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Report No: L091501602

Date: 9/10/2015



NVLAP LAB CODE 200927-0

**Report No:** L091501602

**Report Prepared For:** HK Lighting Group  
3529 Old Conejo Road #118

**Model Number:** ZXL-16-AMB-40D

**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 ZXL-16-AMB-40D. Received in working and undamaged condition. No modifications were necessary.

**Testing Condition:** Fixture is tested with no special conditions.

**Sample Arrival Date:** 8/31/15

**Date of Tests:** 9/9/15 - 9/10/15

**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	11/10/15
Xitron Power Analysis System	2503AH	MT-EL01	10/20/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/16
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/05/16
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

<b>Manufacturer:</b>	HK Lighting Group
<b>Model Number:</b>	ZXL-16-AMB-40D
<b>Driver Model Number:</b>	HATCH LC12-0700P-120-B
<b>Total Lumens:</b>	66.08
<b>Input Voltage (VAC/60Hz):</b>	120.00
<b>Input Current (Amp):</b>	0.08
<b>Input Power (W):</b>	8.56
<b>Input Power Factor:</b>	0.95
<b>Current ATHD @ 120V(%):</b>	20%
<b>Current ATHD @ 277V(%):</b>	N/A
<b>Efficacy:</b>	8
<b>Color Rendering Index (CRI):</b>	-20
<b>Correlated Color Temperature (K):</b>	1453
<b>Chromaticity Coordinate x:</b>	0.6004
<b>Chromaticity Coordinate y:</b>	0.3990
<b>Ambient Temperature (°C):</b>	25.0
<b>Stabilization Time (Hours):</b>	1:15
<b>Total Operating Time (Hours):</b>	1:55
<b>Off State Power(W):</b>	0.00

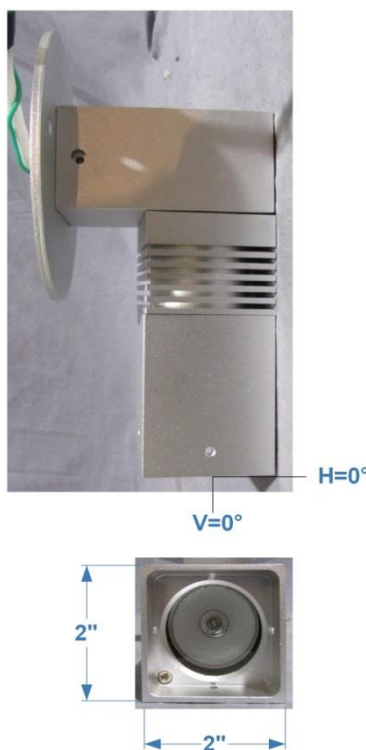
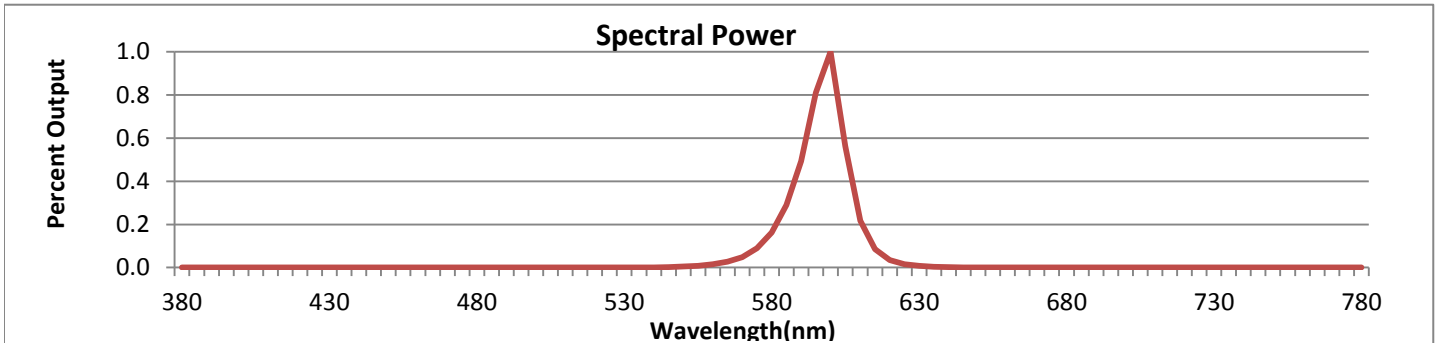


