

Light efficiency:



Light quality:



Color temperature:



Output: 99,5 lm

Peak: 156 cd

Power: 4,7 W

PF: 1,0



Product name:

**F L-S O - 2-4 C -1 0 0-B-LSWT-W2**

Item number:

**F L / S O - 2 / 4 C / 1 0 0 / B / LSWT/W2**

Date and time:

**08.03.2019 11:59:39**

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**

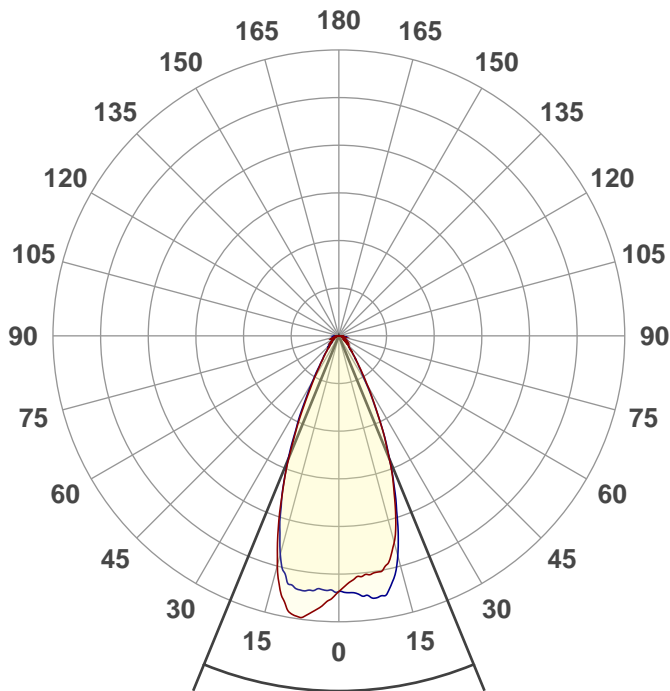
**Master of Engineering**

Pruefort:

**Lichtlabor**

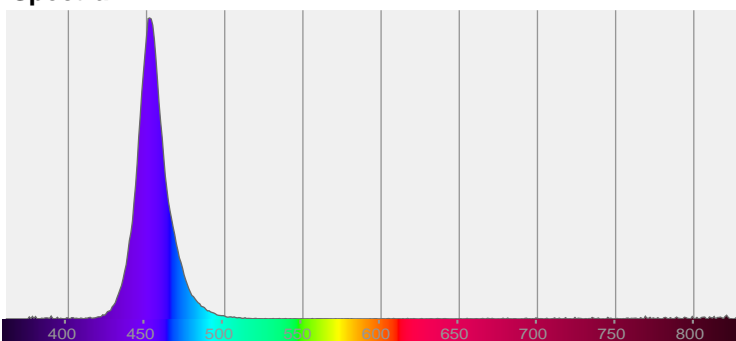
**Gaustasse13-15**

**55411 Bingen am Rhein**

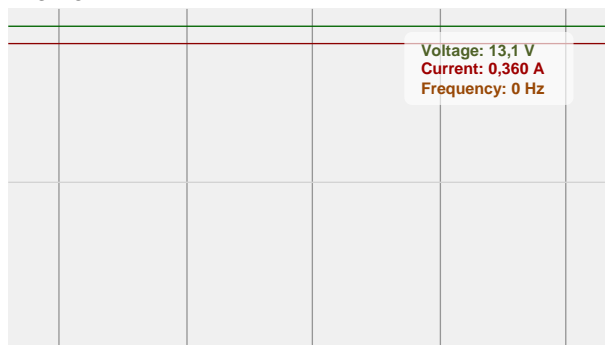


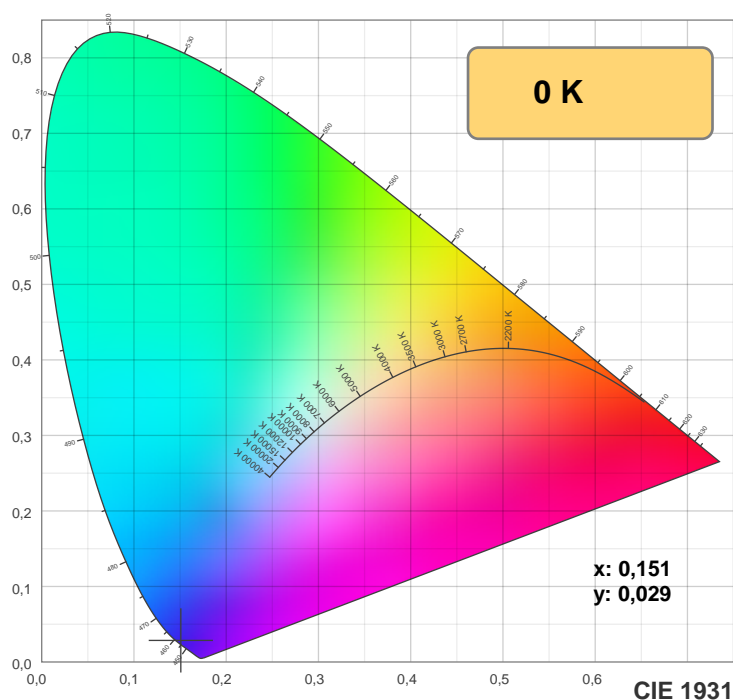
CIE 1931  
x: 0,151  
y: 0,029

Spectra



Power





TM30: 0,0



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

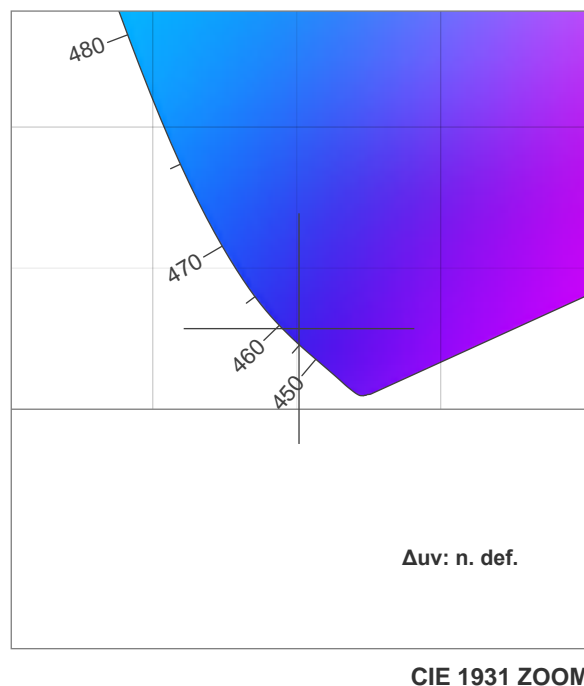
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

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

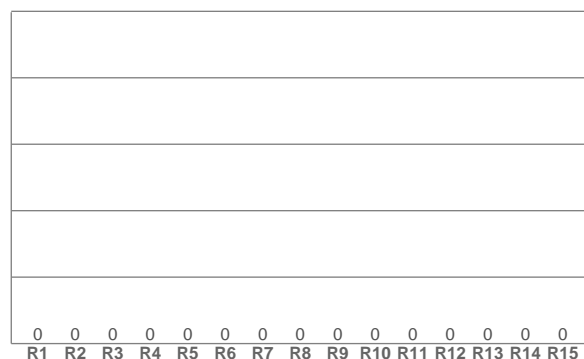
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

CQS Q values

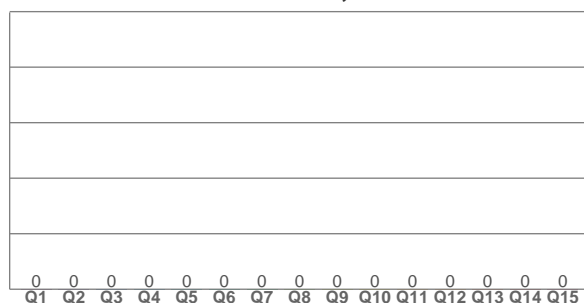
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0



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	Δuv
0 K	0,0	0,0	0,0	0,0	0,0	0,151	0,029	0,198	0,056	n. def.

