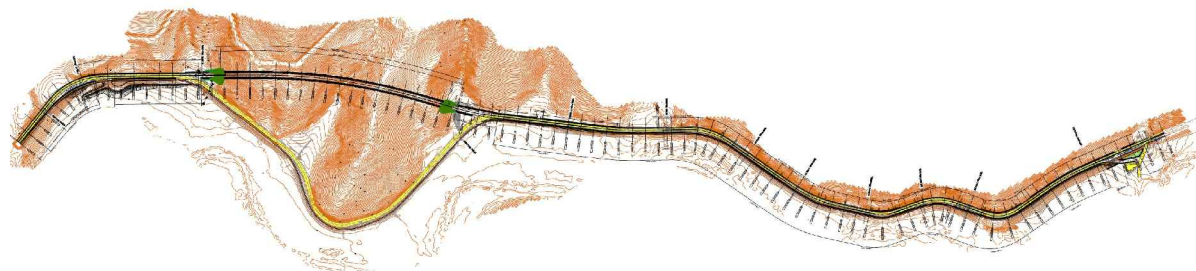


S.S. 685 "DELLE TRE VALLI UMBRE"

RETTIFICA DEL TRACCIATO E ADEGUAMENTO ALLA SEZ. TIPO C2 DAL km 41+500 al km 51+500
STRALCIO 1 - LAVORI DI ADEGUAMENTO ALLA SEZ. TIPO C2 DAL km 49+300 al km 51+500



PROGETTO DEFINITIVO

IMPRESA ESECUTRICE



GRUPPO DI LAVORO ANAS

PROGETTAZIONE



RESPONSABILE DEI LAVORI

IL PROGETTISTA

Ing. Valerio BAJETTI
Ordine degli Ingegneri della
provincia di Roma n°A26211
(Diretto tecnico Ingegneria del Territorio)



IL COORDINATORE DELLA SICUREZZA
IN FASE DI PROGETTAZIONE

Ing. Fabrizio BAJETTI
Ordine degli Ingegneri della
provincia di Roma n°10112
(Diretto tecnico Ingegneria del Territorio)



RESPONSABILE DEL PROCEDIMENTO

Ing. Alessandro MICHELI

PROTOCOLLO

DATA

N. ELABORATO:

F108

CAPITOLO F1 - IMPIANTI GALLERIA RELAZIONE ILLUMINOTECNICA GALLERIA

CODICE PROGETTO

NOME FILE

REVISIONE

SCALA:

PROGETTO

PG0374D2201

CODICE
ELAB.

V01IM00IMPRE01

A

D

C

B

A

PRIMA EMISSIONE

FEBBRAIO
2023

ING. EMANUELE
ROSSI

ING. GIANCARLO
TANZI

ING. VALERIO
BAJETTI

REV.

DESCRIZIONE

DATA

REDATTO

VERIFICATO

APPROVATO

ANAS__Galleria SP209

Installation :

Project number : 400797819

Customer :

Processed by :

I riferimenti alle marche sono puramente indicativi, l'impresa potrà scegliere qualunque marca rispettando però le caratteristiche tecniche riportate nel presente documento

Disclaimer

In practice the values in this report may vary due to tolerances. Regarding LED's, a tolerance of +/-10% is applicable. As the theoretical road surface reflection used in this calculation is almost certain to differ from the instantaneous reflectance on site, calculated luminance values (cd/m²) are notional.

This document contains information regarding feasibility for the purposes of a proposal. The information contained in this report does not constitute a 'design' for the purposes of the Construction, Design and Management Regulations, therefore Signify do not accept or assume the role of 'designer' when submitting this information for whatever purpose the information in this document is used. Signify provides this lighting proposal based solely on information provided by the Customer. The Customer is therefore responsible for ensuring that the proposal can be adopted as a "design" i.e. be safely implemented in compliance with any laws and regulations. Signify will not be held liable for any risk associated with the implementation of the proposal to the extent that Signify has not been provided with the information required to undertake a comprehensive risk assessment.

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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1 Luminaire data

1.1 PHILIPS, BGP237 T25 DSM35 / LED... (!ETO TubePoint ...)

1.1.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Large

BGP237 T25 DSM35 / LED630-4S 408W / CRI75

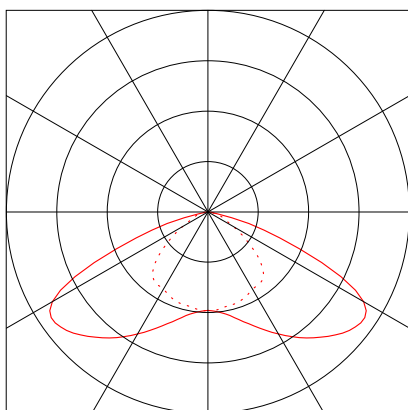
Luminaire data

Luminaire efficiency : 87%
Luminaire efficacy : 136.2 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 87
UGR 4H 8H : 32.6 / 25.8
Power : 407.6 W
Luminous flux : 55514.7 lm

Equipped with

Quantity : 1
Designation : LED630-4S
CRI75
Colour : 4000
Luminous flux : 63810 lm
Colour reproduction : 75

Dimensions : 486 mm x 1091 mm x 90 mm



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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1 Luminaire data

1.2 PHILIPS, BGP236 T25 DSM35 / LED... (!ETO TubePoint ...)

1.2.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Medium

BGP236 T25 DSM35 / LED420-4S 275W / CRI75

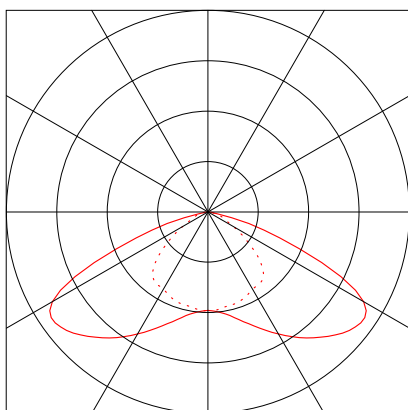
Luminaire data

Luminaire efficiency : 87%
Luminaire efficacy : 135.96 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 87
UGR 4H 8H : 32.6 / 25.9
Power : 274.7 W
Luminous flux : 37348.2 lm

Equipped with

Quantity : 1
Designation : LED420-4S
CRI75
Colour : 4000
Luminous flux : 42929 lm
Colour reproduction : 75

Dimensions : 486 mm x 727 mm x 90 mm



Object : ANAS__Galleria SP209
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1 Luminaire data

1.3 PHILIPS, BGP235 T25 DSM35 / LED... (!ETO TubePoint ...)

1.3.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Small

BGP235 T25 DSM35 / LED210-4S 139W / CRI75

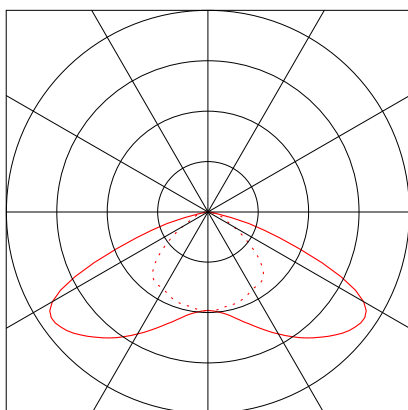
Luminaire data

Luminaire efficiency : 87%
Luminaire efficacy : 135.77 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 87
UGR 4H 8H : 32.6 / 25.9
Power : 139.2 W
Luminous flux : 18899 lm

Equipped with

Quantity : 1
Designation : LED210-4S
CRI75
Colour : 4000
Luminous flux : 21723 lm
Colour reproduction : 75

Dimensions : 486 mm x 364 mm x 90 mm



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023

1 Luminaire data

1.4 PHILIPS, BGP235 T25 DSM35 / LED... (!ETO TubePoint ...)

1.4.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Small

BGP235 T25 DSM35 / LED105-4S 66W / CRI75

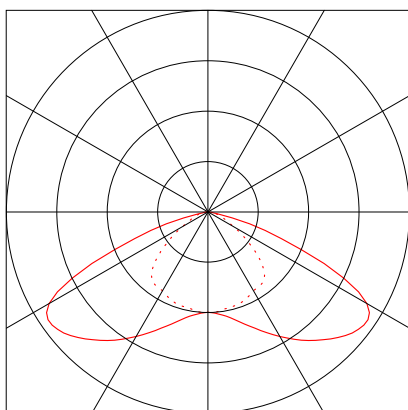
Luminaire data

Luminaire efficiency : 88%
Luminaire efficacy : 145.45 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 88
UGR 4H 8H : 30.3 / 23.6
Power : 65.6 W
Luminous flux : 9541.8 lm

Equipped with

Quantity : 1
Designation : LED105-4S
CRI75
Colour : 4000
Luminous flux : 10843 lm
Colour reproduction : 75

Dimensions : 486 mm x 364 mm x 90 mm



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023

1 Luminaire data

1.5 PHILIPS, BGP235 T25 DSM35 / LED... (!ETO TubePoint ...)

1.5.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Small

BGP235 T25 DSM35 / LED58-4S 37W / CRI75

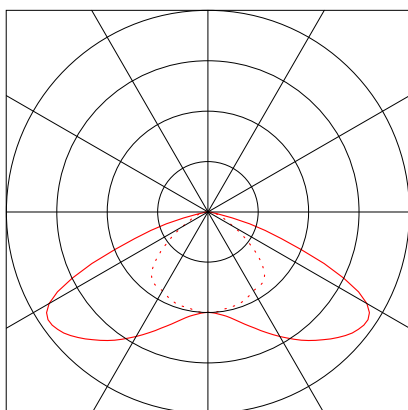
Luminaire data

Luminaire efficiency : 88%
Luminaire efficacy : 141.08 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 88
UGR 4H 8H : 28.2 / 21.5
Power : 37.3 W
Luminous flux : 5262.4 lm

Equipped with

Quantity : 1
Designation : LED58-4S
CRI75
Colour : 4000
Luminous flux : 5980 lm
Colour reproduction : 75

Dimensions : 486 mm x 364 mm x 90 mm



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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1 Luminaire data

1.6 PHILIPS, BGP235 T25 DSM35 / LED... (!ETO TubePoint ...)

1.6.1 Data sheet

Manufacturer: PHILIPS

!ETO TubePoint Gen2 Small

BGP235 T25 DSM35 / LED58-4S 37W / CRI75

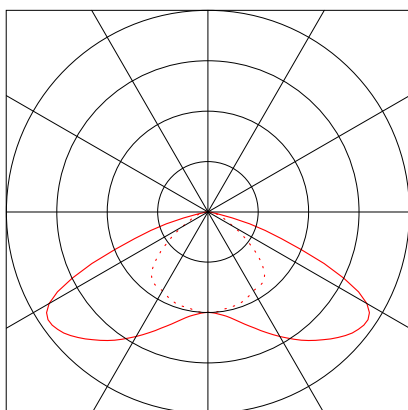
Luminaire data

Luminaire efficiency : 88%
Luminaire efficacy : 141.08 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 39 79 99 100 88
UGR 4H 8H : 28.2 / 21.5
Power : 37.3 W
Luminous flux : 5262.4 lm

Equipped with

Quantity : 1
Designation : LED58-4S
CRI75
Colour : 4000
Luminous flux : 5980 lm
Colour reproduction : 75

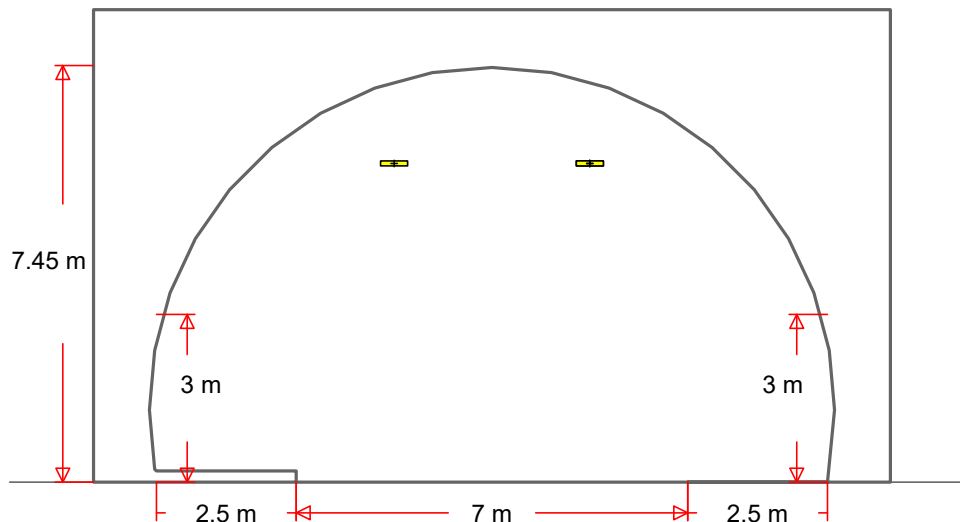
Dimensions : 486 mm x 364 mm x 90 mm



2 Galleria SP209__dir SUD

2.1 Description, Galleria SP209__dir SUD

2.1.1 Project data



Geometry tunnel

Length of the tunnel	:	490 m
Length of the tunnel (calculation model)	:	490 m
Height of the tunnel	:	7.45 m

Width of the carriageway	:	7 m
Number of lanes	:	2
Covering / material	:	CIE C2, q0 = 0.056
Marginal strip right	:	2.5 m
Marginal strip left	:	2.5 m

Height of the wall (right)	:	3 m
Covering / material	:	diffus 40%

Height of the wall (left)	:	3 m
Covering / material	:	diffus 40%

Calculation specifications

Speed	:	80 km/h
Length of the threshold zone	:	109 m
Luminance threshold zone	:	164.99 cd/m ²
Luminance interior zone	:	3 cd/m ²

Object : ANAS__Galleria SP209
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2 Galleria SP209__dir SUD

2.1 Description, Galleria SP209__dir SUD

2.1.1 Project data

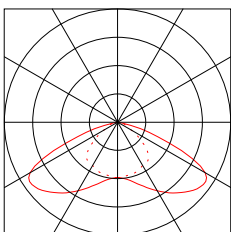
LDC in use

1



PHILIPS

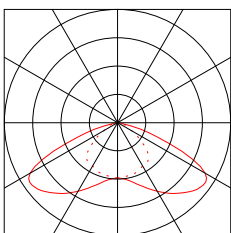
Order No. : !ETO TubePoint Gen2 Large
Luminaire name : BGP237 T25 DSM35 / LED630-4S 408W / CRI75
Equipment : 1 x LED630-4S CRI75 407.6 W / 63810 lm
Maintenance factor: 0.80



2



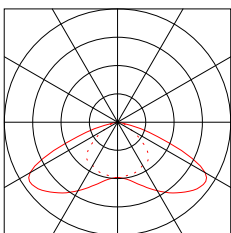
Order No. : !ETO TubePoint Gen2 Medium
Luminaire name : BGP236 T25 DSM35 / LED420-4S 275W / CRI75
Equipment : 1 x LED420-4S CRI75 274.7 W / 42929 lm
Maintenance factor: 0.80



3



Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED210-4S 139W / CRI75
Equipment : 1 x LED210-4S CRI75 139.2 W / 21723 lm
Maintenance factor: 0.80




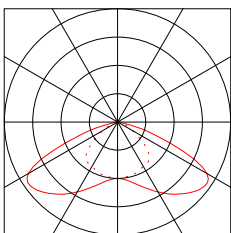
Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023


2 Galleria SP209__dir SUD

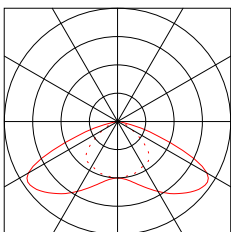
2.1 Description, Galleria SP209__dir SUD


2.1.1 Project data

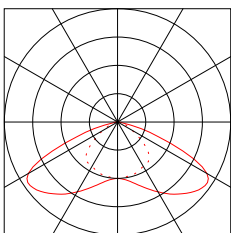
4  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED105-4S 66W / CRI75
Equipment : 1 x LED105-4S CRI75 65.6 W / 10843 lm
Maintenance factor: 0.80



5  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
Maintenance factor: 0.80



6  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
Maintenance factor: 0.80



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

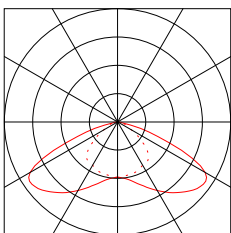
Adaptation LDC in use

PHILIPS

1 59 x



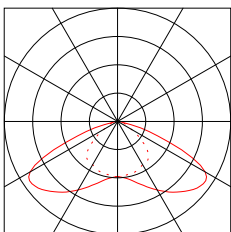
Order No. : !ETO TubePoint Gen2 Large
Luminaire name : BGP237 T25 DSM35 / LED630-4S 408W / CRI75
Equipment : 1 x LED630-4S CRI75 407.6 W / 63810 lm
Maintenance factor: 0.80



2 5 x



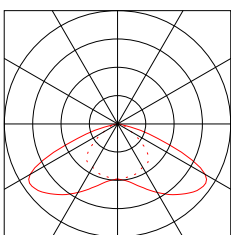
Order No. : !ETO TubePoint Gen2 Medium
Luminaire name : BGP236 T25 DSM35 / LED420-4S 275W / CRI75
Equipment : 1 x LED420-4S CRI75 274.7 W / 42929 lm
Maintenance factor: 0.80



3 14 x



Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED210-4S 139W / CRI75
Equipment : 1 x LED210-4S CRI75 139.2 W / 21723 lm
Maintenance factor: 0.80

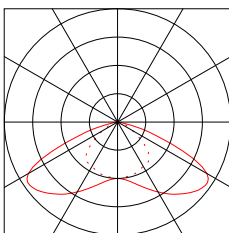


Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
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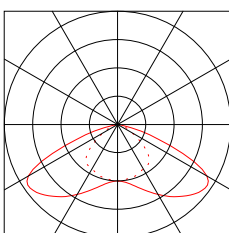
2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

4 25 x Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED105-4S 66W / CRI75
 Equipment : 1 x LED105-4S CRI75 65.6 W / 10843 lm
 Maintenance factor: 0.80



5 43 x Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
 Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
 Maintenance factor: 0.80



Row of luminaires: rinforzo DX (3.1)

Number of luminaires: 146

System power (total): 30.6kW

Basic position: x=4.50m y=1.75m, z=5.70m

-variable distances-

Rotation: z=0.0° C0=0.0° C90=0.0°

Nr.	Pos.	X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1		4.50	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
2		5.96	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
3		7.42	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
4		8.88	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
5		10.34	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
6		11.80	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
7		13.26	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
8		14.72	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
9		16.18	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
10		17.64	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
11		19.10	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
12		20.56	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
13		22.02	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
14		23.48	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
15		24.94	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
16		26.40	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
17		27.86	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
18		29.32	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
19		30.78	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
20		32.24	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
21		33.70	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

22	35.16	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
23	36.62	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
24	38.08	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
25	39.54	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
26	41.00	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
27	42.46	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
28	43.92	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
29	45.38	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
30	46.84	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
31	48.30	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
32	49.76	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
33	51.22	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
34	52.68	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
35	54.14	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
36	55.60	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
37	57.09	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
38	58.60	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
39	60.15	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
40	61.72	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
41	63.32	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
42	64.96	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
43	66.63	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
44	68.34	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
45	70.09	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
46	71.58	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
47	73.72	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
48	75.60	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
49	77.54	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
50	79.54	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
51	81.61	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
52	83.04	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
53	85.95	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
54	88.25	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
55	90.65	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
56	93.16	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
57	96.41	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
58	98.61	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
59	101.59	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
60	103.73	274.7W / 42.93kln1	100%	25%	0%	0%	0%	0%	0%	0%
61	105.98	274.7W / 42.93kln3	100%	25%	37%	25%	50%	25%	0%	0%
62	108.38	274.7W / 42.93kln2	100%	25%	37%	25%	0%	0%	0%	0%
63	110.91	274.7W / 42.93kln1	100%	25%	0%	0%	0%	0%	0%	0%
64	113.66	274.7W / 42.93kln3	100%	25%	37%	25%	50%	25%	0%	0%
65	115.19	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
66	116.76	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
67	117.90	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
68	120.12	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
69	121.93	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
70	123.84	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
71	125.84	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
72	127.96	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
73	130.59	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
74	132.54	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

75	135.03	139.2W / 21.72klm1	100%	25%	0%	0%	0%	0%	0%	0%
76	137.66	139.2W / 21.72klm3	100%	25%	37%	25%	50%	25%	0%	0%
77	140.46	139.2W / 21.72klm2	100%	25%	37%	25%	0%	0%	0%	0%
78	143.42	139.2W / 21.72klm1	100%	25%	0%	0%	0%	0%	0%	0%
79	145.00	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
80	146.60	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
81	148.26	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
82	149.97	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
83	151.74	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
84	153.56	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
85	155.45	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
86	157.41	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
87	159.43	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
88	161.53	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
89	163.71	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
90	165.97	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
91	168.32	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
92	170.76	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
93	173.29	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
94	176.53	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
95	178.69	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
96	181.56	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
97	184.55	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
98	187.99	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
99	190.97	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
100	194.40	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
101	198.01	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
102	201.80	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
103	205.79	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
104	208.11	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
105	211.07	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
106	212.91	37.3W / 5.98klm 3	100%	25%	37%	25%	50%	25%	0%	0%
107	215.43	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
108	218.02	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
109	220.71	37.3W / 5.98klm 3	100%	25%	37%	25%	50%	25%	0%	0%
110	223.48	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
111	226.36	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
112	229.33	37.3W / 5.98klm 3	100%	25%	37%	25%	50%	25%	0%	0%
113	232.42	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
114	235.62	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
115	238.95	37.3W / 5.98klm 3	100%	25%	37%	25%	50%	25%	0%	0%
116	242.41	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
117	246.02	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
118	249.78	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
119	253.72	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
120	257.83	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
121	262.15	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
122	266.69	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
123	271.47	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
124	276.52	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
125	281.87	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%
126	287.55	37.3W / 5.98klm 2	100%	25%	37%	25%	0%	0%	0%	0%
127	293.55	37.3W / 5.98klm 1	100%	25%	0%	0%	0%	0%	0%	0%

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023

2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

128	299.55	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
129	305.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
130	311.55	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
131	317.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
132	323.55	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
133	329.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
134	335.55	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
135	341.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
136	347.55	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
137	353.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
138	359.45	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
139	372.05	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
140	383.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
141	395.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
142	407.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
143	419.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
144	431.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
145	443.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
146	455.55	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%

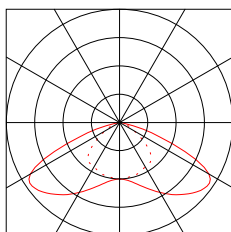
Interior LDC in use

6



PHILIPS

Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
 Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
 Maintenance factor: 0.80



Row of luminaires: permanente DX (1.1)

Number of luminaires: 43
 Basic position: x=3.50m y=1.75m, z=5.70m
 Rotation: z=0.0° C0=0.0° C90=0.0°

System power (total): 1.6kW (0.49 km)
 Constant distance: 11.50m
 Flicker frequency (v=80 km/h): 1.9 Hz

Nr.	Pos. X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1	3.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
2	15.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
3	26.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
4	38.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
5	49.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
6	61.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
7	72.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
8	84.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
9	95.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
10	107.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

11	118.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
12	130.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
13	141.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
14	153.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
15	164.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
16	176.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
17	187.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
18	199.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
19	210.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
20	222.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
21	233.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
22	245.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
23	256.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
24	268.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
25	279.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
26	291.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
27	302.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
28	314.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
29	325.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
30	337.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
31	348.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
32	360.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
33	371.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
34	383.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
35	394.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
36	406.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
37	417.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
38	429.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
39	440.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
40	452.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
41	463.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
42	475.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
43	486.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%

Row of luminaires: permanente SX (2.1)

Number of luminaires: 43

System power (total): 1.6kW (0.49 km)

Basic position: x=3.50m y=5.25m, z=5.70m

Constant distance: 11.50m

Rotation: z=0.0° C0=0.0° C90=0.0°

Flicker frequency (v=80 km/h): 1.9 Hz

Nr.	Pos. X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1	3.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
2	15.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
3	26.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
4	38.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
5	49.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
6	61.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
7	72.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
8	84.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
9	95.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
10	107.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
11	118.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
12	130.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
13	141.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%

Object : ANAS__Galleria SP209
 Installation :
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2.1 Description, Galleria SP209__dir SUD

2.1.2 Luminaire list

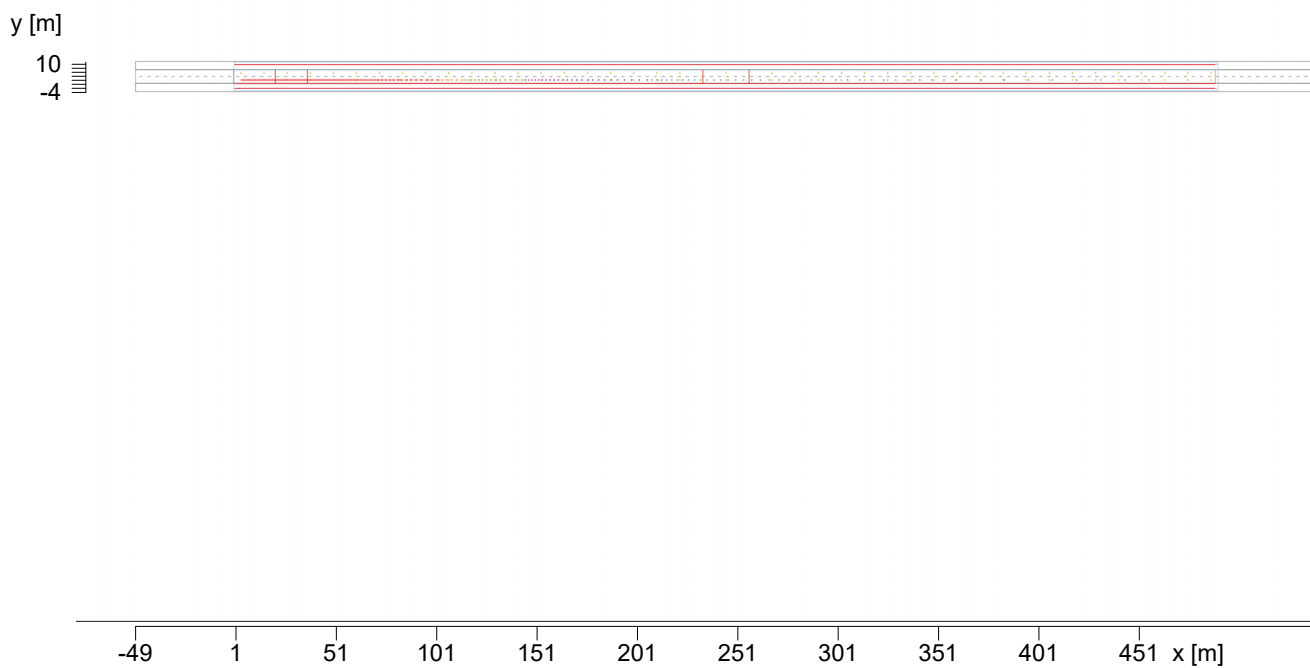
14	153.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
15	164.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
16	176.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
17	187.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
18	199.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
19	210.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
20	222.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
21	233.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
22	245.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
23	256.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
24	268.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
25	279.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
26	291.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
27	302.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
28	314.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
29	325.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
30	337.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
31	348.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
32	360.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
33	371.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
34	383.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
35	394.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
36	406.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
37	417.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
38	429.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
39	440.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
40	452.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
41	463.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
42	475.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
43	486.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%

Object : ANAS__Galleria SP209
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2.1 Description, Galleria SP209__dir SUD

2.1.3 Floor plan



2.1 Description, Galleria SP209__dir SUD

2.1.4 3D view, View from the left



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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2 Galleria SP209__dir SUD

2.2 Calculation results, Galleria SP209__dir SUD

2.2.1 Result overview, S1: 100%

Regulating step: S1: 100%

Adaptation

1: 100%
2: 100%
3: 100%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	: 175.55 cd/m ²	88.77 cd/m ²
Uo	Lmin/Lavg : 0.92	0.69
UI	Llmin/Llma:: 1.00	0.99
TI max. Max.	: 2 %	1 %

Wall left (diffus 40%)

Lav	: 63.33 cd/m ²	63.33 cd/m ²
Uo	Lmin/Lavg : 0.89	0.89
Lwall/L	: 0.49	0.48

Wall right (diffus 40%)

Lav	: 200.45 cd/m ²	200.45 cd/m ²
Uo	Lmin/Lavg : 0.98	0.98
Lwall/L	: 1.55	1.53

Illuminance

Roadway

Em 2548.57 lx
Uo Emin/Em : 0.62

Wall left

Em : 497.40 lx
Uo Emin/Em : 0.89

Wall right

Em 1574.34 lx
Uo Emin/Em : 0.98

Object : ANAS__Galleria SP209
 Installation :
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2 Galleria SP209__dir SUD

2.2 Calculation results, Galleria SP209__dir SUD

2.2.1 Result overview, S1: 100%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.88 (386.50 m) 0.70 (37.77 m)
 TI max. : 13 % (161.66 m) 5 % (154.78 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (354.38 m) 0.97 (354.38 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (354.38 m) 0.97 (354.38 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.2 Result overview, S2: 25%

Regulating step: S2: 25%

Adaptation

1: 25%
2: 25%
3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	46.28 cd/m ²	24.74 cd/m ²
Uo	Lmin/Lavg :	0.92	0.70
UI	Llmin/Llma::	0.99	0.98
TI max. Max.	:	3 %	1 %

Wall left (diffus 40%)

Lav	:	18.20 cd/m ²	18.20 cd/m ²
Uo	Lmin/Lavg :	0.89	0.89
Lwall/L	:	0.52	0.52

Wall right (diffus 40%)

Lav	:	52.48 cd/m ²	52.48 cd/m ²
Uo	Lmin/Lavg :	0.98	0.98
Lwall/L	:	1.51	1.49

Illuminance

Roadway

Em : 682.49 lx
Uo Emin/Em : 0.63

Wall left

Em : 142.91 lx
Uo Emin/Em : 0.89

Wall right

Em : 412.14 lx
Uo Emin/Em : 0.98

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.2 Calculation results, Galleria SP209__dir SUD

2.2.2 Result overview, S2: 25%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (200.66 m) 0.71 (37.77 m)
 TI max. : 10 % (154.78 m) 4 % (168.54 m)

Wall left (diffus 40%)
 Ut min. : 0.98 (102.01 m) 0.98 (102.01 m)

Wall right (diffus 40%)
 Ut min. : 0.98 (102.01 m) 0.98 (102.01 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.2 Calculation results, Galleria SP209__dir SUD

2.2.3 Result overview, S3: 24.7%

Regulating step: S3: 24.7%

Adaptation

1: 0%
2: 37%
3: 37%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	45.70 cd/m ²	24.46 cd/m ²
Uo	Lmin/Lavg :	0.92	0.70
UI	Llmin/Llma::	0.99	0.97
TI max. Max.	:	2 %	1 %

Wall left (diffus 40%)

Lav	:	18.01 cd/m ²	18.01 cd/m ²
Uo	Lmin/Lavg :	0.89	0.89
Lwall/L	:	0.52	0.52

Wall right (diffus 40%)

Lav	:	51.82 cd/m ²	51.82 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.51	1.49

Illuminance

Roadway

Em : 674.30 lx
Uo Emin/Em : 0.63

Wall left

Em : 141.45 lx
Uo Emin/Em : 0.89

Wall right

Em : 406.99 lx
Uo Emin/Em : 0.97

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.3 Result overview, S3: 24.7%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (200.66 m) 0.71 (37.77 m)
 TI max. : 12 % (163.95 m) 5 % (163.95 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (182.31 m) 0.97 (182.31 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (182.31 m) 0.97 (182.31 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.2 Calculation results, Galleria SP209__dir SUD

2.2.4 Result overview, S4: 16.7%

Regulating step: S4: 16.7%

Adaptation

1: 0%
2: 25%
3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	31.91 cd/m ²	17.54 cd/m ²
Uo	Lmin/Lavg :	0.92	0.71
UI	Llmin/Llma::	0.98	0.96
TI max. Max.	:	2 %	1 %

Wall left (diffus 40%)

Lav	:	13.19 cd/m ²	13.19 cd/m ²
Uo	Lmin/Lavg :	0.90	0.90
Lwall/L	:	0.54	0.54

Wall right (diffus 40%)

Lav	:	36.04 cd/m ²	36.04 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.49	1.47

Illuminance

Roadway

Em : 475.22 lx
Uo Emin/Em : 0.64

Wall left

Em : 103.60 lx
Uo Emin/Em : 0.90

Wall right

Em : 283.02 lx
Uo Emin/Em : 0.97

Object : ANAS_Galleria SP209
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.4 Result overview, S4: 16.7%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance
 Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (166.25 m) 0.72 (37.77 m)
 TI max. : 10 % (163.95 m) 4 % (134.13 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (79.06 m) 0.97 (79.06 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (79.06 m) 0.97 (79.06 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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Project number : 400797819
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.5 Result overview, S5: 16.7%

Regulating step: S5: 16.7%

Adaptation

1: 0%
2: 0%
3: 50%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	31.93 cd/m ²	17.55 cd/m ²
Uo	Lmin/Lavg :	0.92	0.71
UI	Llmin/Llma::	0.98	0.96
TI max. Max.	:	3 %	1 %

Wall left (diffus 40%)

Lav	:	13.20 cd/m ²	13.20 cd/m ²
Uo	Lmin/Lavg :	0.90	0.90
Lwall/L	:	0.54	0.54

Wall right (diffus 40%)

Lav	:	36.03 cd/m ²	36.03 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.49	1.47

Illuminance

Roadway

Em : 475.19 lx
Uo Emin/Em : 0.64

Wall left

Em : 103.64 lx
Uo Emin/Em : 0.90

Wall right

Em : 282.98 lx
Uo Emin/Em : 0.97

Object : ANAS__Galleria SP209
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.5 Result overview, S5: 16.7%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (166.25 m) 0.72 (37.77 m)
 TI max. : 12 % (163.95 m) 6 % (163.95 m)

Wall left (diffus 40%)
 Ut min. : 0.96 (95.12 m) 0.96 (95.12 m)

Wall right (diffus 40%)
 Ut min. : 0.96 (95.12 m) 0.96 (95.12 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.2 Calculation results, Galleria SP209__dir SUD

2.2.6 Result overview, S6: 8.3%

Regulating step: S6: 8.3%

Adaptation

1: 0%
 2: 0%
 3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 20.56 m - 36.62 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -39.44 m; z = 1.50 m dx = 61.15 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	17.51 cd/m ²	10.28 cd/m ²
Uo	Lmin/Lavg :	0.90	0.72
UI	Llmin/Llma::	0.97	0.94
TI max.	Max. :	3 %	2 %

Wall left (diffus 40%)

Lav	:	8.17 cd/m ²	8.17 cd/m ²
Uo	Lmin/Lavg :	0.90	0.90
Lwall/L	:	0.60	0.59

Wall right (diffus 40%)

Lav	:	19.59 cd/m ²	19.59 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.44	1.42

Illuminance

Roadway

Em : 267.82 lx
 Uo Emin/Em : 0.67

Wall left

Em : 64.19 lx
 Uo Emin/Em : 0.90

Wall right

Em : 153.86 lx
 Uo Emin/Em : 0.97

Object : ANAS_Galleria SP209
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.6 Result overview, S6: 8.3%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.50 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.67 lx Em : 24.67 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: -0.09 m - 488.59 m Points: nx = 213, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.88 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (131.83 m) 0.74 (37.77 m)
 TI max. : 7 % (129.54 m) 4 % (99.71 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (102.01 m) 0.97 (102.01 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (102.01 m) 0.97 (102.01 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.7 Result overview, Int.1

Regulating step: Int.1

Adaptation

1: 0%
2: 0%
3: 0%

Interior

4: 100%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	3.10 cd/m ²	3.10 cd/m ²
Uo	Lmin/Lavg :	0.74	0.74
UI	Lmin/Lmax :	0.83	0.83
TI max.	Max. :	5 %	5 %

Wall left (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em	:	60.50 lx
Uo	Emin/Em :	0.88

Wall left

Em	:	24.67 lx
Uo	Emin/Em :	0.94

Wall right

Em	:	24.67 lx
Uo	Emin/Em :	0.94

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
Installation :
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2.2 Calculation results, Galleria SP209__dir SUD

2.2.8 Result overview, Int.2

Regulating step: Int.2

Adaptation

1: 0%
2: 0%
3: 0%

Interior

4: 50%

Interior, Interior zone

Measuring range: 233.50 m - 256.50 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = 173.50 m; z = 1.50 m dx = 61.64 m (fix)

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	1.55 cd/m ²	1.55 cd/m ²
Uo	Lmin/Lavg :	0.74	0.74
UI	Lmin/Lmax :	0.83	0.83
TI max.	Max. :	4 %	4 %

Wall left (diffus 40%)

Lav	:	1.57 cd/m ²	1.57 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	1.57 cd/m ²	1.57 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em	:	30.25 lx
Uo	Emin/Em :	0.88

Wall left

Em	:	12.33 lx
Uo	Emin/Em :	0.94

Wall right

Em	:	12.33 lx
Uo	Emin/Em :	0.94

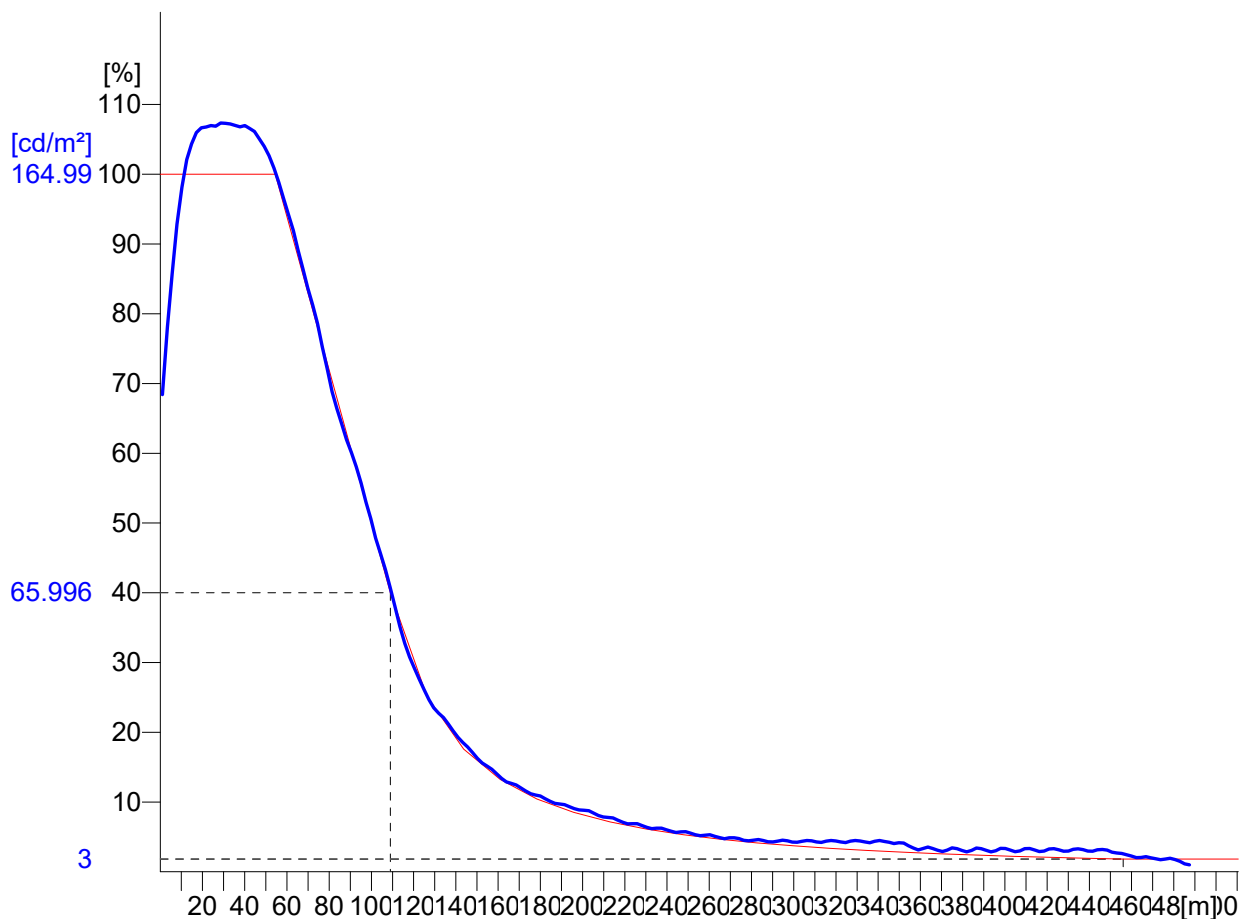
qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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2.2 Calculation results, Galleria SP209__dir SUD

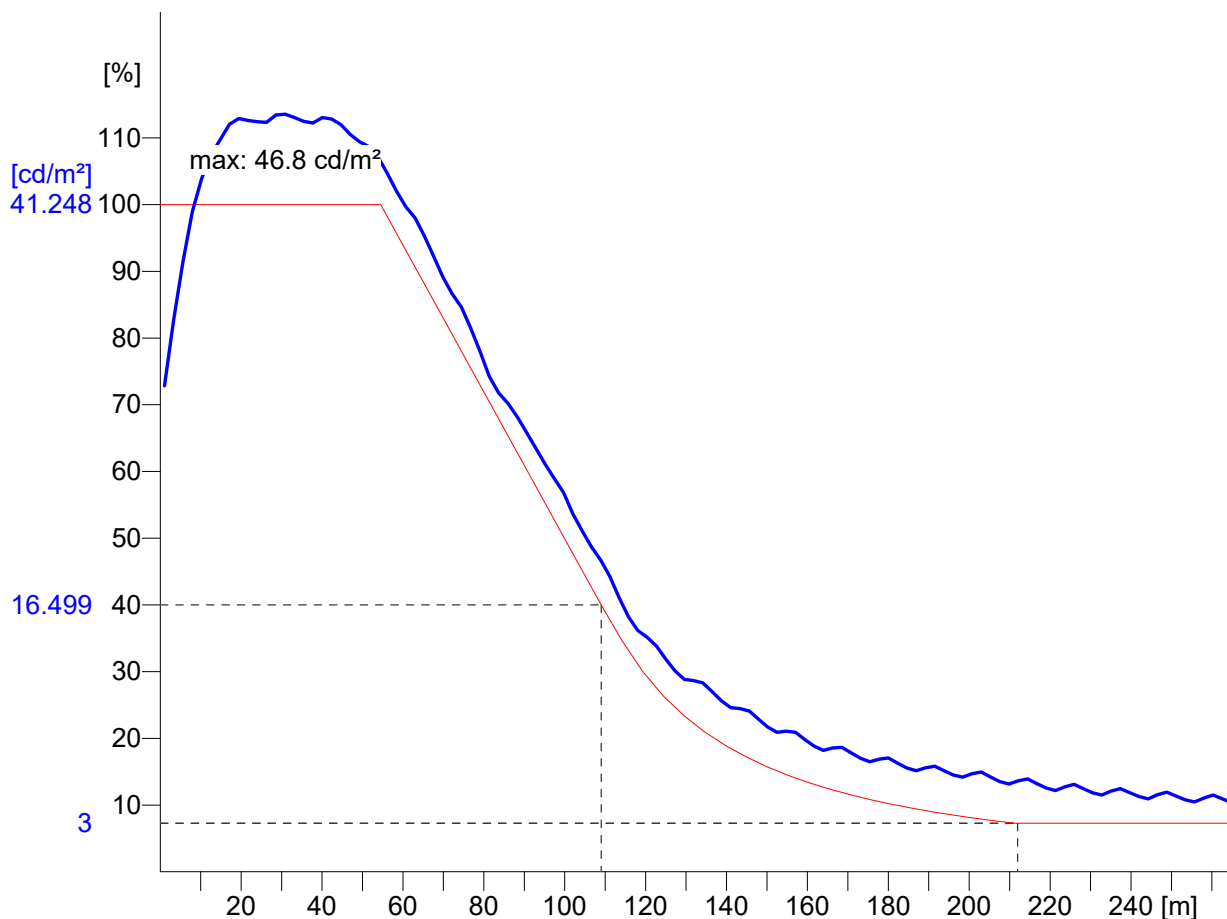
2.2.9 Evolution, Adaptation (L), S1: 100%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

