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Report No: L101410421

Date: 11/12/2014



NVLAP LAB CODE 200927-0

Report No: L101410421

Report Prepared For: Hunter Industries
 1775 Diamond Street, San Marcos, CA. 92078

Model Number: KGZDC3LEDBZ

Test: Electrical and Photometric tests

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is KGZDC3LEDBZ. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 11/7/14

Date of Tests: 11/11/14 - 11/11/14

Seasoning of Sample: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/15
Xitron Power Analysis System	2503AH	MT-EL01	01/09/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/15
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/15
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Summary

Manufacturer:	Hunter Industries
Model Number:	KGZDC3LEDBZ
Driver Model Number:	N/A
Total Lumens:	123.07
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.47
Input Power (W):	5.27
Input Power Factor:	0.93
Current ATHD @ 12V(%):	39%
Current ATHD @ 277V(%):	N/A
Efficacy:	23
Color Rendering Index (CRI):	83
Correlated Color Temperature (K):	3902
Chromaticity Coordinate x:	0.3854
Chromaticity Coordinate y:	0.3813
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	1:30
Total Operating Time (Hours):	2:40
Off State Power(W):	0.00

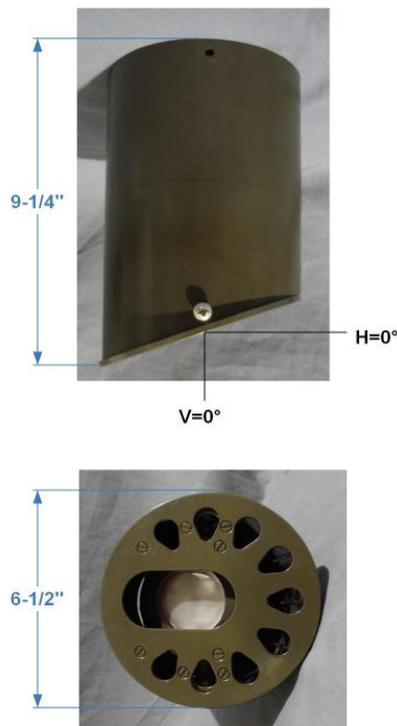
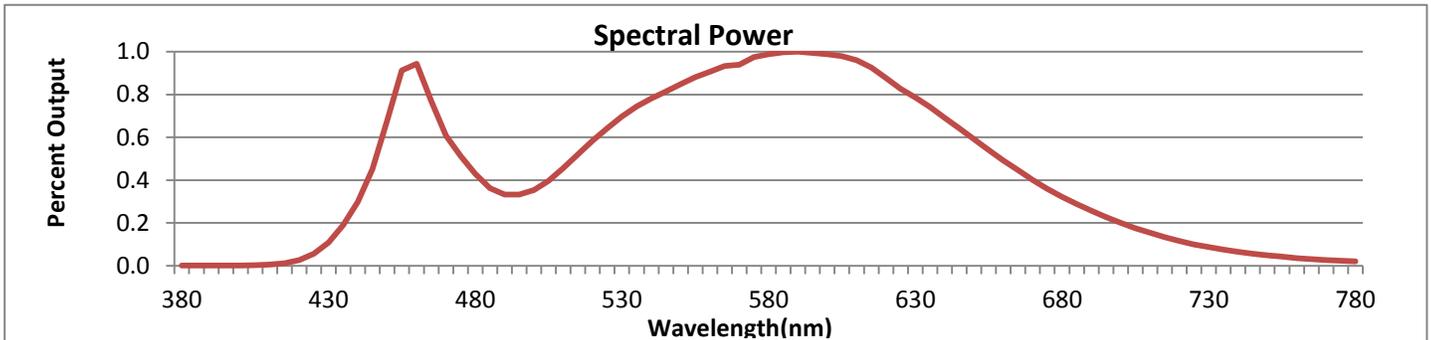


