

Project Number
17.01801



Date
6/29/2017

Lab 6
Sphere

Test Sample Description

Catalog Number: P8171-28-30K
Description: HAL 6" square recessed white GT LED with new inductors

Photometry

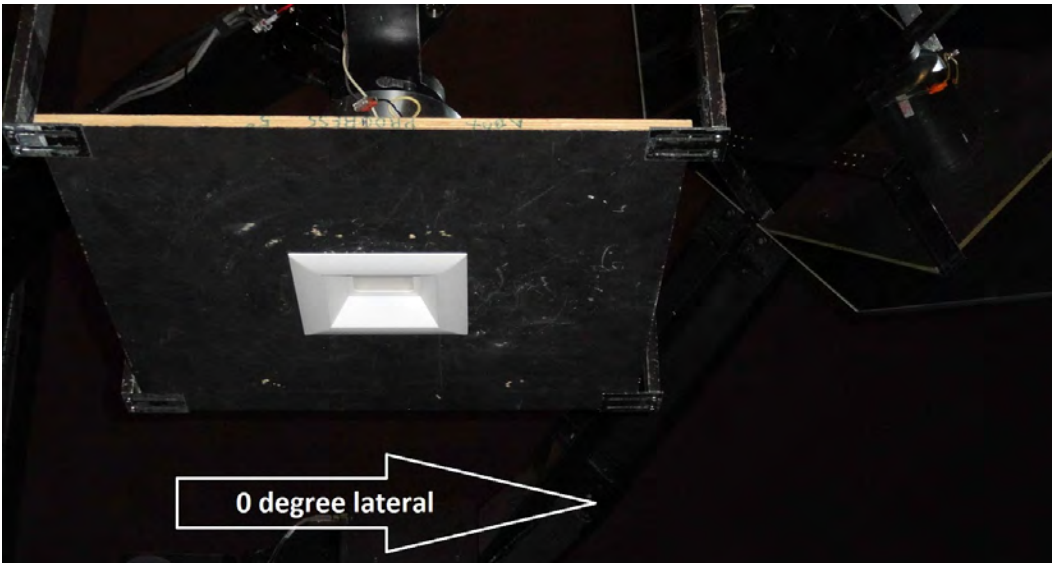
Test Method: IES LM-79-08 § 10
Preburn Time: 21:30
Time To Stabilize: 1:00
Total Operating Time: 23:10

Input Voltage (Volts): 120.0
Input Current (Amps): 0.078
Input Wattage (Watts): 9.1
Ambient Temp (°C): 24.1

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 8:00
Time To Stabilize: 1:15
Total Operating Time: 9:15

Input Voltage (Volts): 120.0
Input Current (Amps): 0.078
Input Wattage (Watts): 9.1
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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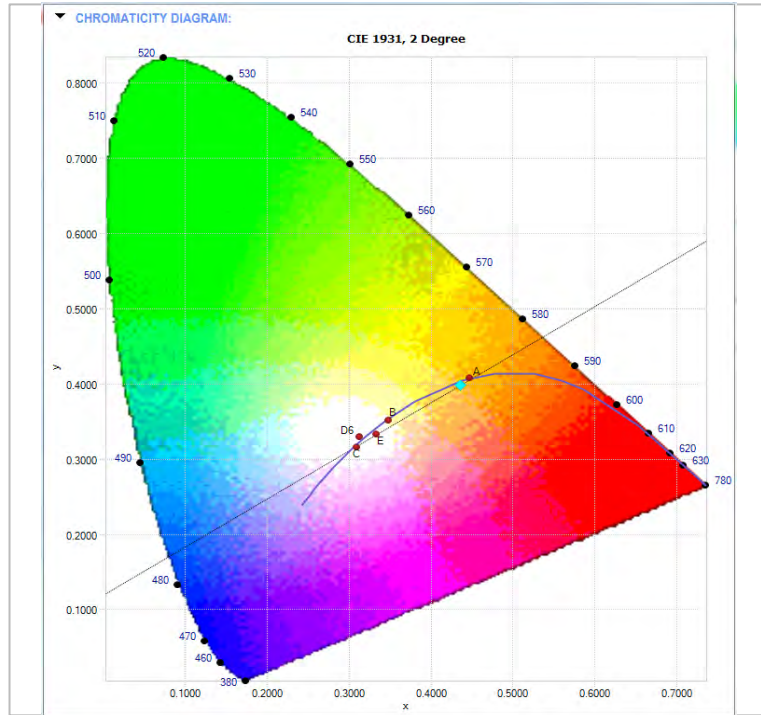


Lamp Cat#: GT-V1
 Lamp Desc: 16 - Nichia 3000K LEDs
 Driver Desc: 1 - HAL - (hubbell China) 93081773

