



## **Compliance Testing, LLC**

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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### **Test Report**

Prepared for: Seibert Williams Glass, LLC

Model: SOS Child Car Seat Minder

Description: Transmitter integrated into the chest clip of a child's car seat

FCC ID: 2ABS2-SOSR1

To

FCC Part 15.231

Date of Issue: January 21, 2014

On the behalf of the applicant:

Seibert Williams Glass, LLC  
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Attention of:

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Project No: p13c0009

**Alex Macon**  
**Project Test Engineer**

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All results contained herein relate only to the sample tested



## Test Report Revision History

| Revision | Date              | Revised By  | Reason for Revision                                    |
|----------|-------------------|-------------|--------------------------------------------------------|
| 1.0      | January 21, 2014  | Alex Macon  | Original Document                                      |
| 2.0      | February 13, 2014 | Amanda Reed | Added FCC ID                                           |
| 3.0      | March 5, 2014     | Alex Macon  | Added 15.205 section, added uV/m to dBuV/m calculation |
|          |                   |             |                                                        |



## Table of Contents

| <b><u>Description</u></b>                           | <b><u>Page</u></b> |
|-----------------------------------------------------|--------------------|
| Standard Test Conditions Engineering Practices..... | 6                  |
| Test Results Summary .....                          | 7                  |
| Fundamental Field Strength .....                    | 8                  |
| Radiated Spurious Emissions .....                   | 9                  |
| 99% Occupied Bandwidth .....                        | 11                 |
| Test Equipment Utilized .....                       | 12                 |



**ILAC / A2LA**

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation, unless noted below.

Please refer to <http://www.compliancetesting.com/labscope.html> for current scope of accreditation.

Testing Certificate Number: **2152.01**



**FCC Site Reg, #349717**

**IC Site Reg. #2044A-2**

**Non-accredited tests contained in this report:**

**N/A**



**The applicant has been cautioned as to the following**

**15.21: Information to User**

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**15.27(a): Special Accessories**

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator the responsible part may employ other methods of ensuring that the special accessories are provided to the consumer, without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.



## Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing.

In accordance with ANSI C63.10-2009 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

| Environmental Conditions |                 |                    |
|--------------------------|-----------------|--------------------|
| Temperature<br>(°C)      | Humidity<br>(%) | Pressure<br>(Mbar) |
| 20.3 – 22.1              | 28.6 - 29.4     | 971.9 – 973.4      |

## EUT Description

**Model:** SOS Child Car Seat Minder

**Description:** Transmitter integrated into the chest clip of a child's car seat

**Additional Information:** The EUT is a safety device used on car seats. When the buckle device is clasped, it repeatedly sends a signal to the receiver. The receiver monitors the vehicle's state and enables an alarm if the vehicle is turned on and the buckle device remains clasped.

## EUT Operation during Tests

EUT was equipped with test software which enabled the device to continuously transmit. The buckle was clasped and transmitting during all tests.

**Accessories:** None

**Cables:** None

**Modifications:** None



## Test Results Summary

| Specification         | Test Name                      | Pass,<br>Fail, N/A | Comments |
|-----------------------|--------------------------------|--------------------|----------|
| 15.231(a),(e)         | Fundamental Field Strength     | Pass               |          |
| 15.231(d)             | Out of Band Spurious Emissions | Pass               |          |
| 15.231(c),<br>RSS-210 | 99% Occupied Bandwidth         | Pass               |          |



## Fundamental Field Strength

**Name of Test:**

Fundamental Field Strength

**Engineer:** Alex Macon

**Test Equipment Utilized:**

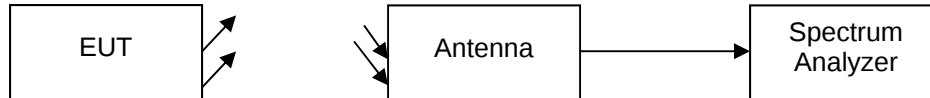
i00349, i00379, i00428

**Test Date:** 1/10/14

### Test Procedure

The EUT was tested in a semi-anechoic chamber at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Fundamental Field Strength.

### Test Setup



### Spectrum Analyzer Settings

| Detector Settings | RBW     | VBW     | Span         |
|-------------------|---------|---------|--------------|
| Average           | 120 kHz | 300 kHz | As Necessary |

### Sample Calculations:

Correction Factors include Antenna and cable insertion loss.

Measured Level includes correction factors that were entered into the spectrum analyzer before recording test data.

