PHOTOMETRIC TEST REPORT

ENNA TWIN BRONZE

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ENNA TWIN BRONZE

LIGHT EFFICIENCY:

51 Lumen/Watt

LIGHT QUALITY:

CRI: 95.3

COLOR TEMPERATURE:

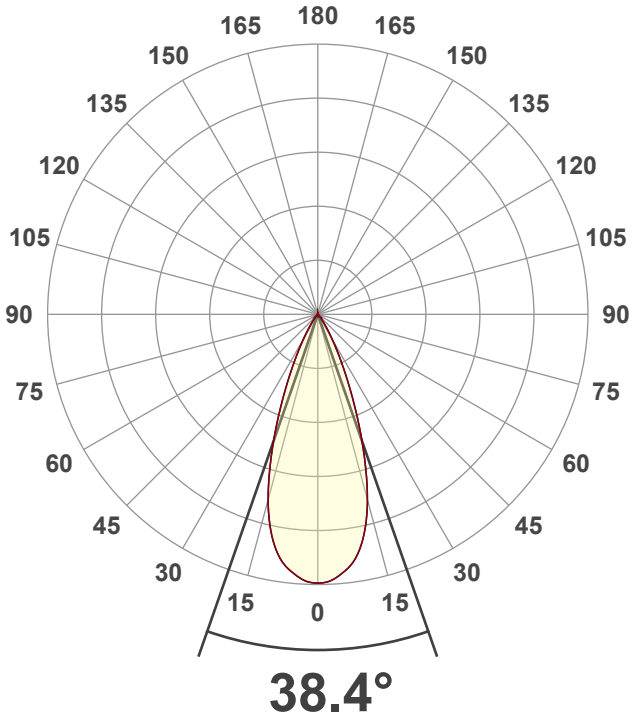
2705 K

OUTPUT: 170 lm

PEAK: 395 cd

POWER: 3.3 W

PF: 0.48



CIE 1931
x: 0.461
y: 0.412

Tracking number: n/a

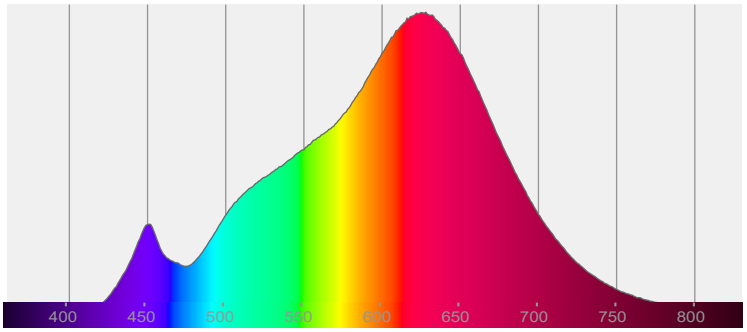
Product name:
Enna Twin Bronze

Item number:
1058197

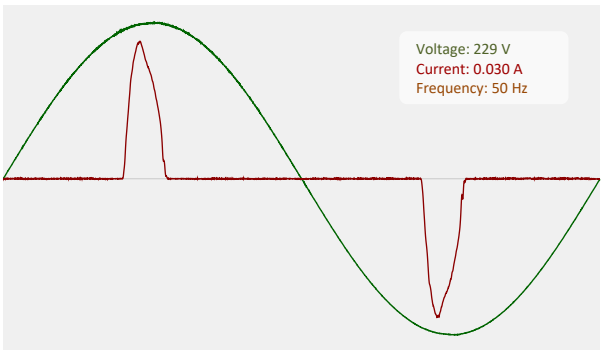
Date and time:
12/11/2021 11:11:28

Description:
IP20 LED Twin Reading Light (Single Head)

