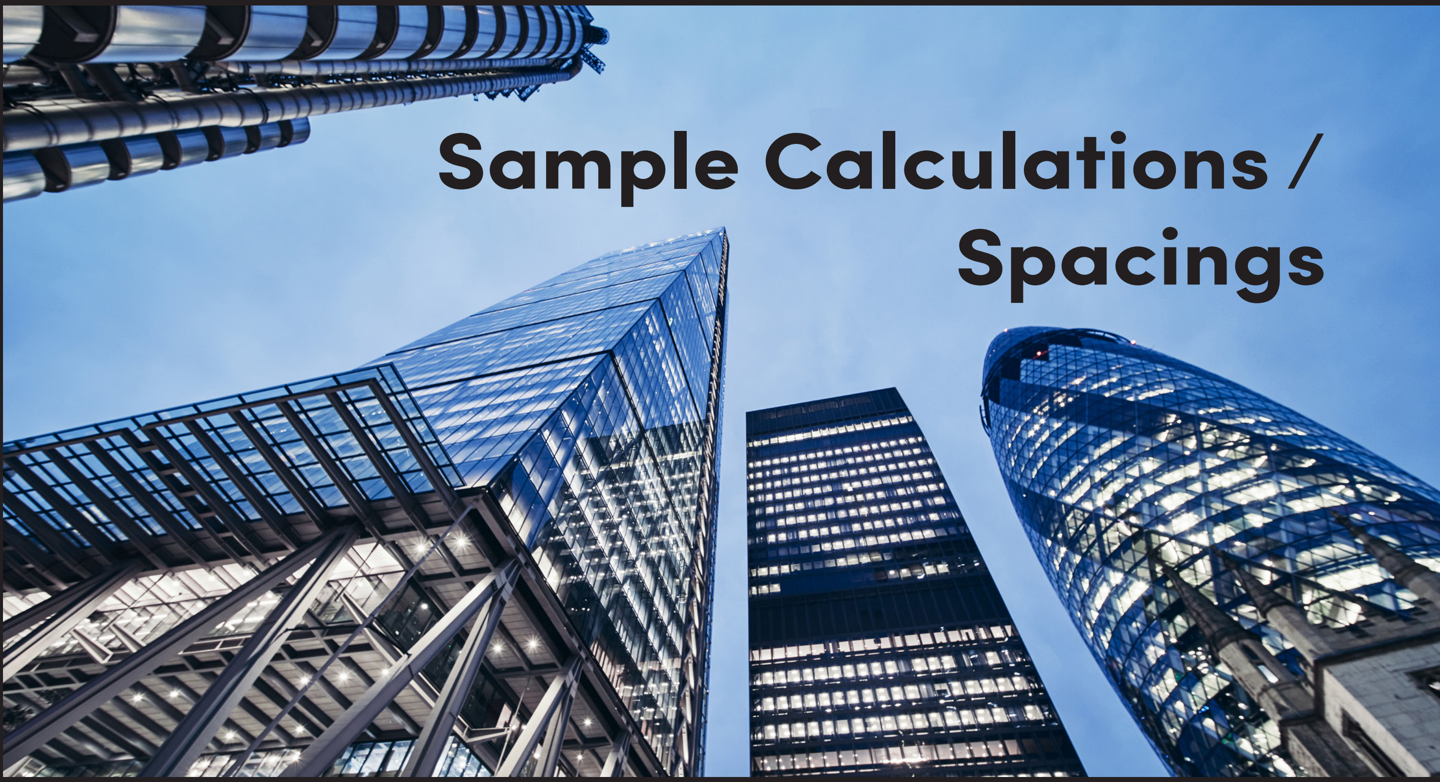
Lighting Design

Sample Calculations / Spacings



Hacel®

Fluent in Lighting

Introduction

Hacel Lighting has an established heritage and brand philosophy founded on quality service and innovative luminaires alongside a deserved reputation for flexibility and availability of which we are extremely proud. All Hacel products are designed and manufactured in our purpose built facility in the UK and still encompass the core values, which have been instilled in our business from the onset.

We have a clear, articulated and strategic focus, combined with a team of dedicated people. The people at the core of our business are what remains the major factor in our growth, development and strength. Our ongoing product design and development process underpins Hacel's commitment to innovation.

Our dedicated and experienced Lighting Design Consultants can assist and advise on your lighting control requirements. We always consider the well-being, economic and energy related prerequisites of the Client and offer enterprising solutions and professional advice.

Please contact our Lighting Department for further information

lightingdesign@hacel.co.uk

Together Everyone Achieves More

Sample Calculations / Spacings

Values used in our calculation:

Reflectances	.70.50.20
Maintenance factor	0.8
Measuring plane	0.75m from floor
Ceiling Height	2.8m

The calculation results are based on the above values and on dimension details given, any inaccuracies in this information may have an effect on the actual illumination level.

Em = average (mean) lux level
Emin = minimum lux level
Emin/Eav (Uo) = uniformity

Sample area schemes:

Offices - Using luminaires from our LED Modules range, showing results for a range of grid spacings. Cibse guide has a range of 350-500 lux average for Offices and calls for a uniformity figure of 0.6 or above.

These sample areas should help with quantity requirements.

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Lighting Design

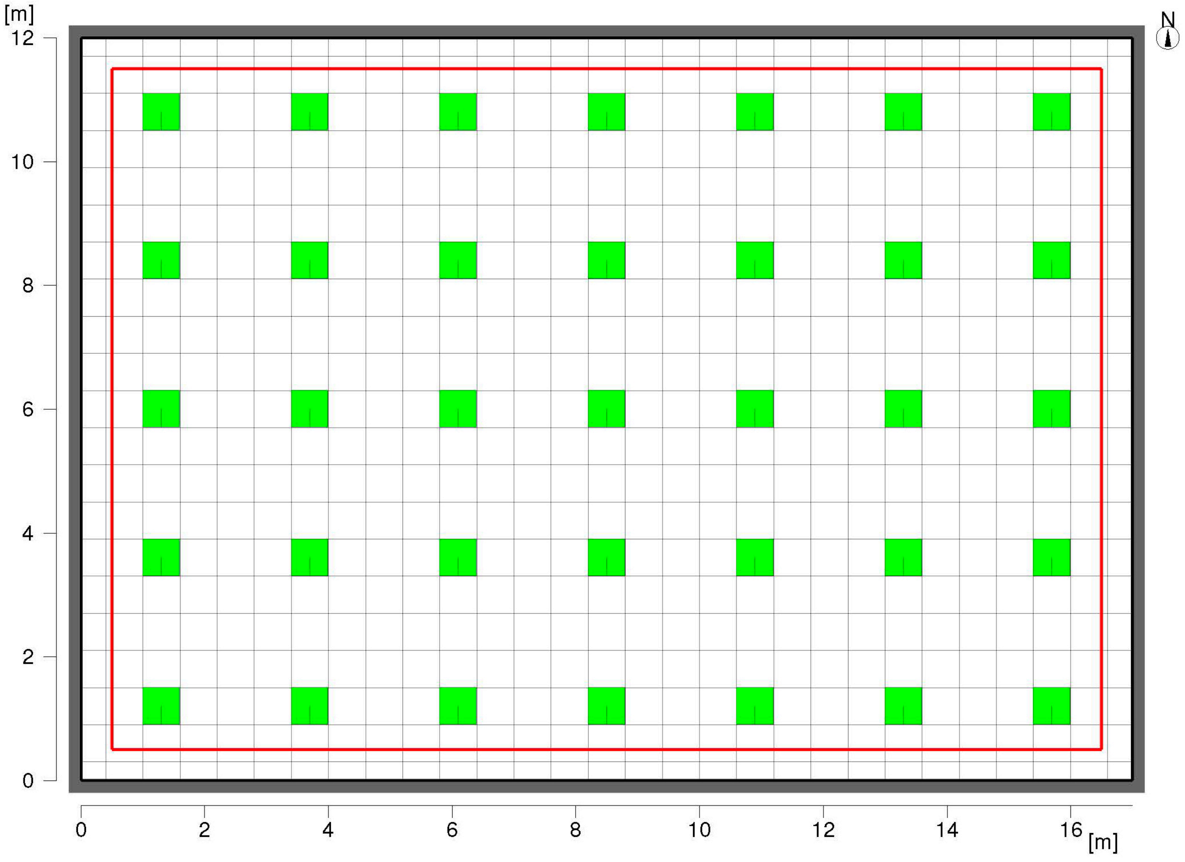
Sample Calculations / Spacings Office

Summary

Ceiling Height	Spacings (Centres)	Quantity	Luminaire	Lux Average	UGR	Uniformity	W/M2
2.8m	2.4m x 2.4m	35	20w iMod Grid	478	<=18.1	0.88	3.77
2.8m	3.0m x 2.4m	30	20w iMod Grid	396	<=18.1	0.82	3.24
2.8m	2.4m x 2.4m	35	26w iMod Grid	583	<=18.8	0.88	4.8
2.8m	3.0m x 2.4m	30	26w iMod Grid	483	<=18.8	0.82	4.12
2.8m	3.0m x 3.0m	24	26w iMod Grid	404	<=18.8	0.8	3.47
2.8m	2.4m x 2.4m	35	22w iMod Evolva Grid	504	<=17.8	0.89	4.12
2.8m	3.0m x 2.4m	30	22w iMod Evolva Grid	417	<=17.8	0.81	3.53
2.8m	3.0m x 3.0m	24	22w iMod Evolva Grid	347	<=17.8	0.77	2.97
2.8m	3.0m x 2.4m	30	25w iMod Evolva Grid	479	<=18.2	0.81	4.12
2.8m	3.0m x 2.0m	24	25w iMod Evolva Grid	399	<=18.2	0.77	3.47
2.8m	3.0m x 2.4m	30	29w iMod Evolva Grid	543	<=18.7	0.81	4.54
2.8m	3.0m x 3.0m	24	29w iMod Evolva Grid	453	<=18.7	0.77	3.83
2.8m	2.4m x 2.4m	35	24w iMod Inset Grid	452	<=18.2	0.89	4.58
2.8m	3.0m x 2.4m	30	24w iMod Inset Grid	374	<=18.2	0.81	3.93
2.8m	2.4m x 2.4m	35	29w iMod Inset Grid	533	<=18.8	0.89	5.56
2.8m	3.0m x 2.4m	30	29w iMod Inset Grid	441	<=18.8	0.81	4.76
2.8m	3.0m x 3.0m	24	29w iMod Inset Grid	368	<=18.8	0.76	4.01
2.8m	3.0m x 2.4m	30	36w iMod Inset Grid	526	<=19.4	0.81	5.93
2.8m	3.0m x 3.0m	24	36w iMod Inset Grid	439	<=19.4	0.76	4.99
2.8m	2.4m x 2.4m	35	21w SkyMod Grid	428	<=20.9	0.83	4.01
2.8m	3.0m x 2.4m	30	21w SkyMod Grid	355	<=20.9	0.82	3.44
2.8m	3.0m x 2.4m	30	33w SkyMod Grid	521	<=22.3	0.82	5.62
2.8m	3.0m x 3.0m	24	33w SkyMod Grid	435	<=22.3	0.86	4.73
2.8m	2.4m x 2.4m	35	31w SkyMod Wafer Grid	525	<=18.8	0.86	5.88
2.8m	3.0m x 2.4m	30	31w SkyMod Wafer Grid	435	<=18.8	0.79	5.04
2.8m	3.0m x 3.0m	24	31w SkyMod Wafer Grid	363	<=18.8	0.7	4.25

Office 20W **iMod**® Grid – 2.4m x 2.4m centres

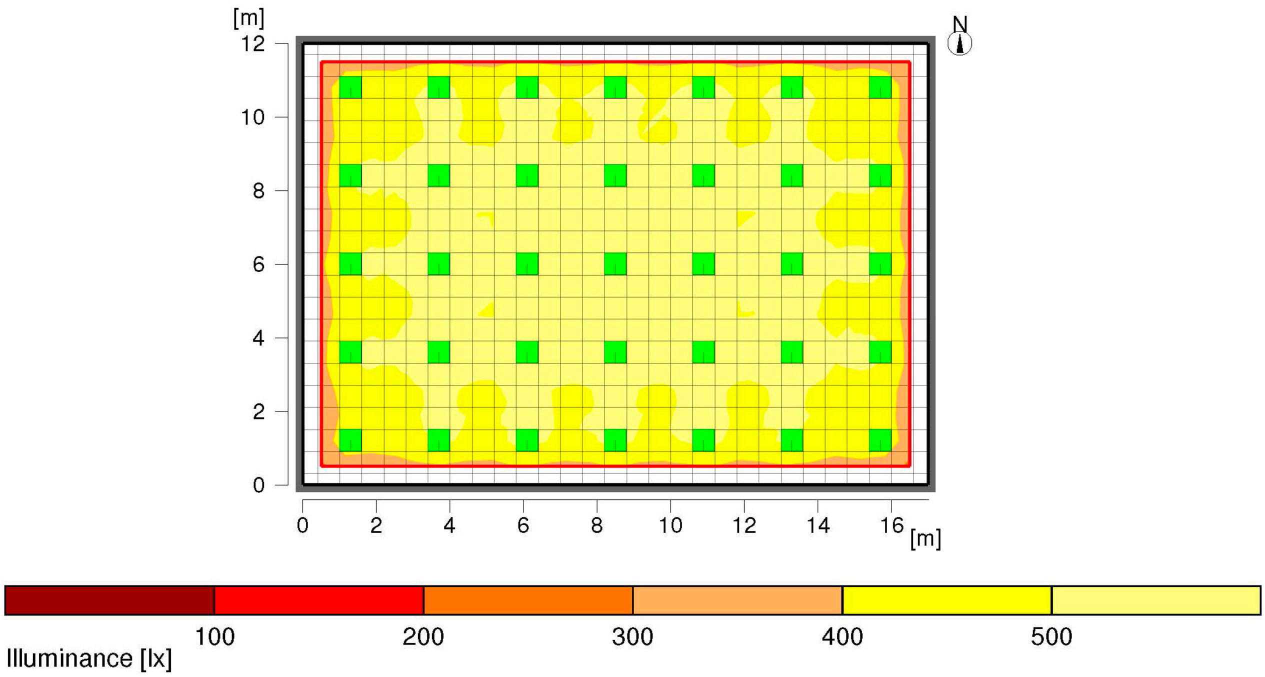
Floor plan



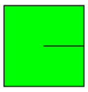
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 20W **iMod**® Grid - 2.4m x 2.4m centres

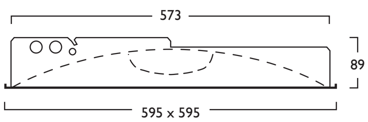
Result overview



General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	125860 lm
Total power	770.0 W
Total power per area (204.00 m^2)	3.77 W/m^2 (0.79 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	478 lx
Emin	422 lx
Emin/Eav (Uo)	0.88
UGR (7.5H 10.6H)	<=18.1
Position	0.75 m

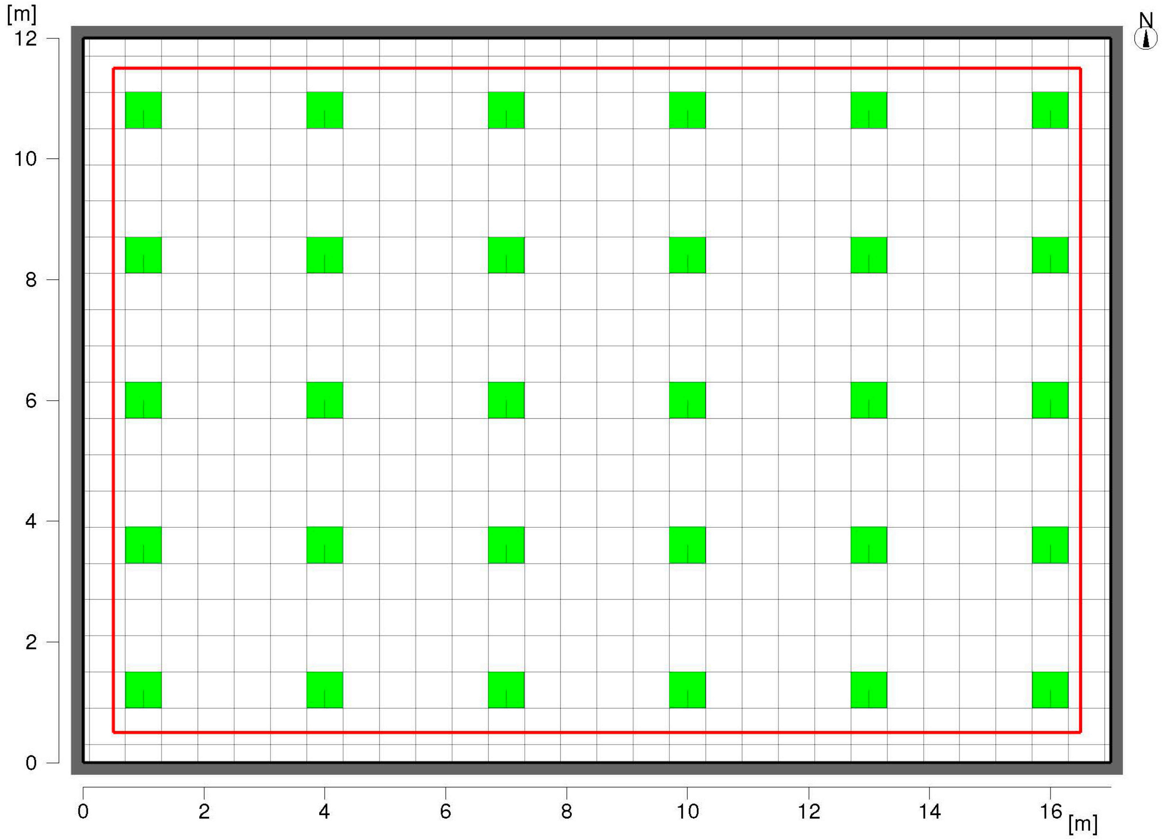
 **35x**

Order No. : IM249 A LED420
Luminaire name : 20w iMod Grid
Equipment : 1 x LED 19.7 W / 3596 lm



Office 20W **iMod**® Grid – 3.0m x 2.4m centres

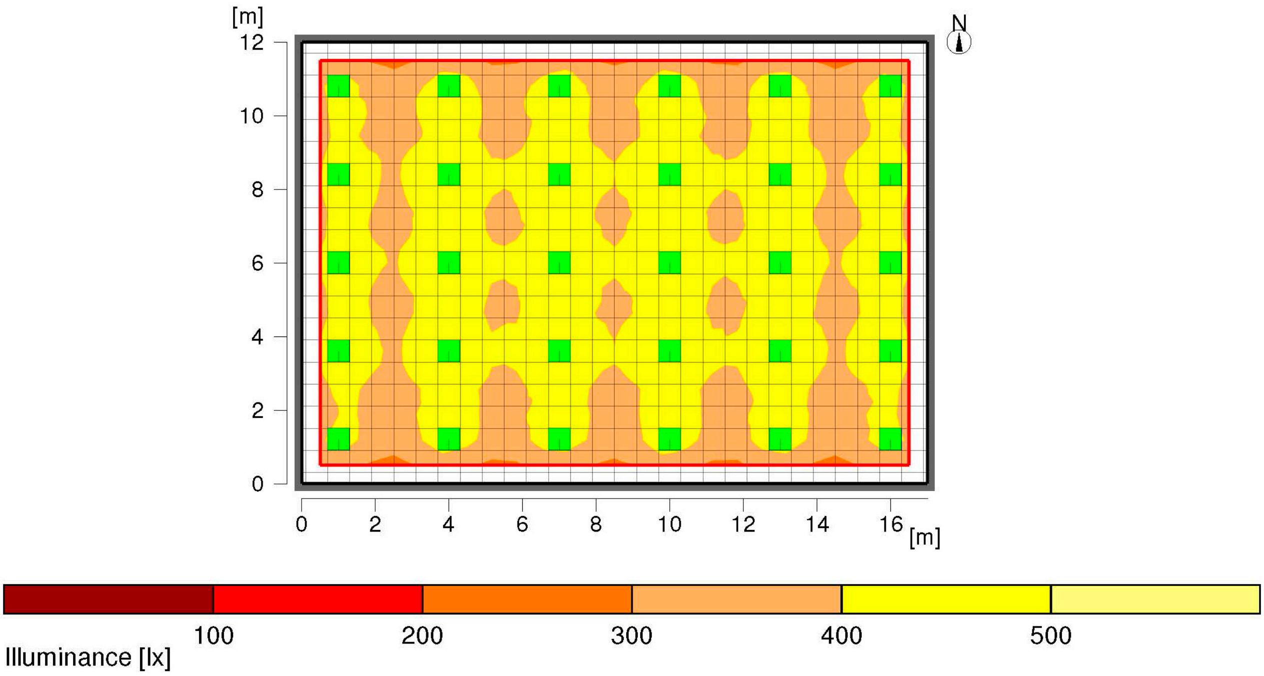
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

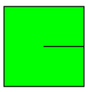
Office 20W **iMod**® Grid – 3.0m x 2.4m centres

Result overview



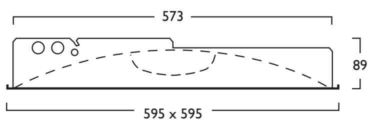
General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	107880 lm
Total power	660.0 W
Total power per area (204.00 m^2)	3.24 W/m^2 (0.82 W/m^2/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	396 lx
Emin	325 lx
Emin/Eav (Uo)	0.82
UGR (7.5H 10.6H)	<=18.1
Position	0.75 m



