

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 1 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

This drawing consists of pages issued or re-issued on dates shown in the following list.
Italic underlined words indicate content changes or additions on revised pages.

PAGE

1 - 60

ISSUED

22 Jun 2004

PAGE

1 - 56

REISSUED

11 Aug 2004

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BY: Laura Bramschreiber and Clyde Pineda

Page 2 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

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TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 3 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

TABLE OF CONTENTS

Page	Section	Description
1	0.0	Drawing; Client; Product; Standards
7	1.0	Engineering Considerations
	1.1	General Engineering Considerations
	1.1.1	23 April 2004 FCC Conformance Statement
8	1.2	Specific Engineering Considerations
	1.3	Product Description and Intended Use
10	1.4	Abbreviated List of Photographs
11	1.5	Equipment Used During Measurements
14	2.0	Mandatory Labeling, Manual Information, and Shipping Documents
	2.1	FCC Label
15		Label Illustration
15	2.2	Operators' Manual Information
15	2.3	FCC User Information
18	2.4	Industry Canada
19	2.5	RegTP Declaration
22		Photographs
29		Oscillator Frequencies
30		EUT Orientation
31	3.0	Radiated Electromagnetic Interference - Test Configuration
34	4.0	Radiated EMI - Results
46	5.0	Conducted EMI - Test Configuration
46	6.0	Conducted EMI - Results
53		FCC/EN Conducted Graphs
56		Last Page of Report
		Certificate of Conformance

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 4 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Pulver Laboratories Inc. (PLI) File Number: 5397

Pulver Laboratories Inc. (PLI) Project Number: C2134

Product Name: (1) Video Printed Circuit Assembly installed in
Dell Prototype Host PC (EUT)
(EUT = Equipment Under Test)

Model Number: (1) Sil1364ADD2-N
(Video Printed Circuit Assembly)
(2) Prototype (Dell Host PC)

Applicant: Silicon Image, Inc.
1060 East Arques Avenue
Sunnyvale, California 94085
Telephone: 408.616.4000
URL: www.SiliconImage.com

Location Certified: Silicon Image, Inc.
1060 East Arques Avenue
Sunnyvale, California 94085
Telephone: 408.616.4000
URL: www.SiliconImage.com

Manufacturing Location: Silicon Image, Inc.
1060 East Arques Avenue
Sunnyvale, California 94085
Telephone: 408.616.4000
URL: www.SiliconImage.com

Pulver Laboratories Inc. (PLI) Control Number: 5397X

Equipment Category

- Information Technology Equipment including Electrical Business Equipment

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 5 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Evaluated to the Following Standards

PLI Certification.

Certified by Pulver Laboratories Inc. to comply with the following standards.

FCC Certification.

Federal Communications Commission (FCC, USA)

Category Classification: Class B - Residential
FCC ID number - SAX5397X (Pending)

- American National Standards Institute C63.4-2001 entitled Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- Federal Communications Commission Rules and Regulations located in the Code of Federal Regulations, Title 47, Part 2 entitled Frequency Allocations and Radio Treaty Matters; General Rules and Regulations; and Part 15 entitled Radio Frequency Devices, 23 April 2004 Edition.

ICAN Verification.

Industry Canada (ICAN)

Category Classification: Class B - Residential

- Canadian Standards Association (CSA) C108.8-M1983 (R2000) entitled Electromagnetic Emissions for Data Processing Equipment and Electronic Office Machines.
- Canadian Standards Association (CSA) CAN3-C108.3.1-M84 (R2000) entitled Limits and Measurement Methods of Electromagnetic Noise from AC Power Systems.
- Industry Canada. Interference-Causing Equipment Standard: ICES-003, Issue 3, 22 Nov 97, entitled "Interference-Causing Equipment Standard for Digital Apparatus".
- Industry Canada (ICAN) Radio Interference Regulation amendment dated 15 September 1988 (Radio Act Registration SOR/88-475); 3862 01 Data Processing Equipment.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 6 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

**CE Certification mark.
International Community**

Category Classification: Class B - Residential

- EN55022 / CISPR 22 entitled Limits and methods of measurement of radio disturbance characteristics of information technology equipment, 1995 Edition.
- EN55022 / CISPR 22 entitled Limits and methods of measurement of radio disturbance characteristics of information technology equipment, 1998 Edition.

Referenced Test Standards

- EN55022 / CISPR 22 entitled Limits and methods of measurement of radio disturbance characteristics of information technology equipment, First Edition 1985.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 7 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

1.0 Engineering Considerations

1.1 General Engineering Considerations

1.1.1 This report deals with conformance to the:

- Code of Federal Regulations, 47 CFR, Part 2 and Part 15, issued 23 April 2004;
- American National Standards Institute standard number C63.4-2001 entitled Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz;
- EN55022 / CISPR 22 entitled Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Second Edition 1993, with amendment A1, May 1995 Edition.

1.1.2 To assist the Federal Communications Commission in the continuing education of applicants and grantees, Pulver Laboratories has advised Silicon Image, Inc. to review a copy of the Rules and Regulations located in the Code of Federal Regulations, Title 47, Part 2 entitled Frequency Allocations and Radio Treaty Matters; General Rules and Regulations; and Part 15 entitled Radio Frequency Devices, issued 23 April 2004.

1.1.3 The manufacturer has a contractual obligation to Pulver Laboratories to incorporate into production all modifications photographed and outlined in this report with associated documentation.

1.1.4 The Pulver Laboratories Certificate of Conformance issued with this report allows the manufacturer to ship and sell product using the Pulver Laboratories Product Certification Label. This label can only be used if the manufacturer allows Pulver Laboratories to conduct a Follow Up Service at the manufacturing facilities and conduct an Electromagnetic Interference test of the finished product every six months.

1.1.5 This report also deals with conformance to Radio Frequency Interference Suppression of High Frequency Equipment for Industrial, Scientific, and Medical (ISM) and similar purposes for Canada and the countries listed in the Pulver Laboratories Certificate of Conformance associated with this report.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 8 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

1.2 Specific Engineering Considerations

1.2.1 Climatic conditions:

Climatic Conditions	Limits	Readings
Ambient temperature	15°C to 35°C	27°C
Relative humidity	45% to 75%	45%
Atmospheric pressure	68 kPa (680 mbar) to 106 kPa (1060 mbar)	1007 mbar

1.2.2 Interconnecting low voltage cable lengths:

Cable Description	Length (feet)	Length (meters)	Shielded / Unshielded
Computer: power cable	5.64	1.72	Unshielded
Monitor: data cable	5.97	1.82	Unshielded
Monitor: power cable	5.97	1.82	Unshielded
Printer: data cable	3.29	1.00	Shielded
Printer: power cable	8.70	2.65	Unshielded
Keyboard: data cable	5.31	1.62	Unshielded
USB Mouse: data cable	5.57	1.70	Unshielded
Serial modem: data cable	1.00	0.30	Shielded
Serial modem: power cable	5.97	1.82	Unshielded

1.2.3 Input / Output (I / O) Cables coiled and wrapped to maximum lengths of 30 to 40 cm, at least 40 cm from ground plane as recommended by ANSI 63.4-1992.

1.2.4 Most severe cable orientation chosen when measuring unwanted radiated and conducted emissions.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 9 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

1.2.5 To meet the agency criteria listed in this PLI Evaluation Report, the following modifications were made to the original design of the Equipment Under Test:

1.2.5.1 No modifications were required.

1.2.6 There is one possible Equipment Under Test (Video Printed Circuit Assembly, Sil1364ADD2-N) input power configuration:

1.2.6.1 The EUT is installed in, and derives power from a host Personal Computer System.

1.2.6.2 Internally, the card uses 1.8V (U3), 3.3V (U1), and 5V (U2) derived from voltage regulators U3, U1, and U2 respectively. 3.3 VDC and 12.0 VDC obtained from PCI-E interface to motherboard connector.

1.2.7 There are five possible EUT test configurations:

1.2.7.1 **Test Configuration #1:** The Video Printed Circuit Assembly, Sil1364ADD2-N is installed in a host PC, which is connected to **120VAC** mains power.

1.2.7.2 **Test Configuration #2:** The Video Printed Circuit Assembly, Sil1364ADD2-N is installed in a host PC, which is connected to **100VAC** mains power.

1.2.7.3 **Test Configuration #3:** The Video Printed Circuit Assembly, Sil1364ADD2-N is installed in a host PC, which is connected to **200VAC** mains power.

1.2.7.4 **Test Configuration #4:** The Video Printed Circuit Assembly, Sil1364ADD2-N is installed in a host PC, which is connected to **230VAC** mains power.

1.2.7.5 **Test Configuration #5:** The Video Printed Circuit Assembly, Sil1364ADD2-N is installed in a host PC, which is connected to **240VAC** mains power.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 10 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

1.2.8 This report does include measurement data to the 10th harmonic of the Video Printed Circuit Assembly.

1.3 Product Description and Intended Use

1.3.1 The Silicon Image, Inc. Video Printed Circuit Assembly, Sil1364ADD2-N uses PanelLink Digital technology to support displays from VGA to UXGA resolutions in a single link interface. The chip supports Intel Motherboards that have Serial Digital Video Output (SDVO) technology and meets the Digital Visual Interface (DVI) 1.0 standard.

