



# Communication Certification Laboratory

November 13, 2006

Mr. Samuel Smith  
Adept Systems Inc.  
2966 Fort Hill road  
Eagle Mountain, UT 84005

Dear Sam:

Communication Certification Laboratory (CCL) has completed testing of the Adept Systems Inc. GRouter4 GR4 to the EN 55022/ICES-003/FCC specifications.

Enclosed is an engineering report for your files. Because this is Declaration of Conformity testing, a written report need not be filed with the FCC or Industry Canada, and no registration number is granted. Regulations do require, however, that you keep the test results on file and make them available to regulatory personnel upon request.

Any information noted as missing or not available at the time of this report should be obtained and kept on file with this report.

In order to market your equipment to the European market the manufacturer or importer must make a declaration of conformity stating that the equipment complies with all applicable Directives that apply to their equipment. The enclosed report covers the requirements for the emissions portion of the EMC Directive only. Once all applicable Directives have been met the manufacturer or importer must then label the equipment with the "CE" marking.

This documentation must be kept on file for a period of ten years following the placement of the last piece of equipment on the market.

Please let us know if we can be of assistance in meeting your testing needs.

Sincerely yours,

COMMUNICATION CERTIFICATION LABORATORY

Joseph W. Jackson  
V.P. Marketing

Enclosures  
73-8424:nph

# COMMUNICATION CERTIFICATION LABORATORY

1940 West Alexander Street  
Salt Lake City, UT 84119  
801-972-6146

## Test Report

Declaration of Conformity

Test Of:

GRouter4 GR4

Test Specifications:

EN 55022: 1994 + A1 & A2  
FCC Part 15, Subpart B  
ICES-003

Test Report Serial No: 73-8424

Applicant:

Adept Systems Inc.  
2966 Fort Hill Road  
Eagle Mountain, UT 84005  
U.S.A.

Dates of Test: November 8, 2006

Issue Date: November 13, 2006

Accredited Testing Laboratory By:



NVLAP Lab Code 100272-0

**CERTIFICATION OF ENGINEERING REPORT**

This report has been prepared by Communication Certification Laboratory to document compliance of the device described below with the Class B requirements of EN 55022: 1994 + A1 & A2, Federal Communications Commission (FCC) Part 15, Subpart B and Industry Canada (IC) ICES-003. This report may be reproduced in full, partial reproduction may only be made with the written consent of the laboratory. The results in this report apply only to the sample tested.

- Applicant: Adept Systems Inc.
- Manufacturer: Adept Systems Inc.
- Brand Name: Adept Systems Inc.
- Model Number: GRouter4 GR4

On this 13<sup>th</sup> day of November 2006, I, individually, and for Communication Certification Laboratory, certify that the statements made in this engineering report are true, complete, and correct to the best of my knowledge, and are made in good faith.

Although NVLAP has recognized that the Communication Certification Laboratory EMC testing facilities are in good standing, this report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

COMMUNICATION CERTIFICATION LABORATORY



Checked by: Thomas C. Jackson  
President



Tested by: Norman P. Hansen  
EMC Technician

## TABLE OF CONTENTS

	<u>PAGE</u>
<u>SECTION 1.0 CLIENT INFORMATION</u> .....	4
<u>SECTION 2.0 EQUIPMENT UNDER TEST (EUT)</u> .....	5
<u>SECTION 3.0 TEST SPECIFICATION, METHODS &amp; PROCEDURES</u> .....	7
<u>SECTION 4.0 OPERATION OF EUT DURING TESTING</u> .....	10
<u>SECTION 5.0 SUMMARY OF TEST RESULTS</u> .....	12
<u>SECTION 6.0 MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS</u> .....	13
<u>APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT</u> .....	18
<u>APPENDIX 2 PHOTOGRAPHS</u> .....	22
<u>APPENDIX 3 FCC Part 15/ICES-003 CONDUCTED DISTURBANCE DATA</u> .....	31
<u>APPENDIX 4 FCC Part 15/ICES-003 COMPLIANCE INFORMATION</u> .....	33

**SECTION 1.0 CLIENT INFORMATION**

**1.1 Applicant:**

Company Name: Adept Systems Inc.  
2966 Fort Hill Road  
Eagle Mountain, UT 84005  
U.S.A.

Contact Name: Samuel Smith  
Title: President

**1.2 Manufacturer:**

Company Name: Adept Systems Inc.  
2966 Fort Hill Road  
Eagle Mountain, UT 84005  
U.S.A.

Contact Name: Samuel Smith  
Title: President

**1.3 Party Responsible for Declaration of Conformity:**

Company Name: Adept Systems Inc.  
2966 Fort Hill Road  
Eagle Mountain, UT 84005  
U.S.A.

Contact Name: Samuel Smith  
Title: President

Signature: \_\_\_\_\_

**SECTION 2.0 EQUIPMENT UNDER TEST (EUT)****2.1 Identification of EUT:**

Brand Name: Adept Systems Inc.  
 Model Name or Number: GRouter4 GR4  
 Serial Number: None  
 Options Fitted: N/A  
 Country of Manufacture: U.S.A.

**2.2 Description of EUT:**

The GRouter4 is a device for use in LonWorks systems to allow bi-directional communications between EIA 709.1 and IP based systems. Power for testing was provided by an Addonics ST-7.5W 5 VDC power adapter.

**2.3 EUT and Support Equipment:**

The FCC ID numbers for all the EUT and support equipment used during the test (including inserted cards) are listed below:

Brand Name Model Number Serial No.	FCC ID Number	Description	Name of Interface Ports / Interface Cables
BN: Adept Systems Inc.  MN: GRouter4 GR4 (Note 1)	DoC	Lontalk/IP Router	See Section 2.4
BN: TRENDnet  MN: TE100-S8P  SN: 0243C3A16540	Verification	8 port LAN hub	Ethernet/Cat 5e cable w/RJ45 connectors
BN: Adept Systems Inc.  MN: Termination Assembly	None	Lontalk Termination	Lontalk / Unshielded twisted pair cable (Note 2)
Note: (1) EUT (2) Interface port connected to EUT (See Section 2.4)			

The support equipment listed above was not modified in order to achieve compliance with this standard.

