



ARRL The national association for
AMATEUR RADIO™

ADMINISTRATIVE HEADQUARTERS
225 Main Street, Newington, Connecticut, USA 06111-1494
Telephone: 860-594-0200 ■ FAX: 860-594-0259
www.arrl.org

04/04/2014

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	4/4/14
Results Reviewed By:	Edward Hare – W1RFI	4/4/14

Summary of Test Results: **Fail**

EUT CONFIGURATION	
Manufacturer	Lumatek
Model Number	N/A
Model	Lumatek Electronic Ballast Dial-A-Watt / Air Cooled 1000W/120-240V
Serial Number	N/A
Importer	Lumatek
Retailers	Amazon Mail Order (purchased here) www.amazon.com See Appendix A for additional details. Other Sources include but not limited to: Growers House Hydroponics Supplies 1501 E 21 st St. Tuscon, AZ 85719 Tel: 855-289-1441 Email: staff@growershouse.com Sunlight Supply, Inc. Vancouver, WA (Corporate Headquarters) 5408 NE 88th Street, Bldg A Vancouver, WA 98665 Tel: 360-883-8846 Fax: 360-883-5395 SLS California Livermore, CA Tel: 925-337-8070 Fax: 925-454-1535



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

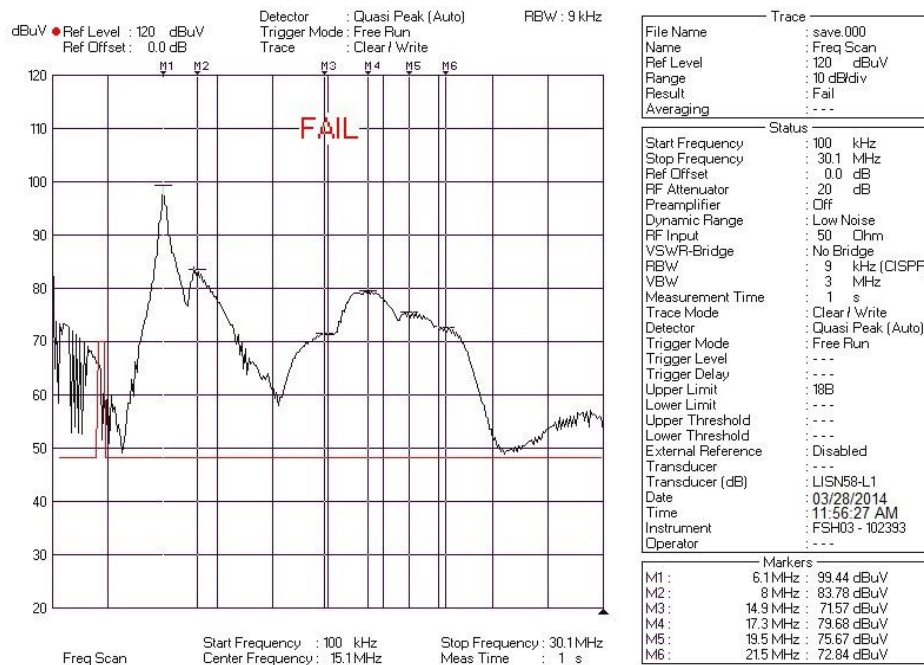
1. Bond the LISN to the ground plane of the test area using a grounding cable that is as short as possible.
2. Connect the EUT power cable to the Line Impedance Stabilization Network (LISN).
3. Measure the conducted emissions from the EUT using the LISN and a quasi-peak detector.
4. Record the six highest 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
6.1 MHz	120VAC	99 dB μ V	48 dB(μ V)	FAIL
8.0 MHz	120VAC	84 dB μ V	48 dB(μ V)	FAIL
14.9 MHz	120VAC	72 dB μ V	48 dB(μ V)	FAIL
17.3 MHz	120VAC	80 dB μ V	48 dB(μ V)	FAIL
19.5 MHz	120VAC	76 dB μ V	48 dB(μ V)	FAIL
21.5 MHz	120VAC	73 dB 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 Air Cooled Ballast at 400 Watt Setting

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

Appendix A

Lumatek Air Cooled Ballast Purchasing Info

On Ed Hare, ARRL Laboratory Manager, placed an on-line order with Amazon for the subject LumatekAir Cooled Ballast for grow lights. This order was placed through the ordering system at Amazon and shipped to ARRL from Grower's House Hydroponic Supplies in Tucson, AZ.

