

PHOTOMETRIC TEST REPORT

ELBA CEILING BASE 410 CE
PHASE

astro

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astro

LIGHT EFFICIENCY:



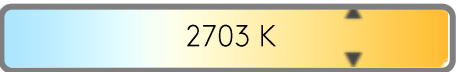
OUTPUT: 2129 lm

LIGHT QUALITY:



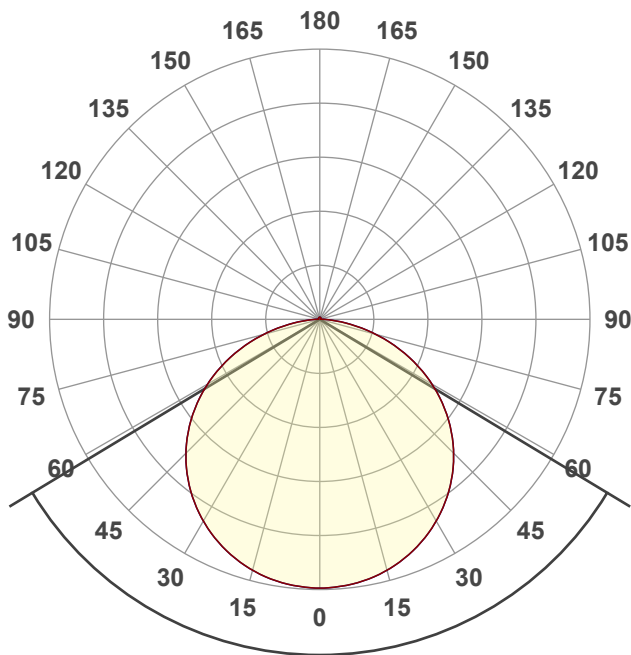
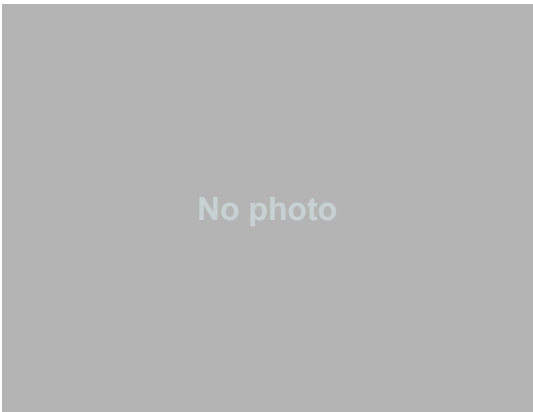
PEAK: 694 cd

COLOR TEMPERATURE:



POWER: 22.7 W

PF: 0.92

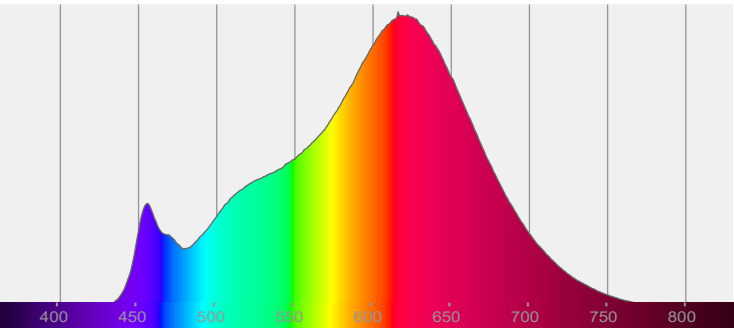


117.8°

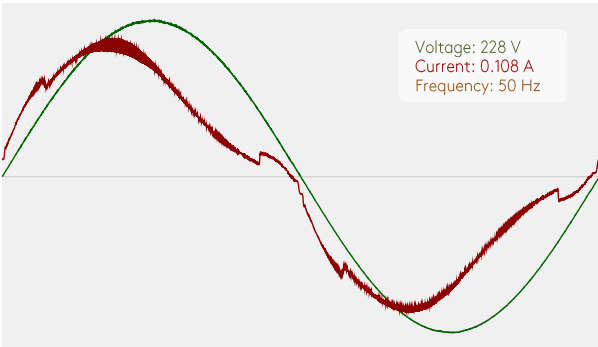


CIE 1931
x: 0.460
y: 0.411

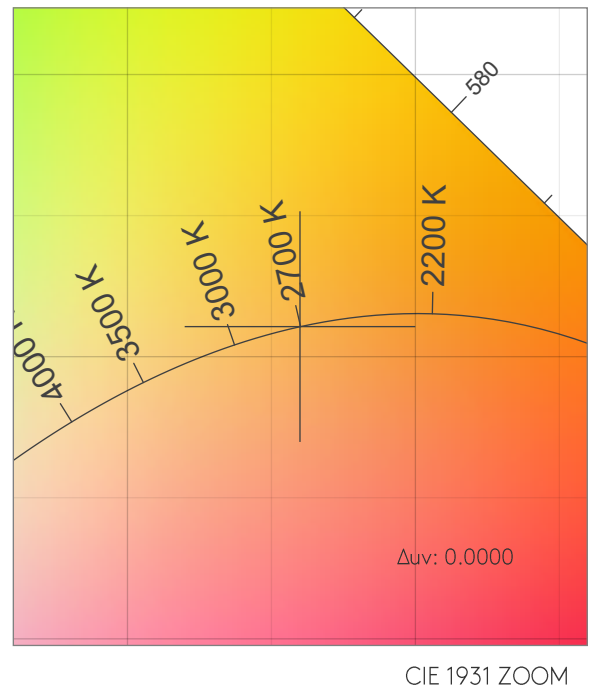
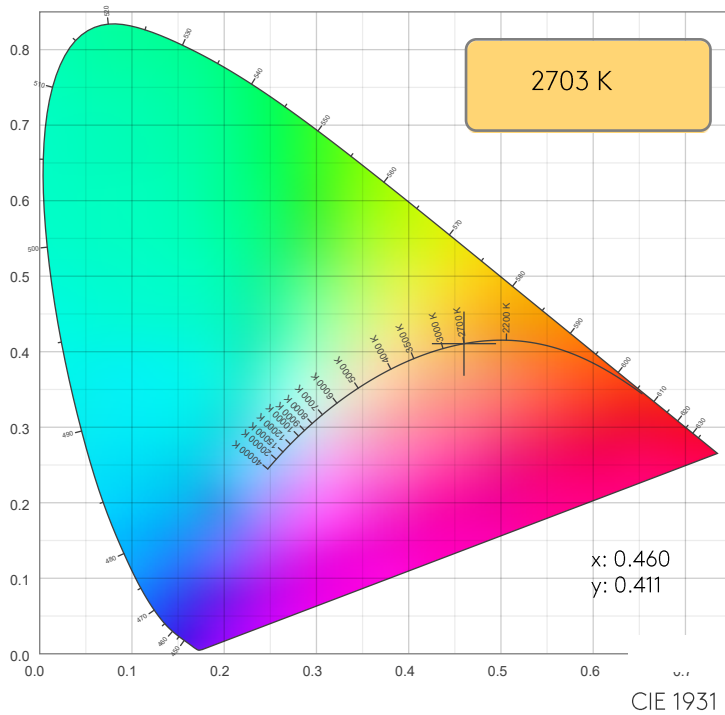
SPECTRA



POWER

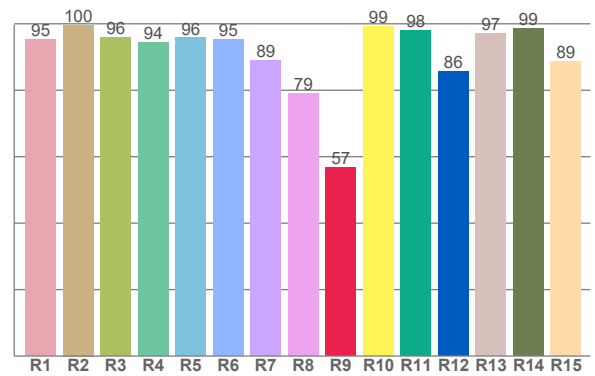
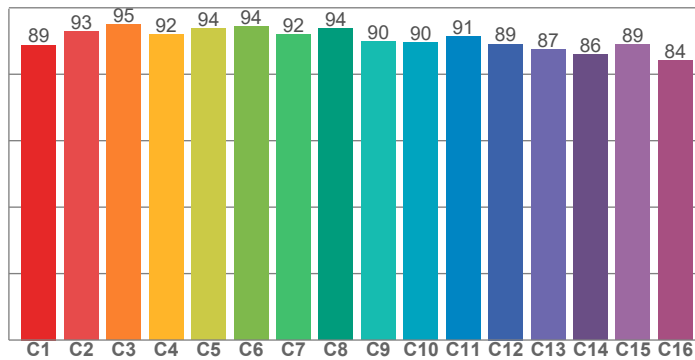


COLOR DETAILS



TM30: 90.6

CRI: 93.0 (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
95.3	99.6	95.9	94.4	95.8	95.3	89.0	79.1	56.8	99.2	98.0	85.7	97.1	98.6	88.8

