

Light Measurement Report

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

Measurement tracking No. and Link: [VT250630-005110](#)

Operator:



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 – 11-1-2024 – 3130191315

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

12 planes – 30°

5°

3,42 m

28,1 W – PF 0,93 – DPF 0,94

230 V – 0,131 A

50 Hz

Lamp stabilized in 15 min 3 sec – 2,0%

Tested Light Source

Product Name

Item No. and Manufacturer

Product Description (line 1)

DOCK030-5700K

DOCK030-5700K – Dutchfulfillment

LED DOCKLIGHT | ZWENKARM | 30W | 1020MM

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

3268 lm – 0,65% / 99,35%

116 lm/W

4653 cd – 41,2°

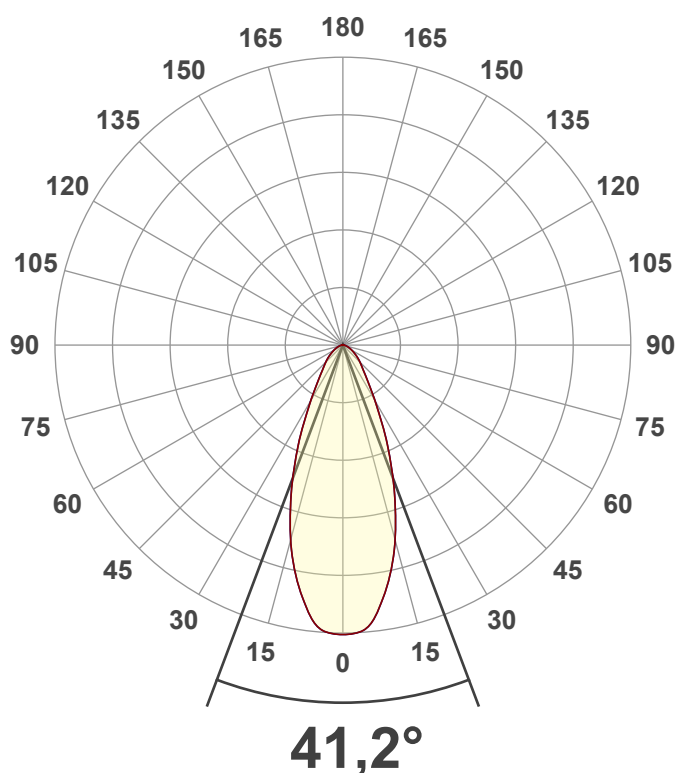
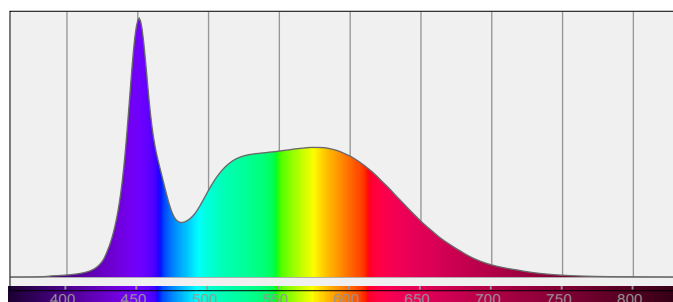
CCT = 5700 K / 5723 K

CRI 83,3

R_f 83,5 – R_g 95,8

Duv 0,0032 – SDCM 4,4

SVM 2,42 – PstLM 0,06



Light Measurement Report

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

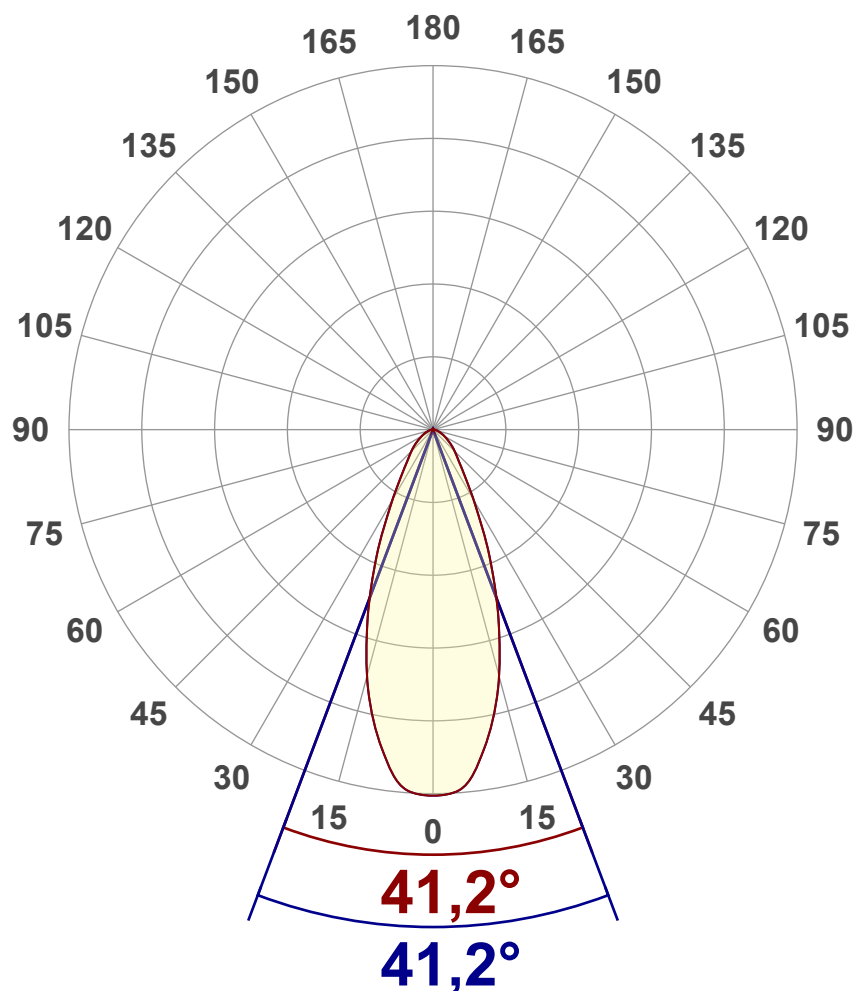
Measurement tracking No. and Link: [VT250630-005110](#)

