

# PHOTOMETRIC TEST REPORT

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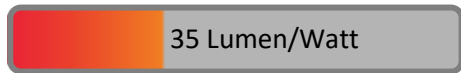
LUCCA SURFACE MATT BLACK

astro

## LUCCA SURFACE MATT BLACK

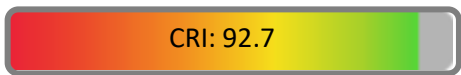
astro

### LIGHT EFFICIENCY:



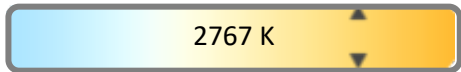
OUTPUT: 125 lm

### LIGHT QUALITY:



PEAK: 369 cd

### COLOR TEMPERATURE:



POWER: 3.6 W

PF: 0.51



Tracking number: [n/a](#)

Product name:

Lucca Surface Matt Black

Item number:

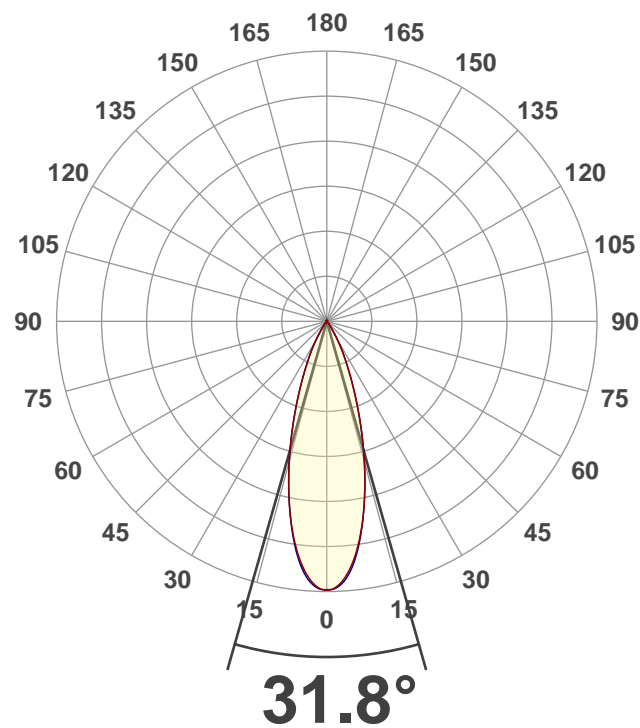
1435001

Date and time:

17/07/2020 10:00:41

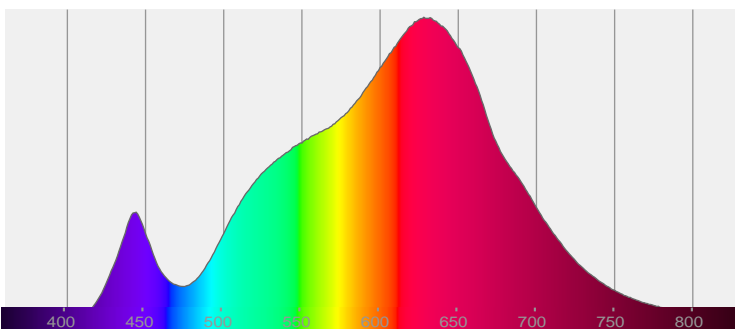
Description:

IP20 LED Reading Light

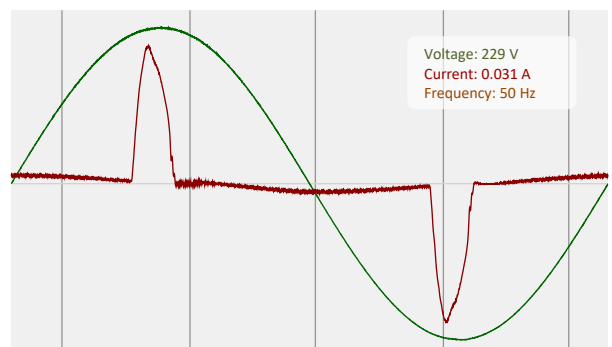


CIE 1931  
x: 0.455  
y: 0.410

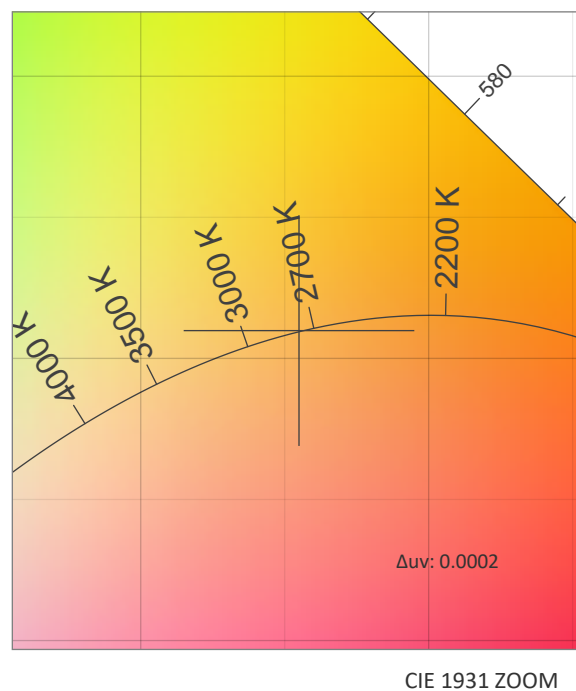
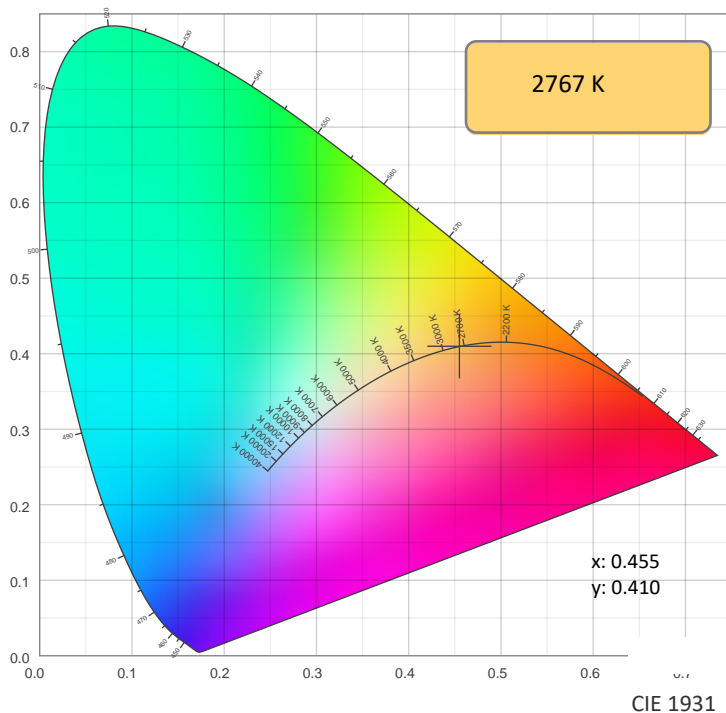
### SPECTRA



### POWER

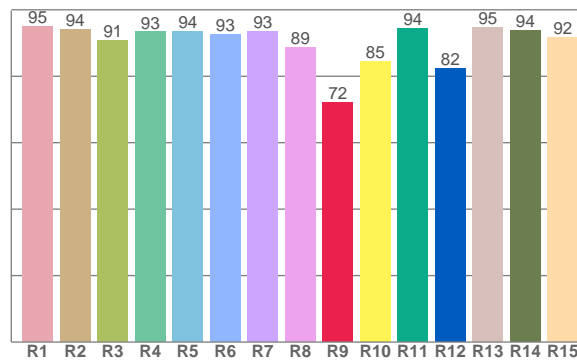
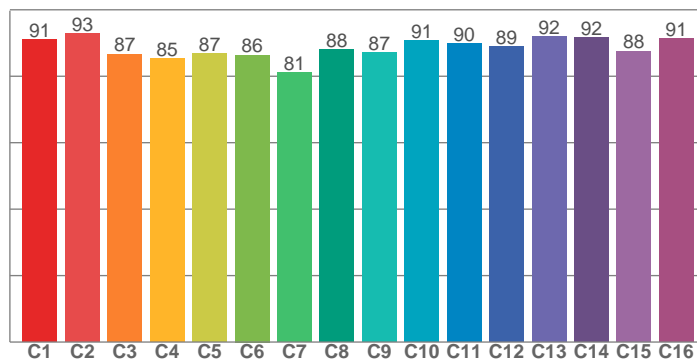


COLOR DETAILS



TM30: 88.9

CRI: 92.7 (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
95.1	94.0	90.9	93.3	93.5	92.6	93.4	88.7	72.2	84.5	94.3	82.5	94.5	93.7	91.7

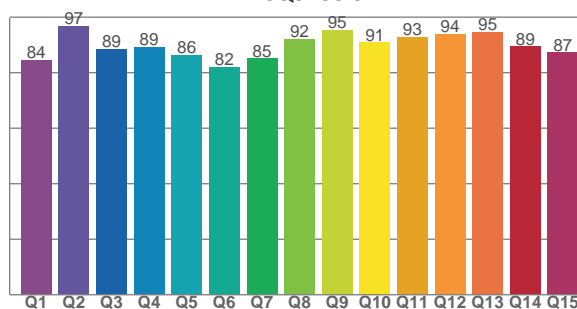
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
91.1	92.8	86.7	85.4	86.9	86.4	81.2	88.1	87.1	90.9	89.9	89.0	91.9	91.6	87.6	91.4

