



ARRL The national association for
AMATEUR RADIO™

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1/28/2014

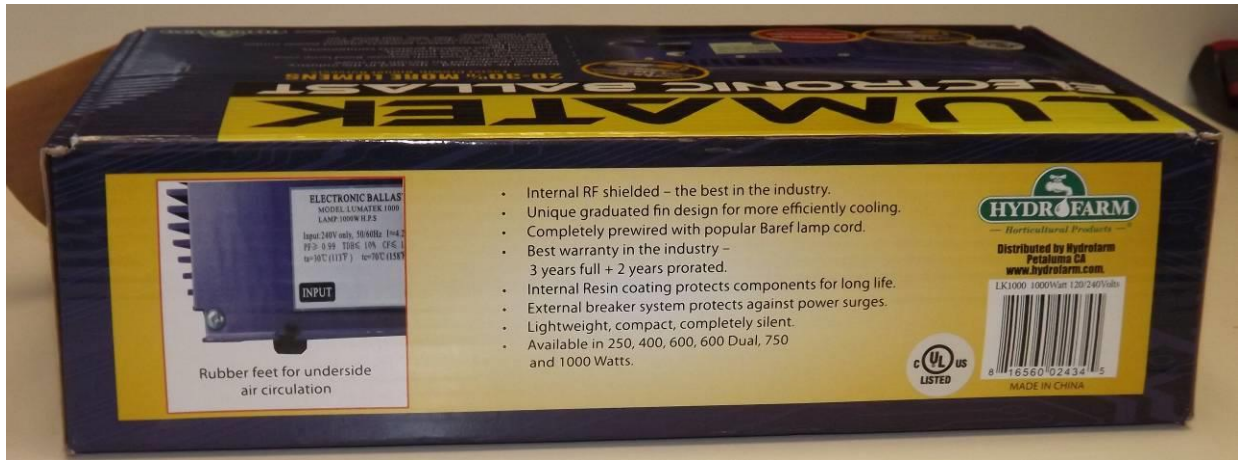
Conducted Emissions Test Report

STANDARD	TITLE
IEEE C63.4 - 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

REVIEW	SIGNATURE	DATE
Performed By:	Mike Gruber – W1MG	1/13/14
Results Reviewed By:	Jerry Ramie – K16LGY	1/15/14

Summary of Test Results: **Fail**

EUT CONFIGURATION	
Manufacturer	Lumatek
Model Number	LK1000
Serial Number	N/A
Importer	Hydrofarm Horticultural Products, Petaluma, CA www.hydrofarm.com
Retailers	<p>Sears Mail Order (purchased here) http://www.sears.com/lumatek-lk1000-dual-voltage-hps-mh-dial-a/p-SPM6725712804</p> <p>See Appendix A for additional details. Other Sources include but not limited to:</p> <p>Sunlight Supply, Inc. Vancouver, WA (Corporate Headquarters) 5408 NE 88th Street, Bldg A Vancouver, WA 98665 Tel: 360-883-8846 Fax: 360-883-5395</p> <p>SLS California Livermore, CA Tel: 925-337-8070 Fax: 925-454-1535</p> <p>Hydrofarm WEST 2249 S. McDowell Ext. Petaluma CA 94954 Tel: 800-634-9990</p>



GENERAL INFORMATION

OBJECT

This document outlines the conducted emissions requirements applicable to lighting equipment covered under **47CFR18**. This procedure will be used for the testing of lighting products in the ARRL EMC laboratory.

