

**Código**

**K201-L9-3K**

**Descripción**

Luminaria tipo bala, diseñada con módulo de LED. Empotrada al techo por medio de sujetadores ubicados en los laterales. Compuesta con un disipador en aluminio y un difusor en acrílico opal.




**Materiales y acabado**

Sujetadores y resortes en hierro con acabado galvanizado. Cuerpo y aro en aluminio inyectado, con acabado en pintura poliéster electrostática en polvo a prueba de radiación UV.

**Color**

Blanco Brillante.

**Características técnicas**

|                |  |   |   |              |
|----------------|--|---|---|--------------|
| <b>LED</b>     |  93° |  25,000h | <b>IP 20</b>  | <b>IK 04</b> |
| <b>PF 0,63</b> | <b>°C 0-55</b>   | <b>V 120-277</b>  |  |              |

**Fuente de luz**

Bala con módulo de LED.

| Potencia Nominal | CRI | K    | Lm / W | Lm de Salida |
|------------------|-----|------|--------|--------------|
| 9W               | >80 | 3000 | 62     | 587          |

.....  
*Opción fuente regulable 1-10V o DALI.*

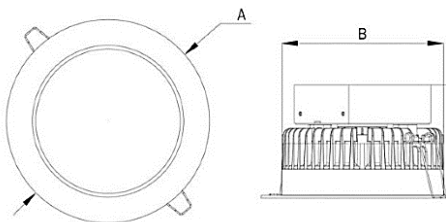
**Características de fuente de luz**

- Color temperatura disponible 3000K (cálido).
- Potencia de Salida: 9,4W.



**Dimensiones (mm)**

**A:** Ø140  
**B:** Ø115

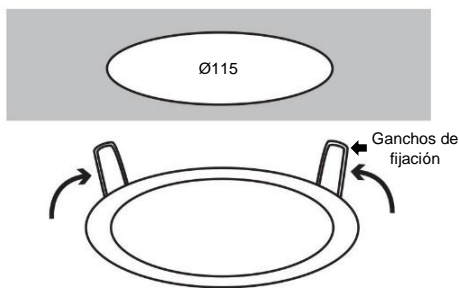


## Instalación

Se debe tener en cuenta la alimentación de la luminaria, para ubicarla.

1. Realizar una perforación en el techo (drywall, madera), en donde desea ubicar la luminaria con un diámetro de Ø115 mm.

2. Sujetar los ganchos de fijación, ubicados en los laterales de la luminaria. Para insertar está en la perforación previamente realizada.



3. Soltar los ganchos una vez que se encuentre la luminaria dentro de la perforación del techo. Asegurarse que la luminaria quede ajustada en el techo.

## Mantenimiento de las luminarias

Es esencial llevar a cabo periódicamente inspecciones y mantenimiento a las luminarias instaladas, ya que estas reciben influencia de las condiciones de operación y del medio donde se ubican.

### 1. Mantenimiento correctivo

El mantenimiento correctivo de las luminarias consiste en localizar, reparar y adecuar las instalaciones para que funcionen el máximo número de horas posible, con el desempeño para el que fueron diseñadas.

Las actividades que componen el mantenimiento correctivo son:

- Localización y reparación de averías
- Adecuación de instalaciones

Para la ejecución del mantenimiento correctivo es importante tener en cuenta los siguientes aspectos:

- Si se genera algún inconveniente en la regleta LED por favor comunicarse con la empresa.
- Revisar el encendido, apagado y el correcto funcionamiento de la luminaria.
- Limpiar las regletas LED y el conjunto óptico de las luminarias con aire comprimido. Para manipular la luminaria se recomienda utilizar guantes quirúrgicos.

### 2. Mantenimiento preventivo

Dentro de las técnicas de diagnóstico se deben considerar las mediciones eléctricas en diferentes puntos de la red, así como la medición de parámetros eléctricos de operación de las luminarias y sus componentes.

### 3. Mantenimiento de las instalaciones eléctricas de las luminarias

La persona encargada de la operación y el mantenimiento de las instalaciones eléctricas de las luminarias será responsable de mantenerlas en condiciones seguras, por lo tanto deben garantizar que se cumplan las disposiciones del reglamento que establece los requisitos que deben cumplir los sistemas de alumbrado y verificar que estas conexiones no presenten ningún riesgo para la salud o la vida de las personas, animales o el medio ambiente.

Light efficiency:



Light quality:



Color temperature:



