

Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC



Laboratory and Equipment

Laboratory Owner and Location

Goniospectrometer System and Type

Sensor Name, Calibr. Date and Serial No.

Spectrometer Manufacturer and Model

Viso Systems, Copenhagen V, Denmark

LabSpion – Type C, horizontal

LabSensor Model2 – 11/12/2024 – 3532797498

Ibsen Photonics, Denmark – Freedom VIS (Custom Viso)

Measurement Conditions

Number of C-planes and Resolution

γ (gamma)-Resolution

Test Distance

Input Power, Power and Displ. Factors

Input RMS Voltage and Current

Frequency of Input Power

Warm-up Time and Variation

72 planes – 5°

1°

0,80 m

10,5 W – PF 0,92 – DPF 0,94

234 V – 0,048 A

50 Hz

Lamp stabilized in 15 min 2 sec – 2,0%

Tested Light Source

Product Name

Item No. and Manufacturer

Product Description (line 1)

MEDUSA S600 2700K PBR

74542100278719 – ELECTRUM

500mA

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)

Efficiency

Peak Intensity and Beam Angle

Correlated Color Temperature, Target/Measured

Color Rendering Index

Color Rendering TM30-18

Color Shift, CIE duv and MacAdam Steps

Flicker

184 lm – 1,12% / 98,88%

18 lm/W

55,4 cd – 136,5°

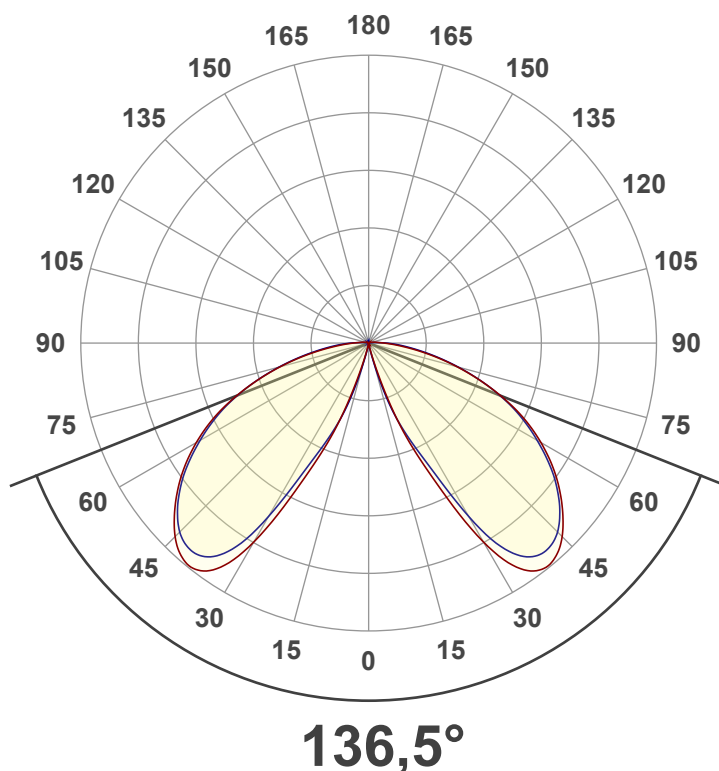
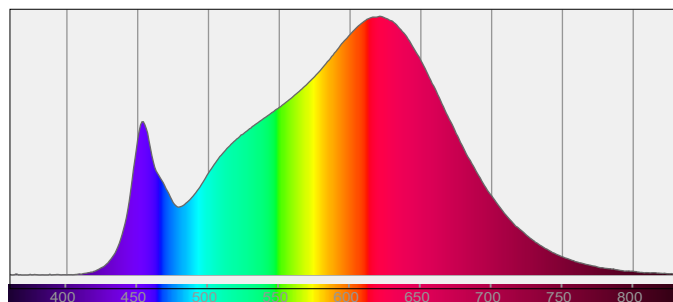
CCT = 2700 K / 3089 K

CRI 93,7

R_f 91,5 – R_g 98,6

Duv -0,0008 – SDCM 14,8

SVM 0,03 – PstLM 0,01



Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

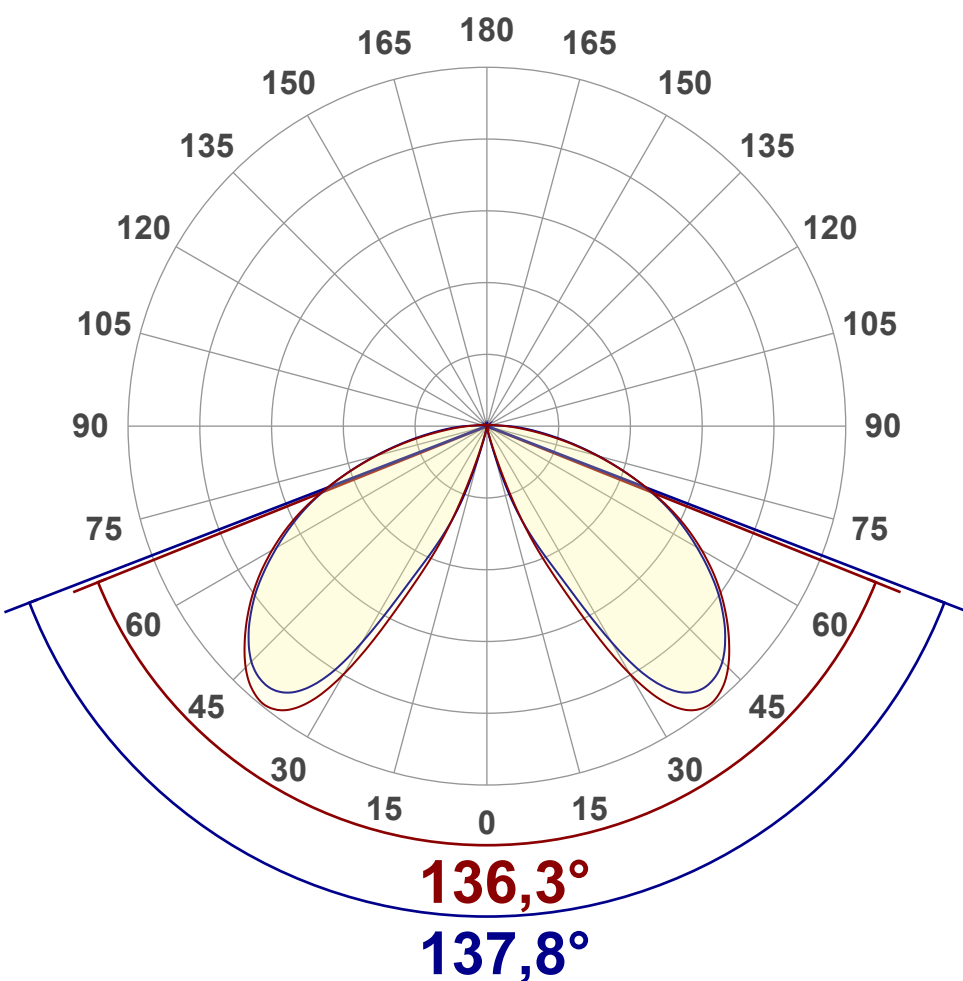
Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	184 lm
Lumen Up% / Down%	1,12% / 98,88%
Peak Intensity	55,4 cd
Beam Angle (50%-FWHM)	136,51°