FIG. 1 LUMINAIRE



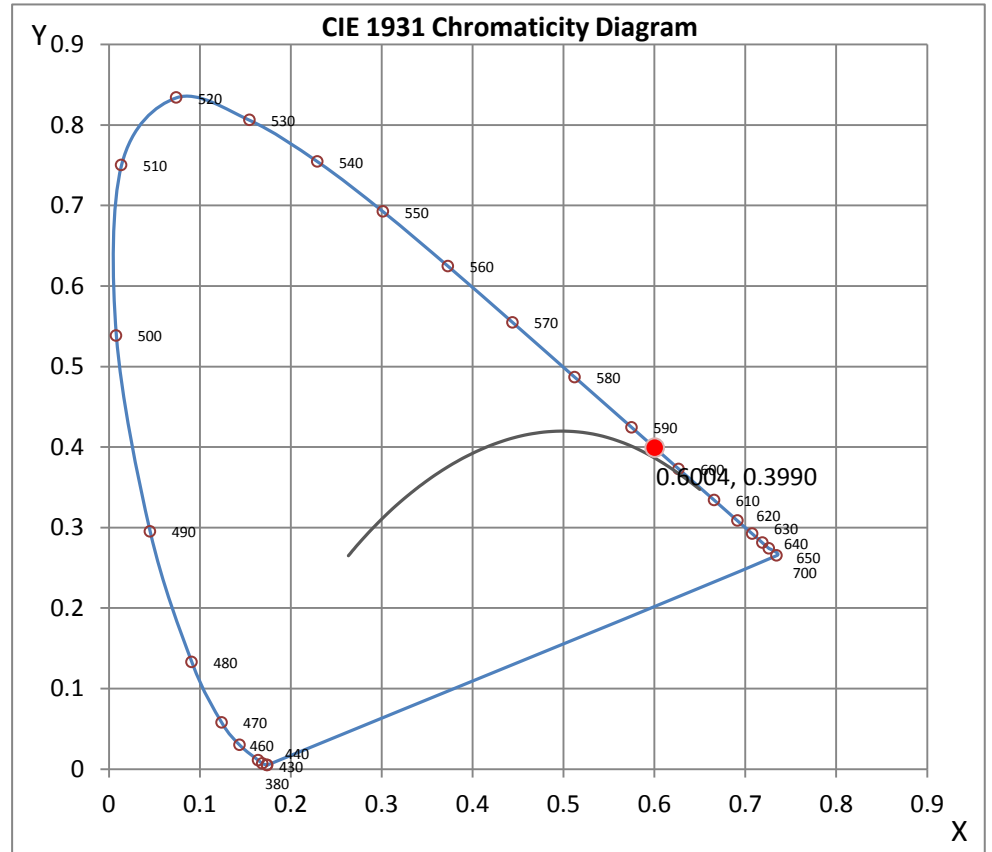
Wavelength	W/m <sup>2</sup> nm	440	0.0000	510	0.0001	580	0.1616	650	0.0006	720	0.0001
380	0.0000	450	0.0001	520	0.0001	590	0.4933	660	0.0003	730	0.0001
390	0.0001	460	0.0000	530	0.0003	600	1.0000	670	0.0002	740	0.0000
400	0.0001	470	0.0000	540	0.0012	610	0.2176	680	0.0001	750	0.0000
410	0.0001	480	0.0001	550	0.0044	620	0.0350	690	0.0001	760	0.0001
420	0.0000	490	0.0001	560	0.0149	630	0.0073	700	0.0001	770	0.0000
430	0.0000	500	0.0001	570	0.0482	640	0.0017	710	0.0001	780	0.0000