#### **2.4 Interface Ports on EUT:**

Name of Ports	No. of Ports Fitted to EUT.	Cable Descriptions/Length
VDC	1	Unshielded twisted pair cable with Phoenix connector/7 meters
Ethernet	1	
Lontalk	1	Unshielded twisted pair cable with Phoenix connector/7 meters

#### **2.5 Modification Incorporated/Special Accessories on EUT:**

The following modifications were made to the GRouter4 GR4 by the Client during testing to comply with the specification. These modifications will be implemented during manufacturing.

1. A common mode choke was installed and a 0.22  $\mu$ F capacitor was installed across the DC supply lines.

Signature: \_\_\_\_\_

Typed Name: Samuel Smith

Title: President

**SECTION 3.0 TEST SPECIFICATION, METHODS & PROCEDURES****3.1 Test Specification:**

Title: EN 55022: 1994 + A1 &amp; A2

Limits and methods of measurement of radio interference characteristics of information technology equipment.

Purpose of Test: The tests were performed to demonstrate initial compliance.

**3.2 Methods & Procedures:****3.2.1 Limits of Conducted Disturbance**

The equipment under test (EUT) shall meet the limits of disturbance of Table 1 or 2 including the average limits and the quasi-peak limits when using, respectively, an average detector receiver and a quasi-peak detector receiver, and measured in accordance with the methods described in Clause 10. If the average limits is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the highest reading shall be recorded with the exception of any brief isolated high reading, which shall be ignored.

Table 1 - Limits of conducted disturbance at the mains ports of Class A ITE.

Frequency range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60
NOTE: The lower limit shall apply at the transition frequency.		



Table 2 - Limits of conducted disturbance at the mains ports of Class B ITE.

Frequency range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

NOTES:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

**3.2.2 Limits of Radiated Disturbance**

The EUT shall meet the limits of Tables 3 or 4 when measured at the measuring distance R in accordance with the methods described in clause 11. If the reading on the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the highest reading shall be recorded with the exception of any brief isolated high reading, which shall be ignored.

Table 3 - Limits for radiated disturbance of Class A ITE at a measuring distance of 10 m.

Frequency range (MHz)	Quasi-peak limits (dB $\mu$ V/m)
30 to 230	40
230 to 1000	47

NOTES:

1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

Table 4 - Limits for radiated disturbance of Class B ITE at a measuring distance of 10 m.

Frequency range (MHz)	Quasi-peak limits (dB $\mu$ V/m)
30 to 230	30
230 to 1000	37

NOTES:

1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

### **3.2.3 Test Procedure**

The conducted disturbance at mains ports and radiated disturbance testing was performed according to the procedures in EN 55022: 1994, Sections 9 through 11. Testing was performed at CCL's Wanship open area test site #2, located at 550 West Wanship Road, Wanship, UT. This site has been fully described in a report submitted to the FCC, and was accepted in a letter dated June 6, 2006 (90504).

CCL is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Lab Code:100272-0, which is effective until September 30, 2007.

For radiated disturbance testing that is performed at distances closer than the specified distance; an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

**SECTION 4.0 OPERATION OF EUT DURING TESTING****4.1 Operating Environment:**

Power Supply: 120/240 VAC  
AC Mains Frequency: 60/50 Hz  
Current Rating: A

To comply with the requirements of EN 55022, FCC Part 15 and ICES-003 the GRouter4 GR4 was tested with the Addonics power supply at both 120 VAC and 240 VAC, using the EN 55022 limits.

The radiated disturbance was prescanned at both 120 VAC and 240 VAC. The worst-case radiated emissions were with the EUT running at 240 VAC; therefore, this data was used to show compliance for radiated disturbance. Conducted disturbance at AC mains testing was performed at both 120 VAC and 240 VAC. The conducted disturbance at AC mains data with the GRouter4 GR4 running on 240 VAC is included in section 6.2 and the 120 VAC data is included in Appendix 3.

**4.2 Operating Modes:**

Each mode of operation was exercised to produce worst-case emissions. The worst-case emissions were with the GRouter4 GR4 connected to the Adept Systems Inc. termination unit, through an Ethernet hub to a laptop computer, and continual communication established.

