

Light efficiency:

51 Lumen/Watt

Light quality:

CRI: 92.6

Color temperature:

3139 K

Output: 1078 lm

Peak: 12317 cd

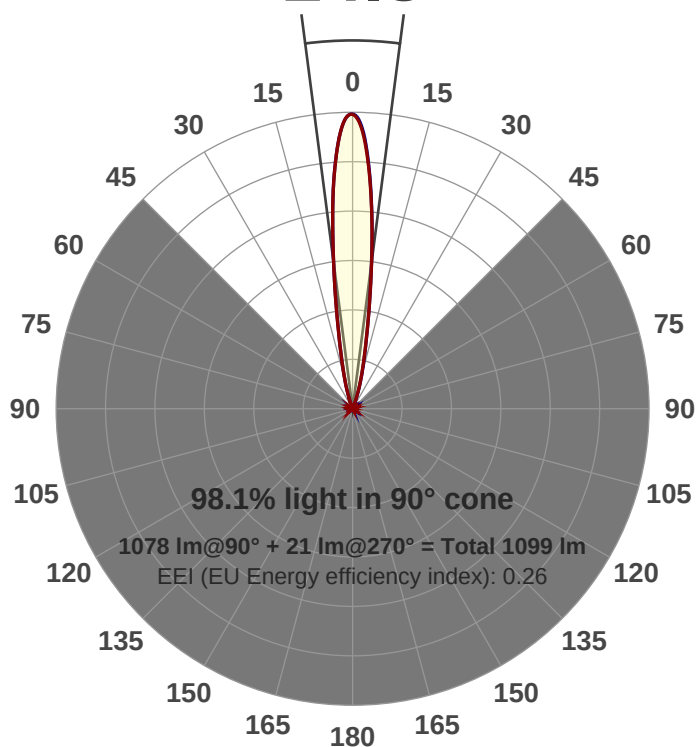
Power: 21.0 W

PF: 0.99



Beam angle

14.8°



Product name:

GRF-CZ20-SP-RD

Item number:

GRF-CZ20-SP-RD

Date and time:

6/14/2017 4:22:36 PM

Description:

V6

LUM: 1078

PPF: 18.2

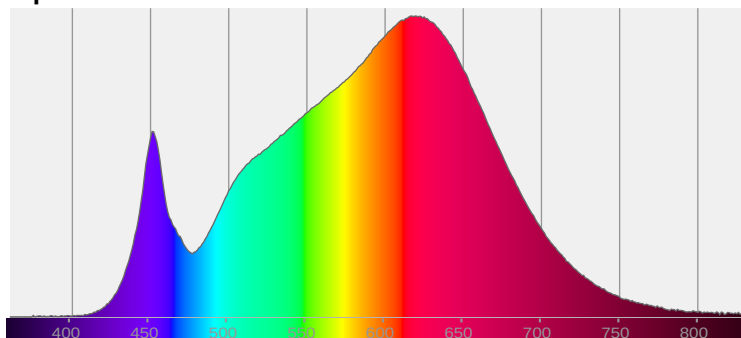


CIE 1931

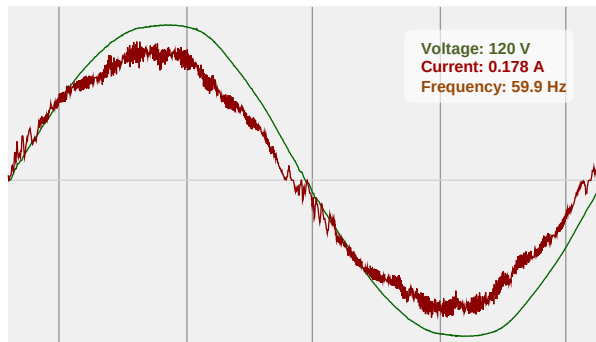
x: 0.428

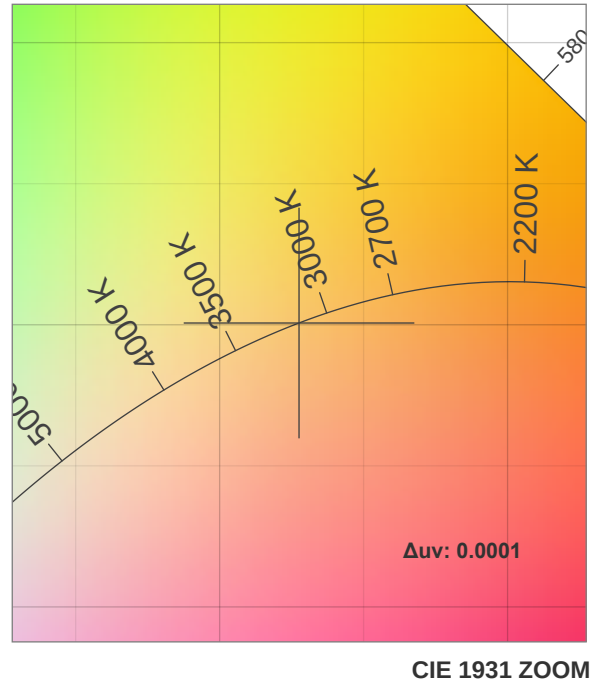
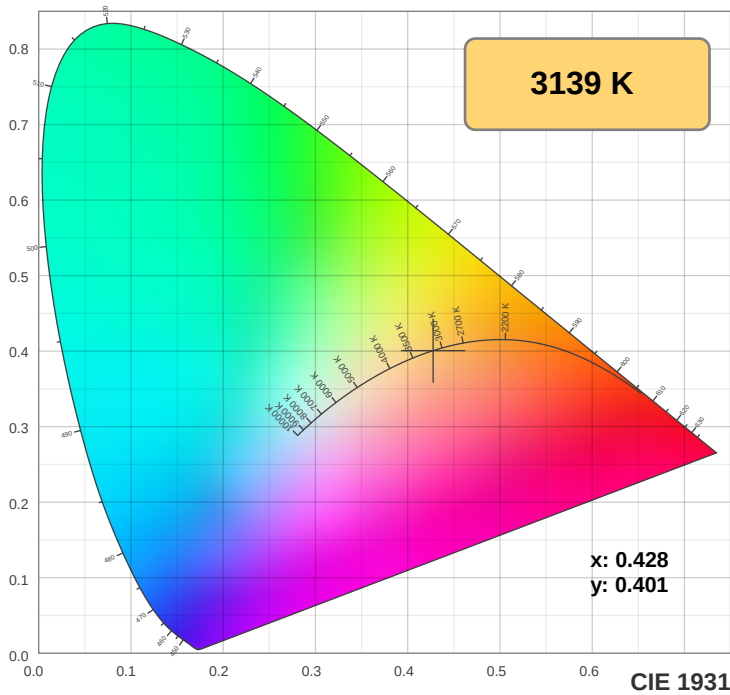
y: 0.401

