



**Cat# 71402**  
**LED High Bay**



QPL ID #  
PPXEAWS8



| Model :                 |                               | 71402                                                  |
|-------------------------|-------------------------------|--------------------------------------------------------|
| OVERALL LAMP PARAMETERS | Input Voltage                 | 100-277VAC 50/60HZ                                     |
|                         | Input Current                 | 1.2A Max                                               |
|                         | Input Power                   | 100 W                                                  |
|                         | Power Factor                  | PF≥0.9                                                 |
|                         | Luminance                     | 11400 LM                                               |
|                         | Luminous Efficiency           | 121 LM/W                                               |
|                         | CRI                           | >80                                                    |
|                         | Beam Angle                    | 90°                                                    |
|                         | Main Structure                | Aluminium + Tempered Glass                             |
| LED DRIVER              | Output Voltage                | 42 VDC                                                 |
|                         | Output Current                | 2.28A                                                  |
|                         | Driver Efficiency             | 93%                                                    |
| LED                     | LED Manufacturer              | COB                                                    |
|                         | LED Type                      | CREE 2520                                              |
|                         | LED Quantity                  | 3 PCS                                                  |
|                         | LED Efficacy                  | 120 LM/W                                               |
|                         | Color Temperature             | 5000K                                                  |
|                         | Dimming                       | PWM/VR/0-10VDC                                         |
| LIFESPAN & ENVIRONMENT  | Lifespan                      | 50000 Hrs.                                             |
|                         | Warranty                      | 5 Years                                                |
|                         | IP Rating                     | IP65 Wet Locations                                     |
|                         | Operating Temperature         | -40F to 131F                                           |
|                         | Storage Temperature.Humidity  | -40°C—+80°C , 10—90% RH                                |
| SAFETY&EMC              | Safety Norms                  | UL1598,UL8750, EN60598, EN61347-2-13, EN62031, EN62471 |
|                         | Withstand Voltage             | I/P-FG: 2121VDC                                        |
|                         | Grounding Resistance          | ≤0.5Ω,OK                                               |
|                         | Electromagnetic Compatibility | EN55015, EN61000-2-3, EN61000-3-3, EN61547             |
| OTHERS                  | Photocell                     | Sold Separately                                        |
|                         | Qty / Carton                  | 1PCS                                                   |
|                         |                               |                                                        |

