

# CUKRARNA

Installation : HODNIK

Project number : 412/16

Customer : SCAPELAB

Processed by : SCAPELAB

Date : 16.11.2016

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.

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
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1 Luminaire data

1.1 Zumtobel, SCUBA LED5600-840 PC LDO V2A [STD] (42182987)

1.1.1 Data sheet

Manufacturer: Zumtobel

42182987 surface mounted SCUBA LED5600-840 PC LDO V2A [STD]

LED moisture-proof diffuser luminaire total power: 44 W, Slave luminaire for DALI control (DALI only) with LED converter; light grey GRP (Glasfibre Reinforced Polyester) housing, halogen-free; Polycarbonate (PC) diffuser, with high impact strength, UV-resistant, made as a single injection-moulded piece patterned internally with prisms; not suitable for through-wiring with H05VV or NYM cable. Sealed optical system fitted to luminaire housing without tools. LED service life lasts 50000 h before luminous flux is reduced to 90% of the initial value. Chromaticity tolerance (initial MacAdam): 3. Luminaire luminous flux: 5600 lm, Luminaire efficacy: 127 lm/W. Colour rendering Ra > 80, colour temperature 4000 K. Fitted to ceiling, wall or trunking using V2A standard spring clips; galvanized sheet steel reflector painted white; 5-pole connector terminal. stainless steel fasteners. ambient temperature: -20°C to +35°C. Approved for indoor use or use in outdoor areas protected by a roof (see installation instructions). Luminaire wired with halogen-free leads. Complies with International Food Standard specifications. Degree of protection: IP65, class of protection: SC1, 850°C glow-wire tested, dimensions: 1594 x 112 x 112 mm; weight: 3.5 kg.

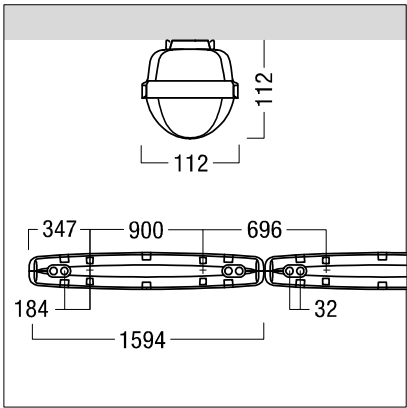
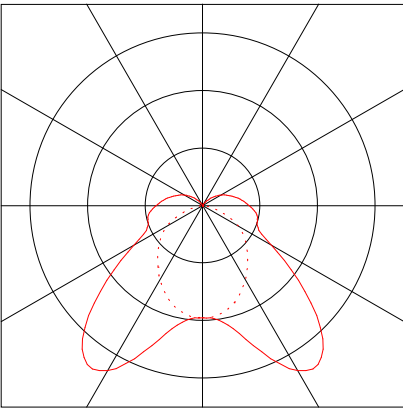
Luminaire data

Absolute Photometry  
Luminaire efficacy : 127.27 lm/W  
Classification : B31 ↓88.4% ↑11.6%  
CIE Flux Codes : 41 74 90 88 100  
UGR 4H 8H : 23.3 / 19.6  
Power : 44 W  
Luminous flux : 5600 lm

Equipped with

Quantity : 1  
Designation : LED-Z42182990  
Colour : Unknown  
Colour reproduction : 80

Dimensions : 1594 mm x 112 mm x 112 mm



Object : CUKRARNA  
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## 1 Luminaire data

### 1.2 Zumtobel, RESCLITE C ESCAPE AD NT1 WH [STD] (42180386)

#### 1.2.1 Data sheet

Manufacturer: Zumtobel

#### 42180386 surface mounted RESCLITE C ESCAPE AD NT1 WH [STD]

LED Safety luminaire for escape-route illumination with minimum output 1 lx; surface mounted; Luminaire with local battery supply for 1h emergency lighting for maintained or non-maintained mode, with automatic or central testing of emergency lighting function; room height 2.2 to 7 m; high power LED, cool white; large die-cast aluminium heat sink ensures optimum thermal management; reflector and lens made of polycarbonate (PC); luminaire housing made of die-cast aluminium in powder coated white finish, RAL 9016; gear tray made of galvanised sheet steel; housing can be installed quickly on gear tray without tools; tool-free maintenance; through-wiring plug-in terminals for wire cross-sections up to 2.5 mm<sup>2</sup>; side cable-entry possible; luminaire total power: 4 W; power supply: 230V AC; rotary switch for mechanical address-setting; degree of protection: IP40, class of protection: SC1; Dimensions: 146 x 146 x 51 mm; weight: 0.65 kg; Luminaire wired with halogen-free leads

