



Frye Electronics

Hearlab

Report #: FRYE0029



Report Prepared By Northwest EMC Inc.

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Issue Date: Thursday, December 18, 2008



Frye Electronics
Hearlab

NVLAP LAB CODE 200630-0

Emissions

Test Description	Specification	Test Method	Pass / Fail
Radiated Emissions	EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)	Pass
Radiated Emissions	IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)	Pass
Conducted Emissions	EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)	Pass
Conducted Emissions	IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)	Pass
Flicker	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-3-3:2005	Pass
Flicker	IEC 60601-1-2:2007	IEC 61000-3-3:2005	Pass
Harmonics	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-3-2:2005	Pass
Harmonics	IEC 60601-2 :2007	IEC 61000-3-2:2005	Pass

Immunity

Test Description	Specification	Test Method	Performance Criterion
ESD	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-2:2001	4
ESD	IEC 60601-1-2:2007	IEC 61000-4-2:2001	4
Radiated Immunity	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-3:2006 (Amended by A1:2007)	2
Radiated Immunity	IEC 60601-1-2:2007	IEC 61000-4-3:2006 (Amended by A1:2007)	2
EFT	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-4:2004	3
EFT	IEC 60601-1-2:2007	IEC 61000-4-4:2004	3
Surge	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-5:2005	2
Surge	IEC 60601-1-2:2007	IEC 61000-4-5:2005	2
Conducted Immunity	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-6:2006	2
Conducted Immunity	IEC 60601-1-2:2007	IEC 61000-4-6:2006	2
Magnetic Field Immunity	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-8:2001	2
Magnetic Field Immunity	IEC 60601-1-2:2007	IEC 61000-4-8:2001	2
Voltage Dips and Interrupts	EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-11:2004	3
Voltage Dips and Interrupts	IEC 60601-1-2:2007	IEC 61000-4-11:2004	3

For an explanation of performance criteria, see details on data sheets, and the detailed performance section of the test report.

Deviations From Test Standards

None

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Approved By:



Dave Tolman, Software/QA Manager

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.



General

Test Scope

These tests were selected to satisfy the EMC requirements requested by the client.

Client Responsibility

Product compliance is the responsibility of the client. The client, prior to testing, specified all the modes, settings, and configurations. Furthermore the client requested the specifications to be applied during the test.

Proper labeling of the product and its packaging is the responsibility of the client. Additional information may be needed in the User Manual. In some cases, a Declaration of Conformity is required. Information to be supplied with the product is an essential part of regulatory compliance.

The client is also responsible for the continuing compliance of the product. Variations in the product due to mass production, alternate parts, or changes to the design must be evaluated by the client. In some cases, this may require a partial or complete retest. At a minimum, any changes to the product must be documented with some discussion or review of product compliance.

Measurement Uncertainty

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.



Revision History

Revision Number	Description	Date	Page Number
0	Initial Report	12/18/2008	n/a

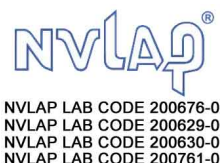
FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.



NVLAP

Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.



CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



NEMKO

Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).



BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.



GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification.



KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)





Explanation of Northwest EMC Performance Criteria

Understanding Performance Criteria and Conformity Decisions

It is the responsibility of the test laboratory to observe the results of the tests that are performed and to accurately report those results. As the responsible party (manufacturer, importer, etc) it is your responsibility to take those results, compare them against the specifications and standards, then, if appropriate make a declaration of conformity. As the responsible party it makes sense that you are fully aware of the requirements, how your device performs when tested to those requirements, and what information is being used to declare conformity.

To better assist you in making those conformity decisions, Northwest EMC has adopted a very simple, yet very clear performance assessment procedure. The following criteria is used when performing immunity or susceptibility tests:

Performance Criteria 1:

The EUT exhibited no change in performance when operating as specified by the manufacturer. In this case no changes were observed during the test.

In most cases this would be equivalent to Performance Criteria A. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, no changes were observed. Basically nothing happened.

Performance Criteria 2:

The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment recovered without any operator intervention, once the test signal was removed. The data sheets will detail the exact phenomena observed.

In most cases this would be equivalent to Performance Criteria B. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT was able to recover from those changes without any operator intervention, once the test signal was removed.

Performance Criteria 3:

The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment required some operator intervention in order to recover. This intervention may be in the form of changing EUT settings, or even resetting the system. The data sheets will detail the exact phenomena observed.

In most cases this would be equivalent to Performance Criteria C. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. The EUT required some sort of operator intervention to recover. There was no permanent damage and the EUT appeared to function normally after completion of test.

Performance Criteria 4:

The EUT exhibited a change in performance when operating as specified by the manufacturer. In this case the equipment was damaged and would not recover. The data sheets will detail the exact phenomena observed.

In most cases there is no specific criterion to compare this to; it typically ends the test. When operating the equipment in the modes or configurations specified by the responsible party, monitoring the parameters specified, changes were observed. There was no recovery; the equipment would no longer function as intended.

Conducted Immunity

Using the mode of operation and configuration noted within this report, a Conducted RF Immunity test was performed. The source of disturbance covered by the standard is basically an electromagnetic field, coming from intended RF transmitters, that may act on the whole length of cables connected to an installed equipment. The dimensions of the disturbed equipment, mostly a sub-part of a larger system, are assumed to be small compared with the wavelengths involved. The ingoing and outgoing leads: e.g. mains, communication lines, and interface cables, behave as passive receiving antenna networks because they can be several wavelengths long. The use of coupling and decoupling devices to apply the disturbing signal to one cable at a time, while keeping all other cables non-excited, can only approximate the real situation where disturbing sources act on all cables simultaneously, with a range of different amplitudes and phases. Coupling and decoupling devices are defined by their characteristics. Any coupling and decoupling device fulfilling these characteristics can be used.

Radiated Immunity

Using the mode of operation and configuration noted within this report, a Radiated RF Immunity test was performed according to EN61000-4-3. The EUT was tested with the transmit antenna placed approximately (3) meters from the surfaces of the EUT. The field was first established with no EUT present then maintained at the specified level. If an error is detected, the field strength may have been reduced to a level in which the error disappeared. This would be determined as the threshold of susceptibility. The test was conducted using horizontal and vertical antenna orientations.

EFT

Using the mode of operation and configuration noted within this report, an EFT/Burst Immunity test was performed. The test is intended to demonstrate the immunity of electrical and electronic equipment when subjected to types of transient disturbances such as those originating from switching transients (interruption of inductive loads, relay contact bounce, etc.). The repetitive fast transient test is a test with bursts consisting of a number of fast transients, coupled into power supply, control and signal ports of electrical and electronic equipment. Significant for the test is short rise time, the repetition rate and the low energy of the transients.

ESD

Using the mode of operation and configuration noted within this report, an ESD Immunity test was performed. The EUT was tested using air and contact discharges. The specified number of air discharges was applied to each of the non-conductive surfaces of the EUT as listed in the data sheet. The specified number of contact discharges was applied to each of the conductive surfaces, seams, and control surfaces of the EUT as listed in the data sheet. If a response is detected after discharge, the type of response, discharge level and location are noted. Testing was conducted with the EUT fully cabled. Discharges were made to the connector shells, not to the individual conductors.

Voltage Dips and Interruptions

Using the mode of operation and configuration noted within this report, a Voltage interruption and dip Immunity test was performed. The standard applies to electrical and electronic equipment having a rated input current not exceeding 16 A per phase. It does not apply to electrical and electronic equipment for connection to D.C. networks or 400 Hz A.C. networks. Electrical and electronic equipment may be affected by voltage dips, short interruptions or voltage variations of power supply. Voltage dips and short interruptions are caused by faults in the network, in installations or by a sudden large change of load. In certain cases, two or more consecutive dips or interruptions may occur. The continuously varying loads connected to the network cause voltage variations.

Surge

Using the mode of operation and configuration noted within this report, a Surge Immunity test was performed. The task of the defined laboratory test is to find the reaction of the EUT under specified operational conditions caused by surge voltages from switching and lightning effects at certain threat levels. The major mechanisms by which lightning produces surge voltages are the following: a) A direct lightning stroke to an external circuit (outdoor) injecting high currents producing voltages by either flowing through earth resistance or flowing through the impedance of the external circuit; b) An indirect lightning stroke (i.e. a stroke between or within clouds or to nearby objects which produces electromagnetic fields) that induces voltages/currents on the conductors outside and/or inside a building; Lightning earth current flow resulting from nearby direct-to-earth discharges coupling into the common earth paths of the earthing system of the installation.

Magnetic Field Immunity

Using the mode of operation and configuration noted within this report, a Power Frequency Magnetic Field Immunity test was performed. The tests are intended to demonstrate the immunity of equipment when subjected to power frequency magnetic fields related to the specific location and installation condition of the equipment (e.g. proximity of equipment to the disturbance source). The power frequency magnetic field is generated by power frequency current in conductors or, rarely, from other devices (e.g. leakage or transformers) in the proximity of equipment.



Northwest EMC Locations



Oregon

Labs EV01- EV12
22975 NW Evergreen Pkwy
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California

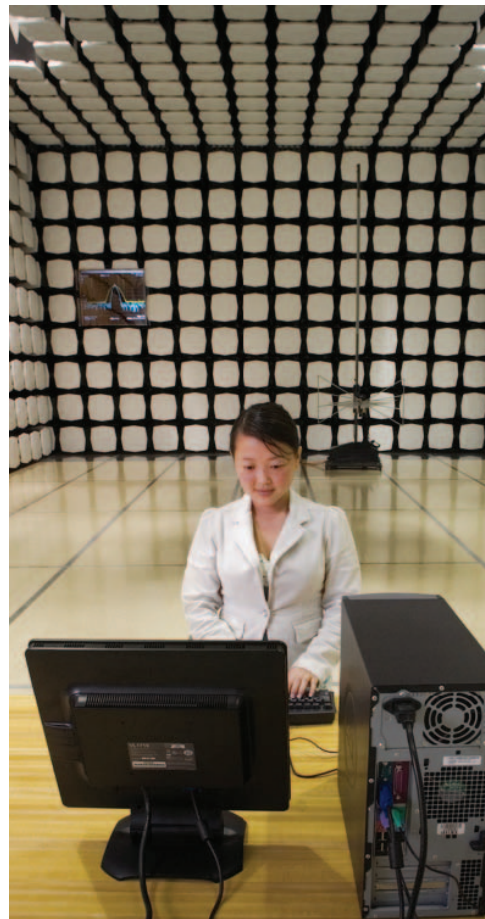
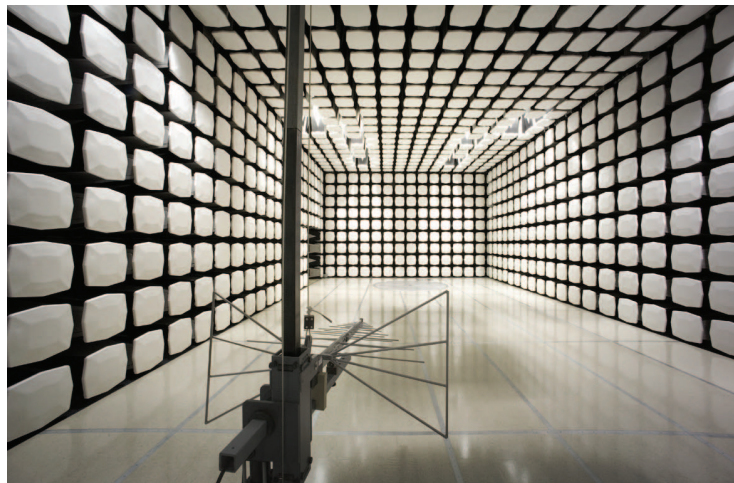
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(315) 685-0796



Client and Equipment Under Test (EUT) Information

Company Name:	Frye Electronics
Address:	P.O. Box 23391
City, State, Zip:	Tigard, OR 97281-3391
Test Requested By:	Jay Whitworth
Model:	Hearlab
First Date of Test:	Thursday, September 04, 2008
Last Date of Test:	Wednesday, December 10, 2008
Receipt Date of Samples:	Thursday, September 04, 2008
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Functional Description of the Equipment Under Test (EUT)

Cortical Evoked Potential Analyzer

EUT Photo(s)



Configuration 1 - FRYE0029

EUT			
Description	Model/Part Number	Serial Number	Manufacturer
Stimulus Controller	HEARLAB	010807007	Frye Laboratories
Electrode Processor	H1000	010807006	Frye Laboratories

Peripherals in Test Setup Boundary			
Description	Model/Part Number	Serial Number	Manufacturer
PC	DCNE	D3104G1	Dell
LCD monitor	H1781	95174CA001188	Envision
Keyboard	L100	CNORH659735718360KC4	Dell
Mouse	None	None	Dell
Speech Mic	CVL-1064	None	Cyber Acoustics
CD Player	MPD8861	None	MEMOREX
Insert Earphone right	3A	29074	Eartone
Insert Earphone left	3A	29075	Eartone
Headphone left	TDH39P	91610	Telephonics
Headphone right	TDH39P	91620	Telephonics
Distractor Headphones	CV-H42	None	Coby
Control Mic	Refmic	None	Frye Electronics
Bone Vibrator	B71	40366	Radioear
Speaker X2	34-2261-00	None	Frye Electronics
#1 Electrode	61-2192-00	0008	Frye Electronics
Reference Electrode	61-3192-00	0018	Frye Electronics
Ground Electrode	61-1192-00	0018	Frye Electronics
Patient Simulator	None	None	Frye Laboratories

Cables					
Cable Type	Shield	Ferrite	Length (m)	Connection 1	Connection 2
Control Mic.	Yes	No	3.76m	Stimulus Controller	Control mic.
Speech Mic.	No	No	2.44m	Stimulus Controller	Speech Mic
Distracter Headphones	No	No	1.0m	Stimulus Controller	Distracter Headphones
Headphone	No	No	1.83m	Stimulus Controller	Headphones
Insert Earphones	No	No	2.14m	Stimulus Controller	Insert Earphones
#1 Electrode	Yes	No	1.42m	Electrode Processor	Patient Simulator
Ground Electrode	Yes	No	1.42m	Electrode Processor	Patient Simulator
Bone Vibrator	No	No	1.83m	Electrode Processor	Electrode
Firewire	Yes	No	2.9m	Stimulus Controller	Electrode Processor
Line Input	No	No	0.46m	Stimulus Controller	CD Player
USB	Yes	Yes	1.93m	Stimulus Controller	PC
Speaker	No	No	3.05m	Stimulus Controller	Speaker
From Aplifier	Yes	No	2.08m	Stimulus Controller	Unterminated
To Amplifier	Yes	No	1.83m	Stimulus Controller	Unterminated
Response Input	Yes	No	0.46m	Stimulus Controller	Unterminated
Aux. Input	Yes	No	1.83m	Stimulus Controller	Unterminated
Line Output	No	No	1.04m	Stimulus Controller	Unterminated
Right speaker	No	No	1.04m	Stimulus Controller	Unterminated
Monitor speaker	No	No	1.04m	Stimulus Controller	Unterminated
External	No	No	1.04m	Stimulus Controller	Unterminated
Keyboard	Yes	Yes	1.0m	PC	Keyboard
Mouse	Yes	Yes	1.83m	PC	Mouse
VGA	Yes	Yes	1.75m	PC	Monitor



