

Light efficiency:



Light quality:



Color temperature:



Output: 113 lm

Peak: 397 cd

Power: 4,4 W

PF: 1,0



Product name:

F L-S O - 2-4 C -1 0 0-B-LSLT-W

Item number:

F L / S O - 2 / 4 C / 1 0 0 / B /LSLT/W

Date and time:

11.03.2019 15:25:27

Description:

Toleranzen:

Lumen +/-4%

Candela +/-2,5%

Colour Temp +/-35 Grad K

CRI +/-0,7

Angular Resolution 1 Grad step

Last Calibration 06.06.2018

Pruefer:

Mourad Benzineb

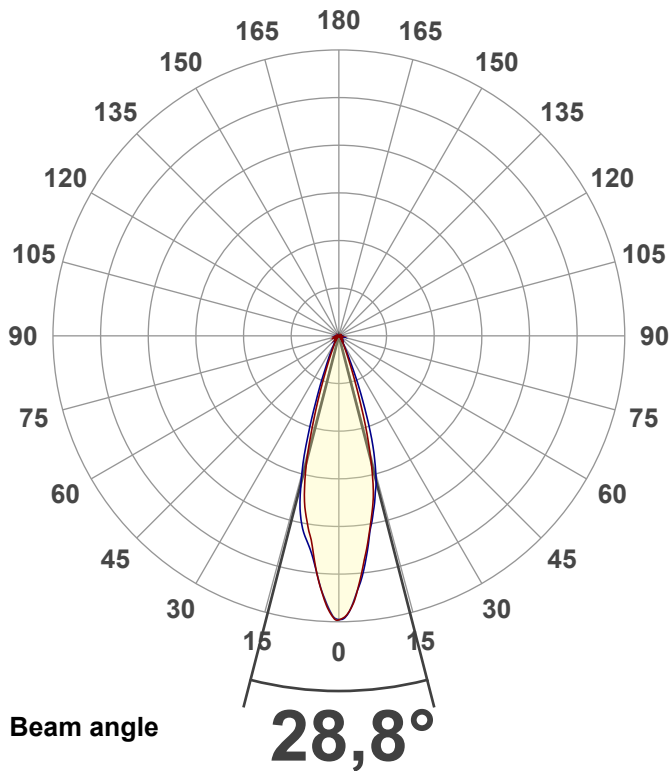
Master of Engineering

Pruefort:

Lichtlabor

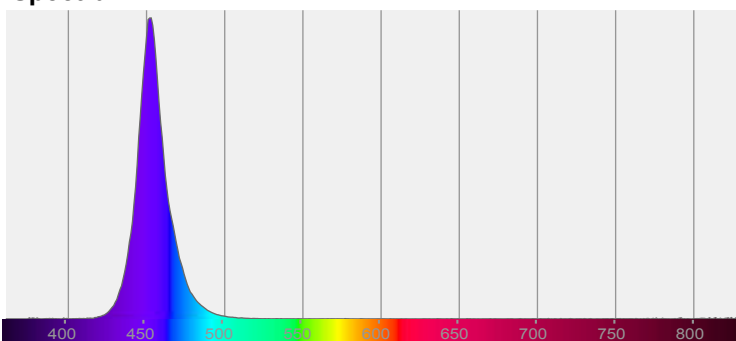
Gaustasse13-15

55411 Bingen am Rhein

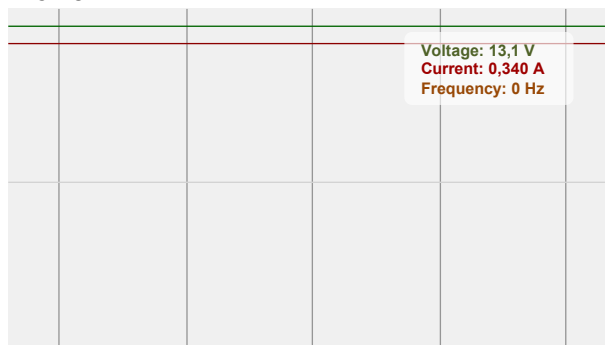


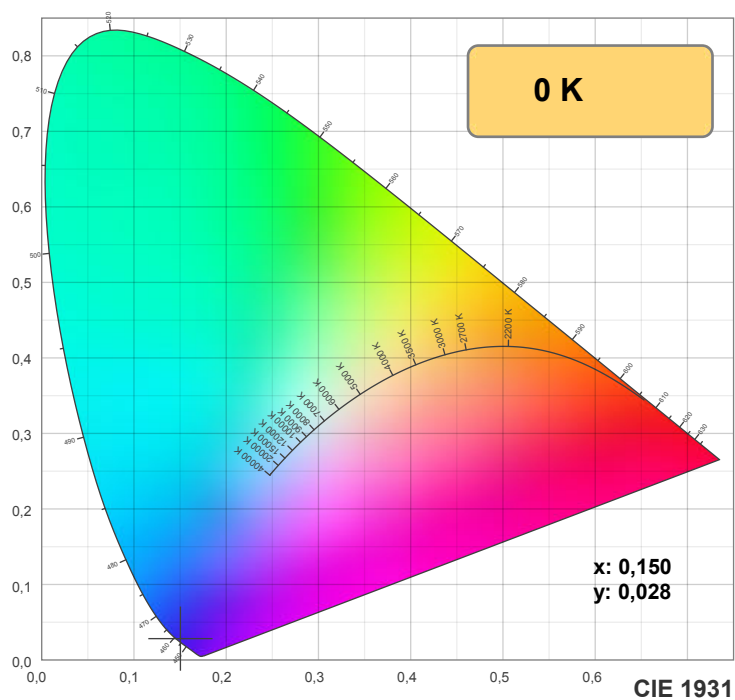
CIE 1931
x: 0,150
y: 0,028

Spectra

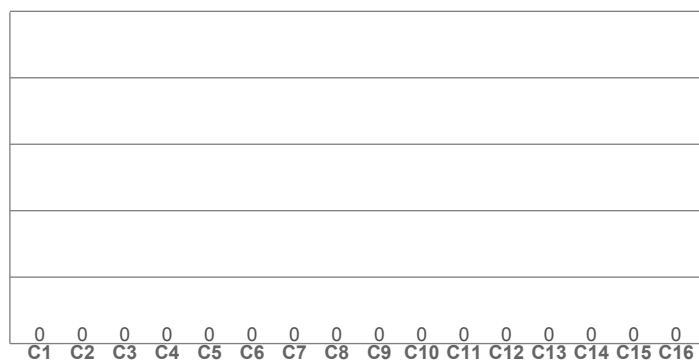


Power





TM30: 0,0



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

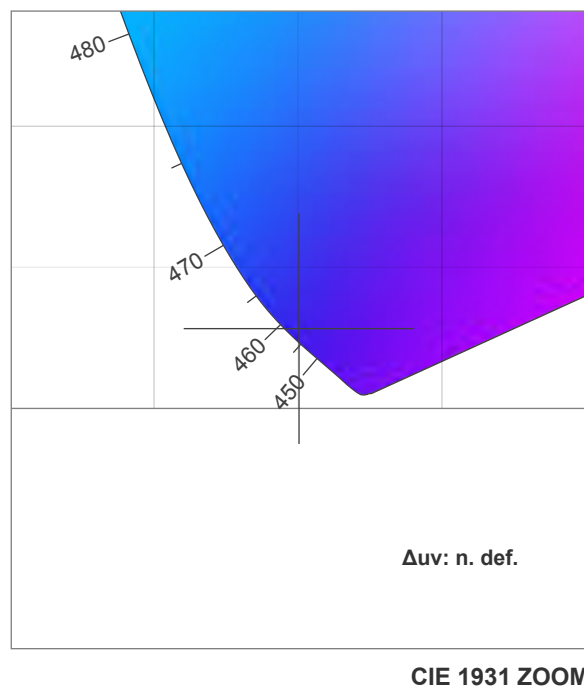
| R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

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

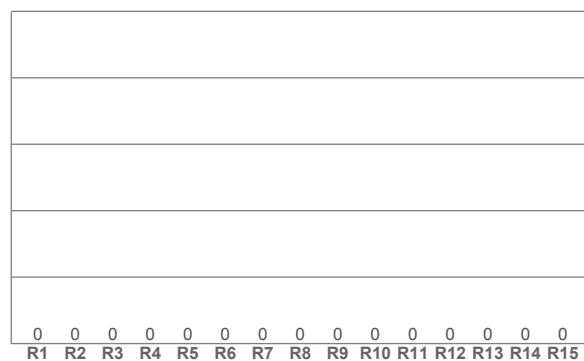
| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

CQS Q values

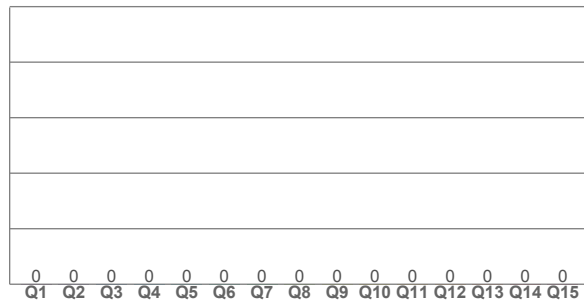
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |



CRI: 0,0 (R1-R8)



CQS: 0,0



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 |
| 0 K | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,150 | 0,028 | 0,198 | 0,056 | n. def. |

