

Project Number
16.02418



Date
9/9/2016

Lab 6
Sphere

Test Sample Description

Catalog Number: P500000-00930
Description: 1-Lt. LED Mini-Pendant 9W LED SAMPLE "A" WITH CLEAR LENS

Photometry

Test Method: IES LM-79-08 § 10
Preburn Time: 0:30
Time To Stabilize: 1:32
Total Operating Time: 2:53

Input Voltage (Volts): 120.2
Input Current (Amps): 0.078
Input Wattage (Watts): 9.3
Ambient Temp (°C): 24.1

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 0:30
Time To Stabilize: 1:17
Total Operating Time: 1:47

Input Voltage (Volts): 120.0
Input Current (Amps): 0.078
Input Wattage (Watts): 9.3
Ambient Temp (°C): 24.2



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.

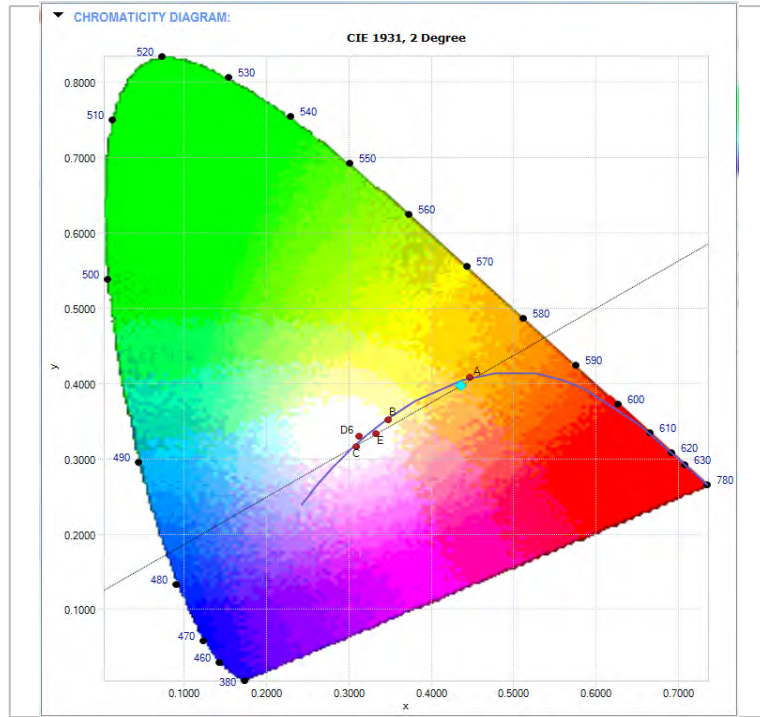


Lamp Cat#: 93070270-3XXX
Lamp Desc: 20 - Nichia 3000K LEDs
Driver Desc: n/a

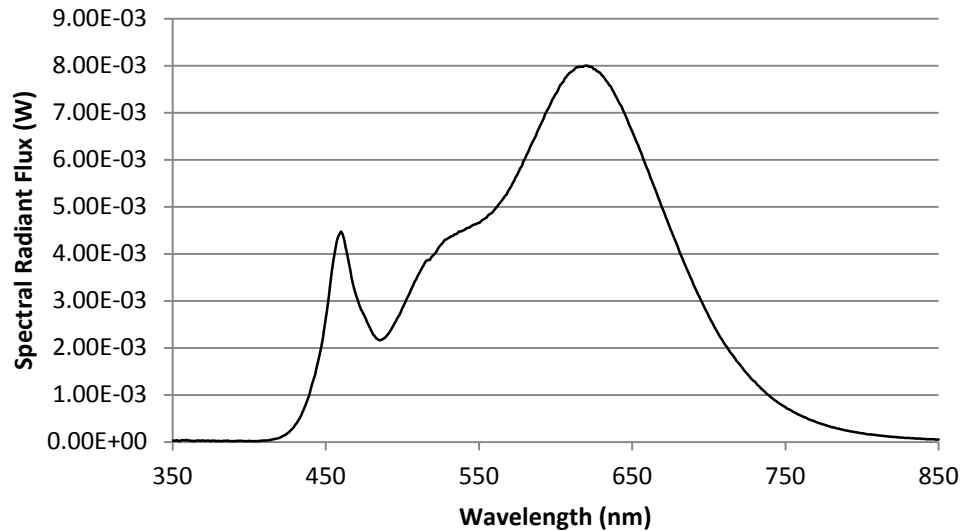
Efficacy: 41.4 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