#### Luminaire data

Absolute Photometry  
Luminaire efficacy : 34.5 lm/W  
Classification : A10 ↓99.4% ↑0.6%  
CIE Flux Codes : 27 48 92 99 100  
UGR 4H 8H : 39.9 / 16.8  
Power : 4 W  
Luminous flux : 138 lm

#### Equipped with

Quantity : 1  
Designation : LED-Z660  
Colour : Unknown  
Colour reproduction : 80

Dimensions : 146 mm x 146 mm x 51 mm



Object : CUKRARNA  
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## 1 Luminaire data

### 1.3 ZUMTOBEL, ONLITE ERI (70446584 (STD - Standard))

#### 1.3.1 Data sheet

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Manufacturer: ZUMTOBEL

70446584 (STD - Standard)

ONLITE ERI

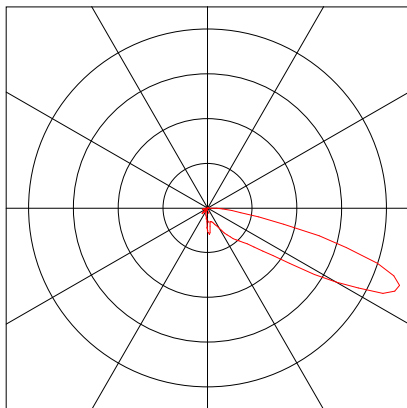
#### Luminaire data

Luminaire efficiency : 100%  
Luminaire efficacy : 34 lm/W  
Classification : A10 ↓99.6% ↑0.4%  
CIE Flux Codes : 23 48 87 100 100  
UGR 4H 8H : 47.8 / 20.8  
Power : 1 W  
Luminous flux : 34 lm

#### Equipped with

Quantity : 1  
Designation : LED-Z396  
0C8W  
Colour :  
Luminous flux : 34 lm

Dimensions : 15 mm x 15 mm x 2 mm

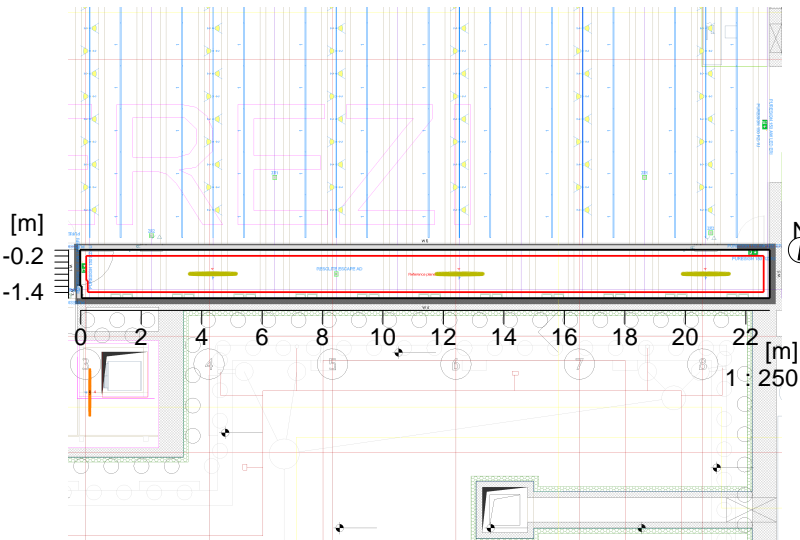


Object : CUKRARNA  
Installation : HODNIK  
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2 01\_splošna osvetlitev

