

Light efficiency:

80 Lumen/Watt

Light quality:

CRI: 92,5

Color temperature:

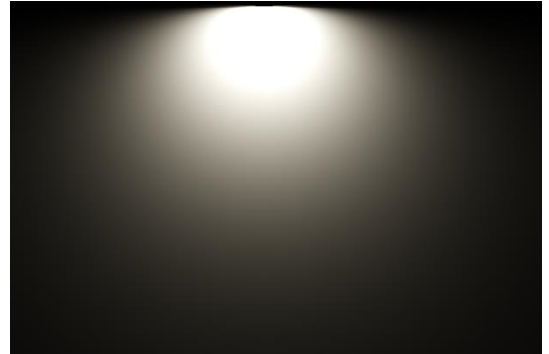
2744 K

Output: 353 lm

Peak: 1798 cd

Power: 4,4 W

PF: 1,0



Product name:

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

Item number:

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

Date and time:

18.03.2019 12:28:42

Description:

HEIDI.D8°

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

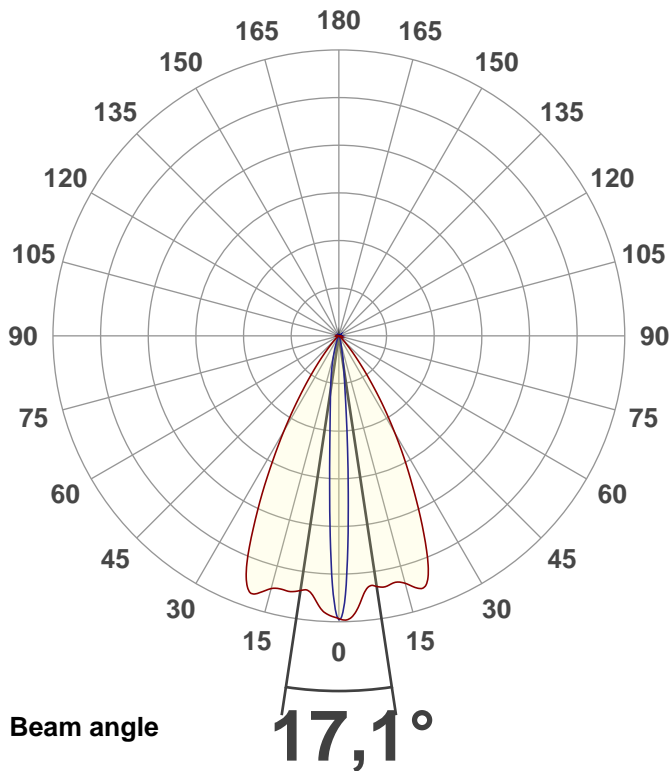
Master of Engineering

Pruefort:

Lichtlabor

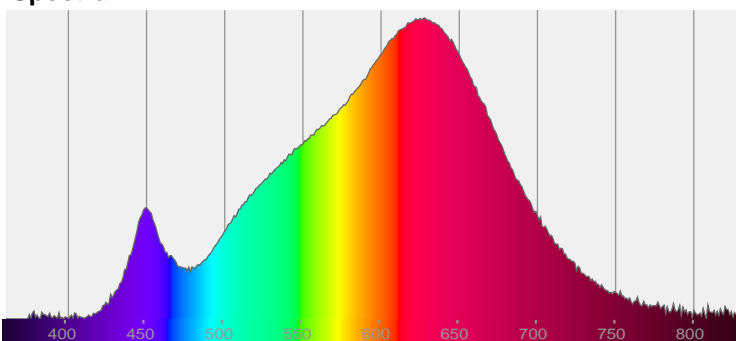
Gaustasse13-15

55411 Bingen am Rhein

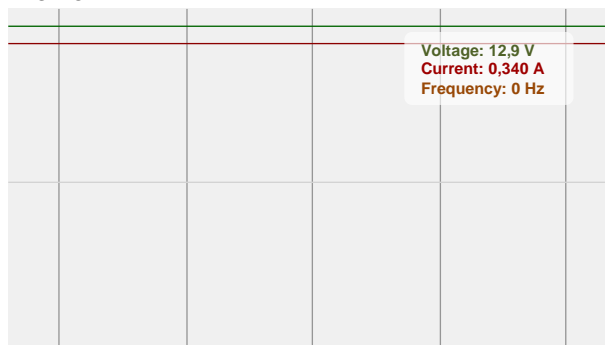


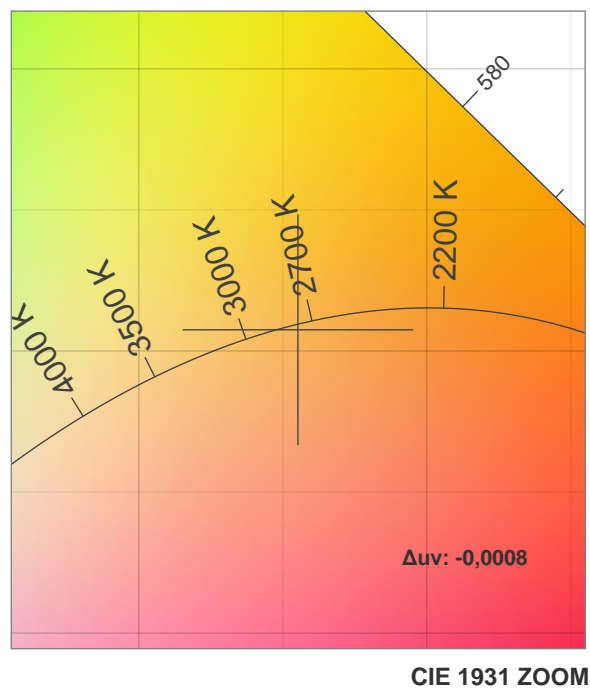
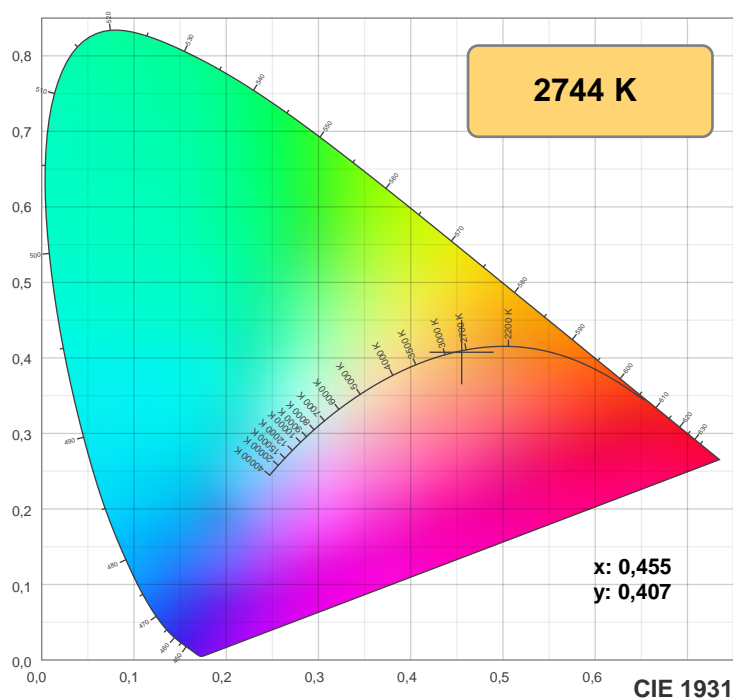
CIE 1931
x: 0,455
y: 0,407

Spectra

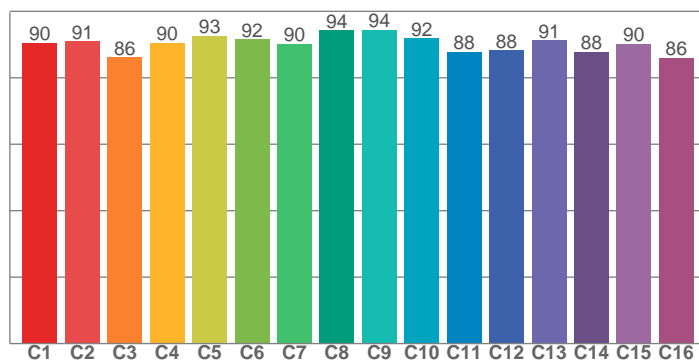


Power

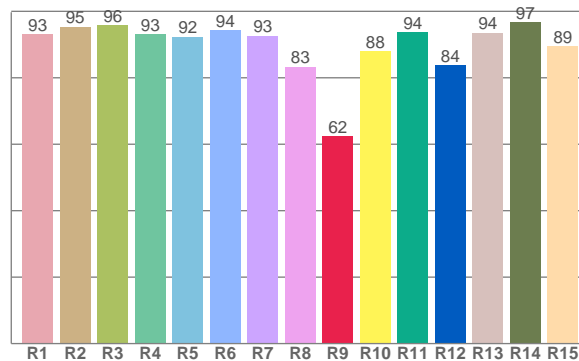




TM30: 90,3



CRI: 92,5 (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
93,0	95,4	95,8	93,1	92,4	94,3	92,7	83,4	62,4	87,9	93,6	83,8	93,6	96,7	89,5

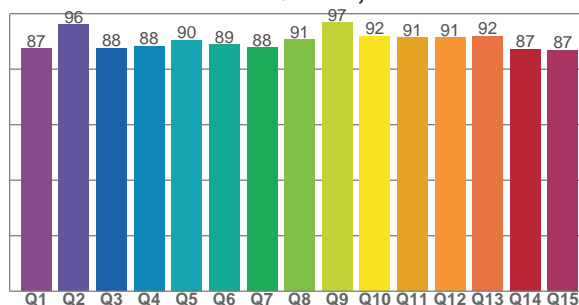
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90,5	91,0	86,1	90,5	92,6	91,6	90,2	94,2	94,5	91,9	87,9	88,3	91,2	87,8	90,1	86,0

