TEST REPORT NO.: 414305-00-01-R14-1217

DAYTON T. BROWN, INC. JOB NO.: 414305-00-000

CUSTOMER: SARGENT AND GREENLEAF, INC.
ONE SECURITY DRIVE
NICHOLASVILLE, KY 40356

SUBJECT: ELECTROMAGNETIC SUSCEPTIBILITY TEST PROGRAM PERFORMED ON EIGHT LOCK ASSEMBLIES

PURCHASE ORDER NO.: 4502226428

THIS REPORT CONTAINS: 32 PAGES

<table>
<thead>
<tr>
<th>PREPARED BY:</th>
<th>M. WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST ENGINEER:</td>
<td>J. ALEXANDRE</td>
</tr>
<tr>
<td>DEPARTMENT SUPERVISOR:</td>
<td>R. CORTES</td>
</tr>
<tr>
<td>DATE:</td>
<td>JANUARY 9, 2015</td>
</tr>
</tbody>
</table>

INFORMATION CONTAINED HEREIN MAY BE SUBJECT TO EXPORT CONTROL LAWS. REFER TO INTERNATIONAL TRAFFIC IN ARMS REGULATION (ITAR) OR THE EXPORT ADMINISTRATION REGULATION (EAR) OF 1979

THE DATA CONTAINED IN THIS REPORT WAS OBTAINED BY TESTING IN COMPLIANCE WITH THE APPLICABLE TEST SPECIFICATION AS NOTED
## Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Section Affected</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>01/09/15</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
# Table of Contents

Revision History .............................................................................................................. 2  
Table of Contents ................................................................................................................. 3  
List of Figures........................................................................................................................ 4  
List of Tables.......................................................................................................................... 4  
1.0 Abstract ..................................................................................................................... 5  
   1.1 Test Summary........................................................................................................... 7  
2.0 References ................................................................................................................. 7  
3.0 Acronyms and Abbreviations ..................................................................................... 8  
4.0 Administrative Information ......................................................................................... 9  
5.0 Test Sample Information ........................................................................................... 9  
   5.1 Modifications........................................................................................................... 9  
6.0 Test Sample Operation .............................................................................................. 9  
   6.1 Mode of Operation.................................................................................................. 9  
   6.2 Susceptibility Criteria............................................................................................... 9  
7.0 General Test Information ......................................................................................... 10  
   7.1 Test Facility........................................................................................................... 10  
   7.2 Setup..................................................................................................................... 10  
8.0 Test Instrumentation ................................................................................................ 10  
   8.1 Instrumentation Characteristics............................................................................. 10  
9.0 Test Methods............................................................................................................. 11  
   9.1 Radiated Susceptibility, Method RS105, Transient Electromagnetic Field............ 11  
      9.1.1 Purpose.......................................................................................................... 11  
      9.1.2 Limit................................................................................................................ 11  
      9.1.3 Test Setup ...................................................................................................... 12  
      9.1.4 Equipment List ................................................................................................ 12  
      9.1.5 Calibration ....................................................................................................... 13  
      9.1.6 Test Procedure............................................................................................... 14  
      9.1.7 Test Results .................................................................................................... 14  
         9.1.7.1 RS105, Calibration Data .......................................................................... 15  
         9.1.7.2 RS105, Test Data .................................................................................... 20  
      9.1.8 RS105, Test Setup Diagrams ....................................................................... 28  
      9.1.9 RS105, Test Setup Photograph(s) .................................................................. 30
List of Figures

Figure 1 - RS105, Required Limit ........................................................................................ 11
Figure 2 - RS105, Calibration Verification Setup .............................................................. 28
Figure 3 - RS105, Typical Test Setup ............................................................................... 29

List of Tables

Table 1 - EUT Components .............................................................................................. 5
Table 2 - EUT Photographs .............................................................................................. 6
Table 3 - Test Summary .................................................................................................... 7
Table 4 - Acronyms and Abbreviations .......................................................................... 8
Table 5 - Administrative Information ............................................................................ 9
Table 6 - RS105 Equipment List .................................................................................... 12
1.0 Abstract

This report details the results of the electromagnetic susceptibility test program on the Lock Assemblies. Testing was performed in accordance with Paragraph 2.0 and was performed at Dayton T. Brown, Inc., Bohemia, New York.

