

# PHOTOMETRIC TEST REPORT

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MINIMA PRO SQUARE  
ADJUSTABLE - MATT WHITE -  
4001379

astro

# MINIMA PRO SQUARE ADJUSTABLE - MATT

astro

## LIGHT EFFICIENCY:

108 Lumen/Watt

## LIGHT QUALITY:

CRI: 95.6

## COLOR TEMPERATURE:

3015 K

OUTPUT: 1272 lm

PEAK: 2284 cd

POWER: 11.8 W

PF: 0.95



Tracking number: [n/a](#)

Product name:

Minima Pro Square Adjustable - Matt  
White - 4001379

Item number:

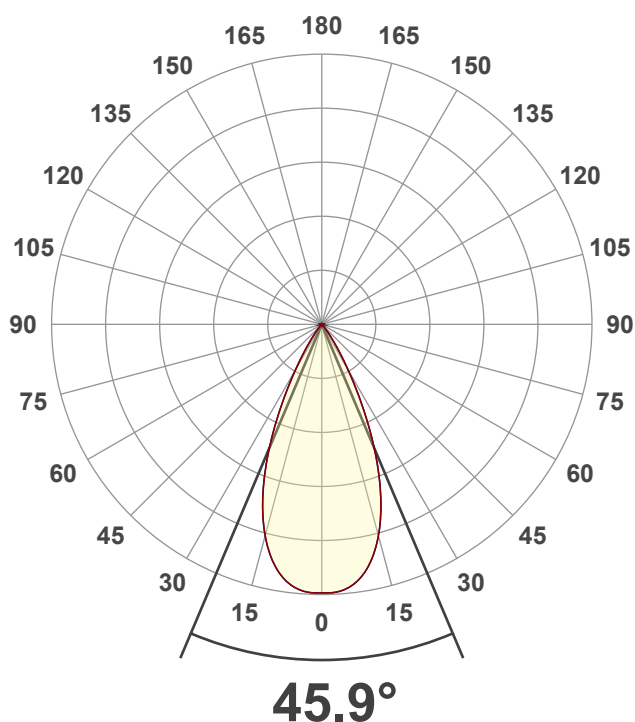
MSA-MW-HE30G1-50G1-X-D1

Date and time:

04/02/2025 15:05:45

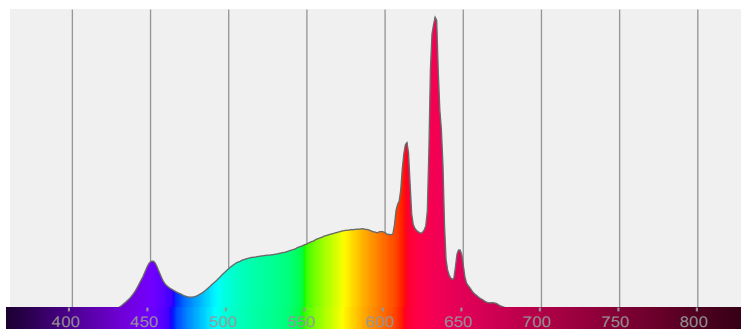
Description:

IP20 LED Downlight

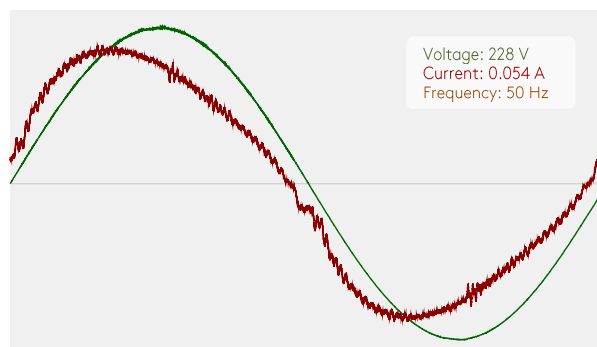


CIE 1931  
x: 0.438  
y: 0.408

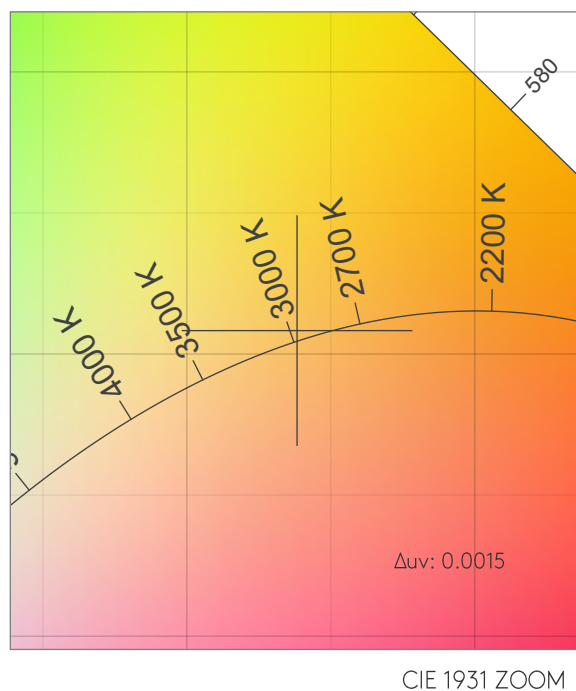
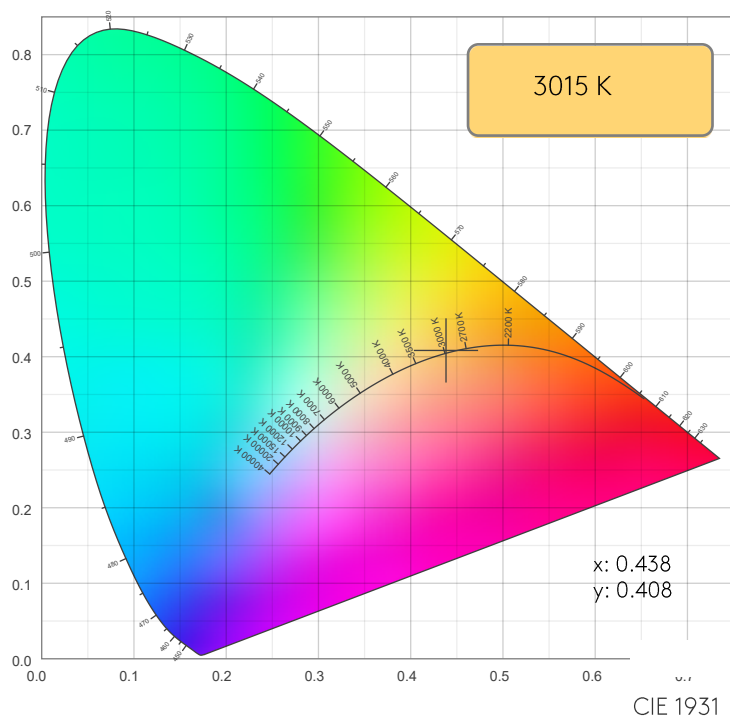
## SPECTRA



