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Report No: L111605703

Date: 12/5/2016



NVLAP LAB CODE 200927-0

Report No: L111605703

Report Prepared For: Hunter Industries
1775 La Costa Meadows Dr. San Marcos, CA 92708

Model Number: LOLED20WWFLSBS

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 LOLED20WWFLSBS. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 11/29/16

Date of Tests: 11/30/16 - 12/5/16

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-GB	2/10/17
Xitron Power Analyzer	2802	MT-EL02-2	12/22/16
BK PRECISION	1747	PS-DC04	12/8/16
Fluke Digital Thermometer	52k/J	MT-TP02-GB	12/8/16
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

Manufacturer:	Hunter Industries
Model Number:	LOLED20WWFLSBS
Driver Model Number:	N/A
Total Lumens:	220.64
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.36
Input Power (W):	3.96
Input Power Factor:	0.92
Current ATHD @ 12V(%):	37%
Current ATHD @ 277V(%):	N/A
Efficacy:	56
Color Rendering Index (CRI):	80
Correlated Color Temperature (K):	2697
Chromaticity Coordinate x:	0.4620
Chromaticity Coordinate y:	0.4141
Ambient Temperature (°C):	25.0
Stabilization Time (Hours):	1:35
Total Operating Time (Hours):	2:45
Off State Power(W):	0.00

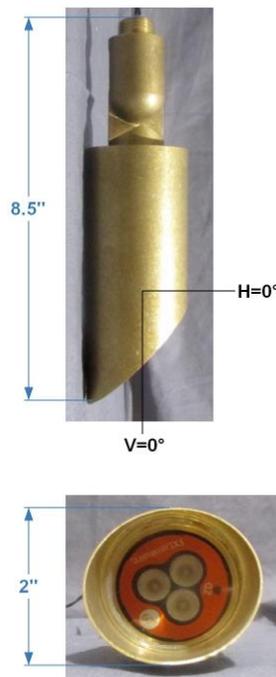
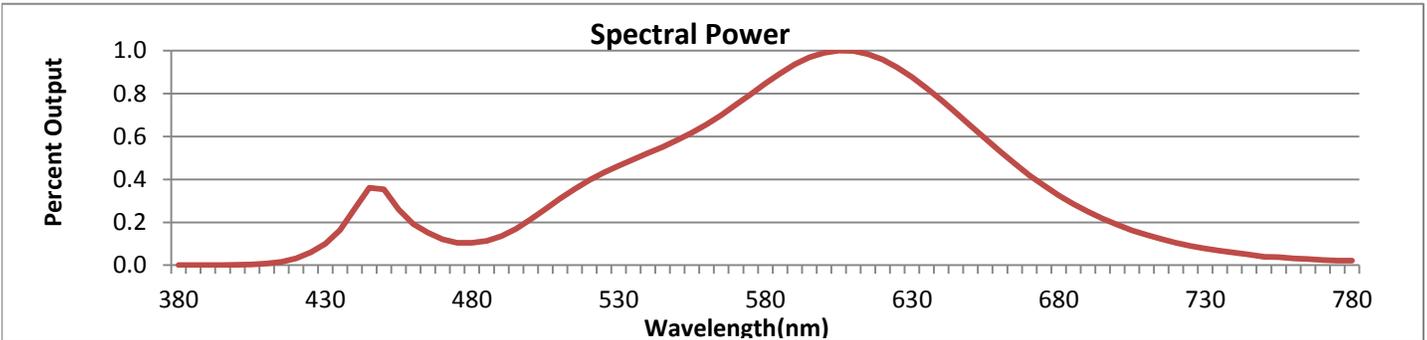


