



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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Alex Macon
Project Test Engineer

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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



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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 (°C)	Humidity (%)	Pressure (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, Fail, N/A	Comments
15.231(a),(e)	Fundamental Field Strength	Pass	
15.231(d)	Out of Band Spurious Emissions	Pass	
15.231(c), RSS-210	99% Occupied Bandwidth	Pass	



Fundamental Field Strength

Name of Test:

Fundamental Field Strength

Engineer: Alex Macon

Test Equipment Utilized:

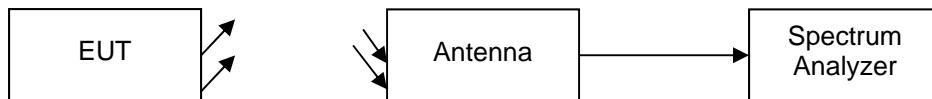
i00349, i00379, i00428

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:

$20 \times \log(uV/m)$

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

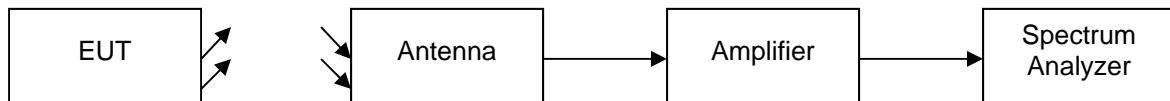
Name of Test: Radiated Spurious Emissions
Test Equipment Utilized: i00349, i00379, i00428

Engineer: Alex Macon
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 10th 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:

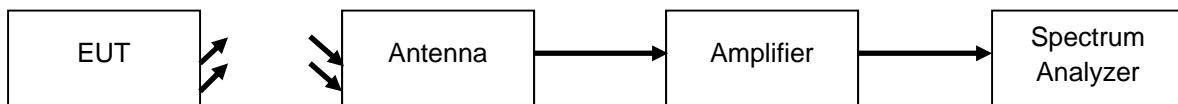
i00349, i00379, i00428

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.

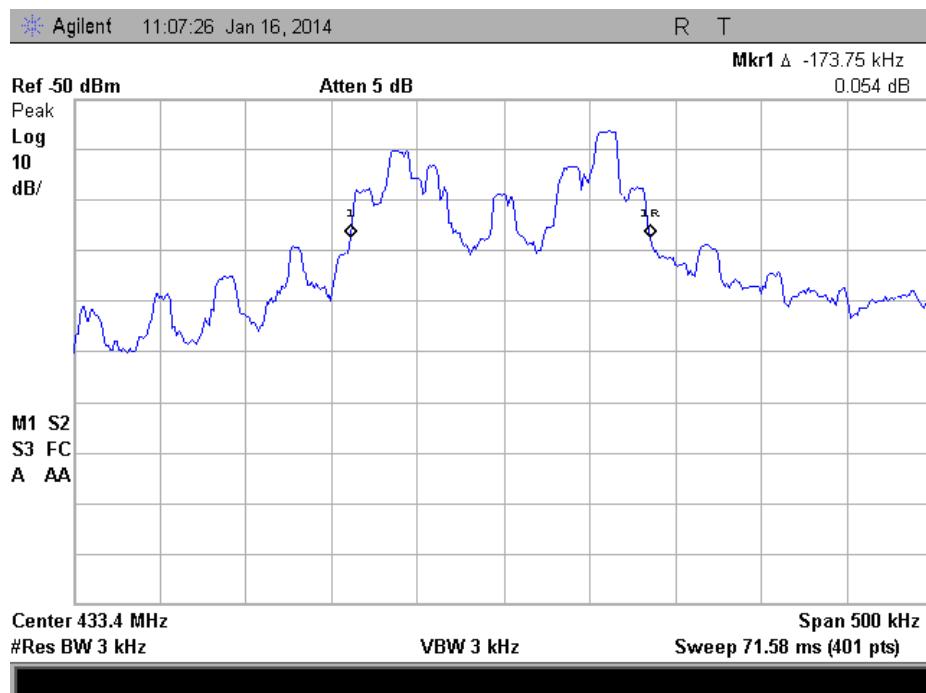
Test Setup



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

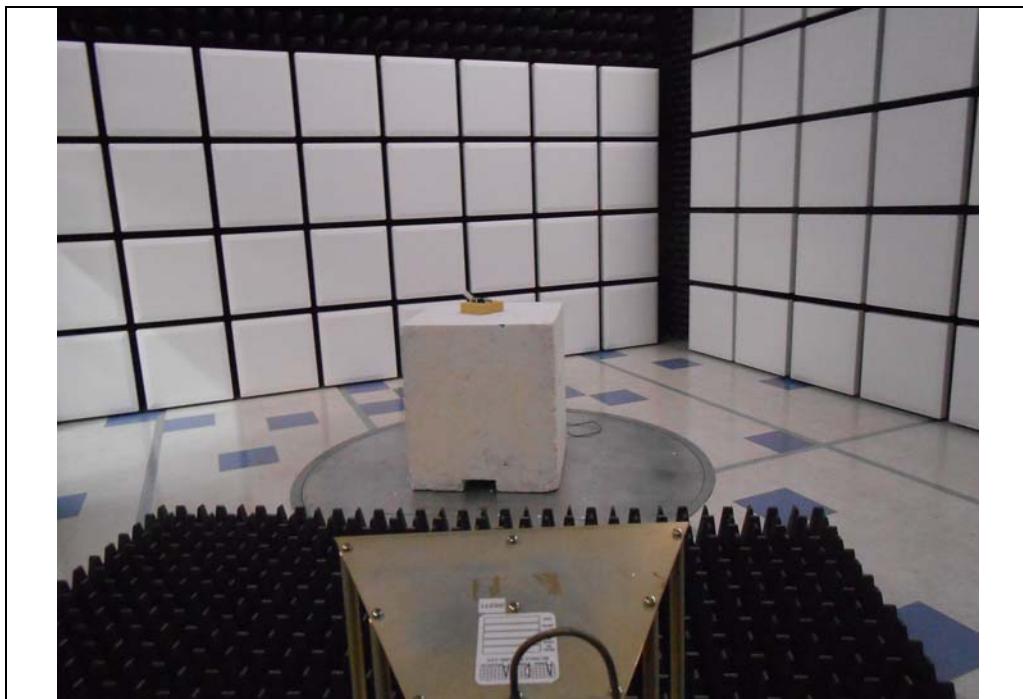
In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.



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Test Setup Photos
FCC ID: 2ABS2-SOSR1

RF Radiated #1



RF Radiated #2

