Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
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

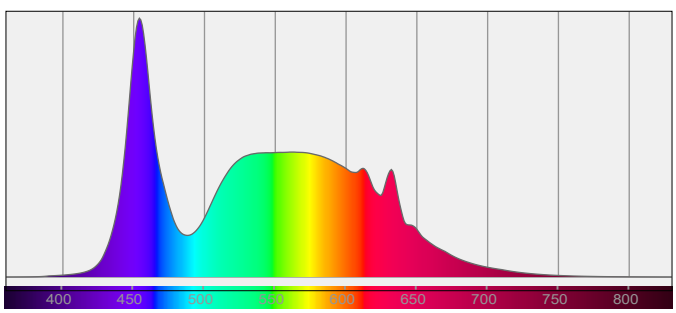
Number of C-planes and Resolution	12 planes – 30°
γ (gamma)-Resolution	5°
Test Distance	12,12 m
Input Power, Power and Displ. Factors	68,5 W – PF 0,97 – DPF 0,98
Input RMS Voltage and Current	230 V – 0,306 A
Frequency of Input Power	50 Hz
Warm-up Time and Variation	Lamp stabilized in 15 min 1 sec – 2,0%

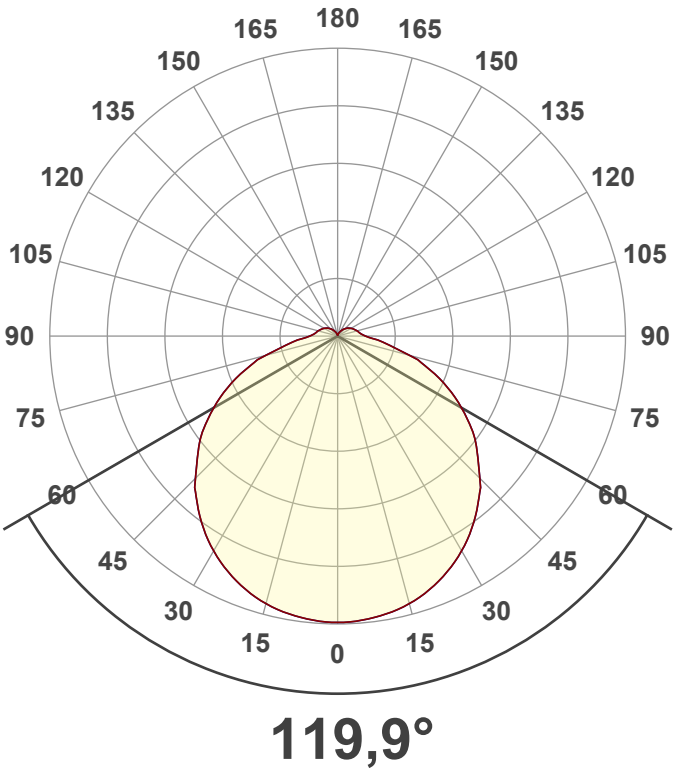
Tested Light Source

Product Name	276307-5700K
Item No. and Manufacturer	276307-5700K – Dutchfulfillment
Product Description (line 1)	LICHTLIJN JUPITER | LED MODULE | 33W/42W/58W/66W | 120°

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)	10011 lm – 9,12% / 90,88%
Efficiency	146 lm/W
Peak Intensity and Beam Angle	2841 cd – 119,9°
Correlated Color Temperature, Target/Measured	CCT = 5700 K / 5831 K
Color Rendering Index	CRI 82,1
Color Rendering TM30-18	R_f 80,9 – R_g 94,8
Color Shift, CIE duv and MacAdam Steps	Duv 0,0020 – SDCM 3,5
Flicker	SVM 0 – PstLM 0,01

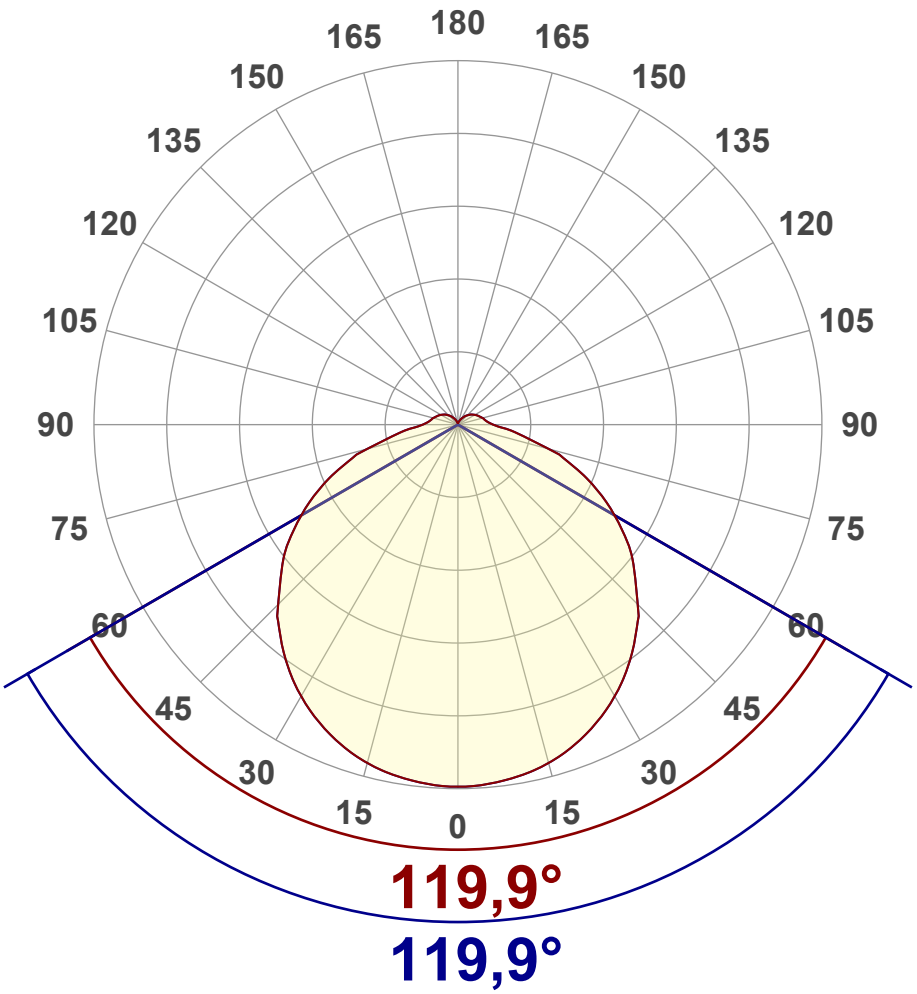




Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

Luminous Intensity diagram Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	10011 lm
Lumen Up% / Down%	9,12% / 90,88%
Peak Intensity	2841 cd
Beam Angle (50%)	119,9°
Beam Angle (90%)	119,9°
Beam Angle (10%)	119,9°

