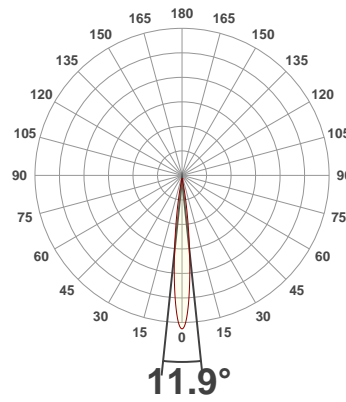
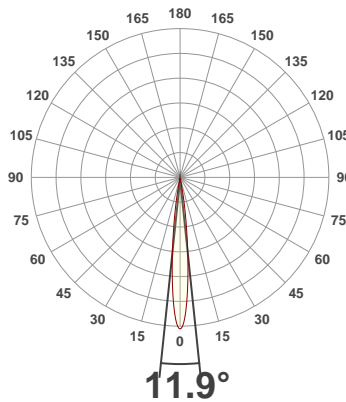




PRODUCT INFORMATION

| | |
|----------------------|----------------|
| SERIAL NUMBER: | LL-200325-0492 |
| DATE OF MEASUREMENT: | 25/03/2020 |
| SIZE (dia. x h): | 73 mm x 47 mm |

ANGULAR DISTRIBUTION AT C0/180 | ANGULAR DISTRIBUTION AT C90/270 | LIGHT OUTPUT DATA

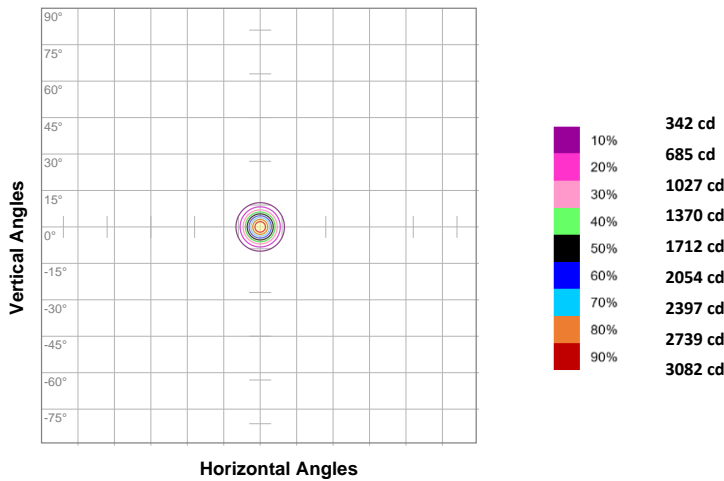


| | |
|------------------------------|---------|
| TOTAL LUMEN OUTPUT: | 184 lm |
| EFFICACY: | 23 lm/W |
| PEAK INTENSITY: | 3424 cd |
| COLOR RENDERING INDEX (CRI): | 94.4 |
| COLOR TEMPERATURE (CCT): | 3062K |
| FIDELITY INDEX (TM30Rf): | 89.3 |
| GAMUT INDEX (TM30Rg): | 106.1 |

BEAM OUTPUT DATA

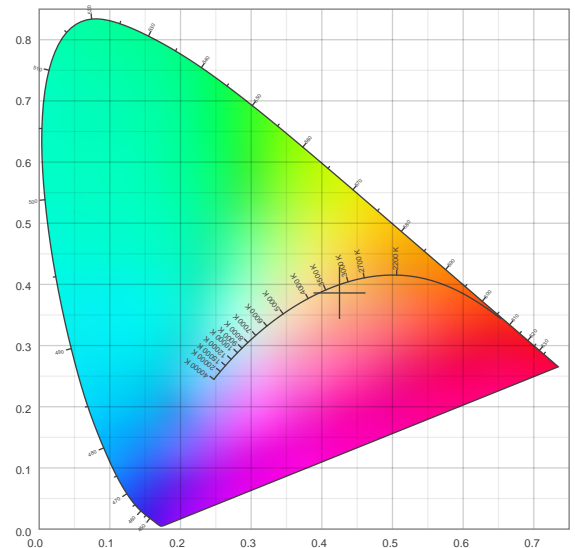
| | |
|------------------------------|-------|
| BEAM ANGLE (FWHM) C0/180: | 11.9° |
| BEAM ANGLE (FWHM) C90/270: | 11.9° |
| FIELD ANGLE (10%) C0/180: | 22.2° |
| FIELD ANGLE (10%) C90/270: | 22.2° |
| NUMBER OF PLANES MEASURED: | 12 |