**Mounting Options(Sold Separately):**



Cat# 71407  
Ceiling Mount  
5-1/2" X 6-1/4"  
Includes Plate, Brackets & Hinges

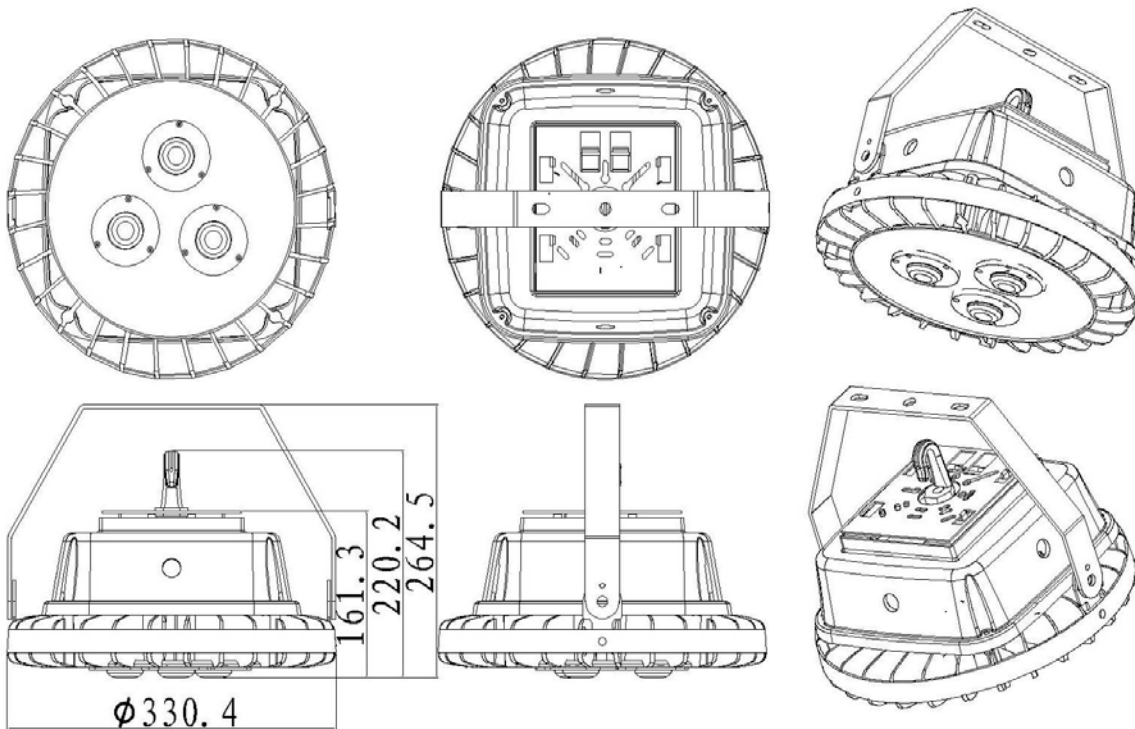


Cat# 71409  
Pendant Mount  
3/4" X 8" (6" Exposed)



Cat# 71408  
Bracket Mount  
8-1/2" X 13"

**Dimensions :**



**LM-79-08 Test Report**

For

Morris Products Inc.

53 Carey Rd. Queensbury, NY 12804

**High-bay Luminaires for Commercial and  
Industrial Buildings**

Model name(s): 71402

Representative (Tested) Model: 71402

Test &amp; Report By:

*Johnson Sun*

Engineer: Johnson Sun

Update: Nov.03, 2016

Review By:

*Tommy Liang*

Manager: Tommy Liang

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

**Laboratory: Standard-Tech Co. Ltd Testing Center****NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

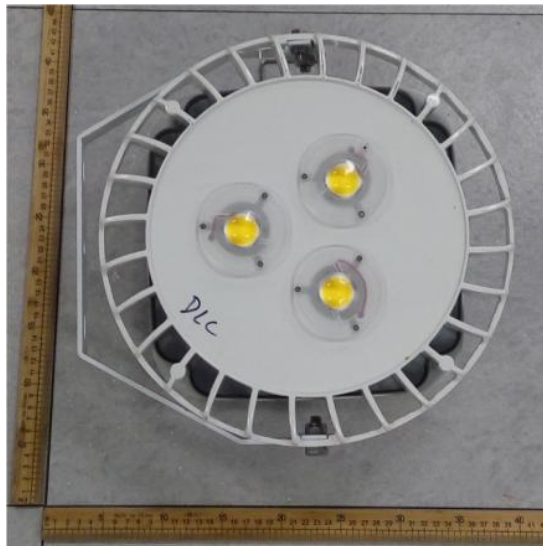
Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>

**1.1 Product Information:**

|                                                                      |                                                             |     |
|----------------------------------------------------------------------|-------------------------------------------------------------|-----|
| Organization Name                                                    | Morris Products Inc.                                        |     |
| Brand Name                                                           | MORRIS                                                      |     |
| Model Number                                                         | 71402                                                       |     |
| SKU (if available)                                                   | N/A                                                         |     |
| Type of Luminaire (for integral lamps, list base type and lamp type) | High-bay Luminaires for Commercial and Industrial Buildings |     |
| Rated Voltage / Frequency                                            | 100 -277Vac, 50/60 Hz                                       |     |
| Nominal Power                                                        | 100W                                                        |     |
| Rated Initial Lamp Lumen                                             | --                                                          |     |
| Declared CCT                                                         | 5000K                                                       |     |
| LED Manufacturer                                                     | CREE                                                        |     |
| LED Model                                                            | CXA2520-0000-000N00P430F                                    |     |
| Sample Number                                                        | GZE161105-A1                                                |     |
| Luminaire Aperture (for downlights)                                  | --                                                          | in. |
| Luminaire Length                                                     | --                                                          | mm  |
| Luminaires Width                                                     | --                                                          | mm  |
| Number of Units (modular products)                                   | N/A                                                         | s   |

