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HBUD2-50K300LSD-PR

Light efficiency:

162 Lumens/Watt

Light quality:

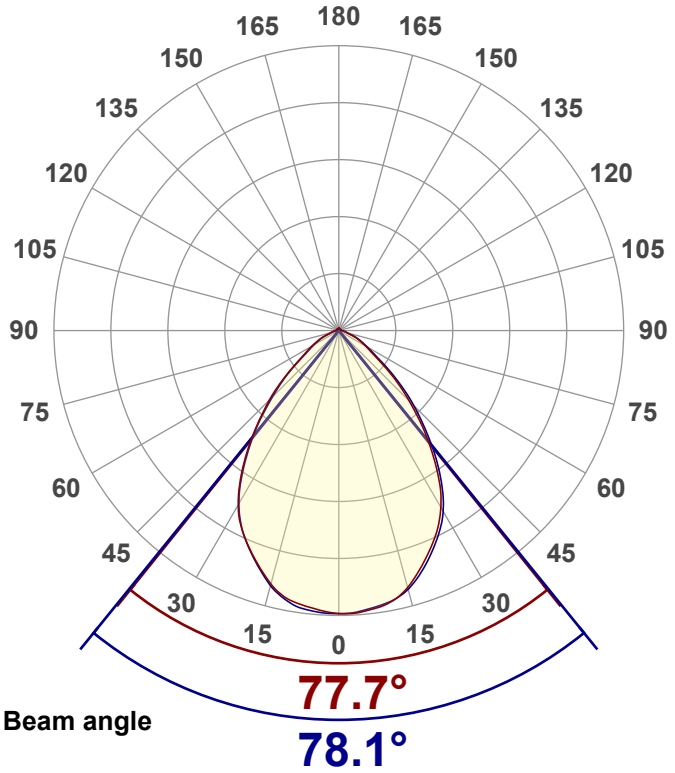
CRI: 74.0

Color temperature:

5527 K

Output: 47956 lm
Peak: 28440 cd

Power: 296.2 W
PF: 1.0



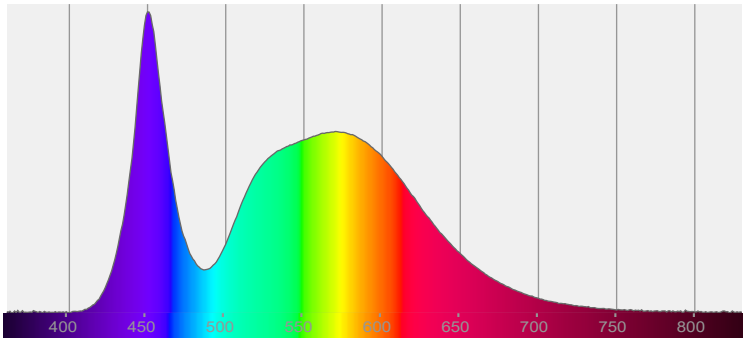
Beam angle

Product name:
HBUD2-50K300LSD-PR

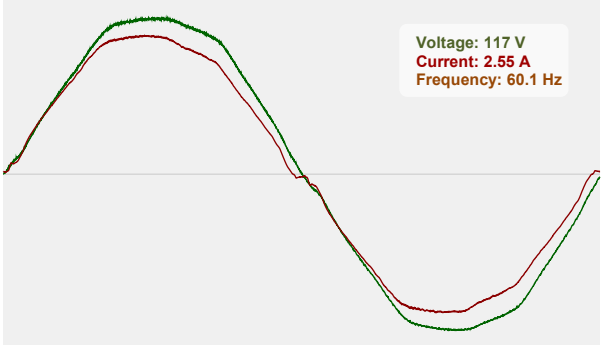
Date and time:
8/29/2025 7:47:10 AM

CIE 1931
x: 0.332
y: 0.346

Spectra



Power



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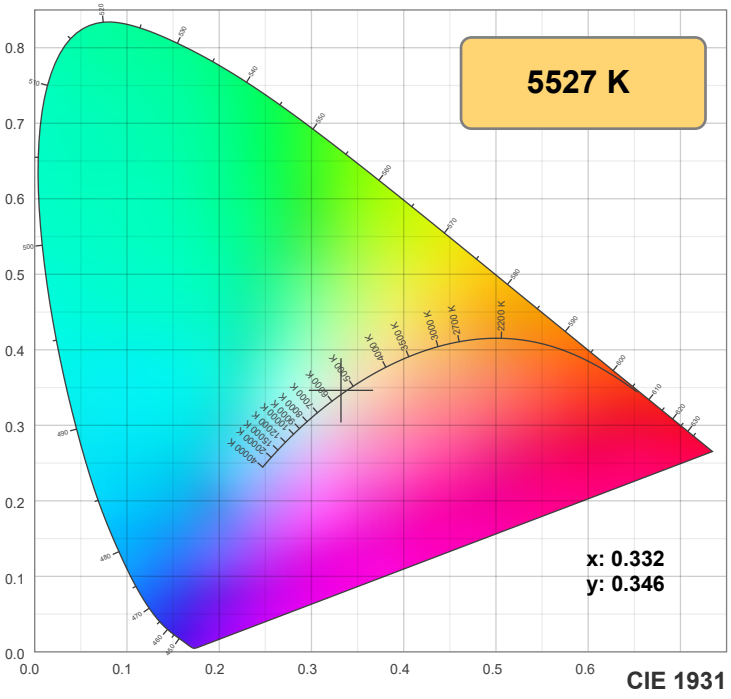
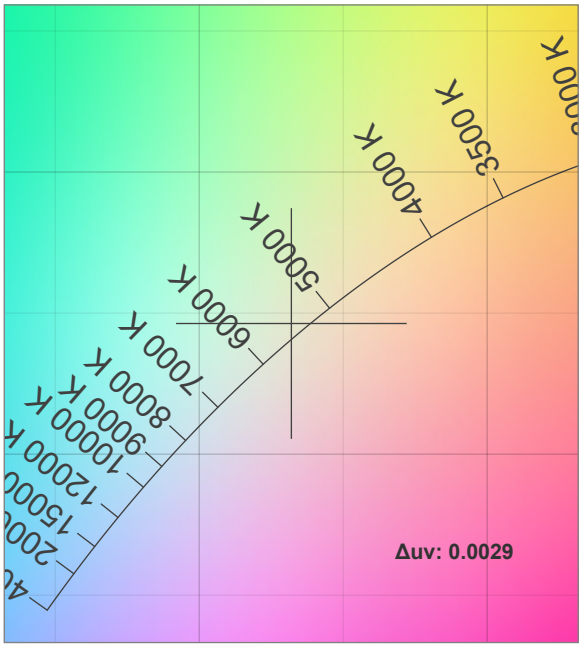
Color Specifications