2.2 Calculation results, Galleria SP209__dir SUD

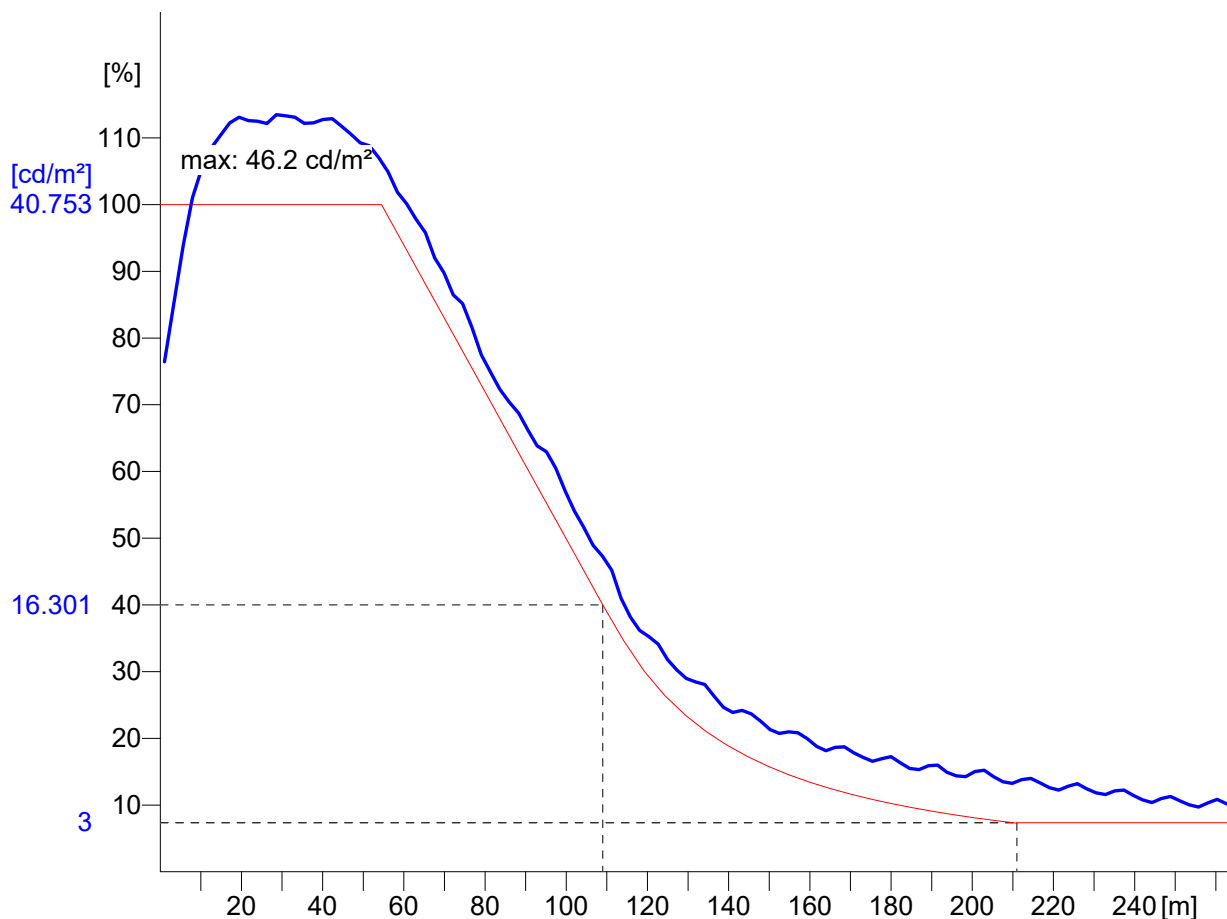
2.2.10 Evolution, Adaptation (L), S2: 25%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

2.2 Calculation results, Galleria SP209__dir SUD

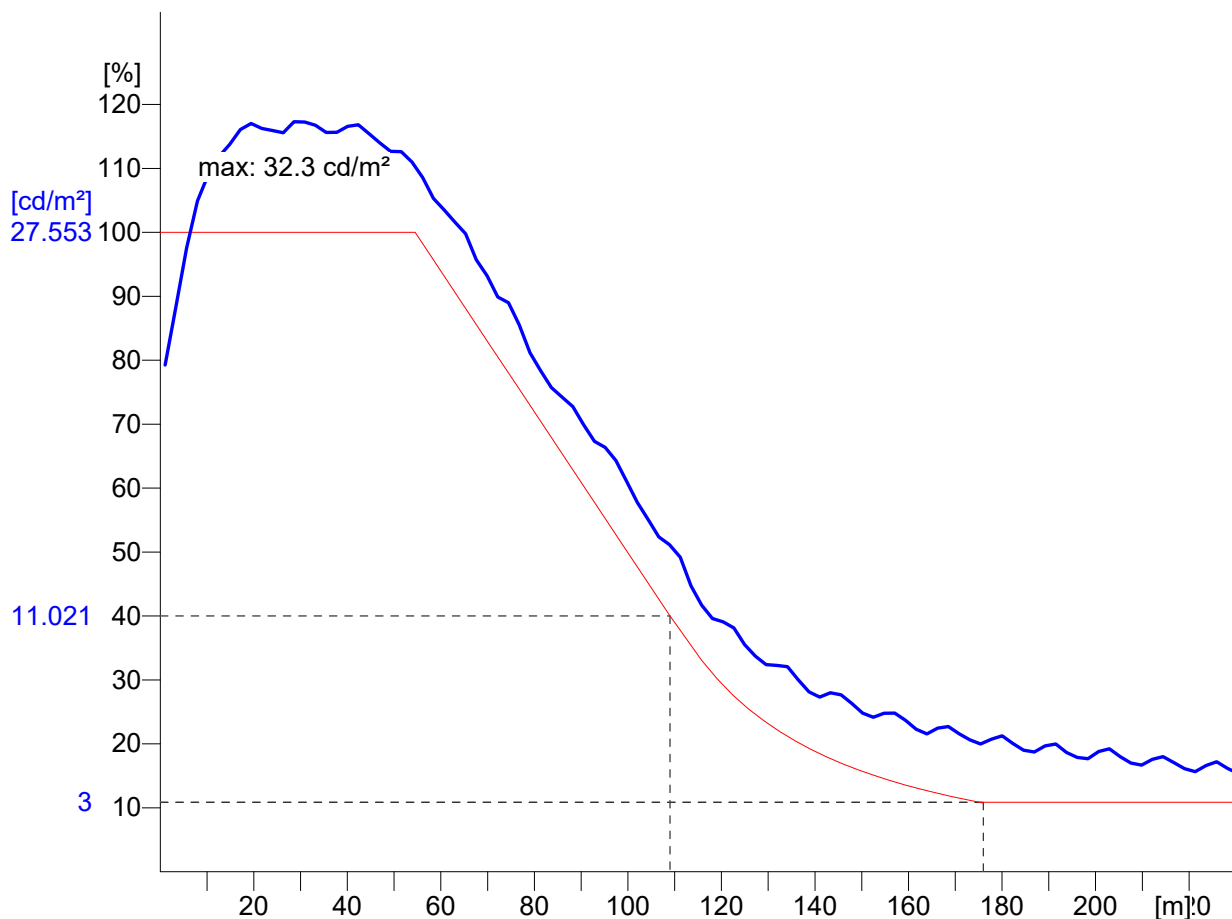
2.2.11 Evolution, Adaptation (L), S3: 24.7%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

2.2 Calculation results, Galleria SP209__dir SUD

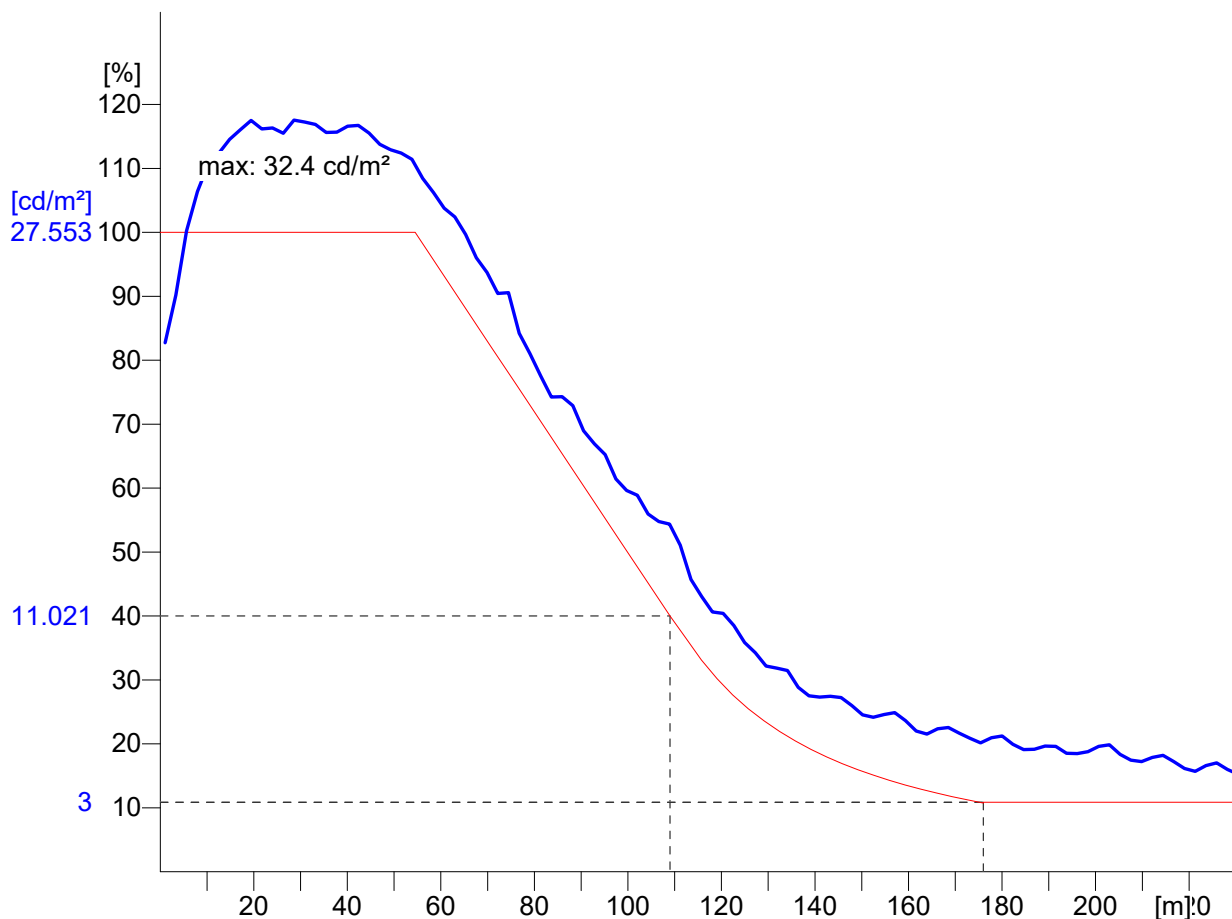
2.2.12 Evolution, Adaptation (L), S4: 16.7%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

2.2 Calculation results, Galleria SP209__dir SUD

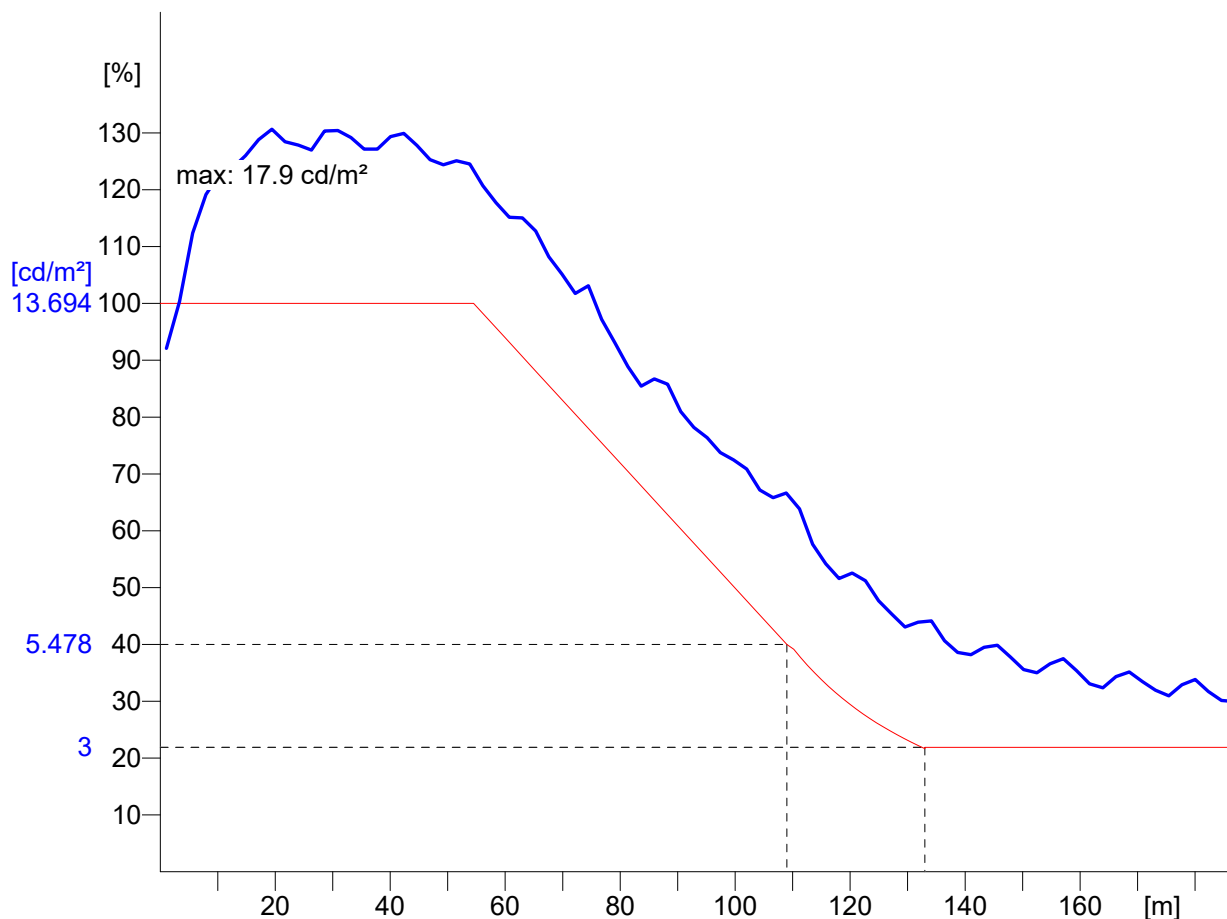
2.2.13 Evolution, Adaptation (L), S5: 16.7%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

2.2 Calculation results, Galleria SP209__dir SUD

2.2.14 Evolution, Adaptation (L), S6: 8.3%, Obs. 1



Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

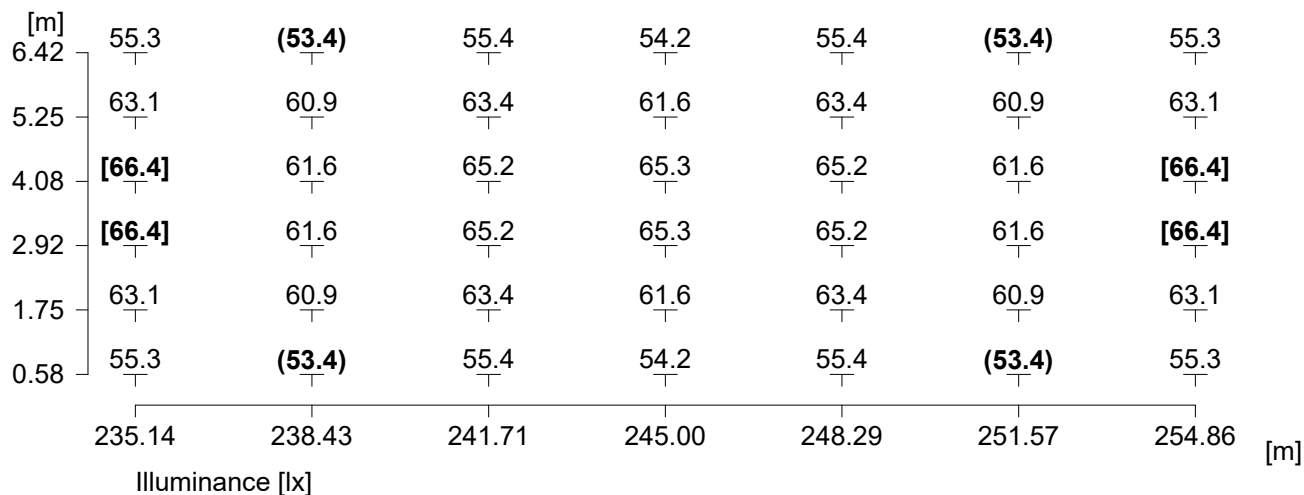
Object : ANAS__Galleria SP209
 Installation :
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2 Galleria SP209__dir SUD

2.3 Calculation results, Galleria SP209__dir SUD

2.3.1 Table, Interior (E), Int.1



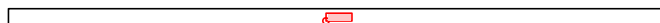
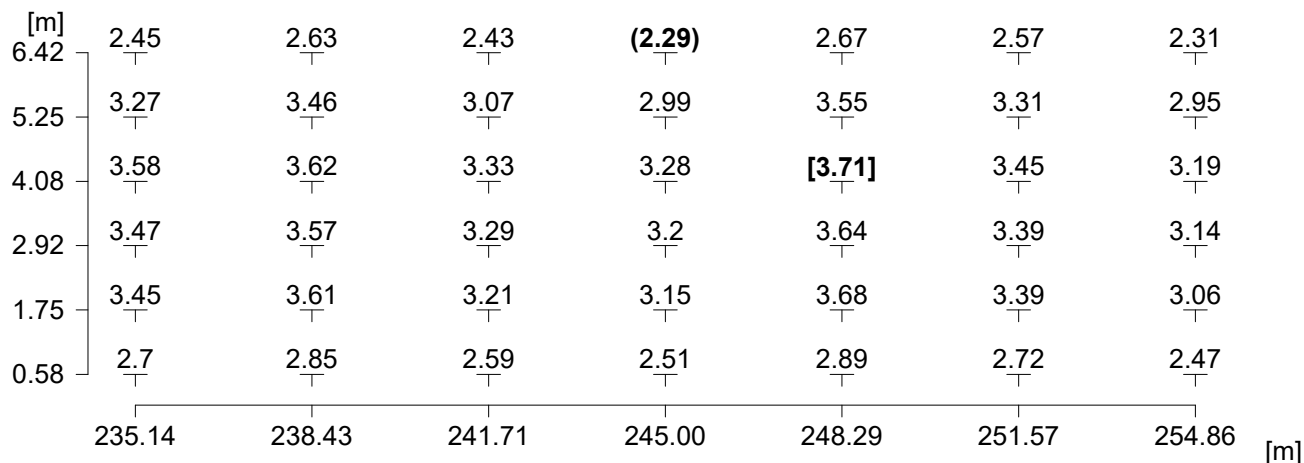
Height reference plane	:	0.00 m
Average illuminance	Em	: 60.5 lx
Minimum illuminance	Emin	: 53.4 lx
Maximum illuminance	Emax	: 66.4 lx
Uniformity Uo	min/average	: 1 : 1.13 (0.88)
Diversity Ud	min/max	: 1 : 1.24 (0.8)

Object : ANAS_Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.2 Table, Interior (L), Int.1, Obs. 1



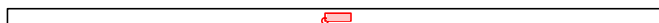
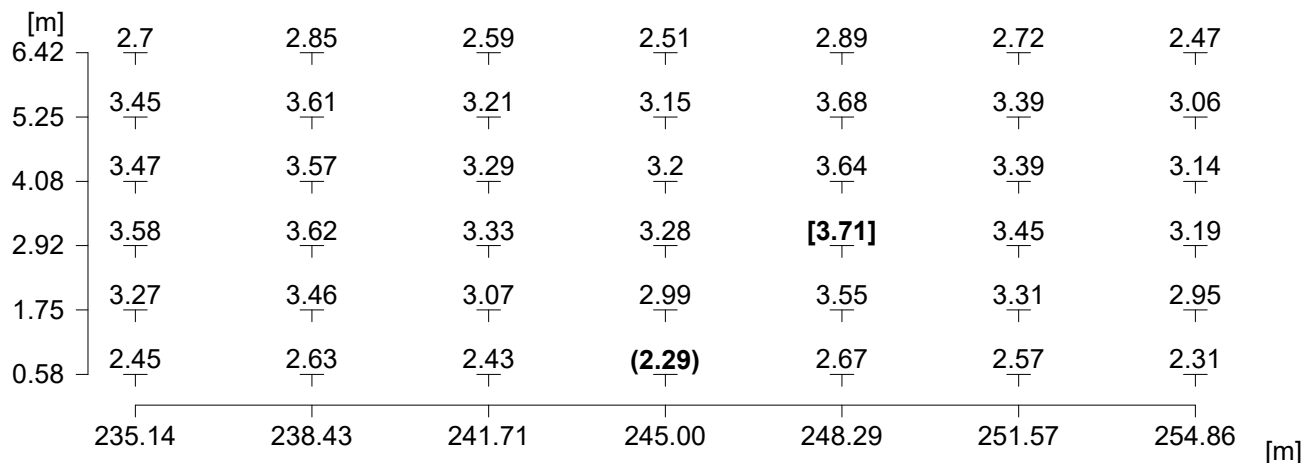
Observer location 1 : x = 174, y = 1.75, z = 1.5 (dx = 61.64)
 Average luminance Lav : 3.1 cd/m²
 Minimum luminance Lmin : 2.29 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.74
 Longitudinal uniformity UI Llmin/Llmax : 0.83
 Threshold increment TI : 5 %

Object : ANAS__Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.3 Table, Interior (L), Int.1, Obs. 2



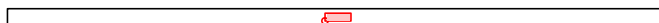
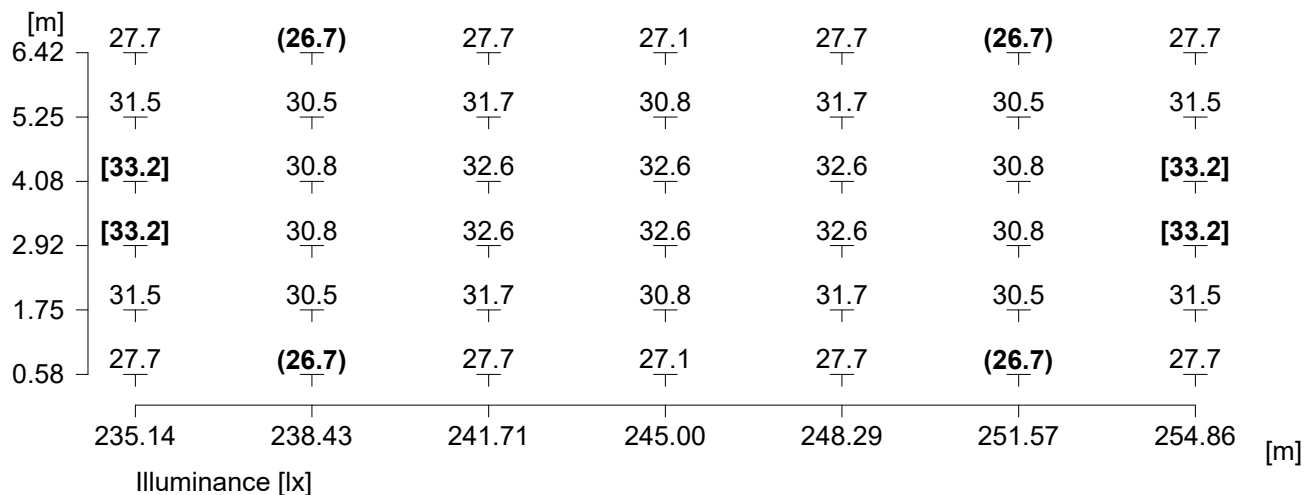
Observer location 2 : x = 174, y = 5.25, z = 1.5 (dx = 61.64)
 Average luminance Lav : 3.1 cd/m²
 Minimum luminance Lmin : 2.29 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.74
 Longitudinal uniformity UI Llmin/Llmax : 0.83
 Threshold increment TI : 5 %

Object : ANAS__Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.4 Table, Interior (E), Int.2



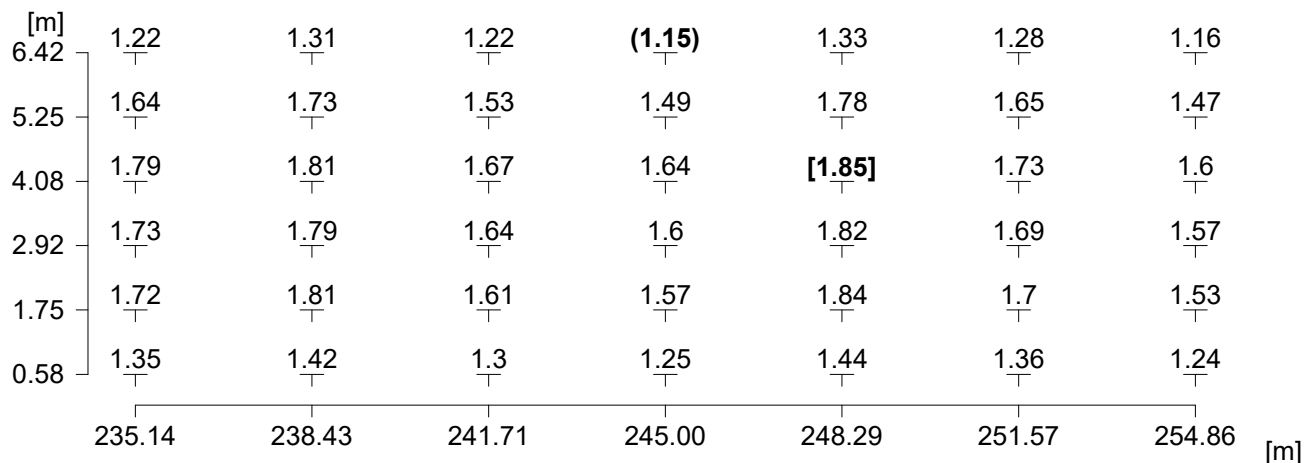
Height reference plane : 0.00 m
 Average illuminance Em : 30.2 lx
 Minimum illuminance Emin : 26.7 lx
 Maximum illuminance Emax : 33.2 lx
 Uniformity Uo min/average : 1 : 1.13 (0.88)
 Diversity Ud min/max : 1 : 1.24 (0.8)

Object : ANAS__Galleria SP209
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 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.5 Table, Interior (L), Int.2, Obs. 1



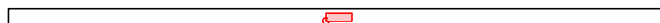
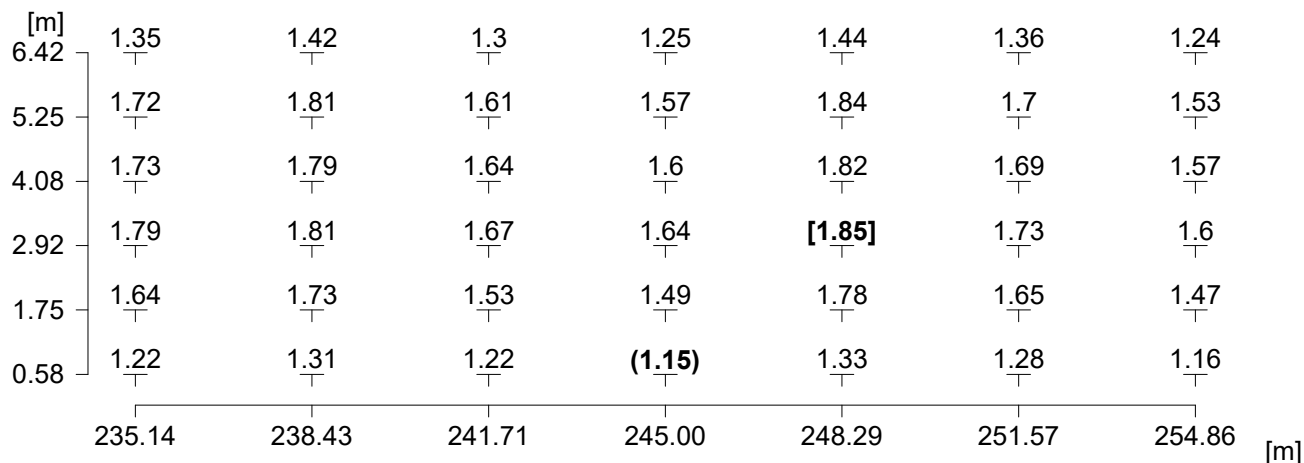
Observer location 1 : x = 174, y = 1.75, z = 1.5 (dx = 61.64)
 Average luminance Lav : 1.55 cd/m²
 Minimum luminance Lmin : 1.15 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.74
 Longitudinal uniformity UI Llmin/Llmax : 0.83
 Threshold increment TI : 5 %

Object : ANAS__Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.6 Table, Interior (L), Int.2, Obs. 2



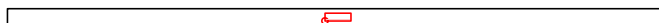
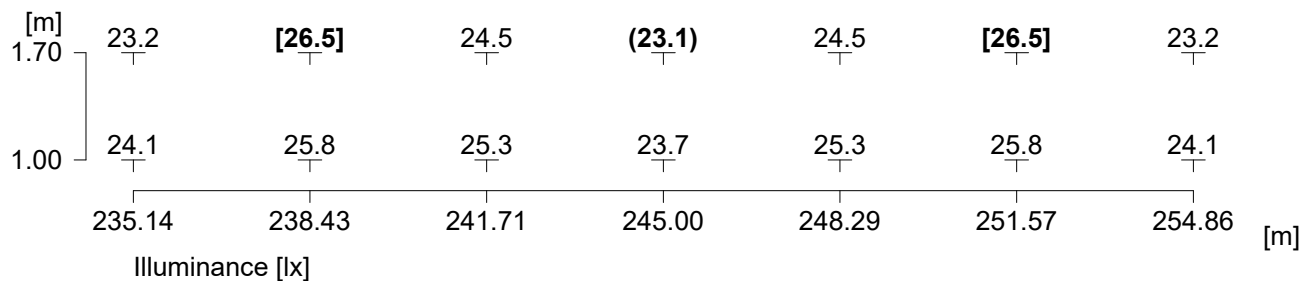
Observer location 2 : x = 174, y = 5.25, z = 1.5 (dx = 61.64)
 Average luminance Lav : 1.55 cd/m²
 Minimum luminance Lmin : 1.15 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.74
 Longitudinal uniformity UI Llmin/Llmax : 0.83
 Threshold increment TI : 5 %

Object : ANAS__Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.7 Table, Interior (E), Wall right, Int.1



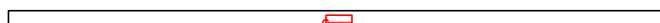
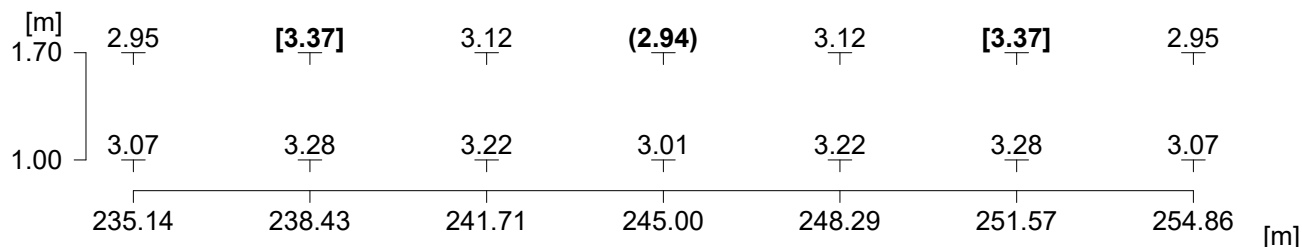
Average illuminance	Em	: 24.7 lx
Minimum illuminance	Emin	: 23.1 lx
Maximum illuminance	Emax	: 26.5 lx
Uniformity Uo	min/average	: 1 : 1.07 (0.94)
Diversity Ud	min/max	: 1 : 1.15 (0.87)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.8 Table, Interior (L), Wall right, Int.1, Obs. 1



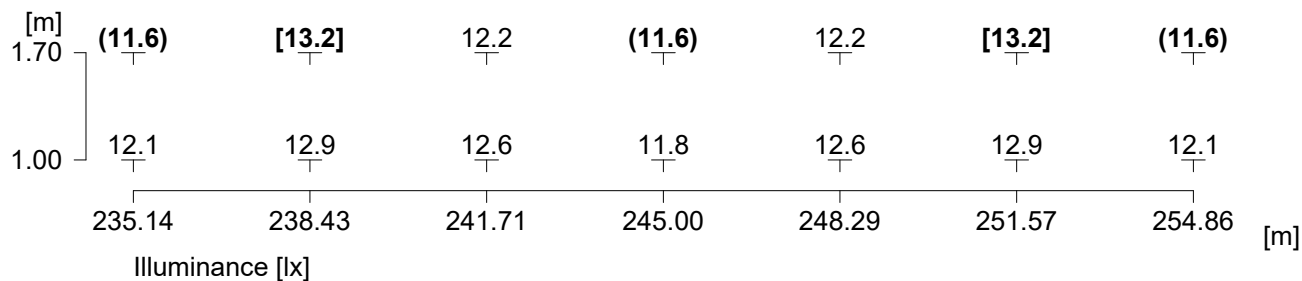
Observer location 1		: x = 174, y = 1.75, z = 1.5 (dx = 61.64)
Average luminance	Lav	: 3.14 cd/m ²
Minimum luminance	Lmin	: 2.94 cd/m ²
Overall uniformity Uo	Lmin/Lm	: 0.94
Longitudinal uniformity UI	Llmin/Llmax	: 0.87 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
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 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.9 Table, Interior (E), Wall right, Int.2



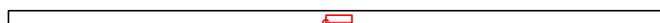
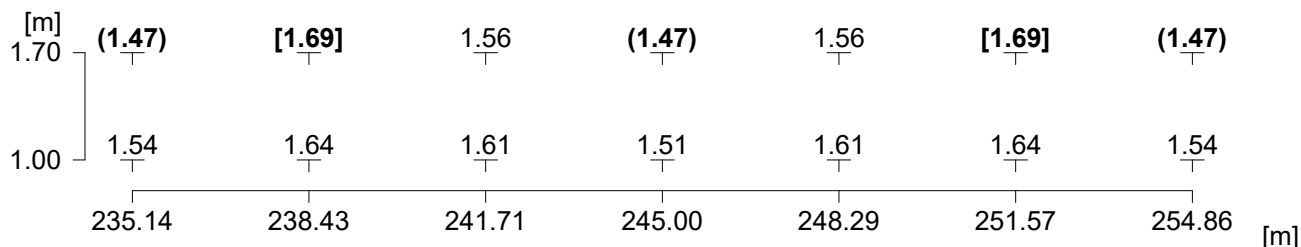
Average illuminance	Em	: 12.3 lx
Minimum illuminance	Emin	: 11.6 lx
Maximum illuminance	Emax	: 13.2 lx
Uniformity Uo	min/average	: 1 : 1.07 (0.94)
Diversity Ud	min/max	: 1 : 1.15 (0.87)

Object : ANAS__Galleria SP209
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2.3 Calculation results, Galleria SP209__dir SUD

2.3.10 Table, Interior (L), Wall right, Int.2, Obs. 1



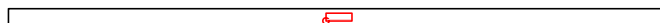
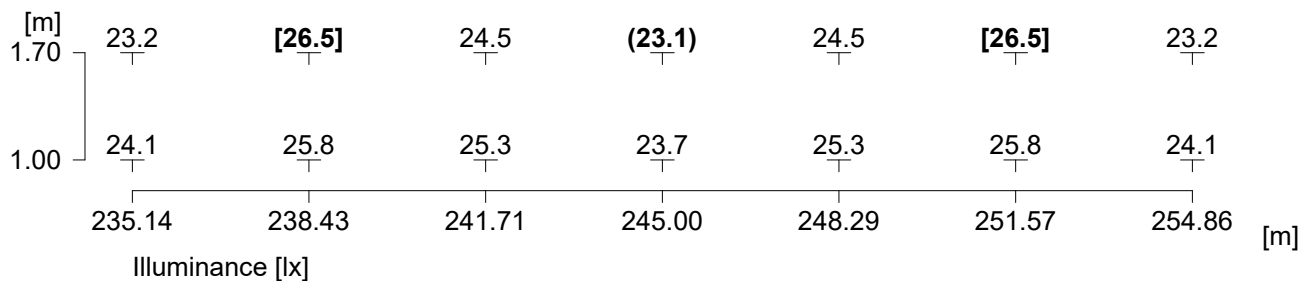
Observer location 1		: x = 174, y = 1.75, z = 1.5 (dx = 61.64)
Average luminance	Lav	: 1.57 cd/m ²
Minimum luminance	Lmin	: 1.47 cd/m ²
Overall uniformity U _o	Lmin/Lm	: 0.94
Longitudinal uniformity U _l	Llmin/Llmax	: 0.87 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.11 Table, Interior (E), Wall left, Int.1



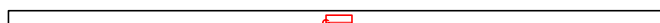
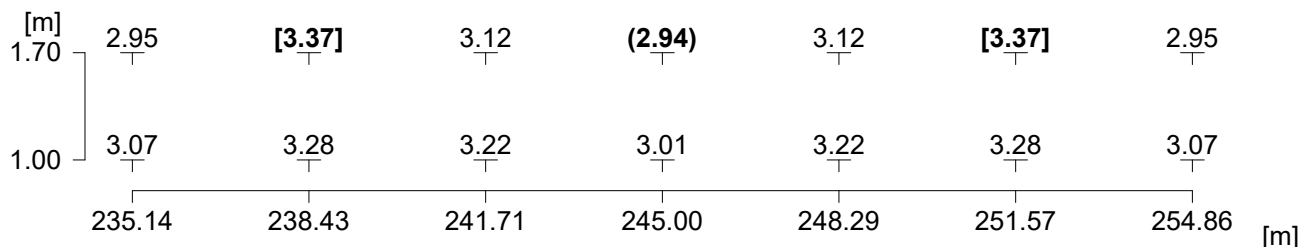
Average illuminance	Em	: 24.7 lx
Minimum illuminance	Emin	: 23.1 lx
Maximum illuminance	Emax	: 26.5 lx
Uniformity Uo	min/average	: 1 : 1.07 (0.94)
Diversity Ud	min/max	: 1 : 1.15 (0.87)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.12 Table, Interior (L), Wall left, Int.1, Obs. 1



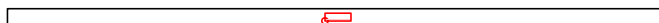
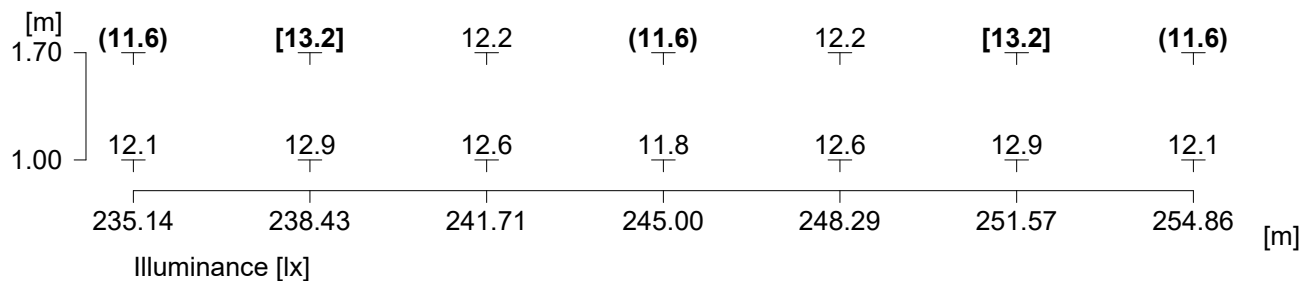
Observer location 1 : x = 174, y = 1.75, z = 1.5 (dx = 61.64)
 Average luminance Lav : 3.14 cd/m²
 Minimum luminance Lmin : 2.94 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.94
 Longitudinal uniformity UI Llmin/Llmax : 0.87 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.13 Table, Interior (E), Wall left, Int.2



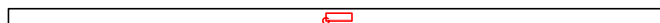
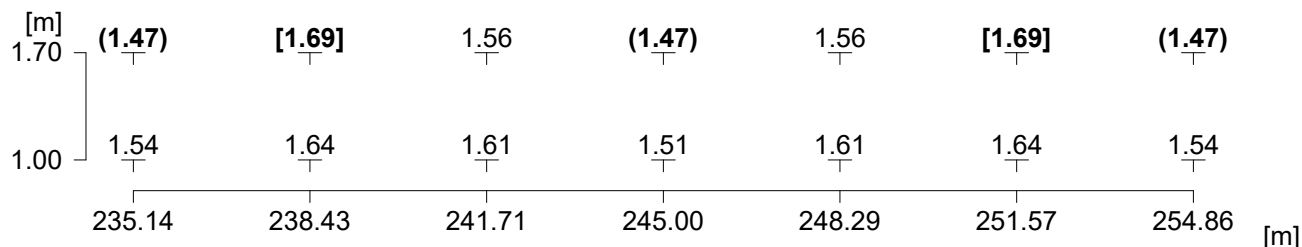
Average illuminance	Em	: 12.3 lx
Minimum illuminance	Emin	: 11.6 lx
Maximum illuminance	Emax	: 13.2 lx
Uniformity Uo	min/average	: 1 : 1.07 (0.94)
Diversity Ud	min/max	: 1 : 1.15 (0.87)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.3 Calculation results, Galleria SP209__dir SUD

