

PHOTOMETRIC TEST REPORT

TERRA 42 LED

astro

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LIGHT EFFICIENCY:

53 Lumen/Watt

LIGHT QUALITY:

CRI: 84.1

COLOR TEMPERATURE:

3091 K

OUTPUT: 169 lm

PEAK: 373 cd

POWER: 3.2 W

PF: 0.45



Tracking number: [n/a](#)

Product name:

Terra 42 LED

Item number:

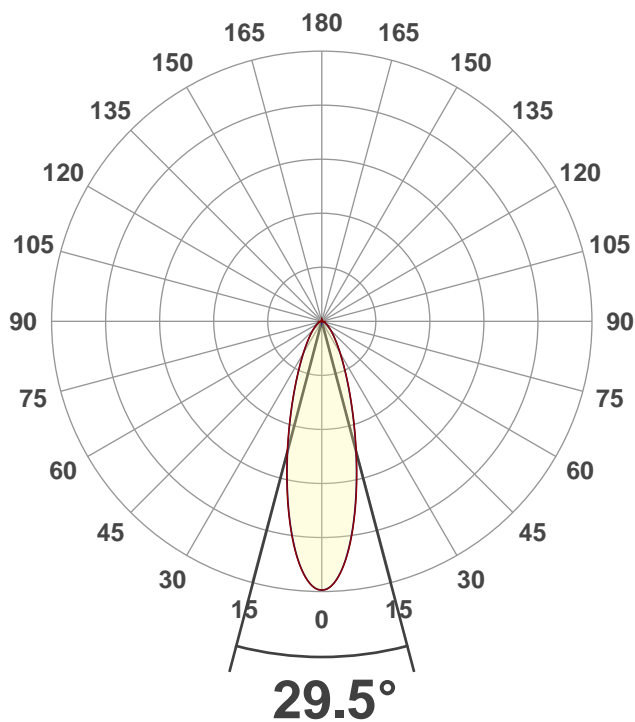
1201007

Date and time:

29/04/2021 11:53:03

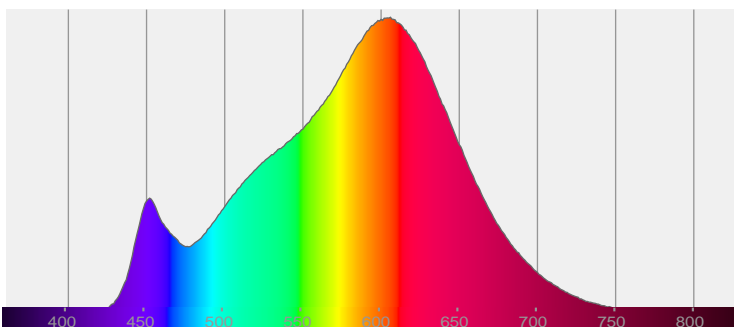
Description:

IP67 Outdoor LED Ground light



CIE 1931
x: 0.437
y: 0.416

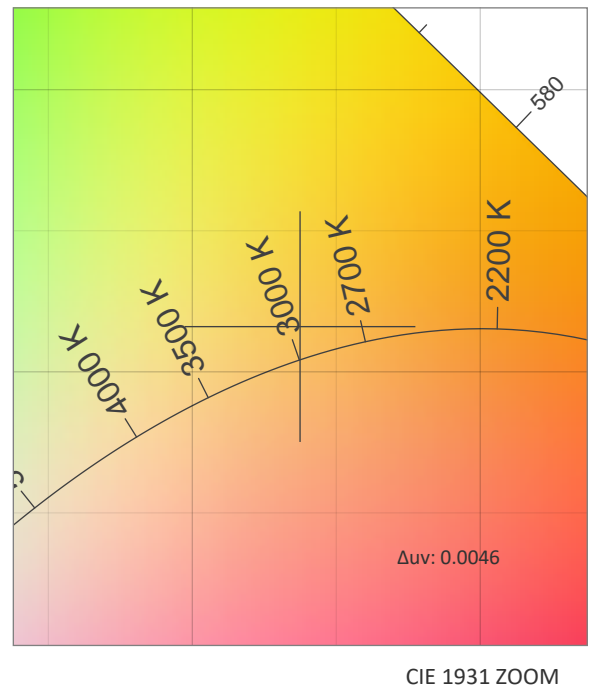
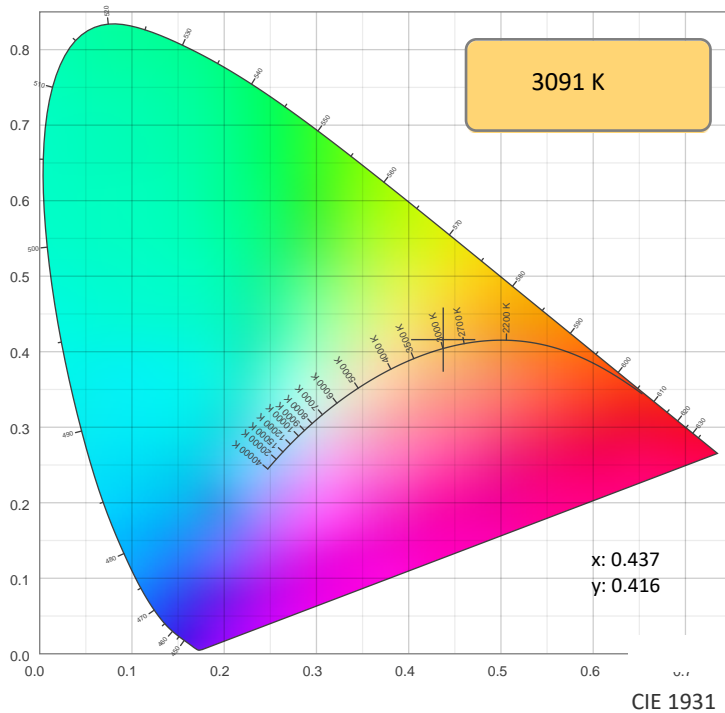
SPECTRA



