

Light efficiency:

74 Lumen/Watt

Light quality:

CRI: 82,4

Color temperature:

2706 K

Output: 354 lm

Peak: 93,8 cd

Power: 4,8 W

PF: 1,0



Product name:

**Navigator-3\_510mm\_827\_Cover-Square-White**

Item number:

**NP/L1C/14C/G1/L1C/0510/827/CSW**

Date and time:

**23.06.2022 10:26:21**

Description:

**Rank: D60-AC-8GB**

**Tolerances:**

**Lumen +/-4%**

**Candela +/-2,5%**

**Colour Temp +/-35 Kelvin**

**CRI +/-0,7**

**Angular Resolution: 1 Degree Step**

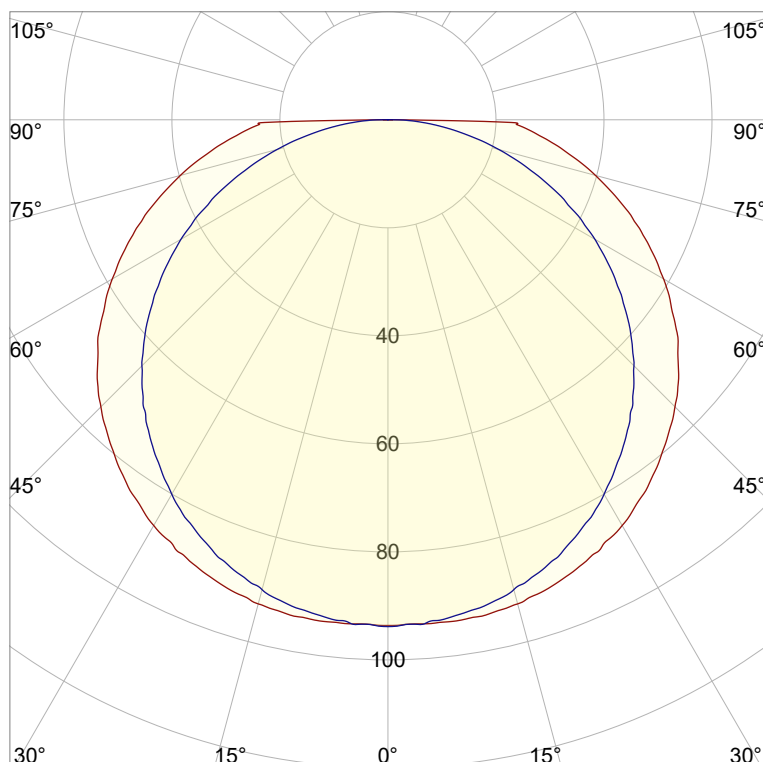
**Last Calibration 20-09-2021**

**Tester: Peter Ulrich**

**Test Site: Lichtlabor**

**Gaustrasse 13**

**55411 Bingen am Rhein**

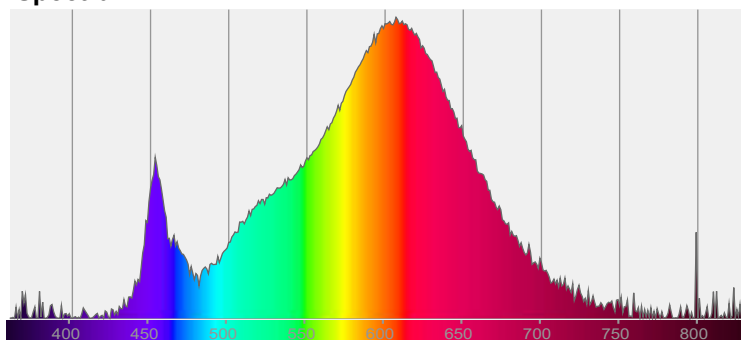


CIE 1931

x: 0,457

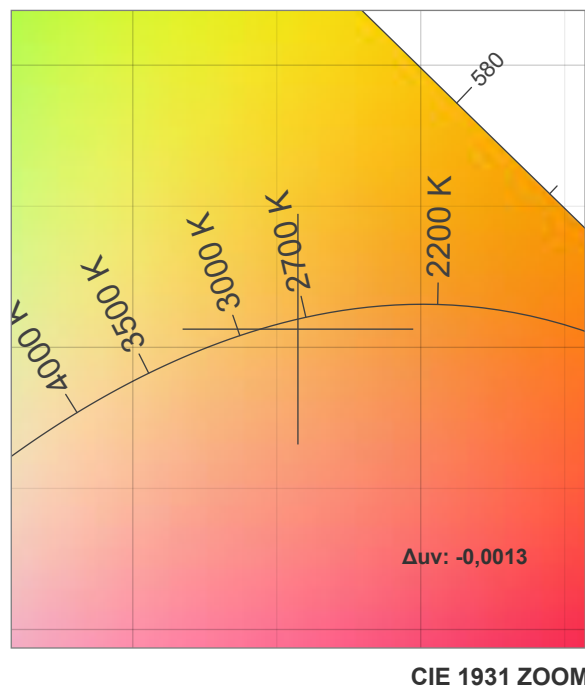
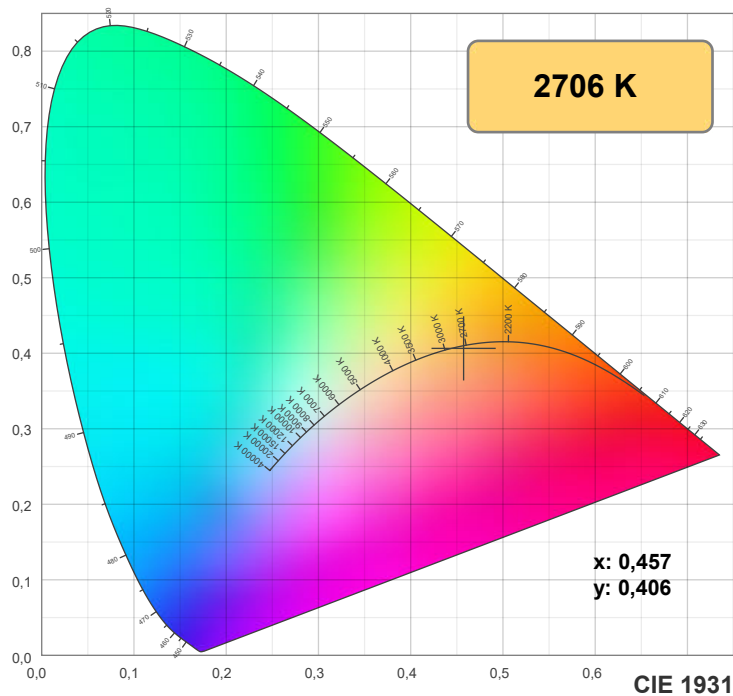
