



Compliance Testing, LLC

Previously Flom Test Lab

EMI, EMC, RF Testing Experts Since 1963

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Test Report

Prepared for: OrthoSensor, Inc.

Model: 07359_C Transceiver

FCC ID: XNL-ORTHOSNSR3

Description: Knee Balancer Transceiver

To

FCC Part 15B
Class B

And

IC ICES-003 Issue 5 August 2012

Date of Issue: February 1, 2013

On the behalf of the applicant:

OrthoSensor, Inc.
1560 Sawgrass Corporate Pkwy
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Sunrise, FL 33323

Attention of:

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John Erhard
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	2/1/13	John Erhard	Original Document
2.0	5/13/13	John Erhard	Add FCC ID to test report



Table of Contents

<u>Subpart</u>	<u>Description</u>	<u>Page</u>
	Standard Test Conditions and Engineering Practices	6
	Test Summary	7
15.107	A/C Powerline Conducted Emissions	8
15.109	Radiated Emissions	10
	Test Equipment Utilized	13



The applicant has been cautioned as to the following

FCC

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 the 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 party 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.

Industry Canada

Products subject to Industry Canada ICES-003 must be labeled in English and/or French (based on the intended market and any other applicable provincial or federal regulations) as follows:

CAN ICES-3 (B)/NMB-3(B)



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 OATS Reg, #933597

IC Reg. #2044A-1

Non-accredited tests contained in this report:

N/A



Test and Measurement Data

Sub-part 2.1033(b)

All tests and measurement data shown were performed in accordance with FCC Rule Parts: 15.107, 15.109; Unintentional Radiators

All tests and measurement data shown are deemed satisfactory evidence of compliance with Industry Canada Interference-Causing Equipment Standard ICES-003.

Name of Test	FCC Section	ICES-003
A/C Powerline Conducted Emissions	15.107	Section 5
Radiated Emissions	15.109	Section 5

Standard Engineering Practices

Unless otherwise indicated the procedures contained in ANSI C63.4-2009 were observed during testing.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst case measurement.

Standard Test Conditions and Engineering Practices

Unless otherwise indicated in the specific measurement results, the ambient temperature was maintained within the range of 10° to 40 ° C (50 ° to 104 ° F) and the relative humidity levels were in the range of 10% to 90%.

Environmental Conditions	
Temperature (° C)	Humidity (%)
20.0	31.9

EUT Description

Model: 07359_C Transceiver

Description: Knee Balancer Transceiver

Firmware: N/A

Software: N/A

Additional Information

N/A

EUT Operation during Tests

The EUT was in a normal operating condition and placed between representative replacement knee metal components.

Accessories: None

Cables: None

Modifications: None



Test Summary

Specification	Test Name	Pass, Fail, N/A	Comments
15.107	A/C Powerline Conducted Emissions	Pass	
15.109	Radiated Emissions	Pass	



15.107 A/C Powerline Conducted Emissions

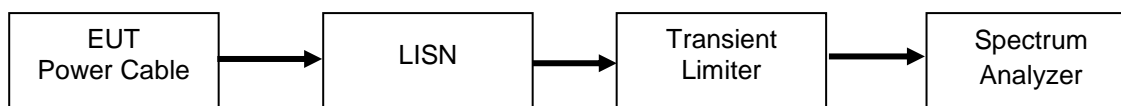
Name of Test: A/C Powerline Conducted Emissions
Test Equipment Utilized: i00033, i00123, i00270