2.3.14 Table, Interior (L), Wall left, Int.2, Obs. 1



Observer location 1 : x = 174, y = 1.75, z = 1.5 (dx = 61.64)
 Average luminance Lav : 1.57 cd/m²
 Minimum luminance Lmin : 1.47 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.94
 Longitudinal uniformity UI Llmin/Llmax : 0.87 (1.70m)

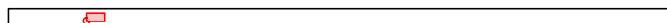
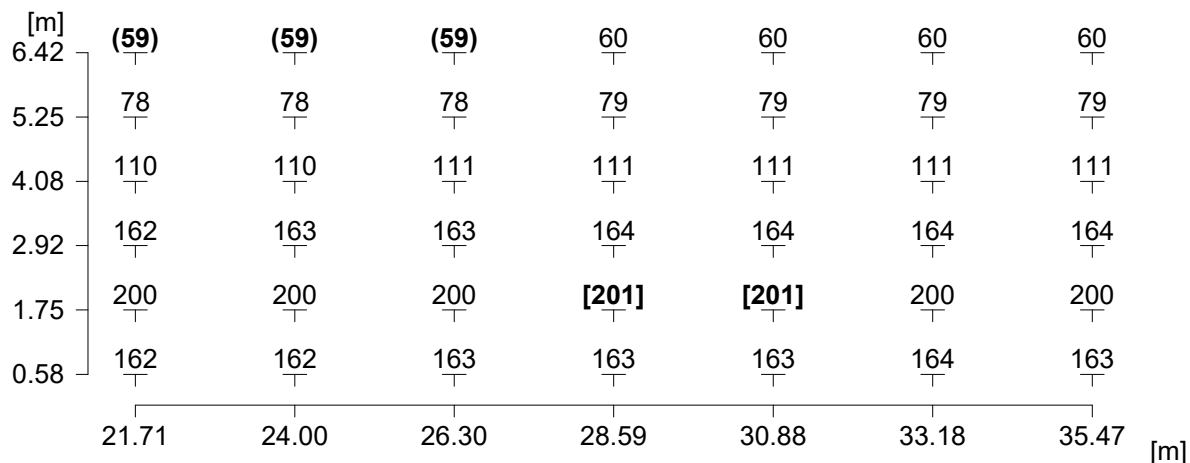
Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.4 Calculation results, Galleria SP209__dir SUD

2.4.1 Table, Entrance (L), S1: 100%, Obs. 1



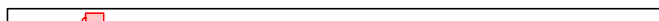
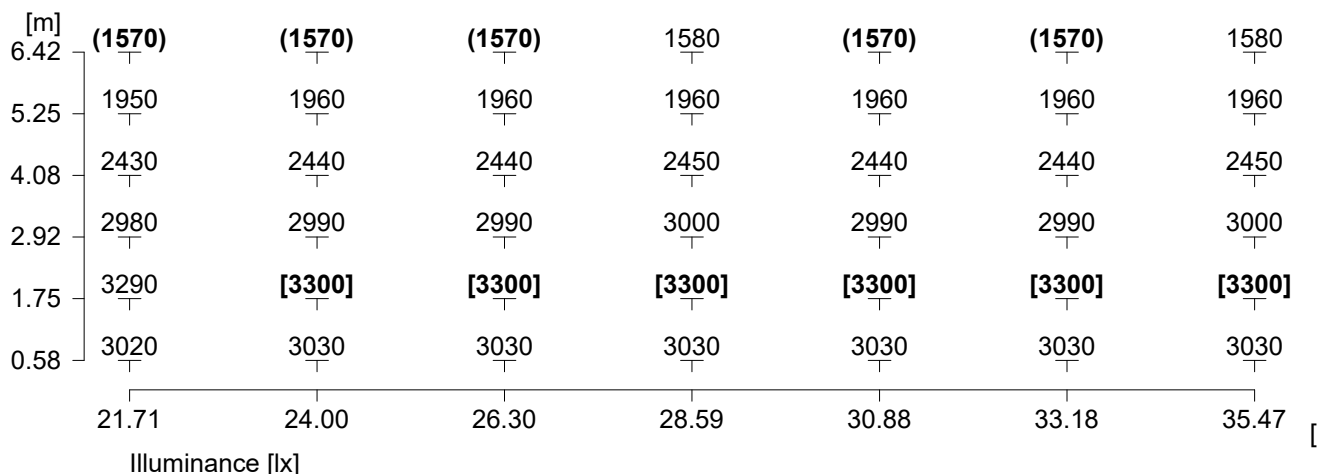
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 176 cd/m²
 Minimum luminance Lmin : 162 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 1
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.2 Table, Entrance (E), S1: 100%



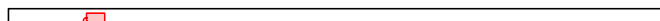
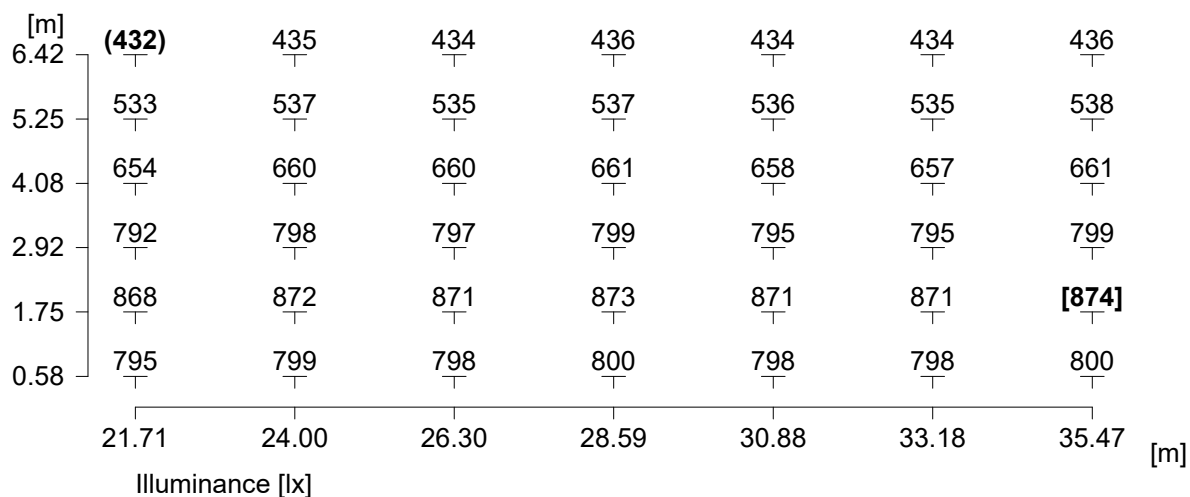
Height reference plane : 0.00 m
 Average illuminance Em : 2550 lx
 Minimum illuminance Emin : 1570 lx
 Maximum illuminance Emax : 3300 lx
 Uniformity Uo min/average : 1 : 1.63 (0.62)
 Diversity Ud min/max : 1 : 2.11 (0.47)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.3 Table, Entrance (E), S2: 25%



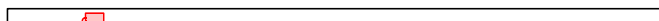
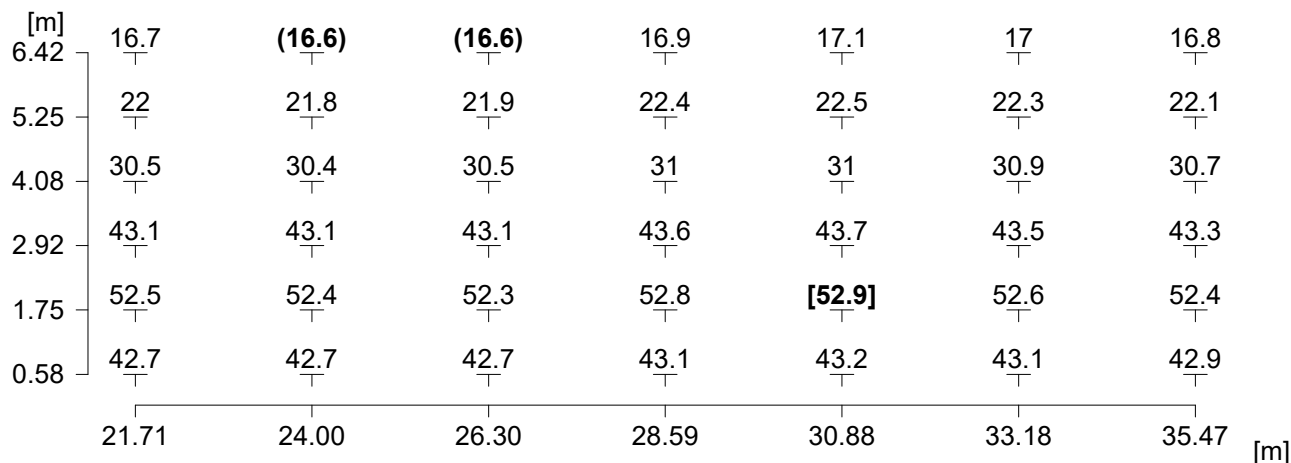
Height reference plane	:	0.00 m
Average illuminance	Em	: 682 lx
Minimum illuminance	Emin	: 432 lx
Maximum illuminance	Emax	: 874 lx
Uniformity Uo	min/average	: 1 : 1.58 (0.63)
Diversity Ud	min/max	: 1 : 2.02 (0.49)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.4 Table, Entrance (L), S2: 25%, Obs. 1



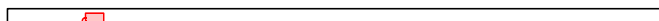
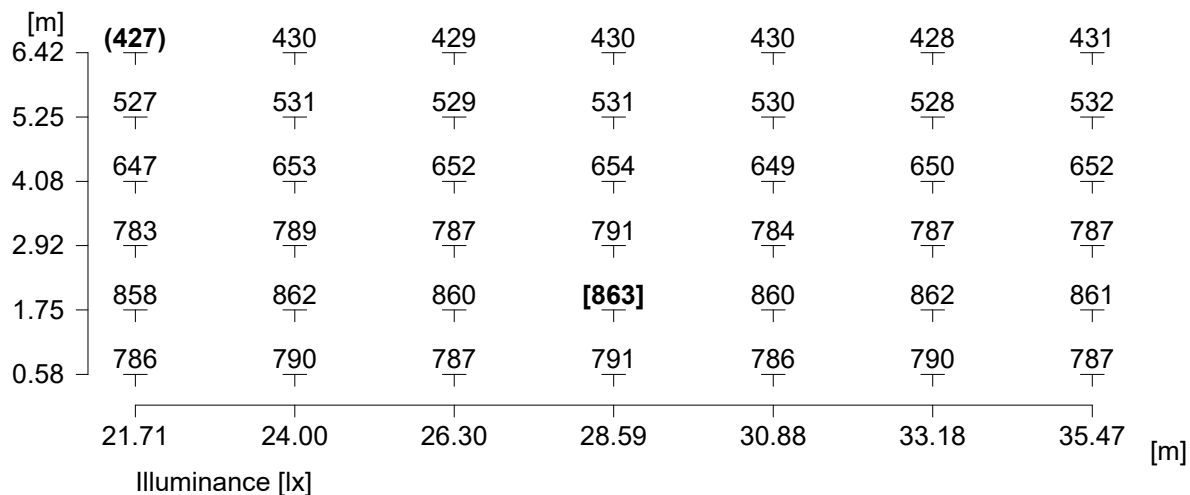
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 46.3 cd/m²
 Minimum luminance Lmin : 42.7 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.99
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.5 Table, Entrance (E), S3: 24.7%



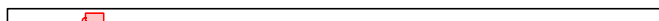
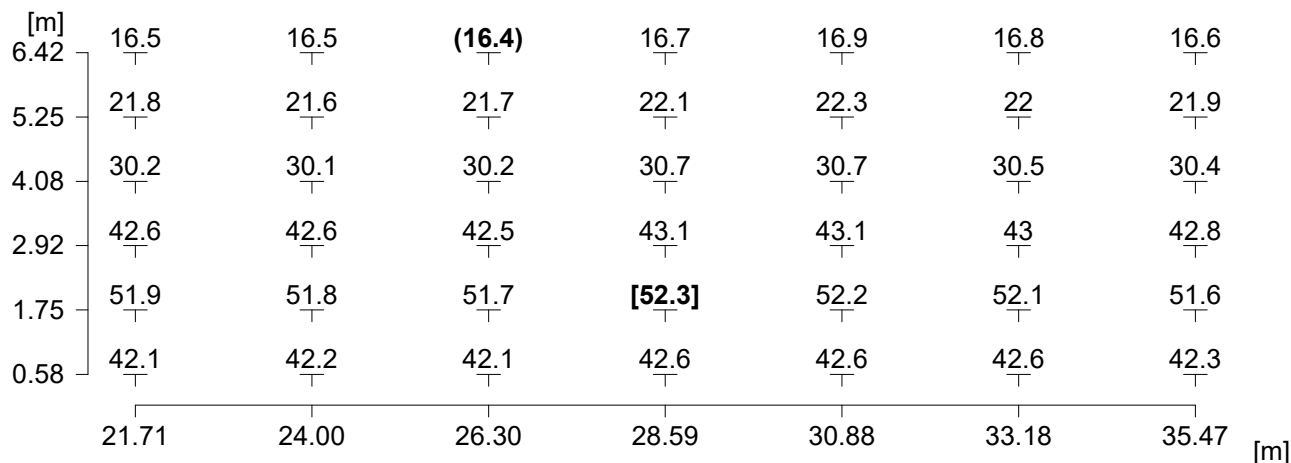
Height reference plane	:	0.00 m
Average illuminance	Em	: 674 lx
Minimum illuminance	Emin	: 427 lx
Maximum illuminance	Emax	: 863 lx
Uniformity Uo	min/average	: 1 : 1.58 (0.63)
Diversity Ud	min/max	: 1 : 2.02 (0.5)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.6 Table, Entrance (L), S3: 24.7%, Obs. 1



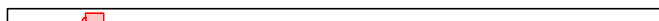
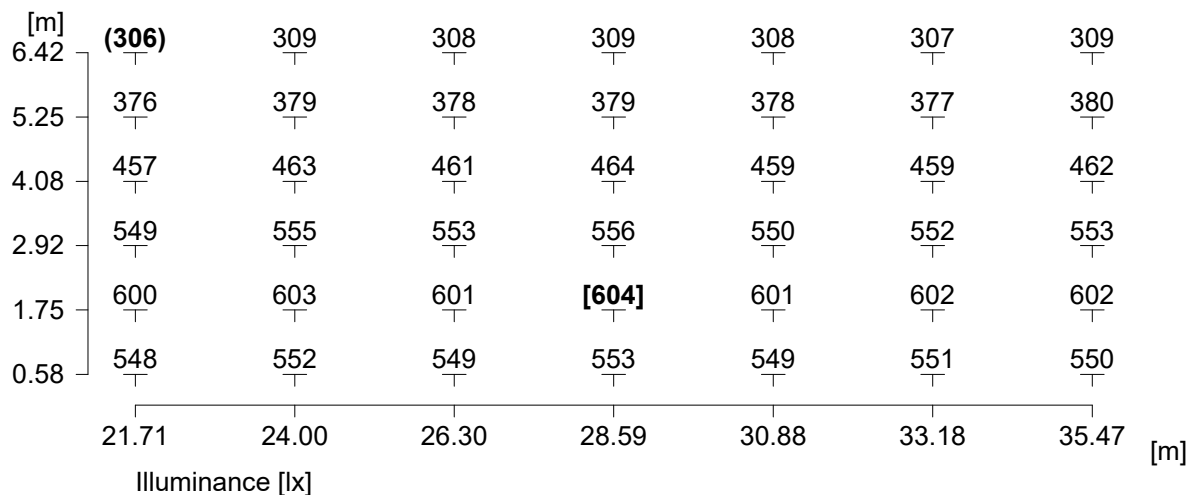
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 45.7 cd/m²
 Minimum luminance Lmin : 42.1 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.99
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

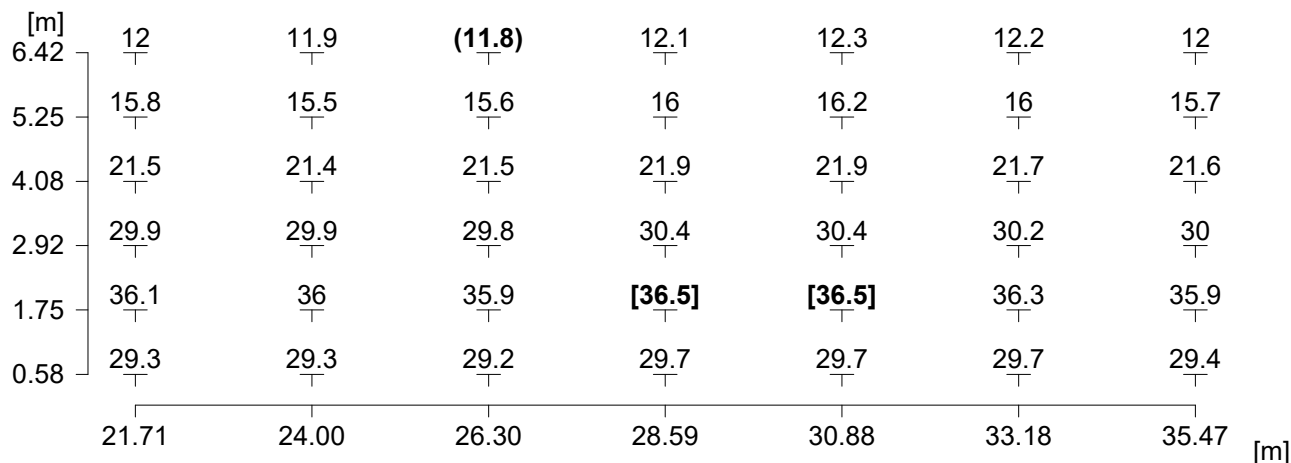
2.4.7 Table, Entrance (E), S4: 16.7%



Height reference plane	:	0.00 m
Average illuminance	Em	: 475 lx
Minimum illuminance	Emin	: 306 lx
Maximum illuminance	Emax	: 604 lx
Uniformity Uo	min/average	: 1 : 1.55 (0.64)
Diversity Ud	min/max	: 1 : 1.97 (0.51)

2.4 Calculation results, Galleria SP209__dir SUD

2.4.8 Table, Entrance (L), S4: 16.7%, Obs. 1



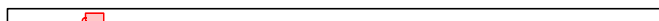
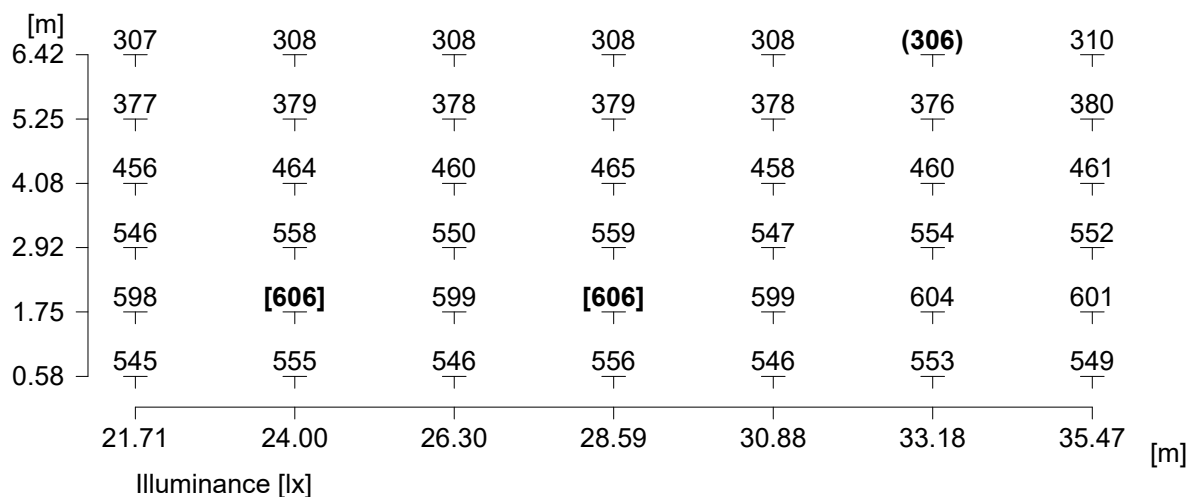
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 31.9 cd/m²
 Minimum luminance Lmin : 29.2 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

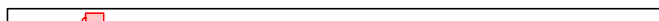
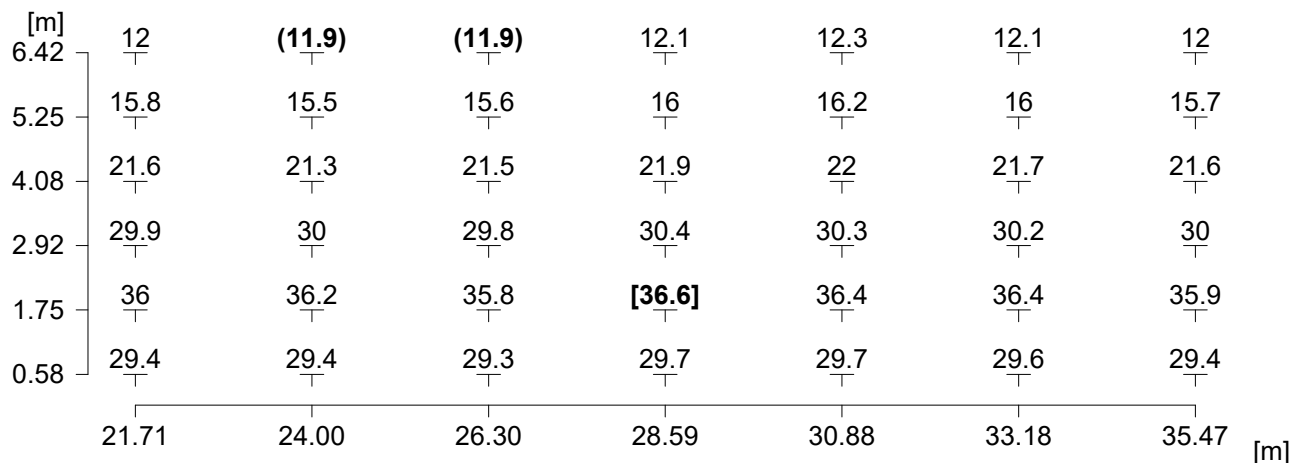
2.4.9 Table, Entrance (E), S5: 16.7%



Height reference plane	:	0.00 m
Average illuminance	Em	: 475 lx
Minimum illuminance	Emin	: 306 lx
Maximum illuminance	Emax	: 606 lx
Uniformity Uo	min/average	: 1 : 1.55 (0.64)
Diversity Ud	min/max	: 1 : 1.98 (0.51)

2.4 Calculation results, Galleria SP209__dir SUD

2.4.10 Table, Entrance (L), S5: 16.7%, Obs. 1



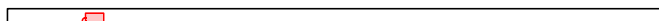
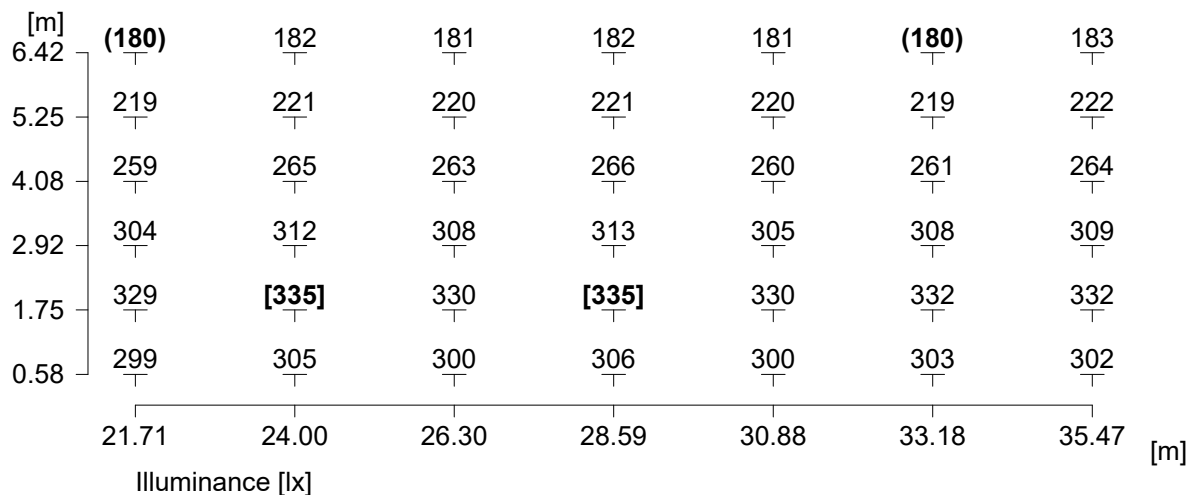
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 31.9 cd/m²
 Minimum luminance Lmin : 29.3 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.11 Table, Entrance (E), S6: 8.3%



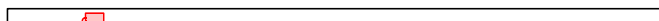
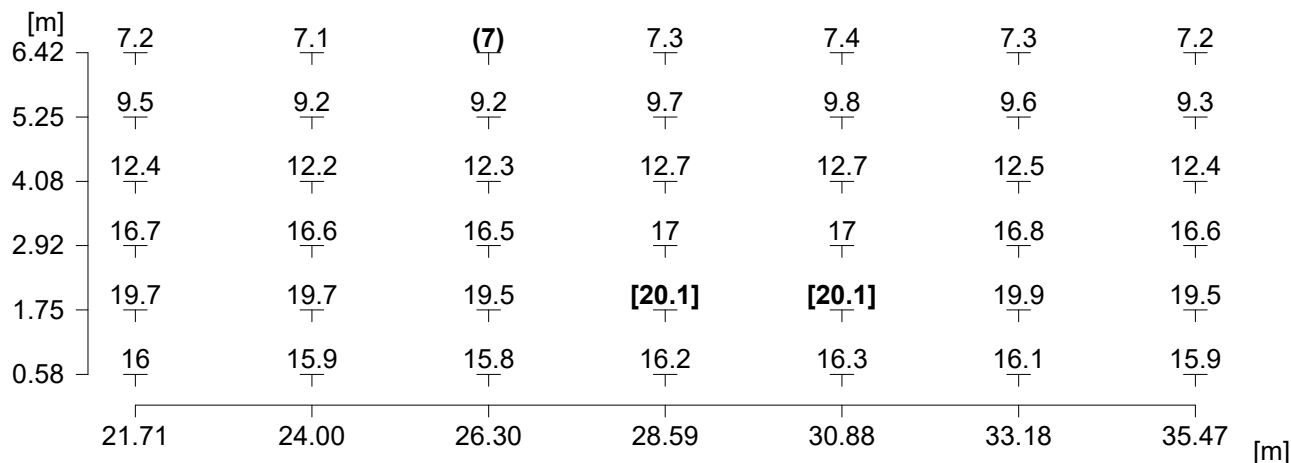
Height reference plane	:	0.00 m
Average illuminance	Em	: 268 lx
Minimum illuminance	Emin	: 180 lx
Maximum illuminance	Emax	: 335 lx
Uniformity Uo	min/average	: 1 : 1.49 (0.67)
Diversity Ud	min/max	: 1 : 1.86 (0.54)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.12 Table, Entrance (L), S6: 8.3%, Obs. 1



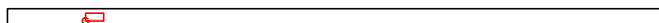
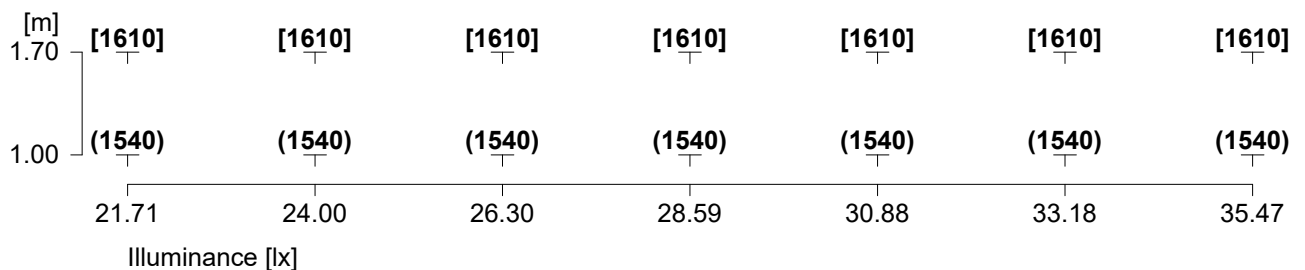
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 17.5 cd/m²
 Minimum luminance Lmin : 15.8 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.9
 Longitudinal uniformity UI Lmin/Lmax : 0.97
 Threshold increment TI : 2 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.13 Table, Entrance (E), Wall right, S1: 100%



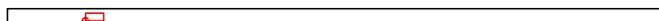
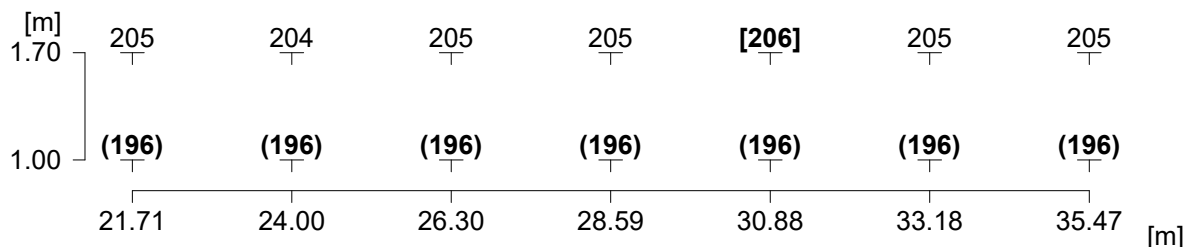
Average illuminance	Em	: 1570 lx
Minimum illuminance	Emin	: 1540 lx
Maximum illuminance	Emax	: 1610 lx
Uniformity Uo	min/average	: 1 : 1.02 (0.98)
Diversity Ud	min/max	: 1 : 1.05 (0.95)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.14 Table, Entrance (L), Wall right, S1: 100%, Obs. 1



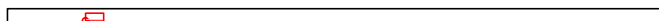
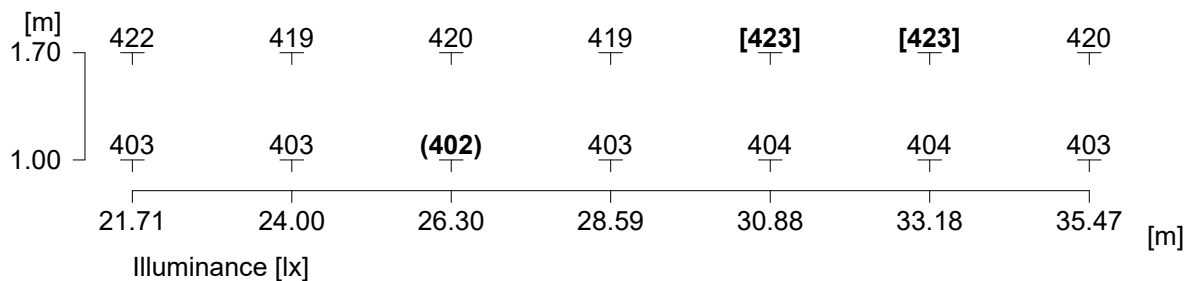
Observer location 1		: x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
Average luminance	Lav	: 200 cd/m²
Minimum luminance	Lmin	: 196 cd/m²
Overall uniformity Uo	Lmin/Lm	: 0.98
Longitudinal uniformity UI	Llmin/Llmax	: 0.99 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.15 Table, Entrance (E), Wall right, S2: 25%



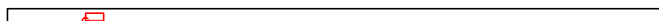
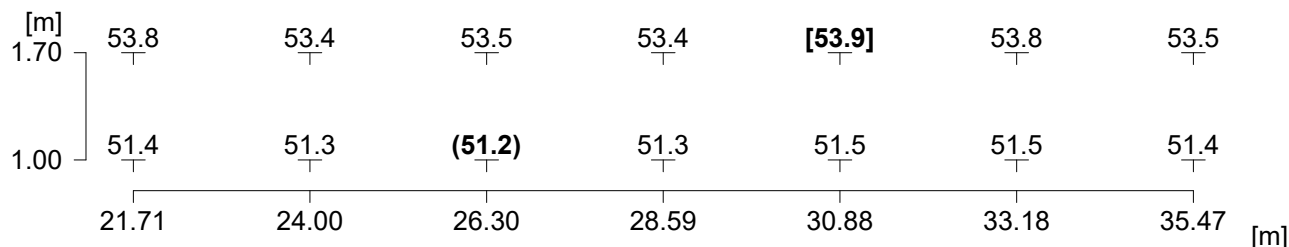
Average illuminance	Em	: 412 lx
Minimum illuminance	Emin	: 402 lx
Maximum illuminance	Emax	: 423 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.98)
Diversity Ud	min/max	: 1 : 1.05 (0.95)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.16 Table, Entrance (L), Wall right, S2: 25%, Obs. 1



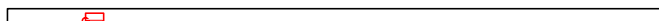
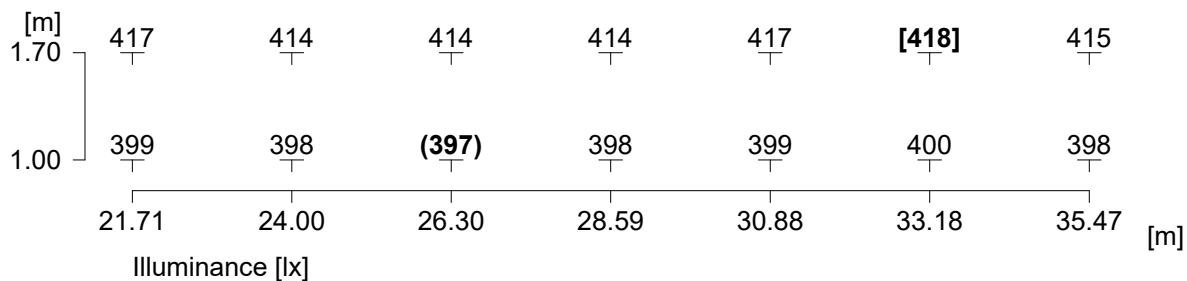
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Average luminance Lav : 52.5 cd/m²
 Minimum luminance Lmin : 51.2 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.98
 Longitudinal uniformity UI Llmin/Llmax : 0.99 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.17 Table, Entrance (E), Wall right, S3: 24.7%



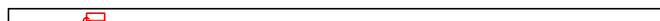
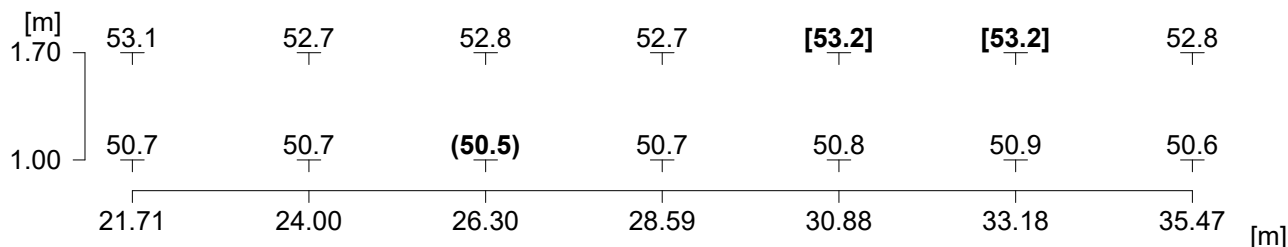
Average illuminance	Em	: 407 lx
Minimum illuminance	Emin	: 397 lx
Maximum illuminance	Emax	: 418 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.05 (0.95)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.18 Table, Entrance (L), Wall right, S3: 24.7%, Obs. 1



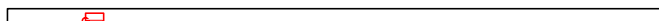
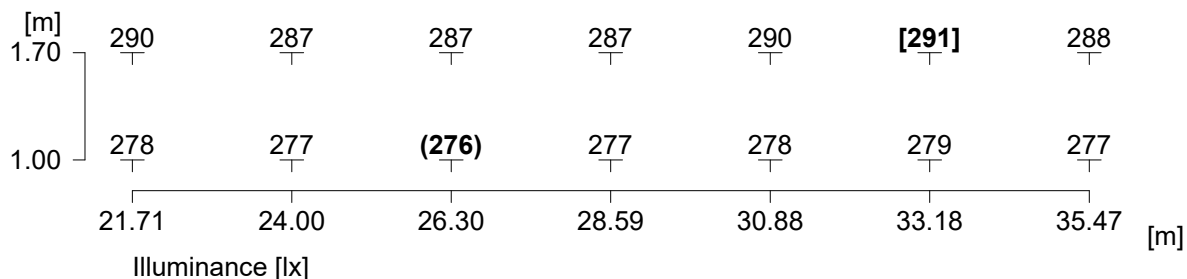
Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Average luminance Lav : 51.8 cd/m²
 Minimum luminance Lmin : 50.5 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.97
 Longitudinal uniformity UI Llmin/Llmax : 0.99 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.19 Table, Entrance (E), Wall right, S4: 16.7%



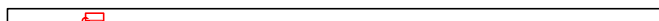
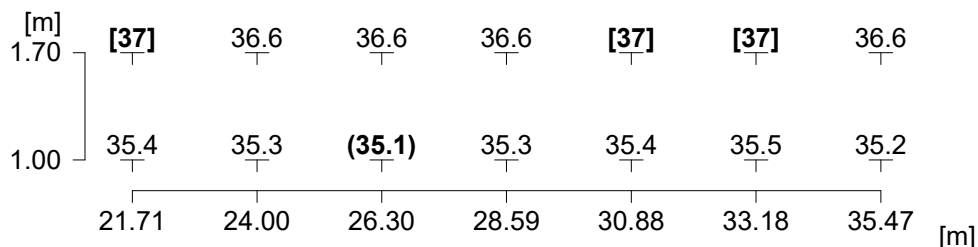
Average illuminance	Em	: 283 lx
Minimum illuminance	Emin	: 276 lx
Maximum illuminance	Emax	: 291 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.05 (0.95)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.20 Table, Entrance (L), Wall right, S4: 16.7%, Obs. 1



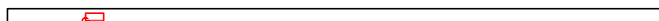
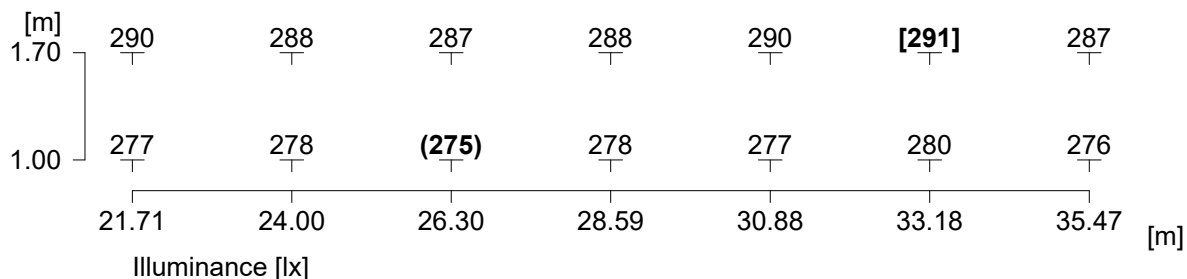
Observer location 1	: x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
Average luminance	Lav : 36 cd/m ²
Minimum luminance	Lmin : 35.1 cd/m ²
Overall uniformity U _o	Lmin/Lm : 0.97
Longitudinal uniformity U _l	Llmin/Llmax : 0.99 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.21 Table, Entrance (E), Wall right, S5: 16.7%



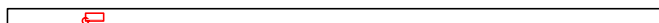
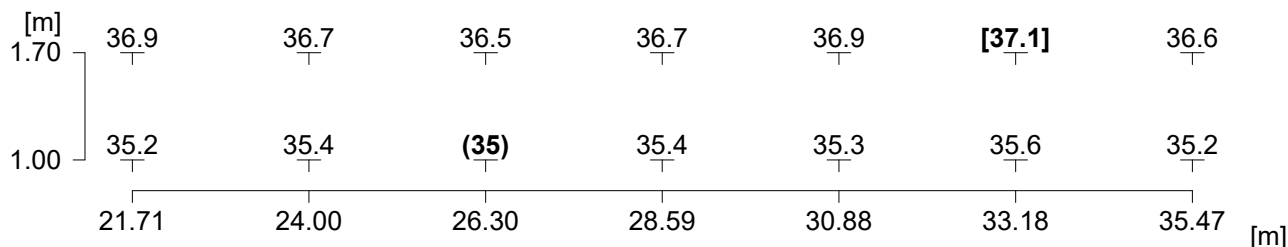
Average illuminance	Em	: 283 lx
Minimum illuminance	Emin	: 275 lx
Maximum illuminance	Emax	: 291 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.06 (0.94)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.22 Table, Entrance (L), Wall right, S5: 16.7%, Obs. 1



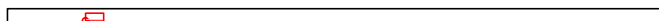
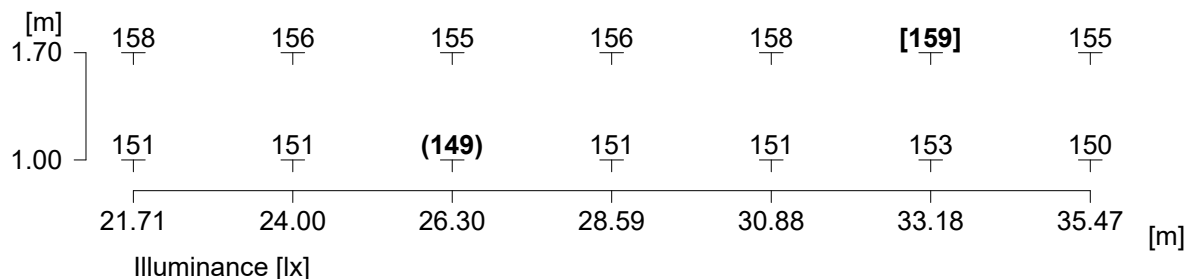
Observer location 1		: x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
Average luminance	Lav	: 36 cd/m ²
Minimum luminance	Lmin	: 35 cd/m ²
Overall uniformity Uo	Lmin/Lm	: 0.97
Longitudinal uniformity UI	Llmin/Llmax	: 0.98 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.23 Table, Entrance (E), Wall right, S6: 8.3%



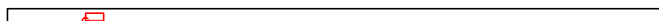
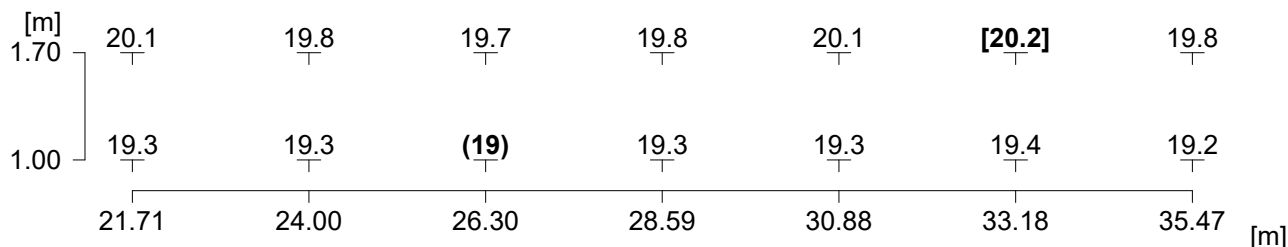
Average illuminance	Em	: 154 lx
Minimum illuminance	Emin	: 149 lx
Maximum illuminance	Emax	: 159 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.06 (0.94)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.4 Calculation results, Galleria SP209__dir SUD

2.4.24 Table, Entrance (L), Wall right, S6: 8.3%, Obs. 1



Observer location 1 : x = -39.4, y = 1.75, z = 1.5 (dx = 61.15)
 Average luminance Lav : 19.6 cd/m²
 Minimum luminance Lmin : 19 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.97
 Longitudinal uniformity UI Llmin/Llmax : 0.98 (1.70m)

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

[m]	28	34	40	46	50	54	57	59	59	60	60	60	60	60	60	
6.42	39	48	56	63	69	73	76	78	79	79	79	79	80	80	79	79
5.25	61	73	84	92	99	104	108	110	111	112	112	112	112	112	112	112
4.08	103	118	131	142	150	157	160	163	164	165	165	165	166	165	165	165
2.92	134	150	164	176	185	192	196	199	200	200	200	200	200	200	200	200
1.75	102	118	130	142	150	157	160	163	164	164	164	164	165	165	165	165
0.58	1.06	3.35	5.65	7.94	10.24	12.53	14.82	17.12	19.41	21.71	24.00	26.30	28.59	30.88	33.18	35.



