

# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

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  
 $\gamma$  (gamma)-Resolution  
Test Distance  
Input Power, Power and Displ. Factors  
Input RMS Voltage and Current  
Frequency of Input Power  
Warm-up Time and Variation

48 planes – 7,5°  
5°  
12,10 m  
143,3 W – PF 1,0 – DPF 1,0  
230 V – 0,626 A  
50 Hz  
Lamp stabilized in 20 min 44 sec – 2,0%

## Tested Light Source

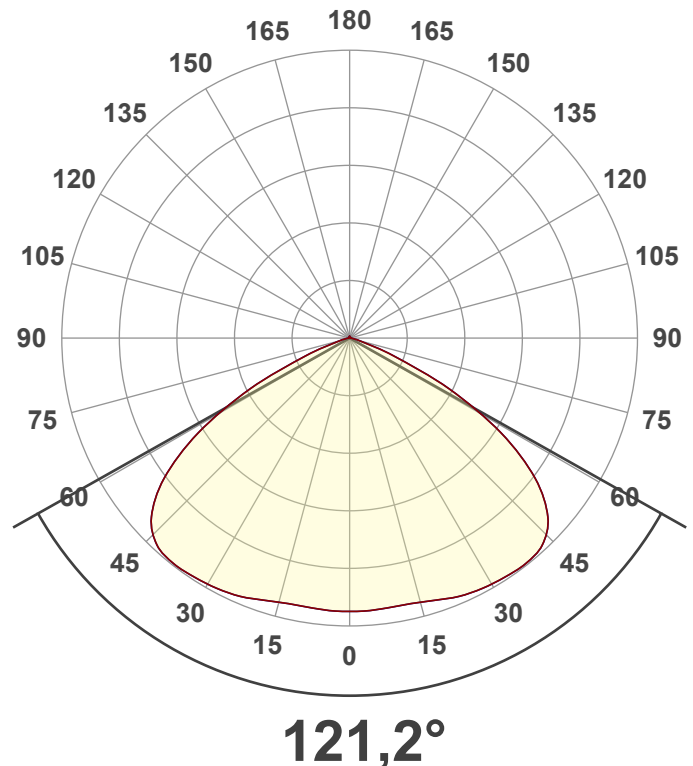
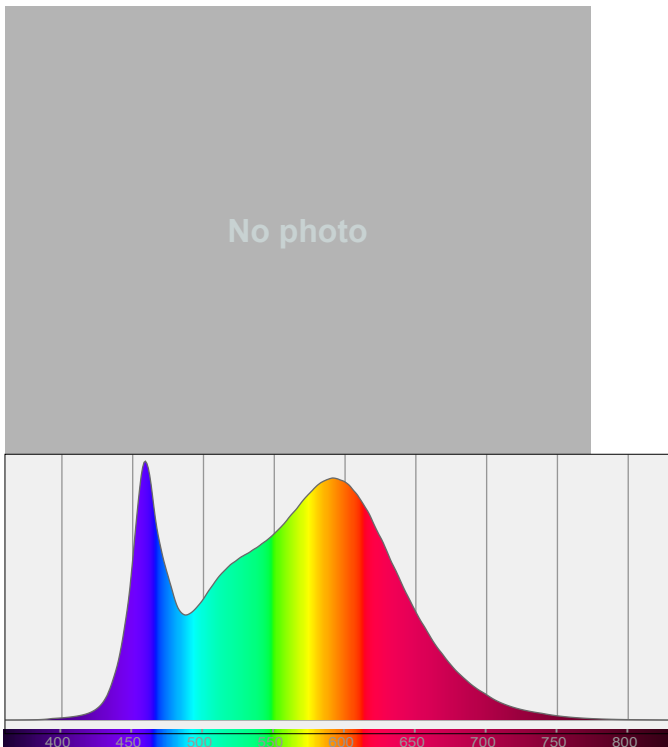
Product Name  
Item No. and Manufacturer  
Product Description (line 1)

812690-4000K  
812690-4000K – Dutchfulfillment  
LED STRAATLAMP | HERO | 150W

## 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

20375 lm – 0,73% / 99,27%  
142 lm/W  
6340 cd – 121,2°  
CCT = 4000 K / 4169 K  
CRI 82,1  
 $R_f$  81,6 –  $R_g$  89,7  
Duv 0,0029 – SDCM 4,1  
SVM 3,79 – PstLM 0,07



# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

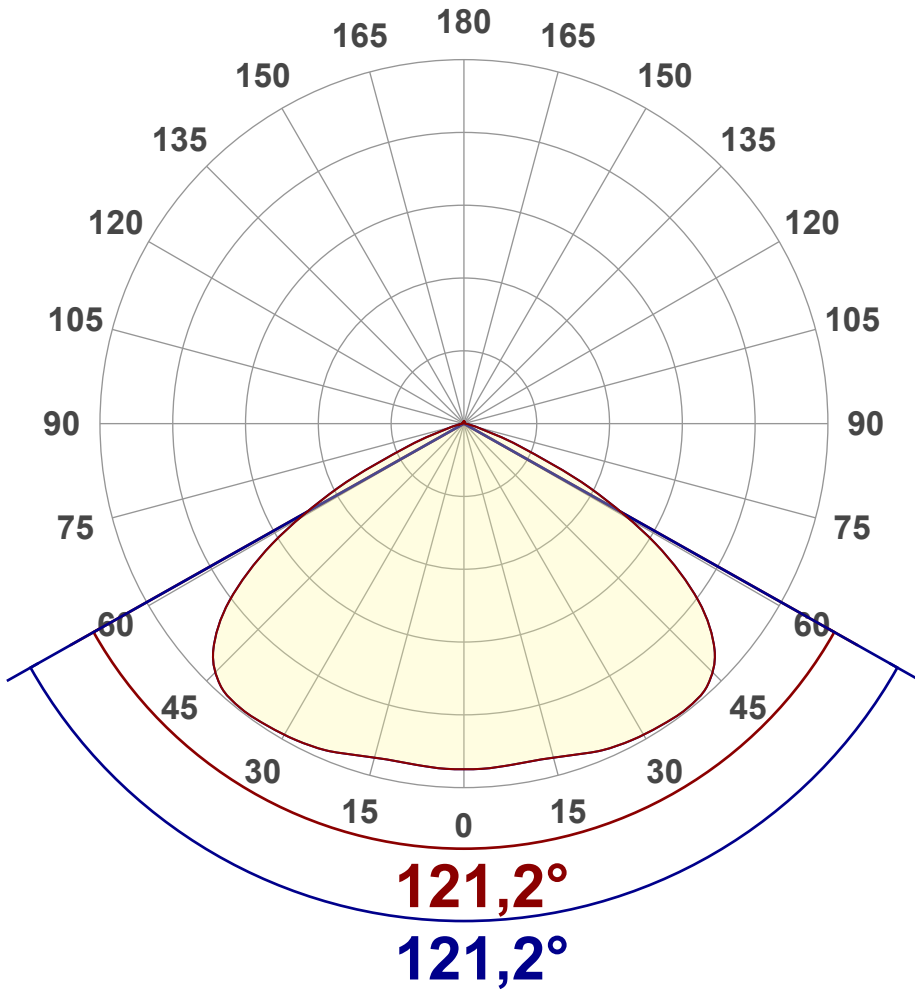
Measurement tracking No. and Link: [VT250818-001183](#)

