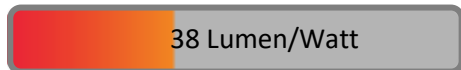


PHOTOMETRIC TEST REPORT

ENNA SURFACE USB

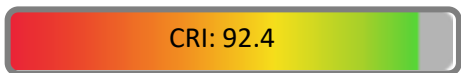
astro

LIGHT EFFICIENCY:



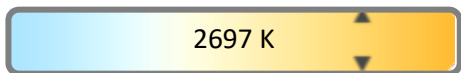
OUTPUT: 134 lm

LIGHT QUALITY:



PEAK: 731 cd

COLOR TEMPERATURE:



POWER: 3.6 W

PF: 0.51

Tracking number: [n/a](#)

Product name:

Enna Surface USB

Item number:

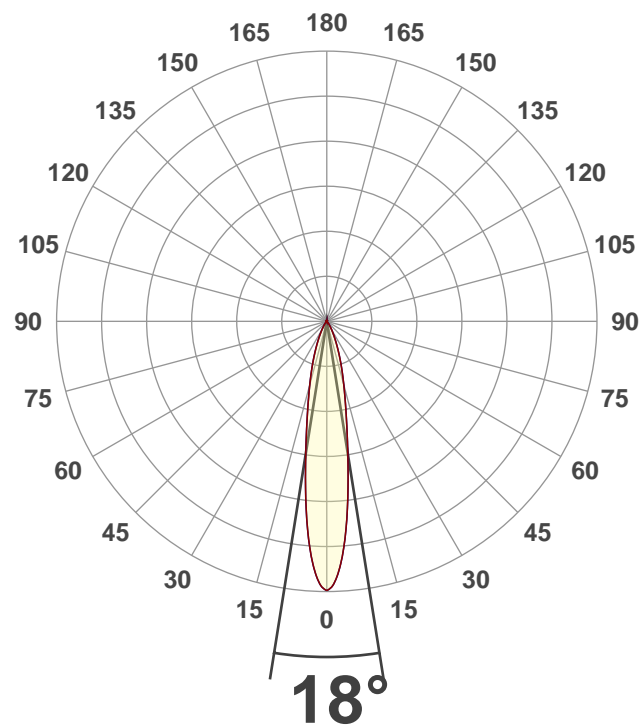
1058154

Date and time:

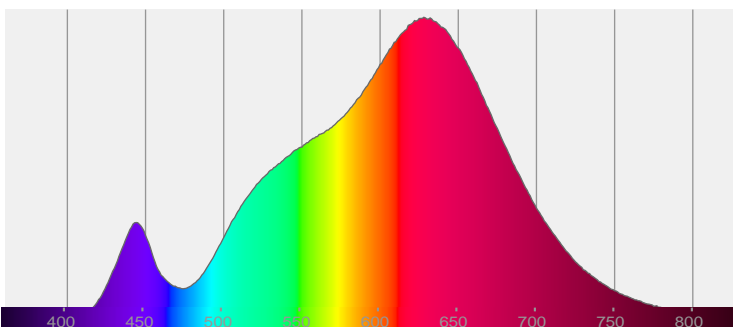
01/10/2020 13:13:28

Description:

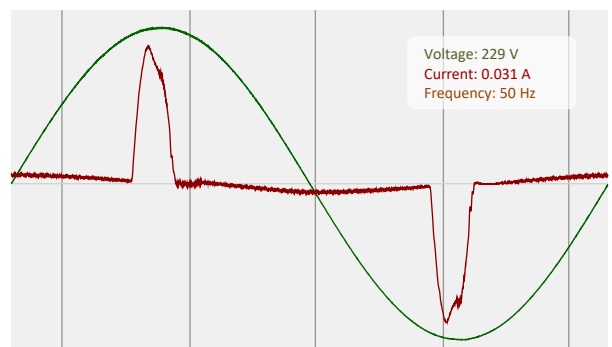
IP20 LED Reading Light with USB Charging