ISOCANDELA DIAGRAM

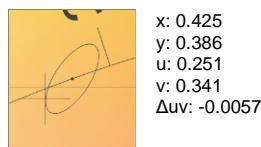


| | |
|----------------------|----------|
| INPUT POWER: | 8.0 W |
| POWER FACTOR: | 1.0 |
| OPTICAL POWER: | 0.681 mW |
| PEAK WAVELENGTH: | 629 nm |
| DOMINANT WAVELENGTH: | 586 nm |

CIE 1931



SPECTRAL DISTRIBUTION | CIE 1931 ZOOM



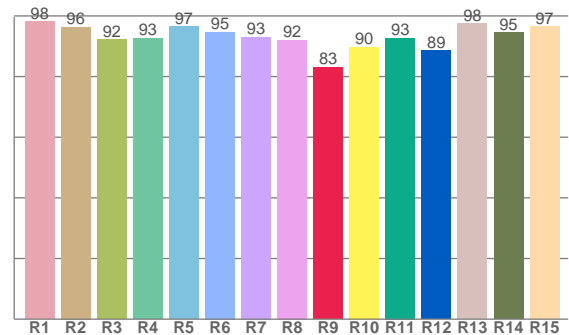
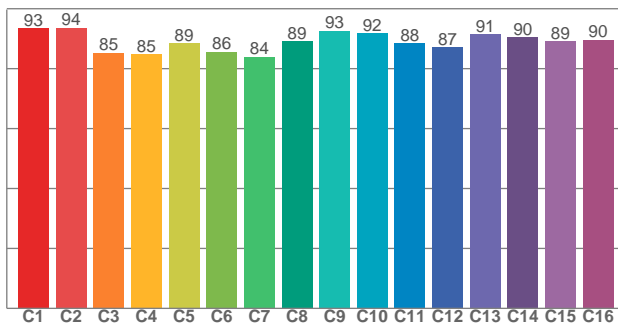
ZONAL LUMEN SUMMARY

| | | | | | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 0°-10° 145 lm | 10°-20° 32.3 lm | 20°-30° 4.72 lm | 30°-40° 1.21 lm | 40°-50° 0.391 lm | 50°-60° 0.155 lm | 60°-70° 0.118 lm | 70°-80° 0.090 lm | 80°-90° 0.072 lm |
| 90°-100° 0.050 lm | 100°-110° 0.046 lm | 110°-120° 0.043 lm | 120°-130° 0.039 lm | 130°-140° 0.034 lm | 140°-150° 0.027 lm | 150°-160° 0.020 lm | 160°-170° 0.012 lm | 170°-180° 0.004 lm |

COLOR DETAILS

TM30: 89.3

CRI: 94.4 (R1-R8)



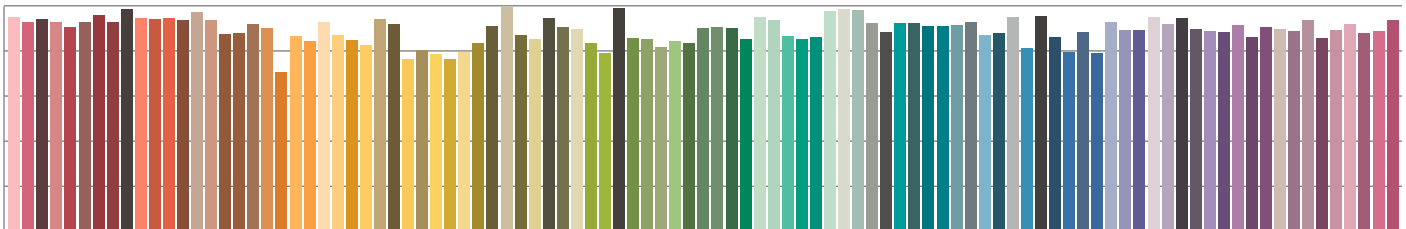
TM30 C values, 16 binned values out of total of 99 C values

