Light efficiency:

147 Lumen/Watt

Light quality:

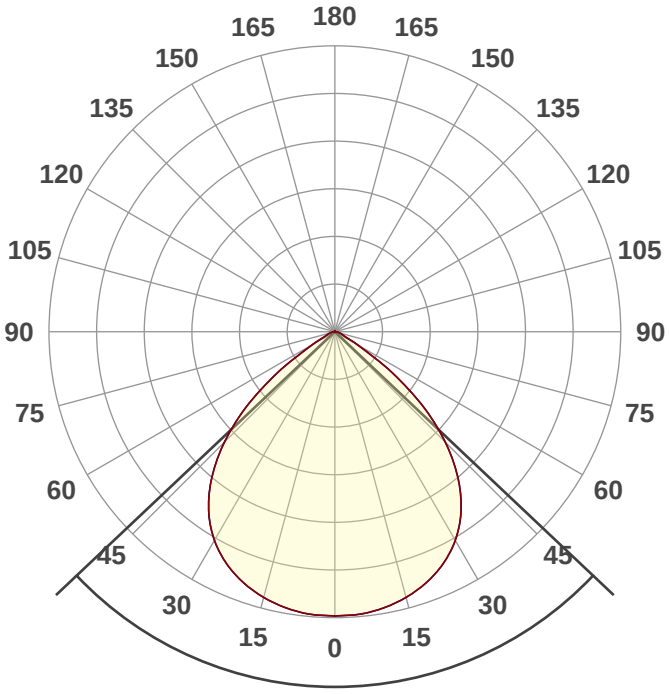
CRI: 74.9

Color temperature:

5390 K

Output: 66203 lm
Peak: 33622 cd

Power: 450 W
PF: 1.0



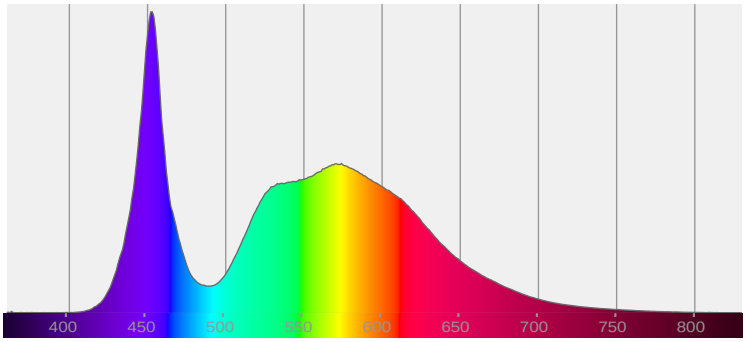
Beam angle **93.3°**

CIE 1931
x: 0.335
y: 0.336

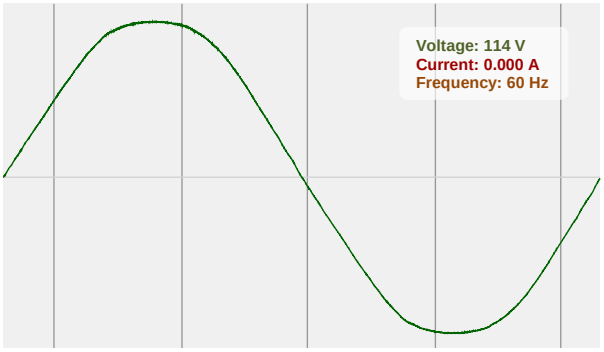
Product name:
HPAL2-50K450-90

Date and time:
3/3/2021 1:47:22 PM

Spectra



Power



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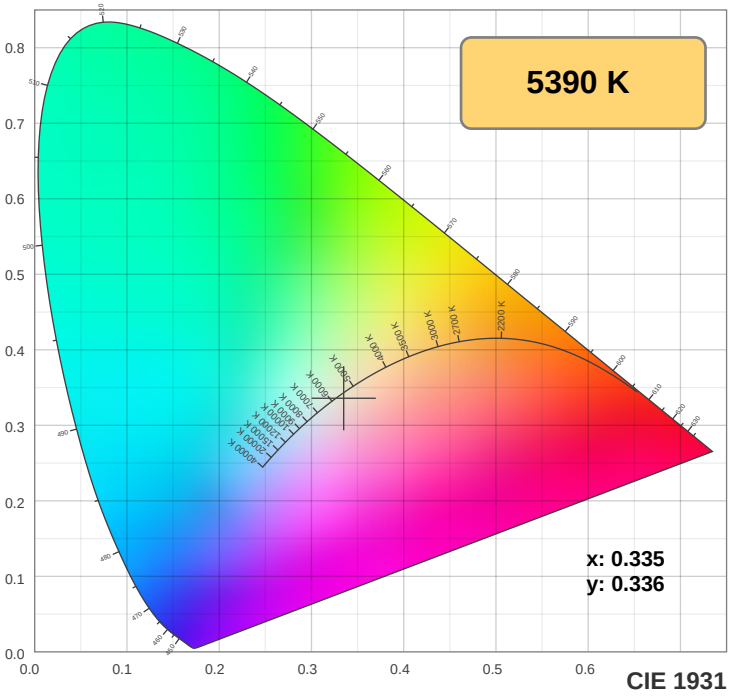
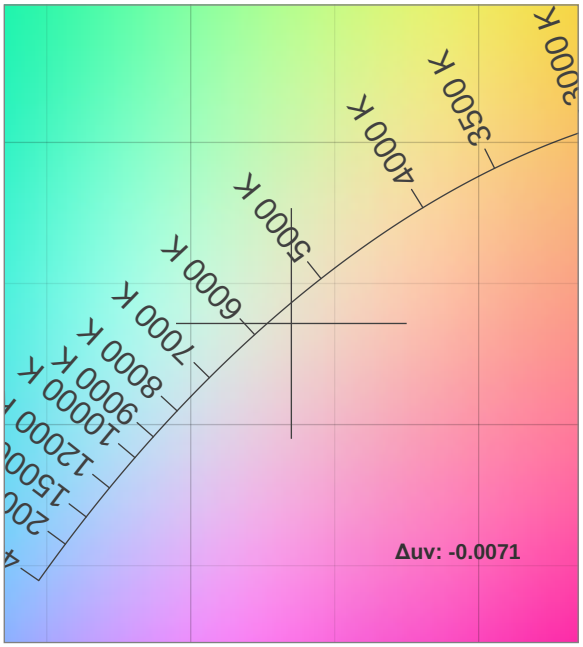
Color Specifications