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
84.5	96.8	88.5	89.1	86.4	82.1	85.0	92.2	95.3	90.8	92.8	93.9	94.6	89.4	87.2

CQS: 88.9



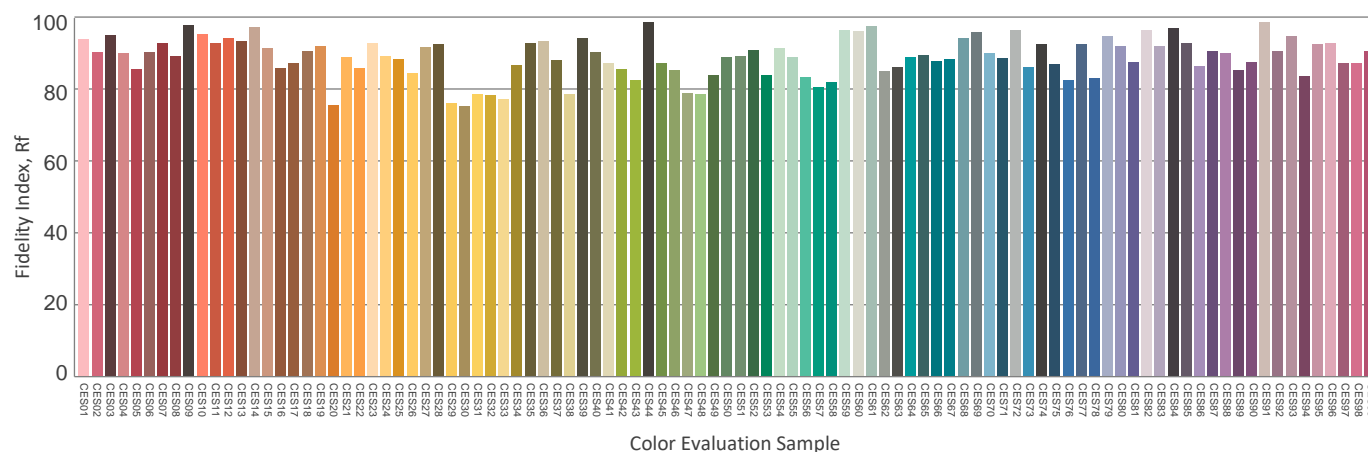
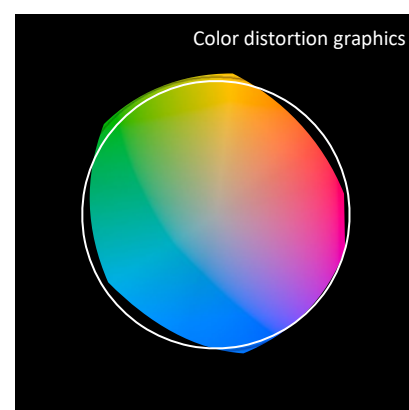
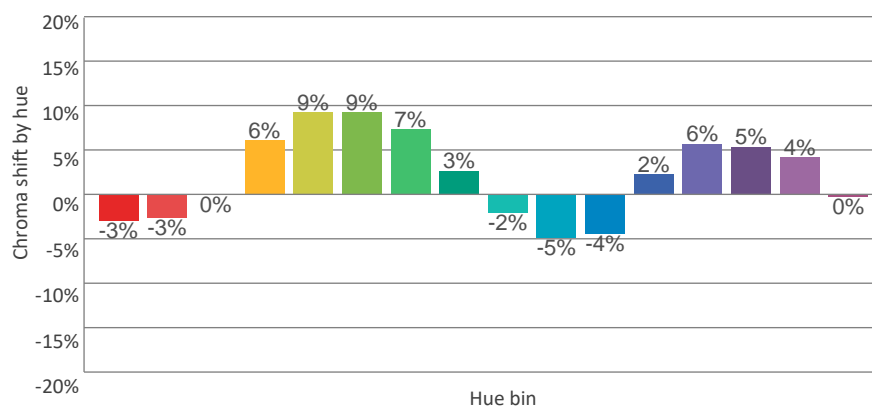
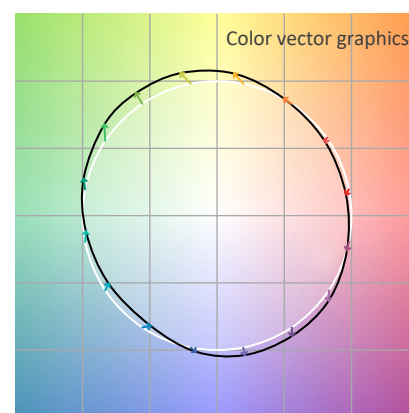
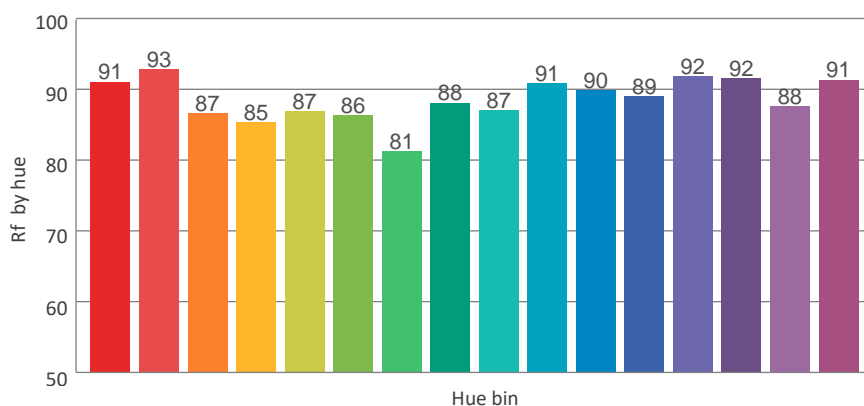
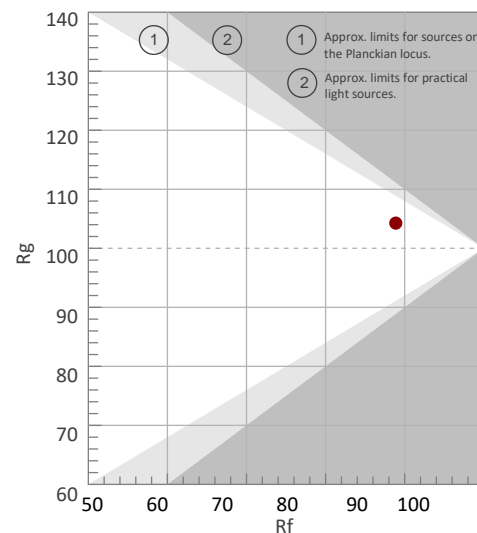
COLOR PARAMETERS

