

Project Number  
18.01016



**HUBBELL**  
Lighting

Date  
6/20/2018

Lab 1  
Sphere

### Test Sample Description

Catalog Number: P810016-028  
Description: 11" EdgeLit Round - White w/ Plastic Refractor

### Photometry

Test Method: IES LM-46-04  
IES LM-79-08 §10

Preburn Time: 0:05  
Time To Stabilize: 0:45  
Total Operating Time: 1:25

Input Voltage (Volts): 120.0  
Input Current (Amps): 0.145  
Input Wattage (Watts): 16.5  
Ambient Temp (°C): 24.9

### Sphere

Test Method: IES LM-16-93  
IES LM-79-08 §12.1

Preburn Time: 4:00  
Time To Stabilize: 1:23  
Total Operating Time: 5:23

Input Voltage (Volts): 120.0  
Input Current (Amps): 0.145  
Input Wattage (Watts): 16.5  
Ambient Temp (°C): 24.3



### Hubbell Lighting, Inc.

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

Checked (sphere): B. LEE  
Checked (photometry): D. ROBBINS  
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.


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Lamp Cat#: STW912D-E1

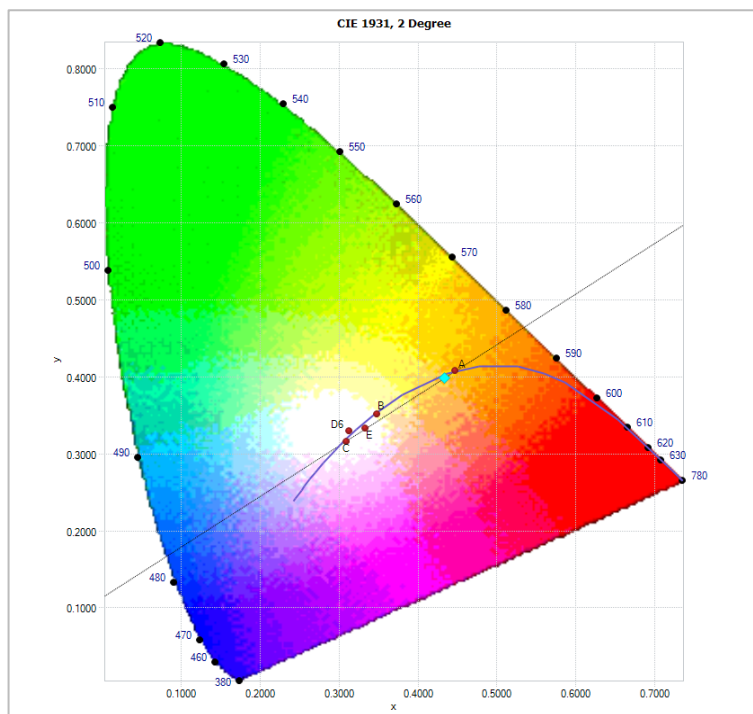
Lamp Desc: 84 - Seoul 3000K LEDs

Driver Desc: 1 - LG TRIA017C0420P-01

Efficacy: 80.8 LPW

S/P Ratio: 1.4 LM/LM

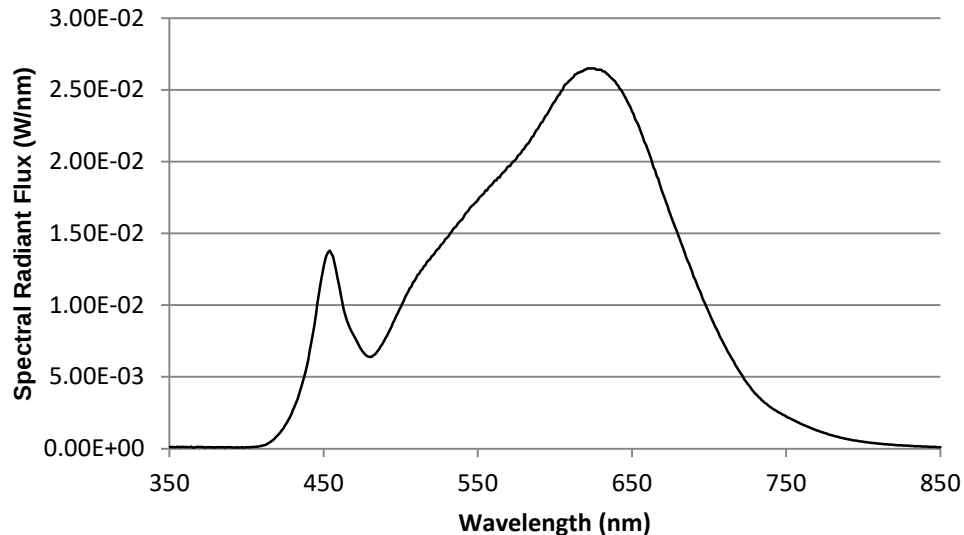
### Chromaticity Diagram



### Spectral Results

| Name                 | Value       | Unit   |
|----------------------|-------------|--------|
| $\Phi$               | 4.76        | watts  |
| $\Phi(v)$            | 1334        | lumens |
| $\Phi(v')$           | 1916        | lm'    |
| Chrom x              | 0.433       |        |