Supplemental and supporting documents are included as follows:

- 1) Amazon order
- 2) Email shipping notification
- 3) Contact information for Hydroponic Supplies

Hare, Ed W1RFI

From: Amazon.com [ship-confirm@amazon.com]
Sent: Tuesday, March 11, 2014 7:26 PM
To: Hare, Ed W1RFI
Subject: Your Amazon.com order of "NEW! LUMATEK LK1000AC..." has shipped!



[Your Orders](#) | [Your Account](#) | [Amazon.com](#)

Shipping Confirmation

Order #105-6269533-5786645

Hello Edward Hare,

Thank you for shopping with us. We thought you'd like to know that Growers House Com Hydroponics Supplies shipped your item, and that this completes your order. Your order is on its way, and can no longer be changed. If you need to return an item from this shipment or manage other orders, please visit [Your Orders](#) on Amazon.com.

Your estimated delivery date is: Monday, March 17, 2014 - Thursday, March 20, 2014 Track Your Package	Your order was sent to: Edward Hare ARRL 225 Main St Newington, CT 06111 United States
--	--

Depending on the ship speed you chose, it may take 24 hours for tracking information to be available in your account.

GET A \$10 GIFT CARD upon approval for the Amazon.com Store Card [Learn more](#)

Shipment Details



NEW! LUMATEK LK1000AC **\$210.00**
1000W/600W/400W HPS/MH Digital Dimmable
Air-Cooled Ballast
Sold by Growers House Com Hydroponics Supplies
Condition: New

Item Subtotal:	\$210.00
Shipping & Handling:	\$0.00
Total Before Tax:	\$210.00
Shipment Total:	\$210.00
Paid by Amex:	\$210.00

Hare, Ed W1RFI

From: Growers House Com Hydroponics Supplies - Amazon Marketplace [43tp83c9z8dfsp1@marketplace.amazon.com]
Sent: Tuesday, March 11, 2014 7:24 PM
To: Hare, Ed W1RFI
Subject: Your Growers House Order #26768 has shipped



Date: 11-Mar-2014

Shipped to:

EDWARD HARE
225 MAIN ST
ARRL
NEWINGTON CT 06111-1400
UNITED STATES

Ordered: 1 Shipped: 1 W0-PO9Y-IJW3 Lumatek Digital Ballast Dual Air Cooled use 400/600/1000 watt HPS or MH BULBS PLUS SUPER LUMENS (NEW ON MARKET) \$210.00
Ordered: 1 Shipped: 1 LK1000AC Lumatek 1000W Air Cooled Dial A Watt Dimmable Ballast \$0.00

To track your package, click the link below:
[Federal Express Tracking Link](#)

Thanks for your order! Happy Growing :)

For Your Information: To help arbitrate disputes and preserve trust and safety, we retain all messages buyers and sellers send through Amazon.com for two years. This includes your response to the message above. Amazon.com uses filtering technology to protect buyers and sellers from possible fraud. Messages that fail this filtering will not be transmitted.

We want you to buy with confidence anytime you purchase products on Amazon.com. Learn more about Safe Online Shopping (<http://www.amazon.com/gp/help/customer/display.html?nodeId=551434>) and our safe buying guarantee (<http://www.amazon.com/gp/help/customer/display.html?nodeId=537868>).

[commMgrTok:A4U6CTSW7Z5RL]

855.289.1441 | Review Lab | A-Z Glossary |   

Welcome to Growers House! [My Account](#) | [My Wishlist](#) | [My Cart](#) | [Checkout](#) | [Log In](#)

[Home](#) / [About GrowersHouse Hydroponics Supplies in Tucson AZ](#)



Welcome to Growers House (GrowersHouse.com) -- Let us help you grow the best plants you've ever seen.

