

Project Number
18.00105



HUBBELL
Lighting

Date
2/1/2018

LAB 1
Sphere

Test Sample Description

Catalog Number: P300182-129-30
Description: 22" Linear LED Bath w/ Etched, Opal Glass Refractor

Photometry

Test Method: IES LM-41-14
IES LM-79-08 §10
Preburn Time: 0:15
Time To Stabilize: 1:20
Total Operating Time: 2:29
Input Voltage (Volts): 120.2
Input Current (Amps): 0.299
Input Wattage (Watts): 35.6
Ambient Temp (°C): 25.9
PF @ 120V: 0.989
THD @ 120V (%): 11.88

Sphere

Test Method: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 8:00
Time To Stabilize: 1:20
Total Operating Time: 9:20
Input Voltage (Volts): 120.0
Input Current (Amps): 0.301
Input Wattage (Watts): 35.8
Ambient Temp (°C): 24



Hubbell Lighting, Inc.

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

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



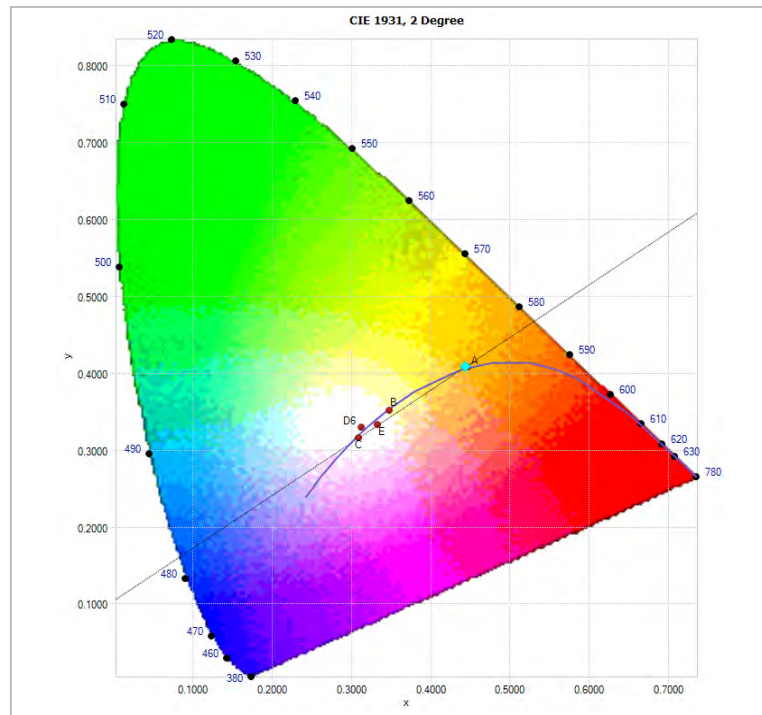
This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.



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

Efficacy: 62.1 LPW S/P Ratio: 1.4 LM/LM

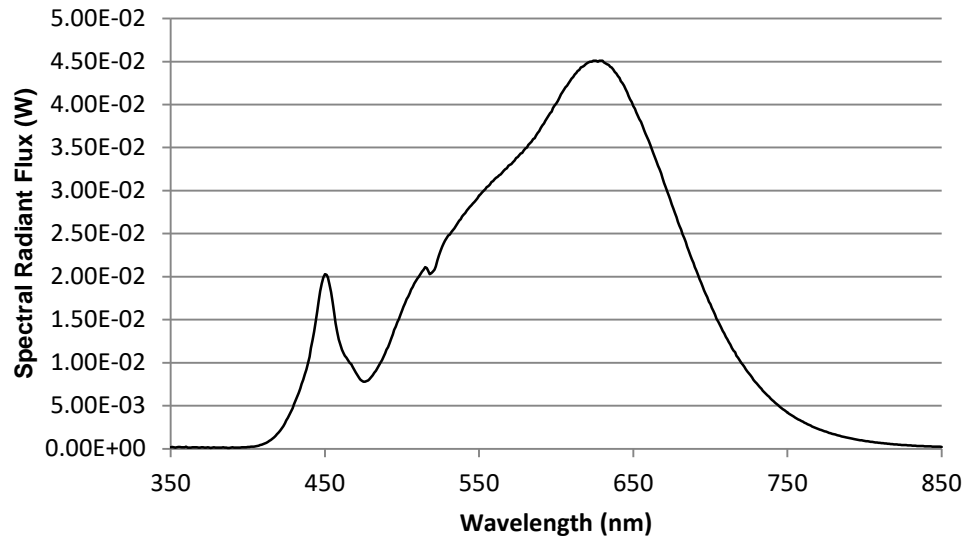
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	7.93	watts
Φ(v)	2223	lumens
Φ(v')	3011	lm'
Chrom x	0.4434	
Chrom y	0.4086	
Chrom u	0.2528	
Chrom v	0.3494	
Duv	0.0006	
Chrom u'	0.2528	
Chrom v'	0.5241	
CCT	2929	K
Purity	55.7	%
λ (dom)	582.8	nm
FWHM	162.8	nm
λ (peak)	622.2	nm
λ (center)	605.5	nm
λ (centroid)	598.6	nm
SDCM	Cool White	
RA	92	
Corr. Coef.	0.000937906	
Correlation	0.0054	
R1	92.7	
R2	94.5	
R3	94.6	
R4	93.3	
R5	91.8	
R6	92.7	
R7	94.2	
R8	85.3	
R9	64.9	
R10	86.0	
R11	93.4	
R12	80.8	
R13	92.9	
R14	96.2	

