

Light Measurement Report

Print date: 10-10-2025
Measurement date and time: 10-10-2025 11:48:42 – Measurement no. VFR-251010-3646-MS
Measurement tracking No. and Link: [VT251010-006629](#)
Operator:



Laboratory and Equipment

Laboratory Owner and Location	Viso Systems, Copenhagen V, Denmark
Goniospectrometer System and Type	LabSpion – Type C, horizontal
Sensor Name, Calibr. Date and Serial No.	LabSensor Model2 – 11-1-2024 – 3130191315
Spectrometer Manufacturer and Model	Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

Measurement Conditions

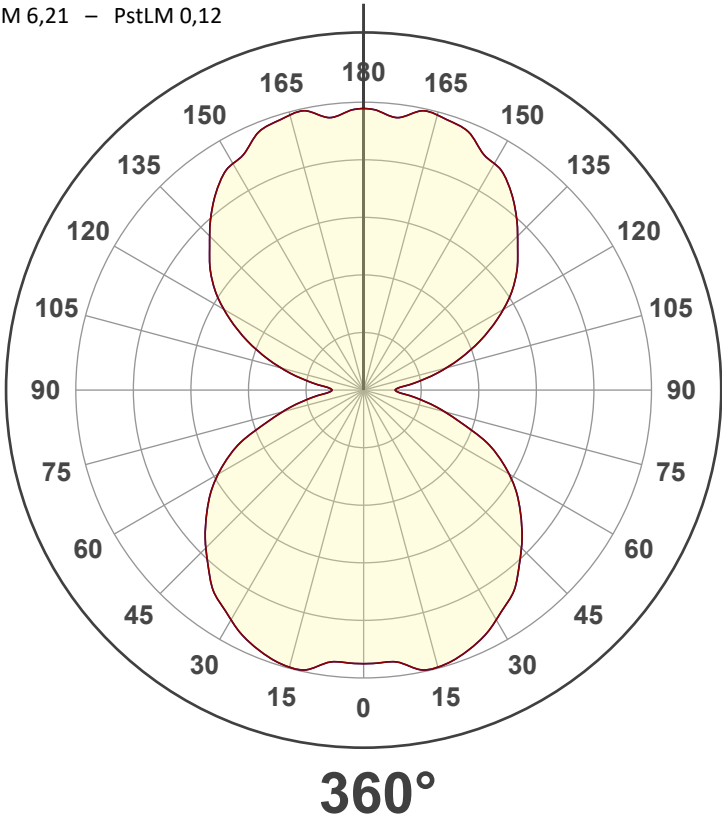
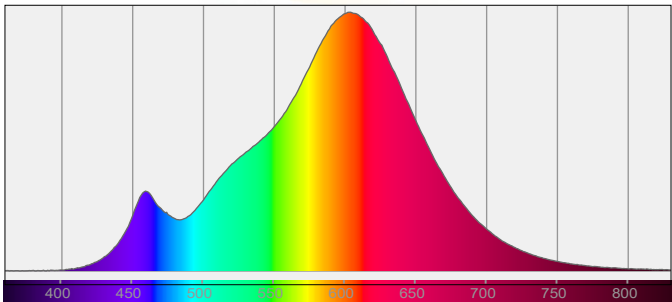
Number of C-planes and Resolution	12 planes – 30°
γ (gamma)-Resolution	5°
Test Distance	1,99 m
Input Power, Power and Displ. Factors	8,0 W – PF 0,82 – DPF 1,0
Input RMS Voltage and Current	230 V – 0,042 A
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 18 min 3 sec – 2,0%

Tested Light Source

Product Name	278400-2700K
Item No. and Manufacturer	278400-2700K – Dutchfulfillment
Product Description (line 1)	R7S 7.5W 118mm

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	1056 lm – 49,55% / 50,45%
Efficiency	132 lm/W
Peak Intensity and Beam Angle	151 cd – 360°
Correlated Color Temperature, Target/Measured	CCT = 2700 K / 2792 K
Color Rendering Index	CRI 81,1
Color Rendering TM30-18	R _f 84,4 – R _g 91,1
Color Shift, CIE duv and MacAdam Steps	Duv 0,0037 – SDCM 5,1
Flicker	SVM 6,21 – PstLM 0,12



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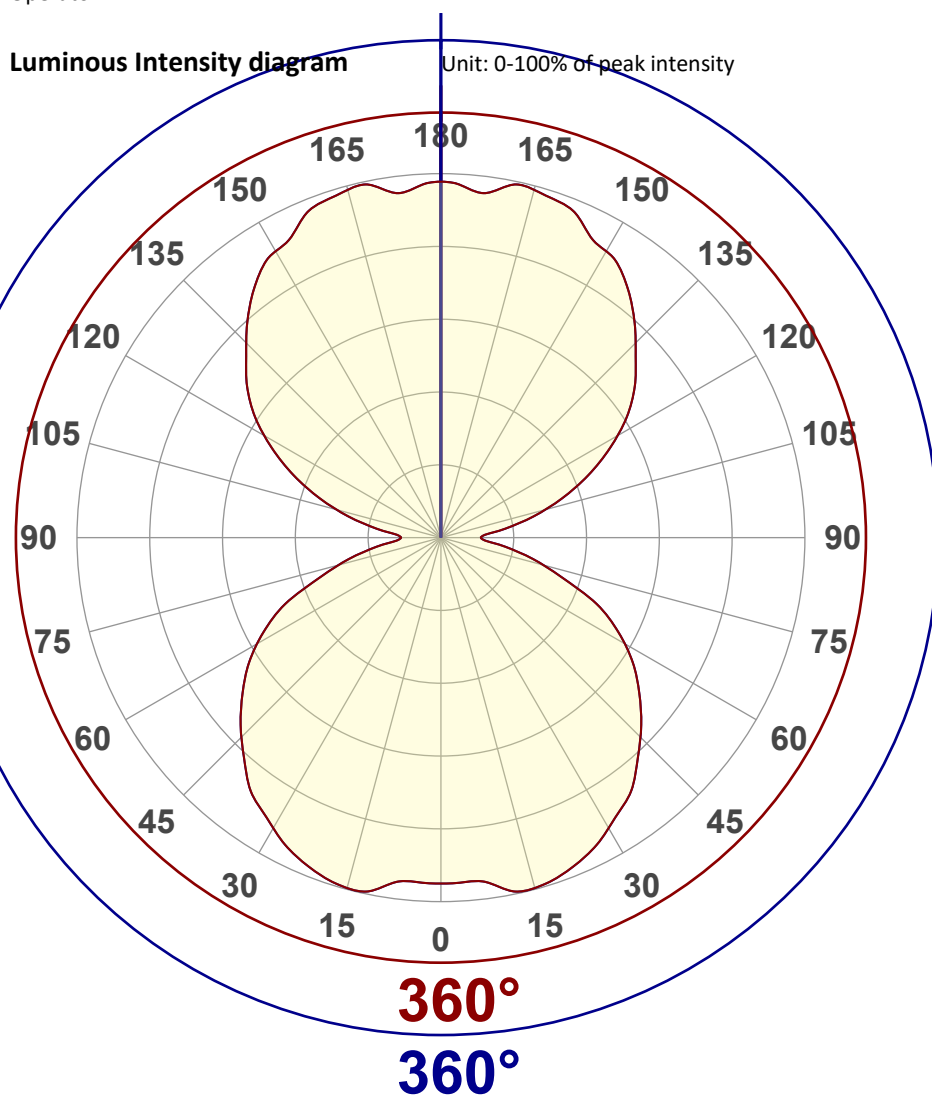
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Operator:



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	1056 lm
Lumen Up% / Down%	49,55% / 50,45%
Peak Intensity	151 cd
Beam Angle (50%)	360°
Beam Angle (90%)	360°
Beam Angle (10%)	360°

Cut-off Angle

Average 2,5%	360°
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Field Angle

Average 10%	360°
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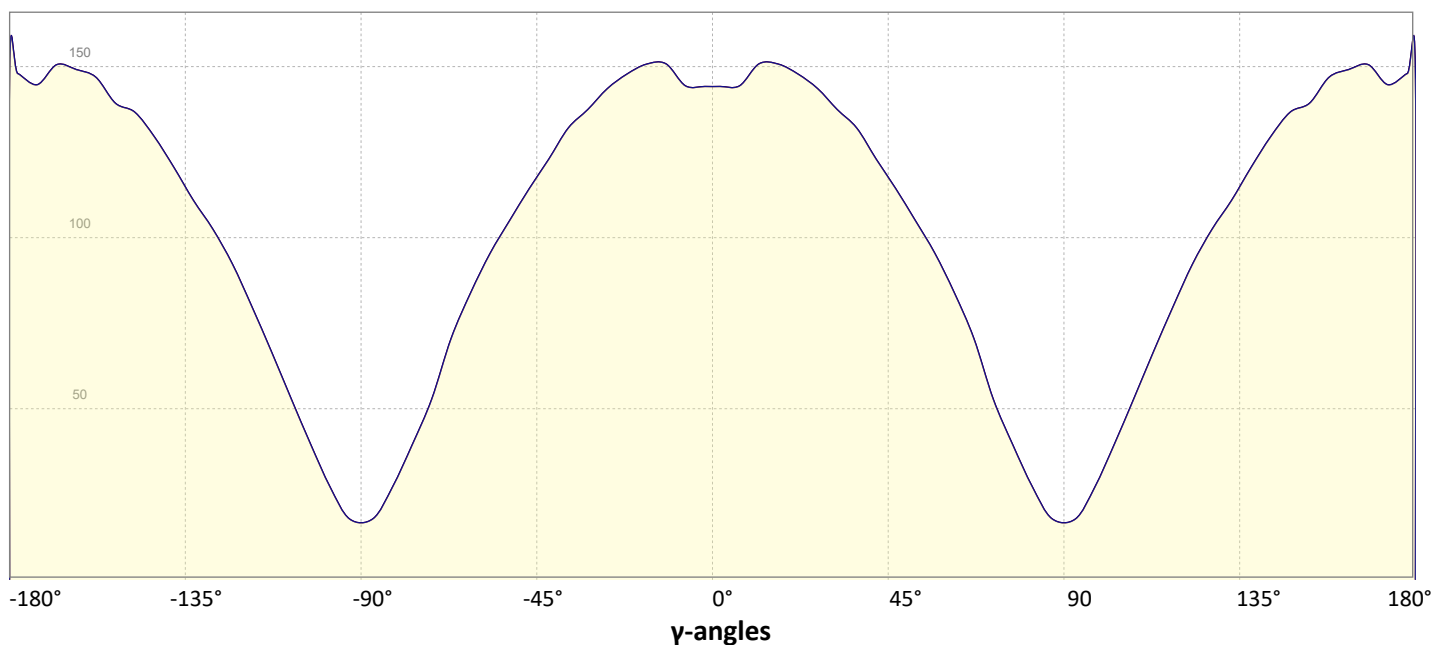
Intensity Ratio

In 120° cone	36,6%
In 90° cone	23,9%

C000-C180

C090-C270

Linear distribution diagram - Intensity (candela) vs γ-angle

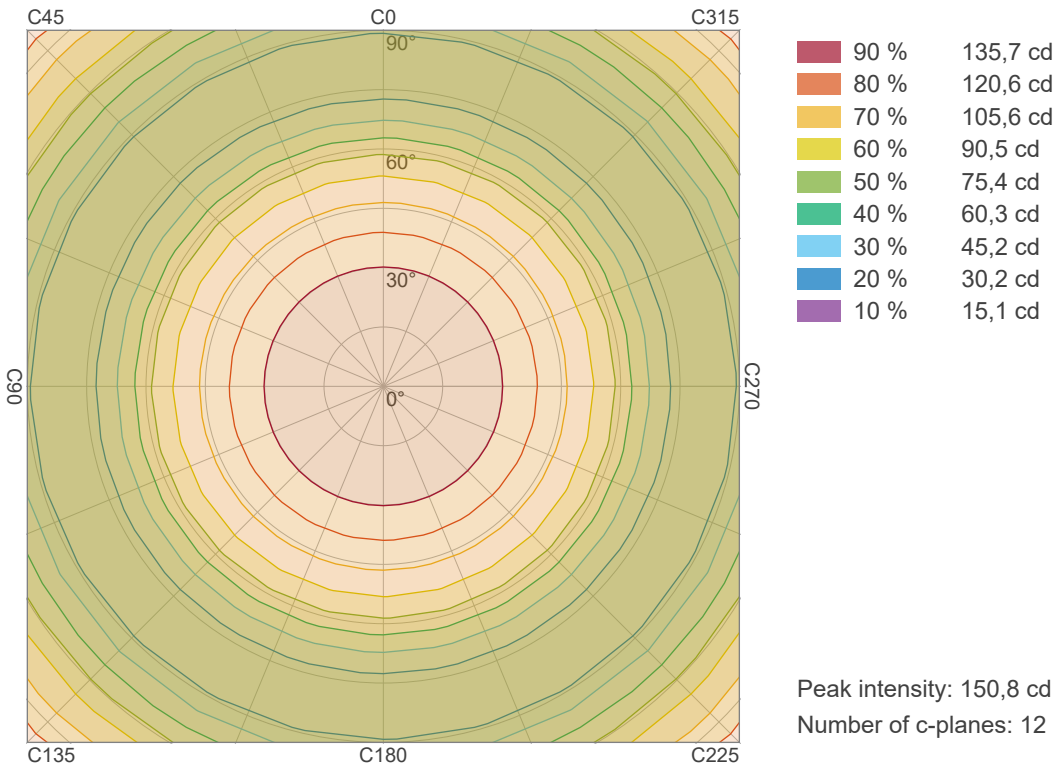


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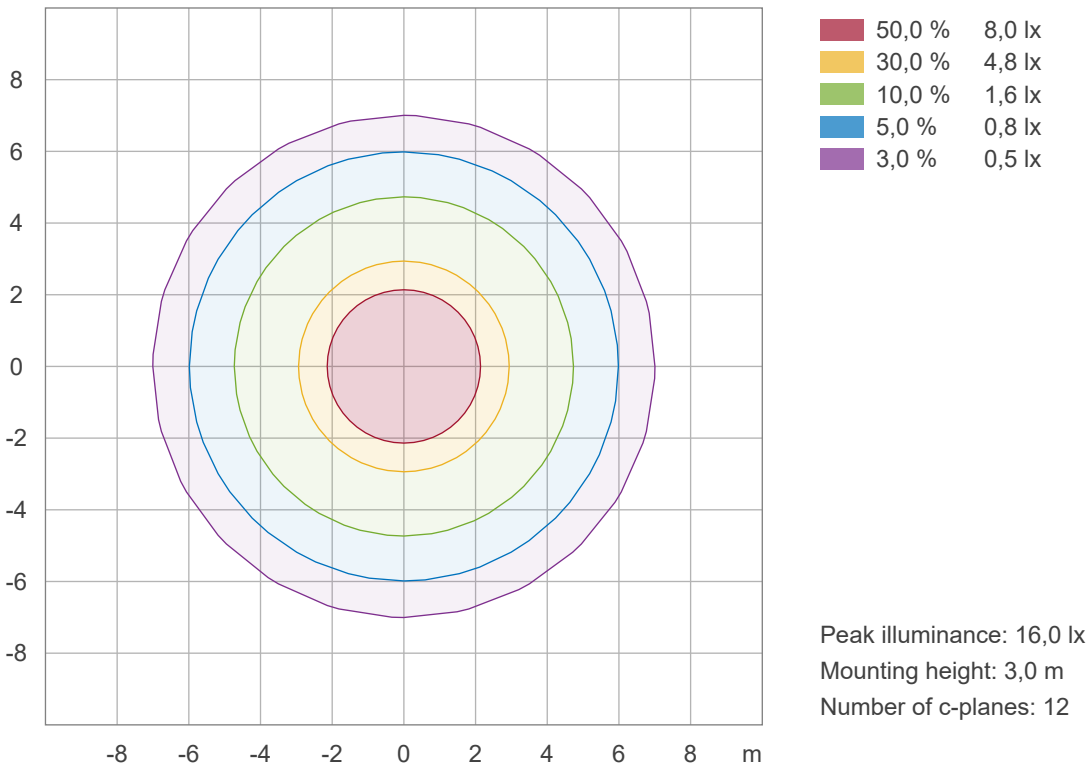
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Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



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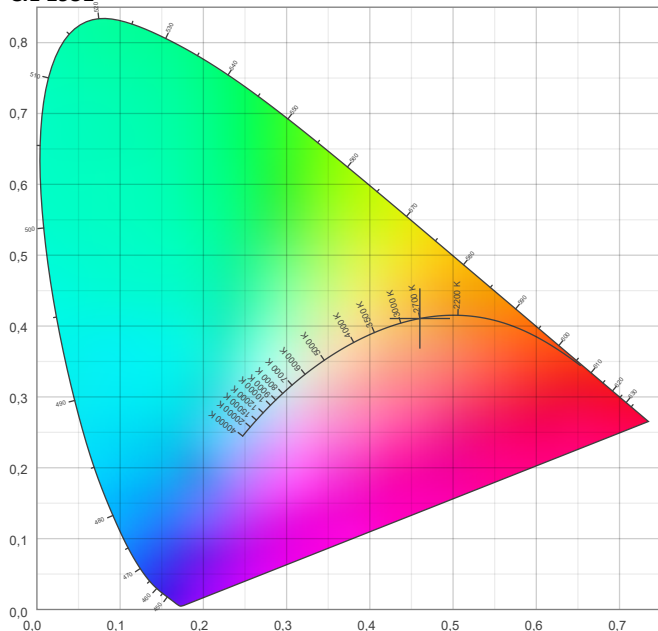


Color details

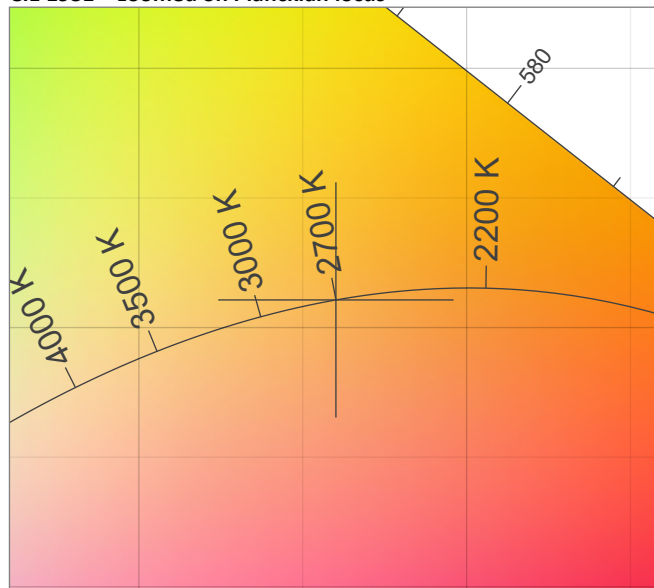
Correlated Color Temperature, Target CCT = 2700 K
Correlated Color Temperature, Measured CCT = 2792 K
Color Rendering Index CRI 81,1
Color Rendering Index, R9 (red component) R9 = 0,1
Color Rendering TM30-18 R_f 84,4 – R_g 91,1
Color Quality Scale CQS = 81,6

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0,460;0,411)
Color coordinate CIEs 1960 (u;v) = (0,263;0,352)
Color deviation from BBL Duv = 0,0037
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0,263;0,527)

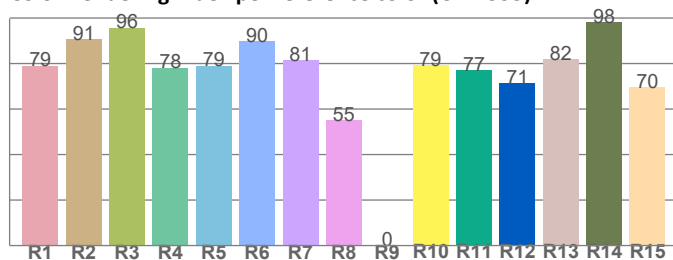
CIE 1931



CIE 1931 – zoomed on Planckian locus



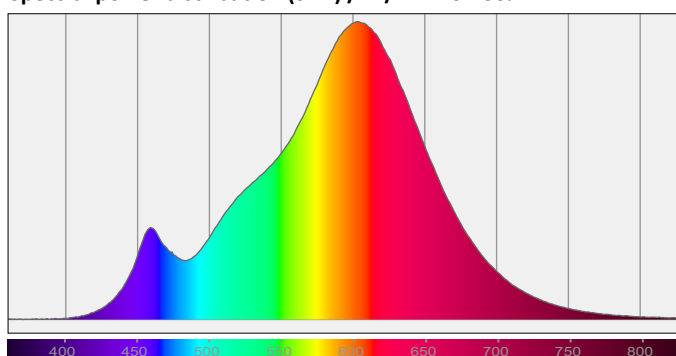
Color Rendering Index per reference color (CIE 1995)



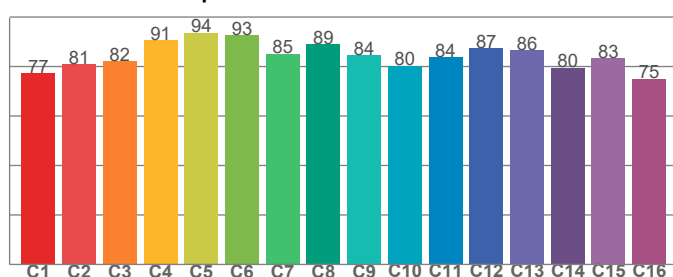
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
79,1	90,7	95,7	78,2	79,0	89,8	81,5	55,1	0,1	79,2	77,1	71,4	81,8	98,2	69,5

Spectral power distribution (SPD) / W/nm – 0-100%



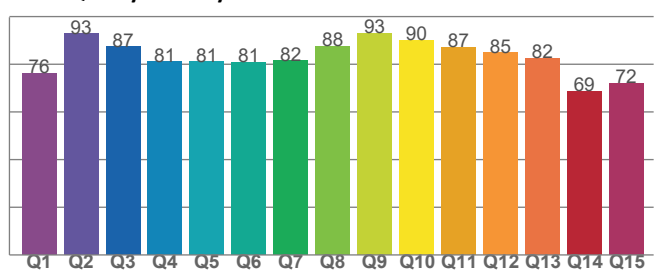
TM30-18 R_f-values per hue bin



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
77,2	80,9	82,2	90,7	93,6	92,6	85,2	89,1	84,5	80,3	83,8	87,3	86,5	79,5	83,4	75,0

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
76,1	92,7	87,3	81,1	81,1	80,8	81,6	87,6	93,1	90,0	87,2	84,8	82,5	68,8	72,0

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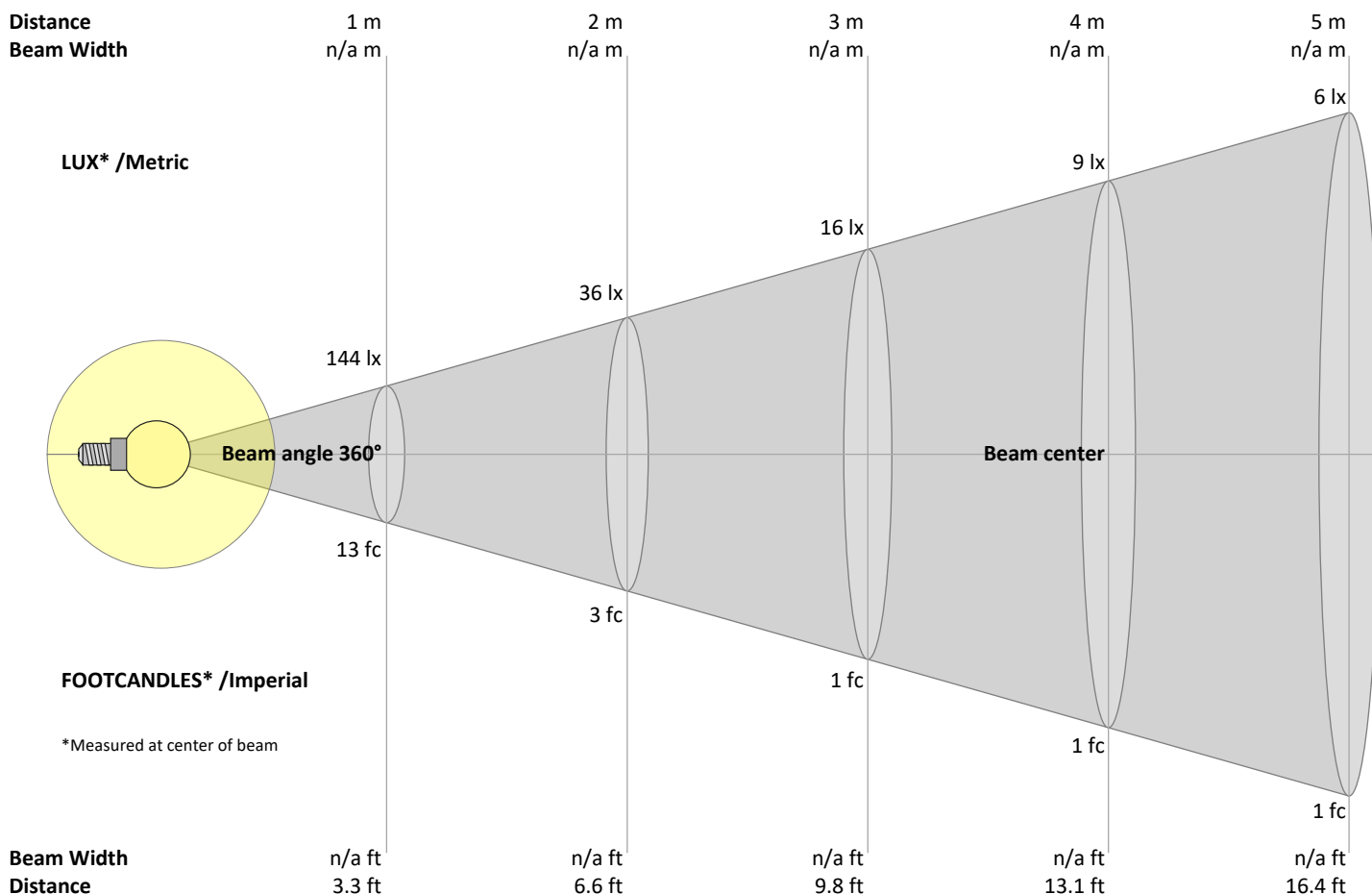
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Beam Details



Beam intensities from 1 – 20 m

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	m
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	ft
144	36	16	9	6	4	3	2	2	1	1	1	1	1	1	1	0	0	0	0	lux
13,4	3,3	1,5	0,8	0,5	0,4	0,3	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0	0	0	0	fc

Intensities in 0° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
144	147	150	143	133	118	101	81	53	29	18	30	53	77	99	115	131	139	149	147	cd
100%	102%	104%	99%	92%	82%	70%	56%	36%	20%	12%	21%	37%	54%	68%	80%	91%	97%	103%	102%	of 0°val

Intensities in 90° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
144	147	150	143	133	118	101	81	53	29	18	30	53	77	99	115	131	139	149	147	cd
100%	102%	104%	99%	92%	82%	70%	56%	36%	20%	12%	21%	37%	54%	68%	80%	91%	97%	103%	102%	of 0°val

Intensities in 180° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
144	147	150	143	133	118	101	81	53	29	18	30	53	77	99	115	131	139	149	147	cd
100%	102%	104%	99%	92%	82%	70%	56%	36%	20%	12%	21%	37%	54%	68%	80%	91%	97%	103%	102%	of 0°val

Intensities in 270° c-plane

0°	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	99°	108°	117°	126°	135°	144°	153°	162°	171°	γ
144	147	150	143	133	118	101	81	53	29	18	30	53	77	99	115	131	139	149	147	cd
100%	102%	104%	99%	92%	82%	70%	56%	36%	20%	12%	21%	37%	54%	68%	80%	91%	97%	103%	102%	of 0°val

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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		Viewed Crosswise					Viewed Endwise				
H = mounting height above eye level		(Viewing direction orthogonal to lamp length axis)					(Viewing direction parallel to lamp length axis)				
X	Y										
2H	2H	28,7	29,6	29,6	30,4	31,6	28,7	29,6	29,6	30,4	31,6
	3H	30,5	31,3	31,5	32,2	33,3	30,5	31,3	31,5	32,2	33,3
	4H	31,3	32,0	32,2	32,9	34,0	31,3	32,0	32,2	32,9	34,0
	6H	32,0	32,6	32,9	33,5	34,7	32,0	32,6	32,9	33,5	34,7
	8H	32,3	33,0	33,2	33,9	35,0	32,3	33,0	33,2	33,9	35,0
	12H	32,6	33,4	33,5	34,2	35,3	32,6	33,4	33,5	34,2	35,3
4H	2H	29,4	30,1	30,3	31,0	32,1	29,4	30,1	30,3	31,0	32,1
	3H	31,4	32,1	32,3	32,9	34,1	31,4	32,1	32,3	32,9	34,1
	4H	32,2	33,2	33,1	33,7	34,9	32,2	33,2	33,1	33,7	34,9
	6H	33,0	33,6	34,0	34,4	35,6	33,0	33,6	34,0	34,4	35,6
	8H	33,4	33,8	34,3	34,8	35,9	33,4	33,8	34,3	34,8	35,9
	12H	33,8	34,1	34,7	35,1	36,3	33,8	34,1	34,7	35,1	36,3
8H	4H	32,5	32,9	33,4	33,9	35,0	32,5	32,9	33,4	33,9	35,0
	6H	33,5	33,8	34,5	34,8	36,0	33,5	33,8	34,5	34,8	36,0
	8H	34,0	34,3	35,0	35,3	36,5	34,0	34,3	35,0	35,3	36,5
	12H	34,5	34,8	35,6	35,8	37,0	34,5	34,8	35,6	35,8	37,0
12H	4H	32,5	32,8	33,5	33,9	35,0	32,5	32,8	33,5	33,9	35,0
	6H	33,6	33,8	34,6	34,9	36,1	33,6	33,8	34,6	34,9	36,1
	8H	34,2	34,4	35,2	35,5	36,6	34,2	34,4	35,2	35,5	36,6
Variations with the observer position for the luminaire spacings, S:											
S = 1.0H		0,1 / -0,1					0,1 / -0,1				
S = 1.5H		0,1 / -0,1					0,1 / -0,1				
S = 2.0H		0,2 / -0,3					0,2 / -0,3				

