

Test report

Light measurement results

Laboratory and Equipment

Test lab
Spectrometer Manufacturer and Model
Measurement date

Viso LightSpion - Seriennummer: 1435906163
LightSpion – Type C, horizontal
28.01.2026

Measurement Conditions

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

4 planes – 90°
7.5°
20.0 W
24.0 V – 0.832 A

Tested Light Source

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

FLEX STRIP HP-COB 288 MONO SWW 1m 251115
AS1COB28826
awL^{ed} by audiowerk GmbH
1000mm
10mm x 1000mm | 6mm x 3mm
Charge: 251115

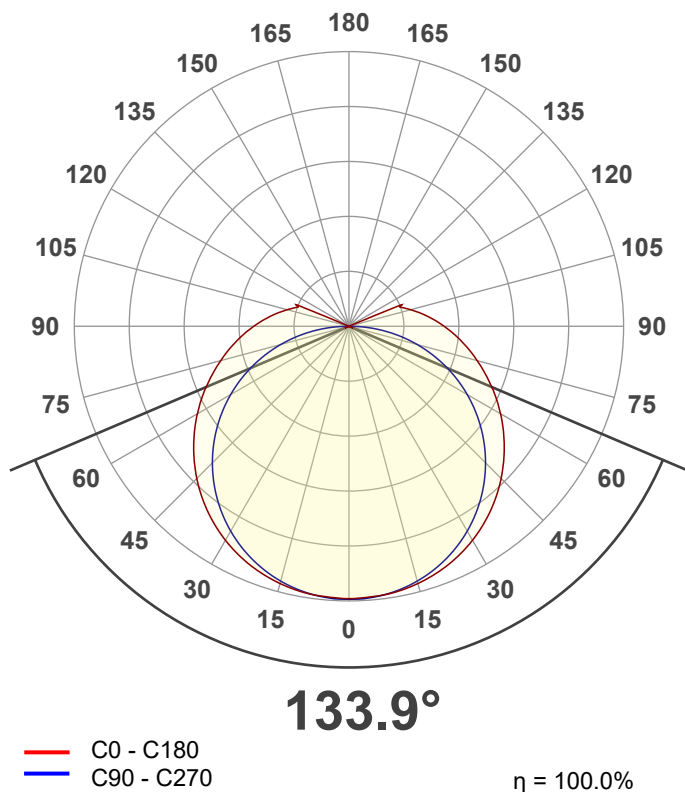
Main Light Measurement Results

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

2502 lm – 8% / 92%
125 lm/W
635 cd
2700 K
CRI 91.6
E

Polar light distribution diagram

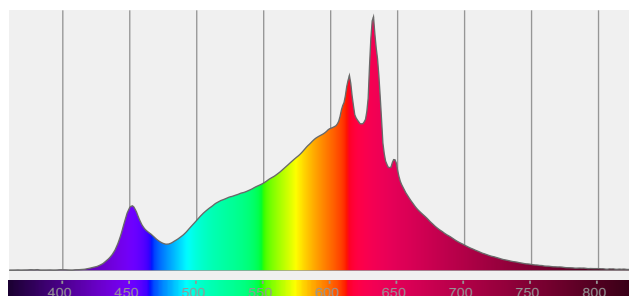
