant's Name .....	SST Wireless Inc.
Address .....	#103-7088 Venture Street, Delta, B.C., V4G 1H5 Canada
Manufacturer's Name .....	Same as Applicant
Address .....	Same as Applicant
Test specification	
Standards .....	✓ FCC15.231:2010 ✓ RSS-210, Issue 8, December 2010
Testing	
Date of receipt of test item .....	June 03, 2014
Date(s) of performance of test .....	June 10 and 11, 2014
Test item description .....	
Trademark .....	N/A
Model and/or type reference .....	WISSLUB-01
FCC & IC ID.....	FCC ID: RQ6-WISSLUB-01, IC ID: 10853A-WISSLUB-01
Serial numbers .....	N/A
Electrical Rating(s) .....	One battery

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<b>Product descriptions</b>	
Application for .....	: 433MHz Data Transceiver Module
Operating Frequency .....	: 434.375 MHz
Equipment mobility .....	: Yes
Modulation .....	: ASK/OOK
Number of Channels .....	: 1
Data Rate .....	: 100kBps
Transmission Interval .....	: 300 msec for FCC Testing
Transmission Period.....	: 6.3msec
Nominal Voltages for .....	: <input checked="" type="checkbox"/> stand-alone equipment <input type="checkbox"/> combined (or host) equipment <input type="checkbox"/> test jig
Supply Voltage .....	: ____ AC ____ Amps ____Hz ____ V ____ DC ____Amps
If DC Power .....	: <input type="checkbox"/> Internal Power Supply <input type="checkbox"/> Host system is supplied the DC power <input checked="" type="checkbox"/> Battery <input type="checkbox"/> Nickel Cadmium <input type="checkbox"/> Nickel-Metal Hydride Alkaline <input checked="" type="checkbox"/> Alkaline <input type="checkbox"/> Lithium-Ion <input type="checkbox"/> Lead Acid (Vehicle regulated) <input type="checkbox"/> Other
Size of equipment(High X Dia, inches) .....	: 7-1/2 X 3-1/8
Mass of equipment (g).....	: -
Operating Temperature Range .....	: - 20 °C to + 55 °C
<b>Test case verdicts</b>	
Test case does not apply to the test object :	: N/A
Test item does meet the requirement .....	: Pass
Test item does not meet the requirement ..:	: Fail

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#### General remarks

**"This report is not valid as a CB Test Report unless appended by an approved CB Testing Laboratory and appended to a CB Test Certificate."**

The test result presented in this report relate only to the object(s) tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

Throughout this report a period is used as the decimal separator.

#### General product information:

The EUT is a Radio Remote Controlled Lubricator.

#### Frequencies

Module	Description	Frequencies
X1	Crystal	26.0MHz

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

Model No.	Description	Manufacturer	Approvals/Standards
N/A			

#### Description of Interface Cables for Testing

Description	Cable Type	Cable length	Ferrite
None			

ARRANGEMENT OF INTERFACE CABLES: All interface cables were positioned for worst-case maximum emissions within the manner assumed to be a typical operation condition (please reference photographs).

#### Software and Firmware

Description	Version
N/A	

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### **Worst-case configuration and mode of operation during testing**

For the testing, the device was modified to continuously turning on the signal every 300 msec. The EUT was installed inside of Lubricator.

### **Modifications Required for Compliance**

None

### **Test Equipment Verified for function**

Model #	Description	Checked Function	Results
E7405	Spectrum Analyzer	Frequency and Amplitude	Connected 50MHz and -20dBm Cal_sigal and checked OK.
HP8447D	Pre-Amplifier, 30 to 1,000MHz	Gain at 30 and 1,000Mhz	Gains are normal.
8449B	Pre-Amplifier, 1 to 26.5GHz	Gain at 1 to 26.5GHz	Gains were normal.
JB1	Anantenna, 30 to 1000MHz	Checked structure	Normal – no damage.
SAS-571	Anantenna, 1 to 18GHz	Checked structure	Normal – no damage
Onset HOBO	Humidity/ Temperature Logger	Compared room Temp. and Hum. with another data logger	Working normally

### **Measurement Uncertainty**

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

Parameter	Uncertainty(dB)
Radiated Emission, 30 to 1,000MHz	4.67
Radiated Emission, 1 to 18GHz	4.65

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

### **Markings**



You should refer to the clause of FCC Part 2 Section 2.295 & 2.296 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. The label has to be including FCC IC/IC ID, Product Number and Manufacturer Info.

According to FCC Section 2.925(a),

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(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),

This device shall bear the following statement in a conspicuous location on the device:

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.

**Note: Some jurisdictions in Canada require Cautions and Warnings to also be in French. It is the responsibility of the Customer to provide bilingual marking, where applicable, in accordance with the requirements of the local regulatory authorities. It is the responsibility of the Customer to determine this requirement and have bilingual wording added to the "Markings".**

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## Test Summary

When configured and operated as specified in this report, the product was found to comply with the requirements as indicated below.

Test Type	Regulation	Measurement Method	Result
AC Power Line Conducted Emission	15.207(a) RSS-Gen	ANSI C63.4:2009 & ANSI C63.10:2009, Clause 6.2	N/A <sup>1)</sup>
Field Strength of Fundamental -Intentional radiator	15.231, 15.205, 15.209 & RSS-210	ANSI C63.4:2009 & ANSI C63.10:2009, Clause 6.5 & 6.6	PASS
Field Strength of Spurious Emissions -Intentional radiator	15.231, 15.205, 15.209 & RSS-210	ANSI C63.4:2009 & ANSI C63.10:2009, Clause 6.5 & 6.6	PASS
Radiated Emissions-Intentional radiators	15.209 and RSS-210	ANSI C63.4:2009 & ANSI C63.10:2009, Clause 6.5	PASS
The Bandwidth of the emission	15.231 and RSS-210	ANSI C63.10:2009, Clause 6.9	PASS

Note1): The EUT is operated by internal battery. This test was exempted by no connection to AC Power Line.

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## AC Power Line Conducted Emission

Test Date	June 16, 2014
Sample Number	1219285
Tested By	Jeremy Lee

### Test Limits

#### FCC 15.207(a):

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator 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  $\mu$ H/50 ohms line impedance stabilization network (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 frequencies ranges.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15–0.5 .....	66 to 56*	56 to 46*
0.5–5 .....	56 .....	46
5–30 .....	60 .....	50

\*Decreases with the logarithm of the frequency.

### Test Results

The test was exempted because there is no public utility (AC) power line connection.

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## Summary of the operation of RF Transmission

Regulation	FCC15.231:2010
Intentional Radiating Frequency	434.375MHz
Sample Number	1219285
Reviewed By	Jeremy LEE

### Test Limits

#### Section 15.231 Periodic operation in the band 40.66 - 40.70 MHz and above 70 MHz.

(a) The provisions of this section are restricted to periodic operation within the band 40.66–40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition
- (5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

### Reviewed Results:

X Pass Fail N/A

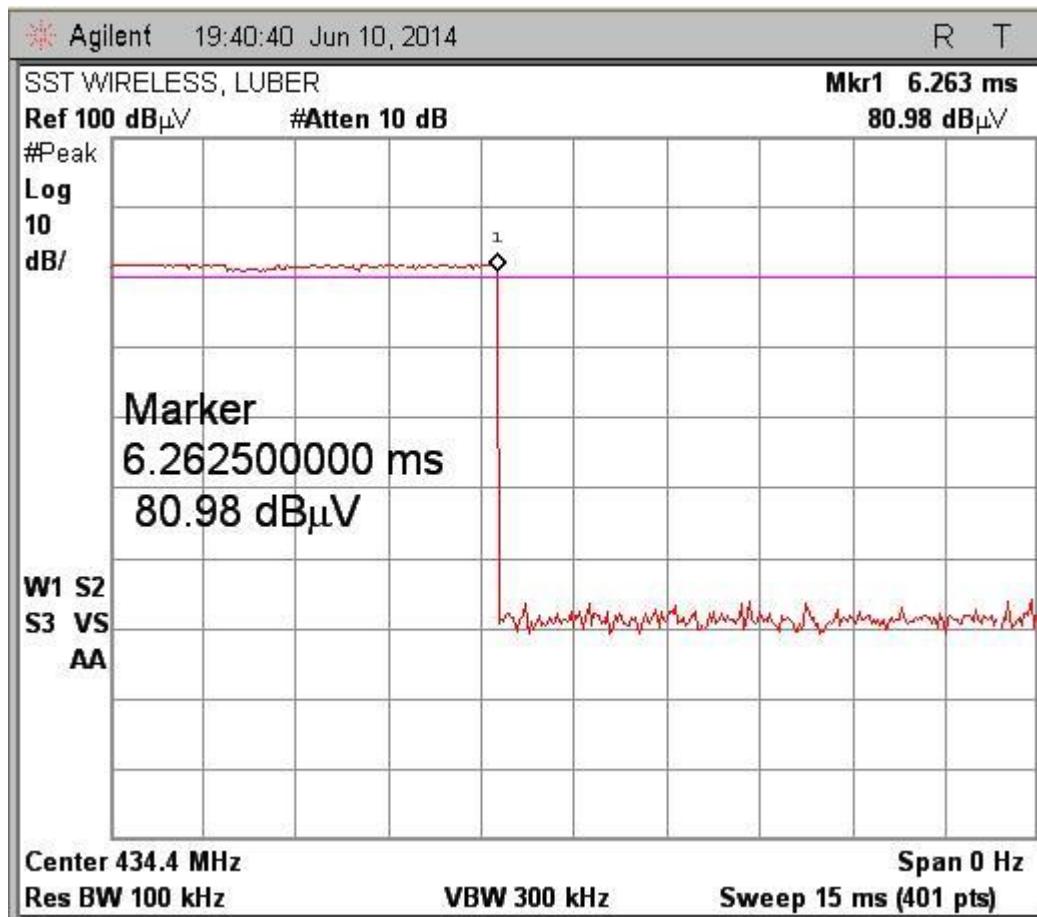
Rule Part No.	Description of Rule	Yes	No	N/A
Pt 15.231(a)	Continuous transmission		X	
Pt 15.231(a)	Control Signals		X	
Pt 15.231(a)	Data transmission with control signal	X		
Pt 15.231(a)(1)	Manually operated		X	
	Automatically deactivate within 5 seconds of being released			X
Pt 15.231(a)(2)	Automatically operated	X		
	Deactivate within 5 seconds after activation	X		

