



166 South Carter, Genoa City, WI 53128

Company: Leggett & Platt Canada Co.
Model Tested: CB
Report Number: 18835
Project Number: 5823

Code of Federal Regulations 47 Part 15 - Radio Frequency Devices

Subpart C – Intentional Radiators

Section 15.209(a)

Radiated Emissions

THE FOLLOWING MEETS THE ABOVE TEST SPECIFICATION

Formal Name: Helios wireless transmitter per WPC specification
Kind of Equipment: Wireless Charging Device
Frequency Range: 111 kHz
Test Configuration: Table-top
Model Number(s): CB
Model(s) Tested: CB
Serial Number(s): 5408200
Date of Tests: March 15, 2013
Test Conducted For: Leggett & Platt Canada Co.
3606 Silver Creek Industrial Drive
Lakeshore, Ontario N8N 4Y3
Canada

NOTICE: "This test report relates only to the items tested and must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Description of Test Sample" page listed inside of this report.

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SIGNATURE PAGE

Tested By:

A handwritten signature in black ink that reads 'James R. Ochoa'.

James Ochoa
EMC Engineer

Reviewed By:

A handwritten signature in black ink that reads 'William Stumpf'.

William Stumpf
OATS Manager

Approved By:

A handwritten signature in black ink that reads 'Brian J. Mattson'.

Brian Mattson
General Manager



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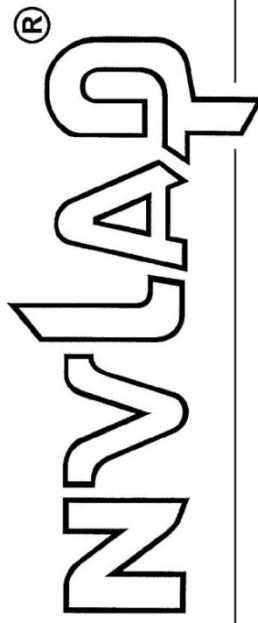
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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is 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 to joint ISO-ILAC-IAF Communique dated January 2009).



2012-10-01 through 2013-09-30
Effective dates

W. D. M.L.Q.
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2009-01-28)



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1.0 Summary of Test Report

It was determined that the Leggett & Platt Canada Co. Helios, Model CB, complies with CFR 47 Part 15 Subpart C Section 15.209(a).

Subpart C Applicable Technical Requirements Tested:

Section	Description	Procedure	Note	Compliant?
15.209(a)	Radiated Emissions, General requirements	ANSI C63.4 – 2009	1	Yes
15.215	Emission Bandwidth - 20dB	ANSI C63.4 – 2009	1	Yes

Note 1: Radiated emission measurement.

2.0 Introduction

In March, 2013 the Helios, Model CB, as provided from Leggett & Platt Canada Co. was tested to the requirements of CFR 47 Part 15 Subpart C Section 15.209(a). To meet these requirements, the procedures contained within this report were performed by personnel of D.L.S Electronic Systems, Inc.

3.0 Test Facilities

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

Wisconsin Test Facility:

D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

Wheeling Test Facility:

D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, IL 60090



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4.0 Description of Test Sample

Description:

Helios wireless transmitter per WPC specification.

Type of Equipment / Frequency Range:

Wireless Charging Device / 111 kHz

Physical Dimensions of Equipment Under Test:

Length: 182 mm x Width: 82 mm x Height: 35 mm

Power Source:

13.5 V dc

Internal Frequencies:

20 MHz

Description of Circuit Board(s) / Part Number:

CB WPT	5405801PXD Rev 01
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5.0 Test Equipment

A list of the equipment used can be found in the table below. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

D.L.S. Wisconsin – OATS 3

Description	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Dates	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	7-23-12	7-23-13
Preamplifier	Rohde & Schwarz	TS-PR10	032001/005	9 kHz – 1 GHz	1-10-13	1-10-14
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	8-22-12	8-22-14
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	9-6-12	9-6-14
Antenna	EMCO	6502	2038	9 kHz – 30 MHz	8-20-12	8-20-14

6.0 Test Arrangements

Emissions Measurement Arrangement:

All radiated and conducted emission measurements were performed at D.L.S. Electronic Systems, Inc. and set up according to ANSI C63.4 – 2009, unless otherwise noted. Description of procedures and measurements can be found in Appendix B – Measurement Data. See Appendix A for additional photos of the test set up.