y: 0,406

Spectra



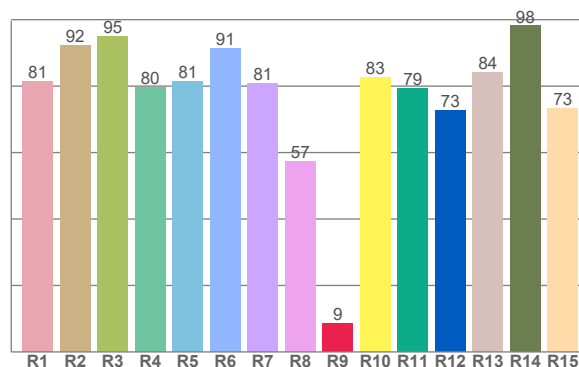
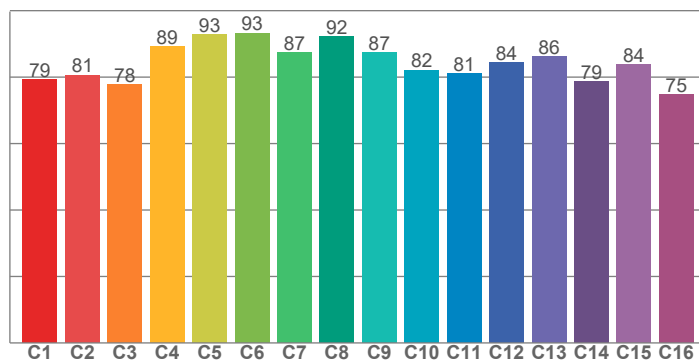
Power

Voltage: 48,0 V  
Current: 0,100 A  
Frequency: 0 Hz



**TM30: 84,2**

**CRI: 82,4 (R1-R8)**



**CRI R values, only R1-R8 are used to calculate final CRI value**

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81,4	92,3	94,9	79,7	81,4	91,3	80,8	57,3	8,6	82,6	79,3	72,7	84,2	98,1	73,3

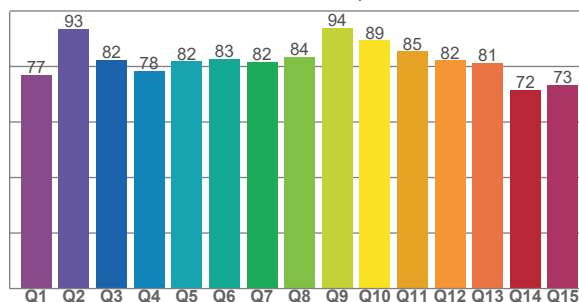
**TM30 C values, 16 binned values out of total of 99 C values**

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
79,2	80,6	77,8	89,3	92,9	93,3	87,5	92,3	87,4	82,1	81,2	84,4	86,2	78,7	83,7	74,8

**CQS Q values**

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
77,1	93,4	82,3	78,4	81,8	82,8	81,8	83,6	93,9	89,4	85,4	82,1	81,2	71,6	73,2