Operator:



## Luminous Intensity diagram

Unit: 0-100% of peak intensity



## Main Values

|                      |                |
|----------------------|----------------|
| Output (total Lumen) | 20375 lm       |
| Lumen Up% / Down%    | 0,73% / 99,27% |
| Peak Intensity       | 6340 cd        |
| Beam Angle (50%)     | 121,2°         |
| Beam Angle (90%)     | 121,2°         |
| Beam Angle (10%)     | 121,2°         |

## Cut-off Angle

|              |      |
|--------------|------|
| Average 2,5% | 154° |
|--------------|------|

## Field Angle

|             |        |
|-------------|--------|
| Average 10% | 141,6° |
|-------------|--------|

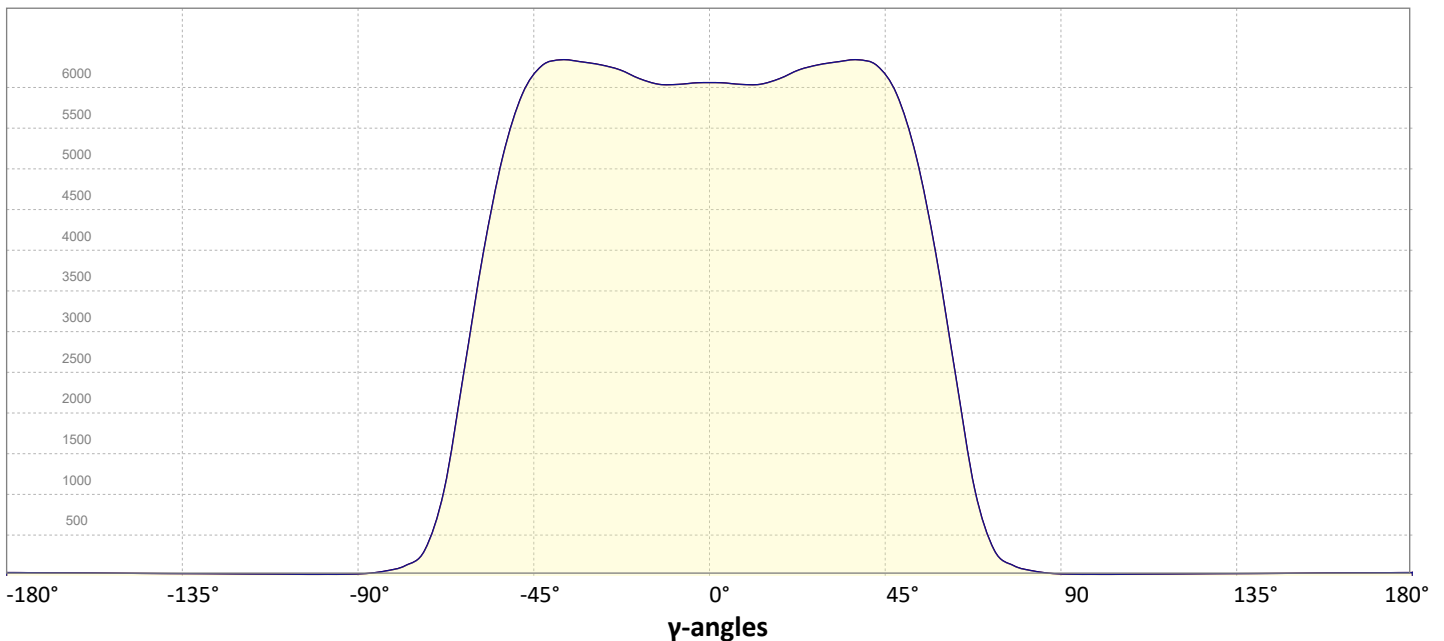
## Intensity Ratio

|              |       |
|--------------|-------|
| In 120° cone | 88,5% |
| In 90° cone  | 56,4% |

**C000-C180**

**C090-C270**

## Linear distribution diagram - Intensity (candela) vs $\gamma$ -angle



# Light Measurement Report

Print date: 18-8-2025

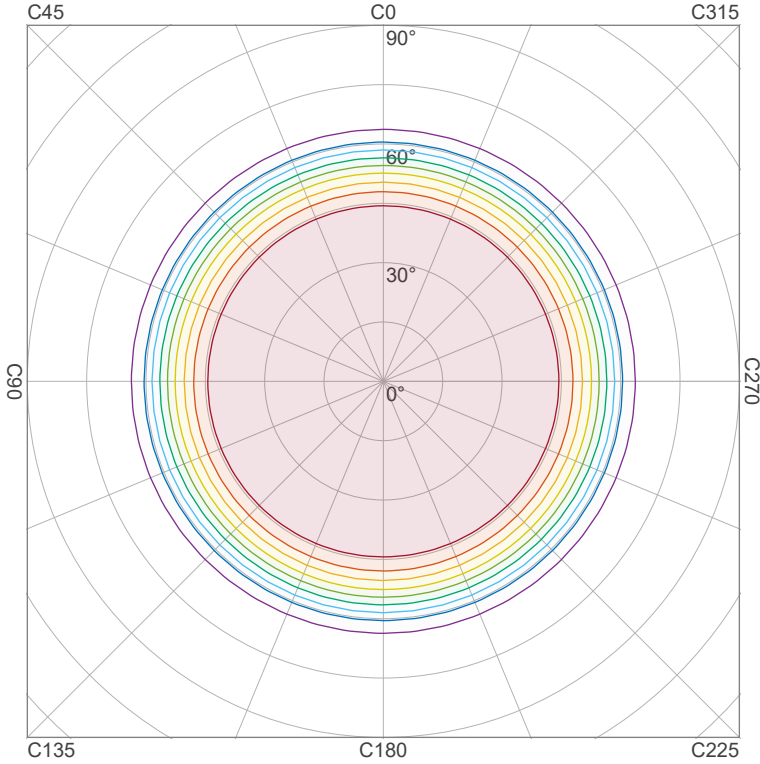
Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

Operator:



## Iso-intensity Diagram (Iso-candela)

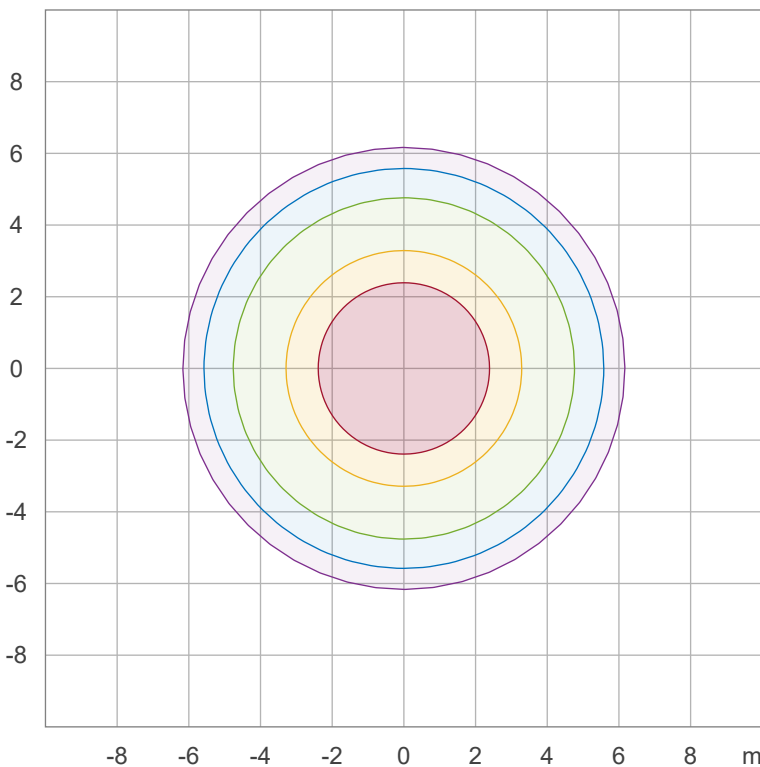


|      |           |
|------|-----------|
| 90 % | 5705,1 cd |
| 80 % | 5071,2 cd |
| 70 % | 4437,3 cd |
| 60 % | 3803,4 cd |
| 50 % | 3169,5 cd |
| 40 % | 2535,6 cd |
| 30 % | 1901,7 cd |
| 20 % | 1267,8 cd |
| 10 % | 633,9 cd  |

Peak intensity: 6339,0 cd

Number of c-planes: 48

## Iso-illuminance Diagram (Iso-lux)



|        |          |
|--------|----------|
| 50,0 % | 336,5 lx |
| 30,0 % | 201,9 lx |
| 10,0 % | 67,3 lx  |
| 5,0 %  | 33,7 lx  |
| 3,0 %  | 20,2 lx  |

Peak illuminance: 673,1 lx

Mounting height: 3,0 m

Number of c-planes: 48

# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

Operator:

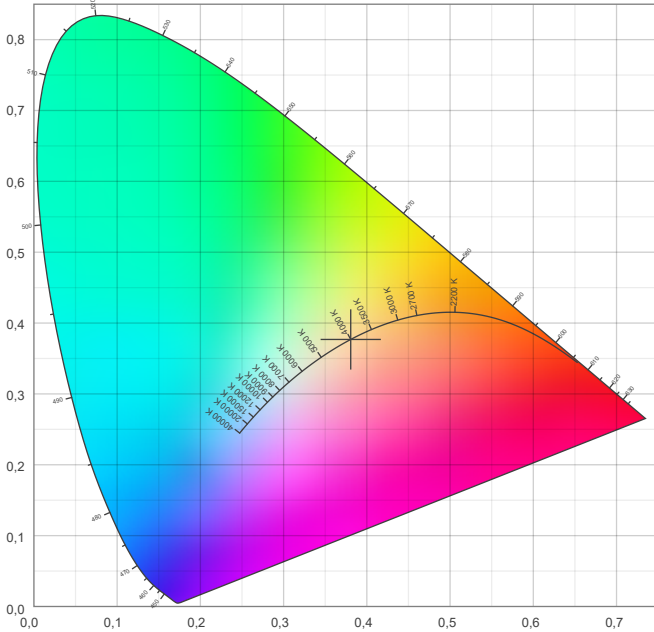


## Color details

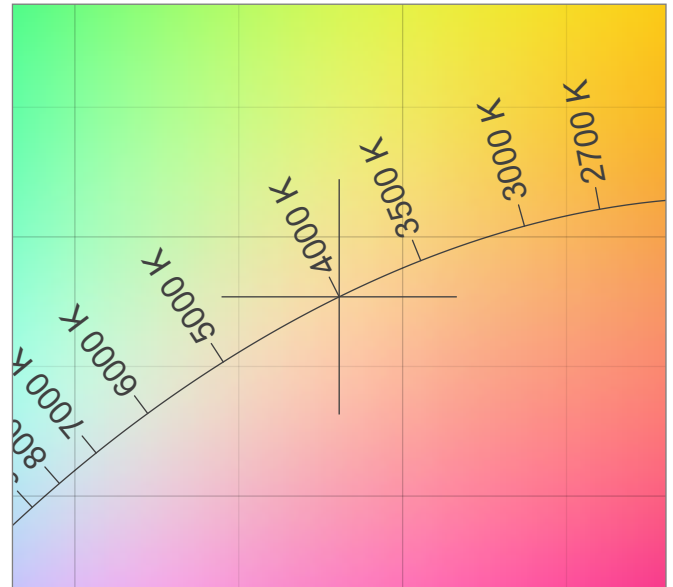
Correlated Color Temperature, Target CCT = 4000 K  
 Correlated Color Temperature, Measured CCT = 4169 K  
 Color Rendering Index CRI 82,1  
 Color Rendering Index, R9 (red component) R9 = 1,0  
 Color Rendering TM30-18 Rf 81,6 – Rg 89,7  
 Color Quality Scale CQS = 81,2

MacAdam Steps SDCM = 4,1  
 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 = 0,0029  
 Color coordinate CIEs 1976 (CIELUV) (u';v') = (0,225;0,502)

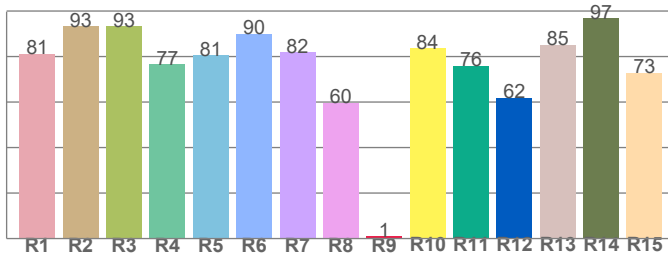
### CIE 1931



### CIE 1931 – zoomed on Planckian locus



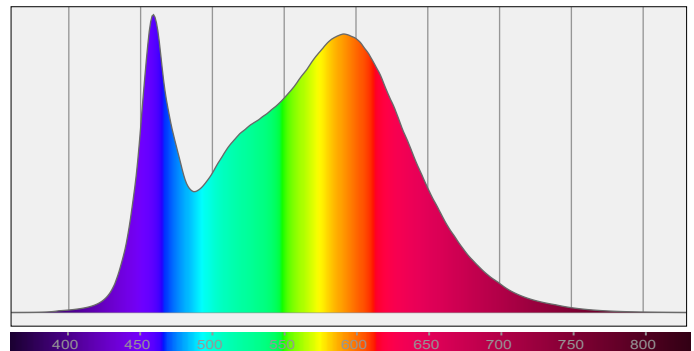
### Color Rendering Index per reference color (CIE 1995)