Cut-off Angle

Average 2,5%	190,7°
--------------	--------

Field Angle

Average 10%	171,9°
-------------	--------

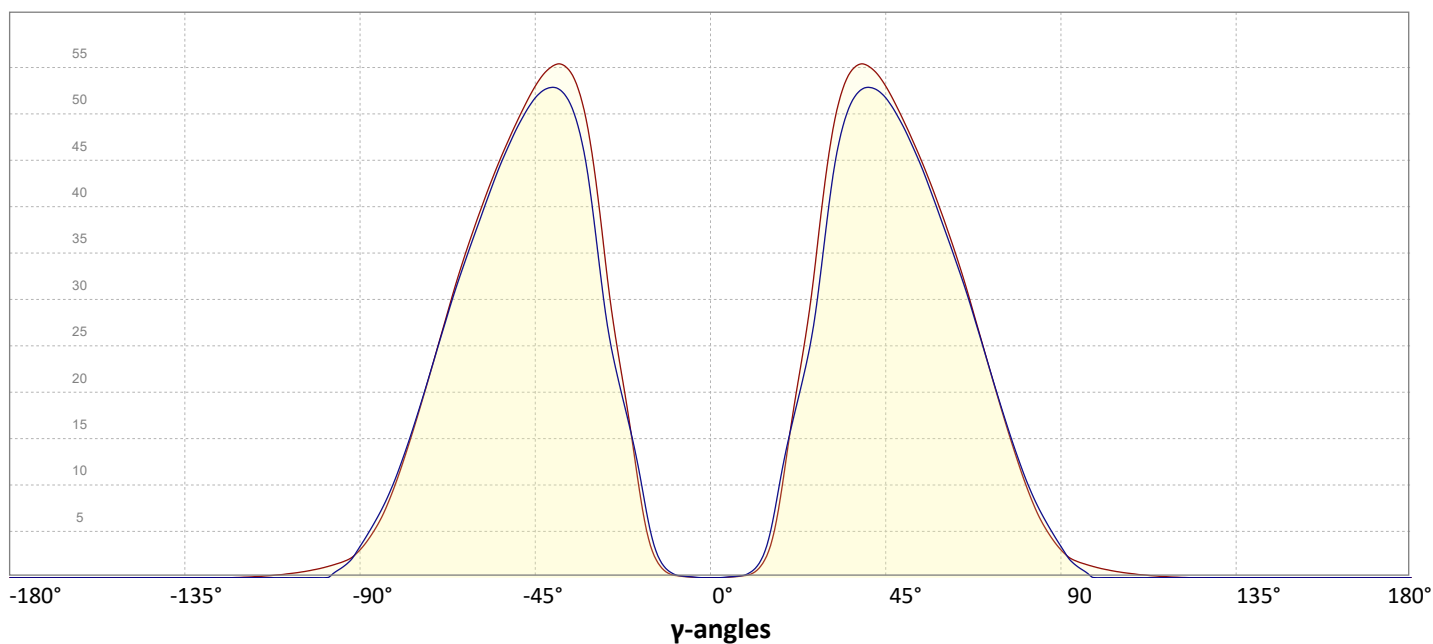
Intensity Ratio

In 120° cone	68,0%
In 90° cone	36,2%

C000-C180

C090-C270

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



Light Measurement Report

Print date: 28/04/2026

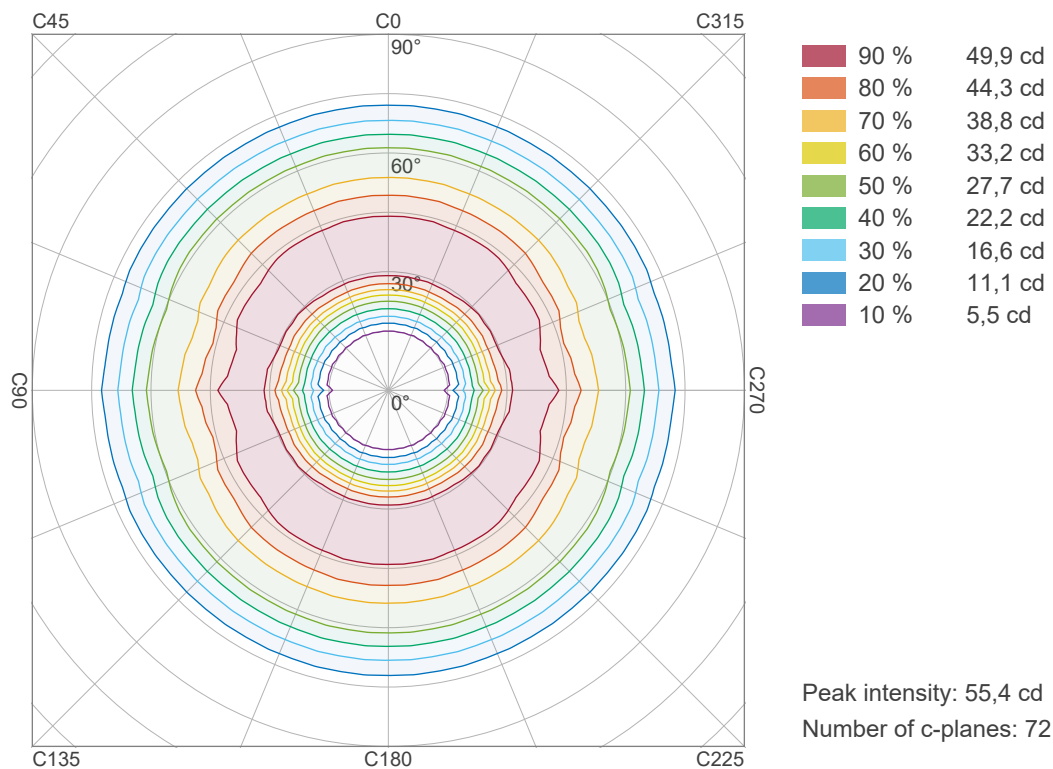
Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

