

**Light efficiency:**

## 93 Lumen/Watt

**Light quality:**

**CRI: 0,0**

**Color temperature:**

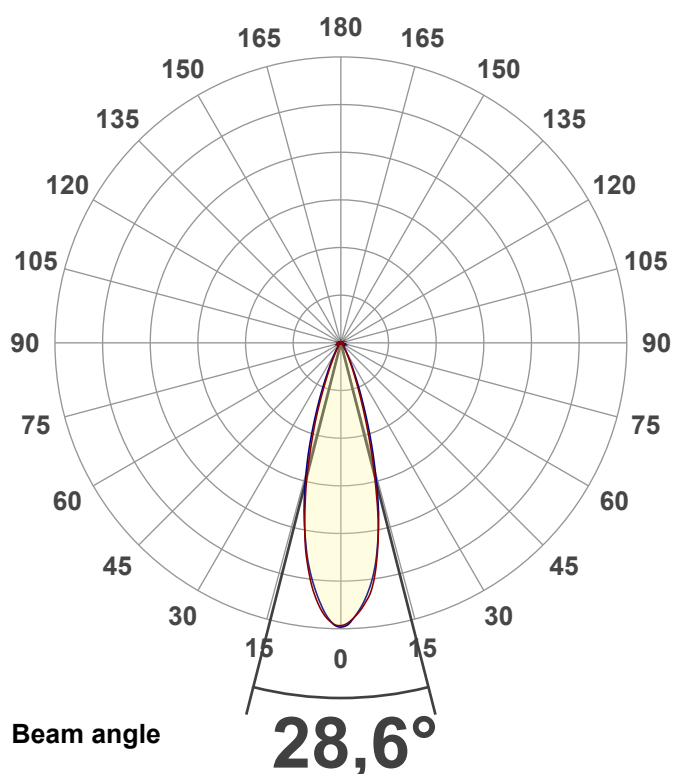
0 K

**Output: 427 lm**

**Peak: 1525 cd**

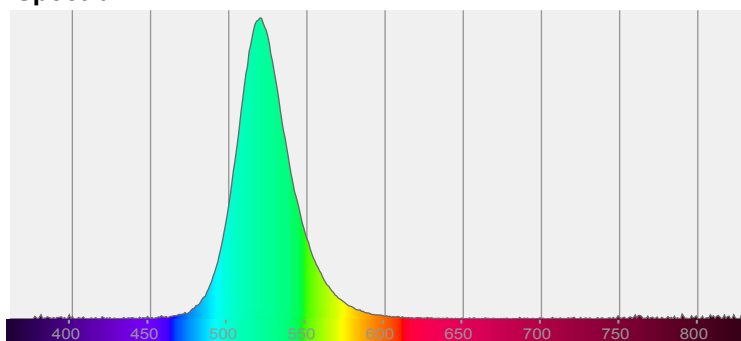
**Power: 4,6 W**

**PF: 1,0**

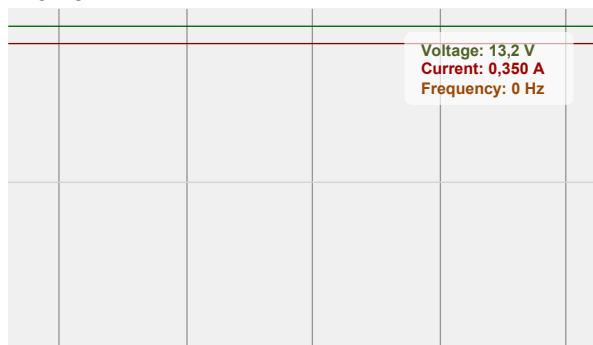


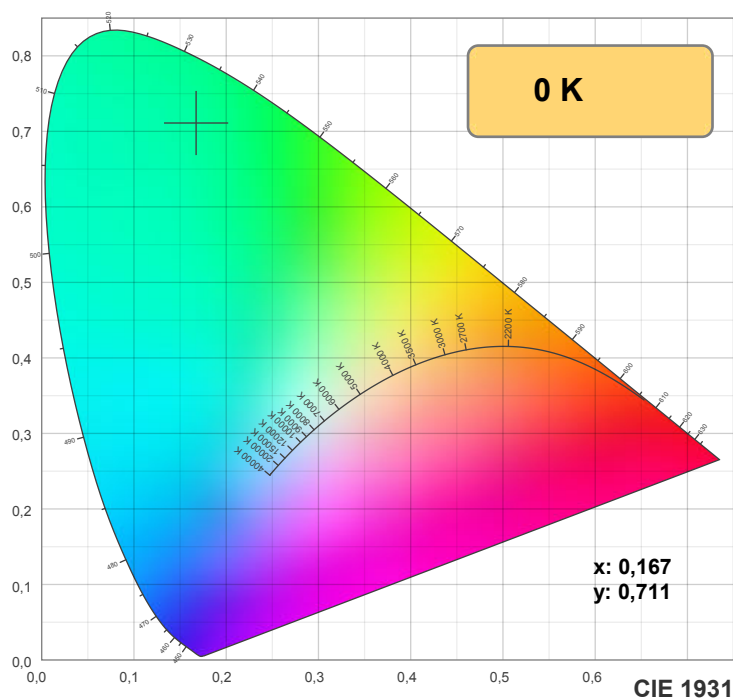
**CIE 1931**  
**x: 0,167**  
**y: 0,711**