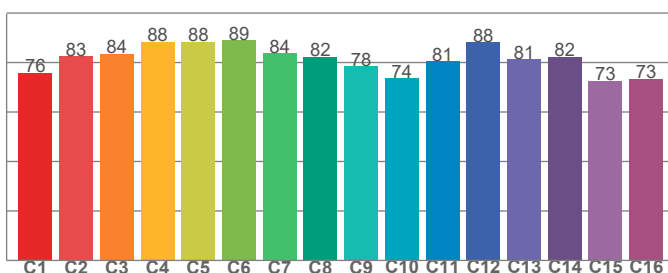
CRI R values, only R1-R8 are used to calculate final CRI value

|      |      |      |      |      |      |      |      |     |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|
| R1   | R2   | R3   | R4   | R5   | R6   | R7   | R8   | R9  | R10  | R11  | R12  | R13  | R14  | R15  |
| 81,2 | 93,4 | 93,4 | 76,6 | 80,6 | 90,1 | 81,8 | 59,7 | 1,0 | 83,8 | 75,9 | 61,9 | 85,2 | 96,7 | 72,8 |

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



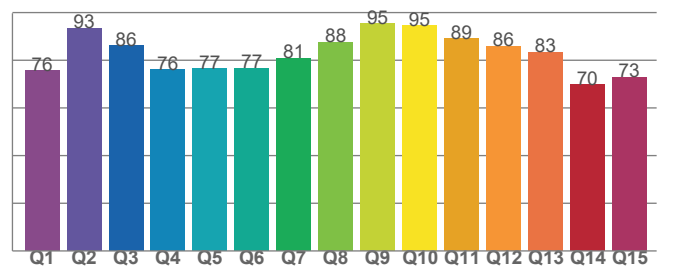
### TM30-18 Rf-values per hue bin



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  |
| 75,9 | 82,6 | 83,6 | 88,4 | 88,4 | 89,1 | 83,6 | 82,3 | 78,4 | 73,5 | 80,6 | 88,2 | 81,2 | 82,3 | 72,7 | 73,5 |

### Color Quality Scale by reference color



CQS Q values

|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
| 75,6 | 93,5 | 86,0 | 76,0 | 76,5 | 76,7 | 80,8 | 87,5 | 95,3 | 94,6 | 89,1 | 85,8 | 83,4 | 69,8 | 72,9 |

# Light Measurement Report

Print date: 18-8-2025

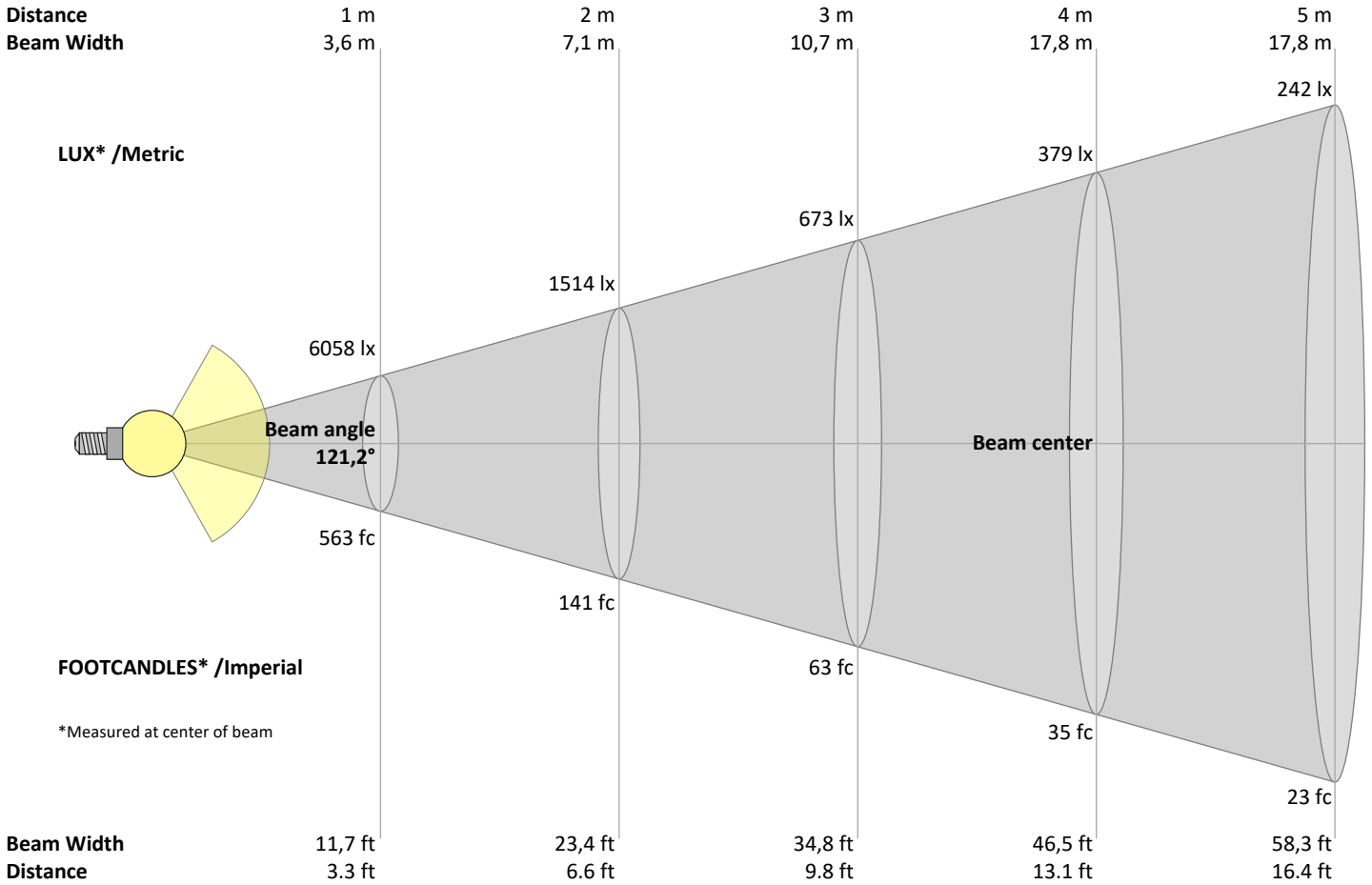
Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](https://www.viso-systems.com/VT250818-001183)

