

Test report

Light measurement results

Laboratory and Equipment

Test lab
Spectrometer Manufacturer and Model
Measurement date

Viso LightSpion - Seriennummer: 1435906163 Sensorseriennumm
LightSpion – Type C, horizontal
24.09.2026

Measurement Conditions

Tested c-planes
Tested gamma resolution
Input Power
Input RMS Voltage and Current

4 planes – 90.00°
7.50°
14.44 W
24 V – 0.60 A

Tested Light Source

Luminaire
Item No.
Manufacturer
Measured length
Dimension (Lamp w x h) | (Light w x h)
Description

NEON FLEX 3D 1616 24V 15W NW 1m 260716
ANF3D161615W08
awLed by audiowerk GmbH
1000mm
16mm x 16mm | 16mm x 16mm
Charge: 260716

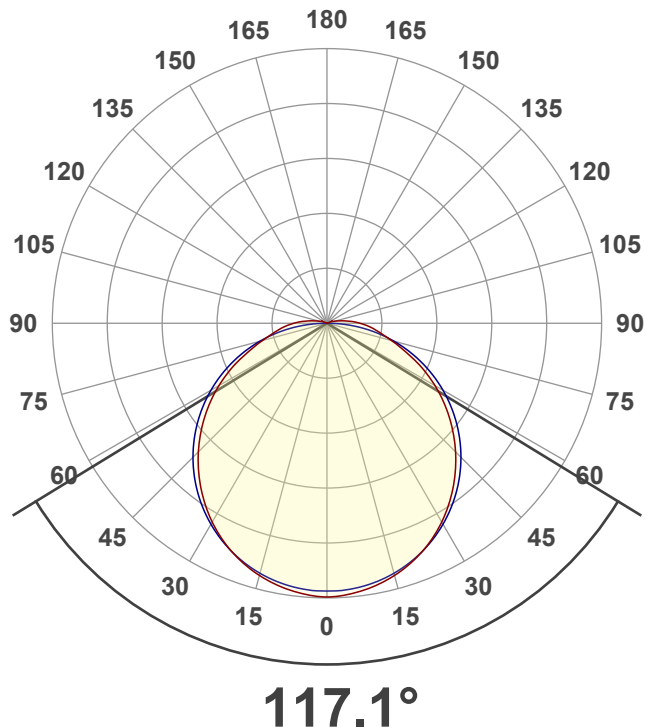
Main Light Measurement Results

Output – Total Lumen (Up% / Down%)
Efficiency
Peak Intensity
Correlated Color Temperature, CCT
Color Rendering Index
Ecodesign Energy Class

