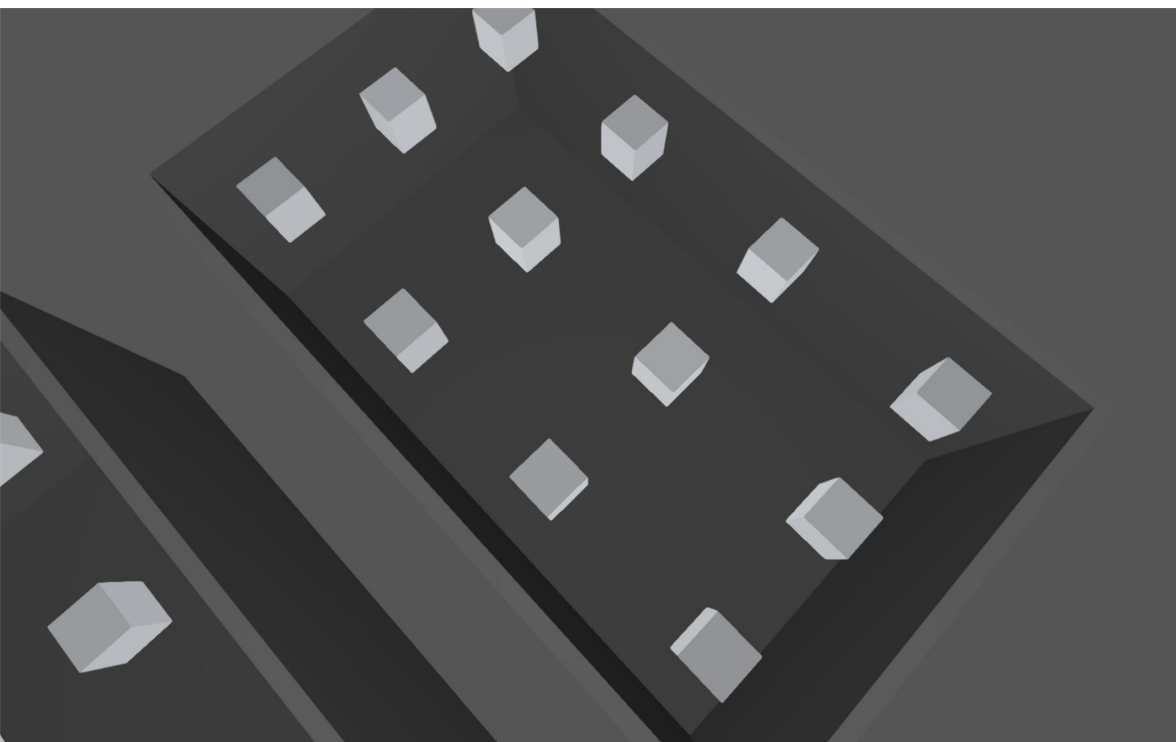


Date

2/23/2024

DIALux



Project

## Preface

Notes on planning:

The energy consumption quantities do not take into account light scenes and their dimming levels.

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Site 1 - Building 1

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Site 1 - Building 1 - Storey 1

### Room 9

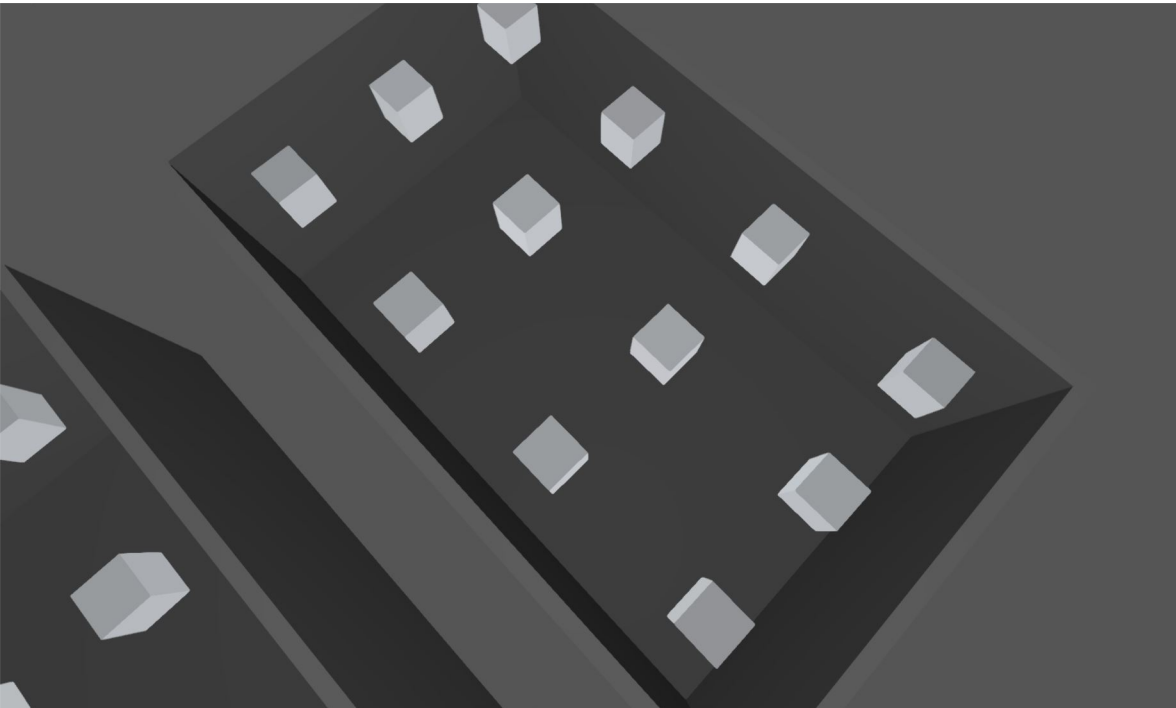
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## Description

## Luminaire list

 $\Phi_{\text{total}}$ 

292392 lm

 $P_{\text{total}}$ 

2448.0 W

Luminous efficacy

119.4 lm/W

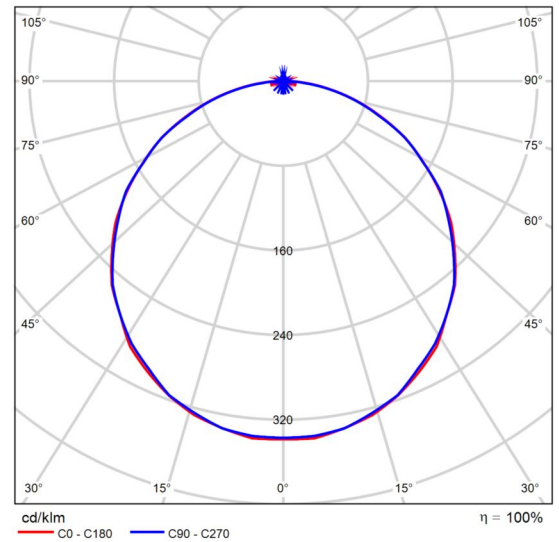
pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
72	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

## Product data sheet

SYLVANIA - START Panel 600x600 HE 4100lm 830 LILO



Article No.	0042872
P	34.0 W
$\Phi_{\text{Lamp}}$	4051 lm
$\Phi_{\text{Luminaire}}$	4061 lm
$\eta$	100.25 %
Luminous efficacy	119.4 lm/W
CCT	3000 K
CRI	80



Polar LDC

Glare evaluation according to UGR												
p Ceiling	70	70	50	50	30	70	70	50	50	30		
p Walls	50	30	50	30	30	50	30	50	30	30		
p Floor	20	20	20	20	20	20	20	20	20	20		
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis					
2H	2H	17.3	18.7	17.7	19.0	19.2	17.3	18.7	17.6	18.9	19.2	
	3H	19.0	20.2	19.3	20.5	20.8	18.9	20.1	19.2	20.4	20.7	
	4H	19.7	20.8	20.0	21.1	21.5	19.6	20.8	19.9	21.1	21.4	
	6H	20.2	21.3	20.6	21.6	22.0	20.1	21.2	20.5	21.5	21.9	
	8H	20.4	21.5	20.8	21.8	22.1	20.3	21.3	20.7	21.7	22.0	
	12H	20.5	21.6	20.9	21.9	22.3	20.4	21.4	20.8	21.7	22.1	
4H	2H	18.0	19.2	18.4	19.5	19.8	18.0	19.2	18.3	19.5	19.8	
	3H	19.9	20.9	20.3	21.2	21.6	19.8	20.8	20.2	21.2	21.5	
	4H	20.7	21.6	21.1	22.0	22.4	20.6	21.5	21.1	21.9	22.3	
	6H	21.4	22.2	21.8	22.6	23.0	21.3	22.1	21.7	22.5	22.9	
	8H	21.6	22.4	22.1	22.8	23.2	21.5	22.2	22.0	22.7	23.1	
	12H	21.8	22.5	22.3	23.0	23.4	21.7	22.3	22.1	22.8	23.2	
8H	4H	21.0	21.8	21.5	22.2	22.6	21.0	21.7	21.4	22.1	22.6	
	6H	21.9	22.5	22.4	22.9	23.4	21.8	22.4	22.3	22.8	23.3	
	8H	22.2	22.8	22.7	23.3	23.7	22.1	22.6	22.6	23.1	23.6	
	12H	22.5	23.0	23.1	23.5	24.0	22.3	22.8	22.8	23.3	23.8	
	4H	21.1	21.7	21.5	22.2	22.6	21.0	21.7	21.5	22.1	22.6	
	6H	22.0	22.5	22.5	23.0	23.5	21.9	22.4	22.4	22.9	23.4	
12H	8H	22.4	22.8	22.9	23.3	23.8	22.2	22.7	22.7	23.2	23.7	
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1					
S = 1.5H		+0.2 / -0.3					+0.2 / -0.3					
S = 2.0H		+0.3 / -0.6					+0.3 / -0.6					
Standard table		BK06					BK06					
Correction summand		5.0					4.9					
Corrected glare indices referring to 4051lm Total luminous flux												

UGR diagram (SHR: 0.25)



Building 1

**Luminaire list** $\Phi_{\text{total}}$ 

292392 lm

 $P_{\text{total}}$ 

2448.0 W

Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
72	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 (Light scene 1)

**Room list**

Building 1 · Storey 1 (Light scene 1)

**Room list**

Koridor

<b>P<sub>total</sub></b> 170.0 W	<b>A<sub>Room</sub></b> 27.81 m <sup>2</sup>	<b>Lighting power density</b> 6.11 W/m <sup>2</sup> = 2.20 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 278 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
5	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Koridor hymje

<b>P<sub>total</sub></b> 306.0 W	<b>A<sub>Room</sub></b> 58.67 m <sup>2</sup>	<b>Lighting power density</b> 5.22 W/m <sup>2</sup> = 1.51 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 345 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Room 3

<b>P<sub>total</sub></b> 306.0 W	<b>A<sub>Room</sub></b> 46.23 m <sup>2</sup>	<b>Lighting power density</b> 6.62 W/m <sup>2</sup> = 1.41 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 470 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Building 1 · Storey 1 (Light scene 1)

**Room list**

## Room 4

<b>P<sub>total</sub></b> 306.0 W	<b>A<sub>Room</sub></b> 45.51 m <sup>2</sup>	<b>Lighting power density</b> 6.72 W/m <sup>2</sup> = 1.42 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 475 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

## Room 5

<b>P<sub>total</sub></b> 408.0 W	<b>A<sub>Room</sub></b> 55.86 m <sup>2</sup>	<b>Lighting power density</b> 7.30 W/m <sup>2</sup> = 1.38 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 529 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
12	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

## Room 6

<b>P<sub>total</sub></b> 306.0 W	<b>A<sub>Room</sub></b> 43.06 m <sup>2</sup>	<b>Lighting power density</b> 7.11 W/m <sup>2</sup> = 1.45 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 492 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Building 1 · Storey 1 (Light scene 1)

**Room list**

## Room 7

<b>P<sub>total</sub></b> 68.0 W	<b>A<sub>Room</sub></b> 9.41 m <sup>2</sup>	<b>Lighting power density</b> 7.23 W/m <sup>2</sup> = 2.36 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 307 lx
------------------------------------	--	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

## Room 8

<b>P<sub>total</sub></b> 204.0 W	<b>A<sub>Room</sub></b> 22.62 m <sup>2</sup>	<b>Lighting power density</b> 9.02 W/m <sup>2</sup> = 1.72 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 524 lx
-------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
6	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

## Room 9

<b>P<sub>total</sub></b> 68.0 W	<b>A<sub>Room</sub></b> 12.57 m <sup>2</sup>	<b>Lighting power density</b> 5.41 W/m <sup>2</sup> = 1.98 W/m <sup>2</sup> /100 lx (Room)	<b>E<sub>perpendicular</sub> (Working plane)</b> 273 lx
------------------------------------	---	---	--

pcs.	Manufacturer	Article No.	Article name	P	Φ <sub>Luminaire</sub>
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Building 1 · Storey 1 (Light scene 1)

**Room list**

Room1

 $P_{\text{total}}$ 

306.0 W

 $A_{\text{Room}}$ 51.02 m<sup>2</sup>

Lighting power density

6.00 W/m<sup>2</sup> = 1.37 W/m<sup>2</sup>/100 lx (Room) $\bar{E}_{\text{perpendicular (Working plane)}}$ 

437 lx

pcs.	Manufacturer	Article No.	Article name	P	$\Phi_{\text{Luminaire}}$
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm

Building 1 · Storey 1

**Luminaire list** $\Phi_{\text{total}}$ 

292392 lm

 $P_{\text{total}}$ 

2448.0 W

Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
72	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 (Light scene 1)

**Calculation objects**



Building 1 · Storey 1 (Light scene 1)

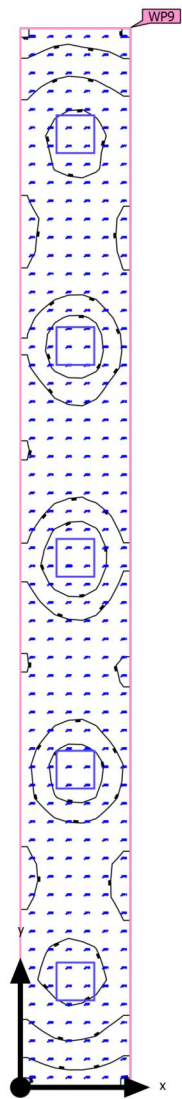
**Calculation objects**

## Working planes

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room1) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	437 lx ( $\geq 300$ lx) ✓	245 lx	550 lx	0.56 ( $\geq 0.50$ ) ✓	0.45	WP1
Working plane (Room 3) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	470 lx ( $\geq 300$ lx) ✓	274 lx	591 lx	0.58 ( $\geq 0.50$ ) ✓	0.46	WP2
Working plane (Room 4) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	475 lx ( $\geq 300$ lx) ✓	274 lx	597 lx	0.58 ( $\geq 0.60$ ) ✗	0.46	WP3
Working plane (Room 5) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	529 lx ( $\geq 300$ lx) ✓	309 lx	644 lx	0.58 ( $\geq 0.50$ ) ✓	0.48	WP4
Working plane (Room 6) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	492 lx ( $\geq 300$ lx) ✓	282 lx	623 lx	0.57 ( $\geq 0.50$ ) ✓	0.45	WP5
Working plane (Room 7) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	307 lx ( $\geq 200$ lx) ✓	219 lx	360 lx	0.71 ( $\geq 0.40$ ) ✓	0.61	WP6
Working plane (Room 8) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	524 lx ( $\geq 300$ lx) ✓	336 lx	640 lx	0.64 ( $\geq 0.40$ ) ✓	0.53	WP7
Working plane (Room 9) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	273 lx ( $\geq 200$ lx) ✓	180 lx	334 lx	0.66 ( $\geq 0.40$ ) ✓	0.54	WP8
Working plane (Koridor ) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	278 lx ( $\geq 200$ lx) ✓	174 lx	346 lx	0.63 ( $\geq 0.40$ ) ✓	0.50	WP9
Working plane (Koridor hymje) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	345 lx ( $\geq 100$ lx) ✓	211 lx	429 lx	0.61 ( $\geq 0.40$ ) ✓	0.49	WP10

Building 1 · Storey 1 · Koridor (Light scene 1)

Summary



Ground area	27.81 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.200 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Koridor (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	278 lx	$\geq 200$ lx	✓	WP9
	$U_o (g_1)$	0.63	$\geq 0.40$	✓	WP9
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	22	$\leq 22$	✓	
Energy estimation <sup>(2)</sup>	Consumption	327 kWh/a	max. 1000 kWh/a	✓	
Room	Lighting power density	6.11 W/m <sup>2</sup>	–		
		2.20 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 1.700 m x 16.357 m and SHR of 0.25.

