

# LM-79

## Test Report

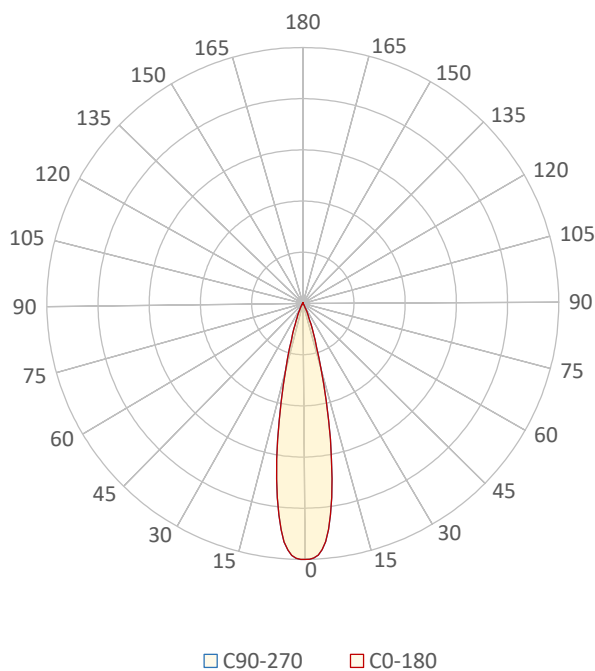
LM79-REVO-MICRO-BASIC-3000K-CRI80-20DEG

### General Discription

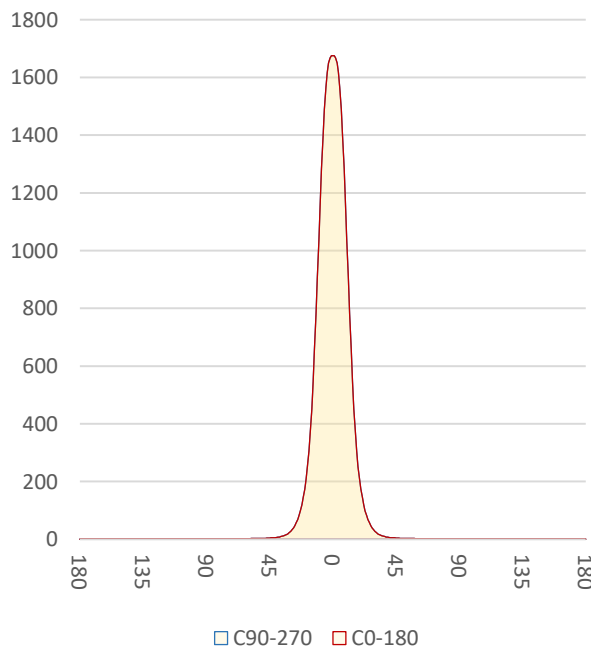
|                   |                     |
|-------------------|---------------------|
| Item number       | RM-2-X-03-1         |
| Date and time     | 12-11-2018 12:30:09 |
| CCT (Kelvin)      | 2894 K              |
| Beam angle        | 23,1°               |
| Luminous flux     | 320 lm              |
| Efficiency        | 60 lm/watt          |
| Weighted energy   | 5,4 kWh/1000h       |
| Power factor      | 0,47                |
| CRI (RA)          | 84,3                |
| Fidelity index Rf | Rf 84,0             |
| Gammut index Rg   | Rg 98,2             |
| Peak              | 1675 cd             |



Polar diagram



Cartesian diagram



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| Beam details | 1m      | 2m     | 3m     | 4m     | 5m    |
|--------------|---------|--------|--------|--------|-------|
| <b>Lux*</b>  | 1675 lx | 419 lx | 186 lx | 105 lx | 67 lx |

