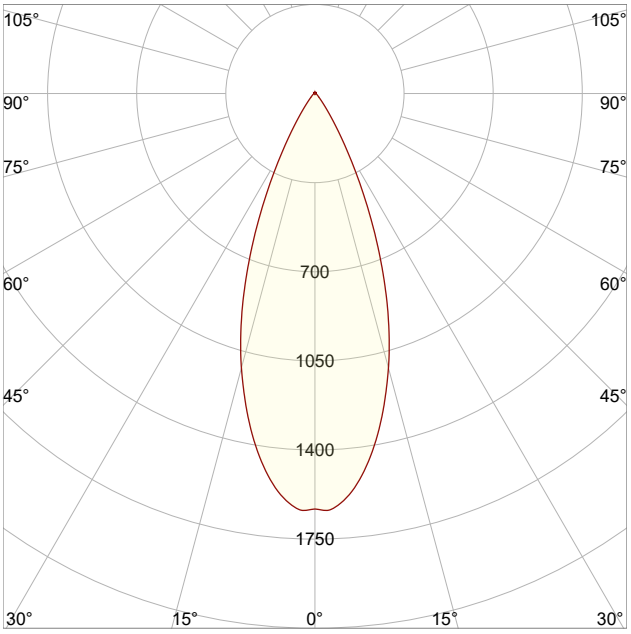
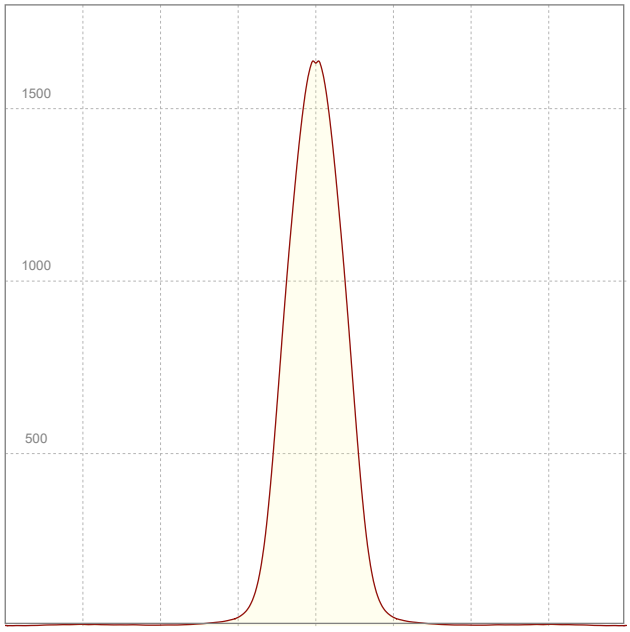
# LM-79
Test Report

## LM79-LINA-HP-4000K-30CM-44DEG

| General Discription | |
|---|---|
| Item number | LC-2-030-23-4 |
| Date and time | 12-2-2016 14:34:21 |
| CCT (Kelvin) | 3859 K |
| Beam angle | 39,5° |
| Luminous flux | 806 lm |
| Efficiency | 66 lm/watt |
| Weighted energy | 12,2 kWh/1000h |
| Power factor | 0,89 |
| CRI (RA) | 84,8 |
| Fidelity index Rf | Rf 86,1 |
| Gammut index Rg | Rg 95,6 |
| Peak | 1637 cd |




