

# 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  
 $\gamma$  (gamma)-Resolution  
Test Distance  
Input Power  
Input RMS Voltage  
Frequency of Input Power

4 - 90°  
5°  
1.60 meter / 5.2 feet  
5 W  
120 V  
60 Hz

## Tested Light Source

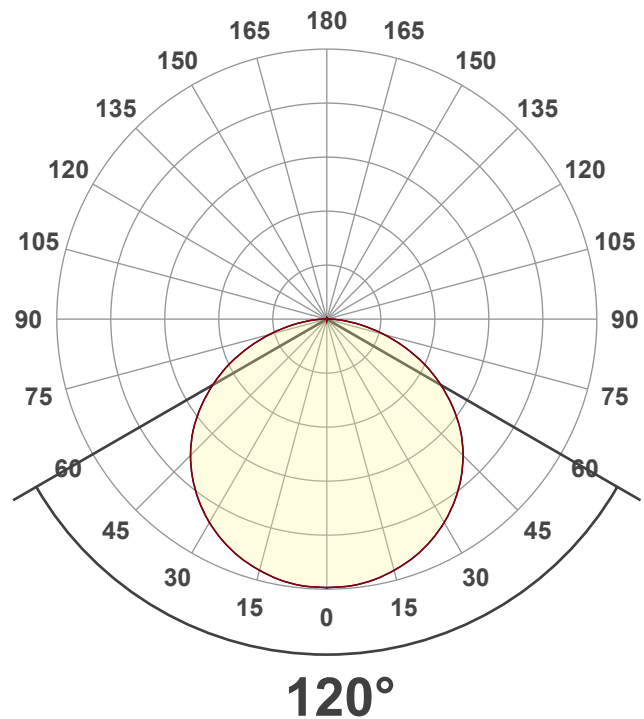
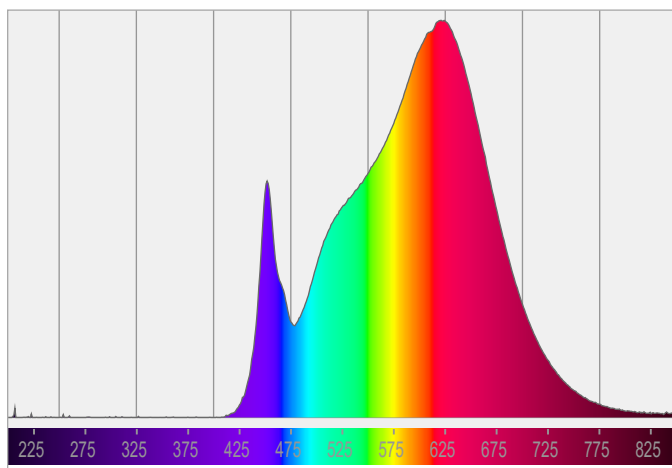
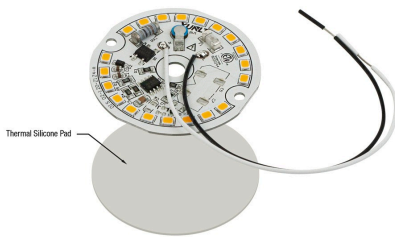
Product Name  
SKU  
Dimensions

**DIS 02-005W-930-120-S1-Z1A**  
**666561428235**  
**Ø49.7mm (2 in), H 4.5mm (0.17 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