\*measured at center of beam

|                           |           |          |          |         |         |
|---------------------------|-----------|----------|----------|---------|---------|
| <b>Footcandles*</b>       | 155,6 fcd | 38,9 fcd | 17,3 fcd | 9,7 fcd | 6,2 fcd |
| <b>Beam width (meter)</b> | 0,4 m     | 0,8 m    | 1,2 m    | 1,6 m   | 2 m     |
| <b>Beam width (Feet)</b>  | 1,3 ft    | 2,7 ft   | 4 ft     | 5,4 ft  | 6,7 ft  |

| Beam intensities |         |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|------------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1m               | 2m      | 3m      | 4m     | 5m     | 6m     | 7m     | 8m     | 9m     | 10m    | 11m    | 12m    | 13m    | 14m    | 15m    | 16m    | 17m    | 18m    | 19m    | 20m    |
| 1675lx           | 419lx   | 186lx   | 105lx  | 67lx   | 47lx   | 34lx   | 26lx   | 21lx   | 17lx   | 14lx   | 12lx   | 10lx   | 9lx    | 7lx    | 7lx    | 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 |
| 155,6fcd         | 38,9fcd | 17,3fcd | 9,7fcd | 6,2fcd | 4,3fcd | 3,2fcd | 2,4fcd | 1,9fcd | 1,6fcd | 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° |
| 1675                      | 1668 | 1617 | 1489 | 1284 | 1035 | 780 | 546 | 371 | 252 | 174 | 120 | 83  | 57  | 39  | 28  | 19  | 14  | 10  | 8   |
| 100%                      | 100% | 96%  | 89%  | 77%  | 62%  | 47% | 33% | 22% | 15% | 10% | 7%  | 5%  | 3%  | 2%  | 2%  | 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° |
| 1675                       | 1668 | 1617 | 1489 | 1284 | 1035 | 780 | 546 | 371 | 252 | 174 | 120 | 83  | 57  | 39  | 28  | 19  | 14  | 10  | 8   |
| 100%                       | 100% | 96%  | 89%  | 77%  | 62%  | 47% | 33% | 22% | 15% | 10% | 7%  | 5%  | 3%  | 2%  | 2%  | 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° |
| 1675                        | 1668 | 1617 | 1489 | 1284 | 1035 | 780 | 546 | 371 | 252 | 174 | 120 | 83  | 57  | 39  | 28  | 19  | 14  | 10  | 8   |
| 100%                        | 100% | 96%  | 89%  | 77%  | 62%  | 47% | 33% | 22% | 15% | 10% | 7%  | 5%  | 3%  | 2%  | 2%  | 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° |
| 1675                        | 1668 | 1617 | 1489 | 1284 | 1035 | 780 | 546 | 371 | 252 | 174 | 120 | 83  | 57  | 39  | 28  | 19  | 14  | 10  | 8   |
| 100%                        | 100% | 96%  | 89%  | 77%  | 62%  | 47% | 33% | 22% | 15% | 10% | 7%  | 5%  | 3%  | 2%  | 2%  | 1%  | 1%  | 1%  | 0%  |

|                       |                        |                          |                                     |                                    |
|-----------------------|------------------------|--------------------------|-------------------------------------|------------------------------------|
| <b>Beam angle 50%</b> | <b>Field angle 10%</b> | <b>Cutoff angle 2,5%</b> | <b>Intensity ratio in 120° cone</b> | <b>Intensity ratio in 90° cone</b> |
| 23,1°                 | 40,4°                  | 55,4°                    | 97,1%                               | 95,8%                              |



