

Light efficiency:

62 Lumen/Watt

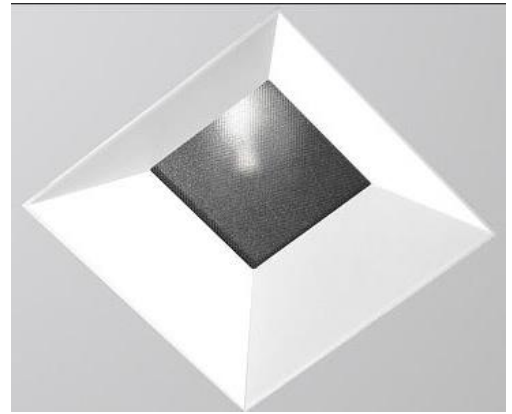
Output: 1326 lm

Light quality:

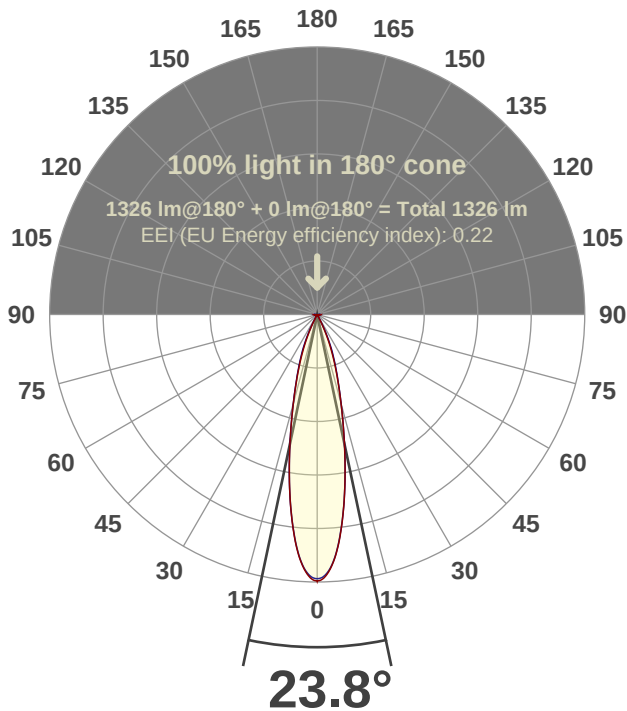
CRI: 92.4

Peak: 5562 cd

Power: 21.2 W



Beam angle



Test number:

CR4D-S-DR-C20-30k-24 (1009-CZ20-NF)

Luminaire Model:

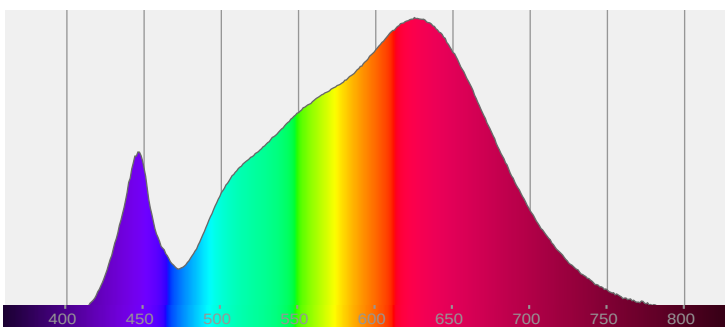
Core 4" Square Deep Regress C20 30K 24°

Date and time:

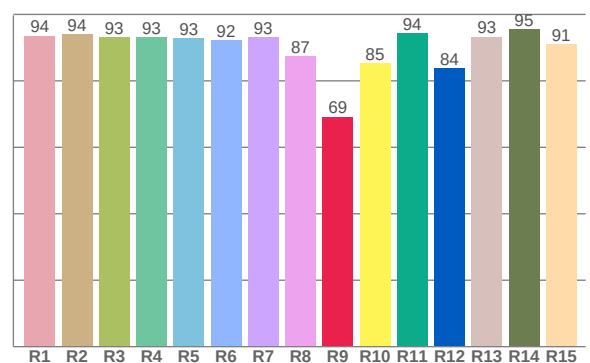
3/8/2017 5:42:30 PM

LUM: 1326

Spectra



CRI: 92.4 (R1-R8)



Color parameters

|  | 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 |
|--|-----------------------|---------------|---------------------|---------------------|---------------------|---------------------------|---------------------------|------------------|------------------|---------------------------------|
|  | CRI                   | CRI R9        | TM30 R <sub>f</sub> | TM30 R <sub>g</sub> | CQS                 | x                         | y                         | u                | v                | Δuv                             |
|  | 92.4                  | 69.2          | 90.3                | 103.1               | 90.2                | 0.429                     | 0.400                     | 0.248            | 0.346            | -0.0006                         |

**$R_f$  90.3**

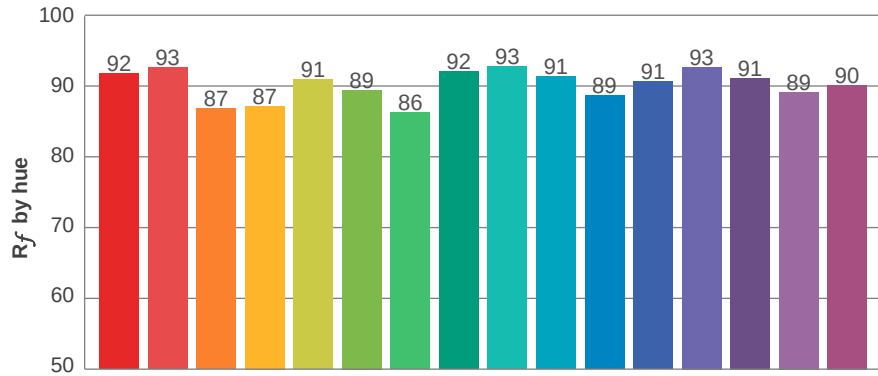
Fidelity index  $R_f$

**$R_g$  103.1**

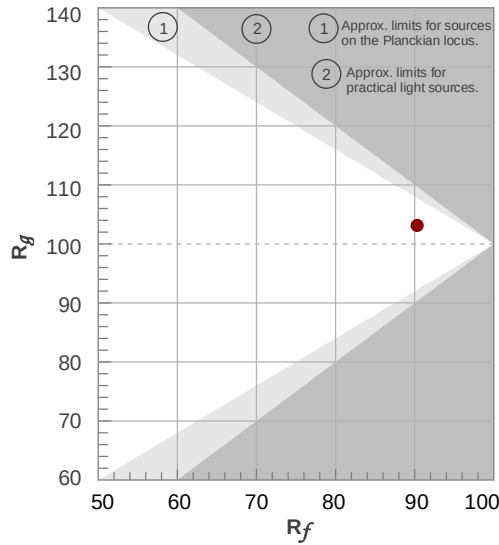
Gammut index  $R_g$

TM30: 90.3

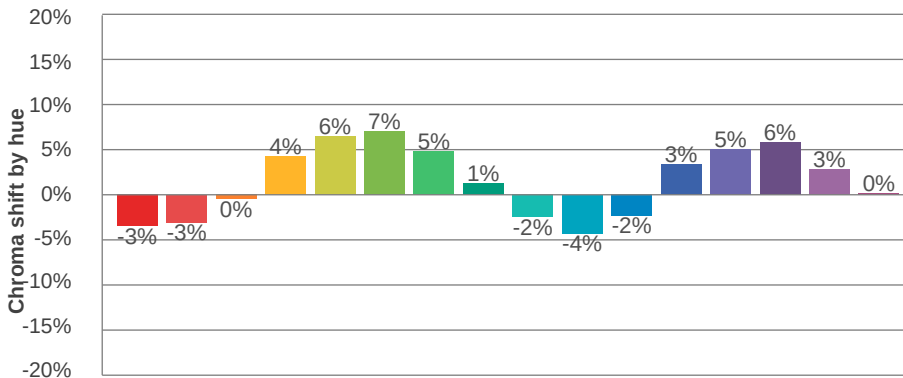
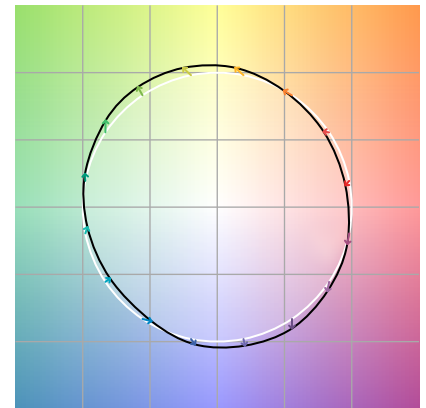
TM-30Color



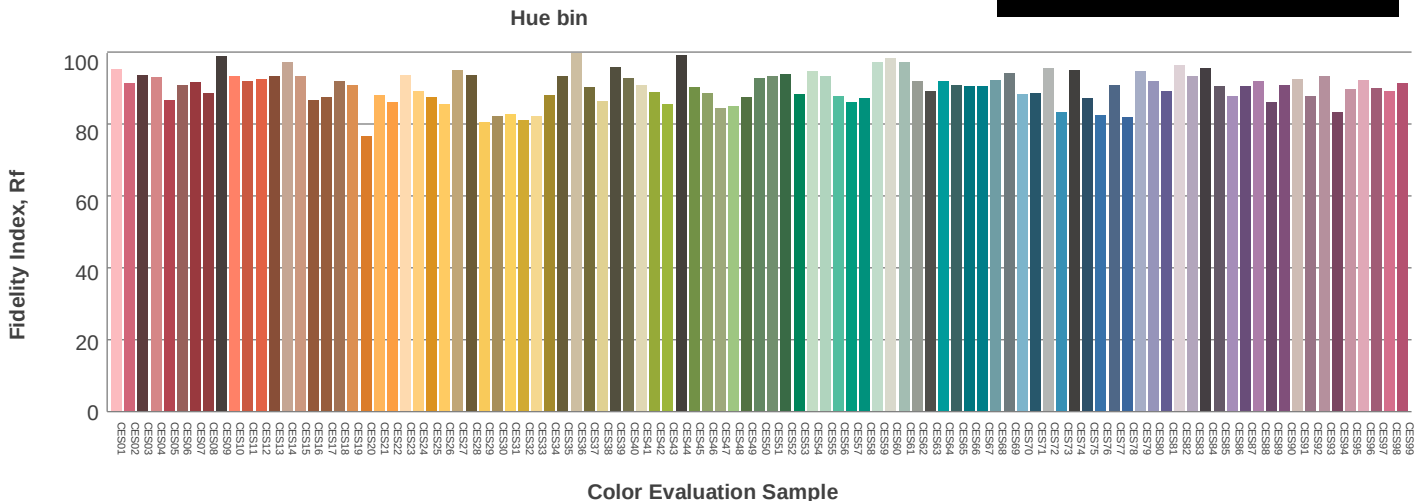
| Hue Bin | $R_f$ | Graphic shifts (%) |     |
|---------|-------|--------------------|-----|
|         |       | Chroma             | Hue |
| 1       | 92    | -3%                | -3% |
| 2       | 93    | -3%                | 3%  |
| 3       | 87    | 0%                 | 7%  |
| 4       | 87    | 4%                 | 7%  |
| 5       | 91    | 6%                 | 5%  |
| 6       | 89    | 7%                 | -1% |
| 7       | 86    | 5%                 | -7% |
| 8       | 92    | 1%                 | -5% |
| 9       | 93    | -2%                | -4% |
| 10      | 91    | -4%                | 0%  |
| 11      | 89    | -2%                | 6%  |
| 12      | 91    | 3%                 | 4%  |
| 13      | 93    | 5%                 | 0%  |
| 14      | 91    | 6%                 | -4% |
| 15      | 89    | 3%                 | -6% |
| 16      | 90    | 0%                 | -8% |



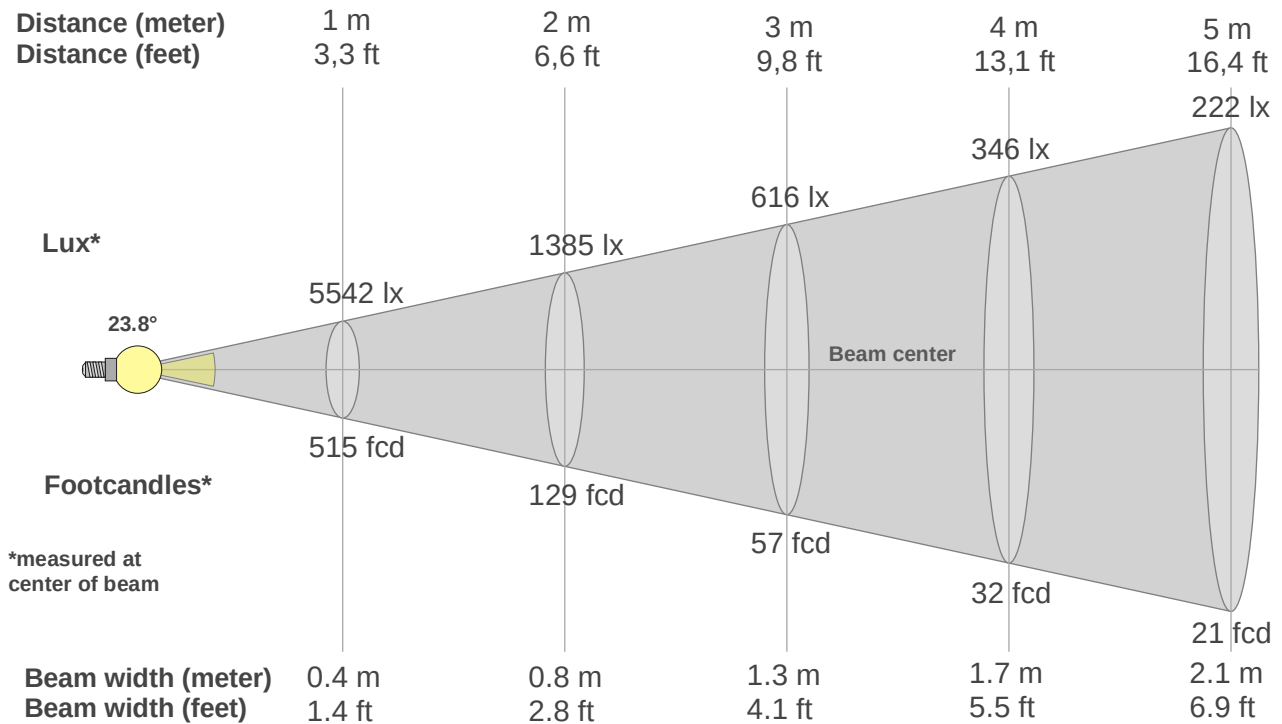
Color vector graphics



Color distortion



## 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 |
| 5542lx   | 1385lx   | 616lx   | 346lx   | 222lx   | 154lx   | 113lx   | 87lx   | 68lx   | 55lx   | 46lx   | 38lx   | 33lx   | 28lx   | 25lx   | 22lx   | 19lx   | 17lx   | 15lx   | 14lx   |
| 514.8fcd | 128.7fcd | 57.2fcd | 32.2fcd | 20.6fcd | 14.3fcd | 10.5fcd | 8fcd   | 6.4fcd | 5.1fcd | 4.3fcd | 3.6fcd | 3fcd   | 2.6fcd | 2.3fcd | 2fcd   | 1.8fcd | 1.6fcd | 1.4fcd | 1.3fcd |

### 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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5542 | 5444 | 5124 | 4621 | 4010 | 3356 | 2739 | 2183 | 1721 | 1347 | 1038 | 768 | 527 | 312 | 151 | 72  | 49  | 40  | 33  | 27  |
| 100% | 98%  | 92%  | 83%  | 72%  | 61%  | 49%  | 39%  | 31%  | 24%  | 19%  | 14% | 10% | 6%  | 3%  | 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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5542 | 5415 | 5110 | 4604 | 4003 | 3355 | 2733 | 2177 | 1730 | 1374 | 1089 | 847 | 607 | 377 | 179 | 66  | 45  | 38  | 31  | 25  |
| 100% | 98%  | 92%  | 83%  | 72%  | 61%  | 49%  | 39%  | 31%  | 25%  | 20%  | 15% | 11% | 7%  | 3%  | 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° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5542 | 5444 | 5124 | 4621 | 4010 | 3356 | 2739 | 2183 | 1721 | 1347 | 1038 | 768 | 527 | 312 | 151 | 72  | 49  | 40  | 33  | 27  |
| 100% | 98%  | 92%  | 83%  | 72%  | 61%  | 49%  | 39%  | 31%  | 24%  | 19%  | 14% | 10% | 6%  | 3%  | 1%  | 1%  | 1%  | 1%  | 0%  |

### Intensities in 270° c-plane

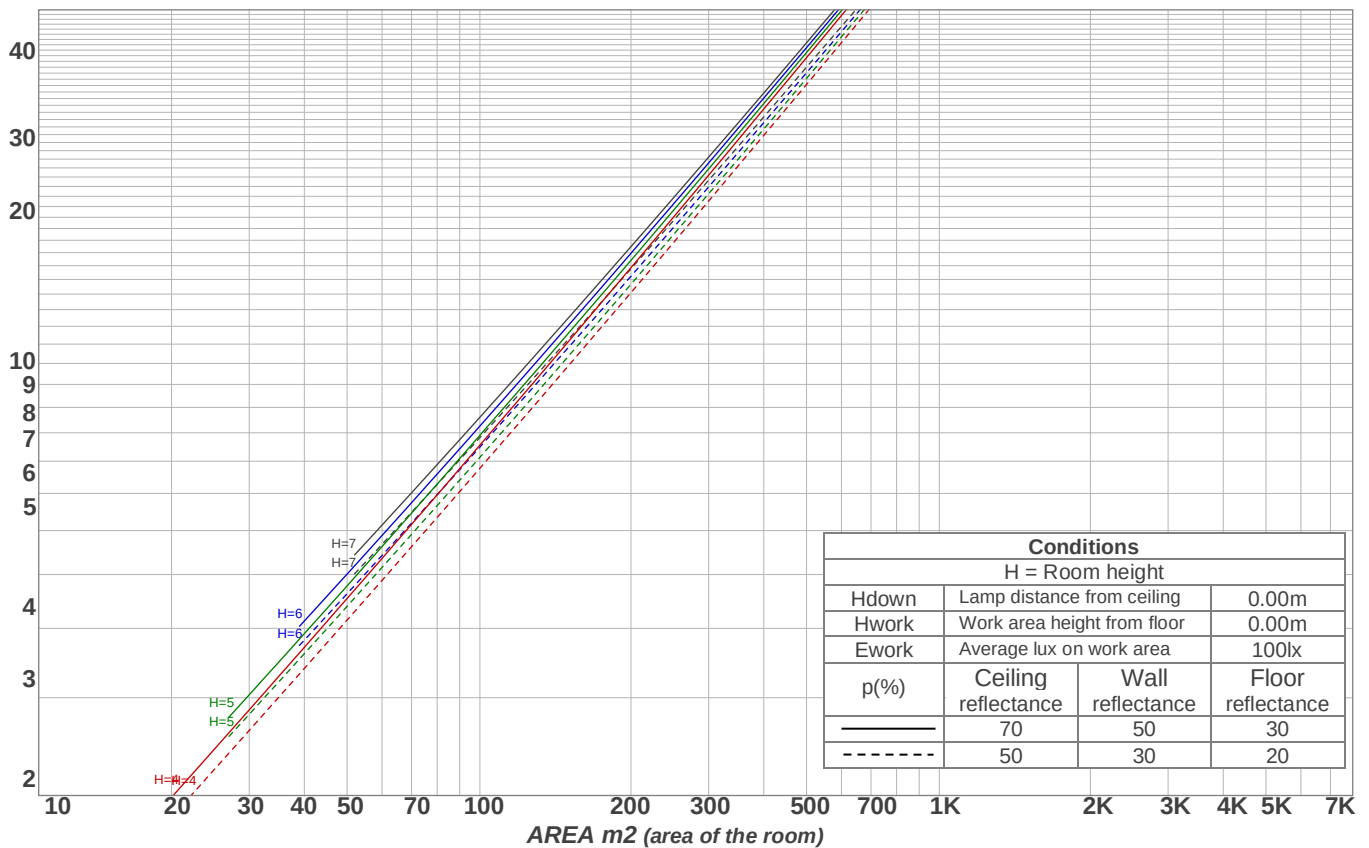
| 0°   | 2°   | 4°   | 6°   | 8°   | 10°  | 12°  | 14°  | 16°  | 18°  | 20°  | 22° | 24° | 26° | 28° | 30° | 32° | 34° | 36° | 38° |
|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5542 | 5415 | 5110 | 4604 | 4003 | 3355 | 2733 | 2177 | 1730 | 1374 | 1089 | 847 | 607 | 377 | 179 | 66  | 45  | 38  | 31  | 25  |
| 100% | 98%  | 92%  | 83%  | 72%  | 61%  | 49%  | 39%  | 31%  | 25%  | 20%  | 15% | 11% | 7%  | 3%  | 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 |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 23.8°          | 52.5°           | 62.8°             | 99.5%                        | 98.7%                       |

## Light planning

### Luminaire budgetary diagram

LAMPS (number of lamps)  
50



### Luminaire budgetary diagram

AREA m2 (area of the room)

### 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 | 112 | 110 | 109 | 107 | 106 | 105 | 104 | 103 | 102 | 101 | 99  | 99  | 98  | 96  |
| 2                   | 111                                                                                                      | 107 | 104 | 101 | 109 | 105 | 102 | 100 | 102 | 100 | 98  | 99  | 97  | 96  | 97  | 95  | 94  | 92  |
| 3                   | 107                                                                                                      | 102 | 98  | 95  | 105 | 101 | 97  | 94  | 98  | 95  | 93  | 96  | 94  | 92  | 94  | 92  | 90  | 89  |
| 4                   | 103                                                                                                      | 98  | 94  | 90  | 102 | 97  | 93  | 90  | 95  | 91  | 89  | 93  | 90  | 88  | 91  | 89  | 87  | 86  |
| 5                   | 100                                                                                                      | 94  | 89  | 86  | 99  | 93  | 89  | 86  | 91  | 88  | 85  | 90  | 87  | 84  | 88  | 86  | 84  | 83  |
| 6                   | 97                                                                                                       | 90  | 86  | 83  | 96  | 90  | 85  | 82  | 88  | 85  | 82  | 87  | 84  | 81  | 86  | 83  | 81  | 80  |
| 7                   | 94                                                                                                       | 87  | 83  | 80  | 93  | 86  | 82  | 79  | 85  | 82  | 79  | 84  | 81  | 79  | 83  | 80  | 78  | 77  |
| 8                   | 91                                                                                                       | 84  | 80  | 77  | 90  | 84  | 79  | 77  | 83  | 79  | 76  | 82  | 78  | 76  | 81  | 78  | 76  | 75  |
| 9                   | 88                                                                                                       | 81  | 77  | 74  | 88  | 81  | 77  | 74  | 80  | 76  | 74  | 79  | 76  | 74  | 79  | 76  | 73  | 72  |
| 10                  | 86                                                                                                       | 79  | 75  | 72  | 85  | 79  | 74  | 72  | 78  | 74  | 72  | 77  | 74  | 71  | 77  | 73  | 71  | 70  |

### Zonal Lumen Summary

| 0°-10°   | 10°-20°   | 20°-30°   | 30°-40°   | 40°-50°   | 50°-60°   | 60°-70°   | 70°-80°   | 80°-90°   |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 416 lm   | 547 lm    | 281 lm    | 57.9 lm   | 10.1 lm   | 6.35 lm   | 3.71 lm   | 1.78 lm   | 1.22 lm   |
| 90°-100° | 100°-110° | 110°-120° | 120°-130° | 130°-140° | 140°-150° | 150°-160° | 160°-170° | 170°-180° |
| 0.000 lm | 0.000 lm  | 0.000 lm  | 0.000 lm  | 0.000 lm  | 0.000 lm  | 0.000 lm  | 0.000 lm  | 0.000 lm  |

## 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<br>lamp axis |      |      |      |      | Viewing direction parallel to lamp axis |      |      |      |      |
| 2H                                                               | 2H  | 20.5                                              | 20.9 | 20.5 | 21.1 | 21.3 | 20.3                                    | 20.7 | 20.4 | 20.9 | 21.1 |
|                                                                  | 3H  | 20.4                                              | 21.0 | 20.7 | 21.1 | 21.3 | 20.4                                    | 21.0 | 20.7 | 21.1 | 21.3 |
|                                                                  | 4H  | 20.4                                              | 21.0 | 20.8 | 21.2 | 21.4 | 20.4                                    | 21.0 | 20.8 | 21.2 | 21.5 |
|                                                                  | 6H  | 20.5                                              | 21.0 | 20.8 | 21.3 | 21.6 | 20.7                                    | 21.1 | 21.0 | 21.4 | 21.8 |
|                                                                  | 8H  | 20.6                                              | 21.0 | 20.9 | 21.4 | 21.7 | 20.8                                    | 21.2 | 21.1 | 21.5 | 21.9 |
|                                                                  | 12H | 20.7                                              | 21.1 | 21.0 | 21.5 | 21.9 | 20.9                                    | 21.4 | 21.3 | 21.7 | 22.1 |
| 4H                                                               | 2H  | 20.3                                              | 20.9 | 20.7 | 21.1 | 21.3 | 20.2                                    | 20.7 | 20.6 | 21.0 | 21.2 |
|                                                                  | 3H  | 20.5                                              | 20.9 | 20.8 | 21.3 | 21.7 | 20.5                                    | 21.0 | 20.9 | 21.3 | 21.7 |
|                                                                  | 4H  | 20.5                                              | 20.9 | 20.9 | 21.4 | 21.9 | 20.6                                    | 21.0 | 21.0 | 21.5 | 22.0 |
|                                                                  | 6H  | 20.7                                              | 21.1 | 21.2 | 21.5 | 21.8 | 20.9                                    | 21.3 | 21.4 | 21.7 | 22.0 |
|                                                                  | 8H  | 20.8                                              | 21.2 | 21.3 | 21.5 | 21.9 | 21.1                                    | 21.5 | 21.6 | 21.8 | 22.2 |
|                                                                  | 12H | 21.0                                              | 21.3 | 21.5 | 21.7 | 22.2 | 21.3                                    | 21.7 | 21.8 | 22.1 | 22.5 |
| 8H                                                               | 4H  | 20.5                                              | 20.9 | 21.0 | 21.3 | 21.6 | 20.6                                    | 21.0 | 21.1 | 21.4 | 21.7 |
|                                                                  | 6H  | 20.8                                              | 21.0 | 21.3 | 21.5 | 22.0 | 21.0                                    | 21.3 | 21.5 | 21.7 | 22.2 |
|                                                                  | 8H  | 21.0                                              | 21.2 | 21.5 | 21.8 | 22.4 | 21.3                                    | 21.5 | 21.8 | 22.1 | 22.7 |
|                                                                  | 12H | 21.4                                              | 21.5 | 22.0 | 22.0 | 22.6 | 21.8                                    | 21.9 | 22.3 | 22.4 | 23.0 |
| 12H                                                              | 4H  | 20.5                                              | 20.8 | 21.0 | 21.2 | 21.7 | 20.6                                    | 20.9 | 21.1 | 21.3 | 21.7 |
|                                                                  | 6H  | 20.8                                              | 21.0 | 21.3 | 21.6 | 22.2 | 21.1                                    | 21.3 | 21.6 | 21.8 | 22.4 |
|                                                                  | 8H  | 21.1                                              | 21.3 | 21.7 | 21.8 | 22.4 | 21.4                                    | 21.6 | 22.0 | 22.1 | 22.7 |
| Corrected glare indices referring to 1326 lm total luminous flux |     |                                                   |      |      |      |      |                                         |      |      |      |      |