Spectra

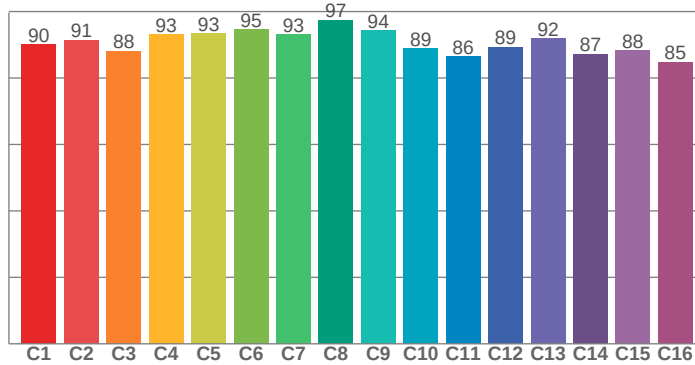


Power

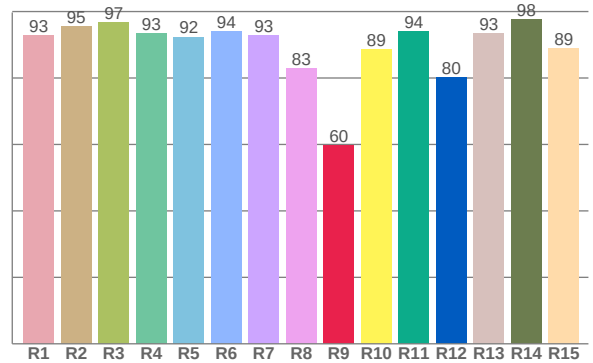




TM30: 90.8



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
92.8	95.4	96.8	93.4	92.4	94.1	92.9	82.9	59.6	88.6	94.1	80.2	93.4	97.6	88.8

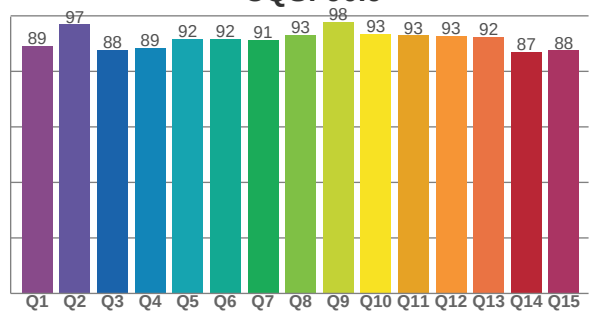
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.1	91.4	88.1	93.2	93.4	94.7	93.1	97.5	94.2	88.9	86.5	89.4	92.0	87.3	88.4	84.9

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
89.0	96.9	87.9	88.5	91.6	91.6	91.2	93.0	97.7	93.5	92.9	92.6	92.5	87.0	87.5

CQS: 90.9



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
3139 K	92.6	59.6	90.8	100.1	90.9	0.428	0.401	0.246	0.346	0.0001