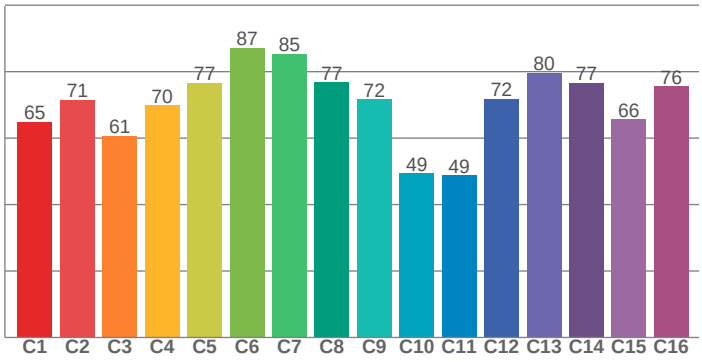


CIE 1931

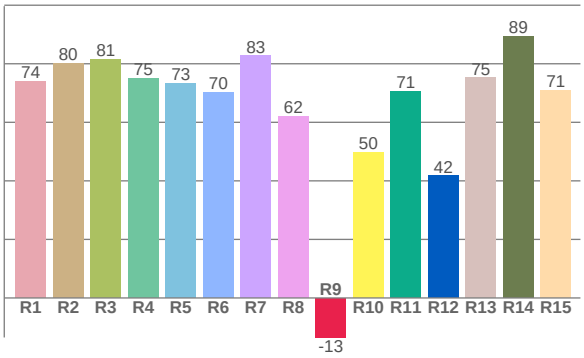


CIE 1931 ZOOM

TM30: 70.2



CRI: 74.9 (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
74.0	80.3	81.5	74.9	73.3	70.2	82.7	62.1	-13.5	49.6	70.5	41.7	75.2	89.2	70.8

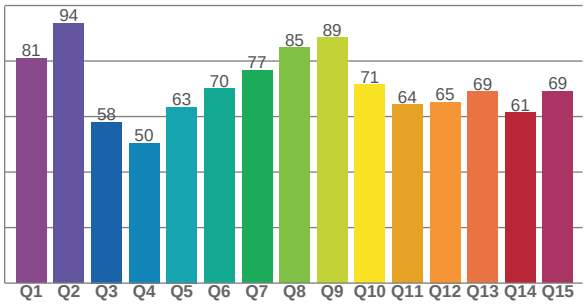
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
64.9	71.5	60.7	69.9	76.6	87.1	85.5	76.7	71.6	49.4	48.8	71.9	79.7	76.7	65.7	75.6

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
81.0	93.6	58.1	50.4	63.4	70.1	76.6	84.9	88.5	71.4	64.4	65.2	68.9	61.5	69.1

CQS: 69.0



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
5390 K	74.9	-13.5	70.2	93.8	69.0	0.335	0.336	0.211	0.317	-0.0071

