

Light efficiency:

144 Lumen/Watt

Light quality:

CRI: 82,2

Color temperature:

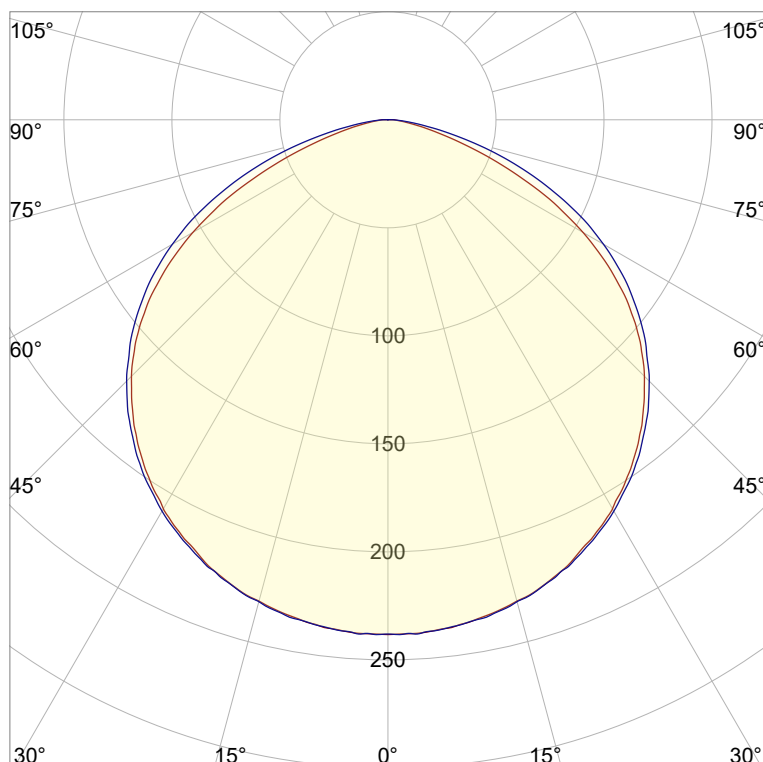
2764 K

Output: 691 lm

Peak: 239 cd

Power: 4,8 W

PF: 1,0



Product name:

Navigator-3_510mm_827_Cover-Flat-Transparent

Item number:

NP/L1C/14C/G1/L1C/0510/827/CFT

Date and time:

22.06.2022 13:07:19

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

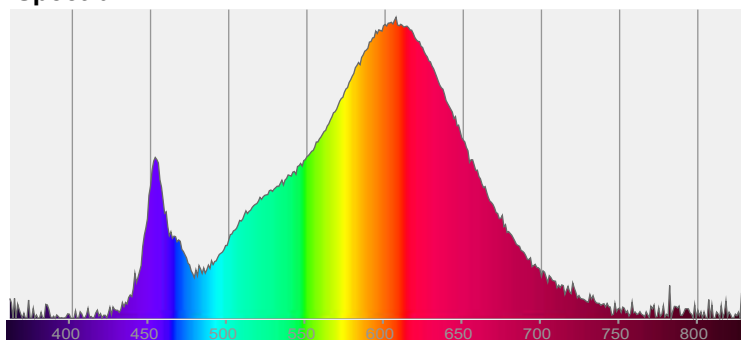


CIE 1931

x: 0,453

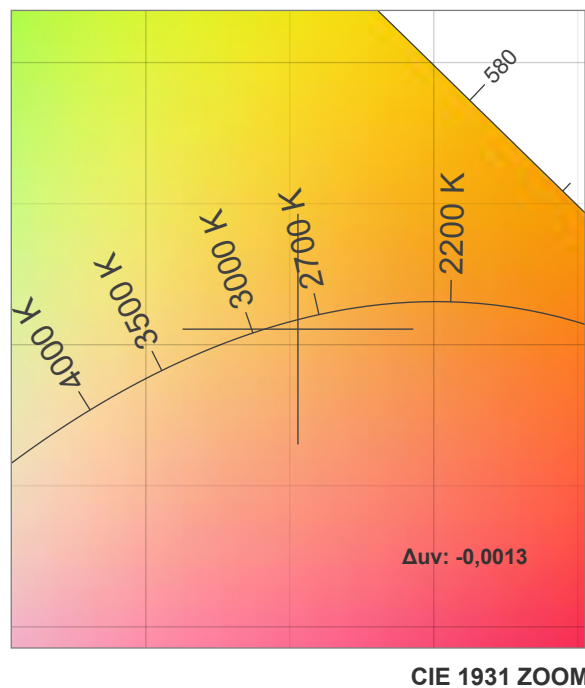
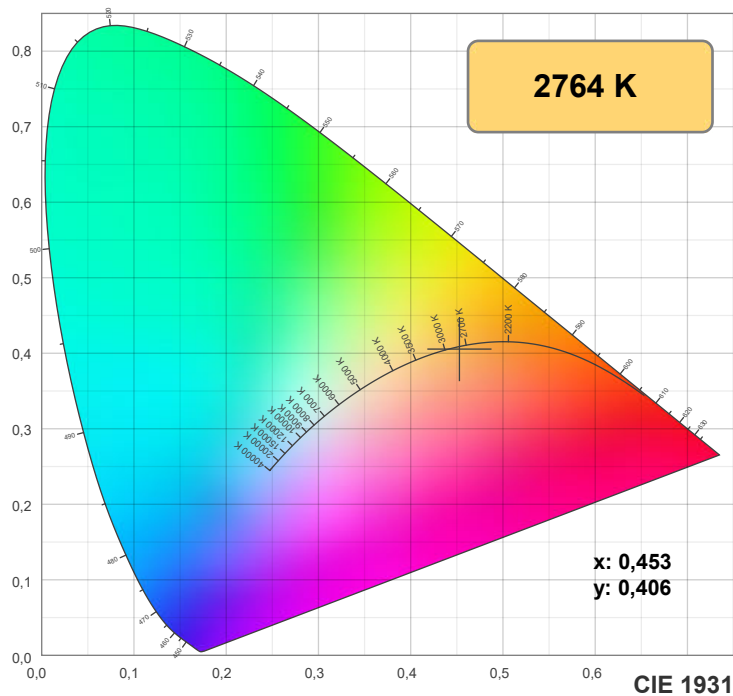
y: 0,406

Spectra



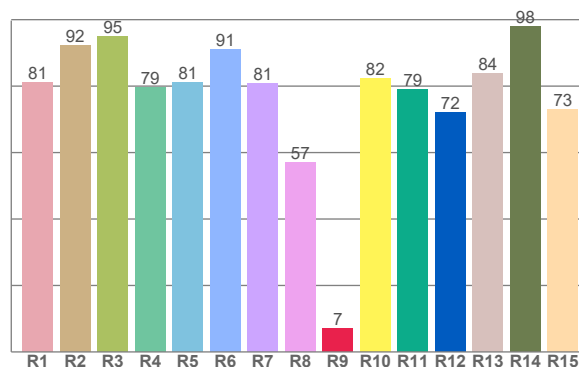
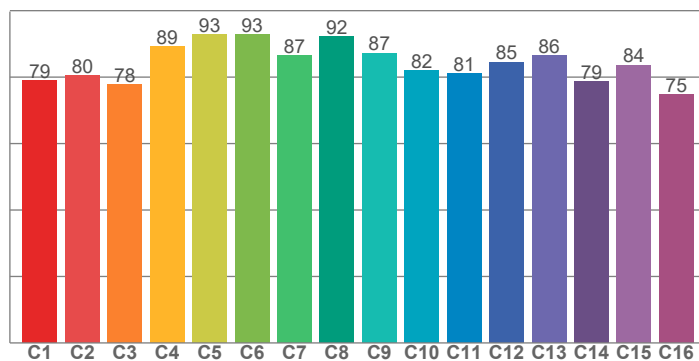
Power

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



TM30: 84,1

CRI: 82,2 (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
81,1	92,2	94,9	79,5	81,2	91,0	80,8	57,0	7,1	82,3	79,0	72,2	83,9	98,1	73,0

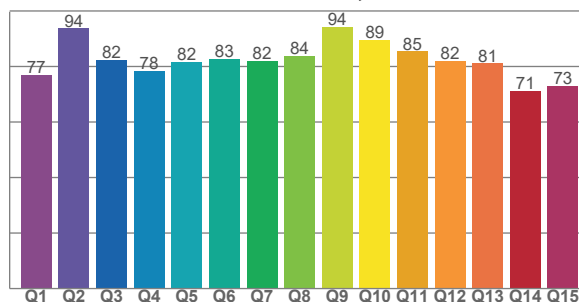
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
79,0	80,4	77,7	89,3	92,9	92,8	86,6	92,2	87,2	81,9	81,0	84,5	86,4	78,7	83,6	74,7

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
77,0	93,7	82,3	78,2	81,6	82,7	81,9	83,9	94,1	89,4	85,4	82,1	81,1	71,2	73,0

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
2764 K	82,2	7,1	84,1	95,6	81,3	0,453	0,406	0,260	0,350	-0,0013

