

Light efficiency:

77 Lumen/Watt

Light quality:

CRI: 92,6

Color temperature:

2757 K

Output: 336 lm

Peak: 1434 cd

Power: 4,4 W

PF: 1,0



Product name:

F L-S O - 2-4 C -1 0 0-W-LSLT-W

Item number:

F L / S O - 2 / 4 C / 1 0 0 / W / LSLT / W

Date and time:

12.03.2019 12:45:30

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

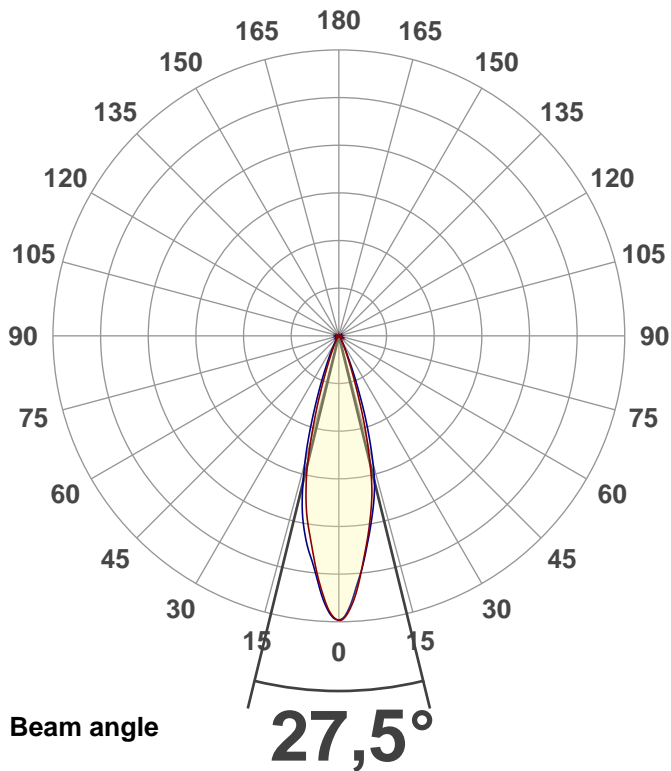
Master of Engineering

Pruefort:

Lichtlabor

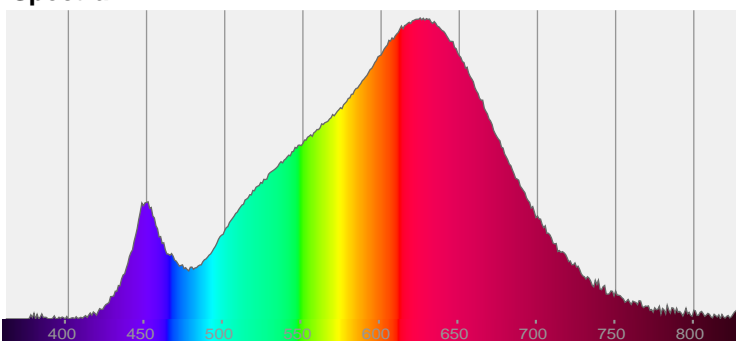
Gaustasse13-15

55411 Bingen am Rhein

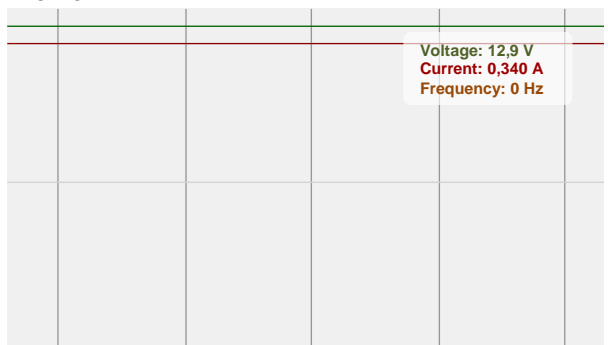


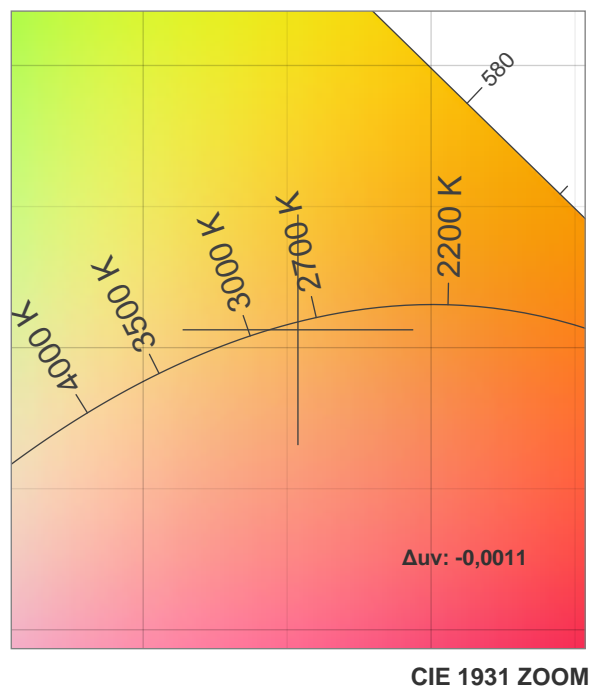
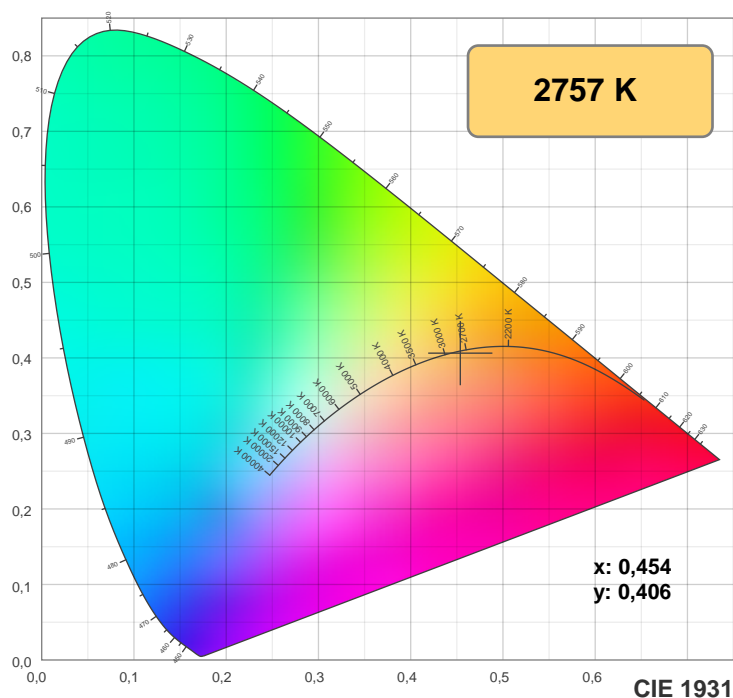
CIE 1931
x: 0,454
y: 0,406

Spectra

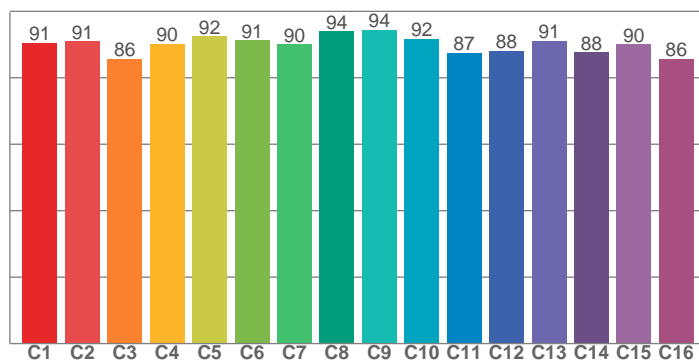


Power

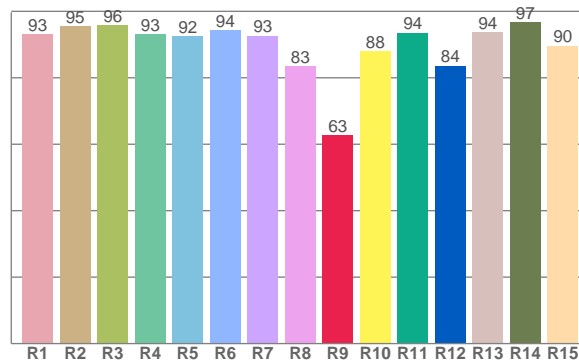




TM30: 90,1



CRI: 92,6 (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
93,1	95,5	95,8	93,1	92,5	94,3	92,6	83,5	62,8	88,1	93,6	83,7	93,7	96,7	89,7

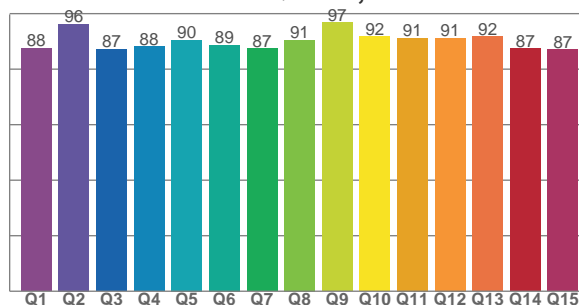
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90,5	91,0	85,8	90,2	92,4	91,2	90,1	94,0	94,4	91,7	87,5	88,0	91,1	87,7	90,1	85,7

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
87,5	96,2	87,2	88,1	90,4	88,8	87,4	90,5	96,8	91,7	91,2	91,2	91,7	87,4	87,1

CQS: 89,6



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
2757 K	92,6	62,8	90,1	101,4	89,6	0,454	0,406	0,260	0,350	-0,0011