Growers House is a family owned and operated hydroponics supply and indoor gardening center. We have both a retail and online store based out of Tucson, AZ to service our customers locally and globally. It is our belief that old business practices are becoming a scarce commodity today. Our goal is to provide our customers a large selection, [wholesale pricing](#), expert advice, [comparison tests](#), and most importantly, customer service. There are no automated phones, robots, or drone-like employees here. We answer the phone all the time when we're open and respond to emails usually within the hour.

If you need help getting started, we have a knowledgeable staff to help walk you through your first setup. Do you have experience but need some pointers on a [large-scale operation](#)? We've built numerous successful large gardens and work on a personal basis to make sure our customers' efforts succeed.

At Growers House we believe if you're not happy, then we haven't done our job.

Visit and shop at Growers House today if you're interested in price, advice, service, and selection. Happy Growing :)

Address:
1501 E 21ST Street
Tucson, AZ 85719

Phone: 855-289-1441
Fax: 520-333-3250
Email: staff@growershouse.com

We're Open (MST Time Zones):
M-F: 10 am to 7 pm
Sat: 10 am to 6 pm
Sun: 11 am to 5 pm

Sign Up for Our Newsletter:

Join Our Community

[About Us](#)

[About Us](#)

[Shipping](#)

[Customer Center](#)

[My Account](#)

[Order Status](#)

[Wishlist](#)

[Returns and Exchanges](#)

[Info](#)

[Buyers Guides](#)

[Privacy Policy](#)

[Returns Policy](#)

[Contacts](#)

[Send Us A Message](#)

[Our Contact Info](#)

[Store Location](#)

[Visit Growers House](#)

[1501 E 21st St](#)

[Tucson, AZ 85719](#)

[1.855.289.1441](#)

[get directions](#)



Hare, Ed W1RFI

From: Growers House Com Hydroponics Supplies - Amazon Marketplace [43tp83c9z8dfsp1@marketplace.amazon.com]
Sent: Tuesday, March 11, 2014 7:24 PM
To: Hare, Ed W1RFI
Subject: Your Growers House Order #26768 has shipped



Date: 11-Mar-2014

Shipped to:

EDWARD HARE
225 MAIN ST
ARRL
NEWINGTON CT 06111-1400
UNITED STATES

Ordered: 1 Shipped: 1 W0-PO9Y-IJW3 Lumatek Digital Ballast Dual Air Cooled use 400/600/1000 watt HPS or MH BULBS PLUS SUPER LUMENS (NEW ON MARKET) \$210.00
Ordered: 1 Shipped: 1 LK1000AC Lumatek 1000W Air Cooled Dial A Watt Dimmable Ballast \$0.00

To track your package, click the link below:
[Federal Express Tracking Link](#)

Thanks for your order! Happy Growing :)

For Your Information: To help arbitrate disputes and preserve trust and safety, we retain all messages buyers and sellers send through Amazon.com for two years. This includes your response to the message above. Amazon.com uses filtering technology to protect buyers and sellers from possible fraud. Messages that fail this filtering will not be transmitted.

We want you to buy with confidence anytime you purchase products on Amazon.com. Learn more about Safe Online Shopping (<http://www.amazon.com/gp/help/customer/display.html?nodeId=551434>) and our safe buying guarantee (<http://www.amazon.com/gp/help/customer/display.html?nodeId=537868>).

[commMgrTok:A4U6CTSW7Z5RL]

APPENDIX B

Failure to Meet FCC Labeling Requirements

As the photos in this report show, there is no FCC label or sticker on this device. Furthermore, there is no 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.¹ 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.

¹ While not necessarily an FCC matter, we also note that the device does not have a UL label. Furthermore, there isn't a UL label anywhere in the packaging material or documentation.