**CRI & CCT**

x	0.6004
y	0.3990
u'	0.3646
v'	0.5451
CRI	-19.60
CCT	1453
Duv	0.01029

**R Values**

R1	-30.05
R2	55.88
R3	15.14
R4	-65.89
R5	-38.00
R6	49.07
R7	-8.88
R8	-133.74
R9	-374.47
R10	35.78
R11	-89.28
R12	3.21
R13	-10.48
R14	45.33





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## 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 : JEFF AHN

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*

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



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## Photometric Test Report

### IES FLOOD REPORT

PHOTOMETRIC FILENAME : L091501602.IES

### DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002  
[TEST] L091501602  
[TESTLAB] LIGHT LABORATORY, INC.  
[ISSUEDATE] 9/10/2015  
[MANUFAC] HK LIGHTING GROUP  
[LUMCAT] ZXL-16-AMB-40D  
[LUMINAIRE] AMBER LED ACCENT LIGHT  
[BALLASTCAT] HATCH LC12-0700P-120-B  
[LAMPPOSITION] 0,0  
[LAMPCAT] N/A  
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND  
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.  
[INPUT] 120VAC, 8.56W  
[TEST PROCEDURE] IESNA:LM-79-08

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

### CHARACTERISTICS

NEMA Type	6 H x 6 V
Maximum Candela	64.87
Maximum Candela Angle	0H -1V
Horizontal Beam Angle (50%)	51.4
Vertical Beam Angle (50%)	51.3
Horizontal Field Angle (10%)	106.4
Vertical Field Angle (10%)	106.8
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	35
Beam Efficiency	N.A.
Field Lumens	60
Field Efficiency	N.A.
Spill Lumens	7
Luminaire Lumens	66
Total Efficiency	N.A.
Total Luminaire Watts	8.56
Ballast Factor	1.00

