LIGHT LABORATORY INC.
8165 E Kaiser Blvd. Anaheim, CA 92808
www.lightlaboratory.com

NVLAP TESTING
NVLAP LAB CODE 200927-0

Report No: **L101702905** **Issue Date: 10/19/2017**

Report Prepared For: Hunter Industries
1785 La Costa Meadows Dr, San Marcos, CA 92078

Model Number: **C-PL-7LED20W**

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. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 10/16/17

Date of Tests: 10/17/17 - 10/18/17

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	11/28/17
ITECH	IT6122	PS-DC03-S1	11/28/17
Fluke Digital Thermometer	52k/J	MT-TP02-GC	11/28/17
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.

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Test Summary	
Manufacturer:	Hunter Industries
Model Number:	C-PL-7LED20W
Driver Model Number:	N/A
Total Lumens:	46.12
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.11
Input Power (W):	1.20
Input Power Factor:	0.93
Current ATHD @ 12V(%):	37%
Current ATHD @ 277V(%):	N/A
Efficacy:	38
Color Rendering Index (CRI):	85
Correlated Color Temperature (K):	2705
Chromaticity Coordinate x:	0.4520
Chromaticity Coordinate y:	0.3971
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	0:45
Total Operating Time (Hours):	1:25

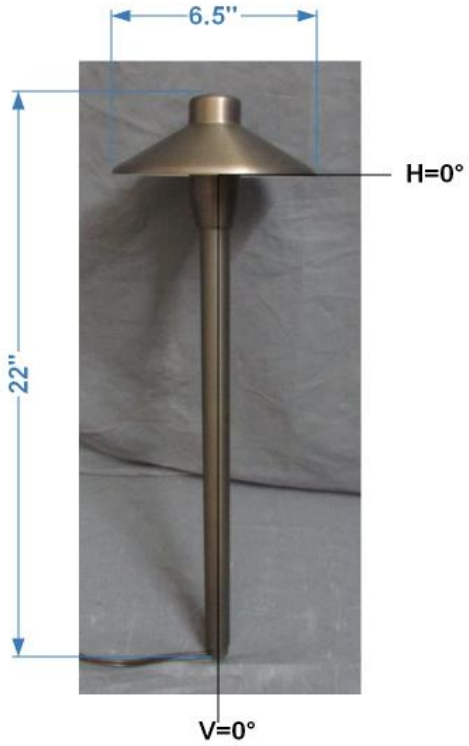


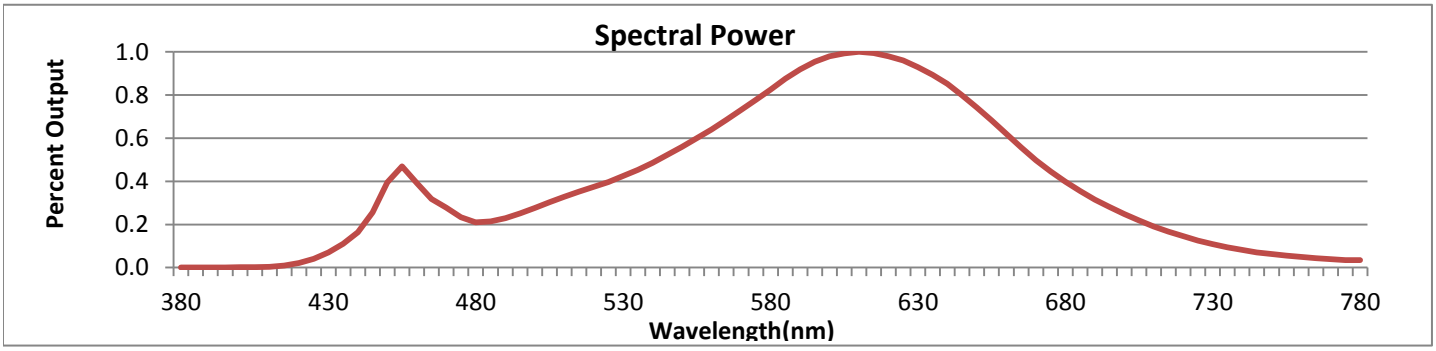
FIG. 1 LUMINAIRE

*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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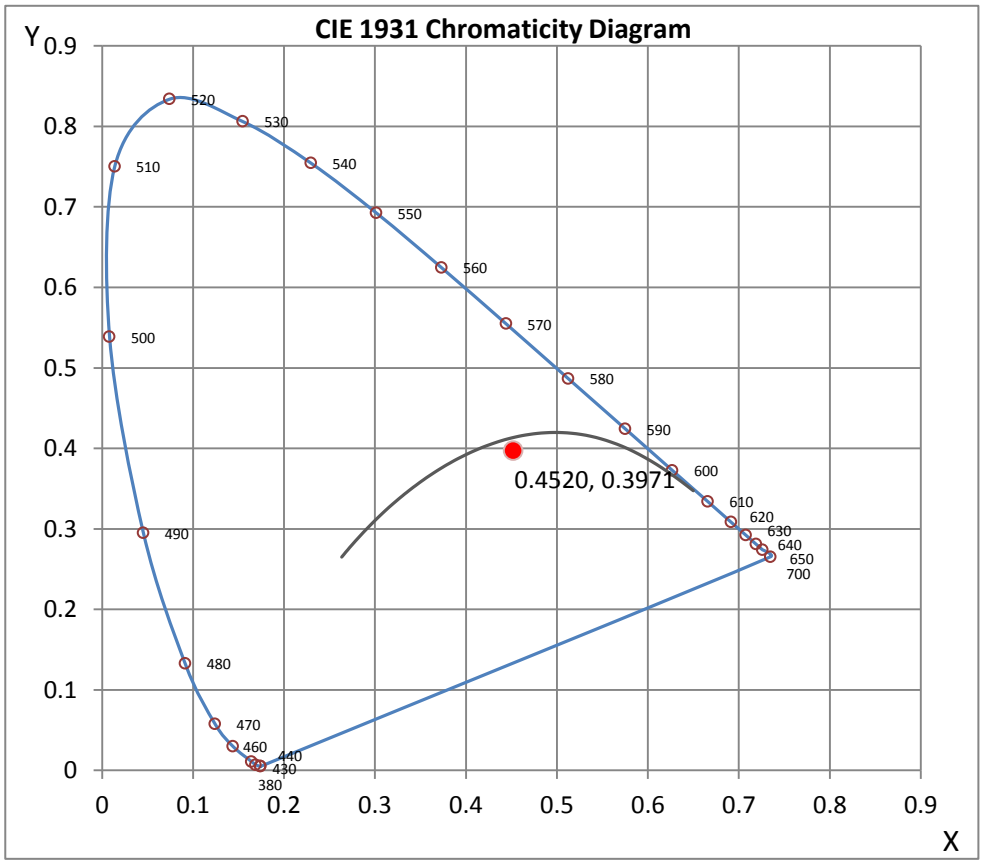
Wavelength	W/m²nm	440	0.1638	510	0.3278	580	0.8261	650	0.7424	720	0.1455
380	0.0008	450	0.3959	520	0.3744	590	0.9193	660	0.6204	730	0.1093
390	0.0009	460	0.3915	530	0.4242	600	0.9795	670	0.4982	740	0.0815
400	0.0014	470	0.2780	540	0.4856	610	1.0000	680	0.3982	750	0.0630
410	0.0041	480	0.2103	550	0.5597	620	0.9806	690	0.3153	760	0.0491
420	0.0219	490	0.2293	560	0.6404	630	0.9294	700	0.2483	770	0.0393
430	0.0700	500	0.2763	570	0.7306	640	0.8522	710	0.1909	780	0.0352

