

PHOTOMETRIC TEST REPORT

ZEPPPO READER MATT MATT BLACK

astro

LIGHT EFFICIENCY:

38 Lumen/Watt

LIGHT QUALITY:

CRI: 92.2

COLOR TEMPERATURE:

2760 K

OUTPUT: 130 lm

PEAK: 436 cd

POWER: 3.4 W

PF: 0.5



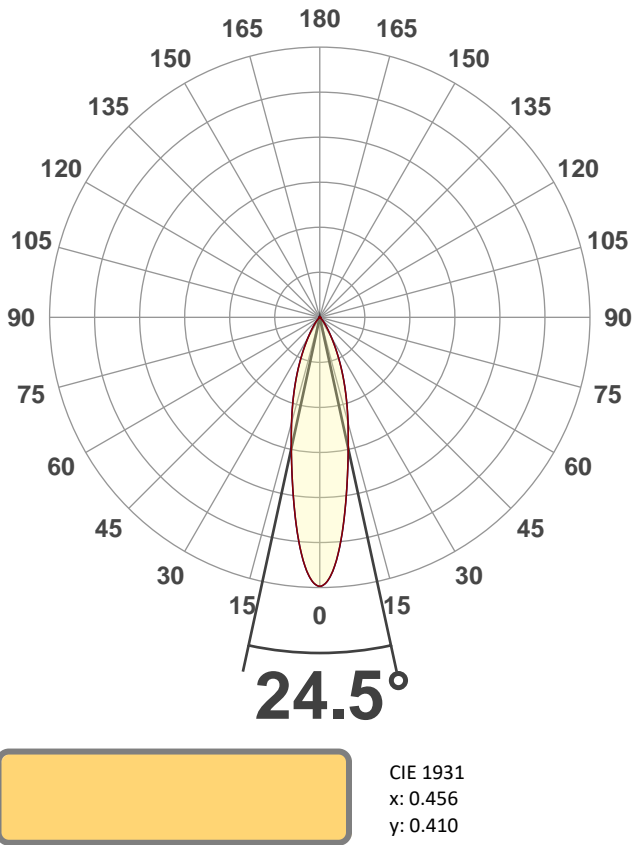
Tracking number: [n/a](#)