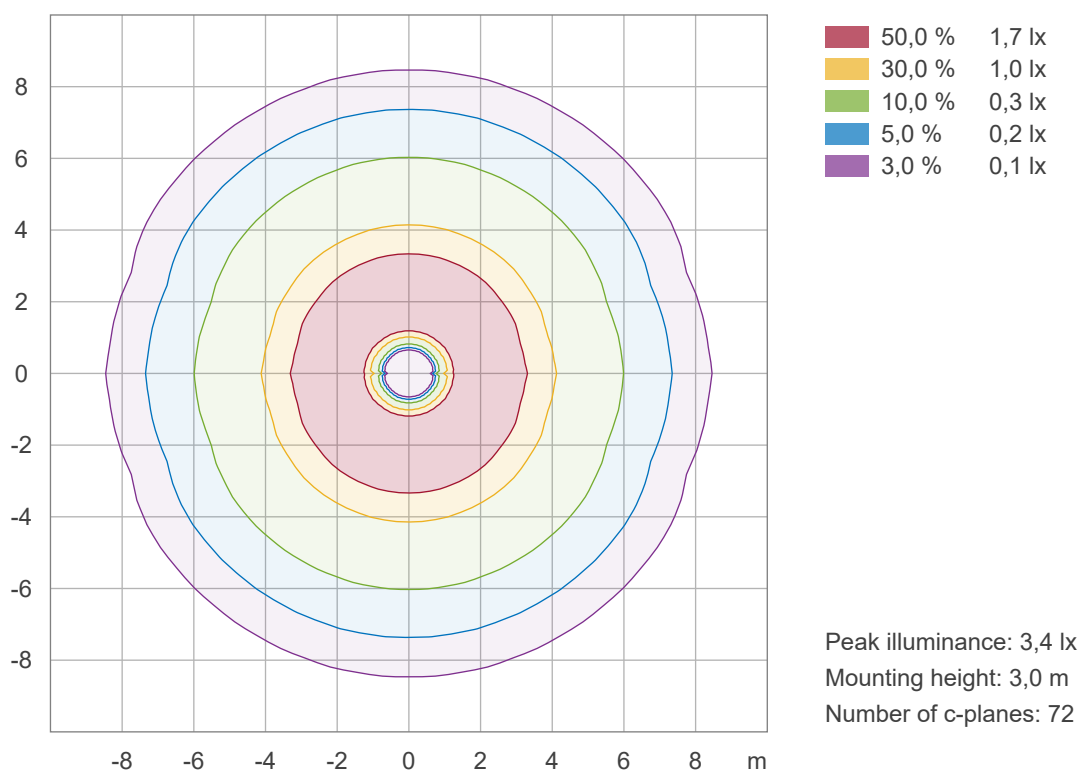
Operator: LC



Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC

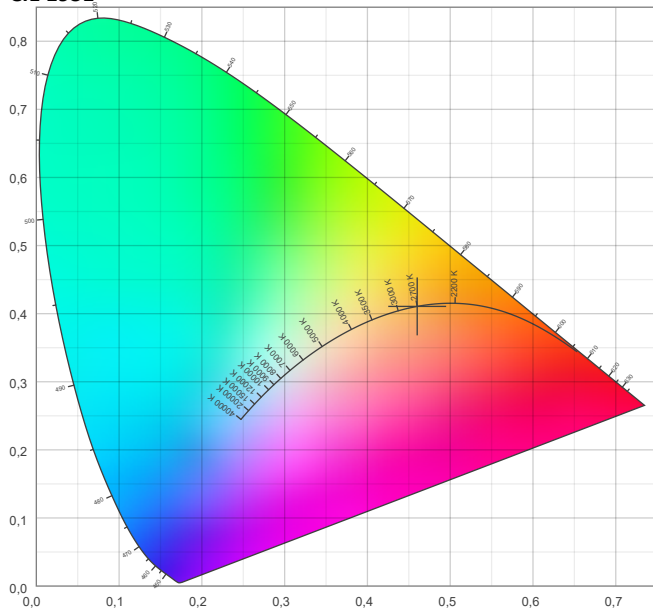


Color details

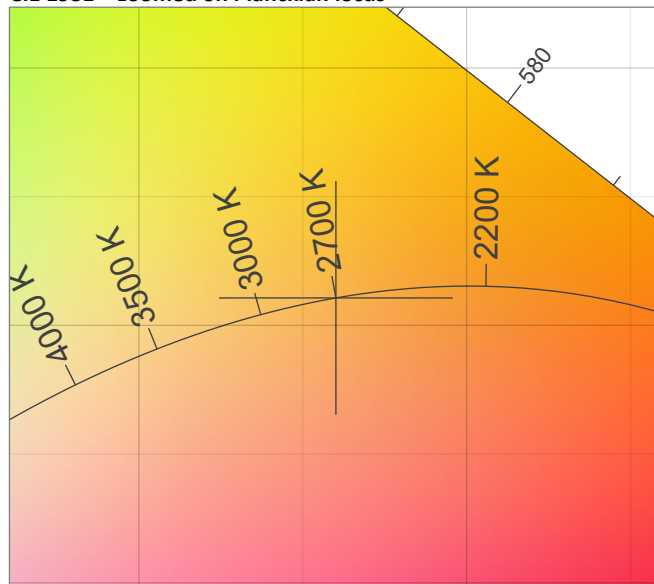
Correlated Color Temperature, Target CCT = 2700 K
Correlated Color Temperature, Measured CCT = 3089 K
Color Rendering Index CRI 93,7
Color Rendering Index, R9 (red component) R9 = 62,8
Color Rendering TM30-18 R_f 91,5 – R_g 98,6
Color Quality Scale CQS = 91,5

