

Project Number
18.01472



HUBBELL
Lighting

Date
9/14/2018

Lab 4
Sphere

Test Sample Description

Catalog Number: P350087-020-30
Description: 1-Lt. Round Frosted Glass LED Flush Mount

Photometry

Test Method: IES LM-41-14
IES LM-79-08 § 10

Preburn Time: 0:30
Time To Stabilize: 0:30
Total Operating Time: 1:20

Input Voltage (Volts): 120.0
Input Current (Amps): 0.220
Input Wattage (Watts): 26.1
Ambient Temp (°C): 24.5

Sphere

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

Preburn Time: 16:00
Time To Stabilize: 0:55
Total Operating Time: 17:40

Input Voltage (Volts): 120.0
Input Current (Amps): 0.217
Input Wattage (Watts): 25.7
Ambient Temp (°C): 24
PF @ 120V: 0.987
THD @ 120V (%): 15.2



Hubbell Lighting, Inc.

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

Checked (sphere): M. ELLMANN
Checked (photometry): R. HALL
Approved: N. DeVOL



TESTING
NVLAP LAB CODE: 201003-0

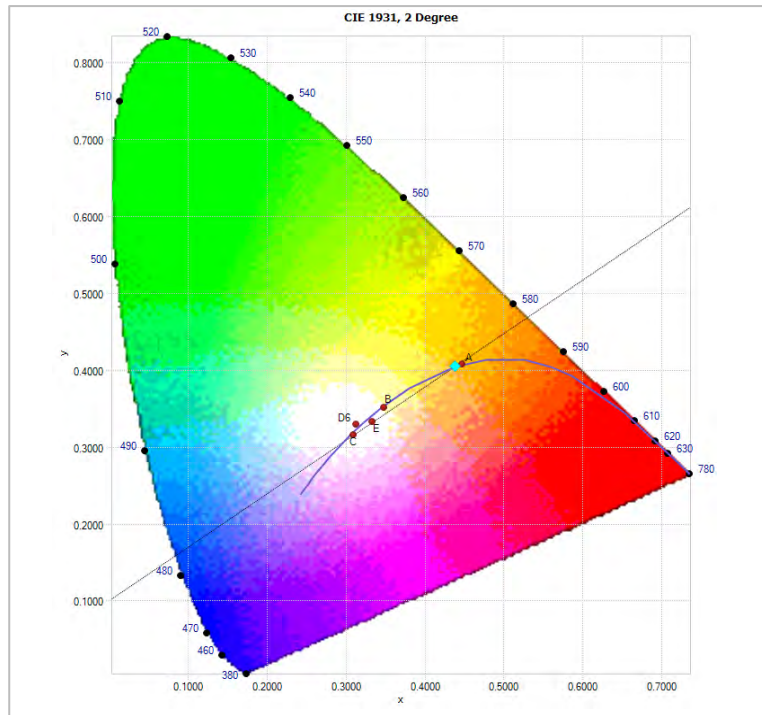
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Lamp Cat#: 93090367-3230
 Lamp Desc: 3000K LEDs

