

Project Number
16.00018



Date
1/6/2016

LAB #6
Sphere

Test Sample Description

Catalog Number: P5675-3030K9

Description: 5" diameter up/down wall mount LED cylinder with LEDs moved closer to opening. Type V

Photometry

Test Method: IES LM-79-08 § 10
Preburn Time: 2:00
Time To Stabilize: 1:46
Total Operating Time: 5:44

Input Voltage (Volts): 120.1
Input Current (Amps): 0.297
Input Wattage (Watts): 32.9
Ambient Temp (°C): 24.4

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 20:00
Time To Stabilize: 1:17
Total Operating Time: 21:17

Input Voltage (Volts): 120.0
Input Current (Amps): 0.297
Input Wattage (Watts): 32.9
Ambient Temp (°C): 24.5



Hubbell Lighting, Inc.

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

Checked (sphere): M. ELLMANN
Checked (photometry): B. FLAUM
Approved: M. WASHBURN



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

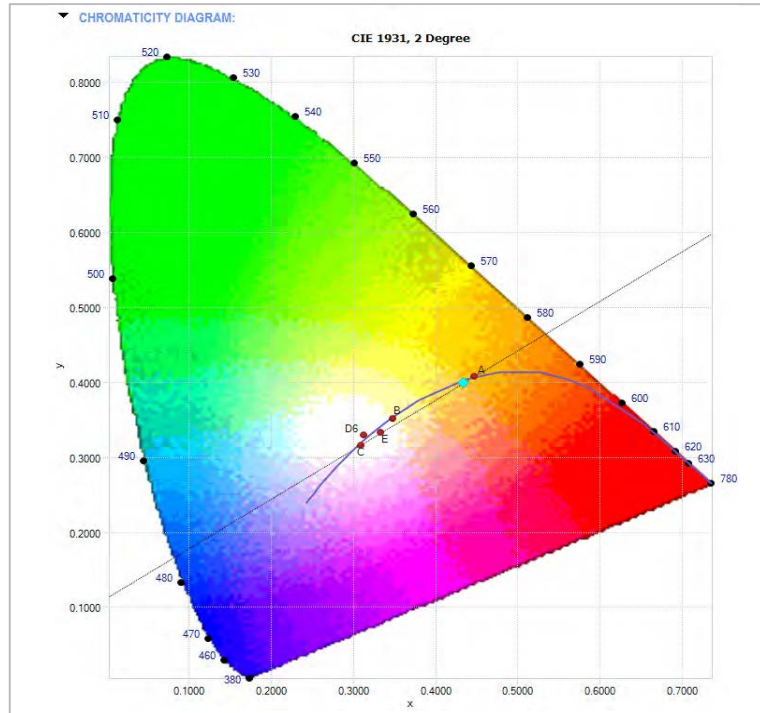


Lamp Cat#: 93047261-4030
 Lamp Desc: 40 - Nichia 3000K LEDs
 Driver Desc: CC driver