Configurations

Reference Electrode | Yes | No | 1.42m | Electrode Processor | Patient Simulator

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Software	
Title	Version
ASA	1.0

Configuration 2 - FRYE0029

EUT			
Description	Model/Part Number	Serial Number	Manufacturer
Stimulus Controller	HEARLAB	010807007	Frye Laboratories
Electrode Processor	H1000	010807006	Frye Laboratories

Peripherals in Test Setup Boundary			
Description	Model/Part Number	Serial Number	Manufacturer
PC	DCNE	D3104G1	Dell
LCD monitor	H1781	95174CA001188	Envision
Keyboard	L100	CNORH659735718360KC4	Dell
Mouse	None	None	Dell
Speech Mic	CVL-1064	None	Cyber Acoustics
CD Player	MPD8861	None	MEMOREX
Insert Earphone right	3A	29074	Eartone
Insert Earphone left	3A	29075	Eartone
Headphone left	TDH39P	91610	Telephonics
Headphone right	TDH39P	91620	Telephonics
Distracter Headphones	CV-H42	None	Coby
Control Mic	Refmic	None	Frye Electronics
Bone Vibrator	B71	40366	Radioear
Speaker X2	34-2261-00	None	Frye Electronics
#1 Electrode	61-2192-00	0008	Frye Electronics
Reference Electrode	61-3192-00	0018	Frye Electronics
Ground Electrode	61-1192-00	0018	Frye Electronics

Cables					
Cable Type	Shield	Ferrite	Length (m)	Connection 1	Connection 2
Control Mic.	Yes	No	3.76m	Stimulus Controller	Control mic.
Speech Mic.	No	No	2.44m	Stimulus Controller	Speech Mic
Distracter Headphones	No	No	1.0m	Stimulus Controller	Distracter Headphones
Headphone	No	No	1.83m	Stimulus Controller	Headphones
Insert Earphones	No	No	2.14m	Stimulus Controller	Insert Earphones
Bone Vibrator	No	No	1.83m	Electrode Processor	Electrode
Firewire	Yes	No	2.9m	Stimulus Controller	Electrode Processor
Line Input	No	No	0.46m	Stimulus Controller	CD Player
USB	Yes	Yes	1.93m	Stimulus Controller	PC
Speaker	No	No	3.05m	Stimulus Controller	Speaker
From Aplifier	Yes	No	2.08m	Stimulus Controller	Unterminated
To Amplifier	Yes	No	1.83m	Stimulus Controller	Unterminated
Response Input	Yes	No	0.46m	Stimulus Controller	Unterminated
Aux. Input	Yes	No	1.83m	Stimulus Controller	Unterminated
Line Output	No	No	1.04m	Stimulus Controller	Unterminated
Right speaker	No	No	1.04m	Stimulus Controller	Unterminated
Monitor speaker	No	No	1.04m	Stimulus Controller	Unterminated
External	No	No	1.04m	Stimulus Controller	Unterminated



Configurations

Keyboard	Yes	Yes	1.0m	PC	Keyboard
Mouse	Yes	Yes	1.83m	PC	Mouse
VGA	Yes	Yes	1.75m	PC	Monitor
Reference Electrode	Yes	No	1.42m	Electrode Processor	Patient Simulator
AC Mains	No	No	0.3m	Stimulus Controller	AC Mains
#1 Electrode	Yes	No	1.42m	Electrode Processor	Terminated
Reference Electrode	Yes	No	1.42m	Electrode Processor	Terminated
Ground Electrode	Yes	No	1.42m	Electrode Processor	Terminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Software	
Title	Version
ASA	1.0

Configuration 3 - FRYE0029

EUT			
Description	Model/Part Number	Serial Number	Manufacturer
Stimulus Controller	HEARLAB	010807007	Frye Laboratories
Electrode Processor	H1000	010807006	Frye Laboratories

Peripherals in Test Setup Boundary			
Description	Model/Part Number	Serial Number	Manufacturer
PC	DCNE	D3104G1	Dell
LCD monitor	H1781	95174CA001188	Envision
Keyboard	L100	CNORH659735718360KC4	Dell
Mouse	None	None	Dell
Speech Mic	CVL-1064	None	Cyber Acoustics
CD Player	MPD8861	None	MEMOREX
Insert Earphone right	3A	29074	Eartone
Insert Earphone left	3A	29075	Eartone
Headphone left	TDH39P	91610	Telephonics
Headphone right	TDH39P	91620	Telephonics
Distracter Headphones	CV-H42	None	Coby
Control Mic	Refmic	None	Frye Electronics
Bone Vibrator	B71	40366	Radioear
Speaker X2	34-2261-00	None	Frye Electronics
#1 Electrode	61-2192-00	0008	Frye Electronics
Reference Electrode	61-3192-00	0018	Frye Electronics
Ground Electrode	61-1192-00	0018	Frye Electronics

Cables					
Cable Type	Shield	Ferrite	Length (m)	Connection 1	Connection 2
Control Mic.	Yes	No	3.76m	Stimulus Controller	Control mic.
Speech Mic.	No	No	2.44m	Stimulus Controller	Speech Mic
Distracter Headphones	No	No	1.0m	Stimulus Controller	Distracter Headphones
Headphone	No	No	1.83m	Stimulus Controller	Headphones
Insert Earphones	No	No	2.14m	Stimulus Controller	Insert Earphones
Bone Vibrator	No	No	1.83m	Electrode Processor	Electrode
Firewire	Yes	No	2.9m	Stimulus Controller	Electrode Processor
Line Input	No	No	0.46m	Stimulus Controller	CD Player
USB	Yes	Yes	1.93m	Stimulus Controller	PC
Speaker	No	No	3.05m	Stimulus Controller	Speaker
From Amplifier	Yes	No	2.08m	Stimulus Controller	Unterminated

To Amplifier	Yes	No	1.83m	Stimulus Controller	Unterminated
Response Input	Yes	No	0.46m	Stimulus Controller	Unterminated
Aux. Input	Yes	No	1.83m	Stimulus Controller	Unterminated
Line Output	No	No	1.04m	Stimulus Controller	Unterminated
Right speaker	No	No	1.04m	Stimulus Controller	Unterminated
Monitor speaker	No	No	1.04m	Stimulus Controller	Unterminated
External	No	No	1.04m	Stimulus Controller	Unterminated
Keyboard	Yes	Yes	1.0m	PC	Keyboard
Mouse	Yes	Yes	1.83m	PC	Mouse
VGA	Yes	Yes	1.75m	PC	Monitor
Refrence Electrode	Yes	No	1.42m	Electrode Processor	Patient Simulator
AC Mains	No	No	0.5m	Stimulus Controller	AC Mains
#1 Electrode	Yes	No	1.42m	Electrode Processor	Terminated
Reference Electrode	Yes	No	1.42m	Electrode Processor	Terminated
Ground Electrode	Yes	No	1.42m	Electrode Processor	Terminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Software	
Title	Version
ASA	1.0

Configuration 1 - FRYE0028

EUT			
Description	Model/Part Number	Serial Number	Manufacturer
Stimulus Controller	Hearlab	AO1	Frye Laboratories
Electrode Processor	None	A01	Frye Laboratories

Peripherals in Test Setup Boundary			
Description	Model/Part Number	Serial Number	Manufacturer
PC	DCNE	D3104G1	Dell
LCD monitor	H1781	95174CA001188	Envision
Keyboard	L100	CNORH659735718360KC4	Dell
Mouse	None	None	Dell
Speech Mic	CVL-1064	None	Cyber Acoustics
CD Player	CX-CD114	None	Coby
Insert Earphone right	3A	29035	Eartone
Insert Earphone left	3A	29035	Eartone
Headphone left	TDH39P	C029386	Telephonics
Headphone right	TDH39P	C029367	Telephonics
Distracter Headphones	CV-H42	None	Coby
Control Mic	Refmic	None	Frye Electronics
Bone Vibrator	B71	40366	Radioear
Speaker	34-2261-00	None	Frye Electronics
#1 Electrode	61-2192-00	0008	Frye Electronics
Reference Electrode	61-3192-00	0018	Frye Electronics
Ground Electrode	61-1192-00	0018	Frye Electronics

Cables					
Cable Type	Shield	Ferrite	Length (m)	Connection 1	Connection 2
Control Mic.	Yes	No	3.76m	Stimulus Controller	Control mic.
Speech Mic.	No	No	2.44m	Stimulus Controller	Speech Mic
Distracter Headphones	No	No	1.0m	Stimulus Controller	Distracter Headphones
Headphone	No	No	1.83m	Stimulus Contoller	Headphones



Configurations

Insert Earphones	No	No	2.14m	Stimulus Contoller	Insert Earphones
#1 Electrode	Yes	No	1.42m	Electrode Processor	Electrode
Ground Electrode	Yes	No	1.42	Electrode Processor	Electrode
Bone Vibrator	No	No	1.83	Electrode Processor	Electrode
Firewire	Yes	No	2.9m	Stimulus Contoller	Electrode Processor
Line Input	No	No	0.46m	Stimulus Contoller	CD Player
USB	Yes	Yes	1.93	Stimulus Contoller	PC
Speaker	No	No	3.05	Stimulus Contoller	Speaker
From Aplifier	Yes	No	2.08	Stimulus Contoller	Unterminated
To Amplifier	Yes	No	1.83	Stimulus Contoller	Unterminated
Response Input	Yes	No	0.46m	Stimulus Contoller	Unterminated
Aux. Input	Yes	No	1.83m	Stimulus Contoller	Unterminated
Line Output	No	No	1.04m	Stimulus Contoller	Unterminated
Right speaker	No	No	1.04m	Stimulus Contoller	Unterminated
Monitor speaker	No	No	1.04m	Stimulus Contoller	Unterminated
External	No	No	1.04m	Stimulus Contoller	Unterminated
Keyboard	Yes	Yes	1.0m	PC	Keyboard
Mouse	Yes	Yes	1.83m	PC	Mouse
VGA	Yes	Yes	1.75	PC	Monitor

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.



Modifications

Equipment Modifications

Date	Work Order	Test	Modification	Note	Disposition of EUT
9/4/2008	FRYE0028	Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/8/2008	FRYE0029	Radiated RF Immunity	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/8/2008	FRYE0029	Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	CI	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	VDI	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	Surge	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	EFT/Burst	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	Flicker	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	Harmonics	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/9/2008	FRYE0029	Magnetic Field Immunity	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
12/10/2008	FRYE0029	ESD	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Modes of Operation

Typical operating mode.

Power Setting Investigated

120V/60Hz

230V/50Hz

Configurations Investigated

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Frequency Range Investigated

Start Frequency	30 MHz	End Frequency	1000 MHz
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Sample Calculations

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
AAS	Spectrum Analyzer	Agilent	E4443A	12/7/2007	13 mo
EVL	EV11 Cables		10m Test Distance Cables	5/24/2008	13 mo
AOY	Pre-Amplifier	Miteq	AM-1551	5/22/2008	13 mo
AXB	Antenna, Biconilog	EMCO	3142	1/15/2008	24 mo

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000	N/A	1000

Measurements were made using the bandwidths and detectors specified. No video filter was used.

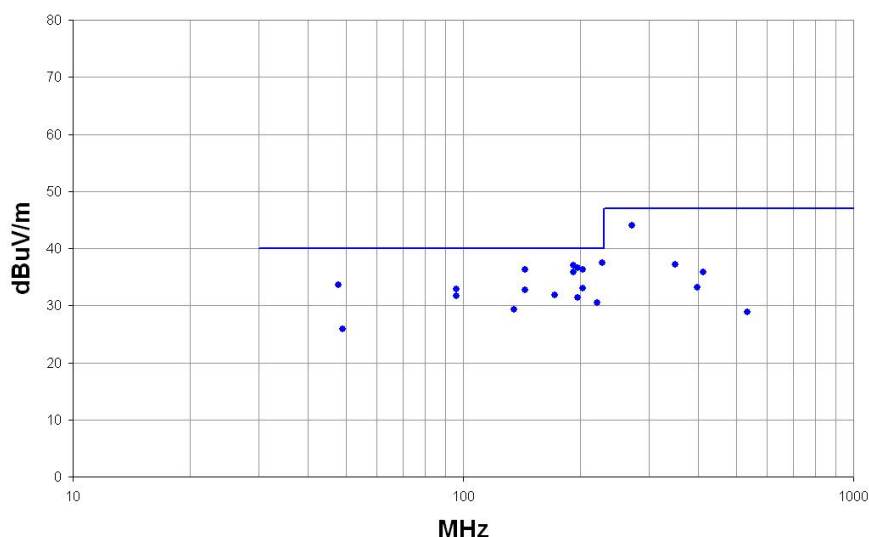
Test Description

Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT. Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 3 meters or 10 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.



Radiated Emissions Data

EUT:	Hearlab	Work Order:	FRYE0028
Serial Number:	AO1	Date:	9/4/2008
Customer:	Frye Electronics	Temperature:	23.38°C
Attendees:	George Frye, Jay Whitworth	Humidity:	42.82%
Project:	None	Barometric Pressure:	1021.6mb
Tester:	Kyle Holgate	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV11
Test Specifications		Test Method	
EN 60601-1-2:2001(Amended by A1:2006) Class A		CISPR 11:2004 (Amended by A2:2006)	
IEC 60601-1-2:2007 Class A		CISPR 11:2004 (Amended by A2:2006)	
Test Parameters			
Antenna Height(s) (m)	1-4m	Test Distance	10
Comments			
None			
EUT Operating Modes			
Typical operating mode.			
Deviations from Test Standard			
None			