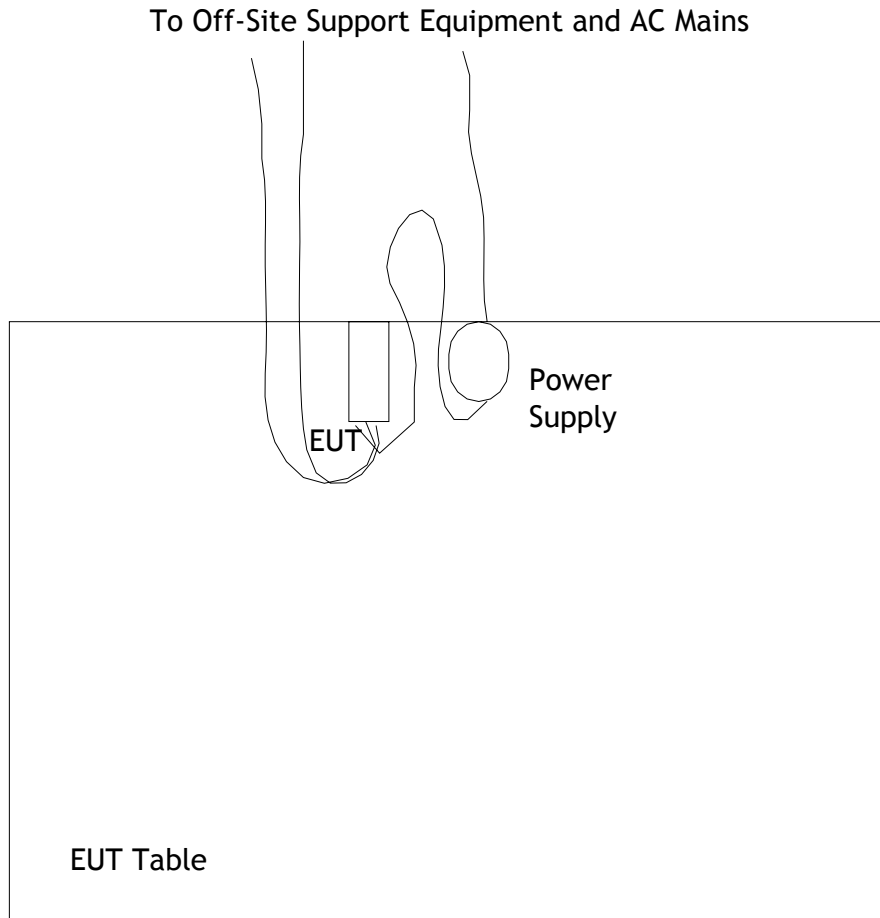
**4.3 EUT Exercise Software:**

Internal firmware was used to exercise the EUT.

**4.4 Configuration & Peripherals:**

The GRouter4 GR4 was placed on the table and connected to the support equipment listed in Section 2.3 via each port listed in Section 2.4. Shown in Section 4.5 is a block diagram of the test configuration.

**4.5 Block Diagram of Test Configuration:**



**SECTION 5.0 SUMMARY OF TEST RESULTS****5.1 Class B of EN 55022: 1994.****5.1.1 Summary of Tests:**

<b>Port</b>	<b>Environmental Phenomena</b>	<b>Frequency Range (MHz)</b>	<b>Result</b>
AC Power	Conducted Disturbance at Mains Ports (Hot Lead to Ground)	0.15 to 30	Complied
AC Power	Conducted Disturbance at Mains Ports (Neutral Lead to Ground)	0.15 to 30	Complied
Enclosure	Radiated Disturbance (Vertical Polarity)	30 to 1000	Complied
Enclosure	Radiated Disturbance (Horizontal Polarity)	30 to 1000	Complied

**5.2 Result**

In the configuration tested, the EUT complied with the requirements of the specification.

**SECTION 6.0 MEASUREMENTS, EXAMINATIONS AND DERIVED RESULTS****6.1 General Comments:**

This section contains the test results only. Details of the test methods used and a list of the test equipment used during the measurements can be found in Appendix 1 of this report.

**6.2 Test Results:****6.2.1 Conducted Disturbance at Mains Ports Data (Hot Lead)**

Frequency (MHz)	Detector	Measured Level (dB $\mu$ V)	Class B Limit (dB $\mu$ V)	Margin (dB)
0.20	Quasi-Peak (Note 2)	60.0	63.5	-3.5
0.20	Average (Note 2)	42.8	53.5	-10.7
0.31	Quasi-Peak (Note 2)	56.4	60.1	-3.7
0.31	Average (Note 2)	44.4	50.1	-5.7
0.40	Quasi-Peak (Note 2)	45.7	57.8	-12.1
0.40	Average (Note 2)	38.7	47.8	-9.1
0.50	Peak (Note 1)	41.2	46.0	-4.8
0.91	Peak (Note 1)	39.3	46.0	-6.7
1.01	Peak (Note 1)	38.5	46.0	-7.5
<p>Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.</p> <p>Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.</p>				

**Measurement Uncertainty**

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 3.3$  dB.

**RESULT**

The EUT complied with the specification limit by a margin of 3.5 dB.

**6.2.2 Conducted Disturbance at Mains Ports Data (Neutral Lead)**

Frequency (MHz)	Detector	Measured Level (dB $\mu$ V)	Class B Limit (dB $\mu$ V)	Margin (dB)
0.20	Quasi-Peak (Note 2)	58.7	63.6	-4.9
0.20	Average (Note 2)	40.5	53.6	-13.1
0.31	Quasi-Peak (Note 2)	54.0	60.1	-6.1
0.31	Average (Note 2)	43.7	50.1	-6.4
1.01	Peak (Note 1)	38.7	46.0	-7.3
1.11	Peak (Note 1)	37.5	46.0	-8.5
1.42	Peak (Note 1)	36.1	46.0	-9.9
1.71	Peak (Note 1)	37.4	46.0	-8.6
3.33	Peak (Note 1)	37.9	46.0	-8.1
<p>Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.</p> <p>Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.</p>				

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 3.3$  dB.

RESULT

The EUT complied with the specification limit by a margin of 4.9 dB.

**6.2.3 Radiated Disturbance Data (Vertical Polarity)**

Frequency (MHz)	Detector	Receiver Reading (dB $\mu$ V)	Correction Factor (dB/m)	Field Strength (dB $\mu$ V/m)	Class B 10 m Limit (dB $\mu$ V/m)	Margin (dB)
40.4	Quasi-Peak (Note 1)	12.2	12.9	25.1	30.0	-4.9
46.8	Quasi-Peak (Note 1)	14.7	10.2	24.9	30.0	-5.1
80.7	Quasi-Peak (Note 1)	19.7	7.3	27.0	30.0	-3.0
100.0	Quasi-Peak (Note 1)	21.1	8.5	29.6	30.0	-0.4
125.9	Peak (Note 1)	15.1	7.6	22.7	30.0	-7.3
167.2	Peak (Note 1)	13.2	9.9	23.1	30.0	-6.9
181.3	Peak (Note 1)	13.4	10.9	24.3	30.0	-5.7
199.2	Quasi-Peak (Note 1)	15.2	11.1	26.3	30.0	-3.7
820.8	Peak (Note 1)	4.0	26.6	30.6	37.0	-6.4

Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the quasi-peak limit.

