

Light efficiency:

38 Lumen/Watt

Light quality:

CRI: 81,4

Color temperature:

2743 K

Output: 94,0 lm

Peak: 183 cd

Power: 2,4 W

PF: 0,76



Product name:

brilliance 230V 35 Grad

Item number:

30406.857.35.52

Date and time:

18.07.2017 12:12:00

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

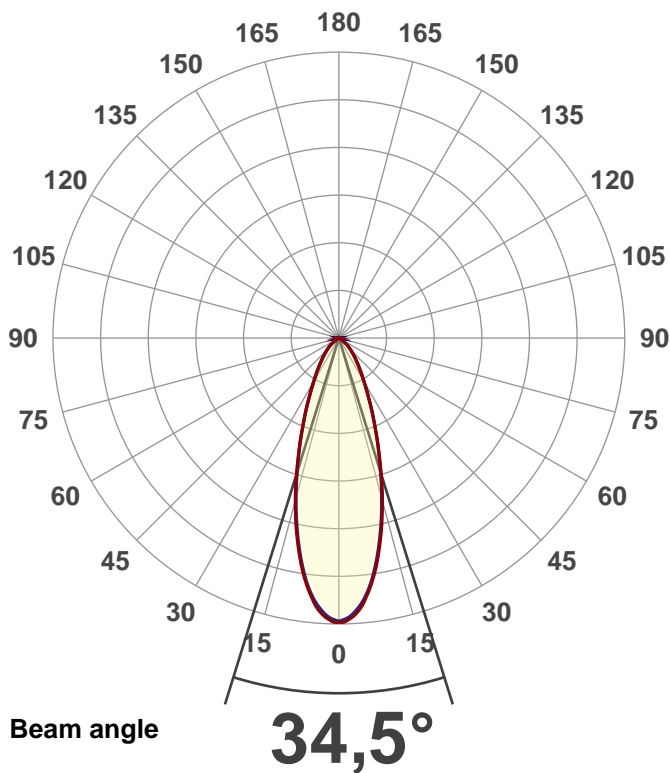
Master of Engineering

Pruefort:

Lichtlabor

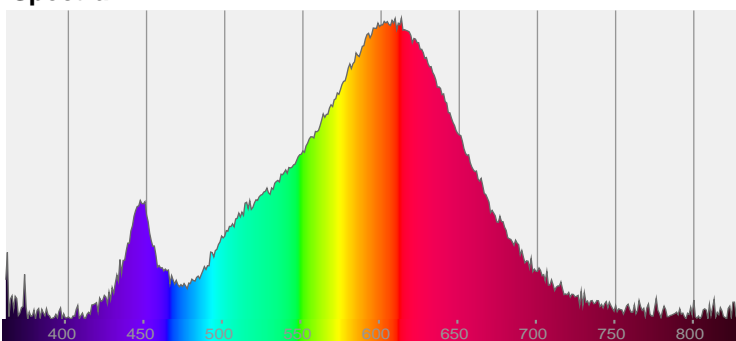
Gaustrasse13-15

55411 Bingen am Rhein

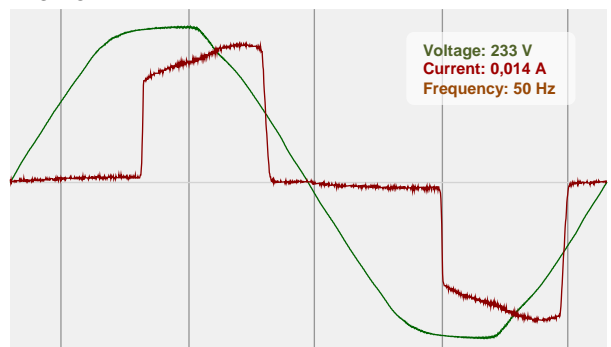


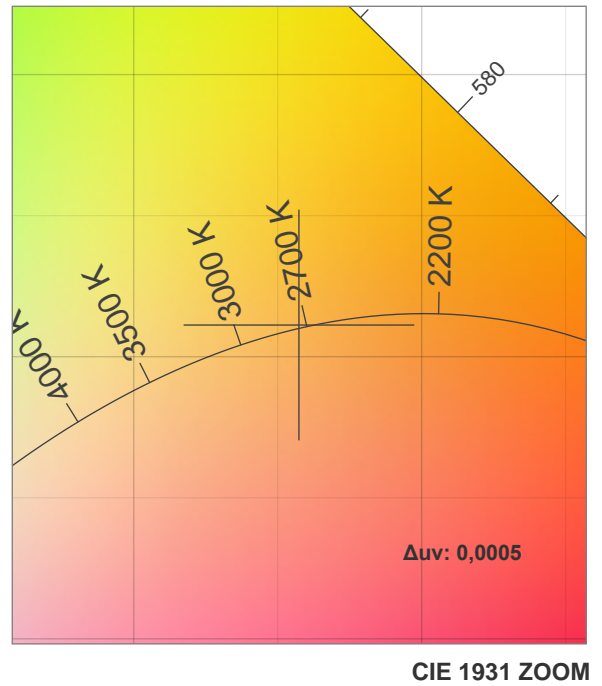
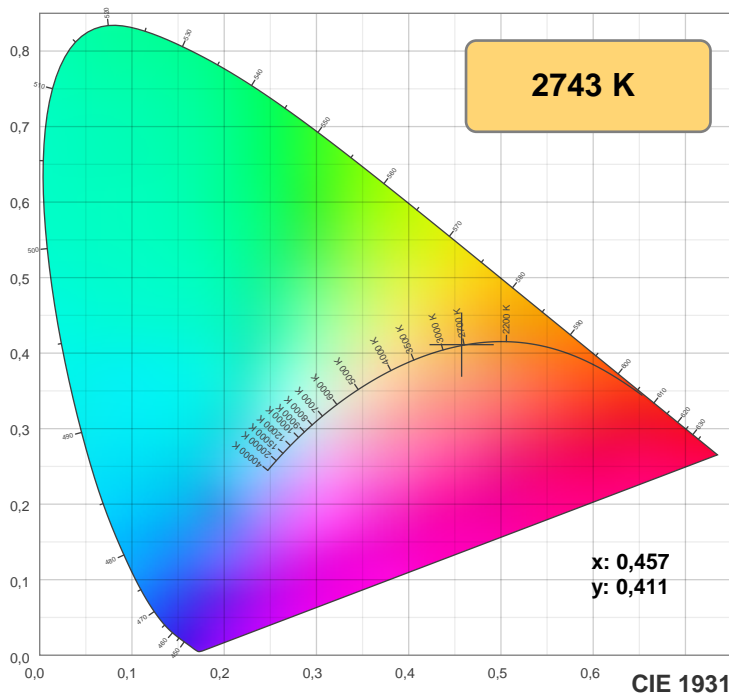
CIE 1931
x: 0,457
y: 0,411

Spectra

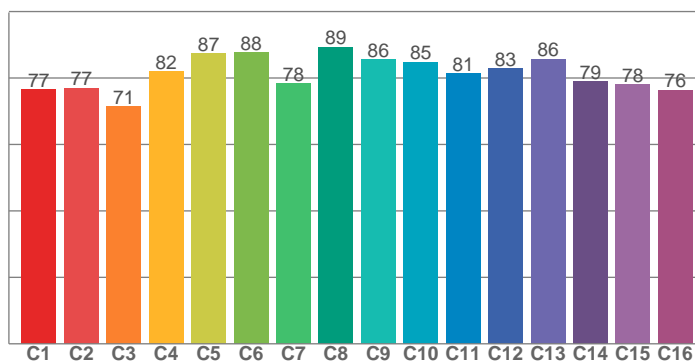


