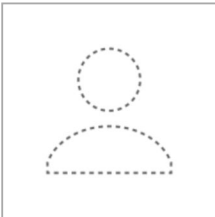


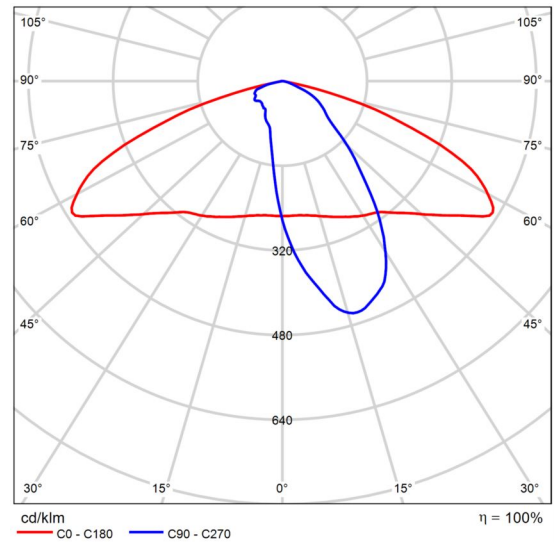
**Riigitee 21102 lõigule ja kelgumäele, Lümända alevikus,
rajatavad valgusmastid**

Product data sheet

Not yet a DIALux member - MRUE 020 730 L04 AA016_Bin-L_TH



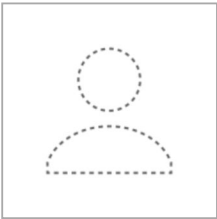
Article No.	Micro Martin 20 W 16 LEDs
P	20.0 W
Φ_{Lamp}	2923 lm
$\Phi_{Luminaire}$	2923 lm
η	100.00 %
Luminous efficacy	146.2 lm/W
CCT	3000 K
CRI	70



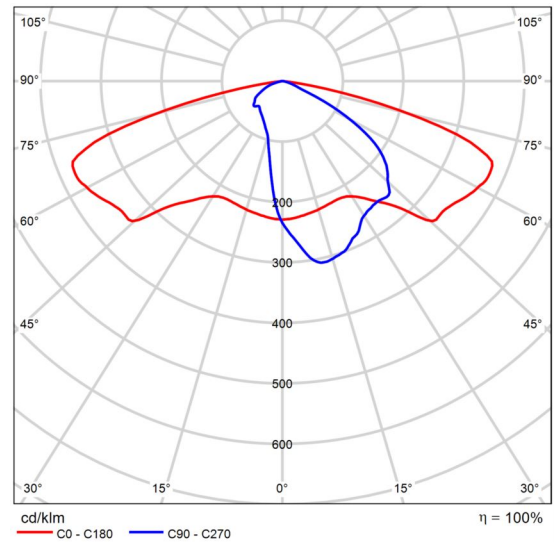
Polar LDC

Product data sheet

Not yet a DIALux member - MRUE 050 730 L22 AA016_Bin-L_TH



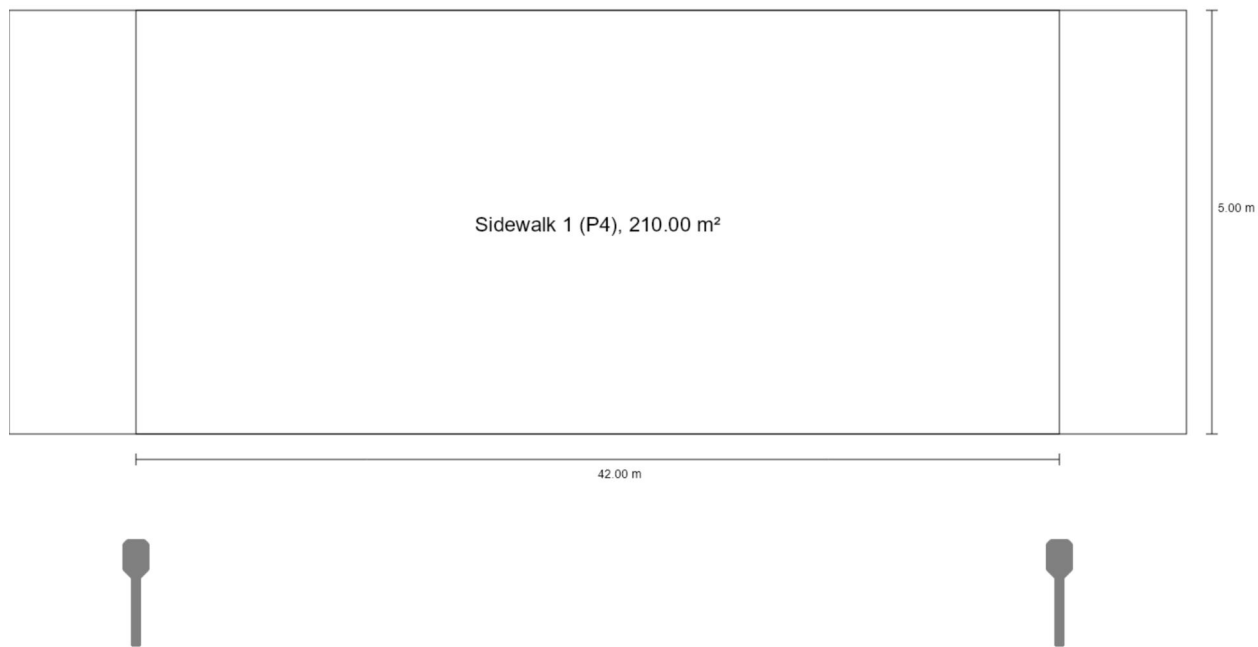
Article No.	Micro Martin 50 W 16 LEDs
P	50.0 W
Φ_{Lamp}	5989 lm
$\Phi_{Luminaire}$	5989 lm
η	100.00 %
Luminous efficacy	119.8 lm/W
CCT	3000 K
CRI	70



