

Light Measurement Report

Print date: 26-11-2024

Measurement date and time: 26-11-2024 13:15:59 – Measurement no. VFR-241126-2172-MS

Measurement tracking No. and Link: [VT241126-006909](https://www.viso-systems.com/track/VT241126-006909)

Operator:



Laboratory and Equipment

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

Viso Systems, Copenhagen V, Denmark
LabSpion – Type C, horizontal
LabSensor Model2 – 11-1-2024 – 3130191315
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

72 planes – 5°
5°
2,00 m
30,0 W – PF 0,81 – DPF 1,0
230 V – 0,162 A
50 Hz
Lamp stabilized in 15 min 2 sec – 2,0%

Tested Light Source

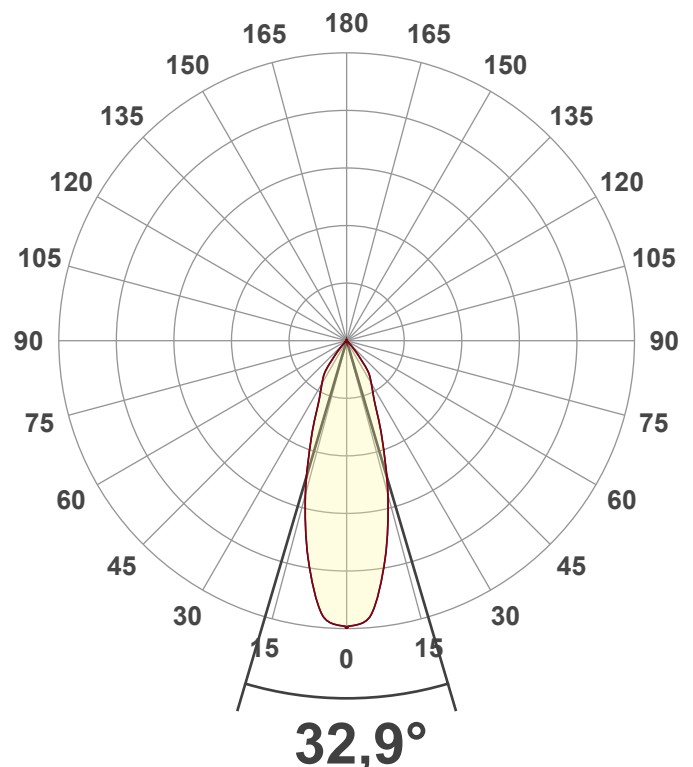
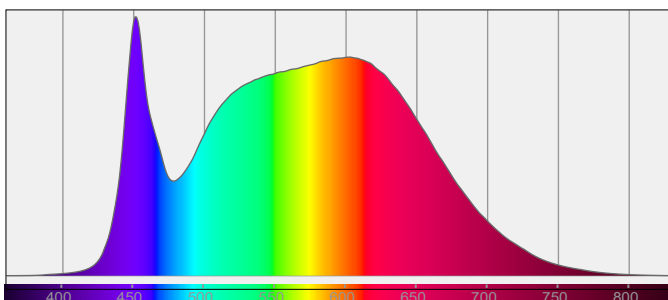
Product Name
Item No. and Manufacturer
Product Description (line 1)
SWITCH

807887-4000K-30W
807887-4000K-30W – Dutchfulfillment
3-FASE RAILSPOT | ROSALIN | 10W-20W-30W | WIT | DIMBAAR | CCT-

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
Flicker

2159 lm – 0,07% / 99,93%
72 lm/W
4893 cd – 32,9°
CCT = 4000 K / 4281 K
CRI 89,5
 R_f 89,1 – R_g 96,3
Duv 0,0052 – SDCM 6,9
SVM 0,03 – PstLM 0,02



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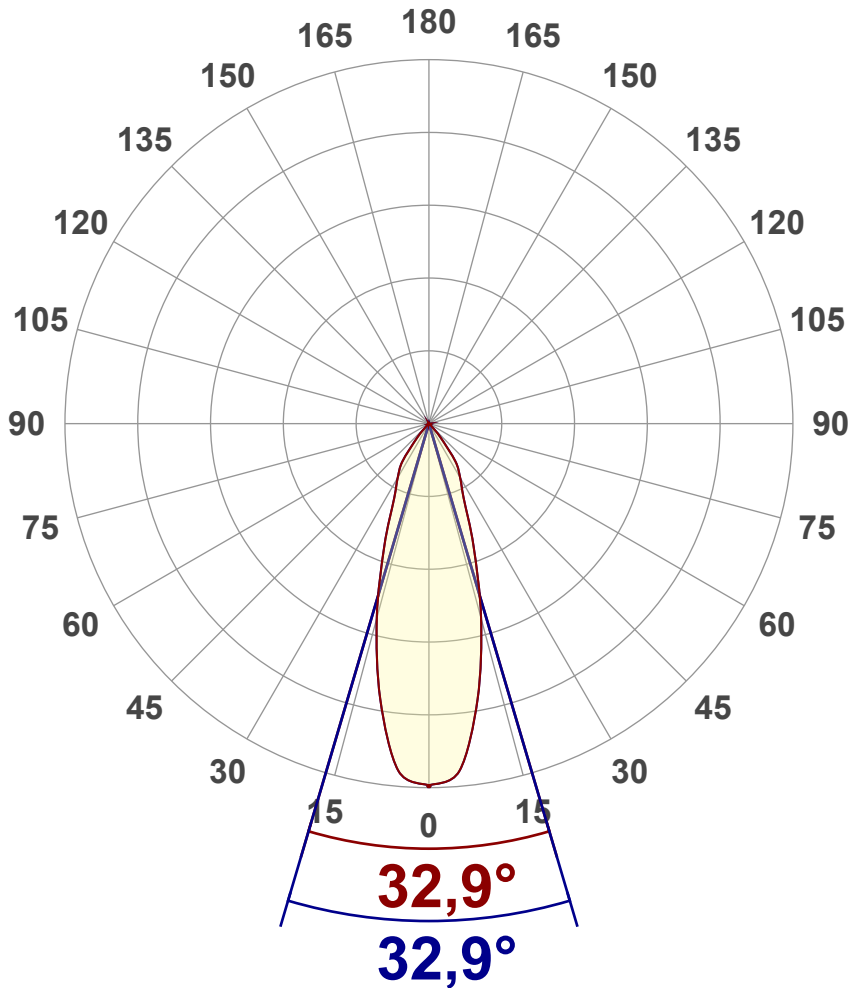
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Operator:



Luminous Intensity diagram

Unit: 0-100% of peak intensity



Main Values

| | |
|----------------------|----------------|
| Output (total Lumen) | 2159 lm |
| Lumen Up% / Down% | 0,07% / 99,93% |
| Peak Intensity | 4893 cd |
| Beam Angle (50%) | 32,9° |
| Beam Angle (90%) | 32,9° |
| Beam Angle (10%) | 32,9° |

Cut-off Angle

| | |
|--------------|-------|
| Average 2,5% | 86,3° |
|--------------|-------|

Field Angle

| | |
|-------------|-------|
| Average 10% | 73,6° |
|-------------|-------|

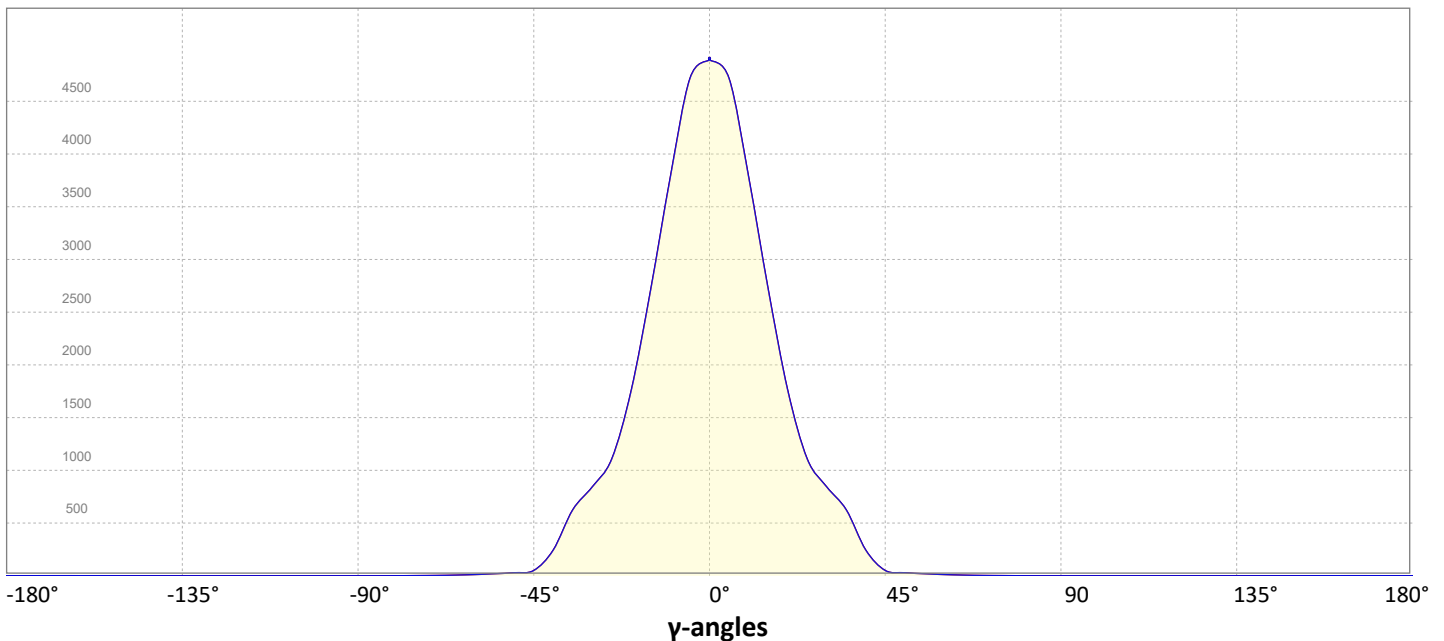
Intensity Ratio

| | |
|--------------|-------|
| In 120° cone | 99,5% |
| In 90° cone | 98,0% |

C000-C180

C090-C270

Linear distribution diagram - Intensity (candela) vs γ -angle



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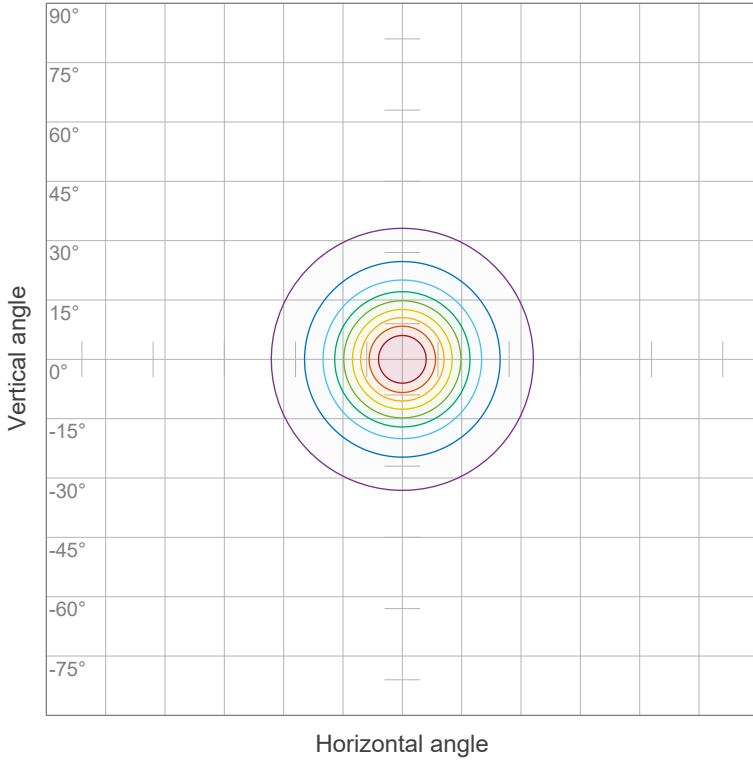
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Operator:



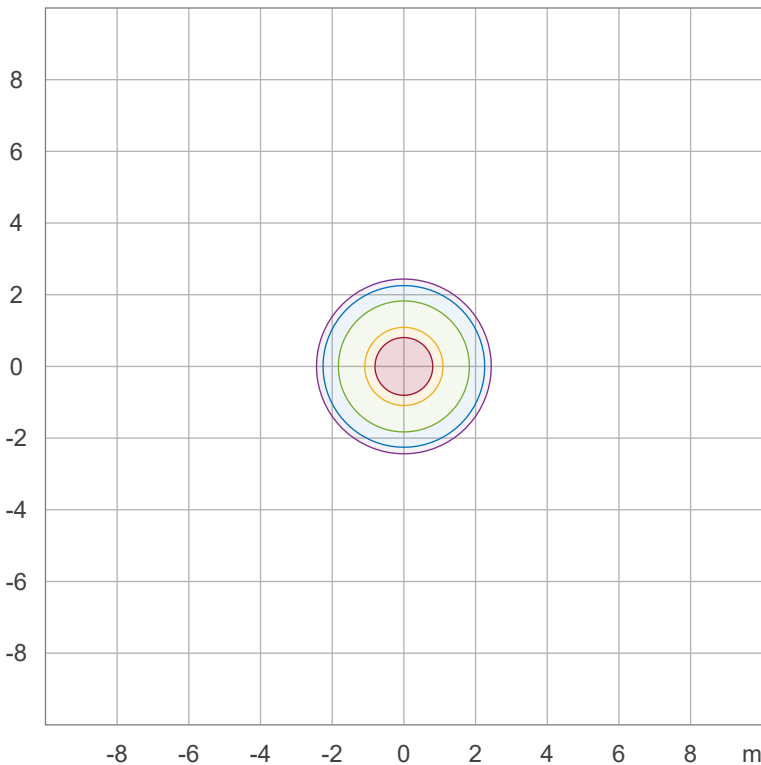
Iso-intensity Diagram (Iso-candela)



| | |
|------|-----------|
| 90 % | 4404,1 cd |
| 80 % | 3914,7 cd |
| 70 % | 3425,4 cd |
| 60 % | 2936,0 cd |
| 50 % | 2446,7 cd |
| 40 % | 1957,4 cd |
| 30 % | 1468,0 cd |
| 20 % | 978,7 cd |
| 10 % | 489,3 cd |

Peak intensity: 4893,4 cd
Number of c-planes: 72

Iso-illuminance Diagram (Iso-lux)



| | |
|--------|----------|
| 50,0 % | 271,9 lx |
| 30,0 % | 163,1 lx |
| 10,0 % | 54,4 lx |
| 5,0 % | 27,2 lx |
| 3,0 % | 16,3 lx |

Peak illuminance: 543,7 lx
Mounting height: 3,0 m
Number of c-planes: 72

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Operator:



Color details

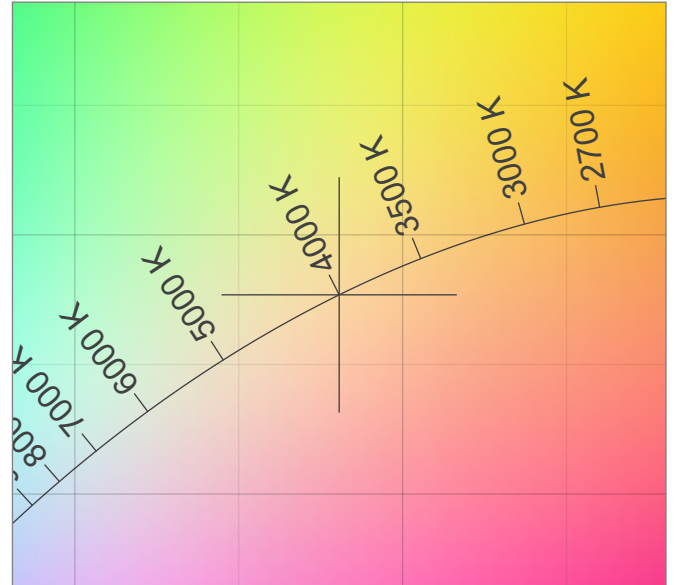
Correlated Color Temperature, Target CCT = 4000 K
 Correlated Color Temperature, Measured CCT = 4281 K
 Color Rendering Index CRI 89,5
 Color Rendering Index, R9 (red component) R9 = 45,9
 Color Rendering TM30-18 R_f 89,1 – R_g 96,3
 Color Quality Scale CQS = 89,8

MacAdam Steps SDCM = 6,9
 Color coordinates CIE 1931 (x;y) = (0,381;0,377)
 Color coordinate CIEs 1960 (u;v) = (0,225;0,334)
 Color deviation from BBL Duv = 0,0052
 Color coordinate CIEs 1976 (CIELUV) (u';v') = (0,225;0,502)

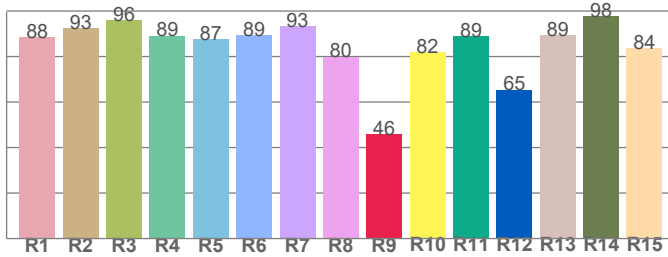
CIE 1931



CIE 1931 – zoomed on Planckian locus



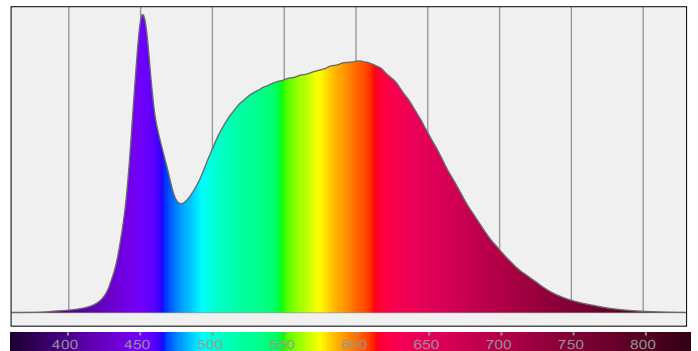
Color Rendering Index per reference color (CIE 1995)



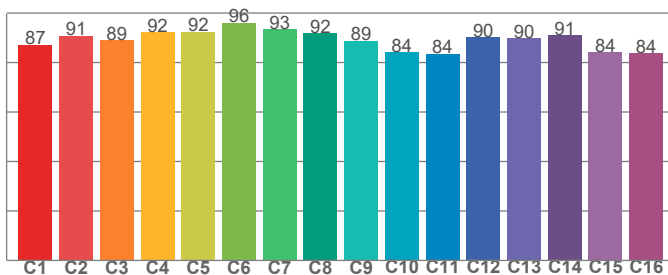
CRI R values, only R1-R8 are used to calculate final CRI value

| | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
| 88,4 | 92,5 | 95,9 | 89,1 | 87,5 | 89,4 | 93,3 | 79,9 | 45,9 | 82,0 | 88,9 | 65,4 | 89,5 | 97,6 | 83,5 |