Unless otherwise noted, the bandwidth of the measuring receiver / analyzer used during testing is shown below.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz



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7.0 Test Conditions

Test Conditions recorded during test:

Temperature and Humidity:

65°F at 24% RH

Supply Voltage:

13.5 V dc

8.0 Modifications Made To EUT For Compliance

None noted at time of test.

9.0 Additional Descriptions

Tests were conducted with the EUT pinging/transmitting.

10.0 Results

Measurements were performed in accordance with ANSI C63.4 – 2009. Graphical and tabular data can be found in Appendix B at the end of this report.

11.0 Conclusion

The Helios, Model CB, as provided from Leggett & Platt Canada Co. tested in March, 2013 **meets** the requirements of CFR 47 Part 15 Subpart C Section 15.209(a).



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Appendix A – Test Photos

Photo Information and Test Setup:

Item 0: Helios, Model CB
Item 1: Simulated Charging Load

Radiated Emissions – Front



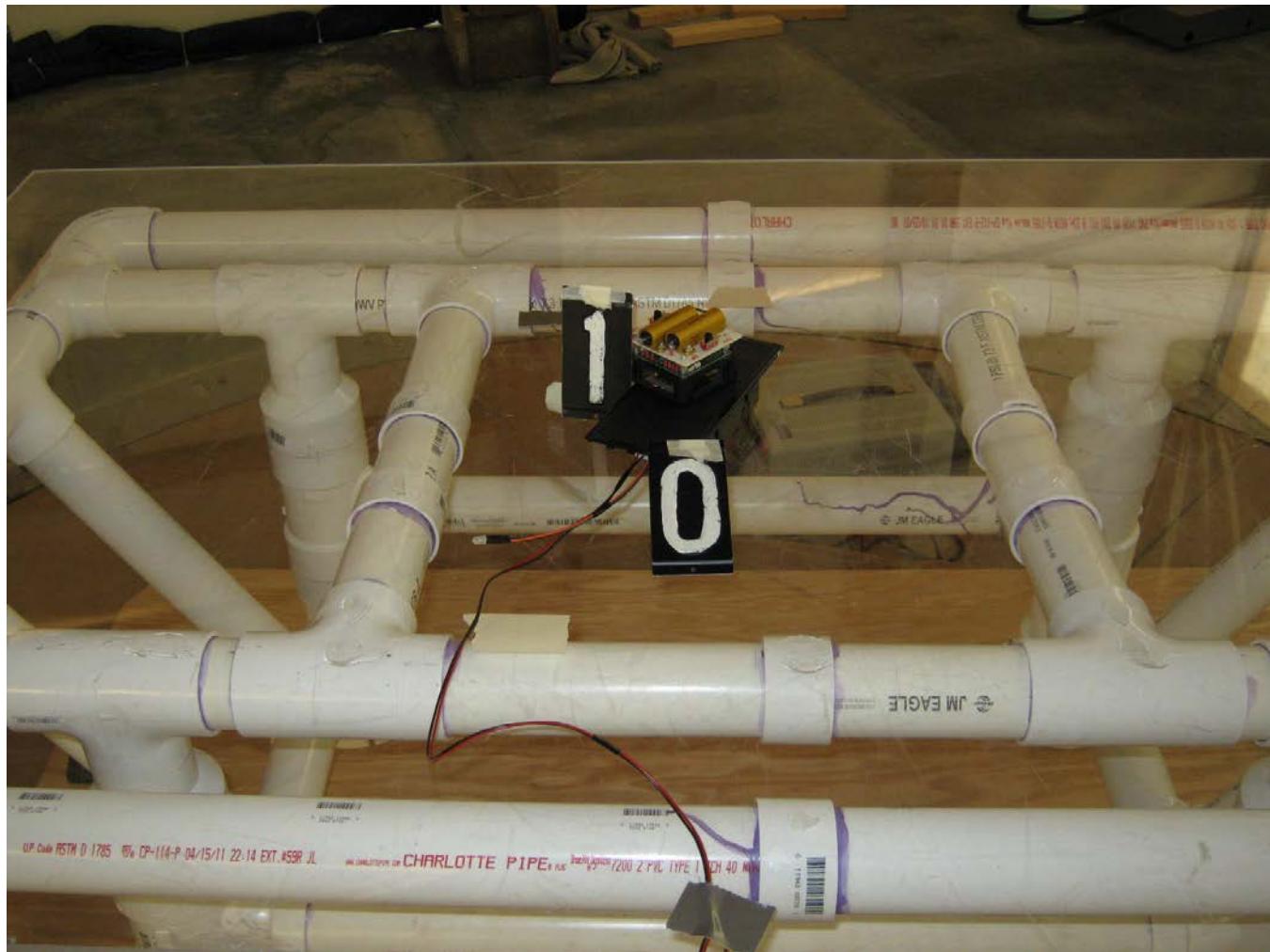


