

Light Measurement Report

Print date: 11.06.2025

Measurement date and time: 11.06.2025 11:35:12 – Measurement no. VFR-250611-0159-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

4 planes – 90°

7.5°

0.66 m

16.2 W – PF 1.0 – DPF 0.0

24.0 V – 0.673 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 HP-COB 320 MONO WW 1m 241120

ASCOB32006 – awLed by audiowerk GmbH

Length: 1000mm

Width: 10mm

Height: 5mm

Charge: 241120

Product Description

Main Light Measurement Results

Output – Total Lumen (Up% / Down%)

Output – Lumen/m

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

2244 lm – 9.82% / 90.18%

2244 lm/m

139 lm/W

577 cd – 129.6°

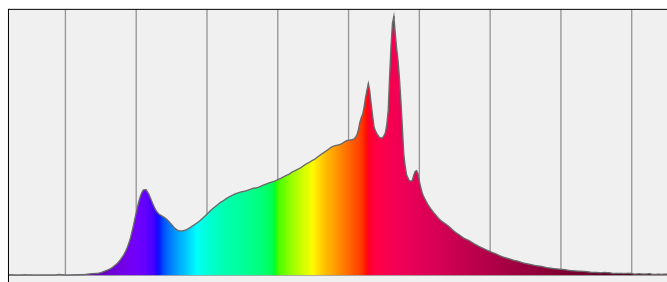
CCT = 3044 K / 3044 K

CRI 93.7

R_f 89.7 – R_g 96.4

Duv 0.0000 – SDCM n/a

SVM n/a – PstLM n/a



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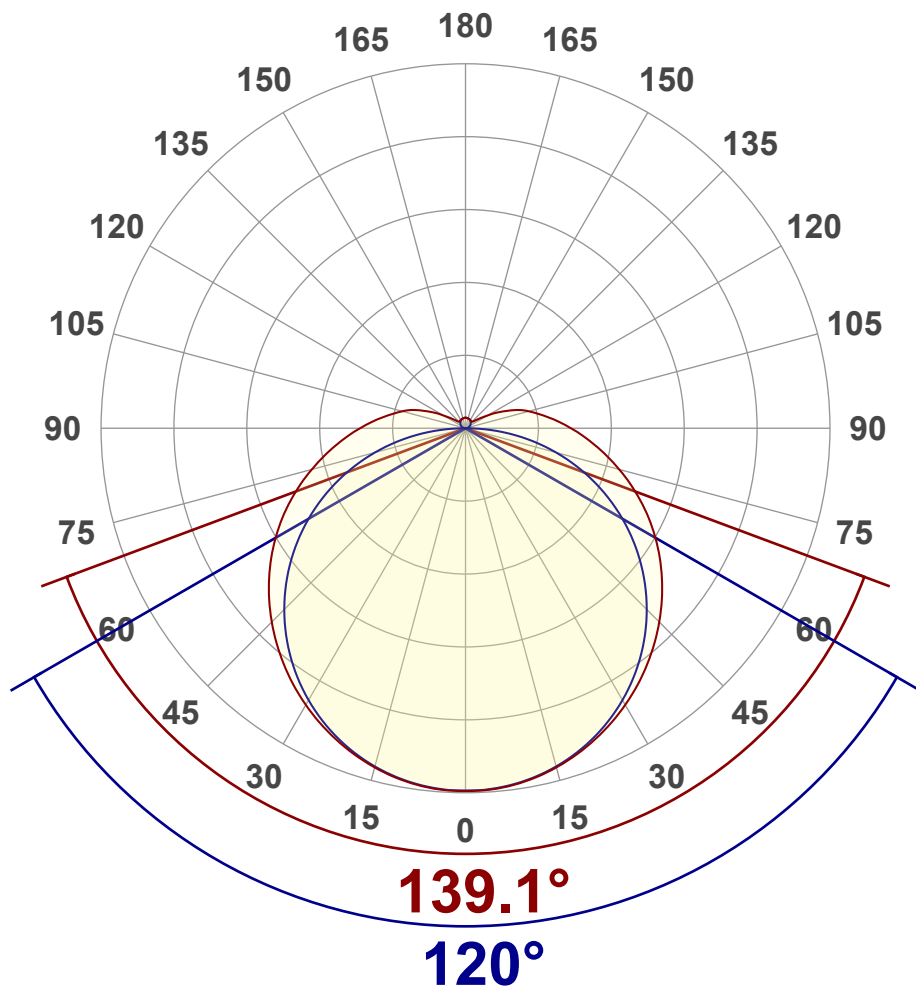
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Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	2244 lm
Lumen Up% / Down%	9.82% / 90.18%
Peak Intensity	577 cd
Beam Angle (50%)	129.6°
Beam Angle (90%)	120°
Beam Angle (10%)	139.1°

Cut-off Angle

Average 2,5%	360°
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Field Angle

Average 10%	200.3°
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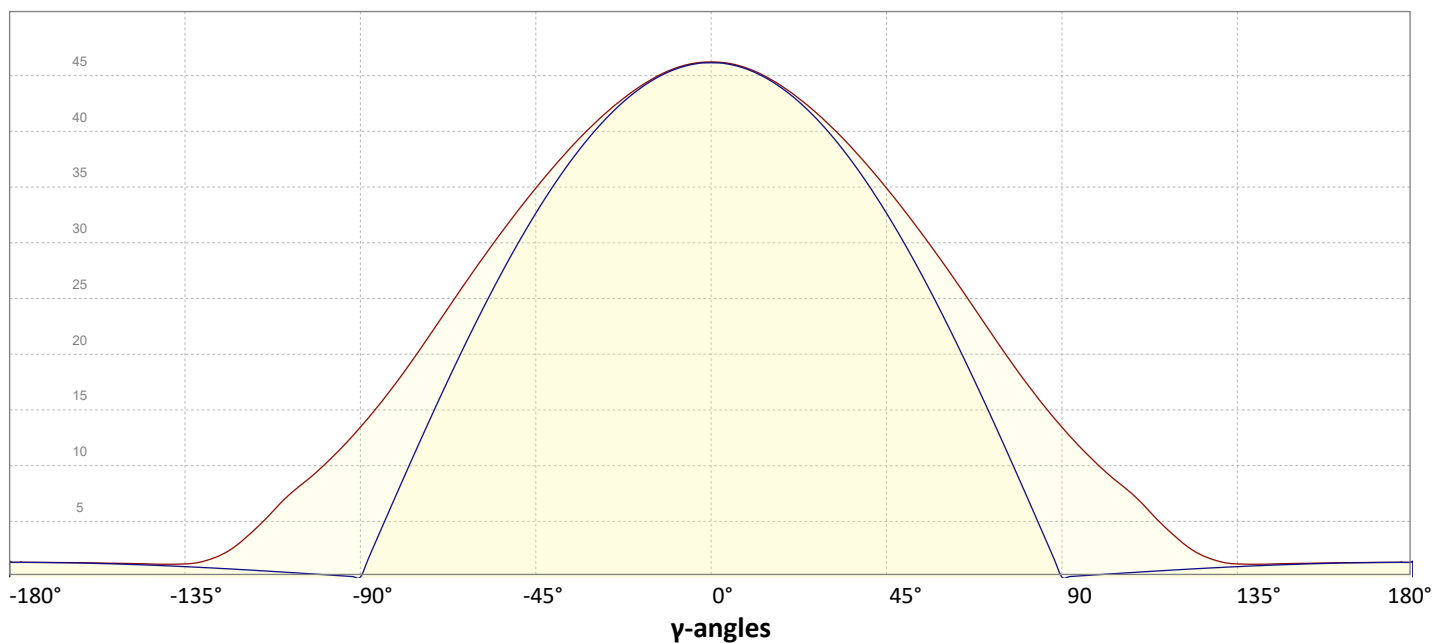
Intensity Ratio

In 120° cone	62.4%
In 90° cone	40.9%

C000-C180

C090-C270

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



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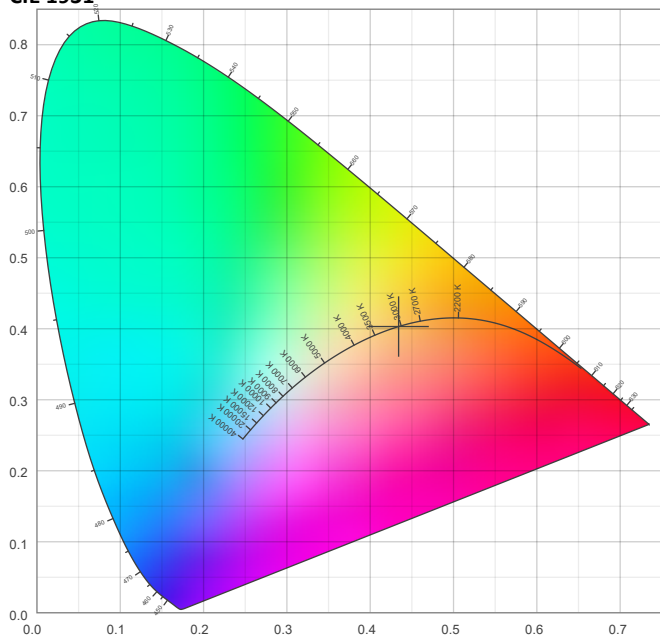
Operator:

Color details

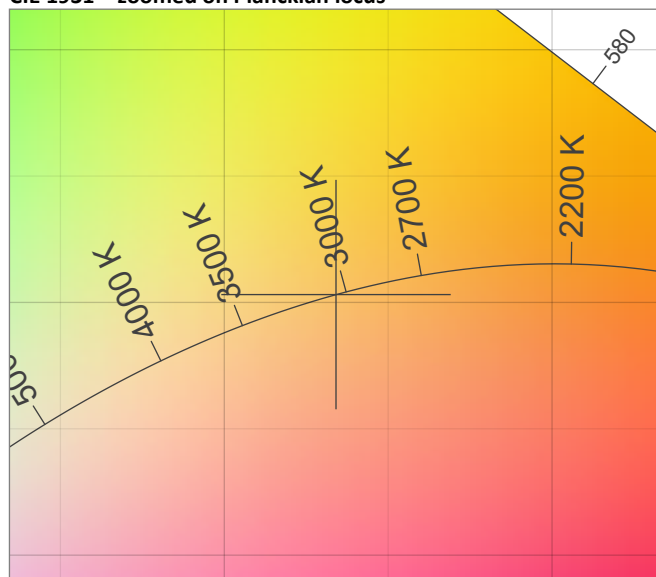
Correlated Color Temperature, Target CCT = 3044 K
Correlated Color Temperature, Measured CCT = 3044 K
Color Rendering Index CRI 93.7
Color Rendering Index, R9 (red component) R9 = 59.8
Color Rendering TM30-18 R_f 89.7 – R_g 96.4
Color Quality Scale CQS = 91.5

MacAdam Steps
Color coordinates CIE 1931 (x;y) = (0.434;0.403)
Color coordinate CIEs 1960 (u;v) = (0.249;0.347)
Color deviation from BBL Duv = 0.0000
Color coordinate CIEs 1976 (CIELUV) (u';v') = (0.249;0.521)

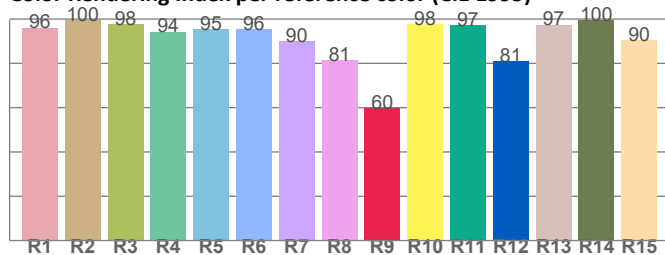
CIE 1931



CIE 1931 – zoomed on Planckian locus



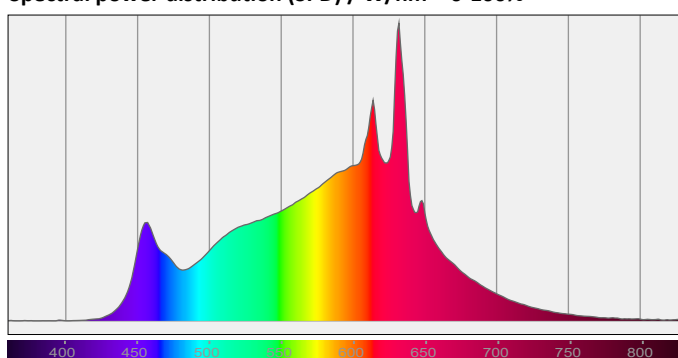
Color Rendering Index per reference color (CIE 1995)



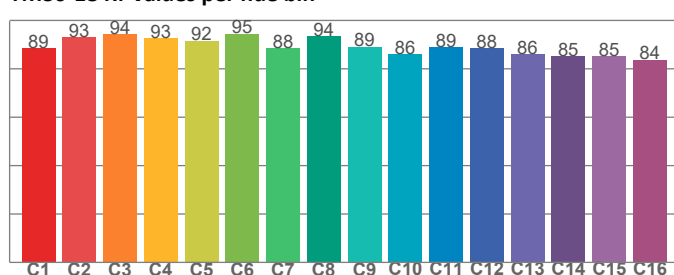
CRI R values, only R1-R8 are used to calculate final CRI value

R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
96.0	99.6	97.7	94.3	95.4	95.5	89.9	81.4	59.8	97.5	97.1	80.9	97.4	99.6	90.5

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



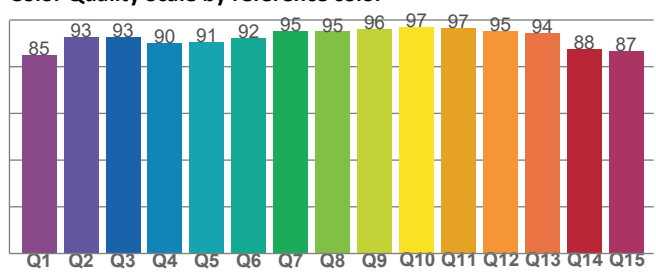
TM30-18 R_f-values per hue bin



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
88.6	93.0	94.4	92.5	91.6	94.6	88.5	93.6	89.1	86.1	89.0	88.4	86.0	85.1	85.4	83.8

Color Quality Scale by reference color



CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
85.1	92.7	92.6	90.0	90.7	92.3	95.1	95.1	96.2	97.2	96.6	95.5	94.3	87.6	86.7

Beam Details

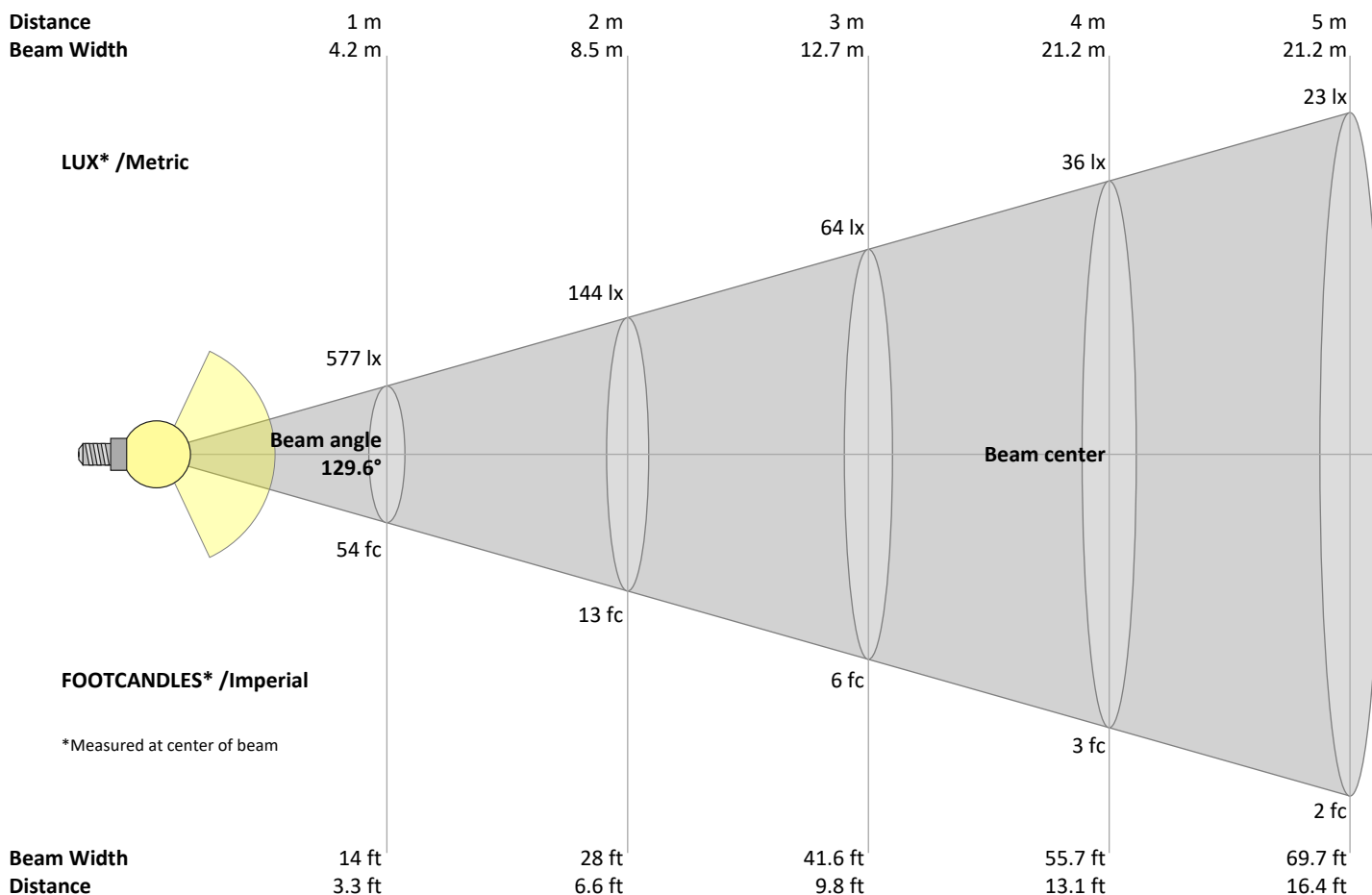
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Beam intensities from 1 – 20 m

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
577	144	64	36	23	16	12	9	7	6	5	4	3	3	3	2	2	2	2	1	lux
53.6	13.4	6	3.3	2.1	1.5	1.1	0.8	0.7	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	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
577	570	551	520	481	436	385	330	273	217	169	127	93	54	26	16	15	15	16	16	cd
100%	99%	95%	90%	83%	76%	67%	57%	47%	38%	29%	22%	16%	9%	4%	3%	3%	3%	3%	3%	of 0°v

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
577	570	549	514	467	408	339	262	178	90	0	3	5	8	10	12	13	15	16	16	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	1%	1%	2%	2%	2%	3%	3%	3%	of 0°vd

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
577	570	551	520	481	436	385	330	273	217	169	127	93	54	26	16	15	15	16	16	cd
100%	99%	95%	90%	83%	76%	67%	57%	47%	38%	29%	22%	16%	9%	4%	3%	3%	3%	3%	3%	of 0°v

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
577	570	549	514	467	408	339	262	178	90	0	3	5	8	10	12	13	15	16	16	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	1%	1%	2%	2%	2%	3%	3%	3%	of 0°vd

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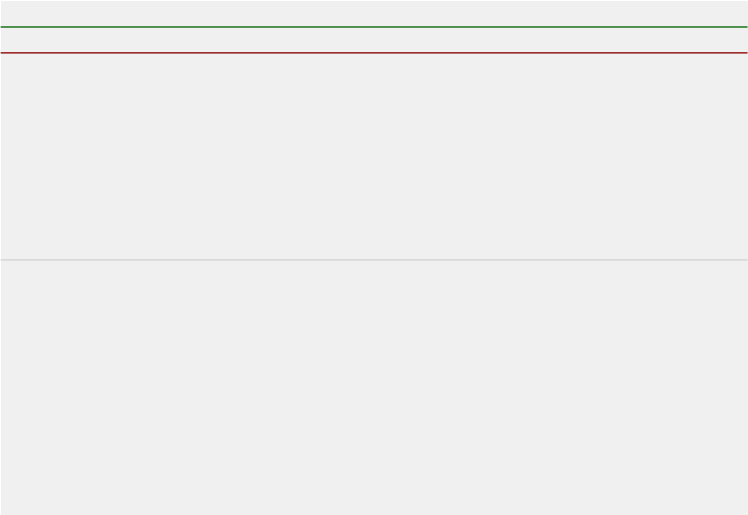


Power Details

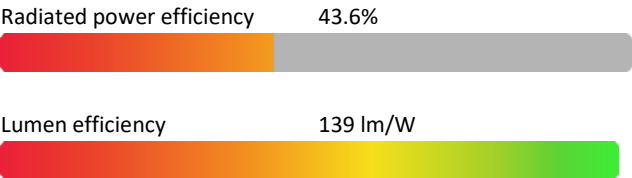
Input Power

Power feed to light source	16.2 W
Frequency of input power	0 Hz
RMS Input voltage feed, V_{RMS}	24.0 V
RMS Input current feed, I_{RMS}	0.673 A
Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$	16.15 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



Stabilization Details

Warmup Conditions

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

Color Temperature Change

CCT start	3048 K
CCT shift	-4 K
CCT end	3044 K

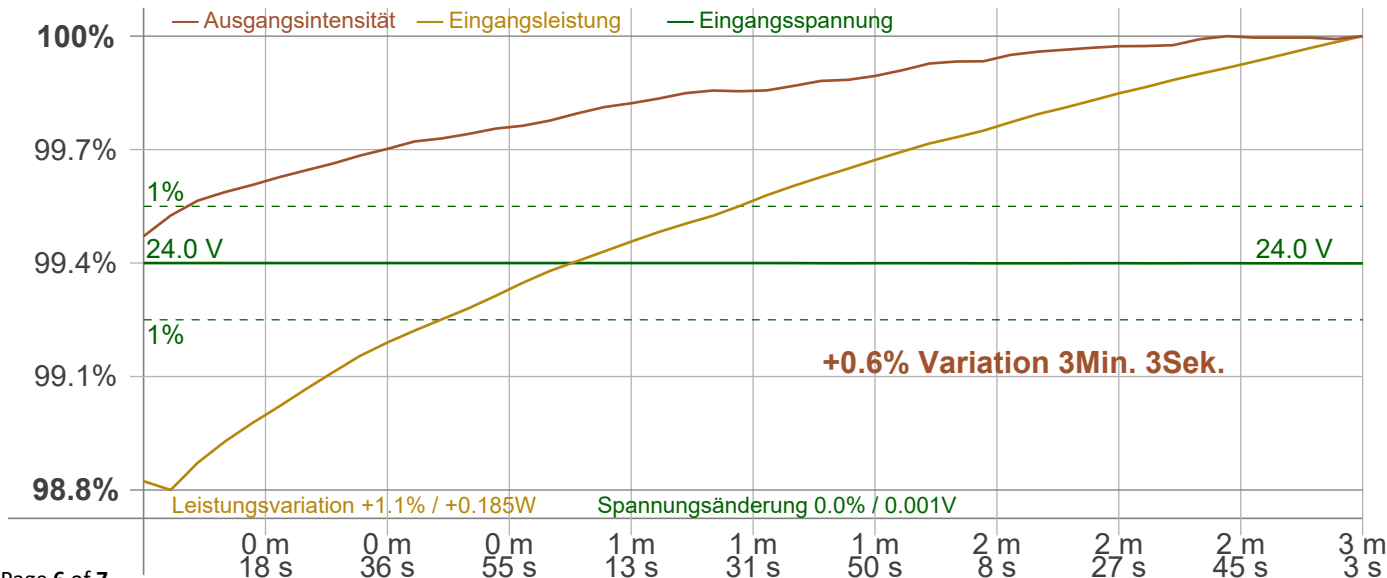
Warmup Result

Total warmup time	Lampe stabilisiert in 3 Min. 3 Sek.
Warmup variation	+0.6%

Output Change

Output start	2234 lm
Output change	+10 lm
Output end	2244 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 %

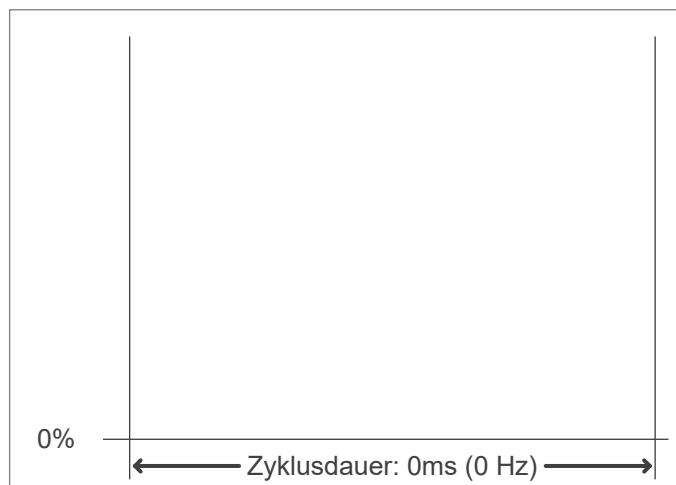
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

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

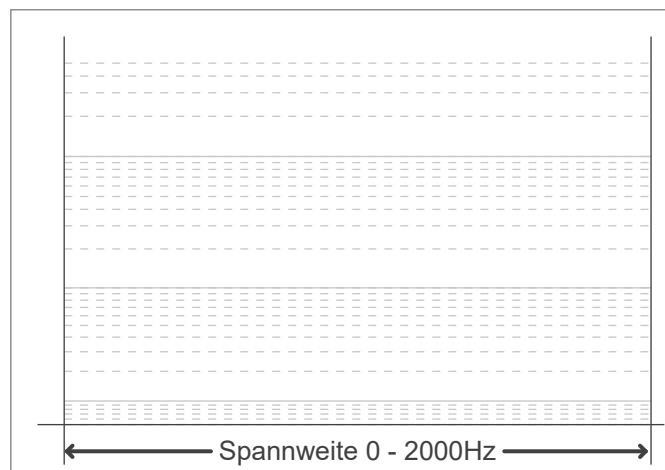
Flicker indices according to Lighting Research Center (2015)

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