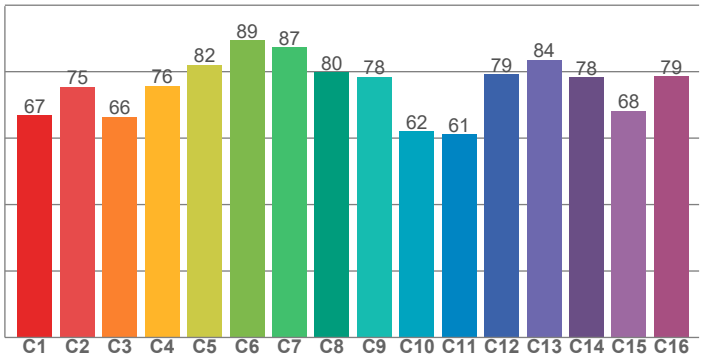


CIE 1931

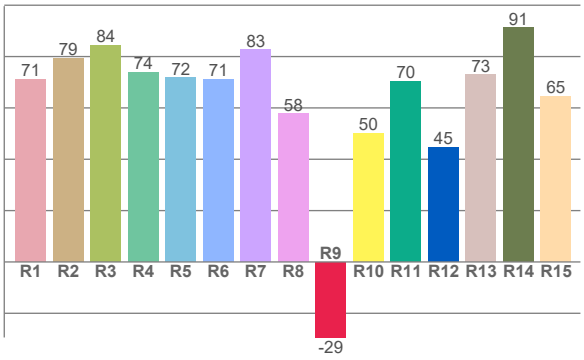


CIE 1931 ZOOM

TM30: 75.3



CRI: 74.0 (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
71.1	79.5	84.3	73.8	71.7	71.1	82.6	57.7	-29.4	50.0	70.4	44.7	72.9	91.2	64.6

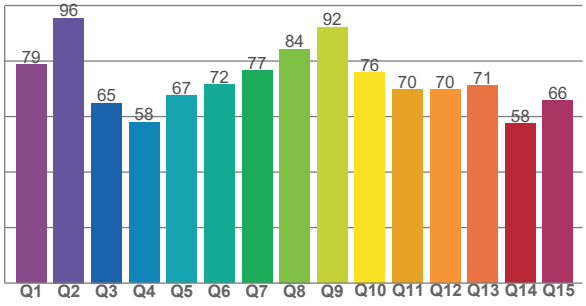
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
66.9	75.4	66.4	75.8	82.1	89.4	87.4	79.8	78.5	62.0	61.1	79.3	83.6	78.4	68.3	78.6

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
78.7	95.5	64.9	58.0	67.5	71.6	76.7	84.4	92.2	75.8	69.6	69.7	71.2	57.6	65.7

CQS: 71.2



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
5527 K	74.0	-29.4	75.3	92.9	71.2	0.332	0.346	0.205	0.320	0.0029