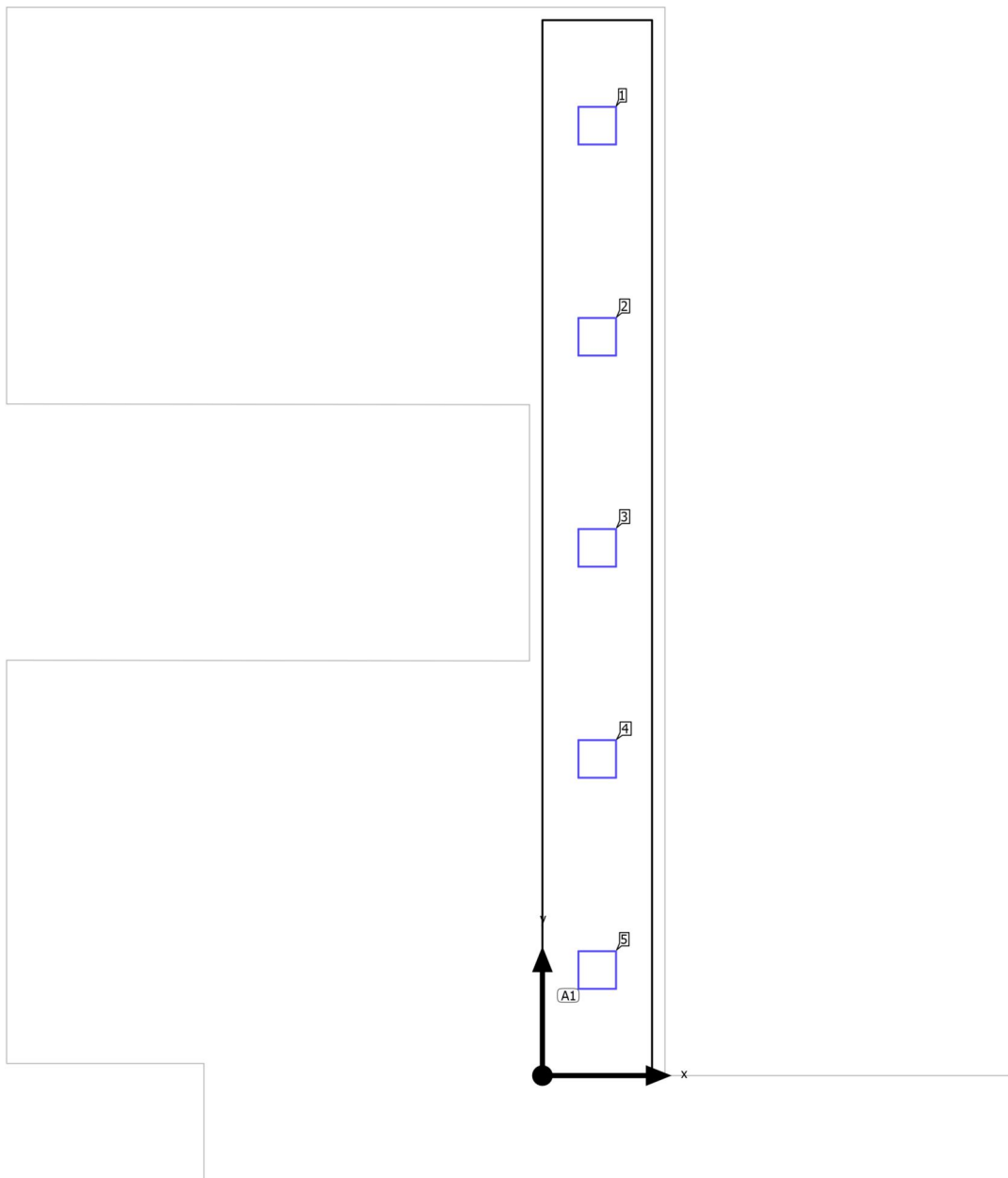
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)

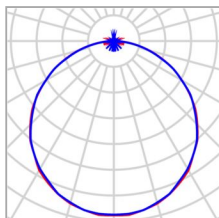
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
5	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	21	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Koridor

**Luminaire layout plan**

Building 1 · Storey 1 · Koridor

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

5 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	0.850 m / 1.636 m / 3.700 m	0.850 m	14.722 m	3.700 m	1
X-direction	1 pcs., Centre - centre, 1.700 m	0.850 m	11.450 m	3.700 m	2
Y-direction	5 pcs., Centre - centre, 3.271 m	0.850 m	8.179 m	3.700 m	3
		0.850 m	4.907 m	3.700 m	4
Arrangement	A1	0.850 m	1.636 m	3.700 m	5

Building 1 · Storey 1 · Koridor

**Luminaire list** $\Phi_{\text{total}}$ 

20305 lm

 $P_{\text{total}}$ 

170.0 W

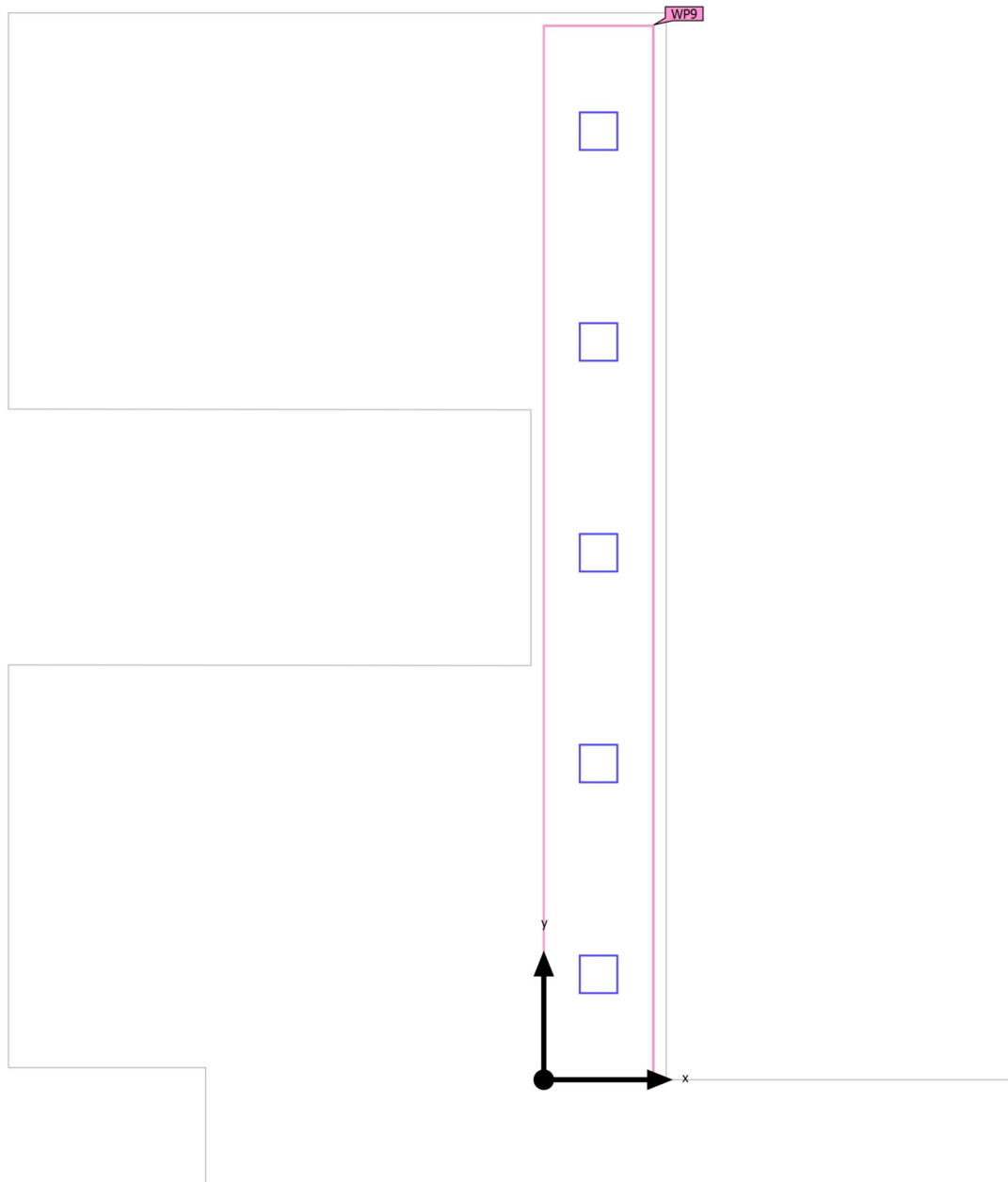
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
5	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Koridor (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Koridor (Light scene 1)

**Calculation objects**

## Working planes

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Koridor ) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	278 lx ( $\geq 200$ lx) ✓	174 lx	346 lx	0.63 ( $\geq 0.40$ ) ✓	0.50	WP9

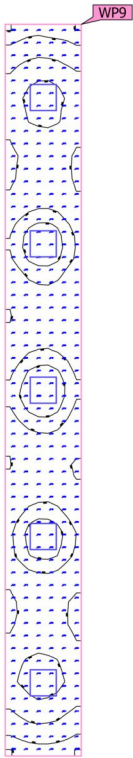
(1) Based on a rectangular space of 1.700 m x 16.357 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)



Building 1 · Storey 1 · Koridor (Light scene 1)

Working plane (Koridor )

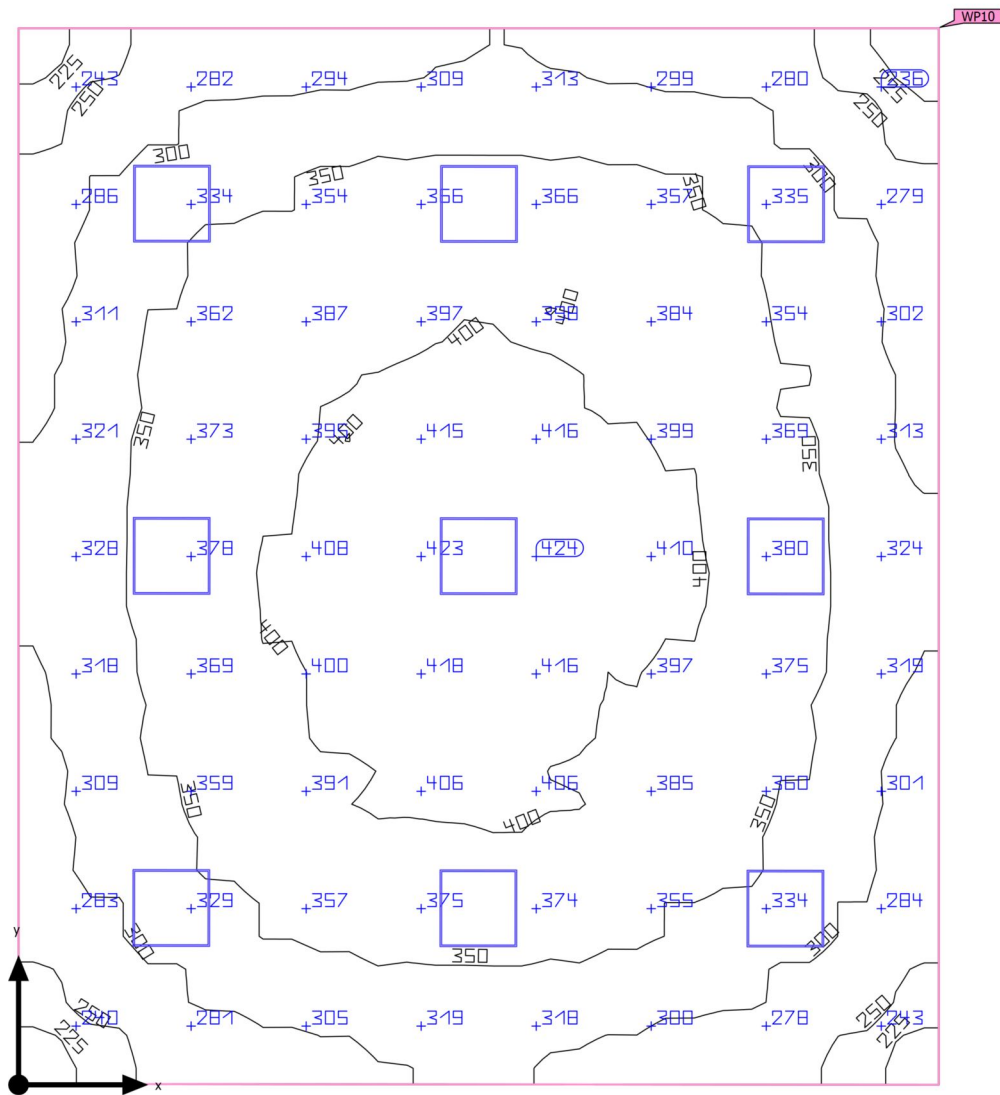


Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Koridor ) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	278 lx (≥ 200 lx) ✓	174 lx	346 lx	0.63 (≥ 0.40) ✓	0.50	WP9

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)

Building 1 · Storey 1 · Koridor hymje (Light scene 1)

## Summary



Ground area	58.67 m <sup>2</sup>	Clearance height	3.200 m
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %	Mounting height	3.700 m
Maintenance factor	0.80 (fixed)	Height <sub>Working plane</sub>	0.000 m
		Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Koridor hymje (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	345 lx	$\geq 100 \text{ lx}$	✓	WP10
	$U_o (g_1)$	0.61	$\geq 0.40$	✓	WP10
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	21	$\leq 25$	✓	
Energy estimation <sup>(2)</sup>	Consumption	337 kWh/a	max. 2100 kWh/a	✓	
Room	Lighting power density	5.22 W/m <sup>2</sup>	–		
		1.51 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 8.209 m x 7.150 m and SHR of 0.25.

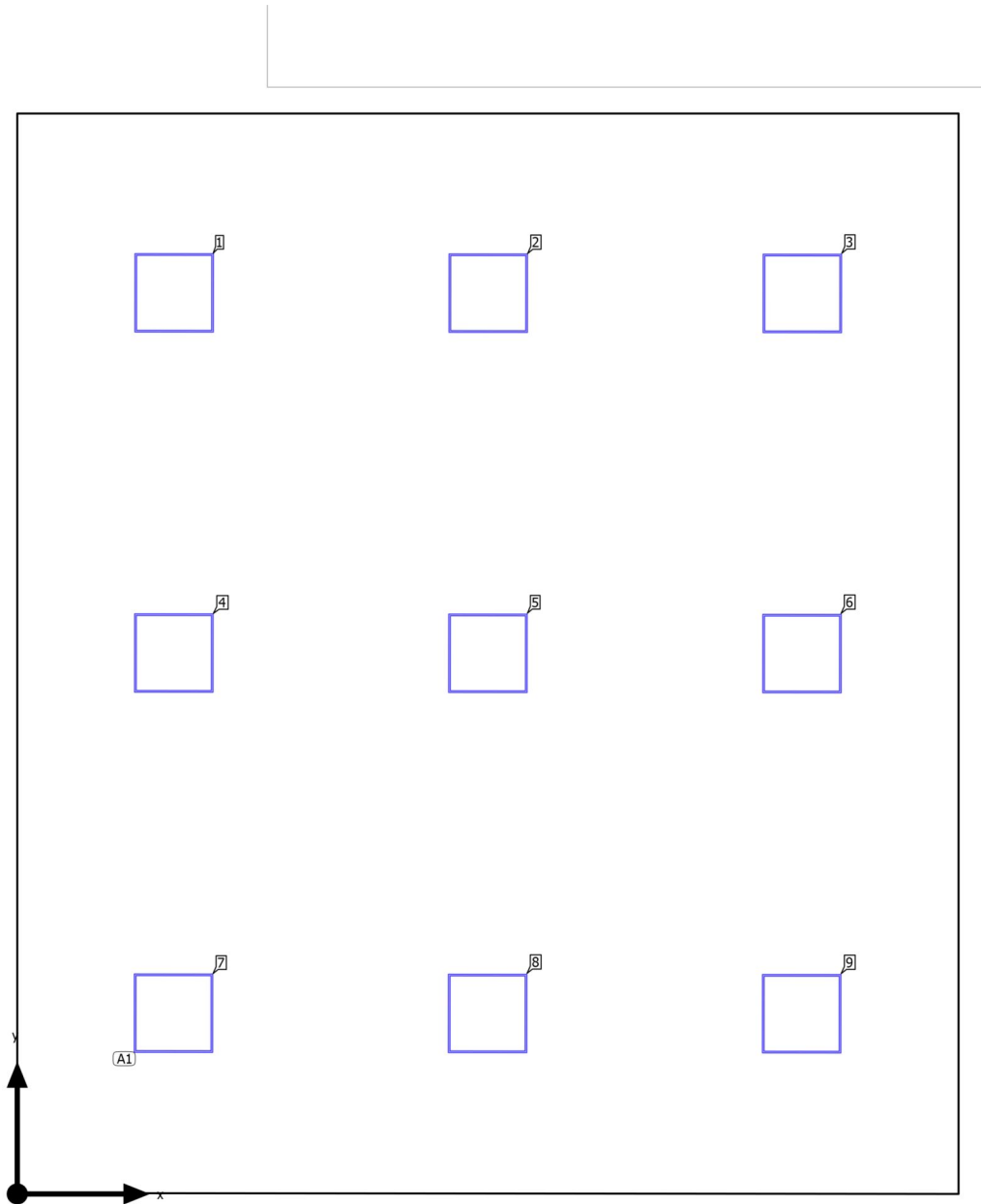
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.17 Circulation areas, corridors)

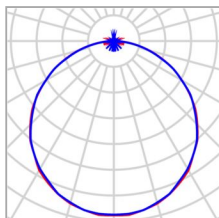
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	21	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Koridor hymje

**Luminaire layout plan**

Building 1 · Storey 1 · Koridor hymje

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

9 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.187 m / 1.374 m / 3.700 m	1.192 m	6.846 m	3.700 m	1
X-direction	3 pcs., Centre - centre, 2.386 m	3.577 m	6.844 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 2.736 m	5.963 m	6.842 m	3.700 m	3
Arrangement	A1	1.189 m	4.110 m	3.700 m	4
		3.575 m	4.108 m	3.700 m	5
		5.961 m	4.106 m	3.700 m	6
		1.187 m	1.374 m	3.700 m	7
		3.573 m	1.371 m	3.700 m	8
		5.958 m	1.369 m	3.700 m	9

Building 1 · Storey 1 · Koridor hymje

**Luminaire list** $\Phi_{\text{total}}$ 

36549 lm

 $P_{\text{total}}$ 

306.0 W

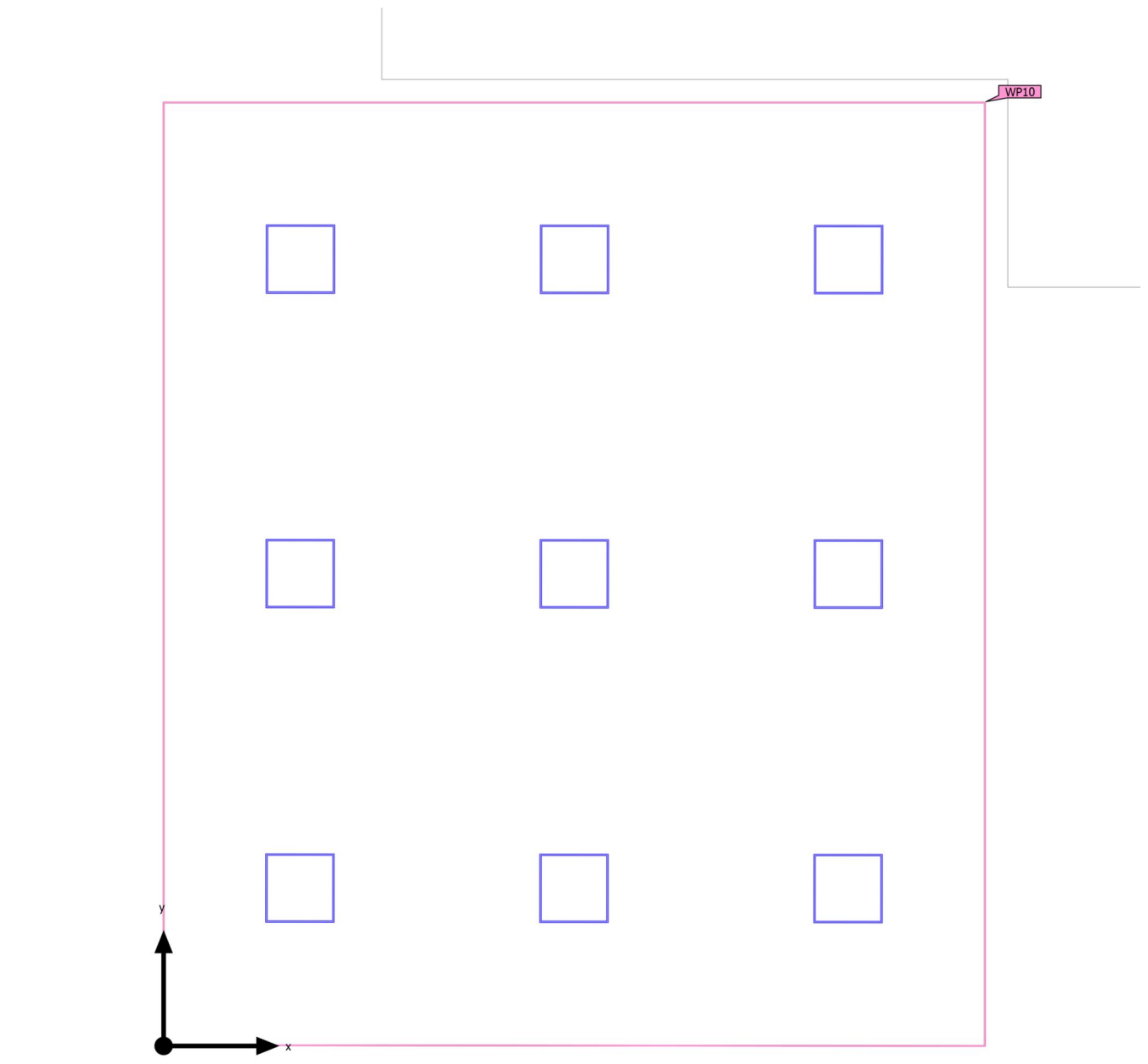
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Koridor hymje (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Koridor hymje (Light scene 1)