## Spectra

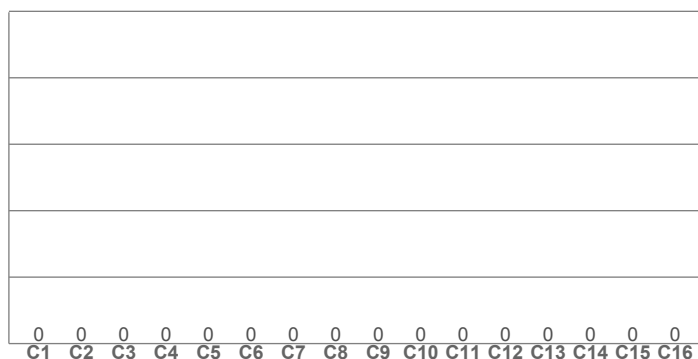


## Power





TM30: 0,0



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

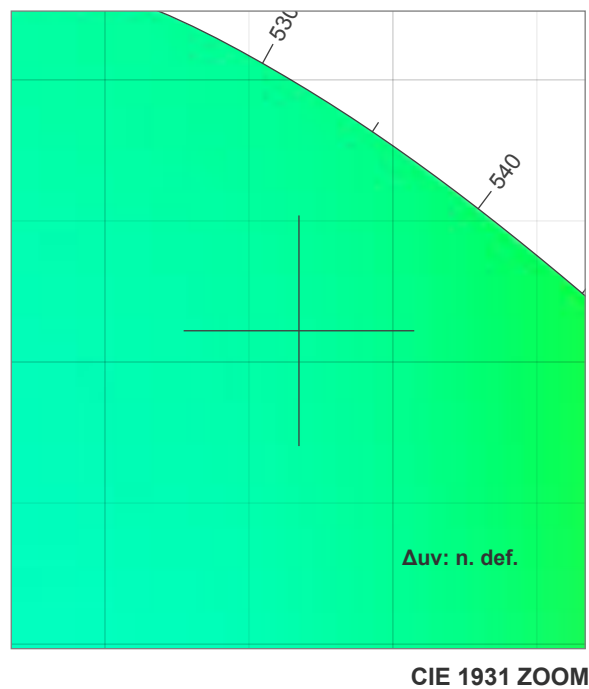
| R1  | R2  | R3  | R4  | R5  | R6  | R7  | R8  | R9  | R10 | R11 | R12 | R13 | R14 | R15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

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

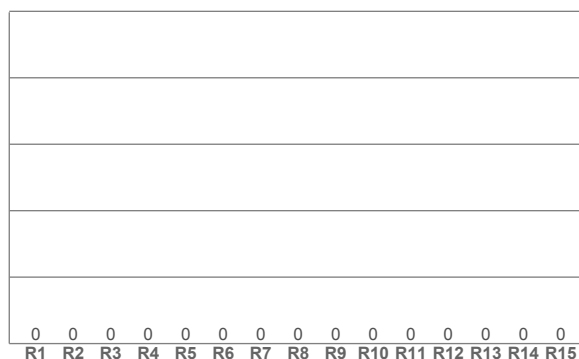
| C1  | C2  | C3  | C4  | C5  | C6  | C7  | C8  | C9  | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |

CQS Q values

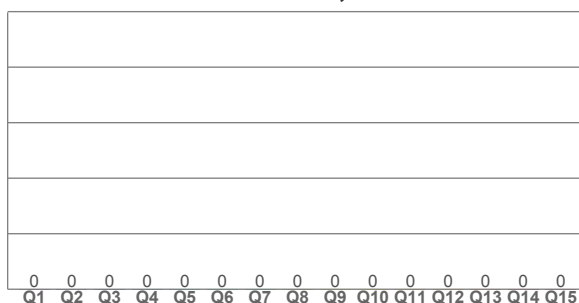
| Q1  | Q2  | Q3  | Q4  | Q5  | Q6  | Q7  | Q8  | Q9  | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |



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                 | 0,167                     | 0,711                     | 0,060            | 0,381            | n. def.                         |

