UL Verification Services Inc.
7036 Snowdrift Road
Allentown, PA 18106
610-774-1300

Photometric Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-2002

Prepared For

Auroralight Inc

2742 Loker Ave W
#100
Carlsbad, CA 92010-6619
United States

Catalog Number

HSL11-2-WF-45 (2W, 60° OPTIC, 4500K)

Order Number
12250114
Test Number
12250114.28

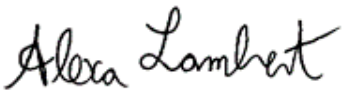
Report Date

2018-05-07

Prepared By

Sean Gregory, Project Handler

Approved By



Alexa Lambert, Project Handler

Luminaire Description:	Cylindrical metal housing, with adjustable knuckle, clear glass lens and internal LED module
Lamp:	One (1) Cree XHP 4500K LED with 60°, wide flood optic
Mounting:	Flood
Ballast/Driver:	Integrated
Note:	This report has been pro-rated using data from report numbers 12250114.26, 12250114.01, 12250114.02, 12250114.03, 12250114.04, 12250114.05, and 12250114.06 to account for differences in color temperature.

Luminaire

Luminaire Characteristics

Luminous Diameter:	1.50	in.
Luminous Height:	1.000	in.

Summary of Results

Roadway Classification:	Type V, Very Short
Cutoff Classification:	Full Cutoff
BUG Rating:	B0 U0 G0

Test Conditions

Test Temperature:	25.1	°C
Voltage:	12.00	VAC
Current:	0.1590	A
Power:	1.789	W
Power Factor:	0.938	
Frequency:	60	Hz
Current THD:	21.5	%

Tested in 30 planes left side, 30 planes right side, left and right averaged
Vertical test increments are 2.5 degrees
Test distance exceeds five times the greatest luminous opening of luminaire

Laboratory results may not be representative of field performance
Ballast factors have not been applied

Distribution - Goniophotometer

Distribution Test Conditions

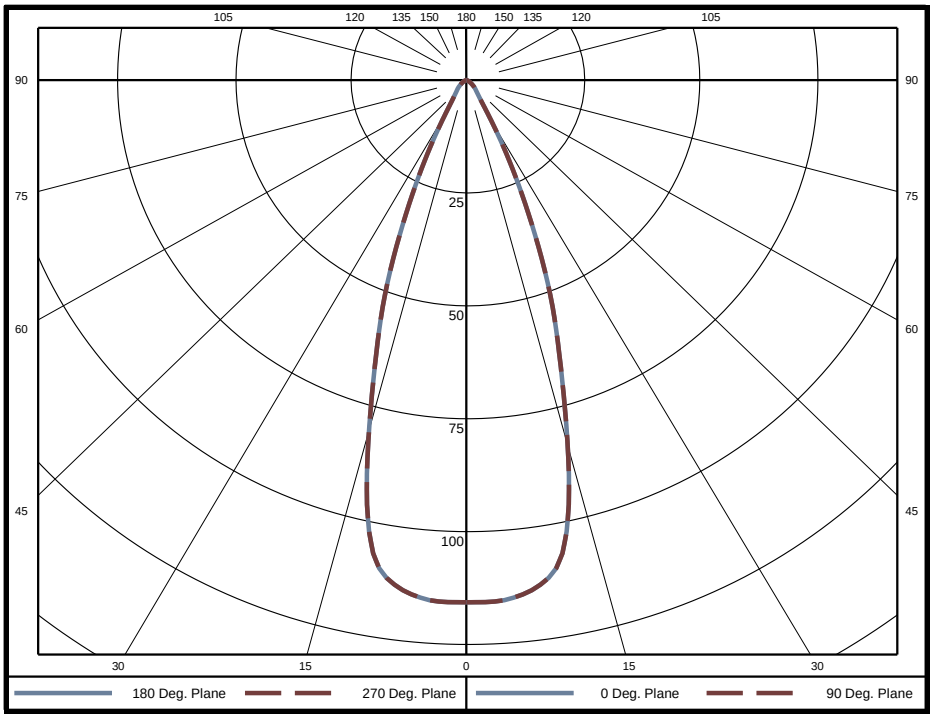
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.1 °C	12.00 VAC	0.1590 A	1.789 W	0.938	60 Hz	21.5 %

