

Test report

Laboratory and Equipment

Test lab
Spectrometer Manufacturer and Model
Measurement date

Viso LabSpion - serial: 3331725735 sensor serial: 3532797498 - T
LabSpion - Type C, horizontal
10/09/2026

Measurement Conditions

Tested c-planes
Tested gamma resolution
Input Power

72 planes - 5,00°
1,00°
6,024 W

Tested Light Source

Luminaire
Basic Luminous Shape
Item No.
Manufacturer
Description
Dimensions, luminous surface
Dimensions, light source housing

SPHERA 3000K 24D BLACK
SPHERICAL
35011600302402
ELECTRUM

H/D = NaN, W = 0, L = 11,5, Shape = SPHERICAL
H/D = 0, W = 0, L = 11,5

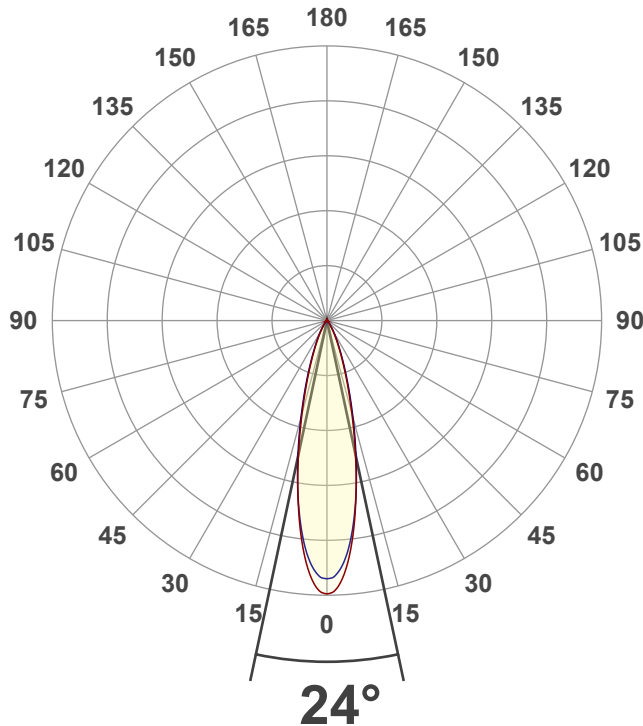
Main Light Measurement Results

Output - Total Lumen (Up% / Down%)
Efficiency
Peak Intensity
Correlated Color Temperature, CCT
Color Rendering Index

244,6 lm - 1,81% / 98,19%
40,6 lm/W
983,5 cd
3000 K
CRI 91,6 TM30Rf 90,7 TM30 Rg 97,8

Polar light distribution diagram

Unit: 0-100% of peak intensity



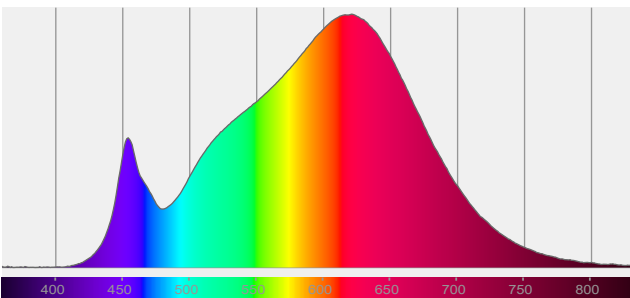
— C0 - C180
— C90 - C270

$\eta = 100\%$

Product photo

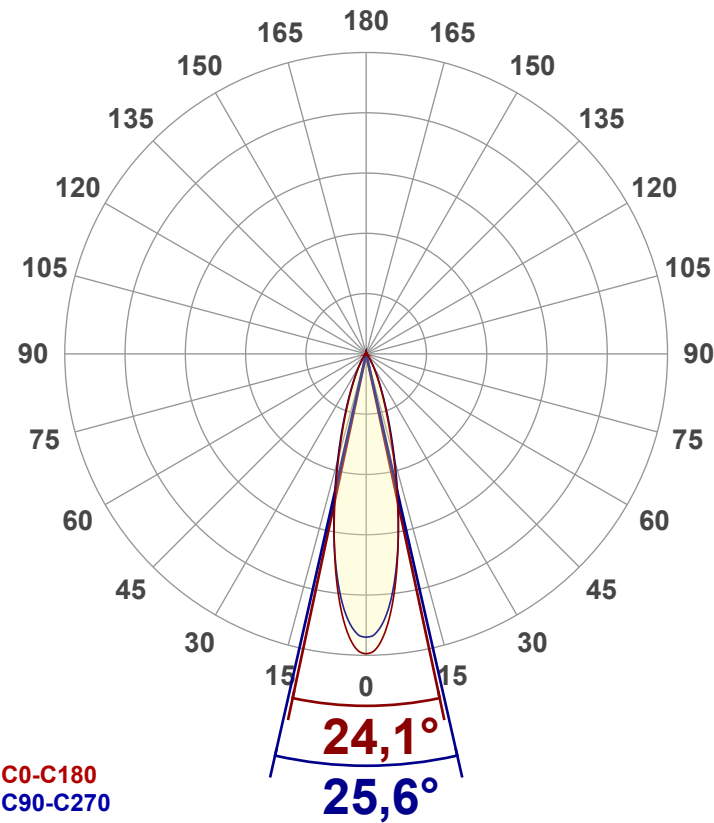


Spectral power distribution



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

Output (total Lumen)	244,6 lm
Lumen Up% / Down%	1,81% / 98,19%
Peak Intensity	983,5 cd
Beam Angle (50%-FWHM)	24,0°