Polar LDC

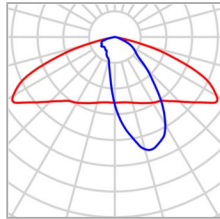
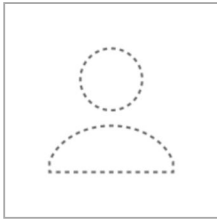
Kelgumägi

Summary (according to EN 13201:2015)



Kelgumägi

Summary (according to EN 13201:2015)



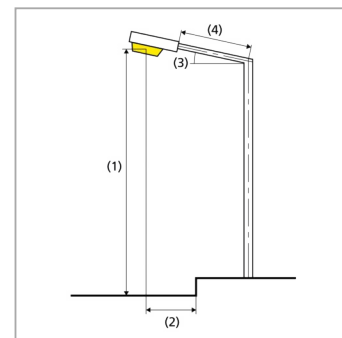
Manufacturer	Not yet a DIALux member	P	20.0 W
Article No.	Micro Martin 20 W 16 LEDs	Φ_{Lamp}	2923 lm
Article name	MRUE 020 730 L04 AA016_Bin-L_TH	$\Phi_{Luminaire}$	2923 lm
Fitting	1x 16 LEDs bin L	η	100.00 %

Kelgumägi

Summary (according to EN 13201:2015)

MRUE 020 730 L04 AA016_Bin-L_TH (single side bottom)

Pole distance	42.000 m
(1) Light spot height	8.000 m
(2) Light point overhang	-1.500 m
(3) Boom inclination	0.0°
(4) Boom length	1.000 m
Annual operating hours	4000 h: 100.0 %, 20.0 W
Wattage / route	480.0 W/km
ULR / ULOR	0.00 / 0.00
Max. luminous intensities Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.	$\geq 70^\circ$: 437 cd/klm $\geq 80^\circ$: 23.9 cd/klm $\geq 90^\circ$: 1.52 cd/klm
Luminous intensity class The luminous intensity values in [cd/klm] for calculation of the luminous intensity class refer to the luminaire luminous flux according to EN 13201:2015.	G*4
Glare index class	D.6
MF	0.80



Kelgumägi

Summary (according to EN 13201:2015)

Results for valuation fields

A maintenance factor of 0.80 was used for calculating for the installation.

	Symbol	Calculated	Target	Check
Sidewalk 1 (P4)	E_{av}	5.22 lx	[5.00 - 7.50] lx	✓
	E_{min}	1.24 lx	≥ 1.00 lx	✓

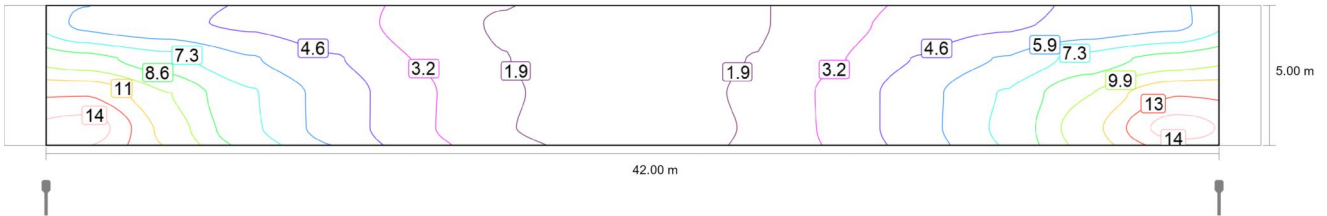
Results for energy efficiency indicators

	Symbol	Calculated	Energy Consumption
Kelgumägi	D_p	0.018 W/lx*m ²	-
MRUE 020 730 L04 AA016_Bin-L_TH (single side bottom)	D_e	0.4 kWh/m ² yr	80.0 kWh/yr

