

Project Number
18.00947



HUBBELL
Lighting

Date
6/7/2018

Lab 1
Sphere

Test Sample Description

Catalog Number: P300224-009-30
Description: 3ft LED Circular-Cross-Section Vanity w/ Acrylic Refractor

Photometry

Test Method: IES LM-xx-yy
IES LM-79-08 §10
Preburn Time: 1:30
Time To Stabilize: 0:50
Total Operating Time: 3:51

Input Voltage (Volts): 120.3
Input Current (Amps): 0.290
Input Wattage (Watts): 34.2
Ambient Temp (°C): 24.6

Sphere

Test Method: IES LM-16-93
IES LM-79-08 §12.1
Preburn Time: 4:00
Time To Stabilize: 1:02
Total Operating Time: 5:02

Input Voltage (Volts): 120.0
Input Current (Amps): 0.290
Input Wattage (Watts): 34.0
Ambient Temp (°C): 24.5



Hubbell Lighting, Inc.

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

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



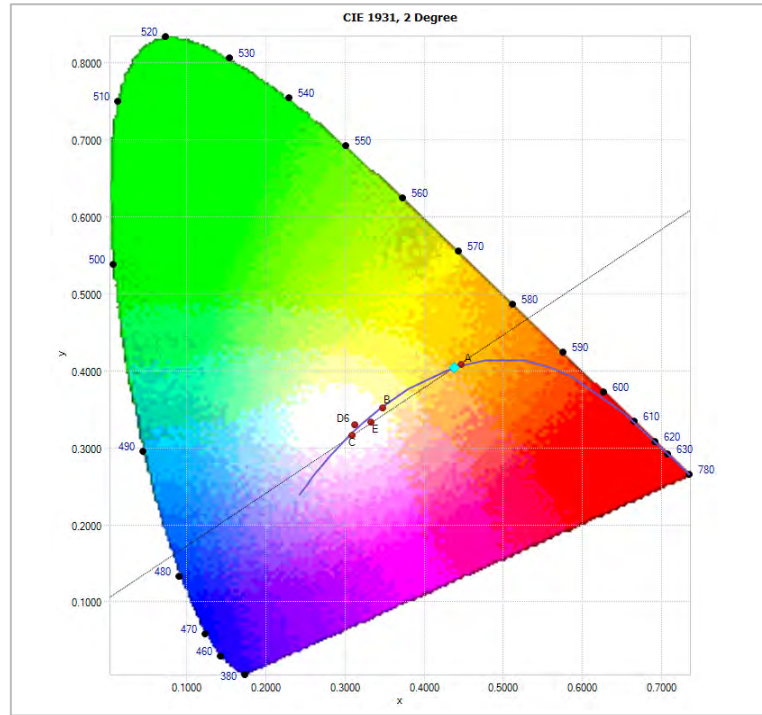
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Lamp Cat#: 2835 0.5W
 Lamp Desc: 66 - Edison 3000K LEDs
 Driver Desc: 1 - Becky BQE36-0830-40-TD
 Programmed to 550mA

Efficacy: 76.5 LPW S/P Ratio: 1.4 LM/LM

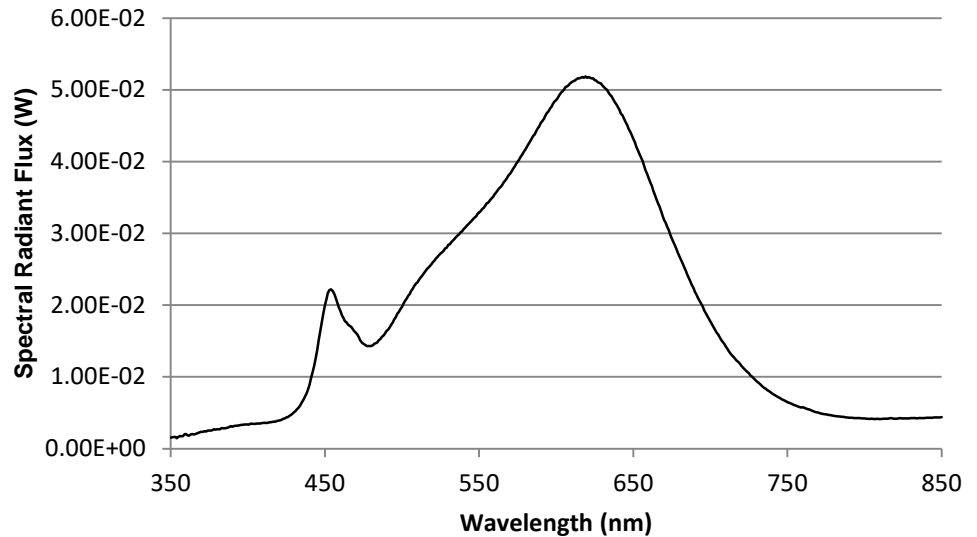
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	9.65	watts
Φ(v)	2601	lumens
Φ(v')	3704	lm'
Chrom x	0.438	
Chrom y	0.405	
Chrom u	0.2509	
Chrom v	0.348	
Duv	0.0001	
Chrom u'	0.2509	
Chrom v'	0.5219	
CCT	2987	K
Purity	53.1	%
λ (dom)	582.8	nm
FWHM	162.3	nm
λ (peak)	619.3	nm
λ (center)	600.7	nm
λ (centroid)	598.8	nm
SDCM	Cool White	
RA	93	
Corr. Coef.	0.00030325	
Correlation	0.0054	
R1	92.7	
R2	97.0	
R3	98.7	
R4	92.3	
R5	92.7	
R6	96.8	
R7	91.3	
R8	80.6	
R9	57.1	
R10	92.4	
R11	93.2	
R12	85.9	
R13	94.0	
R14	99.6	

