

Light efficiency:

150 Lumen/Watt

Light quality:

CRI: 82,2

Color temperature:

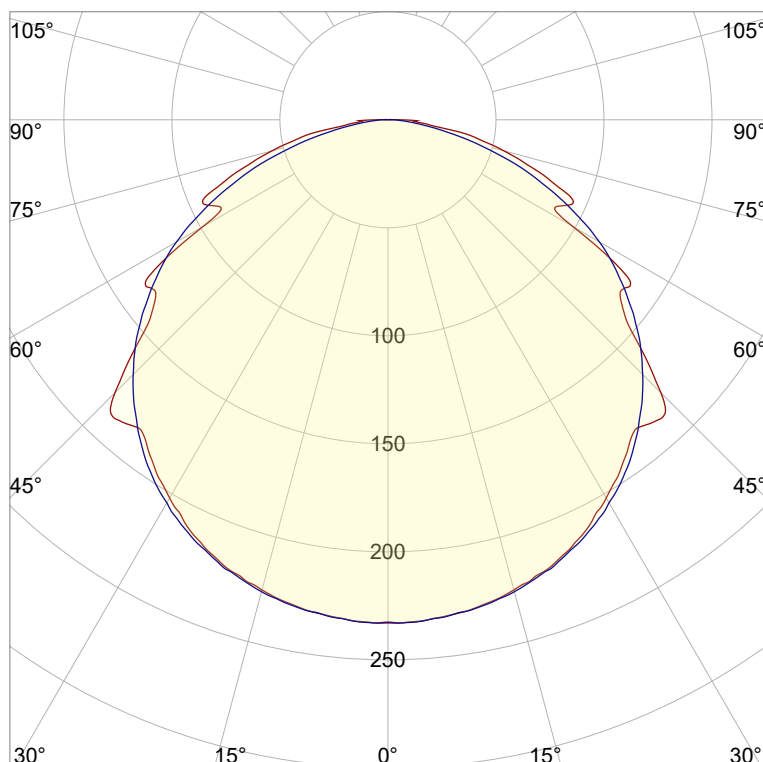
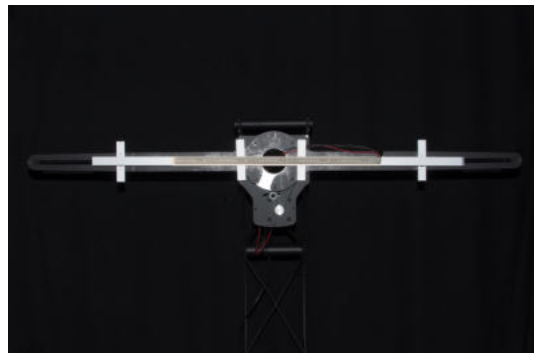
2766 K

Output: 718 lm

Peak: 233 cd

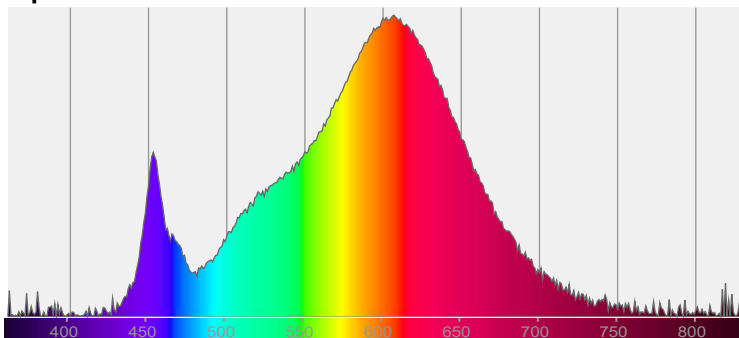
Power: 4,8 W

PF: 1,0



CIE 1931
x: 0,453
y: 0,406

Spectra



Power

Voltage: 48,0 V
Current: 0,100 A
Frequency: 0 Hz

Product name:

Navigator-3_510mm_827_Cover-Square-Transparent

Item number:

NP/L1C/14C/G1/L1C/0510/827/CST

Date and time:

23.06.2022 12:06:10

Description:

Rank: D60-AC-8GB

Tolerances:

Lumen +/-4%

Candela +/-2,5%

Colour Temp +/-35 Kelvin

CRI +/-0,7

Angular Resolution: 1 Degree Step

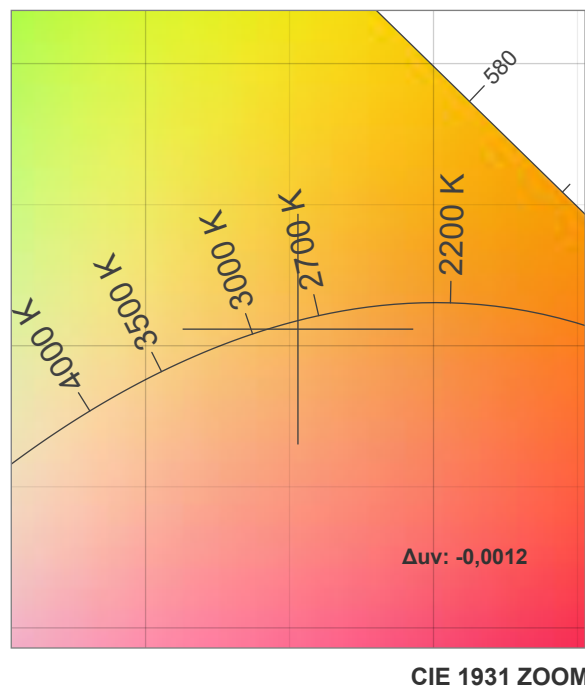
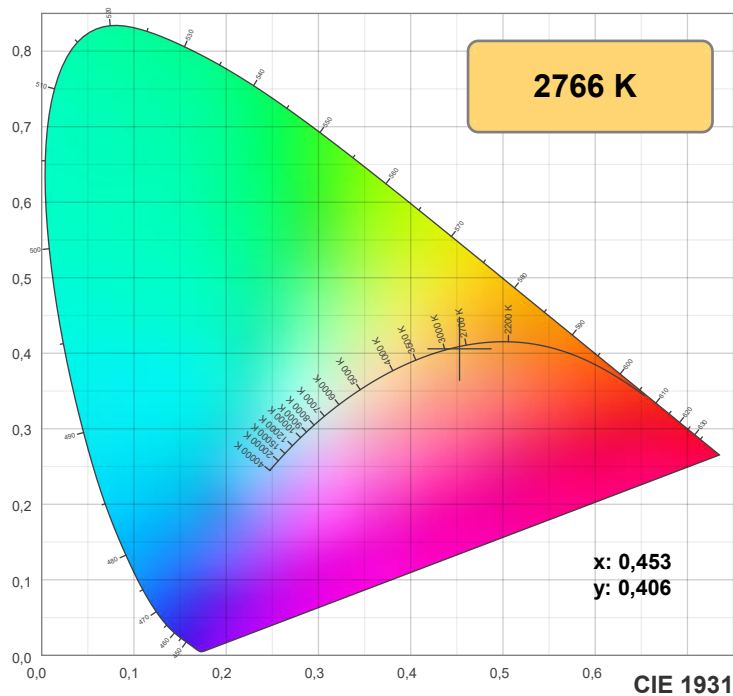
Last Calibration 20-09-2021

Tester: Peter Ulrich

Test Site: Lichtlabor

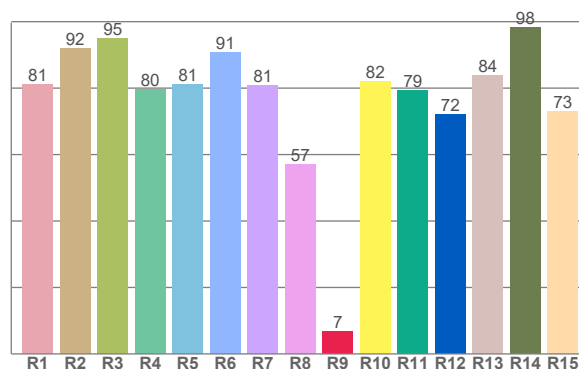
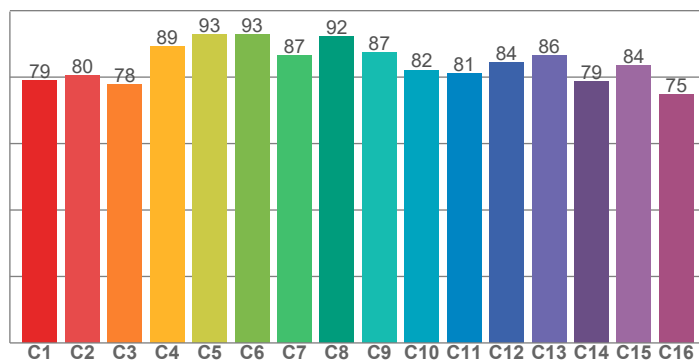
Gaustrasse 13

55411 Bingen am Rhein



TM30: 84,1

CRI: 82,2 (R1-R8)



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 |
|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|
| 81,1 | 92,0 | 95,1 | 79,6 | 81,1 | 90,8 | 80,9 | 57,0 | 6,9 | 81,9 | 79,2 | 72,0 | 83,9 | 98,2 | 72,9 |

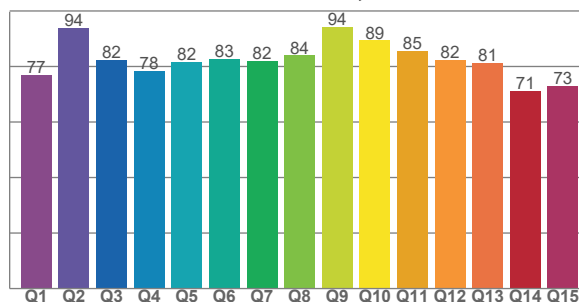
TM30 C values, 16 binned values out of total of 99 C values

| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 79,0 | 80,5 | 77,7 | 89,2 | 92,9 | 92,7 | 86,6 | 92,3 | 87,4 | 82,1 | 81,0 | 84,5 | 86,4 | 78,8 | 83,6 | 74,7 |

CQS Q values

| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 77,0 | 93,7 | 82,2 | 78,4 | 81,7 | 82,8 | 81,9 | 83,9 | 94,2 | 89,4 | 85,5 | 82,2 | 81,2 | 71,1 | 72,9 |

CQS: 81,3



Color parameters

| Color temperature | Color rendering index | Red component | Color fidelity | Color gamut | Color quality scale | Color coordinate cie 1931 | Color coordinate cie 1931 | Color coordinate | Color coordinate | Color deviation from black body |
|-------------------|-----------------------|---------------|----------------|-------------|---------------------|---------------------------|---------------------------|------------------|------------------|---------------------------------|
| CCT | CRI | CRI R9 | TM30 Rf | TM30 Rg | CQS | x | y | u | v | Δuv |
| 2766 K | 82,2 | 6,9 | 84,1 | 95,6 | 81,3 | 0,453 | 0,406 | 0,260 | 0,350 | -0,0012 |