**Photo**

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**1.2 Test Specifications:**

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of Receipt            | : Oct.31,2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Date of Test               | : Nov.01,2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Test item                  | <ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>                                                                                                                                                                                                                                                                                        |
| Reference Standard         | <ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol> |
| Reference Work Instruction | QD25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**1.3 Test Methods****1) Photometric and Light Distribution Measurement – Goniophotometer Method:**

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**2) Chromaticity Measurement – Sphere-Spectroradiometer Method:**

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

**3) Electrical Measurements:**

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

**2.1 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction QD25)*

|                  |             |                          |         |
|------------------|-------------|--------------------------|---------|
| Test date        | 2016-11-01  | Test Ambient:            | 25.2 °C |
| Test Orientation | As intended | Stabilization Time (min) | 90      |
| Model Number     | 71402       |                          |         |

**Electrical Measurement :**

| Sample No.        | Voltage (Vac) | Frequency (Hz) | Current (A) | Power (W) | Power Factor | THD %     |
|-------------------|---------------|----------------|-------------|-----------|--------------|-----------|
| GZE161105-        | 120.0         | 60             | 0.7896      | 94.09     | 0.9930       | 5.31      |
| A1                | 277.0         | 60             | 0.3630      | 92.99     | 0.9249       | 15.20     |
| DLC Pass Criteria |               |                |             |           | >= 0.9(-3%)  | <= 20(+5) |

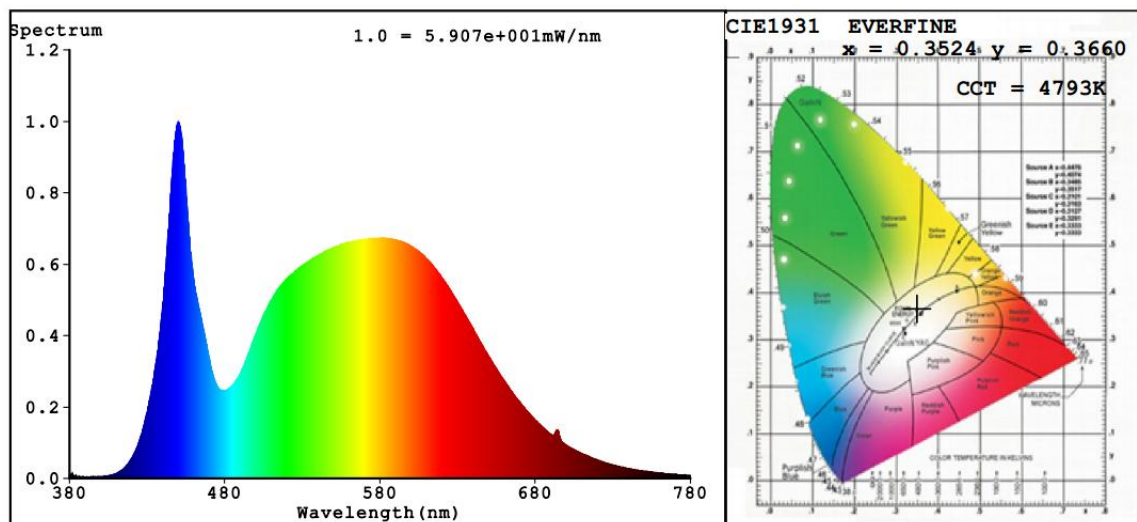
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