EUT PASS CRITERIA (Consumer)

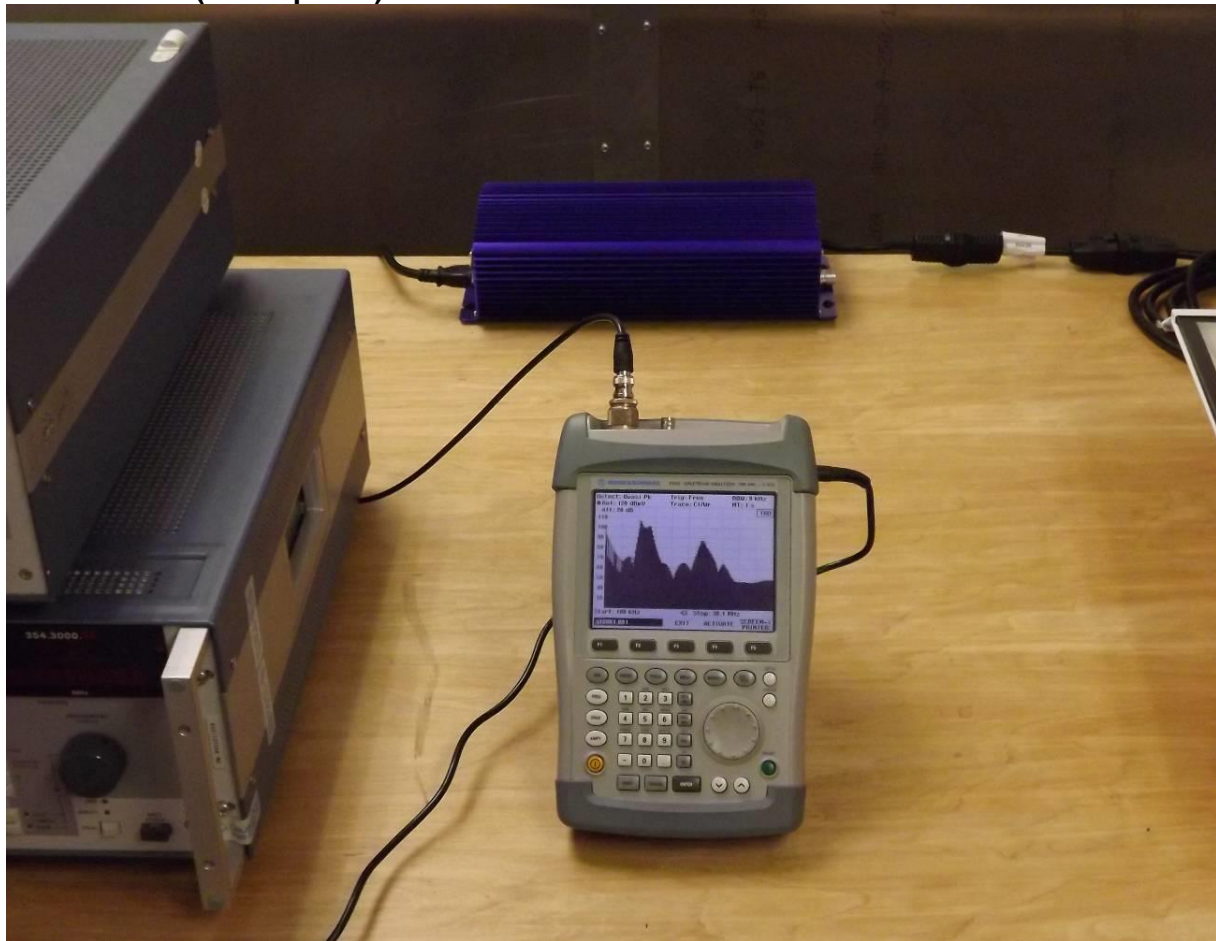
Table 1

Test Location	Test	Frequency Range	Limits		
Power Supply	Conducted Emissions	0.45 MHz - 2.51 MHz	250 μ V /	48 dB(μ V)	quasi peak
		2.51 MHz - 3 MHz	3,000 μ V /	70 dB(μ V)	quasi peak
		3 MHz - 30 MHz	250 μ V /	48 dB(μ V)	quasi peak