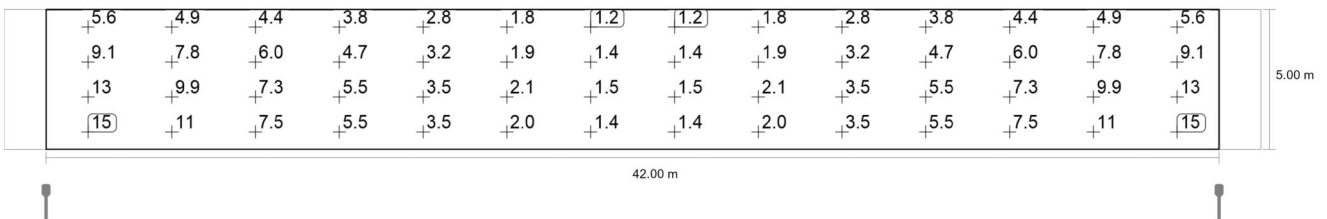
Kelgumägi
Sidewalk 1 (P4)

Results for valuation field

	Symbol	Calculated	Target	Check
Sidewalk 1 (P4)	E_{av}	5.22 lx	[5.00 - 7.50] lx	✓
	E_{min}	1.24 lx	≥ 1.00 lx	✓



Maintenance value, horizontal illuminance [lx] (Iso-illuminance curves)



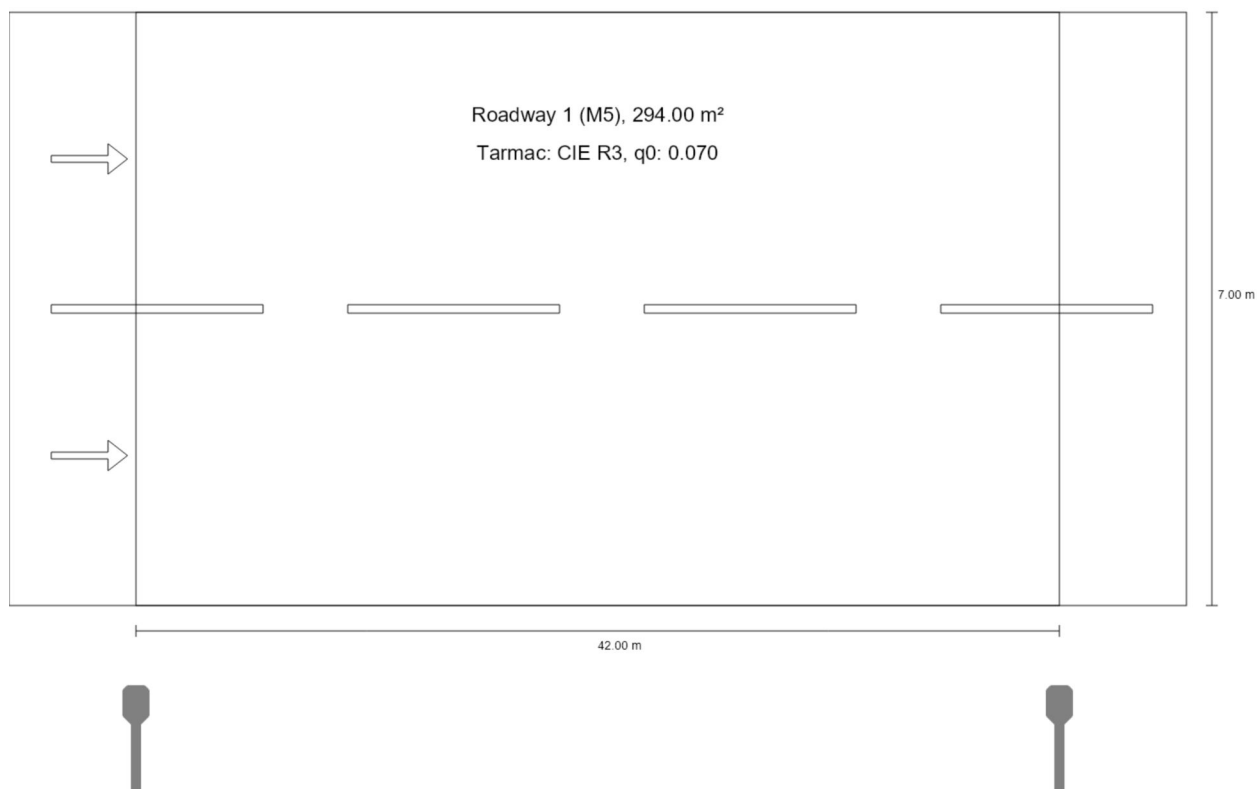
Maintenance value, horizontal illuminance [lx] (Value grid)

m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
4.375	5.56	4.87	4.38	3.84	2.78	1.78	1.24	1.24	1.78	2.78	3.84	4.38	4.87	5.56
3.125	9.12	7.78	6.02	4.68	3.18	1.95	1.37	1.37	1.95	3.18	4.68	6.02	7.78	9.12
1.875	12.54	9.93	7.34	5.45	3.54	2.11	1.49	1.49	2.11	3.54	5.45	7.34	9.93	12.54
0.625	14.61	10.81	7.47	5.46	3.52	2.02	1.37	1.37	2.02	3.52	5.46	7.47	10.81	14.61