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TM30 Report

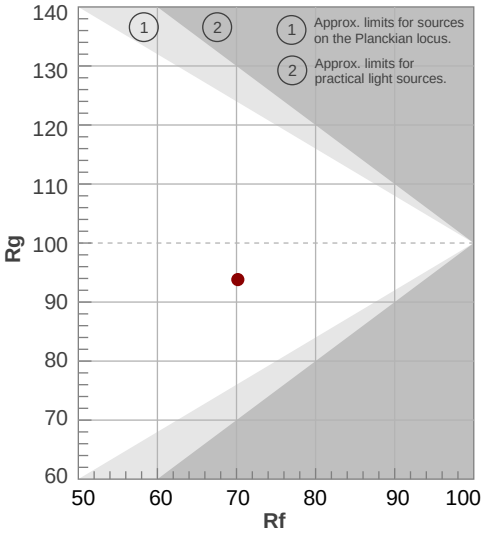
Rf 70.2

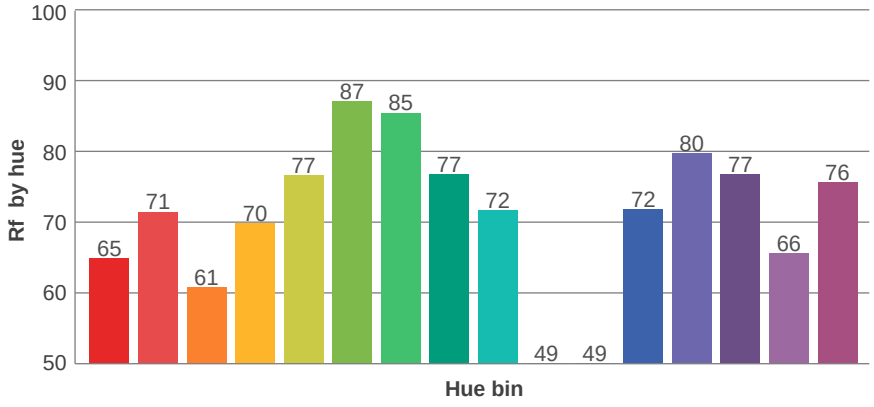
Fidelity index Rf

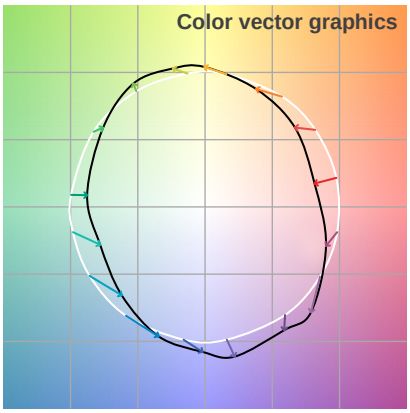
Rg 93.8

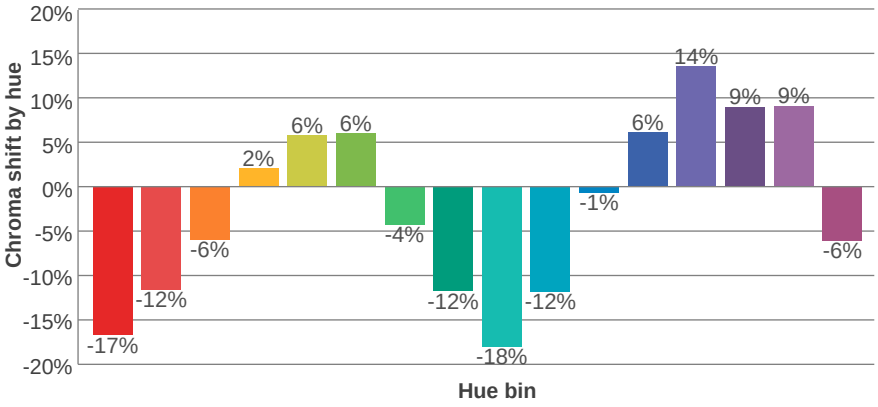
Gammut index Rg

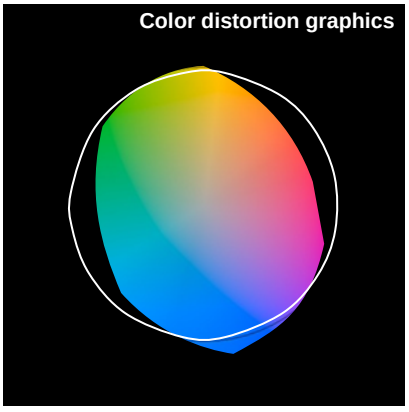
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	65	-17%	-1%
2	71	-12%	10%
3	61	-6%	19%
4	70	2%	17%
5	77	6%	10%
6	87	6%	-1%
7	85	-4%	-6%
8	77	-12%	-2%
9	72	-18%	13%
10	49	-12%	25%
11	49	-1%	29%
12	72	6%	16%
13	80	14%	3%
14	77	9%	-7%
15	66	9%	-26%
16	76	-6%	-12%