Engineer: John Erhard
Test Date: 1/28/2013

Test Procedure

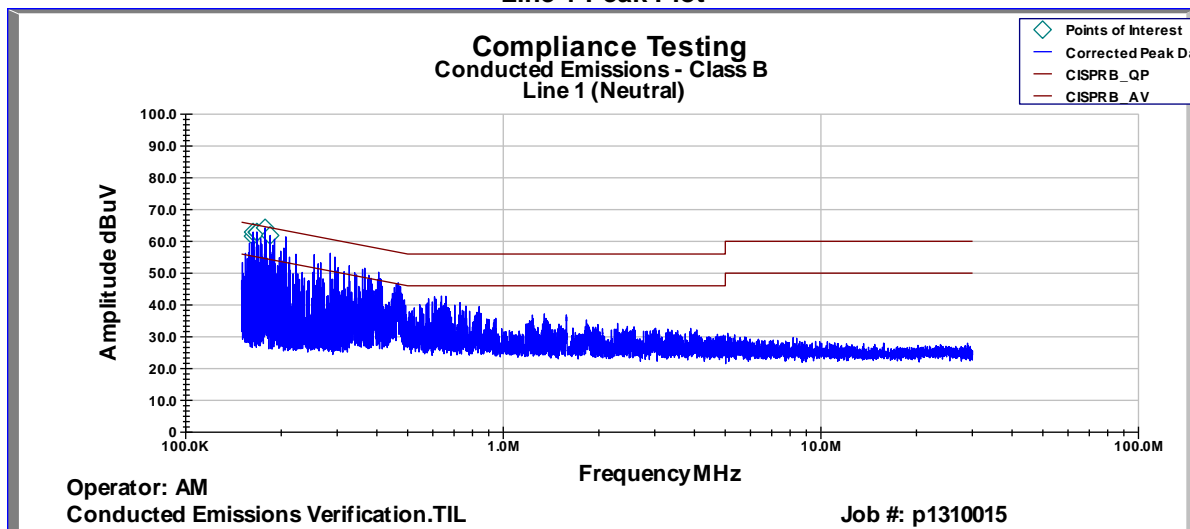
The EUT power cable was connected to a LISN and the monitored output of the LISN was connected to a transient limiter, which then connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were measured and compared to the specification limits.

Test Setup

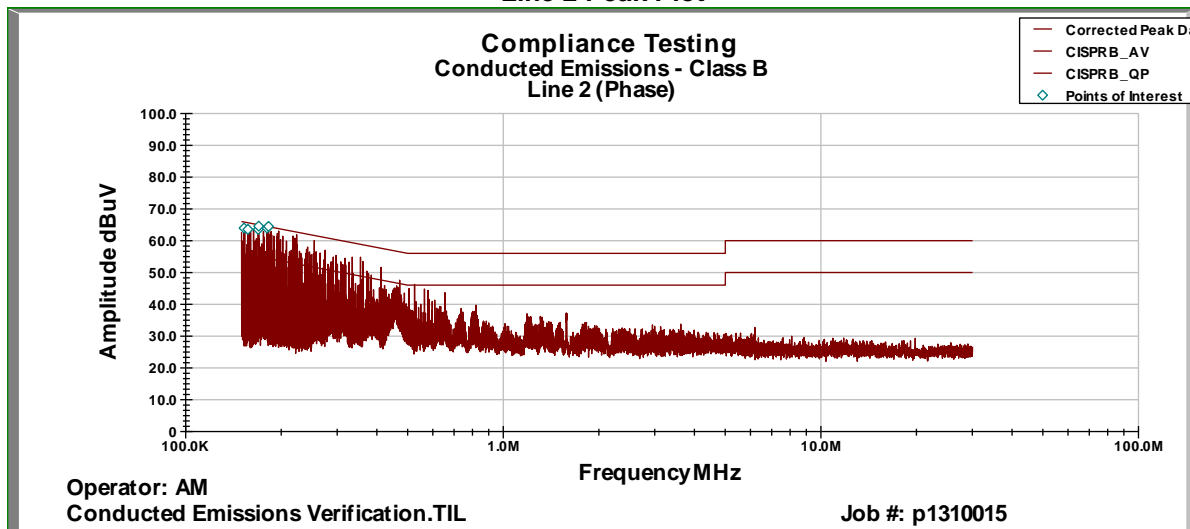


Conducted Emissions Test Results

Line 1 Peak Plot



Line 2 Peak Plot





Line 1 Neutral Avg Detector

Frequency (KHz)	Measured Value (dBuV)	LISN Corr Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	L1 Final Data (dBuV)	Limit (dBuV)	Avg Margin (dB)
188.8	24.45	0.2	0.02	10.1	34.78	54.891	-20.12
177.38	26.09	0.2	0.02	10.1	36.41	55.218	-18.81
167.24	25.64	0.2	0.02	10.128	35.99	55.507	-19.52
156.26	27.84	0.24	0.02	10.2	38.29	55.821	-17.53
155.62	26.26	0.24	0.02	10.2	36.73	55.839	-19.11
155.62	26.26	0.24	0.02	10.2	36.727	55.839	-19.113

Line 2 Phase Avg Detector

Frequency (KHz)	Measured Value (dBuV)	LISN Corr Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	L2 Final Data (dBuV)	Limit (dBuV)	Avg Margin (dB)
189.24	24.41	0.2	0.02	10.1	34.73	54.879	-20.15
186.21	25.61	0.2	0.02	10.1	35.93	54.965	-19.04
174.05	26.94	0.2	0.02	10.1	37.26	55.313	-18.05
164.34	26.55	0.2	0.02	10.157	36.92	55.59	-18.67
151.07	26.97	0.29	0.02	10.2	37.48	55.97	-18.49
150.47	27.75	0.3	0.02	10.2	38.266	55.987	-17.72