All following limits were converted to dBuV/m by the calculation stated below:

$20 \cdot \text{LOG}(\mu\text{V/m})$

| Fundamental Frequency (MHz) | Field strength of fundamental (uV/m) | Field strength of spurious emissions (uV/m) |
|-----------------------------|--------------------------------------|---------------------------------------------|
| 260 - 470                   | 3750 to 12500                        | 375 to 1250                                 |

\*Linear interpolations

### Fundamental Field Strength

| Tuned Frequency (MHz) | Avg. Measured Level (dBuV/m) | Avg. Limit (dBuV/m) | Result |
|-----------------------|------------------------------|---------------------|--------|
| 433.393               | 53.36                        | 72.8                | Pass   |



## Radiated Spurious Emissions

**Name of Test:**

Radiated Spurious Emissions

**Engineer:** Alex Macon

**Test Equipment Utilized:**

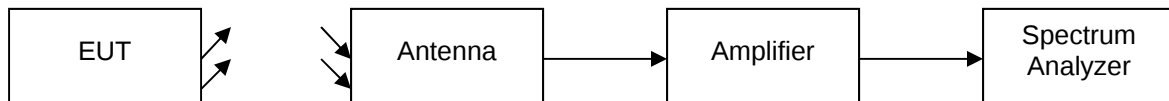
i00349, i00379, i00428

**Test Date:** 1/10/14

### Test Procedure

The EUT was tested in a semi-anechoic chamber set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the limits for Radiated Spurious Emissions. The antenna, band reject filter, amplifier and cable correction factors were input into the spectrum analyzer before recording data. The spectrum for each tuned frequency was examined to the 10<sup>th</sup> harmonic.

### Test Setup



### Analyzer Settings

| Detector Settings | RBW (MHz) | VBW (MHz) | Span         |
|-------------------|-----------|-----------|--------------|
| Peak              | 1         | 3         | As Necessary |
| Average           | 1         | 3         | As Necessary |

### Sample Calculations:

Correction Factors include Antenna and cable insertion loss correction factors.

Measured Level includes correction factors that were input to the spectrum analyzer before recording test data



### Radiated Spurious Emissions

| Tuned Frequency (MHz) | Emission Frequency (GHz) | Peak Measured Level (dBuV/m) | Peak Limit (dBuV/m) | Margin (dB) |
|-----------------------|--------------------------|------------------------------|---------------------|-------------|
| 433.5                 | 1.300                    | 43.39                        | 74.0                | -30.61      |
|                       | 2.167                    | 43.97                        | 74.0                | -30.03      |
|                       | 2.600                    | 43.32                        | 74.0                | -30.68      |

| Tuned Frequency (MHz) | Emission Frequency (GHz) | Avg. Measured Level (dBuV/m) | Avg. Limit (dBuV/m) | Margin (dB) |
|-----------------------|--------------------------|------------------------------|---------------------|-------------|
| 433.5                 | 1.300                    | 42.77                        | 54.0                | -11.23      |
|                       | 2.167                    | 43.83                        | 54.0                | -10.17      |
|                       | 2.600                    | 43.32                        | 54.0                | -10.68      |

### Radiated Spurious Emissions in the Restricted Band (15.205)

| Tuned Frequency (MHz) | Emission Frequency (GHz) | Avg. Measured Level (dBuV/m) | Avg. Limit (dBuV/m) | Margin (dB) |
|-----------------------|--------------------------|------------------------------|---------------------|-------------|
| 433.5                 | 1.300                    | 42.77                        | 54.0                | -11.23      |

### Radiated Emissions 15.231 (b)

| Tuned Frequency (MHz) | Emission Frequency (MHz) | Avg. Measured Level (dBuV/m) | Avg. Limit (dBuV/m) | Margin (dB) |
|-----------------------|--------------------------|------------------------------|---------------------|-------------|
| 433.5                 | 360.02                   | 18.27                        | 57.9                | -39.63      |



## 99% Occupied Bandwidth

**Name of Test:**

99% Occupied Bandwidth

**Engineer:** Alex Macon

**Test Equipment Utilized:**

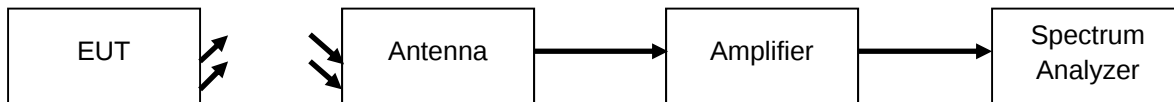
i00349, i00379, i00428

**Test Date:** 1/17/14

### Test Procedure

The EUT was tested in a semi-anechoic chamber at a distance of 3 meter from the receiving antenna. The Span was set wide enough to capture the entire transmit spectrum and the resolution bandwidth was set to at least 1% of the span. The analyzer was set to max hold while the 99% bandwidth was measured.