**Calculation objects**

## Working planes

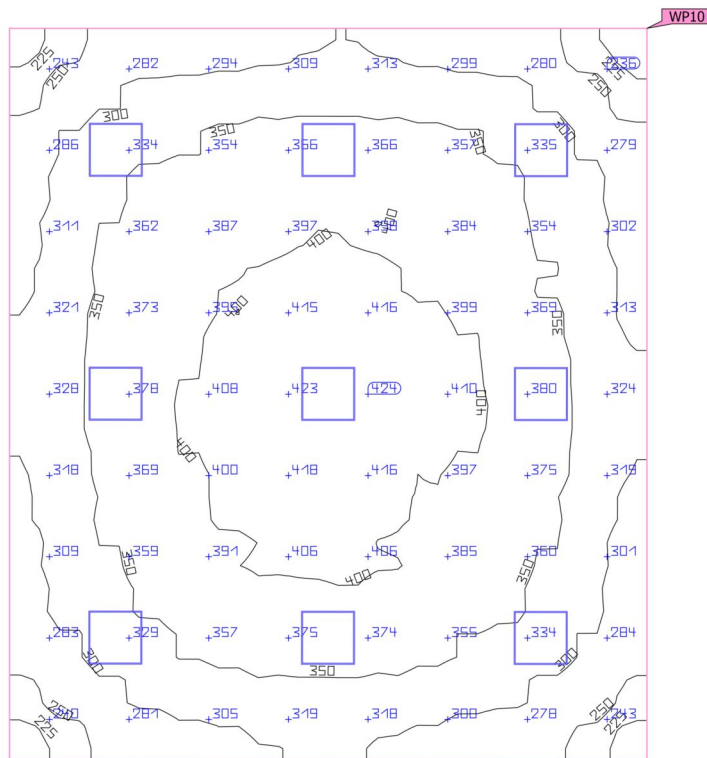
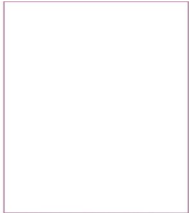
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Koridor hymje) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	345 lx ( $\geq 100$ lx) ✓	211 lx	429 lx	0.61 ( $\geq 0.40$ ) ✓	0.49	WP10

(1) Based on a rectangular space of 8.209 m x 7.150 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.17 Circulation areas, corridors)



Building 1 · Storey 1 · Koridor hymje (Light scene 1)

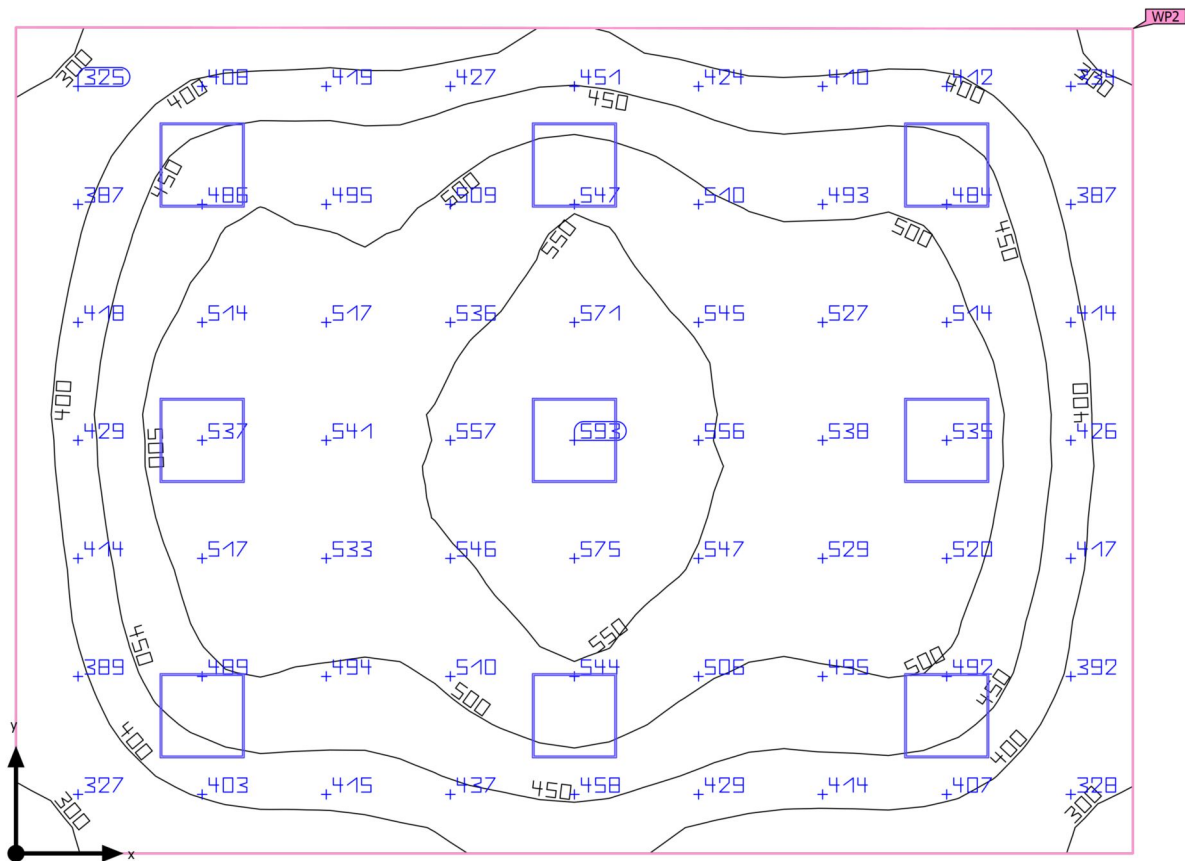
**Working plane (Koridor hymje)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Koridor hymje)	345 lx	211 lx	429 lx	0.61	0.49	WP10
Perpendicular illuminance (adaptive)	( $\geq 100$ lx)			( $\geq 0.40$ )		
Height: 0.000 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.17 Circulation areas, corridors)

Building 1 · Storey 1 · Room 3 (Light scene 1)

Summary



Ground area	46.23 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.200 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 3 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	470 lx	$\geq 300 \text{ lx}$	✓	WP2
	$U_o (g_1)$	0.58	$\geq 0.50$	✓	WP2
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	22	$\leq 19$	✗	
Energy estimation <sup>(2)</sup>	Consumption	407 kWh/a	max. 1650 kWh/a	✓	
Room	Lighting power density	6.62 W/m <sup>2</sup>	–		
		1.41 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 7.909 m x 5.850 m and SHR of 0.25.

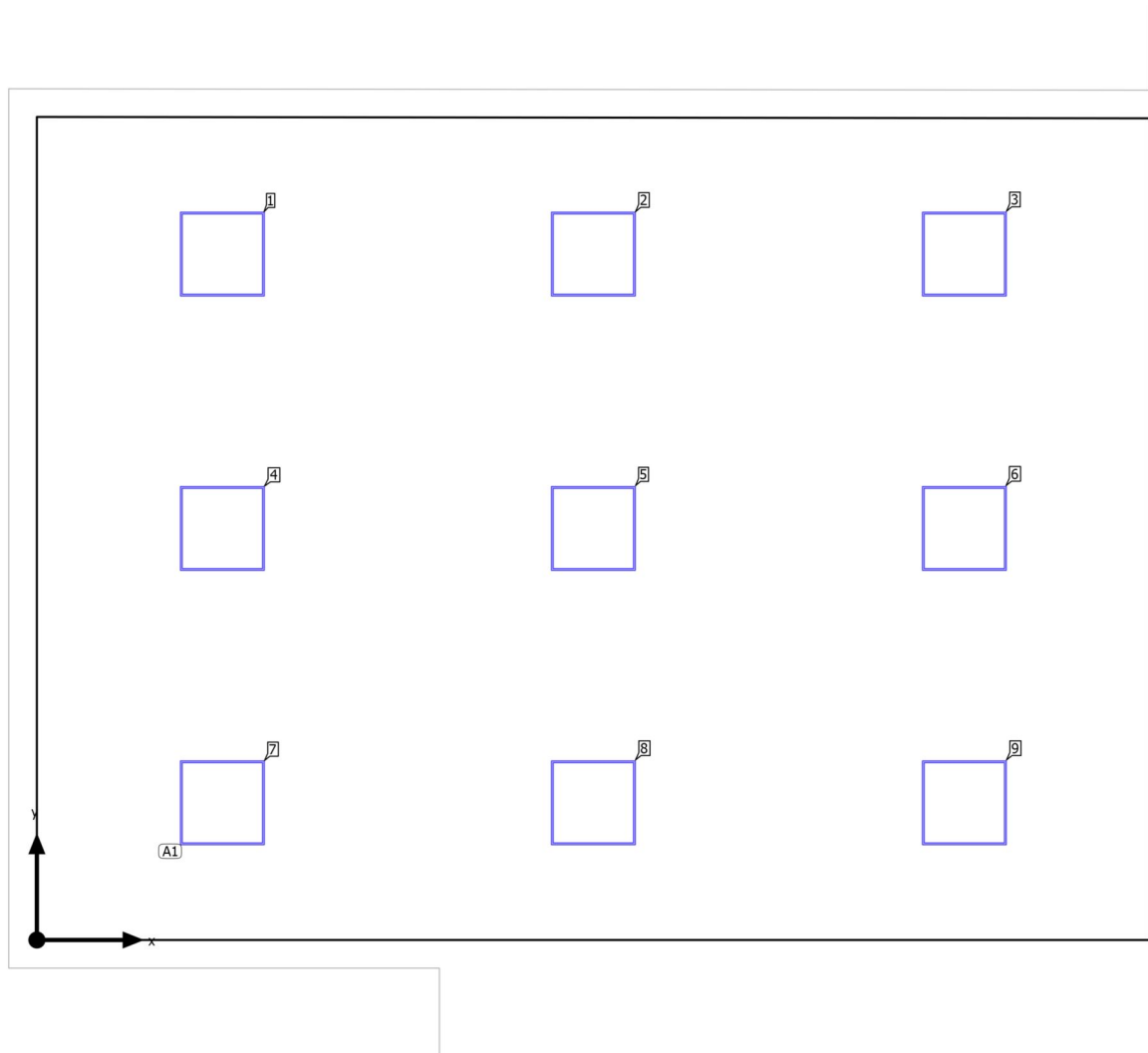
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

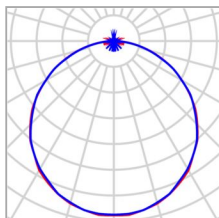
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	21	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 3

**Luminaire layout plan**

Building 1 · Storey 1 · Room 3

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

9 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.318 m / 0.975 m / 3.700 m	1.318 m	4.875 m	3.700 m	1
X-direction	3 pcs., Centre - centre, 2.636 m	3.954 m	4.875 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 1.950 m	6.591 m	4.875 m	3.700 m	3
Arrangement	A1	1.318 m	2.925 m	3.700 m	4
		3.954 m	2.925 m	3.700 m	5
		6.591 m	2.925 m	3.700 m	6
		1.318 m	0.975 m	3.700 m	7
		3.954 m	0.975 m	3.700 m	8
		6.591 m	0.975 m	3.700 m	9

Building 1 · Storey 1 · Room 3

**Luminaire list** $\Phi_{\text{total}}$ 

36549 lm

 $P_{\text{total}}$ 

306.0 W

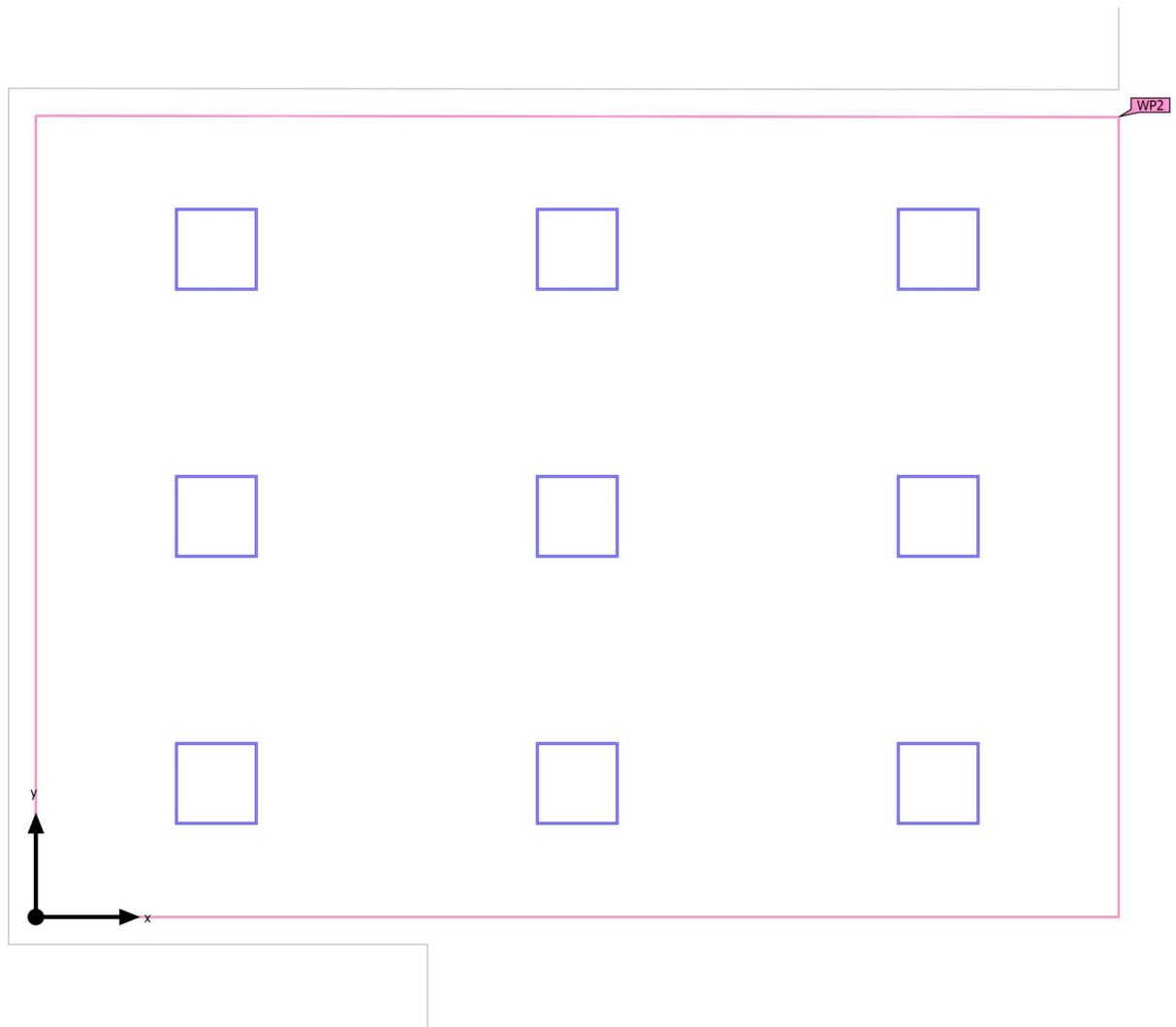
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 3 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 3 (Light scene 1)

**Calculation objects**

## Working planes

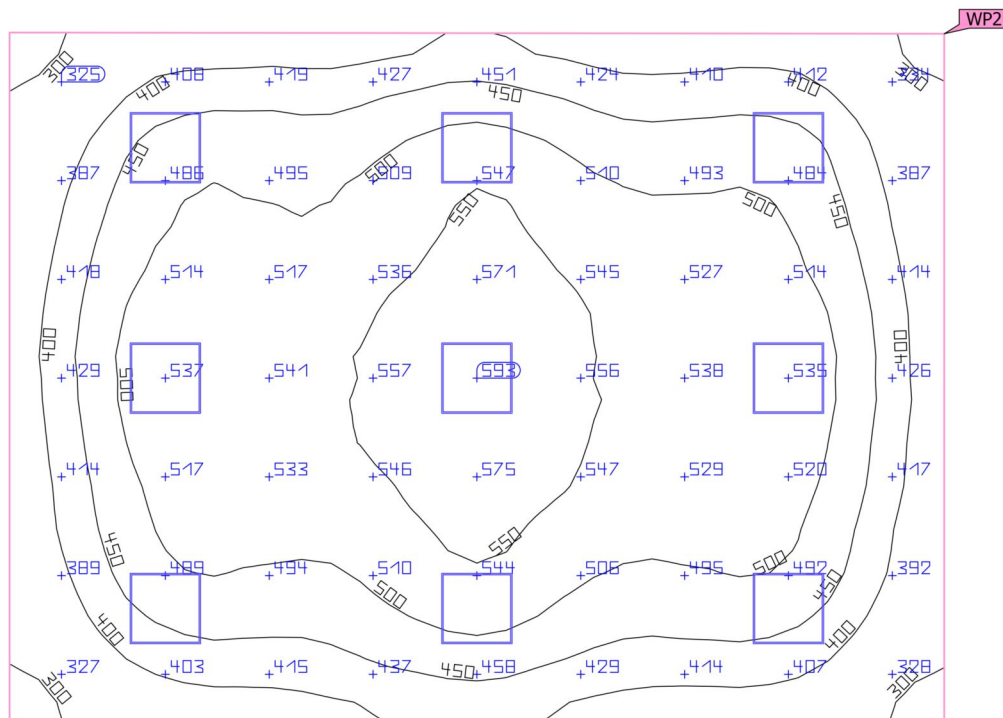
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 3) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	470 lx ( $\geq 300$ lx) ✓	274 lx	591 lx	0.58 ( $\geq 0.50$ ) ✓	0.46	WP2

(1) Based on a rectangular space of 7.909 m x 5.850 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)



Building 1 · Storey 1 · Room 3 (Light scene 1)