POWER

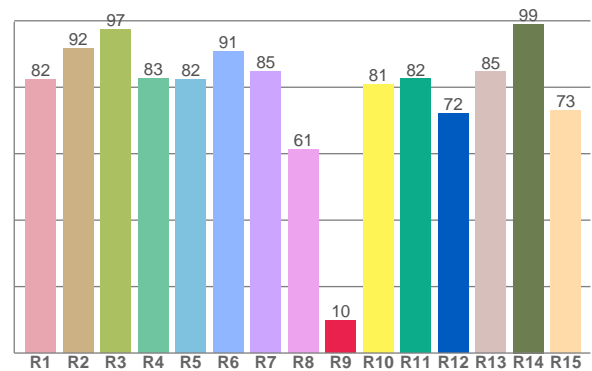
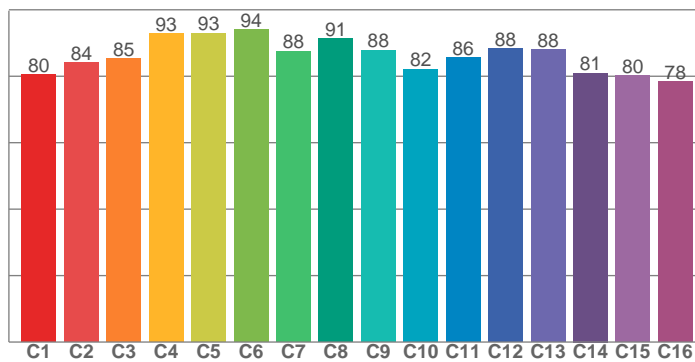


COLOR DETAILS



TM30: 86.4

CRI: 84.1 (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 |
|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|
| 82.3 | 91.6 | 97.5 | 82.7 | 82.3 | 90.7 | 84.8 | 61.3 | 9.9 | 80.9 | 82.5 | 72.2 | 84.6 | 99.0 | 73.1 |

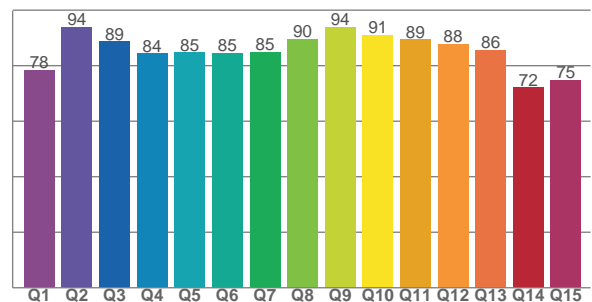
TM30 C values, 16 binned values out of total of 99 C values

| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 80.4 | 84.2 | 85.3 | 92.7 | 93.0 | 94.0 | 87.6 | 91.5 | 87.9 | 82.2 | 85.6 | 88.4 | 88.0 | 81.0 | 80.3 | 78.5 |

CQS Q values

| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 78.5 | 93.9 | 88.7 | 84.3 | 84.8 | 84.5 | 84.9 | 89.6 | 93.9 | 91.1 | 89.5 | 87.7 | 85.6 | 72.1 | 74.9 |

CQS: 84.2



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 |
| 3091 K | 84.1 | 9.9 | 86.4 | 93.0 | 84.2 | 0.437 | 0.416 | 0.246 | 0.351 | 0.0046 |

