

Project Number  
17.01791



Date  
6/27/2017

LAB 6  
Sphere

**Test Sample Description**

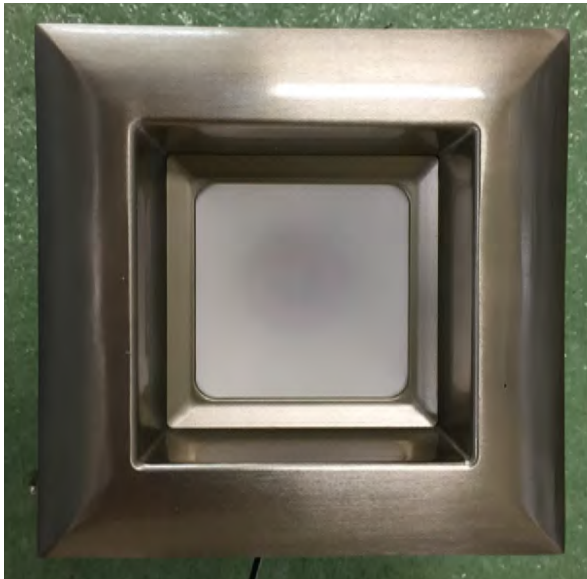
Catalog Number: P8180-09-30K  
Description: HAL 4" square recessed brushed nickel GT LED with new inductors.

**Photometry**

Test Method: IES LM-79-08 § 10  
Preburn Time: 00:30  
Time To Stabilize: 1:00  
Total Operating Time: 3:00  
  
Input Voltage (Volts): 119.8  
Input Current (Amps): 0.077  
Input Wattage (Watts): 9.03  
Ambient Temp (°C): 24.1

**Sphere**

Test Method: IES LM-79-08 § 9.1 & 12.1  
Preburn Time: 2:00  
Time To Stabilize: 1:11  
Total Operating Time: 3:11  
  
Input Voltage (Volts): 120.0  
Input Current (Amps): 0.076  
Input Wattage (Watts): 8.9  
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.

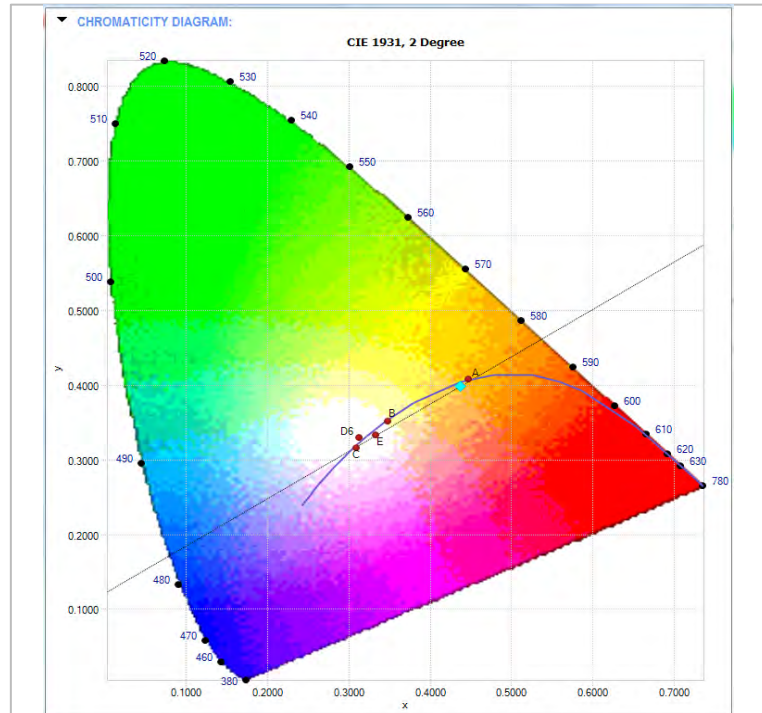


Lamp Cat#: GT-V1  
 Lamp Desc: 16 - Nichia 3000K LEDs  
 Driver Desc: 1 - HAL - (hubbell China) 93081773