## TM30 details

**Rf 0,0**

Fidelity index Rf

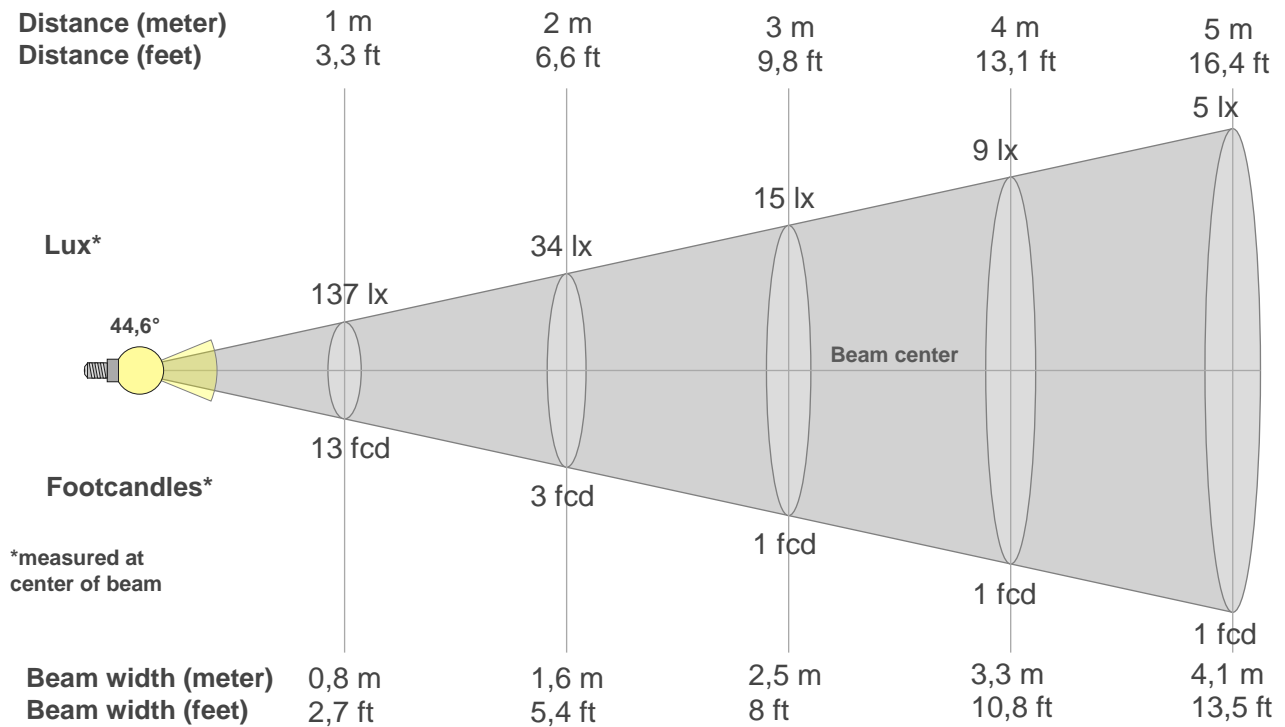
**Rg 0,0**

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
137lx	34lx	15lx	9lx	5lx	4lx	3lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx	1lx	1lx	0lx	0lx	0lx	0lx
12,8fcd	3,2fcd	1,4fcd	0,8fcd	0,5fcd	0,4fcd	0,3fcd	0,2fcd	0,2fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0,1fcd	0fcd	0fcd	0fcd	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°
137	133	130	129	129	129	125	119	110	98	86	74	61	49	39	31	24	19	15	13
100%	97%	95%	94%	94%	94%	91%	86%	80%	72%	63%	54%	45%	36%	29%	23%	18%	14%	11%	9%

### 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°
137	138	139	140	142	142	136	128	116	101	87	74	62	49	38	29	23	19	15	12
100%	100%	101%	102%	103%	103%	99%	93%	84%	74%	64%	54%	45%	36%	28%	21%	17%	14%	11%	9%