| Parameter                   | Result              | Special Color Rendering Indices |    |     |    |
|-----------------------------|---------------------|---------------------------------|----|-----|----|
| Test Voltage (V)            | 120.0               | R1                              | 80 | R9  | 11 |
| Frequency (Hz)              | 60                  | R2                              | 87 | R10 | 68 |
| CCT (K)                     | 4793                | R3                              | 92 | R11 | 81 |
| Duv                         | 0.0043              | R4                              | 82 | R12 | 57 |
| Chromaticity (x, y)         | x=0.3524 y=0.3660   | R5                              | 80 | R13 | 82 |
| Chromaticity (u', v')       | u'=0.2108 v'=0.4926 | R6                              | 82 | R14 | 95 |
| Color Rendering Index (CRI) | 82.6                | R7                              | 89 | R15 | 75 |
| R9                          | 11                  | R8                              | 69 | --  | -- |

**Photometric Measurement – Goniophotometer Method :**

| Parameter                           | Result |        | DLC V4.0 Pass Criteria |                      |
|-------------------------------------|--------|--------|------------------------|----------------------|
| Test Voltage (V)                    | 120.0  | 277.0  | --                     |                      |
| Frequency (Hz)                      | 60     | 60     |                        |                      |
| Total Luminous (lm)                 | 11434  | 11303  | >=10000 (-10%)         |                      |
| Luminous Efficacy (lm/W)            | 121.52 | 121.55 | Standard: >= 105(-3%)  | Premium: >= 130(-3%) |
| Zonal lumens in the 20-50 °zone (%) | 65.8   | --     | >=30(-10)              |                      |
| Beam Angle (°)                      | 89.4   | --     | --                     |                      |
| Center Beam Candle Power (cd)       | 6073   | --     | --                     |                      |

