<table>
<thead>
<tr>
<th><strong>OVERALL LAMP PARAMETERS</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage</td>
<td>100-277VAC 50/60Hz</td>
</tr>
<tr>
<td>Input Current</td>
<td>0.3A Max</td>
</tr>
<tr>
<td>Input Power</td>
<td>30W</td>
</tr>
<tr>
<td>Power Factor</td>
<td>PF≥0.90</td>
</tr>
<tr>
<td>Luminance</td>
<td>3538 LM</td>
</tr>
<tr>
<td>Luminous Efficiency</td>
<td>118 LM/W</td>
</tr>
<tr>
<td>CRI</td>
<td>≥80</td>
</tr>
<tr>
<td>Beam Angle</td>
<td>90 x 120°</td>
</tr>
<tr>
<td>Main Structure</td>
<td>Aluminium + Tempered Glass</td>
</tr>
<tr>
<td><strong>LED DRIVER</strong></td>
<td></td>
</tr>
<tr>
<td>Output Voltage</td>
<td>24-45VDC</td>
</tr>
<tr>
<td>Output Current</td>
<td>0.7A</td>
</tr>
<tr>
<td>Driver Efficiency</td>
<td>89%</td>
</tr>
<tr>
<td><strong>LED</strong></td>
<td></td>
</tr>
<tr>
<td>LED Manufacturer</td>
<td>Phillips</td>
</tr>
<tr>
<td>LED Type</td>
<td>LumiLED 3030</td>
</tr>
<tr>
<td>LED Quantity</td>
<td>18 PCS</td>
</tr>
<tr>
<td>LED Efficacy</td>
<td>150 LM/W</td>
</tr>
<tr>
<td>Color Temperature</td>
<td>3000K</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
<tr>
<td>Photocell</td>
<td>Not Included</td>
</tr>
<tr>
<td><strong>LIFESPAN &amp; ENVIRONMENT</strong></td>
<td></td>
</tr>
<tr>
<td>Lifespan</td>
<td>50,000 Hrs.</td>
</tr>
<tr>
<td>Warranty</td>
<td>5 Years</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP65 Wet Locations</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°F to +131°F</td>
</tr>
<tr>
<td>Storage Temperature, Humidity</td>
<td>-40°C to +80°C, 10—90% RH</td>
</tr>
<tr>
<td><strong>SAFETY &amp; EMC</strong></td>
<td></td>
</tr>
<tr>
<td>Safety Norms</td>
<td>UL1598, UL8750, EN60598, EN61347-2-13, EN62031, EN62471</td>
</tr>
<tr>
<td>Withstand Voltage</td>
<td>1/F-PG: 2121VDC</td>
</tr>
<tr>
<td>Grounding Resistance</td>
<td>≤0.5Ω, OK</td>
</tr>
<tr>
<td>Electromagnetic Compatibility</td>
<td>EN55015, EN61000-2-3, EN61000-3-3, EN61547</td>
</tr>
<tr>
<td><strong>OTHERS</strong></td>
<td></td>
</tr>
<tr>
<td>Dimension</td>
<td>Pls refer to attached dimensional drawing</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>5.9 Lbs</td>
</tr>
<tr>
<td>Packing Size</td>
<td>Inner box: L238<em>W212</em>H145 master carton: 490<em>440</em>300</td>
</tr>
<tr>
<td>Qty / Carton</td>
<td>8 PCS</td>
</tr>
<tr>
<td>Volume</td>
<td>2.283m3/carton</td>
</tr>
</tbody>
</table>
LM-79-08 Test Report
For
Morris Products Inc.
53 Carey Rd. Queensbury, NY 12804

