

Light efficiency:

84 Lumen/Watt

Light quality:

CRI: 93,3

Color temperature:

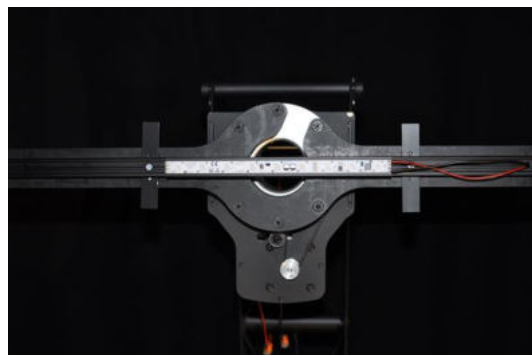
2990 K

Output: 523 lm

Peak: 2260 cd

Power: 6,2 W

PF: 1,0



Product name:

Focus-4-F1C-D0258-930-LSMF-10772

Item number:

FLNP-F1C-D0258-930-LSMF-10772

Date and time:

08.12.2020 12:54:53

Description:

Rank: P4-7D2

Bestromung: 220mA

Toleranzen:

Lumen +/-4%

Candela +/-2,5%

Colour Temp +/-35 Grad K

CRI +/-0,7

Angular Resolution 1 Grad Step

Last Calibration 20.05.2019

Abstand:248mm

Pruefer:

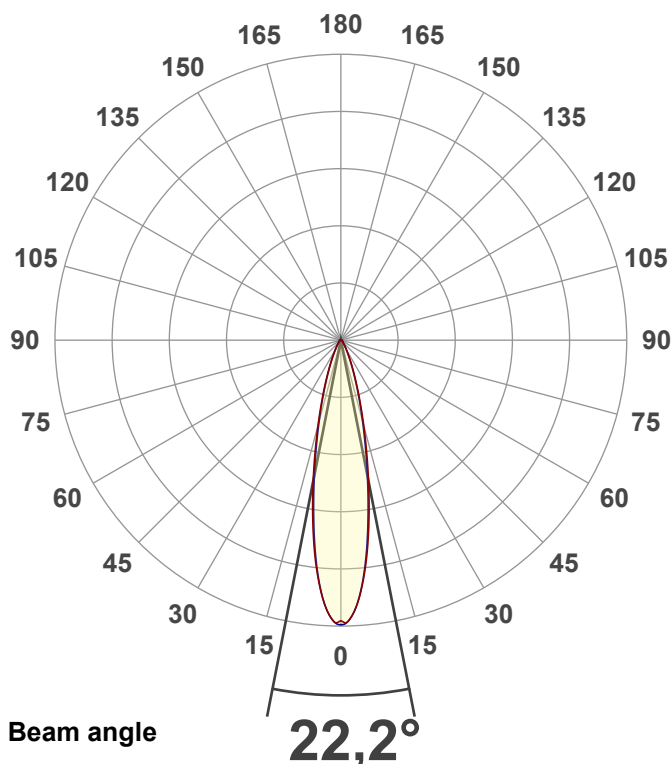
Peter Ulrich

Pruefort:

Lichtlabor

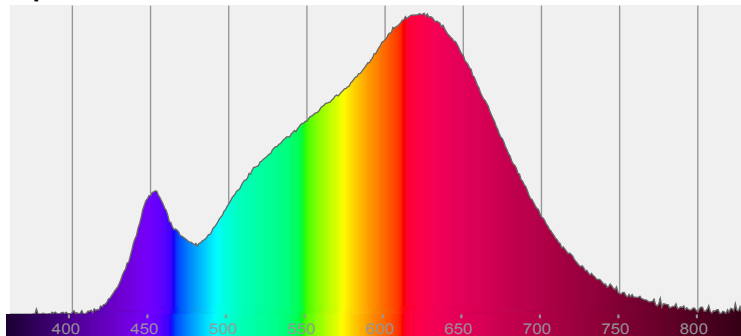
Gaustrasse13

55411 Bingen am Rhein

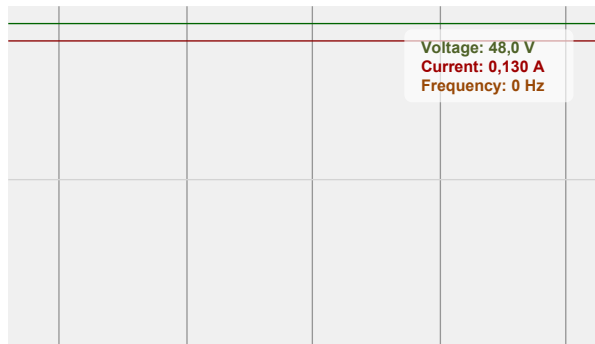


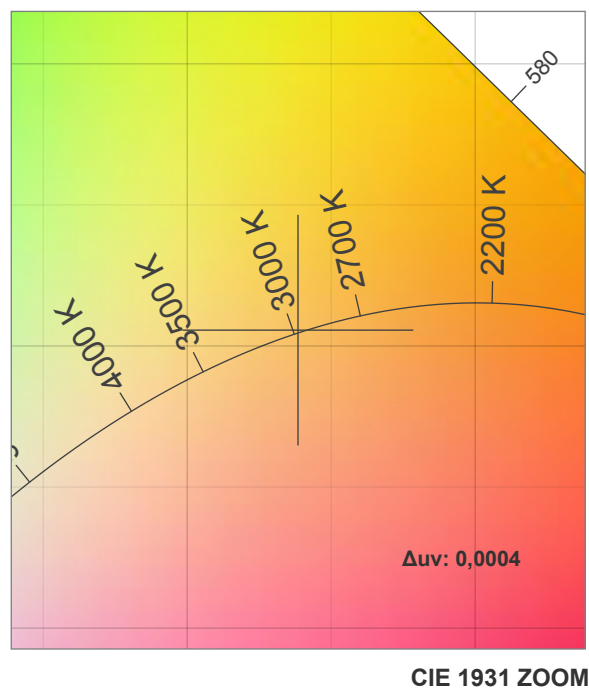
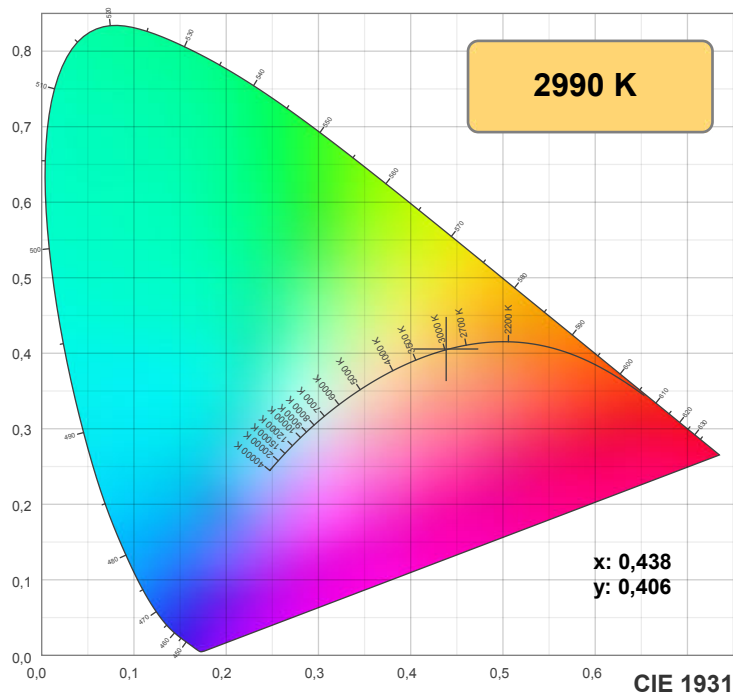
CIE 1931  
x: 0,438  
y: 0,406

Spectra

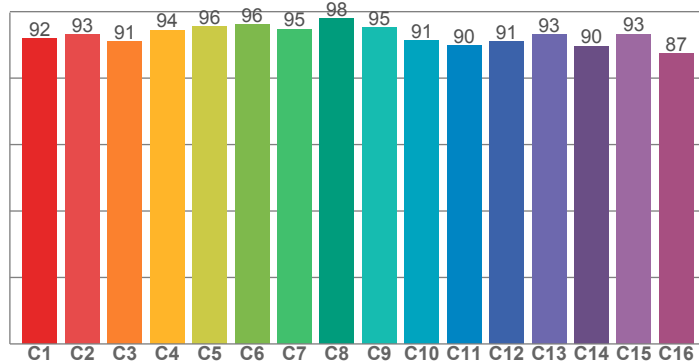


Power

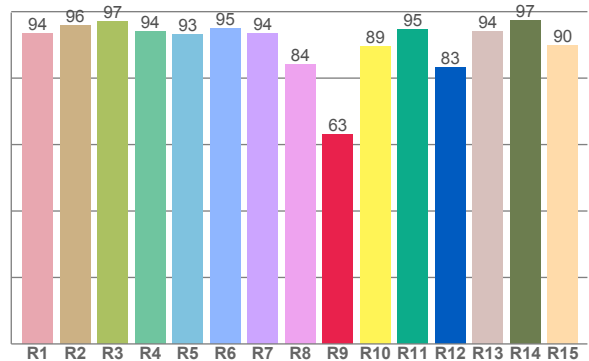




**TM30: 92,7**



**CRI: 93,3 (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
93,5	96,0	96,9	94,0	93,0	95,0	93,5	84,2	63,2	89,4	94,5	83,3	94,2	97,5	89,8

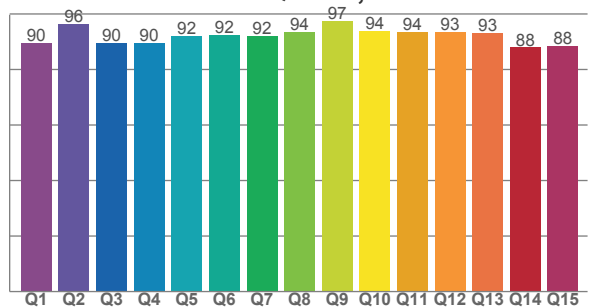
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91,8	93,1	91,0	94,4	95,5	96,2	94,8	97,9	95,2	91,3	89,7	91,0	93,2	89,7	93,2	87,3

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
89,5	96,4	89,5	89,5	92,0	92,4	92,1	93,6	97,5	94,0	93,6	93,5	93,3	87,9	88,4