SPECTRA



POWER



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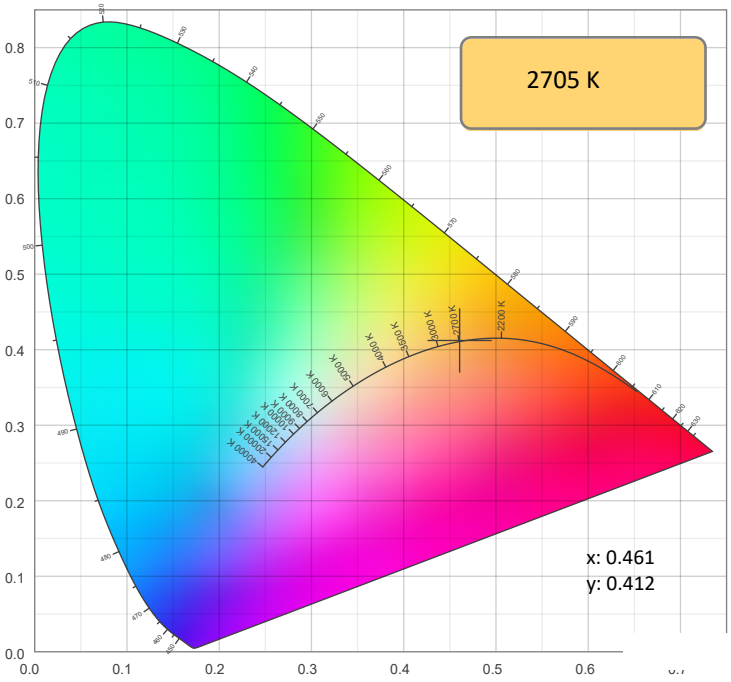
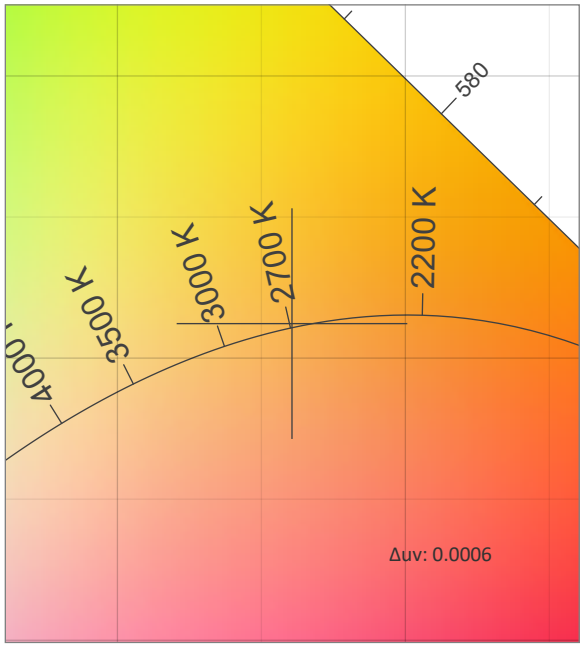
COLOR DETAILS

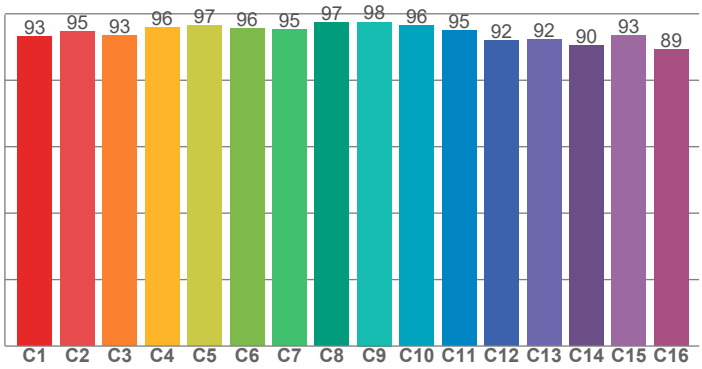


CIE 1931

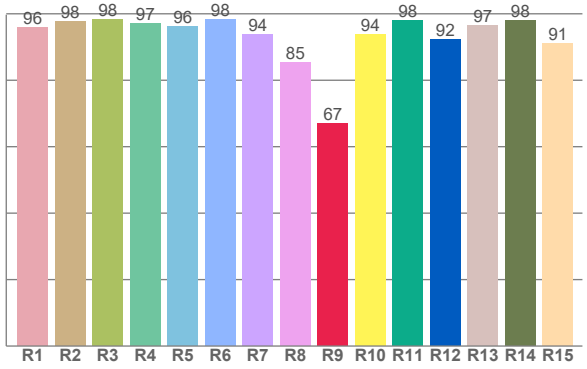


CIE 1931 ZOOM

TM30: 94.4



CRI: 95.3 (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
96.0	97.6	98.2	97.2	96.2	98.2	93.7	85.4	67.0	93.9	98.0	92.3	96.6	98.0	91.2

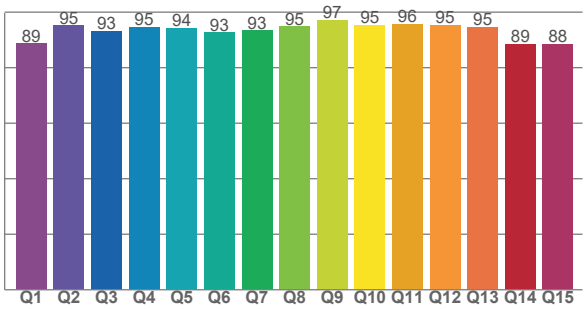
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.1	94.7	93.4	95.9	96.6	95.5	95.2	97.3	97.5	96.4	94.9	91.9	92.1	90.3	93.4	89.4

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
88.7	95.2	93.2	94.6	94.2	92.7	93.4	94.8	97.1	95.4	95.6	95.3	94.7	88.6	88.5