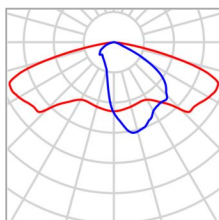
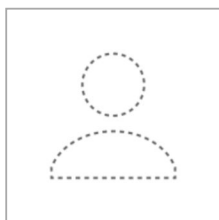
Maintenance value, horizontal illuminance [lx] (Value chart)

	E_{av}	E_{min}	E_{max}	$U_0 (g_1)$	g_2
Maintenance value, horizontal illuminance	5.22 lx	1.24 lx	14.6 lx	0.24	0.09

Summary (according to EN 13201:2015)



Summary (according to EN 13201:2015)

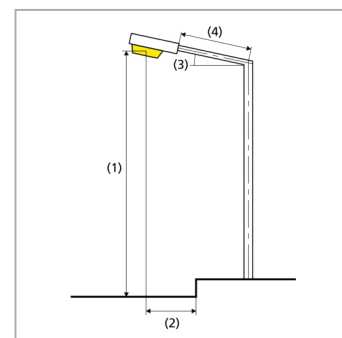


Manufacturer	Not yet a DIALux member	P	50.0 W
Article No.	Micro Martin 50 W 16 LEDs	Φ_{Lamp}	5989 lm
Article name	MRUE 050 730 L22 AA016_Bin-L_TH	$\Phi_{\text{Luminaire}}$	5989 lm
Fitting	1x 16 LEDs bin L	η	100.00 %

Summary (according to EN 13201:2015)

MRUE 050 730 L22 AA016_Bin-L_TH (single side bottom)

Pole distance	42.000 m
(1) Light spot height	8.000 m
(2) Light point overhang	-1.200 m
(3) Boom inclination	0.0°
(4) Boom length	1.000 m
Annual operating hours	4000 h: 100.0 %, 50.0 W
Wattage / route	1200.0 W/km
ULR / ULOR	0.00 / 0.00
Max. luminous intensities Any direction forming the specified angle from the downward vertical, with the luminaire installed for use.	≥ 70°: 602 cd/klm ≥ 80°: 159 cd/klm ≥ 90°: 1.91 cd/klm
Luminous intensity class The luminous intensity values in [cd/klm] for calculation of the luminous intensity class refer to the luminaire luminous flux according to EN 13201:2015.	G*1
Glare index class	D.5
MF	0.80



Summary (according to EN 13201:2015)

Results for valuation fields

A maintenance factor of 0.80 was used for calculating for the installation.

	Symbol	Calculated	Target	Check
Roadway 1 (M5)	L_{av}	0.50 cd/m ²	≥ 0.50 cd/m ²	✓
	U_o	0.43	≥ 0.35	✓
	U_l	0.50	≥ 0.40	✓
	TI	15 %	≤ 15 %	✓
	R_{EI}	0.53	≥ 0.30	✓

Results for energy efficiency indicators

	Symbol	Calculated	Energy Consumption
Riigitee	D_p	0.021 W/lx*m ²	-
MRUE 050 730 L22 AA016_Bin-L_TH (single side bottom)	D_e	0.7 kWh/m ² yr	200.0 kWh/yr

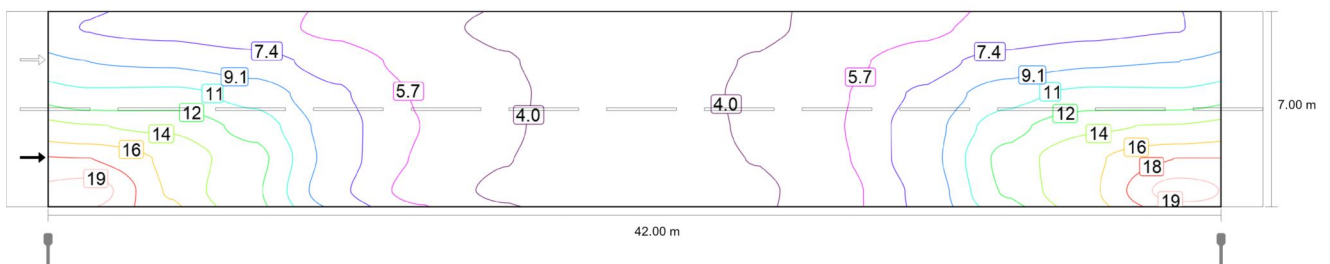
Roadway 1 (M5)