Spectral power distribution (SPD) / W/nm – 0-100%



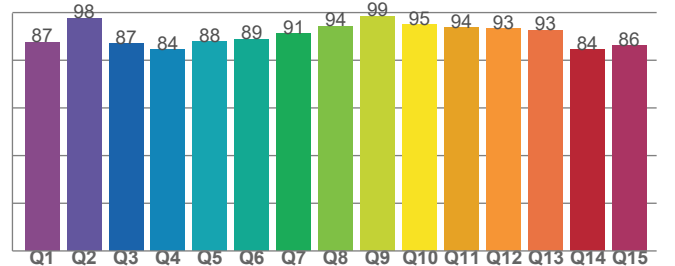
TM30-18 R_f-values per hue bin



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 |
| 87,2 | 90,8 | 88,9 | 92,2 | 92,5 | 96,0 | 93,4 | 91,8 | 88,8 | 84,2 | 83,5 | 90,3 | 89,7 | 90,9 | 84,1 | 83,7 |

Color Quality Scale by reference color



CQS Q values

| | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
| 87,5 | 97,7 | 86,9 | 84,5 | 87,8 | 88,9 | 91,1 | 94,2 | 98,5 | 94,9 | 93,6 | 93,3 | 92,7 | 84,3 | 86,0 |

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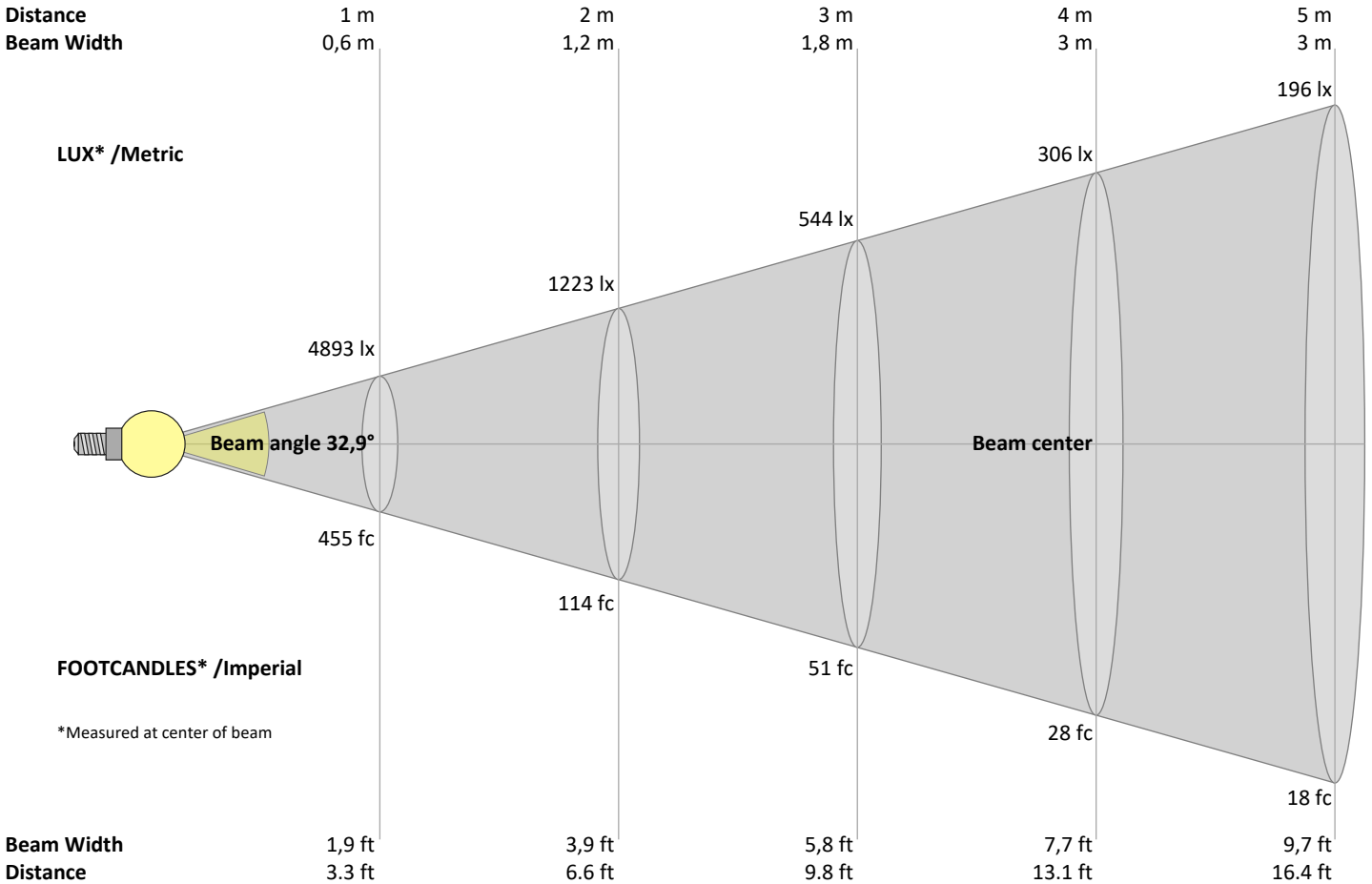
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Operator:



Beam 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 |
| 4893 | 1223 | 544 | 306 | 196 | 136 | 100 | 76 | 60 | 49 | 40 | 34 | 29 | 25 | 22 | 19 | 17 | 15 | 14 | 12 | lux |
| 454,6 | 113,7 | 50,5 | 28,4 | 18,2 | 12,6 | 9,3 | 7,1 | 5,6 | 4,5 | 3,8 | 3,2 | 2,7 | 2,3 | 2 | 1,8 | 1,6 | 1,4 | 1,3 | 1,1 | 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 4893 | 4823 | 4751 | 4533 | 4160 | 3787 | 3363 | 2938 | 2534 | 2150 | 1766 | 1504 | 1242 | 1057 | 950 | 844 | 757 | 670 | 551 | 398 | cd |
| 100% | 99% | 97% | 93% | 85% | 77% | 69% | 60% | 52% | 44% | 36% | 31% | 25% | 22% | 19% | 17% | 15% | 14% | 11% | 8% | 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 4893 | 4823 | 4751 | 4533 | 4160 | 3787 | 3363 | 2938 | 2534 | 2150 | 1766 | 1504 | 1242 | 1057 | 950 | 844 | 757 | 670 | 551 | 398 | cd |
| 100% | 99% | 97% | 93% | 85% | 77% | 69% | 60% | 52% | 44% | 36% | 31% | 25% | 22% | 19% | 17% | 15% | 14% | 11% | 8% | 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 4893 | 4823 | 4751 | 4533 | 4160 | 3787 | 3363 | 2938 | 2534 | 2150 | 1766 | 1504 | 1242 | 1057 | 950 | 844 | 757 | 670 | 551 | 398 | cd |
| 100% | 99% | 97% | 93% | 85% | 77% | 69% | 60% | 52% | 44% | 36% | 31% | 25% | 22% | 19% | 17% | 15% | 14% | 11% | 8% | 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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 4893 | 4823 | 4751 | 4533 | 4160 | 3787 | 3363 | 2938 | 2534 | 2150 | 1766 | 1504 | 1242 | 1057 | 950 | 844 | 757 | 670 | 551 | 398 | cd |
| 100% | 99% | 97% | 93% | 85% | 77% | 69% | 60% | 52% | 44% | 36% | 31% | 25% | 22% | 19% | 17% | 15% | 14% | 11% | 8% | of 0°val |

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Operator:



Light Planning – UGR table

Uncorrected, comprehensive UGR table according to 117-1995

| Reflectances | | 70 | 70 | 50 | 50 | 30 | 70 | 70 | 50 | 50 | 30 |
|-------------------------------------|-----------|--|------|------|------|------|--|------|------|------|------|
| | 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 | 19,4 | 19,9 | 19,5 | 20,2 | 20,3 | 19,4 | 19,9 | 19,5 | 20,2 | 20,3 |
| | 3H | 19,1 | 19,8 | 19,5 | 20,0 | 20,2 | 19,1 | 19,8 | 19,5 | 20,0 | 20,2 |
| | 4H | 19,0 | 19,7 | 19,4 | 19,9 | 20,1 | 19,0 | 19,7 | 19,4 | 19,9 | 20,1 |
| | 6H | 19,0 | 19,6 | 19,3 | 19,9 | 20,2 | 19,0 | 19,6 | 19,3 | 19,9 | 20,2 |
| | 8H | 19,0 | 19,5 | 19,3 | 19,8 | 20,2 | 19,0 | 19,5 | 19,3 | 19,8 | 20,2 |
| | 12H | 18,9 | 19,4 | 19,2 | 19,8 | 20,2 | 18,9 | 19,4 | 19,2 | 19,8 | 20,2 |
| 4H | 2H | 19,0 | 19,7 | 19,4 | 19,9 | 20,1 | 19,0 | 19,7 | 19,4 | 19,9 | 20,1 |
| | 3H | 18,9 | 19,4 | 19,3 | 19,8 | 20,2 | 18,9 | 19,4 | 19,3 | 19,8 | 20,2 |
| | 4H | 18,8 | 19,2 | 19,2 | 19,7 | 20,2 | 18,8 | 19,2 | 19,2 | 19,7 | 20,2 |
| | 6H | 18,7 | 19,2 | 19,2 | 19,5 | 19,9 | 18,7 | 19,2 | 19,2 | 19,5 | 19,9 |
| | 8H | 18,6 | 19,1 | 19,1 | 19,4 | 19,8 | 18,6 | 19,1 | 19,1 | 19,4 | 19,8 |
| | 12H | 18,6 | 18,9 | 19,1 | 19,3 | 19,8 | 18,6 | 18,9 | 19,1 | 19,3 | 19,8 |
| 8H | 4H | 18,6 | 19,1 | 19,1 | 19,4 | 19,8 | 18,6 | 19,1 | 19,1 | 19,4 | 19,8 |
| | 6H | 18,6 | 18,9 | 19,1 | 19,3 | 19,9 | 18,6 | 18,9 | 19,1 | 19,3 | 19,9 |
| | 8H | 18,6 | 18,8 | 19,1 | 19,3 | 19,9 | 18,6 | 18,8 | 19,1 | 19,3 | 19,9 |
| | 12H | 18,5 | 18,7 | 19,1 | 19,2 | 19,8 | 18,5 | 18,7 | 19,1 | 19,2 | 19,8 |
| 12H | 4H | 18,6 | 18,9 | 19,1 | 19,3 | 19,8 | 18,6 | 18,9 | 19,1 | 19,3 | 19,8 |
| | 6H | 18,6 | 18,8 | 19,1 | 19,3 | 19,9 | 18,6 | 18,8 | 19,1 | 19,3 | 19,9 |
| | 8H | 18,5 | 18,7 | 19,1 | 19,2 | 19,8 | 18,5 | 18,7 | 19,1 | 19,2 | 19,8 |

Variations with the observer position for the luminaire spacings, S:

| | | |
|----------|-------------|-------------|
| S = 1.0H | 5,1 / -12,4 | 5,1 / -12,4 |
| S = 1.5H | 7,8 / -15,3 | 7,8 / -15,3 |
| S = 2.0H | 9,8 / -17,9 | 9,8 / -17,9 |

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 | 0 |
| RCR | (RCR: Room Cavity Ratio) | | | | | | | | | | | | | | | | | |
| | Room Values are expressed as percentage of Lumen delivered to the task surface | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 114 | 112 | 109 | 107 | 112 | 109 | 107 | 105 | 105 | 104 | 102 | 102 | 100 | 99 | 98 | 97 | 96 | 95 |
| 2 | 109 | 105 | 101 | 98 | 107 | 103 | 100 | 97 | 100 | 97 | 95 | 97 | 95 | 93 | 94 | 92 | 91 | 89 |
| 3 | 104 | 99 | 94 | 91 | 102 | 97 | 93 | 90 | 95 | 91 | 88 | 92 | 89 | 87 | 90 | 88 | 86 | 84 |
| 4 | 100 | 93 | 88 | 84 | 98 | 92 | 87 | 84 | 90 | 86 | 83 | 88 | 85 | 82 | 86 | 83 | 81 | 80 |
| 5 | 96 | 88 | 83 | 79 | 94 | 87 | 82 | 79 | 85 | 81 | 78 | 84 | 80 | 77 | 82 | 79 | 77 | 75 |
| 6 | 92 | 84 | 78 | 74 | 90 | 83 | 78 | 74 | 81 | 77 | 74 | 80 | 76 | 73 | 79 | 75 | 73 | 71 |
| 7 | 88 | 79 | 74 | 70 | 86 | 79 | 74 | 70 | 78 | 73 | 70 | 76 | 72 | 69 | 75 | 72 | 69 | 68 |
| 8 | 84 | 76 | 70 | 67 | 83 | 75 | 70 | 67 | 74 | 70 | 66 | 73 | 69 | 66 | 72 | 69 | 66 | 65 |
| 9 | 81 | 72 | 67 | 64 | 80 | 72 | 67 | 63 | 71 | 66 | 63 | 70 | 66 | 63 | 69 | 66 | 63 | 62 |
| 10 | 78 | 69 | 64 | 61 | 77 | 69 | 64 | 61 | 68 | 63 | 60 | 67 | 63 | 60 | 67 | 63 | 60 | 59 |