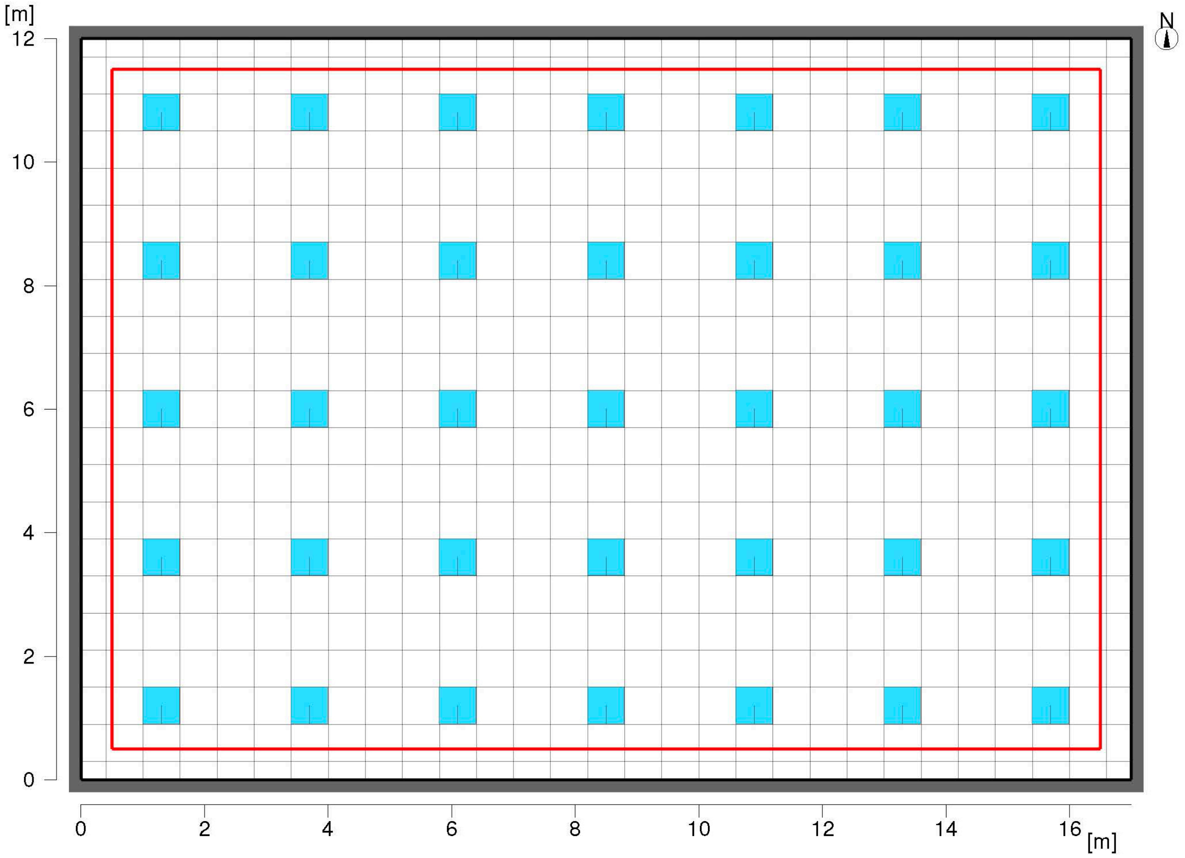
30x

Order No. :	IM249 A LED420
Luminaire name :	20w iMod Grid
Equipment :	1 x LED 19.7 W / 3596 lm



Office 26W **iMod**® Grid – 2.4m x 2.4m centres

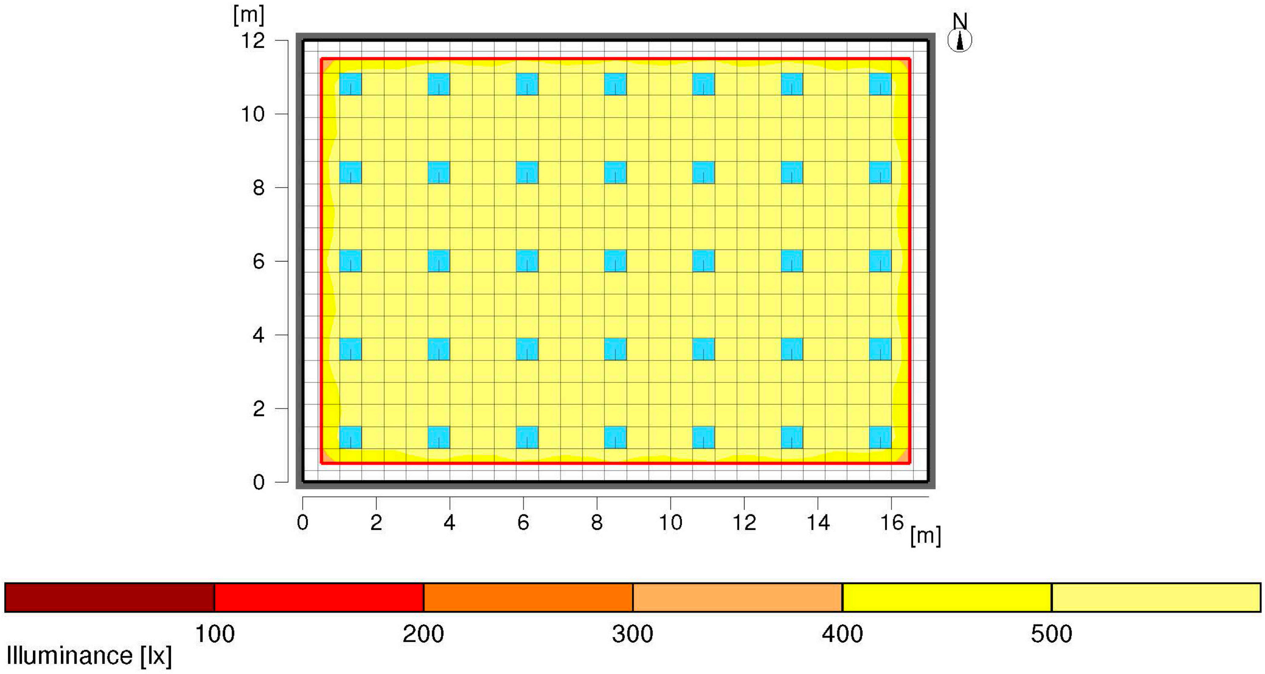
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 26W **iMod**® Grid – 2.4m x 2.4m centres

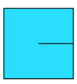
Result overview



General

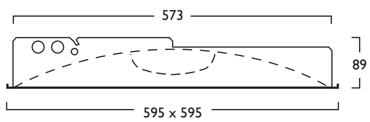
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	153300 lm
Total power	980.0 W
Total power per area (204.00 m²)	4.80 W/m² (0.82 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	583 lx
Emin	514 lx
Emin/Eav (Uo)	0.88
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



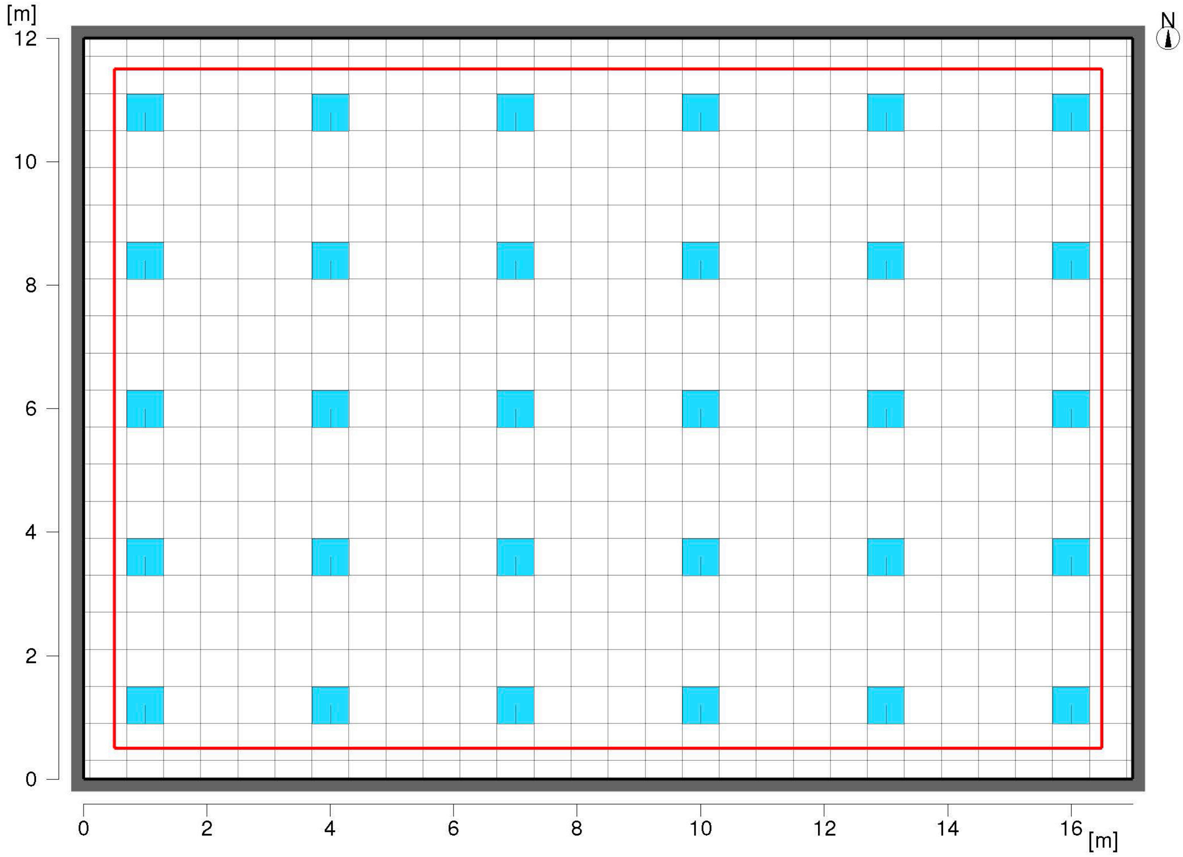
35x

Order No. : IM249 A LED420
Luminaire name : 26w iMod Grid
Equipment : 1 x LED 25 W / 4380 lm



Office 26W **iMod**® Grid – 3.0m x 2.4m centres

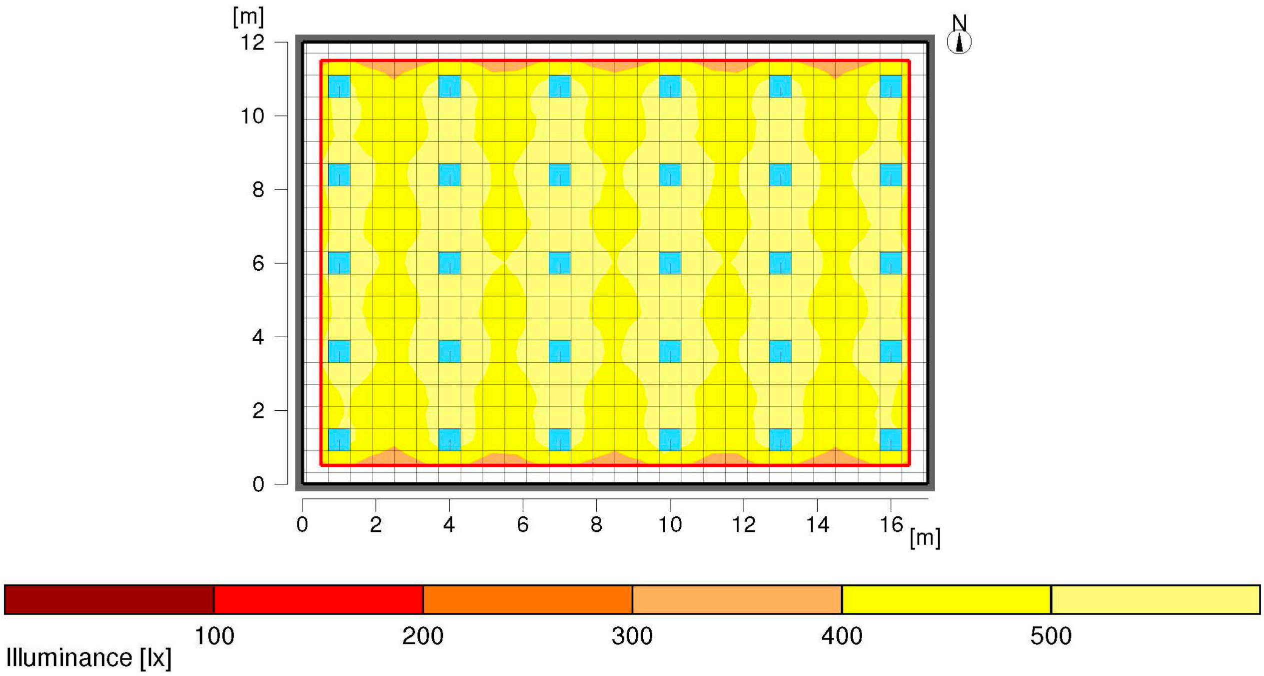
Result overview



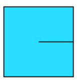
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 26W **iMod**® Grid – 3.0m x 2.4m centres

Result overview

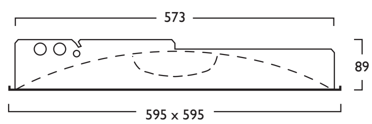


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	131400 lm
Total power	840.0 W
Total power per area (204.00 m²)	4.12 W/m² (0.85 W/m²/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	483 lx
Emin	396 lx
Emin/Eav (Uo)	0.82
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



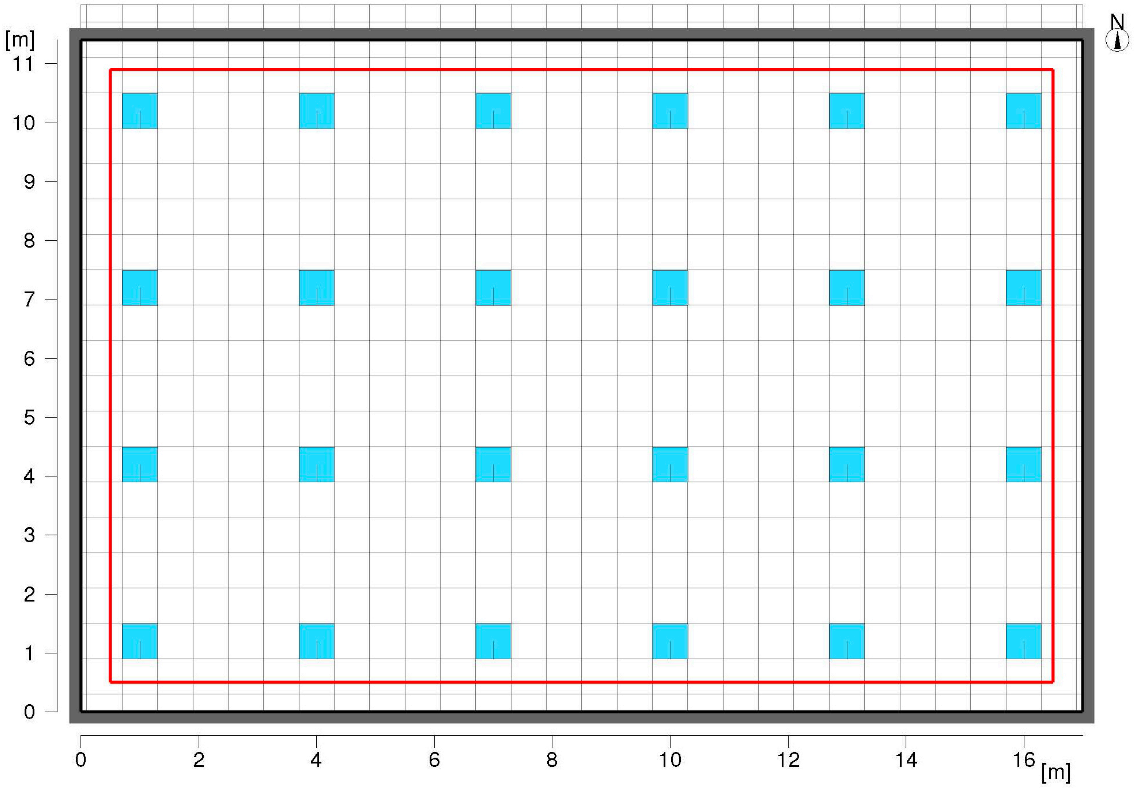
30x

Order No. :	IM249 A LED426
Luminaire name :	26w iMod Grid
Equipment :	1 x LED 25 W / 4380 lm



Office 26W **iMod**® Grid – 3.0m x 3.0m centres

Floor plan



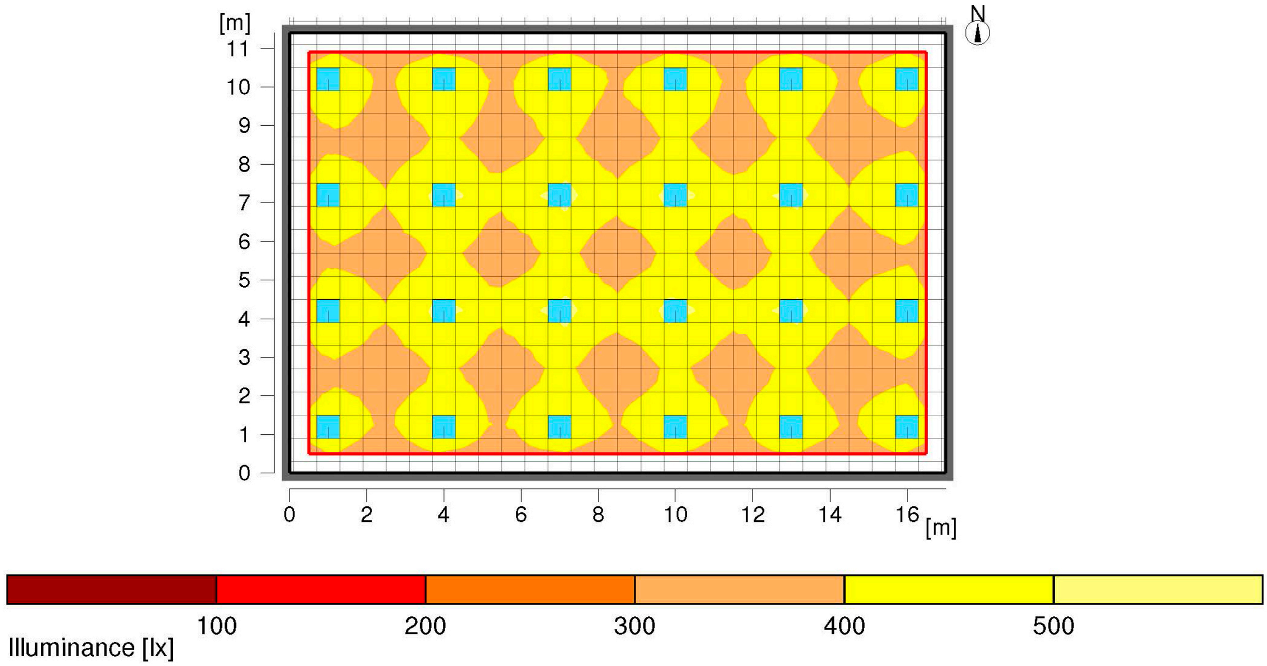
Room data:
W1 : 17.00
W2 : 11.40
W3 : 17.00
W4 : 11.40
W5 : -----
W6 : -----
Floor: -----
Ceiling: -----
Room height [m]:
Height of reference plane [m]:
Height of luminaire plane [m]:

Reflectance:
50.0 %
50.0 %
50.0 %
50.0 %

20.0 %
70.0 %
2.80
0.75
2.80

Office 26W **iMod**® Grid – 3.0m x 3.0m centres

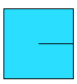
Result overview



General

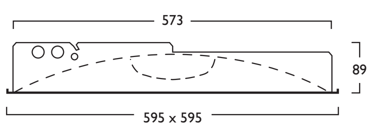
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	105120 lm
Total power	672.0 W
Total power per area (193.80 m^2)	3.47 W/m^2 (0.86 W/m^2/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	404 lx
Emin	324 lx
Emin/Eav (Uo)	0.80
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



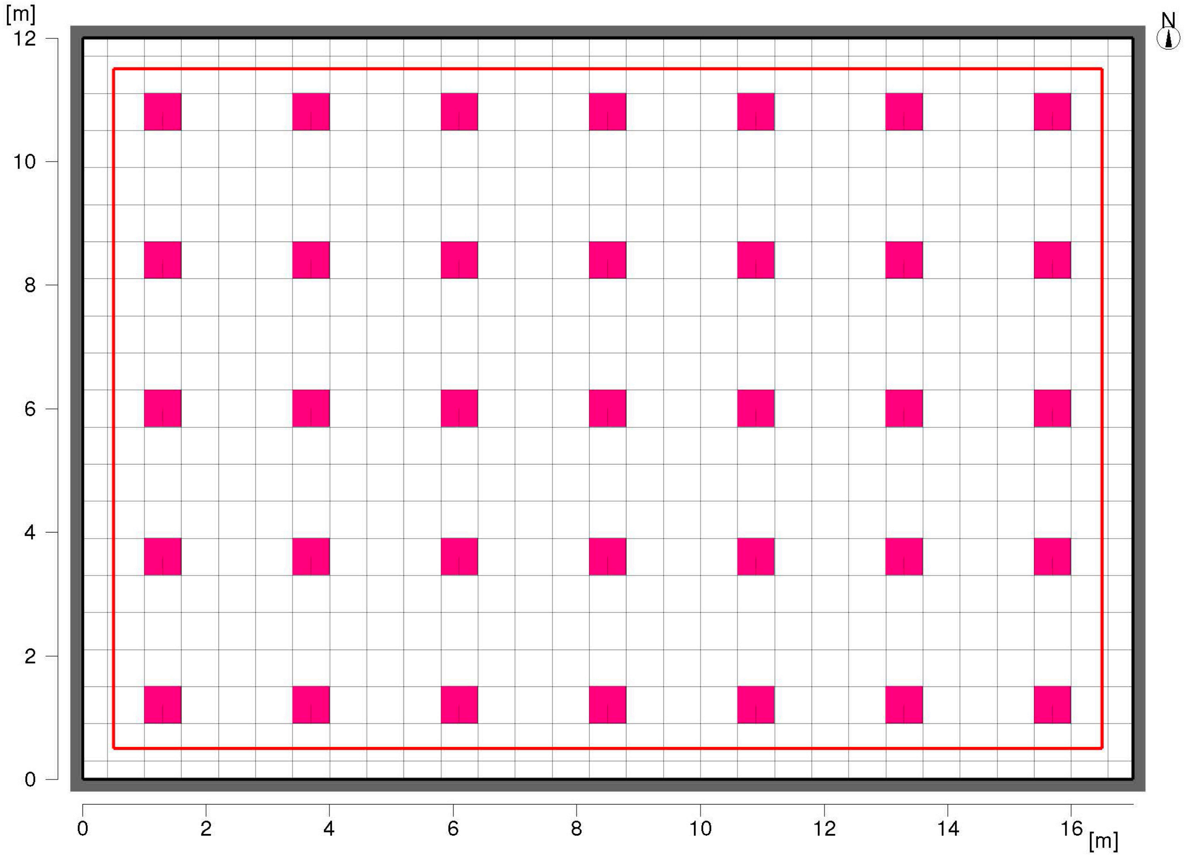
24x

Order No. : IM249 A LED426
Luminaire name : 26w iMod Grid
Equipment : 1 x LED 25 W / 4380 lm