1.4 List of Photographs Contained in this Report

FIGURE 1: PLI Photograph Number 5397C2134SJ-01-2 illustrates the front view of the host PC with all peripherals attached in the Radiated EMI test configurations. The EUT is installed in the Personal Computer System.

FIGURE 2: PLI Photograph Number 5397C2134SJ-02-2 illustrates the rear view of the host PC with all peripherals attached in Radiated EMI test configurations. The EUT is installed in the Personal Computer System.

FIGURE 3: PLI Photograph Number 5397C2134SJR-01 illustrates the rear view of the host PC with all peripherals attached in Conducted EMI test configurations. The EUT is installed in the Personal Computer System.

FIGURE 4: PLI Photograph Number 5397C2134SJ-04-2 illustrates the top view of the host PC with the top cover open showing the placement of the installed Equipment Under Test and reflecting the placement of internal ribbon cables attaching the Equipment Under Test to the motherboard and associated internal system components.

FIGURE 5: PLI Photograph Number 5397C2134SJ-05-2 illustrates an alternate view of the host PC with the top cover open.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 11 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

FIGURE 6: PLI Photograph Number 5397C2134SJ-06-2 illustrates the component side of the EUT Printed Circuit Assembly, Sil1364ADD2-N.

FIGURE 7: PLI Photograph Number 5397C2134SJ-07-2 illustrates the circuit side of the EUT Printed Circuit Assembly, Sil1364ADD2-N.

- 1.5 Equipment used during measurements calibrated according to internationally acceptable laboratory procedures. Calibration data along with Certificates of conformance and traceability are on file at the testing facility. Each calibrated equipment item is individually labeled with date calibrated; due date for next calibration; initials of person who calibrated the equipment; and the name of the organization that performed the calibration service.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 12 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Laboratory Test Equipment					
Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Cycle
Spectrum Analyzer	Hewlett-Packard	8568A	2314A02738	11 May 2004	1 Year
Quasi-Peak Adapter	Hewlett-Packard	85650A	204300273	11 May 2004	1 Year
Amplifier	Hewlett-Packard	8447D Option 010	1937A03004	11 May 2004	1 Year
Spectrum Analyzer	Hewlett-Packard	8565A	PLI2200	11 May 2004	1 Year
Amplifier	Hewlett-Packard	8349A	PLI2201	11 May 2004	1 Year
Biconical Antenna	EMCO	3109	2089	22 Jun 2004	1 Year
Log Periodic Antenna	EMCO	3146	1118	22 Jun 2004	1 Year
Double Ridge Horn Antenna	EMCO	3115	4782	22 Jun 2004	1 Year
L.I.S.N	Solar Electronics	8012-50-R-24 BNC	PLI2202	14 Apr 2004	1 Year
L.I.S.N	Solar Electronics	8328-50-TS-50- N	PLI2203	14 Apr 2004	1 Year
High Pass Filter	Solar Electronics	7801-5.0	PLI2204	Not Applicable	
Tunable Band Pass Filter	K & L Microwave	5BT-48/95-5/B	NC583-1	Not Applicable	
Tunable Band Pass Filter	K & L Microwave	5BT-95/190-5/B	PLI2205	Not Applicable	
Magnetic Loop Antenna	Electro-Metrics	ALR-25M	M203680	Not Applicable	
Equipment Testing Turntable	EMCO	1061-06	PLI2206	Not Applicable	
Antenna Positioning Tower	EMCO	1050	PLI2211	Not Applicable	

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 13 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Laboratory Test Equipment					
Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Cycle
RF Attenuator	Narda	757C	35797	05 Jun 2004	1 Year
RF Attenuator	Narda	757C	36808	05 Jun 2004	1 Year
RF Attenuator	Narda	757C	40604	05 Jun 2004	1 Year
Close Field Antenna	Electro-Metrics	EFP-25	PLI2207	Not Applicable	
Oscilloscope	Tektronix	2445	PLI2208	Not Applicable	
Frequency Comb Generator	Hewlett-Packard	8406A	2246A02197	Not Applicable	
Absorbing Clamp	Schaffner EMC	MDS-21	831153	Not Applicable	
Line Probe	EMCO	3701	1007	Not Applicable	
Frequency Generator	Hewlett-Packard	TS-418B/U	PLI2209	Not Applicable	
Frequency Generator	Hewlett-Packard	TS-510A/U	PLI2210	Not Applicable	
Multimeter	Fluke	FLUKE 110 True RMS	78140239	12 Dec 2003	1 Year
Multimeter	Fluke	FLUKE 73 III	78850774	12 Dec 2003	1 Year
Digital Power Meter	Fluke	FLUKE 39	6836019	26 Feb 2004	1 Year
ELF Field Monitor	Walker Magnetic	ELF-50D	K71260-201	30 Dec 2003	1 Year

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 14 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

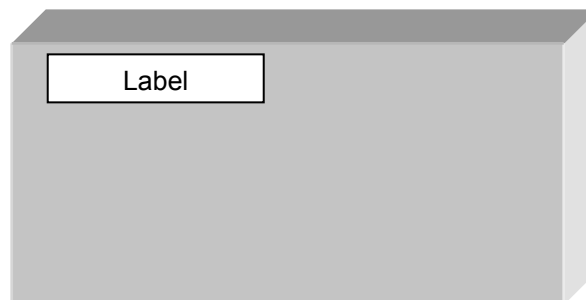
2.0 Mandatory Labeling and Operators' Manual Information and Shipping Documents

2.1 Label

The illustration on the next page shows the actual FCC label (three times the actual size) with the appropriate wording. Note the letters "EMI" on the label, which abbreviate "Electromagnetic Interference". Organizations like the Federal Communications Commission and their respective limits are listed on the label.

Also notice the letters "NRTL", which abbreviate "Nationally Recognized Testing Laboratory" as recommended by OSHA and the National Electrical Code for the United States. For Pulver Laboratories product Certification labels used for safety Certification, the phrase "SAFETY" appears on the label. Safety Certifying organizations like Pulver Laboratories are listed on the label adjacent to the testing standards used during equipment evaluation.

A rough sketch of the label location is shown below.



Component side of the EUT

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 15 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Label Illustration
{three times the size of actual FCC Label}

FCC ID: SAX5397X

2.2 Operators' Manual Information

2.2.1 Insert the following information directly into the operators' manual to meet the requirements of product safety and Radio Frequency Interference (RFI) rules and regulations.

CAUTIONS

- (1) Use a shielded data cable connection between the parallel or serial data ports and peripherals of this equipment.
- (2) Network connections may consist of non-shielded CAT 5 cable.

WARNINGS

- (1) A non-shielded power cord may be used to connect AC power to every component and peripheral of the system.

2.3 **FCC User Information** - Place the following statements in the front of the operators' manual so that the user of the EUT is aware of its interference potential. If available, provide additional information to the user about corrective measures.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 16 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Class B Digital Device or Peripheral

FCC NOTICE INFORMATION FOR THE USER

Silicon Image, Inc.
FCC ID: SAX5397X

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. This Product Certified to meet the Standards in the categories listed below:

Information Technology Equipment

EMI: FCC Part 15 Class B; ICAN ICES-003 Class B; EN55022 Class B

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 1) Reorient or relocate the receiving antenna.
- 2) Increase the separation between the equipment and receiver.
- 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 4) Consult the dealer or an experienced radio/TV technician for help.

The user may find the following publication prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems" (Stock Number 004-000-00345-4).

Available exclusively from the Superintendent of Documents, Government Printing Office, Washington, DC 20402 (telephone 202-512-1800).

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance to Part 15 of the FCC Rules could void the user's authority to operate the equipment.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 17 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Class B or Class 2 Digital Device

CE NOTICE INFORMATION FOR THE USER

This equipment has been tested and found to comply with the limits for a Class B or Class 2 digital device, pursuant to EN 55022 Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the expense of the user.

The user may find the following publication prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems"
(Stock Number 004-000-00345-4).

Available exclusively from the Superintendent of Documents, Government Printing Office, Washington, DC 20402 (telephone 202-512-1800).

WARNING

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TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 18 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

- 2.4 **Industry Canada** - Provide the ICAN statements that follow this paragraph along with the Pulver Laboratories Certificate of Conformance (in this report) in the first pages of the operators' manual and place with the shipping documents accompanying each product.

ICAN Class B Digital Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 19 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

2.5 **RegTP Declaration (for Germany)**

- 2.5.1 This declaration addresses the Electromagnetic Compatibility defined by RegTP's main functions under the Telecommunications Act ("TKG") and the Postal Act ("PostG") associated with Department 4 dealing with Technical Telecommunications Regulation.
- 2.5.2 This declaration for the newly formed RegTP in English and German shown on the next pages will be provided to the operator of the Equipment Under Test.
- 2.5.3 This declaration shall be provided along with the Pulver Laboratories Certificate of Conformance in a conspicuous location in the operators' manual and be placed with the shipping documents of each unit marketed in Germany and the European Community and specifically Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Chile, Denmark, Dominican Republic, Finland, France, Greece, Guatemala, Haiti, Hong Kong, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Kuwait, Luxembourg, Netherlands, New Zealand, Norway, Pakistan, Paraguay, Peru, Philippines, Portugal, Singapore, Saudi Arabia, South Africa, Spain, Sweden, Switzerland, Syria, Taiwan, Turkey, United Kingdom, and Uruguay.
- 2.5.4 THE FOLLOWING STATEMENTS CAN ONLY BE USED IF Pulver Laboratories CERTIFIES THAT THE PRODUCT CONFORMS TO EUROPEAN SAFETY. This report is strictly for Electromagnetic Interference and does not cover safety.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 20 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

RegTP Declaration by Pulver Laboratories Inc. and Manufacturer or Importer in English:

Pulver Laboratories Inc. and Silicon Image, Inc. hereby certify that the Vide Printed Circuit Assembly, Sil1364ADD2-N (Equipment, Type, Model Number) is in compliance with VFG 523/1969, DIN 57871 / VDE 0871 / 09.84, and DIN 57875 Part 1 A2 / 10.90 (product standards) and is RFI suppressed.

