

Project Number
18.00017



HUBBELL
Lighting

Date
1/5/2018

Lab 1
Sphere

Test Sample Description

Catalog Number: P350077-XXX-30
Description: 14" Maier LED C-T-C w/ Etched Opal Acrylic Diffuser

Photometry

Test Method: IES LM-46-04
IES LM-79-08 § 10

Preburn Time: 0:05
Time To Stabilize: 0:55
Total Operating Time: 1:35

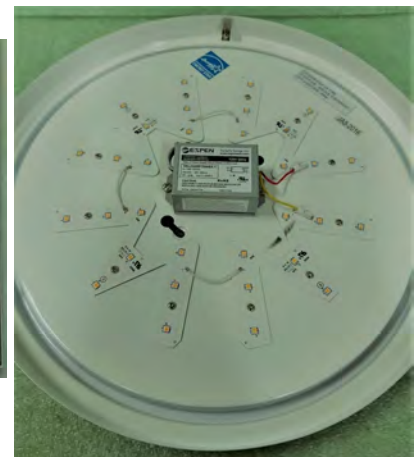
Input Voltage (Volts): 120.2
Input Current (Amps): 0.229
Input Wattage (Watts): 27.2
Ambient Temp (°C): 26.1

Sphere

Test Method: IES LM-16-93
IES LM-79-08 § 9.1 & 12.1

Preburn Time: 2:00
Time To Stabilize: 1:19
Total Operating Time: 3:19

Input Voltage (Volts): 120.0
Input Current (Amps): 0.228
Input Wattage (Watts): 27.1
Ambient Temp (°C): 24.0



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Checked (sphere): B. LEE
Checked (photometry): D. ROBBINS
Approved: P. McCARTHY



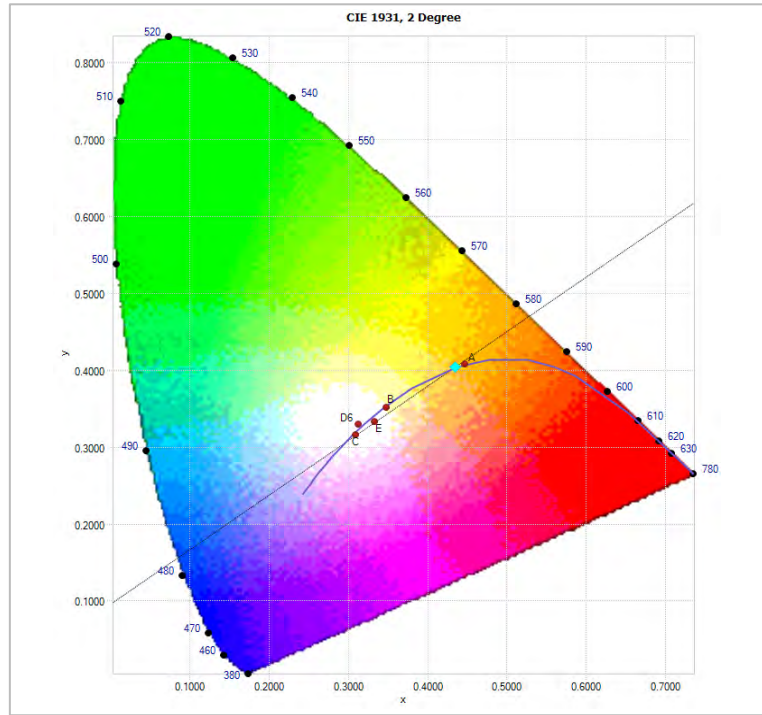
This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.



Lamp Cat#: LEMWS36X90LZ3A00
 Lamp Desc: 32 - LG 3000K LEDs
 Driver Desc: 1 - ESPEN VEL25050120HDA-1
 Programmed to 500mA