CQS: 92.7



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 diviation from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	Δuv
2705 K	95.3	67.0	94.4	100.3	92.7	0.461	0.412	0.262	0.352	0.0006

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TM30 DETAILS

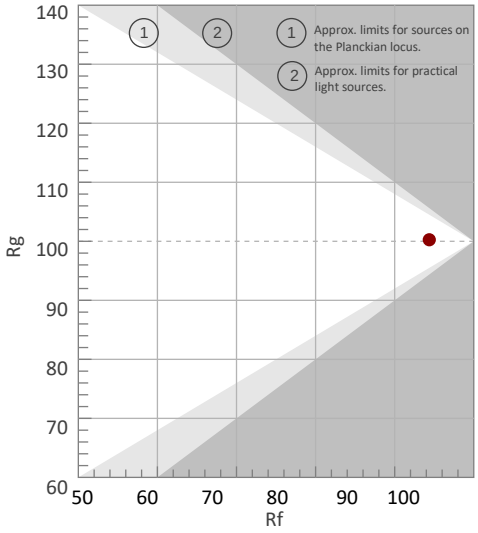
Rf 94.4

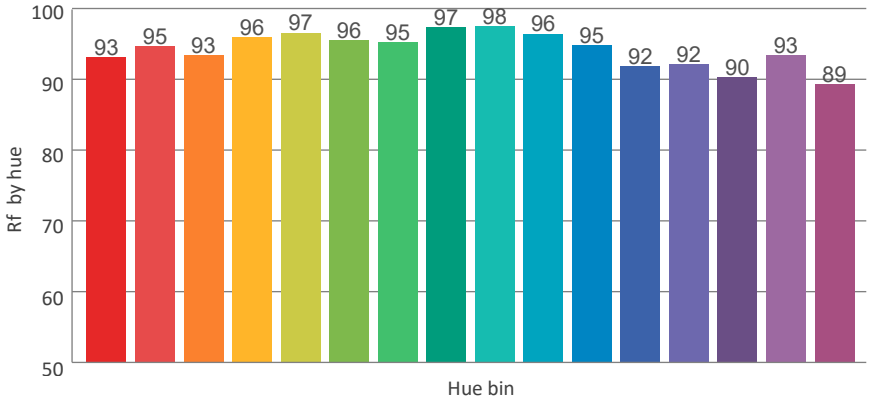
Fidelity index Rf

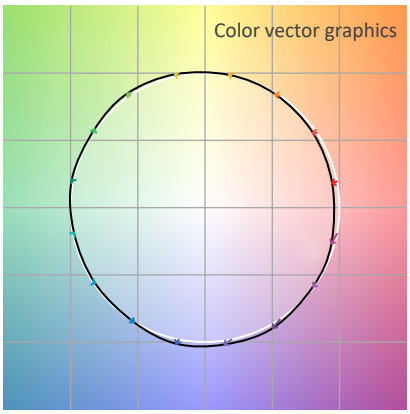
Rg 100.3

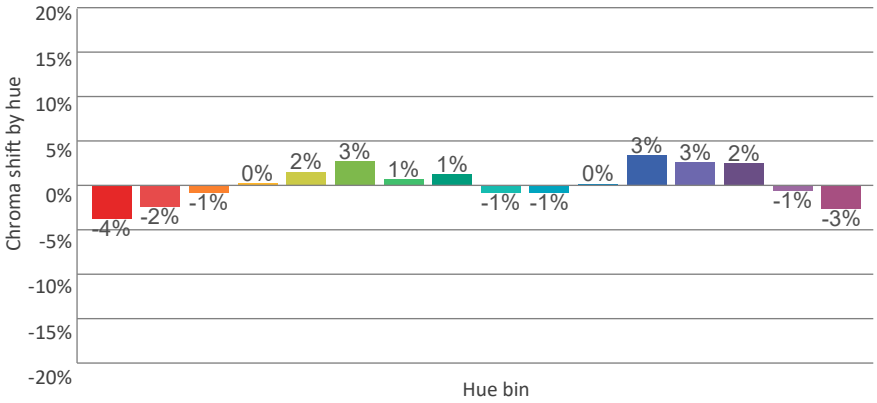
Gammut index Rg

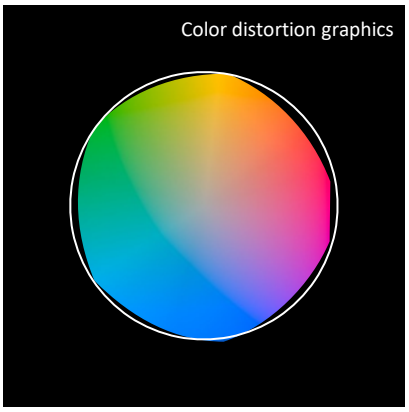
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	93	-4%	-1%
2	95	-2%	2%
3	93	-1%	3%
4	96	0%	2%
5	97	2%	3%
6	96	3%	1%
7	95	1%	-3%
8	97	1%	-1%
9	98	-1%	-1%
10	96	-1%	1%
11	95	0%	3%
12	92	3%	-1%
13	92	3%	-5%
14	90	2%	-8%
15	93	-1%	-4%
16	89	-3%	-8%