The marketing and sale of this equipment in Germany has been reported to the German Postal service. They have also been given the right to retest this equipment to verify compliance with product regulations.

Compliance with applicable regulations depends on the use of shielded cables. The user is responsible for procuring the appropriate cables.

This equipment has been tested concerning compliance with the relevant RFI protection requirements both individually and on a system level (to simulate normal operation conditions). However, it is possible that these RFI requirements are not met under certain unfavorable conditions in other installations. The user is responsible for compliance of his particular installation.

Pulver Laboratories Inc.
Testing and Certification Laboratories

Silicon Image, Inc.
Name of Manufacturer or Importer

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 21 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

RegTP Declaration by Pulver Laboratories Inc. and Manufacturer or Importer in German:

Bescheinigung des Pulver Laboratories Inc. und Silicon Image, Inc. hiermit wird bescheinigt, dass die Vide Printed Circuit Assembly, Sil1364ADD2-N in Übereinstimmung mit den Bestimmungen der VFG 523/1969, DIN 57871 / VDE 0871 / 09.84, und DIN 57875 Part 1 A2 / 10.90 (Amtsblattvertugung) funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Geräts angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Einhaltung mit betreffenden Bestimmungen kommt darauf an, dass geschirmte Ausführungen gebraucht werden. Für die Beschaffung richtiger Ausführungen ist der Betreiber Verantwortlich.

Dieses Gerät wurde sowohl einzeln als auch in einer Anlage, die einen normalen Anwendungsfall nachbildet, auf die Einhaltung der Funk-entstörbestimmungen geprüft. Es ist jedoch möglich, dass die Funk-entstörbestimmungen unter Ungünstigen Umständen bei anderen Gerätekombinationen nicht Eingehalten werden. Der Betreiber ist für die Einhaltung der funk-eutstörungsbestimmungen seiner gesamten Anlage verantwortlich, in der dieses Gerät betrieben wird.

Pulver Laboratories Inc.
Testing and Certification Laboratories

Silicon Image, Inc.
Name des Herstellers / Importeurs

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 22 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

FIGURE 1: PLI Photograph Number 5397C2134SJ-01-2 illustrates the front view of the host PC with all peripherals attached in the Radiated EMI test configurations. The EUT is installed in the Personal Computer System.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 23 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

FIGURE 2: PLI Photograph Number 5397C2134SJ-02-2 illustrates the rear view of the host PC with all peripherals attached in Radiated EMI test configurations. The EUT is installed in the Personal Computer System.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 24 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

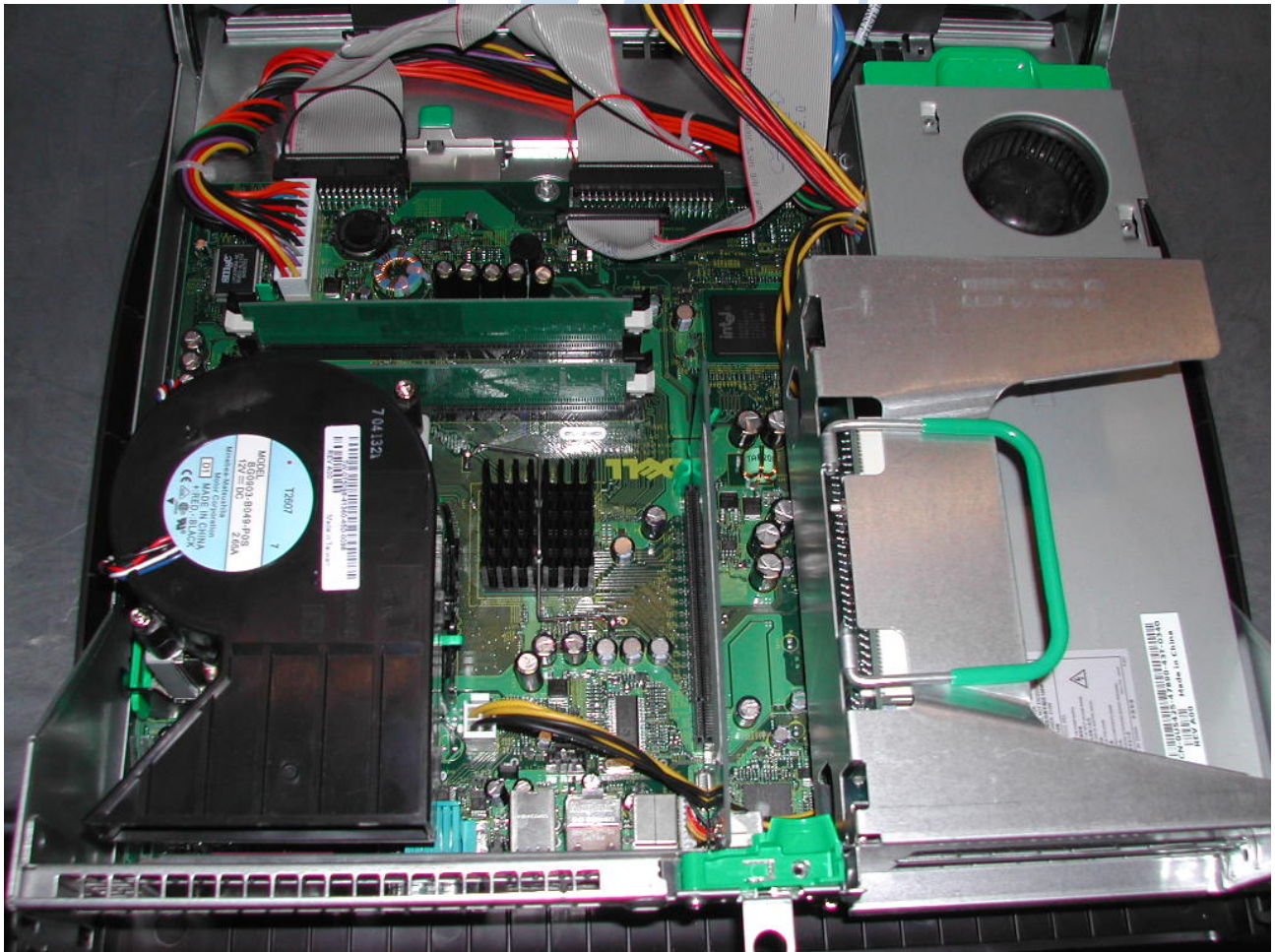
FIGURE 3: PLI Photograph Number 5397C2134SJR-01 illustrates the rear view of the host PC with all peripherals attached in Conducted EMI test configurations. The EUT is installed in the Personal Computer System.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 25 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

FIGURE 4: PLI Photograph Number 5397C2134SJ-04-2 illustrates the top view of the host PC with the top cover open showing the placement of the installed Equipment Under Test and reflecting the placement of internal ribbon cables attaching the Equipment Under Test to the motherboard and associated internal system components.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 26 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

