

Project Number  
17.01354



Date  
5/11/2017

Lab 6  
Sphere

### Test Sample Description

Catalog Number: P350065-129-30  
Description: 21" Round LED Pendant-Mount

### Photometry

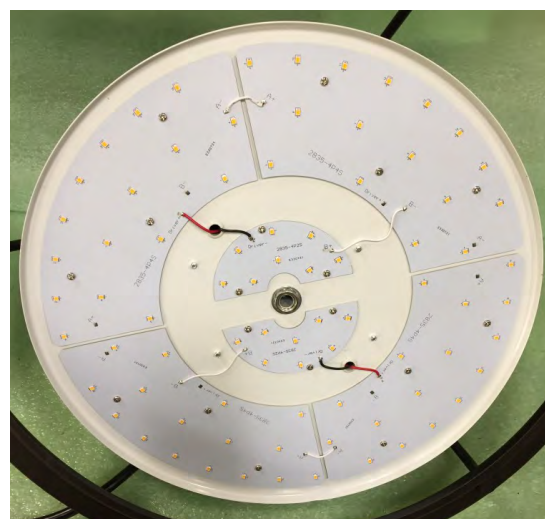
Test Method: IES LM-79-08 § 10  
Preburn Time: 0:30  
Time To Stabilize: 0:50  
Total Operating Time: 1:55

Input Voltage (Volts): 120.1  
Input Current (Amps): 0.344  
Input Wattage (Watts): 41.2  
Ambient Temp (°C): 24.2

### Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1  
Preburn Time: 9:00  
Time To Stabilize: 1:23  
Total Operating Time: 10:23

Input Voltage (Volts): 120.0  
Input Current (Amps): 0.344  
Input Wattage (Watts): 41.0  
Ambient Temp (°C): 24.6



### Hubbell Lighting, Inc.

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

Checked (sphere): B. LEE  
Checked (photometry): M. ELLMANN  
Approved: P. McCARTHY



TESTING  
NVLAP LAB CODE: 201003-0

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

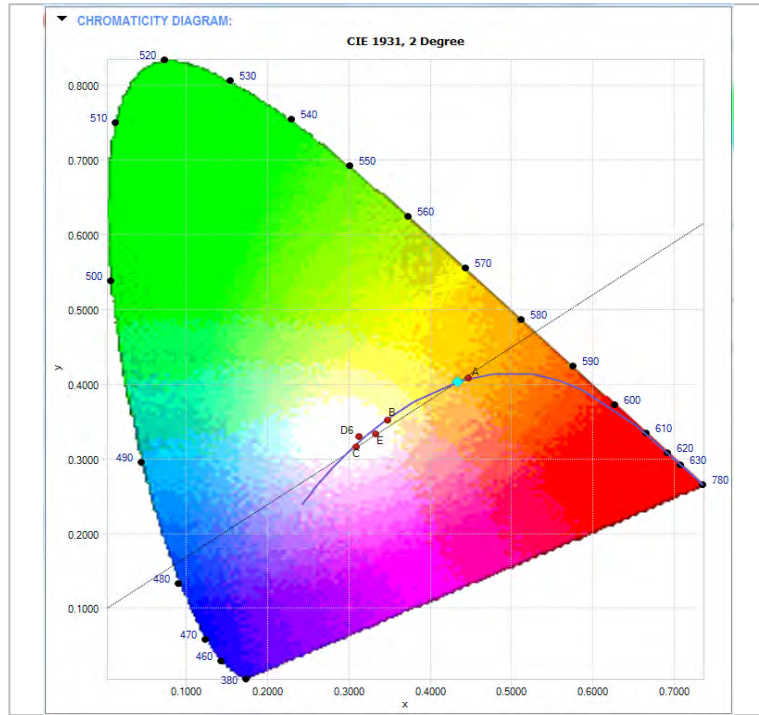


Lamp Cat#: LM281B  
 Lamp Desc: 96 - Samsung 3000K LEDs  
 Driver Desc: 2 - Espen VEL30054MVHDA-10V-1

