

Project Number
16.01985



Date
7/25/2016

Lab 6
Sphere

Test Sample Description

Catalog Number: P8222-2830K
Description: 7.25 LED Flush Mount (SAMPLE A)

Photometry

Test Method: IES LM-79-08 § 10
Preburn Time: 00:20
Time To Stabilize: 0:46
Total Operating Time: 2:12

Input Voltage (Volts): 120.1
Input Current (Amps): 0.146
Input Wattage (Watts): 17.3
Ambient Temp (°C): 24.0

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1
Preburn Time: 8:00
Time To Stabilize: 0:57
Total Operating Time: 8:57

Input Voltage (Volts): 120.0
Input Current (Amps): 0.144
Input Wattage (Watts): 17.0
Ambient Temp (°C): 24.1



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Greenville, SC 29607
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Checked (sphere): B. LEE
Checked (photometry): M. ELLMANN
Approved: D. BLACK



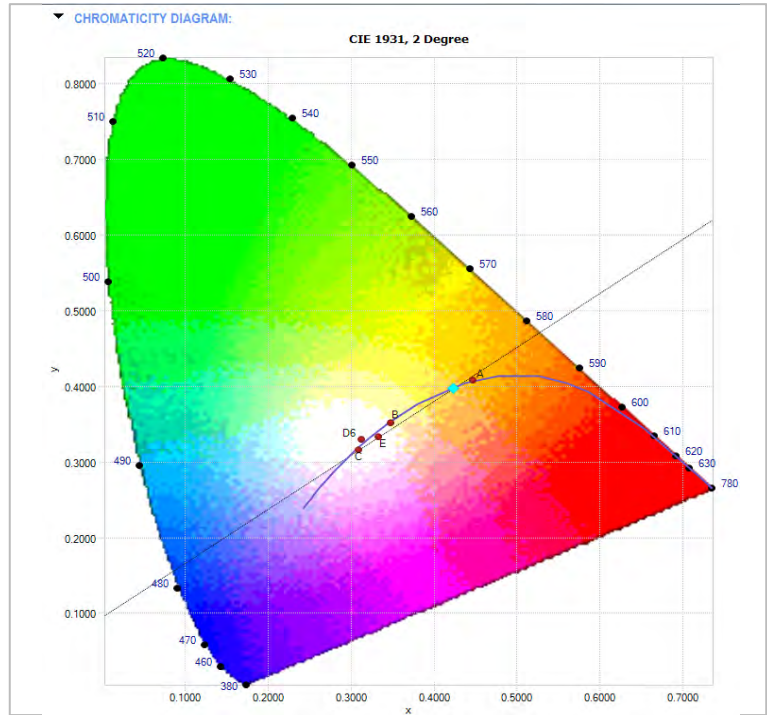


Lamp Cat#: N/A
Lamp Desc: 40 - Nichia 3000K LEDs
Driver Desc: N/A

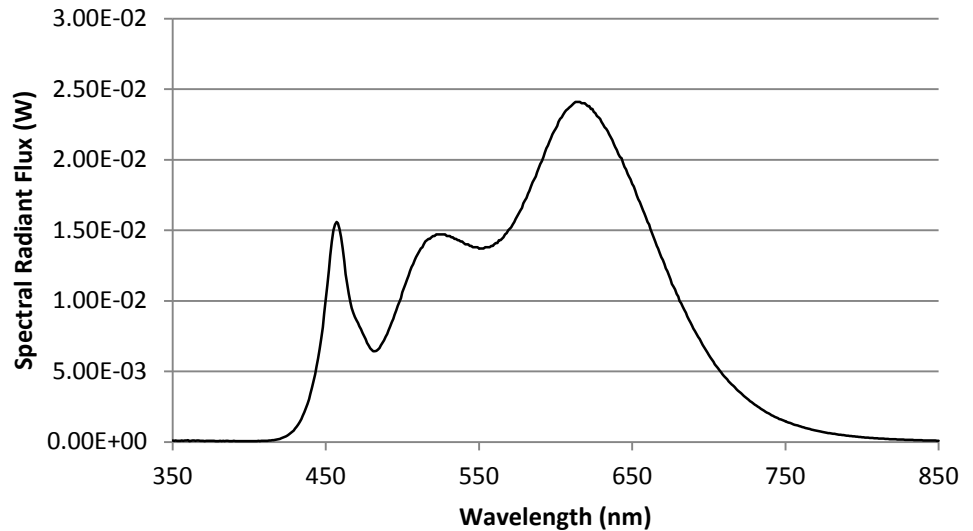
Efficacy: 68.8 LPW S/P Ratio: 1.6 LM/LM

Spectral Results

| Name | Value | Unit |
|----------------------|-------------|--------|
| Φ | 4.02 | watts |
| $\Phi(v)$ | 1169 | lumens |
| $\Phi(v')$ | 1861 | lm' |
| Chrom x | 0.4237 | |