SETUP CHECKLIST

Initials	Setup
MG	The EUT should be in new condition, built to production specifications, using production parts and using production processes. (commercially available)
MG	Schedule EMC facility time with the ARRL Laboratory. (This test is performed by formally trained users of the EMC facility)
MG	Complete Equipment List Table.
MG	Connect output of LISN to input of EMC Receiver.
MG	Apply rated voltage to input of LISN.
MG	Connect the EUT to the LISN using a standard power cord supplied with the product. (approx. 1.2m in length)
MG	The Reference Ground Plane on the floor should be at least 2m x 2m in size and shall extend 0.5m beyond the footprint of the EUT.
MG	For measuring table-top devices, mount onto a table 0.8m high and use a vertical conducting plane at least 2m x 2m in size located 40cm to the rear of the EUT and bonded to the reference ground plane with 3cm-wide straps at intervals less than 1m.
MG	Test each EUT model number at its nominal (rated) voltage.
MG	Photograph the test setup and include in this test report.

TEST SETUP (insert photo)



EQUIPMENT LIST

Use the following equipment (or equivalent) in executing this procedure. If an equivalent piece of test equipment is used, then a note with the make, model, serial number, and calibration due date of the equipment must be made in the table.

Manufacturer	Description	Model Number	Serial Number	Cal Due
N/A	Conducted Emissions test area	N/A	N/A	N/A
R&S	EMC Spectrum Analyzer/EMI Receiver	FSH3	102393	06-21-14
N/A	Measurement Cable	N/A	N/A	N/A
R&S	Line Impedance Stabilization Network (LISN)	ENV216	100057	Self

CONDUCTED EMISSIONS TEST

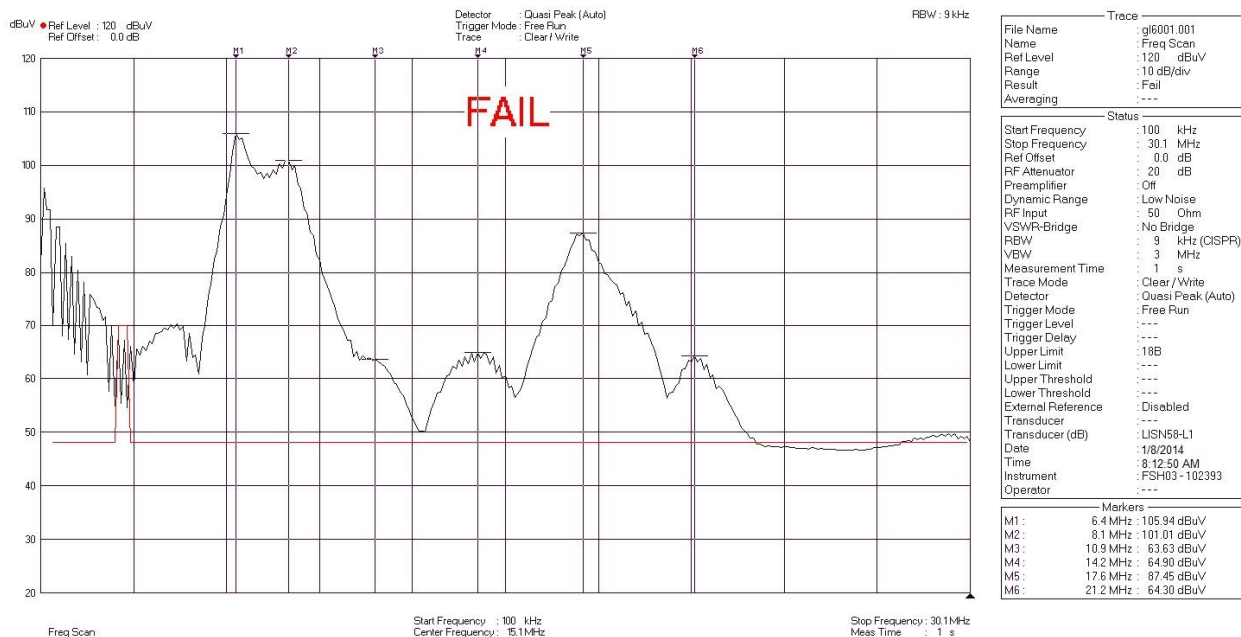
1. Bond the LISN to the ground plane of the test area using a grounding cable that is as short as possible.
2. Connect the EUT power cable to the Line Impedance Stabilization Network (LISN).
3. Measure the conducted emissions from the EUT using the LISN and a quasi-peak detector.
4. Record the six highest emissions from the EUT and compare the voltage to the limits specified in Table 1.
5. Attach emissions plots to this procedure.