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
2767 K	92.7	72.2	88.9	104.3	88.9	0.455	0.410	0.260	0.351	0.0002

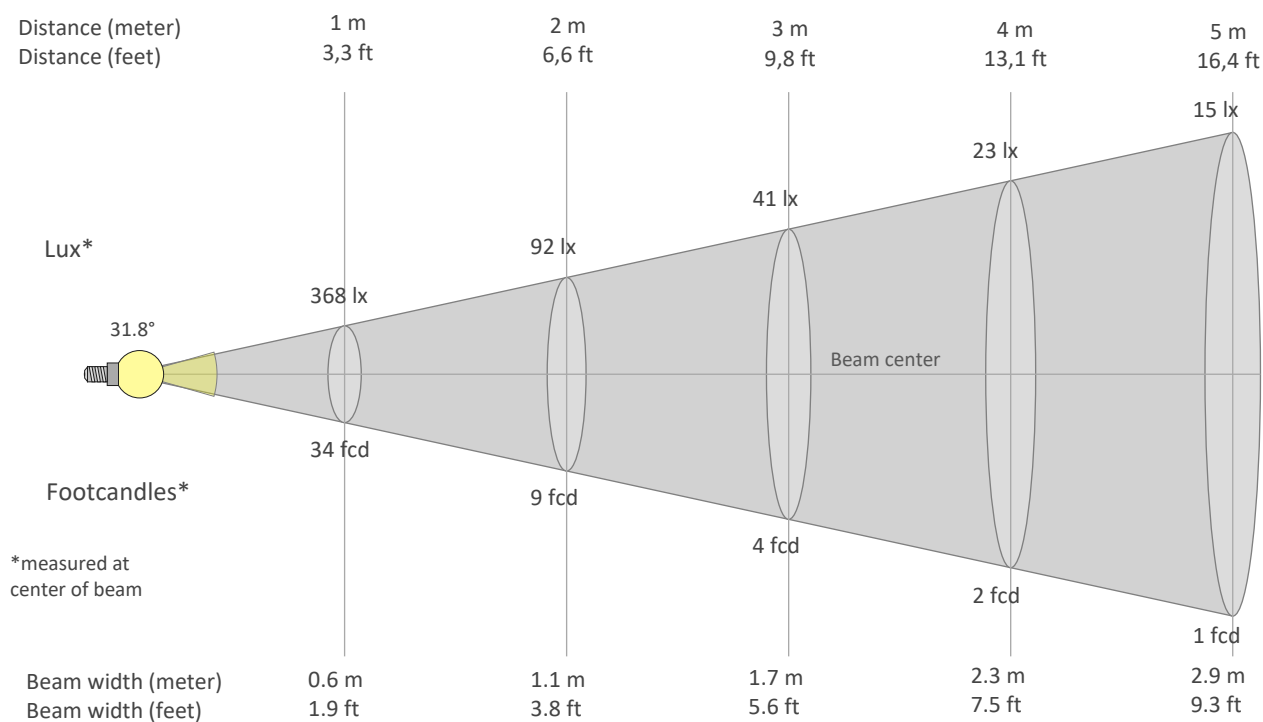
**Rf 88.9**  
Fidelity index Rf

**Rg 104.3**  
Gammut index Rg

Hue Bin	Graphic shifts (%)		
	R <sub>f</sub>	Chroma	Hue
1	91	-3%	-3%
2	93	-3%	3%
3	87	0%	7%
4	85	6%	8%
5	87	9%	6%
6	86	9%	0%
7	81	7%	-10%
8	88	3%	-8%
9	87	-2%	-8%
10	91	-5%	-3%
11	90	-4%	4%
12	89	2%	4%
13	92	6%	0%
14	92	5%	-3%
15	88	4%	-6%
16	91	0%	-6%