## TM30 details

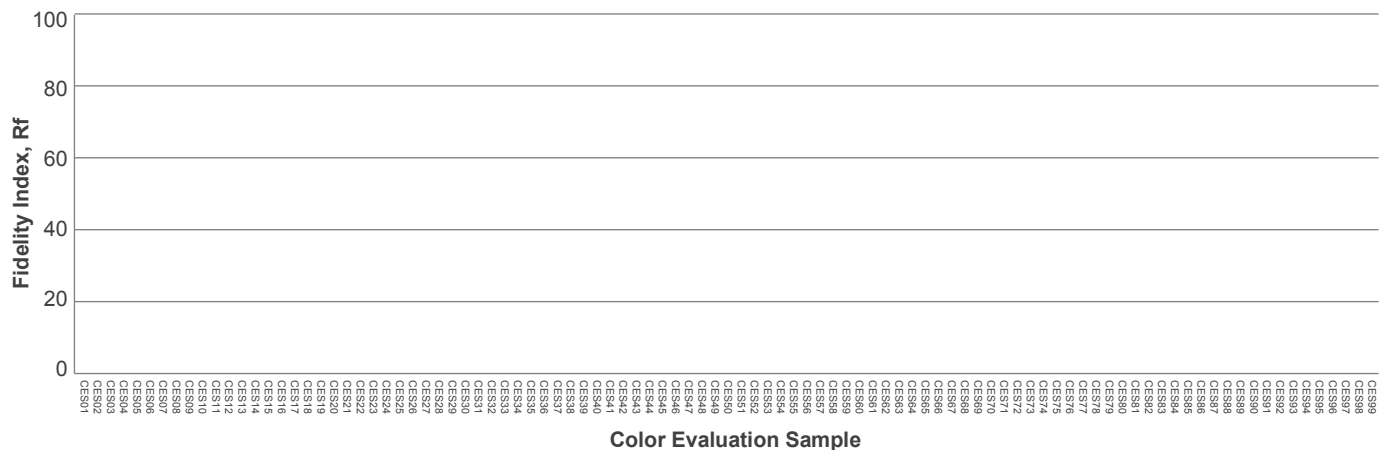
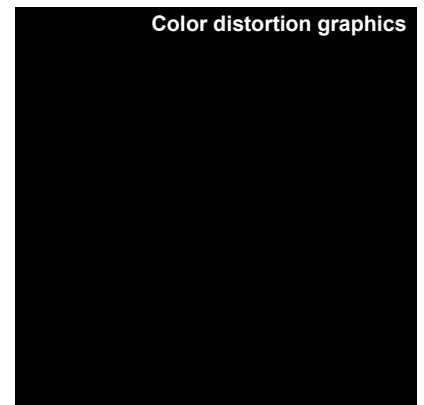
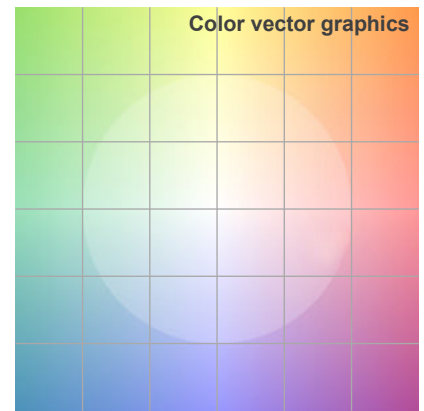
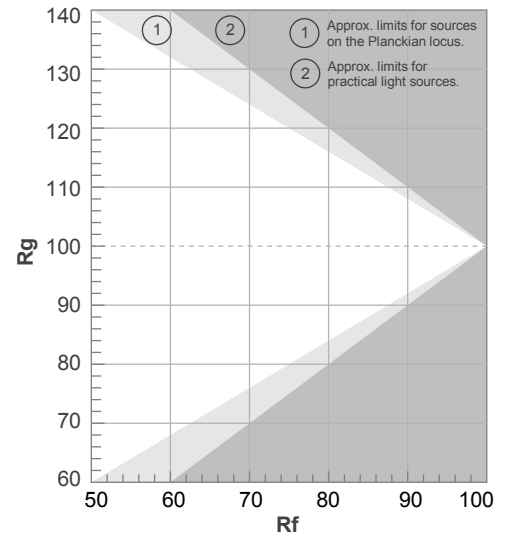
**Rf 0,0**