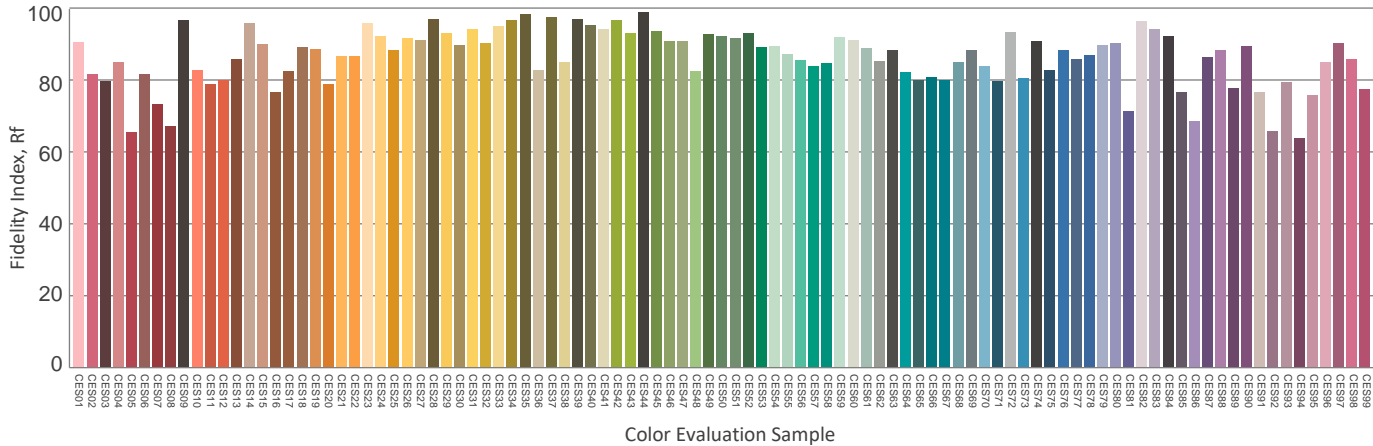
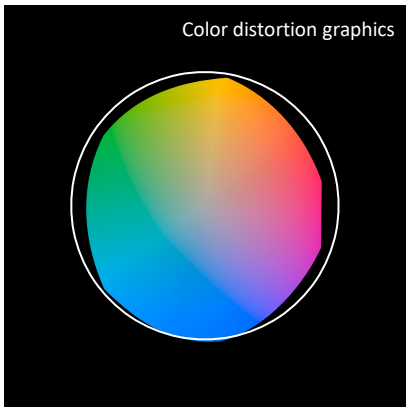
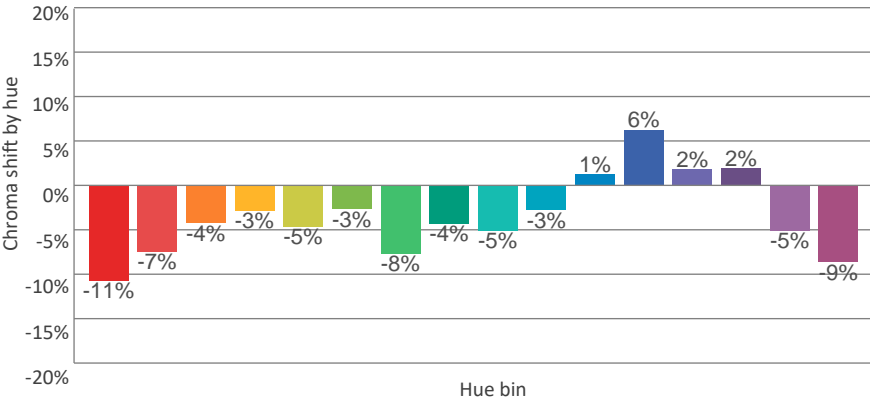
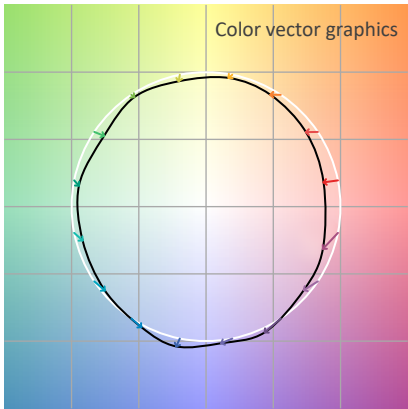
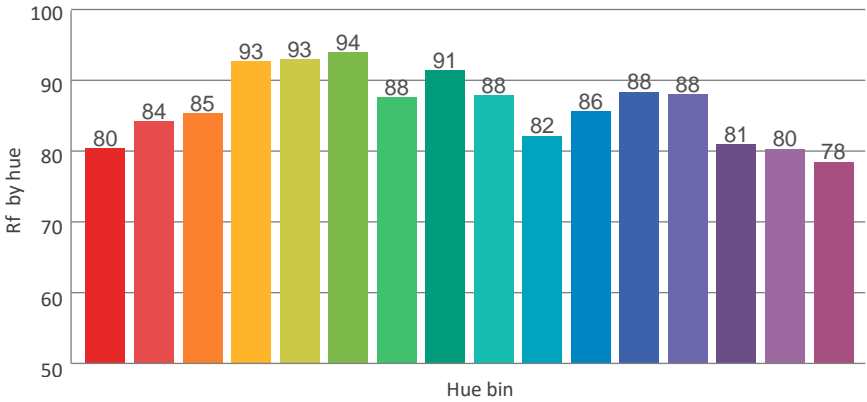
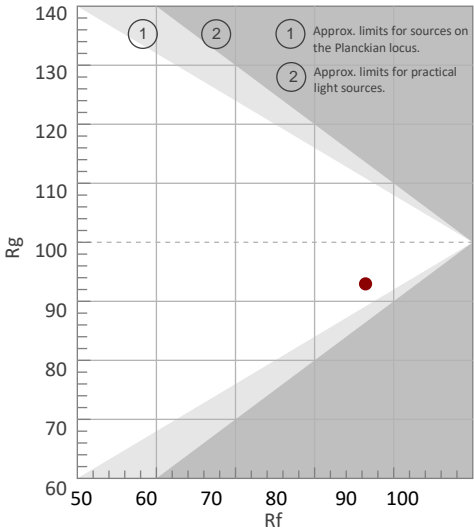
Rf 86.4