**CQS: 91,6**



## 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
2990 K	93,3	63,2	92,7	99,4	91,6	0,438	0,406	0,251	0,348	0,0004

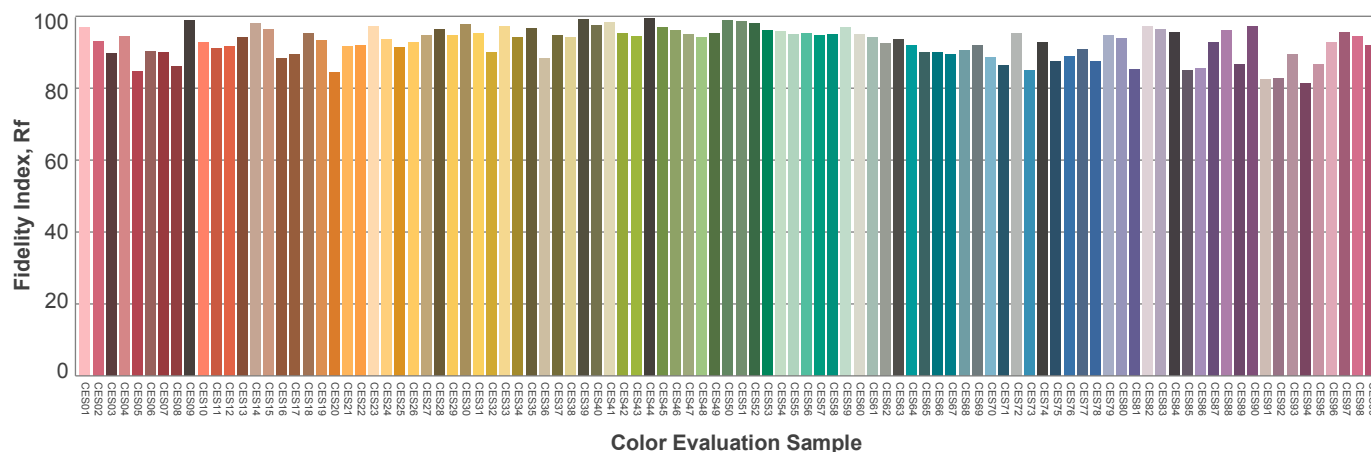
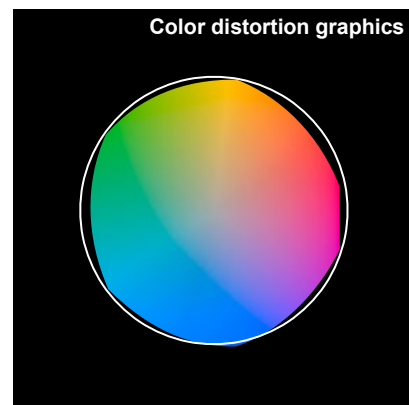
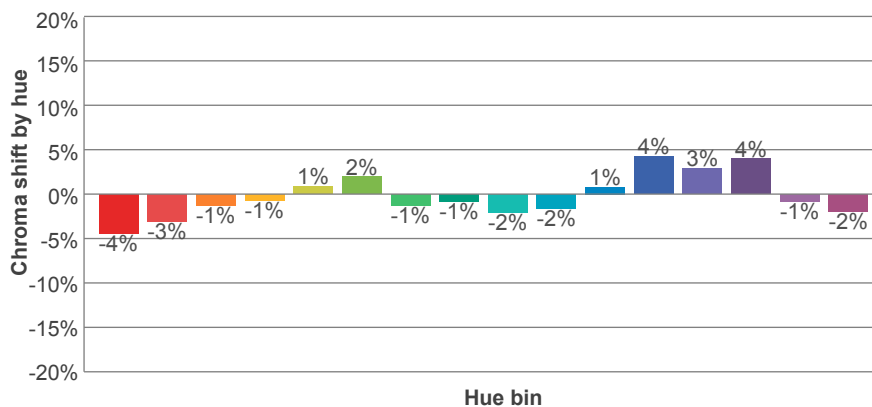
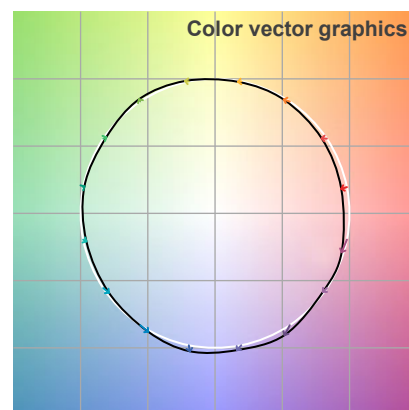
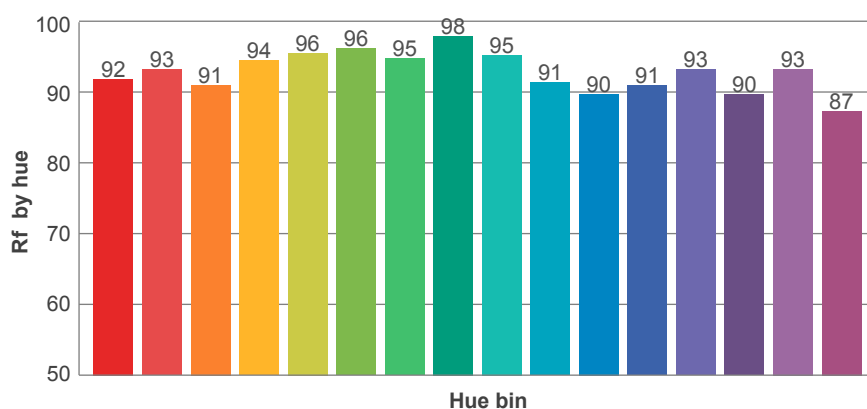
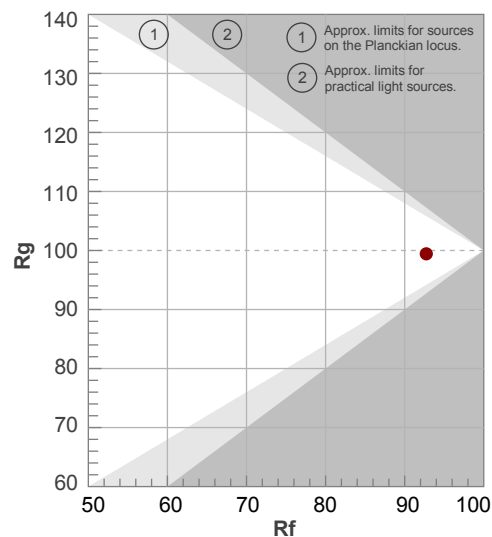
**Rf 92,7**