1279 lm – 2.095% / 97.9%
88.6 lm/W
407.2 cd
4000 K
CRI 95.6
G

Polar light distribution diagram

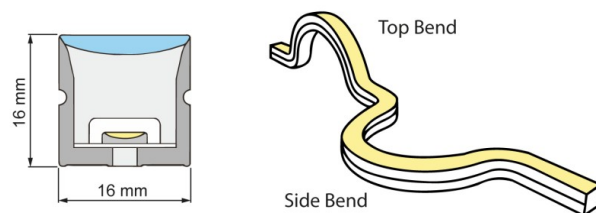
Unit: 0-100% of peak intensity



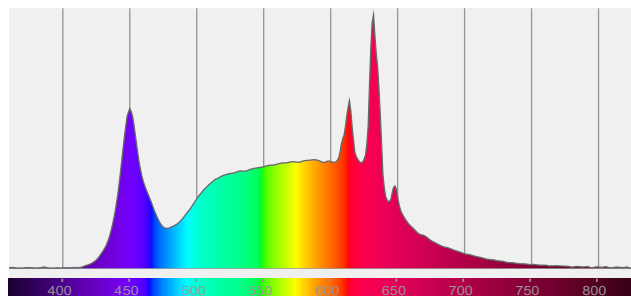
— C0 - C180
— C90 - C270

$\eta = 100\%$

Product photo



Spectral power distribution

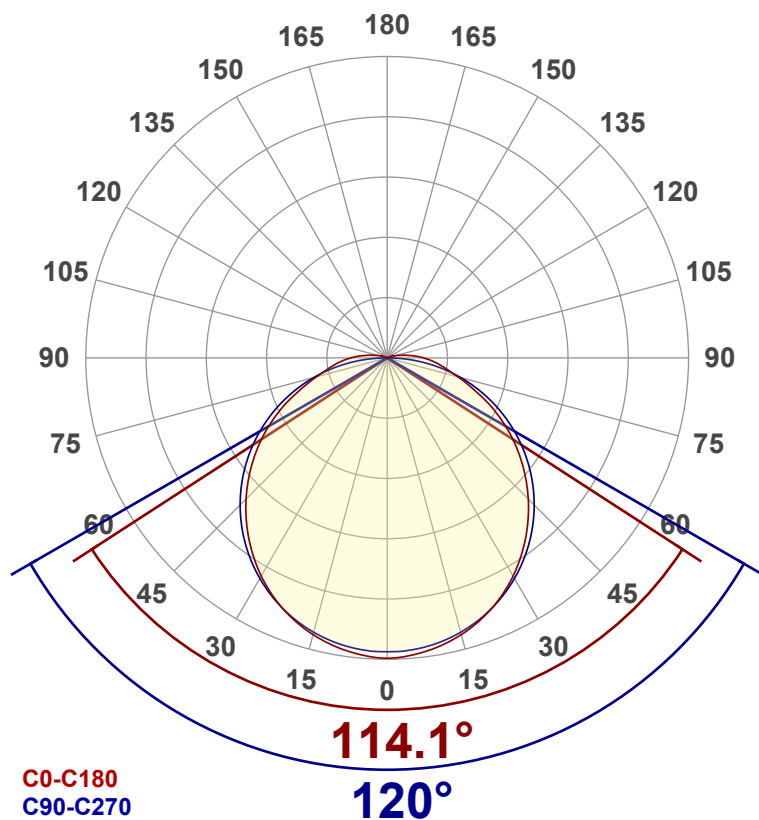


Test report

Light measurement results

Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	1279 lm
Lumen Up% / Down%	2.095% / 97.9%
Peak Intensity	407.2 cd
Beam Angle (50%-FWHM)	117.1°

EU Ecodesign parameters

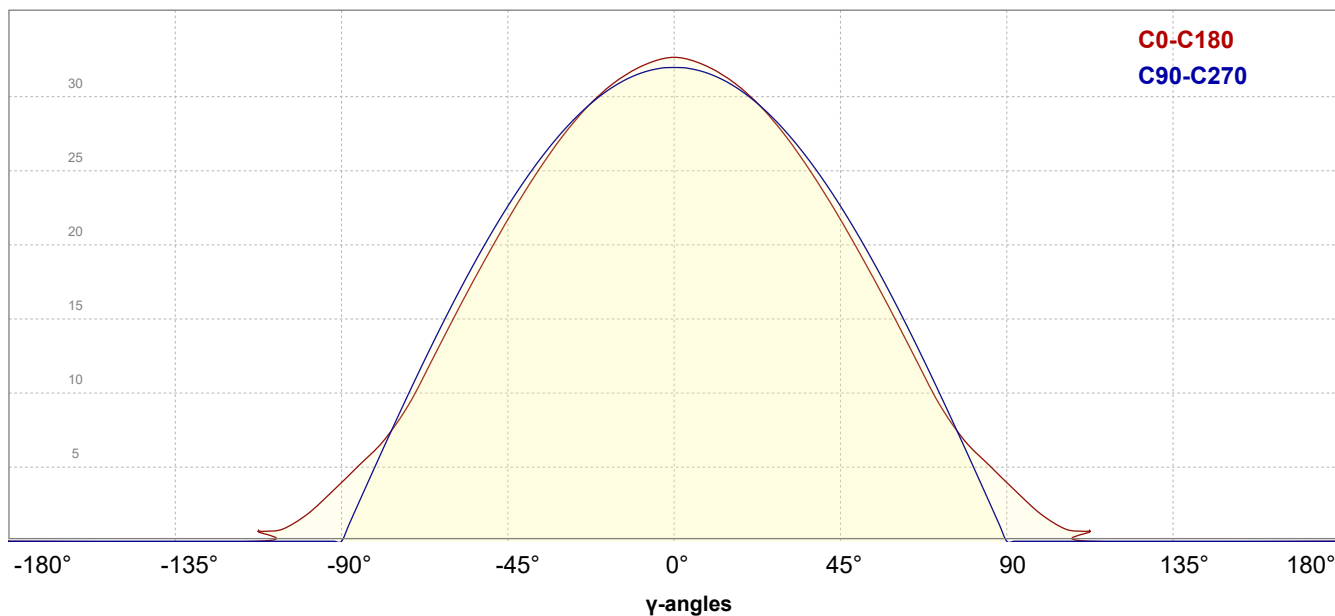
Directionality (DLS or NDLS)	NDLS
Ecodesign Useful Luminous Flux	1279 lm
Ecodesign Energy Class	G

Intensity Ratio

In 120° cone	72.67%
In 90° cone	48.77%

Linear distribution diagram

Intensity [cd]



Test report

Light measurement results

Color details

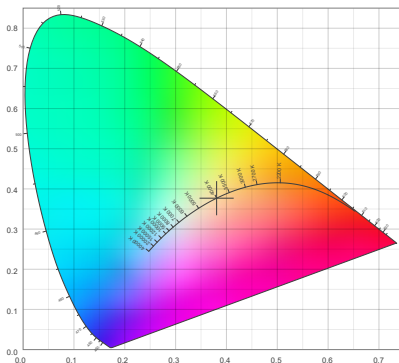
Correlated Color Temperature, Target
Correlated Color Temperature, Measured
Color Rendering Index
Color Rendering Index, R9 (red)
Color Rendering TM30-18

