## FCC PART 15, SUBPART B and C

 TEST REPORTfor
A2B SWITCH
MODEL: LS050

Prepared for
LOAD SYSTEMS INTERNATIONAL, INC. 4495 BOUL. WILFRID-HAMEL, BUREAU 110

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DATE: APRIL 2, 2003

|  | REPORT | APPENDICES |  |  |  |  | TOTAL |
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## GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

| Device Tested: | A2B Switch <br> Model: LS050 <br> S/N: N/A |
| :--- | :--- |
| Product Description: | See Expository Statement. |
| Modifications: | The EUT was not modified during the testing. |
| Manufacturer: | Load Systems International, Inc. <br> 4495 Boul. Wilfrid-Hamel, Bureau 110 <br> Quebec, Quebec G1P 2J7 |

Test Date: $\quad$ February 25, 2003

Test Specifications: EMI requirements
CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.249
Test Procedure: ANSI C63.4: 1992

Test Deviations: The test procedure was not deviated from during the testing.

## SUMMARY OF TEST RESULTS

| TEST | DESCRIPTION | RESULTS |
| :---: | :--- | :--- |
| 1 | Conducted RF Emissions, $450 \mathrm{kHz}-30 \mathrm{MHz}$ | This test was not performed because the EUT operates <br> on DC power only and cannot be plugged into the AC <br> public mains. |
| 2 | Radiated RF Emissions, $10 \mathrm{kHz}-9300 \mathrm{MHz}$ | Complies with the Class B limits of CFR Title 47, Part <br> 15, Subpart B; and Subpart C, sections 15.205, 15.209, <br> and 15.249. |

## 1. <br> PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the A2B Switch Model: LS050. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.

## 2. ADMINISTRATIVE DATA

### 2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

### 2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

## 2.3 <br> Cognizant Personnel

Load Systems International, Inc.
Marc Boivin Head Of Electrical Engineering
Compatible Electronics, Inc.

| Kyle Fujimoto | Test Engineer |
| :--- | :--- |
| Kirit Ramani | Test Engineer |
| Michael Christensen | Test Engineer |

### 2.4 Date Test Sample was Received

The test sample was received on February 17, 2003.

### 2.5 Disposition of the Test Sample

The sample has not been returned to Load Systems International, Inc. as of April 2, 2003.

### 2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

| RF | Radio Frequency |
| :--- | :--- |
| EMI | Electromagnetic Interference |
| EUT | Equipment Under Test |
| P/N | Part Number |
| S/N | Serial Number |
| HP | Hewlett Packard |
| ITE | Information Technology Equipment |
| CML | Corrected Meter Limit |
| LISN | Line Impedance Stabilization Network |



## 3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

| SPEC | TITLE |
| :--- | :--- |
| CFR Title 47, <br> Part 15 | FCC Rules - Radio frequency devices (including digital devices) |
| ANSI C63.4 <br> 1992 | Methods of measurement of radio-noise emissions from low-voltage <br> electrical and electronic equipment in the range of 9 kHz to 40 GHz. |

## 4. <br> DESCRIPTION OF TEST CONFIGURATION

## 4.1 <br> Description of Test Configuration - EMI

Setup and operation of the equipment under test.
Specifics of the EUT and Peripherals Tested
The A2B Switch Model: LS050 (EUT) was tested as a stand alone unit in three orthogonal axis and was continuously transmitting.

The final radiated data was taken in the mode above. Please see Appendix E for the data sheets.

### 4.1.1 <br> Cable Construction and Termination

There are no external cables connected to the EUT.

