

**Light efficiency:**

**98 Lumen/Watt**

### Light quality:

**CRI: 0,0**

**Color temperature:**

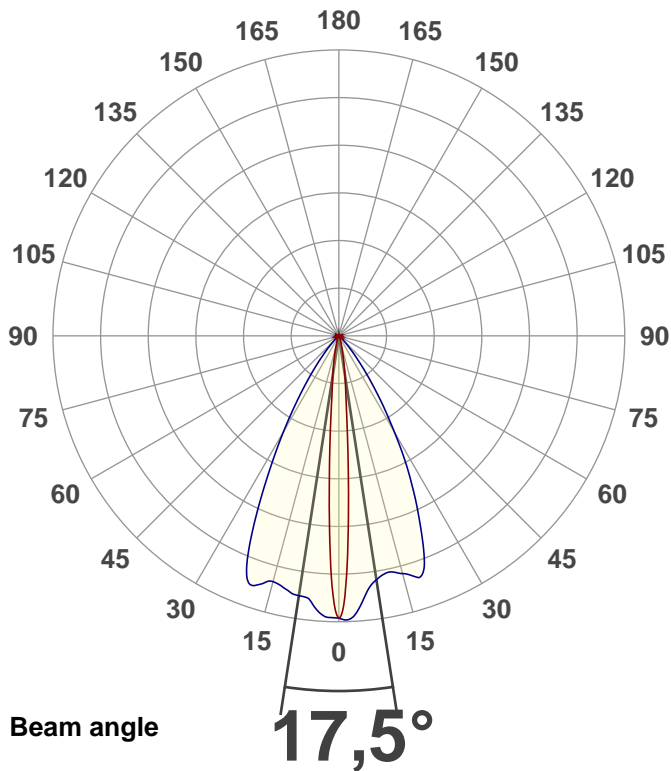
**OK**

**Output: 438 lm**

**Peak: 2246 cd**

**Power: 4,5 W**

**PF: 1,0**



**Product name:**

**FL-S O - 2-4 C -1 0 0-G-LATT-O90**

**Item number:**

**FL/SO-2/4C/100/G/LATT/O90**

**Date and time:**

08.04.2019 09:25:05

**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:**

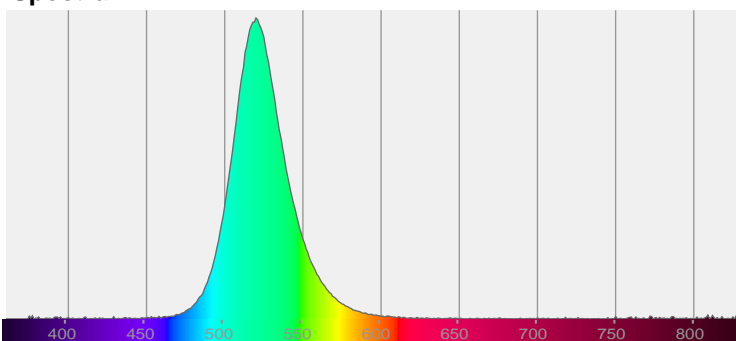
## Lichtlabor

**Gaustasse13-15**

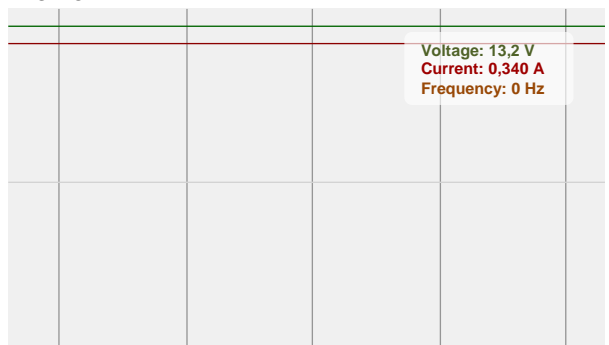
## 55411 Bingen am Rhein

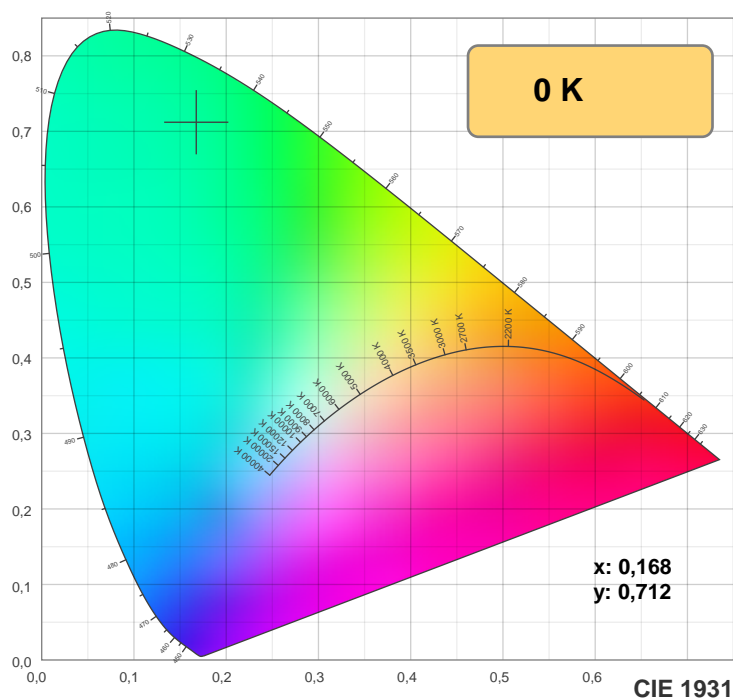