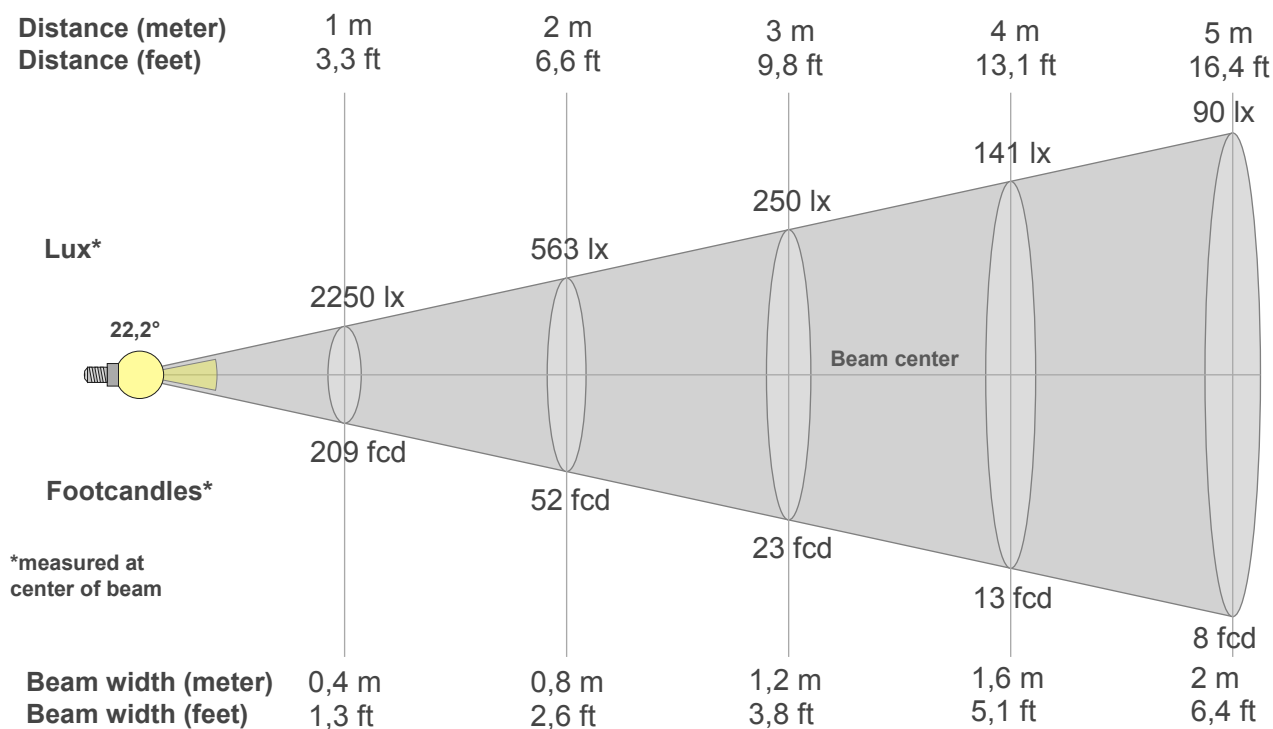
Fidelity index Rf

**Rg 99,4**

Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	92	-4%	0%
2	93	-3%	2%
3	91	-1%	4%
4	94	-1%	2%
5	96	1%	3%
6	96	2%	0%
7	95	-1%	-2%
8	98	-1%	-1%
9	95	-2%	2%
10	91	-2%	5%
11	90	1%	8%
12	91	4%	2%
13	93	3%	-4%
14	90	4%	-7%
15	93	-1%	-4%
16	87	-2%	-10%





## 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
2250lx	563lx	250lx	141lx	90lx	63lx	46lx	35lx	28lx	23lx	19lx	16lx	13lx	11lx	10lx	9lx	8lx	7lx	6lx	6lx
209,1fcd	52,3fcd	23,2fcd	13,1fcd	8,4fcd	5,8fcd	4,3fcd	3,3fcd	2,6fcd	2,1fcd	1,7fcd	1,5fcd	1,2fcd	1,1fcd	0,9fcd	0,8fcd	0,7fcd	0,6fcd	0,6fcd	0,5fcd

## 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°
2250	2199	2051	1828	1563	1286	1024	798	612	466	351	265	200	152	116	90	70	56	44	37
100%	98%	91%	81%	69%	57%	46%	35%	27%	21%	16%	12%	9%	7%	5%	4%	3%	2%	2%	2%

## 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°
2250	2198	2044	1808	1524	1237	978	757	581	440	332	250	188	143	110	86	69	56	46	38
100%	98%	91%	80%	68%	55%	43%	34%	26%	20%	15%	11%	8%	6%	5%	4%	3%	2%	2%	2%

