

Light efficiency:



Light quality:



Color temperature:



Output: 1396 lm

Peak: 3320 cd

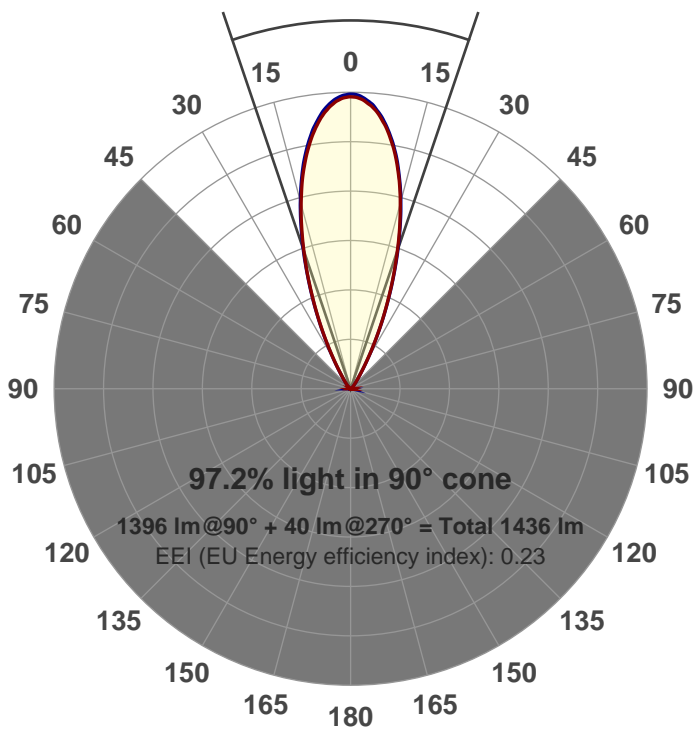
Power: 21.1 W

PF: 0.99



Beam angle

37.5°



Product name:

GR-CZ20-FL-RD-91A

Item number:

GR-CZ20-FL-RD-91A

Date and time:

6/14/2017 11:32:29 AM

Description:

500 mA V6

LUM: 1396

PPF: 23.5

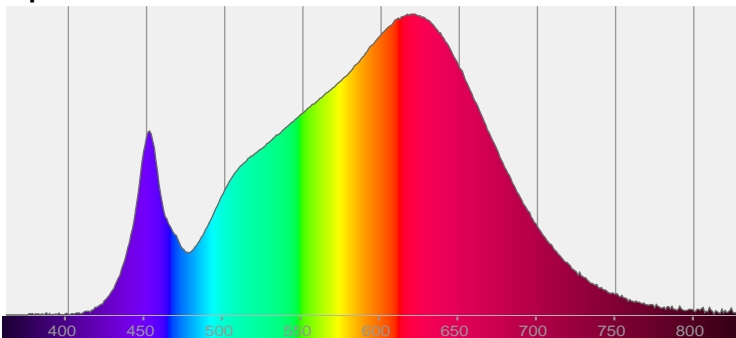


CIE 1931

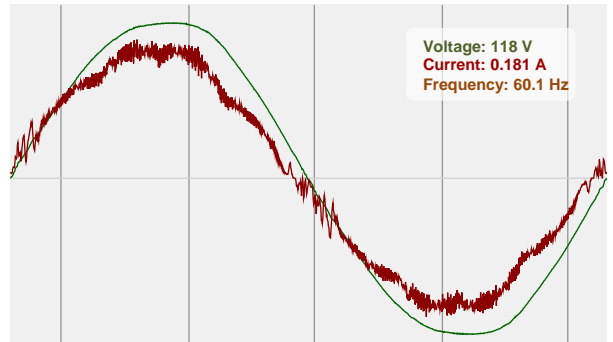
x: 0.428

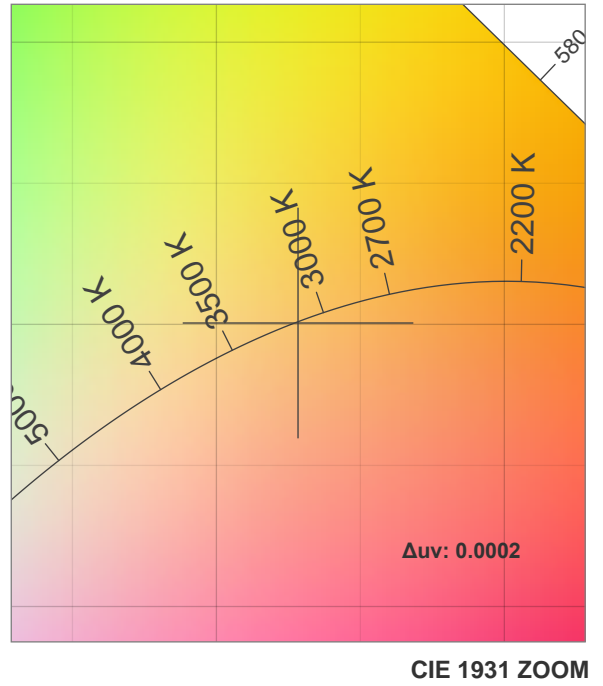
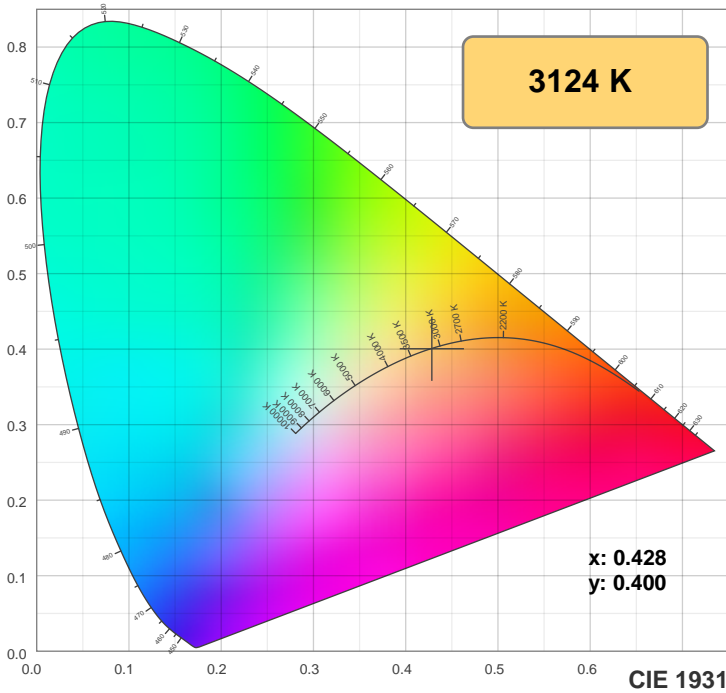
y: 0.400

