

Light Measurement Report

Print date: 2025-10-15
- Measurement no..... VFR-251015-0089-MS
Measurement No. Serial: VFR-251015-0089-MS - Tracking: VT251015-003284
Operator: n/a

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 - 2025-05-21 - 3230088275
Ibsen Photonics, Denmark - Freedom VIS (Custom Viso)

Measurement Conditions

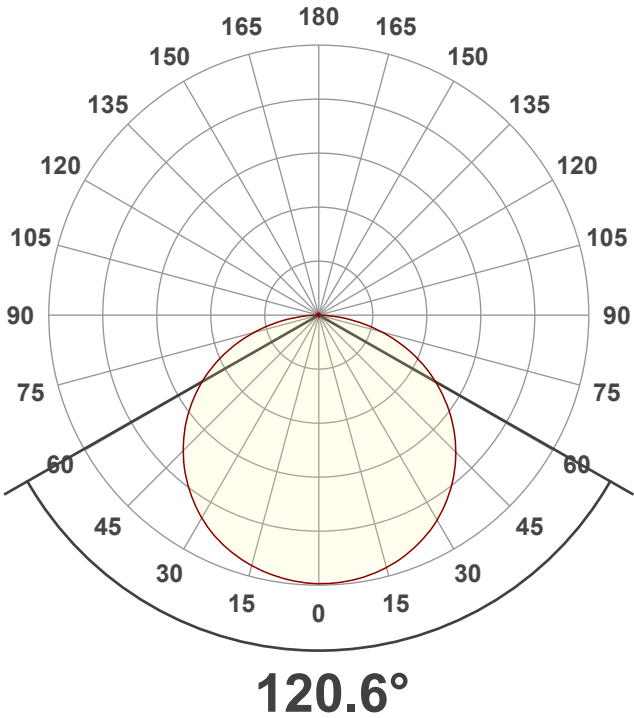
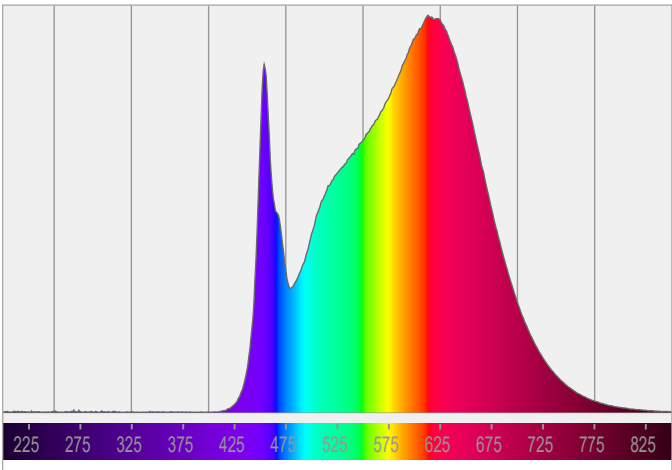
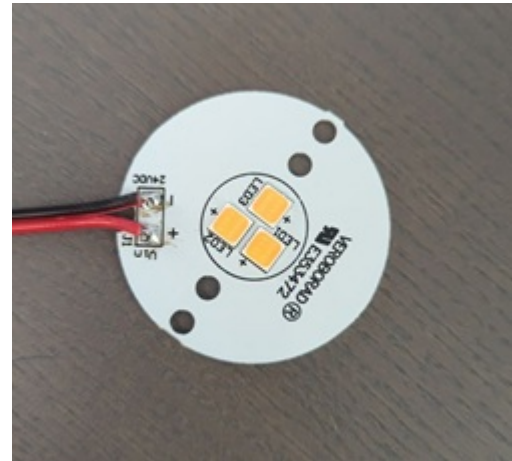
Number of C-planes and Resolution
γ (gamma)-Resolution
Test Distance
Input Power, Power and Displ. Factors
Input RMS Voltage and Current
Frequency of Input Power
Warm-up Time and Variation
2 - 180°
5°
1.04 meter / 3.4 feet
2.9 W - PF 0.44 - DPF 0.89
120 V - 0.056 A
60 Hz
Not completed - 2.0%

Tested Light Source

Product Name
Item No. and Manufacturer
Product Description (line 1)
3 SMD LED module
-

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
500 - 0.17% / 99.83%
147 lm/W
137 cd - 120.6°
3355 - 3355 K / 3355 K
CRI 94.1
Rf 90.4 - Rg 98.1
Duv -0.0018 - SDCM n/a