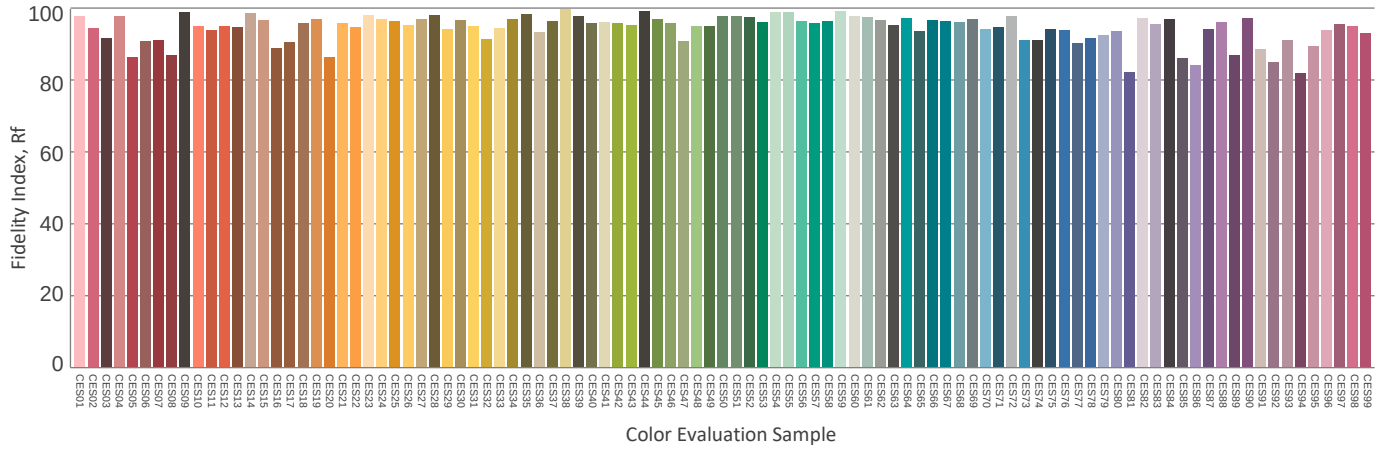












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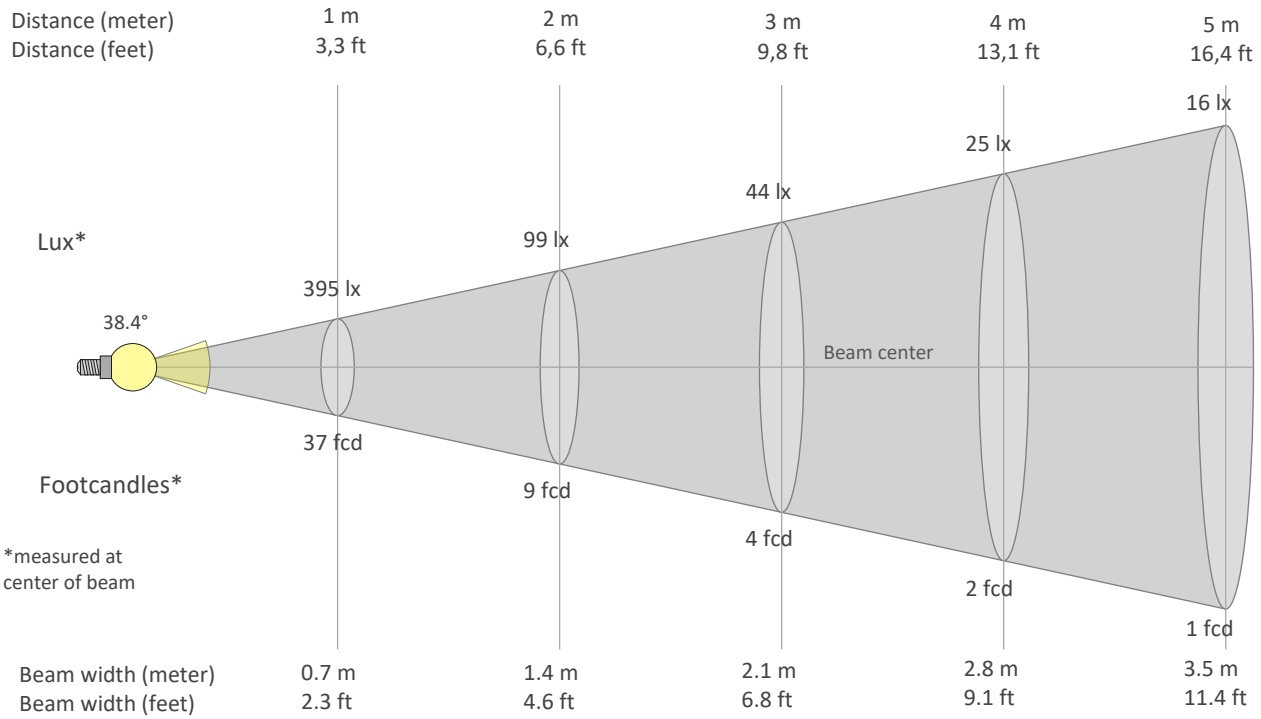
BEAM DETAILS