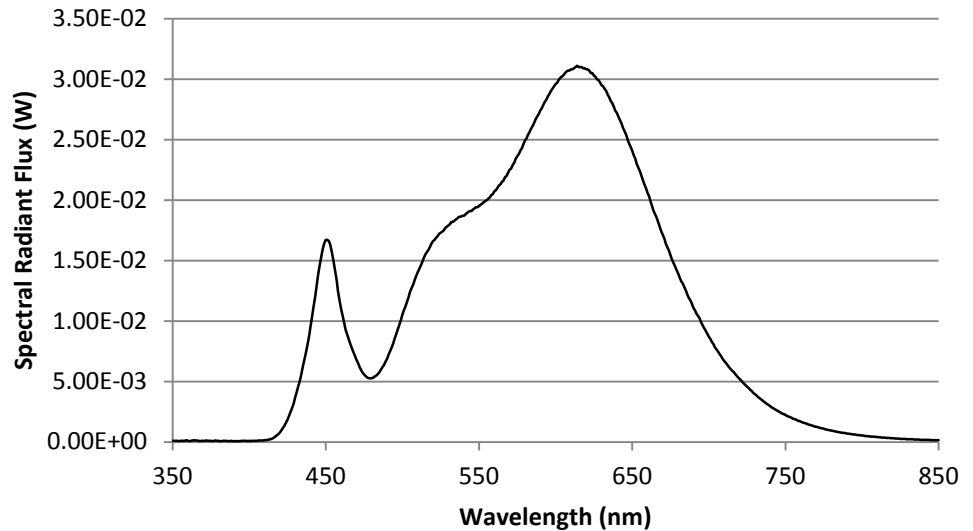
Efficacy: 47.1 LPW S/P Ratio: 1.4 LM/LM

Spectral Results

| Name | Value | Unit |
|----------------------|-------------|--------|
| Φ | 5.25 | watts |
| $\Phi(v)$ | 1549 | lumens |
| $\Phi(v')$ | 2155 | lm' |
| Chrom x | 0.434 | |
| Chrom y | 0.3997 | |
| Chrom u | 0.2506 | |
| Chrom v | 0.3461 | |
| Duv | 0.0015 | |
| Chrom u' | 0.2506 | |
| Chrom v' | 0.5192 | |
| CCT | 3011 | K |
| Purity | 50.2 | % |
| λ (dom) | 583.3 | nm |
| FWHM | 159.5 | nm |
| λ (peak) | 615 | nm |
| λ (center) | 595.0 | nm |
| λ (centroid) | 591.1 | nm |
| SDCM | Cool White | |
| RA | 91 | |
| Corr. Coef. | 0.001376953 | |
| Correlation | 0.0054 | |
| R1 | 91.4 | |
| R2 | 94.3 | |
| R3 | 96.1 | |
| R4 | 91.7 | |
| R5 | 91.1 | |
| R6 | 93.3 | |
| R7 | 90.5 | |
| R8 | 78.1 | |
| R9 | 49.3 | |
| R10 | 86.1 | |
| R11 | 93.0 | |
| R12 | 79.8 | |
| R13 | 92.3 | |
| R14 | 97.2 | |



Spectral Distribution of Radiant Flux



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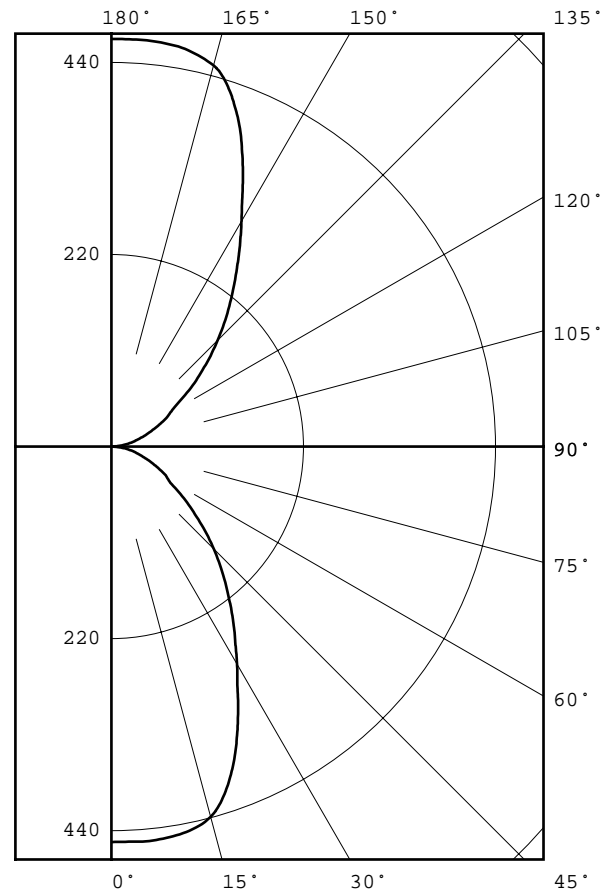


REPORT NUMBER: 16.00018.1
ISSUE DATE: 01/06/16
PREPARED FOR: PROGRESS
CATALOG NUMBER: P5675-3030K9
LUMINAIRE: 5" diameter up/down wall mount LED cylinder with LEDs moved closer to opening.Type V
LAMP CAT. NO.: 93047261-4030
LAMP: 40- Nichia 3000K LEDs
REFRACTOR: Sabic polycarbonate LUX7430C-NAT, Lens 93047259-3
MOUNTING: Pendant
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

