

Light efficiency:



Output: 22219 lm

Light quality:



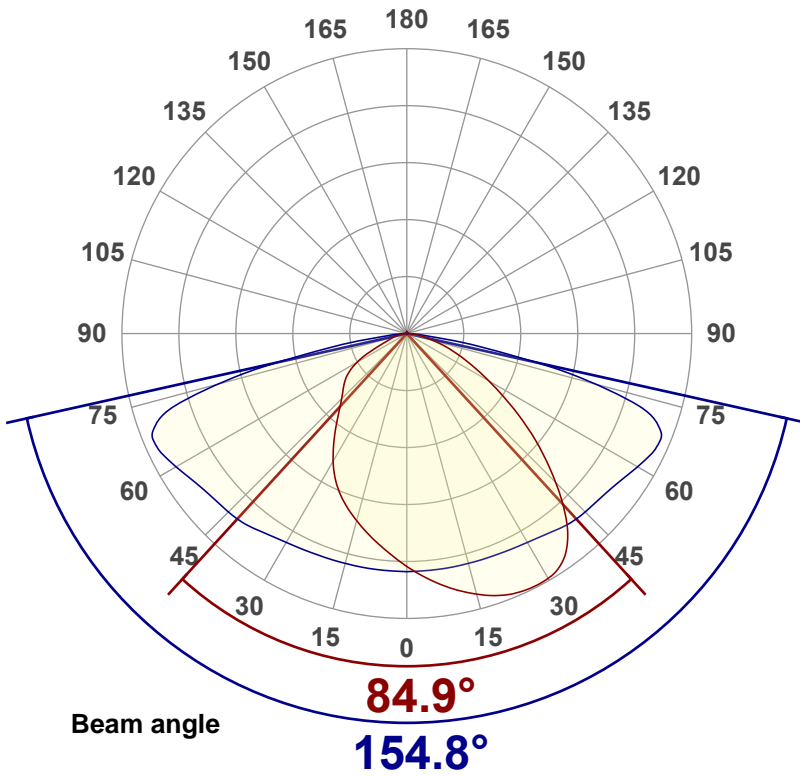
Peak: 7861 cd

Color temperature:



Power: 153 W

PF: 1.0

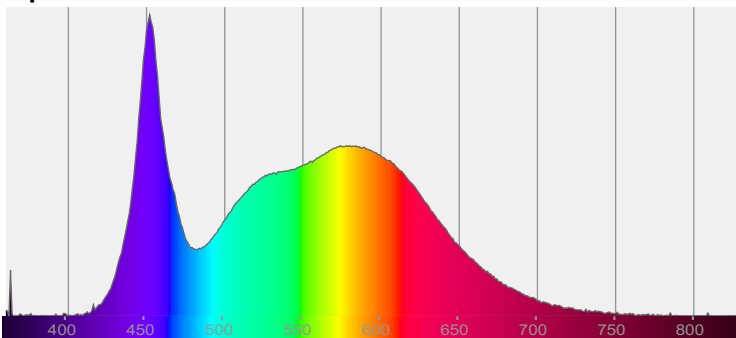


Product name:  
**PLLD4-50K150W-xLT3BR1**  
Date and time:  
**7/1/2022 7:56:04 AM**

