

Project Number
17.01345



HUBBELL
Lighting

Date
5/8/2017

Lab 1
Sphere

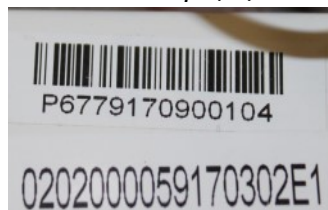
Test Sample Description

Catalog Number: P350070-009-30
Description: 15" LED Round Flush-Mount

Photometry

Test Method: IES LM-79-08 § 10
Preburn Time: 0:05
Time To Stabilize: 0:45
Total Operating Time: 1:08

Input Voltage (Volts): 120.0
Input Current (Amps): 0.236
Input Wattage (Watts): 28.3
Ambient Temp (°C): 24.1



Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 9:00
Time To Stabilize: 0:59
Total Operating Time: 9:59

Input Voltage (Volts): 120.0
Input Current (Amps): 0.239
Input Wattage (Watts): 28.2
Ambient Temp (°C): 24.3

Hubbell Lighting, Inc.

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

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



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: 56 - Samsung 3000K LEDs

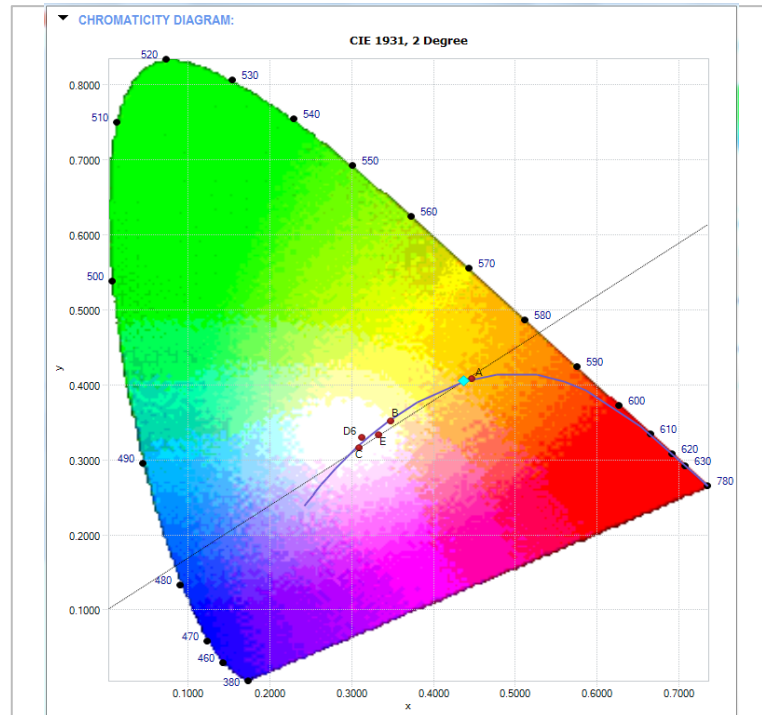
Driver Desc: 1 - Espen VEL30054MVHDA-10V-1