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Pt 15.231(a)(3)	Periodic transmission at regular predetermined intervals		X	
	Polling or supervision transmission, including data, to determine system integrity or transmitters used in security or safety applications requires no total duration of transmission not exceeding 2s/hr.		X	
Pt 15.231(a)(4)	Operation involving fire, security, or safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.		X	

- Measured result of the Turned-on and off time.



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## Field Strength of Fundamental – Intentional Radiator

Regulation	FCC15.231:2010
Intentional Radiating Frequency	434.375MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	120kHz
Temperature	24.7 °C
Relative Humidity	43.0 %
Barometric Pressure:	102.1 kPa
Test Date	June 10, 2014
Sample Number	1219285
Calibrated Test Equipment (ID)	266, 272, 371, 516
Reference Equipment (ID) (Calibration not required)	374
Electrical Rating	Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

## Test Limits

### FCC 15.231:

(b) In addition to the provisions of Section 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 (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66– 40.70.	2,250 .....	225
70–130 .....	1,250 .....	125
130–174 .....	11,250 to 3,750 .....	1125 to 375
174–260 .....	3,750 .....	375
260–470 .....	13,750 to 12,500 .....	1375 to 1,250
Above 470	12,500 .....	1,250

<sup>1</sup> Linear interpolations.

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in § 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of § 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

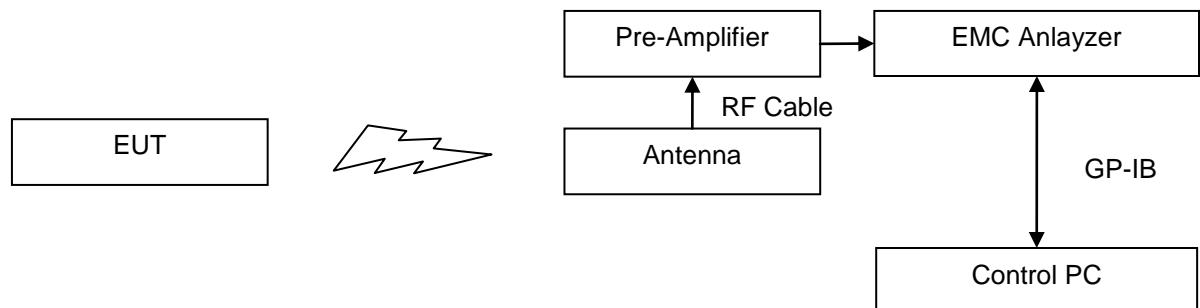
## Test Setup

The test was performed in accordance with **FCC 15.31, 15.33, 15.35 and ANSI C63.10, 2009**.

The test setup for Field Strength of Fundamental was shown in Figure - 1.

- a) The EUT was placed on a wooden Table, which was put on the turning ground plate.
- b) The EUT was set up on 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- c) The EUT was continually on its RF Transmitter. It was modified to transmit in 300ms intervals for this testing.
- d) It was measured with a receiver - Spectrum analyzer, was software controlled.

## Setup Block Diagram



## Test Setup in Chamber

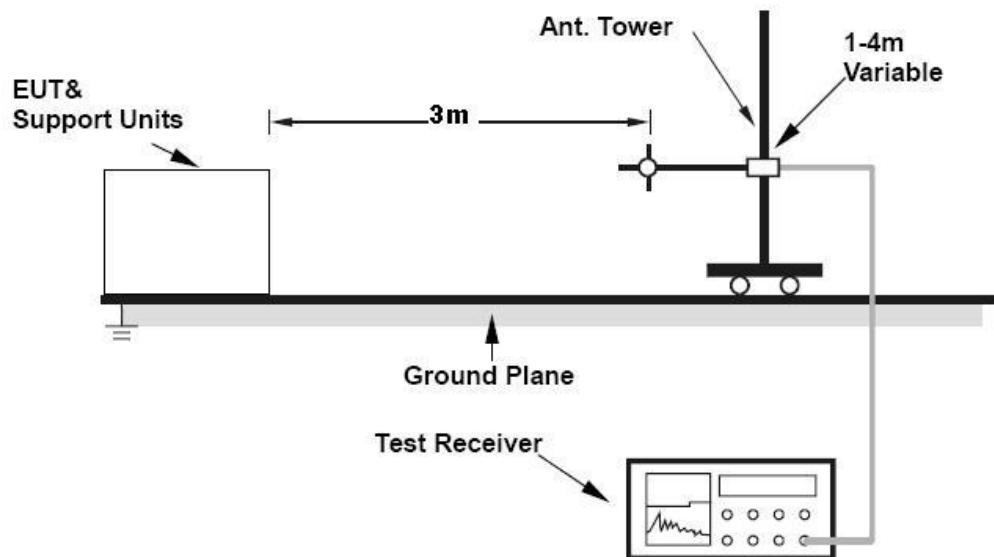


Figure – 1 Test setup for Radiated emissions in Chamber

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## Test Results:

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

X Pass Fail N/A

Fundamental Frequency (MHz)	Limit (dBuV/m)	Measured (dBuV/m)	Margin (dB)	Pol.	Results
434.375	80.17	68.16	12.01	H	PASS
		58.83	21.34	V	PASS

### - Table of Field Strength of Fundamental; Quasi Peak Detecting, Antenna was used a JB1.

LabTest Certification Inc.  
 Intentional Radiated Emissions  
 FCC15.231, 205 & 209, 3 meters, Horizontal

Operator: Jeremy Lee

09:15:34 PM, Tuesday, June 10, 2014

Model #: Luber  
 Contact: Bill Morton  
 Company: SST Wireless Inc.

Frequency	Measured	AntFactor	PathLoss	Emission	Limit	Margin	T/T	Tower	POL
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	Degree	cm	
434.3732000 MHz	79.87	17.00	-25.39	68.16	80.17	12.01	110.0	204.9	H
868.8061000 MHz	41.55	22.48	-23.56	38.26	60.84	22.58	250.0	100.2	H

Project # : 12023, Sample #: 1219285  
 Temp. : 24.7 C, Hum. : 43.0 %  
 Barometer Pres.: 102.1 kPa

LabTest Certification Inc.  
 Intentional Radiated Emissions  
 FCC15.231, 205 & 209, 3 meters, Vertical

Operator: Jeremy Lee

09:15:34 PM, Tuesday, June 10, 2014

Model #: Luber  
 Contact: Bill Morton  
 Company: SST Wireless Inc.