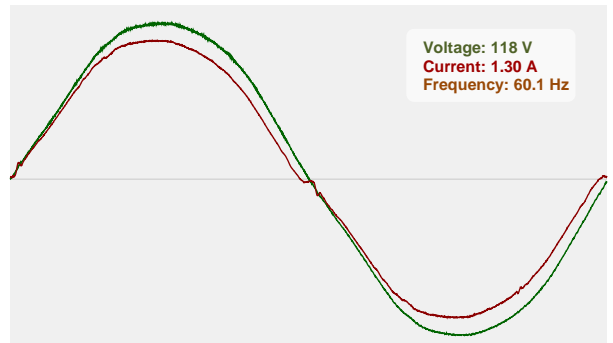


CIE 1931  
x: 0.340  
y: 0.347

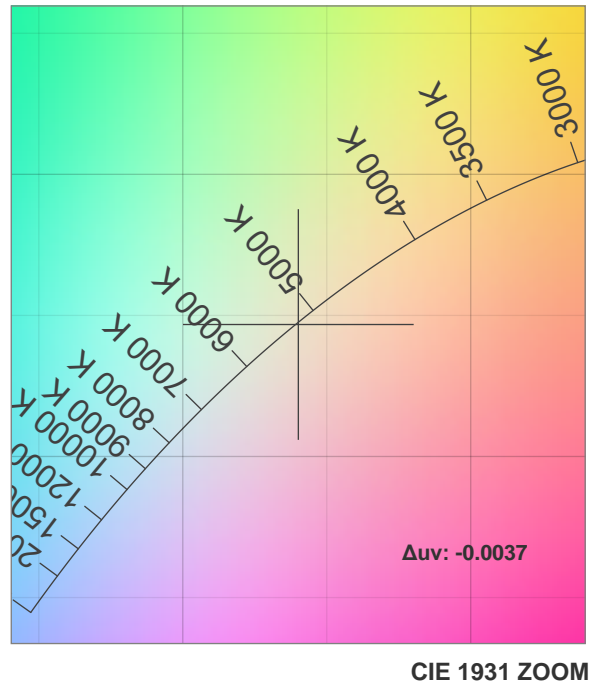
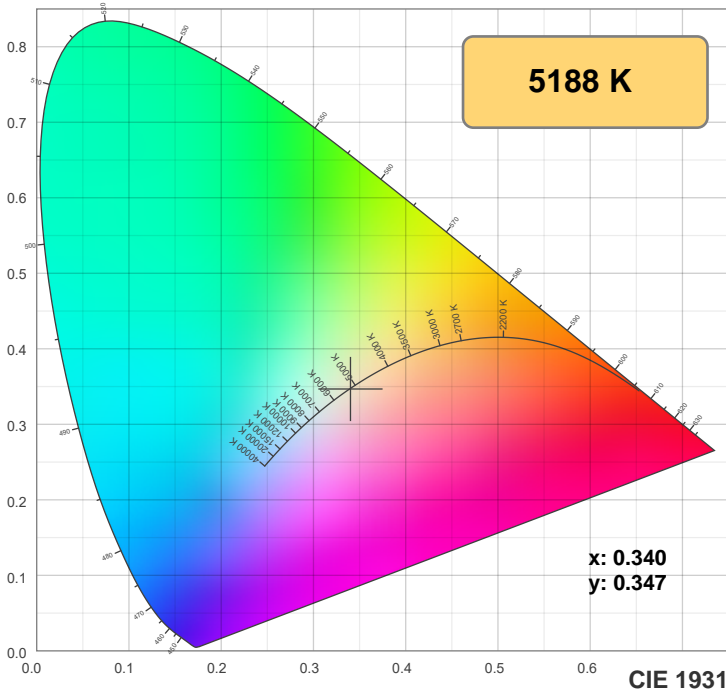
Spectra



Power

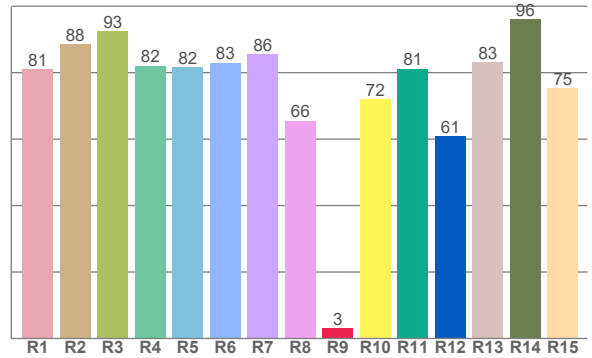
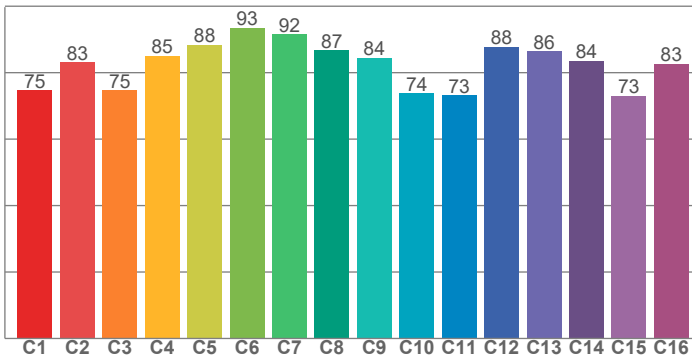


### Color Specifications



**TM30: 82.4**

**CRI: 82.5 (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
81.1	88.5	92.5	82.0	81.7	83.0	85.6	65.6	3.1	71.9	81.2	60.9	83.2	96.2	75.3

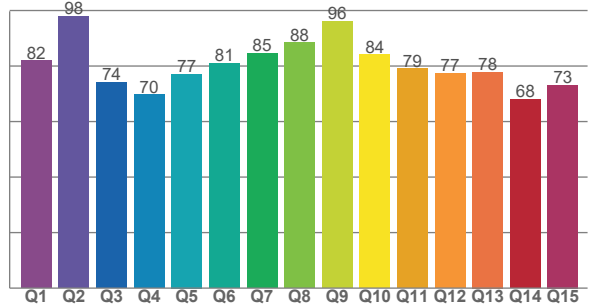
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
74.6	83.1	74.6	85.1	88.4	93.5	91.5	86.7	84.5	73.8	73.1	87.8	86.4	83.5	73.1	82.6

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
81.9	98.0	74.1	69.8	77.1	81.1	84.6	88.4	96.2	84.2	79.1	77.4	77.9	68.0	73.2