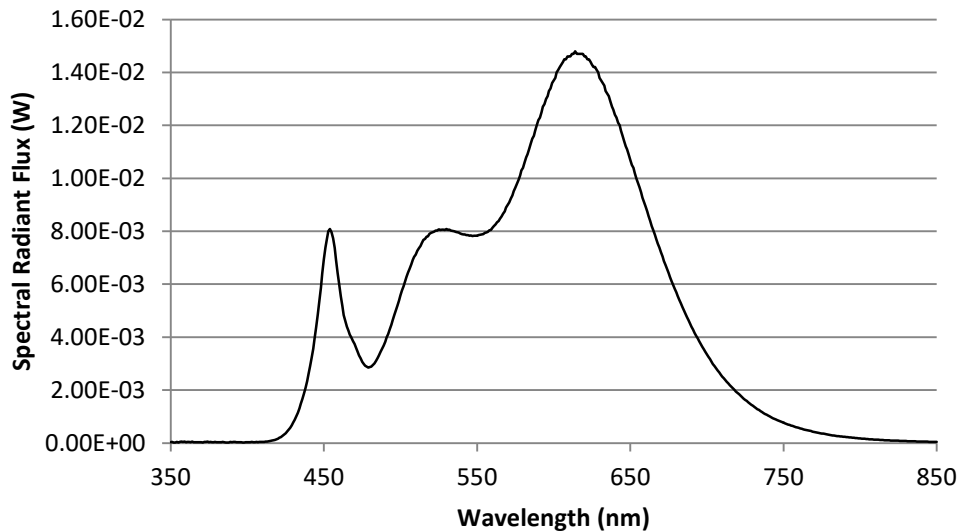
Efficacy: 76.7 LPW      S/P Ratio: 1.5 LM/LM

**Spectral Results**

Name	Value	Unit
Φ	2.31	watts
Φ(v)	683	lumens
Φ(v')	999	lm'
Chrom x	0.4371	
Chrom y	0.3991	
Chrom u	0.2529	
Chrom v	0.3463	
Duv	0.0023	
Chrom u'	0.2529	
Chrom v'	0.5194	
CCT	2954	K
Purity	51	%
λ (dom)	583.8	nm
FWHM	156.8	nm
λ (peak)	614.5	nm
λ (center)	590.6	nm
λ (centroid)	589.1	nm
SDCM	Cool White	
RA	95	
Corr. Coef.	0.002033925	
Correlation	0.0054	
R1	98.4	
R2	98.8	
R3	96.6	
R4	98.5	
R5	99.4	
R6	93.1	
R7	90.2	
R8	81.3	
R9	59.5	
R10	97.8	
R11	92.7	
R12	87.4	
R13	99.1	
R14	98.9	



**Spectral Distribution of Radiant Flux**



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**ISSUE DATE:** 06/26/17

**PREPARED FOR:** PROGRESS

**CATALOG NUMBER:** P8180-09-30K

**LUMINAIRE:** HAL 4" 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:** 93070948-1065 PC

**MOUNTING:** Recessed

**NOTE:** DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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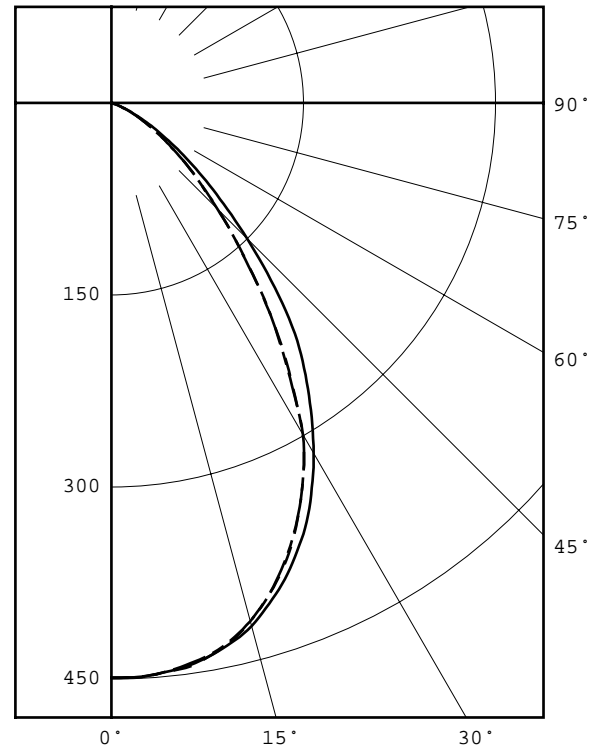
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CANDELA DISTRIBUTION						FLUX
	0.0	22.5	45.0	67.5	90.0	
0	449	449	449	449	449	
5	447	447	447	447	447	42
15	419	420	423	421	419	118
25	348	354	361	354	348	162
35	232	247	266	249	230	154
45	118	130	150	132	117	103
55	51	58	63	58	51	53
65	15	17	17	17	15	17
75	1	1	1	1	1	2
85	0	0	0	0	0	0
90	0	0	0	0	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	323	49.5
0- 40	477	73.2
0- 60	633	97.1
0- 90	652	100.0
90-180	0	0.0
0-180	652	100.0

