

Light efficiency:



Output: 16783 lm

Light quality:



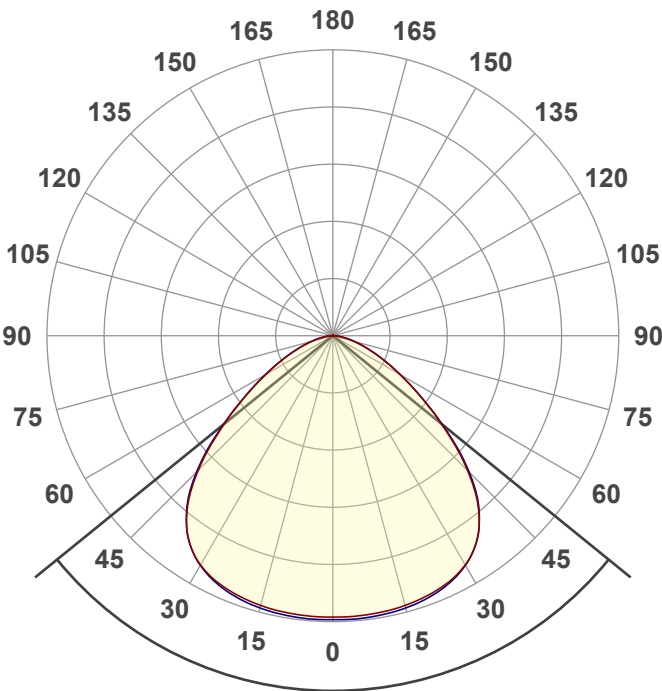
Peak: 6630 cd

Color temperature:



Power: 100.5 W

PF: 1.0



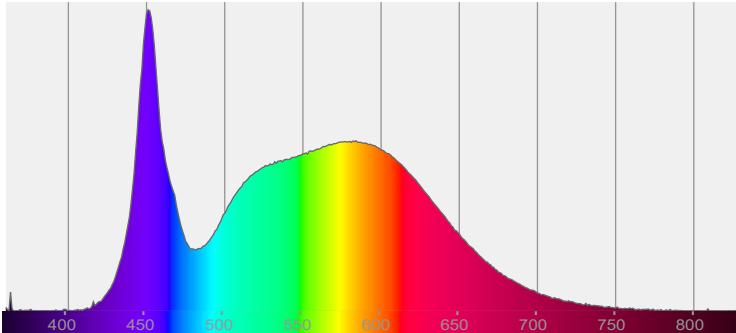
Product name:  
**HBR4-50K100S-LEX39**  
Date and time:  
**7/12/2023 3:24:49 PM**

Beam angle **101.9°**

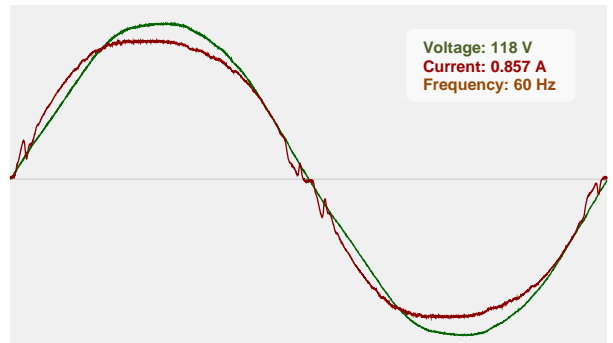


CIE 1931  
x: 0.344  
y: 0.354

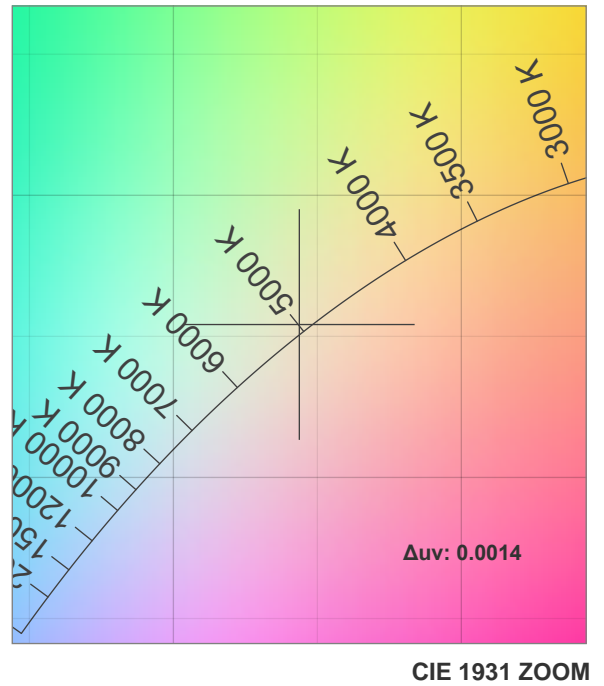
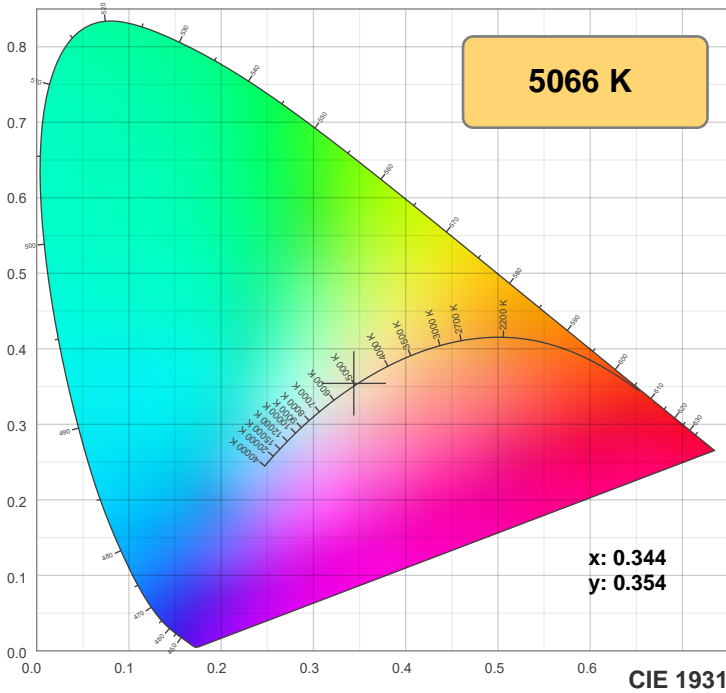
Spectra