Fidelity index Rf

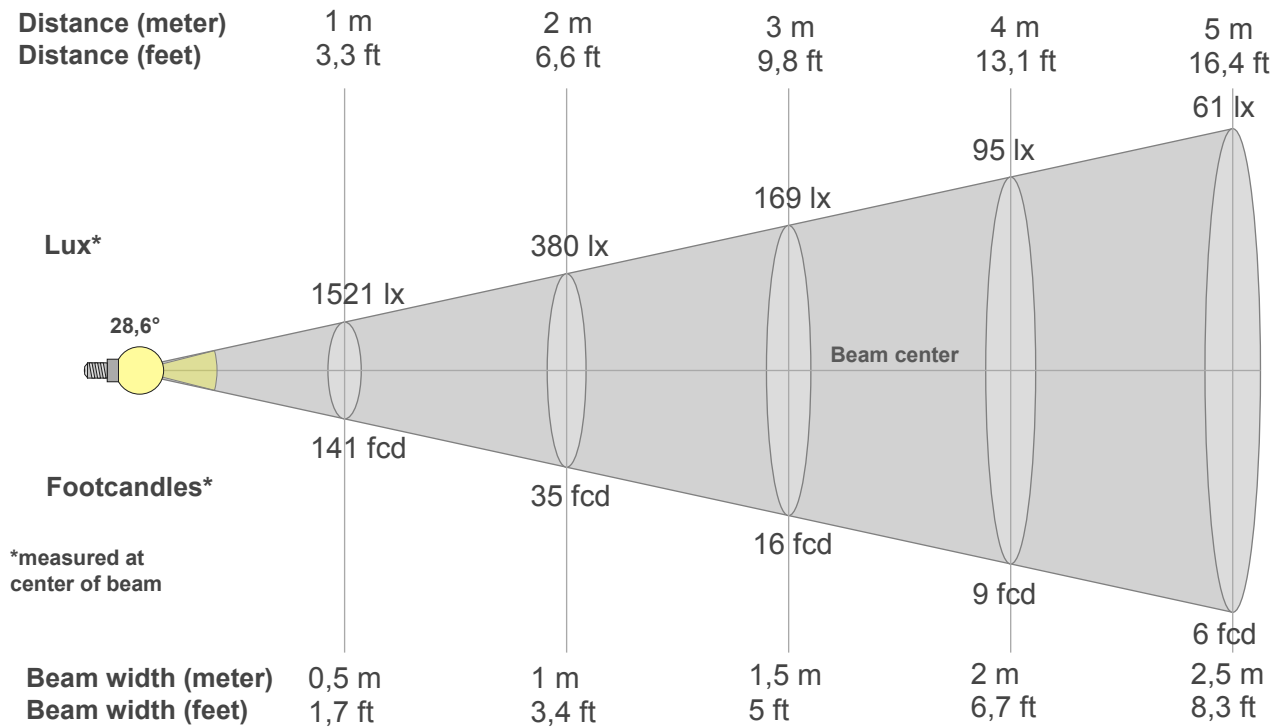
**Rg 0,0**

Gammut index Rg

| Hue Bin | R <sub>f</sub> | 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 |
| 1521lx   | 380lx   | 169lx   | 95lx   | 61lx   | 42lx   | 31lx   | 24lx   | 19lx   | 15lx   | 13lx   | 11lx   | 9lx    | 8lx    | 7lx    | 6lx    | 5lx    | 5lx    | 4lx    | 4lx    |
| 141,3fcd | 35,3fcd | 15,7fcd | 8,8fcd | 5,7fcd | 3,9fcd | 2,9fcd | 2,2fcd | 1,7fcd | 1,4fcd | 1,2fcd | 1fcd   | 0,8fcd | 0,7fcd | 0,6fcd | 0,6fcd | 0,5fcd | 0,4fcd | 0,4fcd | 0,4fcd |

### 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° |
|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1521 | 1492 | 1444 | 1379 | 1280 | 1133 | 960 | 760 | 579 | 418 | 298 | 209 | 152 | 108 | 79  | 58  | 43  | 33  | 26  | 20  |
| 100% | 98%  | 95%  | 91%  | 84%  | 75%  | 63% | 50% | 38% | 28% | 20% | 14% | 10% | 7%  | 5%  | 4%  | 3%  | 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° |
|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1521 | 1498 | 1434 | 1355 | 1254 | 1123 | 974 | 802 | 632 | 481 | 352 | 255 | 181 | 129 | 91  | 67  | 50  | 38  | 29  | 23  |
| 100% | 99%  | 94%  | 89%  | 82%  | 74%  | 64% | 53% | 42% | 32% | 23% | 17% | 12% | 8%  | 6%  | 4%  | 3%  | 2%  | 2%  | 2%  |

