Solid-State Lighting Module (SSLM)

The project’s goal was to build a light-emitting-diode (LED)-based light fixture that is identical in fit, form, and function to the existing International Space Station (ISS) General Luminaire Assembly (GLA) light fixture and fly it on the ISS in early FY 2008 as a Station Detailed Test Objective (SDTO).

Comparison of GLA and SSLM

<table>
<thead>
<tr>
<th>Specification</th>
<th>GLA</th>
<th>SSLM</th>
<th>SSLM Benefits to ISS/Future Spacecraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>30 W</td>
<td>30 W</td>
<td>n/a</td>
</tr>
<tr>
<td>Photo-optic Luminous Flux</td>
<td>449 lm</td>
<td>479 lm</td>
<td>Better illumination = safer operation</td>
</tr>
<tr>
<td>Mass</td>
<td>4.0 kg</td>
<td>3.6 kg</td>
<td>Less up-mass = more flexibility for manifesting</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>120 VDC</td>
<td>120 VDC</td>
<td>n/a</td>
</tr>
<tr>
<td>Dimmability</td>
<td>flickering</td>
<td>0–100%</td>
<td>No flicker = less eye strain</td>
</tr>
<tr>
<td>Planned Life</td>
<td>~5,000 hr</td>
<td>~50,000 hr</td>
<td>Less maintenance = less up-mass and crew time</td>
</tr>
</tbody>
</table>

SSLM.

https://ntrs.nasa.gov/search.jsp?R=20090022250 2019-08-02T07:16:30+00:00Z
Our design offers the following strengths:

- proven component hardware: Our design uses components flown in other KSC-developed hardware;
- “heat path” thermal pad: LED array heat is transferred from the circuit board by silicon pad, negating the need for a cooling fan;
- variable colorimetry: The output light color can be changed by inserting different LED combinations.

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