Six Highest Emissions	Nominal Line Voltage	Interference Voltage (Quasi Peak)	Limit (Quasi Peak)	PASS / FAIL
6.4MHz	120VAC	106dB μ V	48 dB(μ V)	FAIL
8.1MHz	120VAC	101dB μ V	48 dB(μ V)	FAIL
10.9MHz	120VAC	64dB μ V	48 dB(μ V)	FAIL
14.2MHz	120VAC	65dB μ V	48 dB(μ V)	FAIL
17.6MHz	120VAC	87dB μ V	48 dB(μ V)	FAIL
21.2MHz	120VAC	64dB μ V	48 dB(μ V)	FAIL

(See Appendix B for additional rules violations.)

PLOT OF CONDUCTED EMISSIONS (PHASE TO GROUND)

NOTE: The Neutral conductor to ground spectra was very similar.



Lumatek LK-1000 at 600 Watt Setting

All Power Settings Are Similar. See Appendix C for supplemental data.

Appendix A

Lumatek LK1000 Purchasing Info

On October 25, 2013, the ARRL Purchasing Department placed an order for the subject Lumatek LK1000 grow light. This order was placed through the Sears Web site at www.sears.com. The order was shipped on October 29 and received on November 5, 2013.

Supplemental and supporting documents are included as follows:

- 1) Purchase order
- 2) Email order process notification
- 3) Email shipping notification

The purchase of this light was made by Sears through ePowerBuys. Sears Holdings Corporation and ePowerBuys address and contact information are as follows:

- Sears Holdings Corporation Contact Information and CEO

Edward S. Lampert, Chairman & CEO
Sears Holdings Corporation
3333 Beverly Road
Hoffman Estates, IL 60179
Tel: (847) 286-2500 (Main Number)

- ePowerBuys Contact Info

ePowerBuys
24885 Danafir
Dana Point, CA 92629
Tel: (949) 716-5312
Email: customerservice@epowerbuys.com

Supplemental and supporting documents are included as follows:

- 1) Purchase order
- 2) Email order process notification
- 3) Email shipping notification

Purchase Order
(Appendix A Continued)

[Print page](#) [Close](#)


Thanks for your order #581131591

Paid with Master Card ending in 8326
A confirmation email will be sent to krochette@arrl.org

Items We're Shipping

Purchasing Department 225 Main St. MG-213 Newington, CT 06111	Merchandise Subtotal	\$351.42
	Shipping/Handling	\$33.50
	Pre tax Subtotal	\$384.92
	Tax	\$24.45
	Total	\$409.37

Arriving Nov 18

	Lumatek Lumatek LK1000 Dual Voltage HPS-MH Dial A Watt Dimmable, 1000W-750W-600W	\$351.42
Sold by ePowerBuys Item # SPM6517838405 Mfr. Model #LK1222N		Qty 1

<https://www.sears.com/shc/s/OrderConfirmationDisplayView?lpToolsTotal=0.00&ShopI...> 10/25/2013

Email Order Process Notification

(Appendix A Continued)

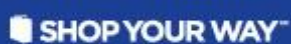
From: Sears [<mailto:sears@value.sears.com>]
Sent: Friday, October 25, 2013 3:35 PM
To: Rochette, Kim
Subject: Your sears.com order is being processed

Order #581131591

[Customer Service Home](#)



ORDER PROCESSING
order #: [581131591](#)



Member # xxxxxxxxxxxx8146
[View Account](#)



[Join Now](#)

Thank you for shopping with Sears!

Dear Purchasing,

Your order [581131591](#) is processing.