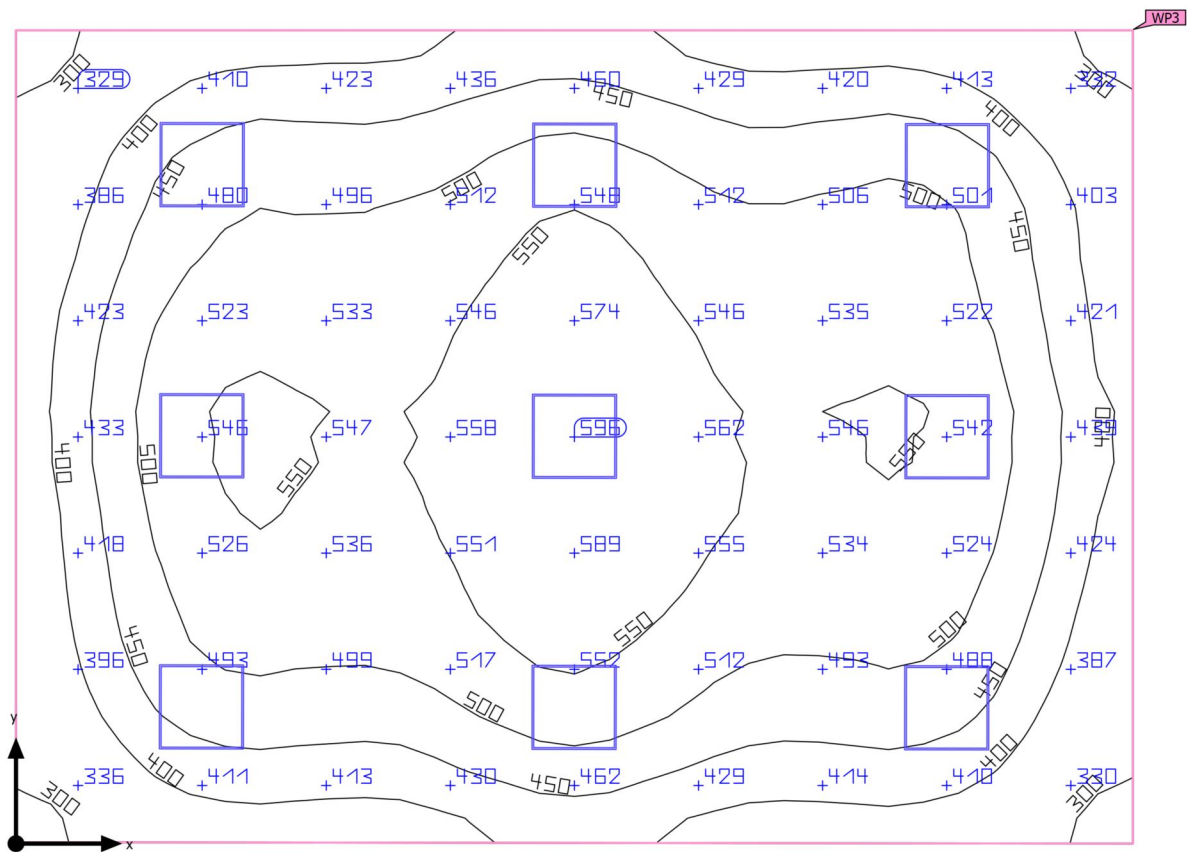
**Working plane (Room 3)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 3)	470 lx	274 lx	591 lx	0.58	0.46	WP2
Perpendicular illuminance (adaptive)	(≥ 300 lx)			(≥ 0.50)		
Height: 0.800 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

Building 1 · Storey 1 · Room 4 (Light scene 1)

Summary



Ground area	45.51 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.700 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 4 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	475 lx	$\geq 300 \text{ lx}$	✓	WP3
	$U_o (g_1)$	0.58	$\geq 0.60$	✗	WP3
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	22	$\leq 19$	✗	
Energy estimation <sup>(2)</sup>	Consumption	407 kWh/a	max. 1600 kWh/a	✓	
Room	Lighting power density	6.72 W/m <sup>2</sup>	–		
		1.42 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 5.760 m x 7.909 m and SHR of 0.25.

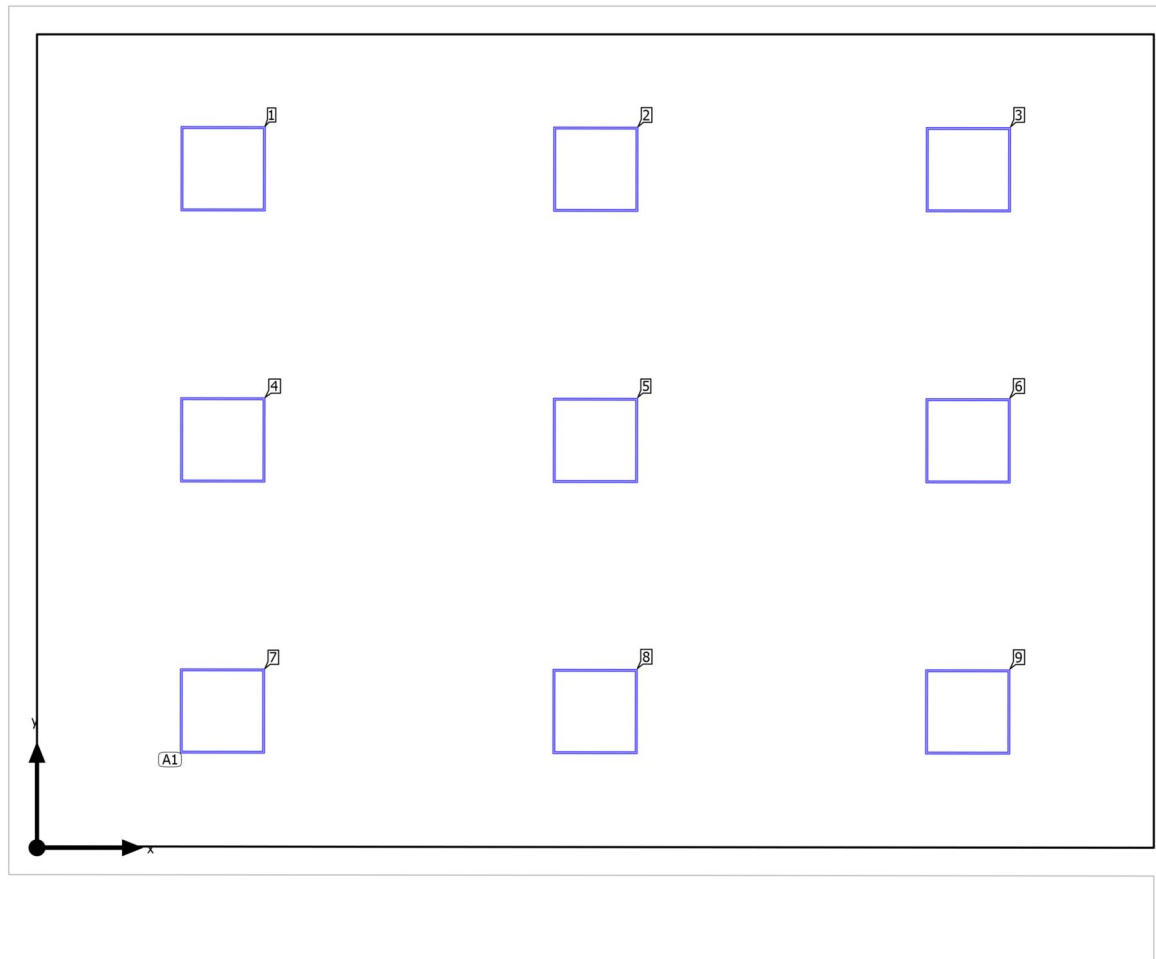
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

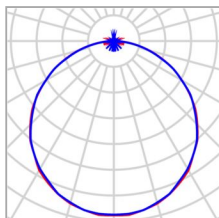
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	21	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 4

**Luminaire layout plan**

Building 1 · Storey 1 · Room 4

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

9 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.313 m / 0.968 m / 3.700 m	1.318 m	4.808 m	3.700 m	1
X-direction	3 pcs., Centre - centre, 2.639 m	3.957 m	4.805 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 1.920 m	6.595 m	4.802 m	3.700 m	3
Arrangement	A1	1.316 m	2.888 m	3.700 m	4
		3.954 m	2.885 m	3.700 m	5
		6.593 m	2.882 m	3.700 m	6
		1.313 m	0.968 m	3.700 m	7
		3.952 m	0.965 m	3.700 m	8
		6.591 m	0.962 m	3.700 m	9

Building 1 · Storey 1 · Room 4

**Luminaire list** $\Phi_{\text{total}}$ 

36549 lm

 $P_{\text{total}}$ 

306.0 W

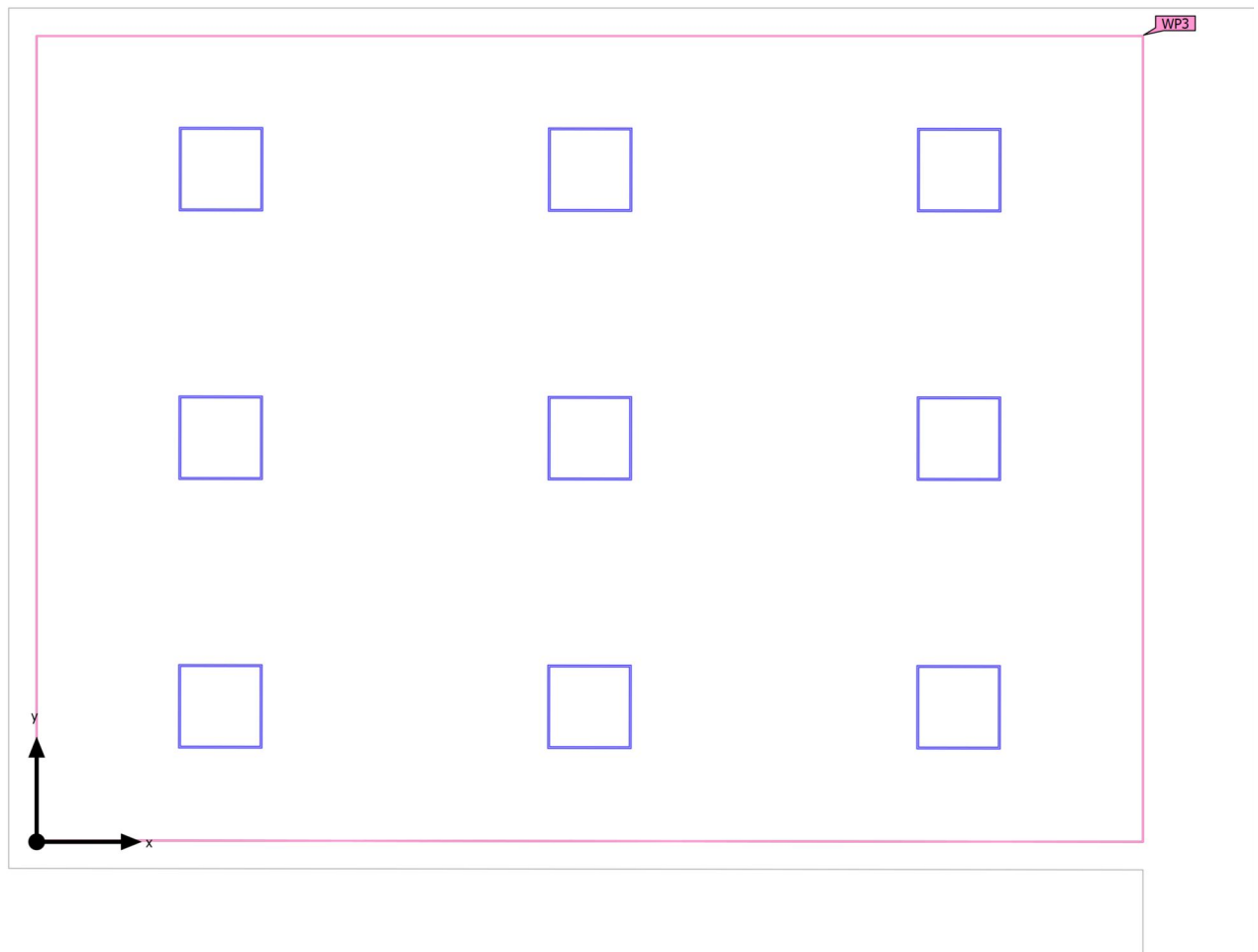
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 4 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 4 (Light scene 1)

**Calculation objects**

## Working planes

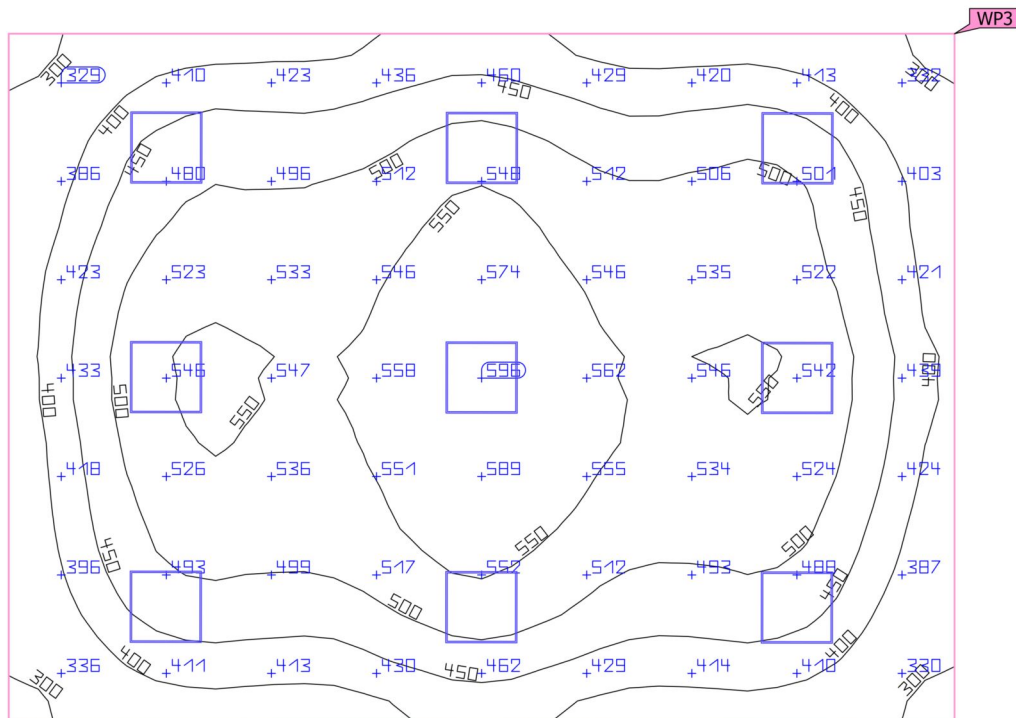
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 4) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	475 lx ( $\geq 300$ lx) ✓	274 lx	597 lx	0.58 ( $\geq 0.60$ ) ✗	0.46	WP3

(1) Based on a rectangular space of 5.760 m x 7.909 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)



Building 1 · Storey 1 · Room 4 (Light scene 1)

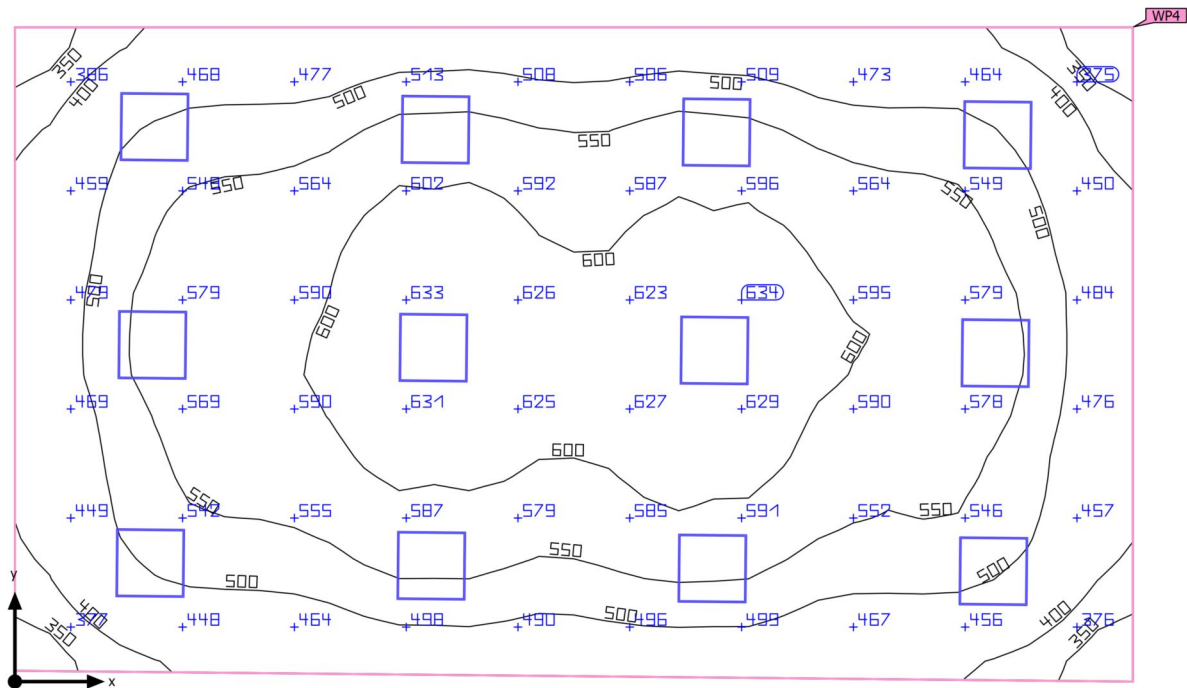
**Working plane (Room 4)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 4)	475 lx	274 lx	597 lx	0.58	0.46	WP3
Perpendicular illuminance (adaptive)	( $\geq 300$ lx)			( $\geq 0.60$ )		
Height: 0.800 m, Wall zone: 0.000 m	✓			✗		

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

Building 1 · Storey 1 · Room 5 (Light scene 1)

Summary



Ground area	55.86 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.700 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 5 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	529 lx	$\geq 300 \text{ lx}$	✓	WP4
	$U_o (g_1)$	0.58	$\geq 0.50$	✓	WP4
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	23	$\leq 19$	✗	
Energy estimation <sup>(2)</sup>	Consumption	543 kWh/a	max. 2000 kWh/a	✓	
Room	Lighting power density	7.30 W/m <sup>2</sup>	–		
		1.38 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 5.742 m x 9.809 m and SHR of 0.25.