### Intensities in 180° c-plane

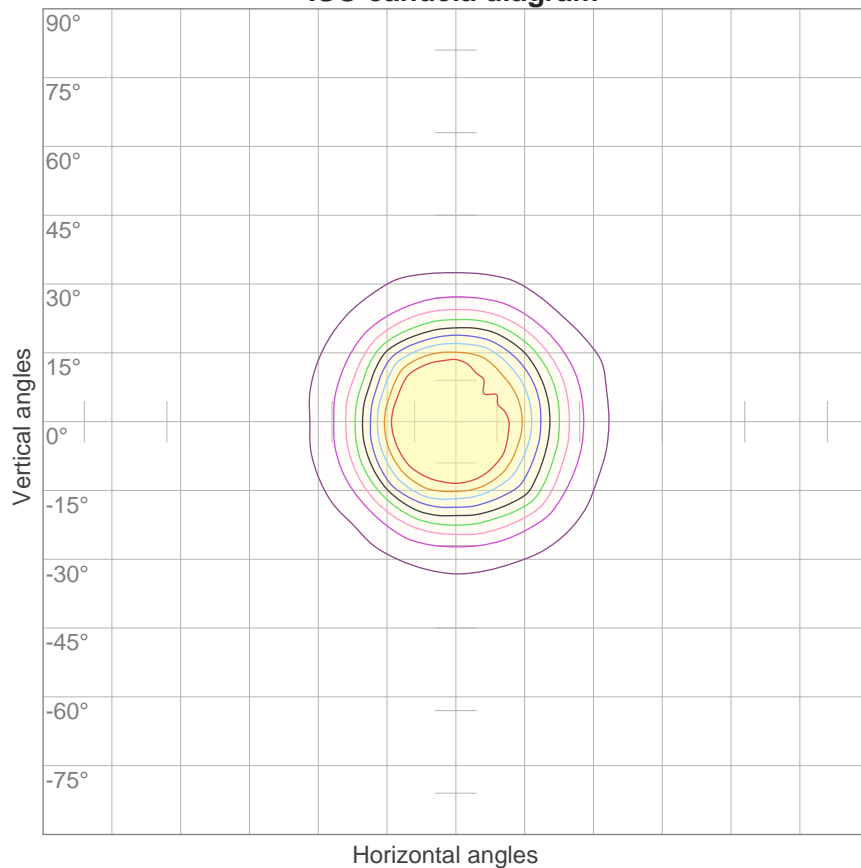
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
137	142	146	150	153	151	144	134	120	104	88	73	58	45	34	27	20	16	13	11
100%	103%	106%	109%	111%	110%	105%	98%	87%	76%	64%	53%	42%	33%	25%	19%	15%	12%	10%	8%

### 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°
137	137	137	138	138	137	134	127	115	102	88	74	60	48	37	28	22	17	14	11
100%	99%	99%	100%	101%	100%	98%	92%	84%	74%	64%	54%	44%	35%	27%	21%	16%	12%	10%	8%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
44,6°	71,7°	125,1°	92,9%	86,5%

ISO candela diagram



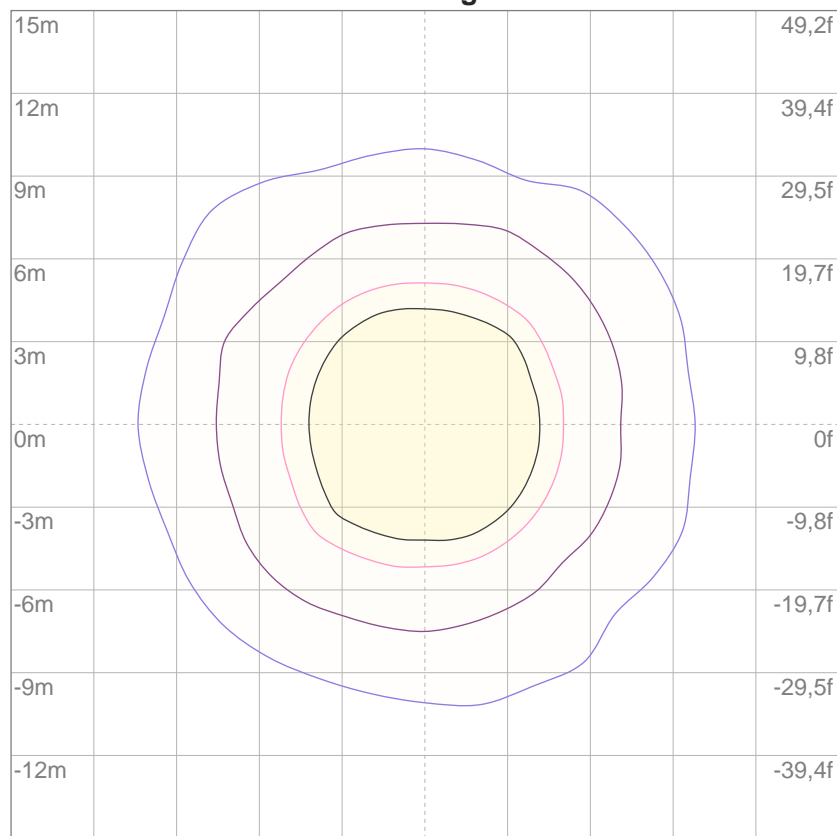
10%	14 cd
20%	27 cd
30%	41 cd
40%	55 cd
50%	69 cd
60%	82 cd
70%	96 cd
80%	110 cd
90%	124 cd

Conditions:

Number of c-planes: 16

Candela at center: 137 cd

ISO lux diagram



3%	41,2m lx
5%	68,7m lx
10%	0,137 lx
30%	0,412 lx
50%	0,687 lx

Conditions:

Number of c-planes: 16

Lux at center: 1,37 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	8,5	9,3	8,7	9,5	9,7	8,3	9,1	8,5	9,3	9,5
	3H	10,0	10,7	10,3	11,0	11,2	9,6	10,4	9,9	10,7	10,9
	4H	10,7	11,4	11,0	11,7	11,9	10,5	11,2	10,8	11,4	11,7
	6H	11,8	12,4	12,1	12,7	13,0	11,4	12,1	11,7	12,4	12,6
	8H	12,3	13,0	12,7	13,3	13,6	12,1	12,7	12,4	13,0	13,3
	12H	12,9	13,5	13,2	13,8	14,1	12,9	13,5	13,2	13,8	14,1
4H	2H	8,9	9,6	9,2	9,9	10,2	8,7	9,5	9,0	9,7	10,0
	3H	10,7	11,3	11,1	11,7	12,0	10,4	11,0	10,8	11,3	11,7
	4H	11,7	12,3	12,1	12,6	12,9	11,4	12,0	11,8	12,3	12,6
	6H	13,0	13,5	13,4	13,8	14,2	12,6	13,1	13,1	13,5	13,9
	8H	13,7	14,1	14,1	14,5	14,9	13,5	13,9	13,9	14,3	14,7
	12H	14,4	14,8	14,8	15,2	15,6	14,4	14,8	14,9	15,2	15,6
8H	4H	12,1	12,6	12,6	12,9	13,3	11,9	12,3	12,3	12,7	13,1
	6H	13,7	14,0	14,1	14,5	14,9	13,4	13,7	13,8	14,1	14,6
	8H	14,6	14,9	15,1	15,4	15,8	14,4	14,7	14,9	15,2	15,6
	12H	15,6	15,8	16,0	16,3	16,8	15,6	15,8	16,1	16,3	16,8
12H	4H	12,2	12,6	12,7	13,0	13,4	12,0	12,3	12,4	12,8	13,2
	6H	13,9	14,2	14,4	14,6	15,1	13,6	13,9	14,1	14,3	14,8
	8H	15,0	15,2	15,5	15,7	16,2	14,8	15,0	15,3	15,5	16,0
Variation of the observer position for the luminaire distance S											
S = 1,0H		+0,3 / -0,2					+0,2 / -0,2				
S = 1,5H		+0,6 / -0,5					+0,5 / -0,4				
S = 2,0H		+1,0 / -0,6					+1,0 / -0,8				
Standard table		BK08					BK09				
Correction summand		-2,6					-2,3				
Corrected glare indices referring to 99,5 lm total luminous flux											