EU Ecodesign parameters

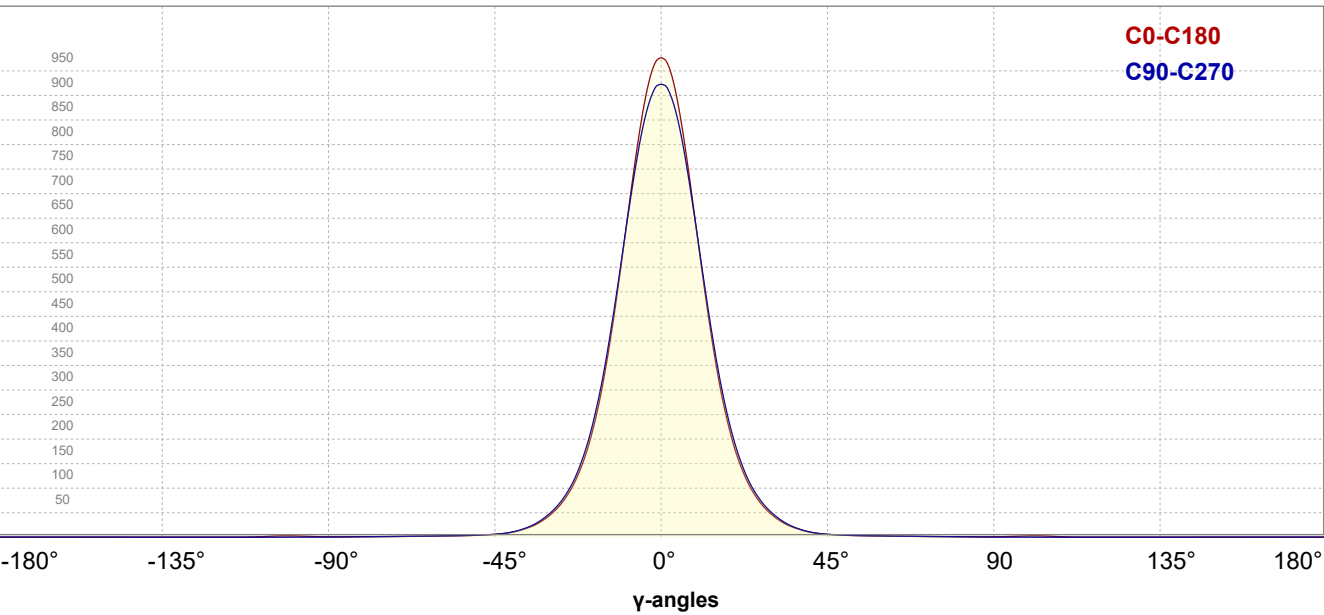
Directionality (DLS or NDLS)	DLS
Ecodesign Useful Luminous Flux	231,1 lm
Ecodesign Energy Class	G

