

Project Number
17.01799



Date
6/28/2017

Lab 6
Sphere

Test Sample Description

Catalog Number: P8171-09-30K
Description: HAL 6" square recessed brushed nickel GT LED with new inductors.

Photometry

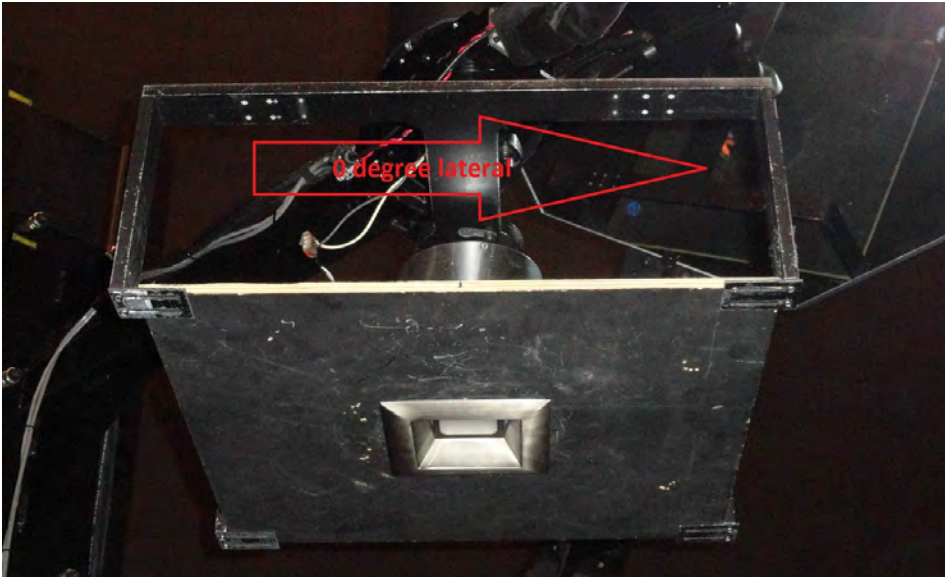
Test Method: IES LM-79-08 § 10
Preburn Time: 14:30
Time To Stabilize: 1:10
Total Operating Time: 16:30

Input Voltage (Volts): 120.1
Input Current (Amps): 0.077
Input Wattage (Watts): 9.0
Ambient Temp (°C): 24.0

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 3:00
Time To Stabilize: 2:01
Total Operating Time: 5:01

Input Voltage (Volts): 120.0
Input Current (Amps): 0.077
Input Wattage (Watts): 9.0
Ambient Temp (°C): 24.3



Hubbell Lighting, Inc.

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

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



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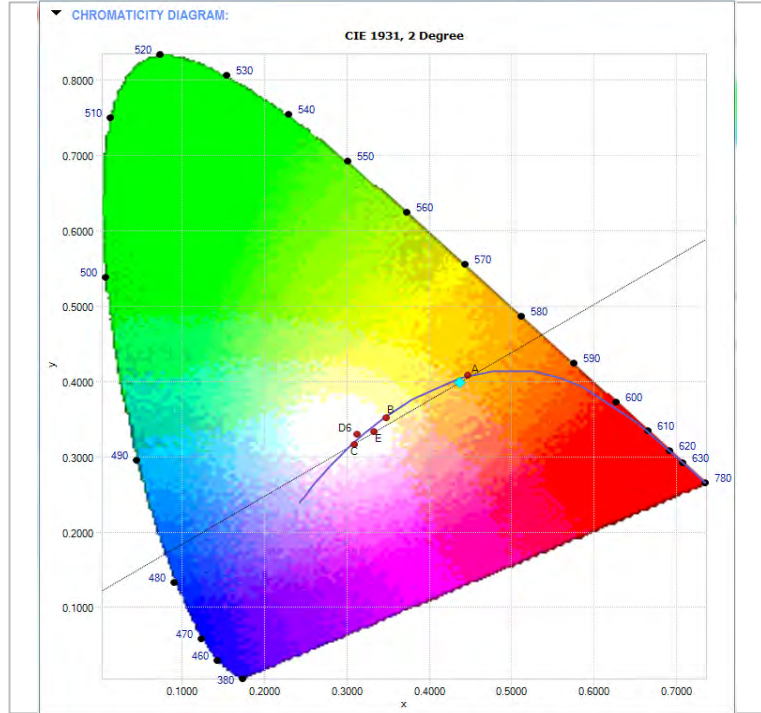


