



S278 Street Lighting Calculation Summary

APPENDIX D

DATE: 27 March 2026
DESIGNER: The Lighting Bee Ltd
PROJECT No: 1523
PROJECT NAME: Forest Farm



S278 Street Lighting Strategy

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1 - C2	1065.00	660.00	150.00	150.00	1.50	1.50
2	Grid 2 - C3	1055.00	540.00	100.00	100.00	1.49	1.49
3	Grid 3 - C3	880.00	400.00	100.00	100.00	1.49	1.49
4	Grid 4 - C3	540.00	370.00	140.00	120.00	1.49	1.50
5	Grid 5 - East (Bat Crossin...	735.04	382.08	40.00	10.00	0.25	0.25
6	Grid 6 - West (Bat Crossin...	754.43	417.08	40.00	10.00	0.25	0.25
7	Grid 7 - Crossing Carpet	518.99	339.29	30.00	30.00	0.50	0.50
8	Grid 8 - Back of Waiting A...	513.57	361.52	3.50	1.50	0.25	0.25
9	Grid 9 - Front of Kerb (No...	515.27	359.69	3.50	1.50	0.25	0.25
10	Grid 10 - Front Of Kerb (S...	520.00	354.93	3.50	1.50	0.25	0.25
11	Grid 11 - Back of Waiting ...	521.39	353.51	3.50	1.50	0.25	0.25
12	Grid 12 - Centre of Crossi...	517.45	357.26	3.50	1.50	0.25	0.25
13	Grid 13 - Centre of Crossi...	519.97	359.68	3.49	1.50	0.25	0.25
14	Grid 14 - M4/P2	678.75	350.00	121.25	100.00	1.50	1.49
15	Grid 15 - M3/P1	1154.97	702.96	200.00	100.00	1.49	1.49
16	Grid 16	933.81	811.68	200.00	100.00	1.49	1.49

Luminaires



Luminaire A Data

Supplier	Urbis Schreder
Type	AXIA 3.2 5280 Integrated lenses 32 OSLO N SQUARE GIANT@800mA
Lamp(s)	32 OSLO N SQUARE GIANT@800mA WW 730 230V
LampFlux(klm)/Colour	9.55 WW 3000K/70
File Name	AXIA 3.2 5280 32 OSLO N SQUARE GIANT 800mA WW 730 78W 430132 Integrated I...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	827.8, 161.9, 0.0
No. in Project	16

Luminaire B Data

Supplier	
Type	BGP623 DM11
Lamp(s)	LED-HB 4S/740
Lamp Flux (klm)	12.50
File Name	Luma1_BGP623_DM11_12500_80LED_30 5mA_4S_CLO L90_NW.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	574.0, 158.1, 0.0
No. in Project	3



Luminaire C Data

Supplier	Philips
Type	BGP704 DM10
Lamp(s)	LED-HB 5.2S 740
Lamp Flux (klm)	18.50
File Name	Luma Gen2 Medium_BGP704_DM10_1850 0_80LED_5.2S_CLO L90_740.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	523.4, 90.0, 0.0
No. in Project	1

Luminaire D Data

Supplier	
Type	AXIA 3.2 D8.8 - 3K 32 OSLO N SQUARE GI ANT 580mA WW Integrated
Lamp(s)	32 OSLO N SQUARE GIANT 580mA WW 3 000K
Lamp Flux (klm)	8.87
File Name	AXIA 3.2 D8.8 - 3K 32 OSLO N SQUARE GI ANT 580mA WW 3000K Integrated lenses ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	825.8, 81.9, 0.0
No. in Project	22

Luminaires



Luminaire E Data

Supplier	Philips
Type	BGP704 DM10
Lamp(s)	LED-HB 5.2S 740
Lamp Flux (klm)	21.00
File Name	Luma Gen2 Medium_BGP704_DM10_2100 0_80LED_5.2S_CLO_L90_740.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	523.4, 90.0, 0.0
No. in Project	5

Luminaire F Data

Supplier	
Type	AXIA 3.3 E14.6-3K Integrated lenses - 64 OSLON SQUARE GIANT
Lamp(s)	64 OSLON SQUARE GIANT@480mA WW 730 230V 00-36-982
Lamp Flux (klm)	13.69
File Name	AXIA 3.3 E14.6 - 3K 64 OSLON SQUARE GIANT 480mA WW 3000K Integrated lens...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	625.2, 21.3, 0.0
No. in Project	20

Luminaire G Data

Supplier	
Type	AXIA 3.3 D14.6 - 3K 64 OSLON SQUARE G IANT 480mA WW Integrated
Lamp(s)	64 OSLON SQUARE GIANT 480mA WW 3 000K
Lamp Flux (klm)	14.60
File Name	AXIA 3.3 D14.6 - 3K 64 OSLON SQUARE G IANT 480mA WW 3000K Integrated lenses...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	825.8, 81.9, 0.0
No. in Project	20

Luminaire H Data

Supplier	
Type	AXIA 3.3 52933BL Integrated lenses - 64 O SLON SQUARE GIANT@4
Lamp(s)	64 OSLON SQUARE GIANT WW 730 230V 00-36-646
Lamp Flux (klm)	15.09
File Name	AXIA 3.3 E14.6 - 3K BL 64 OSLON SQUAR E GIANT 480mA WW 3000K Integrated le...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	359.1, 9.2, 0.0
No. in Project	3

Luminaire I Data

Supplier	
Type	AXIA 3.3 5280 Integrated lenses Rear louve rs 64 OSLON SQUARE
Lamp(s)	64 OSLON SQUARE GIANT@480mA WW 730 230V 1x03-55-869 - DRIVER
LampFlux(klm)/Colour	15.76 3000K/70
File Name	AXIA 3.3 5280 64 OSLON SQUARE GIANT Drv 480mA WW 730 92W 479682 Integrat...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	648.0, 98.6, 0.0
No. in Project	1

Luminaire J Data

Supplier	
Type	AMPERA EVO 1 5370 Flat glass Embellish ment plate, Zebra left
Lamp(s)	10 LEDs@600mA NW 740 230V 03-55-699
LampFlux(klm)/Colour	2.77 NW 4000K/70
File Name	AMPERA EVO 1 5370 10 LEDs Drv 600mA NW 740 20W 523282 Flat glass ZL LE 23...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	63.0, 85.6, 0.0
No. in Project	2

Luminaire L Data

Supplier	
Type	AXIA 3.1 C3.5 - 27K BL 16 OSLON SQUAR E GIANT 460mA WW 2700K I
Lamp(s)	16 OSLON SQUARE GIANT 460mA WW 2 700K
Lamp Flux (klm)	3.50
File Name	AXIA 3.1 C3.5 - 27K BL 16 OSLON SQUAR E GIANT 460mA WW 2700K Integrated le...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	742.5, 62.1, 4.3
No. in Project	4

Luminaire M Data

Supplier	
Type	AXIA 3.1 A1.1 - 3K 8 OSLON SQUARE GIA NT 270mA WW Integrated I
Lamp(s)	8 OSLON SQUARE GIANT 270mA WW 30 00K
Lamp Flux (klm)	1.13
File Name	AXIA 3.1 A1.1 - 3K 8 OSLON SQUARE GIA NT 270mA WW 3000K Integrated lenses - ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	1048.4, 33.1, 0.0
No. in Project	3

Luminaires

Luminaire N Data

Supplier	
Type	AXIA 3.1 B2.1 - 3K 8 OSLOM SQUARE GIA NT 540mA WW Integrated I
Lamp(s)	8 OSLOM SQUARE GIANT 540mA WW 30 00K
Lamp Flux (klm)	2.10
File Name	AXIA 3.1 B2.1 - 3K 8 OSLOM SQUARE GIA NT 540mA WW 3000K Integrated lenses - ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	1019.7, 85.8, 0.0
No. in Project	1

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	1345.10	687.55	10.00	64.00	0.00	0.00	0.40			
2	A	1315.44	711.77	10.00	250.00	0.00	0.00	0.40			
3	G	1276.17	724.10	10.00	255.00	0.00	0.00	0.40			
4	G	1237.98	720.82	10.00	84.00	0.00	0.00	0.40			
5	F	1106.57	734.79	10.00	40.00	0.00	0.00	0.40			
6	F	1131.43	704.84	10.00	25.00	0.00	0.00	0.40			
7	G	1110.16	760.74	10.00	229.00	0.00	0.00	0.40			
8	G	1059.54	780.42	10.00	54.00	0.00	0.00	0.40			
9	G	1035.55	808.55	10.00	239.00	0.00	0.00	0.40			
10	A	991.80	824.42	10.00	55.00	0.00	0.00	0.70			
11	A	958.83	848.42	10.00	53.00	0.00	0.00	0.70			
12	A	931.61	886.55	10.00	234.00	0.00	0.00	1.90			
13	B	887.17	900.95	10.00	54.00	0.00	0.00	0.40			
14	B	857.09	936.78	10.00	233.00	0.00	0.00	0.40			
15	A	824.66	960.66	10.00	231.00	0.00	0.00	0.90			
16	A	790.19	986.37	10.00	237.00	0.00	0.00	0.90			
17	A	746.12	1002.17	10.00	55.00	0.00	0.00	1.90			
18	B	720.52	1038.05	10.00	237.00	0.00	0.00	0.40			
19	A	674.65	1056.65	10.00	52.00	0.00	0.00	0.90			
20	A	639.89	1082.93	10.00	51.00	0.00	0.00	1.90			
21	A	604.51	1114.07	10.00	46.00	0.00	0.00	1.90			
22	C	587.45	1154.37	6.00	221.00	0.00	0.00	0.40			
23	A	547.60	1176.63	8.00	31.00	0.00	0.00	0.40			
24	A	566.17	1160.28	8.00	28.00	0.00	0.00	0.40			
25	E	527.30	1206.94	10.00	37.00	0.00	0.00	0.40			
26	E	522.29	1234.26	10.00	219.00	0.00	0.00	0.40			
27	E	502.47	1257.85	10.00	211.00	0.00	0.00	0.40			
28	E	481.19	1279.16	10.00	219.00	0.00	0.00	0.40			
29	E	466.01	1293.88	10.00	219.00	0.00	0.00	0.40			
30	A	577.08	1119.94	10.00	106.00	0.00	0.00	0.90			
31	A	558.62	1137.95	10.00	5.00	0.00	0.00	0.70			
32	A	564.05	1115.26	10.00	131.00	0.00	0.00	0.70			
33	D	535.95	1111.61	8.00	315.00	0.00	0.00	0.70			
34	D	520.80	1083.82	8.00	141.00	0.00	0.00	0.70			
35	D	501.20	1059.36	8.00	144.00	0.00	0.00	0.90			
36	D	487.25	1035.41	8.00	150.00	0.00	0.00	0.70			

Layout Continued

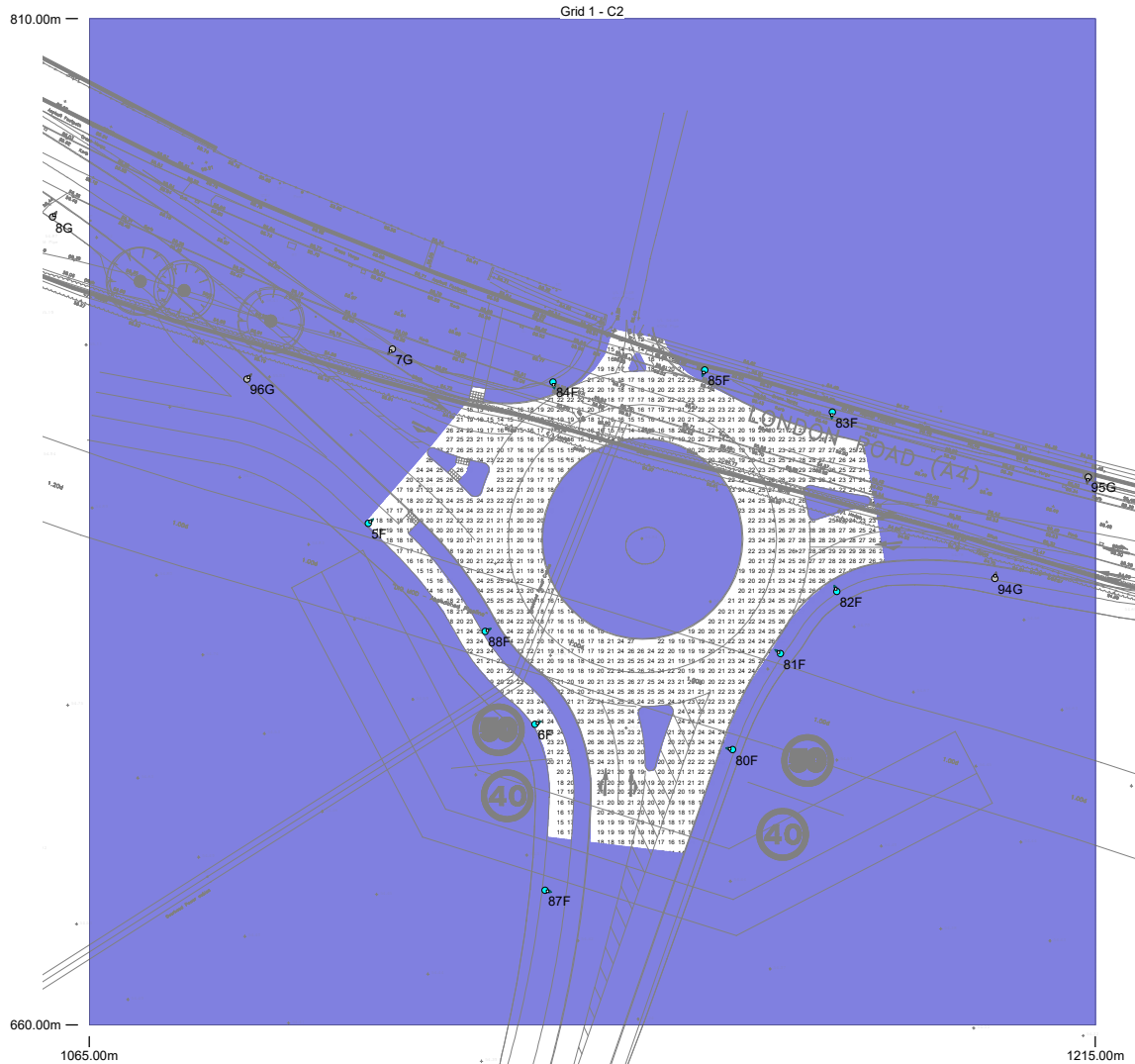
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
37	D	462.27	1013.80	8.00	335.00	0.00	0.00	0.70			
38	D	474.18	1008.20	8.00	155.00	0.00	0.00	0.70			
39	D	450.39	989.53	8.00	333.00	0.00	0.00	0.70			
40	D	464.00	987.05	8.00	157.00	0.00	0.00	0.70			
41	D	435.25	958.62	8.00	326.00	0.00	0.00	0.70			
42	D	444.88	949.41	8.00	155.00	0.00	0.00	0.70			
43	D	431.92	926.97	8.00	155.00	0.00	0.00	0.70			
44	D	409.33	904.89	8.00	335.00	0.00	0.00	0.70			
45	D	405.81	872.87	8.00	153.00	0.00	0.00	0.70			
46	D	382.92	850.95	8.00	336.00	0.00	0.00	0.70			
47	D	379.51	819.10	8.00	154.00	0.00	0.00	0.70			
48	D	356.70	797.14	8.00	334.00	0.00	0.00	0.40			
49	D	353.04	764.75	8.00	155.00	0.00	0.00	0.40			
50	D	341.71	736.63	8.00	154.00	0.00	0.00	1.40			
51	D	326.09	711.39	8.00	150.00	0.00	0.00	0.40			
52	D	309.84	683.74	8.00	148.00	0.00	0.00	0.70			
53	D	287.73	652.40	8.00	139.00	0.00	0.00	0.40			
54	G	1129.16	611.97	10.00	158.00	0.00	0.00	0.40			
55	F	919.59	460.81	8.00	25.00	0.00	0.00	0.40			
56	H	1093.65	591.76	8.00	64.00	0.00	0.00	0.40			
57	H	1116.98	585.21	10.00	149.00	0.00	0.00	0.40			
58	H	1102.63	561.04	10.00	151.00	0.00	0.00	0.40			
59	F	619.78	402.36	10.00	100.00	0.00	0.00	0.40			
60	F	583.31	380.50	8.00	206.00	0.00	0.00	0.40			
61	F	566.10	403.98	10.00	296.00	0.00	0.00	0.40			
62	F	607.92	427.31	8.00	10.00	0.00	0.00	0.40			
63	F	629.86	451.97	8.00	291.00	0.00	0.00	0.40			
64	F	598.03	461.63	8.00	21.00	0.00	0.00	0.40			
65	F	595.70	396.97	10.00	105.00	0.00	0.00	0.40			
66	I	1077.01	528.73	10.00	136.00	0.00	0.00	0.40			
67	G	1045.27	499.90	10.00	123.00	0.00	0.00	0.40			
68	G	1008.25	476.01	10.00	117.00	0.00	0.00	0.40			
69	G	969.41	457.32	10.00	117.00	0.00	0.00	0.40			
70	G	900.10	426.05	10.00	117.00	0.00	0.00	0.40			
71	G	830.17	408.90	10.00	284.00	0.00	0.00	0.40			
72	G	797.76	391.73	10.00	99.00	0.00	0.00	0.40			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
75	G	684.91	402.14	10.00	80.00	0.00	0.00	0.40			
76	F	645.05	405.04	10.00	93.00	0.00	0.00	0.40			
77	G	531.33	376.86	10.00	314.00	0.00	0.00	0.40			
78	G	507.73	339.74	10.00	143.00	0.00	0.00	0.40			
79	F	933.06	440.83	10.00	117.00	0.00	0.00	0.40			
80	F	1160.87	701.08	10.00	166.00	0.00	0.00	0.40			
81	F	1168.04	715.36	10.00	144.00	0.00	0.00	0.40			
82	F	1176.44	724.63	10.00	113.00	0.00	0.00	0.40			
83	F	1175.77	751.36	10.00	264.00	0.00	0.00	0.40			
84	F	1134.12	755.82	10.00	283.00	0.00	0.00	0.40			
85	F	1156.73	757.63	10.00	249.00	0.00	0.00	0.40			
86	G	1141.29	644.79	10.00	161.00	0.00	0.00	0.40			
87	F	1132.93	680.09	10.00	345.00	0.00	0.00	0.40			
88	F	1124.00	718.66	10.00	27.00	0.00	0.00	0.40			
89	G	867.26	411.41	10.00	112.00	0.00	0.00	0.40			
90	J	523.09	357.16	6.00	138.00	0.00	0.00	0.40			
91	J	514.62	359.99	6.00	315.00	0.00	0.00	0.40			
92	L	727.20	395.89	5.00	75.00	0.00	0.00	0.40			
93	L	754.45	392.26	5.00	82.00	0.00	0.00	0.40			
94	L	735.89	408.91	5.00	260.00	0.00	0.00	0.40			
95	L	762.68	405.76	5.00	259.00	0.00	0.00	0.40			
94	G	1199.99	726.55	10.00	80.00	0.00	0.00	0.40			
95	G	1213.94	741.67	10.00	257.00	0.00	0.00	0.40			
96	G	1088.51	756.26	10.00	49.00	0.00	0.00	0.40			
97	D	476.07	1040.63	8.00	338.00	0.00	0.00	0.70			
98	M	523.11	957.95	5.00	228.00	0.00	0.00	0.40			
99	M	511.27	983.68	4.00	193.00	0.00	0.00	0.40			
100	N	505.04	1014.59	4.00	195.00	0.00	0.00	0.40			
101	M	370.03	738.11	4.00	226.00	0.00	0.00	0.40			

Horizontal Illuminance (lux)

Grid 1 - C2

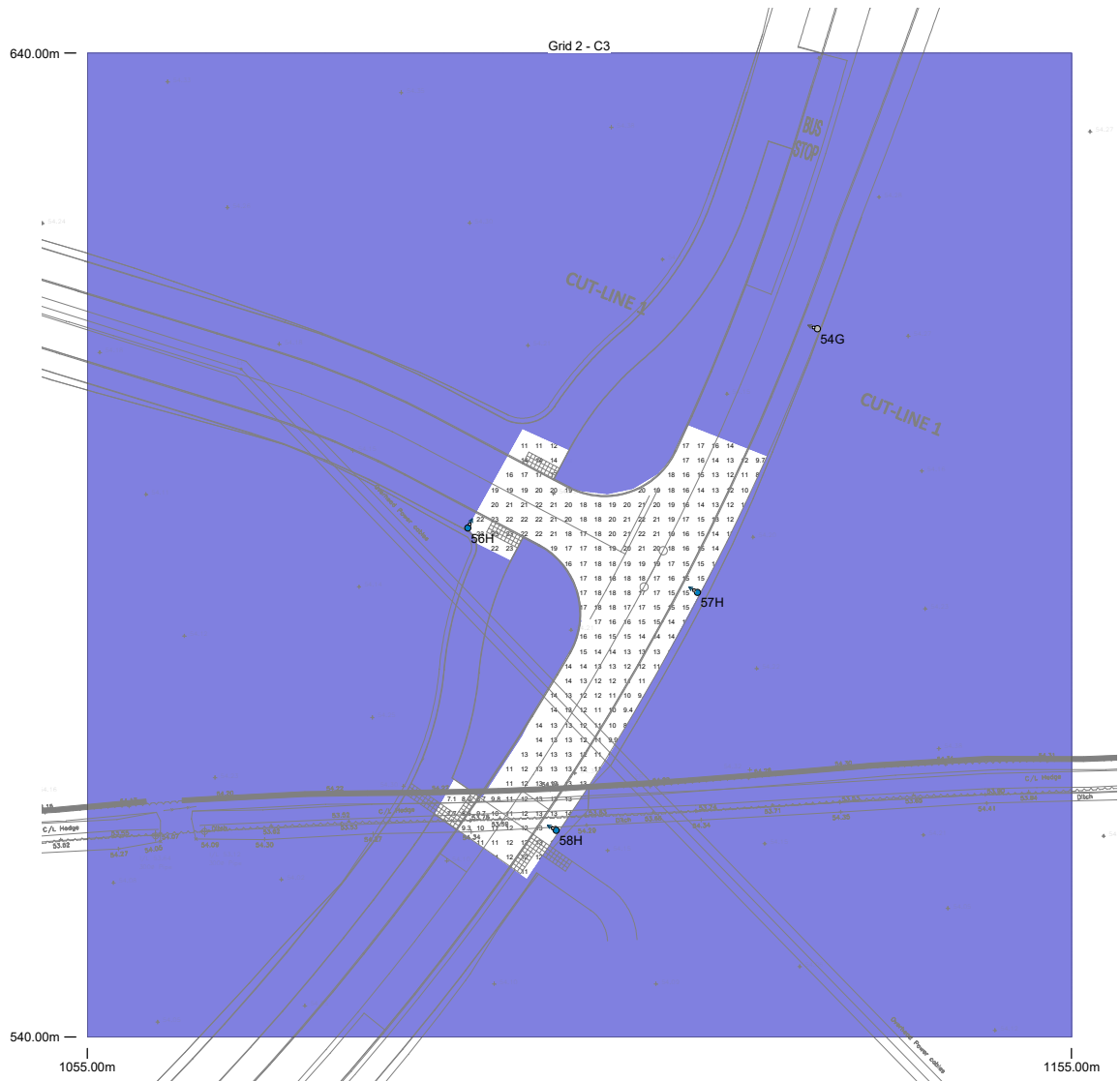


Results

Eav	21.16
Emin	11.22
Emax	29.32
Emin/Emax	0.38
Emin/Eav	0.53

Horizontal Illuminance (lux)