Test Data

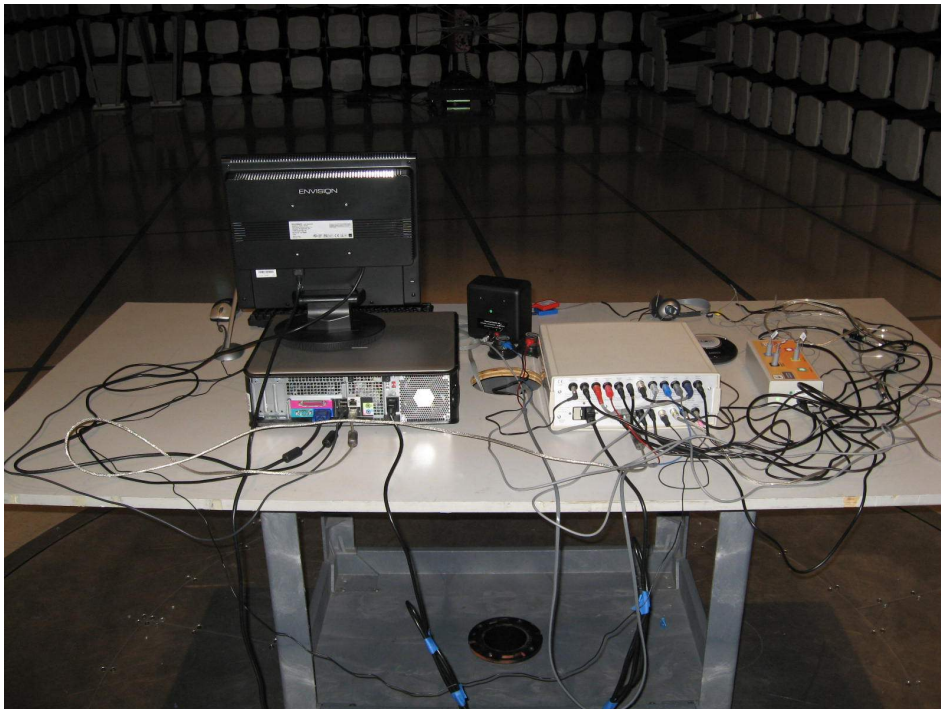
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (-meters)	Azimuth (degrees)	Test Distance (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
227.322	59.4	-21.9	3.5	85.0	10.0	0.0	Horz	QP	0.0	37.5	40.0	-2.5	
192.032	60.6	-23.5	3.0	231.0	10.0	0.0	Horz	QP	0.0	37.1	40.0	-2.9	
270.335	64.5	-20.5	3.7	215.0	10.0	0.0	Horz	QP	0.0	44.0	47.0	-3.0	
196.618	60.0	-23.4	3.0	213.0	10.0	0.0	Horz	QP	0.0	36.6	40.0	-3.4	
202.760	59.5	-23.2	3.3	227.0	10.0	0.0	Horz	QP	0.0	36.3	40.0	-3.7	
144.014	62.3	-26.0	4.0	127.0	10.0	0.0	Horz	QP	0.0	36.3	40.0	-3.7	
192.010	59.4	-23.5	1.0	234.0	10.0	0.0	Vert	QP	0.0	35.9	40.0	-4.1	
48.010	57.0	-23.3	1.0	49.0	10.0	0.0	Vert	QP	0.0	33.7	40.0	-6.3	
202.764	56.2	-23.2	1.0	99.0	10.0	0.0	Vert	QP	0.0	33.0	40.0	-7.0	
95.993	59.9	-27.0	3.5	362.0	10.0	0.0	Horz	QP	0.0	32.9	40.0	-7.1	



Radiated Emissions Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (-meters)	Azimuth (degrees)	Test Distance (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
144.011	58.7	-26.0	1.0	350.0	10.0	0.0	Vert	QP	0.0	32.7	40.0	-7.3	
171.970	56.0	-24.1	1.0	204.0	10.0	0.0	Vert	QP	0.0	31.9	40.0	-8.1	
96.043	58.7	-27.0	1.3	256.0	10.0	0.0	Vert	QP	0.0	31.7	40.0	-8.3	
196.604	54.8	-23.4	1.0	105.0	10.0	0.0	Vert	QP	0.0	31.4	40.0	-8.6	
220.796	52.7	-22.3	3.2	70.0	10.0	0.0	Horz	QP	0.0	30.4	40.0	-9.6	
350.173	54.7	-17.6	2.5	27.0	10.0	0.0	Horz	QP	0.0	37.1	47.0	-9.9	
135.166	55.8	-26.5	3.9	15.0	10.0	0.0	Horz	QP	0.0	29.3	40.0	-10.7	
411.635	52.5	-16.6	2.0	342.0	10.0	0.0	Horz	QP	0.0	35.9	47.0	-11.1	
399.029	50.0	-16.8	1.0	29.0	10.0	0.0	Vert	QP	0.0	33.2	47.0	-13.8	
49.135	49.7	-23.9	1.0	77.0	10.0	0.0	Vert	QP	0.0	25.8	40.0	-14.2	
534.547	42.6	-13.7	2.0	287.0	10.0	0.0	Horz	QP	0.0	28.9	47.0	-18.1	

Results Pass





Conducted Emissions

Modes of Operation

Assessment mode

Power Setting Investigated

230V/50Hz

120V/60Hz

Configurations Investigated

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Sample Calculations

Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
LIR	LISN	Solar	9252-50-R-24-BNC	1/4/2008	13 mo
LIP	LISN	Solar	9252-50-R-24-BNC	1/4/2008	13 mo
ATO	Attenuator	Coaxicom	66702 2910-20	6/30/2008	13 mo
HFG	High Pass Filter	T.T.E.	7766	2/5/2008	13 mo
EVG	EV07 Cables		Conducted Cables	5/2/2008	13 mo
ARH	Receiver	Rohde & Schwarz	ESCI	8/28/2008	12 mo

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000	N/A	1000

Test Description

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm.



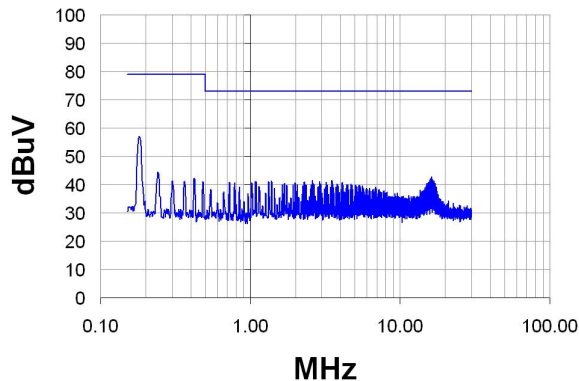
Conducted Emissions Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV07

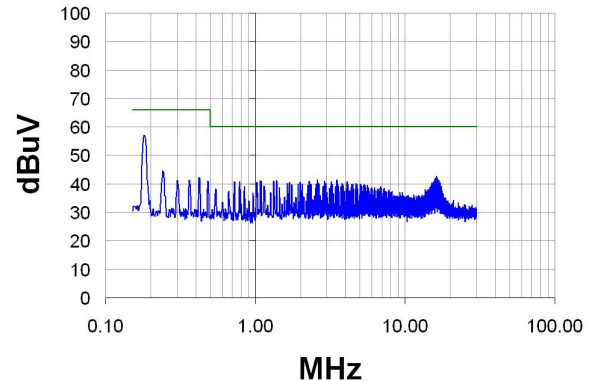
Test Specifications	Test Method
IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)
EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)

Test Parameters					
Run #	1	Line:	High Line	Ext. Attenuation:	20
Comments					
Patient Simulator consist of 1 liter saline with 3 cooper electrodes immersed.					
EUT Operating Modes					
Assessment mode					
Deviations from Test Standard					
None					

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Test Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	35.6	21.4	57.0	79.0	-22.0
16.270	21.9	20.8	42.7	73.0	-30.3
16.140	21.3	20.8	42.1	73.0	-30.9
15.960	21.3	20.8	42.1	73.0	-30.9
16.390	21.2	20.8	42.0	73.0	-31.0
16.330	21.2	20.8	42.0	73.0	-31.0
16.090	21.1	20.8	41.9	73.0	-31.1
16.510	21.0	20.8	41.8	73.0	-31.2

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	35.6	21.4	57.0	66.0	-9.0
16.270	21.9	20.8	42.7	60.0	-17.3
16.140	21.3	20.8	42.1	60.0	-17.9
15.960	21.3	20.8	42.1	60.0	-17.9
16.390	21.2	20.8	42.0	60.0	-18.0
16.330	21.2	20.8	42.0	60.0	-18.0
16.090	21.1	20.8	41.9	60.0	-18.1
16.510	21.0	20.8	41.8	60.0	-18.2

Conducted Emissions Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
16.210	20.8	20.8	41.6	73.0	-31.4
15.900	20.8	20.8	41.6	73.0	-31.4
3.512	20.8	20.6	41.4	73.0	-31.6
2.600	20.8	20.6	41.4	73.0	-31.6
1.384	20.7	20.6	41.3	73.0	-31.7
16.930	20.4	20.8	41.2	73.0	-31.8
16.030	20.4	20.8	41.2	73.0	-31.8
2.904	20.5	20.6	41.1	73.0	-31.9
1.328	20.5	20.6	41.1	73.0	-31.9
1.088	20.5	20.6	41.1	73.0	-31.9
16.690	20.3	20.8	41.1	73.0	-31.9
16.450	20.3	20.8	41.1	73.0	-31.9
15.840	20.3	20.8	41.1	73.0	-31.9
16.570	20.2	20.8	41.0	73.0	-32.0
2.304	20.3	20.6	40.9	73.0	-32.1
3.208	20.2	20.6	40.8	73.0	-32.2
15.600	20.0	20.8	40.8	73.0	-32.2
0.728	20.0	20.8	40.8	73.0	-32.2

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
16.210	20.8	20.8	41.6	60.0	-18.4
15.900	20.8	20.8	41.6	60.0	-18.4
3.512	20.8	20.6	41.4	60.0	-18.6
2.600	20.8	20.6	41.4	60.0	-18.6
1.384	20.7	20.6	41.3	60.0	-18.7
16.930	20.4	20.8	41.2	60.0	-18.8
16.030	20.4	20.8	41.2	60.0	-18.8
2.904	20.5	20.6	41.1	60.0	-18.9
1.328	20.5	20.6	41.1	60.0	-18.9
1.088	20.5	20.6	41.1	60.0	-18.9
16.690	20.3	20.8	41.1	60.0	-18.9
16.450	20.3	20.8	41.1	60.0	-18.9
15.840	20.3	20.8	41.1	60.0	-18.9
16.570	20.2	20.8	41.0	60.0	-19.0
2.304	20.3	20.6	40.9	60.0	-19.1
3.208	20.2	20.6	40.8	60.0	-19.2
15.600	20.0	20.8	40.8	60.0	-19.2
0.728	20.0	20.8	40.8	60.0	-19.2

Results Pass

Varugankorajan

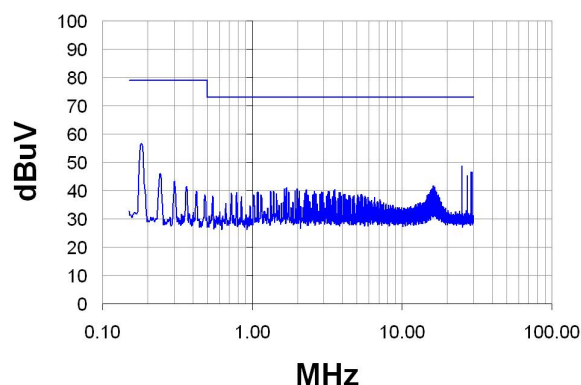
Conducted Emissions Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV07

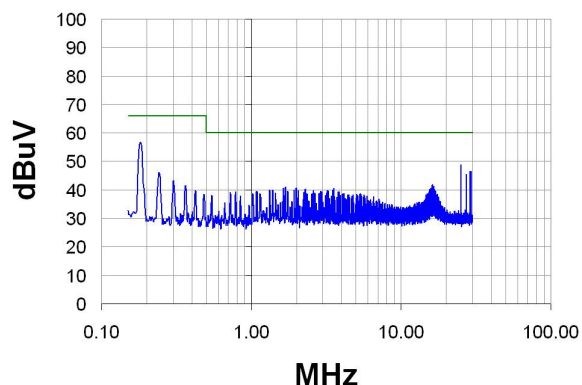
Test Specifications	Test Method
IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)
EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)

Test Parameters					
Run #	2	Line:	Neutral	Ext. Attenuation:	20
Comments					
Patient Simulator consist of 1 liter saline with 3 cooper electrodes immersed.					
EUT Operating Modes					
Assessment mode					
Deviations from Test Standard					
None					

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Test Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	35.2	21.4	56.6	79.0	-22.4
25.130	27.9	20.8	48.7	73.0	-24.3
29.440	25.7	20.9	46.6	73.0	-26.4
28.830	25.7	20.9	46.6	73.0	-26.4
27.340	24.5	20.9	45.4	73.0	-27.6
16.260	21.0	20.8	41.8	73.0	-31.2
16.200	20.9	20.8	41.7	73.0	-31.3
16.560	20.5	20.8	41.3	73.0	-31.7

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	35.2	21.4	56.6	66.0	-9.4
25.130	27.9	20.8	48.7	60.0	-11.3
29.440	25.7	20.9	46.6	60.0	-13.4
28.830	25.7	20.9	46.6	60.0	-13.4
27.340	24.5	20.9	45.4	60.0	-14.6
16.260	21.0	20.8	41.8	60.0	-18.2
16.200	20.9	20.8	41.7	60.0	-18.3
16.560	20.5	20.8	41.3	60.0	-18.7

Conducted Emissions Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
16.380	20.5	20.8	41.3	73.0	-31.7
1.696	20.4	20.6	41.0	73.0	-32.0
1.632	20.1	20.6	40.7	73.0	-32.3
16.510	19.9	20.8	40.7	73.0	-32.3
16.450	19.9	20.8	40.7	73.0	-32.3
1.992	20.0	20.6	40.6	73.0	-32.4
16.320	19.8	20.8	40.6	73.0	-32.4
16.140	19.8	20.8	40.6	73.0	-32.4
15.900	19.8	20.8	40.6	73.0	-32.4
3.568	19.9	20.6	40.5	73.0	-32.5
16.020	19.7	20.8	40.5	73.0	-32.5
15.960	19.7	20.8	40.5	73.0	-32.5
16.620	19.6	20.8	40.4	73.0	-32.6
15.530	19.5	20.8	40.3	73.0	-32.7
15.600	19.5	20.8	40.3	73.0	-32.7
2.304	19.6	20.6	40.2	73.0	-32.8
16.690	19.3	20.8	40.1	73.0	-32.9
0.242	25.0	21.0	46.0	79.0	-33.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
16.380	20.5	20.8	41.3	60.0	-18.7
1.696	20.4	20.6	41.0	60.0	-19.0
1.632	20.1	20.6	40.7	60.0	-19.3
16.510	19.9	20.8	40.7	60.0	-19.3
16.450	19.9	20.8	40.7	60.0	-19.3
1.992	20.0	20.6	40.6	60.0	-19.4
16.320	19.8	20.8	40.6	60.0	-19.4
16.140	19.8	20.8	40.6	60.0	-19.4
15.900	19.8	20.8	40.6	60.0	-19.4
3.568	19.9	20.6	40.5	60.0	-19.5
16.020	19.7	20.8	40.5	60.0	-19.5
15.960	19.7	20.8	40.5	60.0	-19.5
16.620	19.6	20.8	40.4	60.0	-19.6
15.530	19.5	20.8	40.3	60.0	-19.7
15.600	19.5	20.8	40.3	60.0	-19.7
2.304	19.6	20.6	40.2	60.0	-19.8
16.690	19.3	20.8	40.1	60.0	-19.9
0.242	25.0	21.0	46.0	66.0	-20.0

Results Pass

Varugankorajan



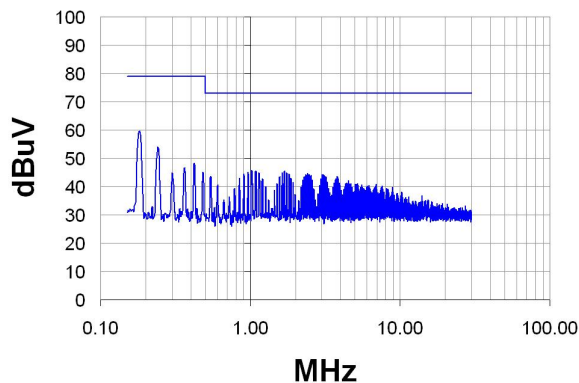
Conducted Emissions Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV07