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  |
| 6058  | 1514  | 673  | 379  | 242  | 168  | 124  | 95   | 75   | 61   | 50   | 42   | 36   | 31   | 27   | 24   | 21   | 19   | 17   | 15   | lux |
| 562,8 | 140,7 | 62,5 | 35,2 | 22,5 | 15,6 | 11,5 | 8,8  | 6,9  | 5,6  | 4,7  | 3,9  | 3,3  | 2,9  | 2,5  | 2,2  | 1,9  | 1,7  | 1,6  | 1,4  | 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° | γ        |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 6058 | 6050 | 6038 | 6067 | 6153 | 6242 | 6294 | 6326 | 6310 | 6122 | 5600 | 4659 | 3354 | 1897 | 750 | 235 | 97  | 46  | 24  | 18  | cd       |
| 100% | 100% | 100% | 100% | 102% | 103% | 104% | 104% | 104% | 101% | 92%  | 77%  | 55%  | 31%  | 12% | 4%  | 2%  | 1%  | 0%  | 0%  | of 0°val |

### 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° | γ        |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 6058 | 6050 | 6038 | 6067 | 6153 | 6242 | 6294 | 6326 | 6310 | 6122 | 5600 | 4659 | 3354 | 1897 | 750 | 235 | 97  | 46  | 24  | 18  | cd       |
| 100% | 100% | 100% | 100% | 102% | 103% | 104% | 104% | 104% | 101% | 92%  | 77%  | 55%  | 31%  | 12% | 4%  | 2%  | 1%  | 0%  | 0%  | of 0°val |

### 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° | γ        |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 6058 | 6050 | 6038 | 6067 | 6153 | 6242 | 6294 | 6326 | 6310 | 6122 | 5600 | 4659 | 3354 | 1897 | 750 | 235 | 97  | 46  | 24  | 18  | cd       |
| 100% | 100% | 100% | 100% | 102% | 103% | 104% | 104% | 104% | 101% | 92%  | 77%  | 55%  | 31%  | 12% | 4%  | 2%  | 1%  | 0%  | 0%  | of 0°val |

### 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° | γ        |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|----------|
| 6058 | 6050 | 6038 | 6067 | 6153 | 6242 | 6294 | 6326 | 6310 | 6122 | 5600 | 4659 | 3354 | 1897 | 750 | 235 | 97  | 46  | 24  | 18  | cd       |
| 100% | 100% | 100% | 100% | 102% | 103% | 104% | 104% | 104% | 101% | 92%  | 77%  | 55%  | 31%  | 12% | 4%  | 2%  | 1%  | 0%  | 0%  | of 0°val |

# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

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        | 32,1   | 33,2 | 32,3 | 33,6 | 33,8 | 32,1   | 33,3 | 32,4 | 33,6 | 33,9 |
|                                     | 3H        | 32,3   | 33,5 | 32,7 | 33,8 | 34,0 | 32,4   | 33,6 | 32,8 | 33,8 | 34,1 |
|                                     | 4H        | 32,3   | 33,4 | 32,7 | 33,7 | 33,9 | 32,3   | 33,5 | 32,8 | 33,7 | 34,0 |
|                                     | 6H        | 32,3   | 33,2 | 32,6 | 33,5 | 33,9 | 32,3   | 33,3 | 32,7 | 33,6 | 34,0 |
|                                     | 8H        | 32,2   | 33,2 | 32,6 | 33,5 | 33,9 | 32,3   | 33,2 | 32,6 | 33,6 | 34,0 |
|                                     | 12H       | 32,2   | 33,1 | 32,5 | 33,4 | 33,9 | 32,2   | 33,2 | 32,6 | 33,5 | 34,0 |
| 4H                                  | 2H        | 32,3   | 33,4 | 32,7 | 33,7 | 34,0 | 32,4   | 33,5 | 32,8 | 33,8 | 34,1 |
|                                     | 3H        | 32,7   | 33,6 | 33,1 | 34,0 | 34,4 | 32,8   | 33,7 | 33,1 | 34,0 | 34,5 |
|                                     | 4H        | 32,6   | 33,4 | 33,1 | 33,9 | 34,4 | 32,7   | 33,5 | 33,1 | 33,9 | 34,5 |
|                                     | 6H        | 32,6   | 33,4 | 33,1 | 33,7 | 34,1 | 32,6   | 33,4 | 33,1 | 33,8 | 34,2 |
|                                     | 8H        | 32,5   | 33,2 | 33,0 | 33,6 | 34,0 | 32,6   | 33,3 | 33,1 | 33,7 | 34,1 |
|                                     | 12H       | 32,5   | 33,1 | 33,0 | 33,5 | 34,0 | 32,6   | 33,1 | 33,1 | 33,6 | 34,1 |
| 8H                                  | 4H        | 32,5   | 33,3 | 33,1 | 33,6 | 34,0 | 32,6   | 33,3 | 33,1 | 33,7 | 34,1 |
|                                     | 6H        | 32,5   | 33,0 | 33,0 | 33,5 | 34,1 | 32,6   | 33,1 | 33,1 | 33,6 | 34,1 |
|                                     | 8H        | 32,5   | 33,0 | 33,0 | 33,5 | 34,1 | 32,6   | 33,0 | 33,1 | 33,6 | 34,2 |
|                                     | 12H       | 32,5   | 32,8 | 33,1 | 33,4 | 34,0 | 32,5   | 32,9 | 33,1 | 33,4 | 34,1 |
| 12H                                 | 4H        | 32,5   | 33,1 | 33,0 | 33,5 | 34,0 | 32,6   | 33,2 | 33,1 | 33,6 | 34,1 |
|                                     | 6H        | 32,5   | 33,0 | 33,0 | 33,5 | 34,1 | 32,6   | 33,0 | 33,1 | 33,6 | 34,2 |
|                                     | 8H        | 32,5   | 32,8 | 33,1 | 33,4 | 34,0 | 32,5   | 32,9 | 33,1 | 33,4 | 34,1 |

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

|          |            |            |
|----------|------------|------------|
| S = 1.0H | 0,3 / -0,2 | 0,3 / -0,2 |
| S = 1.5H | 1,0 / -1,5 | 1,0 / -1,5 |
| S = 2.0H | 2,2 / -4,8 | 2,2 / -4,7 |

## 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 | 101 | 101 | 101 | 99 |
| 1                   | 110   | 106 | 102 | 99  | 107 | 104 | 100 | 97  | 99  | 97  | 94  | 95  | 93  | 91  | 92  | 90  | 88  | 86 |
| 2                   | 101   | 93  | 87  | 82  | 98  | 91  | 86  | 81  | 88  | 83  | 79  | 85  | 81  | 77  | 82  | 78  | 75  | 73 |
| 3                   | 92  | 82  | 75  | 69  | 90  | 81  | 74  | 68  | 78  | 72  | 67  | 75  | 70  | 65  | 72  | 68  | 64  | 62 |
| 4                   | 84  | 73  | 64  | 58  | 82  | 71  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 64  | 59  | 55  | 53 |
| 5                   | 77  | 65  | 56  | 50  | 75  | 64  | 55  | 49  | 61  | 54  | 49  | 59  | 53  | 48  | 58  | 52  | 48  | 46 |
| 6                   | 71  | 58  | 49  | 43  | 69  | 57  | 49  | 43  | 55  | 48  | 42  | 53  | 47  | 42  | 52  | 46  | 41  | 39 |
| 7                   | 66  | 52  | 44  | 38  | 64  | 51  | 43  | 37  | 50  | 42  | 37  | 48  | 42  | 37  | 47  | 41  | 36  | 34 |
| 8                   | 61  | 47  | 39  | 33  | 59  | 47  | 39  | 33  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 32  | 30 |
| 9                   | 57  | 43  | 35  | 30  | 55  | 43  | 35  | 29  | 41  | 34  | 29  | 40  | 34  | 29  | 39  | 33  | 29  | 27 |
| 10                  | 53  | 40  | 32  | 27  | 52  | 39  | 32  | 26  | 38  | 31  | 26  | 37  | 31  | 26  | 36  | 30  | 26  | 24 |

# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

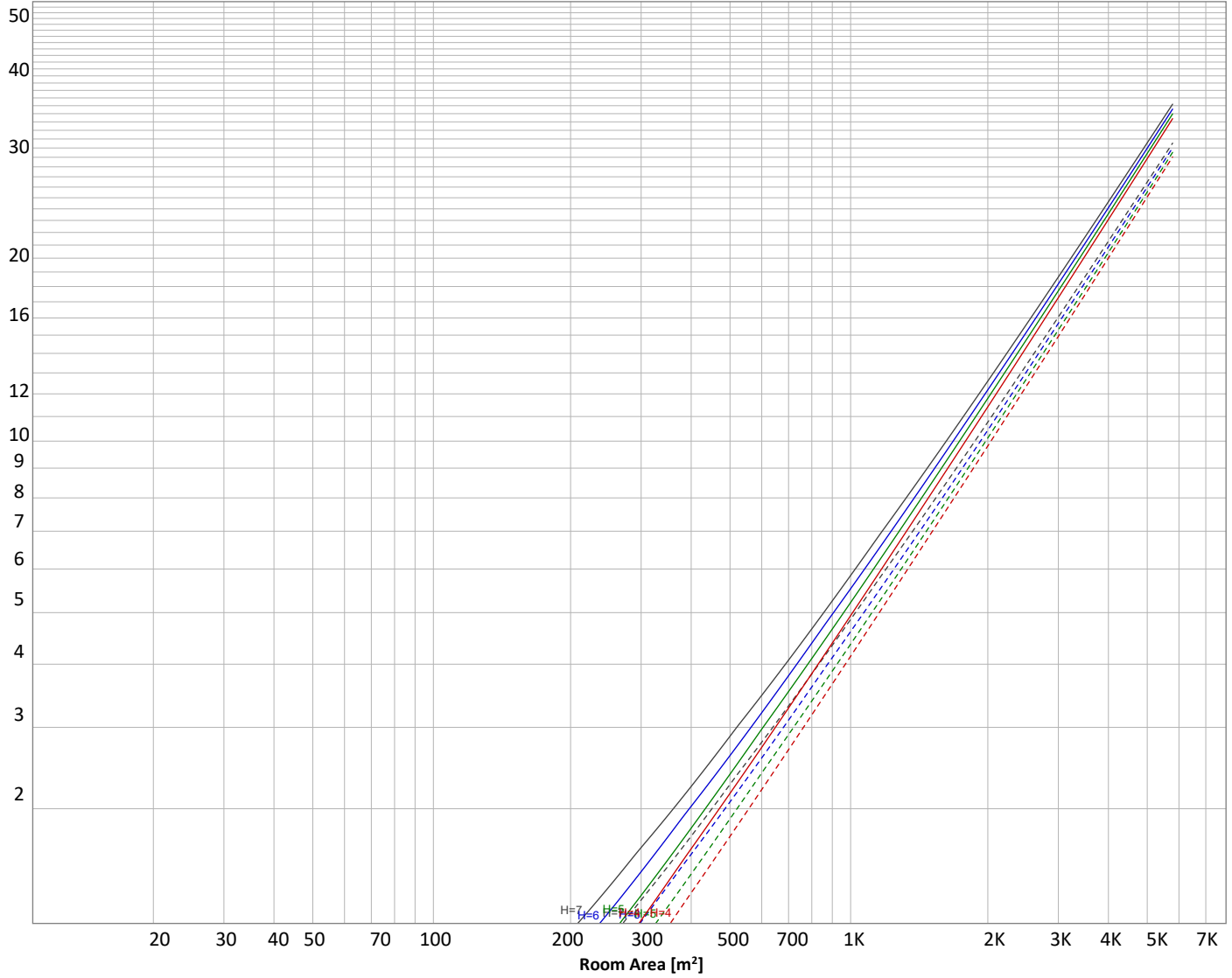
Operator:



## Luminaire budgetary diagram

Uncorrected, comprehensive UGR table according to 117-1995

LAMPS (number of lamps)



### Conditions

|   |                 |           |                     |                          |
|---|-----------------|-----------|---------------------|--------------------------|
| H = Room height                                   | Flux = 20375 lm |           |                     |                          |
| H <sub>down</sub> = Lamp distance from ceiling =  | 0.00 m          | Line type | Ceiling reflectance | ρ(%)<br>Wall reflectance |
| H <sub>work</sub> = Work area height from floor = | 0.00 m          | -----     | 70                  | 50                       |
| E <sub>work</sub> = Average lux on work area =    | 100 lx          | —————     | 50                  | 30                       |
|   |                 |           |                     | Floor reflectance        |
|   |                 |           |                     | 20                       |

### Zonal Lumen Summary

| 0°-10°   | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 577 lm   | 1722 lm   | 2890 lm   | 3974 lm   | 4726 lm   | 4145 lm   | 1869 lm   | 272 lm    | 51,3 lm   |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 20,2 lm  | 19,0 lm   | 20,4 lm   | 21,1 lm   | 20,2 lm   | 18,2 lm   | 15,3 lm   | 10,2 lm   | 3,61 lm   |

# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

Operator:



## Outdoor Light Planning

### Lumen per Zone

| Zone (γ) | Lumen           | % Total |
|----------|-----------------|---------|
| 0-10°    | {LUM00-10} lm   | #VALUE! |
| 10-20°   | {LUM10-20} lm   | #VALUE! |
| 20-30°   | {LUM20-30} lm   | #VALUE! |
| 30-40°   | {LUM30-40} lm   | #VALUE! |
| 40-50°   | {LUM40-50} lm   | #VALUE! |
| 50-60°   | {LUM50-60} lm   | #VALUE! |
| 60-70°   | {LUM60-70} lm   | #VALUE! |
| 70-80°   | {LUM70-80} lm   | #VALUE! |
| 80-90°   | {LUM80-90} lm   | #VALUE! |
| 90-100°  | {LUM90-100} lm  | #VALUE! |
| 100-110° | {LUM100-110} lm | #VALUE! |
| 110-120° | {LUM110-120} lm | #VALUE! |
| 120-130° | {LUM120-130} lm | #VALUE! |
| 130-140° | {LUM130-140} lm | #VALUE! |
| 140-150° | {LUM140-150} lm | #VALUE! |
| 150-160° | {LUM150-160} lm | #VALUE! |
| 160-170° | {LUM160-170} lm | #VALUE! |
| 170-180° | {LUM170-180} lm | #VALUE! |
| Total    | 0 lm            | #VALUE! |

