

Light efficiency:



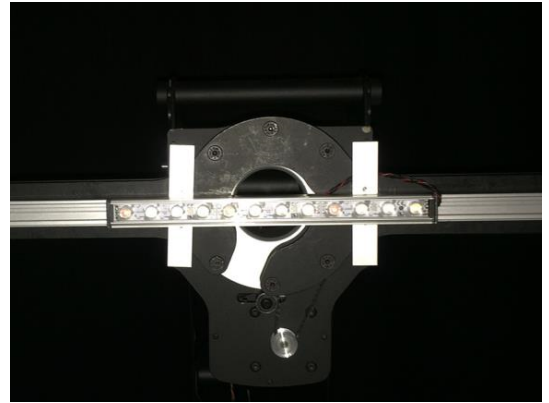
Light quality:



Color temperature:



**Output:** 229 lm  
**Peak:** 1635 cd  
**Power:** 7,0 W  
**PF:** 0,82



Product name:

**FLNP-F4CH-C-258-W-927-10771**

Item number:

**FLNP-F4CH-C-258-W-927-10771**

Date and time:

**14.02.2019 12:54:30**

Description:

**Toleranzen:**

**Lumen +/-4%**

**Candela +/-2,5%**

**Colour Temp +/-35 Grad K**

**CRI +/-0,7**

**Angular Resolution 1 Grad step**

**Last Calibration 06-06-2018**

**Pruefer:**

**Mourad Benzineb**

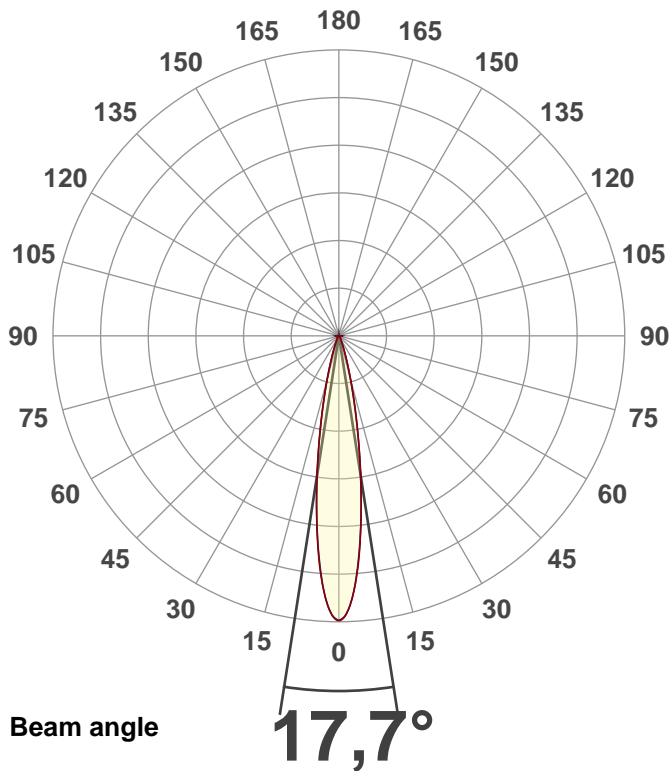
**Master of Engineering**

**Pruefort:**

**Lichtlabor**

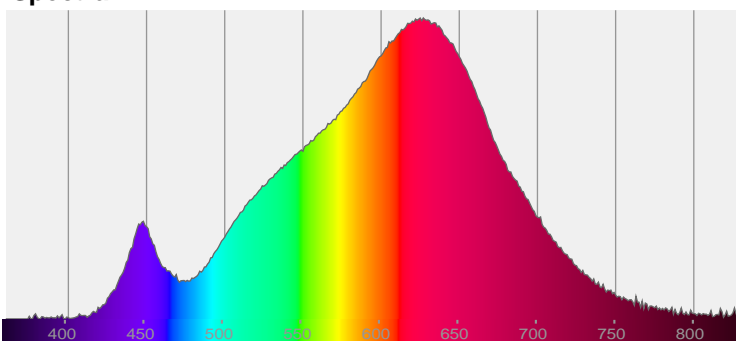
**Gaustrasse13-15**

**55411 Bingen am Rhein**

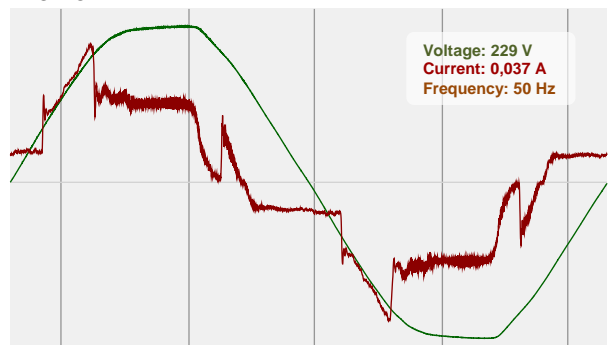