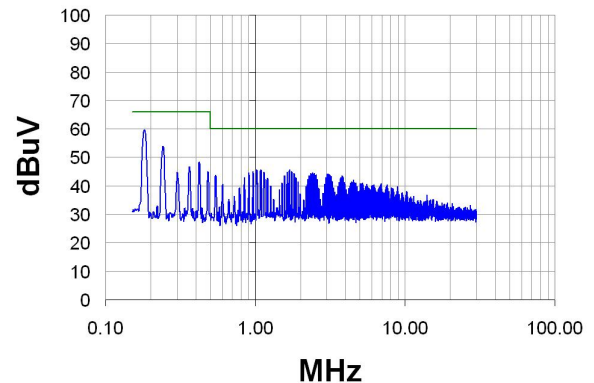
Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)
IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)

Test Parameters					
Run #	3	Line:	High Line	Ext. Attenuation:	20
Comments					
Patient Simulator consist of 1 liter saline with 3 cooper electrodes immersed.					
EUT Operating Modes					
Assessment mode					
Deviations from Test Standard					
None					

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Test Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	38.1	21.4	59.5	79.0	-19.5
0.242	32.9	21.0	53.9	79.0	-25.1
1.024	25.1	20.6	45.7	73.0	-27.3
1.696	25.0	20.6	45.6	73.0	-27.4
1.088	25.0	20.6	45.6	73.0	-27.4
0.968	24.5	20.6	45.1	73.0	-27.9
1.752	24.4	20.6	45.0	73.0	-28.0
1.144	24.3	20.6	44.9	73.0	-28.1

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	38.1	21.4	59.5	66.0	-6.5
0.242	32.9	21.0	53.9	66.0	-12.1
1.024	25.1	20.6	45.7	60.0	-14.3
1.696	25.0	20.6	45.6	60.0	-14.4
1.088	25.0	20.6	45.6	60.0	-14.4
0.968	24.5	20.6	45.1	60.0	-14.9
1.752	24.4	20.6	45.0	60.0	-15.0
1.144	24.3	20.6	44.9	60.0	-15.1

Conducted Emissions Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.632	24.2	20.6	44.8	73.0	-28.2
2.416	24.0	20.6	44.6	73.0	-28.4
0.908	23.9	20.6	44.5	73.0	-28.5
1.816	23.9	20.6	44.5	73.0	-28.5
2.360	23.7	20.6	44.3	73.0	-28.7
2.480	23.7	20.6	44.3	73.0	-28.7
3.024	23.6	20.6	44.2	73.0	-28.8
3.088	23.6	20.6	44.2	73.0	-28.8
3.144	23.3	20.6	43.9	73.0	-29.1
2.536	23.2	20.6	43.8	73.0	-29.2
0.543	22.8	20.9	43.7	73.0	-29.3
3.816	23.0	20.6	43.6	73.0	-29.4
2.296	22.9	20.6	43.5	73.0	-29.5
1.568	22.9	20.6	43.5	73.0	-29.5
3.208	22.8	20.6	43.4	73.0	-29.6
1.872	22.3	20.6	42.9	73.0	-30.1
0.847	22.2	20.7	42.9	73.0	-30.1
3.872	22.2	20.6	42.8	73.0	-30.2

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.632	24.2	20.6	44.8	60.0	-15.2
2.416	24.0	20.6	44.6	60.0	-15.4
0.908	23.9	20.6	44.5	60.0	-15.5
1.816	23.9	20.6	44.5	60.0	-15.5
2.360	23.7	20.6	44.3	60.0	-15.7
2.480	23.7	20.6	44.3	60.0	-15.7
3.024	23.6	20.6	44.2	60.0	-15.8
3.088	23.6	20.6	44.2	60.0	-15.8
3.144	23.3	20.6	43.9	60.0	-16.1
2.536	23.2	20.6	43.8	60.0	-16.2
0.543	22.8	20.9	43.7	60.0	-16.3
3.816	23.0	20.6	43.6	60.0	-16.4
2.296	22.9	20.6	43.5	60.0	-16.5
1.568	22.9	20.6	43.5	60.0	-16.5
3.208	22.8	20.6	43.4	60.0	-16.6
1.872	22.3	20.6	42.9	60.0	-17.1
0.847	22.2	20.7	42.9	60.0	-17.1
3.872	22.2	20.6	42.8	60.0	-17.2

Results Pass

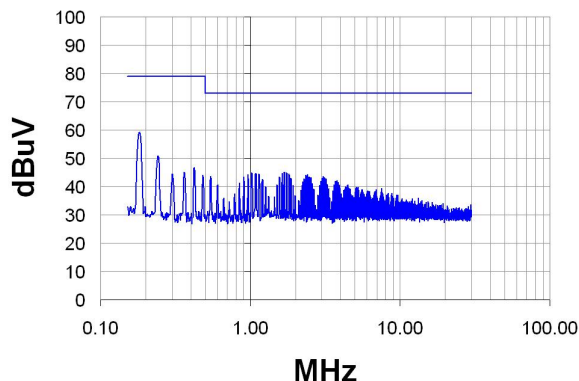
Varugankorajan

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV07

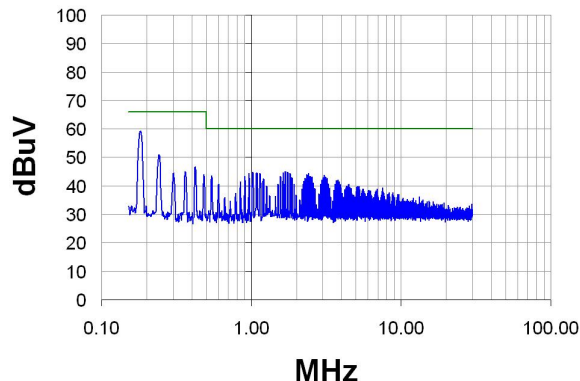
Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006) Class A	CISPR 11:2004 (Amended by A2:2006)
IEC 60601-1-2:2007 Class A	CISPR 11:2004 (Amended by A2:2006)

Test Parameters					
Run #	4	Line:	Neutral	Ext. Attenuation:	20
Comments					
Patient Simulator consist of 1 liter saline with 3 cooper electrodes immersed.					
EUT Operating Modes					
Assessment mode					
Deviations from Test Standard					
None					

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Test Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	37.8	21.4	59.2	79.0	-19.8
1.688	24.5	20.6	45.1	73.0	-27.9
0.242	29.9	21.0	50.9	79.0	-28.1
1.024	24.3	20.6	44.9	73.0	-28.1
1.752	24.2	20.6	44.8	73.0	-28.2
1.088	24.1	20.6	44.7	73.0	-28.3
1.632	24.0	20.6	44.6	73.0	-28.4
1.144	23.9	20.6	44.5	73.0	-28.5

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.181	37.8	21.4	59.2	66.0	-6.8
1.688	24.5	20.6	45.1	60.0	-14.9
0.242	29.9	21.0	50.9	66.0	-15.1
1.024	24.3	20.6	44.9	60.0	-15.1
1.752	24.2	20.6	44.8	60.0	-15.2
1.088	24.1	20.6	44.7	60.0	-15.3
1.632	24.0	20.6	44.6	60.0	-15.4
1.144	23.9	20.6	44.5	60.0	-15.5

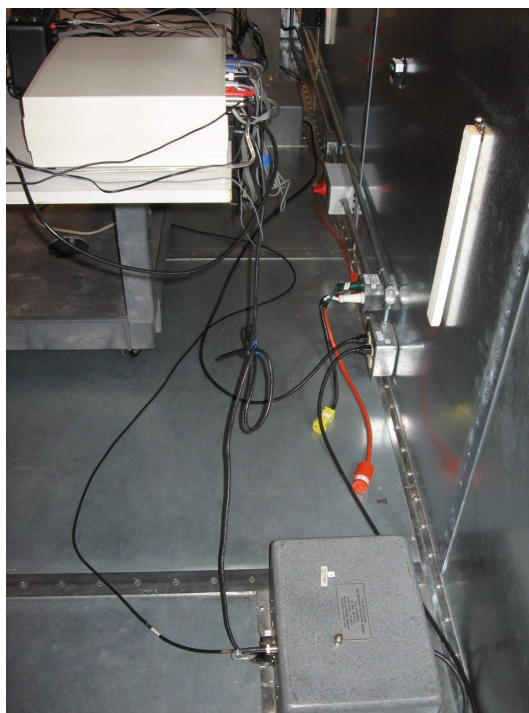
Conducted Emissions Data

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.808	23.8	20.6	44.4	73.0	-28.6
2.416	23.7	20.6	44.3	73.0	-28.7
0.968	23.7	20.6	44.3	73.0	-28.7
2.360	23.4	20.6	44.0	73.0	-29.0
3.080	23.1	20.6	43.7	73.0	-29.3
0.544	22.7	20.9	43.6	73.0	-29.4
0.908	22.8	20.6	43.4	73.0	-29.6
1.568	22.8	20.6	43.4	73.0	-29.6
2.480	22.7	20.6	43.3	73.0	-29.7
2.536	22.6	20.6	43.2	73.0	-29.8
3.144	22.5	20.6	43.1	73.0	-29.9
3.024	22.4	20.6	43.0	73.0	-30.0
1.872	22.3	20.6	42.9	73.0	-30.1
2.296	22.2	20.6	42.8	73.0	-30.2
3.200	21.9	20.6	42.5	73.0	-30.5
1.208	21.9	20.6	42.5	73.0	-30.5
3.808	21.4	20.6	42.0	73.0	-31.0
2.960	21.4	20.6	42.0	73.0	-31.0

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.808	23.8	20.6	44.4	60.0	-15.6
2.416	23.7	20.6	44.3	60.0	-15.7
0.968	23.7	20.6	44.3	60.0	-15.7
2.360	23.4	20.6	44.0	60.0	-16.0
3.080	23.1	20.6	43.7	60.0	-16.3
0.544	22.7	20.9	43.6	60.0	-16.4
0.908	22.8	20.6	43.4	60.0	-16.6
1.568	22.8	20.6	43.4	60.0	-16.6
2.480	22.7	20.6	43.3	60.0	-16.7
2.536	22.6	20.6	43.2	60.0	-16.8
3.144	22.5	20.6	43.1	60.0	-16.9
3.024	22.4	20.6	43.0	60.0	-17.0
1.872	22.3	20.6	42.9	60.0	-17.1
2.296	22.2	20.6	42.8	60.0	-17.2
3.200	21.9	20.6	42.5	60.0	-17.5
1.208	21.9	20.6	42.5	60.0	-17.5
3.808	21.4	20.6	42.0	60.0	-18.0
2.960	21.4	20.6	42.0	60.0	-18.0

Results Pass

Varugankorajan



Modes of Operation

Assessment mode

Power Setting Investigated

230VAC/50Hz

Configurations Investigated

FRYE0029 - 1

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
THR	Universal Power Analyzer	Voltech	PM6000	12/7/2007	13 mo
THI	Reference Impedence Network	Voltech	IEC 61000-3 Reference Impedence Network	12/7/2007	13 mo

Test Description

This test measures the voltage fluctuations and flicker impressed on the AC mains by the EUT. It is applicable to electrical and electronic equipment having an input current up to and including 16A per phase, and intended to be connected to public low-voltage distribution systems of between 220 V and 250 V at 50 Hz line to neutral.

The test is conducted using frequency domain instrumentation as described in EN 61000-3-3 Section 4. All types of voltage fluctuations are assessed at the supply terminals of the EUT by direct measurement using a flickermeter, which complies with the specification given in IEC 868.

The percentage total harmonic distortion of the supply voltage shall be less than 3%.

Flicker Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-3-3:2005
IEC 60601-1-2:2007	IEC 61000-3-3:2005

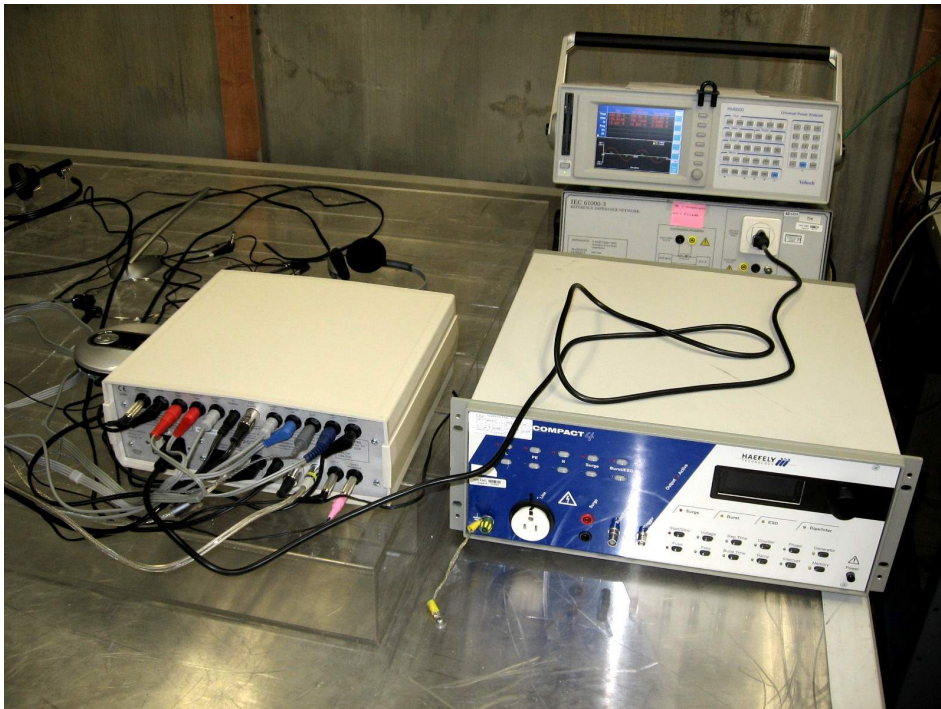
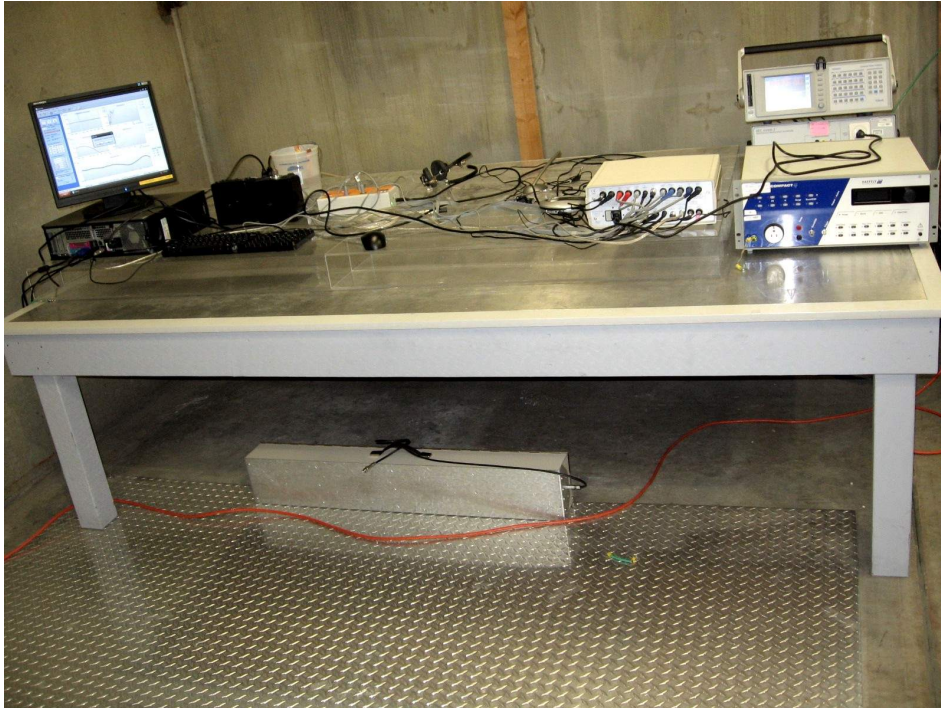
Comments
None
EUT Operating Modes
Assessment mode
Deviations from Test Standard
None

Test Data

Parameter	Limit	Reading	Result
dc - the relative steady-state voltage change	3.3%	0.003	Pass
dmax - the maximum relative voltage change	4% (without additional conditions)	0.053	Pass
d(t) - the relative voltage change **	shall not exceed 3.3 % for more than 500 ms	0	Pass
Pst - short-term flicker	1.0	0.145	Pass
Plt - long-term flicker	0.65		N/A

**The time function of the r.m.s. voltage change evaluated as a single value for each successive half period between zero-crossings of the source voltage between time intervals in which the voltage is in a steady-state condition for at least 1 s.