Power

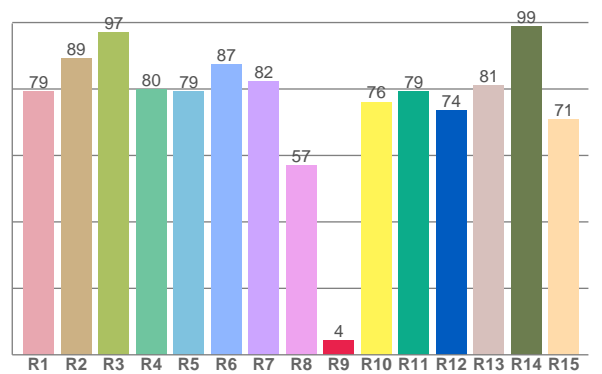




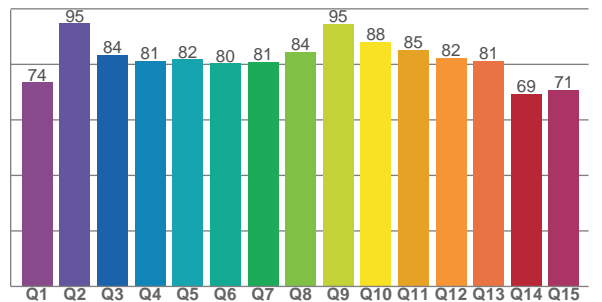
TM30: 81,3



CRI: 81,4 (R1-R8)



CQS: 80,6



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
79,2	89,2	97,2	80,0	79,2	87,3	82,3	57,1	4,4	76,1	79,4	73,6	81,2	98,7	70,9