| Chrom y | 0.3977 | |
| Chrom u | 0.2447 | |
| Chrom v | 0.3446 | |
| Duv | 0.0008 | |
| Chrom u' | 0.2447 | |
| Chrom v' | 0.5169 | |
| CCT | 3182 | K |
| Purity | 46.5 | % |
| λ (dom) | 582.3 | nm |
| FWHM | 168.2 | nm |
| λ (peak) | 614.8 | nm |
| λ (center) | 589.0 | nm |
| λ (centroid) | 587.5 | nm |
| SDCM | Cool White | |
| RA | 94 | |
| Corr. Coef. | 0.000586377 | |
| Correlation | 0.0054 | |
| R1 | 97.3 | |
| R2 | 97.0 | |
| R3 | 96.4 | |
| R4 | 97.1 | |
| R5 | 96.6 | |
| R6 | 91.5 | |
| R7 | 92.0 | |
| R8 | 87.3 | |
| R9 | 73.3 | |
| R10 | 93.7 | |
| R11 | 91.2 | |
| R12 | 82.9 | |
| R13 | 96.4 | |
| R14 | 98.5 | |



Spectral Distribution of Radiant Flux



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



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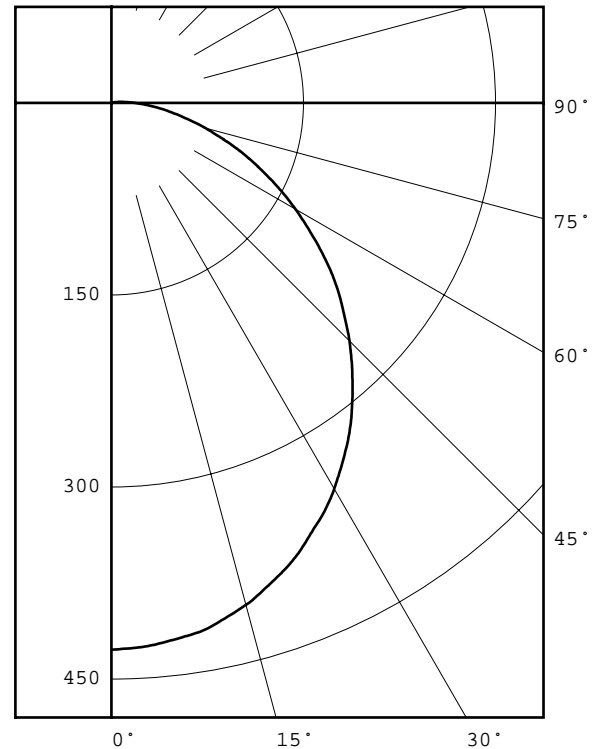


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ISSUE DATE: 07/25/16
PREPARED FOR: PROGRESS
CATALOG NUMBER: P8222-2830K
LUMINAIRE: 7.25 LED Flush Mount (SAMPLE A)
LAMP CAT. NO.: n/a
LAMP: 40-Nichia 3000K LED's
BALLAST CAT. NO.: XI020C056V054BST1
BALLAST: 1-CC driver
Refractor Material : Frosted lens
MOUNTING: Ceiling
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