TM30 details

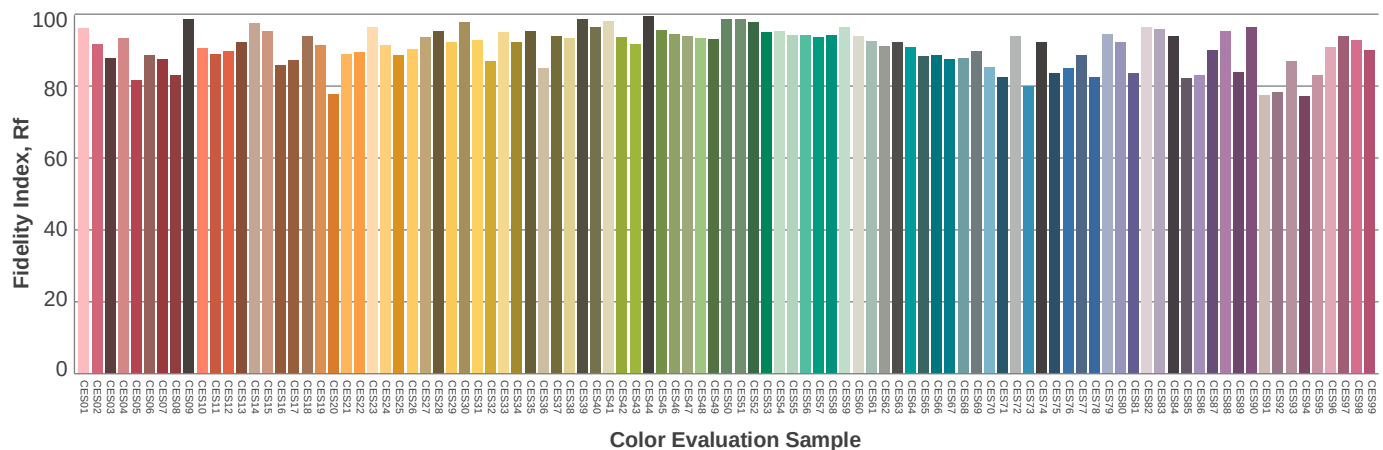
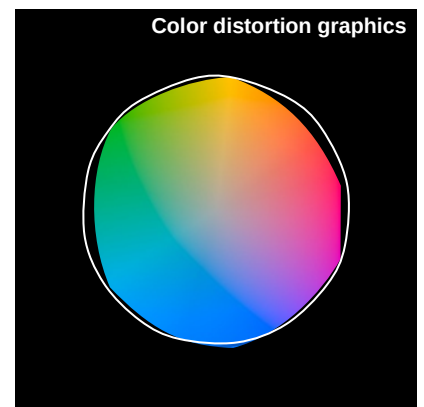
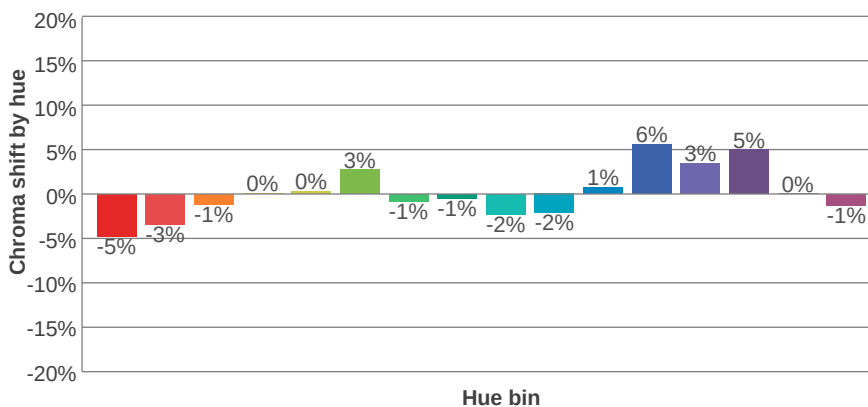
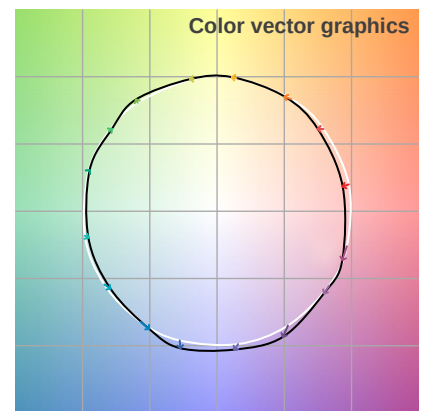
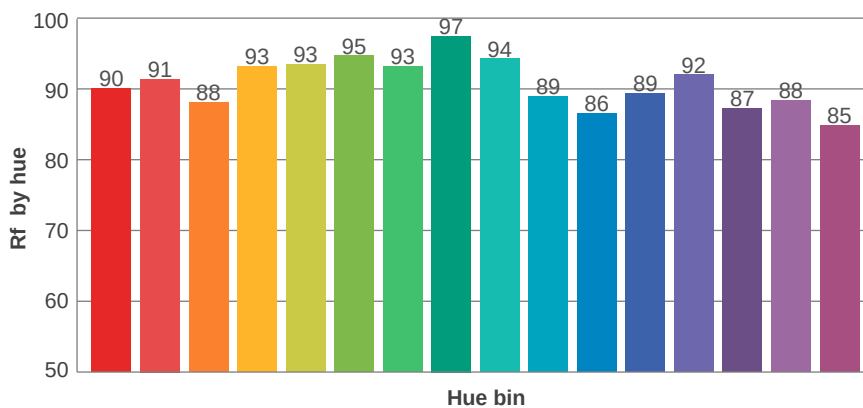
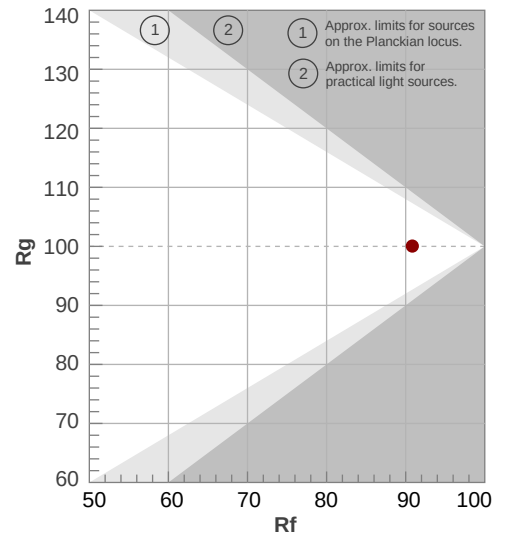
Rf 90.8

