

Light efficiency:

50 Lumen/Watt

Light quality:

CRI: 80,4

Color temperature:

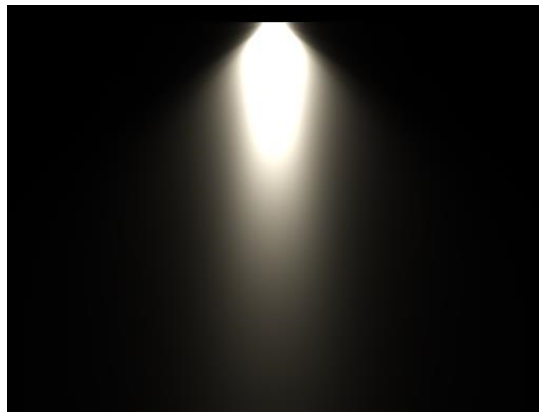
2764 K

Output: 288 lm

Peak: 689 cd

Power: 5,8 W

PF: 0,99



Product name:

brilliance 230V 15 Grad

Item number:

30406.857.15.52

Date and time:

18.07.2017 15:19:59

Description:

Toleranzen:

Lumen +/-4%

Candela +/-2,5%

Colour Temp +/-35 Grad K

CRI +/-0,7

Angular Resolution 1 Grad step

Last Calibration 30.06.2017

Pruefer:

Mourad Benzineb

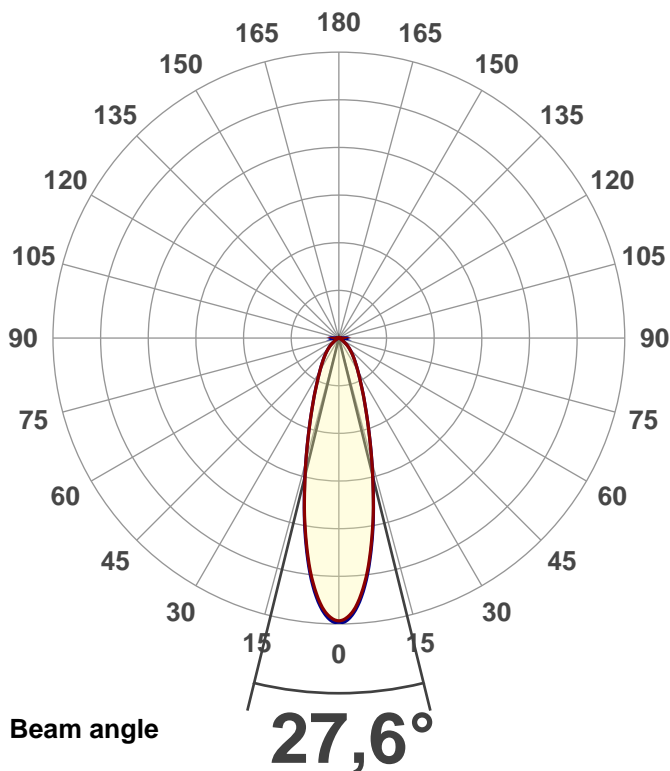
Master of Engineering

Pruefort:

Lichtlabor

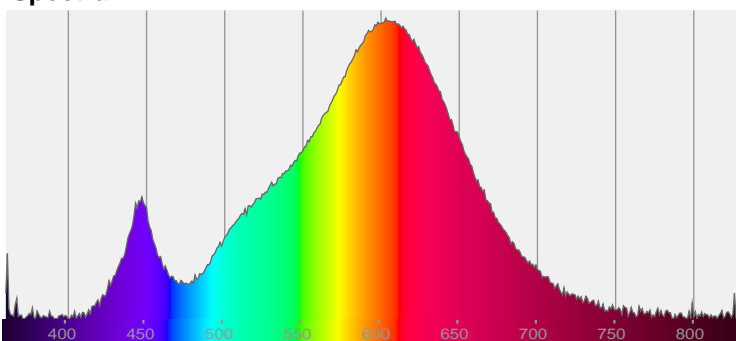
Gaustasse13-15

55411 Bingen am Rhein

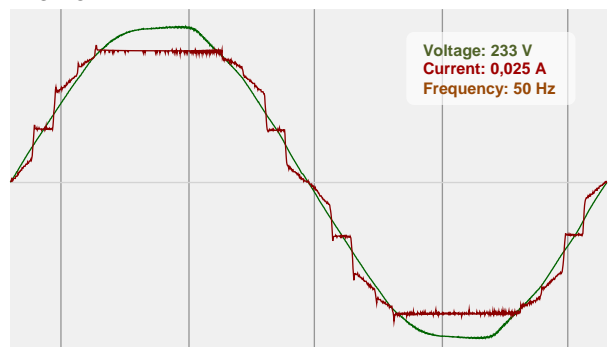


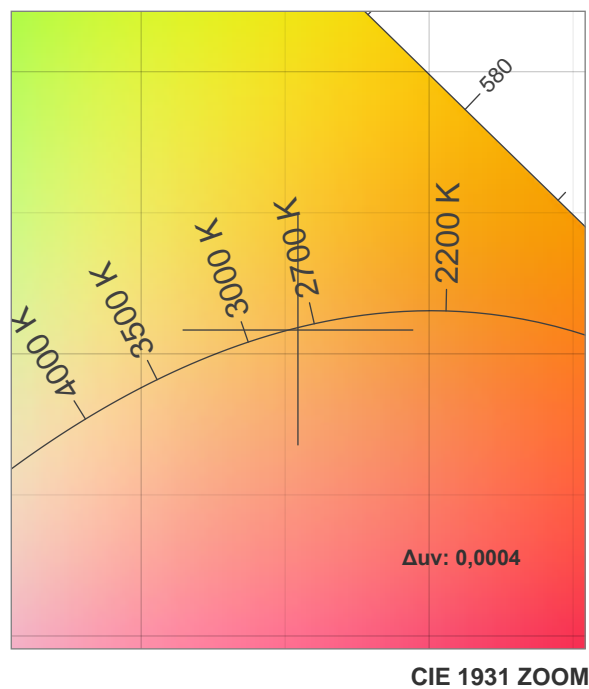
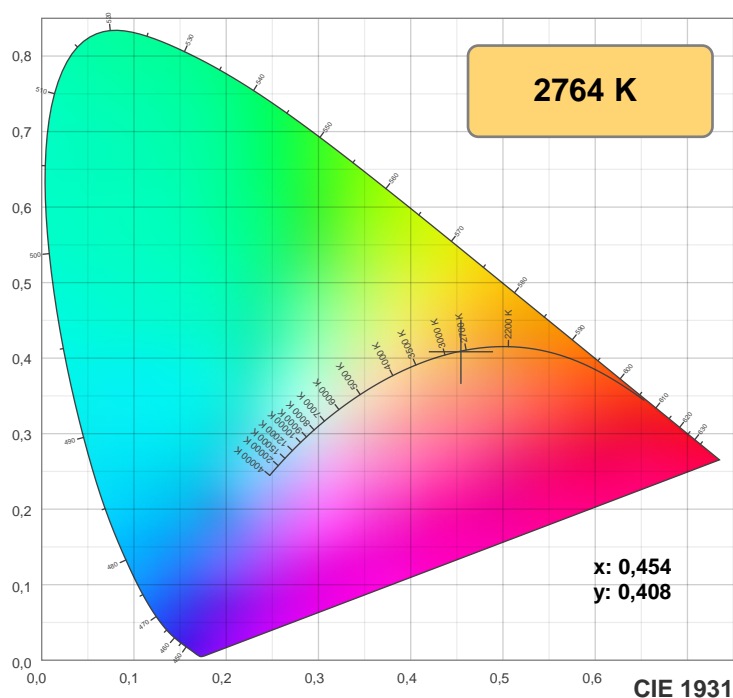
CIE 1931
x: 0,454
y: 0,408

Spectra

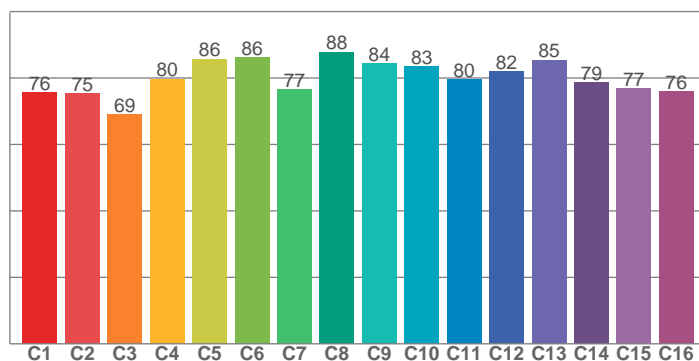


Power

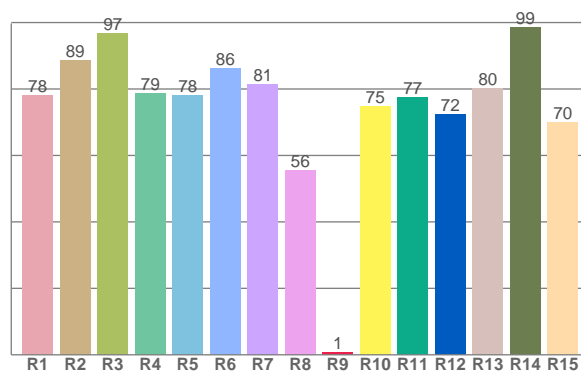




TM30: 80,0



CRI: 80,4 (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
78,1	88,6	96,8	78,6	78,1	86,3	81,4	55,5	0,8	74,7	77,5	72,3	80,2	98,5	70,0