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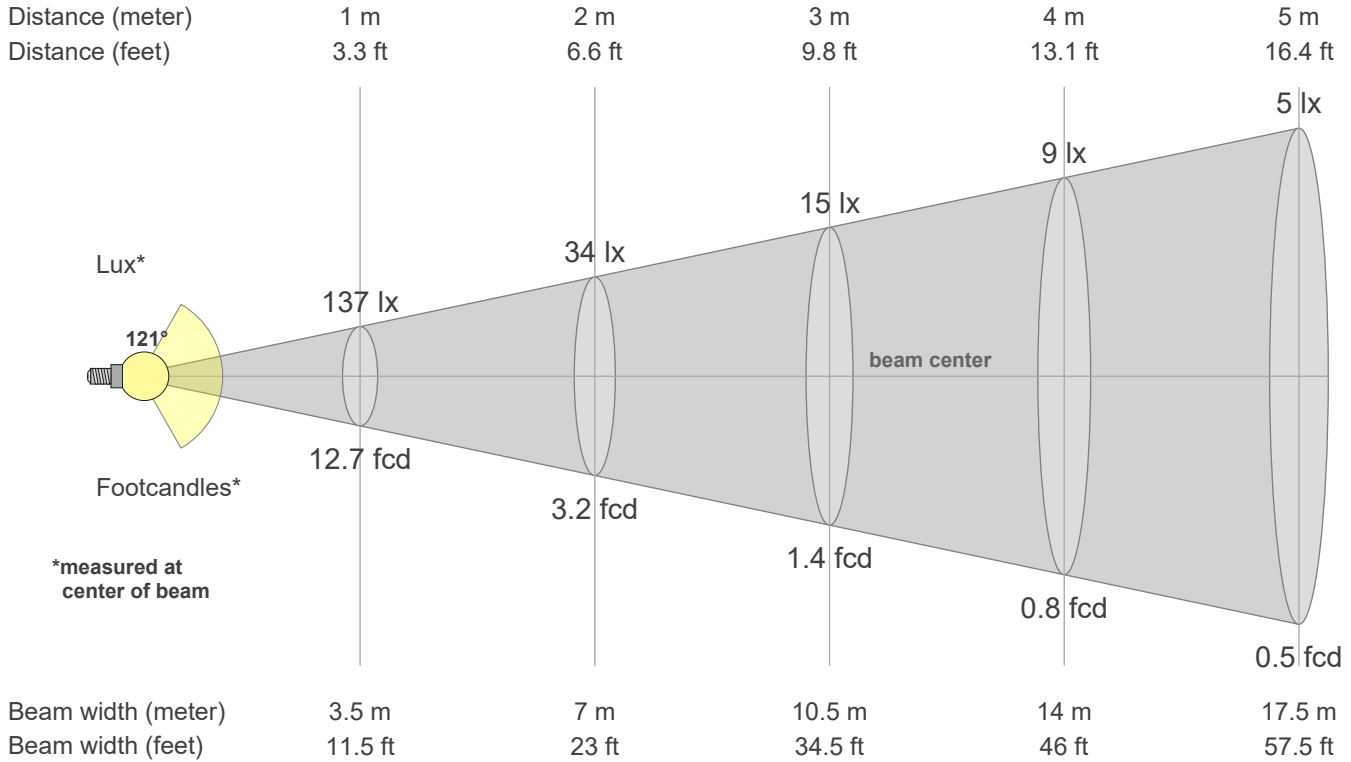
Beam details

Beam angle (Peak 50%)
Field angle (Peak 10%)
Cutoff angle (Peak 2.5%)

120.6°
166.6°
176.9°

Output ratio in 120° cone
Output ratio in 90° cone

75.7%
50.4%



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
137 lx	34 lx	15 lx	9 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
12.7 fc	3.2 fc	1.4 fc	0.8 fc	0.5 fc	0.4 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	0.0 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°
137	136	135	133	130	126	120	114	107	99	90	80	69	58	46	33	21	9	2	0
100%	100%	99%	97%	95%	92%	88%	83%	78%	72%	66%	58%	50%	42%	34%	24%	15%	7%	1%	0%

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°
137	136	135	133	130	126	120	114	107	99	90	80	69	58	46	33	21	9	2	0
100%	100%	99%	97%	95%	92%	88%	83%	78%	72%	66%	58%	50%	42%	34%	24%	15%	7%	1%	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°
137	136	134	132	129	124	119	113	106	98	89	79	69	58	46	34	22	10	2	0
100%	99%	98%	97%	94%	91%	87%	83%	77%	71%	65%	58%	50%	42%	34%	25%	16%	8%	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°
137	136	134	132	129	124	119	113	106	98	89	79	69	58	46	34	22	10	2	0
100%	99%	98%	97%	94%	91%	87%	83%	77%	71%	65%	58%	50%	42%	34%	25%	16%	8%	2%	0%