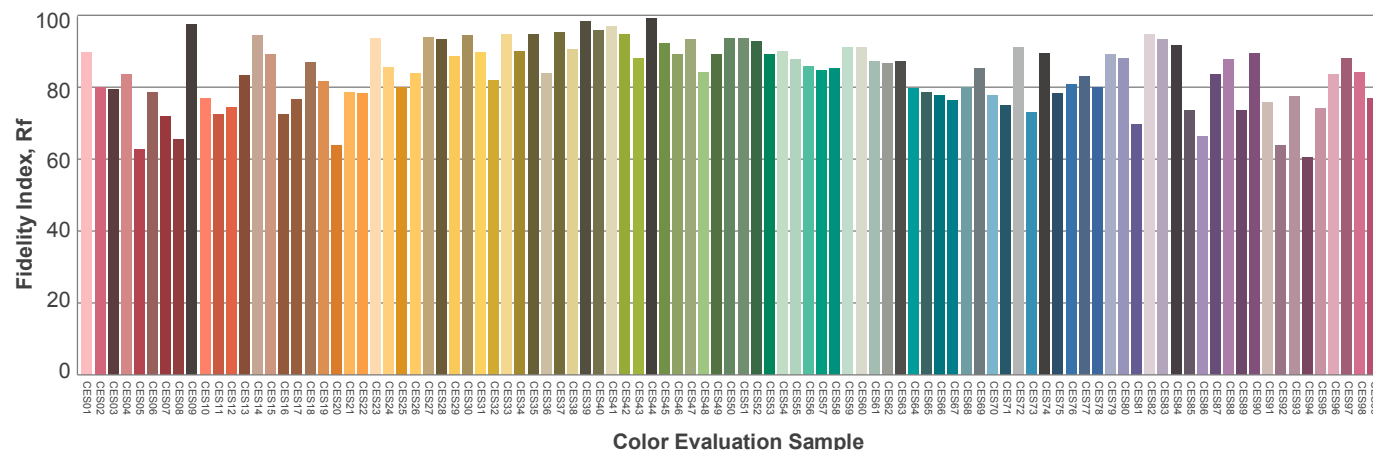
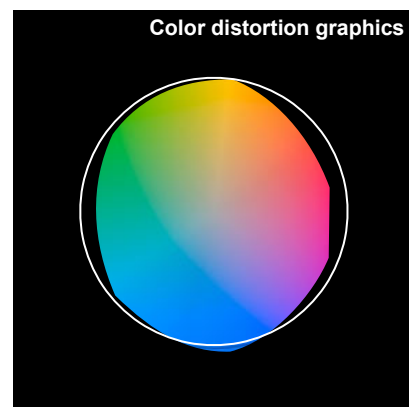
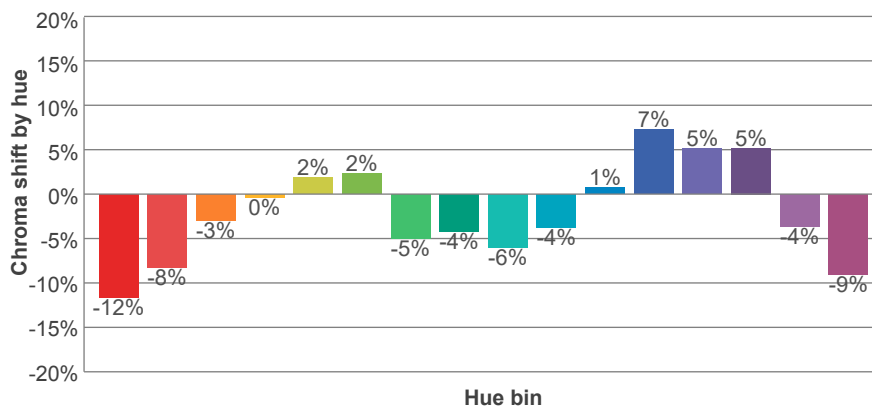
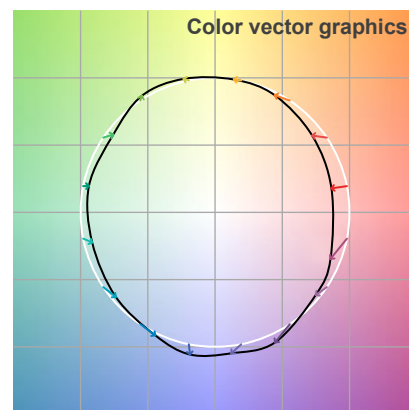
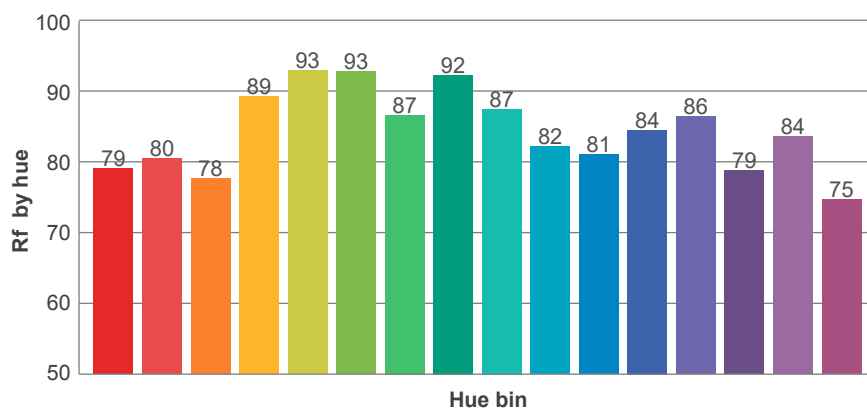
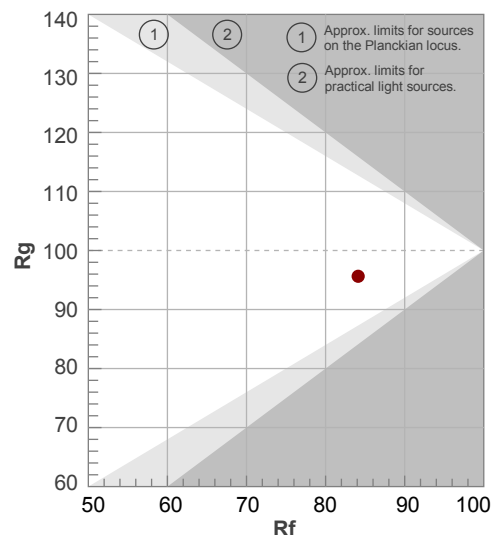
Rf 84,1

