

### Light efficiency:

**146 Lumen/Watt**

### Light quality:

**CRI: 82,1**

### Color temperature:

**2748 K**

**Output: 703 lm**

**Peak: 231 cd**

**Power: 4,8 W**

**PF: 1,0**



### Product name:

**Navigator-3\_510mm\_827\_Cover-Round-Frosted**

### Item number:

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

### Date and time:

**23.06.2022 14:46:50**

### Description:

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

**Tolerances:**

**Lumen +/-4%**

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

**Colour Temp +/-35 Kelvin**

**CRI +/-0,7**

**Angular Resolution: 1 Degree Step**

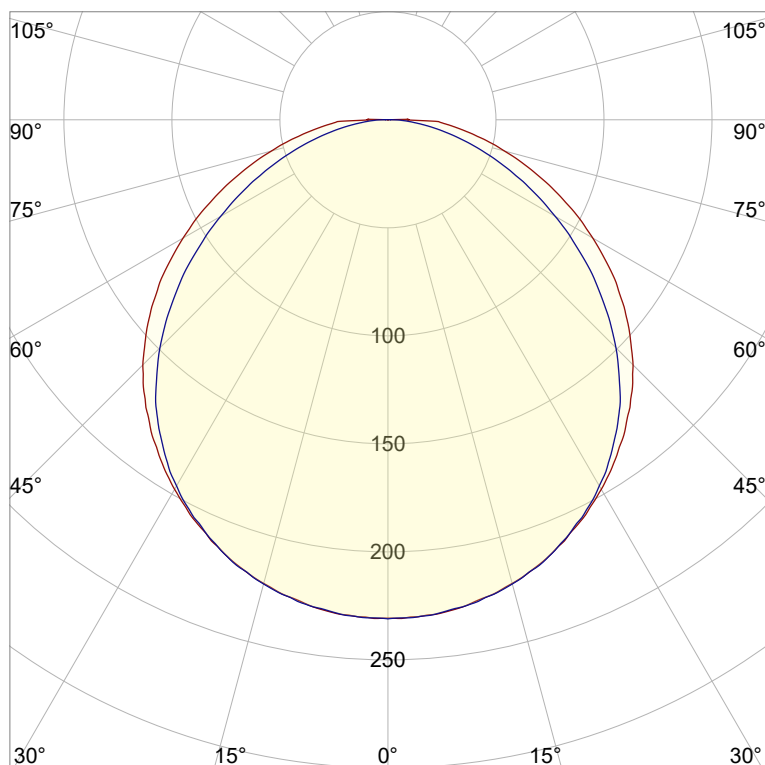
**Last Calibration 20-09-2021**

**Tester: Peter Ulrich**

**Test Site: Lichtlabor**

**Gaustrasse 13**

**55411 Bingen am Rhein**

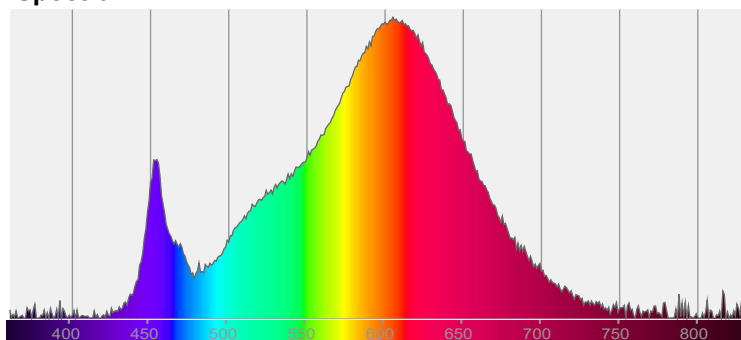