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HBUD2-50K300LSD-PR

TM30 Report

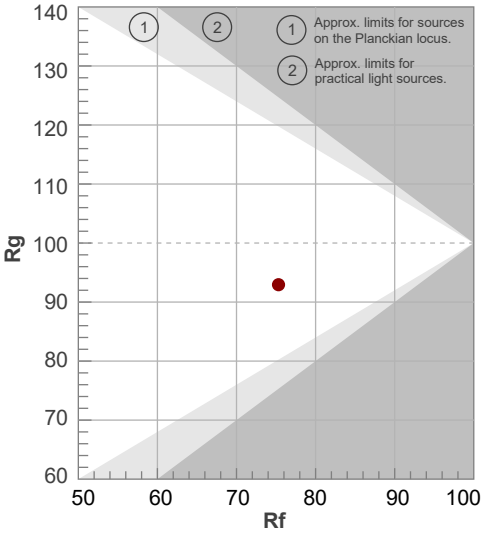
Rf 75.3

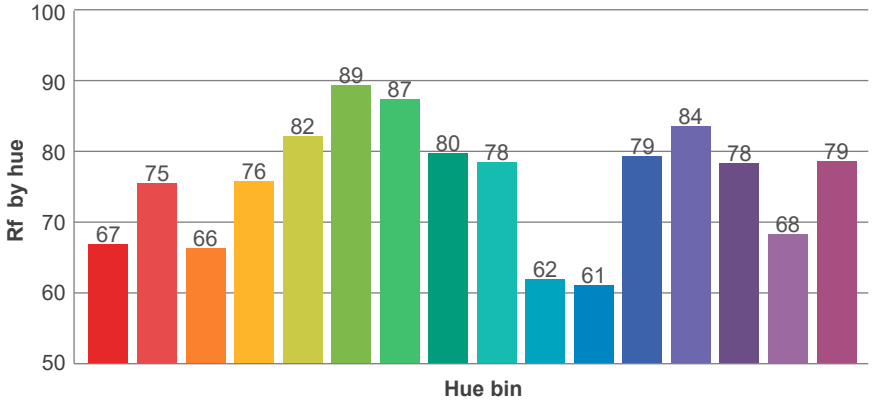
Fidelity index Rf

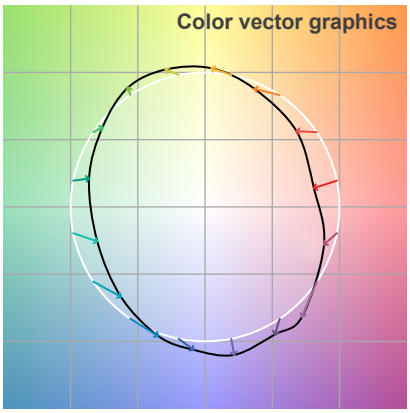
Rg 92.9

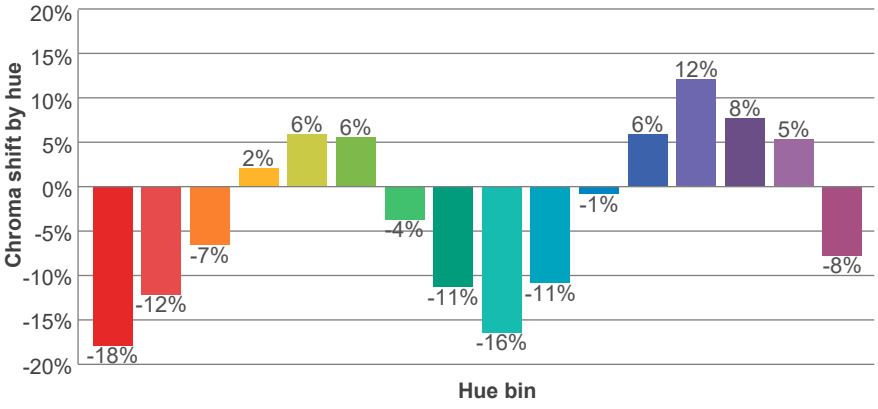
Gammut index Rg

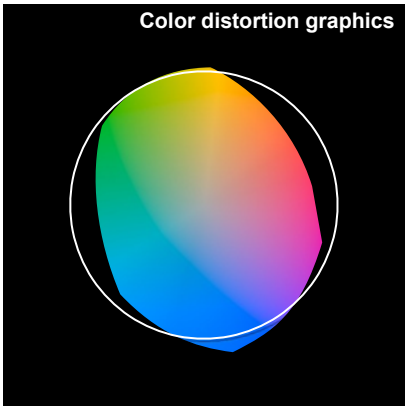
		Graphic shifts (%)	
Hue Bin	R_f	Chroma	Hue
1	67	-18%	-2%
2	75	-12%	9%
3	66	-7%	18%
4	76	2%	15%
5	82	6%	9%
6	89	6%	-2%
7	87	-4%	-7%
8	80	-11%	-4%
9	78	-16%	10%
10	62	-11%	21%
11	61	-1%	24%
12	79	6%	12%
13	84	12%	0%
14	78	8%	-9%
15	68	5%	-28%
16	79	-8%	-10%