Cut-off Angle

Average 2,5%	288,2°

Field Angle

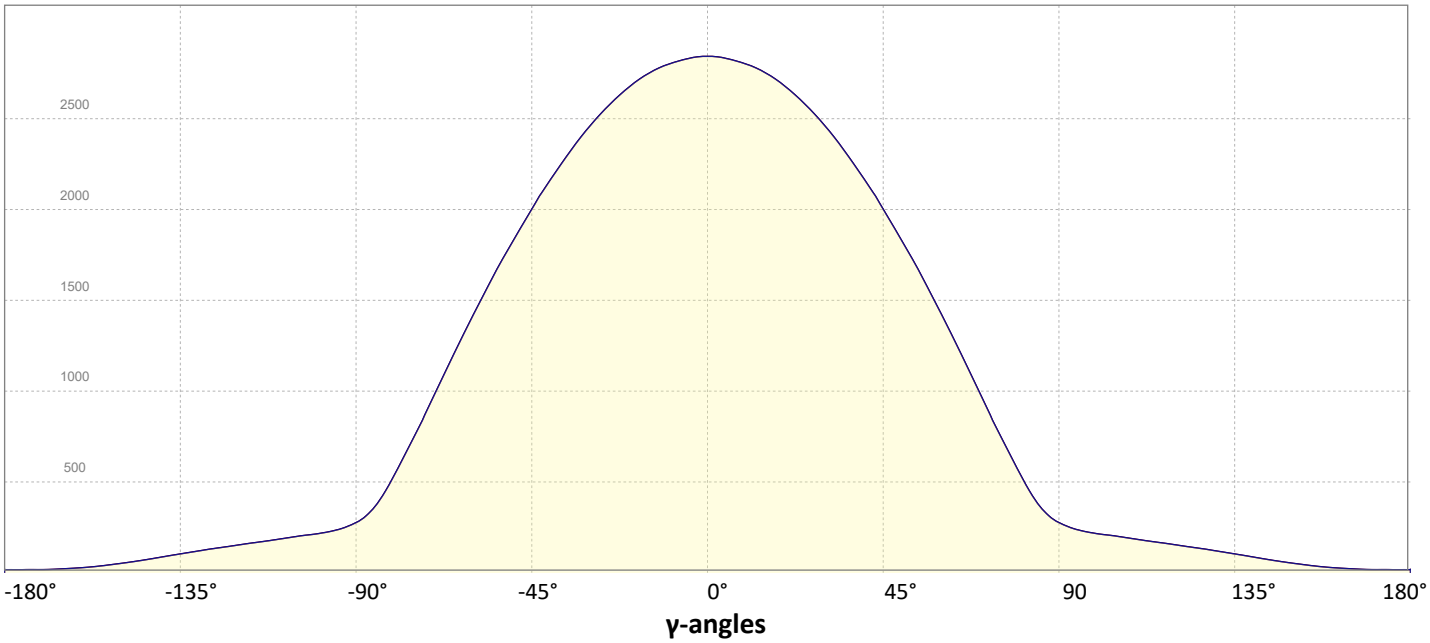
Average 10%	179,7°

Intensity Ratio

In 120° cone	66,9%
In 90° cone	44,6%

C000-C180
C090-C270

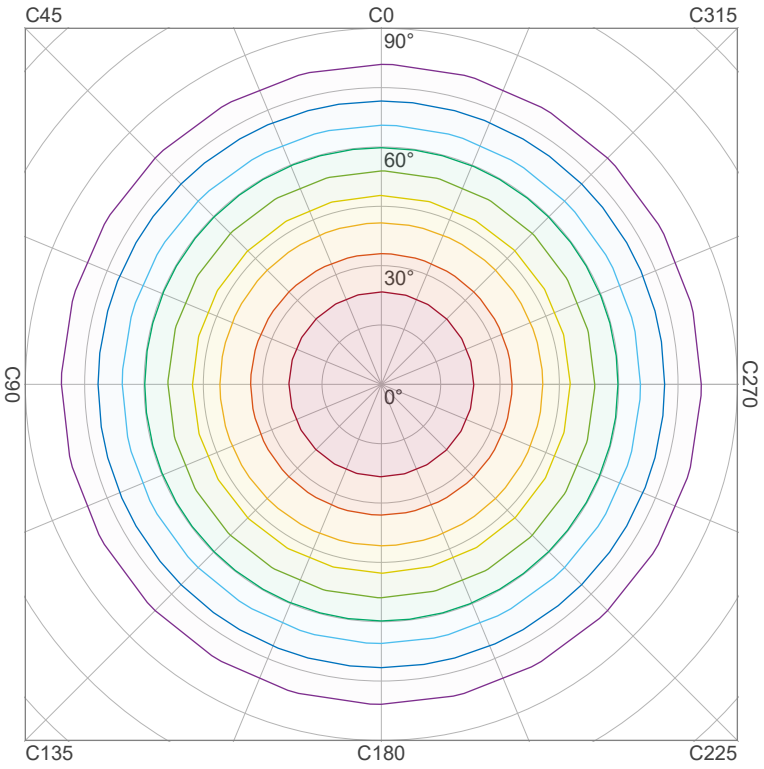
Linear distribution diagram - Intensity (candela) vs γ-angle



Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

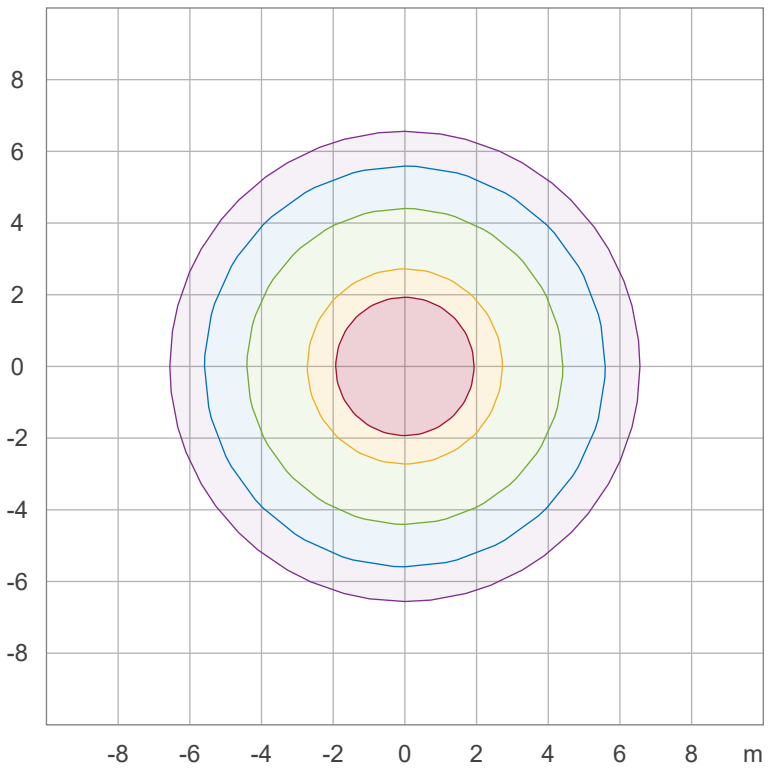
Iso-intensity Diagram (Iso-candela)



90 %	2556,6 cd
80 %	2272,5 cd
70 %	1988,5 cd
60 %	1704,4 cd
50 %	1420,3 cd
40 %	1136,3 cd
30 %	852,2 cd
20 %	568,1 cd
10 %	284,1 cd

Peak intensity: 2840,7 cd
Number of c-planes: 12

Iso-illuminance Diagram (Iso-lux)



50,0 %	157,8 lx
30,0 %	94,7 lx
10,0 %	31,6 lx
5,0 %	15,8 lx
3,0 %	9,5 lx

Peak illuminance: 315,6 lx
Mounting height: 3,0 m
Number of c-planes: 12

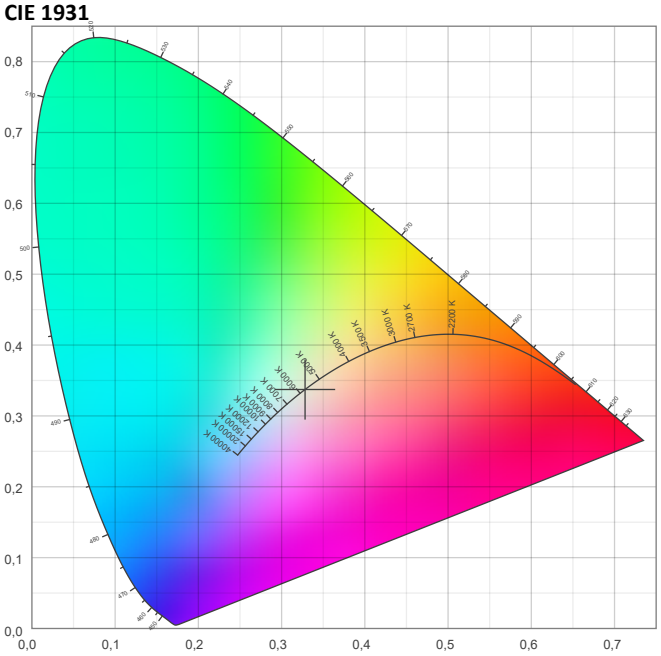
Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

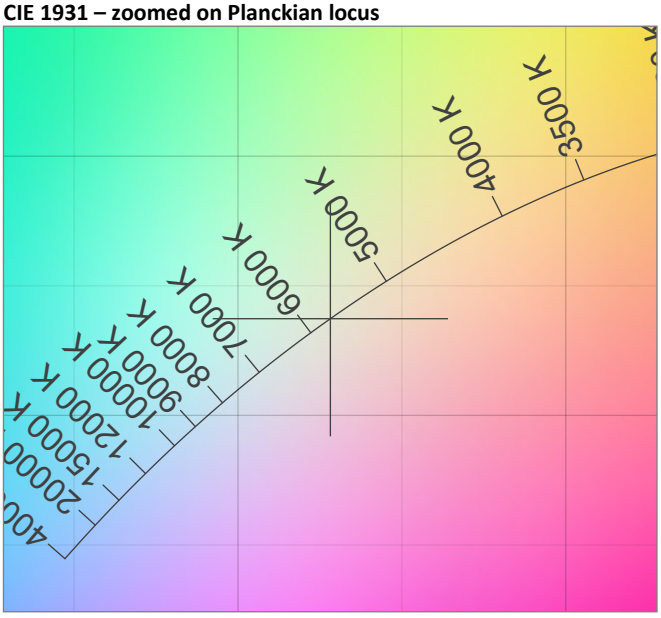
Color details

Correlated Color Temperature, Target	CCT = 5700 K
Correlated Color Temperature, Measured	CCT = 5831 K
Color Rendering Index	CRI 82,1
Color Rendering Index, R9 (red component)	R9 = 14,1
Color Rendering TM30-18	R_f 80,9 – R_g 94,8
Color Quality Scale	CQS = 78,4
MacAdam Steps	SDCM = 3,5
Color coordinates CIE 1931	(x;y) = (0,328;0,337)
Color coordinate CIEs 1960	(u;v) = (0,205;0,317)
Color deviation from BBL	Duv = 0,0020
Color coordinate CIEs 1976 (CIELUV)	(u';v') = (0,205;0,475)