Unit: 0-100% of peak intensity



Product photo



Spectral power distribution

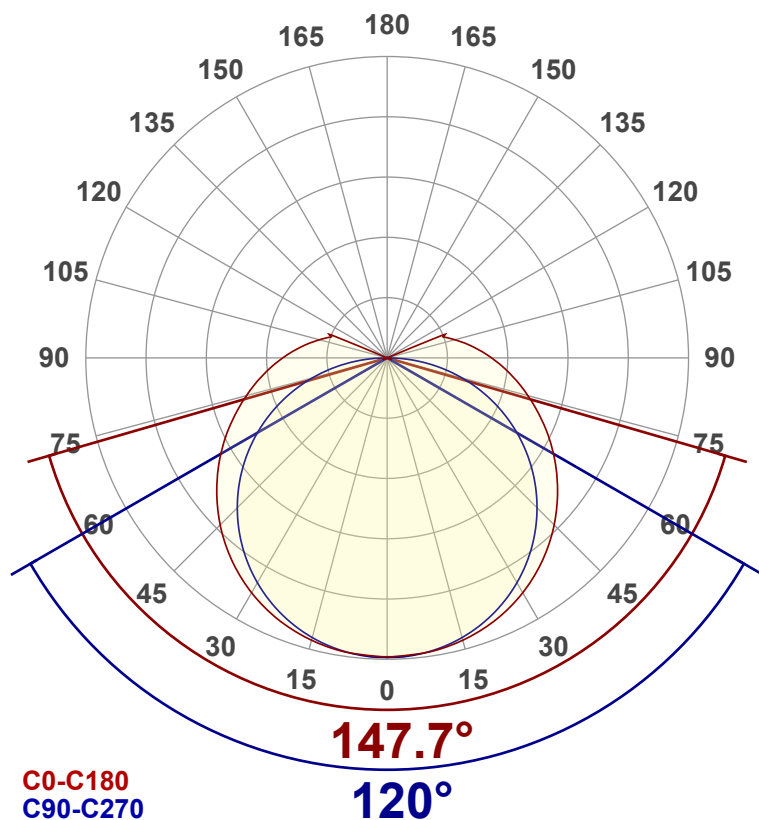


Test report

Light measurement results

Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	2502 lm
Lumen Up% / Down%	8.05% / 91.95%
Peak Intensity	635 cd
Beam Angle (50%-FWHM)	133.88°

EU Ecodesign parameters

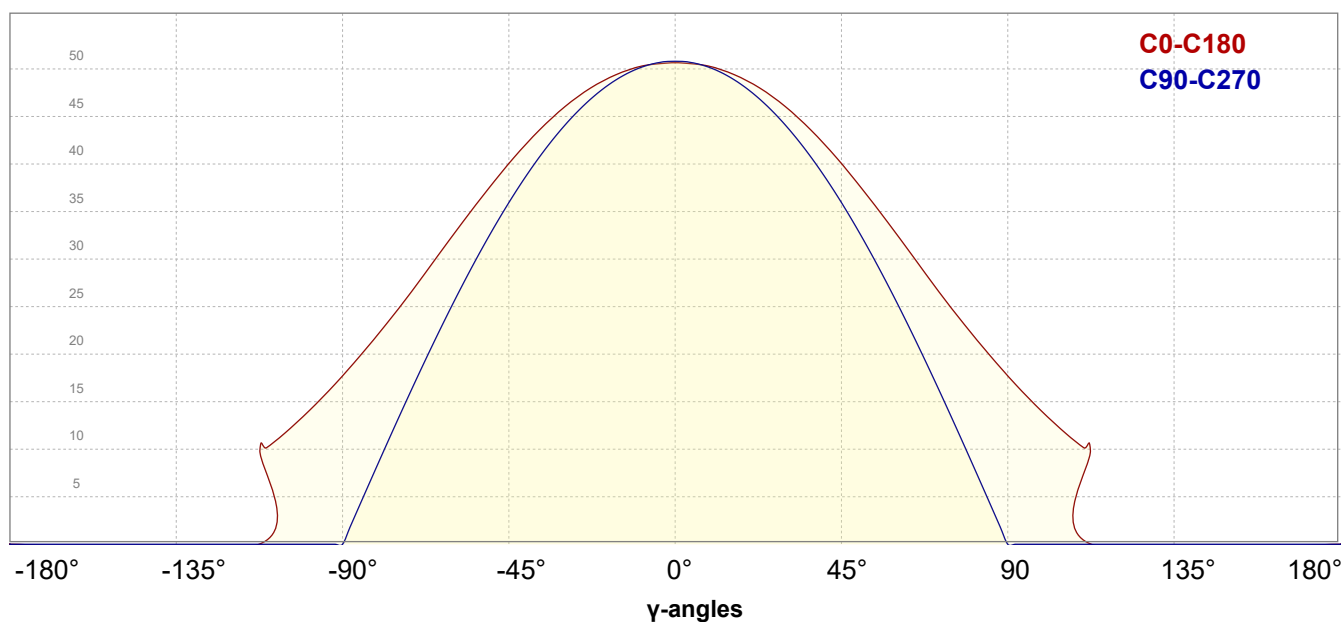
Directionality (DLS or NDLS)	NDLS
Ecodesign Useful Luminous	2502 lm
Ecodesign Energy Class	E

Intensity Ratio

In 120° cone	62.6%
In 90° cone	40.8%

Linear distribution diagram

Intensity [cd]



Test report

Light measurement results

Color details

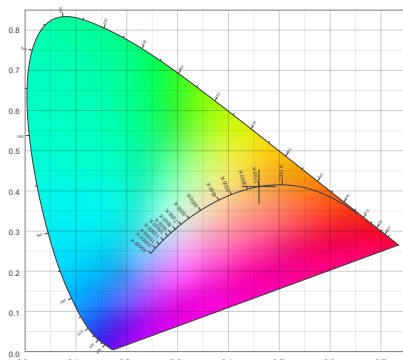
Correlated Color Temperature, Target
Correlated Color Temperature, Measured
Color Rendering Index
Color Rendering Index, R9 (red)
Color Rendering TM30-18