Fidelity index Rf

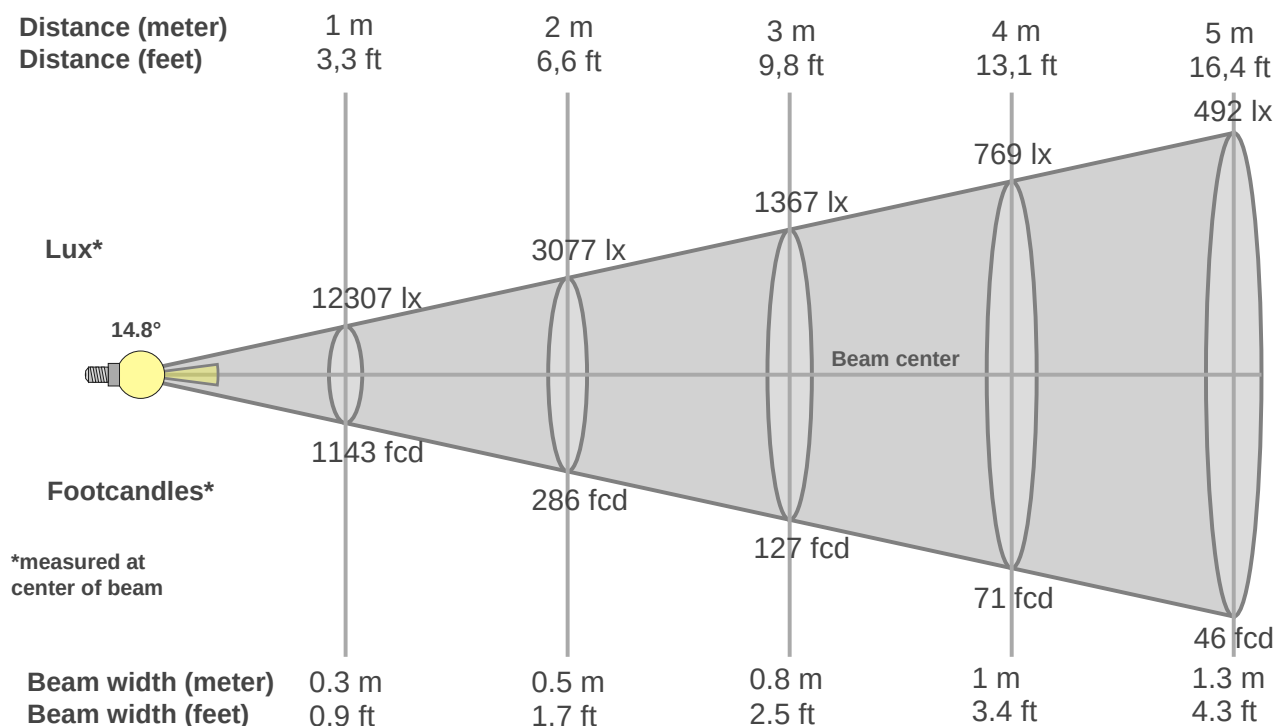
Rg 100.1

Gamut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	90	-5%	-1%
2	91	-3%	3%
3	88	-1%	5%
4	93	0%	3%
5	93	0%	3%
6	95	3%	0%
7	93	-1%	-3%
8	97	-1%	-1%
9	94	-2%	2%
10	89	-2%	5%
11	86	1%	8%
12	89	6%	2%
13	92	3%	-3%
14	87	5%	-8%
15	88	0%	-7%
16	85	-1%	-11%