TM30 details

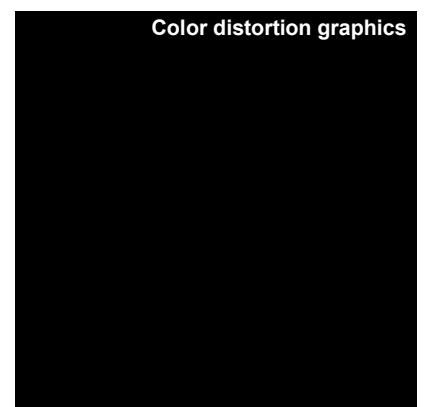
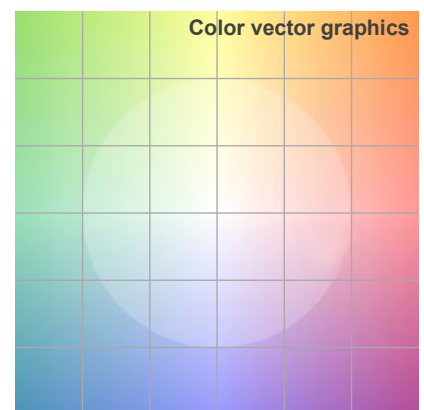
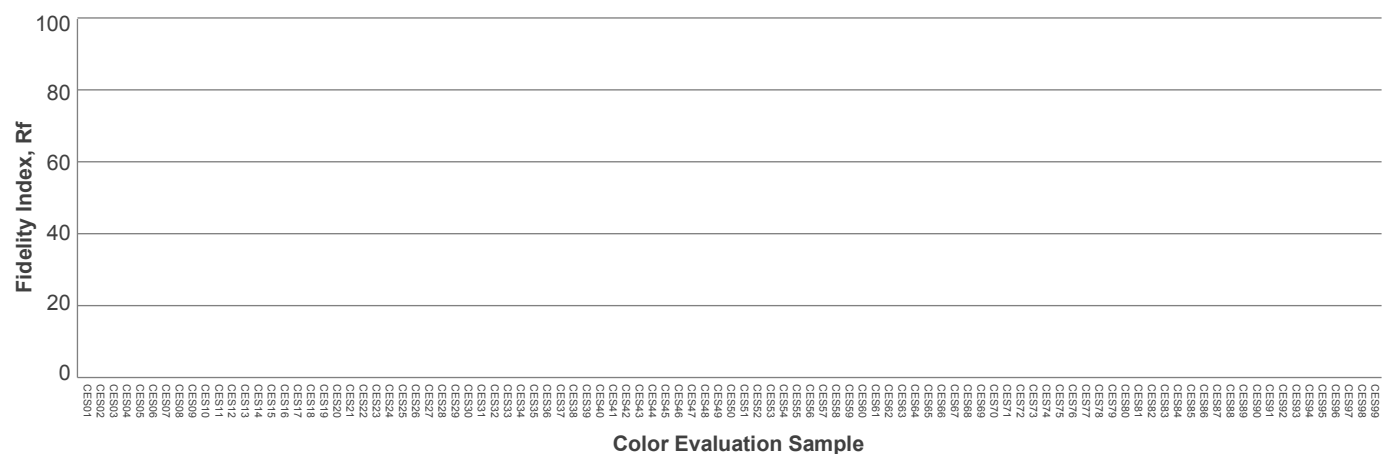
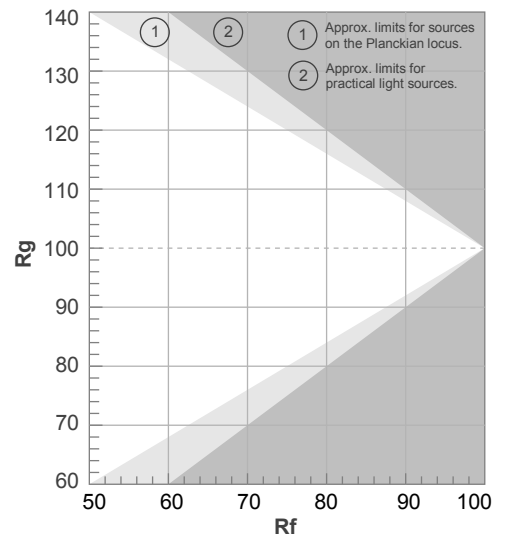
Rf 0,0