2.1 Description, 01\_splošna osvetlitev

2.1.1 Floor plan



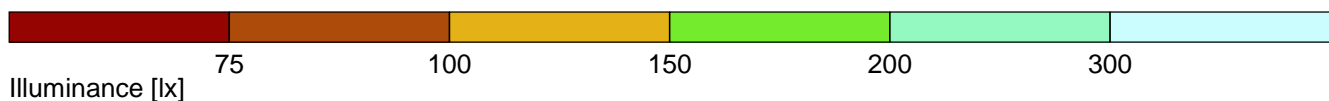
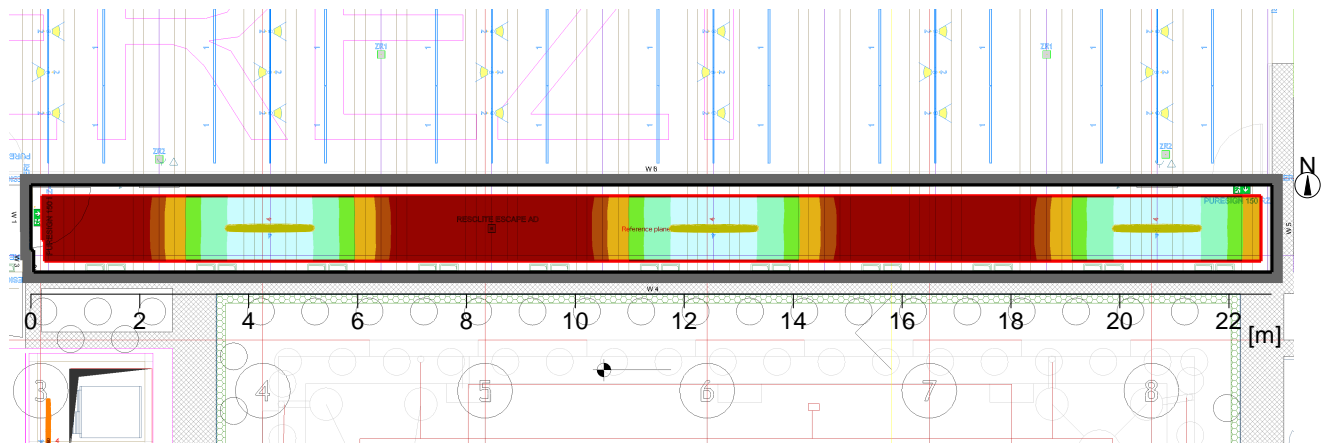
Wall	x	y	Length	Reflectance
1	66.42 m	188.53 m	1.19 m	50.0 %
2	66.47 m	188.52 m	0.05 m	50.0 %
3	66.47 m	188.13 m	0.40 m	50.0 %
4	89.19 m	188.13 m	22.73 m	50.0 %
5	89.19 m	189.72 m	1.60 m	50.0 %
6	66.42 m	189.72 m	22.78 m	50.0 %
Floor				20.0 %
Ceiling				70.0 %
Room height		2.50 m		
Height of reference plane		0.75 m		

Object : CUKRARNA  
 Installation : HODNIK  
 Project number : 412/16  
 Date : 16.11.2016

## 2 01\_splošna osvetlitev

### 2.2 Summary, 01\_splošna osvetlitev

#### 2.2.1 Result overview, Evaluation area 1



#### General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.50 m
Maintenance factor	0.80
Total luminous flux of all lamps	16800 lm
Total power	132.0 W
Total power per area (36.34 m <sup>2</sup> )	3.63 W/m <sup>2</sup> (2.32 W/m <sup>2</sup> /100lx)

#### Evaluation area 1

#### Reference plane 1.1

	Horizon
Em	156 lx
Emin	11 lx
Emin/Eav (Uo)	0.07
Emin/Emax (Ud)	0.03
UGR (1.3H 19.0H)	<=22.1
Position	0.75 m

#### Type No.\Make

1	3	<b>Zumtobel</b>
		Order No. : 42182987
		Luminaire name : SCUBA LED5600-840 PC LDO V2A [STD]
		Equipment : 1 x LED-Z42182990 44 W / 5600 lm

Object : CUKRARNA  
Installation : HODNIK  
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## 2 01\_splošna osvetlitev