Output: 587 lm

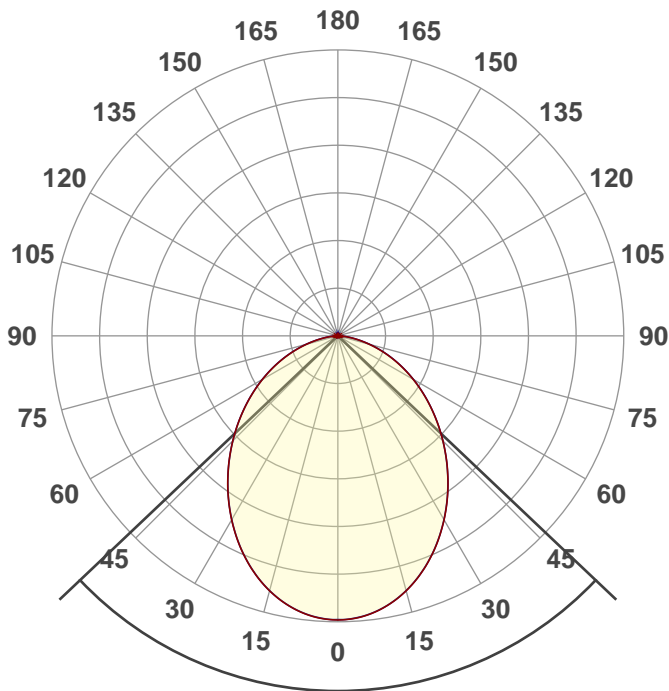
Peak: 257 cd

Power: 9,4 W

PF: 0,63



Product name:  
E0104-K201-L9-3K



Beam angle  
**93,1°**



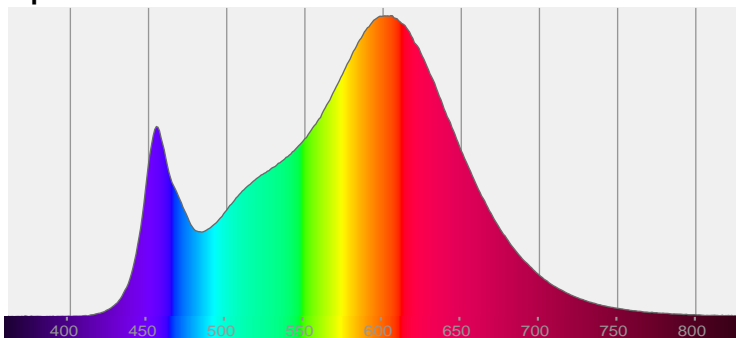
CIE 1931  
x: 0,425  
y: 0,393

THD Values:

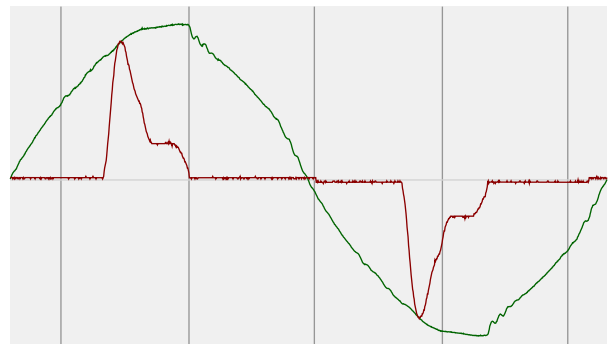
Voltage: 3,45%

Current: 116,68%

Spectra

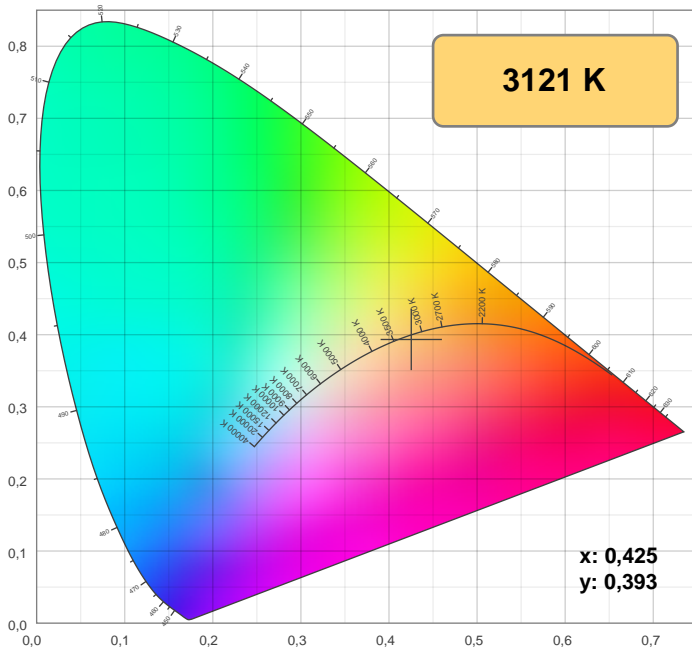


Power



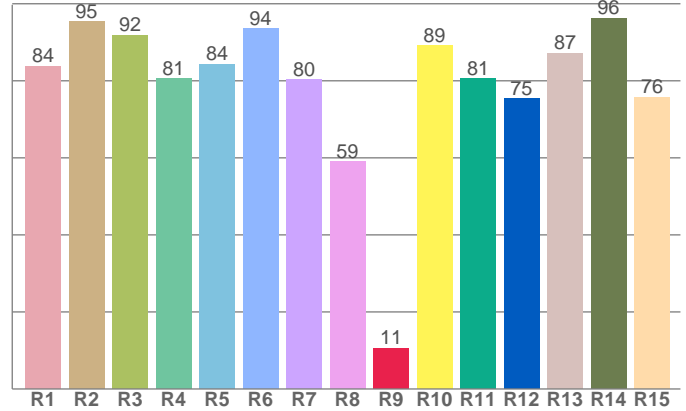
Voltage: 116 V  
Current: 0,130 A  
Frequency: 60 Hz

## Color details



CIE 1931

CRI: 83,6 (R1-R8)