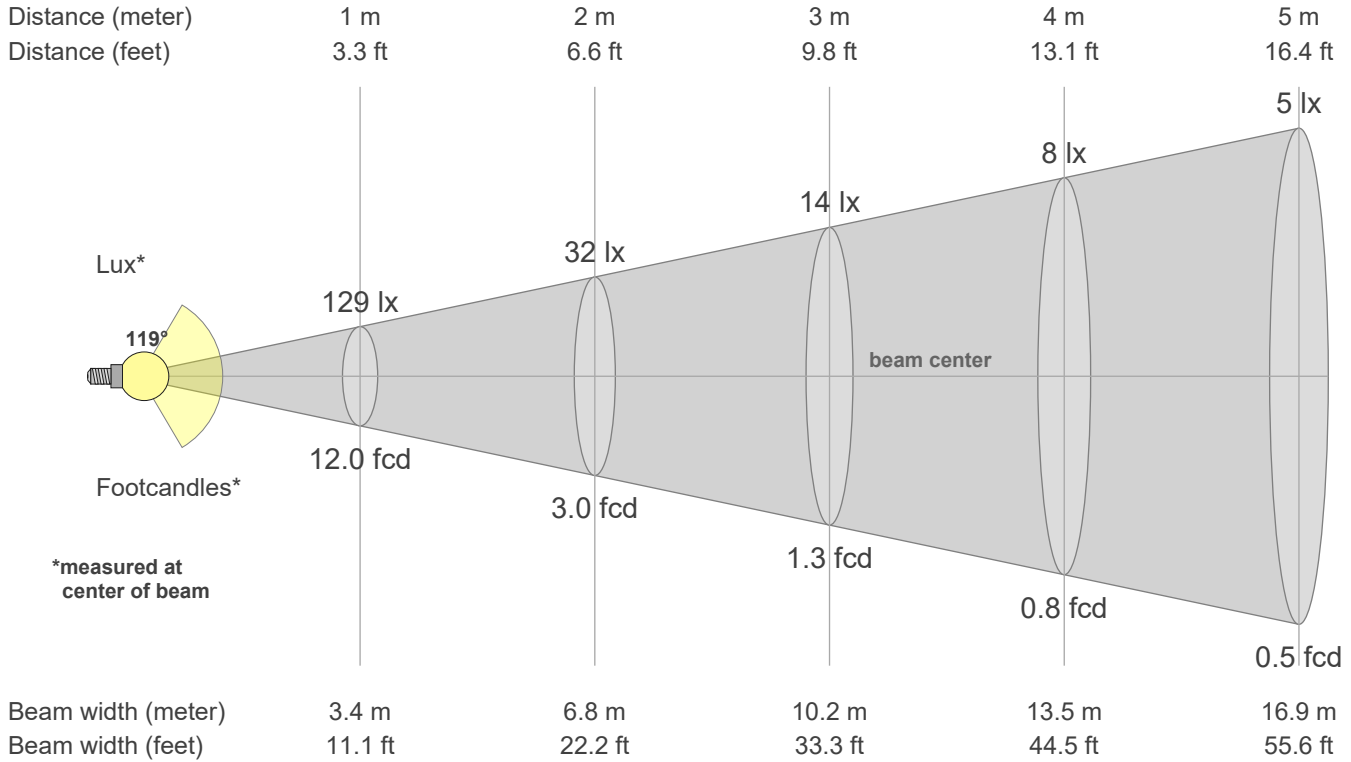
400 - 0.36% / 99.64%  
84 lm/W  
129 cd - 120°  
3000 - 3000 K / 3021 K  
CRI 94.0  
Rf 92.0 - Rg 99.9  
Duv -0.0022 - SDCM 2.4



# Light Measurement Report

## Beam details

Beam angle (Peak 50%)	118.9°	Output ratio in 120° cone	76.7%
Field angle (Peak 10%)	164.9°	Output ratio in 90° cone	51.2%
Cutoff angle (Peak 2.5%)	177.9°		



## 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
129 lx	32 lx	14 lx	8 lx	5 lx	4 lx	3 lx	2 lx	2 lx	1 lx	1 lx	1 lx	1 lx	1 lx	1 lx	1 lx	0 lx	0 lx	0 lx	0 lx
12.0 fc	3.0 fc	1.3 fc	0.8 fc	0.5 fc	0.3 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	0.0 fc	0.0 fc	0.0 fc	0.0 fc	0.0 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°
129	129	128	125	122	118	113	107	101	93	84	74	63	52	40	29	18	8	2	0
100%	100%	99%	97%	94%	91%	87%	83%	78%	72%	65%	57%	49%	40%	31%	22%	14%	6%	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°
129	129	128	125	122	118	113	107	101	93	84	74	63	52	40	29	18	8	2	0
100%	100%	99%	97%	94%	91%	87%	83%	78%	72%	65%	57%	49%	40%	31%	22%	14%	6%	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°
129	129	128	125	122	118	113	107	101	93	84	74	63	52	40	29	18	8	2	0
100%	100%	99%	97%	94%	91%	87%	83%	78%	72%	65%	57%	49%	40%	31%	22%	14%	6%	2%	0%