### Intensity peaks

|                |            |
|----------------|------------|
| Max intensity  | {PEAK} cd  |
| Intensity, 90° | {INT90} cd |
| Intensity, 0°  | {INT0} cd  |

### Zonal Lumen summary

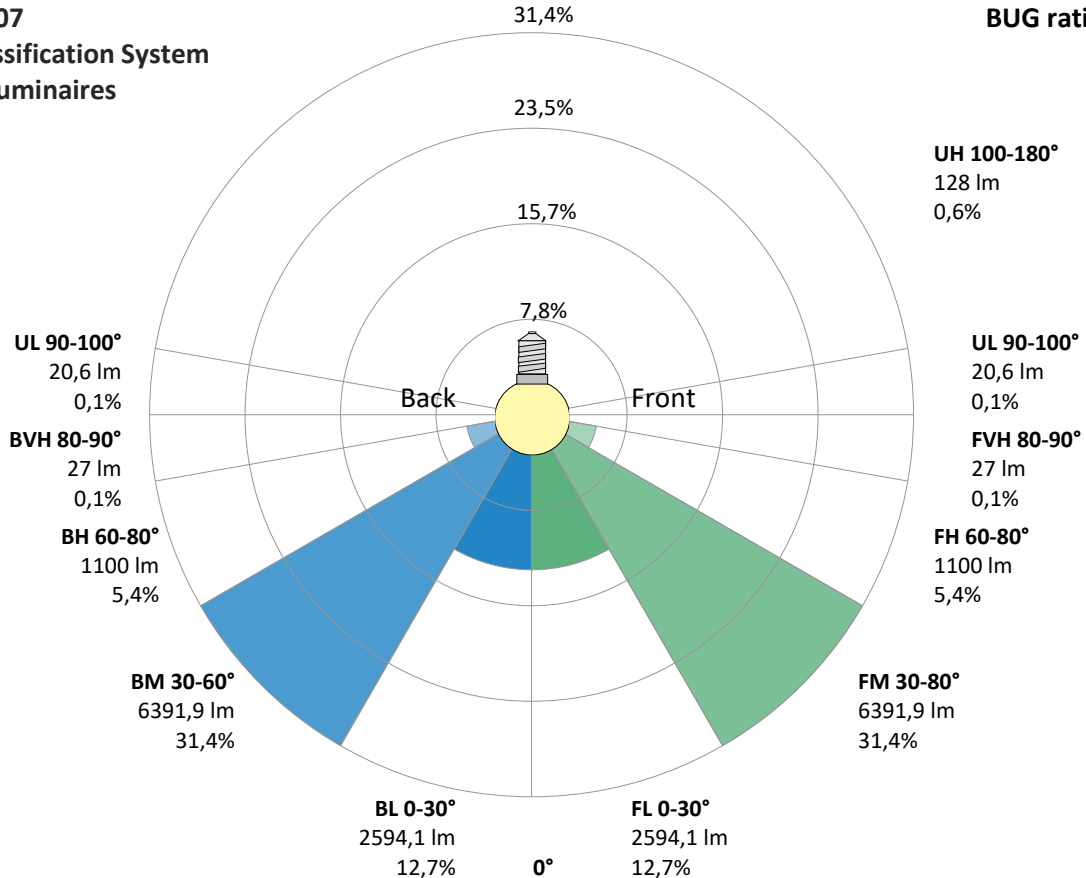
| Zone (γ) | Lumen          | % Total |
|----------|----------------|---------|
| 0-30°    | {LUM00-30} lm  | #VALUE! |
| 0-40°    | {LUM00-40} lm  | #VALUE! |
| 0-60°    | {LUM00-60} lm  | #VALUE! |
| 60-90°   | {LUM60-90} lm  | #VALUE! |
| 70-100°  | {LUM70-100} lm | #VALUE! |
| 90-120°  | {LUM90-120} lm | #VALUE! |
| 0-90°    | {LUM00-90} lm  | #VALUE! |
| 90-180°  | {LUM90-180} lm | #VALUE! |
| 0-180°   | {LUM00-180} lm | #VALUE! |

### BUG rating

|                      | Lumen     | % Total |
|----------------------|-----------|---------|
| <b>Forward light</b> |           |         |
| Low(0-30°)           | {BUG0} lm | #VALUE! |
| Medium(30-60°)       | {BUG1} lm | #VALUE! |
| High(60-80°)         | {BUG2} lm | #VALUE! |
| Very high(80-90°)    | {BUG3} lm | #VALUE! |
| <b>Back light</b>    |           |         |
| Low(0-30°)           | {BUG4} lm | #VALUE! |
| Medium(30-60°)       | {BUG5} lm | #VALUE! |
| High(60-80°)         | {BUG6} lm | #VALUE! |
| Very high(80-90°)    | {BUG7} lm | #VALUE! |
| <b>Uplight</b>       |           |         |
| Low(90-100°)         | {BUG8} lm | #VALUE! |
| High(100-180°)       | {BUG9} lm | #VALUE! |

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

**BUG rating B4 U3 G1**



# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](#)

Operator:

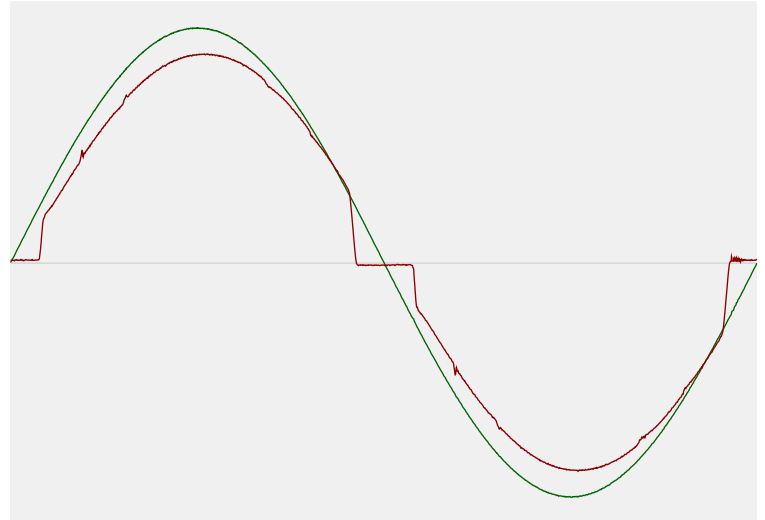


## Power Details

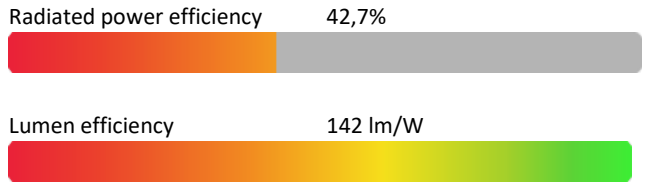
### Input Power

|   |           |
|---|-----------|
| Power feed to light source                          | 143,3 W   |
| Frequency of input power                            | 50 Hz     |
| RMS Input voltage feed, $V_{RMS}$                   | 230 V     |
| RMS Input current feed, $I_{RMS}$                   | 0,626 A   |
| Volt-Ampere or apparent power = $V_{RMS} * I_{RMS}$ | 143,99 VA |
| Displacement factor of AC power feed                | 1,0       |
| Power factor of AC current feed                     | 1,0       |
| Total harmonic distortion of the current            | 8,79%     |
| 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 | 3986 K |
| CCT shift | +14 K  |
| CCT end   | 4000 K |