APPENDIX C

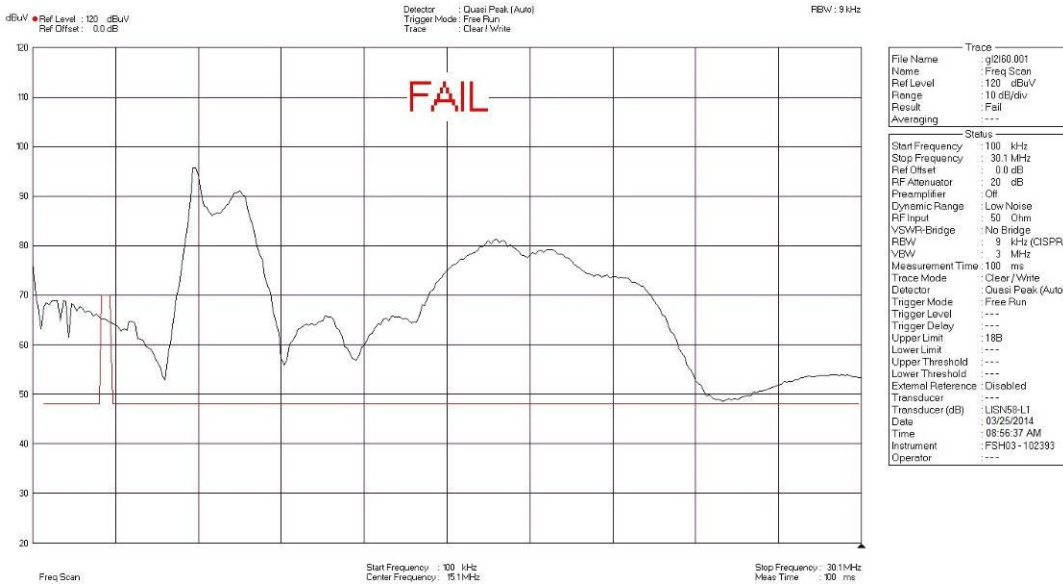
Lumatek Air-Cooled Ballast Conducted Emissions Testing Supplemental Data

The Quasi Peak graphs in this Appendix show that the Lumatek Air-Cooled ballast significantly exceeds all FCC Part 18 limits under all operating conditions.

