Integrating Sphere Test Report

Relevant Standards
IES LM-79-2008
ANSI C78.377-2011, ANSI C82.77-2002

Prepared For
Elemental LED Inc, DBA Diode LED
Wes Buck
Suite 211,1195 Park Ave.
Emeryville, CA 94608
United States

Catalog Number
DI-12V-2VA63-9016
Order Number
11358060
Test Number
872637

Test Date
2015-01-22

Prepared By
Javier Caban, Technician

Approved By
Zachary Mooney, Senior Engineering Associate

The results contained in this report pertain only to the tested sample.
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Luminaire Description: LED strip
Lamp: 18 white LEDs
Mounting: Surface

Summary of Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiant Flux</td>
<td>1210 mW</td>
</tr>
<tr>
<td>Luminous Flux</td>
<td>333.6 lm</td>
</tr>
<tr>
<td>Luminaire Efficacy</td>
<td>76.7 lm/W</td>
</tr>
<tr>
<td>CCT</td>
<td>4043 K</td>
</tr>
<tr>
<td>CRI (Ra)</td>
<td>94.7</td>
</tr>
<tr>
<td>Chromaticity (x)</td>
<td>0.3782</td>
</tr>
<tr>
<td>Chromaticity (y)</td>
<td>0.3744</td>
</tr>
<tr>
<td>Chromaticity (u)</td>
<td>0.2245</td>
</tr>
<tr>
<td>Chromaticity (v)</td>
<td>0.3335</td>
</tr>
<tr>
<td>Duv</td>
<td>-0.0011</td>
</tr>
</tbody>
</table>

Test Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>25.4 °C</td>
</tr>
<tr>
<td>Voltage</td>
<td>12.00 VDC</td>
</tr>
<tr>
<td>Current</td>
<td>0.3622 A</td>
</tr>
<tr>
<td>Power</td>
<td>4.347 W</td>
</tr>
</tbody>
</table>

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for this measurement.
Color Quality - Integrating Sphere
Integrating Sphere Test Conditions

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Voltage</th>
<th>Current</th>
<th>Power</th>
<th>Power Factor</th>
<th>Frequency</th>
<th>Current THD</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4 °C</td>
<td>12.00 VAC</td>
<td>0.3622 A</td>
<td>4.347 W</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Summary of Results

- Total Output: 334 Lumens
- Efficacy: 76.7 lm/w
- CCT: 4043 K
- CRI (Ra): 94.7
- CRI (R9): 84.4
- Peak Wavelength: 451.7 nm
- Dominant Wavelength: 579.1 nm
- S/P Ratio: 1.8

Chromaticity (x): 0.3782
Chromaticity (y): 0.3744
Chromaticity (u'): 0.2245
Chromaticity (v'): 0.5002
TM-30 Rf: 91.4
TM-30 Rg: 100.3
Duv: -0.0011

CIE 1931, 2 Degree

Nominal CCT Quadrangles

Inside Quad 4100 K

Color Rendering Index Detail

<table>
<thead>
<tr>
<th>Ra (CRI)</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>R7</th>
<th>R8</th>
<th>R9</th>
<th>R10</th>
<th>R11</th>
<th>R12</th>
<th>R13</th>
<th>R14</th>
</tr>
</thead>
<tbody>
<tr>
<td>94.7</td>
<td>95.2</td>
<td>95.7</td>
<td>93.9</td>
<td>94.8</td>
<td>94.0</td>
<td>92.1</td>
<td>97.3</td>
<td>94.3</td>
<td>84.4</td>
<td>88.3</td>
<td>93.8</td>
<td>74.7</td>
<td>95.2</td>
<td>96.2</td>
</tr>
</tbody>
</table>

Flux vs Wavelength

Spectral Flux (mW/nm) vs Wavelength (nm)