CIE 1931
x: 0.461
y: 0.411

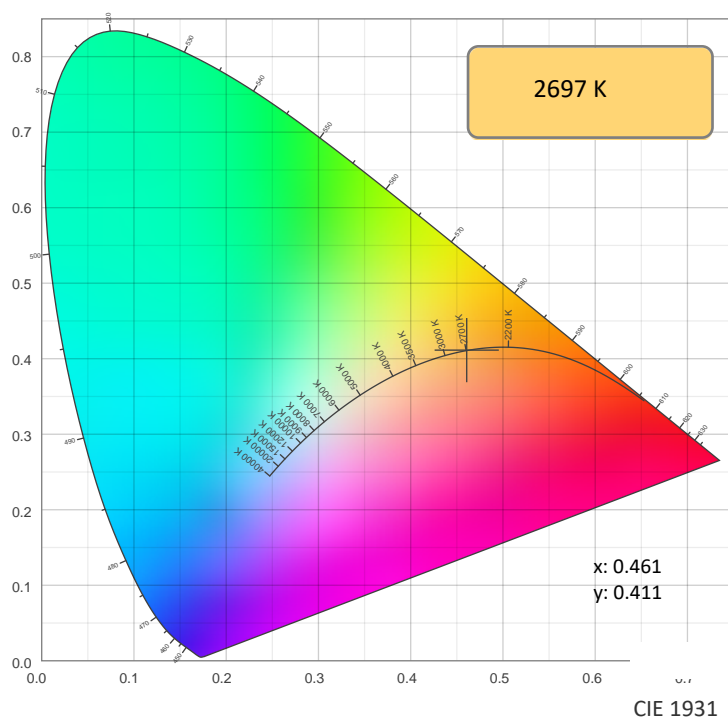
SPECTRA



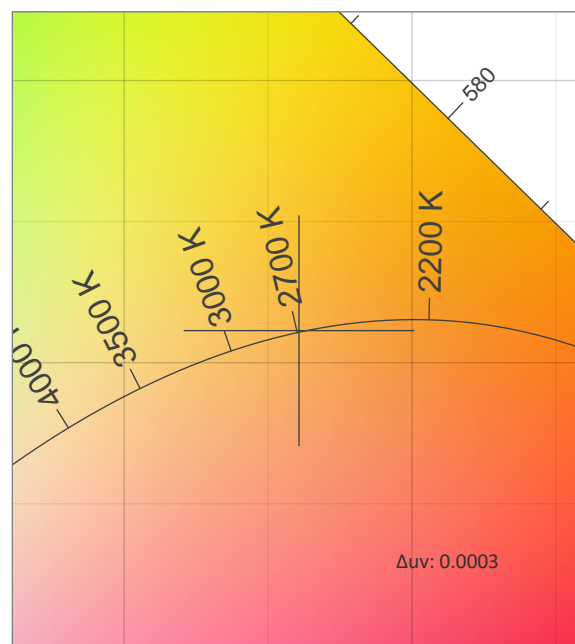
POWER



COLOR DETAILS

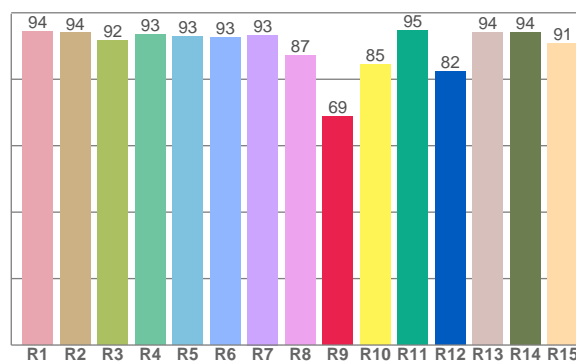
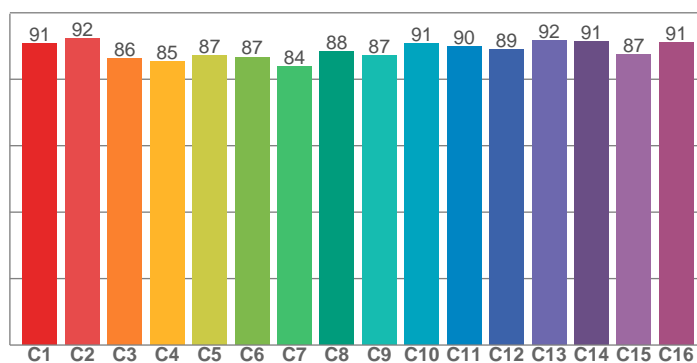


TM30: 88.7



CIE 1931 ZOOM

CRI: 92.4 (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
94.4	93.9	91.5	93.5	93.0	92.6	93.3	87.1	68.9	84.5	94.6	82.4	94.1	94.1	90.8

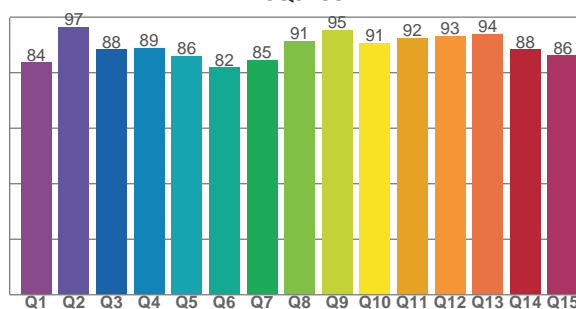
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.7	92.3	86.2	85.4	87.1	86.7	83.7	88.2	87.2	90.8	89.8	89.0	91.7	91.3	87.3	91.0

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
83.6	96.5	88.4	88.8	86.0	81.9	84.6	91.4	95.5	90.7	92.4	93.3	93.9	88.3	86.2