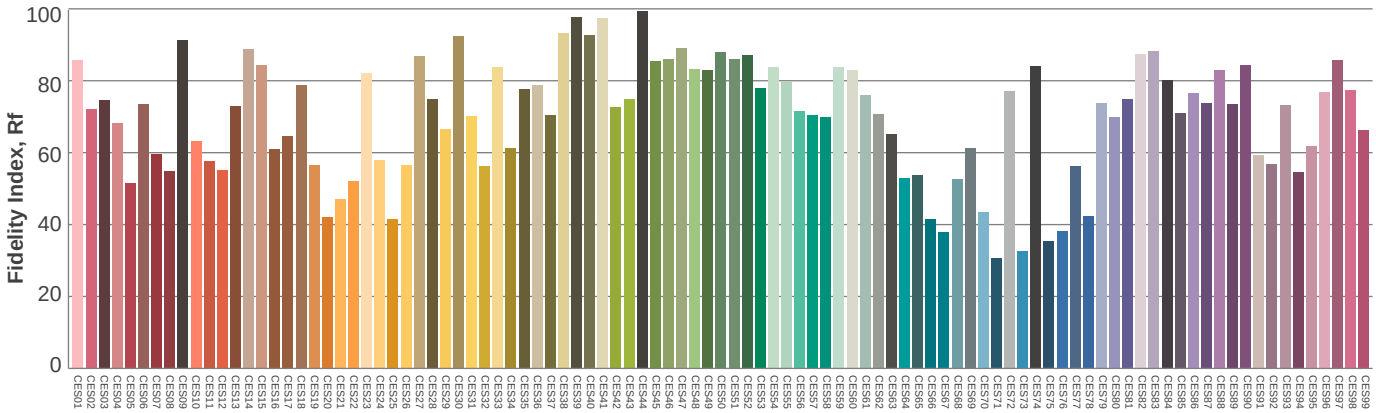












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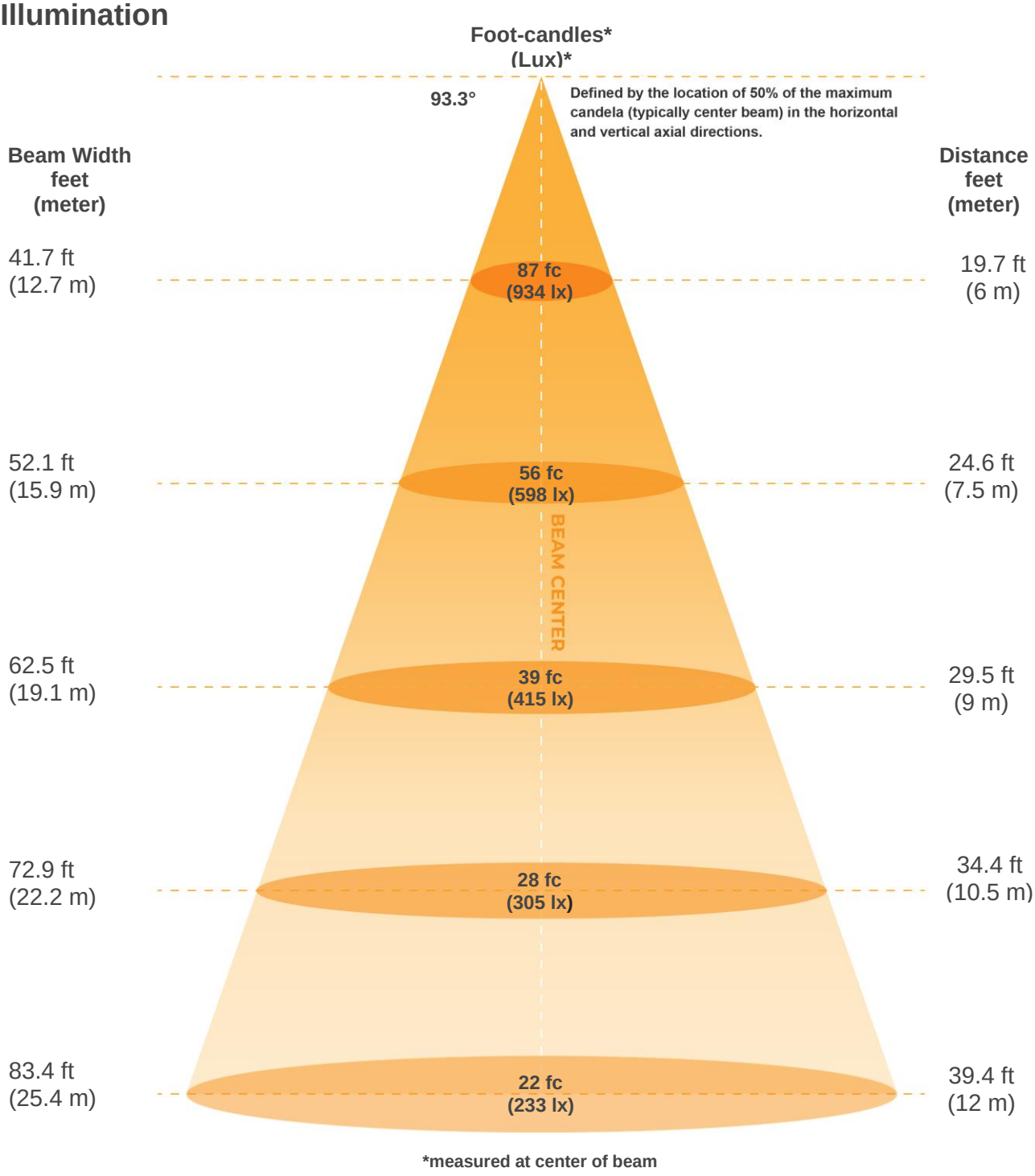
Illumination



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
33622lx	8406lx	3736lx	2101lx	1345lx	934lx	686lx	525lx	415lx	336lx	278lx	233lx	199lx	172lx	149lx	131lx	116lx	104lx	93lx	84lx
3123.6f	780.9fc	347.1fc	195.2fc	124.9fc	86.8fcd	63.7fcd	48.8fcd	38.6fcd	31.2fcd	25.8fcd	21.7fcd	18.5fcd	15.9fcd	13.9fcd	12.2fcd	10.8fcd	9.6fcd	8.7fcd	7.8fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
93.3°	**118.9°**	**140.9°**	**95.9%**	**75.6%**

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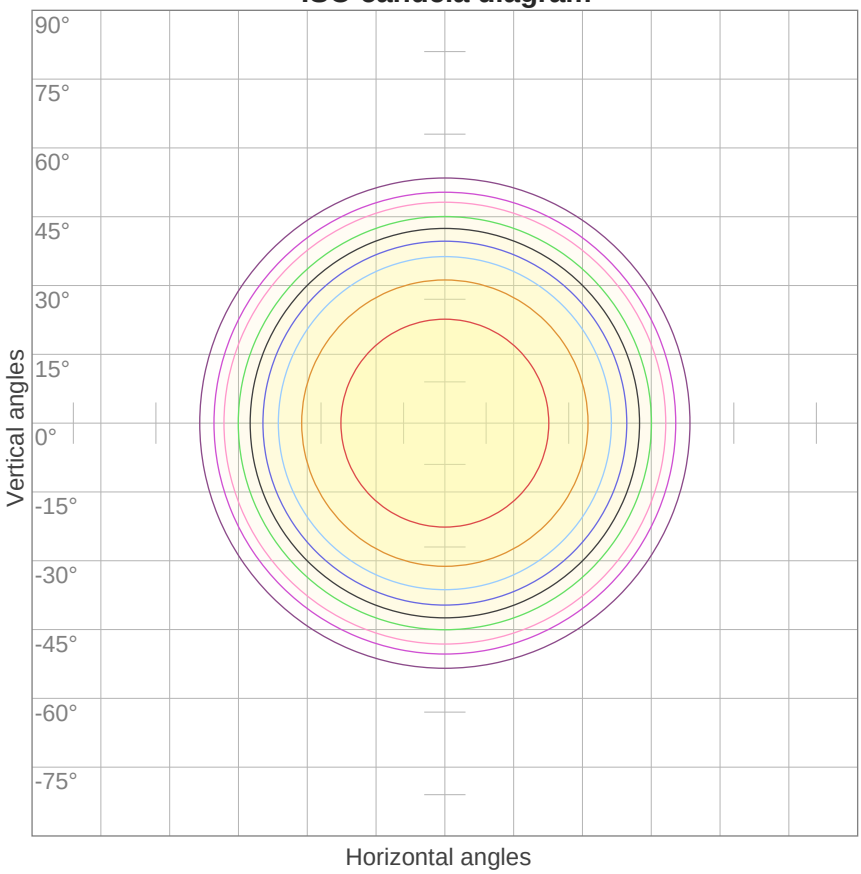
ISO Diagrams