TM30 details

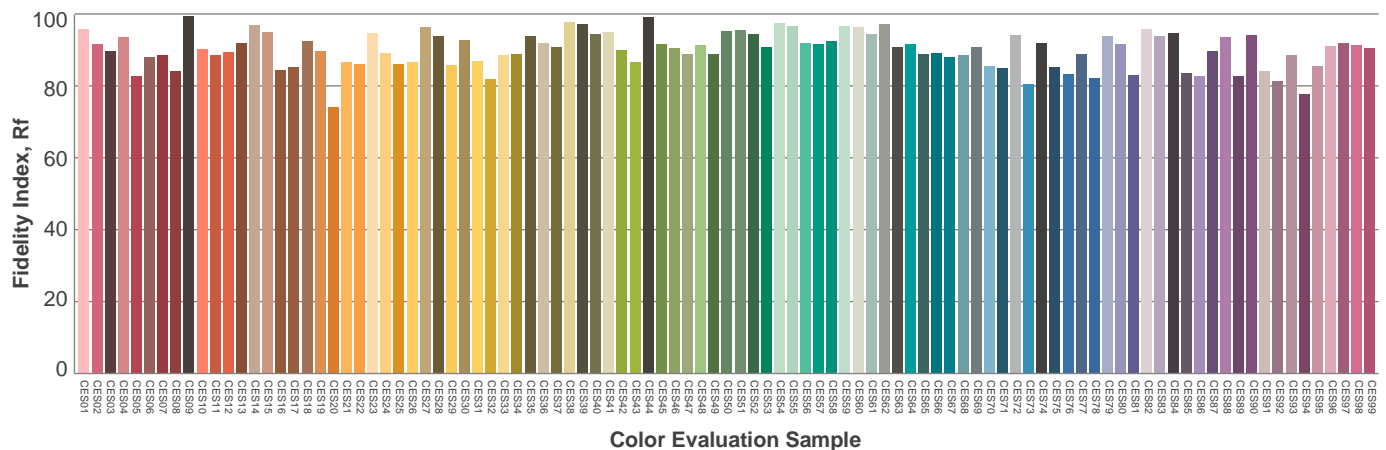
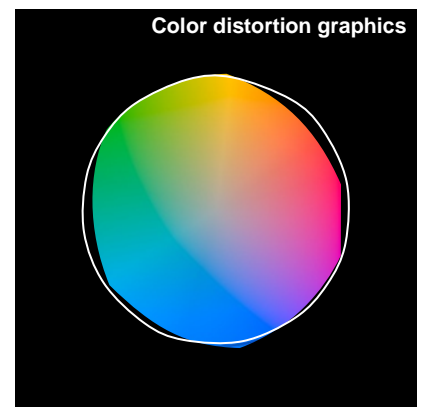
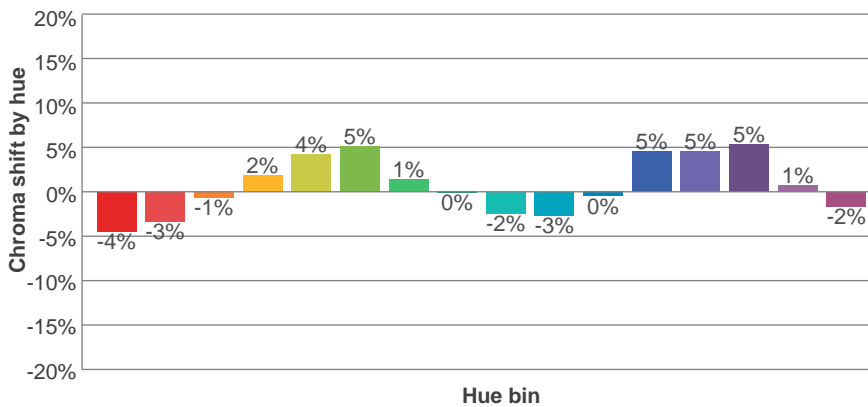
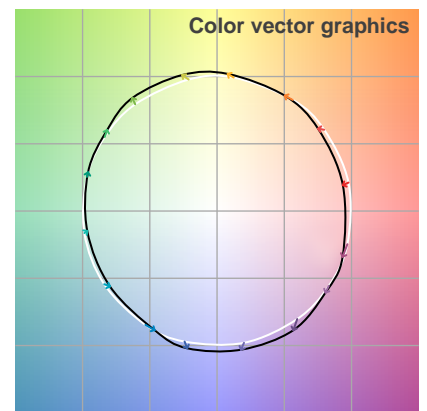
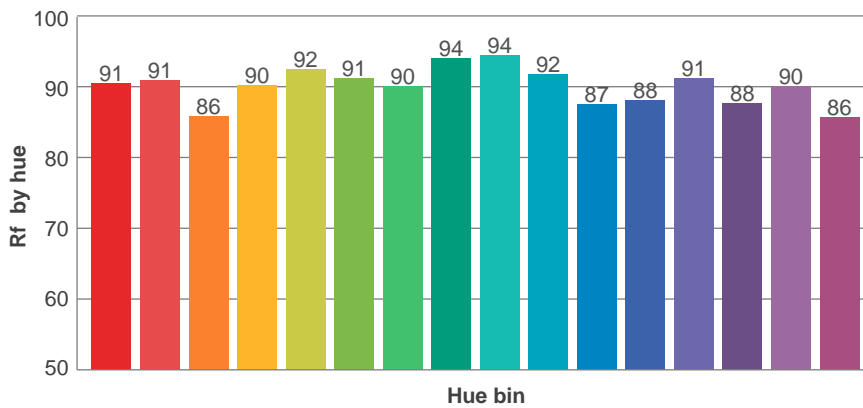
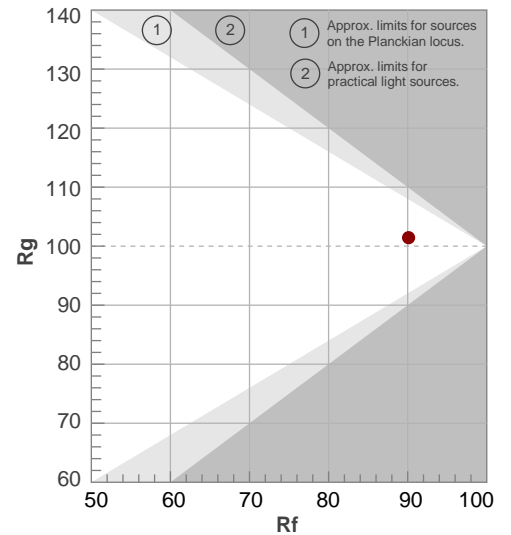
Rf 90,1