**CQS: 81,3**



## Color parameters

Color temperature	Color rendering index	Red component	Color fidelity	Color gamut	Color quality scale	Color coordinate cie 1931	Color coordinate cie 1931	Color coordinate	Color coordinate	Color deviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2706 K	82,4	8,6	84,2	95,8	81,3	0,457	0,406	0,263	0,350	-0,0013

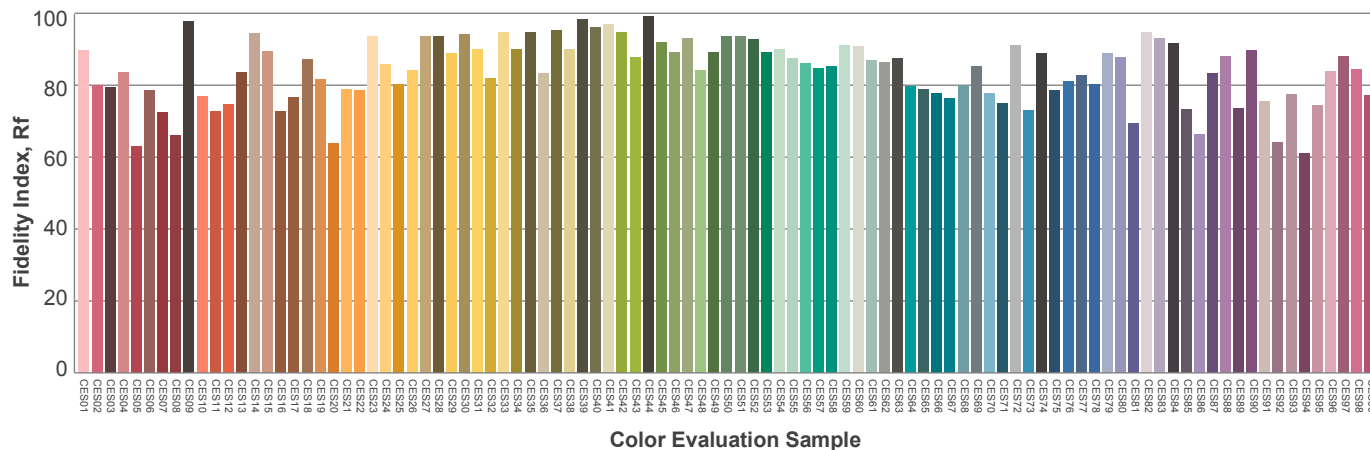
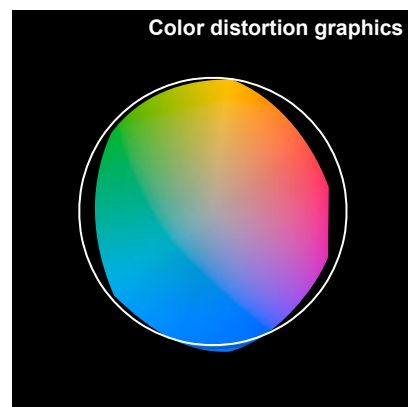
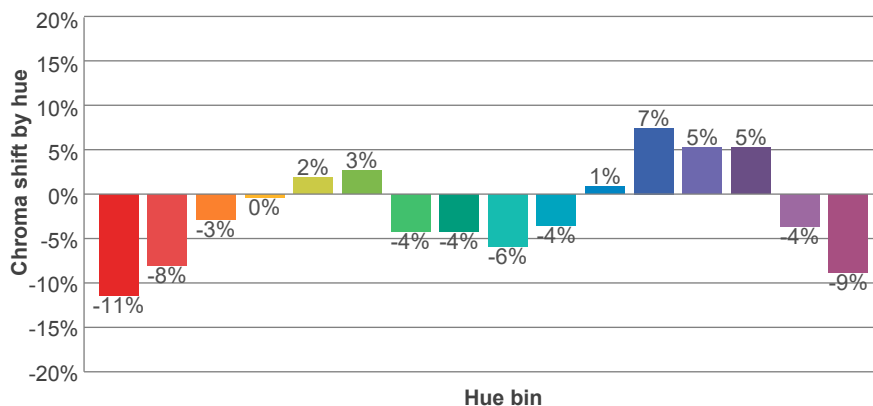
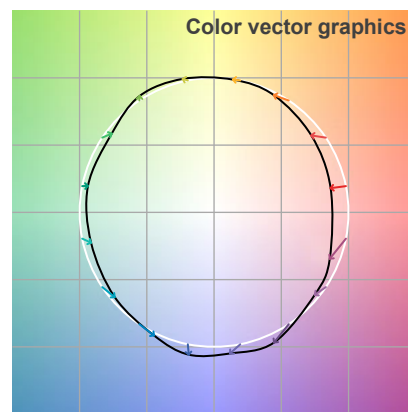
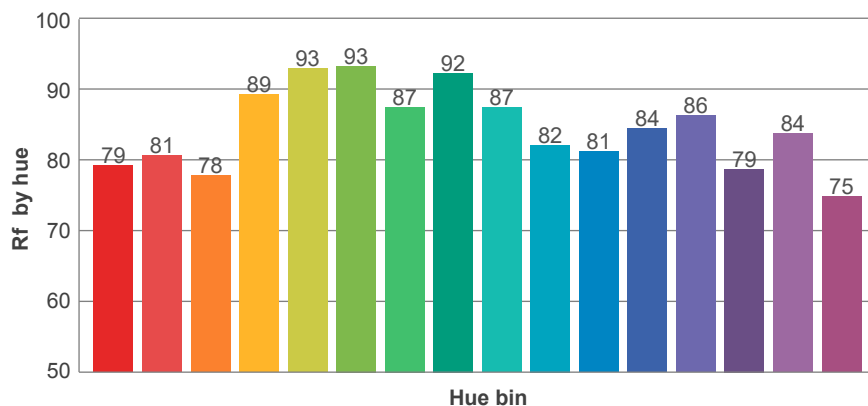
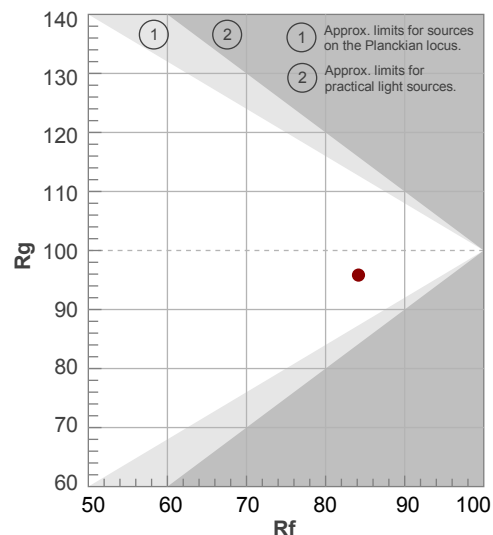
**Rf 84,2**