ISO candela diagram



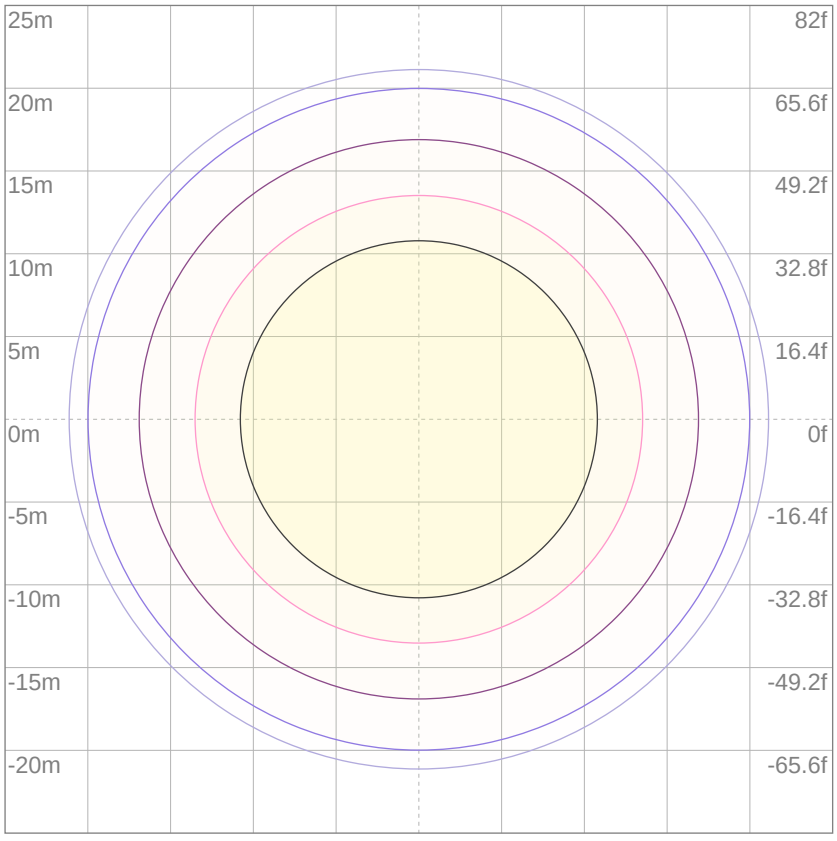
10%	3362 cd
20%	6724 cd
30%	10087 cd
40%	13449 cd
50%	16811 cd
60%	20173 cd
70%	23536 cd
80%	26898 cd
90%	30260 cd

Conditions:

Number of c-planes: 16

Candela at center: 33622 cd

ISO lux diagram



3%	10.1 lx
5%	16.8 lx
10%	33.6 lx
30%	101 lx
50%	168 lx

Conditions:

Number of c-planes: 16

Lux at center: 336 lx

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

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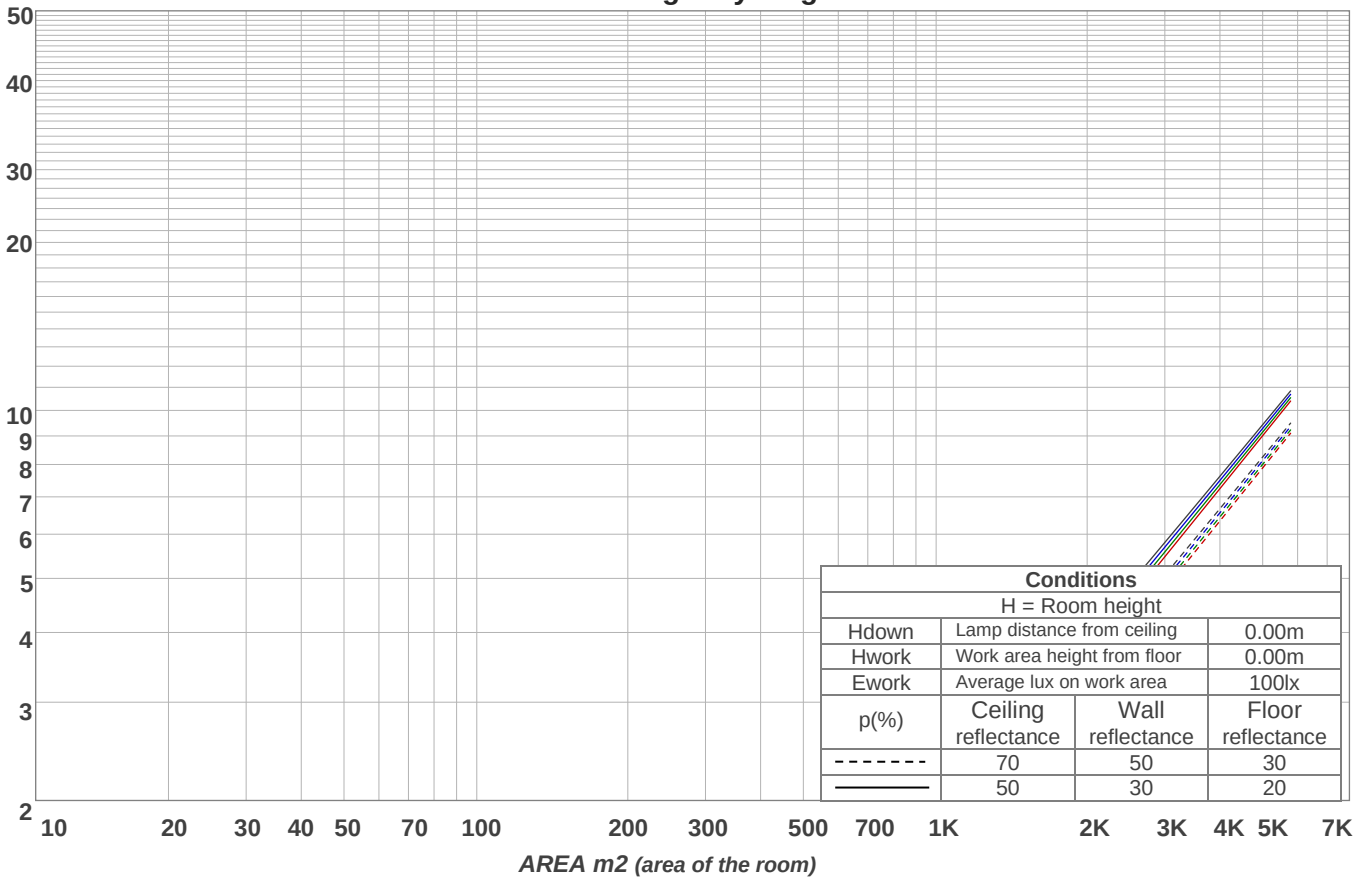
Light Planning

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	99
1	112	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89
2	104	98	92	88	101	96	91	87	92	88	85	89	86	83	86	83	81	79
3	97	88	82	76	94	87	81	76	84	79	74	81	77	73	79	75	72	70
4	90	80	73	67	88	79	72	67	76	70	66	74	69	65	72	68	64	62
5	83	73	65	59	81	71	64	59	69	63	59	68	62	58	66	61	57	55
6	78	66	59	53	76	65	58	53	64	57	52	62	56	52	60	55	51	50
7	72	61	53	48	71	60	53	47	58	52	47	57	51	47	56	50	46	45
8	68	56	48	43	66	55	48	43	54	47	43	53	47	42	51	46	42	40
9	63	51	44	39	62	51	44	39	50	43	39	49	43	39	48	42	38	37
10	60	48	41	36	58	47	40	36	46	40	36	45	39	35	44	39	35	34

Luminaire budgetary diagram



Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
3188 lm	9177 lm	13918 lm	16131 lm	14038 lm	7004 lm	1548 lm	641 lm	195 lm

90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
32.5 lm	37.3 lm	47.5 lm	53.8 lm	56.1 lm	51.8 lm	43.0 lm	29.3 lm	10.6 lm