**CQS: 79.0**



### 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 deviation from black body
<b>CCT</b>	<b>CRI</b>	<b>CRI R9</b>	<b>TM30 Rf</b>	<b>TM30 Rg</b>	<b>CQS</b>	<b>x</b>	<b>y</b>	<b>u</b>	<b>v</b>	<b>Δuv</b>
<b>5188 K</b>	<b>82.5</b>	<b>3.1</b>	<b>82.4</b>	<b>95.4</b>	<b>79.0</b>	<b>0.340</b>	<b>0.347</b>	<b>0.210</b>	<b>0.321</b>	<b>-0.0037</b>

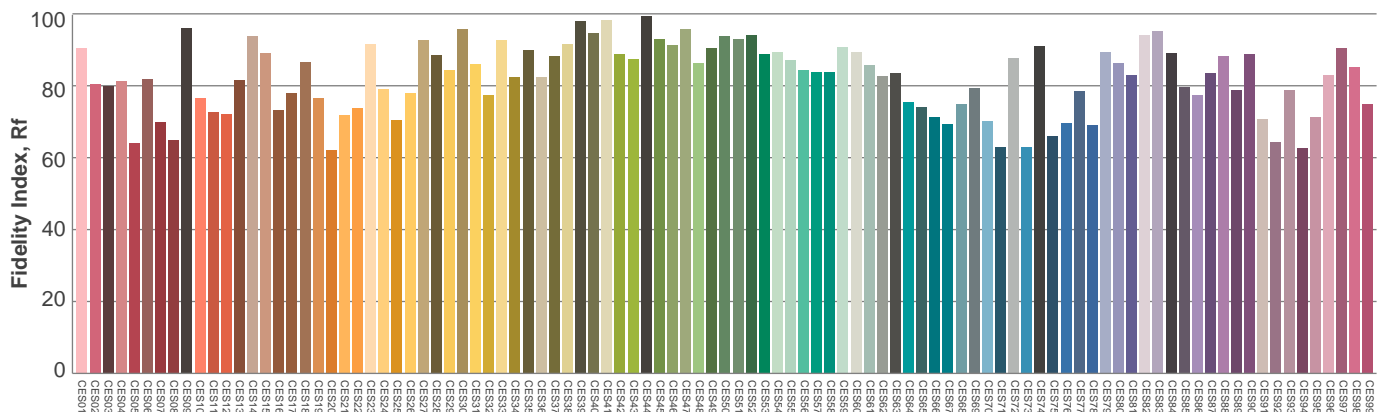
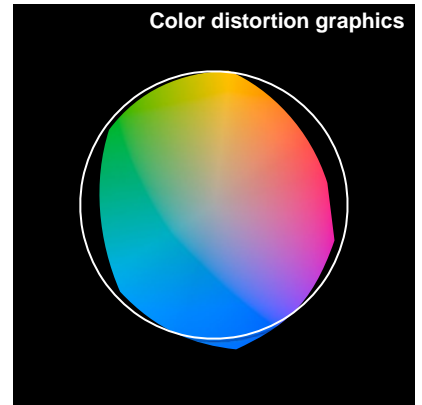
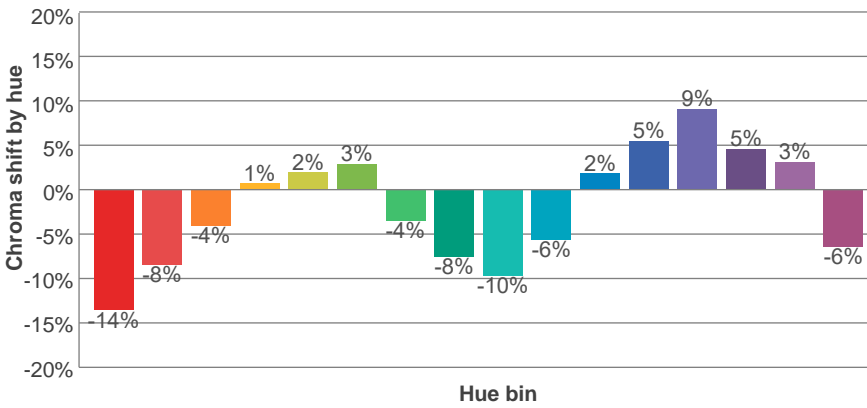
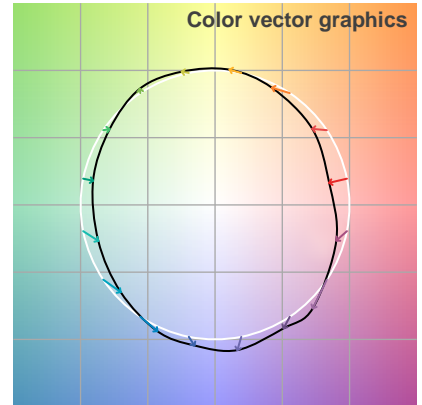
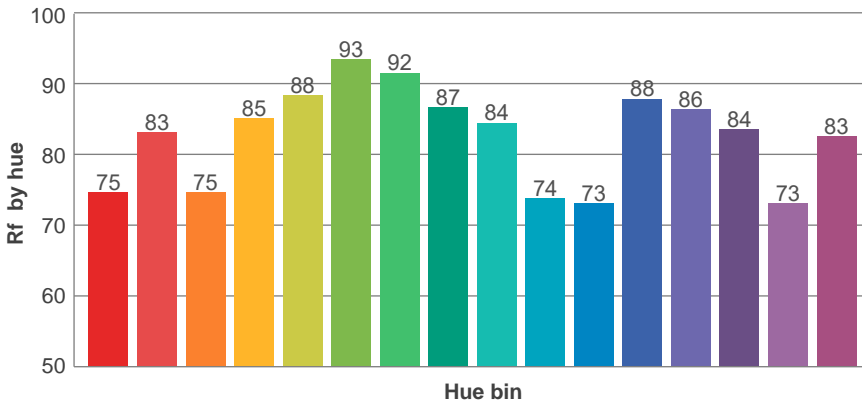
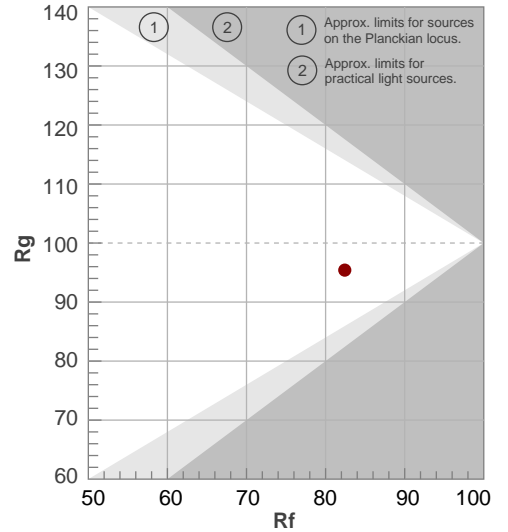