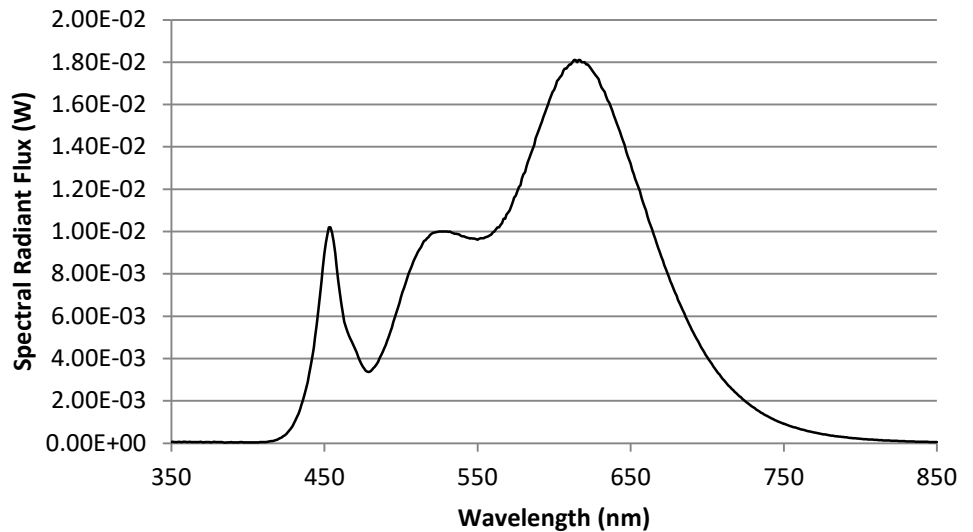
Efficacy: 92.0 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	2.83	watts
Φ(v)	837	lumens
Φ(v')	1231	lm'
Chrom x	0.4361	
Chrom y	0.399	
Chrom u	0.2523	
Chrom v	0.3462	
Duv	0.0021	
Chrom u'	0.2523	
Chrom v'	0.5193	
CCT	2970	K
Purity	50.7	%
λ (dom)	583.7	nm
FWHM	158	nm
λ (peak)	614.7	nm
λ (center)	590.0	nm
λ (centroid)	588.8	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.001924951	
Correlation	0.0054	
R1	98.8	
R2	98.8	
R3	97.3	
R4	97.9	
R5	99.4	
R6	93.2	
R7	90.9	
R8	82.5	
R9	61.6	
R10	97.9	
R11	91.5	
R12	87.6	
R13	98.9	
R14	99.1	



Spectral Distribution of Radiant Flux



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REPORT NUMBER: 17.01801

PAGE: 3 OF 8

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PREPARED FOR: PROGRESS

CATALOG NUMBER: P8171-28-30K

LUMINAIRE: HAL 6" square recessed white 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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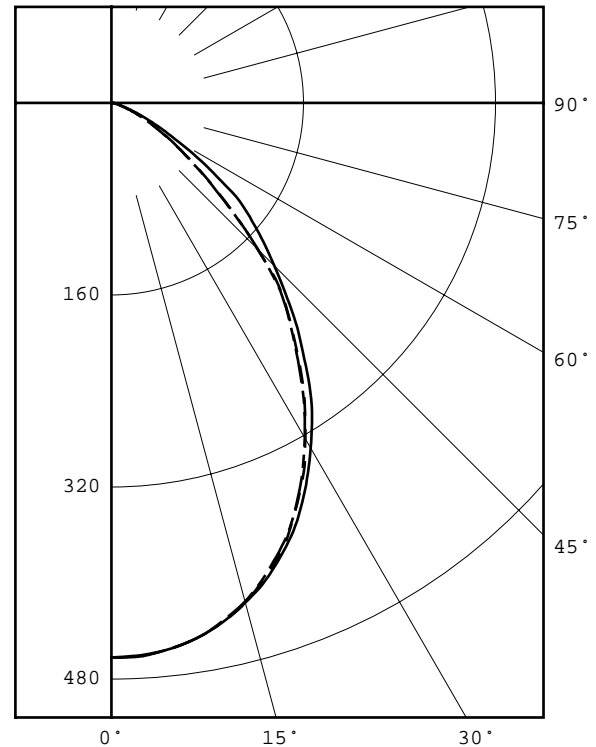
PAGE: 4 OF 8

CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	462	462	462	462	462	
5	459	459	459	459	459	43
15	431	431	431	431	430	121
25	367	370	373	369	366	170
35	276	281	288	280	274	175
45	172	188	192	188	173	141
55	75	85	108	85	74	80
65	27	31	35	31	27	32
75	7	7	8	7	7	9
85	2	2	2	2	2	2
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	334	43.1
0- 40	509	65.8
0- 60	731	94.4
0- 90	774	100.0
90-180	0	0.0
0-180	774	100.0

EFFICACY = 85.0 lm/W
CIE TYPE - DIRECT
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.08 1.08
LUMINOUS LENGTH : 4.500 4.500

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	45-DEG	90-DEG
45	18619.	20784.	18727.
55	10009.	14413.	9875.
65	4890.	6339.	4890.
75	2070.	2366.	2070.
85	1756.	1756.	1756.