CRI & CCT

x	0.4520
y	0.3971
u'	0.2635
v'	0.5209
CRI	85.10
CCT	2705
Duv	-0.00442

R Values

R1	84.86
R2	95.03
R3	93.99
R4	81.33
R5	85.02
R6	93.63
R7	82.43
R8	64.44
R9	27.55
R10	88.14
R11	79.94
R12	81.22
R13	87.51
R14	97.65



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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 : 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 : L101702905.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L101702905
[TESTLAB] LIGHT LABORATORY, INC. (www.lightlaboratory.com)
[ISSUEDATE] 10/18/2017
[MANUFAC] Hunter Industries
[LUMCAT] C-PL-7LED20W
[LUMINAIRE] Path Light 7" Hat 20W
[BALLASTCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 12VAC, 1.20W
[TEST PROCEDURE] IESNA:LM-79-08

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

CHARACTERISTICS

NEMA Type	7 H x 7 V
Maximum Candela	12.224
Maximum Candela Angle	0H 0V
Horizontal Beam Angle (50%)	136.0
Vertical Beam Angle (50%)	136.0
Horizontal Field Angle (10%)	160.6
Vertical Field Angle (10%)	160.6
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	41
Beam Efficiency	N.A.
Field Lumens	45
Field Efficiency	N.A.
Spill Lumens	1
Luminaire Lumens	46
Total Efficiency	N.A.
Total Luminaire Watts	1.2
Ballast Factor	1.00

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Results derived from content of manufacturers photometric file.

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L101702905.IES

AXIAL CANDELA

DEG.	HOR.	DEG.	VERT.
90	.001	90	.001
85	.371	85	.371
75	2.186	75	2.186
65	7.799	65	7.799
55	10.752	55	10.752
47.5	11.642	47.5	11.642
42.5	11.922	42.5	11.922
37.5	11.846	37.5	11.846
33	11.676	33	11.676
29	11.555	29	11.555
25.5	11.487	25.5	11.487
22.5	11.445	22.5	11.445
19.5	11.41	19.5	11.41
17	11.392	17	11.392
15	11.378	15	11.378
13	11.361	13	11.361
11	11.344	11	11.344
9	11.334	9	11.334
7	11.331	7	11.331
5	11.328	5	11.328
3	11.686	3	11.686
1	12.045	1	12.045
0	12.224	0	12.224
-1	12.045	-1	12.045
-3	11.686	-3	11.686
-5	11.328	-5	11.328
-7	11.331	-7	11.331
-9	11.334	-9	11.334
-11	11.344	-11	11.344
-13	11.361	-13	11.361
-15	11.378	-15	11.378
-17	11.392	-17	11.392
-19.5	11.41	-19.5	11.41
-22.5	11.445	-22.5	11.445
-25.5	11.487	-25.5	11.487
-29	11.555	-29	11.555
-33	11.676	-33	11.676
-37.5	11.846	-37.5	11.846
-42.5	11.922	-42.5	11.922
-47.5	11.642	-47.5	11.642
-55	10.752	-55	10.752
-65	7.799	-65	7.799
-75	2.186	-75	2.186
-85	.371	-85	.371
-90	.001	-90	.001

