

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°
1.60 meter / 5.2 feet
10 W
120 V
60 Hz

Tested Light Source

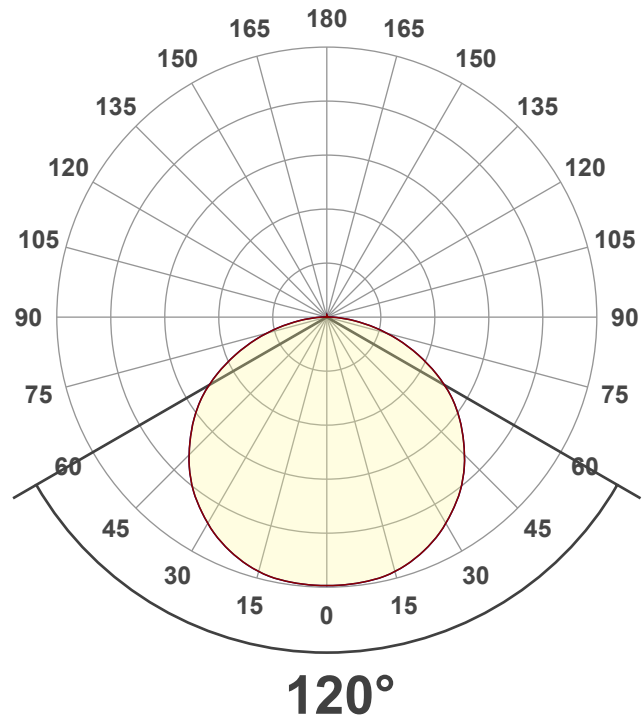
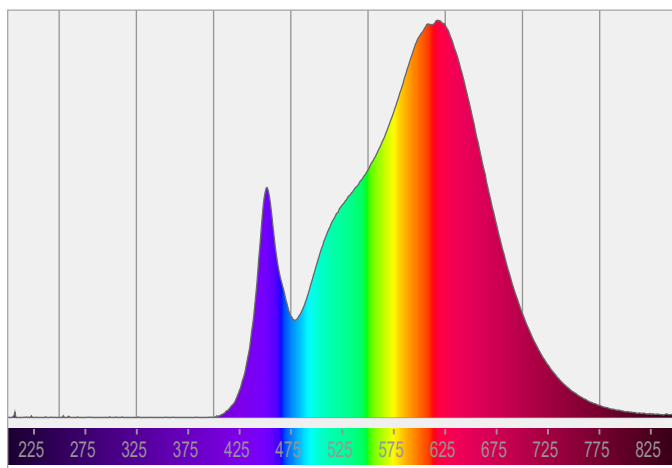
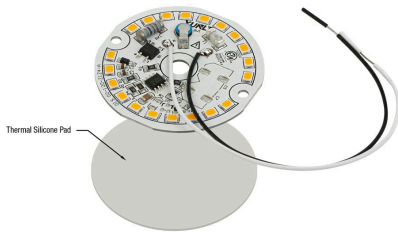
Product Name
SKU
Dimensions

DIS 02-010W-930-120-S1-Z1A
666561428242
Ø49.7mm (2 in), H 4.5mm (1.7 in)

Main Light Measurement Results

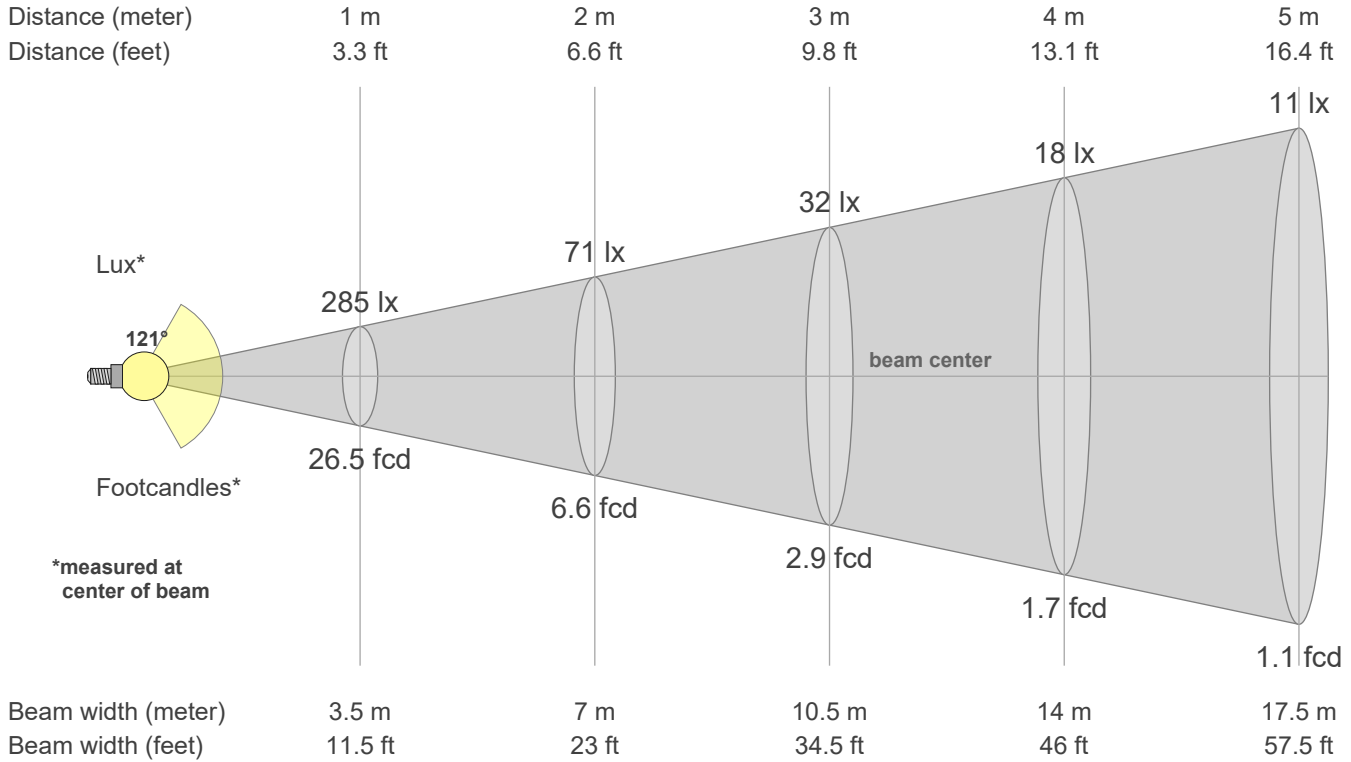
Output – Total Lumen (Up% / Down%)
Efficiency
Peak Intensity and Beam Angle
Correlated Color Temperature - Target/Measured
Color Rendering Index
Color Rendering TM30-18
Color Shift - CIE duv and MacAdam Steps