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
87,4	96,1	87,5	88,4	90,5	88,9	87,8	90,7	96,8	91,8	91,4	91,9	87,2	87,0	

CQS: 89,8



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
2744 K	92,5	62,4	90,3	101,2	89,8	0,455	0,407	0,261	0,350	-0,0008

TM30 details

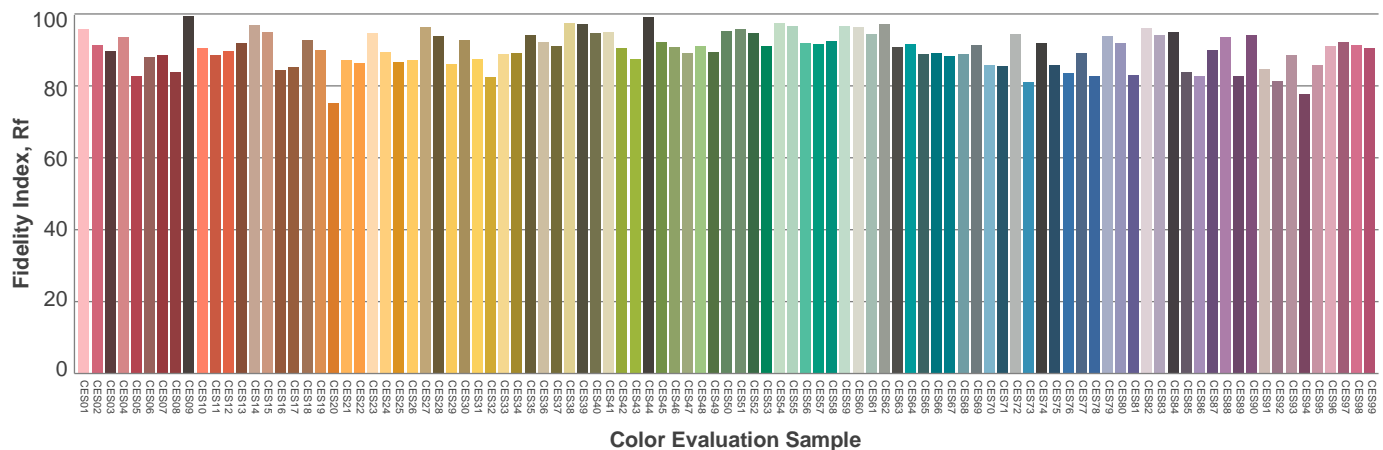
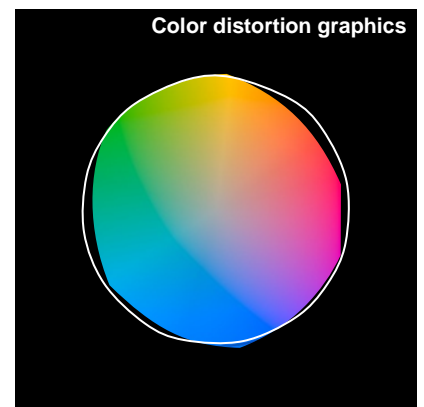
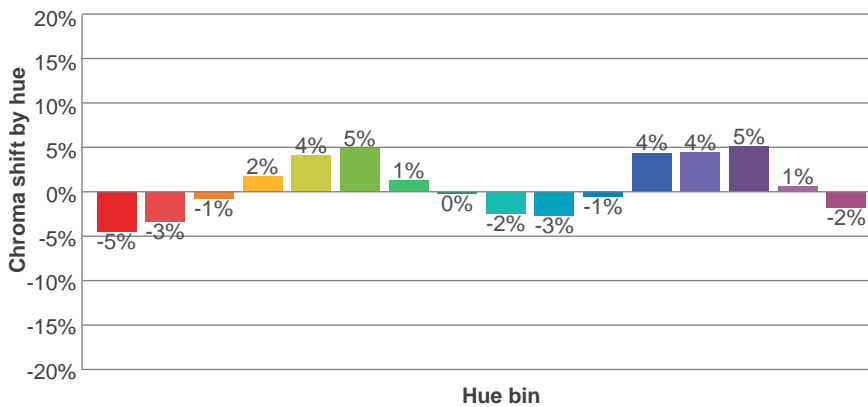
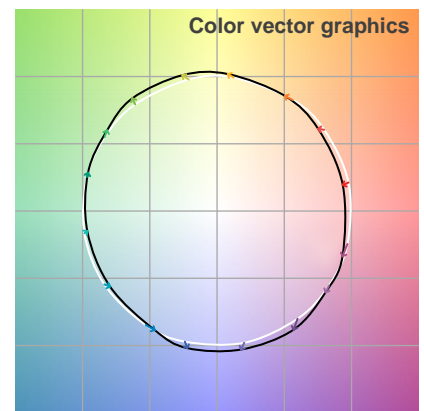
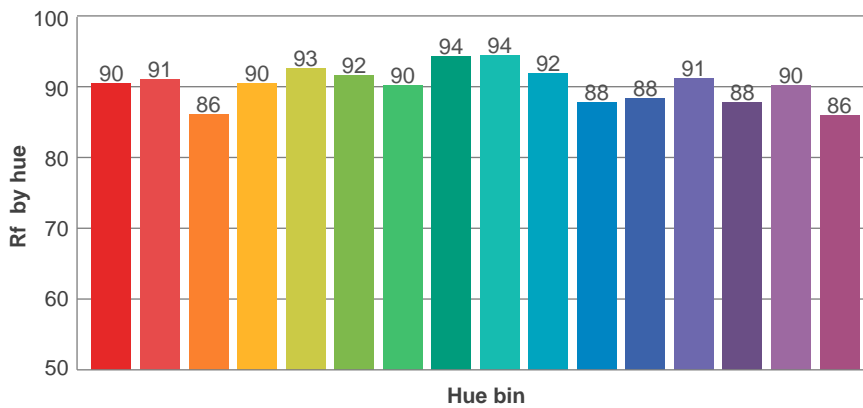
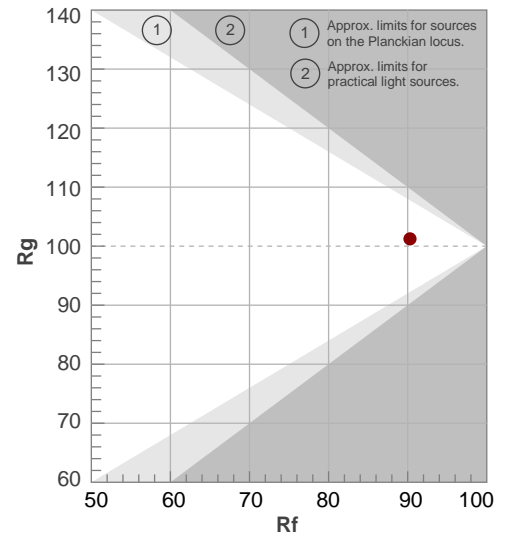
Rf 90,3