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
395lx	99lx	44lx	25lx	16lx	11lx	8lx	6lx	5lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx	1lx	1lx	1lx	1lx
36.7fcd	9.2fcd	4.1fcd	2.3fcd	1.5fcd	1fcd	0.7fcd	0.6fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	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°
395	393	388	379	368	352	328	299	263	222	182	143	110	82	60	42	29	20	13	8
100%	100%	98%	96%	93%	89%	83%	76%	67%	56%	46%	36%	28%	21%	15%	11%	7%	5%	3%	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°
395	393	388	379	368	352	328	299	263	222	182	143	110	82	60	42	29	20	13	8
100%	100%	98%	96%	93%	89%	83%	76%	67%	56%	46%	36%	28%	21%	15%	11%	7%	5%	3%	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°
395	393	388	379	368	352	328	299	263	222	182	143	110	82	60	42	29	20	13	8
100%	100%	98%	96%	93%	89%	83%	76%	67%	56%	46%	36%	28%	21%	15%	11%	7%	5%	3%	2%

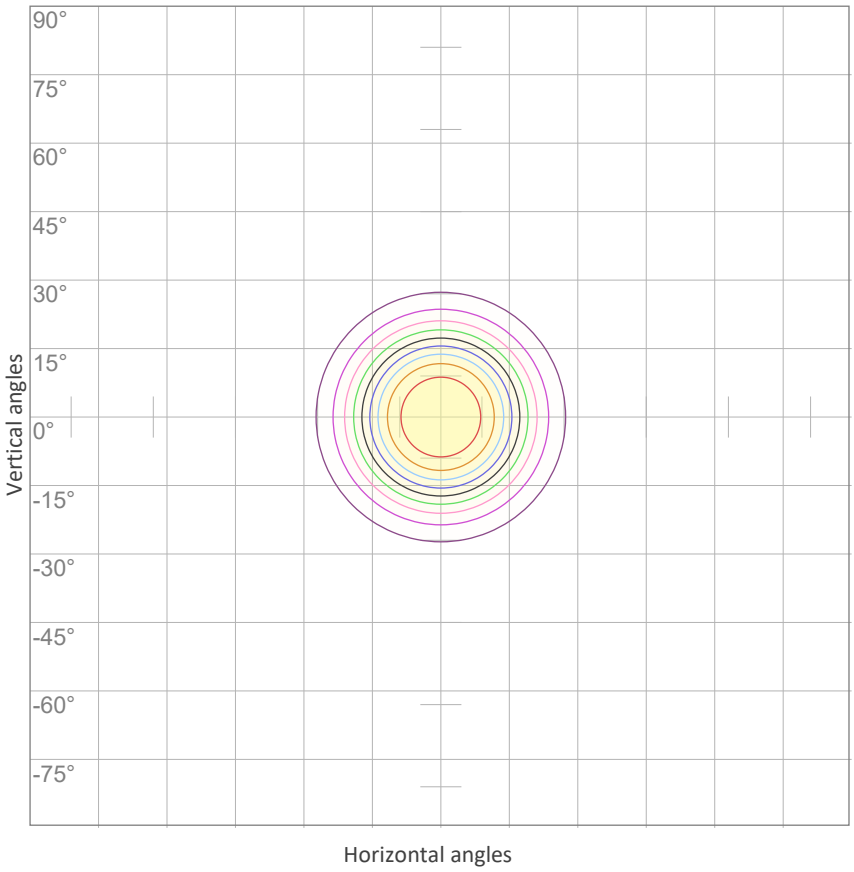
Intensities in 270° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
395	393	388	379	368	352	328	299	263	222	182	143	110	82	60	42	29	20	13	8
100%	100%	98%	96%	93%	89%	83%	76%	67%	56%	46%	36%	28%	21%	15%	11%	7%	5%	3%	2%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
38.4°	60.8°	74.5°	99.4%	99.0%