*Polar curve*




*Linear distribution diagram*

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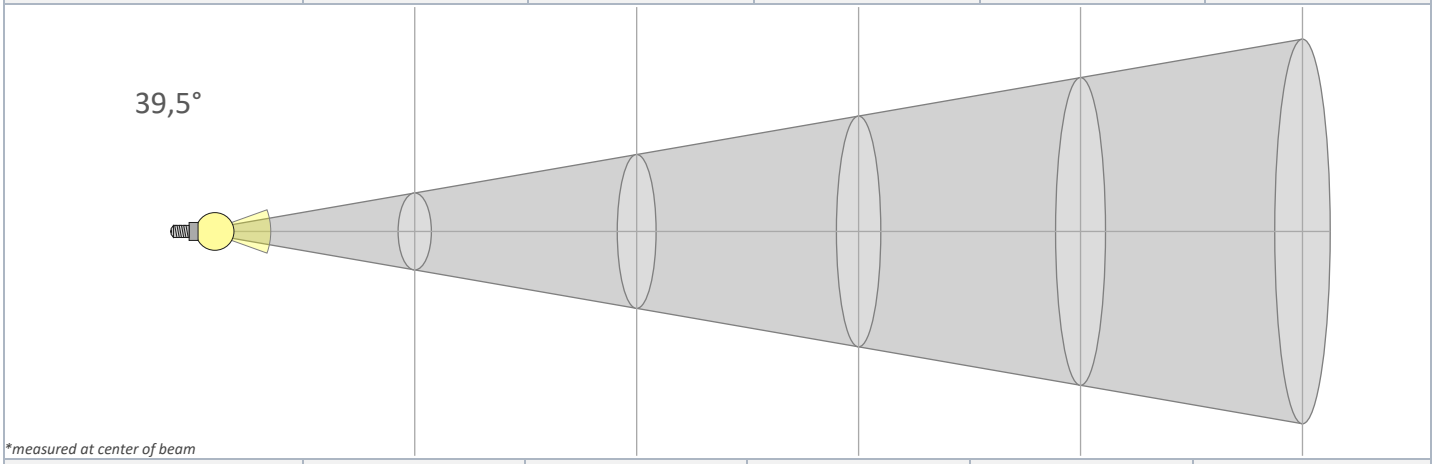
| Beam details | 1m | 2m | 3m | 4m | 5m |
|---|---|---|---|---|---|
| *Lux** | 1632 lx | 408 lx | 181 lx | 102 lx | 65 lx |




*measured at center of beam

| | | | | | |
|---|---|---|---|---|---|
| *Footcandles** | 151,6 fcd | 37,9 fcd | 16,8 fcd | 9,5 fcd | 6,1 fcd |
| *Beam width (meter)* | 0,7 m | 1,4 m | 2,2 m | 2,9 m | 3,6 m |
| *Beam width (Feet)* | 2,4 ft | 4,7 ft | 7,1 ft | 9,4 ft | 11,8 ft |

*Beam intensities*

| 1m | 2m | 3m | 4m | 5m | 6m | 7m | 8m | 9m | 10m | 11m | 12m | 13m | 14m | 15m | 16m | 17m | 18m | 19m | 20m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1632lx | 408lx | 181lx | 102lx | 65lx | 45lx | 33lx | 26lx | 20lx | 16lx | 13lx | 11lx | 10lx | 8lx | 7lx | 6lx | 6lx | 5lx | 5lx | 4lx |
| 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 |
| 151,6fcd | 37,9fcd | 16,8fcd | 9,5fcd | 6,1fcd | 4,2fcd | 3,1fcd | 2,4fcd | 1,9fcd | 1,5fcd | 1,3fcd | 1,1fcd | 0,9fcd | 0,8fcd | 0,7fcd | 0,6fcd | 0,5fcd | 0,5fcd | 0,4fcd | 0,4fcd |

*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° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1632 | 1636 | 1602 | 1545 | 1470 | 1381 | 1280 | 1170 | 1057 | 933 | 804 | 672 | 543 | 424 | 320 | 234 | 168 | 119 | 84 | 62 |
| 100% | 100% | 98% | 95% | 90% | 85% | 78% | 72% | 65% | 57% | 49% | 41% | 33% | 26% | 20% | 14% | 10% | 7% | 5% | 4% |

*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° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1632 | 1636 | 1602 | 1545 | 1470 | 1381 | 1280 | 1170 | 1057 | 933 | 804 | 672 | 543 | 424 | 320 | 234 | 168 | 119 | 84 | 62 |
| 100% | 100% | 98% | 95% | 90% | 85% | 78% | 72% | 65% | 57% | 49% | 41% | 33% | 26% | 20% | 14% | 10% | 7% | 5% | 4% |