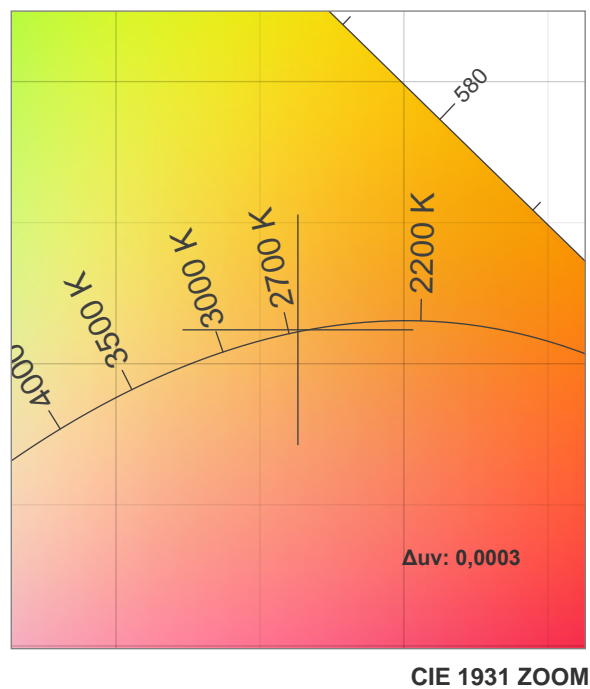
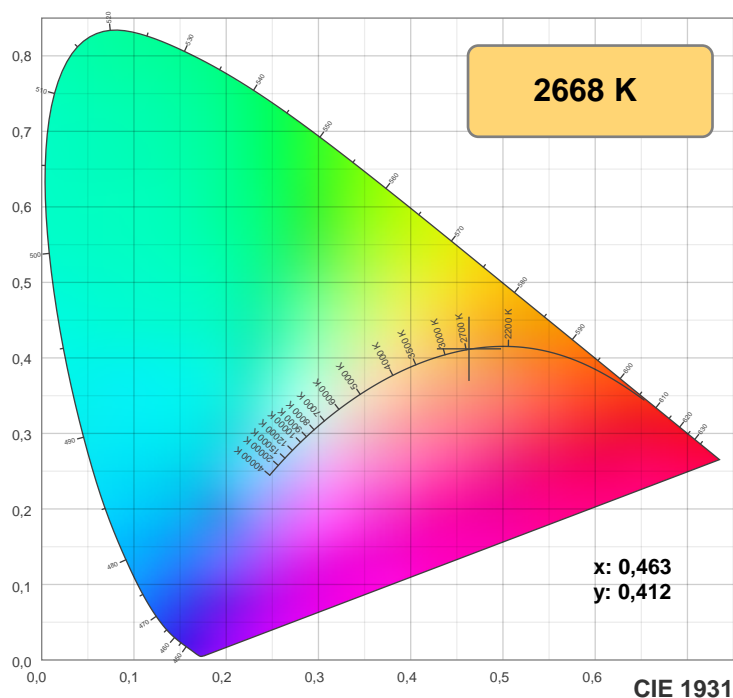
CIE 1931  
x: 0,463  
y: 0,412

Spectra

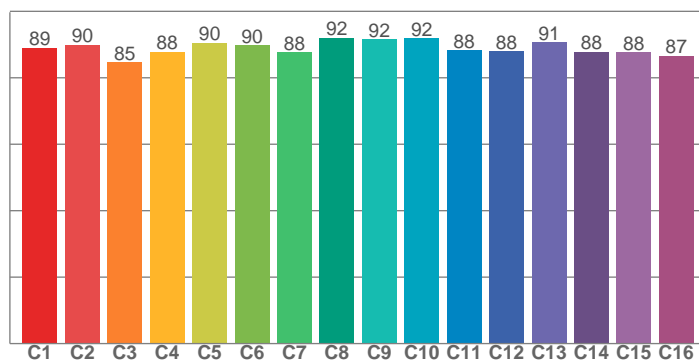


Power

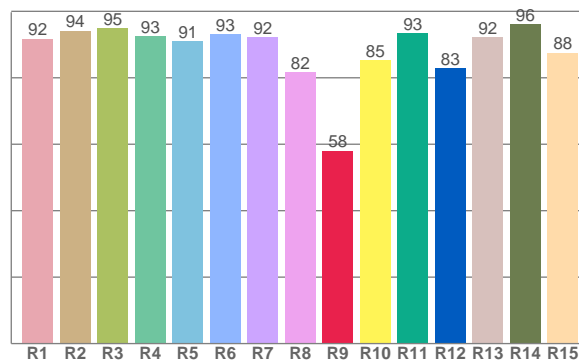




TM30: 89,0



CRI: 91,4 (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
91,7	94,1	94,9	92,5	91,0	93,0	92,3	81,6	58,0	85,3	93,3	82,8	92,1	96,2	87,6

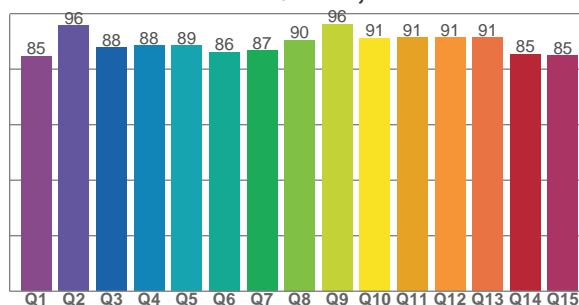
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89,1	89,9	84,6	87,9	90,5	89,7	87,7	92,1	91,5	91,8	88,2	88,0	90,6	87,8	87,6	86,6

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
84,6	95,7	87,7	88,4	88,6	86,1	86,7	90,5	96,3	91,2	91,4	91,3	91,4	85,3	84,9