Fidelity index Rf

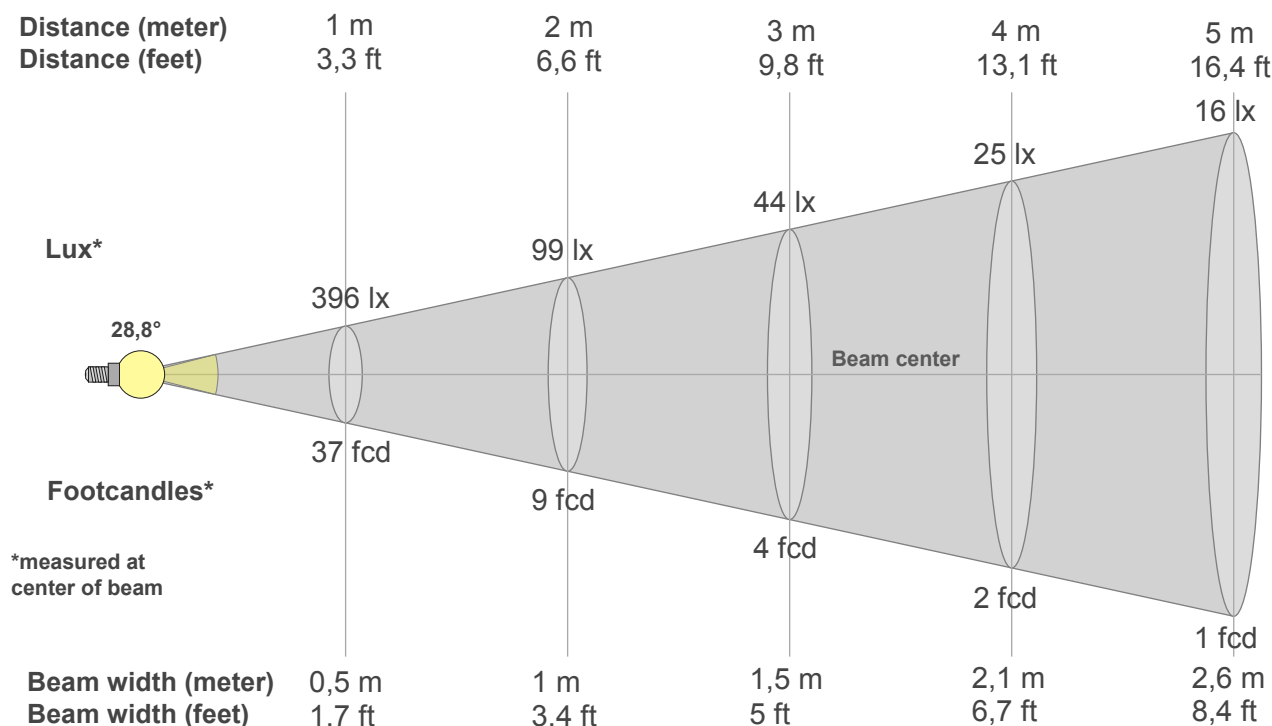
Rg 0,0

Gammut index Rg

| Hue Bin | R _f | Graphic shifts (%) | |
|---------|----------------|--------------------|-----|
| | | Chroma | Hue |
| 1 | 0 | 0% | 0% |
| 2 | 0 | 0% | 0% |
| 3 | 0 | 0% | 0% |
| 4 | 0 | 0% | 0% |
| 5 | 0 | 0% | 0% |
| 6 | 0 | 0% | 0% |
| 7 | 0 | 0% | 0% |
| 8 | 0 | 0% | 0% |
| 9 | 0 | 0% | 0% |
| 10 | 0 | 0% | 0% |
| 11 | 0 | 0% | 0% |
| 12 | 0 | 0% | 0% |
| 13 | 0 | 0% | 0% |
| 14 | 0 | 0% | 0% |
| 15 | 0 | 0% | 0% |
| 16 | 0 | 0% | 0% |



Beam details



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 |
| 396lx | 99lx | 44lx | 25lx | 16lx | 11lx | 8lx | 6lx | 5lx | 4lx | 3lx | 3lx | 2lx | 2lx | 2lx | 2lx | 1lx | 1lx | 1lx | 1lx |
| 36,8fcd | 9,2fcd | 4,1fcd | 2,3fcd | 1,5fcd | 1fcd | 0,8fcd | 0,6fcd | 0,5fcd | 0,4fcd | 0,3fcd | 0,3fcd | 0,2fcd | 0,2fcd | 0,2fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd | 0,1fcd |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 396 | 386 | 359 | 323 | 291 | 260 | 231 | 190 | 143 | 95 | 60 | 38 | 26 | 19 | 14 | 10 | 9 | 8 | 6 | 5 |
| 100% | 97% | 91% | 82% | 73% | 66% | 58% | 48% | 36% | 24% | 15% | 10% | 7% | 5% | 3% | 3% | 2% | 2% | 2% | 1% |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 396 | 387 | 359 | 330 | 295 | 265 | 239 | 215 | 182 | 144 | 101 | 66 | 40 | 25 | 16 | 12 | 9 | 7 | 6 | 5 |
| 100% | 98% | 91% | 83% | 74% | 67% | 60% | 54% | 46% | 36% | 26% | 17% | 10% | 6% | 4% | 3% | 2% | 2% | 2% | 1% |