Spectral Distribution of Radiant Flux





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LUMINAIRE: 22" Linear LED Bath w/ Etched, Opal Glass
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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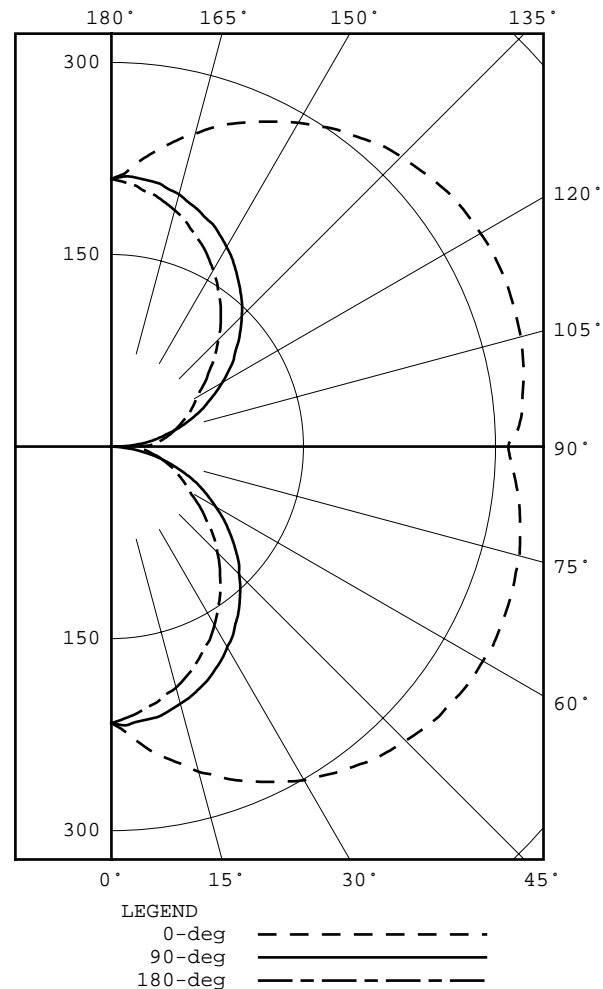
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CANDELA DISTRIBUTION						FLUX
	0.0	45.0	90.0	135.0	180.0	
0	216	216	216	216	216	
5	231	225	216	210	210	21
15	263	244	208	198	195	62
25	289	257	192	177	173	99
35	310	262	169	152	147	128
45	325	262	141	122	117	145
55	334	257	111	89	86	151
65	335	248	78	57	61	145
75	330	233	44	33	42	133
85	317	213	8	11	25	114
90	310	206	0	7	21	
95	322	227	21	21	36	123
105	331	239	53	41	52	140
115	334	250	84	63	69	149
125	331	256	116	94	90	152
135	320	259	144	124	118	145
145	303	257	169	152	146	126
155	280	249	190	177	171	97
165	253	236	204	196	191	61
175	222	217	211	206	205	20
180	209	209	209	209	209	

ZONAL ZONE	LUMEN LUMENS	SUMMARY	%FIXT
0- 30	182		9.1
0- 40	310		15.4
0- 60	605		30.1
0- 90	998		49.6
90-120	412		20.5
90-130	564		28.1
90-150	836		41.5
90-180	1014		50.4
0-180	2012		100.0

EFFICACY = 56.7 lm/W
CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG 180-DEG
SPACING CRITERIA : 2.09 1.25 1.12
SHIELDING ANGLES : 90 90





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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 8096. 6439. 2914.
55 8448. 6034. 2175.
65 8880. 5441. 1617.
75 9492. 4472. 1208.
85 10308. 1586. 813.