Efficacy: 73.6 LPW S/P Ratio: 1.4 LM/LM

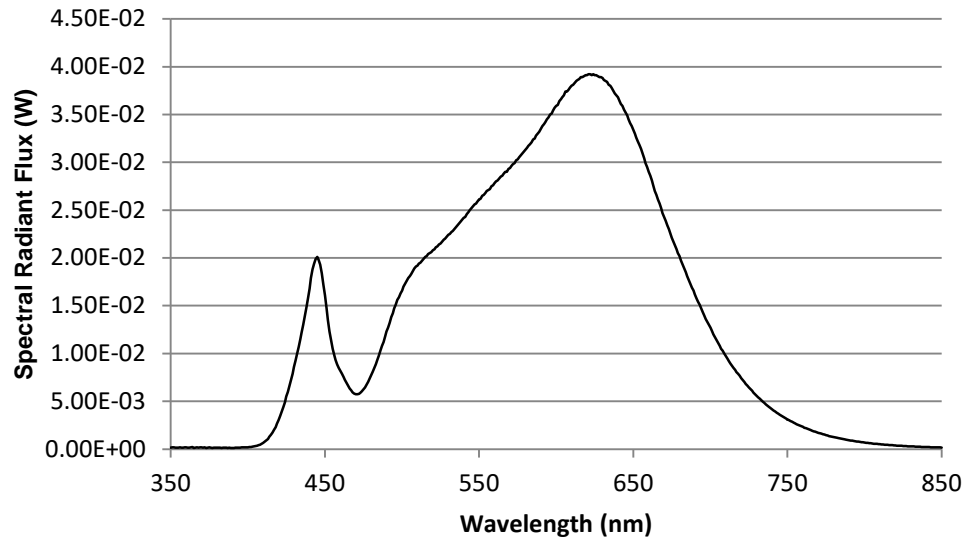
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	6.94	watts
$\Phi(v)$	1995	lumens
$\Phi(v')$	2813	lm'
Chrom x	0.4341	
Chrom y	0.4047	
Chrom u	0.2485	
Chrom v	0.3475	
Duv	0.0006	
Chrom u'	0.2485	
Chrom v'	0.5212	
CCT	3051	K
Purity	51.8	%
λ (dom)	582.4	nm
FWHM	169.1	nm
λ (peak)	620.4	nm
λ (center)	596.8	nm
λ (centroid)	592.1	nm
SDCM	Cool White	
RA	92	
Corr. Coef.	0.000661732	
Correlation	0.0054	
R1	92.5	
R2	94.1	
R3	95.2	
R4	93.3	
R5	92.2	
R6	93.3	
R7	92.7	
R8	83.7	
R9	60.9	
R10	86.3	
R11	94.9	
R12	85.7	
R13	92.6	
R14	96.7	

Spectral Distribution of Radiant Flux



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PREPARED FOR: PROGRESS

CATALOG NUMBER: P730077-xxx-30

LUMINAIRE: 14" Maier LED C-T-C w/ Etched Opal Acrylic Diffuser

LAMP CAT. NO.: LEMWS36X90LZ3A00

LAMP: 32- LG 3000K LEDs

BALLAST CATALOG NUMBER: VEL25050120HDA-1

BALLAST: 1- ESPEN

MOUNTING: Ceiling

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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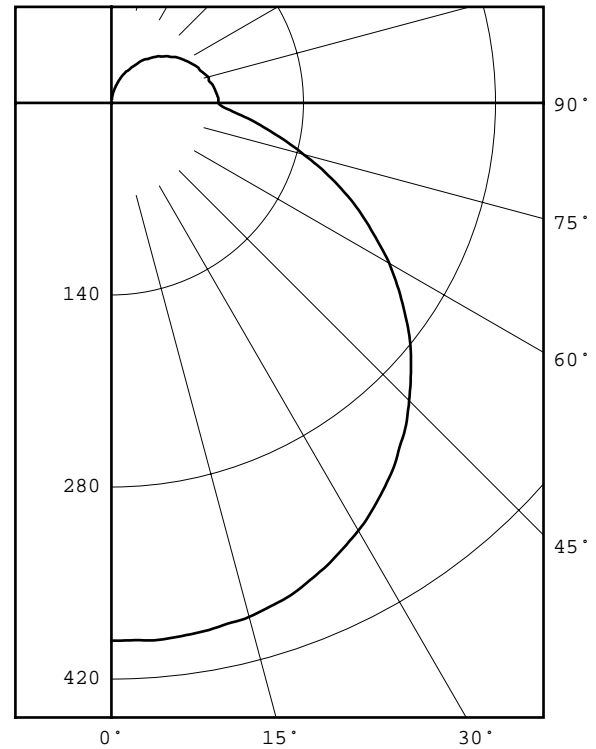
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DEG	CANDELA	LUMENS
0	392	
5	393	37
15	388	110
25	372	172
35	345	216
45	307	237
55	260	233
65	205	203
75	145	154
85	93	103
90	78	
95	77	84
105	73	76
115	66	65
125	58	52
135	48	37
145	37	23
155	25	12
165	13	4
175	3	0
180	3	

ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	319	17.5
0- 40	535	29.4
0- 60	1005	55.2
0- 90	1465	80.6
90-120	226	12.4
90-130	278	15.3
90-150	338	18.6
90-180	354	19.4
0-180	1819	100.0

EFFICACY = 66.9 lm/W
CIE TYPE - SEMI-DIRECT
SPACING CRITERION: 1.36
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 90 90





®

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LUMINOUS DIAMETER: 14.000
HEIGHT OF SIDE : 3.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	3435.
55	3284.
65	3081.
75	2795.
85	2609.