Spectral Distribution of Radiant Flux





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LUMINAIRE: 3ft LED Circular-Cross-Section
Vanity w/ Acrylic Refractor

LAMP CAT. NO.: 2835 0.5W

LAMP: 66- Edison 3000K LEDs

BALLAST CATALOG NUMBER: BQE36-0830-40-TD

BALLAST: 1- Becky - Programmed to 550mA

MOUNTING: Wall

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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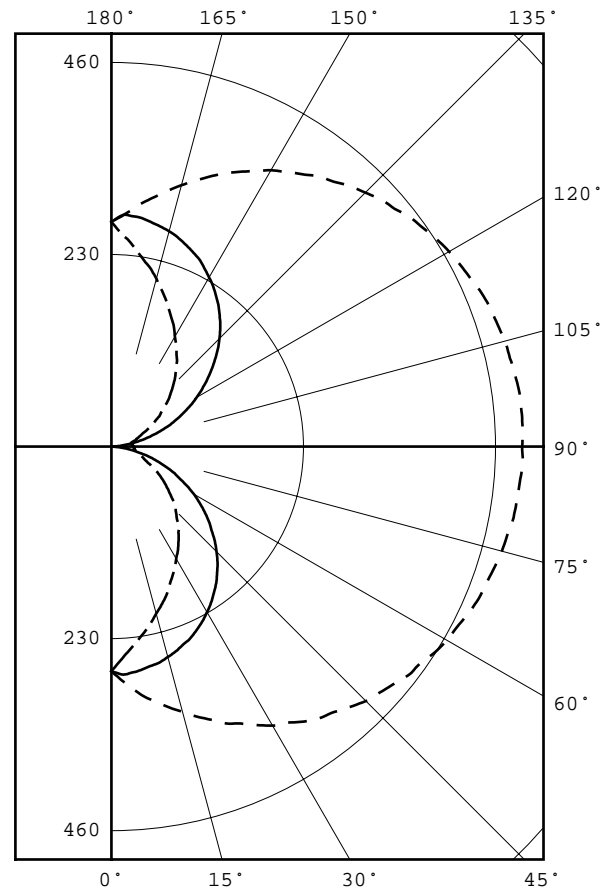
CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	FLUX
0	269	269	269	269	269	
5	291	284	272	250	245	26
15	329	306	261	220	207	75
25	366	322	242	186	172	118
35	402	332	214	151	140	152
45	431	335	178	117	109	174
55	452	333	136	85	79	184
65	472	326	90	53	51	182
75	484	321	46	27	35	175
85	491	319	8	17	28	168
90	492	319	0	15	26	
95	493	321	11	15	25	168
105	488	327	50	24	30	176
115	475	332	95	51	47	184
125	456	337	140	82	74	185
135	430	336	183	115	105	174
145	398	331	219	151	136	152
155	363	320	248	187	170	118
165	324	303	267	221	208	75
175	285	279	277	253	247	26
180	269	269	269	269	269	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	218	8.7
0- 40	369	14.7
0- 60	727	29.0
0- 90	1252	49.9
90-120	529	21.1
90-130	714	28.4
90-150	1040	41.4
90-180	1257	50.1
0-180	2510	100.0

EFFICACY = 73.4 lm/W
CIE TYPE - GENERAL DIFFUSE
PLANE : 0-DEG 90-DEG 180-DEG
SPACING CRITERIA : 2.18 1.26 0.89
SHIELDING ANGLES : 90 90



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



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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 34.500 2.000
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 12942. 2827. 3273.
55 16349. 2194. 2857.
65 22315. 1521. 2411.
75 34536. 844. 2497.
85 76116. 166. 4341.