Office 22W **iMod**® Evolva Grid - 2.4m x 2.4m centres

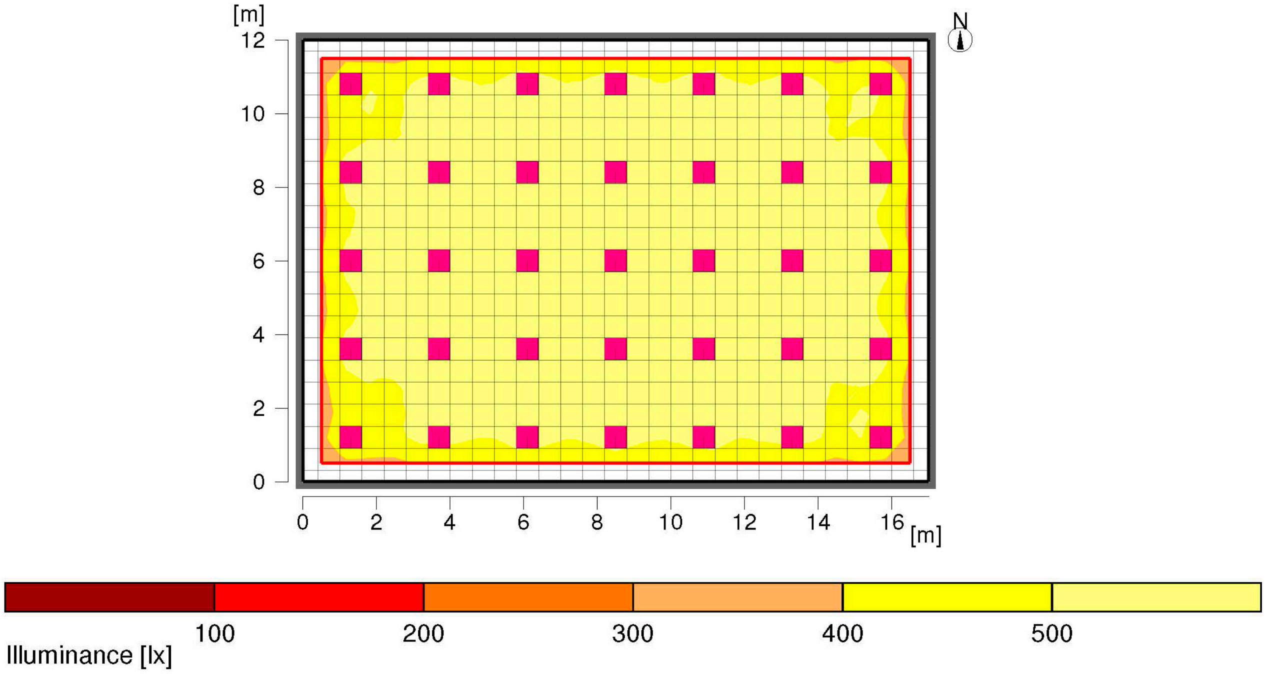
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 22W **iMod**® Evolva Grid – 2.4m x 2.4m centres

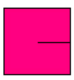
Result overview



General

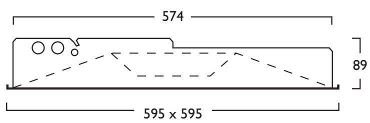
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	135695 lm
Total power	840.0 W
Total power per area (204.00 m²)	4.12 W/m² (0.82 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	504 lx
Emin	446 lx
Emin/Eav (Uo)	0.89
UGR (7.5H 10.6H)	<=17.8
Position	0.75 m



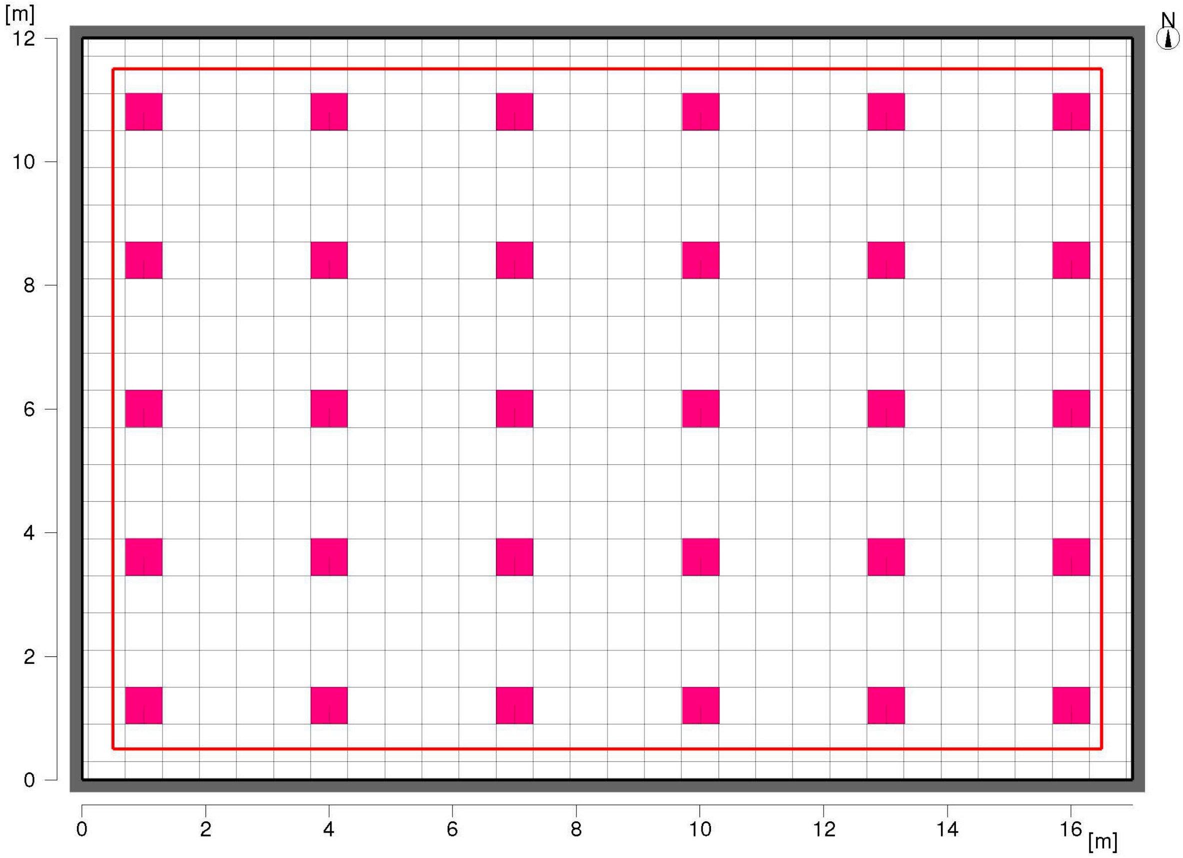
35x

Order No. : IM1188 A LED422
Luminaire name : 22w iMod Evolva Grid
Equipment : 1 x LED 21.5 W / 3877 lm



Office 22W **iMod**® Evolva Grid – 3.0m x 2.4m centres

Floor plan

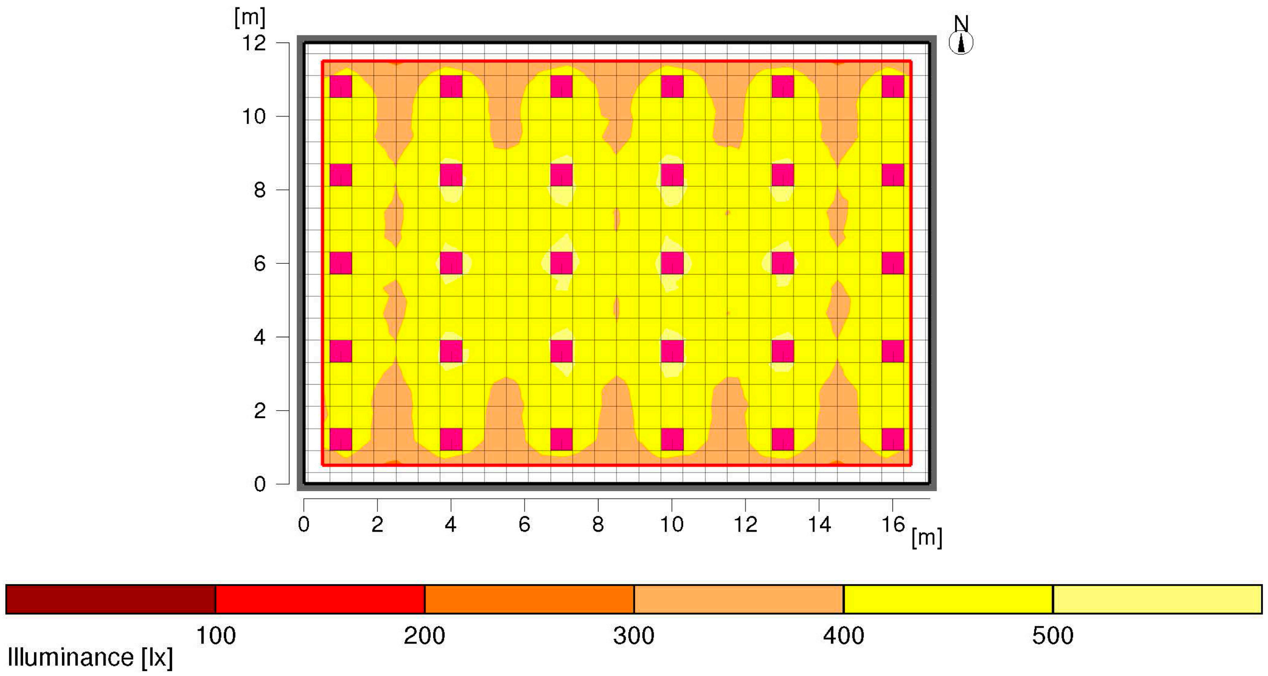


Room data:

Room data:	Reflectance:
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 22W **iMod**® Evolva Grid – 3.0m x 2.4m centres

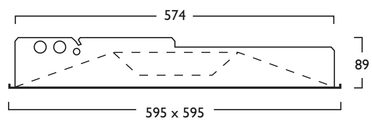
Result overview



General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	116310 lm
Total power	720.0 W
Total power per area (204.00 m²)	3.53 W/m² (0.85 W/m²/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	417 lx
Emin	337 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=17.8
Position	0.75 m

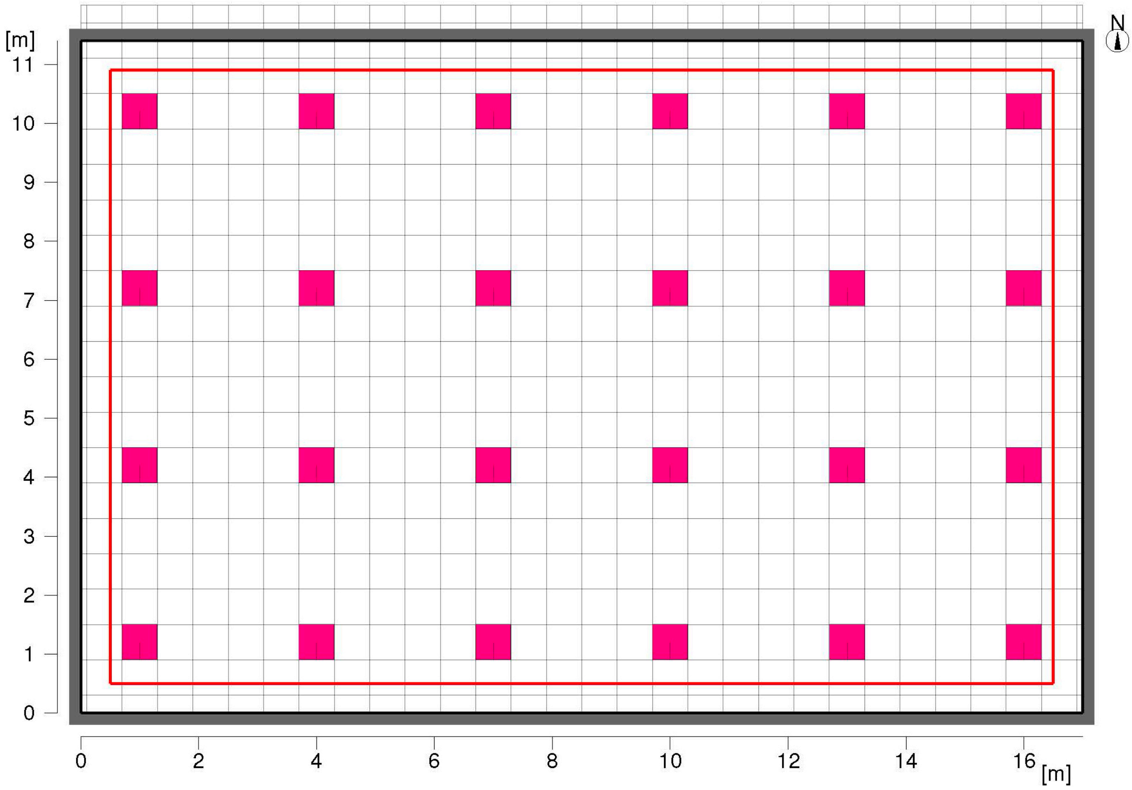
30x

Order No. : IM1188 A LED422
Luminaire name : 22w iMod Evolva Grid
Equipment : 1 x LED 21.5 W / 3877 lm



Office 22W **iMod**® Evolva Grid – 3.0m x 3.0m centres

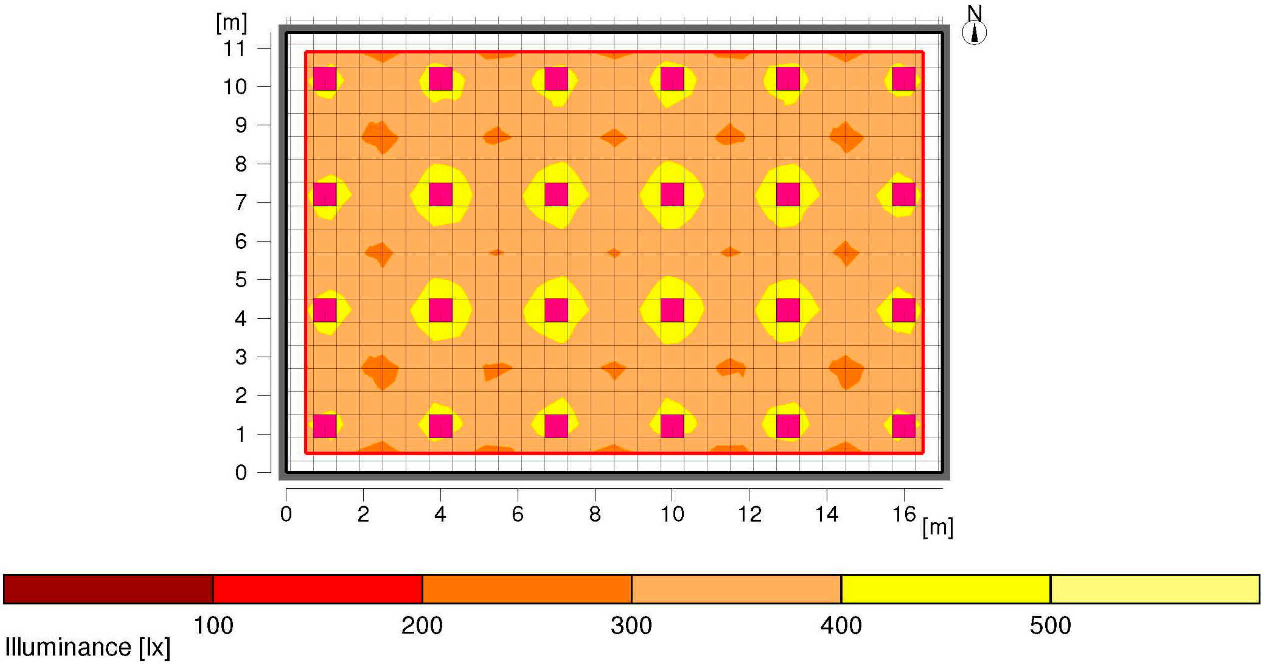
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

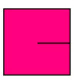
Office 22W **iMod®** Evolva Grid – 3.0m x 3.0m centres

Result overview



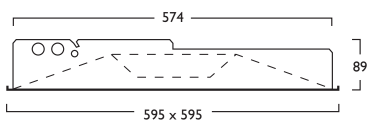
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	93048 lm
Total power	576.0 W
Total power per area (193.80 m^2)	2.97 W/m^2 (0.86 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	347 lx
Emin	267 lx
Emin/Eav (Uo)	0.77
UGR (7.5H 10.6H)	<=17.8
Position	0.75 m



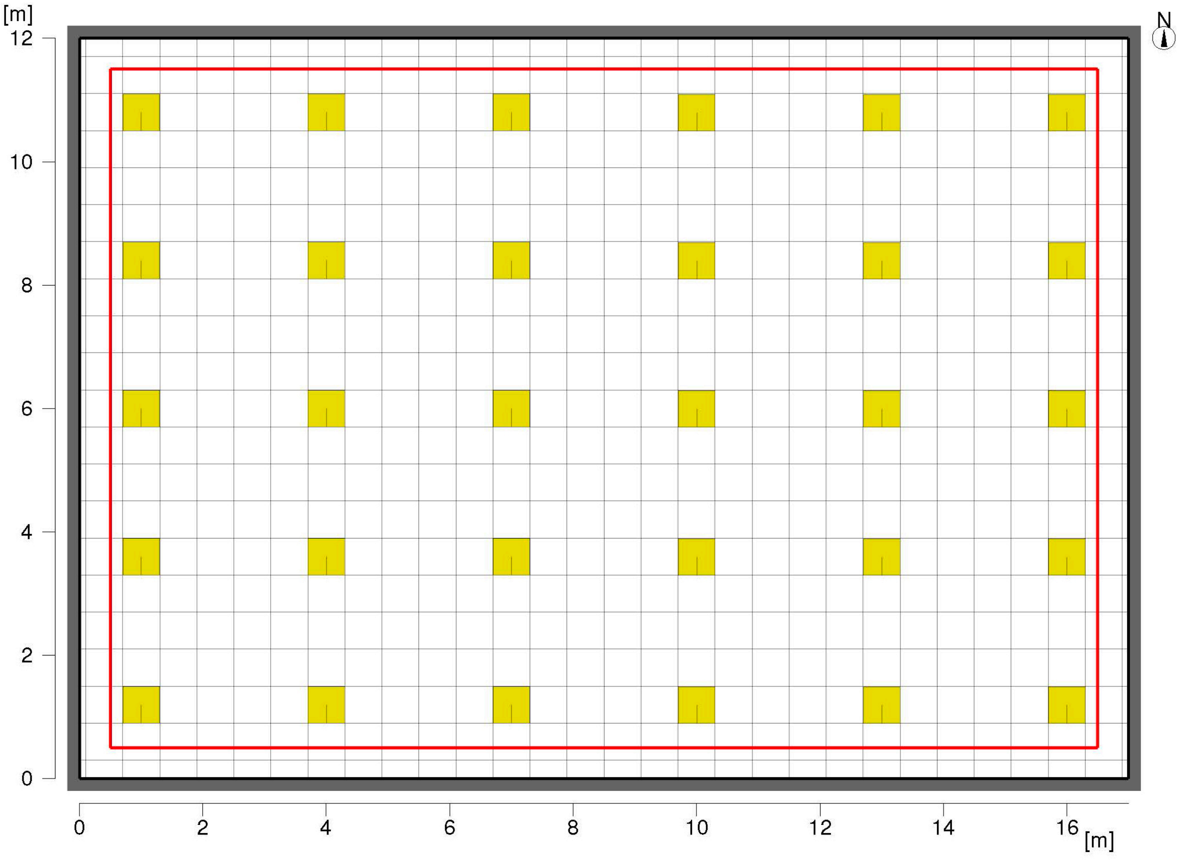
24x

Order No. : IM1188 A LED422
Luminaire name : 22w iMod Evolva Grid
Equipment : 1 x LED 21.5 W / 3877 lm