**IES FLOOD REPORT**  
**PHOTOMETRIC FILENAME : L091501602.IES**

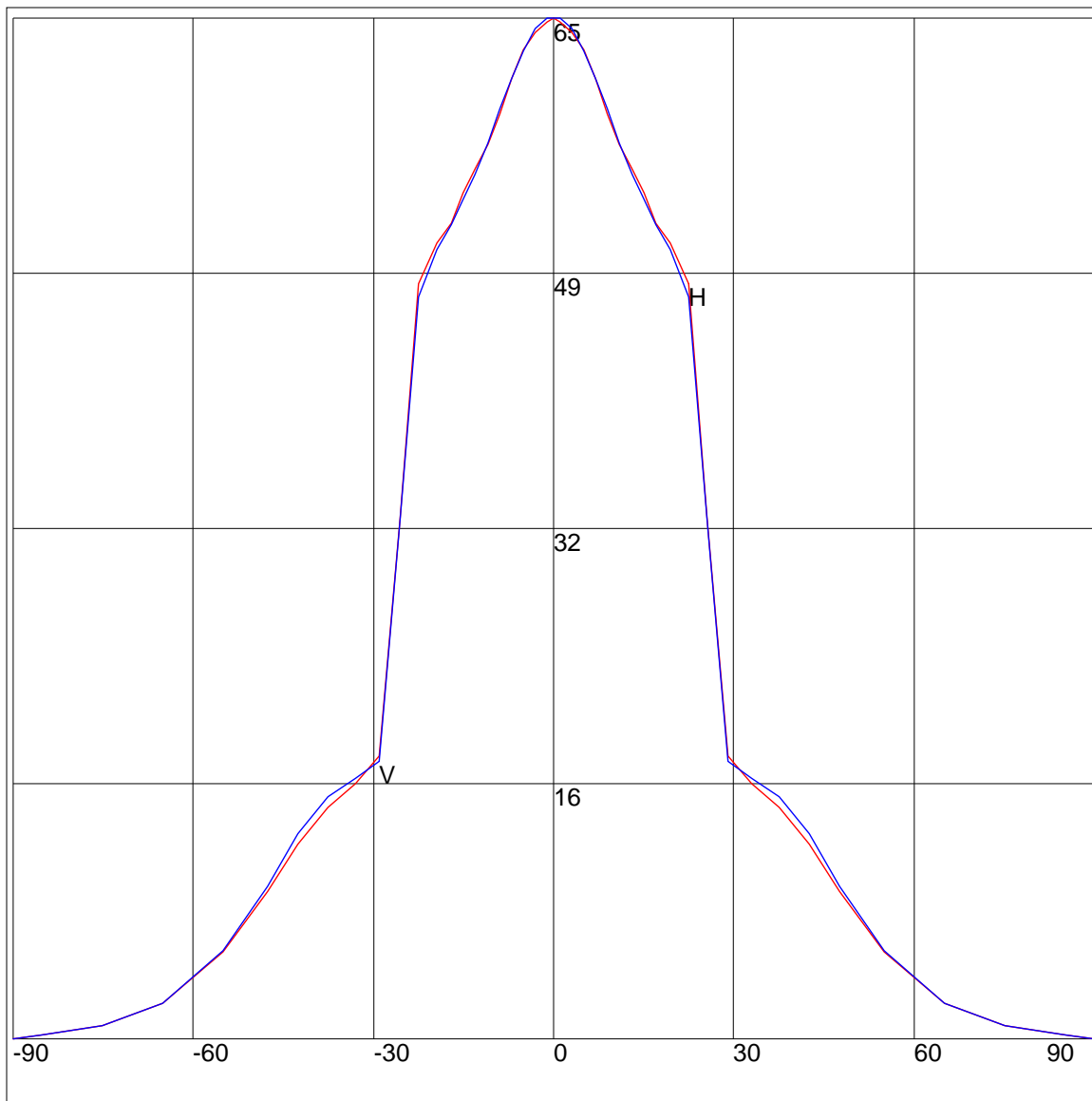
**AXIAL CANDELA**

DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	.31	85	.29
75	.88	75	.87
65	2.26	65	2.26
55	5.59	55	5.62
47.5	9.36	47.5	9.73
42.5	12.38	42.5	13.04
37.5	14.72	37.5	15.45
33	16.23	33	16.59
29	17.97	29	17.7
25.5	33.15	25.5	33.05
22.5	47.96	22.5	47.18
19.5	50.55	19.5	50.13
17	51.86	17	51.74
15	53.75	15	53.37
13	55.24	13	54.94
11	56.85	11	56.96
9	58.79	9	59.08
7	61.05	7	61.03
5	62.87	5	62.75
3	63.97	3	64.17
1	64.65	1	64.87
0	64.86	0	64.86
-1	64.65	-1	64.87
-3	63.97	-3	64.17
-5	62.87	-5	62.75
-7	61.05	-7	61.03
-9	58.79	-9	59.08
-11	56.85	-11	56.96
-13	55.24	-13	54.94
-15	53.75	-15	53.37
-17	51.86	-17	51.74
-19.5	50.55	-19.5	50.13
-22.5	47.96	-22.5	47.18
-25.5	33.15	-25.5	33.05
-29	17.97	-29	17.7
-33	16.23	-33	16.59
-37.5	14.72	-37.5	15.45
-42.5	12.38	-42.5	13.04
-47.5	9.36	-47.5	9.73
-55	5.59	-55	5.62
-65	2.26	-65	2.26
-75	.88	-75	.87
-85	.31	-85	.29
-90	0	-90	0

**ZONAL LUMEN SUMMARY**

Zone	%
0-20	30.3
0-30	56.6
0-40	70.2
0-60	91.2
0-80	99.1
0-90	100
10-90	92.7
20-40	39.9
20-50	53.6
40-70	26.5
60-80	7.9
70-80	2.3
80-90	0.9
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

