

Light efficiency:



Light quality:



Color temperature:



Output: 188 lm

Peak: 332 cd

Power: 5,8 W

PF: 0,99



Product name:

**brilliance 230V 25 Grad**

Item number:

**30406.857.25.52**

Date and time:

**18.07.2017 09:53:50**

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**

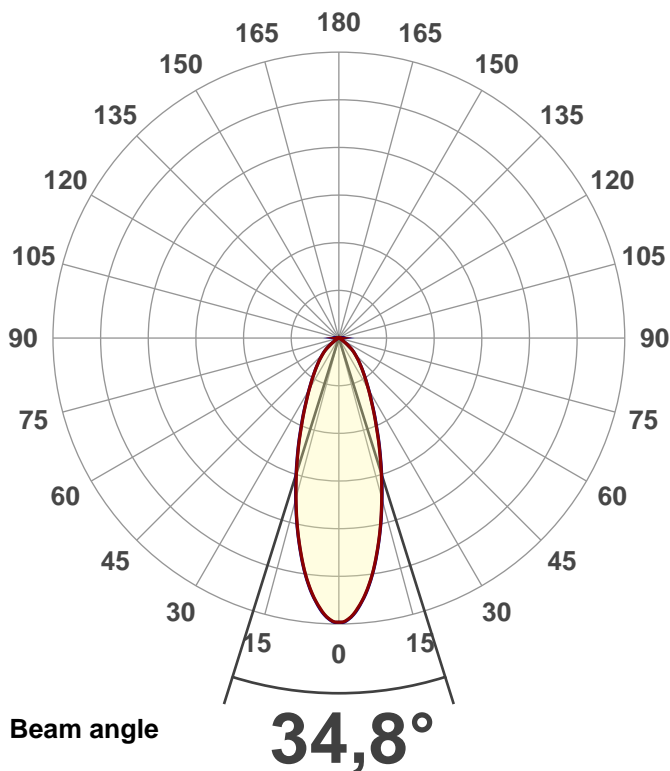
**Master of Engineering**

**Pruefort:**

**Lichtlabor**

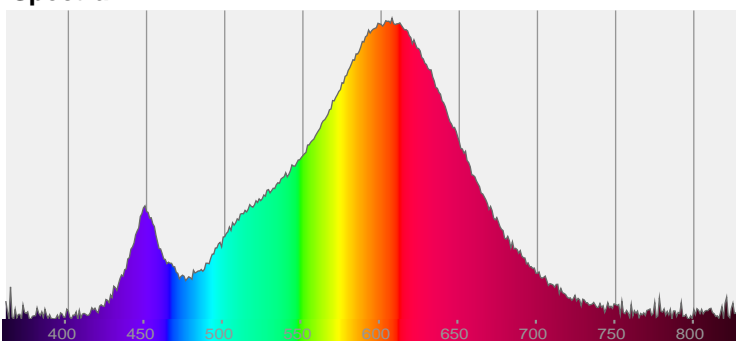
**Gaustrasse13-15**

**55411 Bingen am Rhein**

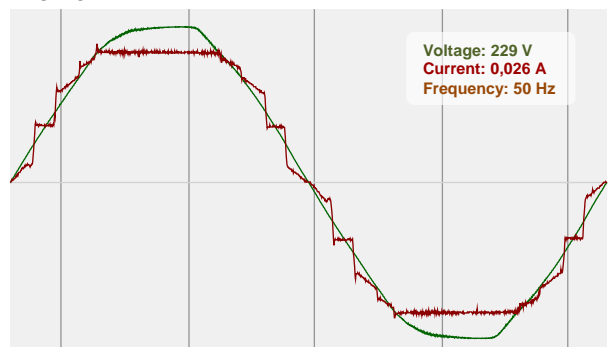


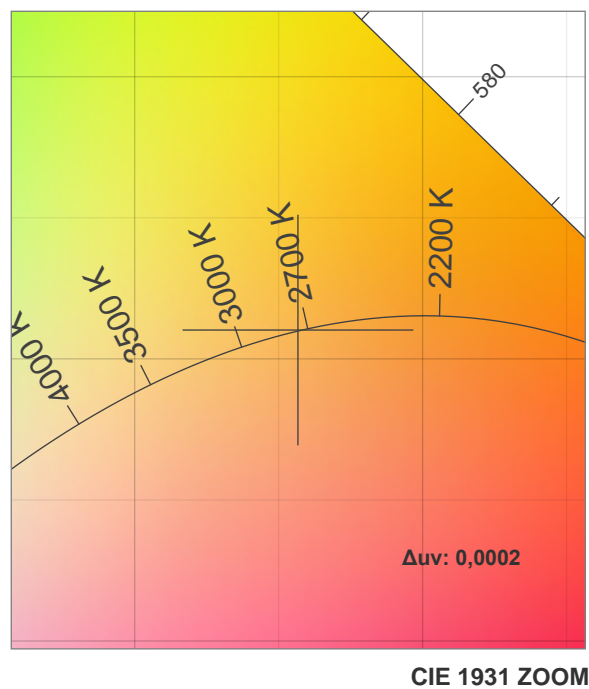