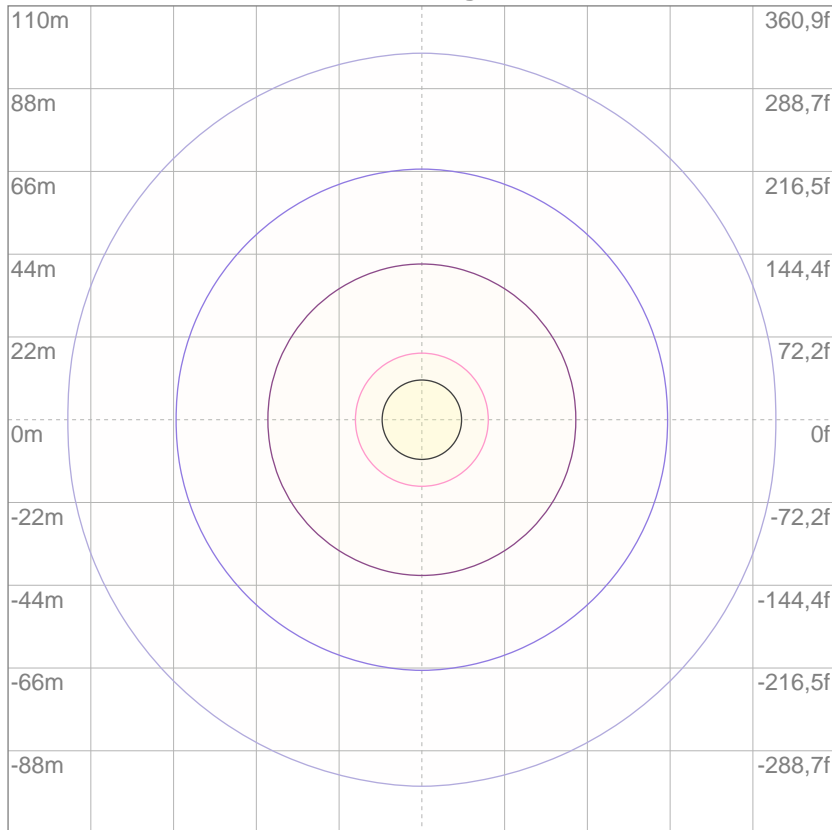


CRI R values, only R1-R8 are used to calculate final CRI value

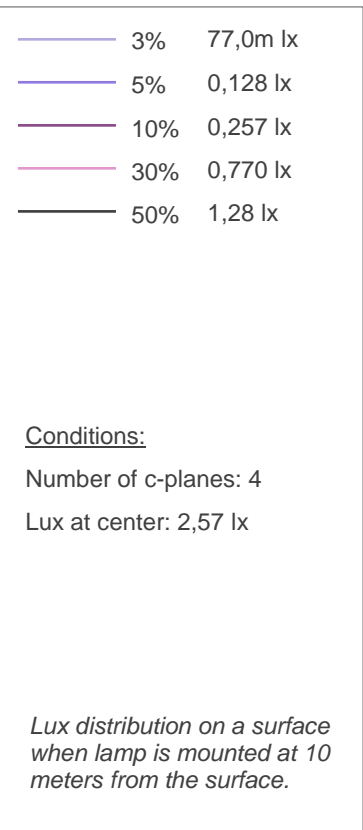
| R1   | R2   | R3   | R4   | R5   | R6   | R7   | R8   | 9    | R10  | R11  | R12  | R13  | R14  | R15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 83,7 | 95,3 | 91,8 | 80,6 | 84,4 | 93,6 | 80,3 | 59,0 | 10,6 | 89,1 | 80,6 | 75,4 | 87,2 | 96,2 | 75,8 |