Grid 2 - C3

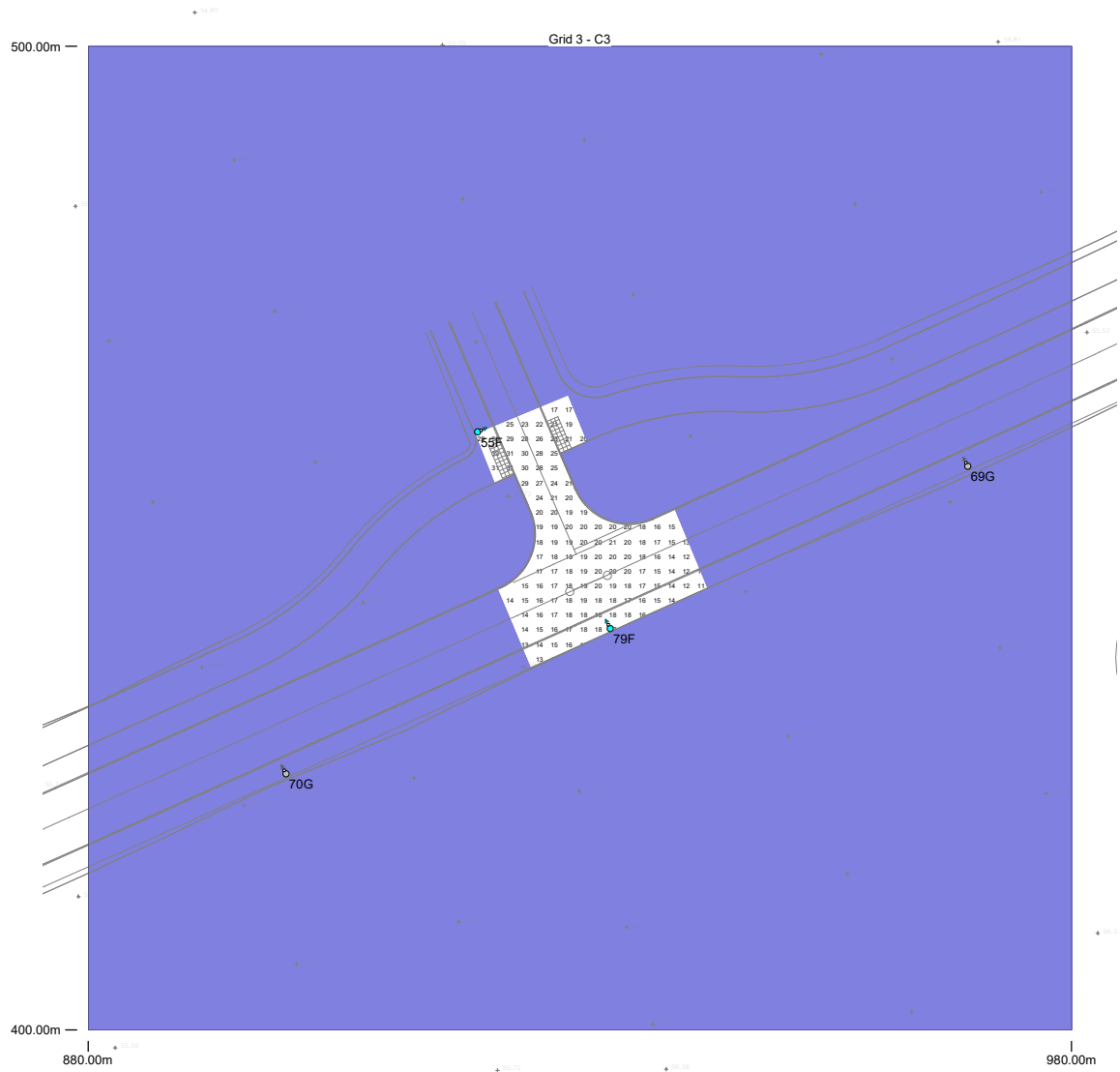


Results

Eav	15.04
Emin	7.07
Emax	23.36
Emin/Emax	0.30
Emin/Eav	0.47

Horizontal Illuminance (lux)

Grid 3 - C3



Results

Eav	19.00
Emin	10.64
Emax	31.81
Emin/Emax	0.33
Emin/Eav	0.56

Horizontal Illuminance (lux)

Grid 4 - C3

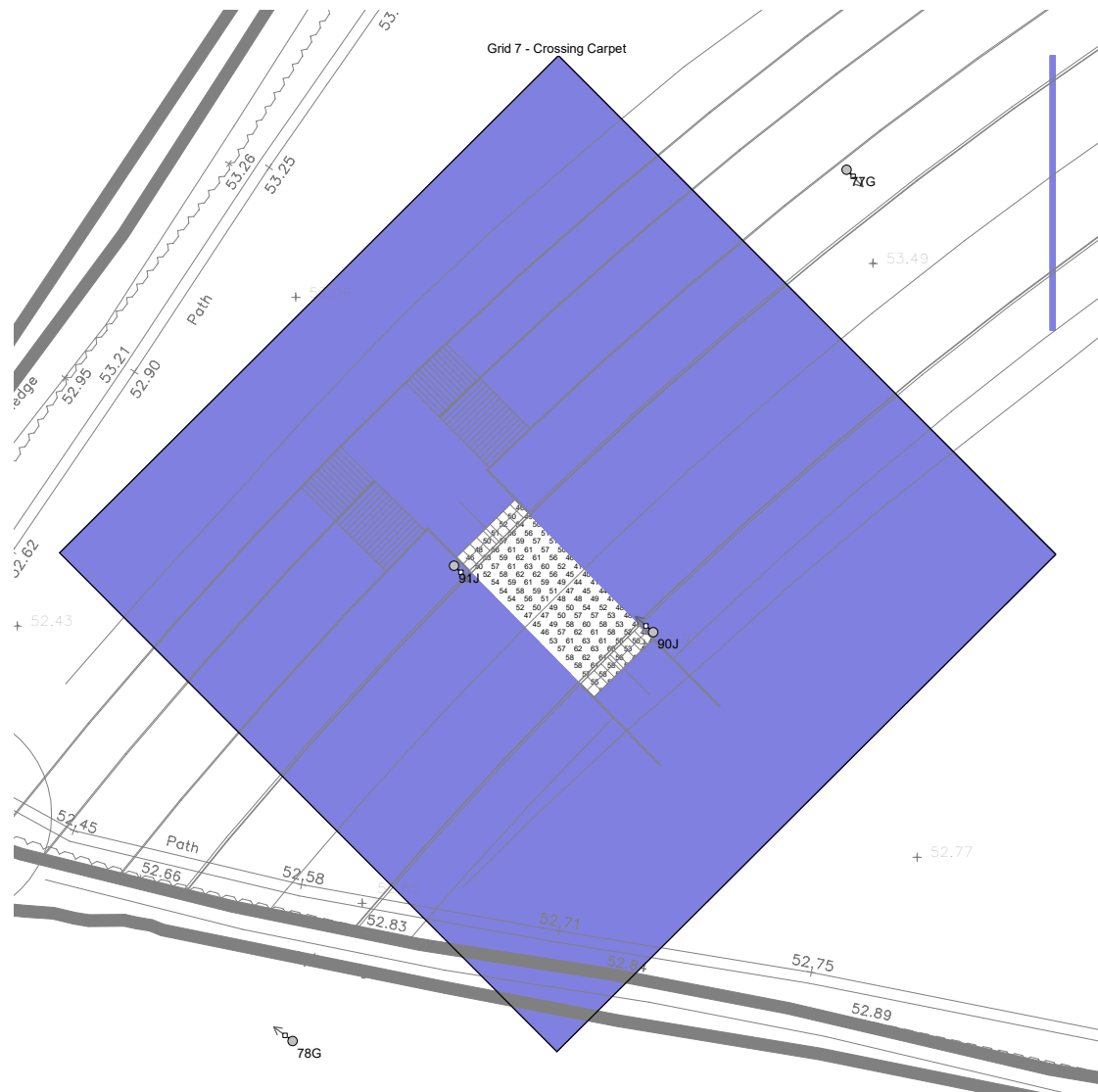


Results

Eav	15.93
Emin	7.61
Emax	28.72
Emin/Emax	0.26
Emin/Eav	0.48

Horizontal Illuminance (lux)

Grid 7 - Crossing Carpet



Results

Eav	53.51
Emin	40.18
Emax	62.90
Emin/Emax	0.64
Emin/Eav	0.75

Illuminance (lux)

Grid 8 - Back of Waiting Area (North)

21	21	20	19	19	18	17	16	16	16	16	16	15	14
21	20	20	19	19	18	17	17	17	17	17	16	16	15
20	20	20	19	19	18	17	17	17	17	17	17	16	16
19	19	19	19	19	18	18	17	17	17	17	17	17	16
19	19	19	19	19	18	18	17	17	17	17	17	17	17
19	19	19	19	19	19	18	18	18	17	18	18	18	17

Results

Eav	17.82
Emin	13.87
Emax	21.19
Emin/Emax	0.65
Emin/Eav	0.78

Illuminance (lux)

Grid 9 - Front of Kerb (North)

13	14	15	16	16	17	17	18	18	18	18	18	17	17
15	16	17	18	19	20	20	20	21	21	20	20	20	19
18	19	20	21	22	22	23	23	23	23	23	22	22	21
20	21	22	23	24	24	25	25	25	25	24	24	23	22
21	22	23	24	25	26	26	26	26	26	25	25	24	23
22	23	24	25	26	27	27	27	27	26	26	25	24	23

Results

Eav	21.59
Emin	13.04
Emax	26.86
Emin/Emax	0.49
Emin/Eav	0.60

Illuminance (lux)

Grid 10 - Front Of Kerb (South)

17	18	18	18	18	18	18	18	17	16	16	15	14	13
20	21	21	21	21	21	21	20	20	19	18	17	16	15
22	23	23	23	24	24	23	23	23	22	21	20	19	18
23	24	25	25	26	26	26	25	25	24	23	22	21	19
24	25	26	27	27	27	27	27	26	25	24	23	22	21
25	26	26	27	28	28	28	27	27	26	25	24	23	21

Results

Eav	22.12
Emin	12.93
Emax	27.82
Emin/Emax	0.46
Emin/Eav	0.58

Illuminance (lux)

Grid 11 - Back of Waiting Area (South)

16	18	19	20	20	20	19	19	19	19	20	20	21	21
17	18	19	20	20	19	19	19	19	19	19	20	20	20
18	19	19	20	19	19	19	18	19	19	19	19	19	19
18	19	19	20	19	19	19	19	19	19	19	19	19	19
19	20	20	20	20	19	19	19	19	19	19	19	19	18
20	20	20	20	20	20	20	20	20	20	19	19	19	19

Results

Eav	19.22
Emin	16.26
Emax	20.78
Emin/Emax	0.78
Emin/Eav	0.85

Illuminance (lux)

Grid 12 - Centre of Crossing (North)

30	33	35	37	37	37	36	34	32	29	26	23	20	17
23	25	27	28	28	28	28	27	26	24	22	20	18	16
19	20	21	21	22	22	22	22	21	20	19	17	16	15
16	17	17	18	18	18	18	18	18	17	17	16	15	14
14	15	15	15	16	16	16	16	16	16	15	14	14	13
12	13	13	14	14	14	14	14	14	14	14	13	13	12

Results

Eav	20.03
Emin	12.02
Emax	37.07
Emin/Emax	0.32
Emin/Eav	0.60

Illuminance (lux)

Grid 13 - Centre of Crossing (South)

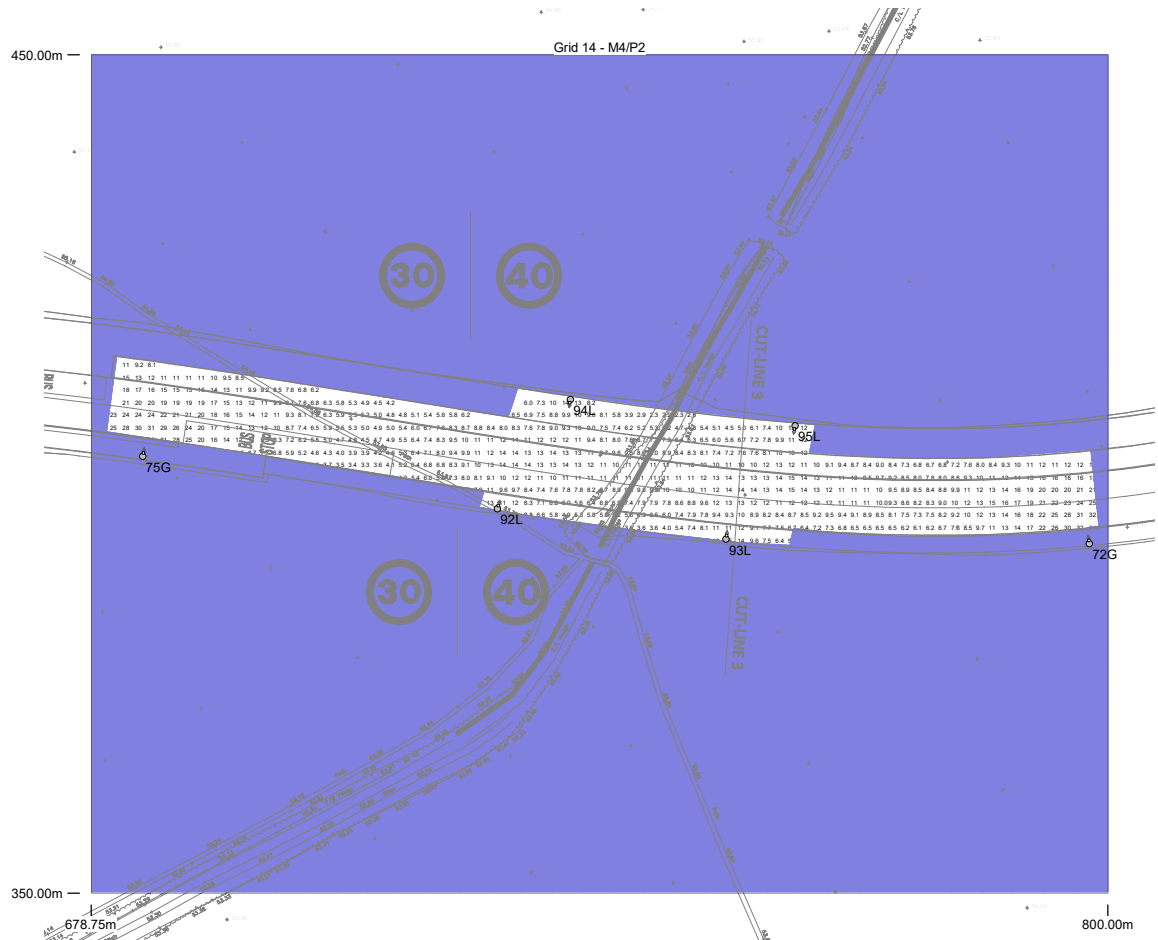
34	36	38	39	40	39	37	35	32	30	26	23	20	17
26	28	30	31	32	32	31	30	28	26	23	21	19	16
20	22	23	24	25	25	25	24	23	21	20	18	17	15
17	18	18	19	19	20	20	19	19	18	17	16	15	14
15	15	16	16	17	17	17	17	16	16	15	15	14	13
13	14	14	14	15	15	15	15	15	14	14	13	13	12

Results

Eav	21.20
Emin	11.90
Emax	39.64
Emin/Emax	0.30
Emin/Eav	0.56

Horizontal Illuminance (lux)

Grid 14 - M4/P2

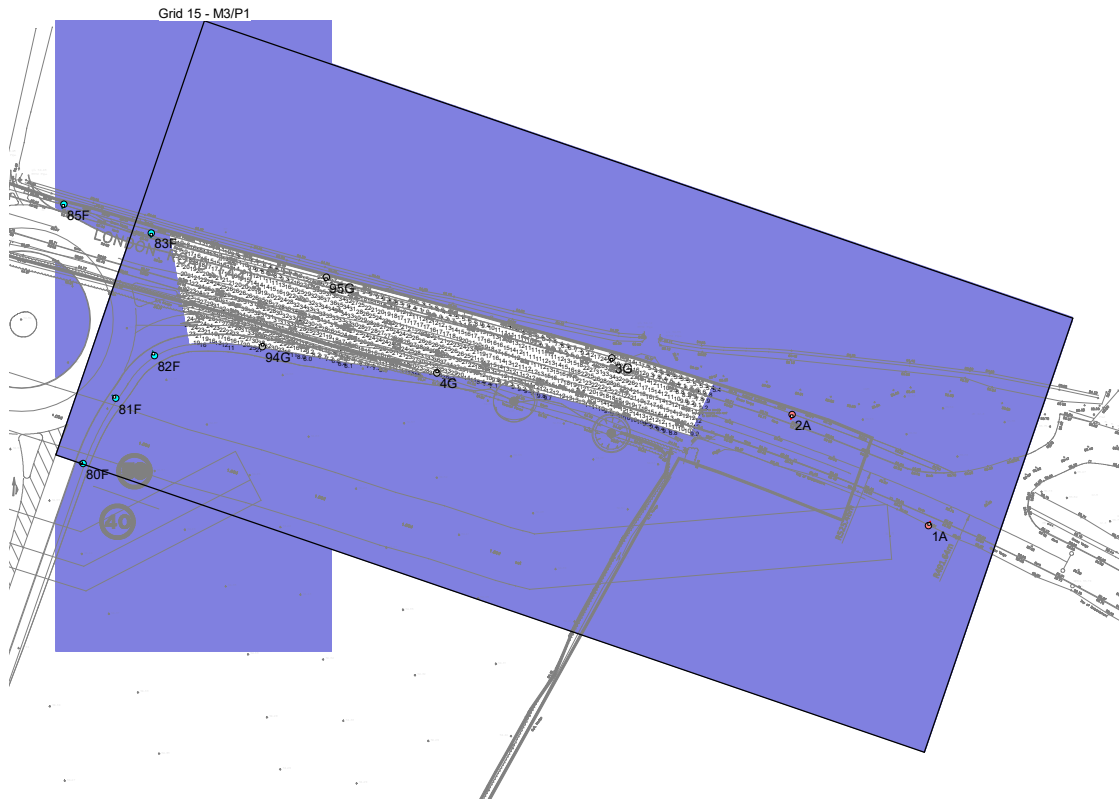


Results

Eav	10.53
Emin	2.24
Emax	33.61
Emin/Emax	0.07
Emin/Eav	0.21

Horizontal Illuminance (lux)

Grid 15 - M3/P1

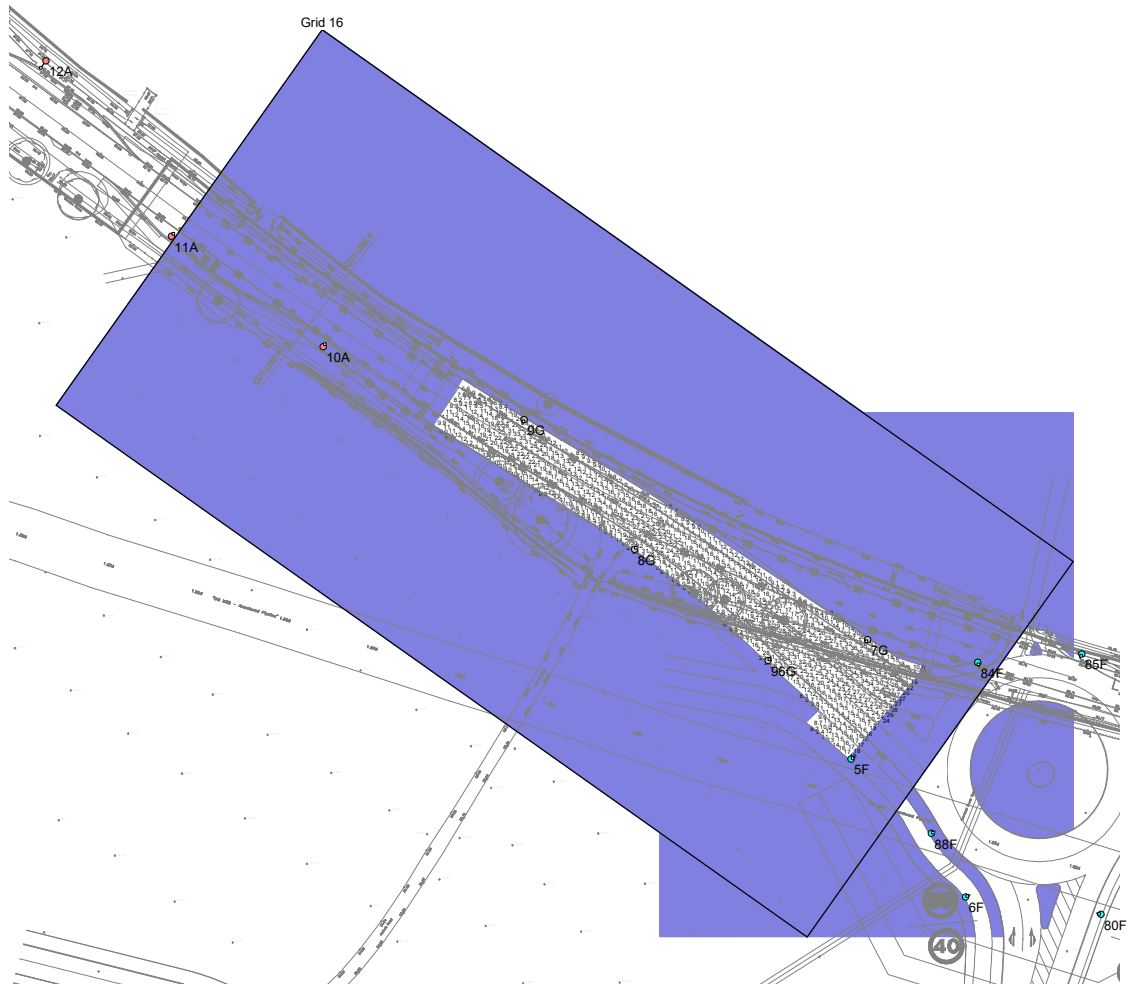


Results

Eav	18.81
Emin	4.46
Emax	37.06
Emin/Emax	0.12
Emin/Eav	0.24

Horizontal Illuminance (lux)

Grid 16



Results

Eav	18.60
Emin	4.38
Emax	40.03
Emin/Emax	0.11
Emin/Eav	0.24

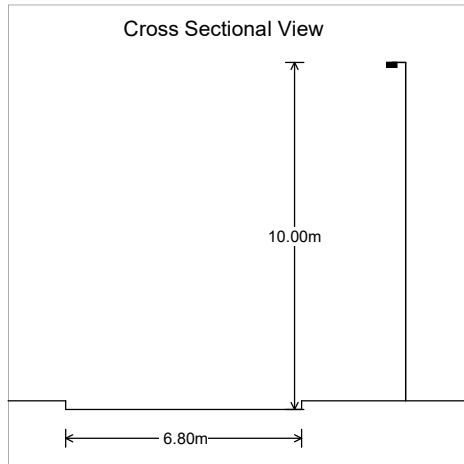
DATE: 3 March 2025
DESIGNER: The Lighting Bee Ltd
PROJECT No: 1523
PROJECT NAME: Forest Farm



Roadway Lighting Report

Roadway Report Summary

Layout



Road Data

Calculation Grid	EN13201 Luminance
Width (m)	6.80
No. of Lanes	2
Road Surface	C2
Q0	0.07
Lane Width (m)	3.40
Rei Width (m)	3.40

Main Lighting

Column Data

Configuration	Single Sided Right
Spacing (m)	48.50
Height (m)	10.00
Tilt (deg)	0.00
Setback (m)	3.00
Outreach (m)	0.40
Overhang (m)	-2.60

Luminaire Data

Supplier	AXIA 3.3 D14.6 - 3K 64 OSLO SQUARE G
Type	IANT 480mA WW Integrated
Lamp(s)	64 OSLO SQUARE GIANT 480mA WW 3000K
Lamp Flux (klm)	14.60
File Name	AXIA 3.3 D14.6 - 3K 64 OSLO SQUARE G IANT 480mA WW 3000K Integrated lenses...
Maintenance Factor	0.87
Lum. Int. Class	G3

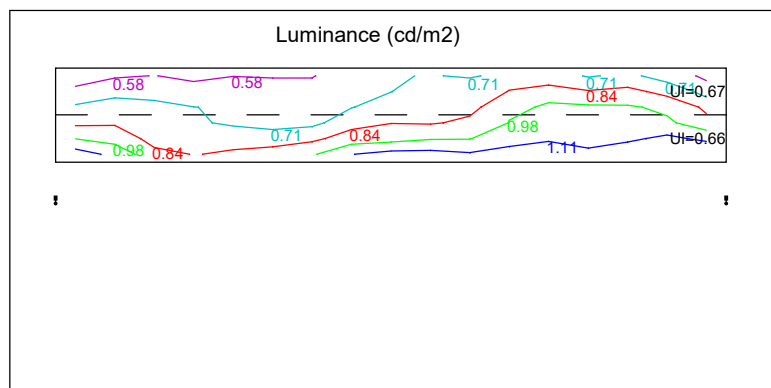
Results

Main

Complies with M4

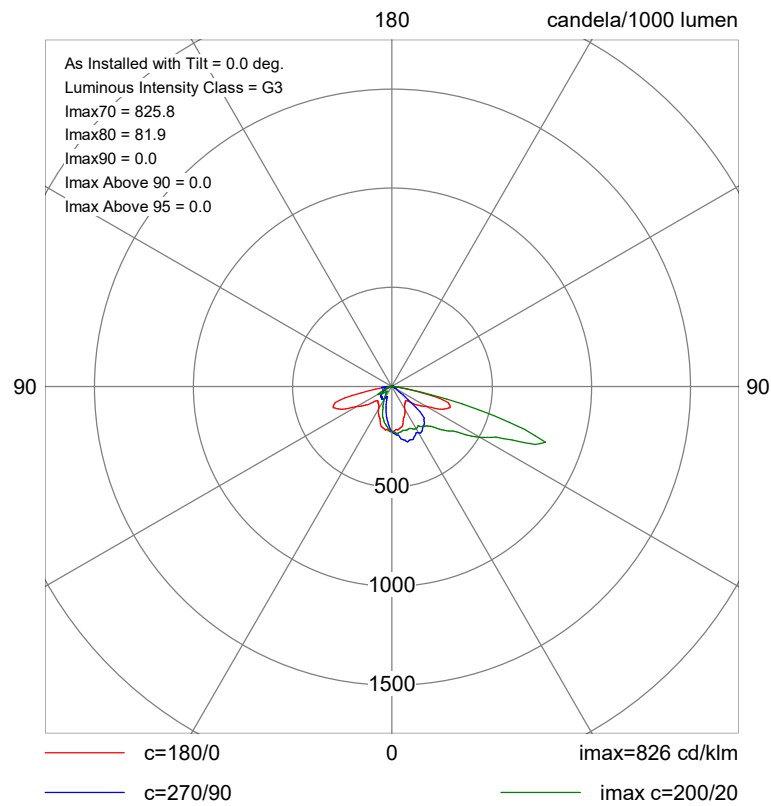
Lavmin	0.84 (1)
Lmin	0.51 (1)
Lmax	1.39 (2)
U0min	0.56 (2)
Ulmin	0.66 (1)
TI(%)	14.93 (1)
Rei	0.65

Number in brackets is the Observer Lane for Result shown.