Fidelity index Rf

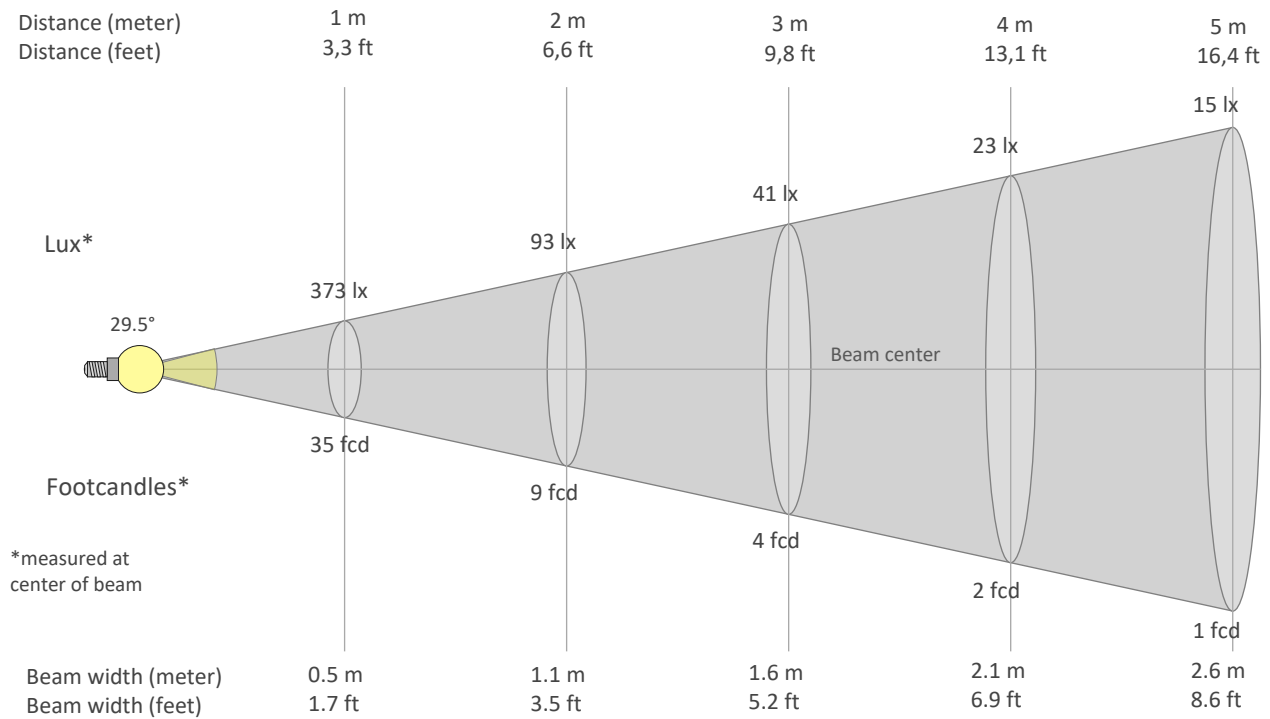
Rg 93.0

Gammut index Rg

| Hue Bin | Graphic shifts (%) | | |
|---------|--------------------|--------|------|
| | Rf | Chroma | Hue |
| 1 | 80 | -11% | 1% |
| 2 | 84 | -7% | 5% |
| 3 | 85 | -4% | 6% |
| 4 | 93 | -3% | 2% |
| 5 | 93 | -5% | 2% |
| 6 | 94 | -3% | -1% |
| 7 | 88 | -8% | -2% |
| 8 | 91 | -4% | 3% |
| 9 | 88 | -5% | 7% |
| 10 | 82 | -3% | 10% |
| 11 | 86 | 1% | 10% |
| 12 | 88 | 6% | -1% |
| 13 | 88 | 2% | -9% |
| 14 | 81 | 2% | -16% |
| 15 | 80 | -5% | -11% |
| 16 | 78 | -9% | -14% |



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 |
| 373lx | 93lx | 41lx | 23lx | 15lx | 10lx | 8lx | 6lx | 5lx | 4lx | 3lx | 3lx | 2lx | 2lx | 2lx | 1lx | 1lx | 1lx | 1lx | 1lx |
| 34.6fcd | 8.7fcd | 3.8fcd | 2.2fcd | 1.4fcd | 1fcd | 0.7fcd | 0.5fcd | 0.4fcd | 0.3fcd | 0.3fcd | 0.2fcd | 0.2fcd | 0.2fcd | 0.2fcd | 0.1fcd | 0.1fcd | 0.1fcd | 0.1fcd | 0.1fcd |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 373 | 368 | 352 | 329 | 299 | 266 | 232 | 200 | 169 | 143 | 120 | 101 | 85 | 71 | 60 | 52 | 44 | 38 | 33 | 28 |
| 100% | 99% | 94% | 88% | 80% | 71% | 62% | 54% | 45% | 38% | 32% | 27% | 23% | 19% | 16% | 14% | 12% | 10% | 9% | 8% |