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| DEG | CANDELA | LUMENS |
|-----|---------|--------|
| 0 | 453 | |
| 5 | 454 | 43 |
| 15 | 439 | 122 |
| 25 | 343 | 157 |
| 35 | 243 | 152 |
| 45 | 166 | 128 |
| 55 | 99 | 89 |
| 65 | 60 | 59 |
| 75 | 31 | 33 |
| 85 | 9 | 10 |
| 90 | 0 | |
| 95 | 9 | 10 |
| 105 | 31 | 34 |
| 115 | 62 | 61 |
| 125 | 103 | 93 |
| 135 | 172 | 133 |
| 145 | 251 | 157 |
| 155 | 356 | 163 |
| 165 | 452 | 126 |
| 175 | 467 | 44 |
| 180 | 467 | |

| ZONAL LUMEN SUMMARY | | |
|---------------------|--------|-------|
| ZONE | LUMENS | %FIXT |
| 0- 30 | 323 | 20.0 |
| 0- 40 | 475 | 29.4 |
| 0- 60 | 692 | 42.8 |
| 0- 90 | 795 | 49.2 |
| 90-120 | 105 | 6.5 |
| 90-130 | 198 | 12.3 |
| 90-150 | 488 | 30.2 |
| 90-180 | 822 | 50.8 |
| 0-180 | 1617 | 100.0 |



TOTAL INPUT WATTS = 33.0
EFFICACY = 49.0 Lm/W
CIE TYPE - DIRECT-INDIRECT
LUMINAIRE SPACING CRITERION = 1.0



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LUMINOUS DIAMETER: 4.750

LUMINANCE DATA IN CANDELA/SQ METER
ANGLE AVERAGE
IN DEG

| | |
|----|--------|
| 45 | 20527. |
| 55 | 15092. |
| 65 | 12414. |
| 75 | 10473. |
| 85 | 9029. |



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CANDELA DISTRIBUTION

| | |
|-------|-----|
| | 0.0 |
| 0.0 | 453 |
| 5.0 | 454 |
| 10.0 | 451 |
| 15.0 | 439 |
| 20.0 | 400 |
| 25.0 | 343 |
| 30.0 | 288 |
| 35.0 | 243 |
| 40.0 | 203 |
| 45.0 | 166 |
| 50.0 | 130 |
| 55.0 | 99 |
| 60.0 | 75 |
| 65.0 | 60 |
| 70.0 | 44 |
| 75.0 | 31 |
| 80.0 | 20 |
| 85.0 | 9 |
| 90.0 | 0 |
| 95.0 | 9 |
| 100.0 | 20 |
| 105.0 | 31 |
| 110.0 | 45 |
| 115.0 | 62 |
| 120.0 | 78 |
| 125.0 | 103 |
| 130.0 | 136 |
| 135.0 | 172 |
| 140.0 | 210 |
| 145.0 | 251 |
| 150.0 | 298 |
| 155.0 | 356 |
| 160.0 | 414 |
| 165.0 | 452 |
| 170.0 | 464 |
| 175.0 | 467 |
| 180.0 | 467 |



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ZONAL LUMEN SUMMARY

| | |
|---------|-----|
| 0- 5 | 11. |
| 5- 10 | 32. |
| 10- 15 | 53. |
| 15- 20 | 69. |
| 20- 25 | 78. |
| 25- 30 | 79. |
| 30- 35 | 78. |
| 35- 40 | 74. |
| 40- 45 | 68. |
| 45- 50 | 60. |
| 50- 55 | 50. |
| 55- 60 | 39. |
| 60- 65 | 33. |
| 65- 70 | 26. |
| 70- 75 | 19. |
| 75- 80 | 14. |
| 80- 85 | 8. |
| 85- 90 | 2. |
| 90- 95 | 2. |
| 95-100 | 8. |
| 100-105 | 14. |
| 105-110 | 20. |
| 110-115 | 27. |
| 115-120 | 34. |
| 120-125 | 41. |
| 125-130 | 52. |
| 130-135 | 62. |
| 135-140 | 71. |
| 140-145 | 77. |
| 145-150 | 81. |
| 150-155 | 82. |
| 155-160 | 81. |
| 160-165 | 72. |
| 165-170 | 54. |
| 170-175 | 33. |
| 175-180 | 11. |