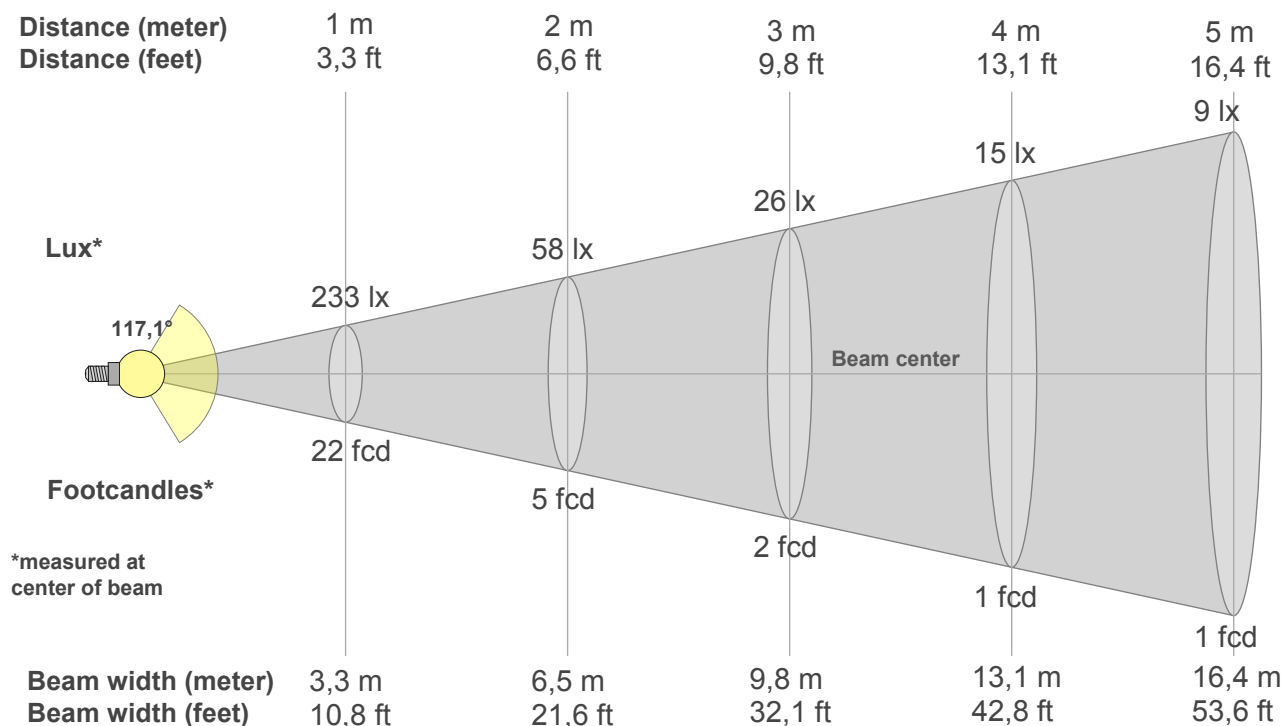
Fidelity index Rf

Rg 95,6

Gamut index Rg

| Hue Bin | R _f | Graphic shifts (%) | |
|---------|----------------|--------------------|------|
| | | Chroma | Hue |
| 1 | 79 | -12% | 1% |
| 2 | 80 | -8% | 7% |
| 3 | 78 | -3% | 11% |
| 4 | 89 | 0% | 6% |
| 5 | 93 | 2% | 4% |
| 6 | 93 | 2% | -3% |
| 7 | 87 | -5% | -6% |
| 8 | 92 | -4% | -1% |
| 9 | 87 | -6% | 4% |
| 10 | 82 | -4% | 11% |
| 11 | 81 | 1% | 14% |
| 12 | 84 | 7% | 2% |
| 13 | 86 | 5% | -9% |
| 14 | 79 | 5% | -17% |
| 15 | 84 | -4% | -9% |
| 16 | 75 | -9% | -17% |





Beam intensities from 1-20m

| 1m | 2m | 3m | 4m | 5m | 6m | 7m | 8m | 9m | 10m | 11m | 12m | 13m | 14m | 15m | 16m | 17m | 18m | 19m | 20m |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 3,3ft | 6,6ft | 9,8ft | 13,1ft | 16,4ft | 19,7ft | 23ft | 26,2ft | 29,5ft | 32,8ft | 36,1ft | 39,4ft | 42,7ft | 45,9ft | 49,2ft | 52,5ft | 55,8ft | 59,1ft | 62,3ft | 65,6ft |
| 233lx | 58lx | 26lx | 15lx | 9lx | 6lx | 5lx | 4lx | 3lx | 2lx | 2lx | 2lx | 1lx | 1lx | 1lx | 1lx | 1lx | 1lx | 1lx | 1lx |
| 21,6fcd | 5,4fcd | 2,4fcd | 1,4fcd | 0,9fcd | 0,6fcd | 0,4fcd | 0,3fcd | 0,3fcd | 0,2fcd | 0,2fcd | 0,2fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd |

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° |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 233 | 232 | 230 | 225 | 220 | 212 | 202 | 191 | 185 | 179 | 144 | 135 | 99 | 93 | 78 | 56 | 35 | 14 | 4 | 1 |
| 100% | 100% | 99% | 97% | 95% | 91% | 87% | 82% | 79% | 77% | 62% | 58% | 43% | 40% | 34% | 24% | 15% | 6% | 2% | 1% |

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° |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 233 | 232 | 230 | 226 | 221 | 214 | 205 | 194 | 181 | 167 | 151 | 132 | 113 | 90 | 66 | 42 | 22 | 8 | 1 | 1 |
| 100% | 100% | 99% | 97% | 95% | 92% | 88% | 83% | 78% | 72% | 65% | 57% | 48% | 39% | 29% | 18% | 9% | 4% | 1% | 1% |

Intensities in 180° c-plane

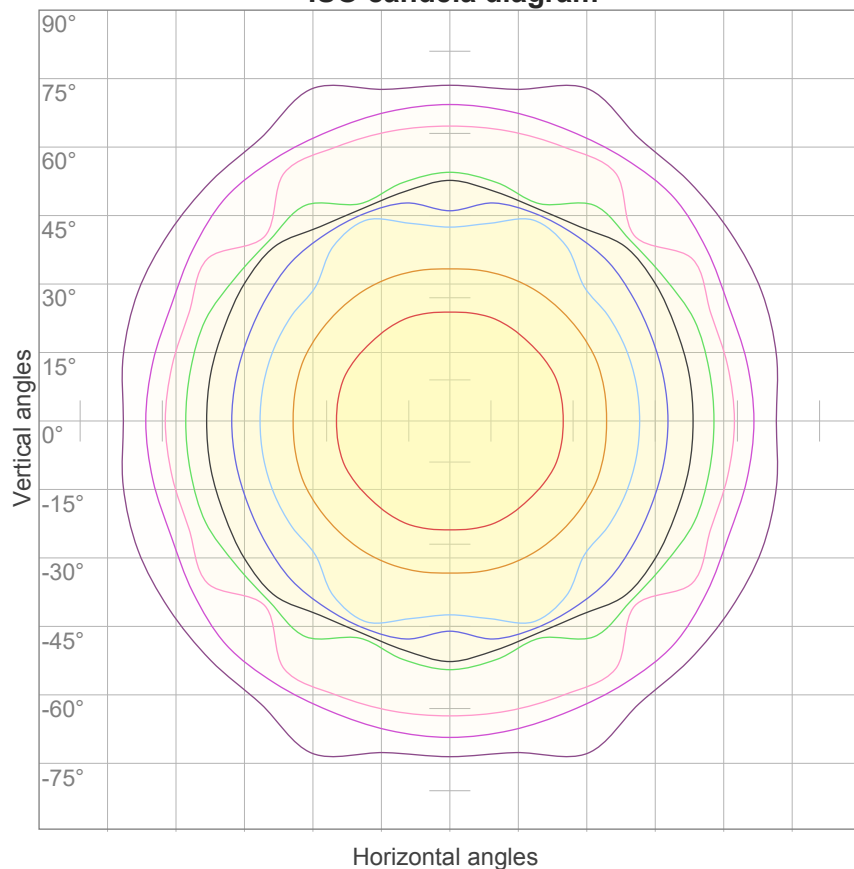
| 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° | 95° |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 233 | 232 | 230 | 225 | 220 | 212 | 202 | 191 | 185 | 179 | 144 | 135 | 99 | 93 | 78 | 56 | 35 | 14 | 4 | 1 |
| 100% | 100% | 99% | 97% | 95% | 91% | 87% | 82% | 79% | 77% | 62% | 58% | 43% | 40% | 34% | 24% | 15% | 6% | 2% | 1% |

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° |
|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 233 | 232 | 230 | 226 | 221 | 214 | 205 | 194 | 181 | 167 | 151 | 132 | 113 | 90 | 66 | 42 | 22 | 8 | 1 | 1 |
| 100% | 100% | 99% | 97% | 95% | 92% | 88% | 83% | 78% | 72% | 65% | 57% | 48% | 39% | 29% | 18% | 9% | 4% | 1% | 1% |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 117,1° | 165° | 175,8° | 77,3% | 51,6% |

