

Project Number
18.00014



Date
1/8/2018

Lab 1
Sphere

Test Sample Description

Catalog Number: P350076-xxx-30
Description: 9" Drum LED C-T-C w/ Etched Opal Acrylic Diffuser

Photometry

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

Preburn Time: 00:05

Time To Stabilize: 0:75

Total Operating Time: 2:05

Input Voltage (Volts): 120.2

Input Current (Amps): 0.174

Input Wattage (Watts): 20.8

Ambient Temp (°C): 26.0

Sphere

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

Preburn Time: 2:00

Time To Stabilize: 1:05

Total Operating Time: 3:05

Input Voltage (Volts): 120.0

Input Current (Amps): 0.174

Input Wattage (Watts): 20.8

Ambient Temp (°C): 24.0



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701 Millennium Boulevard
Greenville, SC 29607
www.hubbelllighting.com

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: 18 - LG 3000K LEDs

Driver Desc: 1 - ESPEN VEL19048120HDA-1

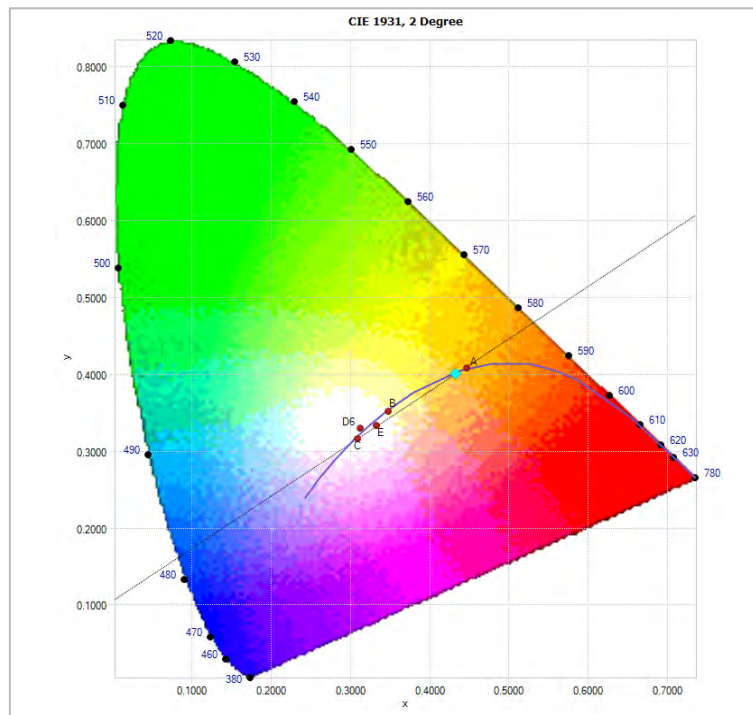
Programmed to 480mA

Efficacy: 66.6 LPW S/P Ratio: 1.4 LM'/LM

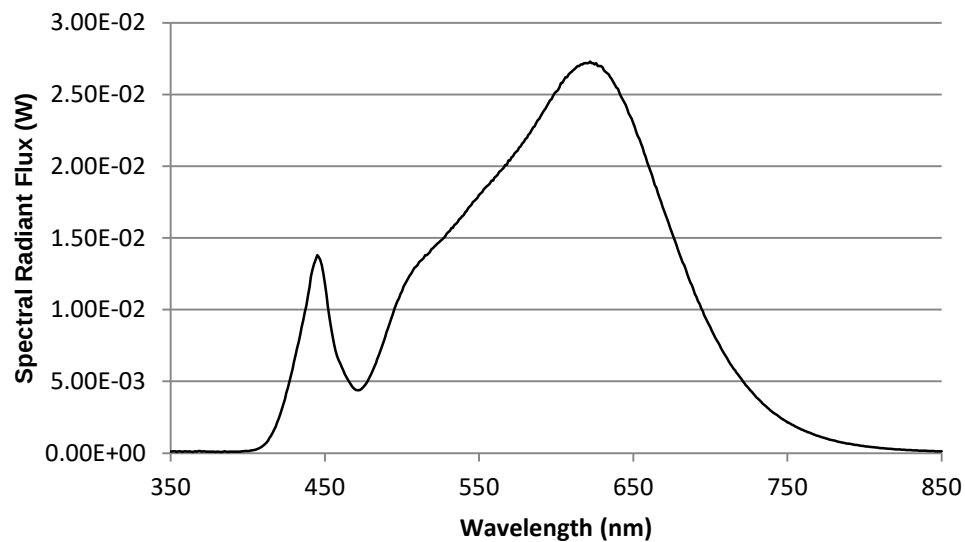
Spectral Results

Name	Value	Unit
Φ	4.83	watts
$\Phi(v)$	1385	lumens
$\Phi(v')$	1956	lm'
Chrom x	0.4329	
Chrom y	0.4012	
Chrom u	0.2492	
Chrom v	0.3464	
Duv	0.0006	
Chrom u'	0.2492	
Chrom v'	0.5196	
CCT	3043	K
Purity	50.4	%
λ (dom)	582.9	nm
FWHM	166.9	nm
λ (peak)	621.5	nm
λ (center)	597.5	nm
λ (centroid)	591.6	nm
SDCM	Cool White	
RA	92	
Corr. Coef.	0.000621986	
Correlation	0.0054	
R1	92.4	
R2	94.4	
R3	95.7	
R4	92.8	
R5	92.3	
R6	93.7	
R7	92.1	
R8	82.7	
R9	59.5	
R10	87.0	
R11	94.4	
R12	86.8	
R13	92.7	
R14	97.0	