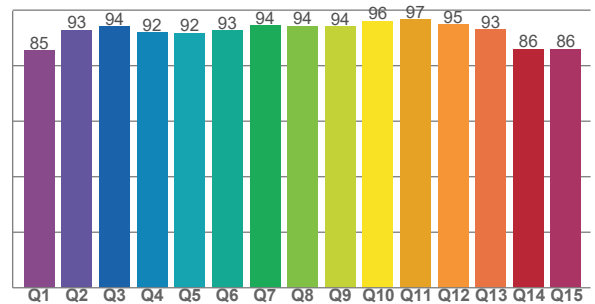
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
88.8	92.7	94.8	92.1	93.9	94.4	92.1	93.8	89.9	89.6	91.5	89.1	87.5	85.8	89.0	84.2

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
85.5	92.8	94.2	92.0	91.7	92.6	94.5	94.2	94.1	96.0	96.7	94.8	93.0	86.1	86.0

CQS: 91.3



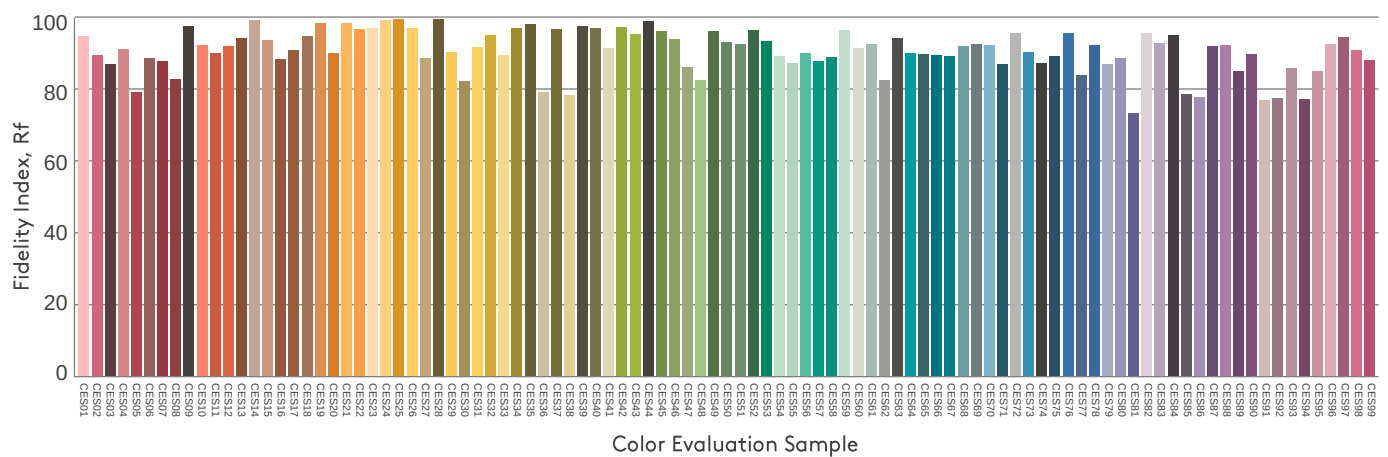
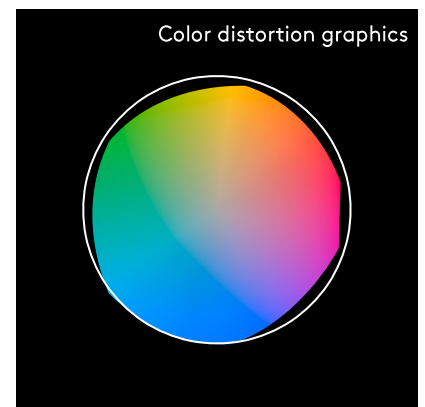
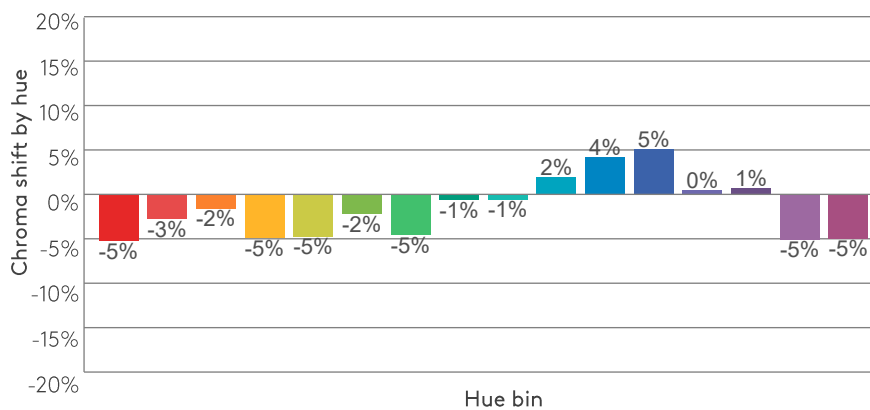
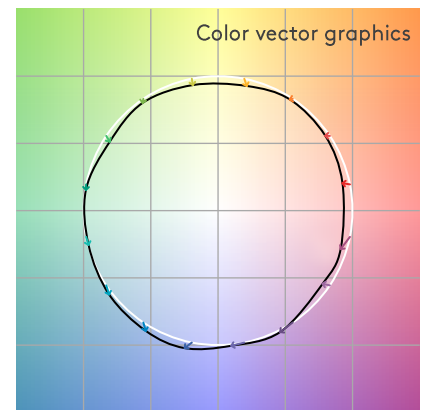
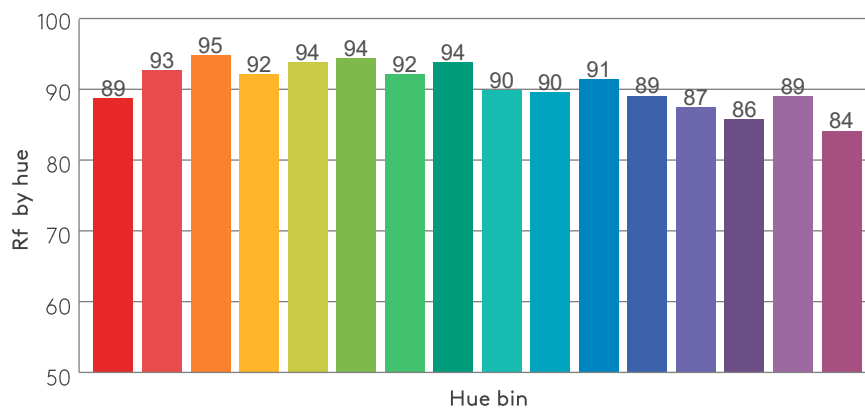
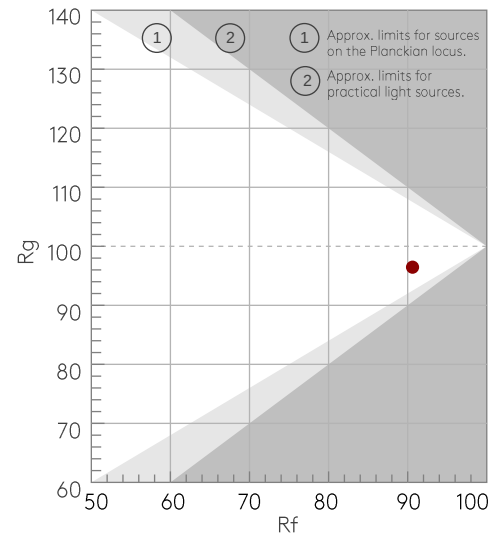
COLOR PARAMETERS