AXIAL CANDELA DISPLAY

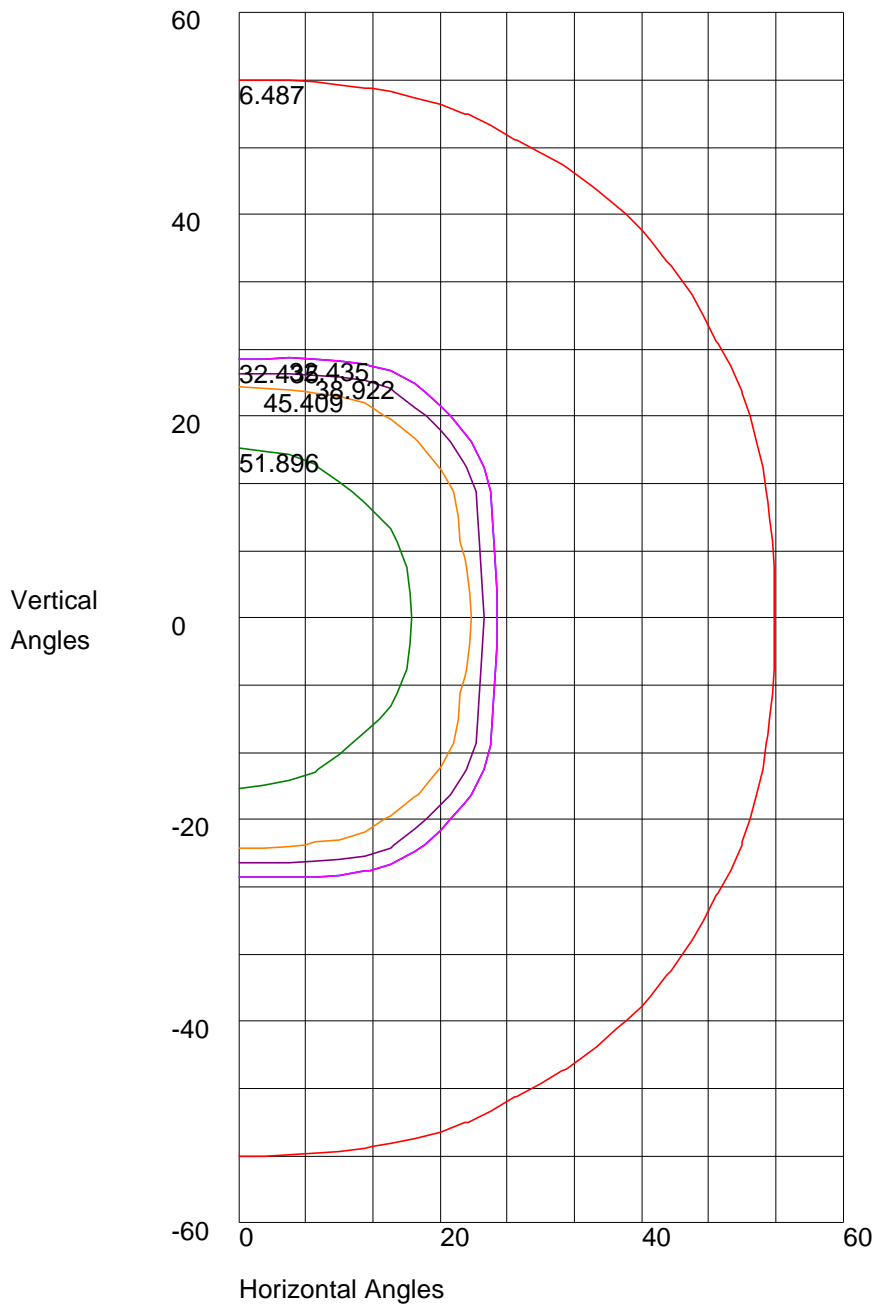


Maximum Candela = 64.87 Located At Horizontal Angle = 0, Vertical Angle = -1

H - Horizontal Axial Candela

V - Vertical Axial Candela

ISOCANDELA CURVES



Maximum Candela = 64.87 Located At Horizontal Angle = 0, Vertical Angle = -1  
50% Maximum Candela = 32.435  
10% Maximum Candela = 6.487