

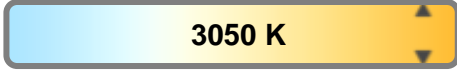
Light efficiency:



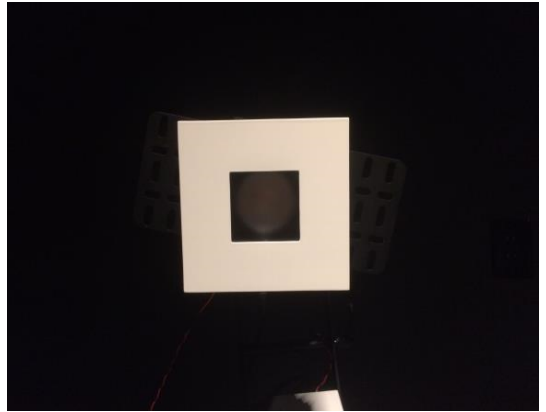
Light quality:



Color temperature:

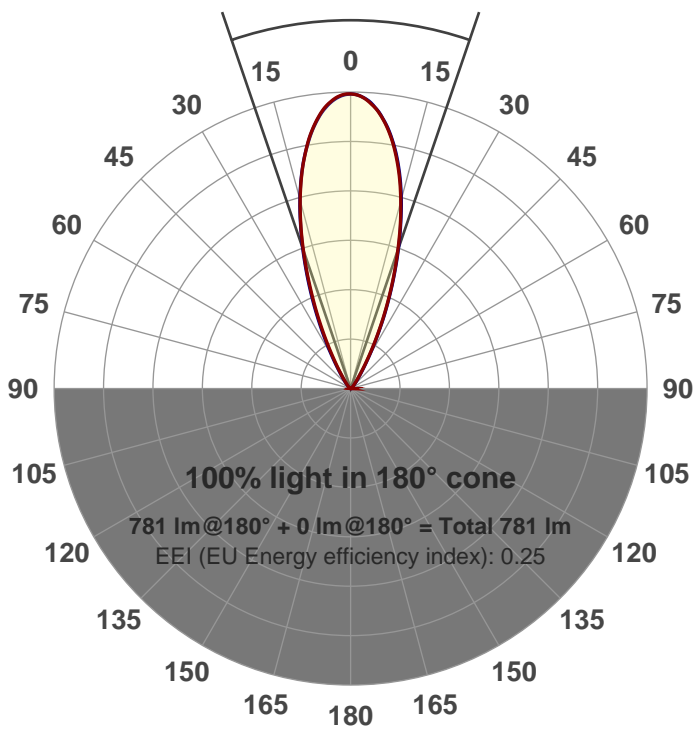


Output: 781 lm  
Peak: 1773 cd  
Power: 15.0 W  
PF: 0.98



Beam angle

37.7°



Test number:  
**GRF-AD-WF-SQ-91A**  
Luminaire Model:  
**GRF-AD-WF-SQ-91A**  
Date and time:  
**8/9/2017 4:40:41 PM**  
Description:  
**350mA**

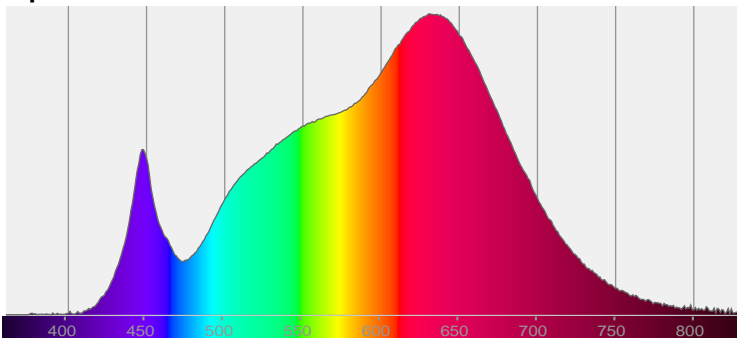
LUM: 781

PPF: 14.6

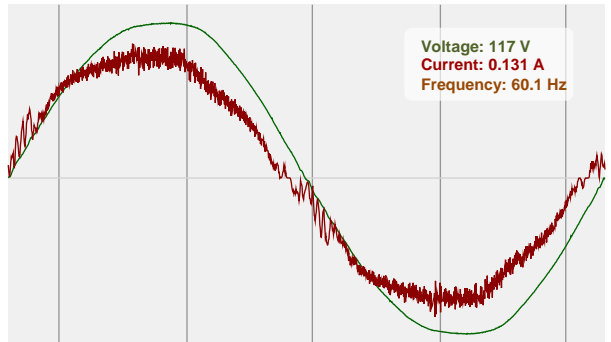


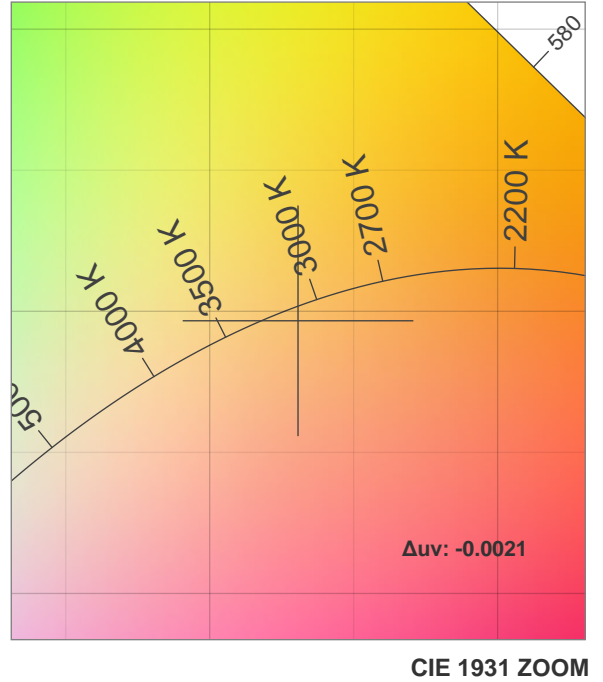
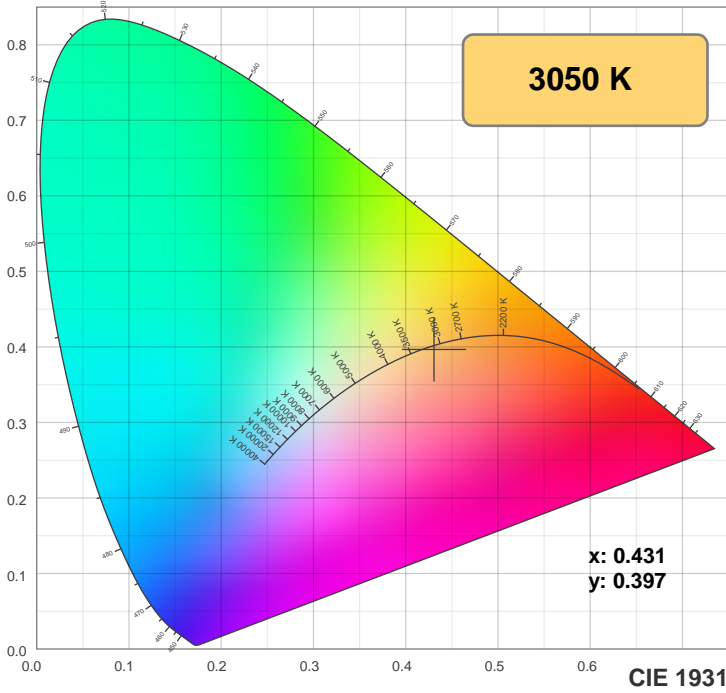
CIE 1931  
x: 0.431  
y: 0.397

Spectra

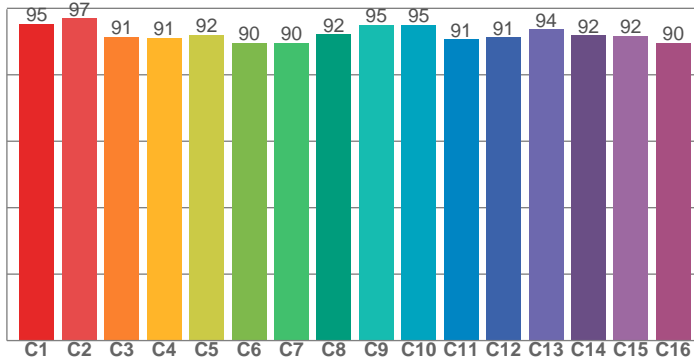


Power

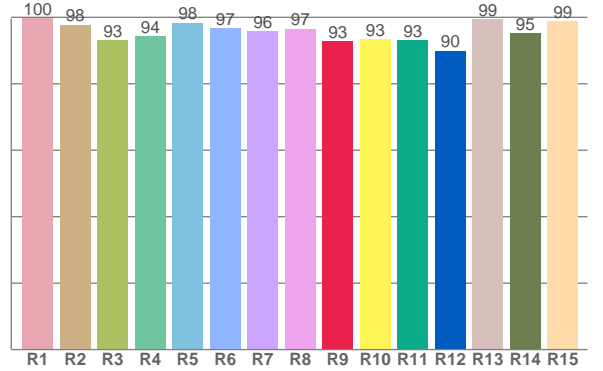




**TM30: 92.6**



**CRI: 96.5 (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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 99.7 | 97.7 | 93.1 | 94.4 | 98.4 | 96.7 | 95.8 | 96.6 | 92.8 | 93.3 | 93.2 | 89.9 | 99.4 | 95.2 | 98.7 |

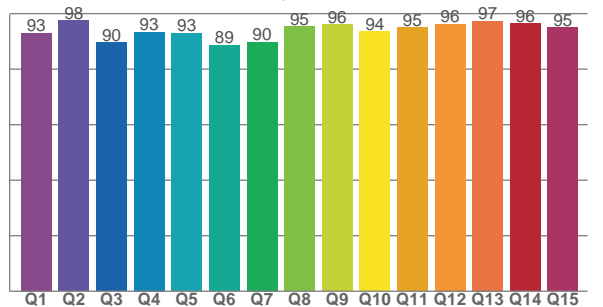
TM30 C values, 16 binned values out of total of 99 C values

| C1   | C2   | C3   | C4   | C5   | C6   | C7   | C8   | C9   | C10  | C11  | C12  | C13  | C14  | C15  | C16  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 95.3 | 97.0 | 91.4 | 91.1 | 92.0 | 89.6 | 89.7 | 92.1 | 95.0 | 95.0 | 90.6 | 91.2 | 93.7 | 91.8 | 91.7 | 89.7 |

CQS Q values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 93.1 | 97.5 | 89.6 | 93.5 | 92.9 | 88.6 | 89.8 | 95.3 | 96.1 | 93.6 | 95.0 | 96.3 | 97.4 | 96.4 | 94.9 |

**CQS: 93.2**



## Color parameters

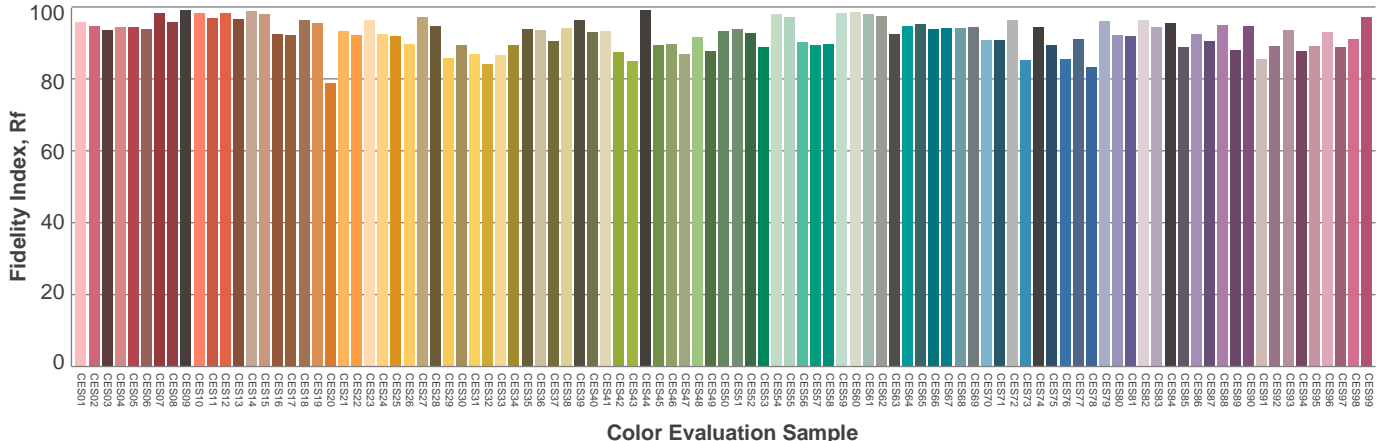
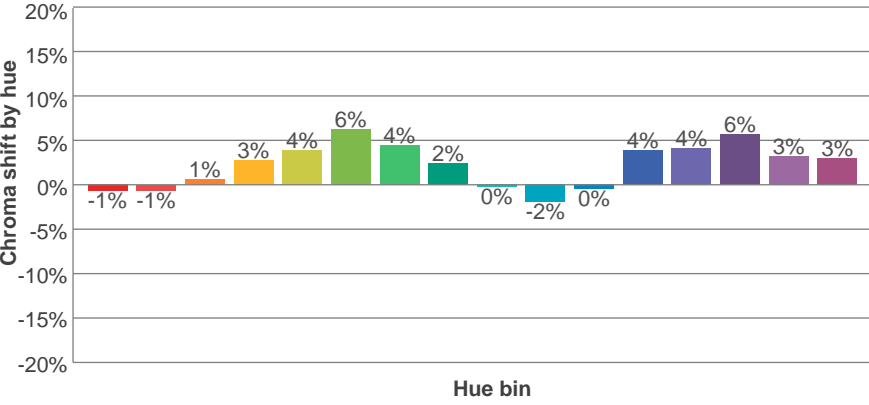
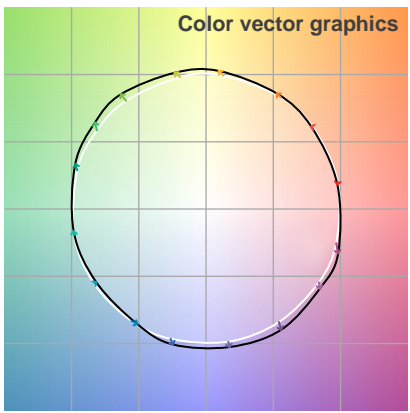
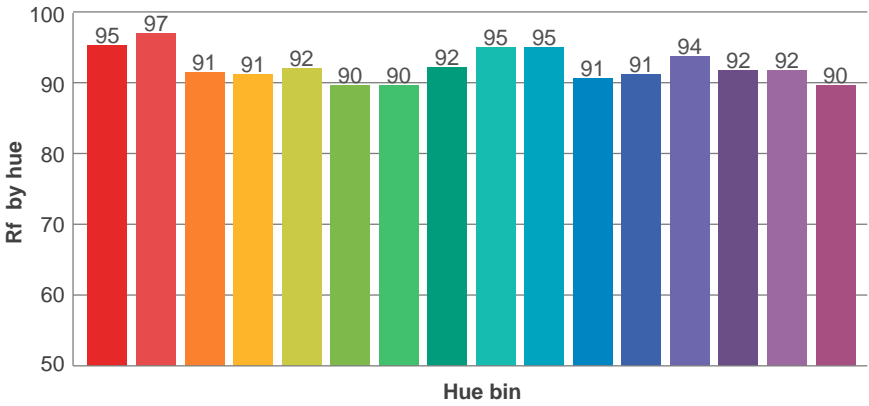
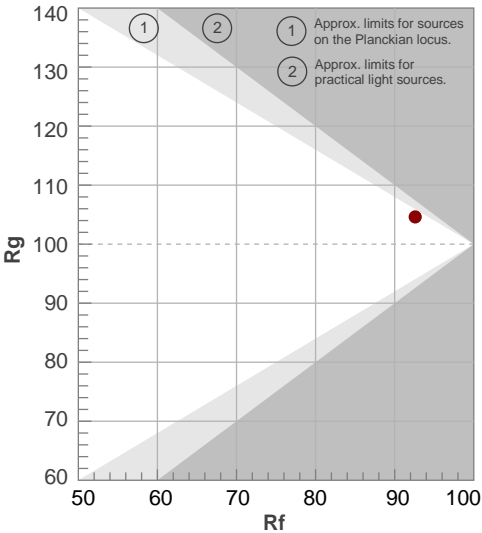
| Color temperature | Color rendering index | Red component | Color fidelity | Color gamut | Color quality scale | Color coordinate cie 1931 | Color coordinate cie 1931 | Color coordinate | Color coordinate | Color deviation from black body |
|-------------------|-----------------------|---------------|----------------|-------------|---------------------|---------------------------|---------------------------|------------------|------------------|---------------------------------|
| CCT               | CRI                   | CRI R9        | TM30 Rf        | TM30 Rg     | CQS                 | x                         | y                         | u                | v                | Δuv                             |
| 3050 K            | 96.5                  | 92.8          | 92.6           | 104.6       | 93.2                | 0.431                     | 0.397                     | 0.250            | 0.345            | -0.0021                         |

# TM30 details

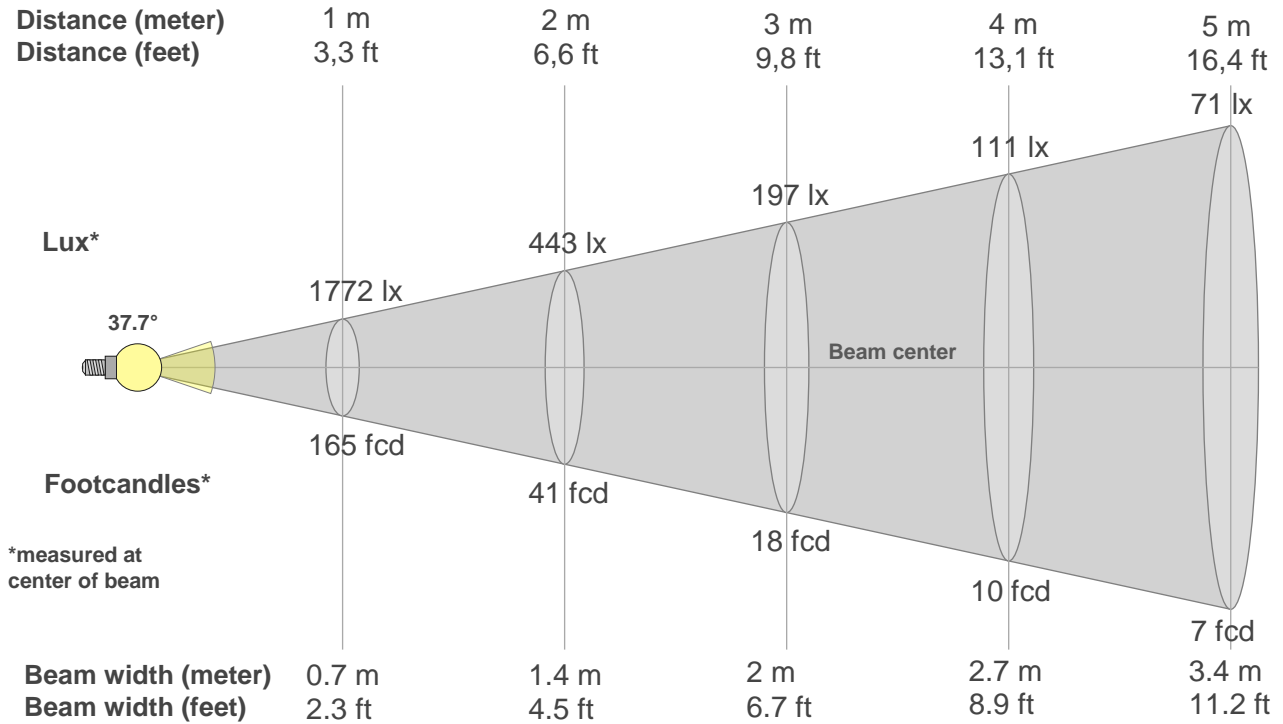
**Rf 92.6**  
Fidelity index Rf

**Rg 104.6**  
Gammut index Rg

| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |     |
|---------|----------------|--------------------|-----|
|         |                | Chroma             | Hue |
| 1       | 95             | -1%                | -2% |
| 2       | 97             | -1%                | 1%  |
| 3       | 91             | 1%                 | 4%  |
| 4       | 91             | 3%                 | 4%  |
| 5       | 92             | 4%                 | 4%  |
| 6       | 90             | 6%                 | 1%  |
| 7       | 90             | 4%                 | -4% |
| 8       | 92             | 2%                 | -4% |
| 9       | 95             | 0%                 | -3% |
| 10      | 95             | -2%                | 0%  |
| 11      | 91             | 0%                 | 5%  |
| 12      | 91             | 4%                 | 3%  |
| 13      | 94             | 4%                 | 0%  |
| 14      | 92             | 6%                 | -2% |
| 15      | 92             | 3%                 | -4% |
| 16      | 90             | 3%                 | -7% |



# 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 |
| 1772lx  | 443lx   | 197lx   | 111lx   | 71lx   | 49lx   | 36lx   | 28lx   | 22lx   | 18lx   | 15lx   | 12lx   | 10lx   | 9lx    | 8lx    | 7lx    | 6lx    | 5lx    | 5lx    | 4lx    |
| 164.6fc | 41.1fcd | 18.3fcd | 10.3fcd | 6.6fcd | 4.6fcd | 3.4fcd | 2.6fcd | 2fcd   | 1.6fcd | 1.4fcd | 1.1fcd | 1fcd   | 0.8fcd | 0.7fcd | 0.6fcd | 0.6fcd | 0.5fcd | 0.5fcd | 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° |
|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1772 | 1763 | 1729 | 1673 | 1593 | 1493 | 1376 | 1243 | 1099 | 947 | 791 | 640 | 502 | 377 | 272 | 191 | 135 | 95  | 70  | 52  |
| 100% | 100% | 98%  | 94%  | 90%  | 84%  | 78%  | 70%  | 62%  | 53% | 45% | 36% | 28% | 21% | 15% | 11% | 8%  | 5%  | 4%  | 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° |
|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1772 | 1759 | 1725 | 1668 | 1589 | 1491 | 1377 | 1248 | 1105 | 955 | 805 | 661 | 527 | 407 | 302 | 219 | 156 | 112 | 82  | 62  |
| 100% | 99%  | 97%  | 94%  | 90%  | 84%  | 78%  | 70%  | 62%  | 54% | 45% | 37% | 30% | 23% | 17% | 12% | 9%  | 6%  | 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° |
|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1772 | 1758 | 1720 | 1663 | 1584 | 1485 | 1369 | 1237 | 1094 | 945 | 795 | 652 | 517 | 394 | 289 | 203 | 140 | 98  | 70  | 52  |
| 100% | 99%  | 97%  | 94%  | 89%  | 84%  | 77%  | 70%  | 62%  | 53% | 45% | 37% | 29% | 22% | 16% | 11% | 8%  | 6%  | 4%  | 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° |
|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1772 | 1759 | 1725 | 1667 | 1588 | 1492 | 1378 | 1248 | 1104 | 955 | 805 | 661 | 527 | 404 | 299 | 215 | 153 | 110 | 80  | 60  |
| 100% | 99%  | 97%  | 94%  | 90%  | 84%  | 78%  | 70%  | 62%  | 54% | 45% | 37% | 30% | 23% | 17% | 12% | 9%  | 6%  | 5%  | 3%  |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 37.7°          | 61.8°           | 79.6°             | 99.0%                        | 96.9%                       |



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