Part1

Observer location 1 : x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 41.1 cd/m²
 Minimum luminance Lmin : 1.31 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.032
 Longitudinal uniformity UI Lmin/Lmax : 0.007
 Threshold increment TI : 13 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

60	60	60	60	59	59	59	58	57	56	55	54	52	51	49	48	
79	80	80	79	79	78	78	77	75	74	72	71	69	67	65	63	
112	112	112	111	111	110	109	107	105	103	100	99	95	93	90	87	
165	165	164	164	162	161	159	156	153	149	146	143	138	134	130	126	
200	200	199	198	196	194	191	188	184	179	175	171	165	160	155	151	
164	164	164	163	162	160	158	156	152	149	145	142	137	134	129	125	
47	37.77	40.06	42.36	44.65	46.94	49.24	51.53	53.83	56.12	58.42	60.71	63.00	65.30	67.59	69.89	72.1



Part2

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

	47	45	43	42	40	39	37	36	35	33	32	31	30	28	27	26
	61	59	57	54	52	51	49	47	45	44	42	41	39	37	35	34
	85	81	79	75	72	70	67	65	63	61	58	56	53	51	48	45
	122	117	112	107	103	100	96	93	90	87	83	79	74	71	68	64
	146	139	133	127	123	119	115	111	107	103	98	93	88	84	80	75
	121	116	112	106	103	99	96	93	90	86	82	78	74	71	67	63
8	74.48	76.77	79.06	81.36	83.65	85.95	88.24	90.54	92.83	95.12	97.42	99.71	102.01	104.30	106.60	108.8



Part3

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

	24	23	21	20	19	18	17	16	15	15	14	14	13	13	12	12
	32	30	28	26	25	24	22	21	20	19	19	18	17	16	16	16
	43	40	37	35	33	31	29	28	26	26	25	24	23	22	21	21
	59	55	51	48	46	43	41	39	37	36	35	33	32	30	29	28
	70	65	60	57	54	51	48	45	43	42	41	39	37	35	34	33
	59	55	51	48	45	43	40	38	36	35	34	33	31	30	28	27
9	111.18	113.48	115.77	118.07	120.36	122.66	124.95	127.24	129.54	131.83	134.13	136.42	138.72	141.01	143.30	145.60



Part4

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

11	11	10	10	10	10	9	9	9	9	8	8	8	8	8	7
15	14	14	13	13	13	12	11	11	11	11	10	10	10	10	10
20	19	18	18	17	16	16	15	15	15	14	14	13	13	13	12
27	26	25	24	23	22	21	20	20	20	19	18	18	17	17	17
31	30	29	28	27	26	25	24	23	23	22	21	21	20	20	19
26	25	24	23	22	21	20	20	19	19	18	18	17	17	16	16
147.89	150.19	152.48	154.78	157.07	159.36	161.66	163.95	166.25	168.54	170.84	173.13	175.42	177.72	180.01	182.31



Part5

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

7	7	7	7	7	7	6	6	7	6	6	6	6	6	6	5
9	9	9	9	9	8	8	8	9	8	8	8	8	8	7	7
12	12	12	12	11	11	11	11	11	10	10	10	10	10	9	9
16	16	15	15	15	14	14	14	14	13	13	13	13	12	12	11
19	18	18	18	17	17	16	16	16	15	15	14	14	14	14	13
15	15	15	15	14	14	13	13	13	13	12	12	12	12	11	11
184.60	186.90	189.19	191.48	193.78	196.07	198.37	200.66	202.96	205.25	207.54	209.84	212.13	214.43	216.72	219.02



Part6

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4
7	7	7	7	6	6	7	7	6	6	6	6	6	6	6	5
9	9	9	8	8	8	8	8	8	8	7	8	8	7	7	7
11	11	11	11	10	10	10	10	10	9	9	9	9	9	9	8
13	13	13	12	12	11	11	11	11	11	10	10	11	10	10	9
10	10	10	10	10	9	9	9	9	9	8	9	9	8	8	8
221.31	223.60	225.90	228.19	230.49	232.78	235.08	237.37	239.66	241.96	244.25	246.55	248.84	251.14	253.43	255.72



Part7

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6	6	6	5	5	5	6	5	5	5	5	5	5	5	5	5
7	7	7	7	6	7	7	6	6	6	6	6	6	6	6	6
9	9	8	8	8	8	8	8	7	7	7	8	7	7	7	7
10	10	9	9	9	9	9	9	8	8	8	8	8	8	8	8
8	8	8	7	7	7	7	7	7	7	7	7	7	6	6	6
258.02	260.31	262.61	264.90	267.20	269.49	271.78	274.08	276.37	278.67	280.96	283.26	285.55	287.84	290.14	292.43



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
7	7	6	6	6	7	7	6	6	6	7	7	6	6	6	7
294.73	297.02	299.32	301.61	303.90	306.20	308.49	310.79	313.08	315.38	317.67	319.96	322.26	324.55	326.85	329.14



Part9

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

4	4	4	4	4	4	4	4	4	4	4	3	3	3	4	3
5	5	5	5	5	5	5	5	5	5	5	4	4	4	5	4
6	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5
7	7	7	7	7	7	7	7	7	7	6	6	5	6	6	6
8	8	8	8	8	8	8	7	8	7	7	6	6	6	6	6
7	6	6	6	7	6	6	6	6	6	6	5	5	5	5	5
331.44	333.73	336.02	338.32	340.61	342.91	345.20	347.50	349.79	352.08	354.38	356.67	358.97	361.26	363.56	365.85



Part10

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023

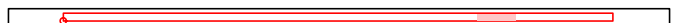


2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{5}$	$\frac{3}{4}$	$\frac{3}{4}$
$\frac{4}{5}$	$\frac{4}{4}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{4}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{4}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{4}{5}$	$\frac{4}{4}$
$\frac{5}{5}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{5}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{5}$	$\frac{4}{5}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{5}$
$\frac{5}{6}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{6}{6}$	$\frac{6}{6}$	$\frac{5}{6}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{6}{6}$	$\frac{6}{6}$	$\frac{5}{6}$	$\frac{5}{5}$	$\frac{5}{6}$	$\frac{6}{6}$	$\frac{6}{6}$	$\frac{5}{5}$
$\frac{6}{5}$	$\frac{5}{4}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{5}{4}$	$\frac{6}{4}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{6}{5}$
368.14	370.44	372.73	375.03	377.32	379.62	381.91	384.20	386.50	388.79	391.09	393.38	395.68	397.97	400.26	402.56



Part11

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	5	5	5	5	4	5	5	5	5	4	5	5	5	5	4
5	5	6	6	5	5	5	5	6	5	5	5	5	5	5	5
5	5	6	6	6	5	5	6	6	6	5	5	6	6	6	5
4	4	5	5	5	4	4	5	5	5	4	4	5	5	5	4
104.85	407.15	409.44	411.74	414.03	416.32	418.62	420.91	423.21	425.50	427.80	430.09	432.38	434.68	436.97	439.27



Part12

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{2}{3}$	$\frac{2}{3}$	
$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	
$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	
$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	
$\frac{5}{6}$	$\frac{6}{7}$	$\frac{6}{7}$	$\frac{6}{7}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	
$\frac{4}{5}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{2}{3}$	$\frac{3}{4}$	
11.56	443.86	446.15	448.44	450.74	453.03	455.33	457.62	459.92	462.21	464.50	466.80	469.09	471.39	473.68	475.98	47



Part13

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2 Galleria SP209__dir SUD

2.5 Calculation results, Galleria SP209__dir SUD

2.5.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	(1)
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	(1)
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	(1)
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	(1)
8.27	480.56	482.86	485.15	487.45

[m]



Part14

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

[m]	569	771	976	1160	1310	1430	1510	1550	1560	1570	1570	1570	1580
6.42	680	952	1230	1480	1660	1800	1880	1920	1940	1950	1960	1960	1960
5.25	815	1180	1550	1870	2100	2260	2360	2410	2420	2430	2440	2440	2450
4.08	986	1440	1900	2310	2600	2800	2900	2950	2970	2980	2990	2990	3000
2.92	1080	1580	2090	2550	2890	3090	3200	3260	3280	3290	[3300]	[3300]	[3300]
1.75	990	1450	1920	2340	2640	2830	2930	2990	3010	3020	3030	3030	3030
0.58	1.06	3.35	5.65	7.94	10.24	12.53	14.82	17.12	19.41	21.71	24.00	26.30	28.59
	Illuminance [lx]												



Part1

Height reference plane : 0.00 m
 Average illuminance Em : 618 lx
 Minimum illuminance Emin : 45 lx
 Maximum illuminance Emax : 3300 lx
 Uniformity Uo min/average : 1 : 13.7 (0.07)
 Diversity Ud min/max : 1 : 73.1 (0.01)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

1570	1570	1580	1570	1580	1570	1570	1570	1560	1550	1540	1520	1490
1960	1960	1960	1960	1960	1960	1950	1950	1940	1930	1910	1890	1860
2440	2440	2450	2440	2450	2440	2440	2440	2430	2410	2390	2360	2320
2990	2990	3000	3000	3000	2990	2990	2990	2980	2960	2930	2890	2840
[3300]	[3300]	[3300]	[3300]	[3300]	[3300]	[3300]	3290	3280	3260	3230	3190	3130
3030	3030	3030	3030	3030	3030	3030	3020	3010	2990	2970	2920	2880
30.88	33.18	35.47	37.77	40.06	42.36	44.65	46.94	49.24	51.53	53.83	56.12	58.42



Part2

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

1460	1430	1390	1350	1320	1280	1240	1200	1160	1120	1070	1030	988
1820	1780	1730	1690	1640	1590	1540	1490	1440	1390	1330	1280	1220
2270	2220	2160	2100	2040	1980	1920	1850	1800	1730	1660	1590	1520
2780	2720	2650	2570	2500	2430	2350	2270	2200	2110	2030	1940	1850
3070	3000	2920	2840	2750	2670	2590	2500	2430	2330	2230	2140	2030
2810	2750	2680	2600	2530	2450	2370	2300	2230	2140	2050	1960	1870
60.71	63.00	65.30	67.59	69.89	72.18	74.48	76.77	79.06	81.36	83.65	85.95	88.24



Part3

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

952	919	888	860	831	796	765	730	691	652	612	576	538	
1180	1140	1100	1070	1040	990	949	903	854	807	759	714	665	
1460	1410	1370	1330	1290	1230	1180	1120	1060	997	939	884	822	
1780	1720	1680	1620	1580	1500	1440	1360	1280	1210	1140	1070	998	
1950	1890	1840	1780	1730	1660	1580	1490	1410	1330	1250	1170	1090	
1790	1730	1690	1630	1590	1520	1450	1370	1290	1220	1150	1080	1000	
90.54	92.83	95.12	97.42	99.71	102.01	104.30	106.60	108.89	111.18	113.48	115.77	118.07	12



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

505	472	442	419	397	382	367	353	343	331	320	308	295	286
621	580	543	515	488	469	451	433	421	407	394	379	363	350
764	709	664	630	600	575	551	528	514	498	483	462	440	425
926	856	800	760	724	691	663	636	618	599	578	554	529	508
1010	937	875	830	789	753	725	695	674	652	628	604	577	552
928	859	803	760	723	690	664	636	616	596	575	553	528	504
10.36	122.66	124.95	127.24	129.54	131.83	134.13	136.42	138.72	141.01	143.30	145.60	147.89	150.18



Part5

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

274	264	253	243	237	228	222	215	208	205	199	195	190	
334	322	309	296	290	279	271	263	253	249	242	238	232	
406	391	373	357	350	338	328	315	303	298	292	285	277	
485	465	444	425	415	400	388	372	358	352	344	335	326	
525	503	482	463	450	432	418	403	388	380	370	360	352	
480	460	441	423	410	394	382	368	354	346	338	329	321	
19	152.48	154.78	157.07	159.36	161.66	163.95	166.25	168.54	170.84	173.13	175.42	177.72	180.01



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

184	183	178	175	170	165	165	162	159	156	153	152	149
224	222	216	212	207	201	199	196	192	190	185	184	180
267	264	258	253	245	237	237	232	229	223	218	218	214
315	310	303	296	287	277	276	270	266	261	253	253	249
341	334	324	316	309	300	296	288	284	280	273	271	265
310	304	295	288	281	273	269	262	258	255	248	246	240
182.31	184.60	186.90	189.19	191.48	193.78	196.07	198.37	200.66	202.96	205.25	207.54	209.84



Part7

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

146	143	138	137	133	131	128	125	125	122	121	119	115
176	172	166	165	160	158	154	150	150	146	145	142	138
208	201	193	193	188	185	179	173	174	171	169	164	159
241	233	224	222	216	212	205	199	200	196	193	187	181
256	249	240	236	229	224	219	212	211	206	203	199	193
233	226	218	214	208	204	198	193	192	187	184	180	175
212.13	214.43	216.72	219.02	221.31	223.60	225.90	228.19	230.49	232.78	235.08	237.37	239.66



Part8

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

116	114	113	111	108	109	106	106	104	101	102	100	100	
139	135	135	132	128	130	126	126	124	120	122	119	118	
160	158	156	151	147	149	147	145	141	136	139	136	136	
182	180	177	172	166	168	166	163	159	153	156	153	153	
193	188	185	182	177	176	173	170	168	162	163	158	158	
174	170	168	164	160	159	156	153	152	146	148	143	143	
241.96	244.25	246.55	248.84	251.14	253.43	255.72	258.02	260.31	262.61	264.90	267.20	269.49	2



Part9

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

98	95	96	95	94	93	91	92	91	91	91	89	91	90
116	114	114	113	111	110	108	108	108	107	107	105	107	107
131	128	129	129	127	124	120	122	123	122	120	118	120	122
146	144	143	144	141	138	134	134	137	135	132	131	132	135
154	151	150	149	145	144	141	140	141	138	138	138	137	139
138	137	134	134	131	130	127	126	127	125	124	124	123	125
71.78	274.08	276.37	278.67	280.96	283.26	285.55	287.84	290.14	292.43	294.73	297.02	299.32	301.



Part10

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

91	90	89	91	90	91	90	89	91	90	91	90	88	
107	106	105	107	106	107	106	105	107	106	108	106	105	
122	119	117	120	121	122	119	117	120	121	123	119	117	
135	131	131	132	134	136	131	131	133	133	136	131	130	
138	137	138	137	138	139	136	137	138	137	140	137	137	
125	123	124	124	124	126	122	124	124	123	126	123	123	
.61	303.90	306.20	308.49	310.79	313.08	315.38	317.67	319.96	322.26	324.55	326.85	329.14	331.44



Part11

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

91	90	91	90	88	91	89	90	89	85	85	81	79
108	106	108	107	104	108	105	107	106	100	102	96	93
121	120	123	119	116	121	120	122	118	112	114	108	104
134	132	136	132	129	135	132	135	131	124	126	118	112
140	136	140	137	135	140	135	139	137	130	132	120	112
125	122	126	123	122	126	122	125	123	117	118	107	101
333.73	336.02	338.32	340.61	342.91	345.20	347.50	349.79	352.08	354.38	356.67	358.97	361.26



Part12

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

77	72	74	72	73	74	71	74	73	73	73	71	73
89	83	86	85	85	86	82	86	85	85	86	82	85
96	88	93	95	95	94	88	93	95	95	93	87	92
103	94	99	101	101	101	95	100	102	101	100	93	98
106	98	101	101	100	103	99	103	102	100	102	97	101
94	87	90	90	90	92	87	91	91	90	91	86	89
363.56	365.85	368.14	370.44	372.73	375.03	377.32	379.62	381.91	384.20	386.50	388.79	391.09



Part13

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

73	72	73	71	73	73	72	73	71	73	73	72	73
85	85	86	82	85	85	85	86	82	84	85	85	86
95	95	93	87	91	94	95	94	88	91	94	95	94
101	100	100	94	98	101	100	100	94	97	101	100	100
101	99	102	97	100	101	100	102	98	100	101	100	101
91	90	91	86	88	91	90	91	87	88	90	90	91
393.38	395.68	397.97	400.26	402.56	404.85	407.15	409.44	411.74	414.03	416.32	418.62	420.91



Part14

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

71	73	73	72	73	71	73	73	72	73	71	73	72	
83	84	85	85	86	83	84	84	85	86	83	84	83	
88	90	93	95	94	89	90	93	95	94	89	90	92	
95	97	100	101	99	96	97	99	101	99	96	97	98	
99	100	101	100	101	99	100	100	101	100	99	100	99	
88	88	90	90	90	88	88	89	90	90	88	88	88	
123.21	425.50	427.80	430.09	432.38	434.68	436.97	439.27	441.56	443.86	446.15	448.44	450.74	453.03



Part15

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

72	70	66	66	63	60	59	54	56	55	55	55	52	53
84	83	78	77	72	69	67	62	64	63	62	63	59	61
93	91	84	82	78	73	69	63	65	66	66	65	60	62
100	96	90	86	80	74	69	63	65	66	66	65	60	62
100	97	92	88	78	71	68	62	64	63	62	63	59	61
89	87	82	77	69	63	60	55	56	55	55	55	52	53
3.03	455.33	457.62	459.92	462.21	464.50	466.80	469.09	471.39	473.68	475.98	478.27	480.56	482.8



Part16

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.2 Table, Adaptation (E), S1: 100%

51	(45)
58	52
61	55
61	55
58	52
51	(45)

6 485.15 487.45 [m]



Part17

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

[m]	516	769	1020	1260	1450	1550	1590	1600	1610	1610	1610	1610	1610
1.70	516	769	1020	1260	1450	1550	1590	1600	1610	1610	1610	1610	1610
1.00	510	736	968	1180	1340	1450	1510	1520	1530	1540	1540	1540	1540
	1.06	3.35	5.65	7.94	10.24	12.53	14.82	17.12	19.41	21.71	24.00	26.30	28.59
	Illuminance [lx]												



Part1

Average illuminance	Em	: 372 lx
Minimum illuminance	Emin	: 20 lx
Maximum illuminance	Emax	: 1620 lx
Uniformity Uo	min/average	: 1 : 18.8 (0.05)
Diversity Ud	min/max	: 1 : 81.5 (0.01)

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

[1620]	1610	1610	1610	1610	[1620]	1610	1610	1600	1600	1580	1560	1530
1540	1540	1540	1540	1540	1540	1540	1540	1530	1520	1510	1490	1460
30.88	33.18	35.47	37.77	40.06	42.36	44.65	46.94	49.24	51.53	53.83	56.12	58.42



Part2

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

1500	1470	1430	1380	1340	1300	1270	1230	1180	1130	1090	1040	987
1430	1400	1360	1320	1280	1240	1210	1170	1130	1080	1040	993	951
60.71	63.00	65.30	67.59	69.89	72.18	74.48	76.77	79.06	81.36	83.65	85.95	88.24



Part3

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

945	917	897	870	840	810	771	725	688	648	608	566	528	
914	879	856	828	803	770	736	697	658	620	581	543	505	
90.54	92.83	95.12	97.42	99.71	102.01	104.30	106.60	108.89	111.18	113.48	115.77	118.07	12



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

490	451	420	396	377	360	347	338	325	311	300	290	280	264
469	436	407	382	363	347	334	323	312	299	289	279	267	254
10.36	122.66	124.95	127.24	129.54	131.83	134.13	136.42	138.72	141.01	143.30	145.60	147.89	150.18



Part5

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

	249	237	231	223	212	204	197	191	187	179	173	169	166
	241	229	222	214	205	197	190	185	180	173	167	163	160
19	152.48	154.78	157.07	159.36	161.66	163.95	166.25	168.54	170.84	173.13	175.42	177.72	180.01



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

163	157	151	147	146	143	137	134	132	131	131	126	122
157	152	146	142	141	137	133	130	128	127	125	122	118
182.31	184.60	186.90	189.19	191.48	193.78	196.07	198.37	200.66	202.96	205.25	207.54	209.84



Part7

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

119	116	114	109	104	102	102	101	96	93	91	92	92
115	113	109	106	102	99	99	97	94	91	89	89	88
212.13	214.43	216.72	219.02	221.31	223.60	225.90	228.19	230.49	232.78	235.08	237.37	239.66



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

87	84	83	83	83	79	77	75	76	76	73	70	70	
85	82	81	81	80	78	75	74	75	73	72	69	68	
241.96	244.25	246.55	248.84	251.14	253.43	255.72	258.02	260.31	262.61	264.90	267.20	269.49	2



Part9

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

70	70	67	64	64	65	65	63	60	61	62	63	62	59
68	68	66	64	63	63	63	61	60	59	61	61	60	59
71.78	274.08	276.37	278.67	280.96	283.26	285.55	287.84	290.14	292.43	294.73	297.02	299.32	301.



Part10

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

	60	63	62	62	60	59	63	63	61	60	59	63	63
	59	60	61	60	59	59	61	61	60	59	59	61	61
.61	303.90	306.20	308.49	310.79	313.08	315.38	317.67	319.96	322.26	324.55	326.85	329.14	331.44



Part11

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

61	61	59	62	64	60	61	59	62	63	57	51	46
60	59	59	60	61	61	59	59	60	59	56	50	47
333.73	336.02	338.32	340.61	342.91	345.20	347.50	349.79	352.08	354.38	356.67	358.97	361.26



Part12

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

44	47	42	40	40	44	48	45	41	40	43	47	44
46	45	43	40	41	44	45	44	41	40	43	44	44
363.56	365.85	368.14	370.44	372.73	375.03	377.32	379.62	381.91	384.20	386.50	388.79	391.09



Part13

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

40	40	42	46	45	41	40	42	46	45	41	40	42
41	40	43	44	44	41	40	42	44	44	42	40	42
393.38	395.68	397.97	400.26	402.56	404.85	407.15	409.44	411.74	414.03	416.32	418.62	420.91



Part14

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

45	45	42	40	42	45	45	42	40	42	44	45	43	
44	44	42	40	42	44	44	42	41	42	43	44	42	
123.21	425.50	427.80	430.09	432.38	434.68	436.97	439.27	441.56	443.86	446.15	448.44	450.74	453.03



Part15

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

40	41	42	38	32	26	25	27	25	23	23	24	26	24
41	41	40	37	32	28	27	26	26	24	23	25	25	24
3.03	455.33	457.62	459.92	462.21	464.50	466.80	469.09	471.39	473.68	475.98	478.27	480.56	482.8



Part16

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.3 Table, Adaptation (E), Wall right, S1: 100%

	22	(20)	
	22	(20)	
6	485.15	487.45	[m]



Part17

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

[m]	66	98	130	160	185	197	202	204	205	205	205	205	205	205	205	205
1.70	66	98	130	160	185	197	202	204	205	205	205	205	205	205	205	205
1.00	65	94	123	150	171	185	192	194	195	196	196	196	196	196	196	196
	1.06	3.35	5.65	7.94	10.24	12.53	14.82	17.12	19.41	21.71	24.00	26.30	28.59	30.88	33.18	35.47



Part1

Observer location 1		: x = -84.9, y = 1.75, z = 1.5 (dx = 85.93)
Average luminance	Lav	: 47.4 cd/m ²
Minimum luminance	Lmin	: 2.52 cd/m ²
Overall uniformity Uo	Lmin/Lm	: 0.053
Longitudinal uniformity UI	Llmin/Llmax	: 0.013 (1.70m)

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	205	205	[206]	205	205	204	203	202	199	195	191	187	182	176	171	165
	196	196	196	196	196	195	194	192	190	186	182	178	173	169	163	158
47	37.77	40.06	42.36	44.65	46.94	49.24	51.53	53.83	56.12	58.42	60.71	63.00	65.30	67.59	69.89	72.1



Part2

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	161	156	150	144	138	133	126	120	117	114	111	107	103	98	92	88
	154	149	144	138	132	126	121	116	112	109	105	102	98	94	89	84
8	74.48	76.77	79.06	81.36	83.65	85.95	88.24	90.54	92.83	95.12	97.42	99.71	102.01	104.30	106.60	108.8



Part3

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	82	77	72	67	62	57	54	50	48	46	44	43	41	40	38	37
	79	74	69	64	60	56	52	49	46	44	43	41	40	38	37	35
9	111.18	113.48	115.77	118.07	120.36	122.66	124.95	127.24	129.54	131.83	134.13	136.42	138.72	141.01	143.30	145.60



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	36	34	32	30	29	28	27	26	25	24	24	23	22	22	21	21
	34	32	31	29	28	27	26	25	24	24	23	22	21	21	20	20
I	147.89	150.19	152.48	154.78	157.07	159.36	161.66	163.95	166.25	168.54	170.84	173.13	175.42	177.72	180.01	182.31



Part5

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

20	19	19	19	18	17	17	17	17	17	16	16	15	15	15	14
19	19	18	18	17	17	17	16	16	16	16	15	15	14	14	13
184.60	186.90	189.19	191.48	193.78	196.07	198.37	200.66	202.96	205.25	207.54	209.84	212.13	214.43	216.72	219.02



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

13	13	13	13	12	12	12	12	12	11	11	11	11	11	10	10
13	13	13	12	12	12	11	11	11	11	10	10	10	10	10	10
221.31	223.60	225.90	228.19	230.49	232.78	235.08	237.37	239.66	241.96	244.25	246.55	248.84	251.14	253.43	255.72



Part7

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

10	10	10	9	9	9	9	9	9	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	8	8	8	8	8	8	8	8
258.02	260.31	262.61	264.90	267.20	269.49	271.78	274.08	276.37	278.67	280.96	283.26	285.55	287.84	290.14	292.43



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	8
8	8	8	8	8	8	8	8	7	8	8	8	8	7	8	8
294.73	297.02	299.32	301.61	303.90	306.20	308.49	310.79	313.08	315.38	317.67	319.96	322.26	324.55	326.85	329.14



Part9

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

8	8	8	7	8	8	8	8	8	8	8	7	7	6	6	6
8	8	7	8	8	8	8	7	8	8	8	7	6	6	6	6
331.44	333.73	336.02	338.32	340.61	342.91	345.20	347.50	349.79	352.08	354.38	356.67	358.97	361.26	363.56	365.85



Part10

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

5	5	5	6	6	6	5	5	5	6	6	5	5	5	6	6	
5	5	5	6	6	6	5	5	5	6	6	5	5	5	6	6	
368.14	370.44	372.73	375.03	377.32	379.62	381.91	384.20	386.50	388.79	391.09	393.38	395.68	397.97	400.26	402.56	4



Part11

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

5	5	5	6	6	5	5	5	6	6	5	5	5	6	6	5	
5	5	5	6	6	5	5	5	6	6	5	5	5	6	6	5	
104.85	407.15	409.44	411.74	414.03	416.32	418.62	420.91	423.21	425.50	427.80	430.09	432.38	434.68	436.97	439.27	441.56



Part12

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

5	5	6	6	5	5	5	5	5	4	(3)	(3)	(3)	(3)	(3)	(3)	
5	5	6	6	5	5	5	5	5	4	4	(3)	(3)	(3)	(3)	(3)	
11.56	443.86	446.15	448.44	450.74	453.03	455.33	457.62	459.92	462.21	464.50	466.80	469.09	471.39	473.68	475.98	47



Part13

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



2.5 Calculation results, Galleria SP209__dir SUD

2.5.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

(3)	(3)	(3)	(3)	(3)
(3)	(3)	(3)	(3)	(3)
8.27	480.56	482.86	485.15	487.45

[m]



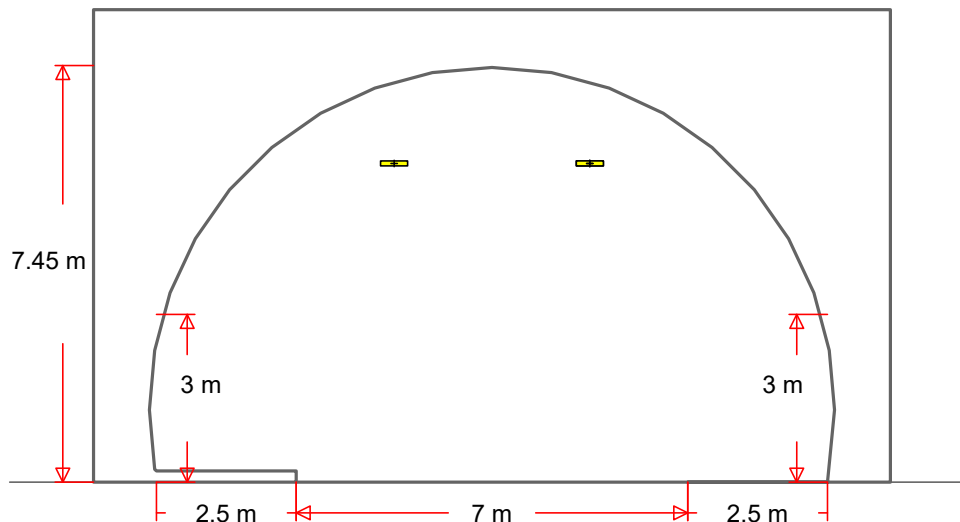
Part14

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023

3 Galleria SP209__dir NORD

3.1 Description, Galleria SP209__dir NORD

3.1.1 Project data



Geometry tunnel

Length of the tunnel : 490 m
Length of the tunnel (calculation model) : 490 m
Height of the tunnel : 7.45 m

Width of the carriageway : 7 m
Number of lanes : 2
Covering / material : CIE C2, $q_0 = 0.056$
Marginal strip right : 2.5 m
Marginal strip left : 2.5 m

Height of the wall (right) : 3 m
Covering / material : diffus 40%

Height of the wall (left) : 3 m
Covering / material : diffus 40%

Calculation specifications

Speed : 80 km/h
Length of the threshold zone : 109 m
Luminance threshold zone : 114.97 cd/m²
Luminance interior zone : 3 cd/m²

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023

3 Galleria SP209__dir NORD

3.1 Description, Galleria SP209__dir NORD

3.1.1 Project data

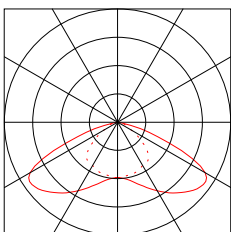
LDC in use

1



PHILIPS

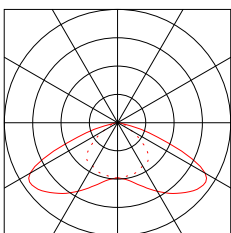
Order No. : !ETO TubePoint Gen2 Large
Luminaire name : BGP237 T25 DSM35 / LED630-4S 408W / CRI75
Equipment : 1 x LED630-4S CRI75 407.6 W / 63810 lm
Maintenance factor: 0.80



2



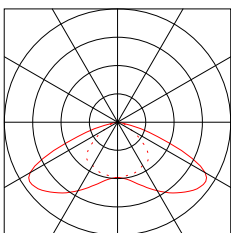
Order No. : !ETO TubePoint Gen2 Medium
Luminaire name : BGP236 T25 DSM35 / LED420-4S 275W / CRI75
Equipment : 1 x LED420-4S CRI75 274.7 W / 42929 lm
Maintenance factor: 0.80



3



Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED210-4S 139W / CRI75
Equipment : 1 x LED210-4S CRI75 139.2 W / 21723 lm
Maintenance factor: 0.80




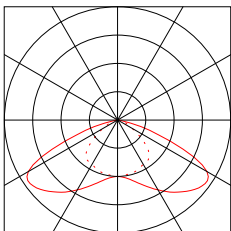
Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023


3 Galleria SP209__dir NORD

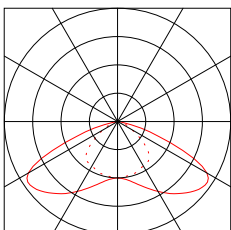
3.1 Description, Galleria SP209__dir NORD


3.1.1 Project data

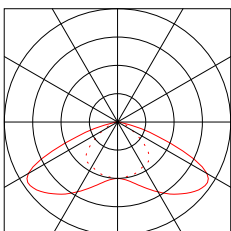
4  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED105-4S 66W / CRI75
Equipment : 1 x LED105-4S CRI75 65.6 W / 10843 lm
Maintenance factor: 0.80



5  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
Maintenance factor: 0.80



6  Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
Maintenance factor: 0.80



Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023

3.1 Description, Galleria SP209__dir NORD

3.1.2 Luminaire list

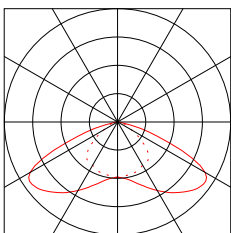
Adaptation LDC in use

PHILIPS

1 36 x



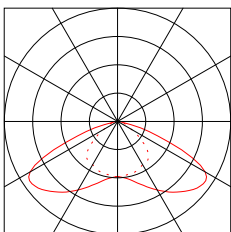
Order No. : !ETO TubePoint Gen2 Large
Luminaire name : BGP237 T25 DSM35 / LED630-4S 408W / CRI75
Equipment : 1 x LED630-4S CRI75 407.6 W / 63810 lm
Maintenance factor: 0.80



2 9 x



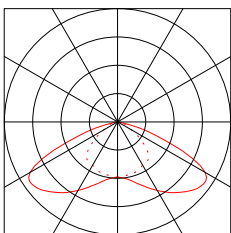
Order No. : !ETO TubePoint Gen2 Medium
Luminaire name : BGP236 T25 DSM35 / LED420-4S 275W / CRI75
Equipment : 1 x LED420-4S CRI75 274.7 W / 42929 lm
Maintenance factor: 0.80



3 11 x



Order No. : !ETO TubePoint Gen2 Small
Luminaire name : BGP235 T25 DSM35 / LED210-4S 139W / CRI75
Equipment : 1 x LED210-4S CRI75 139.2 W / 21723 lm
Maintenance factor: 0.80

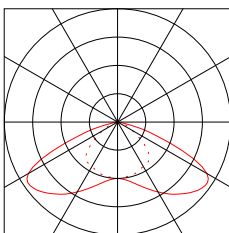


Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023

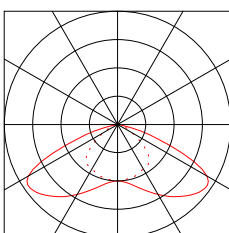
3.1 Description, Galleria SP209__dir NORD

3.1.2 Luminaire list

4 20 x Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED105-4S 66W / CRI75
 Equipment : 1 x LED105-4S CRI75 65.6 W / 10843 lm
 Maintenance factor: 0.80



5 34 x Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
 Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
 Maintenance factor: 0.80



Row of luminaires: rinforzo SX (3.1)

Number of luminaires: 110 System power (total): 21.3kW
 Basic position: x=4.50m y=1.75m, z=5.70m -variable distances-
 Rotation: z=0.0° C0=0.0° C90=0.0°

Nr.	Pos.	X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1		4.50	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
2		6.57	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
3		8.64	407.6W / 63.81kl	n3	100%	25%	0%	0%	0%	0%	0%	0%
4		10.71	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
5		12.78	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
6		15.95	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
7		17.22	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
8		18.99	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
9		21.06	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
10		23.13	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
11		25.20	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
12		27.27	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
13		29.34	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
14		31.41	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
15		33.48	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
16		35.55	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
17		37.12	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
18		39.69	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%
19		41.76	407.6W / 63.81kl	n3	100%	25%	37%	25%	50%	25%	0%	0%
20		43.83	407.6W / 63.81kl	n2	100%	25%	37%	25%	0%	0%	0%	0%
21		45.90	407.6W / 63.81kl	n1	100%	25%	0%	0%	0%	0%	0%	0%

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.1 Description, Galleria SP209__dir NORD

3.1.2 Luminaire list

22	47.97	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
23	50.34	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
24	52.11	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
25	54.18	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
26	56.25	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
27	58.38	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
28	60.08	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
29	62.83	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
30	65.15	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
31	67.54	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
32	70.01	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
33	73.36	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
34	75.21	407.6W / 63.81kln3	100%	25%	37%	25%	50%	25%	0%	0%
35	77.97	407.6W / 63.81kln2	100%	25%	37%	25%	0%	0%	0%	0%
36	80.85	407.6W / 63.81kln1	100%	25%	0%	0%	0%	0%	0%	0%
37	82.86	274.7W / 42.93kln3	100%	25%	37%	25%	50%	25%	0%	0%
38	84.95	274.7W / 42.93kln2	100%	25%	37%	25%	0%	0%	0%	0%
39	87.11	274.7W / 42.93kln1	100%	25%	0%	0%	0%	0%	0%	0%
40	89.36	274.7W / 42.93kln3	100%	25%	37%	25%	50%	25%	0%	0%
41	91.71	274.7W / 42.93kln2	100%	25%	37%	25%	0%	0%	0%	0%
42	94.17	274.7W / 42.93kln1	100%	25%	0%	0%	0%	0%	0%	0%
43	96.76	274.7W / 42.93kln3	100%	25%	37%	25%	50%	25%	0%	0%
44	99.50	274.7W / 42.93kln2	100%	25%	37%	25%	0%	0%	0%	0%
45	102.43	274.7W / 42.93kln1	100%	25%	0%	0%	0%	0%	0%	0%
46	104.00	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
47	105.63	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
48	107.64	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
49	109.09	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
50	110.95	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
51	112.93	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
52	115.05	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
53	117.32	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
54	119.76	139.2W / 21.72kln1	100%	25%	0%	0%	0%	0%	0%	0%
55	122.38	139.2W / 21.72kln3	100%	25%	37%	25%	50%	25%	0%	0%
56	125.21	139.2W / 21.72kln2	100%	25%	37%	25%	0%	0%	0%	0%
57	126.73	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
58	128.29	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
59	129.42	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
60	131.61	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
61	133.37	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
62	135.21	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
63	137.13	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
64	139.15	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
65	140.95	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
66	143.46	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
67	145.77	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
68	148.20	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
69	150.76	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
70	153.45	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
71	156.29	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%
72	159.29	65.6W / 10.84klm 1	100%	25%	0%	0%	0%	0%	0%	0%
73	162.47	65.6W / 10.84klm 3	100%	25%	37%	25%	50%	25%	0%	0%
74	165.85	65.6W / 10.84klm 2	100%	25%	37%	25%	0%	0%	0%	0%

Object : ANAS_Galleria SP209
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3.1 Description, Galleria SP209__dir NORD

3.1.2 Luminaire list

75	169.43	65.6W / 10.84klm	1	100%	25%	0%	0%	0%	0%	0%	0%
76	173.26	65.6W / 10.84klm	3	100%	25%	37%	25%	50%	25%	0%	0%
77	175.51	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
78	177.82	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
79	180.22	37.3W / 5.98klm	3	100%	25%	37%	25%	50%	25%	0%	0%
80	182.72	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
81	185.32	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
82	188.04	37.3W / 5.98klm	3	100%	25%	37%	25%	50%	25%	0%	0%
83	190.88	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
84	193.84	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
85	196.96	37.3W / 5.98klm	3	100%	25%	37%	25%	50%	25%	0%	0%
86	200.22	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
87	203.66	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
88	207.28	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
89	211.10	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
90	215.16	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
91	219.46	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
92	224.06	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
93	228.98	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
94	234.28	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
95	240.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
96	246.01	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
97	252.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
98	258.01	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
99	264.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
100	270.01	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
101	276.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
102	282.01	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
103	288.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
104	294.01	37.3W / 5.98klm	2	100%	25%	37%	25%	0%	0%	0%	0%
105	306.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
106	318.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
107	330.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
108	342.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
109	354.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%
110	366.01	37.3W / 5.98klm	1	100%	25%	0%	0%	0%	0%	0%	0%


Interior
 LDC in use

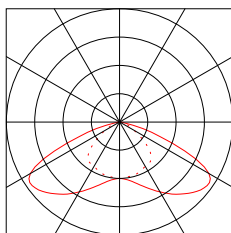
PHILIPS

Object : ANAS_Galleria SP209
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3.1 Description, Galleria SP209_dir NORD

3.1.2 Luminaire list

6  Order No. : !ETO TubePoint Gen2 Small
 Luminaire name : BGP235 T25 DSM35 / LED58-4S 37W / CRI75
 Equipment : 1 x LED58-4S CRI75 37.3 W / 5980 lm
 Maintenance factor: 0.80



Row of luminaires: permanente DX (1.1)

Number of luminaires: 43 System power (total): 1.6kW (0.49 km)
 Basic position: x=3.50m y=1.75m, z=5.70m Constant distance: 11.50m
 Rotation: z=0.0° C0=0.0° C90=0.0° Flicker frequency (v=80 km/h): 1.9 Hz

Nr.	Pos. X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1	3.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
2	15.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
3	26.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
4	38.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
5	49.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
6	61.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
7	72.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
8	84.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
9	95.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
10	107.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
11	118.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
12	130.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
13	141.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
14	153.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
15	164.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
16	176.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
17	187.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
18	199.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
19	210.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
20	222.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
21	233.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
22	245.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
23	256.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
24	268.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
25	279.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
26	291.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
27	302.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
28	314.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
29	325.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
30	337.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
31	348.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
32	360.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
33	371.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
34	383.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%

Object : ANAS_Galleria SP209
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3.1 Description, Galleria SP209_dir NORD

3.1.2 Luminaire list

35	394.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
36	406.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
37	417.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
38	429.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
39	440.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
40	452.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
41	463.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
42	475.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
43	486.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%

Row of luminaires: permanente SX (2.1)

Number of luminaires: 43

System power (total): 1.6kW (0.49 km)