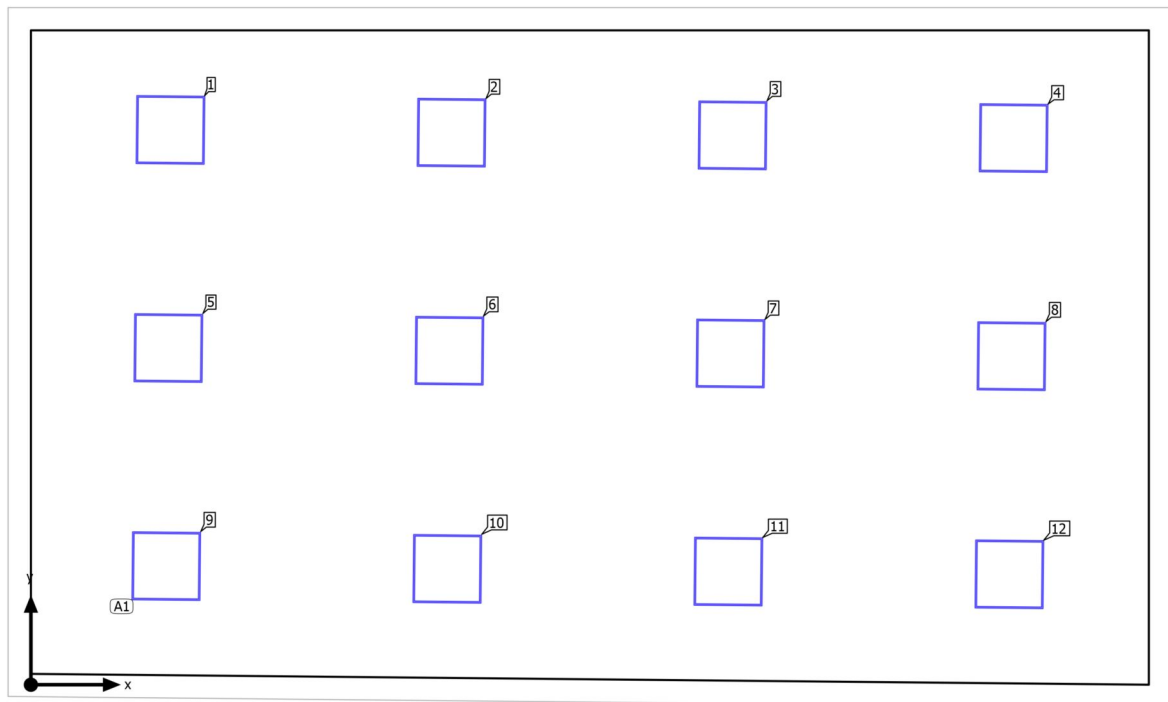
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
12	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	22	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 5

**Luminaire layout plan**

Building 1 · Storey 1 · Room 5

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

12 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.187 m / 1.041 m / 3.700 m	1.225 m	4.868 m	3.700 m	1
X-direction	4 pcs., Centre - centre, 2.466 m	3.690 m	4.844 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 1.914 m	6.156 m	4.820 m	3.700 m	3
Arrangement	A1	8.622 m	4.797 m	3.700 m	4
		1.206 m	2.954 m	3.700 m	5
		3.672 m	2.930 m	3.700 m	6
		6.138 m	2.907 m	3.700 m	7
		8.604 m	2.883 m	3.700 m	8
		1.187 m	1.041 m	3.700 m	9
		3.653 m	1.017 m	3.700 m	10
		6.119 m	0.993 m	3.700 m	11
		8.585 m	0.969 m	3.700 m	12

Building 1 · Storey 1 · Room 5

**Luminaire list** $\Phi_{\text{total}}$ 

48732 lm

 $P_{\text{total}}$ 

408.0 W

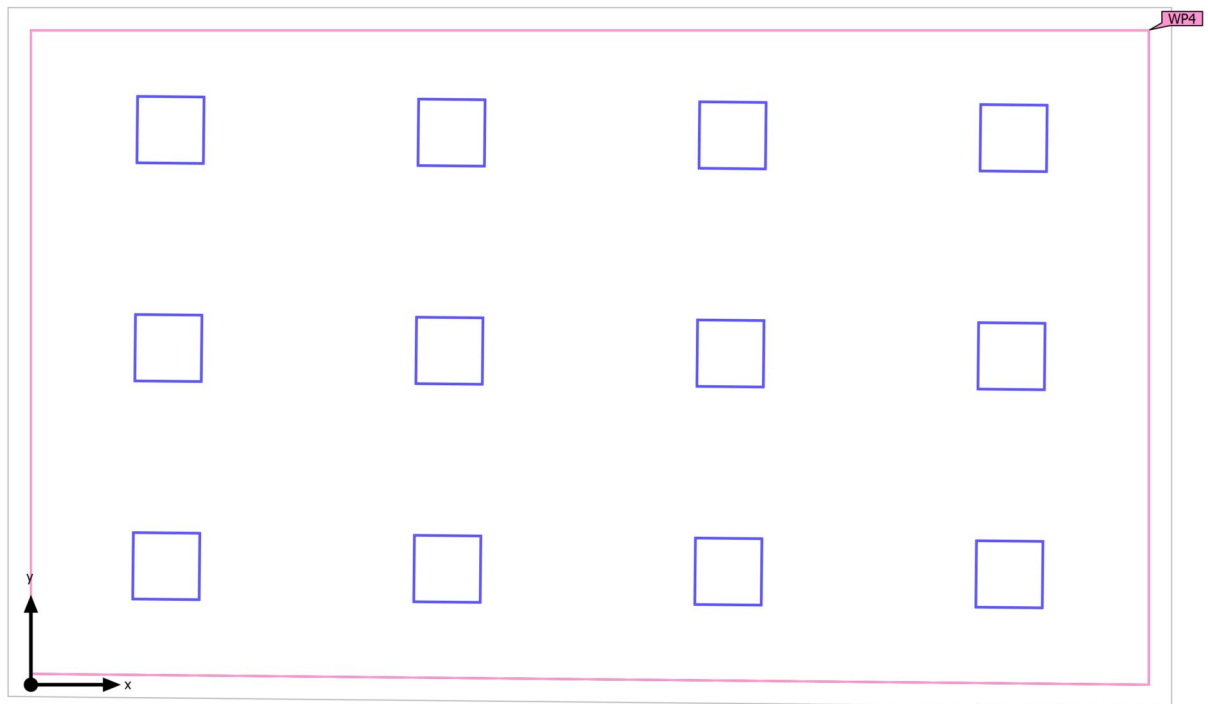
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
12	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 5 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 5 (Light scene 1)

**Calculation objects**

## Working planes

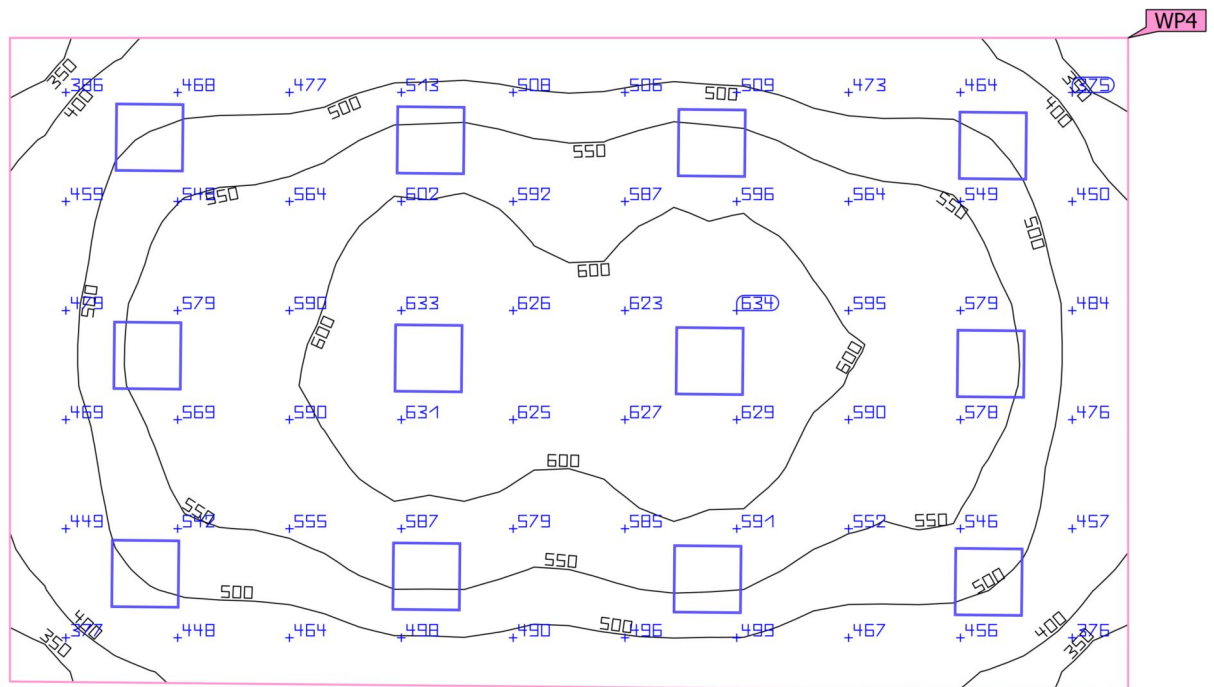
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 5) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	529 lx ( $\geq 300$ lx) ✓	309 lx	644 lx	0.58 ( $\geq 0.50$ ) ✓	0.48	WP4

(1) Based on a rectangular space of 5.742 m x 9.809 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)



Building 1 · Storey 1 · Room 5 (Light scene 1)

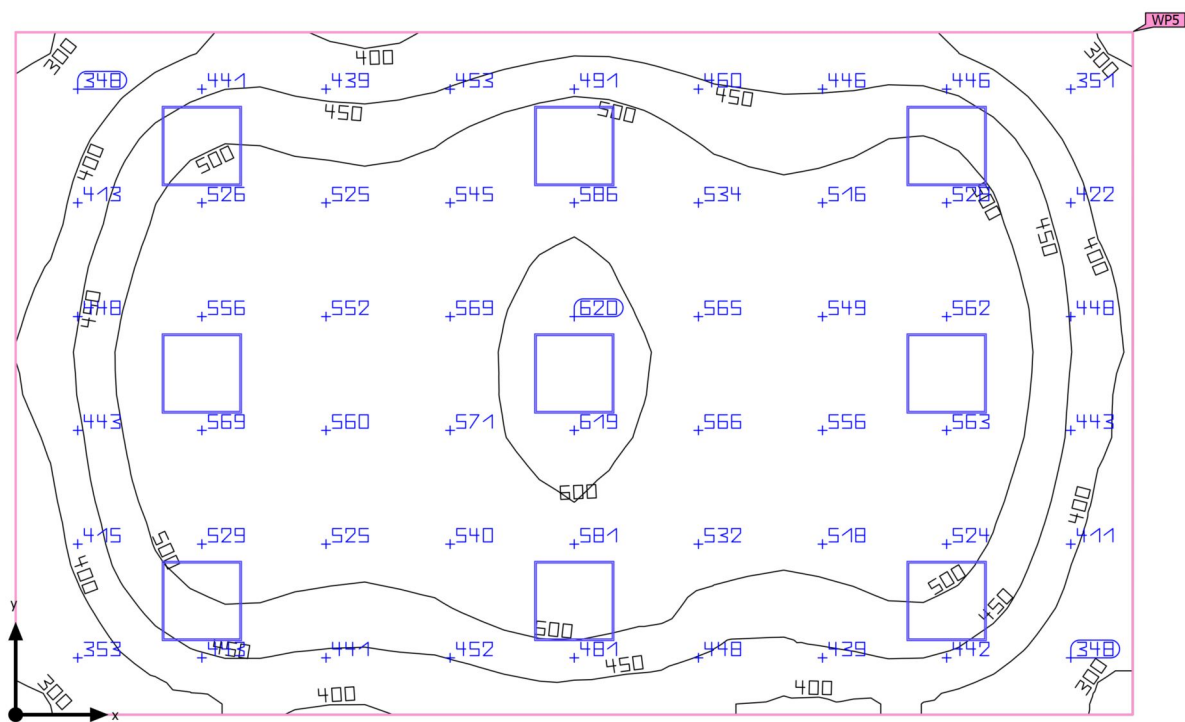
**Working plane (Room 5)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 5)	529 lx	309 lx	644 lx	0.58	0.48	WP4
Perpendicular illuminance (adaptive)	(≥ 300 lx)			(≥ 0.50)		
Height: 0.800 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

Building 1 · Storey 1 · Room 6 (Light scene 1)

Summary



Ground area	43.06 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.200 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 6 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	492 lx	$\geq 300$ lx	✓	WP5
	$U_o (g_1)$	0.57	$\geq 0.50$	✓	WP5
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	20	$\leq 19$	✗	
Energy estimation <sup>(2)</sup>	Consumption	407 kWh/a	max. 1550 kWh/a	✓	
Room	Lighting power density	7,11 W/m <sup>2</sup>	–		
		1.45 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 8.394 m x 5.130 m and SHR of 0.25.

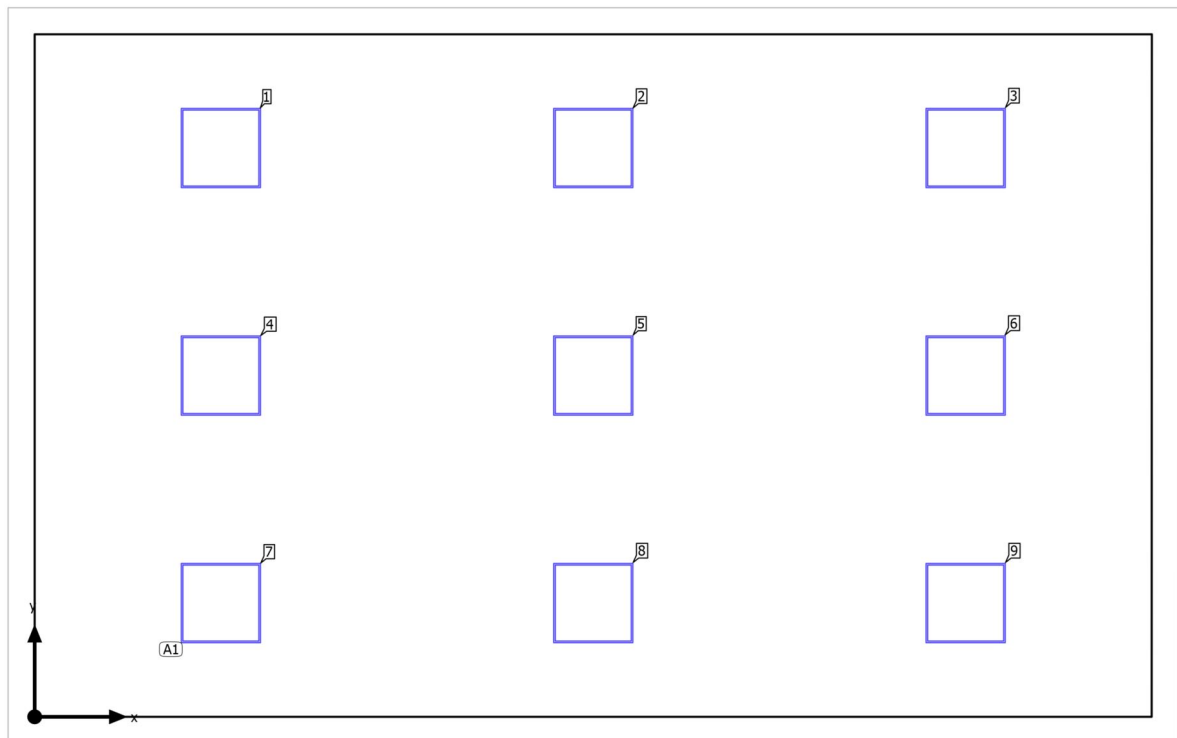
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

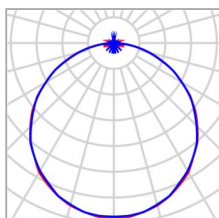
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	20	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 6

**Luminaire layout plan**

Building 1 · Storey 1 · Room 6

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

9 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.399 m / 0.855 m / 3.700 m	1.399 m	4.275 m	3.700 m	1
X-direction	3 pcs., Centre - centre, 2.798 m	4.197 m	4.275 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 1.710 m	6.995 m	4.275 m	3.700 m	3
Arrangement	A1	1.399 m	2.565 m	3.700 m	4
		4.197 m	2.565 m	3.700 m	5
		6.995 m	2.565 m	3.700 m	6
		1.399 m	0.855 m	3.700 m	7
		4.197 m	0.855 m	3.700 m	8
		6.995 m	0.855 m	3.700 m	9

Building 1 · Storey 1 · Room 6

**Luminaire list** $\Phi_{\text{total}}$ 

36549 lm

 $P_{\text{total}}$ 

306.0 W

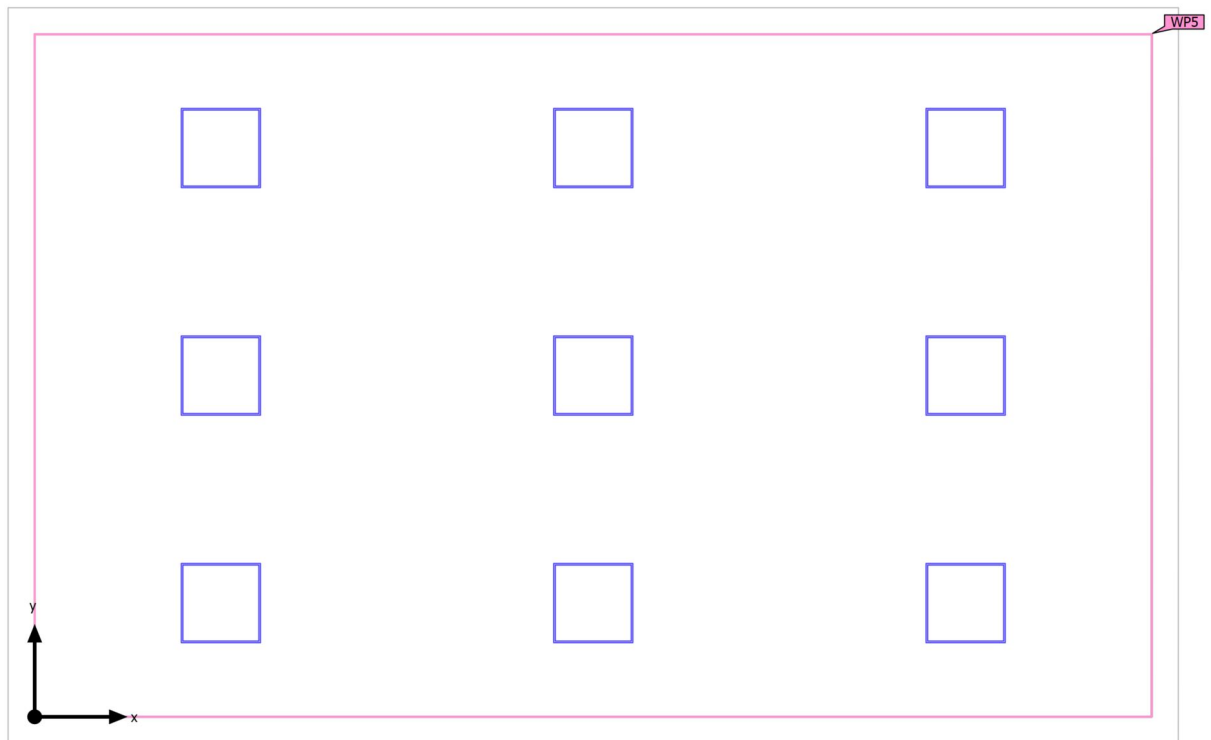
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 6 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 6 (Light scene 1)