## Intensities in 180° c-plane

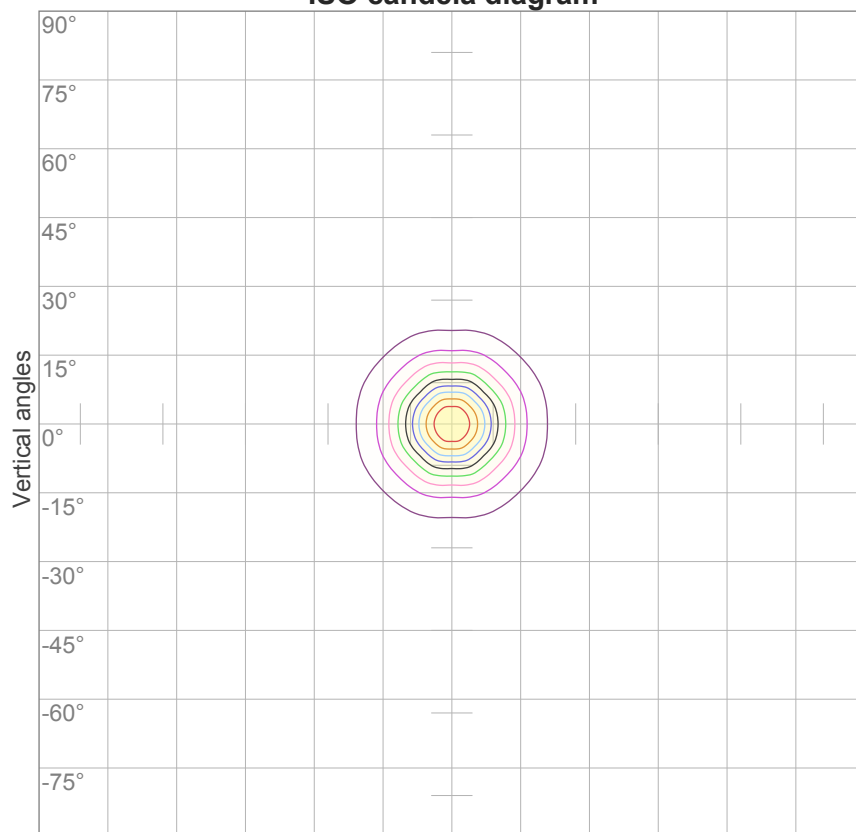
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
2250	2199	2051	1828	1563	1286	1024	798	612	466	351	265	200	152	116	90	70	56	44	37
100%	98%	91%	81%	69%	57%	46%	35%	27%	21%	16%	12%	9%	7%	5%	4%	3%	2%	2%	2%

## 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°
2250	2198	2044	1808	1524	1237	978	757	581	440	332	250	188	143	110	86	69	56	46	38
100%	98%	91%	80%	68%	55%	43%	34%	26%	20%	15%	11%	8%	6%	5%	4%	3%	2%	2%	2%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
22,2°	46,6°	68,2°	96,7%	92,8%

### ISO candela diagram



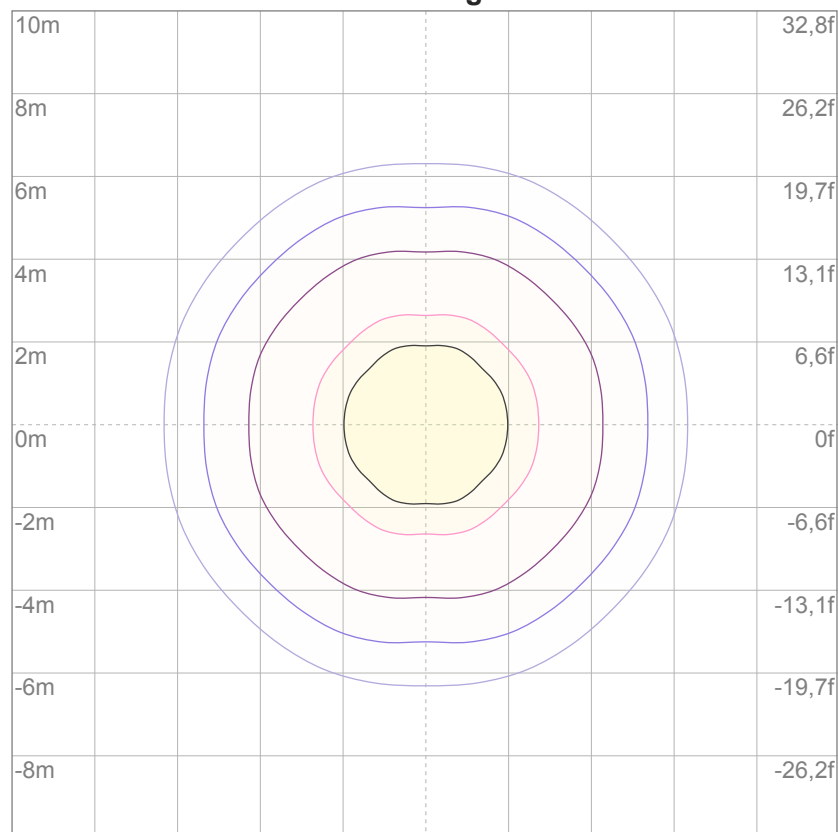
10%	225 cd
20%	450 cd
30%	675 cd
40%	900 cd
50%	1125 cd
60%	1350 cd
70%	1575 cd
80%	1800 cd
90%	2025 cd