EFFICACY = 72.2 lm/W  
CIE TYPE - DIRECT  
PLANE : 0-DEG 90-DEG  
SPACING CRITERIA : 1.05 1.05  
LUMINOUS LENGTH : 3.000 3.000

LUMINANCE DATA IN CANDELA/SQ M			
ANGLE	AVERAGE	AVERAGE	AVERAGE
IN DEG	0-DEG	45-DEG	90-DEG
45	28740.	36534.	28496.
55	15313.	18916.	15313.
65	6113.	6928.	6113.
75	665.	665.	665.
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	449	449	449	449	449
2.5	449	449	449	450	449
5.0	447	447	447	447	447
7.5	445	444	444	443	443
10.0	439	439	439	438	438
12.5	431	431	432	431	430
15.0	419	420	423	421	419
17.5	405	407	410	407	405
20.0	389	392	396	393	388
22.5	370	375	379	375	369
25.0	348	354	361	354	348
27.5	325	332	339	332	325
30.0	299	308	316	308	299
32.5	264	279	291	281	263
35.0	232	247	266	249	230
37.5	199	217	241	216	200
40.0	168	184	212	185	167
42.5	141	156	180	156	141
45.0	118	130	150	132	117
47.5	97	109	123	109	96
50.0	80	90	100	90	80
52.5	64	73	80	74	64
55.0	51	58	63	58	51
57.5	40	46	48	46	39
60.0	30	34	36	34	30
62.5	22	24	25	25	22
65.0	15	17	17	17	15
67.5	9	10	11	10	9
70.0	5	6	6	6	5
72.5	2	2	3	2	1
75.0	1	1	1	1	1
77.5	1	1	0	0	1
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	51
15-	20	67
20-	25	78
25-	30	84
30-	35	82
35-	40	73
40-	45	59
45-	50	44
50-	55	32
55-	60	21
60-	65	12
65-	70	5
70-	75	1
75-	80	0
80-	85	0
85-	90	0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0-	10	42
10-	20	118
20-	30	162
30-	40	154
40-	50	103
50-	60	53
60-	70	17
70-	80	2
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	104	110	107	104	102	103	101	99	99	99	97	96	96	94	93	91
2	105	99	95	90	103	98	93	89	94	91	87	91	88	86	88	86	84	82	82
3	98	91	85	80	96	89	84	79	86	82	78	84	80	77	82	78	75	74	74
4	92	83	76	71	90	82	76	71	79	74	70	77	73	69	75	71	68	66	66
5	86	76	69	64	84	75	69	64	73	67	63	71	66	62	70	65	62	60	60
6	81	70	63	58	79	69	62	58	68	62	57	66	61	57	65	60	56	55	55
7	76	65	58	53	74	64	57	52	63	57	52	61	56	52	60	55	51	50	50
8	71	60	53	48	70	59	53	48	58	52	48	57	52	48	56	51	47	46	46
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	52	47	44	42	42
10	63	52	45	41	62	52	45	41	51	45	41	50	44	41	49	44	40	39	39

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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