

Project Number
17.01796



Date
6/27/2017

Lab 6
Sphere

Test Sample Description

Catalog Number: P8161-20-30K
Description: HAL 5" square recessed bronze GT LED with new inductors.

Photometry

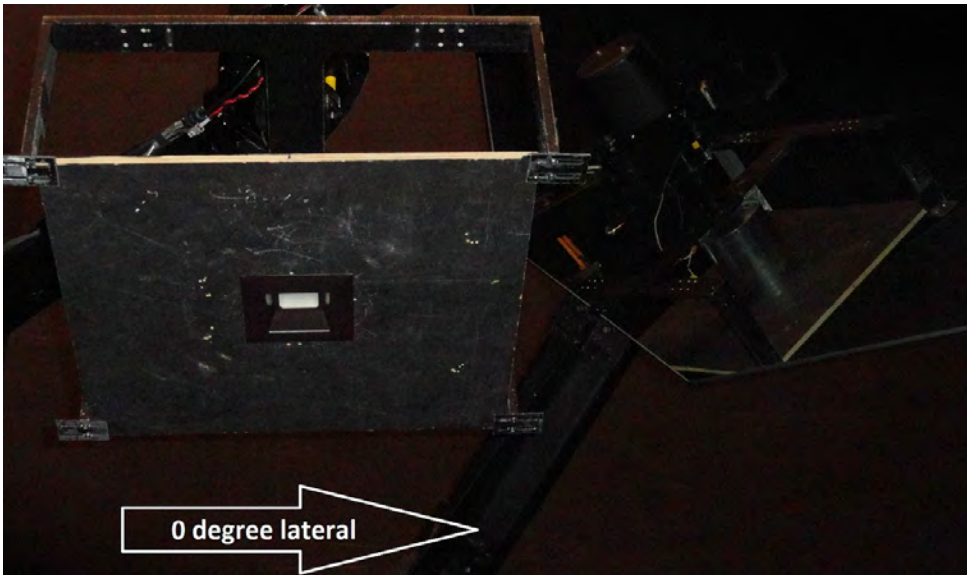
Test Method: IES LM-79-08 § 10
Preburn Time: 16:15
Time To Stabilize: 1:00
Total Operating Time: 17:55

Input Voltage (Volts): 120.1
Input Current (Amps): 0.078
Input Wattage (Watts): 9.1
Ambient Temp (°C): 24.0

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 8:00
Time To Stabilize: 1:10
Total Operating Time: 9:10

Input Voltage (Volts): 120.0
Input Current (Amps): 0.077
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



This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

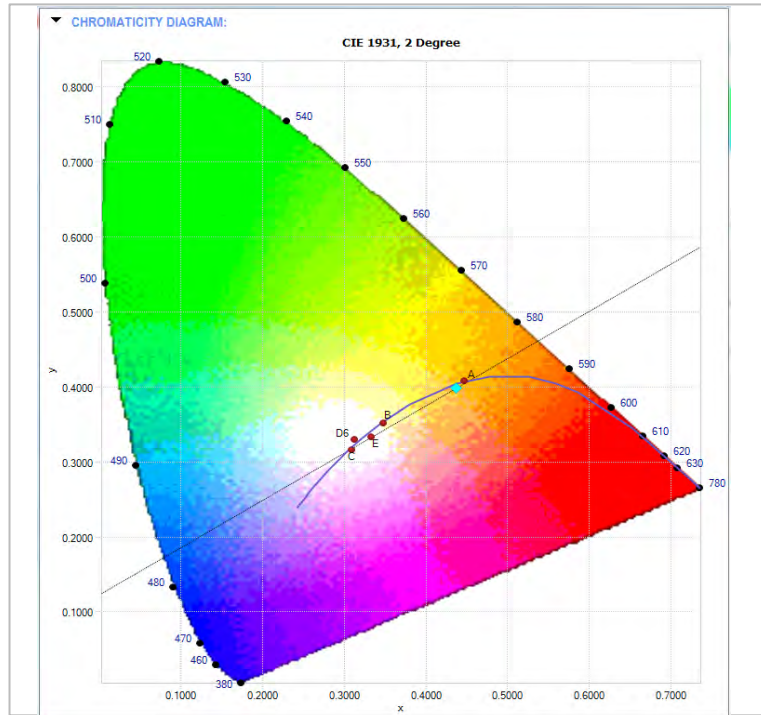


Lamp Cat#: GT-V1
 Lamp Desc: 16 - Nichia 4000K LEDs
 Driver Desc: 1 - HAL - (hubbell China) 93081773