### TM30 Report

**Rf 82.4**  
Fidelity index Rf

**Rg 95.4**  
Gammut index Rg

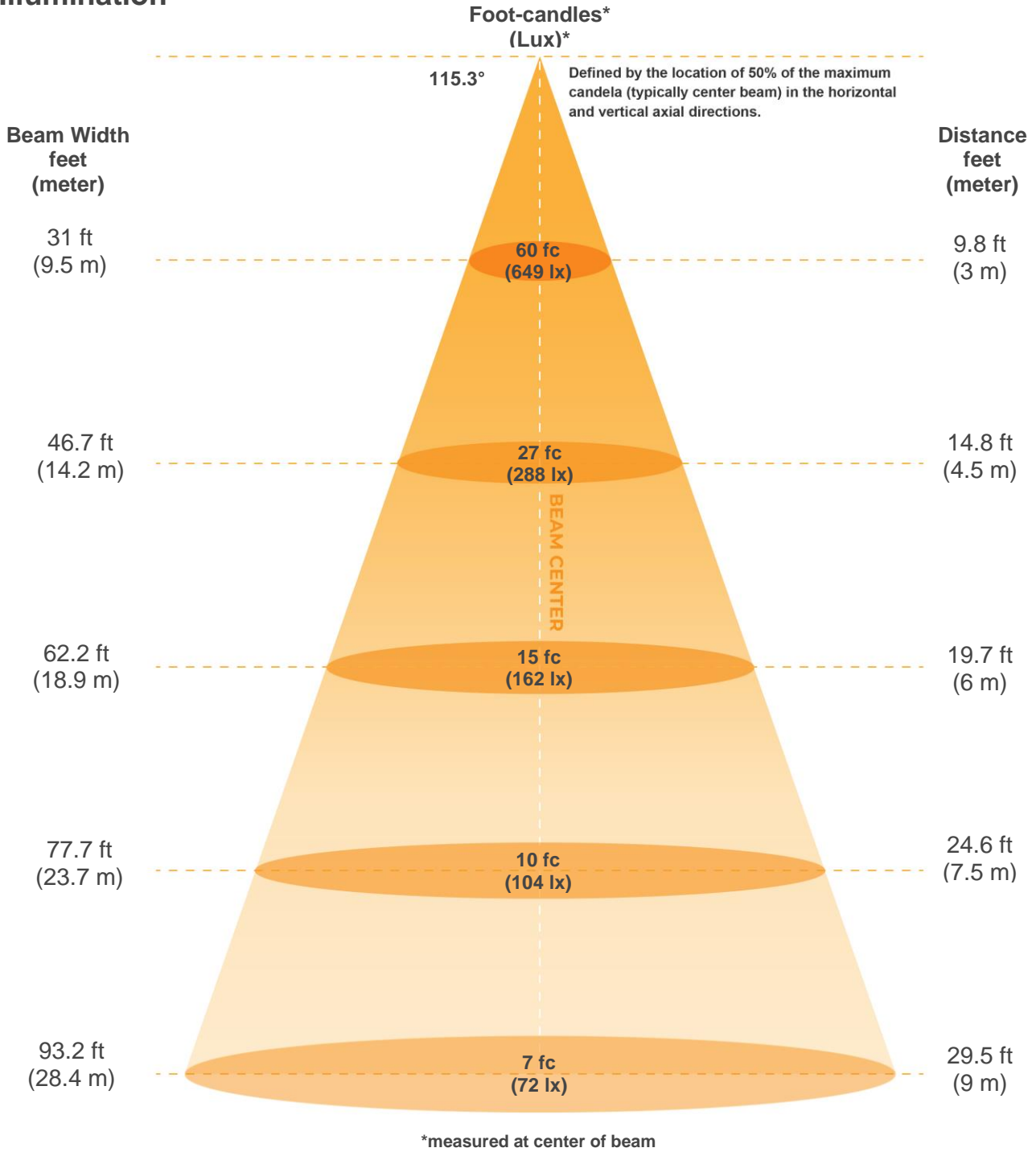
Hue Bin	R <sub>f</sub>	Graphic shifts (%)	
		Chroma	Hue
1	75	-14%	0%
2	83	-8%	7%
3	75	-4%	13%
4	85	1%	9%
5	88	2%	5%
6	93	3%	-1%
7	92	-4%	-3%
8	87	-8%	0%
9	84	-10%	9%
10	74	-6%	15%
11	73	2%	16%
12	88	5%	5%
13	86	9%	-5%
14	84	5%	-9%
15	73	3%	-24%
16	83	-6%	-8%