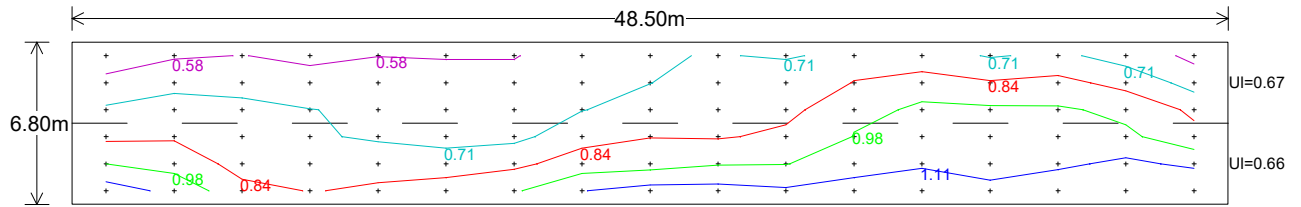
Polar Diagram

Main Luminaire AXIA 3.3 D14.6 - 3K 64 OSLO SQUARE GIANT 480mA WW Integrated



Luminance (cd/m²)

Observer in Lane 1



Main Results

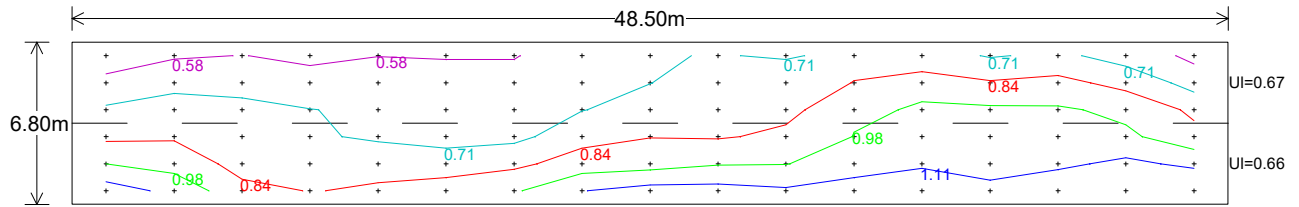
Observers in all Lanes

Lavmin	0.84 (1)
Lmin	0.51 (1)
Lmax	1.39 (2)
U0min	0.56 (2)
UImin	0.66 (1)
Tlmax(%)	14.93 (1)
Rei	0.65

Number in brackets is the
Observer Lane for Result shown.

Luminance (cd/m²)

Observer in Lane 1



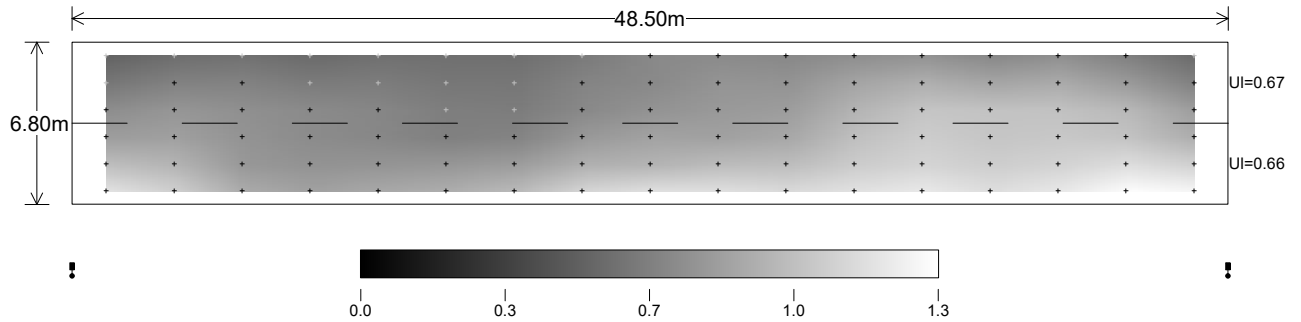
Main Results

Observer in Lane 1

Lav	0.84
Lmin	0.51
Lmax	1.31
U0	0.61
UI	0.66
TI(%)	14.93

Luminance (cd/m²)

Observer in Lane 1



Luminance (cd/m²)

Observer in Lane 1

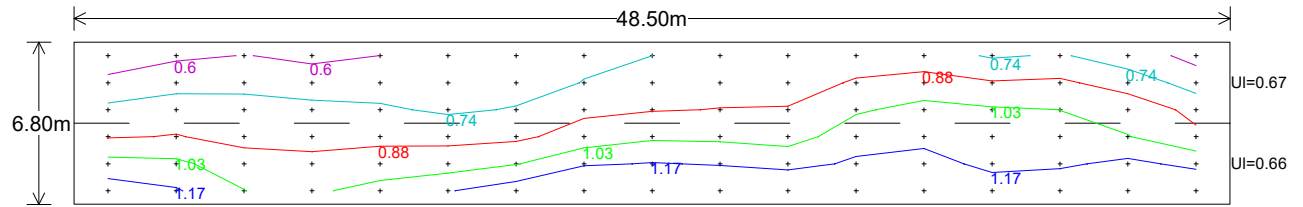
48.50m																		
6.80m	+0.5	+0.6	+0.6	+0.5	+0.6	+0.6	+0.6	+0.6	+0.7	+0.7	+0.7	+0.7	+0.8	+0.7	+0.7	+0.7	+0.5	UI=0.67
	+0.6	+0.7	+0.7	+0.6	+0.6	+0.6	+0.6	+0.7	+0.7	+0.8	+0.8	+0.8	+0.9	+0.9	+0.9	+0.8	+0.7	
	+0.7	+0.8	+0.7	+0.7	+0.7	+0.6	+0.6	+0.7	+0.8	+0.8	+0.8	+0.9	+1.0	+1.0	+1.0	+0.9	+0.8	
	+0.8	+0.8	+0.8	+0.7	+0.7	+0.7	+0.7	+0.8	+0.8	+0.8	+0.9	+1.0	+1.1	+1.0	+1.0	+1.0	+0.9	
	+1.0	+0.9	+0.8	+0.8	+0.8	+0.8	+0.8	+0.9	+0.9	+1.0	+1.0	+1.1	+1.1	+1.1	+1.1	+1.1	+1.1	
	+1.2	+1.1	+0.9	+0.8	+0.9	+0.9	+1.0	+1.1	+1.2	+1.2	+1.1	+1.2	+1.2	+1.1	+1.2	+1.3	+1.3	UI=0.66

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Luminance (cd/m²)

Observer in Lane 2



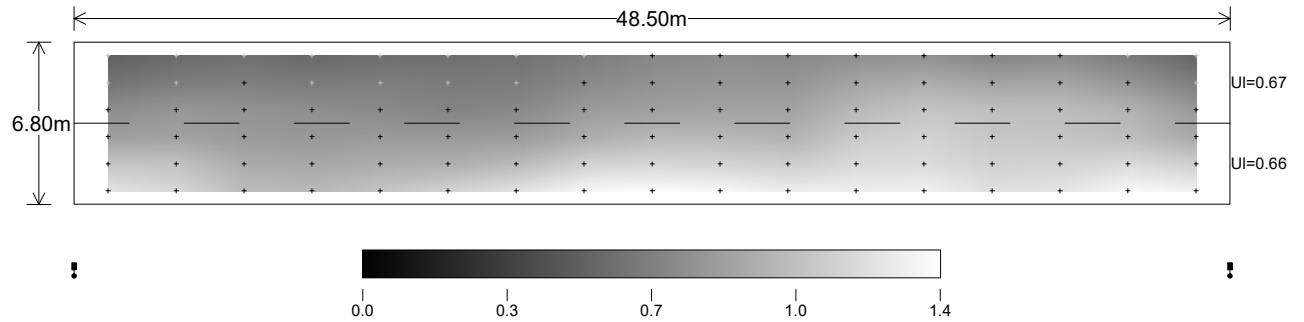
Main Results

Observer in Lane 2

Lav	0.93
Lmin	0.53
Lmax	1.39
U0	0.56
UI	0.67
TI(%)	13.18

Luminance (cd/m²)

Observer in Lane 2



Luminance (cd/m²)

Observer in Lane 2

48.50m																		
6.80m	+0.5	+0.6	+0.6	+0.6	+0.6	+0.6	+0.6	+0.7	+0.7	+0.8	+0.7	+0.8	+0.8	+0.7	+0.8	+0.7	+0.6	UI=0.67
	+0.6	+0.7	+0.7	+0.7	+0.7	+0.7	+0.7	+0.7	+0.8	+0.8	+0.8	+0.9	+0.9	+0.9	+0.9	+0.8	+0.7	
	+0.8	+0.8	+0.8	+0.8	+0.8	+0.7	+0.8	+0.8	+0.9	+0.9	+0.9	+1.0	+1.1	+1.0	+1.0	+1.0	+0.8	
	+0.9	+0.9	+0.8	+0.8	+0.8	+0.8	+0.9	+0.9	+1.0	+1.0	+1.0	+1.1	+1.1	+1.1	+1.1	+1.0	+0.9	
	+1.1	+1.1	+0.9	+0.9	+0.9	+1.0	+1.0	+1.2	+1.2	+1.2	+1.1	+1.2	+1.2	+1.1	+1.2	+1.2	+1.1	
	+1.2	+1.2	+1.0	+1.0	+1.1	+1.2	+1.2	+1.4	+1.4	+1.4	+1.3	+1.3	+1.3	+1.2	+1.3	+1.4	+1.3	UI=0.66

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DATE: 27 March 2026
DESIGNER: The Lighting Bee Ltd
PROJECT No: 1523
PROJECT NAME: Forest Farm



S278 Street Lighting Strategy

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1 - C2	1065.00	660.00	150.00	150.00	1.50	1.50
2	Grid 2 - C3	1055.00	540.00	100.00	100.00	1.49	1.49
3	Grid 3 - C3	880.00	400.00	100.00	100.00	1.49	1.49
4	Grid 4 - C3	540.00	370.00	140.00	120.00	1.49	1.50
5	Grid 5 - East (Bat Crossin...	735.04	382.08	40.00	10.00	0.25	0.25
6	Grid 6 - West (Bat Crossin...	754.43	417.08	40.00	10.00	0.25	0.25
7	Grid 7 - Crossing Carpet	518.99	339.29	30.00	30.00	0.50	0.50
8	Grid 8 - Back of Waiting A...	513.57	361.52	3.50	1.50	0.25	0.25
9	Grid 9 - Front of Kerb (No...	515.27	359.69	3.50	1.50	0.25	0.25
10	Grid 10 - Front Of Kerb (S...	520.00	354.93	3.50	1.50	0.25	0.25
11	Grid 11 - Back of Waiting ...	521.39	353.51	3.50	1.50	0.25	0.25
12	Grid 12 - Centre of Crossi...	517.45	357.26	3.50	1.50	0.25	0.25
13	Grid 13 - Centre of Crossi...	519.97	359.68	3.49	1.50	0.25	0.25
14	Grid 14 - M4/P2	678.75	350.00	121.25	100.00	1.50	1.49
15	Grid 15 - M3/P1	1154.97	702.96	200.00	100.00	1.49	1.49
16	Grid 16	933.81	811.68	200.00	100.00	1.49	1.49

Luminaires



Luminaire A Data

Supplier	Urbis Schreder
Type	AXIA 3.2 5280 Integrated lenses 32 OSLO N SQUARE GIANT@800mA
Lamp(s)	32 OSLO N SQUARE GIANT@800mA WW 730 230V
LampFlux(klm)/Colour	9.55 WW 3000K/70
File Name	AXIA 3.2 5280 32 OSLO N SQUARE GIANT 800mA WW 730 78W 430132 Integrated I...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	827.8, 161.9, 0.0
No. in Project	16

Luminaire B Data

Supplier	
Type	BGP623 DM11
Lamp(s)	LED-HB 4S/740
Lamp Flux (klm)	12.50
File Name	Luma1_BGP623_DM11_12500_80LED_305mA_4S_CLO L90_NW.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	574.0, 158.1, 0.0
No. in Project	3



Luminaire C Data

Supplier	Philips
Type	BGP704 DM10
Lamp(s)	LED-HB 5.2S 740
Lamp Flux (klm)	18.50
File Name	Luma Gen2 Medium_BGP704_DM10_18500_80LED_5.2S_CLO L90_740.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	523.4, 90.0, 0.0
No. in Project	1

Luminaire D Data

Supplier	
Type	AXIA 3.2 D8.8 - 3K 32 OSLO N SQUARE GIANT 580mA WW Integrated
Lamp(s)	32 OSLO N SQUARE GIANT 580mA WW 3000K
Lamp Flux (klm)	8.87
File Name	AXIA 3.2 D8.8 - 3K 32 OSLO N SQUARE GIANT 580mA WW 3000K Integrated lenses ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	825.8, 81.9, 0.0
No. in Project	22

Luminaires



Luminaire E Data

Supplier	Philips
Type	BGP704 DM10
Lamp(s)	LED-HB 5.2S 740
Lamp Flux (klm)	21.00
File Name	Luma Gen2 Medium_BGP704_DM10_2100 0_80LED_5.2S_CLO_L90_740.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	523.4, 90.0, 0.0
No. in Project	5

Luminaire F Data

Supplier	
Type	AXIA 3.3 E14.6-3K Integrated lenses - 64 OSLON SQUARE GIANT
Lamp(s)	64 OSLON SQUARE GIANT@480mA WW 730 230V 00-36-982
Lamp Flux (klm)	13.69
File Name	AXIA 3.3 E14.6 - 3K 64 OSLON SQUARE GIANT 480mA WW 3000K Integrated lens...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	625.2, 21.3, 0.0
No. in Project	20

Luminaire G Data

Supplier	
Type	AXIA 3.3 D14.6 - 3K 64 OSLON SQUARE G IANT 480mA WW Integrated
Lamp(s)	64 OSLON SQUARE GIANT 480mA WW 3 000K
Lamp Flux (klm)	14.60
File Name	AXIA 3.3 D14.6 - 3K 64 OSLON SQUARE G IANT 480mA WW 3000K Integrated lenses...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	825.8, 81.9, 0.0
No. in Project	20

Luminaire H Data

Supplier	
Type	AXIA 3.3 52933BL Integrated lenses - 64 O SLON SQUARE GIANT@4
Lamp(s)	64 OSLON SQUARE GIANT WW 730 230V 00-36-646
Lamp Flux (klm)	15.09
File Name	AXIA 3.3 E14.6 - 3K BL 64 OSLON SQUAR E GIANT 480mA WW 3000K Integrated le...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	359.1, 9.2, 0.0
No. in Project	3

Luminaire I Data

Supplier	
Type	AXIA 3.3 5280 Integrated lenses Rear louve rs 64 OSLON SQUARE
Lamp(s)	64 OSLON SQUARE GIANT@480mA WW 730 230V 1x03-55-869 - DRIVER
LampFlux(klm)/Colour	15.76 3000K/70
File Name	AXIA 3.3 5280 64 OSLON SQUARE GIANT Drv 480mA WW 730 92W 479682 Integrat...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	648.0, 98.6, 0.0
No. in Project	1

Luminaire J Data

Supplier	
Type	AMPERA EVO 1 5370 Flat glass Embellish ment plate, Zebra left
Lamp(s)	10 LEDs@600mA NW 740 230V 03-55-699
LampFlux(klm)/Colour	2.77 NW 4000K/70
File Name	AMPERA EVO 1 5370 10 LEDs Drv 600mA NW 740 20W 523282 Flat glass ZL LE 23...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	63.0, 85.6, 0.0
No. in Project	2

Luminaire L Data

Supplier	
Type	AXIA 3.1 C3.5 - 27K BL 16 OSLON SQUAR E GIANT 460mA WW 2700K I
Lamp(s)	16 OSLON SQUARE GIANT 460mA WW 2 700K
Lamp Flux (klm)	3.50
File Name	AXIA 3.1 C3.5 - 27K BL 16 OSLON SQUAR E GIANT 460mA WW 2700K Integrated le...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	742.5, 62.1, 4.3
No. in Project	4

Luminaire M Data

Supplier	
Type	AXIA 3.1 A1.1 - 3K 8 OSLON SQUARE GIA NT 270mA WW Integrated I
Lamp(s)	8 OSLON SQUARE GIANT 270mA WW 30 00K
Lamp Flux (klm)	1.13
File Name	AXIA 3.1 A1.1 - 3K 8 OSLON SQUARE GIA NT 270mA WW 3000K Integrated lenses - ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	1048.4, 33.1, 0.0
No. in Project	3

Luminaires

Luminaire N Data

Supplier	
Type	AXIA 3.1 B2.1 - 3K 8 OSLOM SQUARE GIA NT 540mA WW Integrated I
Lamp(s)	8 OSLOM SQUARE GIANT 540mA WW 30 00K
Lamp Flux (klm)	2.10
File Name	AXIA 3.1 B2.1 - 3K 8 OSLOM SQUARE GIA NT 540mA WW 3000K Integrated lenses - ...
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	1019.7, 85.8, 0.0
No. in Project	1

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	1345.10	687.55	10.00	64.00	0.00	0.00	0.40			
2	A	1315.44	711.77	10.00	250.00	0.00	0.00	0.40			
3	G	1276.17	724.10	10.00	255.00	0.00	0.00	0.40			
4	G	1237.98	720.82	10.00	84.00	0.00	0.00	0.40			
5	F	1106.57	734.79	10.00	40.00	0.00	0.00	0.40			
6	F	1131.43	704.84	10.00	25.00	0.00	0.00	0.40			
7	G	1110.16	760.74	10.00	229.00	0.00	0.00	0.40			
8	G	1059.54	780.42	10.00	54.00	0.00	0.00	0.40			
9	G	1035.55	808.55	10.00	239.00	0.00	0.00	0.40			
10	A	991.80	824.42	10.00	55.00	0.00	0.00	0.70			
11	A	958.83	848.42	10.00	53.00	0.00	0.00	0.70			
12	A	931.61	886.55	10.00	234.00	0.00	0.00	1.90			
13	B	887.17	900.95	10.00	54.00	0.00	0.00	0.40			
14	B	857.09	936.78	10.00	233.00	0.00	0.00	0.40			
15	A	824.66	960.66	10.00	231.00	0.00	0.00	0.90			
16	A	790.19	986.37	10.00	237.00	0.00	0.00	0.90			
17	A	746.12	1002.17	10.00	55.00	0.00	0.00	1.90			
18	B	720.52	1038.05	10.00	237.00	0.00	0.00	0.40			
19	A	674.65	1056.65	10.00	52.00	0.00	0.00	0.90			
20	A	639.89	1082.93	10.00	51.00	0.00	0.00	1.90			
21	A	604.51	1114.07	10.00	46.00	0.00	0.00	1.90			
22	C	587.45	1154.37	6.00	221.00	0.00	0.00	0.40			
23	A	547.60	1176.63	8.00	31.00	0.00	0.00	0.40			
24	A	566.17	1160.28	8.00	28.00	0.00	0.00	0.40			
25	E	527.30	1206.94	10.00	37.00	0.00	0.00	0.40			
26	E	522.29	1234.26	10.00	219.00	0.00	0.00	0.40			
27	E	502.47	1257.85	10.00	211.00	0.00	0.00	0.40			
28	E	481.19	1279.16	10.00	219.00	0.00	0.00	0.40			
29	E	466.01	1293.88	10.00	219.00	0.00	0.00	0.40			
30	A	577.08	1119.94	10.00	106.00	0.00	0.00	0.90			
31	A	558.62	1137.95	10.00	5.00	0.00	0.00	0.70			
32	A	564.05	1115.26	10.00	131.00	0.00	0.00	0.70			
33	D	535.95	1111.61	8.00	315.00	0.00	0.00	0.70			
34	D	520.80	1083.82	8.00	141.00	0.00	0.00	0.70			
35	D	501.20	1059.36	8.00	144.00	0.00	0.00	0.90			
36	D	487.25	1035.41	8.00	150.00	0.00	0.00	0.70			

