

Light Measurement Report

Print date: 10.06.2025

Measurement date and time: 10.06.2025 16:06:47 – Measurement no. VFR-250610-0127-MS

Measurement tracking No. and Link: [n/a](#)

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, awLed by audiowerk GmbH, Switzerland

LightSpion – Type C, horizontal

n/a – 08.04.2025 – 2772868121

Ibsen Photonics, Denmark – Pebble 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

2 planes – 180°

7.5°

0.66 m

22.2 W – PF 1.0 – DPF 0.0

24.0 V – 0.924 A

0 Hz

Lampe stabilisiert in 3 Min. 3 Sek. – 2.0%

Tested Light Source

Product Name

Item No. and Manufacturer

Shape an dimension

FLEX STRIP HPS-1200 FREE-CUT MONO WW 1m 241120

AS12FC06 – awLed by audiowerk GmbH

Length: 1000mm

Width: 10mm

Height: 5mm

Charge: 241120

Product Description

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 u_v and MacAdam Steps

Flicker

3168 lm – 4.64% / 95.36%

143 lm/W

1022 cd – 115.1°

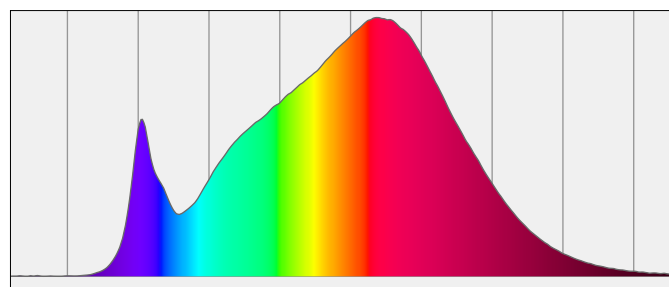
CCT = 3080 K / 3080 K

CRI 92.5

R_f 90.9 – R_g 98.7

Duv 0.0002 – SDCM n/a

SVM n/a – PstLM n/a



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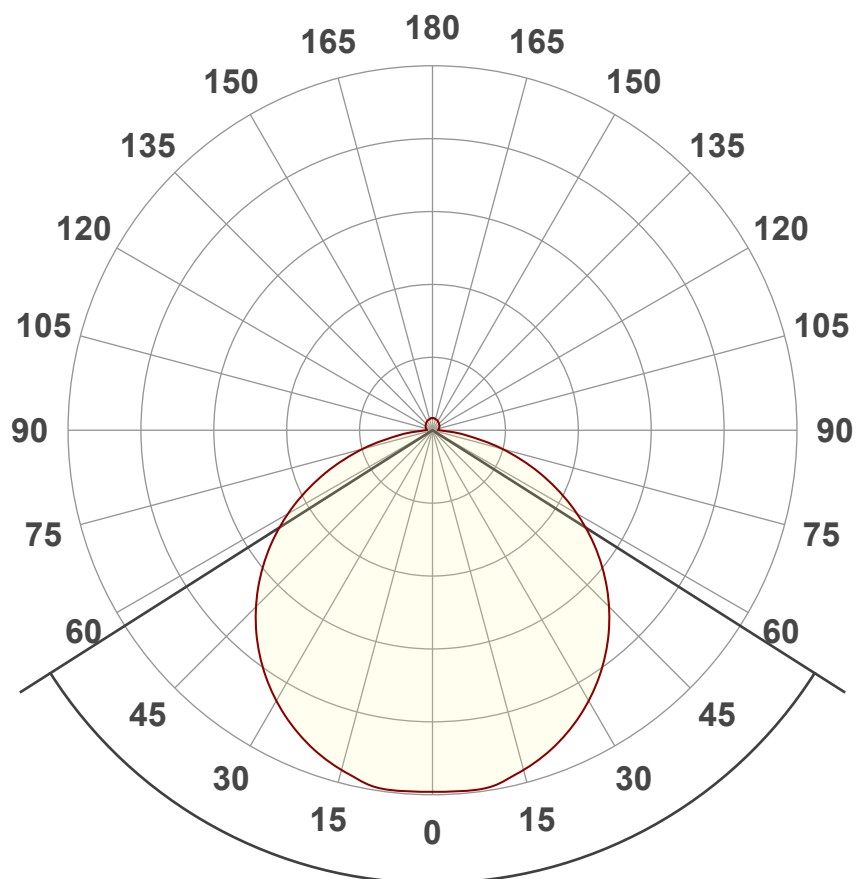
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Operator:

Luminous Intensity diagram

Unit: 0-100% of peak intensity



115.1°

Main Values

Output (total Lumen)	3168 lm
Lumen Up% / Down%	4.64% / 95.36%
Peak Intensity	1022 cd
Beam Angle (50%)	115.1°
Beam Angle (90%)	115.1°
Beam Angle (10%)	115.1°

Cut-off Angle

Average 2,5%	360°
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Field Angle

Average 10%	162.6°
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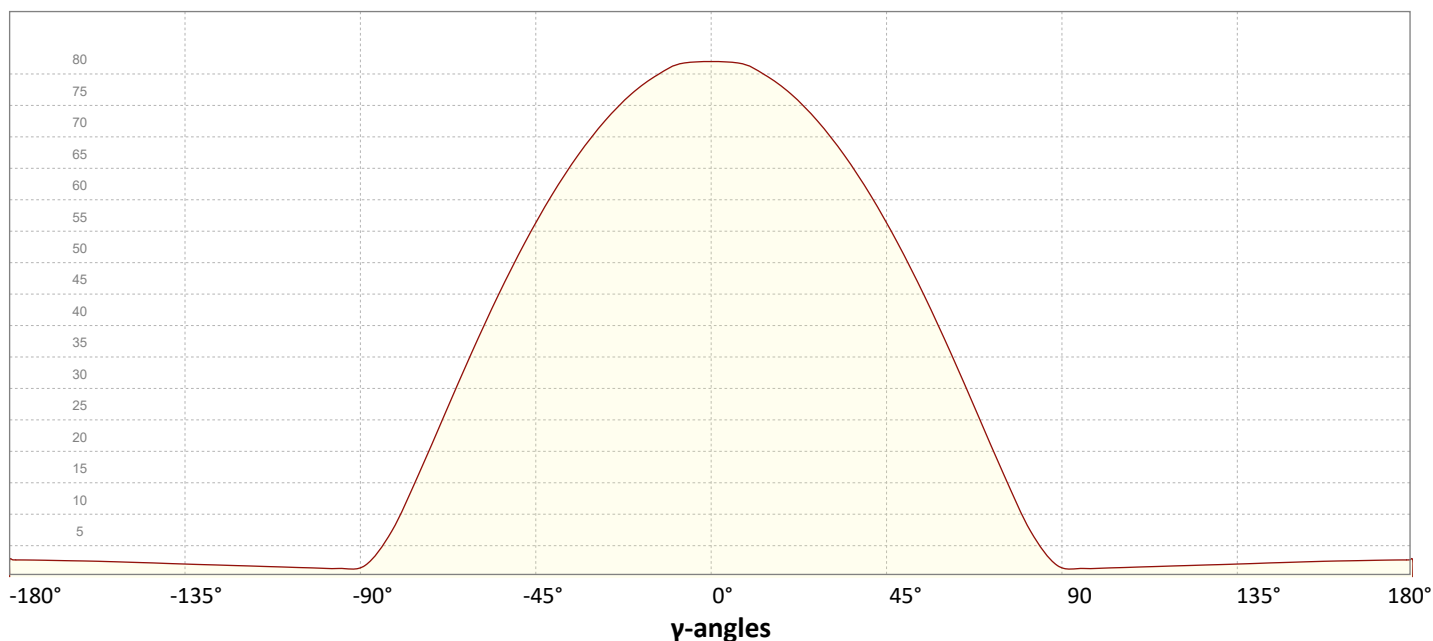
Intensity Ratio

In 120° cone	74.4%
In 90° cone	50.4%

C000-C180

C090-C270

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



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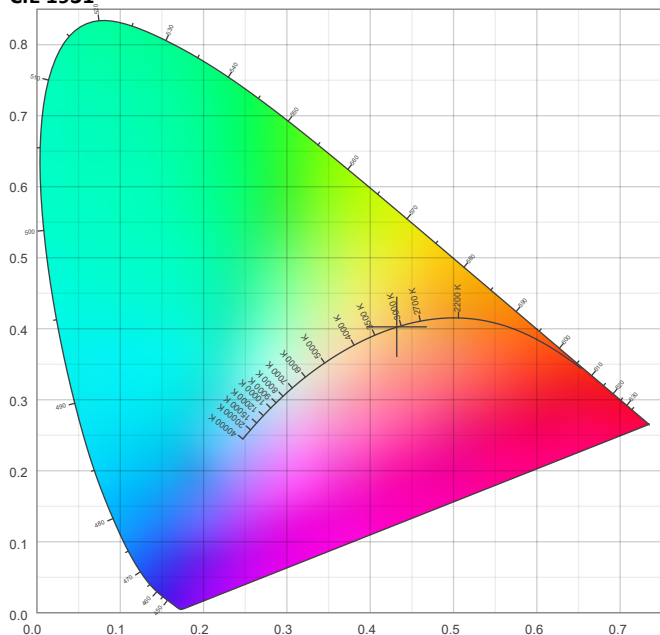
Operator:

Color details

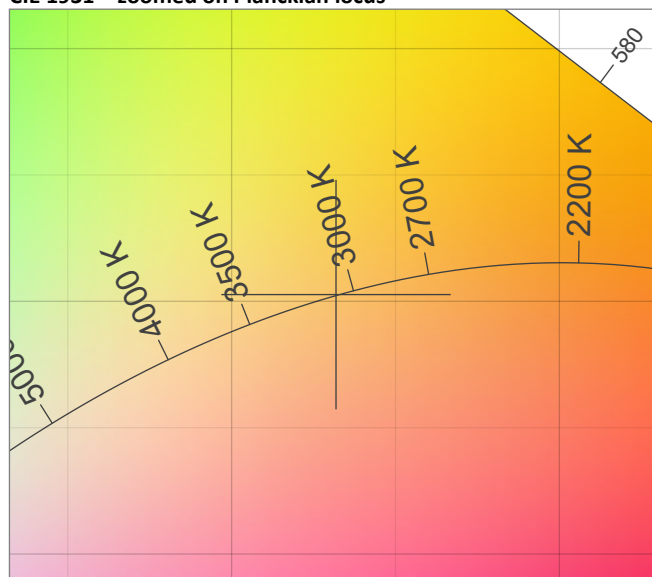
Correlated Color Temperature, Target CCT = 3080 K
Correlated Color Temperature, Measured CCT = 3080 K
Color Rendering Index CRI 92.5
Color Rendering Index, R9 (red component) R9 = 61.5
Color Rendering TM30-18 R_f 90.9 – R_g 98.7
Color Quality Scale CQS = 90.5

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0.432;0.403)
Color coordinate CIEs 1960 (u;v) = (0.248;0.347)
Color deviation from BBL Duv = 0.0002
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0.248;0.520)

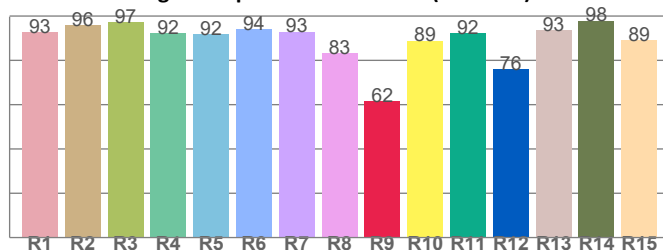
CIE 1931



CIE 1931 – zoomed on Planckian locus



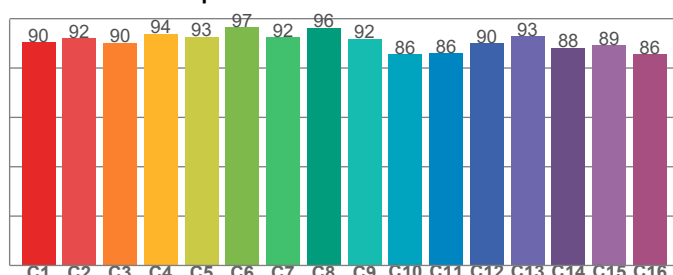
Color Rendering Index per reference color (CIE 1995)



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
92.6	95.8	97.3	92.3	91.8	94.0	92.9	83.3	61.5	88.9	92.4	76.0	93.5	97.9	89.1

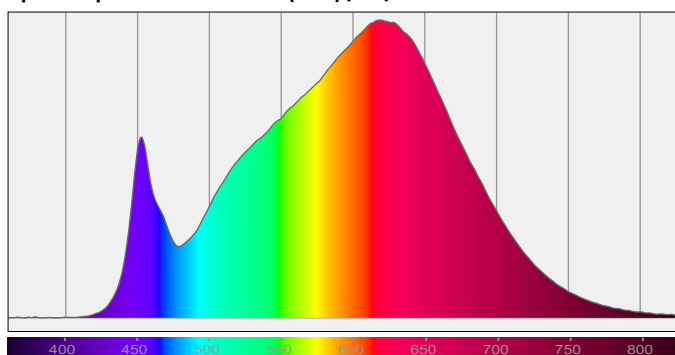
TM30-18 R_f-values per hue bin



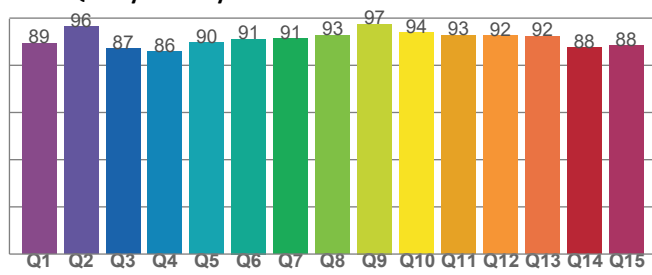
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
90.5	92.1	90.3	94.0	92.7	96.6	92.5	96.4	91.8	85.7	86.0	89.9	93.0	88.2	89.1	85.6

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
89.4	96.3	87.1	85.9	89.5	91.2	91.4	92.7	97.5	93.7	92.7	92.5	92.4	87.6	88.3

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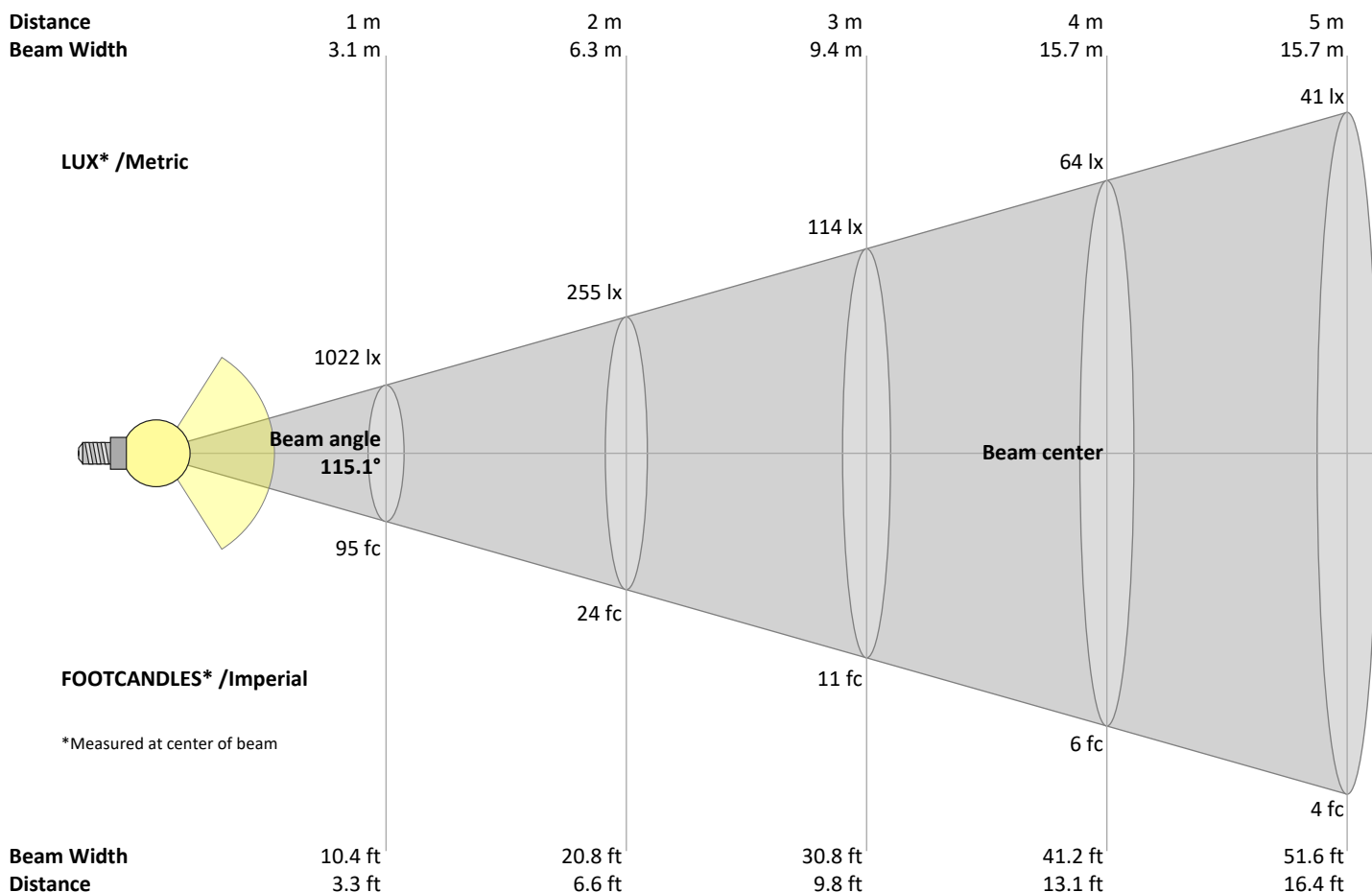
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Operator:

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
1022	255	114	64	41	28	21	16	13	10	8	7	6	5	5	4	4	3	3	3	lux
94.9	23.7	10.5	5.9	3.8	2.6	1.9	1.5	1.2	0.9	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.2	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
1022	1022	1011	991	963	924	880	828	769	703	631	554	470	383	294	205	123	61	22	18	cd
100%	100%	99%	97%	94%	90%	86%	81%	75%	69%	62%	54%	46%	37%	29%	20%	12%	6%	2%	2%	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
1022	1022	1011	991	963	924	880	828	769	703	631	554	470	383	294	205	123	61	22	18	cd
100%	100%	99%	97%	94%	90%	86%	81%	75%	69%	62%	54%	46%	37%	29%	20%	12%	6%	2%	2%	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
1022	1022	1011	991	963	924	880	828	769	703	631	554	470	383	294	205	123	61	22	18	cd
100%	100%	99%	97%	94%	90%	86%	81%	75%	69%	62%	54%	46%	37%	29%	20%	12%	6%	2%	2%	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
1022	1022	1011	991	963	924	880	828	769	703	631	554	470	383	294	205	123	61	22	18	cd
100%	100%	99%	97%	94%	90%	86%	81%	75%	69%	62%	54%	46%	37%	29%	20%	12%	6%	2%	2%	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	28.1	29.2	28.4	29.6	29.9	30.0	31.2	30.3	31.5	31.9
	3H	29.0	30.2	29.5	30.6	30.9	31.5	32.7	31.9	33.0	33.3
	4H	29.4	30.5	29.8	30.9	31.2	32.1	33.2	32.6	33.6	33.9
	6H	29.6	30.6	30.0	31.0	31.5	32.6	33.6	33.0	34.0	34.4
	8H	29.7	30.6	30.1	31.0	31.5	32.7	33.7	33.1	34.1	34.6
	12H	29.6	30.6	30.1	31.0	31.5	32.8	33.8	33.3	34.2	34.7
4H	2H	28.6	29.8	29.1	30.1	30.5	30.2	31.4	30.7	31.7	32.1
	3H	29.9	30.9	30.3	31.3	31.8	31.9	32.9	32.4	33.3	33.8
	4H	30.2	31.2	30.8	31.6	32.2	32.5	33.5	33.1	33.9	34.5
	6H	30.5	31.3	31.1	31.8	32.2	33.1	33.9	33.6	34.4	34.8
	8H	30.5	31.3	31.1	31.8	32.2	33.2	34.0	33.8	34.5	34.9
	12H	30.6	31.2	31.1	31.7	32.3	33.4	34.0	33.9	34.5	35.1
8H	4H	30.5	31.2	31.0	31.7	32.1	32.6	33.4	33.2	33.8	34.3
	6H	30.8	31.4	31.4	31.9	32.6	33.2	33.8	33.8	34.3	35.0
	8H	30.9	31.4	31.5	32.0	32.7	33.4	33.9	34.0	34.5	35.2
	12H	31.0	31.4	31.6	32.0	32.7	33.6	34.1	34.2	34.6	35.3
12H	4H	30.5	31.1	31.0	31.6	32.2	32.6	33.2	33.1	33.7	34.3
	6H	30.9	31.4	31.4	32.0	32.7	33.2	33.7	33.8	34.3	35.0
	8H	31.0	31.4	31.6	32.0	32.7	33.4	33.9	34.1	34.4	35.1
Variations with the observer position for the luminaire spacings, S:											
S = 1.0H				0.1 / -0.2				0.1 / -0.2			
S = 1.5H				0.3 / -0.5				0.5 / -0.6			
S = 2.0H				0.7 / -1.0				1.1 / -1.2			

UGR-Daten konnten aufgrund fehlender/falscher Symmetrie nicht berechnet werden. Gehen Sie zu Bearbeiten -> Photometrisch -> Korrekturen und wählen Sie Asymmetrie korrigieren (UGR für asymmetrische Verteilungen nicht definiert)..

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	109	109	109	103	103	103	98	98	98	95
1	107	103	98	94	104	100	96	92	95	92	89	90	88	85	86	84	82	79
2	98	89	82	77	95	87	81	75	83	77	73	79	74	70	75	71	68	66
3	89	78	70	63	86	76	69	63	73	66	61	69	64	59	66	62	58	55
4	81	69	60	54	79	68	59	53	64	57	52	62	55	50	59	54	49	47
5	75	62	53	46	72	60	52	45	58	50	45	55	49	44	53	47	43	41
6	69	55	46	40	67	54	46	40	52	44	39	50	43	38	48	42	38	35
7	64	50	41	35	62	49	41	35	47	40	34	45	39	34	44	38	33	31
8	59	46	37	31	57	45	37	31	43	36	31	42	35	30	40	34	30	28
9	55	42	34	28	54	41	33	28	40	33	28	38	32	27	37	31	27	25
10	52	39	31	25	50	38	30	25	37	30	25	35	29	25	34	28	24	23

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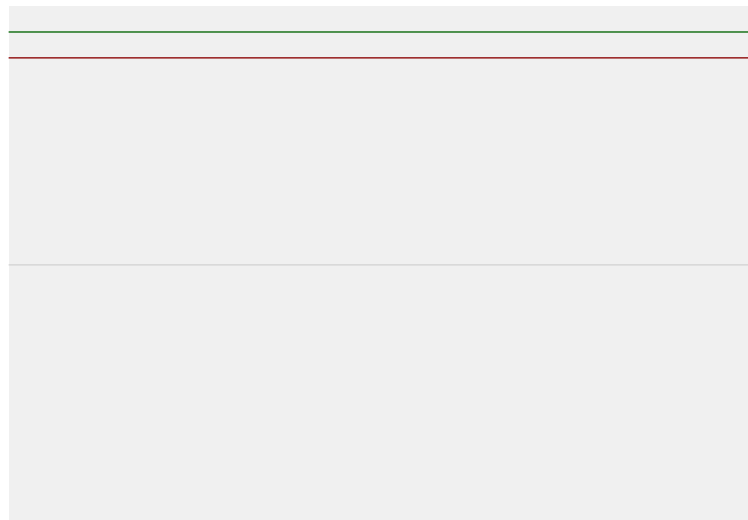
Operator:

Power Details

Input Power

Power feed to light source	22.2 W
Frequency of input power	0 Hz
RMS Input voltage feed, V_{RMS}	24.0 V
RMS Input current feed, I_{RMS}	0.924 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	22.16 VA
Displacement factor of AC power feed	0.0
Power factor of AC current feed	1.0
Total harmonic distortion of the current	0%
Total harmonic distortion of the voltage	0%

Input Power Curve



Efficiency

Radiated power efficiency 49.9%



Lumen efficiency 143 lm/W



Stabilization Details

Warmup Conditions

Stable period	3 Min
Stable change max	2.0%
Minimum time	3 Min

Color Temperature Change

CCT start	3081 K
CCT shift	-1 K
CCT end	3080 K

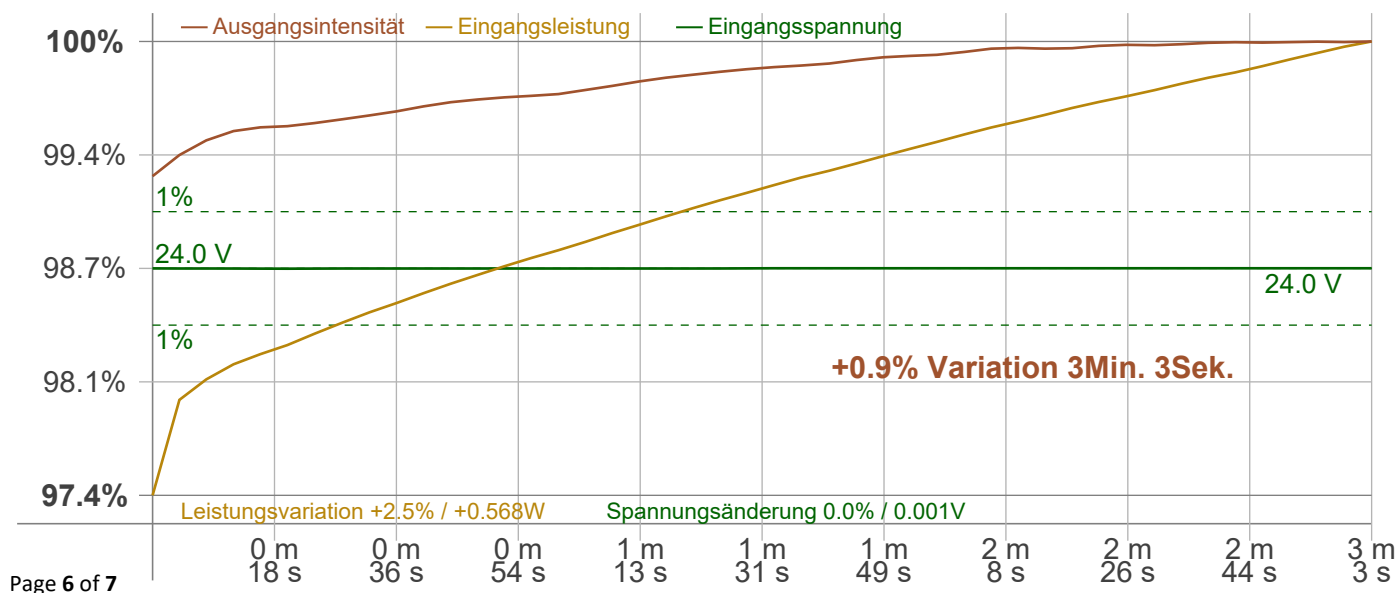
Warmup Result

Total warmup time	Lampe stabilisiert in 3 Min. 3 Sek.
Warmup variation	+0.9%

Output Change

Output start	3148 lm
Output change	+20 lm
Output end	3168 lm

Stabilization Curve



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Flicker /TLA details

Flicker Meter Type Viso Systems LabFlicker
Frequency of input power 0 Hz
Flicker/TLA sample rate n/a samples/s

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

Flicker indices according to Illuminating Engineering Society (IES)

Flicker frequency n/a Hz
Percent Flicker n/a %
Flicker index n/a

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) n/a
SVM value ($80 < F < 2000$ Hz) n/a

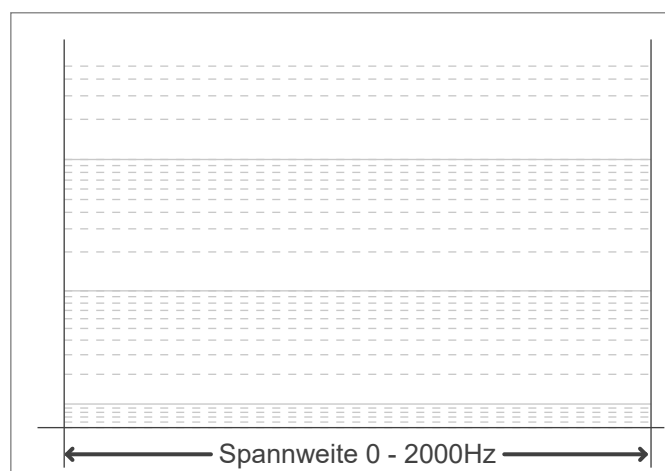
Flicker indices according to Lighting Research Center (2015)

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