CQS: 88,6



## 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
2668 K	91,4	58,0	89,0	101,5	88,6	0,463	0,412	0,264	0,352	0,0003

## TM30 details

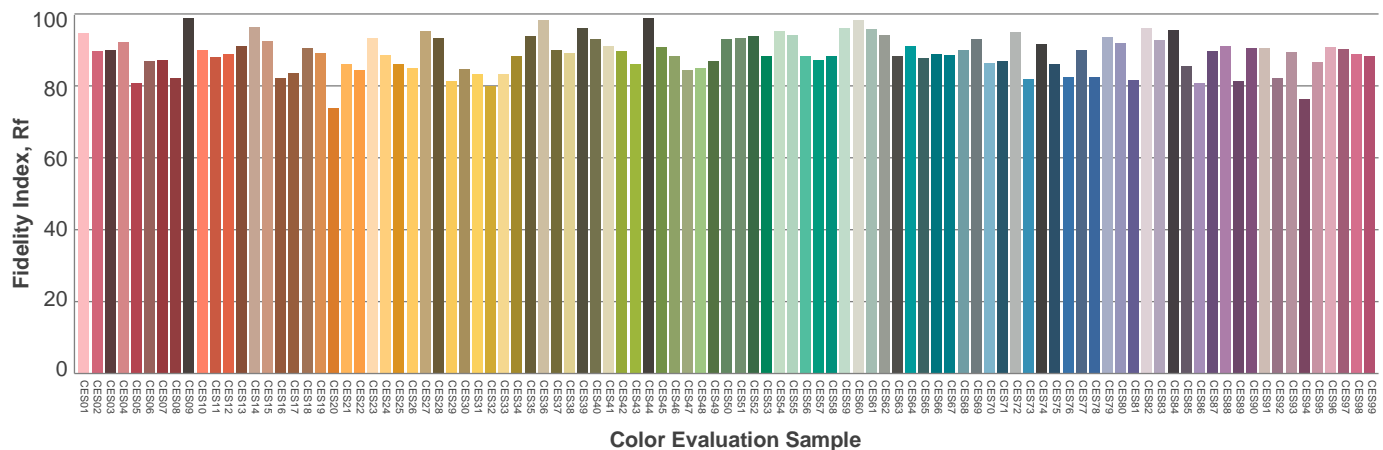
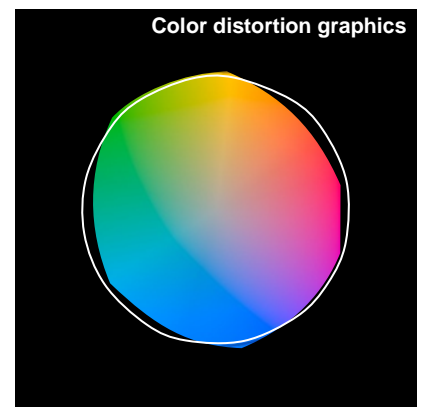
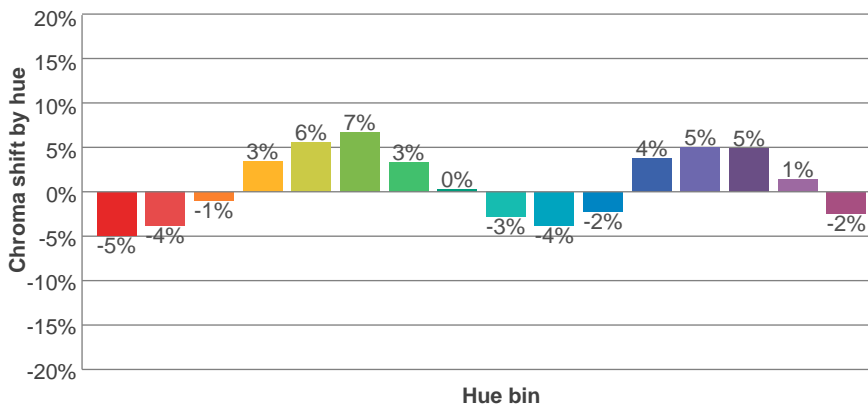
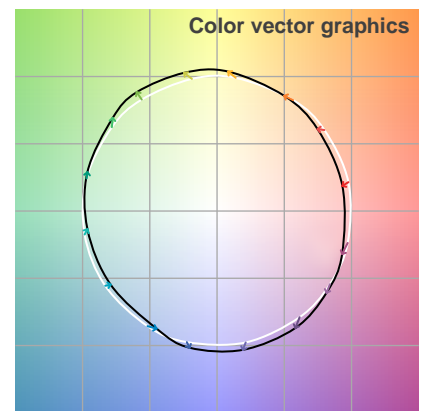
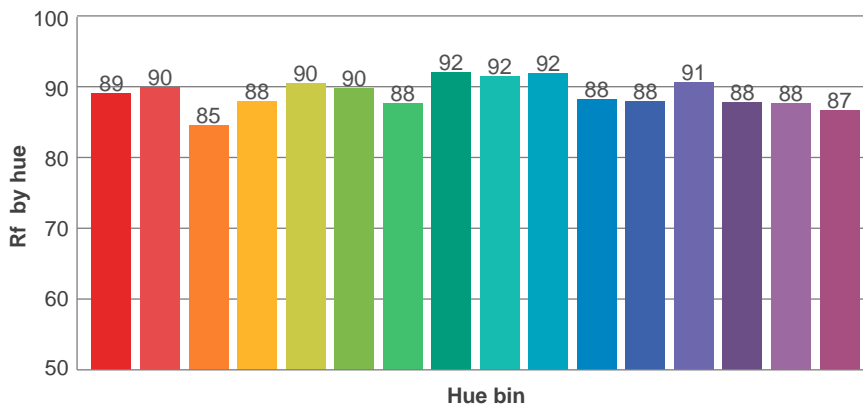
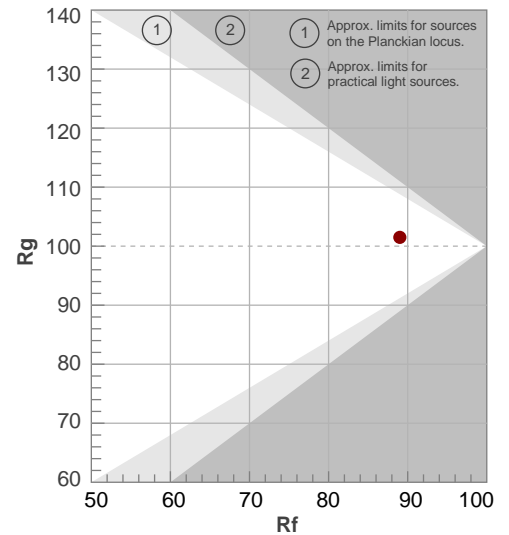
**Rf 89,0**