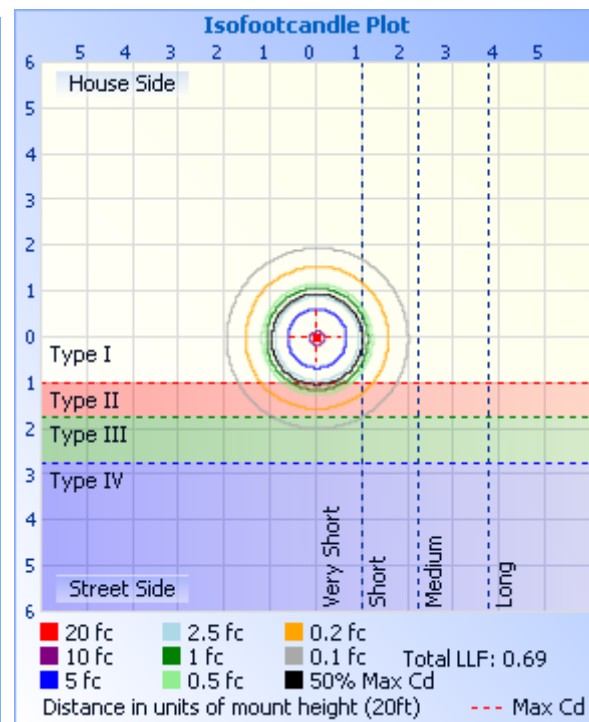
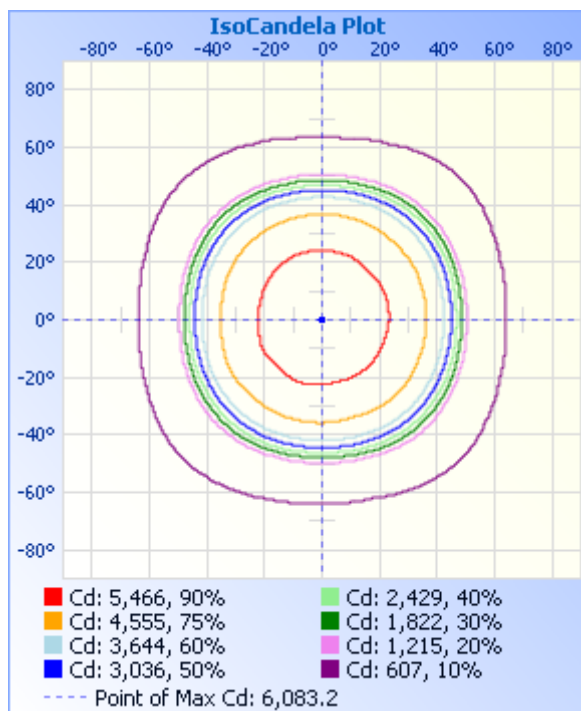
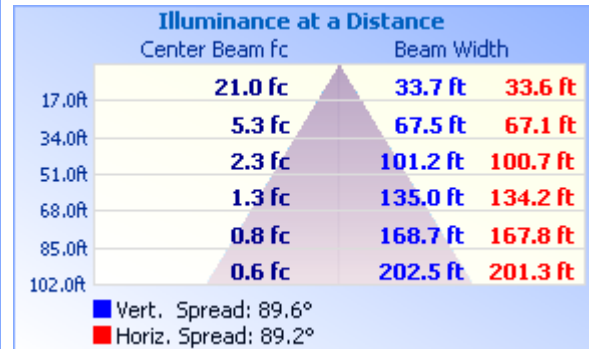
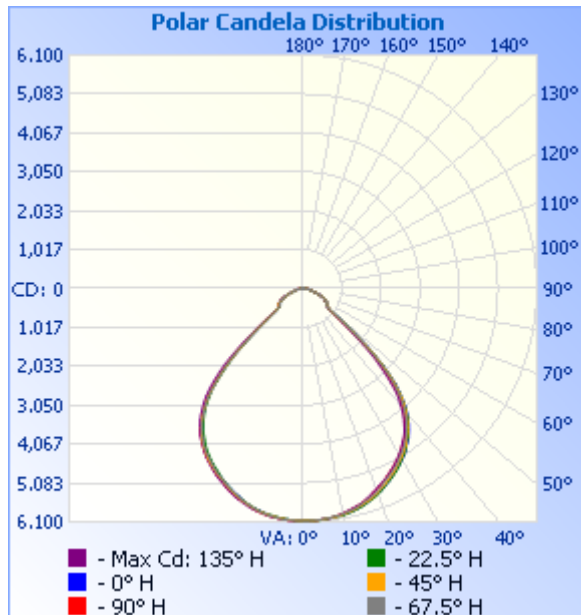
## Spectral Power Distribution &amp; Chromaticity Diagram



## Zonal Lumen Tabulation

| Zonal Lumen Summary |          |             |
|---------------------|----------|-------------|
| Zone                | Lumens   | % Luminaire |
| 0-30                | 4,689.3  | 41%         |
| 0-40                | 7,580.1  | 66.3%       |
| 0-60                | 10,460.4 | 91.5%       |
| 60-90               | 949.3    | 8.3%        |
| 70-100              | 392.5    | 3.4%        |
| 90-120              | 1.7      | 0%          |
| 0-90                | 11,409.7 | 99.8%       |
| 90-180              | 22.4     | 0.2%        |
| 0-180               | 11,432.2 | 100%        |

| Lumens Per Zone |         |         |         |        |         |
|-----------------|---------|---------|---------|--------|---------|
| Zone            | Lumens  | % Total | Zone    | Lumens | % Total |
| 0-10            | 575.0   | 5.0%    | 90-100  | 0.8    | 0%      |
| 10-20           | 1,644.7 | 14.4%   | 100-110 | 0.2    | 0%      |
| 20-30           | 2,469.7 | 21.6%   | 110-120 | 0.7    | 0%      |
| 30-40           | 2,890.8 | 25.3%   | 120-130 | 2.5    | 0%      |
| 40-50           | 2,161.8 | 18.9%   | 130-140 | 4.2    | 0%      |
| 50-60           | 718.5   | 6.3%    | 140-150 | 5.1    | 0%      |
| 60-70           | 557.6   | 4.9%    | 150-160 | 4.6    | 0%      |
| 70-80           | 272.0   | 2.4%    | 160-170 | 3.0    | 0%      |
| 80-90           | 119.7   | 1.0%    | 170-180 | 1.3    | 0%      |