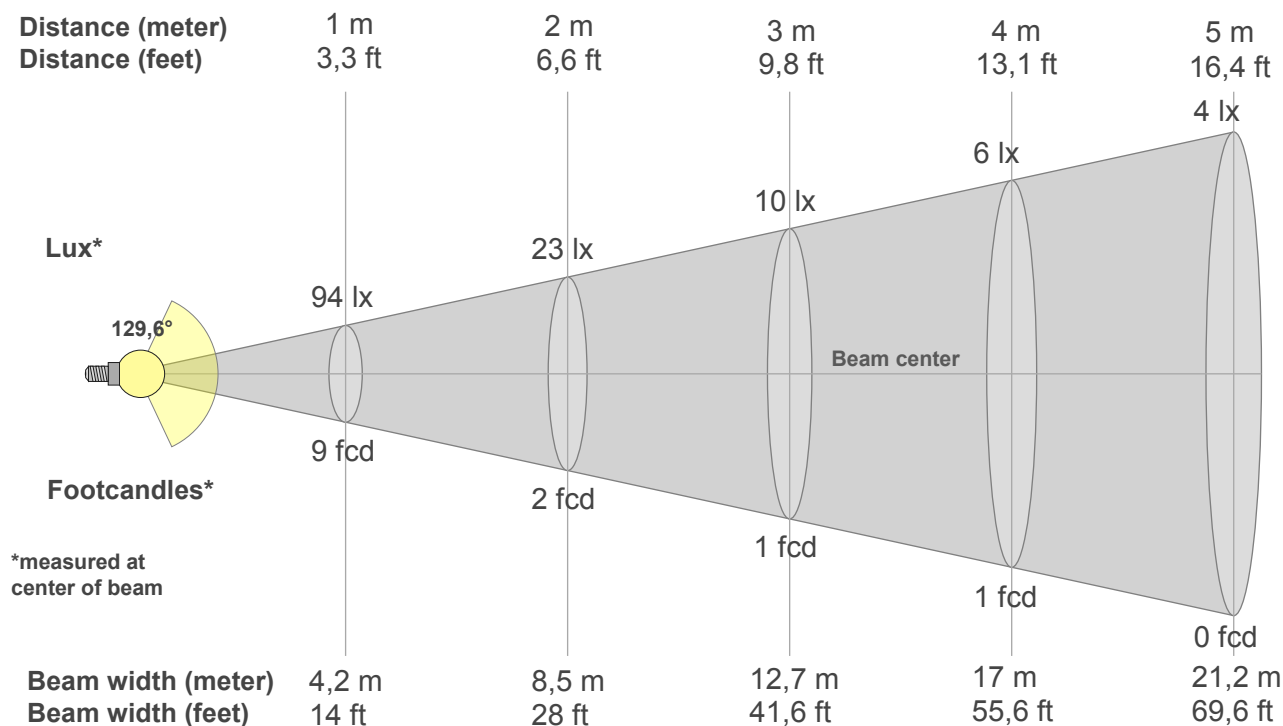
Fidelity index Rf

**Rg 95,8**

Gamut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	79	-11%	1%
2	81	-8%	7%
3	78	-3%	11%
4	89	0%	5%
5	93	2%	4%
6	93	3%	-2%
7	87	-4%	-6%
8	92	-4%	-1%
9	87	-6%	4%
10	82	-4%	11%
11	81	1%	14%
12	84	7%	2%
13	86	5%	-9%
14	79	5%	-17%
15	84	-4%	-9%
16	75	-9%	-17%