Basic position: x=3.50m y=5.25m, z=5.70m

Constant distance: 11.50m

Rotation: z=0.0° C0=0.0° C90=0.0°

Flicker frequency (v=80 km/h): 1.9 Hz

Nr.	Pos. X [m]	Power level	Control	gr.S1	S2	S3	S4	S5	S6	Int.1	Int.2
1	3.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
2	15.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
3	26.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
4	38.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
5	49.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
6	61.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
7	72.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
8	84.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
9	95.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
10	107.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
11	118.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
12	130.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
13	141.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
14	153.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
15	164.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
16	176.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
17	187.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
18	199.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
19	210.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
20	222.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
21	233.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
22	245.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
23	256.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
24	268.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
25	279.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
26	291.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
27	302.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
28	314.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
29	325.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
30	337.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
31	348.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
32	360.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
33	371.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
34	383.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
35	394.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
36	406.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%
37	417.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	50%

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3.1 Description, Galleria SP209__dir NORD

3.1.2 Luminaire list

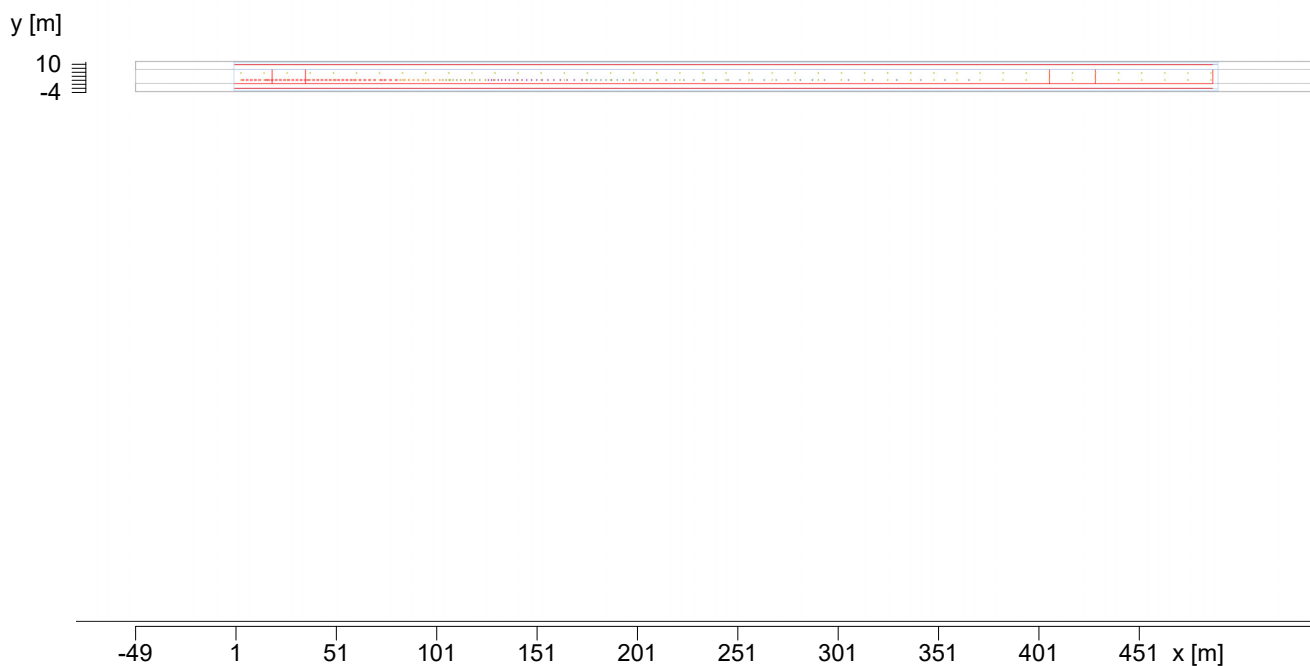
38	429.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
39	440.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
40	452.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
41	463.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
42	475.00	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%
43	486.50	37.3W / 5.98klm	4	100%	100%	100%	100%	100%	100%	100%	100%	50%

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3.1 Description, Galleria SP209__dir NORD

3.1.3 Floor plan



3.1 Description, Galleria SP209__dir NORD

3.1.4 3D view, View from the left



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3 Galleria SP209__dir NORD

3.2 Calculation results, Galleria SP209__dir NORD

3.2.1 Result overview, S1: 100%

Regulating step: S1: 100%

Adaptation

1: 100%
2: 100%
3: 100%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	: 125.52 cd/m ²	64.02 cd/m ²
Uo	Lmin/Lavg : 0.92	0.69
UI	Llmin/Llma:: 0.98	0.99
TI max. Max.	: 3 %	1 %

Wall left (diffus 40%)

Lav	: 46.03 cd/m ²	46.03 cd/m ²
Uo	Lmin/Lavg : 0.89	0.89
Lwall/L	: 0.50	0.49

Wall right (diffus 40%)

Lav	: 144.22 cd/m ²	144.22 cd/m ²
Uo	Lmin/Lavg : 0.97	0.97
Lwall/L	: 1.56	1.53

Illuminance

Roadway

Em 1839.01 lx
Uo Emin/Em : 0.62

Wall left

Em : 361.50 lx
Uo Emin/Em : 0.89

Wall right

Em 1132.74 lx
Uo Emin/Em : 0.97

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3 Galleria SP209__dir NORD

3.2 Calculation results, Galleria SP209__dir NORD

3.2.1 Result overview, S1: 100%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.49 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.63 lx Em : 24.63 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: 0.06 m - 487.40 m Points: nx = 206, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.69 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.88 (306.42 m) 0.70 (32.00 m)
 TI max. : 13 % (140.82 m) 5 % (140.82 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (79.32 m) 0.97 (79.32 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (79.32 m) 0.97 (79.32 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.2 Result overview, S2: 25%

Regulating step: S2: 25%

Adaptation

1: 25%
2: 25%
3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	33.81 cd/m ²	18.52 cd/m ²
Uo	Lmin/Lavg :	0.92	0.71
UI	Llmin/Llma::	0.98	0.97
TI max. Max.	:	3 %	1 %

Wall left (diffus 40%)

Lav	:	13.89 cd/m ²	13.89 cd/m ²
Uo	Lmin/Lavg :	0.90	0.90
Lwall/L	:	0.54	0.54

Wall right (diffus 40%)

Lav	:	38.44 cd/m ²	38.44 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.50	1.48

Illuminance

Roadway

Em : 504.88 lx
Uo Emin/Em : 0.64

Wall left

Em : 109.07 lx
Uo Emin/Em : 0.90

Wall right

Em : 301.87 lx
Uo Emin/Em : 0.97

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.3 Result overview, S3: 24.7%

Regulating step: S3: 24.7%

Adaptation

1: 0%
2: 37%
3: 37%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	33.37 cd/m ²	18.31 cd/m ²
Uo	Lmin/Lavg :	0.92	0.70
UI	Llmin/Llma::	0.98	0.96
TI max. Max.	:	3 %	1 %

Wall left (diffus 40%)

Lav	:	13.71 cd/m ²	13.71 cd/m ²
Uo	Lmin/Lavg :	0.89	0.89
Lwall/L	:	0.54	0.53

Wall right (diffus 40%)

Lav	:	37.77 cd/m ²	37.77 cd/m ²
Uo	Lmin/Lavg :	0.98	0.98
Lwall/L	:	1.49	1.47

Illuminance

Roadway

Em : 497.90 lx
Uo Emin/Em : 0.64

Wall left

Em : 107.65 lx
Uo Emin/Em : 0.89

Wall right

Em : 296.64 lx
Uo Emin/Em : 0.98

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.3 Result overview, S3: 24.7%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Lav : 3.10 cd/m² 3.10 cd/m²
 Uo Lmin/Lavg : 0.74 0.74
 UI Lmin/Lmax : 0.83 0.83
 TI max. Max. : 5 % 5 %

Wall left (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Wall right (diffus 40%)
 Lav : 3.14 cd/m² 3.14 cd/m²
 Uo Lmin/Lavg : 0.94 0.94
 Lwall/L : 1.01 1.01

Illuminance

Roadway
 Em : 60.49 lx
 Uo Emin/Em : 0.88
 Wall left Wall right
 Em : 24.63 lx Em : 24.63 lx
 Uo Emin/Em : 0.94 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: 0.06 m - 487.40 m Points: nx = 206, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.69 m; z = 1.50 m dx = 85.93 m (moving)
 y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)
 Ut min. : 0.89 (166.85 m) 0.72 (27.27 m)
 TI max. : 11 % (140.82 m) 5 % (133.73 m)

Wall left (diffus 40%)
 Ut min. : 0.97 (55.66 m) 0.97 (55.66 m)

Wall right (diffus 40%)
 Ut min. : 0.97 (55.66 m) 0.97 (55.66 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.4 Result overview, S4: 16.7%

Regulating step: S4: 16.7%

Adaptation

1: 0%
 2: 25%
 3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	23.56 cd/m ²	13.34 cd/m ²
Uo	Lmin/Lavg :	0.91	0.71
UI	Llmin/Llma::	0.98	0.95
TI max.	Max. :	3 %	1 %

Wall left (diffus 40%)

Lav	:	10.29 cd/m ²	10.29 cd/m ²
Uo	Lmin/Lavg :	0.89	0.89
Lwall/L	:	0.57	0.56

Wall right (diffus 40%)

Lav	:	26.55 cd/m ²	26.55 cd/m ²
Uo	Lmin/Lavg :	0.98	0.98
Lwall/L	:	1.47	1.45

Illuminance

Roadway

Em : 355.93 lx
 Uo Emin/Em : 0.65

Wall left

Em : 80.82 lx
 Uo Emin/Em : 0.89

Wall right

Em : 208.52 lx
 Uo Emin/Em : 0.98

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.2 Calculation results, Galleria SP209__dir NORD

3.2.4 Result overview, S4: 16.7%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)

		y =1.75 m	y =5.25 m
Roadway (CIE C2, q0 = 0.056)			
Lav	:	3.10 cd/m ²	3.10 cd/m ²
Uo Lmin/Lavg	:	0.74	0.74
Ul Lmin/Lmax	:	0.83	0.83
TI max. Max.	:	5 %	5 %

Wall left (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo Lmin/Lavg	:	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo Lmin/Lavg	:	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em	:	60.49 lx
Uo Emin/Em	:	0.88

Wall left

Em	:	24.63 lx
Uo Emin/Em	:	0.94

Wall right

Em	:	24.63 lx
Uo Emin/Em	:	0.94

Adaptation, Threshold and transition zone

Measuring range: 0.06 m - 487.40 m Points: nx = 206, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.69 m; z = 1.50 m dx = 85.93 m (moving)

		y =1.75 m	y =5.25 m
Roadway (CIE C2, q0 = 0.056)			
Ut min.	:	0.89 (143.19 m)	0.73 (27.27 m)
TI max.	:	10 % (133.73 m)	5 % (133.73 m)

Wall left (diffus 40%)

Ut min.	:	0.97 (55.66 m)	0.97 (55.66 m)
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Wall right (diffus 40%)

Ut min.	:	0.97 (55.66 m)	0.97 (55.66 m)
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qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.2 Calculation results, Galleria SP209__dir NORD

3.2.5 Result overview, S5: 16.7%

Regulating step: S5: 16.7%

Adaptation

1: 0%
2: 0%
3: 50%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	23.56 cd/m ²	13.34 cd/m ²
Uo	Lmin/Lavg :	0.91	0.71
UI	Llmin/Llma::	0.97	0.94
TI max. Max.	:	3 %	1 %

Wall left (diffus 40%)

Lav	:	10.29 cd/m ²	10.29 cd/m ²
Uo	Lmin/Lavg :	0.89	0.89
Lwall/L	:	0.57	0.56

Wall right (diffus 40%)

Lav	:	26.50 cd/m ²	26.50 cd/m ²
Uo	Lmin/Lavg :	0.98	0.98
Lwall/L	:	1.47	1.45

Illuminance

Roadway

Em : 355.37 lx
Uo Emin/Em : 0.66

Wall left

Em : 80.84 lx
Uo Emin/Em : 0.89

Wall right

Em : 208.09 lx
Uo Emin/Em : 0.98

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.2 Calculation results, Galleria SP209__dir NORD

3.2.6 Result overview, S6: 8.3%

Regulating step: S6: 8.3%

Adaptation

1: 0%
2: 0%
3: 25%

Interior

4: 100%

Entrance, Threshold zone (constant)

Measuring range: 18.99 m - 35.55 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = -41.01 m; z = 1.50 m dx = 61.18 m (fix)

Evaluation of Lm, Uo etc. only on observers lane.

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	13.36 cd/m ²	8.23 cd/m ²
Uo	Lmin/Lavg :	0.90	0.72
UI	Llmin/Llma::	0.96	0.93
TI max. Max.	:	3 %	2 %

Wall left (diffus 40%)

Lav	:	6.73 cd/m ²	6.73 cd/m ²
Uo	Lmin/Lavg :	0.90	0.90
Lwall/L	:	0.64	0.63

Wall right (diffus 40%)

Lav	:	14.83 cd/m ²	14.83 cd/m ²
Uo	Lmin/Lavg :	0.97	0.97
Lwall/L	:	1.40	1.39

Illuminance

Roadway

Em : 207.77 lx
Uo Emin/Em : 0.69

Wall left

Em : 52.88 lx
Uo Emin/Em : 0.90

Wall right

Em : 116.50 lx
Uo Emin/Em : 0.97

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.2 Calculation results, Galleria SP209__dir NORD

3.2.6 Result overview, S6: 8.3%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3
 Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)

		y =1.75 m	y =5.25 m
Roadway (CIE C2, q0 = 0.056)			
Lav	:	3.10 cd/m ²	3.10 cd/m ²
Uo Lmin/Lavg	:	0.74	0.74
Uo Lmin/Lmax	:	0.83	0.83
TI max. Max.	:	5 %	5 %

Wall left (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo Lmin/Lavg	:	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo Lmin/Lavg	:	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em : 60.49 lx
 Uo Emin/Em : 0.88

Wall left

Em : 24.63 lx
 Uo Emin/Em : 0.94

Wall right

Em : 24.63 lx
 Uo Emin/Em : 0.94

Adaptation, Threshold and transition zone

Measuring range: 0.06 m - 487.40 m Points: nx = 206, ny = 6, nz = 3
 Observer (starting point coordinate) : x = -84.69 m; z = 1.50 m dx = 85.93 m (moving)

		y =1.75 m	y =5.25 m
Roadway (CIE C2, q0 = 0.056)			
Ut min.	:	0.89 (110.07 m)	0.75 (27.27 m)
TI max.	:	6 % (114.80 m)	3 % (107.70 m)

Wall left (diffus 40%)

Ut min. : 0.97 (55.66 m) 0.97 (55.66 m)

Wall right (diffus 40%)

Ut min. : 0.97 (55.66 m) 0.97 (55.66 m)

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.7 Result overview, Int.1

Regulating step: Int.1

Adaptation

1: 0%
2: 0%
3: 0%

Interior

4: 100%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)

y = 1.75 m

y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	3.10 cd/m ²	3.10 cd/m ²
Uo	Lmin/Lavg :	0.74	0.74
UI	Lmin/Lmax :	0.83	0.83
TI max.	Max. :	5 %	5 %

Wall left (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	3.14 cd/m ²	3.14 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em : 60.49 lx
Uo Emin/Em : 0.88

Wall left

Em : 24.63 lx
Uo Emin/Em : 0.94

Wall right

Em : 24.63 lx
Uo Emin/Em : 0.94

qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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3.2 Calculation results, Galleria SP209__dir NORD

3.2.8 Result overview, Int.2

Regulating step: Int.2

Adaptation

1: 0%
2: 0%
3: 0%

Interior

4: 50%

Interior, Interior zone

Measuring range: 406.00 m - 429.00 m Points: nx = 7, ny = 6, nz = 3

Observer (starting point coordinate) : x = 346.00 m; z = 1.50 m dx = 61.64 m (fix)

y = 1.75 m y = 5.25 m

Roadway (CIE C2, q0 = 0.056)

Lav	:	1.55 cd/m ²	1.55 cd/m ²
Uo	Lmin/Lavg :	0.74	0.74
UI	Lmin/Lmax :	0.83	0.83
TI max.	Max. :	4 %	4 %

Wall left (diffus 40%)

Lav	:	1.57 cd/m ²	1.57 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Wall right (diffus 40%)

Lav	:	1.57 cd/m ²	1.57 cd/m ²
Uo	Lmin/Lavg :	0.94	0.94
Lwall/L	:	1.01	1.01

Illuminance

Roadway

Em	:	30.25 lx
Uo	Emin/Em :	0.88

Wall left

Em	:	12.32 lx
Uo	Emin/Em :	0.94

Wall right

Em	:	12.32 lx
Uo	Emin/Em :	0.94

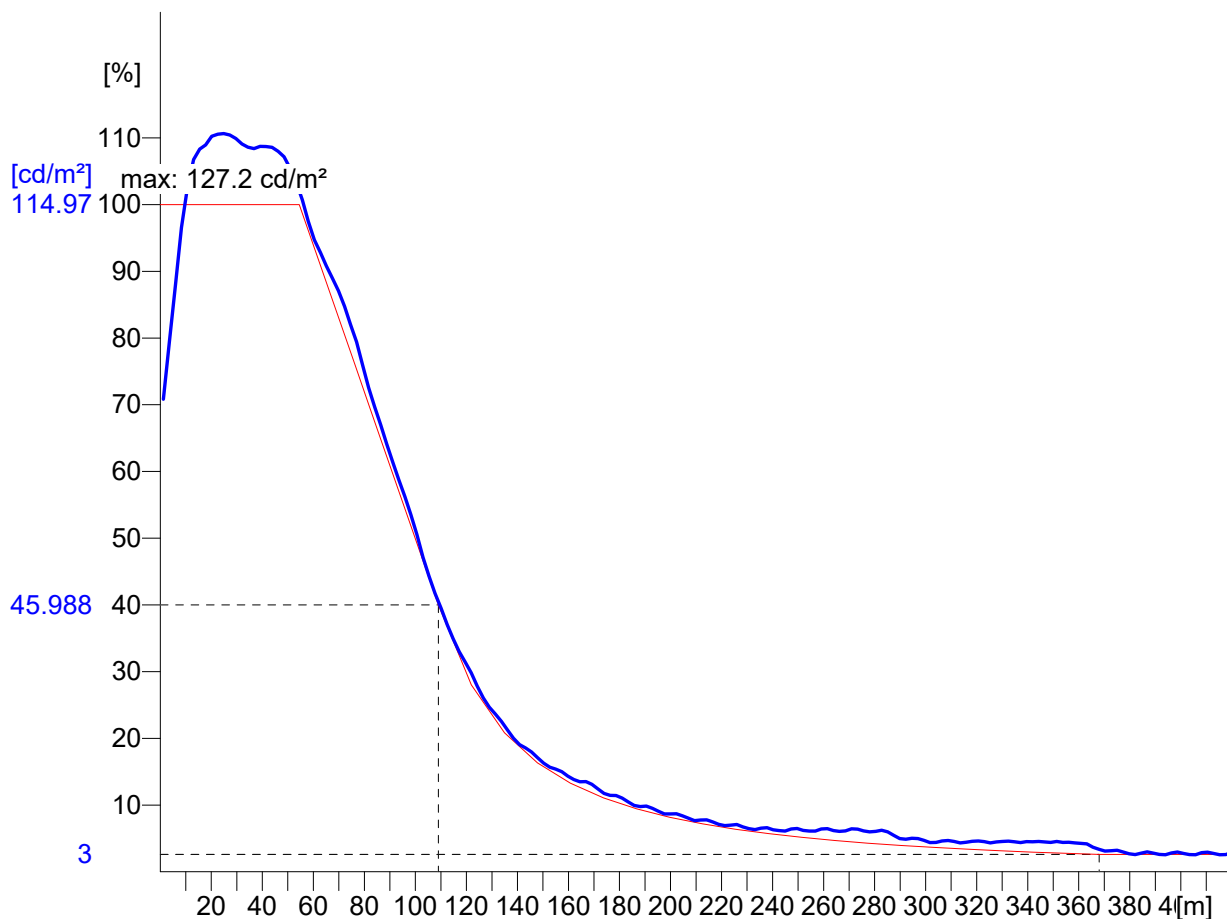
qc: The backward reflection of the road was calculated.

Object : ANAS__Galleria SP209
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3.2 Calculation results, Galleria SP209__dir NORD

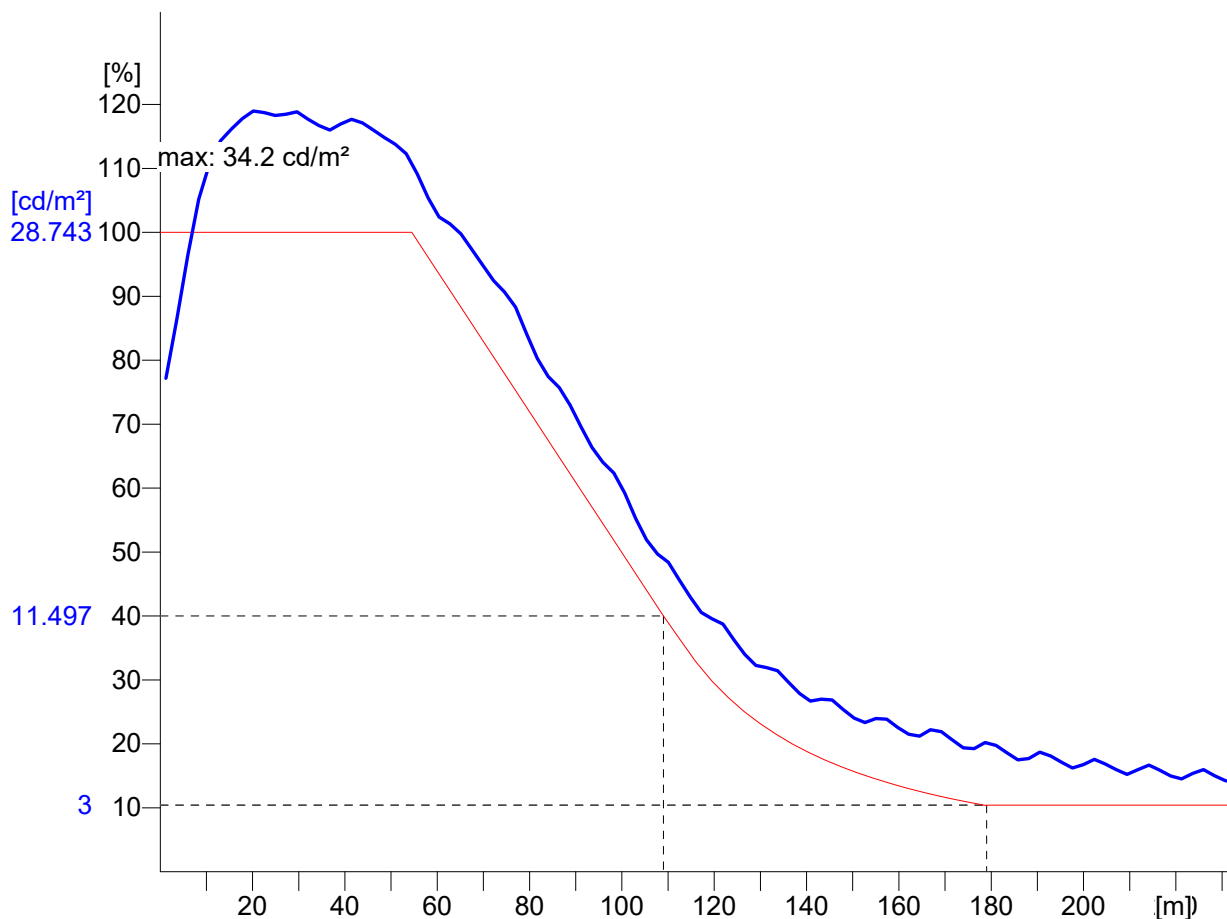
3.2.9 Evolution, Adaptation (L), S1: 100%, Obs. 1



Observer location 1 : $x = -84.7, y = 1.75, z = 1.5$ (dx = 85.93)
Evaluation of L only on observers lane

3.2 Calculation results, Galleria SP209__dir NORD

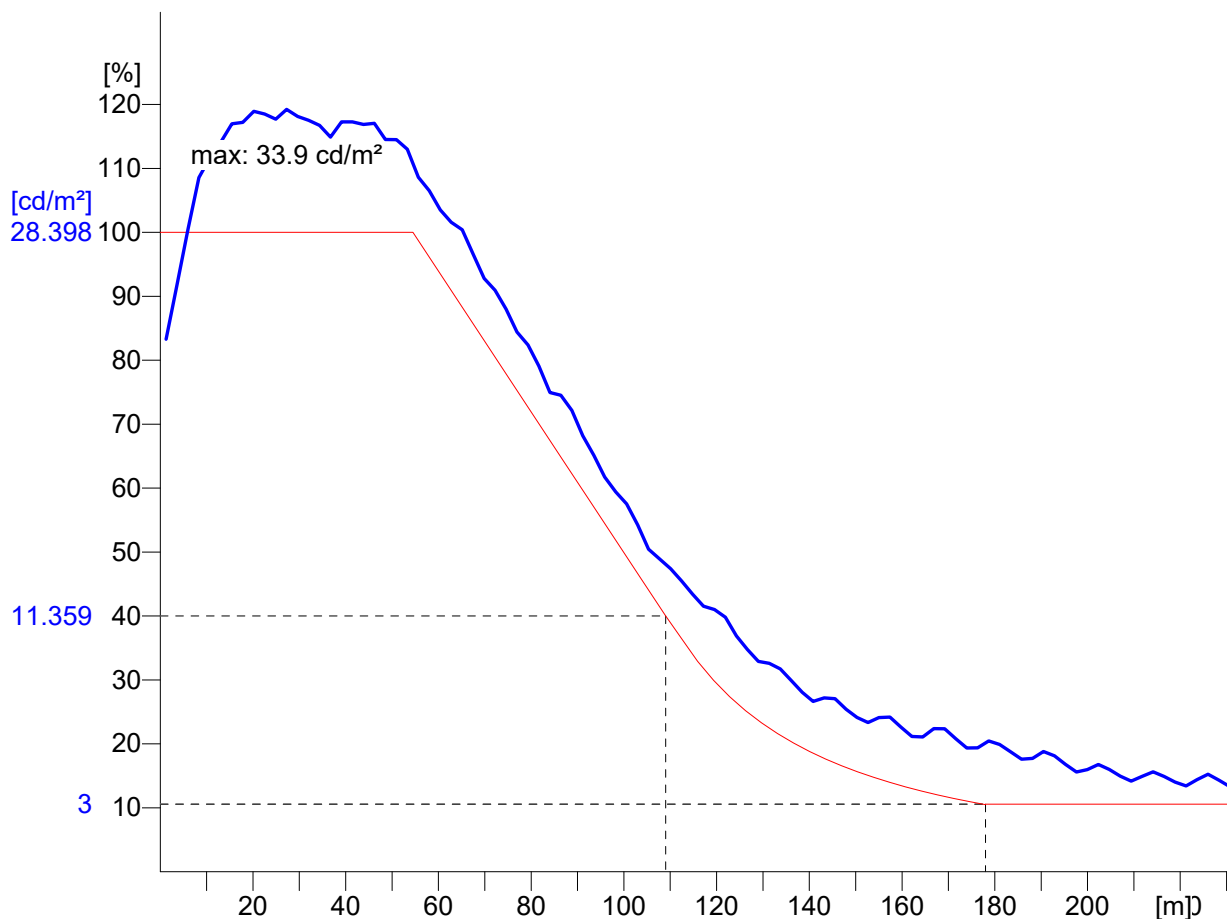
3.2.10 Evolution, Adaptation (L), S2: 25%, Obs. 1



Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

3.2 Calculation results, Galleria SP209__dir NORD

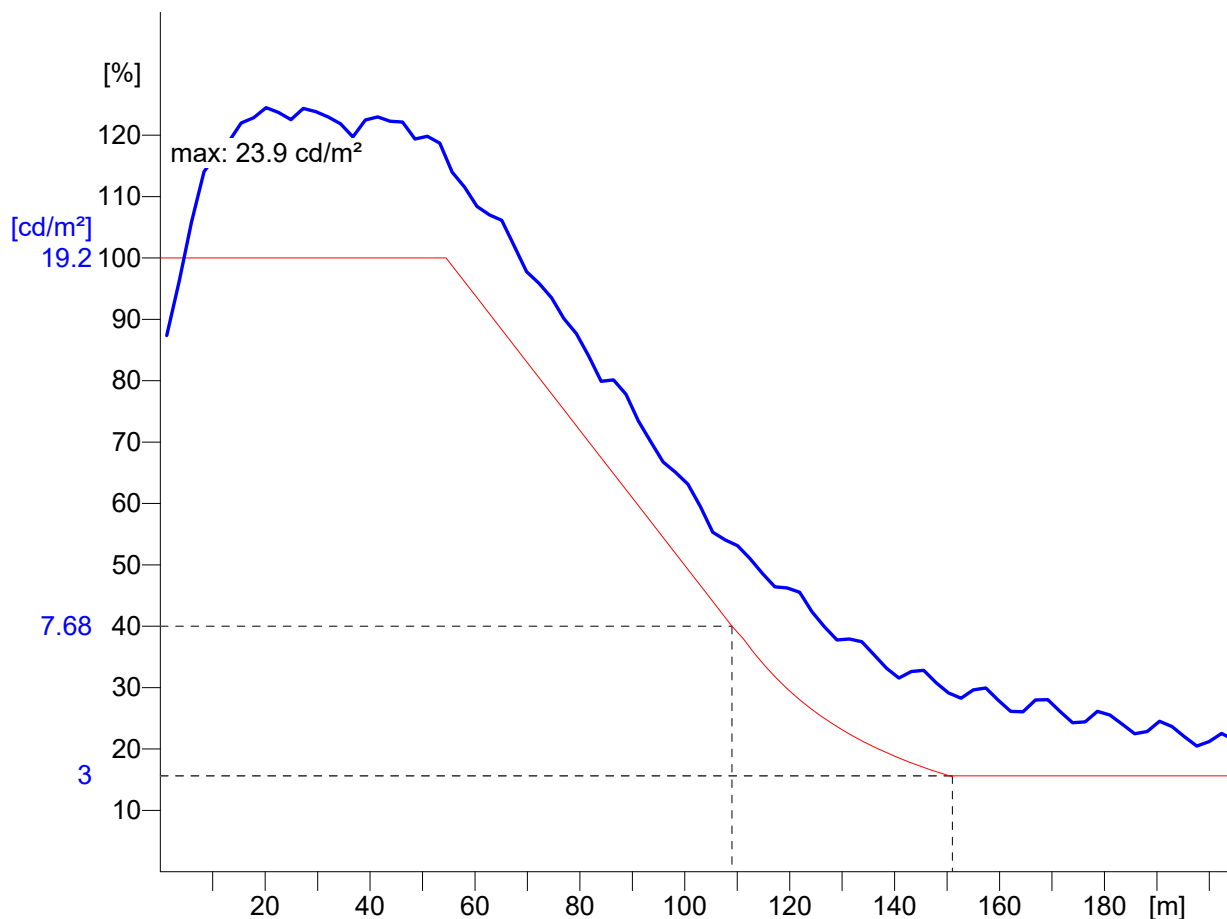
3.2.11 Evolution, Adaptation (L), S3: 24.7%, Obs. 1



Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

3.2 Calculation results, Galleria SP209__dir NORD

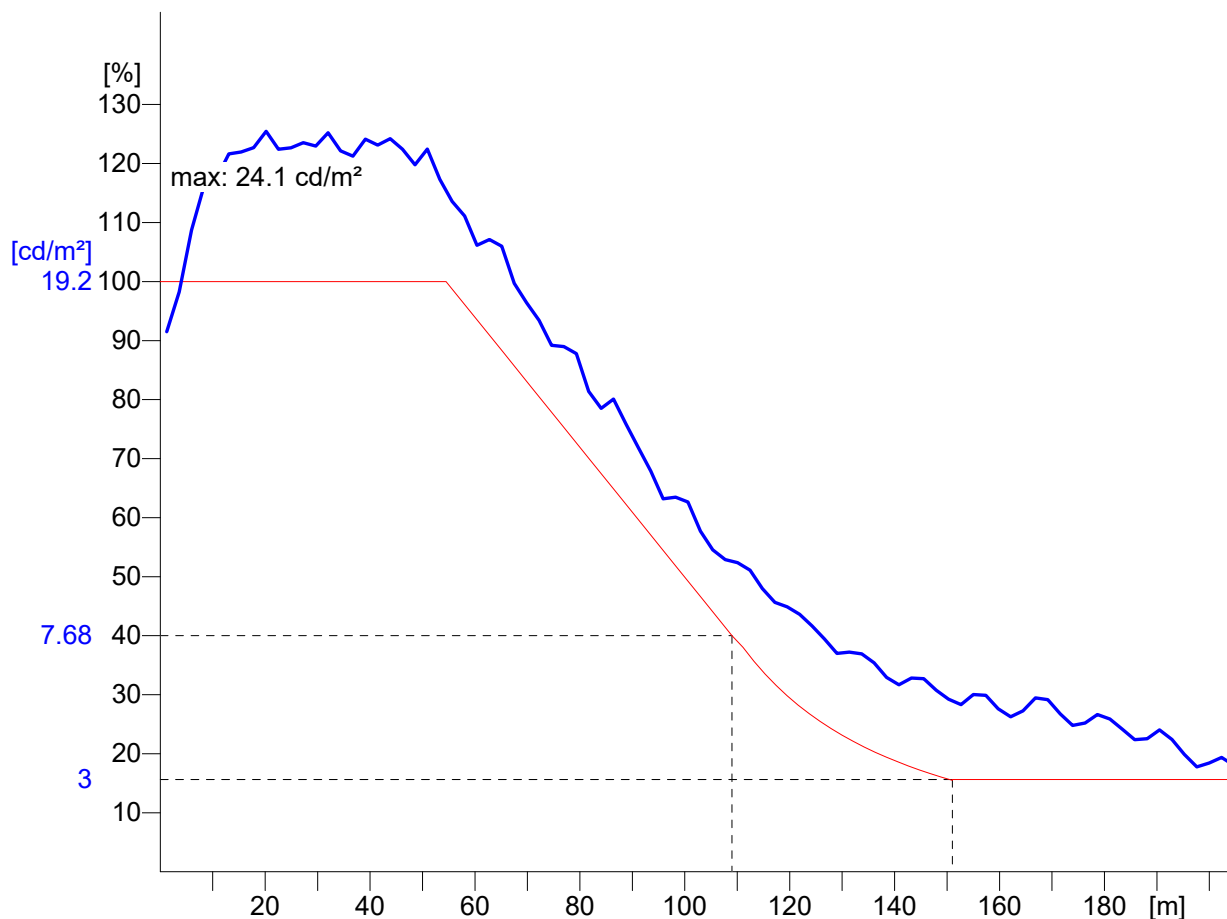
3.2.12 Evolution, Adaptation (L), S4: 16.7%, Obs. 1



Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

3.2 Calculation results, Galleria SP209__dir NORD

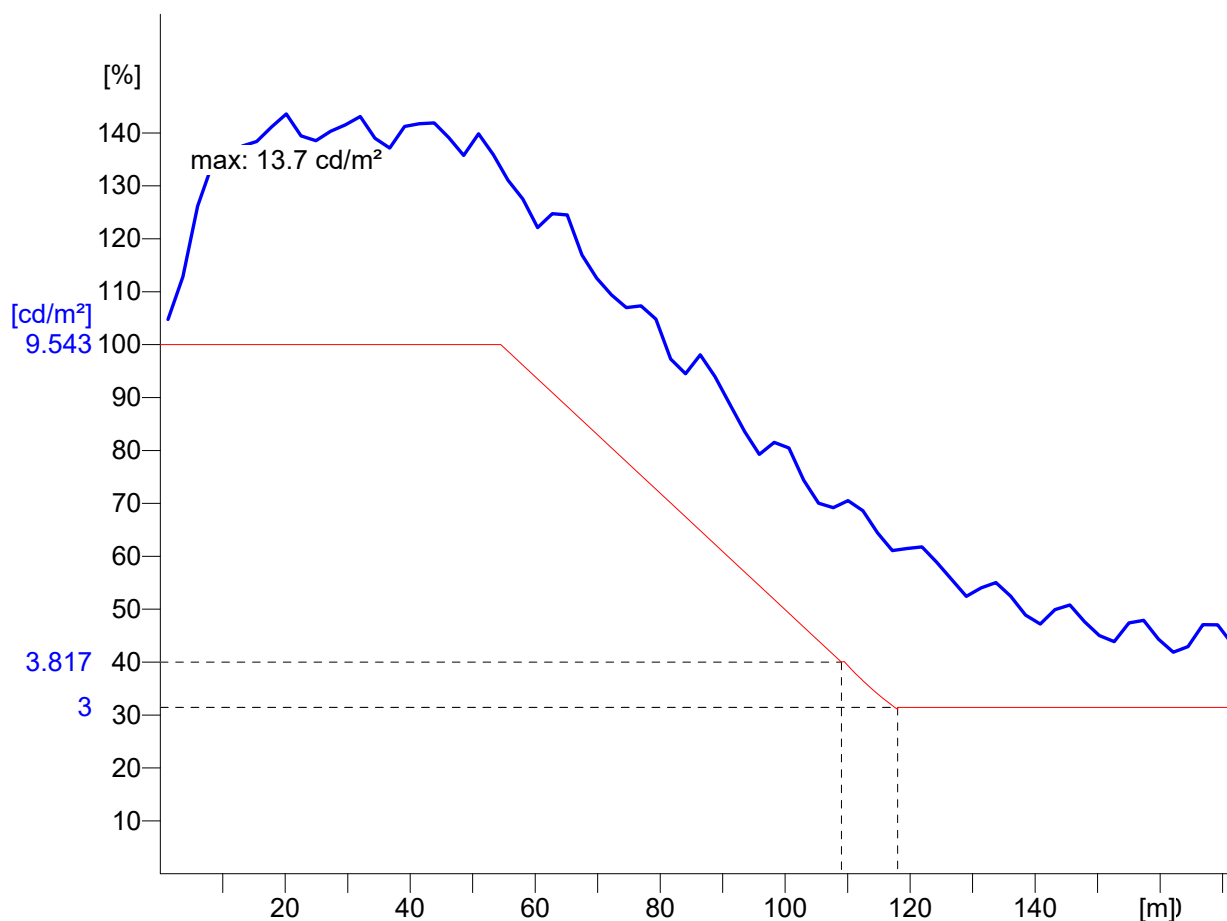
3.2.13 Evolution, Adaptation (L), S5: 16.7%, Obs. 1



Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

3.2 Calculation results, Galleria SP209__dir NORD

3.2.14 Evolution, Adaptation (L), S6: 8.3%, Obs. 1



Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
Evaluation of L only on observers lane

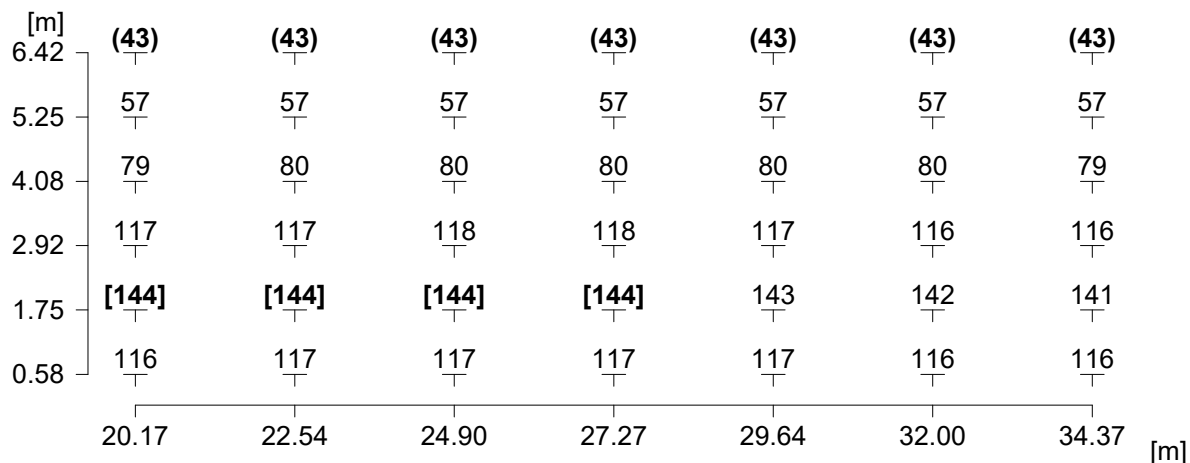
Object : ANAS__Galleria SP209
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3 Galleria SP209__dir NORD

3.3 Calculation results, Galleria SP209__dir NORD

3.3.1 Table, Entrance (L), S1: 100%, Obs. 1



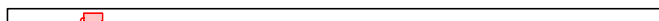
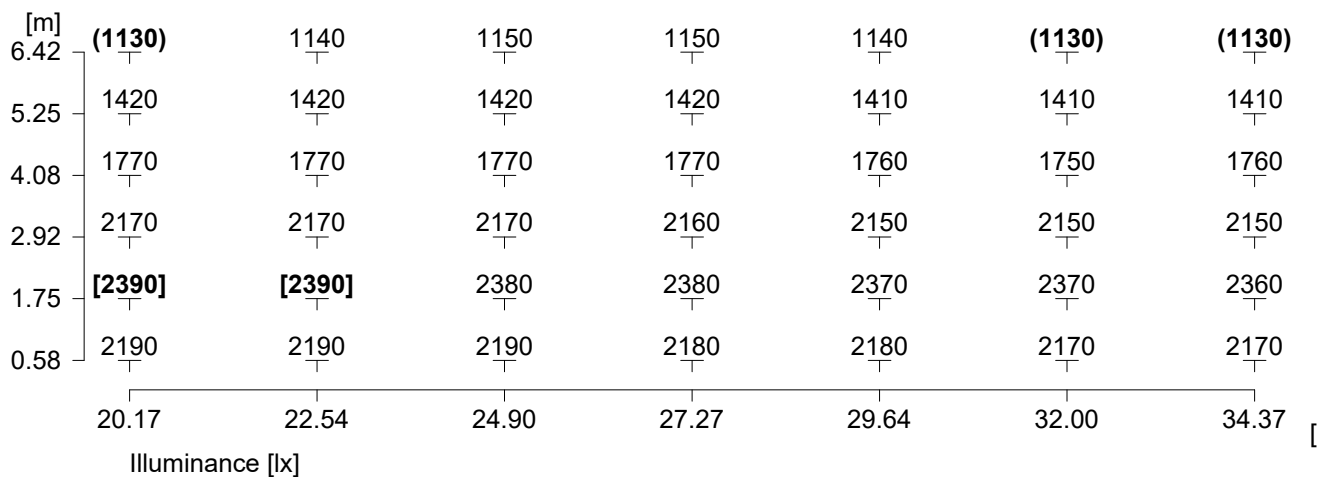
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 126 cd/m²
 Minimum luminance Lmin : 116 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 3 %

Object : ANAS__Galleria SP209
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3.3 Calculation results, Galleria SP209__dir NORD