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
2703 K	93.0	56.8	90.6	96.5	91.3	0.460	0.411	0.263	0.352	0.0000

Rf 90.6
Fidelity index Rf

Rg 96.5
Gammut index Rg

Hue Bin	R _f	Graphic shifts (%)	
		Chroma	Hue
1	89	-5%	2%
2	93	-3%	2%
3	95	-2%	2%
4	92	-5%	-3%
5	94	-5%	0%
6	94	-2%	2%
7	92	-5%	2%
8	94	-1%	4%
9	90	-1%	6%
10	90	2%	7%
11	91	4%	5%
12	89	5%	-4%
13	87	0%	-10%
14	86	1%	-12%
15	89	-5%	-2%
16	84	-5%	-10%



Distance (meter)
Distance (feet)

1 m
3,3 ft

2 m
6,6 ft

3 m
9,8 ft

4 m
13,1 ft

5 m
16,4 ft

28 lx

43 lx

77 lx

173 lx

694 lx

117.8°

Beam center

Footcandles*

64 fcd

16 fcd

7 fcd

4 fcd

3 fcd

*measured at center of beam

Beam width (meter)
Beam width (feet)

3.3 m
10.9 ft

6.6 m
21.9 ft

9.9 m
32.5 ft

13.3 m
43.4 ft

16.6 m
54.4 ft

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
694lx	173lx	77lx	43lx	28lx	19lx	14lx	11lx	9lx	7lx	6lx	5lx	4lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx
64.5fcd	16.1fcd	7.2fcd	4fcd	2.6fcd	1.8fcd	1.3fcd	1fcd	0.8fcd	0.6fcd	0.5fcd	0.4fcd	0.4fcd	0.3fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
694	691	683	670	652	629	601	568	531	488	441	390	334	275	213	150	90	41	12	3
100%	100%	98%	97%	94%	91%	87%	82%	77%	70%	64%	56%	48%	40%	31%	22%	13%	6%	2%	1%

