

Light Measurement Report

Laboratory and Equipment

Goniospectrometer System and Type
Sensor Name, Calibr. Date and Serial No.
Spectrometer Manufacturer and Model

Viso Systems LabSpion - Type C, horizontal
Viso Systems LabSensor Model2 - 2022-11-08 - 3230088275
Ibsen Photonics, Denmark - Freedom VIS (Custom Viso)

Measurement Conditions

Number of C-planes and Resolution
 γ (gamma)-Resolution
Test Distance
Input Power
Input RMS Voltage
Frequency of Input Power

4 - 90°
5°
1.50 meter / 4.9 feet
16 W
120 V
60 Hz

Tested Light Source

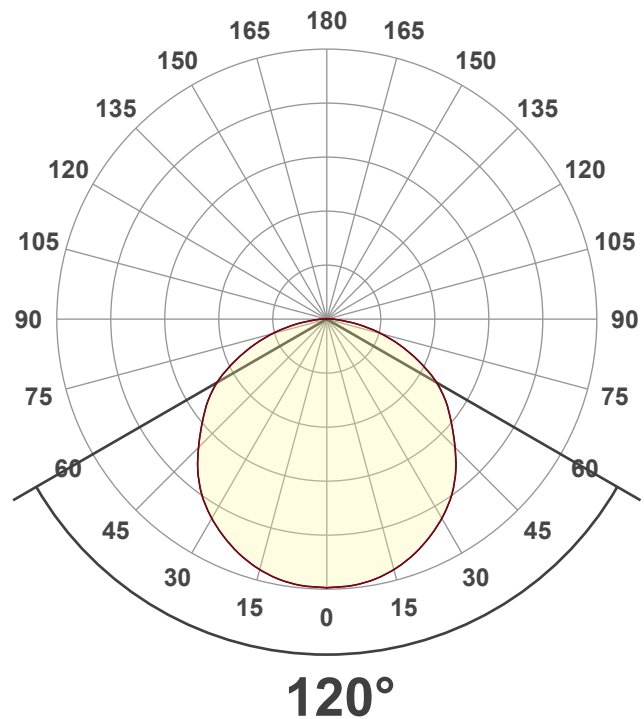
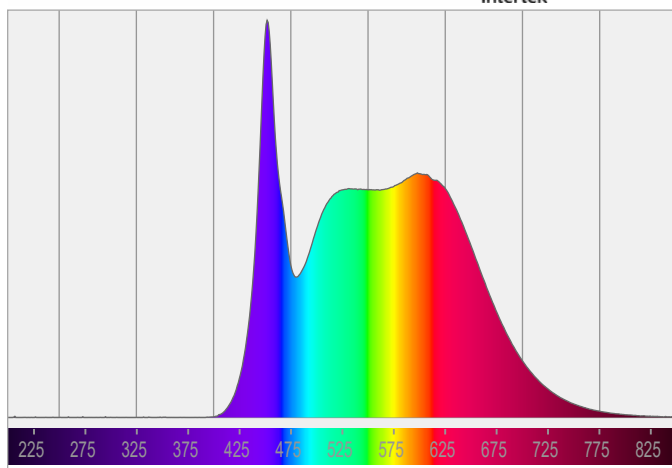
Product Name
SKU
Dimensions

TR06016-2S
666561433611
Ø59mm (2.3 in) x H 14mm (0.55 in)