Layout Continued

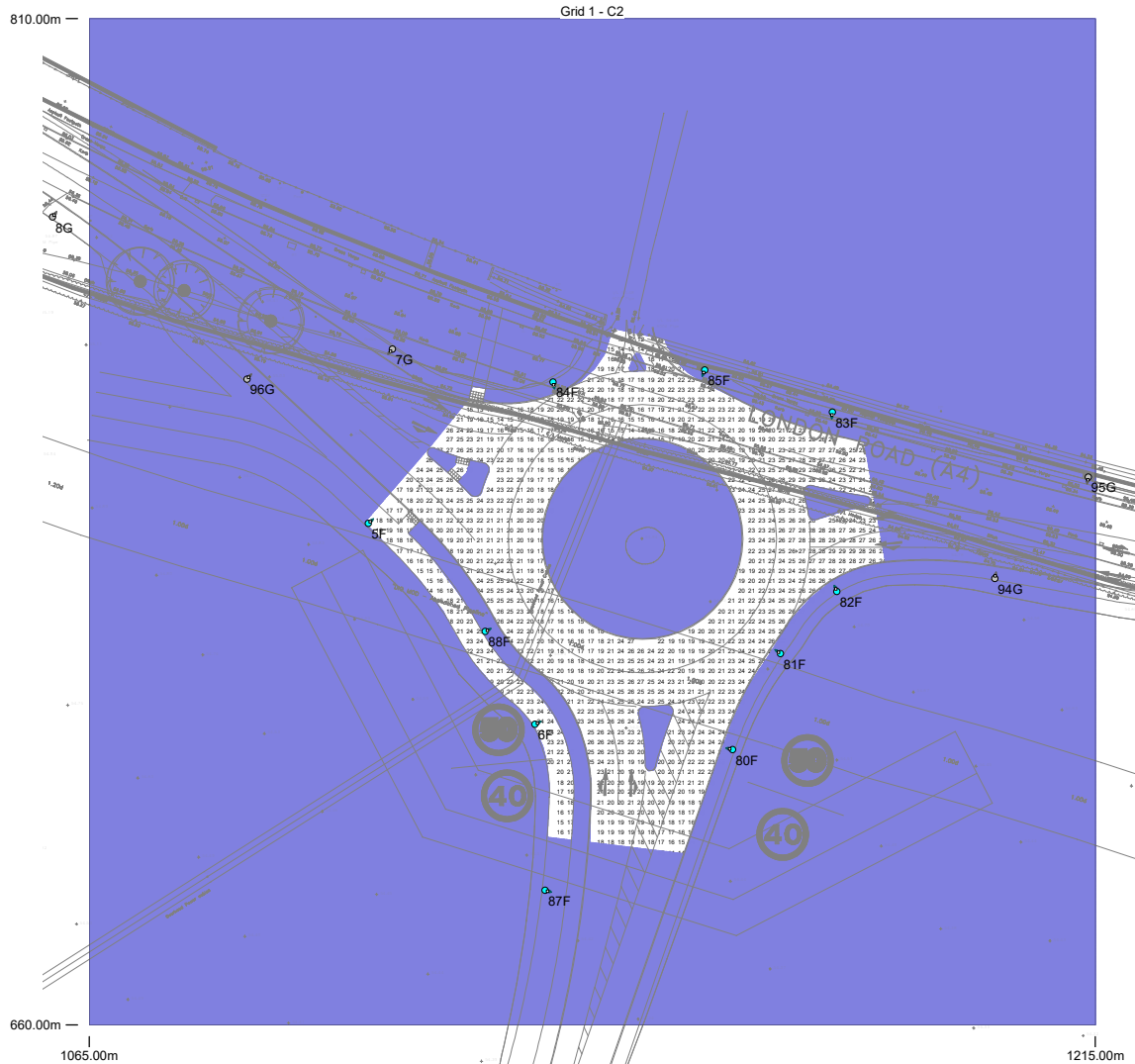
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
37	D	462.27	1013.80	8.00	335.00	0.00	0.00	0.70			
38	D	474.18	1008.20	8.00	155.00	0.00	0.00	0.70			
39	D	450.39	989.53	8.00	333.00	0.00	0.00	0.70			
40	D	464.00	987.05	8.00	157.00	0.00	0.00	0.70			
41	D	435.25	958.62	8.00	326.00	0.00	0.00	0.70			
42	D	444.88	949.41	8.00	155.00	0.00	0.00	0.70			
43	D	431.92	926.97	8.00	155.00	0.00	0.00	0.70			
44	D	409.33	904.89	8.00	335.00	0.00	0.00	0.70			
45	D	405.81	872.87	8.00	153.00	0.00	0.00	0.70			
46	D	382.92	850.95	8.00	336.00	0.00	0.00	0.70			
47	D	379.51	819.10	8.00	154.00	0.00	0.00	0.70			
48	D	356.70	797.14	8.00	334.00	0.00	0.00	0.40			
49	D	353.04	764.75	8.00	155.00	0.00	0.00	0.40			
50	D	341.71	736.63	8.00	154.00	0.00	0.00	1.40			
51	D	326.09	711.39	8.00	150.00	0.00	0.00	0.40			
52	D	309.84	683.74	8.00	148.00	0.00	0.00	0.70			
53	D	287.73	652.40	8.00	139.00	0.00	0.00	0.40			
54	G	1129.16	611.97	10.00	158.00	0.00	0.00	0.40			
55	F	919.59	460.81	8.00	25.00	0.00	0.00	0.40			
56	H	1093.65	591.76	8.00	64.00	0.00	0.00	0.40			
57	H	1116.98	585.21	10.00	149.00	0.00	0.00	0.40			
58	H	1102.63	561.04	10.00	151.00	0.00	0.00	0.40			
59	F	619.78	402.36	10.00	100.00	0.00	0.00	0.40			
60	F	583.31	380.50	8.00	206.00	0.00	0.00	0.40			
61	F	566.10	403.98	10.00	296.00	0.00	0.00	0.40			
62	F	607.92	427.31	8.00	10.00	0.00	0.00	0.40			
63	F	629.86	451.97	8.00	291.00	0.00	0.00	0.40			
64	F	598.03	461.63	8.00	21.00	0.00	0.00	0.40			
65	F	595.70	396.97	10.00	105.00	0.00	0.00	0.40			
66	I	1077.01	528.73	10.00	136.00	0.00	0.00	0.40			
67	G	1045.27	499.90	10.00	123.00	0.00	0.00	0.40			
68	G	1008.25	476.01	10.00	117.00	0.00	0.00	0.40			
69	G	969.41	457.32	10.00	117.00	0.00	0.00	0.40			
70	G	900.10	426.05	10.00	117.00	0.00	0.00	0.40			
71	G	830.17	408.90	10.00	284.00	0.00	0.00	0.40			
72	G	797.76	391.73	10.00	99.00	0.00	0.00	0.40			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
75	G	684.91	402.14	10.00	80.00	0.00	0.00	0.40			
76	F	645.05	405.04	10.00	93.00	0.00	0.00	0.40			
77	G	531.33	376.86	10.00	314.00	0.00	0.00	0.40			
78	G	507.73	339.74	10.00	143.00	0.00	0.00	0.40			
79	F	933.06	440.83	10.00	117.00	0.00	0.00	0.40			
80	F	1160.87	701.08	10.00	166.00	0.00	0.00	0.40			
81	F	1168.04	715.36	10.00	144.00	0.00	0.00	0.40			
82	F	1176.44	724.63	10.00	113.00	0.00	0.00	0.40			
83	F	1175.77	751.36	10.00	264.00	0.00	0.00	0.40			
84	F	1134.12	755.82	10.00	283.00	0.00	0.00	0.40			
85	F	1156.73	757.63	10.00	249.00	0.00	0.00	0.40			
86	G	1141.29	644.79	10.00	161.00	0.00	0.00	0.40			
87	F	1132.93	680.09	10.00	345.00	0.00	0.00	0.40			
88	F	1124.00	718.66	10.00	27.00	0.00	0.00	0.40			
89	G	867.26	411.41	10.00	112.00	0.00	0.00	0.40			
90	J	523.09	357.16	6.00	138.00	0.00	0.00	0.40			
91	J	514.62	359.99	6.00	315.00	0.00	0.00	0.40			
92	L	727.20	395.89	5.00	75.00	0.00	0.00	0.40			
93	L	754.45	392.26	5.00	82.00	0.00	0.00	0.40			
94	L	735.89	408.91	5.00	260.00	0.00	0.00	0.40			
95	L	762.68	405.76	5.00	259.00	0.00	0.00	0.40			
94	G	1199.99	726.55	10.00	80.00	0.00	0.00	0.40			
95	G	1213.94	741.67	10.00	257.00	0.00	0.00	0.40			
96	G	1088.51	756.26	10.00	49.00	0.00	0.00	0.40			
97	D	476.07	1040.63	8.00	338.00	0.00	0.00	0.70			
98	M	523.11	957.95	5.00	228.00	0.00	0.00	0.40			
99	M	511.27	983.68	4.00	193.00	0.00	0.00	0.40			
100	N	505.04	1014.59	4.00	195.00	0.00	0.00	0.40			
101	M	370.03	738.11	4.00	226.00	0.00	0.00	0.40			

Horizontal Illuminance (lux)

Grid 1 - C2

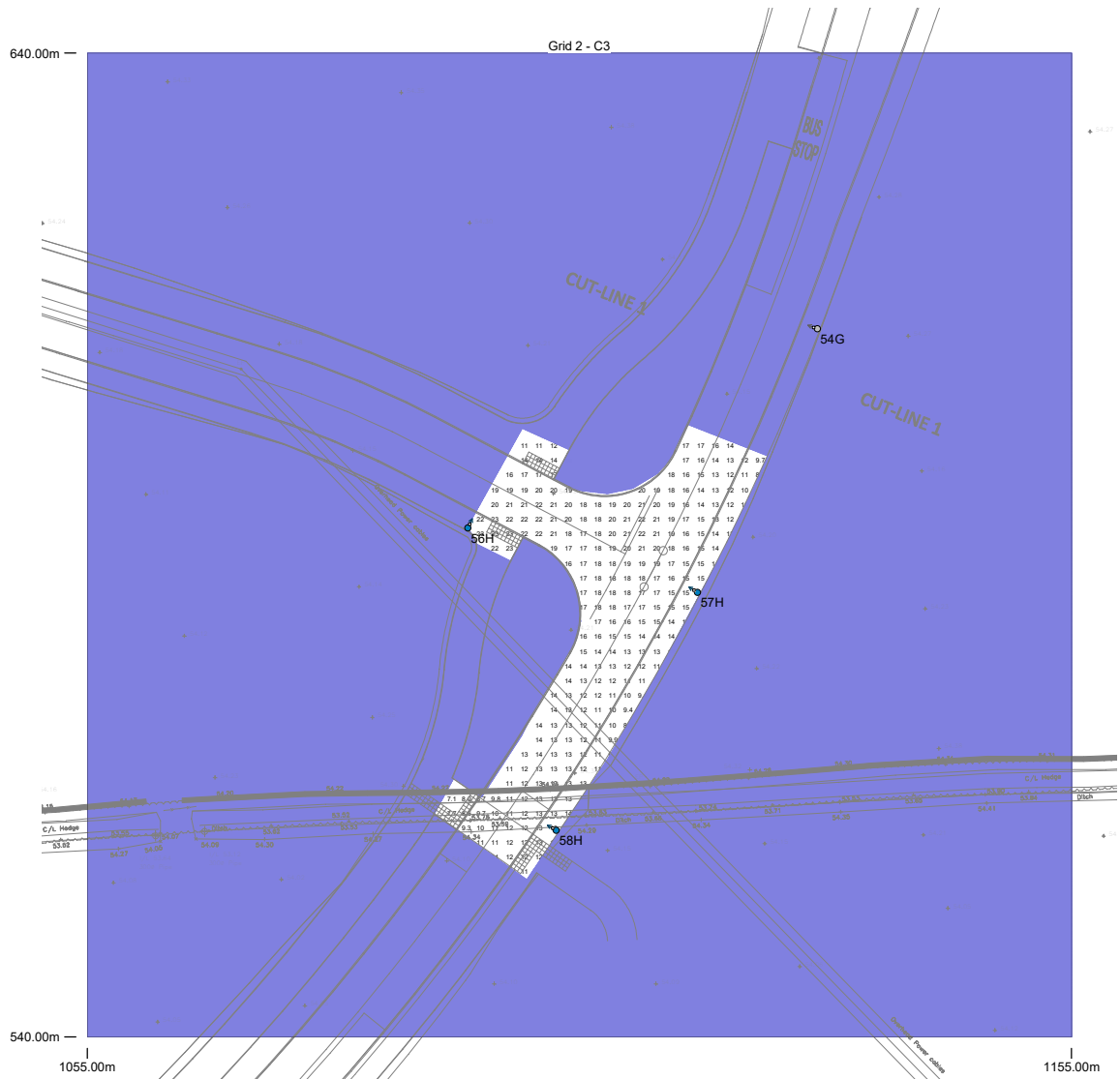


Results

Eav	21.16
Emin	11.22
Emax	29.32
Emin/Emax	0.38
Emin/Eav	0.53

Horizontal Illuminance (lux)

Grid 2 - C3

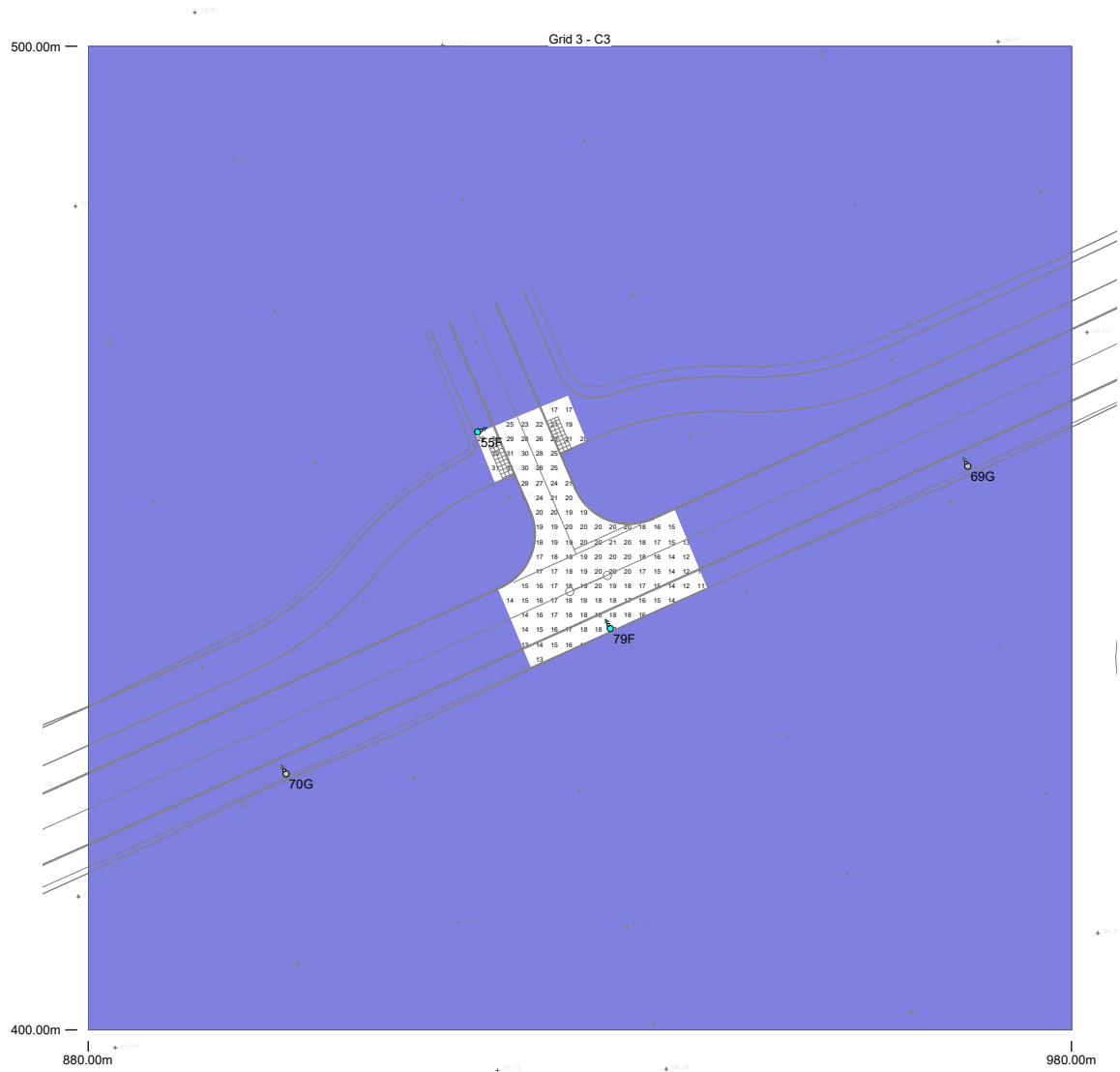


Results

Eav	15.04
Emin	7.07
Emax	23.36
Emin/Emax	0.30
Emin/Eav	0.47

Horizontal Illuminance (lux)

Grid 3 - C3



Results

Eav	19.00
Emin	10.64
Emax	31.81
Emin/Emax	0.33
Emin/Eav	0.56

Horizontal Illuminance (lux)

Grid 4 - C3

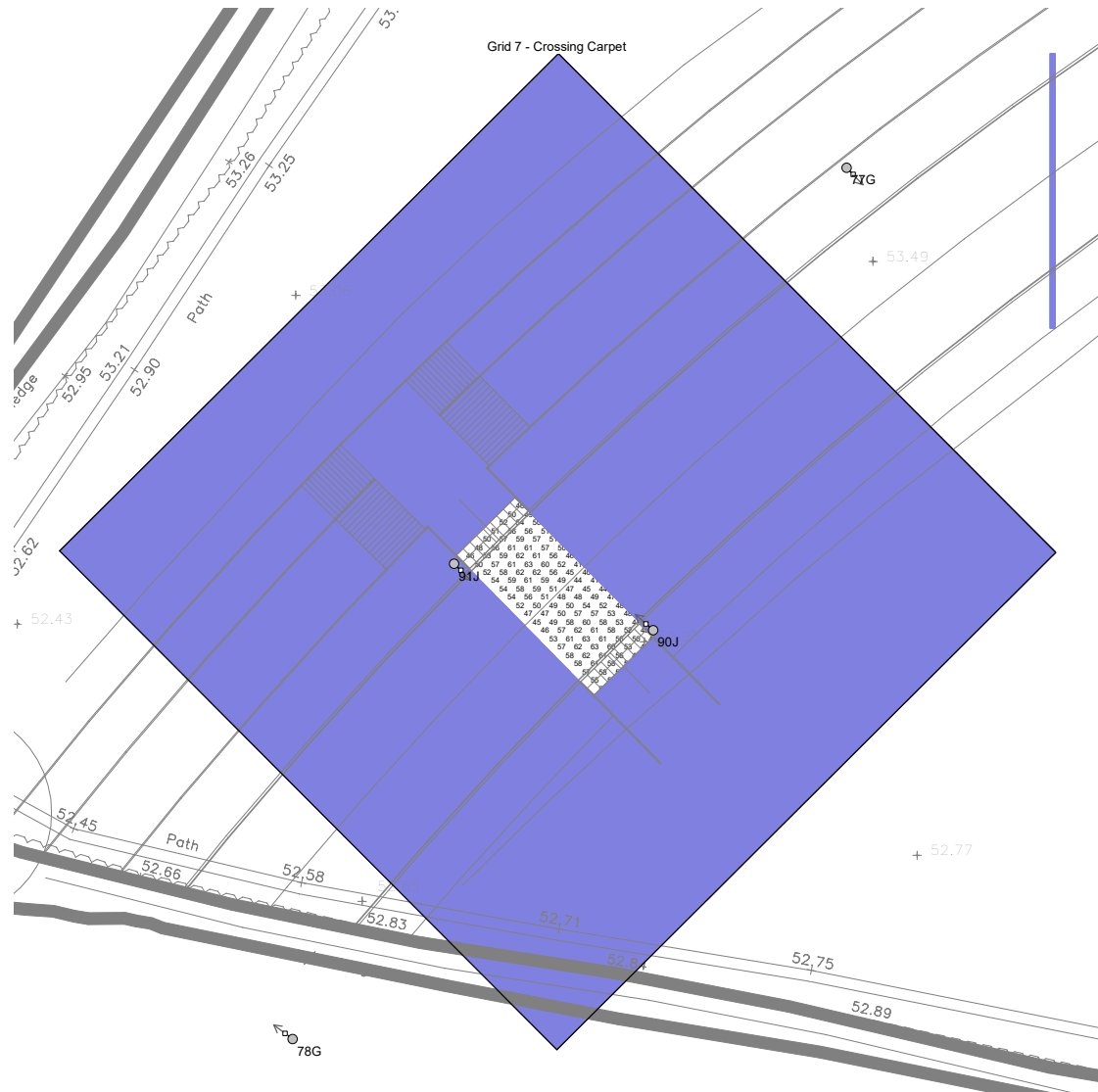


Results

Eav	15.93
Emin	7.61
Emax	28.72
Emin/Emax	0.26
Emin/Eav	0.48

Horizontal Illuminance (lux)

Grid 7 - Crossing Carpet



Illuminance (lux)

Grid 8 - Back of Waiting Area (North)

21	21	20	19	19	18	17	16	16	16	16	16	15	14
21	20	20	19	19	18	17	17	17	17	17	17	16	15
20	20	20	19	19	18	17	17	17	17	17	17	16	16
19	19	19	19	19	18	18	17	17	17	17	17	17	16
19	19	19	19	19	18	18	17	17	17	17	17	17	17
19	19	19	19	19	19	18	18	18	17	18	18	18	17

Results

Eav	17.82
Emin	13.87
Emax	21.19
Emin/Emax	0.65
Emin/Eav	0.78

Illuminance (lux)

Grid 9 - Front of Kerb (North)

13	14	15	16	16	17	17	18	18	18	18	18	17	17
15	16	17	18	19	20	20	20	21	21	20	20	20	19
18	19	20	21	22	22	23	23	23	23	23	22	22	21
20	21	22	23	24	24	25	25	25	25	24	24	23	22
21	22	23	24	25	26	26	26	26	26	25	25	24	23
22	23	24	25	26	27	27	27	27	26	26	25	24	23

Results

Eav	21.59
Emin	13.04
Emax	26.86
Emin/Emax	0.49
Emin/Eav	0.60

Illuminance (lux)

Grid 10 - Front Of Kerb (South)

17	18	18	18	18	18	18	18	17	16	16	15	14	13
20	21	21	21	21	21	21	20	20	19	18	17	16	15
22	23	23	23	24	24	23	23	23	22	21	20	19	18
23	24	25	25	26	26	26	25	25	24	23	22	21	19
24	25	26	27	27	27	27	27	26	25	24	23	22	21
25	26	26	27	28	28	28	27	27	26	25	24	23	21

Results

Eav	22.12
Emin	12.93
Emax	27.82
Emin/Emax	0.46
Emin/Eav	0.58

Illuminance (lux)

Grid 11 - Back of Waiting Area (South)

16	18	19	20	20	20	19	19	19	19	20	20	21	21
17	18	19	20	20	19	19	19	19	19	19	20	20	20
18	19	19	20	19	19	19	18	19	19	19	19	19	19
18	19	19	20	19	19	19	19	19	19	19	19	19	19
19	20	20	20	20	19	19	19	19	19	19	19	19	18
20	20	20	20	20	20	20	20	20	20	19	19	19	19

Results

Eav	19.22
Emin	16.26
Emax	20.78
Emin/Emax	0.78
Emin/Eav	0.85

Illuminance (lux)

Grid 12 - Centre of Crossing (North)

30	33	35	37	37	37	36	34	32	29	26	23	20	17
23	25	27	28	28	28	28	27	26	24	22	20	18	16
19	20	21	21	22	22	22	22	21	20	19	17	16	15
16	17	17	18	18	18	18	18	18	17	17	16	15	14
14	15	15	15	16	16	16	16	16	16	15	14	14	13
12	13	13	14	14	14	14	14	14	14	14	13	13	12

Results

Eav	20.03
Emin	12.02
Emax	37.07
Emin/Emax	0.32
Emin/Eav	0.60

Illuminance (lux)

Grid 13 - Centre of Crossing (South)