Fidelity index Rf

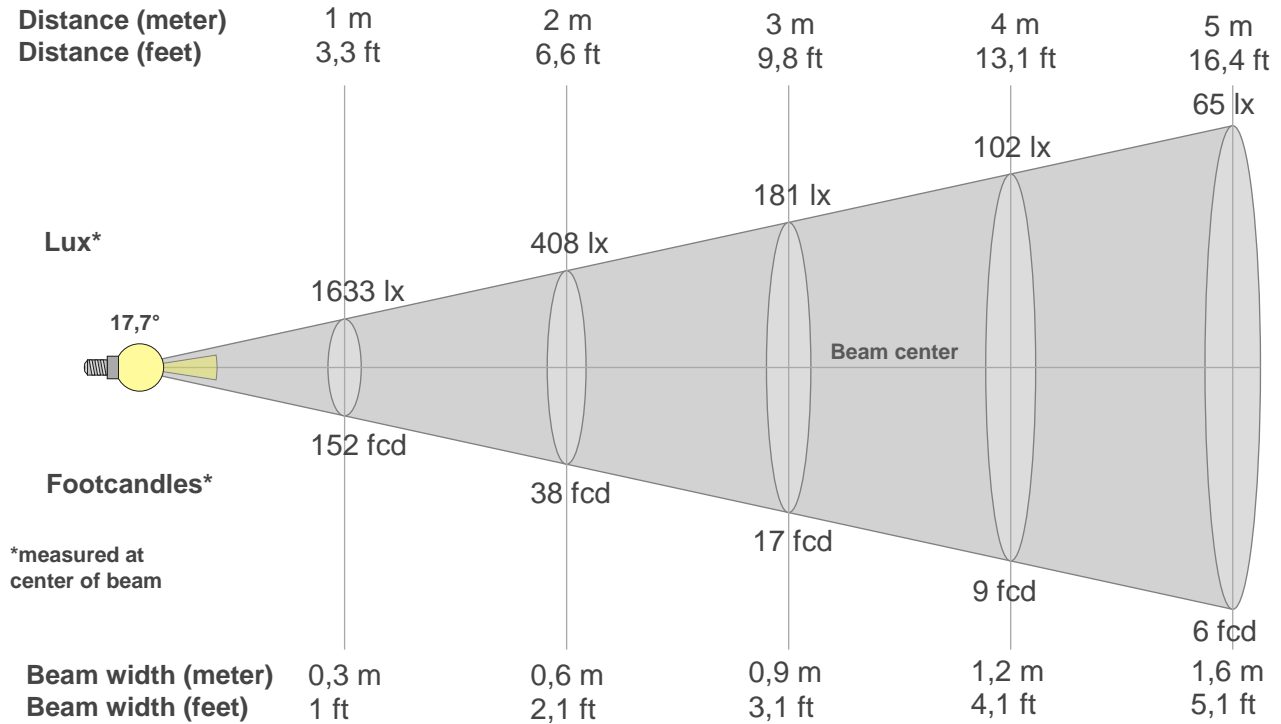
**Rg 101,5**

Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	89	-5%	-2%
2	90	-4%	3%
3	85	-1%	7%
4	88	3%	6%
5	90	6%	5%
6	90	7%	0%
7	88	3%	-6%
8	92	0%	-5%
9	92	-3%	-3%
10	92	-4%	2%
11	88	-2%	7%
12	88	4%	3%
13	91	5%	-3%
14	88	5%	-7%
15	88	1%	-7%
16	87	-2%	-9%



## Beam details



### 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
1633lx	408lx	181lx	102lx	65lx	45lx	33lx	26lx	20lx	16lx	13lx	11lx	10lx	8lx	7lx	6lx	6lx	5lx	5lx	4lx
151,7fcd	37,9fcd	16,9fcd	9,5fcd	6,1fcd	4,2fcd	3,1fcd	2,4fcd	1,9fcd	1,5fcd	1,3fcd	1,1fcd	0,9fcd	0,8fcd	0,7fcd	0,6fcd	0,5fcd	0,5fcd	0,4fcd	0,4fcd

### Intensities in 0° c-plane

0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
1633	1619	1574	1501	1409	1301	1176	1047	923	802	683	575	482	398	323	262	211	170	137	109
100%	99%	96%	92%	86%	80%	72%	64%	57%	49%	42%	35%	30%	24%	20%	16%	13%	10%	8%	7%