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° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 373 | 367 | 352 | 328 | 298 | 265 | 230 | 198 | 168 | 141 | 118 | 99 | 83 | 70 | 59 | 50 | 43 | 37 | 32 | 28 |
| 100% | 99% | 94% | 88% | 80% | 71% | 62% | 53% | 45% | 38% | 32% | 27% | 22% | 19% | 16% | 14% | 12% | 10% | 9% | 7% |

Intensities in 180° c-plane

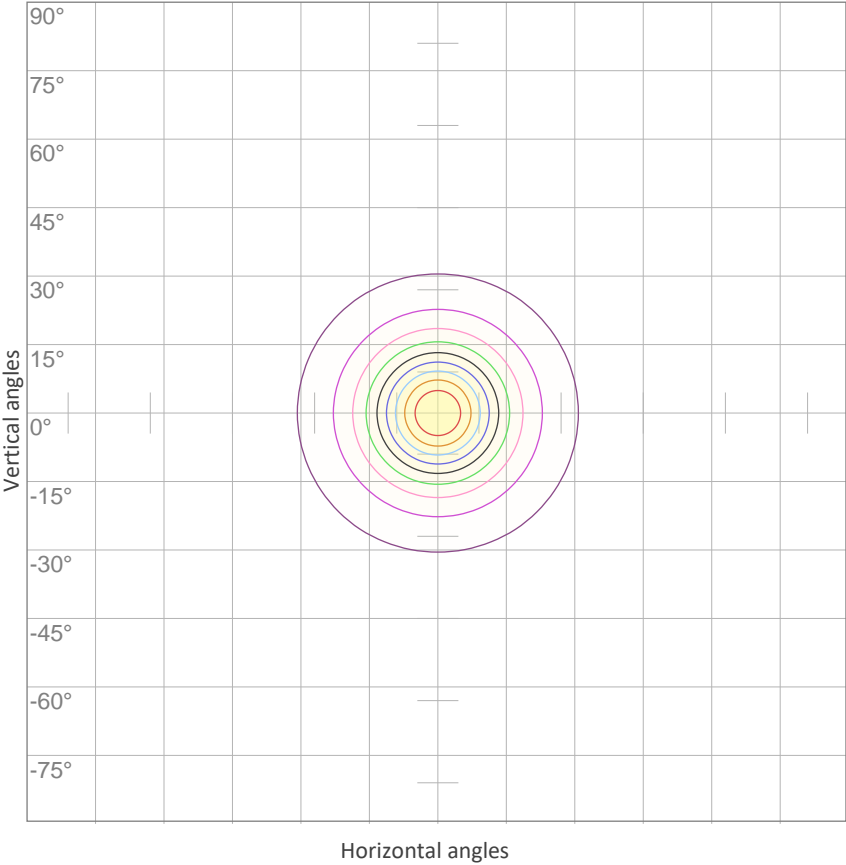
| 0° | 2° | 4° | 6° | 8° | 10° | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 373 | 368 | 352 | 329 | 299 | 266 | 232 | 200 | 169 | 143 | 120 | 101 | 85 | 71 | 60 | 52 | 44 | 38 | 33 | 28 |
| 100% | 99% | 94% | 88% | 80% | 71% | 62% | 54% | 45% | 38% | 32% | 27% | 23% | 19% | 16% | 14% | 12% | 10% | 9% | 8% |

Intensities in 270° c-plane

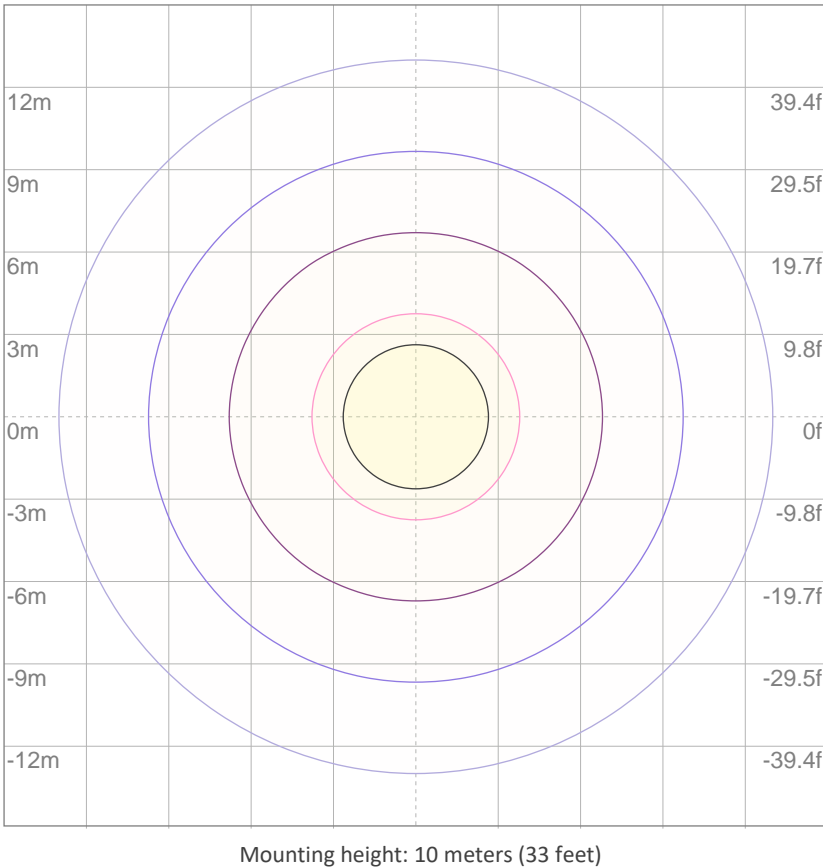
| 0° | 2° | 4° | 6° | 8° | 10° | 12° | 14° | 16° | 18° | 20° | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 373 | 367 | 352 | 328 | 298 | 265 | 230 | 198 | 168 | 141 | 118 | 99 | 83 | 70 | 59 | 50 | 43 | 37 | 32 | 28 |
| 100% | 99% | 94% | 88% | 80% | 71% | 62% | 53% | 45% | 38% | 32% | 27% | 22% | 19% | 16% | 14% | 12% | 10% | 9% | 7% |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 29.5° | 68.1° | 111° | 95.0% | 86.2% |

