GROWKING®
LED LIGHTING TECHNOLOGY

BluRail 40

Test Report BluRail 40

OSRAM GmbH Central Laboratory for Light Measurements

growking.de | Inh. Thomas Brändle
Stadionstraße 58 | D-70771 Leinfelden-Echterdingen | Deutschland
Telefon +49 711 504 286 72 | Telefax +49 711 504 286 73 | info@growking.de
USt.-IdNr. DE154717066 WEEE Reg. Nr. DE 66415516

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OSRAM GmbH · Central Laboratory for Light Measurements (I LMA LMS) · Berliner Allee 65 · 86153 Augsburg

Subject	**Photometric Evaluation**
Object	**Luminaire**
Manufacturer	**Growking**
Type	**BluRail 40**
Serial number	**g196**
Applicant	**Growking** **Stadionstraße 58** **D-70771 Leinfelden-Echterdingen**
Represented by	**OSRAM Opto Semiconductors GmbH**
Customer Order No.	**PASS 34712**
Date of measurement	**23.01.2019**
Number of pages	3

Dimensions [mm]:
210 x 90 x 43

• Type of measurement

Determination of the electrical data, luminous intensity distribution, the luminous flux and the spectral power distribution by adjusting the nominal system voltage.

• Results of measurement

Measurand	value	uncertainty (k=2)
System voltage U_S [V] (given quantity)	230.0	2.3
System current I_S [A]	0.1787	0.0018
System power P_S [W]	39.78	0.40
Power factor λ	0.97	0.02
Luminous flux Φ [lm]	2590	70
Luminous efficacy η_V [lm/W]	65.0	1.9

• Attached ascii data

Spectral power distribution* [W/nm]: 013-19-g196 BluRail 40.prn

Eulumdat (*.ldt/*.ies): 013-19-g196 BluRail 40 - raw.ldt (*.ies)
013-19-g196 BluRail 40 - sym.ldt (*.ies)

Date	Acting head of the laboratory	Person in charge
13.02.2019	N. Wagner	N. Leise

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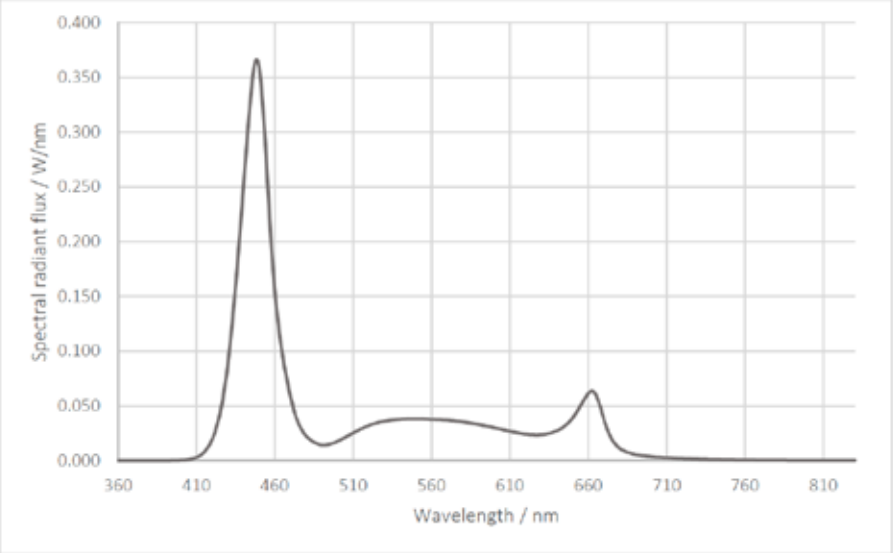
• Spectral power distribution*