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 duv and MacAdam Steps

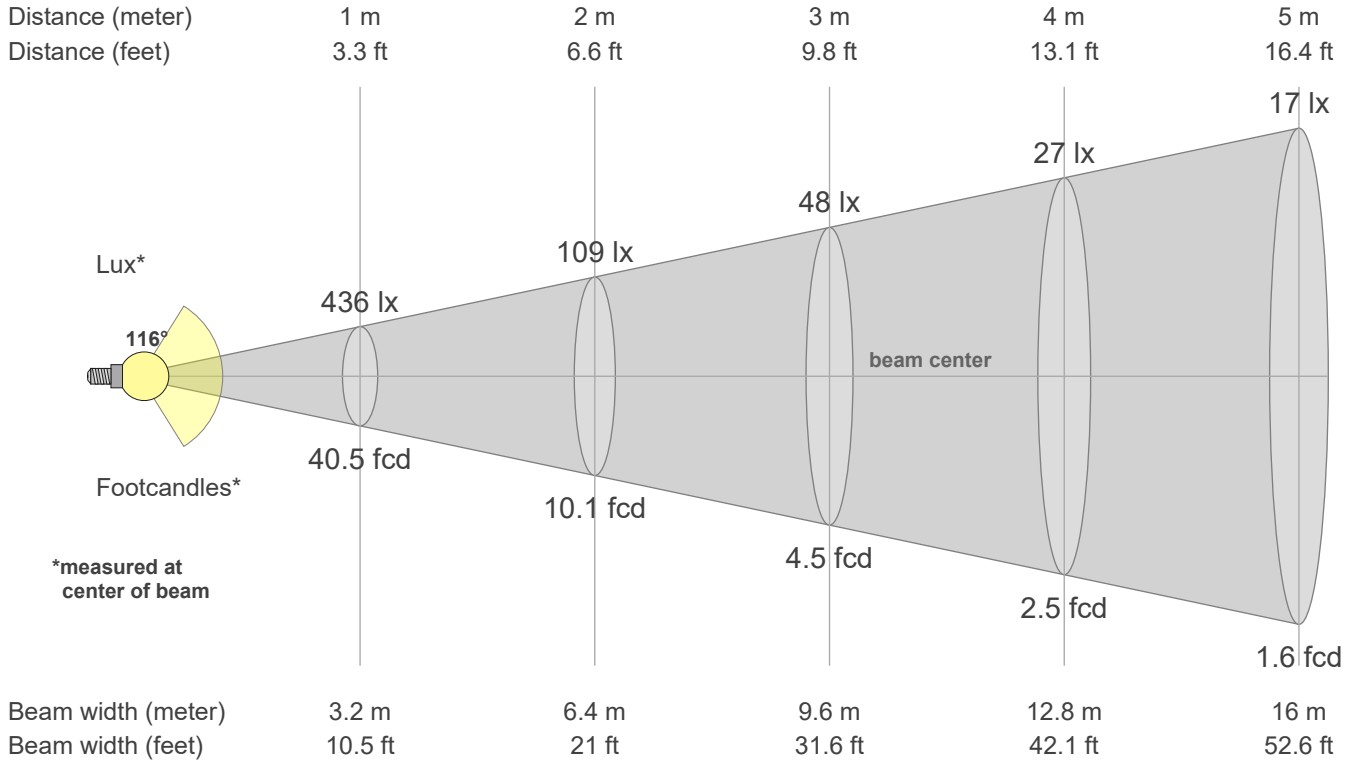
1300 - 0.56% / 99.44%
84 lm/W
436 cd - 120°
5000 - 5000 K / 5026 K
CRI 94.2
Rf 91.7 - Rg 99.7
Duv -0.0031 - SDCM 0.5



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Beam details

Beam angle (Peak 50%)	116.1°	Output ratio in 120° cone	76.9%
Field angle (Peak 10%)	163.6°	Output ratio in 90° cone	52.0%
Cutoff angle (Peak 2.5%)	178.4°		