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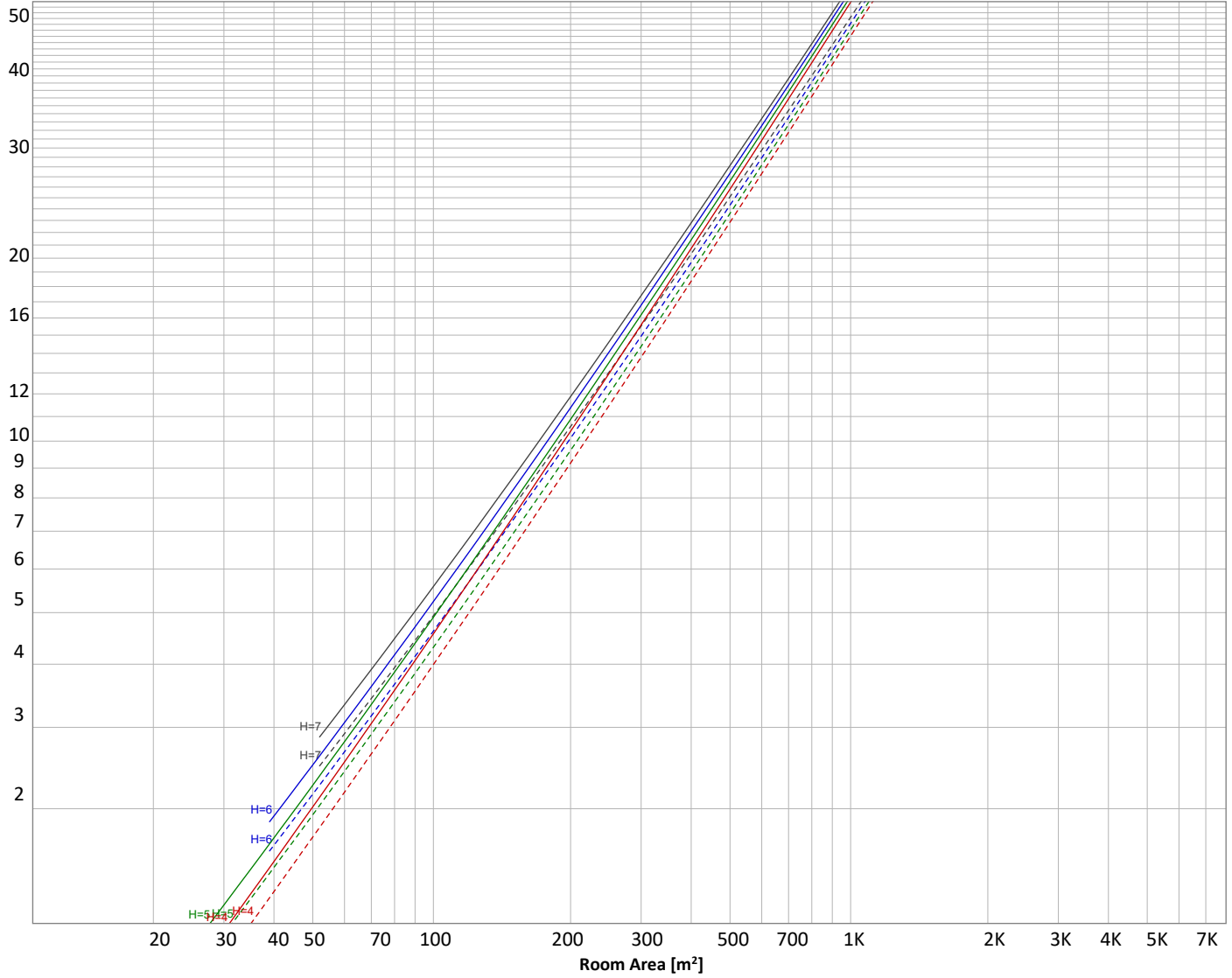
Operator:



Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



Conditions

| | | | | | |
|---|----------------|-----------|---------------------|--------------------------|-------------------|
| H = Room height | Flux = 2159 lm | | | | |
| H _{down} = Lamp distance from ceiling = | 0.00 m | Line type | Ceiling reflectance | ρ(%) Wall reflectance | Floor reflectance |
| H _{work} = Work area height from floor = | 0.00 m | ----- | 70 | 50 | 30 |
| E _{work} = Average lux on work area = | 100 lx | ————— | 50 | 30 | 20 |

Zonal Lumen Summary

| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 413 lm | 745 lm | 544 lm | 359 lm | 69,7 lm | 17,5 lm | 6,65 lm | 2,01 lm | 0,288 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0,132 lm | 0,145 lm | 0,108 lm | 0,120 lm | 0,146 lm | 0,229 lm | 0,329 lm | 0,311 lm | 0,089 lm |

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Operator:



Outdoor Light Planning

Lumen per Zone

| Zone (γ) | Lumen | % Total |
|--------------|----------------|---------------|
| 0-10° | 413 lm | 19,1% |
| 10-20° | 745 lm | 34,5% |
| 20-30° | 544 lm | 25,2% |
| 30-40° | 359 lm | 16,6% |
| 40-50° | 70 lm | 3,2% |
| 50-60° | 18 lm | 0,8% |
| 60-70° | 7 lm | 0,3% |
| 70-80° | 2 lm | 0,1% |
| 80-90° | 0 lm | 0,0% |
| 90-100° | 0 lm | 0,0% |
| 100-110° | 0 lm | 0,0% |
| 110-120° | 0 lm | 0,0% |
| 120-130° | 0 lm | 0,0% |
| 130-140° | 0 lm | 0,0% |
| 140-150° | 0 lm | 0,0% |
| 150-160° | 0 lm | 0,0% |
| 160-170° | 0 lm | 0,0% |
| 170-180° | 0 lm | 0,0% |
| Total | 2159 lm | 100,0% |