| C (DEG)<br>γ (DEG) | 0    | 23    | 45   | 68   | 90   | 113  | 135  | 158  | 180  | 203  | 225  | 248  | 270  | 293  | 315  | 338  |
|--------------------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0                  | 6073 | 6073  | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 | 6073 |
| 5                  | 6047 | 6049  | 6045 | 6052 | 6047 | 6055 | 6047 | 6043 | 6052 | 6047 | 6050 | 6041 | 6035 | 6033 | 6038 | 6055 |
| 10                 | 5975 | 5993  | 5972 | 6012 | 5996 | 6012 | 5993 | 5980 | 5970 | 5973 | 5965 | 5971 | 5944 | 5946 | 5955 | 5961 |
| 15                 | 5814 | 5853  | 5834 | 5873 | 5885 | 5897 | 5862 | 5839 | 5819 | 5846 | 5819 | 5835 | 5792 | 5779 | 5801 | 5792 |
| 20                 | 5622 | 5645  | 5630 | 5677 | 5701 | 5713 | 5676 | 5640 | 5584 | 5628 | 5571 | 5605 | 5554 | 5551 | 5581 | 5567 |
| 25                 | 5356 | 5380  | 5372 | 5426 | 5451 | 5457 | 5413 | 5357 | 5313 | 5382 | 5322 | 5339 | 5291 | 5265 | 5326 | 5311 |
| 30                 | 5058 | 5073  | 5065 | 5124 | 5154 | 5149 | 5116 | 5053 | 5016 | 5075 | 5011 | 5029 | 4991 | 4960 | 5026 | 5003 |
| 35                 | 4657 | 4676  | 4673 | 4736 | 4792 | 4763 | 4724 | 4683 | 4615 | 4674 | 4602 | 4616 | 4596 | 4543 | 4619 | 4596 |
| 40                 | 4017 | 4091  | 4085 | 4174 | 4209 | 4186 | 4158 | 4091 | 4019 | 4044 | 3956 | 3962 | 3953 | 3910 | 3960 | 3968 |
| 45                 | 2939 | 3037  | 3094 | 3178 | 3207 | 3185 | 3160 | 3096 | 2939 | 2874 | 2817 | 2812 | 2780 | 2748 | 2810 | 2838 |
| 50                 | 1231 | 1263  | 1347 | 1460 | 1486 | 1468 | 1371 | 1323 | 1192 | 1100 | 1027 | 1011 | 977  | 1006 | 1065 | 1082 |
| 55                 | 744  | 741   | 760  | 745  | 745  | 746  | 753  | 754  | 758  | 741  | 738  | 747  | 735  | 732  | 761  | 731  |
| 60                 | 693  | 706   | 729  | 717  | 728  | 736  | 727  | 726  | 721  | 708  | 687  | 686  | 671  | 665  | 681  | 671  |
| 65                 | 564  | 573   | 586  | 582  | 586  | 592  | 587  | 590  | 586  | 567  | 565  | 565  | 553  | 548  | 553  | 554  |
| 70                 | 388  | 407   | 417  | 415  | 430  | 421  | 428  | 420  | 418  | 407  | 404  | 394  | 379  | 379  | 377  | 385  |
| 75                 | 235  | 236   | 247  | 250  | 254  | 256  | 250  | 247  | 247  | 244  | 245  | 235  | 224  | 226  | 224  | 227  |
| 80                 | 173  | 165   | 170  | 167  | 170  | 179  | 172  | 171  | 172  | 168  | 181  | 169  | 161  | 168  | 164  | 168  |
| 85                 | 126  | 107   | 127  | 118  | 115  | 131  | 113  | 131  | 132  | 103  | 129  | 113  | 102  | 118  | 101  | 122  |