900 - 0.42% / 99.58%
93 lm/W
285 cd - 120°
3000 - 3000 K / 3068 K
CRI 92.1
Rf 90.9 - Rg 100.4
Duv -0.0036 - SDCM 4.6



Beam details

Beam angle (Peak 50%)	120.6°	Output ratio in 120° cone	76.3%
Field angle (Peak 10%)	165.7°	Output ratio in 90° cone	50.9%
Cutoff angle (Peak 2.5%)	179.5°		



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
285 lx	71 lx	32 lx	18 lx	11 lx	8 lx	6 lx	4 lx	4 lx	3 lx	2 lx	2 lx	2 lx	1 lx	1 lx	1 lx	1 lx	1 lx	1 lx	1 lx
26.5 fc	6.6 fc	2.9 fc	1.7 fc	1.1 fc	0.7 fc	0.5 fc	0.4 fc	0.3 fc	0.3 fc	0.2 fc	0.2 fc	0.2 fc	0.1 fc	0.1 fc	0.1 fc	0.1 fc	0.1 fc	0.1 fc	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°
285	284	283	279	272	264	252	239	224	206	187	167	144	118	92	66	42	20	7	1
100%	100%	99%	98%	96%	93%	89%	84%	79%	73%	66%	59%	51%	42%	32%	23%	15%	7%	2%	0%

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°
285	284	283	279	272	264	252	239	224	206	187	167	144	118	92	66	42	20	7	1
100%	100%	99%	98%	96%	93%	89%	84%	79%	73%	66%	59%	51%	42%	32%	23%	15%	7%	2%	0%

Intensities in 180° c-plane

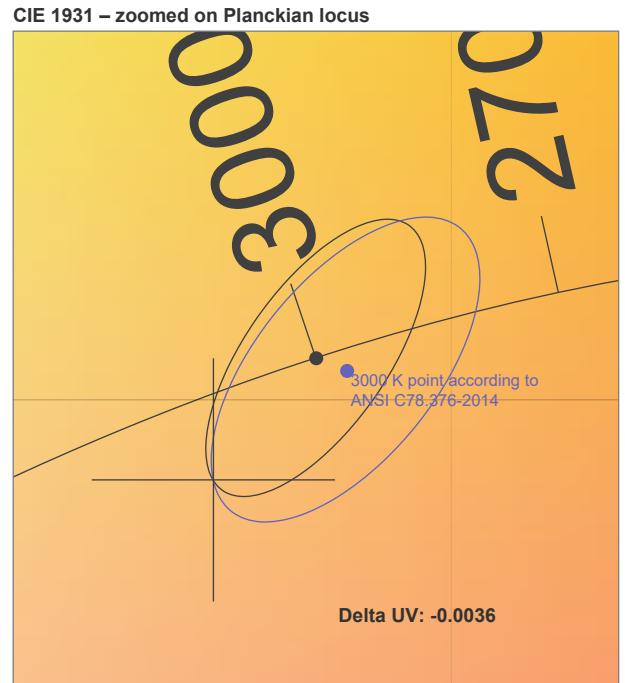
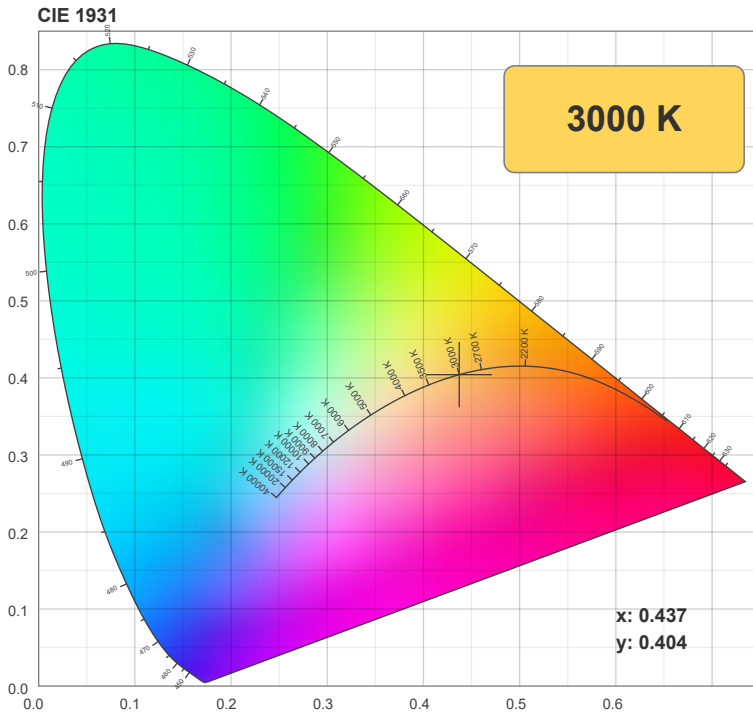
0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
285	284	283	279	272	264	252	239	224	206	187	167	144	118	92	66	42	20	7	1
100%	100%	99%	98%	96%	93%	89%	84%	79%	73%	66%	59%	51%	42%	32%	23%	15%	7%	2%	0%