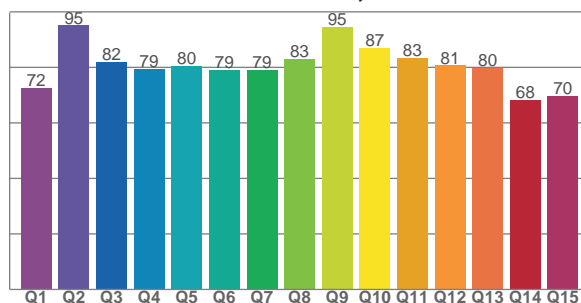
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
75,6	75,4	69,0	79,7	85,7	86,2	76,6	87,8	84,4	83,4	79,6	81,9	85,4	78,7	76,9	75,9

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
72,4	95,1	82,0	79,4	80,5	78,9	79,2	83,0	94,6	86,9	83,5	80,7	79,9	68,4	69,6

CQS: 79,4



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	80,4	0,8	80,0	97,6	79,4	0,454	0,408	0,260	0,350	0,0004

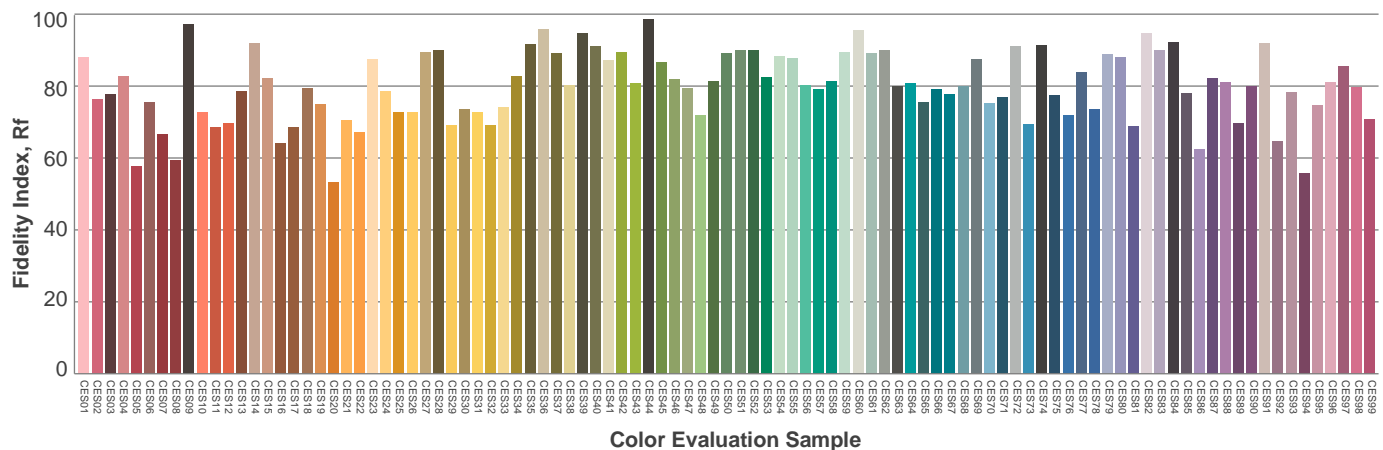
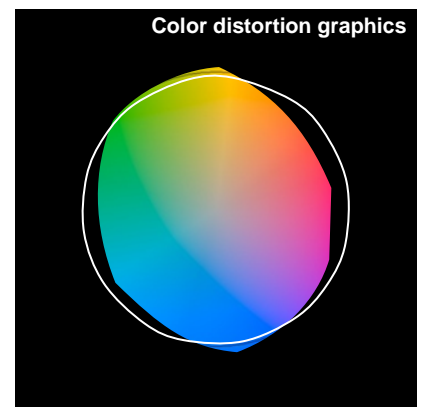
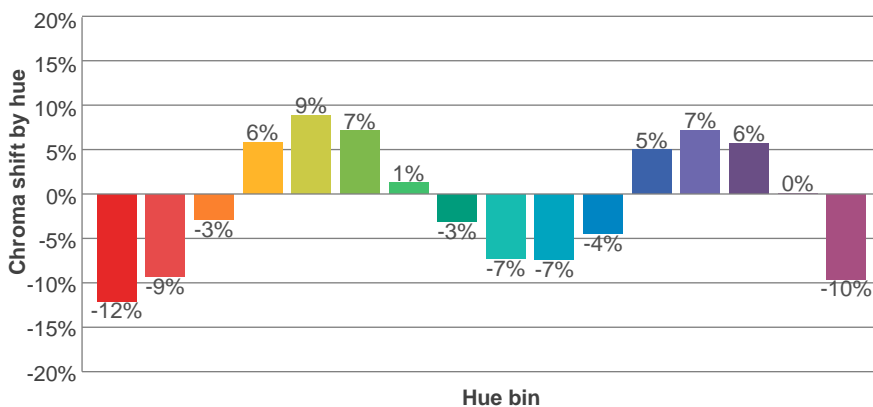
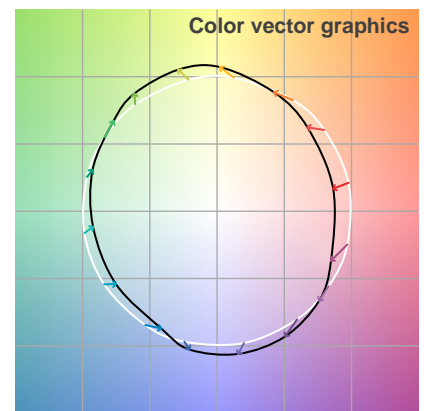
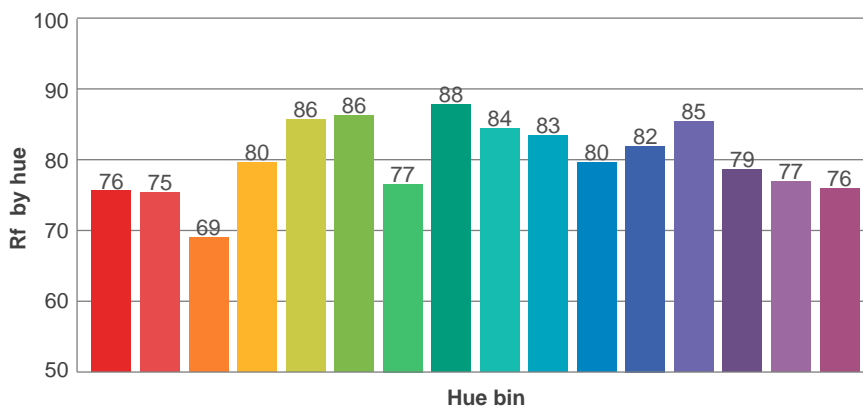
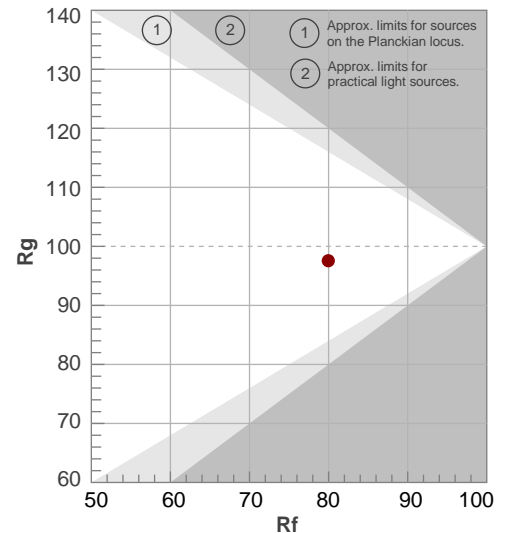
Rf 80,0