Efficacy: 46.4 LPW S/P Ratio: 1.4 LM/LM

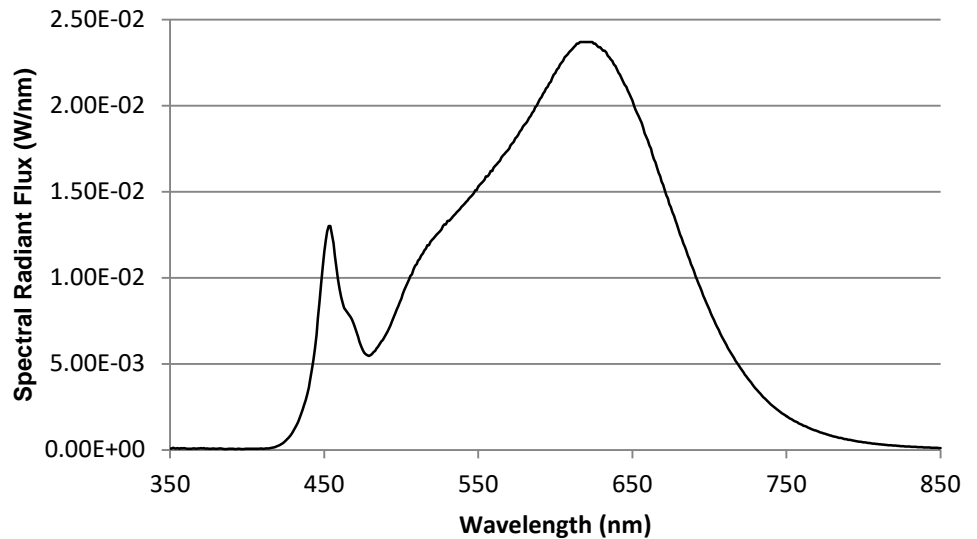
Chromaticity Diagram



Spectral Results

Name	Value	Unit
Φ	4.17	watts
Φ(v)	1192	lumens
Φ(v')	1690	lm'
Chrom x	0.4378	
Chrom y	0.4059	
Chrom u	0.2504	
Chrom v	0.3481	
Duv	0.0005	
Chrom u'	0.2504	
Chrom v'	0.5222	
CCT	2997	K
Purity	53.2	%
λ (dom)	582.6	nm
FWHM	166.5	nm
λ (peak)	620.6	nm
λ (center)	600.4	nm
λ (centroid)	595.6	nm
SDCM	Cool White	
RA	93	
Corr. Coef.	0.000616742	
Correlation	0.0054	
R1	93.3	
R2	96.6	
R3	98.5	
R4	93.0	
R5	92.7	
R6	95.6	
R7	92.6	
R8	82.8	
R9	61.4	
R10	91.1	
R11	93.9	
R12	79.2	
R13	94.3	
R14	98.6	

Spectral Distribution of Radiant Flux





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LUMINAIRE: 1-Lt. Round Frosted Glass LED Flush Mount

LAMP CAT. NO.: 93090367-3230

LAMP: 3000K LEDs

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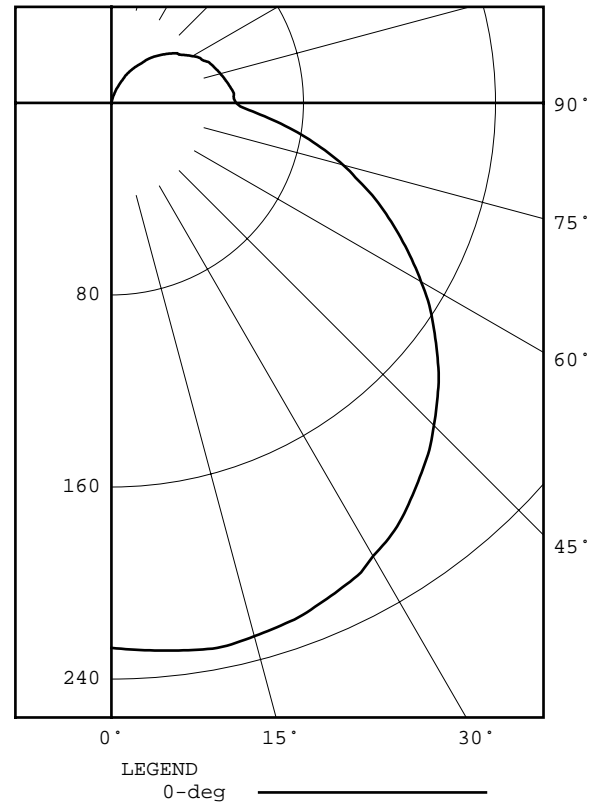
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DEG	CANDELA	LUMENS
0	227	
5	229	22
15	230	65
25	224	103
35	211	132
45	190	147
55	164	147
65	133	132
75	100	105
85	64	71
90	52	
95	51	55
105	47	50
115	42	42
125	35	32
135	28	22
145	19	12
155	10	5
165	3	1
175	0	0
180	0	

ZONAL ZONE	LUMEN LUMENS	SUMMARY LUMENS	%FIXT
0- 30		190	16.7
0- 40		322	28.2
0- 60		616	53.9
0- 90		924	80.9
90-120		147	12.9
90-130		179	15.6
90-150		213	18.6
90-180		218	19.1
0-180		1142	100.0

EFFICACY = 43.7 lm/W
CIE TYPE - SEMI-DIRECT
SPACING CRITERION: 1.43
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 90 90





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LUMINOUS DIAMETER: 14.750
HEIGHT OF SIDE : 3.250

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	1903.
55	1852.
65	1782.
75	1712.
85	1583.