Fidelity index Rf

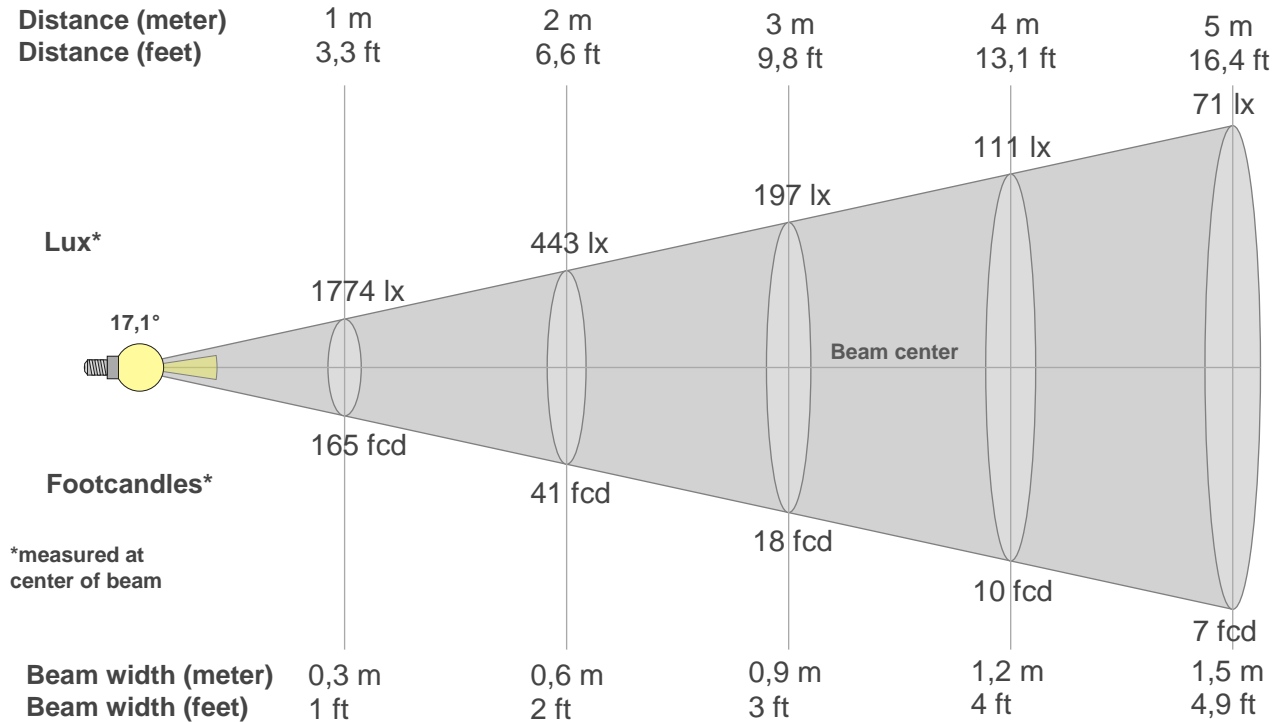
Rg 101,2

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	90	-5%	-1%
2	91	-3%	3%
3	86	-1%	6%
4	90	2%	5%
5	93	4%	4%
6	92	5%	-1%
7	90	1%	-5%
8	94	0%	-3%
9	94	-2%	-1%
10	92	-3%	4%
11	88	-1%	8%
12	88	4%	3%
13	91	4%	-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
1774lx	443lx	197lx	111lx	71lx	49lx	36lx	28lx	22lx	18lx	15lx	12lx	10lx	9lx	8lx	7lx	6lx	5lx	5lx	4lx
164,8fcd	41,2fcd	18,3fcd	10,3fcd	6,6fcd	4,6fcd	3,4fcd	2,6fcd	2fcd	1,6fcd	1,4fcd	1,1fcd	1fcd	0,8fcd	0,7fcd	0,6fcd	0,6fcd	0,5fcd	0,5fcd	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°
1774	1788	1783	1759	1716	1662	1614	1590	1590	1599	1605	1603	1596	1593	1600	1614	1635	1657	1671	1665
100%	101%	101%	99%	97%	94%	91%	90%	90%	90%	91%	90%	90%	90%	90%	91%	92%	93%	94%	94%

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°
1774	1697	1463	1136	828	581	406	299	234	185	146	114	89	71	58	49	43	38	33	29
100%	96%	82%	64%	47%	33%	23%	17%	13%	10%	8%	6%	5%	4%	3%	3%	2%	2%	2%	2%

Intensities in 180° c-plane

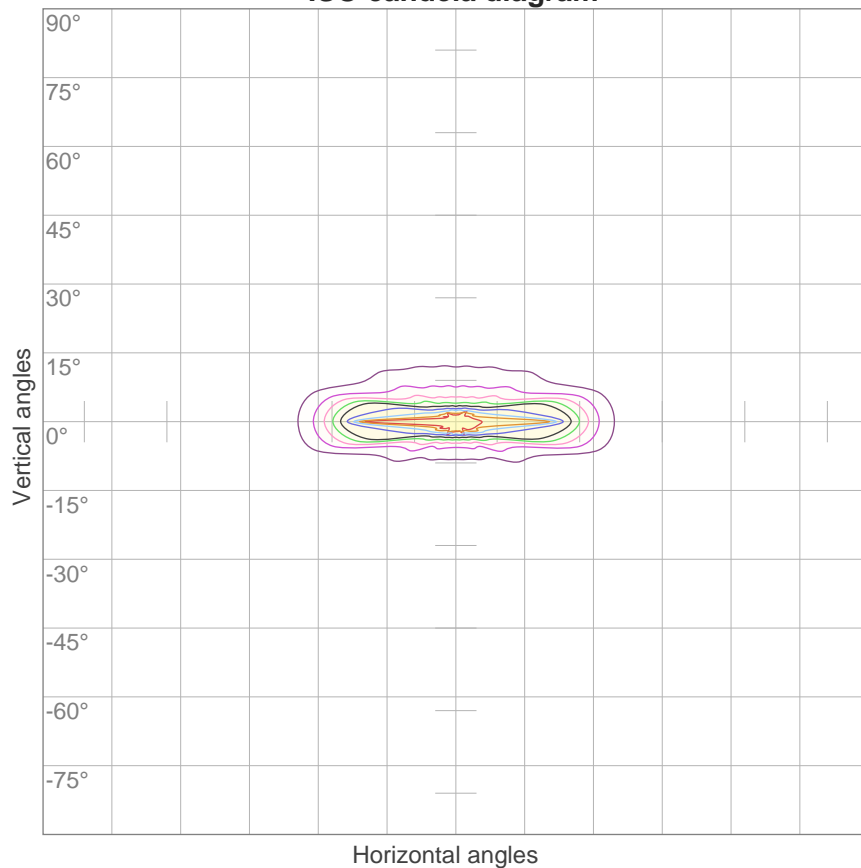
0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°
1774	1770	1759	1742	1712	1672	1636	1616	1617	1626	1634	1639	1637	1636	1638	1648	1667	1689	1708	1711
100%	100%	99%	98%	97%	94%	92%	91%	91%	92%	92%	92%	92%	92%	92%	93%	94%	95%	96%	96%