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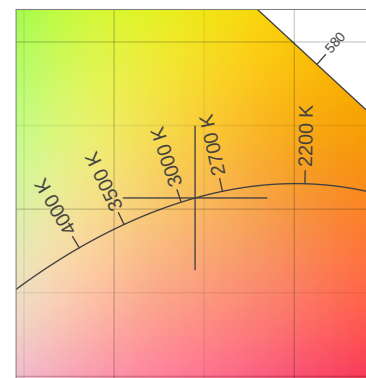
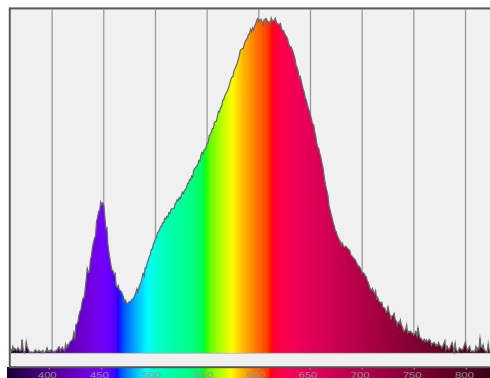
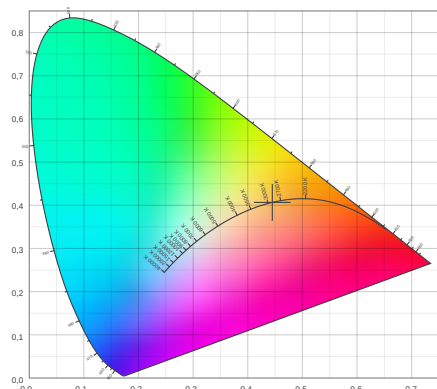
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LM79-REVO-MICRO-BASIC-3000K-CRI80-20DEG

### Color details



CIE 1931

x: 0,445

2894 K

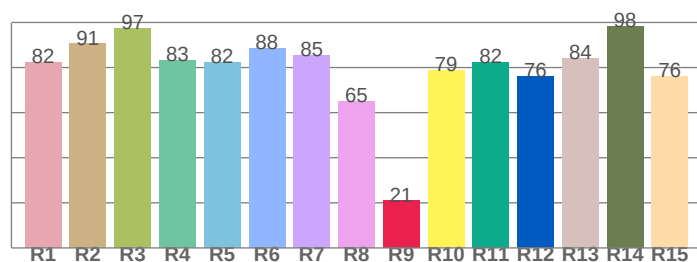
y: 0,407

Spectra

CIE 1931 ZOOM

$\Delta uv$ : 0,0001

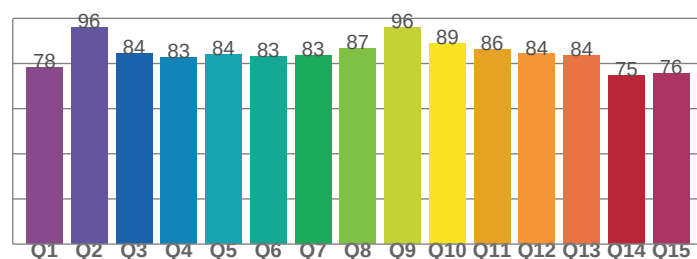
CRI: **84,3** (R1-R8)



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

| R1   | R2   | R3   | R4   | R5   | R6   | R7   | R8   |
|------|------|------|------|------|------|------|------|
| 82,4 | 90,5 | 97,2 | 83,1 | 82,4 | 88,4 | 85,5 | 65,0 |
| R9   | R10  | R11  | R12  | R13  | R14  | R15  |      |
| 20,9 | 78,6 | 82,3 | 76,2 | 84,0 | 98,4 | 76,0 |      |

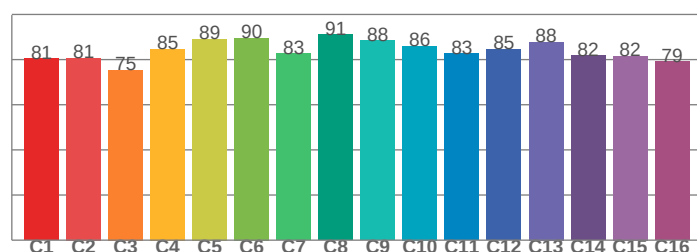
CQS: **83,3**



CQS values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   |
|------|------|------|------|------|------|------|------|
| 78,3 | 95,9 | 84,3 | 82,5 | 84,0 | 83,1 | 83,4 | 86,7 |
| Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |      |
| 95,9 | 89,0 | 86,3 | 84,3 | 83,7 | 74,6 | 75,7 |      |