Results for valuation field

	Symbol	Calculated	Target	Check
Roadway 1 (M5)	L_{av}	0.50 cd/m ²	≥ 0.50 cd/m ²	✓
	U_o	0.43	≥ 0.35	✓
	U_l	0.50	≥ 0.40	✓
	TI	15 %	≤ 15 %	✓
	R_{El}	0.53	≥ 0.30	✓

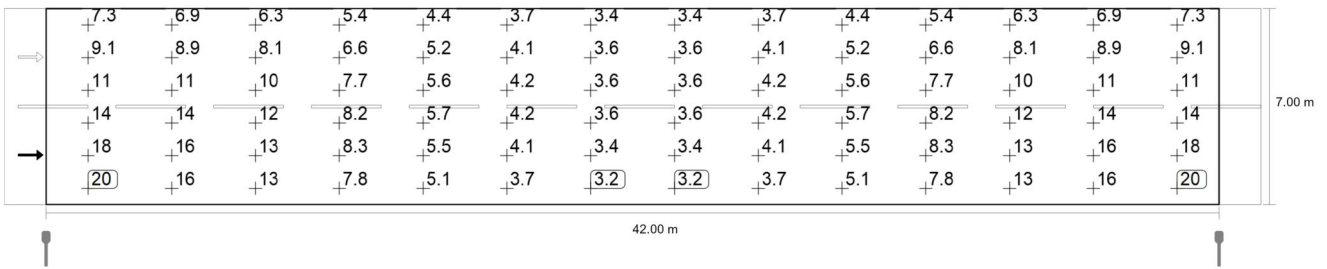
Results for observer

	Symbol	Calculated	Target	Check
Observer 1 Position: -60.000 m, 1.750 m, 1.500 m	L_{av}	0.50 cd/m ²	≥ 0.50 cd/m ²	✓
	U_o	0.46	≥ 0.35	✓
	U_l	0.50	≥ 0.40	✓
	TI	15 %	≤ 15 %	✓
Observer 2 Position: -60.000 m, 5.250 m, 1.500 m	L_{av}	0.56 cd/m ²	≥ 0.50 cd/m ²	✓
	U_o	0.43	≥ 0.35	✓
	U_l	0.67	≥ 0.40	✓
	TI	9 %	≤ 15 %	✓



Roadway 1 (M5)

Maintenance value, horizontal illuminance [lx] (Iso-illuminance curves)

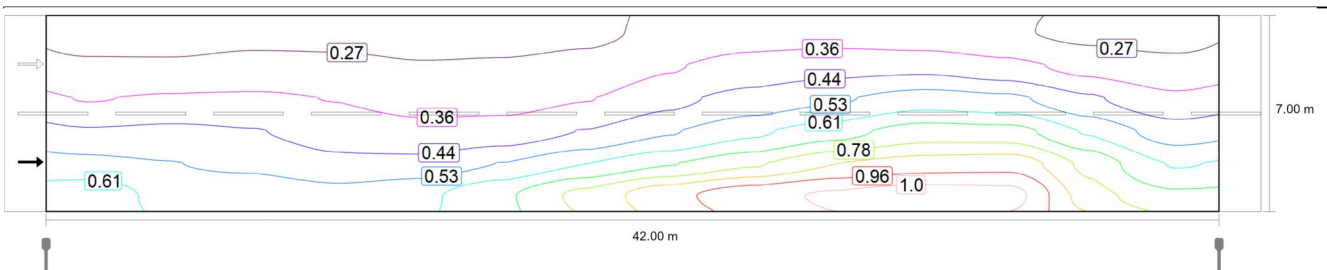


Maintenance value, horizontal illuminance [lx] (Value grid)

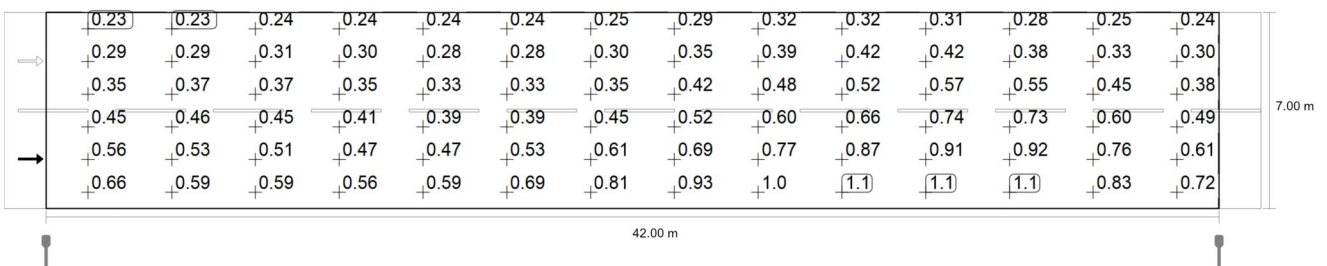
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
6.417	7.32	6.89	6.26	5.35	4.43	3.74	3.39	3.39	3.74	4.43	5.35	6.26	6.89	7.32
5.250	9.06	8.85	8.15	6.61	5.16	4.10	3.59	3.59	4.10	5.16	6.61	8.15	8.85	9.06
4.083	11.18	11.27	10.13	7.66	5.57	4.23	3.64	3.64	4.23	5.57	7.66	10.13	11.27	11.18
2.917	14.27	13.87	11.80	8.22	5.68	4.20	3.56	3.56	4.20	5.68	8.22	11.80	13.87	14.27
1.750	17.53	15.52	13.02	8.30	5.52	4.07	3.40	3.40	4.07	5.52	8.30	13.02	15.52	17.53
0.583	20.06	15.62	12.70	7.78	5.08	3.71	3.16	3.16	3.71	5.08	7.78	12.70	15.62	20.06