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 4.3$  dB (30 MHz to 200 MHz) and  $\pm 6.0$  dB @ 3 meters  $\pm 2.7$  dB @ 10 meters (200 MHz to 1 GHz).

RESULT

The EUT complied with the specification limit by a margin of 0.4 dB.



**6.2.4 Radiated Disturbance Data (Horizontal Polarity)**

Frequency (MHz)	Detector	Receiver Reading (dB $\mu$ V)	Correction Factor (dB/m)	Field Strength (dB $\mu$ V/m)	Class B 10 m Limit (dB $\mu$ V/m)	Margin (dB)
440.8	Peak (Note 1)	5.5	19.2	24.7	37.0	-12.3
699.2	Peak (Note 1)	4.2	25.5	29.7	37.0	-7.3
720.0	Peak (Note 1)	3.5	25.7	29.2	37.0	-7.8
761.6	Peak (Note 1)	2.8	26.1	28.9	37.0	-8.1
801.6	Peak (Note 1)	1.2	26.3	27.5	37.0	-9.5
821.6	Peak (Note 1)	0.6	26.6	27.2	37.0	-9.8

Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the quasi-peak limit.

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 4.3$  dB (30 MHz to 200 MHz) and  $\pm 6.0$  dB @ 3 meters  $\pm 2.7$  dB @ 10 meters (200 MHz to 1 GHz).

RESULT

The EUT complied with the specification limit by a margin of 7.3 dB.

**6.3 Sample Field Strength Calculation:**

The field strength is calculated by adding the Correction Factor (Antenna Factor + Cable Factor), to the measured level from the receiver. The receiver amplitude reading is compensated for any amplifier gain. The basic equation with a sample calculation is shown below:

$$FS = RA + CF \quad \text{Where}$$

FS = Field Strength

RA = Receiver Amplitude Reading (Receiver Reading -  
Amplifier Gain)

CF = Correction Factor (Antenna Factor + Cable Factor)

Assume a receiver reading of 42.5 dB $\mu$ V is obtained from the receiver, an amplifier gain of 26.5 dB and a correction factor of 8.5 dB/m. The field strength is calculated by subtracting the amplifier gain and adding the correction factor, giving a field strength of 24.5 dB $\mu$ V/m,  $FS = (42.5 - 26.5) + 8.5 = 24.5$  dB $\mu$ V/m

**APPENDIX 1 TEST PROCEDURES AND TEST EQUIPMENT****Conducted Disturbance at Mains Ports:**

The conducted disturbance at mains ports from the EUT was measured using a spectrum analyzer with a quasi-peak adapter for peak, quasi-peak and average readings. The quasi-peak adapter uses a bandwidth of 9 kHz, with the spectrum analyzer's resolution bandwidth set at 100 kHz, for readings in the 150 kHz to 30 MHz frequency ranges.

The conducted disturbance at mains ports measurements are performed in a screen room using a (50  $\Omega$ /50  $\mu$ H) Line Impedance Stabilization Network (LISN).

Where mains flexible power cords are longer than 1 m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

Where the EUT is a collection of ITE with each ITE having its own power cord, the point of connection for the LISN is determined from the following rules:

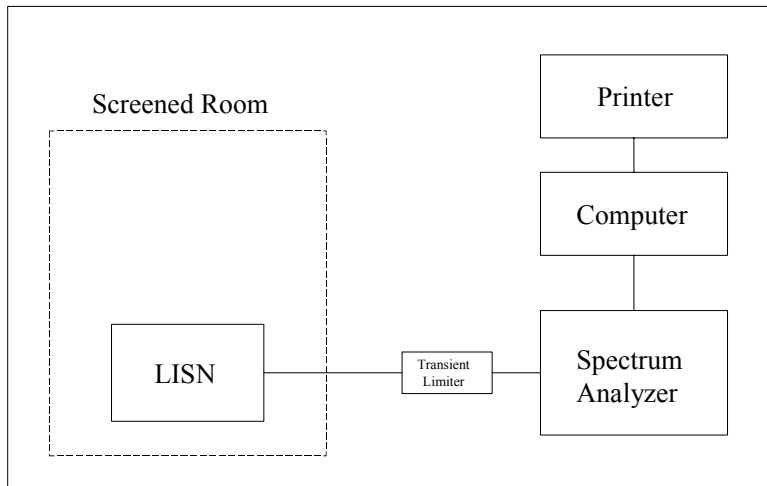
- a) Each power cord, which is terminated in a mains supply plug, shall be tested separately.
- b) Power cords, which are not specified by the manufacturer to be connected via a host unit, shall be tested separately.
- c) Power cords which are specified by the manufacturer to be connected via a host unit or other power supplying equipment shall be connected to that host unit and the power cords of that host unit connected to the LISN and tested.
- d) Where a special connection is specified, the necessary hardware to effect the connection is supplied by the manufacturer for the testing purpose.
- e) When testing equipment with multiple mains cords, those cords not under test are connected to an artificial mains network (AMN) different than the AMN used for the mains cord under test.