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Color details

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

CCT = 3355 K
CCT = 3355 K
CRI = 94.1
R9 = 66.2
Rf 90.4 - Rg 98.1
CQS = 91.8

MacAdam Steps

Color coordinates CIE 1931

Color coordinate CIEs 1960

Color deviation from BBL

Color coordinate CIEs 1976 (CIELUV)

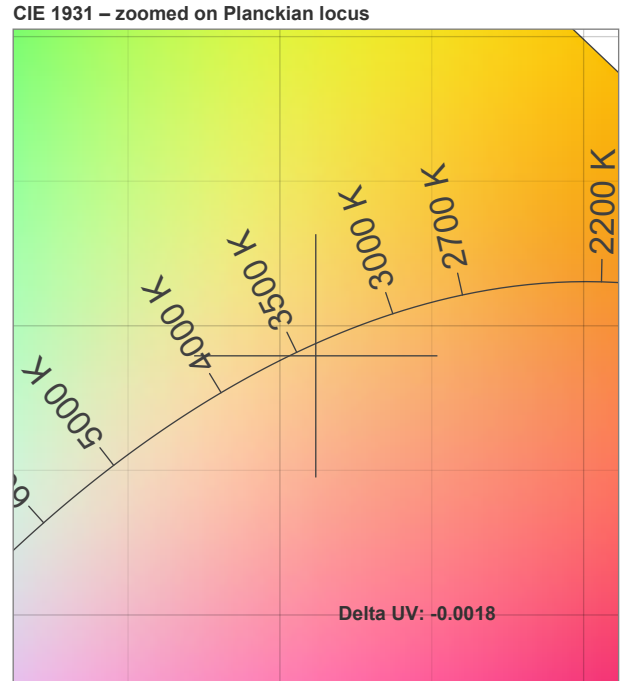
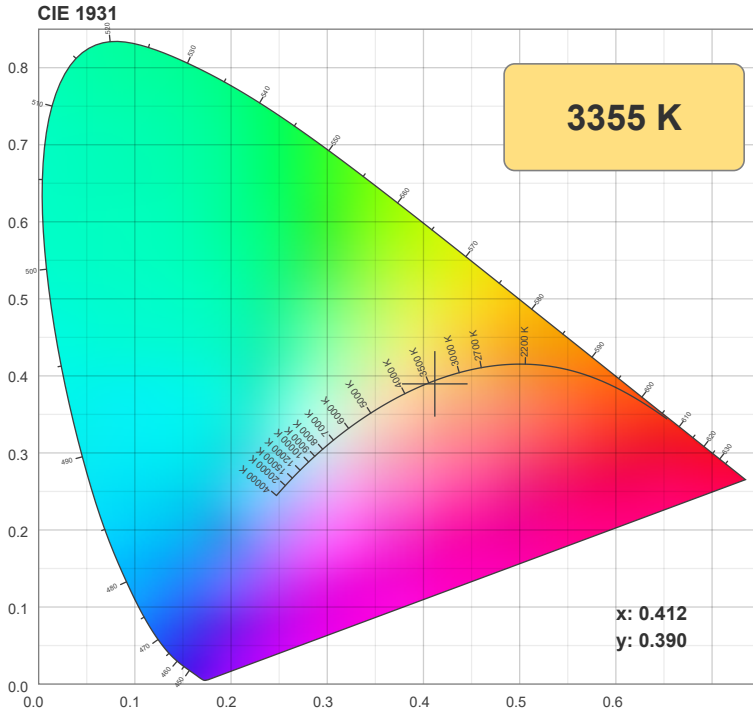
SDCM = n/a

(x,y) = (0.412,0.390)

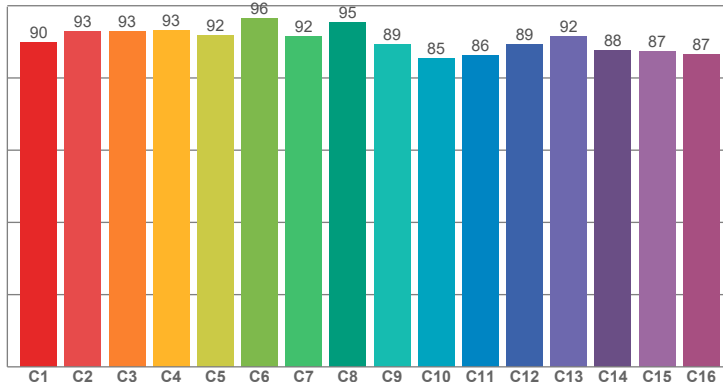
(u,v) = (0.240,0.341)

