

Light efficiency:

88 Lumen/Watt

Light quality:

CRI: 0,0

Color temperature:

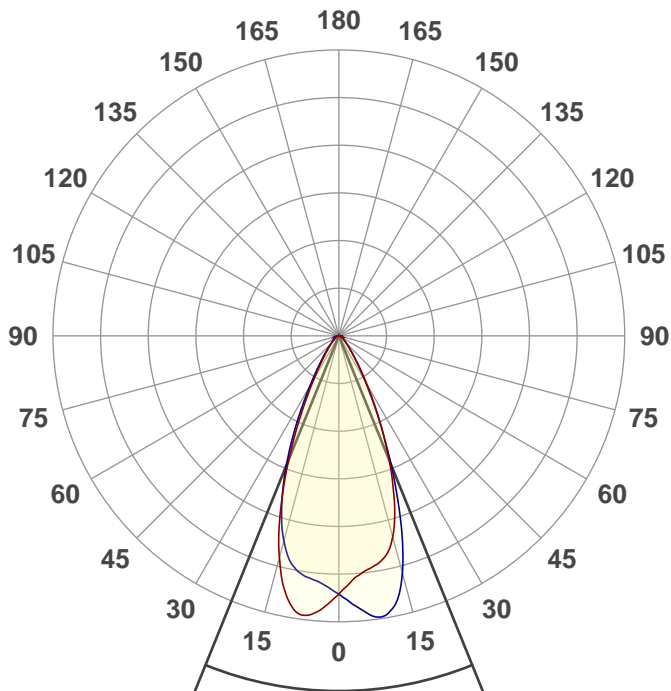
OK

Output: 392 lm

Peak: 650 cd

Power: 4,5 W

PF: 1,0



Beam angle

44,1°



CIE 1931
x: 0,168
y: 0,712

Product name:

FL-SO-2-4C-100-G-LSWT-W2

Item number:

FL/SO-2/4C/100/G/LSWT/W2

Date and time:

08.03.2019 14:48:41

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

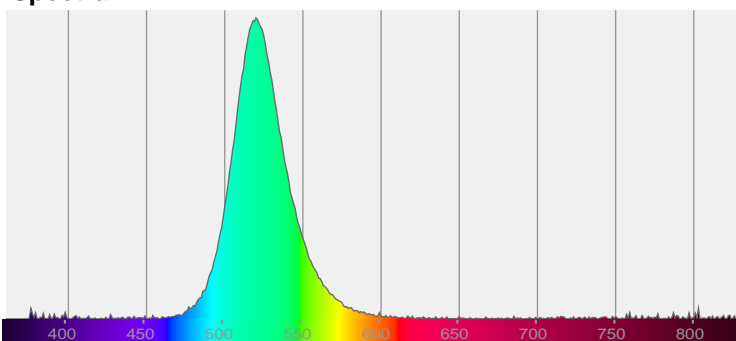
Pruefort:

Lichtlabor

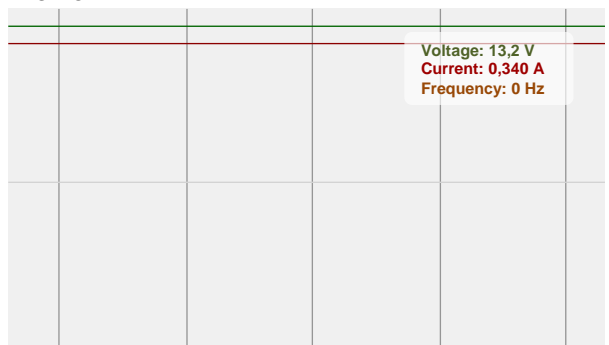
Gaustasse13-15

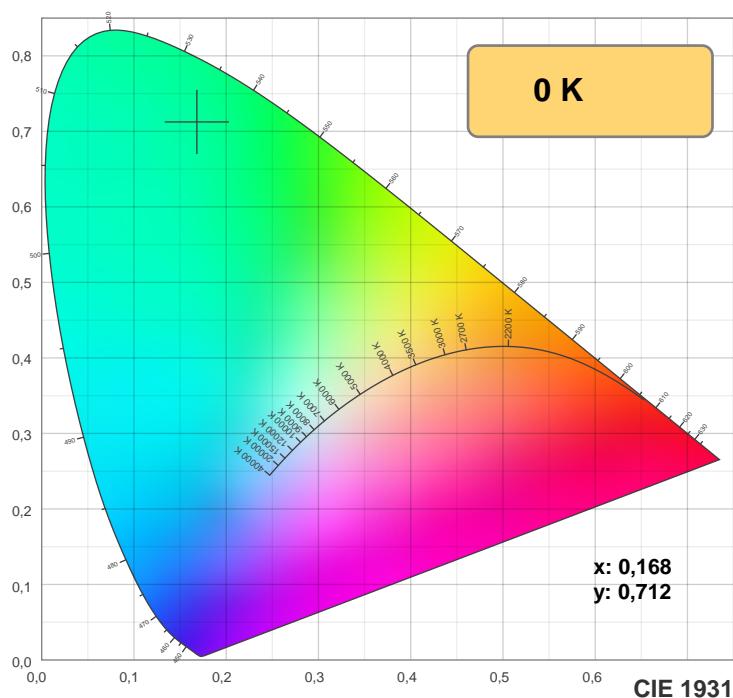
55411 Bingen am Rhein

Spectra



Power





TM30: 0,0



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

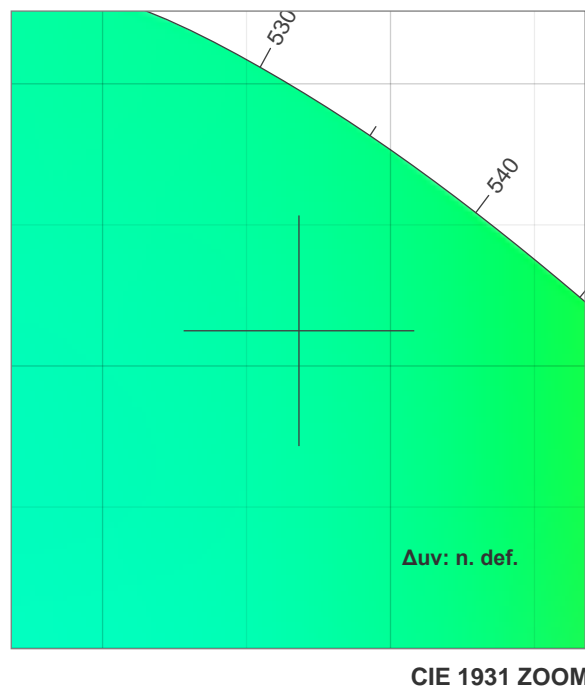
| R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

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

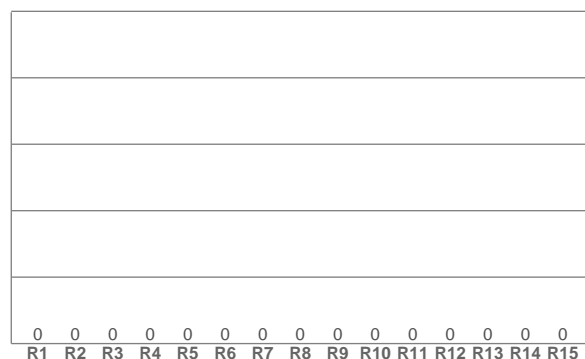
| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

CQS Q values

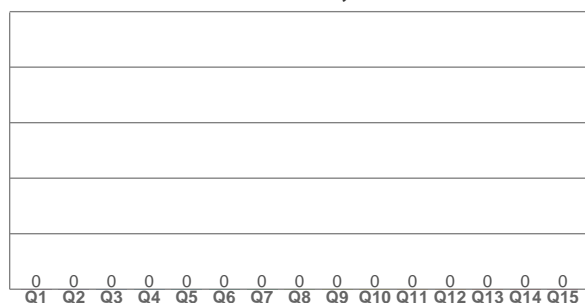
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |



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 | 0,168 | 0,712 | 0,060 | 0,381 | n. def. |