Office 25W **iMod**® Evolva Grid – 3.0m x 2.4m centres

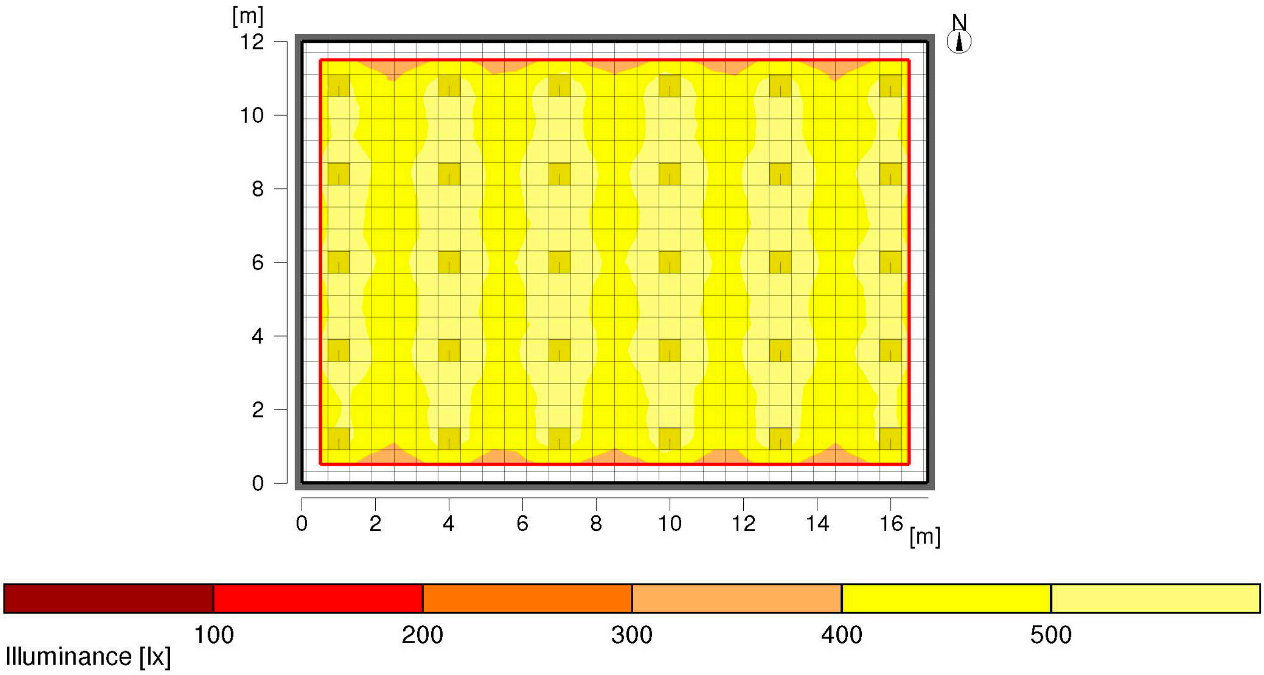
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 25W **iMod**® Evolva Grid – 3.0m x 2.4m centres

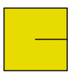
Result overview



General

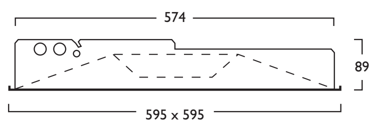
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	133650 lm
Total power	840.0 W
Total power per area (204.00 m²)	4.12 W/m² (0.86 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	479 lx
Emin	388 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=18.2
Position	0.75 m



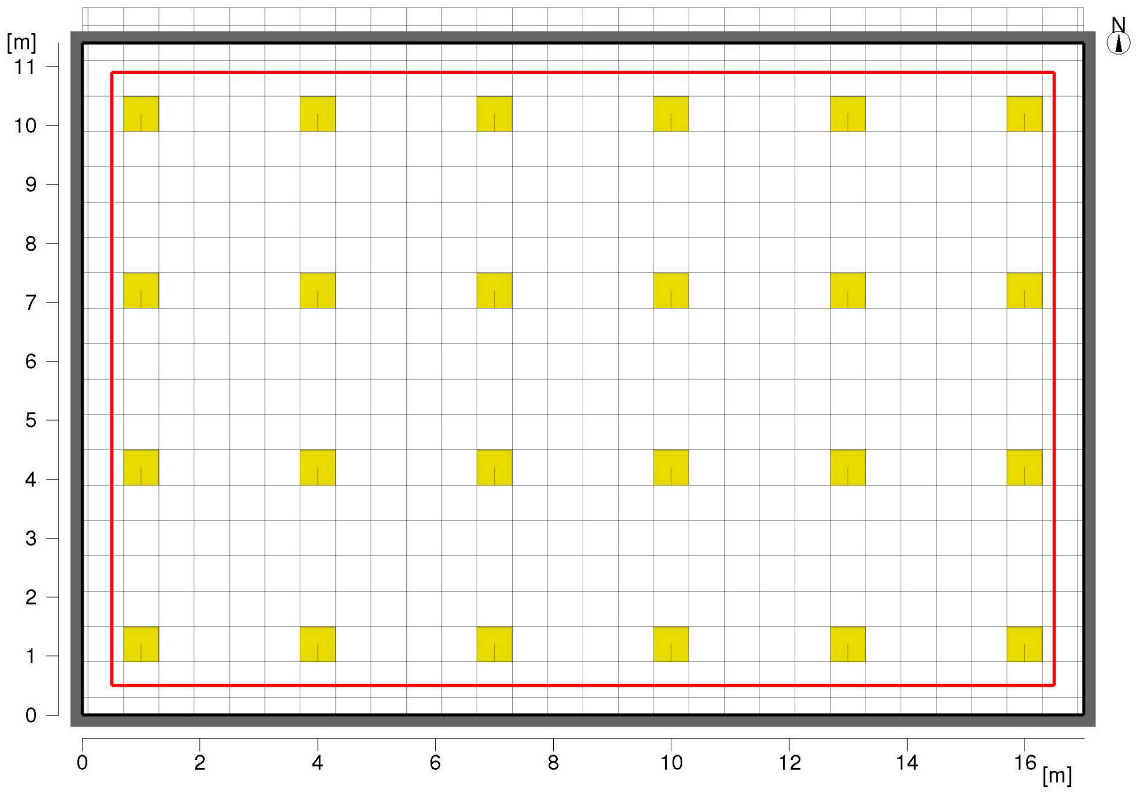
30x

Order No. : IM1188 A LED425
Luminaire name : 25w iMod Evolva Grid
Equipment : 1 x LED 25 W / 4455 lm



Office 25W **iMod**® Evolva Grid – 3.0m x 3.0m centres

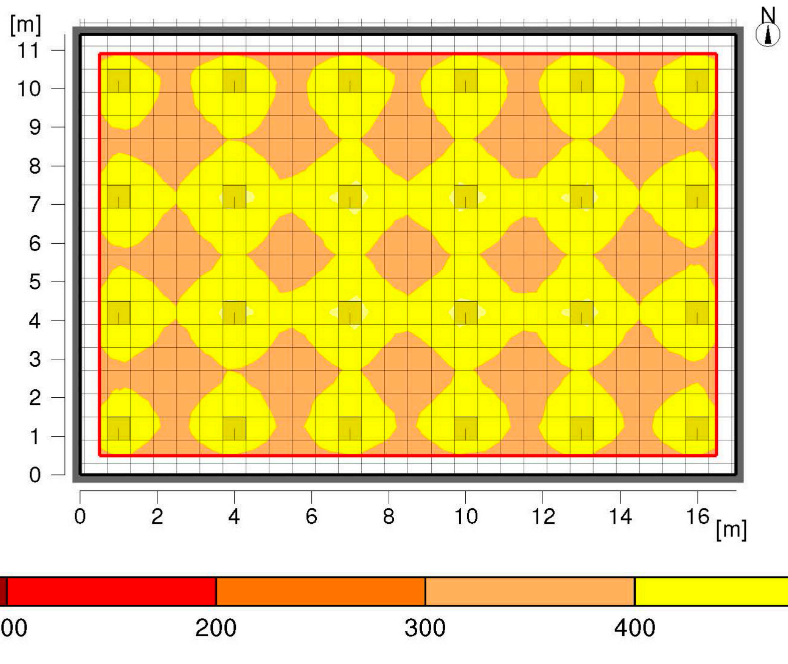
Floor plan



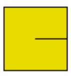
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 25W **iMod**® Evolva Grid – 3.0m x 3.0m centres

Result overview

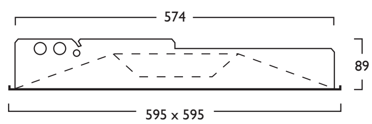


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	106920 lm
Total power	672.0 W
Total power per area (193.80 m^2)	3.47 W/m^2 (0.87 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	399 lx
Emin	307 lx
Emin/Eav (Uo)	.77
UGR (7.5H 10.6H)	<=18.2
Position	0.75 m



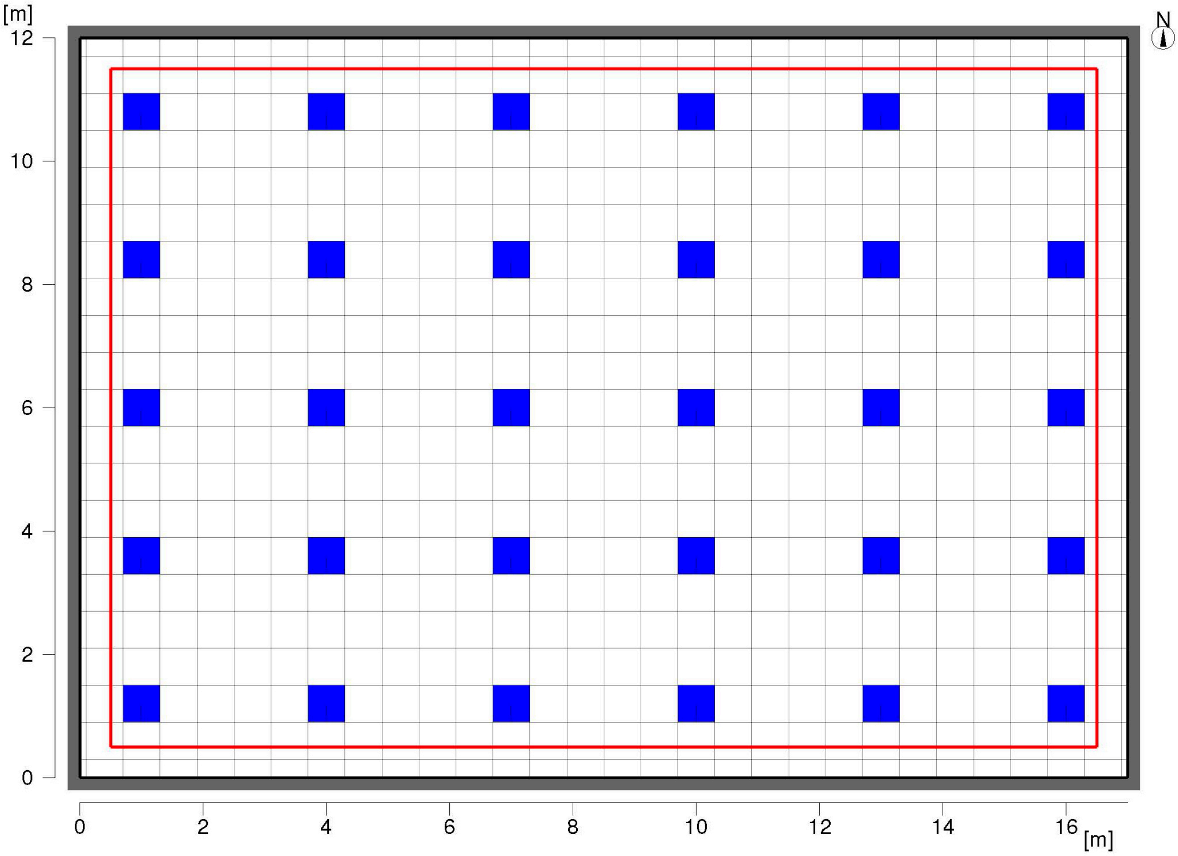
24x

Order No. : IM1188 A LED425
Luminaire name : 25w iMod Evolva Grid
Equipment : 1 x LED 25 W / 4455 lm



Office 29W **iMod**® Evolva Grid – 3.0m x 2.4m centres

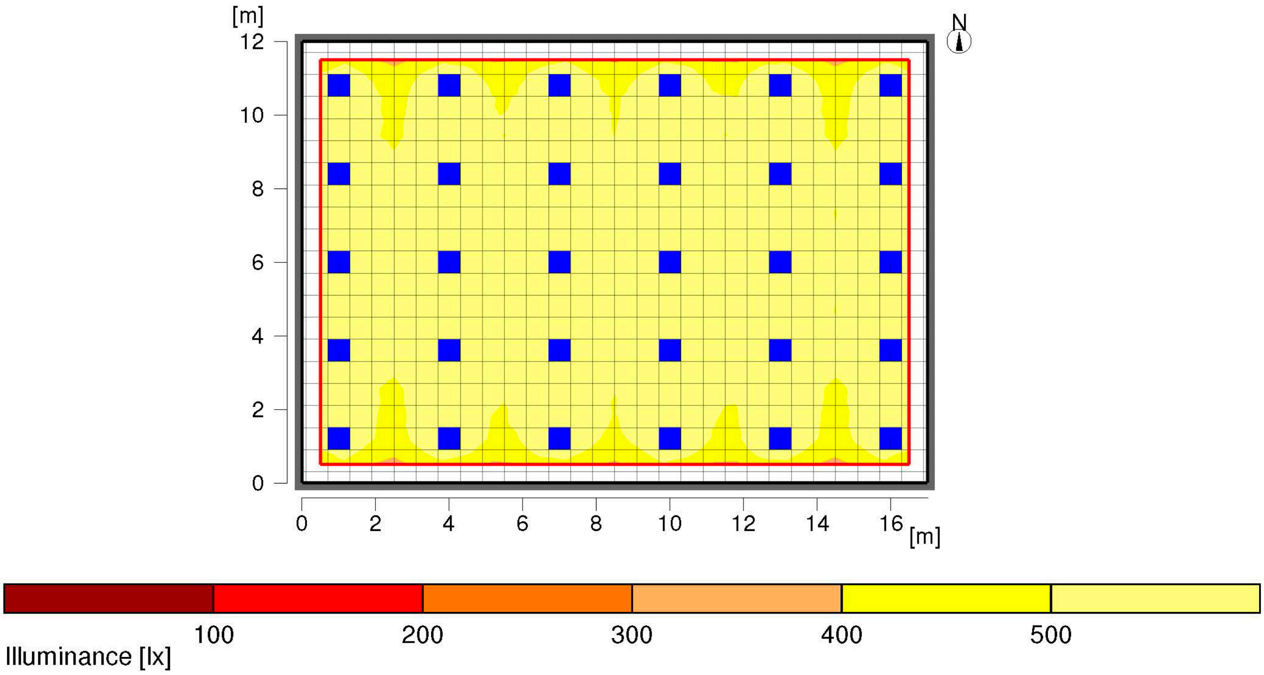
Floor plan



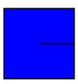
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 29W **iMod**® Evolva Grid – 3.0m x 2.4m centres

Result overview

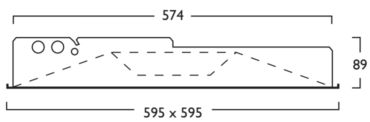


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	151590 lm
Total power	927.0 W
Total power per area (204.00 m^2)	4.54 W/m^2 (0.84 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	543 lx
Emin	440 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=18.7
Position	0.75 m



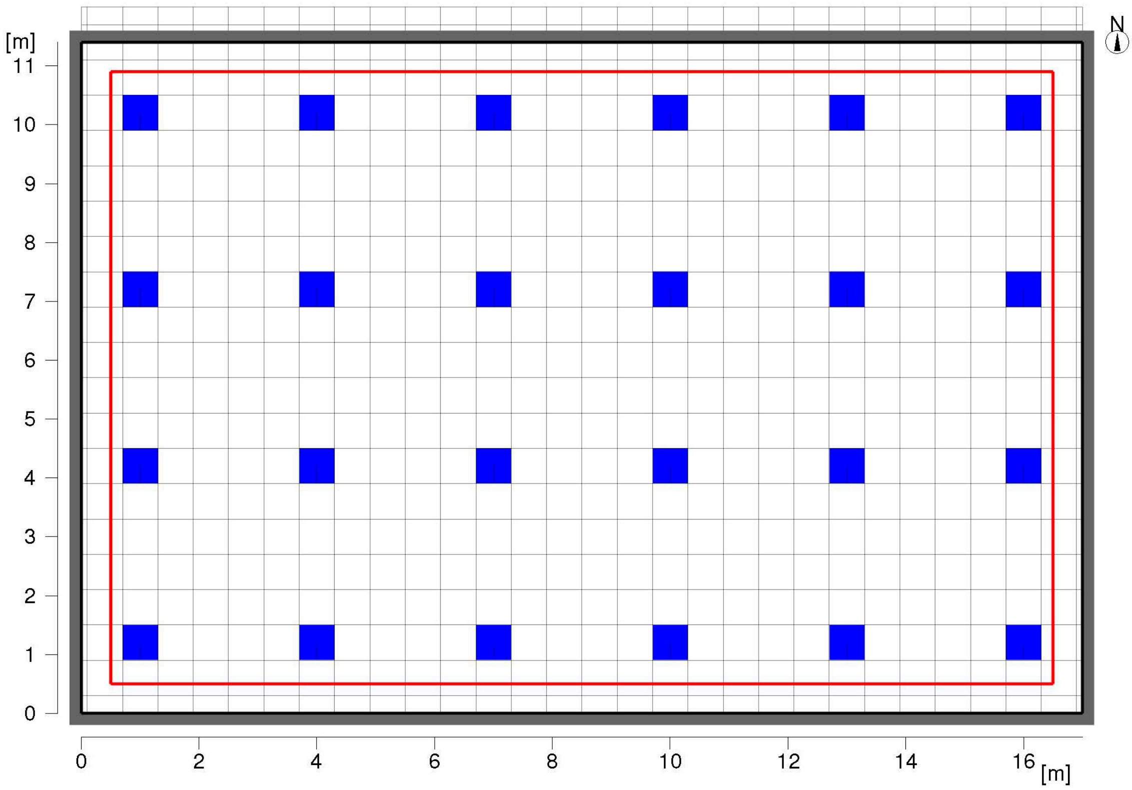
30x

Order No. :	IM1188 A LED429
Luminaire name :	29w iMod Evolva Grid
Equipment :	1 x LED 28.6 W / 5053 lm



Office 29W **iMod**® Evolva Grid – 3.0m x 3.0m centres

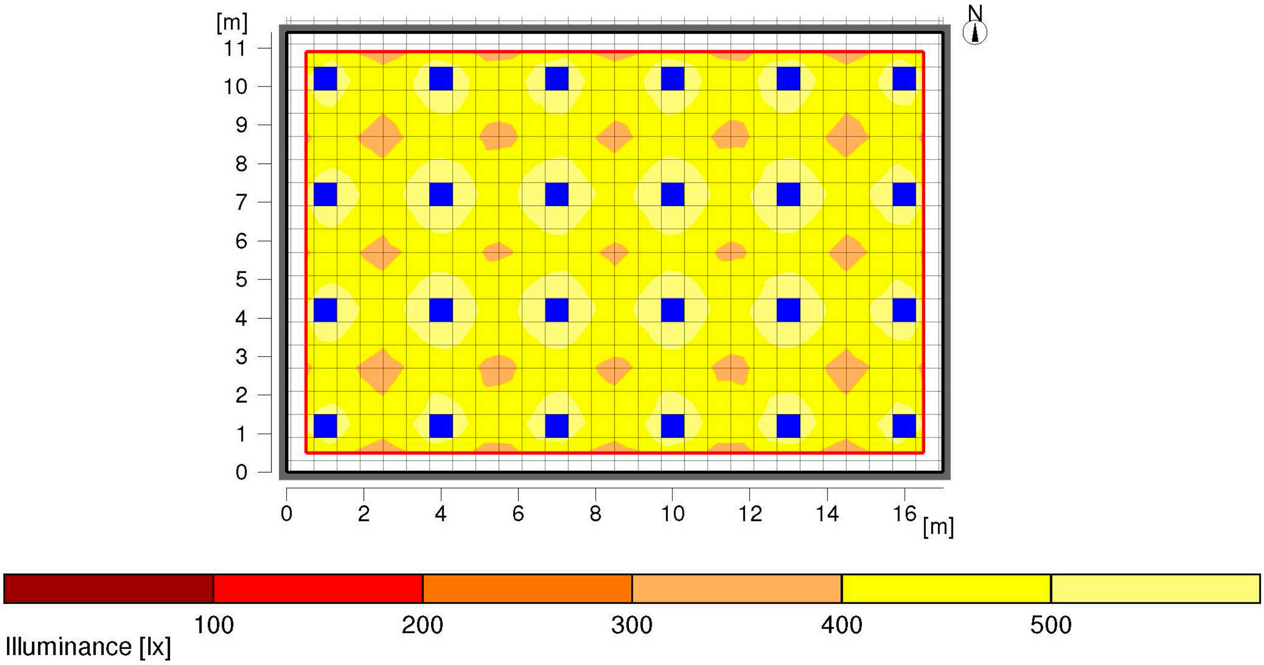
Floor plan



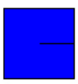
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 29W **iMod**® Evolva Grid – 3.0m x 3.0m centres

Result overview

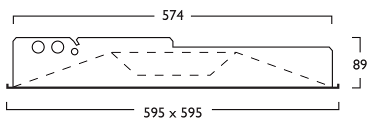


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	121272 lm
Total power	741.6 W
Total power per area (193.80 m^2)	3.83 W/m^2 (0.85 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	453 lx
Emin	348 lx
Emin/Eav (Uo)	.77
UGR (7.5H 10.6H)	<=18.7
Position	0.75 m