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 = -0,0008
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0,263;0,527)

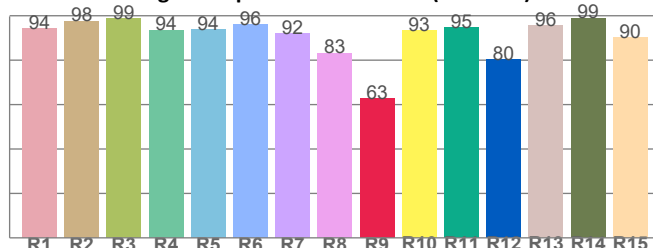
CIE 1931



CIE 1931 – zoomed on Planckian locus



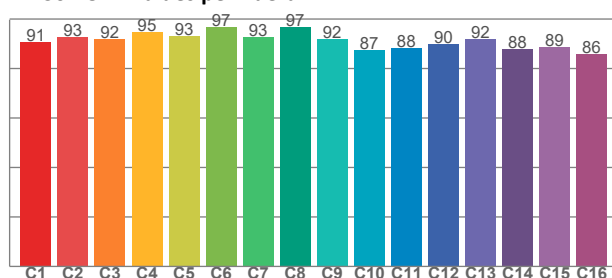
Color Rendering Index per reference color (CIE 1995)



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
94,3	97,7	98,7	93,6	93,9	96,2	92,1	83,3	62,8	93,4	94,7	80,2	95,5	99,0	90,4

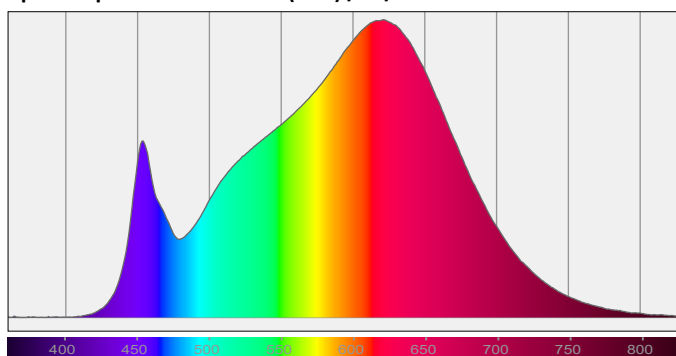
TM30-18 R_f-values per hue bin



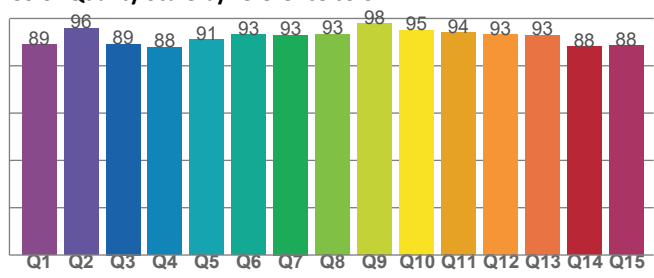
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90,7	92,8	92,0	94,7	93,3	96,9	92,6	96,7	92,0	87,3	88,2	90,1	92,0	88,0	88,9	85,9

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



Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
89,0	95,8	89,2	87,9	91,1	93,0	93,0	93,3	97,7	95,0	93,9	93,2	92,8	88,0	88,4

Beam Details

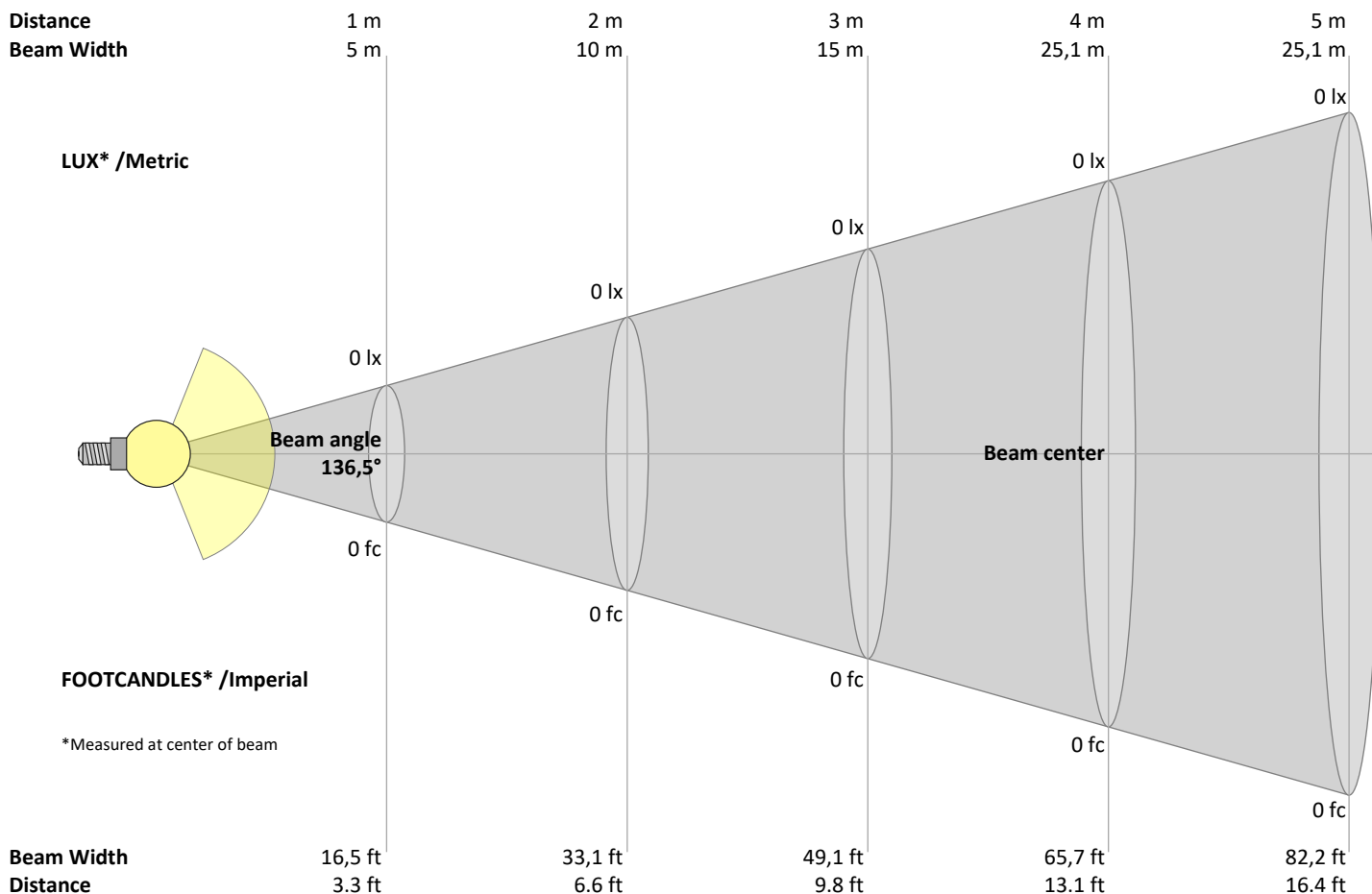
Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC



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
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	lux
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
0,0	0,1	0,3	3,0	14,4	27,6	44,5	53,8	55,3	53,0	48,9	44,1	38,5	32,2	25,0	17,7	11,2	6,1	3,0	1,6	cd
100%	986%	5214%	45904%	224321	429252	690851	835657	858842	823360	759768	685286	598739	500551	387908	275737	173643	94499%	46743%	25287%	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
0,0	0,1	0,5	4,3	14,9	23,8	38,8	50,0	52,8	51,7	48,2	43,4	37,7	31,7	24,9	17,9	11,7	6,9	3,4	1,0	cd
100%	1560%	8232%	66337%	230804	370016	602209	777091	821151	803871	749303	674698	585614	492410	386722	278783	181974	107570	52463%	15322%	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
0,0	0,1	0,3	3,0	14,4	27,6	44,5	53,8	55,3	53,0	48,9	44,1	38,5	32,2	25,0	17,7	11,2	6,1	3,0	1,6	cd
100%	986%	5214%	45904%	224321	429252	690851	835657	858842	823360	759768	685286	598739	500551	387908	275737	173643	94499%	46743%	25287%	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
0,0	0,1	0,5	4,3	14,9	23,8	38,8	50,0	52,8	51,7	48,2	43,4	37,7	31,7	24,9	17,9	11,7	6,9	3,4	1,0	cd
100%	1560%	8232%	66337%	230804	370016	602209	777091	821151	803871	749303	674698	585614	492410	386722	278783	181974	107570	52463%	15322%	of 0°val

Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC



Light Planning – UGR table

Corrected, comprehensive UGR table according to 117-1995

Reflectances												
	p Ceiling		70	70	50	50	30	70	70	50	50	30
	p Walls		50	30	50	30	30	50	30	50	30	30
	p Floor		20	20	20	20	20	20	20	20	20	20
Room size												
H = mounting height above eye level												
X		Y	Viewed Crosswise					Viewed Endwise				
			(Viewing direction orthogonal to lamp length axis)					(Viewing direction parallel to lamp length axis)				
2H	2H	2H	27,4	28,8	27,7	29,2	29,5	27,0	28,5	27,3	28,9	29,1
		3H	28,5	30,0	28,9	30,3	30,6	28,2	29,6	28,6	30,0	30,2
		4H	28,9	30,3	29,3	30,6	30,9	28,6	30,0	29,0	30,3	30,6
		6H	29,2	30,5	29,6	30,8	31,2	28,9	30,1	29,2	30,4	30,8
		8H	29,3	30,5	29,6	30,8	31,2	29,0	30,2	29,3	30,5	30,9
		12H	29,3	30,4	29,7	30,8	31,3	29,0	30,1	29,4	30,5	31,0
4H	4H	2H	27,8	29,2	28,2	29,5	29,8	27,5	28,9	27,9	29,2	29,5
		3H	29,2	30,3	29,6	30,7	31,2	28,9	30,1	29,3	30,4	30,9
		4H	29,6	30,7	30,1	31,1	31,7	29,3	30,4	29,8	30,8	31,4
		6H	29,9	30,9	30,4	31,3	31,7	29,6	30,6	30,1	31,0	31,4
		8H	30,0	30,9	30,5	31,3	31,7	29,7	30,6	30,2	31,0	31,5
		12H	30,0	30,8	30,5	31,3	31,8	29,8	30,6	30,3	31,0	31,5
8H	8H	4H	29,7	30,6	30,2	31,0	31,5	29,5	30,4	30,0	30,8	31,2
		6H	30,1	30,9	30,7	31,3	31,9	29,9	30,6	30,4	31,1	31,7
		8H	30,3	30,9	30,8	31,5	32,1	30,0	30,7	30,6	31,2	31,9
		12H	30,4	30,9	31,0	31,4	32,1	30,1	30,7	30,7	31,2	31,9
12H	12H	4H	29,7	30,5	30,2	30,9	31,4	29,4	30,2	30,0	30,7	31,2
		6H	30,2	30,8	30,7	31,3	32,0	29,9	30,6	30,4	31,1	31,8
		8H	30,3	30,9	30,9	31,4	32,0	30,1	30,6	30,7	31,2	31,8
Variations with the observer position for the luminaire spacings, S:												
S = 1.0H			0,1 / -0,1					0,1 / -0,2				
S = 1.5H			0,3 / -0,5					0,4 / -0,5				
S = 2.0H			0,9 / -1,1					0,9 / -1,2				