PAGE: 3 OF 9

| DEG | CANDELA | LUMENS |
|-----|---------|--------|
| 0 | 427 | |
| 5 | 424 | 40 |
| 15 | 406 | 114 |
| 25 | 370 | 171 |
| 35 | 322 | 201 |
| 45 | 263 | 203 |
| 55 | 199 | 178 |
| 65 | 134 | 133 |
| 75 | 76 | 81 |
| 85 | 33 | 37 |
| 90 | 19 | |
| 95 | 9 | 11 |
| 105 | 1 | 1 |
| 115 | 0 | 0 |
| 125 | 0 | 0 |
| 135 | 0 | 0 |
| 145 | 0 | 0 |
| 155 | 0 | 0 |
| 165 | 0 | 0 |
| 175 | 0 | 0 |
| 180 | 0 | 0 |

| ZONAL LUMEN ZONE | SUMMARY LUMENS | %FIXT |
|------------------|----------------|-------|
| 0- 30 | 325 | 27.8 |
| 0- 40 | 527 | 45.0 |
| 0- 60 | 907 | 77.6 |
| 0- 90 | 1158 | 99.0 |
| 90-120 | 12 | 1.0 |
| 90-130 | 12 | 1.0 |
| 90-150 | 12 | 1.0 |
| 90-180 | 12 | 1.0 |
| 0-180 | 1170 | 100.0 |



TOTAL INPUT WATTS = 17.3
EFFICACY = 67.6 Lm/W
CIE TYPE - DIRECT
LUMINAIRE SPACING CRITERION = 1.2



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ISSUE DATE: 07/25/16
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PAGE: 4 OF 9

LUMINOUS DIAMETER: 4.500
HEIGHT OF SIDE : 0.375

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

| | |
|----|--------|
| 45 | 32759. |
| 55 | 29353. |
| 65 | 25164. |
| 75 | 20493. |
| 85 | 16670. |



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ISSUE DATE: 07/25/16
PREPARED FOR: PROGRESS

PAGE: 5 OF 9

CANDELA DISTRIBUTION

| | |
|-------|-----|
| | 0.0 |
| 0.0 | 427 |
| 5.0 | 424 |
| 10.0 | 418 |
| 15.0 | 406 |
| 20.0 | 390 |
| 25.0 | 370 |
| 30.0 | 348 |
| 35.0 | 322 |
| 40.0 | 293 |
| 45.0 | 263 |
| 50.0 | 232 |
| 55.0 | 199 |
| 60.0 | 166 |
| 65.0 | 134 |
| 70.0 | 104 |
| 75.0 | 76 |
| 80.0 | 52 |
| 85.0 | 33 |
| 90.0 | 19 |
| 95.0 | 9 |
| 100.0 | 3 |
| 105.0 | 1 |
| 110.0 | 0 |
| 115.0 | 0 |
| 120.0 | 0 |
| 125.0 | 0 |
| 130.0 | 0 |
| 135.0 | 0 |
| 140.0 | 0 |
| 145.0 | 0 |
| 150.0 | 0 |
| 155.0 | 0 |
| 160.0 | 0 |
| 165.0 | 0 |
| 170.0 | 0 |
| 175.0 | 0 |
| 180.0 | 0 |



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REPORT NUMBER: 16.01985
ISSUE DATE: 07/25/16
PREPARED FOR: PROGRESS

PAGE: 6 OF 9

ZONAL LUMEN SUMMARY

| | |
|---------|------|
| 0- 5 | 10. |
| 5- 10 | 30. |
| 10- 15 | 49. |
| 15- 20 | 66. |
| 20- 25 | 80. |
| 25- 30 | 91. |
| 30- 35 | 99. |
| 35- 40 | 103. |
| 40- 45 | 103. |
| 45- 50 | 100. |
| 50- 55 | 94. |
| 55- 60 | 84. |
| 60- 65 | 73. |
| 65- 70 | 60. |
| 70- 75 | 47. |
| 75- 80 | 34. |
| 80- 85 | 23. |
| 85- 90 | 14. |
| 90- 95 | 7. |
| 95-100 | 3. |
| 100-105 | 1. |
| 105-110 | 0. |
| 110-115 | 0. |
| 115-120 | 0. |
| 120-125 | 0. |
| 125-130 | 0. |
| 130-135 | 0. |
| 135-140 | 0. |
| 140-145 | 0. |
| 145-150 | 0. |
| 150-155 | 0. |
| 155-160 | 0. |
| 160-165 | 0. |
| 165-170 | 0. |
| 170-175 | 0. |
| 175-180 | 0. |