Operator:



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	3268 lm
Lumen Up% / Down%	0,65% / 99,35%
Peak Intensity	4653 cd
Beam Angle (50%)	41,2°
Beam Angle (90%)	41,2°
Beam Angle (10%)	41,2°

Cut-off Angle

Average 2,5%	132,1°
--------------	--------

Field Angle

Average 10%	83,5°
-------------	-------

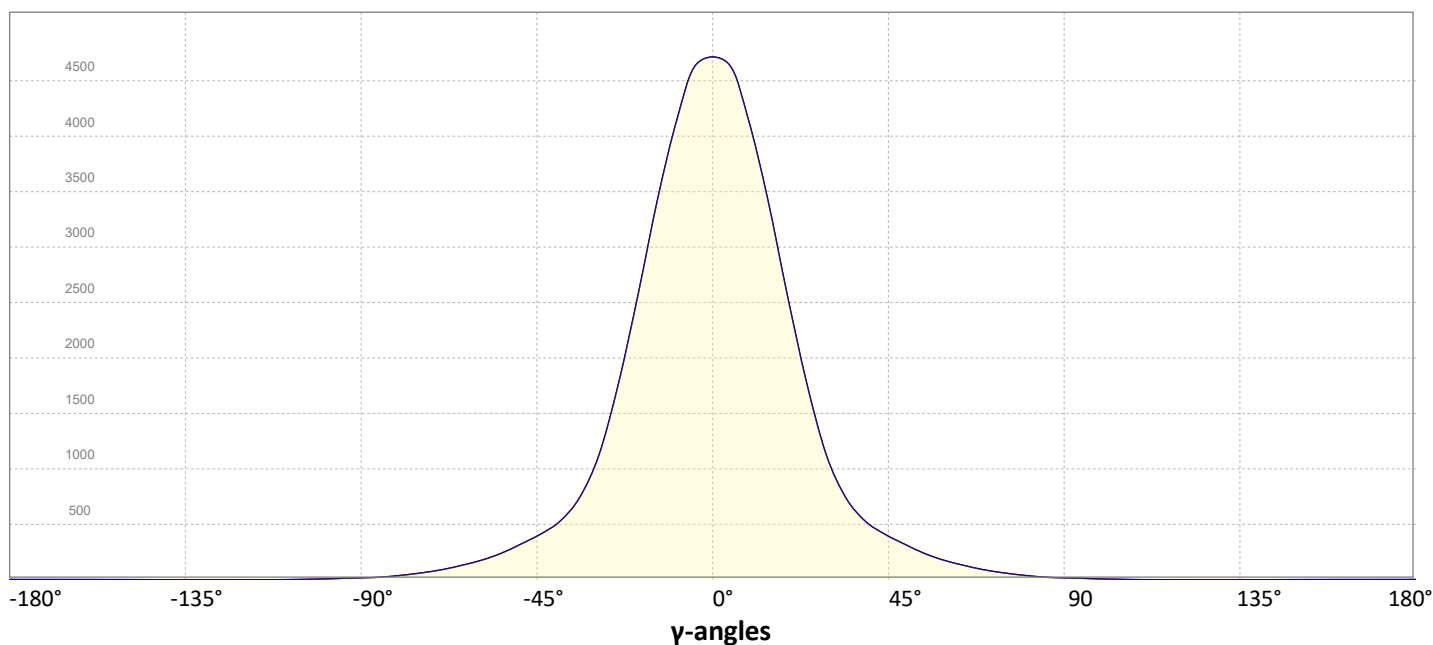
Intensity Ratio

In 120° cone	92,7%
In 90° cone	82,1%

C000-C180

C090-C270

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