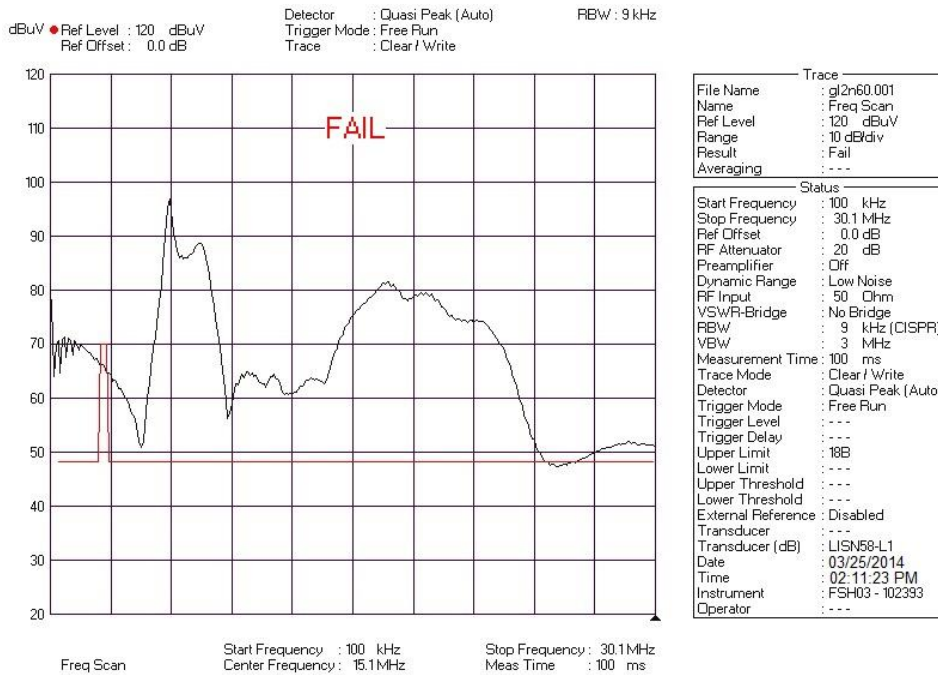
Lumatek Air-Cooled Ballast

600 Watt Setting

0.10 to 30.1 MHz

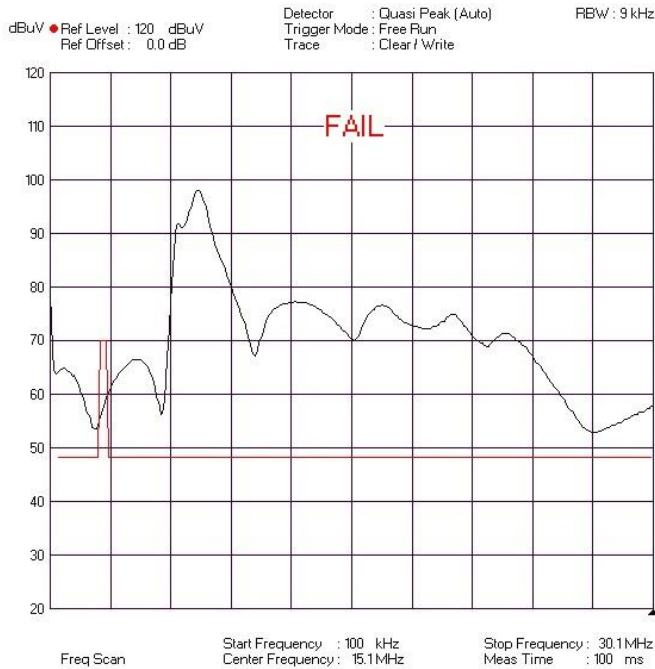


Phase to Ground



Neutral to Ground

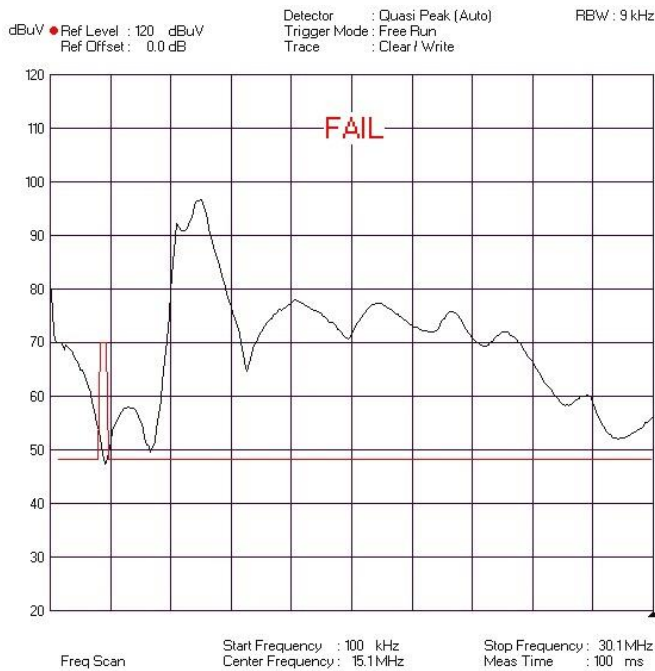
Lumatek Air-Cooled Ballast 1,000 Watt Setting 0.10 to 30.1 MHz



Trace	
File Name	: gl210.001
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	: 03/26/2014
Time	: 08:37:16 AM
Instrument	: FSH03 - 102393
Operator	: ---