**Calculation objects**

## Working planes

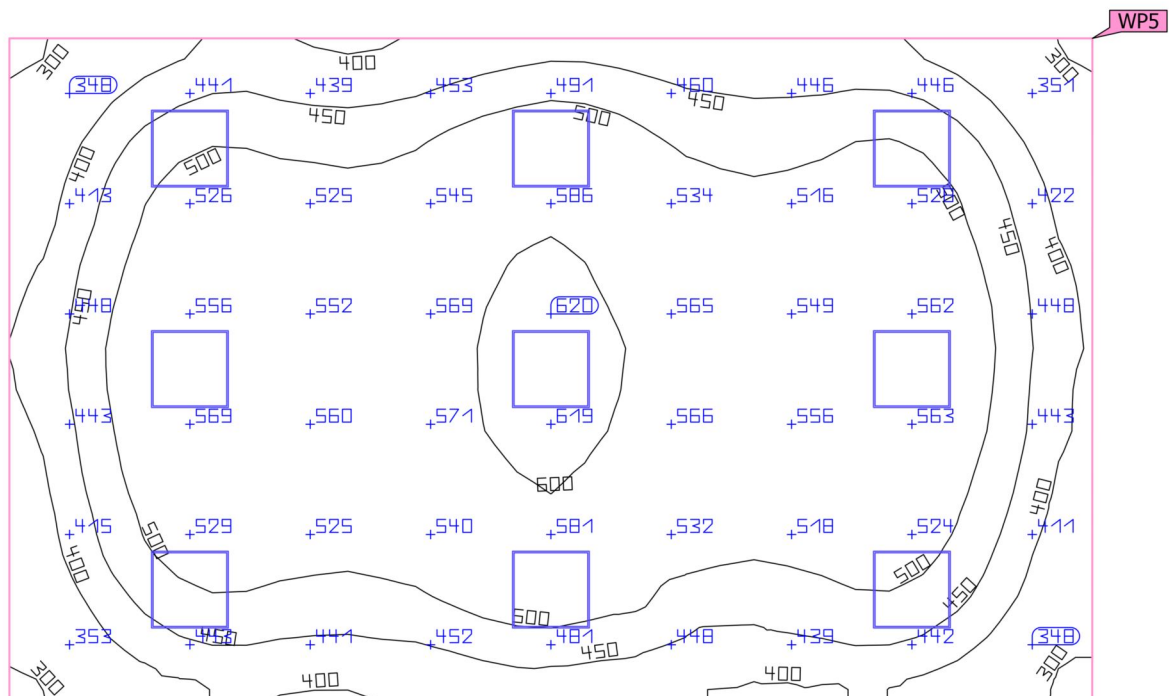
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 6) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	492 lx ( $\geq 300$ lx) ✓	282 lx	623 lx	0.57 ( $\geq 0.50$ ) ✓	0.45	WP5

(1) Based on a rectangular space of 8.394 m x 5.130 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)



Building 1 · Storey 1 · Room 6 (Light scene 1)

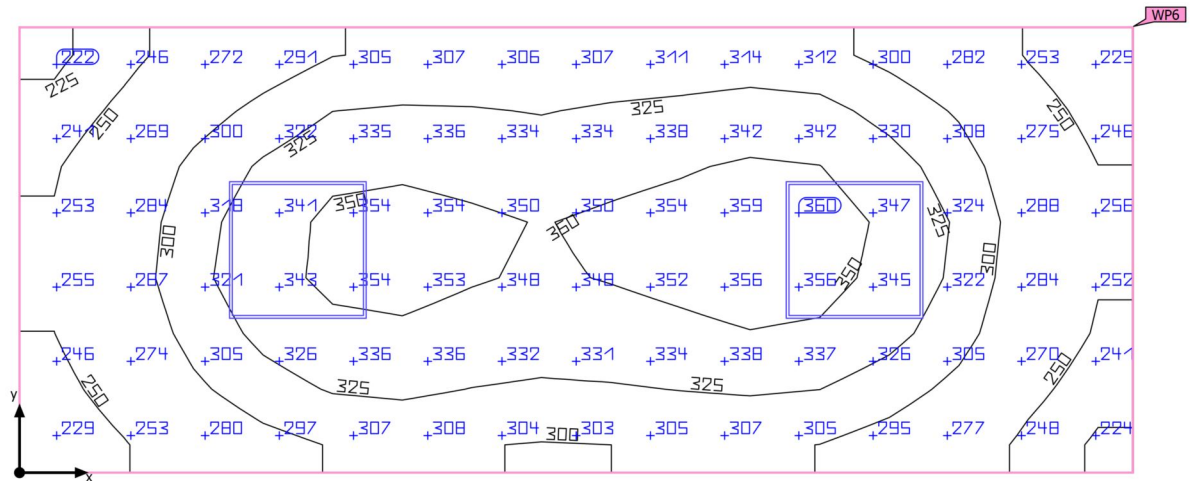
**Working plane (Room 6)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 6)	492 lx	282 lx	623 lx	0.57	0.45	WP5
Perpendicular illuminance (adaptive)	(≥ 300 lx)			(≥ 0.50)		
Height: 0.800 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

Building 1 · Storey 1 · Room 7 (Light scene 1)

## Summary



Ground area	9.41 m <sup>2</sup>	Clearance height	3.700 m
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %	Mounting height	3.700 m
Maintenance factor	0.80 (fixed)	Height <sub>Working plane</sub>	0.800 m
		Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 7 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	307 lx	$\geq 200$ lx	✓	WP6
	$U_o (g_1)$	0.71	$\geq 0.40$	✓	WP6
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	19	$\leq 22$	✓	
Energy estimation <sup>(2)</sup>	Consumption	131 kWh/a	max. 350 kWh/a	✓	
Room	Lighting power density	7.23 W/m <sup>2</sup>	–		
		2.36 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 1.940 m x 4.848 m and SHR of 0.25.

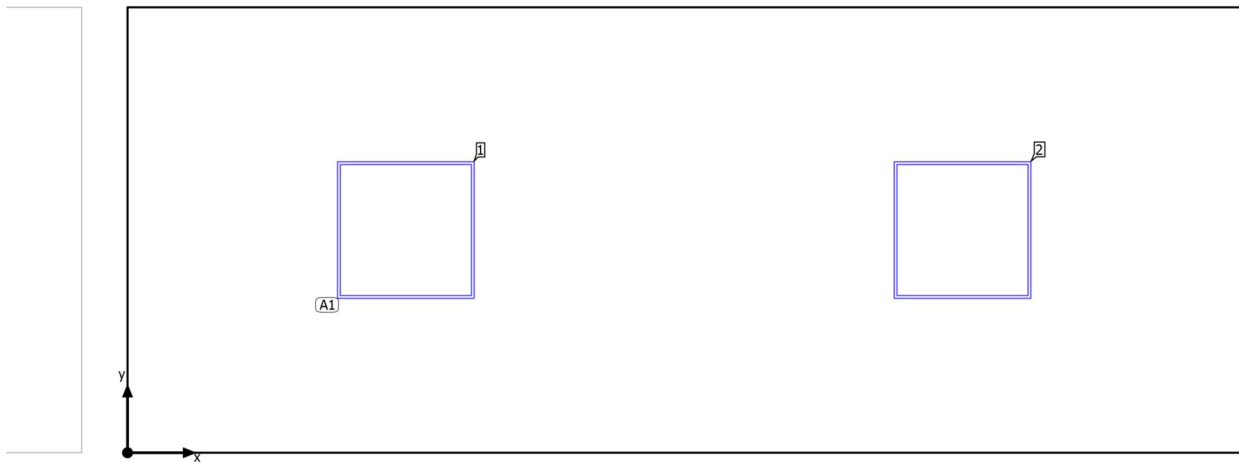
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)

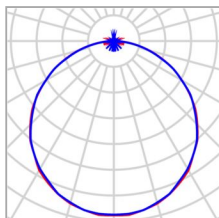
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	19	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 7

**Luminaire layout plan**

Building 1 · Storey 1 · Room 7

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	$\Phi_{\text{Luminaire}}$	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

2 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.212 m / 0.970 m / 3.700 m	1.212 m	0.970 m	3.700 m	1
X-direction	2 pcs., Centre - centre, 2.424 m	3.636 m	0.970 m	3.700 m	2
Y-direction	1 pcs., Centre - centre, 1.940 m				
Arrangement	A1				

Building 1 · Storey 1 · Room 7

**Luminaire list** $\Phi_{\text{total}}$ 

8122 lm

 $P_{\text{total}}$ 

68.0 W

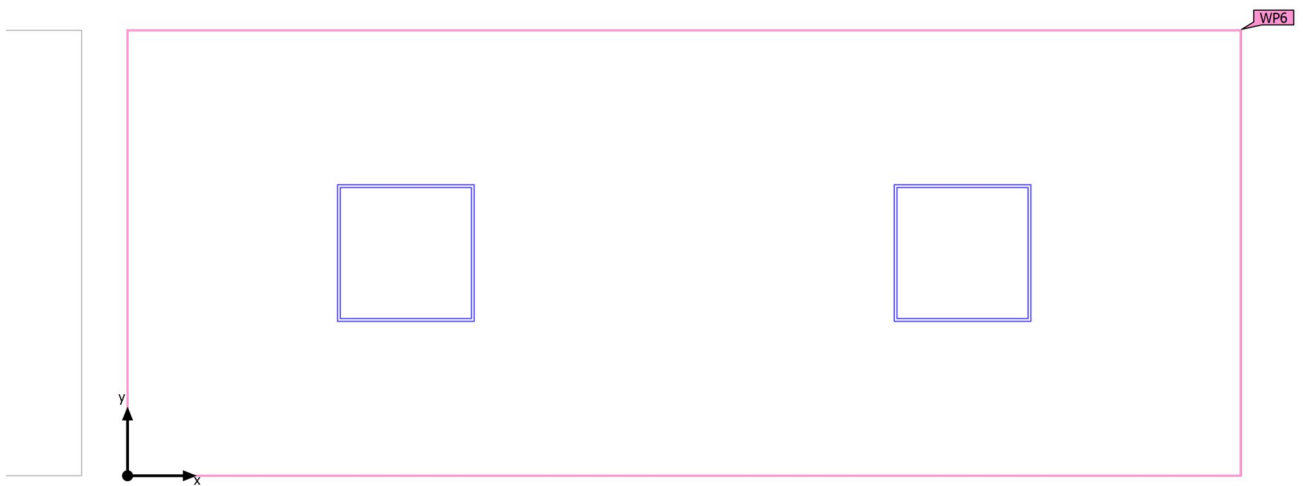
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 7 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 7 (Light scene 1)

## Calculation objects

### Working planes

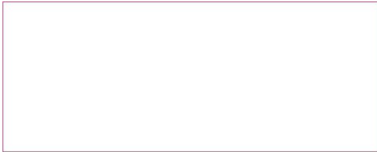
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 7) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	307 lx ( $\geq 200$ lx) ✓	219 lx	360 lx	0.71 ( $\geq 0.40$ ) ✓	0.61	WP6

(1) Based on a rectangular space of 1.940 m x 4.848 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)



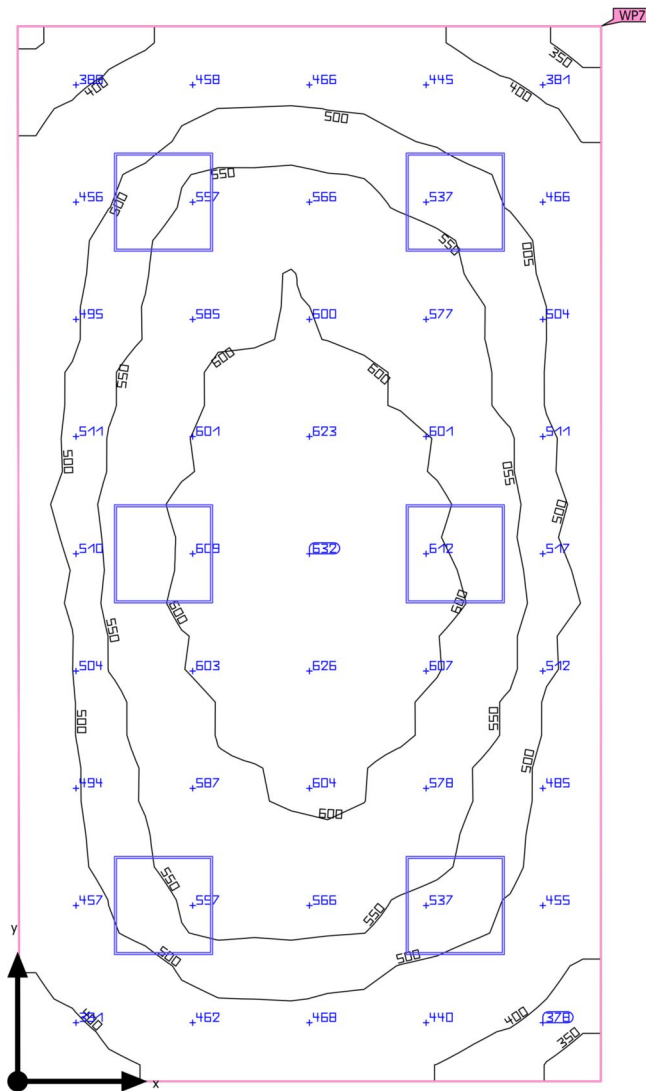
Building 1 · Storey 1 · Room 7 (Light scene 1)

**Working plane (Room 7)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 7)	307 lx	219 lx	360 lx	0.71	0.61	WP6
Perpendicular illuminance (adaptive)	$\geq 200$ lx			$\geq 0.40$		
Height: 0.800 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.16 Entrance halls)

## Summary



Ground area	22.62 m²	Clearance height	3.200 m
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %	Mounting height	3.700 m
Maintenance factor	0.80 (fixed)	Height <sub>working plane</sub>	0.800 m
		Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 8 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	524 lx	$\geq 300 \text{ lx}$	✓	WP7
	$U_o (g_1)$	0.64	$\geq 0.40$	✓	WP7
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	19	$\leq 19$	✓	
Energy estimation <sup>(2)</sup>	Consumption	27.5 kWh/a	max. 800 kWh/a	✓	
Room	Lighting power density	9.02 W/m <sup>2</sup>	–		
		1.72 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 3.540 m x 6.401 m and SHR of 0.25.

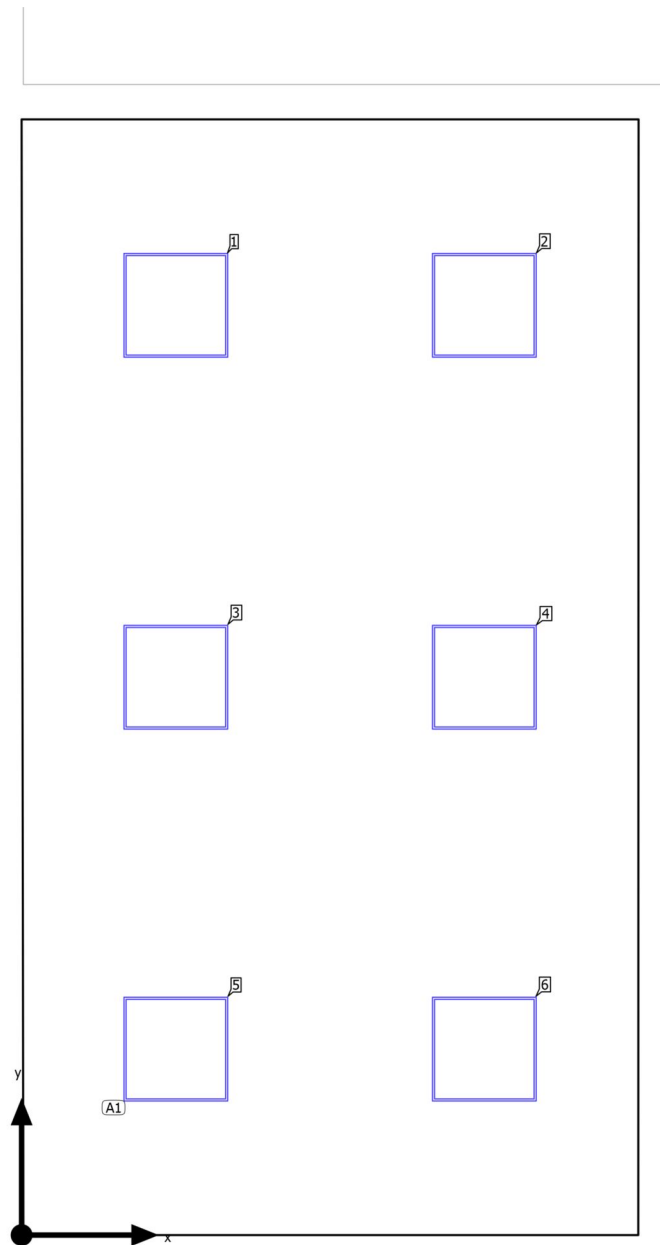
(2) Calculated using DIN:18599-4.

Utilisation profile: Offices (5.26.1 Filing, copying, etc.)