FIG. 1 LUMINAIRE

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



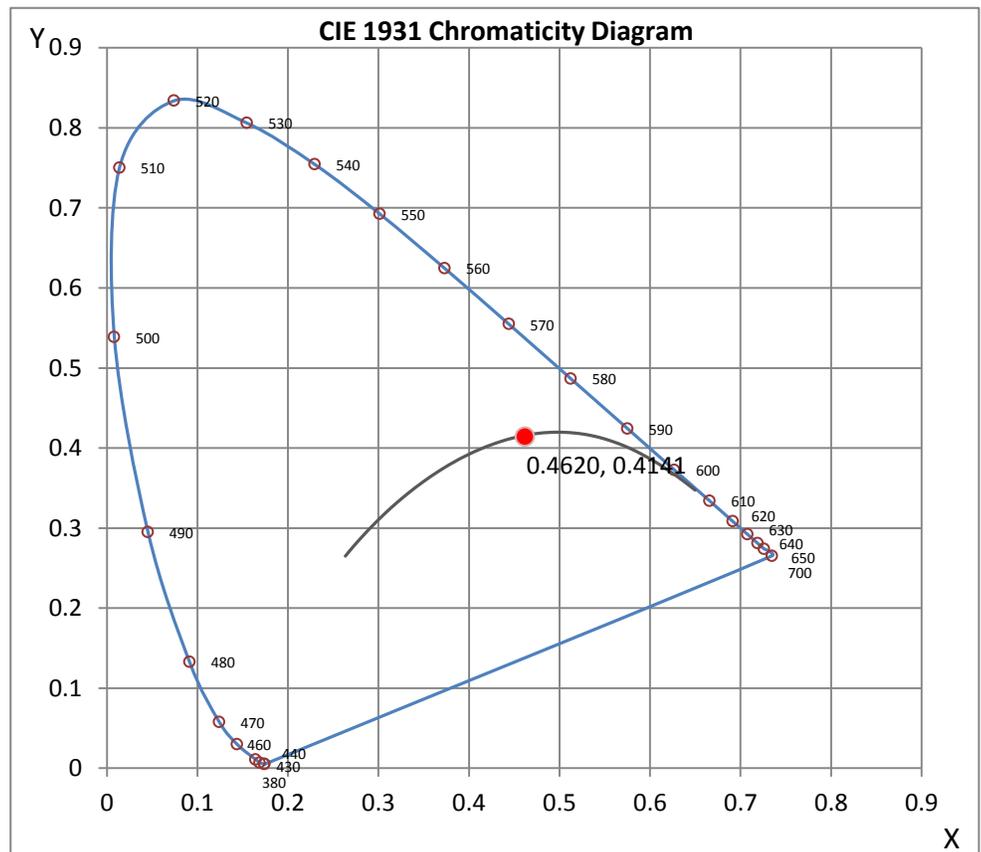
Wavelength	W/m ² nm	440	0.2627	510	0.3104	580	0.8472	650	0.6509	720	0.1046
380	0.0007	450	0.3536	520	0.3961	590	0.9365	660	0.5313	730	0.0773
390	0.0008	460	0.1919	530	0.4639	600	0.9908	670	0.4195	740	0.0578
400	0.0018	470	0.1212	540	0.5226	610	0.9986	680	0.3261	750	0.0397
410	0.0073	480	0.1042	550	0.5837	620	0.9585	690	0.2492	760	0.0323
420	0.0323	490	0.1356	560	0.6565	630	0.8773	700	0.1885	770	0.0243
430	0.1005	500	0.2138	570	0.7479	640	0.7708	710	0.1410	780	0.0210

CRI & CCT

x	0.4620
y	0.4141
u'	0.2623
v'	0.5290
CRI	80.00
CCT	2697
Duv	0.00111

R Values

R1	77.94
R2	87.23
R3	95.53
R4	78.30
R5	76.70
R6	83.15
R7	83.18
R8	57.63
R9	4.93
R10	70.39
R11	76.09
R12	63.89
R13	79.58
R14	97.02



*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 : L111605703.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L111605703
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 12/5/2016
[MANUFAC] HUNTER INDUSTRIES
[LUMCAT] LOLED20WWFLSBS
[LUMINAIRE] 20 WARM WIDE FLOOD LONG SHROUD UPLIGHT
[BALLASTCAT] 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, 3.96W
[TEST PROCEDURE] IESNA:LM-79-08

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

CHARACTERISTICS

NEMA Type	4 H x 4 V
Maximum Candela	423.76
Maximum Candela Angle	-1H 0V
Horizontal Beam Angle (50%)	39.4
Vertical Beam Angle (50%)	39.4
Horizontal Field Angle (10%)	66.1
Vertical Field Angle (10%)	66.1
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	111
Beam Efficiency	N.A.
Field Lumens	187
Field Efficiency	N.A.
Spill Lumens	33
Luminaire Lumens	221
Total Efficiency	N.A.
Total Luminaire Watts	3.96
Ballast Factor	1.00