CCT = 2700 K
CCT = 2700 K
CRI 91.6
R9 = 45.8
Rf 90.6
Rg 99.0

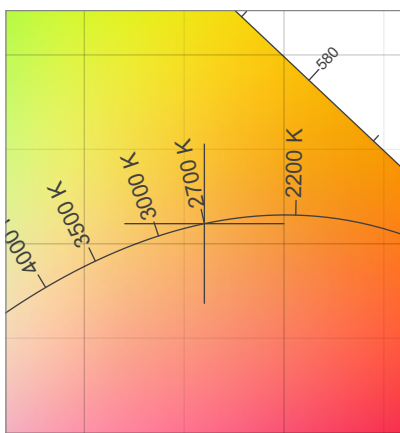
MacAdam Steps
Color deviation from BBL
Color coordinates CIE 1931
Color coordinate CIEs 1960
Color coordinate CIEs 1976
Color Quality Scale

SDCM = 0.7
Duv = -0.0006
(x;y) = (0.460;0.411)
(u;v) = (0.263;0.352)
(u';v') = (0.263;0.527)
CQS = 89.2

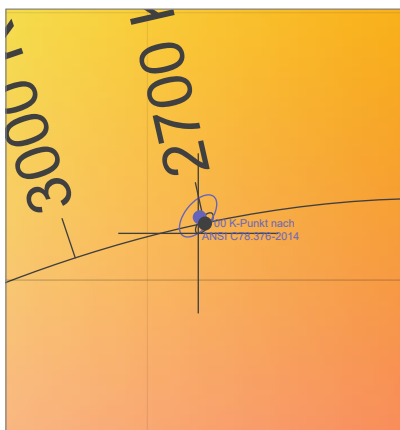
CIE 1931 Chromaticity diagram



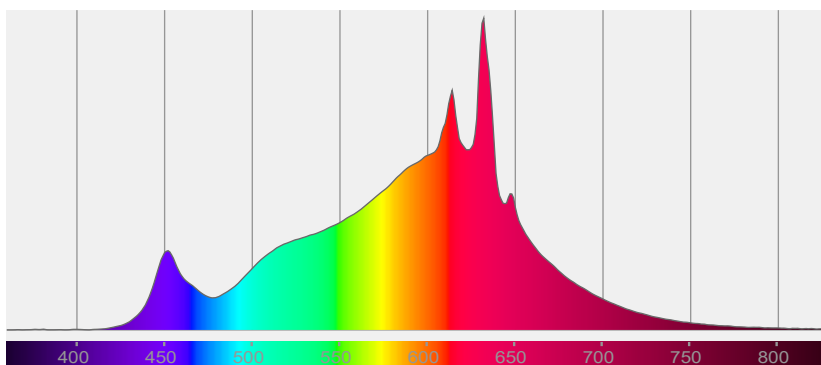
CIE 1931 Chromaticity - zoomed



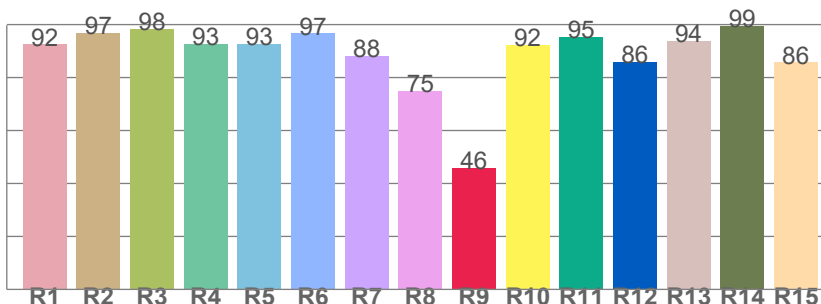
CIE 1931 Chromaticity - SDCM



Spectral power distribution



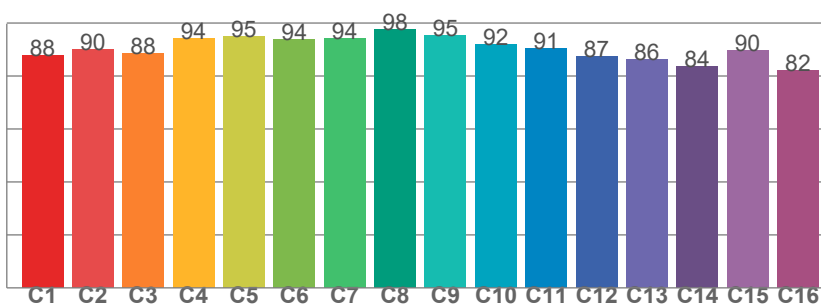
Color Rendering Index per reference color (CIE 1995)



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
92.5	96.9	98.3	92.8	92.8	96.6	88.1	75.1	45.8	92.2	95.4	85.8	93.8	99.3	85.7