Intensity peaks

| | |
|----------------|---------|
| Max intensity | 4893 cd |
| Intensity, 90° | 0 cd |
| Intensity, 0° | 4893 cd |

Zonal Lumen summary

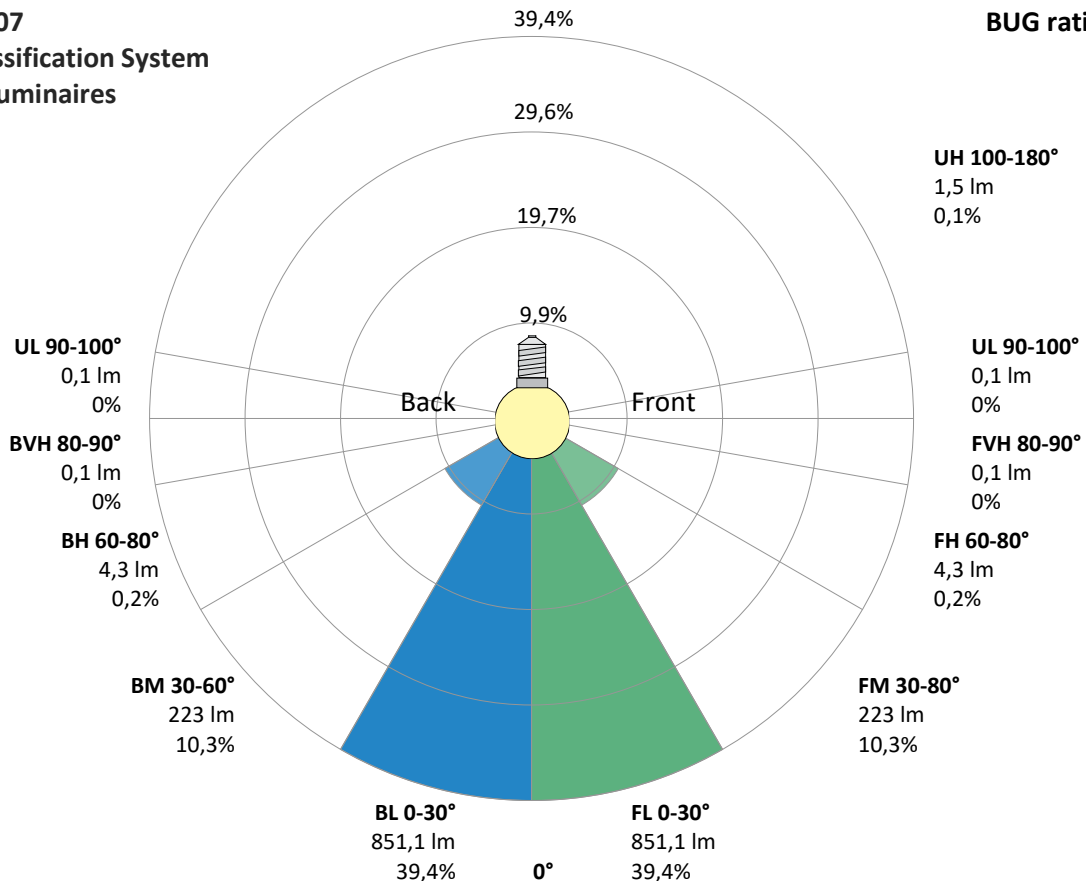
| Zone (γ) | Lumen | % Total |
|----------|---------|---------|
| 0-30° | 1702 lm | 78,8% |
| 0-40° | 2061 lm | 95,5% |
| 0-60° | 2148 lm | 99,5% |
| 60-90° | 9 lm | 0,4% |
| 70-100° | 2 lm | 0,1% |
| 90-120° | 0 lm | 0,0% |
| 0-90° | 2157 lm | 99,9% |
| 90-180° | 2 lm | 0,1% |
| 0-180° | 2159 lm | 100,0% |

BUG rating

| | Lumen | % Total |
|----------------------|--------|---------|
| Forward light | | |
| Low(0-30°) | 851 lm | 39,4% |
| Medium(30-60°) | 223 lm | 10,3% |
| High(60-80°) | 4 lm | 0,2% |
| Very high(80-90°) | 0 lm | 0,0% |
| Back light | | |
| Low(0-30°) | 851 lm | 39,4% |
| Medium(30-60°) | 223 lm | 10,3% |
| High(60-80°) | 4 lm | 0,2% |
| Very high(80-90°) | 0 lm | 0,0% |
| Uplight | | |
| Low(90-100°) | 0 lm | 0,0% |
| High(100-180°) | 1 lm | 0,1% |

IESNA TM-15-07 Luminaire Classification System For Outdoor Luminaires

BUG rating B2 U1 G0



Light Measurement Report

Print date: 26-11-2024

Measurement date and time: 26-11-2024 13:15:59 – Measurement no. VFR-241126-2172-MS

Measurement tracking No. and Link: [VT241126-006909](https://www.viso-systems.com/VT241126-006909)

Operator:

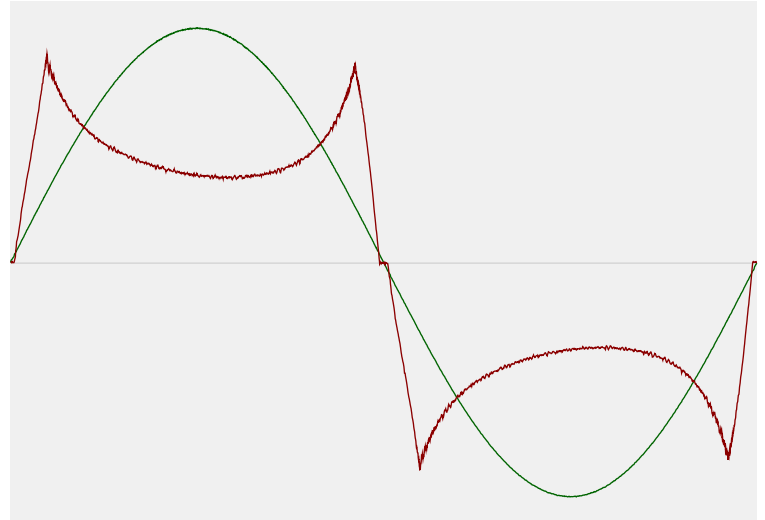


Power Details

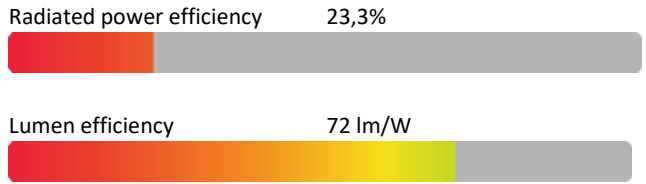
Input Power

| | |
|---|----------|
| Power feed to light source | 30,0 W |
| Frequency of input power | 50 Hz |
| RMS Input voltage feed, V_{RMS} | 230 V |
| RMS Input current feed, I_{RMS} | 0,162 A |
| Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$ | 37,24 VA |
| Displacement factor of AC power feed | 1,0 |
| Power factor of AC current feed | 0,81 |
| Total harmonic distortion of the current | 69,64% |
| Total harmonic distortion of the voltage | 0,08% |

Input Power Curve



Efficiency



Stabilization Details

Warmup Conditions

| | |
|-------------------|--------|
| Stable period | 15 min |
| Stable change max | 2,0% |
| Minimum time | 15 min |

Color Temperature Change

| | |
|-----------|--------|
| CCT start | 3995 K |
| CCT shift | +5 K |
| CCT end | 4000 K |

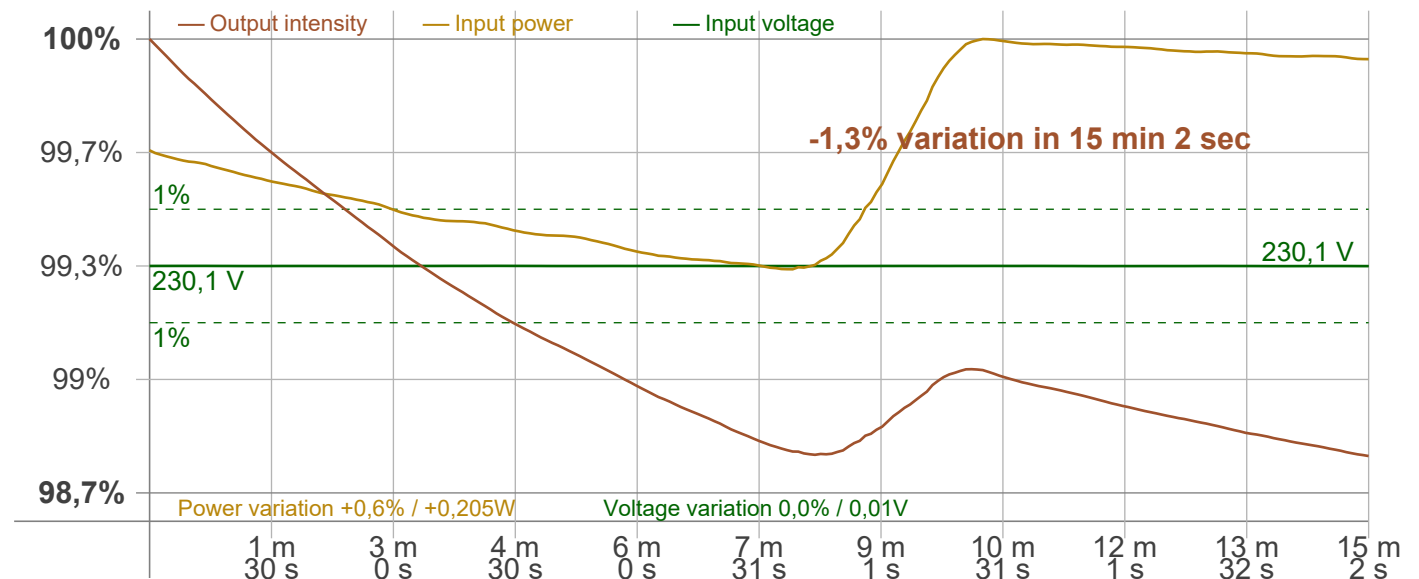
Warmup Result

| | |
|-------------------|---------------------------------|
| Total warmup time | Lamp stabilized in 15 min 2 sec |
| Warmup variation | -1,3% |

Output Change

| | |
|---------------|---------|
| Output start | 2186 lm |
| Output change | -28 lm |
| Output end | 2159 lm |

Stabilization Curve



Light Measurement Report

Print date: 26-11-2024

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Measurement tracking No. and Link: [VT241126-006909](https://www.viso-systems.com/VT241126-006909)

Operator:



Flicker /TLA details

Flicker Meter Type: Viso Systems LabFlicker
 Frequency of input power: 50 Hz
 Flicker/TLA sample rate: 20000 samples/s

Measurement time
 PstLM: 180 sec
 All other indices: 1,2 sec

Flicker indices according to Illuminating Engineering Society (IES)

Flicker frequency: 100 Hz
 Percent Flicker: 0,97 %
 Flicker index: 0

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

JA8/10 40 Hz: 0,04 %
 JA8/10 90 Hz: 0,04 %
 JA8/10 200 Hz: 0,77 %
 JA8/10 400 Hz: 0,95 %
 JA8/10 1000 Hz: 0,95 %

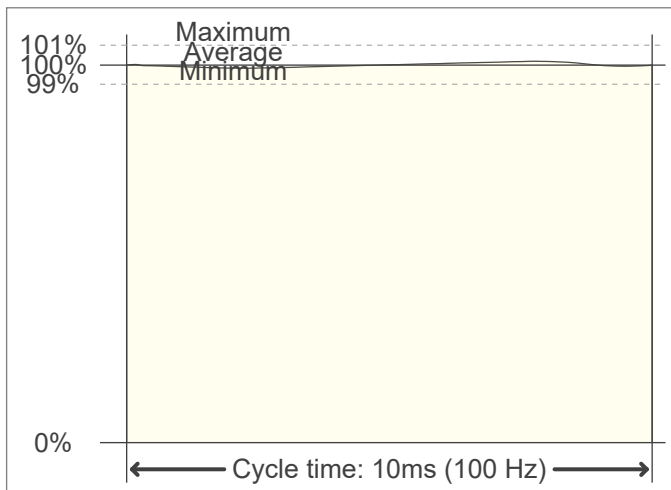
TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value (F < 80 Hz): 0,02
 SVM value (80 < F < 2000 Hz): 0,03

Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp: 0,02

Flicker frame (frame of one flicker period in time domain)



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