Lamp Cat#: GT-V1
 Lamp Desc: 16 - Nichia 3000K LEDs
 Driver Desc: 1 - HAL - (hubbell China) 93081773

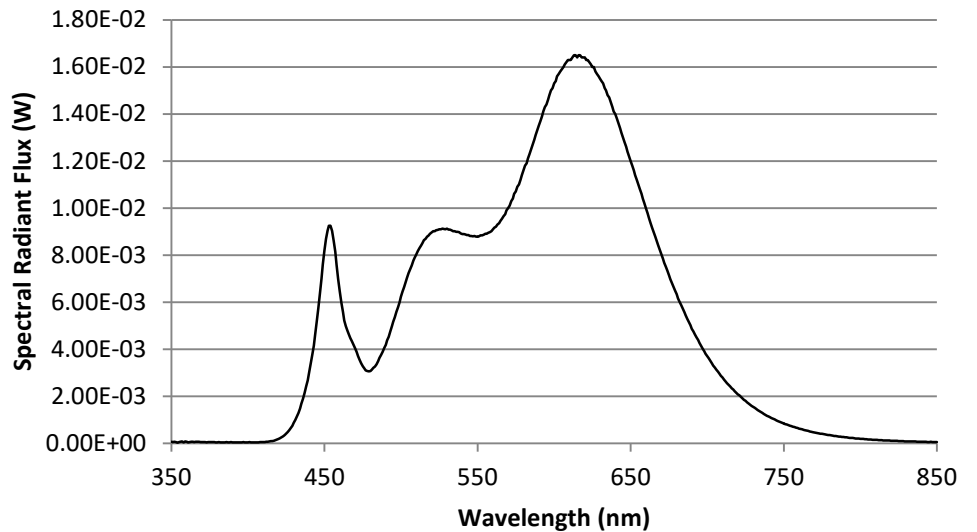
Efficacy: 84.8 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	2.58	watts
Φ(v)	763	lumens
Φ(v')	1118	lm'
Chrom x	0.4365	
Chrom y	0.3989	
Chrom u	0.2525	
Chrom v	0.3462	
Duv	0.0022	
Chrom u'	0.2525	
Chrom v'	0.5193	
CCT	2963	K
Purity	50.7	%
λ (dom)	583.7	nm
FWHM	157.4	nm
λ (peak)	614.7	nm
λ (center)	590.2	nm
λ (centroid)	588.8	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.002025151	
Correlation	0.0054	
R1	98.7	
R2	98.8	
R3	97.3	
R4	97.9	
R5	99.6	
R6	93.3	
R7	90.7	
R8	82.1	
R9	60.8	
R10	98.2	
R11	91.9	
R12	87.6	
R13	99.0	
R14	99.1	



Spectral Distribution of Radiant Flux



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CATALOG NUMBER: P8171-09-30K

LUMINAIRE: HAL 6" square recessed brushed nickel GT LED with new inductors.

LAMP CAT. NO.: GT-V1

LAMP: 16 - 3000K Nichia LEDs

BALLAST CATALOG NUMBER: 93081773

BALLAST: 1 - HAL - (Hubbell China)

REFRACTOR: 93075069-1065 PC

MOUNTING: Recessed

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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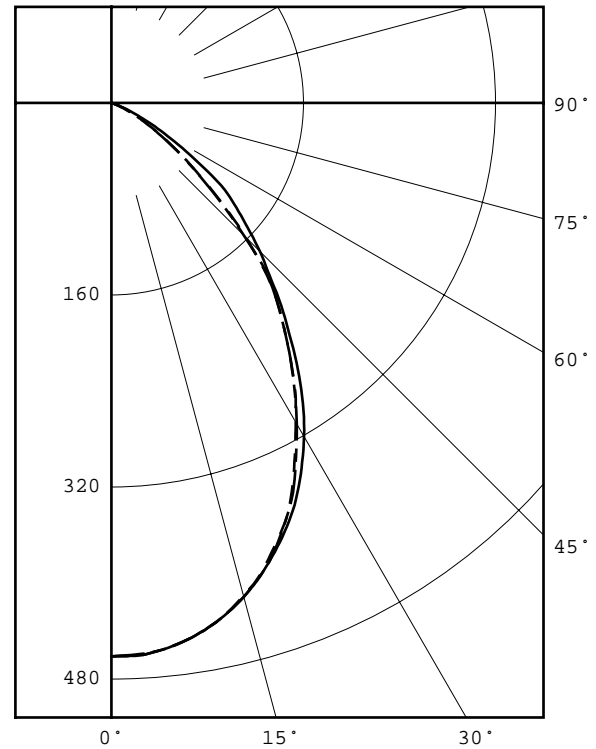
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CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	461	461	461	461	461	
5	458	458	458	458	458	43
15	425	426	426	426	426	120
25	356	360	364	360	358	165
35	260	265	271	265	260	166
45	158	172	175	174	156	129
55	60	70	93	69	60	67
65	15	18	22	18	14	19
75	0	0	1	0	0	1
85	0	0	0	0	0	0
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	328	46.2
0- 40	493	69.5
0- 60	689	97.1
0- 90	710	100.0
90-180	0	0.0
0-180	710	100.0