*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° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1632 | 1636 | 1602 | 1545 | 1470 | 1381 | 1280 | 1170 | 1057 | 933 | 804 | 672 | 543 | 424 | 320 | 234 | 168 | 119 | 84 | 62 |
| 100% | 100% | 98% | 95% | 90% | 85% | 78% | 72% | 65% | 57% | 49% | 41% | 33% | 26% | 20% | 14% | 10% | 7% | 5% | 4% |

*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° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1632 | 1636 | 1602 | 1545 | 1470 | 1381 | 1280 | 1170 | 1057 | 933 | 804 | 672 | 543 | 424 | 320 | 234 | 168 | 119 | 84 | 62 |
| 100% | 100% | 98% | 95% | 90% | 85% | 78% | 72% | 65% | 57% | 49% | 41% | 33% | 26% | 20% | 14% | 10% | 7% | 5% | 4% |

| *Beam angle 50%* | *Field angle 10%* | *Cutoff angle 2,5%* | *Intensity ratio in 120° cone* | *Intensity ratio in 90° cone* |
|---|---|---|---|---|
| 39,5° | 64,3° | 81,7° | 95,6% | 93,1% |

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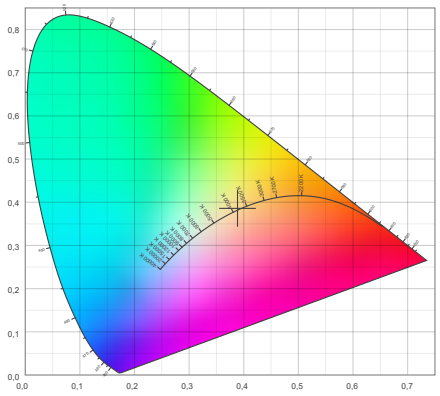
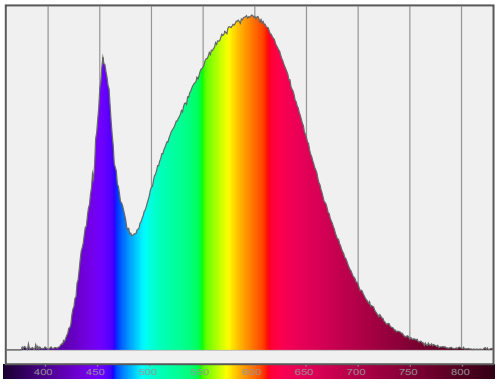
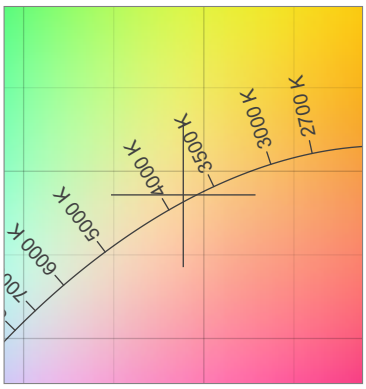
## LM79-LINA-HP-4000K-30CM-44DEG

### Color details

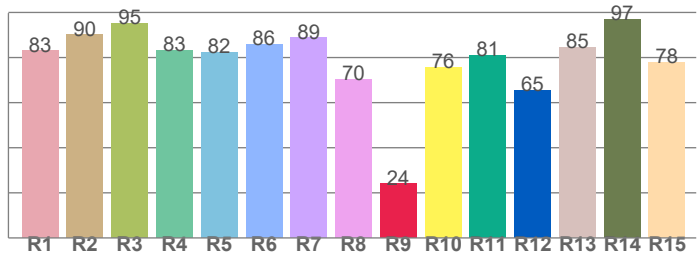







| | | | | |
|---|---|---|---|---|
| *CIE 1931* | x: 0,389 | | Spectra | *CIE 1931 ZOOM* |
| 3859 K | y: 0,386 | | | Δuv: 0,0019 |