### 2.3 Calculation results, 01\_splošna osvetlitev

#### 2.3.1 Table, Reference plane 1.1 (E)

[m]	135	134	135
	174	172	174
22	220	217	220
	270	267	269
	318	317	318
	360	360	360
	389	389	388
	[399]	398	[399]
	389	389	389
20	362	361	362
	319	318	320
	270	268	271
	221	219	222
	175	174	177
	136	136	137
	106	106	107
	83	83	84
	65	66	66
18	52	54	53
	43	44	43
	36	37	37
	31	32	32
	28	29	28
	26	27	27
	26	27	26
	26	27	26
16	28	29	28
	31	32	31
	35	36	35
	42	42	42

Part1

Height of the reference plane

		: 0.75 m
Average illuminance	Eav	: 156 lx
Minimum illuminance	Emin	: 11 lx
Maximum illuminance	Emax	: 399 lx
Uniformity Uo	Emin/Eav	: 1 : 13.70 (0.07)
Diversity Ud	Emin/Emax	: 1 : 34.95 (0.03)

Object : CUKRARNA  
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2 01\_splošna osvetlitev

2.3 Calculation results, 01\_splošna osvetlitev

2.3.1 Table, Reference plane 1.1 (E)

	50	51	50
	63	63	63
	79	79	79
	101	101	101
14	130	129	129
	167	164	166
	211	207	210
	259	256	258
	308	307	307
	353	351	352
	383	382	382
	396	395	396
12	390	390	391
	364	364	365
	326	324	326
	278	276	279
	228	226	229
	181	179	181
	141	140	142
	110	109	110
10	86	86	85
	67	68	67
	54	55	54
	44	45	44
	37	38	37
	32	33	32
	28	29	28
	26	27	26
8	25	26	25
	26	26	26
	27	28	27

Part2



Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

2 01\_splošna osvetlitev

2.3 Calculation results, 01\_splošna osvetlitev

2.3.1 Table, Reference plane 1.1 (E)

	30	30	29
	33	34	33
	39	40	39
	47	48	47
	58	59	58
	73	73	73
	93	93	93
6	120	119	121
	155	153	155
	197	195	198
	245	244	246
	296	294	297
	341	340	342
	375	375	376
	392	393	394
4	390	391	392
	370	369	371
	333	332	335
	287	285	289
	235	234	237
	188	186	189
	147	145	148
	114	113	114
2	88	88	88
	68	69	68
	54	54	54
	43	44	43
	35	35	34
	29	29	28
	24	24	23