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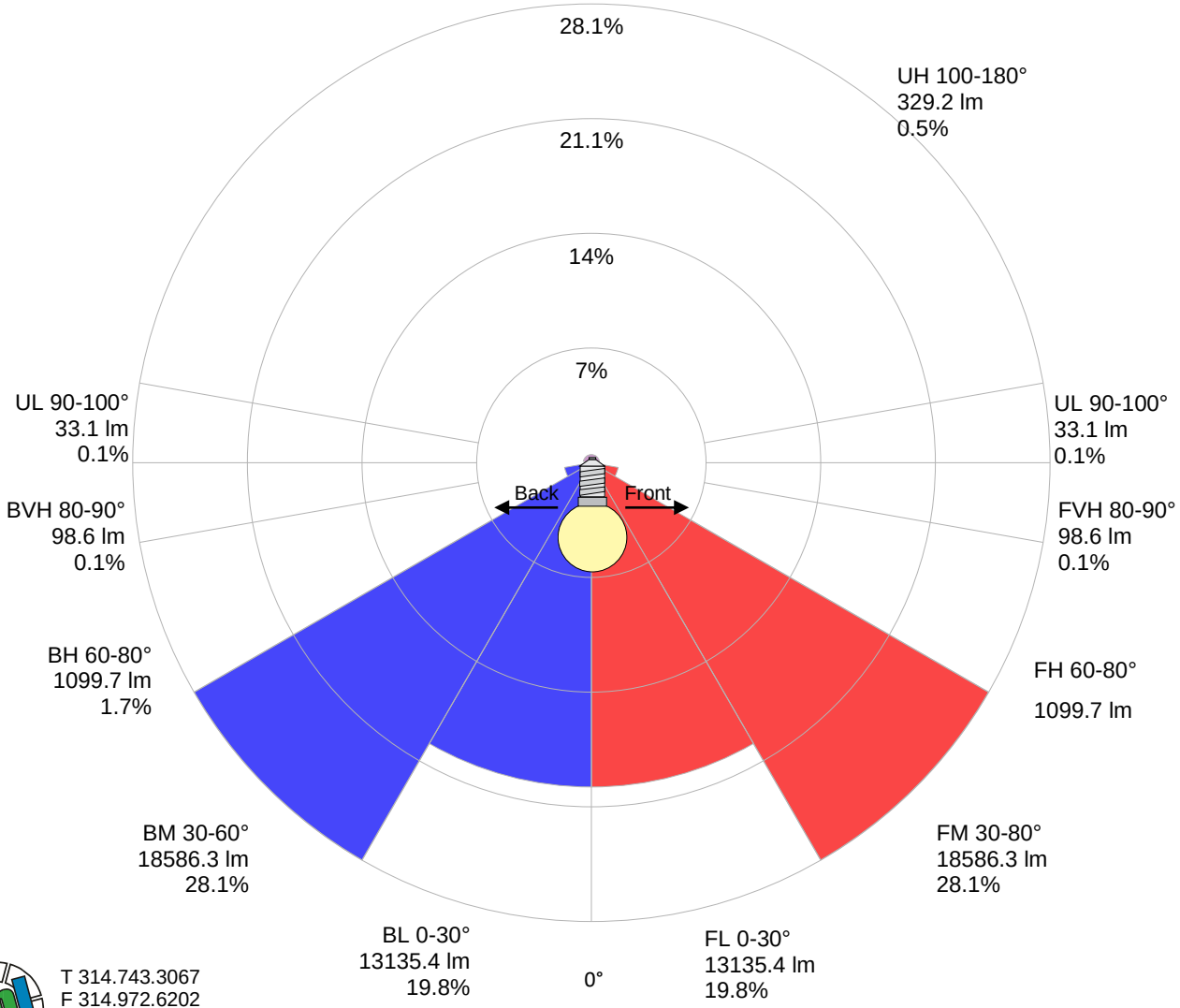
Road Report

LCS table

BUG rating:	B5 U3 G1	
Forward light	Lumens	Lumens %
Low(0-30):	13135.4	19.8%
Medium(30-60):	18586.3	28.1%
High(60-80):	1099.7	1.7%
Very high(80-90):	98.6	0.1%
Back light		
Low(0-30):	13135.4	19.8%
Medium(30-60):	18586.3	28.1%
High(60-80):	1099.7	1.7%
Very high(80-90):	98.6	0.1%
Uplight		
Low(90-100):	33.1	0.1%
High(100-180):	329.2	0.5%

LCS graph



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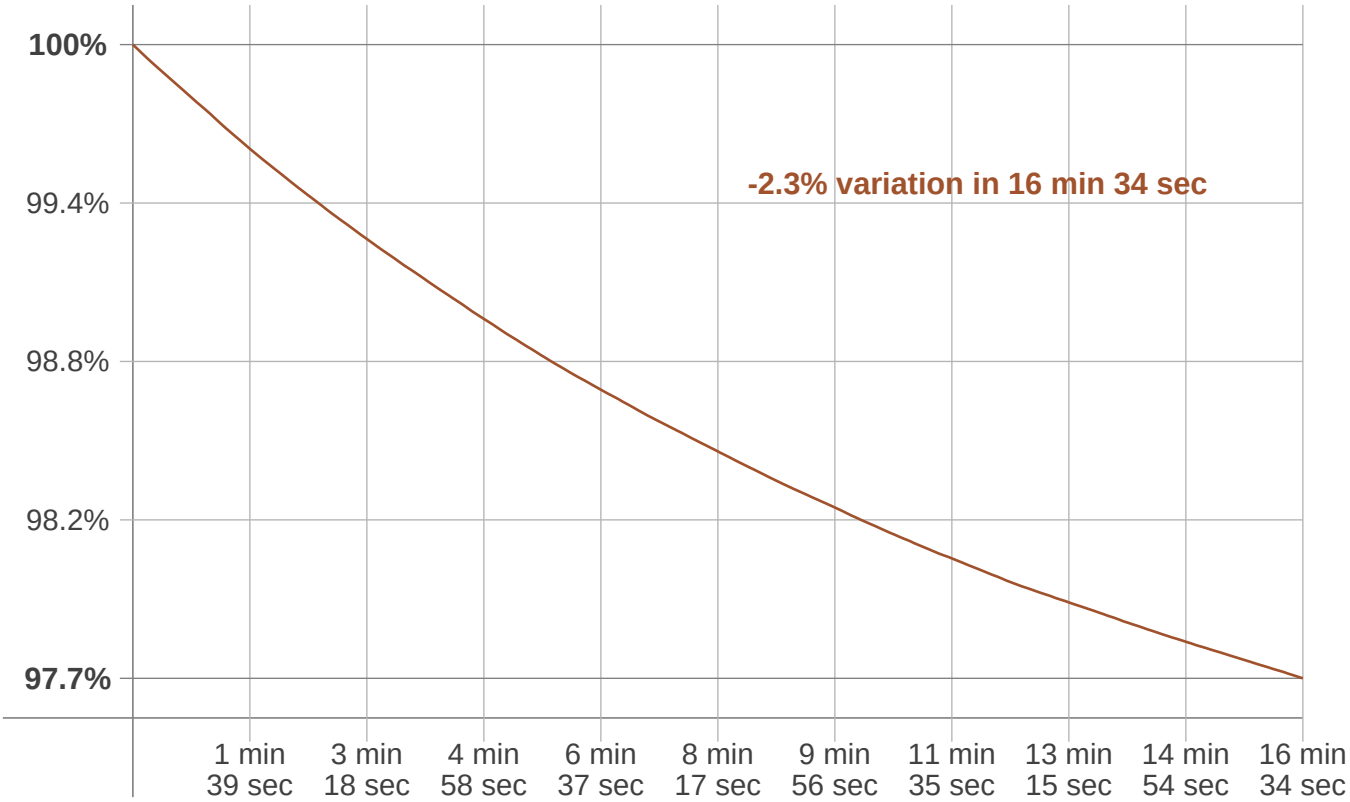
Stabilization