#### Conditions:

Number of c-planes: 16

Candela at center: 2250 cd

### ISO lux diagram



3%	0,675 lx
5%	1,13 lx
10%	2,25 lx
30%	6,75 lx
50%	11,3 lx

#### Conditions:

Number of c-planes: 16

Lux at center: 22,5 lx

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

Mounting height: 10 meters (33 feet)

### Glare Evaluation According to UGR

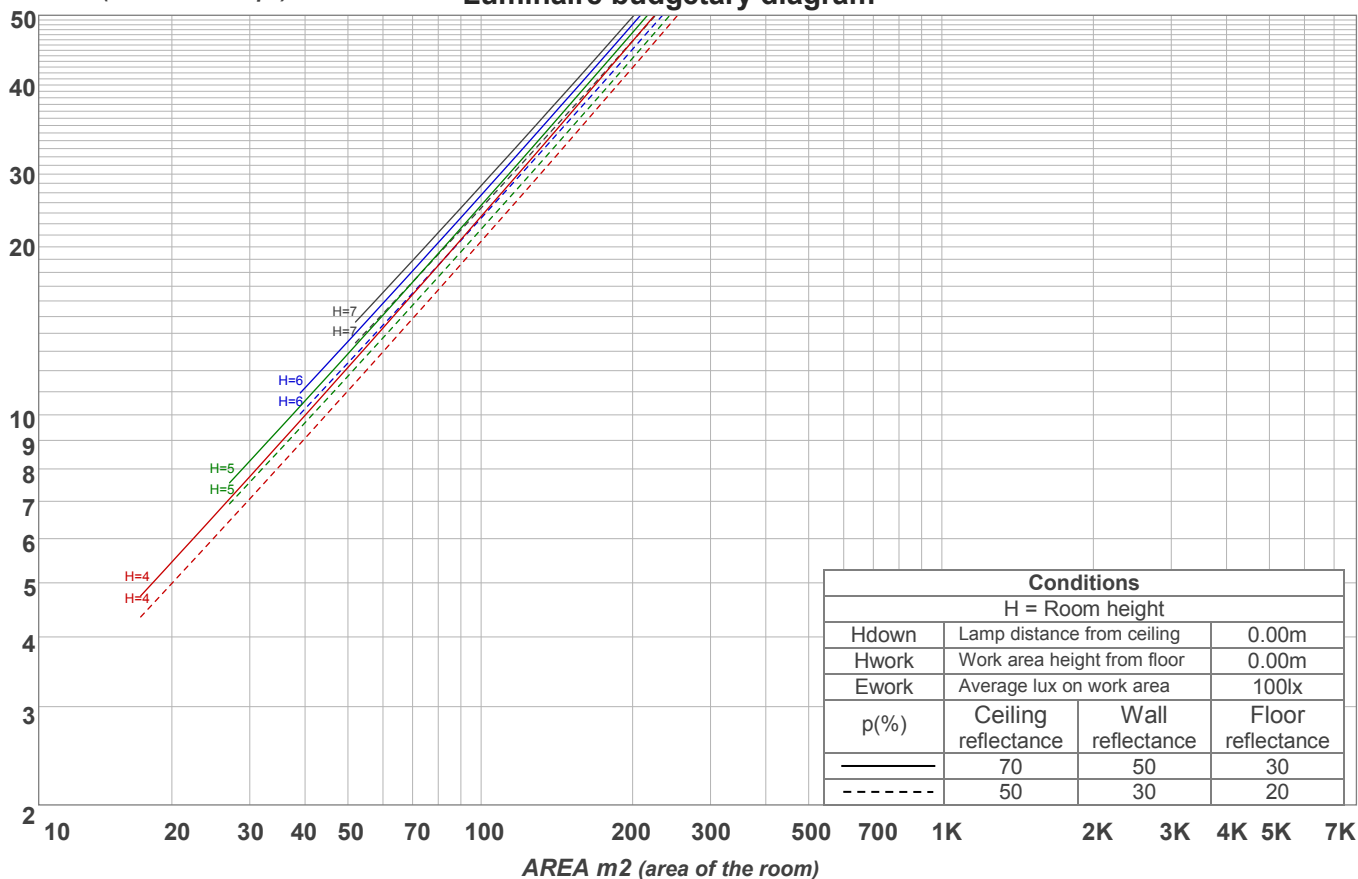
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	11,3	11,8	11,4	12,0	12,2	13,4	13,9	13,4	14,1	14,3
	3H	11,8	12,4	12,1	12,6	12,8	14,3	15,0	14,7	15,2	15,4
	4H	12,0	12,6	12,4	12,8	13,1	14,8	15,4	15,2	15,6	15,9
	6H	12,2	12,7	12,4	13,0	13,3	15,1	15,6	15,4	15,9	16,3
	8H	12,2	12,7	12,5	13,0	13,4	15,2	15,7	15,5	16,0	16,4
	12H	12,1	12,6	12,5	13,0	13,4	15,2	15,7	15,6	16,1	16,5
4H	2H	11,6	12,2	11,9	12,4	12,7	13,3	14,0	13,7	14,2	14,4
	3H	12,4	12,9	12,8	13,3	13,7	14,7	15,2	15,0	15,5	15,9
	4H	12,6	13,1	13,1	13,5	14,0	15,1	15,6	15,5	16,0	16,5
	6H	12,8	13,3	13,3	13,7	14,0	15,5	16,0	16,0	16,3	16,7
	8H	12,8	13,3	13,4	13,7	14,0	15,6	16,1	16,1	16,4	16,8
	12H	12,8	13,2	13,3	13,6	14,1	15,7	16,0	16,2	16,4	16,9
8H	4H	12,8	13,3	13,3	13,6	14,0	15,1	15,6	15,6	15,9	16,3
	6H	13,1	13,4	13,6	13,9	14,4	15,6	15,9	16,1	16,4	16,9
	8H	13,2	13,5	13,7	14,0	14,6	15,8	16,1	16,3	16,6	17,2
	12H	13,3	13,5	13,8	14,0	14,6	16,0	16,2	16,5	16,7	17,3
12H	4H	12,8	13,2	13,3	13,6	14,0	15,1	15,4	15,6	15,9	16,3
	6H	13,2	13,4	13,7	13,9	14,6	15,6	15,9	16,1	16,4	17,0
	8H	13,3	13,5	13,8	14,0	14,6	15,8	16,0	16,4	16,5	17,1
Variation of the observer position for the luminaire distance S											
S = 1.0H		1,2 / -0,8					1,0 / -0,5				
S = 1.5H		2,7 / -1,2					2,0 / -1,0				
S = 2.0H		4,0 / -1,6					3,0 / -1,6				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 523 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	114	112	109	107	112	109	107	105	105	104	102	102	100	99	98	97	96	94
2	109	105	102	99	107	103	100	97	100	98	95	97	95	93	94	93	91	90
3	105	100	95	92	103	98	94	91	96	92	90	93	91	88	91	89	87	85
4	101	95	90	87	99	94	89	86	92	88	85	90	87	84	88	85	83	82
5	97	91	86	82	96	90	85	82	88	84	81	86	83	80	85	82	80	78
6	94	87	82	78	93	86	82	78	85	81	78	83	80	77	82	79	77	75
7	91	83	79	75	90	83	78	75	82	78	75	81	77	74	80	76	74	73
8	88	80	76	72	87	80	75	72	79	75	72	78	74	72	77	74	71	70
9	85	78	73	70	84	77	73	70	76	72	70	76	72	69	75	72	69	68
10	83	75	71	68	82	75	70	68	74	70	67	73	70	67	73	69	67	66