Intensity Ratio

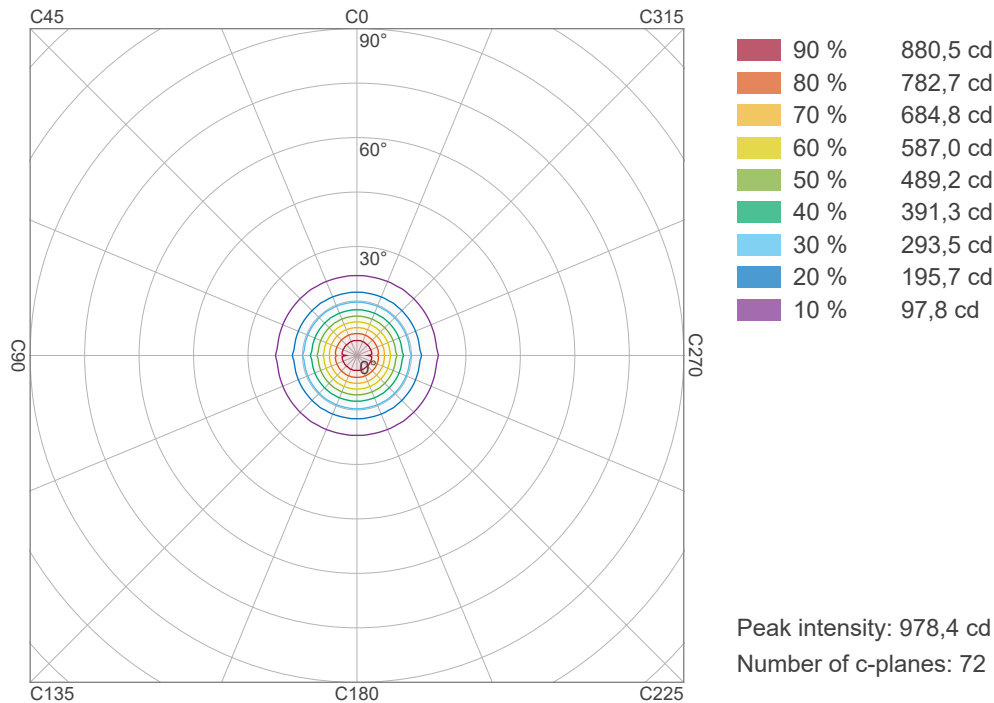
In 120° cone	96,39%
In 90° cone	94,48%

Linear distribution diagram

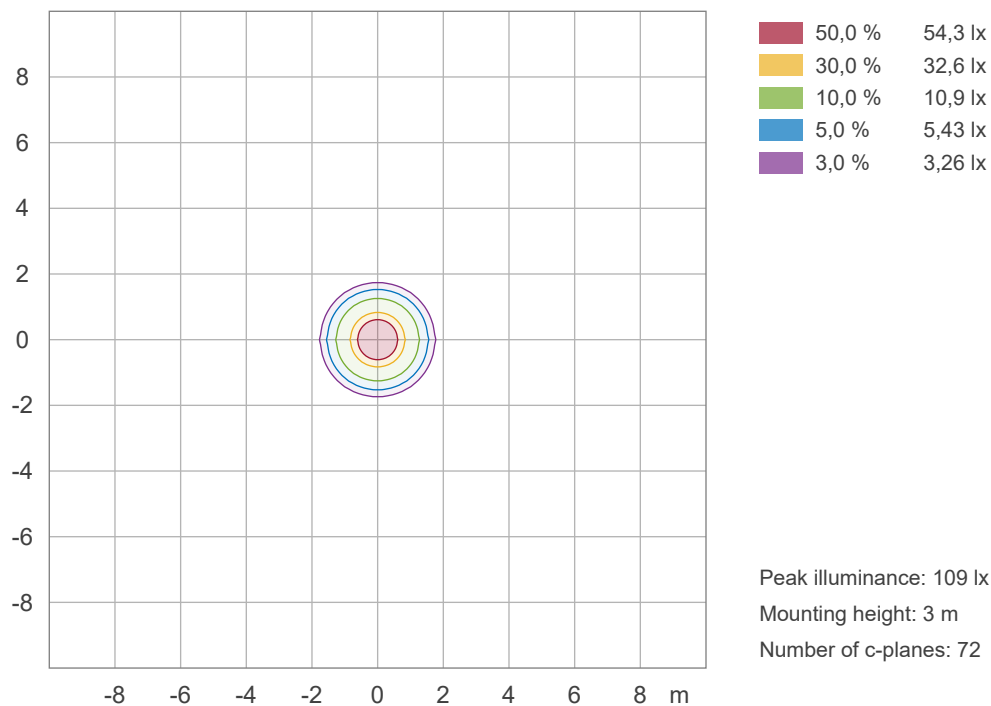
Intensity [cd]



Iso-intensity Diagram (Iso-candela)



Iso-illuminance Diagram (Iso-lux)



Test report

Color details

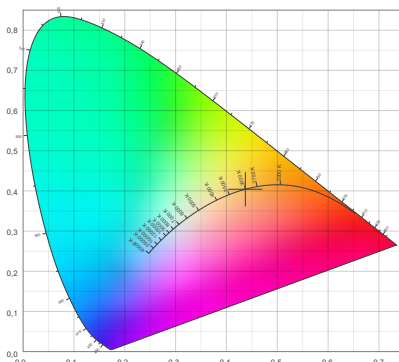
Correlated Color Temperature, Target
Correlated Color Temperature, Measured
Color Rendering Index
Color Rendering Index, R9 (red)
Color Rendering TM30-18

CCT = 3000 K
CCT = 3015 K
CRI 91,6
R9 = 55,0
Rf 90,7
Rg 97,8

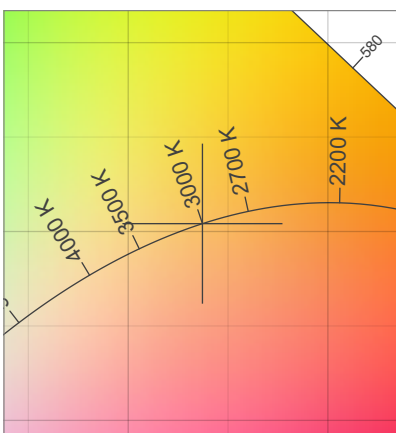
MacAdam Steps
Color deviation from BBL
Color coordinates CIE 1931
Color coordinate CIEs 1960
Color coordinate CIEs 1976
Color Quality Scale

SDCM = 1,0
Duv = 0,0010
(x;y) = (0,4372;0,4042)
(u;v) = (0,2507;0,3476)
(u';v') = (0,2507;0,5215)
CQS = 90,1