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
12307lx	3077lx	1367lx	769lx	492lx	342lx	251lx	192lx	152lx	123lx	102lx	85lx	73lx	63lx	55lx	48lx	43lx	38lx	34lx	31lx
1143.4fcd	285.8fcd	127fcd	71.5fcd	45.7fcd	31.8fcd	23.3fcd	17.9fcd	14.1fcd	11.4fcd	9.4fcd	7.9fcd	6.8fcd	5.8fcd	5.1fcd	4.5fcd	4fcd	3.5fcd	3.2fcd	2.9fcd

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°
12.3K	12.2K	11.9K	11.2K	10.3K	9.3K	8.0K	6.7K	5.5K	4.4K	3.6K	2.9K	2.3K	1.9K	1.6K	1.2K	1.0K	0.8K	0.5K	0.3K
100%	99%	97%	91%	84%	75%	65%	54%	45%	36%	29%	23%	19%	15%	13%	10%	8%	6%	4%	3%

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°
12.3K	12.2K	11.9K	11.2K	10.3K	9.2K	7.9K	6.6K	5.4K	4.4K	3.5K	2.8K	2.3K	1.8K	1.5K	1.2K	1.0K	0.7K	0.5K	0.3K
100%	99%	96%	91%	84%	75%	64%	54%	44%	35%	28%	23%	18%	15%	12%	10%	8%	6%	4%	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°
12.3K	12.1K	11.6K	10.9K	9.9K	8.9K	7.8K	6.6K	5.5K	4.6K	3.7K	3.0K	2.5K	2.1K	1.7K	1.4K	1.2K	0.9K	0.7K	0.5K
100%	98%	94%	88%	81%	72%	63%	54%	45%	37%	30%	25%	21%	17%	14%	12%	9%	7%	6%	4%

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°
12.3K	12.2K	11.7K	10.9K	10.0K	8.9K	7.8K	6.6K	5.5K	4.5K	3.7K	3.1K	2.6K	2.1K	1.8K	1.5K	1.2K	1.0K	0.7K	0.5K
100%	99%	95%	89%	81%	72%	63%	54%	44%	37%	30%	25%	21%	17%	14%	12%	10%	8%	6%	4%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
14.8°	30.8°	38.9°	1.0%	1.0%