Phase to Ground

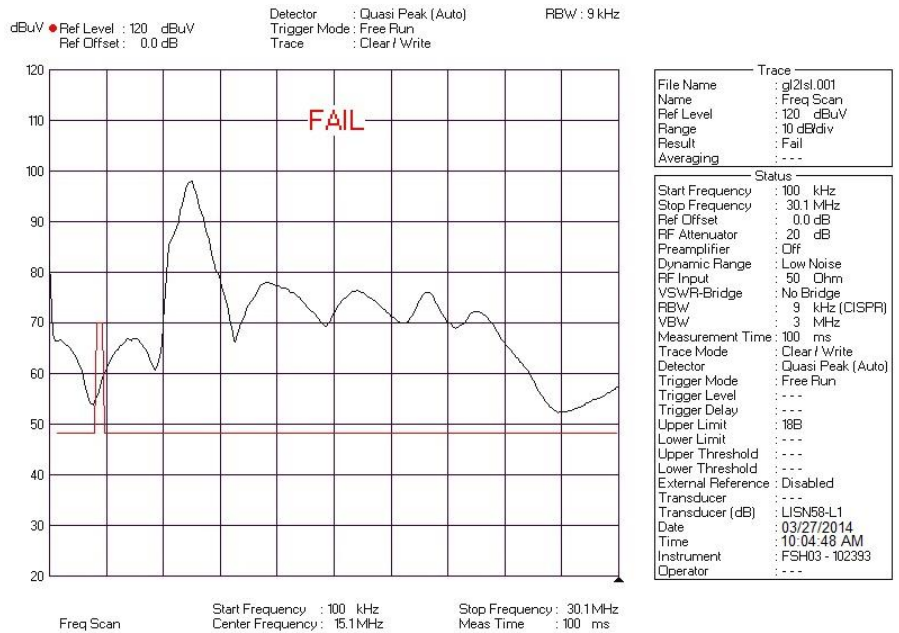


Trace	
File Name	: gl2n10.001
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

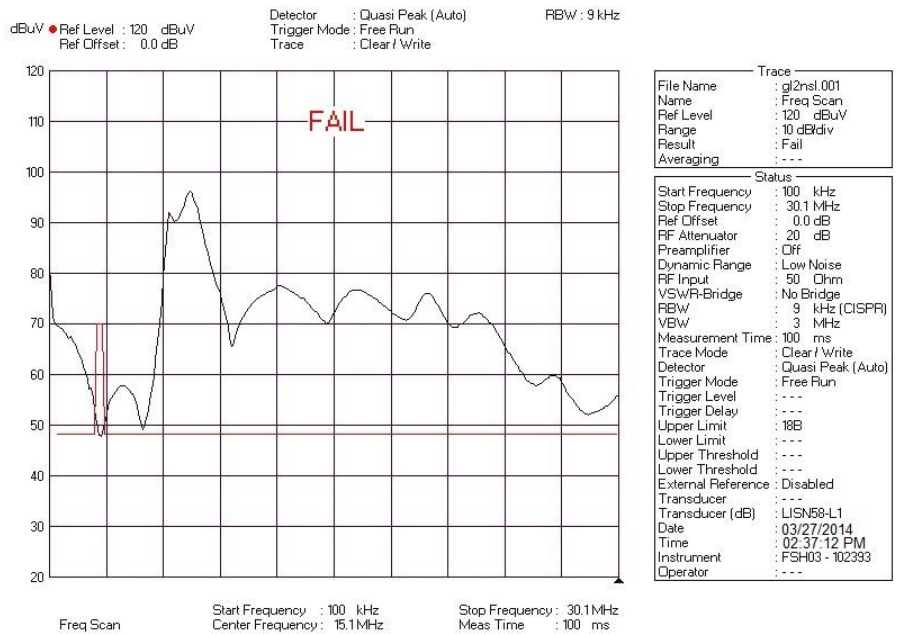
Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
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	: 03/26/2014
Time	: 01:37:08 PM
Instrument	: FSH03 - 102393
Operator	: ---

Neutral to Ground

**Lumatek Air-Cooled Ballast
Super Lumens Setting
0.10 to 30.1 MHz**



Phase to Ground



Neutral to Ground