## ISO Diagrams

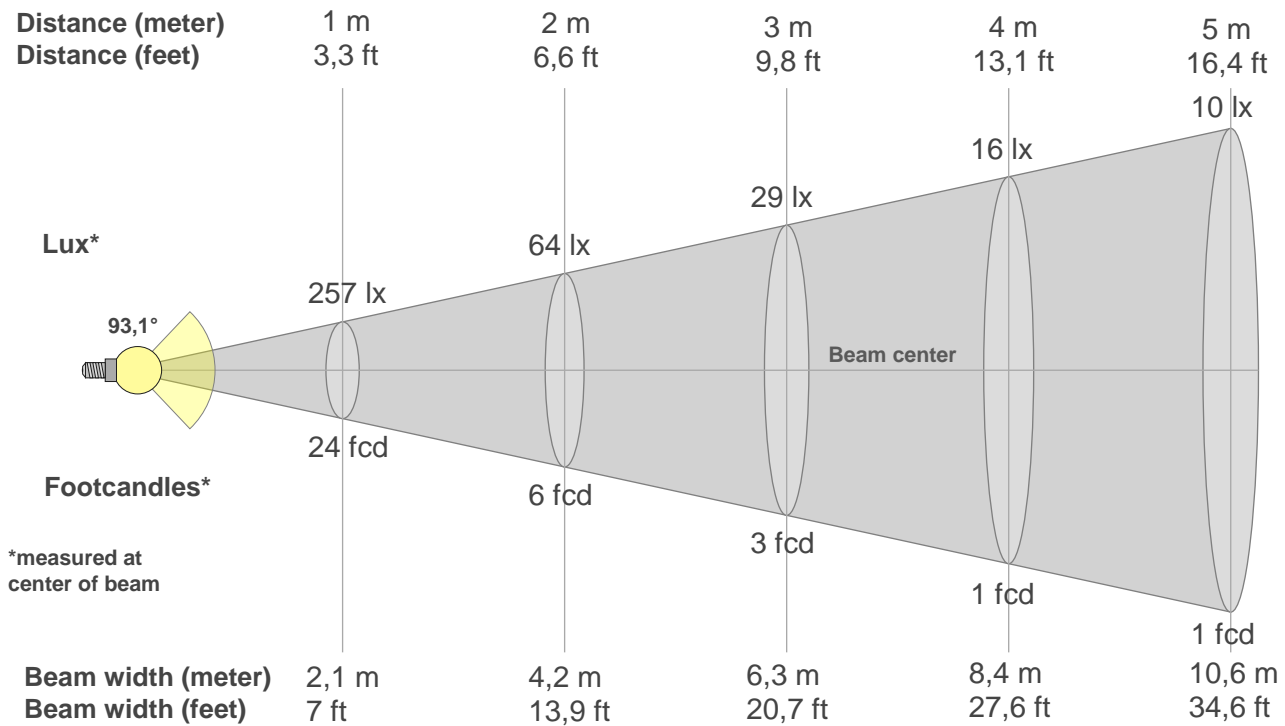
### ISO lux diagram



Mounting height: 10 meters (33 f)



## 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 |
| 257lx   | 64lx  | 29lx   | 16lx   | 10lx   | 7lx    | 5lx    | 4lx    | 3lx    | 3lx    | 2lx    | 2lx    | 2lx    | 1lx    | 1lx    | 1lx    | 1lx    | 1lx    | 1lx    | 1lx    |
| 23,8fcd | 6fcd  | 2,6fcd | 1,5fcd | 1fcd   | 0,7fcd | 0,5fcd | 0,4fcd | 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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 257  | 255 | 249 | 239 | 225 | 210 | 192 | 173 | 154 | 134 | 115 | 97  | 79  | 61  | 45  | 29  | 16  | 6   | 1   | 0   |
| 100% | 99% | 97% | 93% | 88% | 82% | 75% | 67% | 60% | 52% | 45% | 38% | 31% | 24% | 17% | 11% | 6%  | 2%  | 0%  | 0%  |

### 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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 257  | 255 | 248 | 238 | 225 | 210 | 192 | 173 | 154 | 134 | 115 | 97  | 79  | 62  | 45  | 30  | 16  | 6   | 1   | 0   |
| 100% | 99% | 97% | 93% | 88% | 82% | 75% | 67% | 60% | 52% | 45% | 38% | 31% | 24% | 18% | 12% | 6%  | 2%  | 0%  | 0%  |

### 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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 257  | 255 | 249 | 239 | 225 | 210 | 192 | 173 | 154 | 134 | 115 | 97  | 79  | 61  | 45  | 29  | 16  | 6   | 1   | 0   |
| 100% | 99% | 97% | 93% | 88% | 82% | 75% | 67% | 60% | 52% | 45% | 38% | 31% | 24% | 17% | 11% | 6%  | 2%  | 0%  | 0%  |

### 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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 257  | 255 | 248 | 238 | 225 | 210 | 192 | 173 | 154 | 134 | 115 | 97  | 79  | 62  | 45  | 30  | 16  | 6   | 1   | 0   |
| 100% | 99% | 97% | 93% | 88% | 82% | 75% | 67% | 60% | 52% | 45% | 38% | 31% | 24% | 18% | 12% | 6%  | 2%  | 0%  | 0%  |