Results	Pass	<i>Varuzhan Kocharyan</i>
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Modes of Operation

Assessment mode

Power Setting Investigated

230VAC/50Hz

Configurations Investigated

FRYE0029 - 1

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
THR	Universal Power Analyzer	Voltech	PM6000	12/7/2007	13 mo
THI	Reference Impedence Network	Voltech	IEC 61000-3 Reference Impedence Network	12/7/2007	13 mo

Test Description

This test measures the harmonic currents injected into the AC mains by the EUT. It is applicable to electrical and electronic equipment having an input current up to and including 16A per phase, and intended to be connected to public low-voltage distribution systems of between 220 V and 250 V at 50 Hz line to neutral.

The test is conducted using frequency domain instrumentation as described in EN 61000-3-2 Annex B. The amplitude of each specific harmonic is measured.

Equipment Classification

Class A: Balanced three-phase equipment and all other equipment, except that stated in one of the following classes.
 Class B: Portable tools
 Class C: Lighting equipment, including dimming devices.
 Class D: Equipment having specified power according to EN 61000-3-2 of $P \leq 600$ W, of the following equipment types:
 - Personal Computers
 - Personal Computer Monitors
 - Television Receivers

Quasi-Stationary Current Harmonics Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV05
Test Specifications		Test Method	
EN 60601-1-2:2001(Amended by A1:2006)		IEC 61000-3-2:2005	
IEC 60601-2 :2007		IEC 61000-3-2:2005	

Test Parameters							
Equipment Class	A	Fund. Current (A)	0.0715	Power Factor	0.4028	Ave. Input Curr. (A)	0.1429
Max. THC	0.1238	Measured Power	13.2686	Test Duration	00:02:30		

Comments							
None							

EUT Operating Modes							
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Assessment mode							
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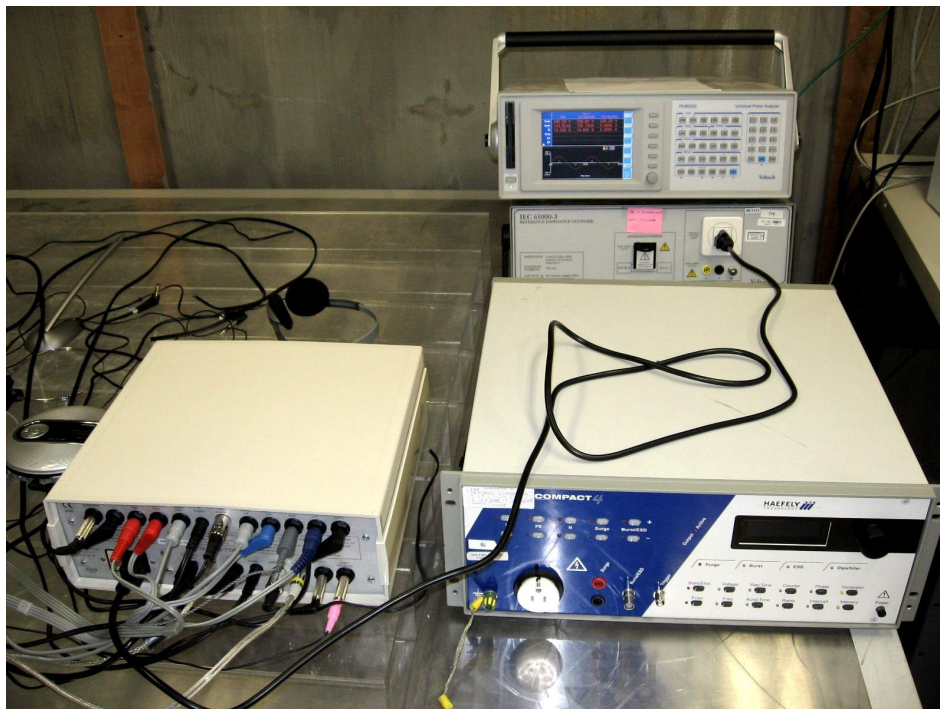
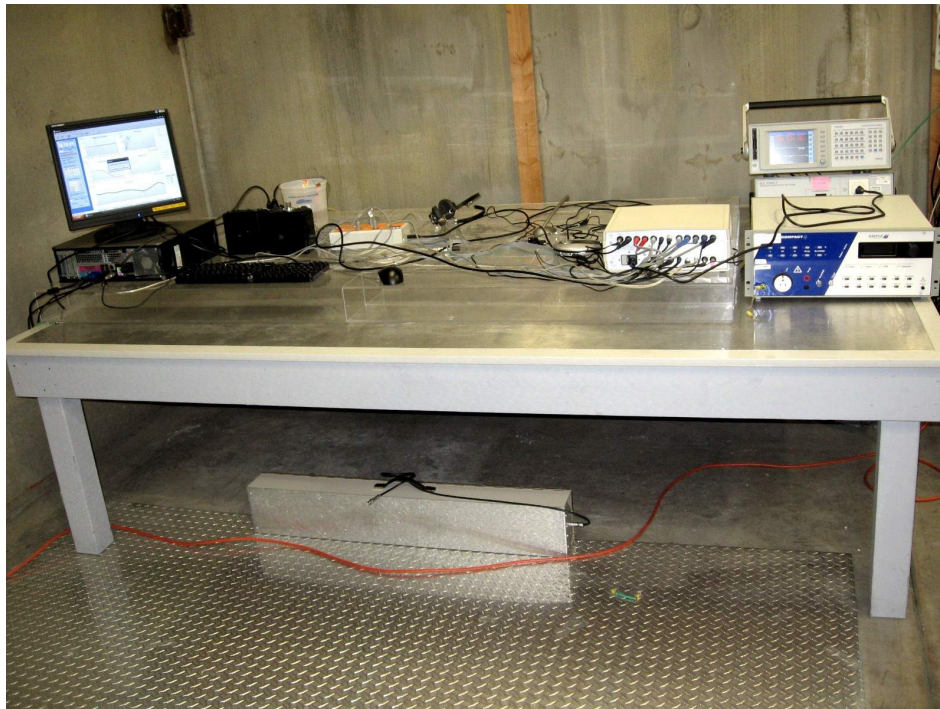
Deviations from Test Standard							
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None							
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Test Data

Harmonic	Limit 1	Limit 2	Avg Reading	Max Reading	Pass/Fail	Harmonic	Limit 1	Limit 2	Avg Reading	Max Reading	Pass/Fail
2	1.08A	1.62A	3.56mA	3.78mA	N/A	22	83.64mA	125.45mA	.38mA	.43mA	N/A
3	2.3A	3.45A	55.67mA	55.75mA	Pass	23	97.83mA	146.74mA	7.88mA	7.93mA	Pass
4	430mA	645mA	3.28mA	3.49mA	N/A	24	76.67mA	115mA	.38mA	.42mA	N/A
5	1.14A	1.71A	53.26mA	53.31mA	Pass	25	90mA	135mA	4.06mA	4.1mA	N/A
6	300mA	450mA	2.86mA	3.06mA	N/A	26	70.77mA	106.15mA	.41mA	.47mA	N/A
7	770mA	1.16A	49.74mA	49.79mA	Pass	27	83.33mA	125mA	1.04mA	1.07mA	N/A
8	230mA	345mA	2.48mA	2.65mA	N/A	28	65.71mA	98.57mA	.43mA	.48mA	N/A
9	400mA	600mA	45.32mA	45.37mA	Pass	29	77.59mA	116.38mA	1.32mA	1.35mA	N/A
10	184mA	276mA	2.16mA	2.3mA	N/A	30	61.33mA	92mA	.43mA	.47mA	N/A
11	330mA	495mA	40.2mA	40.25mA	Pass	31	72.58mA	108.87mA	2.83mA	2.86mA	N/A
12	153.33mA	230mA	1.82mA	1.94mA	N/A	32	57.5mA	86.25mA	.39mA	.42mA	N/A
13	210mA	315mA	34.62mA	34.68mA	Pass	33	68.18mA	102.27mA	3.67mA	3.7mA	N/A
14	131.43mA	197.14mA	1.46mA	1.54mA	N/A	34	54.12mA	81.18mA	.33mA	.36mA	N/A
15	150mA	225mA	28.82mA	28.87mA	Pass	35	64.29mA	96.43mA	3.93mA	3.95mA	N/A
16	115mA	172.5mA	1.08mA	1.14mA	N/A	36	51.11mA	76.67mA	.28mA	.31mA	N/A
17	132.35mA	198.53mA	23.05mA	23.11mA	Pass	37	60.81mA	91.22mA	3.71mA	3.73mA	N/A
18	102.22mA	153.33mA	.76mA	.81mA	N/A	38	48.42mA	72.63mA	.22mA	.25mA	N/A
19	118.42mA	177.63mA	17.51mA	17.56mA	Pass	39	57.69mA	86.54mA	3.16mA	3.18mA	N/A
20	92mA	138mA	.51mA	.55mA	N/A	40	46mA	69mA	.23mA	.25mA	N/A
21	107.14mA	160.71mA	12.4mA	12.45mA	Pass						

Results	Pass	





Electrostatic Discharge Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/10/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-2:2001
IEC 60601-1-2:2007	IEC 61000-4-2:2001

Test Parameters			
Energy Storage Capacitor	150pf	Discharge Resistance	330 ohms
Polarity of Output Voltage	Positive and Negative	Time Between Successive Discharges	>= 1 sec

Comments

None

EUT Operating Modes

Assessment mode. Electrodes tested in idle mode, unhooked, with functionality check after discharges applied

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Air Discharge

NUMBER OF DISCHARGES	10	10	10	10	10	10	10	10	10	10
ESD TEST LEVEL (kV)	2	-2	3	-3	4	-4	8	-8	15	-15
All Green Arrows - No Observations	o	o	-	-	-	o	o	o		
Air gap between male and female parts of										
Stimulus Controller plastic backshell connectors	o	o	-	-	o	o	F	F		
Non- populated Electrode 2 and 3 connectors										
of Electrode Processor	o	o	-	-	o	o	C	C		
Power Switch	o	o	-	-	o	o	C	C		

Contact Discharge

NUMBER OF DISCHARGES	10	10	10	10	10	10	10	10	10	10
ESD TEST LEVEL (kV)	2	-2	4	-4	6	-6	8	-8	15	-15
All Blue Arrows - No Observations										
Horizontal Coupling Plane	A	B	A	B	A	C	-	-	-	-
Vertical Coupling Plane	A	B	D	D	D	D				
Stimulus Controller metall back shell connectors, back panel and screws	E	E	E	E	C	C	-	-	-	-
Electrodes	o	o	-	G	-	-				

Test Data

Item Number	Phenomena Observed
A	Following every of 10 discharges, a momentarily spikes appeared on EEG graph and MRE graph; repeatable, recovered without intervention
B	Following every of 10 discharge, the triangle- shaped pulses appeared on EEG graph and MRE graph; repeatable, self-recovered



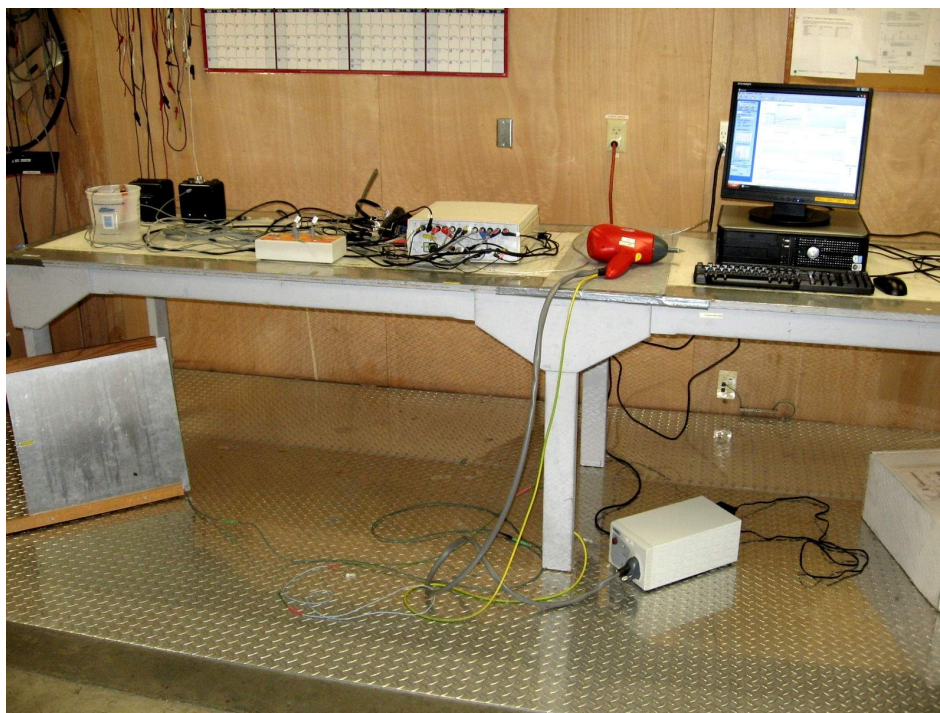
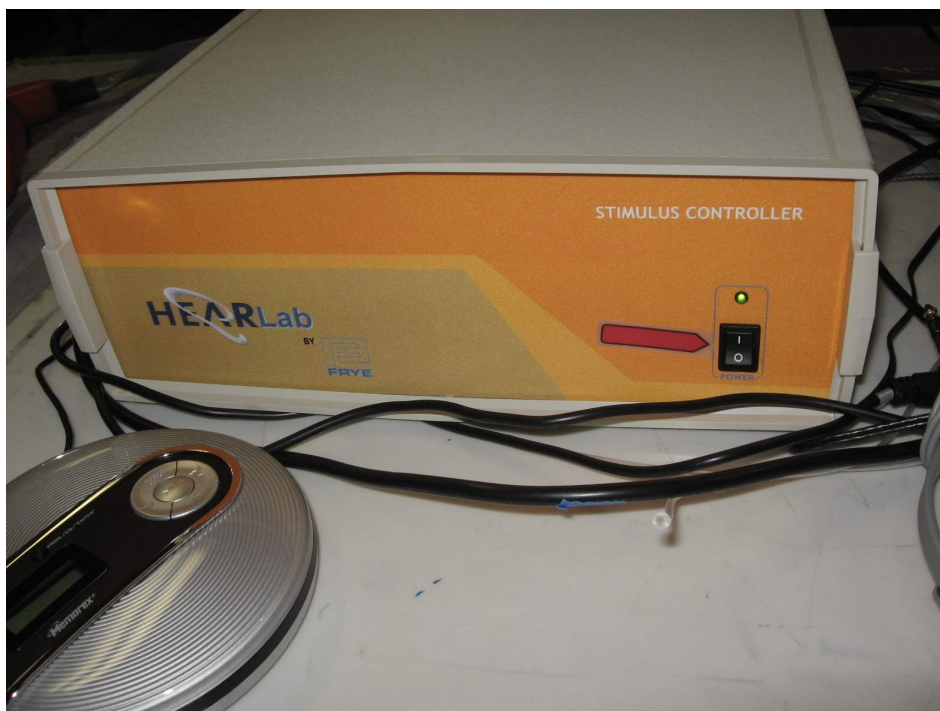
Electrostatic Discharge Data