ISO CANDELA DIAGRAM



ISO LUX DIAGRAM



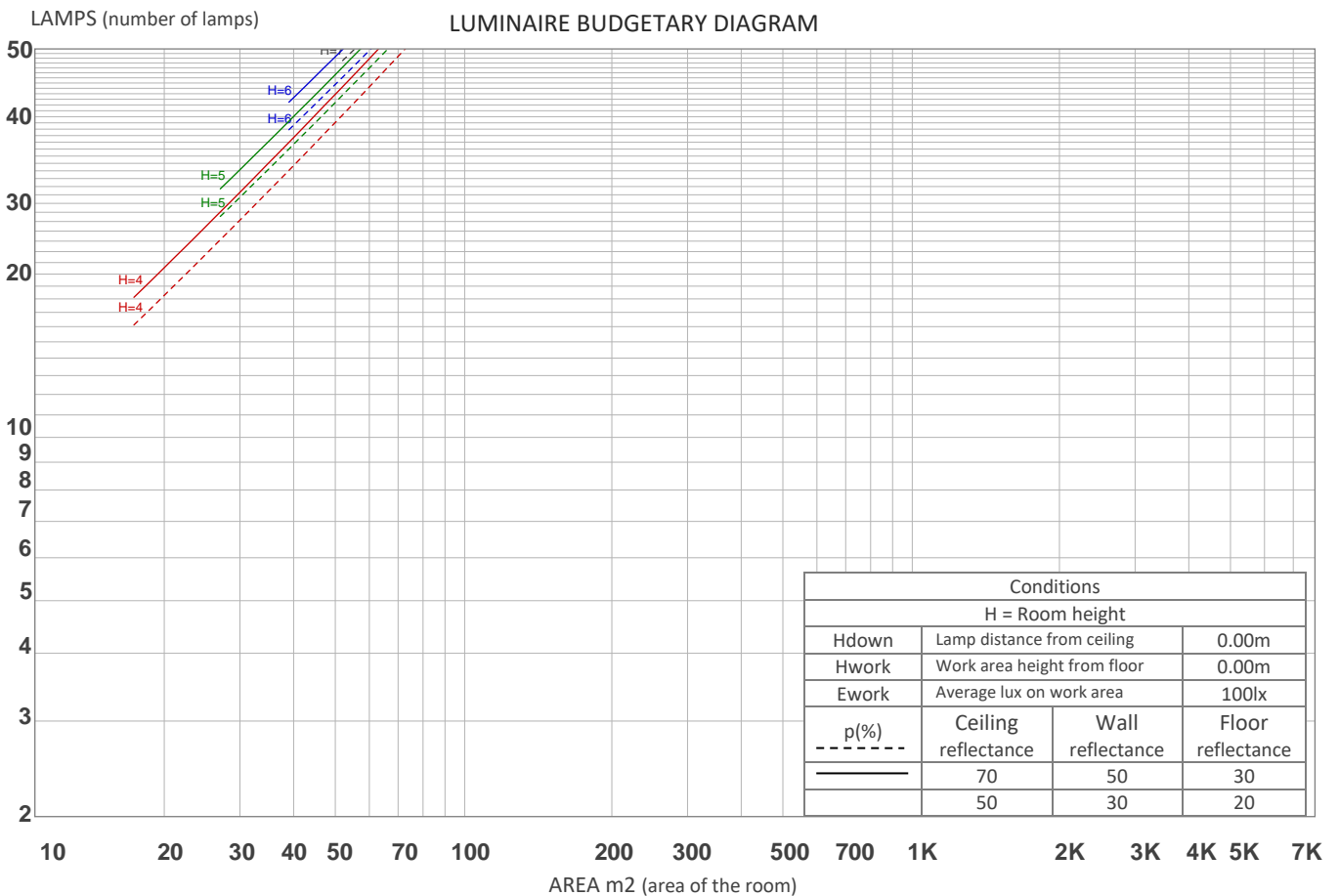
UGR

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 | 22.0 | 22.7 | 22.1 | 22.9 | 23.1 | 22.0 | 22.7 | 22.1 | 22.9 | 23.1 |
| | 3H | 22.5 | 23.3 | 22.9 | 23.5 | 23.7 | 22.5 | 23.3 | 22.8 | 23.5 | 23.7 |
| | 4H | 22.7 | 23.5 | 23.1 | 23.7 | 24.0 | 22.7 | 23.5 | 23.1 | 23.7 | 23.9 |
| | 6H | 22.9 | 23.5 | 23.2 | 23.8 | 24.2 | 22.9 | 23.5 | 23.2 | 23.8 | 24.2 |
| | 8H | 22.9 | 23.5 | 23.2 | 23.9 | 24.3 | 22.9 | 23.5 | 23.2 | 23.8 | 24.2 |
| | 12H | 22.9 | 23.5 | 23.2 | 23.9 | 24.3 | 22.9 | 23.5 | 23.2 | 23.8 | 24.3 |
| 4H | 2H | 22.1 | 22.9 | 22.5 | 23.2 | 23.4 | 22.1 | 22.9 | 22.5 | 23.1 | 23.4 |
| | 3H | 23.0 | 23.6 | 23.3 | 23.9 | 24.4 | 23.0 | 23.6 | 23.3 | 23.9 | 24.4 |
| | 4H | 23.2 | 23.8 | 23.6 | 24.2 | 24.7 | 23.2 | 23.8 | 23.6 | 24.2 | 24.7 |
| | 6H | 23.4 | 24.0 | 23.9 | 24.3 | 24.7 | 23.4 | 24.0 | 23.9 | 24.3 | 24.7 |
| | 8H | 23.4 | 24.0 | 23.9 | 24.3 | 24.7 | 23.4 | 24.0 | 23.9 | 24.3 | 24.7 |
| | 12H | 23.4 | 23.8 | 23.9 | 24.3 | 24.7 | 23.4 | 23.8 | 23.9 | 24.2 | 24.7 |
| 8H | 4H | 23.3 | 23.8 | 23.8 | 24.2 | 24.5 | 23.3 | 23.8 | 23.8 | 24.2 | 24.5 |
| | 6H | 23.6 | 23.9 | 24.1 | 24.4 | 24.9 | 23.5 | 23.9 | 24.1 | 24.4 | 24.9 |
| | 8H | 23.7 | 24.0 | 24.2 | 24.5 | 25.1 | 23.7 | 23.9 | 24.2 | 24.5 | 25.1 |
| | 12H | 23.7 | 23.9 | 24.3 | 24.4 | 25.1 | 23.7 | 23.9 | 24.2 | 24.4 | 25.0 |
| 12H | 4H | 23.2 | 23.7 | 23.7 | 24.1 | 24.6 | 23.2 | 23.7 | 23.7 | 24.1 | 24.5 |
| | 6H | 23.6 | 23.9 | 24.1 | 24.4 | 25.0 | 23.6 | 23.9 | 24.1 | 24.4 | 25.0 |