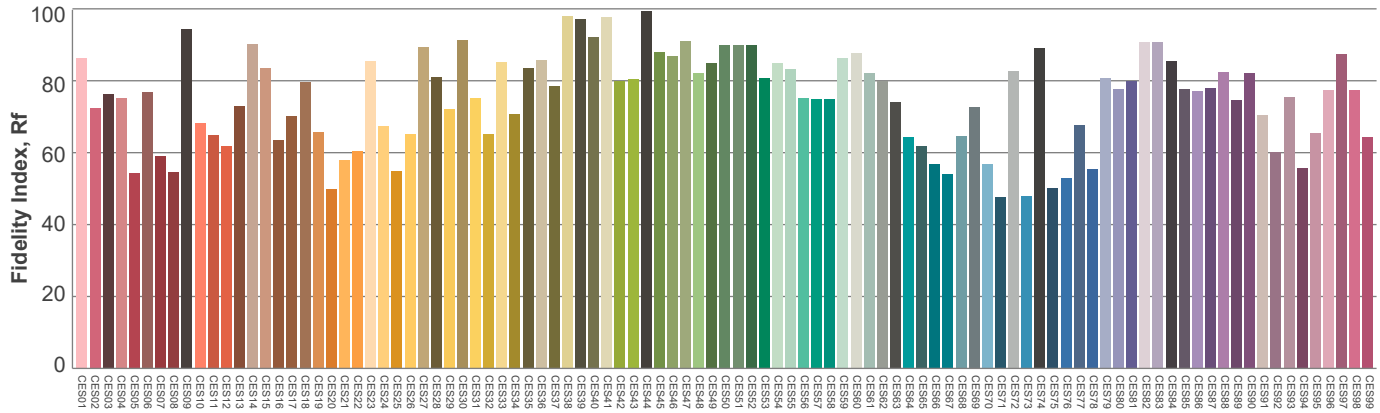












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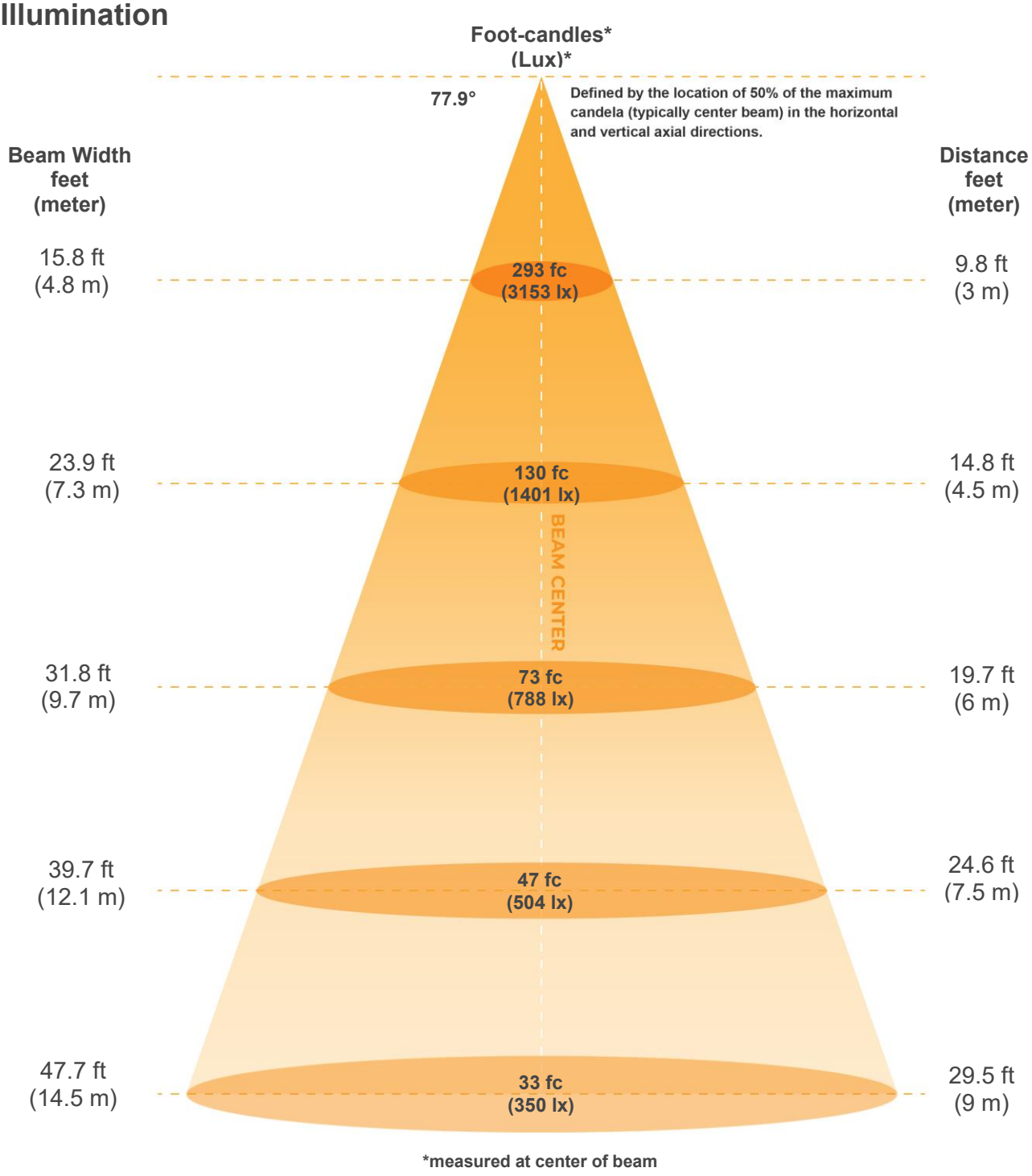
Illumination



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	28374	7094	3153	1773	1135	788	579	443	350	284	234	197	168	145	126	111	98	88	79	71
fc	2636.1	659	292.9	164.8	105.4	73.2	53.8	41.2	32.5	26.4	21.8	18.3	15.6	13.4	11.7	10.3	9.1	8.1	7.3	6.6

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°
78.1°	77.7°	122.6°	122.6°	154.8°	89.7%	74.0%

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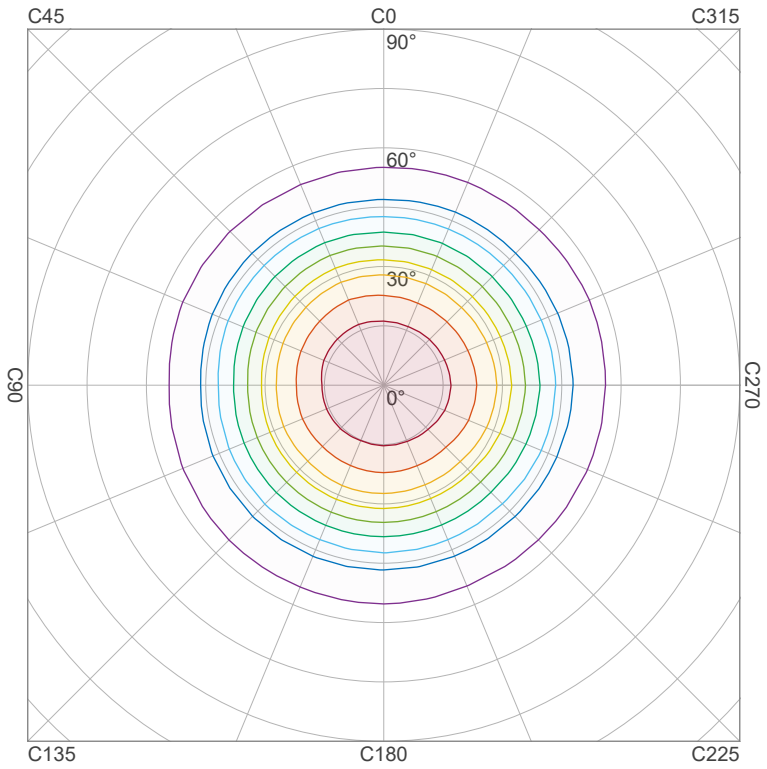
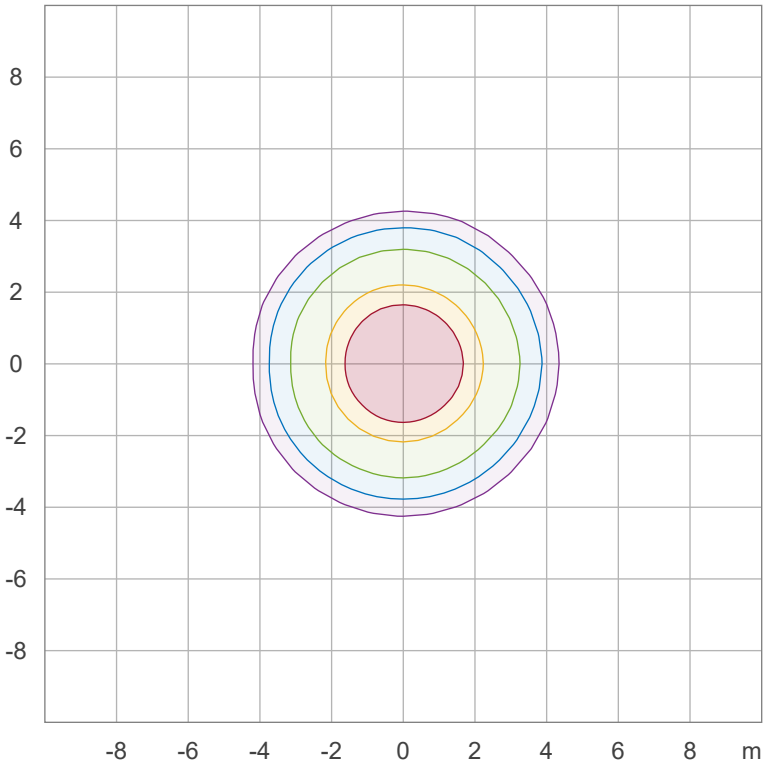
Iso-intensity Diagram (Iso-candela)