TM30: **84,0**



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

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   |
|------|------|------|------|------|------|------|------|
| 80,6 | 80,8 | 75,4 | 84,6 | 89,2 | 89,5 | 82,6 | 91,1 |
| C9   | C10  | C11  | C12  | C13  | C14  | C15  |      |
| 88,4 | 86,1 | 82,8 | 84,6 | 87,9 | 81,9 | 81,6 |      |

### 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                | $\Delta uv$                     |
| 2894 K            | 84,3                  | 20,9          | 84,0           | 98,2        | 83,3                | 0,445                     | 0,407                     | 0,255            | 0,349            | 0,0001                          |



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LM79-REVO-MICRO-BASIC-3000K-CRI80-20DEG

### TM30 details

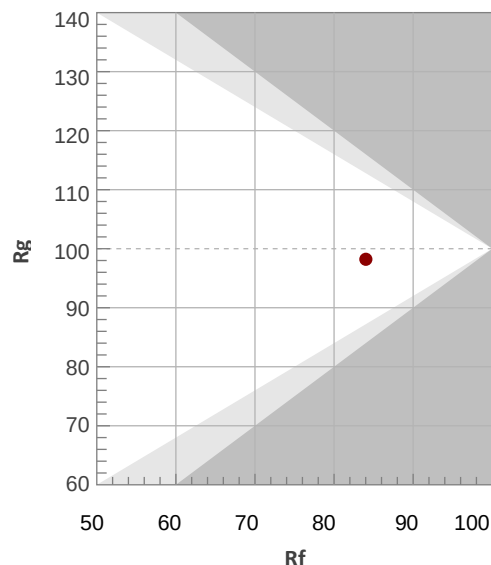
Rf 84,0

Fidelity index Rf

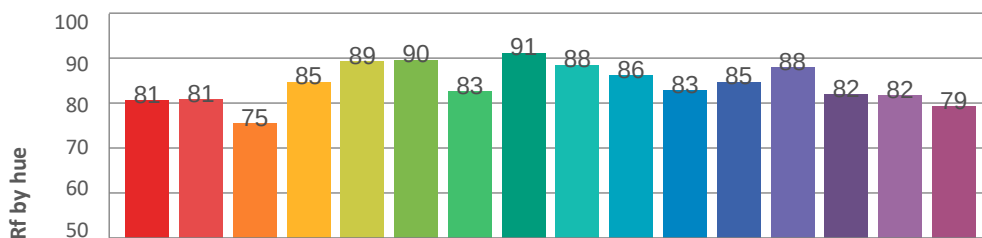
Rg 98,2

Gamut index Rg

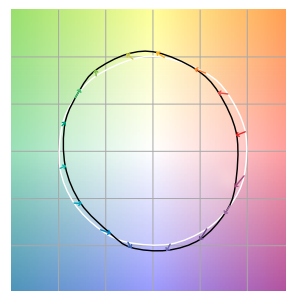
| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 81             | -10%               | -2%  |
| 2       | 81             | -7%                | 7%   |
| 3       | 75             | -3%                | 11%  |
| 4       | 85             | 4%                 | 9%   |
| 5       | 89             | 6%                 | 5%   |
| 6       | 90             | 5%                 | -3%  |
| 7       | 83             | 1%                 | -10% |
| 8       | 91             | -3%                | -4%  |
| 9       | 88             | -6%                | -1%  |
| 10      | 86             | -6%                | 5%   |
| 11      | 83             | -3%                | 10%  |
| 12      | 85             | 5%                 | 4%   |
| 13      | 88             | 6%                 | -5%  |
| 14      | 82             | 5%                 | -12% |
| 15      | 82             | 0%                 | -10% |
| 16      | 79             | -7%                | -13% |