## 5. <br> LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1

EUT and Accessory List

| EQUIPMENT | MANUFACTURER | MODEL <br> NUMBER | SERIAL <br> NUMBER | FCC ID |
| :--- | :--- | :--- | :--- | :--- |
| A2B SWITCH (EUT) | LOAD SYSTEMS | LS050 | N/A | QVBLS050 |
|  | INTERNATIONAL, |  |  |  |



### 5.2 EMI Test Equipment

| EQUIPMENT <br> TYPE | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | CAL. DATE | $\begin{aligned} & \text { CAL. DUE } \\ & \text { DATE } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Radiated Emissions <br> Manual Test Radiated | Compatible Electronics | N/A | N/A | N/A | N/A |
| Spectrum Analyzer Main Section | Hewlett Packard | 8566B | 3638A08784 | June 14, 2002 | June 14, 2003 |
| Spectrum Analyzer Display Section | Hewlett Packard | 85662A | 3701A22279 | June 14, 2002 | June 14, 2003 |
| Spectrum Analyzer -Quasi-Peak Adapter | Hewlett Packard | 85650A | 2430A00424 | June 14, 2002 | June 14, 2003 |
| Preamplifier | Com Power | PA-102 | 1017 | Jan. 2, 2003 | Jan. 2, 2004 |
| Biconical Antenna | Com Power | AB-100 | 1548 | Sept. 19, 2002 | Sept. 19, 2003 |
| Log Periodic Antenna | Com Power | AL-100 | 16089 | Oct. 4, 2002 | Oct. 4, 2003 |
| Computer | Hewlett Packard | D5251A 888 | US74458128 | N/A | N/A |
| Printer | Hewlett Packard | C5886A | SG7CM1P090 | N/A | N/A |
| Monitor | Hewlett Packard | D5258A | DK74889705 | N/A | N/A |
| Loop Antenna | Com-Power | AL-130 | 17070 | June 19, 2002 | June 19, 2003 |
| Horn Antenna | Antenna Research | DRG-118/A | 1053 | Jan. 13, 2002 | Jan. 13, 2004 |
| Microwave Preamplifier | Com-Power | PA-122 | 25195 | Jan. 2, 2003 | Jan. 2, 2004 |

## 6. <br> TEST SITE DESCRIPTION

## 6.1

## Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.
6.2

EUT Mounting, Bonding and Grounding
The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.


## 7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

### 7.1 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz , and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz . The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The measurement bandwidths and transducers used for the radiated emissions test were:

| FREQUENCY RANGE | EFFECTIVE <br> MEASUREMENT <br> BANDWIDTH | TRANSDUCER |
| :---: | :---: | :---: |
| 9 kHz to 150 kHz | 200 Hz | Active Loop Antenna |
| 150 kHz to 30 MHz | 9 kHz | Active Loop Antenna |
| 30 MHz to 300 MHz | 120 kHz | Biconical Antenna |
| 300 MHz to 1 GHz | 120 kHz | Log Periodic Antenna |
| 1 GHz to 9.3 GHz | 1 MHz | Horn Antenna |

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 1992. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for $E$ field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.


## Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data. The final qualification data sheets are located in Appendix E.


## 8. <br> CONCLUSIONS

The A2B Switch Model: LS050 meets all of the Class B specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.249.


## APPENDIX A

## LABORATORY RECOGNITIONS

## LABORATORY RECOGNITIONS

## Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0
Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027
Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031
Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

## Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission
Industry Canada
Radio-Frequency Technologies (Competent Body)

## APPENDIX B

## MODIFICATIONS TO THE EUT

## MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 specifications.
All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.


## APPENDIX C

## ADDITIONAL MODELS COVERED UNDER THIS REPORT

# ADDITIONAL MODELS COVERED UNDER THIS REPORT 

USED FOR THE PRIMARY TEST<br>A2B Switch<br>Model: LS050<br>S/N: N/A

No additional models were covered under this report.

## APPENDIX D

## DIAGRAMS, CHARTS, AND PHOTOS

## FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

## OPEN LAND > 15 METERS



OPEN LAND > 15 METERS
$\mathbf{x}$ = GROUND RODS

D $=$ TEST DISTANCE (meters)
$\square$
= GROUND SCREEN



# COM-POWER AB-100 

## BICONICAL ANTENNA

S/N: 01548

## CALIBRATION DATE: SEPTEMBER 19, 2002

| FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> $(\mathbf{d B})$ | FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> $(\mathbf{d B})$ |
| :---: | :---: | :---: | :---: |
| 30 | 14.30 | 120 | 10.70 |
| 35 | 14.00 | 125 | 11.40 |
| 40 | 13.70 | 140 | 12.70 |
| 45 | 12.00 | 150 | 12.50 |
| 50 | 11.40 | 160 | 12.90 |
| 60 | 9.70 | 175 | 14.10 |
| 70 | 8.30 | 180 | 14.70 |
| 80 | 7.60 | 200 | 15.10 |
| 90 | 7.80 | 250 | 16.90 |
| 100 | 8.60 | 300 | 19.10 |