### Intensities in 90° c-plane

0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
1633	1617	1573	1501	1404	1291	1171	1046	916	792	677	572	474	389	319	260	209	168	135	109
100%	99%	96%	92%	86%	79%	72%	64%	56%	48%	41%	35%	29%	24%	20%	16%	13%	10%	8%	7%

### Intensities in 180° c-plane

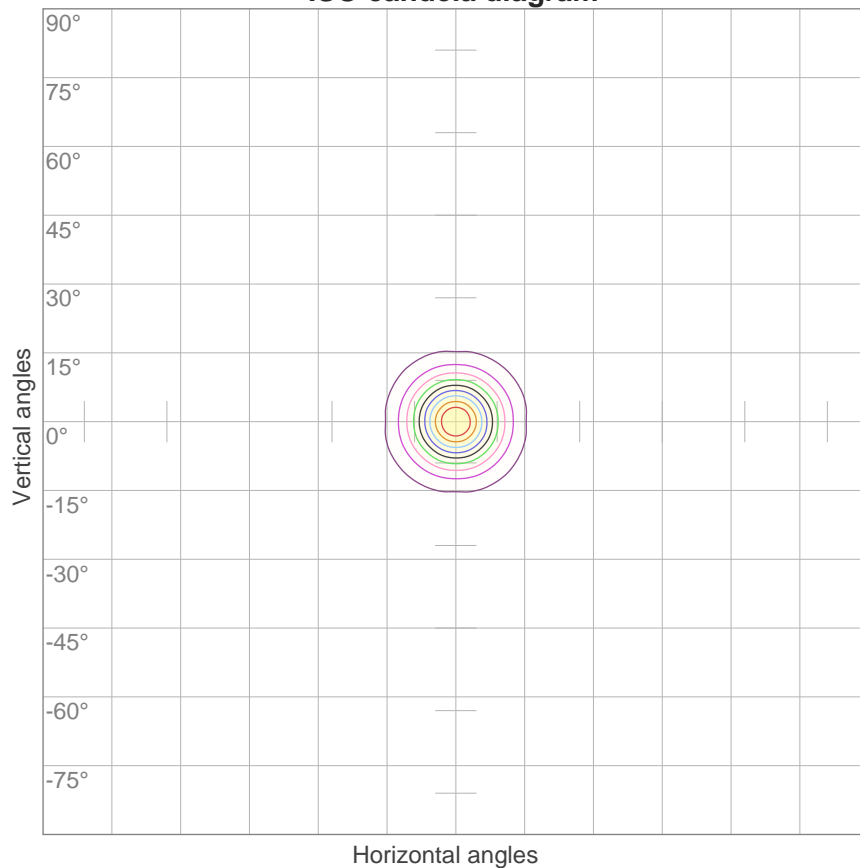
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
1633	1619	1574	1501	1409	1301	1176	1047	923	802	683	575	482	398	323	262	211	170	137	109
100%	99%	96%	92%	86%	80%	72%	64%	57%	49%	42%	35%	30%	24%	20%	16%	13%	10%	8%	7%

### Intensities in 270° c-plane

0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
1633	1617	1573	1501	1404	1291	1171	1046	916	792	677	572	474	389	319	260	209	168	135	109
100%	99%	96%	92%	86%	79%	72%	64%	56%	48%	41%	35%	29%	24%	20%	16%	13%	10%	8%	7%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
17,7°	34,9°	49,4°	96,5%	93,0%

ISO candela diagram



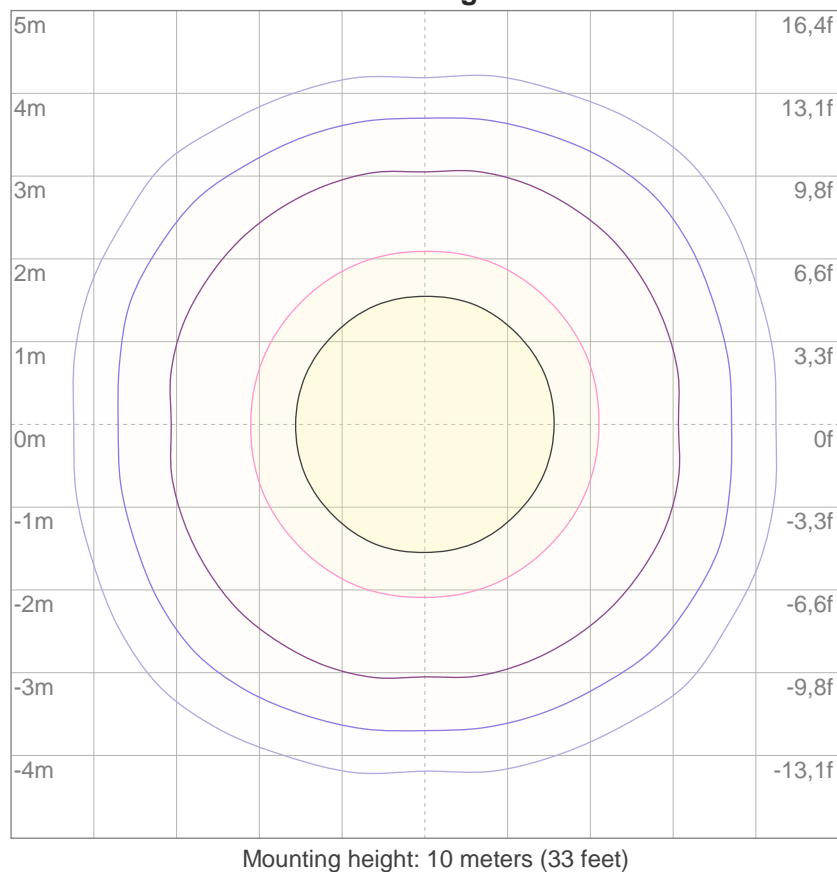
10%	163 cd
20%	327 cd
30%	490 cd
40%	653 cd
50%	816 cd
60%	980 cd
70%	1143 cd
80%	1306 cd
90%	1470 cd