| | 8H | 23.6 | 23.9 | 24.2 | 24.4 | 25.0 | 23.6 | 23.9 | 24.2 | 24.4 | 25.0 |
| Variation of the observer position for the luminaire distance S | | | | | | | | | | | |
| S = 1.0H | | 0.7 / -0.7 | | | | | 0.7 / -0.7 | | | | |
| S = 1.5H | | 1.8 / -1.2 | | | | | 1.7 / -1.2 | | | | |
| S = 2.0H | | 2.9 / -1.9 | | | | | 2.8 / -1.8 | | | | |
| Standard table | | n/a | | | | | n/a | | | | |
| Correction summand | | n/a | | | | | n/a | | | | |
| Corrected glare indices referring to 169 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 | 113 | 110 | 107 | 105 | 110 | 108 | 105 | 103 | 104 | 102 | 100 | 100 | 98 | 97 | 96 | 95 | 94 | 92 |
| 2 | 107 | 102 | 97 | 94 | 105 | 100 | 96 | 93 | 97 | 93 | 91 | 94 | 91 | 89 | 91 | 89 | 87 | 85 |
| 3 | 101 | 95 | 89 | 85 | 99 | 93 | 88 | 84 | 90 | 86 | 83 | 88 | 85 | 82 | 86 | 83 | 80 | 79 |
| 4 | 96 | 88 | 83 | 78 | 94 | 87 | 82 | 78 | 85 | 80 | 77 | 83 | 79 | 76 | 81 | 78 | 75 | 73 |
| 5 | 91 | 83 | 77 | 73 | 90 | 82 | 76 | 72 | 80 | 75 | 71 | 78 | 74 | 71 | 77 | 73 | 70 | 69 |
| 6 | 87 | 78 | 72 | 68 | 86 | 77 | 72 | 67 | 76 | 71 | 67 | 74 | 70 | 66 | 73 | 69 | 66 | 65 |
| 7 | 83 | 74 | 68 | 64 | 82 | 73 | 67 | 63 | 72 | 67 | 63 | 71 | 66 | 63 | 69 | 65 | 62 | 61 |
| 8 | 80 | 70 | 64 | 60 | 78 | 69 | 64 | 60 | 68 | 63 | 60 | 67 | 63 | 59 | 66 | 62 | 59 | 58 |
| 9 | 76 | 67 | 61 | 57 | 75 | 66 | 61 | 57 | 65 | 60 | 57 | 64 | 60 | 56 | 63 | 59 | 56 | 55 |
| 10 | 73 | 64 | 58 | 54 | 72 | 63 | 58 | 54 | 62 | 57 | 54 | 62 | 57 | 54 | 61 | 57 | 54 | 52 |