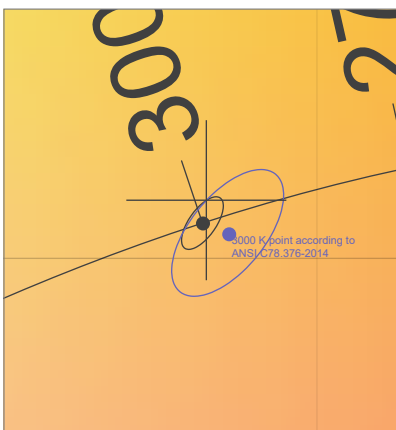
CIE 1931 Chromaticity diagram



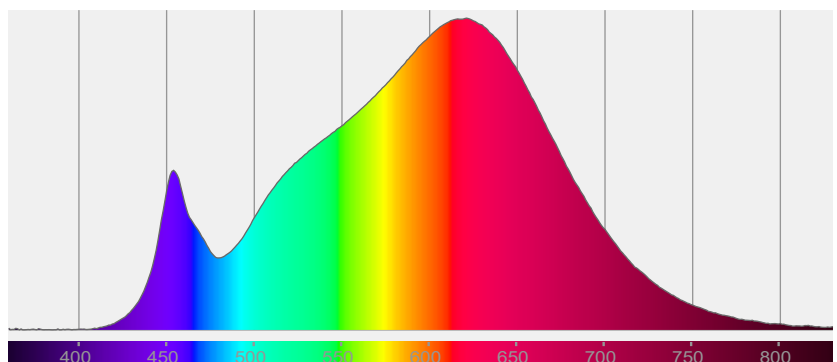
CIE 1931 Chromaticity - zoomed



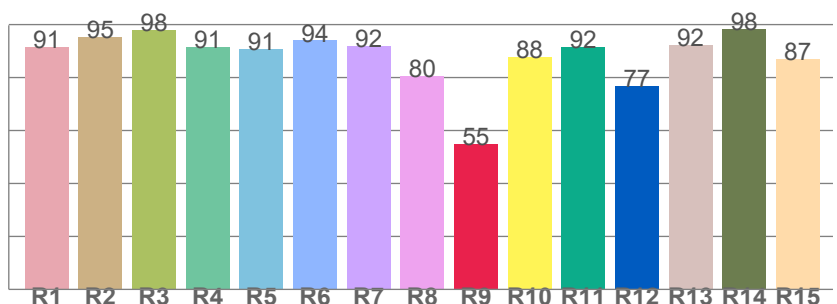
CIE 1931 Chromaticity - SDCM



Spectral power distribution



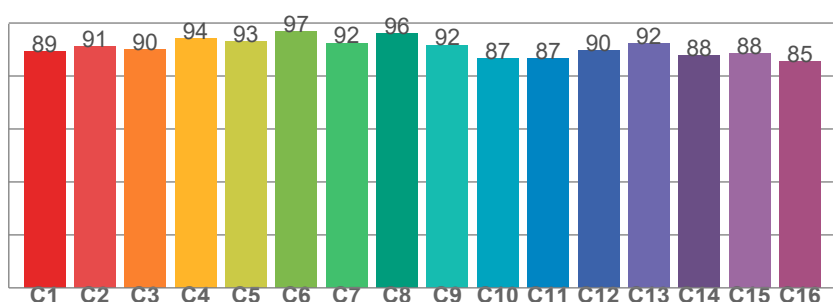
Color Rendering Index per reference color (CIE 1995)



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
91,4	95,3	97,8	91,4	90,7	94,0	92,0	80,4	55,0	87,9	91,7	76,9	92,4	98,1	87,0

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
89,4	91,3	90,1	94,0	93,1	96,7	92,4	96,1	91,7	86,7	86,5	89,8	92,4	87,8	88,4	85,5