CQS: 88.4



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
2697 K	92.4	68.9	88.7	103.9	88.4	0.461	0.411	0.263	0.352	0.0003

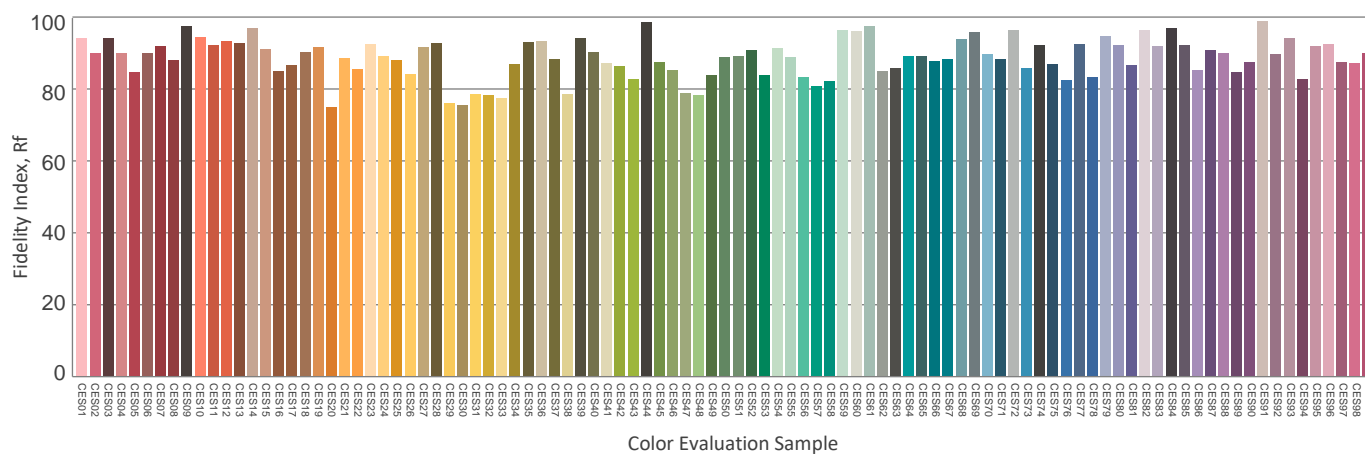
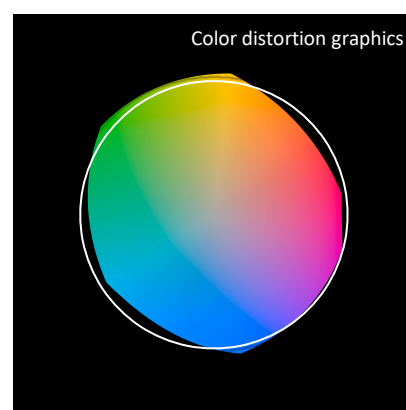
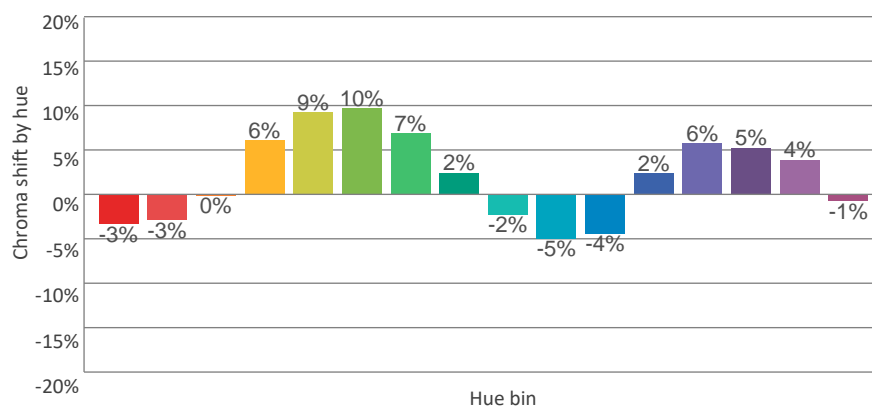
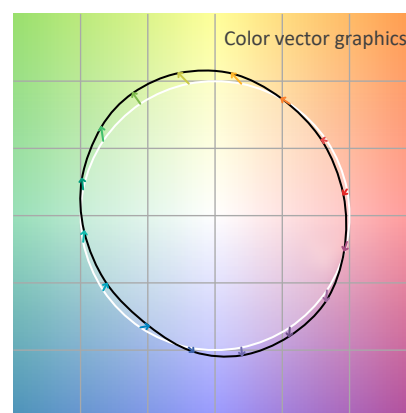
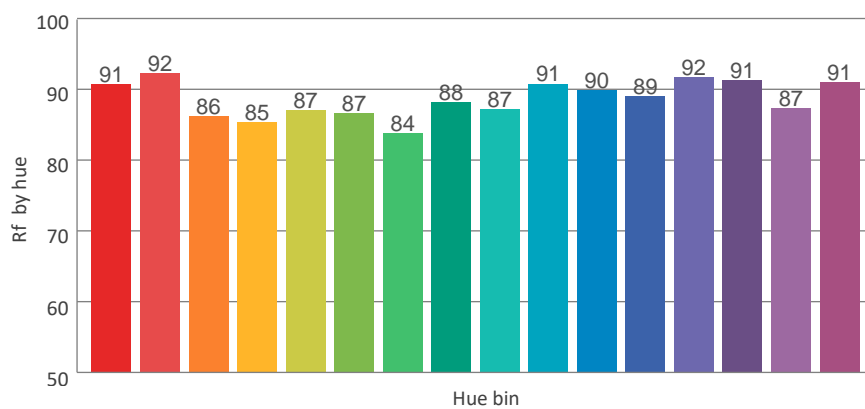
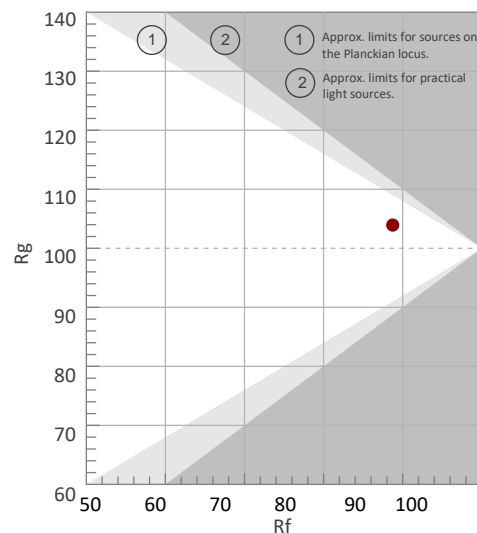
Rf 88.7