## Spectra



## Power





TM30: 0,0



CRI R values, only R1-R8 are used to calculate final CRI value

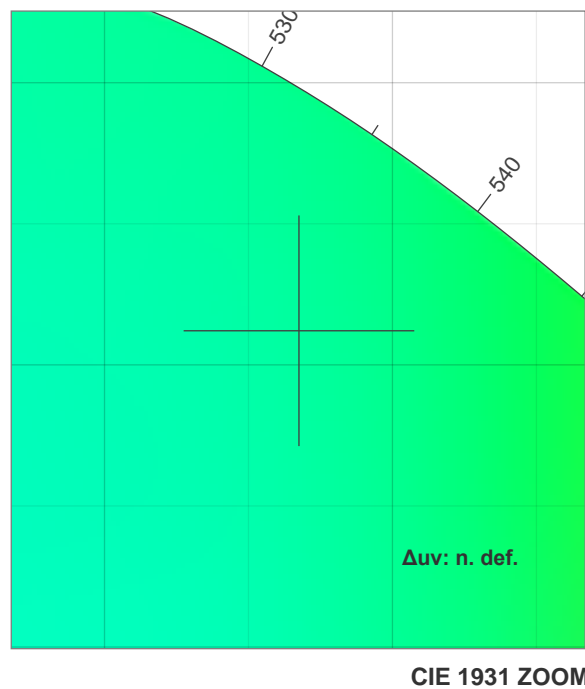
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

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

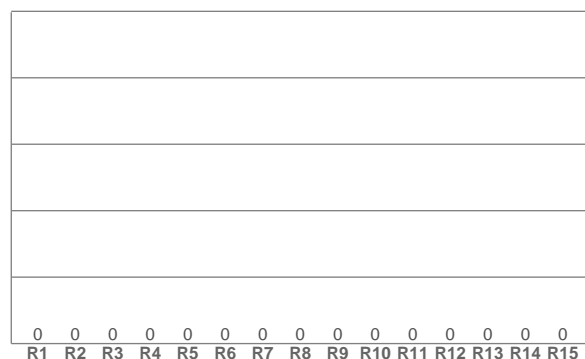
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

CQS Q values

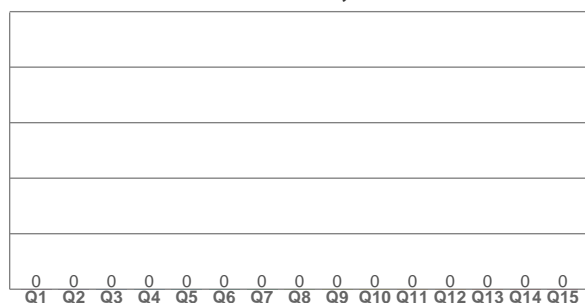
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0



CRI: 0,0 (R1-R8)



CQS: 0,0



## 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	$\Delta uv$
0 K	0,0	0,0	0,0	0,0	0,0	0,168	0,712	0,060	0,381	n. def.