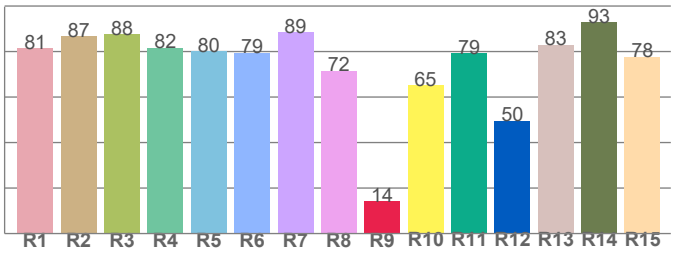
CIE 1931



CIE 1931 – zoomed on Planckian locus



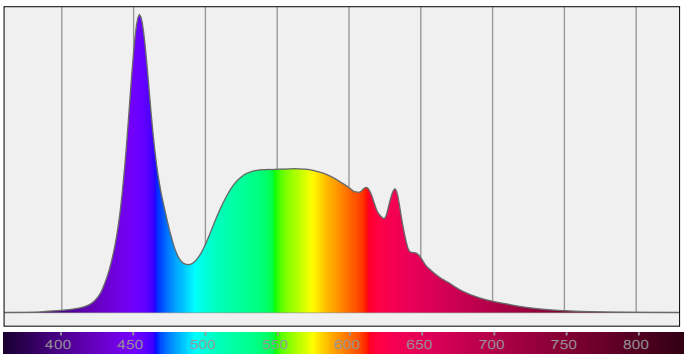
Color Rendering Index per reference color (CIE 1995)



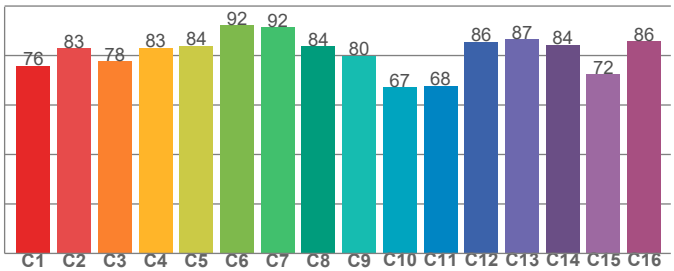
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81,4	86,6	87,6	81,7	80,2	79,4	88,6	71,6	14,1	65,2	79,3	49,6	83,0	92,9	77,6

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



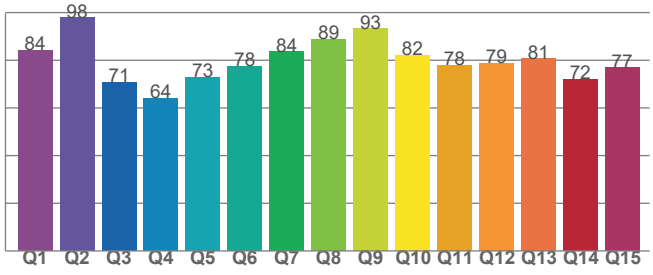
TM30-18 Rf-values per hue bin



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
75,8	82,9	77,6	83,1	83,9	92,2	91,5	83,8	79,9	67,1	67,8	85,6	86,6	84,3	72,4	85,7

Color Quality Scale by reference color



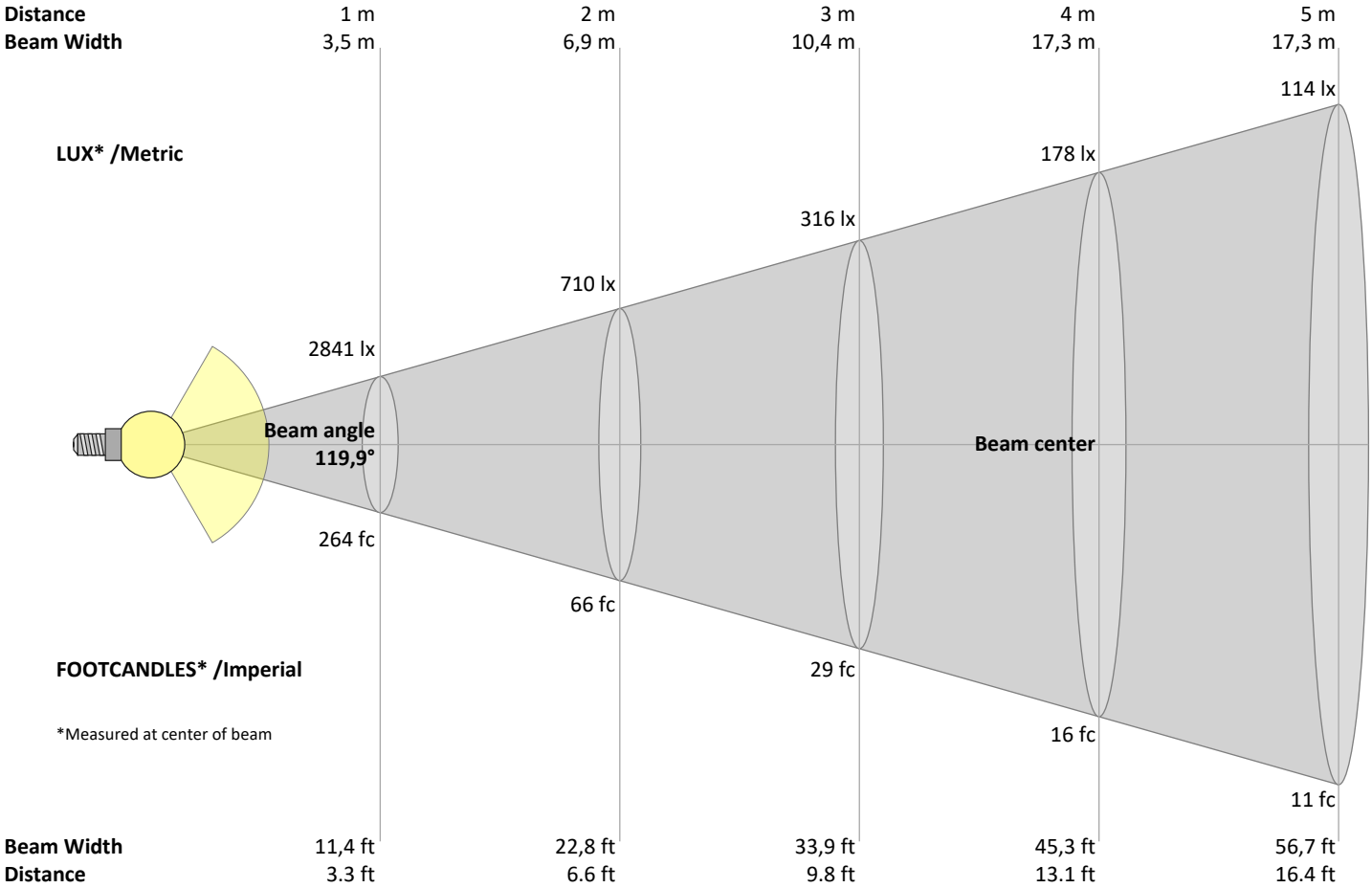
CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
84,2	97,8	70,9	64,1	72,8	77,6	83,7	88,8	93,3	82,2	77,9	78,8	80,6	72,2	76,8

Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

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
2841	710	316	178	114	79	58	44	35	28	23	20	17	14	13	11	10	9	8	7	lux
263,9	66	29,3	16,5	10,6	7,3	5,4	4,1	3,3	2,6	2,2	1,8	1,6	1,3	1,2	1	0,9	0,8	0,7	0,7	fc

Intensities in 0° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
2841	2829	2798	2748	2673	2577	2460	2323	2170	2001	1818	1625	1418	1201	977	756	551	380	282	238	cd
100%	100%	98%	97%	94%	91%	87%	82%	76%	70%	64%	57%	50%	42%	34%	27%	19%	13%	10%	8%	of 0°val

Intensities in 90° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
2841	2829	2798	2748	2673	2577	2460	2323	2170	2001	1818	1625	1418	1201	977	756	551	380	282	238	cd
100%	100%	98%	97%	94%	91%	87%	82%	76%	70%	64%	57%	50%	42%	34%	27%	19%	13%	10%	8%	of 0°val

Intensities in 180° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
2841	2829	2798	2748	2673	2577	2460	2323	2170	2001	1818	1625	1418	1201	977	756	551	380	282	238	cd
100%	100%	98%	97%	94%	91%	87%	82%	76%	70%	64%	57%	50%	42%	34%	27%	19%	13%	10%	8%	of 0°val

Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°	γ
2841	2829	2798	2748	2673	2577	2460	2323	2170	2001	1818	1625	1418	1201	977	756	551	380	282	238	cd
100%	100%	98%	97%	94%	91%	87%	82%	76%	70%	64%	57%	50%	42%	34%	27%	19%	13%	10%	8%	of 0°val

Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

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**										
2H	2H	23,0	24,1	23,3	24,6	25,0	23,4	24,6	23,8	25,0	25,4
	3H	24,5	25,7	25,1	26,2	26,6	25,1	26,3	25,6	26,8	27,1
	4H	25,3	26,4	25,8	26,8	27,3	26,0	27,1	26,5	27,5	28,0
	6H	25,9	26,9	26,4	27,4	27,9	26,8	27,8	27,2	28,2	28,8
	8H	26,1	27,1	26,6	27,6	28,2	27,1	28,1	27,6	28,6	29,2
	12H	26,3	27,3	26,8	27,8	28,4	27,5	28,5	28,0	28,9	29,5
4H	2H	23,6	24,8	24,2	25,2	25,6	23,9	25,1	24,5	25,5	26,0
	3H	25,5	26,5	26,0	27,0	27,6	26,0	27,0	26,5	27,4	28,0
	4H	26,3	27,3	26,8	27,7	28,4	26,9	27,9	27,4	28,3	29,0
	6H	27,0	27,9	27,6	28,3	28,9	27,8	28,6	28,4	29,1	29,7
	8H	27,3	28,1	27,9	28,6	29,1	28,2	29,0	28,8	29,5	30,1
	12H	27,6	28,2	28,2	28,8	29,4	28,7	29,3	29,3	29,9	30,5
8H	4H	26,6	27,4	27,3	27,9	28,5	27,2	27,9	27,8	28,5	29,0
	6H	27,6	28,1	28,2	28,8	29,5	28,3	28,9	28,9	29,5	30,2
	8H	28,0	28,5	28,6	29,2	30,0	28,8	29,4	29,5	30,0	30,8
	12H	28,4	28,8	29,1	29,5	30,2	29,4	29,9	30,1	30,5	31,2
12H	4H	26,7	27,3	27,3	27,9	28,5	27,2	27,8	27,8	28,4	29,0
	6H	27,7	28,2	28,3	28,9	29,6	28,4	28,9	29,0	29,5	30,3
	8H	28,2	28,6	28,9	29,3	30,0	29,0	29,4	29,7	30,1	30,8

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 / -0,2	0,1 / -0,1
S = 2.0H	0,3 / -0,4	0,3 / -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	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	91	102	97	93	89	91	87	84	85	83	80	80	78	76	73
2	95	86	79	73	92	84	77	71	79	73	68	74	69	65	70	66	63	60
3	86	75	67	60	83	73	65	59	69	62	57	65	59	55	61	56	53	50
4	79	67	57	50	76	65	56	50	61	54	48	57	51	46	54	49	45	42
5	72	59	50	43	70	58	49	42	54	47	41	51	45	40	49	43	39	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	32
7	62	48	39	33	60	47	38	32	44	37	32	42	36	31	40	34	30	28
8	57	44	35	29	55	43	35	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	34	28	23	33	27	22	31	26	22	20