Fidelity index Rf

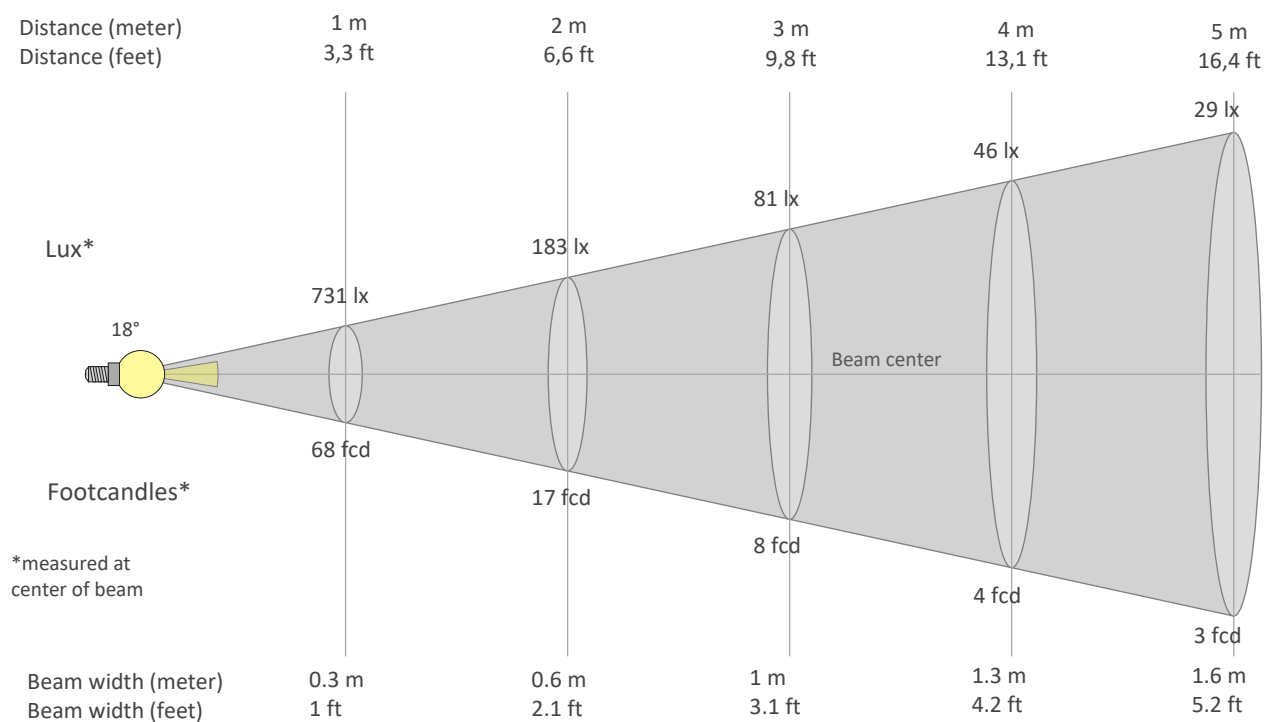
Rg 103.9

Gammut index Rg

		Graphic shifts (%)	
Hue Bin	Rf	Chroma	Hue
1	91	-3%	-3%
2	92	-3%	3%
3	86	0%	7%
4	85	6%	8%
5	87	9%	6%
6	87	10%	0%
7	84	7%	-8%
8	88	2%	-8%
9	87	-2%	-7%
10	91	-5%	-3%
11	90	-4%	5%
12	89	2%	4%
13	92	6%	-1%
14	91	5%	-4%
15	87	4%	-7%
16	91	-1%	-7%