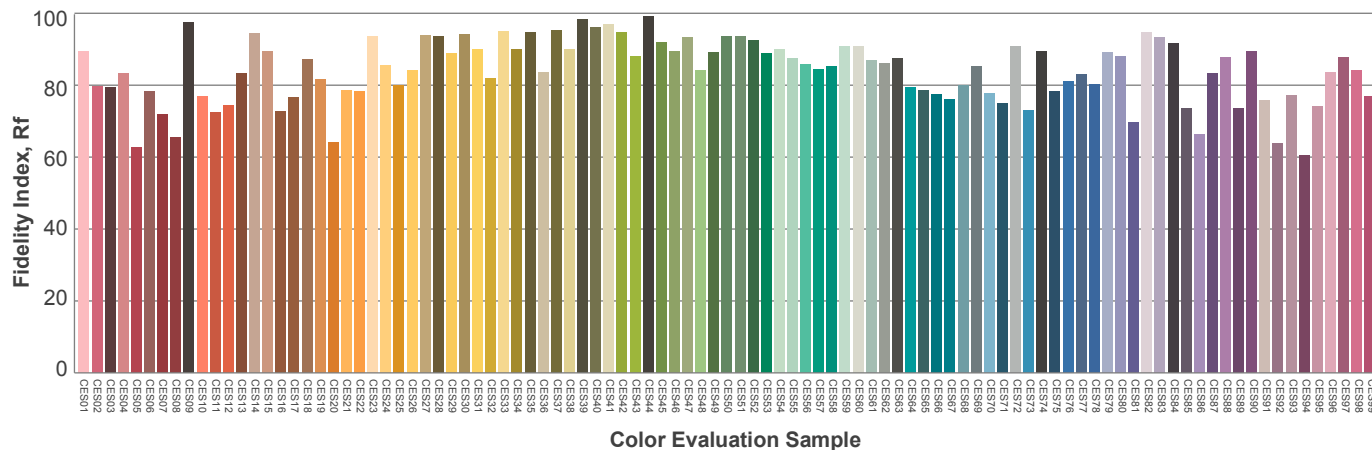
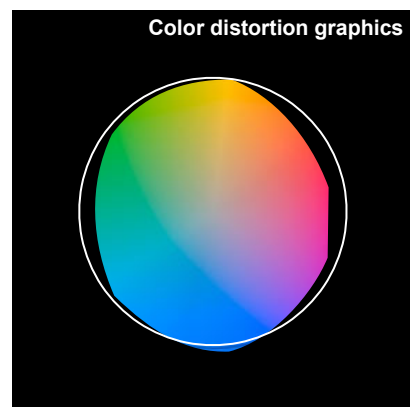
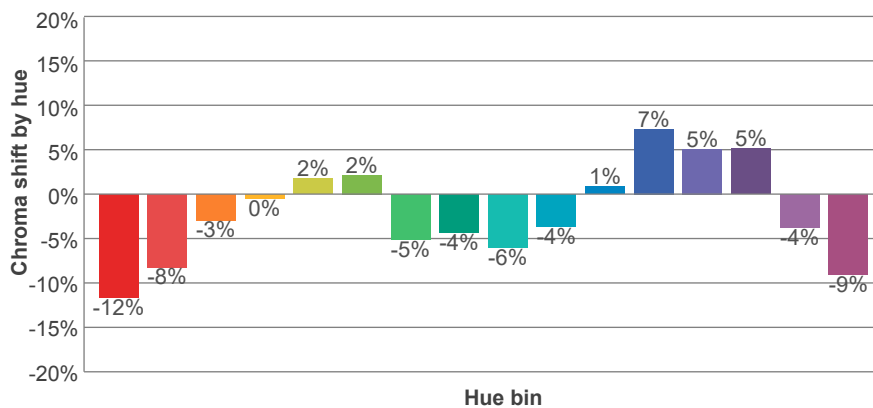
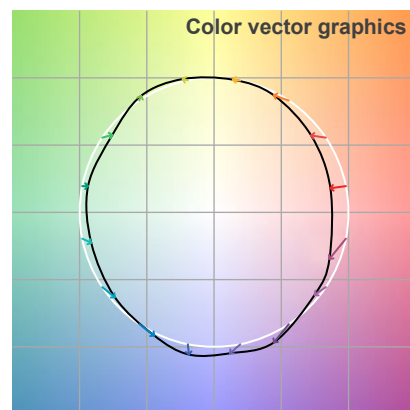
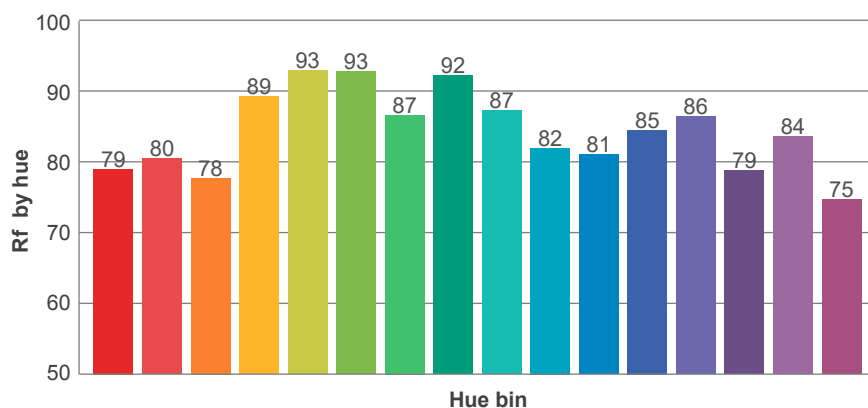
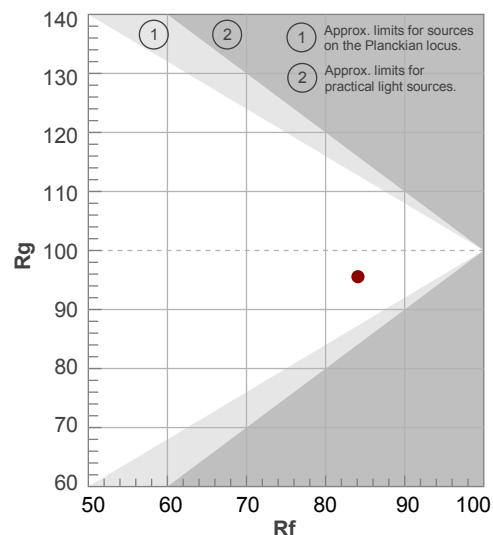
Rf 84,1