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	119	119	119	119	116	116	116	116	110	110	110	106	106	106	101	101	101	99
1	106	100	95	90	103	98	93	89	93	89	86	89	86	83	85	82	80	78
2	94	84	76	69	91	82	75	68	78	72	67	75	69	65	71	67	63	61
3	84	72	62	54	81	70	61	54	67	59	53	64	57	51	61	55	50	48
4	76	62	51	43	73	60	50	43	57	49	42	55	47	41	52	46	41	38
5	68	53	43	35	66	52	42	35	50	41	34	47	40	34	45	39	33	31
6	62	47	36	29	60	46	36	29	44	35	28	42	34	28	40	33	28	25
7	57	41	31	24	55	40	31	24	38	30	24	37	29	23	35	28	23	21
8	52	37	27	20	50	36	27	20	34	26	20	33	25	20	32	25	19	17
9	48	33	24	17	46	32	23	17	31	23	17	30	22	17	28	22	17	15
10	44	30	21	15	43	29	20	15	28	20	15	27	20	14	26	19	14	12

Light Measurement Report

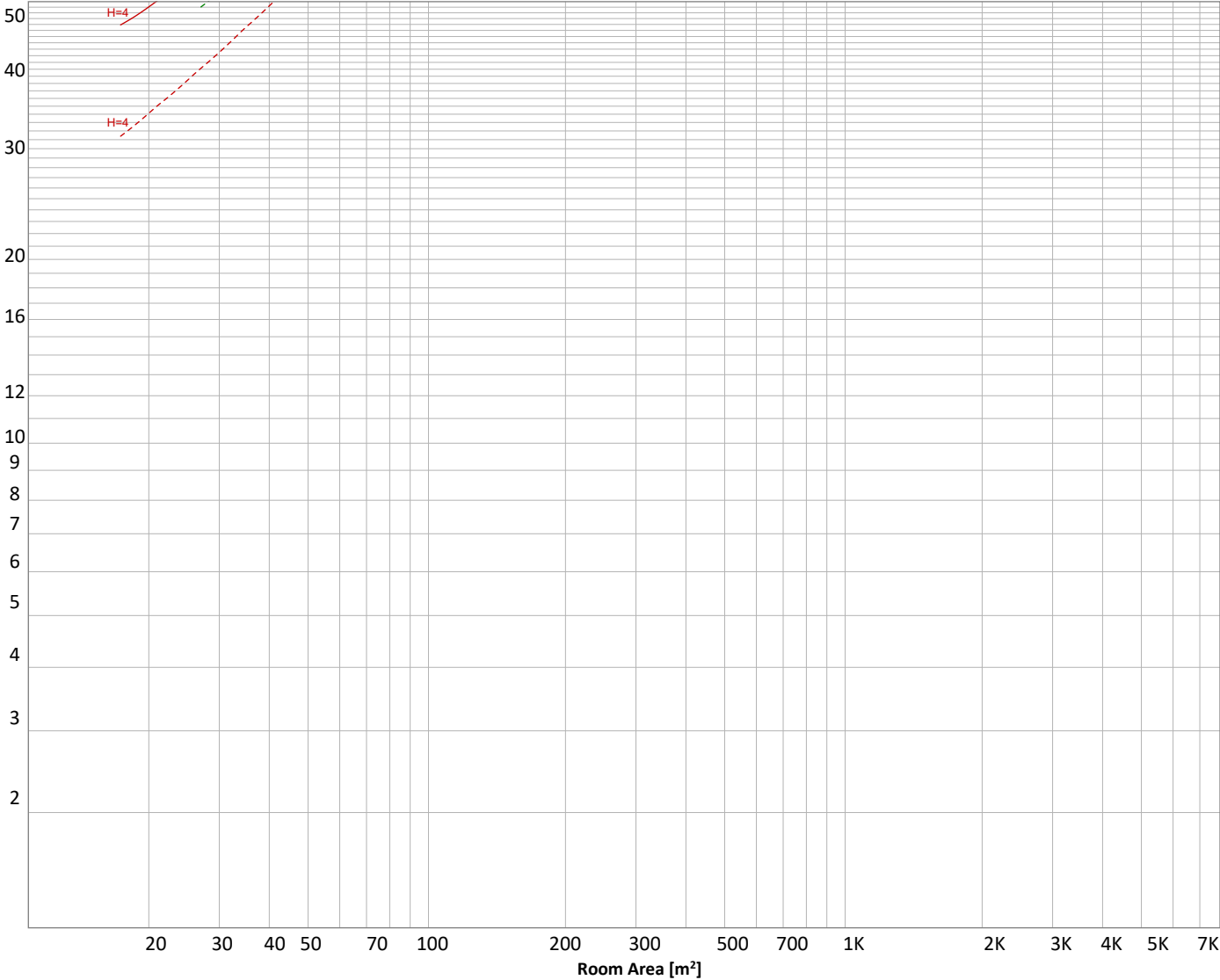
Print date: 28/04/2026
Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS
Measurement tracking No. and Link: [VT260428-003988](#)
Operator: LC



Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 184 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
				30
				20

Zonal Lumen Summary

0°-10°	10°-20°	20°-30°	30°-40°	40°-50°	50°-60°	60°-70°	70°-80°	80°-90°
0,013 lm	1,38 lm	13,2 lm	32,3 lm	39,7 lm	38,4 lm	31,1 lm	18,6 lm	7,03 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
1,64 lm	0,352 lm	0,064 lm	0,006 lm	0,003 lm	0,002 lm	0,001 lm	0,000 lm	0,000 lm

Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC



Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	0 lm	0,0%
10-20°	1 lm	0,7%
20-30°	13 lm	7,2%
30-40°	32 lm	17,6%
40-50°	40 lm	21,6%
50-60°	38 lm	20,9%
60-70°	31 lm	16,9%
70-80°	19 lm	10,1%
80-90°	7 lm	3,8%
90-100°	2 lm	0,9%
100-110°	0 lm	0,2%
110-120°	0 lm	0,0%
120-130°	0 lm	0,0%
130-140°	0 lm	0,0%
140-150°	0 lm	0,0%
150-160°	0 lm	0,0%
160-170°	0 lm	0,0%
170-180°	0 lm	0,0%
Total	184 lm	100,0%