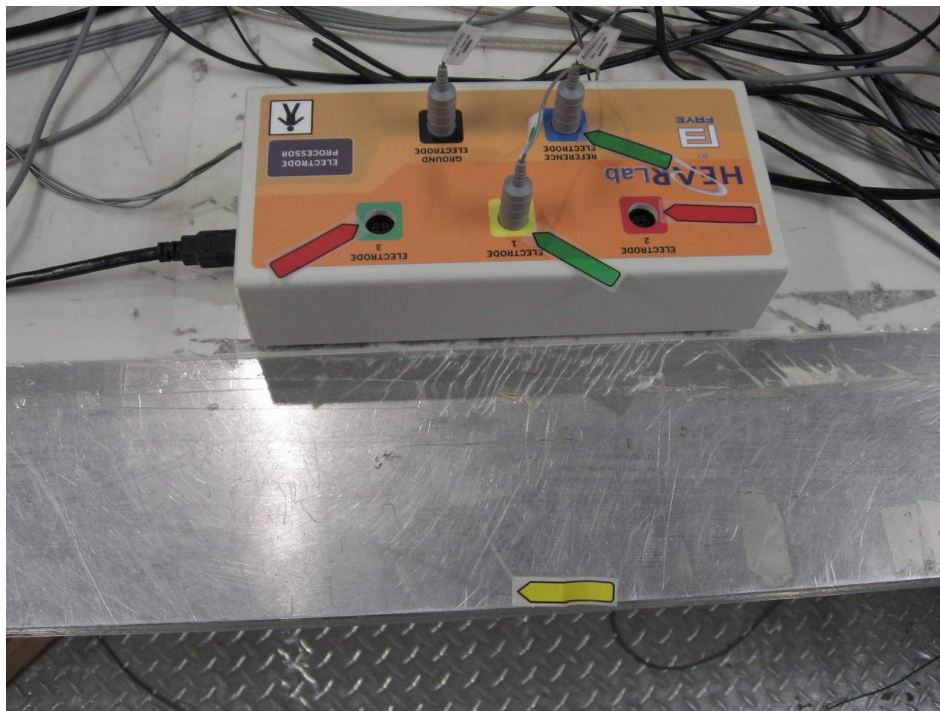
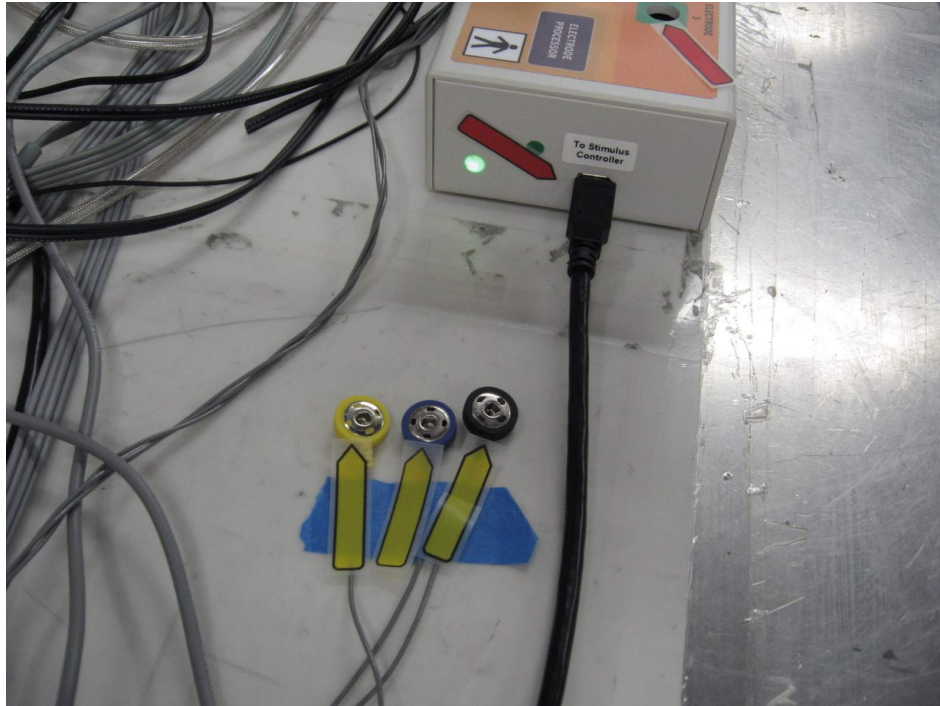
C	After first discharge ACA1.0 software froze, after 4-5 discharge software turned off ; did not recover. User's intervention was required.
D	Following every of 10 discharges, a momentarily spikes appeared on EEG graph and MRE graph; repeatable, recovered without intervention.
E	After first discharge Stimulus Sound from speaker stopped; repeatable phenomena, did not recover without user's intervention
F	After first discharge ACA1.0 software turned off ; did not recover.
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
IGM	ESD Gun	Teseq	NSG 437	7/30/2008	13 mo

Results	Meets NWEMC Performance Criteria 4	<i>Varuzandokarjan</i>
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; the EUT would not recover.		





Radiated Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV10

Test Specifications	Test Method
IEC 60601-1-2:2007	IEC 61000-4-3:2006 (Amended by A1:2007)
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-3:2006 (Amended by A1:2007)

Test Parameters					
Test Level	>= 3 V/m	Spec. Level	3 V/m	Modulation Freq	1kHz and pass band
Start Frequency	80MHz	Stop Frequency	2500MHz	Modulation Type	AM
Step Size	1%	Dwell Time	1 Sec.	Modulation Depth	80%
Comments					

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Clock and Oscillators

No operating frequencies were provided by the client.

Test Data

Frequency (MHz)	Field Strength (volts/meter)	Antenna Polarity	Side Tested	Phenomena Observed / Comments
80MHz - 2500MHz	Test Level	Horz	Front	No anomalies observed except those listed below
80MHz .580MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances
80MHz - 2500MHz	Test Level	Vert	Front	No anomalies observed except those listed below
80MHz 743MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances.
80MHz - 2500MHz	Test Level	Horz	Back	No anomalies observed except those listed below
80MHz .470MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances.
80MHz - 2500MHz	Test Level	Vert	Back	No anomalies observed except those listed below
80MHz 680MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances
80MHz - 2500MHz	Test Level	Horz	Left	No anomalies observed except those listed below
80MHz 510MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances
80MHz - 2500MHz	Test Level	Vert	Left	No anomalies observed except those listed below
80MHz .480MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances.
80MHz - 2500MHz	Test Level	Horz	Right	No anomalies observed except those listed below
80MHz 640MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances.
80MHz - 2500MHz	Test Level	Vert	Right	No anomalies observed except those listed below
80MHz .640MHz	3			EEG plot and Most Recent Epoch plot show mostly full scale disturbances

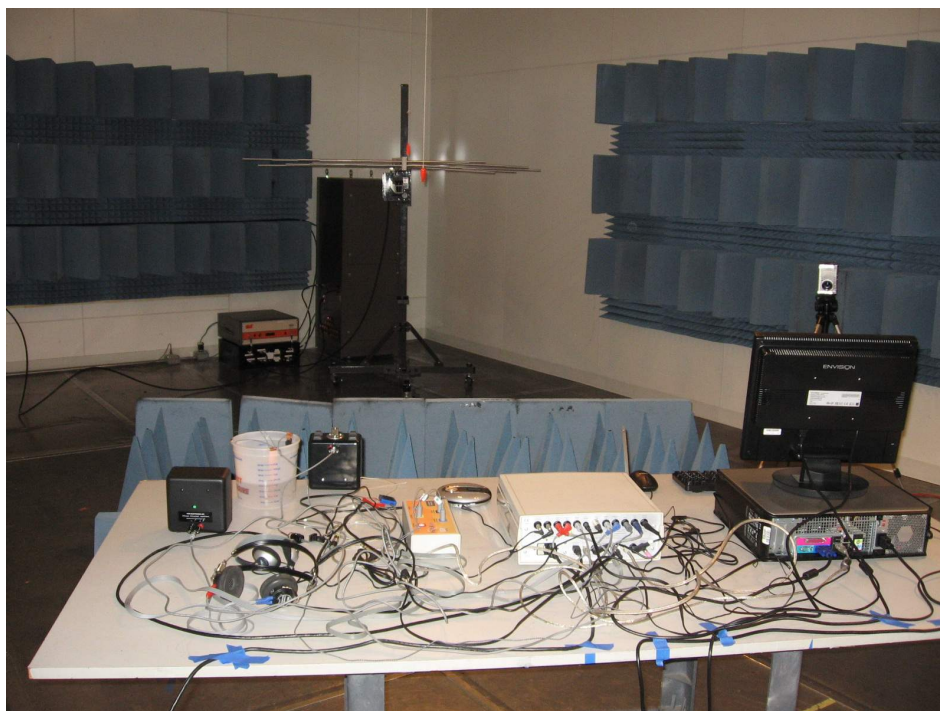
Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
SPE	Power Head	Amplifier Research	PH2000	12/7/2007	13 mo
IRD	Dual Directional Coupler	Amplifier Research	DC7154	11/11/2008	13 mo
IRO	Dual Directional Coupler	Amplifier Research	DC6180A	11/11/2008	13 mo
SPH	RF Power Meter	Amplifier Research	PM2002	12/7/2007	13 mo
TRO	RF Amplifier	Amplifier Research	25S1G4A	NCR	0 mo
TRR	RF Amplifier	Amplifier Research	500W1000A	NCR	0 mo
IED	E-Field Probe	Amplifier Research	FP2080	1/28/2008	24 mo
AHW	Antenna, Horn	ETS	3115	7/21/2008	24 mo
ALJ	Antenna, Log Periodic	EMCO	3144	NCR	0 mo
TGS	Signal Generator	Agilent	E4422B	12/7/2007	13 mo

Results Meets NWEMC Performance Criteria 2

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.

Varuzandokarjan







Electrical Fast Transient Burst Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	3	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-4:2004
IEC 60601-1-2:2007	IEC 61000-4-4:2004

Test Parameters					
Period Time	300mS \pm 20%	Impulse Duration	50nS \pm 30%	Frequency of Burst	5kHz
Rise Time of One Pulse	5nS \pm 30%	Duration of Burst	15mS \pm 20%	Relation of Power Supply	Asynchronous

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

AC/DC

LINE 1	LINE 1	LINE 2	LINE 2	LINE 3	LINE 3	NEUTRAL	NEUTRAL	GROUND	GROUND	ALL LINES	ALL LINES
2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV
A	A					A	A	A	A	A	A

Signal/Control

Control mic	Control mic	Firewire	Firewire	Speaker	Speaker	n/a	n/a	n/a	n/a	n/a	n/a
1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV
A	A	A	A	A	A						

Test Data

Item#	Phenomena Observed
A	ACA1.0
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
IHK	Artificial Hand	NWEMC		10/10/2008	24 mo
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECOMPACT 4	9/24/2008	13 mo

Results	Meets NWEMC Performance Criteria 3
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.	

Varuzhan Kocharyan



Electrical Fast Transient Burst Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	3	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-4:2004
IEC 60601-1-2:2007	IEC 61000-4-4:2004

Test Parameters					
Period Time	300mS ± 20%	Impulse Duration	50nS ± 30%	Frequency of Burst	100kHz
Rise Time of One Pulse	5nS ± 30%	Duration of Burst	0.75mS ±20%	Relation of Power Supply	Asynchronous

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

AC/DC

LINE 1	LINE 1	LINE 2	LINE 2	LINE 3	LINE 3	NEUTRAL	NEUTRAL	GROUND	GROUND	ALL LINES	ALL LINES
2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV
A	A					A	A	B	B	B	B

Signal/Control

Control mic	Control mic	Firewire	Firewire	Speaker	Speaker	n/a	n/a	n/a	n/a	n/a	n/a
1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV
B	B	A	A	A	A						

Test Data

Item#	Phenomena Observed
A	ACA1.0
B	ACA1.0 software turned off ; did not recover after burst removed. User's intervention was necessary in order to recover the system.
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
IHK	Artificial Hand	NWEMC		10/10/2008	24 mo
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECOMPACT 4	9/24/2008	13 mo

Results Meets NWEMC Performance Criteria 3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.

Varuzhan Kocharyan



Electrical Fast Transient Burst Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	3	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-4:2004
IEC 60601-1-2:2007	IEC 61000-4-4:2004

Test Parameters					
Period Time	300mS ± 20%	Impulse Duration	50nS ± 30%	Frequency of Burst	5kHz
Rise Time of One Pulse	5nS ± 30%	Duration of Burst	15mS ±20%	Relation of Power Supply	Asynchronous

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

AC/DC

LINE 1	LINE 1	LINE 2	LINE 2	LINE 3	LINE 3	NEUTRAL	NEUTRAL	GROUND	GROUND	ALL LINES	ALL LINES
2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV
A	A					A	A	A	A	A	A

Signal/Control

Control mic	Control mic	Firewire	Firewire	Speaker	Speaker	n/a	n/a	n/a	n/a	n/a	n/a
1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV
A	A	A	A	A	A						

Test Data

Item#	Phenomena Observed
A	ACA1.0
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
IHK	Artificial Hand	NWEMC		10/10/2008	24 mo
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECOMPACT 4	9/24/2008	13 mo

Results Meets NWEMC Performance Criteria 3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.