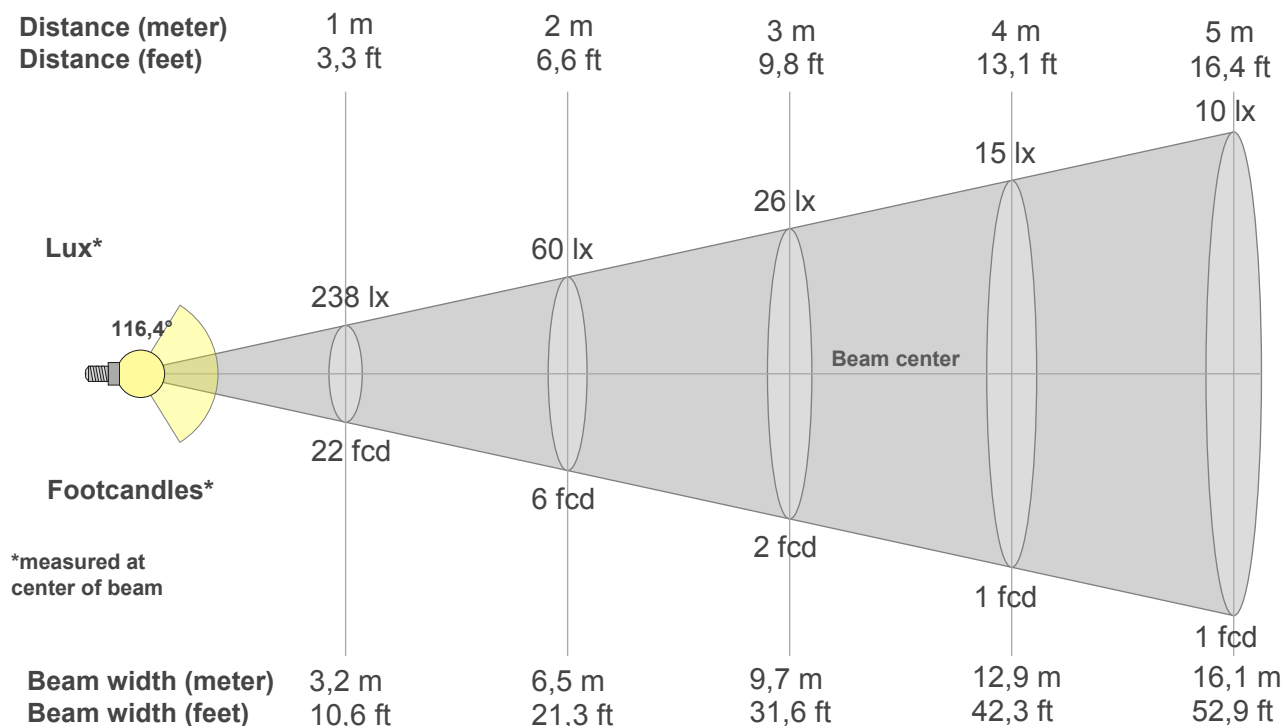
Fidelity index Rf

Rg 95,6

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	79	-12%	1%
2	80	-8%	7%
3	78	-3%	11%
4	89	0%	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
238lx	60lx	26lx	15lx	10lx	7lx	5lx	4lx	3lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx
22,1fcd	5,5fcd	2,5fcd	1,4fcd	0,9fcd	0,6fcd	0,5fcd	0,3fcd	0,3fcd	0,2fcd	0,2fcd	0,2fcd	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°
238	237	235	231	225	217	208	196	183	168	150	129	104	76	48	25	12	5	1	1
100%	100%	99%	97%	94%	91%	87%	82%	77%	70%	63%	54%	44%	32%	20%	11%	5%	2%	1%	1%

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°
238	238	235	231	226	218	209	198	185	171	155	136	115	91	66	41	20	7	1	0
100%	100%	99%	97%	95%	91%	88%	83%	78%	72%	65%	57%	48%	38%	28%	17%	8%	3%	0%	0%

Intensities in 180° c-plane

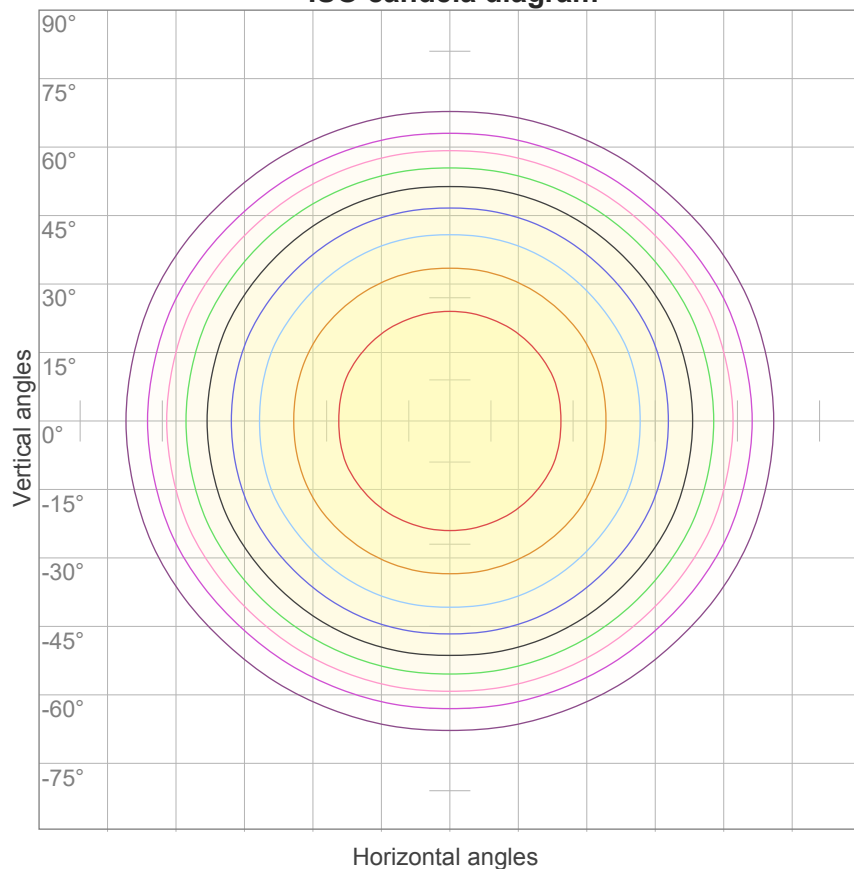
0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
238	237	235	231	225	217	208	196	183	168	150	129	104	76	48	25	12	5	1	1
100%	100%	99%	97%	94%	91%	87%	82%	77%	70%	63%	54%	44%	32%	20%	11%	5%	2%	1%	1%

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°
238	238	235	231	226	218	209	198	185	171	155	136	115	91	66	41	20	7	1	0
100%	100%	99%	97%	95%	91%	88%	83%	78%	72%	65%	57%	48%	38%	28%	17%	8%	3%	0%	0%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
116,4°	154,2°	170,7°	81,3%	54,7%

ISO candela diagram



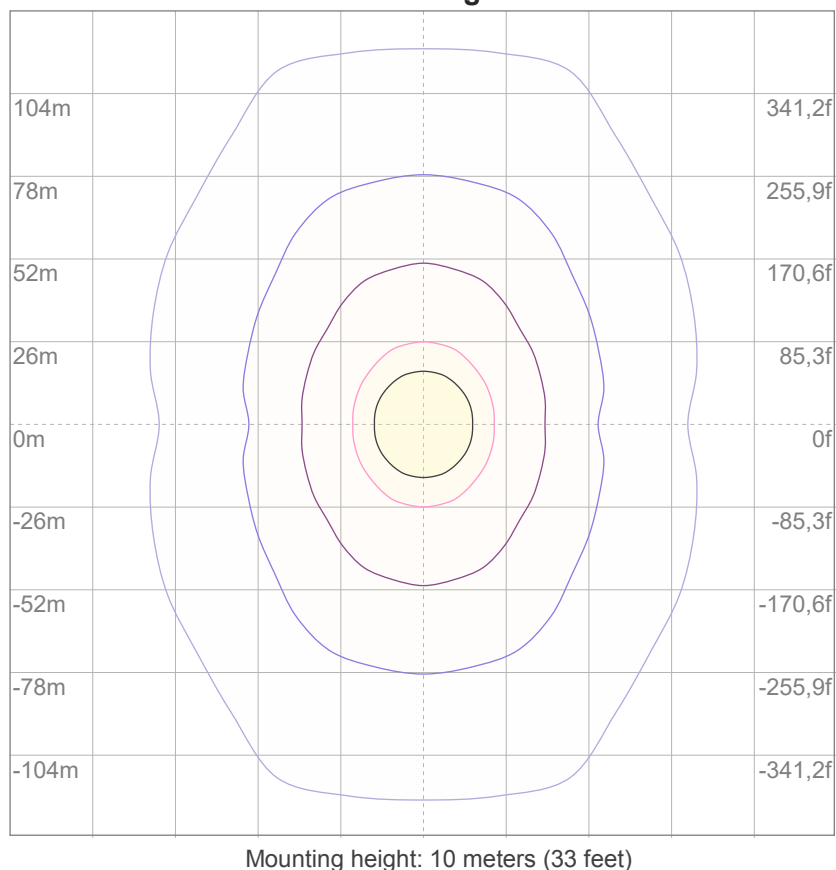
10%	24 cd
20%	48 cd
30%	72 cd
40%	95 cd
50%	119 cd
60%	143 cd
70%	167 cd
80%	191 cd
90%	215 cd

Conditions:

Number of c-planes: 16

Candela at center: 238 cd

ISO lux diagram



3%	71,5m lx
5%	0,119 lx
10%	0,238 lx
30%	0,715 lx
50%	1,19 lx

Conditions:

Number of c-planes: 16

Lux at center: 2,38 lx

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

Glare Evaluation According to UGR

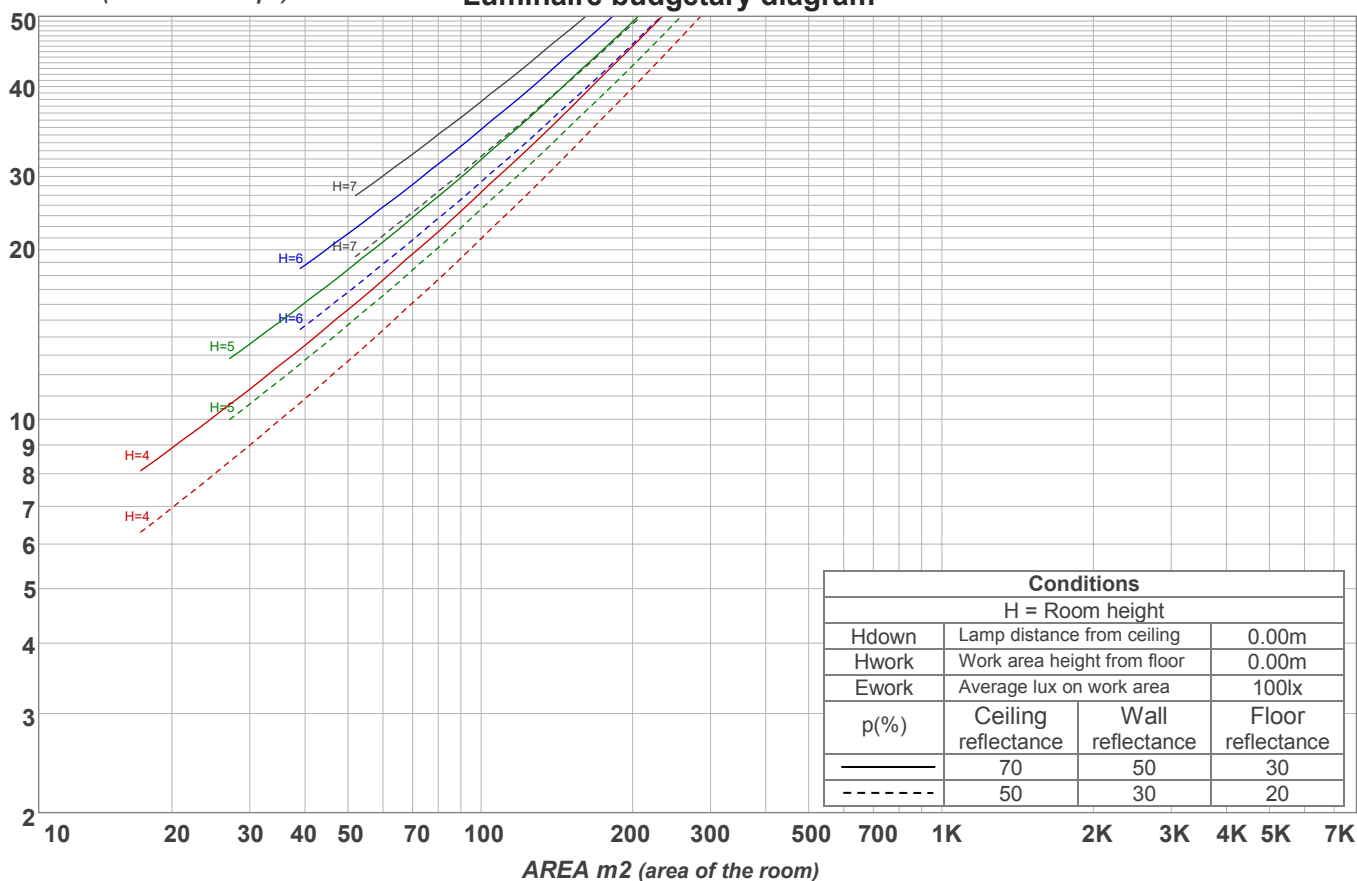
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	22,2	23,4	22,4	23,7	23,9	23,1	24,3	23,3	24,6	24,8
	3H	23,0	24,2	23,4	24,5	24,7	24,4	25,6	24,8	25,9	26,1
	4H	23,1	24,3	23,5	24,6	24,9	24,8	26,0	25,3	26,3	26,6
	6H	23,2	24,3	23,6	24,6	24,9	25,1	26,2	25,4	26,4	26,8
	8H	23,2	24,2	23,6	24,5	24,9	25,2	26,2	25,5	26,5	26,9
	12H	23,2	24,1	23,5	24,5	24,9	25,2	26,1	25,5	26,5	26,9
4H	2H	22,8	23,9	23,2	24,2	24,5	23,5	24,7	23,9	24,9	25,2
	3H	23,8	24,7	24,1	25,1	25,5	25,0	26,0	25,4	26,4	26,8
	4H	23,9	24,8	24,4	25,2	25,8	25,5	26,4	25,9	26,8	27,3
	6H	24,0	24,8	24,5	25,2	25,6	25,8	26,6	26,3	27,0	27,3
	8H	24,0	24,8	24,5	25,1	25,5	25,8	26,6	26,3	27,0	27,4
	12H	24,0	24,6	24,5	25,0	25,5	25,9	26,5	26,4	26,9	27,4
8H	4H	24,1	24,8	24,6	25,2	25,6	25,5	26,3	26,0	26,7	27,0
	6H	24,2	24,8	24,7	25,2	25,8	25,9	26,5	26,4	26,9	27,5
	8H	24,2	24,8	24,8	25,3	25,9	26,0	26,5	26,5	27,0	27,7
	12H	24,2	24,7	24,8	25,2	25,8	26,1	26,5	26,7	27,0	27,6
12H	4H	24,0	24,7	24,5	25,1	25,6	25,5	26,1	26,0	26,6	27,0
	6H	24,2	24,7	24,7	25,3	25,9	25,9	26,4	26,4	26,9	27,6
	8H	24,3	24,7	24,8	25,2	25,8	26,0	26,4	26,6	26,9	27,5
Variation of the observer position for the luminaire distance S											
S = 1.0H		0,1 / -0,2					0,1 / -0,1				
S = 1.5H		0,4 / -0,7					0,2 / -0,3				
S = 2.0H		1,1 / -1,6					0,7 / -1,0				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 691 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	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	106	102	99	95	98	95	92	94	92	89	90	88	87	84
2	99	91	85	79	97	90	83	78	86	81	76	83	78	75	80	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	68	63	70	66	62	60
4	83	71	62	56	81	70	62	55	67	60	55	65	59	54	63	57	53	51
5	76	63	55	48	74	62	54	48	60	53	47	58	52	47	56	51	46	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	40	38
7	65	52	43	37	63	51	43	37	49	42	36	48	41	36	46	40	36	34
8	61	47	39	33	59	46	38	33	45	38	32	44	37	32	43	36	32	30
9	57	43	35	29	55	43	35	29	41	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	27	38	31	26	37	31	26	36	30	26	24

LAMPS (number of lamps)

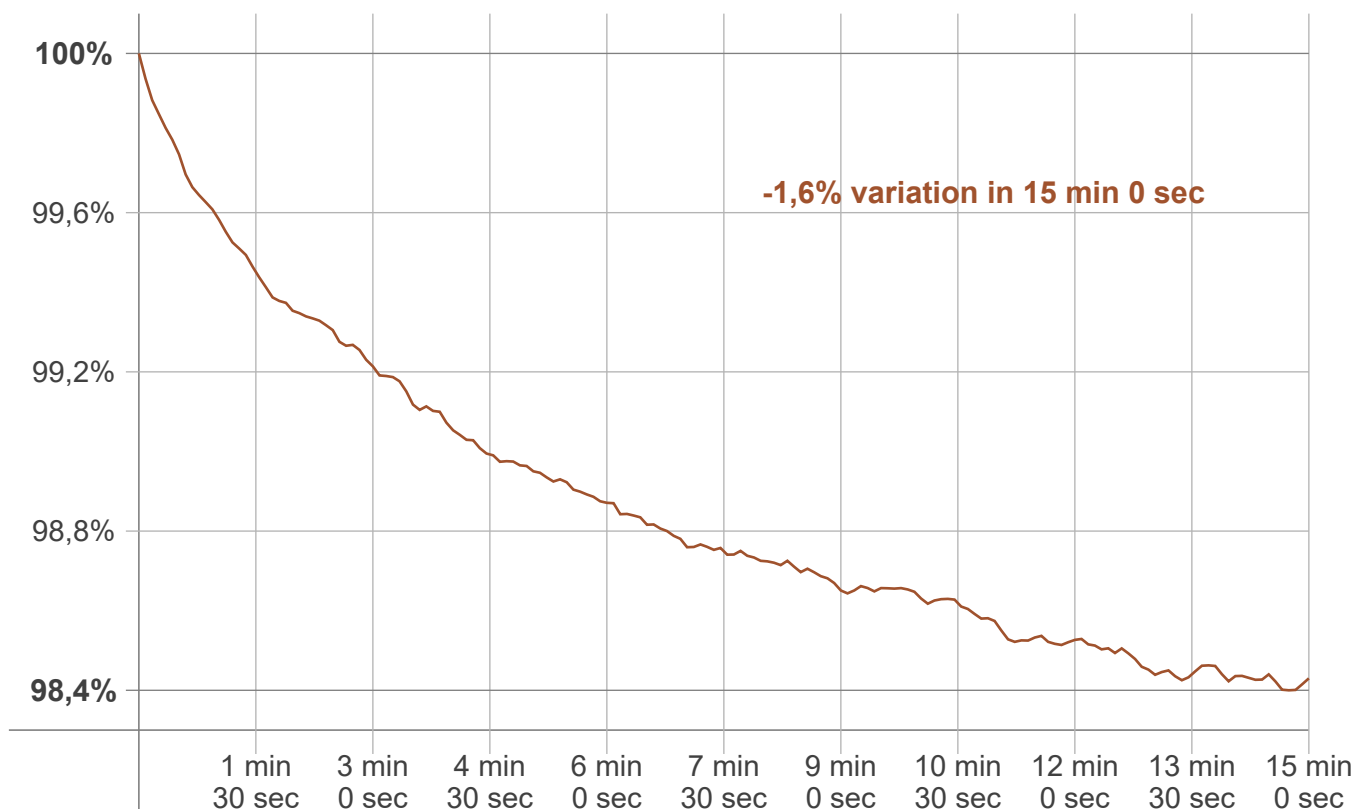
Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
22,6 lm	65,3 lm	100 lm	124 lm	131 lm	119 lm	83,1 lm	35,4 lm	7,93 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,857 lm	0,676 lm	0,462 lm	0,371 lm	0,223 lm	0,099 lm	0,073 lm	0,044 lm	0,015 lm

Warmup curve



Warmup result

Warmup time:	Lamp stabilized in 15 min 0 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
2759 K	+5 K	2764 K

Output change

Output start	Output change	Output end
700 lm	-9 lm	691 lm