FIG. 1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



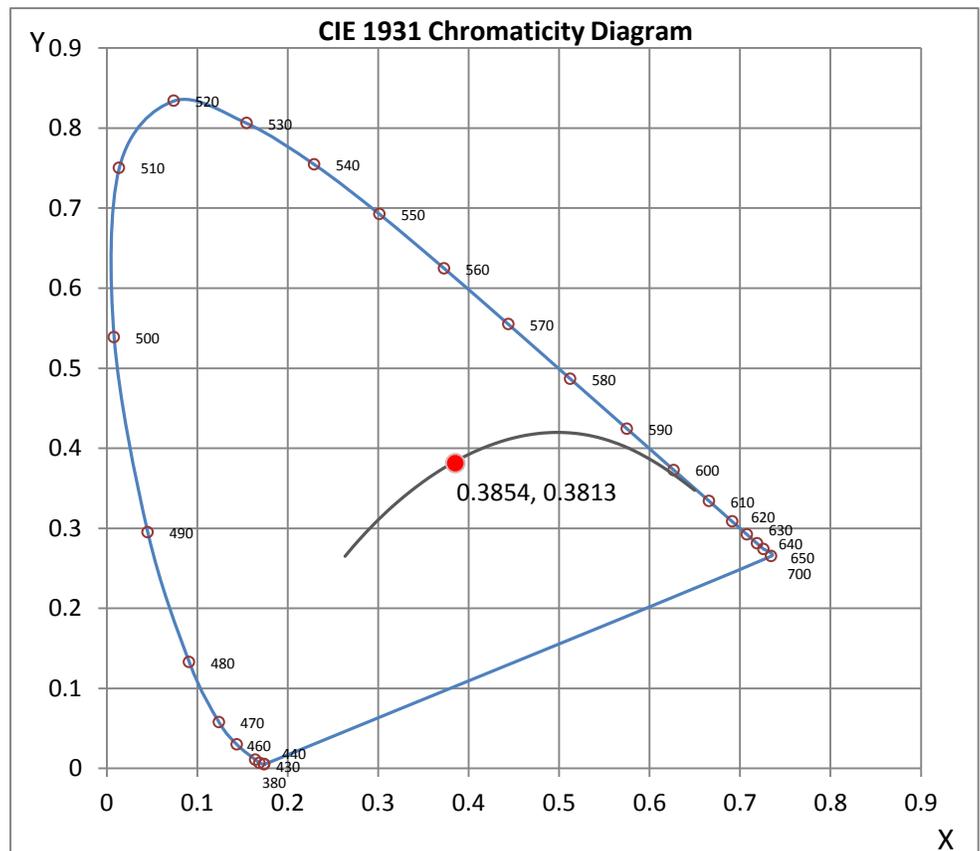
Wavelength	W/m ² nm	440	0.2991	510	0.4567	580	0.9887	650	0.5911	720	0.1150
380	0.0009	450	0.6779	520	0.5838	590	1.0000	660	0.4925	730	0.0868
390	0.0012	460	0.9437	530	0.6965	600	0.9888	670	0.4005	740	0.0651
400	0.0017	470	0.6077	540	0.7821	610	0.9602	680	0.3229	750	0.0487
410	0.0055	480	0.4289	550	0.8479	620	0.8764	690	0.2563	760	0.0360
420	0.0267	490	0.3333	560	0.9059	630	0.7856	700	0.2000	770	0.0272
430	0.1088	500	0.3536	570	0.9399	640	0.6910	710	0.1542	780	0.0205

CRI & CCT

x	0.3854
y	0.3813
u'	0.2265
v'	0.5043
CRI	82.80
CCT	3902
Duv	0.00071

R Values

R1	81.45
R2	90.73
R3	94.92
R4	77.77
R5	79.40
R6	84.78
R7	86.56
R8	67.10
R9	18.71
R10	74.94
R11	73.27
R12	57.70
R13	83.95
R14	96.86



*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

Test Report Released by:



Jeff Ahn
Engineering Manager

Test Report Reviewed by:



Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 8*



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Photometric Test Report

IES FLOOD REPORT

PHOTOMETRIC FILENAME : L101410421.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L101410421
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUE DATE] 11/11/2014
[MANUFAC] HUNTER INDUSTRIES
[LUMCAT] KGZDC3LEDBZ
[LUMINAIRE] 6-1/2"DIA. X 9-1/4"H. LED FIXTURE
[MORE] DIFFUSED LENS
[BALLASTCAT] N.A.
[BALLAST] N.A.
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[_INPUT] 12VAC, 5.27W
[_TEST PROCEDURE] IESNA:LM-79-08