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L111605703.IES

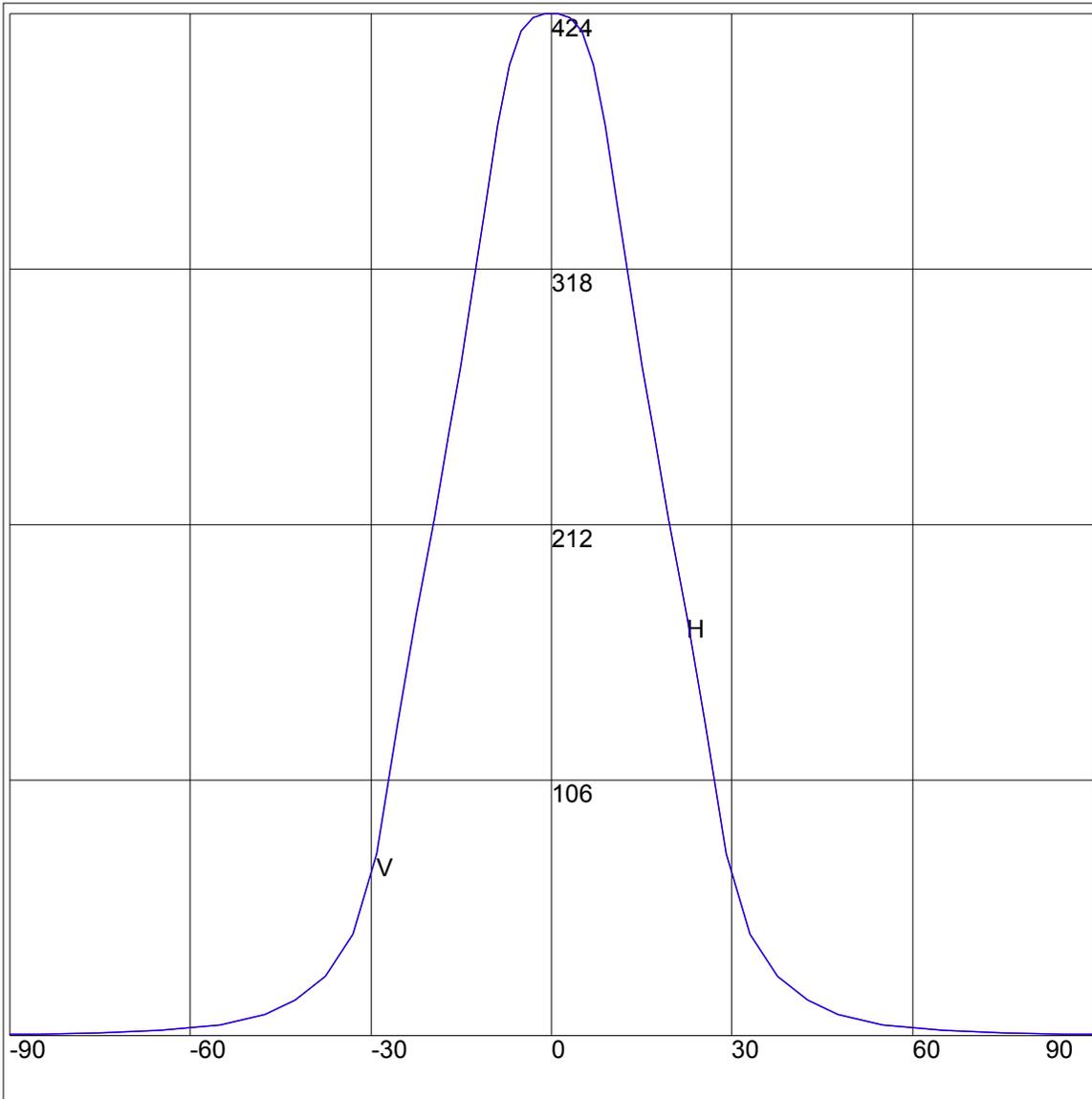
AXIAL CANDELA

DEG.	HOR.	DEG.	VERT.
90	.68	90	.68
85	.9	85	.9
75	1.6	75	1.6
65	2.64	65	2.64
55	4.89	55	4.89
47.5	9.17	47.5	9.17
42.5	15.23	42.5	15.23
37.5	24.93	37.5	24.93
33	42.53	33	42.53
29	75.82	29	75.82
25.5	129.58	25.5	129.58
22.5	174.62	22.5	174.62
19.5	214.5	19.5	214.5
17	250.44	17	250.44
15	277.4	15	277.4
13	309.86	13	309.86
11	344.76	11	344.76
9	377.1	9	377.1
7	402.28	7	402.28
5	416.74	5	416.74
3	422.34	3	422.34
1	423.76	1	423.76
0	423.49	0	423.49
-1	423.76	-1	423.76
-3	422.34	-3	422.34
-5	416.74	-5	416.74
-7	402.28	-7	402.28
-9	377.1	-9	377.1
-11	344.76	-11	344.76
-13	309.86	-13	309.86
-15	277.4	-15	277.4
-17	250.44	-17	250.44
-19.5	214.5	-19.5	214.5
-22.5	174.62	-22.5	174.62
-25.5	129.58	-25.5	129.58
-29	75.82	-29	75.82
-33	42.53	-33	42.53
-37.5	24.93	-37.5	24.93
-42.5	15.23	-42.5	15.23
-47.5	9.17	-47.5	9.17
-55	4.89	-55	4.89
-65	2.64	-65	2.64
-75	1.6	-75	1.6
-85	.9	-85	.9
-90	.68	-90	.68