Varuzhan Kocharyan



Electrical Fast Transient Burst Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	3	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-4:2004
IEC 60601-1-2:2007	IEC 61000-4-4:2004

Test Parameters					
Period Time	300mS ± 20%	Impulse Duration	50nS ± 30%	Frequency of Burst	100kHz
Rise Time of One Pulse	5nS ± 30%	Duration of Burst	0.75mS ±20%	Relation of Power Supply	Asynchronous

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

AC/DC

LINE 1	LINE 1	LINE 2	LINE 2	LINE 3	LINE 3	NEUTRAL	NEUTRAL	GROUND	GROUND	ALL LINES	ALL LINES
2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV	2 kV	-2 kV
A	A					A	A	B	B	B	B

Signal/Control

Control mic	Control mic	Firewire	Firewire	Speaker	Speaker	n/a	n/a	n/a	n/a	n/a	n/a
1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV	1 kV	-1 kV
B	B	A	A	A	A						

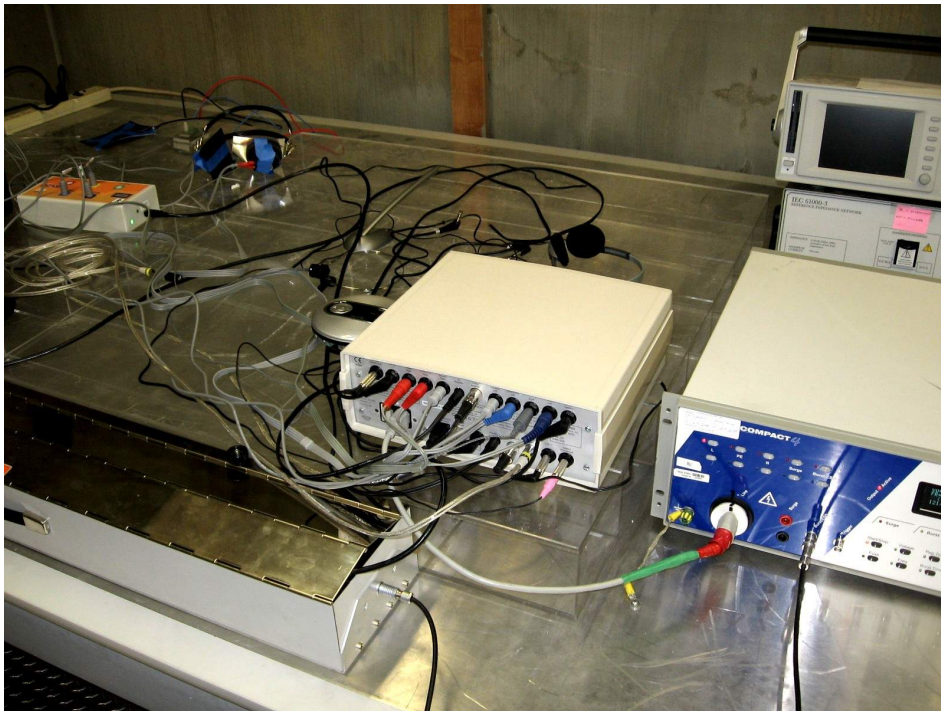
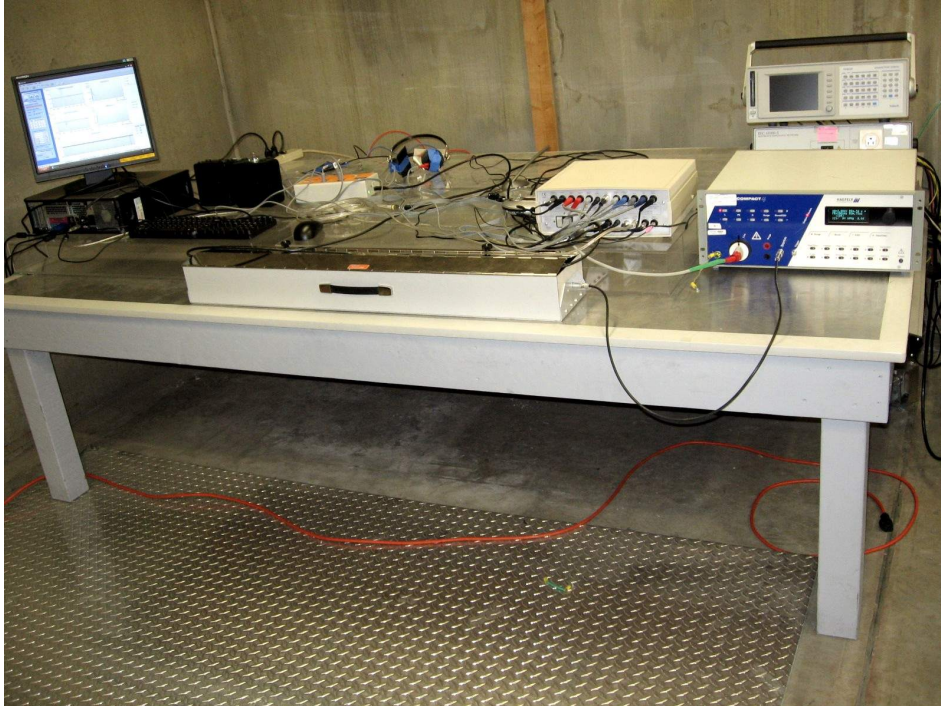
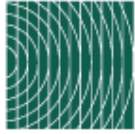
Test Data

Item#	Phenomena Observed
A	ACA1.0
B	ACA1.0 software turned off ; did not recover after burst removed. User's intervention was necessary in order to recover the system.
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
IHK	Artificial Hand	NWEMC		10/10/2008	24 mo
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECOMPACT 4	9/24/2008	13 mo

Results	Meets NWEMC Performance Criteria 3	<i>Varuzhan Kocharyan</i>
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.		



Surge Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-5:2005
IEC 60601-1-2:2007	IEC 61000-4-5:2005

Test Parameters			
Open Circuit Voltage, Risetime	1.2 us \pm 30%	Short-Circuit Current Risetime	8 us \pm 20%
Open Circuit Voltage, Time to 1/2 Value	50 us \pm 20%	Time Between Successive Discharges	20 sec.
Short-Circuit Current Time to 1/2 Value	20 us \pm 20%		

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Test Data

	COMMON MODE HIGH LINE TO GROUND (12 Impedance)					COMMON MODE LOW LINE TO GROUND (12 Impedance)					DIFFERENTIAL MODE HIGH LINE TO LOW LINE (2 Impedance)				
	0 Phase	90 Phase	180 Phase	270 Phase		0 Phase	90 Phase	180 Phase	270 Phase		0 Phase	90 Phase	180 Phase	270 Phase	
+0.5	o	o	o	o		o	o	o	o		o	o	o	o	
-0.5	o	o	o	o		o	o	o	o		o	o	o	o	
+1.0	A	A	A	A		A	A	A	A		o	o	o	o	
-1.0	A	A	A	A		A	A	A	A		o	o	o	o	
+2.0	B	B	B	B		B	B	B	B						
-2.0	B	B	B	B		B	B	B	B						
+4.0															
-4.0															

Item#	Phenomena Observed
A	Following every surge pulse, a momentarily up to +/-100uV spike appeared on EEG graph; re-covered without intervention
B	Following every surge pulse, a momentarily up to +/-150uV spike appeared on EEG graph; re-covered without intervention
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECompact 4	9/24/2008	13 mo

Results	Meets NWEMC Performance Criteria 2
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.	<i>Varuzhan Kocharyan</i>



Surge Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-5:2005
IEC 60601-1-2:2007	IEC 61000-4-5:2005

Test Parameters			
Open Circuit Voltage, Risetime	1.2 us ± 30%	Short-Circuit Current Risetime	8 us ± 20%
Open Circuit Voltage, Time to 1/2 Value	50 us ± 20%	Time Between Successive Discharges	20 sec.
Short-Circuit Current Time to 1/2 Value	20 us ± 20%		

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Test Data

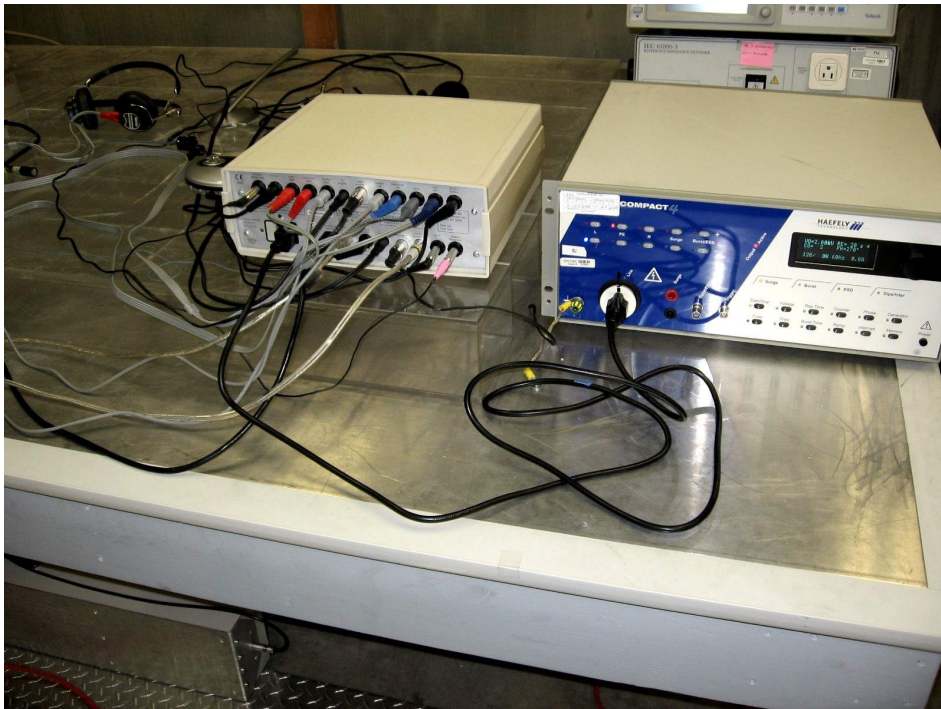
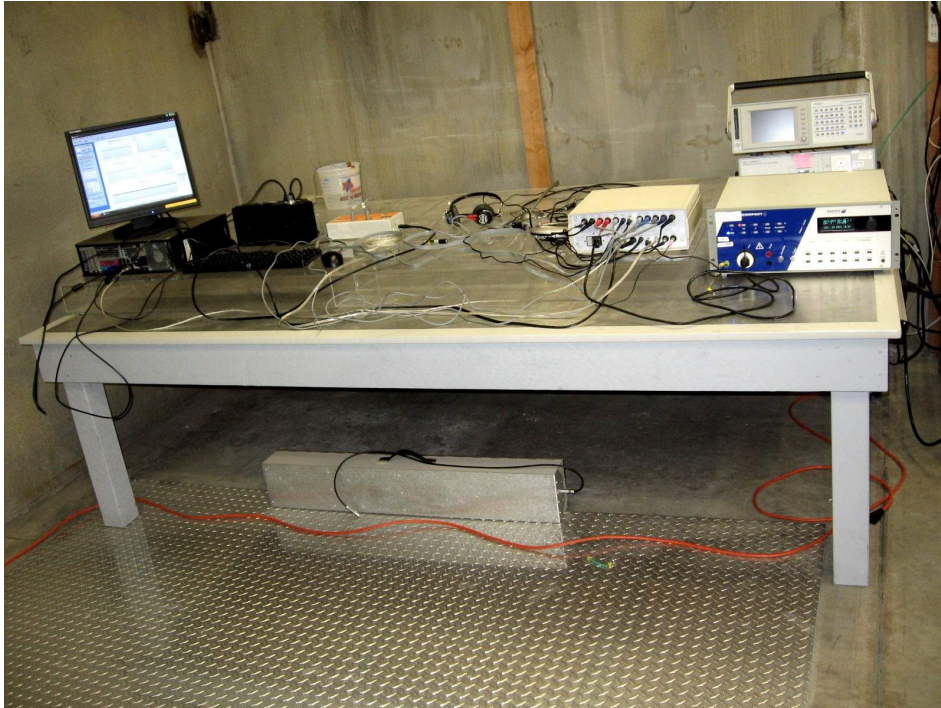
	COMMON MODE HIGH LINE TO GROUND (12 Impedance)					COMMON MODE LOW LINE TO GROUND (12 Impedance)					DIFFERENTIAL MODE HIGH LINE TO LOW LINE (2 Impedance)				
	0 Phase	90 Phase	180 Phase	270 Phase		0 Phase	90 Phase	180 Phase	270 Phase		0 Phase	90 Phase	180 Phase	270 Phase	
+0.5	o	o	o	o		o	o	o	o		o	o	o	o	
-0.5	o	o	o	o		o	o	o	o		o	o	o	o	
+1.0	o	o	o	o		o	o	o	o		o	o	o	o	
-1.0	o	o	o	o		o	o	o	o		o	o	o	o	
+2.0	A	A	A	A		A	A	A	A						
-2.0	A	A	A	A		A	A	A	A						
+4.0															
-4.0															

Item#	Phenomena Observed
A	Following every surge pulse, a momentarily up to +/-100uV spike appeared on EEG graph; re-covered without intervention
Key:	o=No EUT Response Observed - = Not Tested

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECOMPACT 4	9/24/2008	13 mo

Results	Meets NWEMC Performance Criteria 2	<i>Varuzhan Kocharyan</i>
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.		



Conducted Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/8/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	2	Job Site:	EV02

Test Specifications	Test Method
IEC 60601-1-2:2007	IEC 61000-4-6:2006
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-6:2006

Test Parameters					
Test Level	>= 3 VRMS	Spec. Level	3 VRMS	Mod. Freq.	1kHz
Start Freq	150kHz	Stop Freq.	80MHz	Mod. Type	AM
Step Size	1%	Dwell Time	1sec.	Mod. Depth	80%

Comments

None

EUT Operating Modes

Assessment mode

Clock and Oscillators

No operating frequencies were provided by the client.,

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Test Data

Frequency	Test Level (Volts RMS)	Cable Tested	Phenomena Observed / Comments
150kHz - 80MHz	Test Level	AC power	No anomalies observed except those listed below
955kHz .1.79MHz	3		EEG graph shifted down to minimum negative values. Self- recovered when RF removed.
1.8MHz .2MHz	3		EEG graph shifted up to maximum positive values. Self- recovered when RF removed.
2MHz 80MHz	3		EEG plot and Most Recent Epoch plot show mostly full scale disturbances
9.1MHz 42MHz	3		A loud 1kHz tone audible from left speaker. Self-recovered when RF removed.
150kHz - 80MHz	Test Level	Left Speaker	No anomalies observed except those listed below
9.7MHz 58MHz	3		A moderate -to- loud 1kHz tone audible from left speaker.
6.1MHz 80MHz	3		EEG plot and Most Recent Epoch plot show mostly full scale disturbances
4MHz .6MHz	3		EEG graph shifted up to maximum positive values. Self- recovered when RF removed.
150kHz - 80MHz	Test Level	Headphone	No anomalies observed except those listed below
3.05MHz 80MHz	3		EEG plot and Most Recent Epoch plot show full scale disturbances
9.9MHz .41MHz	3		A moderate- to- loud 1kHz tone audible from left speaker. Very loud at 14MHz, 23MHz
150kHz - 80MHz	Test Level	USB	No anomalies observed except those listed below
			Self-recovered when RF removed
			A moderate 1kHz tone audible from left speaker. Self-recovered when RF removed.
955kHz .1.79MHz	3		EEG graph shifted down to negative values. Self- recovered when RF removed.