Fidelity index Rf

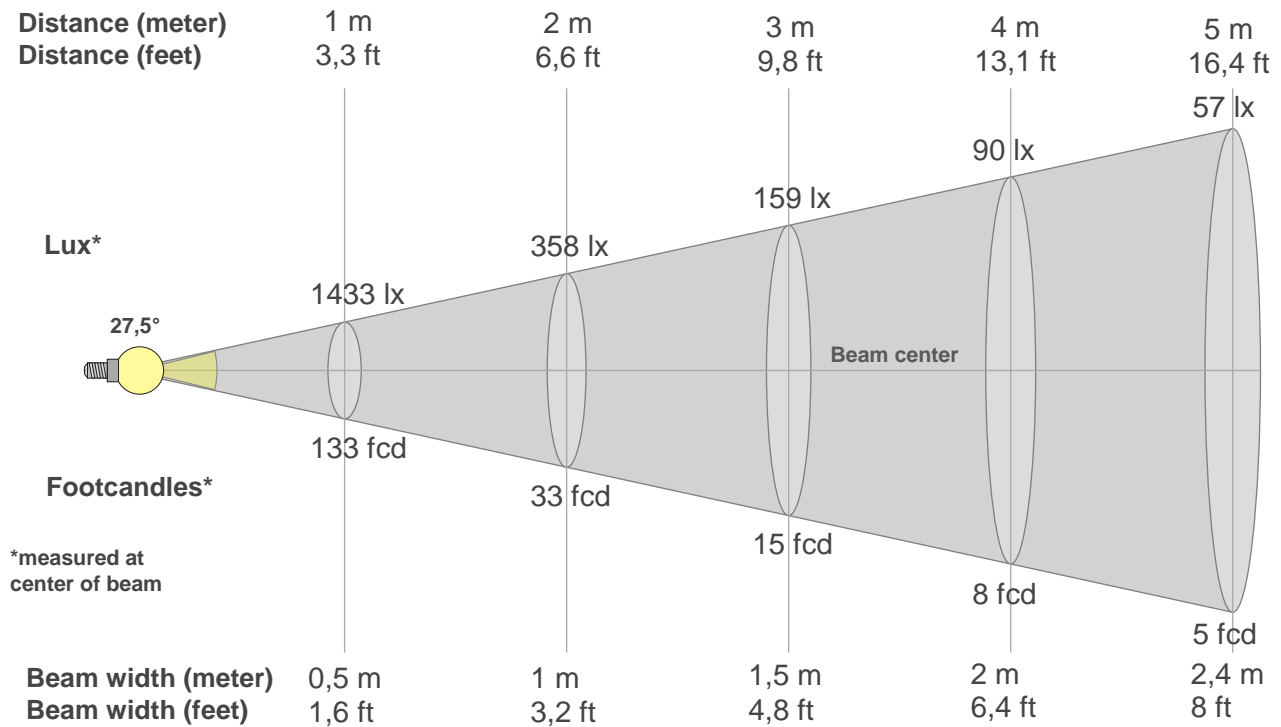
Rg 101,4

Gammut index Rg

Hue Bin	R_f	Graphic shifts (%)	
		Chroma	Hue
1	91	-4%	-1%
2	91	-3%	3%
3	86	-1%	7%
4	90	2%	5%
5	92	4%	4%
6	91	5%	-1%
7	90	1%	-5%
8	94	0%	-3%
9	94	-2%	-1%
10	92	-3%	4%
11	87	0%	8%
12	88	5%	3%
13	91	5%	-3%
14	88	5%	-7%
15	90	1%	-5%
16	86	-2%	-10%



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
1433lx	358lx	159lx	90lx	57lx	40lx	29lx	22lx	18lx	14lx	12lx	10lx	8lx	7lx	6lx	6lx	5lx	4lx	4lx	4lx
133,1fc	33,3fcd	14,8fcd	8,3fcd	5,3fcd	3,7fcd	2,7fcd	2,1fcd	1,6fcd	1,3fcd	1,1fcd	0,9fcd	0,8fcd	0,7fcd	0,6fcd	0,5fcd	0,5fcd	0,4fcd	0,4fcd	0,3fcd

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°
1433	1392	1290	1157	1035	920	801	640	471	310	199	125	83	57	40	29	21	16	13	10
100%	97%	90%	81%	72%	64%	56%	45%	33%	22%	14%	9%	6%	4%	3%	2%	1%	1%	1%	1%

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°
1433	1382	1268	1162	1049	947	849	739	587	430	282	174	102	64	41	29	21	16	12	10
100%	96%	88%	81%	73%	66%	59%	52%	41%	30%	20%	12%	7%	4%	3%	2%	1%	1%	1%	1%