### Intensities in 180° c-plane

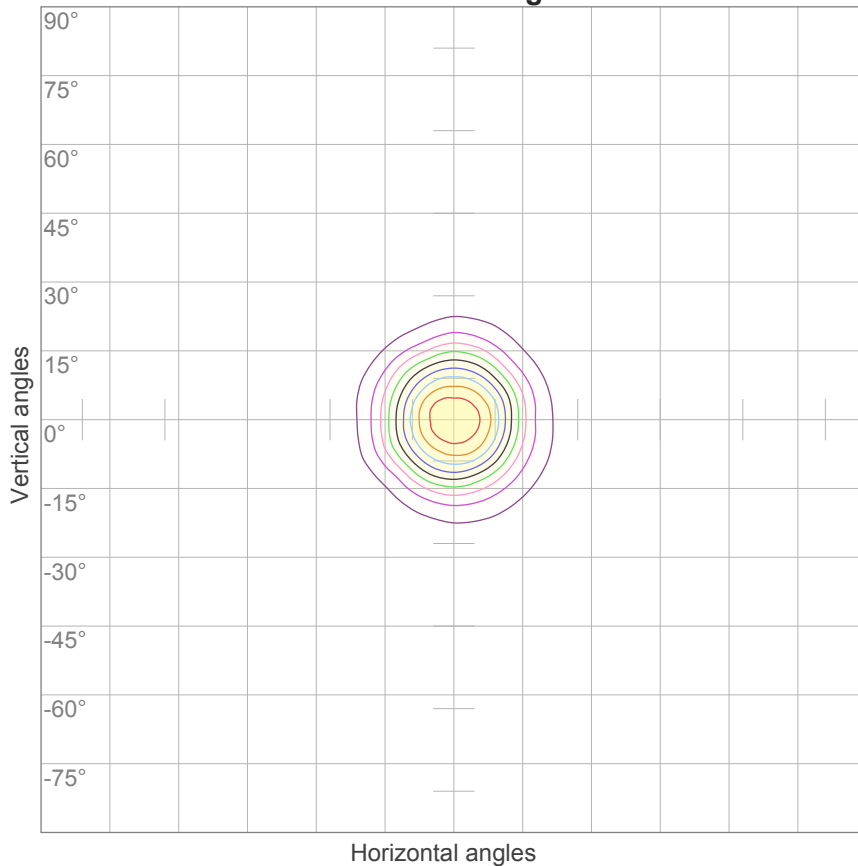
| 0°   | 2°   | 4°   | 6°   | 8°   | 10°  | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1521 | 1499 | 1445 | 1357 | 1239 | 1099 | 929 | 760 | 589 | 440 | 308 | 207 | 140 | 95  | 66  | 47  | 36  | 27  | 22  | 17  |
| 100% | 99%  | 95%  | 89%  | 81%  | 72%  | 61% | 50% | 39% | 29% | 20% | 14% | 9%  | 6%  | 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° |
|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1521 | 1497 | 1424 | 1328 | 1218 | 1086 | 947 | 796 | 646 | 497 | 366 | 260 | 181 | 129 | 94  | 71  | 55  | 42  | 34  | 27  |
| 100% | 98%  | 94%  | 87%  | 80%  | 71%  | 62% | 52% | 42% | 33% | 24% | 17% | 12% | 8%  | 6%  | 5%  | 4%  | 3%  | 2%  | 2%  |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 28,6°          | 48,6°           | 66,5°             | 97,6%                        | 95,1%                       |

ISO candela diagram



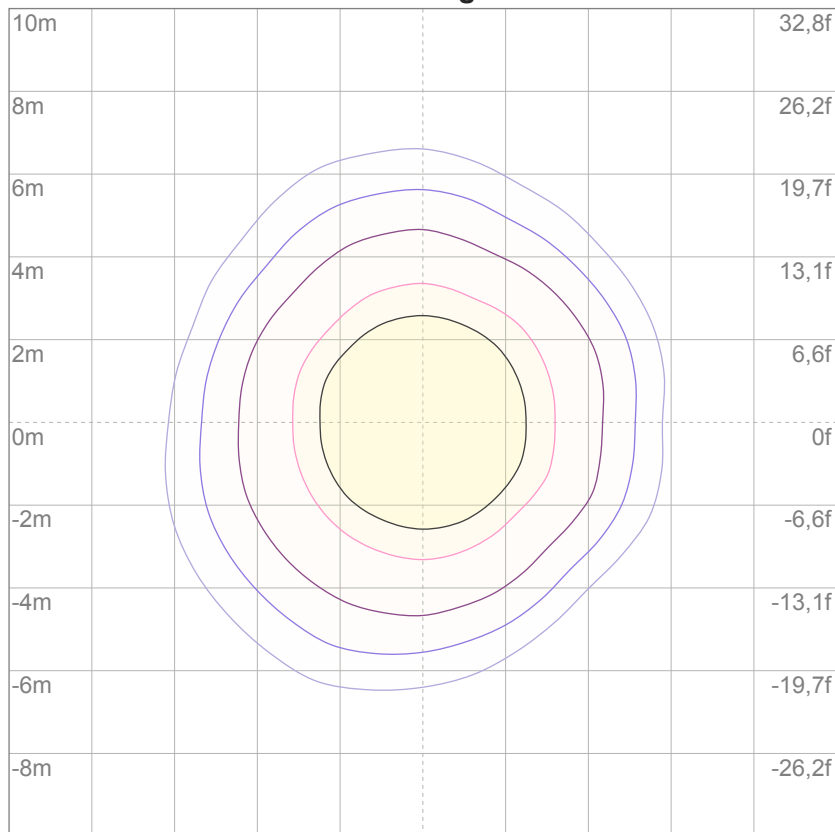
|     |         |
|-----|---------|
| 10% | 152 cd  |
| 20% | 304 cd  |
| 30% | 456 cd  |
| 40% | 608 cd  |
| 50% | 760 cd  |
| 60% | 912 cd  |
| 70% | 1064 cd |
| 80% | 1216 cd |
| 90% | 1368 cd |

Conditions:

Number of c-planes: 16

Candela at center: 1521 cd

ISO lux diagram



|     |          |
|-----|----------|
| 3%  | 0,456 lx |
| 5%  | 0,760 lx |
| 10% | 1,52 lx  |
| 30% | 4,56 lx  |
| 50% | 7,60 lx  |

Conditions:

Number of c-planes: 16

Lux at center: 15,2 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<br>X      Y   |     | Viewing direction at right angles to<br>lamp axis |      |      |      |      | Viewing direction parallel to lamp axis |      |      |      |      |
| 2H  | 2H  | 7,0   | 7,7  | 7,3  | 7,9  | 8,1  | 7,4                                     | 8,1  | 7,7  | 8,3  | 8,5  |
|   | 3H  | 8,3   | 9,0  | 8,6  | 9,2  | 9,4  | 8,6                                     | 9,3  | 8,9  | 9,5  | 9,7  |
|   | 4H  | 9,0   | 9,6  | 9,3  | 9,8  | 10,1 | 9,3                                     | 9,9  | 9,6  | 10,2 | 10,4 |
|   | 6H  | 9,6   | 10,2 | 9,9  | 10,4 | 10,7 | 9,9                                     | 10,5 | 10,2 | 10,7 | 11,0 |
|   | 8H  | 10,0  | 10,5 | 10,3 | 10,8 | 11,1 | 10,2                                    | 10,7 | 10,5 | 11,0 | 11,3 |
|   | 12H | 10,2  | 10,7 | 10,5 | 11,0 | 11,3 | 10,5                                    | 11,0 | 10,9 | 11,3 | 11,6 |
| 4H  | 2H  | 7,5   | 8,2  | 7,9  | 8,4  | 8,7  | 7,8                                     | 8,5  | 8,2  | 8,7  | 9,0  |
|   | 3H  | 9,0   | 9,5  | 9,3  | 9,8  | 10,1 | 9,3                                     | 9,8  | 9,6  | 10,1 | 10,4 |
|   | 4H  | 9,8   | 10,2 | 10,1 | 10,5 | 10,9 | 10,1                                    | 10,6 | 10,5 | 10,9 | 11,3 |
|   | 6H  | 10,5  | 10,9 | 10,9 | 11,3 | 11,7 | 10,9                                    | 11,3 | 11,3 | 11,6 | 12,0 |
|   | 8H  | 11,0  | 11,3 | 11,4 | 11,7 | 12,1 | 11,2                                    | 11,6 | 11,7 | 12,0 | 12,4 |
|   | 12H | 11,3  | 11,5 | 11,7 | 11,9 | 12,4 | 11,7                                    | 12,0 | 12,2 | 12,4 | 12,8 |
| 8H  | 4H  | 10,1  | 10,4 | 10,5 | 10,8 | 11,2 | 10,4                                    | 10,8 | 10,8 | 11,1 | 11,5 |
|   | 6H  | 11,0  | 11,3 | 11,5 | 11,7 | 12,2 | 11,4                                    | 11,6 | 11,8 | 12,0 | 12,5 |
|   | 8H  | 11,6  | 11,8 | 12,1 | 12,2 | 12,7 | 11,8                                    | 12,0 | 12,3 | 12,5 | 13,0 |
|   | 12H | 11,9  | 12,1 | 12,4 | 12,5 | 13,0 | 12,5                                    | 12,7 | 13,0 | 13,1 | 13,6 |
| 12H   | 4H  | 10,1  | 10,4 | 10,6 | 10,8 | 11,2 | 10,5                                    | 10,8 | 10,9 | 11,2 | 11,6 |
|   | 6H  | 11,2  | 11,4 | 11,6 | 11,8 | 12,3 | 11,5                                    | 11,7 | 12,0 | 12,1 | 12,6 |
|   | 8H  | 11,8  | 11,9 | 12,3 | 12,4 | 12,9 | 12,0                                    | 12,2 | 12,5 | 12,7 | 13,2 |
| Variation of the observer position for the luminaire distance S |     |   |      |      |      |      |   |      |      |      |      |
| S = 1,0H  |     | +0,5 / -0,2                                       |      |      |      |      | +0,7 / -0,4                             |      |      |      |      |
| S = 1,5H  |     | +1,2 / -0,5                                       |      |      |      |      | +1,6 / -0,7                             |      |      |      |      |
| S = 2,0H  |     | +2,1 / -0,7                                       |      |      |      |      | +2,7 / -0,9                             |      |      |      |      |
| Standard table  |     | BK06  |      |      |      |      | BK06                                    |      |      |      |      |
| Correction<br>summand   |     | -6,0  |      |      |      |      | -5,7                                    |      |      |      |      |
| Corrected glare indices referring to 427 lm total luminous flux |     |   |      |      |      |      |   |      |      |      |      |