## TM30 details

**Rf 0,0**

Fidelity index Rf

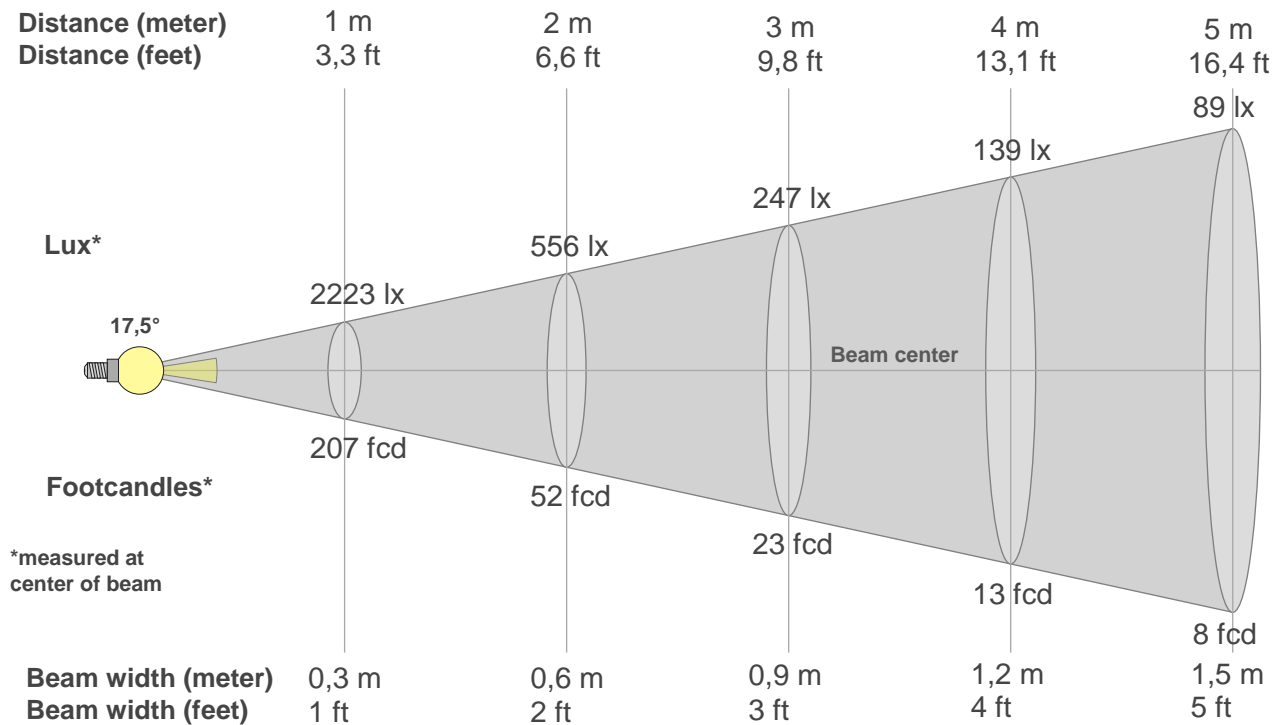
**Rg 0,0**

Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	0	0%	0%
2	0	0%	0%
3	0	0%	0%
4	0	0%	0%
5	0	0%	0%
6	0	0%	0%
7	0	0%	0%
8	0	0%	0%
9	0	0%	0%
10	0	0%	0%
11	0	0%	0%
12	0	0%	0%
13	0	0%	0%
14	0	0%	0%
15	0	0%	0%
16	0	0%	0%



## 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
2223lx	556lx	247lx	139lx	89lx	62lx	45lx	35lx	27lx	22lx	18lx	15lx	13lx	11lx	10lx	9lx	8lx	7lx	6lx	6lx
206,6fc	51,6fcd	23fcd	12,9fcd	8,3fcd	5,7fcd	4,2fcd	3,2fcd	2,6fcd	2,1fcd	1,7fcd	1,4fcd	1,2fcd	1,1fcd	0,9fcd	0,8fcd	0,7fcd	0,6fcd	0,6fcd	0,5fcd

### 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°
2223	2126	1836	1443	1070	775	572	449	365	298	244	201	163	131	104	85	71	59	48	40
100%	96%	83%	65%	48%	35%	26%	20%	16%	13%	11%	9%	7%	6%	5%	4%	3%	3%	2%	2%