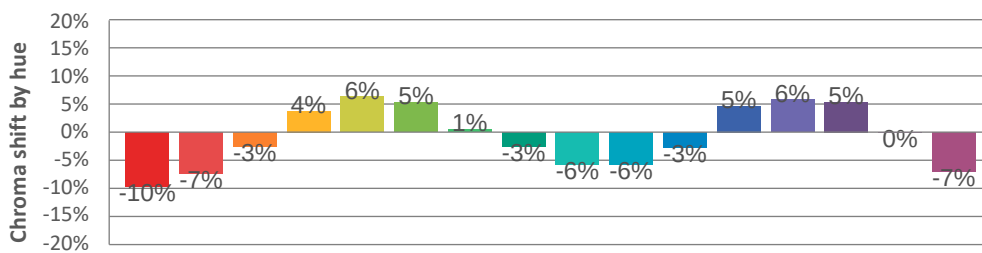
### Hue binH



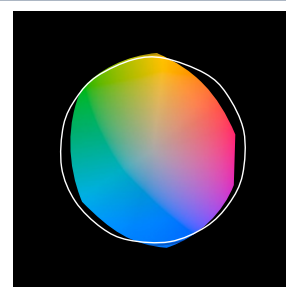
### Color vector graphics



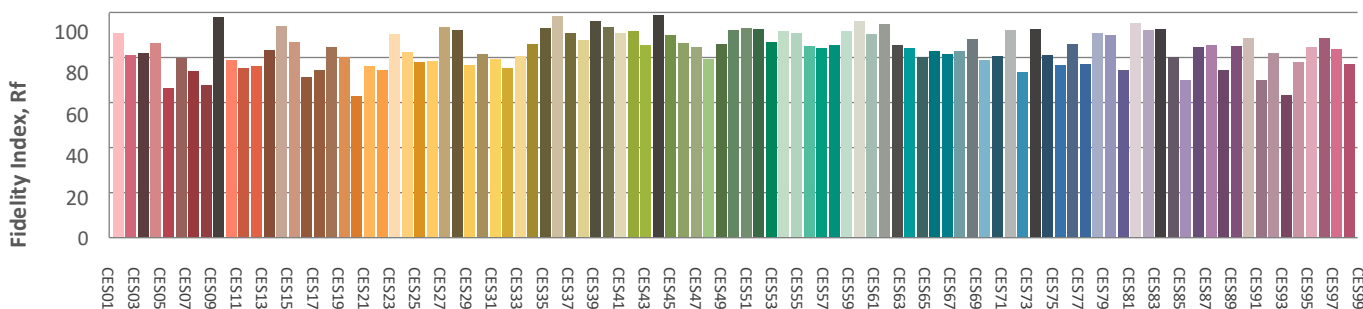
### Hue bin



### 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<br>X      Y                                           |     | Viewing direction at right angles to lamp axis |     |     |     |     | Viewing direction parallel to lamp axis |     |     |     |     |
| 2H                                                              | 2H  | 2,6                                            | 3,3 | 2,9 | 3,5 | 3,7 | 2,6                                     | 3,3 | 2,9 | 3,5 | 3,7 |
|                                                                 | 3H  | 3,7                                            | 4,3 | 4,1 | 4,6 | 4,9 | 3,7                                     | 4,3 | 4,1 | 4,6 | 4,9 |
|                                                                 | 4H  | 4,4                                            | 5,0 | 4,8 | 5,3 | 5,6 | 4,4                                     | 5,0 | 4,8 | 5,3 | 5,6 |
|                                                                 | 6H  | 5,1                                            | 5,7 | 5,5 | 6,0 | 6,3 | 5,1                                     | 5,7 | 5,5 | 6,0 | 6,3 |
|                                                                 | 8H  | 5,5                                            | 6,0 | 5,9 | 6,3 | 6,7 | 5,5                                     | 6,0 | 5,9 | 6,3 | 6,7 |
|                                                                 | 12H | 6,0                                            | 6,5 | 6,4 | 6,8 | 7,2 | 6,0                                     | 6,5 | 6,4 | 6,8 | 7,2 |
| 4H                                                              | 2H  | 3,1                                            | 3,6 | 3,4 | 3,9 | 4,2 | 3,1                                     | 3,6 | 3,4 | 3,9 | 4,2 |
|                                                                 | 3H  | 4,4                                            | 4,9 | 4,8 | 5,2 | 5,6 | 4,4                                     | 4,9 | 4,8 | 5,2 | 5,6 |
|                                                                 | 4H  | 5,3                                            | 5,7 | 5,7 | 6,1 | 6,5 | 5,3                                     | 5,7 | 5,7 | 6,1 | 6,5 |
|                                                                 | 6H  | 6,2                                            | 6,6 | 6,7 | 7,0 | 7,4 | 6,2                                     | 6,6 | 6,7 | 7,0 | 7,4 |
|                                                                 | 8H  | 6,7                                            | 7,0 | 7,2 | 7,4 | 7,9 | 6,7                                     | 7,0 | 7,2 | 7,4 | 7,9 |
|                                                                 | 12H | 7,3                                            | 7,6 | 7,8 | 8,0 | 8,5 | 7,3                                     | 7,6 | 7,8 | 8,0 | 8,5 |