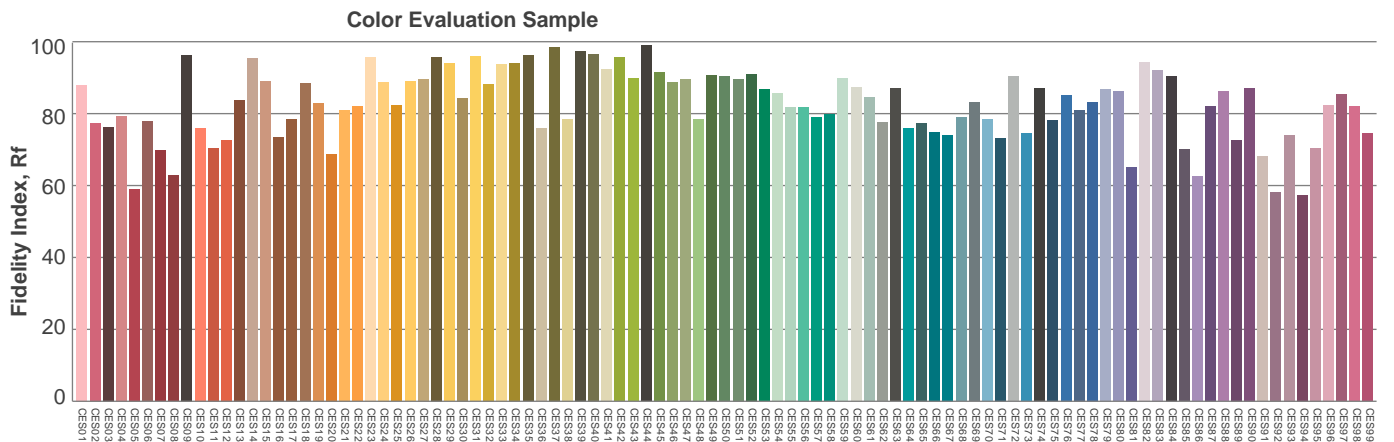
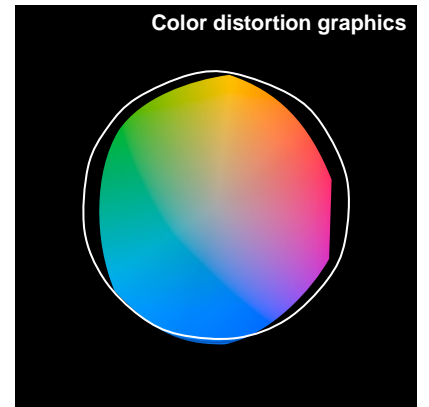
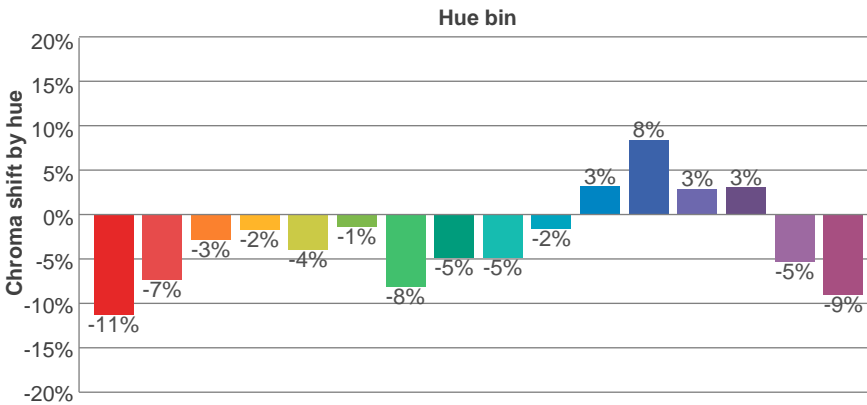
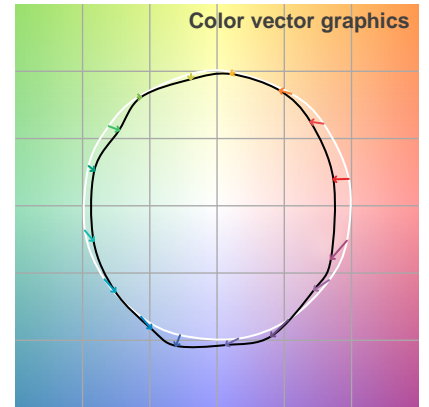
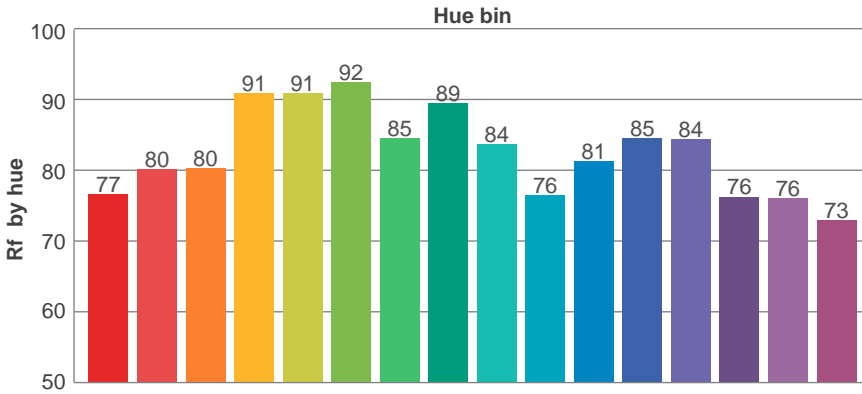
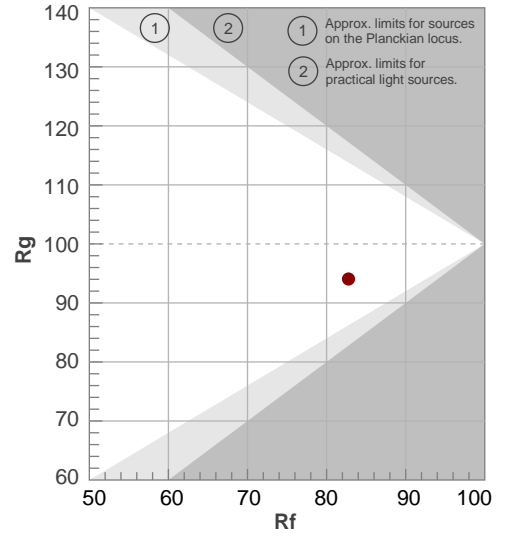
| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 93,1°          | 152,7°          | 169,6°            | 82,8%                        | 59,5%                       |