ISO candela diagram



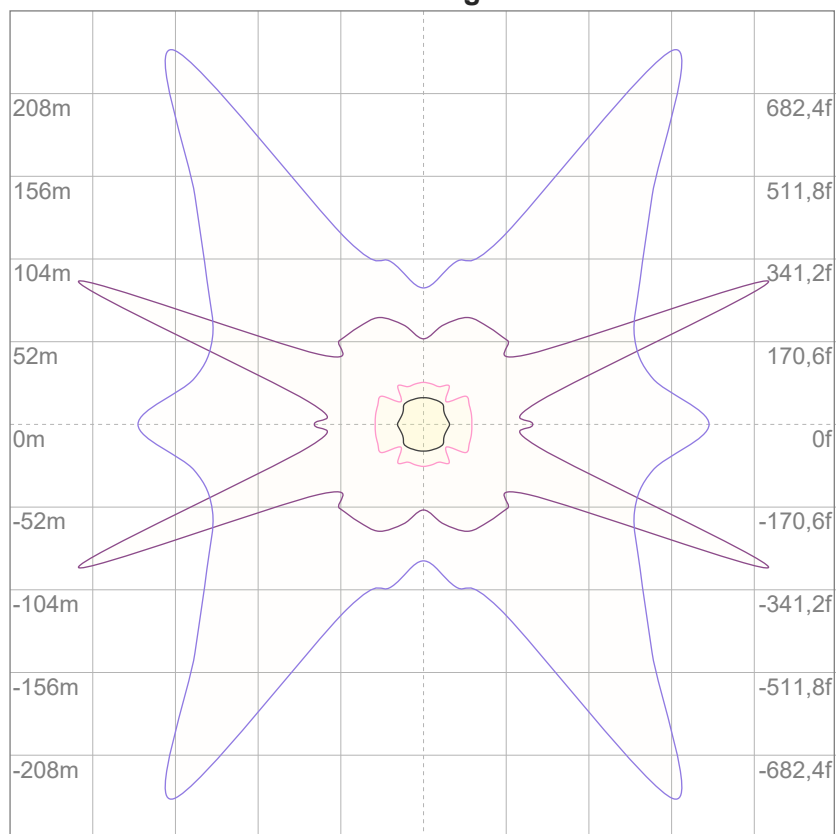
| | |
|-----|--------|
| 10% | 23 cd |
| 20% | 47 cd |
| 30% | 70 cd |
| 40% | 93 cd |
| 50% | 116 cd |
| 60% | 140 cd |
| 70% | 163 cd |
| 80% | 186 cd |
| 90% | 210 cd |

Conditions:

Number of c-planes: 16

Candela at center: 233 cd

ISO lux diagram



| | |
|-----|----------|
| 3% | 69,8m lx |
| 5% | 0,116 lx |
| 10% | 0,233 lx |
| 30% | 0,698 lx |
| 50% | 1,16 lx |

Conditions:

Number of c-planes: 16

Lux at center: 2,33 lx

*Lux distribution on a surface
when lamp is mounted at 10
meters from the surface.*