90 %	25586.6 cd
80 %	22743.6 cd
70 %	19900.7 cd
60 %	17057.7 cd
50 %	14214.8 cd
40 %	11371.8 cd
30 %	8528.9 cd
20 %	5685.9 cd
10 %	2843.0 cd

Peak intensity: 28429.5 cd
Number of c-planes: 16

Iso-illuminance Diagram (Iso-lux)



50.0 %	1578.3 lx
30.0 %	947.0 lx
10.0 %	315.7 lx
5.0 %	157.8 lx
3.0 %	94.7 lx

Peak illuminance: 3156.6 lx
Mounting height: 3.0 m
Number of c-planes: 16

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Light Planning – UGR table

Uncorrected, comprehensive UGR table according to 117-1995

Reflectances										
ρ Ceiling	70	70	50	50	30	70	70	50	50	30
ρ Walls	50	30	50	30	30	50	30	50	30	30
ρ Floor	20	20	20	20	20	20	20	20	20	20
Room size H = mounting height above eye level	**Viewed Crosswise** (Viewing direction orthogonal to lamp length axis)					**Viewed Endwise** (Viewing direction parallel to lamp length axis)				
X **Y**										
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Variations with the observer position for the luminaire spacings, S:

n/a	n/a	n/a
n/a	n/a	n/a
n/a	n/a	n/a

UGR data could not be calculated due to missing/wrong symmetry. Go to Edit -> Photometric -> Corrections and select Correct asymmetry (UGR not defined for asymmetrical distributions)..

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 Lumen delivered to the task surface														
0	118	118	118	118	115	115	115	115	110	110	110	104	104	104	99	99	99	97
1	111	107	104	101	108	104	101	99	100	97	95	95	94	92	92	90	89	86
2	103	96	91	86	100	94	89	85	91	86	83	87	84	81	84	81	79	77
3	96	87	81	75	93	86	79	75	82	77	73	79	75	71	77	73	70	68
4	89	79	72	67	87	78	71	66	75	69	65	73	68	64	70	66	63	61
5	83	72	65	59	81	71	64	59	69	63	58	67	61	57	65	60	56	54
6	78	66	59	53	76	65	58	53	63	57	52	61	56	52	60	55	51	49
7	73	61	53	48	71	60	53	48	58	52	47	57	51	47	55	50	46	45
8	68	56	49	44	67	56	49	44	54	48	43	53	47	43	51	46	43	41
9	64	52	45	40	63	52	45	40	50	44	40	49	43	39	48	43	39	37
10	60	49	42	37	59	48	41	37	47	41	37	46	40	36	45	40	36	34