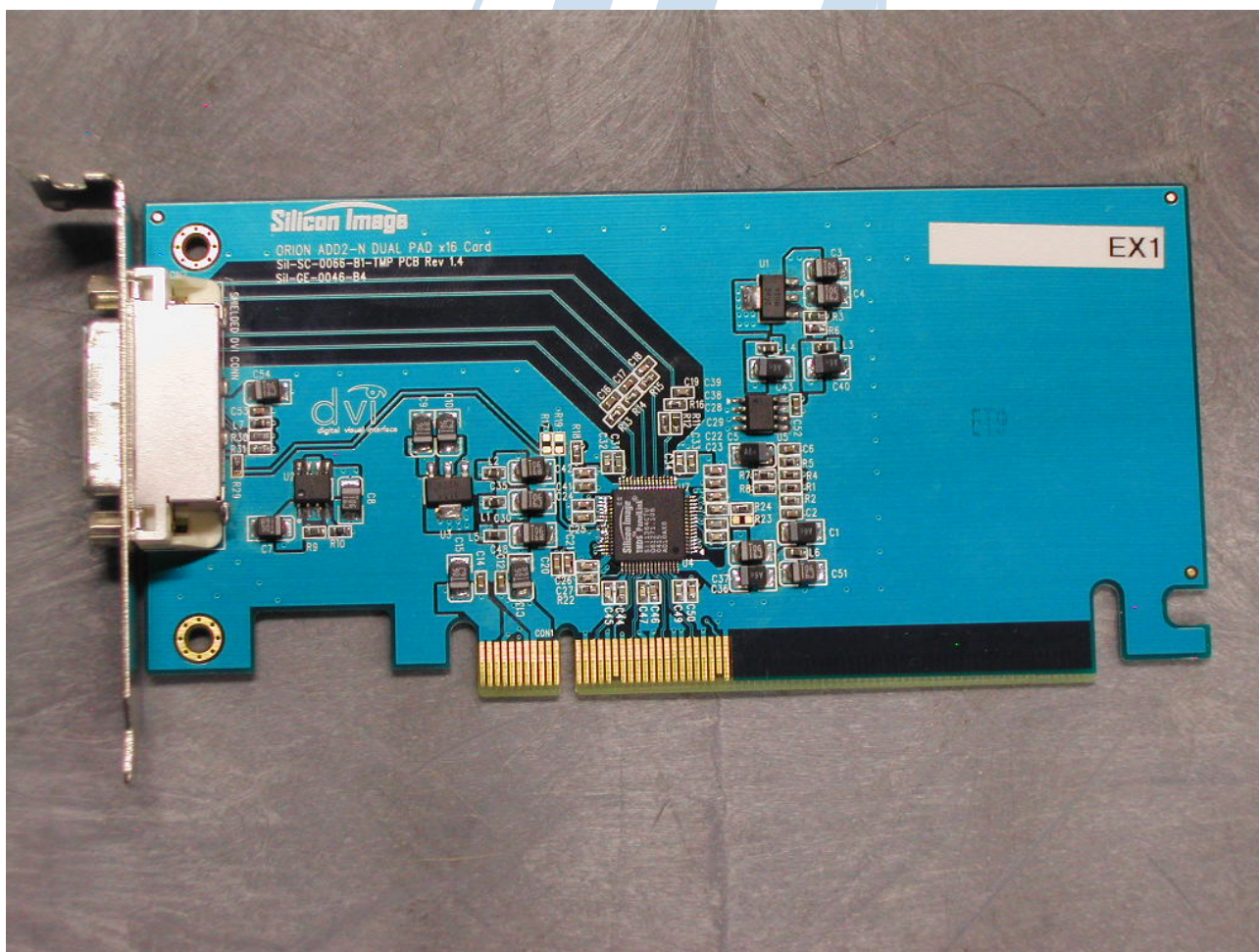
FIGURE 5: PLI Photograph Number 5397C2134SJ-05-2 illustrates an alternate view of the host PC with the top cover open.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 27 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

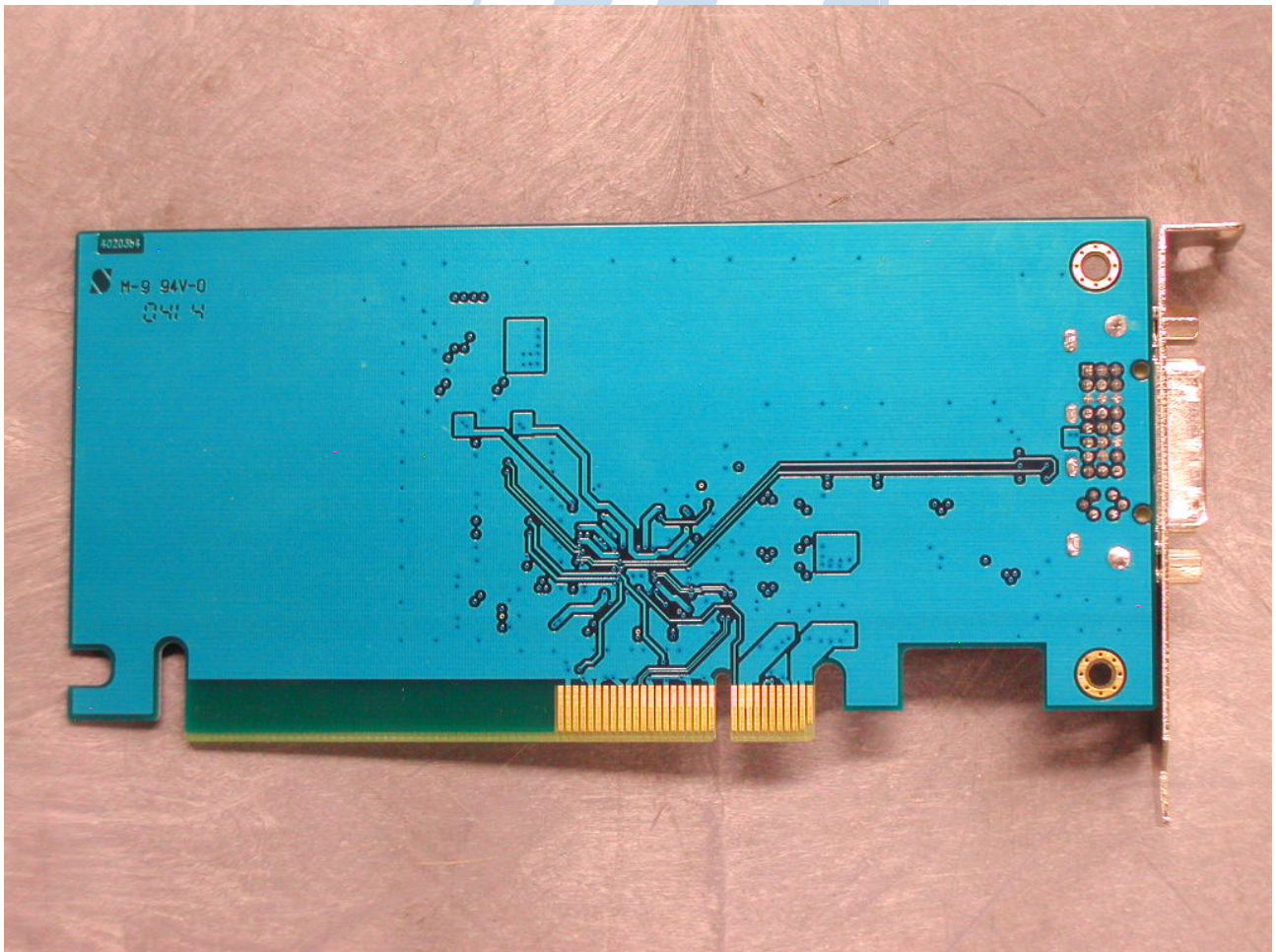
FIGURE 6: PLI Photograph Number 5397C2134SJ-06-2 illustrates the component side of the EUT Printed Circuit Assembly, Sil1364ADD2-N.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 28 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

FIGURE 7: PLI Photograph Number 5397C2134SJ-07-2 illustrates the circuit side of the EUT Printed Circuit Assembly, Sil1364ADD2-N.



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 29 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Clock Oscillators and Frequencies of Operation

Frequency	Component # / Location	Description of Use
3.0 GHz	Host CPU software indicates 2.99 GHz	On motherboard
14 MHz	Host crystal (No designator)	On motherboard
25 MHz	Host crystal (No designator)	On motherboard
Up to 1 MHz	PCE-Express Connector signal	2.5V I ² C bus from Grantsdale G chipset
400 kHz	3.3 V signal at Sil 1364 IC	EEPROM I ² C bus
100 kHz	Sil 1364 IC	Pass-through interface providing the required level shifting from the 2.5V to either 3.3V or 5.0V interface.

Notes:

1. A simplified description of the EUT function:
 - a. The PanelLink® integrated circuit residing on the printed circuit assembly receives a digital stream from the Intel Motherboard, converts this digital stream to DVI-compliant digital output, and directs this DVI output to a digital display.
 - b. The Sil 1364 supports a maximum resolution of UXGA 1600x1200.
 - c. The fully scalable DVI output bandwidth: 25 to 165 MHz.
2. Serial Digital Video Output (SDVO) input signal to EUT at PCI bus connection at Intel Motherboard.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 30 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Equipment Under Test Orientation and Configuration

Refer to PLI Photograph Number 5397C2134SJ-01

3.0 Radiated Electromagnetic Interference (EMI) - Test Configuration

- 3.1 PLI placed the Equipment Under Test (EUT) on an 80 centimeter high table located on a 12.70 millimeter (0.5 inch) thick, 1.83 meter (6.00 foot) diameter, remote controlled steel turntable positioned 3.00 meters away from a receiving antenna assembly. This steel gear driven turntable has a 2400 pound capacity. The grounded turntable top surface is flush with a grounded screen consisting of 6.35 millimeter (0.25 inch) squares forming a wire mesh. The automated 4.00 meter mast and antenna assembly connects to an RF amplifier attached to a spectrum analyzer with quasi-peak adapter.
- 3.2 The Equipment Under Test (EUT) was operated at its specified load condition for which it was designed. After 30 minutes of continuous operation the EUT reached normal operating temperature. PLI recorded EMI data in this report during the normal load and operating temperature of the EUT.
- 3.3 The EUT and system configuration follows:

3.3.1 Hardware connection:

- a. Insert the EUT Printed Circuit Assembly Sil1364ADD2-N into the host PC.
- b. Connect the DVI cable from the flat panel monitor to the host PC.
- c. Connect remaining peripherals, including printer, keyboard, and serial modem. Connect USB mouse to the keyboard.
- d. Connect all power cables.

3.3.2 Software sequence:

- a. Power on the host PC.
- b. Power on the flat panel monitor.
- c. Allow the system operating system to load.
- d. Click On the "Dmv.exe" icon.
- e. Click "OK".
- f. Select "Master test plan" (which causes screen to focus and unfocus constantly in a super high resolution).
- g. This program continuously stresses the EUT Video Printed Circuit Assembly Sil1364ADD2-N until manually halted.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 32 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

3.4 The following equipment list defines the system configuration:

EUT :Video Printed Circuit Assembly
Model Number :Sil1364ADD2-N
Serial Number :none
PLI Sample ID :5397C2134-01
FCC ID Number :SAX5397X (Pending)
Manufacturer :Silicon Image, Inc.

