

Project Number
18.00094



HUBBELL
Lighting

Date
2/1/2018

Lab 1
Sphere

Test Sample Description

Catalog Number: P300150-015-30
Description: 22" AC-LED Bath with Etched Opal Refractor

Photometry

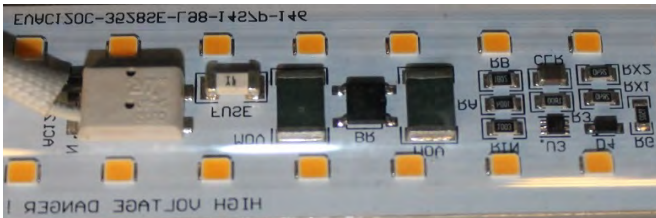
Test Method: IES LM-41-14
IES LM-79-08 §10
Preburn Time: 0:20
Time To Stabilize: 1:30
Total Operating Time: 2:50

Input Voltage (Volts): 120.1
Input Current (Amps): 0.308
Input Wattage (Watts): 36.7
Ambient Temp (°C): 26
PF @ 120V: 0.992
THD @ 120V (%): 11.93

Sphere

Test Method: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 2:00
Time To Stabilize: 1:17
Total Operating Time: 3:17

Input Voltage (Volts): 120.0
Input Current (Amps): 0.308
Input Wattage (Watts): 36.7
Ambient Temp (°C): 24



Hubbell Lighting, Inc.

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Greenville, SC 29607
www.hubbellighting.com

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



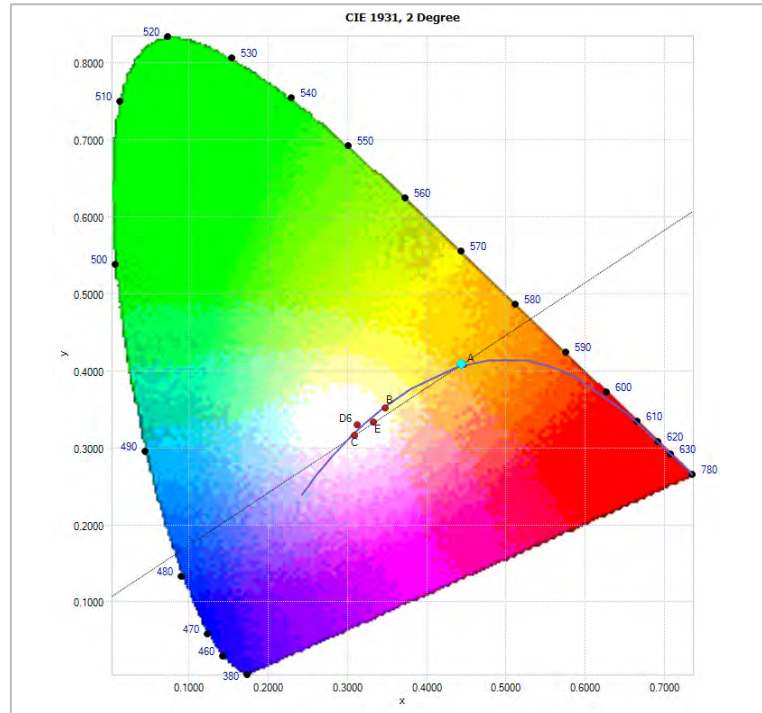
This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.



Lamp Cat#: EVAC120C-3528SE-L98-14S7P-146
 Lamp Desc: 98 - Seoul 3000K LEDs
 Driver Desc: NA