Product name:
Zeppo Reader Matt Matt Black

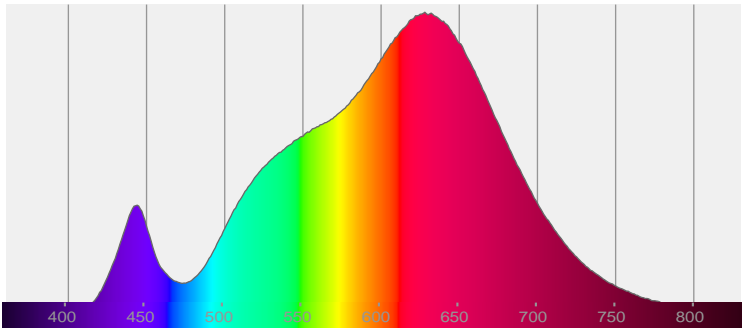
Item number:
1176009

Date and time:
02/10/2020 12:44:12

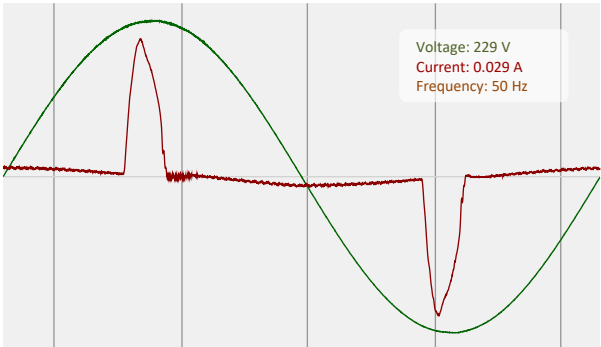
Description:
LED Reading Head



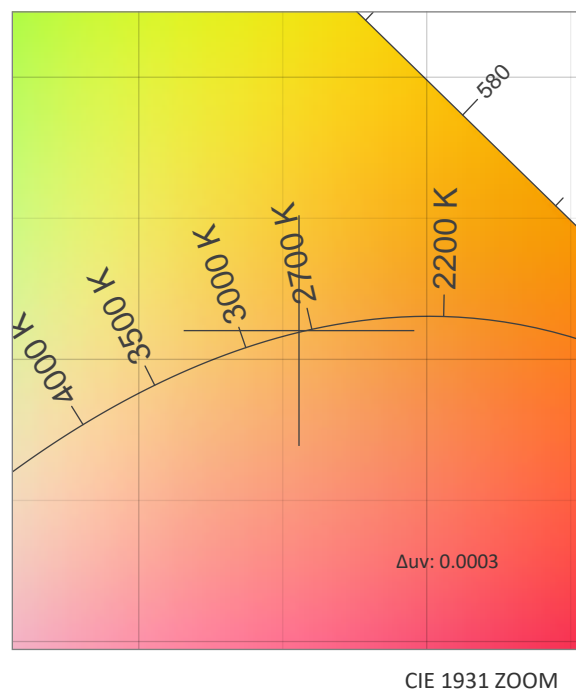
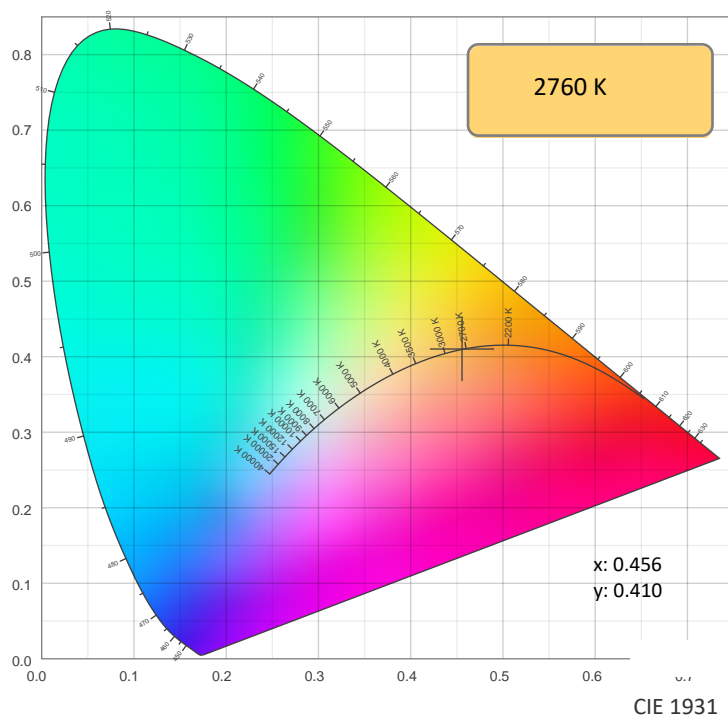
SPECTRA



POWER

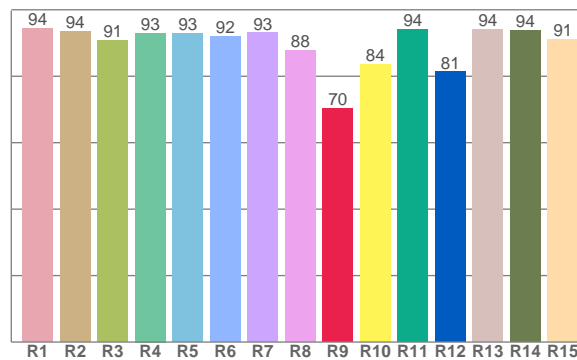
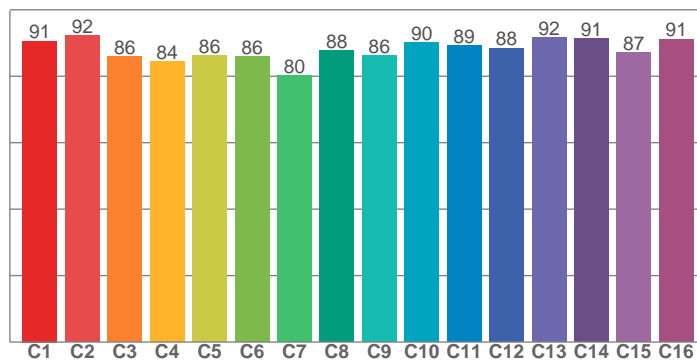


COLOR DETAILS



TM30: 88.3

CRI: 92.2 (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
94.5	93.6	90.7	93.0	92.9	91.9	93.0	87.8	70.2	83.7	94.2	81.3	94.0	93.7	91.0

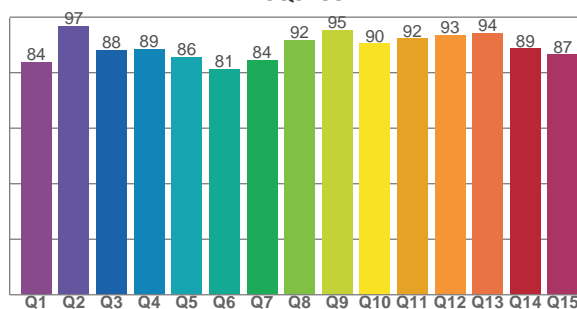
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.6	92.3	85.9	84.5	86.3	85.9	80.2	87.6	86.3	90.2	89.3	88.5	91.6	91.4	87.0	91.2

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
83.8	96.7	88.1	88.5	85.7	81.4	84.5	91.8	95.3	90.5	92.4	93.5	94.2	88.7	86.5

