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Nata

LumCAT: 1677-A
Luminaire: 92.70.064.00+92.70.147.00
Report No: NT2017092513
Test No: GC2017092513
LampCAT: CITIZEN CLU028
Lamp flux(lm): 1463.0
Number of Lamps: 1
Length(mm): 46
Phm Type: C

Voltage(V): 35.5000
Current(A): 0.3000
Power (W): 10.6500
PF: 0.0000
Ballast type: DC
Width(mm): 46
Height(mm): 0

Photometric Results

Lumens(lm): 1189.38
Efficiency(%): 81.30%
Lumens(lm)/Power(W): 111.68
Central intensity(cd): 2756.949
Maximum intensity(cd): 2756.949
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=34.5
 [C90/270]Total=34.5
Field angle(10%Imax): [C0/180]Total=63.1
 [C90/270]Total=63.1
Beam angle of C0 plane : 34.55
Aveage BeamAngle(IEC 61341):34.55
Maximum s/h(1/2): C0_180=0.58 C90_270=0.58
Maximum s/h(1/4): C0_180=0.56 C90_270=0.56
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 82.35%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.586%

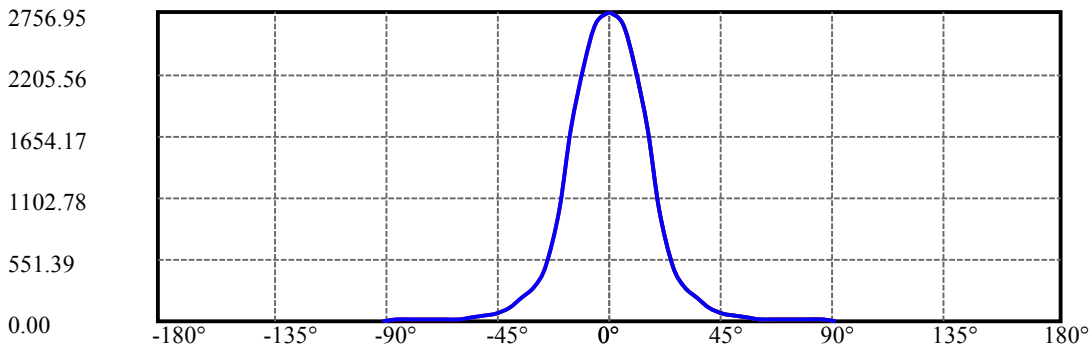
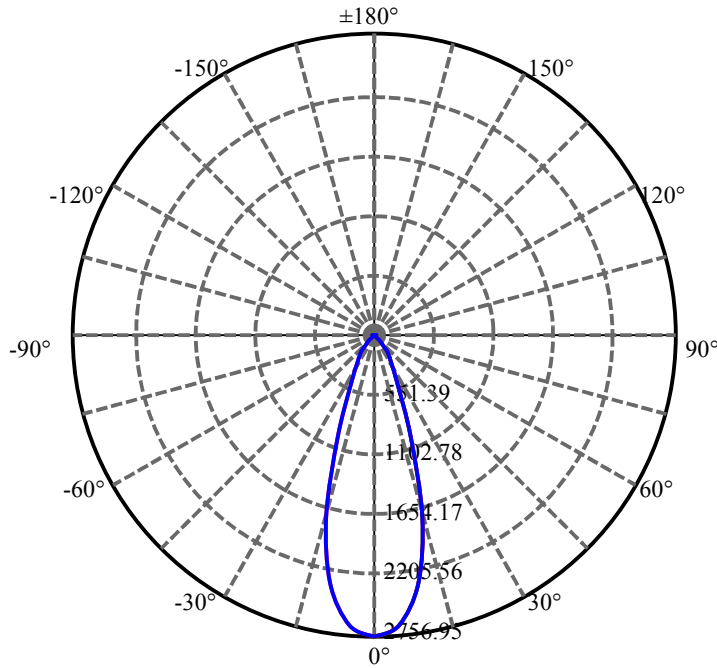
| $\gamma(^{\circ})$ | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|--------------------|---------------|-------------|-----------|-------------|------------|
| 0.0 | 2756.949 | 16.487 | 16.487 | 1.127% | 1.386% |
| 5.0 | 2660.256 | 127.089 | 143.576 | 8.687% | 12.072% |
| 10.0 | 2297.641 | 218.697 | 362.273 | 14.948% | 30.459% |
| 15.0 | 1704.133 | 241.763 | 604.036 | 16.525% | 50.786% |
| 20.0 | 988.262 | 185.274 | 789.309 | 12.664% | 66.363% |
| 25.0 | 492.431 | 114.073 | 903.382 | 7.797% | 75.954% |
| 30.0 | 308.309 | 84.498 | 987.88 | 5.776% | 83.059% |
| 35.0 | 201.630 | 63.392 | 1051.272 | 4.333% | 88.389% |
| 40.0 | 127.132 | 44.793 | 1096.066 | 3.062% | 92.155% |
| 45.0 | 76.301 | 29.574 | 1125.639 | 2.021% | 94.641% |
| 50.0 | 47.066 | 19.763 | 1145.402 | 1.351% | 96.303% |
| 55.0 | 27.425 | 12.314 | 1157.716 | .842% | 97.338% |
| 60.0 | 12.388 | 5.880 | 1163.597 | .402% | 97.833% |
| 65.0 | 9.339 | 4.639 | 1168.236 | .317% | 98.223% |
| 70.0 | 8.892 | 4.580 | 1172.816 | .313% | 98.608% |
| 75.0 | 9.050 | 4.792 | 1177.608 | .328% | 99.011% |
| 80.0 | 9.759 | 5.268 | 1182.876 | .360% | 99.453% |
| 85.0 | 9.415 | 5.141 | 1188.016 | .351% | 99.886% |
| 90.0 | 4.962 | 1.360 | 1189.376 | .093% | 100.000% |