Power

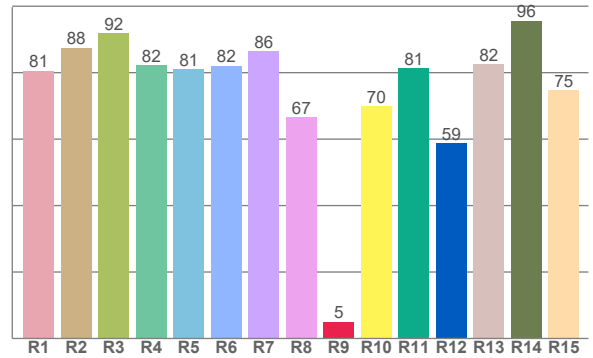
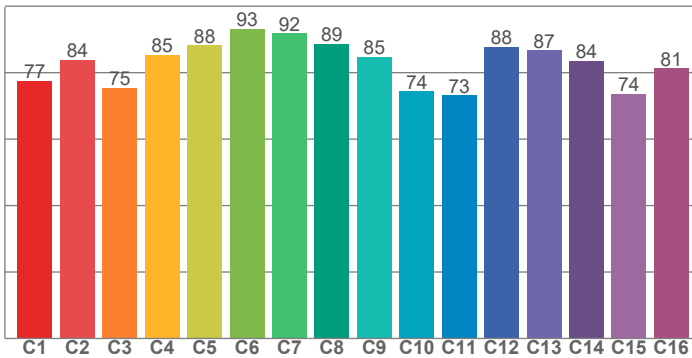


## Color Specifications



**TM30: 82.7**

**CRI: 82.3 (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
80.6	87.5	91.8	82.2	81.1	82.1	86.4	66.5	5.0	69.9	81.4	58.7	82.5	95.7	74.7

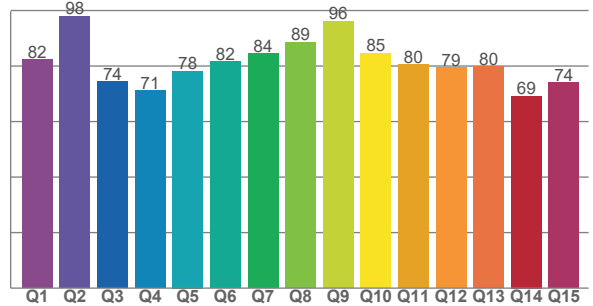
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
77.5	83.9	75.4	85.3	88.2	93.2	91.9	88.7	84.8	74.4	73.1	87.9	86.7	83.5	73.6	81.3

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
82.3	98.0	74.4	71.1	78.2	81.5	84.5	88.6	96.2	84.6	80.5	79.4	79.8	69.2	74.1

**CQS: 79.9**



## 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 division from black body
CCT	CRI	CRI R9	TM30 Rf	TM30 Rg	CQS	x	y	u	v	$\Delta uv$
5066 K	82.3	5.0	82.7	96.0	79.9	0.344	0.354	0.210	0.324	0.0014