| Chrom y              | 0.3987      |        |
| Chrom u              | 0.2503      |        |
| Chrom v              | 0.3458      |        |
| Duv                  | 0.0017      |        |
| Chrom u'             | 0.2503      |        |
| Chrom v'             | 0.5187      |        |
| CCT                  | 3021        | K      |
| Purity               | 49.6        | %      |
| $\lambda$ (dom)      | 583.3       | nm     |
| FWHM                 | 166.7       | nm     |
| $\lambda$ (peak)     | 621.4       | nm     |
| $\lambda$ (center)   | 602.3       | nm     |
| $\lambda$ (centroid) | 594.6       | nm     |
| SDCM                 | Cool White  |        |
| RA                   | 94          |        |
| Corr. Coef.          | 0.001623772 |        |
| Correlation          | 0.0054      |        |
| R1                   | 94.4        |        |
| R2                   | 97.0        |        |
| R3                   | 97.4        |        |
| R4                   | 93.7        |        |
| R5                   | 93.9        |        |
| R6                   | 95.5        |        |
| R7                   | 93.2        |        |
| R8                   | 85.5        |        |
| R9                   | 67.7        |        |
| R10                  | 91.6        |        |
| R11                  | 94.0        |        |
| R12                  | 83.1        |        |
| R13                  | 95.2        |        |
| R14                  | 97.9        |        |