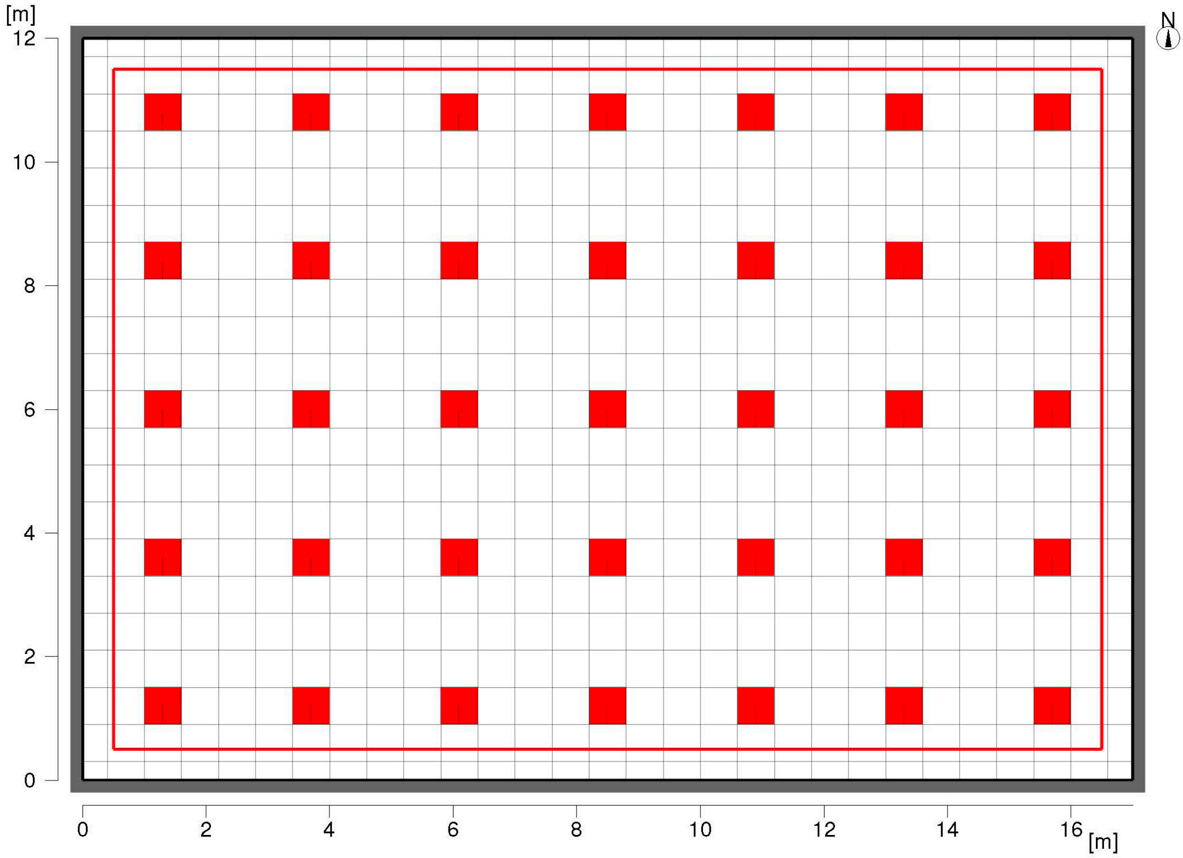
24x

Order No. : IM1188 A LED429
Luminaire name : 29w iMod Evolva Grid
Equipment : 1 x LED 28.6 W / 5053 lm



Office 24W **iMod**® Inset Grid - 2.4m x 2.4m centres

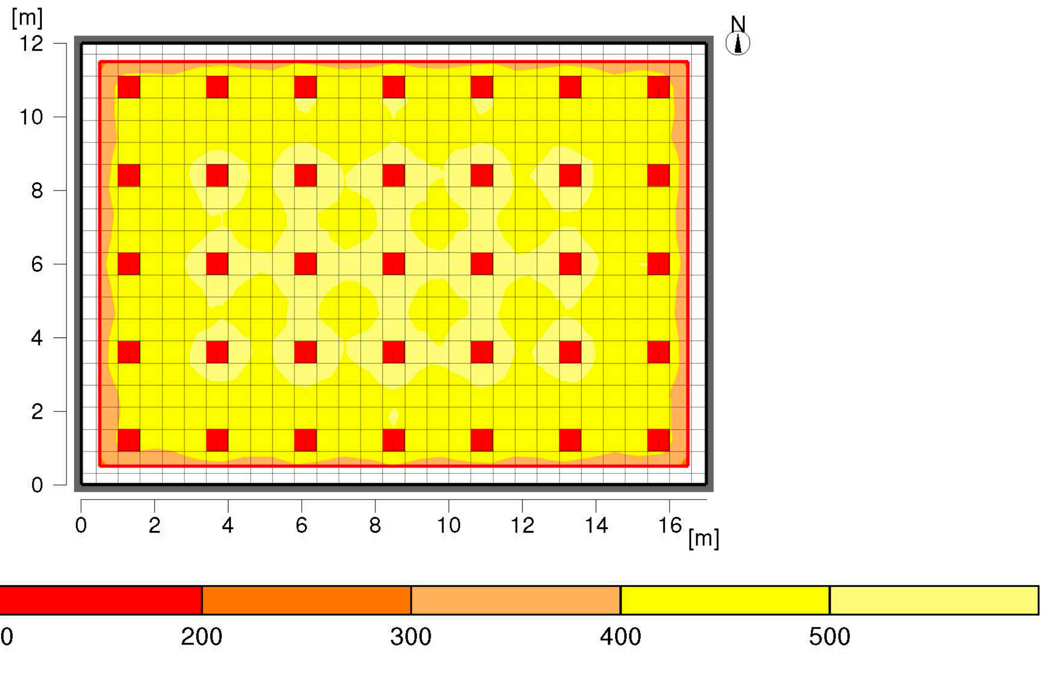
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 24W **iMod**® Inset Grid - 2.4m x 2.4m centres

Result overview



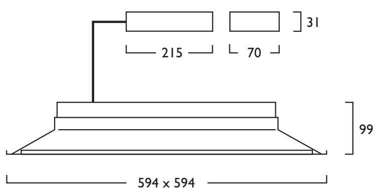
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	130200 lm
Total power	934.5 W
Total power per area (204.00 m²)	4.58 W/m² (1.01 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	452 lx
Emin	402 lx
Emin/Eav (Uo)	0.89
UGR (7.5H 10.6H)	<=18.2
Position	0.75 m

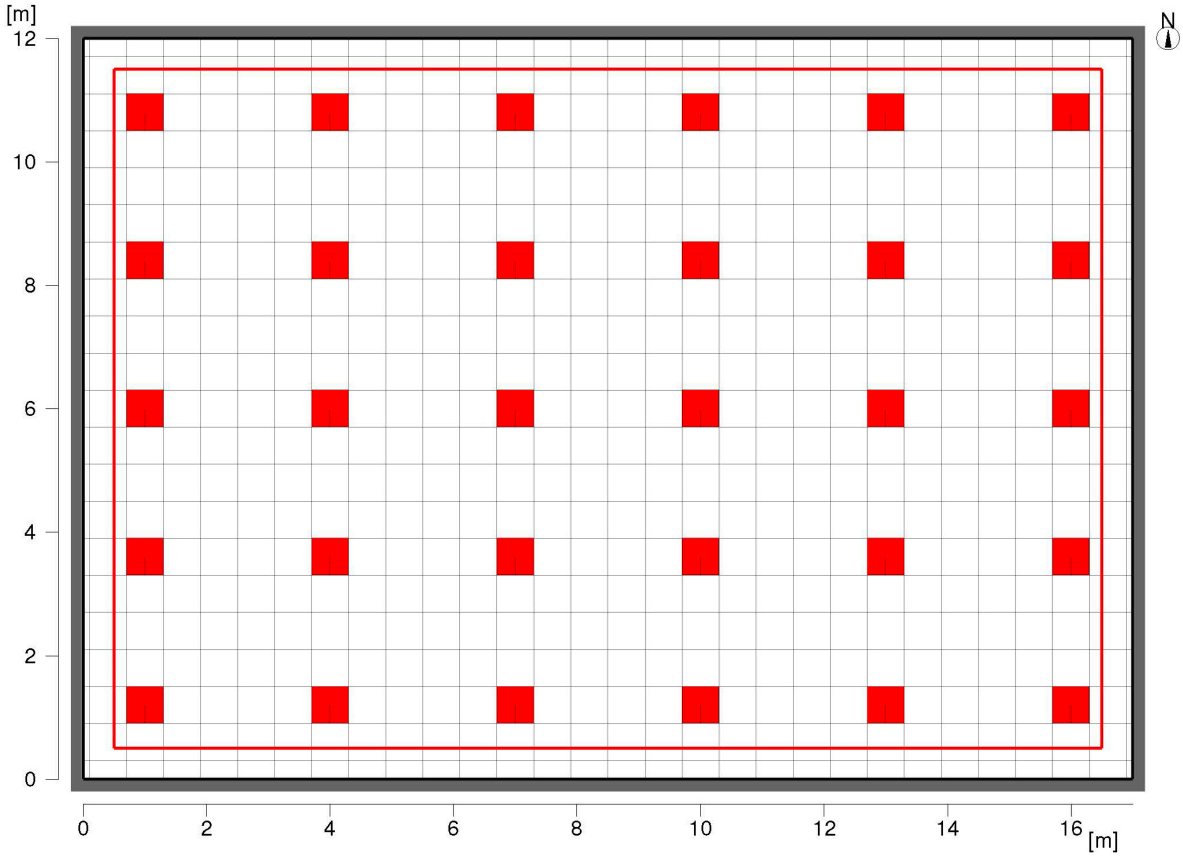
35x

Order No. :	IM1197 A LED424
Luminaire name :	24w iMod Inset Grid (CRI 80)
Equipment :	1 x LED 23.8 W / 3720 lm



Office 24W **iMod**® Inset Grid - 3.0m x 2.4m centres

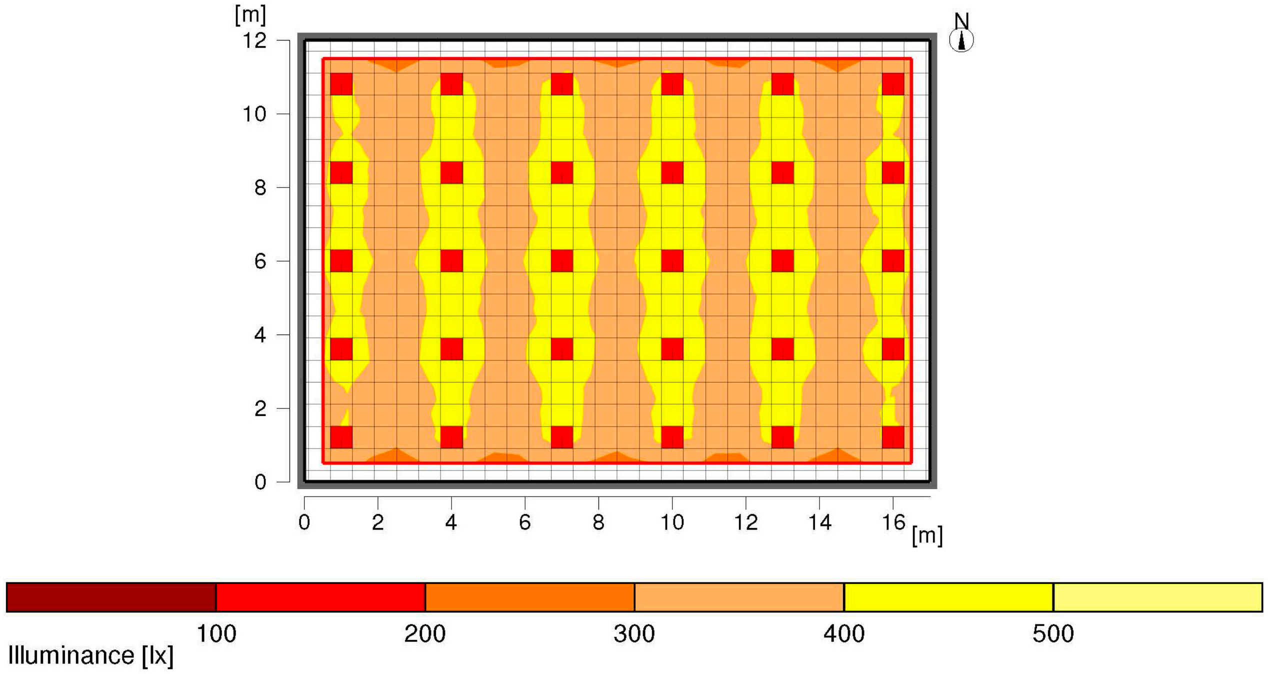
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 24W **iMod**® Inset Grid - 3.0m x 2.4m centres

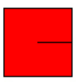
Result overview



General

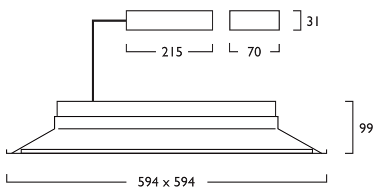
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	111600 lm
Total power	801.0 W
Total power per area (204.00 m²)	3.93 W/m² (1.05 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	374 lx
Emin	303 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=18.2
Position	0.75 m



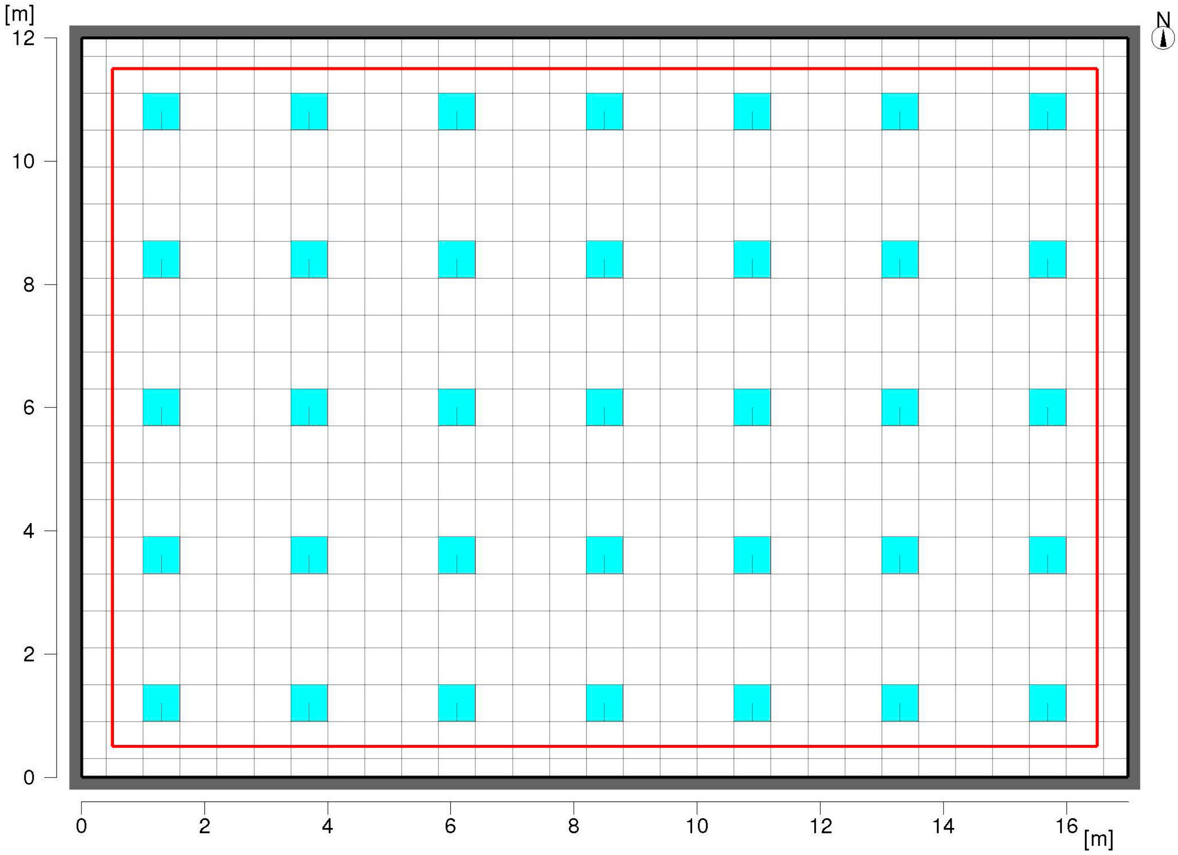
30x

Order No. : IM1197 A LED424
Luminaire name : 24w iMod Inset Grid (CRI 80)
Equipment : 1 x LED 23.8 W / 3720 lm



Office 29W **iMod**® Inset Grid – 2.4m x 2.4m centres

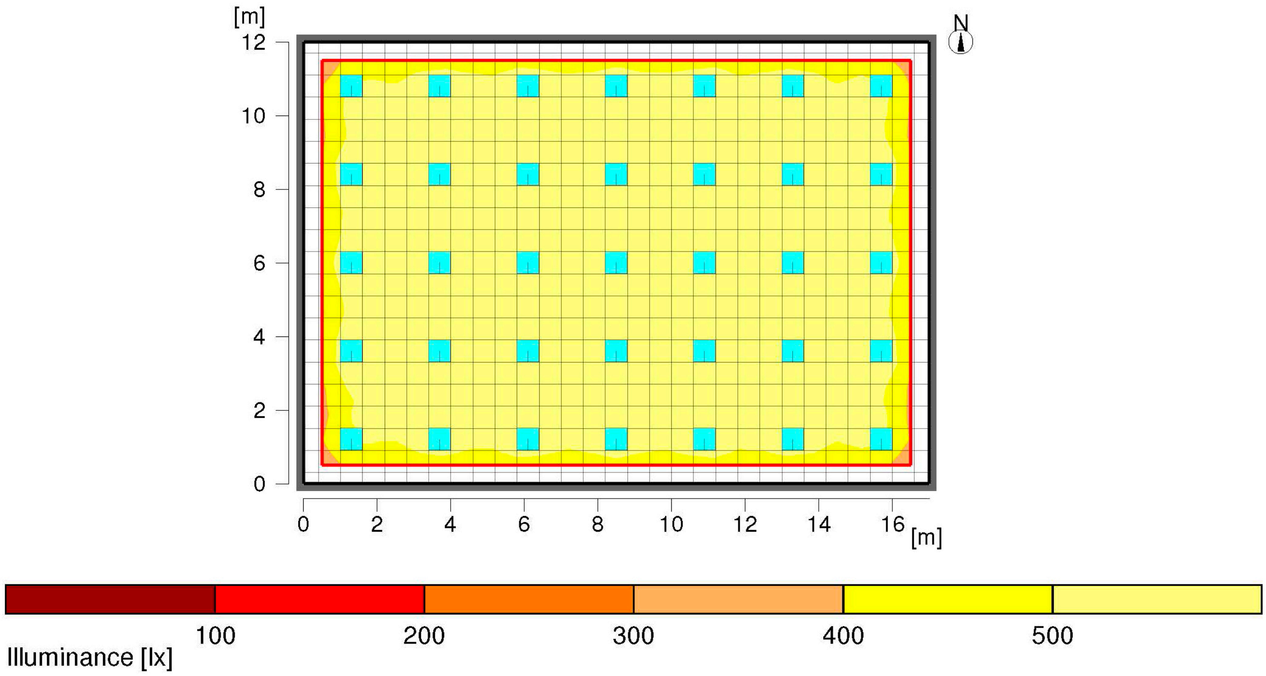
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 29W **iMod**® Inset Grid - 2.4m x 2.4m centres

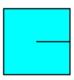
Result overview



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	153545 lm
Total power	1134.0 W
Total power per area (204.00 m²)	5.56 W/m² (1.04 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	533 lx
Emin	474 lx
Emin/Eav (Uo)	0.89
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m

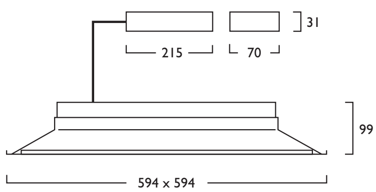


35x

Order No. : IM1197 A LED429

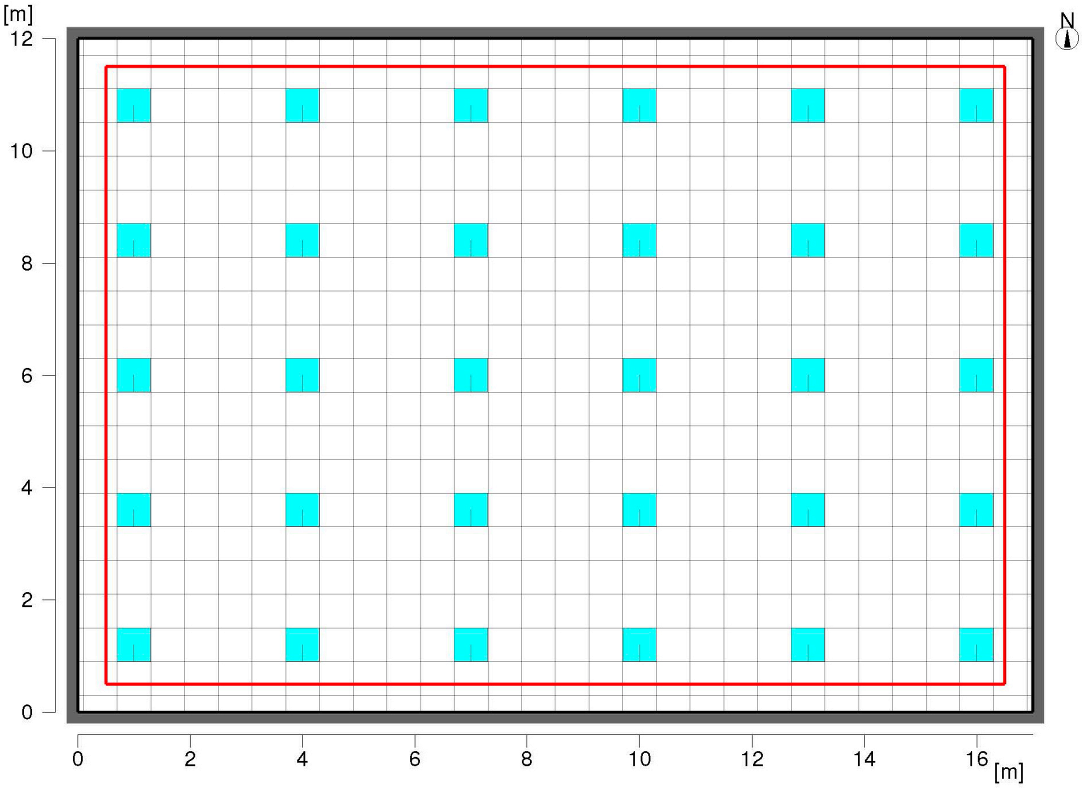
Luminaire name : 29w iMod Inset Grid (CRI 80)