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



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CATALOG NUMBER: P8171-28-30K

PAGE: 5 OF 8

CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	462	462	462	462	462
2.5	462	461	461	461	462
5.0	459	459	459	459	459
7.5	455	455	455	455	455
10.0	449	449	449	449	449
12.5	441	441	441	441	440
15.0	431	431	431	431	430
17.5	418	419	420	419	417
20.0	404	404	406	405	402
22.5	387	389	391	388	386
25.0	367	370	373	369	366
27.5	347	350	353	350	345
30.0	323	328	332	328	322
32.5	300	305	311	304	299
35.0	276	281	288	280	274
37.5	251	257	262	256	250
40.0	229	234	239	234	228
42.5	206	212	214	212	204
45.0	172	188	192	188	173
47.5	143	158	172	157	142
50.0	116	131	153	130	115
52.5	94	106	135	106	93
55.0	75	85	108	85	74
57.5	59	68	85	68	60
60.0	46	53	64	53	46
62.5	36	41	48	41	36
65.0	27	31	35	31	27
67.5	20	23	25	23	20
70.0	14	16	17	16	14
72.5	8	10	12	10	8
75.0	7	7	8	7	7
77.5	6	6	6	6	6
80.0	5	5	4	5	5
82.5	3	3	3	3	3
85.0	2	2	2	2	2
87.5	1	1	1	1	1
90.0	0	0	0	0	0



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PAGE: 6 OF 8

5-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	5	11
5-	10	32
10-	15	52
15-	20	69
20-	25	81
25-	30	88
30-	35	90
35-	40	86
40-	45	78
45-	50	64
50-	55	48
55-	60	33
60-	65	20
65-	70	12
70-	75	6
75-	80	3
80-	85	2
85-	90	1

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	43
10-	20	121
20-	30	170
30-	40	175
40-	50	141
50-	60	80
60-	70	32
70-	80	9
80-	90	2



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PAGE: 7 OF 8

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	119	116	116	116	116	111	111	111	111	106	106	106	102	102	102	100
1	112	108	105	102	102	109	106	103	100	102	99	97	98	96	94	94	93	92	94	90
2	104	98	92	88	88	102	96	91	87	92	88	85	89	86	83	86	84	81	86	79
3	97	88	82	77	77	94	87	81	76	84	79	75	81	77	74	79	75	72	79	71
4	90	80	73	68	68	88	79	72	67	77	71	66	74	69	65	72	68	65	72	63
5	84	73	66	60	60	82	72	65	60	70	64	59	68	63	59	67	62	58	67	56
6	78	67	59	54	54	76	66	59	54	64	58	53	63	57	53	61	56	52	61	51
7	73	62	54	49	49	72	61	54	49	59	53	48	58	52	48	57	52	48	57	46
8	69	57	49	44	44	67	56	49	44	55	48	44	54	48	44	53	47	43	53	42
9	64	53	45	40	40	63	52	45	40	51	45	40	50	44	40	49	44	40	49	38
10	61	49	42	37	37	60	48	42	37	48	41	37	47	41	37	46	41	37	46	35

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>	<i>ITL/HLI LAB 6 - Test Distance: 31.3'</i>	<i>N/A</i>	<i>N/A</i>
<i>Power Analyzer</i>	<i>Yokogawa / WT 332</i>	<i>C2QA27076V</i>	<i>11/2/2017</i>
<i>Power Source</i>	<i>Voltage-Regulated House Power</i>	<i>N/A</i>	<i>N/A</i>
<i>Thermometer</i>	<i>National Instruments / USB-TC01</i>	<i>1912745</i>	<i>11/7/2017</i>

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>	<i>Labsphere / LMS-3M</i>	<i>N/A</i>	<i>Calibrated Weekly</i>
<i>Thermometer</i>	<i>National Instruments / USB TC01</i>	<i>1912751</i>	<i>11/2/2017</i>
<i>LAMP Power Meter</i>	<i>Yokogawa / WT332</i>	<i>C2QA27075V</i>	<i>11/1/2017</i>
<i>Power Supply</i>	<i>Chroma / 61602</i>	<i>616020002113</i>	<i>N/A</i>
<i>Aux Lamp Supply</i>	<i>Labsphere / LPS-100-0833</i>	<i>031159372</i>	<i>10/31/2017</i>
<i>Cal Lamp Supply</i>	<i>Labsphere / LPS-150-0268</i>	<i>1218148505</i>	<i>12/1/2017</i>
<i>Spectrometer</i>	<i>Labsphere / CDS 1100</i>	<i>0624117792</i>	<i>N/A</i>

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