## COM-POWER AL-100

## LOG PERIODIC ANTENNA

S/N: 16089
CALIBRATION DATE: OCTOBER 4, 2002

| FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> $(\mathbf{d B})$ | FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> $(\mathbf{d B})$ |
| :---: | :---: | :---: | :---: |
| 300 | 13.10 | 700 | 17.70 |
| 350 | 14.40 | 750 | 19.60 |
| 400 | 14.30 | 800 | 20.50 |
| 450 | 15.70 | 850 | 21.20 |
| 500 | 16.60 | 900 | 21.20 |
| 550 | 16.60 | 950 | 22.50 |
| 600 | 17.30 | 1000 | 24.60 |
| 650 | 18.80 |  |  |

## COM-POWER PA-102

## PREAMPLIFIER

## S/N: 1017

CALIBRATION DATE: JANUARY 2, 2003

| FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> $(\mathbf{d B})$ | FREQUENCY <br> $(\mathbf{M H z})$ | FACTOR <br> (dB) |
| :---: | :---: | :---: | :---: |
| 30 | 38.4 | 300 | 38.3 |
| 40 | 38.4 | 350 | 38.3 |
| 50 | 38.3 | 400 | 38.3 |
| 60 | 38.4 | 450 | 37.9 |
| 70 | 38.4 | 500 | 38.1 |
| 80 | 38.4 | 550 | 38.2 |
| 90 | 38.4 | 600 | 38.1 |
| 100 | 38.3 | 650 | 37.9 |
| 125 | 38.4 | 700 | 37.9 |
| 150 | 38.4 | 750 | 37.7 |
| 175 | 38.2 | 800 | 37.4 |
| 200 | 38.4 | 850 | 37.6 |
| 225 | 38.2 | 900 | 37.4 |
| 250 | 38.3 | 950 | 36.7 |
| 275 | 38.5 | 1000 | 37.0 |

## COM-POWER PA-122

## MICROWAVE PREAMPLIFIER

S/N: 25195
CALIBRATION DATE: JANUARY 2, 2003

| FREQUENCY <br> $(\mathbf{G H z})$ | FACTOR <br> $(\mathbf{d B})$ | FREQUENCY <br> $(\mathbf{G H z})$ | FACTOR <br> $(\mathbf{d B})$ |
| :---: | :---: | :---: | :---: |
| 1.0 | 33.3 | 6.0 | 32.2 |
| 1.1 | 33.2 | 6.5 | 32.2 |
| 1.2 | 33.4 | 7.0 | 31.8 |
| 1.3 | 32.8 | 7.5 | 32.1 |
| 1.4 | 32.4 | 8.0 | 32.7 |
| 1.5 | 32.7 | 8.5 | 31.5 |
| 1.6 | 32.1 | 9.0 | 30.3 |
| 1.7 | 32.4 | 9.5 | 30.0 |
| 1.8 | 32.3 | 10.0 | 31.9 |
| 1.9 | 32.6 | 11.0 | 29.9 |
| 2.0 | 33.4 | 12.0 | 24.7 |
| 2.5 | 31.2 | 13.0 | 32.0 |
| 3.0 | 31.2 | 14.0 | 30.7 |
| 3.5 | 32.0 | 15.0 | 30.1 |
| 4.0 | 31.3 | 16.0 | 29.2 |
| 4.5 | 31.2 | 17.0 | 28.9 |
| 5.0 | 33.3 | 18.0 | 28.7 |
| 5.5 | 34.0 |  |  |