| 8H                                                              | 4H  | 5,7                                            | 6,0 | 6,1 | 6,4 | 6,8 | 5,7                                     | 6,0 | 6,1 | 6,4 | 6,8 |
|                                                                 | 6H  | 6,8                                            | 7,1 | 7,3 | 7,5 | 8,0 | 6,8                                     | 7,1 | 7,3 | 7,5 | 8,0 |
|                                                                 | 8H  | 7,4                                            | 7,6 | 7,9 | 8,1 | 8,6 | 7,4                                     | 7,6 | 7,9 | 8,1 | 8,6 |
|                                                                 | 12H | 8,3                                            | 8,4 | 8,8 | 8,9 | 9,5 | 8,3                                     | 8,4 | 8,8 | 8,9 | 9,5 |
| 12H                                                             | 4H  | 5,8                                            | 6,0 | 6,2 | 6,4 | 6,9 | 5,8                                     | 6,0 | 6,2 | 6,4 | 6,9 |
|                                                                 | 6H  | 7,0                                            | 7,1 | 7,5 | 7,6 | 8,1 | 7,0                                     | 7,1 | 7,5 | 7,6 | 8,1 |
|                                                                 | 8H  | 7,7                                            | 7,8 | 8,2 | 8,3 | 8,8 | 7,7                                     | 7,8 | 8,2 | 8,3 | 8,8 |
| Variation of the observer position for the luminaire distance S |     |                                                |     |     |     |     |                                         |     |     |     |     |
| S = 1,0H                                                        |     | +0,6 / -0,3                                    |     |     |     |     | +0,6 / -0,3                             |     |     |     |     |
| S = 1,5H                                                        |     | +1,3 / -0,5                                    |     |     |     |     | +1,3 / -0,5                             |     |     |     |     |
| S = 2,0H                                                        |     | +2,3 / -0,8                                    |     |     |     |     | +2,3 / -0,8                             |     |     |     |     |
| Standard table                                                  |     | BK07                                           |     |     |     |     | BK07                                    |     |     |     |     |
| Correction summand                                              |     | -9,7                                           |     |     |     |     | -9,7                                    |     |     |     |     |
| Corrected glare indices referring to 320lm total luminous flux  |     |                                                |     |     |     |     |                                         |     |     |     |     |