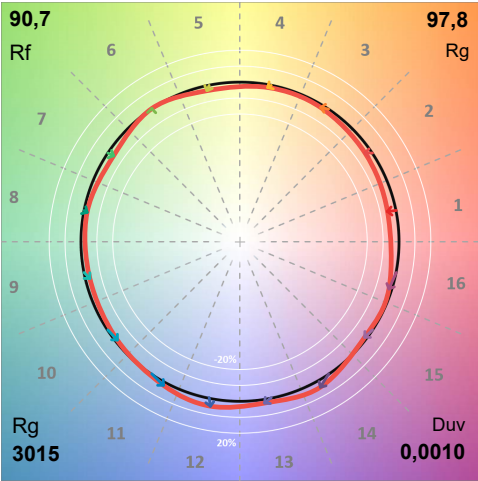
Test report

Light measurement results

Print date 11-09-2026

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

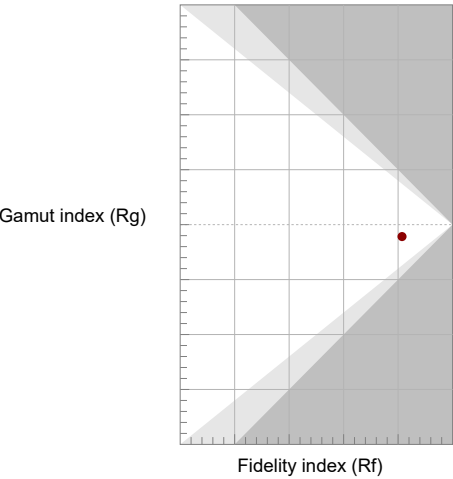
Color Vector Graphic



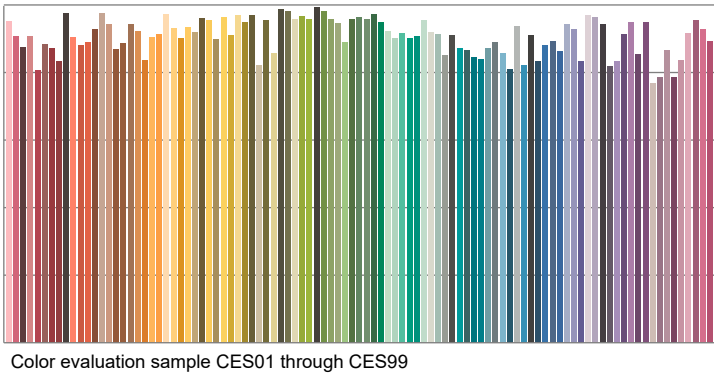
Color Distortion Graphic



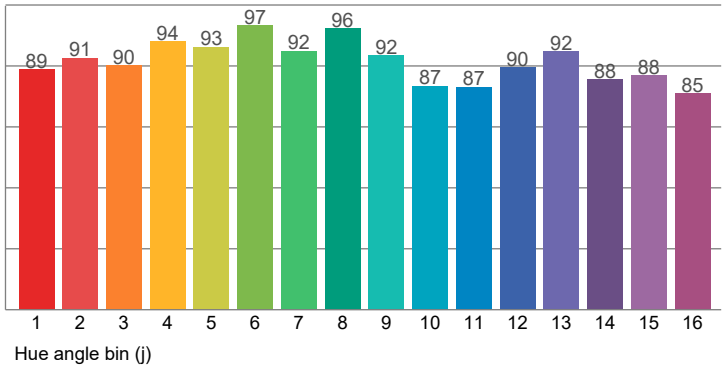
Gamut Index vs. Fidelity Index



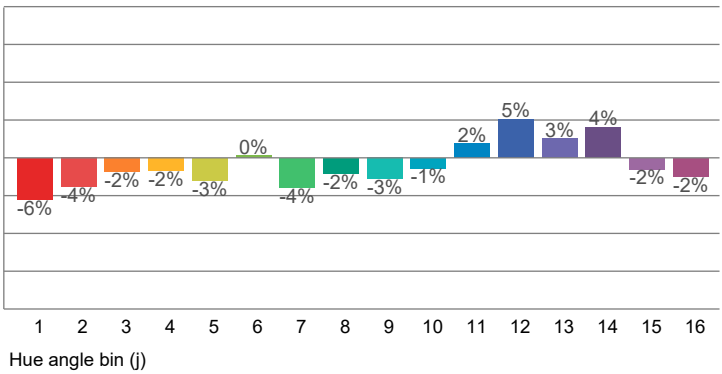
Color Rendition by Color Evaluation Sample (CES)



Local Color Fidelity (per hue bin)



Local Chroma Shift (per hue bin)



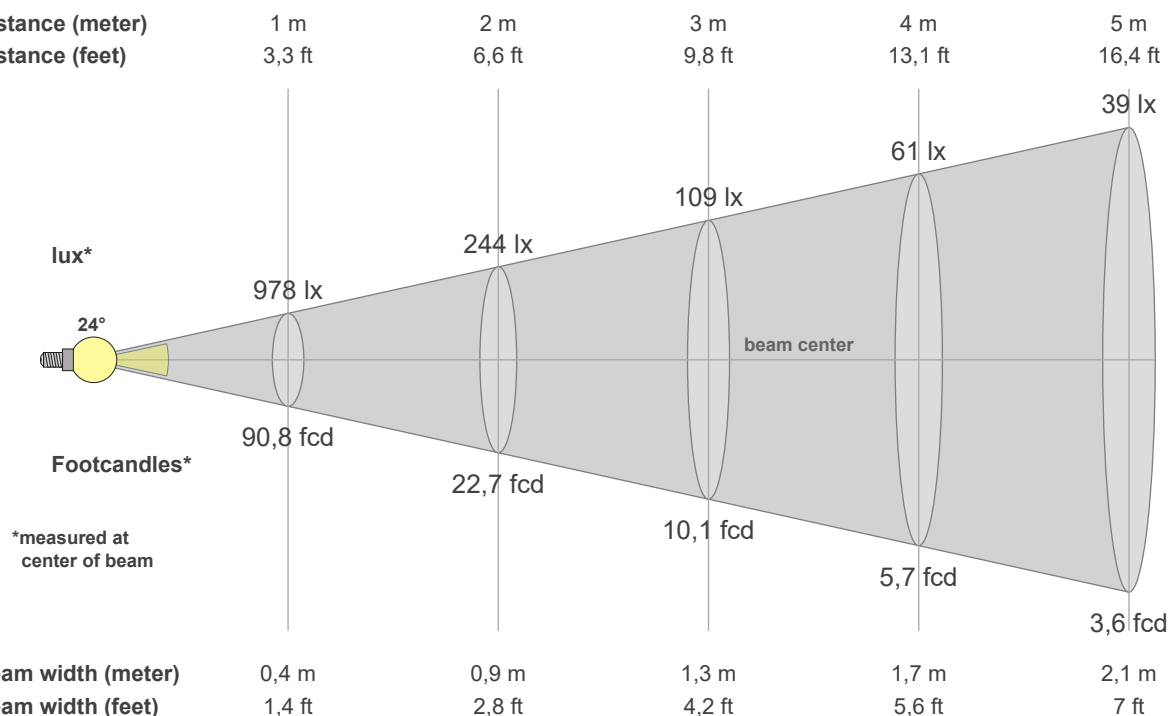
CIE x 0,4372
CIE y 0,4372
CIE u' 0,2507
CIE v' 0,5215