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
76,6	77,0	71,5	81,9	87,3	87,7	78,4	89,3	85,6	84,8	81,3	83,0	85,7	79,0	78,0	76,4

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
73,5	94,8	83,5	81,1	81,8	80,3	80,8	84,5	94,7	88,1	85,1	82,4	81,3	69,5	70,7

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
2743 K	81,4	4,4	81,3	97,4	80,6	0,457	0,411	0,261	0,351	0,0005

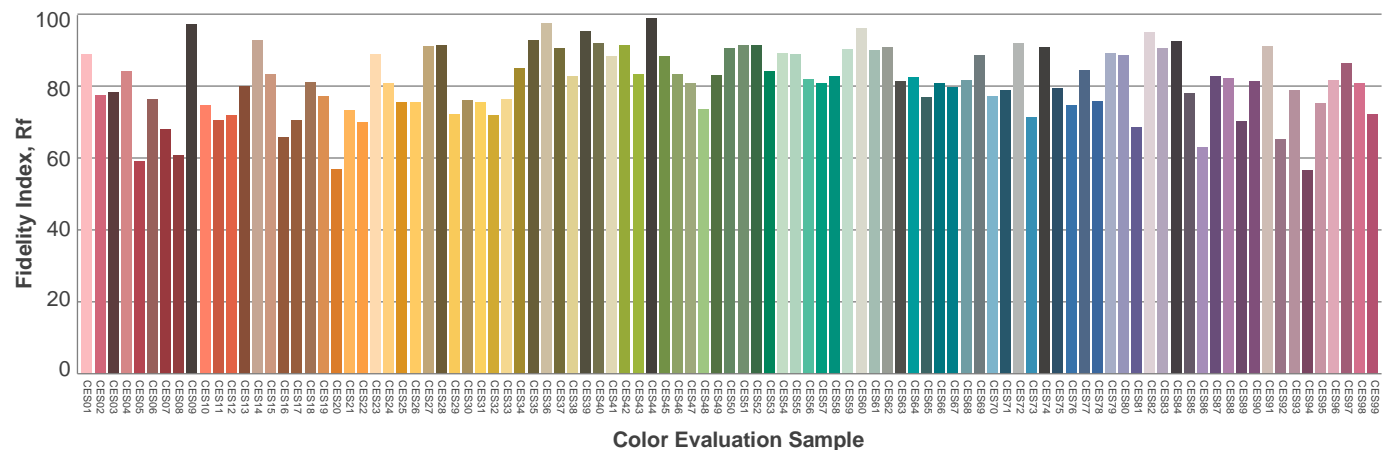
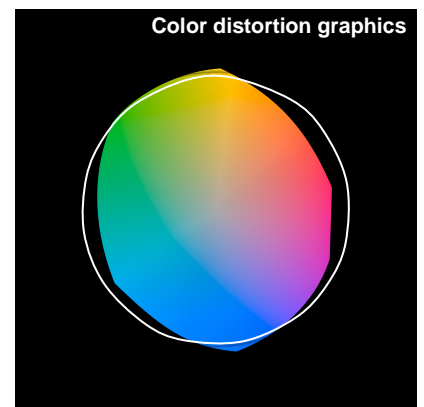
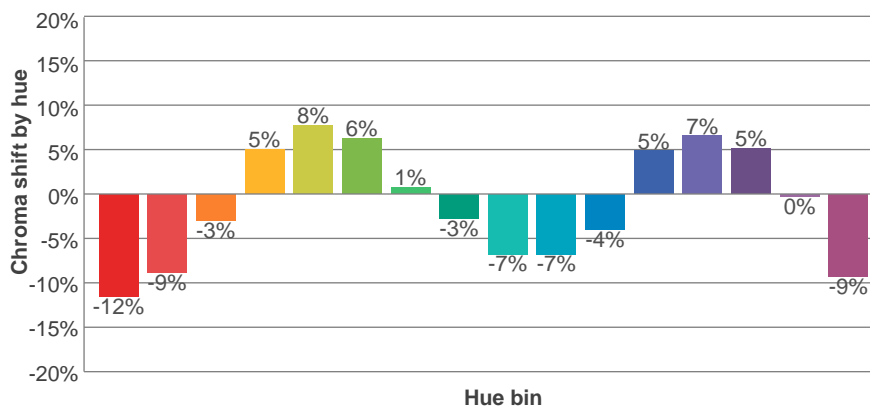
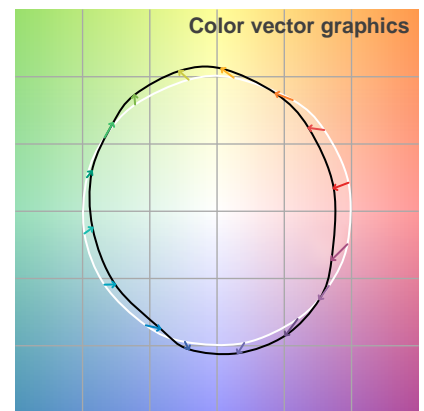
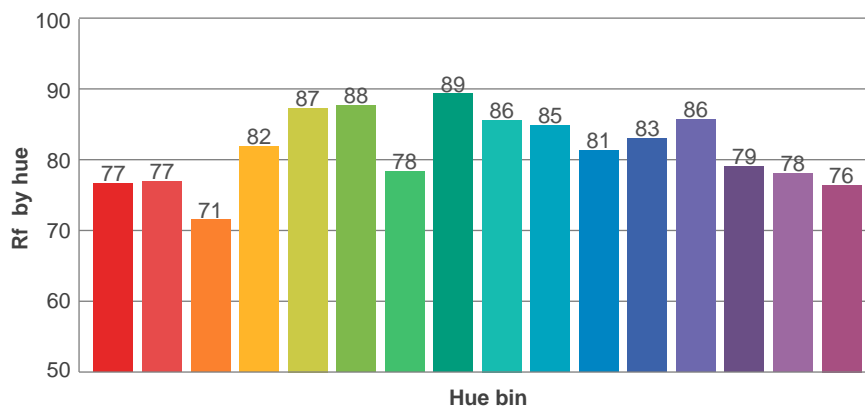
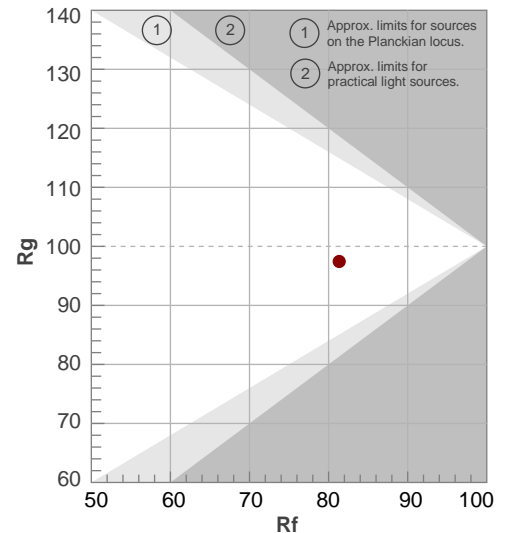
Rf 81,3