Intensities in 180° c-plane

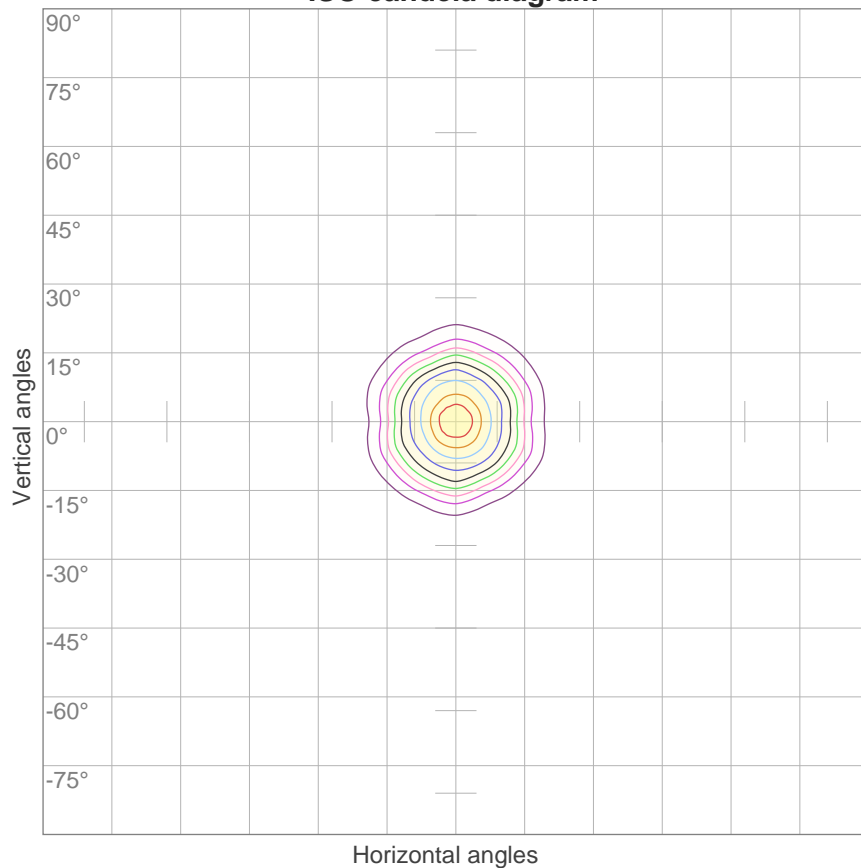
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
1433	1387	1279	1154	1032	926	797	642	458	305	190	121	79	55	39	28	21	16	12	10
100%	97%	89%	81%	72%	65%	56%	45%	32%	21%	13%	8%	6%	4%	3%	2%	1%	1%	1%	1%

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°
1433	1397	1299	1183	1094	1001	888	741	582	420	290	194	131	89	63	44	32	24	18	14
100%	97%	91%	83%	76%	70%	62%	52%	41%	29%	20%	14%	9%	6%	4%	3%	2%	2%	1%	1%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
27,5°	44,7°	59,1°	98,5%	96,9%

ISO candela diagram



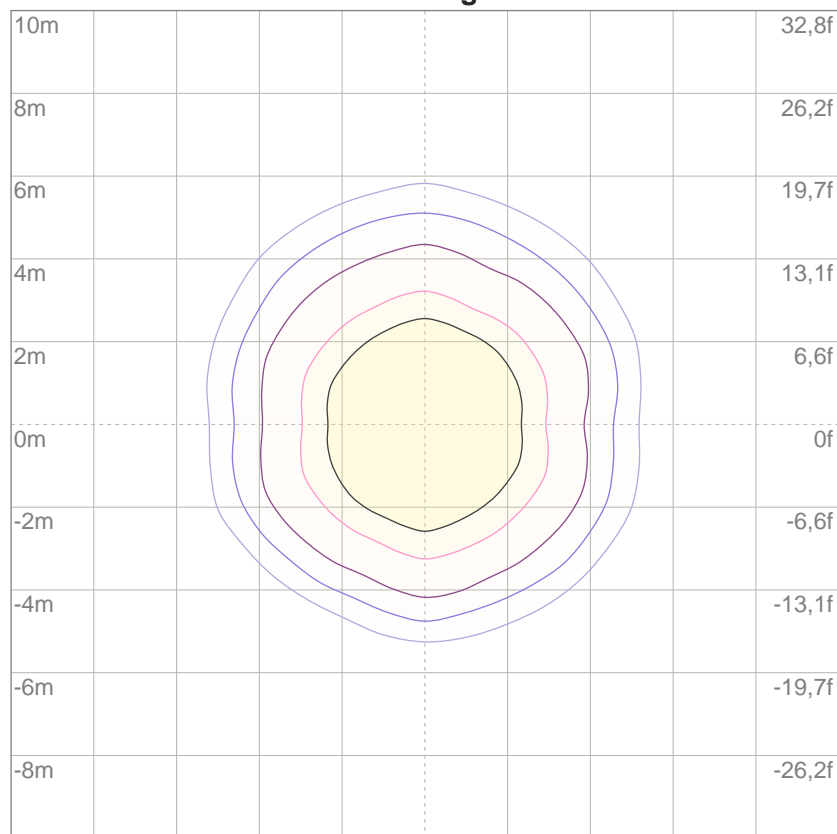
10%	143 cd
20%	287 cd
30%	430 cd
40%	573 cd
50%	716 cd
60%	860 cd
70%	1003 cd
80%	1146 cd
90%	1289 cd