CIE 13.3-1995

Ra 91,6
R9 55,0

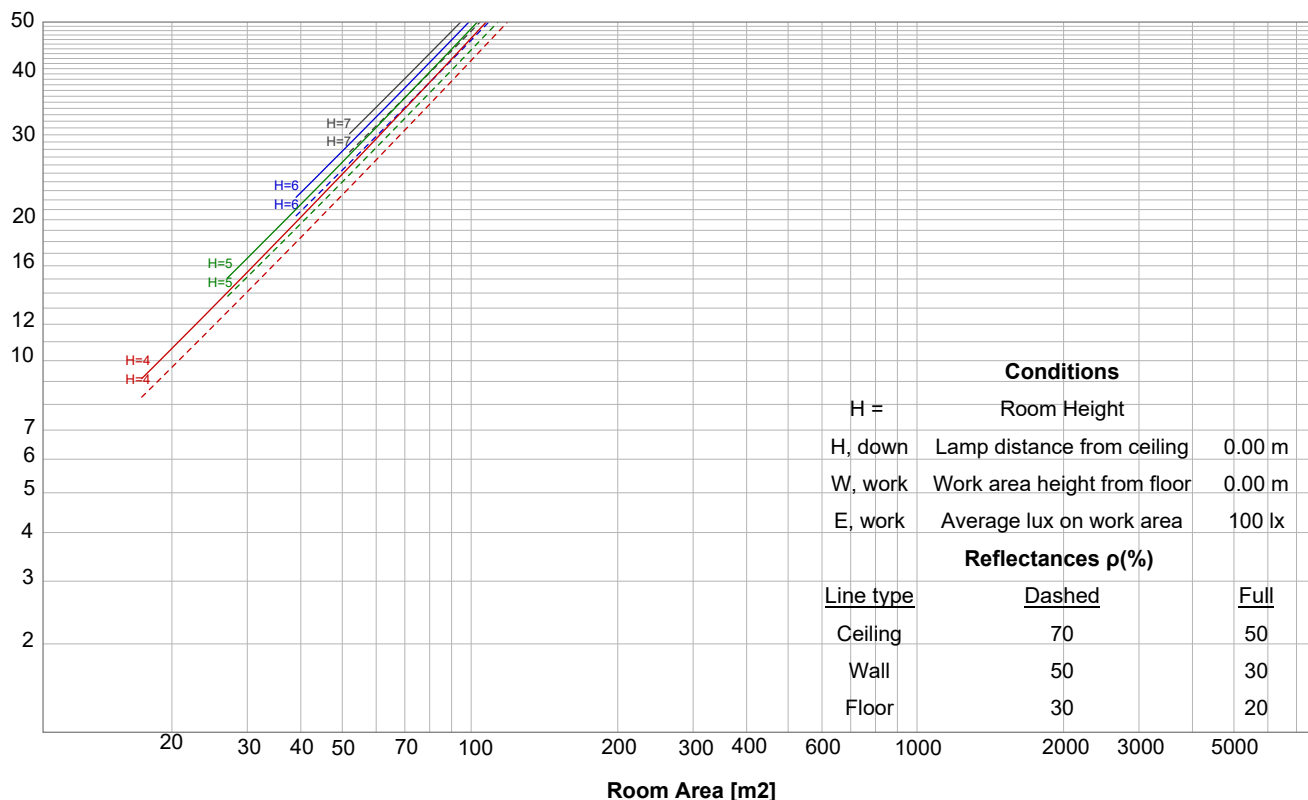
Test report

Beam details



Luminaire budgetary diagram

LAMPS (number of lamps)



Test report

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
978	244	109	61	39	27	20	15	12	10	8	7	6	5	4	4	3	3	3	2	lux
90,8	22,7	10,1	5,7	3,6	2,5	1,9	1,4	1,1	0,9	0,8	0,6	0,5	0,5	0,4	0,4	0,3	0,3	0,3	0,2	fc

Intensities in 0° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
978	959	903	818	713	601	491	390	304	234	178	136	103	79	60	46	34	26	19	15	cd
100%	98%	92%	84%	73%	61%	50%	40%	31%	24%	18%	14%	11%	8%	6%	5%	4%	3%	2%	1%	of 0°val