Architectural Flood and Spot Luminaires

Model name(s): 71342A, 71339A, 71340A

Representative (Tested) Model: 71342A

Model Different: All construction and rating are the same, except CCT

Test & Report By: Johnson Sun
Review By: Tommy Liang

Engineer: Johnson Sun
Manager: Tommy Liang
Update: Nov. 16, 2016

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

<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Morris Products Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand Name</td>
<td>MORRIS</td>
</tr>
<tr>
<td>Model Number</td>
<td>71342A</td>
</tr>
<tr>
<td>SKU (if available)</td>
<td>N/A</td>
</tr>
<tr>
<td>Type of Luminaire (for integral lamps, list base type and lamp type)</td>
<td>Architectural Flood and Spot Luminaires</td>
</tr>
<tr>
<td>Rated Voltage / Frequency</td>
<td>100 -277Vac, 50/60 Hz</td>
</tr>
<tr>
<td>Nominal Power</td>
<td>30W</td>
</tr>
<tr>
<td>Rated Initial Lamp Lumen</td>
<td>--</td>
</tr>
<tr>
<td>Declared CCT</td>
<td>3000K,4000K,5000K</td>
</tr>
<tr>
<td>LED Manufacturer</td>
<td>Philips Lumileds</td>
</tr>
<tr>
<td>LED Model</td>
<td>L130-2780003000W21</td>
</tr>
<tr>
<td>Sample Number</td>
<td>GZE161105-BR1(3000K),BR2(5000K)</td>
</tr>
<tr>
<td>Luminaire Aperture (for downlights)</td>
<td>-- in.</td>
</tr>
<tr>
<td>Luminaire Length</td>
<td>-- mm</td>
</tr>
<tr>
<td>Luminaires Width</td>
<td>-- mm</td>
</tr>
<tr>
<td>Number of Units (modular products)</td>
<td>N/A s</td>
</tr>
</tbody>
</table>

**Photo**
1.2 Test Specifications:

<table>
<thead>
<tr>
<th>Test item</th>
<th>Reference Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Receipt</td>
<td>Nov.11, 2016</td>
</tr>
<tr>
<td>Date of Test</td>
<td>Nov. 12, 2016</td>
</tr>
<tr>
<td>Test item</td>
<td>1. Total Luminous Flux</td>
</tr>
<tr>
<td></td>
<td>2. Luminous Distribution Intensity</td>
</tr>
<tr>
<td></td>
<td>3. Luminous Efficacy</td>
</tr>
<tr>
<td></td>
<td>4. Correlated Color Temperature</td>
</tr>
<tr>
<td></td>
<td>5. Color Rendering Index</td>
</tr>
<tr>
<td></td>
<td>6. Chromaticity Coordinate</td>
</tr>
<tr>
<td></td>
<td>7. Electrical Parameters</td>
</tr>
<tr>
<td></td>
<td>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</td>
</tr>
<tr>
<td></td>
<td>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</td>
</tr>
<tr>
<td></td>
<td>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</td>
</tr>
<tr>
<td></td>
<td>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</td>
</tr>
<tr>
<td>Reference Work Instruction</td>
<td>QD25</td>
</tr>
</tbody>
</table>

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° C ± 1° 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° vertical intervals and 22.5° 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° C ± 1° 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° C ± 1° 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)

<table>
<thead>
<tr>
<th>Test date</th>
<th>2016-11-12</th>
<th>Test Ambient:</th>
<th>25.2 ° C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Orientation</td>
<td>As intended</td>
<td>Stabilization Time (min)</td>
<td>90</td>
</tr>
<tr>
<td>Model Number</td>
<td>71342A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Measurement:**

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Voltage (Vac)</th>
<th>Frequency (Hz)</th>
<th>Current (A)</th>
<th>Power (W)</th>
<th>Power Factor</th>
<th>THD %</th>
</tr>
</thead>
<tbody>
<tr>
<td>GZE161105-BR1</td>
<td>120.0</td>
<td>60</td>
<td>0.2444</td>
<td>28.94</td>
<td>0.9869</td>
<td>9.05</td>
</tr>
<tr>
<td></td>
<td>277.0</td>
<td>60</td>
<td>0.1149</td>
<td>28.69</td>
<td>0.9013</td>
<td>11.39</td>
</tr>
</tbody>
</table>