3.3.2 Table, Entrance (E), S1: 100%



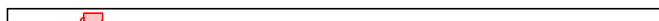
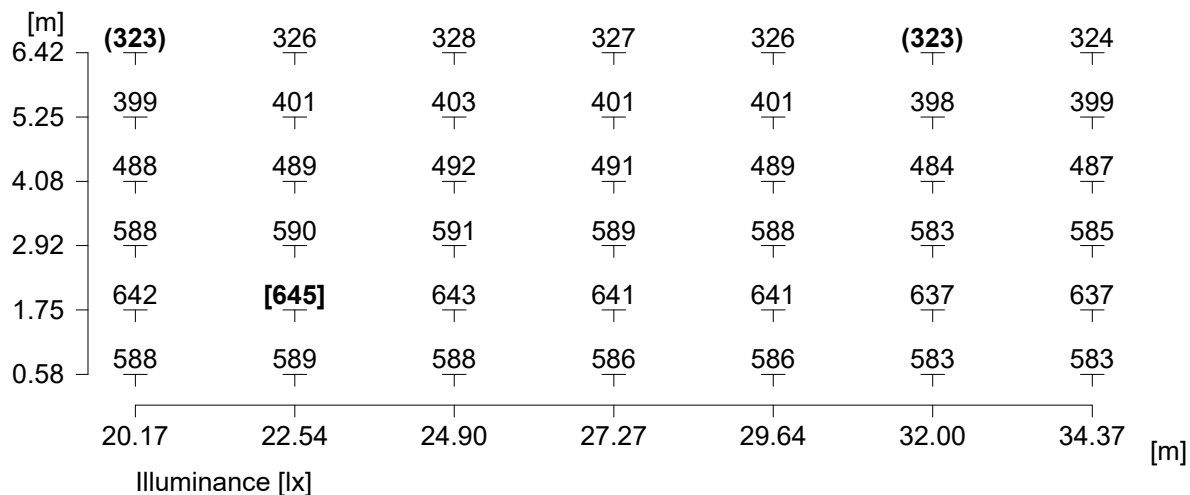
Height reference plane : 0.00 m
 Average illuminance Em : 1840 lx
 Minimum illuminance Emin : 1130 lx
 Maximum illuminance Emax : 2390 lx
 Uniformity Uo min/average : 1 : 1.62 (0.62)
 Diversity Ud min/max : 1 : 2.11 (0.47)

Object : ANAS__Galleria SP209
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3.3 Calculation results, Galleria SP209__dir NORD

3.3.3 Table, Entrance (E), S2: 25%



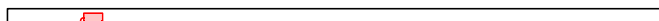
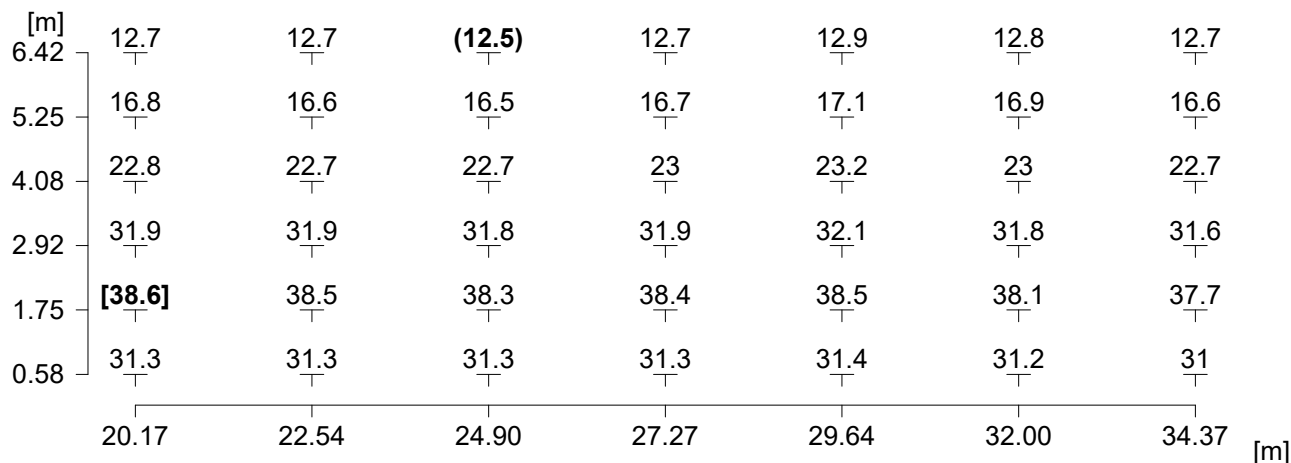
Height reference plane	:	0.00 m
Average illuminance	Em	: 505 lx
Minimum illuminance	Emin	: 323 lx
Maximum illuminance	Emax	: 645 lx
Uniformity Uo	min/average	: 1 : 1.56 (0.64)
Diversity Ud	min/max	: 1 : 2 (0.5)

Object : ANAS__Galleria SP209
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3.3 Calculation results, Galleria SP209__dir NORD

3.3.4 Table, Entrance (L), S2: 25%, Obs. 1



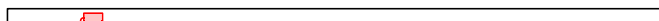
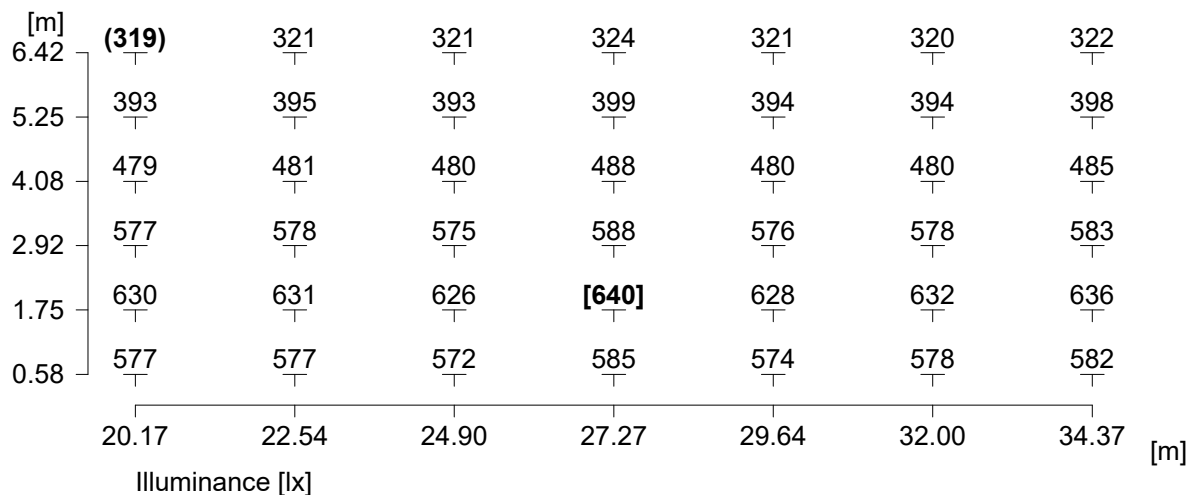
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 33.8 cd/m²
 Minimum luminance Lmin : 31 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 3 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.5 Table, Entrance (E), S3: 24.7%



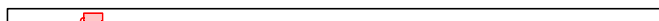
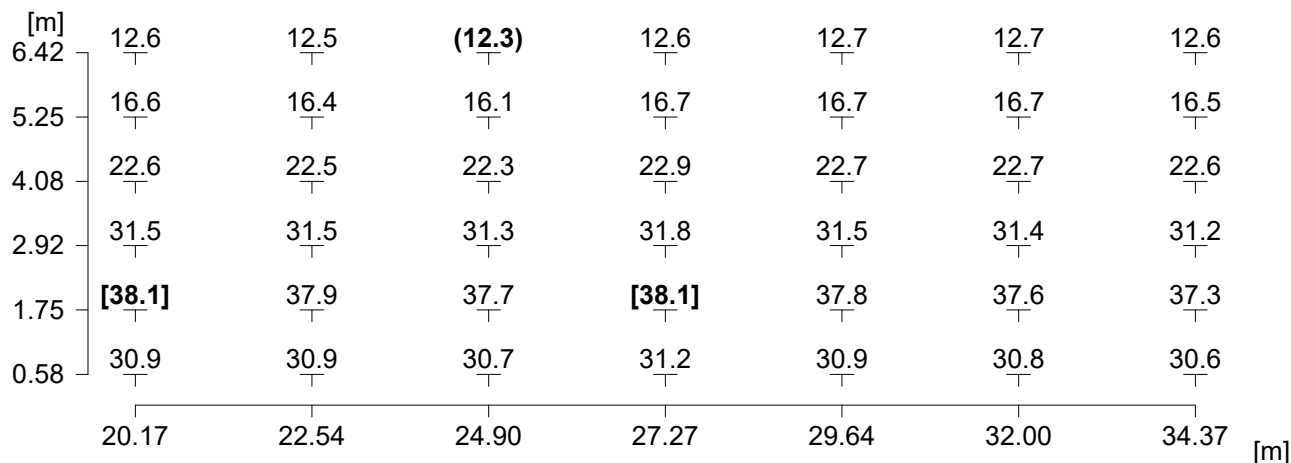
Height reference plane	:	0.00 m
Average illuminance	Em	: 498 lx
Minimum illuminance	Emin	: 319 lx
Maximum illuminance	Emax	: 640 lx
Uniformity Uo	min/average	: 1 : 1.56 (0.64)
Diversity Ud	min/max	: 1 : 2.01 (0.5)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.6 Table, Entrance (L), S3: 24.7%, Obs. 1



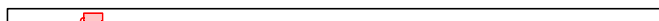
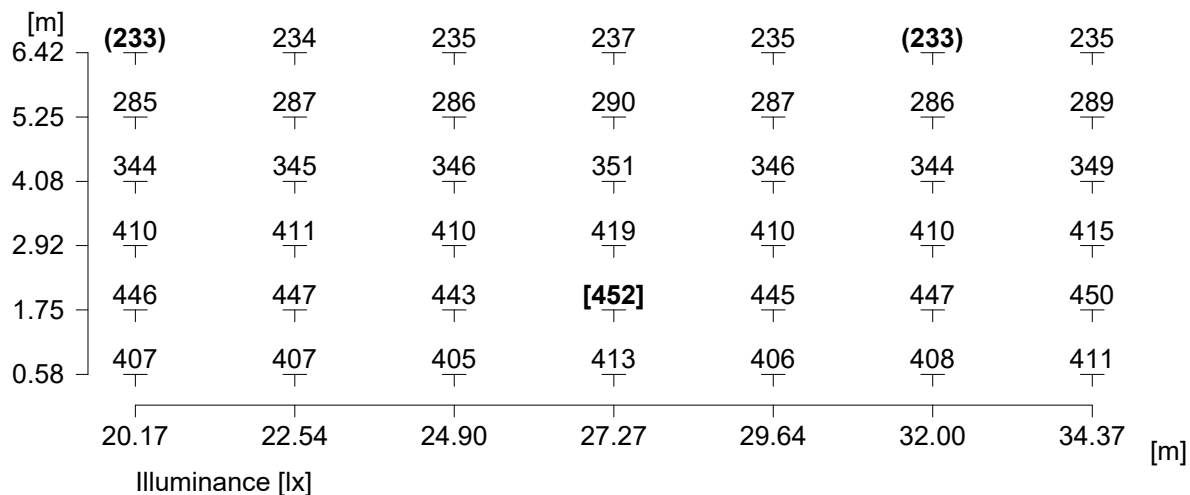
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 33.4 cd/m²
 Minimum luminance Lmin : 30.6 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.92
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 3 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.7 Table, Entrance (E), S4: 16.7%



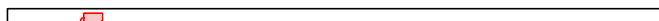
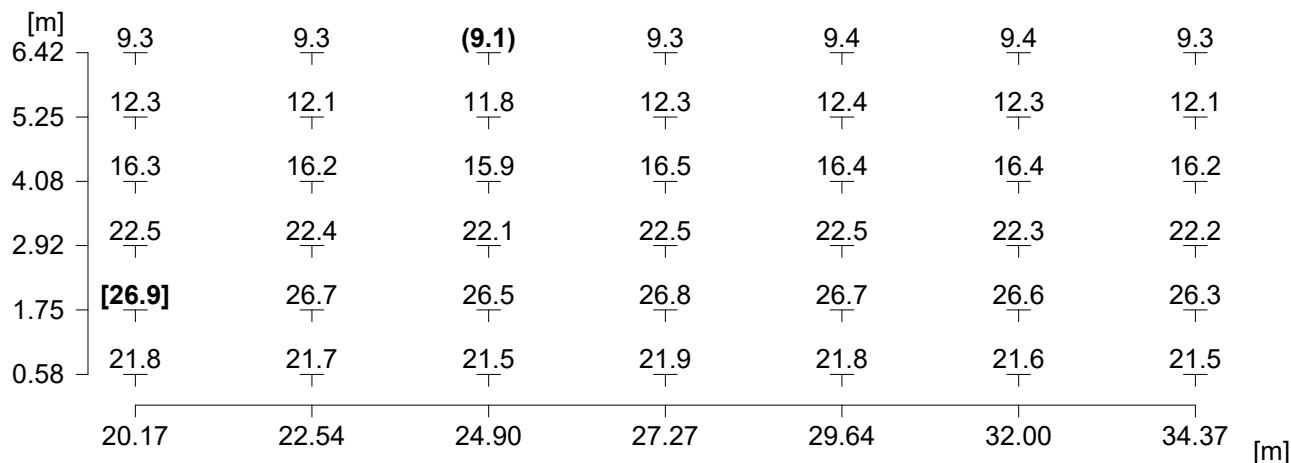
Height reference plane	:	0.00 m
Average illuminance	Em	: 356 lx
Minimum illuminance	Emin	: 233 lx
Maximum illuminance	Emax	: 452 lx
Uniformity Uo	min/average	: 1 : 1.53 (0.65)
Diversity Ud	min/max	: 1 : 1.94 (0.51)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.8 Table, Entrance (L), S4: 16.7%, Obs. 1



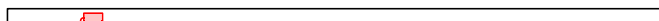
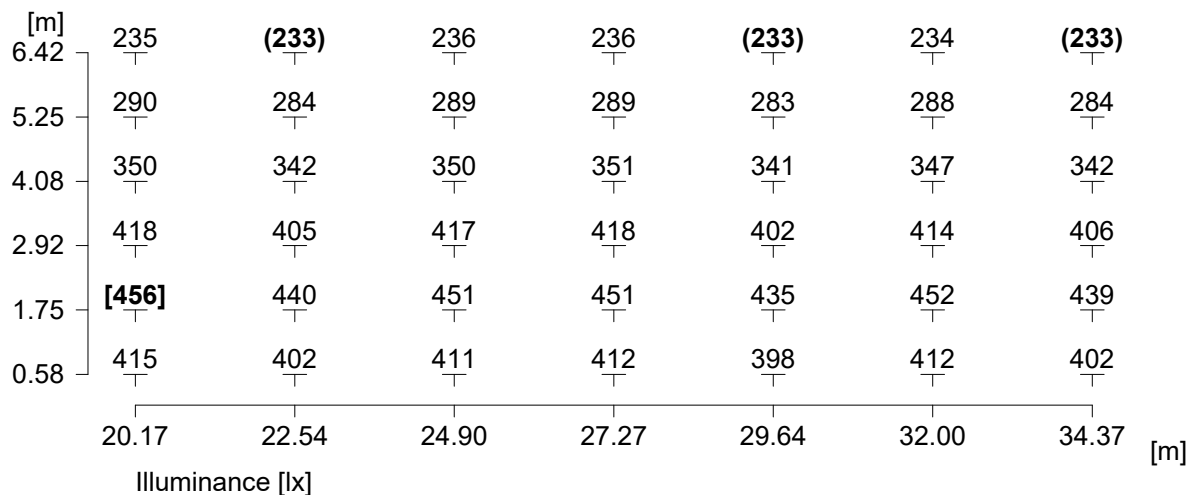
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 23.6 cd/m²
 Minimum luminance Lmin : 21.5 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.91
 Longitudinal uniformity UI Lmin/Lmax : 0.98
 Threshold increment TI : 3 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.9 Table, Entrance (E), S5: 16.7%



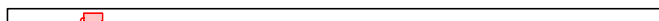
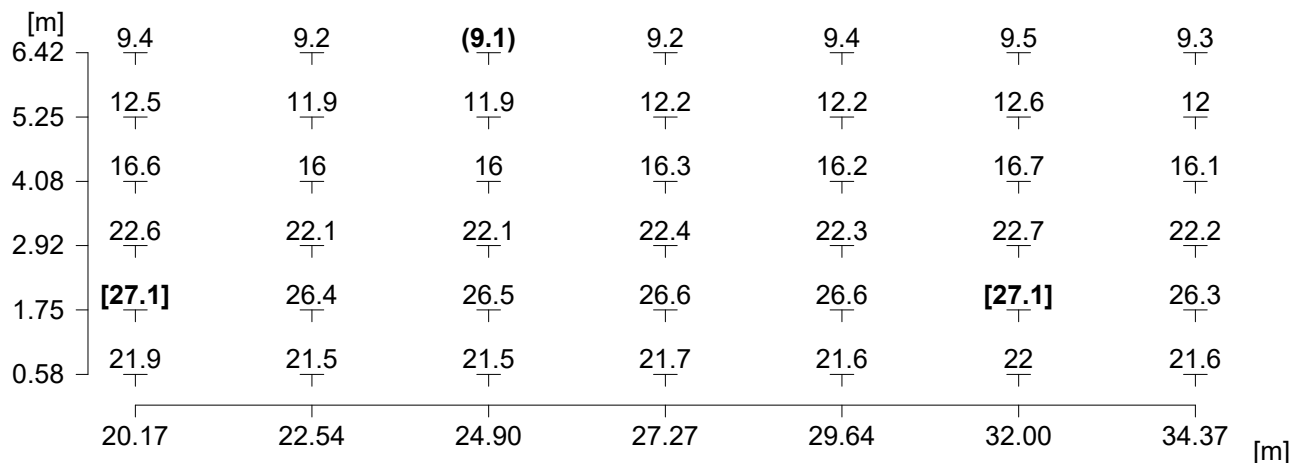
Height reference plane	:	0.00 m
Average illuminance	Em	: 355 lx
Minimum illuminance	Emin	: 233 lx
Maximum illuminance	Emax	: 456 lx
Uniformity Uo	min/average	: 1 : 1.53 (0.66)
Diversity Ud	min/max	: 1 : 1.96 (0.51)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.10 Table, Entrance (L), S5: 16.7%, Obs. 1



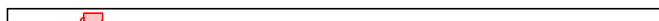
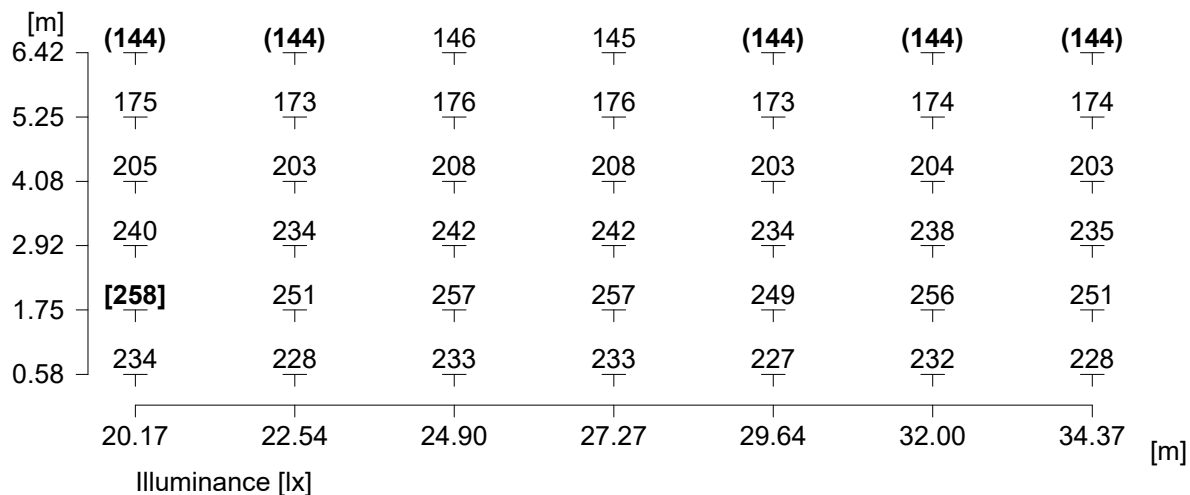
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 23.6 cd/m²
 Minimum luminance Lmin : 21.5 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.91
 Longitudinal uniformity UI Lmin/Lmax : 0.97
 Threshold increment TI : 3 %

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.11 Table, Entrance (E), S6: 8.3%



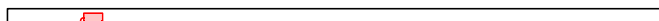
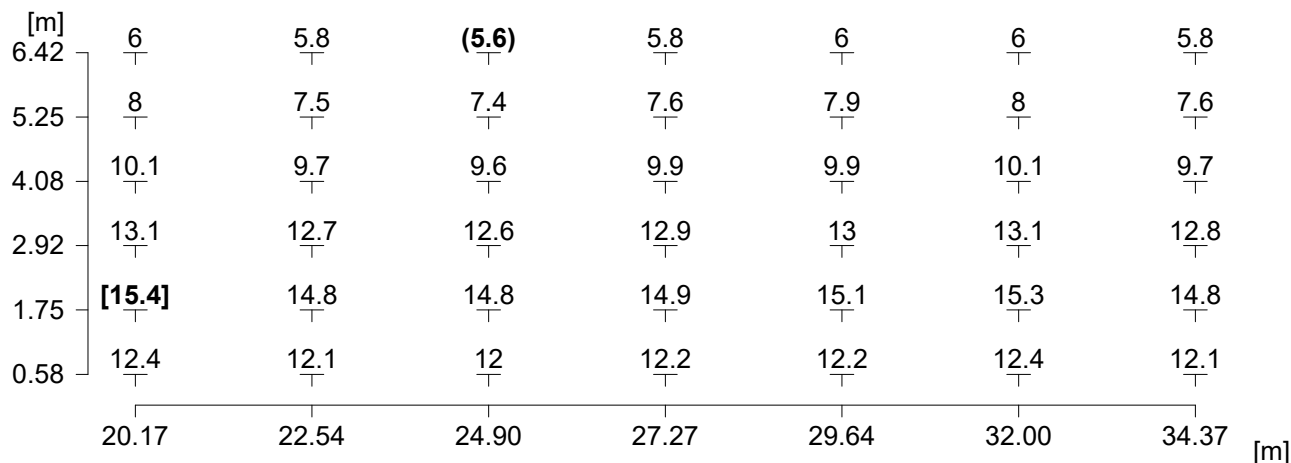
Height reference plane	:	0.00 m
Average illuminance	Em	: 208 lx
Minimum illuminance	Emin	: 144 lx
Maximum illuminance	Emax	: 258 lx
Uniformity Uo	min/average	: 1 : 1.45 (0.69)
Diversity Ud	min/max	: 1 : 1.8 (0.56)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.12 Table, Entrance (L), S6: 8.3%, Obs. 1



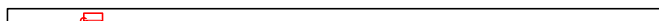
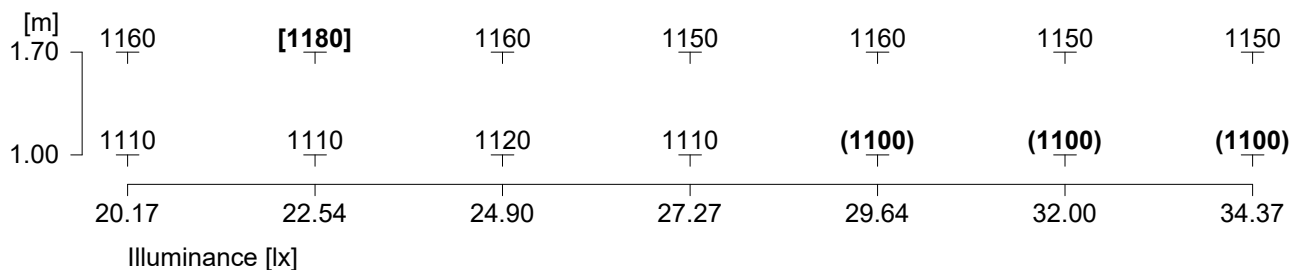
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 13.4 cd/m²
 Minimum luminance Lmin : 12 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.9
 Longitudinal uniformity UI Lmin/Lmax : 0.96
 Threshold increment TI : 3 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.13 Table, Entrance (E), Wall right, S1: 100%



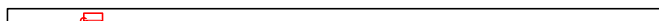
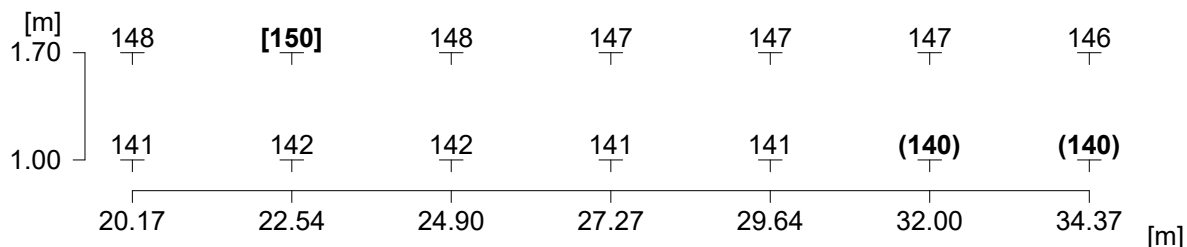
Average illuminance	Em	: 1130 lx
Minimum illuminance	Emin	: 1100 lx
Maximum illuminance	Emax	: 1180 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.07 (0.93)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.14 Table, Entrance (L), Wall right, S1: 100%, Obs. 1



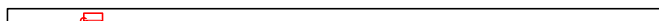
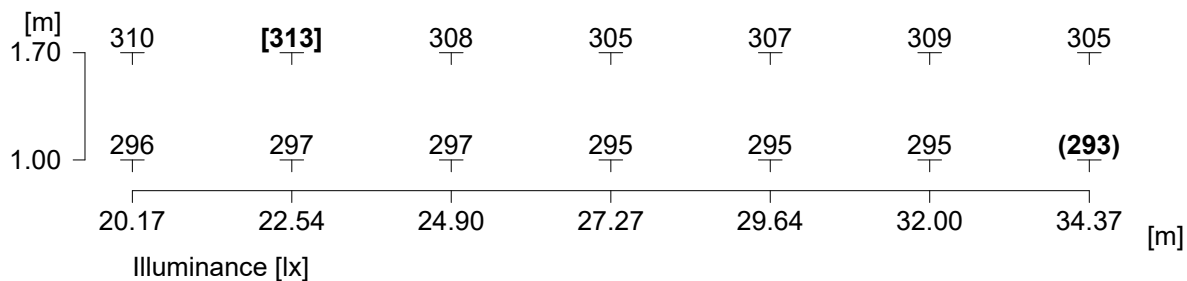
Observer location 1	: x = -41, y = 1.75, z = 1.5 (dx = 61.18)
Average luminance	Lav : 144 cd/m²
Minimum luminance	Lmin : 140 cd/m²
Overall uniformity Uo	Lmin/Lm : 0.97
Longitudinal uniformity UI	Llmin/Llmax : 0.98 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.15 Table, Entrance (E), Wall right, S2: 25%



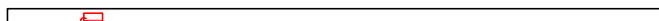
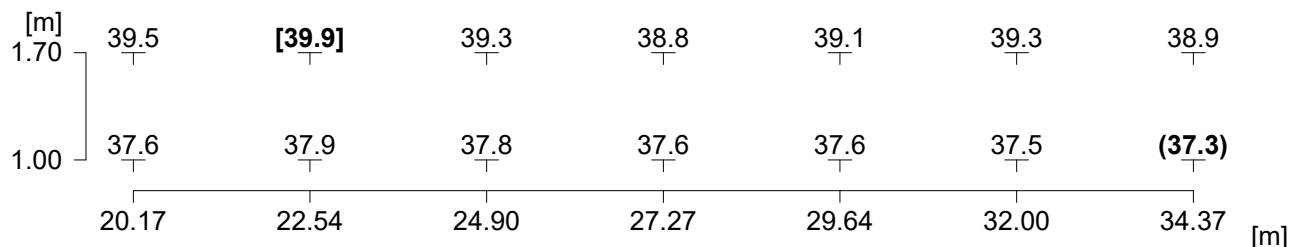
Average illuminance	Em	: 302 lx
Minimum illuminance	Emin	: 293 lx
Maximum illuminance	Emax	: 313 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.07 (0.94)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.16 Table, Entrance (L), Wall right, S2: 25%, Obs. 1



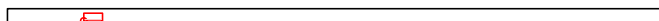
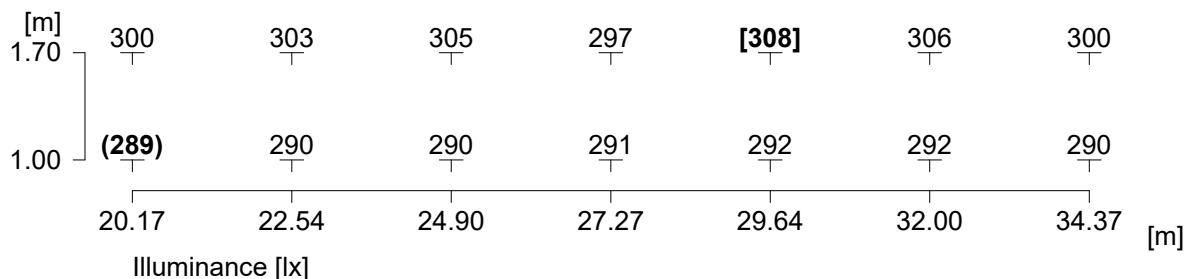
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Average luminance Lav : 38.4 cd/m²
 Minimum luminance Lmin : 37.3 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.97
 Longitudinal uniformity UI Llmin/Llmax : 0.97 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.17 Table, Entrance (E), Wall right, S3: 24.7%



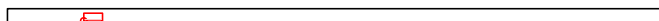
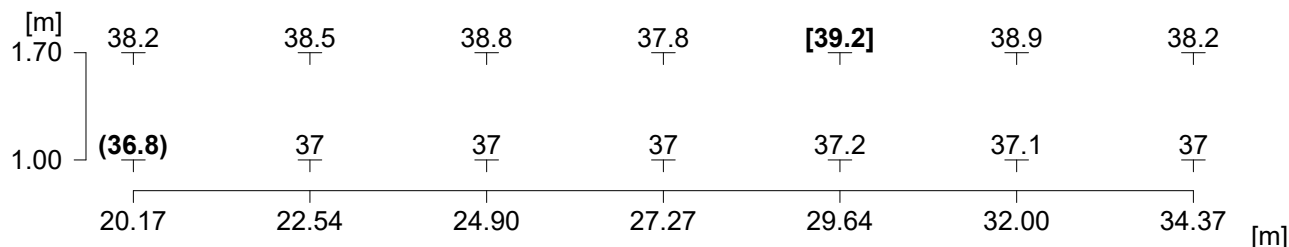
Average illuminance	Em	: 297 lx
Minimum illuminance	Emin	: 289 lx
Maximum illuminance	Emax	: 308 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.98)
Diversity Ud	min/max	: 1 : 1.06 (0.94)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.18 Table, Entrance (L), Wall right, S3: 24.7%, Obs. 1



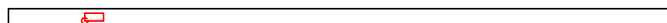
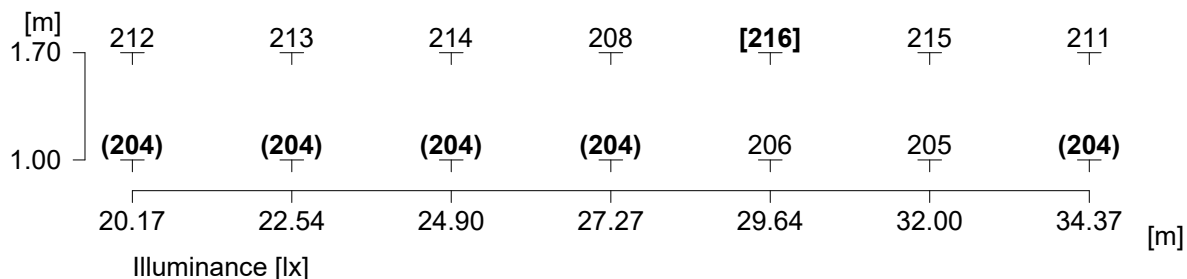
Observer location 1	: x = -41, y = 1.75, z = 1.5 (dx = 61.18)
Average luminance	Lav : 37.8 cd/m²
Minimum luminance	Lmin : 36.8 cd/m²
Overall uniformity Uo	Lmin/Lm : 0.98
Longitudinal uniformity UI	Llmin/Llmax : 0.96 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.19 Table, Entrance (E), Wall right, S4: 16.7%



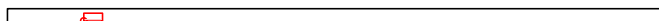
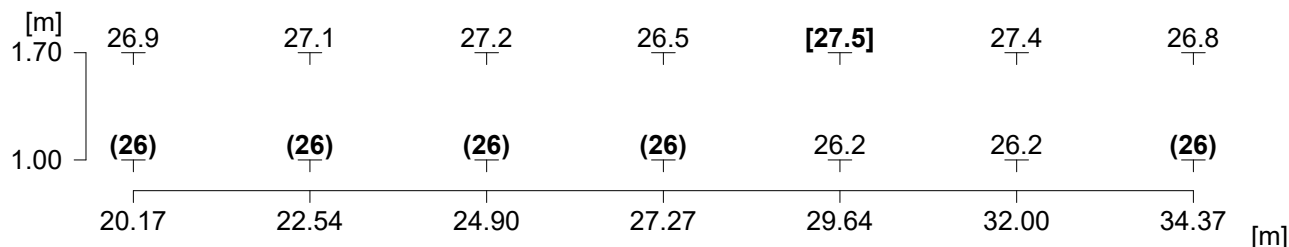
Average illuminance	Em	: 209 lx
Minimum illuminance	Emin	: 204 lx
Maximum illuminance	Emax	: 216 lx
Uniformity Uo	min/average	: 1 : 1.02 (0.98)
Diversity Ud	min/max	: 1 : 1.06 (0.94)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.20 Table, Entrance (L), Wall right, S4: 16.7%, Obs. 1



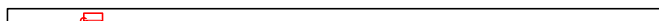
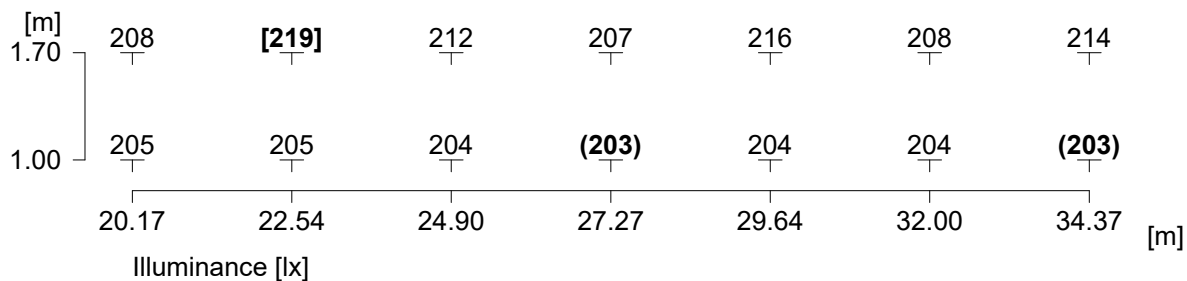
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Average luminance Lav : 26.5 cd/m²
 Minimum luminance Lmin : 26 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.98
 Longitudinal uniformity UI Llmin/Llmax : 0.96 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.21 Table, Entrance (E), Wall right, S5: 16.7%



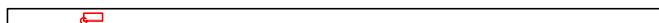
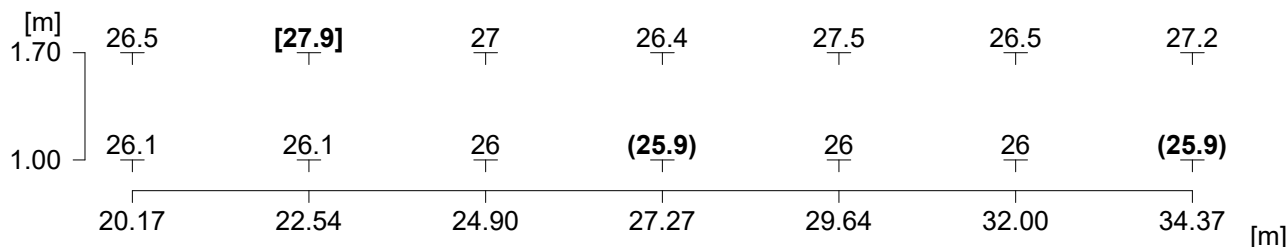
Average illuminance	Em	: 208 lx
Minimum illuminance	Emin	: 203 lx
Maximum illuminance	Emax	: 219 lx
Uniformity Uo	min/average	: 1 : 1.02 (0.98)
Diversity Ud	min/max	: 1 : 1.08 (0.93)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.22 Table, Entrance (L), Wall right, S5: 16.7%, Obs. 1



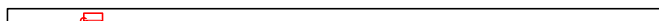
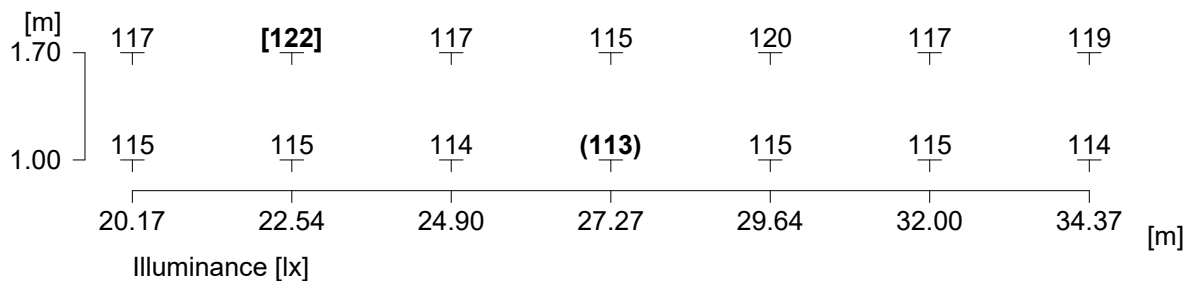
Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Average luminance Lav : 26.5 cd/m²
 Minimum luminance Lmin : 25.9 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.98
 Longitudinal uniformity UI Llmin/Llmax : 0.95 (1.70m)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.23 Table, Entrance (E), Wall right, S6: 8.3%



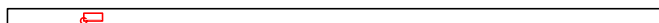
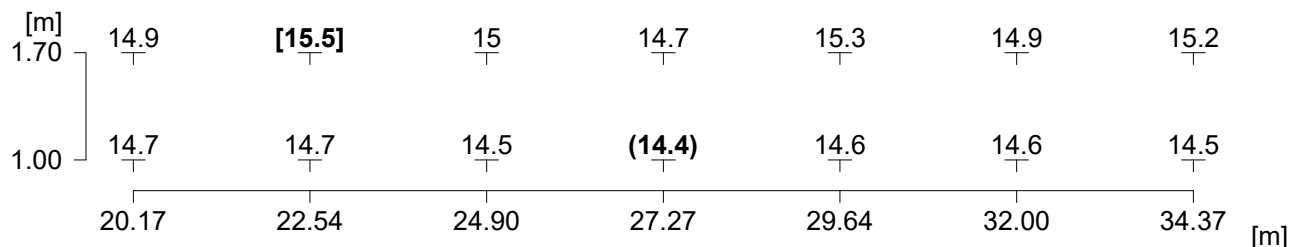
Average illuminance	Em	: 117 lx
Minimum illuminance	Emin	: 113 lx
Maximum illuminance	Emax	: 122 lx
Uniformity Uo	min/average	: 1 : 1.03 (0.97)
Diversity Ud	min/max	: 1 : 1.08 (0.93)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.3 Calculation results, Galleria SP209__dir NORD

3.3.24 Table, Entrance (L), Wall right, S6: 8.3%, Obs. 1



Observer location 1 : x = -41, y = 1.75, z = 1.5 (dx = 61.18)
 Average luminance Lav : 14.8 cd/m²
 Minimum luminance Lmin : 14.4 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.97
 Longitudinal uniformity UI Llmin/Llmax : 0.94 (1.70m)

Object : ANAS_Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

[m]	21	25	30	34	37	40	41	43	43	43	43	44	44	43	43	43
6.42	21	25	30	34	37	40	41	43	43	43	43	44	44	43	43	43
5.25	29	35	41	47	50	53	55	57	57	57	57	58	58	57	57	56
4.08	45	53	60	68	72	76	79	80	80	81	81	81	81	80	80	79
2.92	74	84	94	103	110	114	116	117	119	119	119	119	118	117	117	117
1.75	96	106	117	128	135	140	141	142	[144]	[144]	[144]	[144]	143	142	141	141
0.58	74	84	93	103	109	114	116	117	118	118	118	118	118	117	116	116
	1.25	3.61	5.98	8.34	10.71	13.08	15.44	17.81	20.17	22.54	24.90	27.27	29.64	32.00	34.37	36.