Efficacy: 60.1 LPW

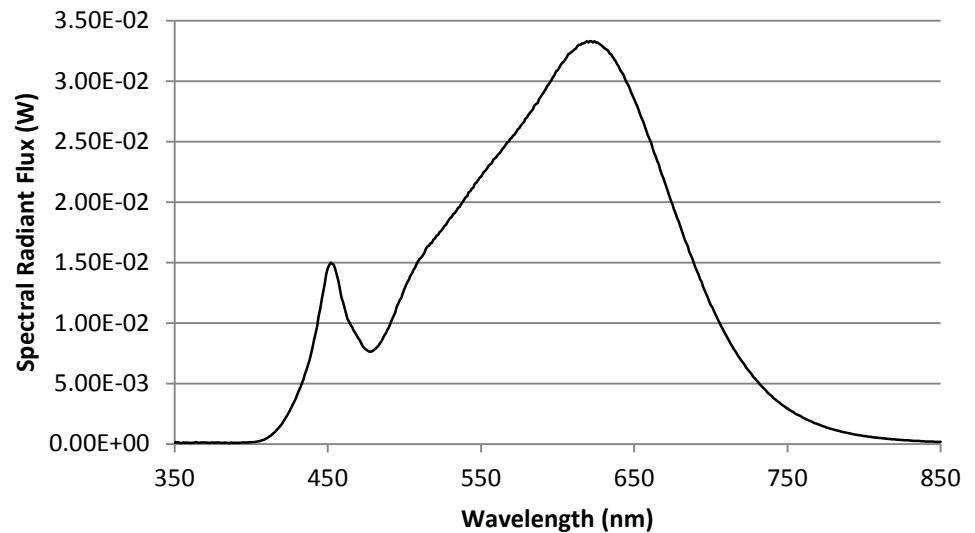
S/P Ratio: 1.4 LM'/LM

Spectral Results

Name	Value	Unit
Φ	5.94	watts
$\Phi(v)$	1696	lumens
$\Phi(v')$	2389	lm'
Chrom x	0.4365	
Chrom y	0.4055	
Chrom u	0.2497	
Chrom v	0.3479	
Duv	0.0006	
Chrom u'	0.2497	
Chrom v'	0.5219	
CCT	3017	K
Purity	52.7	%
λ (dom)	582.5	nm
FWHM	165.9	nm
λ (peak)	621	nm
λ (center)	601.0	nm
λ (centroid)	594.8	nm
SDCM	Cool White	
RA	92	
Corr. Coef.	0.000668374	
Correlation	0.0054	
R1	92.0	
R2	95.2	
R3	97.3	
R4	92.3	
R5	91.5	
R6	94.0	
R7	92.8	
R8	82.3	
R9	59.1	
R10	88.1	
R11	92.6	
R12	82.2	
R13	92.7	
R14	97.9	



Spectral Distribution of Radiant Flux





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ISSUE DATE: 05/08/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P350070-009-30

LUMINAIRE: 15" Round LED Flush-Mount

LAMP CAT. NO.: LM281B

LAMP: 56- SAMSUNG 3000K LEDs

BALLAST CATALOG NUMBER: VEL30054MVHDA-10V-1

BALLAST: 1- ESPEN

MOUNTING: Ceiling

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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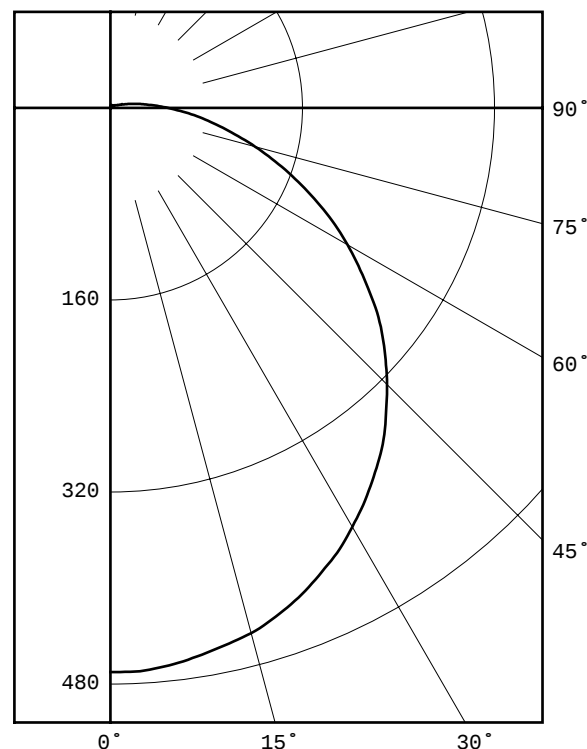
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DEG	CANDELA	LUMENS
0	470	
5	468	44
15	453	128
25	423	195
35	380	238
45	326	252
55	262	235
65	193	191
75	125	132
85	70	77
90	48	
95	31	35
105	11	13
115	5	5
125	3	3
135	3	2
145	3	2
155	3	1
165	2	1
175	2	0
180	0	

ZONAL ZONE	LUMEN	SUMMARY LUMENS	%FIXT
0- 30		367	23.6
0- 40		605	38.9
0- 60		1092	70.2
0- 90		1492	96.0
90-120		53	3.4
90-130		56	3.6
90-150		60	3.9
90-180		63	4.0
0-180		1554	100.0