TM30 details

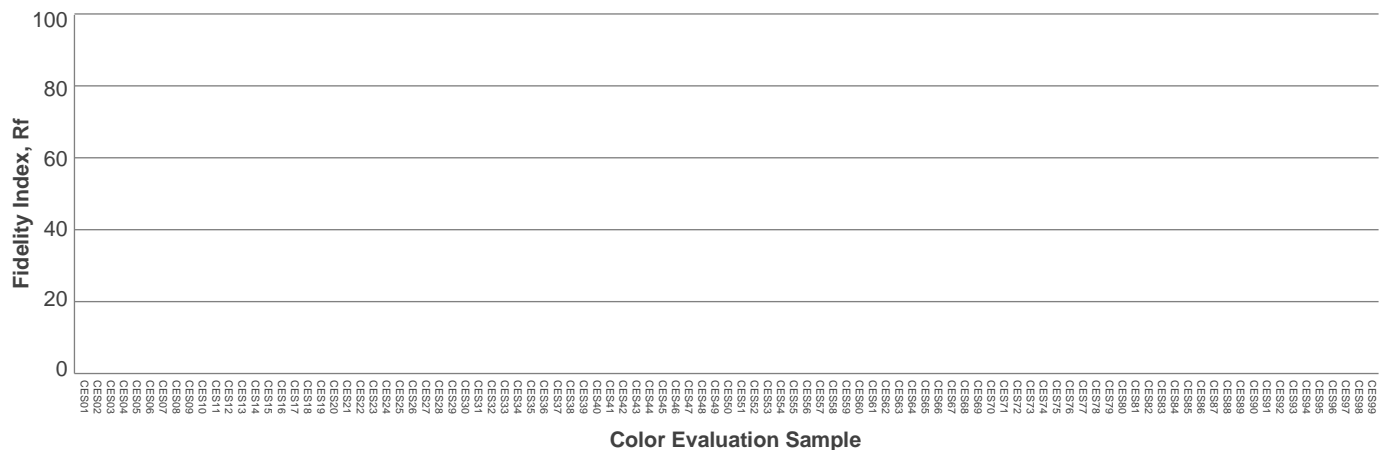
Rf 0,0

Fidelity index Rf

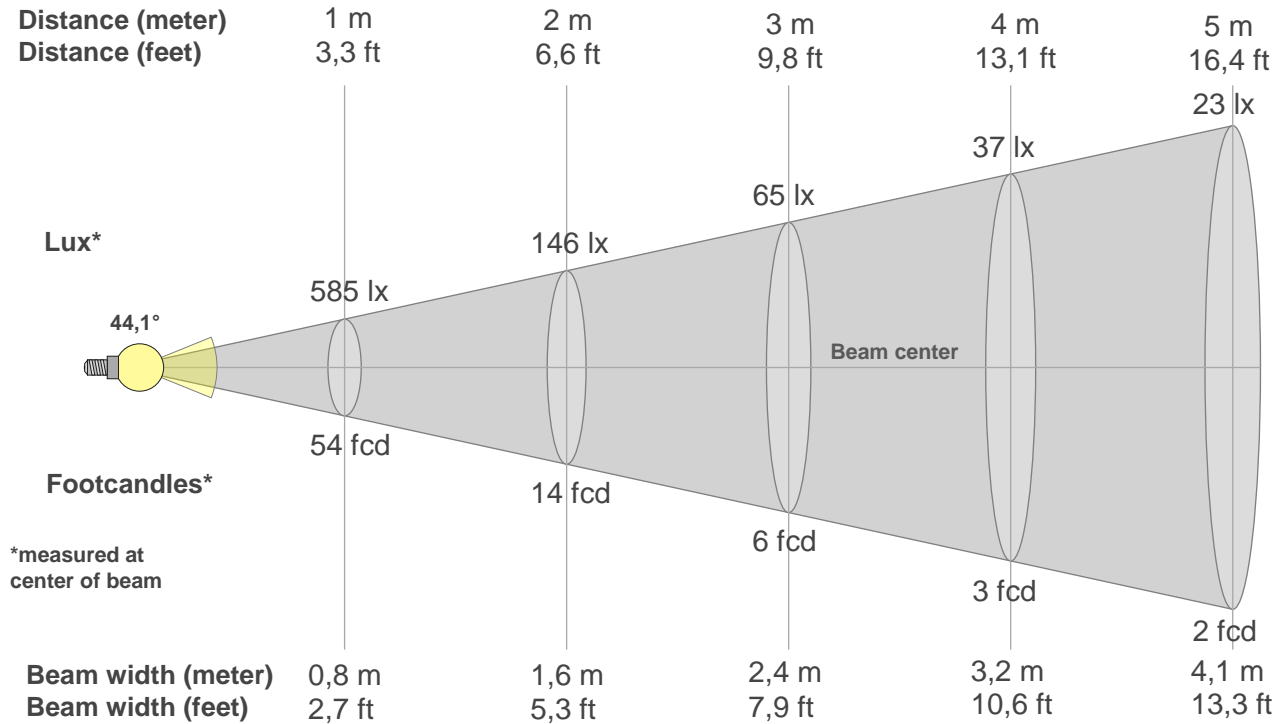
Rg 0,0

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 |
| 585lx | 146lx | 65lx | 37lx | 23lx | 16lx | 12lx | 9lx | 7lx | 6lx | 5lx | 4lx | 3lx | 3lx | 3lx | 2lx | 2lx | 2lx | 2lx | 1lx |
| 54,4fcd | 13,6fcd | 6fcd | 3,4fcd | 2,2fcd | 1,5fcd | 1,1fcd | 0,8fcd | 0,7fcd | 0,5fcd | 0,4fcd | 0,4fcd | 0,3fcd | 0,3fcd | 0,2fcd | 0,2fcd | 0,2fcd | 0,2fcd | 0,2fcd | 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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 585 | 566 | 548 | 538 | 530 | 522 | 509 | 487 | 453 | 409 | 357 | 305 | 253 | 206 | 164 | 128 | 100 | 79 | 62 | 50 |
| 100% | 97% | 94% | 92% | 91% | 89% | 87% | 83% | 77% | 70% | 61% | 52% | 43% | 35% | 28% | 22% | 17% | 13% | 11% | 9% |