**CIE 1931**

**x: 0,455**

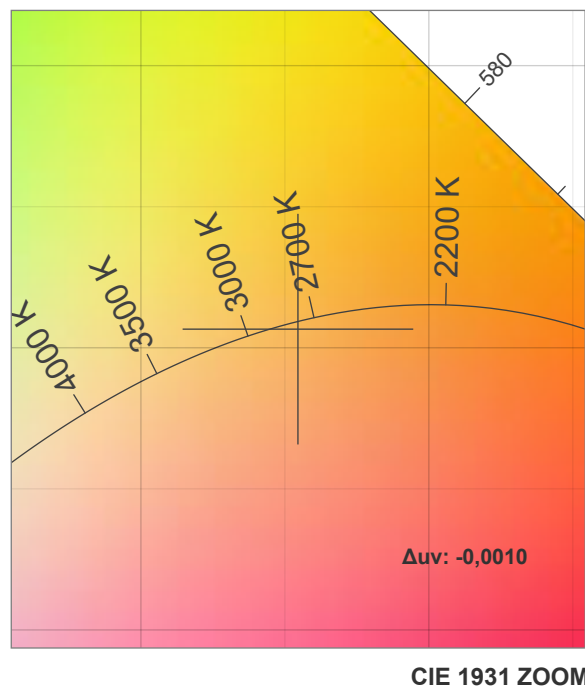
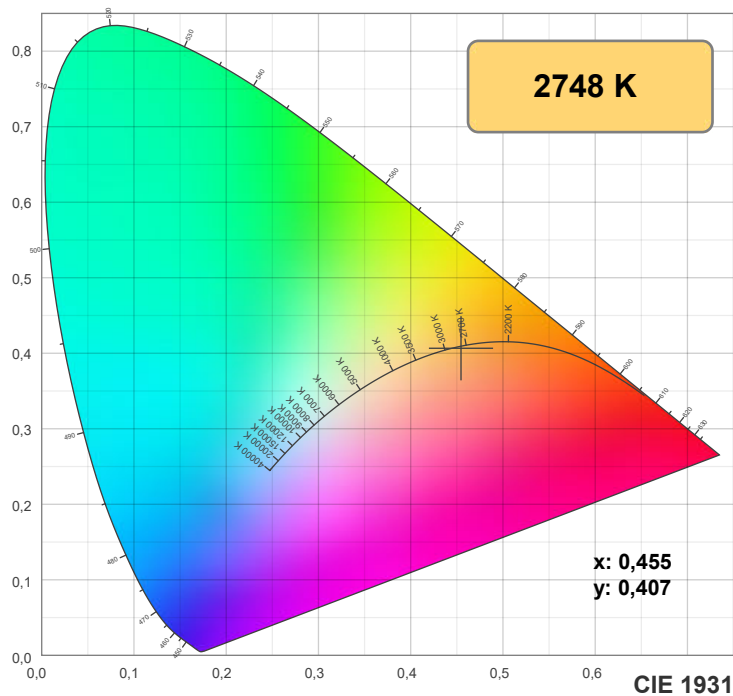
**y: 0,407**

### Spectra



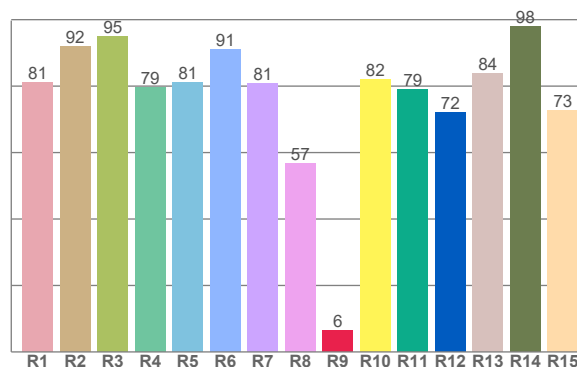
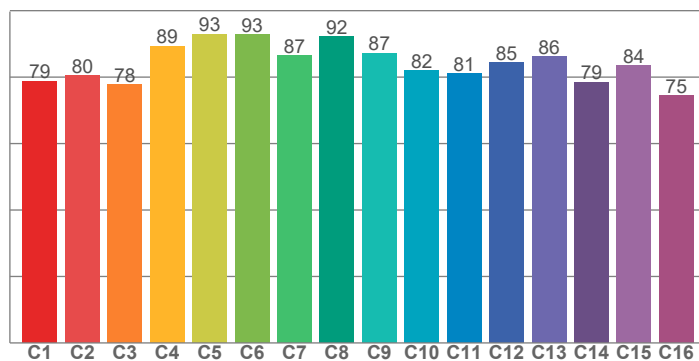
### Power

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



**TM30: 84,1**

**CRI: 82,1 (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
81,0	92,1	94,9	79,5	81,0	91,0	80,7	56,7	6,4	82,1	79,0	72,1	83,8	98,1	72,7

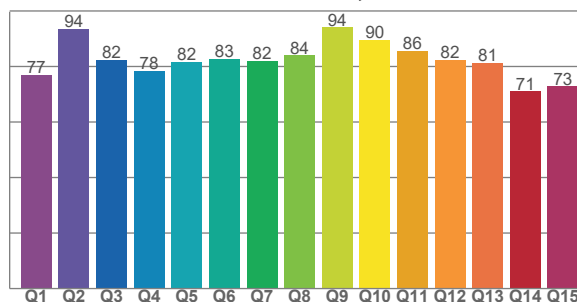
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
78,9	80,4	77,9	89,4	93,0	92,8	86,6	92,2	87,2	82,0	81,2	84,5	86,3	78,5	83,5	74,5

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
76,8	93,5	82,5	76,5	81,7	82,7	82,0	84,0	94,1	89,5	85,6	82,3	81,1	71,0	72,8

