



LAB 1
Sphere

Test Sample Description

Catalog Number: P300188-015-30
Description: 4-Lt. LED Bath w/ Etched Glass Refractors

Photometry

Test Method: IES LM-46-04
IES LM-79-08 §10
Preburn Time: 0:10
Time To Stabilize: 1:10
Total Operating Time: 3:02

Input Voltage (Volts): 120.0
Input Current (Amps): 0.328
Input Wattage (Watts): 39.0
Ambient Temp (°C): 25.0

Sphere

Test Method: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 0:30
Time To Stabilize: 1:18
Total Operating Time: 1:48

Input Voltage (Volts): 120.0
Input Current (Amps): 0.326
Input Wattage (Watts): 38.8
Ambient Temp (°C): 24
PF @ 120V: 0.984
THD @ 120V (%): 12.3



Hubbell Lighting, Inc.

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

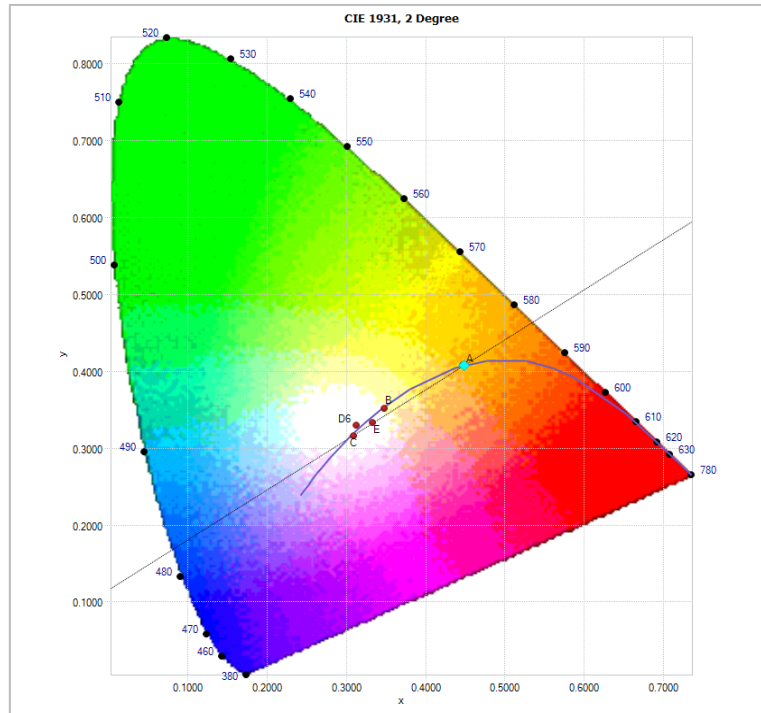




Lamp Cat#: EVAC120C-3528SE-L28-14S2P-201
 Lamp Desc: 112 - Seoul 3000K LEDs

Efficacy: 52.2 LPW S/P Ratio: 1.3 LM/LM

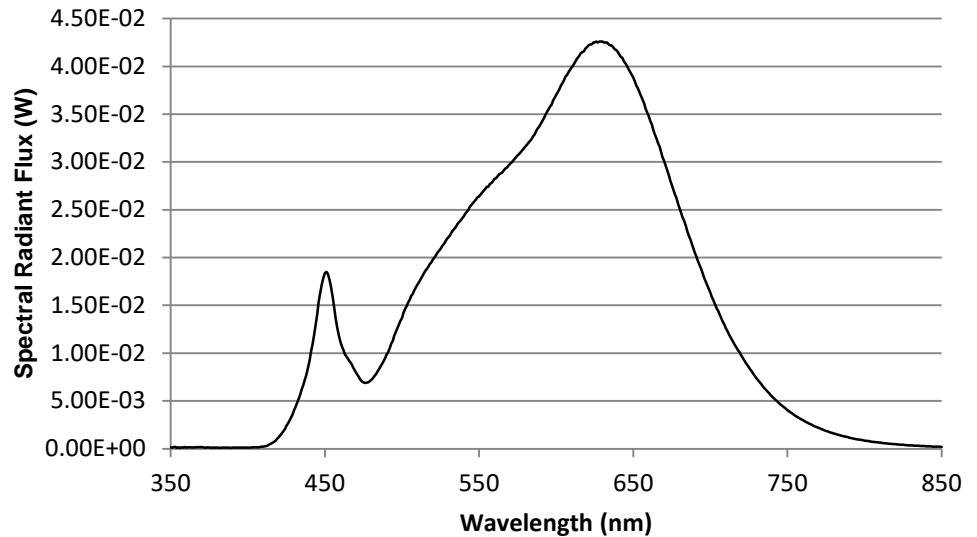
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	7.36	watts
Φ(v)	2026	lumens
Φ(v')	2689	lm'
Chrom x	0.4483	
Chrom y	0.408	
Chrom u	0.2562	
Chrom v	0.3498	
Duv	0.0001	
Chrom u'	0.2562	
Chrom v'	0.5246	
CCT	2846	K
Purity	57.1	%
λ (dom)	583.5	nm
FWHM	161.6	nm
λ (peak)	628.9	nm
λ (center)	607.4	nm
λ (centroid)	601.3	nm
SDCM	Cool White	
RA	93	
Corr. Coef.	0.000248393	
Correlation	0.0054	
R1	94.0	
R2	95.3	
R3	94.6	
R4	94.2	
R5	93.1	
R6	93.7	
R7	94.5	
R8	87.0	
R9	69.5	
R10	87.6	
R11	94.5	
R12	81.9	
R13	94.2	
R14	96.1	