### 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°
2223	2244	2242	2220	2173	2113	2051	2001	1968	1946	1927	1915	1910	1917	1932	1946	1961	1983	2005	2001
100%	101%	101%	100%	98%	95%	92%	90%	89%	88%	87%	86%	86%	86%	87%	88%	88%	89%	90%	90%

### Intensities in 180° c-plane

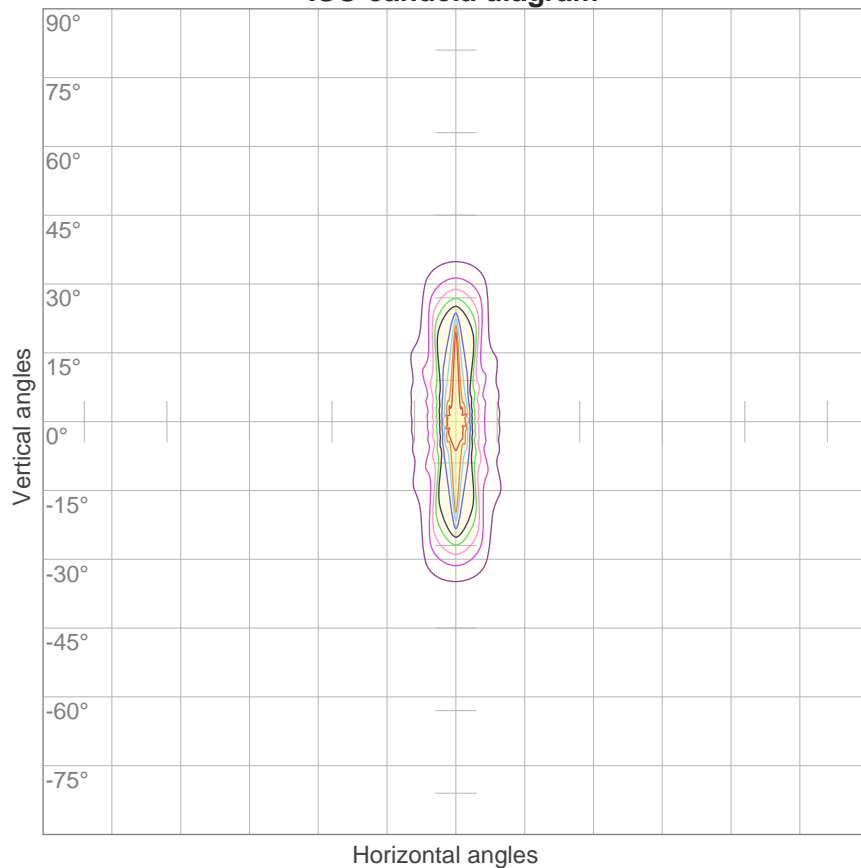
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
2223	2107	1824	1439	1076	791	578	439	356	298	251	207	171	141	114	91	71	60	51	41
100%	95%	82%	65%	48%	36%	26%	20%	16%	13%	11%	9%	8%	6%	5%	4%	3%	3%	2%	2%

### 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°
2223	2229	2227	2217	2192	2157	2114	2087	2080	2077	2072	2058	2044	2028	2018	2012	2018	2046	2069	2087
100%	100%	100%	100%	99%	97%	95%	94%	94%	93%	93%	93%	92%	91%	91%	90%	91%	92%	93%	94%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
17,5°	36,4°	53,3°	97,2%	94,3%