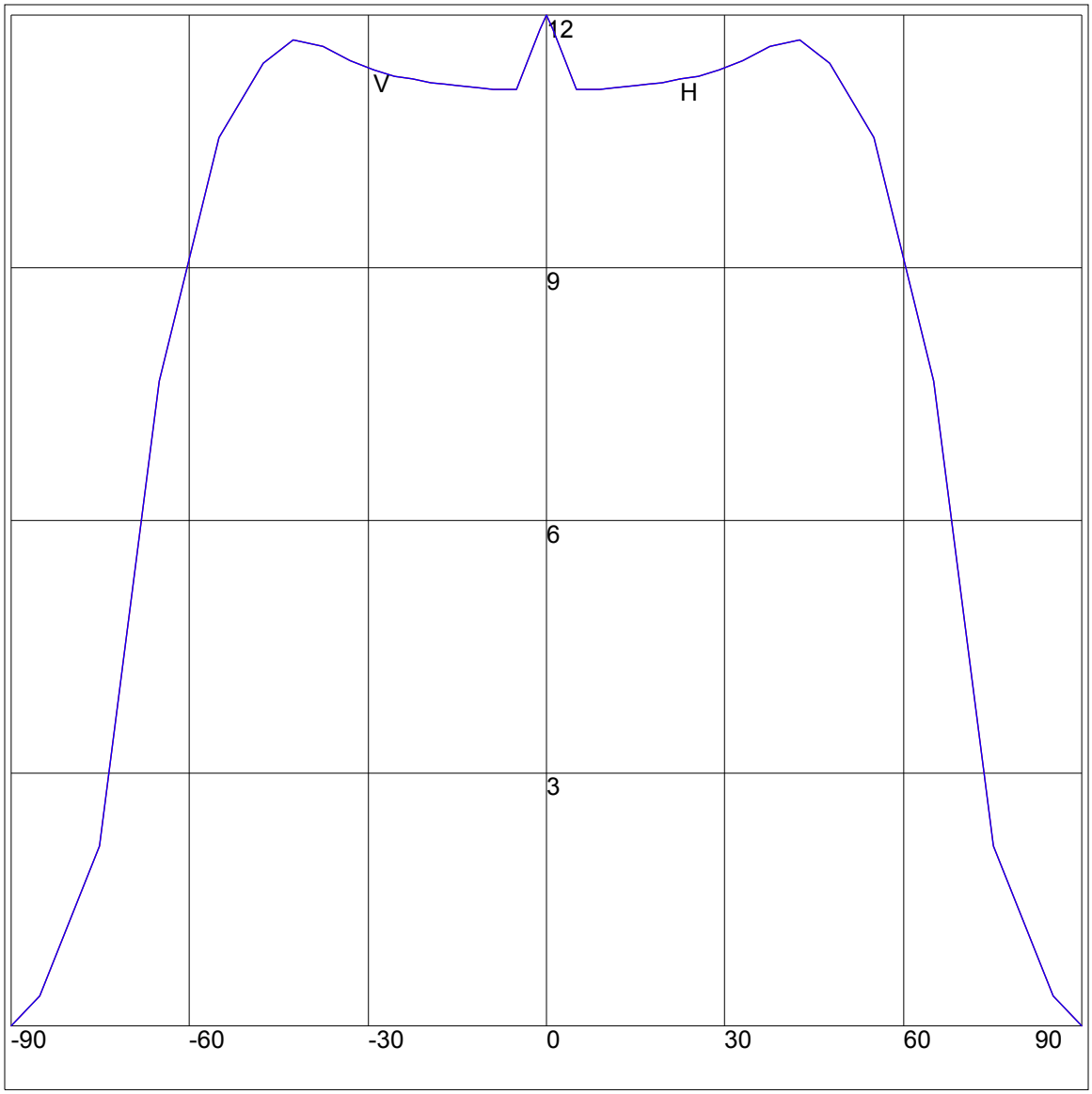
ZONAL LUMEN SUMMARY

Zone	%
0-20	9.3
0-30	20.9
0-40	36.8
0-60	77.2
0-80	99
0-90	100
10-90	97.6
20-40	27.5
20-50	47.2
40-70	56.5
60-80	21.8
70-80	5.7
80-90	1
90-110	0
90-120	0
90-130	0
90-150	0
90-180	0
110-180	0
0-180	100