**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	$\Delta uv$
2748 K	82,1	6,4	84,1	95,4	81,3	0,455	0,407	0,261	0,350	-0,0010

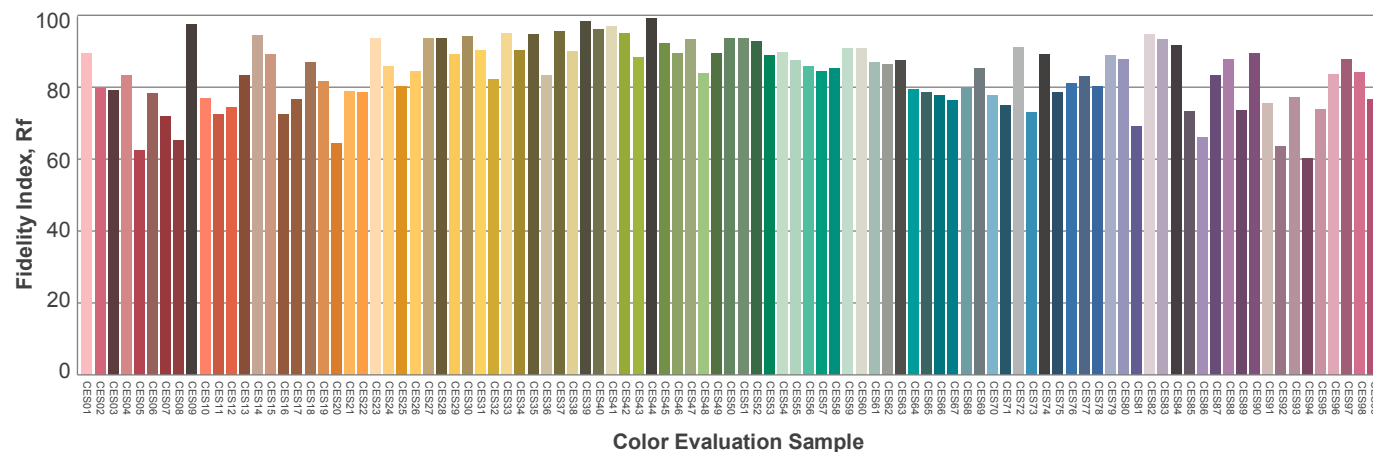
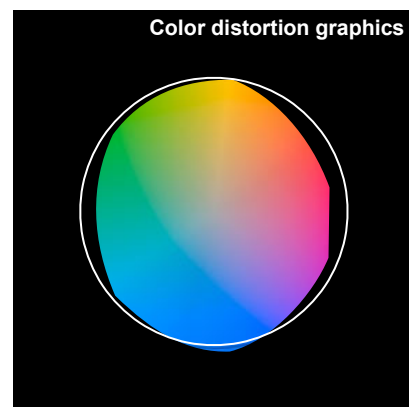
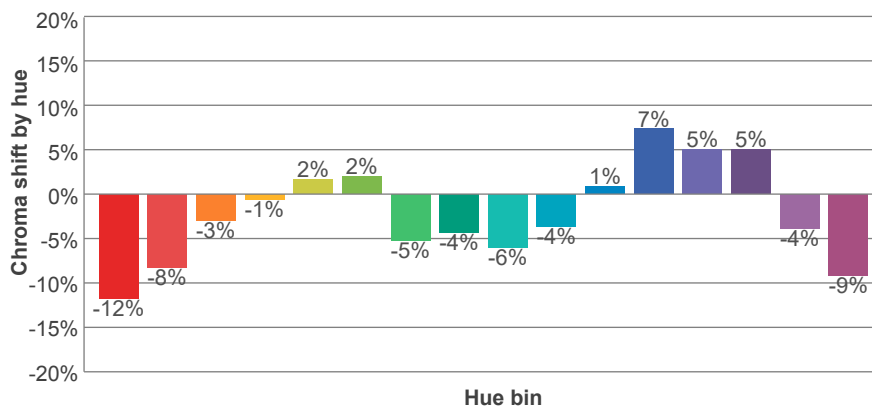
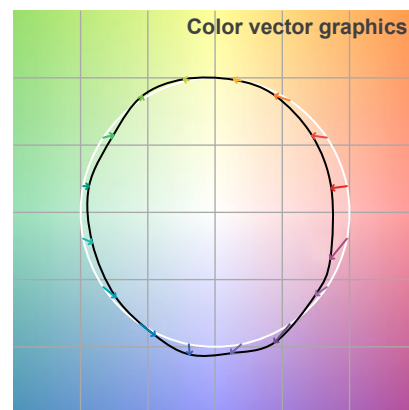
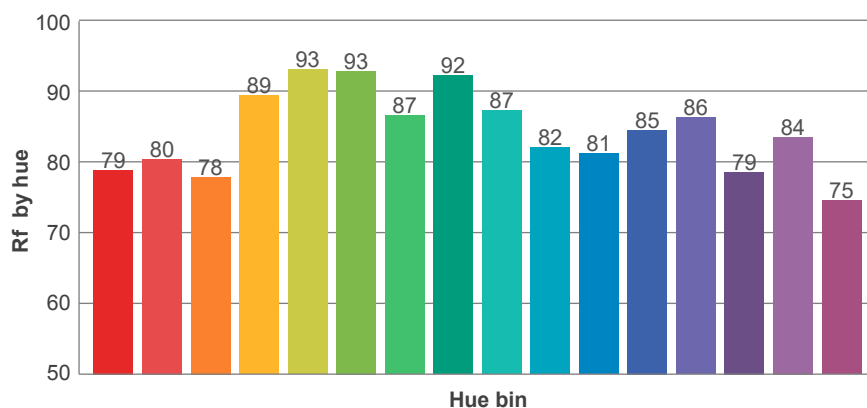
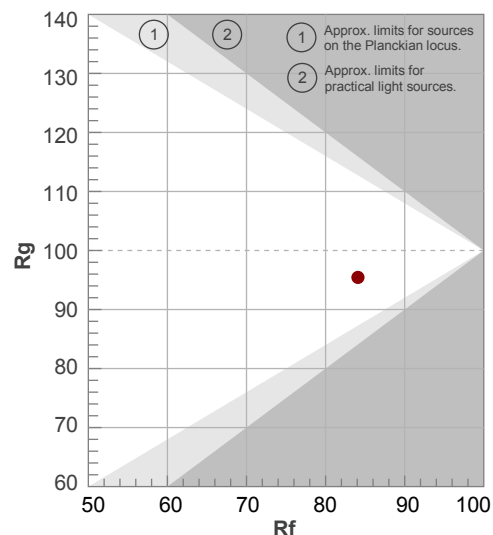
**Rf 84,1**