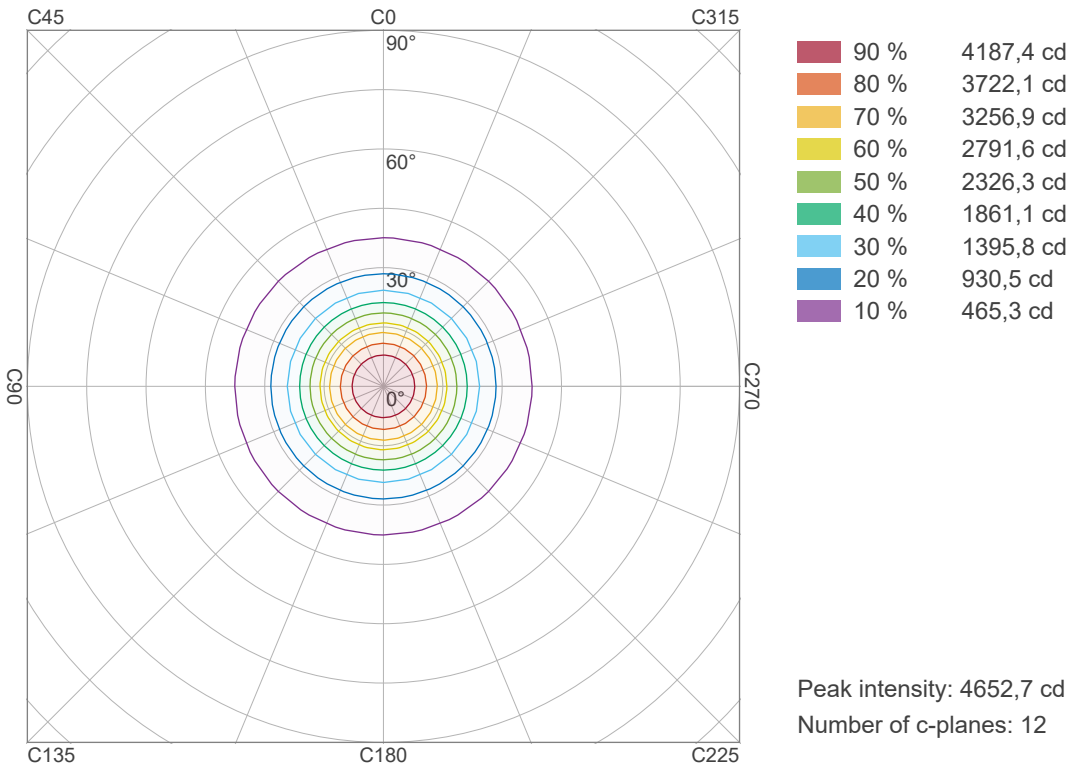


Light Measurement Report

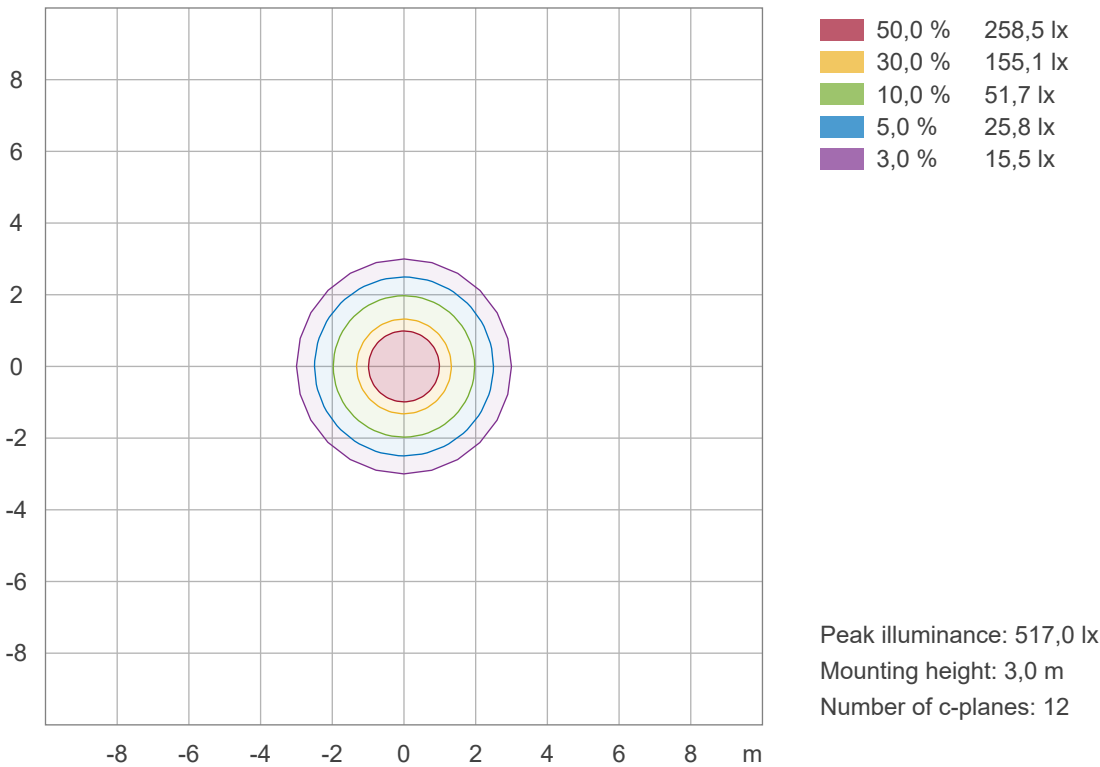
Print date: 30-6-2025
Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS
Measurement tracking No. and Link: [VT250630-005110](#)
Operator:



Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



Light Measurement Report

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

Measurement tracking No. and Link: [VT250630-005110](#)

Operator:

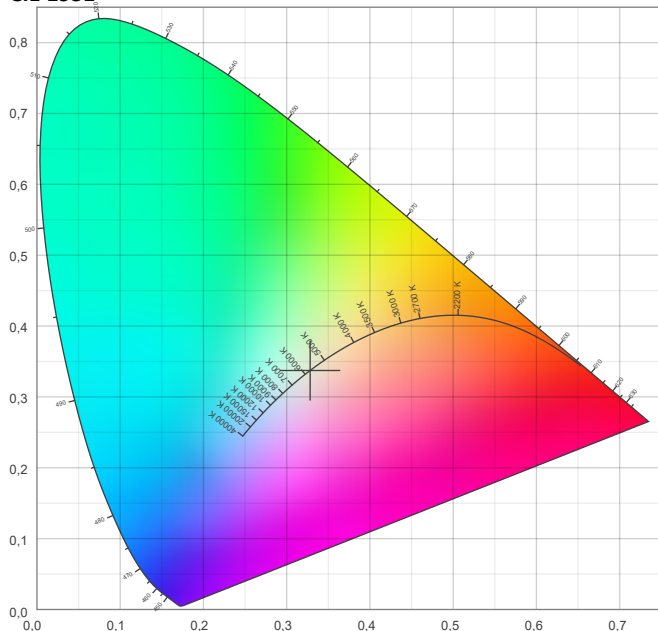


Color details

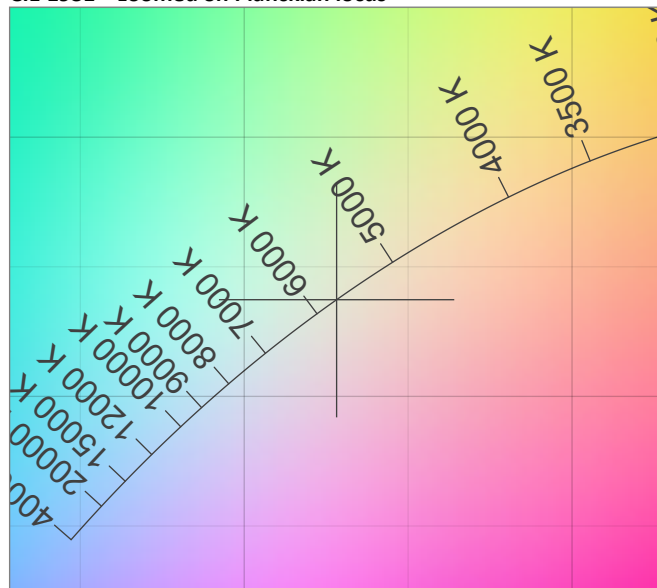
Correlated Color Temperature, Target CCT = 5700 K
Correlated Color Temperature, Measured CCT = 5723 K
Color Rendering Index CRI 83,3
Color Rendering Index, R9 (red component) R9 = 9,0
Color Rendering TM30-18 R_f 83,5 – R_g 95,8
Color Quality Scale CQS = 81,2

MacAdam Steps
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 = 0,0032
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0,205;0,475)

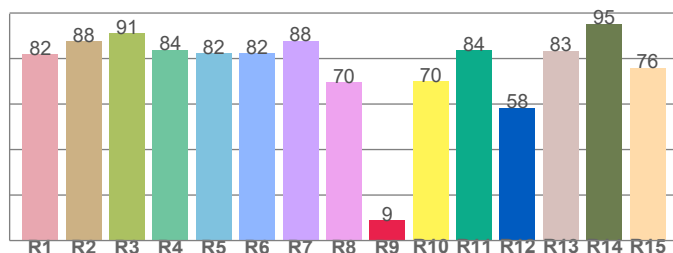
CIE 1931



CIE 1931 – zoomed on Planckian locus



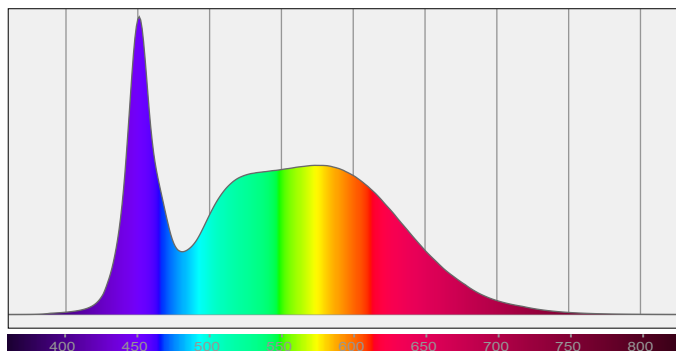
Color Rendering Index per reference color (CIE 1995)



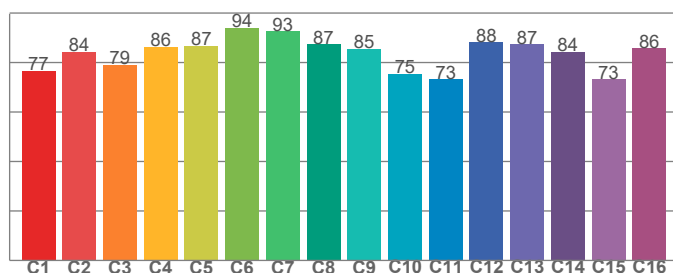
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
81,8	87,5	91,1	83,9	82,3	82,3	87,9	69,6	9,0	70,1	83,5	58,3	83,4	95,4	76,0

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



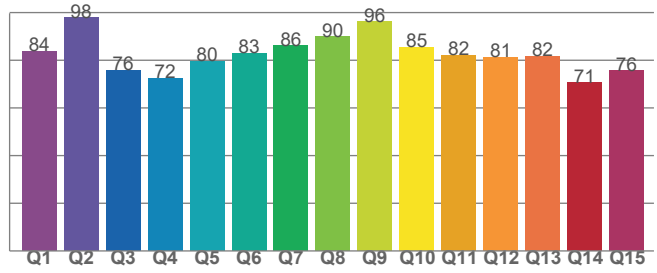
TM30-18 Rf-values per hue bin



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
76,7	84,4	79,0	86,4	86,8	94,1	92,7	87,4	85,5	75,5	73,3	88,2	87,4	84,3	73,4	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
83,7	97,9	75,8	72,4	79,7	83,0	86,1	89,9	96,2	85,5	82,0	81,3	81,6	70,6	75,7

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

Measurement tracking No. and Link: [VT250630-005110](#)



VISO
SYSTEMS

Distance
Beam Width

LUX* /Metric

Beam angle 41,2°

Beam center

FOOTCANDLES* /Imperial

*Measured at center of beam

Distance (m)	Distance (ft)	Beam Width (m)	Beam Width (ft)	LUX (Metric)	FOOTCANDLES (Imperial)
0,8	3,3	2,5	8,2	4653	432
1,5	4,9	4,2	13,8	1163	108
2,3	7,5	6,4	21,0	517	48
3,8	12,5	10,4	34,3	291	27
5,0	16,4	13,8	43,9	186	17

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
4653	1163	517	291	186	129	95	73	57	47	38	32	28	24	21	18	16	14	13	12	lux
432,2	108,1	48	27	17,3	12	8,8	6,8	5,3	4,3	3,6	3	2,6	2,2	1,9	1,7	1,5	1,3	1,2	1,1	fc