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CANDELA DISTRIBUTION

0.0	227
5.0	229
10.0	231
15.0	230
20.0	228
25.0	224
30.0	218
35.0	211
40.0	201
45.0	190
50.0	178
55.0	164
60.0	149
65.0	133
70.0	117
75.0	100
80.0	82
85.0	64
90.0	52
95.0	51
100.0	49
105.0	47
110.0	45
115.0	42
120.0	39
125.0	35
130.0	32
135.0	28
140.0	24
145.0	19
150.0	15
155.0	10
160.0	6
165.0	3
170.0	0
175.0	0
180.0	0



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	5
5- 10	16
10- 15	27
15- 20	38
20- 25	47
25- 30	56
30- 35	63
35- 40	69
40- 45	72
45- 50	74
50- 55	74
55- 60	72
60- 65	69
65- 70	63
70- 75	57
75- 80	49
80- 85	40
85- 90	31
90- 95	28
95-100	27
100-105	26
105-110	24
110-115	22
115-120	20
120-125	17
125-130	15
130-135	12
135-140	10
140-145	7
145-150	5
150-155	3
155-160	2
160-165	1
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	22
0- 20	87
0- 30	190
0- 40	322
0- 50	469
0- 60	616
0- 70	748
0- 80	853
0- 90	924
0-100	979
0-110	1029
0-120	1071
0-130	1103
0-140	1124
0-150	1137
0-160	1142
0-170	1142
0-180	1142



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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	114	114	114	114	114	110	110	110	110	100	100	100	92	92	92	84	84	84	81
1	102	96	91	86	86	97	92	87	83	84	80	77	77	74	71	70	68	66	62
2	91	82	74	68	68	87	79	72	66	72	66	61	66	61	57	60	56	53	50
3	83	71	62	55	55	78	68	60	53	62	56	50	57	51	47	52	48	44	40
4	75	62	53	46	46	71	60	51	45	55	48	42	50	44	39	46	41	37	34
5	69	55	46	39	39	65	53	44	38	49	41	36	45	38	33	41	36	31	29
6	63	49	40	33	33	60	47	39	33	44	36	31	40	34	29	37	32	27	25
7	59	45	36	29	29	56	43	34	28	40	32	27	36	30	25	34	28	24	22
8	54	40	32	26	26	52	39	31	25	36	29	24	33	27	23	31	25	21	19
9	51	37	29	23	23	48	36	28	22	33	26	21	31	24	20	28	23	19	17
10	47	34	26	21	21	45	33	25	20	30	24	19	28	22	18	26	21	17	15

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 : Osram ST8-HA4-250-840 22W / 4000K

Lamp Number: RM B6-28

Ballast: Vossloh Schwabe LN 36.149

Ballast Number: RM B6-28

Calibration Voltage/Frequency: 220Vac / 50hz

Total Luminous Flux: 2463 Lumens

Calibration Date: 01/19/2017

Test Equipment Used

Instrument	Manufacturer / Model	S/N	Calibration Due:
Goniophotometer	LMT/GO-DS 1600 Lab 4- Test Dist.: 31.0'	N/A	N/A
Power Analyzer	Yokogawa / WT 332	C2QA27074V	10/25/2018
Power Source	Chroma / 61604 AC P/S	616040003897	N/A
Thermometer	LMT / ATS-4Ch	10B623-3	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

Instrument	Manufacturer / Model	S/N	Calibration Due:
3-Meter Sphere	Labsphere / LMS-3M	N/A	Calibration Checked Daily
Thermometer	National Instruments / USB TC01	1912751	10/26/2018
LAMP Power Meter	Yokogawa / WT332	C2QA27075V	10/25/2018
Power Supply	Chroma / 61602	616020002113	N/A
Power Supply PF/THD	Voltage-Regulated House Power	N/A	N/A
Aux Lamp Supply	Labsphere / LPS-100-0833	0331159372	N/A
Cal Lamp Supply	Labsphere / LPS-150-0268	1218148505	N/A
Spectrometer	Labsphere / CDS 1100	0624117792	N/A

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