Beam intensities from 1 - 20 m / 3 - 66 ft

1 m	2 m	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m	11 m	12 m	13 m	14 m	15 m	16 m	17 m	18 m	19 m	20 m
3.3 ft	6.6 ft	9.8 ft	13.1 ft	16.4 ft	19.7 ft	23.0 ft	26.2 ft	29.5 ft	32.8 ft	36.1 ft	39.4 ft	42.7 ft	45.9 ft	49.2 ft	52.5 ft	55.8 ft	59.1 ft	62.3 ft	65.6 ft
436 lx	109 lx	48 lx	27 lx	17 lx	12 lx	9 lx	7 lx	5 lx	4 lx	4 lx	3 lx	3 lx	2 lx	2 lx	2 lx	2 lx	1 lx	1 lx	1 lx
40.5 fcd	10.1 fcd	4.5 fcd	2.5 fcd	1.6 fcd	1.1 fcd	0.8 fcd	0.6 fcd	0.5 fcd	0.4 fcd	0.3 fcd	0.3 fcd	0.2 fcd	0.2 fcd	0.2 fcd	0.2 fcd	0.1 fcd	0.1 fcd	0.1 fcd	0.1 fcd

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°
436	435	430	421	408	392	374	352	326	295	265	237	206	168	129	92	55	24	9	3
100%	100%	99%	97%	94%	90%	86%	81%	75%	68%	61%	54%	47%	38%	30%	21%	13%	6%	2%	1%

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°
436	435	430	421	408	392	374	352	326	295	265	237	206	168	129	92	55	24	9	3
100%	100%	99%	97%	94%	90%	86%	81%	75%	68%	61%	54%	47%	38%	30%	21%	13%	6%	2%	1%

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°
436	435	430	421	408	392	374	352	326	295	265	237	206	168	129	92	55	24	9	3
100%	100%	99%	97%	94%	90%	86%	81%	75%	68%	61%	54%	47%	38%	30%	21%	13%	6%	2%	1%

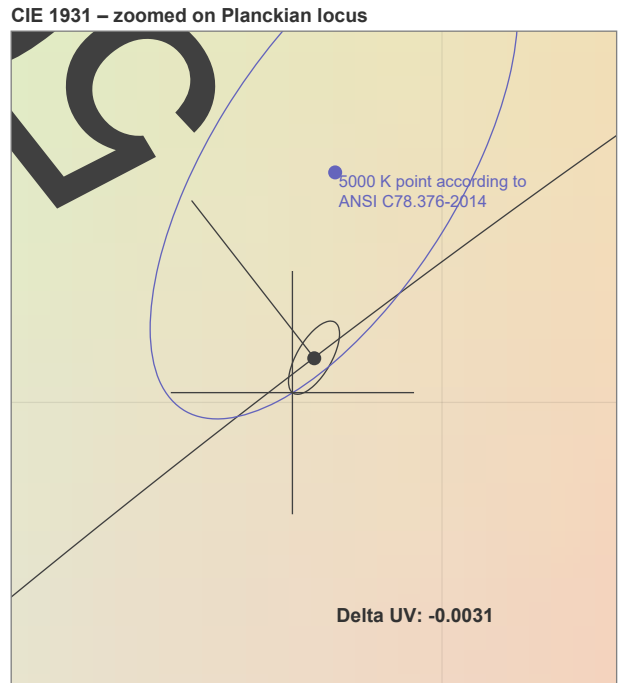
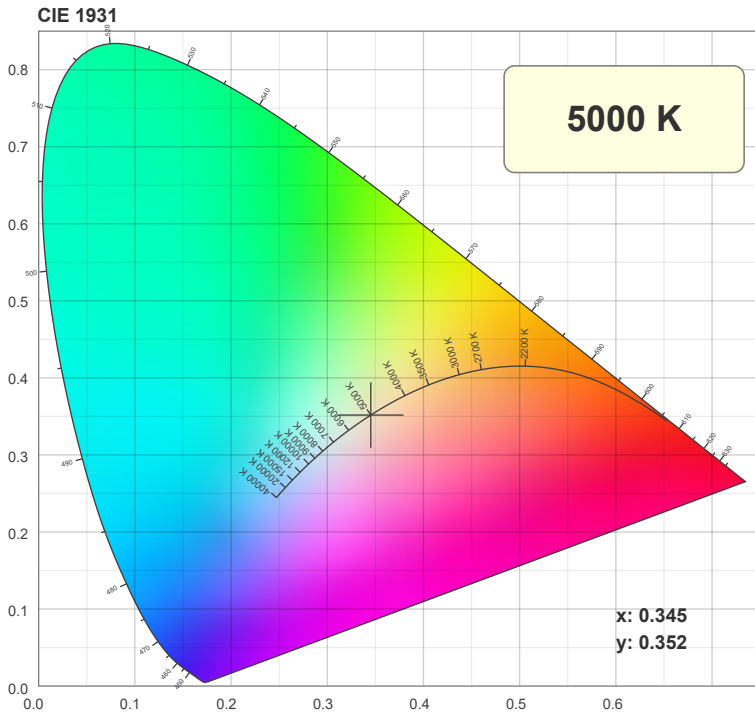
Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
436	435	430	421	408	392	374	352	326	295	265	237	206	168	129	92	55	24	9	3
100%	100%	99%	97%	94%	90%	86%	81%	75%	68%	61%	54%	47%	38%	30%	21%	13%	6%	2%	1%

