

Project Number  
16.02109



Date  
8/9/2016

Lab 6  
Sphere

### Test Sample Description

Catalog Number: P3592-0930K9XA & P350053-009-30  
Description: 1-Lt. LED FLUSH MOUNT USE LIGHT ENGINE "A"

### Photometry

Test Method: IES LM-79-08 § 10  
Preburn Time: 00:30  
Time To Stabilize: 0:44  
Total Operating Time: 1:49  
  
Input Voltage (Volts): 120.0  
Input Current (Amps): 0.150  
Input Wattage (Watts): 17.7  
Ambient Temp (°C): 24.0

### Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1  
Preburn Time: 1:00  
Time To Stabilize: 1:02  
Total Operating Time: 2:02  
  
Input Voltage (Volts): 120.0  
Input Current (Amps): 0.148  
Input Wattage (Watts): 17.4  
Ambient Temp (°C): 24.3



### Hubbell Lighting, Inc.

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Greenville, SC 29607  
www.hubbellighting.com

Checked (sphere): B.LEE  
Checked (photometry): M.ELLMANN  
Approved: D. BLACK



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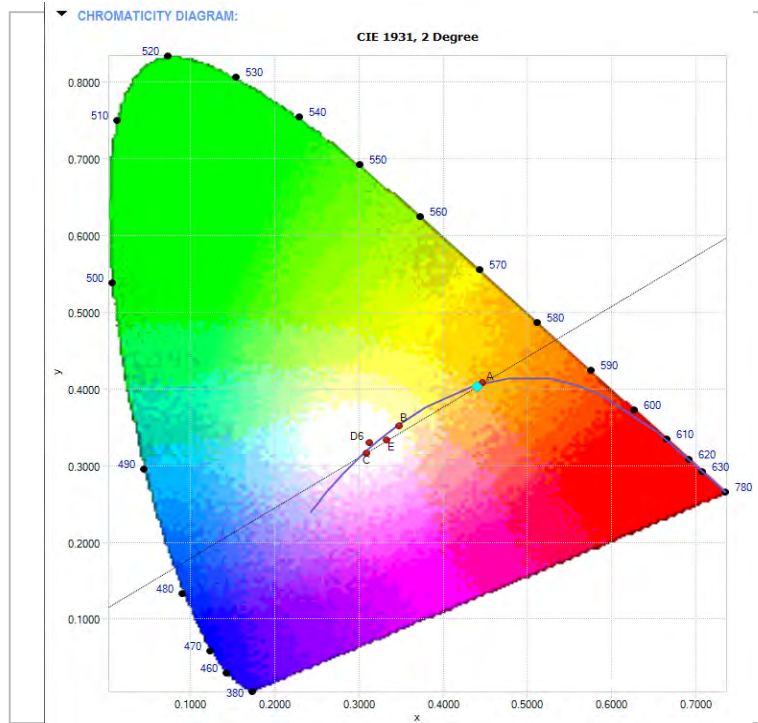


Lamp Cat#: 93047261-5130  
Lamp Desc: 40 - Nichia 3000K LEDs  
Driver Desc: NA

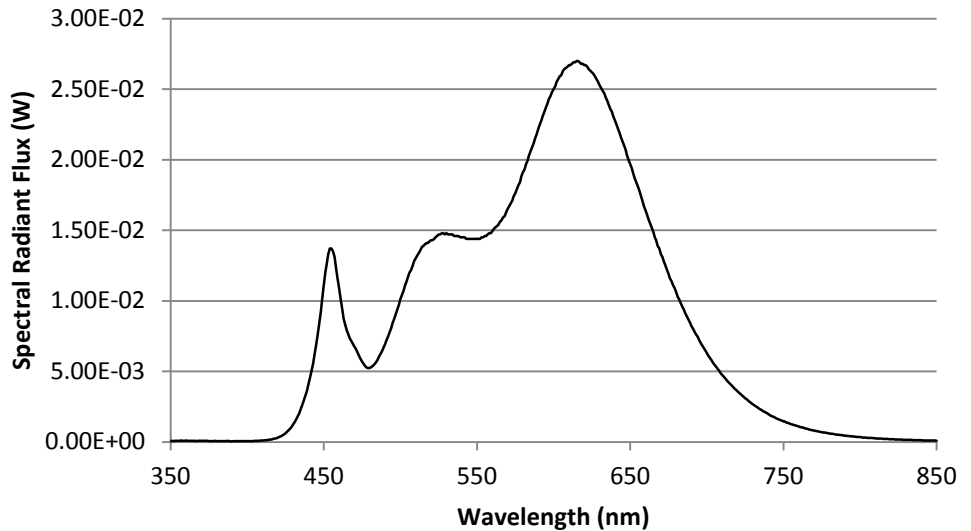
Efficacy: 71.7 LPW      S/P Ratio: 1.4 LM/LM