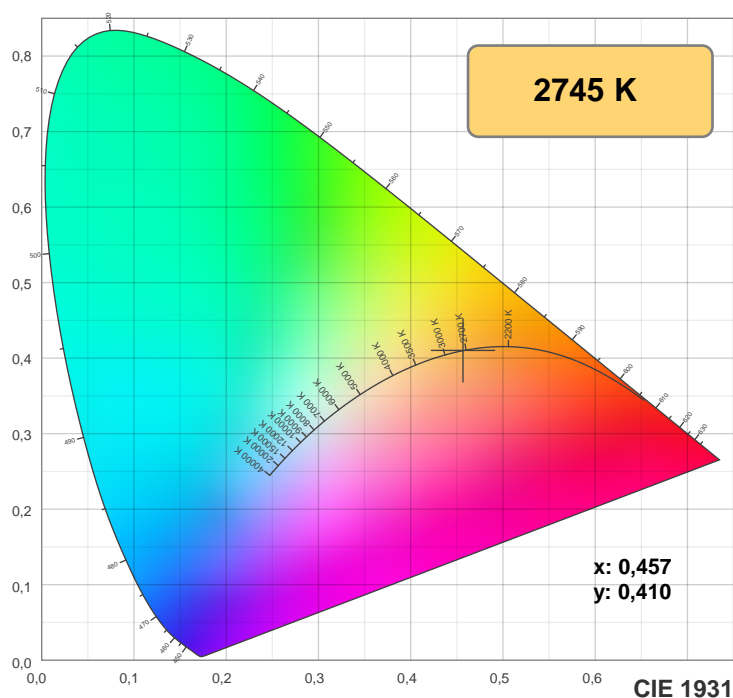
CIE 1931  
x: 0,457  
y: 0,410

Spectra

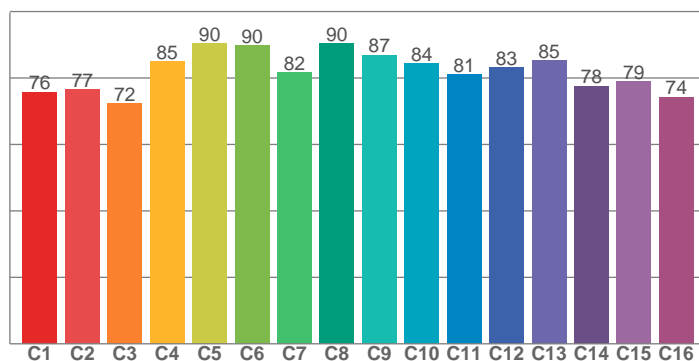


Power

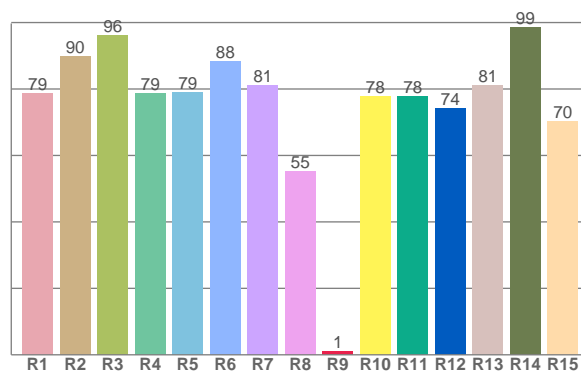




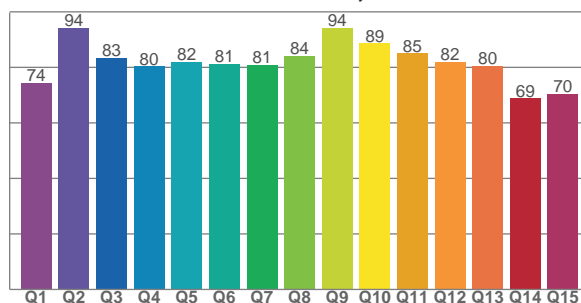
TM30: 82,0



CRI: 80,9 (R1-R8)



CQS: 80,5



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
78,8	89,9	96,2	78,7	78,9	88,4	81,1	55,1	1,1	77,8	77,9	74,1	81,2	98,5	70,2

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
75,8	76,5	72,3	85,0	90,4	89,9	81,7	90,4	86,9	84,3	81,0	83,2	85,2	77,6	79,0	74,3