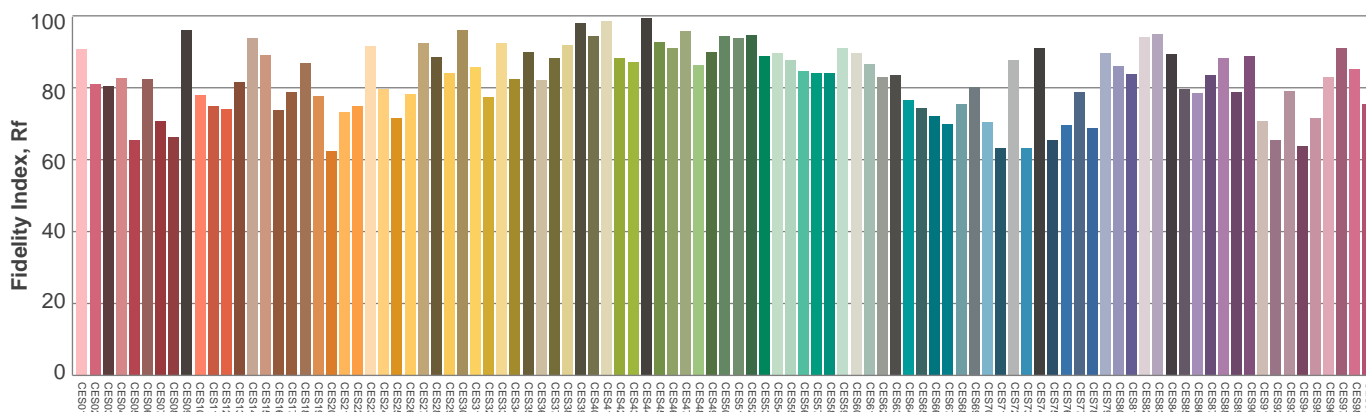
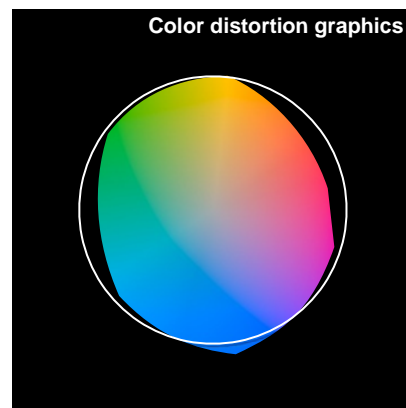
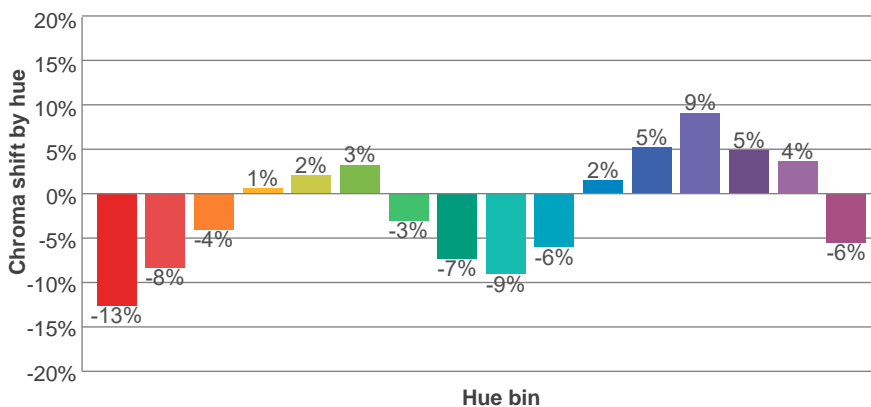
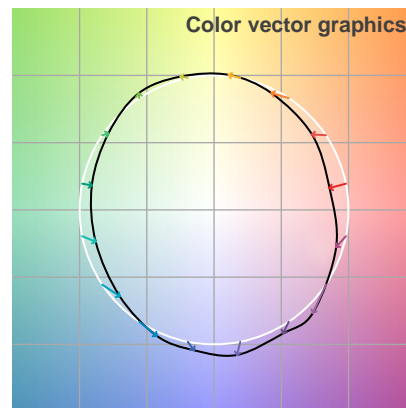
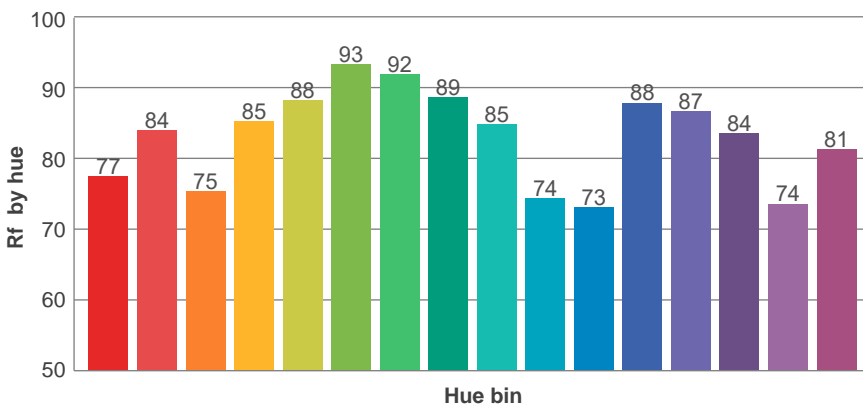
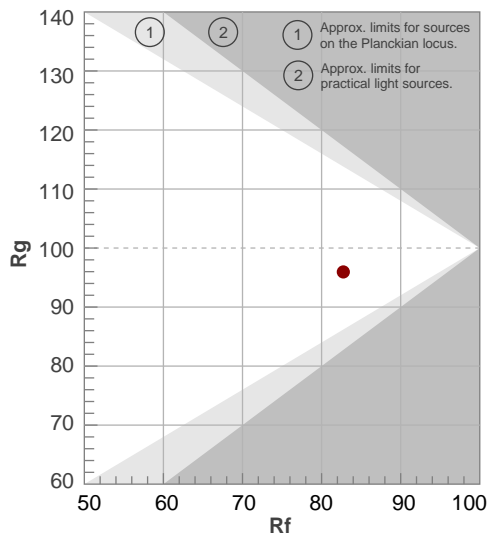