Product :Computer
Model Number :DHS
Serial Number :7G5FY41
PLI Sample ID :5397C2134-02
FCC ID Number :FCC DOC Authorized
Manufacturer :Dell Computer

Product :Monitor
Model Number :VLCD522720-1B
Serial Number :AOF024720518
PLI Sample ID :5397C2134-03
FCC ID Number :FCC DOC Authorized
Manufacturer :Viewsonic

Product Name :Keyboard
Model Number :SK8125
Serial Number :none
PLI Sample ID :5397C2134-04
FCC ID Number :FCC DOC Authorized
Manufacturer :Dell Computers

Product Name :USB Mouse
Model Number :M056U0-0D1161
Serial Number :413059264
PLI Sample ID :5397C2134-05
FCC ID Number :FCC DOC Authorized
Manufacturer :Dell Computer

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 33 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Product Name :Serial Modem
Part Number :56SPX-2/56SX-2
Serial Number :020052155
FCC ID Number :FCC DOC Authorized
Manufacturer :Best Data

Product Name :Printer
Model Number :DeskJet 630C
Serial Number :MX11S121VY
FCC ID Number :FCC DOC Authorized
Manufacturer :Hewlett Packard

Product Name :AC Adapter for Printer
Model Number :AA20930
Serial Number :0950-3490
FCC ID Number :none
Manufacturer :Hewlett Packard

- 3.5 The Equipment Under Test was evaluated per the American National Standards Institute standard number C63.4-2001 entitled Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. To maximize Electromagnetic Interference signal strength, PLI rotated the System Under Test 360 degrees and then adjusted the receiving antenna height until the maximum signal appeared on the spectrum analyzer. The input/output interface cables between units of the system were always positioned to yield maximum field strength.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 34 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

4.0 Radiated EMI – Results

- 4.1 The investigated frequency spectrum revealed radiated EMI signals. The highest interference in the horizontal polarization occurred when the front of the unit was facing 180 degrees clockwise with respect to the antenna. The highest interference in the vertical polarization occurred when the front of the unit was facing 180 degrees clockwise with respect to the antenna.
- 4.2 The "ACF" (Antenna Correction Factor) shown in the test data in this report includes compensation for the antenna factor; cable attenuation; the series RF attenuator; the RF amplifier; and pre-selector system losses. PLI shows the spectrum analyzer data as quasi-peak amplitudes.
- 4.3 The test facility is FCC registered; the procedures are CISPR registered, ICAN registered, VCCI registered, VDE approved, and RegTP approved.

Type of Test	Radiated Electromagnetic Interference
Specification	FCC, ICAN, and EN55022 Class B
Date Data Collected	07 to 11 Jun 2004
Detection Technique	Spectrum Analyzer with Quasi-peak Adapter
Resolution Bandwidth	100 kHz
Video Bandwidth	100 kHz
Antennas	30 to 200MHz High Field Biconical Antenna 200 to 1000MHz Log-Periodic Antenna 1 to 18GHz Double Ridge Guide Horn

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 35 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #1 – 120VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Horizontal							
35.45	44.30	-8.62	35.68	40.00	-4.32	40.46	-4.78
125.46	43.60	-9.55	34.05	43.50	-9.45	40.46	-6.41
129.00	48.80	-9.71	39.09	43.50	-4.41	40.46	-1.37 *
145.23	47.40	-9.66	37.74	43.50	-5.76	40.46	-2.72
181.40	45.70	-7.26	38.44	43.50	-5.06	40.46	-2.02
185.45	39.90	-8.14	31.76	43.50	-11.74	40.46	-8.70
358.85	47.30	-5.73	41.57	46.00	-4.43	47.46	-5.89
380.85	42.80	-4.32	38.48	46.00	-7.52	47.46	-8.98
431.42	42.60	-2.28	40.32	46.00	-5.68	47.46	-7.14
549.40	43.60	-1.01	42.59	46.00	-3.41	47.46	-4.87
551.55	41.20	-0.99	40.21	46.00	-5.79	47.46	-7.25
632.35	39.80	-0.64	39.16	46.00	-6.84	47.46	-8.30
636.13	42.50	-0.65	41.85	46.00	-4.15	47.46	-5.61
780.10	29.20	1.83	31.03	46.00	-14.97	47.46	-16.43
780.88	38.10	1.85	39.95	46.00	-6.05	47.46	-7.51
809.10	38.30	2.61	40.91	46.00	-5.09	47.46	-6.55
915.15	32.70	5.18	37.88	46.00	-8.12	47.46	-9.58
970.93	32.30	6.65	38.95	54.00	-15.05	47.46	-8.51

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 36 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #1 – 120VAC

Frequency MHz	EMI Data dBµV/M	ACF	Field Strength dBµV/M	FCC Limit dBµV/M	FCC Margin to Limit dBµV/M	EN Limit dBµV/M	EN Margin to Limit dBµV/M
30 - 1000 MHz							
Vertical							
51.60	41.80	-8.96	32.84	40.00	-7.16	40.46	-7.62
79.38	38.00	-9.64	28.36	40.00	-11.64	40.46	-12.10
82.65	43.40	-9.49	33.91	40.00	-6.09	40.46	-6.55
119.03	37.30	-7.94	29.36	43.50	-14.14	40.46	-11.10
135.20	29.70	-7.19	22.51	43.50	-20.99	40.46	-17.95
185.78	42.10	-4.30	37.80	43.50	-5.70	40.46	-2.66
425.33	40.00	0.65	40.65	46.00	-5.35	47.46	-6.81
430.55	38.80	0.76	39.56	46.00	-6.44	47.46	-7.90
465.82	40.30	1.49	41.79	46.00	-4.21	47.46	-5.67
467.95	36.40	1.53	37.93	46.00	-8.07	47.46	-9.53
493.57	40.50	2.06	42.56	46.00	-3.44	47.46	-4.90
568.23	36.00	3.46	39.46	46.00	-6.54	47.46	-8.00
585.85	37.50	3.79	41.29	46.00	-4.71	47.46	-6.17
809.00	33.50	8.15	41.65	46.00	-4.35	47.46	-5.81
970.93	30.40	11.40	41.80	54.00	-12.20	47.46	-5.66

120VAC Frequency MHz	EMI Data dBµV/M	ACF	Field Strength dBµV/M	FCC Limit dBµV/M	FCC Margin to Limit dBµV/M
----------------------------	-----------------------	-----	-----------------------------	------------------------	----------------------------------

1.0 - 18.0 GHz

Vertical

1.8	-54.00	26.74	51.37	54.40	-3.03
1.9	-52.00	27.02	53.66	54.40	-0.74 *
2.3	-56.00	28.32	50.98	54.40	-3.42

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 37 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #2 – 100VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Horizontal							
35.45	44.50	-8.62	35.88	40.00	-4.12	40.46	-4.58
125.46	43.60	-9.55	34.05	43.50	-9.45	40.46	-6.41
129.00	48.80	-9.71	39.09	43.50	-4.41	40.46	-1.37 *
145.23	47.40	-9.66	37.74	43.50	-5.76	40.46	-2.72
181.40	45.70	-7.26	38.44	43.50	-5.06	40.46	-2.02
185.45	40.60	-8.14	32.46	43.50	-11.04	40.46	-8.00
358.85	47.50	-5.73	41.77	46.00	-4.23	47.46	-5.69
431.42	33.40	-2.28	31.12	46.00	-14.88	47.46	-16.34
623.20	38.10	-0.63	37.47	46.00	-8.53	47.46	-9.99
780.10	31.40	1.83	33.23	46.00	-12.77	47.46	-14.23
780.88	39.00	1.85	40.85	46.00	-5.15	47.46	-6.61
809.10	38.30	2.61	40.91	46.00	-5.09	47.46	-6.55
915.15	32.70	5.18	37.88	46.00	-8.12	47.46	-9.58
970.93	32.30	6.65	38.95	54.00	-15.05	47.46	-8.51

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 38 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #2 – 100VAC

Frequency MHz	EMI Data dBμV/M	ACF	Field Strength dBμV/M	FCC Limit dBμV/M	FCC Margin to Limit dBμV/M	EN Limit dBμV/M	EN Margin to Limit dBμV/M
30 - 1000 MHz							
Vertical							
51.60	41.80	-8.96	32.84	40.00	-7.16	40.46	-7.62
79.38	38.00	-9.64	28.36	40.00	-11.64	40.46	-12.10
82.65	44.10	-9.49	34.61	40.00	-5.39	40.46	-5.85
119.03	37.30	-7.94	29.36	43.50	-14.14	40.46	-11.10
135.20	44.20	-7.19	37.01	43.50	-6.49	40.46	-3.45
185.78	43.30	-4.30	39.00	43.50	-4.50	40.46	-1.46 *
425.33	40.00	0.65	40.65	46.00	-5.35	47.46	-6.81
430.55	38.80	0.76	39.56	46.00	-6.44	47.46	-7.90
465.82	40.30	1.49	41.79	46.00	-4.21	47.46	-5.67
467.95	36.40	1.53	37.93	46.00	-8.07	47.46	-9.53
493.57	40.50	2.06	42.56	46.00	-3.44	47.46	-4.90
585.85	37.50	3.79	41.29	46.00	-4.71	47.46	-6.17
809.05	32.70	8.15	40.85	46.00	-5.15	47.46	-6.61
970.93	33.00	11.40	44.40	54.00	-9.60	47.46	-3.06