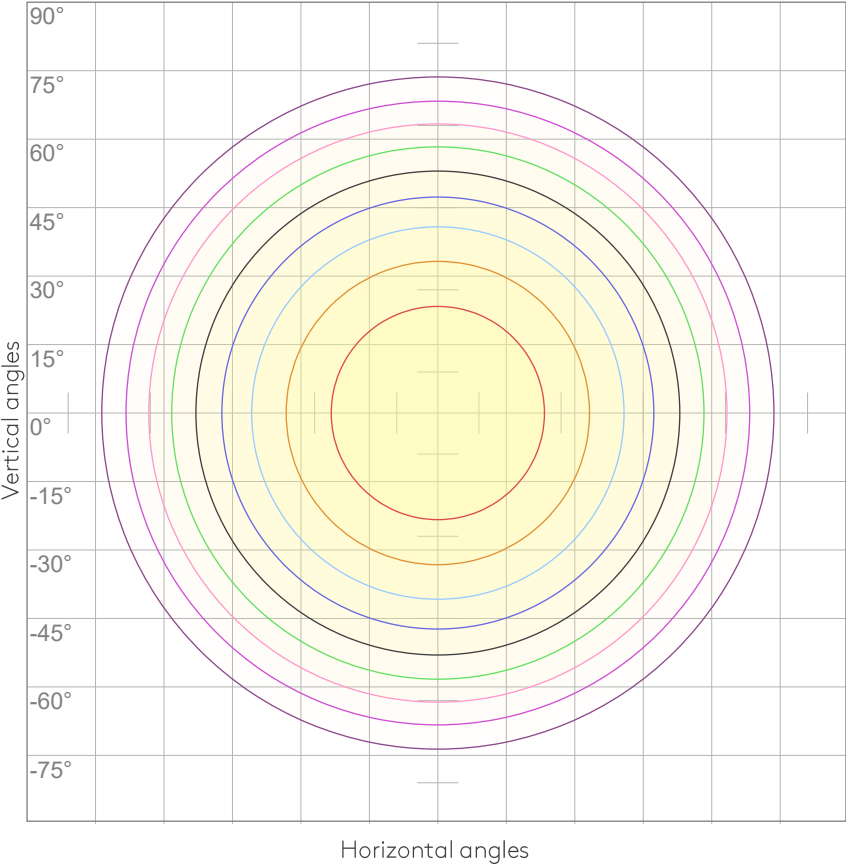
0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
694	691	683	670	652	629	601	568	531	488	441	390	334	275	213	150	90	41	12	3
100%	100%	98%	97%	94%	91%	87%	82%	77%	70%	64%	56%	48%	40%	31%	22%	13%	6%	2%	1%

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
694	691	683	670	652	629	601	568	531	488	441	390	334	275	213	150	90	41	12	3
100%	100%	98%	97%	94%	91%	87%	82%	77%	70%	64%	56%	48%	40%	31%	22%	13%	6%	2%	1%

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
694	691	683	670	652	629	601	568	531	488	441	390	334	275	213	150	90	41	12	3
100%	100%	98%	97%	94%	91%	87%	82%	77%	70%	64%	56%	48%	40%	31%	22%	13%	6%	2%	1%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
117.8°	163.6°	177.3°	76.4%	51.2%

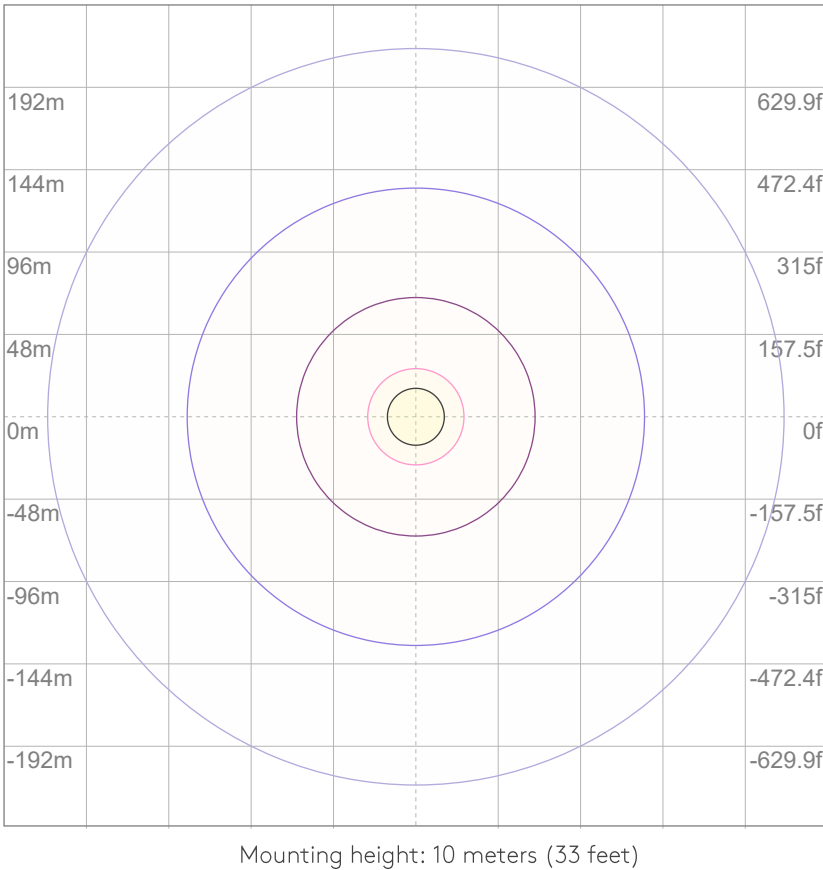
ISO CANDELA DIAGRAM



- 10% 69 cd
- 20% 139 cd
- 30% 208 cd
- 40% 278 cd
- 50% 347 cd
- 60% 416 cd
- 70% 486 cd
- 80% 555 cd
- 90% 624 cd

Conditions:
Number of c-planes: 8
Candela at center: 694 cd

ISO LUX DIAGRAM



- 3% 0.208 lx
- 5% 0.347 lx
- 10% 0.694 lx
- 30% 2.08 lx
- 50% {LUX_10M50} lx

Conditions:
Number of c-planes: 8
Lux at center: 6.94 lx

Lux distribution on a surface
when lamp is mounted at 10
meters from the surface.