ISO candela diagram



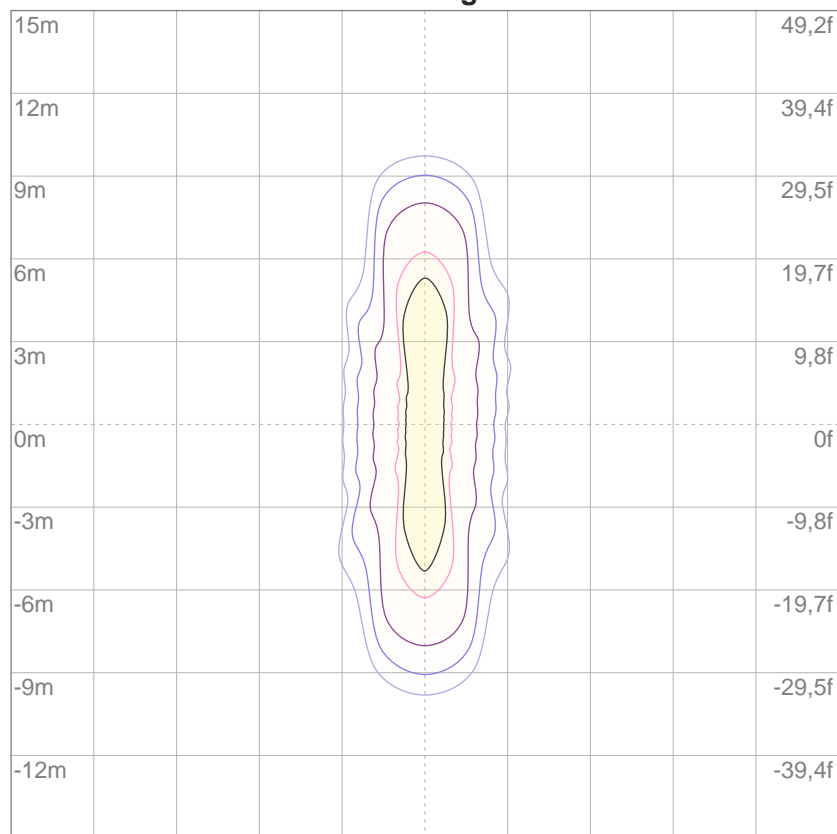
10%	222 cd
20%	445 cd
30%	667 cd
40%	889 cd
50%	1112 cd
60%	1334 cd
70%	1556 cd
80%	1779 cd
90%	2001 cd

Conditions:

Number of c-planes: 16

Candela at center: 2223 cd

ISO lux diagram



3%	0,667 lx
5%	1,11 lx
10%	2,22 lx
30%	6,67 lx
50%	11,1 lx

Conditions:

Number of c-planes: 16

Lux at center: 22,2 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	5,8	6,5	6,1	6,7	6,9	16,6	17,3	16,8	17,5	17,7
	3H	7,6	8,3	7,9	8,5	8,7	16,6	17,2	16,9	17,5	17,7
	4H	8,4	9,0	8,7	9,3	9,5	16,6	17,2	16,9	17,5	17,8
	6H	9,1	9,7	9,4	9,9	10,2	16,9	17,5	17,2	17,7	18,0
	8H	9,5	10,1	9,9	10,4	10,7	17,3	17,9	17,7	18,2	18,5
	12H	10,1	10,6	10,4	10,9	11,2	17,6	18,1	17,9	18,4	18,7
4H	2H	6,8	7,5	7,1	7,7	8,0	16,4	17,0	16,7	17,3	17,6
	3H	8,8	9,3	9,1	9,6	9,9	16,5	17,0	16,8	17,3	17,6
	4H	9,6	10,1	10,0	10,4	10,7	16,6	17,0	16,9	17,4	17,7
	6H	10,5	10,8	10,9	11,2	11,6	17,0	17,3	17,4	17,7	18,1
	8H	11,0	11,3	11,4	11,7	12,1	17,6	17,9	18,0	18,3	18,7
	12H	11,6	11,9	12,0	12,3	12,7	18,0	18,2	18,4	18,6	19,1
8H	4H	10,1	10,4	10,5	10,8	11,2	16,5	16,9	17,0	17,3	17,7
	6H	11,2	11,4	11,6	11,8	12,3	17,0	17,3	17,5	17,7	18,1
	8H	11,8	12,0	12,2	12,4	12,9	17,7	17,9	18,1	18,3	18,8
	12H	12,5	12,7	13,0	13,2	13,7	18,2	18,4	18,7	18,8	19,3
12H	4H	10,2	10,5	10,6	10,9	11,3	16,5	16,8	17,0	17,2	17,6
	6H	11,4	11,6	11,8	12,0	12,5	17,0	17,2	17,5	17,7	18,1
	8H	12,1	12,2	12,5	12,7	13,2	17,7	17,9	18,2	18,3	18,8
Variation of the observer position for the luminaire distance S											
S = 1,0H		+0,1 / -0,2					+4,5 / -2,2				
S = 1,5H		+0,3 / -0,2					+7,1 / -2,4				
S = 2,0H		+0,5 / -0,5					+9,0 / -2,8				
Standard table		BK08					BK02				
Correction summand		-5,1					-0,5				
Corrected glare indices referring to 438 lm total luminous flux											