Desktop ITE are placed on a non-conducting table at least 0.8 meters from the metallic floor. The equipment is placed a minimum of 40 cm from all walls. Floor standing equipment is placed directly on the earth grounded floor.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	10/25/2006
Test Software	CCL	Conducted Emissions	Revision 1.2	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/28/2006
Quasi-Peak Detector	Hewlett Packard	85650A	2043A00137	10/10/2006
LISN	EMCO	3825/2	9508-2435	03/15/2006
Conductance Cable Wanship Site #2	CCL	Cable J	N/A	12/12/2005
Transient Limiter	Hewlett Packard	11947A	3107A02266	12/12/2005

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above at intervals defined in ANSI C63.4:2001 Section 4.4 following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

Conducted Emissions Test Setup



**Radiated Disturbance:**

The radiated disturbance from the ITE was measured using a spectrum analyzer with a quasi-peak adapter for peak and quasi-peak readings. A preamplifier with a fixed gain of 26 dB and a power amplifier with a fixed gain of 22 dB were used to increase the sensitivity of the measuring instrumentation. The quasi-peak adapter uses a bandwidth of 120 kHz, with the spectrum analyzer's resolution bandwidth set at 1 MHz, for readings in the 30 to 1000 MHz frequency ranges.

A biconilog antenna was used to measure the frequency range of 30 to 1000 MHz, at a distance of 10 meters from the EUT. The readings obtained by these antennas are correlated to the levels obtained with a tuned dipole antenna by adding antenna factors.

The configuration of the ITE was varied to find the maximum radiated emission. The EUT was connected to the peripherals listed in Section 2.3 via the interconnecting cables listed in Section 2.4. A technician manually manipulated these interconnecting cables to obtain worst-case radiated disturbance. The ITE was rotated 360 degrees, and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission. Where there was multiple interface ports all of the same type, cables are either placed on all of the ports or cables added to these ports until the emissions do not increase by more than 2 dB.

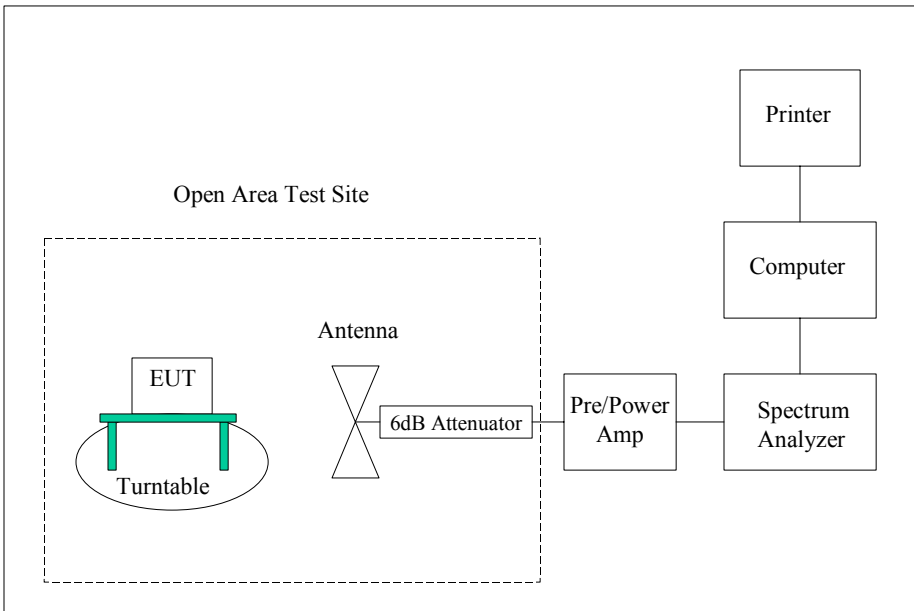
Desktop ITE are measured on a non-conducting table 0.8 meters above the ground plane. The table is placed on a turntable, which is level with the ground plane. For equipment normally placed on floors, the equipment shall be placed directly on the turntable.

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
Wanship Open Area Test Site #2	CCL	N/A	N/A	10/25/2006
Test Software	CCL	Radiated Emissions	Revision 1.3	N/A
Spectrum Analyzer	Hewlett Packard	8566B	2230A01711	10/28/2006
Quasi-Peak Detector	Hewlett Packard	85650A	2043A00137	10/10/2006
Biconilog Antenna	EMCO	3142	9601-1009	10/19/2006

Type of Equipment	Manufacturer	Model Number	Serial Number	Date of Last Calibration
10 Meter Radiated Emissions Cable Wanship Site #2	CCL	Cable L	N/A	12/12/2005
Pre/Power-Amplifier	Hewlett Packard	8447F	3113A05161	09/06/2006
6 dB Attenuator	Hewlett Packard	8491A	32835	12/12/2005

An independent calibration laboratory or CCL personnel calibrates all the equipment listed above at intervals defined in ANSI C63.4:2001 Section 4.4 following outlined calibration procedures. All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to tractability is on file and is available for examination upon request.

