



**FCC CFR47 PART 15 SUBPART B  
INDUSTRY CANADA RSS-210 ISSUE 7  
CLASS II PERMISSIVE CHANGE  
VERIFICATION TEST REPORT**

**FOR**

**433.92 MHz RECEIVER**

**MODEL NUMBER: 200.0191**

**FCC ID: NATRX433R-2  
IC: 3323104597A**

**REPORT NUMBER: 07U11313-1, REVISION B**

**ISSUE DATE: OCTOBER 5, 2007**

*Prepared for*

**SMARTIRE SYSTEMS INC.  
#150 13151 VANIER PLACE  
RICHMOND, BC V6V2J1, CANADA**

*Prepared by*

**COMPLIANCE CERTIFICATION SERVICES  
47173 BENICIA STREET  
FREMONT, CA 94538, USA  
TEL: (510) 771-1000  
FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	10/01/07	Initial Issue	T. Chan
B	10/05/07	Corrected IC Certification Number.	S. Radecki

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS.....</b>	<b>4</b>
<b>2. TEST METHODOLOGY .....</b>	<b>5</b>
<b>3. FACILITIES AND ACCREDITATION .....</b>	<b>5</b>
<b>4. CALIBRATION AND UNCERTAINTY.....</b>	<b>5</b>
4.1. <i>MEASURING INSTRUMENT CALIBRATION.....</i>	<i>5</i>
4.2. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>5</i>
<b>5. EQUIPMENT UNDER TEST.....</b>	<b>6</b>
5.1. <i>DESCRIPTION OF EUT.....</i>	<i>6</i>
5.2. <i>CLASS II CHANGE DESCRIPTION.....</i>	<i>6</i>
5.3. <i>PRELIMINARY TEST CONFIGURATIONS.....</i>	<i>7</i>
5.4. <i>MODE (S) OF OPERATION.....</i>	<i>7</i>
5.5. <i>MODIFICATIONS.....</i>	<i>7</i>
5.6. <i>DETAILS OF TESTED SYSTEM.....</i>	<i>7</i>
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>9</b>
<b>7. APPLICABLE LIMITS AND TEST RESULTS .....</b>	<b>10</b>
7.1. <i>RADIATED EMISSIONS.....</i>	<i>10</i>
7.2. <i>AC MAINS LINE CONDUCTED EMISSIONS.....</i>	<i>13</i>
<b>8. SETUP PHOTOS.....</b>	<b>14</b>

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SMARTIRE SYSTEMS INC.  
#150 13151 VANIER PLACE  
RICHMOND, BC V6V2J1, CANADA

**EUT DESCRIPTION:** 433.92 MHz RECEIVER

**MODEL NUMBER:** 200.0191

**SERIAL NUMBER:** 191-1-0001507

**DATE TESTED:** SEPTEMBER 13, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART B RSS-210 Issue 7 Annex 8	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested 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 herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



---

THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

---

CHIN PANG  
EMC TECHNICIAN  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, and RSS-210 Issue 7.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 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. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Radiated Emission, Above 2000 MHz	+/- 4.3 dB
Power Line Conducted Emission	+/- 2.9 dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a 433 MHz receiver used in the SmartTire Passenger Car Tire Monitoring System. One of the three versions of the receiver would be installed in a passenger vehicle and used to receive signals from and display the status of the passenger tire pressure sensors installed on the wheels. All three versions of the receiver use an identical receiver board. The Basic Receiver has LED's to display the status while the High End Display and High End Remote Display versions both have an identical LCD Display connected either directly or remotely via a cable to the Basic Receiver. A transmitter/sensor would be installed either on the rim or in place of the valve of each wheel, depending on the model of the transmitter. Each transmitter reports back to the receiver with the pressure status and temperature status, regardless of vehicle movement. If a change in excess of 1lb. is detected, the 4-to-6 minute normal cycle transmit interval is interrupted. Instead, the information is transmitted immediately because it is considered a safety issue, as in the case of a punctured tire, and treated accordingly.

The receiver was powered with a 12-volt external power supply connected to the cigarette lighter plug connector.

#### **GENERAL INFORMATION**

CHASSIS MATERIAL	PLASTIC
ENCLOSURE MATERIAL	PLASTIC
POWER REQUIREMENTS	12 / 24 VDC
POWERLINE FILTER MANUFACTURER AND MODEL	N/A

### 5.2. DESCRIPTION OF CLASS II CHANGE

The major change filed under this application is:

(1) The PCB was modified to add additional components

3 capacitors were added for filtering noise on the alarm output lines (C44, C45, C46)  
2 resistors were changed to capacitors for additional filtering on these lines (C42, C43)

(2) The Part # (originally 200.0059) has now changed to 200.0191

(3) The following components were removed for cost reasons:

- (1) Buzz1
- (2) R30, R32, R33, Q2, Q8

### 5.3. PRELIMINARY TEST CONFIGURATIONS

The following configurations were used for testing:

EUT Configuration	Description
Normal	EUT and Power Supply

### 5.4. MODE (S) OF OPERATION

Mode	Description
Normal	Receive mode.

### 5.5. MODIFICATIONS

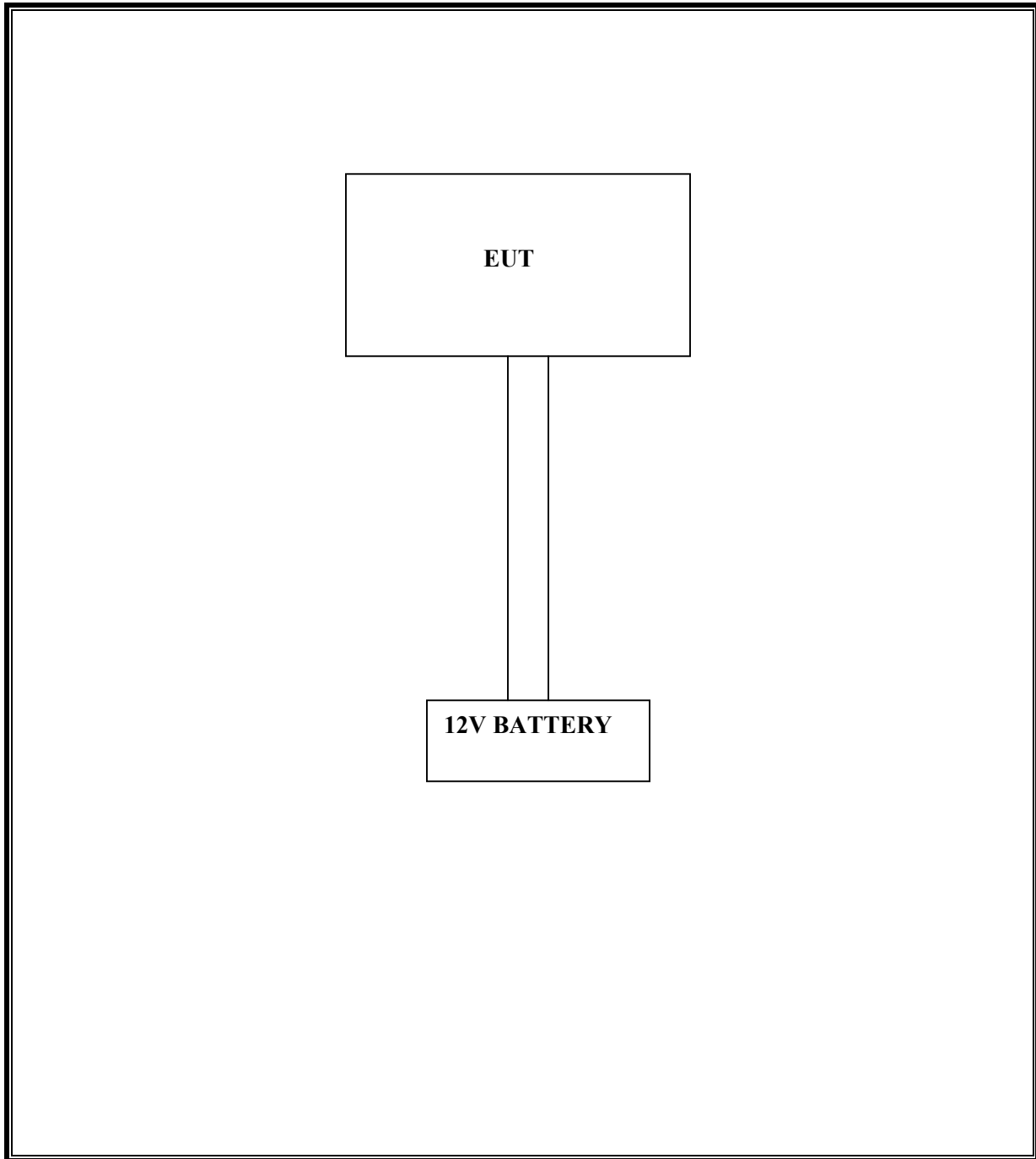
No modifications were made during testing.