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
731lx	183lx	81lx	46lx	29lx	20lx	15lx	11lx	9lx	7lx	6lx	5lx	4lx	4lx	3lx	3lx	3lx	2lx	2lx	2lx
67.9fcd	17fcd	7.5fcd	4.2fcd	2.7fcd	1.9fcd	1.4fcd	1.1fcd	0.8fcd	0.7fcd	0.6fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd

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°
731	703	630	528	417	323	252	200	160	128	101	78	60	46	35	26	20	15	12	9
100%	96%	86%	72%	57%	44%	34%	27%	22%	18%	14%	11%	8%	6%	5%	4%	3%	2%	2%	1%

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°
731	703	630	528	417	323	252	200	160	128	101	78	60	46	35	26	20	15	12	9
100%	96%	86%	72%	57%	44%	34%	27%	22%	18%	14%	11%	8%	6%	5%	4%	3%	2%	2%	1%

Intensities in 180° c-plane

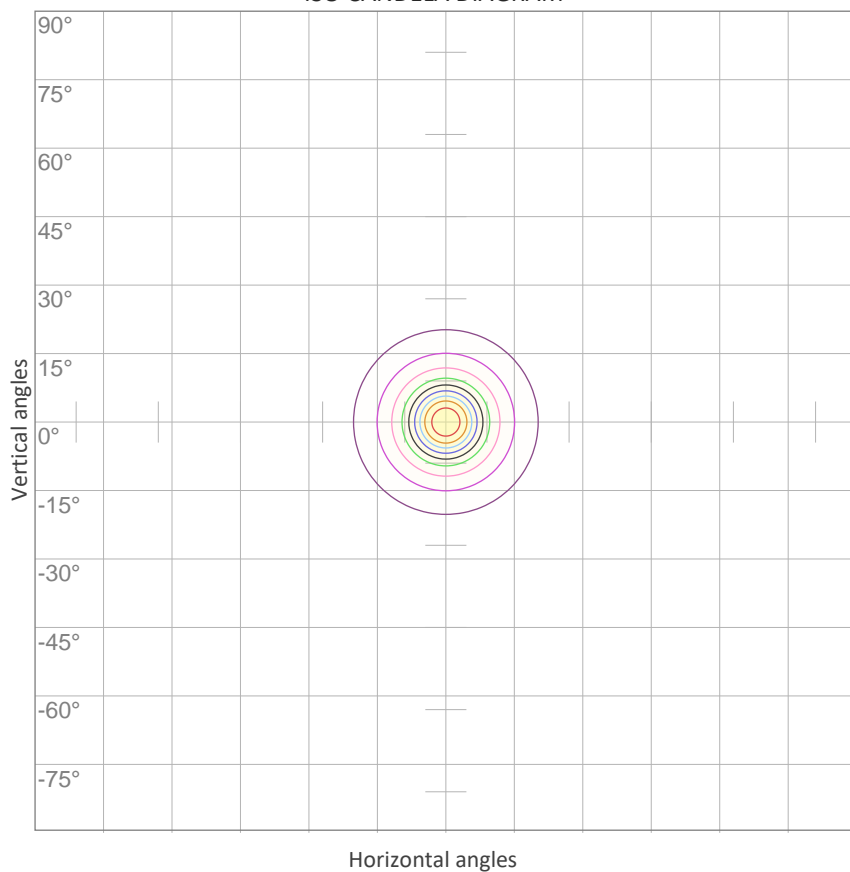
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
731	703	630	528	417	323	252	200	160	128	101	78	60	46	35	26	20	15	12	9
100%	96%	86%	72%	57%	44%	34%	27%	22%	18%	14%	11%	8%	6%	5%	4%	3%	2%	2%	1%

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°
731	703	630	528	417	323	252	200	160	128	101	78	60	46	35	26	20	15	12	9
100%	96%	86%	72%	57%	44%	34%	27%	22%	18%	14%	11%	8%	6%	5%	4%	3%	2%	2%	1%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
18°	45.1°	65.1°	99.4%	98.5%

