

The image shows a large, modern building with a glass facade at dusk. The OSRAM logo is illuminated in orange on the glass. The building's interior lights are visible through the windows, and the sky is a deep blue.

# Growking Horticultural system estimation

01.03.2019 | SSL Application Service Europe & Emerging Markets

E. Rachkova

Light is OSRAM



# Growking BluRail 40

## Requirements and Boundary Conditions:

Photonic flux on surface: to be evaluated

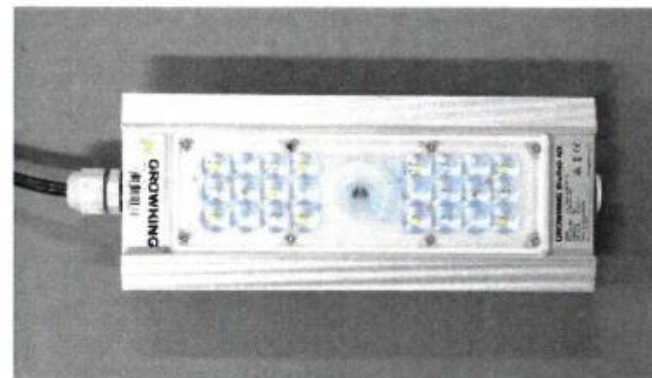
Distance to plant: 15cm, 30cm, 40cm, 50cm

Illuminated surface to be used for calculations: **50cm x 50cm**

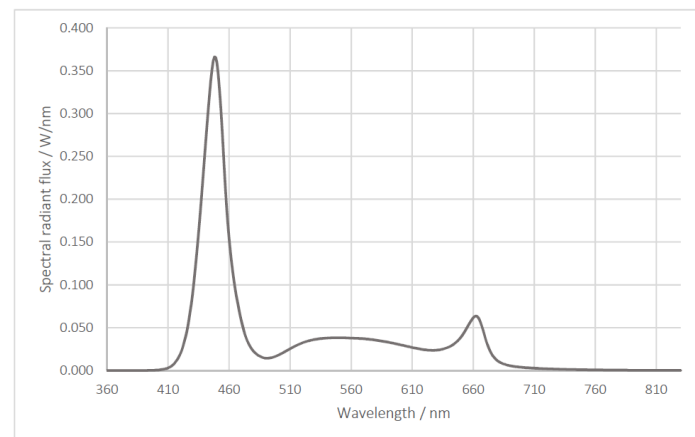
Total Photosynthetic Photon Flux (400nm – 700nm): 67.1  $\mu\text{mol/s}$

Only the light from the LED considered for simulation, no light from the sun!

Environment influence was not taken into account (maintenance factor = 1)



Dimensions [mm]:  
210 x 90 x 43



# System calculation Growking BluRail 40

distance to plant 15 cm

Photosynthetic Photon Flux: **67.1**  $\mu\text{mol/s}$

Result:

- Average **260**  $\mu\text{mol/s/m}^2$
- Maximal **1087**  $\mu\text{mol/s/m}^2$
- Minimal **4.00**  $\mu\text{mol/s/m}^2$

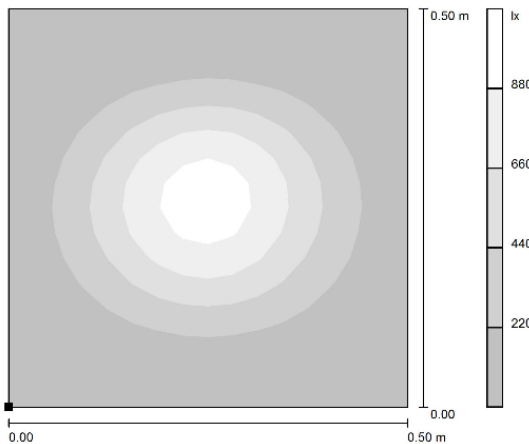
Raster: 16 x 16 Punkte

$E_m$  [lx]  
260

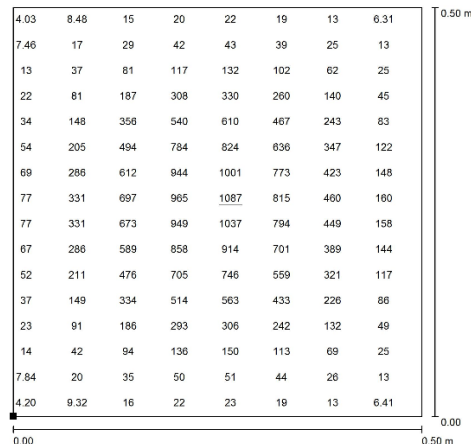
$E_{\min}$  [lx]  
4.00

$E_{\max}$  [lx]  
1087

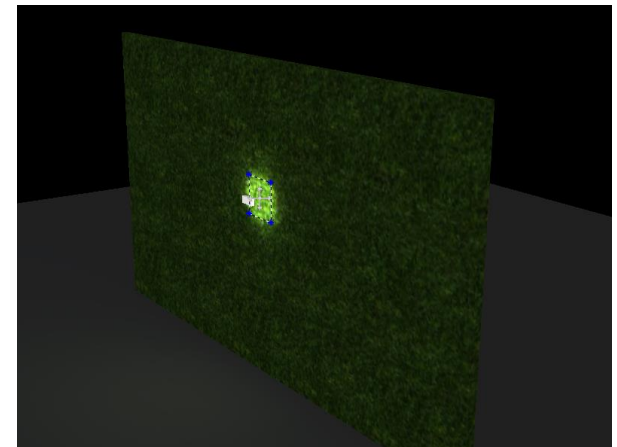
Grey rendering



Value mesh



3D rendering



# System calculation Growking BluRail 40

distance to plant 30 cm

Photosynthetic Photon Flux: **67.1**  $\mu\text{mol/s}$

Result:

- Average **187**  $\mu\text{mol/s/m}^2$
- Maximal **294**  $\mu\text{mol/s/m}^2$
- Minimal **62**  $\mu\text{mol/s/m}^2$

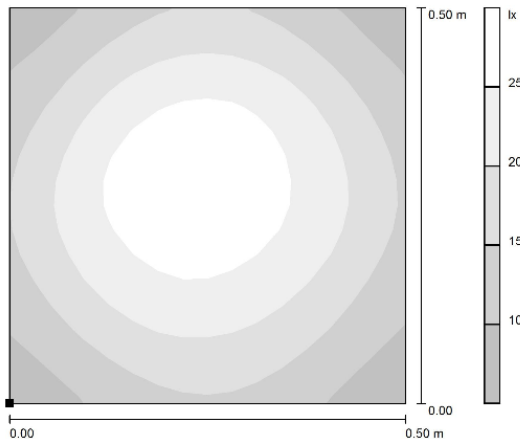
Raster: 16 x 16 Punkte

$E_m$  [lx]  
187

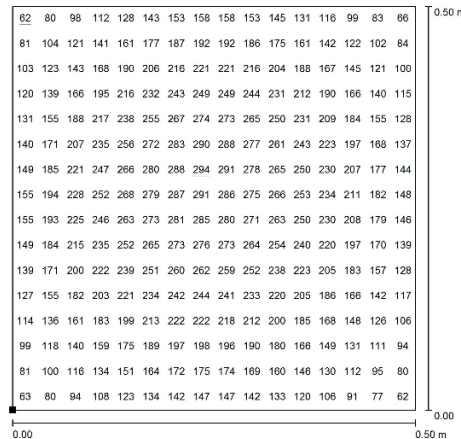
$E_{\min}$  [lx]  
62

$E_{\max}$  [lx]  
294

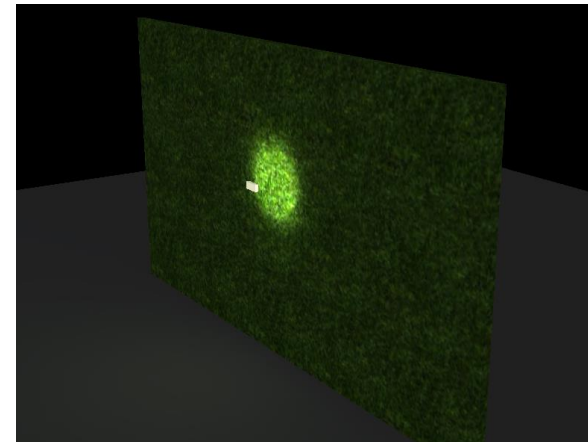
Grey rendering



Value mesh



3D rendering



# System calculation Growking BluRail 40

distance to plant 40 cm

Photosynthetic Photon Flux: **67.1**  $\mu\text{mol/s}$

Result:

- Average **130**  $\mu\text{mol/s/m}^2$
- Maximal **167**  $\mu\text{mol/s/m}^2$
- Minimal **72**  $\mu\text{mol/s/m}^2$