| 90                 | 11.4 | 9.70  | 15.8 | 15.9 | 22.1 | 25.6 | 19.6 | 24.8 | 15.7 | 8.90 | 5.74 | 0.84 | 2.58 | 2.90 | 5.16 | 9.81 |
| 95                 | 0.05 | 0.05  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100                | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.53 | 0.00 | 0.05 | 0.16 | 0.05 | 0.00 | 0.06 | 0.11 | 0.11 |
| 105                | 0.11 | 0.32  | 0.21 | 0.00 | 0.00 | 0.05 | 0.05 | 0.37 | 0.26 | 0.21 | 0.21 | 0.11 | 0.11 | 0.26 | 0.16 | 0.37 |
| 110                | 0.47 | 0.53  | 0.42 | 0.16 | 0.26 | 0.42 | 0.37 | 0.43 | 0.42 | 0.47 | 0.37 | 0.26 | 0.37 | 0.32 | 0.43 | 0.48 |
| 115                | 0.69 | 0.58  | 0.58 | 0.37 | 0.37 | 0.42 | 0.48 | 0.64 | 0.63 | 0.74 | 0.74 | 0.48 | 0.74 | 0.53 | 0.60 | 0.65 |
| 120                | 1.89 | 1.63  | 1.48 | 1.11 | 0.84 | 0.84 | 1.39 | 1.44 | 1.48 | 1.63 | 1.64 | 1.27 | 1.17 | 1.38 | 1.66 | 1.61 |
| 125                | 3.64 | 3.26  | 2.53 | 2.90 | 3.11 | 2.91 | 2.55 | 3.08 | 2.49 | 2.69 | 2.49 | 2.91 | 3.23 | 3.18 | 2.35 | 2.72 |
| 130                | 4.91 | 6.71  | 3.23 | 4.12 | 4.59 | 4.60 | 3.68 | 4.26 | 3.86 | 3.80 | 3.49 | 4.08 | 4.70 | 4.72 | 3.63 | 3.89 |
| 135                | 6.44 | 5.42  | 4.17 | 5.49 | 5.75 | 6.02 | 4.74 | 5.32 | 5.61 | 5.26 | 4.66 | 5.76 | 5.97 | 6.46 | 4.91 | 5.44 |
| 140                | 7.97 | 6.63  | 5.91 | 7.34 | 6.96 | 7.41 | 6.02 | 6.61 | 7.24 | 6.90 | 6.04 | 7.72 | 7.60 | 7.47 | 6.08 | 6.99 |
| 145                | 8.82 | 6.84  | 7.66 | 8.40 | 7.86 | 8.94 | 6.51 | 7.41 | 8.72 | 7.91 | 7.31 | 9.04 | 8.41 | 9.22 | 7.80 | 8.11 |
| 150                | 9.67 | 8.00  | 9.72 | 9.88 | 10.2 | 9.84 | 8.85 | 8.42 | 9.72 | 9.01 | 8.79 | 9.78 | 9.98 | 10.2 | 10.2 | 9.01 |
| 155                | 9.41 | 9.16  | 10.7 | 11.0 | 10.9 | 10.5 | 9.76 | 9.22 | 9.51 | 9.84 | 9.74 | 10.2 | 9.76 | 10.3 | 10.7 | 9.97 |
| 160                | 9.56 | 9.42  | 10.8 | 10.9 | 10.8 | 10.6 | 10.1 | 9.76 | 9.36 | 9.79 | 10.1 | 10.9 | 9.56 | 10.1 | 10.7 | 10.6 |
| 165                | 10.2 | 10.00 | 11.1 | 10.9 | 10.7 | 10.8 | 10.1 | 9.76 | 10.6 | 9.90 | 10.3 | 11.0 | 10.2 | 10.6 | 10.7 | 11.4 |
| 170                | 11.9 | 11.1  | 12.4 | 12.7 | 12.3 | 13.0 | 12.3 | 10.5 | 12.4 | 12.2 | 12.0 | 13.5 | 13.8 | 14.0 | 13.3 | 13.3 |
| 175                | 12.5 | 12.1  | 13.4 | 13.3 | 14.3 | 13.3 | 13.3 | 11.0 | 13.5 | 13.3 | 12.6 | 13.8 | 14.6 | 15.2 | 14.1 | 13.9 |
| 180                | 12.2 | 12.4  | 13.3 | 12.8 | 13.7 | 13.3 | 13.4 | 11.6 | 12.5 | 12.3 | 12.2 | 13.2 | 12.8 | 13.9 | 13.4 | 13.4 |