CCT = 4000 K
CCT = 3929 K
CRI 95.6
R9 = 81.0
Rf 91.3
Rg 102.4

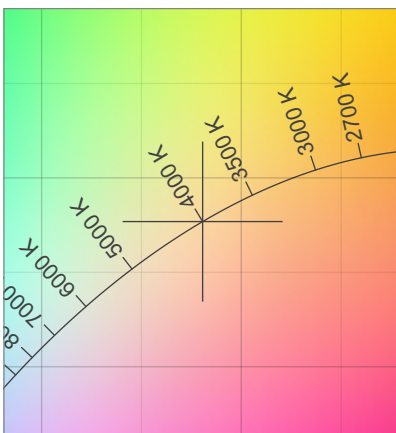
MacAdam Steps
Color deviation from BBL
Color coordinates CIE 1931
Color coordinate CIEs 1960
Color coordinate CIEs 1976
Color Quality Scale

SDCM = 3.2
Duv = -0.0038
(x;y) = (0.3806;0.3769)
(u;v) = (0.2252;0.3344)
(u';v') = (0.2252;0.5017)
CQS = 92.6

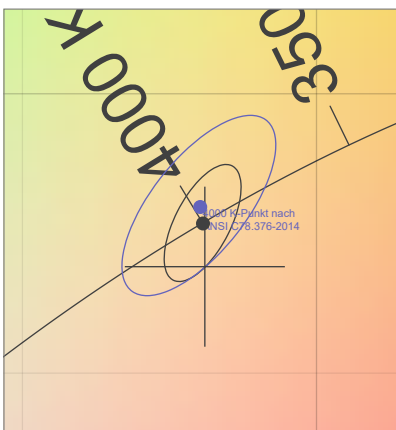
CIE 1931 Chromaticity diagram



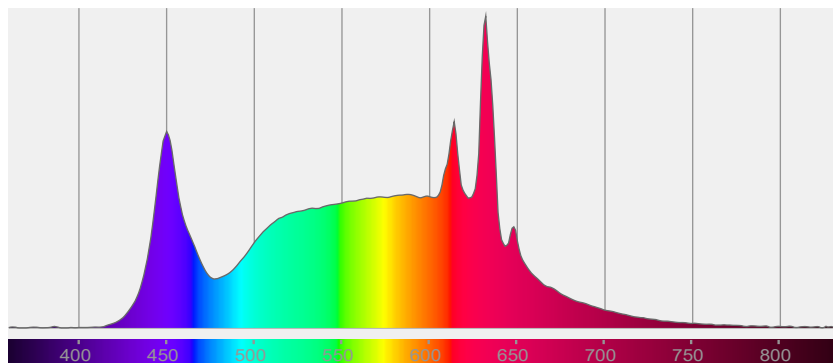
CIE 1931 Chromaticity - zoomed



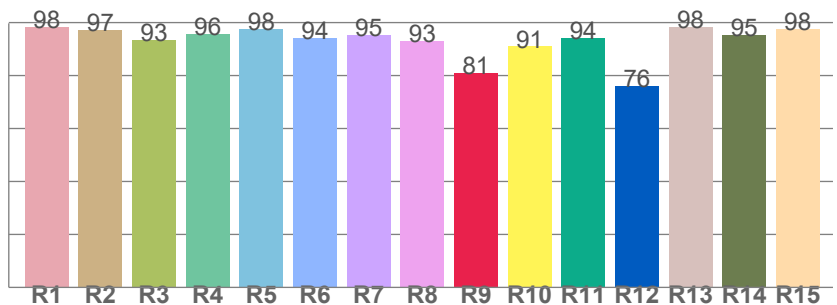
CIE 1931 Chromaticity - SDCM



Spectral power distribution



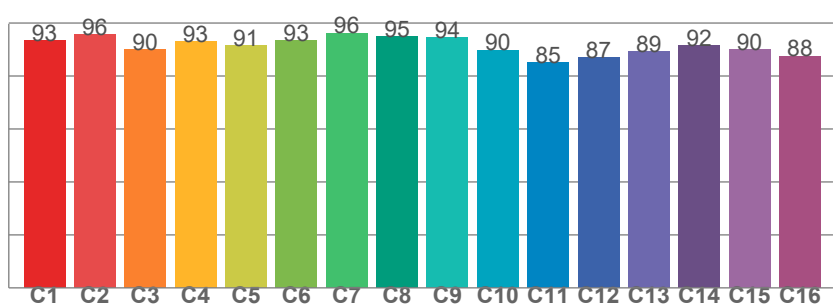
Color Rendering Index per reference color (CIE 1995)



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
98.4	97.1	93.2	95.7	97.5	94.1	95.4	93.2	81.0	90.9	94.1	76.0	98.3	95.2	97.6