### Spectral Distribution of Radiant Flux





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**ISSUE DATE:** 06/20/18

**PREPARED FOR:** PROGRESS

**CATALOG NUMBER:** P810016-028

**LUMINAIRE:** 11" EdgeLit Round - White w/ Plastic Refractor

**LAMP CAT. NO.:** STW912D-E1

**LAMP:** 84- Seoul 3000K LEDs

**BALLAST CATALOG NUMBER:** TRIA017C0420P-01

**BALLAST:** 1- LG

**MOUNTING:** Ceiling

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



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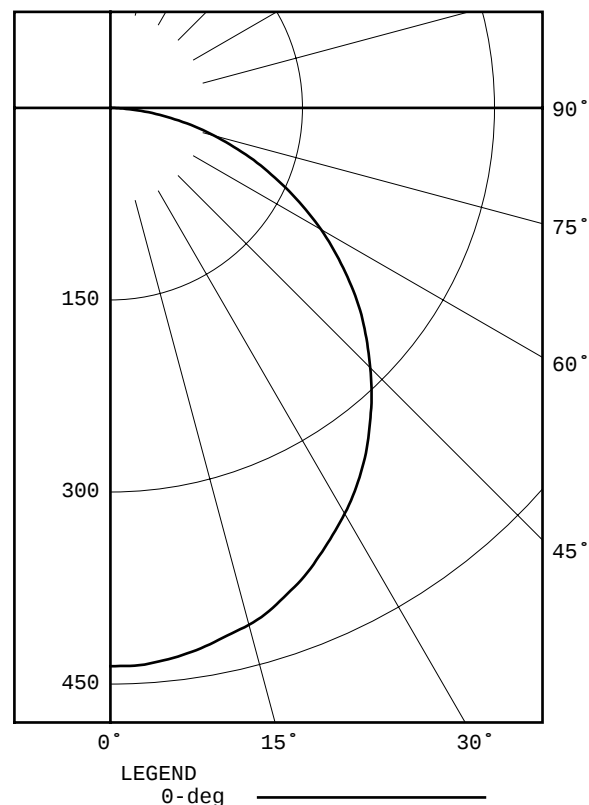
| DEG | CANDELA | LUMENS |
|-----|---------|--------|
| 0   | 436     |        |
| 5   | 434     | 41     |
| 15  | 418     | 118    |
| 25  | 386     | 178    |
| 35  | 343     | 214    |
| 45  | 287     | 222    |
| 55  | 224     | 200    |
| 65  | 154     | 153    |
| 75  | 84      | 89     |
| 85  | 21      | 25     |
| 90  | 0       |        |

| ZONAL LUMEN SUMMARY |        |
|---------------------|--------|
| ZONE                | LUMENS |
| 0- 30               | 337    |
| 0- 40               | 551    |
| 0- 60               | 973    |
| 0- 90               | 1240   |
| 90-180              | 0      |
| 0-180               | 1240   |

| %FIXT |
|-------|
| 27.2  |
| 44.5  |
| 78.5  |
| 100.0 |
| 0.0   |
| 100.0 |

EFFICACY = 75.2 lm/W  
CIE TYPE - DIRECT  
SPACING CRITERION: 1.25  
LUMINOUS DIAMETER: 9.500

| LUMINANCE DATA IN CANDELA/SQ M |
|--------------------------------|
| ANGLE AVERAGE                  |
| IN DEG                         |
| 45                             |
| 55                             |
| 65                             |
| 75                             |
| 85                             |





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|      |     |
|------|-----|
| 0.0  | 436 |
| 2.5  | 436 |
| 5.0  | 434 |
| 7.5  | 431 |
| 10.0 | 427 |
| 12.5 | 422 |
| 15.0 | 418 |
| 17.5 | 412 |
| 20.0 | 404 |
| 22.5 | 396 |
| 25.0 | 386 |
| 27.5 | 376 |
| 30.0 | 366 |
| 32.5 | 355 |
| 35.0 | 343 |
| 37.5 | 330 |
| 40.0 | 316 |
| 42.5 | 302 |
| 45.0 | 287 |
| 47.5 | 272 |
| 50.0 | 257 |
| 52.5 | 241 |
| 55.0 | 224 |
| 57.5 | 207 |
| 60.0 | 190 |
| 62.5 | 172 |
| 65.0 | 154 |
| 67.5 | 136 |
| 70.0 | 119 |
| 72.5 | 101 |
| 75.0 | 84  |
| 77.5 | 68  |
| 80.0 | 51  |
| 82.5 | 36  |
| 85.0 | 21  |
| 87.5 | 8   |
| 90.0 | 0   |