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° |
|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 585 | 600 | 617 | 633 | 643 | 639 | 620 | 582 | 527 | 459 | 387 | 318 | 254 | 201 | 155 | 121 | 93 | 72 | 57 | 46 |
| 100% | 103% | 105% | 108% | 110% | 109% | 106% | 99% | 90% | 79% | 66% | 54% | 43% | 34% | 27% | 21% | 16% | 12% | 10% | 8% |

Intensities in 180° c-plane

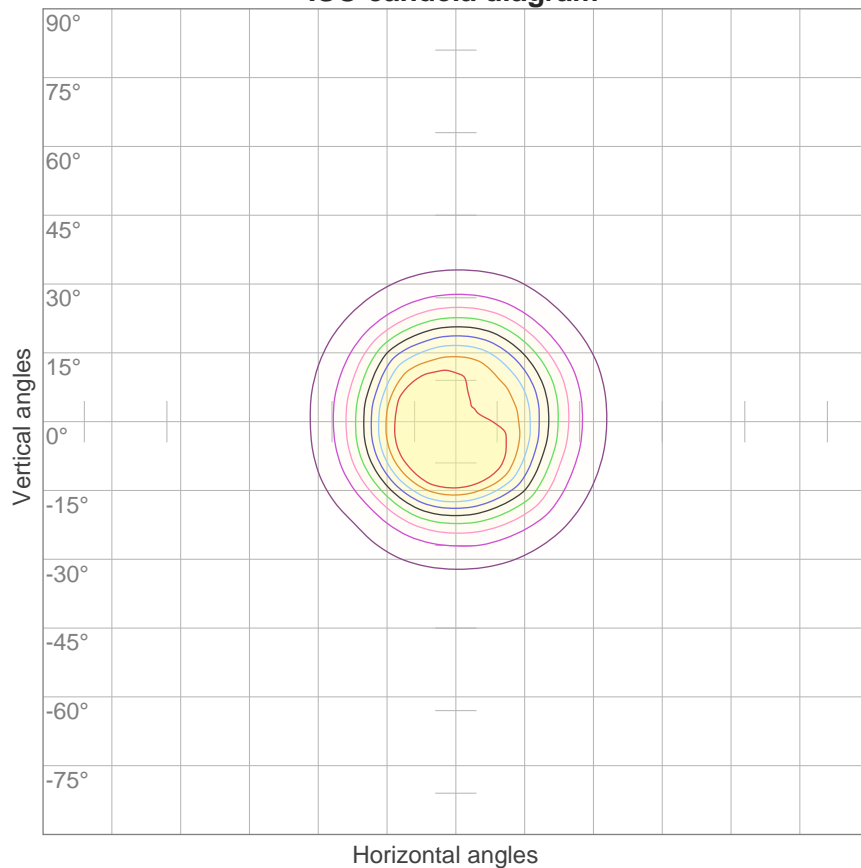
| 0° | 2° | 4° | 6° | 8° | 10° | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 585 | 605 | 624 | 636 | 637 | 621 | 590 | 546 | 494 | 433 | 367 | 303 | 243 | 190 | 147 | 112 | 87 | 68 | 54 | 44 |
| 100% | 103% | 107% | 109% | 109% | 106% | 101% | 93% | 84% | 74% | 63% | 52% | 42% | 33% | 25% | 19% | 15% | 12% | 9% | 8% |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 585 | 573 | 562 | 556 | 550 | 541 | 525 | 498 | 463 | 420 | 371 | 319 | 266 | 215 | 169 | 131 | 102 | 81 | 64 | 52 |
| 100% | 98% | 96% | 95% | 94% | 92% | 90% | 85% | 79% | 72% | 63% | 54% | 45% | 37% | 29% | 22% | 18% | 14% | 11% | 9% |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 44,1° | 71,2° | 103,3° | 96,8% | 91,6% |