### Radiated Emissions Test Setup



**APPENDIX 2 PHOTOGRAPHS**

Photograph 1 - Front View Radiated Disturbance Worst Case Configuration

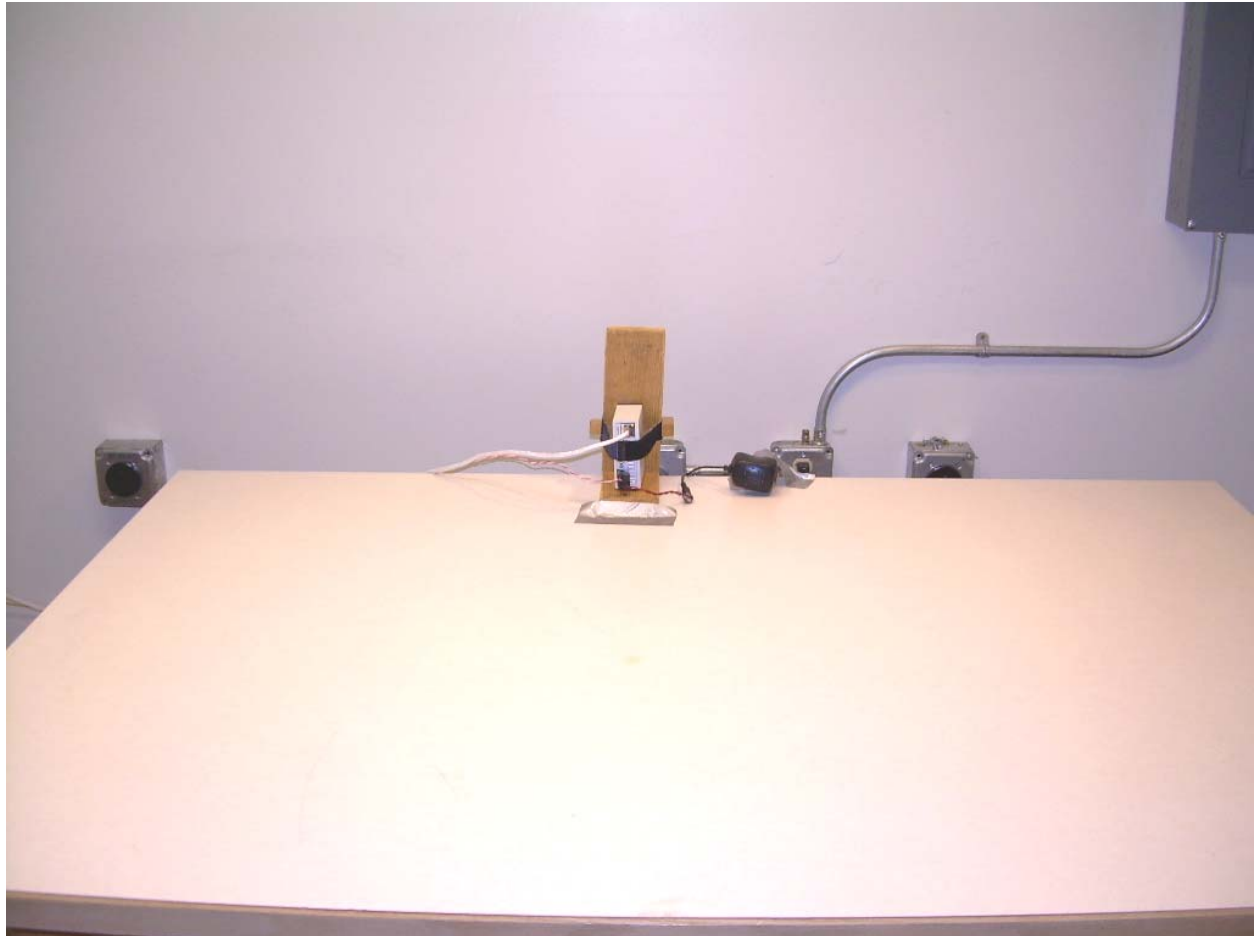


Photograph 2 - Back View Radiated Disturbance Worst Case Configuration





Photograph 3 - Front View Conducted Disturbance Worst Case Configuration



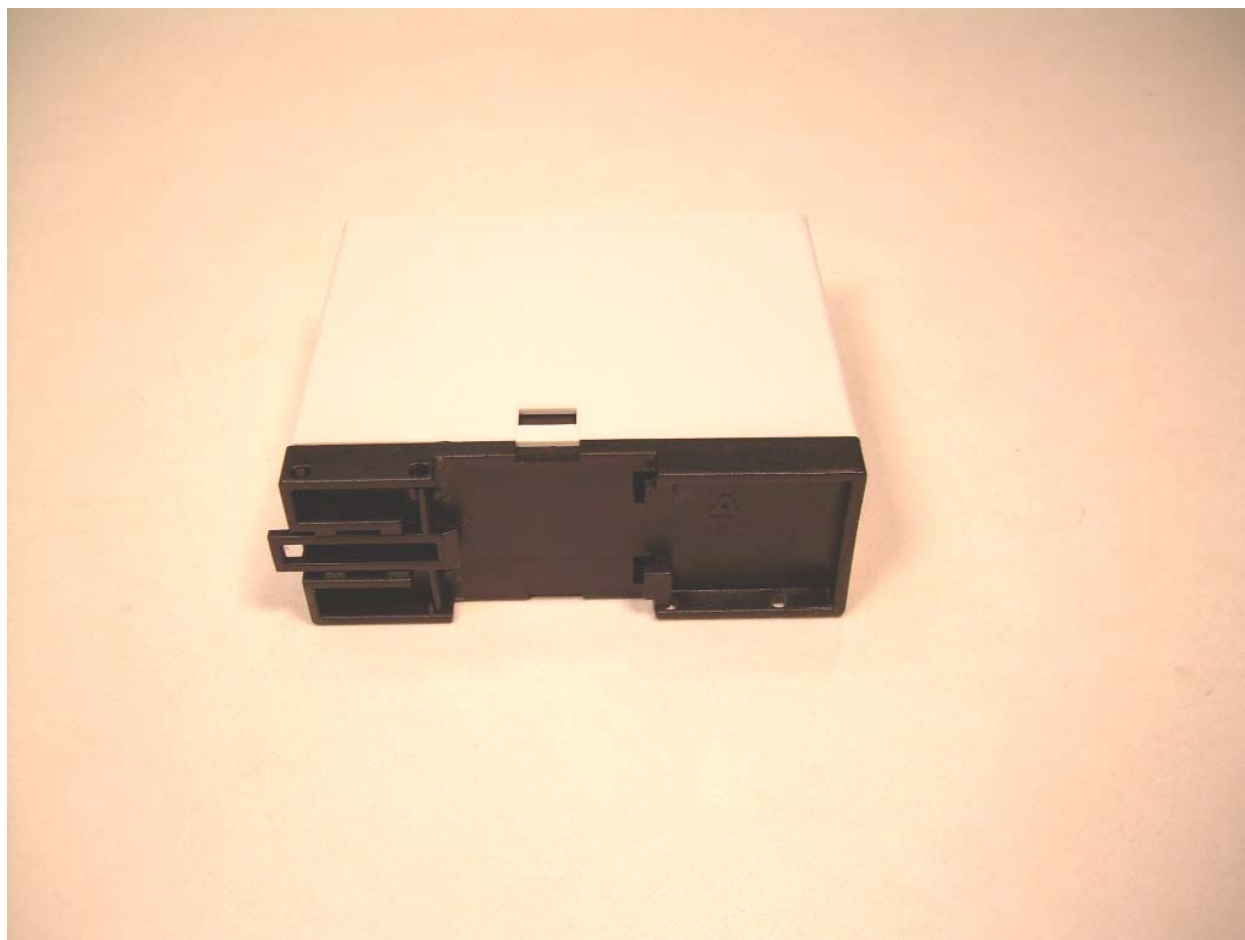
Photograph 4 - Back View Conducted Disturbance Worst Case Configuration