When your order ships, we'll send you an email confirmation that includes your order's tracking number.

We truly appreciate your business and hope everything you ordered meets or exceeds your expectations.

Best regards,
Imran Jooma
EVP & President, Marketing and Online
Imran@customerservice.sears.com

Please keep this email as a receipt for your purchase.

ORDER HIGHLIGHTS

Pending Points Earned

Base Points: 3514
[See Details](#)

BILLING INFORMATION

Purchasing Department

225 Main St.
MG-213
Newington, CT 06111

860-594-0217
860-594-0200
krochette@arrl.org

WE LOVE FEEDBACK

Let us know how we did



SHIP INFORMATION

Salescheck #: [093012579529](#)

Shipping Address
Purchasing Department
225 Main St.
MG-213
Newington, CT 06111

Expected Arrival Date: 11/18/2013
Delivery Method: Ship

Order Date: 25-Oct-2013
Return Code: 3689-9517-1533-2969-0619

860-594-0217
860-594-0200

ITEM DETAILS	PRICE	QTY	PROMOTIONS	TOTALS
Item# SPM6517838405 Mfr# LK1222N	Reg. \$351.42	1		
Description: Lumatek LK1000 Dual Voltage HPS-MH Dial A Watt Dimmable, 1000W-750W-600W				
Sold by: ePowerBuys				
Seller Info Return Policy				
				Subtotal: \$351.42
				Item Total: \$351.42

ORDER TOTAL

Merchandise Subtotal	\$351.42
Total Shipping/Handling Charges	\$33.50
Pre Tax Subtotal:	\$384.92
Tax (Where Applicable)	\$24.45

Total Due: \$409.37

Total Charged to Credit Card \$409.37
MasterCard Card ending in: *****8326

HERE ARE YOUR PENDING SHOP YOUR WAYSM POINTS THAT COULD BE EARNED WITH THIS ORDER

TOTAL POINTS	TOTAL POINTS VALUE	BASE POINTS
3514	\$3.51	3514

Points displayed are estimates only. Points earned vary based on purchase(s), offers, cancellations, or subsequent modifications to your order.

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Email Shipping Notification
(Appendix A Continued)

From: Sears [<mailto:sears@value.sears.com>]
Sent: Tuesday, October 29, 2013 3:12 PM
To: Rochette, Kim
Subject: Your sears.com order has been shipped!



Salecheck # 093012579529



ship confirmation
Order #: [581131591](#)

[Order Center](#) [Customer Service](#) [Return Questions](#)

Member # xxxxxxxxxxxx8146 View Account	Join Now
---	--------------------------

Dear Purchasing,

Great news – your order **581131591** has shipped!

[TRACK MY PACKAGE ▶](#)

Your package is being shipped by UPS and the tracking number is 1Z7W541X0392274520. It may take 24 hours for your tracking number to return any information.

Thank you again for shopping with us!

Best regards,
Imran Jooma
EVP & President, Marketing and Online
Imran@customerservice.sears.com



Shipping Information	Item Number	Shipped Items	QTY	Item Price
Purchasing Department 225 Main St. MG-213 Newington CT 06111 Phone: 860-594-0217 Shipping Vendor: UPS	SPM6517838405	Lumatek LK1000 Dual Voltage HPS-MH Dial A Watt Dimmable, 1000W-750W-600W Sold By: ePowerBuys Email Seller Seller Info Return Policy Tracking Number: 1Z7W541X0392274520	1	\$351.42
	Order Date: 25-Oct-2013 Salecheck Number: 093012579529 Return code: 3689-9517-1533-2969-0619		Initial Subtotal: \$351.42 Tax: \$24.45 Shipping: \$33.50 Total: \$409.37	

Billing Information	Payment Information	Billed Amount
Purchasing Department 225 Main St. MG-213 Newington CT 06111 860-594-0217 860-594-0200 krochette@arll.org	MasterCard: *****8326	\$409.37

If your order contains an item that is not sold by Sears or Kmart, please be advised that this item **cannot be returned or exchanged at your local Sears or Kmart store**. Your merchant's profile, which contains their specific return policy, is available via the product page. Please see your merchant's profile for additional details.