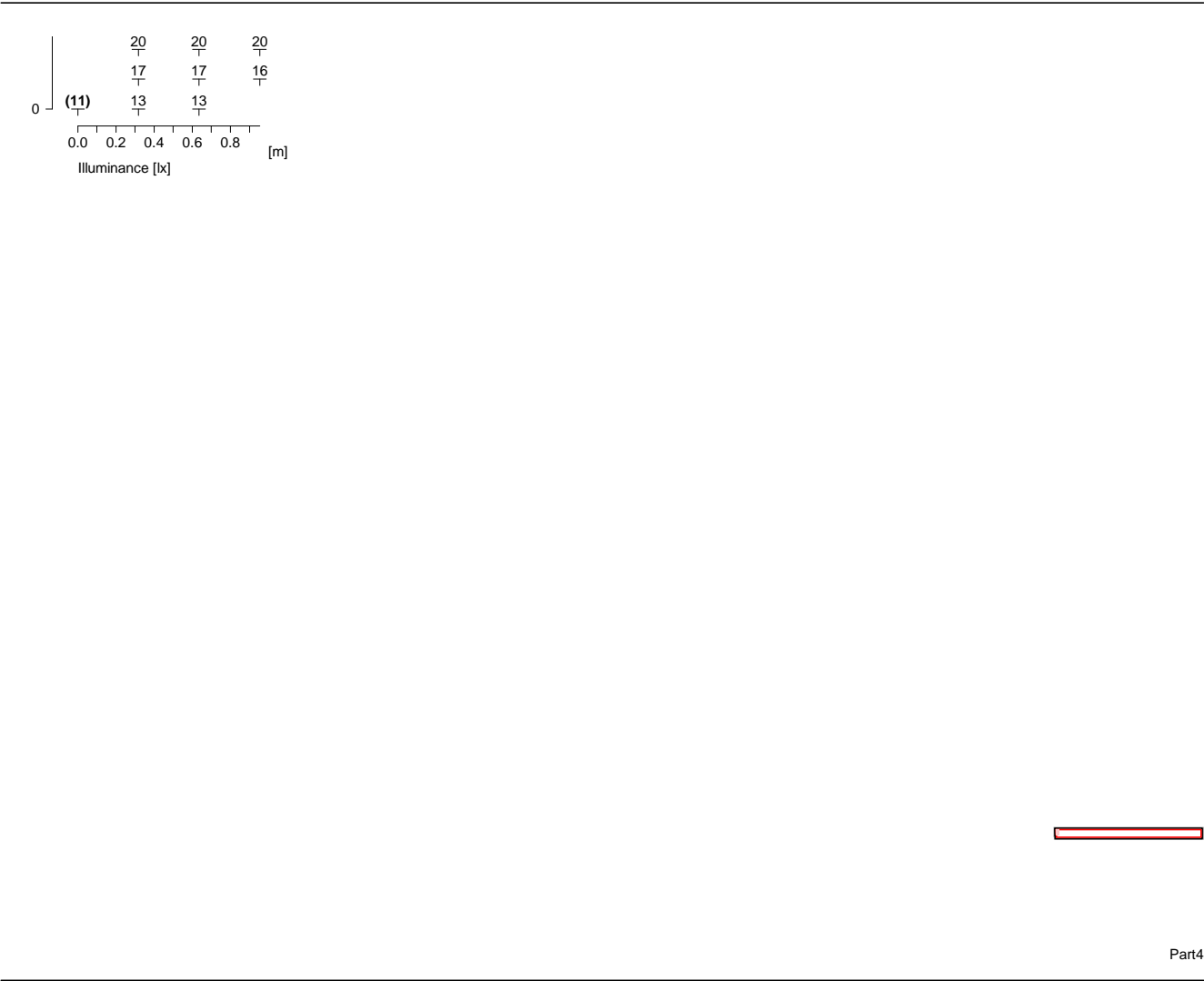
Part3

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

2 01\_splošna osvetlitev

2.3 Calculation results, 01\_splošna osvetlitev

2.3.1 Table, Reference plane 1.1 (E)

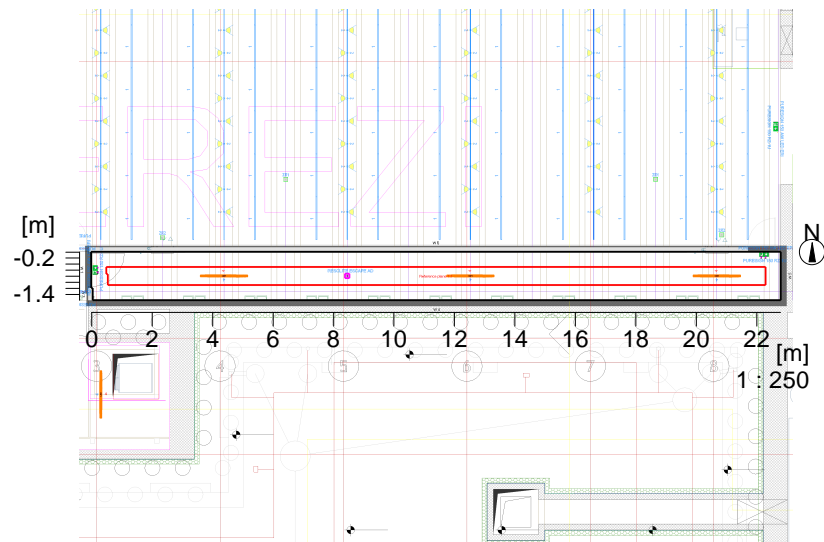


Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
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3 02\_varnostna osvetlitev