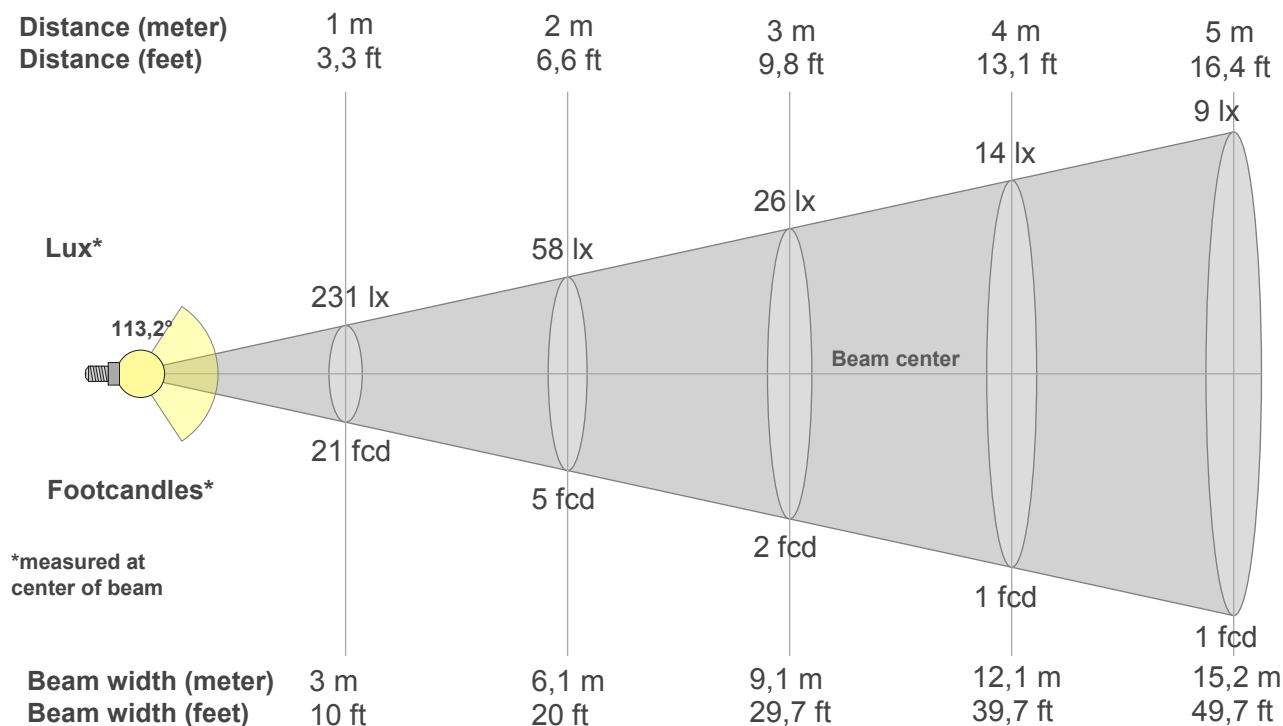
Fidelity index Rf

**Rg 95,4**

Gamut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	79	-12%	1%
2	80	-8%	7%
3	78	-3%	11%
4	89	-1%	5%
5	93	2%	4%
6	93	2%	-3%
7	87	-5%	-6%
8	92	-4%	-1%
9	87	-6%	4%
10	82	-4%	11%
11	81	1%	14%
12	85	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
231lx	58lx	26lx	14lx	9lx	6lx	5lx	4lx	3lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx
21,4fcd	5,4fcd	2,4fcd	1,3fcd	0,9fcd	0,6fcd	0,4fcd	0,3fcd	0,3fcd	0,2fcd	0,2fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd

## Intensities in 0° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
231	230	227	222	216	207	197	186	174	160	145	128	109	91	73	56	41	29	10	0
100%	100%	98%	96%	93%	90%	86%	81%	75%	69%	63%	55%	47%	39%	32%	24%	18%	12%	4%	0%

## Intensities in 90° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
231	230	227	222	216	206	196	182	167	149	130	110	89	70	52	36	21	10	2	0
100%	100%	98%	96%	93%	89%	85%	79%	72%	65%	56%	48%	39%	30%	23%	15%	9%	4%	1%	0%

## Intensities in 180° c-plane

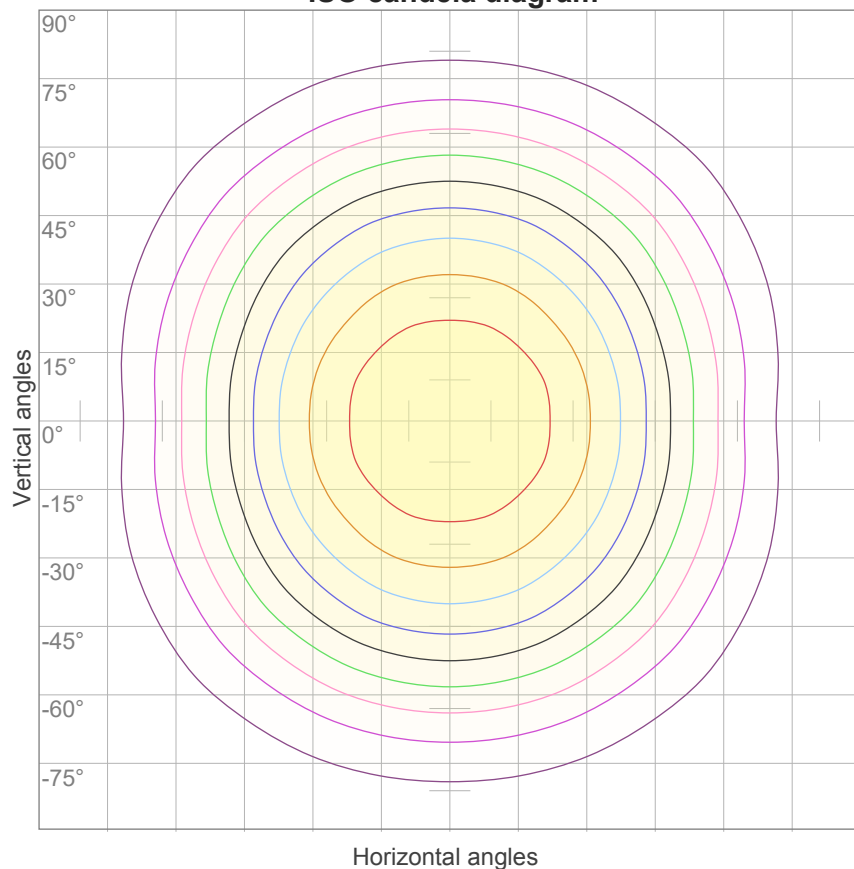
0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
231	230	227	222	216	207	197	186	174	160	145	128	109	91	73	56	41	29	10	0
100%	100%	98%	96%	93%	90%	86%	81%	75%	69%	63%	55%	47%	39%	32%	24%	18%	12%	4%	0%

## Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
231	230	227	222	216	206	196	182	167	149	130	110	89	70	52	36	21	10	2	0
100%	100%	98%	96%	93%	89%	85%	79%	72%	65%	56%	48%	39%	30%	23%	15%	9%	4%	1%	0%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
113,2°	171,8°	207,6°	74,5%	50,7%