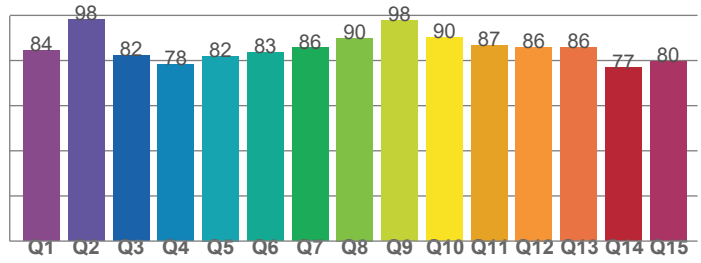
CRI: **84,8** (R1-R8)




*CRI values, R1-R8 are used to calculate final CRI value*

| R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 |
|---|---|---|---|---|---|---|---|
| **83,0** | **90,1** | **95,0** | **83,1** | **82,4** | **85,8** | **88,8** | **70,3** |
| R9 | R10 | R11 | R12 | R13 | R14 | R15 | |
| **24,0** | **75,7** | **80,9** | **65,5** | **84,6** | **97,1** | **77,9** | |

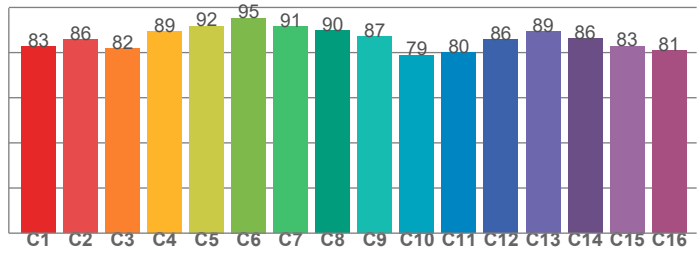
CQS: **84,6**




*CQS values*

| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 |
|---|---|---|---|---|---|---|---|
| **84,4** | **98,1** | **82,2** | **78,2** | **82,0** | **83,5** | **85,6** | **90,0** |
| Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | |
| **97,7** | **90,2** | **86,9** | **86,0** | **85,8** | **76,8** | **79,6** | |

TM30: **86,1**




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

| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 |
|---|---|---|---|---|---|---|---|
| **82,8** | **85,8** | **81,7** | **89,3** | **91,7** | **95,3** | **91,5** | **89,8** |
| C9 | C10 | C11 | C12 | C13 | C14 | C15 | |
| **87,2** | **78,9** | **80,0** | **85,7** | **89,3** | **86,3** | **82,9** | |

### 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 diviation from black body |
|---|---|---|---|---|---|---|---|---|---|---|
| CCT | CRI | CRI R9 | TM30 Rf | TM30 Rg | CQS | x | y | u | v | Δuv |
| **3859 K** | **84,8** | **24,0** | **86,1** | **95,6** | **84,6** | **0,389** | **0,386** | **0,227** | **0,338** | **0,0019** |