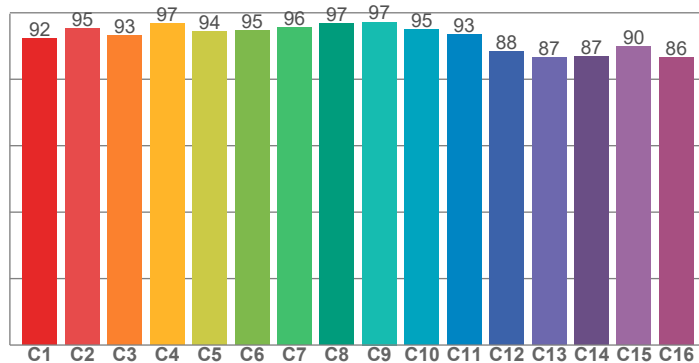
## POWER



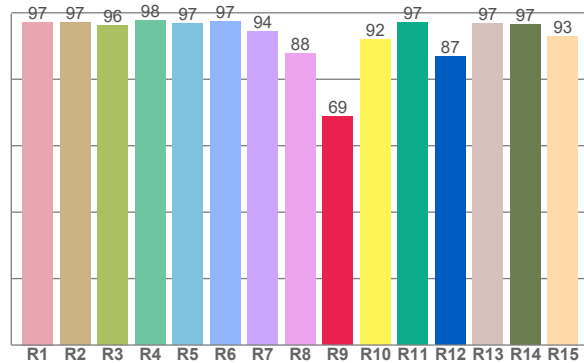
## COLOR DETAILS



TM30: 93.1



CRI: 95.6 (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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 97.2 | 97.2 | 96.2 | 97.8 | 96.8 | 97.5 | 94.5 | 87.7 | 68.8 | 91.9 | 97.1 | 86.9 | 96.7 | 96.5 | 92.8 |

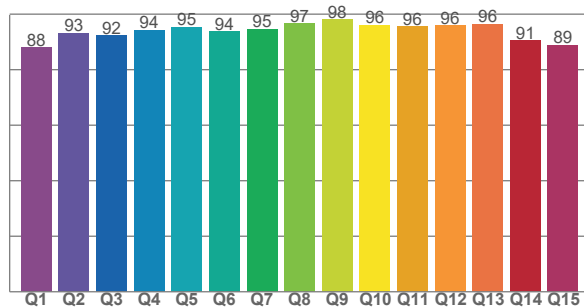
TM30 C values, 16 binned values out of total of 99 C values

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   | C9   | C10  | C11  | C12  | C13  | C14  | C15  | C16  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 92.3 | 95.4 | 93.1 | 96.7 | 94.5 | 94.6 | 95.7 | 96.9 | 97.2 | 95.0 | 93.4 | 88.3 | 86.5 | 86.8 | 90.0 | 86.5 |

CQS Q values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 88.1 | 93.2 | 92.3 | 94.3 | 95.4 | 93.8 | 94.7 | 96.6 | 98.0 | 96.2 | 95.6 | 96.0 | 96.4 | 90.6 | 88.9 |