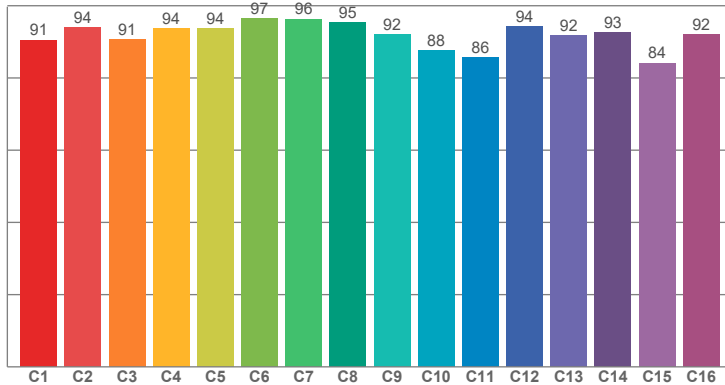
Color details

Correlated Color Temperature, Target CCT = 5000 K
 Correlated Color Temperature, Measured CCT = 5026 K
 Color Rendering Index CRI = 94.2
 Color Rendering Index, R9 (red component) R9 = 66.1
 Color Rendering TM30-18 Rf 91.7 - Rg 99.7
 Color Quality Scale CQS = 91.7

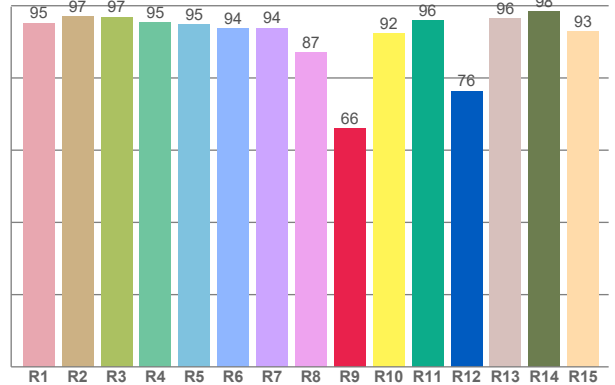
MacAdam Steps
 Color coordinates CIE 1931 (x,y) = (0.345,0.352)
 Color coordinate CIEs 1960 (u,v) = (0.211,0.323)
 Color deviation from BBL Duv = -0.0031
 Color coordinate CIEs 1976 (CIELUV) (u',v') = (0.211,0.485)



TM30-18 Rf-values per hue bin. Rf: 91.7



Color Rendering Index per reference color (CIE 1995). CRI: 94.2



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
95.21	97.12	96.92	95.33	94.79	93.67	93.83	87.06	66.06	92.35	95.96	76.39	96.47	98.37	92.78

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
90.51	93.95	90.72	93.72	93.78	96.55	96.34	95.31	92.12	87.52	85.59	94.30	91.78	92.70	84.15	92.01

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
91.76	99.32	86.42	86.24	91.46	94.58	94.79	95.95	98.30	93.86	92.68	92.07	92.26	88.50	89.73

Color Quality Scale by reference color. CQS: 91.7