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
4653	4653	4653	4462	4264	4025	3736	3447	3104	2759	2426	2106	1786	1526	1267	1057	902	746	659	573	cd
100%	100%	100%	96%	92%	87%	80%	74%	67%	59%	52%	45%	38%	33%	27%	23%	19%	16%	14%	12%	of 0°val

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
4653	4653	4653	4462	4264	4025	3736	3447	3104	2759	2426	2106	1786	1526	1267	1057	902	746	659	573	cd
100%	100%	100%	96%	92%	87%	80%	74%	67%	59%	52%	45%	38%	33%	27%	23%	19%	16%	14%	12%	of 0°val

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
4653	4653	4653	4462	4264	4025	3736	3447	3104	2759	2426	2106	1786	1526	1267	1057	902	746	659	573	cd
100%	100%	100%	96%	92%	87%	80%	74%	67%	59%	52%	45%	38%	33%	27%	23%	19%	16%	14%	12%	of 0°val

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
4653	4653	4653	4462	4264	4025	3736	3447	3104	2759	2426	2106	1786	1526	1267	1057	902	746	659	573	cd
100%	100%	100%	96%	92%	87%	80%	74%	67%	59%	52%	45%	38%	33%	27%	23%	19%	16%	14%	12%	of 0°val

Light Measurement Report

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

Measurement tracking No. and Link: [VT250630-005110](#)

Operator:



Light Planning – UGR table

Uncorrected, 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		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	21,8	22,5	21,9	22,8	23,0	21,7	22,5	21,9	22,8	23,0
	3H	22,3	23,2	22,7	23,5	23,7	22,3	23,2	22,7	23,4	23,6
	4H	22,6	23,5	23,1	23,7	24,0	22,6	23,5	23,0	23,7	24,0
	6H	23,0	23,7	23,3	24,0	24,3	22,9	23,6	23,2	23,9	24,3
	8H	23,0	23,7	23,4	24,1	24,5	23,0	23,7	23,3	24,0	24,4
	12H	23,1	23,8	23,5	24,2	24,6	23,1	23,8	23,4	24,1	24,5
4H	2H	21,9	22,8	22,3	23,0	23,3	21,9	22,8	22,3	23,0	23,3
	3H	22,9	23,6	23,2	23,9	24,4	22,9	23,5	23,2	23,9	24,3
	4H	23,2	23,8	23,7	24,3	24,8	23,2	23,8	23,6	24,2	24,8
	6H	23,6	24,2	24,1	24,6	24,9	23,5	24,2	24,0	24,5	24,9
	8H	23,7	24,3	24,2	24,7	25,0	23,7	24,3	24,2	24,6	25,0
	12H	23,8	24,3	24,3	24,7	25,2	23,8	24,3	24,3	24,7	25,2
8H	4H	23,3	23,9	23,9	24,3	24,7	23,3	23,9	23,8	24,3	24,6
	6H	23,8	24,2	24,3	24,7	25,2	23,8	24,2	24,3	24,7	25,2
	8H	24,1	24,4	24,6	25,0	25,6	24,1	24,4	24,6	24,9	25,6
	12H	24,3	24,6	24,9	25,1	25,7	24,3	24,5	24,9	25,1	25,7
12H	4H	23,3	23,8	23,8	24,2	24,7	23,3	23,8	23,8	24,2	24,7
	6H	23,9	24,2	24,4	24,8	25,4	23,9	24,2	24,4	24,7	25,4
	8H	24,1	24,4	24,7	24,9	25,6	24,1	24,4	24,7	24,9	25,5
Variations with the observer position for the luminaire spacings, S:											
S = 1.0H		0,4 / -0,4					0,4 / -0,4				
S = 1.5H		1,1 / -0,8					1,1 / -0,8				
S = 2.0H		1,9 / -1,3					1,9 / -1,3				

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	101	101	101	99
1	112	109	106	103	110	107	104	101	102	100	98	98	97	95	95	94	92	90
2	106	100	95	91	103	98	94	90	95	91	88	91	89	86	89	86	84	82
3	99	92	86	82	97	91	85	81	88	83	80	85	82	78	83	80	77	75
4	94	85	79	74	92	84	78	74	82	77	73	80	75	72	78	74	71	69
5	89	80	73	68	87	79	73	68	77	71	67	75	70	67	73	69	66	64
6	84	74	68	63	83	74	67	63	72	67	62	70	66	62	69	65	62	60
7	80	70	63	59	79	69	63	59	68	62	58	67	62	58	65	61	58	56
8	76	66	60	55	75	65	59	55	64	59	55	63	58	54	62	58	54	53
9	73	62	56	52	71	62	56	52	61	55	52	60	55	51	59	54	51	50
10	69	59	53	49	68	59	53	49	58	52	49	57	52	49	56	52	48	47