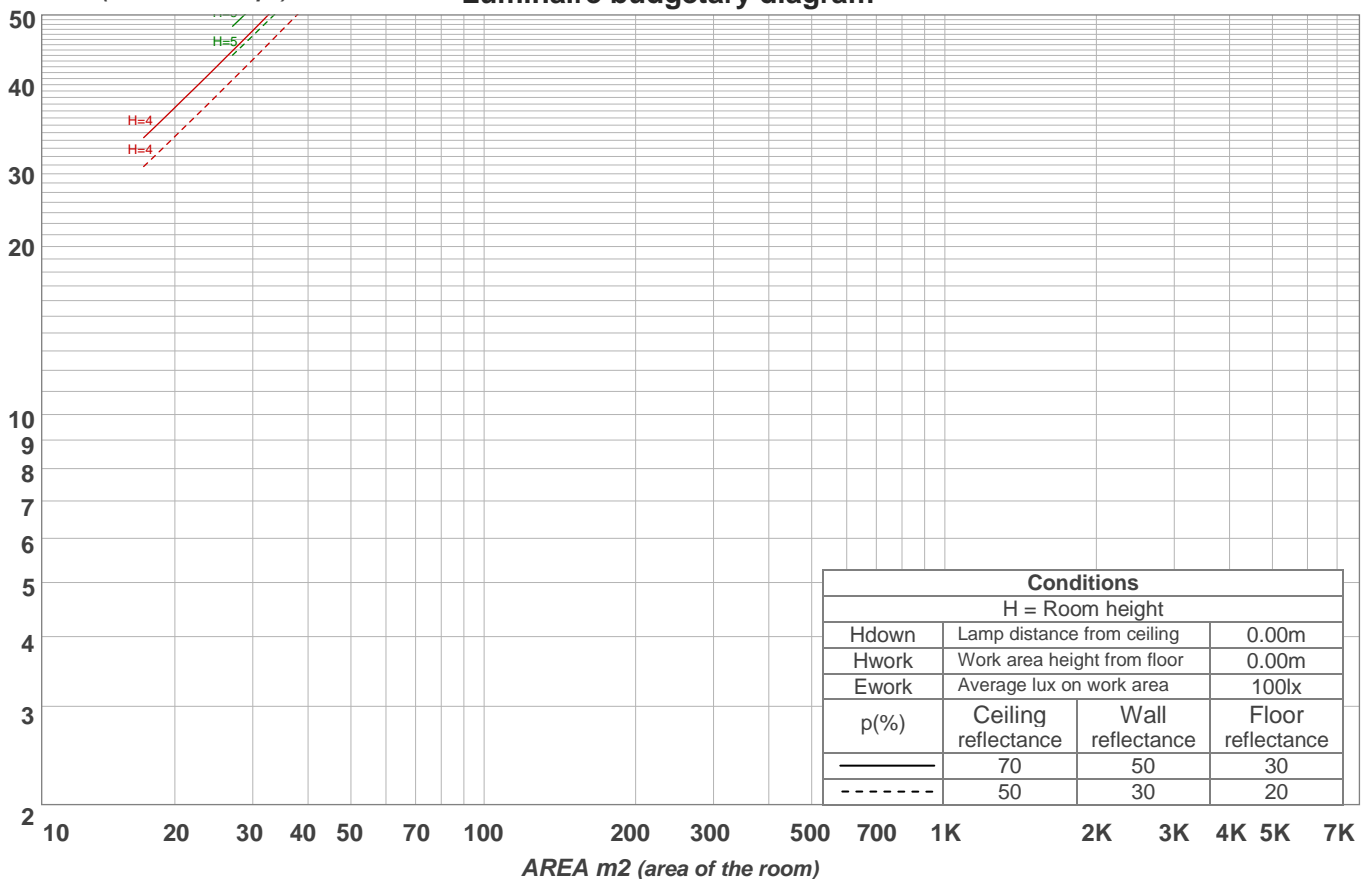
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