Intensity peaks

Max intensity	55 cd
Intensity, 90°	3 cd
Intensity, 0°	0 cd

Zonal Lumen summary

Zone (γ)	Lumen	% Total
0-30°	15 lm	7,9%
0-40°	47 lm	25,5%
0-60°	125 lm	68,0%
60-90°	57 lm	30,9%
70-100°	27 lm	14,9%
90-120°	2 lm	1,1%
0-90°	182 lm	98,9%
90-180°	2 lm	1,1%
0-180°	184 lm	100,0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	7 lm	4,0%
Medium(30-60°)	55 lm	30,0%
High(60-80°)	25 lm	13,5%
Very high(80-90°)	4 lm	1,9%
Back light		
Low(0-30°)	7 lm	4,0%
Medium(30-60°)	55 lm	30,0%
High(60-80°)	25 lm	13,5%
Very high(80-90°)	4 lm	1,9%

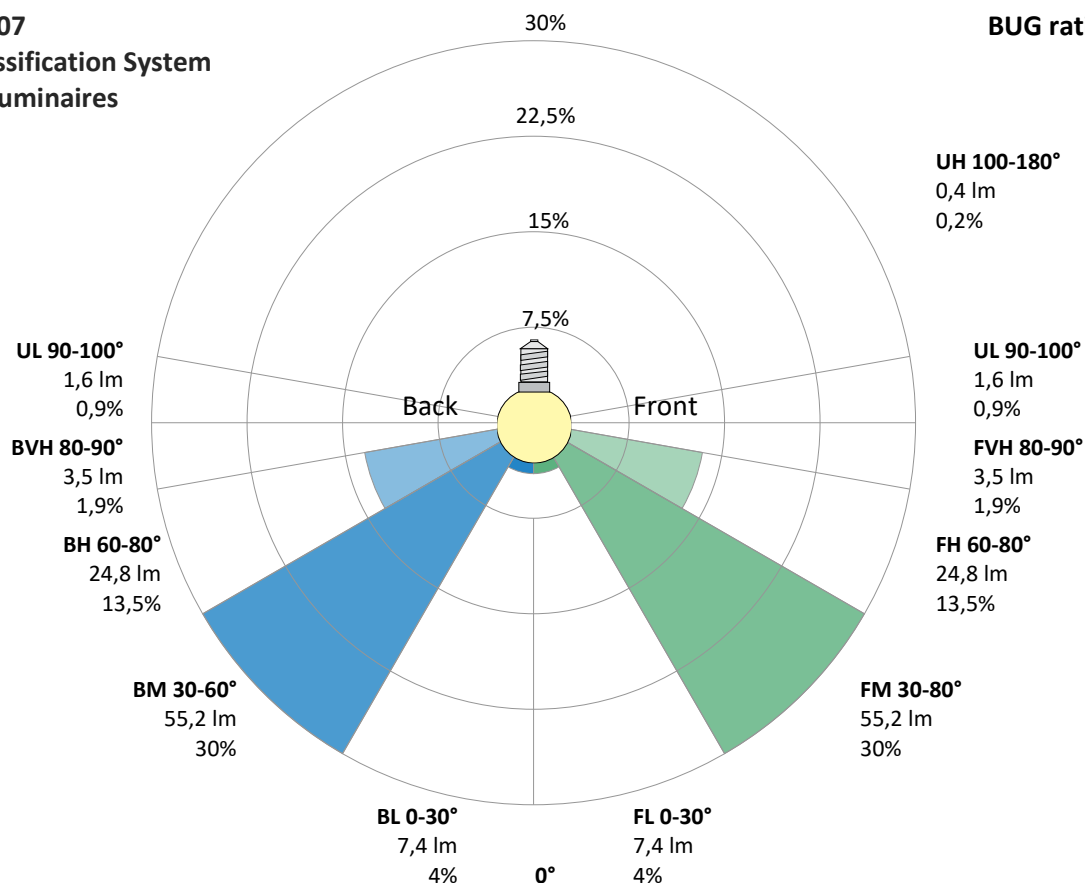
Uplight

Low(90-100°)	2 lm	0,9%
High(100-180°)	0 lm	0,2%

IESNA TM-15-07

Luminaire Classification System For Outdoor Luminaires

BUG rating B0 U1 G0



Light Measurement Report

Print date: 28/04/2026

Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS

Measurement tracking No. and Link: [VT260428-003988](#)

Operator: LC

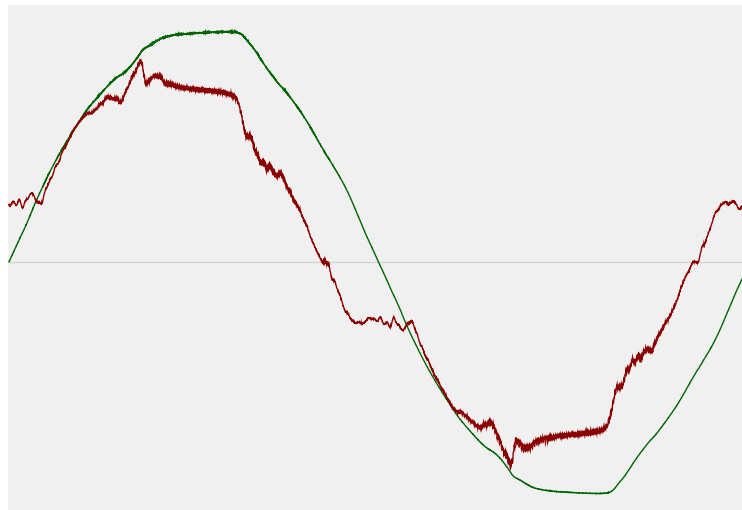


Power Details

Input Power

Power feed to light source	10,5 W
Frequency of input power	50 Hz
RMS Input voltage feed, V_{RMS}	234 V
RMS Input current feed, I_{RMS}	0,048 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	11,34 VA
Displacement factor of AC power feed	0,94
Power factor of AC current feed	0,92
Total harmonic distortion of the current	13,75%
Total harmonic distortion of the voltage	3,5%

Input Power Curve



Efficiency

Radiated power efficiency 6,0%



Lumen efficiency 18 lm/W



Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	2702 K
CCT shift	-2 K
CCT end	2700 K