TM30-18 Rf-values per hue bin

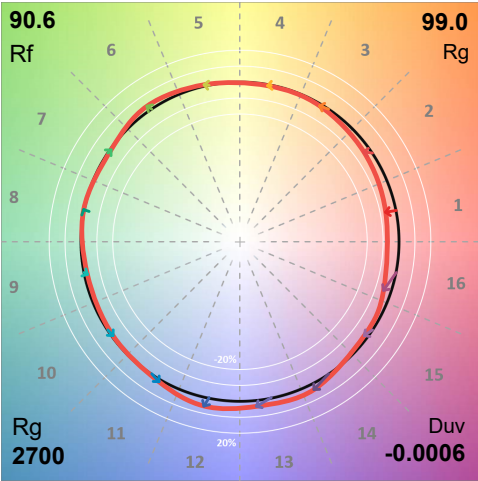


TM30-18 Rf-values per hue bin

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
88.0	90.2	88.4	94.3	94.8	93.8	94.2	97.6	95.3	91.9	90.5	87.4	86.3	83.7	89.8	82.3

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

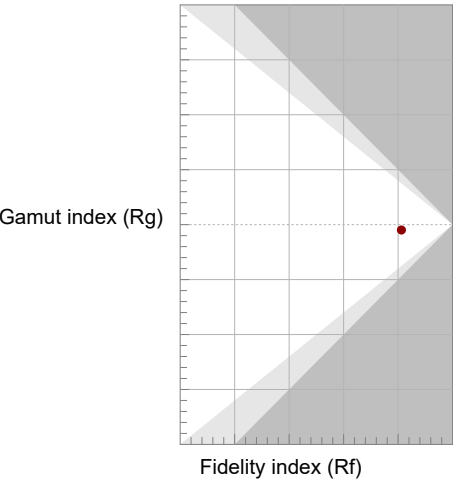
Color Vector Graphic



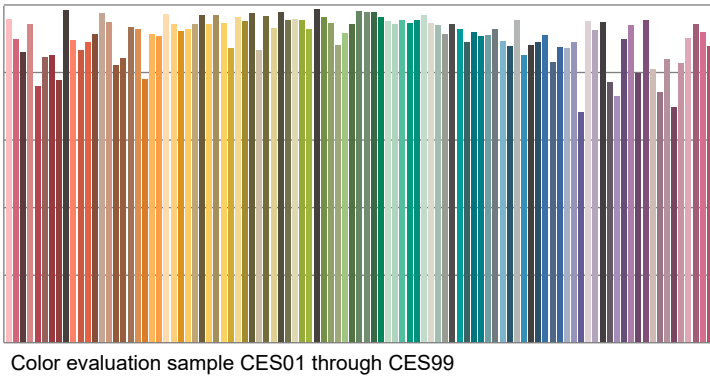
Color Distortion Graphic



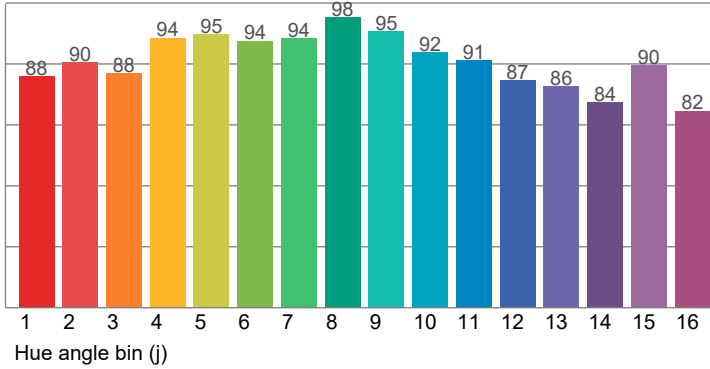
Gamut Index vs. Fidelity Index



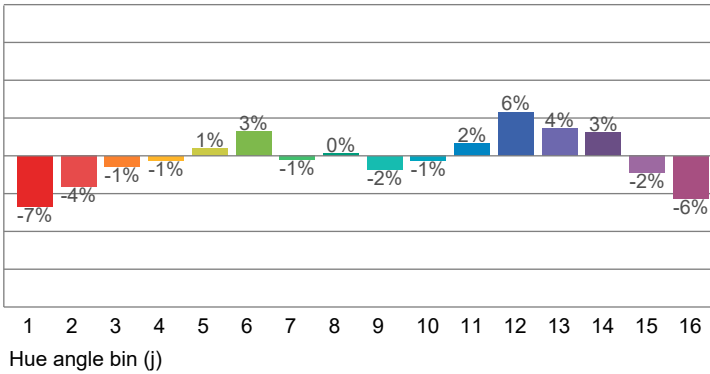
Color Rendition by Color Evaluation Sample (CES)