Intensities in 90° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
978	909	865	794	703	603	500	403	318	247	190	145	110	85	65	50	37	28	21	15	cd
100%	93%	88%	81%	72%	62%	51%	41%	32%	25%	19%	15%	11%	9%	7%	5%	4%	3%	2%	2%	of 0°val

Intensities in 180° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
978	959	903	818	713	601	491	390	304	234	178	136	103	79	60	46	34	26	19	15	cd
100%	98%	92%	84%	73%	61%	50%	40%	31%	24%	18%	14%	11%	8%	6%	5%	4%	3%	2%	1%	of 0°val

Intensities in 270° c-plane

0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°	26°	28°	30°	32°	34°	36°	38°	γ
978	909	865	794	703	603	500	403	318	247	190	145	110	85	65	50	37	28	21	15	cd
100%	93%	88%	81%	72%	62%	51%	41%	32%	25%	19%	15%	11%	9%	7%	5%	4%	3%	2%	2%	of 0°val

Test report

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

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	118,6	118,6	118,6	118,6	115,6	115,6	115,6	115,6	110,1	110,1	110,1	105,0	105,0	105,0	100,4	100,4	100,4	98,2
1	113,9	111,4	109,2	107,3	111,3	109,1	107,2	105,4	104,8	103,3	101,9	100,8	99,6	98,5	97,1	96,2	95,4	93,5
2	109,4	105,3	101,9	99,0	107,2	103,5	100,4	97,8	100,0	97,5	95,4	96,8	94,9	93,1	93,9	92,3	91,0	89,3
3	105,3	100,0	95,9	92,7	103,3	98,6	94,8	91,8	95,8	92,7	90,1	93,2	90,7	88,5	90,8	88,8	87,0	85,5
4	101,5	95,4	90,9	87,5	99,7	94,2	90,1	86,9	91,9	88,5	85,7	89,8	86,9	84,6	87,9	85,5	83,4	82,1
5	98,0	91,3	86,6	83,2	96,4	90,3	86,0	82,8	88,4	84,7	81,9	86,7	83,5	81,1	85,1	82,4	80,2	78,9
6	94,6	87,6	82,9	79,5	93,2	86,8	82,4	79,2	85,2	81,4	78,5	83,8	80,5	77,9	82,4	79,5	77,3	76,1
7	91,6	84,3	79,6	76,3	90,3	83,6	79,2	76,1	82,3	78,4	75,6	81,1	77,6	75,1	79,9	76,9	74,6	73,4
8	88,7	81,3	76,6	73,4	87,5	80,7	76,3	73,2	79,6	75,7	72,9	78,5	75,0	72,5	77,5	74,4	72,1	71,0
9	86,0	78,5	73,9	70,9	84,9	78,0	73,7	70,7	77,0	73,1	70,4	76,1	72,6	70,1	75,3	72,1	69,8	68,7
10	83,4	76,0	71,5	68,5	82,5	75,5	71,3	68,4	74,7	70,8	68,2	73,9	70,4	67,9	73,2	70,0	67,7	66,6

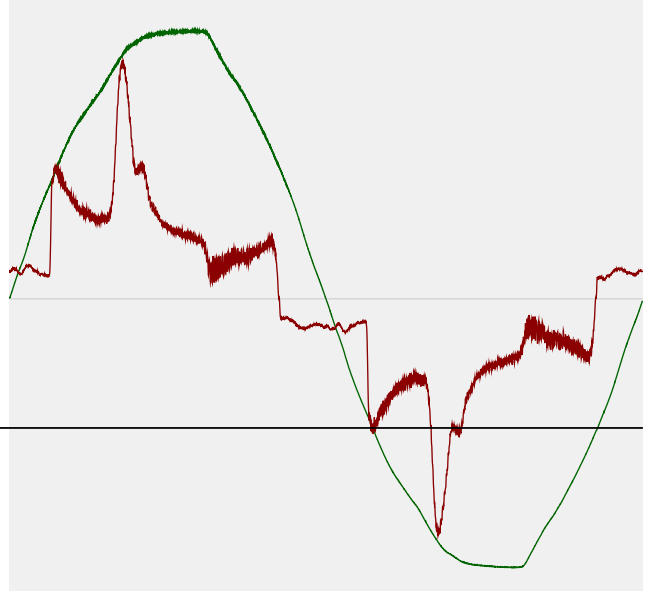
Test report

Power details

Input power

Frequency of input power	50,0 Hz
Power feed to light source	6,024 W
RMS Input voltage feed V,RMS	240 V
RMS Input current feed I,RMS	0,03 A
Volt-Amp or apparent power = V,RMS*I,RMS	7,4 VA
Displacement factor of AC power feed	0,91
Power factor of AC current feed	0,82
Total harmonic distortion of the current	45,14%
Total harmonic distortion of the voltage	3,02%