**Spectral Results**

Name	Value	Unit
$\Phi$	4.21	watts
$\Phi(v)$	1248	lumens
$\Phi(v')$	1805	lm'
Chrom x	0.4405	
Chrom y	0.4036	
Chrom u	0.2531	
Chrom v	0.3478	
Duv	0.001	
Chrom u'	0.2531	
Chrom v'	0.5217	
CCT	2934	K
Purity	53.4	%
$\lambda$ (dom)	583.3	nm
FWHM	157	nm
$\lambda$ (peak)	615	nm
$\lambda$ (center)	591.0	nm
$\lambda$ (centroid)	590.5	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.000700428	
Correlation	0.0054	
R1	98.1	
R2	99.3	
R3	97.1	
R4	99.2	
R5	98.9	
R6	93.9	
R7	90.5	
R8	81.1	
R9	58.6	
R10	99.0	
R11	93.7	
R12	87.0	
R13	99.4	
R14	99.0	



**Spectral Distribution of Radiant Flux**



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PREPARED FOR: PROGRESS  
CATALOG NUMBER: P3592-0930K9XA & P350053-009-30  
LUMINAIRE: 1-Lt. LED FLUSH MOUNT  
LAMP CAT. NO.: 93047261-5130  
LAMP: 40 - Nichia 3000K LED's  
BALLAST: 1 - CC driver  
MOUNTING: Ceiling

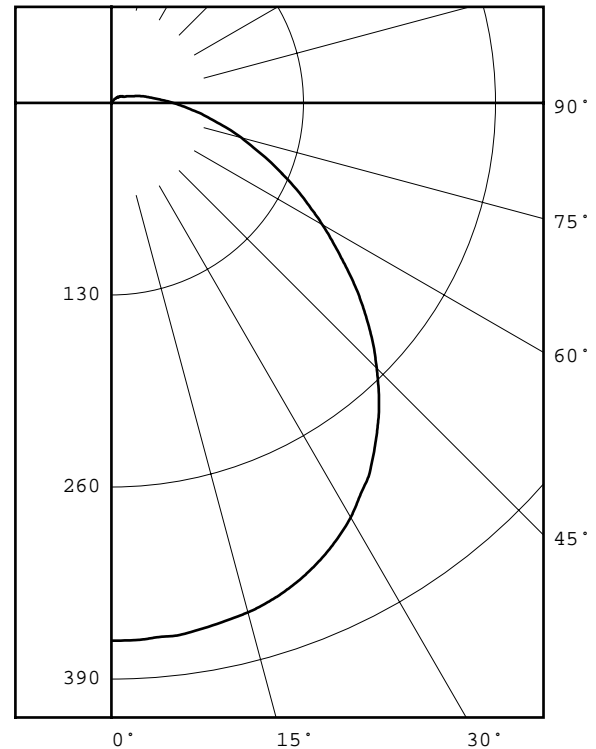
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NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

DEG	CANDELA	LUMENS
0	364	
5	363	35
15	357	101
25	339	156
35	305	190
45	254	196
55	194	174
65	138	137
75	91	96
85	55	61
90	42	
95	31	35
105	18	19
115	10	10
125	8	7
135	5	4
145	0	0
155	0	0
165	0	0
175	0	0
180	0	0

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	292	23.9
0- 40	482	39.5
0- 60	852	69.8
0- 90	1146	93.8
90-120	64	5.3
90-130	71	5.8
90-150	75	6.2
90-180	75	6.2
0-180	1221	100.0

TOTAL INPUT WATTS = 17.7  
EFFICACY = 69.0 Lm/W  
CIE TYPE - DIRECT  
LUMINAIRE SPACING CRITERION = 1.3





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LUMINOUS DIAMETER: 9.000  
HEIGHT OF SIDE : 2.750

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	6298.
55	5296.
65	4336.
75	3492.
85	2822.