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°
1774	1660	1408	1101	840	655	530	444	382	332	288	250	216	185	156	131	108	88	71	57
100%	94%	79%	62%	47%	37%	30%	25%	22%	19%	16%	14%	12%	10%	9%	7%	6%	5%	4%	3%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
17,1°	37,5°	54°	97,5%	95,1%

ISO candela diagram



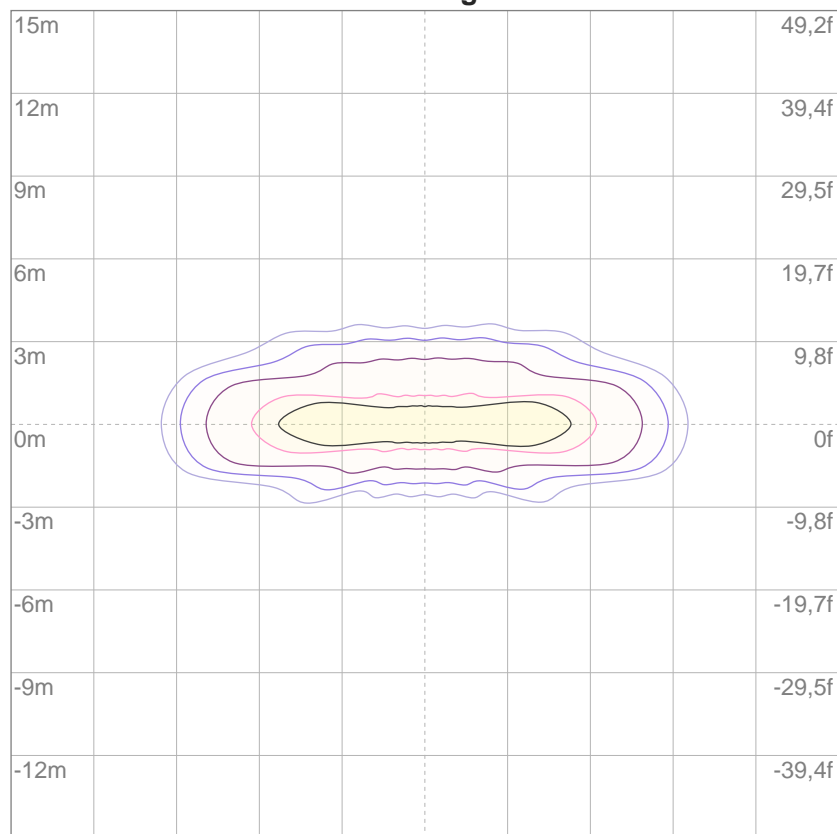
10%	177 cd
20%	355 cd
30%	532 cd
40%	709 cd
50%	887 cd
60%	1064 cd
70%	1241 cd
80%	1419 cd
90%	1596 cd

Conditions:

Number of c-planes: 16

Candela at center: 1774 cd

ISO lux diagram



3%	0,532 lx
5%	0,887 lx
10%	1,77 lx
30%	5,32 lx
50%	8,87 lx

Conditions:

Number of c-planes: 16

Lux at center: 17,7 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	15,5	16,3	15,8	16,4	16,6	2,7	3,4	2,9	3,6	3,8
	3H	15,6	16,2	15,9	16,4	16,7	4,9	5,5	5,2	5,7	6,0
	4H	15,7	16,3	16,0	16,5	16,8	6,0	6,6	6,3	6,8	7,1
	6H	16,0	16,6	16,3	16,9	17,1	7,2	7,7	7,5	8,0	8,3
	8H	16,2	16,8	16,6	17,1	17,4	7,9	8,4	8,2	8,7	9,0
	12H	16,3	16,8	16,6	17,1	17,4	8,6	9,1	9,0	9,4	9,8
4H	2H	15,4	16,0	15,7	16,2	16,5	3,9	4,5	4,2	4,8	5,0
	3H	15,4	15,9	15,8	16,2	16,6	6,1	6,6	6,5	6,9	7,3
	4H	15,6	16,0	16,0	16,4	16,7	7,3	7,8	7,7	8,1	8,4
	6H	16,2	16,5	16,6	16,9	17,3	8,6	9,0	9,0	9,4	9,8
	8H	16,5	16,8	16,9	17,2	17,6	9,4	9,8	9,8	10,1	10,5
	12H	16,6	16,9	17,0	17,3	17,7	10,3	10,6	10,8	11,0	11,4
8H	4H	15,6	15,9	16,0	16,3	16,7	8,0	8,3	8,4	8,7	9,1
	6H	16,2	16,5	16,7	16,9	17,4	9,5	9,8	10,0	10,2	10,6
	8H	16,7	16,9	17,1	17,3	17,8	10,5	10,7	10,9	11,1	11,6
	12H	16,8	17,0	17,3	17,4	17,9	11,5	11,7	12,0	12,2	12,7
12H	4H	15,6	15,8	16,0	16,2	16,7	8,3	8,6	8,7	9,0	9,4
	6H	16,2	16,5	16,7	16,9	17,4	9,9	10,1	10,3	10,5	11,0
	8H	16,7	16,8	17,2	17,3	17,8	10,9	11,1	11,4	11,5	12,0
Variation of the observer position for the luminaire distance S											
S = 1,0H		+4,9 / -2,7					+0,1 / -0,1				
S = 1,5H		+7,6 / -2,8					+0,3 / -0,3				
S = 2,0H		+9,5 / -3,2					+0,5 / -0,6				
Standard table		BK02					BK10				
Correction summand		-1,7					-6,0				
Corrected glare indices referring to 353 lm total luminous flux											