## TM30 details

**Rf 82,8**  
Fidelity index Rf

**Rg 94,1**  
Gammut index Rg

| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 77             | -11%               | 2%   |
| 2       | 80             | -7%                | 7%   |
| 3       | 80             | -3%                | 9%   |
| 4       | 91             | -2%                | 3%   |
| 5       | 91             | -4%                | 1%   |
| 6       | 92             | -1%                | -2%  |
| 7       | 85             | -8%                | -2%  |
| 8       | 89             | -5%                | 2%   |
| 9       | 84             | -5%                | 9%   |
| 10      | 76             | -2%                | 12%  |
| 11      | 81             | 3%                 | 11%  |
| 12      | 85             | 8%                 | -1%  |
| 13      | 84             | 3%                 | -10% |
| 14      | 76             | 3%                 | -17% |
| 15      | 76             | -5%                | -12% |
| 16      | 73             | -9%                | -16% |



# UGR

## 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 lamp axis |      |      |      |      | Viewing direction parallel to lamp axis |      |      |      |      |      |
| 2H  | 2H   | 23,4 | 24,6 | 23,7 | 24,8 | 25,1                                    | 23,4 | 24,6 | 23,7 | 24,8 | 25,1 |
|   | 3H   | 24,7 | 25,8 | 25,0 | 26,0 | 26,3                                    | 24,7 | 25,8 | 25,0 | 26,0 | 26,3 |
|   | 4H   | 25,1 | 26,2 | 25,5 | 26,5 | 26,7                                    | 25,1 | 26,2 | 25,5 | 26,5 | 26,8 |
|   | 6H   | 25,4 | 26,4 | 25,8 | 26,7 | 27,0                                    | 25,4 | 26,4 | 25,8 | 26,7 | 27,0 |
|   | 8H   | 25,5 | 26,4 | 25,9 | 26,7 | 27,1                                    | 25,5 | 26,5 | 25,9 | 26,8 | 27,1 |
|   | 12H  | 25,5 | 26,4 | 25,9 | 26,7 | 27,1                                    | 25,6 | 26,5 | 25,9 | 26,8 | 27,1 |
| 4H  | 2H   | 24,0 | 25,0 | 24,3 | 25,3 | 25,6                                    | 24,0 | 25,0 | 24,3 | 25,3 | 25,6 |
|   | 3H   | 25,4 | 26,3 | 25,8 | 26,6 | 27,0                                    | 25,4 | 26,3 | 25,8 | 26,7 | 27,0 |
|   | 4H   | 26,0 | 26,8 | 26,4 | 27,2 | 27,5                                    | 26,0 | 26,8 | 26,4 | 27,2 | 27,5 |
|   | 6H   | 26,4 | 27,1 | 26,8 | 27,5 | 27,9                                    | 26,4 | 27,1 | 26,9 | 27,5 | 27,9 |
|   | 8H   | 26,5 | 27,1 | 26,9 | 27,5 | 28,0                                    | 26,6 | 27,2 | 27,0 | 27,6 | 28,0 |
|   | 12H  | 26,6 | 27,1 | 27,0 | 27,6 | 28,0                                    | 26,6 | 27,2 | 27,1 | 27,6 | 28,0 |
| 8H  | 4H   | 26,2 | 26,9 | 26,7 | 27,3 | 27,7                                    | 26,2 | 26,9 | 26,7 | 27,3 | 27,7 |
|   | 6H   | 26,7 | 27,2 | 27,2 | 27,7 | 28,1                                    | 26,8 | 27,3 | 27,2 | 27,7 | 28,2 |
|   | 8H   | 26,9 | 27,3 | 27,4 | 27,8 | 28,3                                    | 26,9 | 27,4 | 27,4 | 27,8 | 28,3 |
|   | 12H  | 27,0 | 27,4 | 27,5 | 27,9 | 28,4                                    | 27,0 | 27,4 | 27,5 | 27,9 | 28,4 |
| 12H   | 4H   | 26,2 | 26,8 | 26,7 | 27,2 | 27,7                                    | 26,3 | 26,8 | 26,7 | 27,2 | 27,7 |
|   | 6H   | 26,8 | 27,2 | 27,2 | 27,7 | 28,1                                    | 26,8 | 27,2 | 27,3 | 27,7 | 28,2 |
|   | 8H   | 27,0 | 27,3 | 27,4 | 27,8 | 28,3                                    | 27,0 | 27,4 | 27,5 | 27,8 | 28,3 |
| Variation of the observer position for the luminaire distance S |  |      |      |      |      |   |      |      |      |      |      |
| S = 1,0H  | +0,1 / -0,2                                    |      |      |      |      | +0,1 / -0,2                             |      |      |      |      |      |
| S = 1,5H  | +0,3 / -0,5                                    |      |      |      |      | +0,3 / -0,5                             |      |      |      |      |      |
| S = 2,0H  | +0,5 / -0,9                                    |      |      |      |      | +0,5 / -0,9                             |      |      |      |      |      |
| Standard table  | BK05   |      |      |      |      | BK05                                    |      |      |      |      |      |
| Correction summand  | 9,6  |      |      |      |      | 9,6                                     |      |      |      |      |      |
| Corrected glare indices referring to 587 lm total luminous flux |  |      |      |      |      |   |      |      |      |      |      |