## 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	112	109	106	103	110	107	104	102	103	101	99	99	97	96	95	94	93	91
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	85	84
3	101	94	88	84	99	92	87	83	90	85	82	87	84	81	85	82	79	78
4	96	88	82	77	94	86	81	77	84	79	76	82	78	75	80	77	74	72
5	91	82	76	72	89	81	76	71	79	74	71	78	73	70	76	72	69	68
6	87	77	71	67	85	77	71	67	75	70	66	74	69	66	72	68	65	64
7	83	73	67	63	81	73	67	63	71	66	62	70	65	62	69	65	62	60
8	79	69	63	59	78	69	63	59	68	63	59	67	62	59	66	62	58	57
9	76	66	60	56	74	65	60	56	65	59	56	64	59	56	63	59	55	54
10	72	63	57	53	71	62	57	53	62	57	53	61	56	53	60	56	53	51

LAMPS (number of lamps)

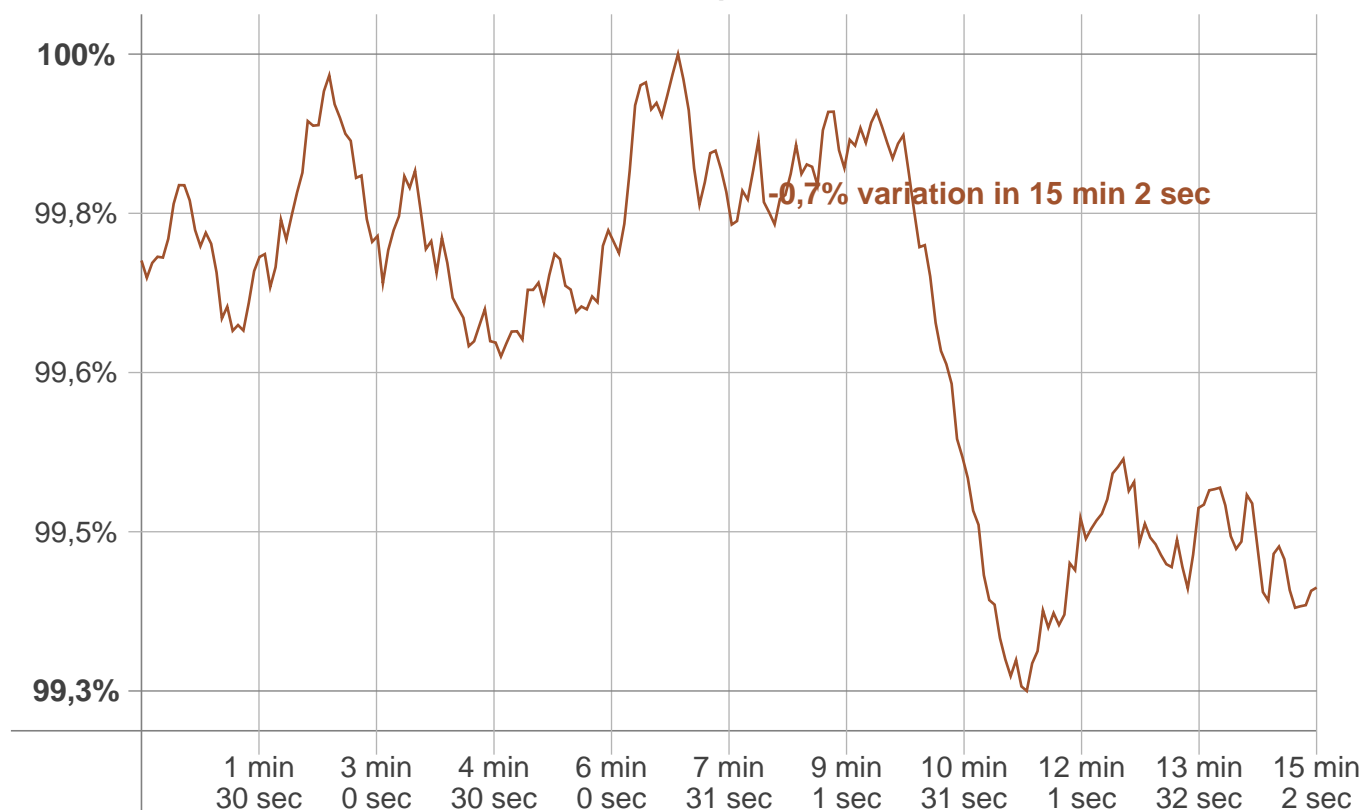
## Luminaire budgetary diagram



## Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	33,0 lm	25,8 lm	10,8 lm	5,55 lm	3,91 lm	2,99 lm	2,28 lm	1,78 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,048 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	-0,7%