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
2760 K	92.2	70.2	88.3	104.3	88.4	0.456	0.410	0.260	0.351	0.0003

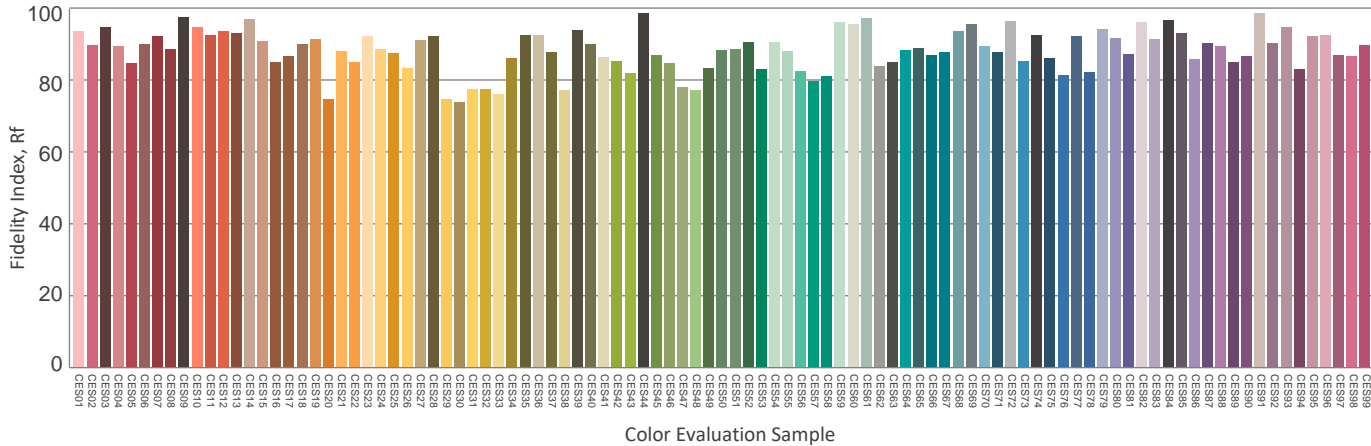
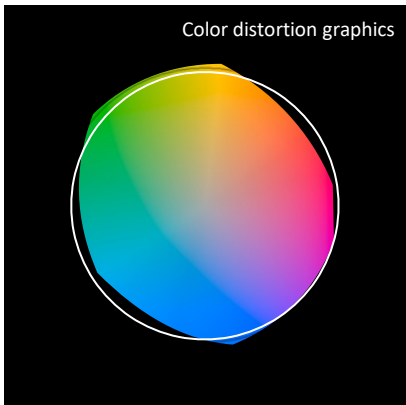
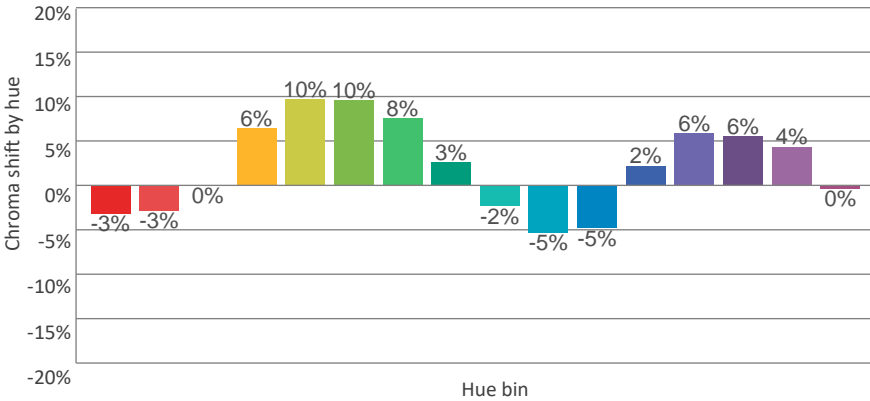
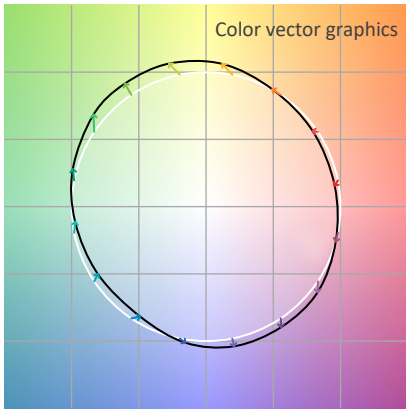
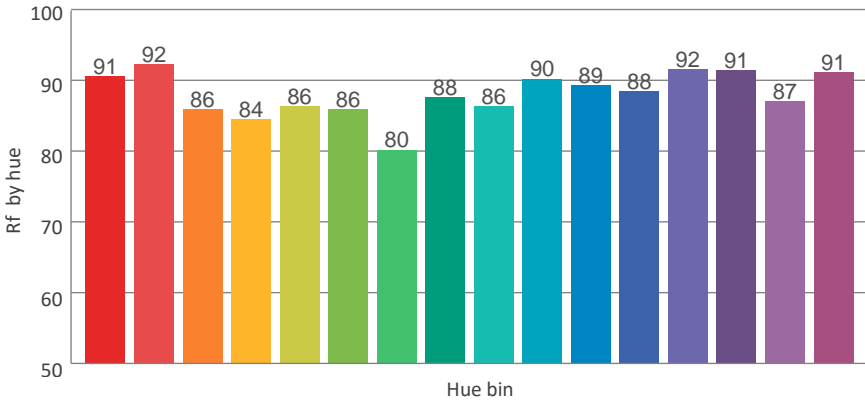
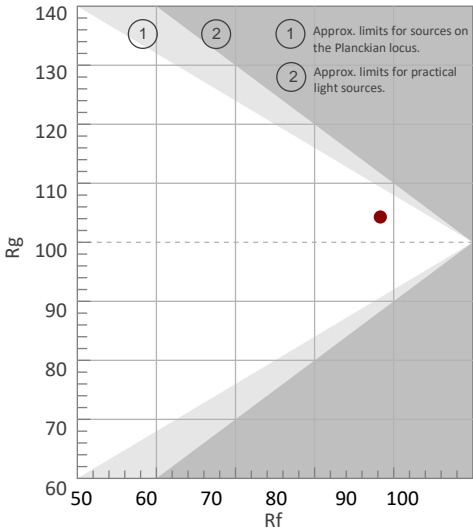
Rf 88.3