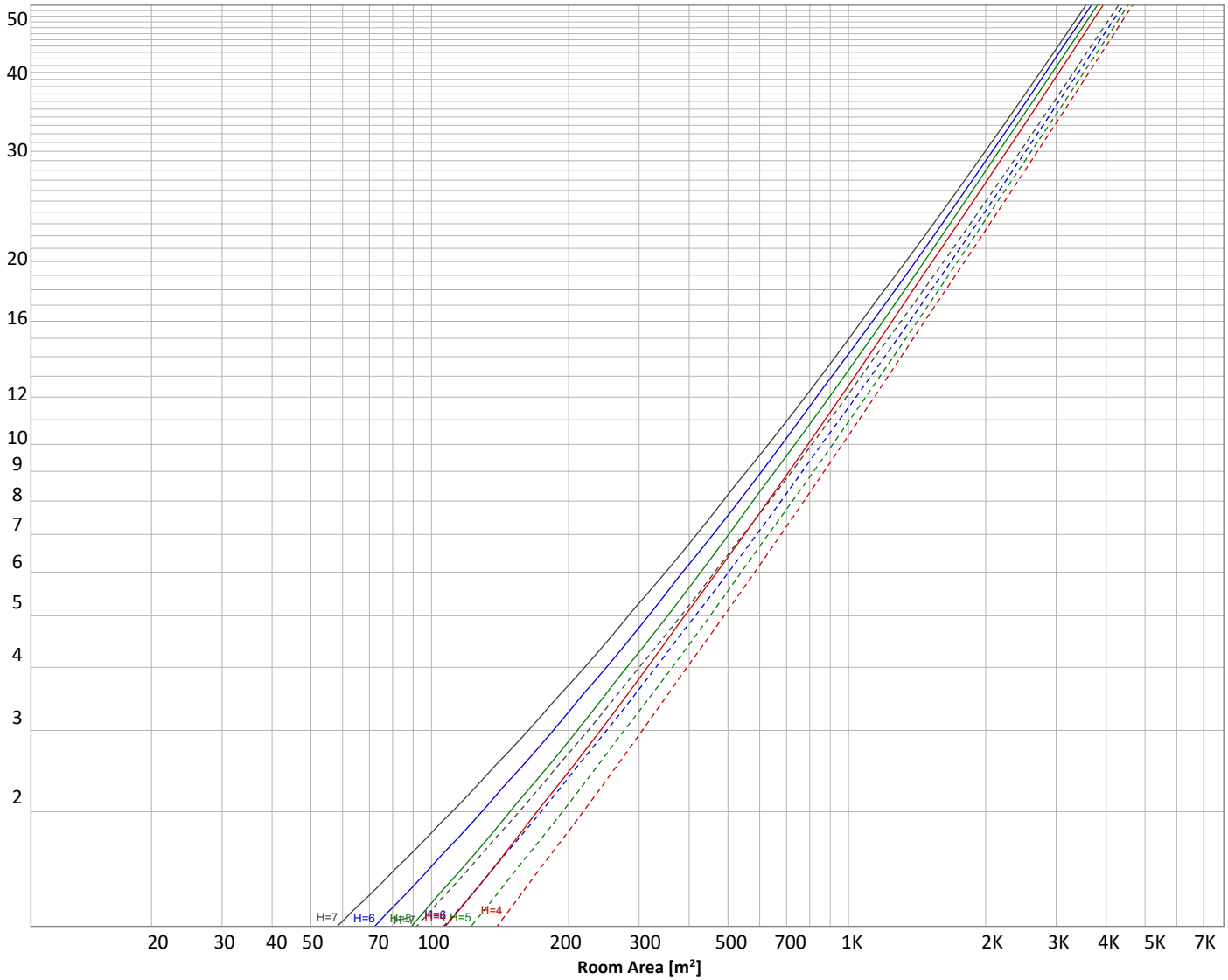
Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 10011 lm		ρ(%)		
H_{down} = Lamp distance from ceiling =	0.00 m	Line type	Ceiling reflectance	Wall reflectance	Floor reflectance
H_{work} = Work area height from floor =	0.00 m	----------	70	50	30
E_{work} = Average lux on work area =	100 lx	————	50	30	20

Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
269 lm	777 lm	1190 lm	1456 lm	1545 lm	1455 lm	1190 lm	800 lm	415 lm

90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
260 lm	212 lm	168 lm	123 lm	81,4 lm	43,0 lm	18,2 lm	6,45 lm	1,66 lm

Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen		% Total
0-10°	{LUM00-10}	lm	#WAARDE!
10-20°	{LUM10-20}	lm	#WAARDE!
20-30°	{LUM20-30}	lm	#WAARDE!
30-40°	{LUM30-40}	lm	#WAARDE!
40-50°	{LUM40-50}	lm	#WAARDE!
50-60°	{LUM50-60}	lm	#WAARDE!
60-70°	{LUM60-70}	lm	#WAARDE!
70-80°	{LUM70-80}	lm	#WAARDE!
80-90°	{LUM80-90}	lm	#WAARDE!
90-100°	{LUM90-100}	lm	#WAARDE!
100-110°	{LUM100-110}	lm	#WAARDE!
110-120°	{LUM110-120}	lm	#WAARDE!
120-130°	{LUM120-130}	lm	#WAARDE!
130-140°	{LUM130-140}	lm	#WAARDE!
140-150°	{LUM140-150}	lm	#WAARDE!
150-160°	{LUM150-160}	lm	#WAARDE!
160-170°	{LUM160-170}	lm	#WAARDE!
170-180°	{LUM170-180}	lm	#WAARDE!
Total	0	lm	#WAARDE!