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
74,3	94,2	83,4	80,3	81,8	81,3	80,9	84,1	94,2	88,6	85,0	81,9	80,5	68,8	70,5

## 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
2745 K	80,9	1,1	82,0	96,1	80,5	0,457	0,410	0,261	0,351	0,0002

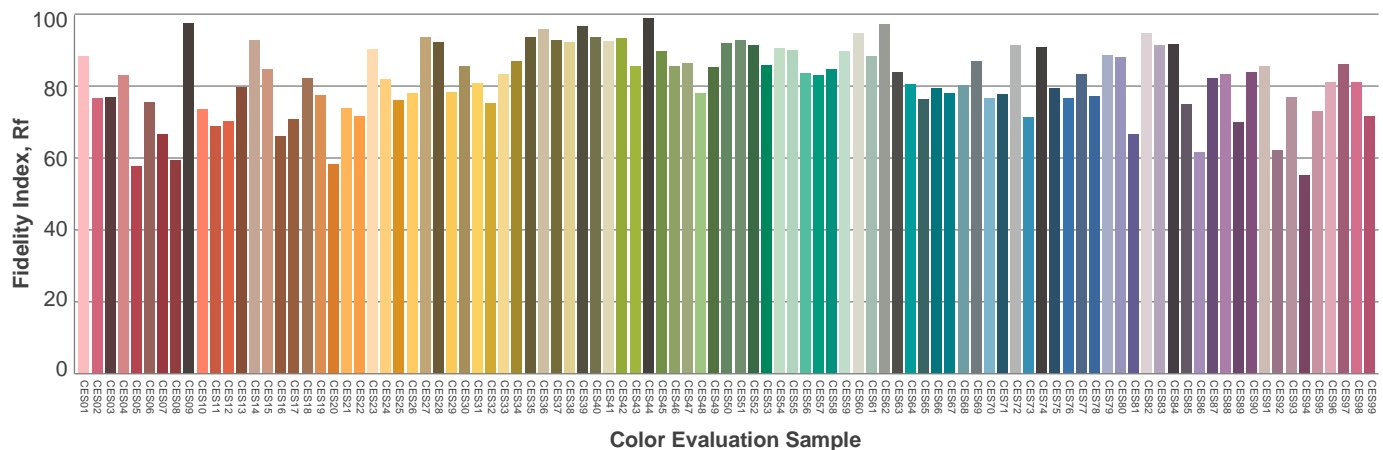
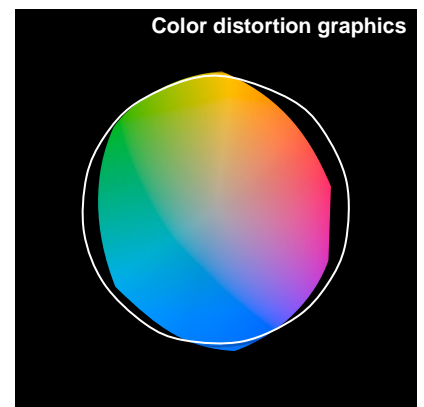
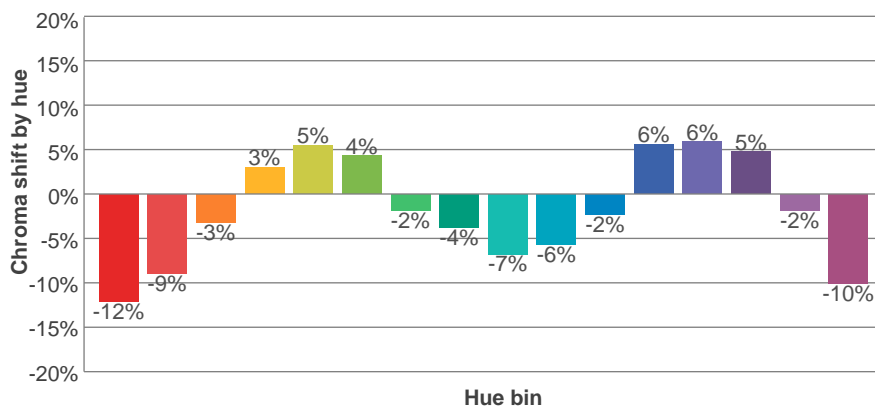
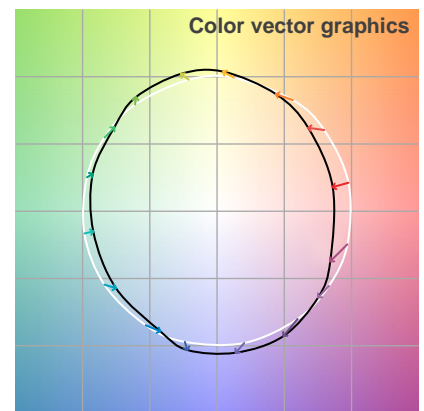
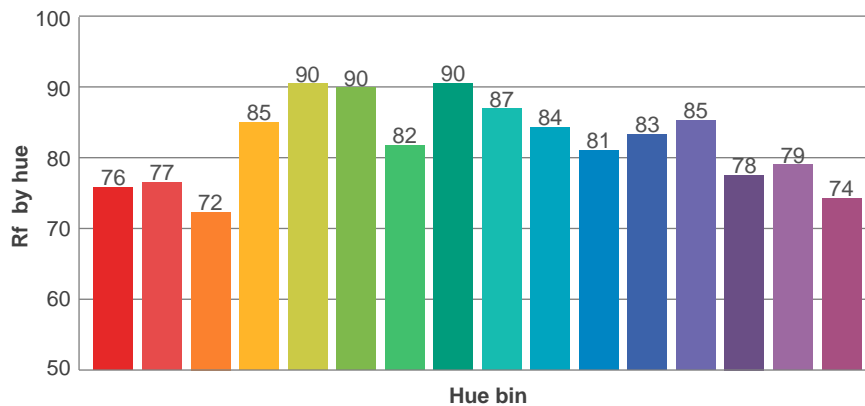
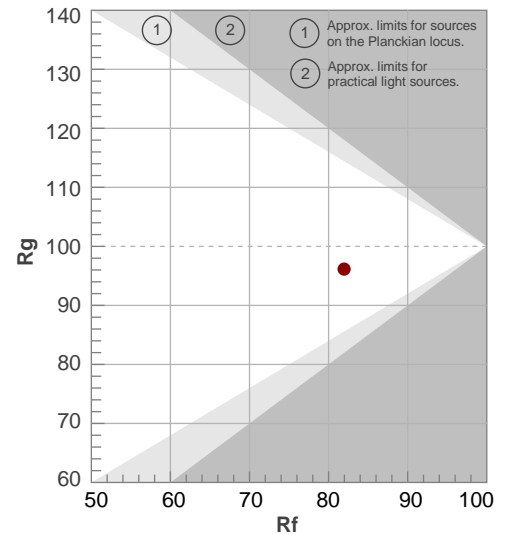
**Rf 82,0**

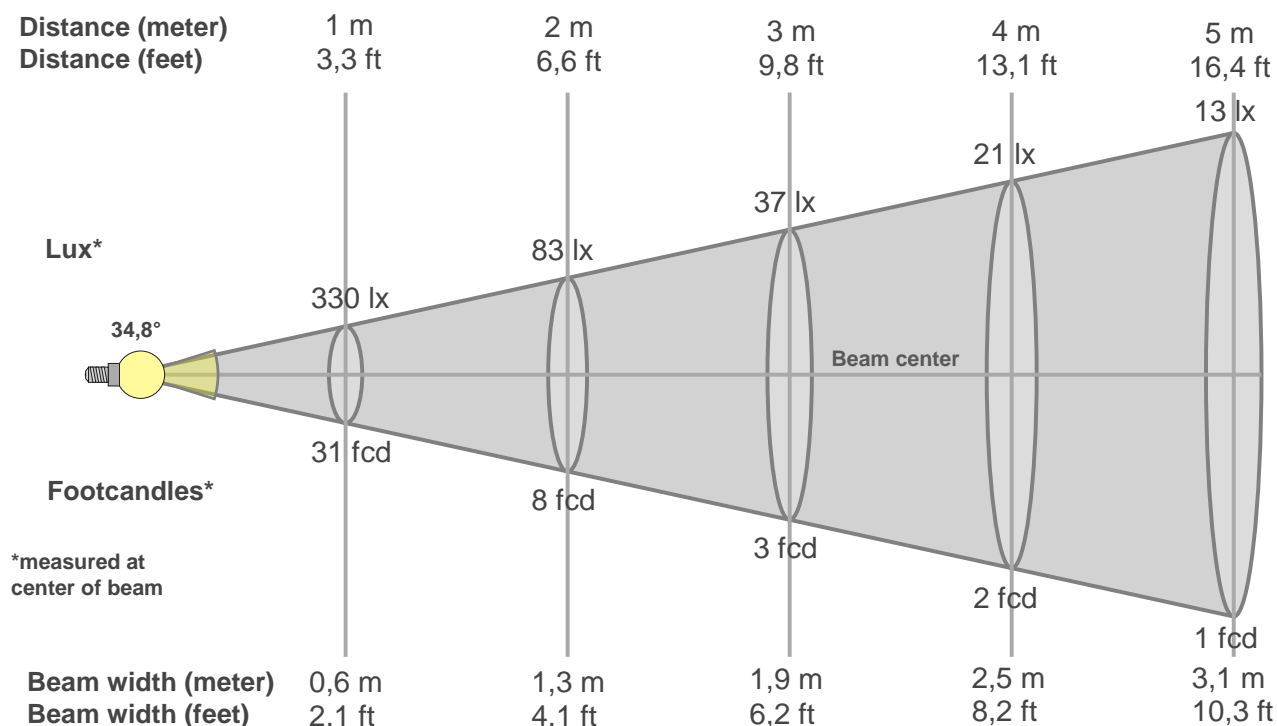
Fidelity index Rf

**Rg 96,1**

Gamut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	76	-12%	-1%
2	77	-9%	8%
3	72	-3%	13%
4	85	3%	9%
5	90	5%	5%
6	90	4%	-3%
7	82	-2%	-10%
8	90	-4%	-3%
9	87	-7%	0%
10	84	-6%	7%
11	81	-2%	12%
12	83	6%	3%
13	85	6%	-8%
14	78	5%	-16%
15	79	-2%	-12%
16	74	-10%	-15%





#### 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
330lx	83lx	37lx	21lx	13lx	9lx	7lx	5lx	4lx	3lx	3lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx
30,7fcd	7,7fcd	3,4fcd	1,9fcd	1,2fcd	0,9fcd	0,6fcd	0,5fcd	0,4fcd	0,3fcd	0,3fcd	0,2fcd	0,2fcd	0,2fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd

#### 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°
330	327	315	298	278	254	230	205	181	159	138	120	104	90	78	69	60	54	47	42
100%	99%	95%	90%	84%	77%	70%	62%	55%	48%	42%	36%	31%	27%	24%	21%	18%	16%	14%	13%