Color Evaluation Sample



**Illumination**



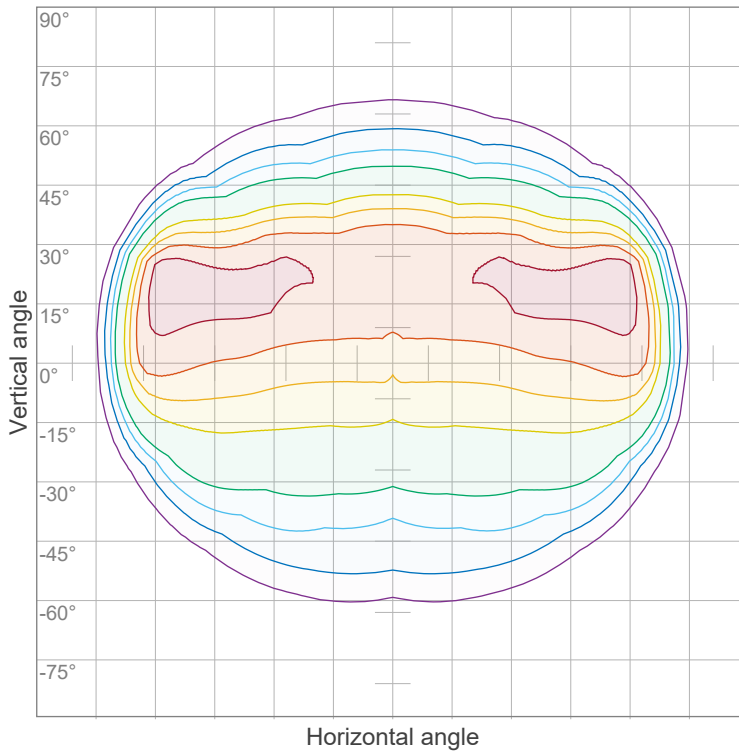
**Beam intensities from 1-20m**

m	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ft	3.3	6.6	9.8	13.1	16.4	19.7	23	26.2	29.5	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3	65.6
lux	5837	1459	649	365	233	162	119	91	72	58	48	41	35	30	26	23	20	18	16	15
fc	542.3	135.6	60.3	33.9	21.7	15.1	11.1	8.5	6.7	5.4	4.5	3.8	3.2	2.8	2.4	2.1	1.9	1.7	1.5	1.4

Beam angle H	Beam Angle V	Field angle H 10%	Field Angle V 10%	Cutoff Angle 2.5%	Intensity Ratio in 120°	Intensity Ratio in 90°
154.8°	84.9°	166°	141.9°	169.6°	72.9%	46.4%