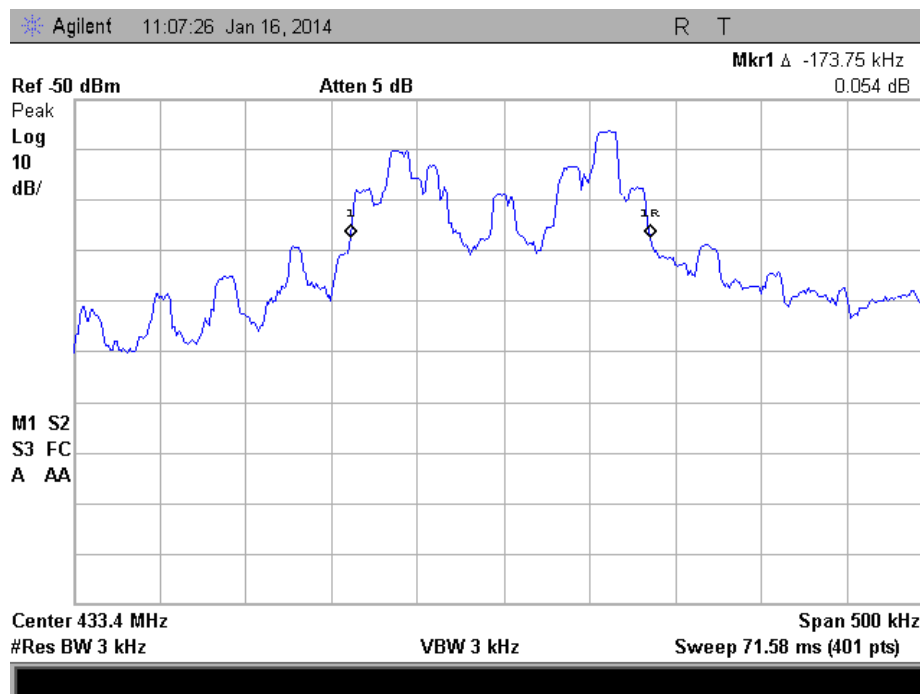
### Test Setup



### Occupied Bandwidth Summary

| Frequency (MHz) | Recorded Measurement (kHz) | Result |
|-----------------|----------------------------|--------|
| 433.5           | 173.75                     | Pass   |

### 99% Bandwidth 433.5 MHz





## Test Equipment Utilized

| Description                   | Manufacturer | Model #                       | CT Asset # | Last Cal Date | Cal Due Date |
|-------------------------------|--------------|-------------------------------|------------|---------------|--------------|
| *Humidity / Temp Meter        | Newport      | IBTHX-W-5                     | i00282     | 12/4/12       | 12/4/13      |
| Bi-Log Antenna                | Schaffner    | CBL 6111D                     | i00349     | 10/8/13       | 10/8/15      |
| *EMI Analyzer                 | Agilent      | E7405A                        | i00379     | 11/21/12      | 11/21/13     |
| Thermo Hygrometer             | Omega        | RH81                          | i00408     | 4/15/13       | 4/15/15      |
| 3 Meter Semi-Anechoic Chamber | Panashield   | 3 Meter Semi-Anechoic Chamber | i00428     | 11/14/13      | 11/14/15     |

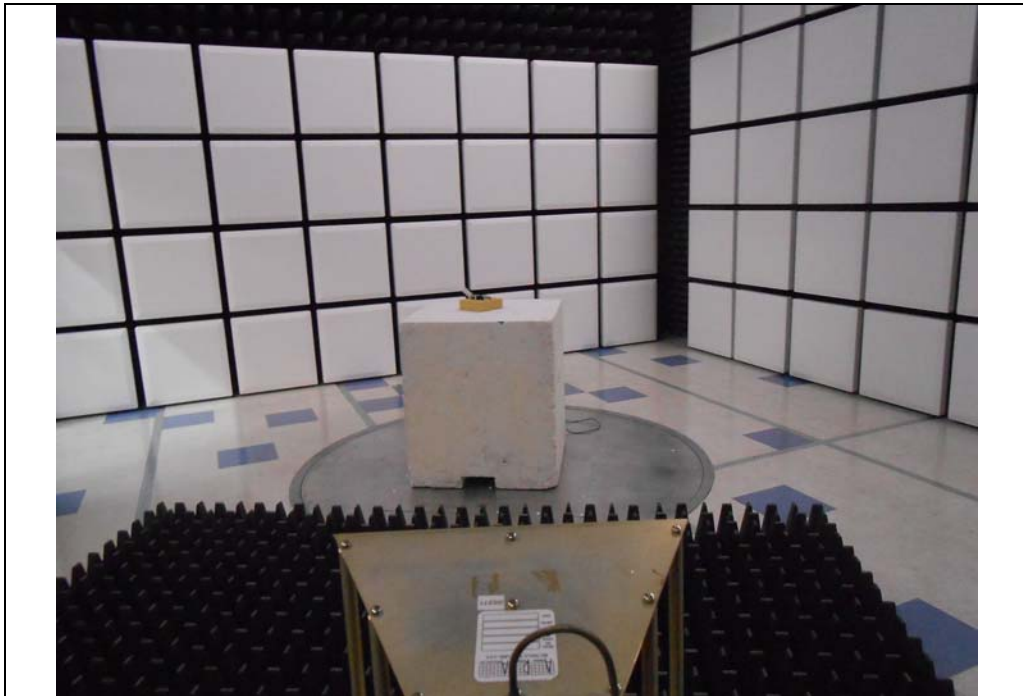
\*Note: Equipment under 60 day calibration extension per Lab Manager

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.



**Test Setup Photos**  
**FCC ID: 2ABS2-SOSR1**

**RF Radiated #1**



**RF Radiated #2**