#### 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°
330	327	316	299	279	255	230	206	182	160	140	121	105	91	79	69	61	54	47	42
100%	99%	96%	91%	84%	77%	70%	62%	55%	48%	42%	37%	32%	28%	24%	21%	18%	16%	14%	13%

#### Intensities in 180° c-plane

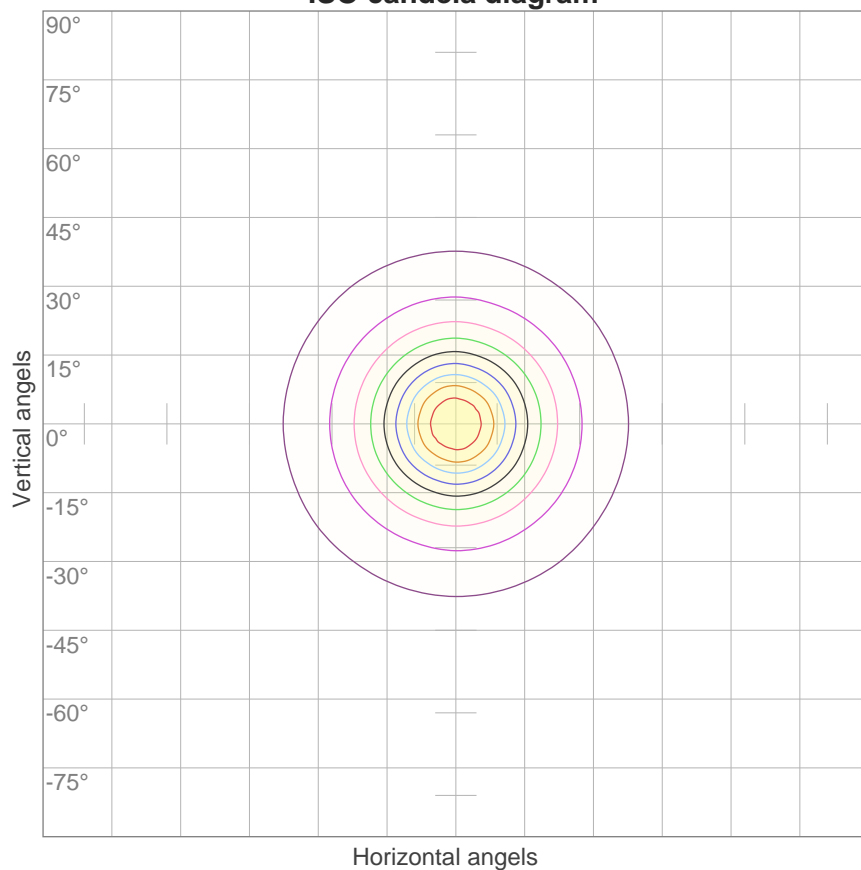
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
330	327	315	298	278	254	230	205	181	159	138	120	104	90	78	69	60	54	47	42
100%	99%	95%	90%	84%	77%	70%	62%	55%	48%	42%	36%	31%	27%	24%	21%	18%	16%	14%	13%

#### 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°
330	327	316	299	279	255	230	206	182	160	140	121	105	91	79	69	61	54	47	42
100%	99%	96%	91%	84%	77%	70%	62%	55%	48%	42%	37%	32%	28%	24%	21%	18%	16%	14%	13%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
34,8°	83,5°	109,1°	98,4%	89,8%