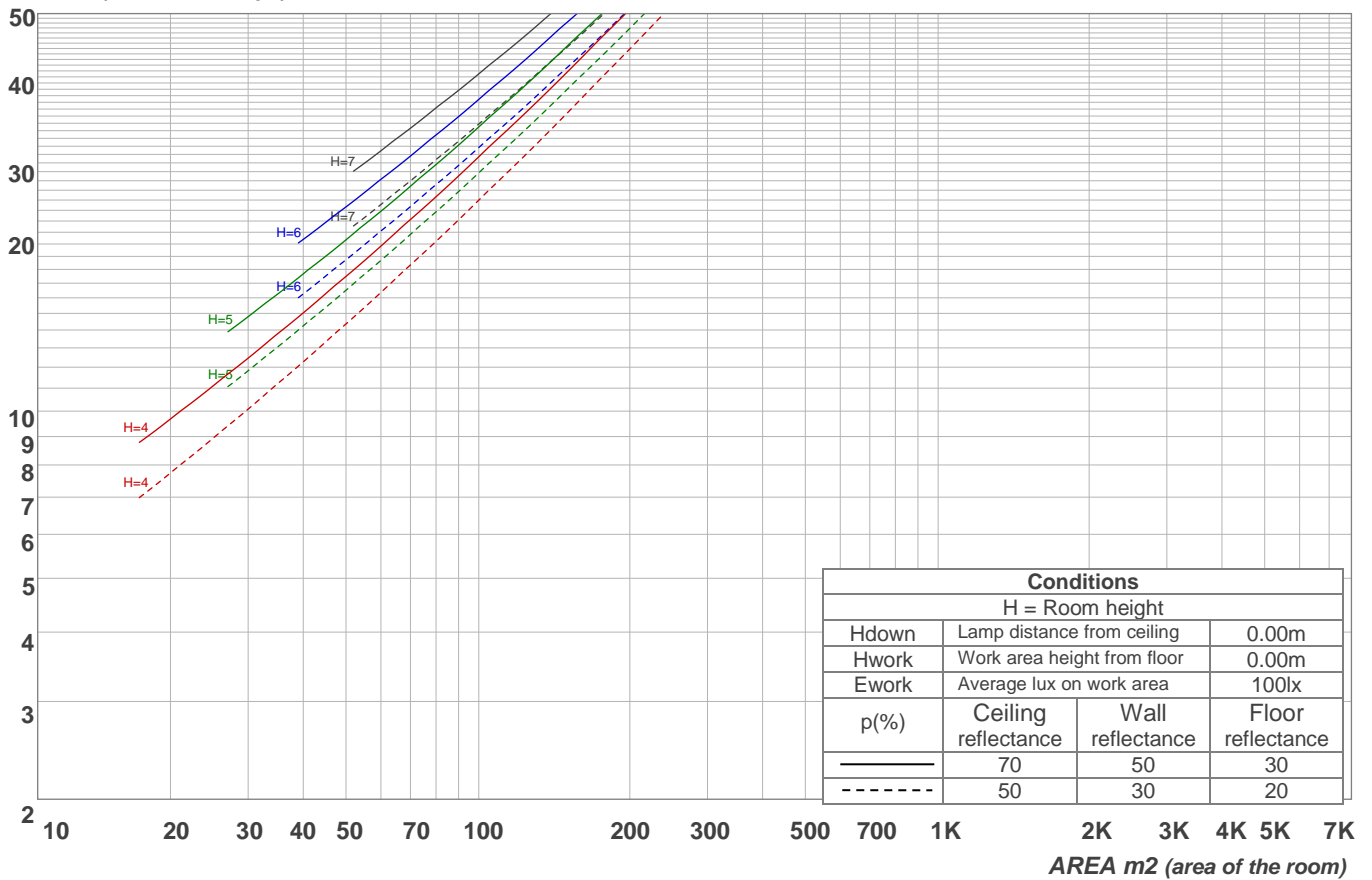
# Light planning

## 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  | 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 | 100 |    |   |
| 1                   | 110  | 105 | 101 | 97  | 107 | 103 | 99  | 96  | 99  | 96  | 93  | 95  | 92  | 90  | 91  | 89  | 87  | 85  | 85  |    |   |
| 2                   | 100  | 92  | 86  | 81  | 98  | 91  | 85  | 80  | 87  | 82  | 78  | 84  | 80  | 76  | 81  | 77  | 74  | 72  | 72  |    |   |
| 3                   | 92   | 82  | 74  | 68  | 89  | 80  | 73  | 67  | 77  | 71  | 66  | 75  | 69  | 65  | 72  | 68  | 64  | 62  | 62  |    |   |
| 4                   | 84   | 73  | 65  | 58  | 82  | 72  | 64  | 58  | 69  | 62  | 57  | 67  | 61  | 56  | 65  | 60  | 55  | 53  | 53  |    |   |
| 5                   | 78   | 66  | 57  | 51  | 76  | 65  | 56  | 50  | 62  | 55  | 50  | 60  | 54  | 49  | 59  | 53  | 49  | 47  | 47  |    |   |
| 6                   | 72   | 59  | 51  | 45  | 70  | 58  | 50  | 44  | 57  | 49  | 44  | 55  | 49  | 44  | 53  | 48  | 43  | 41  | 41  |    |   |
| 7                   | 67   | 54  | 46  | 40  | 65  | 53  | 45  | 40  | 52  | 45  | 39  | 50  | 44  | 39  | 49  | 43  | 39  | 37  | 37  |    |   |
| 8                   | 63   | 50  | 41  | 36  | 61  | 49  | 41  | 36  | 48  | 40  | 35  | 46  | 40  | 35  | 45  | 39  | 35  | 33  | 33  |    |   |
| 9                   | 59   | 46  | 38  | 32  | 57  | 45  | 37  | 32  | 44  | 37  | 32  | 43  | 36  | 32  | 42  | 36  | 32  | 30  | 30  |    |   |
| 10                  | 55   | 42  | 35  | 29  | 54  | 42  | 34  | 29  | 41  | 34  | 29  | 40  | 34  | 29  | 39  | 33  | 29  | 27  | 27  |    |   |