## Beam intensities from 1-20m

1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3,3ft	6,6ft	9,8ft	13,1ft	16,4ft	19,7ft	23ft	26,2ft	29,5ft	32,8ft	36,1ft	39,4ft	42,7ft	45,9ft	49,2ft	52,5ft	55,8ft	59,1ft	62,3ft	65,6ft
94lx	23lx	10lx	6lx	4lx	3lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx	0lx	0lx	0lx	0lx	0lx	0lx	0lx
8,7fcd	2,2fcd	1fcd	0,5fcd	0,3fcd	0,2fcd	0,2fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0fcd	0fcd	0fcd	0fcd	0fcd	0fcd	0fcd

## Intensities in 0° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°
93,6	93,5	92,0	88,1	82,7	75,2	66,0	55,3	43,7	32,1	11,1	9,9	8,8	7,7	6,6	5,5	4,3	3,2	2,1	1,0
100%	100%	98%	94%	88%	80%	70%	59%	47%	34%	12%	11%	9%	8%	7%	6%	5%	3%	2%	1%

## Intensities in 90° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°
93,6	92,3	88,6	82,7	74,3	64,4	52,6	39,8	25,8	12,4	1,3	1,1	1,0	0,9	0,8	0,6	0,5	0,4	0,2	0,1
100%	99%	95%	88%	79%	69%	56%	42%	28%	13%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%

## Intensities in 180° c-plane

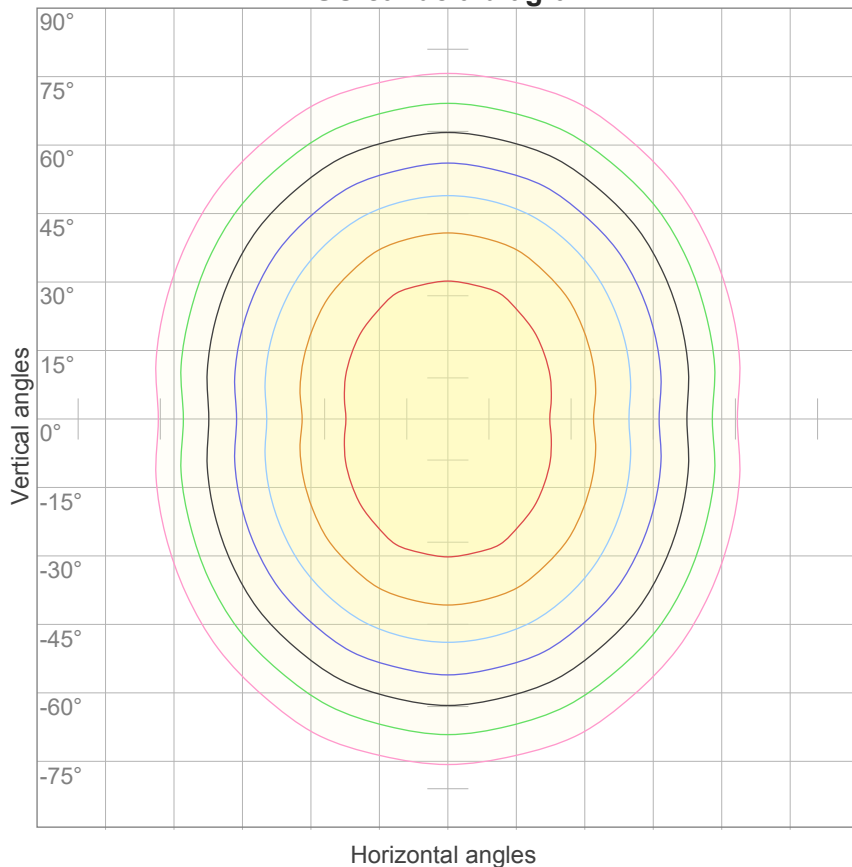
0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°
93,6	93,5	92,0	88,1	82,7	75,2	66,0	55,3	43,7	32,1	11,1	9,9	8,8	7,7	6,6	5,5	4,3	3,2	2,1	1,0
100%	100%	98%	94%	88%	80%	70%	59%	47%	34%	12%	11%	9%	8%	7%	6%	5%	3%	2%	1%

## Intensities in 270° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°
93,6	92,3	88,6	82,7	74,3	64,4	52,6	39,8	25,8	12,4	1,3	1,1	1,0	0,9	0,8	0,6	0,5	0,4	0,2	0,1
100%	99%	95%	88%	79%	69%	56%	42%	28%	13%	1%	1%	1%	1%	1%	1%	1%	0%	0%	0%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
129,6°	183,8°	209,9°	65,8%	43,0%