## 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
368lx	92lx	41lx	23lx	15lx	10lx	8lx	6lx	5lx	4lx	3lx	3lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx	1lx
34.2fcd	8.6fcd	3.8fcd	2.1fcd	1.4fcd	1fcd	0.7fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd	0.1fcd	0.1fcd	0.1fcd	0.1fcd	0.1fcd

### 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°
368	364	352	334	309	280	249	216	183	151	122	96	75	57	42	29	19	12	8	6
100%	99%	96%	91%	84%	76%	68%	59%	50%	41%	33%	26%	20%	16%	12%	8%	5%	3%	2%	2%

### 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°
368	365	356	337	312	281	249	215	182	150	121	96	74	56	42	30	19	12	8	6
100%	99%	97%	92%	85%	76%	67%	58%	49%	41%	33%	26%	20%	15%	11%	8%	5%	3%	2%	2%

### Intensities in 180° c-plane

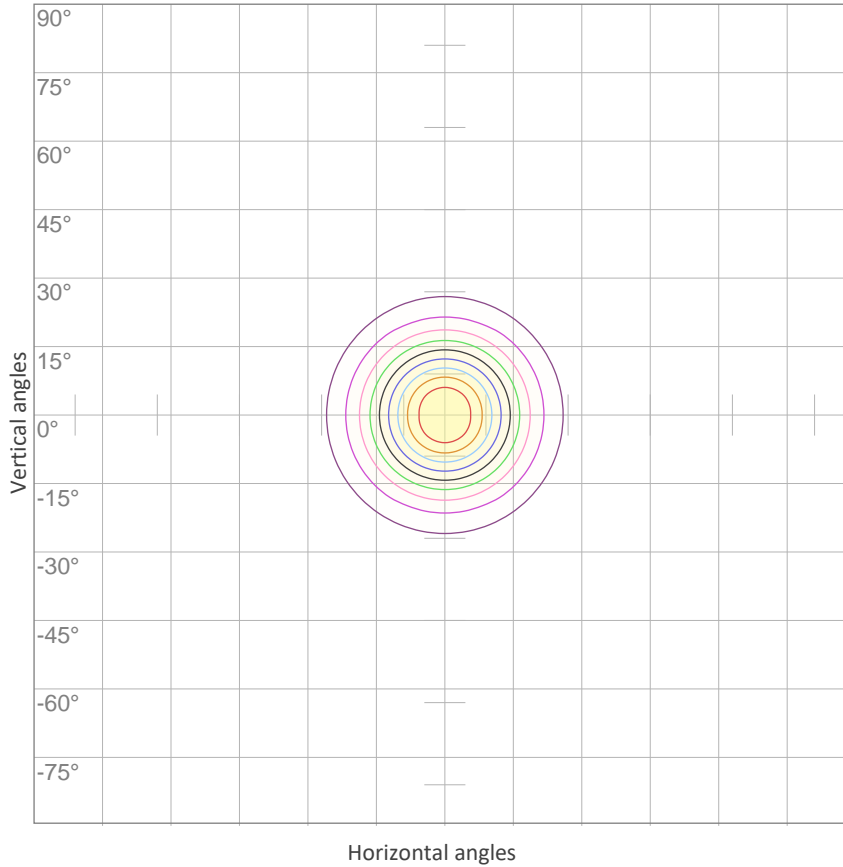
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
368	364	352	334	309	280	249	216	183	151	122	96	75	57	42	29	19	12	8	6
100%	99%	96%	91%	84%	76%	68%	59%	50%	41%	33%	26%	20%	16%	12%	8%	5%	3%	2%	2%

### 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°
368	365	356	337	312	281	249	215	182	150	121	96	74	56	42	30	19	12	8	6
100%	99%	97%	92%	85%	76%	67%	58%	49%	41%	33%	26%	20%	15%	11%	8%	5%	3%	2%	2%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
31.8°	57.7°	70.7°	99.4%	99.1%