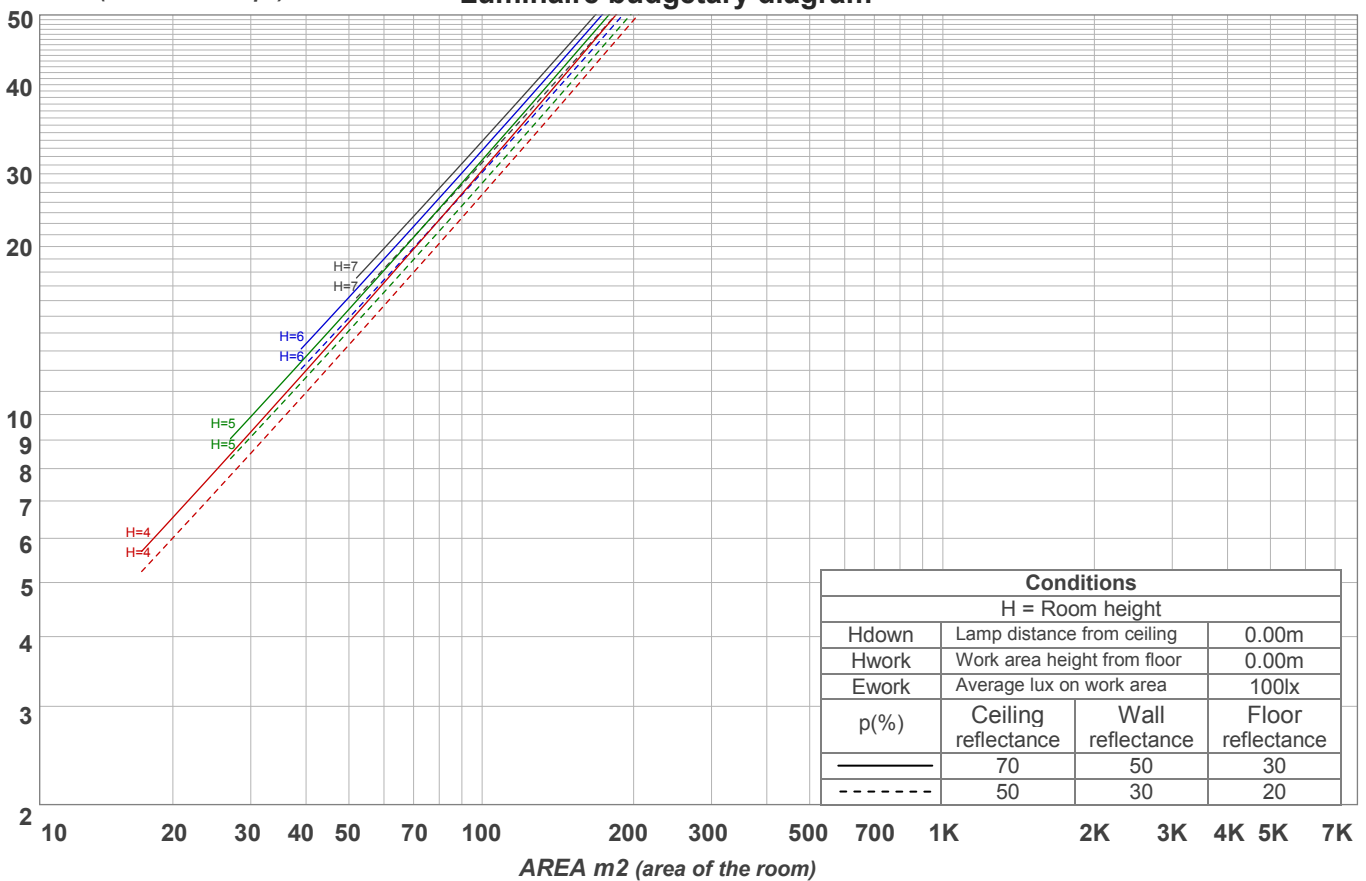
UGR data could be incorrect as lamp output is not symmetrical. Goto Edit->Photometric->Corrections and select Correct asymmetry.

## 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                   | 114  | 112 | 110 | 108 | 112 | 110 | 108 | 106 | 106 | 104 | 103 | 102 | 101 | 100 | 99  | 98  | 97  | 95  |
| 2                   | 110  | 106 | 102 | 99  | 108 | 104 | 101 | 98  | 101 | 98  | 96  | 98  | 96  | 94  | 95  | 94  | 92  | 91  |
| 3                   | 106  | 101 | 96  | 93  | 104 | 99  | 95  | 92  | 97  | 94  | 91  | 94  | 92  | 90  | 92  | 90  | 88  | 87  |
| 4                   | 102  | 96  | 91  | 88  | 100 | 95  | 91  | 88  | 93  | 89  | 87  | 91  | 88  | 86  | 89  | 87  | 85  | 83  |
| 5                   | 99   | 92  | 87  | 84  | 97  | 91  | 87  | 83  | 89  | 86  | 83  | 88  | 85  | 82  | 86  | 84  | 81  | 80  |
| 6                   | 95   | 88  | 84  | 80  | 94  | 88  | 83  | 80  | 86  | 82  | 79  | 85  | 82  | 79  | 84  | 81  | 78  | 77  |
| 7                   | 92   | 85  | 80  | 77  | 91  | 84  | 80  | 77  | 83  | 79  | 76  | 82  | 79  | 76  | 81  | 78  | 76  | 75  |
| 8                   | 89   | 82  | 77  | 74  | 88  | 82  | 77  | 74  | 81  | 77  | 74  | 80  | 76  | 74  | 79  | 76  | 73  | 72  |
| 9                   | 87   | 79  | 75  | 72  | 86  | 79  | 75  | 72  | 78  | 74  | 71  | 77  | 74  | 71  | 77  | 73  | 71  | 70  |
| 10                  | 84   | 77  | 72  | 69  | 83  | 76  | 72  | 69  | 76  | 72  | 69  | 75  | 71  | 69  | 74  | 71  | 69  | 68  |