Name	Value	Unit
Φ	1.38	watts
$\Phi(v)$	385	lumens
$\Phi(v')$	565	lm'
Chrom x	0.4363	
Chrom y	0.3979	
Chrom u	0.2528	
Chrom v	0.3459	
Duv	0.0026	
Chrom u'	0.2528	
Chrom v'	0.5189	
CCT	2958	K
Purity	50.4	%
λ (dom)	583.9	nm
FWHM	160.6	nm
λ (peak)	618.8	nm
λ (center)	601.2	nm
λ (centroid)	595.8	nm
SDCM	Cool White	
RA	94	
Corr. Coef.	0.002380775	
Correlation	0.0054	
R1	97.2	
R2	98.6	
R3	96.3	
R4	95.2	
R5	96.8	
R6	94.5	
R7	90.2	
R8	83.5	
R9	66.7	
R10	98.8	
R11	97.9	
R12	82.8	
R13	99.1	
R14	99.0	



Spectral Distribution of Radiant Flux



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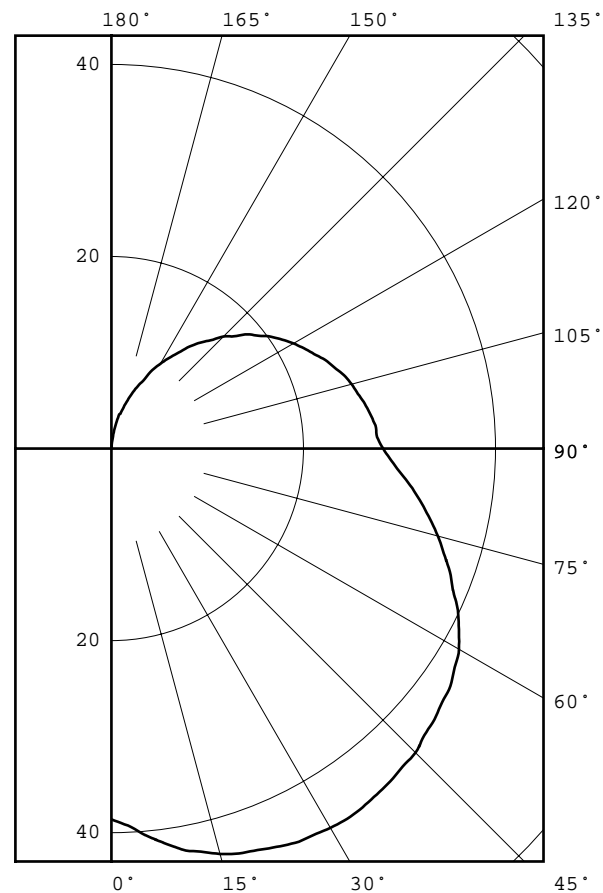
REPORT NUMBER: 16.02418
ISSUE DATE: 09/09/16
PREPARED FOR: PROGRESS
CATALOG NUMBER: P500000-00930
LUMINAIRE: 1-Lt. LED Mini-Pendant
LAMP CAT. NO.: 93070270-3XXX
LAMP: 20-Nichia 3000K LEDs
BALLAST CAT. NO.: N/A
BALLAST: 1-CC
Refractor Material : Clear / Opal Etched
MOUNTING: Pendant
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

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DEG	CANDELA	LUMENS
0	38.6	
5	40.4	3.9
15	43.7	12.4
25	45.3	20.9
35	45.6	28.6
45	44.8	34.5
55	43.1	38.5
65	39.8	39.4
75	35.2	37.2
85	30.3	33.2
90	28.2	
95	27.6	30.0
105	25.9	27.3
115	23.3	23.2
125	20.3	18.2
135	16.5	12.7
145	12.2	7.8
155	7.8	3.8
165	3.9	1.2
175	0.2	0.1
180	0.0	

ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	37.2	10.0
0- 40	65.8	17.7
0- 60	138.9	37.2
0- 90	248.6	66.7
90-120	80.5	21.6
90-130	98.7	26.5
90-150	119.2	32.0
90-180	124.3	33.3
0-180	372.8	100.0

TOTAL INPUT WATTS = 9.34
EFFICACY = 39.9 Lm/W
CIE TYPE - SEMI-DIRECT
LUMINAIRE SPACING CRITERION = 1.7





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LUMINOUS DIAMETER: 3.375
HEIGHT OF SIDE : 2.625

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	5513.
55	5391.
65	5222.
75	5016.
85	4888.



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CANDELA DISTRIBUTION

	0.0
0.0	38.6
5.0	40.4
10.0	42.4
15.0	43.7
20.0	44.5
25.0	45.3
30.0	45.6
35.0	45.6
40.0	45.2
45.0	44.8
50.0	43.9
55.0	43.1
60.0	41.8
65.0	39.8
70.0	37.5
75.0	35.2
80.0	32.8
85.0	30.3
90.0	28.2
95.0	27.6
100.0	26.8
105.0	25.9
110.0	24.7
115.0	23.3
120.0	21.9
125.0	20.3
130.0	18.5
135.0	16.5
140.0	14.4
145.0	12.2
150.0	10.2
155.0	7.8
160.0	5.9
165.0	3.9
170.0	2.5
175.0	0.2
180.0	0.0



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ZONAL LUMEN SUMMARY

0- 5	0.9
5- 10	3.0
10- 15	5.1
15- 20	7.3
20- 25	9.4
25- 30	11.5
30- 35	13.4
35- 40	15.1
40- 45	16.6
45- 50	17.9
50- 55	18.9
55- 60	19.6
60- 65	19.8
65- 70	19.5
70- 75	19.0
75- 80	18.2
80- 85	17.2
85- 90	16.0
90- 95	15.2
95-100	14.8
100-105	14.1
105-110	13.3
110-115	12.2
115-120	11.0
120-125	9.8
125-130	8.4
130-135	7.0
135-140	5.7
140-145	4.5
145-150	3.3
150-155	2.3
155-160	1.4
160-165	0.8
165-170	0.4
170-175	0.1
175-180	0.0



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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	1
5- 10	3
10- 15	5
15- 20	7
20- 25	9
25- 30	11
30- 35	13
35- 40	15
40- 45	17
45- 50	18
50- 55	19
55- 60	20
60- 65	20
65- 70	20
70- 75	19
75- 80	18
80- 85	17
85- 90	16
90- 95	15
95-100	15
100-105	14
105-110	13
110-115	12
115-120	11
120-125	10
125-130	8
130-135	7
135-140	6
140-145	4
145-150	3
150-155	2
155-160	1
160-165	1
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	4
0- 20	16
0- 30	37
0- 40	66
0- 50	100
0- 60	139
0- 70	178
0- 80	215
0- 90	249
0-100	279
0-110	306
0-120	329
0-130	347
0-140	360
0-150	368
0-160	372
0-170	373
0-180	373



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	
0	11111111111111	105105105105	93	93	93	82	82	82	71	71	71	67						
1	97	91	85	80	91	85	80	76	75	71	67	65	62	59	56	54	52	47
2	87	77	69	62	81	72	65	58	63	57	52	55	50	46	47	43	40	36
3	78	66	57	49	73	62	54	47	54	47	42	47	41	37	40	36	32	28
4	71	58	48	41	66	54	45	39	47	40	34	41	35	30	35	30	27	23
5	65	51	41	34	60	48	39	32	42	34	29	36	30	26	31	26	22	19
6	59	45	36	29	55	42	34	28	37	30	25	32	26	22	28	23	19	16
7	55	41	31	25	51	38	30	24	34	27	21	29	23	19	25	20	17	14
8	51	37	28	22	47	35	26	21	30	24	19	27	21	17	23	18	15	12
9	47	33	25	19	44	31	24	18	28	21	17	24	19	15	21	16	13	11
10	44	30	22	17	41	29	21	16	26	19	15	22	17	13	20	15	12	10

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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