

Light efficiency:

107 Lumen/Watt

Output: 2236 lm

Light quality:

CRI: 83.7

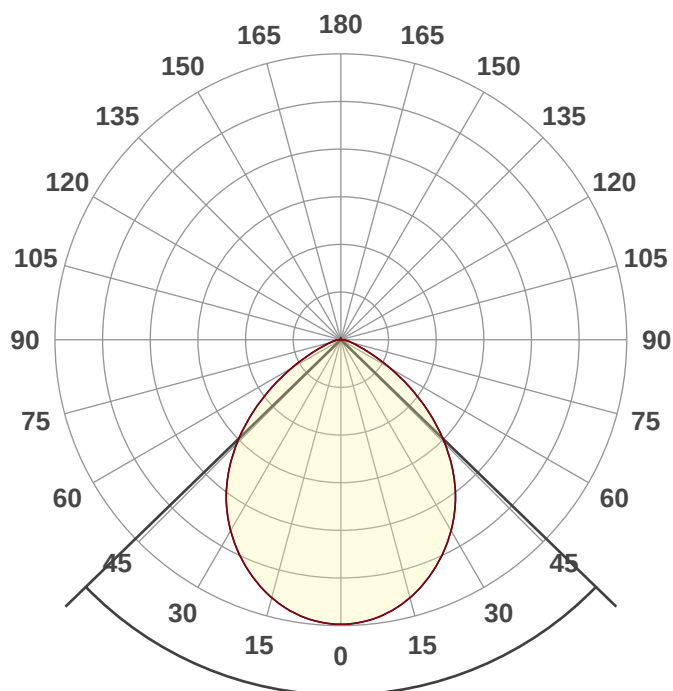
Peak: 1096 cd

Color temperature:

4036 K

Power: 20.9 W

PF: 0.99



Product name:

CDL8D-SW3B-SP22W

Date and time:

12/2/2020 12:08:02 PM

Beam angle

91.8°

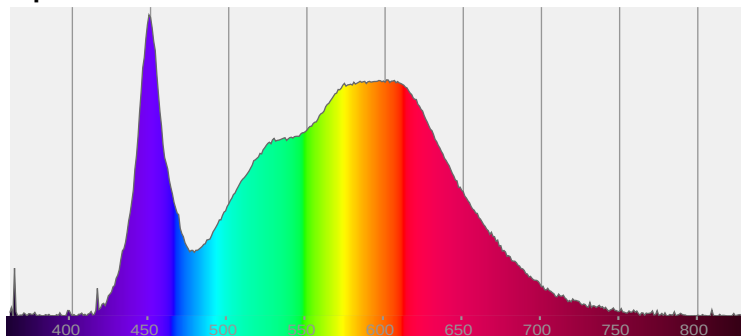


CIE 1931

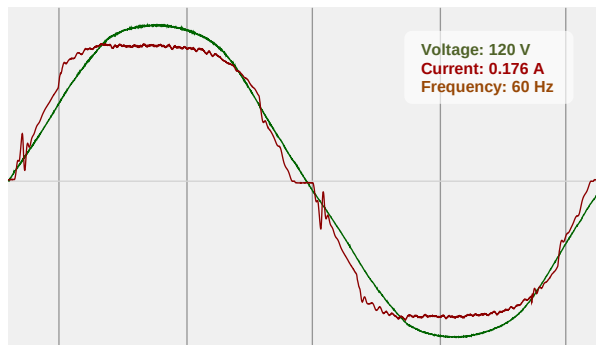
x: 0.378

y: 0.370

Spectra



Power



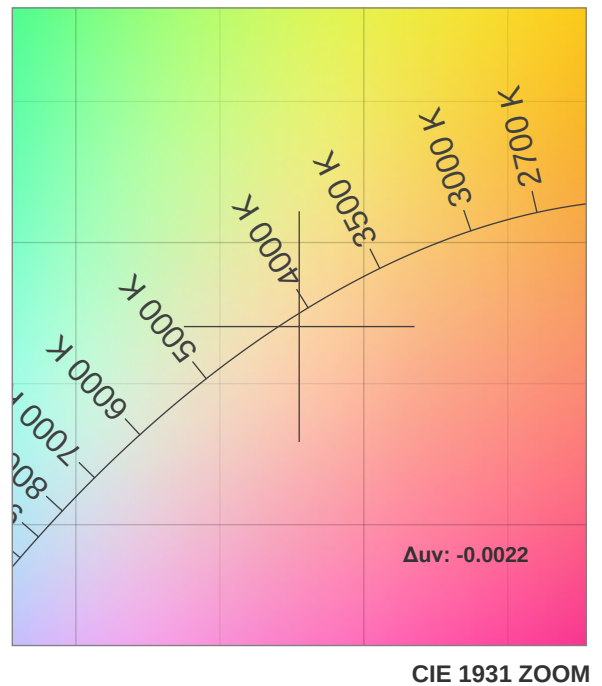
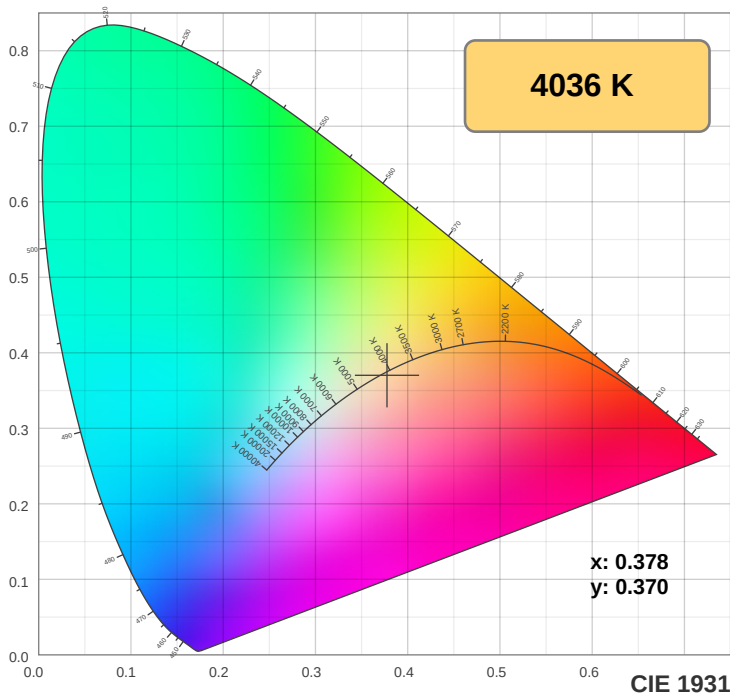
T 314.743.3067

F 314.972.6202

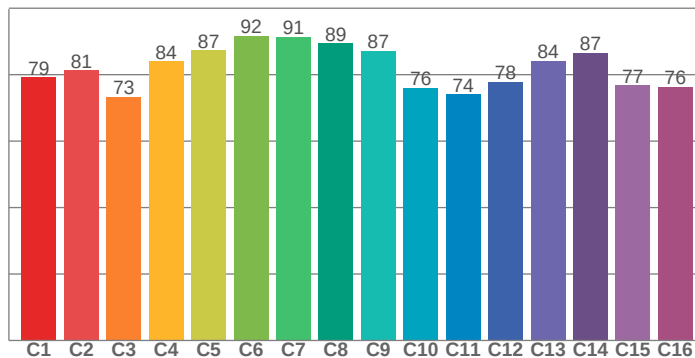
email: [commercial-sales@superbrightleds.com](mailto:commercial-sales@superbrightleds.com)

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

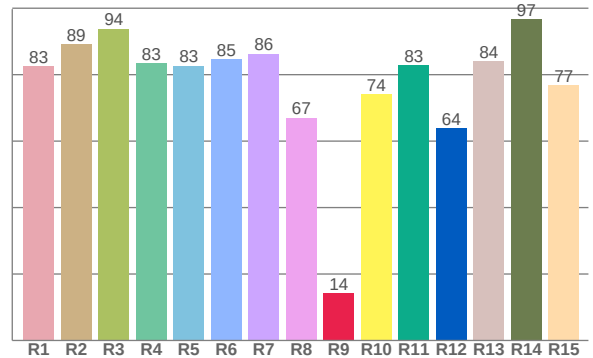
## Color Specifications



**TM30: 82.0**



**CRI: 83.7 (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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 82.6 | 89.1 | 93.8 | 83.5 | 82.7 | 84.7 | 86.3 | 67.0 | 14.3 | 74.1 | 82.8 | 64.0 | 84.1 | 96.6 | 76.9 |

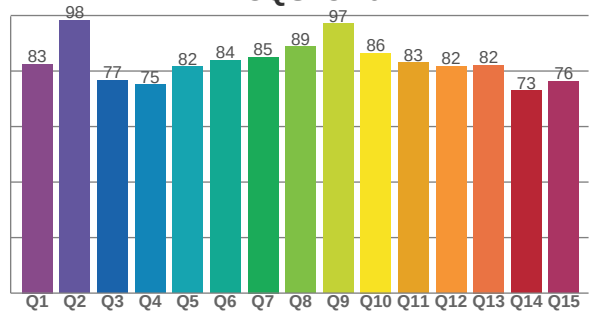
TM30 C values, 16 binned values out of total of 99 C values

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   | C9   | C10  | C11  | C12  | C13  | C14  | C15  | C16  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 79.2 | 81.3 | 73.3 | 84.0 | 87.3 | 91.6 | 91.4 | 89.4 | 87.1 | 76.0 | 74.1 | 77.9 | 84.2 | 86.6 | 76.8 | 76.3 |

CQS Q values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 82.5 | 98.3 | 76.7 | 75.2 | 81.7 | 83.9 | 85.1 | 88.7 | 97.1 | 86.5 | 83.1 | 81.8 | 82.2 | 73.0 | 76.3 |

**CQS: 82.0**



## 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                             |
| 4036 K            | 83.7                  | 14.3          | 82.0           | 97.4        | 82.0                | 0.378                     | 0.370                     | 0.226            | 0.332            | -0.0022                         |



## TM30 Report

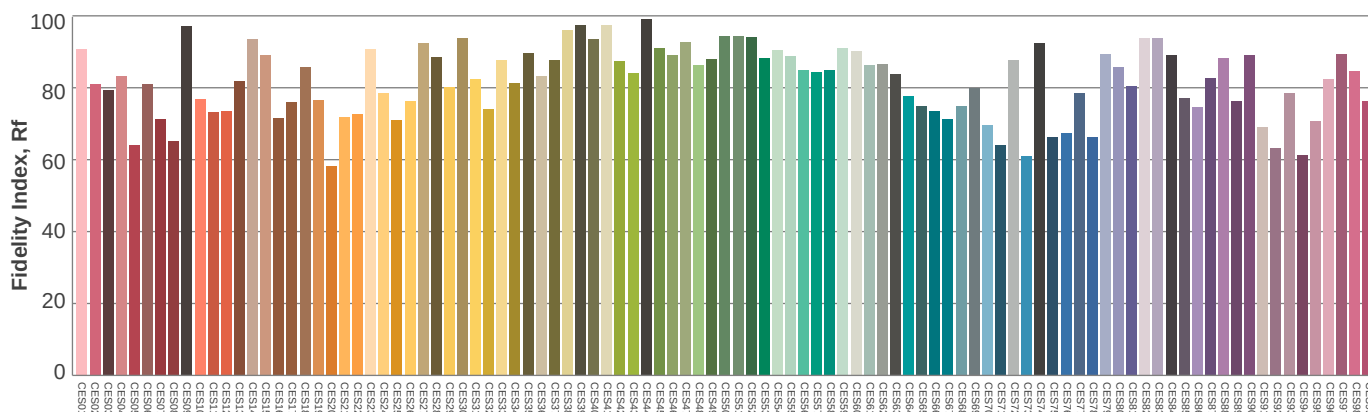
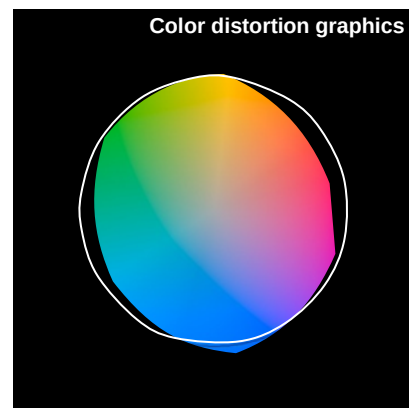
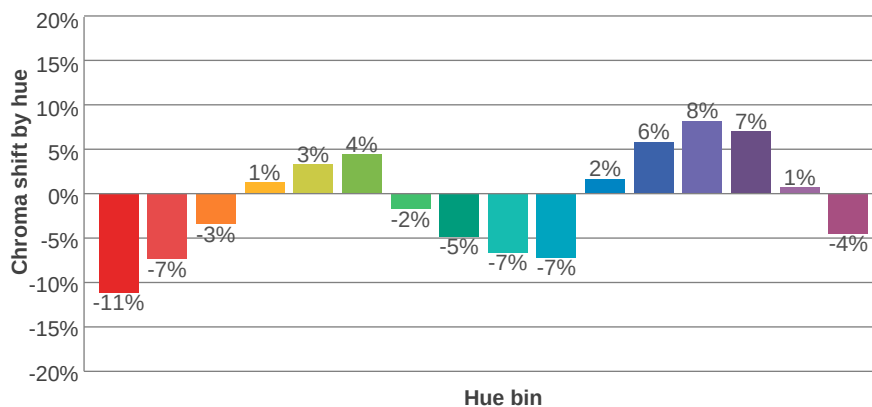
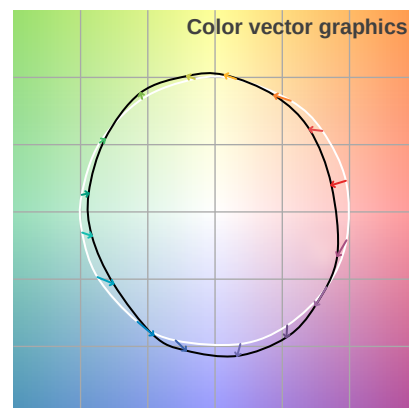
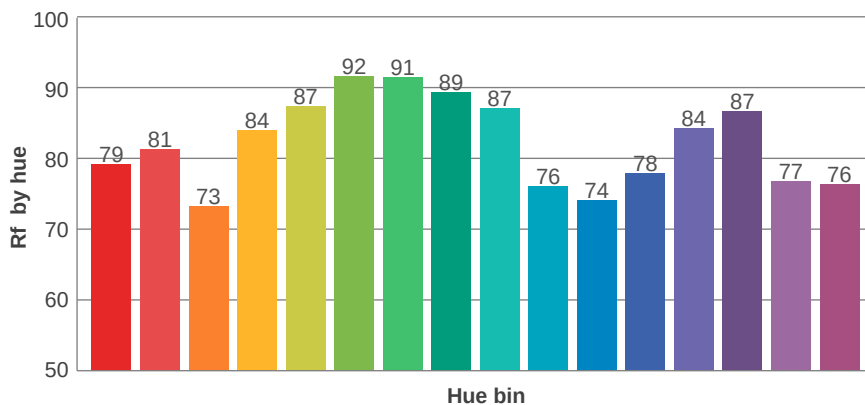
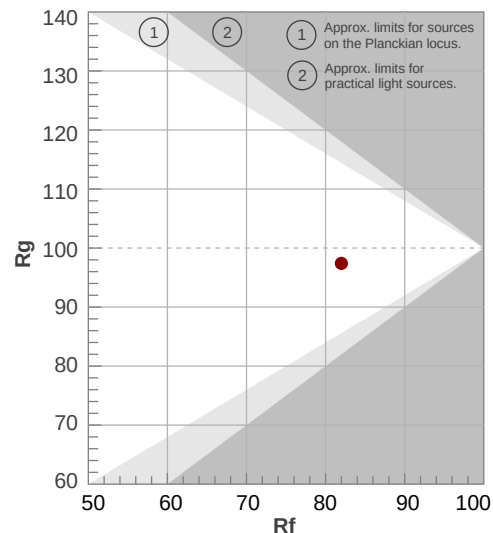
**Rf 82.0**

Fidelity index Rf

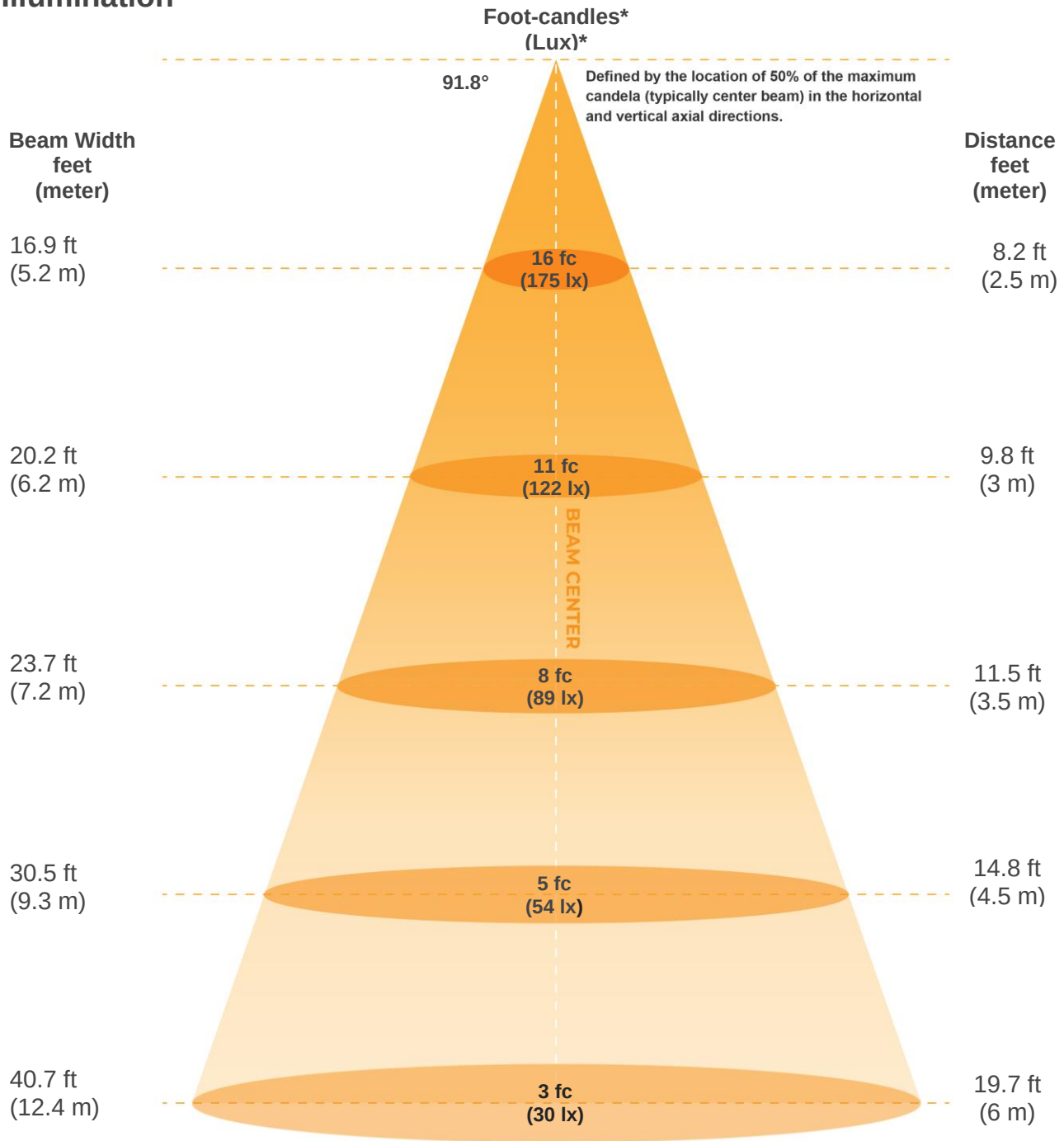
**Rg 97.4**

Gamut index Rg

| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 79             | -11%               | -1%  |
| 2       | 81             | -7%                | 6%   |
| 3       | 73             | -3%                | 12%  |
| 4       | 84             | 1%                 | 9%   |
| 5       | 87             | 3%                 | 5%   |
| 6       | 92             | 4%                 | -1%  |
| 7       | 91             | -2%                | -4%  |
| 8       | 89             | -5%                | -2%  |
| 9       | 87             | -7%                | 4%   |
| 10      | 76             | -7%                | 11%  |
| 11      | 74             | 2%                 | 15%  |
| 12      | 78             | 6%                 | 9%   |
| 13      | 84             | 8%                 | -4%  |
| 14      | 87             | 7%                 | -5%  |
| 15      | 77             | 1%                 | -16% |
| 16      | 76             | -4%                | -13% |



## Illumination



\*measured at center of beam

### Beam intensities from 1-20m

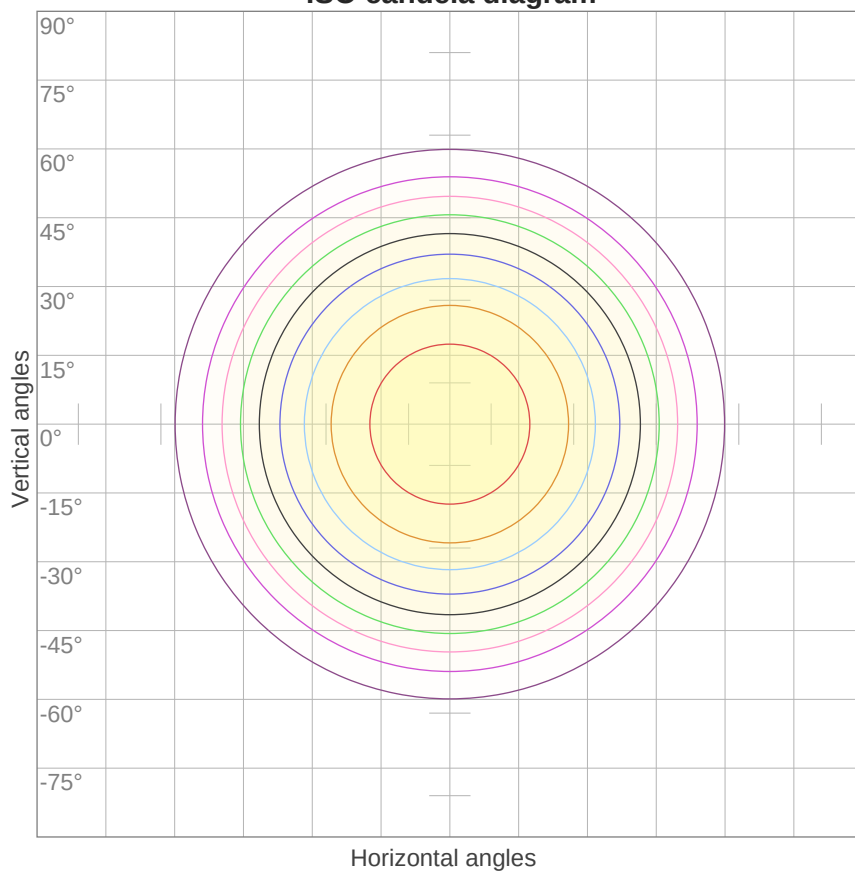
| 1m       | 2m      | 3m      | 4m     | 5m     | 6m     | 7m     | 8m     | 9m     | 10m    | 11m    | 12m    | 13m    | 14m    | 15m    | 16m    | 17m    | 18m    | 19m    | 20m    |
|----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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 |
| 1096lx   | 274lx   | 122lx   | 69lx   | 44lx   | 30lx   | 22lx   | 17lx   | 14lx   | 11lx   | 9lx    | 8lx    | 6lx    | 6lx    | 5lx    | 4lx    | 4lx    | 3lx    | 3lx    | 3lx    |
| 101.9fcd | 25.5fcd | 11.3fcd | 6.4fcd | 4.1fcd | 2.8fcd | 2.1fcd | 1.6fcd | 1.3fcd | 1fcd   | 0.8fcd | 0.7fcd | 0.6fcd | 0.5fcd | 0.5fcd | 0.4fcd | 0.4fcd | 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 |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 91.8°          | 133.3°          | 159.3°            | 90.7%                        | 68.2%                       |



## ISO Diagrams

ISO candela diagram



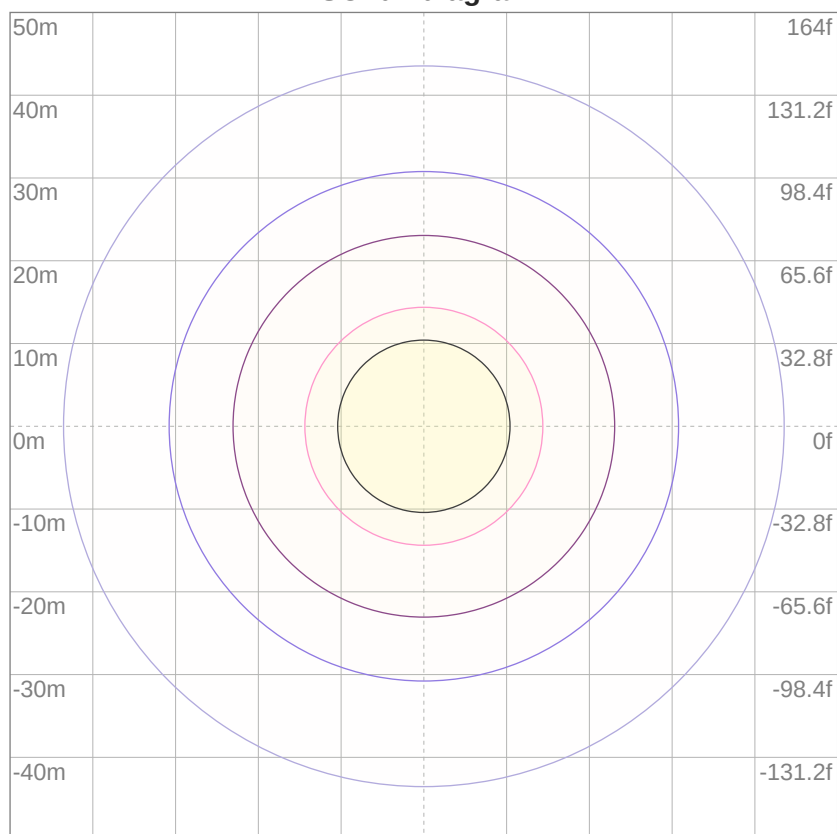
|     |        |
|-----|--------|
| 10% | 110 cd |
| 20% | 219 cd |
| 30% | 329 cd |
| 40% | 439 cd |
| 50% | 548 cd |
| 60% | 658 cd |
| 70% | 767 cd |
| 80% | 877 cd |
| 90% | 987 cd |

### Conditions:

Number of c-planes: 16

Candela at center: 1096 cd

ISO lux diagram



|     |          |
|-----|----------|
| 3%  | 0.329 lx |
| 5%  | 0.548 lx |
| 10% | 1.10 lx  |
| 30% | 3.29 lx  |
| 50% | 5.48 lx  |

### Conditions:

Number of c-planes: 16

Lux at center: 11.0 lx

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



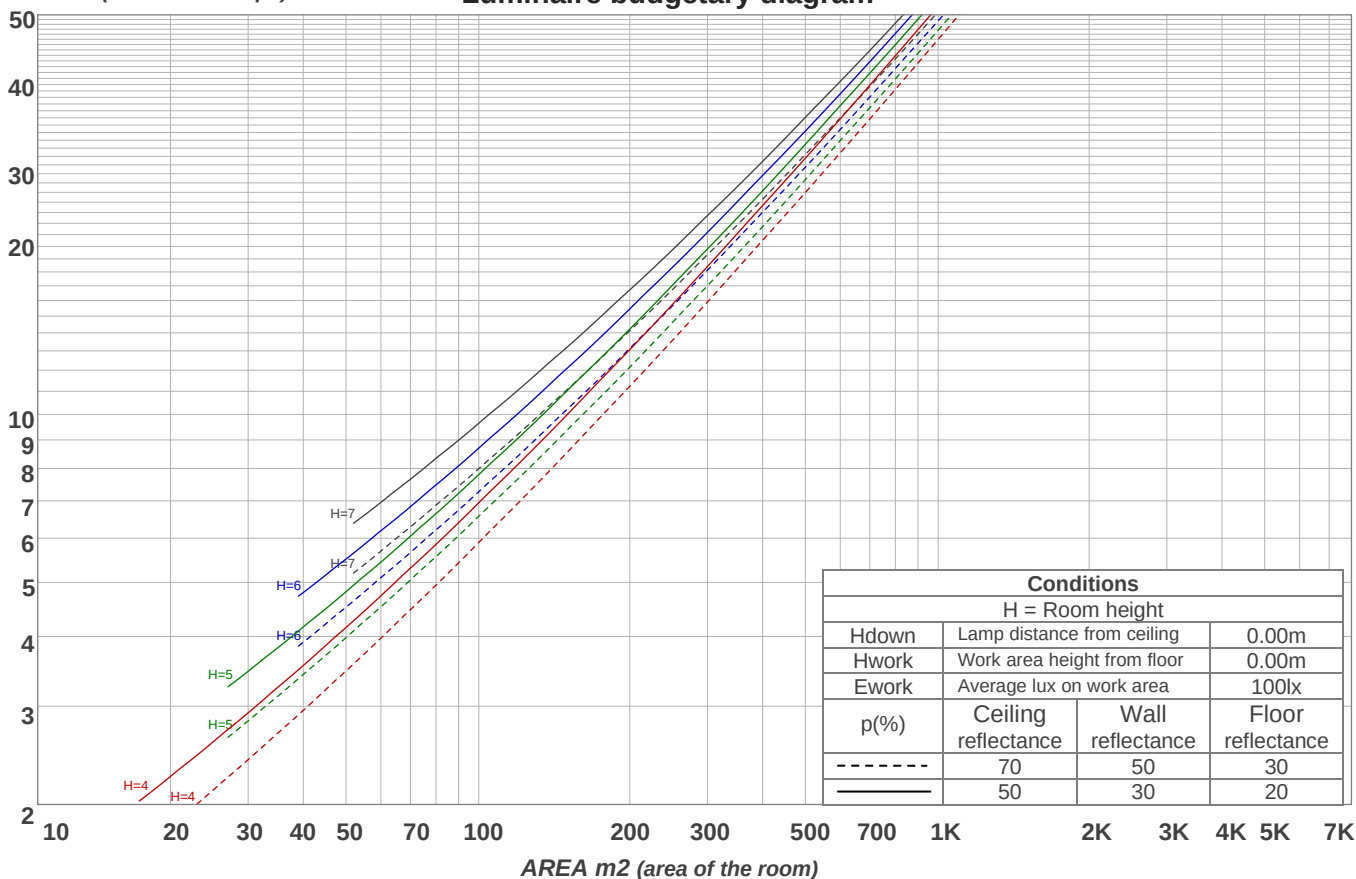
## Light Planning

### 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                   | 119                                                                                                      | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1                   | 111                                                                                                      | 107 | 103 | 100 | 108 | 105 | 101 | 99  | 100 | 98  | 95  | 96  | 94  | 92  | 93  | 91  | 90  | 88  |
| 2                   | 102                                                                                                      | 96  | 90  | 85  | 100 | 94  | 88  | 84  | 90  | 86  | 82  | 87  | 83  | 80  | 84  | 81  | 78  | 76  |
| 3                   | 95                                                                                                       | 86  | 79  | 73  | 92  | 84  | 78  | 72  | 81  | 76  | 71  | 78  | 74  | 70  | 76  | 72  | 69  | 67  |
| 4                   | 88                                                                                                       | 77  | 69  | 64  | 85  | 76  | 69  | 63  | 73  | 67  | 62  | 71  | 66  | 61  | 69  | 64  | 61  | 59  |
| 5                   | 81                                                                                                       | 70  | 62  | 56  | 79  | 69  | 61  | 55  | 67  | 60  | 55  | 65  | 59  | 54  | 63  | 58  | 54  | 52  |
| 6                   | 75                                                                                                       | 63  | 55  | 50  | 74  | 62  | 55  | 49  | 61  | 54  | 49  | 59  | 53  | 48  | 57  | 52  | 48  | 46  |
| 7                   | 70                                                                                                       | 58  | 50  | 44  | 69  | 57  | 50  | 44  | 56  | 49  | 44  | 54  | 48  | 43  | 53  | 47  | 43  | 41  |
| 8                   | 66                                                                                                       | 53  | 45  | 40  | 64  | 52  | 45  | 40  | 51  | 44  | 40  | 50  | 44  | 39  | 49  | 43  | 39  | 37  |
| 9                   | 61                                                                                                       | 49  | 41  | 36  | 60  | 48  | 41  | 36  | 47  | 41  | 36  | 46  | 40  | 36  | 45  | 40  | 36  | 34  |
| 10                  | 58                                                                                                       | 45  | 38  | 33  | 57  | 45  | 38  | 33  | 44  | 37  | 33  | 43  | 37  | 33  | 42  | 37  | 33  | 31  |

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°   |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 103 lm   | 290 lm    | 423 lm    | 479 lm    | 436 lm    | 297 lm    | 135 lm    | 47.6 lm   | 14.3 lm   |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 1.74 lm  | 1.40 lm   | 1.46 lm   | 1.52 lm   | 1.50 lm   | 1.30 lm   | 1.04 lm   | 0.708 lm  | 0.231 lm  |

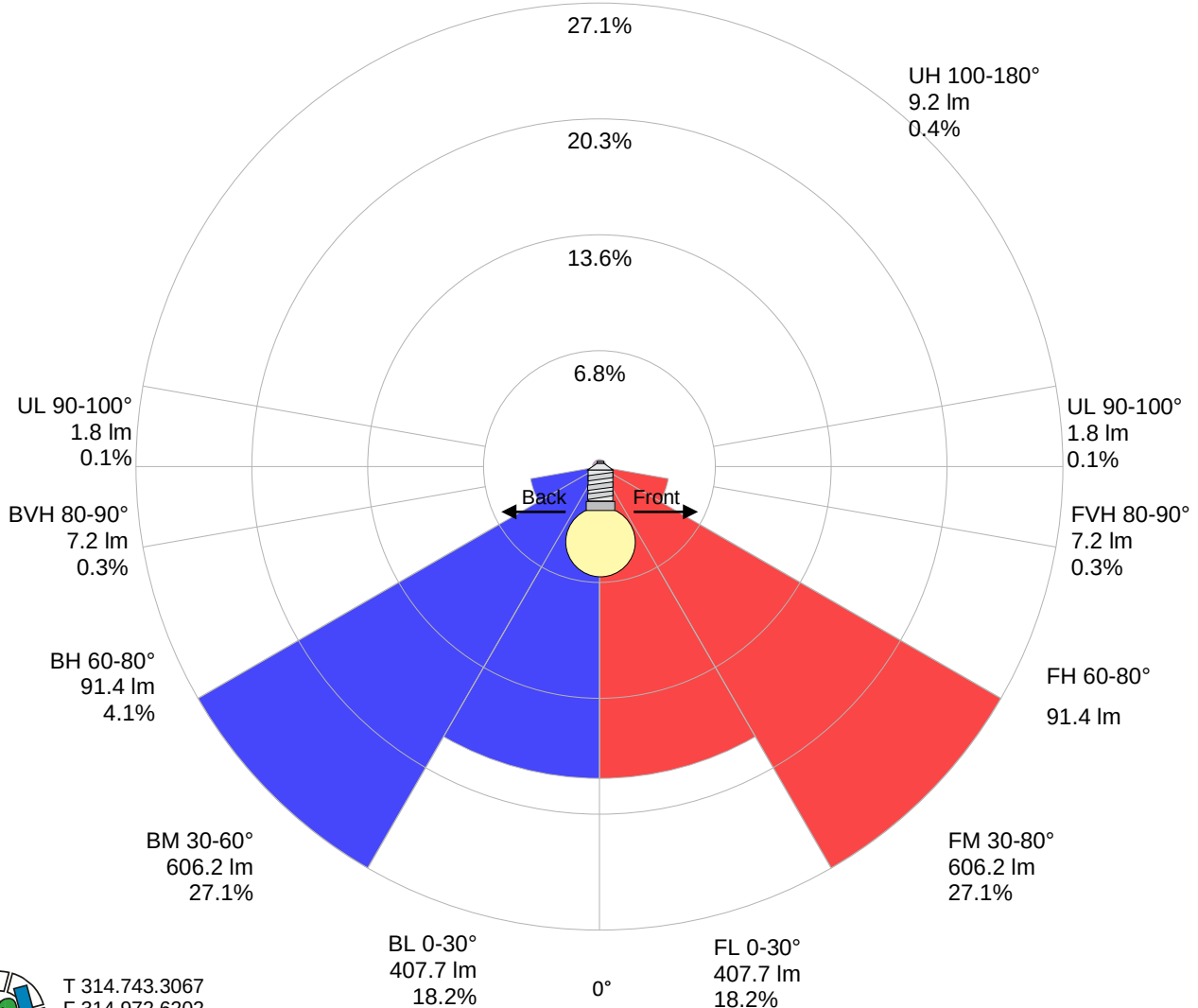


## Road Report

LCS table

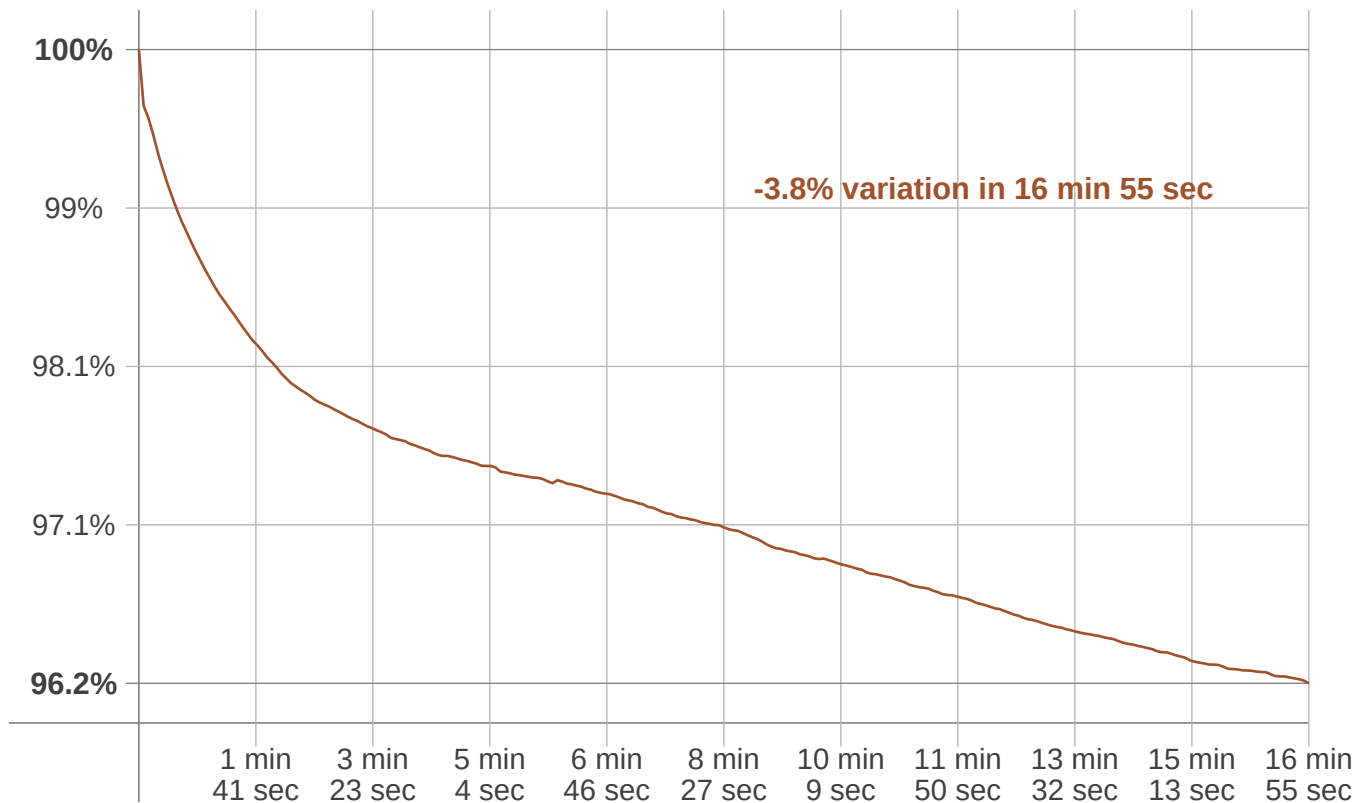
| BUG rating:       | B1 U1 G0 |          |
|-------------------|----------|----------|
| Forward light     | Lumens   | Lumens % |
| Low(0-30):        | 407.7    | 18.2%    |
| Medium(30-60):    | 606.2    | 27.1%    |
| High(60-80):      | 91.4     | 4.1%     |
| Very high(80-90): | 7.2      | 0.3%     |
| Back light        |          |          |
| Low(0-30):        | 407.7    | 18.2%    |
| Medium(30-60):    | 606.2    | 27.1%    |
| High(60-80):      | 91.4     | 4.1%     |
| Very high(80-90): | 7.2      | 0.3%     |
| Uplight           |          |          |
| Low(90-100):      | 1.8      | 0.1%     |
| High(100-180):    | 9.2      | 0.4%     |

LCS graph



## Stabilization

### Warmup curve



### Warmup result

|                  |               |
|------------------|---------------|
| Warmup time:     | 16 min 55 sec |
| Warmup variation | -3.8%         |

### Warmup conditions

|                    |        |
|--------------------|--------|
| Stable period:     | 15 min |
| Stable change max: | 2.0%   |
| Minimum time:      | 15 min |

### Color temperature change

| CCT start | CCT change | CCT end |
|-----------|------------|---------|
| 4006 K    | +30 K      | 4036 K  |

### Output change

| Output start | Output change | Output end |
|--------------|---------------|------------|
| 2292 lm      | -56 lm        | 2236 lm    |



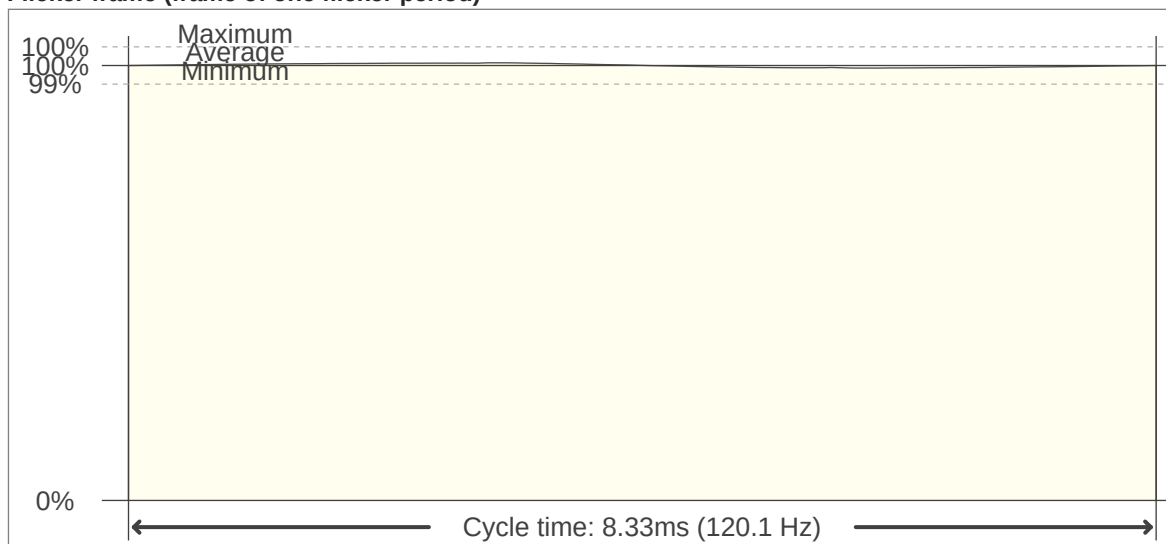


## Flicker

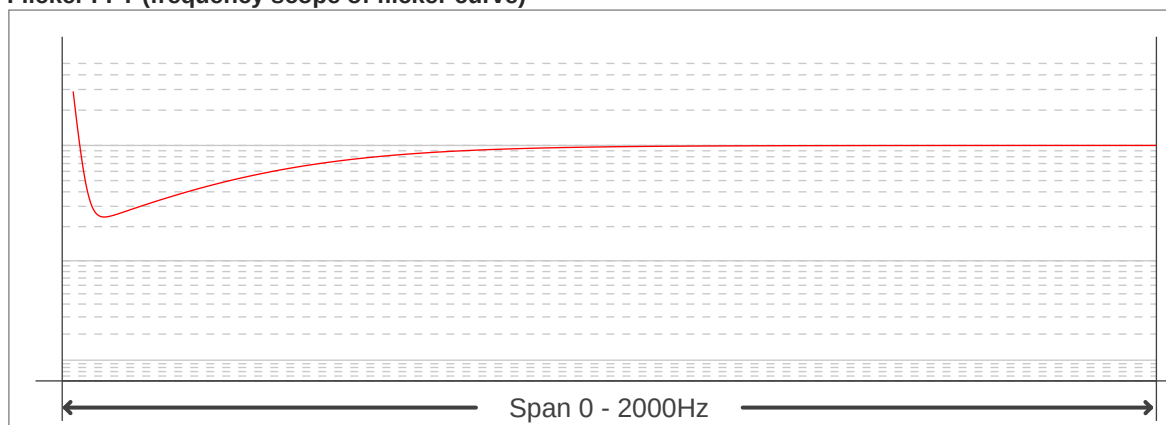
Flicker curve (complete sampled flicker signal)



Flicker frame (frame of one flicker period)



Flicker FFT (frequency scope of flicker curve)



Flicker results:

|                       |           |
|-----------------------|-----------|
| Flicker frequency:    | 120.12 Hz |
| Flicker index:        | 0         |
| Flicker percentage:   | 0.65 %    |
| SVM: (Visual flicker) | 0.02      |

Flicker conditions:

|              |                      |
|--------------|----------------------|
| Sample rate: | 40000 samples/second |
|--------------|----------------------|