Equipment : 1 x LED 28.9 W / 4387 lm



Office 29W **iMod**® Inset Grid – 3.0m x 2.4m centres

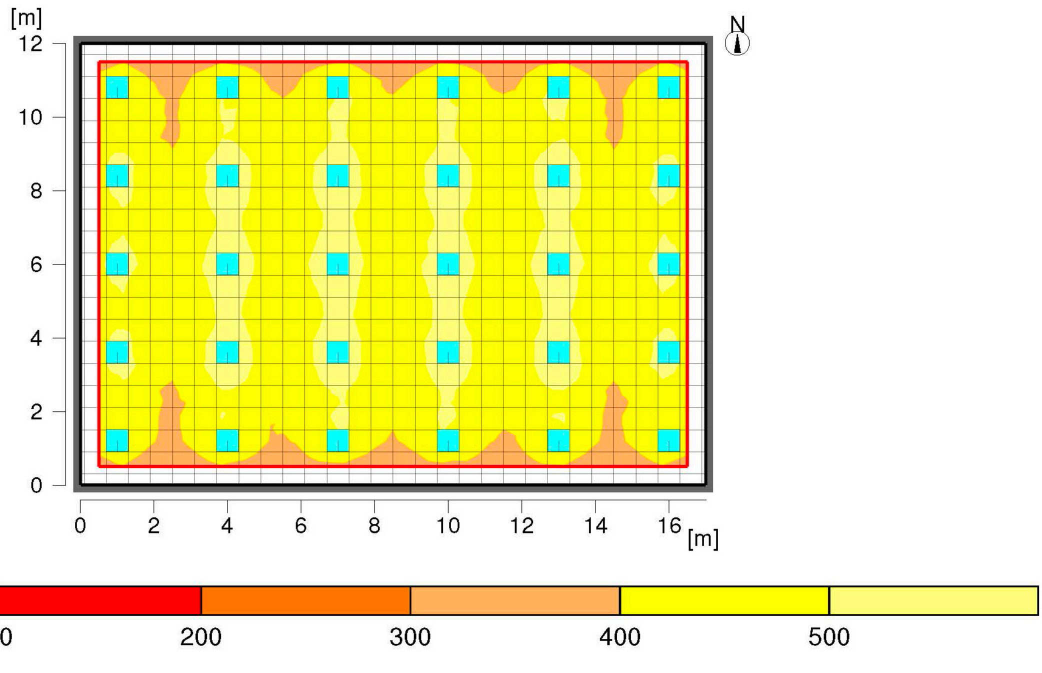
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

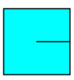
Office 29W **iMod**® Inset Grid - 3.0m x 2.4m centres

Result overview



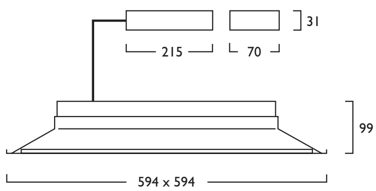
General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	131610 lm
Total power	972.0 W
Total power per area (204.00 m²)	4.76 W/m² (1.08 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	441 lx
Emin	357 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



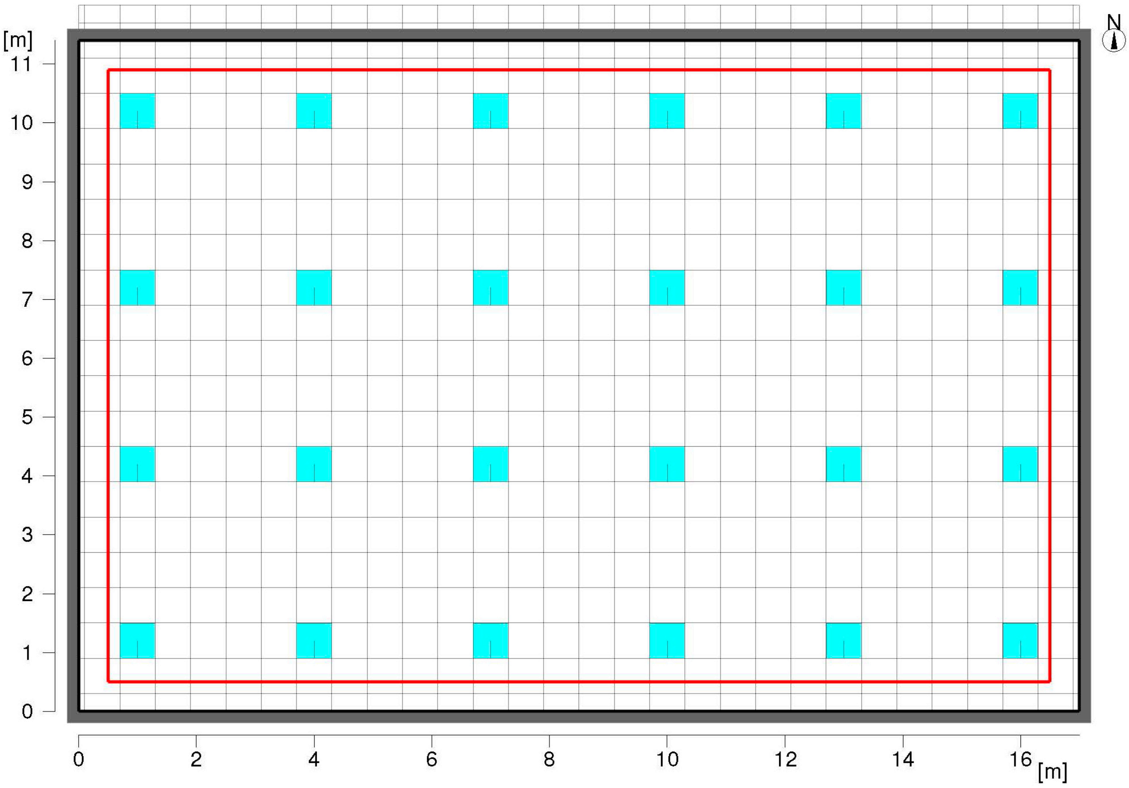
30x

Order No. : IM1197 A LED429
Luminaire name : 29w iMod Inset Grid (CRI 80)
Equipment : 1 x LED 28.9 W / 4387 lm



Office 29W **iMod**® Inset Grid – 3.0m x 3.0m centres

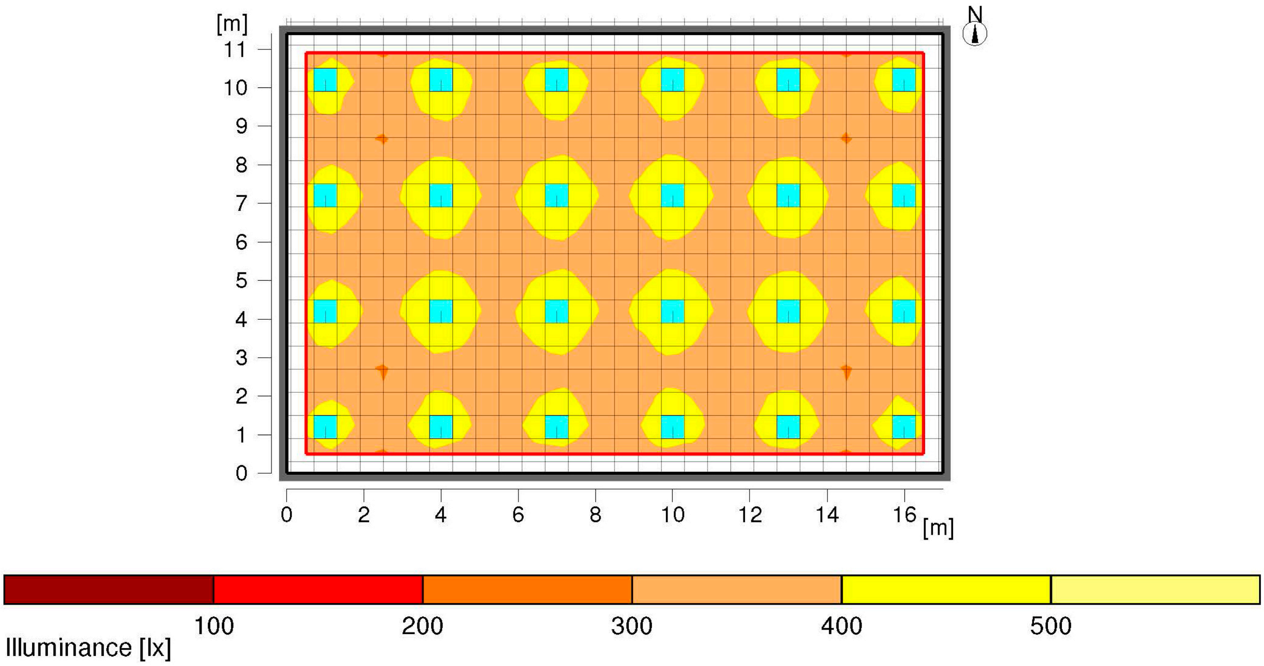
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

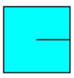
Office 29W **iMod®** Inset Grid - 3.0m x 3.0m centres

Result overview, Evaluation area 1



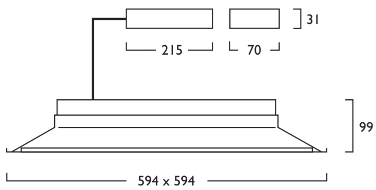
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	105288 lm
Total power	777.6 W
Total power per area (193.80 m²)	4.01 W/m² (1.09 W/m²/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	368 lx
Emin	279 lx
Emin/Eav (Uo)	0.76
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



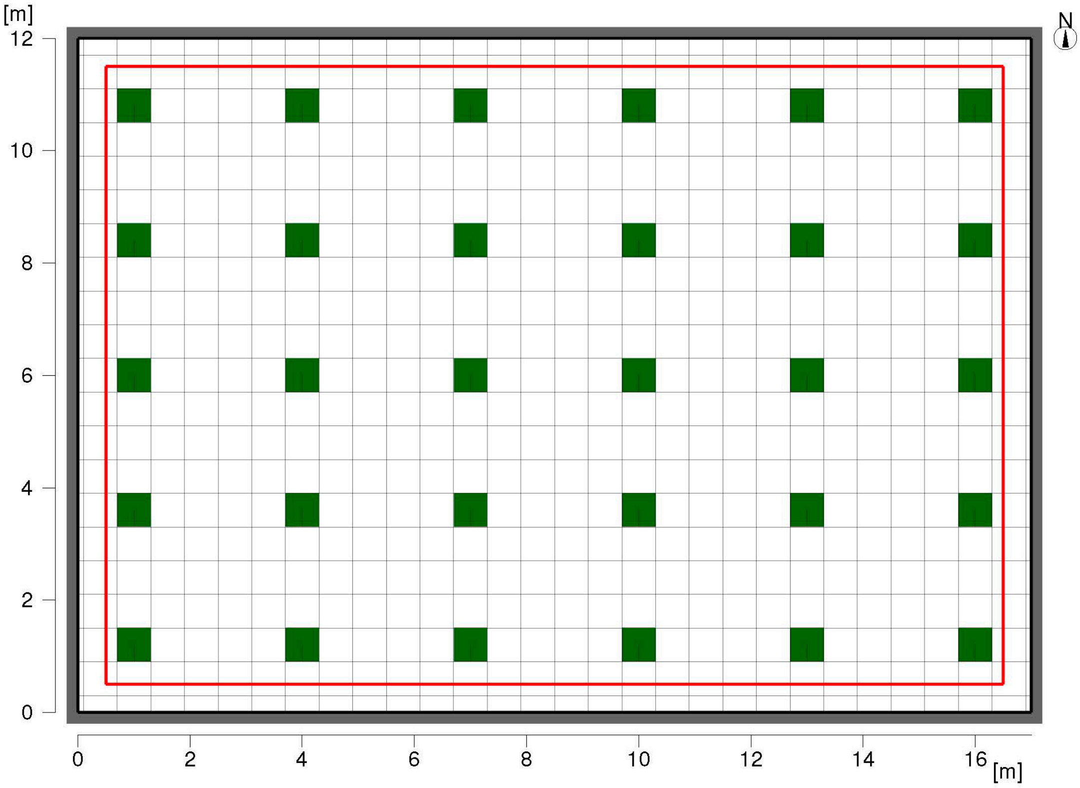
24x

Order No. : IM1197 A LED429
Luminaire name : 29w iMod Inset Grid (CRI 80)
Equipment : 1 x LED 28.9 W / 4387 lm



Office 36W iMod® Inset Grid – 3.0m x 2.4m centres

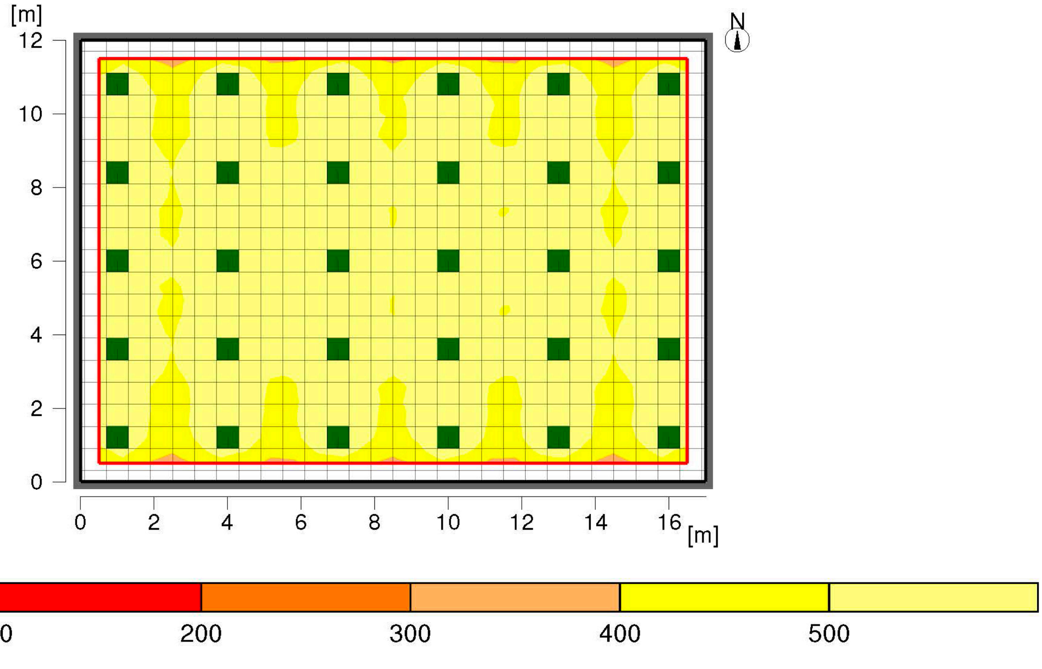
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 36W **iMod**® Inset Grid - 3.0m x 2.4m centres

Result overview



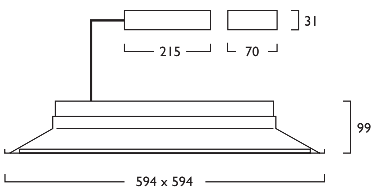
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	156930 lm
Total power	1209.0 W
Total power per area (204.00 m²)	5.93 W/m² (1.13 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	526 lx
Emin	426 lx
Emin/Eav (Uo)	0.81
UGR (7.5H 10.6H)	<=19.4
Position	0.75 m

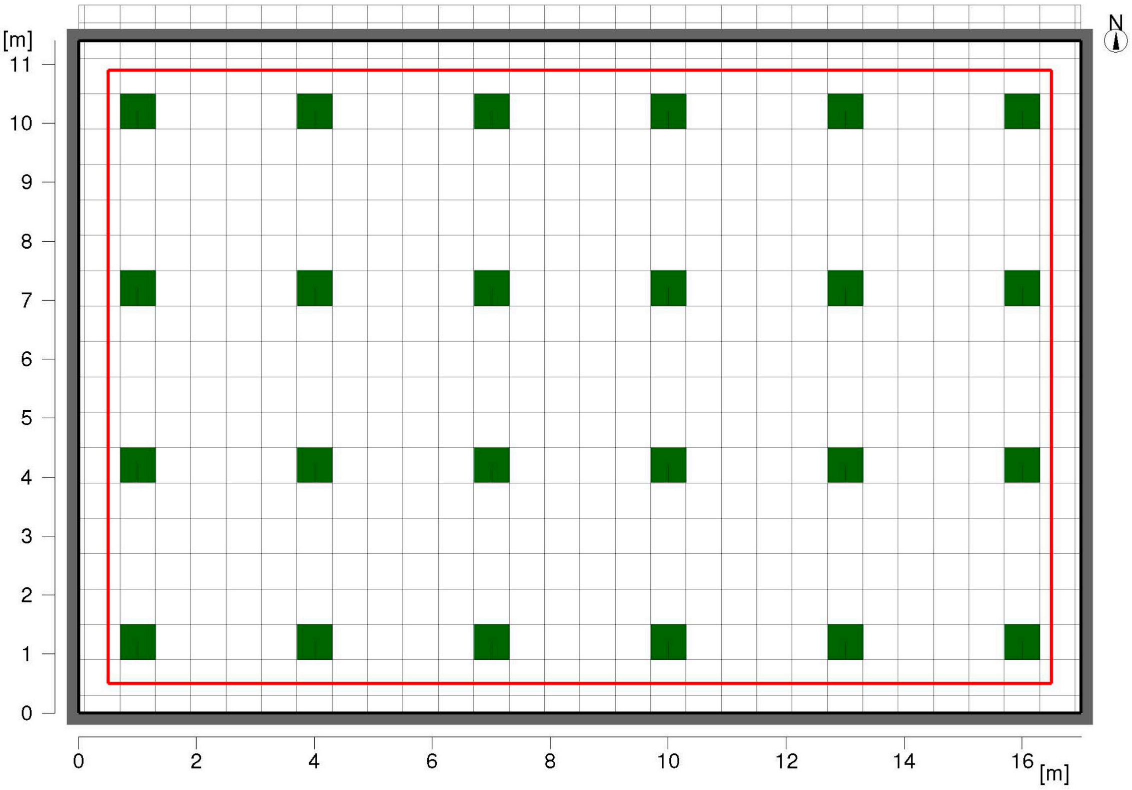
30x

Order No. : IM1197 A LED436
Luminaire name : 36w iMod Inset Grid (CRI 80)
Equipment : 1 x LED 36 W / 5231 lm



Office 36W **iMod**® Inset Grid – 3.0m x 3.0m centres

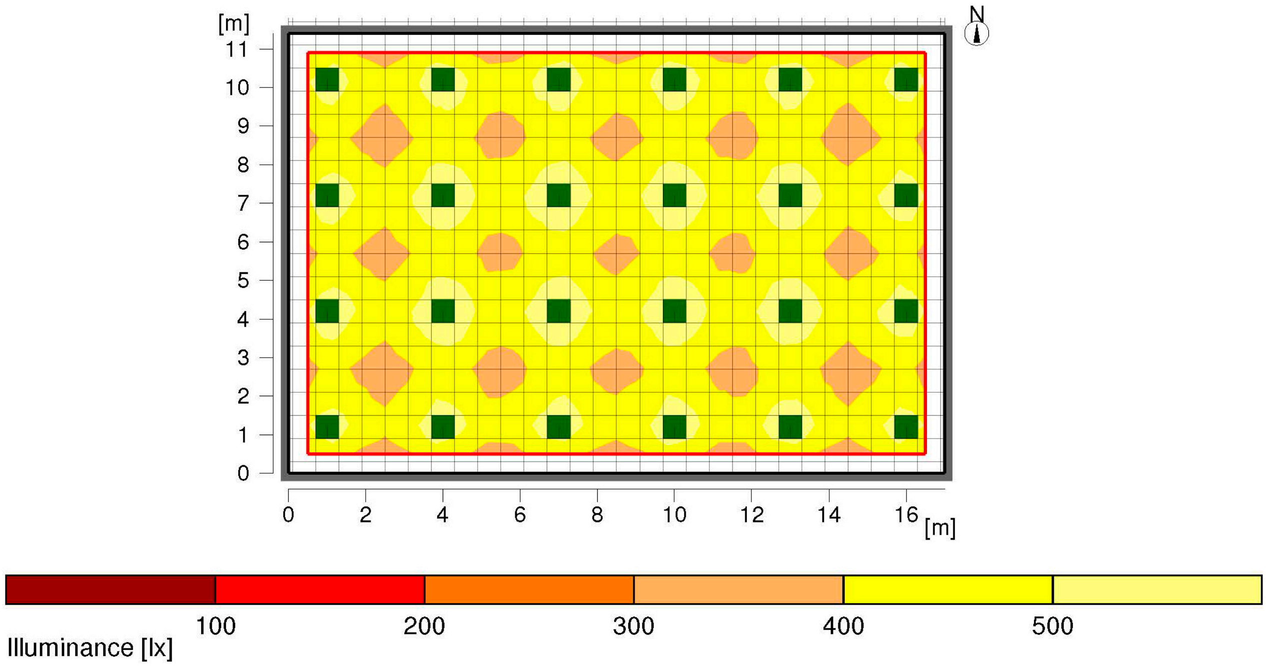
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 36W **iMod**® Inset Grid - 3.0m x 3.0m centres

Result overview



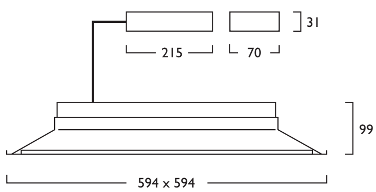
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	125544 lm
Total power	967.2 W
Total power per area (193.80 m^2)	4.99 W/m^2 (1.14 $W/m^2/100lx$)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	439 lx
Emin	333 lx
Emin/Eav (Uo)	0.76
UGR (7.5H 10.6H)	<=19.4
Position	0.75 m