Maintenance value, horizontal illuminance [lx] (Value chart)

	E_{av}	E_{min}	E_{max}	$U_o (g_1)$	g_2
Maintenance value, horizontal illuminance	7.94 lx	3.16 lx	20.1 lx	0.40	0.16



Observer 1: Maintenance value, luminance with dry roadway [cd/m^2] (Iso-illuminance curves)



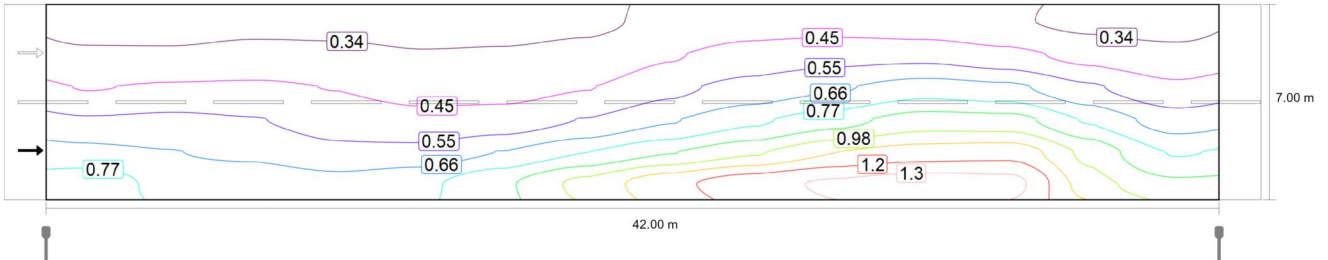
Roadway 1 (M5)

Observer 1: Maintenance value, luminance with dry roadway [cd/m^2] (Value grid)

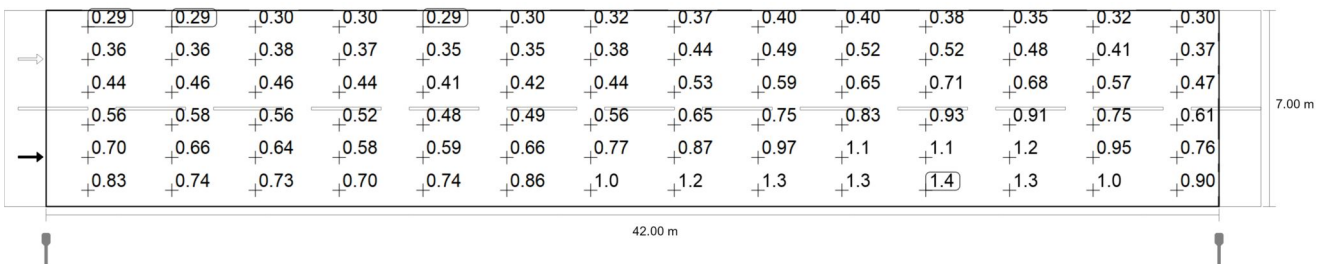
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
6.417	0.23	0.23	0.24	0.24	0.24	0.24	0.25	0.29	0.32	0.32	0.31	0.28	0.25	0.24
5.250	0.29	0.29	0.31	0.30	0.28	0.28	0.30	0.35	0.39	0.42	0.42	0.38	0.33	0.30
4.083	0.35	0.37	0.37	0.35	0.33	0.33	0.35	0.42	0.48	0.52	0.57	0.55	0.45	0.38
2.917	0.45	0.46	0.45	0.41	0.39	0.39	0.45	0.52	0.60	0.66	0.74	0.73	0.60	0.49
1.750	0.56	0.53	0.51	0.47	0.47	0.53	0.61	0.69	0.77	0.87	0.91	0.92	0.76	0.61
0.583	0.66	0.59	0.59	0.56	0.59	0.69	0.81	0.93	1.01	1.05	1.08	1.07	0.83	0.72

Observer 1: Maintenance value, luminance with dry roadway [cd/m^2] (Value chart)