Spectral Distribution of Radiant Flux





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ISSUE DATE: 02/02/18

PREPARED FOR: PROGRESS

CATALOG NUMBER: P300188-015-30

LUMINAIRE: 4-Lt. LED Bath w/ Etched Glass Refractors

LAMP CAT. NO.: EVAC120C-3528SE-L28-14S2P-201

LAMP: 112- Seoul 3000K LEDs

MOUNTING: Wall

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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CANDELA DISTRIBUTION

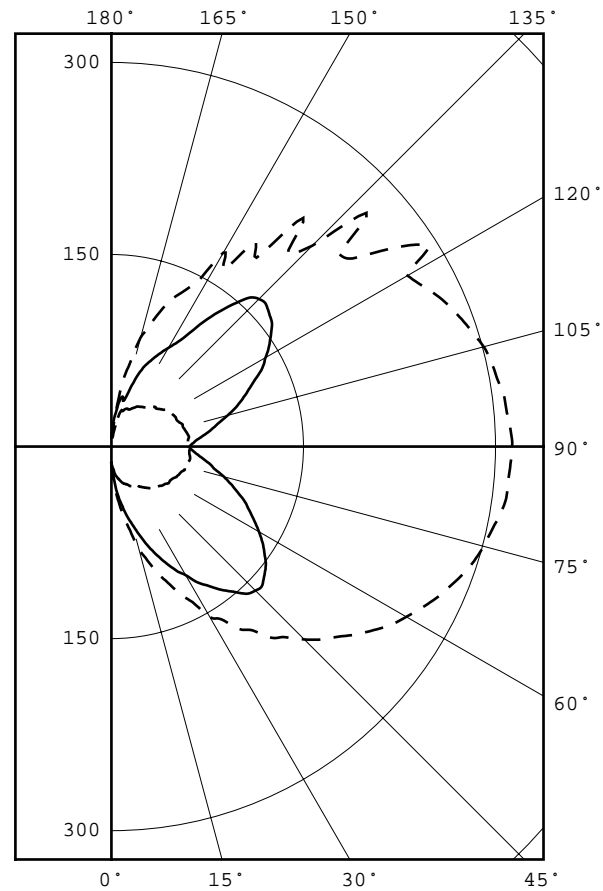
	0.0	45.0	90.0	135.0	180.0
0	13	13	13	13	13
5	32	30	28	21	18
15	83	75	63	40	28
25	127	121	100	56	34
35	174	161	133	64	38
45	213	202	159	73	45
55	250	239	146	81	51
65	280	269	119	87	56
75	301	290	91	91	60
85	311	301	67	94	61
90	313	302	61	95	61
95	310	300	68	93	60
105	301	290	94	91	58
115	280	269	124	87	55
125	271	240	152	82	50
135	222	210	163	69	43
145	194	169	111	67	38
155	134	115	75	49	32
165	88	63	37	25	29
175	15	22	21	15	6
180	7	7	7	7	7

FLUX

3
17
41
74
110
143
169
187
194
193
186
169
145
112
73
39
13
2

ZONAL ZONE	LUMEN LUMENS	SUMMARY %FIXT
0- 30	61	3.3
0- 40	135	7.2
0- 60	388	20.7
0- 90	938	50.1
90-120	548	29.3
90-130	693	37.1
90-150	878	47.0
90-180	932	49.9
0-180	1870	100.0

EFFICACY = 47.9 lm/W
CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 90 90



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



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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 3.000 29.000
HEIGHT OF SIDE : 7.500 7.500

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 90-DEG 180-DEG
45 1533. 3183. 324.
55 1699. 3312. 347.
65 1856. 3227. 371.
75 2006. 3188. 400.
85 2150. 3462. 422.