ISO candela diagram



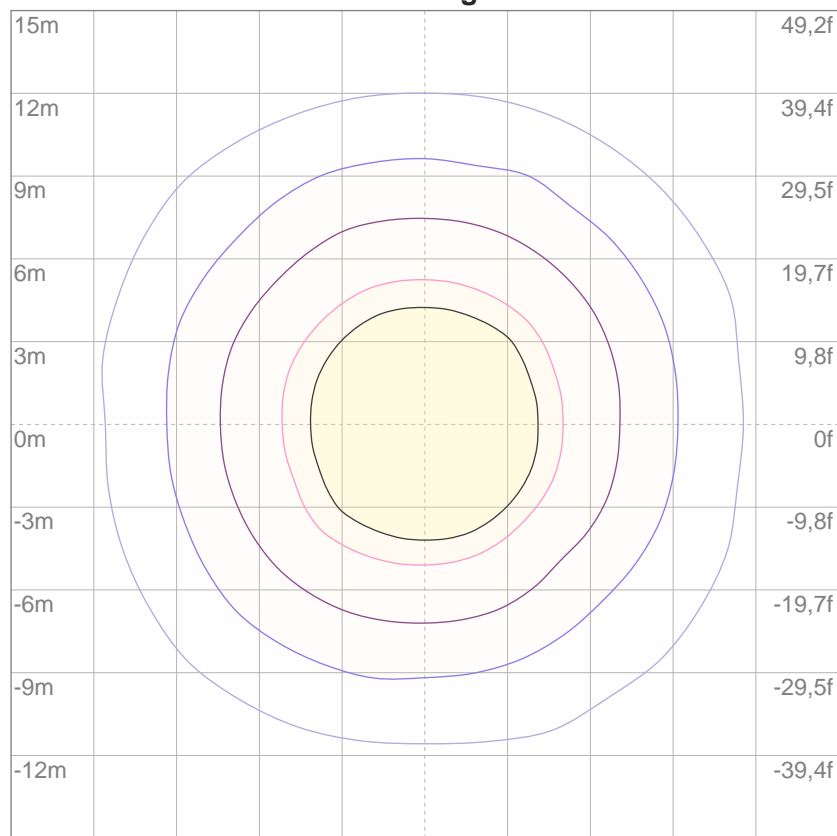
| | |
|-----|--------|
| 10% | 59 cd |
| 20% | 117 cd |
| 30% | 176 cd |
| 40% | 234 cd |
| 50% | 293 cd |
| 60% | 351 cd |
| 70% | 410 cd |
| 80% | 468 cd |
| 90% | 527 cd |

Conditions:

Number of c-planes: 16

Candela at center: 585 cd

ISO lux diagram



| | |
|-----|----------|
| 3% | 0,176 lx |
| 5% | 0,293 lx |
| 10% | 0,585 lx |
| 30% | 1,76 lx |
| 50% | 2,93 lx |

Conditions:

Number of c-planes: 16

Lux at center: 5,85 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 | 12,1 | 12,8 | 12,3 | 13,0 | 13,2 | 11,8 | 12,5 | 12,0 | 12,7 | 12,9 |
| | 3H | 12,6 | 13,3 | 12,9 | 13,6 | 13,8 | 12,3 | 13,0 | 12,6 | 13,3 | 13,5 |
| | 4H | 13,0 | 13,6 | 13,3 | 13,9 | 14,1 | 12,7 | 13,3 | 13,0 | 13,6 | 13,8 |
| | 6H | 13,2 | 13,8 | 13,6 | 14,1 | 14,4 | 13,0 | 13,6 | 13,3 | 13,9 | 14,2 |
| | 8H | 13,4 | 14,0 | 13,7 | 14,3 | 14,6 | 13,2 | 13,8 | 13,5 | 14,1 | 14,4 |
| | 12H | 13,5 | 14,1 | 13,9 | 14,4 | 14,7 | 13,3 | 13,9 | 13,7 | 14,2 | 14,5 |
| 4H | 2H | 12,3 | 12,9 | 12,6 | 13,2 | 13,4 | 12,0 | 12,6 | 12,3 | 12,9 | 13,1 |
| | 3H | 13,0 | 13,5 | 13,3 | 13,8 | 14,2 | 12,7 | 13,3 | 13,1 | 13,6 | 13,9 |
| | 4H | 13,4 | 13,9 | 13,8 | 14,3 | 14,6 | 13,2 | 13,7 | 13,6 | 14,0 | 14,3 |
| | 6H | 13,9 | 14,3 | 14,3 | 14,6 | 15,0 | 13,7 | 14,1 | 14,1 | 14,4 | 14,8 |
| | 8H | 14,1 | 14,5 | 14,5 | 14,9 | 15,3 | 13,9 | 14,3 | 14,3 | 14,7 | 15,1 |
| | 12H | 14,4 | 14,7 | 14,8 | 15,1 | 15,5 | 14,1 | 14,4 | 14,6 | 14,8 | 15,3 |
| 8H | 4H | 13,6 | 13,9 | 14,0 | 14,3 | 14,7 | 13,3 | 13,7 | 13,7 | 14,0 | 14,4 |
| | 6H | 14,1 | 14,4 | 14,6 | 14,8 | 15,3 | 13,9 | 14,2 | 14,4 | 14,6 | 15,1 |
| | 8H | 14,5 | 14,7 | 14,9 | 15,1 | 15,6 | 14,3 | 14,5 | 14,7 | 14,9 | 15,4 |
| | 12H | 14,8 | 15,0 | 15,3 | 15,5 | 16,0 | 14,6 | 14,8 | 15,1 | 15,2 | 15,7 |
| 12H | 4H | 13,6 | 13,9 | 14,0 | 14,3 | 14,7 | 13,3 | 13,6 | 13,7 | 14,0 | 14,4 |
| | 6H | 14,2 | 14,4 | 14,6 | 14,8 | 15,3 | 14,0 | 14,2 | 14,4 | 14,6 | 15,1 |
| | 8H | 14,6 | 14,7 | 15,0 | 15,2 | 15,7 | 14,4 | 14,5 | 14,8 | 15,0 | 15,5 |
| Variation of the observer position for the luminaire distance S | | | | | | | | | | | |
| S = 1,0H | | +1,3 / -0,8 | | | | | +1,2 / -0,8 | | | | |
| S = 1,5H | | +2,8 / -1,3 | | | | | +2,6 / -1,3 | | | | |
| S = 2,0H | | +4,3 / -1,8 | | | | | +4,1 / -1,7 | | | | |
| Standard table | | BK04 | | | | | BK04 | | | | |
| Correction summand | | -3,2 | | | | | -3,5 | | | | |
| Corrected glare indices referring to 392 lm total luminous flux | | | | | | | | | | | |