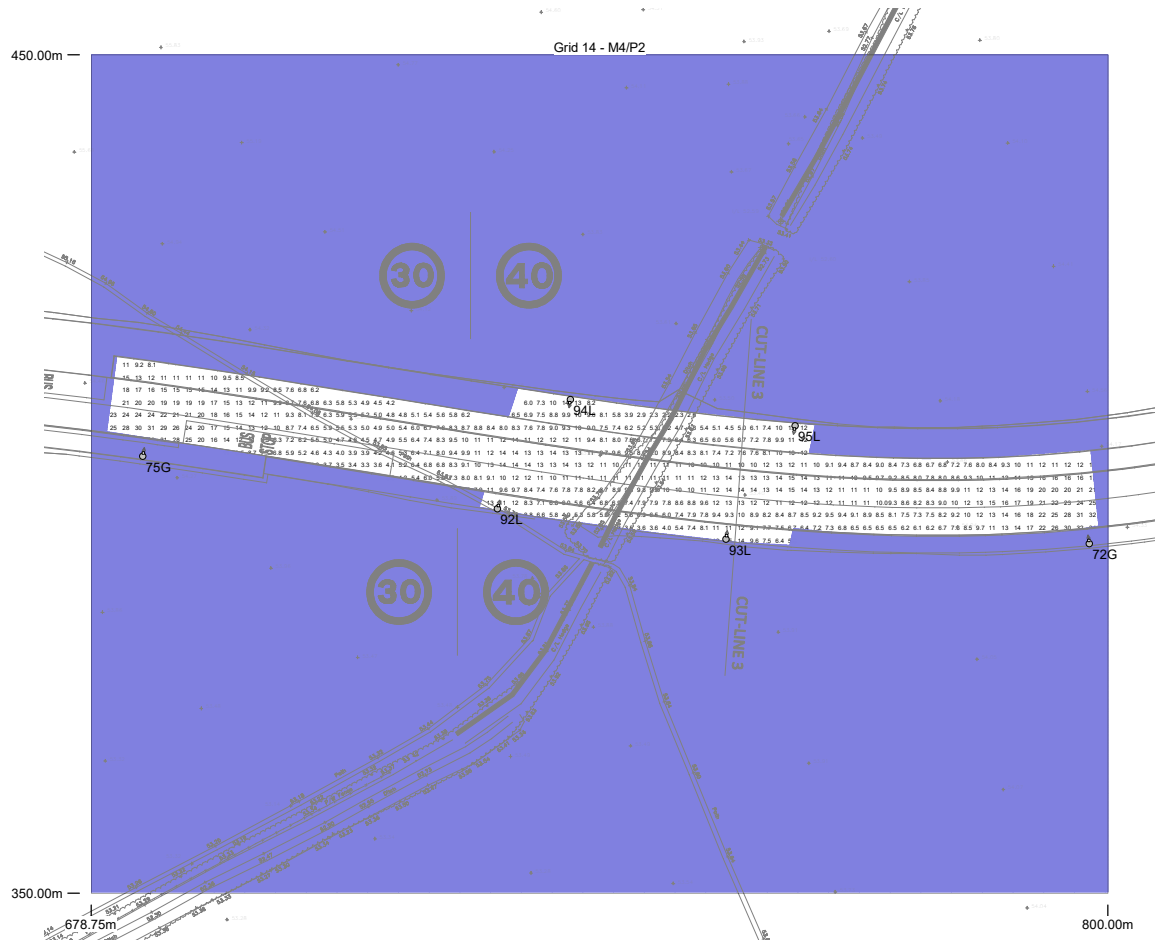
34	36	38	39	40	39	37	35	32	30	26	23	20	17
26	28	30	31	32	32	31	30	28	26	23	21	19	16
20	22	23	24	25	25	25	24	23	21	20	18	17	15
17	18	18	19	19	20	20	19	19	18	17	16	15	14
15	15	16	16	17	17	17	17	16	16	15	15	14	13
13	14	14	14	15	15	15	15	15	14	14	13	13	12

Results

Eav	21.20
Emin	11.90
Emax	39.64
Emin/Emax	0.30
Emin/Eav	0.56

Horizontal Illuminance (lux)

Grid 14 - M4/P2

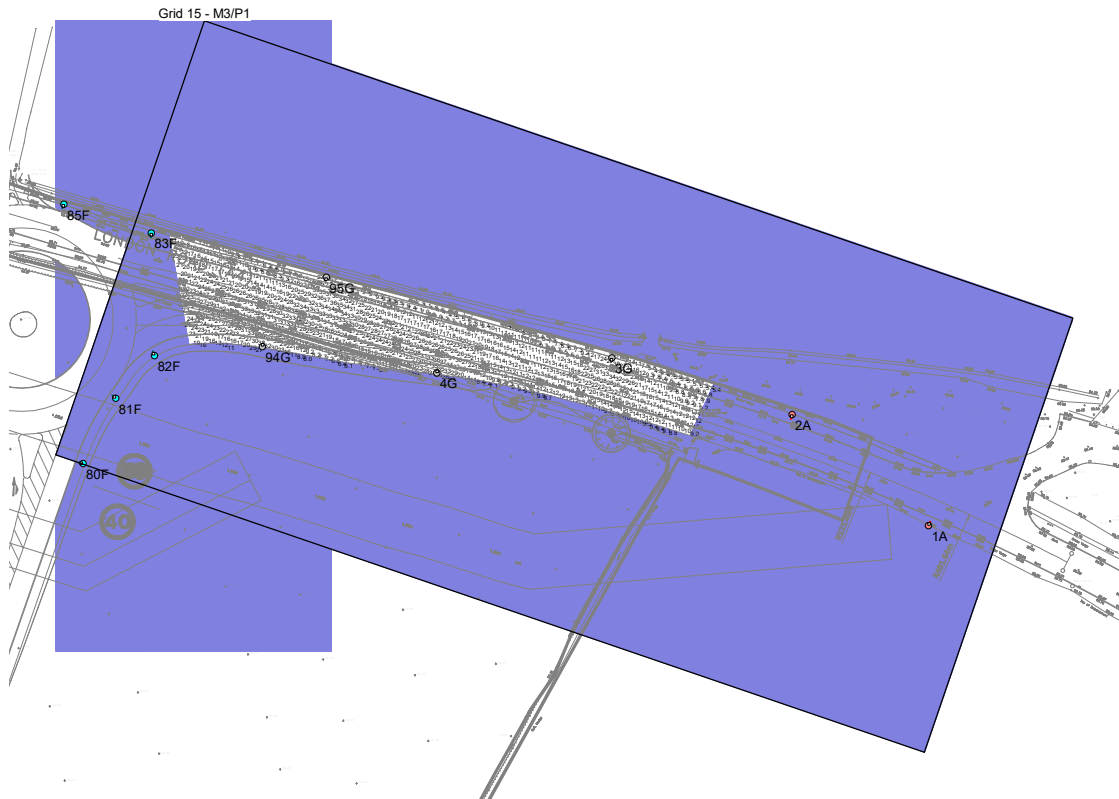


Results

Eav	10.53
Emin	2.24
Emax	33.61
Emin/Emax	0.07
Emin/Eav	0.21

Horizontal Illuminance (lux)

Grid 15 - M3/P1

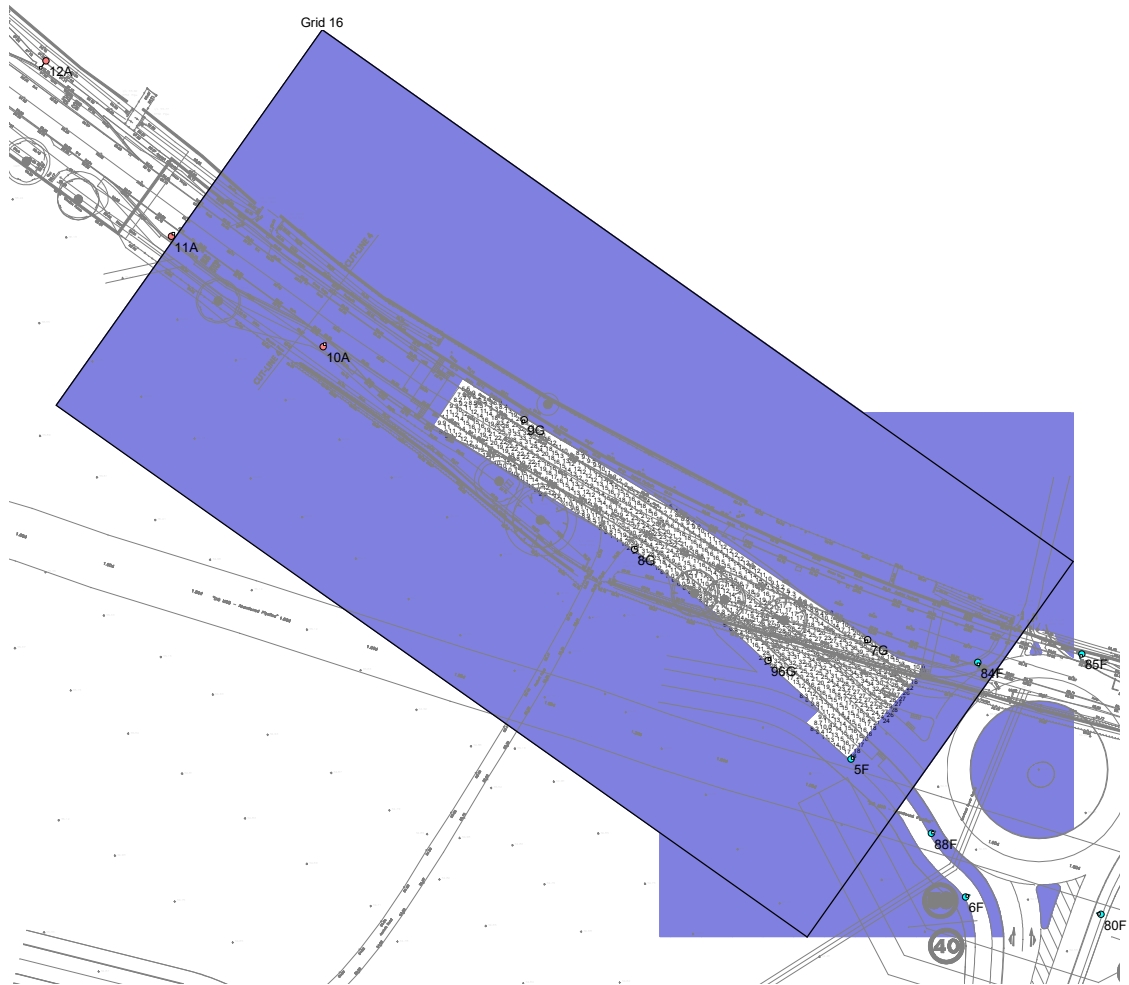


Results

Eav	18.81
Emin	4.46
Emax	37.06
Emin/Emax	0.12
Emin/Eav	0.24

Horizontal Illuminance (lux)

Grid 16



Results

Eav	18.60
Emin	4.38
E _{max}	40.03
Emin/E _{max}	0.11
Emin/Eav	0.24



Luminaire Data Sheets and
Manufacturers Data

APPENDIX E

AMPERA EVO



High-performance LED lighting solution with fast return on investment

Creating an efficient, economical and sustainable LED lighting solution was the driving force behind the development of AMPERA EVO.

AMPERA EVO is a road luminaire highlighting high performance, technical innovation, and simplicity. This innovative luminaire thus provides powerful lighting, fast and simple installation, easy lighting network management, as well as the fastest return on investment.

Available with various lumen packages - and numerous lighting distributions - the AMPERA EVO can meet all your road and urban lighting needs.

IP 66

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URBAN &
RESIDENTIAL
STREETS



BRIDGES



BIKE &
PEDESTRIAN
PATHS



RAILWAY
STATIONS &
METROS



CAR PARKS



LARGE AREAS



SQUARES &
PEDESTRIAN
AREAS



ROADS &
MOTORWAYS

Concept

AMPERA EVO comes in two separate high-pressure die cast aluminium parts for the greatest installation and maintenance ease. The two parts are connected by two tool-free side latches. The electrical connection is automatically triggered on closing via a knife-type connector. This system allows safe connection with the mains cabling and prevents from any cabling error inside the gear compartment.

AMPERA EVO is available in two sizes to offer maximum flexibility and aesthetic coherence for town and city centres. AMPERA EVO takes advantage of the latest photometric innovations. It uses the LensoFlex® and MidFlex™ photometric engines, which have been developed around the concepts of high performance, compactness, versatility and standardisation.

AMPERA EVO comes with the IzyFix universal fixation system adapted to post-top and side-entry mounting on any pole arms (from Ø32mm, with adapter, to Ø76mm). The IzyFix system enables the luminaire to be switched from one position to another at any time, without removing it from the pole, offering complete versatility regarding pole and bracket configuration. The inclination angle can be adjusted on-site (tilting range of 110°), in both the post-top and side-entry position, to optimise the light distribution.

AMPERA EVO is a future-proof luminaire designed for a more sustainable future. It is made of highly recyclable materials and offers tool-free access for maintenance operations. Moreover, AMPERA EVO can be equipped with various control options allowing easy remote management of lighting network, with advanced features that enable the light intensity to be adjusted to what is strictly needed, thus creating environments favourable to flora and fauna.



Tool-free opening, and a mounting with two separate parts for easy installation.



The IzyFix universal fixation system, with switching from a post-top to a side-entry position, facilitates luminaire ordering and installation.

TYPES OF APPLICATION

- URBAN & RESIDENTIAL STREETS
- BRIDGES
- BIKE & PEDESTRIAN PATHS
- RAILWAY STATIONS & METROS
- CAR PARKS
- LARGE AREAS
- SQUARES & PEDESTRIAN AREAS
- ROADS & MOTORWAYS

KEY ADVANTAGES

- Cost-effective and efficient lighting solution for a fast return on investment
- On-site adjustment from post-top to side-entry without disconnecting the luminaire from the pole thanks to IzyFix
- Tool free access: easy and safe maintenance
- Connected-ready for your future Smart city requirements
- Compatible with the Schröder EXEDRA control platform
- Zhaga-D4i certified
- Adjustable inclination on-site



Connected-ready for your future smart city projects.



Designed for a more sustainable future.



LensoFlex®4

LensoFlex®4 maximises the heritage of the LensoFlex® concept with a very compact yet powerful photometric engine based upon the addition principle of photometric distribution. The number of LEDs in combination with the driving current determines the intensity level of the light distribution. With optimised light distributions and very high efficiency, this fourth generation enables the products to be downsized to meet application requirements with an optimised solution in terms of investment.

LensoFlex®4 optics can feature backlight control to prevent intrusive lighting, or a glare limiter for high visual comfort.



MidFlex™

The MidFlex™ photometric engine is based on the same principle as LensoFlex®2: each LED is associated with a specific lens that generates the complete photometric distribution of the luminaire. MidFlex™ takes advantage of the maturity of mid-power LEDs for professional applications. The MidFlex™ photometric engines are based on the combination of several modules of 48 mid-power LEDs tightly positioned to maximise the LED density. This concept provides high lumen packages with a limited product footprint. The MidFlex™ photometric engines offers excellent efficiency for a sustainable performance.

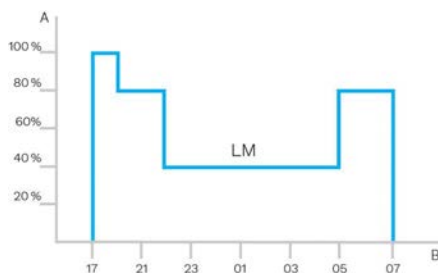




Custom dimming profile

Intelligent luminaire drivers can be programmed with complex dimming profiles. Up to five combinations of time intervals and light levels are possible. This feature does not require any extra wiring.

The period between switching on and switching off is used to activate the preset dimming profile. The customised dimming system generates maximum energy savings while respecting the required lighting levels and uniformity throughout the night.



A. Dimming level | B. Time



Daylight sensor / photocell

Photocell or daylight sensors switch the luminaire on as soon as natural light falls to a certain level. It can be programmed to switch on during a storm, on a cloudy day (in critical areas) or only at nightfall so as to provide safety and comfort in public spaces.



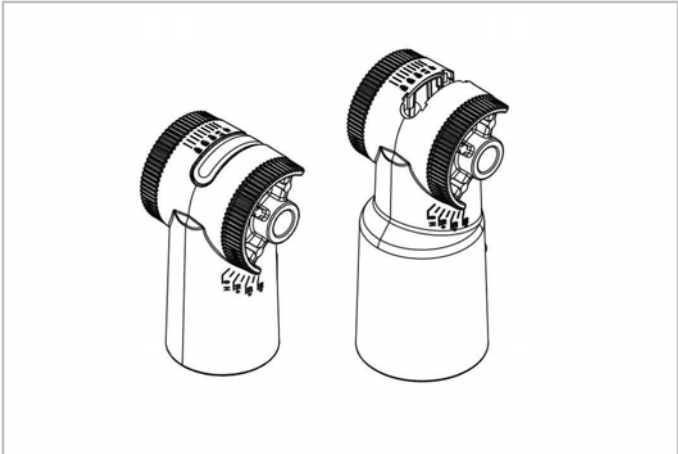
PIR sensor: motion detection

In places with little nocturnal activity, lighting can be dimmed to a minimum most of the time. By using passive infrared (PIR) sensors, the level of light can be raised as soon as a pedestrian or a slow vehicle is detected in the area.

Each luminaire level can be configured individually with several parameters such as minimum and maximum light output, delay period and ON/OFF duration time. PIR sensors can be used in an autonomous or interoperable network.



The Schröder IzyFix patented high-pressure die-casted aluminium universal fixation system is an integral part of the luminaire mounted in the factory. The IzyFix system aims to fit needs worldwide by meeting IEC and ANSI 3G testing requirements. It is intended to simplify life for customers and installers in the process of purchasing and installing luminaires for various applications.



From post-top to side-entry in one movement

The innovative design allows changing from a side-entry to a post-top position – even with luminaires ordered with factory pre-cabling – without any switching work on the fixation or disconnection from the pole. Therefore the type of mounting (horizontal or vertical) does not have to be considered when ordering. This unique feature also eases installation. After setting the correct position, an accessory is provided to cover the resulting space and ensure further protection of the luminaire.

Best-in-class tilting range



The IzyFix universal fixation system enables a best-in-class range of mounting angle of 130°*, to ensure maximum lighting performance for all kinds of road scenarios and offer the possibility of installing the luminaire in extreme situations as well. With a setting mark on the body and angles on the spigot, adjusting is carried out in 5° increments by loosening two screws. The wide tilting range enables more comfortable access to the gear

compartment during field maintenance.

*Depending on the size and shape of the luminaire, the inclination angle may be reduced. For more accurate information, always consult the installation sheets.

Variation for all poles



Due to the many different applications used worldwide, Schröder has created a range of fixation systems and reducers to satisfy all needs that might come up on the market.

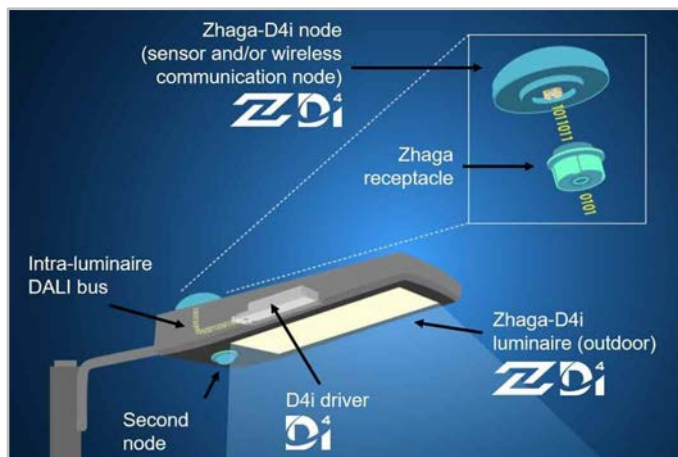
	IzyFix Ø60mm	IzyFix Ø76mm
Ø32mm spigot	✓ (with reducer)	✓ (with reducer)
Ø42-48mm spigot	✓	✓ (with reducer)
Ø60mm spigot	✓	✓
Ø76mm spigot	✗	✓

The Zhaga consortium joined forces with the DiiA and produced a single Zhaga-D4i certification that combines the Zhaga Book 18 version 2 outdoor connectivity specifications with the DiiA's D4i specifications for intra-luminaire DALI.

2 sockets: top and bottom



The Zhaga socket is small and suited to applications where aesthetics is essential. The architecture of Zhaga-D4i also foresees the possibility of putting two sockets on one luminaire, allowing for instance, the combination of a detection sensor and a control node. This also has the added value of standardising certain detection sensor communications with the D4i protocol.



Standardisation for interoperable ecosystems



As a founding member of the Zhaga consortium, Schröder has participated in the creation of, and therefore supports, the Zhaga-D4i certification program and the initiative of this group to standardise an interoperable ecosystem. The D4i specifications take the best of the standard DALI2 protocol and adapt it to an intra-luminaire environment but it has certain limitations. Only luminaire mounted control devices can be combined with a Zhaga-D4i luminaire.

According to the specification, control devices are limited respectively to 2W and 1W average power consumption.

Certification program

The Zhaga-D4i certification covers all the critical features including mechanical fit, digital communication, data reporting and power requirements within a single luminaire, ensuring plug-and-play interoperability of luminaires (drivers) and peripherals such as connectivity nodes.

Cost-effective solution

A Zhaga-D4i certified luminaire includes drivers offering features that had previously been in the control node, like energy metering, which has in turn simplified the control device therefore reducing the price of the control system.

Schröder EXEDRA is the most advanced lighting management system on the market for controlling, monitoring and analysing streetlights in a user-friendly way.



Standardisation for interoperable ecosystems

Schröder plays a key role in driving standardisation with alliances and partners such as uCIFI, TALQ or Zhaga. Our joint commitment is to provide solutions designed for vertical and horizontal IoT integration. From the body (hardware) to the language (data model) and the intelligence (algorithms), the complete Schröder EXEDRA system relies on shared and open technologies. Schröder EXEDRA also relies on Microsoft™ Azure for cloud services, provided with the highest levels of trust, transparency, standards conformance and regulatory compliance.

Breaking the silos

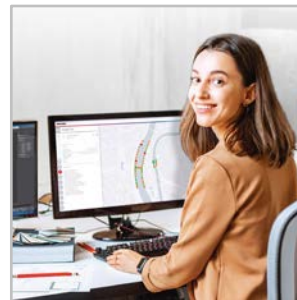
With EXEDRA, Schröder has taken a technology-agnostic approach: we rely on open standards and protocols to design an architecture able to interact seamlessly with third-party software and hardware solutions. Schröder EXEDRA is designed to unlock complete interoperability, as it offers the ability to:

- control devices (luminaires) from other brands
- manage controllers and to integrate sensors from other brands
- connect with third-party devices and platforms

A plug-and-play solution

As a gateway-less system using the cellular network, an intelligent automated commissioning process recognises, verifies and retrieves luminaire data into the user interface. The self-healing mesh between luminaire controllers enables real-time adaptive lighting to be configured directly via the user interface. OWLET IV luminaire controllers, optimised for Schröder EXEDRA, operate Schröder's luminaires and luminaires from third parties. They use both cellular and mesh radio networks, optimising geographical coverage and redundancy for continuous operation.

Tailored experience



Schröder EXEDRA includes all advanced features needed for smart device management, real-time and scheduled control, dynamic and automated lighting scenarios, maintenance and field operation planning, energy consumption management and third-party connected hardware integration. It is fully configurable and includes tools for user management and multi-tenant policy that enables contractors, utilities or big cities to segregate projects.

A powerful tool for efficiency, rationalisation and decision making

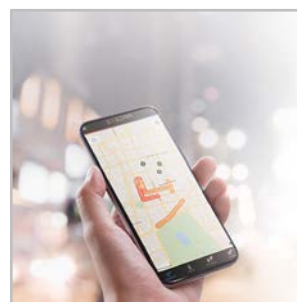
Data is gold. Schröder EXEDRA brings it with all the clarity managers need to drive decisions. The platform collects massive amounts of data from end devices and, aggregates, analyses and intuitively displays them to help end-users take the right actions.

Protected on every side



Schröder EXEDRA provides state-of-the-art data security with encryption, hashing, tokenisation, and key management practices that protect data across the whole system and its associated services. The whole platform is ISO 27001 certified. It demonstrates that Schröder EXEDRA meets the requirements for establishing, implementing, maintaining and continually improving security management.

Mobile App: any time, any place, connect to your street lighting



The Schröder EXEDRA mobile application offers the essential functionalities of the desktop platform, to accompany all types of operator on site in their daily effort to maximise the potential of connected lighting. It enables real-time control and settings, and contributes to effective maintenance.

With the PureNight concept, Schröder offers the ultimate solution for restoring the night sky without switching off cities, while maintaining safety and well-being for people and preserving wildlife. The PureNight concept guarantees that your Schröder lighting solution satisfies environmental laws and requirements. Well-designed LED lighting has the potential to improve the environment in all respects.



Protect wildlife



If not well designed, artificial lighting can badly affect wildlife. Blue light and excessive intensity can have a damaging effect on all types of life. Blue light radiation has the ability to suppress the production of melatonin, the hormone that contributes to the regulation of the circadian rhythm. It can also alter the behavioural patterns of animals including bats and moths, as it can change their movements towards or away from light sources. Schröder

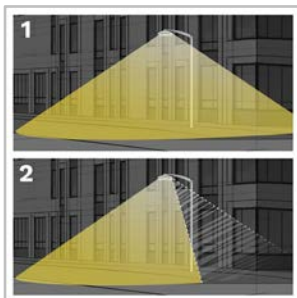
favours warm white LEDs with minimal blue light, combined with advanced control systems including sensors. This enables permanent adaptation of the lighting to the real needs of the moment, minimising disturbance to the fauna and flora.

Get the starry sky back



The Upward Light Ratio (ULR) and Upward Light Output Ratio (ULOR), the latter taking the flux from the luminaire into account, provide information on the percentage of light emitted towards the sky. This Schröder range of luminaires minimises or eliminates (depending on the options) upward-directed light flux. It complies with strict international and local requirements.