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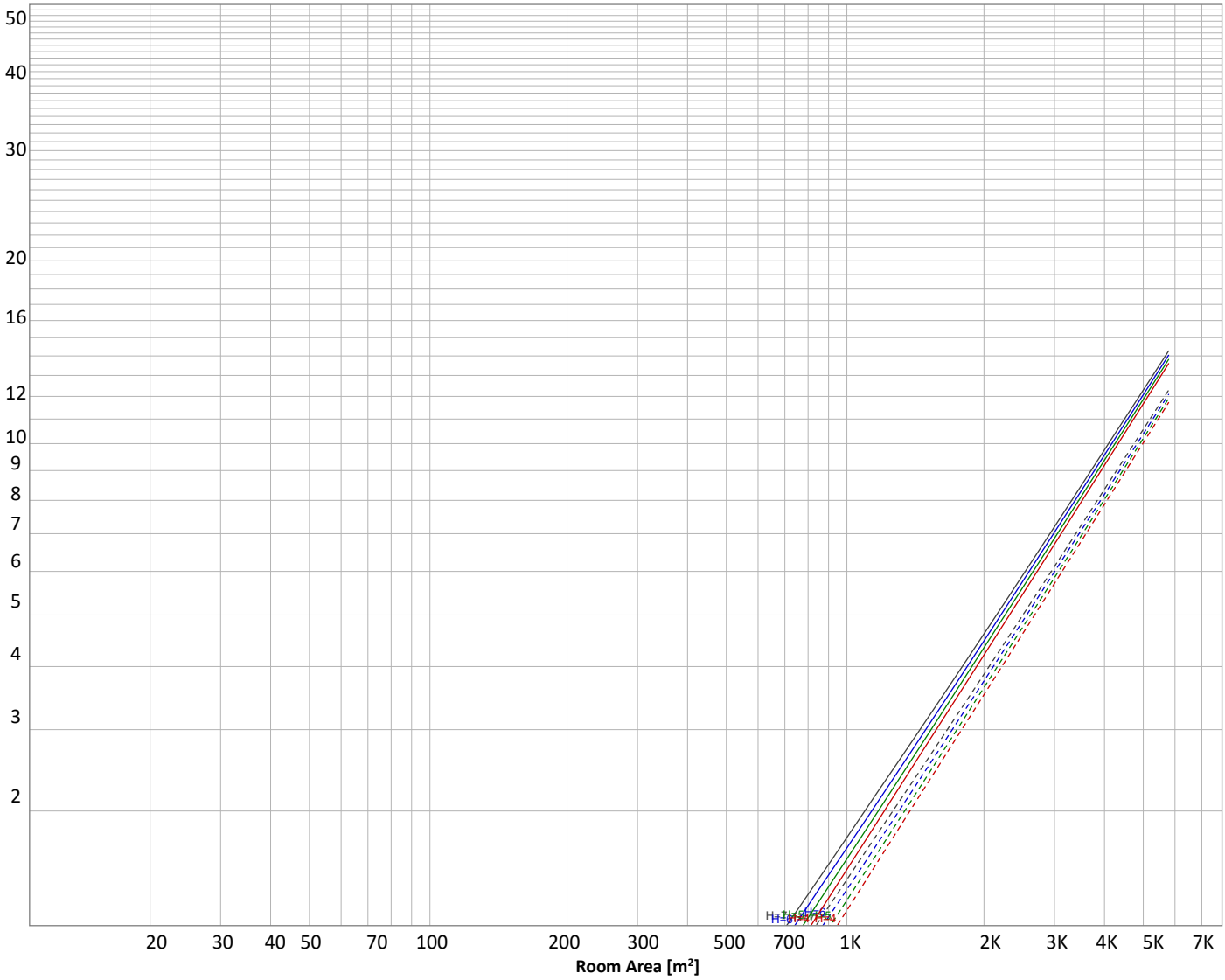
Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 47956 lm
H_{down} = Lamp distance from ceiling =	0.00 m
H_{work} = Work area height from floor =	0.00 m
E_{work} = Average lux on work area =	100 lx

ρ(%)			
Line type	Ceiling reflectance	Wall reflectance	Floor reflectance
----------	70	50	30
————	50	30	20

Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
2676 lm	7452 lm	10457 lm	10582 lm	7720 lm	4150 lm	2190 lm	926 lm	462 lm

90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
278 lm	238 lm	214 lm	185 lm	151 lm	114 lm	83.1 lm	56.0 lm	21.8 lm

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Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	2676 lm	5.6%
10-20°	7452 lm	15.5%
20-30°	10457 lm	21.8%
30-40°	10582 lm	22.1%
40-50°	7720 lm	16.1%
50-60°	4150 lm	8.7%
60-70°	2190 lm	4.6%
70-80°	926 lm	1.9%
80-90°	462 lm	1.0%
90-100°	278 lm	0.6%
100-110°	238 lm	0.5%
110-120°	214 lm	0.4%
120-130°	185 lm	0.4%
130-140°	151 lm	0.3%
140-150°	114 lm	0.2%
150-160°	83 lm	0.2%
160-170°	56 lm	0.1%
170-180°	22 lm	0.0%
Total	47956 lm	100.0%

Intensity peaks

Max intensity	28440 cd
Intensity, 90°	304 cd
Intensity, 0°	28374 cd

Zonal Lumen summary

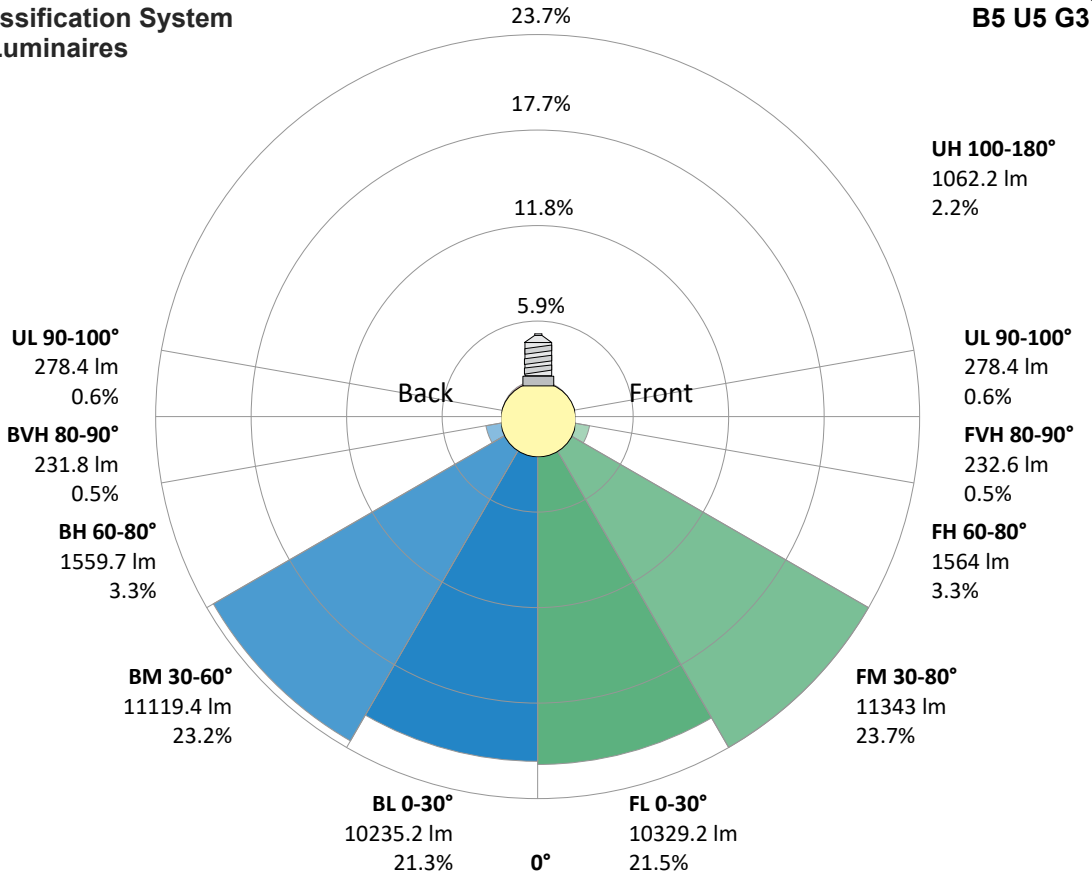
Zone (γ)	Lumen	% Total
0-30°	20585 lm	42.9%
0-40°	31167 lm	65.0%
0-60°	43038 lm	89.7%
60-90°	3578 lm	7.5%
70-100°	1666 lm	3.5%
90-120°	730 lm	1.5%
0-90°	46615 lm	97.2%
90-180°	1341 lm	2.8%
0-180°	47956 lm	100.0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	10329 lm	21.5%
Medium(30-60°)	11343 lm	23.7%
High(60-80°)	1564 lm	3.3%
Very high(80-90°)	233 lm	0.5%
Back light		
Low(0-30°)	10235 lm	21.3%
Medium(30-60°)	11119 lm	23.2%
High(60-80°)	1560 lm	3.3%
Very high(80-90°)	232 lm	0.5%
Uplight		
Low(90-100°)	278 lm	0.6%
High(100-180°)	1062 lm	2.2%