Light Measurement Report

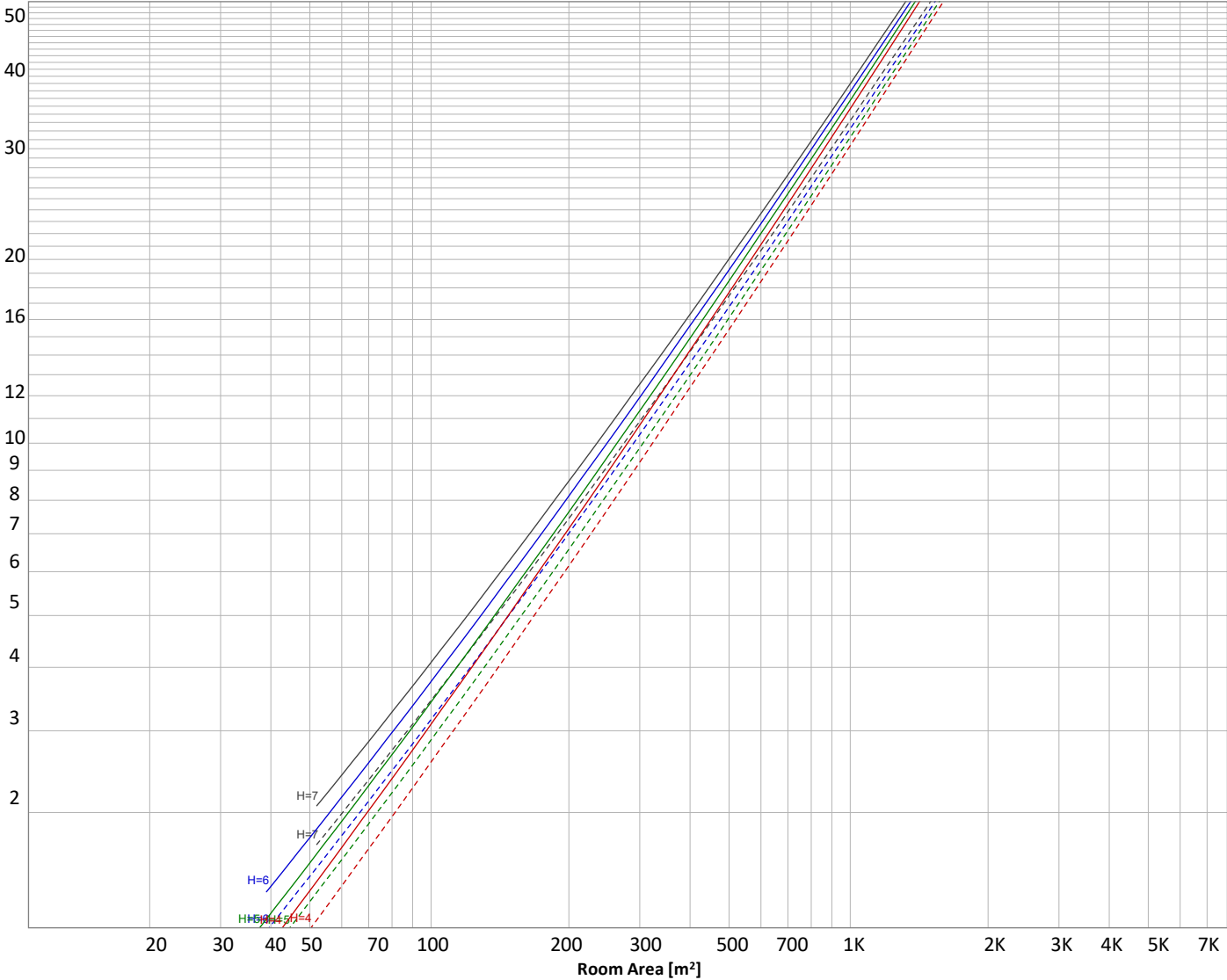
Print date: 30-6-2025
Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS
Measurement tracking No. and Link: [VT250630-005110](#)
Operator:



Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

H = Room height	Flux = 3268 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°
417 lm	896 lm	755 lm	450 lm	306 lm	206 lm	124 lm	64,5 lm	27,9 lm
90°-100°	100°-110°	110°-120°	120°-130°	130°-140°	140°-150°	150°-160°	160°-170°	170°-180°
13,2 lm	4,05 lm	0,701 lm	0,289 lm	0,404 lm	0,720 lm	0,867 lm	0,693 lm	0,249 lm

Light Measurement Report

Print date: 30-6-2025

Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS

Measurement tracking No. and Link: [VT250630-005110](#)

Operator:



Outdoor Light Planning

Lumen per Zone

Zone (γ)	Lumen	% Total
0-10°	417 lm	12,8%
10-20°	896 lm	27,4%
20-30°	755 lm	23,1%
30-40°	450 lm	13,8%
40-50°	306 lm	9,4%
50-60°	206 lm	6,3%
60-70°	124 lm	3,8%
70-80°	65 lm	2,0%
80-90°	28 lm	0,9%
90-100°	13 lm	0,4%
100-110°	4 lm	0,1%
110-120°	1 lm	0,0%
120-130°	0 lm	0,0%
130-140°	0 lm	0,0%
140-150°	1 lm	0,0%
150-160°	1 lm	0,0%
160-170°	1 lm	0,0%
170-180°	0 lm	0,0%
Total	3268 lm	100,0%