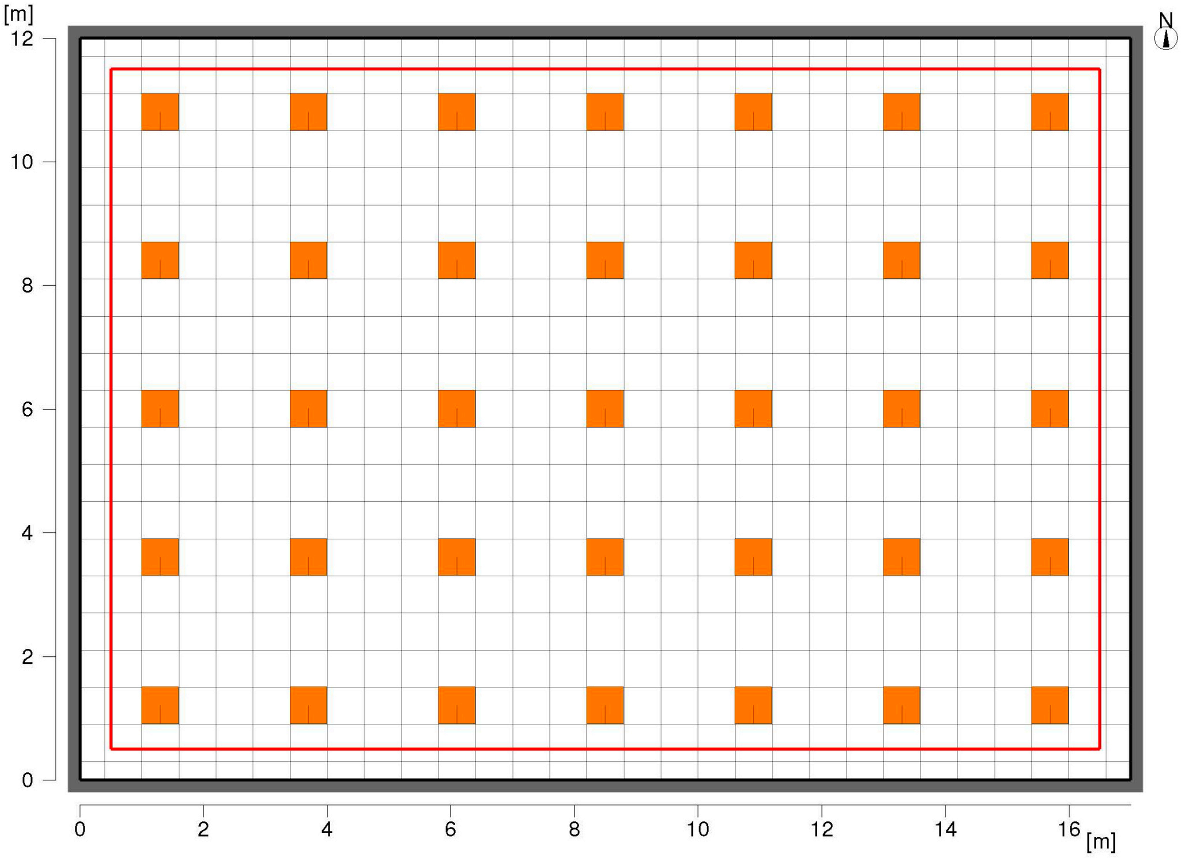
24x

Order No. : IM1197 A LED436
Luminaire name : 36w iMod Inset Grid (CRI 80)
Equipment : 1 x LED 36 W / 5231 lm



Office 21W **SkyMod**® Grid – 2.4m x 2.4m centres

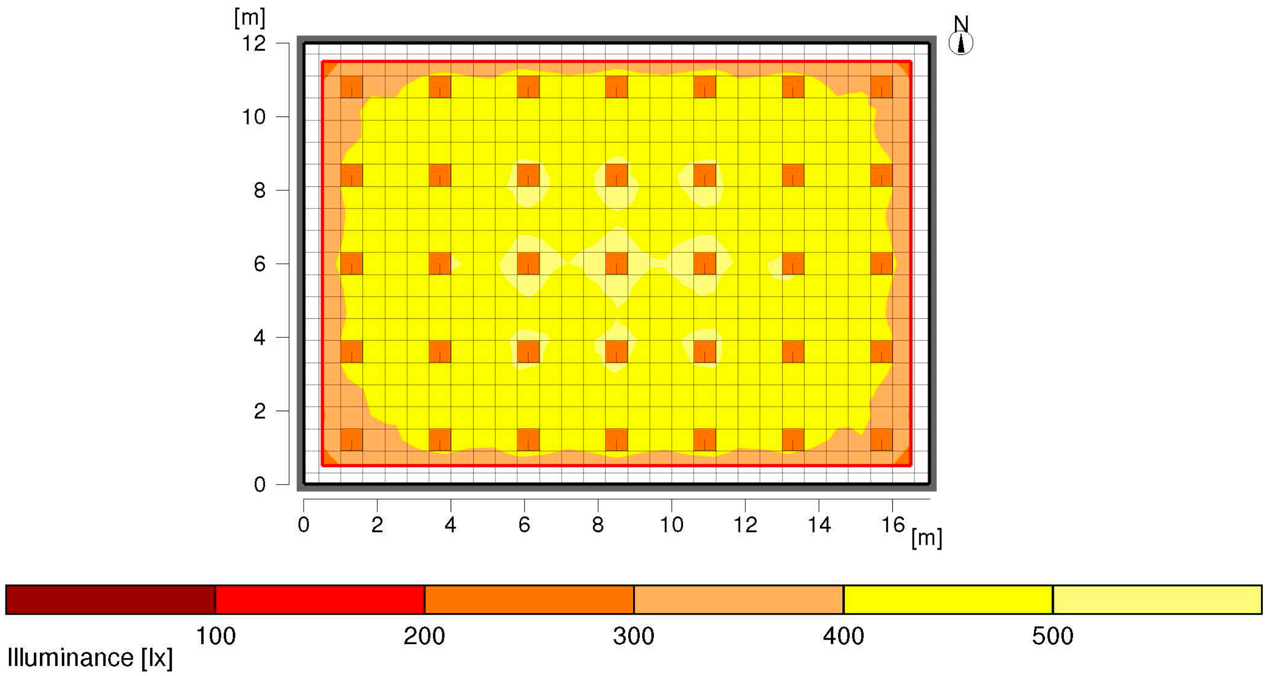
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 21W **SkyMod**® Grid – 2.4m x 2.4m centres

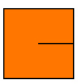
Result overview



General

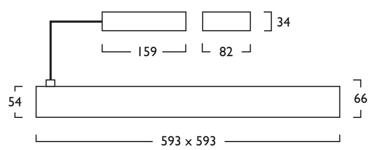
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	132300 lm
Total power	819.0 W
Total power per area (204.00 m²)	4.01 W/m² (0.94 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	428 lx
Emin	357 lx
Emin/Eav (Uo)	0.83
UGR (7.5H 10.6H)	<=20.9
Position	0.75 m



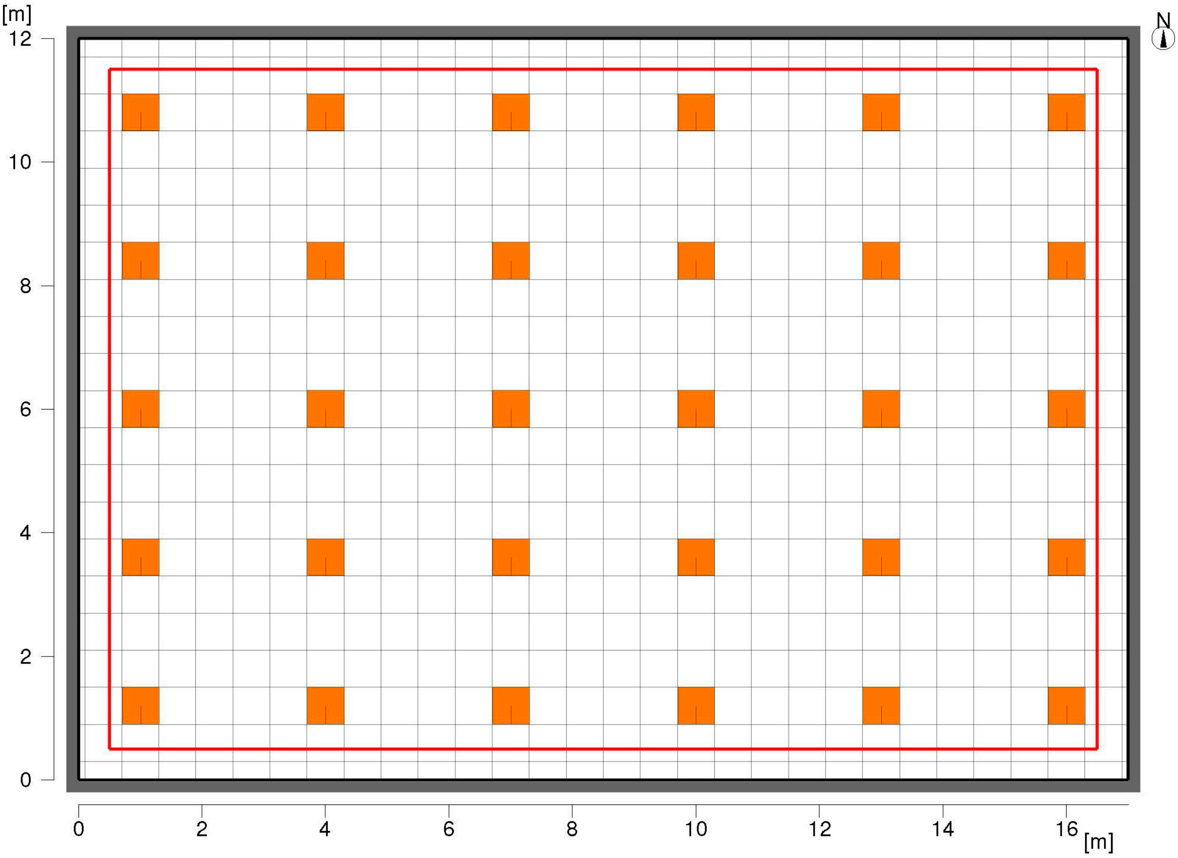
35x

Order No. : IM297 A LED421
Luminaire name : 21w SkyMod Grid
Equipment : 2 x LED 10.7 W / 1890 lm



Office 21W **SkyMod**® Grid – 3.0m x 2.4m centres

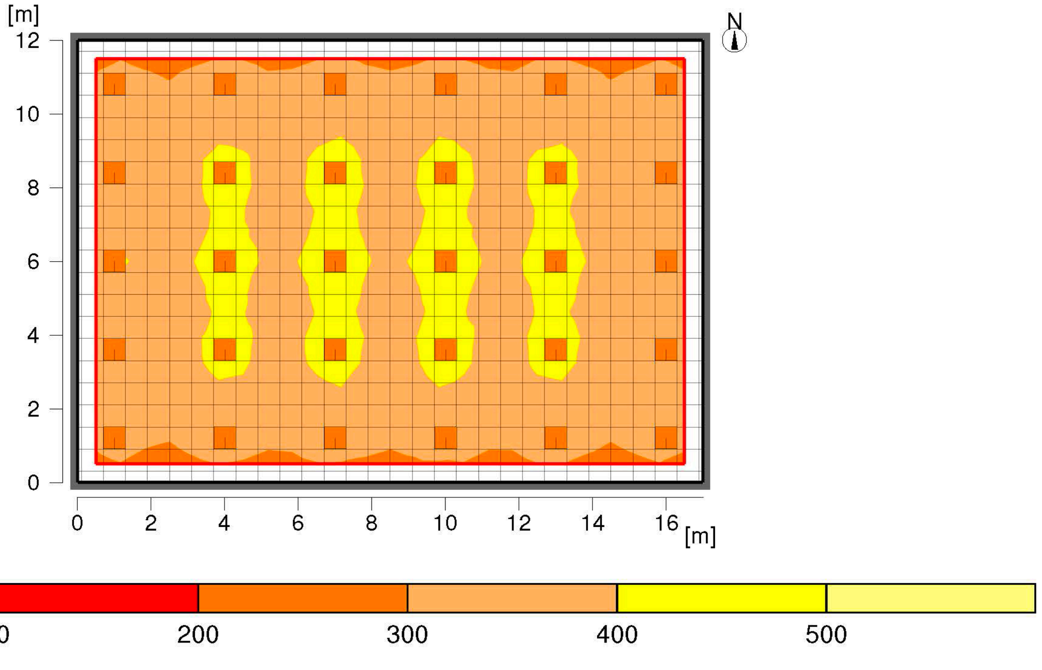
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

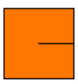
Office 21W **SkyMod**® Grid – 3.0m x 2.4m centres

Result overview



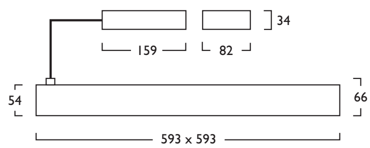
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	113400 lm
Total power	702.0 W
Total power per area (204.00 m²)	3.44 W/m² (0.97 W/m²/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	355 lx
Emin	291 lx
Emin/Eav (Uo)	0.82
UGR (7.5H 10.6H)	<=20.9
Position	0.75 m



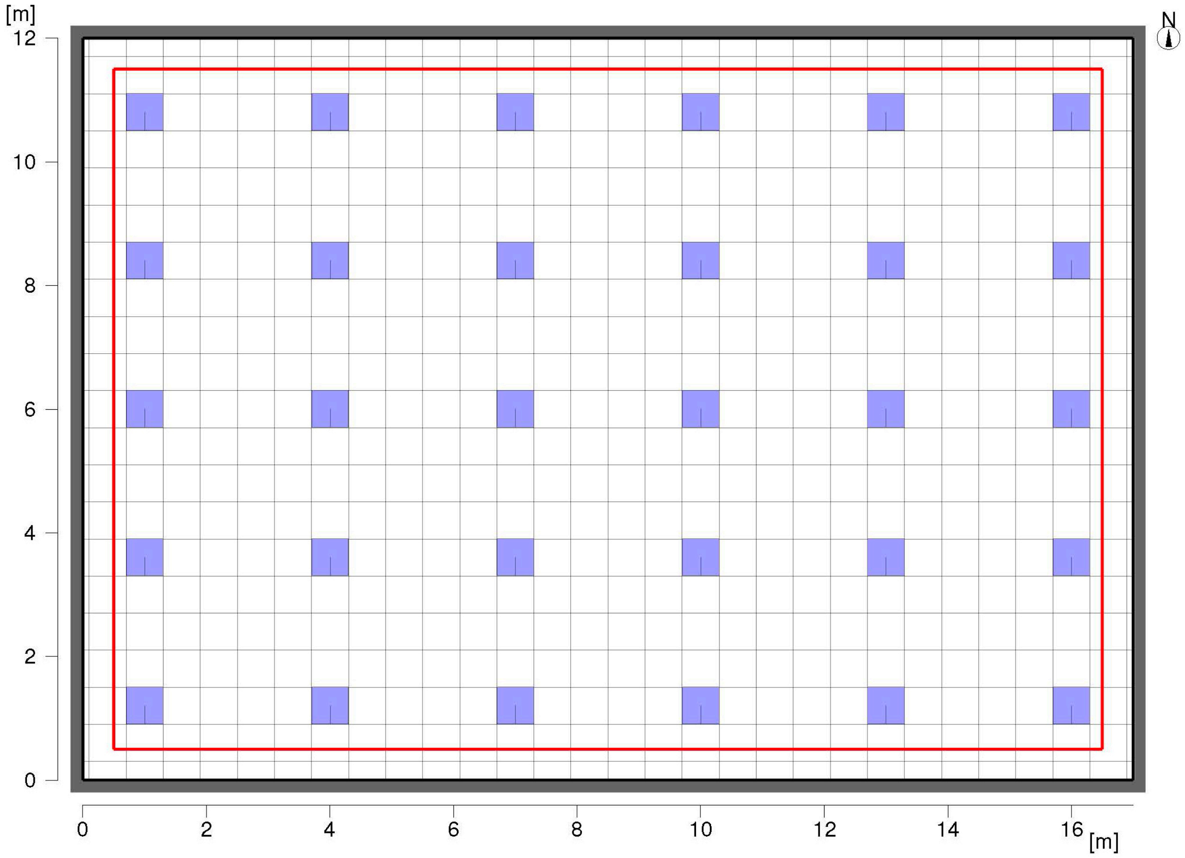
30x

Order No. : IM297 A LED421
Luminaire name : 21w SkyMod Grid
Equipment : 2 x LED 10.7 W / 1890 lm



Office 33W **SkyMod**® Grid – 3.0m x 2.4m centres

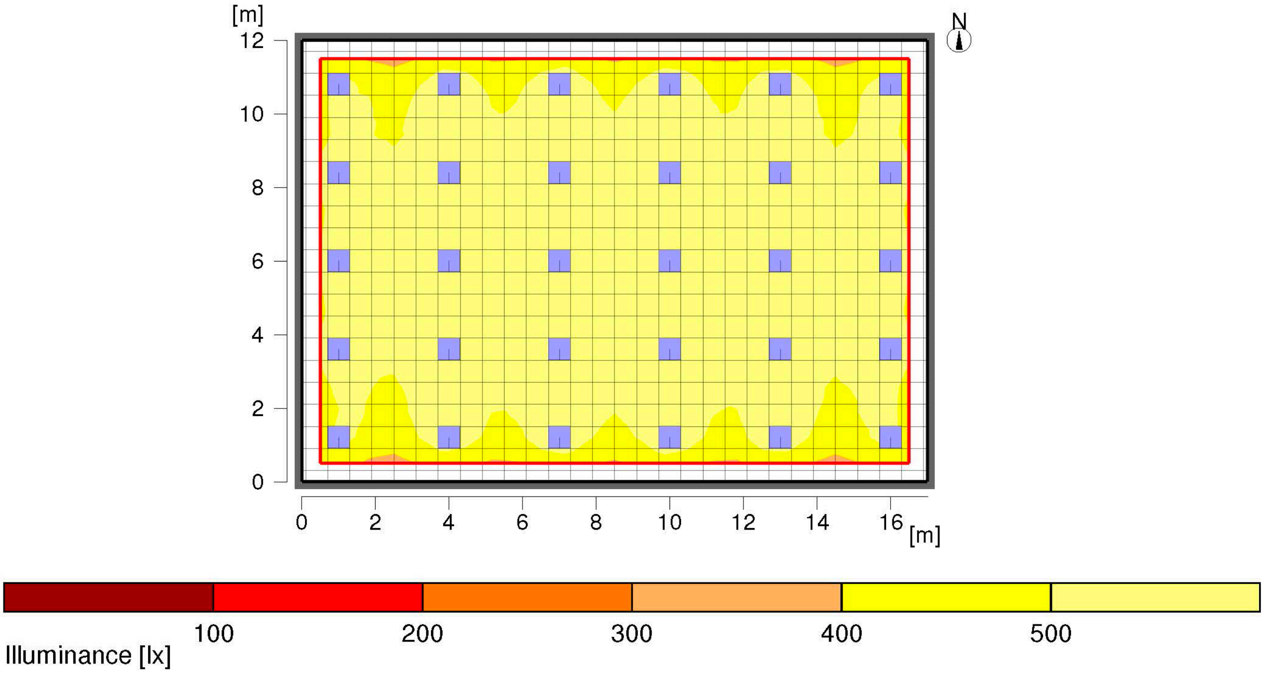
Floor plan



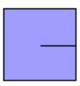
Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 33W **SkyMod**® Grid – 3.0m x 2.4m centres

Result overview

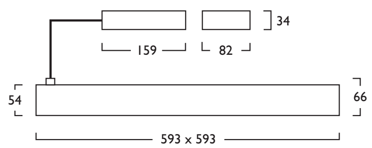


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	166200 lm
Total power	1146.0 W
Total power per area (204.00 m²)	5.62 W/m² (1.08 W/m²/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	521 lx
Emin	425 lx
Emin/Eav (Uo)	0.82
UGR (7.5H 10.6H)	<=22.3
Position	0.75 m



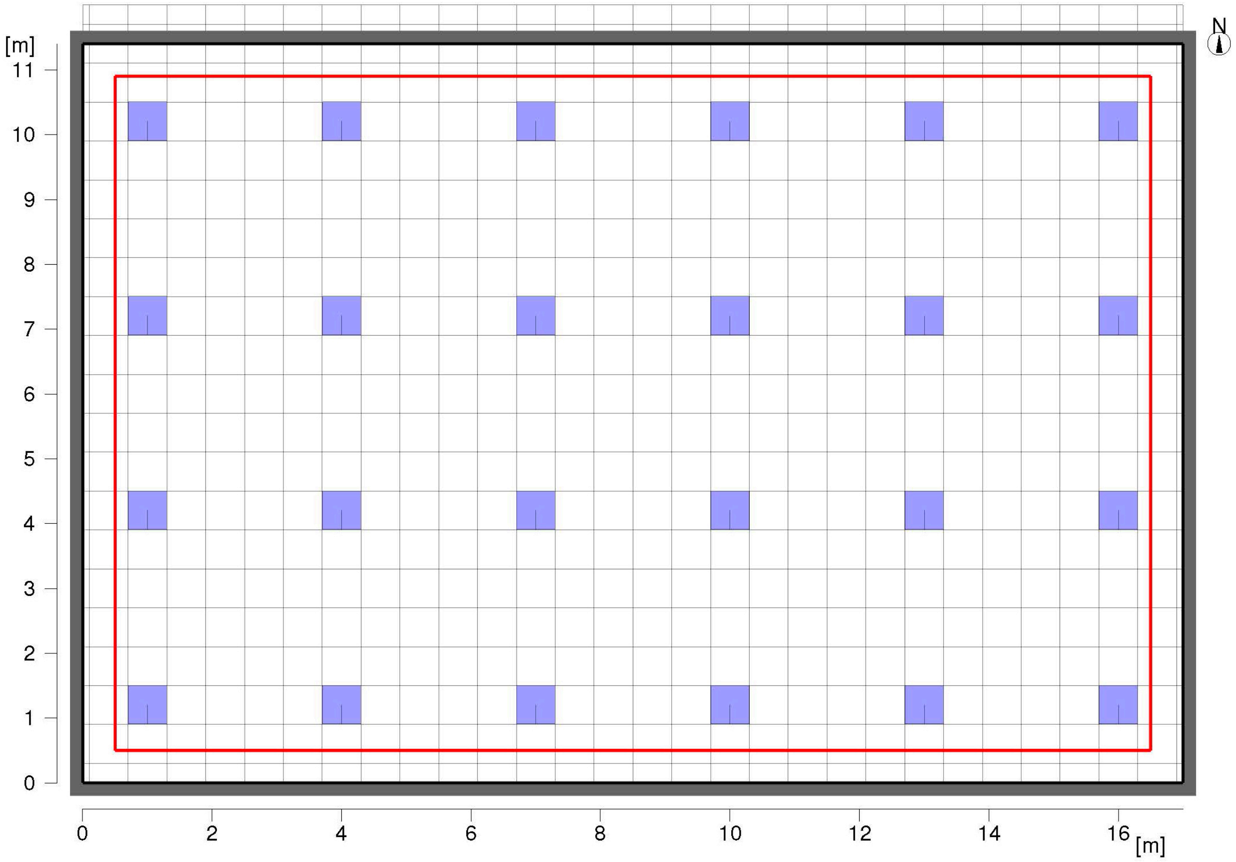
30x

Order No. :	IM297 A LED433
Luminaire name :	33w SkyMod Grid (CRI 80)
Equipment :	2 x LED 16.6 W / 2770 lm