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TME	Terminator	S.M. Electronics	ST6N-20	6/27/2008	13 mo
TMF	Terminator	S.M. Electronics	ST6N-20	6/27/2008	13 mo
INM	CDN	Dressler	CDN-M3	1/15/2008	13 mo
INN	CDN	Dressler	CDN-M3	1/15/2008	13 mo
III	Injection Probe	Fischer Custom Communications	F-120-9A	NCR	0 mo
RBX	Attenuator 100W 6dB	JFW	50FH-006-100	NCR	0 mo
IHJ	Artificial Hand	NWEMC		10/10/2008	24 mo
IRK	Directional Coupler	Amplifier Research	DC3400A	11/10/2008	13 mo
SPQ	Power Head	Amplifier Research	PH2000	12/14/2007	12 mo
SPX	Power Head	Amplifier Research	PH2000	12/14/2007	12 mo
SPZ	Power Meter	Amplifier Research	PM2002	12/14/2007	12 mo
TAC	RF Amplifier	Amplifier Research	150A100A	NCR	0 mo
TGY	Signal Generator	Rohde & Schwarz	SMB100A	11/21/2007	15 mo

Results Meets NWEMC Performance Criteria 2

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.





Conducted Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	2	Job Site:	EV02

Test Specifications	Test Method
IEC 60601-1-2:2007	IEC 61000-4-6:2006
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-6:2006

Test Parameters					
Test Level	>= 3 VRMS	Spec. Level	3 VRMS	Mod. Freq.	1kHz
Start Freq	150kHz	Stop Freq.	80MHz	Mod. Type	AM
Step Size	1%	Dwell Time	1sec.	Mod. Depth	80%
Comments					

None

EUT Operating Modes

Assessment mode

Clock and Oscillators

No operating frequencies were provided by the client.,

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Test Data

Frequency	Test Level (Volts RMS)	Cable Tested	Phenomena Observed / Comments
150kHz - 80MHz	Test Level	Inserte earphones	No anomalies observed except those listed below
11.5MHz .40MHz	3		A moderate- to- loud 1kHz tone audible from left speaker. Very loud at 16MHz, 32MHz
5.2MHz 80MHz	3		EEG plot and Most Recent Epoch plot show full scale disturbances
150kHz - 80MHz	Test Level	Firewire	No anomalies observed except those listed below
955kHz .1.79MHz	3		EEG graph shifted up to maximum positive values. Self- recovered when RF removed.
2MHz 80MHz	3		EEG plot and Most Recent Epoch plot show mostly full scale disturbances
8.8MHz 47MHz	3		A moderate- to- loud 1kHz tone audible from left speaker.
150kHz - 80MHz	Test Level	Electrodes	No anomalies observed except those listed below
476kHz .640kHz	3		EEG graph shifted down to negative values. Self- recovered when RF removed.
640kHz .80MHz	3		EEG plot and Most Recent Epoch plot show mostly full scale disturbances
13.3MHz .65MHz	3		A moderate- to- loud 1kHz tone audible from left speaker; very loud at 35MHz.

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TME	Terminator	S.M. Electronics	ST6N-20	6/27/2008	13 mo
TMF	Terminator	S.M. Electronics	ST6N-20	6/27/2008	13 mo
INM	CDN	Dressler	CDN-M3	1/15/2008	13 mo
INN	CDN	Dressler	CDN-M3	1/15/2008	13 mo

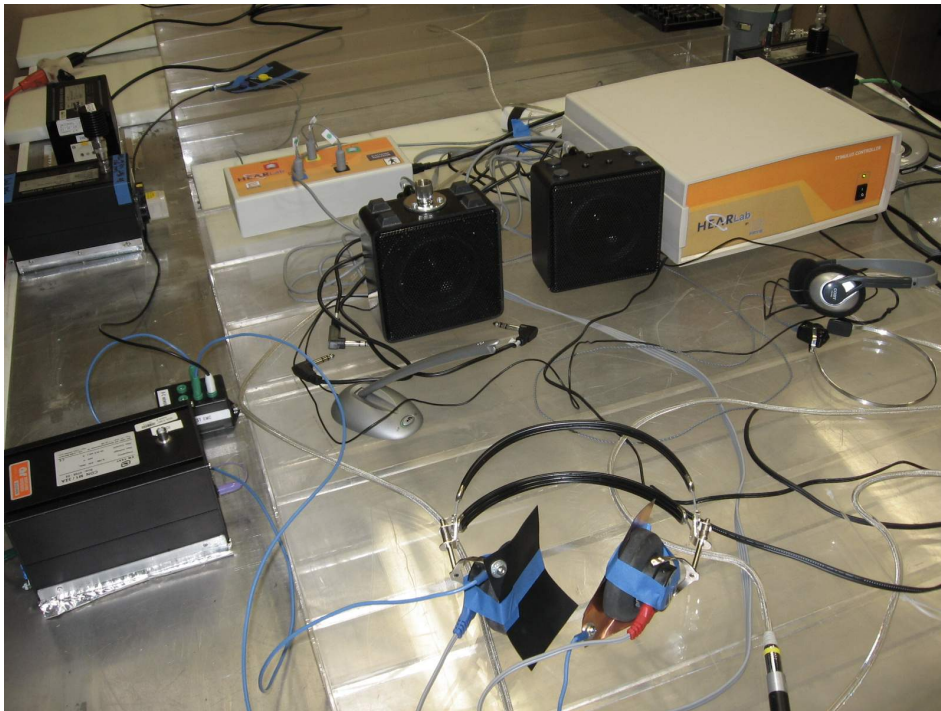


Conducted Immunity Data

III	Injection Probe	Fischer Custom Communications	F-120-9A	NCR	0 mo
RBX	Attenuator 100W 6dB	JFW	50FH-006-100	NCR	0 mo
IHJ	Artificial Hand	NWEMC		10/10/2008	24 mo
IRK	Directional Coupler	Amplifier Research	DC3400A	11/10/2008	13 mo
SPQ	Power Head	Amplifier Research	PH2000	12/14/2007	12 mo
SPX	Power Head	Amplifier Research	PH2000	12/14/2007	12 mo
SPZ	Power Meter	Amplifier Research	PM2002	12/14/2007	12 mo
TAC	RF Amplifier	Amplifier Research	150A100A	NCR	0 mo
TGY	Signal Generator	Rohde & Schwarz	SMB100A	11/21/2007	15 mo

Results	Meets NWEMC Performance Criteria 2
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Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.







Magnetic Field Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-8:2001
IEC 60601-1-2:2007	IEC 61000-4-8:2001

Test Parameters
Test Level 3 A/m
Test Frequency 60Hz
Comments
None
EUT Operating Modes
Assessment mode
Deviations from Test Standard
None
EUT Functions Monitored
Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Test Data

Axis	Observation
X	EEG graph show about 30uV p-p disturbance added to initial value; self-recovered when MF removed.
Y	EEG graph show about 30uV p-p disturbance added to initial value and MRE graph show 7.5uV p-p disturbance added ;
Z	EEG graph show about 30uV p-p disturbance added to initial value and MRE graph show 7.5uV p-p disturbance added ;

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
THA	Programmable Power Supply	Hewlett-Packard	6843A	12/7/2007	13 mo
IME	Helmholtz Coil	NWEMC	None	1/28/2008	13 mo

Results	Meets NWEMC Performance Criteria 2	<i>Varuzhan Kocharyan</i>
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.		



Magnetic Field Immunity Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration #	1	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-8:2001
IEC 60601-1-2:2007	IEC 61000-4-8:2001

Test Parameters
Test Level 3 A/m
Test Frequency 50Hz
Comments
None
EUT Operating Modes
Assessment mode
Deviations from Test Standard
None
EUT Functions Monitored
Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

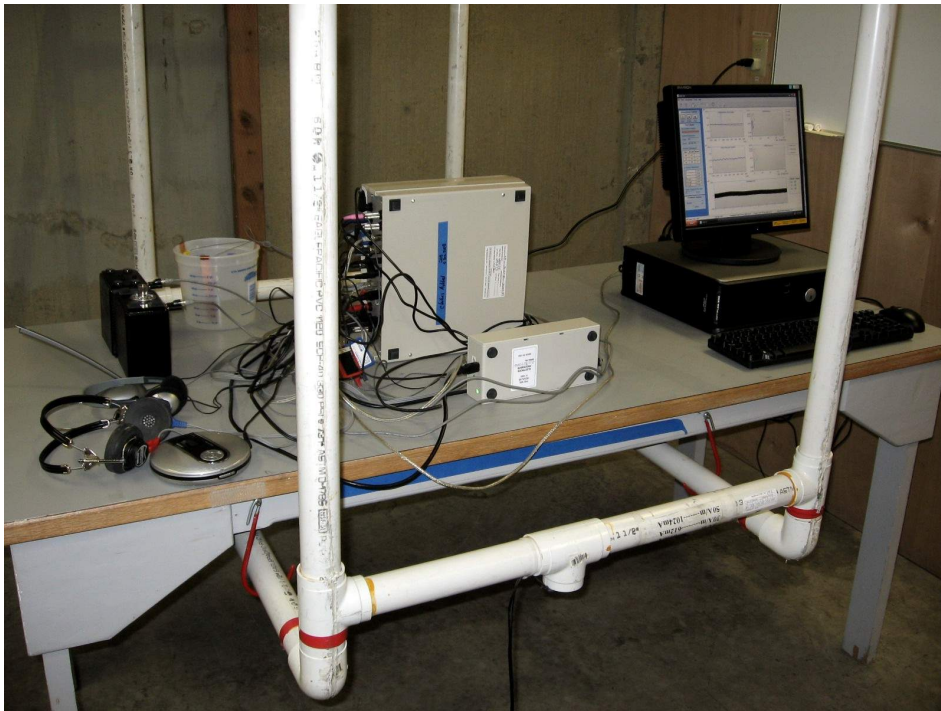
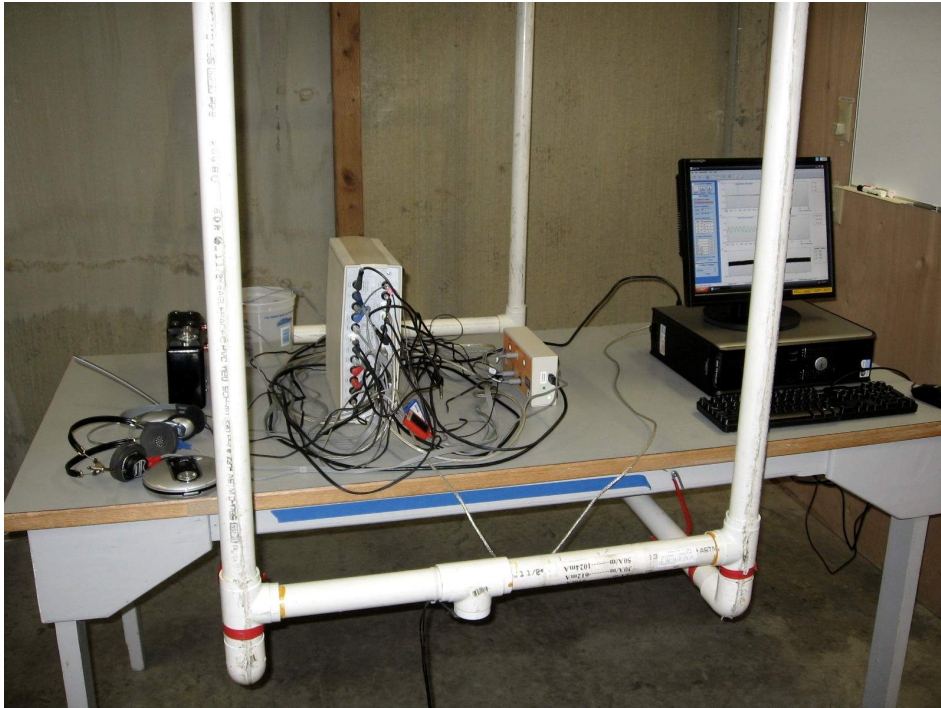
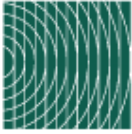
Test Data

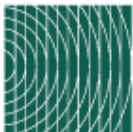
Axis	Observation
X	EEG graph show about 30uV p-p disturbance added to initial value; self-recovered when MF removed.
Y	EEG graph show about 30uV p-p disturbance added to initial value and MRE graph show 7.5uV p-p disturbance added ;
Z	EEG graph show about 30uV p-p disturbance added to initial value and MRE graph show 2.5uV p-p disturbance added ;

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
THA	Programmable Power Supply	Hewlett-Packard	6843A	12/7/2007	13 mo
IME	Helmholtz Coil	NWEMC	None	1/28/2008	13 mo

Results	Meets NWEMC Performance Criteria 2	<i>Varuzhan Kocharyan</i>
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer, the EUT self-recovered.		





Voltage Dips and Interrupts Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	120VAC/60Hz
Configuration	2	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-11:2004
IEC 60601-1-2:2007	IEC 61000-4-11:2004

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Results - Environmental Phenomena - Dip

Number of Events	Percent Reduction	Durations (mS)	Phase Angles Tested	Phenomena Observed (See Key Below)	Meets NWEMC Performance Criteria
3	100%	10ms	0°, 90°, 180°, 270°	o	1
3	60%	100ms	0°, 90°, 180°, 270°	o	1
3	30%	500ms	0°, 90°, 180°, 270°	o	1
1	>95%	5 S	0°	A	3

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer

Test Data

Item#	Phase	Voltage	Phenomena Observed
A	0	120	ACA1.0
Key: o=No EUT Response Observed			

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECompact 4	9/24/2008	13 mo

Results Meets NWEMC Performance Criteria 3

Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.



Voltage Dips and Interrupts Data

EUT:	Hearlab	Work Order:	FRYE0029
Serial Number:	Various	Date:	12/9/2008
Customer:	Frye Electronics	Temperature:	21 °C
Attendees:	Jay Whitworth	Humidity:	34%
Project:	None	Barometric Pressure:	1025.4mb
Tester:	Varuzhan Kocharyan	Power:	230VAC/50Hz
Configuration	2	Job Site:	EV05

Test Specifications	Test Method
EN 60601-1-2:2001(Amended by A1:2006)	IEC 61000-4-11:2004
IEC 60601-1-2:2007	IEC 61000-4-11:2004

Comments

None

EUT Operating Modes

Assessment mode

Deviations from Test Standard

None

EUT Functions Monitored

Monitoring EEG, Most Recent Epoch and Accumulative Average real time plots in ASA 1.0 window.

Results - Environmental Phenomena - Dip

Number of Events	Percent Reduction	Durations (mS)	Phase Angles Tested	Phenomena Observed (See Key Below)	Meets NWEMC Performance Criteria
3	100%	10ms	0°, 90°, 180°, 270°	o	1
3	60%	100ms	0°, 90°, 180°, 270°	o	1
3	30%	500ms	0°, 90°, 180°, 270°	o	1
1	>95%	5 S	0°	A	3

Criteria - The EUT exhibited no change in performance when operating as specified by the manufacturer

Test Data

Item#	Phase	Voltage	Phenomena Observed
A	0	230	ACA1.0
Key: o=No EUT Response Observed			

Test Equipment

ID	Description	Manufacturer	Model	Last Calibration	Interval
TOL	Oscilloscope	Tektronix	TDS 5104B	6/11/2008	12 mo
IBJ	EFT Surge VDI Test System	Haefely	ECompact 4	9/24/2008	13 mo

Results	Meets NWEMC Performance Criteria 3
Criteria - The EUT exhibited a change in performance when operating as specified by the manufacturer; intervention was required to recover.	