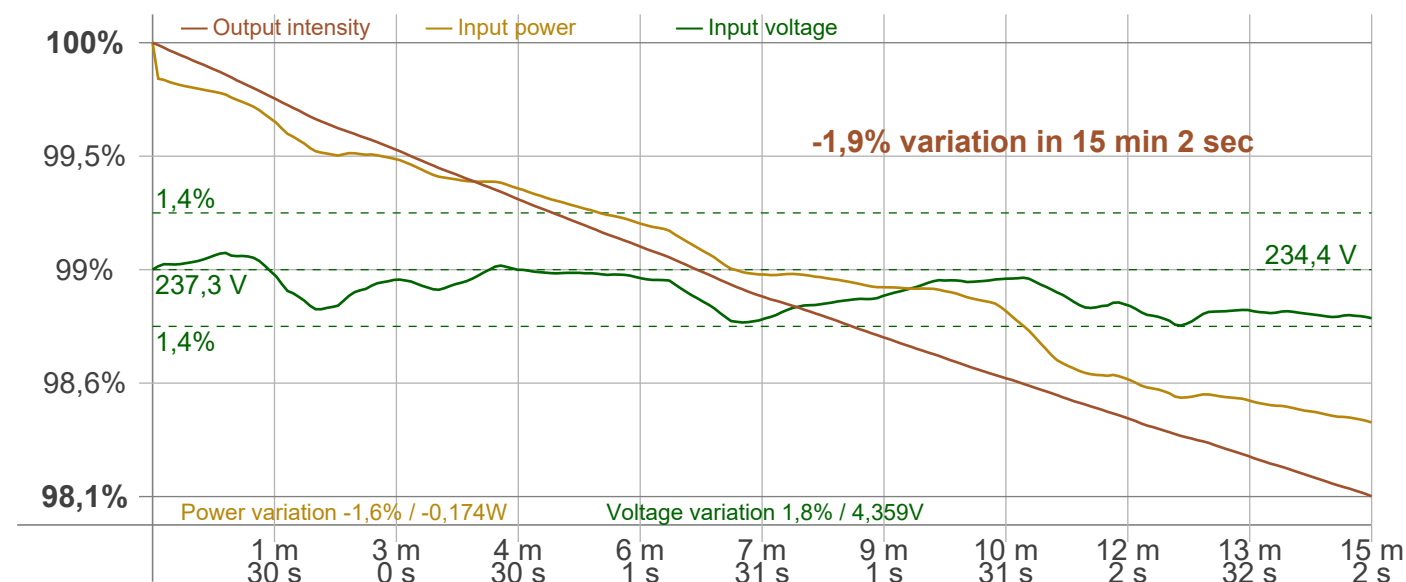
Warmup Result

Total warmup time	Lamp stabilized in 15 min 2 sec
Warmup variation	-1,9%

Output Change

Output start	188 lm
Output change	-4 lm
Output end	184 lm

Stabilization Curve



Light Measurement Report

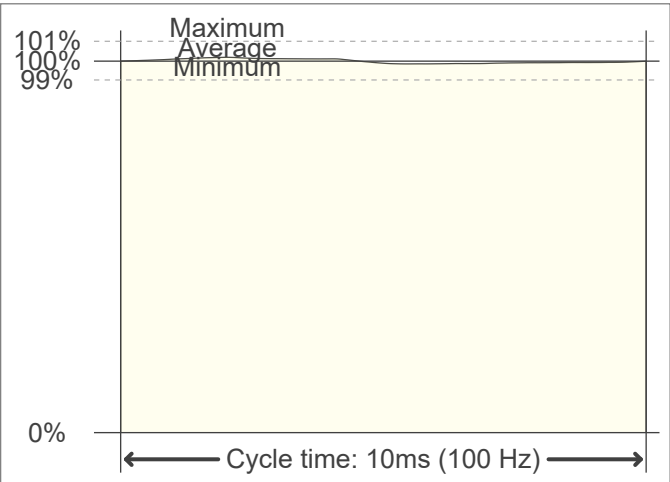
Print date: 28/04/2026
Measurement date and time: 10/04/2026 12:22:46 – Measurement no. VFR-260410-1323-MS
Measurement tracking No. and Link: [VT260428-003988](#)
Operator: LC



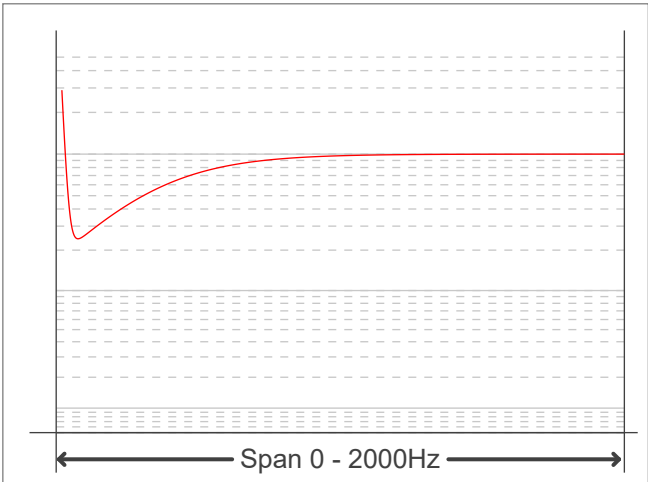
Flicker /TLA details

Flicker Meter Type	Viso Systems LabFlicker	Measurement time	
Frequency of input power	50 Hz	PstLM	180 sec
Flicker/TLA sample rate	20000 samples/s	All other indices	1,2 sec
Flicker indices according to Illuminating Engineering Society (IES)		Flicker indices according to California Energy Commission (CEC) 2016b	
Flicker frequency	100 Hz	JA8/10 40 Hz	0,04 %
Percent Flicker	0,94 %	JA8/10 90 Hz	0,23 %
Flicker index	0	JA8/10 200 Hz	1,02 %
		JA8/10 400 Hz	1 %
		JA8/10 1000 Hz	0,97 %
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)		Flicker indices according to Lighting Research Center (2015)	
PstLM value (F < 80 Hz)	0,01	Perception metric, Assist Mp	0,01
SVM value (80 < F < 2000 Hz)	0,03		

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