3.1 Description, 02\_varnostna osvetlitev

3.1.1 Floor plan



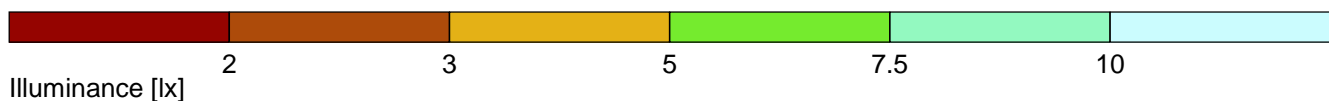
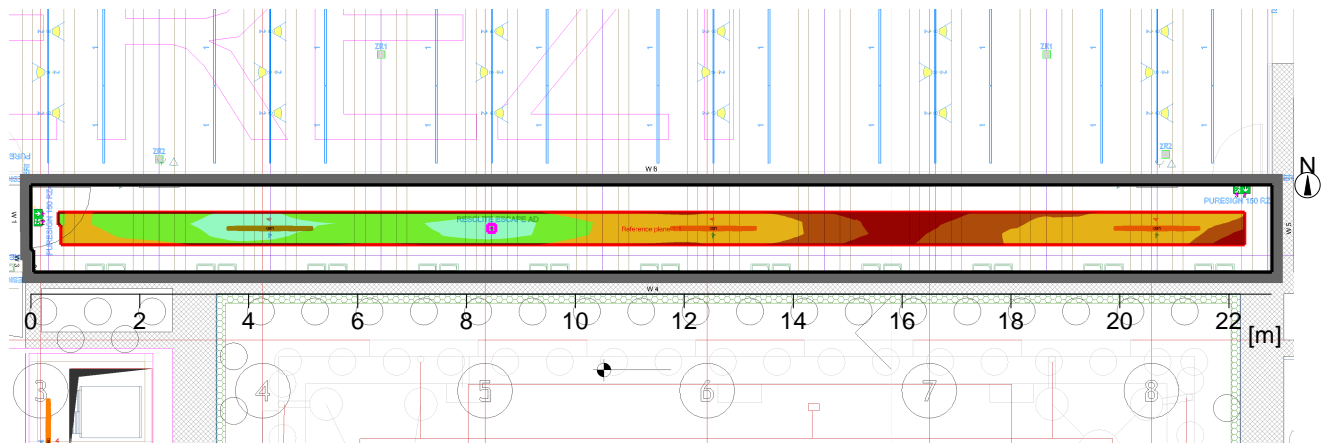
Wall	x	y	Length	Reflectance
1	66.42 m	188.53 m	1.19 m	50.0 %
2	66.47 m	188.52 m	0.05 m	50.0 %
3	66.47 m	188.13 m	0.40 m	50.0 %
4	89.19 m	188.13 m	22.73 m	50.0 %
5	89.19 m	189.72 m	1.60 m	50.0 %
6	66.42 m	189.72 m	22.78 m	50.0 %
Floor				20.0 %
Ceiling				70.0 %
Room height		2.50 m		
Height of reference plane		0.03 m		

Object : CUKRARNA  
 Installation : HODNIK  
 Project number : 412/16  
 Date : 16.11.2016

### 3 02\_varnostna osvetlitev

#### 3.2 Summary, 02\_varnostna osvetlitev

##### 3.2.1 Result overview, Evaluation area 1



#### General

Calculation algorithm used  
 Maintenance factor

Average indirect fraction  
 0.80

Total luminous flux of all lamps  
 Total power  
 Total power per area (36.34 m<sup>2</sup>)

274 lm  
 8.0 W  
 0.22 W/m<sup>2</sup> (4.38 W/m<sup>2</sup>/100lx)

#### Evaluation area 1

#### Reference plane 1.1

Horizontal  
 E<sub>m</sub> 5.03 lx  
 E<sub>min</sub> 1.79 lx  
 E<sub>min</sub>/E<sub>av</sub> (U<sub>o</sub>) 0.36  
 E<sub>min</sub>/E<sub>max</sub> (U<sub>d</sub>) 0.18  
 Position 0.03 m

#### Type No.\Make

2	1	<b>Zumtobel</b>	
		Order No.	: 42180386
		Luminaire name	: RESCLITE C ESCAPE AD NT1 WH [STD]
		Equipment	: 1 x LED-Z660 4 W / 138 lm

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

### 3 02\_varnostna osvetlitev

#### 3.2 Summary, 02\_varnostna osvetlitev

##### 3.2.1 Result overview, Evaluation area 1

3	4	<b>ZUMTOBEL</b>	
		Order No.	: 70446584 (STD - Standard)
		Luminaire name	: ONLITE ERI
		Equipment	: 1 x LED-Z396 0C8W 1 W / 34 lm