Duv = -0.0018

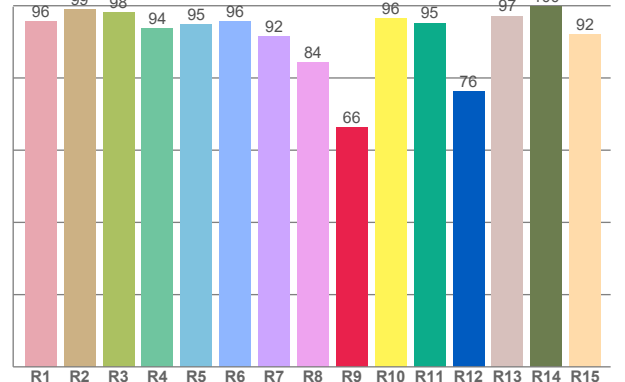
(u',v') = (0.240,0.512)



TM30-18 Rf-values per hue bin. Rf: 90.4



Color Rendering Index per reference color (CIE 1995). CRI: 94.1



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
95.59	98.99	98.12	93.73	94.72	95.67	91.59	84.39	66.19	96.44	95.24	76.21	97.18	99.74	92.02

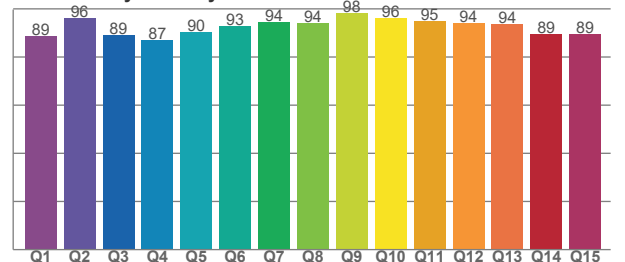
TM30 C values, 16 binned values out of total of 99 C values

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
89.88	92.97	93.00	93.11	91.82	96.48	91.54	95.35	89.40	85.42	86.14	89.27	91.57	87.52	87.31	86.51

CQS Q values

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
88.78	96.26	89.15	87.07	90.17	93.00	94.48	94.19	98.37	96.32	94.89	93.95	93.51	89.37	89.40

Color Quality Scale by reference color. CQS: 91.8



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Power Details

Input Power

Power feed to light source	2.9 W
Frequency of input power	60 Hz
RMS Input voltage feed, Vrms	120 V
RMS Input current feed, Irms	0.056 A
Volt-Ampere or apparent power = Vrms x Irms	6.69 VA
Displacement factor of AC power feed	0.89
Power factor of AC current feed	0.44
Total harmonic distortion of the current	174.73%
Total harmonic distortion of the voltage	2.43%

Efficiency

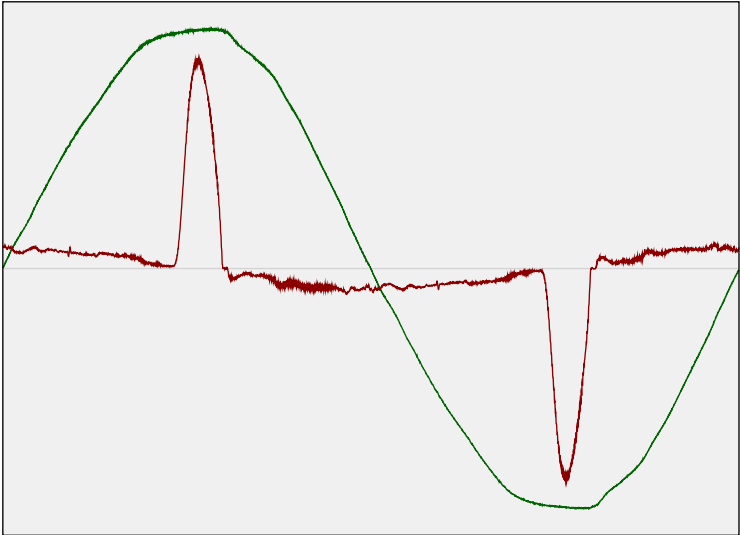
Radiated power efficiency 50.1%



Lumen efficiency 147 lm/W



Input Power Curve



Stabilization Details

Warmup Conditions

Stable period	15 min
Stable change max	2.0%
Minimum time	15 min

Color Temperature Change

CCT start	3355 K
CCT shift	+0 K
CCT end	3355 K

Warmup Result

Total warmup time	Not completed
Warmup variation	+0.0%

Output Change

Output start	430 lm
Output change	+ 1m
Output end	431 lm

Stabilization Curve