Intensity peaks

Max intensity	{PEAK}	cd
Intensity, 90°	{INT90}	cd
Intensity, 0°	{INT0}	cd

Zonal Lumen summary

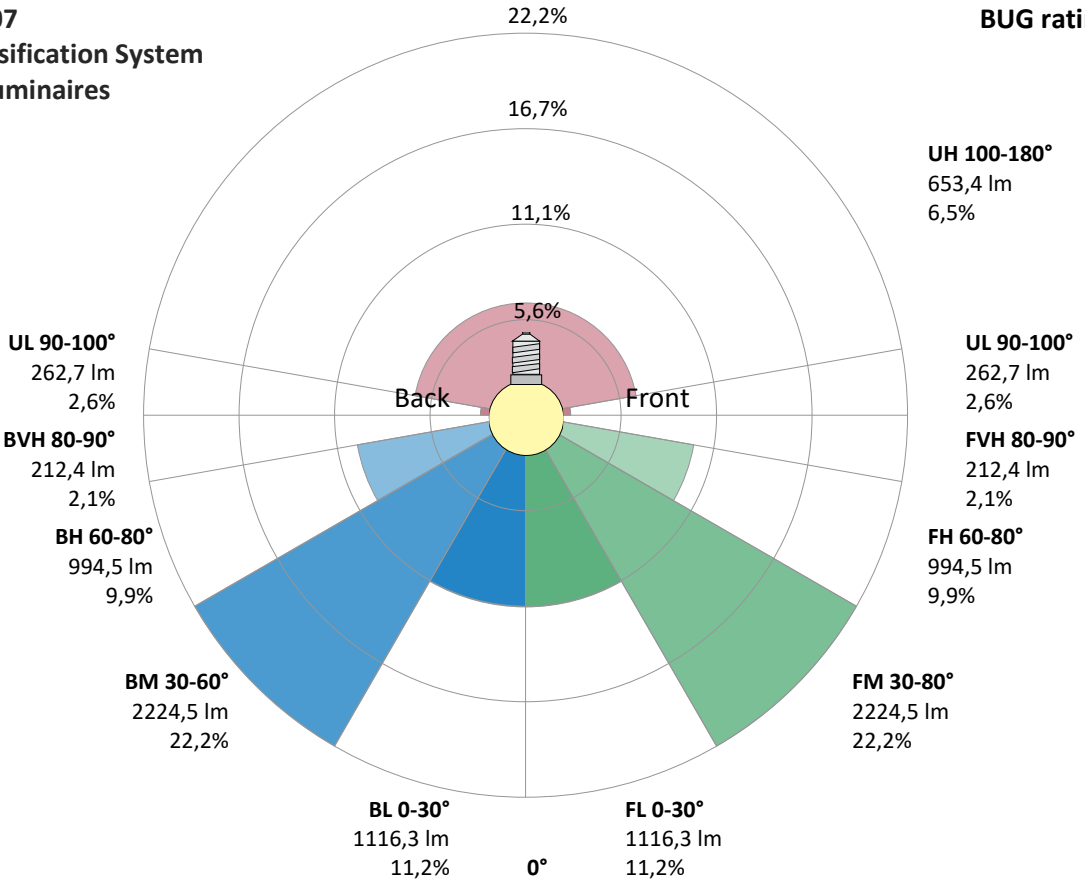
Zone (γ)	Lumen		% Total
0-30°	{LUM00-30}	lm	#WAARDE!
0-40°	{LUM00-40}	lm	#WAARDE!
0-60°	{LUM00-60}	lm	#WAARDE!
60-90°	{LUM60-90}	lm	#WAARDE!
70-100°	{LUM70-100}	lm	#WAARDE!
90-120°	{LUM90-120}	lm	#WAARDE!
0-90°	{LUM00-90}	lm	#WAARDE!
90-180°	{LUM90-180}	lm	#WAARDE!
0-180°	{LUM00-180}	lm	#WAARDE!

BUG rating

	Lumen		% Total
Forward light			
Low(0-30°)	{BUG0}	lm	#WAARDE!
Medium(30-60°)	{BUG1}	lm	#WAARDE!
High(60-80°)	{BUG2}	lm	#WAARDE!
Very high(80-90°)	{BUG3}	lm	#WAARDE!
Back light			
Low(0-30°)	{BUG4}	lm	#WAARDE!
Medium(30-60°)	{BUG5}	lm	#WAARDE!
High(60-80°)	{BUG6}	lm	#WAARDE!
Very high(80-90°)	{BUG7}	lm	#WAARDE!
Uplight			
Low(90-100°)	{BUG8}	lm	#WAARDE!
High(100-180°)	{BUG9}	lm	#WAARDE!

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

BUG rating B3 U4 G2



Light Measurement Report

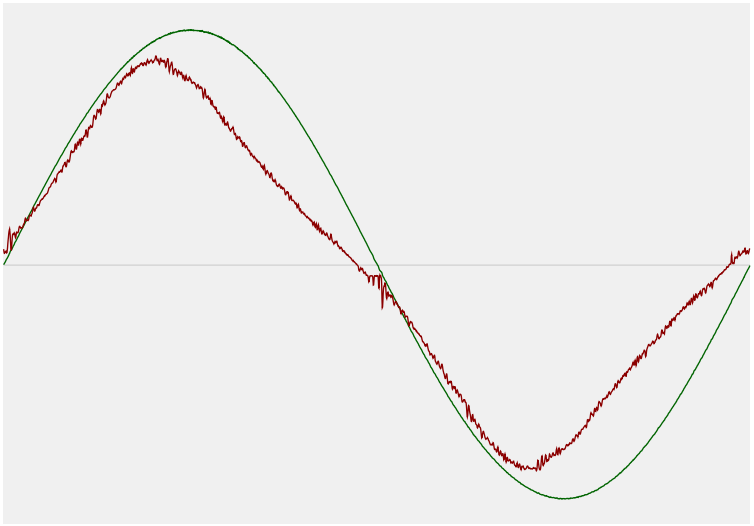
Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

Power Details

Input Power

Power feed to light source	68,5 W
Frequency of input power	50 Hz
RMS Input voltage feed, V_{RMS}	230 V
RMS Input current feed, I_{RMS}	0,306 A
Volt-Ampere or apparent power = V_{RMS}*I_{RMS}	70,52 VA
Displacement factor of AC power feed	0,98
Power factor of AC current feed	0,97
Total harmonic distortion of the current	14,52%
Total harmonic distortion of the voltage	0,07%

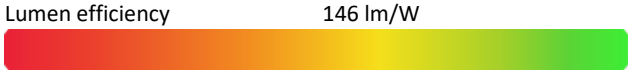
Input Power Curve



Efficiency

Radiated power efficiency 45,4%

Lumen efficiency 146 lm/W



Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	5676 K
CCT shift	+24 K
CCT end	5700 K