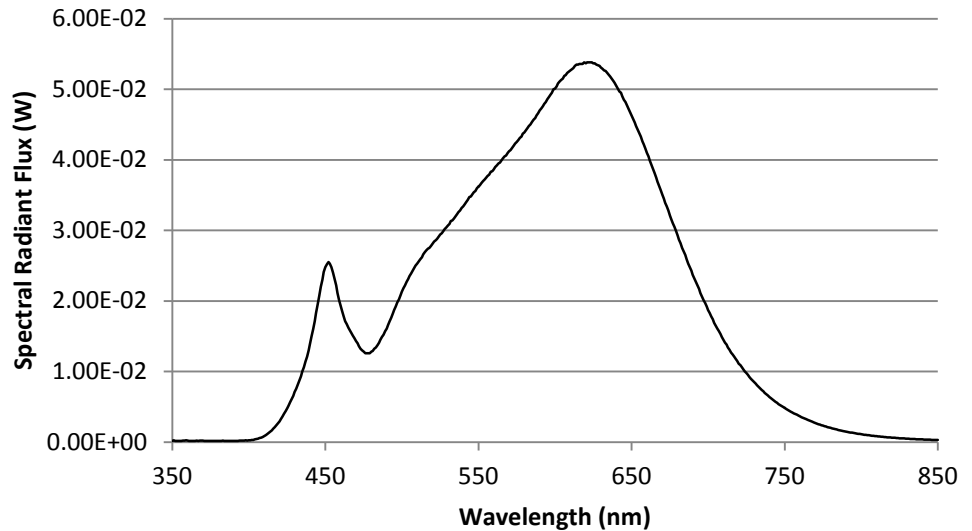
Efficacy: 67.5 LPW      S/P Ratio: 1.4 LM'/LM

**Spectral Results**

Name	Value	Unit
$\Phi$	9.72	watts
$\Phi(v)$	2768	lumens
$\Phi(v')$	3947	lm'
Chrom x	0.4335	
Chrom y	0.4036	
Chrom u	0.2486	
Chrom v	0.3471	
Duv	0.0003	
Chrom u'	0.2486	
Chrom v'	0.5207	
CCT	3052	K
Purity	51.3	%
$\lambda$ (dom)	582.5	nm
FWHM	169.2	nm
$\lambda$ (peak)	621.9	nm
$\lambda$ (center)	599.5	nm
$\lambda$ (centroid)	594.1	nm
SDCM	Cool White	
RA	92	
Corr. Coef.	0.000357062	
Correlation	0.0054	
R1	92.3	
R2	95.4	
R3	97.1	
R4	92.7	
R5	91.9	
R6	94.2	
R7	93.0	
R8	82.9	
R9	60.4	
R10	88.4	
R11	93.1	
R12	82.8	
R13	93.0	
R14	97.8	



**Spectral Distribution of Radiant Flux**



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**PREPARED FOR:** PROGRESS

**CATALOG NUMBER:** P350065-129-30

**LUMINAIRE:** 21" Round LED Pendant-Mount

**LAMP CAT. NO.:** LM281B

**LAMP:** 96- Samsung 3000K LEDs

**BALLAST CATALOG NUMBER:** VEL30054MVHDA-10V-1

**BALLAST:** 2- Espen

**REFRACTOR:** Etched Glass

**MOUNTING:** Ceiling

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

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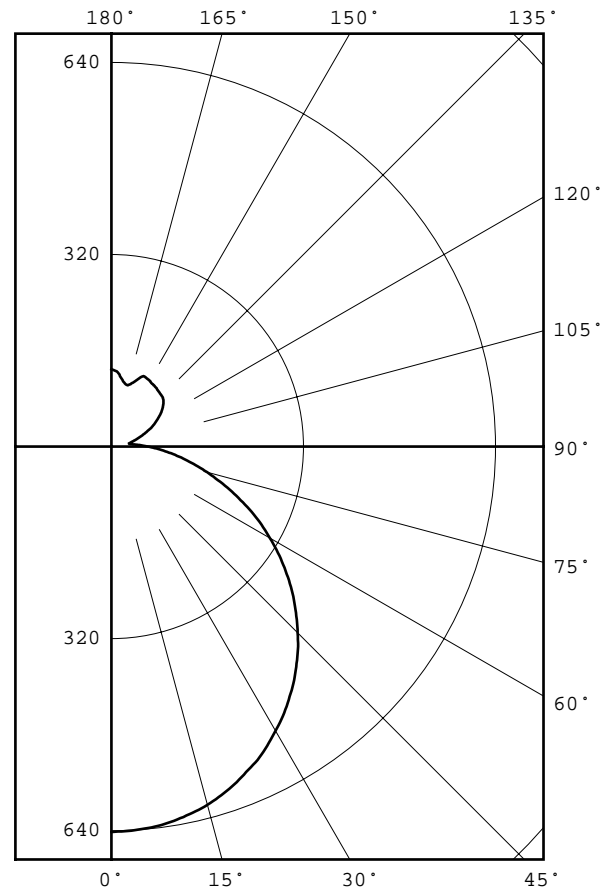
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DEG	CANDELA	LUMENS
0	642	
5	639	61
15	618	174
25	576	265
35	515	322
45	439	339
55	352	315
65	258	255
75	165	175
85	90	99
90	61	
95	39	45
105	40	43
115	72	71
125	102	91
135	119	92
145	124	78
155	129	58
165	106	31
175	124	11
180	129	