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	107	107	107	107	99	99	99	99	84	84	84	69	69	69	57	57	57	50
1	97	92	88	84	89	85	81	78	72	69	67	60	58	56	48	47	46	41
2	88	80	73	68	81	74	68	63	62	58	54	52	49	46	42	40	38	33
3	80	70	62	56	73	64	58	52	54	49	45	45	41	38	37	34	31	27
4	73	61	53	47	67	57	49	44	48	42	38	40	36	32	32	29	27	23
5	67	54	46	40	61	50	43	37	43	37	32	36	31	28	29	26	23	20
6	61	49	40	34	56	45	38	32	38	32	28	32	27	24	26	23	20	17
7	56	44	35	30	52	41	33	28	35	29	24	29	24	21	24	20	18	15
8	52	40	32	26	48	37	30	25	31	26	22	26	22	19	22	18	16	13
9	49	36	28	23	45	34	27	22	29	23	19	24	20	17	20	17	14	12
10	45	33	26	21	42	31	24	19	26	21	17	22	18	15	18	15	13	11

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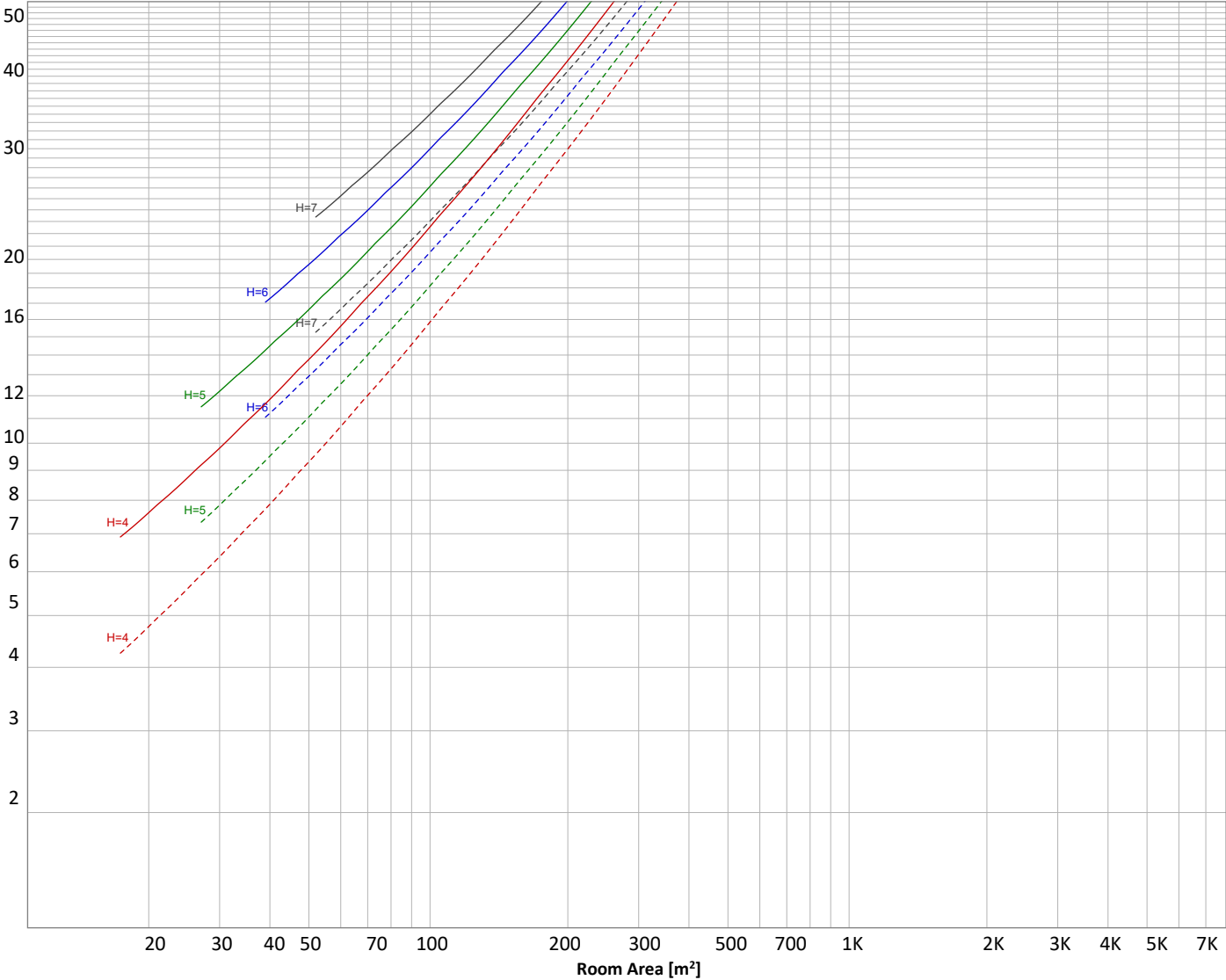
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Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 1056 lm	p(%)		
H _{down} = Lamp distance from ceiling =	0.00 m	Line type	Ceiling reflectance	Wall reflectance
H _{work} = Work area height from floor =	0.00 m	-----	70	50
E _{work} = Average lux on work area =	100 lx	-----	50	30
				Floor reflectance
				20

Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
13,8 lm	42,7 lm	67,0 lm	84,0 lm	90,9 lm	88,7 lm	74,7 lm	47,1 lm	24,0 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
24,0 lm	47,7 lm	71,4 lm	86,3 lm	88,8 lm	83,0 lm	65,9 lm	42,4 lm	13,9 lm

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Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	14 lm	1,3%
10-20°	43 lm	4,0%
20-30°	67 lm	6,3%
30-40°	84 lm	8,0%
40-50°	91 lm	8,6%
50-60°	89 lm	8,4%
60-70°	75 lm	7,1%
70-80°	47 lm	4,5%
80-90°	24 lm	2,3%
90-100°	24 lm	2,3%
100-110°	48 lm	4,5%
110-120°	71 lm	6,8%
120-130°	86 lm	8,2%
130-140°	89 lm	8,4%
140-150°	83 lm	7,9%
150-160°	66 lm	6,2%
160-170°	42 lm	4,0%
170-180°	14 lm	1,3%
Total	1056 lm	100,0%

Intensity peaks

Max intensity	151 cd
Intensity, 90°	18 cd
Intensity, 0°	144 cd

Zonal Lumen summary

Zone (γ)	Lumen	% Total
0-30°	124 lm	11,7%
0-40°	208 lm	19,6%
0-60°	387 lm	36,6%
60-90°	146 lm	13,8%
70-100°	95 lm	9,0%
90-120°	143 lm	13,6%
0-90°	533 lm	50,4%
90-180°	523 lm	49,6%
0-180°	1056 lm	100,0%

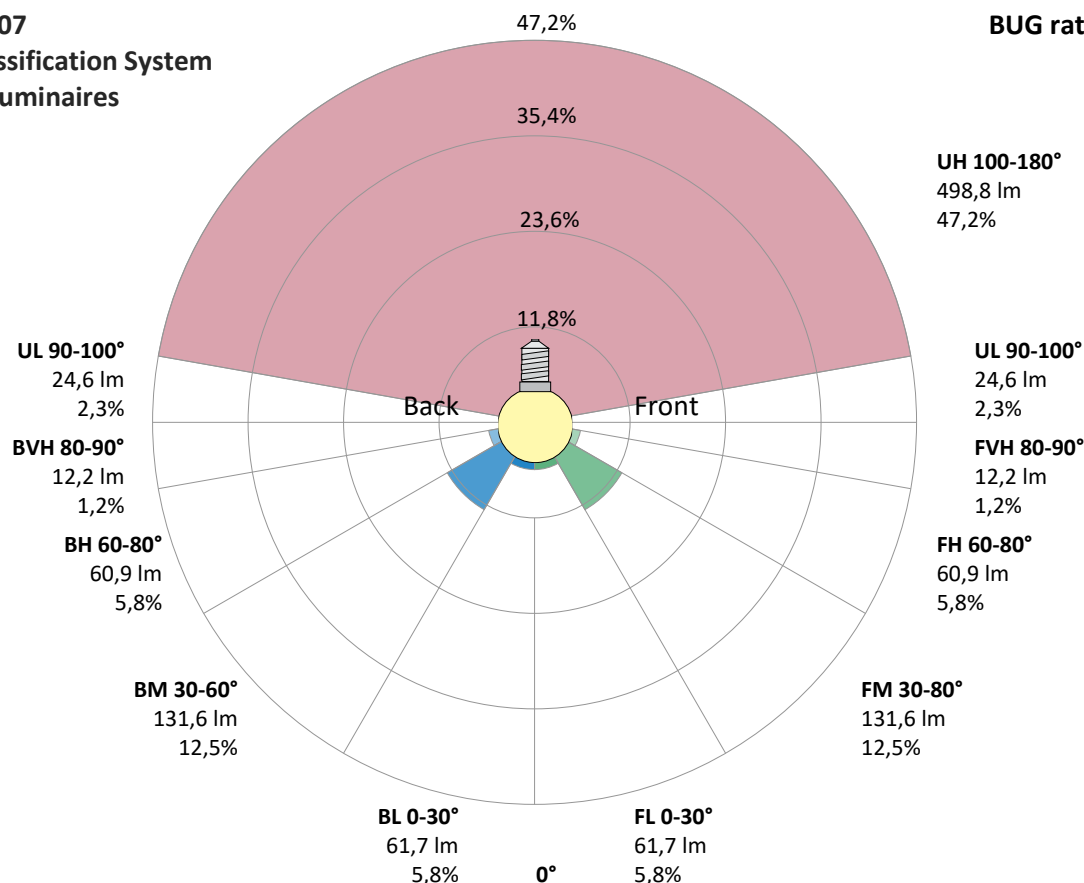
BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	62 lm	5,8%
Medium(30-60°)	132 lm	12,5%
High(60-80°)	61 lm	5,8%
Very high(80-90°)	12 lm	1,2%
Back light		
Low(0-30°)	62 lm	5,8%
Medium(30-60°)	132 lm	12,5%
High(60-80°)	61 lm	5,8%
Very high(80-90°)	12 lm	1,2%
Uplight		
Low(90-100°)	25 lm	2,3%
High(100-180°)	499 lm	47,2%

IESNA TM-15-07

Luminaire Classification System For Outdoor Luminaires

BUG rating B0 U3 G1



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Power Details

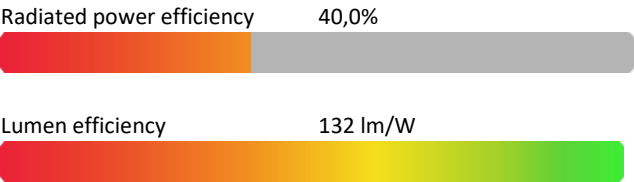
Input Power

Power feed to light source	8,0 W
Frequency of input power	50 Hz
RMS Input voltage feed, V_{RMS}	230 V
RMS Input current feed, I_{RMS}	0,042 A
Volt-Ampere or apparent power = $V_{RMS} \cdot I_{RMS}$	9,72 VA
Displacement factor of AC power feed	1,0
Power factor of AC current feed	0,82
Total harmonic distortion of the current	76,69%
Total harmonic distortion of the voltage	0,14%