EFFICACY = 54.9 lm/W
CIE TYPE - DIRECT
LUMINAIRE SPACING CRITERION = 1.27
PLANE : 0-DEG 90-DEG
SHIELDING ANGLES : 90 90
BEAM ANGLE (50%) : 117.9 DEGREES
FIELD ANGLE (10%): 180.6 DEGREES





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LUMINOUS DIAMETER: 15.000
HEIGHT OF SIDE : 3.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE
IN DEG

45	3223.
55	2938.
65	2591.
75	2172.
85	1801.



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www.hubbelllighting.com**REPORT NUMBER:** 17.01345**ISSUE DATE:** 05/08/17**PREPARED FOR:** PROGRESS**CATALOG NUMBER:** P350070-009-30**PAGE:** 6 OF 9**CANDELA DISTRIBUTION**

0.0	470
5.0	468
10.0	461
15.0	453
20.0	440
25.0	423
30.0	403
35.0	380
40.0	355
45.0	326
50.0	296
55.0	262
60.0	228
65.0	193
70.0	158
75.0	125
80.0	95
85.0	70
90.0	48
95.0	31
100.0	19
105.0	11
110.0	7
115.0	5
120.0	4
125.0	3
130.0	3
135.0	3
140.0	3
145.0	3
150.0	3
155.0	3
160.0	3
165.0	2
170.0	2
175.0	2
180.0	0



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5-DEGREE		
ZONAL	LUMEN	SUMMARY
0- 5		11
5- 10		33
10- 15		54
15- 20		74
20- 25		91
25- 30		105
30- 35		115
35- 40		123
40- 45		126
45- 50		126
50- 55		121
55- 60		113
60- 65		102
65- 70		89
70- 75		74
75- 80		59
80- 85		45
85- 90		32
90- 95		21
95-100		14
100-105		8
105-110		5
110-115		3
115-120		2
120-125		2
125-130		1
130-135		1
135-140		1
140-145		1
145-150		1
150-155		1
155-160		1
160-165		0
165-170		0
170-175		0
175-180		0

10-DEGREE		
ZONAL	LUMEN	SUMMARY
0- 10		44
10- 20		128
20- 30		195
30- 40		238
40- 50		252
50- 60		235
60- 70		191
70- 80		132
80- 90		77
90-100		35
100-110		13
110-120		5
120-130		3
130-140		2
140-150		2
150-160		1
160-170		1
170-180		0



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	118	118	118	118	115	115	115	115	109	109	109	103	103	103	98	98	98	96
1	106	101	96	91	103	98	94	90	93	89	86	88	85	83	84	82	79	77
2	96	87	80	73	93	85	78	72	80	75	70	77	72	68	73	69	65	63
3	87	76	67	60	84	74	66	59	70	64	58	67	61	56	64	59	55	52
4	80	67	58	51	77	65	57	50	62	55	49	59	53	48	57	51	47	44
5	73	60	50	43	71	58	50	43	56	48	42	53	47	41	51	45	40	38
6	67	54	44	38	65	52	44	37	50	42	37	48	41	36	46	40	35	33
7	62	49	39	33	60	47	39	33	46	38	32	44	37	32	42	36	31	29
8	58	44	35	29	56	43	35	29	42	34	29	40	33	28	39	33	28	26
9	54	41	32	26	53	40	32	26	38	31	26	37	30	26	36	30	25	23
10	51	37	29	24	49	37	29	24	35	28	23	34	28	23	33	27	23	21

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: 12/05/2016

Test Equipment Used

<i>Instrument</i>	<i>Manufacturer / Model</i>	<i>S/N</i>	<i>Calibration Due:</i>
<i>Goniophotometer</i>	ITL/HLI LAB 1 - Test Distance: 31.74'	N/A	N/A
<i>Power Analyzer</i>	Yokogawa / WT 332	C2QA27071V	11/2/2017
<i>Power Source</i>	Voltage-Regulated House Power	N/A	N/A
<i>Thermometer</i>	National Instruments / USB-TC01	176F47B	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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