Line 1 Neutral QP Detector

Frequency (KHz)	Measured Value (dBuV)	LISN Corr Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	L1 Final Data (dBuV)	Limit (dBuV)	QP Margin (dB)
188.8	38.732	0.2	0.02	10.1	49.05	64.891	-15.84
177.38	38.848	0.2	0.02	10.1	49.17	65.218	-16.05
167.24	39.655	0.2	0.02	10.128	50.00	65.507	-15.51
156.26	40.092	0.237	0.02	10.2	50.55	65.821	-15.27
155.62	40.783	0.244	0.02	10.2	51.25	65.839	-14.59
155.62	40.783	0.244	0.02	10.2	51.246	65.839	-14.593

Line 2 Phase QP Detector

Frequency (KHz)	Measured Value (dBuV)	LISN Corr Factor (dB)	Cable Loss (dB)	Transient Limiter (dB)	L2 Final Data (dBuV)	Limit (dBuV)	QP Margin (dB)
189.24	39.67	0.2	0.02	10.1	49.99	64.879	-14.89
186.21	37.59	0.2	0.02	10.1	47.91	64.965	-17.05
174.05	39.33	0.2	0.02	10.1	49.65	65.313	-15.66
164.34	40.36	0.2	0.02	10.157	50.73	65.59	-14.86
151.07	41.19	0.29	0.02	10.2	51.70	65.97	-14.27
150.47	42.27	0.3	0.02	10.2	52.784	65.987	-13.203



15.109 Radiated Emissions

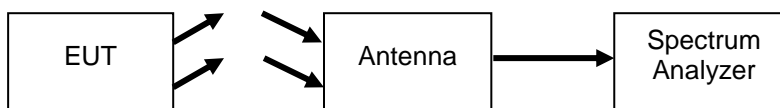
Name of Test: Radiated Emissions
Test Equipment Utilized: i00033, i00267

Engineer: John Erhard
Test Date: 1/30/2013

Test Procedure

The EUT was tested in an Open Area Test Site (OATS) set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360 degrees with the antennas in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure the signal levels were maximized. All emissions from 30 MHz to 1 GHz were examined.