CQS: 93.2



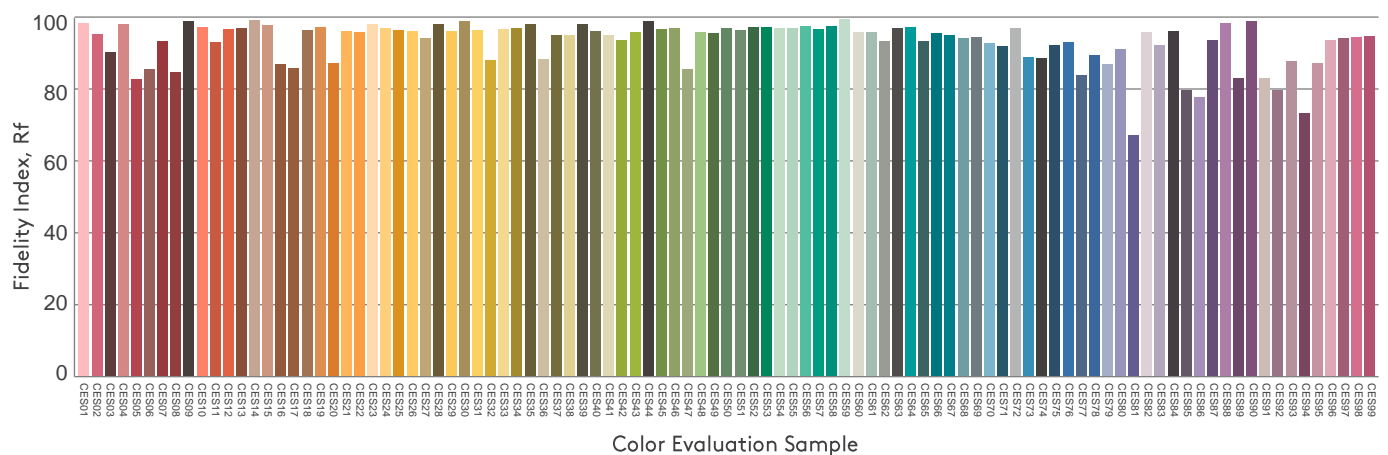
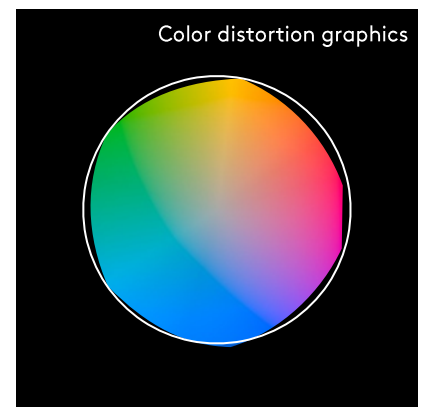
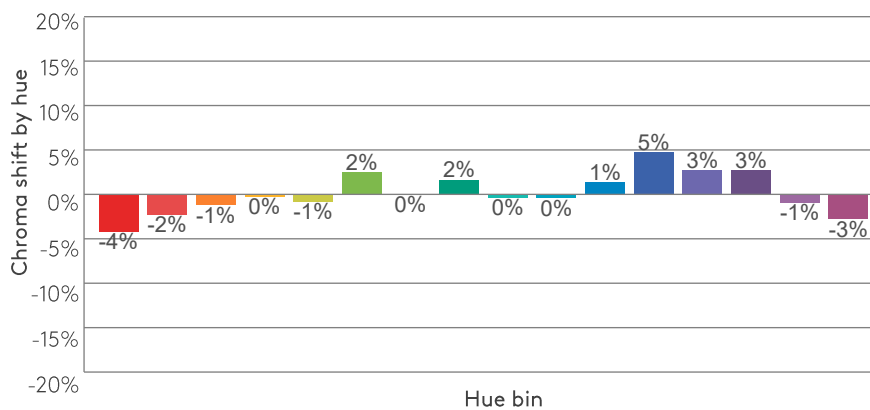
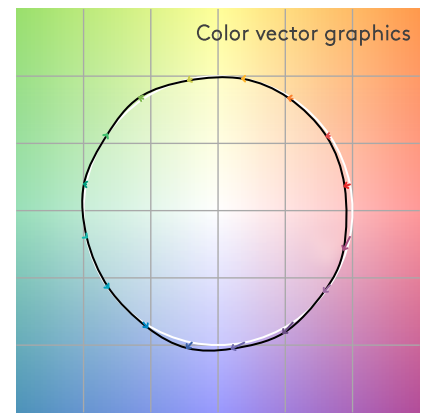
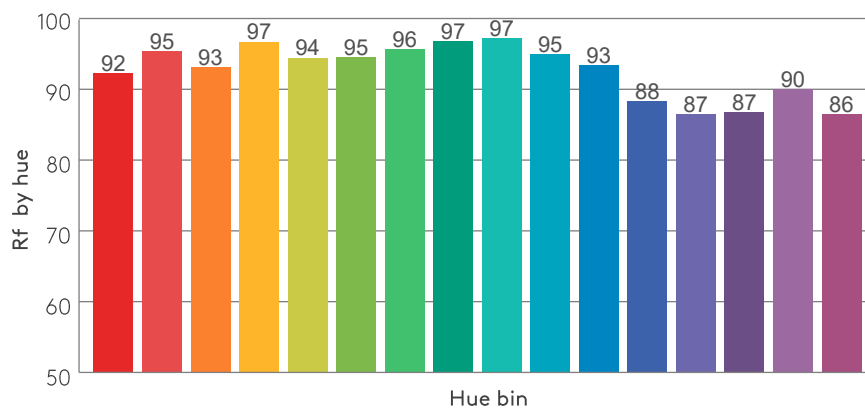
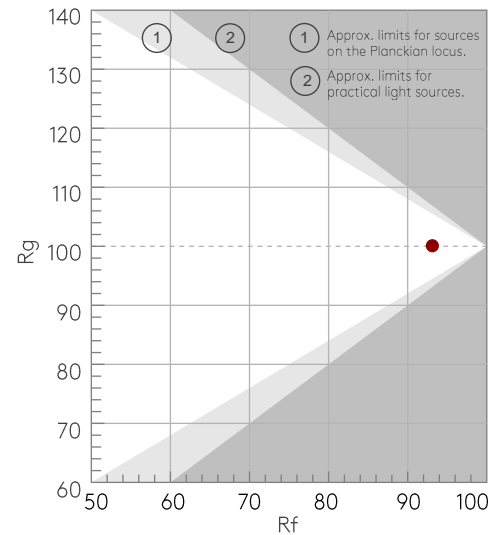
## COLOR PARAMETERS

| 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                | $\Delta uv$                     |
| 3015 K            | 95.6                  | 68.8          | 93.1           | 100.1       | 93.2                | 0.438                     | 0.408                     | 0.250            | 0.349            | 0.0015                          |

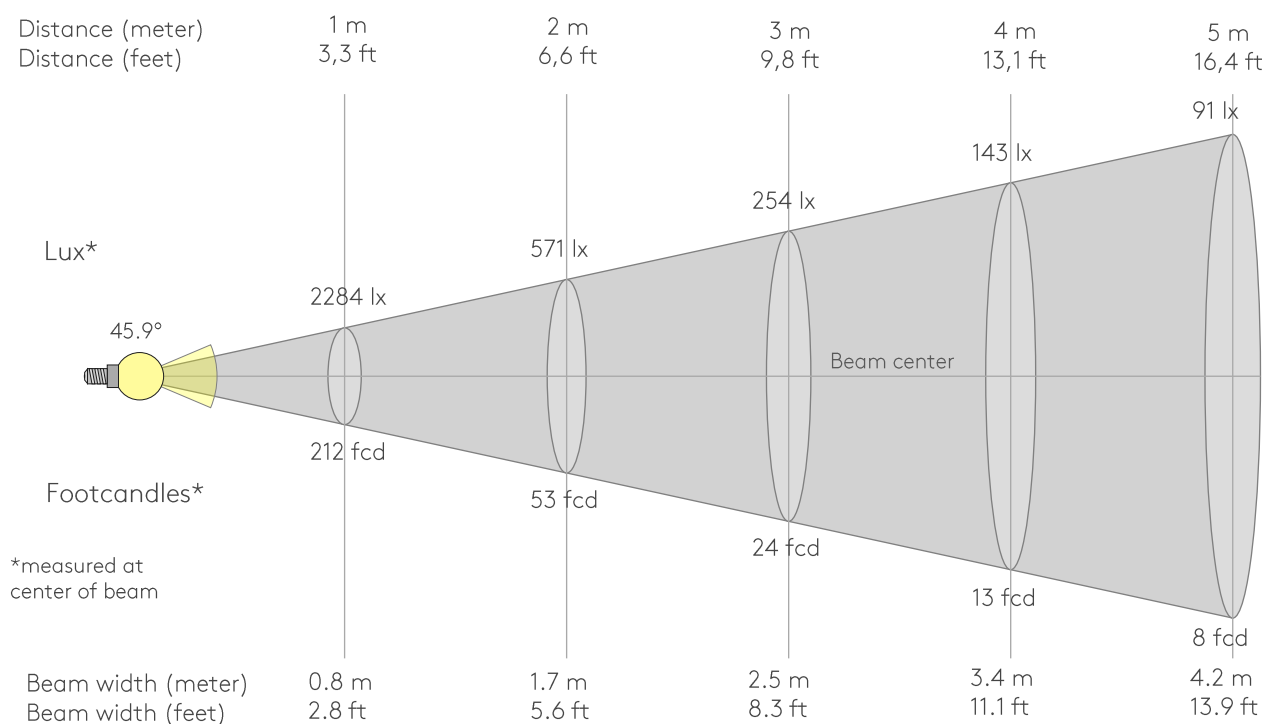
Rf 93.1  
Fidelity index Rf

Rg 100.1  
Gammut index Rg

| Hue Bin | Rf | Graphic shifts (%) |      |
|---------|----|--------------------|------|
|         |    | Chroma             | Hue  |
| 1       | 92 | -4%                | -1%  |
| 2       | 95 | -2%                | 1%   |
| 3       | 93 | -1%                | 3%   |
| 4       | 97 | 0%                 | 1%   |
| 5       | 94 | -1%                | 3%   |
| 6       | 95 | 2%                 | 2%   |
| 7       | 96 | 0%                 | -1%  |
| 8       | 97 | 2%                 | 0%   |
| 9       | 97 | 0%                 | 0%   |
| 10      | 95 | 0%                 | 2%   |
| 11      | 93 | 1%                 | 4%   |
| 12      | 88 | 5%                 | -3%  |
| 13      | 87 | 3%                 | -10% |
| 14      | 87 | 3%                 | -10% |
| 15      | 90 | -1%                | -6%  |
| 16      | 86 | -3%                | -10% |



## 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 |
| 2284lx   | 571lx | 254lx   | 143lx   | 91lx   | 63lx   | 47lx   | 36lx   | 28lx   | 23lx   | 19lx   | 16lx   | 14lx   | 12lx   | 10lx   | 9lx    | 8lx    | 7lx    | 6lx    | 6lx    |
| 212.2fcd | 53fcd | 23.6fcd | 13.3fcd | 8.5fcd | 5.9fcd | 4.3fcd | 3.3fcd | 2.6fcd | 2.1fcd | 1.8fcd | 1.5fcd | 1.3fcd | 1.1fcd | 0.9fcd | 0.8fcd | 0.7fcd | 0.7fcd | 0.6fcd | 0.5fcd |

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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 2284 | 2284 | 2273 | 2246 | 2200 | 2132 | 2041 | 1926 | 1788 | 1627 | 1444 | 1244 | 1032 | 819 | 620 | 448 | 310 | 204 | 127 | 73  |
| 100% | 100% | 100% | 98%  | 96%  | 93%  | 89%  | 84%  | 78%  | 71%  | 63%  | 54%  | 45%  | 36% | 27% | 20% | 14% | 9%  | 6%  | 3%  |

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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 2284 | 2284 | 2273 | 2246 | 2200 | 2132 | 2041 | 1926 | 1788 | 1627 | 1444 | 1244 | 1032 | 819 | 620 | 448 | 310 | 204 | 127 | 73  |
| 100% | 100% | 100% | 98%  | 96%  | 93%  | 89%  | 84%  | 78%  | 71%  | 63%  | 54%  | 45%  | 36% | 27% | 20% | 14% | 9%  | 6%  | 3%  |

Intensities in 180° c-plane

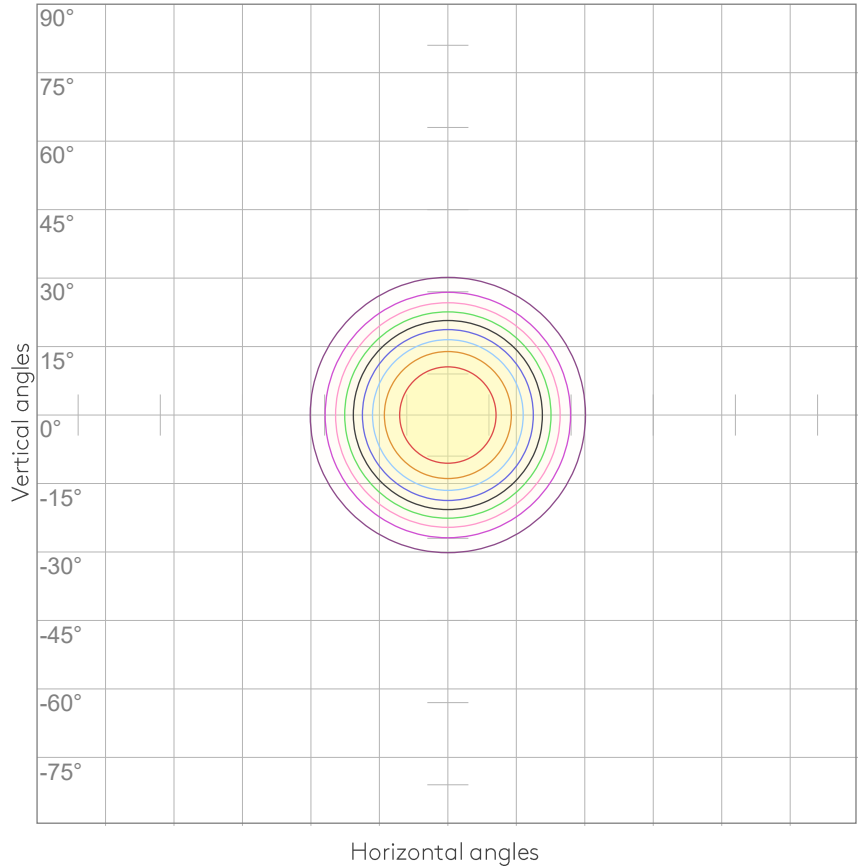
| 0°   | 2°   | 4°   | 6°   | 8°   | 10°  | 12°  | 14°  | 16°  | 18°  | 20°  | 22°  | 24°  | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 2284 | 2284 | 2273 | 2246 | 2200 | 2132 | 2041 | 1926 | 1788 | 1627 | 1444 | 1244 | 1032 | 819 | 620 | 448 | 310 | 204 | 127 | 73  |
| 100% | 100% | 100% | 98%  | 96%  | 93%  | 89%  | 84%  | 78%  | 71%  | 63%  | 54%  | 45%  | 36% | 27% | 20% | 14% | 9%  | 6%  | 3%  |

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° |
|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 2284 | 2284 | 2273 | 2246 | 2200 | 2132 | 2041 | 1926 | 1788 | 1627 | 1444 | 1244 | 1032 | 819 | 620 | 448 | 310 | 204 | 127 | 73  |
| 100% | 100% | 100% | 98%  | 96%  | 93%  | 89%  | 84%  | 78%  | 71%  | 63%  | 54%  | 45%  | 36% | 27% | 20% | 14% | 9%  | 6%  | 3%  |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 45.9°          | 67.1°           | 77.8°             | 99.7%                        | 99.0%                       |

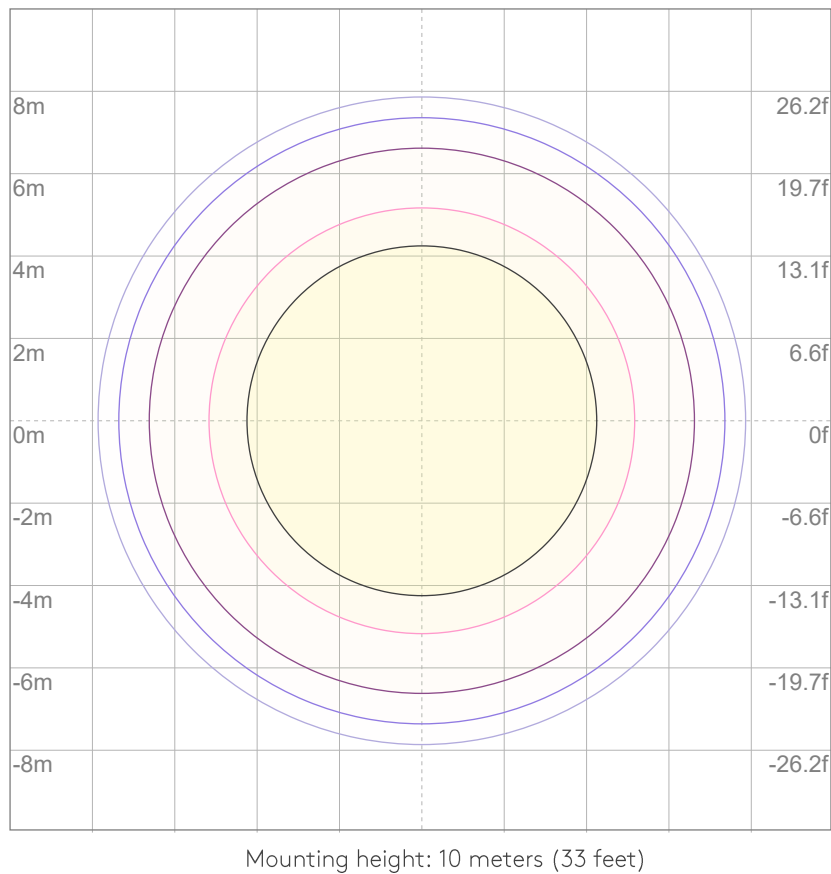
ISO CANDELA DIAGRAM



|     |         |
|-----|---------|
| 10% | 228 cd  |
| 20% | 457 cd  |
| 30% | 685 cd  |
| 40% | 914 cd  |
| 50% | 1142 cd |
| 60% | 1370 cd |
| 70% | 1599 cd |
| 80% | 1827 cd |
| 90% | 2056 cd |

Conditions:  
Number of c-planes: 8  
Candela at center: 2284 cd

ISO LUX DIAGRAM



|     |                |
|-----|----------------|
| 3%  | 0.685 lx       |
| 5%  | 1.14 lx        |
| 10% | 2.28 lx        |
| 30% | 6.85 lx        |
| 50% | {LUX_10M50} lx |

Conditions:  
Number of c-planes: 8  
Lux at center: 22.8 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<br>X      Y  |     | Viewing direction at right angles to lamp axis |      |      |      |      | Viewing direction parallel to lamp axis |      |      |      |      |
| 2H   | 2H  | 18.4   | 18.9 | 18.5 | 19.2 | 19.3 | 18.4                                    | 18.9 | 18.5 | 19.2 | 19.3 |
|  | 3H  | 18.1   | 18.8 | 18.5 | 19.0 | 19.2 | 18.1                                    | 18.8 | 18.5 | 19.0 | 19.2 |
|  | 4H  | 18.0   | 18.7 | 18.4 | 18.9 | 19.2 | 18.0                                    | 18.7 | 18.4 | 18.9 | 19.2 |
|  | 6H  | 18.0   | 18.6 | 18.3 | 18.9 | 19.2 | 18.0                                    | 18.6 | 18.3 | 18.9 | 19.2 |
|  | 8H  | 18.0   | 18.5 | 18.3 | 18.8 | 19.2 | 18.0                                    | 18.5 | 18.3 | 18.8 | 19.2 |
|  | 12H | 17.9   | 18.4 | 18.3 | 18.8 | 19.2 | 17.9                                    | 18.4 | 18.3 | 18.8 | 19.2 |
| 4H   | 2H  | 18.1   | 18.7 | 18.4 | 18.9 | 19.2 | 18.1                                    | 18.7 | 18.4 | 18.9 | 19.2 |
|  | 3H  | 17.9   | 18.4 | 18.3 | 18.8 | 19.2 | 17.9                                    | 18.4 | 18.3 | 18.8 | 19.2 |
|  | 4H  | 17.8   | 18.3 | 18.2 | 18.7 | 19.2 | 17.8                                    | 18.3 | 18.2 | 18.7 | 19.2 |
|  | 6H  | 17.7   | 18.2 | 18.2 | 18.6 | 18.9 | 17.7                                    | 18.2 | 18.2 | 18.6 | 18.9 |
|  | 8H  | 17.7   | 18.1 | 18.2 | 18.5 | 18.8 | 17.7                                    | 18.1 | 18.2 | 18.5 | 18.8 |
|  | 12H | 17.6   | 18.0 | 18.1 | 18.4 | 18.8 | 17.6                                    | 18.0 | 18.1 | 18.4 | 18.8 |
| 8H   | 4H  | 17.7   | 18.1 | 18.2 | 18.5 | 18.8 | 17.7                                    | 18.1 | 18.2 | 18.5 | 18.8 |
|  | 6H  | 17.6   | 17.9 | 18.1 | 18.4 | 18.9 | 17.6                                    | 17.9 | 18.1 | 18.4 | 18.9 |
|  | 8H  | 17.6   | 17.8 | 18.1 | 18.3 | 19.0 | 17.6                                    | 17.8 | 18.1 | 18.3 | 19.0 |
|  | 12H | 17.5   | 17.7 | 18.1 | 18.2 | 18.8 | 17.5                                    | 17.7 | 18.1 | 18.2 | 18.8 |
| 12H  | 4H  | 17.6   | 18.0 | 18.1 | 18.4 | 18.8 | 17.6                                    | 18.0 | 18.1 | 18.4 | 18.8 |
|  | 6H  | 17.6   | 17.8 | 18.1 | 18.3 | 19.0 | 17.6                                    | 17.8 | 18.1 | 18.3 | 19.0 |
|  | 8H  | 17.5   | 17.7 | 18.1 | 18.2 | 18.8 | 17.5                                    | 17.7 | 18.1 | 18.2 | 18.8 |
| Variation of the observer position for the luminaire distance S  |     |  |      |      |      |      |   |      |      |      |      |
| S = 1.0H   |     | 6.4 / -13.1                                    |      |      |      |      | 6.4 / -13.1                             |      |      |      |      |
| S = 1.5H   |     | 9.2 / -15.3                                    |      |      |      |      | 9.2 / -15.3                             |      |      |      |      |
| S = 2.0H   |     | 11.1 / -17.9                                   |      |      |      |      | 11.1 / -17.9                            |      |      |      |      |
| Standard table   |     | n/a  |      |      |      |      | n/a                                     |      |      |      |      |
| Correction summand   |     | n/a  |      |      |      |      | n/a                                     |      |      |      |      |
| Corrected glare indices referring to 1272 lm total luminous flux |     |  |      |      |      |      |   |      |      |      |      |

# MINIMA PRO SQUARE ADJUSTABLE - MATT

## LIGHT PLANNING

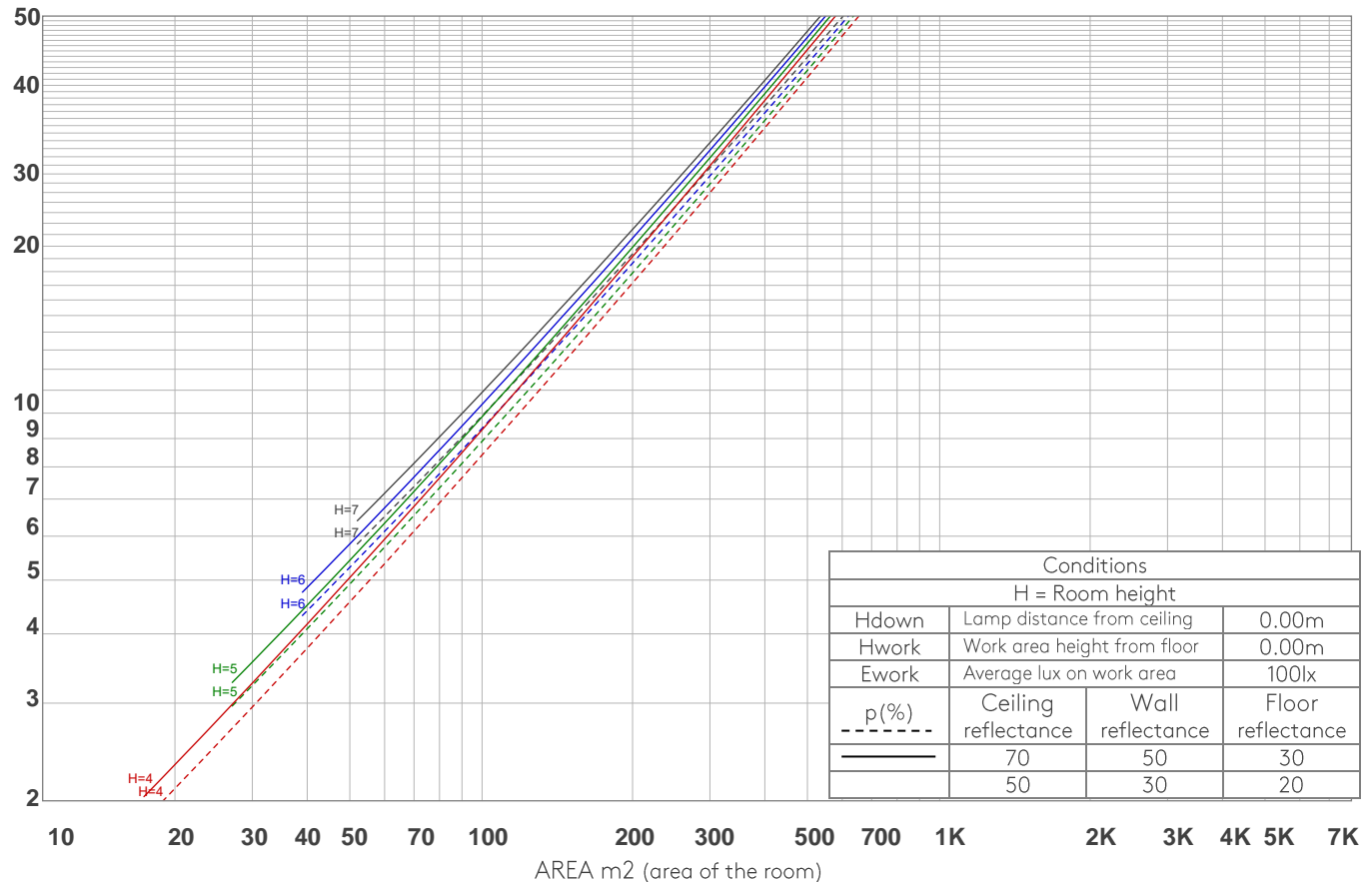
astro

### 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                   | 114  | 112 | 110 | 108 | 112 | 110 | 108 | 106 | 106 | 104 | 103 | 102 | 101 | 100 | 98  | 98  | 97  | 95  |
| 2                   | 110  | 105 | 102 | 99  | 107 | 104 | 100 | 98  | 100 | 98  | 96  | 98  | 95  | 94  | 95  | 93  | 92  | 90  |
| 3                   | 105  | 100 | 95  | 92  | 103 | 98  | 94  | 91  | 96  | 92  | 90  | 93  | 91  | 88  | 91  | 89  | 87  | 86  |
| 4                   | 101  | 94  | 90  | 86  | 99  | 93  | 89  | 86  | 91  | 87  | 85  | 89  | 86  | 84  | 87  | 85  | 83  | 81  |
| 5                   | 97   | 90  | 85  | 81  | 95  | 89  | 84  | 81  | 87  | 83  | 80  | 85  | 82  | 79  | 84  | 81  | 79  | 77  |
| 6                   | 93   | 85  | 80  | 77  | 92  | 85  | 80  | 76  | 83  | 79  | 76  | 82  | 78  | 75  | 81  | 77  | 75  | 74  |
| 7                   | 89   | 81  | 76  | 73  | 88  | 81  | 76  | 72  | 80  | 75  | 72  | 78  | 75  | 72  | 77  | 74  | 71  | 70  |
| 8                   | 86   | 78  | 73  | 69  | 85  | 77  | 72  | 69  | 76  | 72  | 69  | 75  | 71  | 68  | 74  | 71  | 68  | 67  |
| 9                   | 83   | 74  | 69  | 66  | 82  | 74  | 69  | 66  | 73  | 69  | 66  | 72  | 68  | 65  | 71  | 68  | 65  | 64  |
| 10                  | 79   | 71  | 66  | 63  | 79  | 71  | 66  | 63  | 70  | 66  | 63  | 69  | 65  | 62  | 69  | 65  | 62  | 61  |

LAMPS (number of lamps)

### LUMINAIRE BUDGETARY DIAGRAM



### ZONAL LUMEN SUMMARY

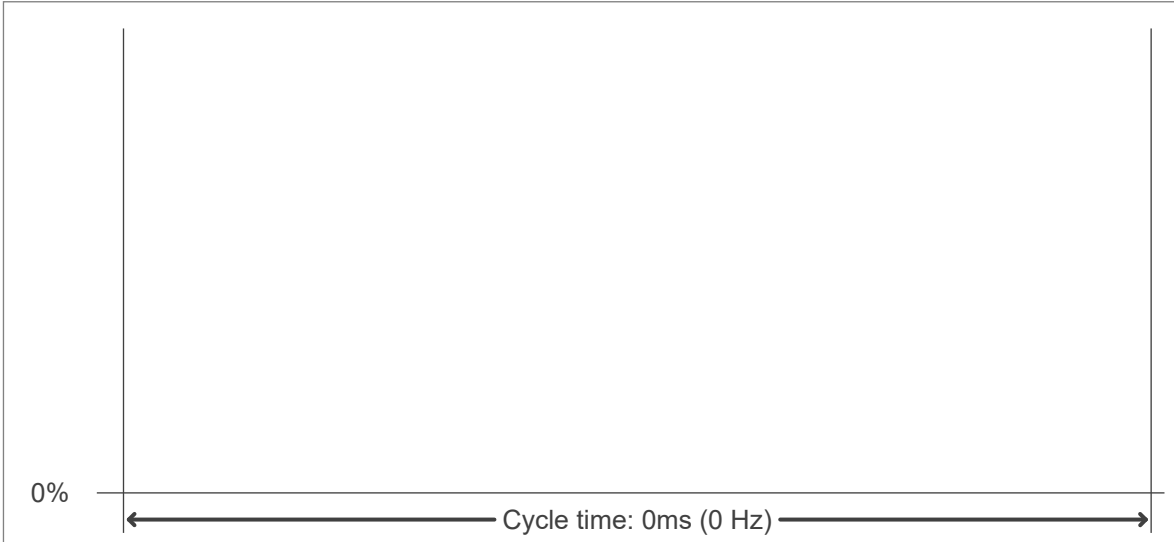
| 0°-10°   | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 212 lm   | 509 lm    | 416 lm    | 114 lm    | 11.9 lm   | 4.20 lm   | 1.47 lm   | 0.276 lm  | 0.102 lm  |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0.075 lm | 0.073 lm  | 0.087 lm  | 0.138 lm  | 0.286 lm  | 0.480 lm  | 0.525 lm  | 0.353 lm  | 0.099 lm  |



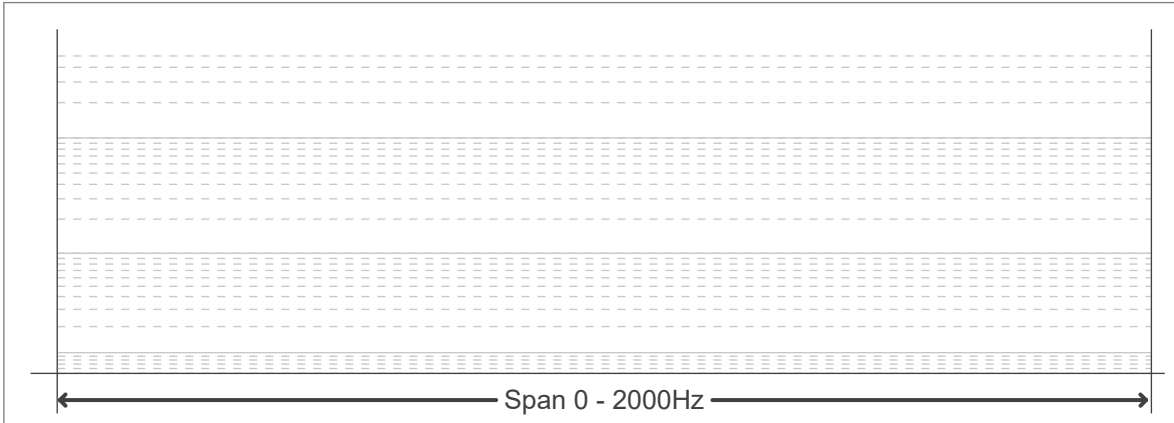
FLICKER CURVE (COMPLETE SAMPLED)



FLICKER FRAME (FRAME OF ONE FLICKER



FLICKER FFT (FREQUENCY SCOPE OF FLICKER



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 |
|--------------|--------------------|