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### TM30 details

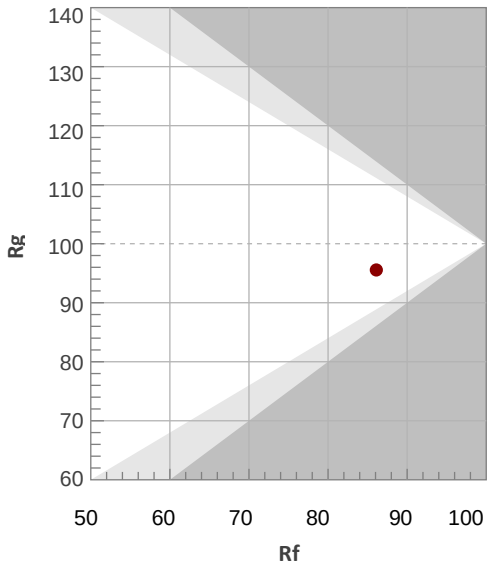
**Rf 86,1**

*Fidelity index Rf*

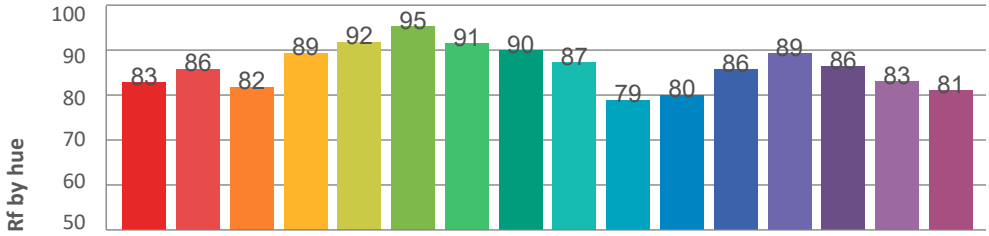
**Rg 95,6**

*Gammut index Rg*

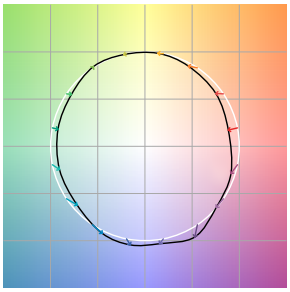
| | | Graphic shifts (%) | |
|---|---|---|---|
| Hue Bin | $R_f$ | Chroma | Hue |
| 1 | 83 | -10% | 0% |
| 2 | 86 | -6% | 5% |
| 3 | 82 | -4% | 9% |
| 4 | 89 | -1% | 6% |
| 5 | 92 | 0% | 3% |
| 6 | 95 | 0% | -2% |
| 7 | 91 | -5% | -3% |
| 8 | 90 | -6% | 0% |
| 9 | 87 | -6% | 6% |
| 10 | 79 | -6% | 12% |
| 11 | 80 | 2% | 14% |
| 12 | 86 | 5% | 5% |
| 13 | 89 | 4% | -5% |
| 14 | 86 | 9% | -9% |
| 15 | 83 | -1% | -12% |
| 16 | 81 | -5% | -11% |