LAMPS (number of lamps)

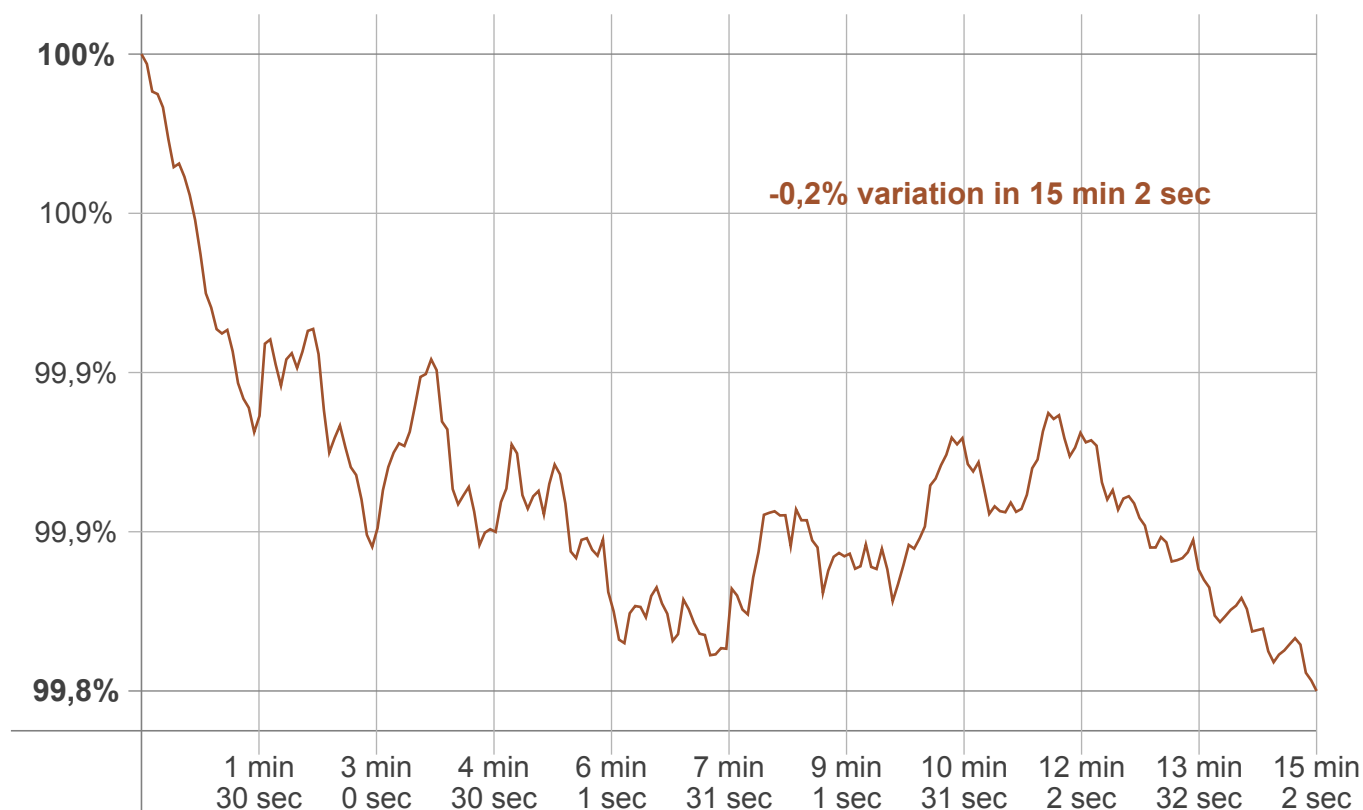
## Luminaire budgetary diagram



## Zonal Lumen Summary

| 0°-10°    | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| {LUM0-10} | 188 lm    | 67,7 lm   | 20,5 lm   | 9,45 lm   | 6,47 lm   | 5,01 lm   | 3,31 lm   | 1,54 lm   |
| 90°-100°  | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0,468 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 | -0,2%        |

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 |
| 427 lm       | lm            | 427 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 |
|--------------|-----------------------|