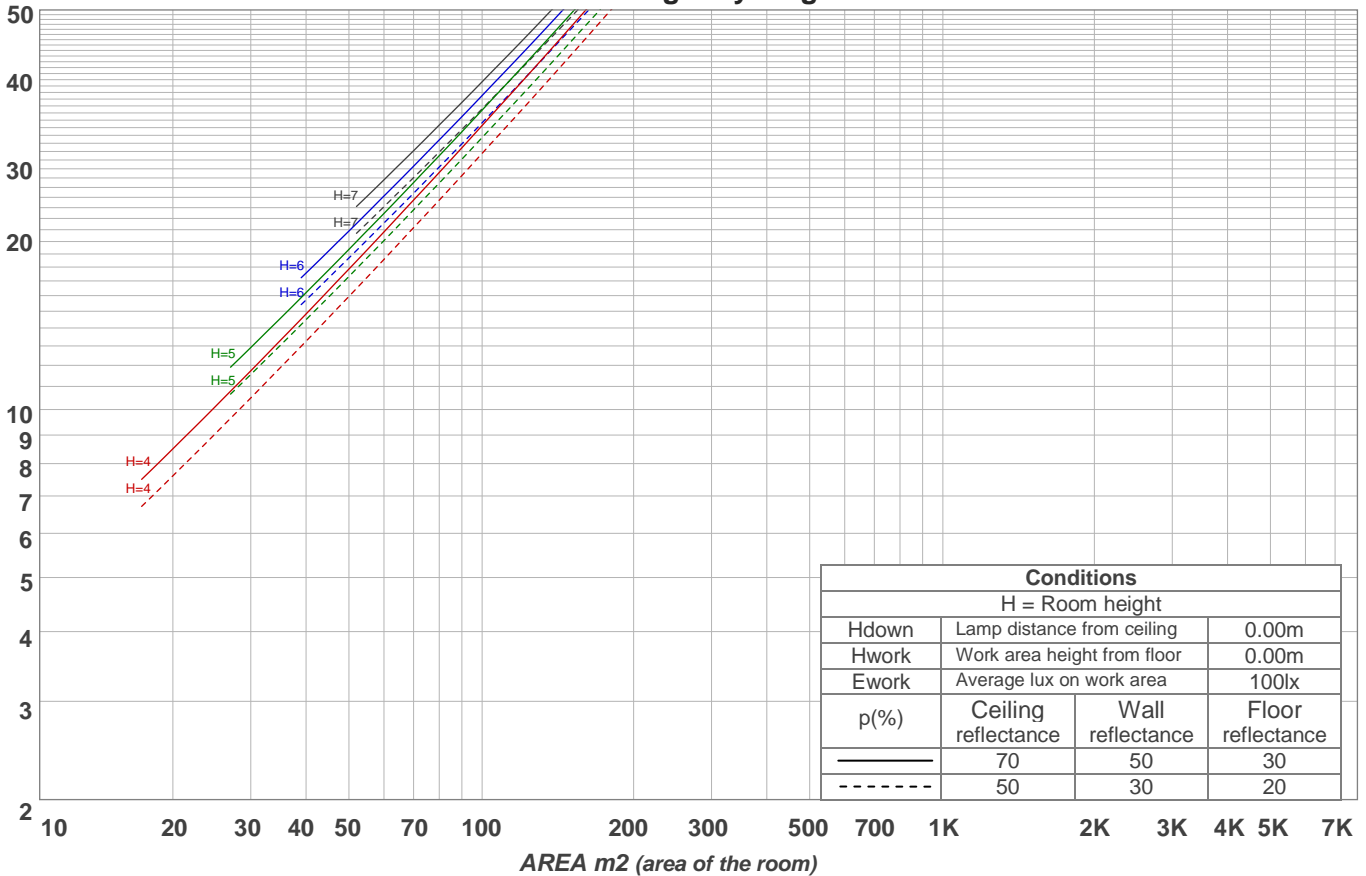
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