Summary of Results

Spacing Criteria
0-180: 0.63
90-270: 0.63

Total Lumen Output: 53.78 Lumens
Luminaire Efficacy: 30.1 lm/w
Maximum Candela: 116 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	2.76	5.1%	60-65	0.31	0.6%	120-125	0	0.0%
5-10	8.07	15.0%	65-70	0.19	0.4%	125-130	0	0.0%
10-15	11.56	21.5%	70-75	0.09	0.2%	130-135	0	0.0%
15-20	10.96	20.4%	75-80	0.02	0.0%	135-140	0	0.0%
20-25	8.35	15.5%	80-85	0	0.0%	140-145	0	0.0%
25-30	4.71	8.8%	85-90	0	0.0%	145-150	0	0.0%
30-35	2.22	4.1%	90-95	0	0.0%	150-155	0	0.0%
35-40	1.40	2.6%	95-100	0	0.0%	155-160	0	0.0%
40-45	1.11	2.1%	100-105	0	0.0%	160-165	0	0.0%
45-50	0.90	1.7%	105-110	0	0.0%	165-170	0	0.0%
50-55	0.66	1.2%	110-115	0	0.0%	170-175	0	0.0%
55-60	0.46	0.9%	115-120	0	0.0%	175-180	0	0.0%

Zone	Lumens	% of Luminaire
0-40	50	93.0%
0-60	53	98.8%
0-90	54	100.0%
90-180	0	0.0%

Candela Tabulation

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7	115.7
5	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1	115.1
10	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8	109.8
15	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8	82.8
20	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5
25	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9
30	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
35	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
40	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
45	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
50	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
55	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
60	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
65	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
70	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
75	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Average Luminance (cd/m^2)

Horizontal Angle (Degrees)

Vertical Angle (Degrees)	0	45	90
0	101500	101500	101500
45	3252	3252	3252
55	1887	1887	1887
65	1047	1047	1047
75	334	334	334
85	0	0	0

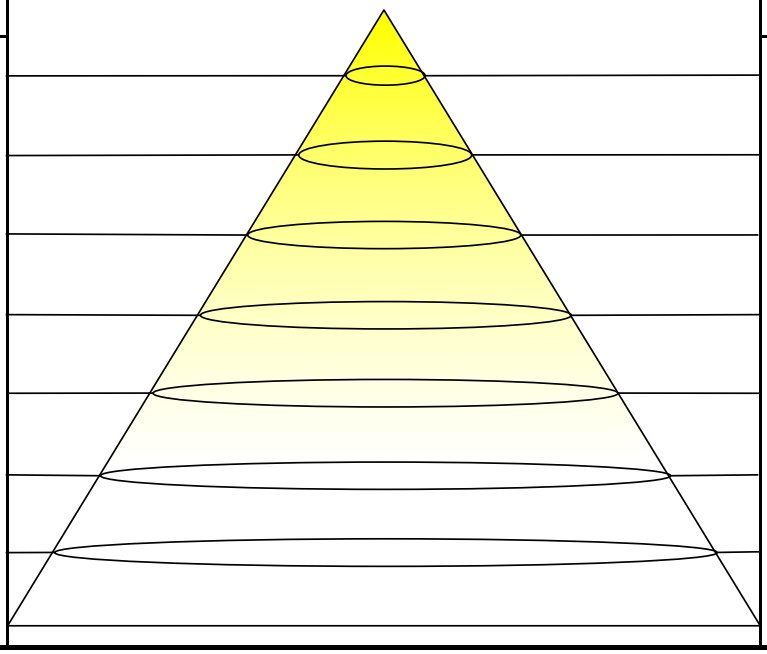
Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%																		
Ceiling Cavity Reflectance	80				70				50			30			10			0
Wall Reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **																	
0	64	64	64	64	63	63	63	63	60	60	60	57	57	57	55	55	55	54
1	61	60	59	58	60	59	58	57	57	56	55	55	54	53	53	52	52	51
2	59	56	55	53	58	56	54	52	54	52	51	52	51	50	51	50	49	48
3	56	53	51	49	55	53	50	49	51	49	48	50	48	47	49	48	47	46
4	54	51	48	46	53	50	48	46	49	47	45	48	46	45	47	45	44	43
5	52	48	45	43	51	48	45	43	47	44	43	46	44	42	45	43	42	41
6	50	46	43	41	49	45	43	41	45	42	41	44	42	40	43	41	40	39
7	48	44	41	39	47	43	41	39	43	40	39	42	40	39	42	40	38	38
8	46	42	39	37	46	42	39	37	41	39	37	41	38	37	40	38	37	36
9	45	40	37	36	44	40	37	36	39	37	35	39	37	35	39	37	35	35
10	43	39	36	34	43	38	36	34	38	36	34	38	35	34	37	35	34	33