Frequency	Measured	AntFactor	PathLoss	Emission	Limit	Margin	T/T	Tower	POL
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	Degree	cm	
434.3795000 MHz	72.84	16.89	-25.39	58.83	80.17	21.34	0.0	142.2	V
868.7974000 MHz	40.04	21.98	-23.56	33.06	60.84	27.78	250.0	135.2	V

Project # : 12023, Sample #: 1219285  
 Temp. : 24.7 C, Hum. : 43.0 %  
 Barometer Pres.: 102.1 kPa

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## Field Strength of Spurious Emissions

Regulation	FCC15.231: 2010
Intentional Radiating Frequency	434.375MHz
Detecting Method	Average and Quasi-Peak Detector
IF Bandwidth	120kHz and 1MHz
Temperature	22.9 to 24.7°C
Relative Humidity	43.0 to 45.0 %
Barometric Pressure:	101.8 to 102.1 kPa
Test Date	June 10, 2014
Sample Number	1219285
Calibrated Test Equipment (ID)	227-3, 266, 272, 273, 371, 516
Reference Equipment (ID) (Calibration not required)	374
Electrical Rating	Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

## Test Limits

### FCC 15.231:

(b) In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Funda- mental fre- quency (MHz)	Field strength of funda- mental (microvolts/ meter)	Field strength of spurious emissions (microvolts/meter)
40.66– 40.70.	2,250 .....	225
70–130 .....	1,250 .....	125
130–174 .....	<sup>1</sup> 1,250 to 3,750 .....	<sup>1</sup> 125 to 375
174–260 .....	3,750 .....	375
260–470 .....	<sup>1</sup> 3,750 to 12,500 .....	<sup>1</sup> 375 to 1,250
Above 470	12,500 .....	1,250

<sup>1</sup> Linear interpolations.

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in § 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of § 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the

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fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in § 15.209, whichever limit permits a higher field strength.

#### FCC 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:

- 1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
- 2 Above 38.6

(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.

(c) Except as provided in paragraphs (d) and (e), regardless of the field strength limits specified elsewhere in this Subpart, the provisions of this Section apply to emissions from any intentional radiator.

#### Test Setup

The test was performed in accordance with **FCC 15.31, 15.33, 15.35, 15.205, 15.209:2010 and ANSI C63.10: 2009.**

The test setup for Field Strength of Spurious is shown in Figure - 1.

- a) The EUT was placed on a wooden supporter, 10cm and it was put on the turning ground plate.
- b) The EUT was set up on 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna supporter.
- c) The EUT was continually on its RF Transmitter. It was modified to transmit in 1000ms intervals for this testing.
- d) It was measured with a receiver - spectrum analyzer, was software controlled.

#### Test Results:

$$\text{Emission level (dBuV/m)} = \text{Average detected level (dBuV)} + \text{Cable Loss(dB)} \\ + \text{Antenna Factor (dB/m)} - \text{Pre-amplifier's Gain (dB)}$$

X	Pass	Fail	N/A			
Harmonic Frequency (MHz)	Detector	Limit (dBuV/m)	Measured (dBuV/m)	Margin (dB)	Pol.	Results
868.750	Quasi-Peak	60.84	38.26	22.58	H	PASS
	Peak	73.98	58.88	15.10	V	PASS
	Averaging	53.98	28.00	25.98	V	PASS
1737.500	Peak	80.84	47.70	33.14	V	PASS
	Averaging	60.84	29.17	31.67	H	PASS
2171.875	Peak	80.84	62.38	18.46	V	PASS
	Averaging	60.84	31.28	29.56	H	PASS
2606.250	Peak	80.84	49.50	31.34	H	PASS

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	Averaging	60.84	34.18	26.66	H	PASS
3040.625	Peak	80.84	65.55	15.29	V	PASS
	Averaging	60.84	39.59	21.25	H	PASS
3475.000	Peak	80.84	49.11	31.73	H	PASS
	Averaging	60.84	35.07	25.77	H	PASS
3909.375	Peak	73.98	66.21	7.77	H	PASS
	Averaging	53.98	38.36	15.62	H	PASS
4343.750	Peak	73.98	55.70	18.28	V	PASS
	Averaging	53.98	38.61	15.37	V	PASS

Prepared by: LabTest Certification Inc.  
 Date Issued: June 16, 2014  
 Project No: 12023

Client: SST Wireless Inc.  
 Report No.: 12023-1E  
 Revision No.: 0

**- Field Strength of Spurious Emission; 2nd harmonic, Quasi-peak Detecting, Antenna was used JB1.**

LabTest Certification Inc.  
 Intentional Radiated Emissions  
 FCC15.231, 205 & 209, 3 meters, Horizontal

Operator: Jeremy Lee

09:15:34 PM, Tuesday, June 10, 2014

Model #: Luber  
 Contact: Bill Morton  
 Company: SST Wireless Inc.

Frequency	Measured	AntFactor	PathLoss	Emission	Limit	Margin	T/T	Tower	POL
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	Degree	cm	
434.3732000 MHz	79.87	17.00	-25.39	68.16	80.17	12.01	110.0	204.9	H
868.8061000 MHz	41.55	22.48	-23.56	38.26	60.84	22.58	250.0	100.2	H

Project #: 12023, Sample #: 1219285  
 Temp.: 24.7 C, Hum.: 43.0 %  
 Barometer Pres.: 102.1 kPa

LabTest Certification Inc.  
 Intentional Radiated Emissions  
 FCC15.231, 205 & 209, 3 meters, Vertical

Operator: Jeremy Lee

09:15:34 PM, Tuesday, June 10, 2014

Model #: Luber  
 Contact: Bill Morton  
 Company: SST Wireless Inc.

Frequency	Measured	AntFactor	PathLoss	Emission	Limit	Margin	T/T	Tower	POL
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	Degree	cm	
434.3795000 MHz	72.84	16.69	-25.39	58.83	80.17	21.34	0.0	142.2	V
868.7974000 MHz	40.04	21.98	-23.56	33.06	60.84	27.78	250.0	135.2	V

Project #: 12023, Sample #: 1219285  
 Temp.: 24.7 C, Hum.: 43.0 %  
 Barometer Pres.: 102.1 kPa

**- Field Strength of Spurious Emissions; 3rd to 10th harmonics, Peak Detecting, Antenna was used SAS-571.**

LabTest Certification Inc.  
 Intentional Radiated Emissions-Harmonics  
 FCC15.231, 205 & 209, 3 meters, Peak Detector\_Horizontal

Operator: Jeremy Lee

11:23:00 AM, Wednesday, June 11, 2014

Model #: Luber  
 Contact: Bill Morton  
 Company: SST Wireless Inc.

Frequency	Measured_PK	AntFactor	PathLoss	Emission_PK	Limit_PK	Margin_PK	T/T	Tower	POL
Hz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB	Degree	cm	
1.3031250 GHz	60.18	24.51	-28.90	55.79	73.98	18.19	231.0	154.5	H
1.7375000 GHz	49.21	25.68	-27.54	47.35	80.84	33.49	233.3	153.6	H
2.1718750 GHz	57.57	27.64	-26.16	59.05	80.84	21.79	296.3	171.8	H
2.6062500 GHz	45.72	29.53	-25.75	49.50	80.84	31.34	234.0	101.1	H
3.0406250 GHz	58.92	30.53	-24.84	64.61	80.84	16.23	98.0	100.6	H
3.4750000 GHz	43.11	30.31	-24.31	49.11	80.84	31.73	259.0	100.8	H
3.9093750 GHz	58.20	31.61	-23.59	66.21	73.98	7.77	269.5	106.5	H
4.3437500 GHz	42.26	31.48	-21.49	52.25	73.98	21.73	109.5	132.2	H

Project #: 12023, Sample #: 1219285  
 Temp.: 22.9 C, Hum.: 45.0 %  
 Barometer Pres.: 101.8 kPa

Prepared by:  
Date Issued:  
Project No:

LabTest Certification Inc.  
June 16, 2014  
12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
0

LabTest Certification Inc.  
Intentional Radiated Emissions-Harmonics  
FCC15.231, 205 & 209, 3 meters, Peak Detector\_Vertical

Operator: Jeremy Lee

12:24:57 PM, Wednesday, June 11, 2014

Model #: Luber  
Contact: Bill Morton  
Company: SST Wireless Inc.

Frequency Hz	Measured_PK dBuV	AntFactor dB/m	PathLoss dB	Emission_PK dBuV/m	Limit_PK dBuV/m	Margin_PK dB	T/T Degree	Tower cm	POL
1.3031250 GHz	63.24	24.54	-28.90	58.88	73.98	15.10	145.8	117.3	V
1.7375000 GHz	49.50	25.74	-27.54	47.70	80.84	33.14	359.5	155.3	V
2.1718750 GHz	60.82	27.72	-26.16	62.38	80.84	18.46	129.5	201.8	V
2.6062500 GHz	45.55	29.57	-25.75	49.37	80.84	31.47	137.8	127.0	V
3.0406250 GHz	59.71	30.68	-24.84	65.55	80.84	15.29	154.5	120.1	V
3.4750000 GHz	41.47	30.40	-24.31	47.56	80.84	33.28	201.8	102.0	V
3.9093750 GHz	56.53	31.64	-23.59	64.58	73.98	9.40	71.0	122.9	V
4.3437500 GHz	45.65	31.54	-21.49	55.70	73.98	18.28	105.8	103.0	V

Project #: 12023, Sample #: 1219285

Temp.: 22.9 C, Hum.: 45.0 %

Barometer Pres.: 101.8 kPa

### - Field Strength of Spurious Emissions; 3rd to 10th harmonics, Average Detecting, Antenna was used SAS-571.

LabTest Certification Inc.  
Intentional Radiated Emissions-Harmonics  
FCC15.231, 205 & 209, 3 meters, Averaging Detector\_Horizontal

Operator: Jeremy Lee

11:23:00 AM, Wednesday, June 11, 2014

Model #: Luber  
Contact: Bill Morton  
Company: SST Wireless Inc.