**DLC Pass Criteria**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Special Color Rendering Indices</th>
<th>DLC Pass Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>120.0</td>
<td>R1 82</td>
<td>&gt;= 0.9(-3%)</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td>R2 90</td>
<td>&lt;= 20(+5)</td>
</tr>
<tr>
<td>CCT (K)</td>
<td>3069</td>
<td>R3 97</td>
<td></td>
</tr>
<tr>
<td>Duv</td>
<td>0.0002</td>
<td>R4 82</td>
<td></td>
</tr>
<tr>
<td>Chromaticity (x, y)</td>
<td>x=0.4323</td>
<td>R5 82</td>
<td>R10 78</td>
</tr>
<tr>
<td>Chromaticity (u’, v’)</td>
<td>u’=0.2481</td>
<td>R6 88</td>
<td>R14 99</td>
</tr>
<tr>
<td>Color Rendering Index (CRI)</td>
<td>83.3</td>
<td>R7 84</td>
<td>R15 75</td>
</tr>
<tr>
<td>R9</td>
<td>11</td>
<td>R8 62</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Special Color Rendering Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>120.0</td>
<td></td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>CCT (K)</td>
<td>3069</td>
<td></td>
</tr>
<tr>
<td>Duv</td>
<td>0.0002</td>
<td></td>
</tr>
<tr>
<td>Chromaticity (x, y)</td>
<td>x=0.4323</td>
<td>y=0.4029</td>
</tr>
<tr>
<td>Chromaticity (u’, v’)</td>
<td>u’=0.2481</td>
<td>v’=0.5202</td>
</tr>
<tr>
<td>Color Rendering Index (CRI)</td>
<td>83.3</td>
<td></td>
</tr>
<tr>
<td>R9</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

**Photometric Measurement – Goniophotometer Method:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>DLC V4.0 Pass Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>120.0</td>
<td></td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Total Luminous (lm)</td>
<td>3228.7</td>
<td>3131.5</td>
</tr>
<tr>
<td>Luminous Efficacy (lm/W)</td>
<td>111.57</td>
<td>109.15</td>
</tr>
<tr>
<td>Zonal lumens in the 0-90° zone (%)</td>
<td>99.9</td>
<td></td>
</tr>
<tr>
<td>Beam Angle (°)</td>
<td>109.5</td>
<td></td>
</tr>
<tr>
<td>Center Beam Candle Power (cd)</td>
<td>1089</td>
<td></td>
</tr>
</tbody>
</table>
### Zonal Lumen Tabulation

#### Zonal Lumen Summary

<table>
<thead>
<tr>
<th>Zone</th>
<th>Lumens</th>
<th>% Luminaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>830.8</td>
<td>25.7%</td>
</tr>
<tr>
<td>0-40</td>
<td>1,404.9</td>
<td>43.5%</td>
</tr>
<tr>
<td>0-60</td>
<td>2,645.9</td>
<td>82%</td>
</tr>
<tr>
<td>60-90</td>
<td>580.2</td>
<td>18%</td>
</tr>
<tr>
<td>70-100</td>
<td>203.9</td>
<td>6.3%</td>
</tr>
<tr>
<td>90-120</td>
<td>0.2</td>
<td>0%</td>
</tr>
<tr>
<td>0-90</td>
<td>3,226.1</td>
<td>99.9%</td>
</tr>
<tr>
<td>90-180</td>
<td>2.2</td>
<td>0.1%</td>
</tr>
<tr>
<td>0-180</td>
<td>3,228.3</td>
<td>100%</td>
</tr>
</tbody>
</table>

#### Lumens Per Zone

<table>
<thead>
<tr>
<th>Zone</th>
<th>Lumens</th>
<th>% Total</th>
<th>Zone</th>
<th>Lumens</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>102.1</td>
<td>3.2%</td>
<td>90-100</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>10-20</td>
<td>285.6</td>
<td>8.8%</td>
<td>100-110</td>
<td>0.0</td>
<td>0%</td>
</tr>
<tr>
<td>20-30</td>
<td>443.1</td>
<td>13.7%</td>
<td>110-120</td>
<td>0.1</td>
<td>0%</td>
</tr>
<tr>
<td>30-40</td>
<td>574.1</td>
<td>17.8%</td>
<td>120-130</td>
<td>0.4</td>
<td>0%</td>
</tr>
<tr>
<td>40-50</td>
<td>633.9</td>
<td>19.6%</td>
<td>130-140</td>
<td>0.5</td>
<td>0%</td>
</tr>
<tr>
<td>50-60</td>
<td>607.1</td>
<td>18.8%</td>
<td>140-150</td>
<td>0.4</td>
<td>0%</td>
</tr>
<tr>
<td>60-70</td>
<td>376.3</td>
<td>11.7%</td>
<td>150-160</td>
<td>0.4</td>
<td>0%</td>
</tr>
<tr>
<td>70-80</td>
<td>173.3</td>
<td>5.4%</td>
<td>160-170</td>
<td>0.3</td>
<td>0%</td>
</tr>
<tr>
<td>80-90</td>
<td>30.7</td>
<td>0.9%</td>
<td>170-180</td>
<td>0.1</td>
<td>0%</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>C (Deg)</th>
<th>0</th>
<th>23</th>
<th>45</th>
<th>68</th>
<th>90</th>
<th>113</th>
<th>135</th>
<th>158</th>
<th>180</th>
<th>203</th>
<th>225</th>
<th>248</th>
<th>270</th>
<th>293</th>
<th>315</th>
<th>338</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y (Deg)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

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
BUG Rating: B1-U1-G1

IESNA Luminaire Flux Distribution Table:

<table>
<thead>
<tr>
<th>Zone</th>
<th>Lumens</th>
<th>Luminaire %</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL - Front-Low(0-30)</td>
<td>421.38</td>
<td>13.1</td>
</tr>
<tr>
<td>FM - Front-Medium(30-60)</td>
<td>940</td>
<td>29.1</td>
</tr>
<tr>
<td>FH - Front-High(60-80)</td>
<td>296.88</td>
<td>9.2</td>
</tr>
<tr>
<td>FVH - Front-Very High(80-90)</td>
<td>15.871</td>
<td>0.5</td>
</tr>
<tr>
<td>Total Forward Light</td>
<td>1675.1</td>
<td>51.9</td>
</tr>
<tr>
<td>BL - Back-Low(0-30)</td>
<td>409.44</td>
<td>12.7</td>
</tr>
<tr>
<td>BM - Back-Medium(30-60)</td>
<td>875.46</td>
<td>27.1</td>
</tr>
<tr>
<td>BH - Back-High(60-80)</td>
<td>252.65</td>
<td>7.8</td>
</tr>
<tr>
<td>BVH - Back-Very High(80-90)</td>
<td>14.776</td>
<td>0.5</td>
</tr>
<tr>
<td>Total Back Light</td>
<td>1553.6</td>
<td>48.1</td>
</tr>
<tr>
<td>UL - Uplight-Low(90-100)</td>
<td>5.3535e-006</td>
<td>0.0</td>
</tr>
<tr>
<td>UH - Uplight-High(100-180)</td>
<td>2.2294</td>
<td>0.1</td>
</tr>
<tr>
<td>Total Up Light</td>
<td>2.2294</td>
<td>0.1</td>
</tr>
</tbody>
</table>

BUG(Back,Up,Glare) Rating: B1-U1-G1

<table>
<thead>
<tr>
<th>Zone</th>
<th>Downward Lumens</th>
<th>Upward Lumens</th>
<th>Total Lumens</th>
</tr>
</thead>
<tbody>
<tr>
<td>House Side</td>
<td>1552.3</td>
<td>1.2213</td>
<td>1553.6</td>
</tr>
<tr>
<td>Street Side</td>
<td>1674.1</td>
<td>1.0081</td>
<td>1675.1</td>
</tr>
</tbody>
</table>
### 2.2 Electrical, Photometric and Chromaticity Measurements
*(Refer to Work Instruction QD25)*