Local Color Fidelity (per hue bin)



Local Chroma Shift (per hue bin)



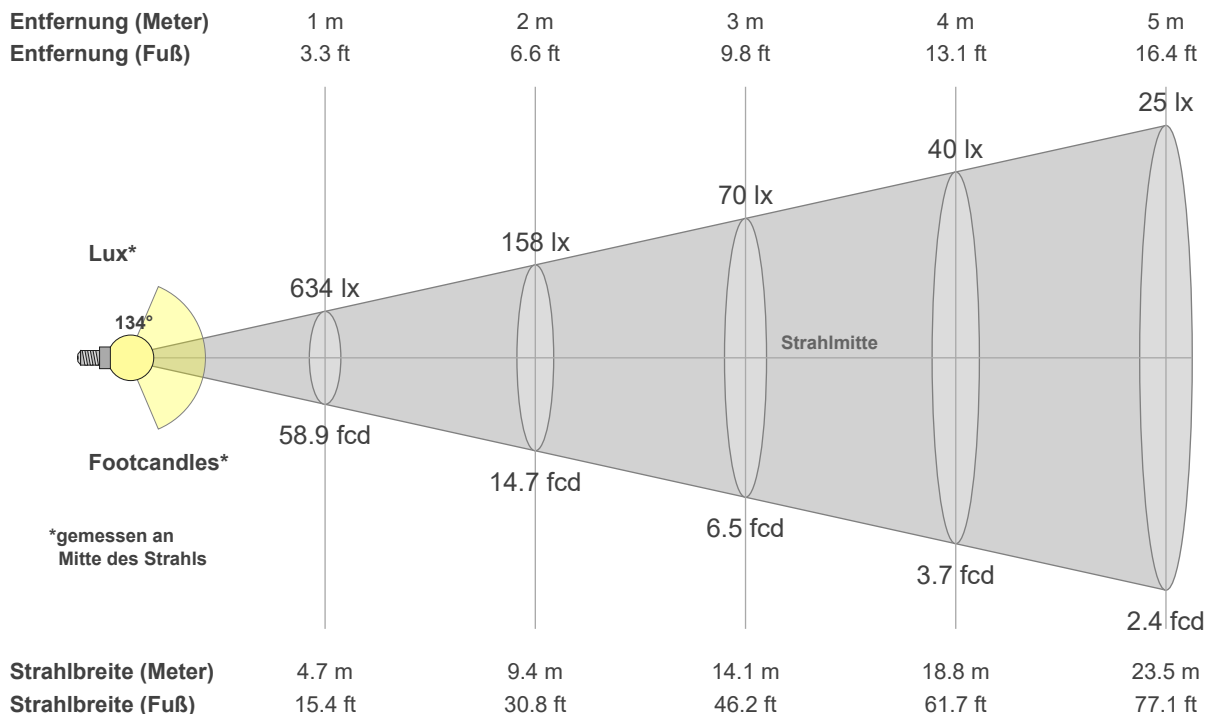
CIE x 0.460
CIE y 0.411
CIE u' 0.263
CIE v' 0.527