Intensities in 180° c-plane

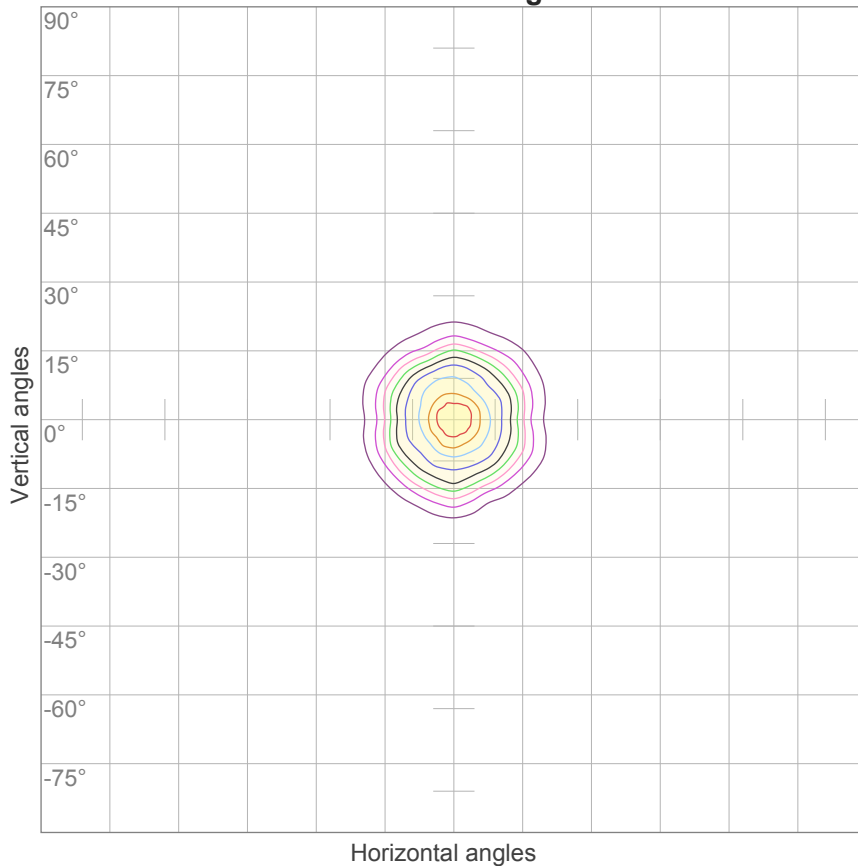
| 0° | 2° | 4° | 6° | 8° | 10° | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 396 | 384 | 355 | 319 | 284 | 260 | 231 | 190 | 139 | 93 | 58 | 37 | 25 | 18 | 14 | 11 | 8 | 7 | 6 | 5 |
| 100% | 97% | 90% | 81% | 72% | 66% | 58% | 48% | 35% | 23% | 15% | 9% | 6% | 5% | 4% | 3% | 2% | 2% | 1% | 1% |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 396 | 382 | 355 | 322 | 297 | 280 | 257 | 221 | 177 | 126 | 84 | 55 | 38 | 26 | 19 | 15 | 11 | 9 | 8 | 6 |
| 100% | 97% | 90% | 81% | 75% | 71% | 65% | 56% | 45% | 32% | 21% | 14% | 10% | 7% | 5% | 4% | 3% | 2% | 2% | 2% |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 28,8° | 45,9° | 62,9° | 91,6% | 87,1% |

ISO candela diagram



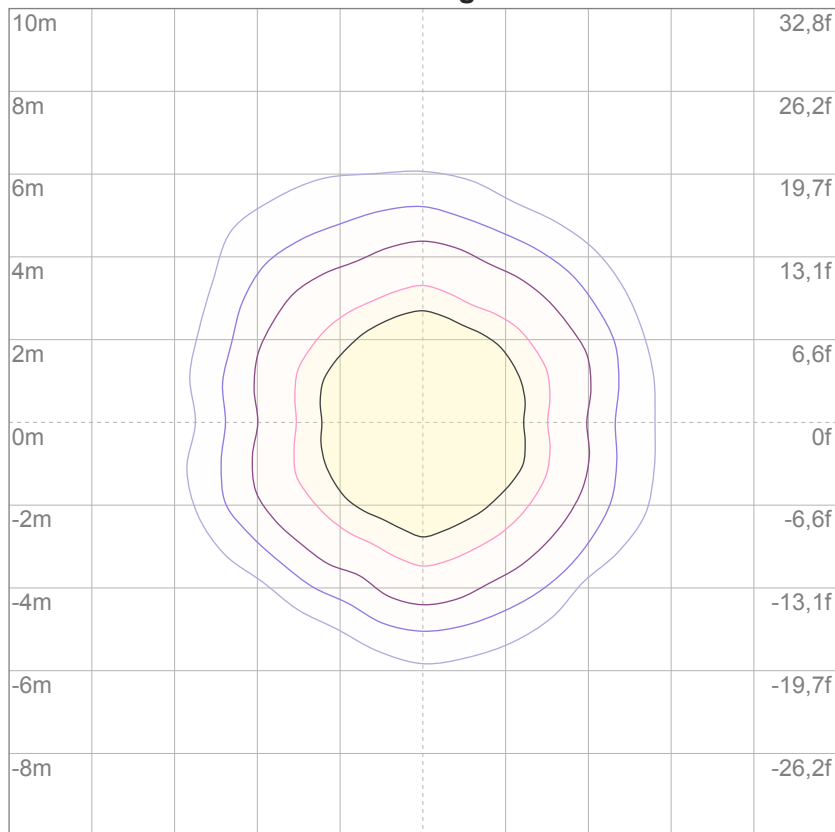
| | |
|-----|--------|
| 10% | 40 cd |
| 20% | 79 cd |
| 30% | 119 cd |
| 40% | 158 cd |
| 50% | 198 cd |
| 60% | 238 cd |
| 70% | 277 cd |
| 80% | 317 cd |
| 90% | 356 cd |