ZONAL LUMEN SUMMARY

| Zone | Lumens | %Lamp | %Fixt |
|---------|---------|--------|---------|
| 0-30 | 987.88 | 67.52% | 83.06% |
| 0-40 | 1096.07 | 74.92% | 92.15% |
| 0-60 | 1163.60 | 79.53% | 97.83% |
| 0-90 | 1188.02 | 81.20% | 99.89% |
| 0-120 | 1188.02 | 81.20% | 99.89% |
| 0-180 | 1189.38 | 81.30% | 100.00% |
| 60-90 | 30.30 | 2.07% | 2.55% |
| 90-120 | 0.00 | 0.00% | 0.00% |
| 90-130 | 0.00 | 0.00% | 0.00% |
| 90-150 | 0.00 | 0.00% | 0.00% |
| 90-180 | 0.00 | 0.00% | 0.00% |
| 0-27.85 | 951.50 | 65.04% | 80.00% |

ZONAL LUMEN SUMMARY

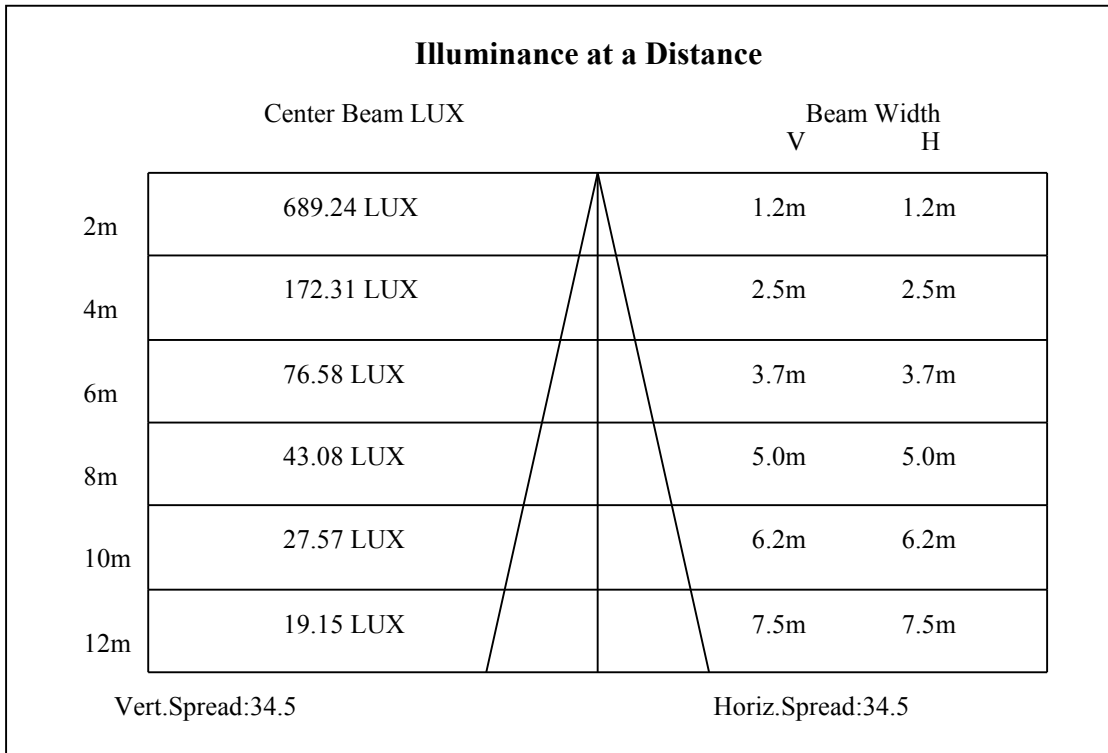
| | |
|---------|--------|
| 0-10 | 362.27 |
| 10-20 | 427.04 |
| 20-30 | 198.57 |
| 30-40 | 108.19 |
| 40-50 | 49.34 |
| 50-60 | 18.19 |
| 60-70 | 9.22 |
| 70-80 | 10.06 |
| 80-90 | 5.14 |
| 90-100 | 0.00 |
| 100-110 | 0.00 |
| 110-120 | 0.00 |
| 120-130 | 0.00 |
| 130-140 | 0.00 |
| 140-150 | 0.00 |
| 150-160 | 0.00 |
| 160-170 | 0.00 |
| 170-180 | 0.00 |