Sears International Orders

The Sears.com International customer support team can be reached at: International@customerservice.sears.com. You may also view answers with regards to order status, return policies, and other frequently asked questions: [click here](#).

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Thank you for shopping at Sears.com and using your Shop Your Way RewardsSM member number. As a valued customer please continue using your Shop Your Way Rewards member number to earn points on qualifying purchases every time you shop with Sears, Kmart, Lands' End at Sears, The Great Indoors and mygoferTM stores and online.

For complete Shop Your Way Rewards program terms and conditions, please visit shopyourwayrewards.com.

Rebates

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International Customer Service

If you have any questions regarding your international order, please email us at International@customerservice.sears.com.

[International Customer Service Page](#).

Customer Service Information

If you have any questions regarding your order, please email us at Order@customerservice.sears.com or call us at 1-877-234-0784. For more Customer Service information, [click here](#).

 3 MONTHS LIMITLESS FREE SHIPPING curious? ▶	 go mobile with Sears Sign up to get the latest deals via text message right on your phone! learn more ▶	Lock your price in today & take your time to pay with Sears layaway learn more ▶	Marketplace at Sears.com means more. More from sears. More for you. More of everything. shop now ▶
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help from your friends.](#)
[Join Shop Your Way](#)

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Appendix B

Failure to Meet FCC Labeling Requirements

As the photos in this report show, a circular FCC sticker appears on the bottom of this device. However, there is no additional FCC information included anywhere on the device, box or documentation. There is no reference to either Part 18 or Part 15 of the FCC rules. This lack of proper labeling and documentation is an additional Part 18 rules violation.

Specifically, some of the more important rules that apply in this case are as follows. Please note that paragraph § 18.213 (d) specifically applies to RF Lighting Devices. In addition, some rules regarding equipment authorization under § 18.203 are included for reference purposes:

§ 18.203 Equipment authorization.

(a) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

- (1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.
- (2) A technical report pursuant to §§ 18.207 and 18.311.

§ 18.213 Information to the user.

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) Simple measures that can be taken by the user to correct interference.
- (d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

APPENDIX C

Lumatek LK-1000 Conducted Emissions Testing Supplemental Data

The Quasi Peak graphs in this Appendix show that the LK-1000 significantly exceeds all FCC Part 18 limits under all operating conditions.

Lumatek LK-1000

600 Watt Setting

0.10 to 30.1 MHz



Trace	
File Name	: gl6001.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

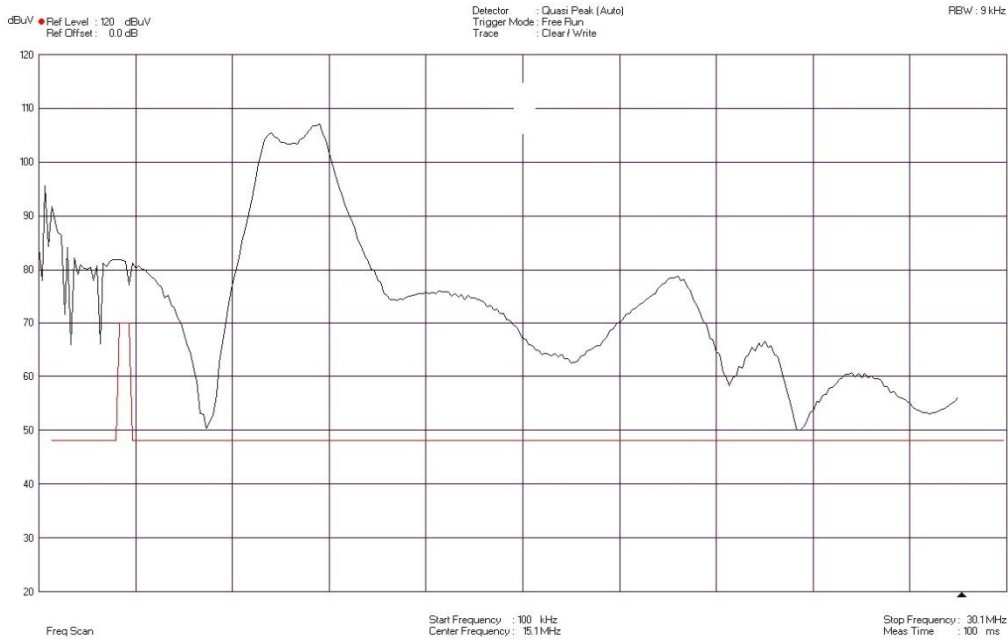
Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 10:04:54 AM
Instrument	: FSH03-102393
Operator	: ---