Conditions:

Number of c-planes: 16

Candela at center: 1633 cd

ISO lux diagram



3%	0,490 lx
5%	0,816 lx
10%	1,63 lx
30%	4,90 lx
50%	8,16 lx

Conditions:

Number of c-planes: 16

Lux at center: 16,3 lx

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

## Glare Evaluation According to UGR

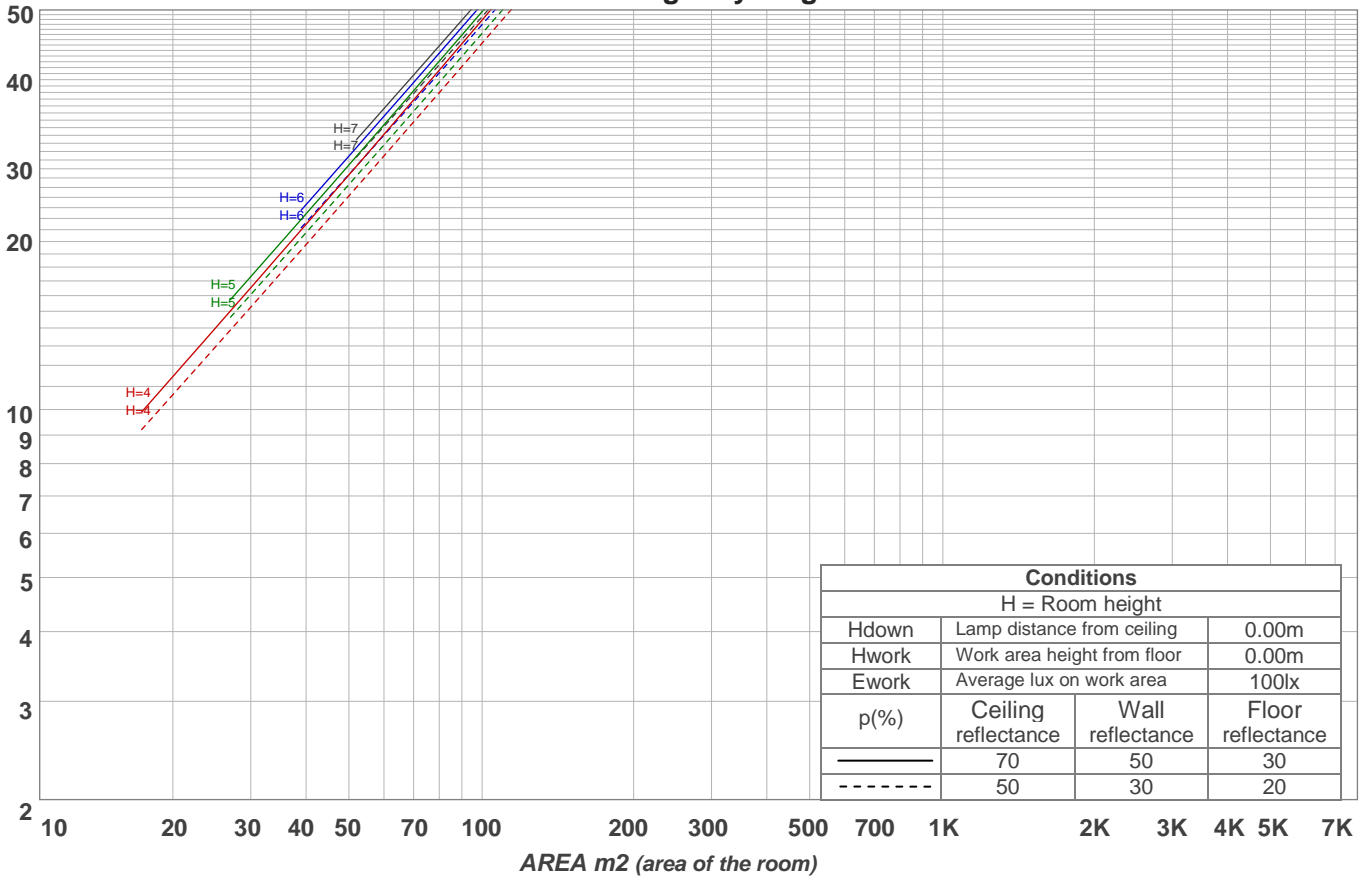
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X      Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	9,0	9,7	9,2	9,9	10,1	7,5	8,2	7,7	8,4	8,6
	3H	10,8	11,4	11,1	11,7	11,9	9,0	9,7	9,3	9,9	10,1
	4H	11,3	12,0	11,6	12,2	12,5	9,7	10,4	10,0	10,6	10,9
	6H	11,7	12,3	12,0	12,6	12,8	10,4	11,0	10,7	11,3	11,6
	8H	11,9	12,4	12,2	12,7	13,0	10,7	11,2	11,0	11,5	11,8
	12H	12,1	12,6	12,4	12,9	13,2	10,9	11,4	11,3	11,7	12,1
4H	2H	9,5	10,2	9,8	10,4	10,7	8,4	9,0	8,7	9,2	9,5
	3H	11,5	12,0	11,8	12,3	12,6	10,1	10,6	10,4	10,9	11,2
	4H	12,2	12,7	12,6	13,0	13,3	11,0	11,4	11,3	11,7	12,1
	6H	12,7	13,1	13,1	13,5	13,9	11,8	12,2	12,2	12,5	12,9
	8H	13,0	13,3	13,4	13,7	14,1	12,1	12,5	12,5	12,8	13,2
	12H	13,2	13,5	13,7	13,9	14,4	12,4	12,7	12,8	13,1	13,5
8H	4H	12,5	12,8	12,9	13,2	13,6	11,4	11,7	11,8	12,1	12,5
	6H	13,2	13,5	13,6	13,9	14,3	12,4	12,7	12,9	13,1	13,5
	8H	13,5	13,8	14,0	14,2	14,7	12,9	13,1	13,3	13,5	14,0
	12H	13,9	14,1	14,4	14,6	15,1	13,3	13,5	13,8	13,9	14,4
12H	4H	12,5	12,8	12,9	13,2	13,6	11,4	11,7	11,9	12,1	12,6
	6H	13,3	13,5	13,8	13,9	14,4	12,5	12,8	13,0	13,2	13,7
	8H	13,7	13,9	14,2	14,3	14,8	13,1	13,3	13,6	13,7	14,2
Variation of the observer position for the luminaire distance S											
S = 1,0H		+0,1 / -0,1					+0,1 / -0,2				
S = 1,5H		+0,4 / -0,3					+0,2 / -0,4				
S = 2,0H		+0,4 / -0,5					+0,4 / -0,8				
Standard table		BK06					BK07				
Correction summand		-3,9					-4,5				
Corrected glare indices referring to 229 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	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95
2	110	106	103	100	108	105	102	99	102	99	97	99	97	95	96	94	93	92
3	107	102	98	95	105	100	97	94	98	95	92	95	93	91	93	91	90	88
4	103	98	93	90	102	96	93	90	94	91	89	93	90	88	91	89	87	85
5	100	94	90	87	99	93	89	86	92	88	85	90	87	85	89	86	84	83
6	97	91	87	84	96	90	86	83	89	85	83	88	85	82	87	84	82	81
7	95	88	84	81	94	88	84	81	87	83	80	86	82	80	85	82	80	79
8	93	86	82	79	92	85	81	79	84	81	78	84	80	78	83	80	78	77
9	90	84	80	77	90	83	79	77	83	79	77	82	79	76	81	78	76	75
10	88	82	78	75	88	81	78	75	81	77	75	80	77	75	79	77	75	74