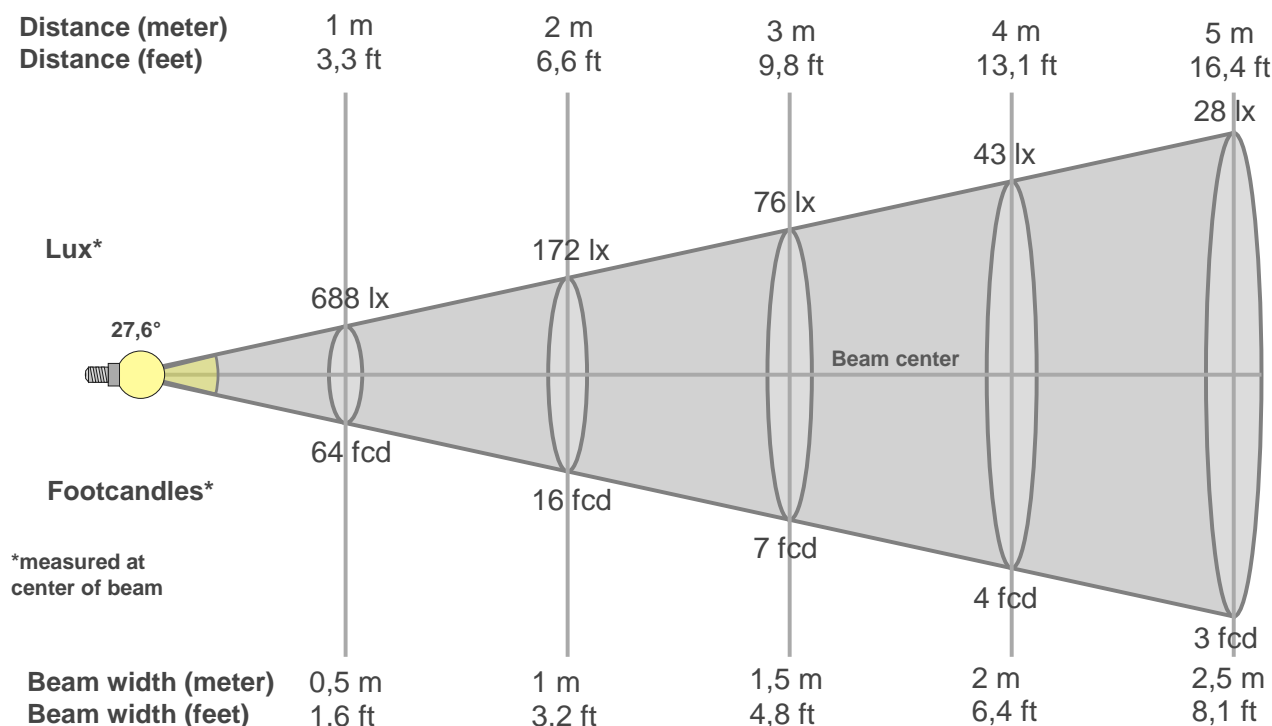
Fidelity index Rf

Rg 97,6

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	76	-12%	-2%
2	75	-9%	9%
3	69	-3%	15%
4	80	6%	11%
5	86	9%	6%
6	86	7%	-4%
7	77	1%	-13%
8	88	-3%	-6%
9	84	-7%	-3%
10	83	-7%	5%
11	80	-4%	11%
12	82	5%	5%
13	85	7%	-6%
14	79	6%	-14%
15	77	0%	-13%
16	76	-10%	-14%





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
688lx	172lx	76lx	43lx	28lx	19lx	14lx	11lx	8lx	7lx	6lx	5lx	4lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx
63,9fcd	16fcd	7,1fcd	4fcd	2,6fcd	1,8fcd	1,3fcd	1fcd	0,8fcd	0,6fcd	0,5fcd	0,4fcd	0,4fcd	0,3fcd	0,3fcd	0,2fcd	0,2fcd	0,2fcd	0,2fcd	0,2fcd

Intensities in 0° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
688	675	645	597	537	470	402	338	282	234	196	166	141	121	105	92	81	72	64	56
100%	98%	94%	87%	78%	68%	58%	49%	41%	34%	29%	24%	21%	18%	15%	13%	12%	10%	9%	8%

Intensities in 90° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
688	682	652	604	542	474	404	339	282	235	196	165	141	121	105	92	81	72	64	57
100%	99%	95%	88%	79%	69%	59%	49%	41%	34%	28%	24%	21%	18%	15%	13%	12%	10%	9%	8%

Intensities in 180° c-plane

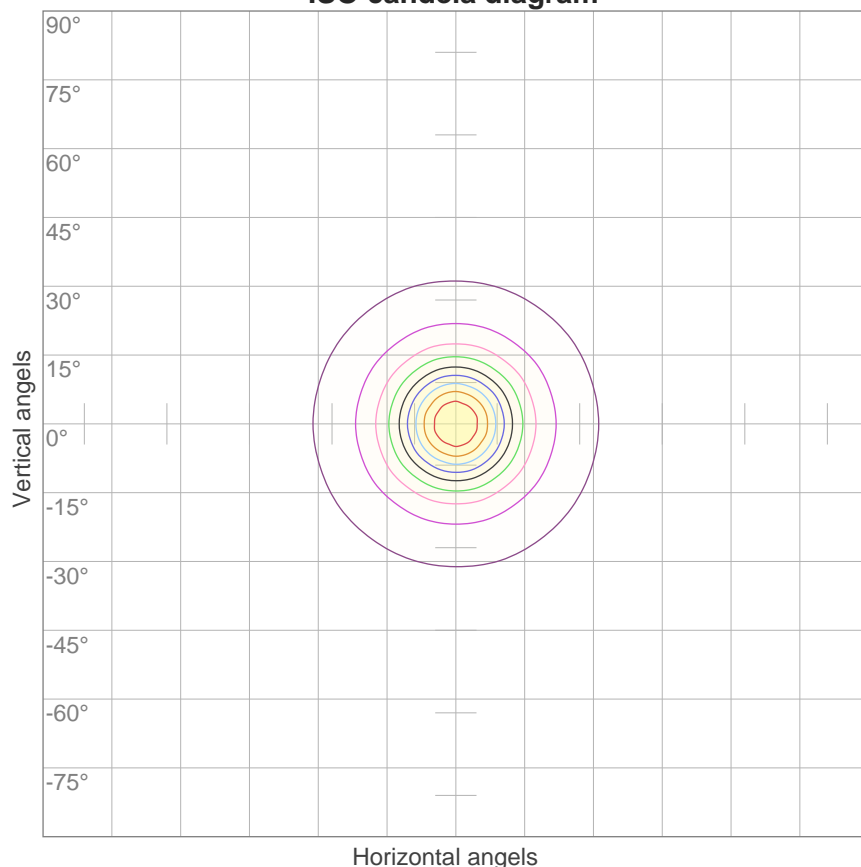
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
688	675	645	597	537	470	402	338	282	234	196	166	141	121	105	92	81	72	64	56
100%	98%	94%	87%	78%	68%	58%	49%	41%	34%	29%	24%	21%	18%	15%	13%	12%	10%	9%	8%