UGR

GLARE EVALUATION ACCORDING TO UGR

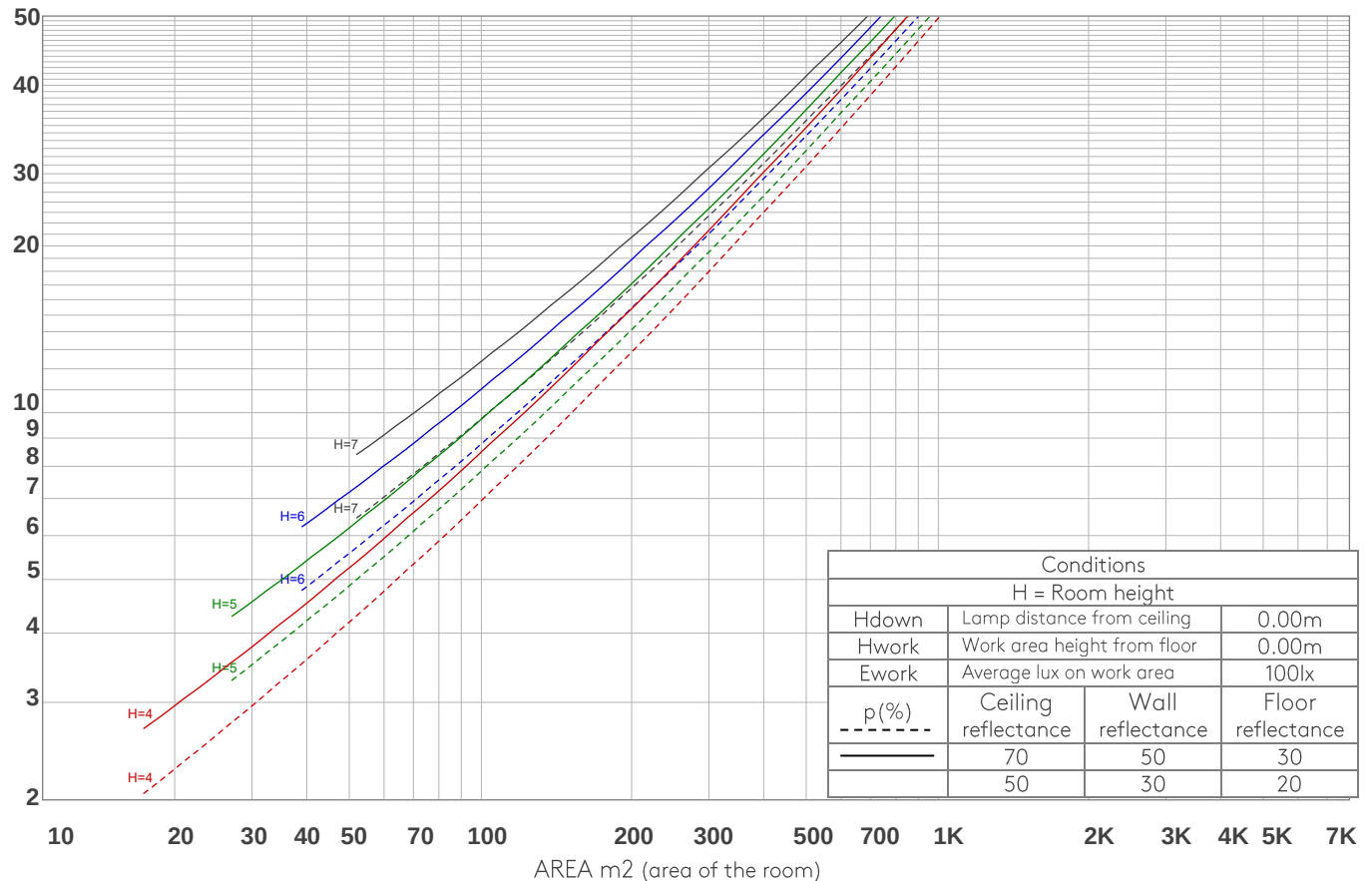
p Ceiling		70	70	50	50	30	70	70	50	50	30
p Walls		50	30	50	30	30	50	30	50	30	30
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	20.4	21.6	20.6	21.9	22.2	20.4	21.6	20.6	21.9	22.2
	3H	21.9	23.2	22.4	23.5	23.7	21.9	23.2	22.4	23.5	23.7
	4H	22.6	23.8	23.0	24.1	24.4	22.6	23.8	23.0	24.1	24.4
	6H	23.2	24.2	23.5	24.5	24.9	23.2	24.2	23.5	24.5	24.9
	8H	23.3	24.4	23.7	24.7	25.1	23.3	24.4	23.7	24.7	25.1
	12H	23.4	24.4	23.8	24.8	25.3	23.4	24.4	23.8	24.8	25.3
4H	2H	21.0	22.2	21.4	22.5	22.8	21.0	22.2	21.4	22.5	22.8
	3H	22.9	23.9	23.3	24.3	24.7	22.9	23.9	23.3	24.3	24.7
	4H	23.6	24.5	24.1	25.0	25.5	23.6	24.5	24.1	25.0	25.5
	6H	24.2	25.1	24.7	25.5	25.9	24.2	25.1	24.7	25.5	25.9
	8H	24.4	25.2	24.9	25.6	26.0	24.4	25.2	24.9	25.6	26.0
	12H	24.6	25.2	25.1	25.7	26.2	24.6	25.2	25.1	25.7	26.2
8H	4H	23.9	24.7	24.4	25.1	25.5	23.9	24.7	24.4	25.1	25.5
	6H	24.7	25.3	25.2	25.8	26.4	24.7	25.3	25.2	25.8	26.4
	8H	25.0	25.5	25.5	26.1	26.7	25.0	25.5	25.5	26.1	26.7
	12H	25.2	25.7	25.8	26.2	26.8	25.2	25.7	25.8	26.2	26.8
12H	4H	23.9	24.6	24.4	25.0	25.5	23.9	24.6	24.4	25.0	25.5
	6H	24.8	25.3	25.3	25.8	26.5	24.8	25.3	25.3	25.8	26.5
	8H	25.1	25.6	25.7	26.1	26.7	25.1	25.6	25.7	26.1	26.7
Variation of the observer position for the luminaire distance S											
S = 1.0H		0.1 / -0.1					0.1 / -0.1				
S = 1.5H		0.1 / -0.2					0.1 / -0.2				
S = 2.0H		0.4 / -0.4					0.4 / -0.4				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 2129 lm total luminous flux											

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	110	110	110	106	106	106	101	101	101	99
1	108	103	99	95	105	101	97	93	96	93	90	92	89	87	88	86	84	82
2	98	90	83	77	95	88	81	76	84	78	74	80	76	72	77	73	70	68
3	89	78	70	63	87	77	69	63	73	67	61	71	65	60	68	63	59	57
4	81	69	60	53	79	68	59	53	65	58	52	63	56	51	60	55	50	48
5	75	62	53	46	73	60	52	45	58	51	45	56	49	44	54	48	44	41
6	69	55	46	40	67	54	46	40	52	45	39	51	44	39	49	43	38	36
7	64	50	41	35	62	49	41	35	48	40	34	46	39	34	45	38	34	32
8	59	46	37	31	58	45	37	31	44	36	31	42	35	30	41	35	30	28
9	55	42	34	28	54	41	33	28	40	33	28	39	32	27	38	32	27	25
10	52	39	31	25	51	38	30	25	37	30	25	36	29	25	35	29	25	23

LAMPS (number of lamps)