ISO DIAGRAMS

ISO CANDELA DIAGRAM



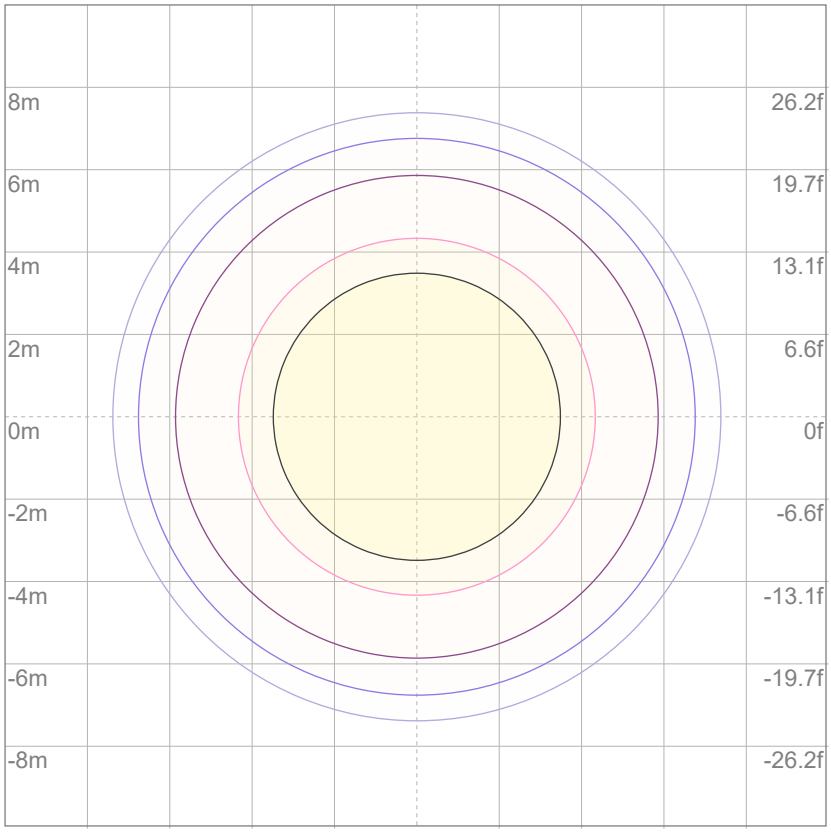
10%	39 cd
20%	79 cd
30%	118 cd
40%	158 cd
50%	197 cd
60%	237 cd
70%	276 cd
80%	316 cd
90%	355 cd

Conditions:

Number of c-planes: 8

Candela at center: 395 cd

ISO LUX DIAGRAM



Mounting height: 10 meters (33 feet)

3%	0.118 lx
5%	0.197 lx
10%	0.395 lx
30%	1.18 lx
50%	{LUX_10M50} lx

Conditions:

Number of c-planes: 8

Lux at center: 3.95 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	7.5	8.0	7.6	8.2	8.4	7.5	8.0	7.6	8.2	8.4
	3H	7.2	7.8	7.6	8.0	8.2	7.2	7.8	7.6	8.0	8.2
	4H	7.1	7.7	7.5	7.9	8.2	7.1	7.7	7.5	7.9	8.2
	6H	7.1	7.6	7.4	7.9	8.2	7.1	7.6	7.4	7.9	8.2
	8H	7.1	7.5	7.4	7.9	8.2	7.1	7.5	7.4	7.9	8.2
	12H	7.0	7.5	7.3	7.8	8.2	7.0	7.5	7.3	7.8	8.2
4H	2H	7.1	7.7	7.5	7.9	8.2	7.1	7.7	7.5	7.9	8.2
	3H	7.0	7.5	7.3	7.8	8.2	7.0	7.5	7.3	7.8	8.2
	4H	6.9	7.3	7.3	7.7	8.2	6.9	7.3	7.3	7.7	8.2
	6H	6.8	7.2	7.3	7.6	7.9	6.8	7.2	7.3	7.6	7.9
	8H	6.7	7.1	7.2	7.5	7.9	6.7	7.1	7.2	7.5	7.9
	12H	6.6	7.0	7.1	7.4	7.9	6.6	7.0	7.1	7.4	7.9
8H	4H	6.7	7.1	7.2	7.5	7.9	6.7	7.1	7.2	7.5	7.9
	6H	6.6	6.9	7.1	7.4	7.9	6.6	6.9	7.1	7.4	7.9
	8H	6.6	6.8	7.1	7.4	8.0	6.6	6.8	7.1	7.4	8.0
	12H	6.6	6.7	7.2	7.3	7.9	6.6	6.7	7.2	7.3	7.9
12H	4H	6.6	7.0	7.1	7.4	7.9	6.6	7.0	7.1	7.4	7.9
	6H	6.6	6.8	7.1	7.4	8.0	6.6	6.8	7.1	7.4	8.0
	8H	6.6	6.7	7.2	7.3	7.9	6.6	6.7	7.2	7.3	7.9
Variation of the observer position for the luminaire distance S											
S = 1.0H		6.4 / -17.3					6.4 / -17.3				
S = 1.5H		9.1 / -18.9					9.1 / -18.9				
S = 2.0H		11.1 / -19.5					11.1 / -19.5				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 170 lm total luminous flux											