TM30-18 Rf-values per hue bin



TM30-18 Rf-values per hue bin

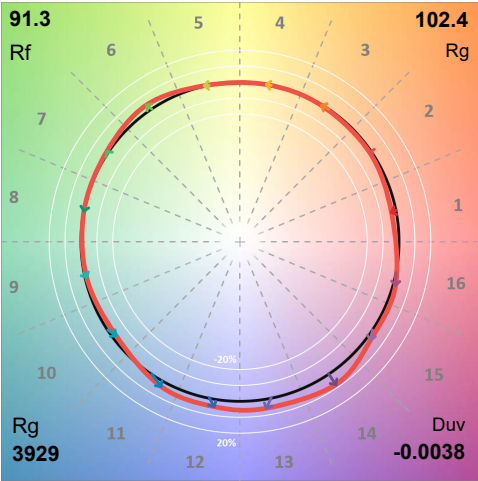
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
93.3	95.8	90.1	92.9	91.5	93.4	96.3	94.9	94.4	89.8	85.0	86.9	89.3	91.6	90.0	87.6

Test report

Light measurement results

Color details - ANSI/IES TM-30-18 Color Rendition Report

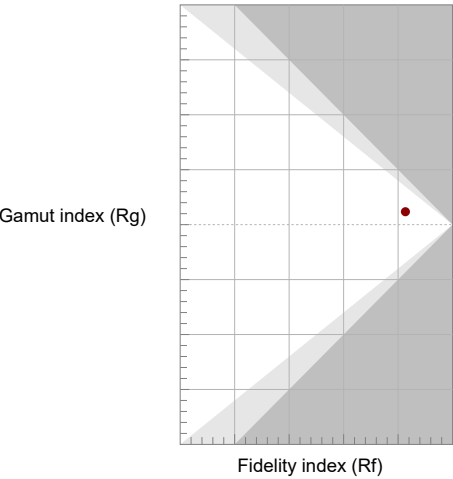
Color Vector Graphic



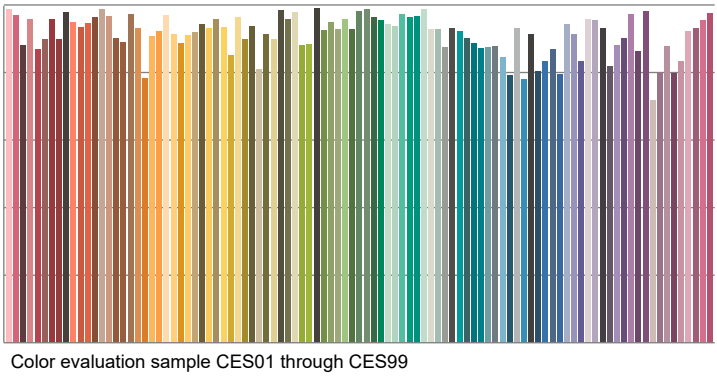
Color Distortion Graphic



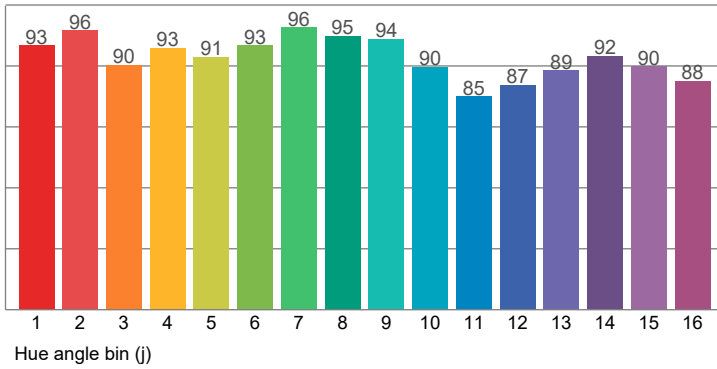
Gamut Index vs. Fidelity Index



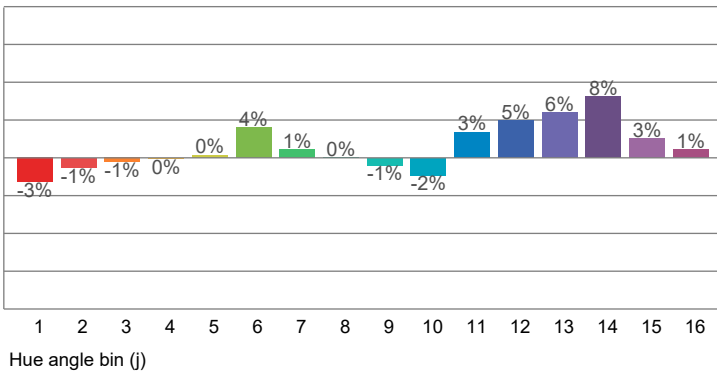
Color Rendition by Color Evaluation Sample (CES)



Local Color Fidelity (per hue bin)



Local Chroma Shift (per hue bin)



CIE x 0.3806
CIE y 0.3769
CIE u' 0.2252
CIE v' 0.5017

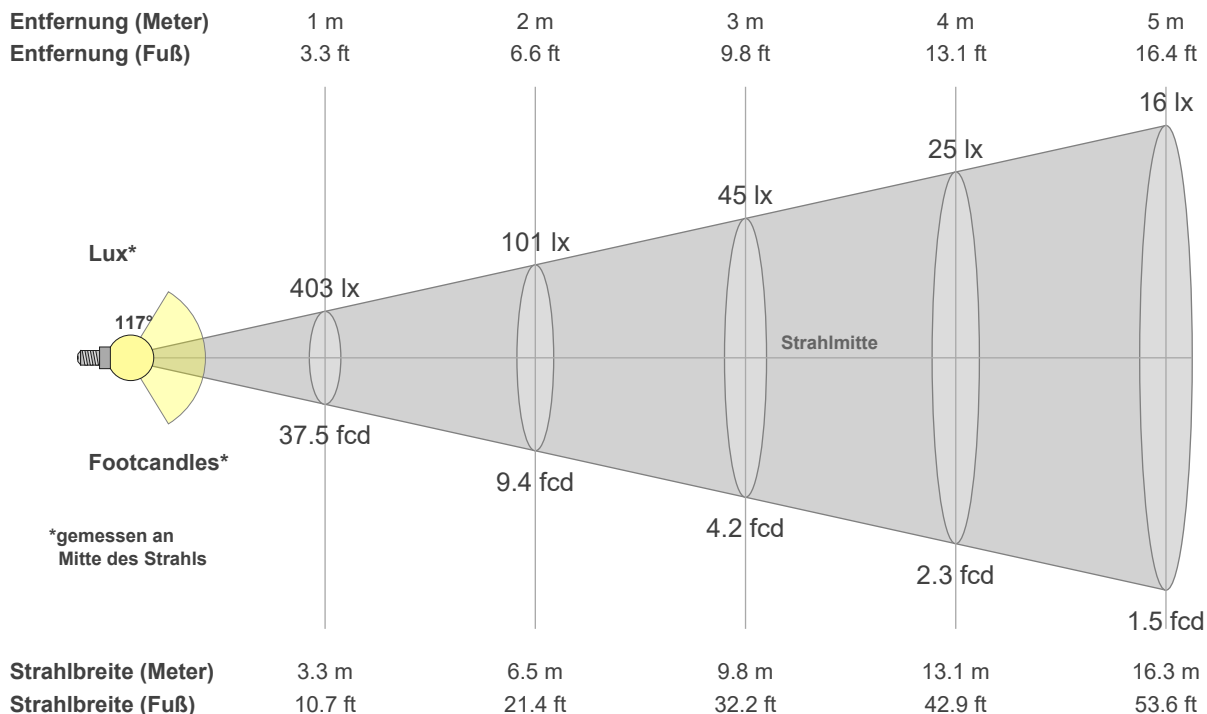
CIE 13.3-1995

Ra 95.6
R9 81.0

Test report

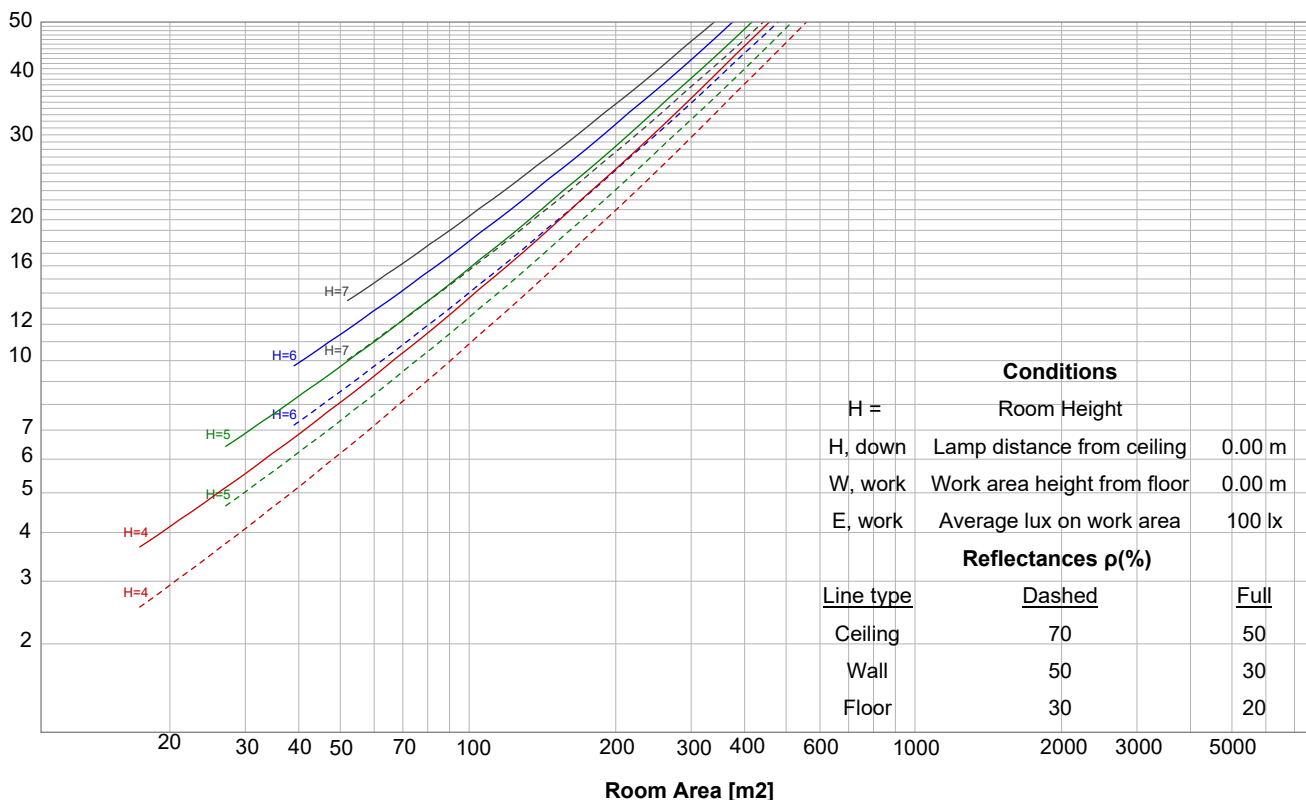
Light measurement results

Beam details



Luminaire budgetary diagram

LAMPS (number of lamps)



Test report

Light measurement results

Intensity 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
403	101	45	25	16	11	8	6	5	4	3	3	2	2	2	2	1	1	1	1	lux
37.5	9.4	4.2	2.3	1.5	1	0.8	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	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
403	405	399	389	376	361	342	320	297	271	244	215	186	156	126	101	80	65	50	35	cd
100%	100%	99%	96%	93%	89%	85%	79%	74%	67%	60%	53%	46%	39%	31%	25%	20%	16%	12%	9%	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
403	398	394	386	376	362	346	327	306	283	257	229	200	169	137	103	69	35	0	0	cd
100%	99%	98%	96%	93%	90%	86%	81%	76%	70%	64%	57%	50%	42%	34%	26%	17%	9%	0%	0%	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
403	405	399	389	376	361	342	320	297	271	244	215	186	156	126	101	80	65	50	35	cd
100%	100%	99%	96%	93%	89%	85%	79%	74%	67%	60%	53%	46%	39%	31%	25%	20%	16%	12%	9%	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
403	398	394	386	376	362	346	327	306	283	257	229	200	169	137	103	69	35	0	0	cd
100%	99%	98%	96%	93%	90%	86%	81%	76%	70%	64%	57%	50%	42%	34%	26%	17%	9%	0%	0%	of 0°val

UGR Table

Corrected, comprehensive UGR table according to 117-1995, S/H ratio=0.25

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		20.5	21.7	20.7	22.0	22.3	22.4	23.6	22.7	24.0	24.3
	3H		21.6	22.9	22.1	23.2	23.5	24.1	25.4	24.6	25.7	26.0
	4H		22.2	23.4	22.6	23.7	24.0	24.9	26.2	25.4	26.5	26.8
	6H		22.7	23.8	23.0	24.1	24.5	25.7	26.8	26.0	27.1	27.5
	8H		22.9	23.9	23.2	24.3	24.7	25.9	27.0	26.3	27.3	27.8
	12H		23.0	24.0	23.4	24.4	24.9	26.1	27.1	26.5	27.5	28.0
4H	2H		21.1	22.4	21.6	22.7	23.0	22.7	23.9	23.1	24.2	24.5
	3H		22.6	23.6	23.0	24.0	24.5	24.7	25.7	25.1	26.1	26.6
	4H		23.2	24.1	23.6	24.6	25.2	25.5	26.5	26.0	26.9	27.5
	6H		23.7	24.6	24.3	25.0	25.5	26.3	27.2	26.8	27.6	28.0
	8H		24.0	24.8	24.5	25.2	25.6	26.6	27.4	27.1	27.8	28.3
	12H		24.2	24.9	24.7	25.4	25.9	26.8	27.5	27.4	28.0	28.5
8H	4H		23.5	24.4	24.1	24.8	25.2	25.6	26.5	26.2	26.9	27.3
	6H		24.3	24.9	24.8	25.4	26.0	26.5	27.2	27.1	27.7	28.3
	8H		24.6	25.2	25.1	25.7	26.4	26.9	27.5	27.5	28.1	28.7
	12H		24.9	25.4	25.5	26.0	26.6	27.2	27.7	27.8	28.3	28.9
12H	4H		23.6	24.3	24.1	24.7	25.2	25.6	26.3	26.1	26.8	27.3
	6H		24.4	24.9	24.9	25.5	26.2	26.6	27.2	27.1	27.7	28.4
	8H		24.7	25.2	25.3	25.8	26.4	27.0	27.5	27.6	28.0	28.7
Variations with the observer position for the luminaire spacings, S:												
S = 1.0H			0.1 / -0.1					0.1 / -0.1				
S = 1.5H			0.2 / -0.3					0.3 / -0.4				
S = 2.0H			0.4 / -0.6					0.8 / -0.8				

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	20
RCR		(Room Cavity Ratio)				Room values are expressed as percentage of Lumen delivered to the task surface												
0	118.5	118.5	118.5	118.5	115.5	115.5	115.5	115.5	109.9	109.9	109.9	104.8	104.8	104.8	100.1	100.1	100.1	97.9
1	107.0	101.6	96.8	92.5	103.9	99.1	94.8	90.8	94.4	90.8	87.5	90.1	87.2	84.5	86.1	83.8	81.6	79.2
2	96.7	87.9	80.5	74.3	93.8	85.8	79.0	73.3	81.8	76.1	71.2	78.2	73.4	69.2	74.8	70.9	67.4	65.0
3	87.9	76.7	68.1	61.2	85.2	75.0	67.0	60.5	71.6	64.8	59.2	68.5	62.7	57.8	65.7	60.8	56.6	54.2
4	80.3	67.7	58.6	51.5	77.8	66.2	57.7	51.0	63.4	56.0	50.1	60.8	54.4	49.2	58.4	52.8	48.3	45.9
5	73.7	60.4	51.0	44.1	71.4	59.1	50.3	43.8	56.7	49.0	43.1	54.5	47.7	42.4	52.4	46.5	41.8	39.5
6	68.0	54.2	45.0	38.4	65.9	53.2	44.5	38.1	51.1	43.4	37.6	49.2	42.3	37.1	47.4	41.3	36.6	34.4
7	63.0	49.1	40.1	33.8	61.1	48.2	39.6	33.6	46.4	38.8	33.2	44.8	37.9	32.8	43.2	37.1	32.4	30.3
8	58.6	44.8	36.0	30.1	56.9	44.0	35.7	29.9	42.4	34.9	29.6	41.0	34.2	29.3	39.7	33.5	28.9	27.0
9	54.7	41.0	32.6	27.0	53.2	40.3	32.3	26.8	39.0	31.7	26.6	37.8	31.1	26.3	36.6	30.5	26.1	24.2
10	51.3	37.8	29.8	24.4	49.9	37.2	29.5	24.3	36.1	29.0	24.1	35.0	28.5	23.9	34.0	28.0	23.7	21.9

Test report

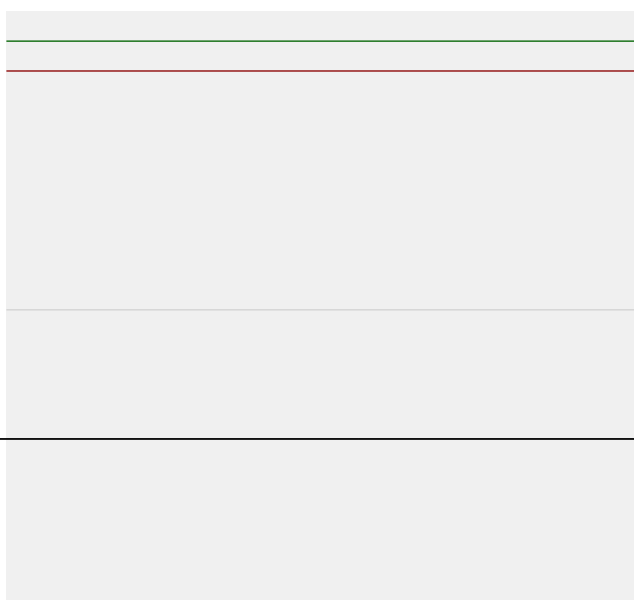
Light measurement results

Power details

Input power

Frequency of input power	0.0 Hz
Power feed to light source	14.44 W
RMS Input voltage feed V _{RMS}	24 V
RMS Input current feed I _{RMS}	0.60 A
Volt-Amp or apparent power = V _{RMS} *I _{RMS}	14.4 VA
Displacement factor of AC power feed	0.00
Power factor of AC current feed	1.00
Total harmonic distortion of the current	0%
Total harmonic distortion of the voltage	0%

Input power curve



Efficiency

Radiated power efficiency 27.99

Lumen efficiency 88.6 lm/W

Stabilization details

Warmup Conditions

Stable period	3 Min
Stable change max	5%
Minimum time	3 Min

Color Temperature Change

CCT start	4010 K
CCT shift	-10 K
CCT end	4000 K

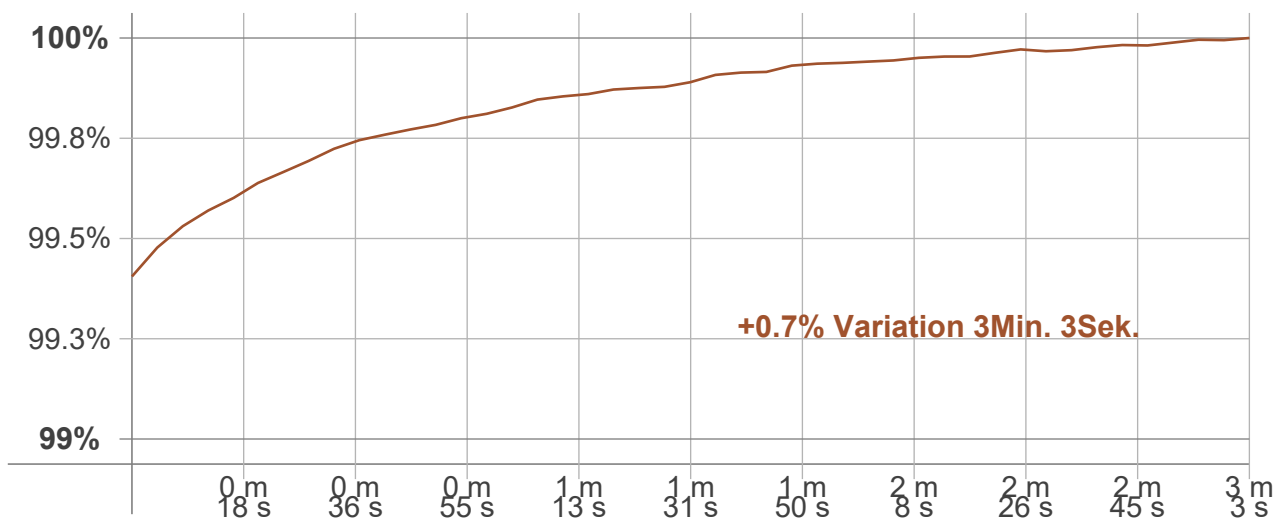
Warmup Result

Total warmup time	Lampe stabilisiert in
Warmup variation	0.659%

Output Change

Output start	1273 lm
Output change	6.529 lm
Output end	1279 lm

Stabilization Curve



Flicker TLA details

Flicker Meter Type Viso Systems LabFlicker
Frequency of input power 0.0 Hz
Flicker/TLA sample rate NaN samples/s

Measurement time
PstLM 180 sec.
All other indices 1,5 sec,

Flicker indices according to Illuminating Engineering Society (IES)

Flicker frequency NaN Hz
Percent Flicker NaN %
Flicker index NaN

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

JA8/10 40 Hz NaN %
JA8/10 90 Hz NaN %
JA8/10 200 Hz NaN %
JA8/10 400 Hz NaN %
JA8/10 1000 Hz NaN %

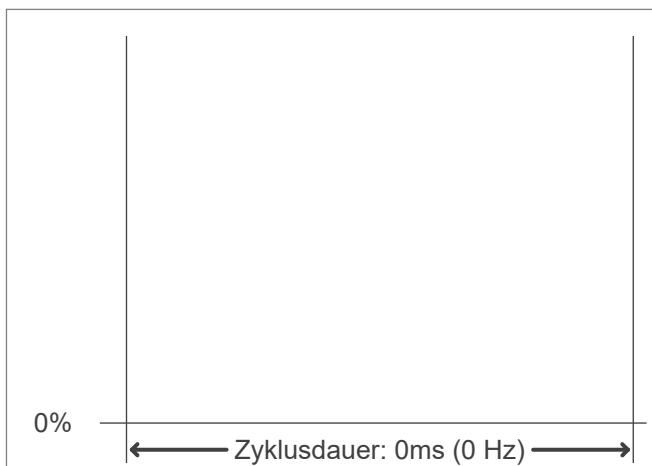
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value ($F < 80$ Hz) NaN
SVM value ($80 < F < 2000$ Hz) NaN

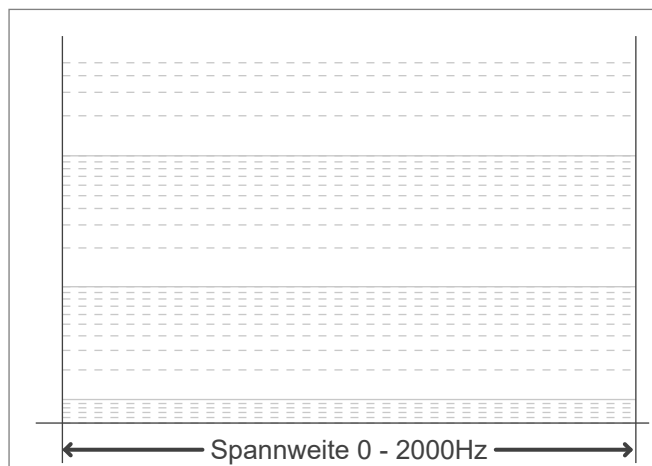
Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp NaN

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