Test Setup



Settings

RBW = 120 KHz

VBW = 300 KHz

Detector – Quasi Peak

Sample Calculations

Corrected Value = Measured Value + Correction factor

Correction factor = ACF + Cable loss

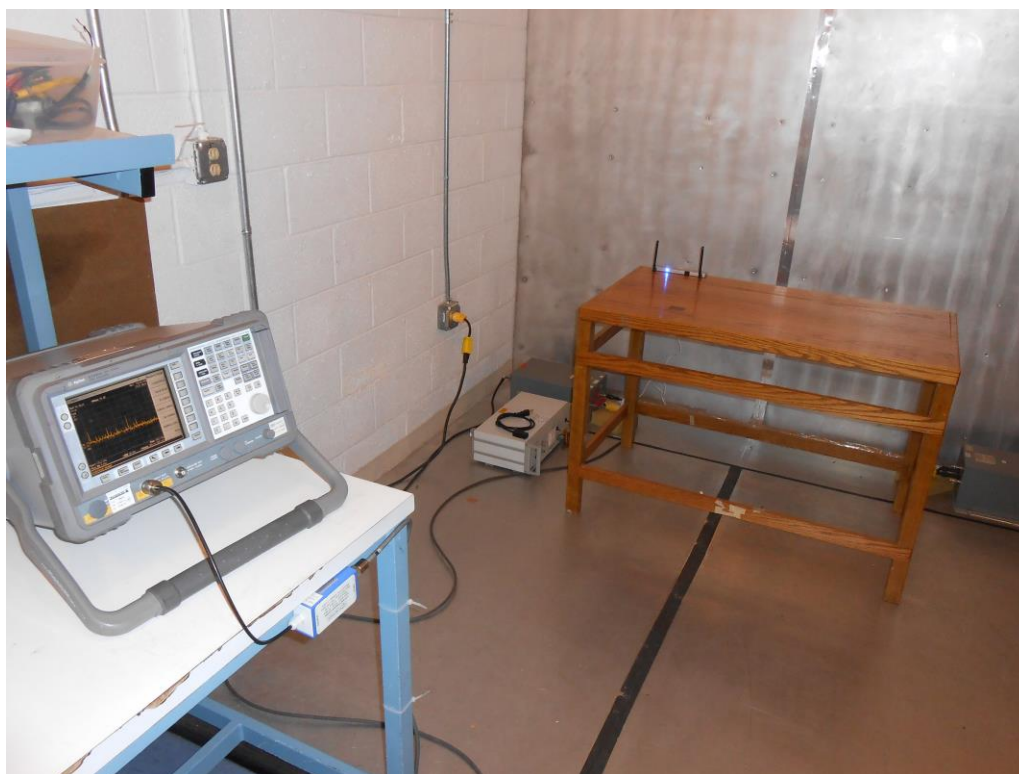
Radiated Emissions

Emission Frequency (MHz)	Measured Value (dBuV/m)	Correction Factor (dB)	Corrected Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarity (V/H)	Antenna Height (cm)	Turntable Position (deg)
47.429	16.560	10.746	27.306	40.000	-12.694	V	98	361
226.450	10.080	12.074	22.154	46.000	-23.846	V	98	361
363.000	8.010	17.029	25.039	46.000	-20.961	V	98	361
561.050	8.980	21.684	30.664	46.000	-15.336	V	98	361
715.500	5.800	23.369	29.169	46.000	-16.831	V	98	361
909.450	6.340	26.182	32.522	46.000	-13.478	V	98	361

There were no detectable emissions. All emissions are system noise levels.

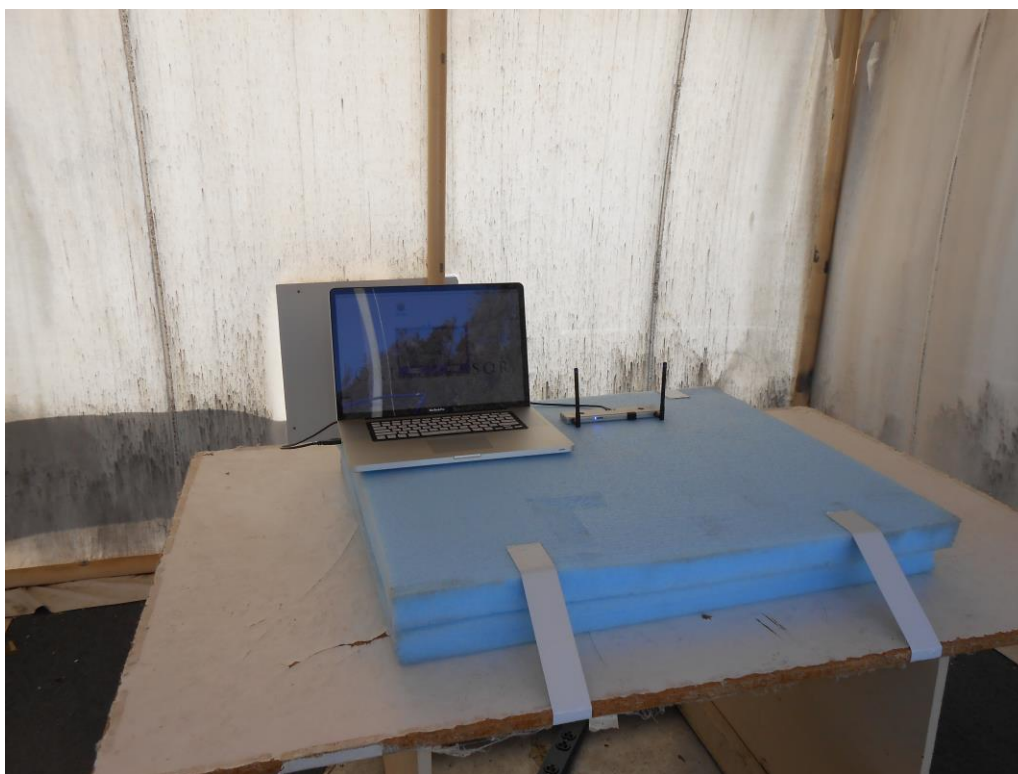


A/C Conducted Emissions Test Setup Photos





Radiated Emissions Test Setup Photos





Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
EMI Receiver	HP	8546A	i00033	12/27/12	12/27/13
Transient Limiter	Com-Power	LIT-153	i00123	Verified on: 1/28/13	
Bilog Antenna	Schaffner	CBL6111C	i00267	12/19/11	12/19/13
LISN	FCC	FCC LISN 50-32-2-01	i00270	10/5/2012	10/5/14
Humidity / Temp Meter	Newport	IBTHX-W-5	i00282	12/4/12	12/4/13
EMI Analyzer	Agilent	E7405A	i00379	11/21/12	11/21/13
Labview Software	National Instruments	FCC_PART15AB_R2	i00395	Compiled on: 06/11	

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.

END OF TEST REPORT