### 5.6. DETAILS OF TESTED SYSTEM

#### TEST SETUP

The EUT is installed in a typical configuration.

**TEST SETUP DIAGRAM**





## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	6/12/2008
RF Filter Section	Agilent / HP	85420E	3705A00256	6/12/2008
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	11/13/2007
Preamp 30-1000MHz	Sonoma	310N	185623	1/20/2008
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	11/1/2007
Spectrum Analyzer 9KHz ~ 26.5 GHz	Agilent / HP	E4407B	US41444322	11/4/2007

## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. RADIATED EMISSIONS

#### TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 433.92 MHz, therefore the frequency range was investigated from 30 MHz to 2 GHz.

#### LIMIT

IC RSS-210 Clause 2.6

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

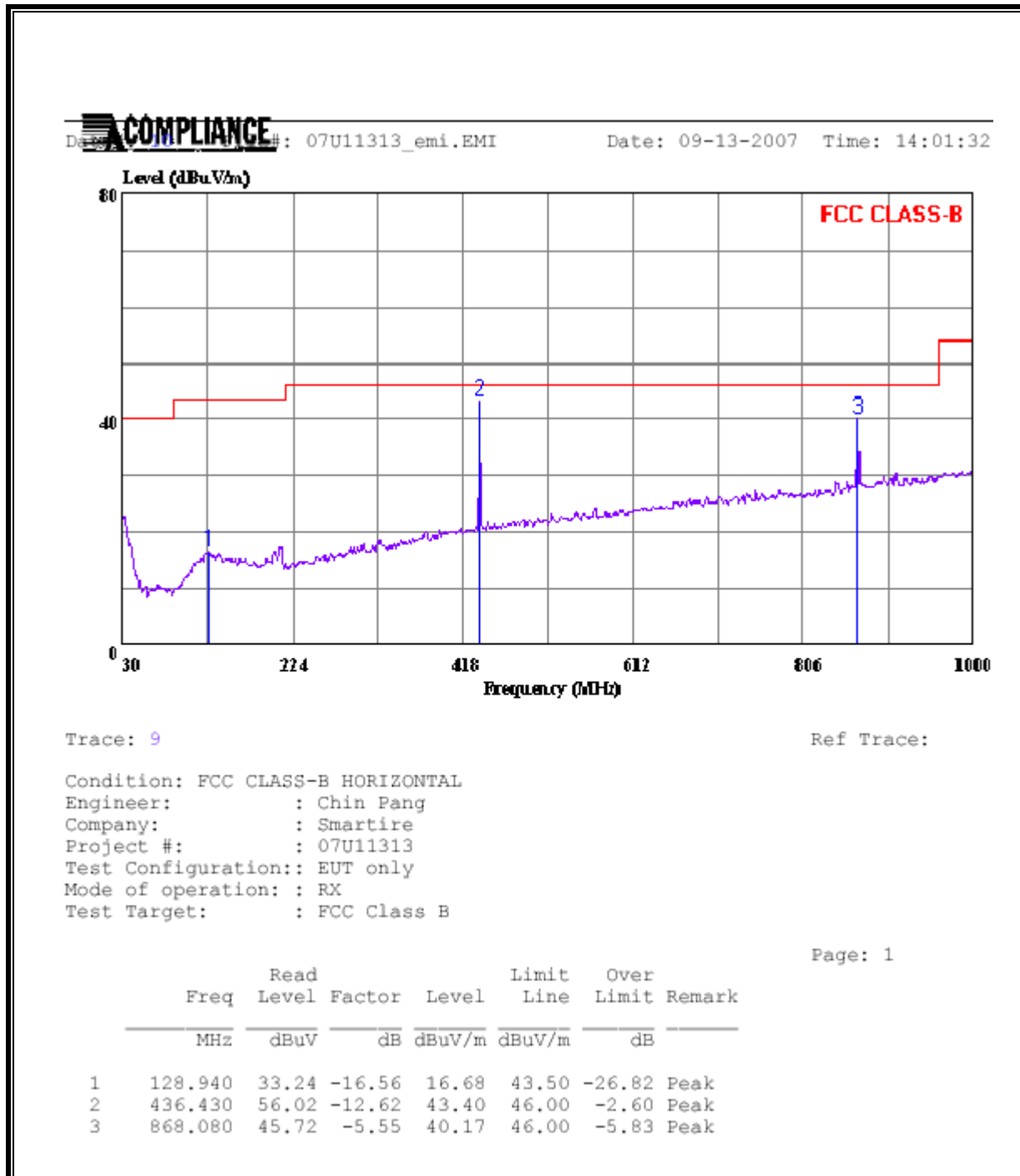
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dB $\mu$ V/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54

Note: The lower limit shall apply at the transition frequency.