LAMPS (number of lamps)

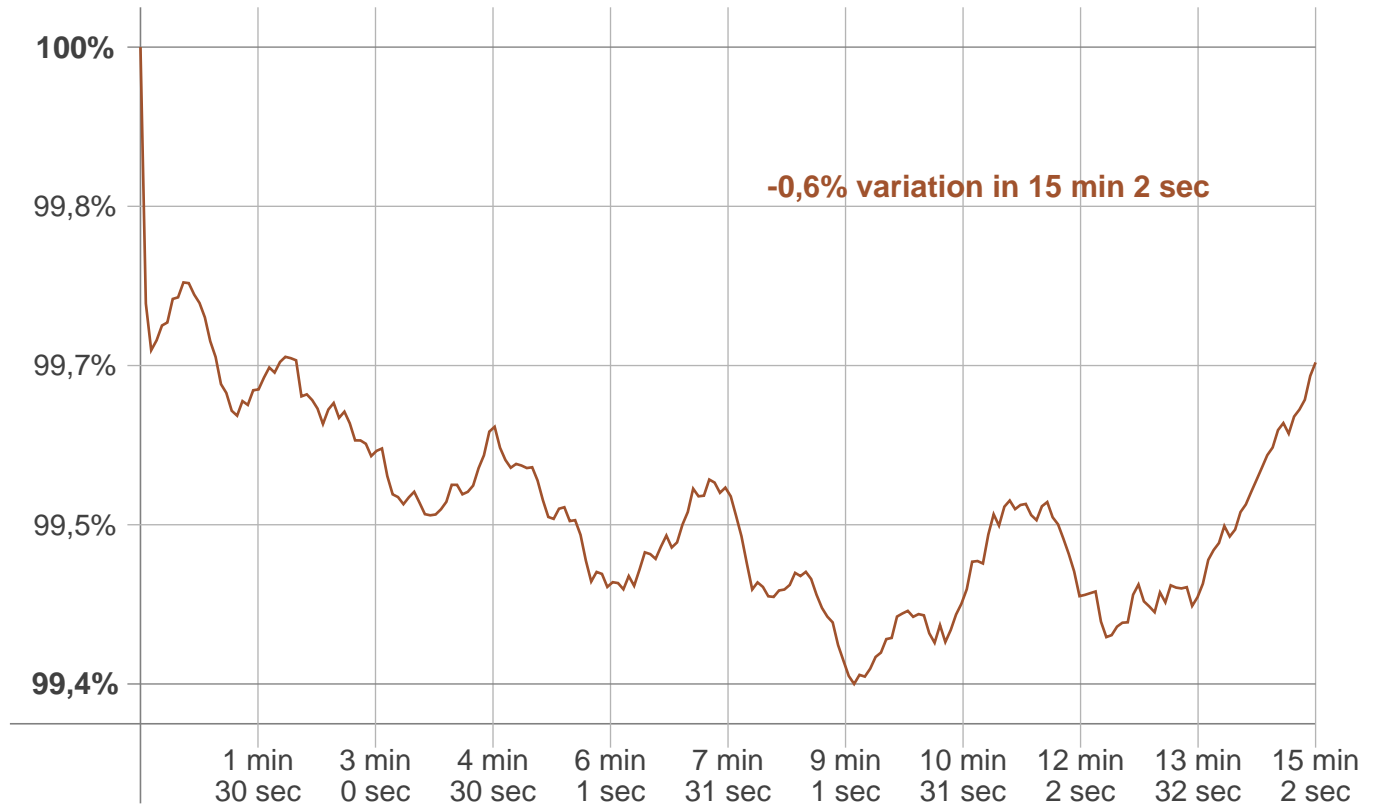
## Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	79,3 lm	20,0 lm	8,19 lm	5,75 lm	5,10 lm	4,04 lm	2,44 lm	1,12 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,164 lm	0,114 lm	0,107 lm	0,097 lm	0,035 lm	0,000 lm	0,000 lm	0,000 lm	0,000 lm