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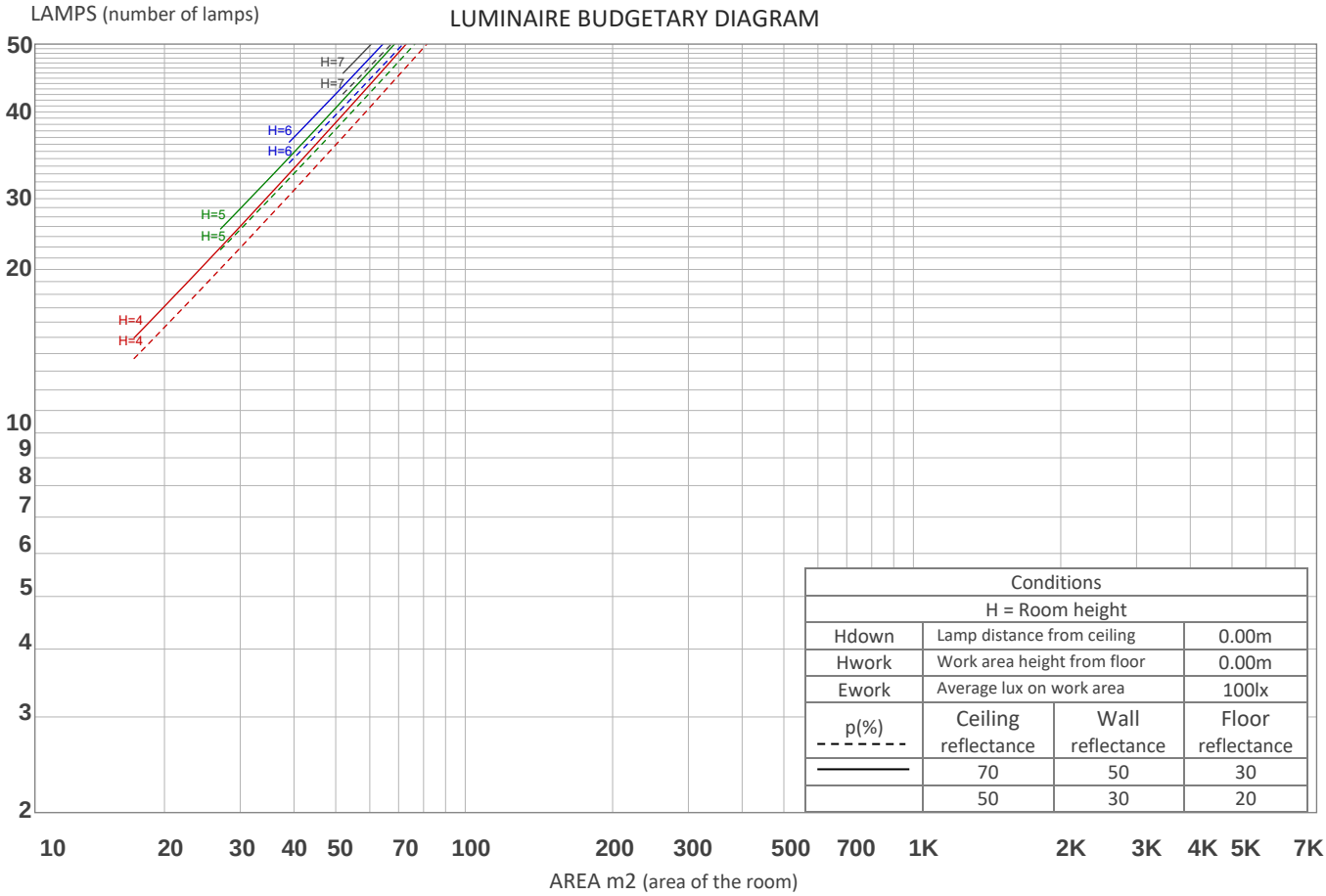
LIGHT PLANNING

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	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95
2	110	106	103	100	108	104	101	99	101	99	97	98	96	94	95	94	92	91
3	106	101	97	93	104	99	96	93	97	94	91	94	92	90	92	90	88	87
4	102	96	91	88	100	95	91	87	93	89	86	91	88	85	89	86	84	83
5	98	91	87	83	97	91	86	83	89	85	82	87	84	81	86	83	81	79
6	95	87	83	79	93	87	82	79	85	81	78	84	81	78	83	80	77	76
7	91	84	79	76	90	83	79	75	82	78	75	81	77	75	80	77	74	73
8	88	80	76	72	87	80	75	72	79	75	72	78	74	72	77	74	71	70
9	85	77	73	69	84	77	72	69	76	72	69	75	71	69	74	71	69	67
10	82	74	70	67	81	74	70	67	73	69	66	73	69	66	72	68	66	65