### TM30 Report

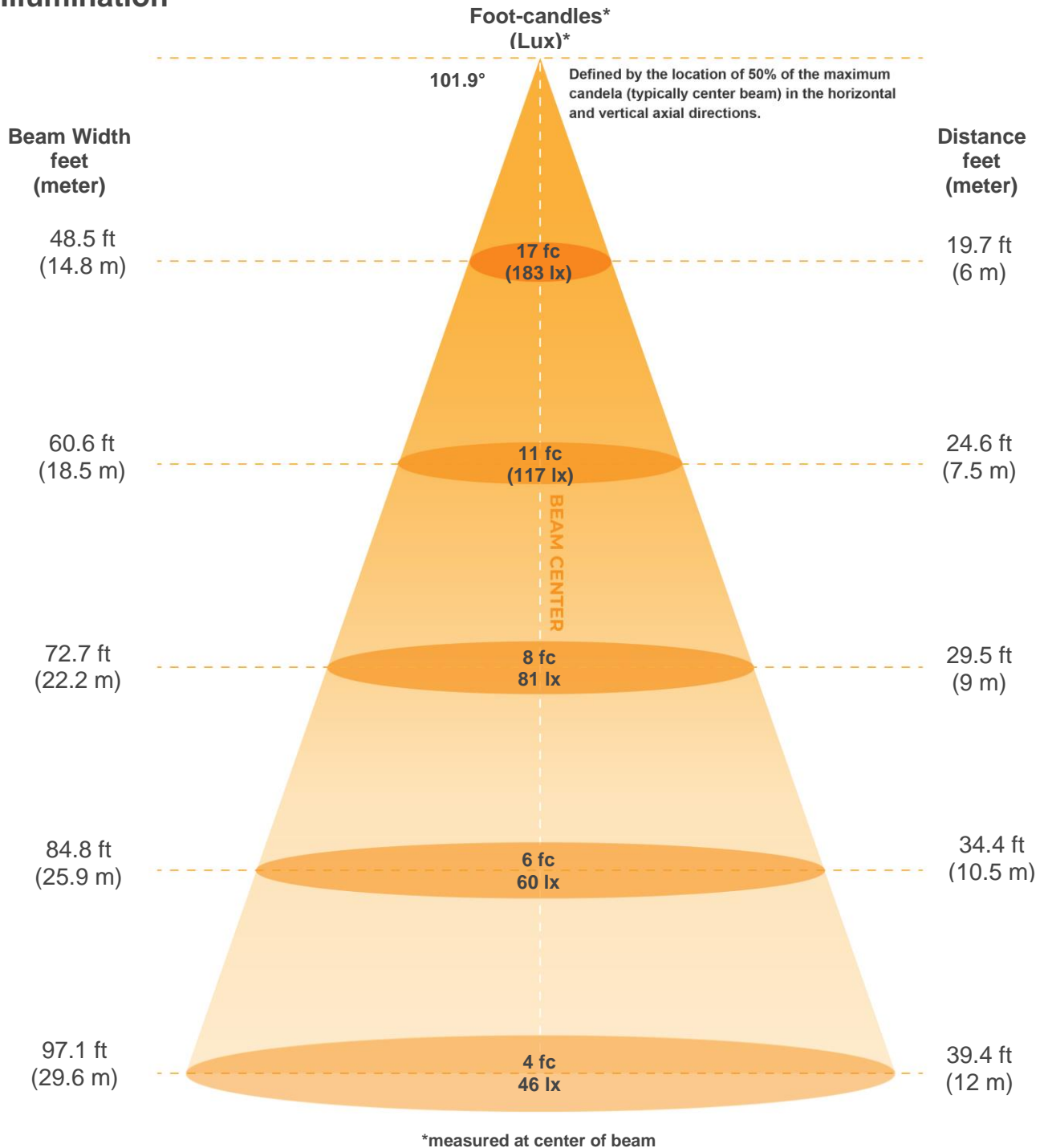
**Rf 82.7**  
Fidelity index Rf

**Rg 96.0**  
Gammut index Rg

Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	77	-13%	-1%
2	84	-8%	6%
3	75	-4%	13%
4	85	1%	9%
5	88	2%	5%
6	93	3%	-1%
7	92	-3%	-4%
8	89	-7%	0%
9	85	-9%	6%
10	74	-6%	14%
11	73	2%	17%
12	88	5%	6%
13	87	9%	-4%
14	84	5%	-8%
15	74	4%	-23%
16	81	-6%	-9%