**ISO candela diagram**



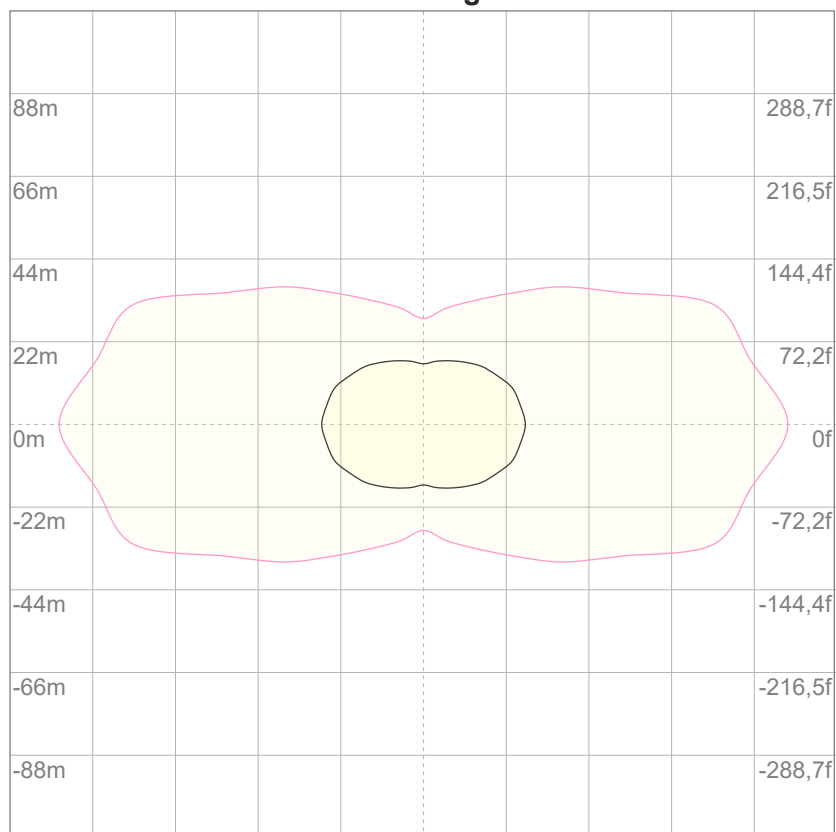
10%	9 cd
20%	19 cd
30%	28 cd
40%	37 cd
50%	47 cd
60%	56 cd
70%	66 cd
80%	75 cd
90%	84 cd

Conditions:

Number of c-planes: 16

Candela at center: 94 cd

**ISO lux diagram**



3%	28,1m lx
5%	46,8m lx
10%	93,6m lx
30%	0,281 lx
50%	0,468 lx

Conditions:

Number of c-planes: 16

Lux at center: 0,936 lx

*Lux distribution on a surface when lamp is mounted at 10 meters from the surface.*