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 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 102 | 101 | 101 | 99 | 98 | 97 | 96 | 95 | 93 |
| 2 | 108 | 103 | 99 | 95 | 106 | 101 | 97 | 94 | 98 | 95 | 92 | 95 | 92 | 90 | 92 | 90 | 88 | 87 |
| 3 | 103 | 96 | 91 | 87 | 101 | 95 | 90 | 87 | 92 | 88 | 85 | 90 | 87 | 84 | 87 | 85 | 83 | 81 |
| 4 | 98 | 90 | 85 | 81 | 96 | 89 | 84 | 80 | 87 | 83 | 79 | 85 | 81 | 78 | 83 | 80 | 77 | 76 |
| 5 | 93 | 85 | 79 | 75 | 92 | 84 | 79 | 75 | 82 | 78 | 74 | 81 | 77 | 73 | 79 | 76 | 73 | 71 |
| 6 | 89 | 80 | 75 | 70 | 87 | 80 | 74 | 70 | 78 | 73 | 70 | 77 | 72 | 69 | 75 | 72 | 69 | 67 |
| 7 | 85 | 76 | 70 | 66 | 84 | 75 | 70 | 66 | 74 | 69 | 66 | 73 | 69 | 65 | 72 | 68 | 65 | 64 |
| 8 | 81 | 72 | 67 | 63 | 80 | 72 | 66 | 62 | 71 | 66 | 62 | 70 | 65 | 62 | 69 | 65 | 62 | 60 |
| 9 | 78 | 69 | 63 | 59 | 77 | 68 | 63 | 59 | 67 | 62 | 59 | 66 | 62 | 59 | 66 | 62 | 59 | 57 |
| 10 | 75 | 66 | 60 | 56 | 74 | 65 | 60 | 56 | 64 | 60 | 56 | 64 | 59 | 56 | 63 | 59 | 56 | 55 |

LAMPS (number of lamps)