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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	269	269	269	269	269	269	269	269	269
5.0	291	289	284	275	272	258	250	249	245
10.0	310	306	296	280	267	247	236	230	226
15.0	329	324	306	281	261	235	220	213	207
20.0	348	340	315	282	252	222	204	195	191
25.0	366	355	322	279	242	207	186	176	172
30.0	386	370	327	276	229	191	168	159	155
35.0	402	383	332	268	214	173	151	143	140
40.0	415	394	334	259	197	154	133	127	125
45.0	431	405	335	249	178	135	117	112	109
50.0	442	414	335	237	157	115	101	96	94
55.0	452	421	333	223	136	96	85	80	79
60.0	464	428	331	209	114	77	69	66	65
65.0	472	432	326	194	90	59	53	52	51
70.0	478	437	324	179	68	43	40	39	41
75.0	484	441	321	165	46	27	27	33	35
80.0	489	443	320	155	26	15	21	27	30
85.0	491	445	319	147	8	8	17	25	28
90.0	492	446	319	145	0	4	15	24	26
95.0	493	448	321	150	11	7	15	22	25
100.0	491	447	323	159	28	14	18	22	24
105.0	488	445	327	171	50	27	24	28	30
110.0	483	441	329	186	73	42	37	35	36
115.0	475	437	332	200	95	59	51	48	47
120.0	467	431	335	215	118	78	66	62	60
125.0	456	425	337	229	140	97	82	77	74
130.0	443	416	338	242	162	116	98	92	90
135.0	430	407	336	253	183	136	115	108	105
140.0	414	395	335	262	202	155	132	123	120
145.0	398	382	331	270	219	174	151	140	136
150.0	382	368	326	276	234	192	168	157	152
155.0	363	353	320	280	248	208	187	175	170
160.0	344	337	312	282	258	224	205	194	189
165.0	324	321	303	282	267	238	221	212	208
170.0	304	303	292	280	273	250	237	230	226
175.0	285	285	279	275	277	261	253	249	247
180.0	269	269	269	269	269	269	269	269	269



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5-DEGREE ZONAL LUMEN SUMMARY		
0- 5		6
5- 10		19
10- 15		31
15- 20		43
20- 25		54
25- 30		64
30- 35		72
35- 40		79
40- 45		85
45- 50		89
50- 55		91
55- 60		92
60- 65		92
65- 70		90
70- 75		89
75- 80		86
80- 85		85
85- 90		83
90- 95		84
95-100		85
100-105		87
105-110		89
110-115		91
115-120		93
120-125		93
125-130		92
130-135		89
135-140		85
140-145		79
145-150		72
150-155		64
155-160		54
160-165		43
165-170		31
170-175		19
175-180		6

10-DEGREE ZONAL LUMEN SUMMARY		
0- 10		26
0- 20		100
0- 30		218
0- 40		369
0- 50		543
0- 60		727
0- 70		909
0- 80		1084
0- 90		1252
0-100		1421
0-110		1597
0-120		1781
0-130		1966
0-140		2141
0-150		2292
0-160		2410
0-170		2484
0-180		2510



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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	89	84	79	87	82	77	73	68	65	62	56	53	51	45	43	41	36	36
2	85	76	69	62	78	70	63	58	58	53	49	48	44	41	38	35	32	28	28
3	77	66	58	51	70	61	53	47	50	45	40	41	37	33	32	29	26	22	22
4	70	58	49	42	64	53	45	39	44	38	33	36	31	28	29	25	22	18	18
5	64	51	42	36	58	47	39	33	39	33	28	32	27	23	25	22	19	15	15
6	59	46	37	30	54	42	34	28	35	29	24	29	24	20	23	19	16	13	13
7	54	41	32	26	49	38	30	25	32	26	21	26	21	18	21	17	14	11	11
8	50	37	29	23	46	34	27	22	29	23	19	24	19	16	19	15	13	10	10
9	47	34	26	20	43	31	24	19	26	21	16	22	17	14	17	14	11	9	9
10	44	31	23	18	40	29	22	17	24	19	15	20	16	12	16	13	10	8	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.

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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: 07/10/2017

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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