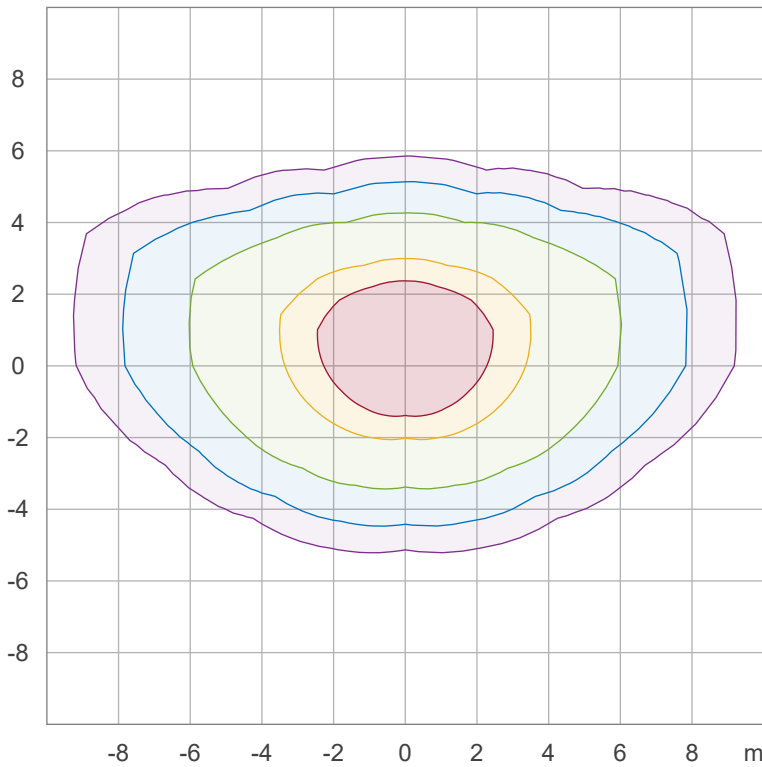
**Iso-intensity Diagram (Iso-candela)**



90 %	7071.8 cd
80 %	6286.0 cd
70 %	5500.3 cd
60 %	4714.5 cd
50 %	3928.8 cd
40 %	3143.0 cd
30 %	2357.3 cd
20 %	1571.5 cd
10 %	785.8 cd

Peak intensity: 7857.5 cd  
 Number of c-planes: 16

**Iso-illuminance Diagram (Iso-lux)**



50.0 %	341.0 lx
30.0 %	204.6 lx
10.0 %	68.2 lx
5.0 %	34.1 lx
3.0 %	20.5 lx

Peak illuminance: 681.9 lx  
 Mounting height: 3.0 m  
 Number of c-planes: 16



### Outdoor Light Planning

#### Lumen per Zone

Zone (y)	Lumen	% Total
0-10°	557 lm	2.5%
10-20°	1647 lm	7.4%
20-30°	2661 lm	12.0%
30-40°	3496 lm	15.7%
40-50°	3931 lm	17.7%
50-60°	3898 lm	17.5%
60-70°	3437 lm	15.5%
70-80°	2128 lm	9.6%
80-90°	348 lm	1.6%
90-100°	16 lm	0.1%
100-110°	15 lm	0.1%
110-120°	16 lm	0.1%
120-130°	17 lm	0.1%
130-140°	17 lm	0.1%
140-150°	15 lm	0.1%
150-160°	12 lm	0.1%
160-170°	7 lm	0.0%
170-180°	2 lm	0.0%
<b>Total</b>	<b>22219 lm</b>	<b>100.0%</b>

#### Intensity peaks

Max intensity	7861 cd
Intensity, 90°	25 cd
Intensity, 0°	5837 cd

#### Zonal Lumen summary

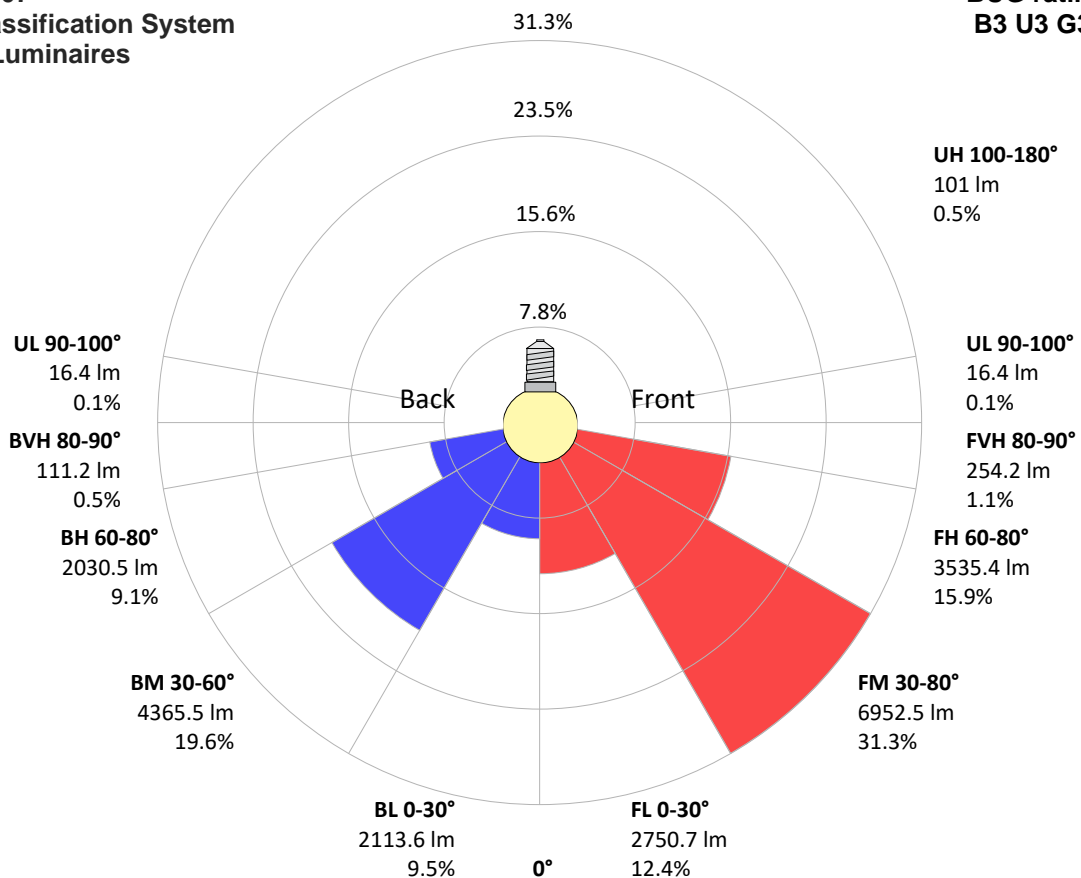
Zone (y)	Lumen	% Total
0-30°	4866 lm	21.9%
0-40°	8361 lm	37.6%
0-60°	16190 lm	72.9%
60-90°	5913 lm	26.6%
70-100°	2492 lm	11.2%
90-120°	47 lm	0.2%
0-90°	22103 lm	99.5%
90-180°	117 lm	0.5%
0-180°	22219 lm	100.0%