Fidelity index Rf

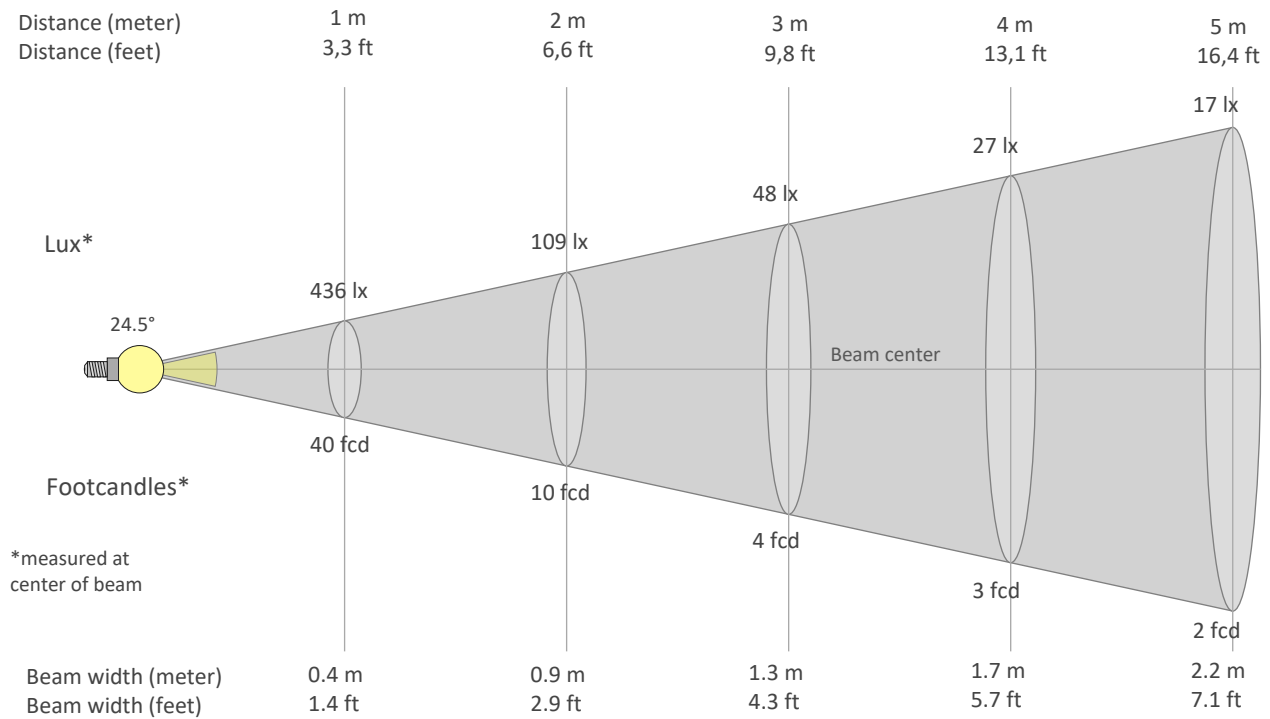
Rg 104.3

Gammut index Rg

Hue Bin	Graphic shifts (%)		
	R _f	Chroma	Hue
1	91	-3%	-3%
2	92	-3%	3%
3	86	0%	7%
4	84	6%	9%
5	86	10%	6%
6	86	10%	-1%
7	80	8%	-10%
8	88	3%	-8%
9	86	-2%	-8%
10	90	-5%	-3%
11	89	-5%	5%
12	88	2%	5%
13	92	6%	0%
14	91	6%	-3%
15	87	4%	-7%
16	91	0%	-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
436lx	109lx	48lx	27lx	17lx	12lx	9lx	7lx	5lx	4lx	4lx	3lx	3lx	2lx	2lx	2lx	2lx	1lx	1lx	1lx
40.5fcd	10.1fcd	4.5fcd	2.5fcd	1.6fcd	1.1fcd	0.8fcd	0.6fcd	0.5fcd	0.4fcd	0.3fcd	0.3fcd	0.2fcd	0.2fcd	0.2fcd	0.2fcd	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°
436	424	393	350	303	259	222	191	164	140	118	98	79	63	49	38	29	22	17	12
100%	97%	90%	80%	70%	60%	51%	44%	38%	32%	27%	22%	18%	15%	11%	9%	7%	5%	4%	3%

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°
436	424	393	350	303	259	222	191	164	140	118	98	79	63	49	38	29	22	17	12
100%	97%	90%	80%	70%	60%	51%	44%	38%	32%	27%	22%	18%	15%	11%	9%	7%	5%	4%	3%

Intensities in 180° c-plane

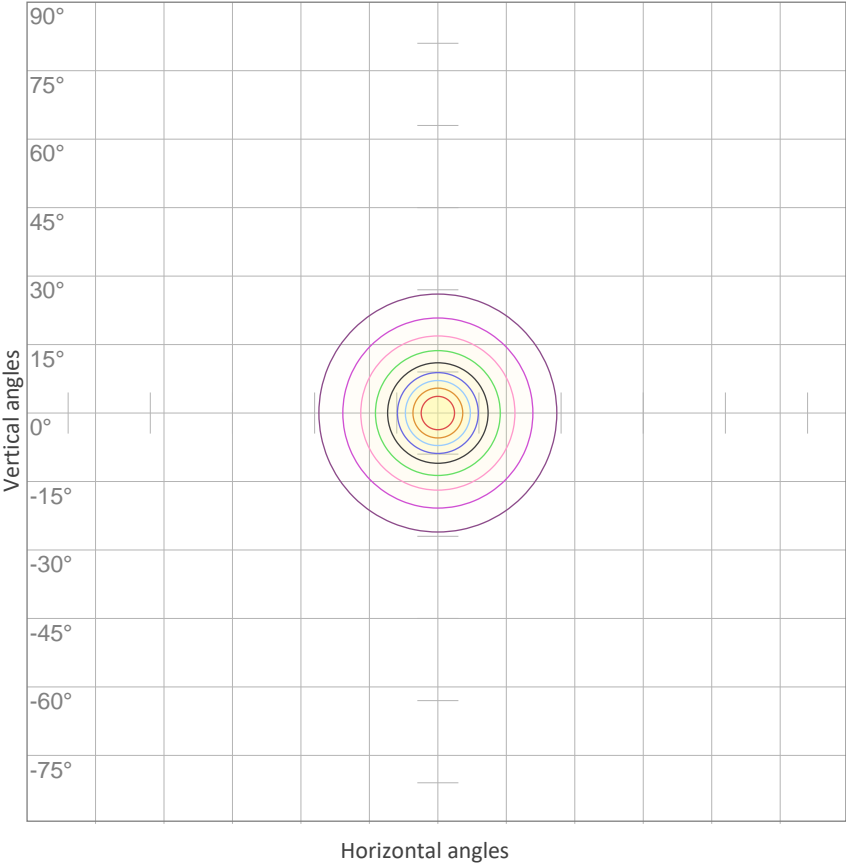
0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°
436	424	393	350	303	259	222	191	164	140	118	98	79	63	49	38	29	22	17	12
100%	97%	90%	80%	70%	60%	51%	44%	38%	32%	27%	22%	18%	15%	11%	9%	7%	5%	4%	3%

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°
436	424	393	350	303	259	222	191	164	140	118	98	79	63	49	38	29	22	17	12
100%	97%	90%	80%	70%	60%	51%	44%	38%	32%	27%	22%	18%	15%	11%	9%	7%	5%	4%	3%

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
24.5°	57.9°	77.7°	99.4%	98.7%