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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	216	216	216	216	216	216	216	216	216
5.0	231	229	225	217	216	213	210	210	210
10.0	247	243	236	222	214	209	205	203	203
15.0	263	257	244	224	208	202	198	195	195
20.0	277	270	251	224	201	194	189	186	185
25.0	289	280	257	222	192	184	177	174	173
30.0	301	289	260	218	181	172	165	162	161
35.0	310	297	262	213	169	159	152	148	147
40.0	319	303	263	207	156	145	137	134	132
45.0	325	308	262	199	141	130	122	118	117
50.0	331	311	260	190	127	114	106	103	102
55.0	334	313	257	181	111	98	89	87	86
60.0	335	313	254	169	94	81	73	71	71
65.0	335	311	248	161	78	64	57	59	61
70.0	333	307	242	148	61	46	43	49	52
75.0	330	302	233	137	44	30	33	40	42
80.0	324	296	223	124	26	17	23	30	33
85.0	317	289	213	111	8	8	11	20	25
90.0	310	282	206	103	0	2	7	17	21
95.0	322	294	227	118	21	16	21	30	36
100.0	327	301	236	128	37	25	33	40	44
105.0	331	305	239	140	53	37	41	49	52
110.0	333	309	244	151	69	53	51	57	60
115.0	334	310	250	162	84	69	63	67	69
120.0	333	311	252	172	100	86	78	76	77
125.0	331	310	256	183	116	102	94	91	90
130.0	326	307	258	192	130	117	109	105	104
135.0	320	303	259	200	144	132	124	120	118
140.0	312	298	259	206	157	146	138	134	133
145.0	303	290	257	212	169	159	152	148	146
150.0	292	281	254	216	180	171	165	161	159
155.0	280	272	249	219	190	182	177	172	171
160.0	268	260	244	220	197	191	187	183	181
165.0	253	249	236	219	204	199	196	193	191
170.0	238	236	228	217	209	205	203	200	199
175.0	222	220	217	213	211	208	206	205	205
180.0	209	209	209	209	209	209	209	209	209



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5-DEGREE ZONAL LUMEN SUMMARY		
0- 5		5
5- 10		16
10- 15		26
15- 20		36
20- 25		45
25- 30		54
30- 35		61
35- 40		67
40- 45		71
45- 50		74
50- 55		75
55- 60		75
60- 65		74
65- 70		71
70- 75		68
75- 80		64
80- 85		60
85- 90		55
90- 95		59
95-100		64
100-105		68
105-110		71
110-115		74
115-120		75
120-125		76
125-130		76
130-135		74
135-140		71
140-145		66
145-150		60
150-155		53
155-160		44
160-165		35
165-170		25
170-175		15
175-180		5

10-DEGREE ZONAL LUMEN SUMMARY		
0- 10		21
0- 20		83
0- 30		182
0- 40		310
0- 50		455
0- 60		605
0- 70		751
0- 80		883
0- 90		998
0-100		1121
0-110		1261
0-120		1410
0-130		1562
0-140		1707
0-150		1834
0-160		1931
0-170		1992
0-180		2012



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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	107	107	107	107	107	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	95	90	85	80	80	87	82	78	74	69	66	63	56	54	52	45	43	42	36
2	85	77	70	63	63	78	71	64	59	59	54	50	48	44	41	38	36	33	28
3	77	67	58	52	52	71	61	54	48	51	45	41	42	37	34	33	30	27	23
4	70	58	50	43	43	64	54	46	40	45	39	34	37	32	28	29	26	23	19
5	64	52	43	36	36	59	48	40	34	40	34	29	33	28	24	26	22	19	16
6	59	46	37	31	31	54	42	35	29	36	29	25	29	24	21	23	20	17	14
7	55	41	33	27	27	50	38	31	25	32	26	22	26	22	18	21	17	15	12
8	50	37	29	24	24	46	35	27	22	29	23	19	24	19	16	19	16	13	10
9	47	34	26	21	21	43	32	24	20	27	21	17	22	17	14	18	14	12	9
10	44	31	24	19	19	40	29	22	17	24	19	15	20	16	13	16	13	10	8

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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