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

BUG rating
B5 U5 G3



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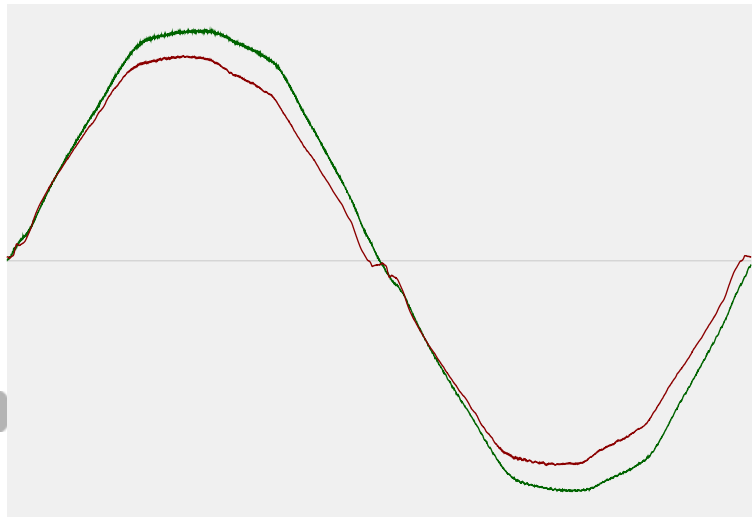
Power Details

Input Power

Power feed to light source	296.2 W
Frequency of input power	60.1 Hz
RMS Input voltage feed, V_{RMS}	117 V
RMS Input current feed, I_{RMS}	2.55 A
Volt-Ampere or apparent power = V_{RMS}*I_{RMS}	296.98 VA
Displacement factor of AC power feed	1.0
Power factor of AC current feed	1.0
Total harmonic distortion of the current	4.05%
Total harmonic distortion of the voltage	2.85%

Input Power Curve



Efficiency

Radiated power efficiency 48.6%

Lumen efficiency 162 lm/W

Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	5494 K
CCT shift	+33 K
CCT end	5527 K

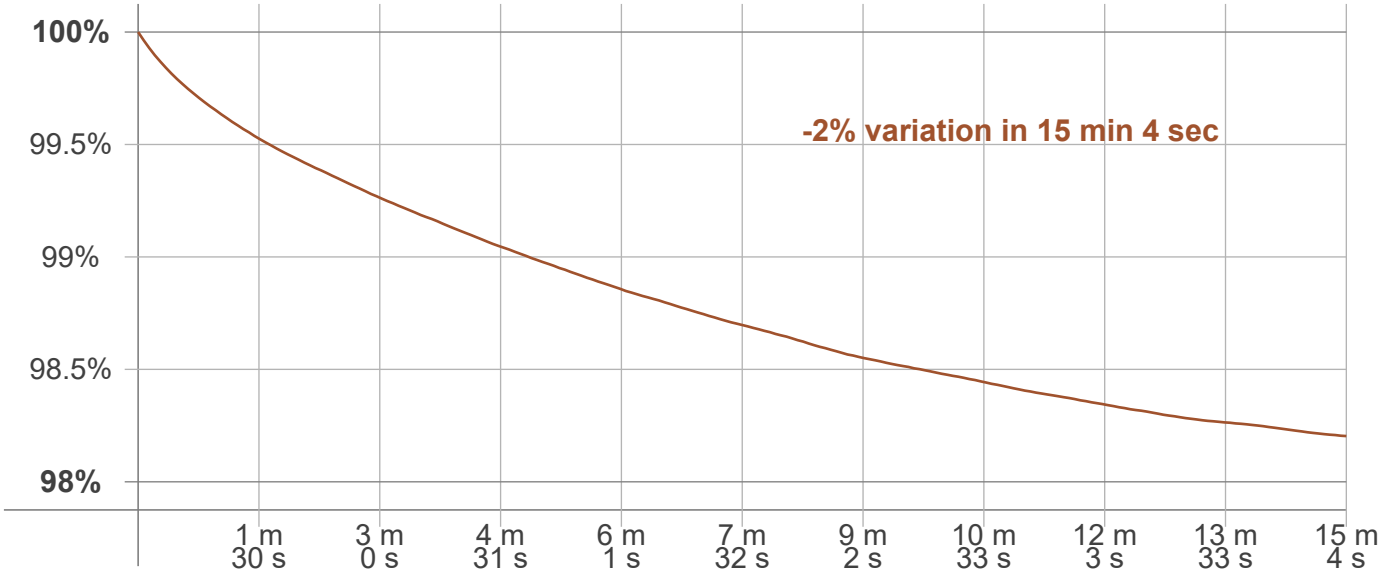
Warmup Result

Total warmup time	Lamp stabilized in 15 min 4 sec
Warmup variation	-2.0%

Output Change

Output start	48894 lm
Output change	-939 lm
Output end	47956 lm

Stabilization Curve



Flicker /TLA details

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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	120.48 Hz
Percent Flicker	0.76 %
Flicker index	0