ZONAL LUMEN SUMMARY

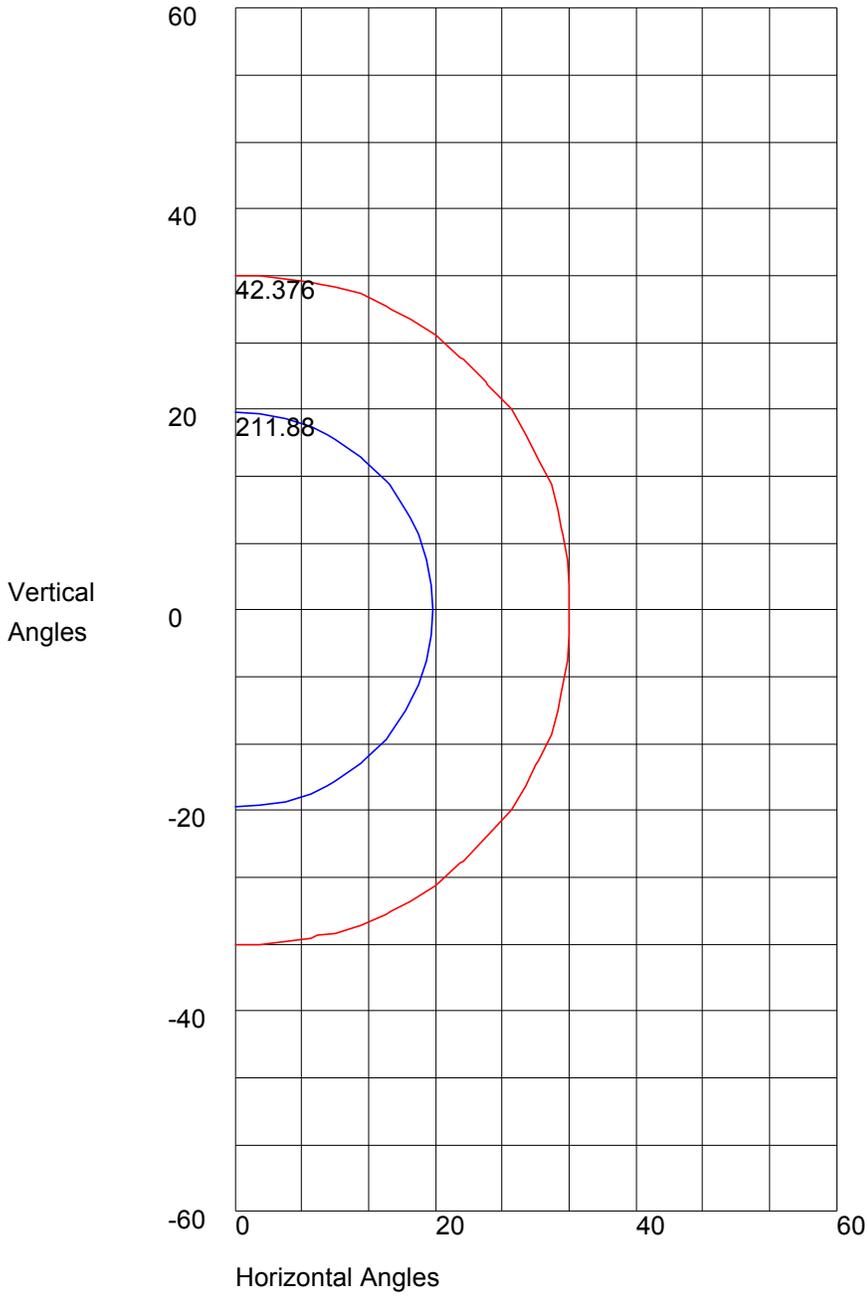
Zone	%
0-20	50.5
0-30	78.3
0-40	88.7
0-60	96.1
0-80	98.7
0-90	99.6
10-90	85.3
20-40	38.2
20-50	43.6
40-70	9
60-80	2.6
70-80	1
80-90	0.8
90-110	0.3
90-120	0.4
90-130	0.4
90-150	0.4
90-180	0.4
110-180	0.1
0-180	100

AXIAL CANDELA DISPLAY



Maximum Candela = 423.76 Located At Horizontal Angle = -1, Vertical Angle = 0
H - Horizontal Axial Candela
V - Vertical Axial Candela

ISOCANDELA CURVES



Maximum Candela = 423.76 Located At Horizontal Angle = -1, Vertical Angle = 0
50% Maximum Candela = 211.88
10% Maximum Candela = 42.376