Object : CUKRARNA  
 Installation : HODNIK  
 Project number : 412/16  
 Date : 16.11.2016

### 3 02\_varnostna osvetlitev

#### 3.3 Calculation results, 02\_varnostna osvetlitev

##### 3.3.1 Table, Reference plane 1.1 (E)

	2.86	1.92
	3.15	2.15
	3.31	2.38
	3.45	2.67
	3.61	3.01
	3.83	3.31
	4.09	3.6
	4.34	3.91
	4.46	4.13
	4.4	4.25
	4.19	4.17
[m]	4.02	4.02
20	3.83	3.86
	3.63	3.66
	3.51	3.5
	3.43	3.41
	3.3	3.36
	3.26	3.34
	3.22	3.3
	3.14	3.28
	3.13	3.27
	3.13	3.31
	3.13	3.41
	3.2	3.39
18	3.15	3.34
	2.99	3.26
	2.88	3.17
	2.77	3.15
	2.7	3.03
	2.58	2.9

Part1

Height of the reference plane



	Eav	: 0.03 m
Average illuminance	Eav	: 5.03 lx
Minimum illuminance	Emin	: 1.79 lx
Maximum illuminance	Emax	: 9.8 lx
Uniformity Uo	Emin/Eav	: 1 : 2.81 (0.36)
Diversity Ud	Emin/Emax	: 1 : 5.48 (0.18)

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

3 02\_varnostna osvetlitev

3.3 Calculation results, 02\_varnostna osvetlitev

3.3.1 Table, Reference plane 1.1 (E)

16	2.45	2.77	
	2.34	2.64	
	2.23	2.51	
	2.13	2.4	
	2.04	2.29	
	1.98	2.21	
	1.91	2.08	
	1.86	2.02	
	1.82	1.97	
	1.8	1.93	
	(1.79)	1.91	
	(1.79)	1.9	
	1.81	1.91	
	1.84	1.94	
	1.9	1.98	
	1.98	2.04	
14	2.06	2.13	
	2.17	2.23	
	2.29	2.35	
	2.42	2.48	
	2.58	2.63	
	2.74	2.79	
	2.92	2.97	
	3.15	3.19	
	3.4	3.44	
	3.69	3.73	
	3.99	4.03	
	4.29	4.33	
	4.61	4.65	
	4.81	4.84	
	4.84	4.87	

Part2

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

3 02\_varnostna osvetlitev

3.3 Calculation results, 02\_varnostna osvetlitev

3.3.1 Table, Reference plane 1.1 (E)

12	4.75	4.77
	4.67	4.69
	4.65	4.67
	4.38	4.39
	4.08	4.09
	3.97	3.97
	4.02	4.02
	4.14	4.13
	4.24	4.22
	4.35	4.32
10	4.48	4.44
	4.65	4.6
	4.78	4.13
	4.32	4.24
	4.45	4.36
	4.65	4.54
	4.86	4.74
	5.13	5
	5.47	5.33
	5.9	5.73
8	6.29	6.1
	6.67	6.45
	7.02	6.79
	7.33	7.1
	7.77	7.53
	8.09	7.82
	8.39	8.14
	8.65	8.37
	8.84	8.56
	8.92	8.66
	8.85	8.56

Part3



Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

3 02\_varnostna osvetlitev

3.3 Calculation results, 02\_varnostna osvetlitev

3.3.1 Table, Reference plane 1.1 (E)

	8.74	8.46	
	8.58	8.28	
	8.42	8.02	
	8.14	7.8	
	7.89	7.41	
	7.72	7.25	
	7.46	7	
	7.28	6.82	
	7.05	6.58	
	6.84	6.36	
6	6.7	6.2	
	6.65	6.14	
	7.18	6.11	
	7.22	6.11	
	7.33	6.14	
	7.4	6.18	
	7.47	6.23	
	7.53	6.29	
	7.63	6.37	
	7.75	7.03	
	7.9	7.15	
	8.03	7.25	
	8.28	7.45	
	8.75	7.86	
4	9.29	8.35	
	9.32	8.47	
	9.51	8.64	
	9.7	8.79	
	[9.8]	8.87	
	9.7	8.76	
	9.13	8.27	