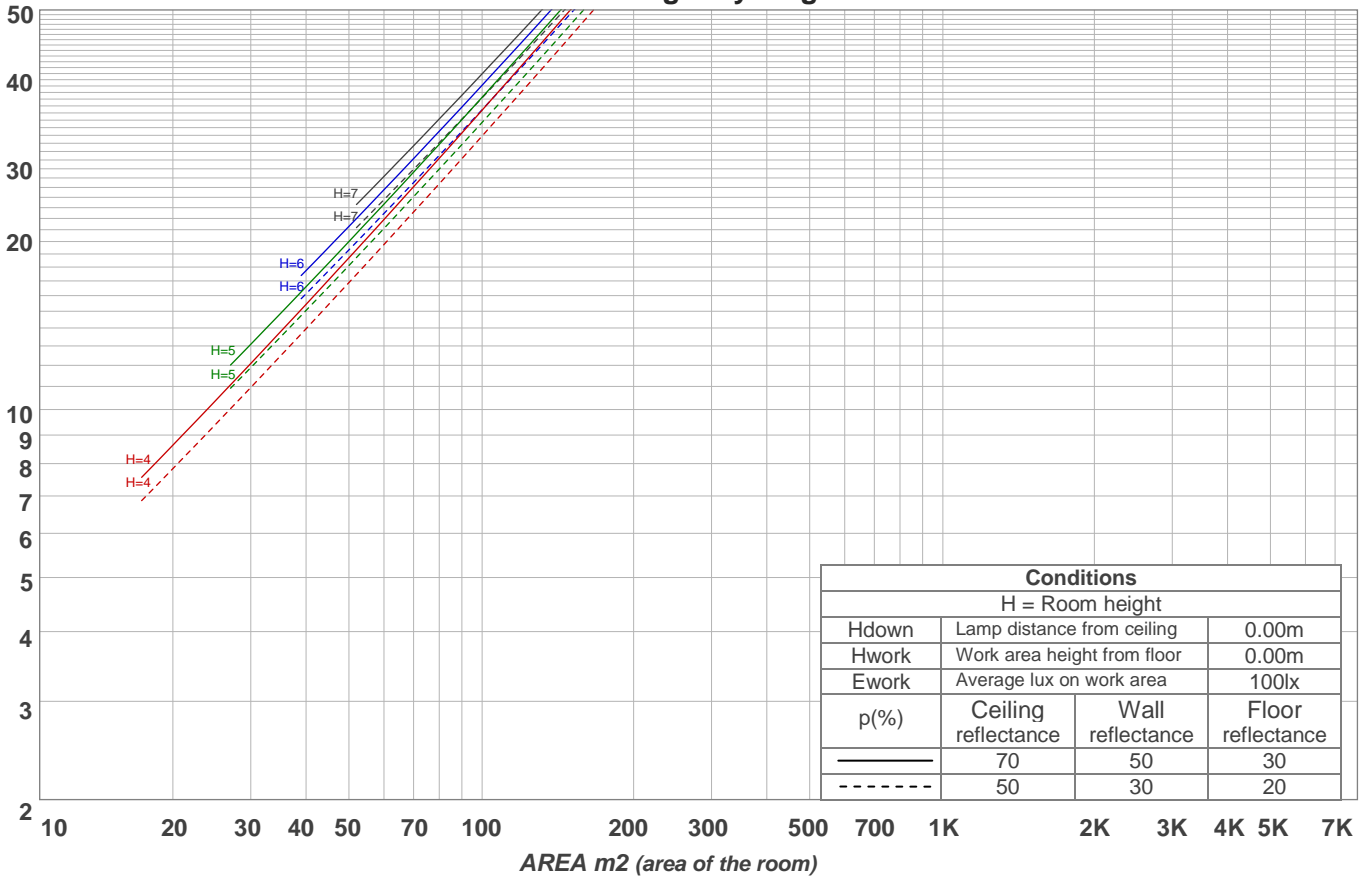
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