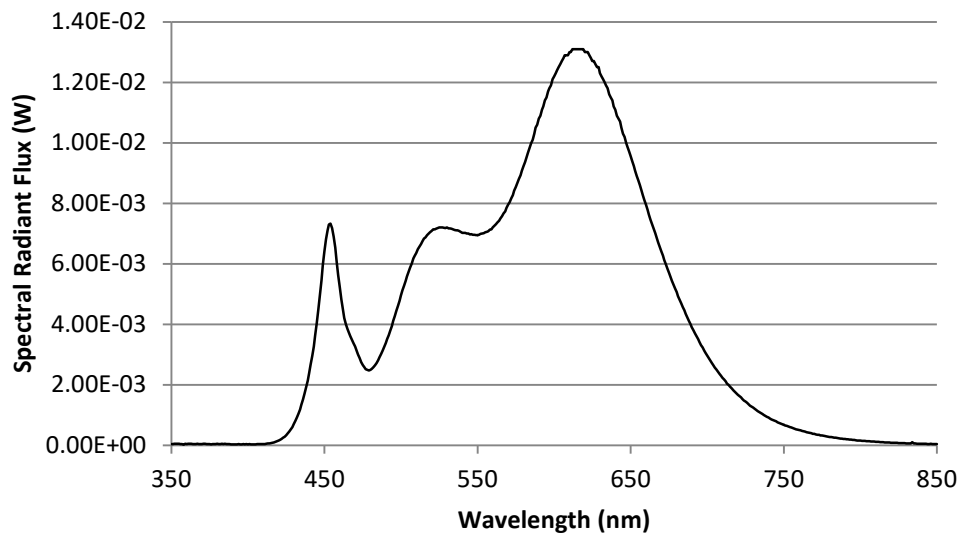
Efficacy: 66.7 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	2.05	watts
Φ(v)	607	lumens
Φ(v')	889	lm'
Chrom x	0.4367	
Chrom y	0.3984	
Chrom u	0.2529	
Chrom v	0.3461	
Duv	0.0024	
Chrom u'	0.2529	
Chrom v'	0.5191	
CCT	2955	K
Purity	50.7	%
λ (dom)	583.8	nm
FWHM	157.1	nm
λ (peak)	614.5	nm
λ (center)	590.4	nm
λ (centroid)	588.9	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.002235415	
Correlation	0.0054	
R1	98.6	
R2	98.7	
R3	96.8	
R4	98.1	
R5	99.5	
R6	93.0	
R7	90.4	
R8	81.7	
R9	60.4	
R10	97.7	
R11	92.0	
R12	87.7	
R13	99.0	
R14	99.0	



Spectral Distribution of Radiant Flux



This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.



HUBBELL
Lighting

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

REPORT NUMBER: 17.01796

PAGE: 3 OF 8

ISSUE DATE: 06/28/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P8161-20-30K

LUMINAIRE: HAL 5" square recessed bronze 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: 93070948-1065 PC