ISO CANDELA DIAGRAM



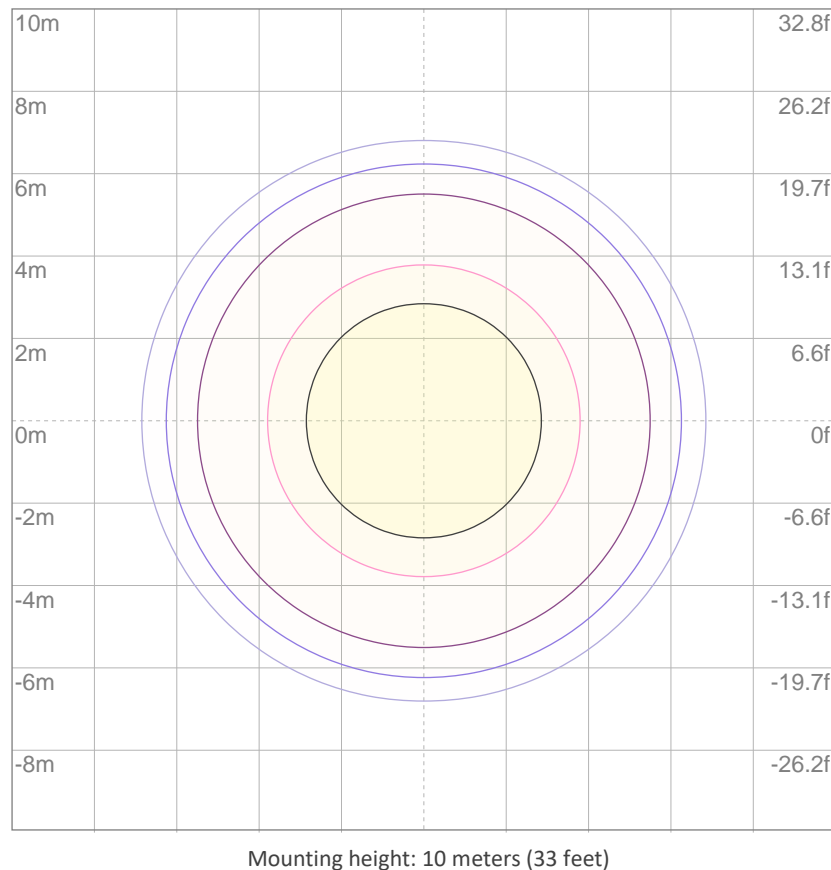
10%	37 cd
20%	74 cd
30%	110 cd
40%	147 cd
50%	184 cd
60%	221 cd
70%	258 cd
80%	295 cd
90%	331 cd

Conditions:

Number of c-planes: 8

Candela at center: 368 cd

ISO LUX DIAGRAM



3%	0.110 lx
5%	0.184 lx
10%	0.368 lx
30%	1.10 lx
50%	{LUX_10M50} lx

Conditions:

Number of c-planes: 8

Lux at center: 3.68 lx

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

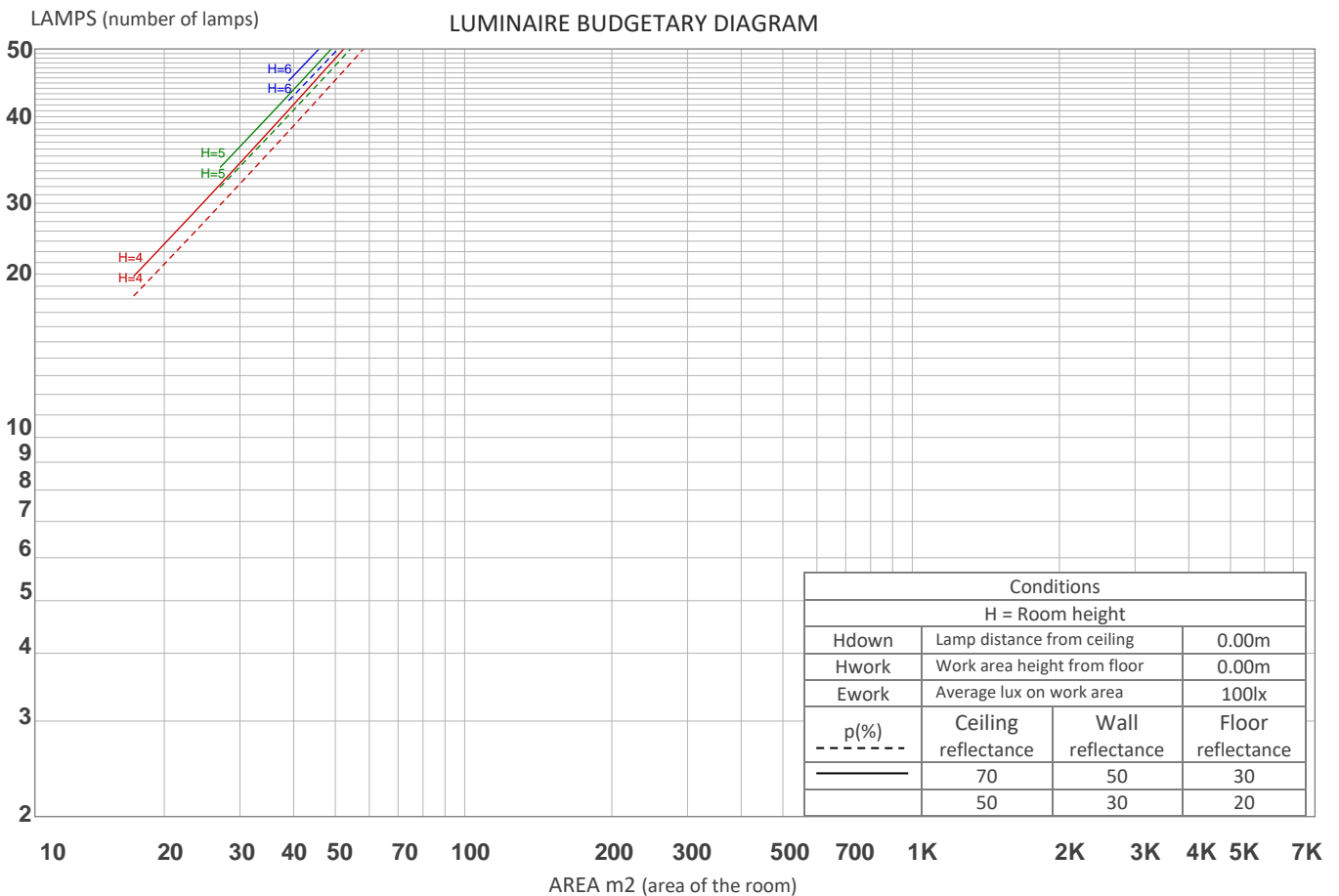
UGR

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	1.4	1.8	1.4	2.0	2.2	1.2	1.7	1.3	1.9	2.1
	3H	1.0	1.7	1.4	1.8	2.0	0.9	1.5	1.3	1.7	1.9
	4H	1.0	1.6	1.4	1.8	2.0	0.8	1.4	1.2	1.6	1.9
	6H	1.0	1.4	1.3	1.7	2.1	0.8	1.3	1.1	1.6	2.0
	8H	0.9	1.4	1.2	1.7	2.1	0.8	1.2	1.1	1.6	2.0
	12H	0.9	1.3	1.2	1.7	2.1	0.7	1.2	1.1	1.5	1.9
4H	2H	1.0	1.6	1.4	1.8	2.0	0.8	1.4	1.2	1.6	1.9
	3H	0.9	1.3	1.2	1.7	2.1	0.7	1.2	1.1	1.5	1.9
	4H	0.7	1.1	1.1	1.6	2.1	0.6	1.0	1.0	1.4	1.9
	6H	0.6	1.1	1.1	1.4	1.8	0.5	1.0	1.0	1.3	1.6
	8H	0.6	1.0	1.1	1.3	1.7	0.4	0.9	0.9	1.2	1.6
	12H	0.5	0.8	1.0	1.2	1.7	0.4	0.7	0.9	1.1	1.6
8H	4H	0.6	1.0	1.1	1.3	1.7	0.4	0.9	0.9	1.2	1.6
	6H	0.5	0.8	1.0	1.2	1.8	0.4	0.6	0.9	1.1	1.6
	8H	0.5	0.7	1.0	1.2	1.9	0.3	0.6	0.9	1.1	1.7
	12H	0.4	0.6	1.0	1.1	1.7	0.3	0.5	0.9	1.0	1.6
12H	4H	0.5	0.8	1.0	1.2	1.7	0.4	0.7	0.9	1.1	1.6
	6H	0.5	0.7	1.0	1.2	1.9	0.3	0.6	0.9	1.1	1.7
	8H	0.4	0.6	1.0	1.1	1.7	0.3	0.5	0.9	1.0	1.6
Variation of the observer position for the luminaire distance S											
S = 1.0H	6.3 / -19.4					6.3 / -19.2					
S = 1.5H	9.0 / -19.9					9.0 / -19.4					
S = 2.0H	11.0 / -20.2					11.0 / -19.8					
Standard table	n/a					n/a					
Correction summand	n/a					n/a					
Corrected glare indices referring to 125 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	111	111	111	106	106	106	102	102	102	99
1	114	112	110	108	112	110	108	107	106	104	103	102	101	100	99	98	97	95
2	110	106	103	100	108	105	102	99	101	99	97	98	97	95	96	94	93	91
3	106	101	97	94	104	100	96	93	97	94	92	95	92	90	93	91	89	87
4	102	97	92	89	101	95	91	88	93	90	87	91	89	86	90	87	85	84
5	99	92	88	84	97	91	87	84	90	86	83	88	85	83	87	84	82	81
6	95	88	84	81	94	88	83	80	86	83	80	85	82	79	84	81	79	77
7	92	85	80	77	91	84	80	77	83	79	76	82	79	76	81	78	76	75
8	89	82	77	74	88	81	77	74	80	76	73	79	76	73	78	75	73	72
9	86	79	74	71	85	78	74	71	77	74	71	77	73	71	76	73	70	69
10	83	76	71	69	83	76	71	68	75	71	68	74	71	68	73	70	68	67