## ANTENNA RESEARCH DRG-118/A

## HORN ANTENNA

S/N: 1053
CALIBRATION DATE: JANUARY 13, 2002

| FREQUENCY (GHz) | FACTOR <br> (dB) | FREQUENCY (GHz) | FACTOR <br> (dB) |
| :---: | :---: | :---: | :---: |
| 1.0 | 25.5 | 10.0 | 39.7 |
| 1.5 | 26.6 | 10.5 | 40.9 |
| 2.0 | 29.4 | 11.0 | 40.7 |
| 2.5 | 30.4 | 11.5 | 42.4 |
| 3.0 | 31.2 | 12.0 | 42.6 |
| 3.5 | 32.3 | 12.5 | 42.4 |
| 4.0 | 32.9 | 13.0 | 41.5 |
| 4.5 | 33.0 | 13.5 | 41.0 |
| 5.0 | 34.8 | 14.0 | 40.5 |
| 5.5 | 35.2 | 14.5 | 43.6 |
| 6.0 | 36.4 | 15.0 | 43.7 |
| 6.5 | 36.6 | 15.5 | 43.3 |
| 7.0 | 38.8 | 16.0 | 42.8 |
| 7.5 | 38.8 | 16.5 | 43.0 |
| 8.0 | 38.0 | 17.0 | 42.7 |
| 8.5 | 38.1 | 17.5 | 44.0 |
| 9.0 | 39.9 | 18.0 | 41.8 |
| 9.5 | 39.1 |  |  |

## COM-POWER AL-130

## LOOP ANTENNA

S/N: 17070

CALIBRATION DATE: JUNE 19, 2002

| FREQUENCY <br> $\mathbf{( M H z )}$ | MAGNETIC <br> $(\mathbf{d B} / \mathbf{m})$ | ELECTRIC <br> $\mathbf{( d B / m )}$ |
| :---: | :---: | :---: |
| 0.009 | -40.4 | 11.1 |
| 0.01 | -40.3 | 11.2 |
| 0.02 | -41.2 | 10.3 |
| 0.05 | -41.6 | 9.9 |
| 0.07 | -41.4 | 10.1 |
| 0.1 | -41.7 | 9.8 |
| 0.2 | -44.0 | 7.5 |
| 0.3 | -41.6 | 9.9 |
| 0.5 | -41.3 | 10.2 |
| 0.7 | -41.4 | 10.1 |
| 1 | -40.9 | 10.6 |
| 2 | -40.6 | 10.9 |
| 3 | -40.5 | 11.0 |
| 4 | -40.8 | 10.7 |
| 5 | -40.2 | 11.3 |
| 10 | -40.7 | 10.8 |
| 15 | -41.4 | 10.1 |
| 20 | -41.6 | 9.9 |
| 25 | -41.7 | 9.8 |
| 30 | -42.9 | 8.6 |
|  |  |  |



FRONT VIEW
LOAD SYSTEMS INTERNATIONAL, INC.
A2B SWITCH
MODEL: LS050
FCC SUBPART B AND C - RADIATED EMISSIONS - 02-25-03

## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW
LOAD SYSTEMS INTERNATIONAL, INC.
A2B SWITCH
MODEL: LS050
FCC SUBPART B AND C - RADIATED EMISSIONS - 02-25-03

## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

## APPENDIX E

## DATA SHEETS

## RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

| COMPANY | LOAD SYSTEMS, INC. | DATE | 2/25/03 |
| :--- | :--- | :--- | :---: |
| EUT | A2B SWITCH | DUTY CYCLE | N/A |
| MODEL | LS050 | \% |  |
| S/N | N/A | PEAK TO AVG | N/A |
| TEST ENGINEER | Kyle Fujimoto | dB |  |