EFFICACY = 78.7 lm/W
CIE TYPE - DIRECT
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.04 1.05
LUMINOUS LENGTH : 4.500 4.500

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	17103.	18944.	16887.
55	8007.	12411.	8007.
65	2717.	3985.	2536.
75	0.	296.	0.
85	0.	0.	0.



LEGEND
0-deg - - - - -
45-deg _____
90-deg - . - . -



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CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	461	461	461	461	461
2.5	461	460	461	461	460
5.0	458	458	458	458	458
7.5	453	453	453	453	453
10.0	446	446	446	446	446
12.5	437	437	437	437	437
15.0	425	426	426	426	426
17.5	412	413	413	413	413
20.0	395	397	398	397	397
22.5	378	380	382	381	378
25.0	356	360	364	360	358
27.5	331	337	343	338	333
30.0	307	312	321	313	309
32.5	285	290	297	289	284
35.0	260	265	271	265	260
37.5	236	242	244	243	236
40.0	214	219	220	219	214
42.5	188	196	195	195	190
45.0	158	172	175	174	156
47.5	128	142	154	143	126
50.0	101	115	136	115	99
52.5	78	90	119	89	79
55.0	60	70	93	69	60
57.5	45	52	70	53	44
60.0	32	39	51	39	33
62.5	22	27	35	27	22
65.0	15	18	22	18	14
67.5	8	11	13	11	8
70.0	3	5	7	6	3
72.5	0	1	3	1	0
75.0	0	0	1	0	0
77.5	0	0	0	0	0
80.0	0	0	0	0	0
82.5	0	0	0	0	0
85.0	0	0	0	0	0
87.5	0	0	0	0	0
90.0	0	0	0	0	0



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5-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	5	11
5-	10	32
10-	15	52
15-	20	68
20-	25	79
25-	30	85
30-	35	85
35-	40	80
40-	45	72
45-	50	57
50-	55	41
55-	60	26
60-	65	14
65-	70	6
70-	75	1
75-	80	0
80-	85	0
85-	90	0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	43
10-	20	120
20-	30	165
30-	40	166
40-	50	129
50-	60	67
60-	70	19
70-	80	1
80-	90	0



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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	119	119	119	119	116	116	116	116	111	111	111	111	106	106	106	102	102	102	100
1	112	109	106	103	110	107	104	102	103	100	98	99	99	97	95	95	94	93	91
2	105	99	94	90	103	97	93	89	94	90	87	91	88	85	88	85	83	81	81
3	98	90	84	79	96	88	83	78	86	81	77	83	79	76	81	77	74	73	73
4	91	82	75	70	89	81	74	69	78	73	69	76	72	68	74	70	67	65	65
5	85	75	68	62	83	74	67	62	72	66	62	70	65	61	69	64	60	59	59
6	80	69	61	56	78	68	61	56	66	60	56	65	59	55	63	59	55	53	53
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48	48
8	70	59	51	46	69	58	51	46	57	51	46	56	50	46	55	49	46	44	44
9	66	54	47	43	65	54	47	42	53	47	42	52	46	42	51	46	42	40	40
10	62	51	44	39	61	50	44	39	49	43	39	48	43	39	48	42	39	37	37

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: 09/02/2016

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	11/2/2017
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	1912745	11/7/2017

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	11/2/2017
<i>LAMP Power Meter</i>	Yokogawa / WT332	C2QA27075V	11/1/2017
<i>Power Supply</i>	Chroma / 61602	616020002113	N/A
<i>Aux Lamp Supply</i>	Labsphere / LPS-100-0833	031159372	10/31/2017
<i>Cal Lamp Supply</i>	Labsphere / LPS-150-0268	1218148505	12/1/2017
<i>Spectrometer</i>	Labsphere / CDS 1100	0624117792	N/A

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