Efficacy: 52.9 LPW S/P Ratio: 1.4 LM/LM

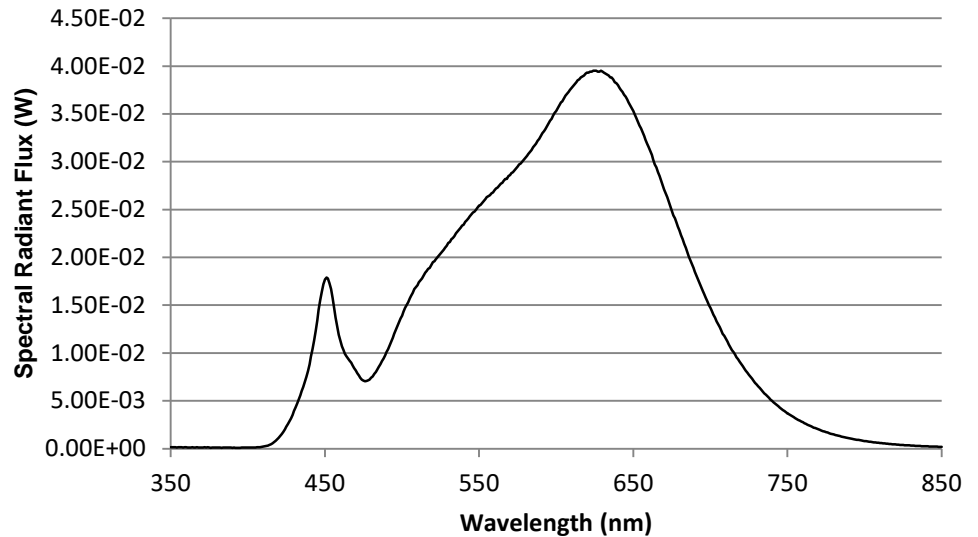
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	6.94	watts
Φ(v)	1942	lumens
Φ(v')	2642	lm'
Chrom x	0.4437	
Chrom y	0.4085	
Chrom u	0.253	
Chrom v	0.3494	
Duv	0.0005	
Chrom u'	0.253	
Chrom v'	0.5241	
CCT	2923	K
Purity	55.8	%
λ (dom)	582.9	nm
FWHM	165.2	nm
λ (peak)	625.1	nm
λ (center)	604.3	nm
λ (centroid)	599.0	nm
SDCM	Cool White	
RA	93	
Corr. Coef.	0.000873955	
Correlation	0.0054	
R1	93.3	
R2	95.1	
R3	95.4	
R4	93.9	
R5	92.6	
R6	93.7	
R7	94.3	
R8	85.6	
R9	65.8	
R10	87.5	
R11	94.4	
R12	81.3	
R13	93.6	
R14	96.6	

Spectral Distribution of Radiant Flux





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CATALOG NUMBER: P300150-015-30

LUMINAIRE: 22" AC-LED Bath w/ Etched Opal Refractor

LAMP CAT. NO.: EVAC120C-3528SE-L98-14S7P-146

LAMP: 98- Seoul 3000K LEDs

MOUNTING: Wall

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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CANDELA DISTRIBUTION

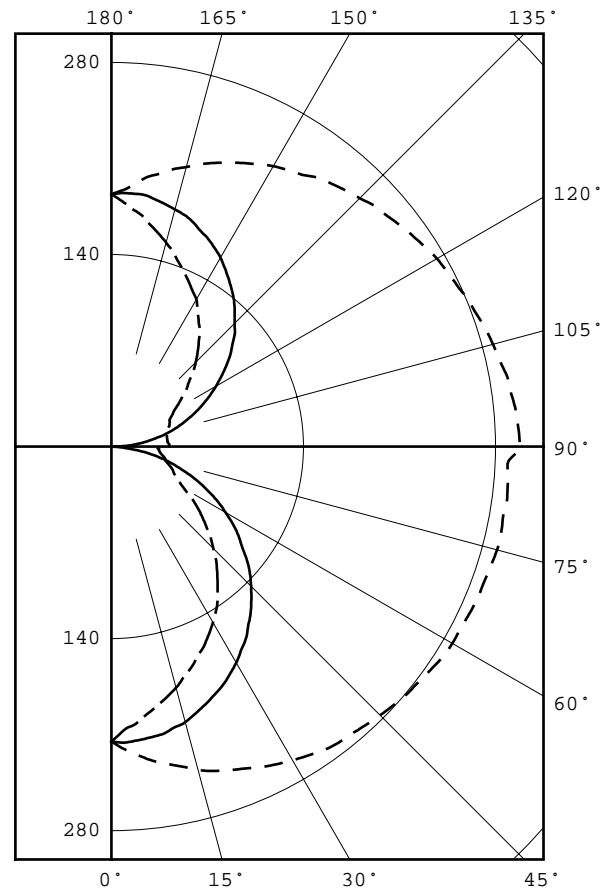
	0.0	45.0	90.0	135.0	180.0	FLUX
0	215	215	215	215	215	
5	226	222	215	206	203	20
15	244	232	208	188	182	59
25	258	236	192	166	160	93
35	270	235	171	142	135	117
45	277	230	144	114	105	131
55	284	222	113	82	76	134
65	288	217	79	50	52	128
75	291	205	44	29	41	118
85	290	202	7	16	35	110
90	298	208	3	22	42	
95	296	206	17	24	41	116
105	288	205	46	31	42	119
115	278	205	74	46	47	122
125	268	209	102	71	63	123
135	256	211	127	96	87	117
145	242	211	149	120	111	103
155	228	208	167	141	133	81
165	211	202	179	161	154	51
175	192	190	185	178	174	18
180	184	184	184	184	184	

ZONAL LUMEN SUMMARY

ZONE	LUMEN LUMENS	%FIXT
0- 30	172	9.8
0- 40	290	16.4
0- 60	554	31.5
0- 90	911	51.7
90-120	357	20.3
90-130	480	27.3
90-150	701	39.8
90-180	850	48.3
0-180	1761	100.0

EFFICACY = 48.0 lm/W
CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG 180-DEG
SPACING CRITERIA : 1.87 1.26 1.04
SHIELDING ANGLES : 90 90

FLUX



LEGEND
0-deg - - - - -
90-deg - - - - -
180-deg - . - . - .