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	101	98	107	103	99	96	99	97	94	97	94	92	94	92	90	89
3	104	98	94	90	102	97	93	90	95	91	88	92	89	87	90	88	86	84
4	100	93	88	85	98	92	88	84	90	86	83	88	85	82	86	83	81	80
5	96	89	83	80	94	88	83	79	86	82	79	84	81	78	83	80	77	76
6	92	84	79	75	91	84	79	75	82	78	75	81	77	74	80	76	74	72
7	89	81	75	72	87	80	75	72	79	74	71	78	74	71	77	73	70	69
8	85	77	72	68	84	77	72	68	76	71	68	75	71	68	74	70	68	66
9	82	74	69	66	81	74	69	65	73	68	65	72	68	65	71	67	65	64
10	79	71	66	63	79	71	66	63	70	66	63	69	65	62	69	65	62	61

LAMPS (number of lamps)

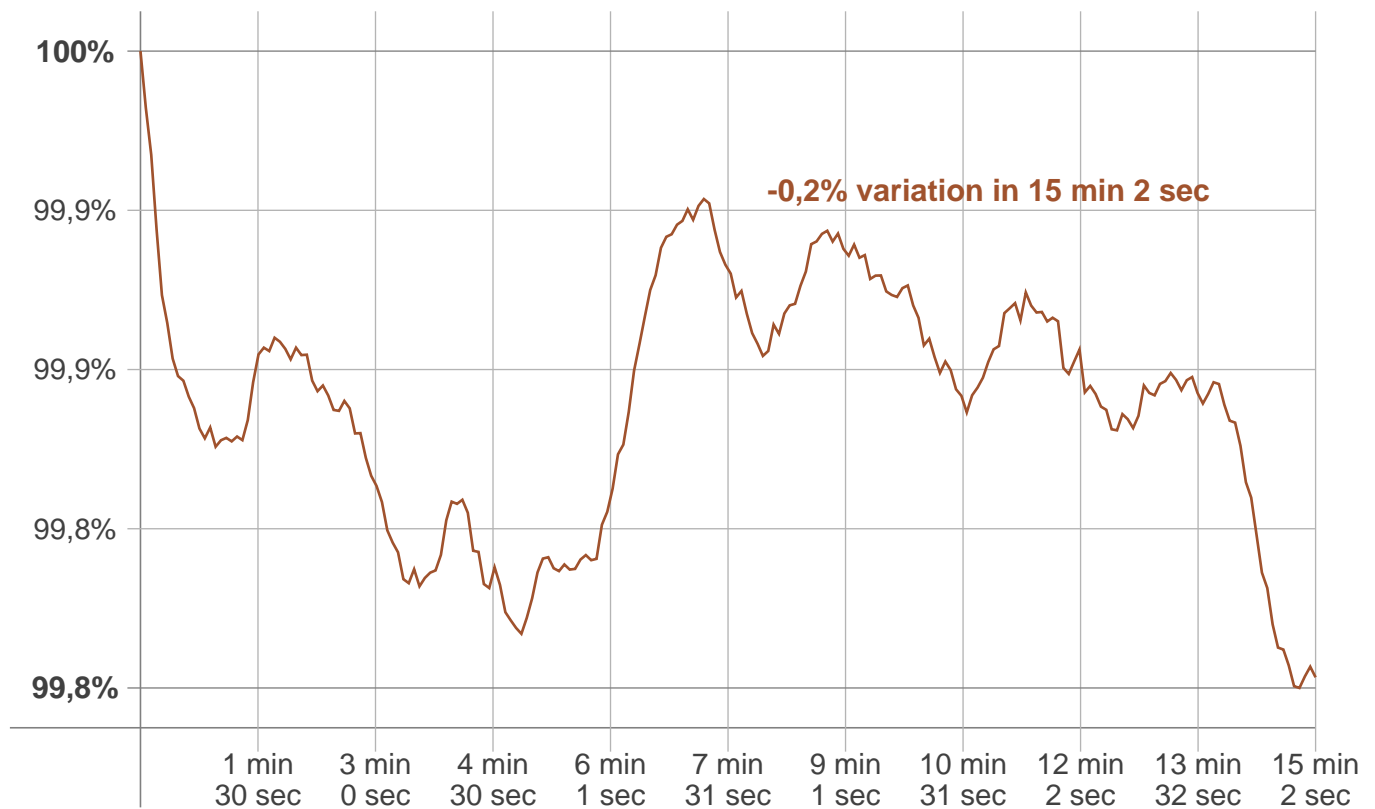
Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
{LUM0-10}	114 lm	92,7 lm	37,6 lm	9,83 lm	4,90 lm	3,79 lm	2,98 lm	1,70 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0,451 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
2745 K	-1 K	2744 K

Output change

Output start	Output change	Output end
353 lm	-1 lm	353 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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