Part1

Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
 Evaluation of Lm, Uo etc. only on observers lane.
 Average luminance Lav : 29.5 cd/m²
 Minimum luminance Lmin : 1.47 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.05
 Longitudinal uniformity UI Lmin/Lmax : 0.011
 Threshold increment TI : 13 %

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

43	43	43	43	42	42	42	41	40	39	38	37	36	35	35	34	
57	57	57	56	56	56	55	54	53	51	50	49	48	46	46	45	
79	80	80	79	79	78	77	75	73	71	69	68	66	65	63	62	
117	117	117	116	116	114	112	109	105	102	100	98	96	94	92	89	
142	141	141	141	139	137	134	130	126	122	120	117	115	113	109	106	
116	116	116	116	115	113	111	108	105	102	100	98	96	93	91	88	
73	39.10	41.46	43.83	46.20	48.56	50.93	53.29	55.66	58.02	60.39	62.76	65.12	67.49	69.85	72.22	74.5



Part2

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

	33	32	31	30	29	27	26	25	24	23	22	21	20	19	18	17
	44	42	40	39	38	36	34	33	31	31	29	27	26	24	24	22
	60	58	55	53	51	49	47	45	43	41	39	37	35	33	31	29
	86	82	79	76	73	70	67	64	61	58	55	51	48	46	43	41
	102	98	93	90	86	82	79	75	72	69	65	60	57	53	50	47
	85	82	78	75	72	69	66	63	60	58	54	51	48	45	43	40
8	76.95	79.32	81.68	84.05	86.41	88.78	91.14	93.51	95.88	98.24	100.61	102.97	105.34	107.70	110.07	112.4



Part3

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

	16	15	14	14	13	12	12	11	11	10	10	9	9	9	8	8
	21	19	19	18	17	16	15	15	14	13	12	12	12	12	11	10
	28	26	25	24	22	21	20	19	18	17	16	16	15	15	14	13
	38	36	34	33	31	29	27	26	25	23	22	21	21	20	19	18
	45	42	40	38	35	33	32	30	29	27	26	24	24	23	22	21
	38	35	34	32	30	28	26	25	24	23	21	20	20	19	18	17
4	114.80	117.17	119.53	121.90	124.26	126.63	129.00	131.36	133.73	136.09	138.46	140.82	143.19	145.56	147.92	150.29



Part4

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

8	8	8	7	7	7	7	7	6	6	6	6	6	6	5	5
10	10	10	9	9	9	9	9	8	8	8	8	8	7	7	7
13	13	13	12	12	11	11	11	11	10	10	10	10	9	9	9
17	17	17	16	15	15	15	15	14	13	13	13	12	12	11	11
20	20	19	18	18	17	17	17	16	15	15	15	14	13	13	12
17	16	16	15	15	14	14	14	13	12	12	12	12	11	10	10
152.65	155.02	157.38	159.75	162.12	164.48	166.85	169.21	171.58	173.94	176.31	178.68	181.04	183.41	185.77	188.14



Part5

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

5	5	5	5	5	5	5	5	4	4	5	4	4	4	4	4
7	7	7	6	6	7	6	6	6	6	6	6	5	5	6	6
9	8	8	8	8	8	8	7	7	7	7	7	7	6	7	7
11	11	10	10	10	10	9	9	9	9	9	8	8	8	8	8
13	12	12	11	11	11	11	10	10	10	10	9	9	9	9	9
10	10	10	9	9	9	9	8	8	8	8	8	7	7	7	7
190.50	192.87	195.24	197.60	199.97	202.33	204.70	207.06	209.43	211.80	214.16	216.53	218.89	221.26	223.62	225.99



Part6

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
8	7	7	7	8	7	7	7	7	7	7	7	7	7	7	7
9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
7	7	7	7	7	7	6	6	7	7	6	6	6	7	7	6
228.36	230.72	233.09	235.45	237.82	240.18	242.55	244.92	247.28	249.65	252.01	254.38	256.74	259.11	261.48	263.84



Part7

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

4	4	4	4	4	4	4	4	4	4	3	3	4	4	3	3
5	5	5	5	5	5	5	5	5	5	4	5	5	5	4	4
6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5
7	7	7	7	7	7	7	7	7	6	6	6	6	6	6	5
8	8	8	8	8	8	8	8	8	7	6	6	6	6	6	5
6	6	7	7	6	6	6	6	6	6	5	5	5	5	5	4
266.21	268.57	270.94	273.30	275.67	278.04	280.40	282.77	285.13	287.50	289.86	292.23	294.60	296.96	299.33	301.69



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$	$\frac{4}{5}$
$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$
$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$	$\frac{5}{5}$
$\frac{5}{4}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{6}{5}$	$\frac{5}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{5}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{6}{4}$
$\frac{4}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{4}{4}$	$\frac{4}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{4}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{5}{4}$	$\frac{4}{4}$	$\frac{5}{4}$
304.06	306.42	308.79	311.16	313.52	315.89	318.25	320.62	322.98	325.35	327.72	330.08	332.45	334.81	337.18	339.54



Part9

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4
5	5	5	5	5	5	5	4	5	5	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4
6	6	6	6	6	6	6	5	5	5	5	4	4	4	4	4
5	5	5	4	5	4	5	4	4	4	4	3	3	3	3	3
341.91	344.28	346.64	349.01	351.37	353.74	356.10	358.47	360.84	363.20	365.57	367.93	370.30	372.66	375.03	377.40



Part10

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{3}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
379.76	382.13	384.49	386.86	389.22	391.59	393.96	396.32	398.69	401.05	403.42	405.78	408.15	410.52	412.88	415.25



Part11

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{2}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{4}{1}$	$\frac{4}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$
$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{3}{1}$	$\frac{2}{1}$	$\frac{3}{1}$
117.61	419.98	422.34	424.71	427.08	429.44	431.81	434.17	436.54	438.90	441.27	443.64	446.00	448.37	450.73	453.10



Part12

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3 Galleria SP209__dir NORD

3.4 Calculation results, Galleria SP209__dir NORD

3.4.1 Table, Adaptation (L), S1: 100%, Obs. 1

3	3	2	2	2	3	3	2	2	2	3	2	2	(1)
4	3	3	3	3	4	3	3	3	3	3	3	2	2
4	4	3	3	4	4	3	3	3	3	3	3	2	2
4	3	3	3	3	4	3	3	3	3	3	3	2	2
4	3	3	3	3	4	3	3	3	3	3	3	2	2
3	3	3	2	3	3	3	3	2	3	3	2	2	(1)
55.46	457.83	460.20	462.56	464.93	467.29	469.66	472.02	474.39	476.76	479.12	481.49	483.85	486.22 [m]



Part13

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

[m]	438	581	726	857	958	1040	1090	1120	1130	1140	1150	1150	1140
6.42	528	723	919	1090	1200	1300	1360	1400	1420	1420	1420	1420	1410
5.25	636	899	1160	1370	1510	1620	1700	1740	1770	1770	1770	1770	1760
4.08	770	1100	1420	1690	1880	2000	2080	2130	2170	2170	2170	2160	2150
2.92	845	1200	1560	1860	2060	2210	2300	2340	2390	2390	2380	2380	2370
1.75	771	1100	1430	1700	1880	2020	2100	2150	2190	2190	2190	2180	2180
0.58													
	1.25	3.61	5.98	8.34	10.71	13.08	15.44	17.81	20.17	22.54	24.90	27.27	29.64
	Illuminance [lx]												



Part1

Height reference plane : 0.00 m
 Average illuminance Em : 448 lx
 Minimum illuminance Emin : 48 lx
 Maximum illuminance Emax : 2390 lx
 Uniformity Uo min/average : 1 : 9.37 (0.11)
 Diversity Ud min/max : 1 : 50 (0.02)

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

1130	1130	1130	1120	1120	1120	1120	1120	1120	1110	1090	1070	1050
1410	1410	1400	1390	1390	1390	1390	1390	1390	1380	1370	1340	1300
1750	1760	1740	1740	1720	1720	1720	1730	1730	1720	1700	1670	1620
2150	2150	2130	2130	2110	2100	2110	2120	2120	2110	2090	2040	1980
2370	2360	2340	2340	2320	2310	2320	2330	2330	2330	2300	2250	2180
2170	2170	2150	2150	2130	2130	2130	2140	2140	2130	2110	2060	2000
32.00	34.37	36.73	39.10	41.46	43.83	46.20	48.56	50.93	53.29	55.66	58.02	60.39



Part2

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

1020	985	958	935	915	899	879	853	829	798	764	727	696
1260	1220	1180	1160	1130	1120	1090	1060	1030	990	946	900	861
1570	1510	1470	1430	1410	1390	1360	1320	1280	1230	1170	1110	1060
1920	1850	1790	1750	1730	1690	1670	1620	1560	1500	1430	1360	1290
2110	2030	1960	1930	1900	1850	1840	1790	1720	1650	1570	1490	1420
1930	1860	1810	1760	1740	1700	1680	1640	1580	1510	1440	1370	1300
62.76	65.12	67.49	69.85	72.22	74.58	76.95	79.32	81.68	84.05	86.41	88.78	91.14



Part3

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

669	640	615	588	563	536	505	476	445	419	396	375	357	
826	791	761	729	698	664	624	587	548	515	486	460	439	
1020	979	942	903	862	822	771	722	671	630	596	563	535	
1240	1190	1150	1100	1050	1000	935	873	811	760	716	677	644	
1360	1300	1260	1210	1150	1090	1020	955	888	831	780	737	704	
1250	1200	1150	1110	1050	1000	937	875	814	761	715	675	643	
93.51	95.88	98.24	100.61	102.97	105.34	107.70	110.07	112.44	114.80	117.17	119.53	121.90	12



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

337	323	307	291	276	261	250	238	229	219	210	205	197	192
415	398	377	356	337	319	306	290	280	268	256	250	240	234
507	487	461	434	407	384	369	352	337	321	307	300	289	280
611	583	552	520	486	457	439	417	400	380	363	354	340	329
668	635	600	565	529	498	475	451	432	412	394	382	366	354
612	582	549	515	483	455	434	412	394	376	359	348	333	323
4.26	126.63	129.00	131.36	133.73	136.09	138.46	140.82	143.19	145.56	147.92	150.29	152.65	155.1



Part5

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

	185	179	176	171	168	163	160	158	152	149	143	140	136
	225	217	214	206	204	197	194	191	185	180	172	168	164
	267	258	254	247	242	232	229	227	220	213	201	196	193
	314	303	298	288	283	271	268	264	256	247	233	226	222
	340	327	319	308	302	293	289	281	273	264	250	242	235
	310	298	290	281	275	266	263	256	248	239	227	220	213
02	157.38	159.75	162.12	164.48	166.85	169.21	171.58	173.94	176.31	178.68	181.04	183.41	185.77



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

132	130	125	124	122	119	117	113	113	110	109	107	103
158	156	150	149	146	142	140	135	135	131	130	128	123
186	182	173	172	170	166	162	154	155	153	150	145	140
214	209	199	197	194	189	184	176	176	173	169	164	158
226	222	212	209	204	199	195	187	186	181	177	173	167
205	201	193	190	185	180	176	170	168	164	160	156	151
188.14	190.50	192.87	195.24	197.60	199.97	202.33	204.70	207.06	209.43	211.80	214.16	216.53



Part7

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

104	101	100	98	95	97	94	94	92	90	92	90	91
124	120	119	117	113	115	111	111	109	106	110	106	108
141	139	137	133	127	130	127	126	122	118	124	121	122
158	156	153	149	142	146	141	140	136	131	138	134	135
166	162	159	156	150	151	146	145	143	137	142	137	139
150	147	143	141	135	136	132	130	129	123	128	124	125
218.89	221.26	223.62	225.99	228.36	230.72	233.09	235.45	237.82	240.18	242.55	244.92	247.28



Part8

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023

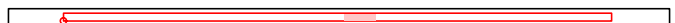


3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

90	89	91	90	91	89	89	91	90	91	89	90	91
106	105	108	106	107	106	105	108	106	107	105	106	107
119	117	123	120	121	118	117	123	121	121	118	118	122
132	129	136	133	134	131	130	136	134	133	131	130	135
138	135	140	137	138	138	136	140	137	138	138	136	139
125	121	126	123	124	124	122	126	124	124	124	122	125
249.65	252.01	254.38	256.74	259.11	261.48	263.84	266.21	268.57	270.94	273.30	275.67	278.04

2



Part9

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

90	90	88	88	86	83	81	77	76	74	73	72	71	74
106	106	104	104	102	99	95	89	88	86	86	85	83	85
121	119	116	117	116	112	105	97	95	94	96	93	90	92
134	132	130	129	129	124	113	104	102	101	102	98	97	99
137	137	136	134	132	126	116	108	105	102	102	100	100	100
124	123	123	120	119	113	105	97	93	90	92	90	89	89
80.40	282.77	285.13	287.50	289.86	292.23	294.60	296.96	299.33	301.69	304.06	306.42	308.79	311



Part10

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

	72	73	72	71	74	72	73	71	72	74	72	74	71
	84	86	84	84	85	83	86	84	84	85	83	86	83
	92	95	92	90	92	92	95	91	91	93	91	95	90
	99	102	97	97	99	98	102	96	98	99	98	102	96
	99	102	99	100	101	99	102	98	100	100	99	102	98
	88	91	89	89	89	88	92	88	90	89	88	92	88
.16	313.52	315.89	318.25	320.62	322.98	325.35	327.72	330.08	332.45	334.81	337.18	339.54	341.91



Part11

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

72	73	72	73	70	72	73	72	72	68	68	66	63
85	85	83	86	83	85	84	83	85	80	81	76	72
92	93	91	94	90	92	93	91	93	87	88	83	77
98	100	98	101	95	99	99	98	99	92	94	88	80
101	100	99	102	98	101	100	98	101	94	95	88	78
90	89	88	91	88	90	89	87	90	85	84	77	69
344.28	346.64	349.01	351.37	353.74	356.10	358.47	360.84	363.20	365.57	367.93	370.30	372.66



Part12

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

61	56	57	55	55	55	53	56	54	56	54	53	56
70	64	65	63	63	63	61	64	62	63	62	61	64
72	65	67	66	67	64	61	66	65	66	63	62	66
73	65	67	67	67	64	61	66	65	66	63	62	66
72	65	65	63	63	63	61	64	62	63	62	61	64
64	57	57	55	56	55	53	56	54	56	54	53	56
375.03	377.40	379.76	382.13	384.49	386.86	389.22	391.59	393.96	396.32	398.69	401.05	403.42



Part13

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

54	56	54	54	56	54	56	53	54	56	54	56	53
62	64	62	61	64	62	64	61	62	63	62	64	61
65	67	62	62	66	65	66	62	63	67	65	66	61
65	67	62	62	66	65	66	62	63	67	65	66	61
62	64	62	61	64	62	64	61	62	63	62	64	61
54	56	54	54	56	54	56	53	54	56	54	56	53
405.78	408.15	410.52	412.88	415.25	417.61	419.98	422.34	424.71	427.08	429.44	431.81	434.17



Part14

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

55	55	55	55	53	55	55	55	55	53	55	55	55	
63	63	62	64	60	63	63	62	63	60	63	62	63	
64	66	66	65	61	64	66	66	65	61	65	66	66	
64	66	66	65	61	64	66	66	65	61	65	66	66	
63	63	62	64	60	63	63	62	63	60	63	62	63	
55	55	55	55	53	55	55	55	55	53	55	55	55	
436.54	438.90	441.27	443.64	446.00	448.37	450.73	453.10	455.46	457.83	460.20	462.56	464.93	46



Part15

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.2 Table, Adaptation (E), S1: 100%

55	53	56	54	55	54	52	53	(48)
63	60	64	62	63	62	59	61	55
64	61	66	65	66	63	60	63	58
64	61	66	65	66	63	60	63	58
63	60	64	62	63	62	59	61	55
55	53	56	54	55	54	52	53	(48)
7.29	469.66	472.02	474.39	476.76	479.12	481.49	483.85	486.22 [m]



Part16

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

[m]	404	587	759	909	1040	1100	1130	1150	1160	1180	1160	1150	1160
1.70													
1.00	395	557	712	855	969	1040	1070	1090	1110	1110	1120	1110	1110
	1.25	3.61	5.98	8.34	10.71	13.08	15.44	17.81	20.17	22.54	24.90	27.27	29.64
	Illuminance [lx]												



Part1

Average illuminance	Em	: 266 lx
Minimum illuminance	Emin	: 21 lx
Maximum illuminance	Emax	: 1180 lx
Uniformity Uo	min/average	: 1 : 12.6 (0.08)
Diversity Ud	min/max	: 1 : 55.8 (0.02)

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

1160	1150	1140	1140	1130	1130	1130	1140	1140	1140	1130	1100	1060
1100	1100	1090	1090	1080	1080	1080	1080	1090	1080	1070	1050	1020
32.00	34.37	36.73	39.10	41.46	43.83	46.20	48.56	50.93	53.29	55.66	58.02	60.39



Part2

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

1030	982	954	936	917	905	892	876	842	797	762	726	687
979	946	921	895	880	866	850	828	803	766	729	696	660
62.76	65.12	67.49	69.85	72.22	74.58	76.95	79.32	81.68	84.05	86.41	88.78	91.14



Part3

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

653	631	611	586	559	528	496	461	428	398	371	353	338	
630	606	582	560	534	505	474	444	412	384	360	340	324	
93.51	95.88	98.24	100.61	102.97	105.34	107.70	110.07	112.44	114.80	117.17	119.53	121.90	12



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

322	304	285	269	254	238	224	213	203	196	188	178	171	165
308	292	274	259	245	230	216	205	196	189	181	173	165	160
14.26	126.63	129.00	131.36	133.73	136.09	138.46	140.82	143.19	145.56	147.92	150.29	152.65	155.1



Part5

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

	161	156	148	142	140	141	136	130	126	122	119	113	106
	155	150	144	138	136	134	131	126	122	118	115	110	104
02	157.38	159.75	162.12	164.48	166.85	169.21	171.58	173.94	176.31	178.68	181.04	183.41	185.77



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

103	101	101	97	92	90	88	89	85	80	79	79	79
100	99	97	94	90	87	87	85	83	79	77	77	76
188.14	190.50	192.87	195.24	197.60	199.97	202.33	204.70	207.06	209.43	211.80	214.16	216.53



Part7

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

74	71	70	70	70	66	64	63	64	65	60	60	60
73	70	69	69	67	65	63	62	63	62	61	59	60
218.89	221.26	223.62	225.99	228.36	230.72	233.09	235.45	237.82	240.18	242.55	244.92	247.28



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

62	64	59	60	61	62	63	59	60	61	62	63	59	
61	61	60	59	60	61	61	59	59	60	61	61	59	
249.65	252.01	254.38	256.74	259.11	261.48	263.84	266.21	268.57	270.94	273.30	275.67	278.04	2



Part9

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

60	62	62	62	57	53	51	48	46	43	40	42	44	44
59	60	61	59	56	52	50	48	45	42	41	42	43	43
80.40	282.77	285.13	287.50	289.86	292.23	294.60	296.96	299.33	301.69	304.06	306.42	308.79	311



Part10

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

	42	40	43	44	43	43	40	43	43	43	43	41	44
	42	41	42	43	43	42	42	42	43	43	42	42	42
.16	313.52	315.89	318.25	320.62	322.98	325.35	327.72	330.08	332.45	334.81	337.18	339.54	341.91



Part11

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

	43	43	43	41	44	42	42	43	42	43	40	36	32
	43	42	42	42	42	43	42	42	42	41	39	35	32
I	344.28	346.64	349.01	351.37	353.74	356.10	358.47	360.84	363.20	365.57	367.93	370.30	372.66



Part12

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

28	27	25	23	23	25	26	24	23	23	25	26	23
30	27	26	24	24	25	26	25	23	24	25	26	25
375.03	377.40	379.76	382.13	384.49	386.86	389.22	391.59	393.96	396.32	398.69	401.05	403.42



Part13

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

23	23	26	26	23	23	23	26	26	23	23	24	26
23	24	26	26	24	23	25	26	25	24	23	25	26
405.78	408.15	410.52	412.88	415.25	417.61	419.98	422.34	424.71	427.08	429.44	431.81	434.17



Part14

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

25	23	23	24	26	25	23	23	24	26	24	23	23	
25	24	24	25	26	25	24	24	25	26	25	24	24	
436.54	438.90	441.27	443.64	446.00	448.37	450.73	453.10	455.46	457.83	460.20	462.56	464.93	467.30



Part15

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.3 Table, Adaptation (E), Wall right, S1: 100%

25	26	24	23	23	25	26	23	(21)
25	26	25	23	24	25	25	23	(21)
7.29	469.66	472.02	474.39	476.76	479.12	481.49	483.85	486.22 [m]



Part16

Object : ANAS__Galleria SP209
 Installation :
 Project number : 400797819
 Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

[m]	51	75	97	116	132	140	144	146	148	[150]	148	147	147	147	146	146
1.70																
1.00	50	71	91	109	123	132	137	139	141	142	142	141	141	140	140	139
	1.25	3.61	5.98	8.34	10.71	13.08	15.44	17.81	20.17	22.54	24.90	27.27	29.64	32.00	34.37	36.



Part1

Observer location 1 : x = -84.7, y = 1.75, z = 1.5 (dx = 85.93)
 Average luminance Lav : 33.9 cd/m²
 Minimum luminance Lmin : 2.68 cd/m²
 Overall uniformity Uo Lmin/Lm : 0.079
 Longitudinal uniformity UI Llmin/Llmax : 0.018 (1.70m)

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	145	144	143	144	145	145	145	143	140	136	131	125	121	119	117	115
	138	138	138	138	138	139	138	136	133	130	125	121	117	114	112	110
73	39.10	41.46	43.83	46.20	48.56	50.93	53.29	55.66	58.02	60.39	62.76	65.12	67.49	69.85	72.22	74.5



Part2

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	114	112	107	102	97	92	87	83	80	78	75	71	67	63	59	55
	108	105	102	97	93	89	84	80	77	74	71	68	64	60	56	52
8	76.95	79.32	81.68	84.05	86.41	88.78	91.14	93.51	95.88	98.24	100.61	102.97	105.34	107.70	110.07	112.4



Part3

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	51	47	45	43	41	39	36	34	32	30	28	27	26	25	24	23
	49	46	43	41	39	37	35	33	31	29	28	26	25	24	23	22
4	114.80	117.17	119.53	121.90	124.26	126.63	129.00	131.36	133.73	136.09	138.46	140.82	143.19	145.56	147.92	150.29



Part4

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

	22	21	21	20	19	18	18	18	17	17	16	16	15	14	14	13
	21	20	20	19	18	18	17	17	17	16	15	15	15	14	13	13
)	152.65	155.02	157.38	159.75	162.12	164.48	166.85	169.21	171.58	173.94	176.31	178.68	181.04	183.41	185.77	188.14



Part5

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

13	13	12	12	11	11	11	11	10	10	10	10	9	9	9	9
13	12	12	11	11	11	11	11	10	10	10	10	9	9	9	9
190.50	192.87	195.24	197.60	199.97	202.33	204.70	207.06	209.43	211.80	214.16	216.53	218.89	221.26	223.62	225.99



Part6

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	8	8	8	8	8	8	8	8	8	8	8	7	8	8	8
228.36	230.72	233.09	235.45	237.82	240.18	242.55	244.92	247.28	249.65	252.01	254.38	256.74	259.11	261.48	263.84



Part7

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

8	8	8	8	8	8	8	8	8	8	7	7	6	6	6	5
8	7	8	8	8	8	7	8	8	8	7	7	6	6	6	5
266.21	268.57	270.94	273.30	275.67	278.04	280.40	282.77	285.13	287.50	289.86	292.23	294.60	296.96	299.33	301.69



Part8

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

5	5	6	6	5	5	5	6	6	5	5	6	6	5	5	5
5	5	6	6	5	5	5	5	5	5	5	5	5	5	5	5
304.06	306.42	308.79	311.16	313.52	315.89	318.25	320.62	322.98	325.35	327.72	330.08	332.45	334.81	337.18	339.54



Part9

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

6	5	5	5	5	6	5	5	5	5	5	5	5	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	(3)
341.91	344.28	346.64	349.01	351.37	353.74	356.10	358.47	360.84	363.20	365.57	367.93	370.30	372.66	375.03	377.40



Part10

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
379.76	382.13	384.49	386.86	389.22	391.59	393.96	396.32	398.69	401.05	403.42	405.78	408.15	410.52	412.88	415.25



Part11

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	
(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	
117.61	419.98	422.34	424.71	427.08	429.44	431.81	434.17	436.54	438.90	441.27	443.64	446.00	448.37	450.73	453.10	4



Part12

Object : ANAS__Galleria SP209
Installation :
Project number : 400797819
Date : 08.03.2023



3.4 Calculation results, Galleria SP209__dir NORD

3.4.4 Table, Adaptation (L), Wall right, S1: 100%, Obs. 1

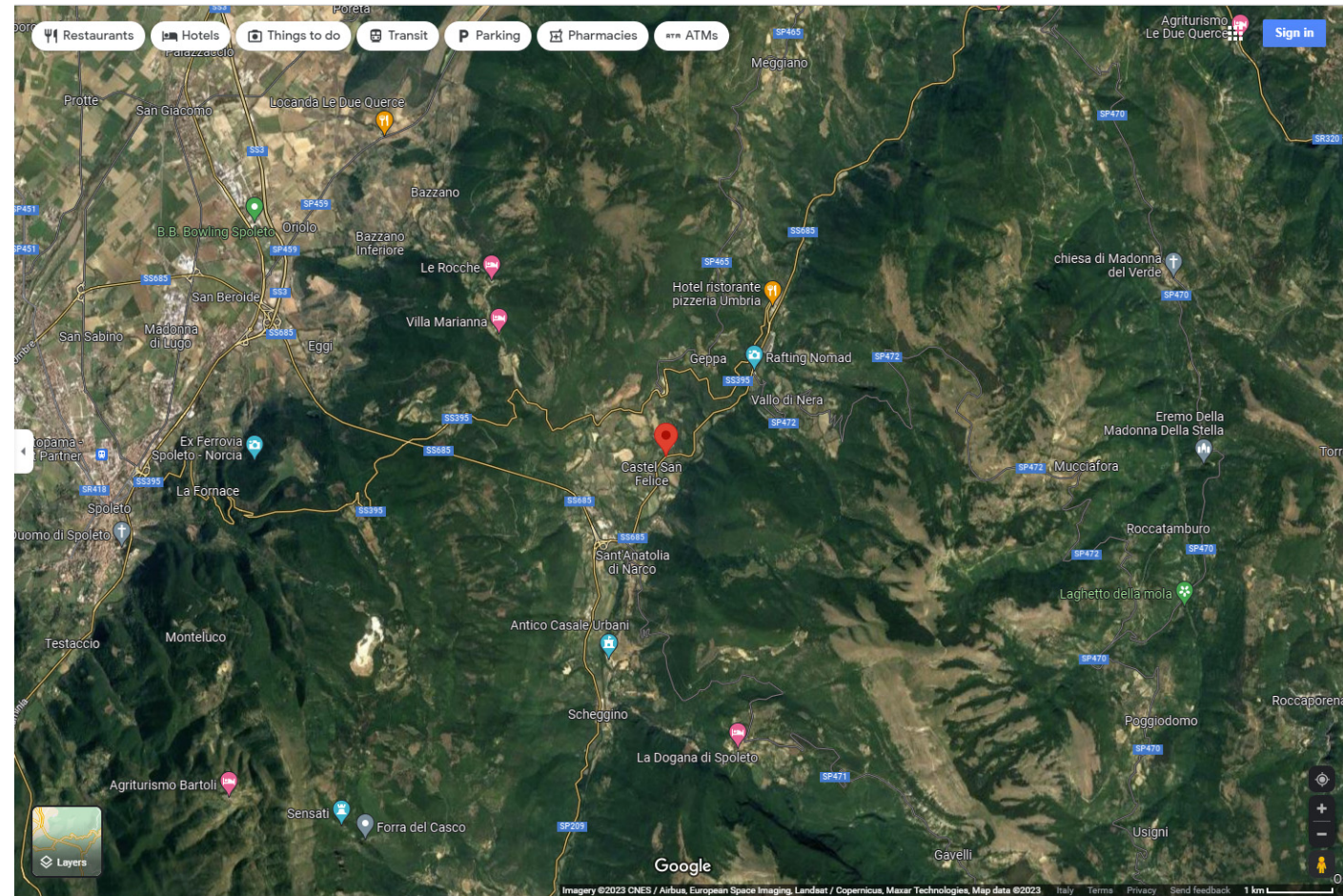
(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
55.46	457.83	460.20	462.56	464.93	467.29	469.66	472.02	474.39	476.76	479.12	481.49	483.85	486.22 [m]



Part13

Galleria SP209

Progetto illuminotecnico

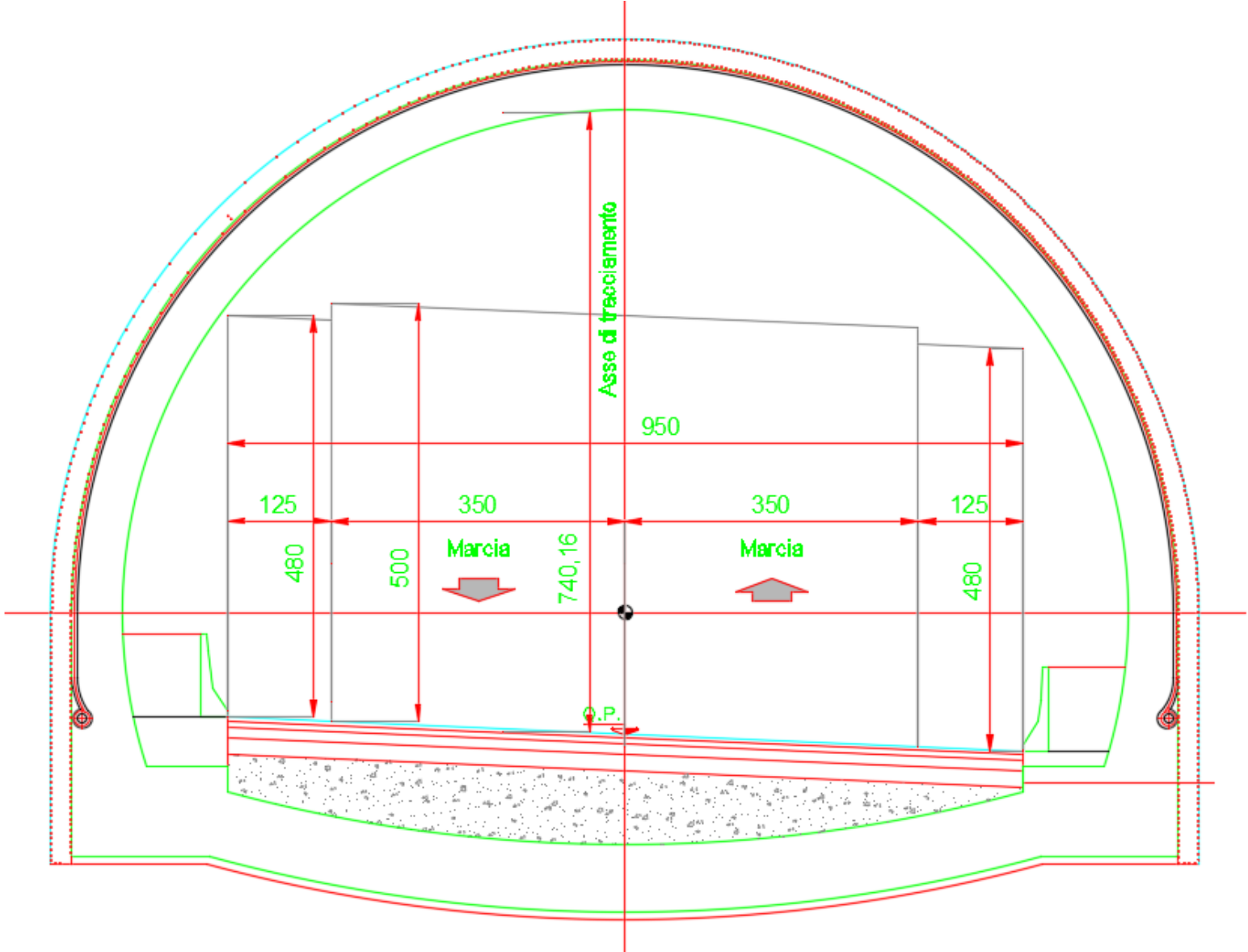


SIGNIFY S.p.A.
Viale Sarca 235
20126 Milano

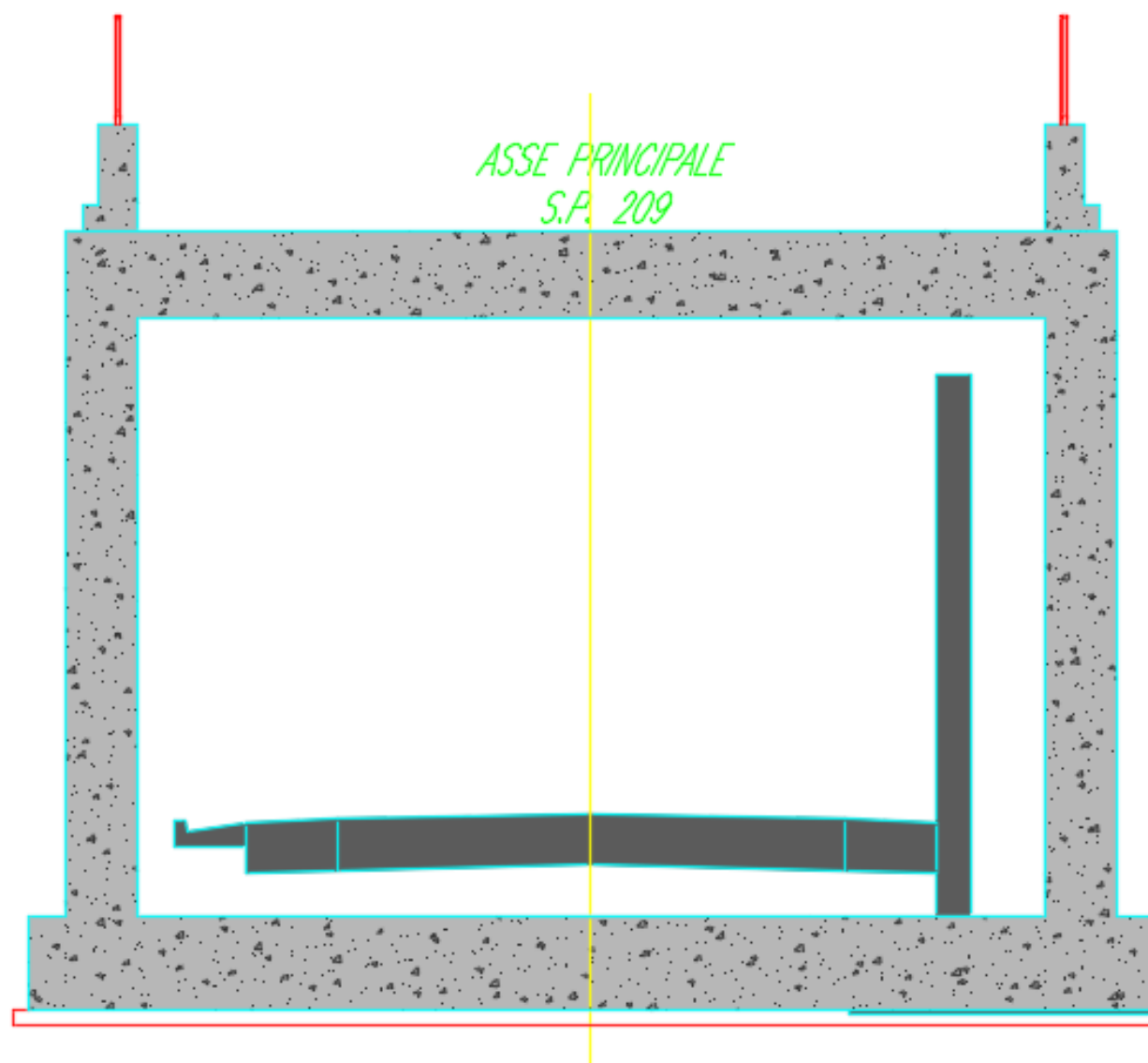
Progetto illuminotecnico
Codice di progetto: 400797819
8 Marzo 2023

DATI GALLERIA	<p>Lunghezza complessiva → 490m</p> <p>Orientamento delle due gallerie = Nord-Sud</p> <p>Coordinate galleria: 97° 99' ; 73° S 77° : 5 863 > J %</p> <p>Imbocco Nord sezione artificiale per 35m Imbocco Sud sezione artificiale per 15m Parte centrale sezione naturale</p>
DATI TRAFFICO	<p>Velocità di progetto illuminotecnico del presente elaborato: 80Km/h + 0 Km/h =80Km/h (22,22m/s)</p> <p>Carreggiata a doppio senso di circolazione</p> <p>N° 2 corsie in tutto</p> <p>Pavimentazione: asfalto CIE C2 con $Q_0=0,056$</p>
PENDENZA LONGITUDINALE	<p>Fornice a Nord, direzione Sud = 0%</p> <p>Fornice a Sud, direzione Nord = 0%</p>
NORME DI RIFERIMENTO	<p>UNI 11095 Febbraio 2021</p> <p>Decreto del ministero delle infrastrutture e dei trasporti 14 Settembre 2005</p>

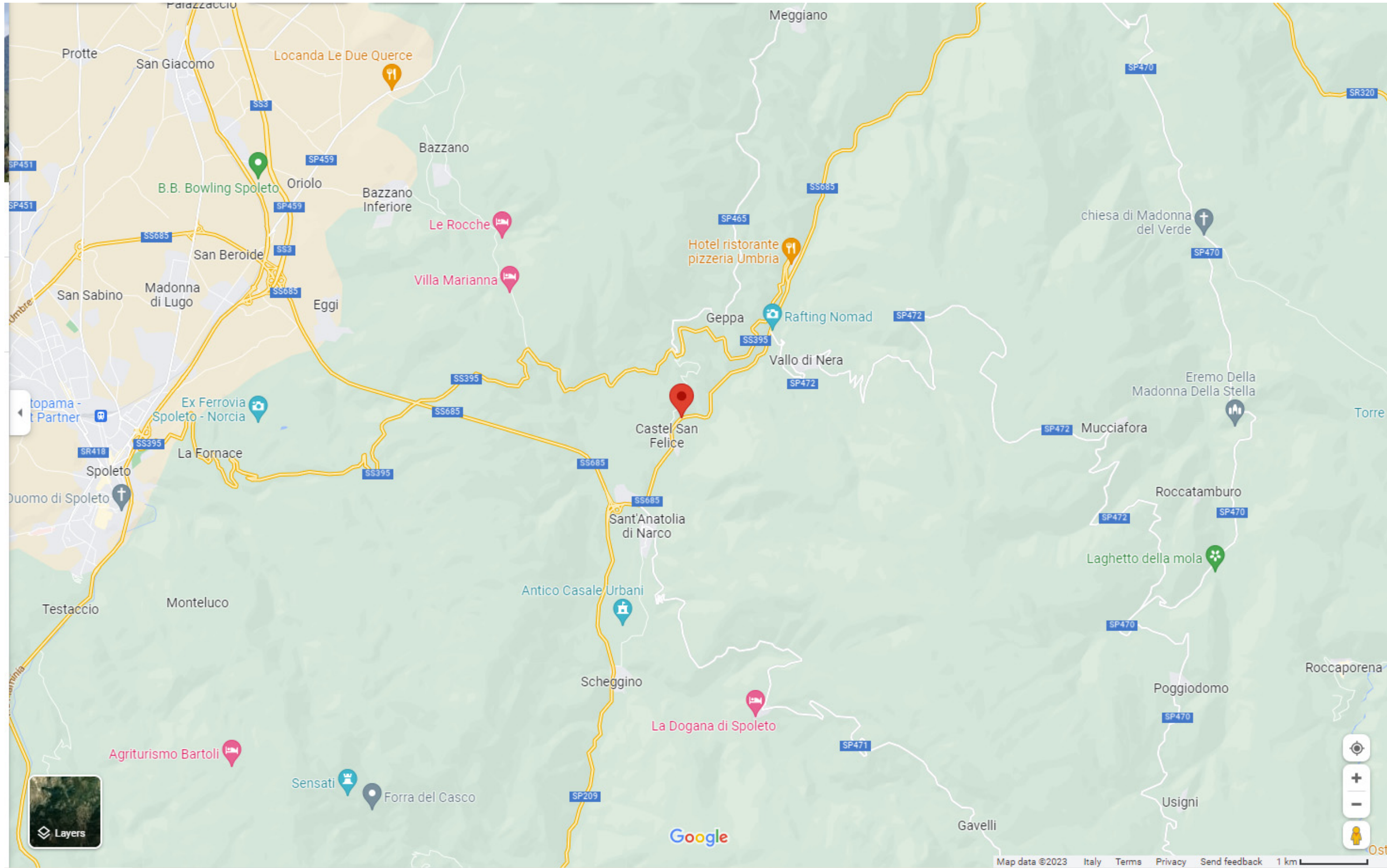
Sezione naturale del tunnel



Sezione artificiale del tunnel



Individuazione geografica dell'area oggetto di studio



Vista satellite dell'area oggetto di studio

42°44'52.1"N 12°50'31.9"E
42.747815, 12.842189

Directions Save Nearby Send to phone Share

06040 Sant'Anatolia di Narco, Province of Perugia
PRXR+4VG Sant'Anatolia di Narco, Province of Perugia
Add a missing place
Add your business

Photos

Photos

Layers

Google

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Galleria SP209 – fornice a NORD direzione SUD

Calcolo della distanza di riferimento (presunzione di arresto)

In base all'appendice A viene calcolata la distanza d'arresto per una strada in presenza di elevate luminanze di velo, e quindi per una strada con superficie stradale bagnata, avente una pendenza longitudinale di **0%**.

Viene utilizzato il grafico (altre strade – superficie stradale bagnata) in base al quale la distanza di riferimento viene stimata:

$$d_a = \mathbf{109m}$$

Altre strade - Superficie stradale bagnata - Distanze di riferimento [m]

Pendenza % \ Velocità km/h	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
25	25	25	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	22
30	31	31	31	30	30	30	30	30	29	29	29	29	29	28	28	28	28	28	28	28	27	27	27	27	27
40	45	44	44	43	43	43	42	42	42	41	41	41	40	40	40	39	39	39	39	38	38	38	38	38	37
50	62	61	61	60	59	58	58	57	56	56	55	55	54	54	53	53	52	52	51	51	51	50	50	50	49
60	84	82	81	79	78	77	76	75	74	73	72	71	70	69	69	68	67	67	66	65	65	64	64	63	63
70	108	106	103	101	99	98	96	94	93	92	90	89	88	87	86	85	84	83	82	81	80	79	78	78	77
80	140	136	133	130	127	124	122	119	117	115	113	111	109	108	106	105	103	102	101	99	98	97	96	95	94
90	186	180	175	170	165	161	157	153	150	147	144	141	138	136	133	131	129	127	125	123	121	119	118	116	115
100	233	225	217	210	203	198	192	187	182	178	174	170	166	163	160	157	154	151	149	146	144	142	140	138	136
110	289	278	267	257	249	240	233	226	220	214	209	204	199	194	190	186	182	179	175	172	169	166	164	161	159
120	358	342	327	314	302	291	281	272	264	256	249	242	236	230	224	219	214	210	206	202	198	194	191	187	184

Nota Valori intermedi possono essere ottenuti per interpolazione lineare con arrotondamento al metro.

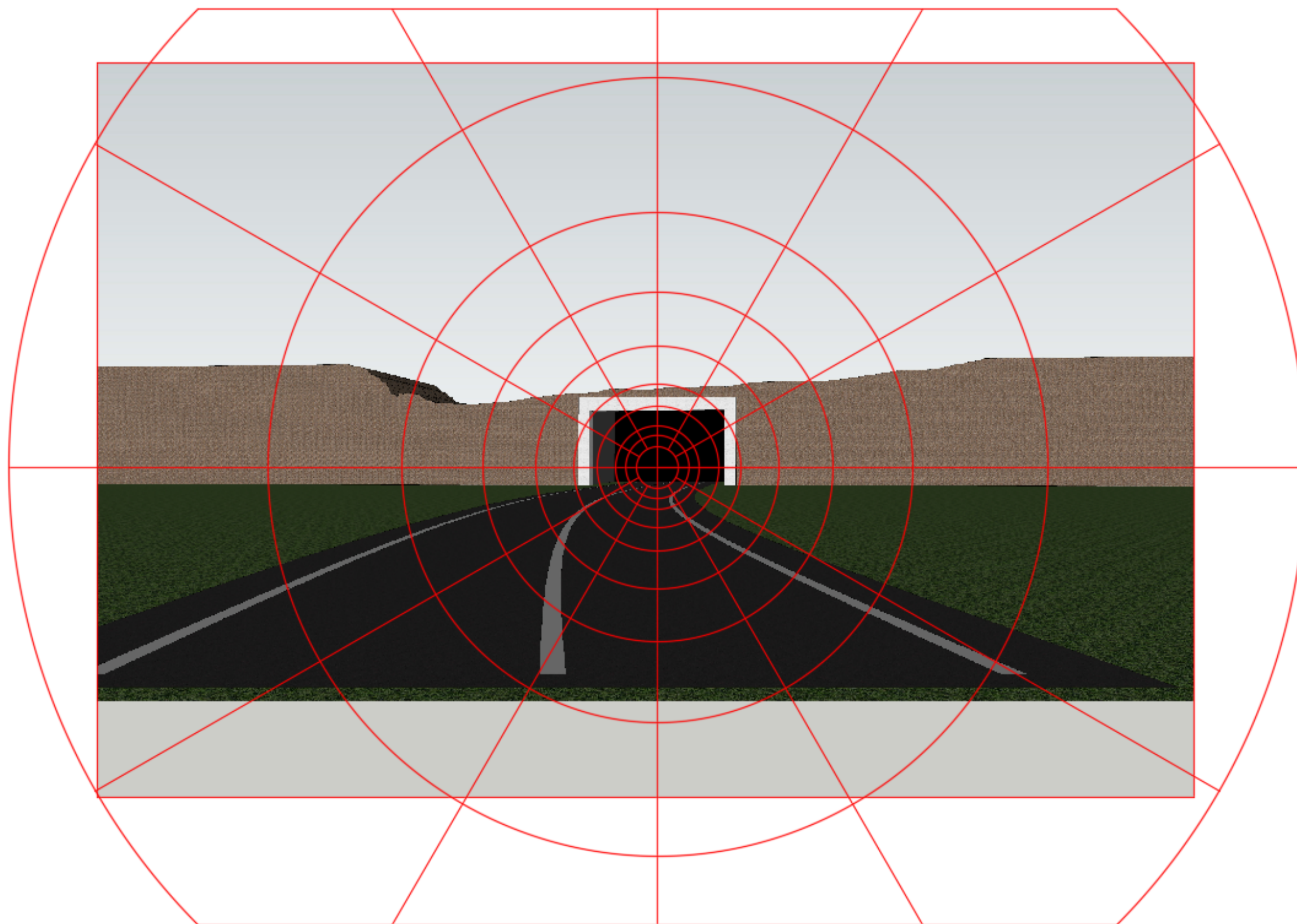
Calcolo della luminanza di velo equivalente

Gli angoli sottesi dai raggi delle circonferenze che limitano i settori del diagramma polare, visti dalla distanza di riferimento, sono specificati nel prospetto E1

Circonferenza	1	2	3	4	5	6	7	8	9	10
Angolo di apertura	1,0°	1,5°	2,0°	2,9°	4,0°	5,8°	8,3°	12,0°	18,0°	28,4°

Calcolo dei diametri delle circonferenze del diagramma polare per la valutazione di L_{seq} :

$d=2tg\theta \cdot da$	diametri	raggi
circonferenza 1 (1°)	3,81	1,90
circonferenza 2 (1,5°)	5,71	2,85
circonferenza 3 (2,0°)	7,61	3,81
circonferenza 4 (2,9°)	11,04	5,52
circonferenza 5 (4,0°)	15,24	7,62
circonferenza 6 (5,8°)	22,14	11,07
circonferenza 7 (8,3°)	31,80	15,90
circonferenza 8 (12,0°)	46,34	23,17
circonferenza 9 (18,0°)	70,83	35,42
circonferenza 10 (28,4°)	117,87	58,94



Attribuzione a ciascun componente di un valore di luminanza [$\text{kcd}\cdot\text{m}^{-2}$] tenendo presente che da questo lato la galleria ha una direzione verso Sud

Valori convenzionali di luminanza da considerare nella stima di L_{seq75}

Direzione di marcia	Luminanza [$\text{kcd}\cdot\text{m}^{-2}$]					
	Cielo	Strada	Rocce	Edifici	Neve	Prati
Verso Nord	8	3	3	8	15	2
Est-Ovest	12	4	2	6	10 (V) 15 (H)	2
Verso Sud	16	5	1	4	5 (V) 15 (H)	2

(V) Paesaggio montagnoso con superfici prevalentemente ripide, rivolte verso il conducente.
(H) Paesaggio pianeggiante, più o meno orizzontale.

Interpolando i valori della tabella sopra, si ottengono i seguenti valori:

COMPONENTE	LUMINANZA
Cielo	16
Strada	5
Rocce	1
Edifici	4
Prati	2

La luminanza di velo equivalente viene calcolata con la seguente formula

$$\left\{ \begin{array}{l} L_{\text{seq}}(x) = 513 \cdot 10^{-6} \sum_{i=1}^9 \sum_{j=1}^{12} k_{i,j} \bar{L}_{i,j}(x) \\ k_{i,j} = 0,78 \quad \text{se } i = 9 \quad \text{e } j = 2, 5, 8, 11 \\ k_{i,j} = 0,22 \quad \text{se } i = 9 \quad \text{e } j = 1, 6, 7, 12 \\ k_{i,j} = 1,00 \quad \text{negli altri casi} \end{array} \right.$$

Calcolo della luminanza dell'atmosfera

La galleria si trova al 42° parallelo Nord (97° 99', 736'S 77°: 5 863' U).

Dal prospetto si definisce un illuminamento orizzontale di **58 klx**.

Illuminamenti orizzontali convenzionali E_{h75}

Latitudine locale	Illuminamento orizzontale [klx]
36° N	64
38° N	62
40° N	60
42° N	58
44° N	57
46° N	55

In base al prospetto sottostante, si stima di visibilità meteorologica stimata di **10 km**

CONDIZIONI	DISTANZA DI VISIBILITA' METEOROLOGICA
Foschia	5
Ambito urbano	8
Leggera foschia	10
Limpida	20
Molto limpida	30

La luminanza dell'atmosfera viene calcolata con la seguente formula.

$$L_{\text{atm}} = 1,3 \frac{d_a \cdot E_h}{\pi \cdot V_m}$$

in cui:

E_h è l'illuminamento orizzontale [lx];

d_a è la distanza di riferimento [m];

V_m è la distanza di visibilità meteorologica [m],

ossia la distanza a cui a causa della luminanza dell'atmosfera un oggetto nero osservato sullo sfondo del cielo all'orizzonte presenta un contrasto pari a 0,05.

Calcolo della luminanza del parabrezza e del cruscotto

La luminanza del parabrezza e del cruscotto viene calcolata secondo la formula:

$$L_{\text{par}} + L_{\text{cru}} = 0,4 \cdot L_{\text{seq}}$$

Calcolo della luminanza di velo

La luminanza di velo può essere calcolata con la seguente formula:

$$L_v = L_{\text{seq}} + L_{\text{atm}} + L_{\text{par}} + L_{\text{cru}}$$

ove:

L_{seq} è la luminanza di velo equivalente

L_{atm} è la luminanza atmosferica

L_{par} è la luminanza del parabrezza

L_{cru} è la luminanza del cruscotto

Calcolo della luminanza media nella sezione iniziale della zona di entrata

La luminanza L_s media mantenuta della pavimentazione stradale nella sezione iniziale della zona di entrata deve risultare non inferiore al valore ottenibile dalla formula:

$$L_e = c \cdot L_v$$

dove:

L_e è la luminanza debilitante;

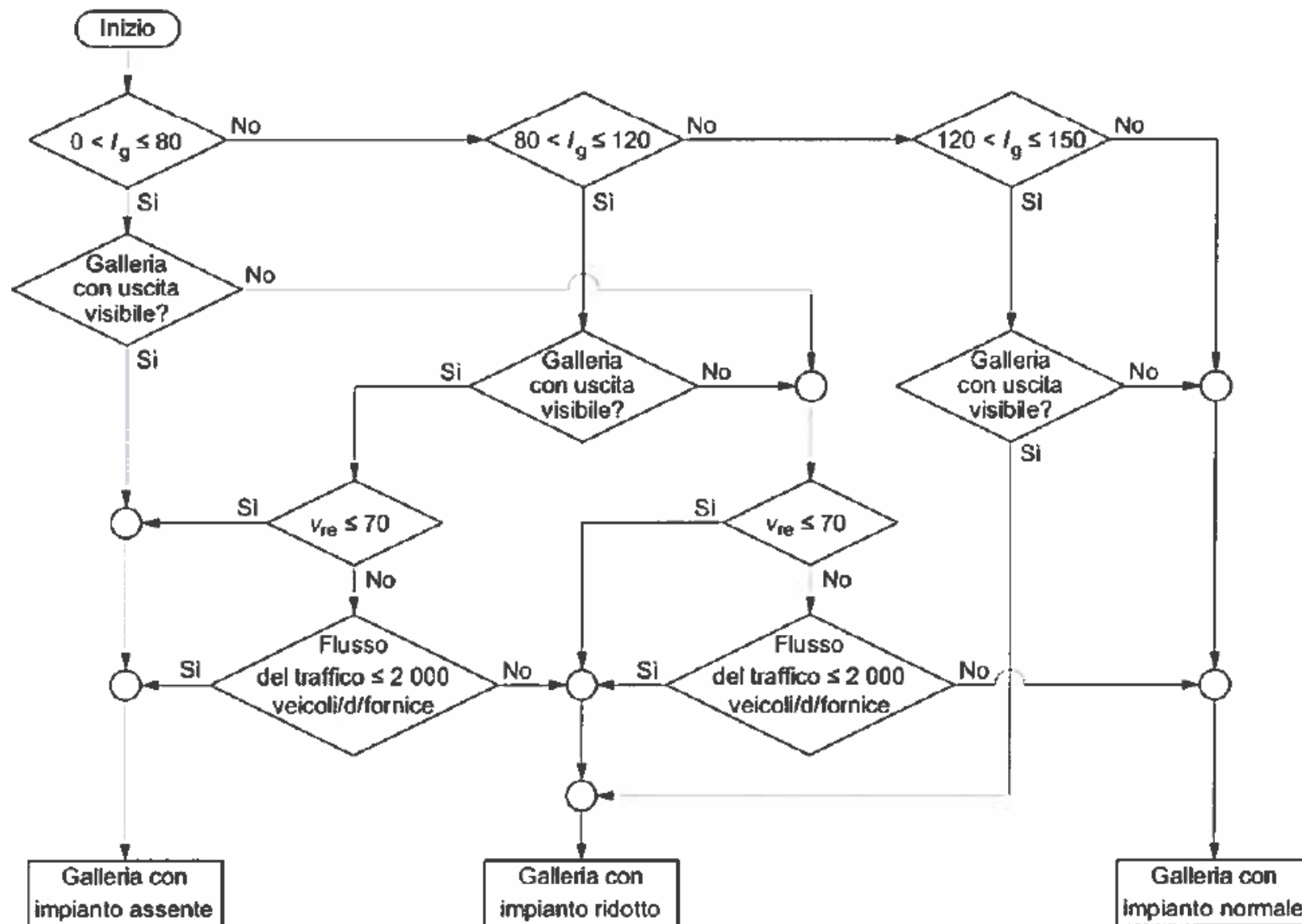
c è un fattore dipendente dal tipo di impianto.

Il parametro c assume il valore **0,23** per impianti a controflusso, e **0,25** per impianti simmetrici

Gallerie lunghe o gallerie brevi

Essendo la galleria lunga 490m, in base al prospetto 2 la Le risulta il 100%

figura 3 **Diagramma decisionale per galleria rettilinea e con strada di accesso rettilinea con pendenza longitudinale costante (II)**



B	2							1	0	1	0,00	
B	3							1	0	1	0,00	
B	4		0,4					1,3	2	1,7	1,18	
B	5		1						5	1	5,00	
B	6		1						5	1	5,00	
B	7		1						5	1	5,00	
B	8		1						5	1	5,00	
B	9		0,4					1,3	2	1,7	1,18	
B	10							1	0	1	0,00	
B	11							1	0	1	0,00	
B	12							1	0	1	0,00	
C	1				0,35			3,85	1,4	4,2	0,33	
C	2							1	0	1	0,00	
C	3							1	0	1	0,00	
C	4		1				1	2,2	7	4,2	1,67	
C	5		3,2				1		18	4,2	4,29	
C	6		1						5	1	5,00	
C	7		1						5	1	5,00	
C	8		1						5	1	5,00	
C	9		1,4				0,5	2,3	8	4,2	1,90	
C	10							1	0	1	0,00	
C	11							1	0	1	0,00	
C	12				0,35			3,85	1,4	4,2	0,33	
D	1	0,5			3,75			2,5	0,25	28	7	4,00
D	2				1,8			5,2	7,2	7	1,03	
D	3				3,8			0,8	2,4	16,8	7	2,40
D	4				1,7			4,5	0,8	15,8	7	2,26
D	5		4,4					2,6		27,2	7	3,89
D	6		1						5	1	5,00	
D	7		1						5	1	5,00	
D	8		1						5	1	5,00	
D	9		3,3		2			1,1	0,6	26,7	7	3,81
D	10				3,8			0,8	2,4	16,8	7	2,40
D	11				1,8			5,2	7,2	7	1,03	
D	12	0,8			3,75			2,2	0,25	32,2	7	4,60
E	1	15,95						0,75		256,7	16,7	15,37
E	2	4,5			3,7			8,3	0,2	103,4	16,7	6,19

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
22,35	42,35	21,7271	16,90	8,69082	47,3136	11,8284	10,8821

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	7,04
		Eh=	58000
		V=	10000
Latm =	16,90		

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
23,52	65,88	33,7948	24,51	13,5179	71,8225	17,9556	16,5192

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	10,21
		Eh=	58000
		V=	10000
Latm =	24,51		

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
40,41	106,29	54,5273	33,83	21,8109	110,171	27,5427	25,3393

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	14,10
		Eh=	58000
		V=	10000
Latm =	33,83		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	20,48
--------	---	----	-------

E	3				0,3			16,4		34	16,7	2,04
E	4							1		2	1	2,00
E	5		13,9					2,8		75,1	16,7	4,50
E	6		1							5	1	5,00
E	7		1							5	1	5,00
E	8		1							5	1	5,00
E	9		9,8					6,9		62,8	16,7	3,76
E	10				0,3			16,4		34	16,7	2,04
E	11	6,9			4			5,8		138	16,7	8,26
E	12	16,3						0,4		261,6	16,7	15,66
F	1	1								16	1	16,00
F	2	28						6		460	34	13,53
F	3							1		2	1	2,00
F	4							1		2	1	2,00
F	5		32,5					1,5		165,5	34	4,87
F	6		1							5	1	5,00
F	7		1							5	1	5,00
F	8		1							5	1	5,00
F	9		20					14		128	34	3,76
F	10	3,4						30,6		115,6	34	3,40
F	11	32,8						1,2		527,2	34	15,51
F	12	1								16	1	16,00
G	1	1								16	1	16,00
G	2	1								16	1	16,00
G	3	12,7						62,3		327,8	75	4,37
G	4		5					70		165	75	2,20
G	5		1							5	1	5,00
G	6		1							5	1	5,00
G	7		1							5	1	5,00
G	8		1							5	1	5,00
G	9		44					31		282	75	3,76
G	10	25						50		500	75	6,67
G	11	1								16	1	16,00
G	12	1								16	1	16,00
H	1	1								16	1	16,00
H	2	1								16	1	16,00
H	3	67,7						120,3		1323,8	188	7,04

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
74,82	181,11	92,9101	49,15	37,1641	179,22	44,805	41,2206

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
92,07	273,18	140,141	70,58	56,0563	266,78	66,6951	61,3595

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
101,00	374,18	191,952	102,84	76,781	371,575	92,8937	85,4622

E _h =	58000
V=	10000
Latm =	49,15

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	29,41
E _h =	58000		
V=	10000		
Latm =	70,58		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	42,85
E _h =	58000		
V=	10000		
Latm =	102,84		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	65,50
E _h =	58000		

Galleria SP209 – fornice a SUD direzione NORD

Calcolo della distanza di riferimento (presunzione di arresto)

In base all'appendice A viene calcolata la distanza d'arresto per una strada in presenza di elevate luminanze di velo, e quindi per una strada con superficie stradale bagnata, avente una pendenza longitudinale di **0%**.

Viene utilizzato il grafico (altre strade – superficie stradale bagnata) in base al quale la distanza di riferimento viene stimata:

$$d_a = \mathbf{109m}$$

Altre strade - Superficie stradale bagnata - Distanze di riferimento [m]

Pendenza % \ Velocità km/h	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12
25	25	25	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	22
30	31	31	31	30	30	30	30	30	29	29	29	29	29	28	28	28	28	28	28	28	27	27	27	27	27
40	45	44	44	43	43	43	42	42	42	41	41	41	40	40	40	39	39	39	39	38	38	38	38	38	37
50	62	61	61	60	59	58	58	57	56	56	55	55	54	54	53	53	52	52	51	51	51	50	50	50	49
60	84	82	81	79	78	77	76	75	74	73	72	71	70	69	69	68	67	67	66	65	65	64	64	63	63
70	108	106	103	101	99	98	96	94	93	92	90	89	88	87	86	85	84	83	82	81	80	79	78	78	77
80	140	136	133	130	127	124	122	119	117	115	113	111	109	108	106	105	103	102	101	99	98	97	96	95	94
90	186	180	175	170	165	161	157	153	150	147	144	141	138	136	133	131	129	127	125	123	121	119	118	116	115
100	233	225	217	210	203	198	192	187	182	178	174	170	166	163	160	157	154	151	149	146	144	142	140	138	136
110	289	278	267	257	249	240	233	226	220	214	209	204	199	194	190	186	182	179	175	172	169	166	164	161	159
120	358	342	327	314	302	291	281	272	264	256	249	242	236	230	224	219	214	210	206	202	198	194	191	187	184

Nota Valori intermedi possono essere ottenuti per interpolazione lineare con arrotondamento al metro.

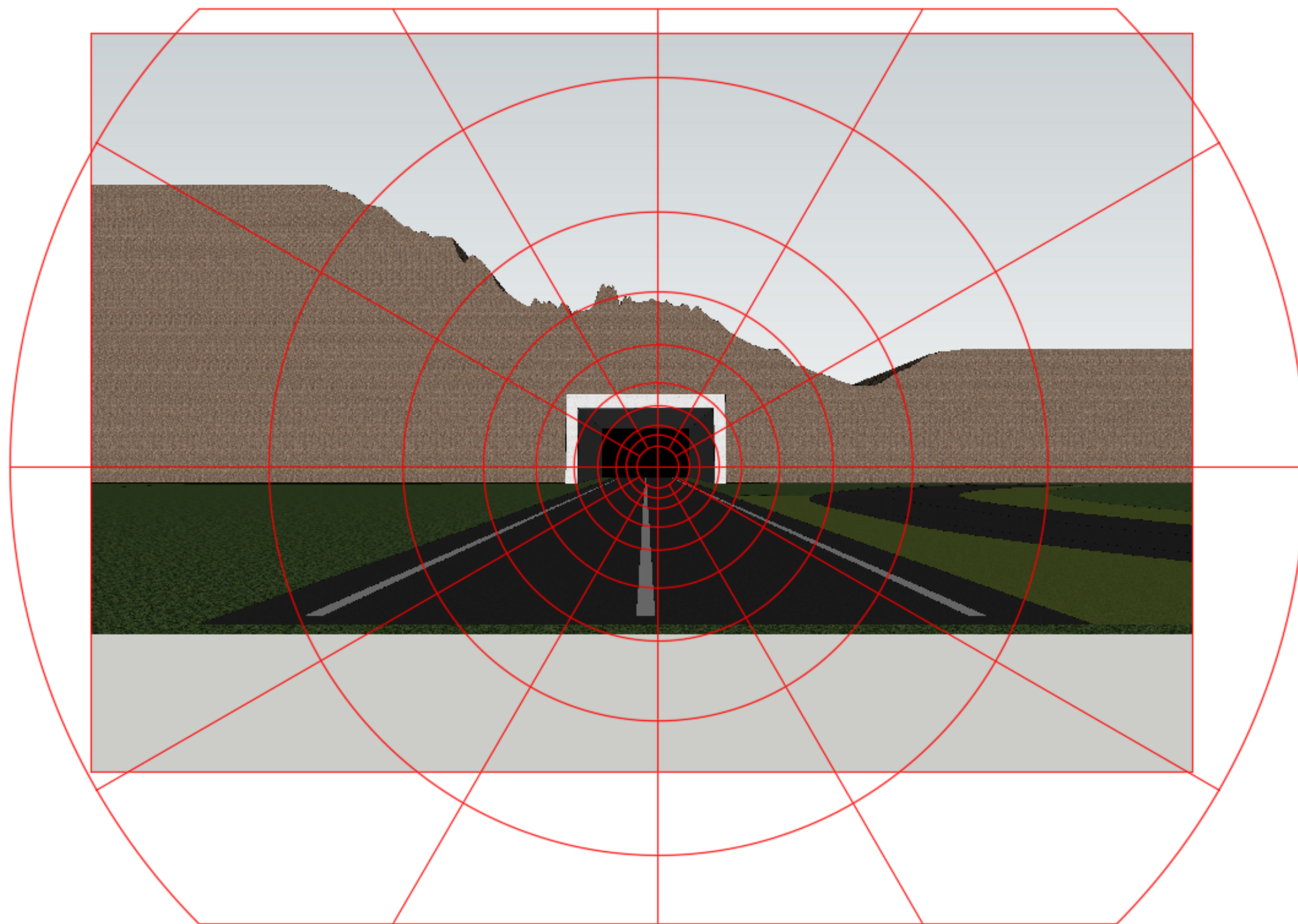
Calcolo della luminanza di velo equivalente

Gli angoli sottesi dai raggi delle circonferenze che limitano i settori del diagramma polare, visti dalla distanza di riferimento, sono specificati nel prospetto E1

Circonferenza	1	2	3	4	5	6	7	8	9	10
Angolo di apertura	1,0°	1,5°	2,0°	2,9°	4,0°	5,8°	8,3°	12,0°	18,0°	28,4°

Calcolo dei diametri delle circonferenze del diagramma polare per la valutazione di L_{seq} :

$d=2tg\theta \cdot da$	diametri	raggi
circonferenza 1 (1°)	3,81	1,90
circonferenza 2 (1,5°)	5,71	2,85
circonferenza 3 (2,0°)	7,61	3,81
circonferenza 4 (2,9°)	11,04	5,52
circonferenza 5 (4,0°)	15,24	7,62
circonferenza 6 (5,8°)	22,14	11,07
circonferenza 7 (8,3°)	31,80	15,90
circonferenza 8 (12,0°)	46,34	23,17
circonferenza 9 (18,0°)	70,83	35,42
circonferenza 10 (28,4°)	117,87	58,94



Attribuzione a ciascun componente di un valore di luminanza [$\text{kcd}\cdot\text{m}^{-2}$] tenendo presente che da questo lato la galleria ha una direzione verso Sud

Valori convenzionali di luminanza da considerare nella stima di L_{seq75}

Direzione di marcia	Luminanza [$\text{kcd}\cdot\text{m}^{-2}$]					
	Cielo	Strada	Rocce	Edifici	Neve	Prati
Verso Nord	8	3	3	8	15	2
Est-Ovest	12	4	2	6	10 (V) 15 (H)	2
Verso Sud	16	5	1	4	5 (V) 15 (H)	2

(V) Paesaggio montagnoso con superfici prevalentemente ripide, rivolte verso il conducente.
 (H) Paesaggio pianeggiante, più o meno orizzontale.

Interpolando i valori della tabella sopra, si ottengono i seguenti valori:

COMPONENTE	LUMINANZA
Cielo	8
Strada	3
Rocce	3
Edifici	8
Prati	2

La luminanza di velo equivalente viene calcolata con la seguente formula

$$\begin{cases}
 L_{\text{seq}}(x) = 513 \cdot 10^{-6} \sum_{i=1}^9 \sum_{j=1}^{12} k_{i,j} \bar{L}_{i,j}(x) \\
 k_{i,j} = 0,78 \quad \text{se } i = 9 \quad \text{e } j = 2, 5, 8, 11 \\
 k_{i,j} = 0,22 \quad \text{se } i = 9 \quad \text{e } j = 1, 6, 7, 12 \\
 k_{i,j} = 1,00 \quad \text{negli altri casi}
 \end{cases}$$

Calcolo della luminanza dell'atmosfera

La galleria si trova al 42° parallelo Nord (97° 99', 736'S 7° 58' 63" U).

Dal prospetto si definisce un illuminamento orizzontale di **58 klx**.

Illuminamenti orizzontali convenzionali E_{h75}

Latitudine locale	Illuminamento orizzontale [klx]
36° N	64
38° N	62
40° N	60
42° N	58
44° N	57
46° N	55

In base al prospetto sottostante, si stima di visibilità meteorologica stimata di **10 km**

CONDIZIONI	DISTANZA DI VISIBILITA' METEOROLOGICA
Foschia	5
Ambito urbano	8
Leggera foschia	10
Limpida	20
Molto limpida	30

La luminanza dell'atmosfera viene calcolata con la seguente formula.

$$L_{atm} = 1,3 \frac{d_a \cdot E_h}{\pi \cdot V_m}$$

in cui:

E_h è l'illuminamento orizzontale [lx];

d_a è la distanza di riferimento [m];

V_m è la distanza di visibilità meteorologica [m],

ossia la distanza a cui a causa della luminanza dell'atmosfera un oggetto nero osservato sullo sfondo del cielo all'orizzonte presenta un contrasto pari a 0,05.

Calcolo della luminanza del parabrezza e del cruscotto

La luminanza del parabrezza e del cruscotto viene calcolata secondo la formula:

$$L_{\text{par}} + L_{\text{cru}} = 0,4 \cdot L_{\text{seq}}$$

Calcolo della luminanza di velo

La luminanza di velo può essere calcolata con la seguente formula:

$$L_v = L_{\text{seq}} + L_{\text{atm}} + L_{\text{par}} + L_{\text{cru}}$$

ove:

L_{seq} è la luminanza di velo equivalente

L_{atm} è la luminanza atmosferica

L_{par} è la luminanza del parabrezza

L_{cru} è la luminanza del cruscotto

Calcolo della luminanza media nella sezione iniziale della zona di entrata

La luminanza L_s media mantenuta della pavimentazione stradale nella sezione iniziale della zona di entrata deve risultare non inferiore al valore ottenibile dalla formula:

$$L_e = c \cdot L_v$$

dove:

L_e è la luminanza debilitante;

c è un fattore dipendente dal tipo di impianto.

Il parametro c assume il valore **0,23** per impianti a controflusso, e **0,25** per impianti simmetrici

Gallerie lunghe o gallerie brevi

Essendo la galleria lunga 490m, in base al prospetto 2 la Le risulta il 100%

figura 3 **Diagramma decisionale per galleria rettilinea e con strada di accesso rettilinea con pendenza longitudinale costante (II)**

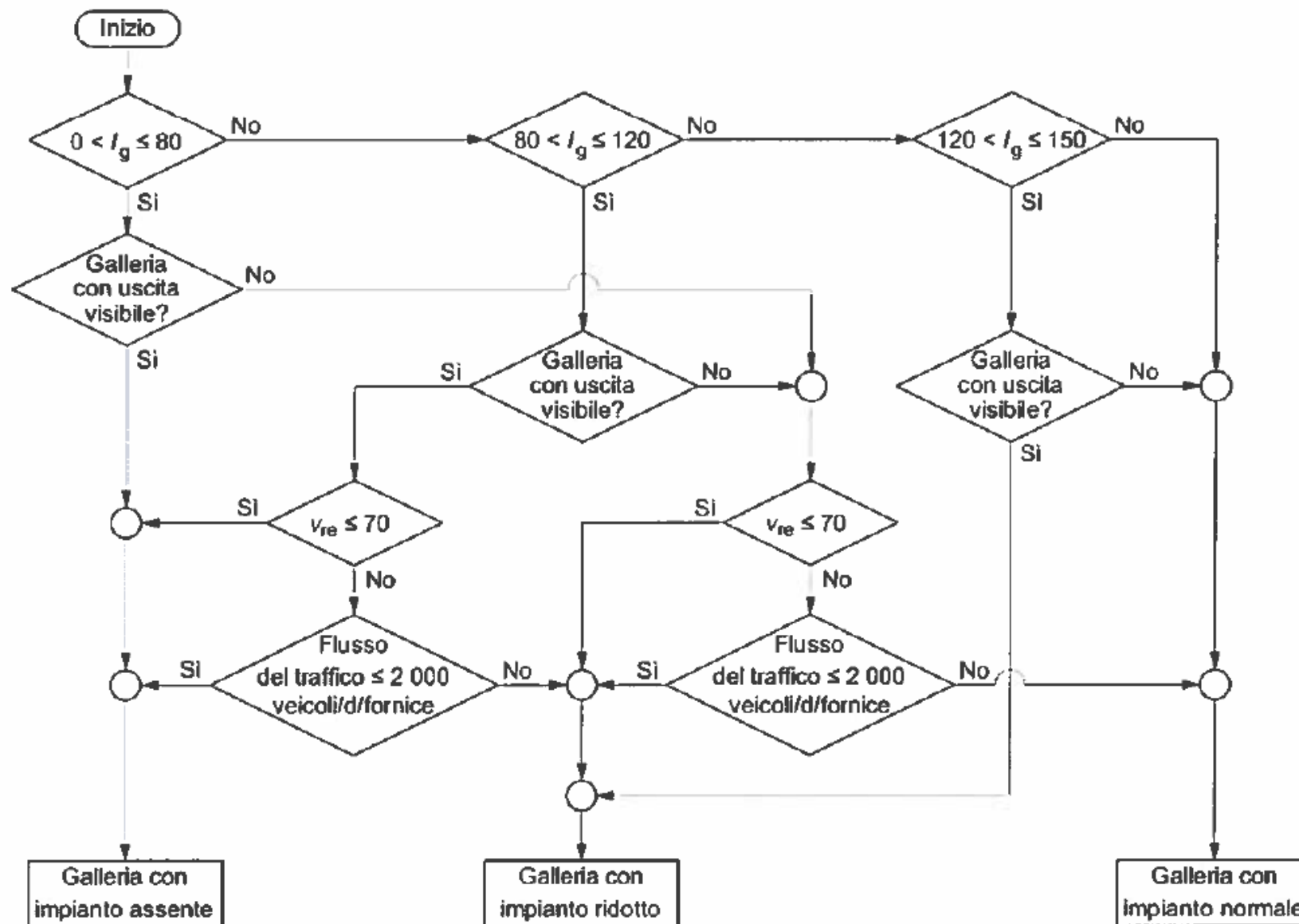
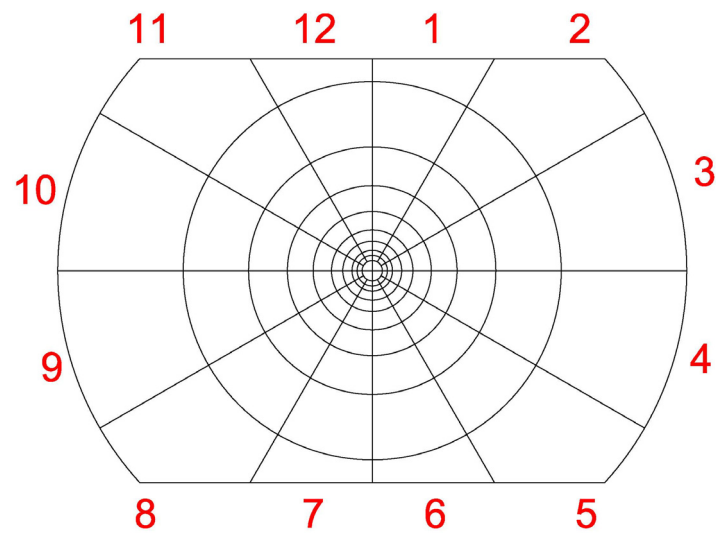


Diagramma di Adrian e luminanze



Il disegno soprastante indica il numero dello spicchio, mentre le corone circolari sono numerate dall'interno all'esterno (da A fino ad I)
 Nella tabella seguente per ogni area delimitata dal diagramma di Adrian viene indicata il rapporto fra le varie componenti (cielo, strada, rocce,edifici,prati, nero) e poi nella colonna viola la relativa luminanza.

corona	settore	CIELO	STRADA	ROCCE	EDIFICI	NEVEV	NEVEH	PRATI	NERO	somma	denominatore	Luminanza
		8	3	3	8	15	15	2	0			
A	1								1	0	1	0,00
A	2								1	0	1	0,00
A	3								1	0	1	0,00
A	4								1	0	1	0,00
A	5		0,88						0,28	2,64	1,16	2,28
A	6		1							3	1	3,00
A	7		1							3	1	3,00
A	8		0,88						0,28	2,64	1,16	2,28
A	9								1	0	1	0,00
A	10								1	0	1	0,00
A	11								1	0	1	0,00
A	12								1	0	1	0,00
B	1								1	0	1	0,00

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	5,28
		E _h =	58000
		V=	10000
Latm =	12,67		

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
10,55	10,55	5,41303	12,67	2,16521	20,2478	5,06195	4,65699

B	2							1	0	1	0,00	
B	3							1	0	1	0,00	
B	4		0,2					1,5	0,6	1,7	0,35	
B	5		1						3	1	3,00	
B	6		1						3	1	3,00	
B	7		1						3	1	3,00	
B	8		1						3	1	3,00	
B	9		0,2					1,5	0,6	1,7	0,35	
B	10							1	0	1	0,00	
B	11							1	0	1	0,00	
B	12							1	0	1	0,00	
C	1							1	0	1	0,00	
C	2							1	0	1	0,00	
C	3			0,65				3,55	1,95	4,2	0,46	
C	4			0,5				3,7	1,5	4,2	0,36	
C	5		1						3	1	3,00	
C	6		1						3	1	3,00	
C	7		1						3	1	3,00	
C	8		1						3	1	3,00	
C	9		1,7					2,5	5,1	4,2	1,21	
C	10							1	0	1	0,00	
C	11							1	0	1	0,00	
C	12							1	0	1	0,00	
D	1			4,25				2,5	0,45	39	7,2	5,42
D	2			3,7				0,1	3,4	29,8	7,2	4,14
D	3			3				4,05	0,15	32,1	7,2	4,46
D	4		1,85	1,15				4,2		23,15	7,2	3,22
D	5		1							3	1	3,00
D	6		1							3	1	3,00
D	7		1							3	1	3,00
D	8		1							3	1	3,00
D	9		3,45	0,4				0,6	2,75	14,75	7,2	2,05
D	10			0,7				6,5	5,6	7,2	0,78	
D	11			1,6				5,6	12,8	7,2	1,78	
D	12			4,25				2,5	0,45	39	7,2	5,42
E	1							1		2	1	2,00
E	2			2,2				14,5		46,6	16,7	2,79

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
12,71	23,26	11,9312	16,90	4,77246	33,5993	8,39984	7,72785

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
14,04	37,29	19,1315	24,51	7,65259	51,2939	12,8235	11,7976

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
39,25	76,54	39,2667	33,83	15,7067	88,8061	22,2015	20,4254

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	7,04
		E _h =	58000
		V=	10000
Latm =	16,90		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	10,21
		E _h =	58000
		V=	10000
Latm =	24,51		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	14,10
		E _h =	58000
		V=	10000
Latm =	33,83		

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	20,48
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E	3							1		2	1	2,00
E	4		5					11,7		38,4	16,7	2,30
E	5		1							3	1	3,00
E	6		1							3	1	3,00
E	7		1							3	1	3,00
E	8		1							3	1	3,00
E	9		7,2		1,2			8,3		47,8	16,7	2,86
E	10				4,1			12	0,6	56,8	16,7	3,40
E	11				5,5			9,4	1,8	62,8	16,7	3,76
E	12							1		2	1	2,00
F	1	10,4						23,6		130,4	34	3,84
F	2	7,35						26,65		112,1	34	3,30
F	3							1		2	1	2,00
F	4		11,4					22,6		79,4	34	2,34
F	5		1							3	1	3,00
F	6		1							3	1	3,00
F	7		1							3	1	3,00
F	8		1							3	1	3,00
F	9		14,5					19,5		82,5	34	2,43
F	10							1		2	1	2,00
F	11							1		2	1	2,00
F	12	2,7						31,3		84,2	34	2,48
G	1	1								8	1	8,00
G	2	1								8	1	8,00
G	3	14						61		234	75	3,12
G	4		23					52		173	75	2,31
G	5		1							3	1	3,00
G	6		1							3	1	3,00
G	7		1							3	1	3,00
G	8		1							3	1	3,00
G	9		27,8					47,2		177,8	75	2,37
G	10							1		2	1	2,00
G	11	18						57		258	75	3,44
G	12	72,2						2,8		583,2	75	7,78
H	1	1								8	1	8,00
H	2	1								8	1	8,00
H	3	60						128		736	188	3,91

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
33,11	109,66	56,2541	49,15	22,5016	127,901	31,9754	29,4173

E _h =	58000
V=	10000
Latm =	49,15

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	29,41
		E _h =	58000
		V=	10000
Latm =	70,58		

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
32,37	142,03	72,8602	70,58	29,1441	172,588	43,1469	39,6951

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	42,85
		E _h =	58000
		V=	10000
Latm =	102,84		

ΣLi	ΣLij	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
49,01	191,04	98,004	102,84	39,2016	240,047	60,0117	55,2108

Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	65,50
		E _h =	58000

H	4		62					126		438	188	2,33
H	5		1							3	1	3,00
H	6		1							3	1	3,00
H	7		1							3	1	3,00
H	8		1							3	1	3,00
H	9		71					117		447	188	2,38
H	10							1		2	1	2,00
H	11	89						99		910	188	4,84
H	12	1								8	1	8,00
I	1	1								8	1	1,76
I	2	1								8	1	6,24
I	3	326						251		3110	577	5,39
I	4		191					386		1345	577	2,33
I	5		1							3	1	2,34
I	6		1							3	1	0,66
I	7		1							3	1	0,66
I	8		1							3	1	2,34
I	9		204					373		1358	577	2,35
I	10	17,5						559,5		1259	577	2,18
I	11	432						73		3602	505	5,56
I	12	1								8	1	1,76

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
51,46	242,50	124,404	157,21	49,7618	331,372	82,8431	76,2156

$\sum Li$	$\sum Lij$	Lseq	Latm	Lpar+cru	Lv	Lsym	Lcb
33,58	276,08	141,631	261,61	56,6524	459,89	114,972	105,775

276,08

Latm =	157,21	V=	10000
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Latm =	$1.3 \cdot (d \cdot E_h) / (\pi \cdot V)$	d=	109
		Eh=	58000
		V=	10000
Latm =	261,61		

Calcolo la luminanza della zona interna

La luminanza media mantenuta della zona interna L_i per gallerie a doppio senso di circolazione deve essere:

$$L_i \geq 2 \cdot L$$

essendo L il valore minimo della luminanza media mantenuta prescritto dalla norma UNI 11248 per la classe relativa al tipo di strada di accesso alla galleria ed all'ambito territoriale, indipendentemente dal fatto che la strada di accesso sia o non sia illuminata.

La strada in questione è stata classificata con una categoria illuminotecnica ME2.

Per categoria illuminotecnica ME2 la norma UNI EN 13201 prescrive una $L_m = 1,5 \text{ cd/m}^2$.

La luminanza media mantenuta della zona interna L_i dovrà essere

$$L_i \geq 1,5 \cdot 2,0 = \mathbf{3,0 \text{ cd/m}^2}$$

Zona di uscita

La zona di uscita è trattata come la zona interna.

Tuttavia è facoltativo aumentare la luminanza della zona di uscita al fine di migliorare il comfort visivo in uscita.

Qualora nella zona di uscita sia previsto un incremento di luminanza rispetto a quello della zona interna, questo deve essere attuato secondo la seguente formula.

$$\bar{L}_{t,c,r}(x) = \bar{L}_{p,c,r} + \frac{4\bar{L}_{p,c,r}}{d_{p,max} - 20}(x - l_g + d_{p,max}) \text{ con } l_g - d_{p,max} \leq x \leq l_g$$

dove:

$\bar{L}_{p,c,r}$ è la luminanza media come definita al punto 7.5;

$d_{p,max}$ è il valore massimo della distanza di progetto illuminotecnico, in metri;

l_g è la lunghezza della galleria, in metri;

x è la coordinata longitudinale x , in metri;

Nel nostro caso le zone di uscita sono coperte dalla zona di transizione del fornice opposto

Zona immediatamente esterna

La strada di accesso alla galleria è illuminata con una luminanza di $1,5 \text{ cd/m}^2$

Illuminazione notturna

La strada di accesso è illuminata, quindi luminanza media della carreggiata deve essere pari a $\mathbf{1,5 \text{ cd/m}^2}$.

REGOLAZIONE E FASI DI ACCENSIONE

Le fasi di accensione nel progetto illuminotecnico sono configurate come il seguente prospetto.

Settings

Control groups	S1	S2	S3	S4	S5	S6	Int. 1	Int. 2
Adaptation								
1	100%	25%	out	out	out	out	out	out
2	100%	25%	37%	25%	out	out	out	out
3	100%	25%	37%	25%	50%	25%	out	out
Interior								
4	100%	100%	100%	100%	100%	100%	100%	50%

La luminanza interna deve essere regolata attraverso dispositivi per la misurazione e gestione che regolano le accensioni in funzione della luminanza esterna.

FATTORE DI MANUTENZIONE







Il progetto è stato realizzato con fattore di manutenzione **MF = 0,80**.

Galleria SP209

La potenza totale installata è **P = 55,1 kW**

51,9 kW per i rinforzi e 3,2 kW per le permanenti

Viene qui riportato l'elenco totale degli apparecchi con le relative potenze delle due canne in oggetto.

Symbol	Quantity	Article number	Article name	Equipment
	95	!ETO TubePoint Gen2 Large	BGP237 T25 DSM35 / LED630-4S 408W / CRI75	1xLED630-4S CRI75 407.6 W
	14	!ETO TubePoint Gen2 Medium	BGP236 T25 DSM35 / LED420-4S 275W / CRI75	1xLED420-4S CRI75 274.7 W
	25	!ETO TubePoint Gen2 Small	BGP235 T25 DSM35 / LED210-4S 139W / CRI75	1xLED210-4S CRI75 139.2 W
	45	!ETO TubePoint Gen2 Small	BGP235 T25 DSM35 / LED105-4S 66W / CRI75	1xLED105-4S CRI75 65.6 W
	77	!ETO TubePoint Gen2 Small	BGP235 T25 DSM35 / LED58-4S 37W / CRI75	1xLED58-4S CRI75 37.3 W
	86	!ETO TubePoint Gen2 Small	BGP235 T25 DSM35 / LED58-4S 37W / CRI75	1xLED58-4S CRI75 37.3 W