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CANDELA DISTRIBUTION

	0.0
0.0	364
5.0	363
10.0	361
15.0	357
20.0	350
25.0	339
30.0	324
35.0	305
40.0	281
45.0	254
50.0	225
55.0	194
60.0	165
65.0	138
70.0	113
75.0	91
80.0	71
85.0	55
90.0	42
95.0	31
100.0	24
105.0	18
110.0	13
115.0	10
120.0	9
125.0	8
130.0	6
135.0	5
140.0	4
145.0	0
150.0	0
155.0	0
160.0	0
165.0	0
170.0	0
175.0	0
180.0	0



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ZONAL LUMEN SUMMARY

0- 5	9.
5- 10	26.
10- 15	43.
15- 20	58.
20- 25	72.
25- 30	84.
30- 35	93.
35- 40	98.
40- 45	99.
45- 50	97.
50- 55	91.
55- 60	83.
60- 65	74.
65- 70	63.
70- 75	53.
75- 80	43.
80- 85	34.
85- 90	26.
90- 95	20.
95-100	15.
100-105	11.
105-110	8.
110-115	6.
115-120	4.
120-125	4.
125-130	3.
130-135	2.
135-140	2.
140-145	0.
145-150	0.
150-155	0.
155-160	0.
160-165	0.
165-170	0.
170-175	0.
175-180	0.



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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	9
5- 10	26
10- 15	43
15- 20	58
20- 25	72
25- 30	84
30- 35	93
35- 40	98
40- 45	99
45- 50	97
50- 55	91
55- 60	83
60- 65	74
65- 70	63
70- 75	53
75- 80	43
80- 85	34
85- 90	26
90- 95	20
95-100	15
100-105	11
105-110	8
110-115	6
115-120	4
120-125	4
125-130	3
130-135	2
135-140	2
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	35
0- 20	135
0- 30	292
0- 40	482
0- 50	678
0- 60	852
0- 70	989
0- 80	1085
0- 90	1146
0-100	1180
0-110	1200
0-120	1210
0-130	1217
0-140	1221
0-150	1221
0-160	1221
0-170	1221
0-180	1221



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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	118	118	118	118	118	114	114	114	114	108	108	108	102	102	102	96	96	96	94
1	106	101	96	91	102	98	93	89	92	89	85	87	84	82	83	80	78	76	76
2	96	87	80	74	93	85	78	72	80	74	70	76	71	67	72	68	65	62	62
3	87	76	68	61	84	74	66	60	70	64	58	67	61	56	63	59	54	52	52
4	80	67	58	51	77	66	57	51	62	55	49	59	53	48	56	51	47	44	44
5	73	60	51	44	71	59	50	44	56	48	42	53	47	41	51	45	40	38	38
6	68	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	35	33	33
7	63	49	40	34	61	48	39	33	46	38	33	44	37	32	42	36	31	29	29
8	58	45	36	30	56	44	35	30	42	34	29	40	33	29	38	33	28	26	26
9	54	41	33	27	53	40	32	27	38	31	26	37	30	26	35	30	25	23	23
10	51	38	30	24	49	37	29	24	36	29	24	34	28	23	33	27	23	21	21

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 LUMINAIRE SAMPLE.



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### *Goniophotometer Calibration*

Calibration Lamp: GE 1000W, 120V, T6, CL (FEL)

Lamp Number: ITL78966-1000-14

Calibration Current: 8.300 Amps DC

Total Luminous Flux: 23413.0 Lumens

Calibration Date: 07/18/2015

### *Test Equipment Used*

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL/HLI LAB 6 - Test Distance: 31.3'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27076V	11/10/2016
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	1912745	11/10/2016

### *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	Calibrated Weekly
<i>Thermometer</i>	National Instruments / USB TC01	1912751	11/10/2016
<i>LAMP Power Meter</i>	Yokogawa / WT332	C2QA27075V	11/10/2016
<i>Power Supply</i>	Chroma / 61602	616020002113	N/A
<i>Aux Lamp Supply</i>	Labsphere / LPS-100-0833	031159372	11/10/2016
<i>Cal Lamp Supply</i>	Labsphere / LPS-150-0268	1218148605	11/10/2016
<i>Spectrometer</i>	Labsphere / CDS 1100	0624117792	N/A

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