Input Power Curve



Efficiency



Stabilization Details

Warmup Conditions

Stable period	15 min
Stable change max	2,0%
Minimum time	15 min

Color Temperature Change

CCT start	2676 K
CCT shift	+24 K
CCT end	2700 K

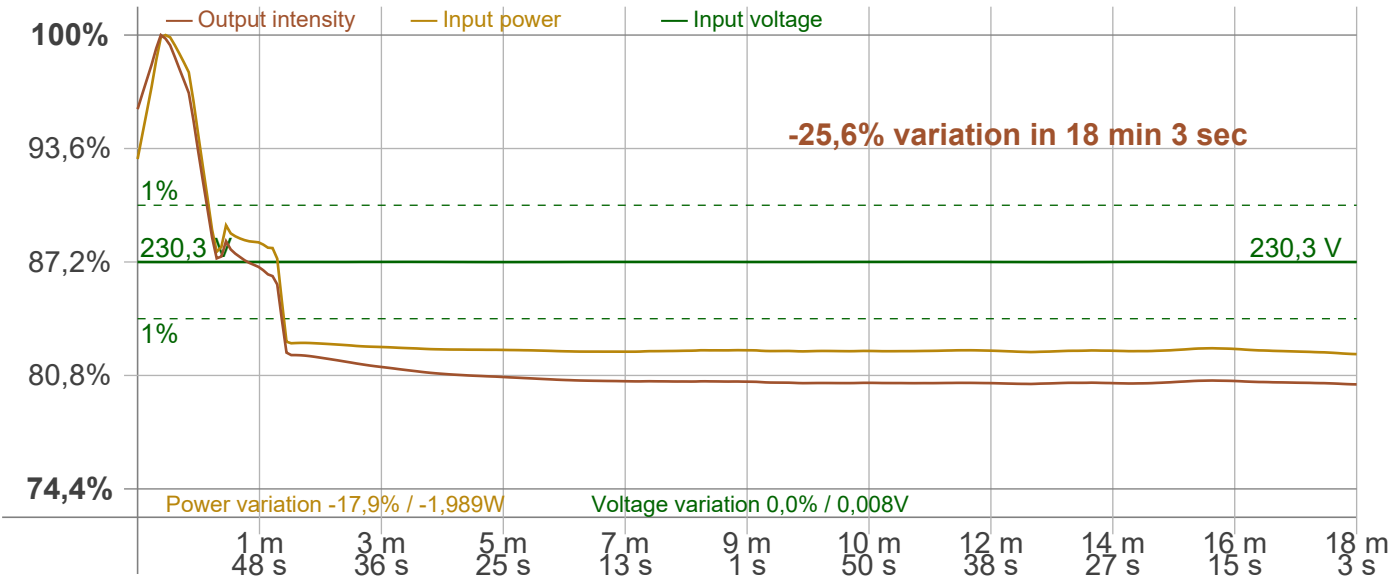
Warmup Result

Total warmup time	Lamp stabilized in 18 min 3 sec
Warmup variation	-25,6%

Output Change

Output start	1244 lm
Output change	-188 lm
Output end	1056 lm

Stabilization Curve



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Flicker /TLA details

Flicker Meter Type Viso Systems LabFlicker
Frequency of input power 50 Hz
Flicker/TLA sample rate 40000 samples/s

Measurement time
PstLM 180 sec
All other indices 1,2 sec

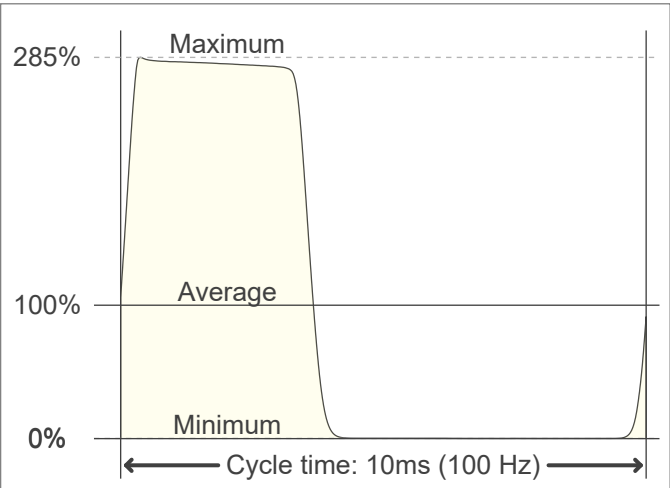
Flicker indices according to Illuminating Engineering Society (IES)
Flicker frequency 100 Hz
Percent Flicker 99,9 %
Flicker index 0,61

Flicker indices according to California Energy Commission (CEC) 2016b
JA8/10 40 Hz n/a %
JA8/10 90 Hz n/a %
JA8/10 200 Hz n/a %
JA8/10 400 Hz n/a %
JA8/10 1000 Hz n/a %

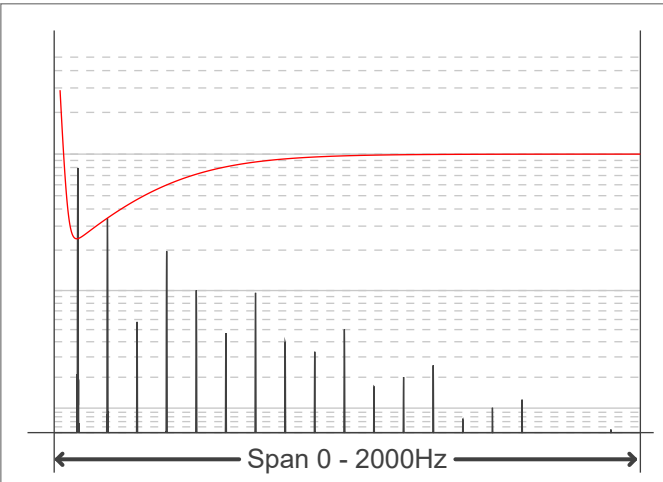
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)
PstLM value (F < 80 Hz) 0,12
SVM value (80 < F < 2000 Hz) 6,21

Flicker indices according to Lighting Research Center (2015)
Perception metric, Assist Mp n/a

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