Conditions:

Number of c-planes: 16

Candela at center: 1433 cd

ISO lux diagram



3%	0,430 lx
5%	0,716 lx
10%	1,43 lx
30%	4,30 lx
50%	7,16 lx

Conditions:

Number of c-planes: 16

Lux at center: 14,3 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	3,2	3,9	3,4	4,0	4,2	2,4	3,1	2,7	3,3	3,5
	3H	4,4	5,0	4,7	5,2	5,5	3,9	4,6	4,2	4,8	5,0
	4H	5,1	5,7	5,4	5,9	6,2	4,8	5,3	5,1	5,6	5,9
	6H	5,8	6,4	6,1	6,6	6,9	5,8	6,3	6,1	6,6	6,9
	8H	6,4	6,9	6,7	7,2	7,5	6,4	7,0	6,8	7,2	7,5
	12H	7,0	7,5	7,3	7,8	8,1	7,3	7,8	7,7	8,1	8,4
4H	2H	3,7	4,3	4,0	4,5	4,8	3,0	3,6	3,3	3,8	4,1
	3H	5,1	5,5	5,4	5,8	6,2	4,7	5,2	5,0	5,5	5,8
	4H	5,9	6,3	6,3	6,7	7,0	5,7	6,1	6,0	6,4	6,8
	6H	6,8	7,2	7,2	7,5	7,9	6,8	7,1	7,2	7,5	7,9
	8H	7,5	7,8	7,9	8,2	8,6	7,6	7,9	8,0	8,3	8,7
	12H	8,3	8,5	8,7	8,9	9,4	8,6	8,9	9,1	9,3	9,7
8H	4H	6,2	6,5	6,6	6,9	7,3	6,0	6,3	6,4	6,7	7,1
	6H	7,3	7,5	7,8	8,0	8,4	7,3	7,5	7,7	7,9	8,3
	8H	8,2	8,4	8,6	8,8	9,3	8,1	8,3	8,6	8,8	9,2
	12H	9,1	9,3	9,6	9,7	10,2	9,4	9,6	9,9	10,1	10,6
12H	4H	6,2	6,5	6,7	6,9	7,3	6,0	6,3	6,5	6,7	7,1
	6H	7,5	7,7	7,9	8,1	8,6	7,4	7,6	7,9	8,0	8,5
	8H	8,4	8,6	8,9	9,0	9,5	8,4	8,5	8,9	9,0	9,5
Variation of the observer position for the luminaire distance S											
S = 1,0H		+0,4 / -0,3					+0,4 / -0,3				
S = 1,5H		+1,1 / -0,6					+0,9 / -0,5				
S = 2,0H		+1,8 / -0,8					+1,5 / -0,7				
Standard table		BK07					---				
Correction summand		-9,1					---				
Corrected glare indices referring to 336 lm total luminous flux											

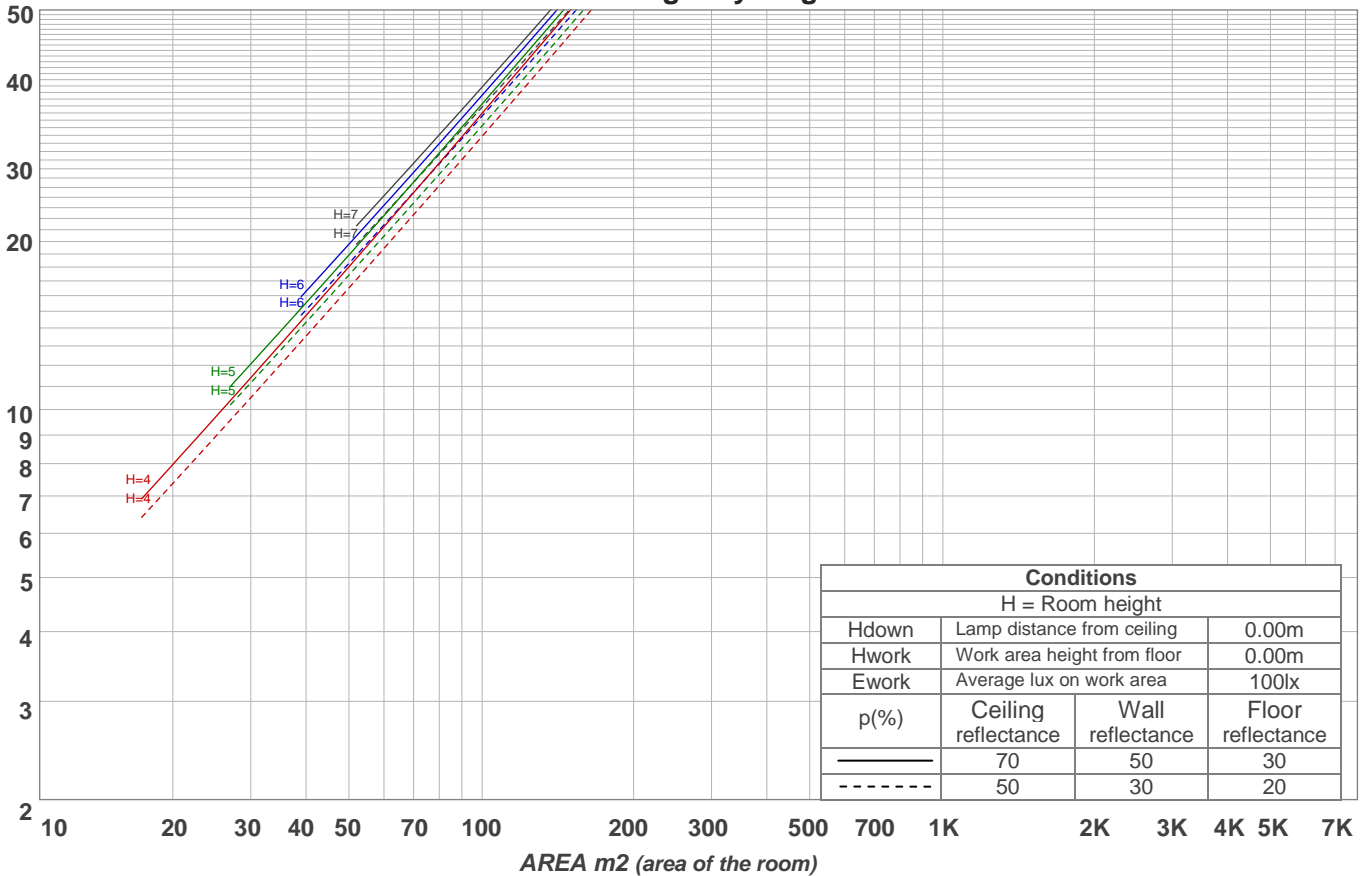
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