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Appendix A

Radiated Emissions – Back





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Appendix B – Measurement Data

1.0 Presence Detection (Transmit Mode)

Rule Part:

15.209(a)

Test Procedure:

ANSI C63.4 – 2009

Limit:

15.209 Radiated Emissions Limits, General Requirements section (a)

Results:

Compliant

Sample Equation(s):

$$\begin{aligned}\text{Total Level} &= \text{Raw Level} + \text{Antenna Factor} + \text{System Loss} \\ \text{Margin} &= \text{Limit} - \text{Total Level}\end{aligned}$$

Notes:

This was a radiated emissions measurement tested with an active loop antenna at a distance of 10 meters from the EUT. The antenna was rotated in the x, y, and z planes to determine the maximum emission.

Radiated Field Strength (Pinging mode)

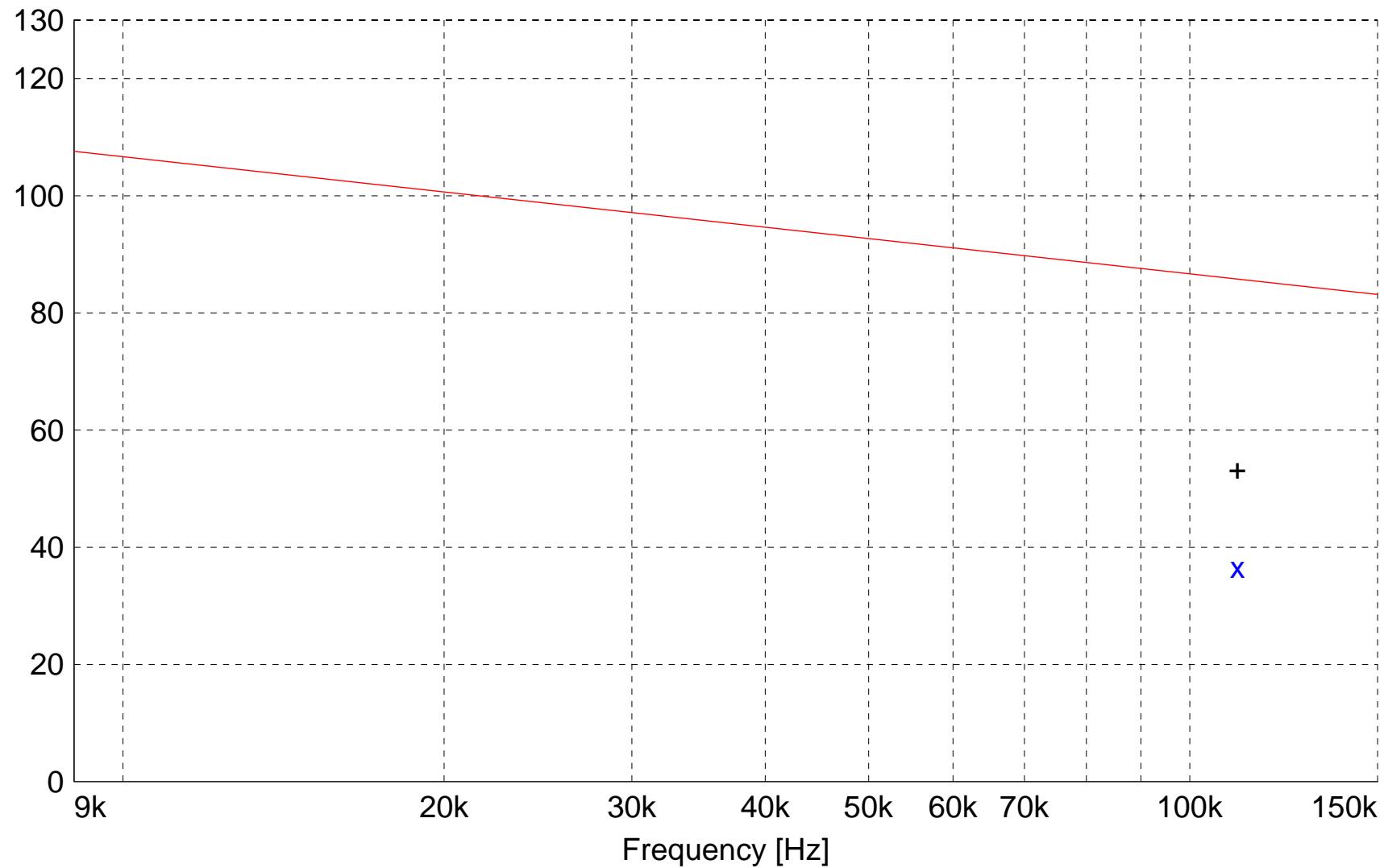
EUT: Helios
Manufacturer: Leggett & Platt
Operating Condition: 65 deg F; 24% R.H.
Test Site: DLS O.F. Site 3
Operator: Jim O
Test Specification:
Comment: 13.5Vdc. Presence Detection Mode
DATE: 3-15-2013