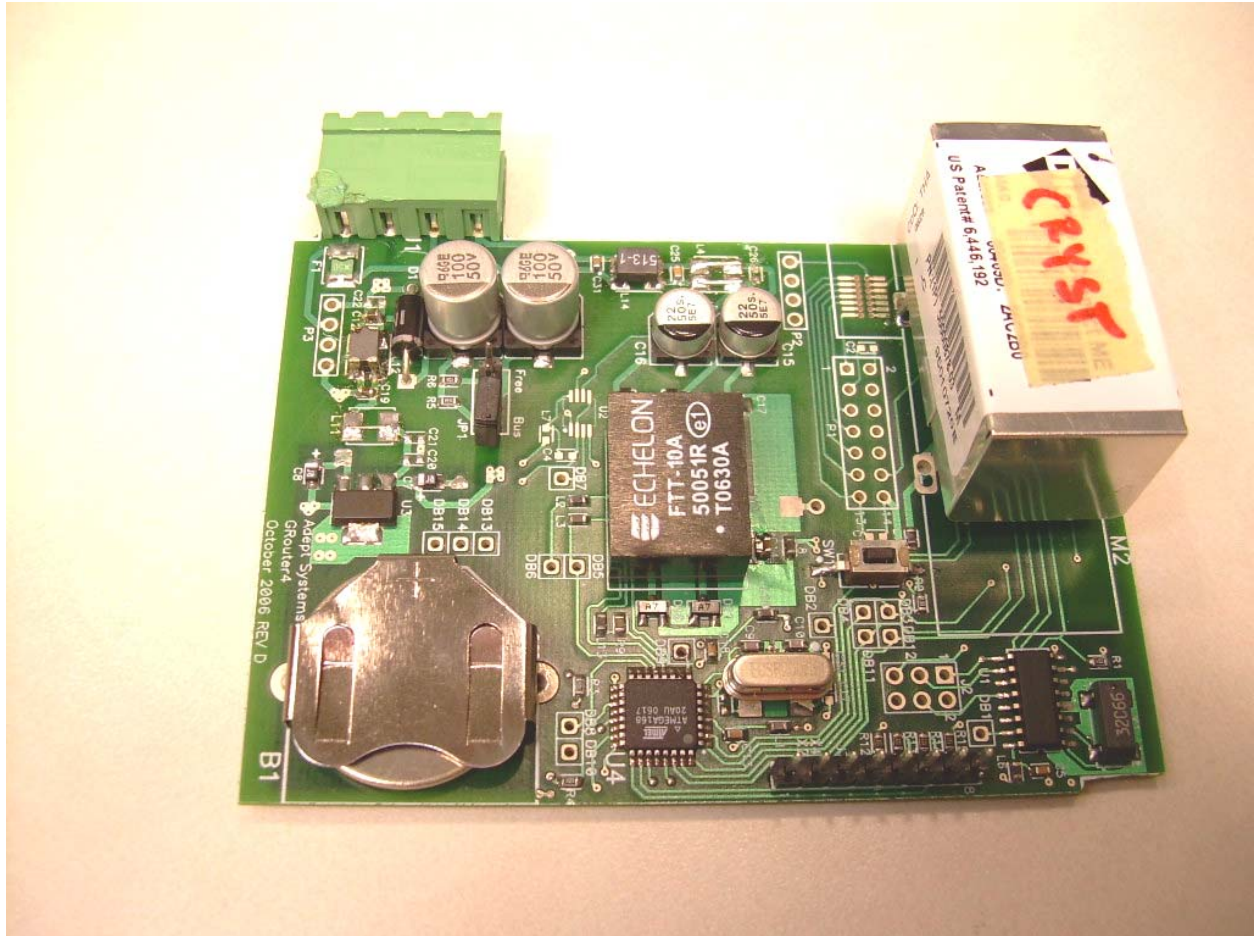
Photograph 5 - Front View of the EUT



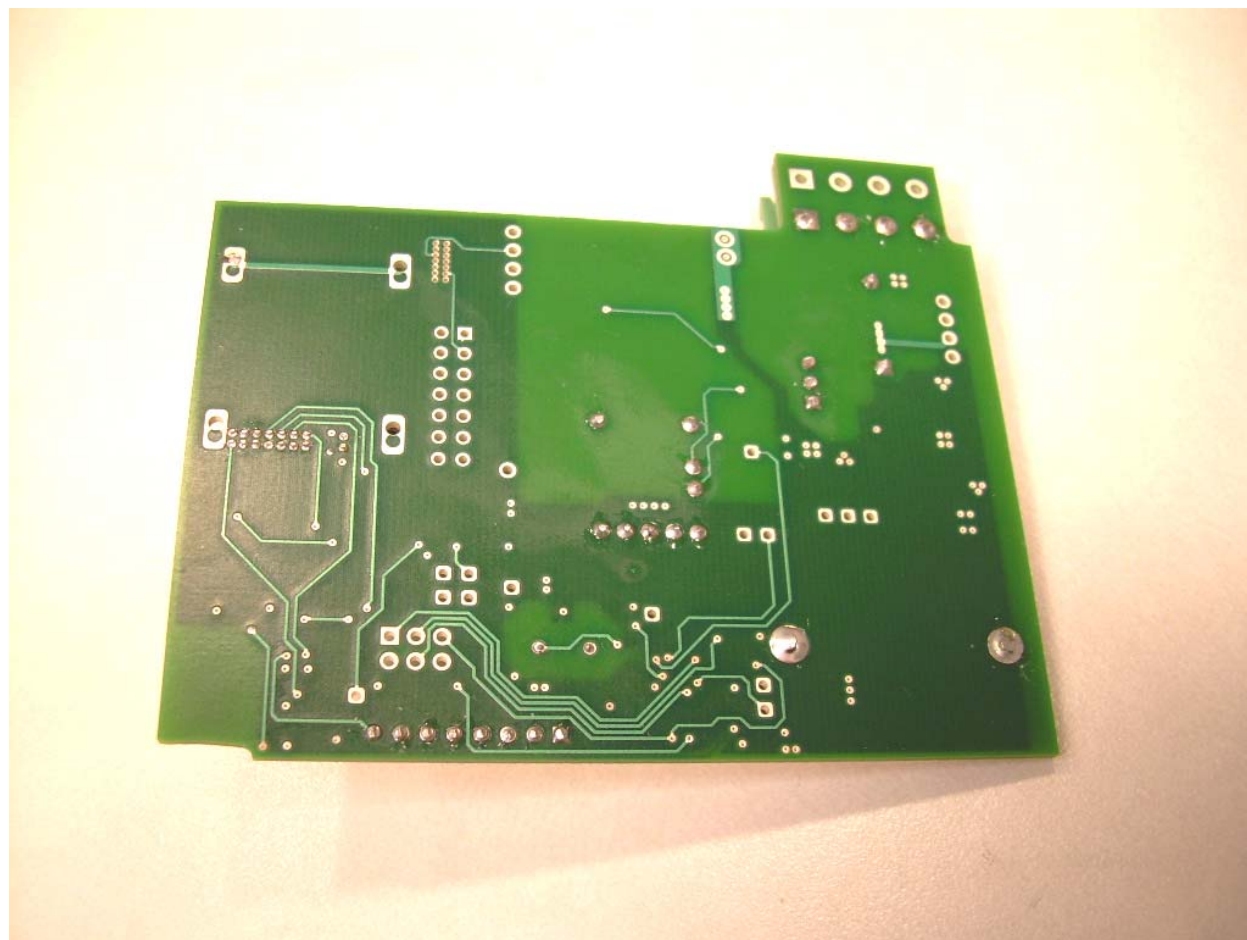
Photograph 6 - Back View of the EUT



Photograph 7 - Component Side of the PCB



Photograph 8 - Trace Side of the PCB



Photograph 9 - View of the Addonics Power Supply



**APPENDIX 3 FCC Part 15/ICES-003 CONDUCTED DISTURBANCE AT MAINS PORTS DATA**

To comply with the requirements of FCC Part 15/ICES-003 the Router4 GR4 was tested at 120 VAC, using the §15.107/EN 55022 limits.

**A.3.1 Conducted Disturbance at Mains Ports Data (Hot Lead)**

Frequency MHz	Detector	Measured Level dB $\mu$ V	Class B Limit dB $\mu$ V	Margin dB
0.20	Quasi-Peak (Note 2)	55.7	63.5	-7.8
0.20	Average (Note 2)	42.5	53.5	-11.0
0.31	Quasi-Peak (Note 2)	51.6	60.1	-8.5
0.31	Average (Note 2)	40.1	50.1	-10.0
0.61	Peak (Note 1)	39.5	46.0	-6.5
1.32	Peak (Note 1)	36.0	46.0	-10.0
1.42	Peak (Note 1)	38.4	46.0	-7.6
2.13	Peak (Note 1)	36.5	46.0	-9.5
Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits. Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.				

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 3.3$  dB.

RESULT

The EUT complied with the specification limit by a margin of 6.5 dB.



**A.3.2 Conducted Disturbance at Mains Ports Data (Neutral Lead)**

Frequency MHz	Detector	Measured Level dB $\mu$ V	Class B Limit dB $\mu$ V	Margin dB