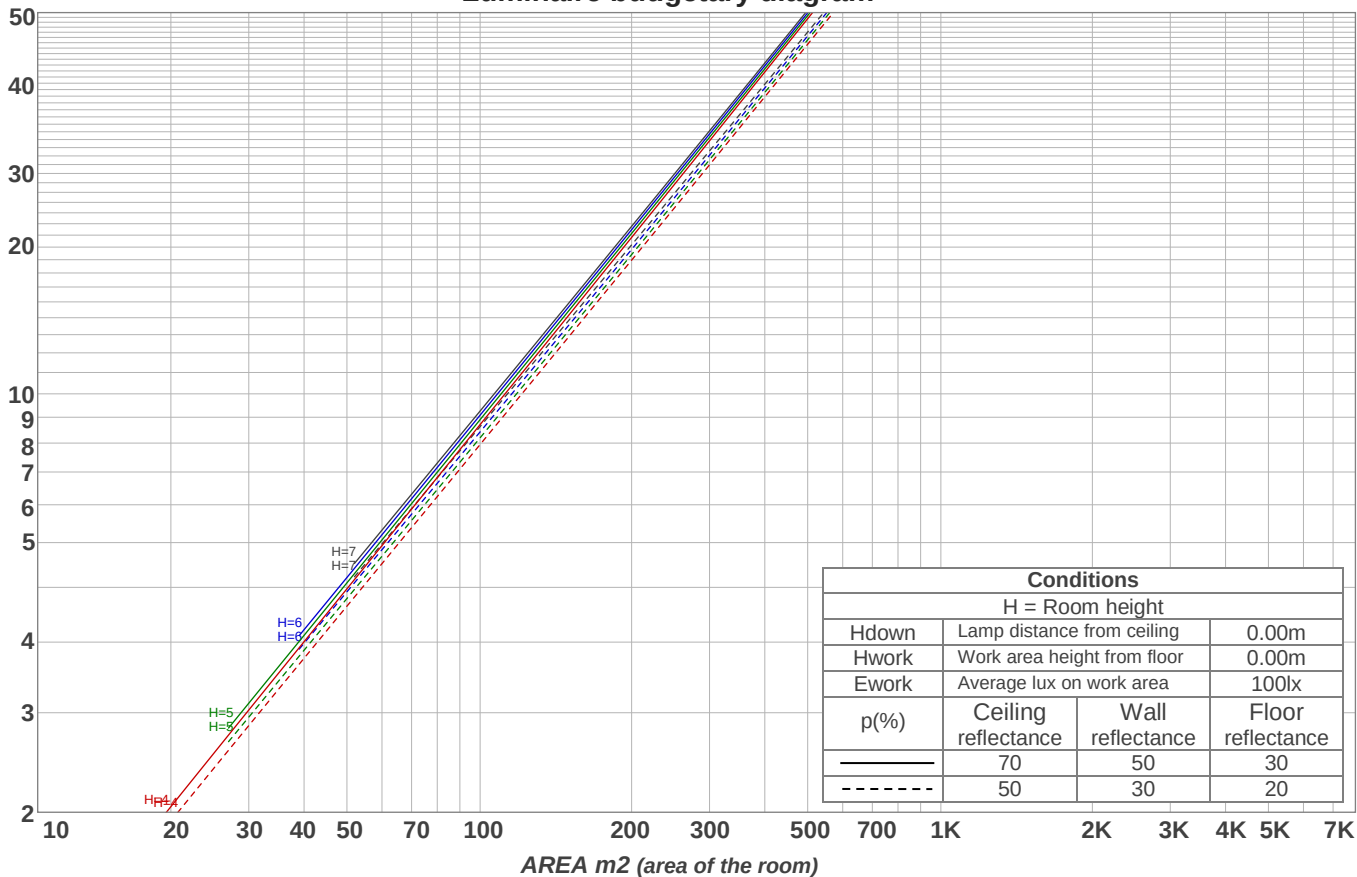
Light planning

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	116	114	113	111	114	112	111	109	108	107	106	104	104	103	101	101	100	98
2	113	110	108	106	111	109	106	105	106	104	102	103	101	100	100	99	98	97
3	111	107	104	102	109	106	103	101	103	101	99	101	99	98	99	98	97	95
4	108	104	101	99	107	103	100	98	101	99	97	100	98	96	98	96	95	94
5	106	102	99	96	105	101	98	96	99	97	95	98	96	94	97	95	94	93
6	104	100	97	94	103	99	96	94	98	95	93	97	94	93	96	94	92	91
7	103	98	95	93	102	97	94	92	96	94	92	95	93	91	94	93	91	90
8	101	96	93	91	100	96	93	91	95	92	90	94	92	90	93	91	90	89
9	99	95	92	90	99	94	91	89	94	91	89	93	91	89	92	90	89	88
10	98	93	90	88	97	93	90	88	92	90	88	92	89	88	91	89	88	87

LAMPS (number of lamps)

Luminaire budgetary diagram



Zonal Lumen Summary

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