Frequency Hz	Measured_AVG dBuV	AntFactor dB/m	PathLoss dB	Emission_AVG dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T Degree	Tower cm	POL
1.3031250 GHz	32.09	24.51	-28.90	27.70	53.98	26.28	231.0	154.5	H
1.7375000 GHz	31.03	25.68	-27.54	29.17	60.84	31.67	233.3	153.6	H
2.1718750 GHz	29.80	27.64	-26.16	31.28	60.84	29.56	296.3	171.8	H
2.6062500 GHz	30.40	29.53	-25.75	34.18	60.84	26.66	234.0	101.1	H
3.0406250 GHz	33.90	30.53	-24.84	39.59	60.84	21.25	98.0	100.6	H
3.4750000 GHz	29.07	30.31	-24.31	35.07	60.84	25.77	259.0	100.8	H
3.9093750 GHz	30.35	31.61	-23.59	38.36	53.98	15.62	269.5	106.5	H
4.3437500 GHz	27.94	31.48	-21.49	37.93	53.98	16.05	109.5	132.2	H

Project #: 12023, Sample #: 1219285

Temp.: 22.9 C, Hum.: 45.0 %

Barometer Pres.: 101.8 kPa

LabTest Certification Inc.  
Intentional Radiated Emissions-Harmonics  
FCC15.231, 205 & 209, 3 meters, Averaging Detector\_Vertical

Operator: Jeremy Lee

12:24:57 PM, Wednesday, June 11, 2014

Model #: Luber  
Contact: Bill Morton  
Company: SST Wireless Inc.

Frequency Hz	Measured_AVG dBuV	AntFactor dB/m	PathLoss dB	Emission_AVG dBuV/m	Limit_AVG dBuV/m	Margin_AVG dB	T/T Degree	Tower cm	POL
1.3031250 GHz	32.36	24.54	-28.90	28.00	53.98	25.98	145.8	117.3	V
1.7375000 GHz	30.85	25.74	-27.54	29.05	60.84	31.79	359.5	155.3	V
2.1718750 GHz	29.06	27.72	-26.16	30.62	60.84	30.22	129.5	201.8	V
2.6062500 GHz	30.10	29.57	-25.75	33.92	60.84	26.92	137.8	127.0	V
3.0406250 GHz	29.69	30.68	-24.84	35.53	60.84	25.31	154.5	120.1	V
3.4750000 GHz	28.67	30.40	-24.31	34.76	60.84	26.08	201.8	102.0	V
3.9093750 GHz	29.70	31.64	-23.59	37.75	53.98	16.23	71.0	122.9	V
4.3437500 GHz	28.56	31.54	-21.49	38.61	53.98	15.37	105.8	103.0	V

Project #: 12023, Sample #: 1219285

Temp.: 22.9 C, Hum.: 45.0 %

Barometer Pres.: 101.8 kPa

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

## Radiated Emission; Intentional Radiators

Regulation	FCC15.209:2010
Intentional Radiating Frequency	434.375MHz
Detecting Method	Quasi Peak Detector
IF Bandwidth	9kHz(under 30MHz) and 120kHz(30 to 1,000MHz)
Temperature	23.7 to 24.3 °C
Relative Humidity	44.0 to 45.0 %
Barometric Pressure:	101.6 to 102.0 kPa
Test Date	June 10 and 11, 2014
Sample Number	1219285
Calibrated Test Equipment (ID)	241, 266, 272, 371, 516
Reference Equipment (ID) (Calibration not required)	374
Electrical Rating	Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

## Test Limits

### FCC 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)	Measure- ment dis- tance (meters)
0.009–0.490 .....	2400/F(kHz)	300
0.490–1.705 .....	24000/F(kHz)	30
1.705–30.0 .....	30	30
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., §§ 15.231 and 15.241.

## Test Results:

Emission level (dB<sub>UV</sub>/m) = Quasi-Peak detected level (dB<sub>UV</sub>) + Cable Loss (dB) + Antenna Factor (dB/m)

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
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SST Wireless Inc.  
12023-1E  
0

**X** Pass      **Fail**      **N/A**

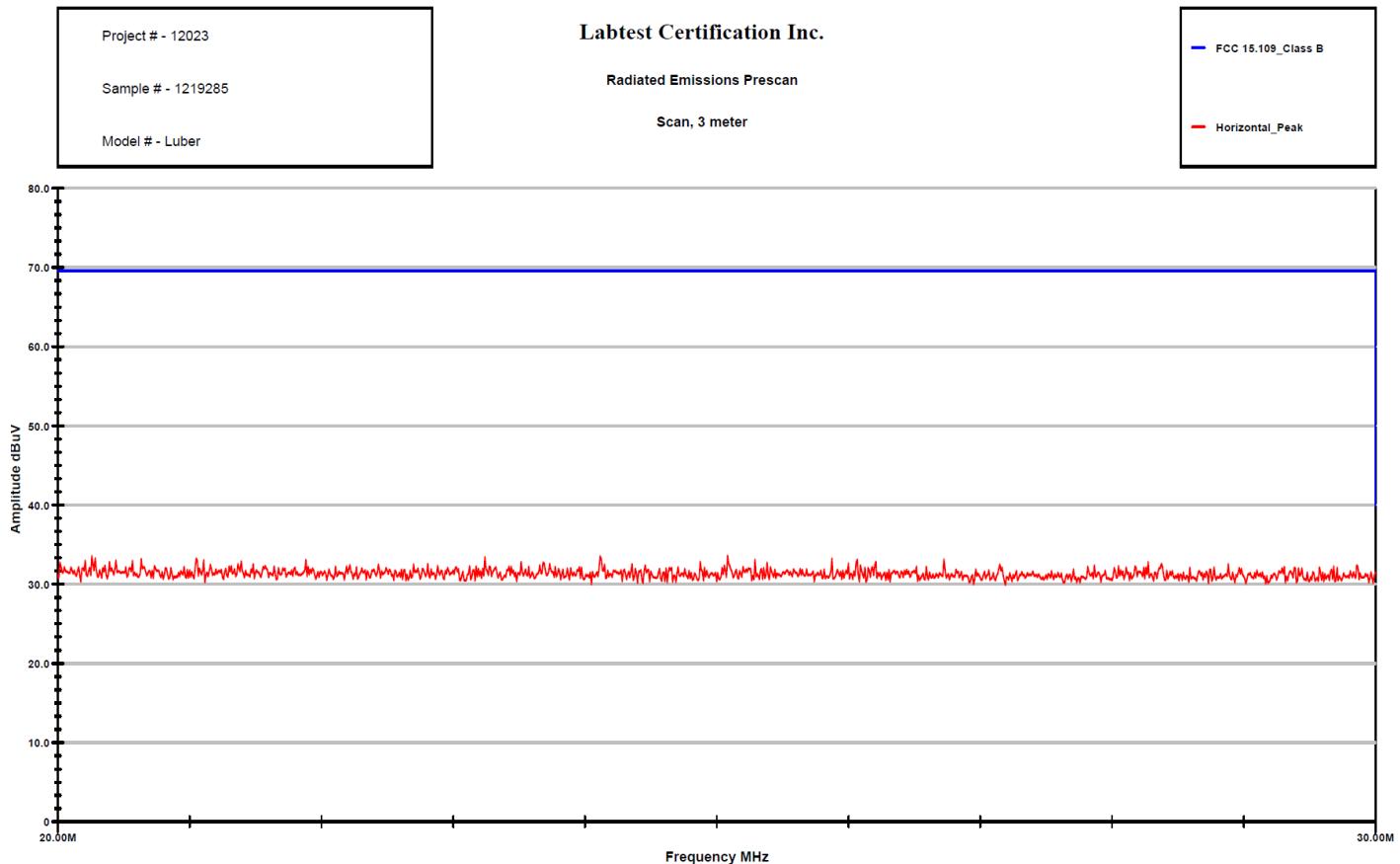
Frequency (MHz)	Limit (dBuV/m)	Measured (dBuV/m)	Margin (dB)	Pol. Of Antenna	Results
48.59167	40.0	19.17*	20.83	H	PASS

Note \*) All measured levels were detected by Peak Detector.

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

- Graph of Radiated Emissions: 20 to 30MHz, Peak detecting, On RF Transmitter, Antenna was used AL-130.