TEXT: "H-Field 10 meters"

Short Description: Equip info Sitel HFld low-30

TEST SET-UP: H-FIELD MEASURED AT 10 METERS

Level [dB μ V/m]



x x : MES A315b_sv_Average
+ + : MES A315b_sv_Peak_List
— LIM Part 15-209 10m

FCC15.209 Field Strength Limit

MEASUREMENT RESULT: "A315b_sv_Final"

3/15/2013 10:25AM

Frequency MHz	Level dB μ V	Antenna Factor	System Loss dB	Total Level dB μ V/m	Limit dB μ V/m	Margin dB	Height Ant. m	EuT Angle deg	Final Detector	Comment
0.110860	26.20	10.29	0.1	36.6	85.8	49.2	1.00	355	AVERAGE	Fundamental

Radiated Field Strength (Pinging mode)

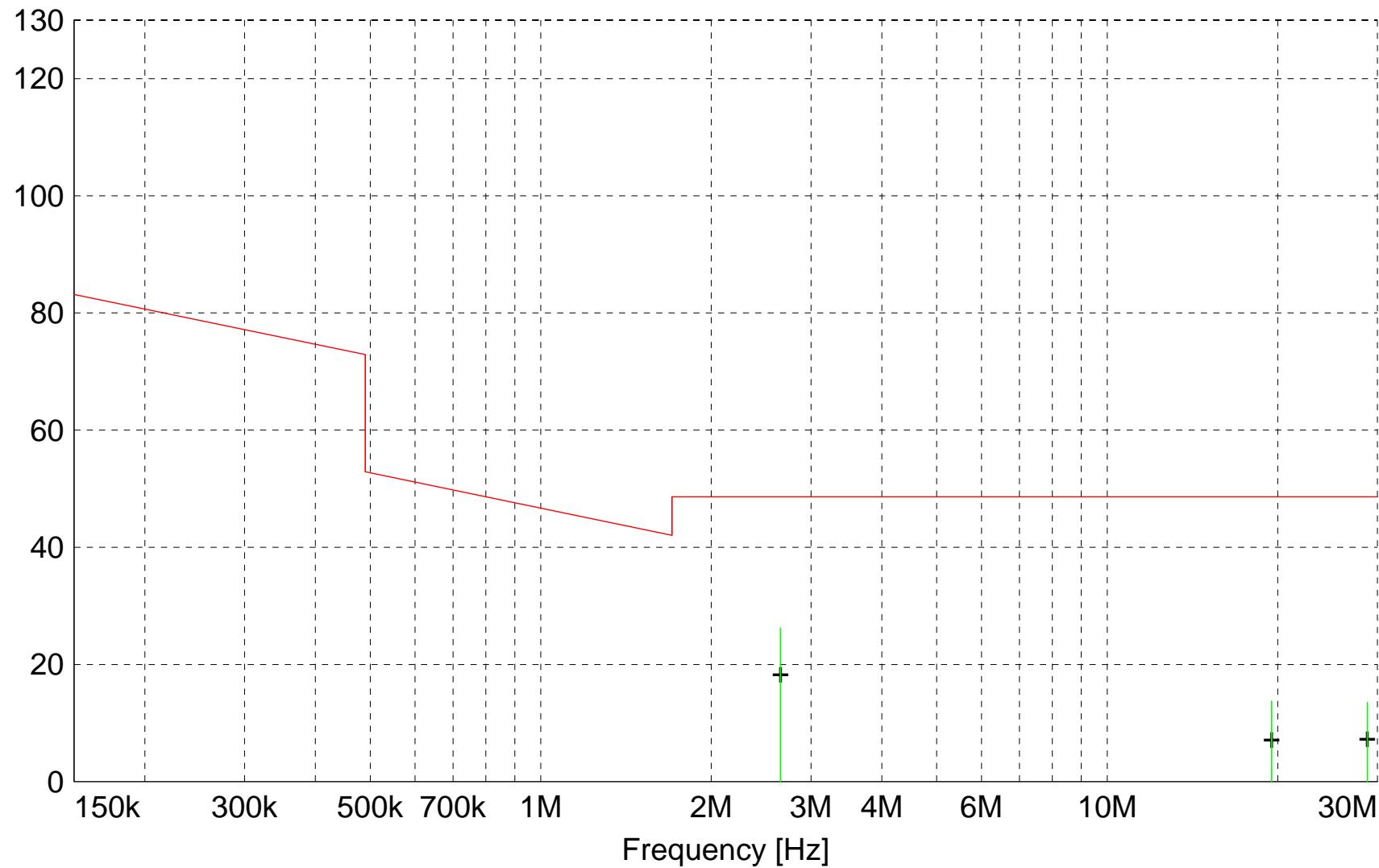
EUT: Helios
Manufacturer: Leggett & Platt
Operating Condition: 65 deg F; 24% R.H.
Test Site: DLS O.F. Site 3
Operator: Jim O
Test Specification:
Comment: 13.5Vdc. Presence Detection Mode
DATE: 3-15-2013

TEXT: "H-Field 10 meters"

Short Description: Equip info Sitel HFld low-30

TEST SET-UP: H-FIELD MEASURED AT 10 METERS

Level [dB μ V/m]



||||| MES A315c_sv_Quasi-Peak
+ + MES A315c_sv_Peak_List
— LIM Part 15-209 10m

FCC15.209 Field Strength Limit

MEASUREMENT RESULT: "A315c_sv_Final"

3/15/2013 10:32AM

Frequency MHz	Level dB μ V	Antenna Factor	System Loss dB	Total dB μ V/m	Limit dB μ V/m	Margin dB	Height		EuT Ant. m	Final Angle deg	Comment Detector
							Margin Ant.	Height m			
2.650000	15.43	10.37	0.4	26.2	48.6	22.4	1.00	0	QUASI-PEAK	NF	
19.518000	2.50	10.14	1.1	13.7	48.6	34.9	1.00	0	QUASI-PEAK	NF	
28.802000	4.03	8.11	1.4	13.5	48.6	35.1	1.00	0	QUASI-PEAK	NF	



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Appendix B

2.0 Emission Bandwidth - 20dB

Rule Part:

15.215

Test Procedure:

ANSI C63.4 – 2009

Limit:

Informative

Results:

Informative

Sample Equation(s):

None

Notes:

Informative



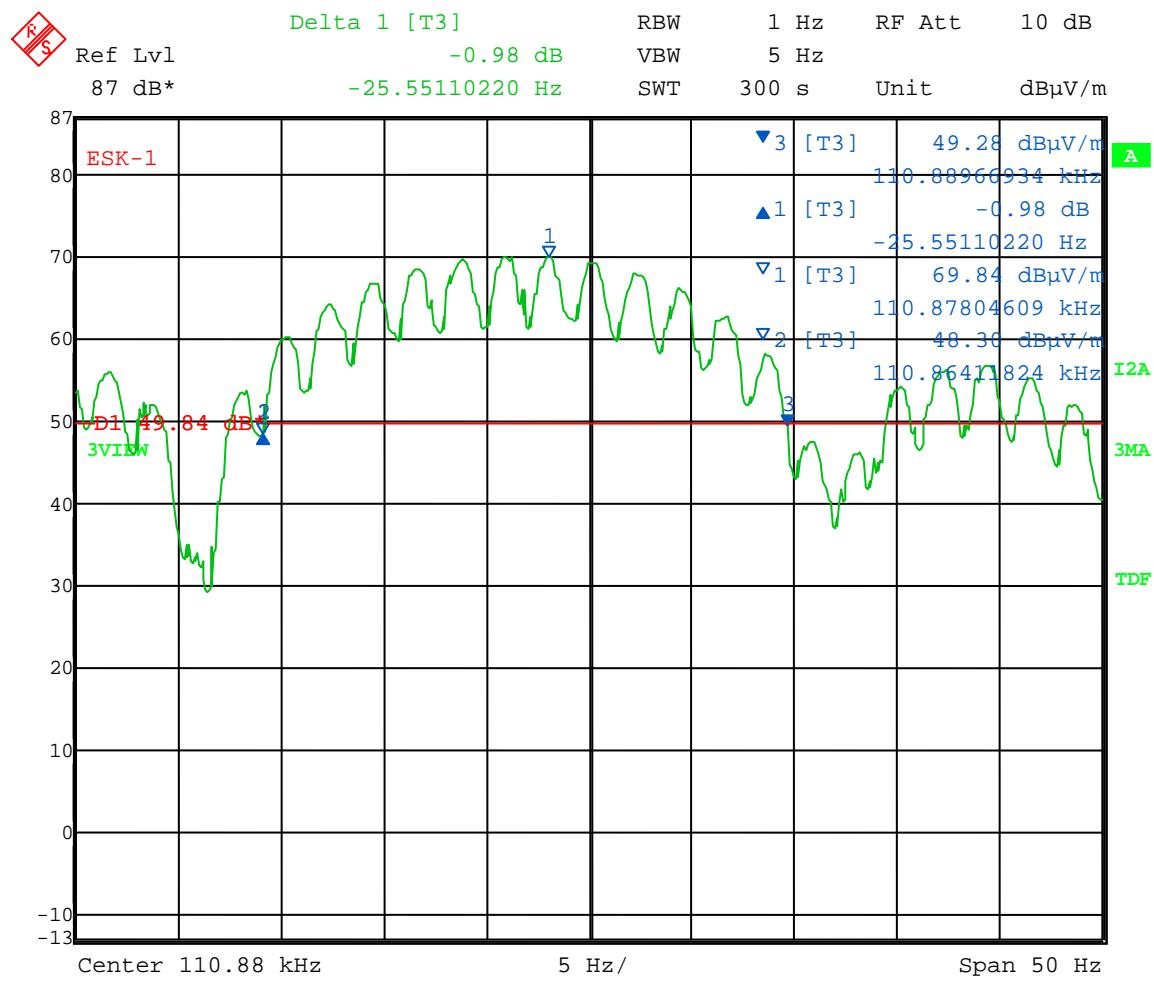
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Appendix B

Test Date: 03-15-2013
Company: Leggett & Platt Canada Co.
EUT: Helios
Test: 20 dB Bandwidth - Radiated
Operator: Jim O
Comment: Presence Detect Mode (Pinging) Frequency = 110.9kHz
RBW = 1-5% of EBW VBW > 3 times RBW

20 dB Bandwidth = 25.5Hz



Date: 15 MAR. 2013 08:47:45



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END OF REPORT

Revision #	Date	Comments	By
1.0	03-18-2013	Preliminary Release	JS