**Illumination**



**Beam intensities from 1-20m**

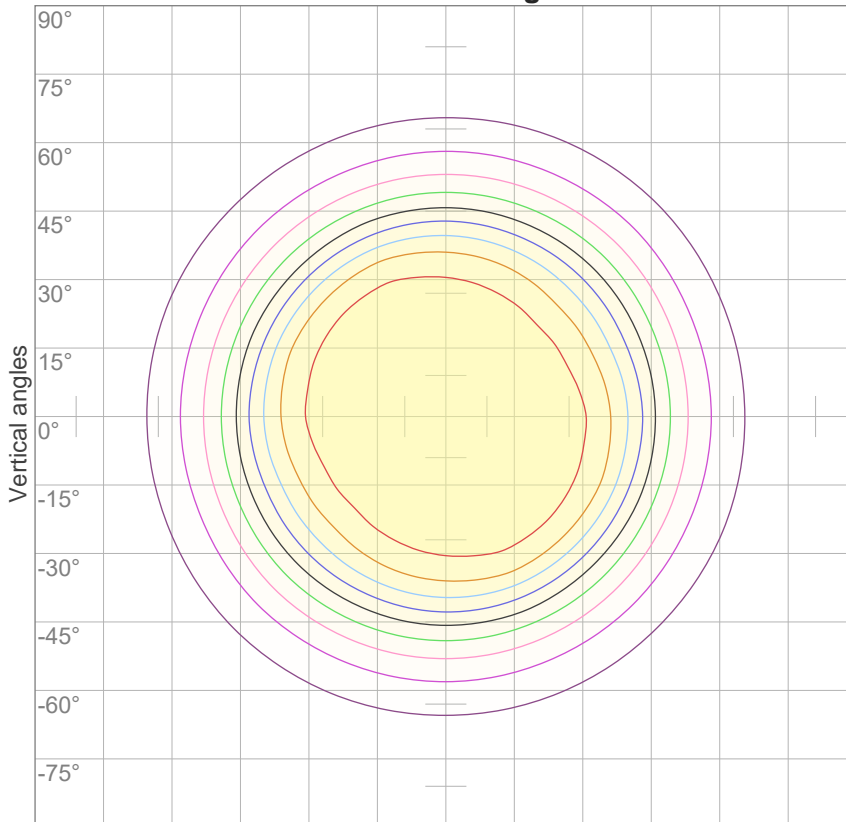
1m	2m	3m	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	16m	17m	18m	19m	20m
3.3ft	6.6ft	9.8ft	13.1ft	16.4ft	19.7ft	23ft	26.2ft	29.5ft	32.8ft	36.1ft	39.4ft	42.7ft	45.9ft	49.2ft	52.5ft	55.8ft	59.1ft	62.3ft	65.6ft
6577lx	1644lx	731lx	411lx	263lx	183lx	134lx	103lx	81lx	66lx	54lx	46lx	39lx	34lx	29lx	26lx	23lx	20lx	18lx	16lx
611fcd	152.8fcd	67.9fcd	38.2fcd	24.4fcd	17fcd	12.5fcd	9.5fcd	7.5fcd	6.1fcd	5fcd	4.2fcd	3.6fcd	3.1fcd	2.7fcd	2.4fcd	2.1fcd	1.9fcd	1.7fcd	1.5fcd

Beam angle 50%	Field angle 10%	Cutoff angle 2,5%	Intensity ratio in 120° cone	Intensity ratio in 90° cone
<b>101.9°</b>	<b>145.6°</b>	<b>167.2°</b>	<b>87.7%</b>	<b>64.5%</b>



**ISO Diagrams**

**ISO candela diagram**



10%	658 cd
20%	1315 cd
30%	1973 cd
40%	2631 cd
50%	3288 cd
60%	3946 cd
70%	4604 cd
80%	5261 cd
90%	5919 cd

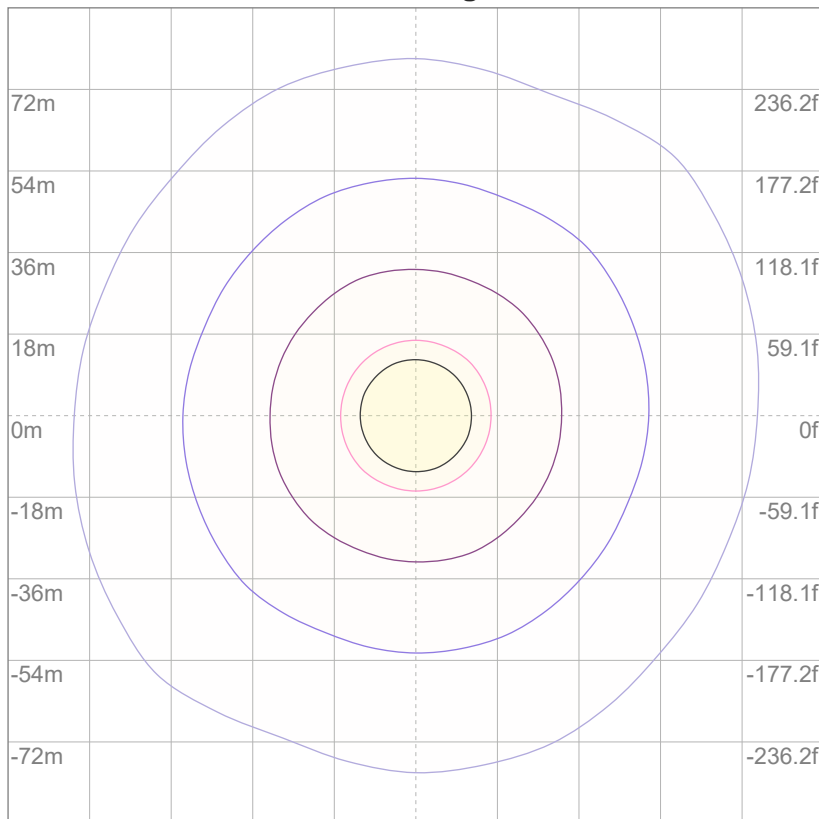
Conditions:

Number of c-planes: 16

Candela at center: 6577 cd

Horizontal angles

**ISO lux diagram**



3%	1.97 lx
5%	3.29 lx
10%	6.58 lx
30%	19.7 lx
50%	32.9 lx

Conditions:

Number of c-planes: 16

Lux at center: 65.8 lx

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

Mounting height: 10 meters (33 feet) **UGR**



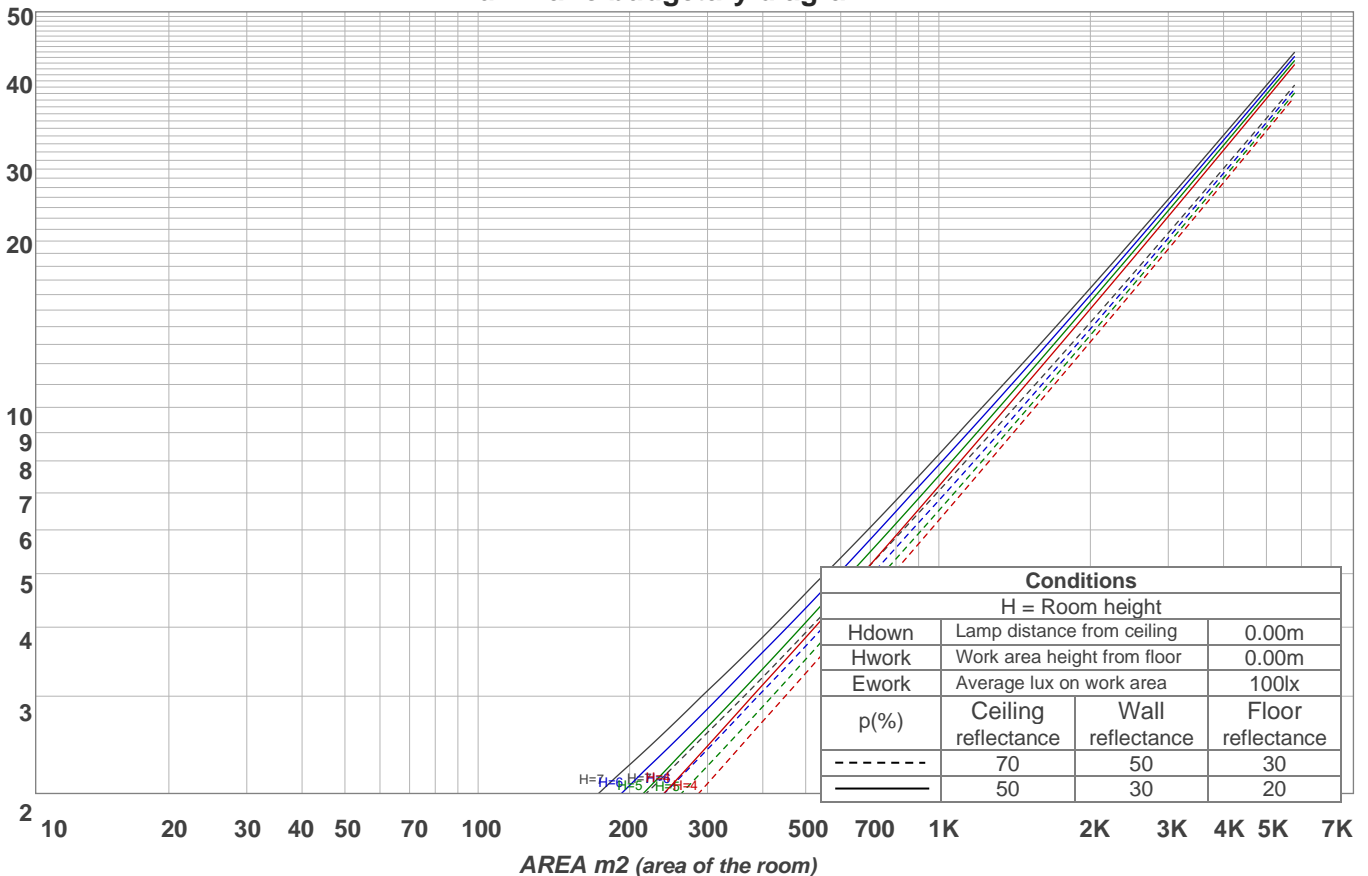
### Light Planning

#### 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	20	0
<b>RCR</b>	<b>(RCR: Room Cavity Ratio)</b>																		
	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	110	106	102	99	108	104	100	97	100	97	94	96	93	91	92	90	89	87	
2	101	94	88	83	99	92	87	82	89	84	80	85	82	78	82	79	76	74	
3	93	84	76	71	91	82	75	70	79	73	69	76	72	67	74	70	66	64	