MOUNTING: Recessed

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



HUBBELL
Lighting

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

REPORT NUMBER: 17.01796
ISSUE DATE: 06/28/17
PREPARED FOR: PROGRESS
CATALOG NUMBER: P8161-20-30K

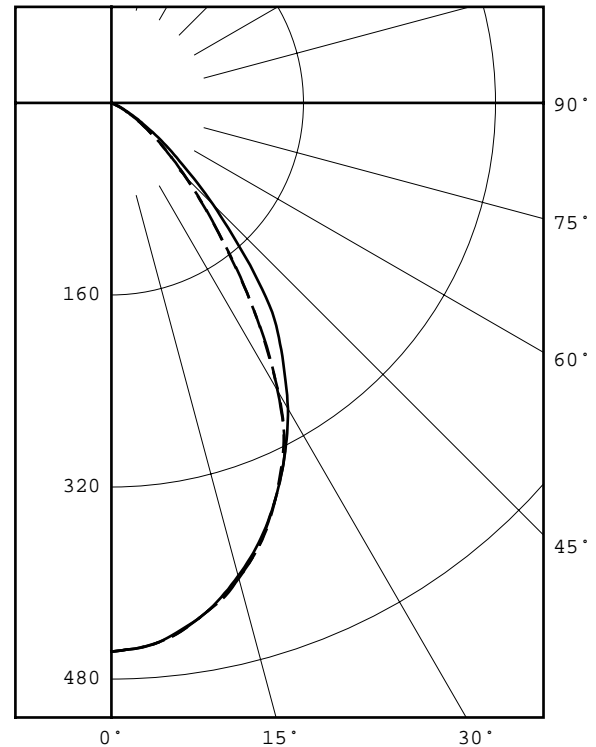
PAGE: 4 OF 8

CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	457	457	457	457	457	
5	451	451	451	451	451	43
15	410	409	408	409	410	115
25	335	336	337	335	337	154
35	202	219	245	218	202	137
45	88	99	120	99	87	80
55	31	37	39	36	31	33
65	3	5	7	5	3	6
75	0	0	0	0	0	0
85	0	0	0	0	0	0
90	0	0	0	0	0	0

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	311	54.8
0- 40	448	79.0
0- 60	561	98.9
0- 90	567	100.0
90-180	0	0.0
0-180	567	100.0

EFFICACY = 62.4 lm/W
CIE TYPE - DIRECT
PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.00 1.01
LUMINOUS LENGTH : 3.250 3.250

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	18263.	24904.	18055.
55	7931.	9978.	7931.
65	1042.	2431.	1042.
75	0.	0.	0.
85	0.	0.	0.



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



HUBBELL
Lighting

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

REPORT NUMBER: 17.01796
ISSUE DATE: 06/28/17
PREPARED FOR: PROGRESS
CATALOG NUMBER: P8161-20-30K

PAGE: 5 OF 8

CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	457	457	457	457	457
2.5	455	455	455	455	455
5.0	451	451	451	451	451
7.5	444	444	443	444	444
10.0	434	434	434	434	434
12.5	423	423	422	423	424
15.0	410	409	408	409	410
17.5	395	393	393	393	395
20.0	378	375	376	376	377
22.5	357	356	357	357	357
25.0	335	336	337	335	337
27.5	311	312	316	312	312
30.0	278	288	294	289	277
32.5	239	255	269	253	241
35.0	202	219	245	218	202
37.5	165	182	220	183	167
40.0	135	150	185	151	135
42.5	109	123	149	122	110
45.0	88	99	120	99	87
47.5	69	79	93	79	70
50.0	54	62	71	63	55
52.5	41	48	55	48	41
55.0	31	37	39	36	31
57.5	22	26	28	26	22
60.0	14	17	19	18	14
62.5	8	10	12	10	8
65.0	3	5	7	5	3
67.5	0	1	3	1	0
70.0	0	0	1	0	0
72.5	0	0	0	0	0
75.0	0	0	0	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



HUBBELL
Lighting

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

REPORT NUMBER: 17.01796
ISSUE DATE: 06/28/17
PREPARED FOR: PROGRESS
CATALOG NUMBER: P8161-20-30K

PAGE: 6 OF 8

5-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	5	11
5-	10	32
10-	15	50
15-	20	65
20-	25	75
25-	30	79
30-	35	75
35-	40	63
40-	45	47
45-	50	33
50-	55	21
55-	60	12
60-	65	5
65-	70	1
70-	75	0
75-	80	0
80-	85	0
85-	90	0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	43
10-	20	115
20-	30	154
30-	40	137
40-	50	80
50-	60	33
60-	70	6
70-	80	0
80-	90	0



HUBBELL
Lighting

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

REPORT NUMBER: 17.01796
ISSUE DATE: 06/28/17
PREPARED FOR: PROGRESS
CATALOG NUMBER: P8161-20-30K

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	116	116	116	116	111	111	111	111	106	106	106	102	102	102	100
1	113	110	107	104	110	107	105	103	103	101	100	100	98	97	96	95	94	92	
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	87	85	84	
3	100	92	87	82	98	91	86	82	88	84	80	86	82	79	84	80	78	76	
4	94	85	79	74	92	84	78	74	82	77	73	80	75	72	78	74	71	69	
5	88	79	72	67	86	78	71	67	76	70	66	74	69	65	72	68	65	63	
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58	
7	78	67	61	56	77	67	60	56	65	60	55	64	59	55	63	58	55	53	
8	74	63	56	51	72	62	56	51	61	55	51	60	55	51	59	54	51	49	
9	69	59	52	48	68	58	52	47	57	51	47	56	51	47	55	50	47	45	
10	66	55	48	44	65	54	48	44	54	48	44	53	47	44	52	47	44	42	

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.

Project Number
17.01796



HUBBELL
Lighting

Date
6/27/2017

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

Hubbell Lighting, Inc.

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

This report shall not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.