Intensity peaks

Max intensity	4653 cd
Intensity, 90°	17 cd
Intensity, 0°	4653 cd

Zonal Lumen summary

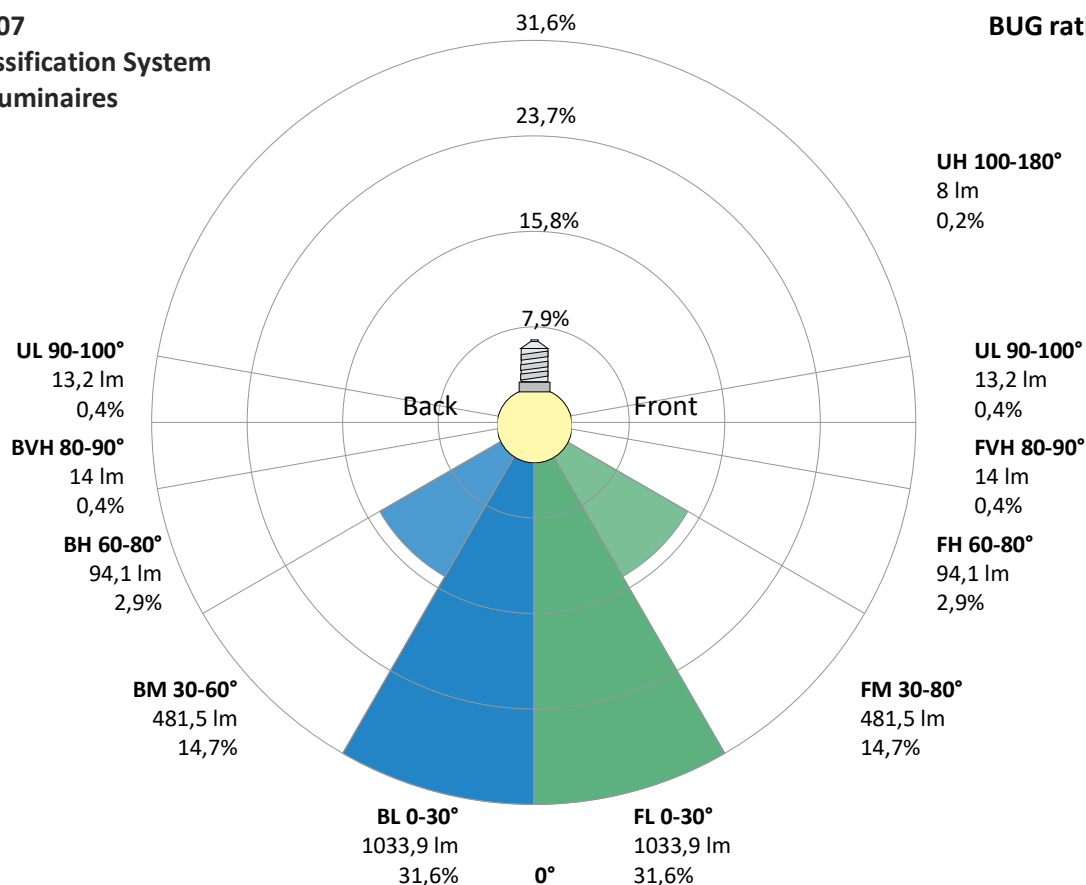
Zone (γ)	Lumen	% Total
0-30°	2068 lm	63,3%
0-40°	2518 lm	77,1%
0-60°	3031 lm	92,7%
60-90°	216 lm	6,6%
70-100°	106 lm	3,2%
90-120°	18 lm	0,5%
0-90°	3247 lm	99,4%
90-180°	21 lm	0,6%
0-180°	3268 lm	100,0%

BUG rating

	Lumen	% Total
Forward light		
Low(0-30°)	1034 lm	31,6%
Medium(30-60°)	481 lm	14,7%
High(60-80°)	94 lm	2,9%
Very high(80-90°)	14 lm	0,4%
Back light		
Low(0-30°)	1034 lm	31,6%
Medium(30-60°)	481 lm	14,7%
High(60-80°)	94 lm	2,9%
Very high(80-90°)	14 lm	0,4%
Uplight		
Low(90-100°)	13 lm	0,4%
High(100-180°)	8 lm	0,2%

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

BUG rating B3 U2 G1



Light Measurement Report

Print date: 30-6-2025
Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS
Measurement tracking No. and Link: [VT250630-005110](#)
Operator:

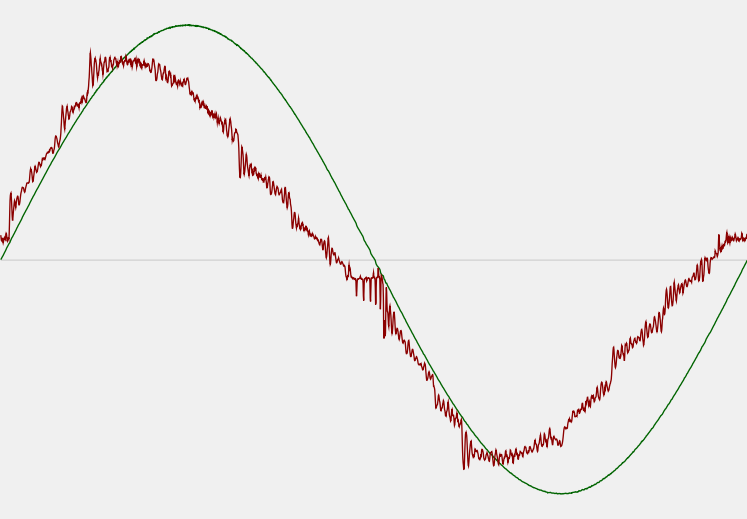


Power Details

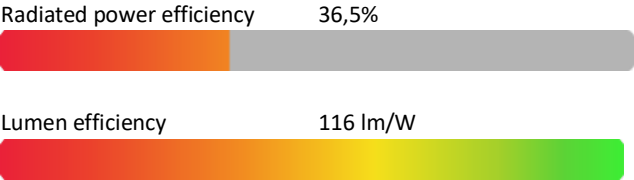
Input Power

Power feed to light source	28,1 W
Frequency of input power	50 Hz
RMS Input voltage feed, V_{RMS}	230 V
RMS Input current feed, I_{RMS}	0,131 A
Volt-Ampere or apparent power = $V_{RMS} \cdot I_{RMS}$	30,17 VA
Displacement factor of AC power feed	0,94
Power factor of AC current feed	0,93
Total harmonic distortion of the current	13,46%
Total harmonic distortion of the voltage	0,07%

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	5692 K
CCT shift	+8 K
CCT end	5700 K