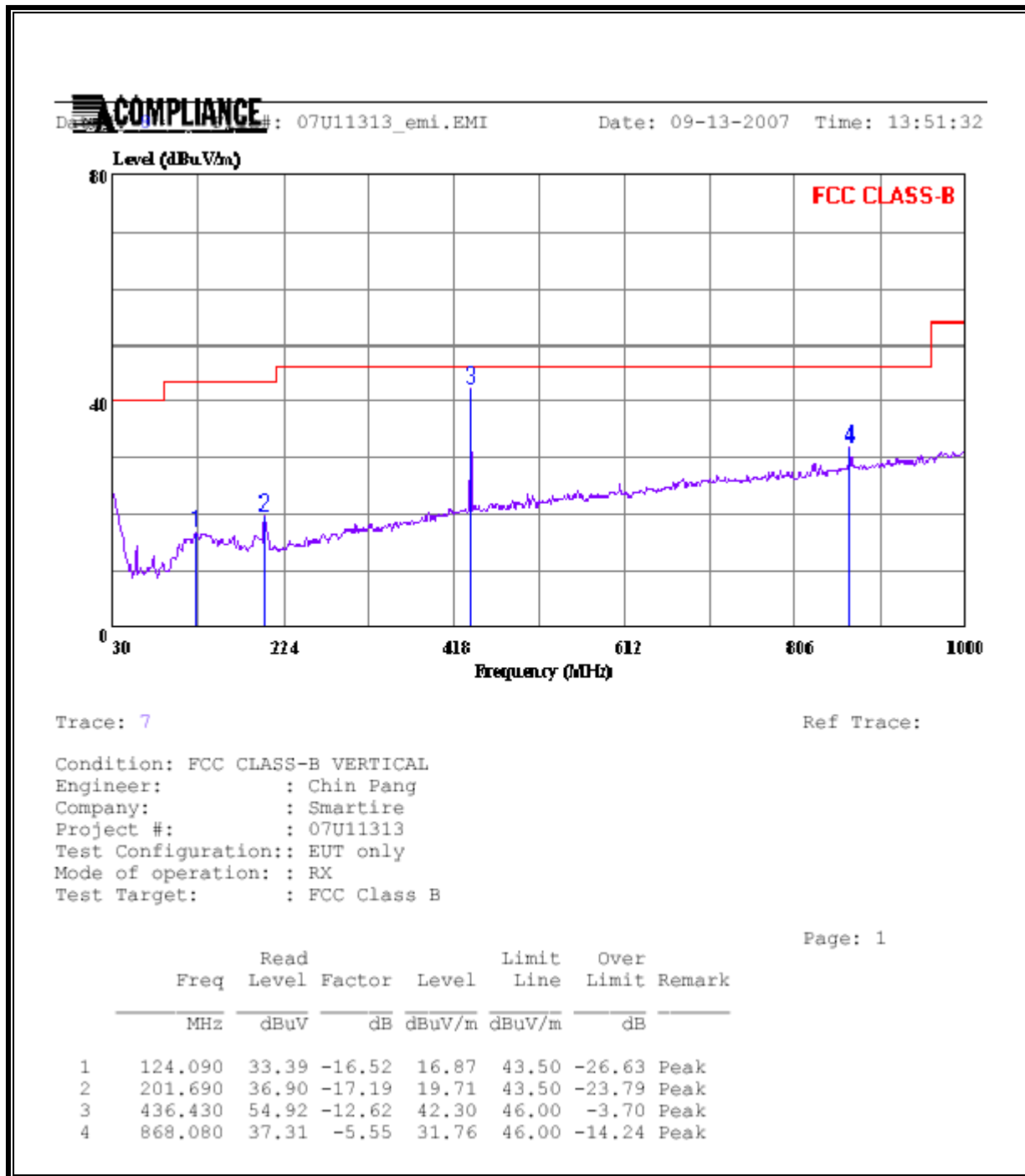
#### RESULTS

No non-compliance noted:

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)**



**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**



Note: no emission was detected above 1 GHz.