### ISO candela diagram



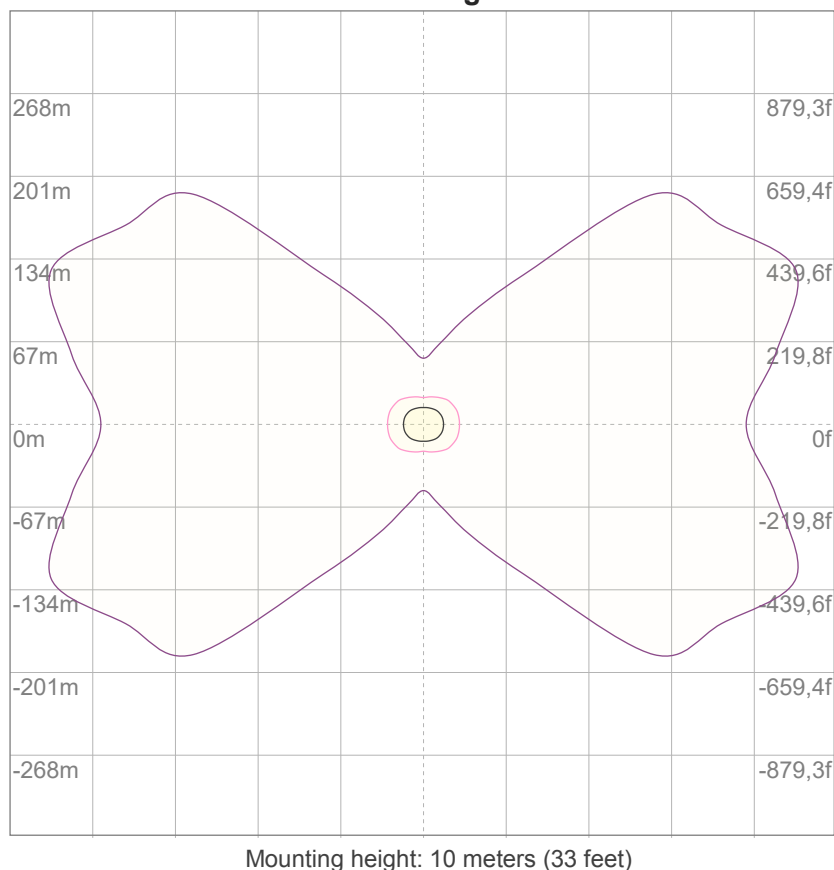
10%	23 cd
20%	46 cd
30%	69 cd
40%	92 cd
50%	115 cd
60%	138 cd
70%	162 cd
80%	185 cd
90%	208 cd