Conditions:

Number of c-planes: 16

Candela at center: 396 cd

ISO lux diagram



| | |
|-----|----------|
| 3% | 0,119 lx |
| 5% | 0,198 lx |
| 10% | 0,396 lx |
| 30% | 1,19 lx |
| 50% | 1,98 lx |

Conditions:

Number of c-planes: 16

Lux at center: 3,96 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 | 6,4 | 7,2 | 6,6 | 7,4 | 7,6 | 6,2 | 7,0 | 6,4 | 7,2 | 7,4 |
| | 3H | 9,1 | 9,8 | 9,4 | 10,1 | 10,3 | 9,0 | 9,7 | 9,2 | 9,9 | 10,2 |
| | 4H | 10,3 | 11,0 | 10,6 | 11,3 | 11,6 | 10,3 | 11,0 | 10,6 | 11,3 | 11,6 |
| | 6H | 12,3 | 12,9 | 12,6 | 13,2 | 13,5 | 12,1 | 12,8 | 12,4 | 13,1 | 13,4 |
| | 8H | 13,3 | 14,0 | 13,7 | 14,3 | 14,6 | 12,9 | 13,6 | 13,3 | 13,8 | 14,1 |
| | 12H | 14,7 | 15,3 | 15,1 | 15,6 | 15,9 | 13,7 | 14,3 | 14,1 | 14,6 | 15,0 |
| 4H | 2H | 7,4 | 8,1 | 7,7 | 8,4 | 8,7 | 7,3 | 8,0 | 7,6 | 8,3 | 8,6 |
| | 3H | 10,4 | 11,0 | 10,7 | 11,3 | 11,6 | 10,2 | 10,9 | 10,6 | 11,2 | 11,5 |
| | 4H | 11,8 | 12,4 | 12,2 | 12,7 | 13,1 | 11,8 | 12,3 | 12,2 | 12,7 | 13,0 |
| | 6H | 13,9 | 14,3 | 14,3 | 14,7 | 15,1 | 13,8 | 14,2 | 14,2 | 14,6 | 15,0 |
| | 8H | 15,0 | 15,4 | 15,4 | 15,8 | 16,2 | 14,6 | 15,1 | 15,1 | 15,4 | 15,9 |
| | 12H | 16,5 | 16,9 | 16,9 | 17,3 | 17,7 | 15,6 | 16,0 | 16,0 | 16,4 | 16,8 |
| 8H | 4H | 12,7 | 13,1 | 13,1 | 13,5 | 13,9 | 12,6 | 13,0 | 13,0 | 13,4 | 13,8 |
| | 6H | 14,9 | 15,2 | 15,3 | 15,6 | 16,1 | 14,8 | 15,1 | 15,2 | 15,5 | 16,0 |
| | 8H | 16,2 | 16,4 | 16,6 | 16,9 | 17,4 | 15,8 | 16,1 | 16,3 | 16,6 | 17,0 |
| | 12H | 17,9 | 18,1 | 18,4 | 18,6 | 19,1 | 17,1 | 17,4 | 17,6 | 17,8 | 18,3 |
| 12H | 4H | 12,8 | 13,2 | 13,3 | 13,6 | 14,0 | 12,7 | 13,1 | 13,2 | 13,5 | 13,9 |
| | 6H | 15,2 | 15,5 | 15,6 | 15,9 | 16,4 | 15,1 | 15,3 | 15,5 | 15,8 | 16,3 |
| | 8H | 16,5 | 16,8 | 17,0 | 17,2 | 17,7 | 16,2 | 16,5 | 16,7 | 17,0 | 17,5 |
| Variation of the observer position for the luminaire distance S | | | | | | | | | | | |
| S = 1,0H | | +0,2 / -0,2 | | | | | +0,2 / -0,2 | | | | |
| S = 1,5H | | +0,4 / -0,4 | | | | | +0,4 / -0,3 | | | | |
| S = 2,0H | | +0,6 / -0,7 | | | | | +0,4 / -0,5 | | | | |
| Standard table | | BK12 | | | | | BK12 | | | | |
| Correction summand | | 0,2 | | | | | -0,3 | | | | |
| Corrected glare indices referring to 113 lm total luminous flux | | | | | | | | | | | |