4	86	75	67	61	84	74	66	60	71	65	59	69	63	59	67	62	58	56	
5	79	67	59	53	77	66	58	53	64	57	52	62	56	51	60	55	51	49	
6	73	61	53	47	72	60	52	46	58	51	46	57	50	46	55	49	45	43	
7	68	56	47	41	67	55	47	41	53	46	41	52	45	41	50	45	40	38	
8	64	51	43	37	62	50	42	37	49	42	37	48	41	37	46	41	36	34	
9	59	47	39	33	58	46	39	33	45	38	33	44	38	33	43	37	33	31	
10	56	43	35	30	55	43	35	30	42	35	30	41	34	30	40	34	30	28	

LAMPS (number of lamps)

#### Luminaire budgetary diagram



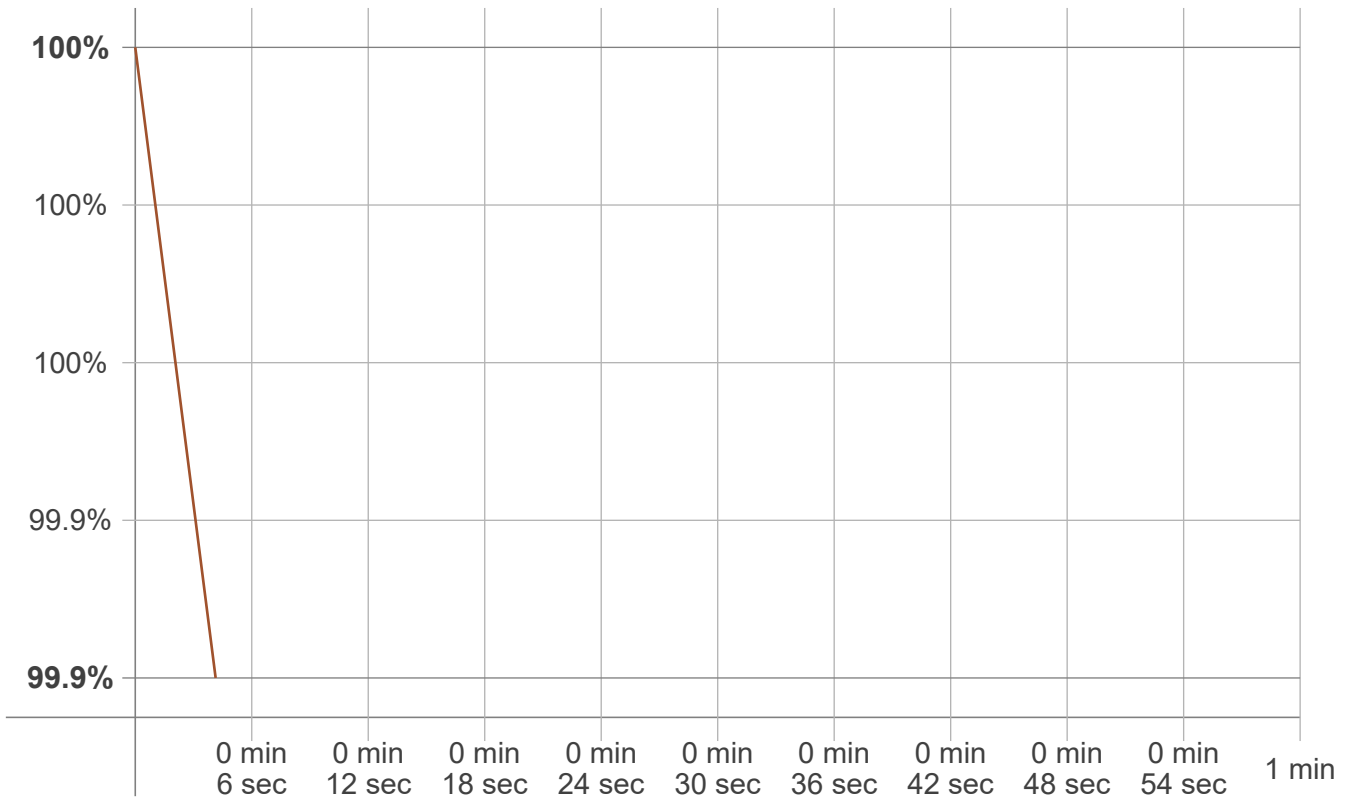
#### Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
627 lm	1847 lm	2928 lm	3617 lm	3393 lm	2311 lm	1280 lm	570 lm	148 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
10.3 lm	5.41 lm	6.95 lm	8.22 lm	9.03 lm	8.60 lm	7.08 lm	4.81 lm	1.64 lm