Note: Candela values converted from Type-C to Type-B

CHARACTERISTICS

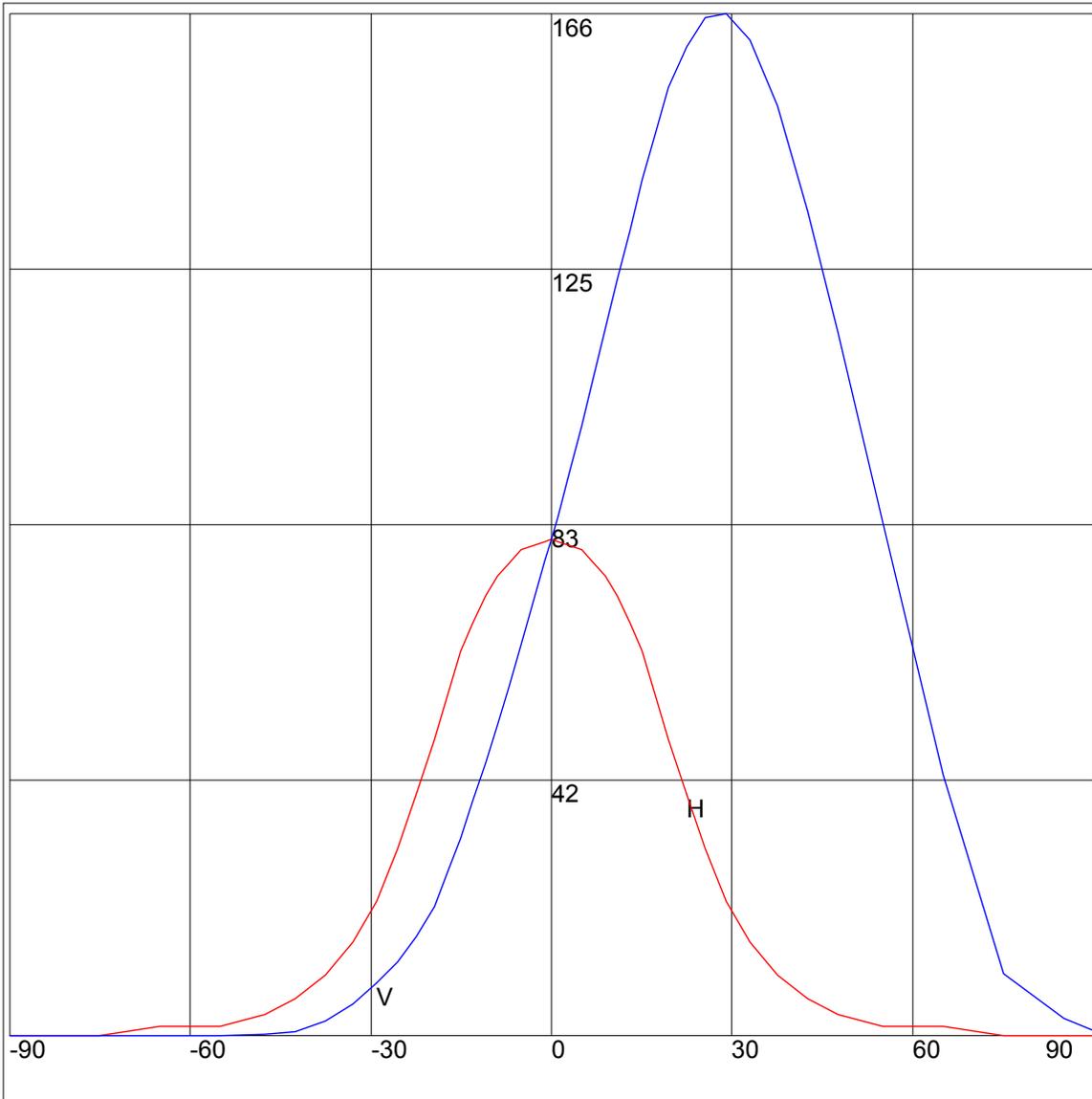
NEMA Type	5 H x 5 V
Maximum Candela	166.05
Maximum Candela Angle	0H 29V
Horizontal Beam Angle (50%)	39.1
Vertical Beam Angle (50%)	54.5
Horizontal Field Angle (10%)	80.4
Vertical Field Angle (10%)	95.3
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	63
Beam Efficiency	N.A.
Field Lumens	111
Field Efficiency	N.A.
Spill Lumens	12
Luminaire Lumens	123.07
Total Efficiency	N.A.
Total Luminaire Watts	5.27
Ballast Factor	1.00