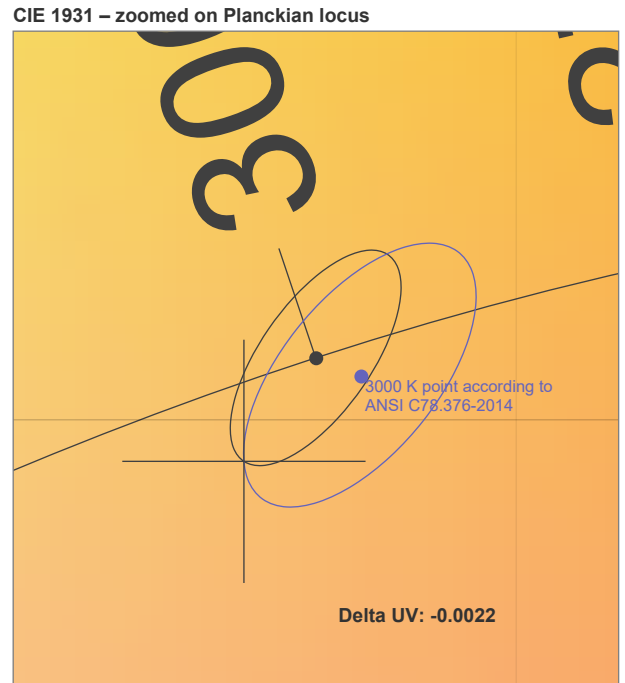
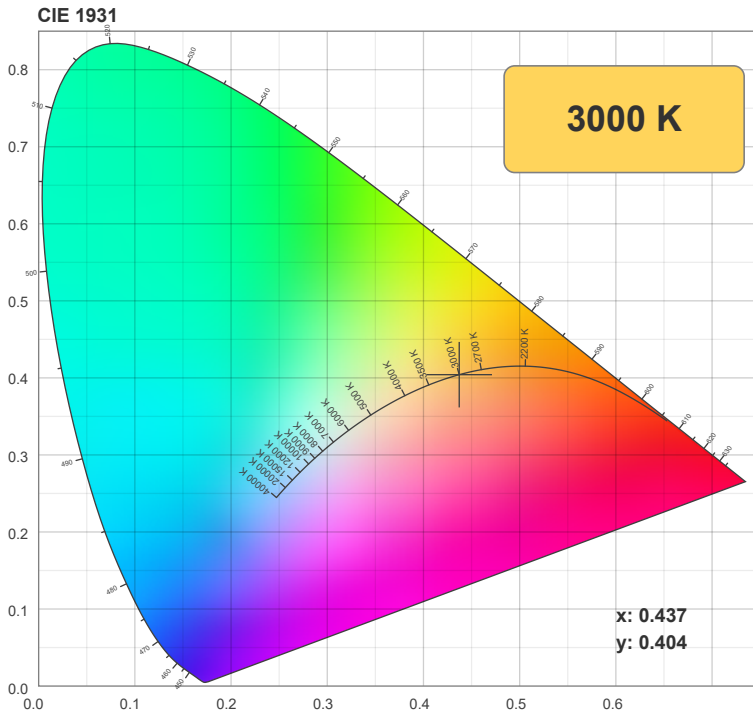
## Intensities in 270° c-plane

0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°	95°
129	129	128	125	122	118	113	107	101	93	84	74	63	52	40	29	18	8	2	0
100%	100%	99%	97%	94%	91%	87%	83%	78%	72%	65%	57%	49%	40%	31%	22%	14%	6%	2%	0%

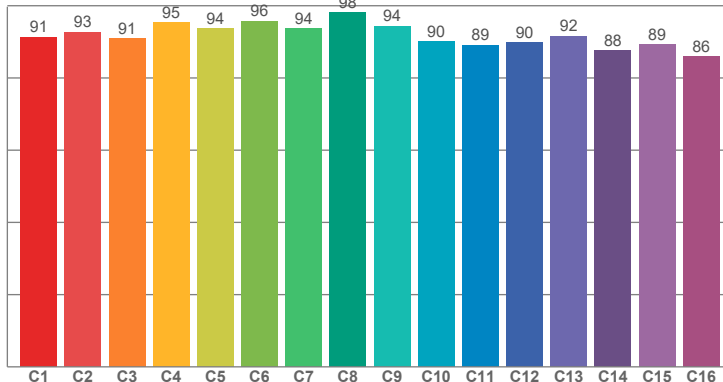
## Color details

Correlated Color Temperature, Target CCT = 3000 K  
 Correlated Color Temperature, Measured CCT = 3021 K  
 Color Rendering Index CRI = 94.0  
 Color Rendering Index, R9 (red component) R9 = 62.5  
 Color Rendering TM30-18 Rf 92.0 - Rg 99.9  
 Color Quality Scale CQS = 91.4

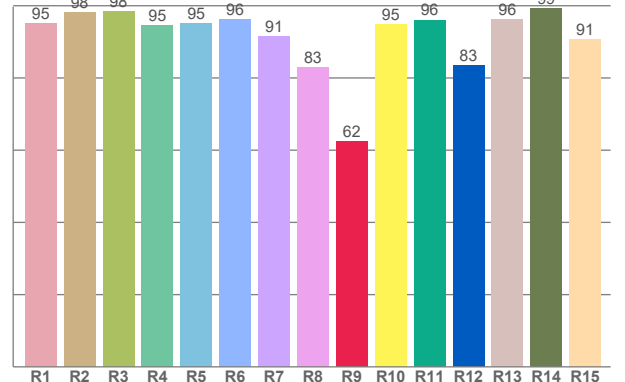
MacAdam Steps  
 Color coordinates CIE 1931 (x,y) = (0.437,0.404)  
 Color coordinate CIEs 1960 (u,v) = (0.251,0.348)  
 Color deviation from BBL Duv = -0.0022  
 Color coordinate CIEs 1976 (CIELUV) (u',v') = (0.251,0.521)



**TM30-18 Rf-values per hue bin. Rf: 92.0**



**Color Rendering Index per reference color (CIE 1995). CRI: 94.0**



**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
94.99	98.08	98.41	94.61	95.08	96.30	91.44	82.81	62.48	94.86	96.08	83.45	96.21	99.24	90.74

**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
91.36	92.74	90.85	95.44	93.80	95.77	93.63	98.07	94.38	90.16	89.16	89.82	91.63	87.72	89.26	86.06

**CQS Q values**

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
89.04	96.04	89.01	89.12	92.87	93.96	91.70	92.45	97.37	94.44	93.49	92.41	92.08	87.73	87.99

**Color Quality Scale by reference color. CQS: 91.4**