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| 5-DEGREE |       |         |
|----------|-------|---------|
| ZONAL    | LUMEN | SUMMARY |
| 0-       | 5     | 10      |
| 5-       | 10    | 31      |
| 10-      | 15    | 50      |
| 15-      | 20    | 68      |
| 20-      | 25    | 83      |
| 25-      | 30    | 95      |
| 30-      | 35    | 104     |
| 35-      | 40    | 110     |
| 40-      | 45    | 112     |
| 45-      | 50    | 110     |
| 50-      | 55    | 105     |
| 55-      | 60    | 96      |
| 60-      | 65    | 84      |
| 65-      | 70    | 69      |
| 70-      | 75    | 53      |
| 75-      | 80    | 36      |
| 80-      | 85    | 20      |
| 85-      | 90    | 5       |

| 10-DEGREE |       |         |
|-----------|-------|---------|
| ZONAL     | LUMEN | SUMMARY |
| 0-        | 10    | 41      |
| 0-        | 20    | 159     |
| 0-        | 30    | 337     |
| 0-        | 40    | 551     |
| 0-        | 50    | 773     |
| 0-        | 60    | 973     |
| 0-        | 70    | 1126    |
| 0-        | 80    | 1215    |
| 0-        | 90    | 1240    |



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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

| RC<br>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        | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1        | 109 | 104 | 99  | 96  | 106 | 102 | 98  | 94  | 97  | 94  | 91  | 93  | 91  | 88  | 90  | 88  | 86  | 83  |
| 2        | 99  | 90  | 83  | 78  | 96  | 88  | 82  | 77  | 85  | 80  | 75  | 82  | 77  | 73  | 79  | 75  | 72  | 69  |
| 3        | 90  | 79  | 71  | 64  | 87  | 78  | 70  | 64  | 75  | 68  | 63  | 72  | 66  | 62  | 69  | 65  | 61  | 58  |
| 4        | 82  | 70  | 61  | 54  | 80  | 69  | 61  | 54  | 66  | 59  | 53  | 64  | 58  | 53  | 62  | 56  | 52  | 50  |
| 5        | 76  | 63  | 54  | 47  | 73  | 62  | 53  | 47  | 59  | 52  | 46  | 57  | 51  | 46  | 56  | 50  | 45  | 43  |
| 6        | 70  | 56  | 47  | 41  | 68  | 55  | 47  | 41  | 54  | 46  | 40  | 52  | 45  | 40  | 50  | 44  | 40  | 38  |
| 7        | 65  | 51  | 42  | 36  | 63  | 50  | 42  | 36  | 49  | 41  | 36  | 47  | 40  | 35  | 46  | 40  | 35  | 33  |
| 8        | 60  | 47  | 38  | 32  | 59  | 46  | 38  | 32  | 45  | 37  | 32  | 43  | 37  | 32  | 42  | 36  | 31  | 30  |
| 9        | 56  | 43  | 35  | 29  | 55  | 42  | 34  | 29  | 41  | 34  | 29  | 40  | 33  | 29  | 39  | 33  | 28  | 27  |
| 10       | 53  | 39  | 32  | 26  | 51  | 39  | 31  | 26  | 38  | 31  | 26  | 37  | 30  | 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 TEST SAMPLE.

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Date  
6/20/2018

### *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:* 07/10/2017

### *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 | 10/25/2018              |
| <i>Power Source</i>    | Voltage-Regulated House Power         | N/A        | N/A                     |
| <i>Thermometer</i>     | National Instruments / USB-TC01       | 176F4E3    | 10/26/2018              |

### *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          | Checked Daily           |
| <i>Thermometer</i>      | National Instruments / USB TC01 | 1912751      | 10/26/2018              |
| <i>LAMP Power Meter</i> | Yokogawa / WT332                | C2QA27075V   | 10/25/2018              |
| <i>Power Supply</i>     | Chroma / 61602                  | 616020002113 | N/A                     |
| <i>Aux Lamp Supply</i>  | Labsphere / LPS-100-0833        | 0331159372   | N/A                     |
| <i>Cal Lamp Supply</i>  | Labsphere / LPS-150-0268        | 1218148505   | N/A                     |
| <i>Spectrometer</i>     | Labsphere / CDS 1100            | 0624117792   | N/A                     |

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