## **7.2. AC MAINS LINE CONDUCTED EMISSIONS**

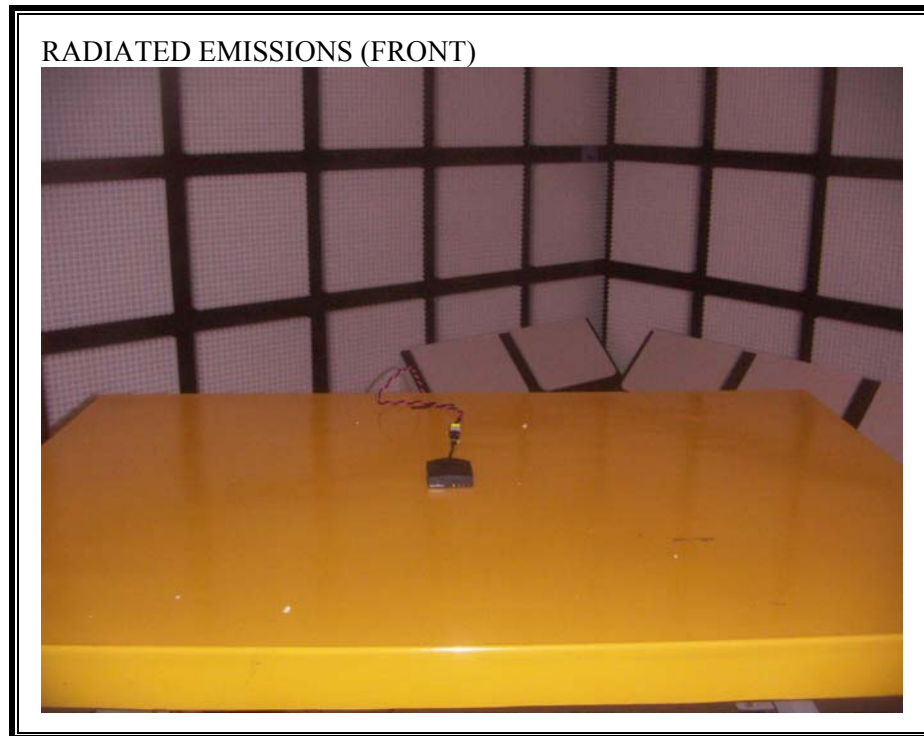
### **TEST PROCEDURE**

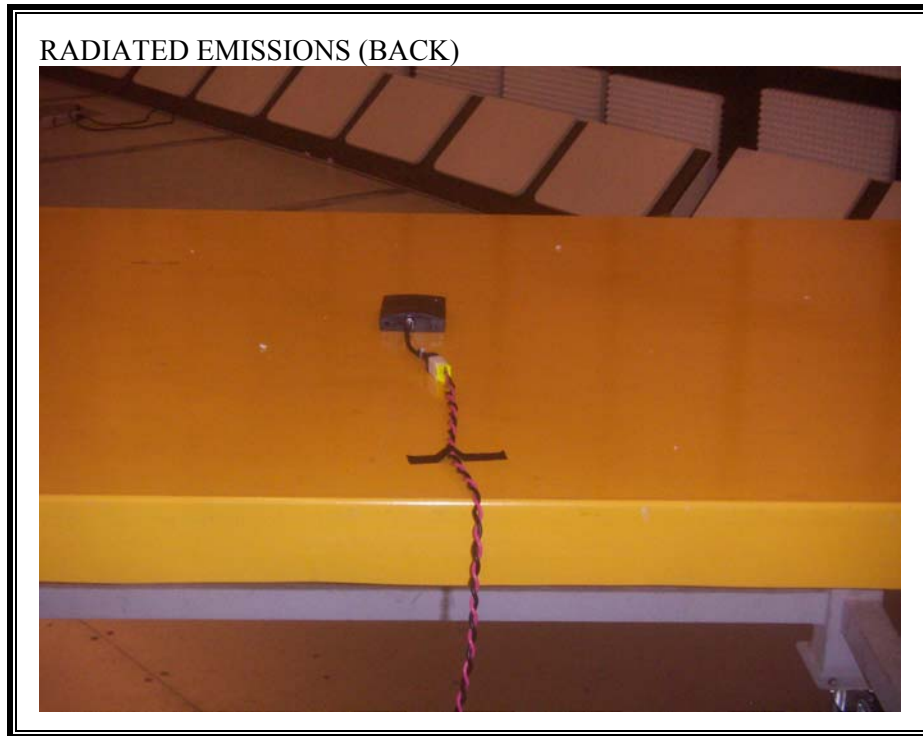
ANSI C63.4

Because product receives its DC power from an automobile or truck this test is not required.

## 8. SETUP PHOTOS

### RADIATED EMISSION





**END OF REPORT**