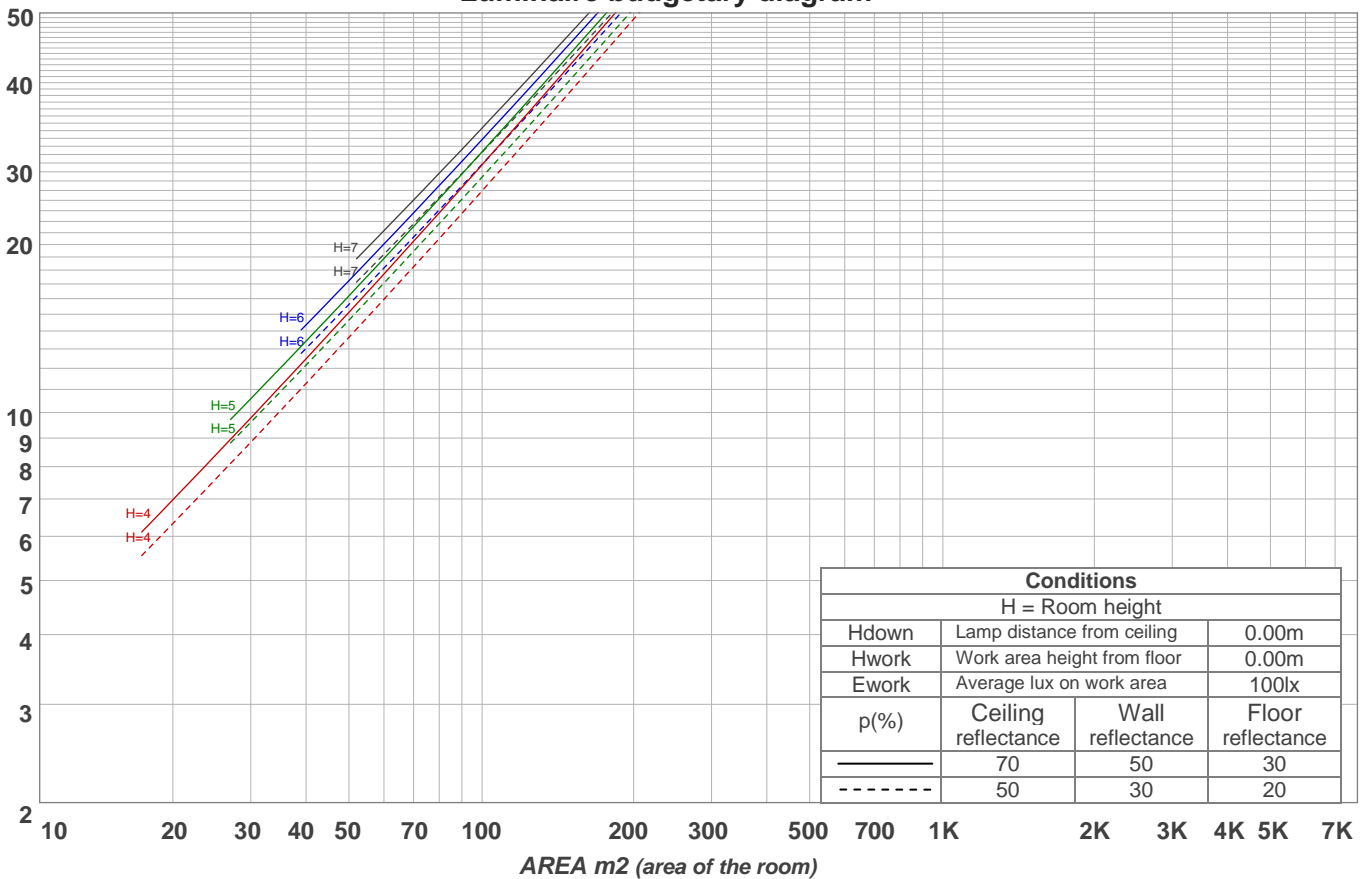
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

## 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	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94
2	109	104	100	97	107	102	99	96	99	96	94	96	94	92	94	92	90	89
3	104	98	94	90	102	97	93	89	94	91	88	92	89	87	90	87	85	84
4	100	93	88	84	98	92	87	84	90	86	83	88	84	82	86	83	81	79
5	96	88	83	79	94	87	82	79	86	81	78	84	80	77	82	79	77	75
6	92	84	79	75	90	83	78	75	82	77	74	80	77	74	79	76	73	72
7	88	80	75	71	87	80	75	71	78	74	71	77	73	70	76	73	70	69
8	85	77	72	68	84	76	71	68	75	71	68	74	70	67	73	70	67	66
9	82	74	69	65	81	73	68	65	72	68	65	71	67	65	71	67	64	63
10	79	71	66	62	78	70	66	62	70	65	62	69	65	62	68	65	62	61