Intensities in 270° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
688	682	652	604	542	474	404	339	282	235	196	165	141	121	105	92	81	72	64	57
100%	99%	95%	88%	79%	69%	59%	49%	41%	34%	28%	24%	21%	18%	15%	13%	12%	10%	9%	8%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
27,6°	69,3°	105,2°	98,4%	90,0%

ISO candela diagram



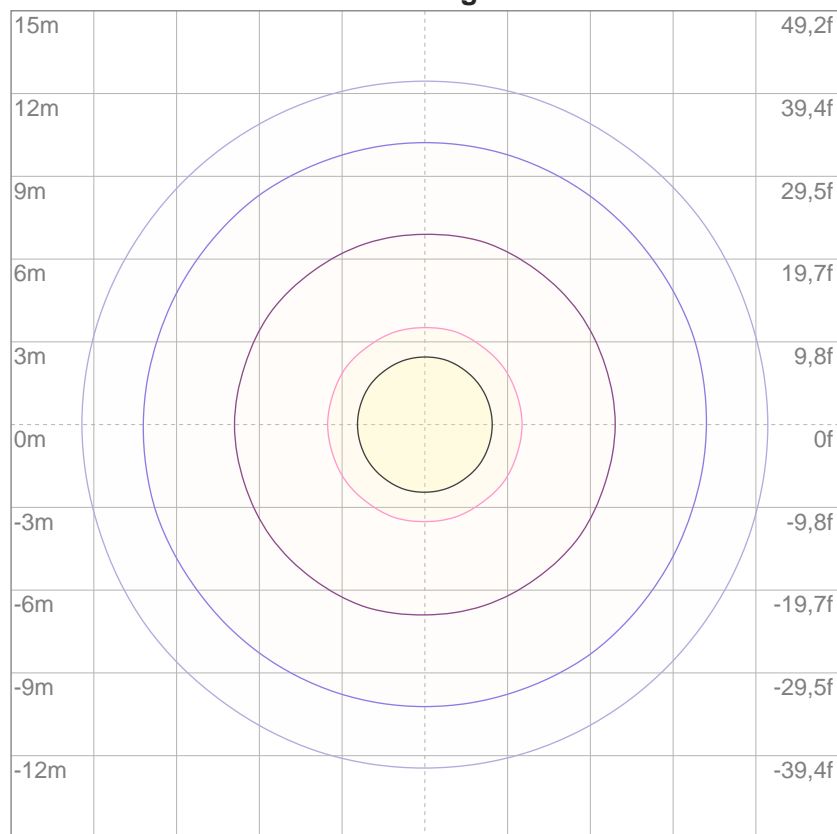
10%	69 cd
20%	138 cd
30%	206 cd
40%	275 cd
50%	344 cd
60%	413 cd
70%	482 cd
80%	550 cd
90%	619 cd

Conditions:

Number of c-planes: 20

Candela at center: 688 cd

ISO lux diagram



Mounting height: 10 meters (33 feet)

3%	0,206 lx
5%	0,344 lx
10%	0,688 lx
30%	2,06 lx
50%	3,44 lx

Conditions:

Number of c-planes: 20

Lux at center: 6,88 lx

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

Glare Evaluation According to UGR

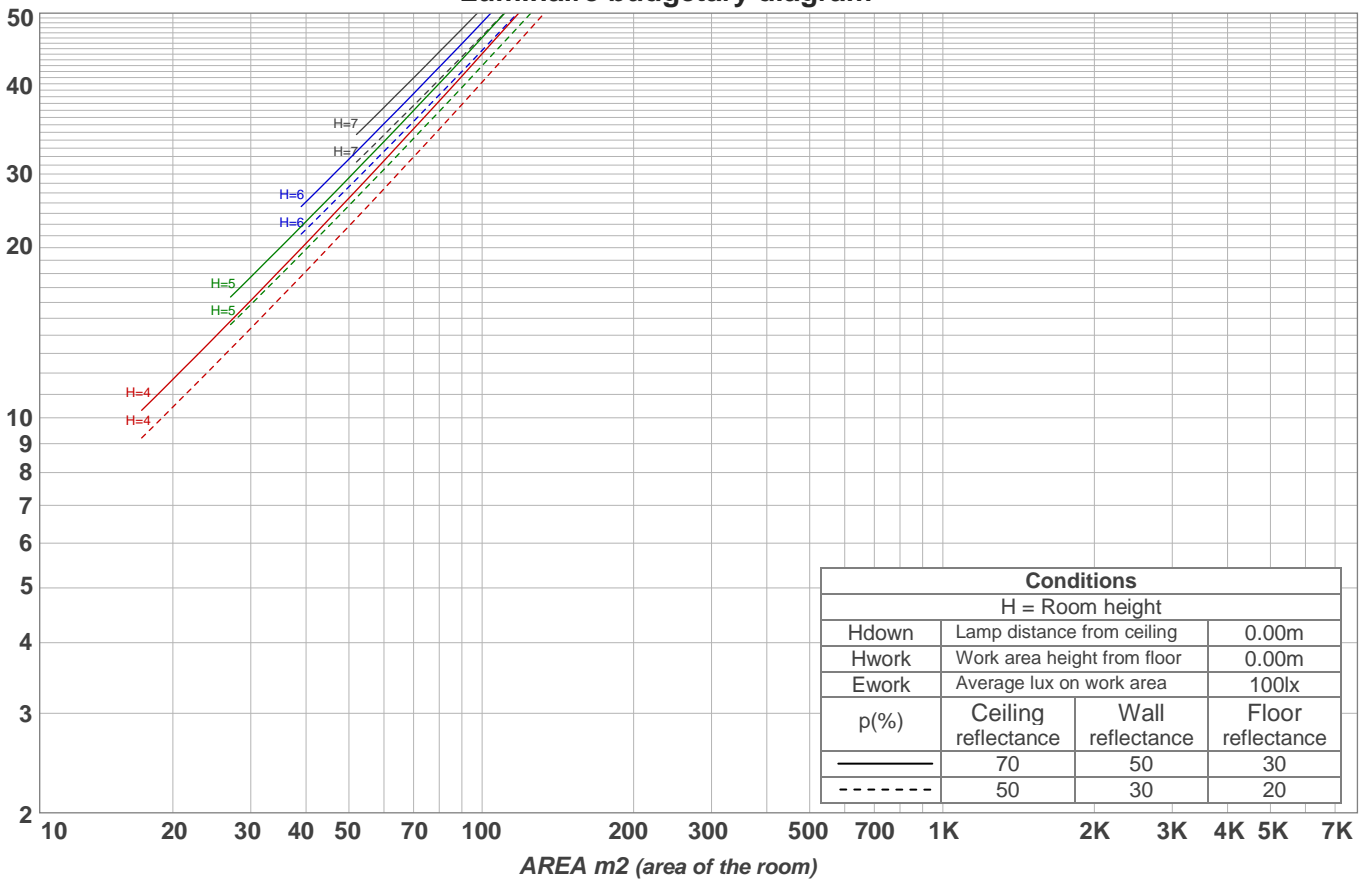
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	16,6	17,4	16,9	17,6	17,8	16,6	17,4	16,9	17,6	17,8
	3H	16,6	17,3	16,9	17,5	17,8	16,6	17,3	16,9	17,5	17,8
	4H	16,5	17,2	16,8	17,5	17,7	16,5	17,2	16,8	17,5	17,7
	6H	16,5	17,1	16,8	17,4	17,7	16,5	17,1	16,8	17,4	17,7
	8H	16,5	17,1	16,8	17,3	17,7	16,5	17,1	16,8	17,3	17,7
	12H	16,5	17,0	16,8	17,3	17,6	16,5	17,0	16,8	17,3	17,6
4H	2H	16,6	17,2	16,9	17,5	17,7	16,6	17,2	16,9	17,5	17,7
	3H	16,5	17,1	16,9	17,4	17,7	16,5	17,1	16,9	17,4	17,7
	4H	16,5	17,0	16,9	17,3	17,6	16,5	17,0	16,9	17,3	17,6
	6H	16,5	16,9	16,9	17,2	17,6	16,5	16,9	16,9	17,2	17,6
	8H	16,5	16,8	16,9	17,2	17,6	16,5	16,8	16,9	17,2	17,6
	12H	16,5	16,8	16,9	17,2	17,6	16,5	16,8	16,9	17,2	17,6
8H	4H	16,4	16,8	16,8	17,1	17,5	16,4	16,8	16,8	17,1	17,5
	6H	16,4	16,7	16,8	17,1	17,5	16,4	16,7	16,8	17,1	17,5
	8H	16,4	16,6	16,9	17,1	17,6	16,4	16,6	16,9	17,1	17,6
	12H	16,4	16,6	16,9	17,1	17,6	16,4	16,6	16,9	17,1	17,6
12H	4H	16,4	16,7	16,8	17,1	17,5	16,4	16,7	16,8	17,1	17,5
	6H	16,3	16,6	16,8	17,0	17,5	16,3	16,6	16,8	17,0	17,5
	8H	16,4	16,6	16,9	17,0	17,5	16,4	16,6	16,9	17,0	17,5
Variation of the observer position for the luminaire distance S											
S = 1,0H		+1,2 / -2,7					+1,2 / -2,7				
S = 1,5H		+3,1 / -6,4					+3,1 / -6,4				
S = 2,0H		+4,9 / -7,4					+4,9 / -7,4				
Standard table		BK00					BK00				
Correction summand		-1,7					-1,7				
Corrected glare indices referring to 288 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	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93
2	108	103	99	95	106	101	98	94	98	95	92	95	93	90	92	90	88	87
3	103	96	91	87	101	95	90	86	92	88	85	90	86	84	87	85	82	81
4	97	90	85	80	96	89	84	80	87	82	79	85	81	78	83	80	77	76
5	93	85	79	75	91	84	78	74	82	77	74	80	76	73	79	75	72	71
6	89	80	74	70	87	79	74	70	78	73	69	76	72	69	75	71	68	67
7	85	76	70	66	83	75	69	65	74	69	65	72	68	65	71	67	64	63
8	81	72	66	62	80	71	66	62	70	65	62	69	65	61	68	64	61	60
9	77	68	63	59	76	68	62	59	67	62	58	66	61	58	65	61	58	57
10	74	65	60	56	73	65	59	56	64	59	56	63	59	55	62	58	55	54