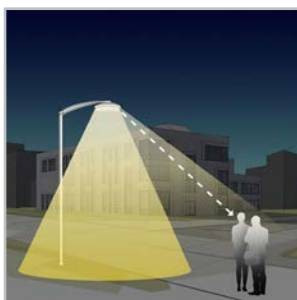
Direct the light only where it is wanted and needed



1. Without backlight
2. With backlight

Schröder is renowned for its expertise in photometry. Our optics direct light only where it is wanted and needed. However, light trespass behind the luminaire might be a key concern when it comes to protecting a sensitive wildlife habitat or avoiding intrusive lighting towards buildings. Our fully integrated backlight solutions easily address this potential risk.

Offer maximum visual comfort to people



Because of the lower installation height compared to road lighting, visual comfort is an essential aspect of urban lighting. Schröder designs lenses and accessories to minimise any type of glare (distracting, discomforting, disabling glare and blinding glare). Our design offices harness a range of possibilities to find the best solutions for each project and ensure that we provide a gentle light that delivers the best night-time experience.

GENERAL INFORMATION

Recommended installation height	4m to 15m 13' to 49'
Circle Light label	Score ≥90 - The product fully meets circular economy requirements
Driver included	Yes
CE mark	Yes
ENEC certified	Yes
ENEC+ certified	Yes
Zhaga-D4i certified	Yes
UKCA marking	Yes
Testing standard	EN 60598-1 IEC TR 62778 EN 62262 LM 79-08 (all measurements in ISO17025 accredited laboratory) LM 80 (all measurements in ISO17025 accredited laboratory)

HOUSING AND FINISH

Housing	Aluminium
Optic	PMMA
Protector	Tempered glass
Housing finish	Polyester powder coating
Standard colour(s)	AKZO grey 900 sanded
Tightness level	IP 66
Impact resistance	IK 09
Vibration test	Compliant with ANSI C 136-31 standard, 3G load Compliant with modified IEC 68-2-6 (0.5G)
Access for maintenance	Tool-less access to gear compartment

OPERATING CONDITIONS

Operating temperature range (Ta)	-40°C up to +50°C / -40° F up to 122°F
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· Depending on the luminaire configuration. For more details, please contact us.

ELECTRICAL INFORMATION

Electrical class	I, II
Nominal voltage	220-240V AC – 50-60Hz
Surge protection options (kV)	10
Electromagnetic compatibility (EMC)	EN 55015 / EN 61000-3-2 / EN 61000-3-3 / EN 61547
Control protocol(s)	1-10V, DALI
Control options	AmpDim, Bi-power, Custom dimming profile, Photocell, Remote management
Socket	Zhaga (optional) NEMA 7-pin (optional)
Associated control system(s)	Schröder EXEDRA
Sensor	PIR (optional)

OPTICAL INFORMATION

LED colour temperature	2200K (Warm White WW 722) 2700K (Warm White WW 727) 3000K (Warm White WW 730) 3000K (Warm White WW 830) 4000K (Neutral White NW 740) 5700K (Cool White CW 757)
Colour rendering index (CRI)	>70 (Warm White WW 722) >70 (Warm White WW 727) >70 (Warm White WW 730) >80 (Warm White WW 830) >70 (Neutral White NW 740) >70 (Cool White CW 757)
ULOR	0%
ULR	0%

· ULOR may be different according to the configuration. Please consult us.

· ULR may be different according to the configuration. Please consult us.

LIFETIME OF THE LEDS @ TQ 25°C

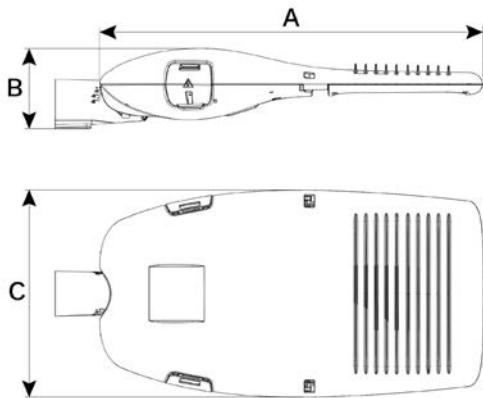
All configurations	100,000h - L95
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· Lifetime may be different according to the size/configurations. Please consult us.

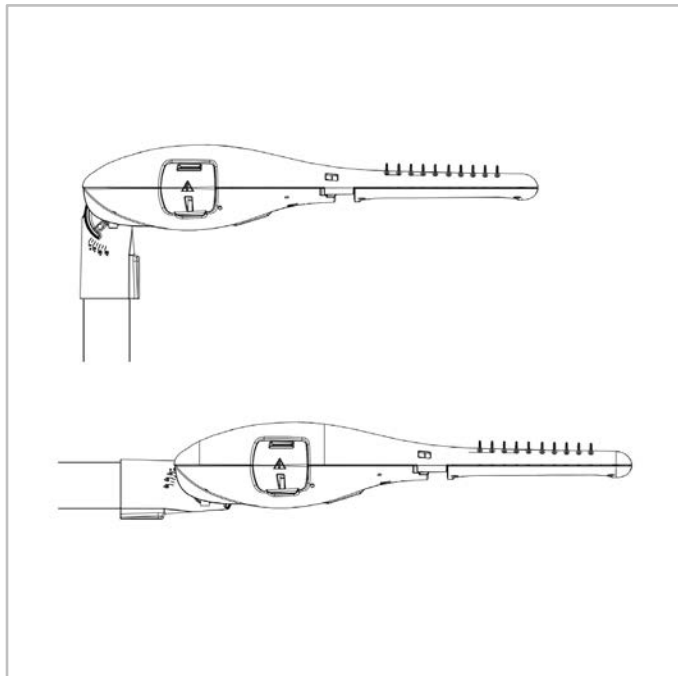
DIMENSIONS AND MOUNTING

AxBxC (mm inch)	AMPERA EVO 1 : 524x128x308 20.6x5.0x12.1 AMPERA EVO 3 : 679x143x365 26.7x5.6x14.4
Weight (kg lbs)	AMPERA EVO 1 : 5.9-7.3 13.0-16.1 AMPERA EVO 3 : 8.9-10.4 19.6-22.9
Aerodynamic resistance (CxS)	AMPERA EVO 1 : 0.04 AMPERA EVO 3 : 0.04
Mounting possibilities	Side-entry slip-over – Ø32mm Side-entry slip-over – Ø42mm Side-entry slip-over – Ø48mm Side-entry slip-over – Ø60mm Side-entry penetrating – Ø60mm Post-top slip-over – Ø32mm Post-top slip-over – Ø42mm Post-top slip-over – Ø48mm Post-top slip-over – Ø60mm Post-top slip-over – Ø76mm Post-top penetrating – Ø60mm

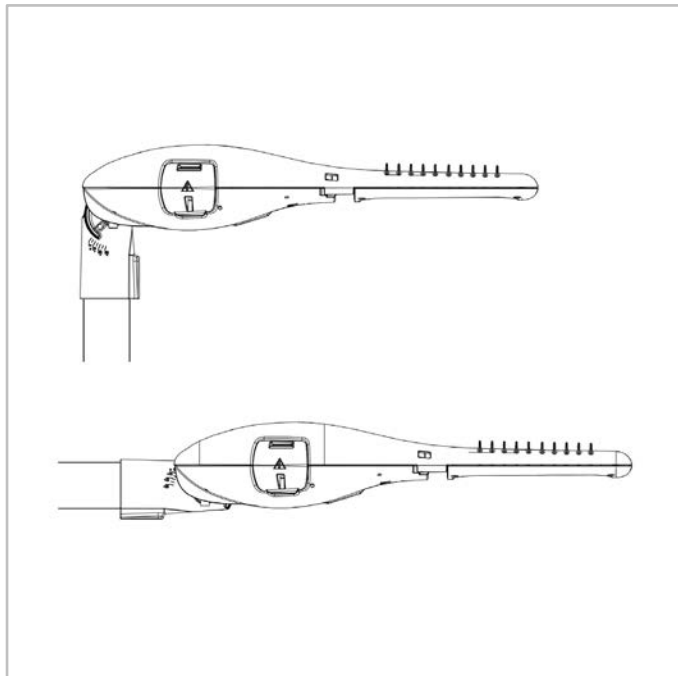
· For more information about mounting possibilities, please consult the installation sheet.
· Dimensions given with Ø60mm spigot (side-entry mounting)



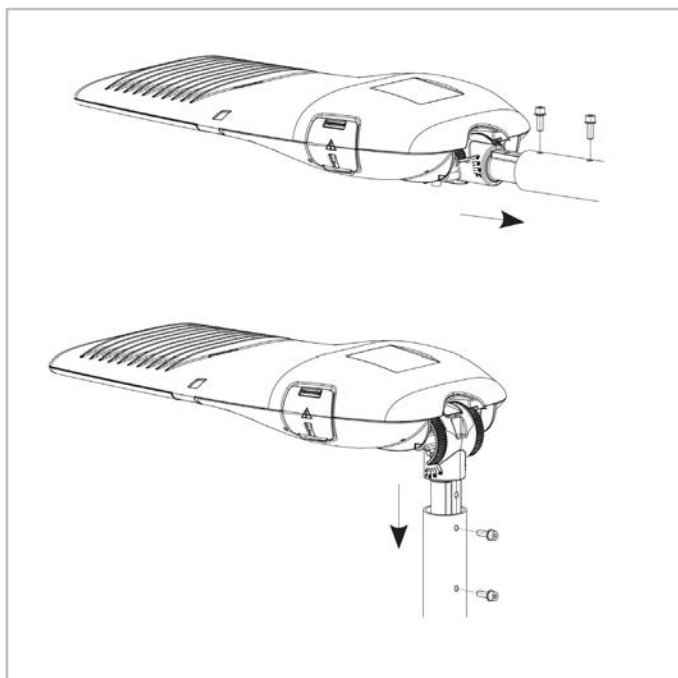
AMPERA EVO | Slip-over mounting for Ø32-60mm spigot - 2xM10 screws

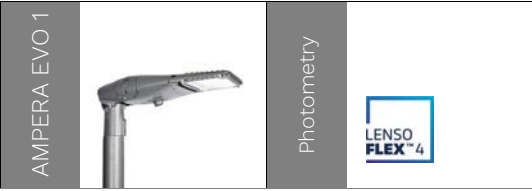


AMPERA EVO | Slip-over mounting for Ø32-76mm spigot - 2xM10 screws



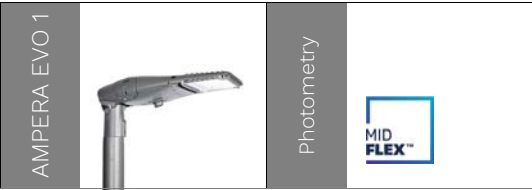
AMPERA EVO | Penetrating fixation for Ø60mm spigot - 2xM8 screws





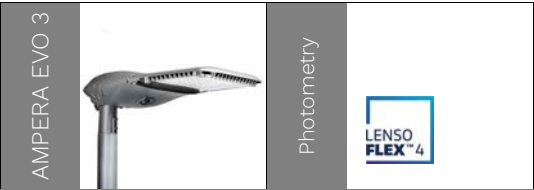
Luminaire output flux (lm)												Power consumption (W)		Luminaire efficacy (lm/W)	
Warm White WW 722		Warm White WW 727		Warm White WW 730		Warm White WW 830		Neutral White NW 740		Cool White CW 757					
Number of LEDs	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Up to
10	600	2600	700	3000	800	3300	700	3100	800	3500	800	3400	7	30	149
20	1300	5300	1500	6100	1600	6700	1500	6300	1700	7100	1700	6900	13	58	160
30	1900	8000	2200	9200	2400	10100	2300	9500	2600	10700	2500	10400	18	85	170
40	2600	10700	3000	12300	3300	13500	3100	12700	3500	14300	3400	13900	24	111	174

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



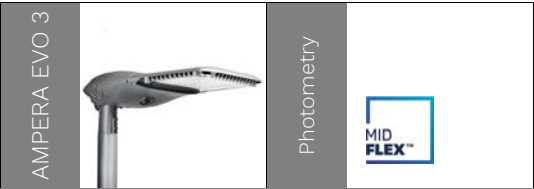
Luminaire output flux (lm)					Power consumption (W)		Luminaire efficacy (lm/W)
Warm White WW 730			Neutral White NW 740				
Number of LEDs	Min	Max	Min	Max	Min	Max	Up to
48	2000	5300	2100	5600	16	50	144
96	4100	10600	4300	11200	29	97	156

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



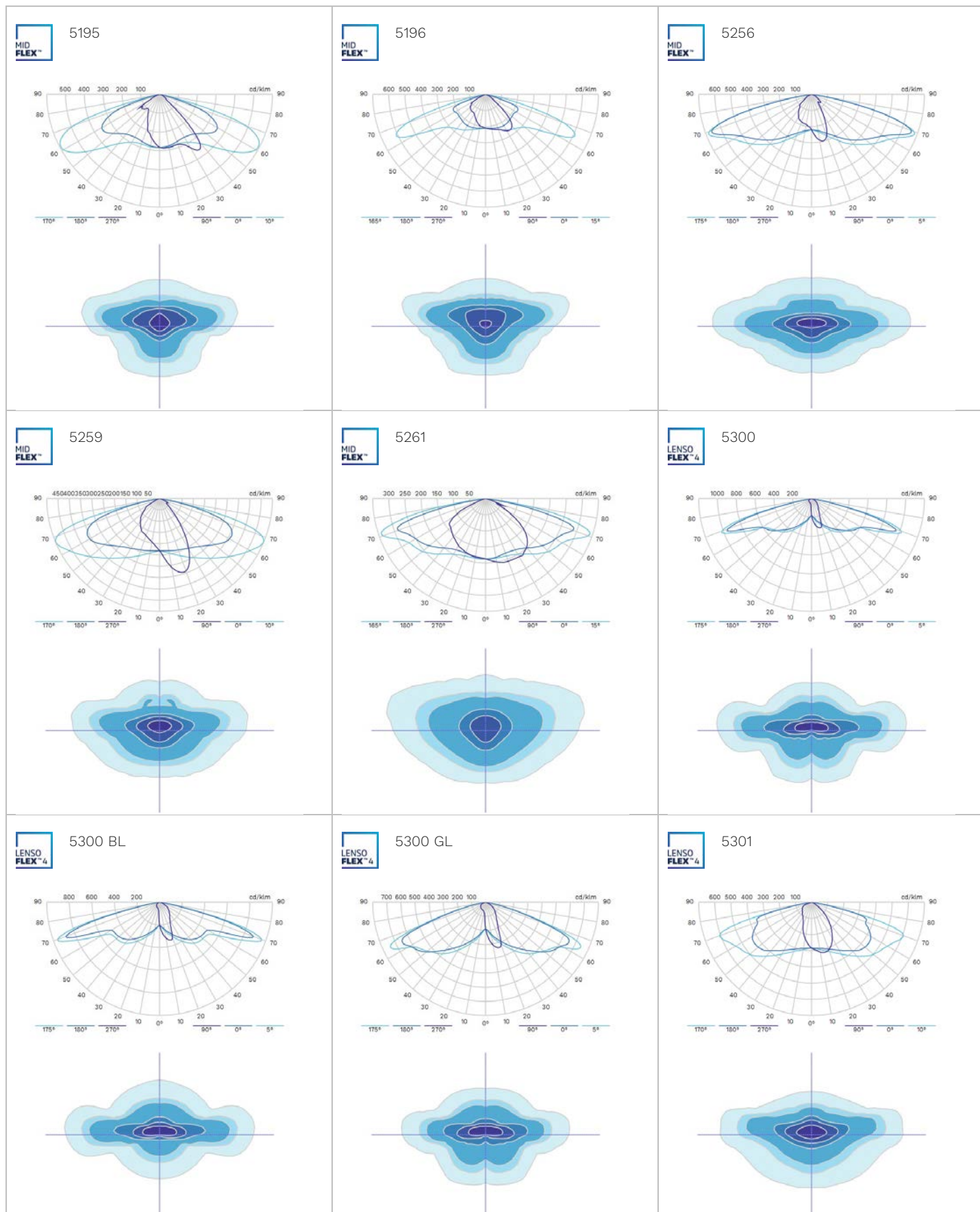
Luminaire output flux (lm)													Power consumption (W)		Luminaire efficacy (lm/W)
Warm White WW 722		Warm White WW 727		Warm White WW 730		Warm White WW 830		Neutral White NW 740		Cool White CW 757					
Number of LEDs	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Up to
40	2600	10600	3000	12200	3300	13400	3100	12600	3500	14200	3400	13800	24	111	172
50	3300	12300	3800	14200	4100	15500	3900	14600	4400	16400	4300	16000	30	123	173
60	3900	14900	4500	17100	5000	18700	4700	17600	5300	19800	5100	19300	36	149	172
70	4600	16700	5300	19300	5800	21100	5500	19800	6100	22300	6000	21800	42	163	173
80	5300	18600	6000	21300	6600	23400	6200	22000	7000	24800	6800	24100	48	176	174

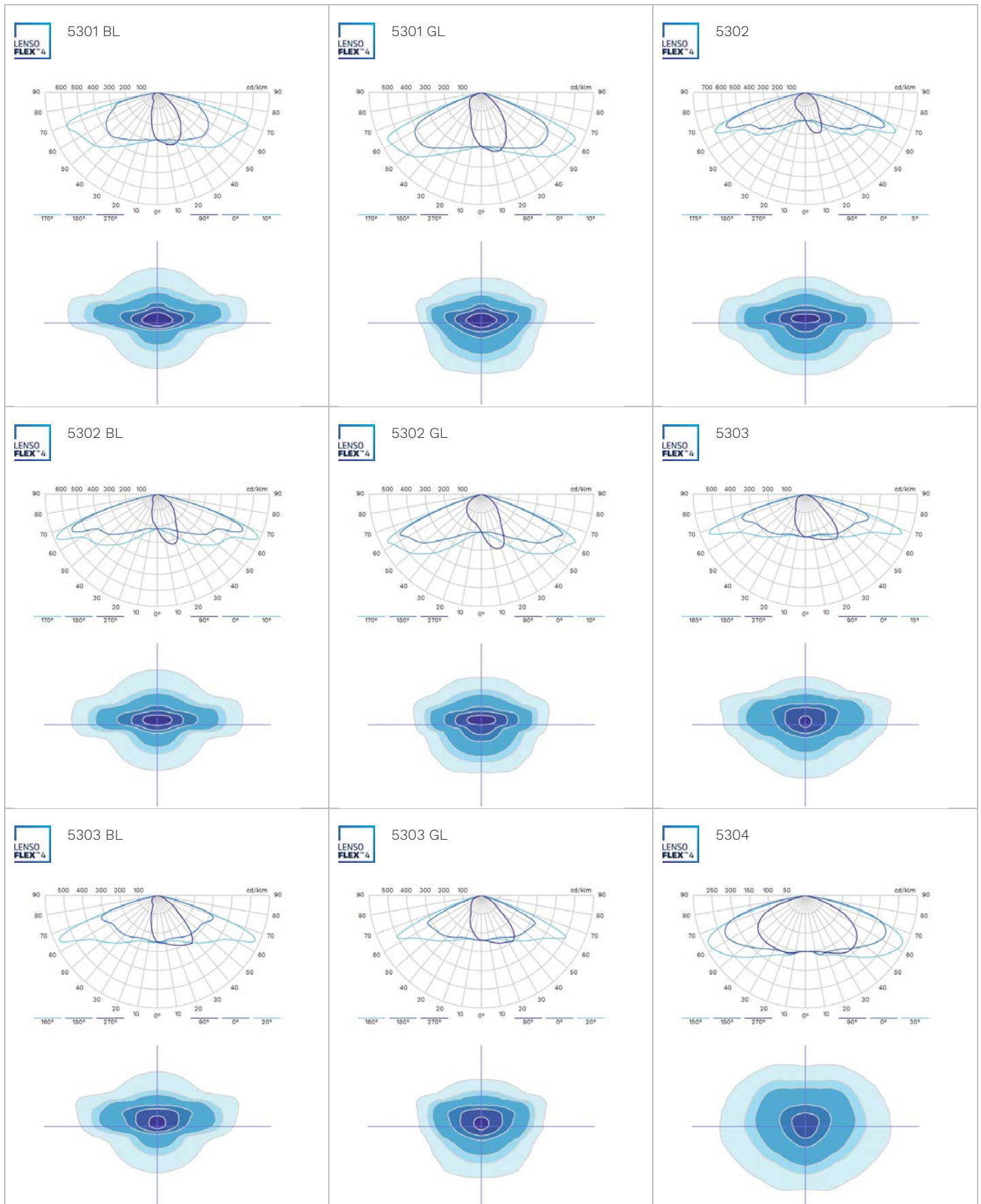
Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %

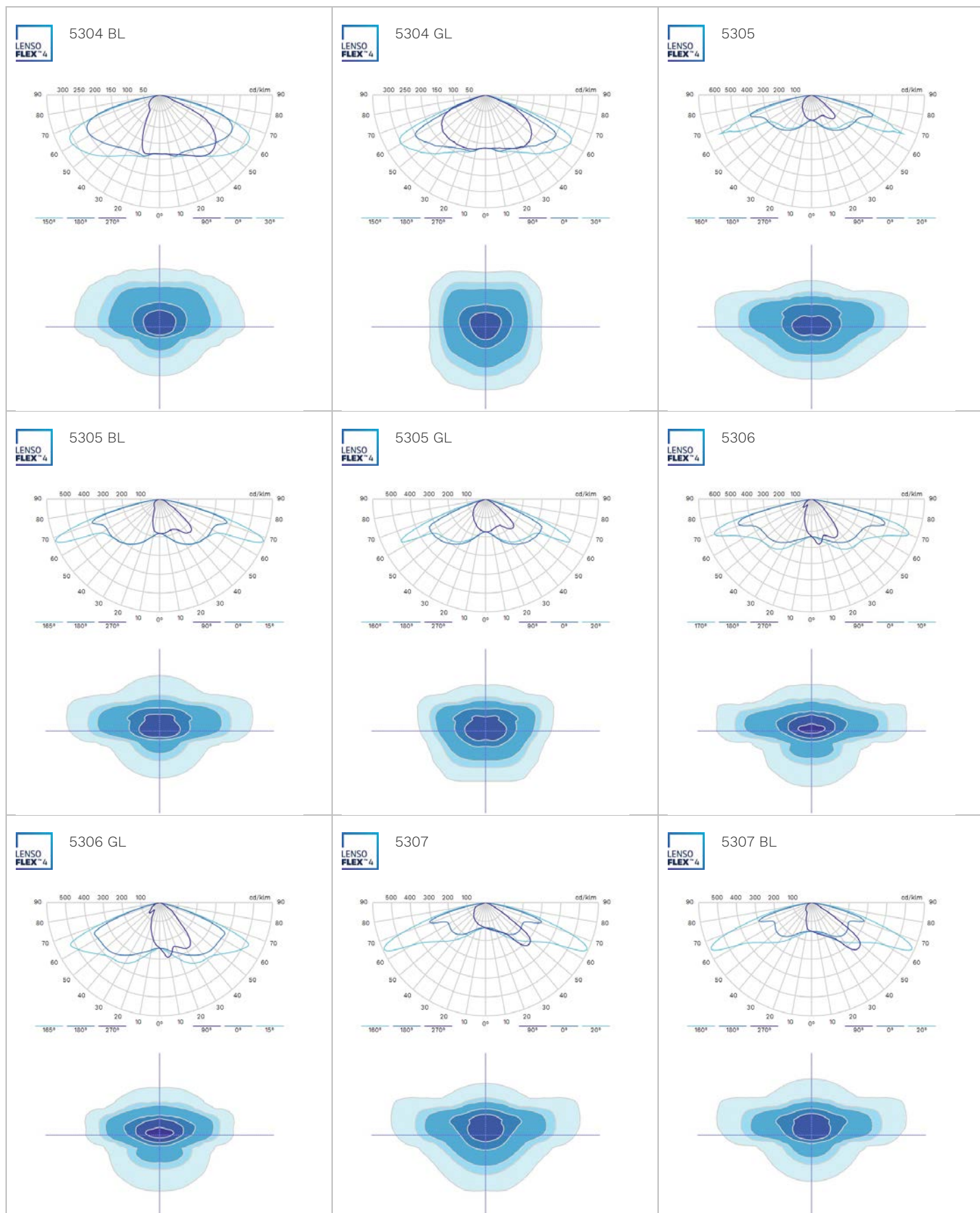


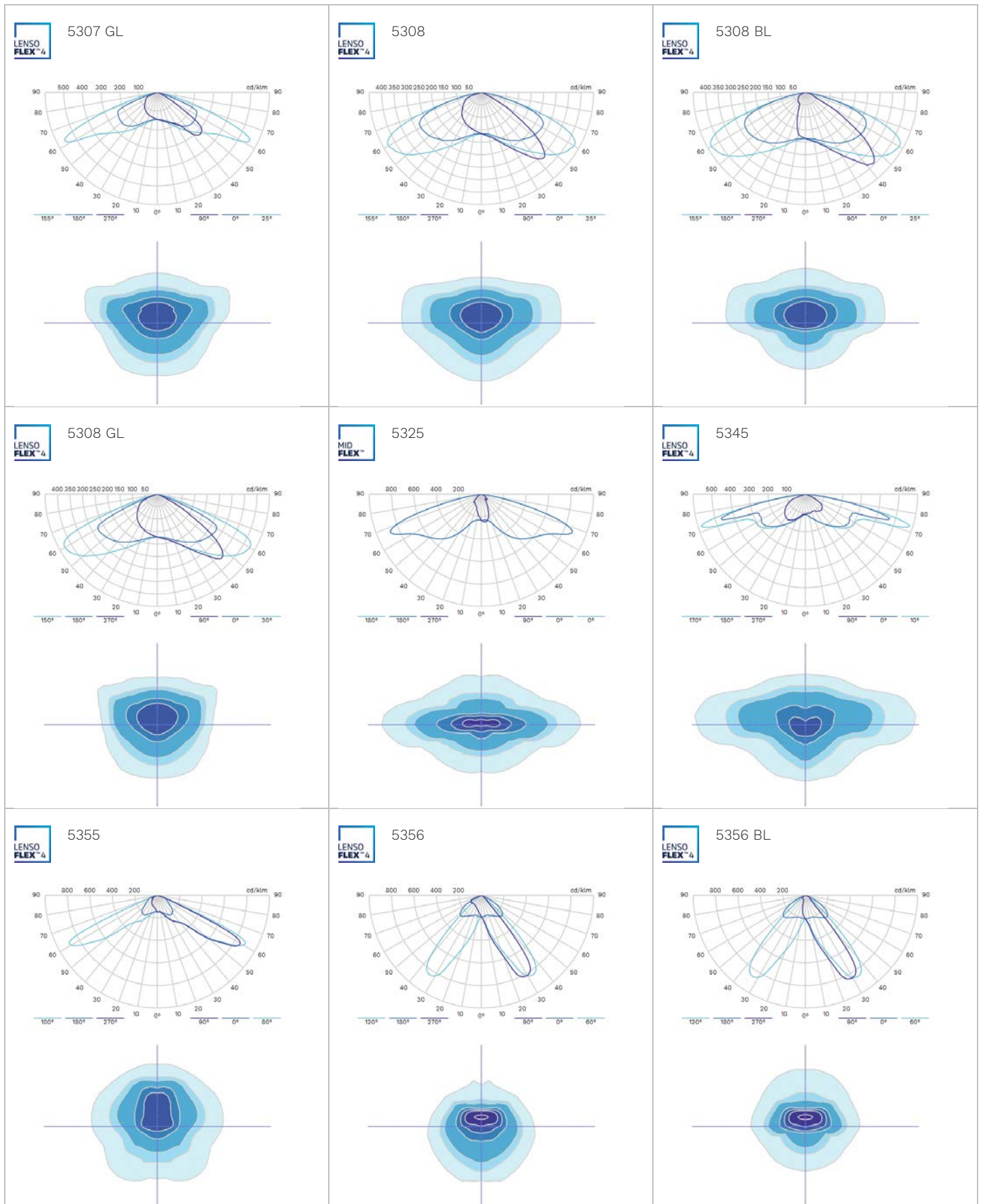
Luminaire output flux (lm)					Power consumption (W)		Luminaire efficacy (lm/W)
Warm White WW 730		Neutral White NW 740					
Number of LEDs	Min	Max	Min	Max	Min	Max	Up to
96	2900	10800	3000	11400	19	97	166
144	4400	16300	4600	17100	28	143	169
192	5800	20200	6100	21200	38	165	167

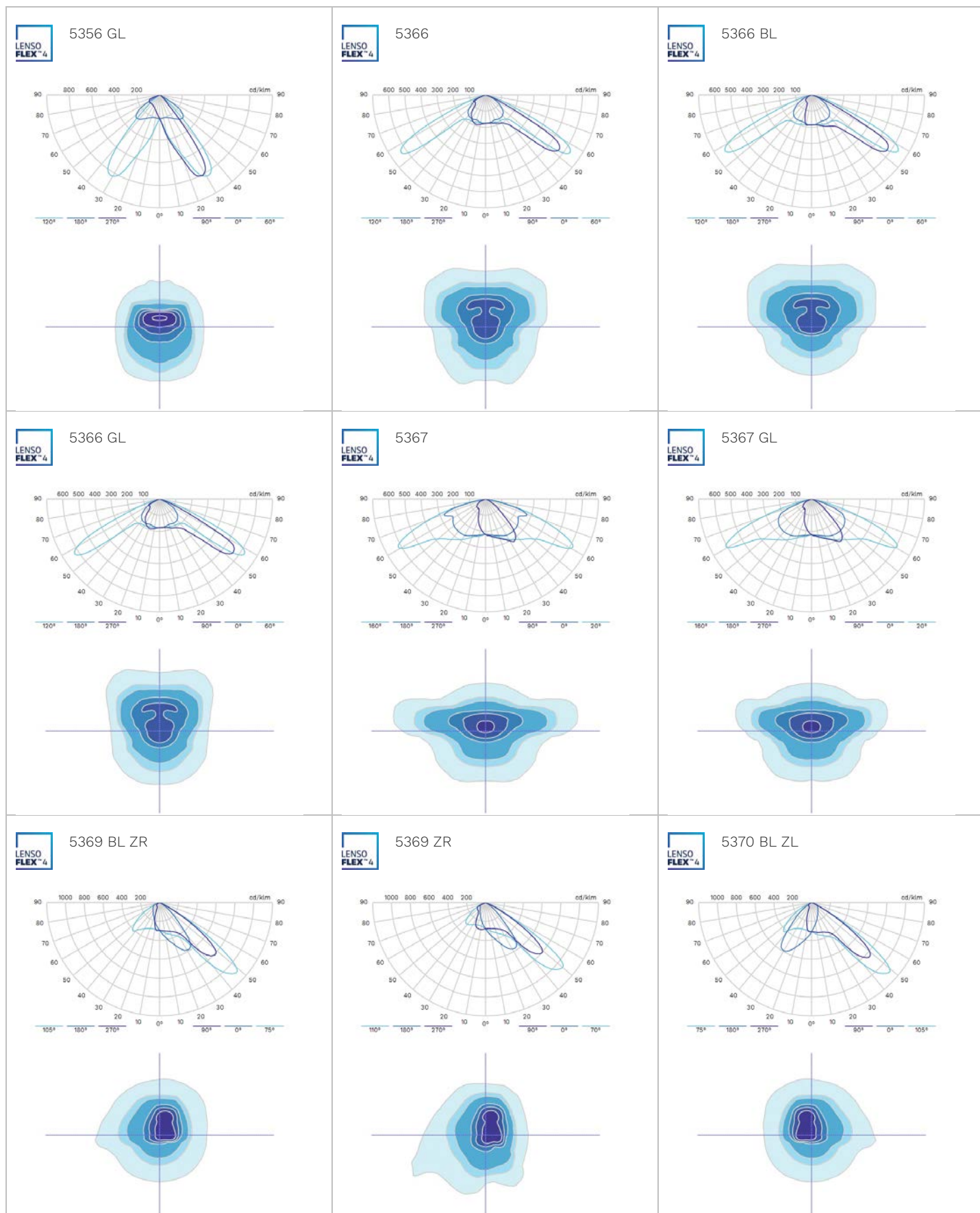
Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



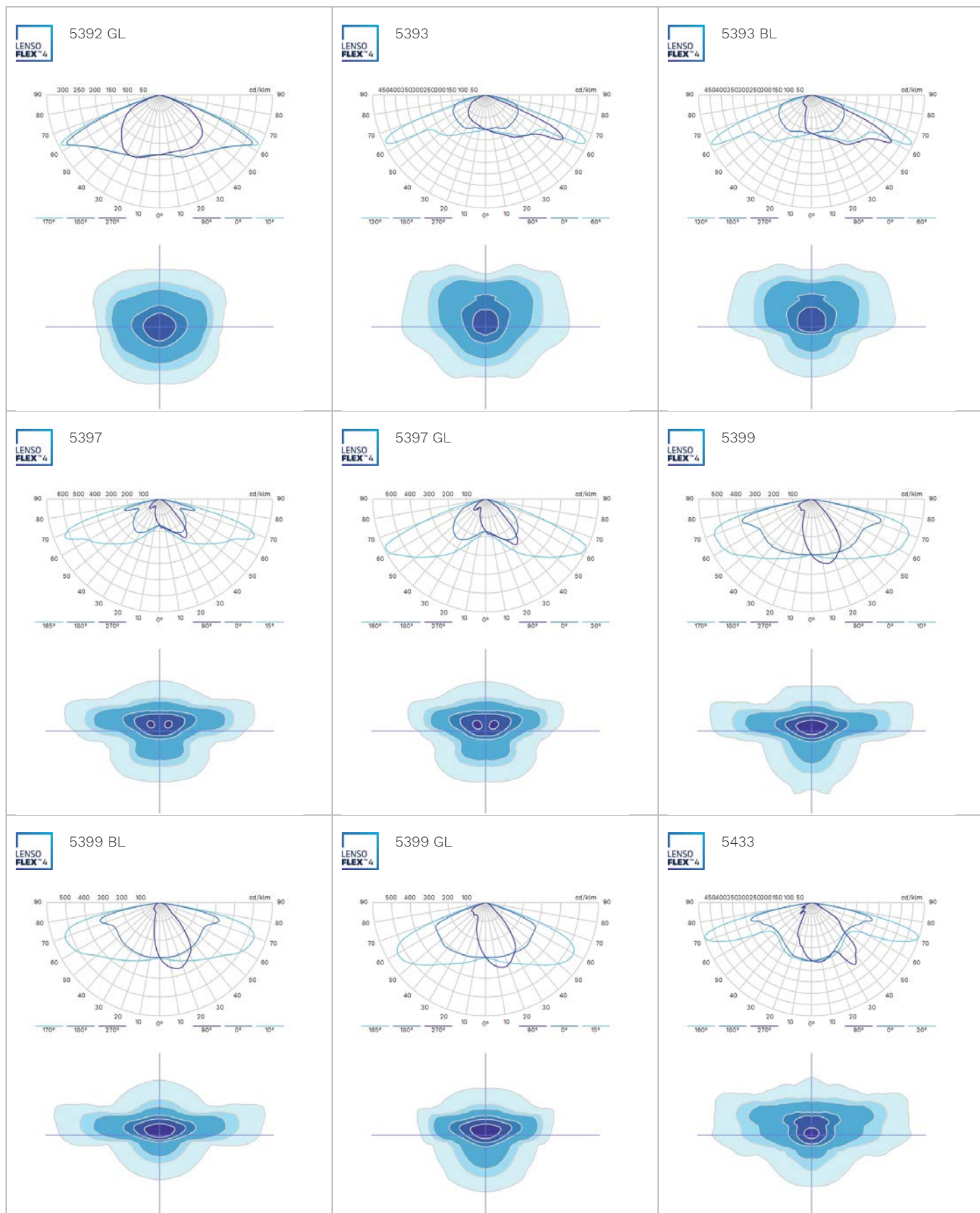


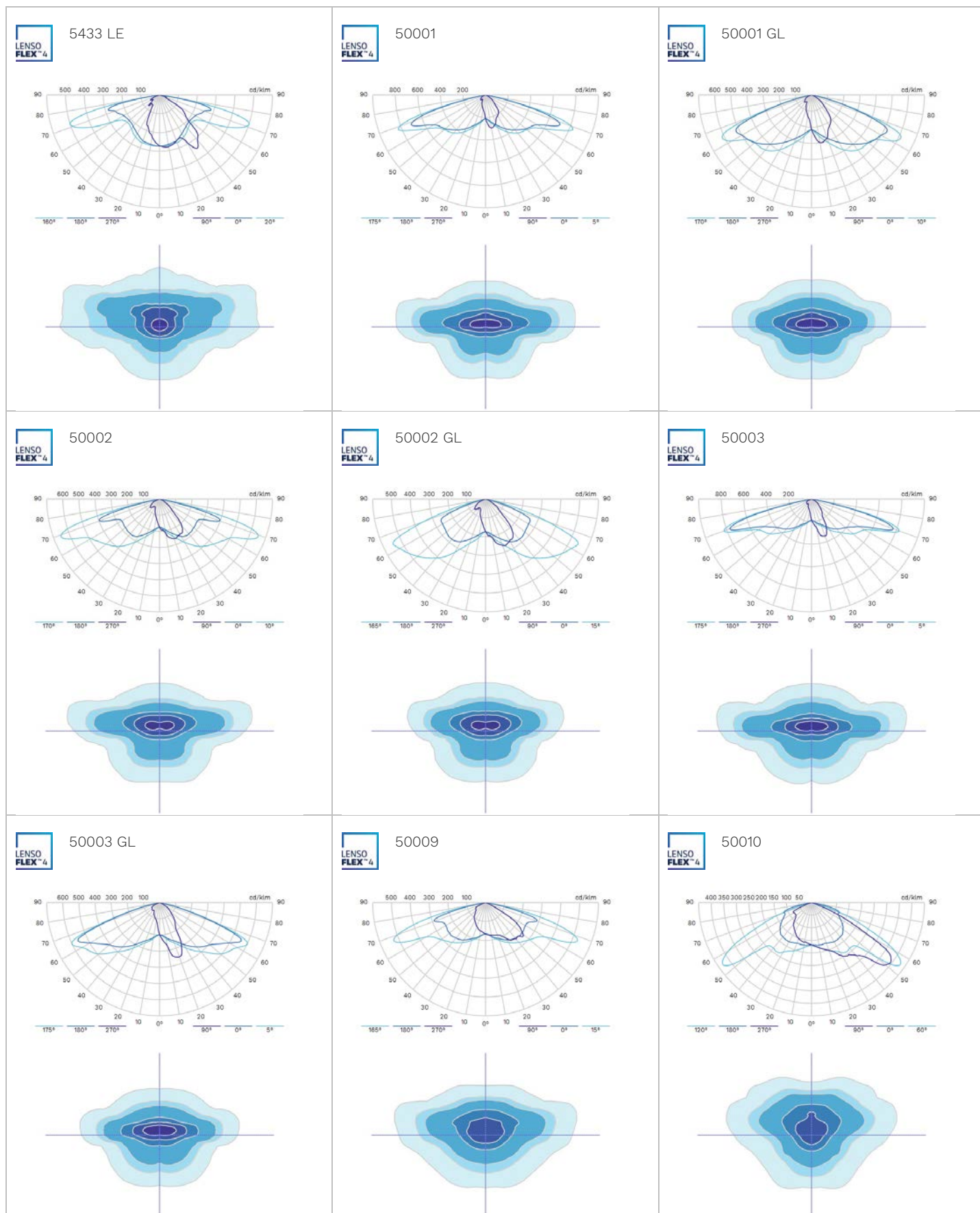












AXIA 3



Engineered for performance, designed for the customer experience

With customer feedback playing a critical part in our innovative design process, we developed AXIA 3. More than a luminaire, it is a platform delivering sustainability, cost-effectiveness and customer experience all while supporting smart city frameworks. Based on experience from the hundreds of thousands AXIA luminaires installed worldwide, this third generation luminaire pushes the boundaries with photometric innovation, ease and speed of installation and FutureProof connectivity.

Available in three sizes, AXIA 3 enables towns and cities to maximise efficiency when lighting numerous environments, from bike paths, squares and car parks to residential streets, carriageways, urban roads and large boulevards. This lightweight and compact luminaire combines quality of light with a minimal carbon footprint. It excels in easy installation and carefree maintenance, reducing operating costs.



IP 66

IK 10



URBAN & RESIDENTIAL STREETS



BIKE & PEDESTRIAN PATHS



RAILWAY STATIONS & METROS



CAR PARKS



LARGE AREAS



SQUARES & PEDESTRIAN AREAS



ROADS & MOTORWAYS

Concept

AXIA 3 is a robust yet compact luminaire, designed with a focus on miniaturisation and superior efficiency. Composed of high-pressure die-cast aluminium, as well as composite materials, AXIA 3 is available in three sizes. Thanks to its reduced weight, this road luminaire is easy to handle during installation. The AXIA 3.1, which can be fitted with up to 16 LEDs, is perfectly suited to low-height applications, whereas AXIA 3.2 and 3.3, with up to 32 or 64 LEDs, are ideal for lighting urban and large roads, carriageways and avenues. The AXIA 3 range is equipped with ProFlex™ photometric engines, providing the highest efficiency thanks to their ability to maximise the lumen output and to provide very extensive light distributions.

AXIA 3 comes pre-cabled, hence there is no need to open the luminaire. The complete range is available with an integrated universal fixation part adapted for post-top and side-entry mounting on various spigots (Ø32mm with adapter, Ø42-48mm, Ø60mm and Ø76mm). The inclination angle can be adjusted on-site for both post-top (-5°/+15°) and side-entry (-10°/+10°) configurations to optimise lighting, reduce power consumption and control light pollution.

This highly efficient, cost-effective and connected-ready luminaire, offers towns and cities the ideal solution to improve lighting levels, increase safety, generate energy savings and reduce their ecological footprint. AXIA 3 is the ideal tool to provide another 25 years of efficiency, sustainability and safety.



The ProFlex™ photometric engine provides the highest efficiency.



The AXIA 3 range has a universal fixation part for spigots ranging from Ø32 to Ø76mm.

TYPES OF APPLICATION

- URBAN & RESIDENTIAL STREETS
- BIKE & PEDESTRIAN PATHS
- RAILWAY STATIONS & METROS
- CAR PARKS
- LARGE AREAS
- SQUARES & PEDESTRIAN AREAS
- ROADS & MOTORWAYS

KEY ADVANTAGES

- Maximised savings in energy and maintenance costs
- ProFlex™ photometric engines offering high efficiency lighting, comfort and safety
- 3 sizes to provide the most accurate solutions for numerous road and urban applications
- Easy installation: pre-cabled and equipped with universal fixation part adapted for side-entry and post-top mounting
- Adjustable inclination for optimised photometry and uniformity
- Connected-ready



The inclination is adjustable on-site for optimised photometry and further energy savings.



AXIA 3 is connected-ready and can operate with various sensors and control systems.



ProFlex™

The ProFlex™ photometric engine integrates the lenses into a polycarbonate protector. This integration increases the output and reduces the reflection inside the optical unit. The polycarbonate used for the ProFlex™ photometric engine offers essential characteristics such as high optical clarity for a superior light transmission, better impact resistance compared to glass and a long life span with UV-stabilisation treatment. The ProFlex™ concept enables a compact design with a thin optical compartment. It provides extensive light distributions so that the spacing between the luminaires can be increased.

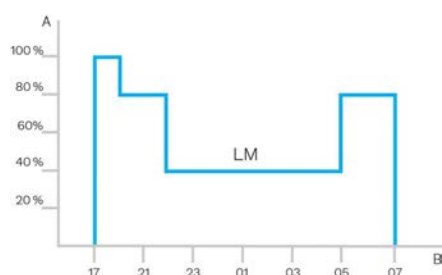




Custom dimming profile

Intelligent luminaire drivers can be programmed with complex dimming profiles. Up to five combinations of time intervals and light levels are possible. This feature does not require any extra wiring.

The period between switching on and switching off is used to activate the preset dimming profile. The customised dimming system generates maximum energy savings while respecting the required lighting levels and uniformity throughout the night.



A. Dimming level | B. Time



Daylight sensor / photocell

Photocell or daylight sensors switch the luminaire on as soon as natural light falls to a certain level. It can be programmed to switch on during a storm, on a cloudy day (in critical areas) or only at nightfall so as to provide safety and comfort in public spaces.



PIR sensor: motion detection

In places with little nocturnal activity, lighting can be dimmed to a minimum most of the time. By using passive infrared (PIR) sensors, the level of light can be raised as soon as a pedestrian or a slow vehicle is detected in the area.

Each luminaire level can be configured individually with several parameters such as minimum and maximum light output, delay period and ON/OFF duration time. PIR sensors can be used in an autonomous or interoperable network.



Schröder EXEDRA is the most advanced lighting management system on the market for controlling, monitoring and analysing streetlights in a user-friendly way.



Standardisation for interoperable ecosystems

Schröder plays a key role in driving standardisation with alliances and partners such as uCIFI, TALQ or Zhaga. Our joint commitment is to provide solutions designed for vertical and horizontal IoT integration. From the body (hardware) to the language (data model) and the intelligence (algorithms), the complete Schröder EXEDRA system relies on shared and open technologies. Schröder EXEDRA also relies on Microsoft™ Azure for cloud services, provided with the highest levels of trust, transparency, standards conformance and regulatory compliance.

Breaking the silos

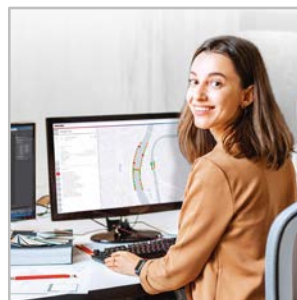
With EXEDRA, Schröder has taken a technology-agnostic approach: we rely on open standards and protocols to design an architecture able to interact seamlessly with third-party software and hardware solutions. Schröder EXEDRA is designed to unlock complete interoperability, as it offers the ability to:

- control devices (luminaires) from other brands
- manage controllers and to integrate sensors from other brands
- connect with third-party devices and platforms

A plug-and-play solution

As a gateway-less system using the cellular network, an intelligent automated commissioning process recognises, verifies and retrieves luminaire data into the user interface. The self-healing mesh between luminaire controllers enables real-time adaptive lighting to be configured directly via the user interface. OWLET IV luminaire controllers, optimised for Schröder EXEDRA, operate Schröder's luminaires and luminaires from third parties. They use both cellular and mesh radio networks, optimising geographical coverage and redundancy for continuous operation.

Tailored experience



Schröder EXEDRA includes all advanced features needed for smart device management, real-time and scheduled control, dynamic and automated lighting scenarios, maintenance and field operation planning, energy consumption management and third-party connected hardware integration. It is fully configurable and includes tools for user management and multi-tenant policy that enables contractors, utilities or big cities to segregate projects.

A powerful tool for efficiency, rationalisation and decision making

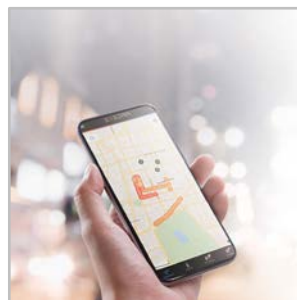
Data is gold. Schröder EXEDRA brings it with all the clarity managers need to drive decisions. The platform collects massive amounts of data from end devices and, aggregates, analyses and intuitively displays them to help end-users take the right actions.

Protected on every side



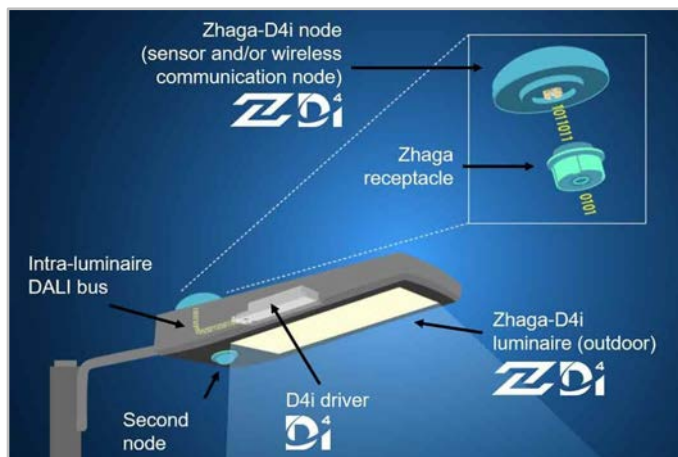
Schröder EXEDRA provides state-of-the-art data security with encryption, hashing, tokenisation, and key management practices that protect data across the whole system and its associated services. The whole platform is ISO 27001 certified. It demonstrates that Schröder EXEDRA meets the requirements for establishing, implementing, maintaining and continually improving security management.