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5-DEGREE
ZONAL LUMEN SUMMARY

| | |
|---------|----|
| 0- 5 | 11 |
| 5- 10 | 32 |
| 10- 15 | 53 |
| 15- 20 | 69 |
| 20- 25 | 78 |
| 25- 30 | 79 |
| 30- 35 | 78 |
| 35- 40 | 74 |
| 40- 45 | 68 |
| 45- 50 | 60 |
| 50- 55 | 50 |
| 55- 60 | 39 |
| 60- 65 | 33 |
| 65- 70 | 26 |
| 70- 75 | 19 |
| 75- 80 | 14 |
| 80- 85 | 8 |
| 85- 90 | 2 |
| 90- 95 | 2 |
| 95-100 | 8 |
| 100-105 | 14 |
| 105-110 | 20 |
| 110-115 | 27 |
| 115-120 | 34 |
| 120-125 | 41 |
| 125-130 | 52 |
| 130-135 | 62 |
| 135-140 | 71 |
| 140-145 | 77 |
| 145-150 | 81 |
| 150-155 | 82 |
| 155-160 | 81 |
| 160-165 | 72 |
| 165-170 | 54 |
| 170-175 | 33 |
| 175-180 | 11 |

10-DEGREE
ZONAL LUMEN SUMMARY

| | |
|-------|------|
| 0- 10 | 43 |
| 0- 20 | 165 |
| 0- 30 | 323 |
| 0- 40 | 475 |
| 0- 50 | 603 |
| 0- 60 | 692 |
| 0- 70 | 751 |
| 0- 80 | 784 |
| 0- 90 | 795 |
| 0-100 | 805 |
| 0-110 | 838 |
| 0-120 | 900 |
| 0-130 | 993 |
| 0-140 | 1126 |
| 0-150 | 1283 |
| 0-160 | 1446 |
| 0-170 | 1572 |
| 0-180 | 1617 |



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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 |
| 0 | 107 | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 55 | 55 | 55 | 49 |
| 1 | 98 | 94 | 91 | 87 | 87 | 91 | 87 | 84 | 81 | 74 | 71 | 69 | 61 | 60 | 58 | 50 | 49 | 48 | 43 |
| 2 | 90 | 83 | 78 | 73 | 73 | 83 | 77 | 72 | 68 | 66 | 62 | 59 | 55 | 52 | 50 | 45 | 43 | 42 | 37 |
| 3 | 83 | 74 | 67 | 62 | 62 | 76 | 69 | 63 | 58 | 59 | 54 | 50 | 49 | 46 | 43 | 41 | 38 | 37 | 33 |
| 4 | 76 | 66 | 59 | 53 | 53 | 70 | 61 | 55 | 50 | 53 | 48 | 44 | 45 | 41 | 38 | 37 | 34 | 32 | 29 |
| 5 | 70 | 59 | 52 | 46 | 46 | 65 | 55 | 49 | 43 | 48 | 42 | 38 | 40 | 37 | 34 | 34 | 31 | 29 | 26 |
| 6 | 65 | 54 | 46 | 40 | 40 | 60 | 50 | 43 | 38 | 43 | 38 | 34 | 37 | 33 | 30 | 31 | 28 | 26 | 23 |
| 7 | 60 | 49 | 41 | 36 | 36 | 56 | 46 | 39 | 34 | 40 | 34 | 30 | 34 | 30 | 27 | 29 | 26 | 23 | 21 |
| 8 | 56 | 45 | 37 | 32 | 32 | 52 | 42 | 35 | 31 | 36 | 31 | 27 | 31 | 27 | 24 | 27 | 24 | 21 | 19 |
| 9 | 53 | 41 | 34 | 29 | 29 | 49 | 38 | 32 | 28 | 34 | 28 | 25 | 29 | 25 | 22 | 25 | 22 | 20 | 17 |
| 10 | 49 | 38 | 31 | 26 | 26 | 46 | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 20 | 23 | 20 | 18 | 16 |

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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Date
1/6/2016

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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