Intensities in 270° c-plane

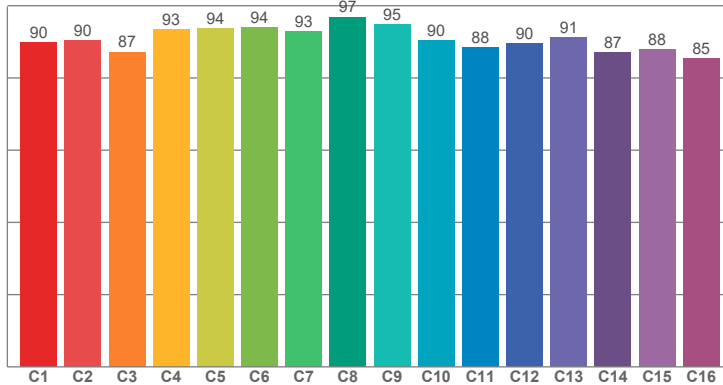
0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
285	284	283	279	272	264	252	239	224	206	187	167	144	118	92	66	42	20	7	1
100%	100%	99%	98%	96%	93%	89%	84%	79%	73%	66%	59%	51%	42%	32%	23%	15%	7%	2%	0%

Color details

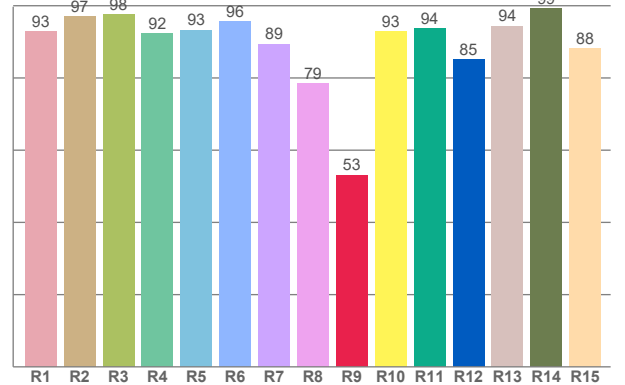
Correlated Color Temperature, Target	CCT = 3000 K	MacAdam Steps	SDCM = 4.6
Correlated Color Temperature, Measured	CCT = 3068 K	Color coordinates CIE 1931	(x,y) = (0.437,0.404)
Color Rendering Index	CRI = 92.1	Color coordinate CIEs 1960	(u,v) = (0.251,0.348)
Color Rendering Index, R9 (red component)	R9 = 53.1	Color deviation from BBL	Duv = -0.0036
Color Rendering TM30-18	Rf 90.9 - Rg 100.4	Color coordinate CIEs 1976 (CIELUV)	(u',v') = (0.251,0.521)
Color Quality Scale	CQS = 89.4		



TM30-18 Rf-values per hue bin. Rf: 90.9



Color Rendering Index per reference color (CIE 1995). CRI: 92.1



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
92.92	97.14	97.62	92.27	93.28	95.67	89.39	78.56	53.12	92.88	93.63	85.11	94.38	99.28	88.27

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
89.78	90.38	87.21	93.38	93.78	93.93	92.95	96.90	94.85	90.34	88.46	89.58	91.16	86.96	87.99	85.47

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
86.98	96.52	87.37	87.59	91.37	91.82	89.42	90.56	97.19	92.60	91.00	89.45	89.39	84.77	85.24

Color Quality Scale by reference color. CQS: 89.4