Spectra

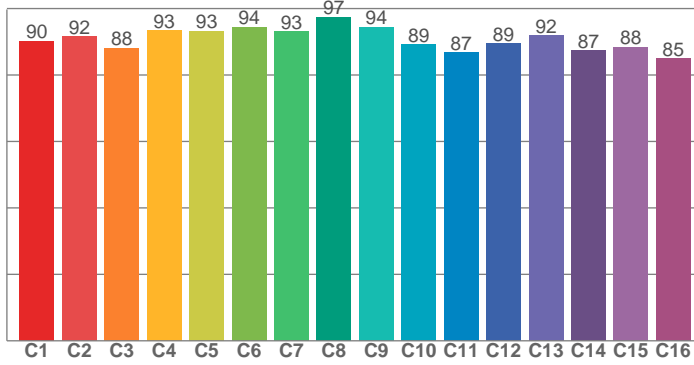


Power

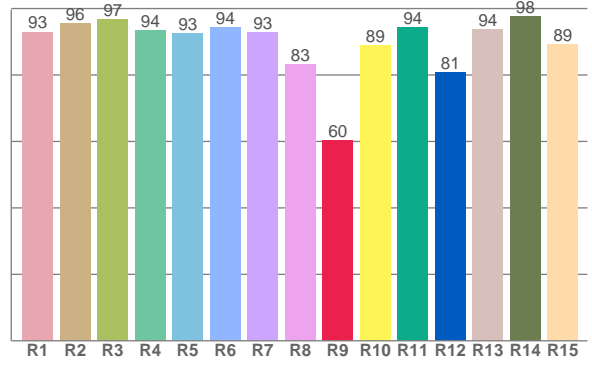




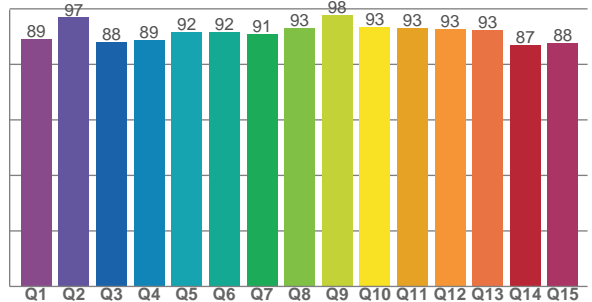
**TM30: 90.9**



**CRI: 92.8 (R1-R8)**



**CQS: 91.0**



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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 93.0 | 95.6 | 96.9 | 93.6 | 92.7 | 94.4 | 92.9 | 83.1 | 60.3 | 89.0 | 94.4 | 80.7 | 93.7 | 97.7 | 89.1 |

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  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 90.3 | 91.5 | 88.2 | 93.4 | 93.3 | 94.5 | 93.2 | 97.5 | 94.4 | 89.3 | 86.7 | 89.4 | 91.9 | 87.3 | 88.5 | 85.0 |

CQS Q values

| Q1   | Q2   | Q3   | Q4   | Q5   | Q6   | Q7   | Q8   | Q9   | Q10  | Q11  | Q12  | Q13  | Q14  | Q15  |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 89.1 | 96.9 | 87.9 | 88.7 | 91.8 | 91.7 | 91.1 | 93.0 | 97.7 | 93.5 | 93.0 | 92.7 | 92.5 | 87.1 | 87.6 |

## Color parameters

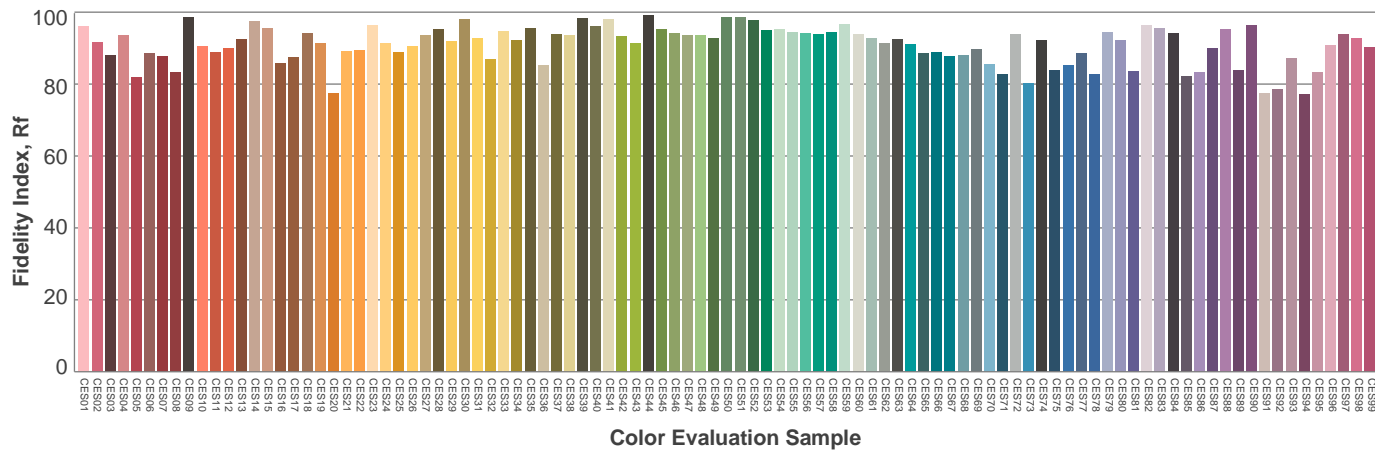
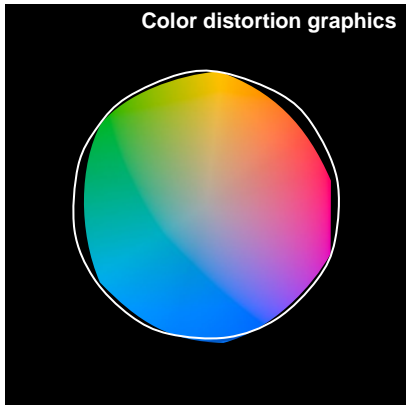
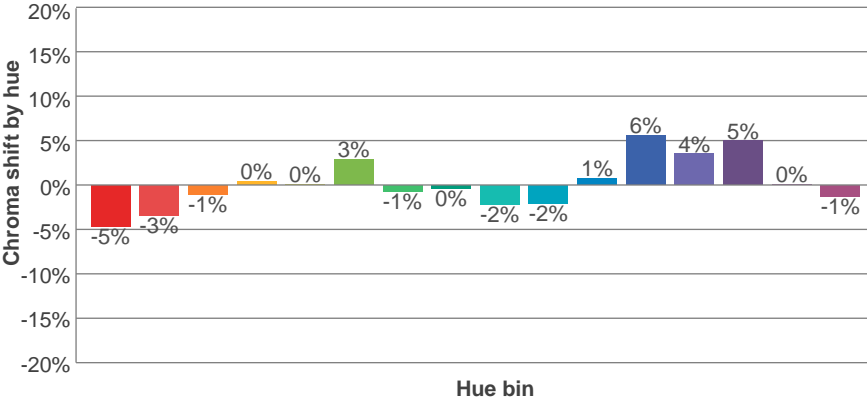
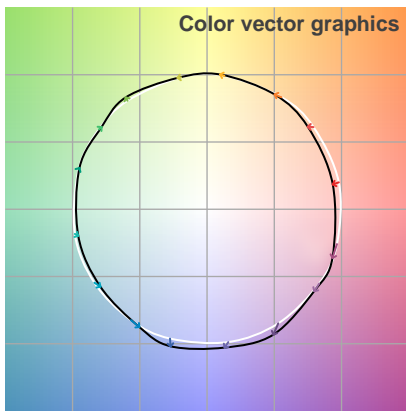
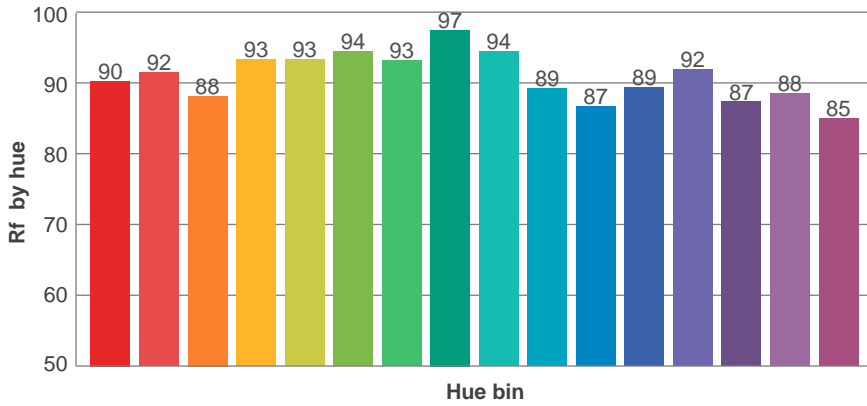
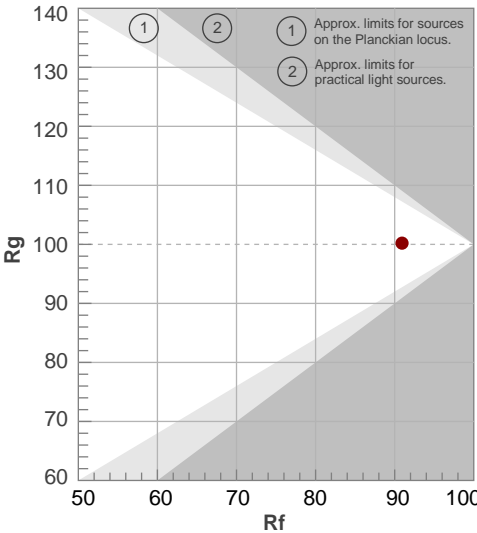
| Color temperature | Color rendering index | Red component | Color fidelity | Color gamut | Color quality scale | Color coordinate cie 1931 | Color coordinate cie 1931 | Color coordinate | Color coordinate | Color diviation from black body |
|-------------------|-----------------------|---------------|----------------|-------------|---------------------|---------------------------|---------------------------|------------------|------------------|---------------------------------|
| CCT               | CRI                   | CRI R9        | TM30 Rf        | TM30 Rg     | CQS                 | x                         | y                         | u                | v                | Δuv                             |
| 3124 K            | 92.8                  | 60.3          | 90.9           | 100.2       | 91.0                | 0.428                     | 0.400                     | 0.247            | 0.346            | 0.0002                          |

# TM30 details

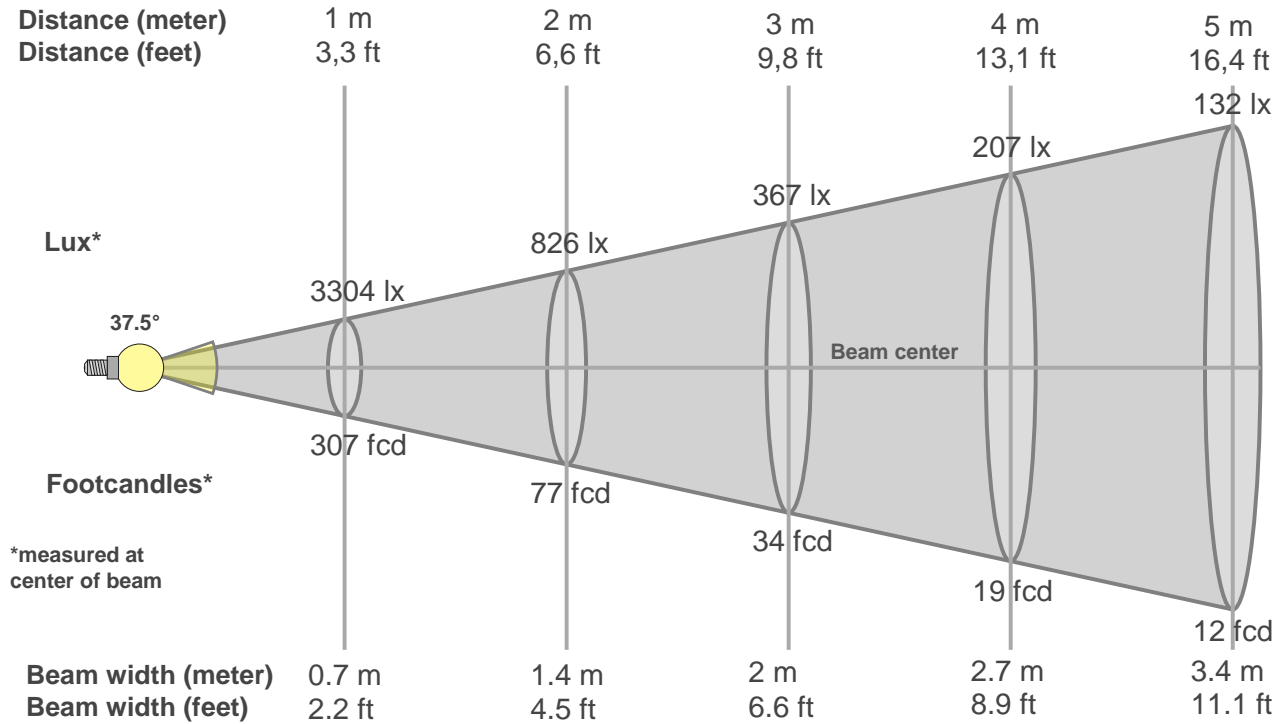
**Rf 90.9**  
Fidelity index Rf

**Rg 100.2**  
Gammut index Rg

| Hue Bin | R <sub>f</sub> | Graphic shifts (%) |      |
|---------|----------------|--------------------|------|
|         |                | Chroma             | Hue  |
| 1       | 90             | -5%                | -1%  |
| 2       | 92             | -3%                | 3%   |
| 3       | 88             | -1%                | 5%   |
| 4       | 93             | 0%                 | 3%   |
| 5       | 93             | 0%                 | 3%   |
| 6       | 94             | 3%                 | 0%   |
| 7       | 93             | -1%                | -3%  |
| 8       | 97             | 0%                 | -1%  |
| 9       | 94             | -2%                | 2%   |
| 10      | 89             | -2%                | 5%   |
| 11      | 87             | 1%                 | 8%   |
| 12      | 89             | 6%                 | 2%   |
| 13      | 92             | 4%                 | -3%  |
| 14      | 87             | 5%                 | -8%  |
| 15      | 88             | 0%                 | -7%  |
| 16      | 85             | -1%                | -11% |



## 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 |
| 3304lx | 826lx   | 367lx   | 207lx   | 132lx   | 92lx   | 67lx   | 52lx   | 41lx   | 33lx   | 27lx   | 23lx   | 20lx   | 17lx   | 15lx   | 13lx   | 11lx   | 10lx   | 9lx    | 8lx    |
| 307fcd | 76.7fcd | 34.1fcd | 19.2fcd | 12.3fcd | 8.5fcd | 6.3fcd | 4.8fcd | 3.8fcd | 3.1fcd | 2.5fcd | 2.1fcd | 1.8fcd | 1.6fcd | 1.4fcd | 1.2fcd | 1.1fcd | 0.9fcd | 0.9fcd | 0.8fcd |

### 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 3304 | 3265 | 3195 | 3084 | 2933 | 2748 | 2533 | 2286 | 2021 | 1743 | 1464 | 1192 | 941 | 718 | 524 | 372 | 262 | 188 | 140 | 105 |
| 100% | 99%  | 97%  | 93%  | 89%  | 83%  | 77%  | 69%  | 61%  | 53%  | 44%  | 36%  | 28% | 22% | 16% | 11% | 8%  | 6%  | 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 3304 | 3295 | 3229 | 3121 | 2974 | 2787 | 2570 | 2319 | 2051 | 1767 | 1481 | 1207 | 953 | 727 | 531 | 378 | 263 | 190 | 140 | 105 |
| 100% | 100% | 98%  | 94%  | 90%  | 84%  | 78%  | 70%  | 62%  | 53%  | 45%  | 37%  | 29% | 22% | 16% | 11% | 8%  | 6%  | 4%  | 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 3304 | 3268 | 3201 | 3096 | 2949 | 2765 | 2544 | 2299 | 2024 | 1747 | 1465 | 1197 | 949 | 725 | 531 | 374 | 262 | 185 | 136 | 103 |
| 100% | 99%  | 97%  | 94%  | 89%  | 84%  | 77%  | 70%  | 61%  | 53%  | 44%  | 36%  | 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° |
|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| 3304 | 3297 | 3228 | 3118 | 2967 | 2785 | 2566 | 2319 | 2050 | 1766 | 1482 | 1210 | 955 | 728 | 531 | 374 | 260 | 183 | 134 | 100 |
| 100% | 100% | 98%  | 94%  | 90%  | 84%  | 78%  | 70%  | 62%  | 53%  | 45%  | 37%  | 29% | 22% | 16% | 11% | 8%  | 6%  | 4%  | 3%  |

| Beam angle 50% | Field angle 10% | Cutoff angle 2,5% | Intensity ratio in 120° cone | Intensity ratio in 90° cone |
|----------------|-----------------|-------------------|------------------------------|-----------------------------|
| 37.5°          | 61.4°           | 79.4°             | 1.0%                         | 1.0%                        |



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