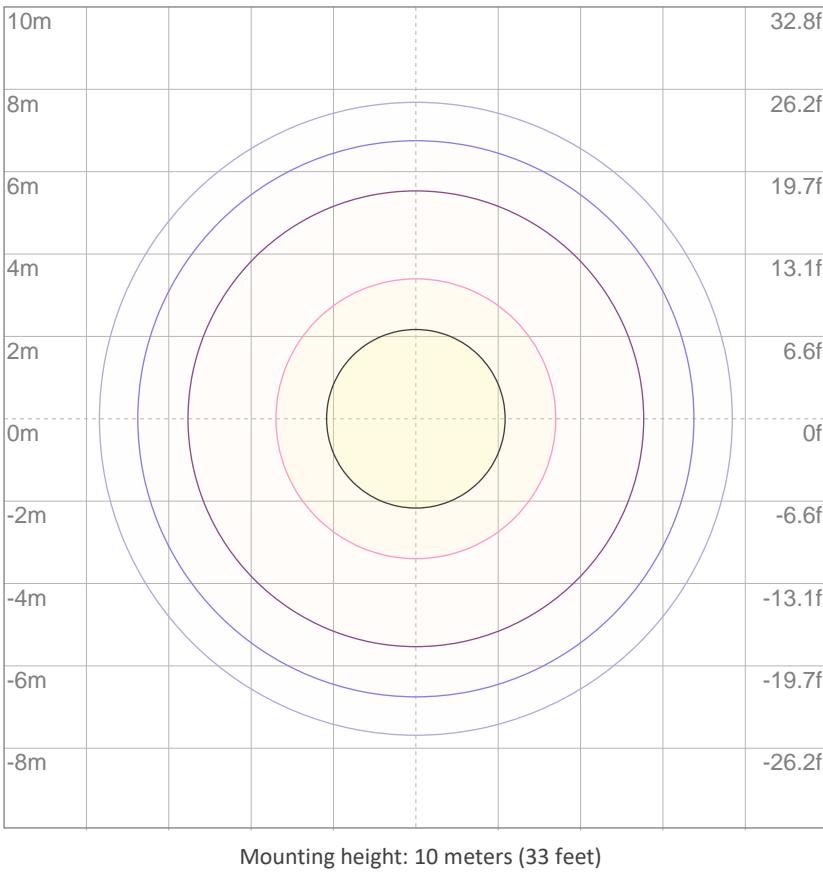
ISO CANDELA DIAGRAM



10%	44 cd
20%	87 cd
30%	131 cd
40%	174 cd
50%	218 cd
60%	261 cd
70%	305 cd
80%	348 cd
90%	392 cd