Trace	
File Name	: gl650n.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 11:05:40 AM
Instrument	: FSH03-102393
Operator	: ---

Lumatek LK-1000
750 Watt Setting
0.10 to 30.1 MHz



Trace	
File Name	: gl750n.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Ref Offset	: 0.0 dB
Range	: 10 dB/div
Result	: ---
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear/Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18dB
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 12:03:12 PM
Instrument	: FSH03-102393
Operator	: ---

Phase to Ground



Trace	
File Name	: gl750n.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Ref Offset	: 0.0 dB
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear/Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18dB
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 1:04:07 PM
Instrument	: FSH03-102393
Operator	: ---

Neutral to Ground

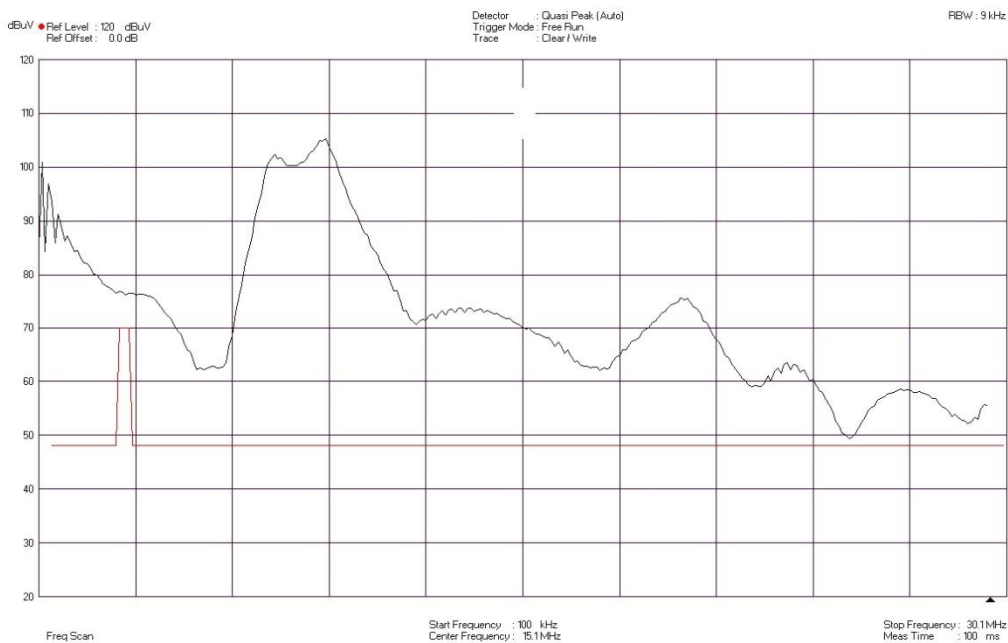
Lumatek LK-1000
1,000 Watt Setting
0.10 to 30.1 MHz



Trace	
File Name	: gl1k1.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18dB
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 8:05:05 AM
Instrument	: FSH03-102393
Operator	: ---

Phase to Ground



Trace	
File Name	: gl1kn.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: ---
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18dB
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 12/19/2013
Time	: 9:08:55 AM
Instrument	: FSH03-102393
Operator	: ---

Neutral to Ground