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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 2.000 22.000
HEIGHT OF SIDE : 2.000 2.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 90-DEG 180-DEG
45 6900. 6576. 2615.
55 7183. 6143. 1922.
65 7634. 5511. 1378.
75 8370. 4472. 1179.
85 9430. 1388. 1138.



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	215	215	215	215	215	215	215	215	215
5.0	226	225	222	217	215	210	206	204	203
10.0	235	233	228	219	213	204	197	194	192
15.0	244	241	232	219	208	196	188	184	182
20.0	251	247	234	216	200	186	177	173	171
25.0	258	252	236	213	192	176	166	161	160
30.0	264	256	236	208	182	164	154	150	148
35.0	270	260	235	201	171	151	142	137	135
40.0	273	262	233	193	158	138	128	122	120
45.0	277	264	230	184	144	123	114	107	105
50.0	281	266	226	173	129	108	98	92	90
55.0	284	267	222	163	113	93	82	77	76
60.0	287	268	217	151	96	76	66	62	61
65.0	288	268	217	139	79	59	50	50	52
70.0	289	268	209	129	61	42	37	43	47
75.0	291	268	205	119	44	26	29	38	41
80.0	290	268	203	111	26	13	24	34	38
85.0	290	267	202	102	7	8	16	30	35
90.0	298	275	208	110	3	15	22	37	42
95.0	296	273	206	109	17	16	24	36	41
100.0	293	270	205	112	31	19	28	37	41
105.0	288	266	205	118	46	28	31	39	42
110.0	283	263	204	125	60	41	37	42	45
115.0	278	259	205	134	74	54	46	45	47
120.0	274	256	207	142	88	68	57	54	53
125.0	268	253	209	151	102	81	71	65	63
130.0	262	249	210	160	115	94	84	77	74
135.0	256	244	211	168	127	106	96	90	87
140.0	250	240	211	175	139	119	109	102	99
145.0	242	234	211	180	149	130	120	114	111
150.0	236	229	210	185	159	141	131	125	124
155.0	228	223	208	188	167	151	141	135	133
160.0	220	217	206	191	174	160	152	145	143
165.0	211	209	202	191	179	168	161	155	154
170.0	202	201	197	191	183	175	170	165	164
175.0	192	192	190	188	185	180	178	174	174
180.0	184	184	184	184	184	184	184	184	184



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5-DEGREE ZONAL LUMEN SUMMARY	
0- 5	5
5- 10	15
10- 15	25
15- 20	34
20- 25	43
25- 30	50
30- 35	56
35- 40	61
40- 45	64
45- 50	67
50- 55	67
55- 60	67
60- 65	65
65- 70	63
70- 75	60
75- 80	58
80- 85	56
85- 90	55
90- 95	58
95-100	58
100-105	59
105-110	60
110-115	61
115-120	61
120-125	62
125-130	61
130-135	60
135-140	57
140-145	54
145-150	49
150-155	44
155-160	37
160-165	30
165-170	22
170-175	13
175-180	4

10-DEGREE ZONAL LUMEN SUMMARY	
0- 10	20
0- 20	80
0- 30	172
0- 40	290
0- 50	421
0- 60	554
0- 70	683
0- 80	801
0- 90	911
0-100	1027
0-110	1146
0-120	1268
0-130	1391
0-140	1509
0-150	1612
0-160	1692
0-170	1744
0-180	1761



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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	108	108	108	108	108	99	99	99	99	84	84	84	70	70	70	58	58	58	52
1	95	90	85	80	80	88	83	78	74	70	66	63	58	55	53	47	45	43	38
2	86	77	70	63	63	79	71	64	59	60	55	50	49	45	42	39	37	34	30
3	78	67	58	52	52	71	62	54	48	52	46	41	43	38	35	34	31	28	24
4	71	59	50	43	43	65	54	46	40	46	39	35	38	33	29	30	27	24	20
5	65	52	43	36	36	59	48	40	34	40	34	29	33	29	25	27	23	20	17
6	59	46	38	31	31	54	43	35	29	36	30	25	30	25	21	24	20	17	14
7	55	42	33	27	27	50	39	31	25	33	27	22	27	22	19	22	18	15	13
8	51	38	29	24	24	47	35	28	22	30	24	19	25	20	16	20	16	14	11
9	47	34	26	21	21	43	32	25	20	27	21	17	23	18	15	19	15	12	10
10	44	31	24	19	19	41	29	22	18	25	19	15	21	16	13	17	14	11	9

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.



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: 07/10/2017

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	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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