LAMPS (number of lamps)

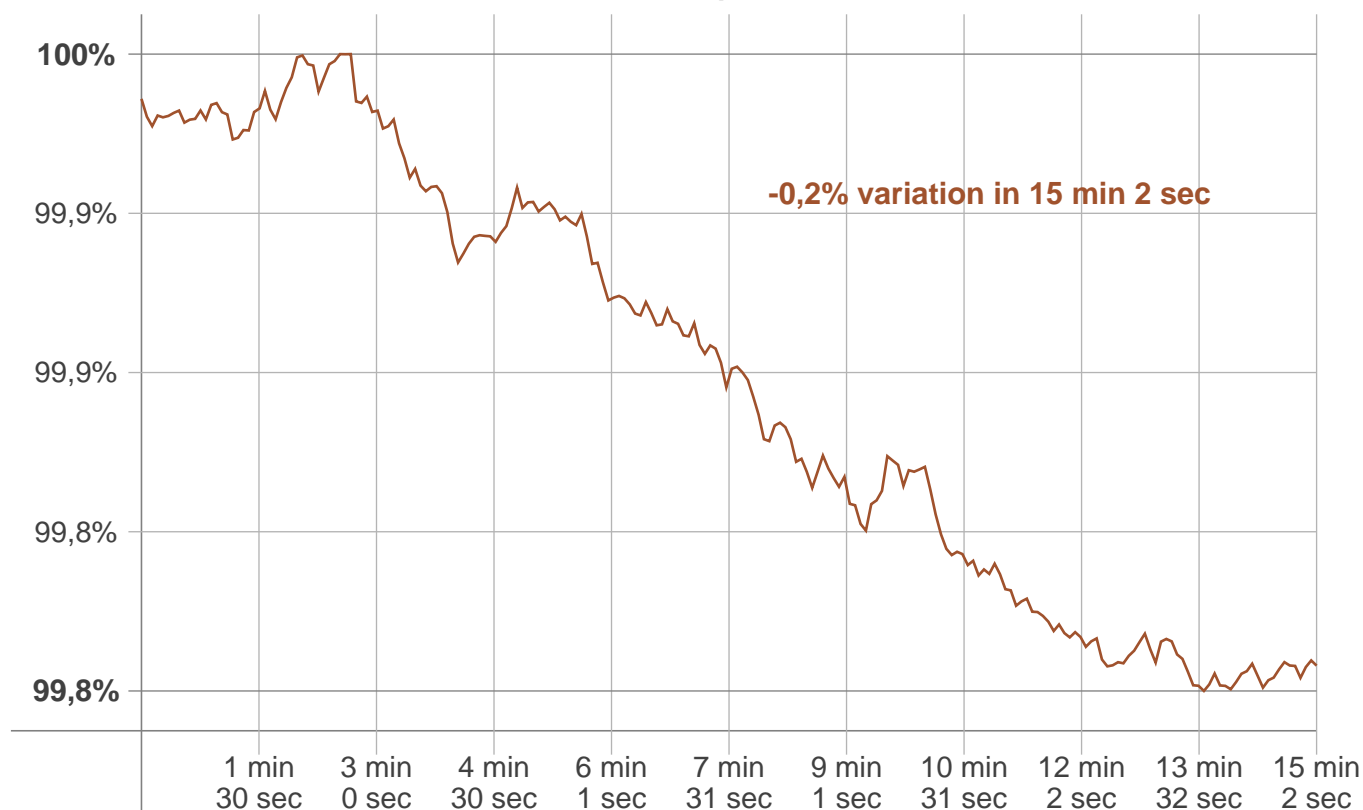
## Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	136 lm	112 lm	48,1 lm	14,2 lm	7,65 lm	5,85 lm	3,82 lm	2,48 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,121 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 2 sec
Warmup variation	-0,2%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
0 K	0 K	0 K

Output change

Output start	Output change	Output end
439 lm	-1 lm	438 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
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