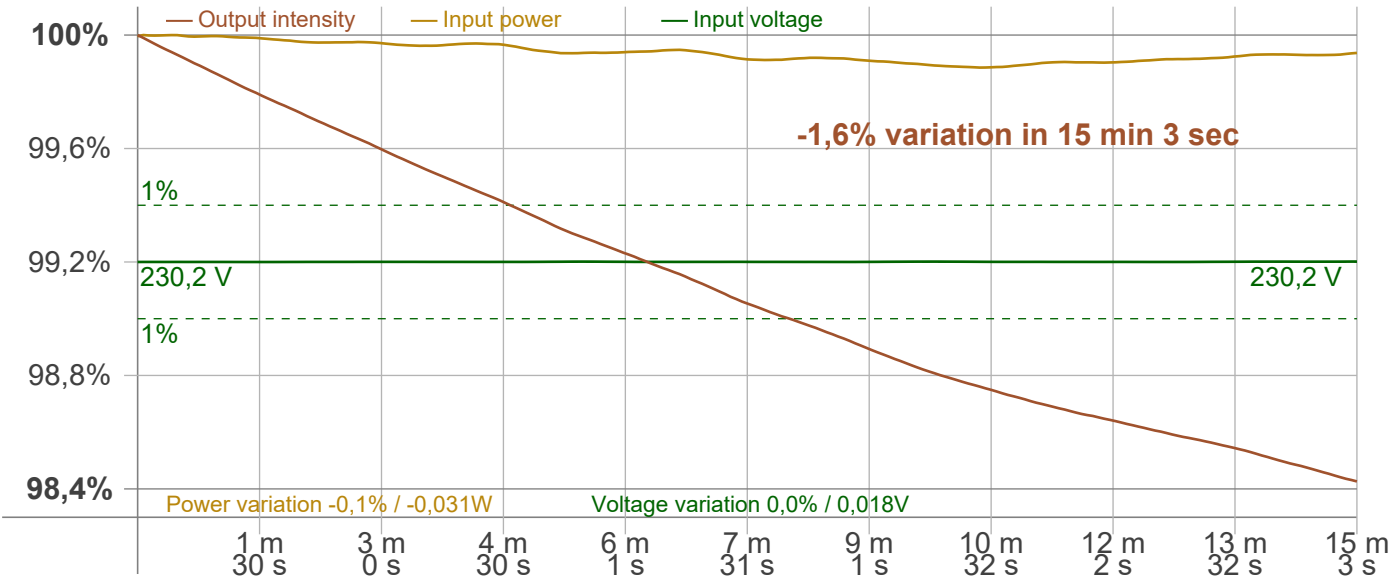
Warmup Result

Total warmup time	Lamp stabilized in 15 min 3 sec
Warmup variation	-1,6%

Output Change

Output start	3319 lm
Output change	-50 lm
Output end	3268 lm

Stabilization Curve



Light Measurement Report

Print date: 30-6-2025
Measurement date and time: 30-6-2025 14:25:48 – Measurement no. VFR-250630-1811-MS
Measurement tracking No. and Link: [VT250630-005110](#)
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

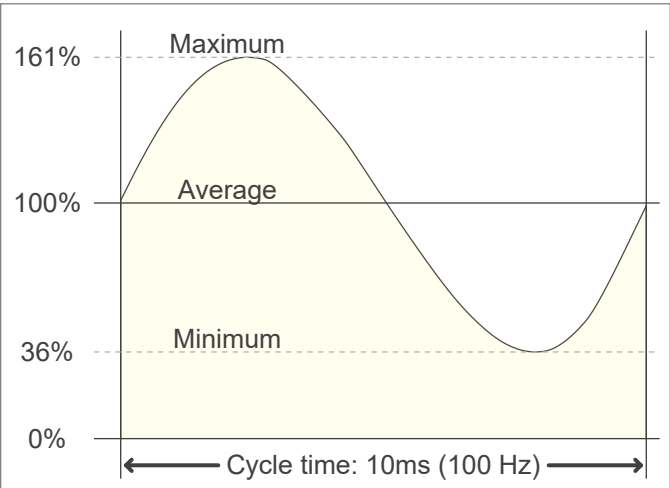
Flicker indices according to Illuminating Engineering Society (IES)
Flicker frequency 100 Hz
Percent Flicker 62,99 %
Flicker index 0,2

Flicker indices according to California Energy Commission (CEC) 2016b
JA8/10 40 Hz 0,06 %
JA8/10 90 Hz 0,44 %
JA8/10 200 Hz 62,77 %
JA8/10 400 Hz 63,29 %
JA8/10 1000 Hz 63,07 %

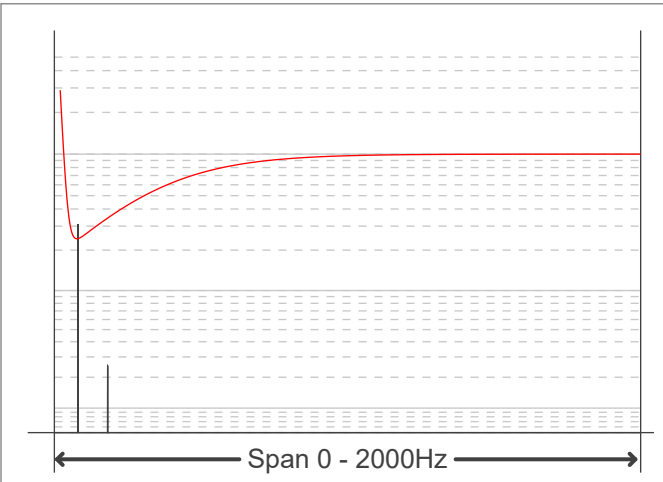
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)
PstLM value (F < 80 Hz) 0,06
SVM value (80 < F < 2000 Hz) 2,42

Flicker indices according to Lighting Research Center (2015)
Perception metric, Assist Mp 0,02

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