Warmup curve



Warmup result

Warmup time:	15 min 2 sec
Warmup variation	-0,6%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
2671 K	-3 K	2668 K

Output change

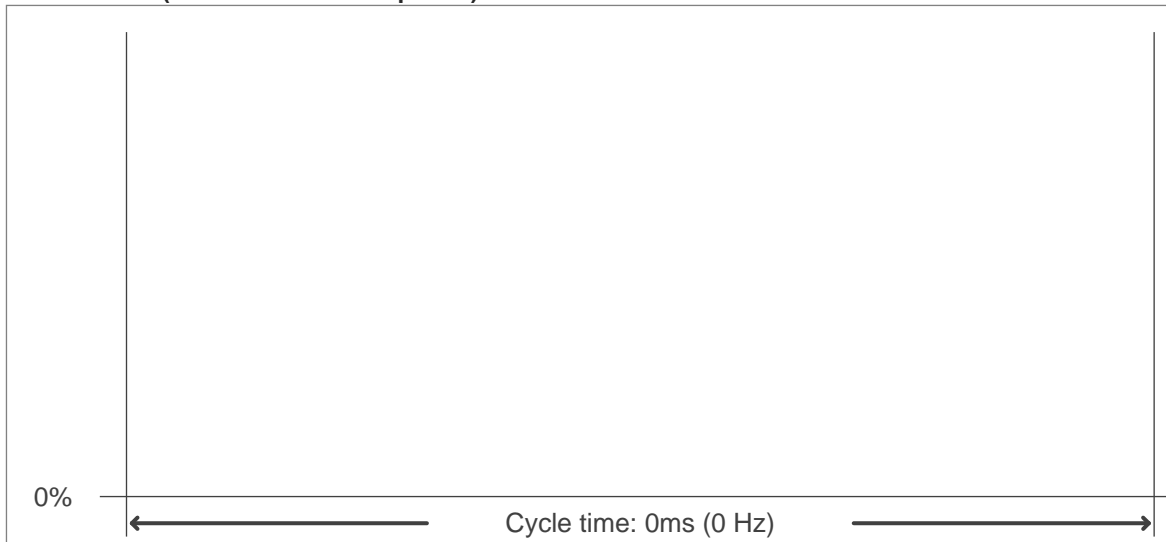
Output start	Output change	Output end
230 lm	lm	229 lm



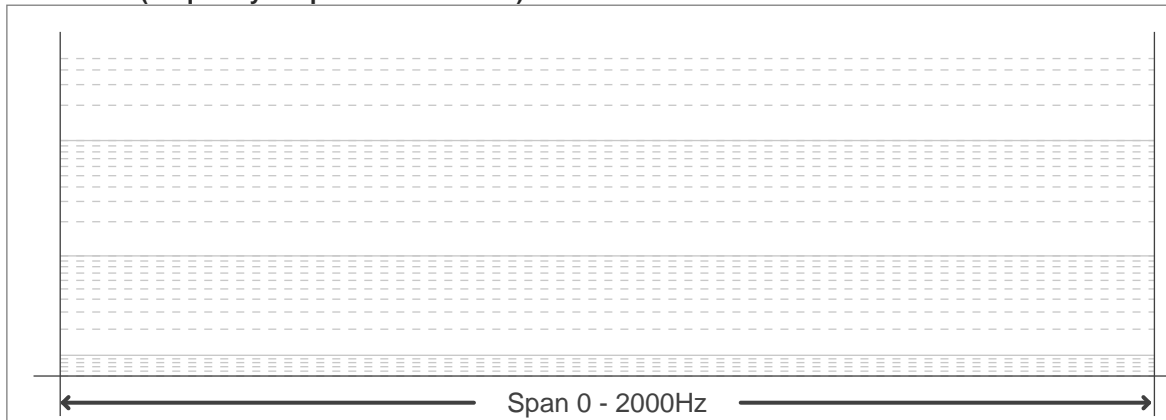
## Flicker curve (complete sampled flicker signal)



## Flicker frame (frame of one flicker period)



## Flicker FFT (frequency scope of flicker curve)



## Flicker results:

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

## Flicker conditions:

Sample rate:	60.000 samples/second
--------------	-----------------------