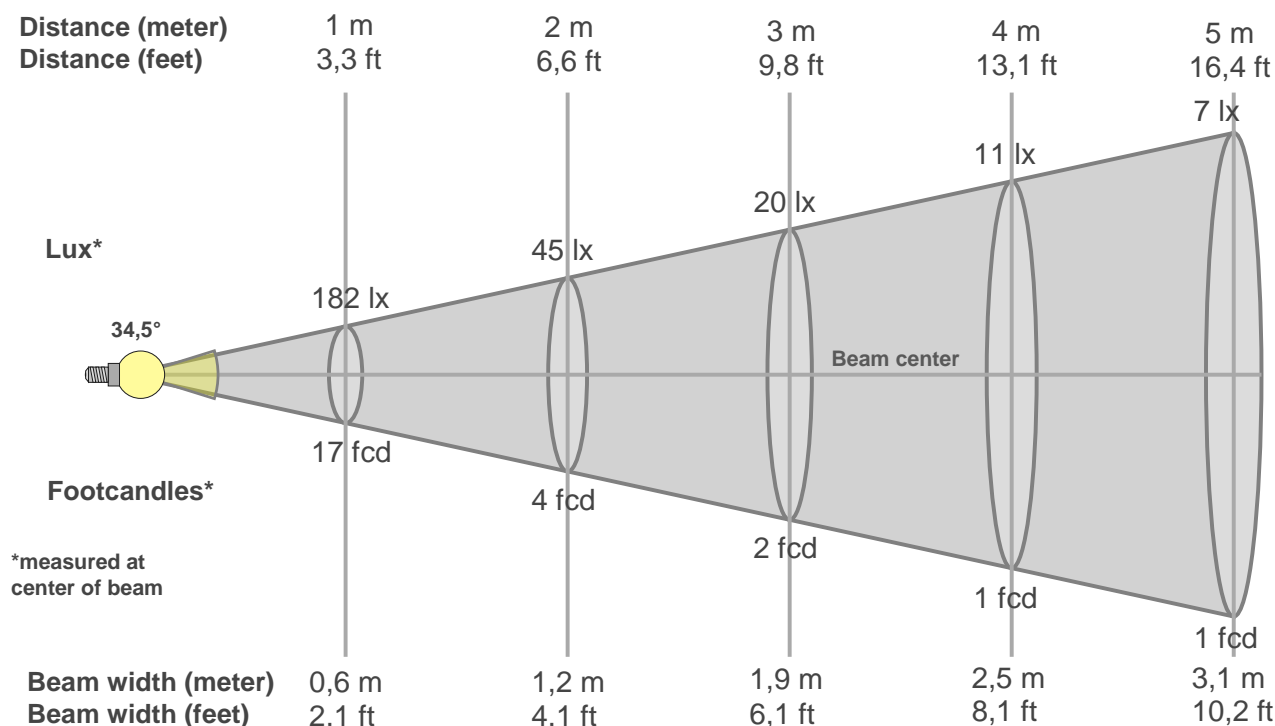
Fidelity index Rf

Rg 97,4

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	77	-12%	-2%
2	77	-9%	8%
3	71	-3%	13%
4	82	5%	10%
5	87	8%	6%
6	88	6%	-3%
7	78	1%	-12%
8	89	-3%	-5%
9	86	-7%	-3%
10	85	-7%	4%
11	81	-4%	10%
12	83	5%	4%
13	86	7%	-6%
14	79	5%	-14%
15	78	0%	-12%
16	76	-9%	-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
182lx	45lx	20lx	11lx	7lx	5lx	4lx	3lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx	0lx
16,9fcd	4,2fcd	1,9fcd	1,1fcd	0,7fcd	0,5fcd	0,3fcd	0,3fcd	0,2fcd	0,2fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0fcd	0fcd

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°
182	180	175	167	156	143	129	115	101	86	74	62	53	45	38	32	28	24	20	18
100%	99%	97%	92%	86%	79%	71%	63%	55%	47%	41%	34%	29%	25%	21%	18%	15%	13%	11%	10%

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°
182	179	173	165	155	142	127	113	99	85	73	62	53	44	38	32	28	24	21	18
100%	98%	95%	91%	85%	78%	70%	62%	54%	47%	40%	34%	29%	24%	21%	18%	15%	13%	11%	10%

Intensities in 180° c-plane

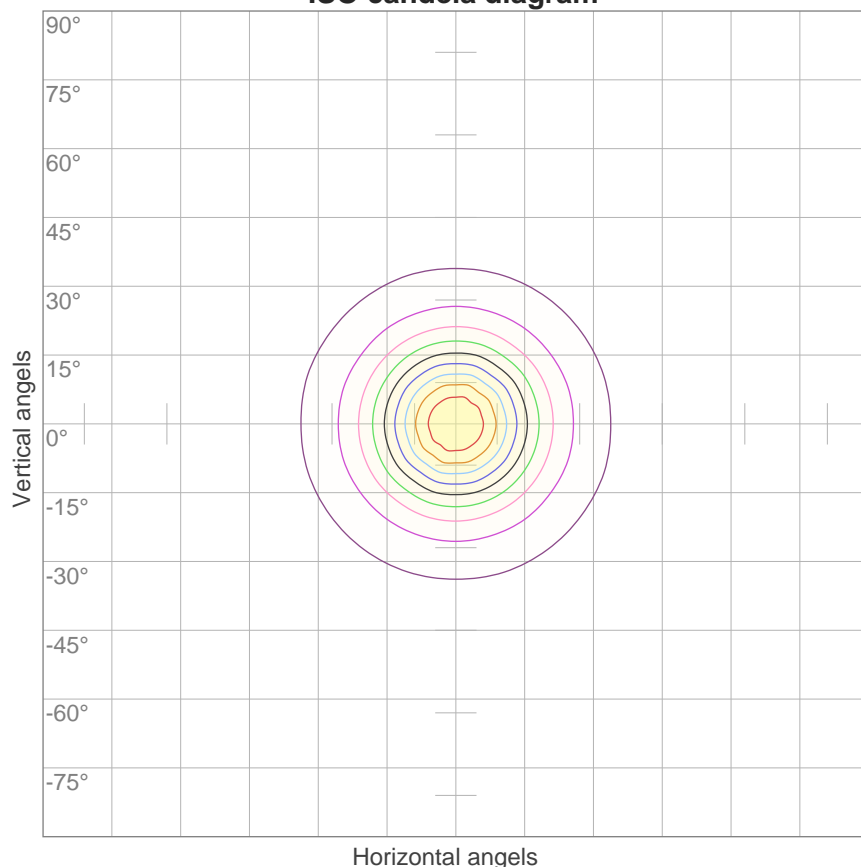
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
182	180	175	167	156	143	129	115	101	86	74	62	53	45	38	32	28	24	20	18
100%	99%	97%	92%	86%	79%	71%	63%	55%	47%	41%	34%	29%	25%	21%	18%	15%	13%	11%	10%