#### BUG rating

	Lumen	% Total
<b>Forward light</b>		
Low(0-30°)	2751 lm	12.4%
Medium(30-60°)	6952 lm	31.3%
High(60-80°)	3535 lm	15.9%
Very high(80-90°)	254 lm	1.1%
<b>Back light</b>		
Low(0-30°)	2114 lm	9.5%
Medium(30-60°)	4366 lm	19.6%
High(60-80°)	2031 lm	9.1%
Very high(80-90°)	111 lm	0.5%
<b>Uplight</b>		
Low(90-100°)	16 lm	0.1%
High(100-180°)	101 lm	0.5%

### IESNA TM-15-07 Luminaire Classification System For Outdoor Luminaires

**BUG rating  
B3 U3 G3**



UGR data could not be calculated due to missing/wrong symmetry. Goto Edit->Photometric->Corrections and select Correct asymmetry.

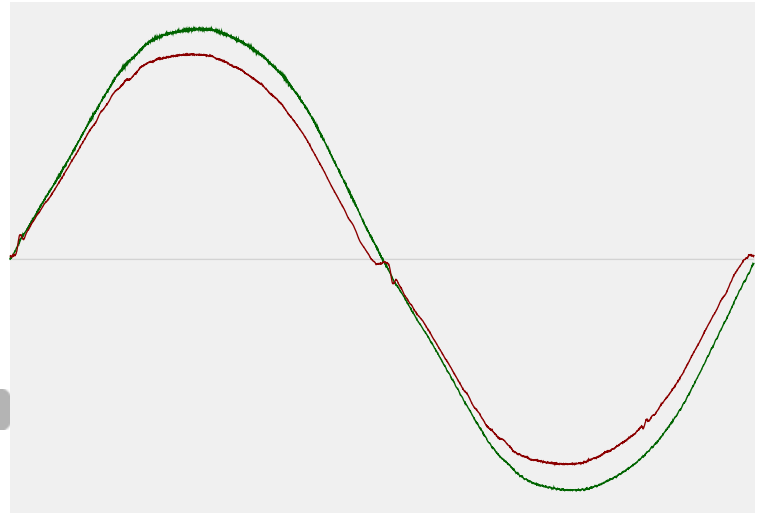


### Power Details

#### Input Power

Power feed to light source	153 W
Frequency of input power	60.1 Hz
RMS Input voltage feed, $V_{RMS}$	118 V
RMS Input current feed, $I_{RMS}$	1.30 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	153.3 VA
Displacement factor of AC power feed	1.0
Power factor of AC current feed	1.0
Total harmonic distortion of the current	4.16%
Total harmonic distortion of the voltage	2.27%