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	115	112	110	108	112	110	108	107	106	105	103	103	101	100	99	98	98	96
2	111	107	104	101	109	105	102	100	102	100	98	99	97	96	96	95	94	92
3	107	102	98	95	105	101	97	94	98	95	93	96	93	91	94	92	90	89
4	103	98	94	90	102	97	93	90	95	91	89	93	90	88	91	89	87	86
5	100	94	90	86	99	93	89	86	91	88	85	90	87	85	89	86	84	83
6	97	91	86	83	96	90	86	83	89	85	82	87	84	82	86	83	81	80
7	94	88	83	80	93	87	83	80	86	82	80	85	82	79	84	81	79	78
8	92	85	80	77	91	84	80	77	83	80	77	82	79	77	82	79	76	75
9	89	82	78	75	88	82	78	75	81	77	75	80	77	75	79	76	74	73
10	87	80	76	73	86	79	75	73	79	75	73	78	75	72	77	74	72	71

LAMPS (number of lamps)

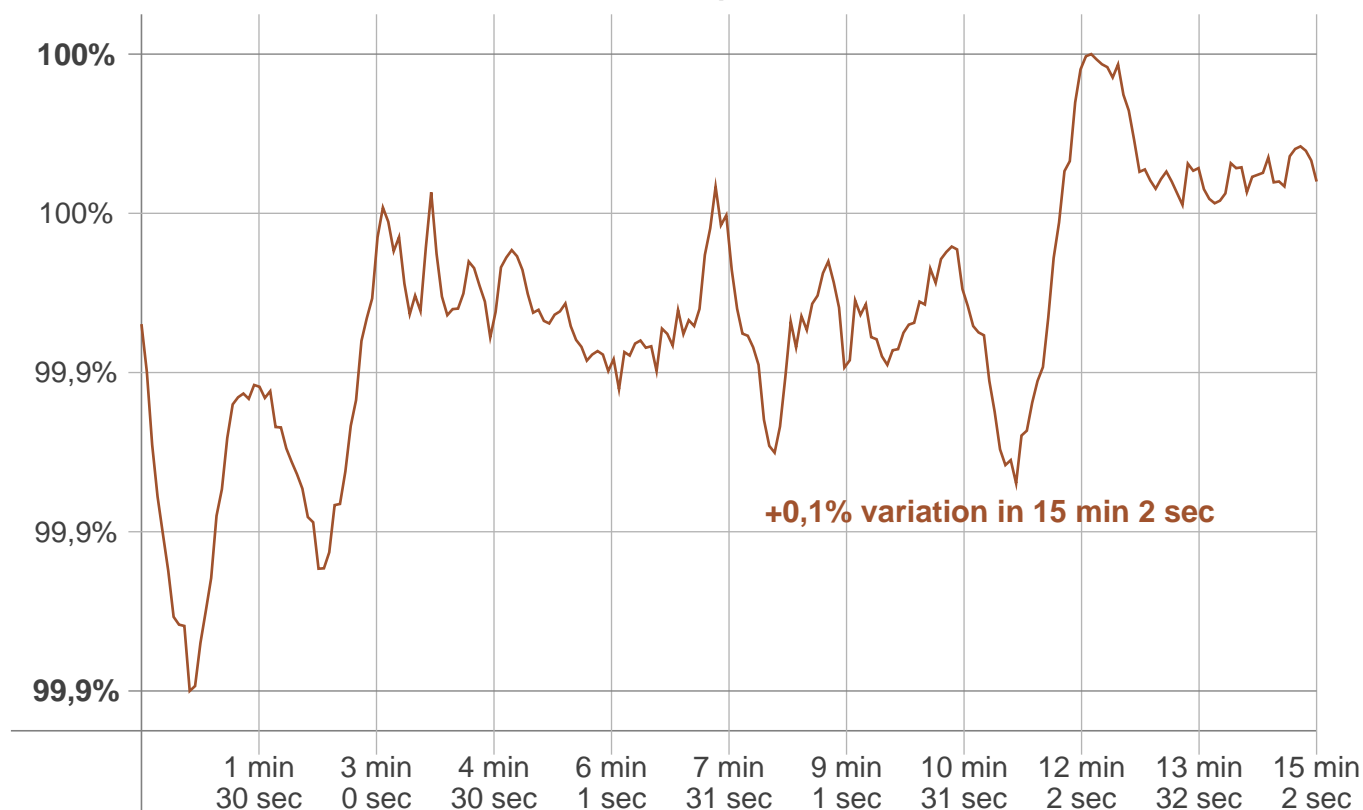
Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	161 lm	43,7 lm	11,1 lm	4,82 lm	3,24 lm	2,43 lm	1,59 lm	1,10 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,063 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	+0,1%