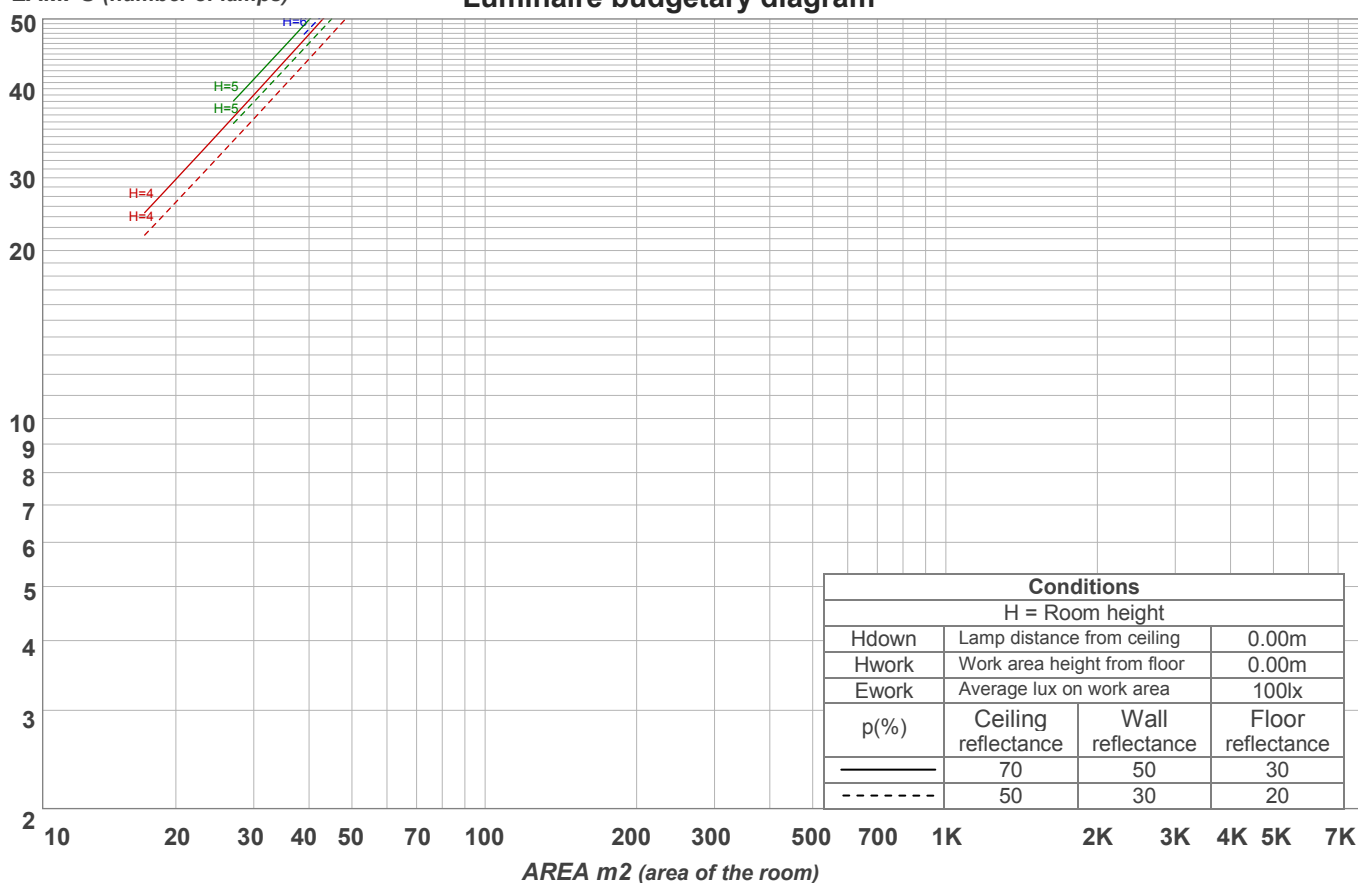
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

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 | 102 | 102 | 102 | 100 |
| 1 | 113 | 110 | 107 | 104 | 110 | 107 | 105 | 103 | 103 | 101 | 99 | 99 | 98 | 96 | 96 | 95 | 94 | 92 |
| 2 | 107 | 102 | 98 | 95 | 105 | 101 | 97 | 94 | 97 | 94 | 92 | 94 | 92 | 90 | 92 | 89 | 88 | 86 |
| 3 | 103 | 97 | 92 | 88 | 101 | 95 | 91 | 87 | 92 | 89 | 86 | 90 | 87 | 84 | 88 | 85 | 83 | 81 |
| 4 | 99 | 92 | 86 | 82 | 97 | 90 | 86 | 82 | 88 | 84 | 81 | 86 | 83 | 80 | 84 | 82 | 79 | 78 |
| 5 | 95 | 87 | 82 | 78 | 93 | 86 | 81 | 78 | 85 | 80 | 77 | 83 | 79 | 76 | 82 | 78 | 76 | 74 |
| 6 | 92 | 84 | 78 | 75 | 90 | 83 | 78 | 74 | 81 | 77 | 74 | 80 | 76 | 73 | 79 | 75 | 73 | 71 |
| 7 | 88 | 80 | 75 | 71 | 87 | 80 | 75 | 71 | 78 | 74 | 71 | 77 | 73 | 70 | 76 | 73 | 70 | 69 |
| 8 | 86 | 77 | 72 | 69 | 84 | 77 | 72 | 69 | 76 | 71 | 68 | 75 | 71 | 68 | 74 | 70 | 68 | 67 |
| 9 | 83 | 75 | 70 | 66 | 82 | 74 | 69 | 66 | 73 | 69 | 66 | 73 | 69 | 66 | 72 | 68 | 66 | 64 |
| 10 | 80 | 72 | 67 | 64 | 79 | 72 | 67 | 64 | 71 | 67 | 64 | 70 | 66 | 64 | 70 | 66 | 64 | 62 |