• Colorimetric values

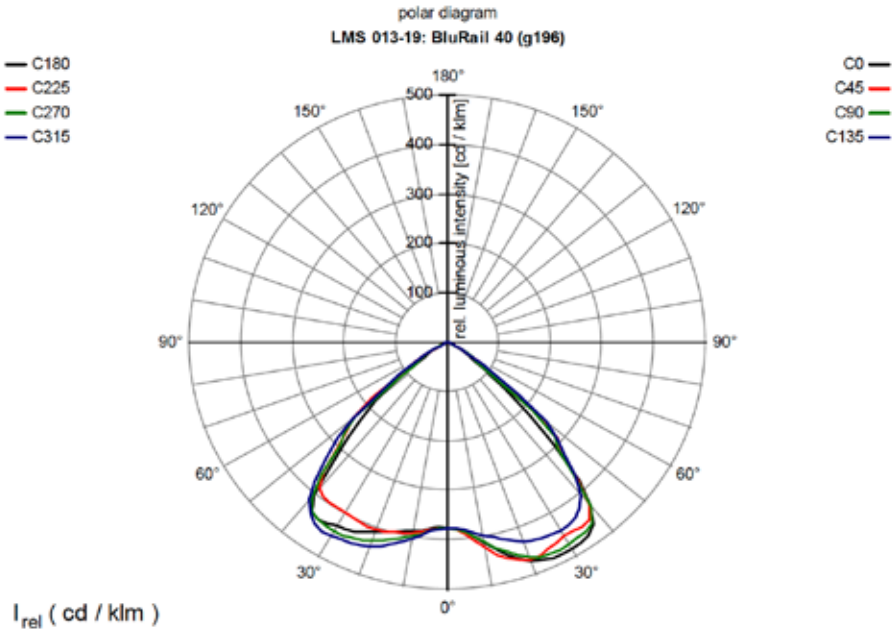
Measurand	value	uncertainty (k=2)
Color coordinate *x*	0.2284	0.0035
Color coordinate *y*	0.1491	0.0035
Correlated color temperature *CCT* [K]	-	-
Color distance *DC*	-	-

• Photosynthesis values

Measurand	value	uncertainty (k=2)
Radiant power $\Phi_{e,380...780\,nm}$ [W]	16.01	0.41
Photosynthetic photon flux $PPF_{400...700\,nm}$ [µmol/s]	67.1	1.7
Photosynthetic photon flux $PPF_{600...750\,nm}$ [µmol/s]	15.5	0.4
Photosynthesis *sy1* [W] according to DIN 5031-10 (2018)	11.7	0.3
Photosynthesis *sy2* [W] according to DIN 5031-10 (2018)	10.0	0.3

*Values lower than detection limit were set to zero

• Luminous intensity distribution



I_{rel} (cd / klm)

• Measurement conditions

Orientation of the object:	Horizontal, radiation downwards, power cord in C90
Power supply:	Alternating current at 50 Hz, voltage as adjusted quantity
System voltage:	Measurement at the end of the power cord
Time course:	Burning in up to photometric stability > 90 minutes at measurement conditions
Ambient temperature:	(25 ± 1) °C

• Equipment used

LMT GO-DS 2000
Integrating Sphere

• Measurement methods

CIE 84 – Technical Report: The measurement of luminous flux
CIE 15:2004 – Technical Report: Colorimetry
IES LM-79-08: Electrical and Photometric Measurements of Solid-State Lighting Product
DIN EN 13032-1:2004 (D): Licht und Beleuchtung – Messung und Darstellung photometrischer Daten von Lampen und Leuchten – Teil 1: Messung und Datenformat
DIN EN 13032-4:2015-08 (D): Licht und Beleuchtung - Messung und Darstellung photometrischer Daten von Lampen und Leuchten - Teil 4: LED-Lampen, -Module und -Leuchten
DIN – Leitfaden zur Angabe der Unsicherheit beim Messen
(Deutsche Übersetzung des „Guide to the Expression of Uncertainty in Measurement")
1. Auflage 1995 Beuth Verlag GmbH Berlin, Wien, Zürich
DIN 5031-10 (2018) – Strahlungsphysik im optischen Bereich und Lichttechnik – Teil 10: Photobiologisch wirksame Strahlung, Größen, Kurzzeichen und Wirkungsspektren