Conditions:
Number of c-planes: 8
Candela at center: 436 cd

ISO LUX DIAGRAM



3%	0.131 lx
5%	0.218 lx
10%	0.436 lx
30%	1.31 lx
50%	{LUX_10M50} lx

Conditions:
Number of c-planes: 8
Lux at center: 4.36 lx

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

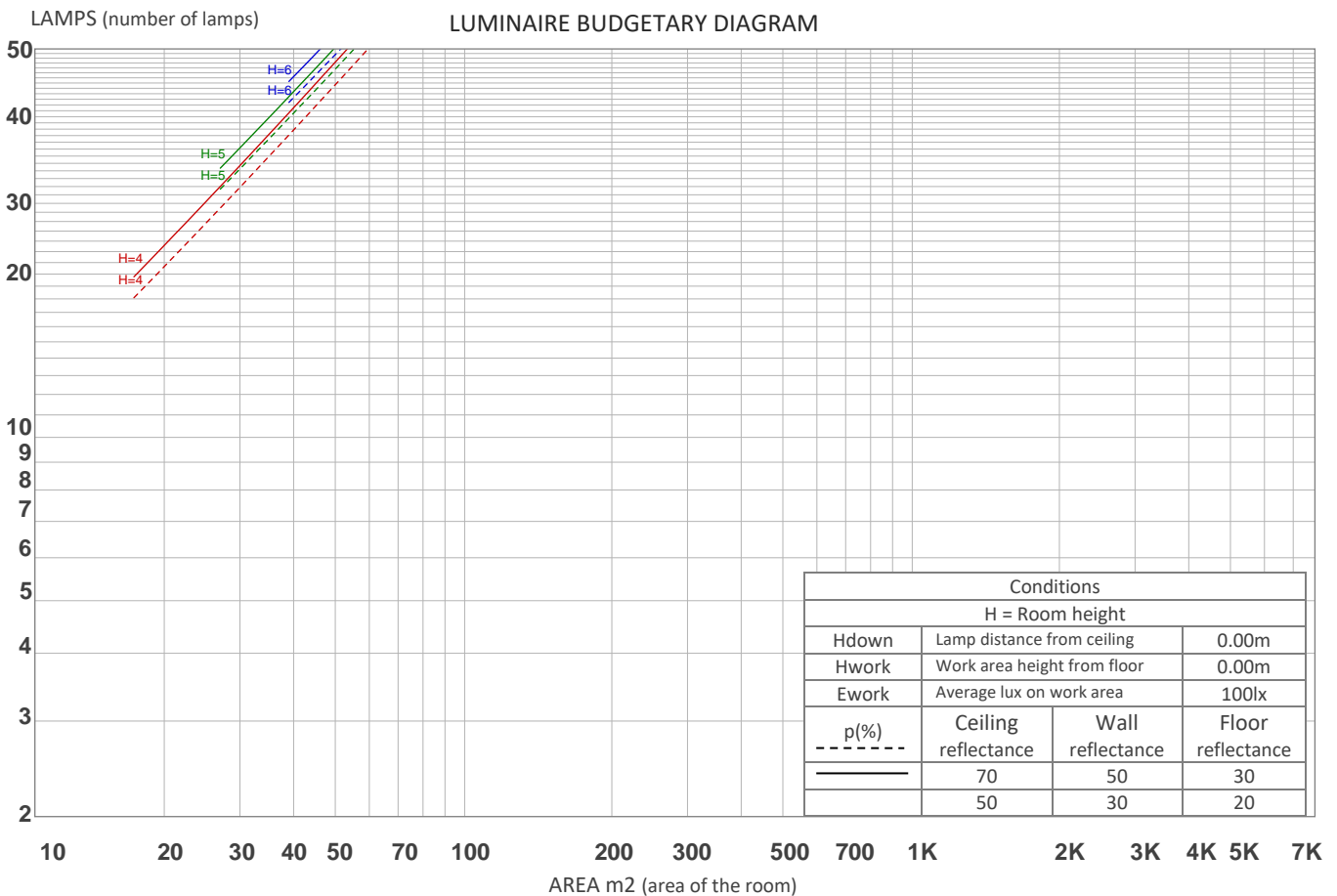
UGR

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	9.2	9.7	9.3	9.9	10.1	9.2	9.7	9.3	9.9	10.1
	3H	8.9	9.5	9.2	9.7	9.9	8.9	9.5	9.2	9.7	9.9
	4H	8.8	9.4	9.2	9.6	9.9	8.8	9.4	9.2	9.6	9.9
	6H	8.8	9.3	9.1	9.6	9.9	8.8	9.3	9.1	9.6	9.9
	8H	8.7	9.2	9.0	9.5	9.9	8.7	9.2	9.0	9.5	9.9
	12H	8.7	9.1	9.0	9.5	9.9	8.7	9.1	9.0	9.5	9.9
4H	2H	8.8	9.4	9.2	9.6	9.9	8.8	9.4	9.2	9.6	9.9
	3H	8.7	9.1	9.0	9.5	9.9	8.7	9.1	9.0	9.5	9.9
	4H	8.5	9.0	8.9	9.4	9.9	8.5	9.0	8.9	9.4	9.9
	6H	8.4	8.9	8.9	9.3	9.6	8.4	8.9	8.9	9.3	9.6
	8H	8.4	8.8	8.9	9.2	9.5	8.4	8.8	8.9	9.2	9.5
	12H	8.3	8.7	8.8	9.1	9.5	8.3	8.7	8.8	9.1	9.5
8H	4H	8.4	8.8	8.9	9.2	9.5	8.4	8.8	8.9	9.2	9.5
	6H	8.3	8.6	8.8	9.1	9.6	8.3	8.6	8.8	9.1	9.6
	8H	8.3	8.5	8.8	9.1	9.7	8.3	8.5	8.8	9.1	9.7
	12H	8.2	8.4	8.8	8.9	9.5	8.2	8.4	8.8	8.9	9.5