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**BUG Rating: B3-U2-G1****IESNA Luminaire Flux Distribution Table:**

| Zone                         | Lumens | Luminaire % |
|------------------------------|--------|-------------|
| FL - Front-Low(0-30)         | 2358.7 | 20.6        |
| FM - Front-Medium(30-60)     | 2965.3 | 25.9        |
| FH - Front-High(60-80)       | 422.65 | 3.7         |
| FVH - Front-Very High(80-90) | 61.909 | 0.5         |
| Total Forward Light          | 5820   | 50.9        |

|                             |        |      |
|-----------------------------|--------|------|
| BL - Back-Low(0-30)         | 2330.7 | 20.4 |
| BM - Back-Medium(30-60)     | 2807.3 | 24.6 |
| BH - Back-High(60-80)       | 406.9  | 3.6  |
| BVH - Back-Very High(80-90) | 57.815 | 0.5  |
| Total Back Light            | 5613.9 | 49.1 |

|                            |         |     |
|----------------------------|---------|-----|
| UL - Uplight-Low(90-100)   | 0.79348 | 0.0 |
| UH - Uplight-High(100-180) | 21.682  | 0.2 |
| Total Up Light             | 22.475  | 0.2 |

|                           |          |
|---------------------------|----------|
| BUG(Back,Up,Glare) Rating | B3-U2-G1 |
|---------------------------|----------|

| Zone        | Downward<br>Lumens | Upward<br>Lumens | Total<br>Lumens |
|-------------|--------------------|------------------|-----------------|
| House Side  | 5602.8             | 11.108           | 5613.9          |
| Street Side | 5808.6             | 11.368           | 5820            |

**3. Test Equipment**

| Equipment ID                                                                                                                                       | Equipment Name                     | Last Calibration Date | Next Calibration Date |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------|-----------------------|
| ST-R-336                                                                                                                                           | 2 meter Integrating Sphere         | 2016-07-01            | 2017-06-30            |
| ST-R-331                                                                                                                                           | Spectral analysis system HAAS-2000 | 2016-07-01            | 2017-06-30            |
| D204                                                                                                                                               | Standard Lamp                      | 2016-07-01            | 2017-06-30            |
| PF2010                                                                                                                                             | Power Meter for Integrating Sphere | 2016-07-01            | 2017-06-30            |
| EE-09                                                                                                                                              | Goniophotometer system             | 2016-07-01            | 2017-06-30            |
| D908S                                                                                                                                              | Standard Lamp                      | 2016-07-01            | 2017-06-30            |
| PF210                                                                                                                                              | Power Meter for Goniophotometer    | 2016-07-01            | 2017-06-30            |
| ST-R-181A                                                                                                                                          | Temperature Tester                 | 2016-07-01            | 2017-06-30            |
| Uncertainty:<br>Photometric Measurement (Sphere):1.74%<br>Chromaticity Measurement(Sphere):14.3K<br>Photometric Measurement(Goniophotometer):1.62% |                                    |                       |                       |

**\*\*\*\*\* END OF REPORT \*\*\*\*\***

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