Operator: Jeremy Lee

T: 23.7 C, H: 44.0 %, BP.:101.6 kPa

RE\_under 30MHz.TIL

Contact: Bill Morton

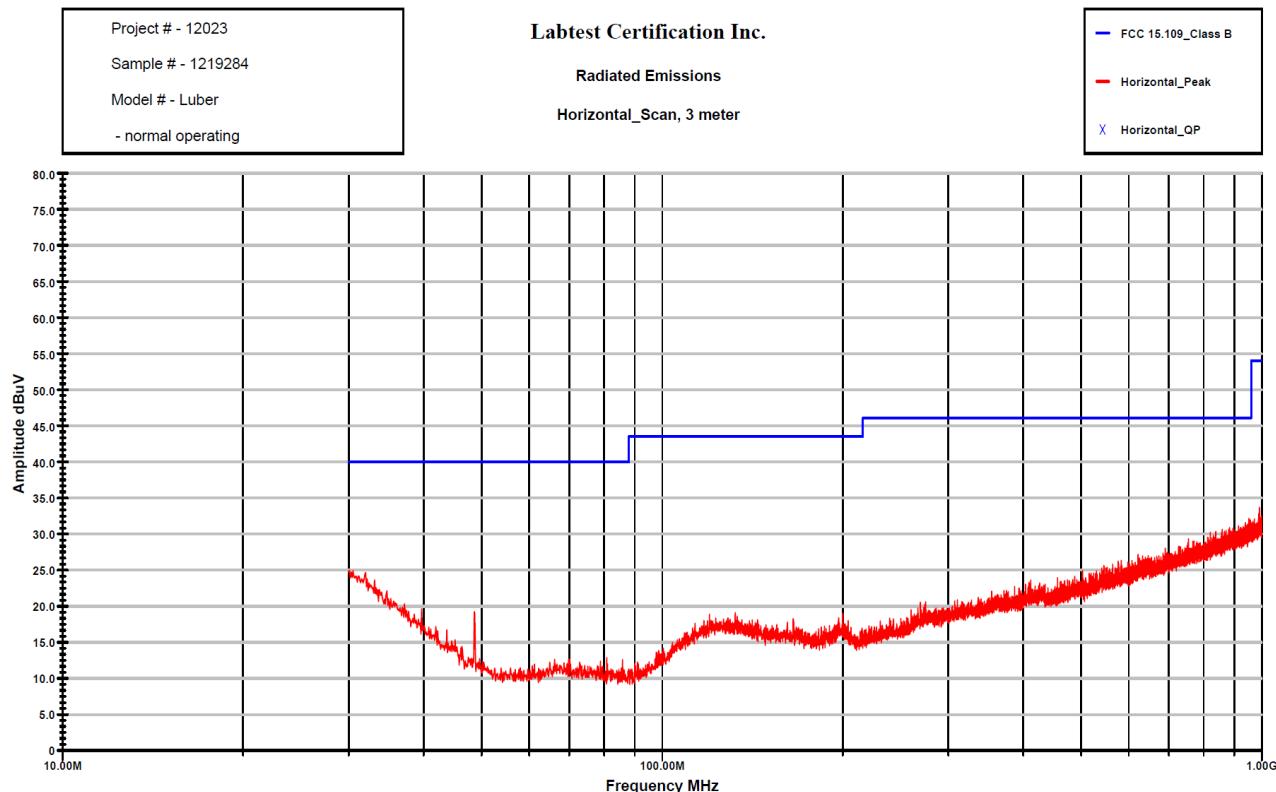
12:55:17 PM, Wednesday, June 11, 2014

Company: SST Wireless Inc.

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

**- Graph of Radiated Emissions: 30 to 1,000MHz, Peak detecting, Normal Operation, Antenna was used JB1, Horizontal.**



Operator: Jeremy Lee

T: 24.3 C, H: 45.0 %, BP.:102.0 kPa

RE\_Scan\_FCC.TIL

Contact: Bill Morton

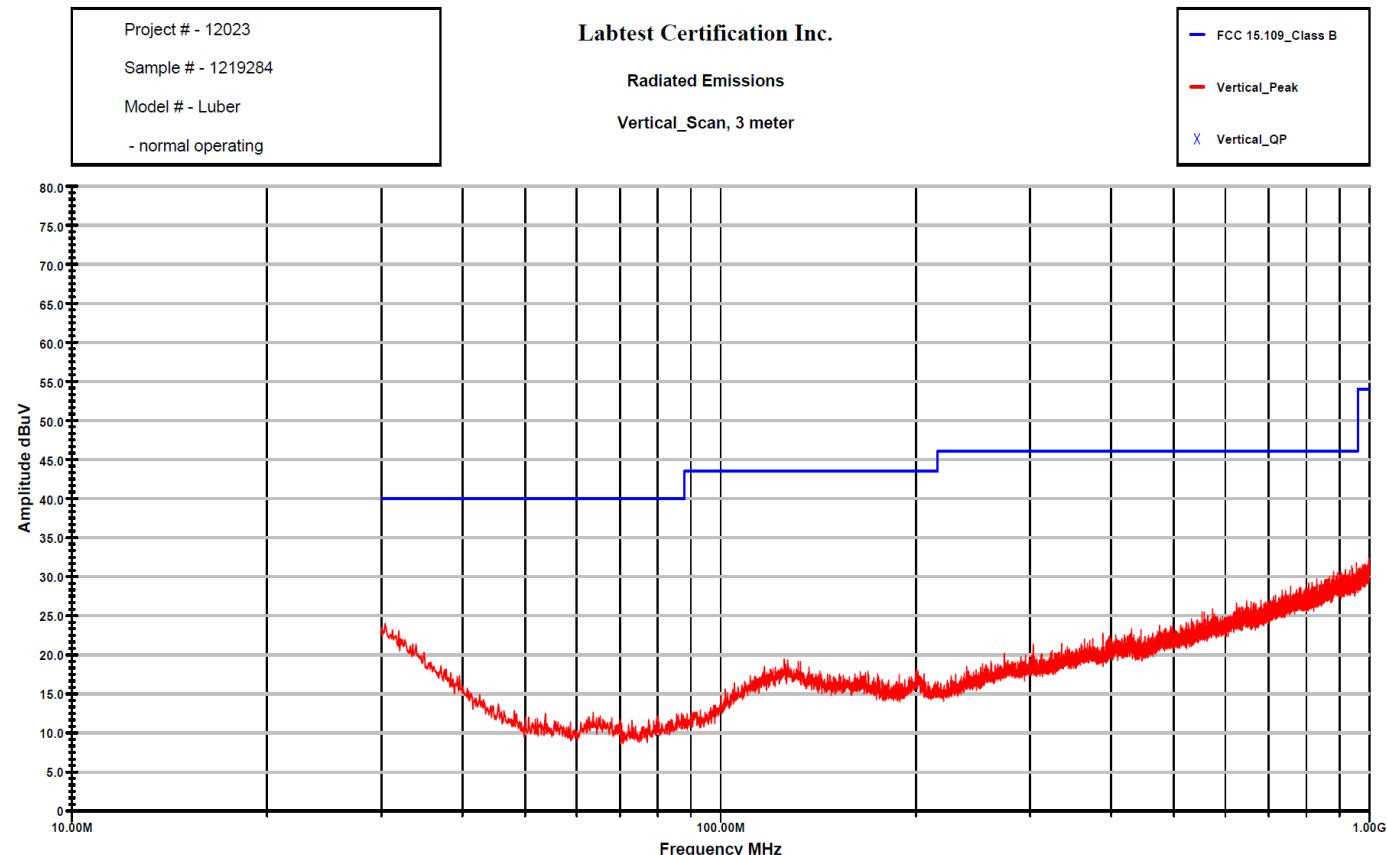
05:58:01 PM, Tuesday, June 10, 2014

Company: SST Wireless Inc.

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

**- Graph of Radiated Emissions: 30 to 1,000MHz, Peak detecting, Normal Operation, Antenna was used JB1, Vertical.**



Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

## The Bandwidth of the emission

Regulation	FCC15.231: 2010
Temperature	22.4 to 23.0 °C
Relative Humidity	37.0 %
Barometric Pressure:	102.6 to 102.7 kPa
Test Date	June 10, 2014
Sample Number	1219285
Calibrated Test Equipment (ID)	266, 272, 516
Reference Equipment (ID) (Calibration not required)	374
Electrical Rating	Internal battery
Tested By	Jeremy LEE

Use the barometric pressure reported at: <http://www.theweathernetwork.com/weather/cabc0248>

## Test 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 20dB down from the modulated carrier.

## Test Setup

The test was performed in accordance with **ANSI C63.10: 2009**.

The setup for Bandwidth of the emission measurements is shown in Figure - 1.

- The EUT was placed on a wooden table, which was put on the turning ground plate.
- It was measured with a receiver - spectrum analyzer.