ISO CANDELA DIAGRAM



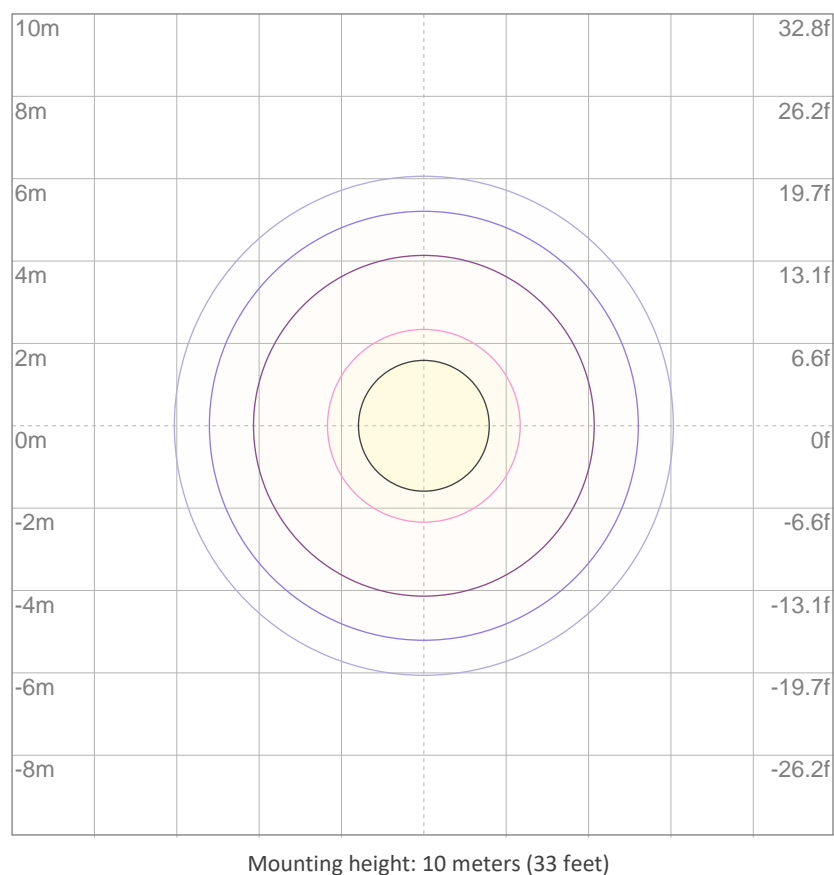
10%	73 cd
20%	146 cd
30%	219 cd
40%	293 cd
50%	366 cd
60%	439 cd
70%	512 cd
80%	585 cd
90%	658 cd

Conditions:

Number of c-planes: 8

Candela at center: 731 cd

ISO LUX DIAGRAM



3%	0.219 lx
5%	0.366 lx
10%	0.731 lx
30%	2.19 lx
50%	{LUX_10M50} lx

Conditions:

Number of c-planes: 8

Lux at center: 7.31 lx

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

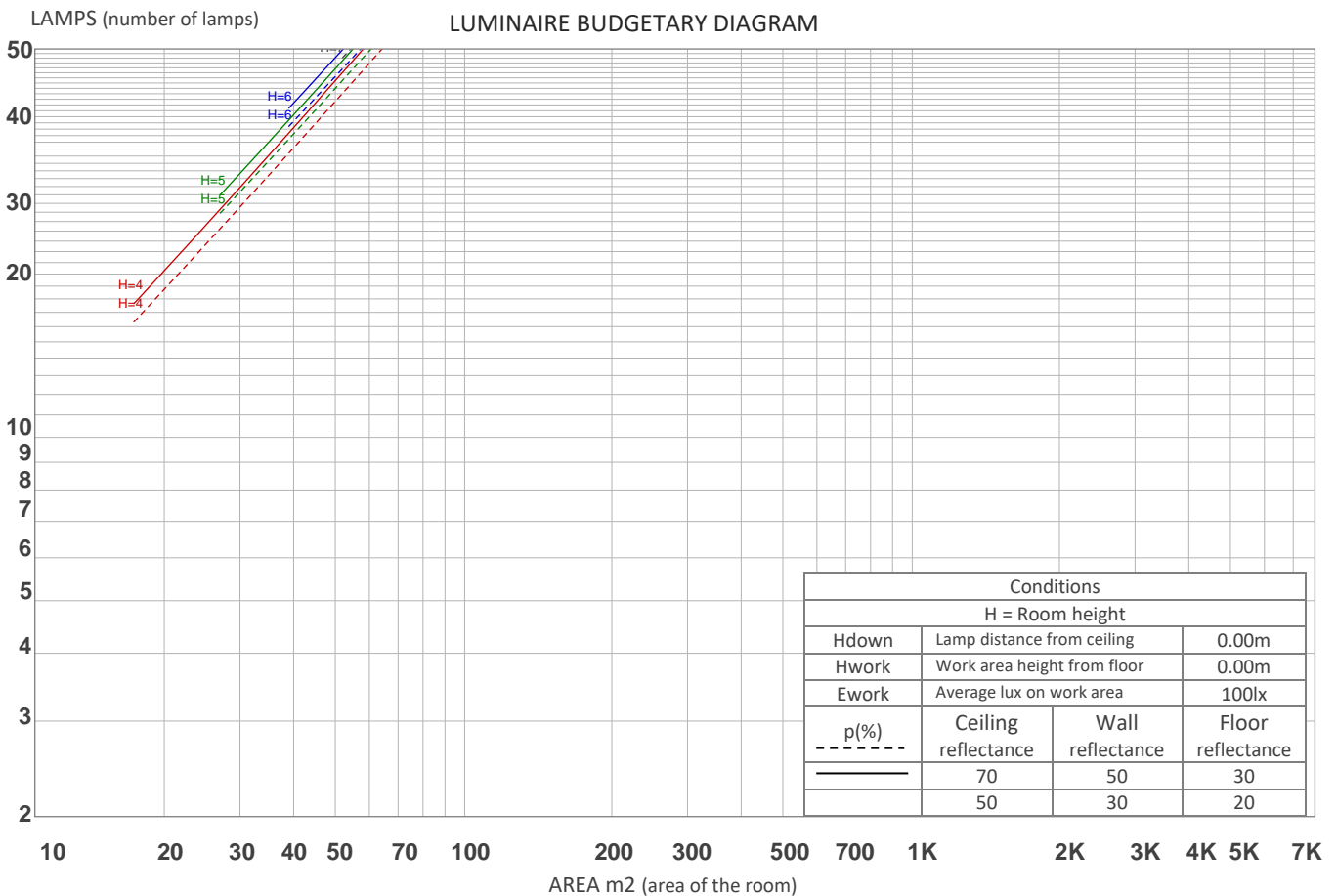
UGR

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	6.7	7.1	6.8	7.3	7.5	6.7	7.1	6.8	7.3	7.5
	3H	6.4	7.0	6.8	7.2	7.4	6.4	7.0	6.8	7.2	7.4
	4H	6.3	6.9	6.7	7.1	7.3	6.3	6.9	6.7	7.1	7.3
	6H	6.3	6.8	6.6	7.1	7.4	6.3	6.8	6.6	7.1	7.4
	8H	6.3	6.7	6.6	7.0	7.4	6.3	6.7	6.6	7.0	7.4
	12H	6.2	6.6	6.6	7.0	7.4	6.2	6.6	6.6	7.0	7.4
4H	2H	6.3	6.9	6.7	7.1	7.3	6.3	6.9	6.7	7.1	7.3
	3H	6.2	6.6	6.6	7.0	7.4	6.2	6.6	6.6	7.0	7.4
	4H	6.1	6.5	6.5	6.9	7.4	6.1	6.5	6.5	6.9	7.4
	6H	6.0	6.4	6.5	6.8	7.1	6.0	6.4	6.5	6.8	7.1
	8H	5.9	6.3	6.4	6.7	7.1	5.9	6.3	6.4	6.7	7.1
	12H	5.8	6.2	6.4	6.6	7.0	5.8	6.2	6.4	6.6	7.0
8H	4H	5.9	6.3	6.4	6.7	7.0	5.9	6.3	6.4	6.7	7.0
	6H	5.8	6.1	6.4	6.6	7.1	5.8	6.1	6.4	6.6	7.1
	8H	5.8	6.0	6.4	6.6	7.2	5.8	6.0	6.4	6.6	7.2
	12H	5.8	5.9	6.4	6.5	7.1	5.8	5.9	6.4	6.5	7.1
12H	4H	5.8	6.2	6.3	6.6	7.0	5.8	6.2	6.3	6.6	7.0
	6H	5.8	6.0	6.4	6.6	7.2	5.8	6.0	6.4	6.6	7.2
	8H	5.8	5.9	6.4	6.5	7.1	5.8	5.9	6.4	6.5	7.1
Variation of the observer position for the luminaire distance S											
S = 1.0H		5.5 / -13.5					5.5 / -13.5				
S = 1.5H		8.1 / -16.4					8.1 / -16.4				
S = 2.0H		10.1 / -17.9					10.1 / -17.9				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 134 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	100
1	115	113	111	109	112	110	109	107	106	105	104	103	101	100	99	98	98	96
2	111	107	104	101	109	105	102	100	102	100	98	99	97	96	96	95	94	92
3	107	102	98	95	105	101	97	94	98	95	93	96	93	91	94	92	90	89
4	103	98	94	90	102	97	93	90	95	91	89	93	90	88	91	89	87	86
5	100	94	90	86	99	93	89	86	91	88	85	90	87	84	88	86	84	83
6	97	90	86	83	96	90	86	83	88	85	82	87	84	81	86	83	81	80
7	94	87	83	80	93	87	82	79	85	82	79	84	81	79	83	80	78	77
8	91	84	80	77	90	84	80	77	83	79	76	82	79	76	81	78	76	75
9	89	82	77	74	88	81	77	74	80	77	74	80	76	74	79	76	74	73
10	86	79	75	72	85	79	75	72	78	74	72	77	74	72	77	74	71	71