ZONAL LUMEN SUMMARY

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
30.9 lm	54.2 lm	30.6 lm	7.36 lm	1.23 lm	0.086 lm	0.040 lm	0.039 lm	0.035 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0.036 lm	0.040 lm	0.044 lm	0.067 lm	0.104 lm	0.135 lm	0.131 lm	0.089 lm	0.024 lm

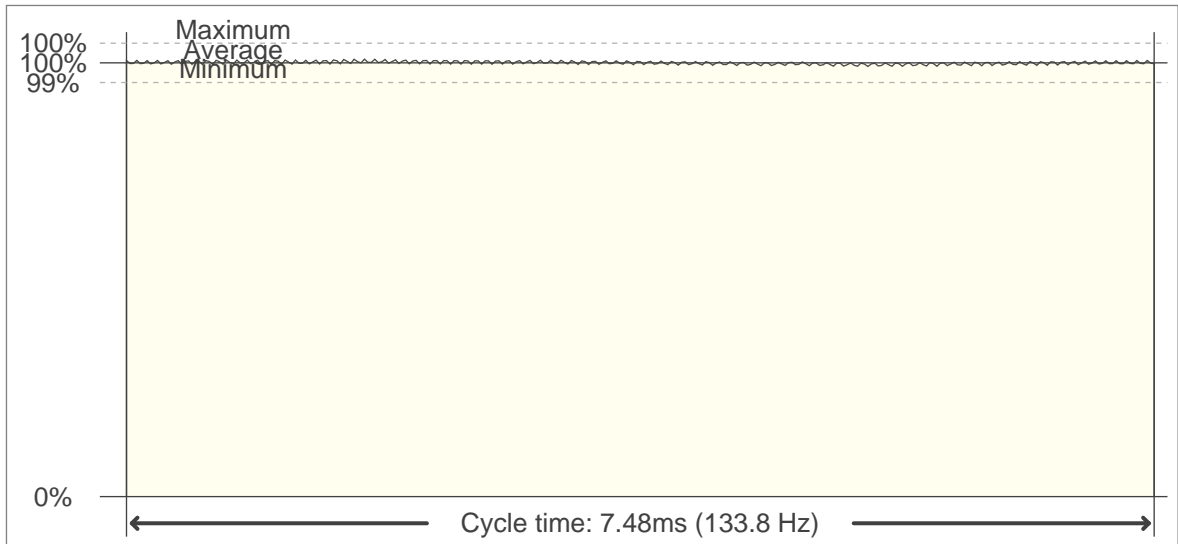


FLICKER

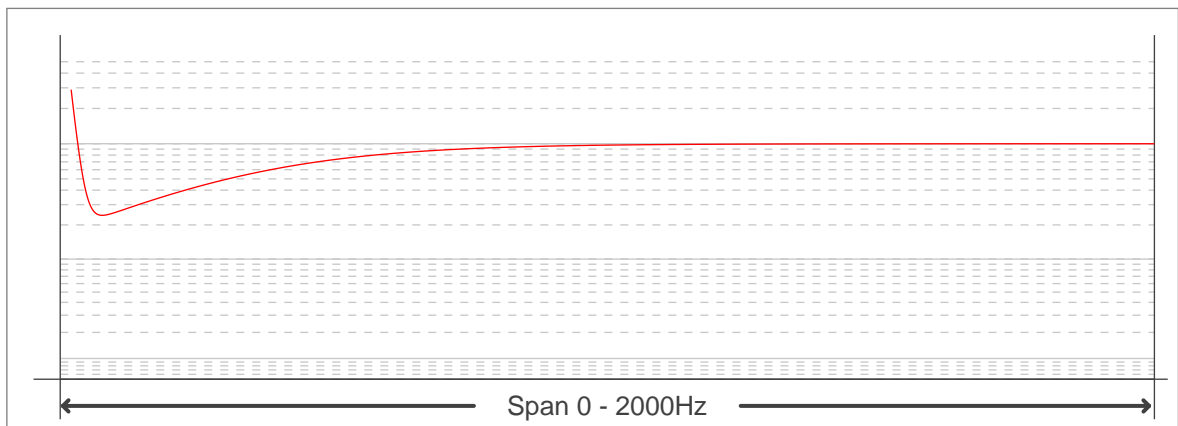
FLICKER CURVE (COMPLETE SAMPLED FLICKER)



FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

Flicker frequency:	133.78 Hz
Flicker index:	0
Flicker percentage:	1.42 %
SVM: (Visual flicker)	0.01

FLICKER CONDITIONS:

Sample rate:	40000 samples/second
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