LUMINAIRE BUDGETARY DIAGRAM



ZONAL LUMEN SUMMARY

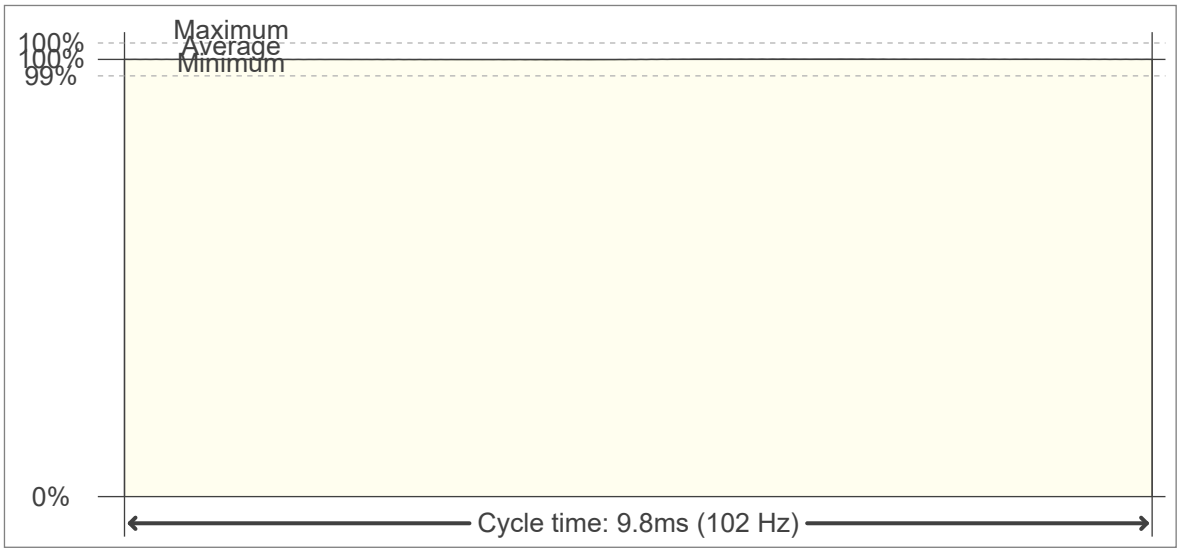
0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
35.7 lm	75.6 lm	44.7 lm	11.2 lm	1.55 lm	0.295 lm	0.073 lm	0.063 lm	0.061 lm

90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0.059 lm	0.065 lm	0.066 lm	0.083 lm	0.105 lm	0.136 lm	0.124 lm	0.086 lm	0.025 lm

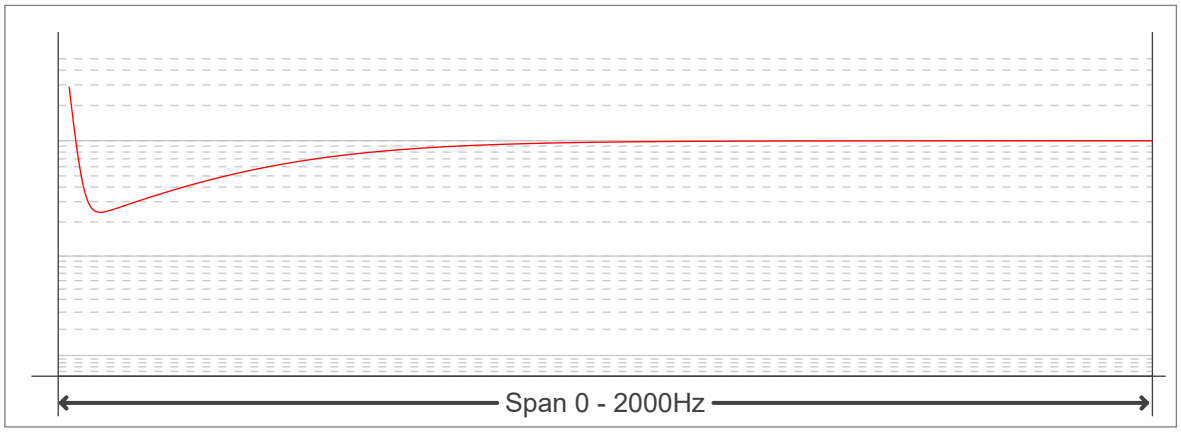
FLICKER

FLICKER CURVE (COMPLETE SAMPLED FLICKER

FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

Flicker frequency:	102.04 Hz
Flicker index:	0
Flicker percentage:	0.12 %
SVM: (Visual flicker)	0

FLICKER CONDITIONS:

Sample rate:	20000 samples/second