### Glare Evaluation According to UGR

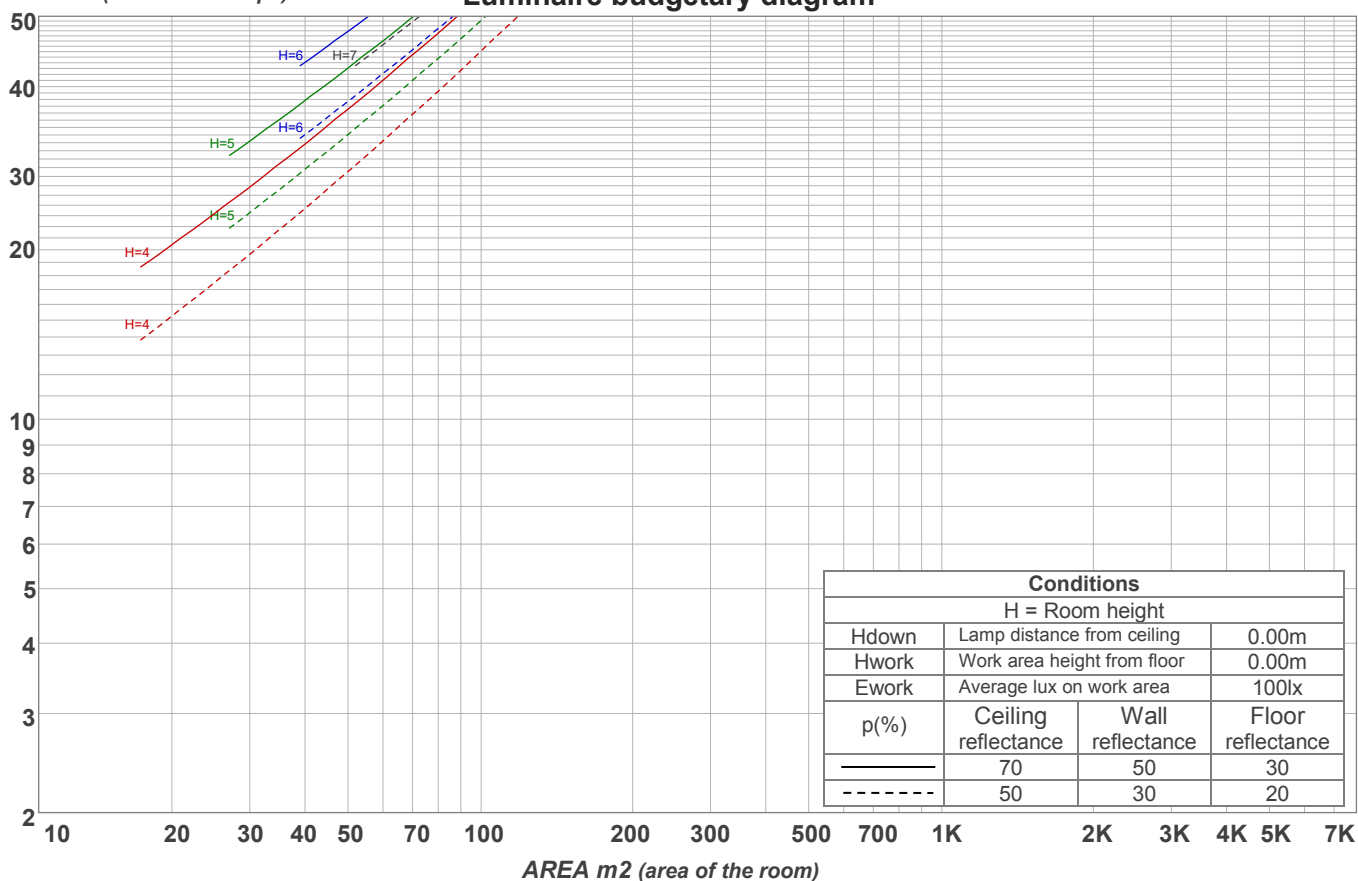
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	18,9	20,2	19,1	20,5	20,7	18,8	20,1	19,0	20,4	20,7
	3H	20,6	22,0	21,1	22,3	22,5	20,4	21,8	20,8	22,1	22,3
	4H	21,5	22,8	21,9	23,1	23,4	21,1	22,4	21,5	22,7	23,0
	6H	22,4	23,6	22,7	23,8	24,2	21,8	22,9	22,1	23,2	23,6
	8H	22,7	23,9	23,1	24,2	24,6	22,0	23,1	22,3	23,4	23,8
	12H	23,1	24,2	23,4	24,5	25,0	22,1	23,2	22,5	23,6	24,0
4H	2H	19,5	20,8	19,9	21,1	21,4	19,4	20,8	19,8	21,0	21,3
	3H	21,6	22,7	22,0	23,1	23,5	21,4	22,5	21,7	22,8	23,3
	4H	22,6	23,6	23,0	24,0	24,6	22,1	23,2	22,6	23,6	24,2
	6H	23,5	24,5	24,0	24,9	25,3	22,9	23,9	23,4	24,2	24,6
	8H	24,0	24,9	24,5	25,3	25,7	23,2	24,1	23,7	24,4	24,8
	12H	24,4	25,2	24,9	25,6	26,1	23,4	24,1	23,9	24,6	25,1
8H	4H	22,9	23,8	23,4	24,2	24,6	22,6	23,5	23,1	23,9	24,3
	6H	24,1	24,8	24,6	25,3	25,9	23,5	24,2	24,0	24,7	25,2
	8H	24,7	25,4	25,2	25,9	26,5	23,9	24,6	24,4	25,1	25,7
	12H	25,3	25,8	25,9	26,3	27,0	24,2	24,8	24,8	25,3	25,9
12H	4H	23,0	23,7	23,5	24,2	24,7	22,6	23,4	23,1	23,8	24,3
	6H	24,2	24,9	24,8	25,4	26,1	23,7	24,3	24,2	24,8	25,5
	8H	24,9	25,4	25,5	25,9	26,6	24,1	24,7	24,7	25,2	25,8
Variation of the observer position for the luminaire distance S											
S = 1.0H		0,1 / -0,1					0,1 / -0,1				
S = 1.5H		0,1 / -0,1					0,1 / -0,1				
S = 2.0H		0,2 / -0,3					0,3 / -0,3				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 354 lm total luminous flux											