| Frequency <br> MHz | Peak Reading (dBuV) | Average (A) or QuasiPeak (QP) | Antenna <br> Polar. <br> (V or H) | Antenna Height (meters) | EUT <br> Azimuth (degrees) | EUT <br> Axis <br> $(\mathbf{X}, \mathbf{Y}, \mathrm{Z})$$\|$ | $\begin{array}{\|c\|} \hline \text { EUT } \\ \text { Tx } \\ \text { Channel } \\ \hline \end{array}$ | Antenna <br> Factor <br> (dB) | Cable <br> Loss <br> (dB) | Amplifier Gain (dB) | Distance <br> Factor <br> (dB) | Mixer <br> Factor <br> (dB) | $\begin{gathered} * \begin{array}{c} \text { Corrected } \\ \text { Reading } \\ (\mathrm{dBuV} / \mathrm{m}) \end{array} \\ \hline \end{gathered}$ | $\begin{gathered} \text { Delta } \\ * * \\ (\mathrm{~dB}) \\ \hline \end{gathered}$ | Spec <br> Limit <br> $(\mathrm{dBuV} / \mathrm{m})$ | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 921.3000 | 53.1 | A | H | 1.0 | 0 | X | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 80.6 | -13.4 | 94.0 |  |
| 921.3000 | 46.3 | A | H | 1.0 | 0 | Y | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 73.8 | -20.2 | 94.0 |  |
| 921.3000 | 55.8 | A | H | 1.0 | 0 | Z | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 83.3 | -10.7 | 94.0 |  |
| 921.3000 | 49.5 | A | V | 1.0 | 90 | X | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 77.0 | -17.0 | 94.0 |  |
| 921.3000 | 53.2 | A | V | 1.0 | 0 | Y | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 80.7 | -13.3 | 94.0 |  |
| 921.3000 | 48.5 | A | V | 1.0 | 0 | Z | LOW | 21.8 | 5.7 | 0.0 | 0.0 | 0.0 | 76.0 | -18.0 | 94.0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA $=$ SPEC LIMIT - CORRECTED READING
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## RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

| COMPANY | LOAD SYSTEMS, INC. | DATE | 2/25/03 |
| :--- | :--- | :--- | :---: |
| EUT | A2B SWITCH | DUTY CYCLE | N/A |
| MODEL | LS050 | \% |  |
| S/N | N/A | PEAK TO AVG | N/A |
| TEST ENGINEER | Kyle Fujimoto | dB |  |


| Frequency $\mathrm{MHz}$ | Peak <br> Reading $(\mathrm{dBuV})$ | Average (A) or QuasiPeak (QP) | Antenna <br> Polar. $(\mathbf{V} \text { or } \mathbf{H})$ | Antenna <br> Height <br> (meters) | EUT <br> Azimuth <br> (degrees) | $\begin{array}{\|c\|} \text { EUT } \\ \text { Axis } \\ (\mathbf{X}, \mathbf{Y}, \mathbf{Z}) \\ \hline \end{array}$ | $\begin{array}{\|c\|} \hline \text { EUT } \\ \text { Tx } \\ \text { Channel } \\ \hline \end{array}$ | Antenna <br> Factor <br> (dB) | Cable <br> Loss <br> (dB) | Amplifier Gain (dB) | Distance <br> Factor <br> (dB) | Mixer <br> Factor <br> (dB) | $\begin{array}{\|c\|} \hline \text { * Corrected } \\ \text { Reading } \\ (\mathrm{dBuV} / \mathrm{m}) \end{array}$ | Delta ** (dB) | $\begin{array}{\|c\|} \hline \text { Spec } \\ \text { Limit } \\ (\mathrm{dBuV} / \mathrm{m}) \\ \hline \end{array}$ | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1842.6000 | 55.6 | 54.3 A | H | 2.0 | 0 | X | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 52.9 | -1.1 | 54.0 |  |
| 1842.6000 | 46.2 | A | H | 1.0 | 0 | Y | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 44.8 | -9.2 | 54.0 |  |
| 1842.6000 | 54.6 | 53.1 A | H | 1.5 | 180 | Z | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 51.7 | -2.3 | 54.0 |  |
| 1842.6000 | 52.1 | A | V | 1.0 | 0 | X | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 50.7 | -3.3 | 54.0 |  |
| 1842.6000 | 54.1 | 52.5 A | V | 1.0 | 0 | Y | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 51.0 | -3.0 | 54.0 |  |
| 1842.6000 | 51.2 | A | V | 1.0 | 0 | Z | LOW | 28.5 | 2.5 | 32.4 | 0.0 | 0.0 | 49.8 | -4.2 | 54.0 |  |
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* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA $=$ SPEC LIMIT - CORRECTED READING


## RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

| COMPANY | LOAD SYSTEMS, INC. | DATE | 2/25/03 |
| :--- | :--- | :--- | :---: |
| EUT | A2B SWITCH | DUTY CYCLE | N/A |
| MODEL | LS050 | \% |  |
| S/N | N/A | PEAK TO AVG | N/A |
| TEST ENGINEER | Kyle Fujimoto | dB |  |



* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA $=$ SPEC LIMIT - CORRECTED READING
PAGE 3 of PAGE 5


## RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

| COMPANY | LOAD SYSTEMS, INC. | DATE | 2/25/03 |
| :--- | :--- | :--- | :---: |
| EUT | A2B SWITCH | DUTY CYCLE | N/A |
| MODEL | LS050 | \% |  |
| S/N | N/A | PEAK TO AVG | N/A |
| TEST ENGINEER | Kyle Fujimoto | dB |  |



* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN
** DELTA $=$ SPEC LIMIT - CORRECTED READING


## RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

| COMPANY | LOAD SYSTEMS, INC. | DATE | 2/25/03 |
| :--- | :--- | :--- | :---: |
| EUT | A2B SWITCH | DUTY CYCLE | N/A |
| MODEL | LS050 | \% |  |
| S/N | N/A | PEAK TO AVG | N/A |
| TEST ENGINEER | Kyle Fujimoto | dB |  |


| Frequency <br> MHz | Peak <br> Reading <br> (dBuV) | Average (A) or QuasiPeak (QP) | Antenna <br> Polar. <br> (V or H) | Antenna <br> Height (meters) | EUT <br> Azimuth <br> (degrees) | $\begin{array}{\|c} \hline \text { EUT } \\ \text { Axis } \\ (\mathbf{X}, \mathbf{Y}, \mathbf{Z}) \end{array}$ | EUT <br> Tx <br> Channel | Antenna <br> Factor <br> (dB) | Cable <br> Loss <br> (dB) | Amplifier Gain (dB) | Distance <br> Factor <br> (dB) | Mixer <br> Factor <br> (dB) | $\begin{array}{\|c\|} \hline \text { Corrected } \\ \text { Reading } \\ (\mathrm{dBuV} / \mathrm{m}) \end{array}$ | $\begin{gathered} \hline \text { Delta } \\ * * \\ \text { (dB) } \\ \hline \end{gathered}$ | $\begin{array}{\|c\|} \hline \text { Spec } \\ \text { Limit } \\ (\mathrm{dBuV} / \mathrm{m}) \\ \hline \end{array}$ | Comments |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4606.5000 | 35.9 | A | H | 1.0 | 0 | X | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 43.8 | -10.2 | 54.0 |  |
| 4606.5000 | 39.9 | A | H | 1.0 | 180 | Y | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 47.8 | -6.2 | 54.0 |  |
| 4606.5000 | 34.6 | A | H | 1.0 | 0 | Z | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 42.5 | -11.5 | 54.0 |  |
| 4606.5000 | 43.4 | 37.3 A | V | 1.0 | 0 | X | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 45.2 | -8.8 | 54.0 |  |
| 4606.5000 | 41.2 | A | V | 1.0 | 0 | Y | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 49.1 | -4.9 | 54.0 |  |
| 4606.5000 | 40.2 | A | V | 1.0 | 0 | Z | LOW | 34.4 | 5.2 | 31.6 | 0.0 | 0.0 | 48.1 | -5.9 | 54.0 |  |
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* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN ** DELTA $=$ SPEC LIMIT - CORRECTED READING

No Harmonics Nor Emissions Found After the 5th Harmonic

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Page: 1 of 1
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Test location: Compatible Electronics
Customer : LOAD SYSTEMS, INC. Date : 2/25/2003
Manufacturer : LOAD SYSTEMS, INC. Time : 16.56
EUT name : A2B SWITCH Model: LS050
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)): 0.00
Test Mode : RADIATED SPURIOUS EMISSIONS 10 kHz TO 9300 MHz
VERTICAL AND HORIZONTAL POLARIZATION
TEMPERATURE 75 DEGREES F., RELATIVE HUMIDITY 65\%
TESTED BY: KYLE FUJIMOTO

NO SPURIOUS EMISSIONS FOUND FROM 10 kHz TO 9300 MHz IN EITHER POLARIZATION FOR THE EUT