ZONAL LUMEN SUMMARY

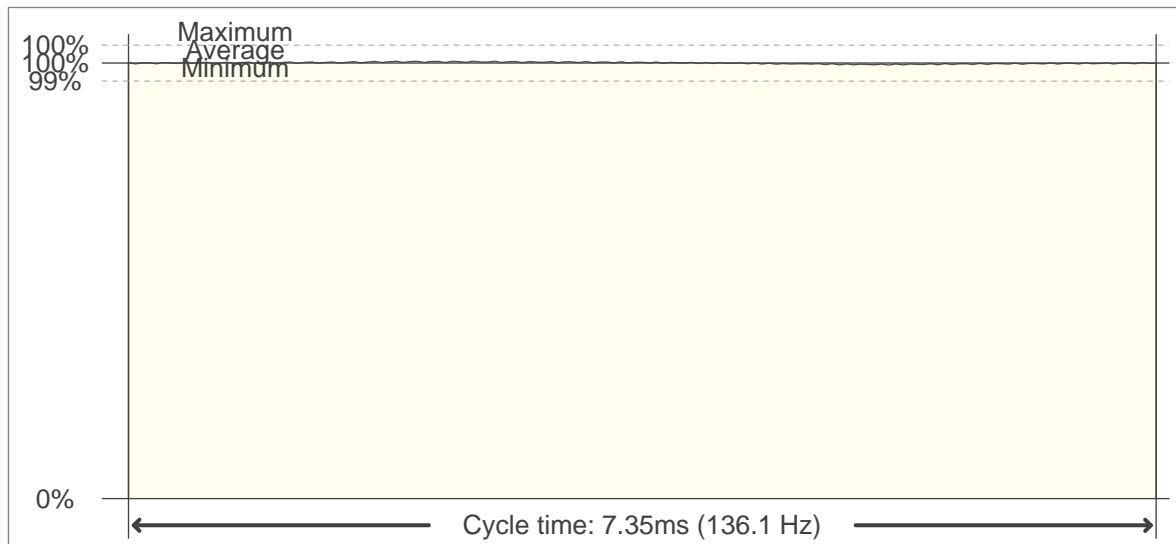
| 0°-10° | 10°-20° | 20°-30° | 30°-40° | 40°-50° | 50°-60° | 60°-70° | 70°-80° | 80°-90° |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 30.0 lm | 50.4 lm | 35.8 lm | 22.1 lm | 13.8 lm | 8.68 lm | 5.09 lm | 2.32 lm | 0.467 lm |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0.042 lm | 0.047 lm | 0.063 lm | 0.080 lm | 0.104 lm | 0.122 lm | 0.119 lm | 0.080 lm | 0.026 lm |

FLICKER

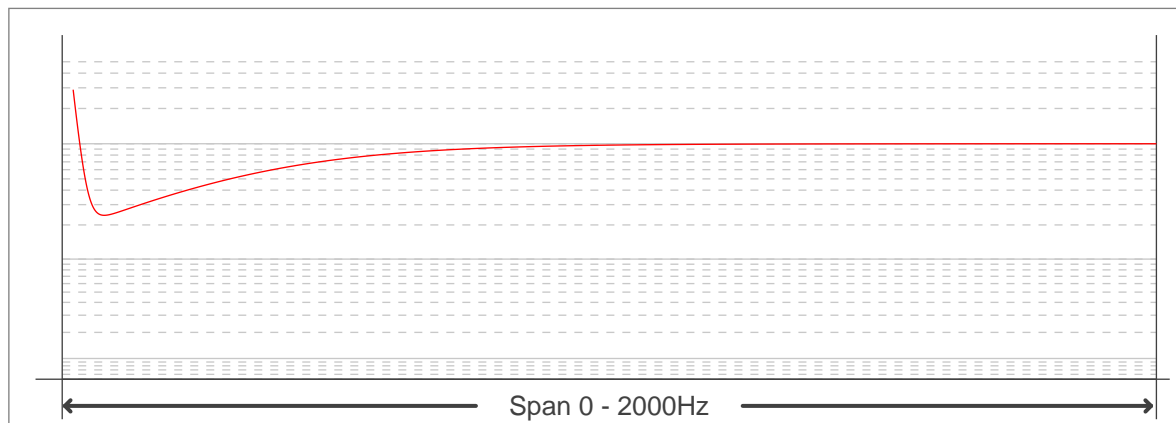
FLICKER CURVE (COMPLETE SAMPLED FLICKER)



FLICKER FRAME (FRAME OF ONE FLICKER PERIOD)



FLICKER FFT (FREQUENCY SCOPE OF FLICKER CURVE)



FLICKER RESULTS:

| | |
|-----------------------|-----------|
| Flicker frequency: | 136.05 Hz |
| Flicker index: | 0 |
| Flicker percentage: | 0.55 % |
| SVM: (Visual flicker) | 0.01 |

FLICKER CONDITIONS:

| | |
|--------------|----------------------|
| Sample rate: | 20000 samples/second |
|--------------|----------------------|