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

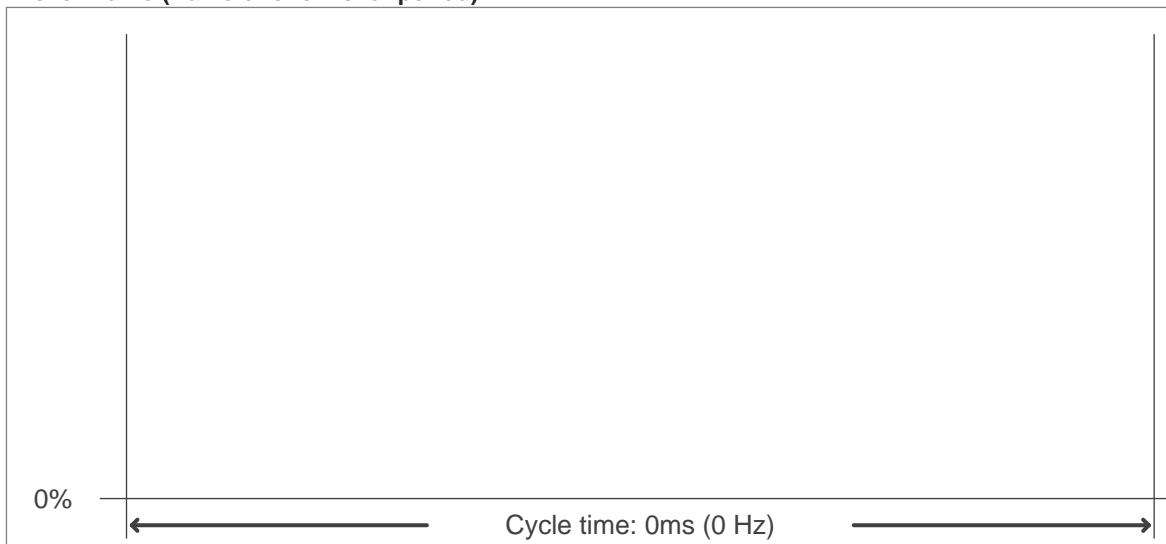
Output start	Output change	Output end
99,6 lm	-0,1 lm	99,5 lm



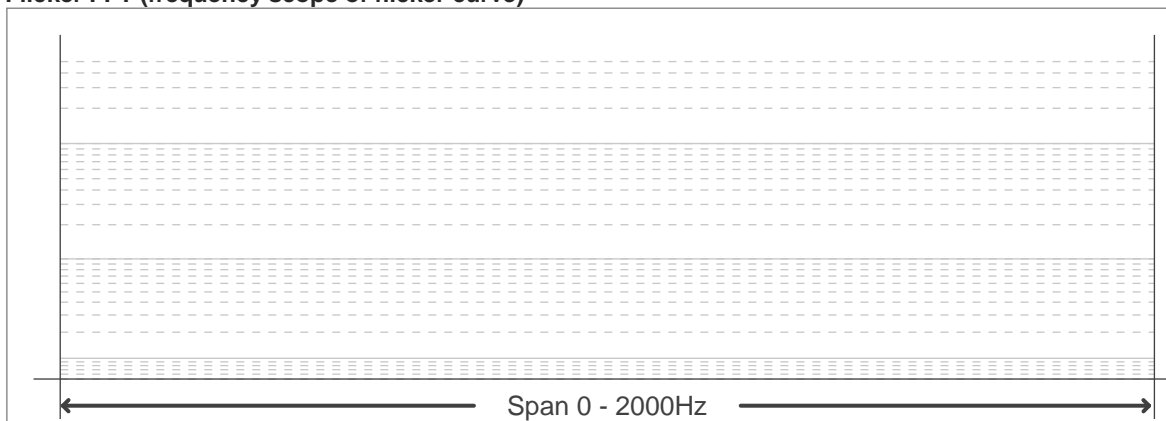
## Flicker curve (complete sampled flicker signal)



## 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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