CIE 13.3-1995
Ra 91.6
R9 45.8

Test report

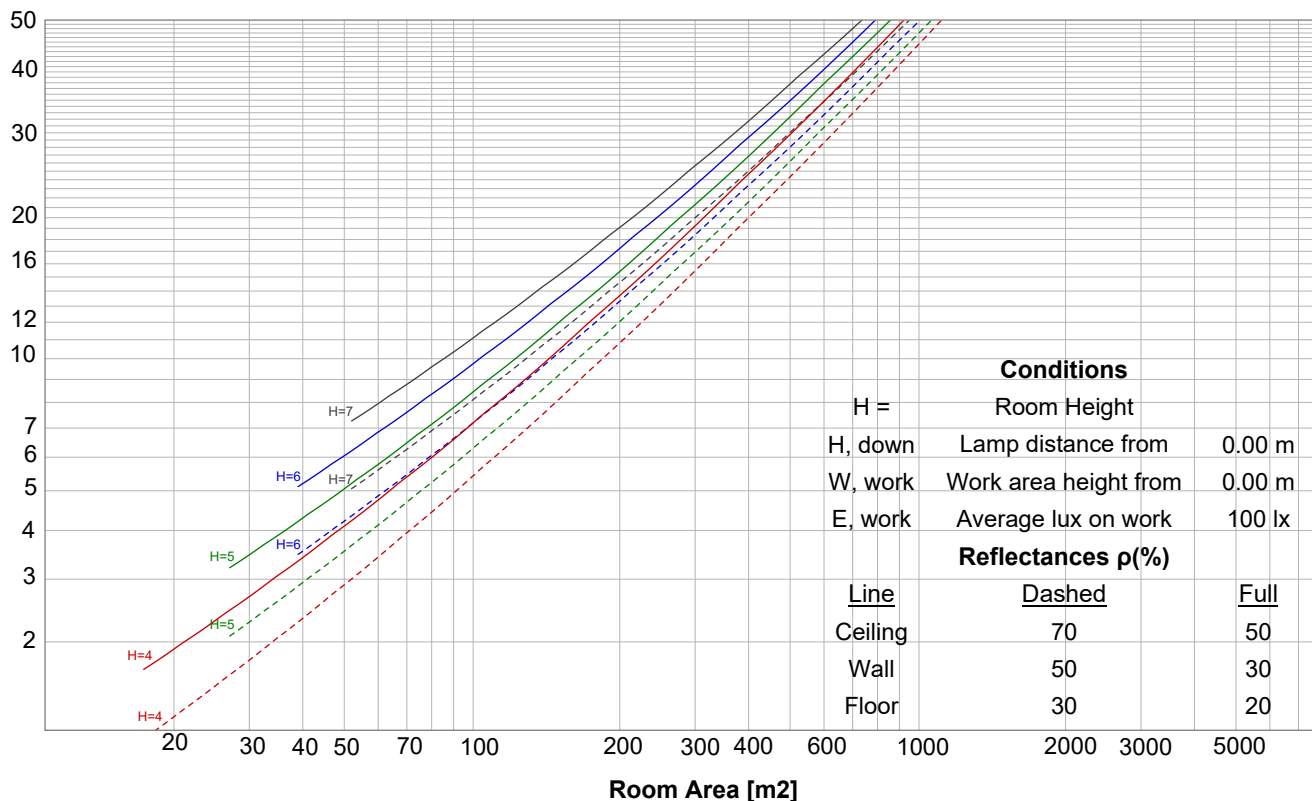
Light measurement results

Beam details



Luminaire budgetary diagram

LAMPS (number of lamps)



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
634	158	70	40	25	18	13	10	8	6	5	4	4	3	3	2	2	2	2	2	lux
58.9	14.7	6.5	3.7	2.4	1.6	1.2	0.9	0.7	0.6	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	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
634	629	612	585	548	500	446	387	328	273	222	176	137	0	0	0	0	0	0	0	cd
100%	99%	97%	92%	86%	79%	70%	61%	52%	43%	35%	28%	22%	0%	0%	0%	0%	0%	0%	0%	of 0°val

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
634	627	604	566	514	449	373	288	196	99	0	0	0	0	0	0	0	0	0	0	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	of 0°val

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
634	629	612	585	548	500	446	387	328	273	222	176	137	0	0	0	0	0	0	0	cd
100%	99%	97%	92%	86%	79%	70%	61%	52%	43%	35%	28%	22%	0%	0%	0%	0%	0%	0%	0%	of 0°val

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
634	627	604	566	514	449	373	288	196	99	0	0	0	0	0	0	0	0	0	0	cd
100%	99%	95%	89%	81%	71%	59%	45%	31%	16%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	of 0°val

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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	27.2	28.5	27.6	28.9	29.3	27.5	28.7	27.9	29.2	29.6	
	3H	29.2	30.4	29.7	30.8	31.2	29.2	30.5	29.8	30.9	31.3	
	4H	30.2	31.4	30.7	31.8	32.2	30.1	31.3	30.6	31.7	32.1	
	6H	31.2	32.3	31.7	32.7	33.3	30.8	31.9	31.3	32.3	32.9	
	8H	31.7	32.8	32.2	33.2	33.8	31.1	32.2	31.6	32.6	33.1	
	12H	32.2	33.2	32.7	33.7	34.3	31.3	32.3	31.8	32.8	33.4	
4H	2H	27.9	29.1	28.4	29.5	29.9	28.1	29.3	28.6	29.7	30.1	
	3H	30.1	31.2	30.6	31.6	32.2	30.2	31.2	30.6	31.6	32.2	
	4H	31.2	32.2	31.7	32.7	33.4	31.0	32.1	31.6	32.5	33.2	
	6H	32.3	33.3	32.9	33.7	34.3	31.9	32.8	32.5	33.3	33.8	
	8H	32.9	33.7	33.5	34.2	34.8	32.2	33.0	32.8	33.5	34.1	
	12H	33.5	34.2	34.1	34.7	35.4	32.5	33.2	33.1	33.7	34.3	
8H	4H	31.6	32.4	32.2	32.9	33.4	31.4	32.2	32.0	32.8	33.3	
	6H	32.9	33.6	33.5	34.2	34.8	32.5	33.1	33.1	33.7	34.4	
	8H	33.6	34.2	34.3	34.9	35.6	32.9	33.5	33.5	34.1	34.9	
	12H	34.4	34.9	35.0	35.5	36.2	33.3	33.8	34.0	34.4	35.2	
12H	4H	31.6	32.3	32.2	32.8	33.5	31.5	32.2	32.1	32.7	33.4	
	6H	33.0	33.6	33.7	34.3	35.0	32.6	33.2	33.2	33.8	34.6	
	8H	33.8	34.3	34.5	34.9	35.7	33.1	33.6	33.8	34.3	35.0	
Variations with the observer position for the luminaire spacings, S:												
S = 1.0H			0.1 / 0.0					0.0 / 0.0				
S = 1.5H			0.1 / -0.1					0.1 / -0.1				
S = 2.0H			0.2 / -0.2					0.3 / -0.3				