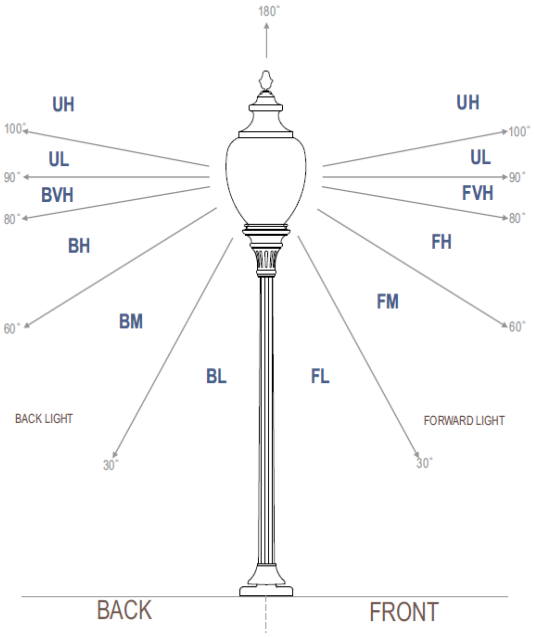
Beam and Field Information	
CIE Type:	Direct
Center Beam Intenisty:	115.7 Candela
Central Cone Intensity:	116 Candela
Beam Flux:	31.6 Lumens
Beam Angle (0-180):	38.3 Degrees
Beam Angle (90-270):	38.3 Degrees
Field Angle (0-180):	59.9 Degrees
Field Angle (90-270):	59.9 Degrees

Cone of Light Tabulation

Mounting Height (Feet)	Footcandles at Nadir	Diameter (Feet)
6.00	3.21	3.78
10.0	1.16	6.30
14.0	0.590	8.82
18.0	0.357	11.3
22.0	0.239	13.9
26.0	0.171	16.4
30.0	0.129	18.9



IES "BUG" Rating
(Back Light, Uplight, Glare)
Per IES TM-15-11



Luminaire Classification System (LCS)

LCS	Zone	Lumens	Luminaire %
FL	(0-30)	23.2	43.5%
FM	(30-60)	3.3	6.2%
FH	(60-80)	0.1	0.3%
FVH	(80-90)	0.0	0.0%
BL	(0-30)	23.2	43.5%
BM	(30-60)	3.3	6.2%
BH	(60-80)	0.1	0.3%
BVH	(80-90)	0.0	0.0%
UL	(90-100)	0.0	0.0%
UH	(100-180)	0.0	0.0%
Total		53.4	100.0%
BUG Rating	**B0 U0 G0**		