<table>
<thead>
<tr>
<th>Test date</th>
<th>2016-11-12</th>
<th>Test Ambient:</th>
<th>25.2 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Orientation</td>
<td>As intended</td>
<td>Stabilization Time (min)</td>
<td>90</td>
</tr>
<tr>
<td>Model Number</td>
<td>71342A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical Measurement:

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Voltage (Vac)</th>
<th>Frequency (Hz)</th>
<th>Current (A)</th>
<th>Power (W)</th>
<th>Power Factor</th>
<th>THD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GZE161105- BR2</td>
<td>120.0</td>
<td>60</td>
<td>0.2471</td>
<td>29.23</td>
<td>0.9858</td>
<td>9.01</td>
</tr>
<tr>
<td></td>
<td>277.0</td>
<td>60</td>
<td>0.1162</td>
<td>28.97</td>
<td>0.9002</td>
<td>11.35</td>
</tr>
</tbody>
</table>

DLC Pass Criteria

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Special Color Rendering Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>120.0</td>
<td>R1 80 R9 5</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td>R2 88 R10 71</td>
</tr>
<tr>
<td>CCT (K)</td>
<td>5030</td>
<td>R3 93 R11 80</td>
</tr>
<tr>
<td>Duv</td>
<td>0.0043</td>
<td>R4 81 R12 58</td>
</tr>
<tr>
<td>Chromaticity (x, y)</td>
<td>x=0.3450 y=0.3602</td>
<td>R5 81 R13 83</td>
</tr>
<tr>
<td>Chromaticity (u’, v’)</td>
<td>u’=0.2081 v’=0.4888</td>
<td>R6 83 R14 96</td>
</tr>
<tr>
<td>Color Rendering Index (CRI)</td>
<td>82.5</td>
<td>R7 87 R15 75</td>
</tr>
<tr>
<td>R9</td>
<td>5</td>
<td>R8 66 -- --</td>
</tr>
</tbody>
</table>

#### Chromaticity Measurement - Sphere-Spectroradiometer Method:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Special Color Rendering Indices</th>
</tr>
</thead>
</table>

#### Photometric Measurement – Sphere-Spectroradiometer Method:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>DLC V4.0 Pass Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>120.0</td>
<td></td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Total Luminous (lm)</td>
<td>3538</td>
<td>&gt;=1000 (-10%)</td>
</tr>
<tr>
<td>Luminous Efficacy (lm/W)</td>
<td>121.04</td>
<td>Standard: &gt;= 90(-3%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>DLC V4.0 Pass Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Voltage (V)</td>
<td>277.0</td>
<td></td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Total Luminous (lm)</td>
<td>3431</td>
<td>&gt;=1000 (-10%)</td>
</tr>
<tr>
<td>Luminous Efficacy (lm/W)</td>
<td>118.43</td>
<td>Standard: &gt;= 90(-3%)</td>
</tr>
</tbody>
</table>
Spectral Power Distribution & Chromaticity Diagram

![Spectrum Diagram]

![Chromaticity Diagram]

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
### 3. Test Equipment

<table>
<thead>
<tr>
<th>Equipment ID</th>
<th>Equipment Name</th>
<th>Last Calibration Date</th>
<th>Next Calibration Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-R-336</td>
<td>2 meter Integrating Sphere</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>ST-R-331</td>
<td>Spectral analysis system HAAS-2000</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>D204</td>
<td>Standard Lamp</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>PF2010</td>
<td>Power Meter for Integrating Sphere</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>EE-09</td>
<td>Goniophotometer system</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>D908S</td>
<td>Standard Lamp</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>PF210</td>
<td>Power Meter for Goniophotometer</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
<tr>
<td>ST-R-181A</td>
<td>Temperature Tester</td>
<td>2016-07-01</td>
<td>2017-06-30</td>
</tr>
</tbody>
</table>

Uncertainty:
- Photometric Measurement (Sphere): 1.74%
- Chromaticity Measurement (Sphere): 14.3K
- Photometric Measurement (Goniophotometer): 1.62%

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