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°
182	179	173	165	155	142	127	113	99	85	73	62	53	44	38	32	28	24	21	18
100%	98%	95%	91%	85%	78%	70%	62%	54%	47%	40%	34%	29%	24%	21%	18%	15%	13%	11%	10%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
34,5°	75,4°	105,6°	98,4%	91,5%

ISO candela diagram



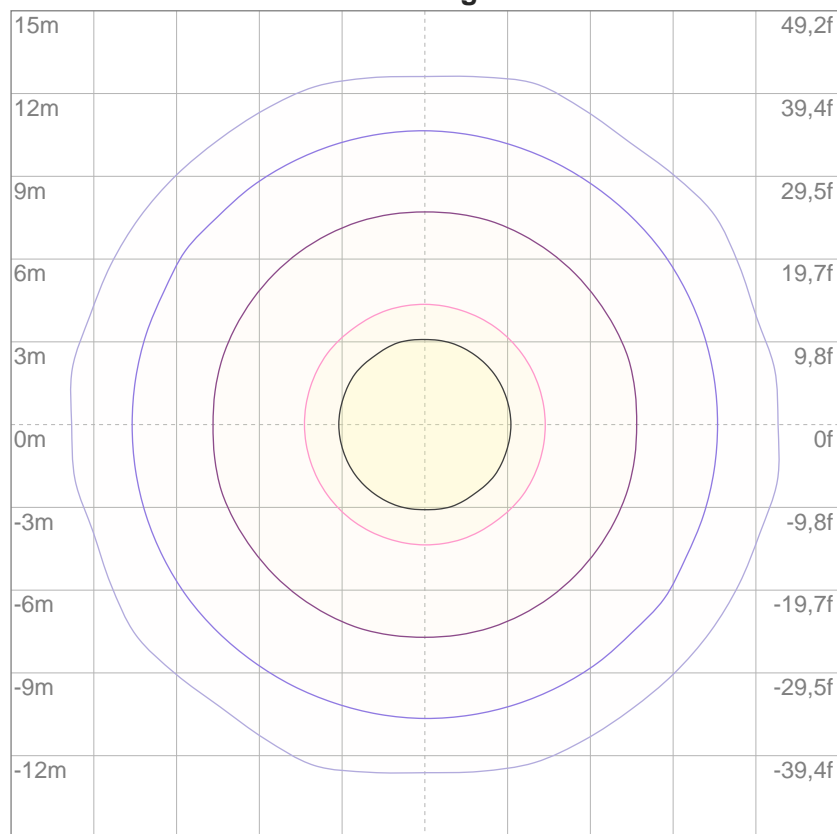
10%	18 cd
20%	36 cd
30%	54 cd
40%	73 cd
50%	91 cd
60%	109 cd
70%	127 cd
80%	145 cd
90%	163 cd

Conditions:

Number of c-planes: 20

Candela at center: 182 cd

ISO lux diagram



3%	54,5m lx
5%	90,8m lx
10%	0,182 lx
30%	0,545 lx
50%	0,908 lx

Conditions:

Number of c-planes: 20

Lux at center: 1,82 lx

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

Glare Evaluation According to UGR

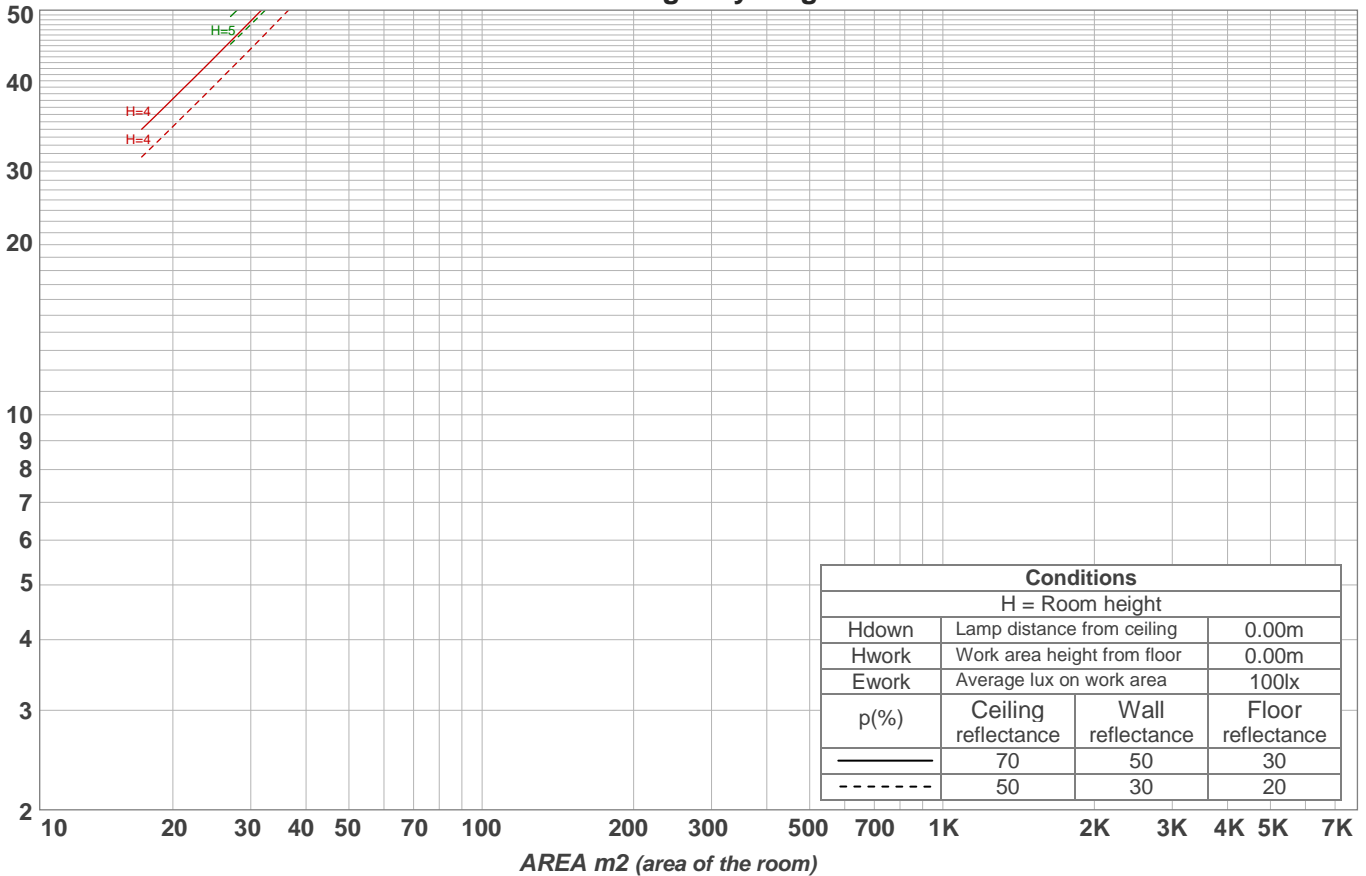
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	12,0	12,8	12,3	13,0	13,2	12,0	12,8	12,3	13,0	13,2
	3H	12,0	12,7	12,2	12,9	13,1	12,0	12,7	12,2	12,9	13,1
	4H	11,9	12,6	12,2	12,9	13,1	11,9	12,6	12,2	12,9	13,1
	6H	11,9	12,5	12,3	12,8	13,1	11,9	12,5	12,3	12,8	13,1
	8H	11,9	12,5	12,3	12,8	13,1	11,9	12,5	12,3	12,8	13,1
	12H	12,0	12,6	12,4	12,9	13,2	12,0	12,6	12,4	12,9	13,2
4H	2H	11,9	12,5	12,2	12,8	13,1	11,9	12,5	12,2	12,8	13,1
	3H	11,9	12,4	12,2	12,7	13,0	11,9	12,4	12,2	12,7	13,0
	4H	11,9	12,4	12,3	12,7	13,0	11,9	12,4	12,3	12,7	13,0
	6H	11,9	12,3	12,3	12,7	13,1	11,9	12,3	12,3	12,7	13,1
	8H	12,0	12,3	12,4	12,7	13,1	12,0	12,3	12,4	12,7	13,1
	12H	12,1	12,4	12,5	12,8	13,2	12,1	12,4	12,5	12,8	13,2
8H	4H	11,8	12,2	12,2	12,6	13,0	11,8	12,2	12,2	12,6	13,0
	6H	11,9	12,2	12,3	12,6	13,0	11,9	12,2	12,3	12,6	13,0
	8H	12,0	12,2	12,5	12,7	13,2	12,0	12,2	12,5	12,7	13,2
	12H	12,2	12,4	12,7	12,9	13,4	12,2	12,4	12,7	12,9	13,4
12H	4H	11,8	12,1	12,2	12,5	12,9	11,8	12,1	12,2	12,5	12,9
	6H	11,9	12,1	12,4	12,6	13,0	11,9	12,1	12,4	12,6	13,0
	8H	12,0	12,2	12,5	12,7	13,2	12,0	12,2	12,5	12,7	13,2
Variation of the observer position for the luminaire distance S											
S = 1,0H		+1,6 / -3,1					+1,6 / -3,1				
S = 1,5H		+3,7 / -4,9					+3,7 / -4,9				
S = 2,0H		+5,6 / -5,5					+5,6 / -5,5				
Standard table		BK01					BK01				
Correction summand		-5,9					-5,9				
Corrected glare indices referring to 94,0 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	96	106	101	98	94	98	95	92	95	93	90	92	90	89	87
3	103	96	91	87	101	95	90	87	92	88	85	90	87	84	87	85	83	81
4	98	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	84	75	70	66	83	75	69	65	74	69	65	72	68	65	71	67	64	63
8	81	72	66	62	80	71	65	62	70	65	61	69	64	61	68	64	61	60
9	77	68	62	58	76	67	62	58	67	62	58	66	61	58	65	61	58	56
10	74	65	59	55	73	64	59	55	64	59	55	63	58	55	62	58	55	54