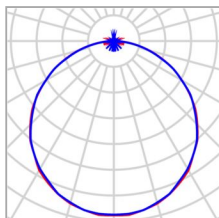
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
6	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	19	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 8

**Luminaire layout plan**

Building 1 · Storey 1 · Room 8

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

6 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	0.885 m / 1.067 m / 3.700 m	0.885 m	5.334 m	3.700 m	1
X-direction	2 pcs., Centre - centre, 1.770 m	2.655 m	5.334 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 2.134 m	0.885 m	3.200 m	3.700 m	3
		2.655 m	3.200 m	3.700 m	4
Arrangement	A1	0.885 m	1.067 m	3.700 m	5
		2.655 m	1.067 m	3.700 m	6

Building 1 · Storey 1 · Room 8

**Luminaire list** $\Phi_{\text{total}}$ 

24366 lm

 $P_{\text{total}}$ 

204.0 W

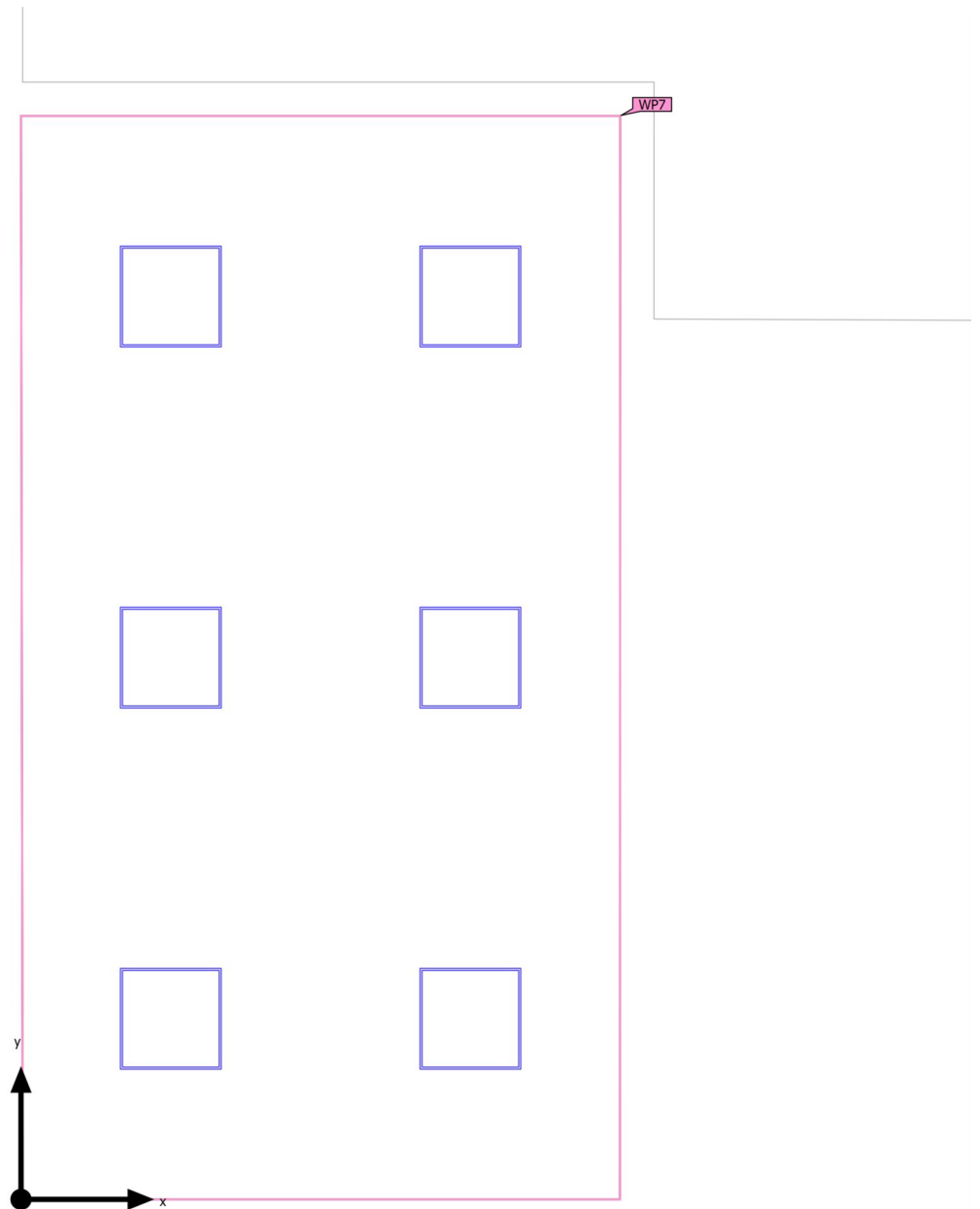
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
6	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 8 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 8 (Light scene 1)

**Calculation objects**

## Working planes

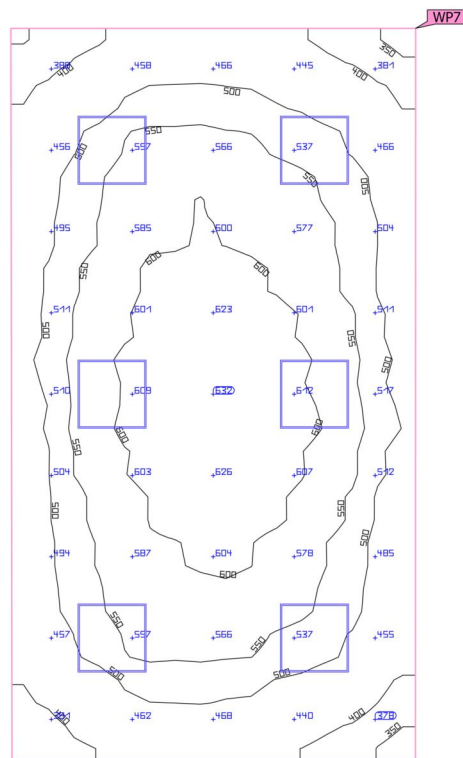
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 8) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	524 lx ( $\geq 300$ lx) ✓	336 lx	640 lx	0.64 ( $\geq 0.40$ ) ✓	0.53	WP7

(1) Based on a rectangular space of 3.540 m x 6.401 m and SHR of 0.25.

Utilisation profile: Offices (5.26.1 Filing, copying, etc.)



Building 1 · Storey 1 · Room 8 (Light scene 1)

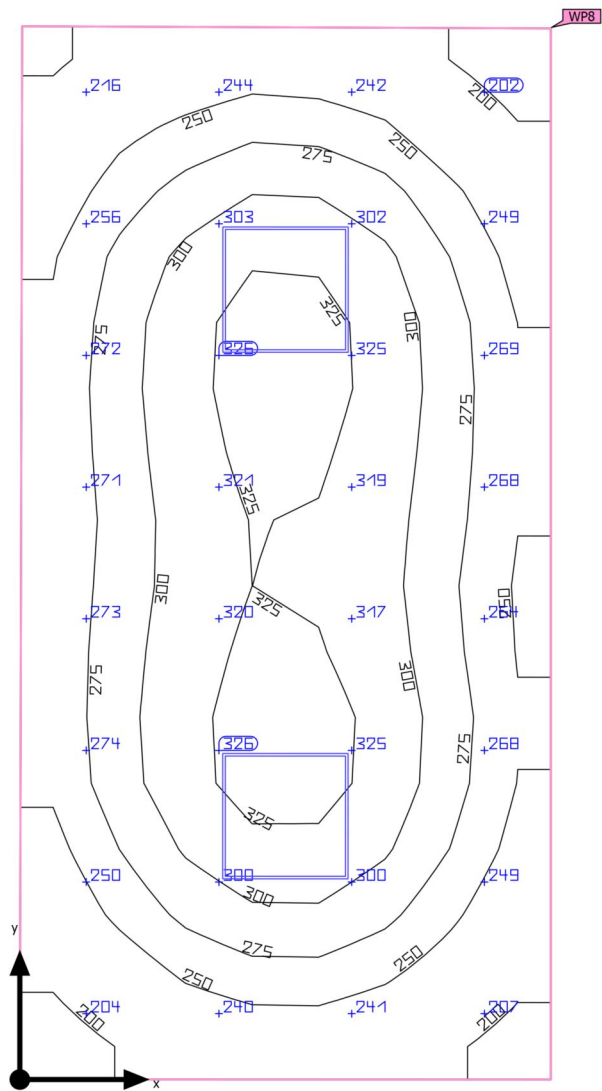
**Working plane (Room 8)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 8) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	524 lx ( $\geq 300$ lx) ✓	336 lx	640 lx	0.64 ( $\geq 0.40$ ) ✓	0.53	WP7

Utilisation profile: Offices (5.26.1 Filing, copying, etc.)

Building 1 · Storey 1 · Room 9 (Light scene 1)

Summary



Ground area	12.57 m <sup>2</sup>	Clearance height	3.200 m
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %	Mounting height	3.700 m
Maintenance factor	0.80 (fixed)	Height <sub>Working plane</sub>	0.800 m
		Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room 9 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	273 lx	$\geq 200 \text{ lx}$	✓	WP8
	$U_o (g_1)$	0.66	$\geq 0.40$	✓	WP8
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	19	$\leq 22$	✓	
Energy estimation <sup>(2)</sup>	Consumption	131 kWh/a	max. 450 kWh/a	✓	
Room	Lighting power density	5.41 W/m <sup>2</sup>	–		
		1.98 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 2.521 m x 5.001 m and SHR of 0.25.

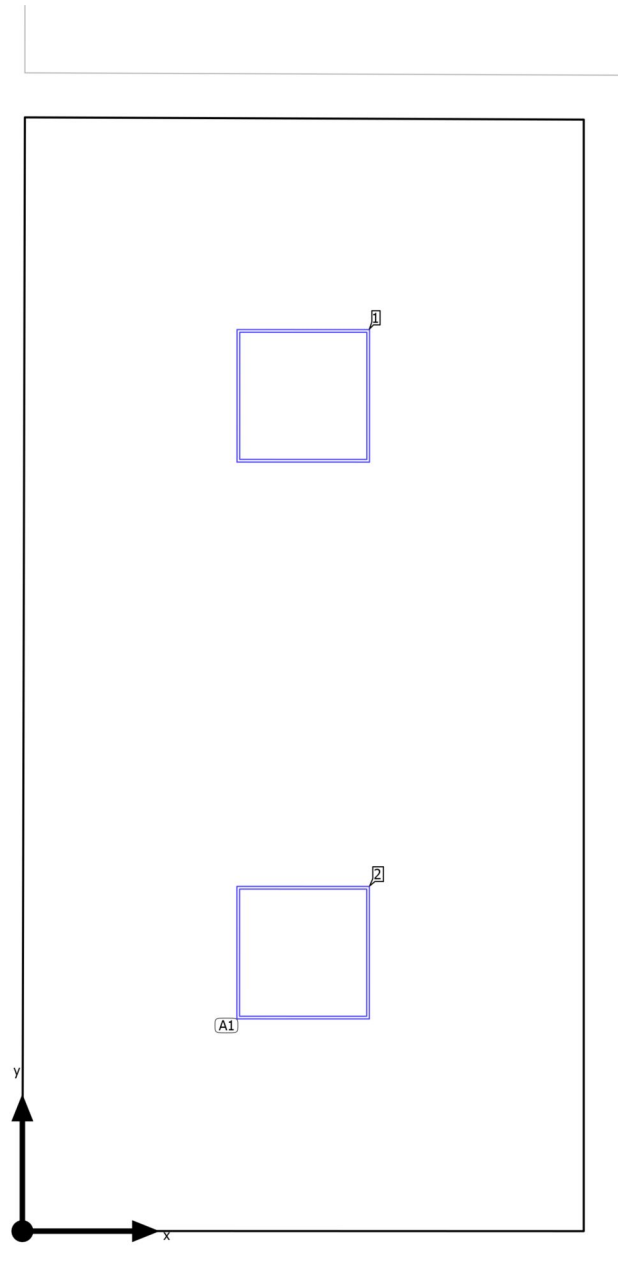
(2) Calculated using DIN:18599-4.

Utilisation profile: Places of public assembly - General areas (5.28.3 Waiting rooms)

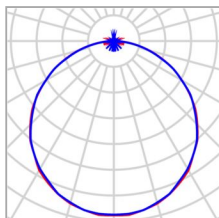
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	19	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 9

**Luminaire layout plan**

Building 1 · Storey 1 · Room 9

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	$\Phi_{\text{Luminaire}}$	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

2 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.261 m / 1.251 m / 3.700 m	1.262 m	3.751 m	3.700 m	1
X-direction	1 pcs., Centre - centre, 2.521 m	1.261 m	1.251 m	3.700 m	2
Y-direction	2 pcs., Centre - centre, 2.500 m				
Arrangement	A1				

Building 1 · Storey 1 · Room 9

**Luminaire list** $\Phi_{\text{total}}$ 

8122 lm

 $P_{\text{total}}$ 

68.0 W

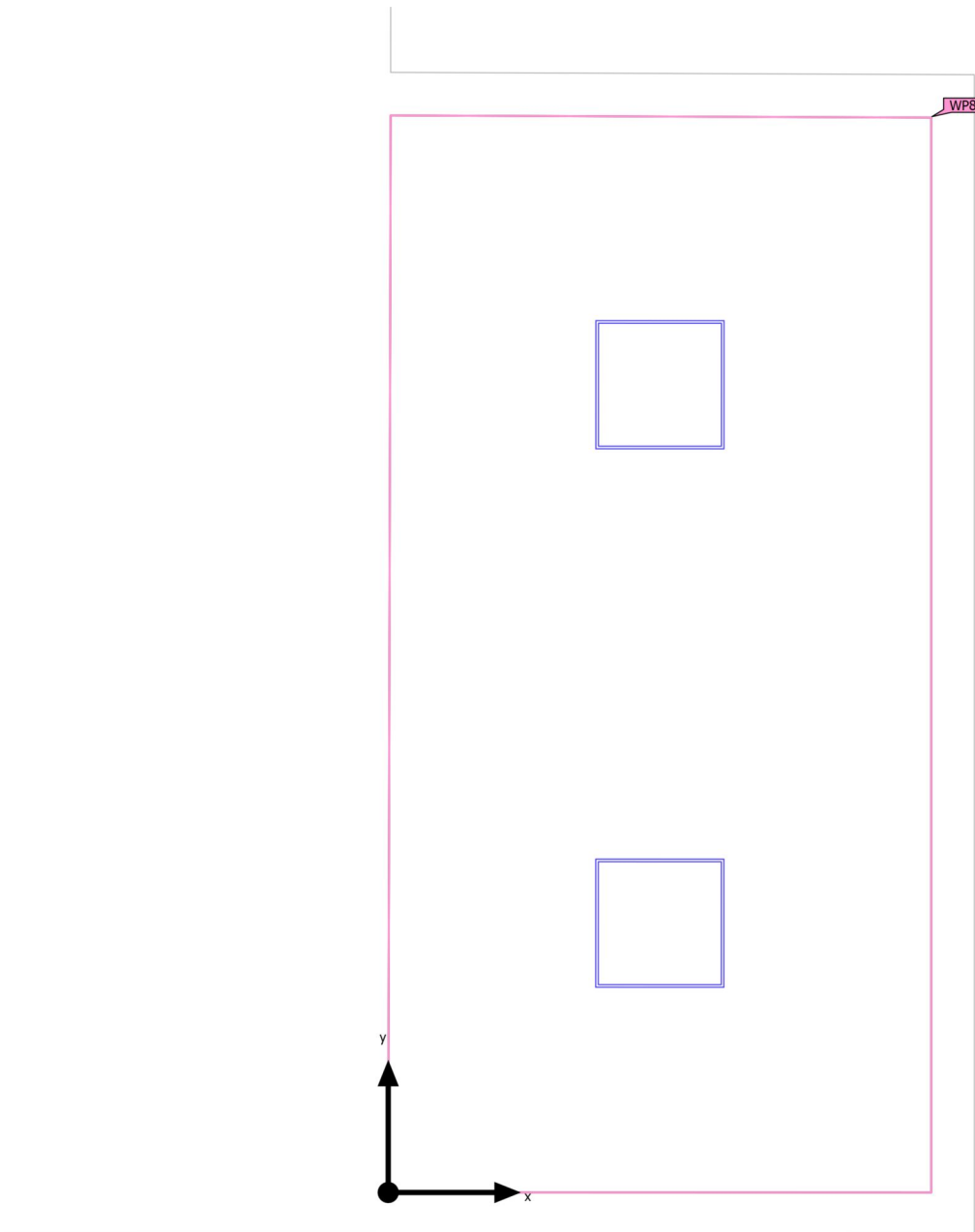
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
2	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room 9 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room 9 (Light scene 1)

**Calculation objects**

## Working planes

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 9) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	273 lx ( $\geq 200$ lx) ✓	180 lx	334 lx	0.66 ( $\geq 0.40$ ) ✓	0.54	WP8

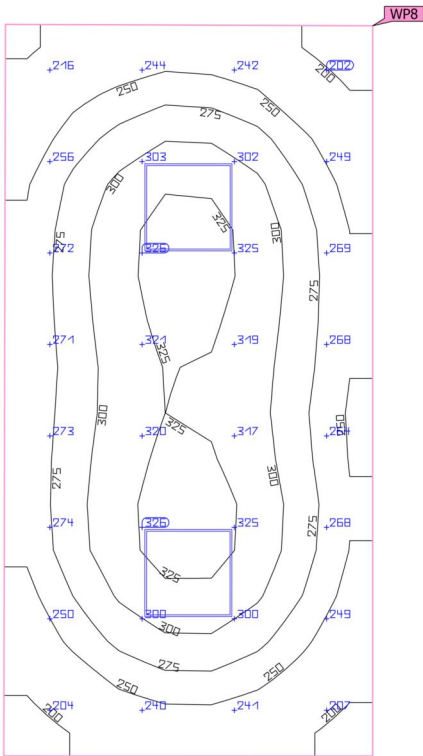
(1) Based on a rectangular space of 2.521 m x 5.001 m and SHR of 0.25.