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

| | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 |
| 93.4 | 93.6 | 85.3 | 84.8 | 88.6 | 85.6 | 83.9 | 89.0 | 92.6 | 91.8 | 88.4 | 87.0 | 91.4 | 90.4 | 89.2 | 89.6 |

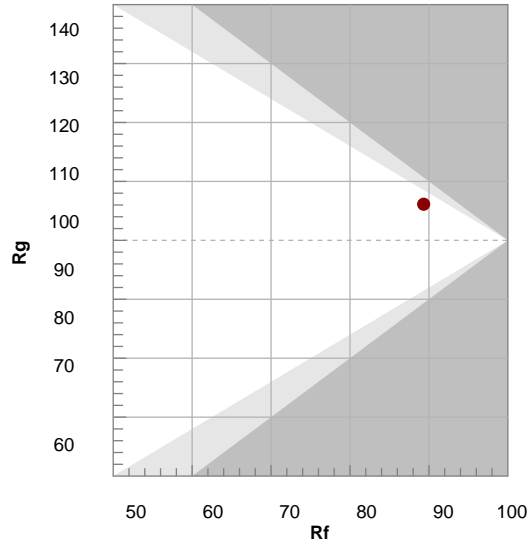
| | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
| 98.1 | 96.4 | 92.1 | 92.6 | 96.5 | 94.7 | 93.0 | 92.1 | 83.1 | 89.7 | 92.8 | 88.6 | 97.5 | 94.5 | 96.5 |

TM30 COLOR EVALUATION SAMPLE



TM30 DETAILS

| Hue Bin | R _f | Graphic shifts (%) | |
|---------|----------------|--------------------|-----|
| | | Chroma | Hue |
| 1 | 93 | -2% | -3% |
| 2 | 94 | -2% | 3% |
| 3 | 85 | 1% | 8% |
| 4 | 85 | 6% | 8% |
| 5 | 89 | 8% | 6% |
| 6 | 86 | 10% | 0% |
| 7 | 84 | 7% | -8% |
| 8 | 89 | 3% | -7% |
| 9 | 93 | -1% | -5% |
| 10 | 92 | -4% | 0% |
| 11 | 88 | -2% | 7% |
| 12 | 87 | 4% | 6% |
| 13 | 91 | 6% | 2% |
| 14 | 90 | 8% | -2% |
| 15 | 89 | 5% | -5% |
| 16 | 90 | 3% | -8% |