LAMPS (number of lamps)

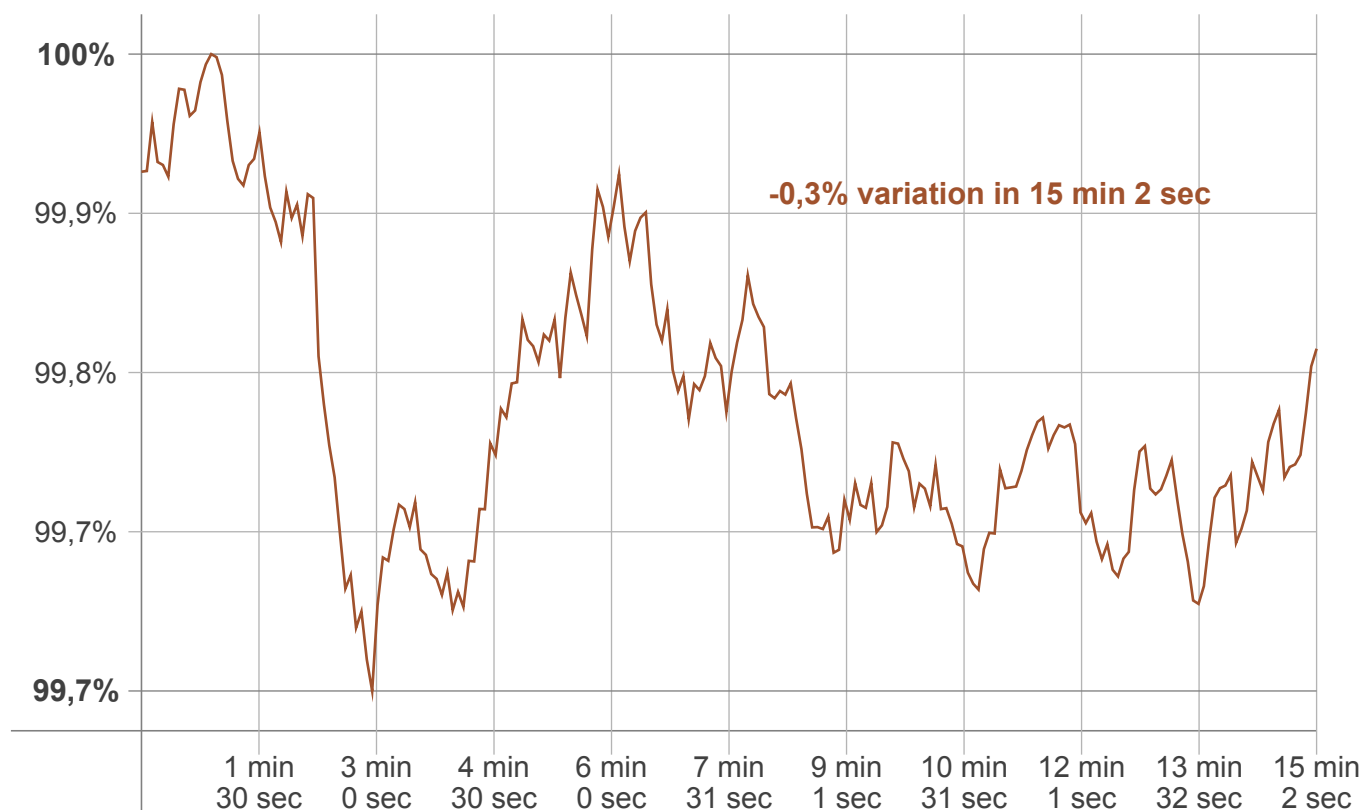
Luminaire budgetary diagram



Zonal Lumen Summary

| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| {LUM0-10} | 47,7 lm | 14,1 lm | 4,74 lm | 3,50 lm | 3,36 lm | 3,38 lm | 3,12 lm | 2,83 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0,167 lm | 0,000 lm | 0,000 lm | 0,000 lm | 0,000 lm | 0,000 lm | 0,000 lm | 0,000 lm | 0,000 lm |

Warmup curve



Warmup result

| | |
|------------------|--------------|
| Warmup time: | 15 min 2 sec |
| Warmup variation | -0,3% |

Warmup conditions

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

Color temperature change

| | | |
|-----------|------------|---------|
| CCT start | CCT change | CCT end |
| 0 K | 0 K | 0 K |

Output change

| | | |
|--------------|---------------|------------|
| Output start | Output change | Output end |
| 113 lm | lm | 113 lm |

Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

| | |
|-----------------------|--------|
| Flicker frequency: | n/a Hz |
| Flicker index: | n/a |
| Flicker percentage: | n/a % |
| SVM: (Visual flicker) | n/a |

Flicker conditions:

| | |
|--------------|-----------------------|
| Sample rate: | 60.000 samples/second |
|--------------|-----------------------|