The Lock Assemblies hereafter are referred to as EUT (Equipment Under Test).

The EUT components are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Model No.</th>
<th>Serial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Lock Assembly</td>
<td>2006-101-000</td>
<td>N/A</td>
</tr>
<tr>
<td>2 Lock Assembly</td>
<td>2006-101-000</td>
<td>8736-1486-3412</td>
</tr>
<tr>
<td>3 Lock Assembly</td>
<td>2006-101-000</td>
<td>8736-1486-3411</td>
</tr>
<tr>
<td>4 Lock Assembly</td>
<td>2006-101-000</td>
<td>8736-1407-0341</td>
</tr>
<tr>
<td>5 Lock Assembly</td>
<td>2007-101-000</td>
<td>8852-1410-3383</td>
</tr>
<tr>
<td>6 Lock Assembly</td>
<td>2006-101-000</td>
<td>8736-1406-3416</td>
</tr>
<tr>
<td>7 Lock Assembly</td>
<td>6124</td>
<td>2123-9539</td>
</tr>
<tr>
<td>8 Lock Assembly</td>
<td>6126</td>
<td>N/A</td>
</tr>
</tbody>
</table>

See Table 2 for Photographs of each EUT.
Table 2 - EUT Photographs

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image1" alt="Photograph 1" /></td>
<td><img src="image5" alt="Photograph 5" /></td>
</tr>
<tr>
<td>2</td>
<td><img src="image2" alt="Photograph 2" /></td>
<td><img src="image6" alt="Photograph 6" /></td>
</tr>
<tr>
<td>3</td>
<td><img src="image3" alt="Photograph 3" /></td>
<td><img src="image7" alt="Photograph 7" /></td>
</tr>
<tr>
<td>4</td>
<td><img src="image4" alt="Photograph 4" /></td>
<td><img src="image8" alt="Photograph 8" /></td>
</tr>
</tbody>
</table>

Pre and post-test inspections revealed no external physical damage.
1.1 Test Summary

Table 3 lists the tests performed and the corresponding test results:

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Description</th>
<th>Limit</th>
<th>Met the Spec. Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS105</td>
<td>Radiated Susceptibility, Transient Electromagnetic Field</td>
<td>Figure RS105-1: 50,000 V/m</td>
<td>X</td>
</tr>
</tbody>
</table>

The test results recorded in this report relate only to those items tested.

This report shall not be reproduced, except in full, without the written approval of Dayton T. Brown, Inc.

2.0 References


### 3.0 Acronyms and Abbreviations

The following acronyms and abbreviations may be used throughout this document:

#### Table 4 - Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym/Abbreviation</th>
<th>Description</th>
<th>Acronym/Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Amperes</td>
<td>HERF</td>
<td>Hazards of Electromagnetic Radiation to Fuel</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
<td>HERO</td>
<td>Hazards of Electromagnetic Radiation to Ordnance</td>
</tr>
<tr>
<td>AF</td>
<td>Audio Frequency</td>
<td>HERP</td>
<td>Hazards of Electromagnetic Radiation to Personnel</td>
</tr>
<tr>
<td>Amp</td>
<td>Amplifier</td>
<td>HIRF</td>
<td>High Intensity Radiated Fields</td>
</tr>
<tr>
<td>Amps</td>
<td>Amperes</td>
<td>HPM</td>
<td>High Power Microwave</td>
</tr>
<tr>
<td>ASW</td>
<td>Anti-submarine Warfare</td>
<td>Hz</td>
<td>Hertz</td>
</tr>
<tr>
<td>BIT</td>
<td>Built in Test</td>
<td>ISM</td>
<td>Industrial, Scientific and Medical Standardization</td>
</tr>
<tr>
<td>BW</td>
<td>Bandwidth</td>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>CI</td>
<td>Commercial Item</td>
<td>k</td>
<td>Kilo</td>
</tr>
<tr>
<td>dB</td>
<td>Decibels</td>
<td>LISN</td>
<td>Line Impedance Stabilization Network</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current</td>
<td>M</td>
<td>Mega</td>
</tr>
<tr>
<td>DoD or DOD</td>
<td>Department of Defense</td>
<td>m</td>
<td>milli</td>
</tr>
<tr>
<td>DRG</td>
<td>Double Ridge Guide</td>
<td>m</td>
<td>Meter</td>
</tr>
<tr>
<td>E3 or E$^3$</td>
<td>Electromagnetic Environmental Effects</td>
<td>µ</td>
<td>micro</td>
</tr>
<tr>
<td>E-Field</td>
<td>Electric Field</td>
<td>NDI</td>
<td>Non-Developmental Item</td>
</tr>
<tr>
<td>ELF</td>
<td>Extremely Low Frequency</td>
<td>n</td>
<td>nano</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic Compatibility</td>
<td>Q</td>
<td>Ohm</td>
</tr>
<tr>
<td>EMCON</td>
<td>Emission Control</td>
<td>p</td>
<td>pico</td>
</tr>
<tr>
<td>EME</td>
<td>Electromagnetic Environment</td>
<td>P-Static</td>
<td>Precipitation Static</td>
</tr>
<tr>
<td>EMF</td>
<td>Electromotive Force</td>
<td>PRF</td>
<td>Pulse Repetition Frequency</td>
</tr>
<tr>
<td>EMI</td>
<td>Electromagnetic Interference</td>
<td>PWM</td>
<td>Pulse Width Modulation</td>
</tr>
<tr>
<td>EMICP</td>
<td>Electromagnetic Interference Control Procedure</td>
<td>RBW</td>
<td>Resolution Bandwidth</td>
</tr>
<tr>
<td>EMITP</td>
<td>Electromagnetic Interference Test Procedure</td>
<td>RF</td>
<td>Radio Frequency</td>
</tr>
<tr>
<td>EMITR</td>
<td>Electromagnetic Interference Test Report</td>
<td>rms</td>
<td>Root-mean-square</td>
</tr>
<tr>
<td>EMP</td>
<td>Electromagnetic Pulse</td>
<td>T</td>
<td>Tesla</td>
</tr>
<tr>
<td>ERP</td>
<td>Effective Radiated Power</td>
<td>TEM</td>
<td>Transverse Electromagnetic</td>
</tr>
<tr>
<td>ESD</td>
<td>Electrostatic Discharge</td>
<td>TPD</td>
<td>Terminal Protection Device</td>
</tr>
<tr>
<td>EUT</td>
<td>Equipment Under Test</td>
<td>UHF</td>
<td>Ultra High Frequency</td>
</tr>
<tr>
<td>F</td>
<td>Farad</td>
<td>UUT</td>
<td>Unit Under Test</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communication Commission</td>
<td>V</td>
<td>Volts</td>
</tr>
<tr>
<td>G</td>
<td>Giga</td>
<td>VHF</td>
<td>Very High Frequency</td>
</tr>
<tr>
<td>H</td>
<td>Henries</td>
<td>VBW</td>
<td>Video Bandwidth</td>
</tr>
<tr>
<td>H-field</td>
<td>Magnetic Field</td>
<td>VLF</td>
<td>Very Low Frequency</td>
</tr>
<tr>
<td>GFE</td>
<td>Government Furnished Equipment</td>
<td>W</td>
<td>Watts</td>
</tr>
</tbody>
</table>
4.0 Administrative Information

Table 5 - Administrative Information

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>EUT Quantity Received:</td>
<td>Eight</td>
</tr>
<tr>
<td>b)</td>
<td>Date EUT Received:</td>
<td>December 16, 2014</td>
</tr>
<tr>
<td>c)</td>
<td>Date(s) Tested:</td>
<td>December 16, 2014 through December 17, 2014</td>
</tr>
<tr>
<td>d)</td>
<td>Date Test Item Shipped:</td>
<td>December 17, 2014</td>
</tr>
<tr>
<td>e)</td>
<td>Customer Representative(s) Present During All or Part of the Testing:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Affiliation</td>
</tr>
<tr>
<td></td>
<td>Ed Miller</td>
<td>Sargent and Greenleaf, Inc.</td>
</tr>
</tbody>
</table>

5.0 Test Sample Information

5.1 Modifications

No modifications were made to the EUT during the course of this testing program.

6.0 Test Sample Operation

6.1 Mode of Operation

All testing was performed with the EUT operating as follows:

- Lock Assembly in Locked Position installed on Safe

6.2 Susceptibility Criteria

During susceptibility testing, operation of the EUT was monitored for any indication of malfunction or degradation of operation. Operation of the EUT was monitored by Sargent and Greenleaf, Inc. and DTB personnel during the susceptibility testing for the following:

- Lock mechanism to function properly after X, Y and Z positions were tested with 50 kV pulse.
7.0 General Test Information

7.1 Test Facility

All testing was performed at Dayton T. Brown, Inc., Bohemia, New York.

7.2 Setup

The EUT was mounted in a safe on a copper ground plane in accordance with Figure 4 of MIL-STD-461F. The safe was mounted on 5 cm foam that sat on the ground plane on the shielded enclosure floor.

Photograph(s) of the test setups are included in the test method.

8.0 Test Instrumentation

8.1 Instrumentation Characteristics

Measurements are made using test equipment with performance monitored and, whenever possible, calibrated by the Dayton T. Brown, Inc. Metrology Department. The calibration system is set up to meet the applicable requirements stipulated in ISO/IEC 17025, ISO 9001, ANSI/NCSL Z540.1-1994 (R2002), and ISO10012. All measuring instruments are calibrated with traceability to intrinsic, International, or National Standards such as NIST (National Institute of Standards and Technology) at periodic intervals. Details are on file at Dayton T. Brown, Inc., and will be made available upon request.
9.0 Test Methods

9.1 Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

9.1.1 Purpose

The purpose of this test is to verify the ability of the EUT to withstand transient electromagnetic fields.

9.1.2 Limit

Figure 1 - RS105, Required Limit

\[
E_I(t) = 0 \quad \text{when } t \leq 0
\]

\[
= E_{01} \times k_1 \left( e^{-a_1 t} - e^{-b_1 t} \right) \quad \text{when } t > 0
\]

\[
E_{01} = 5 \times 10^4 \text{ V/m}
\]

\[
a_1 = 4 \times 10^7 \text{ s}^{-1}
\]

\[
b_1 = 6 \times 10^8 \text{ s}^{-1}
\]

\[
k_1 = 1.3
\]
9.1.3 Test Setup

The test setup is as detailed in Paragraph 7.2 of this document.

Prior to setting up EUT for testing, the uniform field area of the RS105 test setup was verified to be 1 meter by 1 meter by 1 meter minimum.

The EUT was placed in the centerline of the working volume of the RS105 antenna array in such a manner that it did not exceed the usable volume of the radiation system (h/3, B/2, A/2)/(x, y, z) as shown in Figure RS105-3 of MIL-STD-461F (h is the maximum vertical separation of the plates). The test sample was located below the RS105 antenna, in the center of the uniform field area. A magnetic field sensor was used to measure the field.

The EUT was mounted in a safe on a copper ground plane in accordance with Figure 4 of MIL-STD-461F. The safe was mounted on 5 cm foam that sat on the ground plane on the shielded enclosure floor.

The test setup employed was as detailed in the test setup photograph(s).

9.1.4 Equipment List

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MANUFACTURER</th>
<th>MODEL</th>
<th>DTB NO</th>
<th>CAL DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMP SIMULATOR SYSTEM</td>
<td>FCC</td>
<td>RS105</td>
<td>01E-043</td>
<td>No Cal Required</td>
</tr>
<tr>
<td>SENSOR, MAGNETIC FIELD</td>
<td>FCC</td>
<td>HFP-1000A</td>
<td>27-384</td>
<td>05/24/2015</td>
</tr>
<tr>
<td>OSCILLOSCOPE, DIGITAL 4 CHANNEL 500MHZ</td>
<td>TEKTRONIX</td>
<td>TDS 3054B</td>
<td>995303</td>
<td>06/27/2015</td>
</tr>
</tbody>
</table>
9.1.5 Calibration

Before the EUT was installed in the test setup, the field strength of the RS105 setup was verified.

The magnetic field sensor was placed in the center position of the five-point grid in the vertical plane where the front face of the EUT will be located.

Using the magnetic field sensor, it was verified that the pulsed field produced met the peak amplitude, rise time, and pulse width.

For 50,000 V/m the required magnetic field was 132.63 A/m:

\[
\text{Electric Field Strength} = \text{Magnetic Field Strength} \times \text{Impedance of Air}
\]

Where:

- Electric Field Strength (Target = 50,000 V/m)
- Magnetic Field Strength Measured with sensor (Target = 132.63 A/m)
- Impedance of Air = 377 Ohms

The pulse waveform was recorded on the oscilloscope.

The pulse generator settings and associated pulse drive amplitude were determined to satisfy the field requirements.

This process was repeated at each of the other four points of the grid.

The peak value of the electric or magnetic field for each grid position was verified to be 0 dB < magnitude < 6 dB above limit.

The calibration setup is illustrated in Figure 2.
9.1.6 Test Procedure

The pulse was applied at the calibrated generator setting to ensure that the drive pulse waveform characteristics were consistent with those noted during calibration.

The pulse was applied starting at approximately 20% (minimum possible with RS105 simulator system) of the pulse peak amplitude determined in calibration. The pulse amplitude was increased in step sizes of 2 or 3 until the required level is reached.

At least 10 pulses at a rate of not more than one pulse per minute were applied to the front face (X-Axis) of the EUT. The EUT was also tested in the Y-Axis and Z-Axis.

The EUT monitored during and after each pulse for signs of susceptibility or degradation of performance.

If susceptibility was observed, the threshold level of susceptibility was determined, recorded, and included in this test report.

9.1.7 Test Results

No change in indication, malfunction, or degradation in the EUT operation was observed during or after the MIL-STD-461F, Method RS105 test per Sargent and Greenleaf, Inc. and DTB personnel.

See the following test data for detailed test results.
9.1.7.1 RS105, Calibration Data

Test Item: Lock Assemblies
Date: 12/16/14
Customer: Sargent and Greenleaf Inc.
Serial No.: N/A
Test Mode: Calibration (Center)
Job No.: 414305-00-000
Specification: MIL-STD-461F
Amplitude: 50 kV/m
Procedure: MIL-STD-461F
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

RS-105 Simulator H-Field Calibration
12/16/2014 1:27:56 PM

Description:

Required A/m: 133 Measured Ip: 135
Required V/m: 50,000 Measured Vp: 50,895
Power Supply Setting, kV: 39.5 kV

Remarks: Measured V/m = Measured A/m x 377
### Test Item: Lock Assemblies

**Customer:** Sargent and Greenleaf Inc.  
**Test Mode:** Calibration (Left Front)  
**Specification:** MIL-STD-461F  
**Procedure:** MIL-STD-461F

**Date:** 12/16/14  
**Serial No.:** N/A  
**Job No.:** 414305-00-000  
**Amplitude:** 50 kV/m  
**Technician:** P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

**RS-105 Simulator H-Field Calibration**  
12/16/2014  2:21:58 PM

**Description:**

- **Required A/m:** 133  
- **Measured Ip:** 137  
- **Required V/m:** 50,000  
- **Measured Vp:** 51,649

**Power Supply Setting, kV:** 39.5 kV

**Remarks:** Measured V/m = Measured A/m x 377
Test Item: Lock Assemblies
Customer: Sargent and Greenleaf Inc.
Test Mode: Calibration (Left Rear)
Specification: MIL-STD-461F
Procedure: MIL-STD-461F
Date: 12/16/14
Serial No.: N/A
Job No.: 414305-00-000
Amplitude: 50 kV/m
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

### RS-105 Simulator H-Field Calibration

**12/16/2014  2:27:15 PM**

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.50E+02</td>
<td></td>
</tr>
<tr>
<td>1.50E+02</td>
<td></td>
</tr>
<tr>
<td>5.00E+01</td>
<td></td>
</tr>
<tr>
<td>-5.00E+01</td>
<td></td>
</tr>
<tr>
<td>-1.50E+02</td>
<td></td>
</tr>
<tr>
<td>-2.50E+02</td>
<td></td>
</tr>
</tbody>
</table>

**Time (Sec)**

- 0
- 40.0
- 80.0
- 120.0
- 160.0
- 200.0

**Amps/m**

- 2.50E+02
- 1.50E+02
- 5.00E+01
- -5.00E+01
- -1.50E+02
- -2.50E+02

**Required A/m:** 133  
**Measured Ip:** 139  
**Required V/m:** 50,000  
**Measured Vp:** 52,406

**Power Supply Setting, kV:** 39.5 kV

**Remarks:** Measured V/m = Measured A/m x 377
<table>
<thead>
<tr>
<th>Test Item</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lock Assemblies</td>
<td>12/16/14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Customer</th>
<th>Serial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sargent and Greenleaf Inc.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Mode</th>
<th>Job No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration (Right Rear)</td>
<td>414305-00-000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specification</th>
<th>Amplitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-STD-461F</td>
<td>50 kV/m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-STD-461F</td>
<td>P. Kelly</td>
</tr>
</tbody>
</table>

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

### RS-105 Simulator H-Field Calibration

**12/16/2014 2:29:27 PM**

**Test Point:** RIGHT REAR
**Test Date:** 12-16-2014 14:29:03
**Test Type:** Time Domain Acquisition
**Facility:** Dayton T Brown
**Sig Probe:** H-FT100A(01-23-2009)(09-04)

| Description | |
|-------------|--
| Time (Sec)  | Amps/m |
| 0           | 2.50E+02 |
| 1           | 1.50E+02 |
| 2           | 5.00E+01 |
| 3           | -5.00E+01|
| 4           | -1.50E+02|
| 5           | -2.50E+02|

**Power Supply Setting, KV:** 39.5 kV

**Required A/m:** 133  
**Measured Ip:** 142

**Required V/m:** 50,000  
**Measured Vp:** 52,780

**Remarks:** Measured V/m = Measured A/m x 377
Test Item: Lock Assemblies
Customer: Sargent and Greenleaf Inc.
Test Mode: Calibration (Right Front)
Specification: MIL-STD-461F
Procedure: MIL-STD-461F
Date: 12/16/14
Serial No.: N/A
Job No.: 414305-00-000
Amplitude: 50 kV/m
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

RS-105 Simulator H-Field Calibration
12/16/2014 1:57:16 PM

Test Point: RIGHT FRONT 1
Test Date: 12-16-2014 13:56:22
Test Type: Time Domain Acquisition
Facility: Dayton T. Brown
Sig Probe: HFP1000A(01-23-2000)(00-04)

Description:

Required A/m: 133
Required V/m: 50,000
Measured Ip: 135
Measured Vp: 51,272
Power Supply Setting, kV: 39.5 kV

Remarks: Measured V/m = Measured A/m x 377
9.1.7.2 RS105, Test Data

Test Item: Lock Assembly
Date: 12/16/14
Customer: Sargent and Greenleaf Inc.
Model/Serial No.: Model No. 2006-101-000, Serial No. N/A
Test Mode: Operational
Job No.: 414305-00-000
Specification: MIL-STD-461F
Amplitude: 50 kV/m
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV 10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
<td></td>
</tr>
<tr>
<td>50kV 10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Customer requested not to run the Z-Axis on this EUT
**Test Item:** Lock Assembly  
**Date:** 12/17/14  
**Customer:** Sargent and Greenleaf Inc.  
**Model/Serial No.:** Model No. 2006-101-000, Serial No. 8736-1486-3412  
**Test Mode:** Operational  
**Job No.:** 414305-00-000  
**Specification:** MIL-STD-461F  
**Amplitude:** 50 kV/m  
**Technician:** P. Kelly  

### Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>
## Test Item: Lock Assembly

### Customer:
Sargent and Greenleaf Inc.

### Date:
12/17/14

### Model/Serial No.:
Model No. 2006-101-000, Serial No. 8736-1486-3411

### Test Mode:
Operational

### Specification:
MIL-STD-461F

### Job No.:
414305-00-000

### Amplitude:
50 kV/m

### Procedure:
MIL-STD-461F

### Technician:
P. Kelly

### Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>

Met Requirement

Yes [X] No [ ]
<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>
Test Item: Lock Assembly
Customer: Sargent and Greenleaf Inc.
Test Mode: Operational
Specification: MIL-STD-461F
Procedure: MIL-STD-461F
Date: 12/17/14
Model/Serial No.: Model No. 2007-101-000, Serial No. 8852-1410-3383
Job No.: 414305-00-000
Amplitude: 50 kV/m
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>

Met Requirement: Yes ✗ No ☐
Test Item: Lock Assembly
Customer: Sargent and Greenleaf Inc.
Test Mode: Operational
Specification: MIL-STD-461F
Procedure: MIL-STD-461F
Date: 12/17/14
Model/Serial No.: Model No. 2006-101-000, Serial No. 8736-1406-3416
Job No.: 414305-00-000
Amplitude: 50 kV/m
Technician: P. Kelly

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV 10</td>
<td></td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV 10</td>
<td></td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV 10</td>
<td></td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>

Met Requirement: Yes [X] No [ ]
**Test Item:** Lock Assembly  
**Date:** 12/16/14  
**Customer:** Sargent and Greenleaf Inc.  
**Model/Serial No.:** Model No. 6124, Serial No. 2123-9539  
**Test Mode:** Operational  
**Job No.:** 414305-00-000  
**Specification:** MIL-STD-461F  
**Amplitude:** 50 kV/m  
**Technician:** P. Kelly  

Radiated Susceptibility, Method RS105, Transient Electromagnetic Field  

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
<tr>
<td>50kV</td>
<td>10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
</tr>
</tbody>
</table>
**Test Item:** Lock Assembly  

**Date:** 12/16/14  

**Customer:** Sargent and Greenleaf Inc.  

**Model/Serial No.:** Model No. 6126,  

**Test Mode:** Operational  

**Job No.:** 414305-00-000  

**Specification:** MIL-STD-461F  

**Amplitude:** 50 kV/m  

**Technician:** P. Kelly  

**Radiated Susceptibility, Method RS105, Transient Electromagnetic Field**

<table>
<thead>
<tr>
<th>Applied Level (V/m)</th>
<th>Number of Pulses</th>
<th>Pulse Rate</th>
<th>Susceptibility Threshold Level (V/m)</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>50kV 10</td>
<td>1 Pulse per Minute X-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
<td></td>
</tr>
<tr>
<td>50kV 10</td>
<td>1 Pulse per Minute Y-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
<td></td>
</tr>
<tr>
<td>50kV 10</td>
<td>1 Pulse per Minute Z-Axis</td>
<td>N/A</td>
<td>Test Item functioned properly after application of the pulses.</td>
<td></td>
</tr>
</tbody>
</table>
9.1.8 RS105, Test Setup Diagrams

Figure 2 - RS105, Calibration Verification Setup
Figure 3 - RS105, Typical Test Setup
9.1.9 RS105, Test Setup Photograph(s)

X-Axis

X-Axis
Z-Axis