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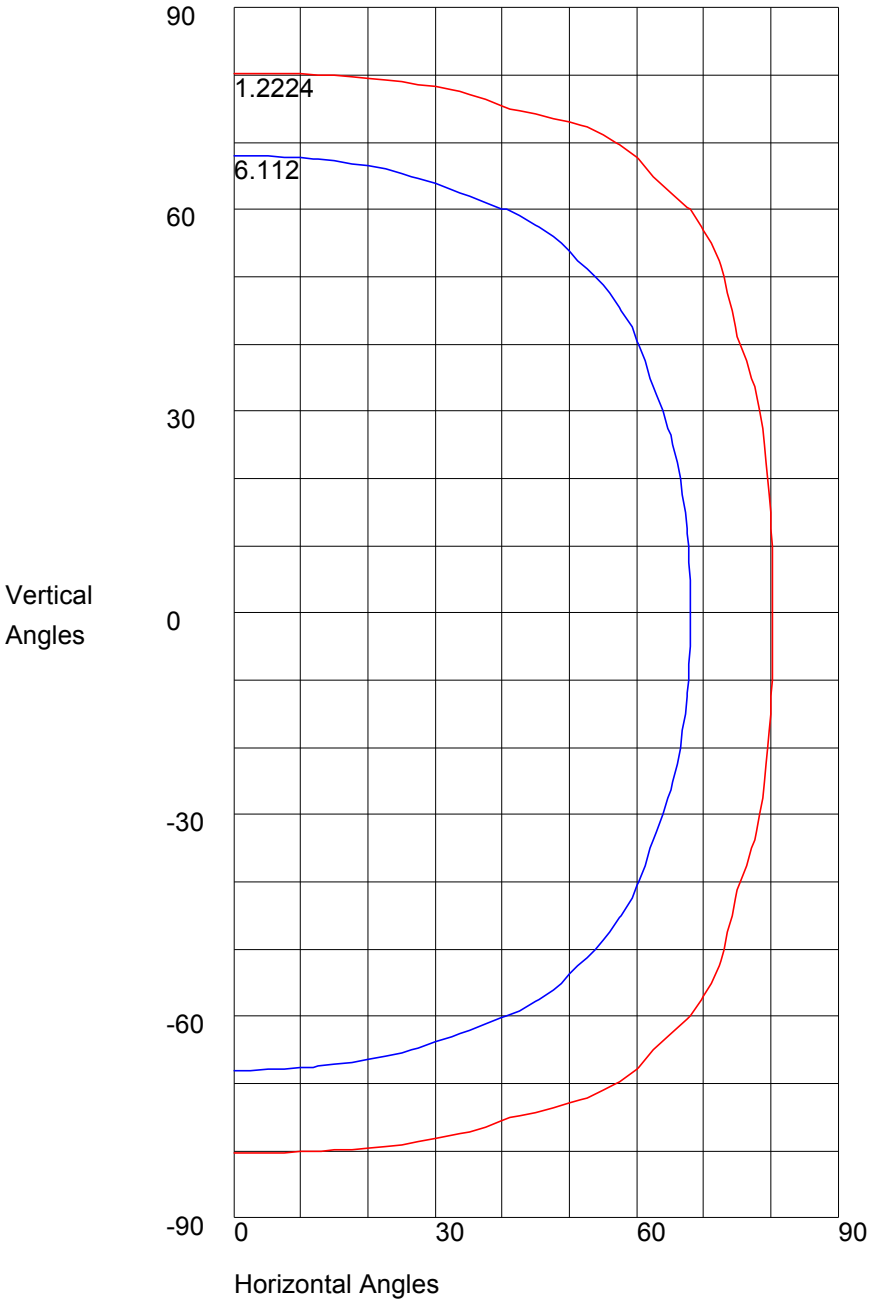
AXIAL CANDELA DISPLAY



Maximum Candela = 12.224 Located At Horizontal Angle = 0, Vertical Angle = 0
H - Horizontal Axial Candela
V - Vertical Axial Candela

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L101702905.IES

ISOCANDELA CURVES



Maximum Candela = 12.224 Located At Horizontal Angle = 0, Vertical Angle = 0
50% Maximum Candela = 6.112
10% Maximum Candela = 1.2224

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