Glare Evaluation According to UGR

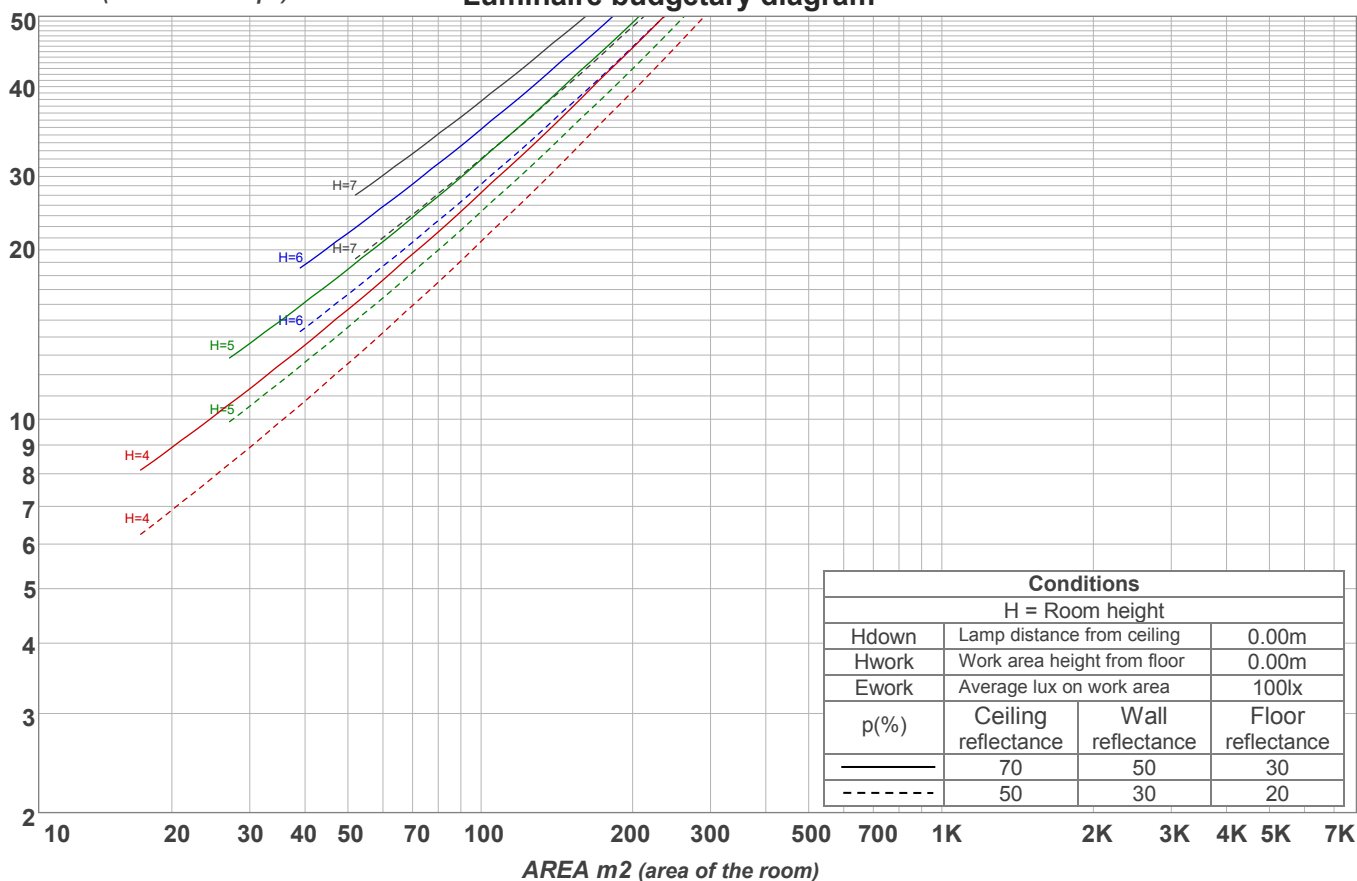
| | | | | | | | | | | | |
|---|-----|---|------|------|------|------|---|------|------|------|------|
| p Ceiling | | 70 | 70 | 50 | 50 | 30 | 70 | 70 | 50 | 50 | 30 |
| p Walls | | 50 | 30 | 50 | 30 | 30 | 50 | 30 | 50 | 30 | 30 |
| p Floor | | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Room size X Y | | Viewing direction at right angles to lamp axis | | | | | Viewing direction parallel to lamp axis | | | | |
| 2H | 2H | 21,2 | 22,4 | 21,4 | 22,8 | 23,0 | 22,5 | 23,7 | 22,7 | 24,0 | 24,3 |
| | 3H | 22,7 | 24,0 | 23,1 | 24,3 | 24,5 | 23,8 | 25,1 | 24,2 | 25,3 | 25,6 |
| | 4H | 23,2 | 24,5 | 23,6 | 24,7 | 25,0 | 24,2 | 25,5 | 24,6 | 25,7 | 26,0 |
| | 6H | 23,6 | 24,7 | 23,9 | 25,0 | 25,3 | 24,6 | 25,7 | 24,9 | 26,0 | 26,3 |
| | 8H | 23,7 | 24,7 | 24,0 | 25,0 | 25,4 | 24,7 | 25,7 | 25,0 | 26,0 | 26,4 |
| | 12H | 23,7 | 24,7 | 24,0 | 25,0 | 25,5 | 24,7 | 25,7 | 25,0 | 26,0 | 26,5 |
| 4H | 2H | 21,8 | 23,0 | 22,2 | 23,3 | 23,5 | 22,8 | 24,0 | 23,2 | 24,3 | 24,5 |
| | 3H | 23,6 | 24,7 | 24,0 | 25,0 | 25,4 | 24,4 | 25,4 | 24,8 | 25,8 | 26,2 |
| | 4H | 24,2 | 25,1 | 24,6 | 25,5 | 26,1 | 24,8 | 25,8 | 25,3 | 26,2 | 26,7 |
| | 6H | 24,6 | 25,5 | 25,1 | 25,8 | 26,2 | 25,3 | 26,2 | 25,8 | 26,5 | 26,9 |
| | 8H | 24,7 | 25,5 | 25,2 | 25,9 | 26,2 | 25,4 | 26,2 | 25,9 | 26,6 | 27,0 |
| | 12H | 24,7 | 25,4 | 25,2 | 25,8 | 26,3 | 25,4 | 26,1 | 25,9 | 26,5 | 27,0 |
| 8H | 4H | 24,5 | 25,3 | 25,0 | 25,6 | 26,0 | 25,1 | 25,9 | 25,6 | 26,2 | 26,6 |
| | 6H | 25,0 | 25,6 | 25,5 | 26,1 | 26,6 | 25,6 | 26,2 | 26,1 | 26,7 | 27,2 |
| | 8H | 25,1 | 25,7 | 25,7 | 26,2 | 26,9 | 25,8 | 26,4 | 26,3 | 26,9 | 27,5 |
| | 12H | 25,3 | 25,7 | 25,8 | 26,2 | 26,8 | 25,9 | 26,4 | 26,5 | 26,9 | 27,5 |
| 12H | 4H | 24,5 | 25,1 | 25,0 | 25,6 | 26,0 | 25,0 | 25,7 | 25,5 | 26,2 | 26,6 |
| | 6H | 25,0 | 25,6 | 25,5 | 26,1 | 26,7 | 25,6 | 26,2 | 26,2 | 26,7 | 27,4 |
| | 8H | 25,2 | 25,7 | 25,8 | 26,2 | 26,8 | 25,9 | 26,3 | 26,4 | 26,8 | 27,4 |
| Variation of the observer position for the luminaire distance S | | | | | | | | | | | |
| S = 1.0H | | 0,3 / -0,2 | | | | | 0,1 / -0,1 | | | | |
| S = 1.5H | | 0,5 / -0,6 | | | | | 0,3 / -0,4 | | | | |
| S = 2.0H | | 0,8 / -0,7 | | | | | 0,8 / -0,9 | | | | |
| Standard table | | n/a | | | | | n/a | | | | |
| Correction summand | | n/a | | | | | n/a | | | | |
| Corrected glare indices referring to 718 lm total luminous flux | | | | | | | | | | | |