## Test Results:

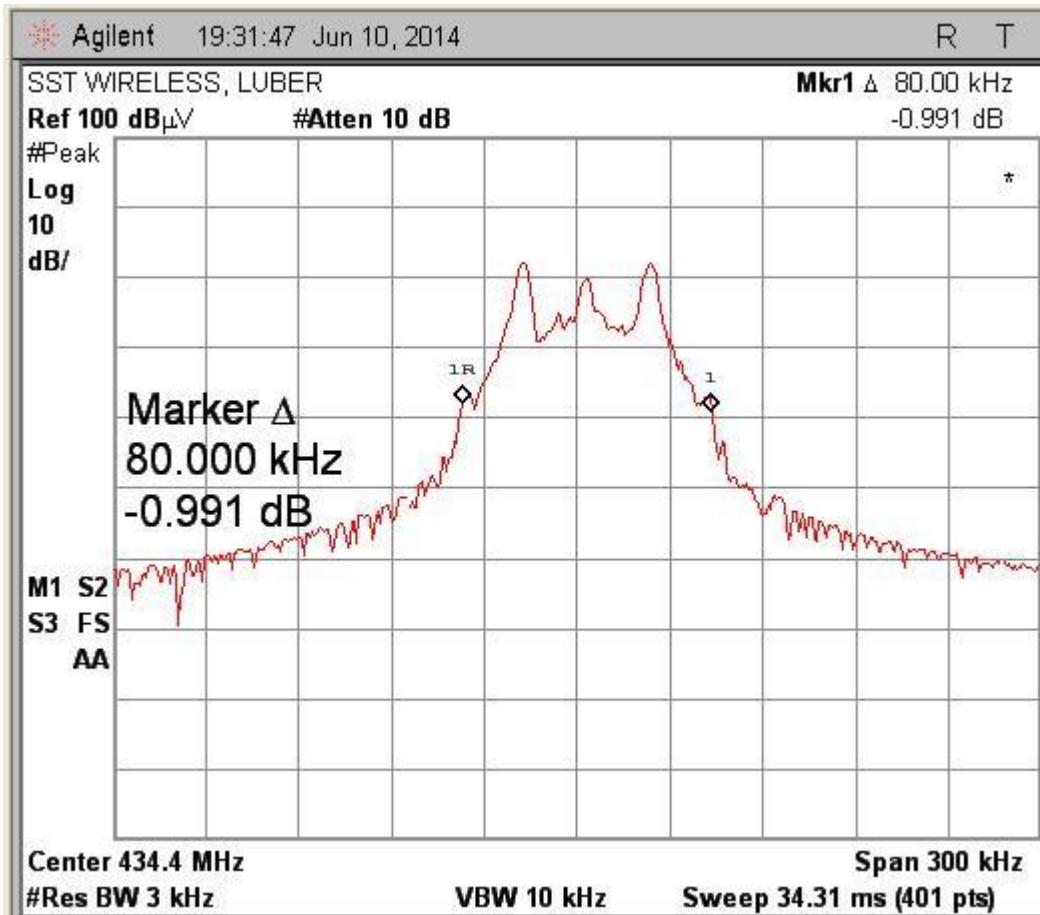
X Pass Fail N/A

Center Frequency (MHz)	Limit( <0.25%, kHz)	Measured(kHz)	Results
434.375	< 1085.94	80	PASS

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

- Measured result of the Bandwidth of the emission(20dBc method).



Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
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## APPENDIX A: Test Equipment Used

ID No.	Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due Date	Calibration Certificate No:	Calibration Laboratory
227-3	Horn Antenna	A.H. Systems	SAS-571	936	12-Jul-2012	12-Jul-2014	2012062215	Liberty Labs
241	Active Loop Antenna	AL-130	Com-Power	17075	09-Oct-2013	09-Oct-2015	1310070101	Liberty Labs
266	Humidity/ Temperature Logger	Onset HOBO	U14-001	2436907	23-Jan-2014	23-Jan-2015	890824060	Techmaster
272	EMC Analyzer	Agilent	E7405A	US41110263	13-May-2014	13-May-2015	1-5983694499-1	Agilent
273	RF Preamplifier	Agilent	8449B	3008A02264	01-May-2013	01-May-2015	2200812126698	Micro Precision
371	EMC Broadband Antenna	Sunol	JB1	A022012	17-Mar-2014	17-Mar-2016	1403130381	Liberty Labs
374	EMC Shielded Enclosure	USC	USC-26	111811	N/A	N/A	N/A	N/A
516	Pre-Amplifier	Agilent	AT8447D	2944A10969	10-Dec-2013	26-Sep-2014	15893070106 8036131210	TRS-ReenTelco

Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
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## APPENDIX B: EUT photos

### - EUT: Out View of Luber



### - EUT: Inside Top View of Luber

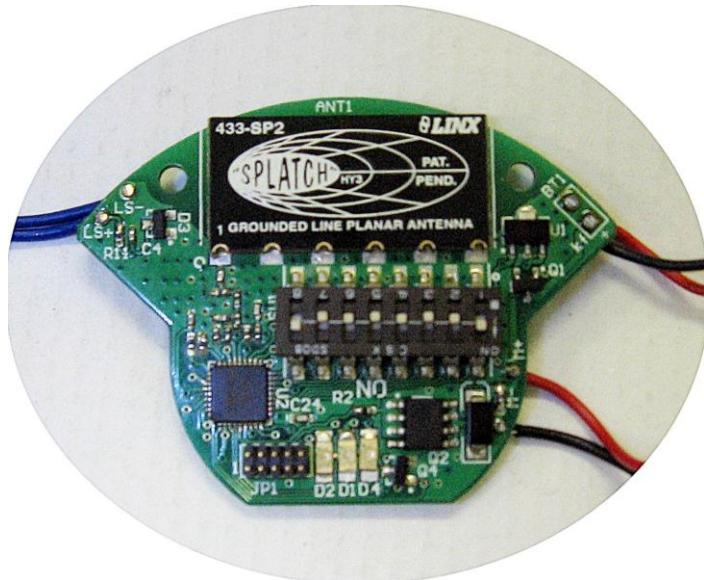


Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

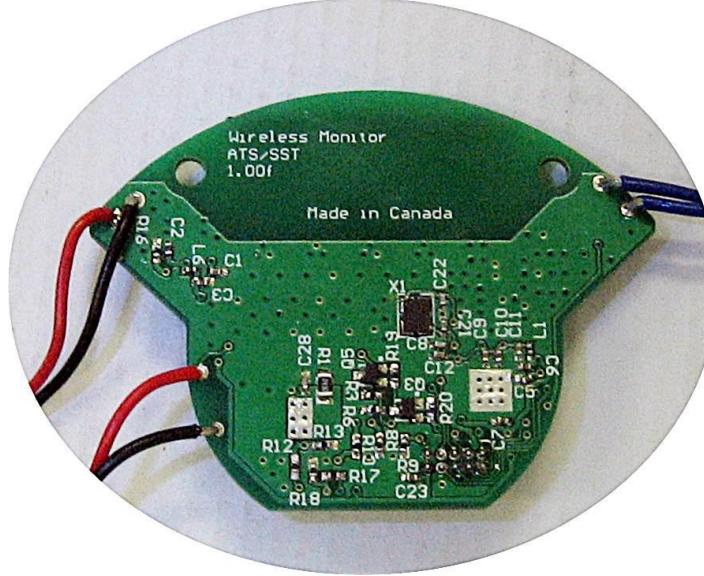
Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
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**- EUT: Top view of Board**