LAMPS (number of lamps)

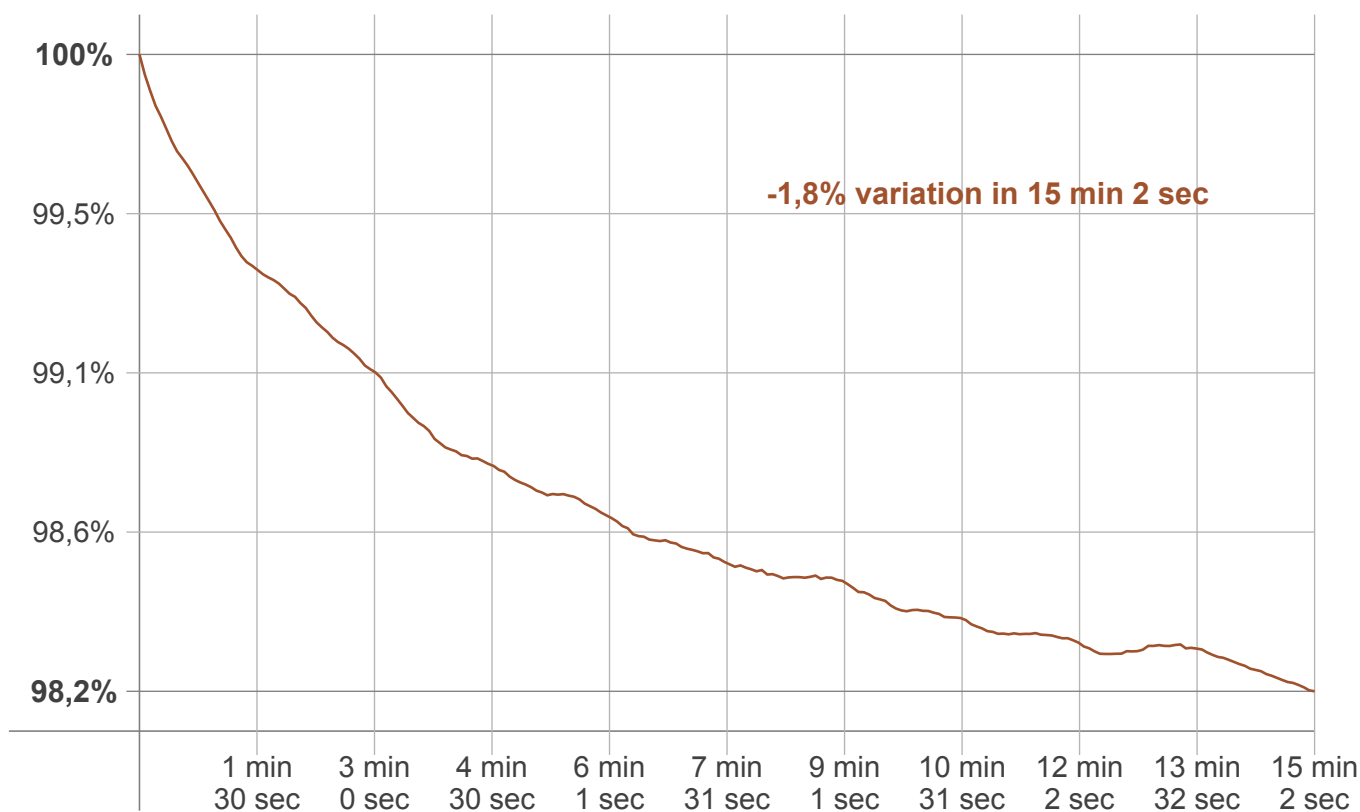
## Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
163 lm	195 lm	85,4 lm	33,2 lm	16,9 lm	12,7 lm	8,92 lm	4,99 lm	1,85 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,608 lm	0,226 lm	0,199 lm	0,180 lm	0,132 lm	0,094 lm	0,069 lm	0,042 lm	0,014 lm

## Warmup curve



## Warmup result

Warmup time:	15 min 2 sec
Warmup variation	-1,8%

## Warmup conditions

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

## Color temperature change

CCT start	CCT change	CCT end
3012 K	-22 K	2990 K

## Output change

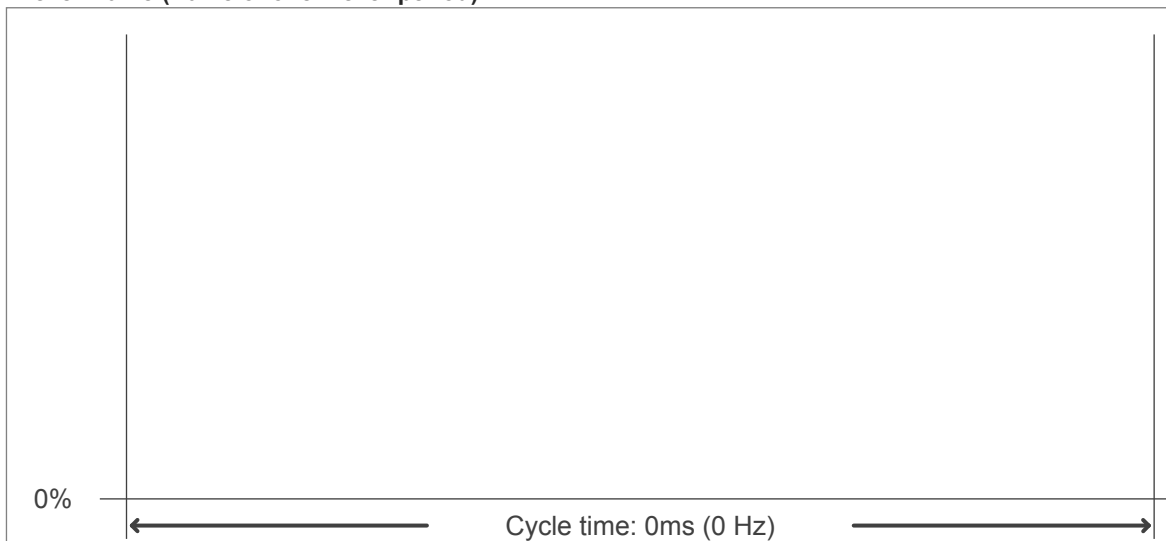
Output start	Output change	Output end
532 lm	-9 lm	523 lm



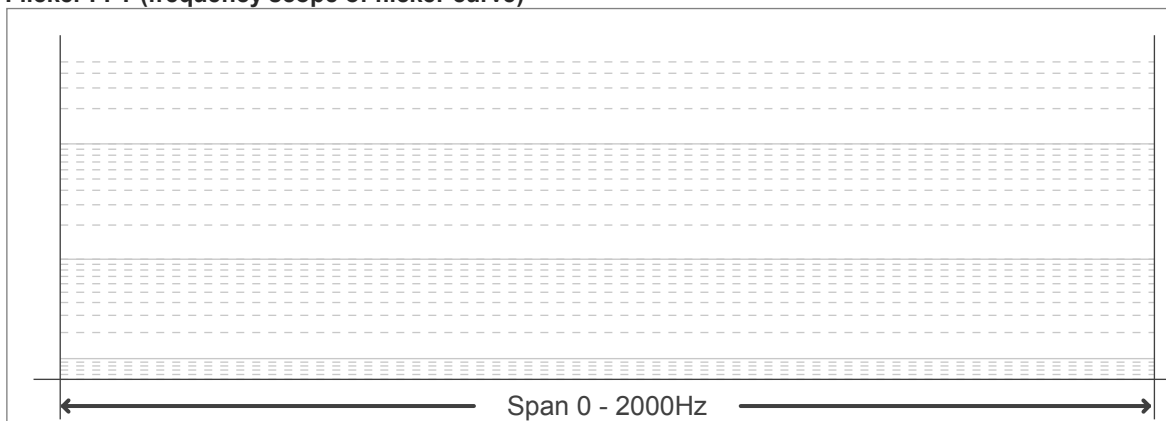
**Flicker curve (complete sampled flicker signal)**



**Flicker frame (frame of one flicker period)**



**Flicker FFT (frequency scope of flicker curve)**



**Flicker results:**

<b>Flicker frequency:</b>	<b>n/a Hz</b>
<b>Flicker index:</b>	<b>n/a</b>
<b>Flicker percentage:</b>	<b>n/a %</b>
<b>SVM: (Visual flicker)</b>	<b>n/a</b>

**Flicker conditions:**

<b>Sample rate:</b>	<b>60.000 samples/second</b>
---------------------	------------------------------