12H	4H	8.3	8.7	8.8	9.1	9.5	8.3	8.7	8.8	9.1	9.5
	6H	8.3	8.5	8.8	9.1	9.7	8.3	8.5	8.8	9.1	9.7
	8H	8.2	8.4	8.8	8.9	9.5	8.2	8.4	8.8	8.9	9.5
Variation of the observer position for the luminaire distance S											
S = 1.0H		5.7 / -18.5					5.7 / -18.5				
S = 1.5H		8.4 / -21.0					8.4 / -21.0				
S = 2.0H		10.4 / -21.9					10.4 / -21.9				
Standard table		n/a					n/a				
Correction summand		n/a					n/a				
Corrected glare indices referring to 130 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	114	112	110	108	112	110	108	106	106	104	103	102	101	100	98	98	97	95
2	110	106	102	100	108	104	101	98	101	98	96	98	96	94	95	94	92	91
3	106	100	96	93	104	99	95	92	96	93	91	94	91	89	92	90	88	86
4	102	95	91	87	100	94	90	87	92	89	86	90	87	85	88	86	84	82
5	98	91	86	83	96	90	86	82	88	84	82	87	83	81	85	82	80	79
6	94	87	82	79	93	86	82	78	85	81	78	83	80	77	82	79	77	75
7	91	83	78	75	90	83	78	75	81	77	74	80	77	74	79	76	74	72
8	88	80	75	72	86	79	75	71	78	74	71	77	74	71	76	73	71	69
9	85	77	72	69	84	76	72	69	75	71	68	75	71	68	74	70	68	67
10	82	74	69	66	81	73	69	66	73	69	66	72	68	66	71	68	65	64