**- EUT: Bottom view of Board**



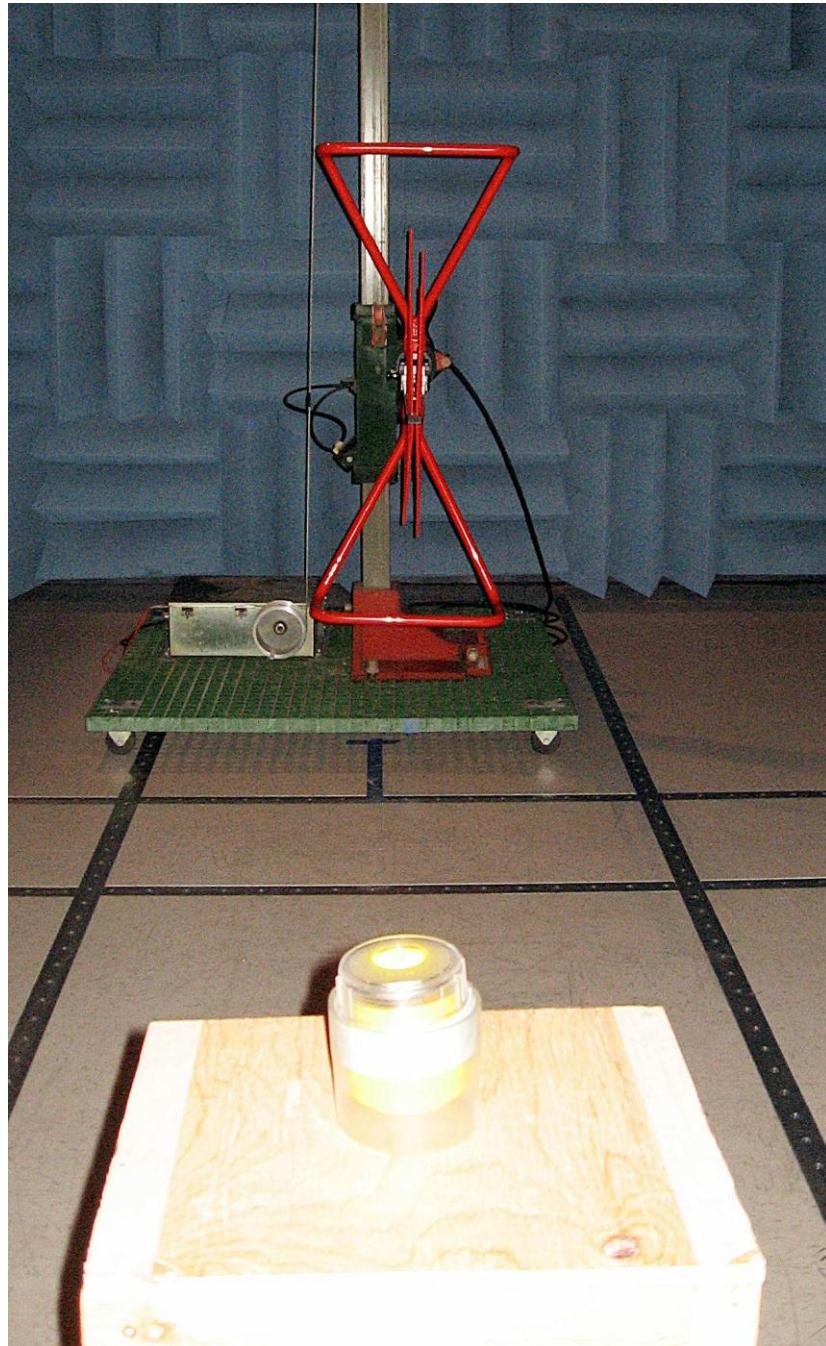
Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
0

## APPENDIX C: Test setup photos

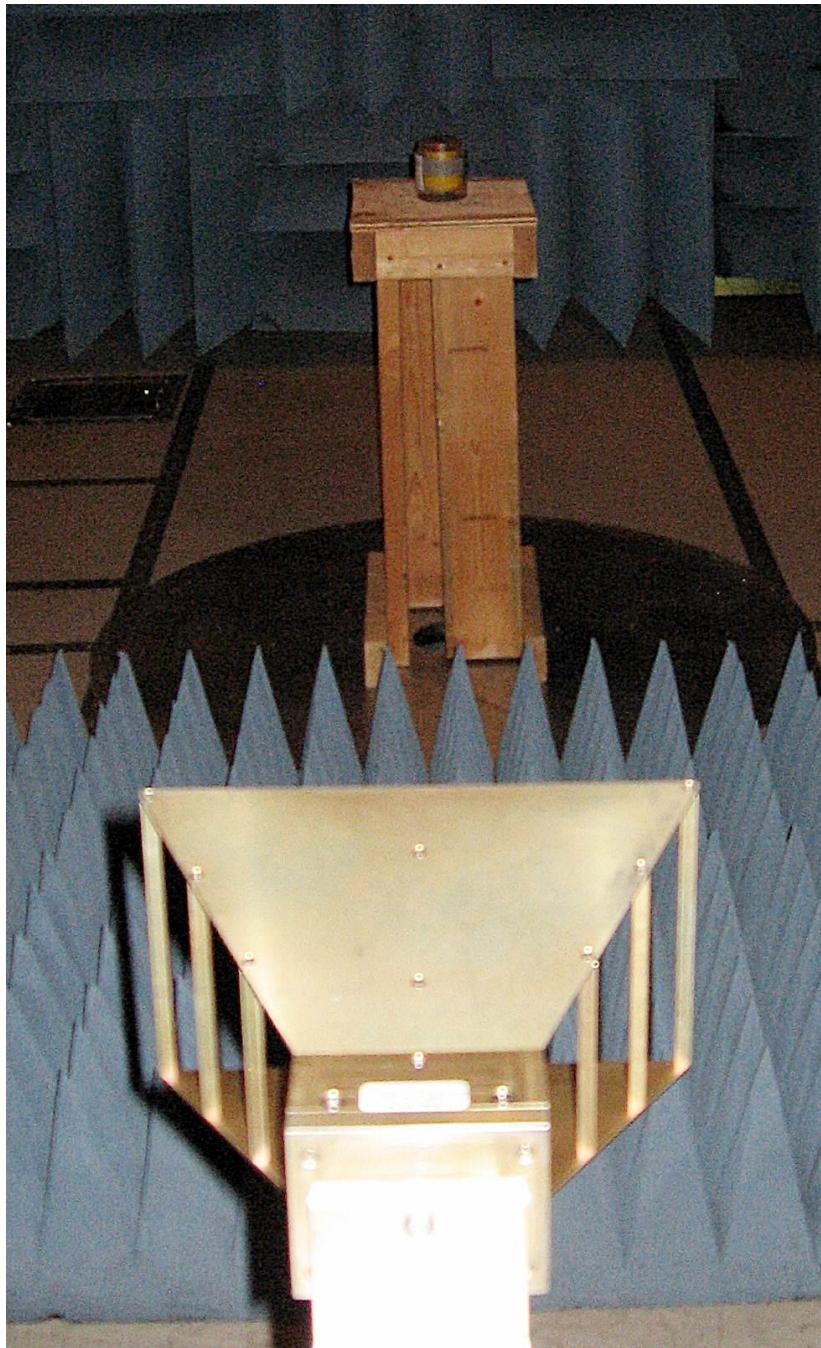
### - Test configuration for Field Strength measurement, Fundamental and Second Harmonics



Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client: SST Wireless Inc.  
Report No.: 12023-1E  
Revision No.: 0

**- Test configuration for Harmonic measurement over 1GHz**

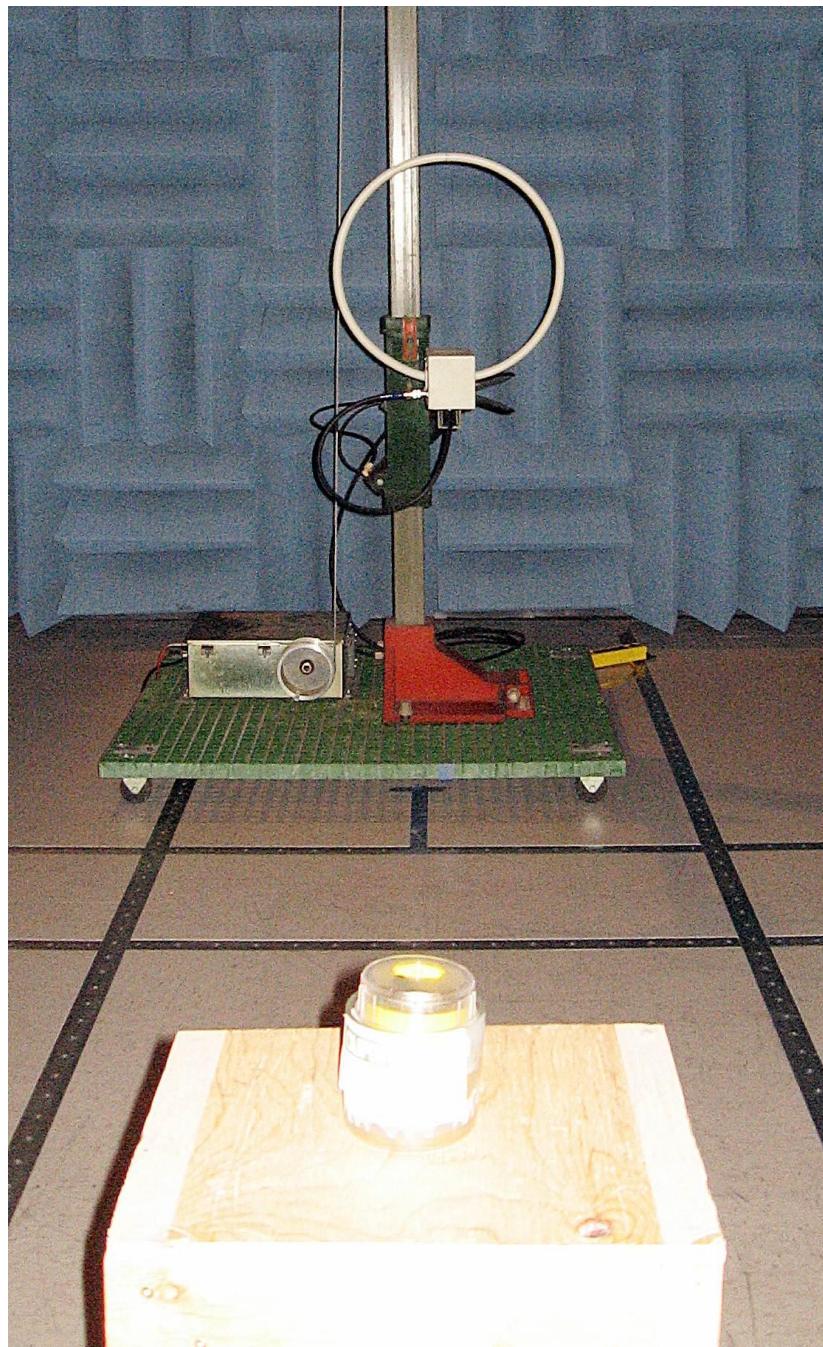


Prepared by: LabTest Certification Inc.  
Date Issued: June 16, 2014  
Project No: 12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
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**- Test configuration for Unintentional measurement below 30MHz**