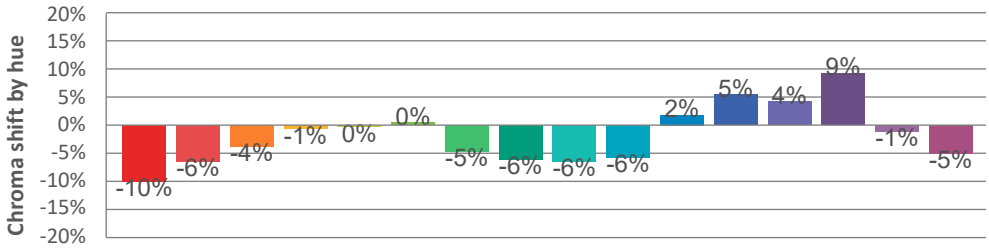

### Hue binH




### Color vector graphics

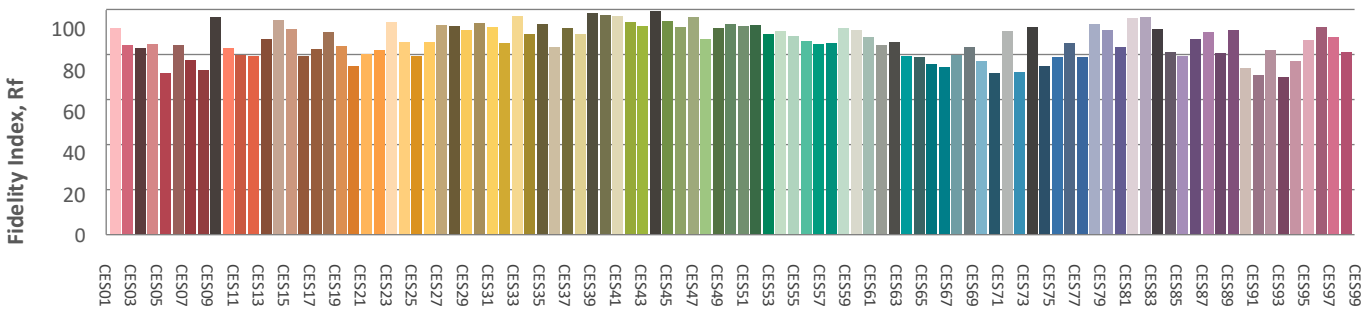


### Hue bin




### Color distortion graphics

### Color Evaluation Sample





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**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 | 13,9 | 14,5 | 14,0 | 14,7 | 14,9 | 13,9 | 14,5 | 14,0 | 14,7 | 14,9 |
| | 3H | 14,1 | 14,8 | 14,5 | 15,0 | 15,2 | 14,1 | 14,8 | 14,5 | 15,0 | 15,2 |
| | 4H | 14,3 | 15,0 | 14,7 | 15,2 | 15,5 | 14,3 | 15,0 | 14,7 | 15,2 | 15,5 |
| | 6H | 14,6 | 15,2 | 15,0 | 15,5 | 15,9 | 14,6 | 15,2 | 15,0 | 15,5 | 15,9 |
| | 8H | 14,8 | 15,3 | 15,2 | 15,7 | 16,1 | 14,8 | 15,3 | 15,2 | 15,7 | 16,1 |
| | 12H | 15,1 | 15,6 | 15,5 | 16,0 | 16,5 | 15,1 | 15,6 | 15,5 | 16,0 | 16,5 |
| 4H | 2H | 13,8 | 14,5 | 14,2 | 14,7 | 15,0 | 13,8 | 14,5 | 14,2 | 14,7 | 15,0 |
| | 3H | 14,3 | 14,9 | 14,7 | 15,3 | 15,7 | 14,3 | 14,9 | 14,7 | 15,3 | 15,7 |
| | 4H | 14,6 | 15,1 | 15,1 | 15,6 | 16,1 | 14,6 | 15,1 | 15,1 | 15,6 | 16,1 |
| | 6H | 15,0 | 15,5 | 15,5 | 15,9 | 16,3 | 15,0 | 15,5 | 15,5 | 15,9 | 16,3 |
| | 8H | 15,3 | 15,8 | 15,8 | 16,2 | 16,6 | 15,3 | 15,8 | 15,8 | 16,2 | 16,6 |
| | 12H | 15,7 | 16,1 | 16,3 | 16,6 | 17,1 | 15,7 | 16,1 | 16,3 | 16,6 | 17,1 |
| 8H | 4H | 14,7 | 15,2 | 15,2 | 15,6 | 16,0 | 14,7 | 15,2 | 15,2 | 15,6 | 16,0 |
| | 6H | 15,3 | 15,6 | 15,8 | 16,1 | 16,7 | 15,3 | 15,6 | 15,8 | 16,1 | 16,7 |
| | 8H | 15,8 | 16,0 | 16,3 | 16,6 | 17,2 | 15,8 | 16,0 | 16,3 | 16,6 | 17,2 |
| | 12H | 16,5 | 16,7 | 17,1 | 17,2 | 17,9 | 16,5 | 16,7 | 17,1 | 17,2 | 17,9 |
| 12H | 4H | 14,7 | 15,1 | 15,2 | 15,5 | 16,0 | 14,7 | 15,1 | 15,2 | 15,5 | 16,0 |
| | 6H | 15,4 | 15,7 | 16,0 | 16,2 | 16,9 | 15,4 | 15,7 | 16,0 | 16,2 | 16,9 |
| | 8H | 15,9 | 16,1 | 16,5 | 16,7 | 17,3 | 15,9 | 16,1 | 16,5 | 16,7 | 17,3 |

Variation of the observer position for the luminaire distance S

| | | |
|---|---|---|
| S = 1.0H | 2,0 / -0,8 | 2,0 / -0,8 |
| S = 1.5H | 3,8 / -0,9 | 3,8 / -0,9 |
| S = 2.0H | 5,3 / -1,2 | 5,3 / -1,2 |
| Standard table | n/a | n/a |
| Correction summand | n/a | n/a |

Corrected glare indices referring to 806lm total luminous flux

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