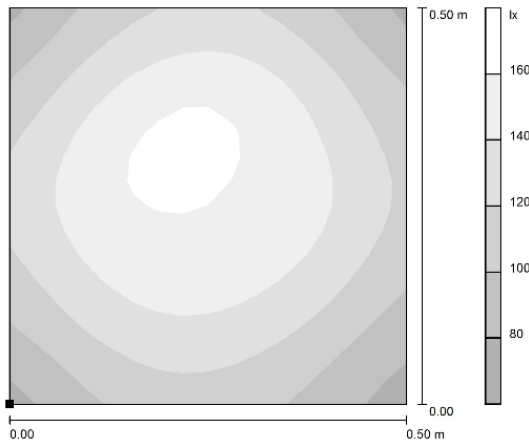
Raster: 16 x 16 Punkte

$E_m$  [lx]  
130

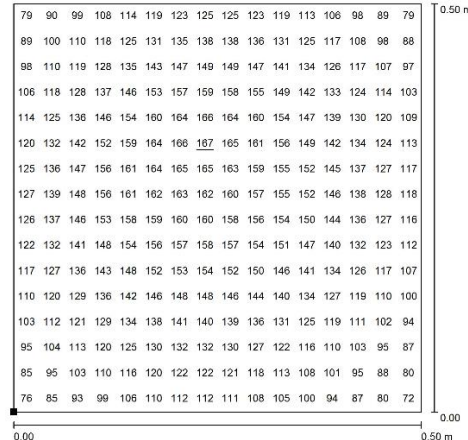
$E_{min}$  [lx]  
72

$E_{max}$  [lx]  
167

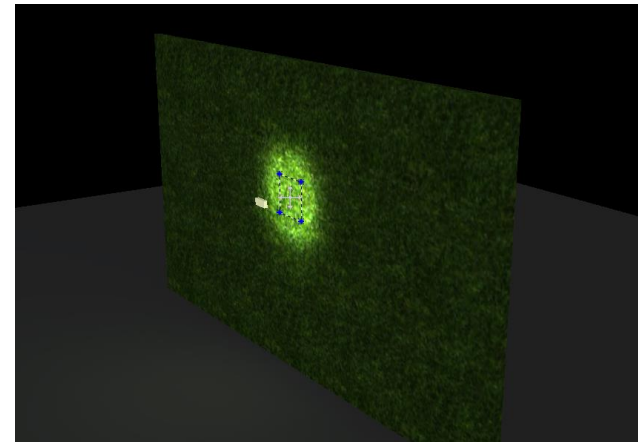
### Grey rendering



### Value mesh



### 3D rendering



# System calculation Growking BluRail 40

distance to plant 50 cm

Photosynthetic Photon Flux: **67.1**  $\mu\text{mol/s}$

Result:

- Average **91**  $\mu\text{mol/s/m}^2$
- Maximal **107**  $\mu\text{mol/s/m}^2$
- Minimal **61**  $\mu\text{mol/s/m}^2$

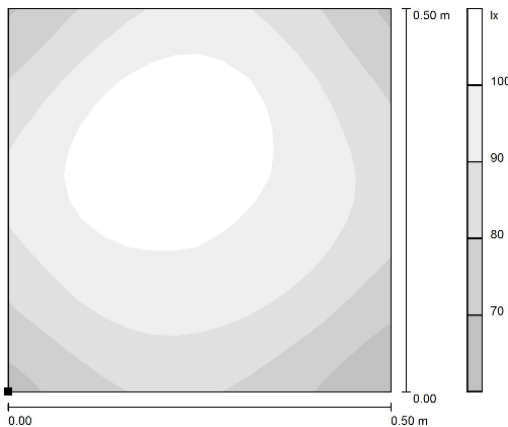
Raster: 16 x 16 Punkte

$E_m$  [lx]  
91

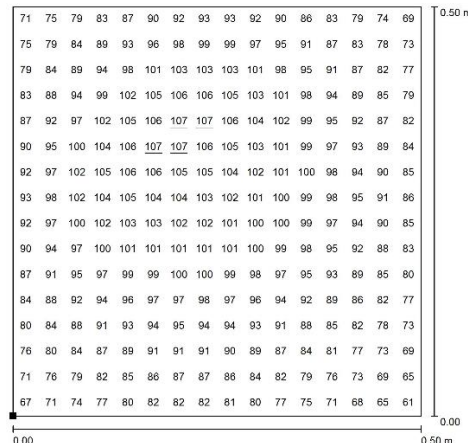
$E_{\min}$  [lx]  
61

$E_{\max}$  [lx]  
107

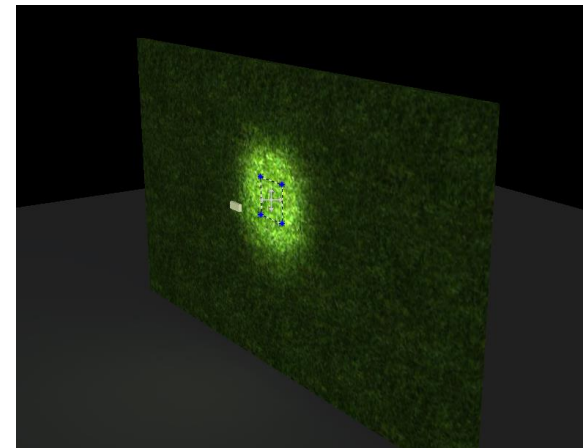
Grey rendering



Value mesh



3D rendering



# Disclaimer

---

All information contained in this document has been checked with the greatest care. OSRAM Opto Semiconductors GmbH can however, not be made liable for any damage that occurs in connection with the use of these contents.

OSRAM Opto Semiconductor GmbH makes no representations and warranties as to a possible interference with third parties' intellectual property rights in view of products originating from one of OSRAM Opto Semiconductor GmbH's partners, or in view of products being a combination of an OSRAM Opto Semiconductor GmbH's product and a product of one of OSRAM Opto Semiconductor GmbH's partners. Furthermore, OSRAM Opto Semiconductors GmbH cannot be made liable for any damage that occurs in connection with the use of a product of one of OSRAM Opto Semiconductor GmbH's partners, or with the use of a combination of an OSRAM Opto Semiconductor GmbH's product and a product of one of OSRAM Opto Semiconductor GmbH's partners.

**Thank you.**