ZONAL ZONE	LUMEN LUMENS	SUMMARY %FIXT
0- 30	500	19.8
0- 40	823	32.6
0- 60	1476	58.5
0- 90	2006	79.4
90-120	159	6.3
90-130	250	9.9
90-150	419	16.6
90-180	520	20.6
0-180	2526	100.0

EFFICACY = 61.3 lm/W  
CIE TYPE - SEMI-DIRECT  
LUMINAIRE SPACING CRITERION = 1.27





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LUMINOUS DIAMETER: 18.000  
HEIGHT OF SIDE : 2.750

LUMINANCE DATA IN CANDELA/SQ M  
ANGLE AVERAGE  
IN DEG

45	3166.
55	2925.
65	2624.
75	2250.
85	1951.



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CANDELA DISTRIBUTION

0.0	642
5.0	639
10.0	631
15.0	618
20.0	599
25.0	576
30.0	547
35.0	515
40.0	479
45.0	439
50.0	397
55.0	352
60.0	305
65.0	258
70.0	210
75.0	165
80.0	125
85.0	90
90.0	61
95.0	39
100.0	30
105.0	40
110.0	55
115.0	72
120.0	87
125.0	102
130.0	113
135.0	119
140.0	121
145.0	124
150.0	127
155.0	129
160.0	116
165.0	106
170.0	111
175.0	124
180.0	129



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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	15
5- 10	45
10- 15	74
15- 20	100
20- 25	123
25- 30	142
30- 35	156
35- 40	166
40- 45	170
45- 50	169
50- 55	163
55- 60	152
60- 65	137
65- 70	118
70- 75	98
75- 80	77
80- 85	58
85- 90	41
90- 95	27
95-100	18
100-105	18
105-110	25
110-115	32
115-120	39
120-125	44
125-130	47
130-135	47
135-140	44
140-145	41
145-150	37
150-155	32
155-160	26
160-165	18
165-170	13
170-175	8
175-180	3

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	61
10- 20	174
20- 30	265
30- 40	322
40- 50	339
50- 60	315
60- 70	255
70- 80	175
80- 90	99
90-100	45
100-110	43
110-120	71
120-130	91
130-140	92
140-150	78
150-160	58
160-170	31
170-180	11





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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	114	114	114	114	114	109	109	109	109	100	100	100	91	91	91	83	83	83	79
1	103	98	93	89	89	98	93	89	86	85	82	79	78	75	73	71	69	67	64
2	93	85	78	72	72	89	81	75	69	74	69	64	68	64	60	62	59	56	52
3	85	74	66	59	59	80	71	63	57	65	59	54	59	54	50	54	50	47	44
4	77	65	56	50	50	73	63	54	48	57	51	45	53	47	43	48	44	40	37
5	71	58	49	42	42	67	56	47	41	51	44	39	47	41	37	43	38	34	32
6	65	52	43	37	37	62	50	42	36	46	39	34	43	37	32	39	34	30	28
7	61	47	38	32	32	58	45	37	31	42	35	30	39	33	28	36	31	27	24
8	56	43	34	29	29	54	41	33	28	38	31	27	35	30	25	33	28	24	22
9	52	39	31	26	26	50	38	30	25	35	28	24	33	27	23	30	25	21	19
10	49	36	28	23	23	47	35	27	23	32	26	22	30	25	21	28	23	19	18

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>Power Supply PF/THD</i>	Voltage-Regulated House Power	N/A	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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