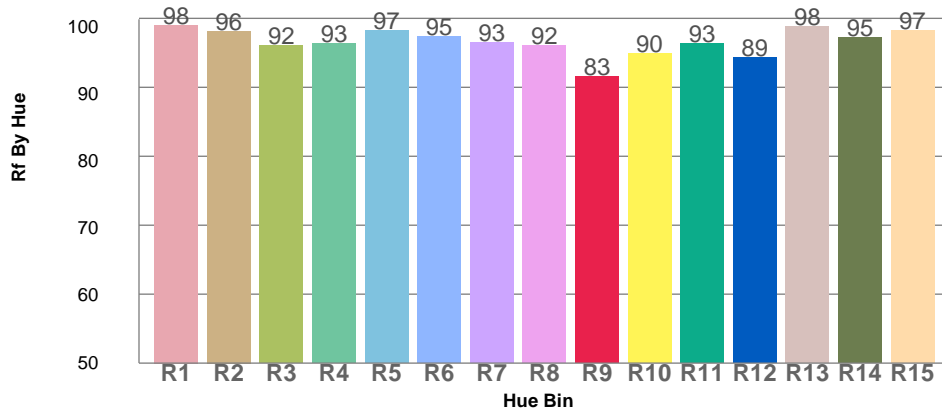


FIDELITY INDEX
R_f 89.3

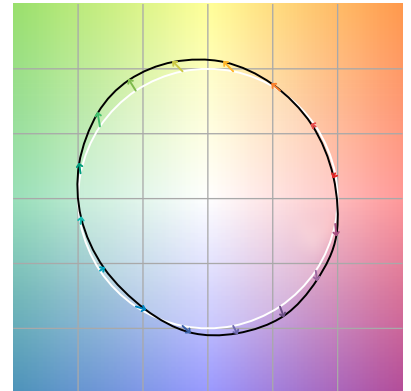
GAMUT INDEX
R_g 106.1

Approx. limits for sources on the Planckian locus.
Approx. limits for practical light sources.