ISO candela diagram



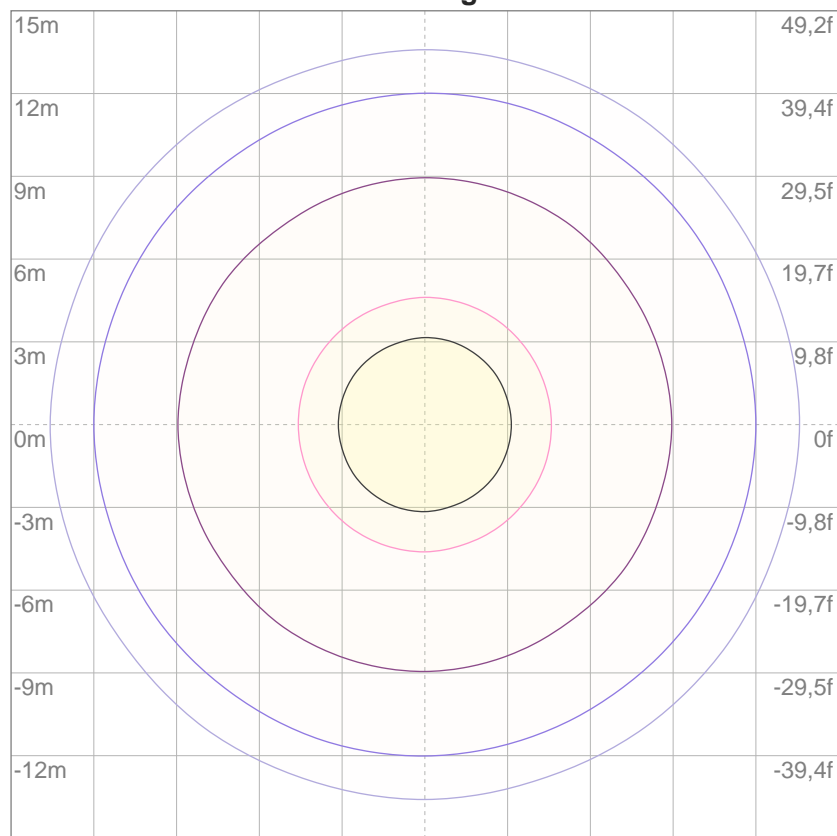
10%	33 cd
20%	66 cd
30%	99 cd
40%	132 cd
50%	165 cd
60%	198 cd
70%	231 cd
80%	264 cd
90%	297 cd

Conditions:

Number of c-planes: 20

Candela at center: 330 cd

ISO lux diagram



3%	99,1m lx
5%	0,165 lx
10%	0,330 lx
30%	0,991 lx
50%	1,65 lx

Conditions:

Number of c-planes: 20

Lux at center: 3,30 lx

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

### Glare Evaluation According to UGR

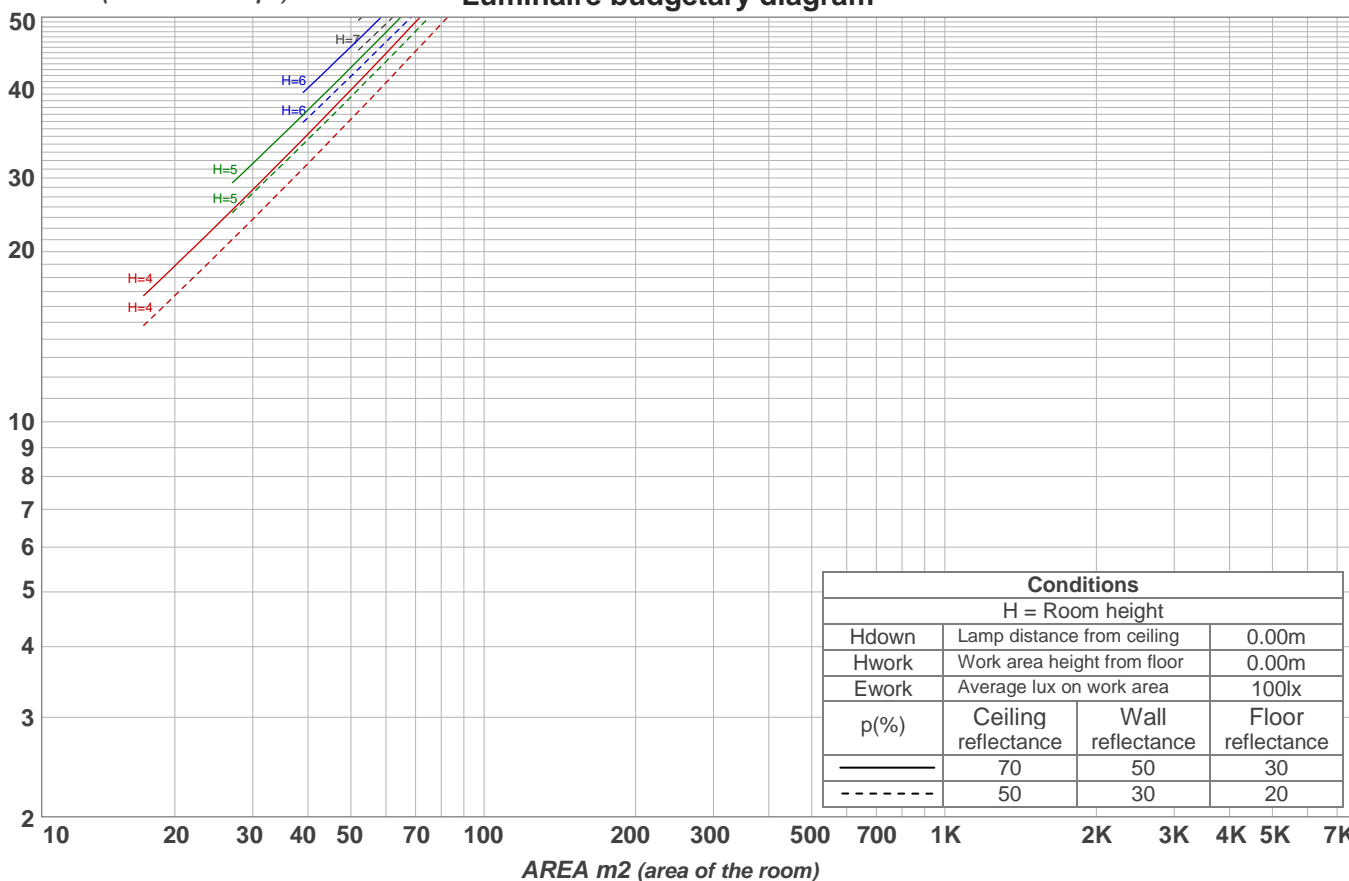
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	15,7	16,5	16,0	16,7	16,9	15,7	16,5	16,0	16,7	16,9
	3H	15,6	16,3	15,9	16,6	16,8	15,6	16,3	15,9	16,6	16,8
	4H	15,6	16,3	15,9	16,5	16,8	15,6	16,3	15,9	16,5	16,8
	6H	15,5	16,2	15,9	16,4	16,7	15,5	16,2	15,9	16,4	16,7
	8H	15,5	16,1	15,9	16,4	16,7	15,5	16,1	15,9	16,4	16,7
	12H	15,5	16,1	15,9	16,4	16,7	15,5	16,1	15,9	16,4	16,7
4H	2H	15,6	16,3	15,9	16,5	16,8	15,6	16,3	15,9	16,5	16,8
	3H	15,5	16,1	15,9	16,4	16,7	15,5	16,1	15,9	16,4	16,7
	4H	15,5	16,0	15,9	16,3	16,6	15,5	16,0	15,9	16,3	16,6
	6H	15,5	15,9	15,9	16,2	16,6	15,5	15,9	15,9	16,2	16,6
	8H	15,5	15,8	15,9	16,2	16,6	15,5	15,8	15,9	16,2	16,6
	12H	15,5	15,8	15,9	16,2	16,7	15,5	15,8	15,9	16,2	16,7
8H	4H	15,4	15,8	15,8	16,1	16,5	15,4	15,8	15,8	16,1	16,5
	6H	15,4	15,7	15,8	16,1	16,5	15,4	15,7	15,8	16,1	16,5
	8H	15,4	15,7	15,9	16,1	16,6	15,4	15,7	15,9	16,1	16,6
	12H	15,5	15,7	16,0	16,2	16,7	15,5	15,7	16,0	16,2	16,7
12H	4H	15,4	15,7	15,8	16,1	16,5	15,4	15,7	15,8	16,1	16,5
	6H	15,4	15,6	15,8	16,0	16,5	15,4	15,6	15,8	16,0	16,5
	8H	15,4	15,6	15,9	16,1	16,6	15,4	15,6	15,9	16,1	16,6
Variation of the observer position for the luminaire distance S											
S = 1,0H		+1,4 / -3,6					+1,4 / -3,6				
S = 1,5H		+3,4 / -6,6					+3,4 / -6,6				
S = 2,0H		+5,3 / -7,4					+5,3 / -7,4				
Standard table		BK00					BK00				
Correction summand		-2,7					-2,7				
Corrected glare indices referring to 188 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	110	108	105	111	108	106	104	104	102	101	100	99	98	97	96	95	93
2	107	102	98	95	105	101	97	94	97	94	91	94	92	90	92	89	88	86
3	102	95	90	86	100	94	89	85	91	87	84	89	85	82	86	84	81	80
4	97	89	83	79	95	88	82	78	85	81	77	83	80	76	82	78	75	74
5	92	83	77	73	90	82	76	72	80	75	72	79	74	71	77	73	70	69
6	87	78	72	67	86	77	71	67	76	71	67	74	70	66	73	69	66	64
7	83	73	67	63	81	73	67	63	71	66	62	70	66	62	69	65	62	60
8	79	69	63	59	78	69	63	59	68	62	59	67	62	58	66	61	58	57
9	75	66	60	56	74	65	59	56	64	59	55	63	59	55	62	58	55	54
10	72	62	56	53	71	62	56	53	61	56	52	60	56	52	60	55	52	51