LAMPS (number of lamps)

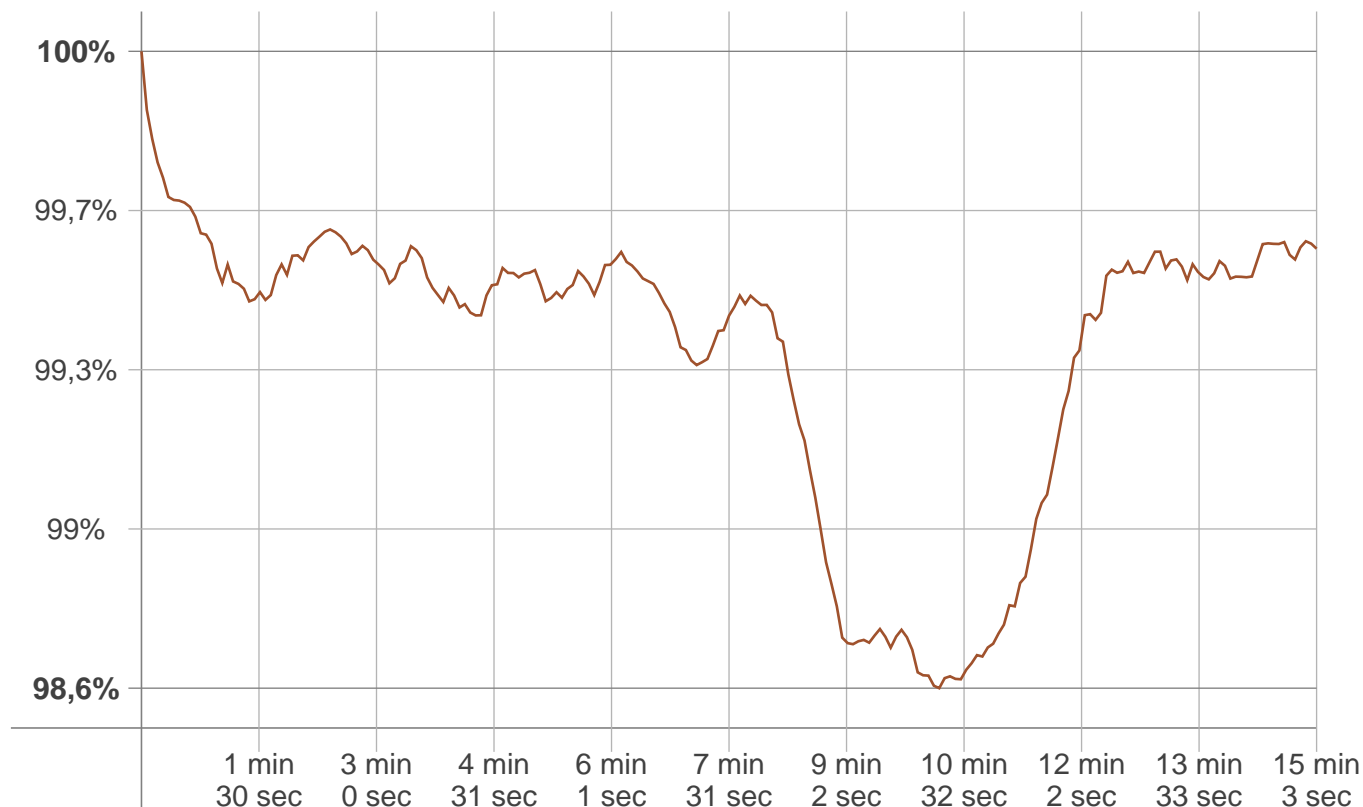
Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	85,7 lm	60,9 lm	42,5 lm	27,9 lm	12,1 lm	2,79 lm	1,11 lm	0,690 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,025 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm

Warmup curve



Warmup result

Warmup time:	15 min 3 sec
Warmup variation	-1,4%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
2763 K	+1 K	2764 K

Output change

Output start	Output change	Output end
290 lm	-1 lm	288 lm