Warmup curve



Warmup result

Warmup time:	**16 min 34 sec**
Warmup variation	**-2.3%**

Warmup conditions

Stable period:	**15 min**
Stable change max:	**2.0%**
Minimum time:	**15 min**

Color temperature change

CCT start	CCT change	CCT end
5347 K	+43 K	5390 K

Output change

Output start	Output change	Output end
67760 lm	-1557 lm	66203 lm

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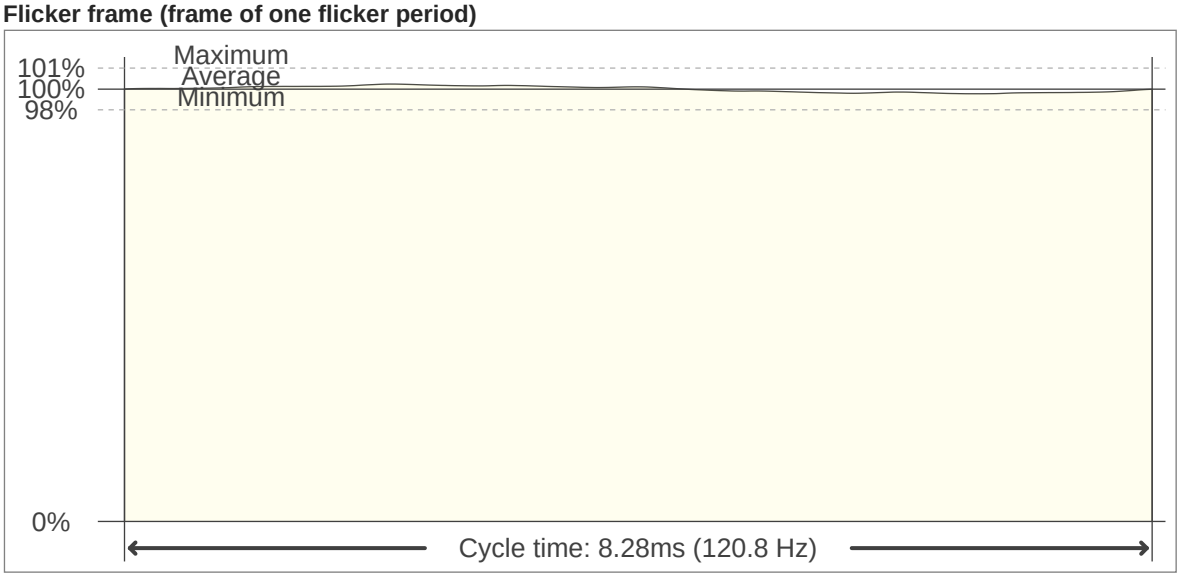
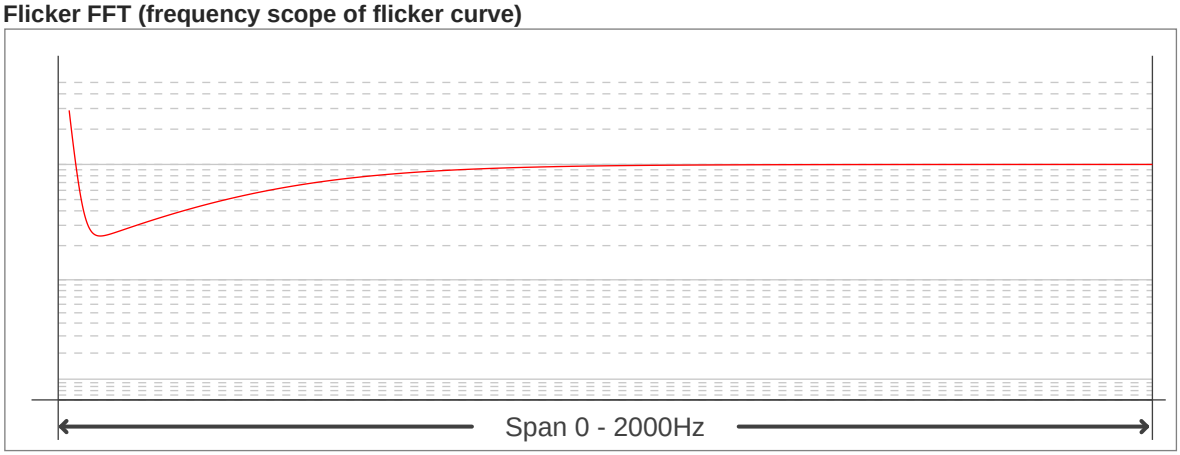
Flicker

Flicker curve (complete sampled flicker signal)

Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

Flicker frequency:	**120.85 Hz**
Flicker index:	**0**
Flicker percentage:	**1.22 %**
SVM: (Visual flicker)	**0.03**

Flicker conditions:

Sample rate:	**40000 samples/second**

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