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CANDELA DISTRIBUTION

0.0	392
5.0	393
10.0	391
15.0	388
20.0	382
25.0	372
30.0	360
35.0	345
40.0	327
45.0	307
50.0	285
55.0	260
60.0	234
65.0	205
70.0	176
75.0	145
80.0	117
85.0	93
90.0	78
95.0	77
100.0	75
105.0	73
110.0	69
115.0	66
120.0	62
125.0	58
130.0	53
135.0	48
140.0	42
145.0	37
150.0	30
155.0	25
160.0	19
165.0	13
170.0	8
175.0	3
180.0	3



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5-DEGREE ZONAL LUMEN SUMMARY		
0- 5		9
5- 10		28
10- 15		46
15- 20		63
20- 25		79
25- 30		93
30- 35	104	
35- 40	112	
40- 45	118	
45- 50	120	
50- 55	119	
55- 60	114	
60- 65	107	
65- 70	97	
70- 75	84	
75- 80	70	
80- 85	57	
85- 90	46	
90- 95	43	
95-100	41	
100-105	39	
105-110	37	
110-115	34	
115-120	31	
120-125	28	
125-130	24	
130-135	20	
135-140	17	
140-145	13	
145-150	10	
150-155	7	
155-160	5	
160-165	3	
165-170	1	
170-175	0	
175-180	0	

10-DEGREE ZONAL LUMEN SUMMARY		
0- 10		37
0- 20		147
0- 30		319
0- 40		535
0- 50		772
0- 60	1005	
0- 70	1208	
0- 80	1362	
0- 90	1465	
0-100	1549	
0-110	1625	
0-120	1691	
0-130	1743	
0-140	1780	
0-150	1803	
0-160	1814	
0-170	1818	
0-180	1819	



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0	
	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30		10
0	114	114	114	114	114	109	109	109	109	100	100	100	92	92	92	84	84	84	81
1	102	96	91	87	87	97	92	88	84	84	81	77	77	74	72	71	68	66	63
2	92	83	75	69	69	87	79	72	67	72	67	62	66	62	58	60	57	54	50
3	83	72	63	56	56	79	69	61	54	63	56	51	58	52	48	53	48	45	41
4	76	63	54	47	47	72	61	52	46	56	48	43	51	45	40	47	42	38	35
5	69	56	47	40	40	66	54	45	39	49	42	37	45	39	34	42	36	32	30
6	64	50	41	34	34	61	48	40	33	44	37	32	41	35	30	38	32	28	26
7	59	45	36	30	30	56	44	35	29	40	33	28	37	31	26	34	29	25	22
8	55	41	32	27	27	52	40	31	26	37	30	25	34	28	23	31	26	22	20
9	51	38	29	24	24	49	36	28	23	34	27	22	31	25	21	29	24	20	18
10	48	34	27	21	21	46	33	26	21	31	24	20	29	23	19	27	22	18	16

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

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Goniophotometer Calibration

Calibration Lamp: GE 1000W, 120V, T6, CL (FEL)

Lamp Number: ITL78966-1000-38

Calibration Current: 8.300 Amps DC

Total Luminous Flux: 25889.0 Lumens

Calibration Date: 07/10/17

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL/HLI LAB 1 - Test Distance: 31.74'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27071V	10/25/2018
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	176F4E3	10/26/2018

Sphere Calibration

Calibration Lamp: EIKO 28V75W/E10

Lamp Number: SCL-1400-J136

Calibration Current: 2.679 Amps

Total Luminous Flux: 1427 Lumens

Test Equipment Used - Color & SPD; THD & Power Factor

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>3-Meter Sphere</i>	Labsphere / LMS-3M	N/A	Calibration Checked Daily
<i>Thermometer</i>	National Instruments / USB TC01	1912751	10/26/2018
<i>LAMP Power Meter</i>	Yokogawa / WT332	C2QA27075V	10/25/2018
<i>Power Supply</i>	Chroma / 61602	616020002113	N/A
<i>Aux Lamp Supply</i>	Labsphere / LPS-100-0833	0331159372	N/A
<i>Cal Lamp Supply</i>	Labsphere / LPS-150-0268	1218148505	N/A
<i>Spectrometer</i>	Labsphere / CDS 1100	0624117792	N/A

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