LUMINAIRE BUDGETARY DIAGRAM

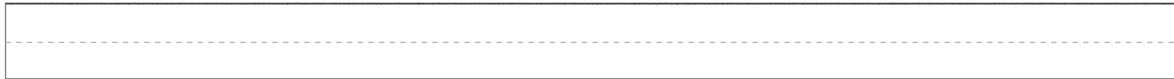


ZONAL LUMEN SUMMARY

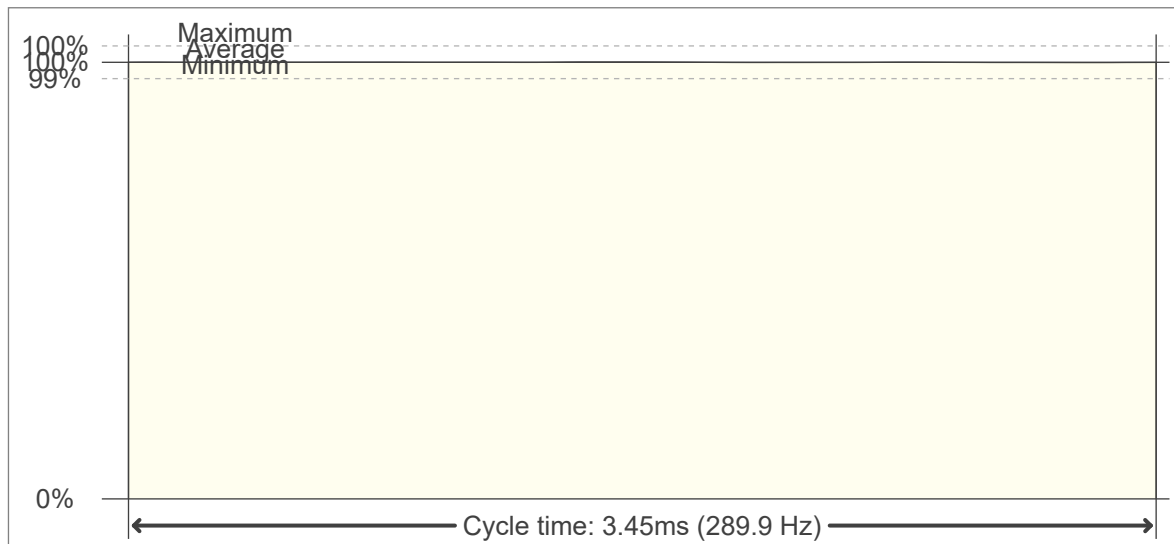
0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
65.8 lm	190 lm	290 lm	356 lm	377 lm	349 lm	272 lm	159 lm	46.1 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
3.95 lm	3.18 lm	3.50 lm	3.58 lm	3.39 lm	2.97 lm	2.34 lm	1.50 lm	0.520 lm

FLICKER

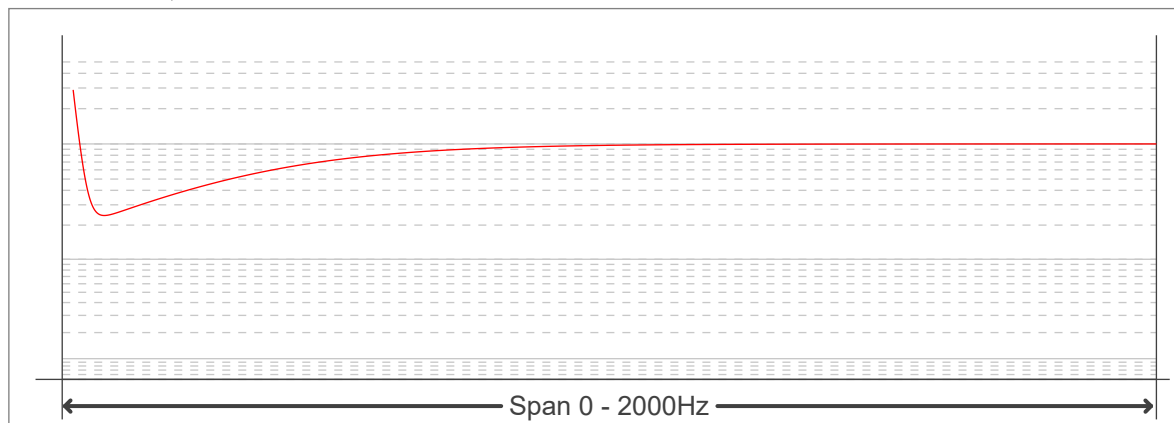
FLICKER CURVE (COMPLETE SAMPLED)



FLICKER FRAME (FRAME OF ONE FLICKER)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER)



FLICKER RESULTS:

Flicker frequency:	289.86 Hz
Flicker index:	0
Flicker percentage:	0.28 %
SVM: (Visual flicker)	0

FLICKER CONDITIONS:

Sample rate:	20000 samples/second
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