

Light efficiency:

125 Lumen/Watt

Output: 3803 lm

Light quality:

CRI: 82.9

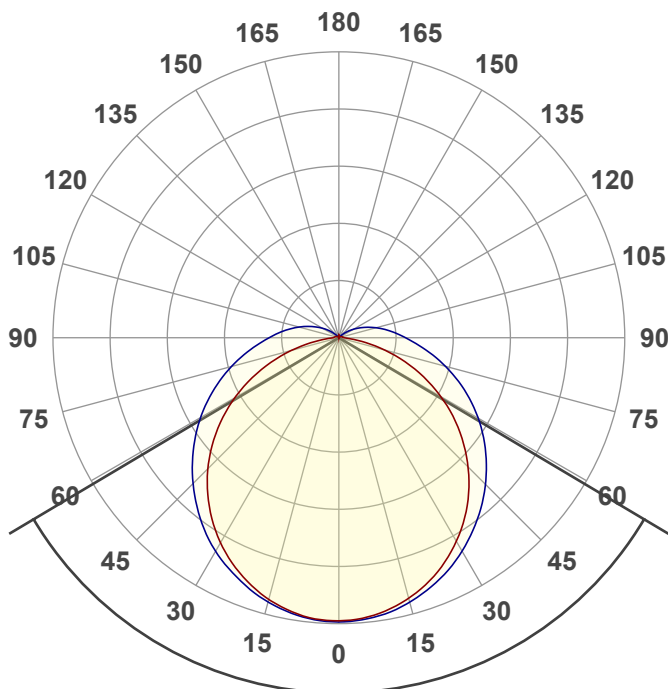
Peak: 1088 cd

Color temperature:

5091 K

Power: 30.4 W

PF: 0.99



Product name:

C2103-504F (30 W)

Date and time:

5/23/2023 11:52:55 AM

Beam angle

118.5°

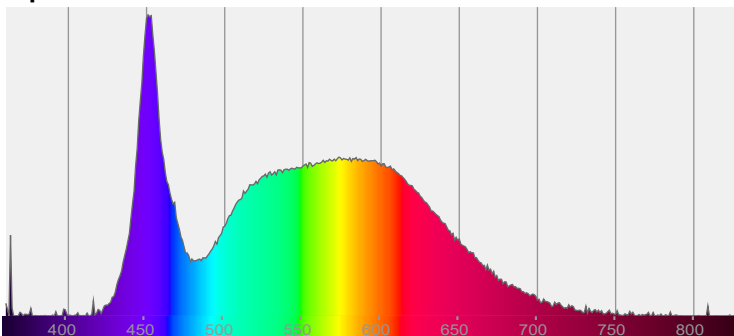


CIE 1931

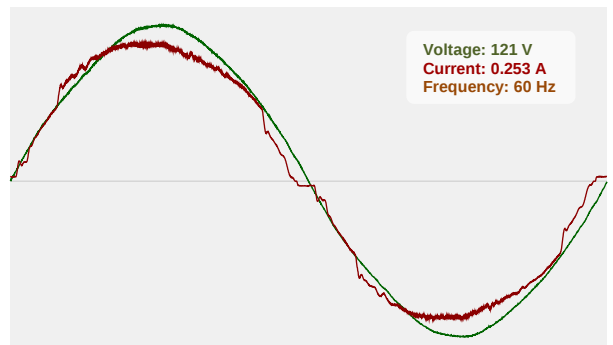
x: 0.343

y: 0.354

Spectra



Power



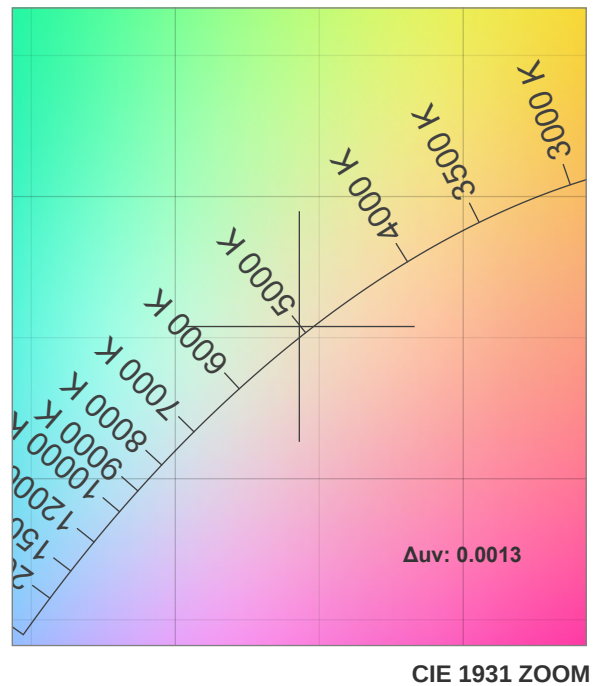
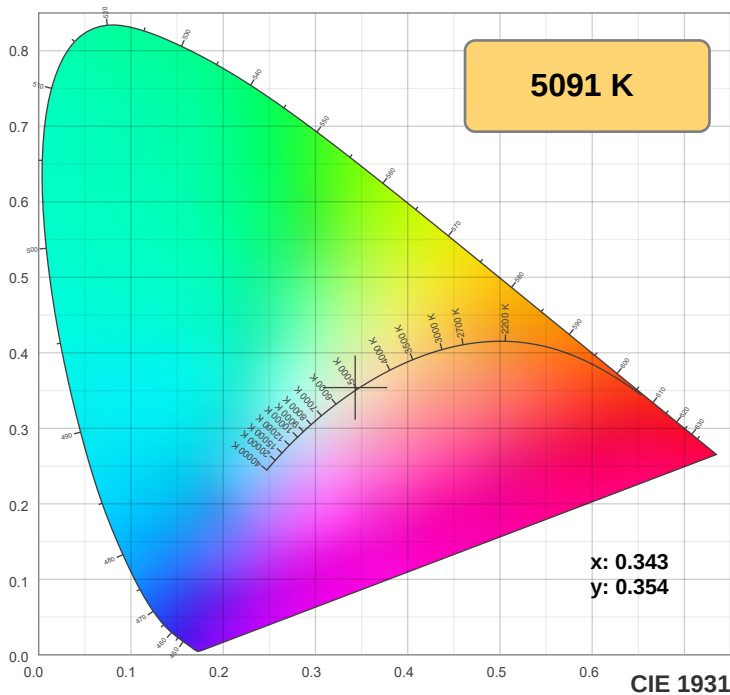
T 314.743.3067

F 314.972.6202

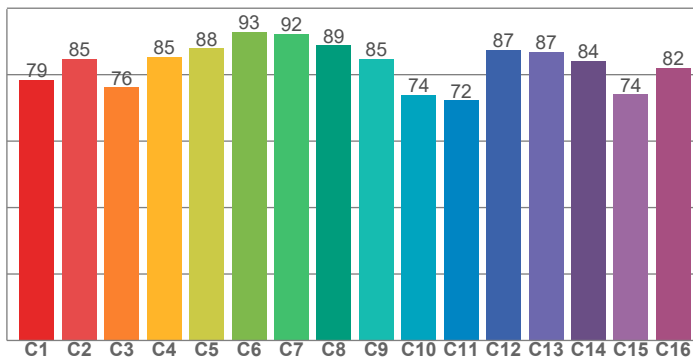
email: [commercial-sales@superbrightleds.com](mailto:commercial-sales@superbrightleds.com)

[www.superbrightleds.com/](http://www.superbrightleds.com/)

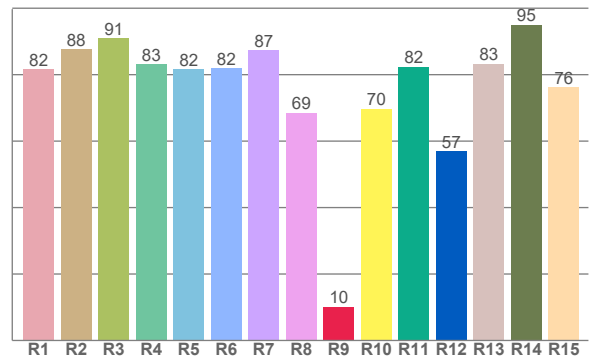
## Color Specifications



TM30: 82.9



CRI: 82.9 (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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 81.7 | 87.6 | 90.9 | 83.2 | 81.7 | 82.0 | 87.3 | 68.6 | 10.2 | 69.7 | 82.4 | 56.9 | 83.3 | 95.1 | 76.2 |

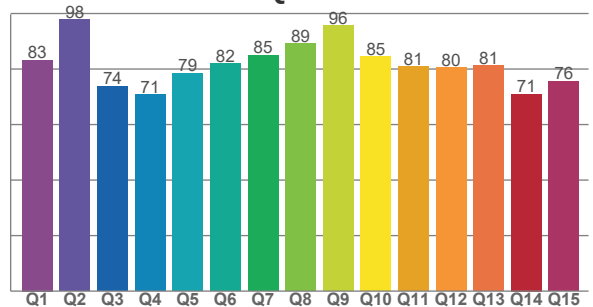
TM30 C values, 16 binned values out of total of 99 C values

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   | C9   | C10  | C11  | C12  | C13  | C14  | C15  | C16  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 78.5 | 84.8 | 76.2 | 85.3 | 87.9 | 93.0 | 92.2 | 88.8 | 84.7 | 74.0 | 72.3 | 87.5 | 86.9 | 84.2 | 74.0 | 82.0 |

CQS Q values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 83.2 | 97.8 | 73.8 | 70.9 | 78.5 | 82.0 | 85.0 | 89.1 | 95.7 | 84.5 | 81.0 | 80.5 | 81.2 | 71.0 | 75.6 |

CQS: 80.4



## 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                             |
| 5091 K            | 82.9                  | 10.2          | 82.9           | 96.4        | 80.4                | 0.343                     | 0.354                     | 0.209            | 0.324            | 0.0013                          |



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## TM30 Report

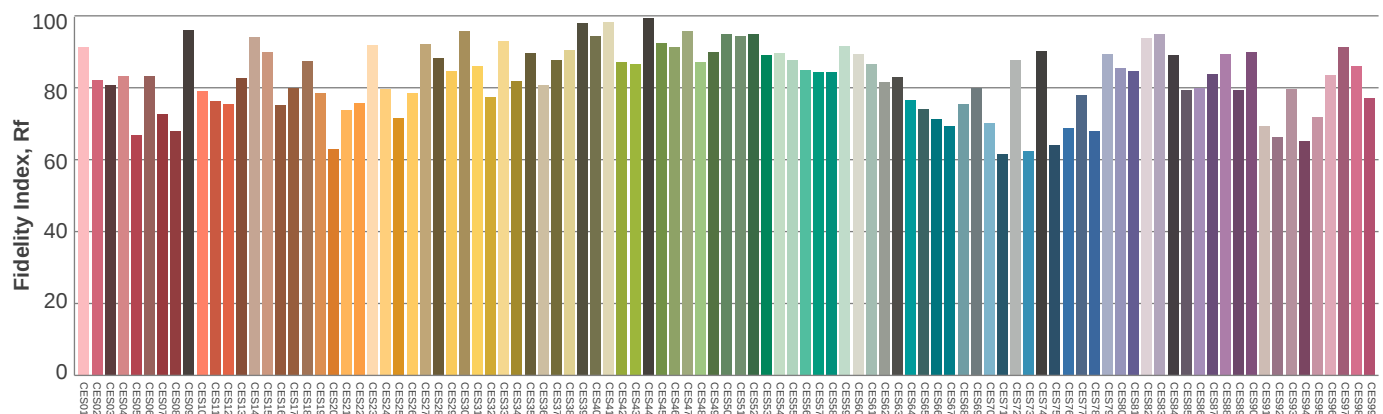
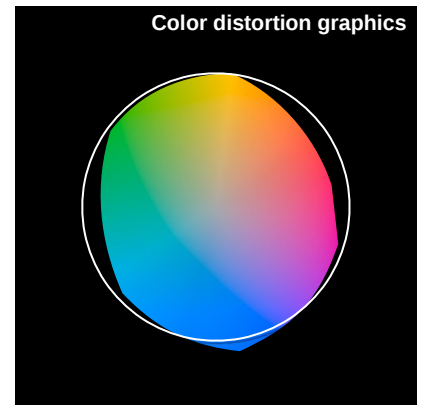
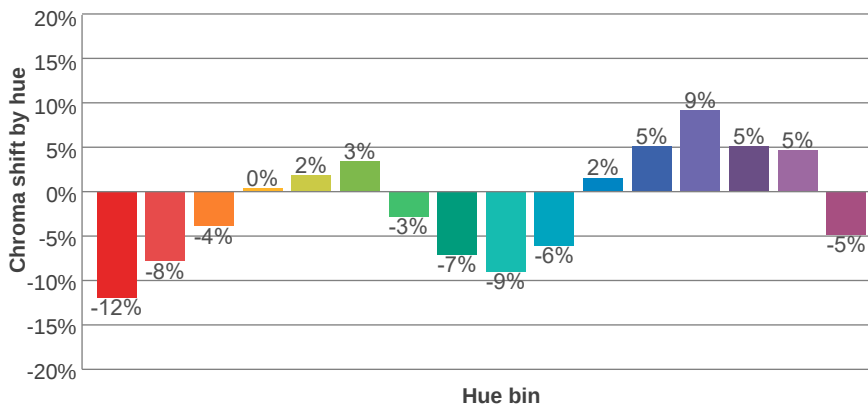
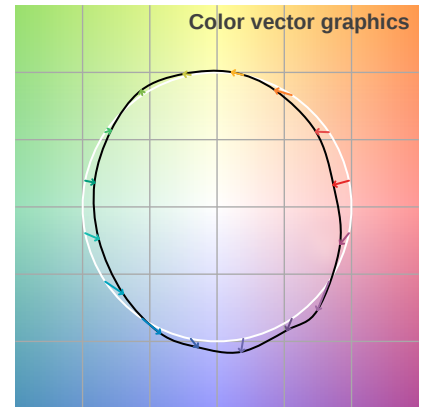
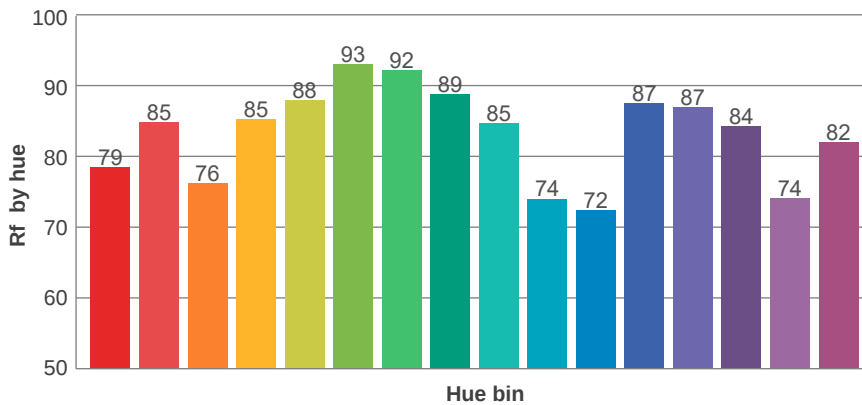
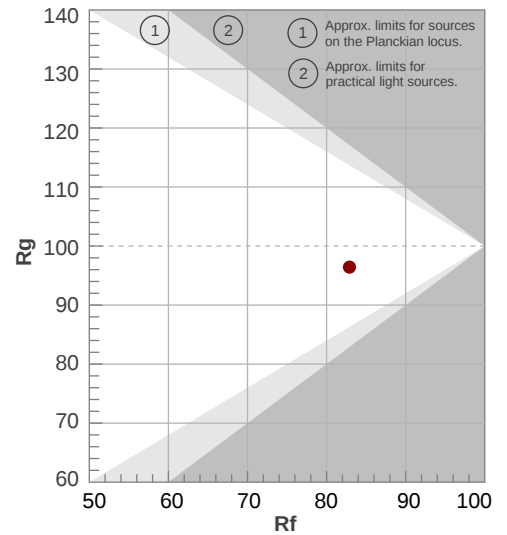
**Rf 82.9**

Fidelity index Rf

**Rg 96.4**

Gamut index Rg

| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 79             | -12%               | -1%  |
| 2       | 85             | -8%                | 6%   |
| 3       | 76             | -4%                | 12%  |
| 4       | 85             | 0%                 | 9%   |
| 5       | 88             | 2%                 | 5%   |
| 6       | 93             | 3%                 | -1%  |
| 7       | 92             | -3%                | -3%  |
| 8       | 89             | -7%                | 0%   |
| 9       | 85             | -9%                | 6%   |
| 10      | 74             | -6%                | 15%  |
| 11      | 72             | 2%                 | 17%  |
| 12      | 87             | 5%                 | 6%   |
| 13      | 87             | 9%                 | -4%  |
| 14      | 84             | 5%                 | -8%  |
| 15      | 74             | 5%                 | -22% |
| 16      | 82             | -5%                | -9%  |



Color Evaluation Sample



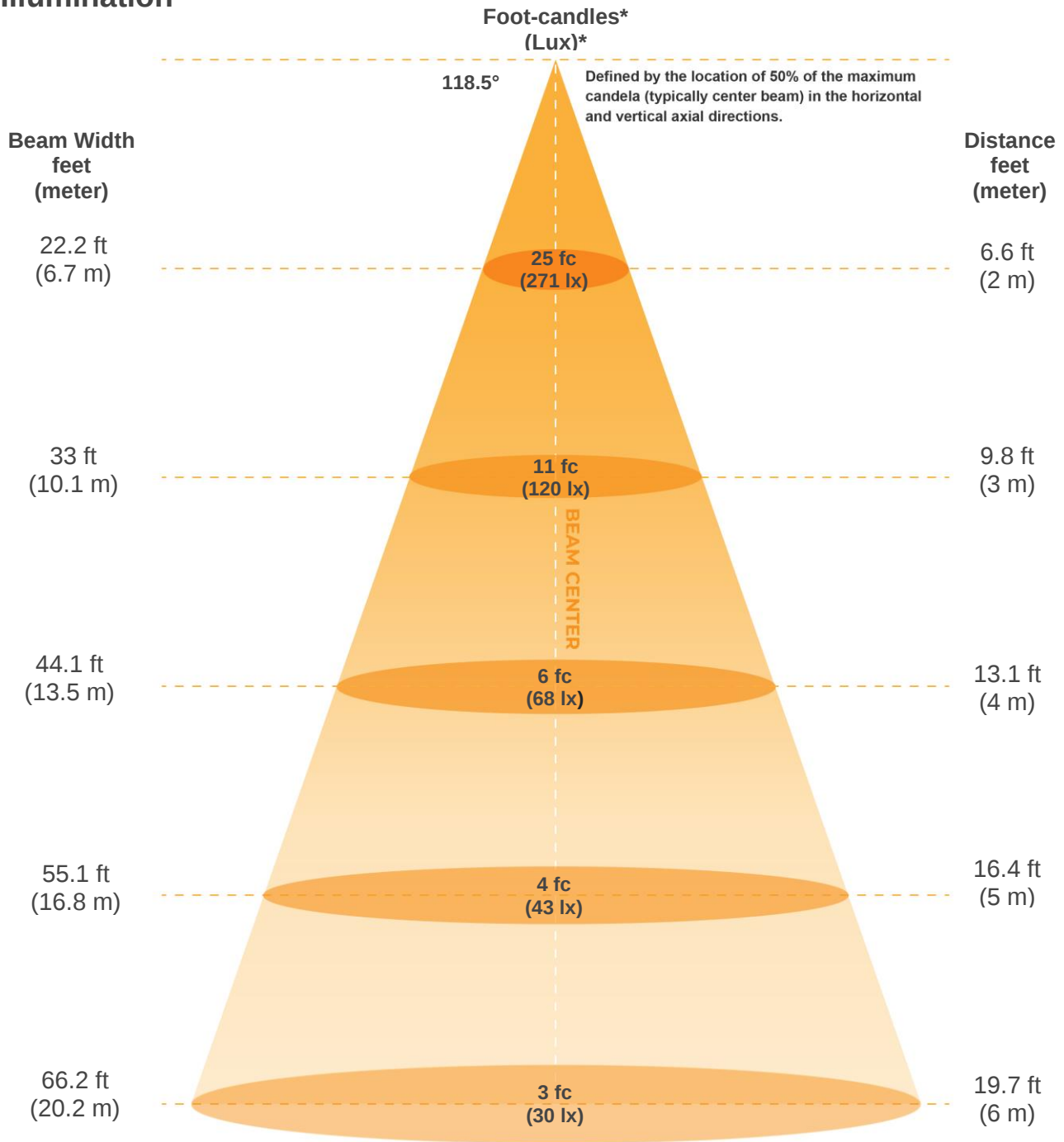
T 314.743.3067

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## Illumination



### Beam intensities from 1-20m

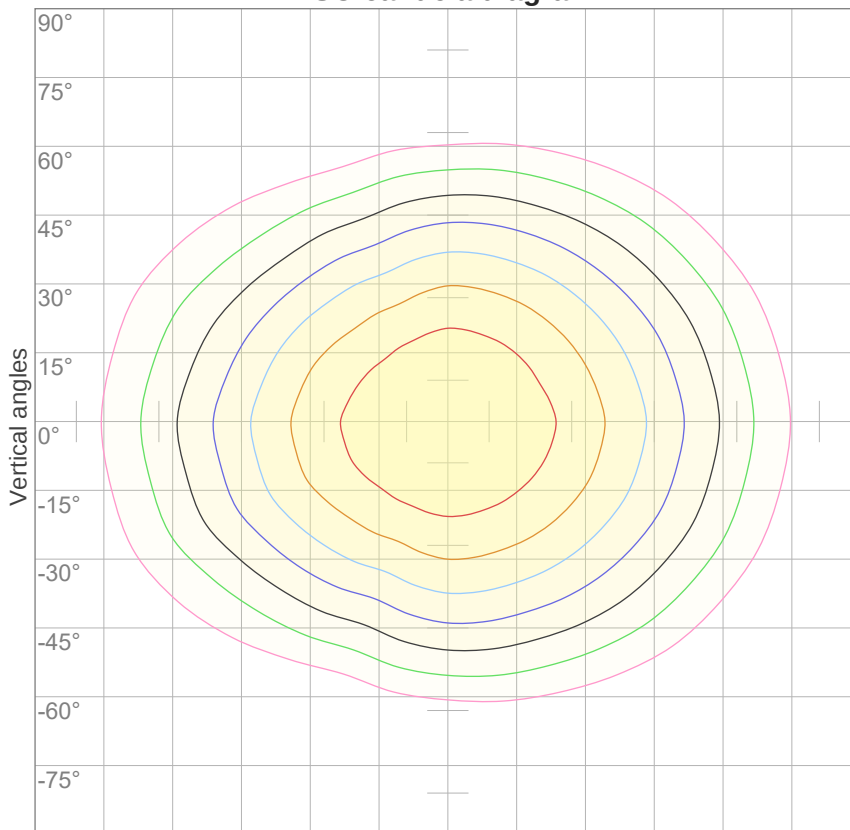
| 1m      | 2m      | 3m      | 4m     | 5m     | 6m     | 7m     | 8m     | 9m     | 10m    | 11m    | 12m    | 13m    | 14m    | 15m    | 16m    | 17m    | 18m    | 19m    | 20m    |
|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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 |
| 1083lx  | 271lx   | 120lx   | 68lx   | 43lx   | 30lx   | 22lx   | 17lx   | 13lx   | 11lx   | 9lx    | 8lx    | 6lx    | 6lx    | 5lx    | 4lx    | 4lx    | 3lx    | 3lx    | 3lx    |
| 100.6fc | 25.2fcd | 11.2fcd | 6.3fcd | 4fcd   | 2.8fcd | 2.1fcd | 1.6fcd | 1.2fcd | 1fcd   | 0.8fcd | 0.7fcd | 0.6fcd | 0.5fcd | 0.4fcd | 0.4fcd | 0.3fcd | 0.3fcd | 0.3fcd | 0.3fcd |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 118.5°         | 197.9°          | 230.9°            | 65.1%                        | 43.6%                       |



## ISO Diagrams

ISO candela diagram



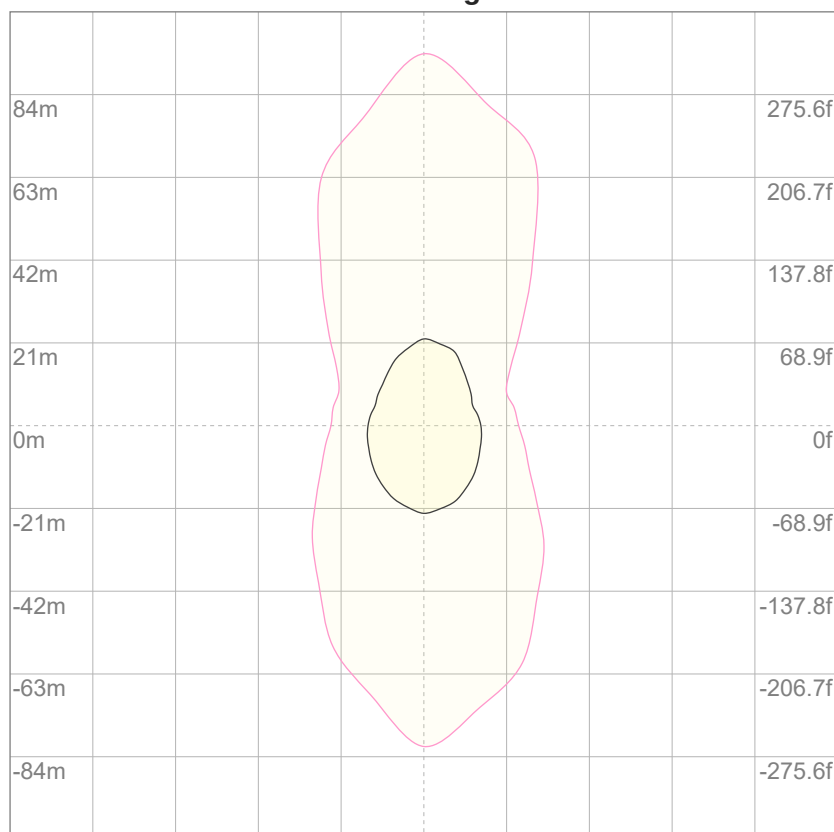
|     |        |
|-----|--------|
| 10% | 108 cd |
| 20% | 217 cd |
| 30% | 325 cd |
| 40% | 433 cd |
| 50% | 542 cd |
| 60% | 650 cd |
| 70% | 758 cd |
| 80% | 866 cd |
| 90% | 975 cd |

Conditions:

Number of c-planes: 16

Candela at center: 1083 cd

ISO lux diagram



|     |          |
|-----|----------|
| 3%  | 0.325 lx |
| 5%  | 0.542 lx |
| 10% | 1.08 lx  |
| 30% | 3.25 lx  |
| 50% | 5.42 lx  |

Conditions:

Number of c-planes: 16

Lux at center: 10.8 lx

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



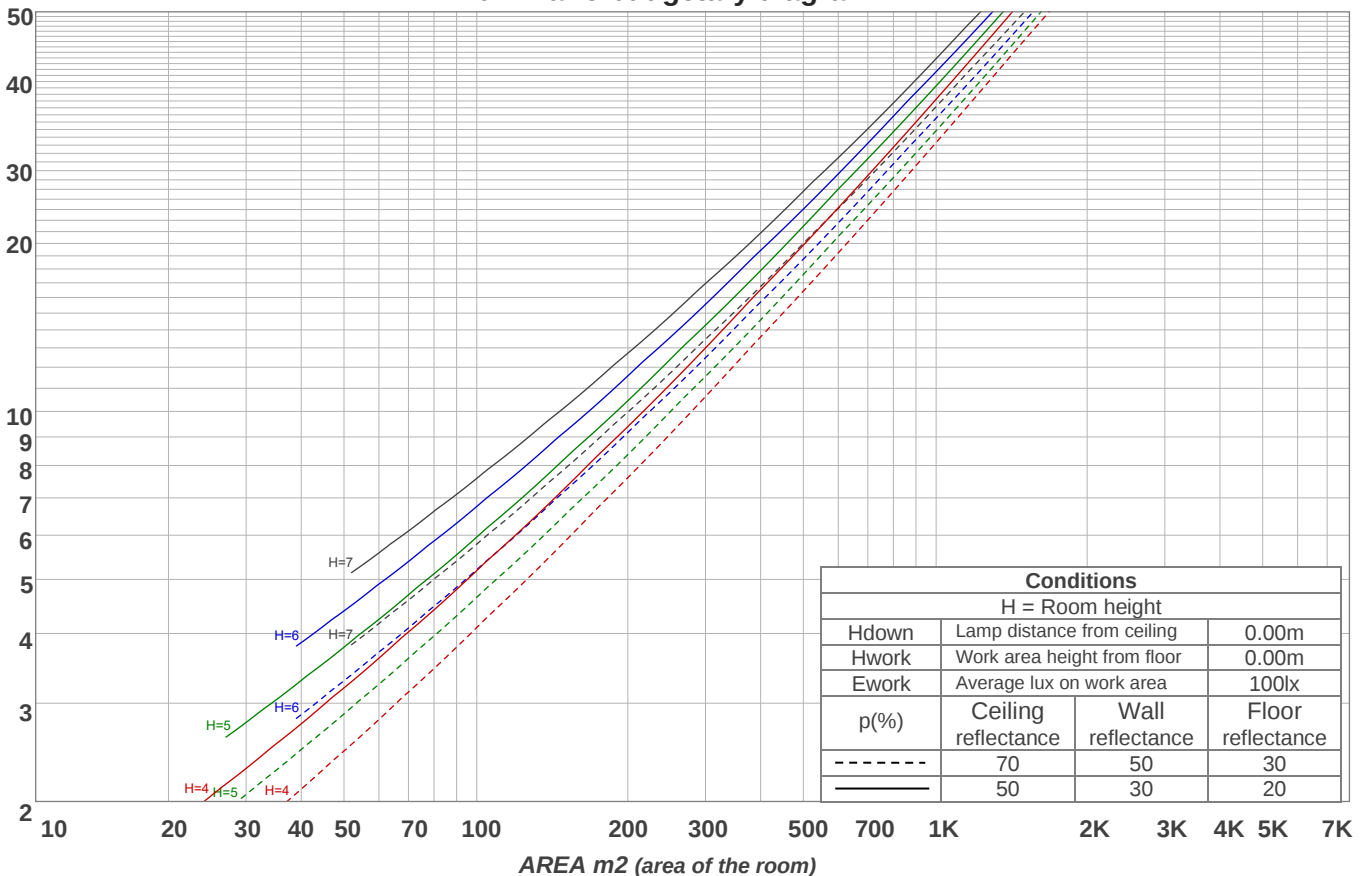
## Light Planning

### 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 | 0  |
| RCR                 | (RCR: Room Cavity Ratio) Room Values are expressed as percentage of Lumens delivered to the task surface |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |    |
| 0                   | 117                                                                                                      | 117 | 117 | 117 | 113 | 113 | 113 | 113 | 106 | 106 | 106 | 100 | 100 | 100 | 94 | 94 | 94 | 92 |
| 1                   | 105                                                                                                      | 99  | 94  | 90  | 101 | 96  | 91  | 87  | 90  | 86  | 83  | 85  | 82  | 79  | 80 | 77 | 75 | 72 |
| 2                   | 95                                                                                                       | 85  | 78  | 71  | 91  | 83  | 76  | 70  | 78  | 72  | 67  | 73  | 68  | 64  | 69 | 65 | 62 | 59 |
| 3                   | 86                                                                                                       | 74  | 66  | 59  | 83  | 72  | 64  | 58  | 68  | 61  | 55  | 64  | 58  | 53  | 60 | 56 | 51 | 49 |
| 4                   | 78                                                                                                       | 66  | 56  | 49  | 75  | 64  | 55  | 48  | 60  | 53  | 47  | 57  | 50  | 45  | 54 | 48 | 44 | 41 |
| 5                   | 72                                                                                                       | 58  | 49  | 42  | 69  | 57  | 48  | 41  | 54  | 46  | 40  | 51  | 44  | 39  | 48 | 42 | 38 | 35 |
| 6                   | 66                                                                                                       | 52  | 43  | 37  | 64  | 51  | 42  | 36  | 48  | 41  | 35  | 46  | 39  | 34  | 44 | 38 | 33 | 31 |
| 7                   | 61                                                                                                       | 47  | 38  | 32  | 59  | 46  | 38  | 32  | 44  | 36  | 31  | 42  | 35  | 30  | 40 | 34 | 29 | 27 |
| 8                   | 57                                                                                                       | 43  | 35  | 29  | 55  | 42  | 34  | 28  | 40  | 33  | 28  | 38  | 32  | 27  | 36 | 31 | 26 | 24 |
| 9                   | 53                                                                                                       | 40  | 31  | 26  | 51  | 39  | 31  | 25  | 37  | 30  | 25  | 35  | 29  | 24  | 34 | 28 | 24 | 22 |
| 10                  | 50                                                                                                       | 37  | 28  | 23  | 48  | 36  | 28  | 23  | 34  | 27  | 22  | 33  | 26  | 22  | 31 | 26 | 21 | 20 |

LAMPS (number of lamps)

### Luminaire budgetary diagram



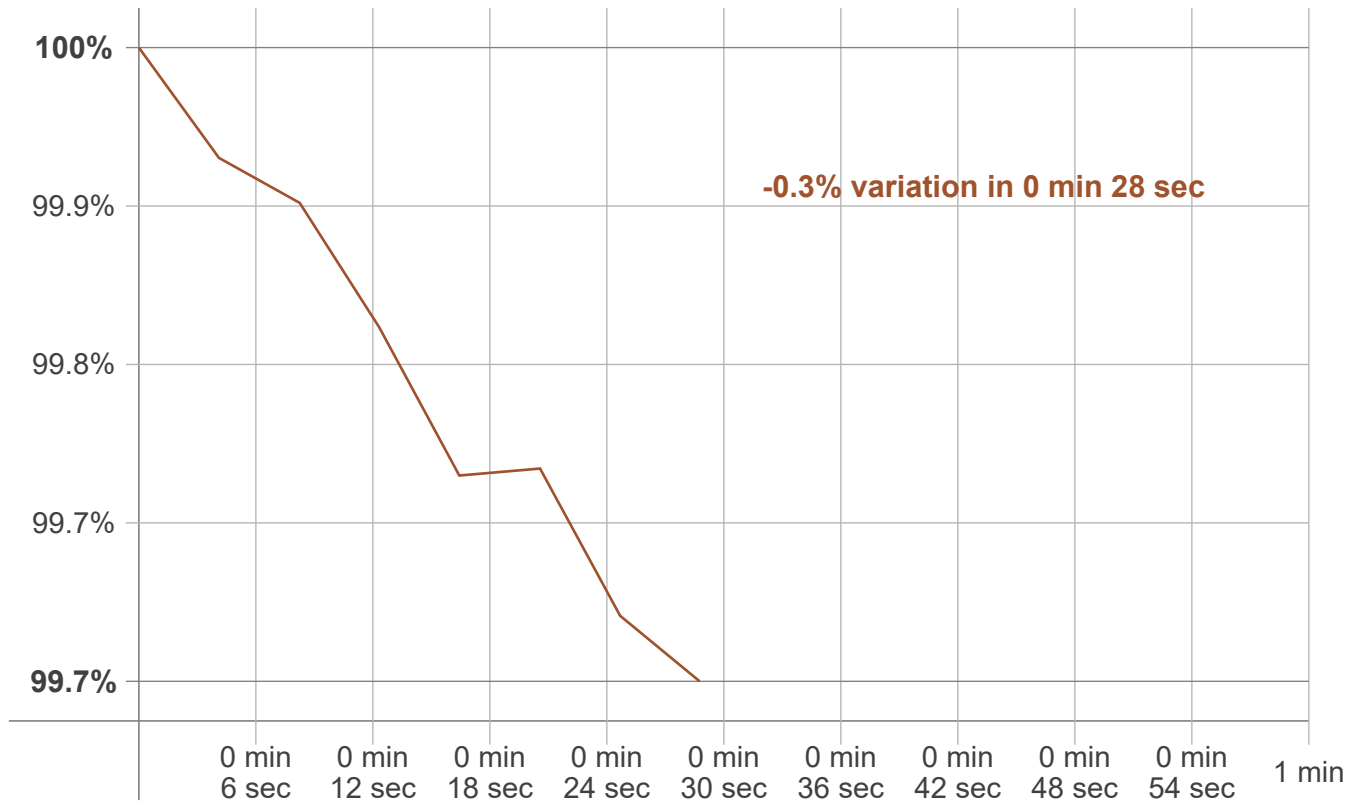
### Zonal Lumen Summary

| 0°-10°   | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 102 lm   | 293 lm    | 443 lm    | 537 lm    | 567 lm    | 533 lm    | 448 lm    | 335 lm    | 227 lm    |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 149 lm   | 90.1 lm   | 46.9 lm   | 19.2 lm   | 5.87 lm   | 2.82 lm   | 1.84 lm   | 1.03 lm   | 0.355 lm  |



## Stabilization

Warmup curve



Warmup result

|                  |               |
|------------------|---------------|
| Warmup time:     | Not completed |
| 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 |
|-----------|------------|---------|
| 5089 K    | +2 K       | 5091 K  |

Output change

| Output start | Output change | Output end |
|--------------|---------------|------------|
| 3811 lm      | -8 lm         | 3803 lm    |

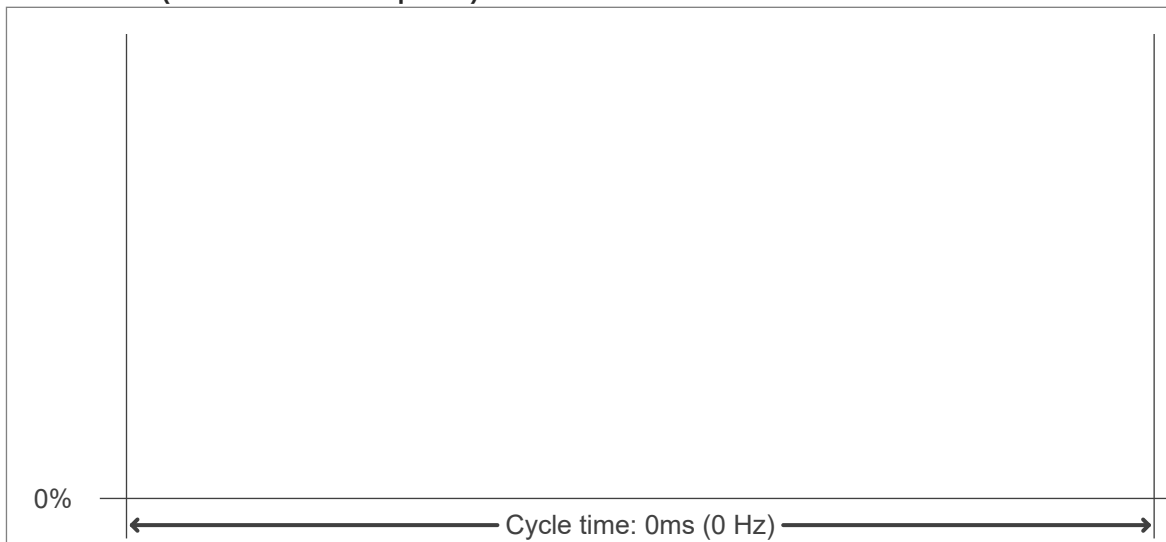


## Flicker Specifications

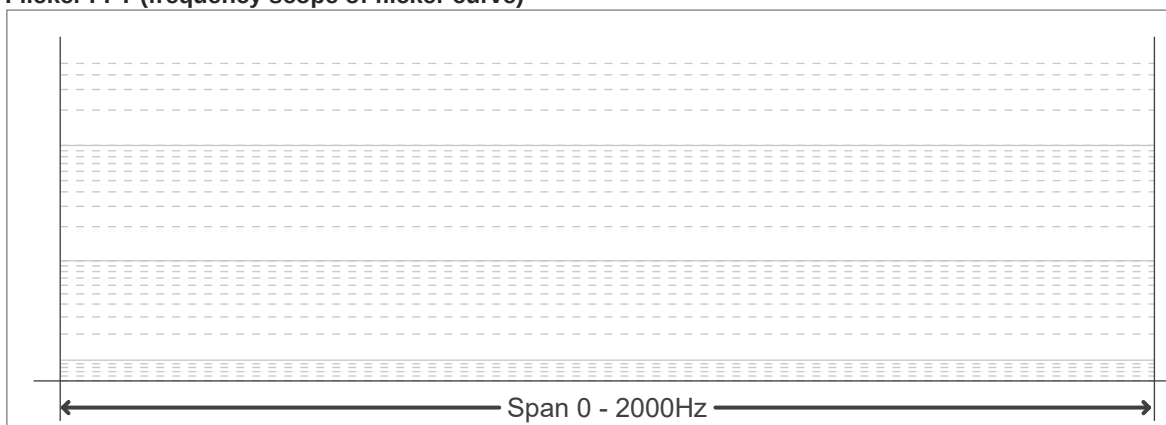
Flicker curve (complete sampled flicker signal)

|  |
|--|
|  |
|  |

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: | n/a samples/second |
|--------------|--------------------|