LAMPS (number of lamps)

### Luminaire budgetary diagram



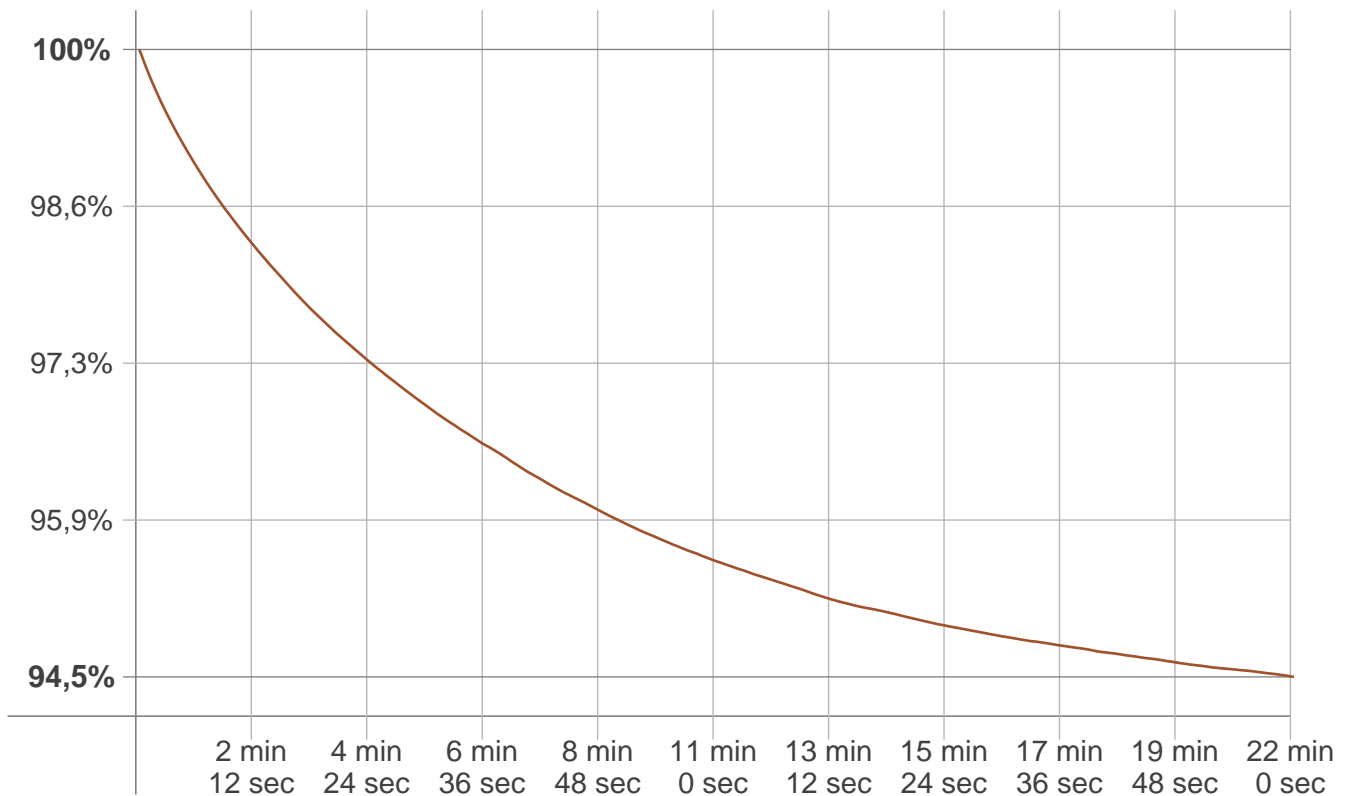
### Zonal Lumen Summary

|          |           |           |           |           |           |           |           |           |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0°-10°   | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
| 24,1 lm  | 67,1 lm   | 96,4 lm   | 108 lm    | 104 lm    | 86,5 lm   | 61,0 lm   | 31,5 lm   | 7,52 lm   |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0,227 lm | 0,137 lm  | 0,161 lm  | 0,220 lm  | 0,176 lm  | 0,110 lm  | 0,076 lm  | 0,048 lm  | 0,017 lm  |



# Stabilization

## Warmup curve



## Warmup result

|                  |              |
|------------------|--------------|
| Warmup time:     | 22 min 4 sec |
| Warmup variation | -5,6%        |

## Warmup conditions

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

## Color temperature change

| CCT start | CCT change | CCT end |
|-----------|------------|---------|
| 3103 K    | +18 K      | 3121 K  |

## Output change

| Output start | Output change | Output end |
|--------------|---------------|------------|
| 620 lm       | -33 lm        | 587 lm     |