Chromaticity Diagram



Spectral Distribution of Radiant Flux





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PREPARED FOR: PROGRESS

CATALOG NUMBER: P730076-xxx-30

LUMINAIRE: 9" Maier LED C-T-C w/ Etched Opal Acrylic Diffuser

LAMP CAT. NO.: LEMWS36X90LZ3A00

LAMP: 18- 3000K LEDs

BALLAST CATALOG NUMBER: VEL19048120HDA-1

BALLAST: 1- ESPEN

MOUNTING: Ceiling

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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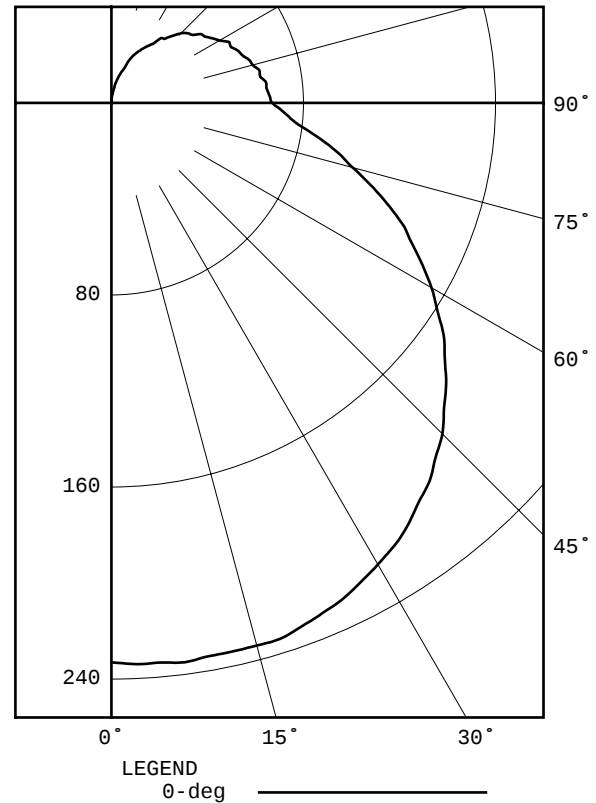
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DEG	CANDELA	LUMENS
0	233	
5	234	22
15	234	66
25	228	105
35	215	135
45	195	150
55	169	151
65	138	137
75	104	111
85	75	83
90	67	
95	65	71
105	61	65
115	55	55
125	48	43
135	41	31
145	30	19
155	22	10
165	11	3
175	3	0
180	2	

ZONAL ZONE	LUMEN	SUMMARY LUMENS	%FIXT
0- 30		194	15.4
0- 40		328	26.1
0- 60		629	50.0
0- 90		960	76.3
90-120		191	15.2
90-130		234	18.6
90-150		285	22.6
90-180		299	23.7
0-180		1259	100.0

EFFICACY = 60.5 lm/W
CIE TYPE - SEMI-DIRECT
SPACING CRITERION: 1.42
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 90 90





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LUMINOUS DIAMETER: 9.000
HEIGHT OF SIDE : 3.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	4717.
55	4470.
65	4165.
75	3789.
85	3583.



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CANDELA DISTRIBUTION

0.0	233
5.0	234
10.0	234
15.0	234
20.0	232
25.0	228
30.0	222
35.0	215
40.0	206
45.0	195
50.0	182
55.0	169
60.0	154
65.0	138
70.0	122
75.0	104
80.0	89
85.0	75
90.0	67
95.0	65
100.0	63
105.0	61
110.0	58
115.0	55
120.0	52
125.0	48
130.0	44
135.0	41
140.0	35
145.0	30
150.0	26
155.0	22
160.0	15
165.0	11
170.0	6
175.0	3
180.0	2



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5-DEGREE		
ZONAL	LUMEN	SUMMARY
0- 5		6
5- 10		17
10- 15		28
15- 20		38
20- 25		48
25- 30		57
30- 35		64
35- 40		70
40- 45		74
45- 50		76
50- 55		76
55- 60		75
60- 65		71
65- 70		66
70- 75		59
75- 80		52
80- 85		44
85- 90		39
90- 95		36
95-100		35
100-105		33
105-110		31
110-115		29
115-120		26
120-125		23
125-130		20
130-135		17
135-140		14
140-145		11
145-150		8
150-155		6
155-160		4
160-165		2
165-170		1
170-175		0
175-180		0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0- 10		22
0- 20		89
0- 30		194
0- 40		328
0- 50		479
0- 60		629
0- 70		766
0- 80		877
0- 90		960
0-100		1031
0-110		1096
0-120		1151
0-130		1195
0-140		1226
0-150		1245
0-160		1255
0-170		1259
0-180		1259



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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
0	113	113	113	113	108	108	108	108	98	98	98	89	89	89	80	80	80	76
1	101	95	90	85	95	90	86	81	82	78	74	74	71	68	66	64	62	58
2	90	81	73	67	85	77	70	64	70	64	59	63	58	54	56	53	50	46
3	82	70	61	54	77	67	59	52	60	54	48	55	49	45	49	45	41	38
4	74	62	52	45	70	59	50	44	53	46	40	48	42	37	43	38	34	31
5	68	55	45	38	64	52	43	37	47	40	34	43	37	32	39	33	29	27
6	63	49	40	33	59	47	38	32	42	35	30	38	32	28	35	30	26	23
7	58	44	35	29	55	42	34	28	38	31	26	35	29	24	32	26	22	20
8	54	40	31	25	51	38	30	24	35	28	23	32	26	21	29	24	20	18
9	50	36	28	22	47	35	27	22	32	25	20	29	23	19	27	22	18	16
10	47	33	25	20	44	32	25	20	29	23	18	27	21	17	25	20	16	14

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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