LAMPS (number of lamps)

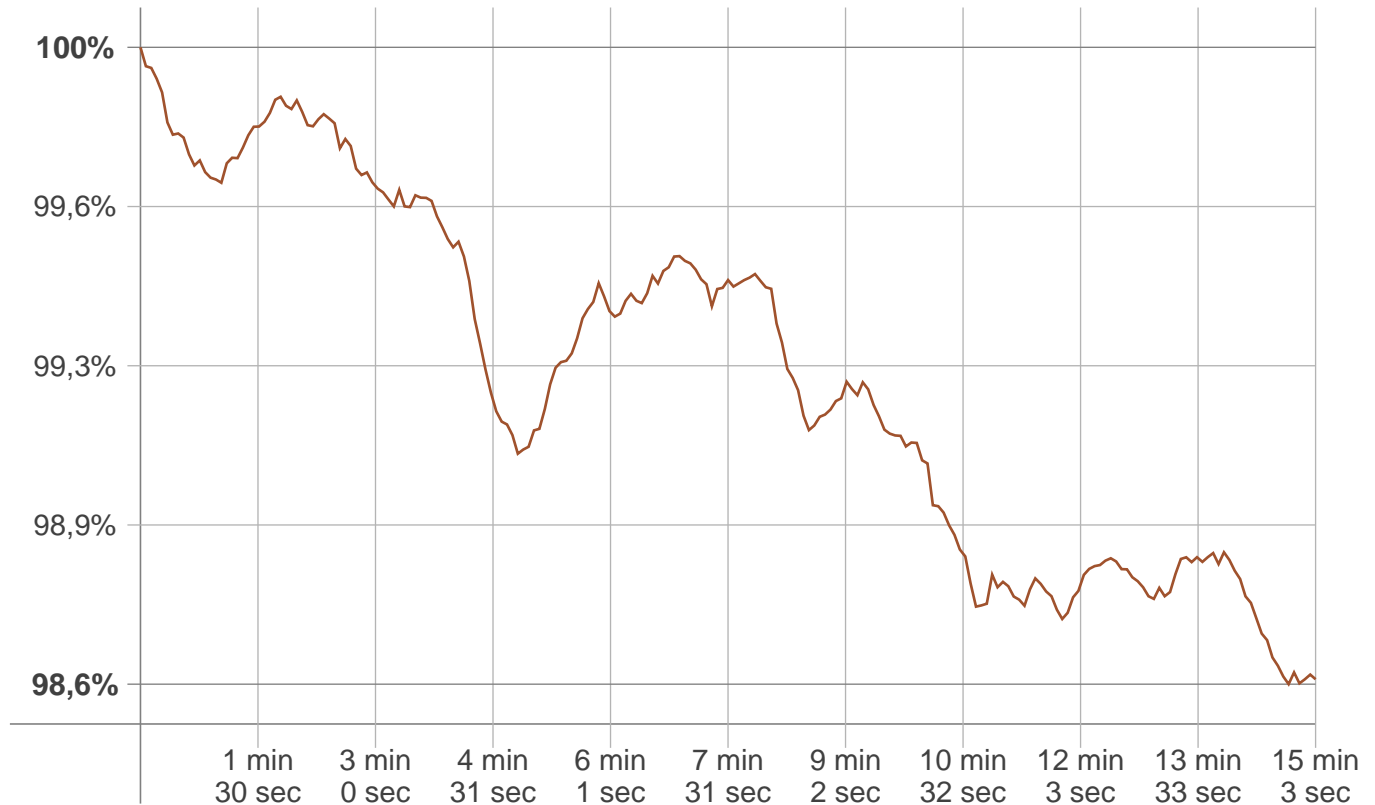
Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	53,2 lm	44,9 lm	31,7 lm	20,5 lm	7,35 lm	1,62 lm	0,755 lm	0,537 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,021 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
2745 K	0 K	2745 K

### Output change

Output start	Output change	Output end
190 lm	-2 lm	188 lm