#### Conditions:

Number of c-planes: 16

Candela at center: 231 cd

### ISO lux diagram



3%	69,2m lx
5%	0,115 lx
10%	0,231 lx
30%	0,692 lx
50%	1,15 lx

#### Conditions:

Number of c-planes: 16

Lux at center: 2,31 lx

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

### Glare Evaluation According to UGR

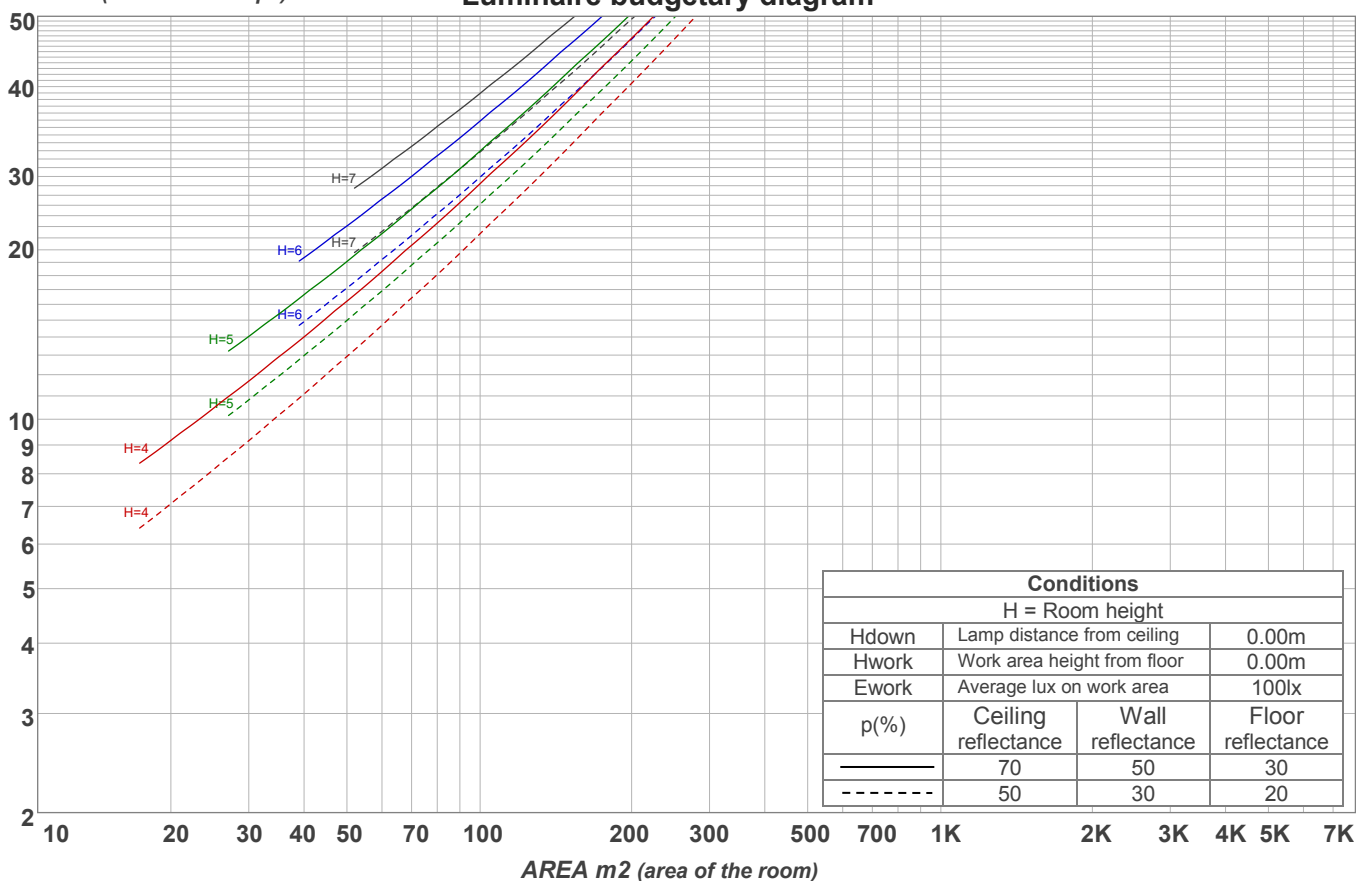
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	21,1	22,4	21,4	22,7	22,9	21,5	22,7	21,7	23,0	23,3
	3H	22,4	23,7	22,8	24,0	24,2	22,7	24,0	23,1	24,3	24,5
	4H	23,0	24,2	23,4	24,5	24,8	23,3	24,5	23,7	24,8	25,0
	6H	23,5	24,6	23,8	24,8	25,2	23,7	24,8	24,0	25,1	25,5
	8H	23,6	24,7	24,0	25,0	25,4	23,8	24,9	24,2	25,2	25,6
	12H	23,7	24,8	24,1	25,1	25,6	23,9	24,9	24,3	25,3	25,7
4H	2H	21,7	22,9	22,1	23,2	23,5	22,0	23,2	22,4	23,5	23,7
	3H	23,3	24,3	23,7	24,7	25,1	23,5	24,6	23,9	24,9	25,4
	4H	23,9	24,9	24,4	25,3	25,8	24,1	25,1	24,6	25,5	26,0
	6H	24,5	25,4	25,0	25,8	26,1	24,6	25,5	25,1	25,9	26,3
	8H	24,7	25,5	25,2	25,9	26,3	24,8	25,7	25,3	26,0	26,4
	12H	24,9	25,6	25,4	26,0	26,5	25,0	25,7	25,4	26,1	26,6
8H	4H	24,2	25,0	24,7	25,4	25,8	24,4	25,2	24,9	25,6	26,0
	6H	24,9	25,6	25,5	26,1	26,6	25,1	25,7	25,6	26,2	26,7
	8H	25,3	25,9	25,8	26,4	27,0	25,4	26,0	25,9	26,5	27,1
	12H	25,6	26,1	26,2	26,6	27,2	25,6	26,1	26,2	26,6	27,2
12H	4H	24,2	24,9	24,7	25,4	25,8	24,4	25,1	24,9	25,5	26,0
	6H	25,1	25,6	25,6	26,1	26,8	25,2	25,7	25,7	26,3	26,9
	8H	25,4	25,9	26,0	26,4	27,0	25,5	26,0	26,1	26,5	27,1
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 / -0,3					0,2 / -0,3				
S = 2.0H		0,4 / -0,5					0,5 / -0,6				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 703 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	119	119	119	119	115	115	115	115	110	110	110	105	105	105	100	100	100	98
1	107	102	98	93	104	100	95	92	95	92	88	91	88	85	87	84	82	80
2	97	89	82	76	94	87	80	74	83	77	72	79	74	70	76	72	68	66
3	89	78	69	63	86	76	68	62	73	66	60	69	64	59	67	62	58	55
4	81	69	60	53	79	67	59	52	64	57	51	62	55	50	59	54	49	47
5	74	61	52	45	72	60	51	45	58	50	44	55	49	44	53	48	43	41
6	69	55	46	40	67	54	46	39	52	44	39	50	43	38	48	42	38	36
7	64	50	41	35	62	49	41	35	47	40	34	46	39	34	44	38	33	31
8	59	46	37	31	58	45	37	31	43	36	31	42	35	30	40	34	30	28
9	55	42	34	28	54	41	33	28	40	33	27	39	32	27	37	31	27	25
10	52	39	31	25	50	38	30	25	37	30	25	36	29	25	35	29	24	23

LAMPS (number of lamps)

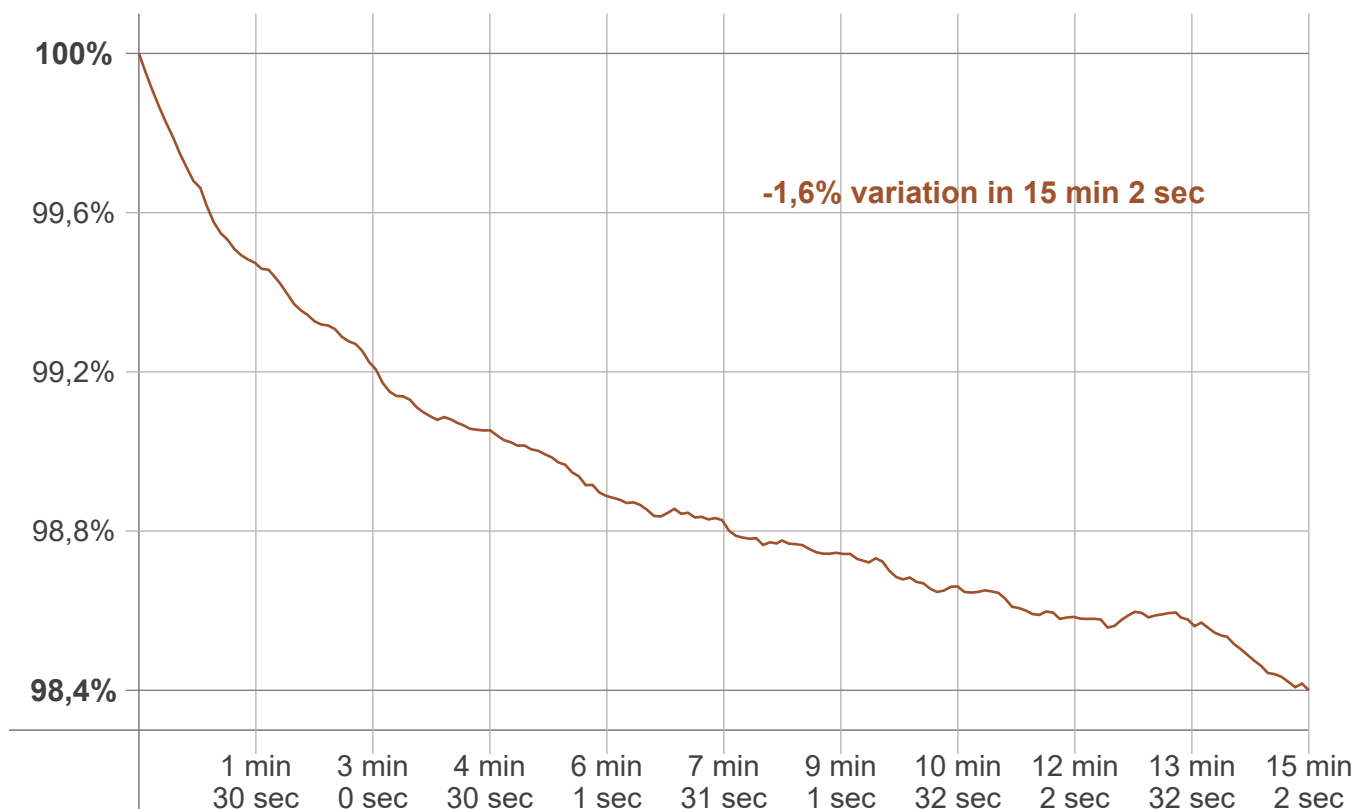
## Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
21,9 lm	62,8 lm	95,5 lm	116 lm	120 lm	108 lm	83,5 lm	53,4 lm	26,0 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
6,17 lm	2,24 lm	1,84 lm	1,66 lm	1,43 lm	1,16 lm	0,857 lm	0,525 lm	0,177 lm

### Warmup curve



### Warmup result

Warmup time:	Lamp stabilized in 15 min 2 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
2745 K	+3 K	2748 K

### Output change

Output start	Output change	Output end
713 lm	-10 lm	703 lm