## Coefficients of Utilization

Ceiling reflectance	80				70				50			30			10			0
Wall reflectance	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
Floor reflectance	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0
RCR	(RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface																	
0	118	118	118	118	114	114	114	114	108	108	108	102	102	102	97	97	97	94
1	105	99	94	90	102	97	92	88	91	87	84	86	83	80	81	79	77	74
2	95	85	78	71	91	83	76	70	78	72	67	74	69	65	70	66	62	60
3	86	74	65	58	83	72	64	57	68	61	55	64	59	54	61	56	52	49
4	78	65	56	48	75	63	55	48	60	52	46	57	50	45	54	48	44	41
5	72	58	48	41	69	56	47	41	54	46	40	51	44	39	48	42	38	35
6	66	52	42	36	64	51	42	35	48	40	34	46	39	34	44	38	33	31
7	61	47	38	31	59	46	37	31	44	36	30	42	35	30	40	34	29	27
8	57	43	34	28	55	42	33	27	40	32	27	38	31	26	36	30	26	24
9	53	39	30	25	51	38	30	25	37	29	24	35	28	24	34	28	23	21
10	50	36	28	22	48	35	27	22	34	27	22	32	26	21	31	25	21	19

LAMPS (number of lamps)

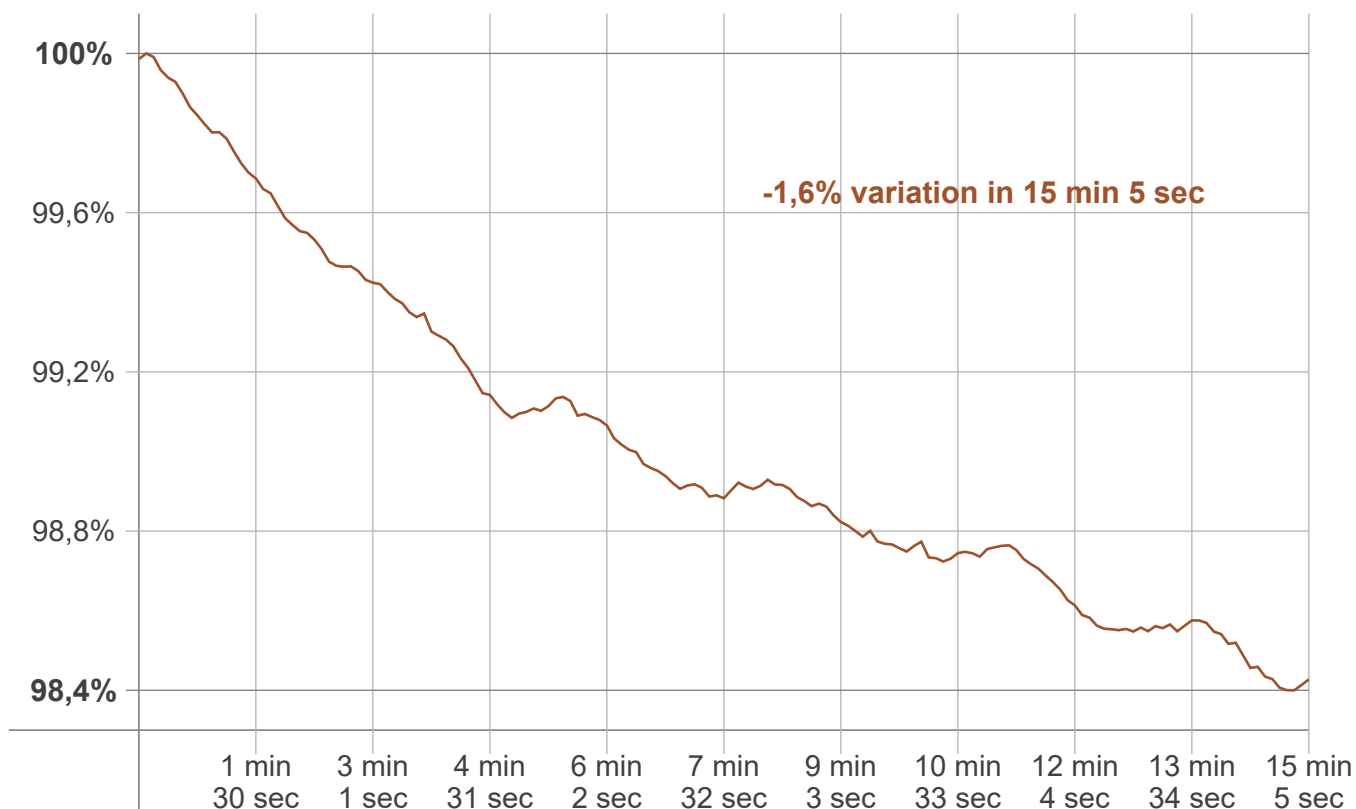
Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
8,90 lm	25,9 lm	40,2 lm	50,1 lm	54,6 lm	53,1 lm	45,8 lm	34,2 lm	20,3 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
7,95 lm	3,52 lm	2,97 lm	2,68 lm	1,63 lm	0,901 lm	0,664 lm	0,407 lm	0,137 lm

### Warmup curve



### Warmup result

Warmup time:	Lamp stabilized in 15 min 5 sec
Warmup variation	-1,6%

### Warmup conditions

Stable period:	15 min
Stable change max:	2,0%
Minimum time:	15 min

### Color temperature change

CCT start	CCT change	CCT end
2703 K	+3 K	2706 K

### Output change

Output start	Output change	Output end
359 lm	-5 lm	354 lm