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	20
RCR	(Room Cavity Ratio)				Room values are expressed as percentage of Lumen delivered to the task surface													
0	117.1	117.1	117.1	117.1	113.5	113.5	113.5	113.5	106.6	106.6	106.6	100.4	100.4	100.4	94.7	94.7	94.7	92.0
1	104.2	98.3	93.0	88.3	100.5	95.2	90.4	86.0	89.4	85.4	81.8	84.0	80.8	77.8	79.0	76.5	74.1	71.3
2	93.7	84.2	76.3	69.7	90.1	81.5	74.3	68.2	76.6	70.6	65.4	72.0	67.0	62.7	67.8	63.7	60.1	57.3
3	84.8	73.0	64.0	56.7	81.5	70.8	62.4	55.7	66.6	59.5	53.6	62.7	56.7	51.7	59.0	54.0	49.7	47.0
4	77.2	64.2	54.6	47.3	74.2	62.3	53.4	46.5	58.6	51.0	45.0	55.3	48.8	43.5	52.2	46.6	42.0	39.4
5	70.8	57.0	47.4	40.3	68.0	55.3	46.4	39.6	52.2	44.4	38.4	49.4	42.6	37.3	46.7	40.8	36.1	33.7
6	65.2	51.0	41.6	34.8	62.6	49.6	40.8	34.3	47.0	39.2	33.3	44.5	37.6	32.4	42.1	36.2	31.5	29.1
7	60.3	46.1	36.9	30.5	58.0	44.9	36.2	30.1	42.6	34.9	29.3	40.4	33.6	28.5	38.4	32.3	27.7	25.5
8	56.0	41.9	33.1	27.0	53.9	40.9	32.5	26.6	38.8	31.3	26.0	36.9	30.2	25.3	35.2	29.2	24.7	22.6
9	52.3	38.4	29.9	24.1	50.4	37.4	29.4	23.8	35.7	28.4	23.3	34.0	27.4	22.7	32.4	26.5	22.2	20.2
10	48.9	35.3	27.1	21.7	47.2	34.5	26.7	21.5	32.9	25.9	21.0	31.5	25.1	20.5	30.1	24.3	20.1	18.2

Test report

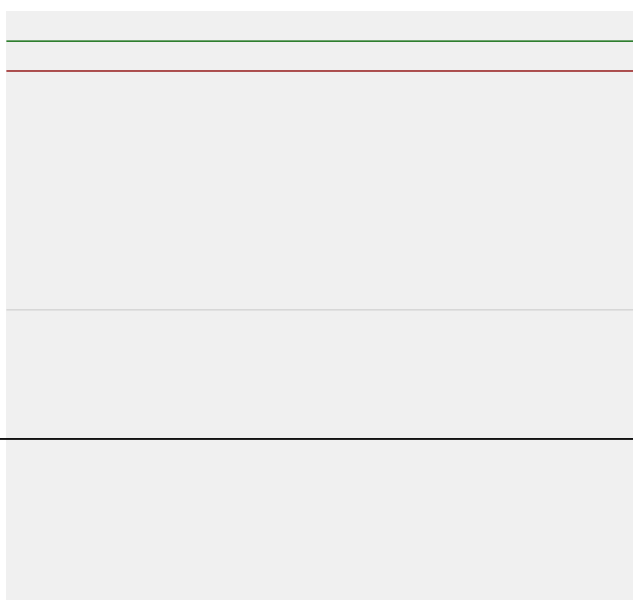
Light measurement results

Power details

Input power

Frequency of input power	0 Hz
Power feed to light source	20.0 W
RMS Input voltage feed V,RMS	24.0 V
RMS Input current feed I,RMS	0.832 A
Volt-Amp or apparent power = V,RMS*I,RMS	19.95 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 39.4%