Prepared by:  
Date Issued:  
Project No:

LabTest Certification Inc.  
June 16, 2014  
12023

Client:  
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SST Wireless Inc.  
12023-1E  
0

## APPENDIX D: ISO 17025:2005 Accreditation Certificate



Prepared by:  
Date Issued:  
Project No:

LabTest Certification Inc.  
June 16, 2014  
12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
0

## International Accreditation Service

# SCOPE OF ACCREDITATION

LabTest Certification, Inc. TL-367  
(Revised March 21, 2013)

3133-20800 Westminster Hwy.  
Richmond, British Columbia V6V 2W3  
Canada

Kavinder Dhillon  
QMS Manager  
(604) 247-0444

FIELDS OF TESTING		ACCREDITED TEST METHODS
Gas and Plumbing		ANSI Standards Z21.1, Z21.8, Z21.10.1, Z21.13/CSA 4.9, Z21.15, Z21.17/CSA 2.7, Z21.19/1.6, Z21.20/C22.2 NO. 199, Z21.42, Z21.50, Z21.57, Z21.58, Z21.63/CSA 11.3, Z21.72/CSA 11.2, Z21.76, Z21.86/CSA 2.32, Z21.91, Z21.97 and Z21.89/CGA1.18, Z83.7/CSA 2.14, Z83.11/CSA 1.8, Z83.26/CSA 2.37; CAN1-1.1, CAN1-2.15, CAN1-2.21, CSA Standards B45 Series, B125, B140.0, B140.1, B140.2.1, B140.2.2, B140.3, B140.4, B140.7-05, B140.8, B140.9.3, B140.9.4-10, B140.12-03, B212-00, B366.1-11, B415.1-10; CGA 1.3, CGA 1.16, CGA 2.17, CSA/CGA-3.4; AS 4551/Ag101, AS 4553/AG 103, AS 4563 and AS 2658; EN Standards 30-1-1, 30-1-2, 30-1-3, 30-1-4, 30-2-1 and 30-2-2, ASME A112 Series; UL Standards 296, 372, and 795
Electrical, EMC and Electro-mechanical		AS 4268.1, 4268.2; AS/NZS 1044, 1053, 2064, 3548, 3652, 4051, 4251.1, 4251.2, 62040.2; 60335.1; AS/NZS 60598.1, AS/NZS 60950.1, AS/NZS 60745.1, AS/NZS 60730.1; CISPR 11 / EN55011; CISPR 14 / EN55014; CISPR 15 / EN55015; CISPR 22 / EN55022; CISPR 24 / EN55024; EN 12895, 301 489, 300 386, 50083-2, 50090-2-2, 50091-2, 50121-1, 50121-2;



**ACCREDITED**

May 5, 2011  
Commencement Date

Print Date: 04/25/2013  
This accreditation certificate supersedes any IAS accreditation certificate bearing an earlier date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation.  
See the IAS Accreditation Listings on the web at [www.iasonline.org](http://www.iasonline.org) for current accreditation information, or contact IAS directly at (562) 364-8201.

Page 2 of 5  
Page 2 of 5  
C. P. Raman, P.E.  
President

11-04680



Prepared by:  
Date Issued:  
Project No:

LabTest Certification Inc.  
June 16, 2014  
12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
0

## International Accreditation Service

# SCOPE OF ACCREDITATION

LabTest Certification, Inc. TL-367

(Revised March 21, 2013)

ACCREDITED TEST METHODS	
FIELDS OF TESTING	
Electrical, EMC and Electro-mechanical (continued)	139, 141, 147, 148, 149, 150, 156, 157, 158, 164, 165, 166, 167, 168, 169, 173, 177, 183, 1, 183, 2, 184, 187, 191, 195, 205, 207, 213, 217, 218, 1, 218, 2, 223, 224, 225, 231, 234, 236, 243, 247, 250, 60065, 60947-1; 60947-4-1; 60950-22, 60950-23, 62368-1, E60335-1, -2, E60730-1, -2, E60745-1, -2, E61010-1, -2, E742, Z240 RV Series 08; IEC/EN Standards 60335-1, -2, 60730-1, -2, 60745-1, -2, 61010-1, -2, 60065, 60079-0, -6, -11, -15 and 60950-1, -2; IEC/EN 60529; 60945, 60598-1, -2, 61347-1; UL Standards 48, 50, 73, 197, 499, 507, 508, 508A, 676, 745-1, 751, 763, 778, 858, 867, 875, 924, 935, 982, 987, 998, 1004, 1012, 1026, 1261, 1310, 1431, 1472, 5085-2, 1; 5085-3; 1563, 1564, 1585, 1598, 1647, 1795, 1993, 1995, UL/CSA 5085-16500, 8750, 2388; 60335-1, 60335-2, 60601-1, 60601-2, 60730-1, 60730-2, 60745-1, 60745-2, 60950-1, 61010-1 and 61010-2; ISO EN Standards 60601-1-2, Part 1-2, 61000-3-2 (Equipment input current less than or equal to 16 Amps/Phase) and 61000-4-3; ANSI Standards C63.4 and C63.7 (only to 26.5GHz); UL Standards 1778, 60947-1, 60947-4-1, 60950-22, 60950-23, and 62368-1
Environmental and Energy	IEC/EN Standards 60068-2-1, 2-2, 2-6, 2-30, 2-27, 2-14, 2-64, 60092-101, 60695-2-2; MIL-STD-810: Method 500.4, 501.4, 502.4, 503.4, 506.4, 507.4, 510.4, 512.4 and 514.5; RTCA-DO-160E: Section 4, 5, 6, 7.2, 8, 10, 12, 16, 17 and 25; CSA Standard P4; CAN/CSA Standards C-300 and C-814; ISO Standards 9806-1, 9806-2 and 9806-3; SRCC 100-08, SRCC TM-1, SRCC-150; CSA Standards F378 and F379, EN Standards 12975-1 and 12975-2



ACCREDITED

May 5, 2011  
Commencement Date

Print Date: 04/25/2013  
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President

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11-04680

Prepared by:  
Date Issued:  
Project No:

LabTest Certification Inc.  
June 16, 2014  
12023

Client:  
Report No.:  
Revision No.:

SST Wireless Inc.  
12023-1E  
0

# International Accreditation Service

## SCOPE OF ACCREDITATION

LabTest Certification, Inc. TL-367  
(Revised March 21, 2013)

FIELDS OF TESTING		ACCREDITED TEST METHODS
ENERGY STAR Program Requirements	Product Specification for Water Coolers	Eligibility Criteria
Maritime	ABYC Standards A-3, A-7, A-26, A-27, A-28, A-30, A-31, E-2, E-11 H-2, P-14, P-18, P-21, P-22, P-24 and P-27; EN Standards 28846, 28848, 28849, 29775, 60092-507; EN ISO 10133, 12216, 13297, 13929, 14895, 15083, 7840, 8847, 8849, 10239, 10240, 10592; 1995/A1, 11105, 11192 and 9097-1994/A1; IACS E1 – E21, 21005; DNV 2.4, BV: Rules for Classification of Steel Ships – Part C, Chapter 3, Section 6.2 Type Approval; ABS Part 4, Chapter 9, Section 7, Lloyds Type Approval Systems – Test Specification Number 1; GL VI-Part 7 Section 3 – Section – B Test Requirements, Chapter 2	CAN/CSA C22.2 NO. 1993/UL 1993/NMX-J-578/1-ANCE), C22.2 NO. 206, C22.2 NO. 250.7, C22.2 NO. 256/UL 1786), C22.2 NO. 250.13/E61347-1, E61347-2-3
Hazardous Locations	CAN/CSA C22.2 NO. 25, 30, 137, 157, 213; CAN/CSA C22.2, EN, IEC and UL 60079-0, 60079-1, 60079-2, 60079-6, 60079-11, 60079-15, 60079-18, 60079-31; IEC/EN 13463-1, 13463-3, 13463-5, 13463-8; ISA 12.12.01; UL 913	



ACCREDITED

C.P. Ramani, P.E.  
President

May 5, 2011  
Commencement Date

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