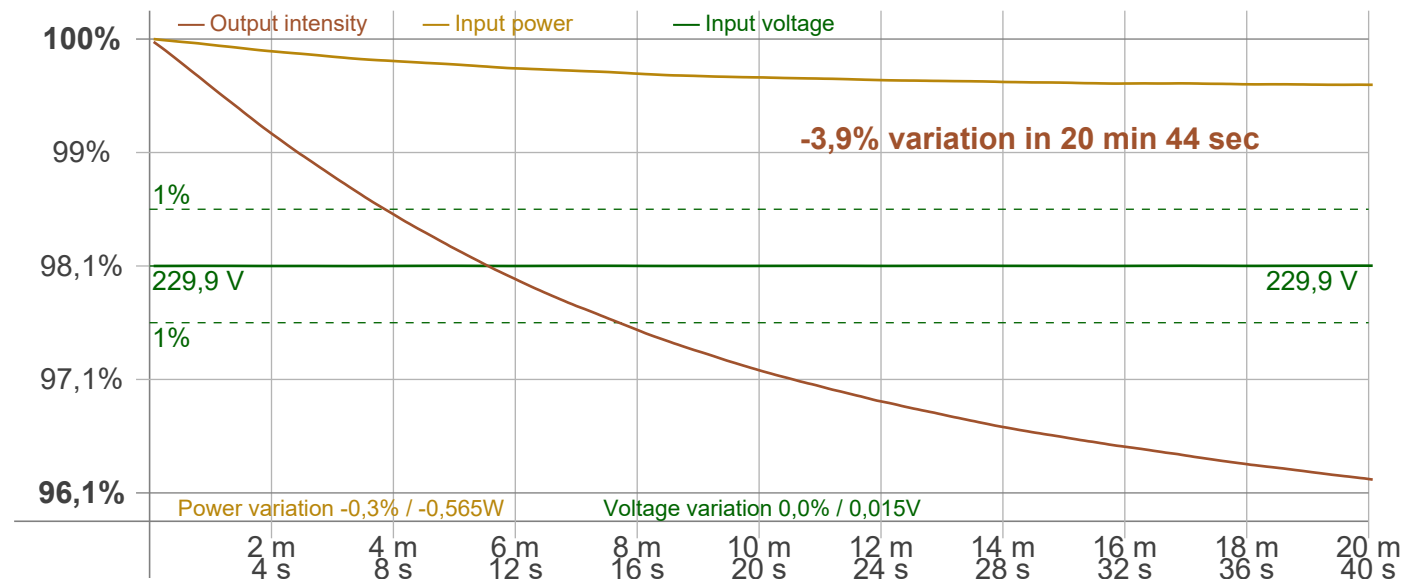
### Warmup Result

|                   |                                  |
|-------------------|----------------------------------|
| Total warmup time | Lamp stabilized in 20 min 44 sec |
| Warmup variation  | -3,9%                            |

### Output Change

|               |          |
|---------------|----------|
| Output start  | 21193 lm |
| Output change | -818 lm  |
| Output end    | 20375 lm |

### Stabilization Curve



# Light Measurement Report

Print date: 18-8-2025

Measurement date and time: 18-8-2025 11:02:25 – Measurement no. VFR-250818-2586-MS

Measurement tracking No. and Link: [VT250818-001183](https://www.viso-systems.com/VT250818-001183)

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: 99,93 %  
 Flicker index: 0,31

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

JA8/10 40 Hz: 0,2 %  
 JA8/10 90 Hz: 0,87 %  
 JA8/10 200 Hz: 102,85 %  
 JA8/10 400 Hz: 102,27 %  
 JA8/10 1000 Hz: 102,02 %

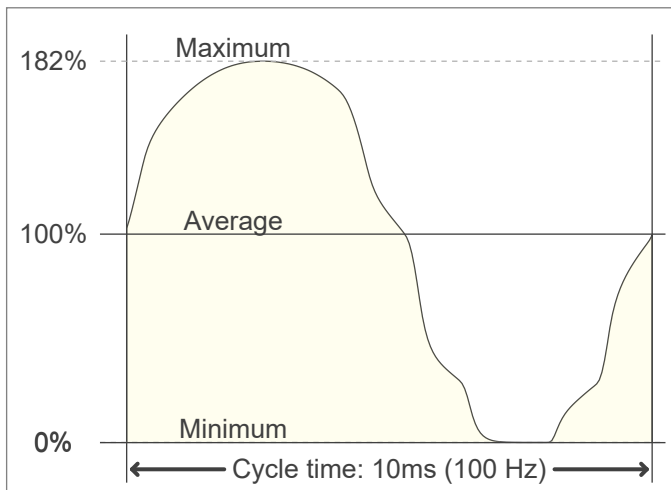
### TLA indices (re IEC TR 61547-1, IEC 61000-3-3 and IEC 61000-4-15)

PstLM value (F < 80 Hz): 0,07  
 SVM value (80 < F < 2000 Hz): 3,79

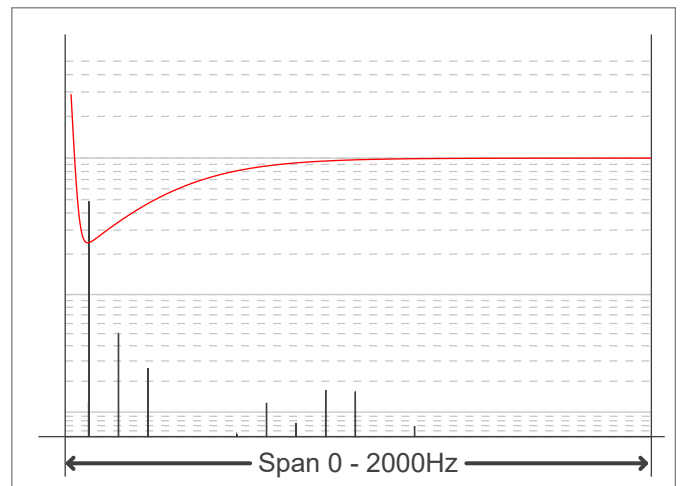
### Flicker indices according to Lighting Research Center (2015)

Perception metric, Assist Mp: 0,04

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



Flicker FFT (flicker curve in frequency domain)



IEEE 1789 Frequency/modulation plot