ZONAL LUMEN SUMMARY

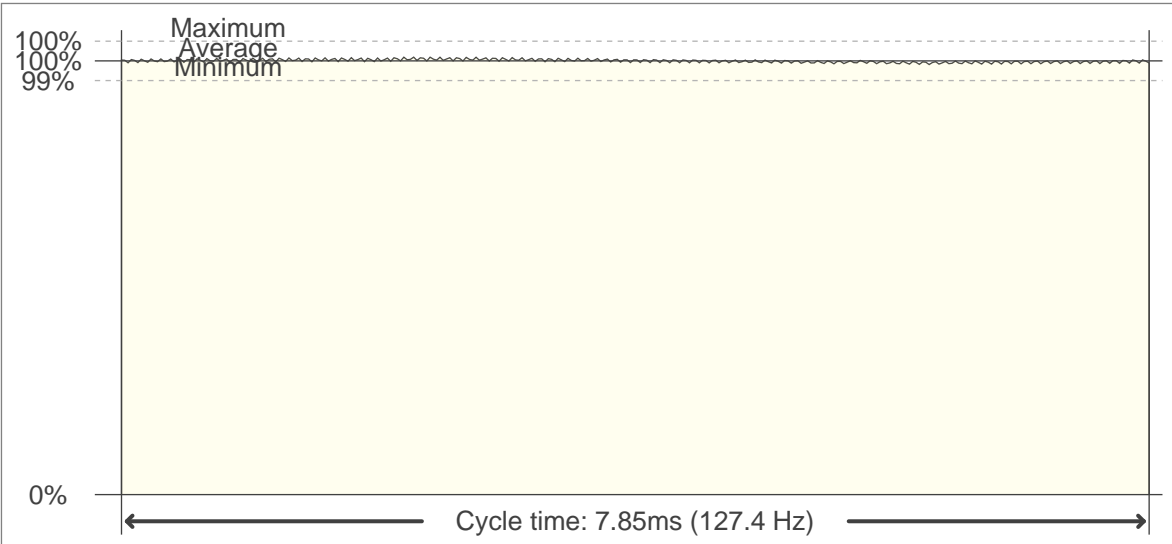
0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
31.7 lm	49.0 lm	32.8 lm	12.5 lm	2.80 lm	0.293 lm	0.079 lm	0.048 lm	0.044 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
0.045 lm	0.044 lm	0.047 lm	0.063 lm	0.093 lm	0.115 lm	0.110 lm	0.076 lm	0.021 lm

FLICKER

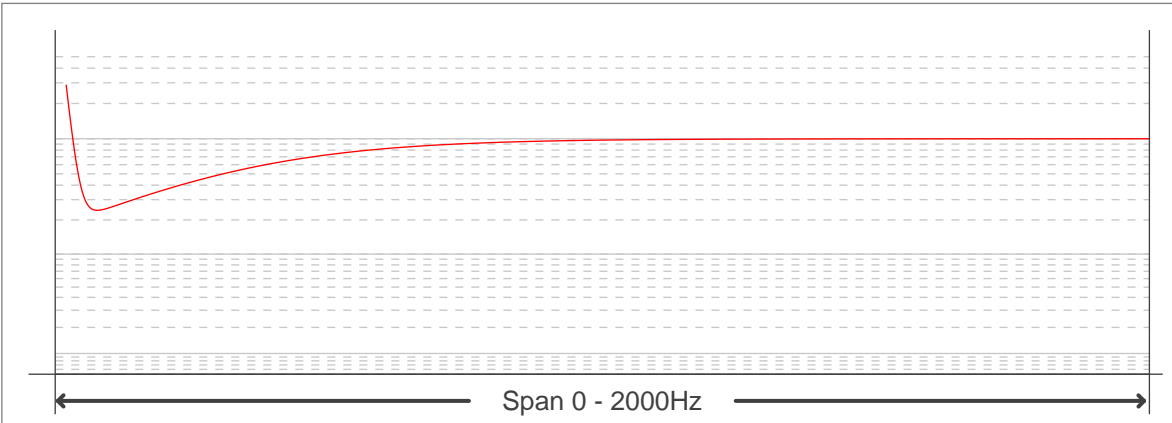
FLICKER CURVE (COMPLETE SAMPLED FLICKER)



FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

Flicker frequency:	127.39 Hz
Flicker index:	0
Flicker percentage:	1.03 %
SVM: (Visual flicker)	0.01

FLICKER CONDITIONS:

Sample rate:	40000 samples/second
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