Office 33W **SkyMod**® Grid – 3.0m x 3.0m centres

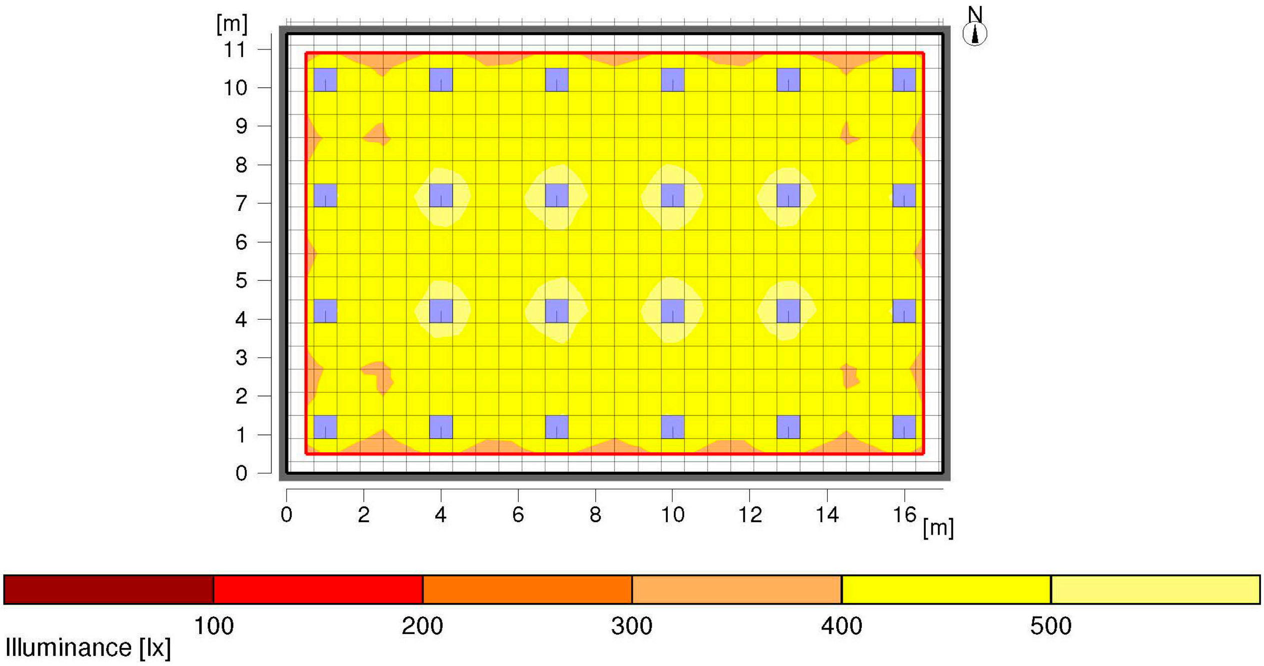
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

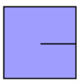
Office 33W **SkyMod**® Grid – 3.0m x 3.0m centres

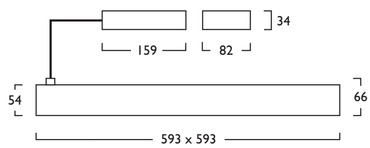
Result overview



General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	132960 lm
Total power	916.8 W
Total power per area (193.80 m^2)	4.73 W/m^2 (1.09 $W/m^2/100lx$)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	435 lx
Emin	373 lx
Emin/Eav (Uo)	0.86
UGR (7.5H 10.6H)	<=22.3
Position	0.75 m



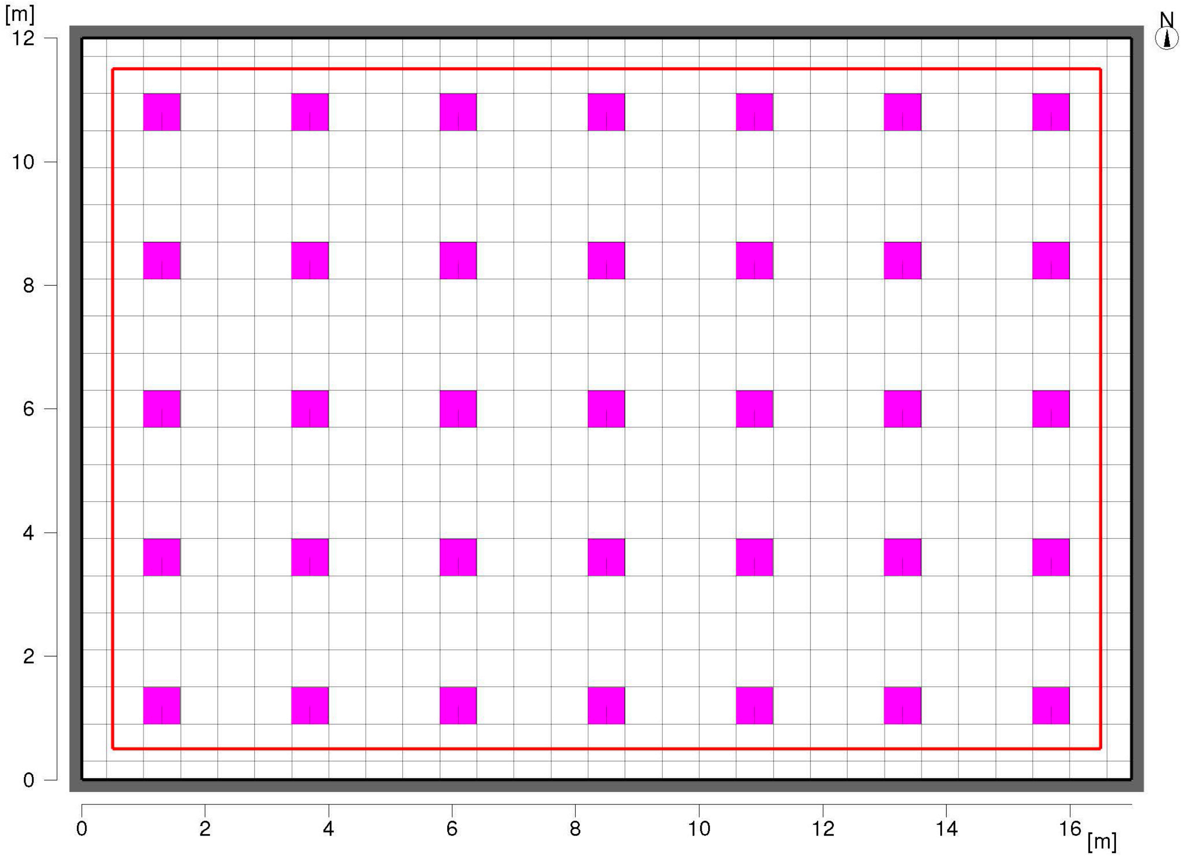


24x

Order No. :	IM297 A LED433
Luminaire name :	33w SkyMod Grid (CRI 80)
Equipment :	2 x LED 16.6 W / 2770 lm

Office 31W **SkyMod**® Wafer Grid - 2.4m x 2.4m centres

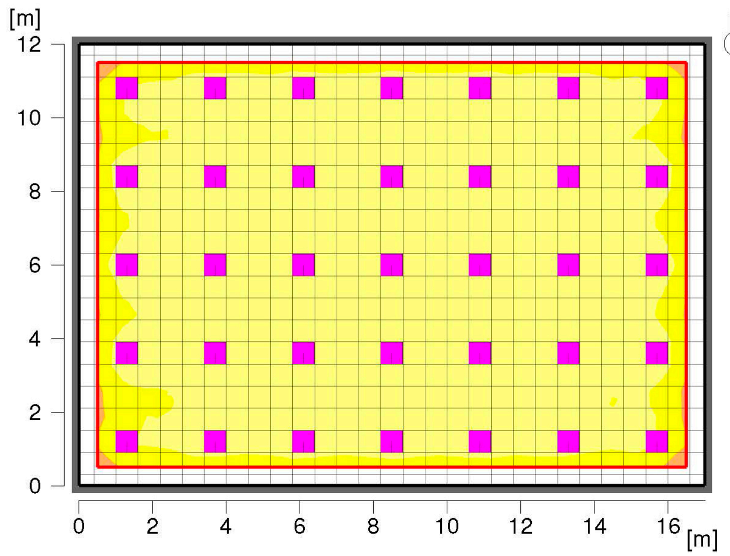
Floor plan

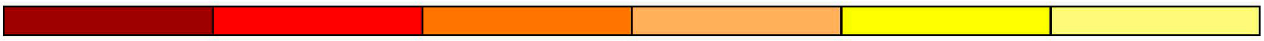


Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

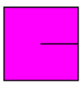
Office 31W **SkyMod®** Wafer Grid - 2.4m x 2.4m centres

Result overview



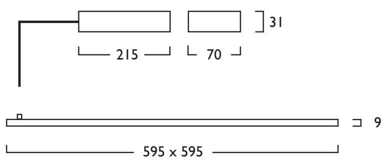


General	
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	126350 lm
Total power	1200.5 W
Total power per area (204.00 m^2)	5.88 W/m^2 (1.12 W/m^2/100lx)
Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	525 lx
Emin	451 lx
Emin/Eav (Uo)	0.86
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



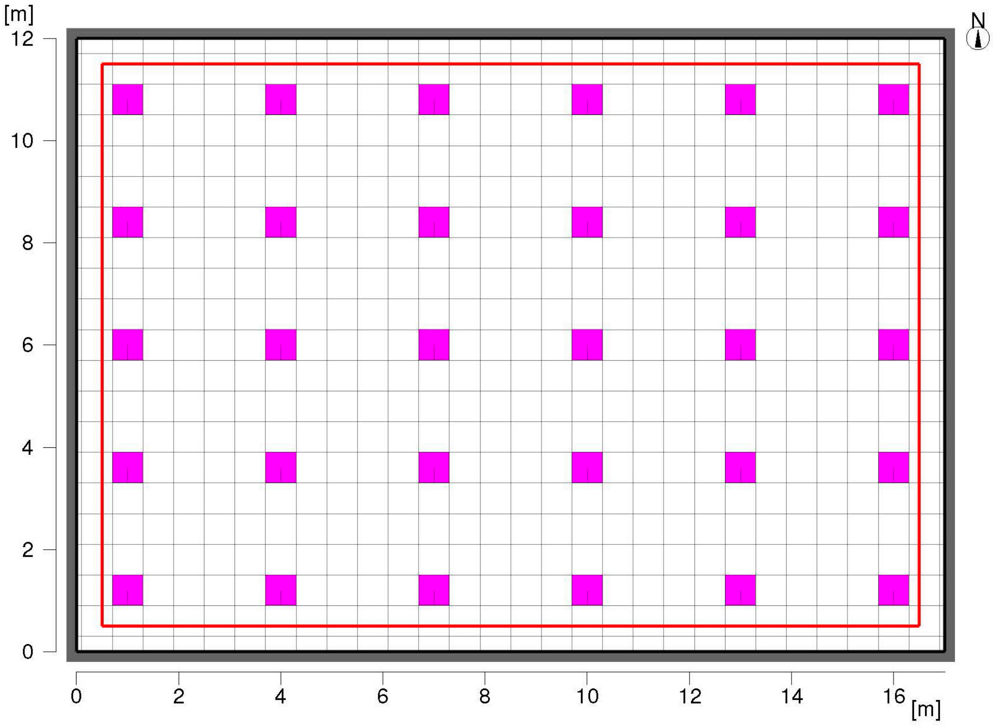
35x

Order No. : IM1189 A LED431
Luminaire name : 31w SkyMod Wafer Grid
Equipment : 1 x LED 30.6 W / 3610 lm



Office 31W **SkyMod®** Wafer Grid – 3.0m x 2.4m centres

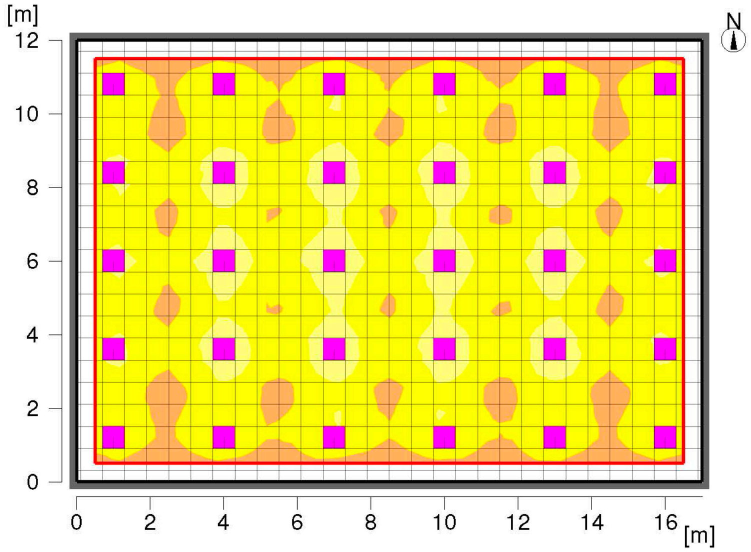
Floor plan

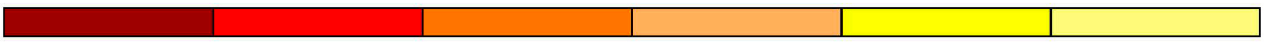


Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 12.00	50.0 %
W3 : 17.00	50.0 %
W4 : 12.00	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 31W **SkyMod**® Wafer Grid - 3.0m x 2.4m centres

Result overview





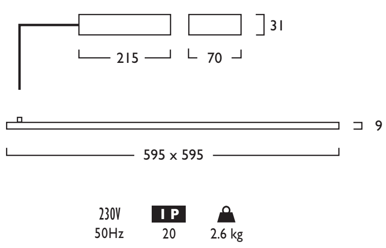
General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	108300 lm
Total power	1029.0 W
Total power per area (204.00 m²)	5.04 W/m² (1.16 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	435 lx
Emin	342 lx
Emin/Eav (Uo)	0.79
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m

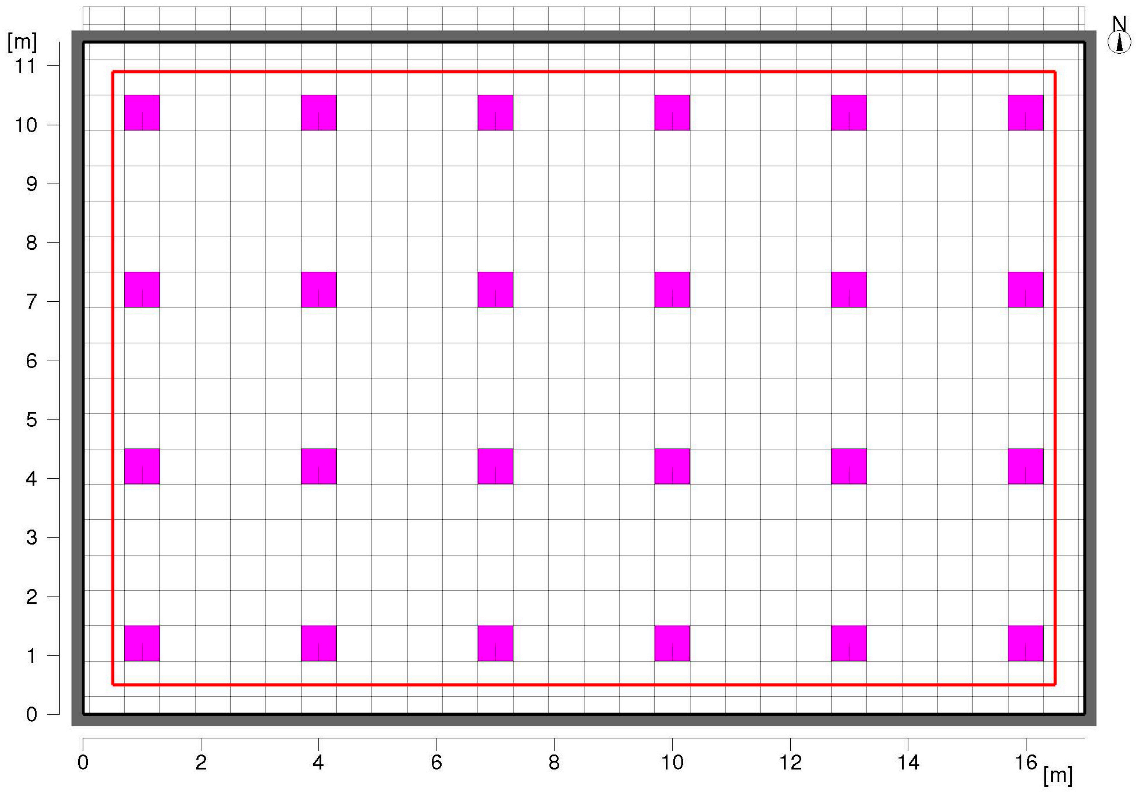
30x

Order No. :	IM1189 A LED431
Luminaire name :	31w SkyMod Wafer Grid
Equipment :	1 x LED 30.6 W / 3610 lm



Office 31W **SkyMod®** Wafer Grid – 3.0m x 3.0m centres

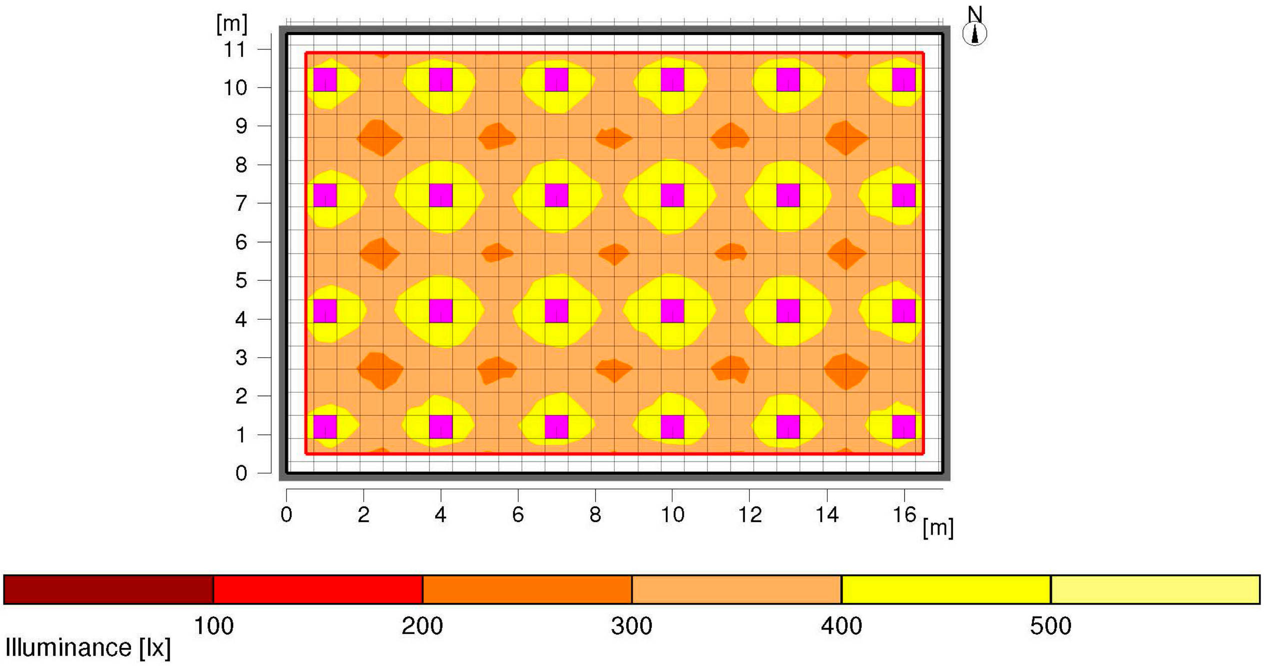
Floor plan



Room data:	**Reflectance:**
W1 : 17.00	50.0 %
W2 : 11.40	50.0 %
W3 : 17.00	50.0 %
W4 : 11.40	50.0 %
W5 : -----	-----
W6 : -----	-----
Floor: -----	20.0 %
Ceiling: -----	70.0 %
Room height [m]:	2.80
Height of reference plane [m]:	0.75
Height of luminaire plane [m]:	2.80

Office 31W **SkyMod**® Wafer Grid – 3.0m x 3.0m centres

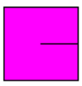
Result overview



General

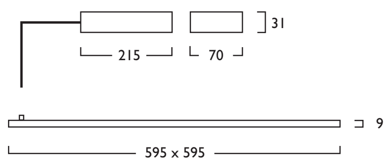
Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux of all lamps	86640 lm
Total power	823.2 W
Total power per area (193.80 m^2)	4.25 W/m^2 (1.17 W/m^2/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	363 lx
Emin	254 lx
Emin/Eav (Uo)	0.70
UGR (7.5H 10.6H)	<=18.8
Position	0.75 m



24x

Order No. :	IM1189 A LED431
Luminaire name :	31w SkyMod Wafer Grid
Equipment :	1 x LED 30.6 W / 3610 lm



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