Flicker indices per California Energy Commission (CEC) 2016b

JA8/10 40 Hz	0.01 %
JA8/10 90 Hz	0.03 %
JA8/10 200 Hz	0.47 %
JA8/10 400 Hz	0.7 %
JA8/10 1000 Hz	0.75 %

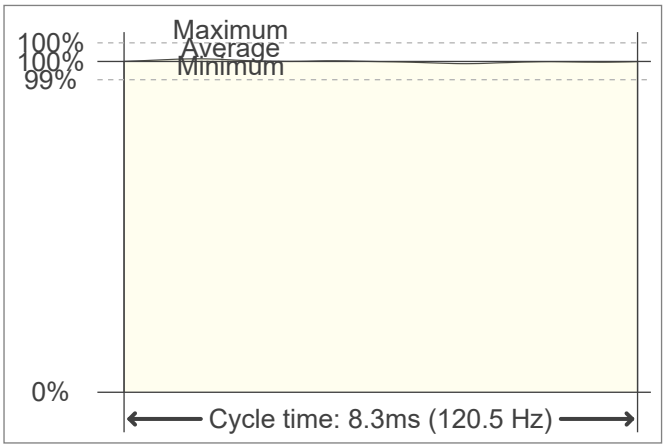
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value (F < 80 Hz)	0.01
SVM value (80 < F < 2000 Hz)	0.02

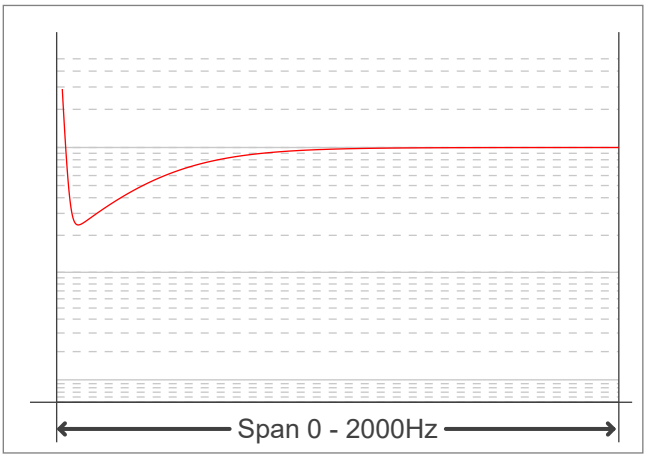
Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp	0

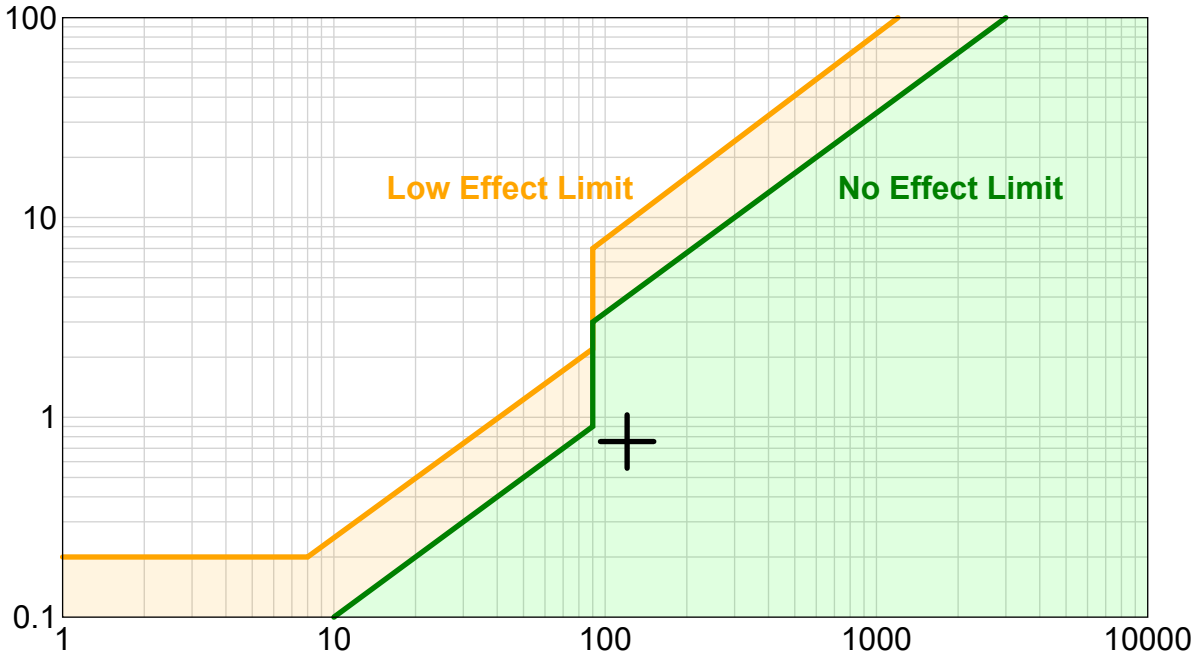
Flicker frame (frame of one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot



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