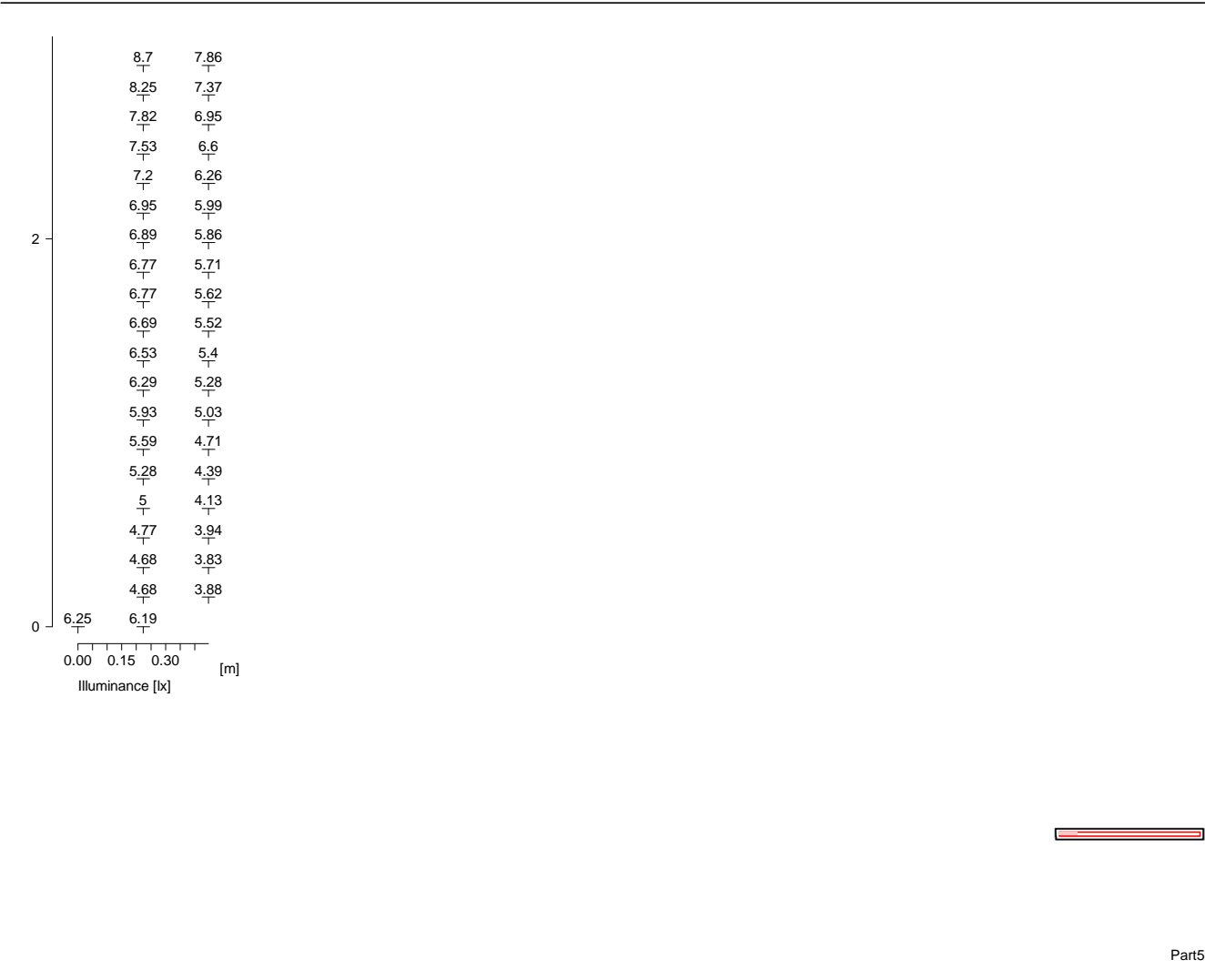
Part4

Object : CUKRARNA  
Installation : HODNIK  
Project number : 412/16  
Date : 16.11.2016

3 02\_varnostna osvetlitev

3.3 Calculation results, 02\_varnostna osvetlitev

3.3.1 Table, Reference plane 1.1 (E)



Part5