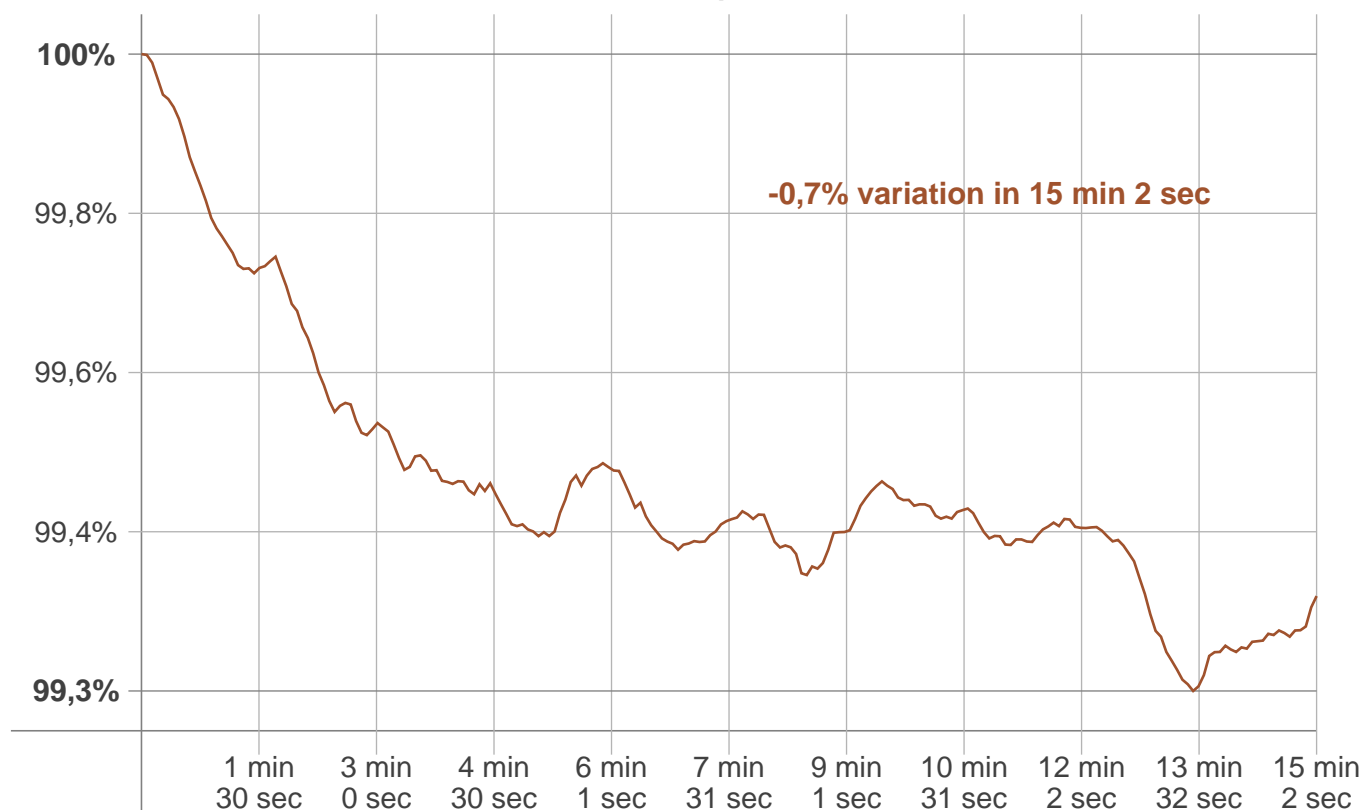
Luminaire budgetary diagram



Zonal Lumen Summary

| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| {LUM0-10} | 139 lm | 108 lm | 44,8 lm | 20,4 lm | 11,8 lm | 6,93 lm | 3,82 lm | 1,73 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0,041 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 | -0,7% |

Warmup conditions

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

Color temperature change

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

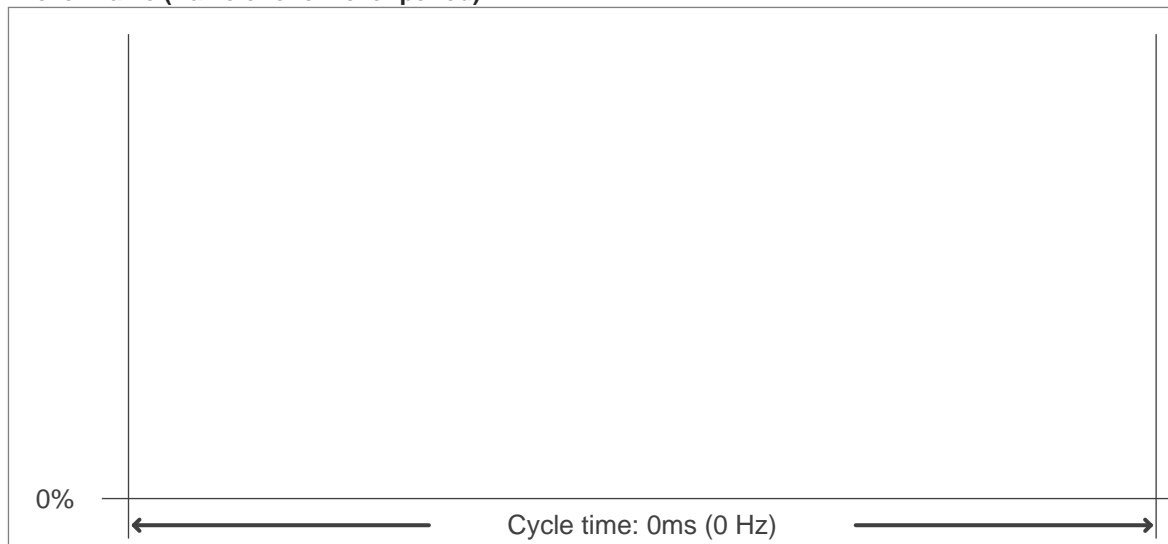
Output change

| | | |
|--------------|---------------|------------|
| Output start | Output change | Output end |
| 394 lm | -2 lm | 392 lm |

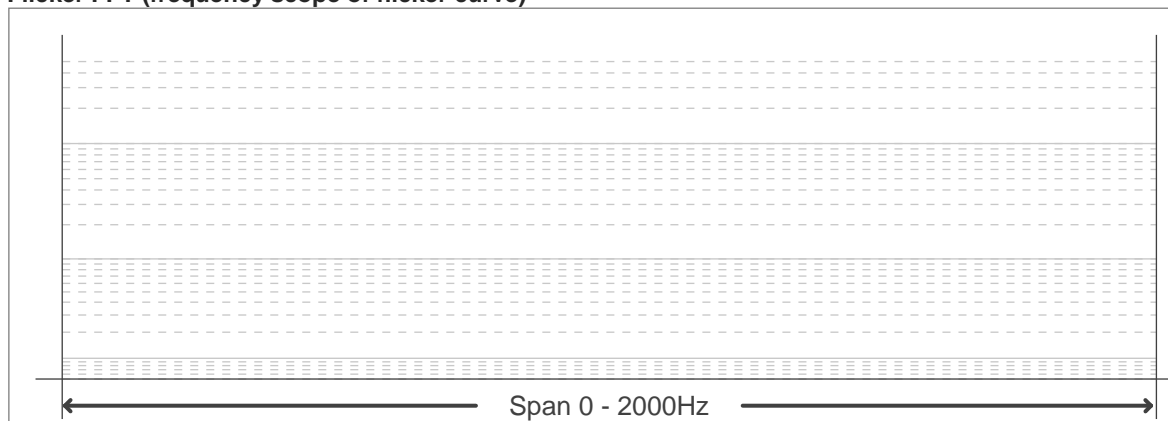
Flicker curve (complete sampled flicker signal)



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 |
|--------------|-----------------------|