ZONAL LUMEN SUMMARY

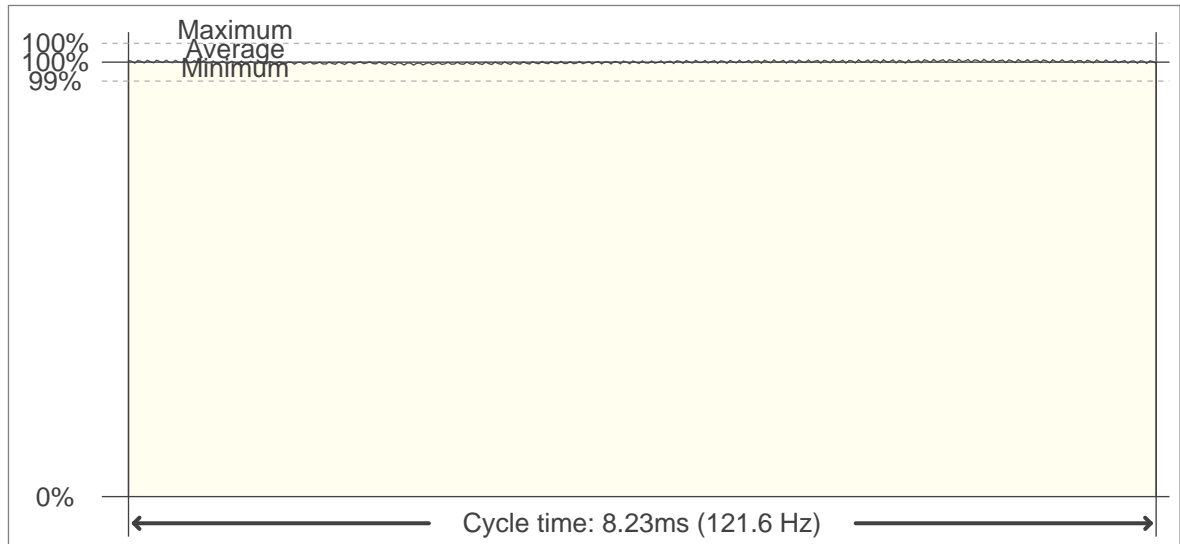
0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
46.5 lm	50.4 lm	24.9 lm	8.69 lm	2.42 lm	0.439 lm	0.112 lm	0.059 lm	0.059 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0.053 lm	0.054 lm	0.052 lm	0.058 lm	0.090 lm	0.090 lm	0.099 lm	0.071 lm	0.017 lm

FLICKER

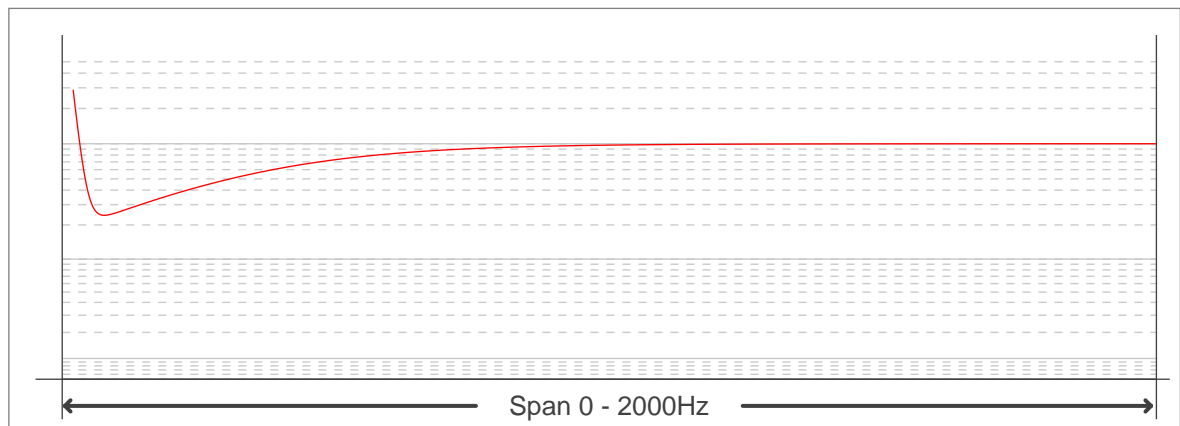
FLICKER CURVE (COMPLETE SAMPLED FLICKER)



FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

Flicker frequency:	121.58 Hz
Flicker index:	0
Flicker percentage:	0.79 %
SVM: (Visual flicker)	0.01

FLICKER CONDITIONS:

Sample rate:	40000 samples/second
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