Warmup conditions

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

Color temperature change

CCT start	CCT change	CCT end
2758 K	-1 K	2757 K

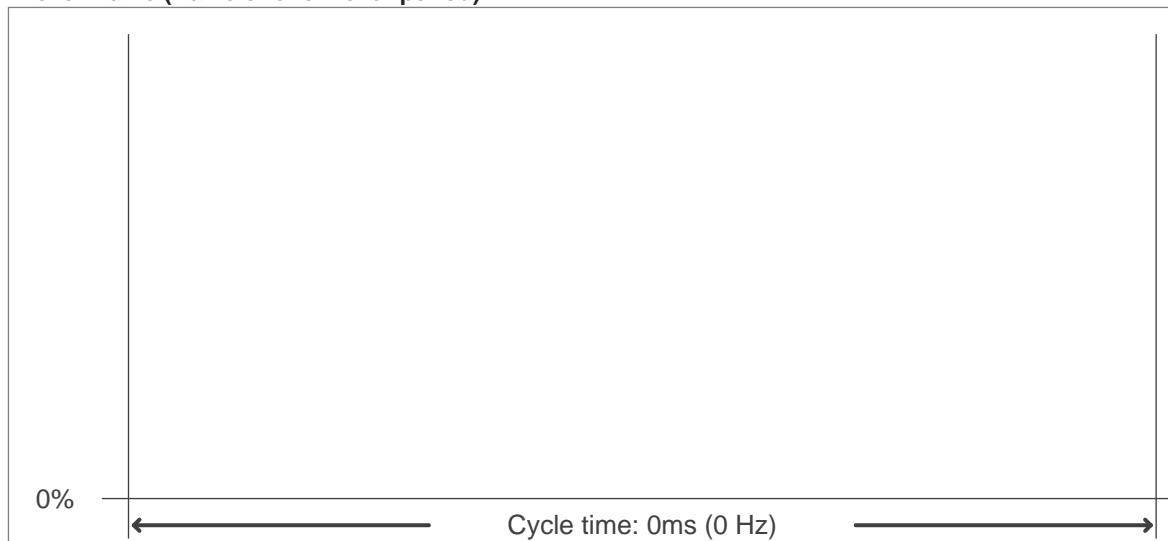
Output change

Output start	Output change	Output end
336 lm	+ 1m	336 lm

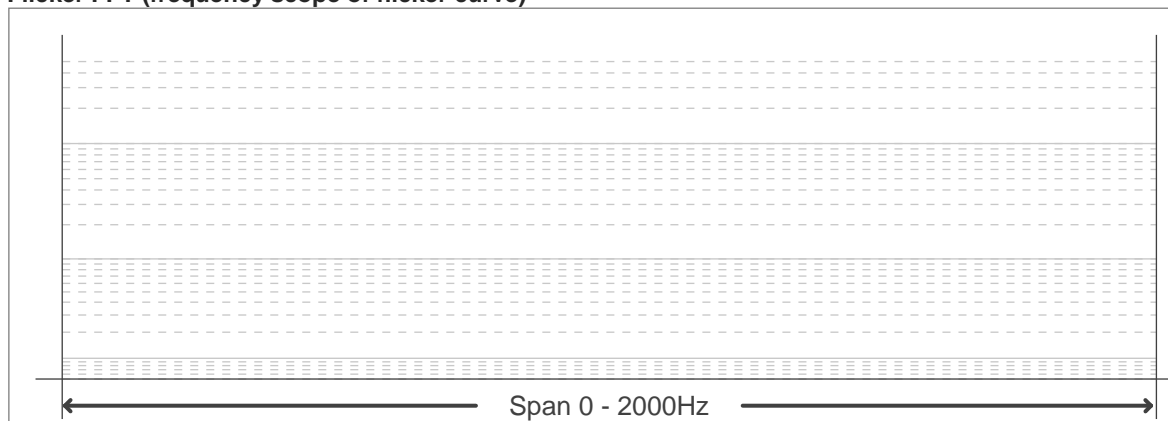
Flicker curve (complete sampled flicker signal)



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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