**Stabilization**

**Warmup curve**



**Warmup result**

<b>Warmup time:</b>	<b>Not completed</b>
<b>Warmup variation</b>	<b>-0.1%</b>

**Warmup conditions**

<b>Stable period:</b>	<b>15 min</b>
<b>Stable change max:</b>	<b>2.0%</b>
<b>Minimum time:</b>	<b>15 min</b>

**Color temperature change**

CCT start	CCT change	CCT end
5066 K	0 K	5066 K

**Output change**

Output start	Output change	Output end
16798 lm	-15 lm	16783 lm

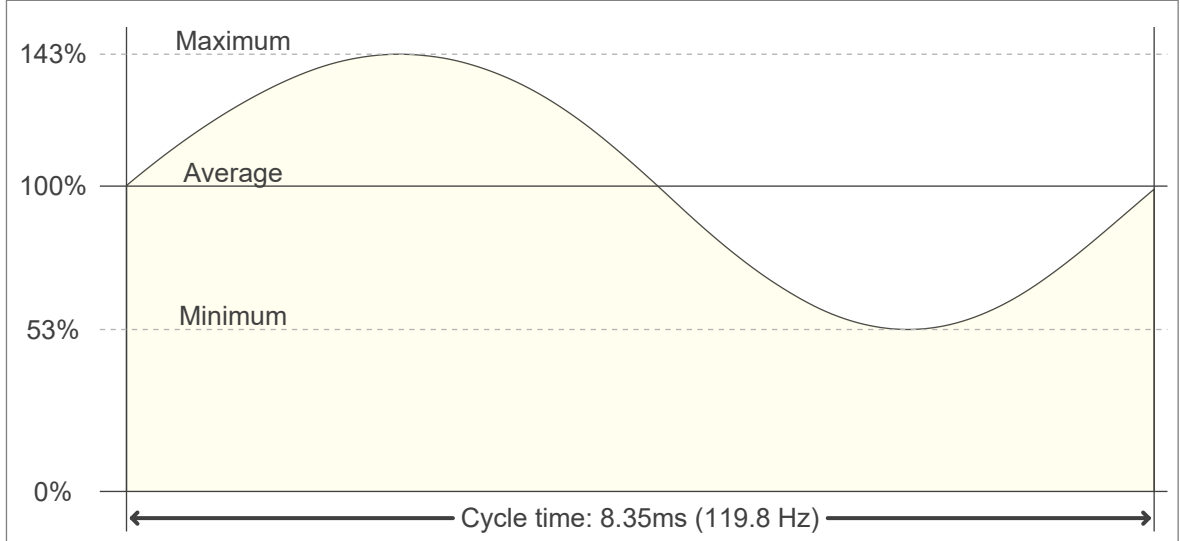


## Flicker Specifications

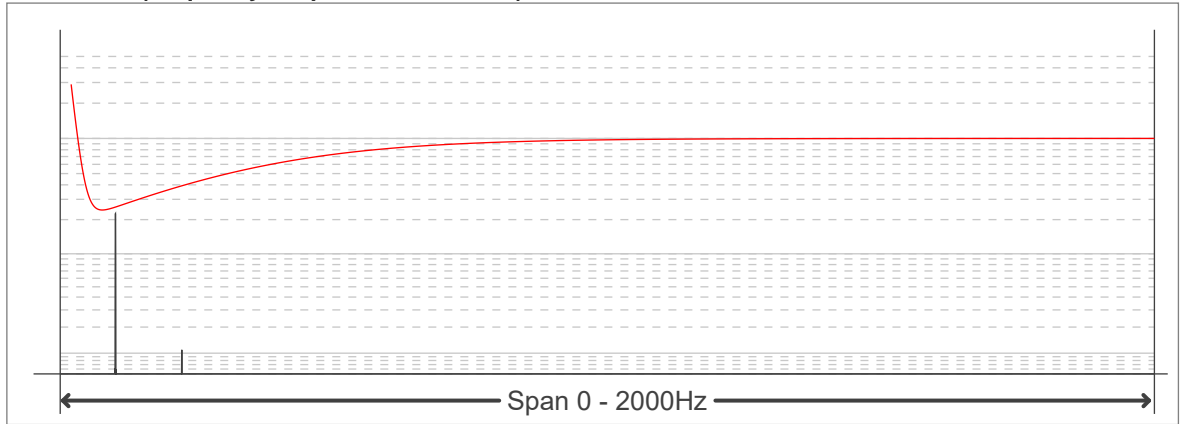
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



**Flicker results:**

<b>Flicker frequency:</b>	<b>119.76 Hz</b>
<b>Flicker index:</b>	<b>0.14</b>
<b>Flicker percentage:</b>	<b>46.09 %</b>
<b>SVM: (Visual flicker)</b>	<b>1.64</b>

**Flicker conditions:**

<b>Sample rate:</b>	<b>20000 samples/second</b>
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