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 Lumens 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 | 108 | 103 | 99 | 95 | 105 | 101 | 97 | 93 | 97 | 93 | 90 | 93 | 90 | 87 | 89 | 87 | 85 | 82 |
| 2 | 98 | 90 | 83 | 77 | 95 | 88 | 81 | 76 | 84 | 79 | 74 | 81 | 76 | 72 | 78 | 74 | 70 | 68 |
| 3 | 89 | 78 | 70 | 63 | 87 | 77 | 69 | 63 | 74 | 67 | 62 | 71 | 65 | 60 | 68 | 63 | 59 | 57 |
| 4 | 82 | 69 | 60 | 54 | 79 | 68 | 60 | 53 | 65 | 58 | 52 | 63 | 57 | 51 | 61 | 55 | 51 | 48 |
| 5 | 75 | 62 | 53 | 46 | 73 | 61 | 52 | 46 | 58 | 51 | 45 | 56 | 50 | 44 | 54 | 49 | 44 | 42 |
| 6 | 69 | 56 | 46 | 40 | 67 | 55 | 46 | 40 | 53 | 45 | 39 | 51 | 44 | 39 | 49 | 43 | 38 | 36 |
| 7 | 64 | 50 | 41 | 35 | 62 | 49 | 41 | 35 | 48 | 40 | 35 | 46 | 39 | 34 | 45 | 39 | 34 | 32 |
| 8 | 60 | 46 | 37 | 31 | 58 | 45 | 37 | 31 | 44 | 36 | 31 | 42 | 36 | 31 | 41 | 35 | 30 | 28 |
| 9 | 56 | 42 | 34 | 28 | 54 | 41 | 33 | 28 | 40 | 33 | 28 | 39 | 32 | 28 | 38 | 32 | 27 | 25 |
| 10 | 52 | 39 | 31 | 25 | 51 | 38 | 30 | 25 | 37 | 30 | 25 | 36 | 30 | 25 | 35 | 29 | 25 | 23 |

LAMPS (number of lamps)

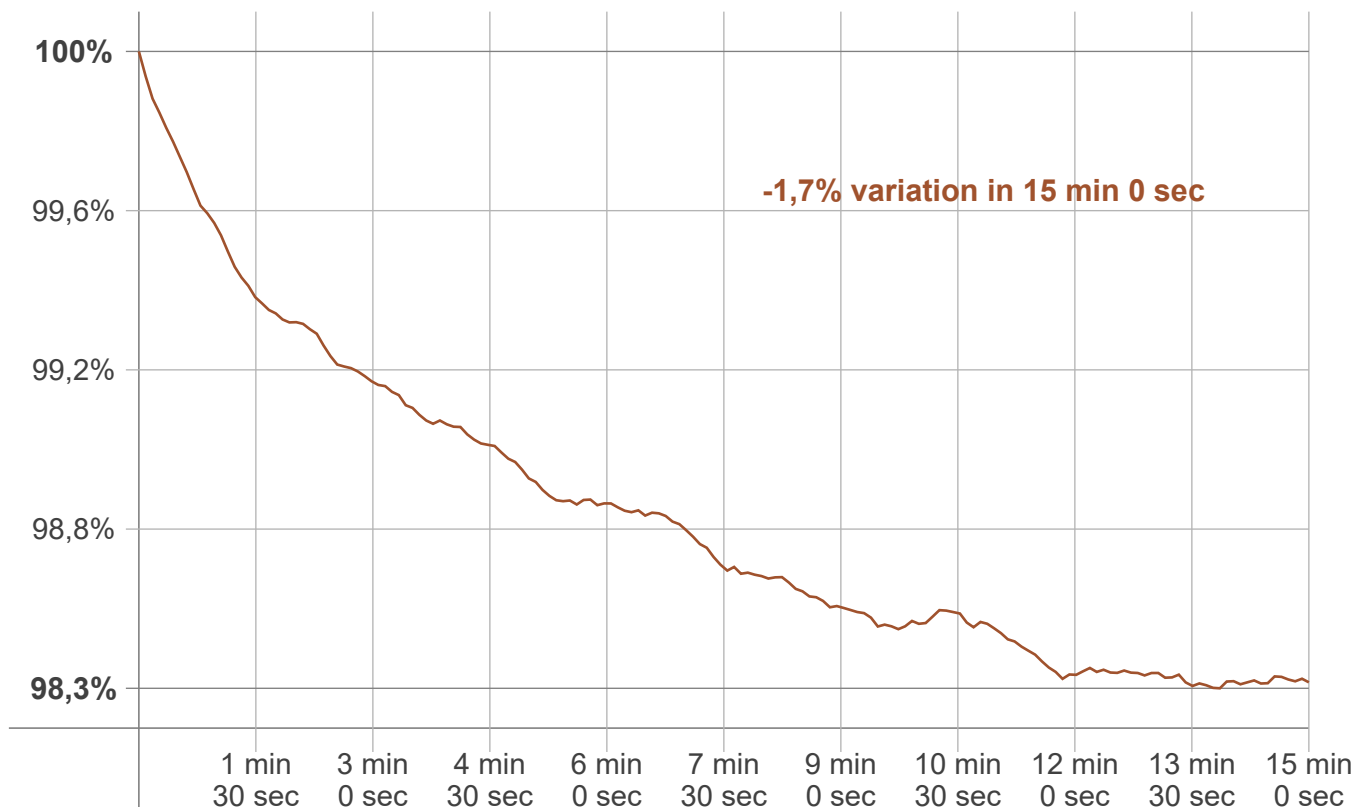
Luminaire budgetary diagram



Zonal Lumen Summary

| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 22,1 lm | 63,9 lm | 98,3 lm | 121 lm | 131 lm | 119 lm | 87,8 lm | 54,0 lm | 16,6 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 1,69 lm | 0,698 lm | 0,579 lm | 0,523 lm | 0,374 lm | 0,254 lm | 0,187 lm | 0,115 lm | 0,039 lm |

Warmup curve



Warmup result

| | |
|------------------|---------------------------------|
| Warmup time: | Lamp stabilized in 15 min 0 sec |
| Warmup variation | -1,7% |

Warmup conditions

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

Color temperature change

| CCT start | CCT change | CCT end |
|-----------|------------|---------|
| 2765 K | +1 K | 2766 K |

Output change

| Output start | Output change | Output end |
|--------------|---------------|------------|
| 728 lm | -10 lm | 718 lm |