	L_{av}	L_{min}	L_{max}	$U_o (g_1)$	g_2
Observer 1: Maintenance value, luminance with dry roadway	0.50 cd/m^2	0.23 cd/m^2	1.08 cd/m^2	0.46	0.21



Observer 1: Luminance with new installation [cd/m^2] (Iso-illuminance curves)



Observer 1: Luminance with new installation [cd/m^2] (Value grid)

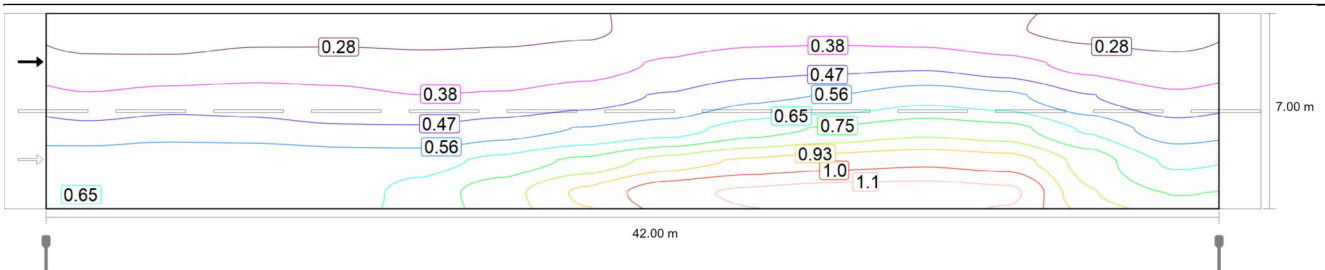
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
6.417	0.29	0.29	0.30	0.30	0.29	0.30	0.32	0.37	0.40	0.40	0.38	0.35	0.32	0.30
5.250	0.36	0.36	0.38	0.37	0.35	0.35	0.38	0.44	0.49	0.52	0.52	0.48	0.41	0.37
4.083	0.44	0.46	0.46	0.44	0.41	0.42	0.44	0.53	0.59	0.65	0.71	0.68	0.57	0.47

Roadway 1 (M5)

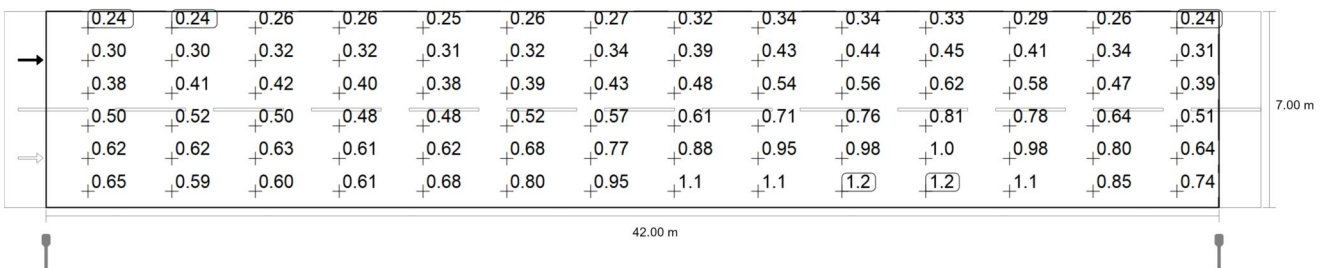
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
2.917	0.56	0.58	0.56	0.52	0.48	0.49	0.56	0.65	0.75	0.83	0.93	0.91	0.75	0.61
1.750	0.70	0.66	0.64	0.58	0.59	0.66	0.77	0.87	0.97	1.09	1.14	1.16	0.95	0.76
0.583	0.83	0.74	0.73	0.70	0.74	0.86	1.01	1.16	1.26	1.32	1.35	1.34	1.03	0.90

Observer 1: Luminance with new installation [cd/m²] (Value chart)

	L _{av}	L _{min}	L _{max}	U _o (g ₁)	g ₂
Observer 1: Luminance with new installation	0.62 cd/m ²	0.29 cd/m ²	1.35 cd/m ²	0.46	0.21



Observer 2: Maintenance value, luminance with dry roadway [cd/m²] (Iso-illuminance curves)



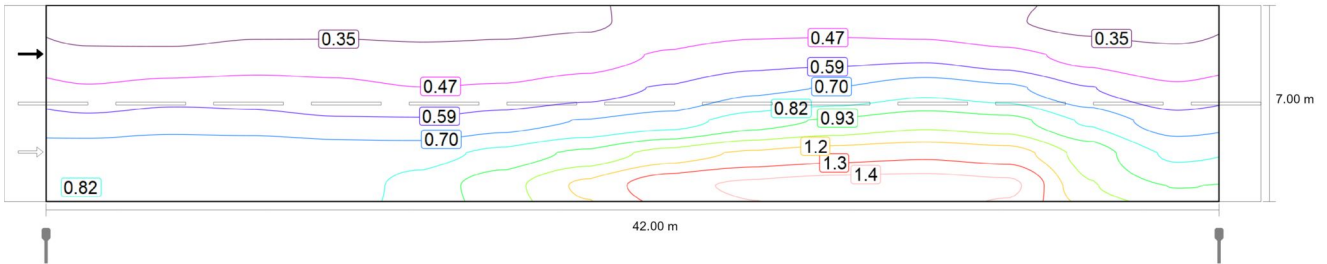
Observer 2: Maintenance value, luminance with dry roadway [cd/m²] (Value grid)