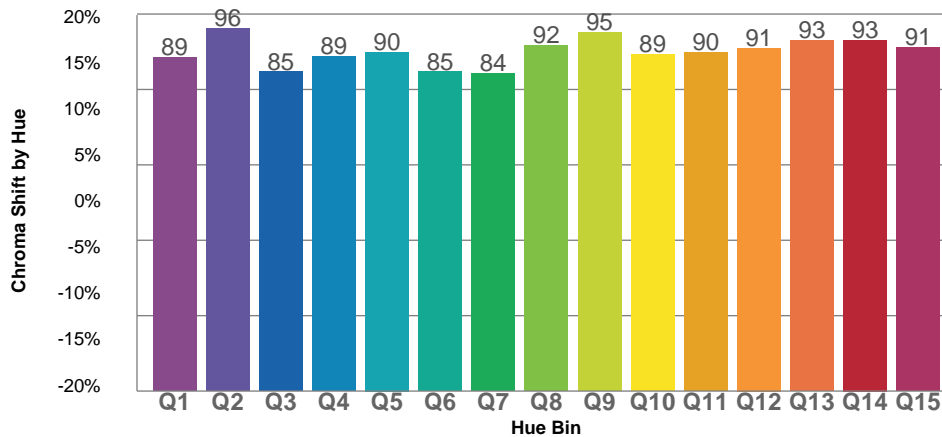
TM30 OVER 50



COLOR VECTOR GRAPHICS



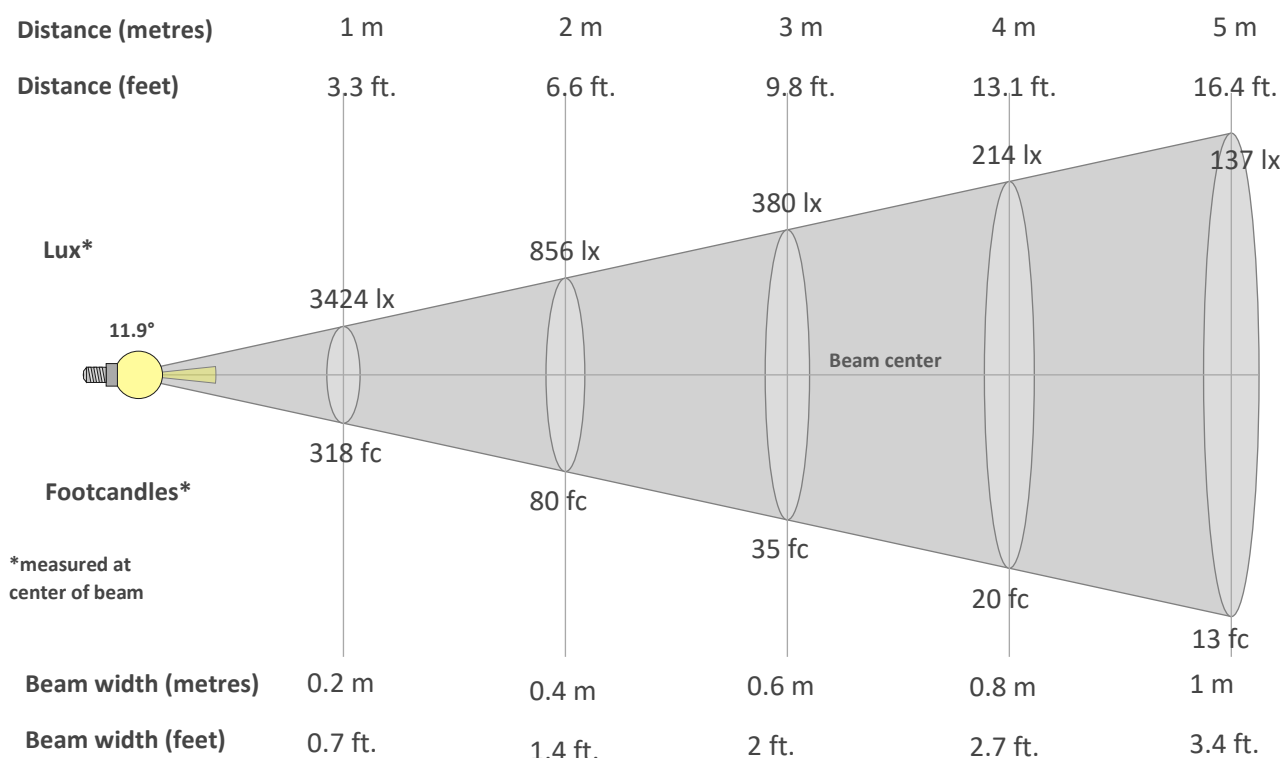
TM30 CHROMA SHIFT



COLOR DISTORTION GRAPHICS



BEAM DETAILS



Beam intensity 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 |
| 3424lx | 856lx | 380lx | 214lx | 137lx | 95lx | 70lx | 54lx | 42lx | 34lx | 28lx | 24lx | 20lx | 17lx | 15lx | 13lx | 12lx | 11lx | 9lx | 9lx |
| 318.1fc | 79.5fc | 35.3fc | 19.9fc | 12.7fc | 8.8fc | 6.5fc | 5fc | 3.9fc | 3.2fc | 2.6fc | 2.2fc | 1.9fc | 1.6fc | 1.4fc | 1.2fc | 1.1fc | 1fc | 0.9fc | 0.8fc |

Intensity in 0° c-plane

| 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° |
|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3424 | 3356 | 3161 | 2861 | 2493 | 2093 | 1692 | 1321 | 999 | 730 | 517 | 356 | 242 | 163 | 110 | 77 | 56 | 42 | 34 | 28 |
| 100% | 98% | 92% | 84% | 73% | 61% | 49% | 39% | 29% | 21% | 15% | 10% | 7% | 5% | 3% | 2% | 2% | 1% | 1% | 1% |

Intensity in 90° c-plane

| 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° |
|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3424 | 3356 | 3161 | 2861 | 2493 | 2093 | 1692 | 1321 | 999 | 730 | 517 | 356 | 242 | 163 | 110 | 77 | 56 | 42 | 34 | 28 |
| 100% | 98% | 92% | 84% | 73% | 61% | 49% | 39% | 29% | 21% | 15% | 10% | 7% | 5% | 3% | 2% | 2% | 1% | 1% | 1% |

Intensity in 180° c-plane

| 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° |
|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3424 | 3356 | 3161 | 2861 | 2493 | 2093 | 1692 | 1321 | 999 | 730 | 517 | 356 | 242 | 163 | 110 | 77 | 56 | 42 | 34 | 28 |
| 100% | 98% | 92% | 84% | 73% | 61% | 49% | 39% | 29% | 21% | 15% | 10% | 7% | 5% | 3% | 2% | 2% | 1% | 1% | 1% |

Intensity in 270° c-plane

| 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | 16° | 17° | 18° | 19° |
|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3424 | 3356 | 3161 | 2861 | 2493 | 2093 | 1692 | 1321 | 999 | 730 | 517 | 356 | 242 | 163 | 110 | 77 | 56 | 42 | 34 | 28 |
| 100% | 98% | 92% | 84% | 73% | 61% | 49% | 39% | 29% | 21% | 15% | 10% | 7% | 5% | 3% | 2% | 2% | 1% | 1% | 1% |