Input power curve



Efficiency

Radiated power efficiency 13,9

Lumen efficiency 40,6 lm/W

Stabilization details

Warmup Conditions

Stable period	15 min
Stable change max	2%
Minimum time	15 min

Color Temperature Change

CCT start	2999 K
CCT shift	1 K
CCT end	3000 K

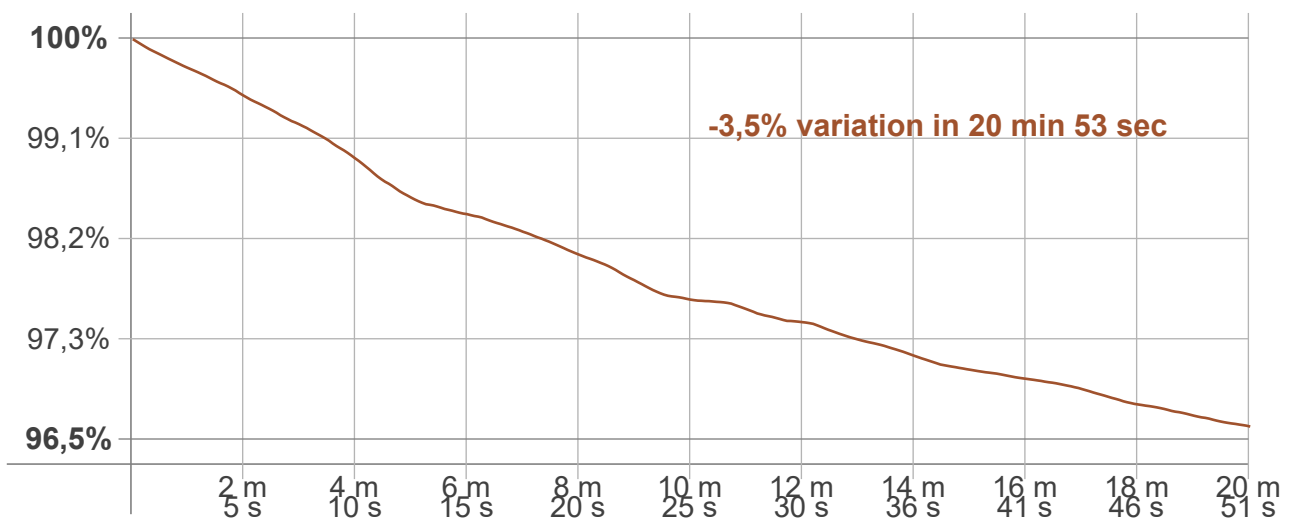
Warmup Result

Total warmup time	Lamp stabilized in :
Warmup variation	-3,5422%

Output Change

Output start	253,4 lm
Output change	-8,8337 lm
Output end	244,6 lm

Stabilization Curve



Flicker TLA details

Flicker Meter Type	Viso Systems LabFlicker
Frequency of input power	50,0 Hz
Flicker/TLA sample rate	20,0 samples/s

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

Flicker indices according to Illuminating Engineering Society (IES)

Flicker frequency	100,0 Hz
Percent Flicker	1,437 %
Flicker index	0,0

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

JA8/10 40 Hz	0,1256 %
JA8/10 90 Hz	0,3292 %
JA8/10 200 Hz	1,511 %
JA8/10 400 Hz	1,39 %
JA8/10 1000 Hz	1,345 %

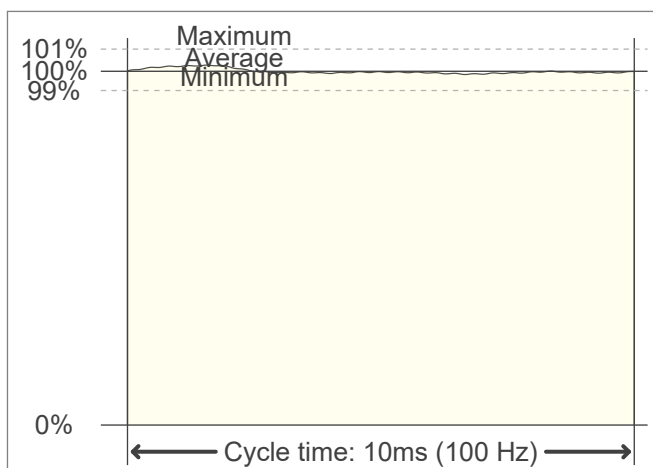
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value ($F < 80$ Hz)	0,05
SVM value ($80 < F < 2000$ Hz)	0,03

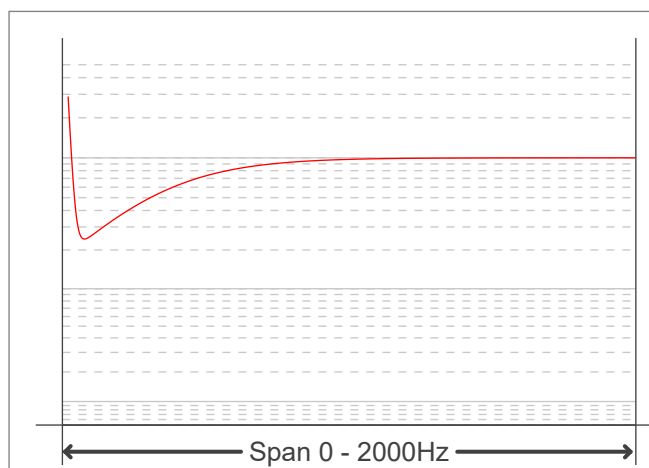
Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp	0,04
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Flicker frame (frame of one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