Lumen efficiency 125 lm/W

Stabilization details

Warmup Conditions

Stable period	3 Min
Stable change max	3.0%
Minimum time	3 Min

Color Temperature Change

CCT start	2712 K
CCT shift	-12 K
CCT end	2700 K

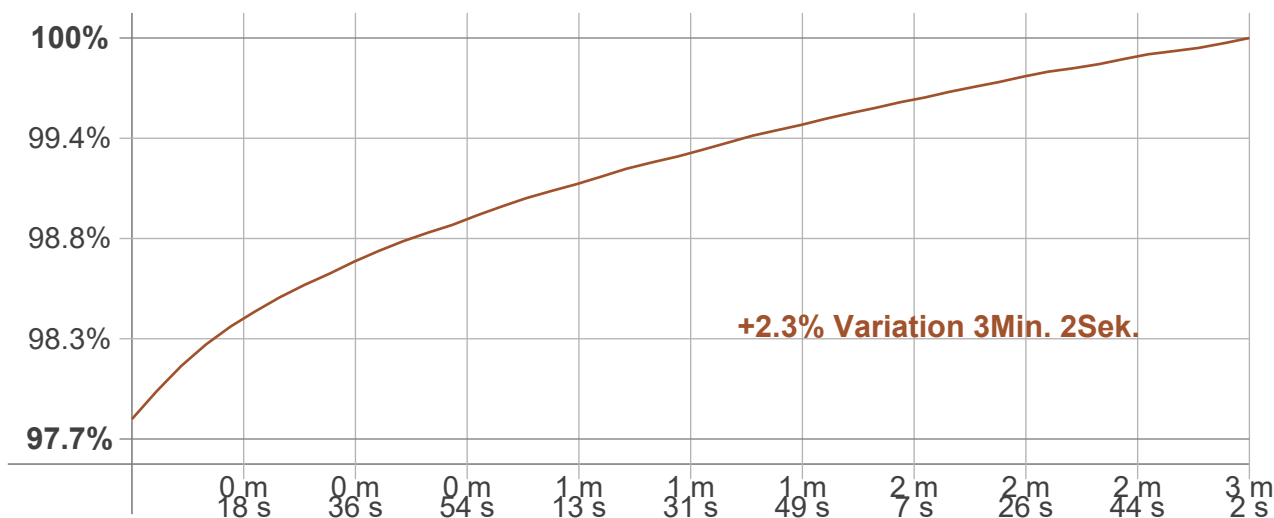
Warmup Result

Total warmup time	Lampe
Warmup variation	+2.3%

Output Change

Output start	2453 lm
Output change	+49 lm
Output end	2502 lm

Stabilization Curve



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 1,5 sec,

Flicker indices according to Illuminating Engineering Society

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

Flicker indices according to California Energy Commission (CEC)

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 %

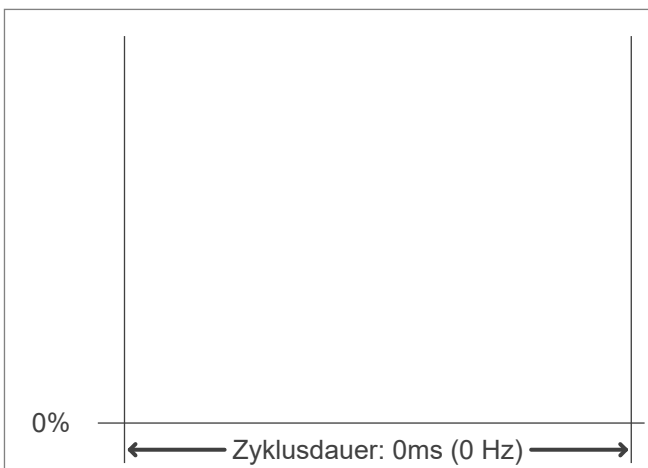
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC

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

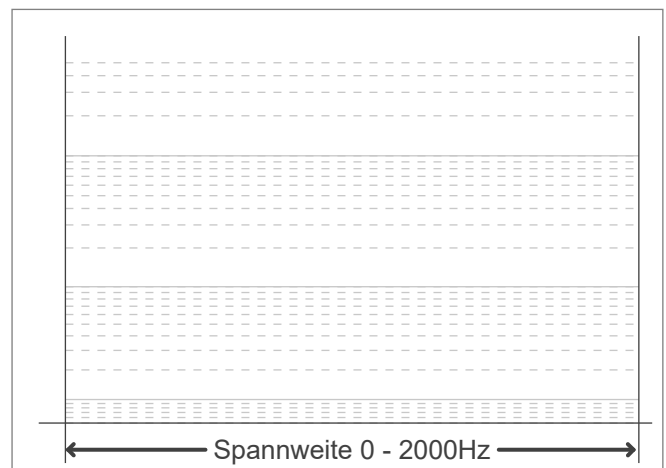
Flicker indices according to Lighting Research Center (2015)

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