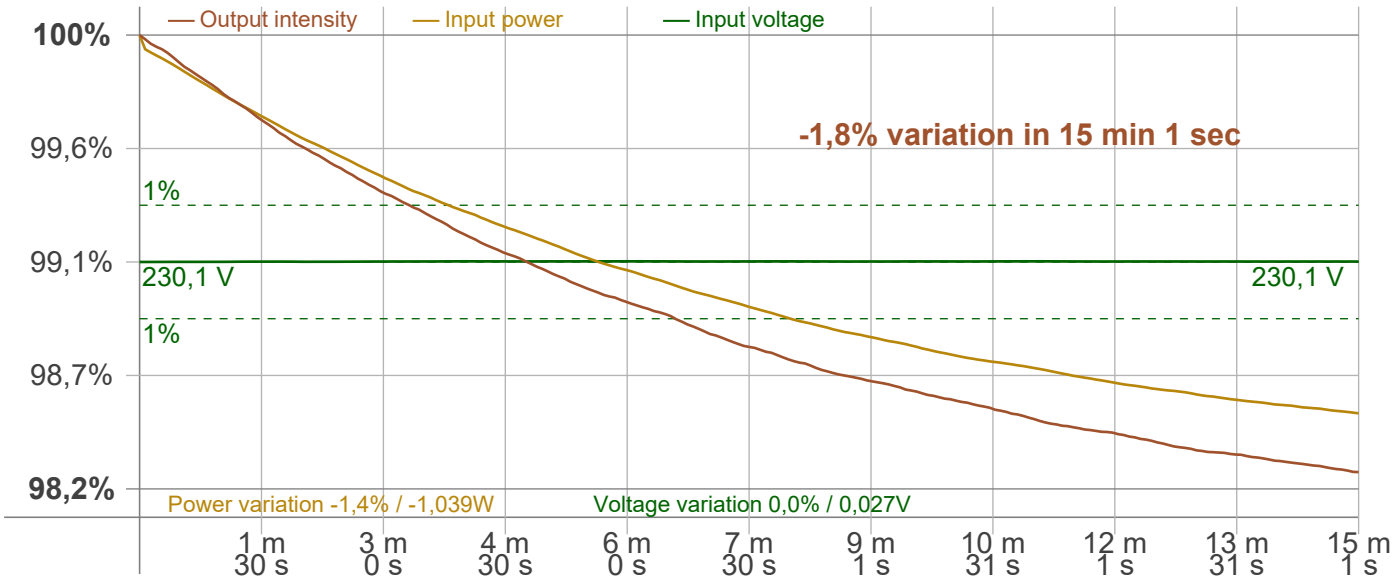
Warmup Result

Total warmup time	Lamp stabilized in 15 min 1 sec
Warmup variation	-1,8%

Output Change

Output start	10188 lm
Output change	-177 lm
Output end	10011 lm

Stabilization Curve



Light Measurement Report

Print date: 15-7-2025
Measurement date and time: 15-7-2025 08:55:57 – Measurement no. VFR-250715-2108-MS
Measurement tracking No. and Link: VT250715-006301
Operator:

Flicker /TLA details

Flicker Meter Type	Viso Systems LabFlicker
Frequency of input power	50 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	88,5 Hz
Percent Flicker	0,09 %
Flicker index	0

Flicker indices according to California Energy Commission (CEC) 2016b

JA8/10 40 Hz	0,02 %
JA8/10 90 Hz	0,02 %
JA8/10 200 Hz	0,05 %
JA8/10 400 Hz	0,06 %
JA8/10 1000 Hz	0,06 %

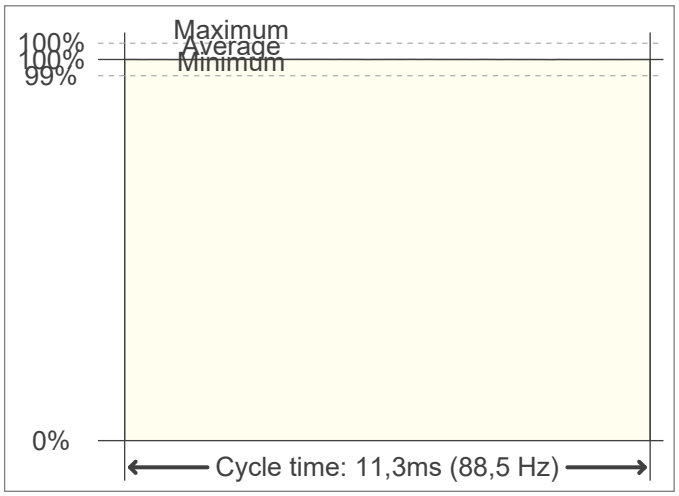
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value (F < 80 Hz)	0,01
SVM value (80 < F < 2000 Hz)	0

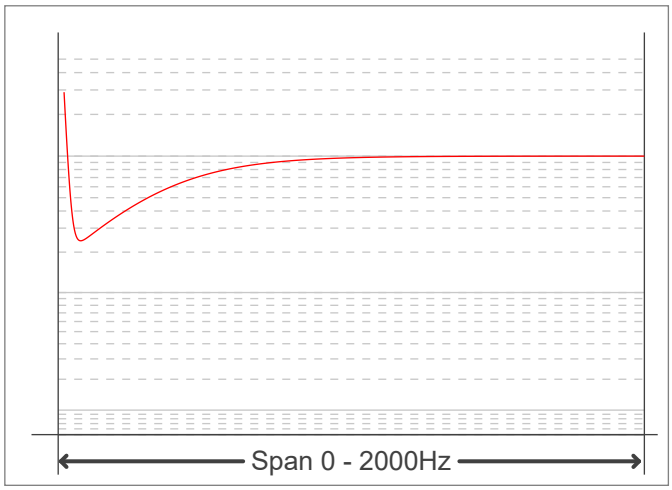
Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp	0,01

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot