

PHOTOMETRIC TEST REPORT

CAN 100 TRACK MATT BLACK

astro

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LIGHT EFFICIENCY:

71 Lumen/Watt

LIGHT QUALITY:

CRI: 92.6

COLOR TEMPERATURE:

3034 K

OUTPUT: 2048 lm

PEAK: 8724 cd

POWER: 28.8 W

PF: 0.97



Tracking number: [n/a](#)

Product name:

Can 100 Track Matt Black

Item number:

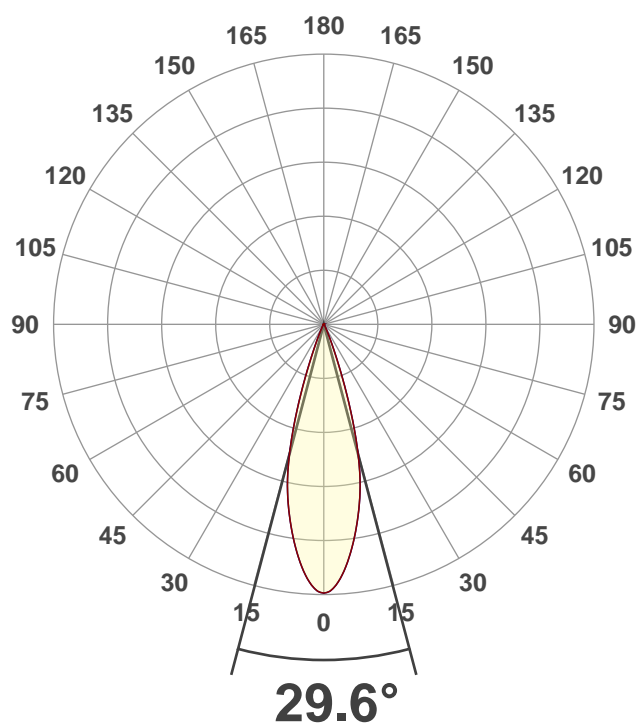
1396035

Date and time:

02/12/2020 13:33:03

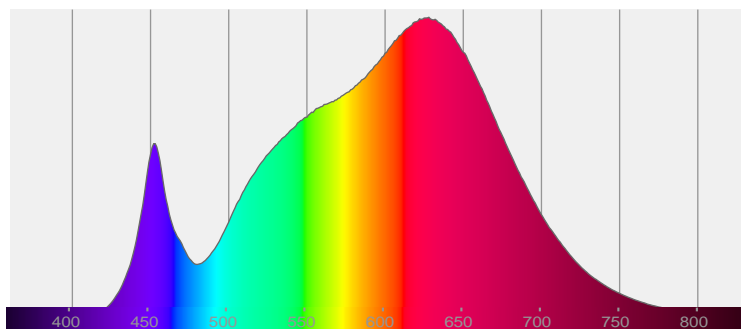
Description:

IP20 Track Spotlight

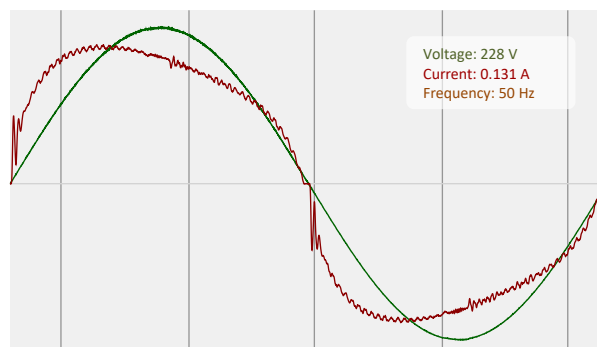


CIE 1931
x: 0.434
y: 0.401

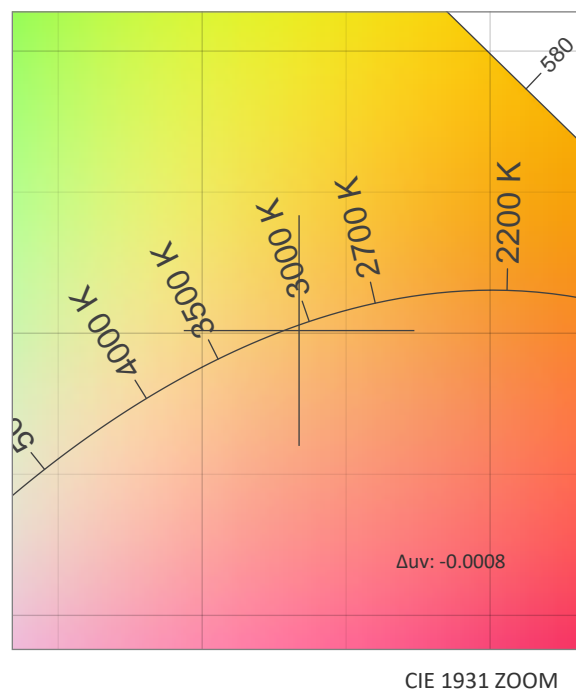
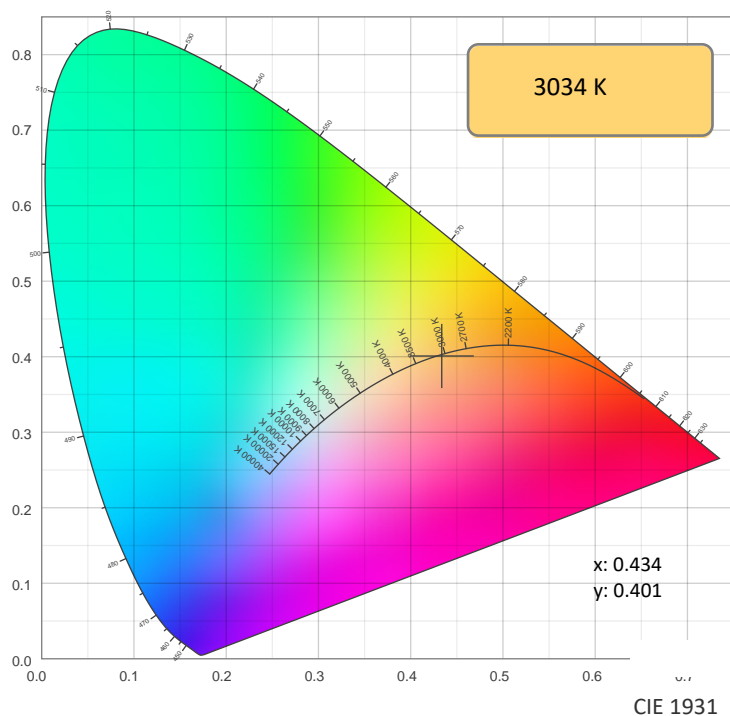
SPECTRA



POWER

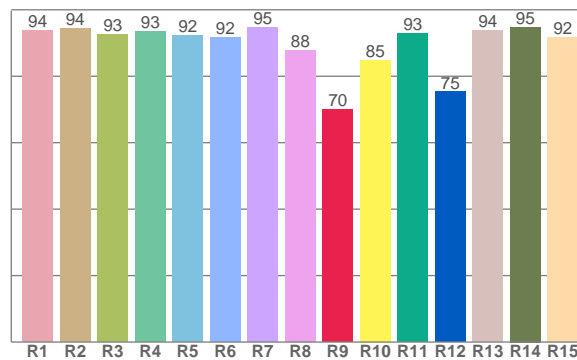
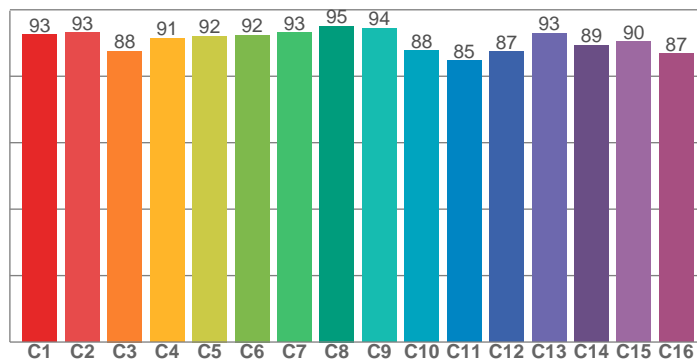


COLOR DETAILS



TM30: 90.8

CRI: 92.6 (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 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 93.8 | 94.5 | 92.6 | 93.4 | 92.3 | 91.7 | 94.6 | 87.9 | 70.0 | 84.9 | 92.9 | 75.3 | 93.9 | 94.8 | 91.8 |

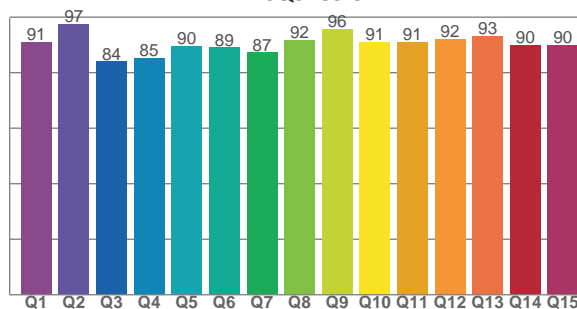
TM30 C values, 16 binned values out of total of 99 C values

| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 92.6 | 93.1 | 87.6 | 91.5 | 92.1 | 92.4 | 93.1 | 95.1 | 94.5 | 87.7 | 84.8 | 87.4 | 93.0 | 89.4 | 90.5 | 86.9 |

CQS Q values

| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 90.9 | 97.4 | 84.1 | 85.3 | 89.7 | 89.1 | 87.2 | 91.7 | 95.6 | 90.9 | 91.0 | 92.1 | 93.3 | 89.9 | 89.9 |

CQS: 89.9



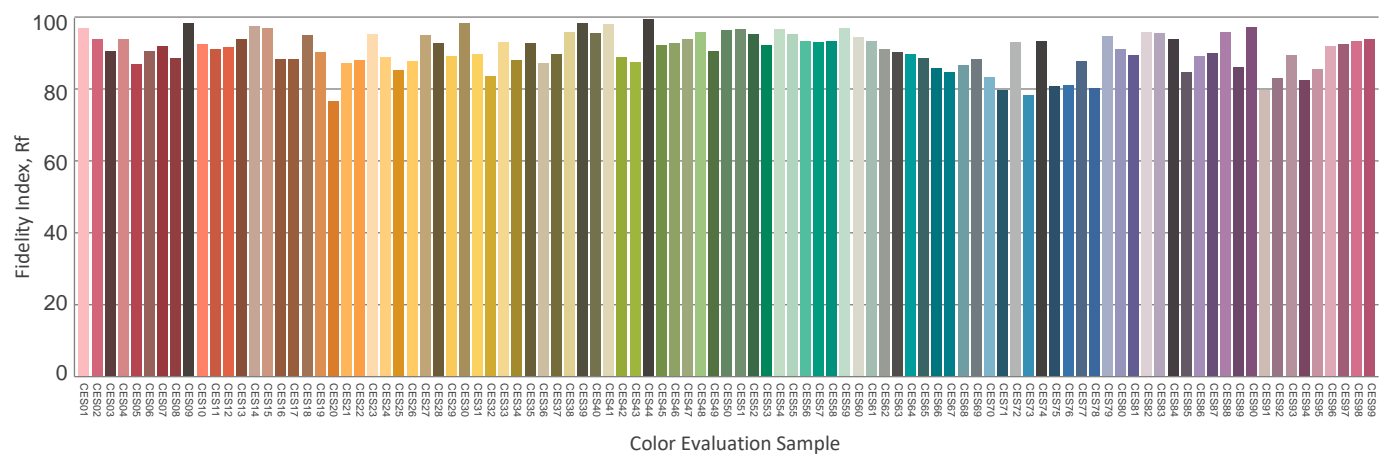
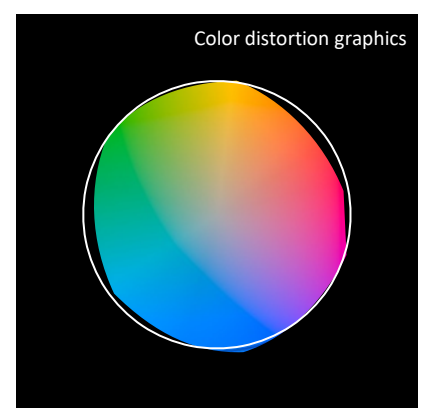
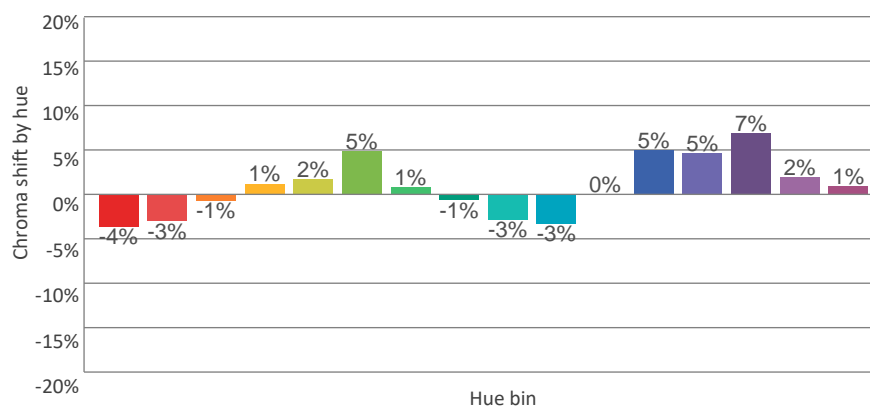
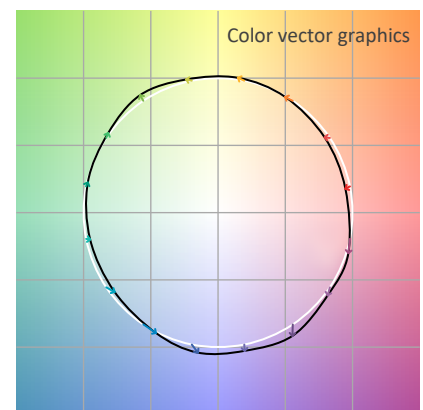
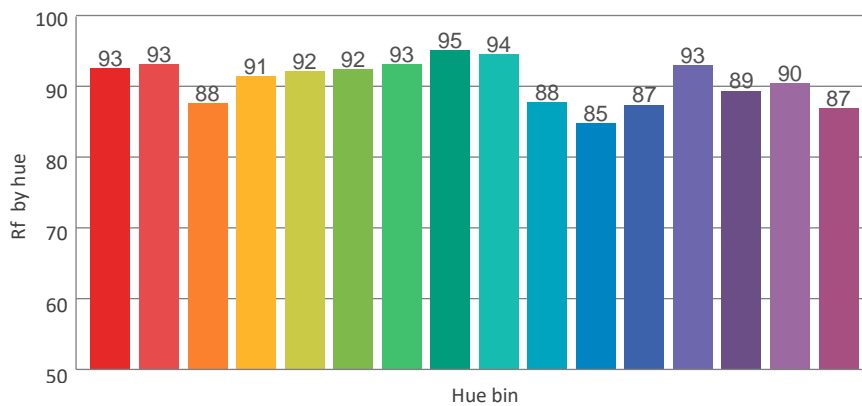
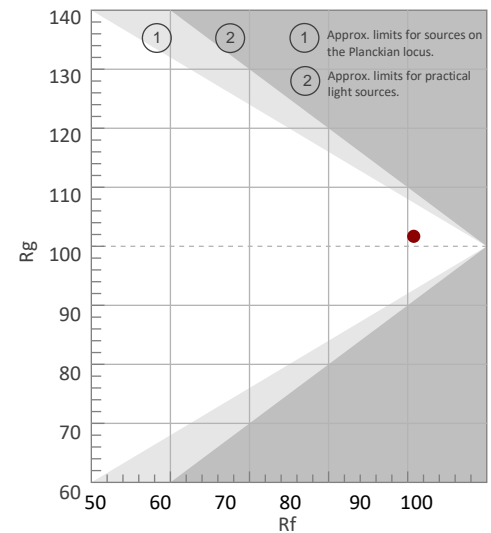
COLOR PARAMETERS

| 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 |
| 3034 K | 92.6 | 70.0 | 90.8 | 101.7 | 89.9 | 0.434 | 0.401 | 0.250 | 0.346 | -0.0008 |

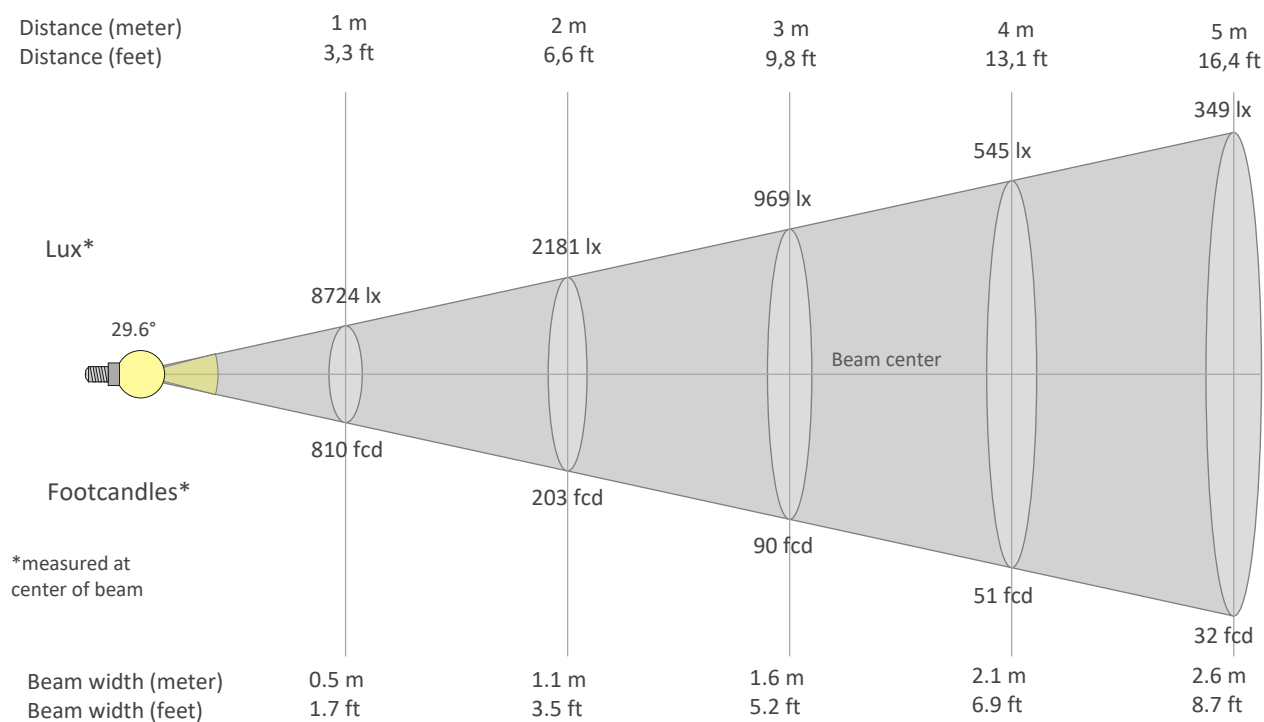
Rf 90.8
Fidelity index Rf

Rg 101.7
Gammut index Rg

| Hue Bin | Graphic shifts (%) | | |
|---------|--------------------|--------|------|
| | R _f | Chroma | Hue |
| 1 | 93 | -4% | -1% |
| 2 | 93 | -3% | 2% |
| 3 | 88 | -1% | 6% |
| 4 | 91 | 1% | 5% |
| 5 | 92 | 2% | 4% |
| 6 | 92 | 5% | 0% |
| 7 | 93 | 1% | -4% |
| 8 | 95 | -1% | -3% |
| 9 | 94 | -3% | 1% |
| 10 | 88 | -3% | 6% |
| 11 | 85 | 0% | 11% |
| 12 | 87 | 5% | 6% |
| 13 | 93 | 5% | -1% |
| 14 | 89 | 7% | -5% |
| 15 | 90 | 2% | -6% |
| 16 | 87 | 1% | -11% |



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 |
| 8724lx | 2181lx | 969lx | 545lx | 349lx | 242lx | 178lx | 136lx | 108lx | 87lx | 72lx | 61lx | 52lx | 45lx | 39lx | 34lx | 30lx | 27lx | 24lx | 22lx |
| 810.5fcd | 202.6fcd | 90.1fcd | 50.7fcd | 32.4fcd | 22.5fcd | 16.5fcd | 12.7fcd | 10fcd | 8.1fcd | 6.7fcd | 5.6fcd | 4.8fcd | 4.1fcd | 3.6fcd | 3.2fcd | 2.8fcd | 2.5fcd | 2.2fcd | 2fcd |

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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 8724 | 8582 | 8205 | 7672 | 7049 | 6370 | 5643 | 4771 | 3684 | 2503 | 1460 | 779 | 419 | 236 | 149 | 104 | 78 | 59 | 47 | 37 |
| 100% | 98% | 94% | 88% | 81% | 73% | 65% | 55% | 42% | 29% | 17% | 9% | 5% | 3% | 2% | 1% | 1% | 1% | 1% | 0% |

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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 8724 | 8582 | 8205 | 7672 | 7049 | 6370 | 5643 | 4771 | 3684 | 2503 | 1460 | 779 | 419 | 236 | 149 | 104 | 78 | 59 | 47 | 37 |
| 100% | 98% | 94% | 88% | 81% | 73% | 65% | 55% | 42% | 29% | 17% | 9% | 5% | 3% | 2% | 1% | 1% | 1% | 1% | 0% |

Intensities in 180° c-plane

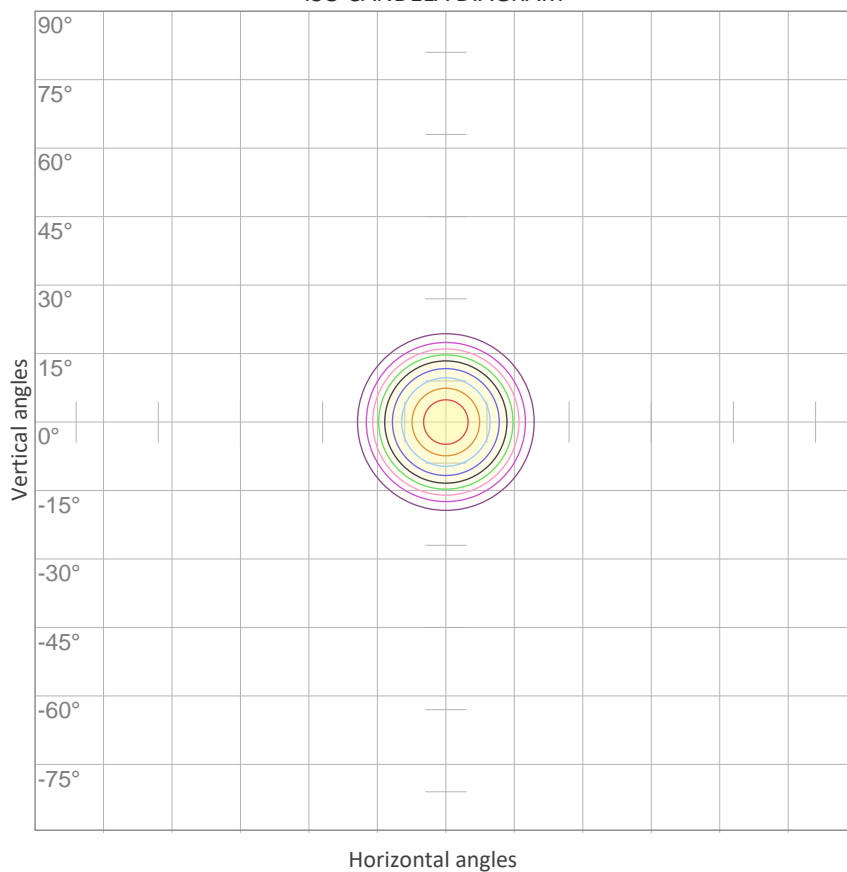
| 0° | 2° | 4° | 6° | 8° | 10° | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 8724 | 8582 | 8205 | 7672 | 7049 | 6370 | 5643 | 4771 | 3684 | 2503 | 1460 | 779 | 419 | 236 | 149 | 104 | 78 | 59 | 47 | 37 |
| 100% | 98% | 94% | 88% | 81% | 73% | 65% | 55% | 42% | 29% | 17% | 9% | 5% | 3% | 2% | 1% | 1% | 1% | 1% | 0% |

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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 8724 | 8582 | 8205 | 7672 | 7049 | 6370 | 5643 | 4771 | 3684 | 2503 | 1460 | 779 | 419 | 236 | 149 | 104 | 78 | 59 | 47 | 37 |
| 100% | 98% | 94% | 88% | 81% | 73% | 65% | 55% | 42% | 29% | 17% | 9% | 5% | 3% | 2% | 1% | 1% | 1% | 1% | 0% |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 29.6° | 43.3° | 52.6° | 99.5% | 99.1% |

ISO CANDELA DIAGRAM



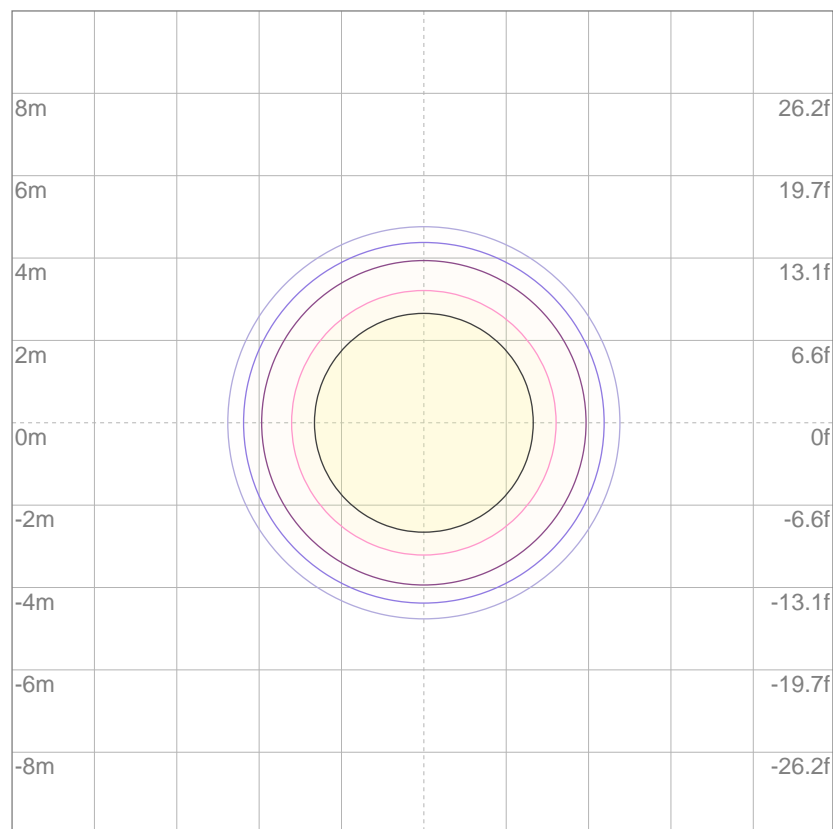
| | |
|-----|---------|
| 10% | 872 cd |
| 20% | 1745 cd |
| 30% | 2617 cd |
| 40% | 3490 cd |
| 50% | 4362 cd |
| 60% | 5234 cd |
| 70% | 6107 cd |
| 80% | 6979 cd |
| 90% | 7852 cd |

Conditions:

Number of c-planes: 8

Candela at center: 8724 cd

ISO LUX DIAGRAM



Mounting height: 10 meters (33 feet)

| | |
|-----|----------------|
| 3% | 2.62 lx |
| 5% | 4.36 lx |
| 10% | 8.72 lx |
| 30% | 26.2 lx |
| 50% | {LUX_10M50} lx |

Conditions:

Number of c-planes: 8

Lux at center: 87.2 lx

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

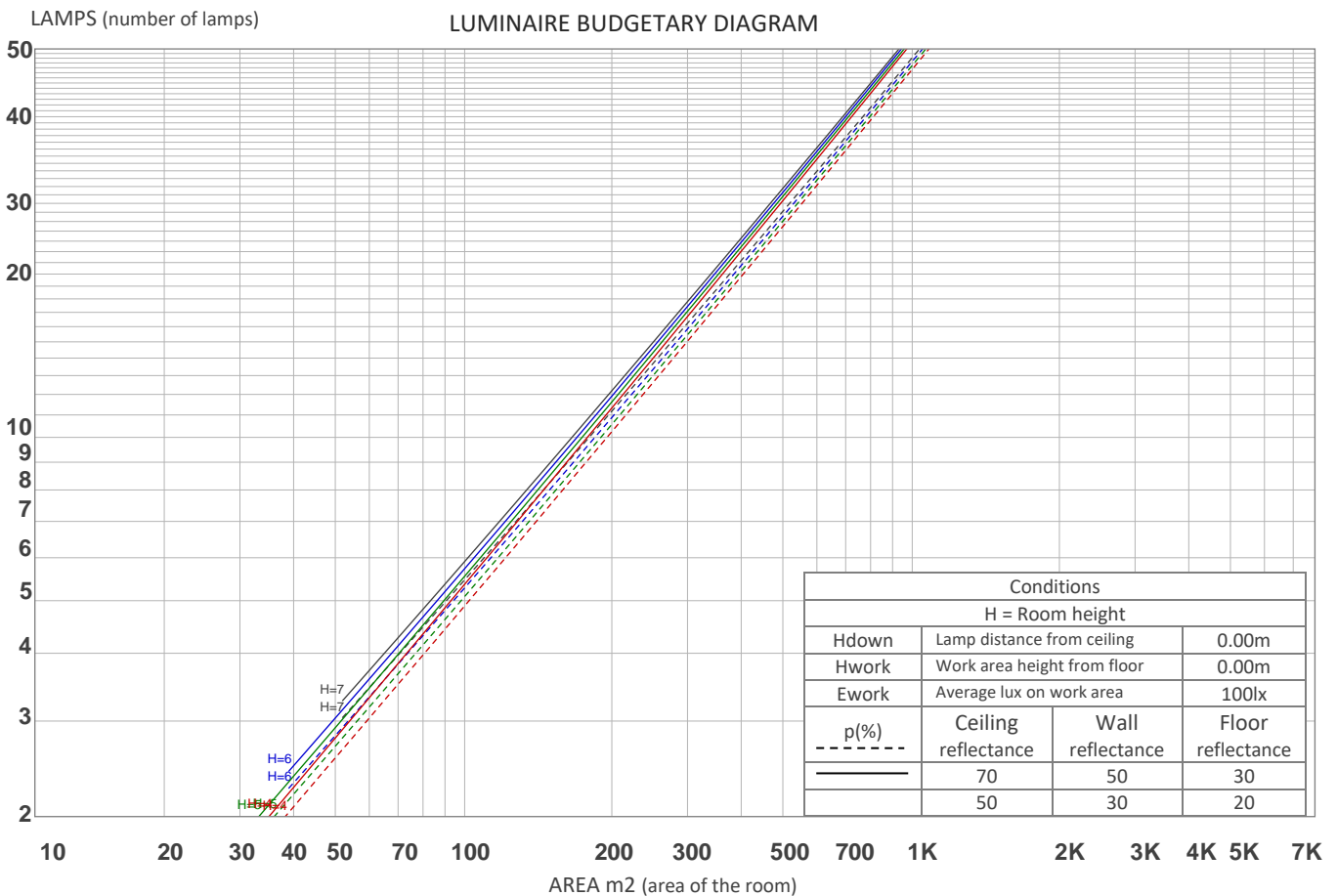
UGR

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 X Y | | Viewing direction at right angles to lamp axis | | | | | Viewing direction parallel to lamp axis | | | | |
| 2H | 2H | 2.4 | 2.8 | 2.5 | 3.0 | 3.2 | 2.4 | 2.8 | 2.5 | 3.0 | 3.2 |
| | 3H | 2.1 | 2.6 | 2.5 | 2.8 | 3.0 | 2.1 | 2.6 | 2.5 | 2.8 | 3.0 |
| | 4H | 2.0 | 2.6 | 2.4 | 2.8 | 3.0 | 2.0 | 2.6 | 2.4 | 2.8 | 3.0 |
| | 6H | 2.0 | 2.4 | 2.3 | 2.7 | 3.1 | 2.0 | 2.4 | 2.3 | 2.7 | 3.1 |
| | 8H | 2.0 | 2.4 | 2.3 | 2.7 | 3.1 | 2.0 | 2.4 | 2.3 | 2.7 | 3.1 |
| | 12H | 1.9 | 2.3 | 2.3 | 2.7 | 3.1 | 1.9 | 2.3 | 2.3 | 2.7 | 3.1 |
| 4H | 2H | 2.0 | 2.6 | 2.4 | 2.8 | 3.0 | 2.0 | 2.6 | 2.4 | 2.8 | 3.0 |
| | 3H | 1.9 | 2.3 | 2.3 | 2.7 | 3.1 | 1.9 | 2.3 | 2.3 | 2.7 | 3.1 |
| | 4H | 1.8 | 2.2 | 2.2 | 2.6 | 3.1 | 1.8 | 2.2 | 2.2 | 2.6 | 3.1 |
| | 6H | 1.7 | 2.1 | 2.2 | 2.5 | 2.8 | 1.7 | 2.1 | 2.2 | 2.5 | 2.8 |
| | 8H | 1.6 | 2.0 | 2.2 | 2.4 | 2.8 | 1.6 | 2.0 | 2.2 | 2.4 | 2.8 |
| | 12H | 1.6 | 1.9 | 2.1 | 2.3 | 2.8 | 1.6 | 1.9 | 2.1 | 2.3 | 2.8 |
| 8H | 4H | 1.6 | 2.0 | 2.2 | 2.4 | 2.7 | 1.6 | 2.0 | 2.2 | 2.4 | 2.7 |
| | 6H | 1.6 | 1.8 | 2.1 | 2.3 | 2.8 | 1.6 | 1.8 | 2.1 | 2.3 | 2.8 |
| | 8H | 1.6 | 1.8 | 2.1 | 2.3 | 2.9 | 1.6 | 1.8 | 2.1 | 2.3 | 2.9 |
| | 12H | 1.5 | 1.7 | 2.1 | 2.2 | 2.8 | 1.5 | 1.7 | 2.1 | 2.2 | 2.8 |
| 12H | 4H | 1.6 | 1.9 | 2.1 | 2.3 | 2.7 | 1.6 | 1.9 | 2.1 | 2.3 | 2.7 |
| | 6H | 1.6 | 1.7 | 2.1 | 2.3 | 2.9 | 1.6 | 1.7 | 2.1 | 2.3 | 2.9 |
| | 8H | 1.5 | 1.7 | 2.1 | 2.2 | 2.8 | 1.5 | 1.7 | 2.1 | 2.2 | 2.8 |
| Variation of the observer position for the luminaire distance S | | | | | | | | | | | |
| S = 1.0H | | 5.1 / -9.4 | | | | | 5.1 / -9.4 | | | | |
| S = 1.5H | | 7.7 / -13.2 | | | | | 7.7 / -13.2 | | | | |
| S = 2.0H | | 9.6 / -15.8 | | | | | 9.6 / -15.8 | | | | |
| Standard table | | n/a | | | | | n/a | | | | |
| Correction summand | | n/a | | | | | n/a | | | | |
| Corrected glare indices referring to 2048 lm total luminous flux | | | | | | | | | | | |

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 | 115 | 113 | 111 | 109 | 113 | 111 | 109 | 108 | 107 | 105 | 104 | 103 | 102 | 101 | 100 | 99 | 98 | 96 |
| 2 | 111 | 108 | 105 | 103 | 109 | 106 | 104 | 101 | 103 | 101 | 99 | 100 | 99 | 97 | 97 | 96 | 95 | 94 |
| 3 | 108 | 104 | 100 | 97 | 106 | 102 | 99 | 97 | 100 | 97 | 95 | 97 | 95 | 94 | 95 | 94 | 92 | 91 |
| 4 | 105 | 100 | 96 | 93 | 103 | 99 | 95 | 93 | 97 | 94 | 91 | 95 | 92 | 90 | 93 | 91 | 89 | 88 |
| 5 | 102 | 96 | 92 | 89 | 101 | 95 | 92 | 89 | 94 | 91 | 88 | 92 | 90 | 88 | 91 | 89 | 87 | 86 |
| 6 | 99 | 93 | 89 | 86 | 98 | 93 | 89 | 86 | 91 | 88 | 86 | 90 | 87 | 85 | 89 | 86 | 84 | 83 |
| 7 | 97 | 90 | 86 | 84 | 96 | 90 | 86 | 83 | 89 | 85 | 83 | 88 | 85 | 83 | 87 | 84 | 82 | 81 |
| 8 | 94 | 88 | 84 | 81 | 93 | 87 | 84 | 81 | 86 | 83 | 81 | 85 | 83 | 80 | 85 | 82 | 80 | 79 |
| 9 | 92 | 85 | 81 | 79 | 91 | 85 | 81 | 79 | 84 | 81 | 78 | 83 | 80 | 78 | 83 | 80 | 78 | 77 |
| 10 | 90 | 83 | 79 | 77 | 89 | 83 | 79 | 77 | 82 | 79 | 76 | 81 | 78 | 76 | 81 | 78 | 76 | 75 |



ZONAL LUMEN SUMMARY

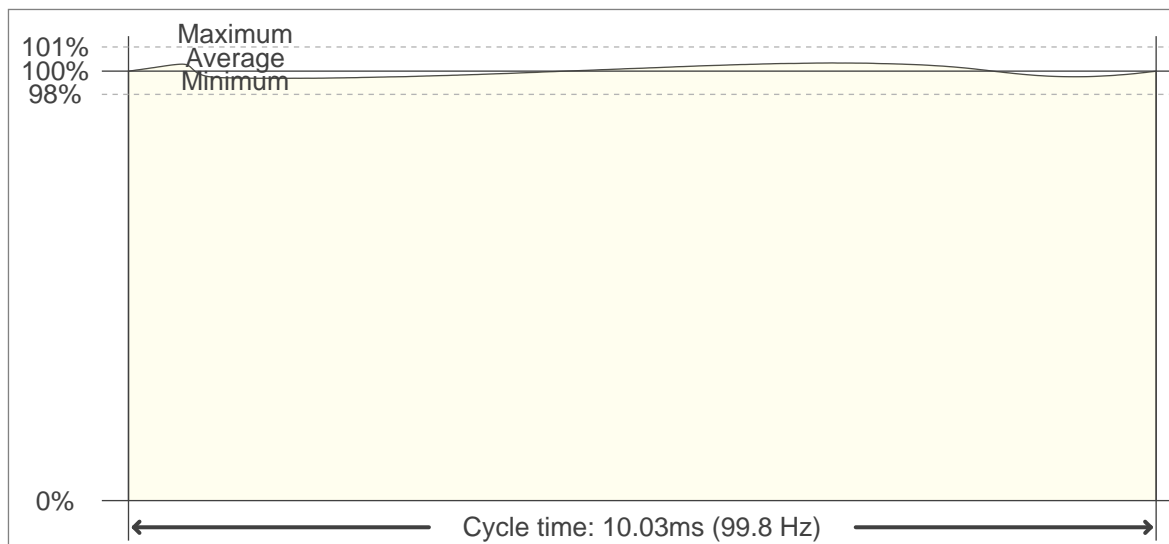
| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 707 lm | 1085 lm | 195 lm | 34.8 lm | 12.0 lm | 3.31 lm | 1.06 lm | 0.346 lm | 0.258 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0.246 lm | 0.234 lm | 0.343 lm | 0.740 lm | 1.42 lm | 2.03 lm | 2.08 lm | 1.41 lm | 0.356 lm |

FLICKER

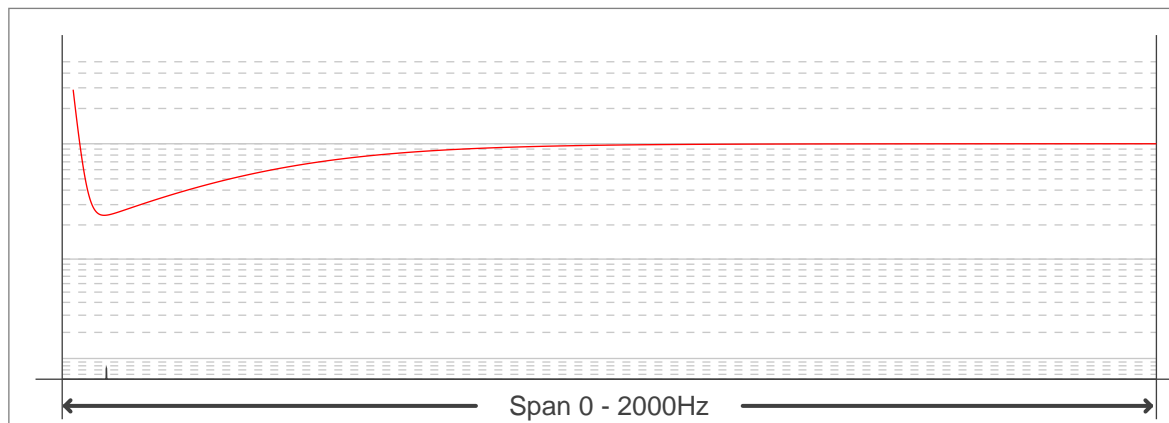
FLICKER CURVE (COMPLETE SAMPLED FLICKER)



FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

| | |
|-----------------------|----------|
| Flicker frequency: | 99.75 Hz |
| Flicker index: | 0.01 |
| Flicker percentage: | 1.86 % |
| SVM: (Visual flicker) | 0.06 |

FLICKER CONDITIONS:

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