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L101410421.IES

AXIAL CANDELA

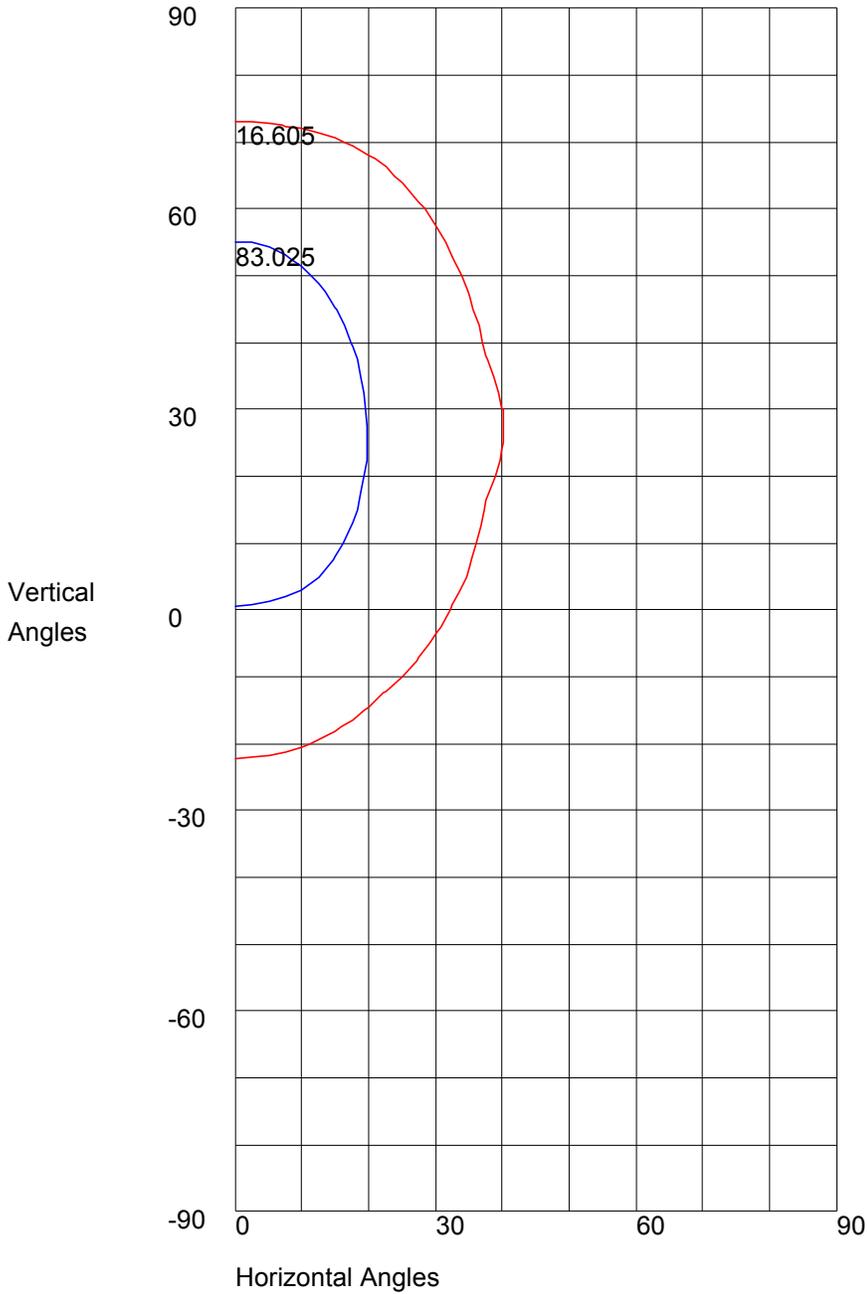
DEG.	HOR.	DEG.	VERT.
90	0	90	1.01
85	0	85	2.85
75	.17	75	10.23
65	1.51	65	42.44
55	1.68	55	83.53
47.5	3.61	47.5	114.22
42.5	6.13	42.5	134.02
37.5	10.03	37.5	151.13
33	15.21	33	161.69
29	21.99	29	166.05
25.5	30.56	25.5	165.46
22.5	39.16	22.5	160.6
19.5	48.13	19.5	154.14
17	56.1	17	145.76
15	62.48	15	139.05
13	66.98	13	131
11	71.47	11	122.95
9	74.76	9	114.96
7	76.84	7	107.05
5	78.92	5	99.13
3	79.62	3	91.74
1	80.31	1	84.35
0	80.66	0	80.66
-1	80.31	-1	77.24
-3	79.62	-3	70.41
-5	78.92	-5	63.57
-7	76.84	-7	57.06
-9	74.76	-9	50.55
-11	71.47	-11	44.28
-13	66.98	-13	38.24
-15	62.48	-15	32.2
-17	56.1	-17	27.24
-19.5	48.13	-19.5	21.03
-22.5	39.16	-22.5	16.19
-25.5	30.56	-25.5	12.08
-29	21.99	-29	8.56
-33	15.21	-33	5.23
-37.5	10.03	-37.5	2.52
-42.5	6.13	-42.5	.84
-47.5	3.61	-47.5	.34
-55	1.68	-55	.17
-65	1.51	-65	0
-75	.17	-75	0
-85	0	-85	0
-90	0	-90	0

AXIAL CANDELA DISPLAY



Maximum Candela = 166.05 Located At Horizontal Angle = 0, Vertical Angle = 29
H - Horizontal Axial Candela
V - Vertical Axial Candela

ISOCANDELA CURVES



Maximum Candela = 166.05 Located At Horizontal Angle = 0, Vertical Angle = 29
50% Maximum Candela = 83.025
10% Maximum Candela = 16.605