100VAC Frequency MHz	EMI Data dBμV/M	ACF	Field Strength dBμV/M	FCC Limit dBμV/M	FCC Margin to Limit dBμV/M
----------------------------	-----------------------	-----	-----------------------------	------------------------	----------------------------------

1.0 - 18.0 GHz

Vertical

1.8	-52	26.74	53.37	54.40	-1.03 *
1.9	-56	27.02	49.66	54.40	-4.74
2.3	-58	28.32	48.98	54.40	-5.42

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 39 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #3 – 200VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Horizontal							
35.45	45.40	-8.62	36.78	40.00	-3.22	40.46	-3.68
125.46	43.60	-9.55	34.05	43.50	-9.45	40.46	-6.41
129.00	48.80	-9.71	39.09	43.50	-4.41	40.46	-1.37 *
145.23	47.60	-9.66	37.94	43.50	-5.56	40.46	-2.52
181.40	47.80	-7.26	40.54	43.50	-2.96	40.46	0.08 *
185.45	48.40	-8.14	40.26	43.50	-3.24	40.46	-0.20 *
358.85	47.30	-5.73	41.57	46.00	-4.43	47.46	-5.89
431.42	43.30	-2.28	41.02	46.00	-4.98	47.46	-6.44
623.20	37.30	-0.63	36.67	46.00	-9.33	47.46	-10.79
780.10	31.40	1.83	33.23	46.00	-12.77	47.46	-14.23
780.88	39.00	1.85	40.85	46.00	-5.15	47.46	-6.61
809.10	38.30	2.61	40.91	46.00	-5.09	47.46	-6.55
915.15	32.70	5.18	37.88	46.00	-8.12	47.46	-9.58
970.93	32.30	6.65	38.95	54.00	-15.05	47.46	-8.51

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DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 40 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #3 – 200VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Vertical							
51.60	41.80	-8.96	32.84	40.00	-7.16	40.46	-7.62
79.38	38.00	-9.64	28.36	40.00	-11.64	40.46	-12.10
82.65	46.20	-9.49	36.71	40.00	-3.29	40.46	-3.75
119.03	37.30	-7.94	29.36	43.50	-14.14	40.46	-11.10
135.20	44.20	-7.19	37.01	43.50	-6.49	40.46	-3.45
185.78	42.30	-4.30	38.00	43.50	-5.50	40.46	-2.46
425.33	40.00	0.65	40.65	46.00	-5.35	47.46	-6.81
430.55	38.80	0.76	39.56	46.00	-6.44	47.46	-7.90
465.82	40.30	1.49	41.79	46.00	-4.21	47.46	-5.67
467.95	36.40	1.53	37.93	46.00	-8.07	47.46	-9.53
493.57	40.50	2.06	42.56	46.00	-3.44	47.46	-4.90
585.85	37.50	3.79	41.29	46.00	-4.71	47.46	-6.17
809.05	32.70	8.15	40.85	46.00	-5.15	47.46	-6.61
970.93	33.00	11.40	44.40	54.00	-9.60	47.46	-3.06

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 41 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #4 – 230VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Horizontal							
35.45	45.40	-8.62	36.78	40.00	-3.22	40.46	-3.68
125.46	43.60	-9.55	34.05	43.50	-9.45	40.46	-6.41
129.00	48.80	-9.71	39.09	43.50	-4.41	40.46	-1.37 *
145.23	47.60	-9.66	37.94	43.50	-5.56	40.46	-2.52
181.40	42.30	-7.26	35.04	43.50	-8.46	40.46	-5.42
185.45	36.10	-8.14	27.96	43.50	-15.54	40.46	-12.50
358.85	47.30	-5.73	41.57	46.00	-4.43	47.46	-5.89
431.42	44.10	-2.28	41.82	46.00	-4.18	47.46	-5.64
623.20	38.00	-0.63	37.37	46.00	-8.63	47.46	-10.09
780.10	32.20	1.83	34.03	46.00	-11.97	47.46	-13.43
780.88	40.70	1.85	42.55	46.00	-3.45	47.46	-4.91
809.10	38.40	2.61	41.01	46.00	-4.99	47.46	-6.45
915.15	32.70	5.18	37.88	46.00	-8.12	47.46	-9.58
970.93	32.30	6.65	38.95	54.00	-15.05	47.46	-8.51

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 42 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #4 – 230VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Vertical							
51.60	41.80	-8.96	32.84	40.00	-7.16	40.46	-7.62
79.38	38.00	-9.64	28.36	40.00	-11.64	40.46	-12.10
82.65	46.20	-9.49	36.71	40.00	-3.29	40.46	-3.75
119.03	32.60	-7.94	24.66	43.50	-18.84	40.46	-15.80
135.20	44.20	-7.19	37.01	43.50	-6.49	40.46	-3.45
185.78	42.30	-4.30	38.00	43.50	-5.50	40.46	-2.46
425.33	40.00	0.65	40.65	46.00	-5.35	47.46	-6.81
430.55	38.80	0.76	39.56	46.00	-6.44	47.46	-7.90
465.82	40.30	1.49	41.79	46.00	-4.21	47.46	-5.67
467.95	36.40	1.53	37.93	46.00	-8.07	47.46	-9.53
493.57	40.50	2.06	42.56	46.00	-3.44	47.46	-4.90
585.85	37.50	3.79	41.29	46.00	-4.71	47.46	-6.17
809.05	32.70	8.15	40.85	46.00	-5.15	47.46	-6.61
970.93	33.00	11.40	44.40	54.00	-9.60	47.46	-3.06

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 43 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #5 – 240VAC

Frequency MHz	EMI Data dB μ V/M	ACF	Field Strength dB μ V/M	FCC Limit dB μ V/M	FCC Margin to Limit dB μ V/M	EN Limit dB μ V/M	EN Margin to Limit dB μ V/M
30 - 1000 MHz							
Horizontal							
35.45	44.50	-8.62	35.88	40.00	-4.12	40.46	-4.58
125.46	43.60	-9.55	34.05	43.50	-9.45	40.46	-6.41
129.00	48.80	-9.71	39.09	43.50	-4.41	40.46	-1.37 *
145.23	47.40	-9.66	37.74	43.50	-5.76	40.46	-2.72
181.40	45.70	-7.26	38.44	43.50	-5.06	40.46	-2.02
185.45	40.60	-8.14	32.46	43.50	-11.04	40.46	-8.00
358.85	47.30	-5.73	41.57	46.00	-4.43	47.46	-5.89
431.42	44.10	-2.28	41.82	46.00	-4.18	47.46	-5.64
623.20	33.60	-0.63	32.97	46.00	-13.03	47.46	-14.49
780.10	30.20	1.83	32.03	46.00	-13.97	47.46	-15.43
780.88	38.20	1.85	40.05	46.00	-5.95	47.46	-7.41
809.10	38.30	2.61	40.91	46.00	-5.09	47.46	-6.55
915.15	32.70	5.18	37.88	46.00	-8.12	47.46	-9.58
970.93	32.30	6.65	38.95	54.00	-15.05	47.46	-8.51

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 44 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #5 – 240VAC

Frequency MHz	EMI Data dBµV/M	ACF	Field Strength dBµV/M	FCC Limit dBµV/M	FCC Margin to Limit dBµV/M	EN Limit dBµV/M	EN Margin to Limit dBµV/M
30 - 1000 MHz							
Vertical							
51.60	41.80	-8.96	32.84	40.00	-7.16	40.46	-7.62
79.38	38.00	-9.64	28.36	40.00	-11.64	40.46	-12.10
82.65	46.20	-9.49	36.71	40.00	-3.29	40.46	-3.75
119.03	37.30	-7.94	29.36	43.50	-14.14	40.46	-11.10
135.20	44.20	-7.19	37.01	43.50	-6.49	40.46	-3.45
185.78	42.30	-4.30	38.00	43.50	-5.50	40.46	-2.46
425.33	40.00	0.65	40.65	46.00	-5.35	47.46	-6.81
430.55	38.80	0.76	39.56	46.00	-6.44	47.46	-7.90
465.82	40.30	1.49	41.79	46.00	-4.21	47.46	-5.67
467.95	36.40	1.53	37.93	46.00	-8.07	47.46	-9.53
493.57	40.50	2.06	42.56	46.00	-3.44	47.46	-4.90
585.85	37.50	3.79	41.29	46.00	-4.71	47.46	-6.17
809.00	33.50	8.15	41.65	46.00	-4.35	47.46	-5.81
970.93	31.70	11.40	43.10	54.00	-10.90	47.46	-4.36

240VAC Frequency MHz	EMI Data dBµV/M	ACF	Field Strength dBµV/M	FCC Limit dBµV/M	FCC Margin to Limit dBµV/M
----------------------------	-----------------------	-----	-----------------------------	------------------------	----------------------------------

1.0 - 18.0 GHz

Vertical

1.8	-60	26.74	45.37	54.40	-9.03
1.9	-56	27.02	49.66	54.40	-4.74

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 45 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Calculations and Notes Concerning Data Presentation

- 4.3.1 "ACF" means the Antenna Correction Factor for either Horizontal or Vertical antenna orientation.
- 4.3.2 "H" designates the Horizontal antenna orientation.
- 4.3.3 "V" designates the Vertical antenna orientation.
- 4.3.4 "*" means the data shown in the "Margin to Limit" column exceeds the data in the "EN Limit" column, or exceeds the data in the "FCC Limit" column. "*" could also mean that the Margin to the Limit is greater than $-2.00 \text{ dB } \mu\text{V per meter}$.
- 4.3.5 "A" designates an ambient signal.
- 4.3.6 "(-.-)" means the signal level is lower than the adjacent data or within the background ambients.
- 4.3.7 "EMI DATA" plus "ACF" equals "Field Strength".
- 4.3.8 "Field Strength" minus "EN Limit" and/or minus "FCC Limit" equals "Margin to Limit".
- 4.3.9 "Margin to Limit" negative numbers show Equipment Under Test "Field Strength" below the "EN Limit" and/or below the "FCC Limit". "Margin to Limit" positive numbers show Equipment Under Test "Field Strength" above the "EN Limit" and/or above the "FCC Limit".
- 4.4 The field strengths in this section were measured at 3.0 meters. None of the Electromagnetic Interference quasi-peaks are in excess of the ICAN (Industry Canada), FCC (Federal Communications Commission), and EC (European Community) Class B maximums, even when the field strength readings in the above table are reduced by $20 \text{ dB } \mu\text{V}$ (to represent 30 meter test site measurements, since an antenna positioned at 30.0 meters receives one tenth of the field strength recorded at 3.0 meters).
- 4.5 **Conclusion** - The radiated Electromagnetic Interference of the Equipment Under Test meets the requirements for Industry Canada (ICAN), Federal Communications Commission (FCC), and the European Community (EC) Class B devices.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 46 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

5.0 Conducted EMI - Test Configuration

- 5.1 Current input power leads of the Equipment Under Test were connected to a Line Impedance Stabilization Network (LISN), which isolate and couple the conducted interference from the power lines to a spectrum analyzer. The LISN and the Equipment Under Test were connected and positioned according to the Industry Canada and the Federal Communications Commission test recommendations. The Equipment Under Test was configured exactly as outlined in the Radiated Electromagnetic Interference Section of this report. The spectrum analyzer data is shown in the following table as quasi-peak amplitudes.
- 5.2 To increase data integrity and also meet the recommendations of the American National Standards Institute standard number C63.4-2001, all electrical devices comprising the system being tested with the Equipment Under Test were connected to the VAC mains using a second Line Impedance Stabilization Network.

6.0 Conducted EMI – Results

- 6.1 Investigation of the EUT revealed conducted interference levels as shown in the table below.

Type of Test	Conducted Electromagnetic Interference
Specification	FCC, ICAN, and EN55022 Class B
Date Data Collected	05 to 11 June; 09 Aug 2004
Detection Technique	Spectrum Analyzer with Quasi-peak Adapter
Frequency Range	0.150 to 30.0 MHz
Resolution Bandwidth	10 kHz
Video Bandwidth	10 kHz
Line Impedance Stabilization Network	50 micro Henry; 50 ohm

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 47 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #1 – 120VAC

Frequency MHz	Line Data dB μ V	Neutral Data dB μ V	FCC / EN Limit dB μ V	FCC / EN Margin to Limit (Line) dB μ V	FCC / EN Margin to Limit (Neutral) dB μ V
0.22	42.30	--	67.71	-25.41	--
0.28	49.40	--	69.19	-19.79	--
0.69	32.00	--	56.00	-24.00	--
0.74	46.40	--	56.00	-9.60	--
0.81	45.30	--	56.00	-10.70	--
1.50	11.40	--	56.00	-44.60	--
1.59	37.90	--	56.00	-18.10	--
4.05	10.70	--	56.00	-45.30	--
6.88	10.70	--	60.00	-49.30	--
12.08	13.20	--	60.00	-46.80	--
17.75	11.10	--	60.00	-48.90	--
18.10	10.60	--	60.00	-49.40	--
0.51	--	40.10	56.00	--	-15.90
0.64	--	40.40	56.00	--	-15.60
0.69	--	44.40	56.00	--	-11.60
0.80	--	47.50	56.00	--	-8.50
1.17	--	43.60	56.00	--	-12.40
1.38	--	23.80	56.00	--	-32.20
1.61	--	28.10	56.00	--	-27.90
1.93	--	33.20	56.00	--	-22.80
4.03	--	19.90	56.00	--	-36.10
12.10	--	20.20	60.00	--	-39.80

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 48 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #2 – 100VAC

Frequency MHz	Line Data dB μ V	Neutral Data dB μ V	FCC / EN Limit dB μ V	FCC / EN Margin to Limit (Line) dB μ V	FCC / EN Margin to Limit (Neutral) dB μ V
0.58	34.80	-.-	56.00	-21.20	-.-
0.62	40.40	-.-	56.00	-15.60	-.-
0.75	34.30	-.-	56.00	-21.70	-.-
0.81	30.80	-.-	56.00	-25.20	-.-
0.96	40.10	-.-	56.00	-15.90	-.-
1.13	33.20	-.-	56.00	-22.80	-.-
1.60	23.70	-.-	56.00	-32.30	-.-
8.08	34.80	-.-	60.00	-25.20	-.-
12.12	28.60	-.-	60.00	-31.40	-.-
19.11	32.90	-.-	60.00	-27.10	-.-
0.16	-.-	42.50	66.17	-.-	-23.67
0.17	-.-	44.10	66.59	-.-	-22.49
0.45	-.-	35.60	57.72	-.-	-22.12
1.37	-.-	45.40	56.00	-.-	-10.60
1.52	-.-	27.90	56.00	-.-	-28.10
9.54	-.-	24.50	60.00	-.-	-35.50
28.22	-.-	42.90	60.00	-.-	-17.10

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 49 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #3 – 200VAC

Frequency MHz	Line Data dB μ V	Neutral Data dB μ V	FCC / EN Limit dB μ V	FCC / EN Margin to Limit (Line) dB μ V	FCC / EN Margin to Limit (Neutral) dB μ V
0.16	30.10	--	66.12	-36.02	--
0.17	28.10	--	66.53	-38.43	--
0.26	18.60	--	68.71	-50.11	--
0.58	34.80	--	56.00	-21.20	--
0.62	40.40	--	56.00	-15.60	--
0.75	34.30	--	56.00	-21.70	--
0.81	30.80	--	56.00	-25.20	--
0.96	40.10	--	56.00	-15.90	--
1.13	33.20	--	56.00	-22.80	--
1.60	23.70	--	56.00	-32.30	--
8.08	34.80	--	60.00	-25.20	--
12.12	28.60	--	60.00	-31.40	--
19.11	32.90	--	60.00	-27.10	--
0.16	--	29.90	66.16	--	-36.26
0.18	--	27.70	66.59	--	-38.89
0.46	--	15.50	57.39	--	-44.89
1.37	--	14.80	56.00	--	-41.20
1.52	--	14.80	56.00	--	-41.20
9.54	--	14.60	60.00	--	-45.40
28.22	--	14.60	60.00	--	-45.40

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 50 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Test Configuration #5 – 240VAC

Frequency MHz	Line Data dB μ V	Neutral Data dB μ V	FCC / EN Limit dB μ V	FCC / EN Margin to Limit (Line) dB μ V	FCC / EN Margin to Limit (Neutral) dB μ V
0.43	46.70	-.-	58.37	-8.67	-.-
0.58	34.80	-.-	56.00	-21.20	-.-
0.62	40.40	-.-	56.00	-15.60	-.-
0.75	34.30	-.-	56.00	-21.70	-.-
0.81	30.80	-.-	56.00	-25.20	-.-
1.13	33.20	-.-	56.00	-22.80	-.-
1.60	23.70	-.-	56.00	-32.30	-.-
8.08	34.80	-.-	60.00	-25.20	-.-
19.11	32.90	-.-	60.00	-27.10	-.-
0.16	-.-	30.00	65.77	-.-	-35.77
0.18	-.-	27.70	65.29	-.-	-37.59
0.46	-.-	15.50	57.39	-.-	-41.89
1.37	-.-	15.20	56.00	-.-	-40.80
1.52	-.-	14.70	56.00	-.-	-41.30
9.54	-.-	14.80	60.00	-.-	-45.20
28.22	-.-	14.90	60.00	-.-	-45.10

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 51 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

6.2 Calculations and Notes Concerning Data Presentation

- 6.2.1 "*" means the "Margin to Limit" Exceeds the "FCC Limit" and/or Exceeds the "EN Limit" or is within a -2 dB μ V margin.
- 6.2.2 "(-.-)" means the signal level is lower than the adjacent data or within the background ambients.
- 6.2.3 "Line Data" minus "FCC Limit" and/or minus "EN Limit" equals "Margin to Limit" for the Line side of the input power cord.
- 6.2.4 "Neutral Data" minus "FCC Limit" and/or minus "EN Limit" equals "Margin to Limit" for the Neutral side of the input power cord.
- 6.2.5 "Margin to Limit" negative numbers show Equipment Under Test "Field Strength" **below** the "FCC Limit" and/or **below** the "EN Limit". "Margin to Limit" positive numbers show Equipment Under Test "Field Strength" **above** the "FCC Limit" and/or **above** the "EN Limit".
- 6.2.6 "A" means an Ambient signal.
- 6.2.7 The symbol " Σ " adjacent to a line of conducted Electromagnetic Interference data means that the "Field Strength" was recorded directly as a quasi-peak measurement, and then reduced by 13 dB μ V. The data obtained in quasi-peak mode was 6 dB μ V or higher than the level of the same emission measured with the spectrum analyzer detector function set to the average mode. The emission was considered broadband, since the quasi-peak mode bandwidth setting was identical to the average mode bandwidth setting. 100 samples were recorded represented by the following equation:

$$\left(\frac{1}{n}\right)\sum_{i=1}^n X_i$$

- 6.3 **Conclusion** - The conducted Electromagnetic Interference of the Equipment Under Test meets the requirements for Industry Canada (ICAN), Federal Communications Commission (FCC), and the European Community (EC) Class B devices.
- 6.4 Graphs of PEAK conducted Electromagnetic Interference for frequency ranges on Line and Neutral are shown on the following pages.
- 6.5 The recorded conducted data utilized a quasi-peak measurement procedure. Hence, any differences between the graphs and the data are

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 52 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

merely the differences between peak and quasi-peak measurements.

6.6 There are 33 AM and 56 FM radio stations in the immediate San Jose, California, area which create large ambient signals. Typical radio stations are:

- 0.810 MHz KGO
- 1.170 MHz KLOK
- 1.370 MHz KEEN
- 1.500 MHz KHTT
- 1.590 MHz KLIV

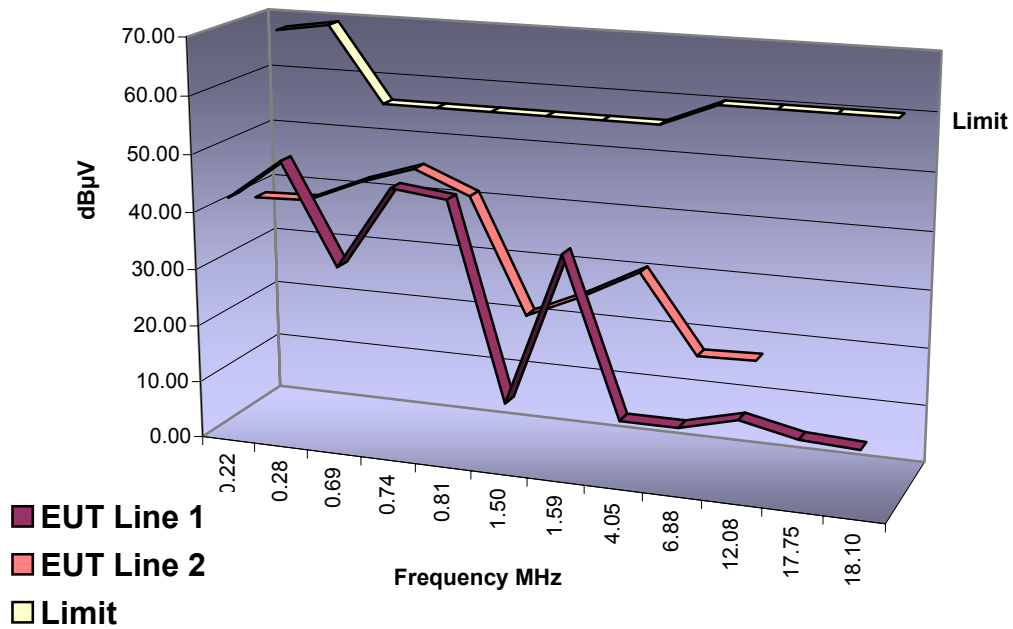
6.7 The conducted Electromagnetic Interference graphs in this report show some of the large ambient signals for several of these radio stations.

6.8 The final Electromagnetic Interference conducted test and measurement equipment configuration was evaluated to assure that Data Compression or Intermodulation Distortion did not occur due to these large ambient signals.

TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 53 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

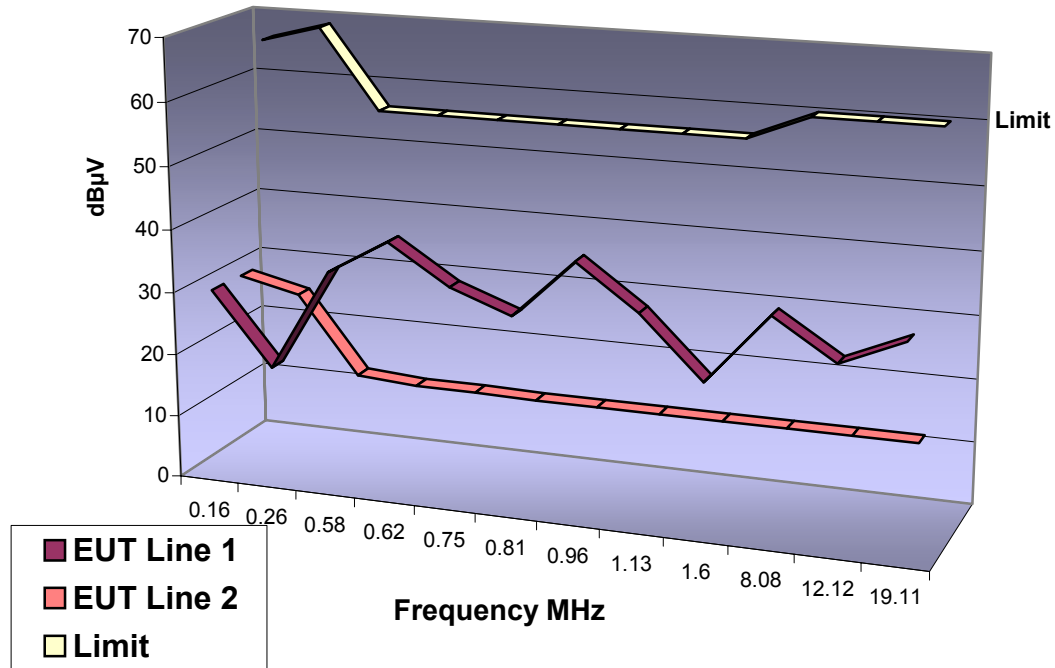
Conducted EMI Data Graph Configuration #1, (EN/FCC)



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 54 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

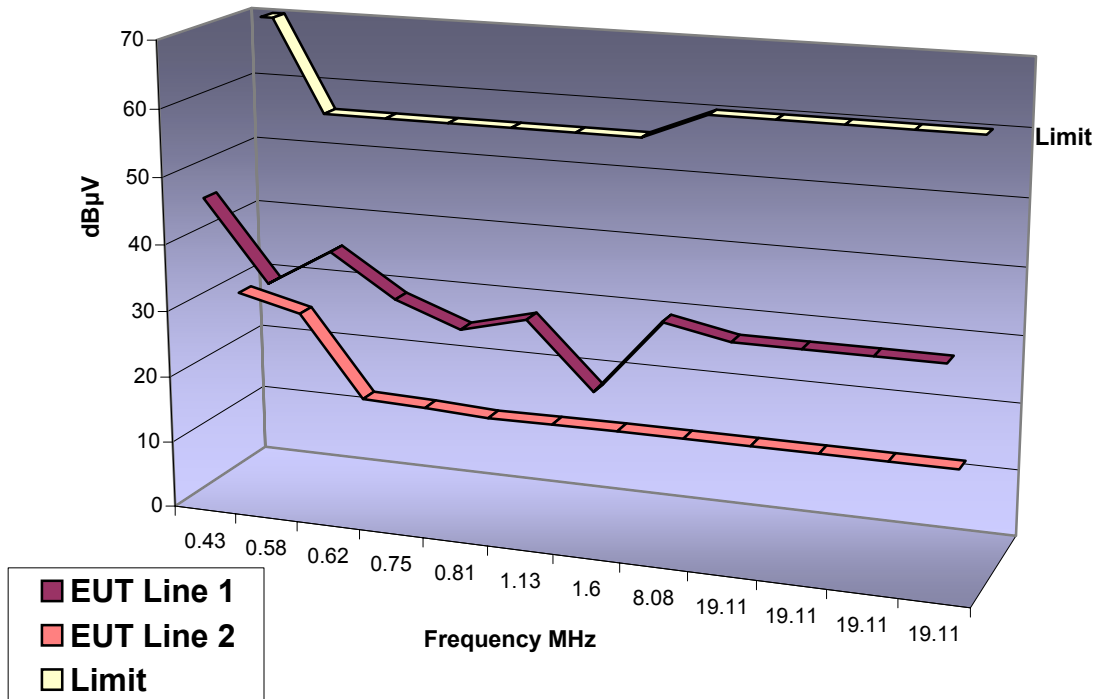
Conducted EMI Data Graph Configuration #3, (EN/FCC)



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 55 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Conducted EMI Data Graph Configuration #5, (EN/FCC)



TITLE: PLI Evaluation Report (RFI) **FCC ID: SAX5397X**
DRAWING: Q539704W.02.DWG.doc Issued: 22 Jun 2004
BY: Laura Bramschreiber and Clyde Pineda

Page 56 of 56
Re-Issued: 11 Aug 2004
Approved: Lee Pulver

Signature Page - Last Page of Report

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