LAMPS (number of lamps)

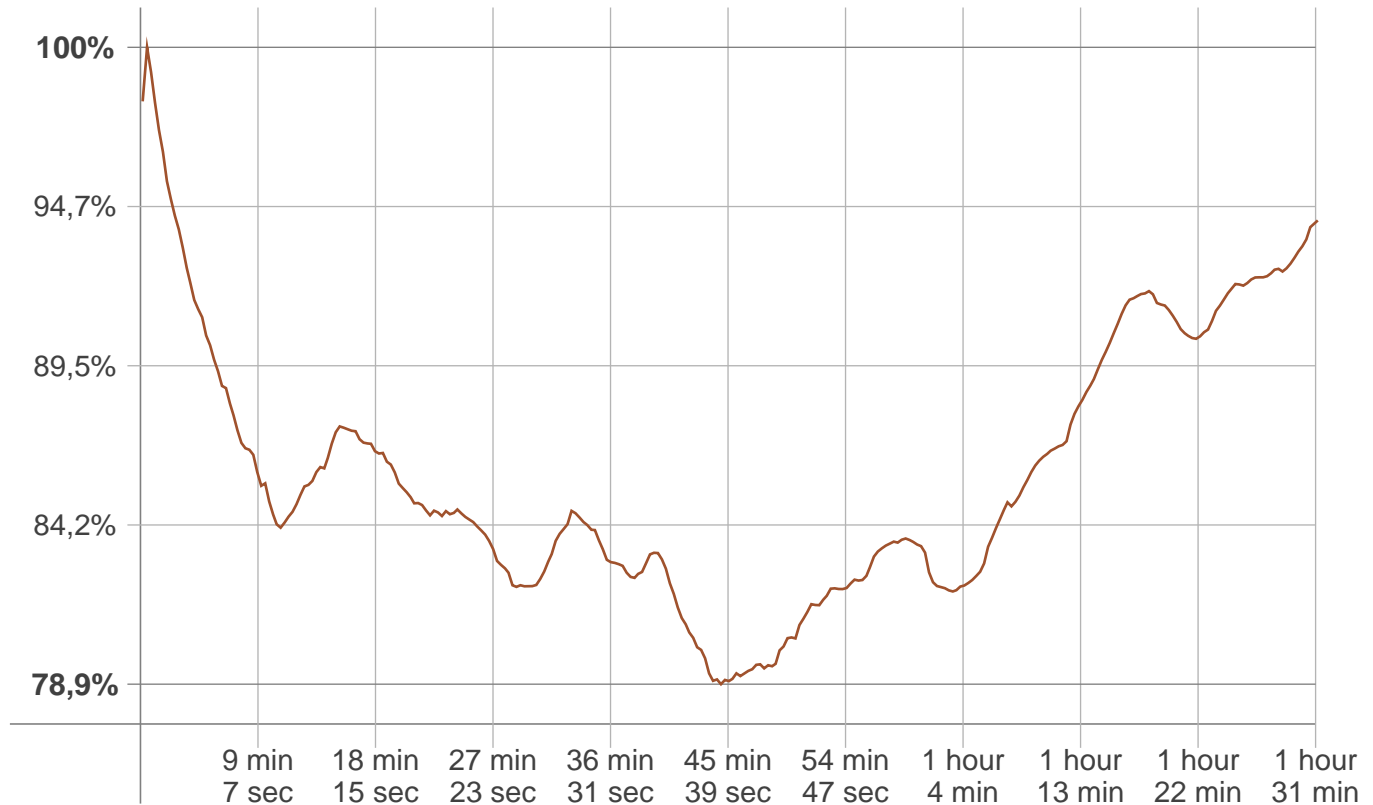
Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	29,3 lm	22,5 lm	14,1 lm	8,23 lm	2,94 lm	0,778 lm	0,408 lm	0,325 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,012 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:	Not completed
Warmup variation	-21,3%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
2732 K	+11 K	2743 K

Output change

Output start	Output change	Output end
84,1 lm	+9,8 lm	94,0 lm