Roadway 1 (M5)

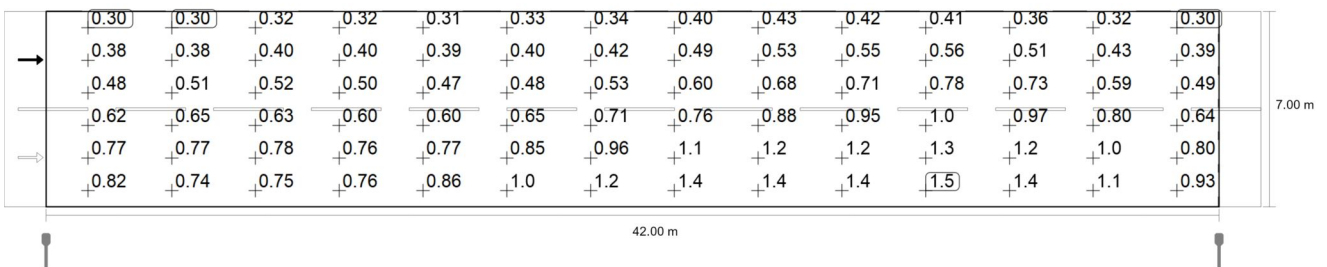
m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
6.417	0.24	0.24	0.26	0.26	0.25	0.26	0.27	0.32	0.34	0.34	0.33	0.29	0.26	0.24
5.250	0.30	0.30	0.32	0.32	0.31	0.32	0.34	0.39	0.43	0.44	0.45	0.41	0.34	0.31
4.083	0.38	0.41	0.42	0.40	0.38	0.39	0.43	0.48	0.54	0.56	0.62	0.58	0.47	0.39
2.917	0.50	0.52	0.50	0.48	0.48	0.52	0.57	0.61	0.71	0.76	0.81	0.78	0.64	0.51
1.750	0.62	0.62	0.63	0.61	0.62	0.68	0.77	0.88	0.95	0.98	1.01	0.98	0.80	0.64
0.583	0.65	0.59	0.60	0.61	0.68	0.80	0.95	1.09	1.13	1.16	1.16	1.14	0.85	0.74

Observer 2: Maintenance value, luminance with dry roadway [cd/m^2] (Value chart)

	L_{av}	L_{min}	L_{max}	$U_0 (g_1)$	g_2
Observer 2: Maintenance value, luminance with dry roadway	0.56 cd/m^2	0.24 cd/m^2	1.16 cd/m^2	0.43	0.20



Observer 2: Luminance with new installation [cd/m^2] (Iso-illuminance curves)



Observer 2: Luminance with new installation [cd/m^2] (Value grid)

m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
6.417	0.30	0.30	0.32	0.32	0.31	0.33	0.34	0.40	0.43	0.42	0.41	0.36	0.32	0.30
5.250	0.38	0.38	0.40	0.40	0.39	0.40	0.42	0.49	0.53	0.55	0.56	0.51	0.43	0.39
4.083	0.48	0.51	0.52	0.50	0.47	0.48	0.53	0.60	0.68	0.71	0.78	0.73	0.59	0.49
2.917	0.62	0.65	0.63	0.60	0.60	0.65	0.71	0.76	0.88	0.95	1.0	0.97	0.80	0.64
1.750	0.77	0.77	0.78	0.76	0.77	0.85	0.96	1.1	1.2	1.2	1.3	1.2	1.0	0.80
0.583	0.82	0.74	0.75	0.76	0.86	1.0	1.2	1.4	1.4	1.4	1.4	1.5	1.4	0.93

Roadway 1 (M5)

m	1.500	4.500	7.500	10.500	13.500	16.500	19.500	22.500	25.500	28.500	31.500	34.500	37.500	40.500
1.750	0.77	0.77	0.78	0.76	0.77	0.85	0.96	1.10	1.19	1.23	1.26	1.22	1.00	0.80
0.583	0.82	0.74	0.75	0.76	0.86	1.00	1.19	1.36	1.42	1.45	1.46	1.42	1.06	0.93

Observer 2: Luminance with new installation [cd/m²] (Value chart)

	L _{av}	L _{min}	L _{max}	U _o (g ₁)	g ₂
Observer 2: Luminance with new installation	0.69 cd/m ²	0.30 cd/m ²	1.46 cd/m ²	0.43	0.20