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REPORT NUMBER: 16.01985
ISSUE DATE: 07/25/16
PREPARED FOR: PROGRESS

PAGE: 7 OF 9

5-DEGREE
ZONAL LUMEN SUMMARY

| | |
|---------|-----|
| 0- 5 | 10 |
| 5- 10 | 30 |
| 10- 15 | 49 |
| 15- 20 | 66 |
| 20- 25 | 80 |
| 25- 30 | 91 |
| 30- 35 | 99 |
| 35- 40 | 103 |
| 40- 45 | 103 |
| 45- 50 | 100 |
| 50- 55 | 94 |
| 55- 60 | 84 |
| 60- 65 | 73 |
| 65- 70 | 60 |
| 70- 75 | 47 |
| 75- 80 | 34 |
| 80- 85 | 23 |
| 85- 90 | 14 |
| 90- 95 | 7 |
| 95-100 | 3 |
| 100-105 | 1 |
| 105-110 | 0 |
| 110-115 | 0 |
| 115-120 | 0 |
| 120-125 | 0 |
| 125-130 | 0 |
| 130-135 | 0 |
| 135-140 | 0 |
| 140-145 | 0 |
| 145-150 | 0 |
| 150-155 | 0 |
| 155-160 | 0 |
| 160-165 | 0 |
| 165-170 | 0 |
| 170-175 | 0 |
| 175-180 | 0 |

10-DEGREE
ZONAL LUMEN SUMMARY

| | |
|-------|------|
| 0- 10 | 40 |
| 0- 20 | 155 |
| 0- 30 | 325 |
| 0- 40 | 527 |
| 0- 50 | 729 |
| 0- 60 | 907 |
| 0- 70 | 1040 |
| 0- 80 | 1121 |
| 0- 90 | 1158 |
| 0-100 | 1169 |
| 0-110 | 1170 |
| 0-120 | 1170 |
| 0-130 | 1170 |
| 0-140 | 1170 |
| 0-150 | 1170 |
| 0-160 | 1170 |
| 0-170 | 1170 |
| 0-180 | 1170 |



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PAGE: 8 OF 9

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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 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 111 | 106 | 106 | 106 | 101 | 101 | 101 | 99 |
| 1 | 108 | 103 | 99 | 95 | 95 | 105 | 101 | 97 | 93 | 96 | 93 | 90 | 90 | 92 | 90 | 87 | 88 | 86 | 84 | 82 |
| 2 | 98 | 90 | 83 | 77 | 77 | 96 | 88 | 82 | 76 | 84 | 79 | 74 | 74 | 81 | 76 | 72 | 78 | 74 | 71 | 68 |
| 3 | 90 | 79 | 71 | 64 | 64 | 87 | 77 | 70 | 64 | 74 | 68 | 62 | 62 | 71 | 66 | 61 | 69 | 64 | 60 | 58 |
| 4 | 82 | 70 | 61 | 55 | 55 | 80 | 69 | 61 | 54 | 66 | 59 | 53 | 53 | 64 | 57 | 52 | 61 | 56 | 52 | 49 |
| 5 | 76 | 63 | 54 | 47 | 47 | 73 | 62 | 53 | 47 | 59 | 52 | 46 | 46 | 57 | 51 | 46 | 55 | 50 | 45 | 43 |
| 6 | 70 | 57 | 48 | 41 | 41 | 68 | 56 | 47 | 41 | 54 | 46 | 41 | 41 | 52 | 45 | 40 | 50 | 44 | 40 | 38 |
| 7 | 65 | 51 | 43 | 36 | 36 | 63 | 50 | 42 | 36 | 49 | 41 | 36 | 36 | 47 | 41 | 36 | 46 | 40 | 35 | 33 |
| 8 | 60 | 47 | 38 | 33 | 33 | 59 | 46 | 38 | 32 | 45 | 37 | 32 | 32 | 43 | 37 | 32 | 42 | 36 | 32 | 30 |
| 9 | 56 | 43 | 35 | 29 | 29 | 55 | 42 | 35 | 29 | 41 | 34 | 29 | 29 | 40 | 34 | 29 | 39 | 33 | 29 | 27 |
| 10 | 53 | 40 | 32 | 27 | 27 | 52 | 39 | 32 | 27 | 38 | 31 | 26 | 26 | 37 | 31 | 26 | 36 | 30 | 26 | 24 |

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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