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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	13	13	13	13	13	13	13	13	13
5.0	32	31	30	29	28	24	21	19	18
10.0	55	55	52	50	46	38	31	26	24
15.0	83	81	75	70	63	52	40	31	28
20.0	105	104	98	91	82	65	49	35	31
25.0	127	128	121	112	100	78	56	39	34
30.0	154	148	141	131	116	89	60	41	35
35.0	174	171	161	149	133	100	64	44	38
40.0	195	191	183	170	148	111	69	48	42
45.0	213	211	202	188	159	120	73	52	45
50.0	231	231	221	205	156	127	77	55	48
55.0	250	249	239	219	146	132	81	59	51
60.0	266	264	255	232	133	135	84	60	53
65.0	280	278	269	243	119	138	87	62	56
70.0	292	290	281	253	105	140	89	63	58
75.0	301	299	290	261	91	137	91	64	60
80.0	308	305	297	267	78	134	94	64	62
85.0	311	309	301	270	67	134	94	62	61
90.0	313	310	302	271	61	134	95	61	61
95.0	310	308	300	269	68	134	93	58	60
100.0	306	305	296	266	80	134	93	57	60
105.0	301	298	290	260	94	139	91	55	58
110.0	291	289	280	253	109	141	89	53	56
115.0	280	279	269	244	124	139	87	52	55
120.0	267	271	258	233	139	138	85	50	53
125.0	271	252	240	221	152	134	82	48	50
130.0	233	253	222	206	161	129	77	44	46
135.0	222	217	210	190	163	121	69	41	43
140.0	233	198	185	175	143	109	65	38	40
145.0	194	188	169	154	111	94	67	36	38
150.0	175	158	150	129	89	80	61	34	35
155.0	134	138	115	101	75	66	49	32	32
160.0	113	109	88	75	58	49	40	30	31
165.0	88	74	63	47	37	31	25	25	29
170.0	52	42	33	38	36	28	18	16	15
175.0	15	20	22	21	21	18	15	9	6
180.0	7	7	7	7	7	7	7	7	7



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	0
5- 10	3
10- 15	6
15- 20	11
20- 25	17
25- 30	24
30- 35	32
35- 40	41
40- 45	50
45- 50	59
50- 55	68
55- 60	75
60- 65	82
65- 70	87
70- 75	92
75- 80	95
80- 85	97
85- 90	97
90- 95	97
95-100	96
100-105	94
105-110	91
110-115	87
115-120	82
120-125	77
125-130	69
130-135	61
135-140	51
140-145	41
145-150	32
150-155	23
155-160	16
160-165	9
165-170	4
170-175	2
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	3
0- 20	20
0- 30	61
0- 40	135
0- 50	245
0- 60	388
0- 70	557
0- 80	743
0- 90	938
0-100	1131
0-110	1317
0-120	1486
0-130	1631
0-140	1743
0-150	1816
0-160	1854
0-170	1868
0-180	1870



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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	92	86	80	75	84	79	73	69	65	61	57	53	50	47	41	39	37	31	31
2	82	72	64	57	75	66	58	52	54	48	43	43	39	35	33	30	27	22	22
3	74	62	52	45	67	56	48	41	46	39	34	37	31	27	28	24	21	16	16
4	67	53	44	36	60	49	40	33	40	33	28	31	26	22	24	20	16	12	12
5	61	47	37	30	55	43	34	28	35	28	23	28	22	18	21	17	13	10	10
6	55	41	32	25	50	38	29	23	31	24	19	24	19	15	18	14	11	8	8
7	51	37	28	22	46	34	26	20	28	21	16	22	17	13	17	12	9	7	7
8	47	33	24	19	43	30	22	17	25	19	14	20	15	11	15	11	8	5	5
9	44	30	22	16	40	27	20	15	23	16	12	18	13	10	14	10	7	5	5
10	41	27	19	14	37	25	18	13	21	15	11	17	12	8	13	9	6	4	4

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>Power Supply PF/THD</i>	Voltage-Regulated House Power	N/A	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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