0.31	Quasi-Peak (Note 2)	48.8	60.1	-11.3
0.31	Average (Note 2)	40.2	50.1	-9.9
0.51	Peak (Note 1)	36.3	46.0	-9.7
0.61	Peak (Note 1)	37.0	46.0	-9.0
1.01	Peak (Note 1)	35.6	46.0	-10.4
1.31	Peak (Note 1)	38.3	46.0	-7.7
1.82	Peak (Note 1)	36.5	46.0	-9.5

Note 1: The reference detector used for the measurements was peak or quasi-peak and the data was compared to the average limit; therefore, the EUT was deemed to meet both the average and quasi-peak limits.

Note 2: The reference detector used for the measurements was quasi-peak and average and the data was compared to the respective limits.

Measurement Uncertainty

The measurement uncertainty (with a 95% confidence level) for this test was:  $\pm 3.3$  dB.

RESULT

The EUT complied with the specification limit by a margin of 7.7 dB.

**APPENDIX 4 FCC Part 15/ICES-003 COMPLIANCE INFORMATION**

**A.4.1 LABEL AND COMPLIANCE STATEMENT**

The label of the Adept Systems Inc. GRouter4 GR4 was not available at the time of this report.

**A.4.2 BLOCK DIAGRAM**

A block diagram showing the clock frequencies and signal paths of the Adept Systems Inc. GRouter4 GR4 was not available at the time of this report.

**A.4.3 USER'S MANUAL**

A copy of the User's manual containing the FCC warning statement was not available at the time of this report.