Mobile App: any time, any place, connect to your street lighting



The Schröder EXEDRA mobile application offers the essential functionalities of the desktop platform, to accompany all types of operator on site in their daily effort to maximise the potential of connected lighting. It enables real-time control and settings, and contributes to effective maintenance.

The Zhaga consortium joined forces with the DiiA and produced a single Zhaga-D4i certification that combines the Zhaga Book 18 version 2 outdoor connectivity specifications with the DiiA's D4i specifications for intra-luminaire DALI.



Standardisation for interoperable ecosystems



As a founding member of the Zhaga consortium, Schröder has participated in the creation of, and therefore supports, the Zhaga-D4i certification program and the initiative of this group to standardise an interoperable ecosystem. The D4i specifications take the best of the standard DALI2 protocol and adapt it to an intra-luminaire environment but it has certain limitations. Only luminaire mounted control devices can be combined with a Zhaga-D4i luminaire.

According to the specification, control devices are limited respectively to 2W and 1W average power consumption.

Certification program

The Zhaga-D4i certification covers all the critical features including mechanical fit, digital communication, data reporting and power requirements within a single luminaire, ensuring plug-and-play interoperability of luminaires (drivers) and peripherals such as connectivity nodes.

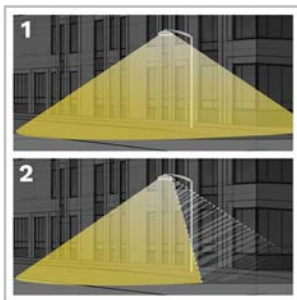
Cost-effective solution

A Zhaga-D4i certified luminaire includes drivers offering features that had previously been in the control node, like energy metering, which has in turn simplified the control device therefore reducing the price of the control system.

With the PureNight concept, Schröder offers the ultimate solution for restoring the night sky without switching off cities, while maintaining safety and well-being for people and preserving wildlife. The PureNight concept guarantees that your Schröder lighting solution satisfies environmental laws and requirements. Well-designed LED lighting has the potential to improve the environment in all respects.



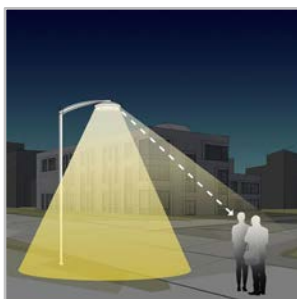
Direct the light only where it is wanted and needed



1. Without backlight
2. With backlight

Schröder is renowned for its expertise in photometry. Our optics direct light only where it is wanted and needed. However, light trespass behind the luminaire might be a key concern when it comes to protecting a sensitive wildlife habitat or avoiding intrusive lighting towards buildings. Our fully integrated backlight solutions easily address this potential risk.

Offer maximum visual comfort to people



Because of the lower installation height compared to road lighting, visual comfort is an essential aspect of urban lighting. Schröder designs lenses and accessories to minimise any type of glare (distracting, discomforting, disabling glare and blinding glare). Our design offices harness a range of possibilities to find the best solutions for each project and ensure that we provide a gentle light that delivers the best night-time experience.

Protect wildlife



If not well designed, artificial lighting can badly affect wildlife. Blue light and excessive intensity can have a damaging effect on all types of life. Blue light radiation has the ability to suppress the production of melatonin, the hormone that contributes to the regulation of the circadian rhythm. It can also alter the behavioural patterns of animals including bats and moths, as it can change their movements towards or away from light sources. Schröder favours warm white LEDs with minimal blue light, combined with advanced control systems including sensors. This enables permanent adaptation of the lighting to the real needs of the moment, minimising disturbance to the fauna and flora.

Choose a Dark Sky certified luminaire



The International Dark-Sky Association (IDA) is the recognised authority on light pollution. It provides leadership, tools and resources to industries and companies willing to reduce light pollution. The IDA's Fixture Seal of Approval programme certifies outdoor lighting fixtures as being Dark Sky Friendly. All products approved by this programme must comply with the following criteria:

- “- The light sources shall have a maximum correlated colour temperature of 3000K;
- Uplight allowance limited to 0.5% of total output, or 50 lumens, with no more than
 - 10 lumens in the 90-100 degree UL zone;
- The luminaires must have a dimming capability to 10% of full rating;
- The luminaires must be equipped with a fixed mounting option;
- The luminaires must have Safety Certification by an independent laboratory.”

This approved Schröder range of luminaires complies with these requirements.

GENERAL INFORMATION

Recommended installation height	4m to 12m 13' to 39'
Driver included	Yes
CE mark	Yes
ENEC certified	Yes
ENEC+ certified	Yes
ROHS compliant	Yes
Dark Sky friendly lighting (IDA certification)	Yes
Zhaga-D4i certified	Yes
Testing standard	LM 79-08 (all measurements in ISO17025 accredited laboratory)

HOUSING AND FINISH

Housing	Aluminium Composite materials
Optic	Polycarbonate
Protector	Polycarbonate (with integrated lenses)
Housing finish	Polyester powder coating
Standard colour(s)	RAL 7040 window grey RAL 9005 Jet black
Tightness level	IP 66
Impact resistance	IK 10
Vibration test	Compliant with modified IEC 68-2-6 (0.5G)

OPERATING CONDITIONS

Operating temperature range (Ta)	-30°C up to +45°C / -22°F up to 113°F
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· Depending on the luminaire configuration. For more details, please contact us.

ELECTRICAL INFORMATION

Electrical class	Class I EU, Class II EU
Nominal voltage	220-240V – 50-60Hz
Power factor (at full load)	0.9
Surge protection options (kV)	10
Electromagnetic compatibility (EMC)	EN 55015 / EN 61000-3-2 / EN 61000-4-5 / EN 61547
Control protocol(s)	1-10V, DALI
Control options	Bi-power, Custom dimming profile, Photocell, Remote management
Socket	Zhaga (optional) NEMA 3-pin (optional) NEMA 6-pin (optional) NEMA 7-pin (optional)
Associated control system(s)	Schröder EXEDRA
Sensor	PIR (optional)

OPTICAL INFORMATION

LED colour temperature	2700K (WW 727) 3000K (WW 730) 4000K (NW 740)
Colour rendering index (CRI)	>70 (WW 727) >70 (WW 730) >70 (NW 740)
ULOR	0%
ULR	0%

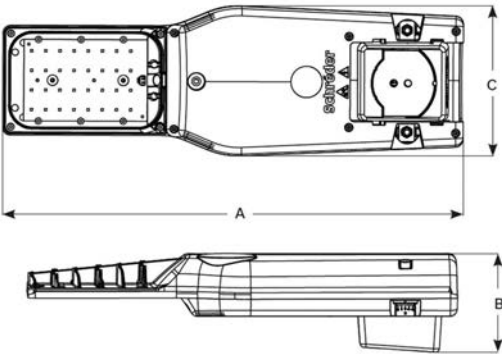
- Meets IDA Dark Sky requirements when fitted with LEDs of 3000K or less.
- ULOR may be different according to the configuration. Please consult us.
- ULR may be different according to the configuration. Please consult us.

LIFETIME OF THE LEDS @ TQ 25°C

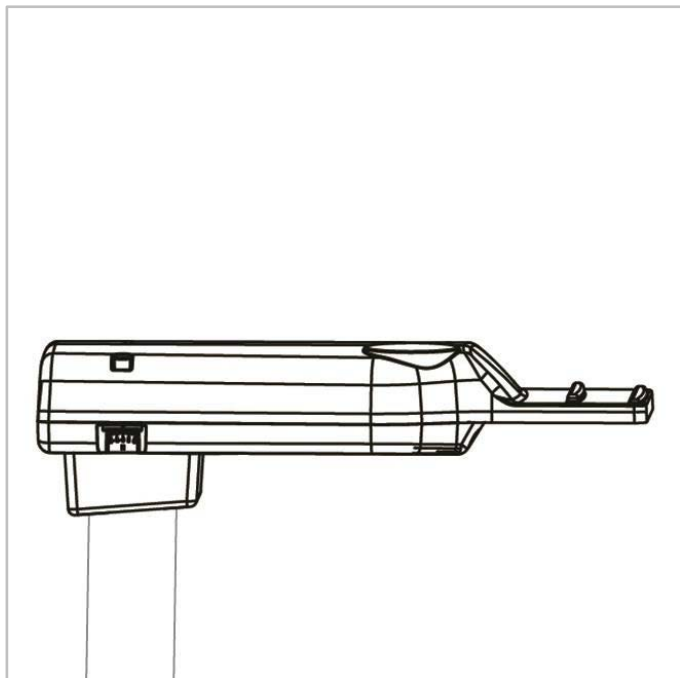
All configurations	100,000h - L90
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DIMENSIONS AND MOUNTING

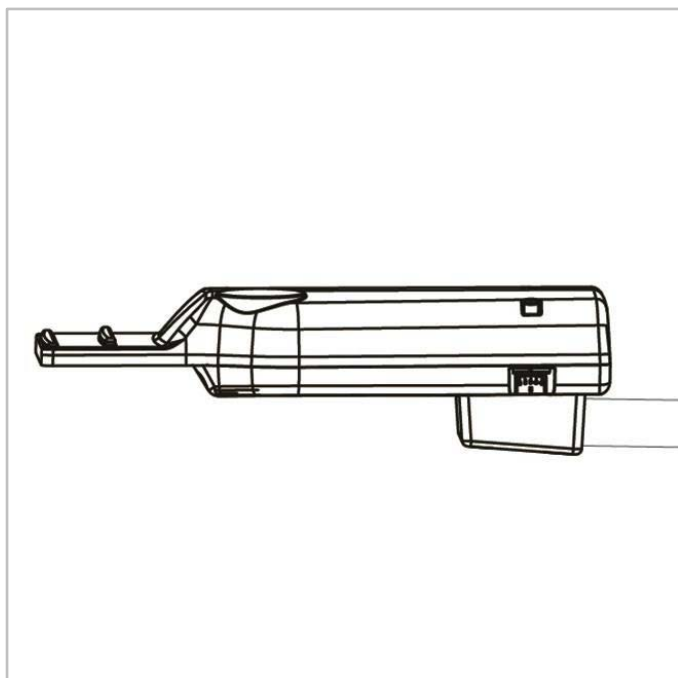
AxBxC (mm inch)	AXIA 3.1 : 513x130x191 20.2x5.1x7.5 AXIA 3.2 : 585x130x191 23.0x5.1x7.5 AXIA 3.3 : 550x130x277 21.7x5.1x10.9
Weight (kg lbs)	AXIA 3.1 : 3.6 7.9 AXIA 3.2 : 4.8 10.6 AXIA 3.3 : 6.0 13.2
Aerodynamic resistance (CxS)	AXIA 3.1 : 0.03 AXIA 3.2 : 0.03 AXIA 3.3 : 0.04
Mounting possibilities	Side-entry slip-over – Ø32mm Side-entry slip-over – Ø42mm Side-entry slip-over – Ø48mm Side-entry slip-over – Ø60mm Post-top slip-over – Ø60mm Post-top slip-over – Ø76mm

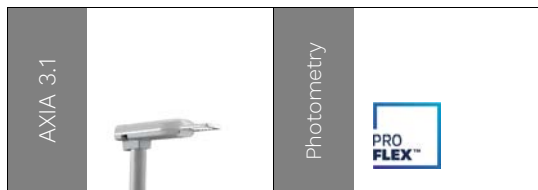


AXIA 3 | Post-top - Slip-over mounting for
Ø60 or Ø76mm spigot - 2xM10 screws



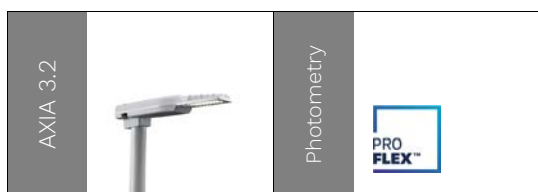
AXIA 3 | Side-entry - Slip-over mounting for
Ø32 (with accessory) or Ø42-60mm spigot -
2xM10 screws





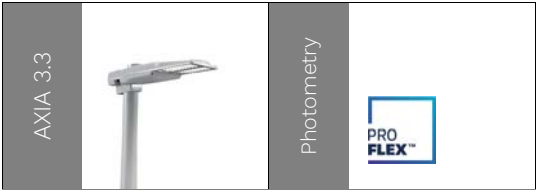
	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White 727		Warm White 730		Neutral White 740				
Number of LEDs	Min	Max	Min	Max	Min	Max	Min	Max	Up to
8	600	2500	700	2600	800	3000	8	23	147
16	900	5100	900	5400	1100	6100	11	44	153

Tolerance on LED flux is $\pm 7\%$ and on total luminaire power $\pm 5\%$



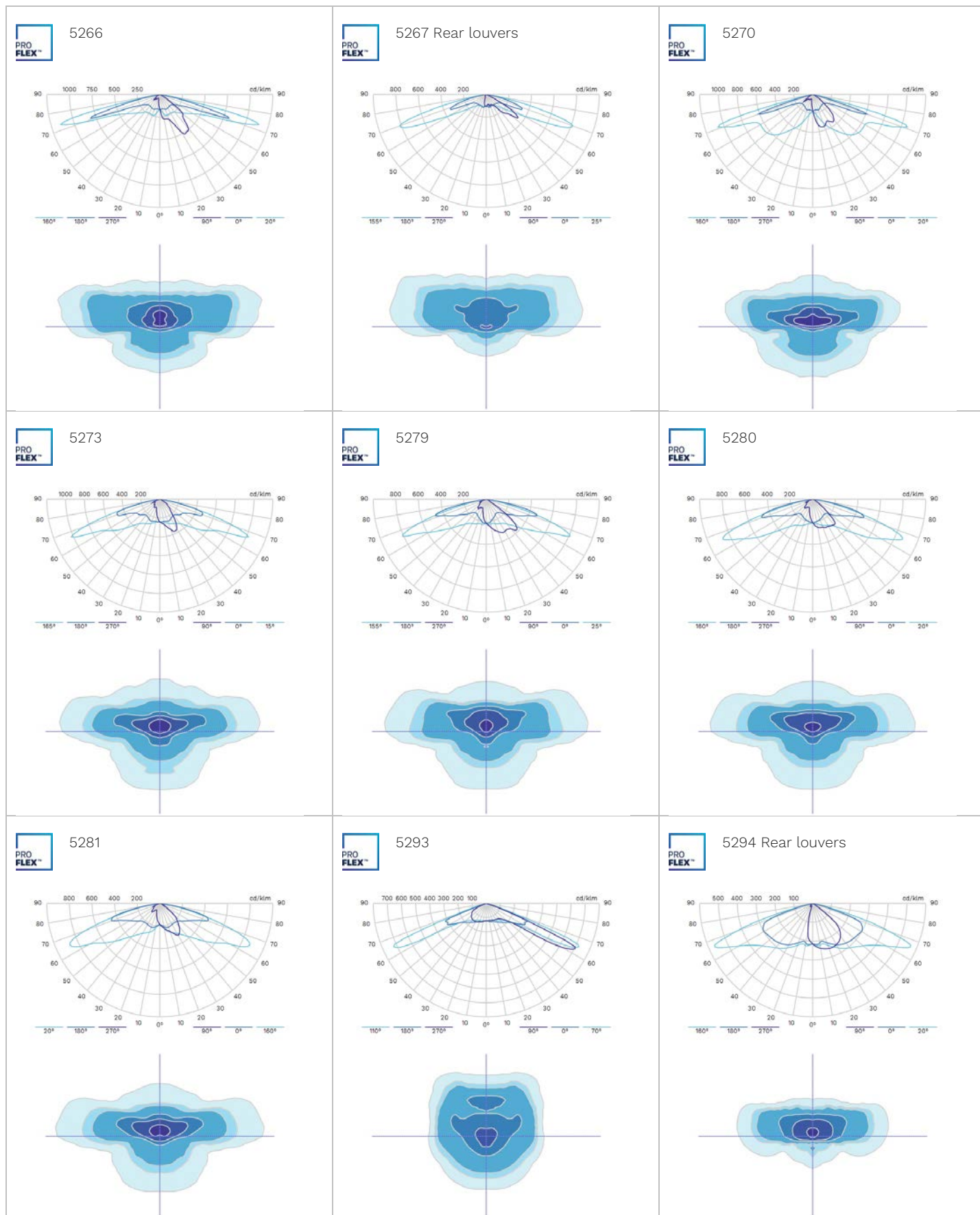
	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White 727		Warm White 730		Neutral White 740				
Number of LEDs	Min	Max	Min	Max	Min	Max	Min	Max	Up to
24	2000	8400	2100	8800	2400	9900	15	76	165
32	2700	9500	2800	9900	3200	11300	20	78	170

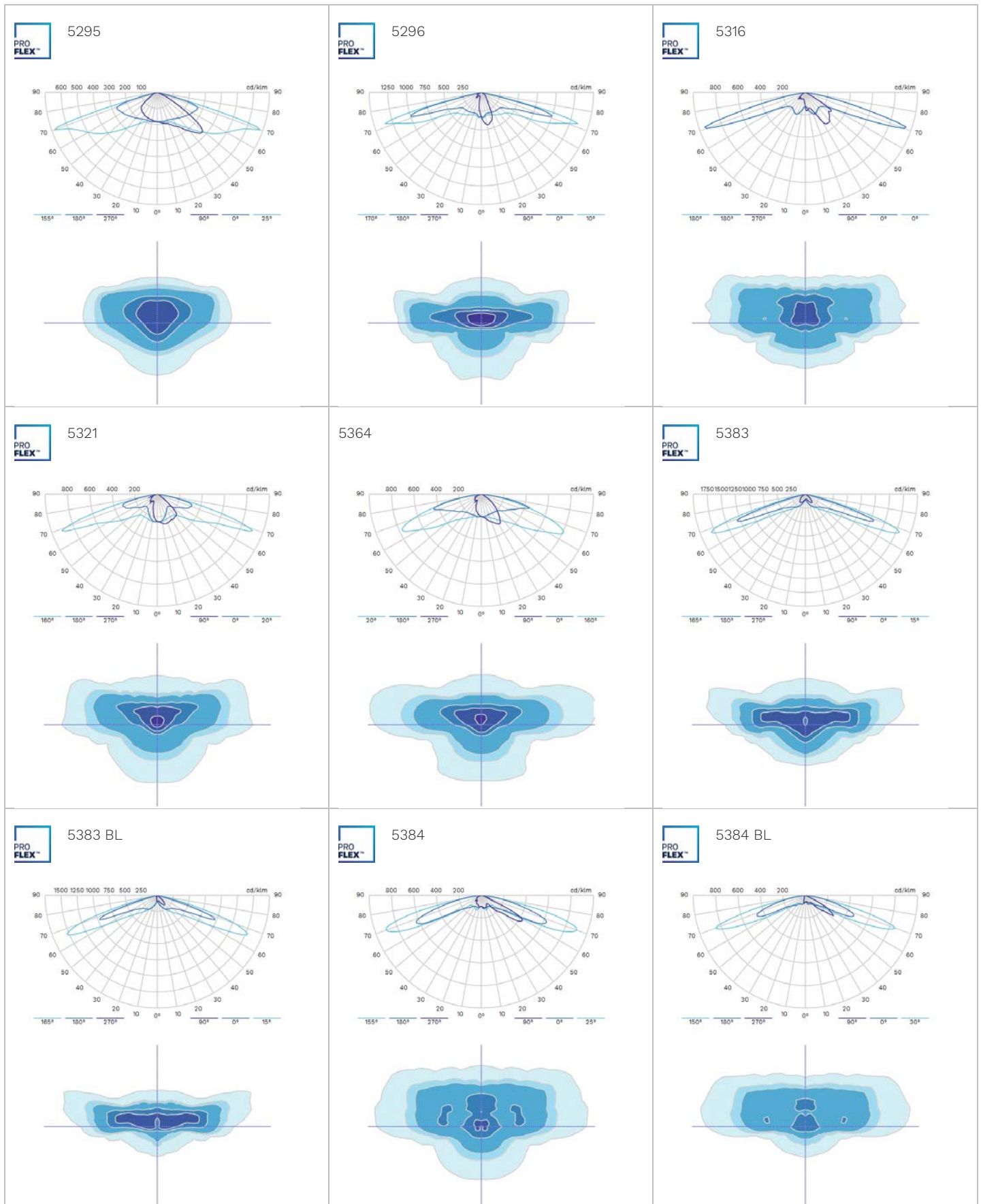
Tolerance on LED flux is $\pm 7\%$ and on total luminaire power $\pm 5\%$

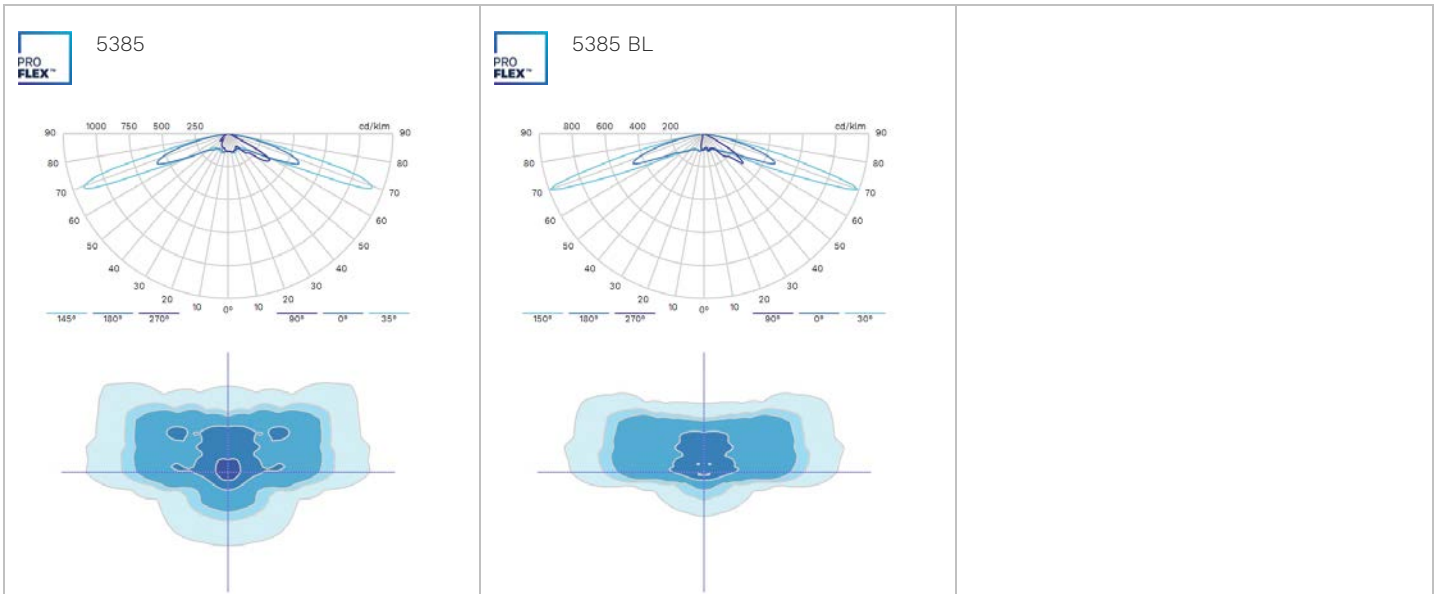


Luminaire output flux (lm)							Power consumption (W)		Luminaire efficacy (lm/W)
Warm White 727		Warm White 730		Neutral White 740					
Number of LEDs	Min	Max	Min	Max	Min	Max	Min	Max	Up to
48	4000	14800	4200	15600	4800	17700	29	129	175
64	5300	19800	5600	20800	6400	23600	38	170	177

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %









The Lighting Bee Ltd

Lighting Design | Impact Assessment | Daylight Analysis

☎ 07840 054601

✉ bonnie@thelightingbee.co.uk

📍 22 Berkshire Drive | Exeter | Devon | EX4 1NF