#### Input Power Curve



#### Efficiency

Radiated power efficiency 45.1%



Lumen efficiency 145 lm/W



### Stabilization Details

#### Warmup Conditions

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

#### Color Temperature Change

CCT start	5088 K
CCT shift	+100 K
CCT end	5188 K

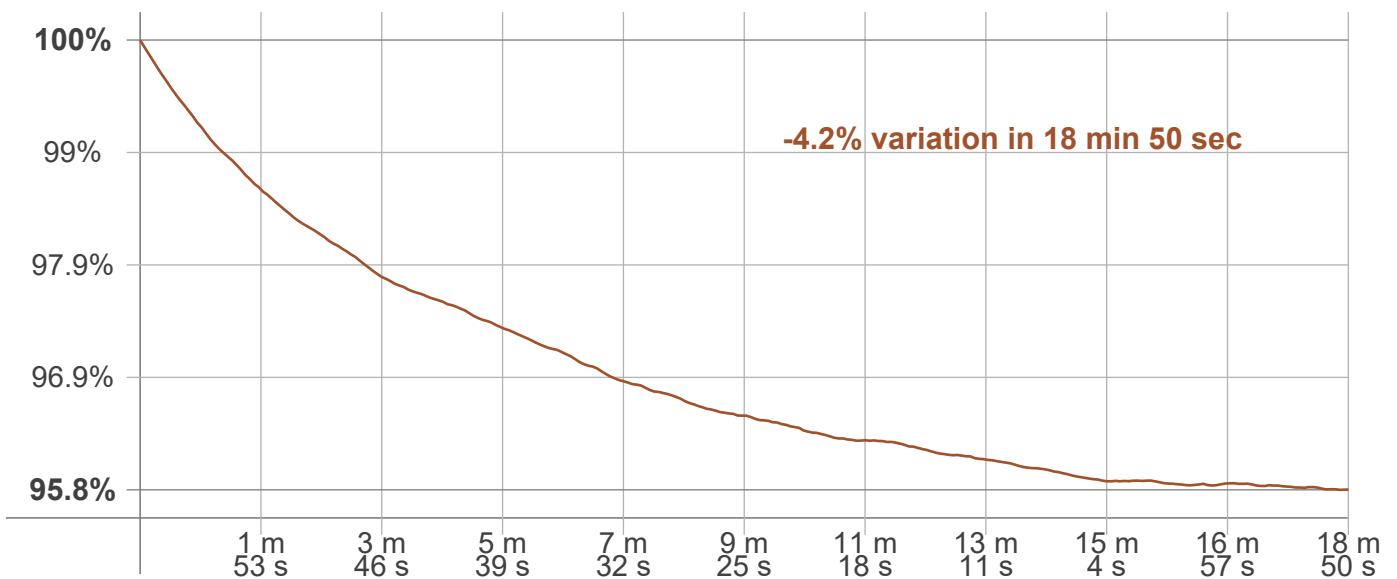
#### Warmup Result

Total warmup time	Lamp stabilized in 18 min 50 sec
Warmup variation	-4.2%

#### Output Change

Output start	23132 lm
Output change	-913 lm
Output end	22219 lm

#### Stabilization Curve



### Flicker /TLA details



Flicker Meter Type                    Viso Systems LabFlicker  
 Frequency of input power            60.1 Hz  
 Flicker/TLA sample rate            20000 samples/s

**Measurement time**  
 PstLM                                    180 sec  
 All other indices                      1.2 sec

**Flicker indices according to Illuminating Engineering Society (IES)**

Flicker frequency                    121.95 Hz  
 Percent Flicker                      0.95 %  
 Flicker index                         0

**Flicker indices per California Energy Commission (CEC) 2016b**

JA8/10 40 Hz                         0.18 %  
 JA8/10 90 Hz                         0.27 %  
 JA8/10 200 Hz                        0.63 %  
 JA8/10 400 Hz                        0.8 %  
 JA8/10 1000 Hz                       0.9 %

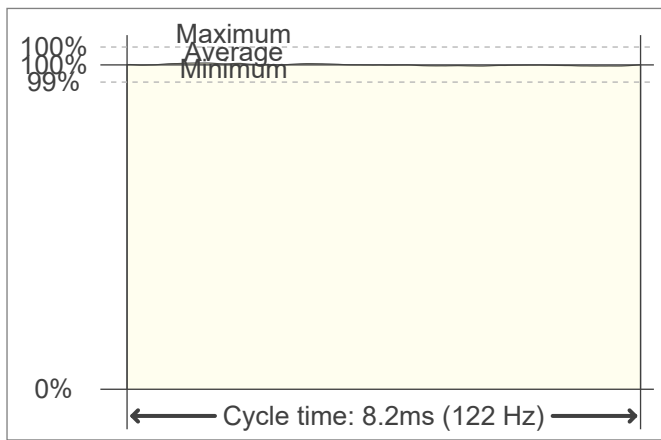
**TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)**

PstLM value (F < 80 Hz)            0.12  
 SVM value (80 < F < 2000 Hz)    0.01

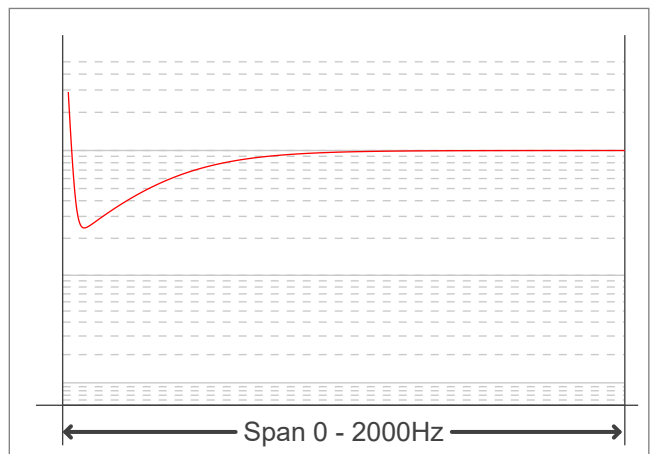
**Flicker indices according to Lighting Research Center (2015)**

Perception metric, Assist Mp        0.09

**Flicker frame (frame of one flicker period in time domain)**



**Flicker FFT (flicker curve in frequency domain)**



**IEEE 1789 Frequency/modulation plot**