Utilisation profile: Places of public assembly - General areas (5.28.3 Waiting rooms)



Building 1 · Storey 1 · Room 9 (Light scene 1)

Working plane (Room 9)

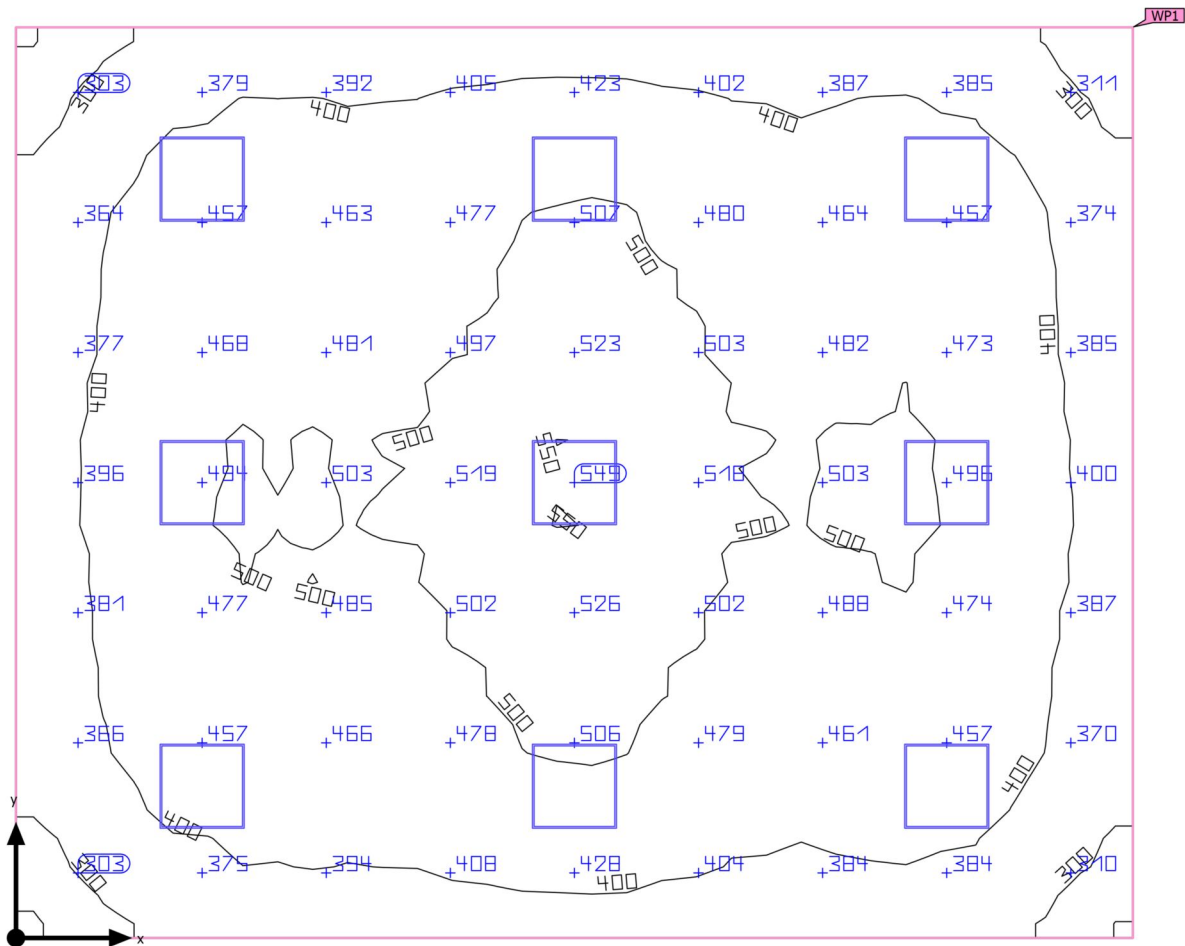


Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room 9) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	273 lx ( $\geq 200$ lx) ✓	180 lx	334 lx	0.66 ( $\geq 0.40$ ) ✓	0.54	WP8

Utilisation profile: Places of public assembly - General areas (5.28.3 Waiting rooms)

Building 1 · Storey 1 · Room1 (Light scene 1)

Summary



Ground area	51.02 m <sup>2</sup>
Reflection factors	Ceiling: 70.0 %, Walls: 50.0 %, Floor: 20.0 %
Maintenance factor	0.80 (fixed)

Clearance height	3.200 m
Mounting height	3.700 m
Height <sub>Working plane</sub>	0.800 m
Wall zone <sub>Working plane</sub>	0.000 m

Building 1 · Storey 1 · Room1 (Light scene 1)

## Summary

### Results

	Symbol	Calculated	Target	Check	Index
Working plane	$\bar{E}_{\text{perpendicular}}$	437 lx	$\geq 300$ lx	✓	WP1
	$U_o (g_1)$	0.56	$\geq 0.50$	✓	WP1
Glare valuation <sup>(1)</sup>	$R_{UG, \text{max}}$	22	$\leq 19$	✗	
Energy estimation <sup>(2)</sup>	Consumption	407 kWh/a	max. 1800 kWh/a	✓	
Room	Lighting power density	6.00 W/m <sup>2</sup>	–		
		1.37 W/m <sup>2</sup> /100 lx	–		

(1) Based on a rectangular space of 6.450 m x 7.910 m and SHR of 0.25.

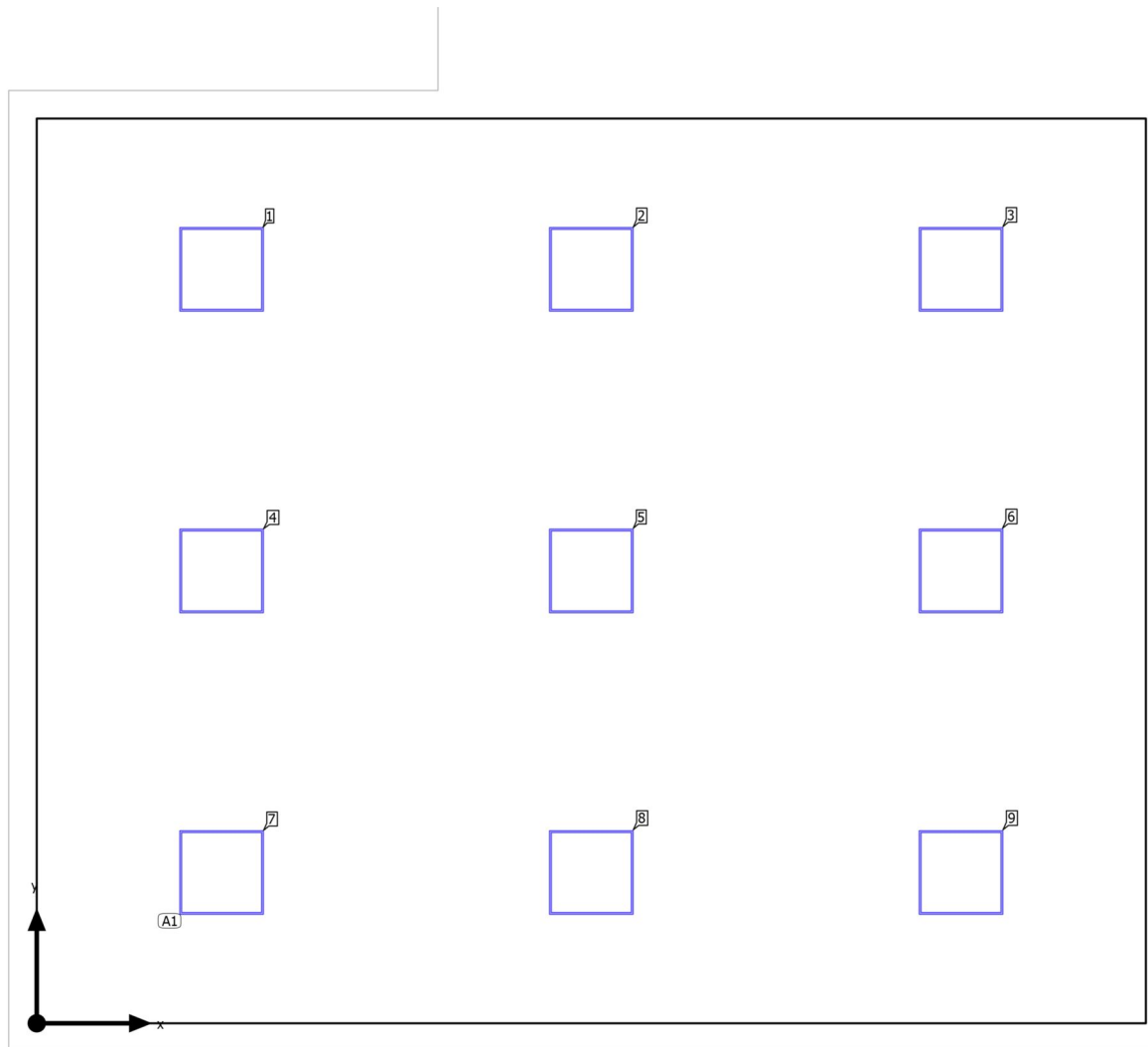
(2) Calculated using DIN:18599-4.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

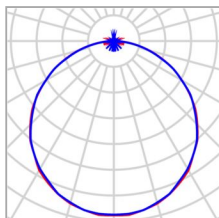
### Luminaire list

pcs.	Manufacturer	Article No.	Article name	$R_{UG}$	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	21	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room1

**Luminaire layout plan**

Building 1 · Storey 1 · Room1

**Luminaire layout plan**

Manufacturer	SYLVANIA	P	34.0 W
Article No.	0042872	Φ <sub>Luminaire</sub>	4061 lm
Article name	START Panel 600x600 HE 4100Lm 830 LILO		
Fitting	1x LED		

9 x SYLVANIA START Panel 600x600 HE 4100Lm 830 LILO

Type	Field Arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	1.318 m / 1.075 m / 3.700 m	1.318 m	5.375 m	3.700 m	1
X-direction	3 pcs., Centre - centre, 2.637 m	3.955 m	5.375 m	3.700 m	2
Y-direction	3 pcs., Centre - centre, 2.150 m	6.591 m	5.375 m	3.700 m	3
Arrangement	A1	1.318 m	3.225 m	3.700 m	4
		3.955 m	3.225 m	3.700 m	5
		6.591 m	3.225 m	3.700 m	6
		1.318 m	1.075 m	3.700 m	7
		3.955 m	1.075 m	3.700 m	8
		6.591 m	1.075 m	3.700 m	9

Building 1 · Storey 1 · Room1

**Luminaire list** $\Phi_{\text{total}}$ 

36549 lm

 $P_{\text{total}}$ 

306.0 W

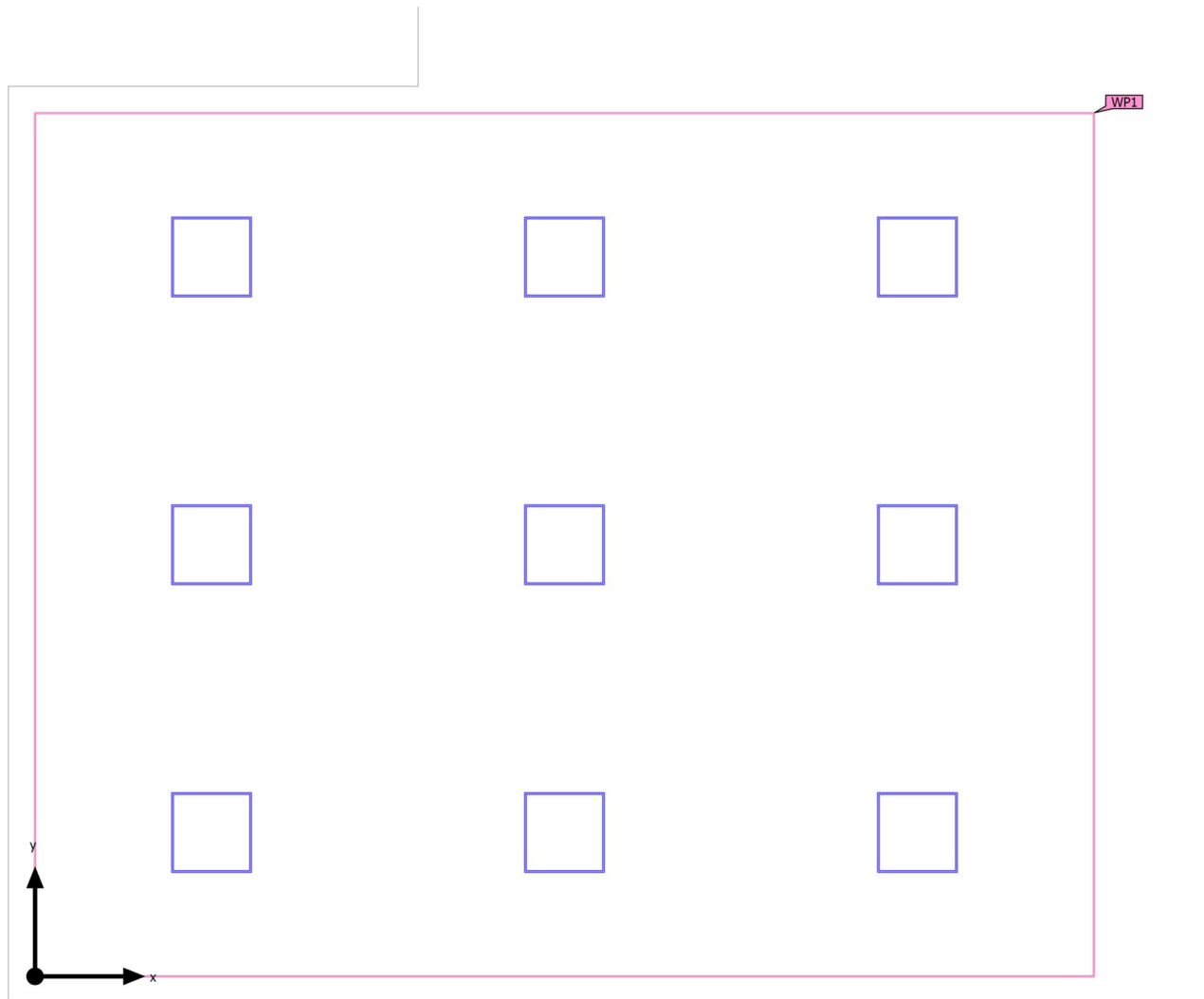
Luminous efficacy

119.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	$\Phi$	Luminous efficacy
9	SYLVANIA	0042872	START Panel 600x600 HE 4100Lm 830 LILO	34.0 W	4061 lm	119.4 lm/W

Building 1 · Storey 1 · Room1 (Light scene 1)

## Calculation objects



Building 1 · Storey 1 · Room1 (Light scene 1)

**Calculation objects**

## Working planes

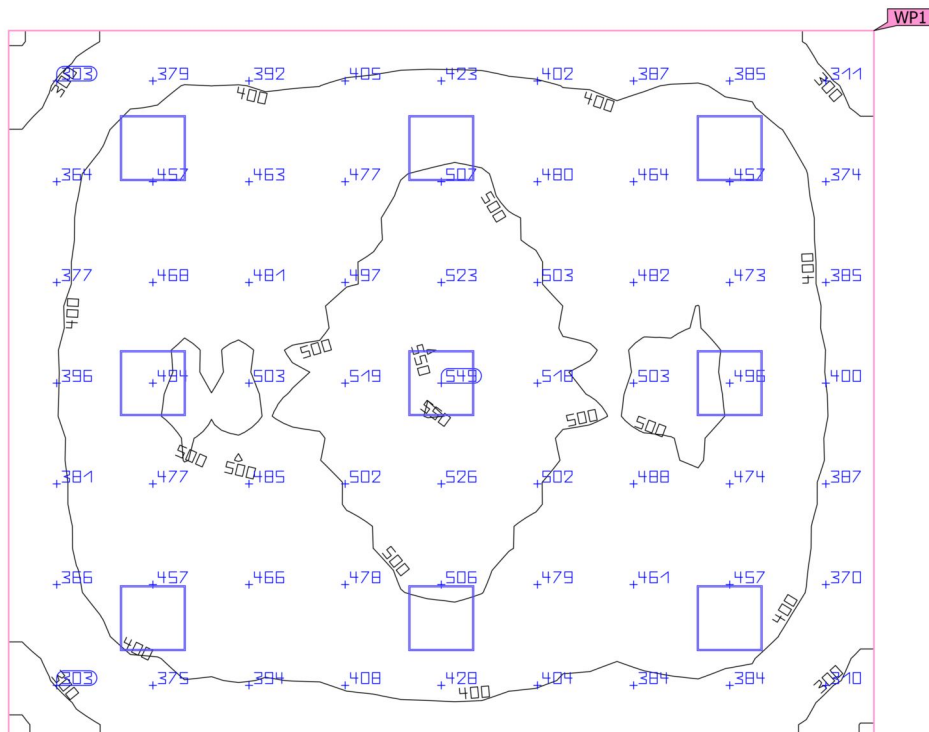
Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room1) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	437 lx ( $\geq 300$ lx) ✓	245 lx	550 lx	0.56 ( $\geq 0.50$ ) ✓	0.45	WP1

(1) Based on a rectangular space of 6.450 m x 7.910 m and SHR of 0.25.

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)



Building 1 · Storey 1 · Room1 (Light scene 1)

**Working plane (Room1)**

Properties	$\bar{E}$ (Target)	$E_{min}$	$E_{max}$	$U_o (g_1)$ (Target)	$g_2$	Index
Working plane (Room1)	437 lx	245 lx	550 lx	0.56	0.45	WP1
Perpendicular illuminance (adaptive)	(≥ 300 lx)			(≥ 0.50)		
Height: 0.800 m, Wall zone: 0.000 m	✓			✓		

Utilisation profile: Educational premises - Educational buildings (5.36.1 Classrooms, tutorial rooms)

## Glossary

### A

A	Formula symbol for a surface in the geometry
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### B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.
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### C

CCT	<p>(Engl. correlated colour temperature)</p> <p>Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators.</p> <p>Allocation of the light colours to the colour temperature ranges acc. to EN 12464-1:</p> <p>Light colour - colour temperature [K]  warm white (ww) &lt; 3,300 K  neutral white (nw) ≥ 3,300 – 5,300 K  daylight white (dw) &gt; 5,300 K</p>
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Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
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Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
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CRI	<p>(Engl. colour rendering index)</p> <p>Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995.</p> <p>The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.</p>
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## Glossary

### D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky.  Formula symbol: D (Engl. daylight factor) Unit: %
Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

### E

Energy evaluation	<p>Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx.</p> <p>The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight.</p> <p>The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.</p>
Eta ( $\eta$ )	<p>(light output ratio)</p> <p>The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed.</p> <p>Unit: %</p>

## Glossary

### G

$g_1$	Often also $U_o$ (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from $E_{min}$ to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
$g_2$	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of $E_{min}$ to $E_{max}$ and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

### I

<b>Illuminance</b>	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ( $lm/m^2 = lx$ ). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring.  Unit: Lux Abbreviation: lx Formula symbol: E
<b>Illuminance, adaptive</b>	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
<b>Illuminance, horizontal</b>	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter $E_h$ .
<b>Illuminance, perpendicular</b>	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.
<b>Illuminance, vertical</b>	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter $E_v$ .

### L

<b>LENI</b>	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193  Unit: $kWh/(m^2 \cdot a)$
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## Glossary

LLMF	<p>(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).</p>
LMF	<p>(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).</p>
LSF	<p>(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).</p>
Luminance	<p>Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive.</p> <p>Unit: Candela per square metre Abbreviation: cd/m<sup>2</sup> Formula symbol: L</p>
Luminous efficacy	<p>Ratio of the emitted luminous flux <math>\Phi</math> [lm] to the absorbed electrical power P [W] Unit: lm/W.</p> <p>This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).</p>
Luminous flux	<p>Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux.</p> <p>Unit: Lumen Abbreviation: lm Formula symbol: <math>\Phi</math></p>
Luminous intensity	<p>Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux <math>\Phi</math> that is emitted in a certain spherical angle <math>\Omega</math>. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit.</p> <p>Unit: Candela Abbreviation: cd Formula symbol: I</p>

## Glossary

### M

Maintenance factor	See MF
MF	<p>(Engl. maintenance factor)/acc. to CIE 97: 2005</p> <p>Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources.</p> <p>The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula <math>RMF \times LMF \times LLMF \times LSF</math>.</p>

### P

P	<p>(Engl. power)</p> <p>Electric power consumption</p> <p>Unit: watt</p> <p>Abbreviation: W</p>
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### R

$R_{(UG)} \max$	<p>Measure of the psychological glare in indoor spaces.</p> <p>In addition to the luminance of luminaires, the level of the <math>R_{(UG)}</math> value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible <math>R_{(UG)}</math>-values <math>R_{(UGL)}</math> for various indoor workplaces.</p>
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.
RMF	<p>(Engl. room maintenance factor)/acc. to CIE 97: 2005</p> <p>Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).</p>

### S

Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.
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## Glossary

### U

**UGR (max)**

(unified glare rating)

Measure for the psychological glare effect in interiors.

In addition to luminaire luminance, the UGR value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible UGR values for various indoor workplaces.

**UGR observer**

Calculation point in the room, for the DIALux the UGR value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).

### V

**Visual task area**

The area that is needed for carrying out the visual task in accordance with DIN EN 12464 -1. The height corresponds with the height at which the visual task is executed.

### W

**Wall zone**

Circumferential area between working plane and walls which is not taken into account for the calculation.

**Working plane**

Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.