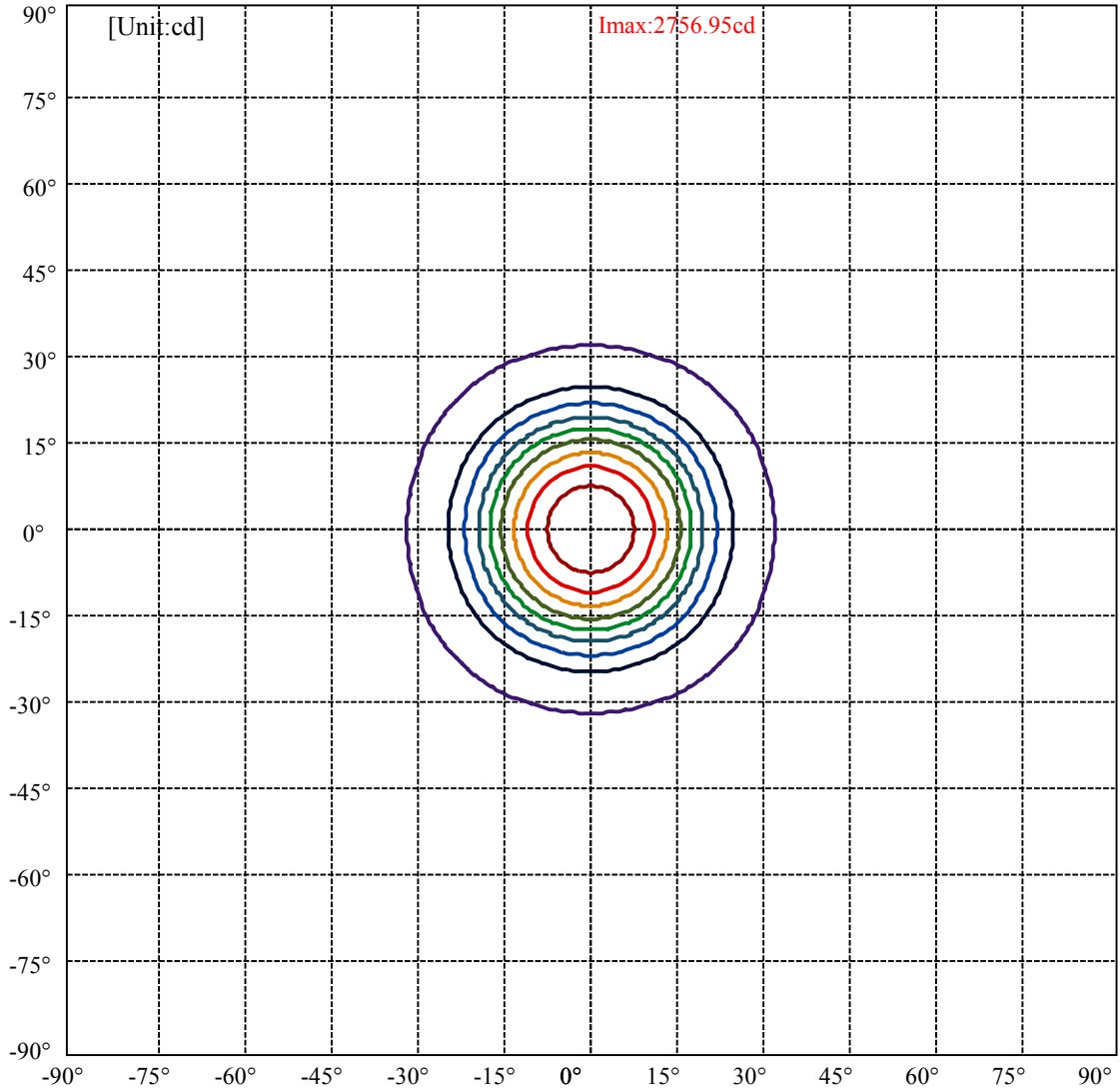


C0(Max): ———
C0/C180: ———
C90/C270: ———

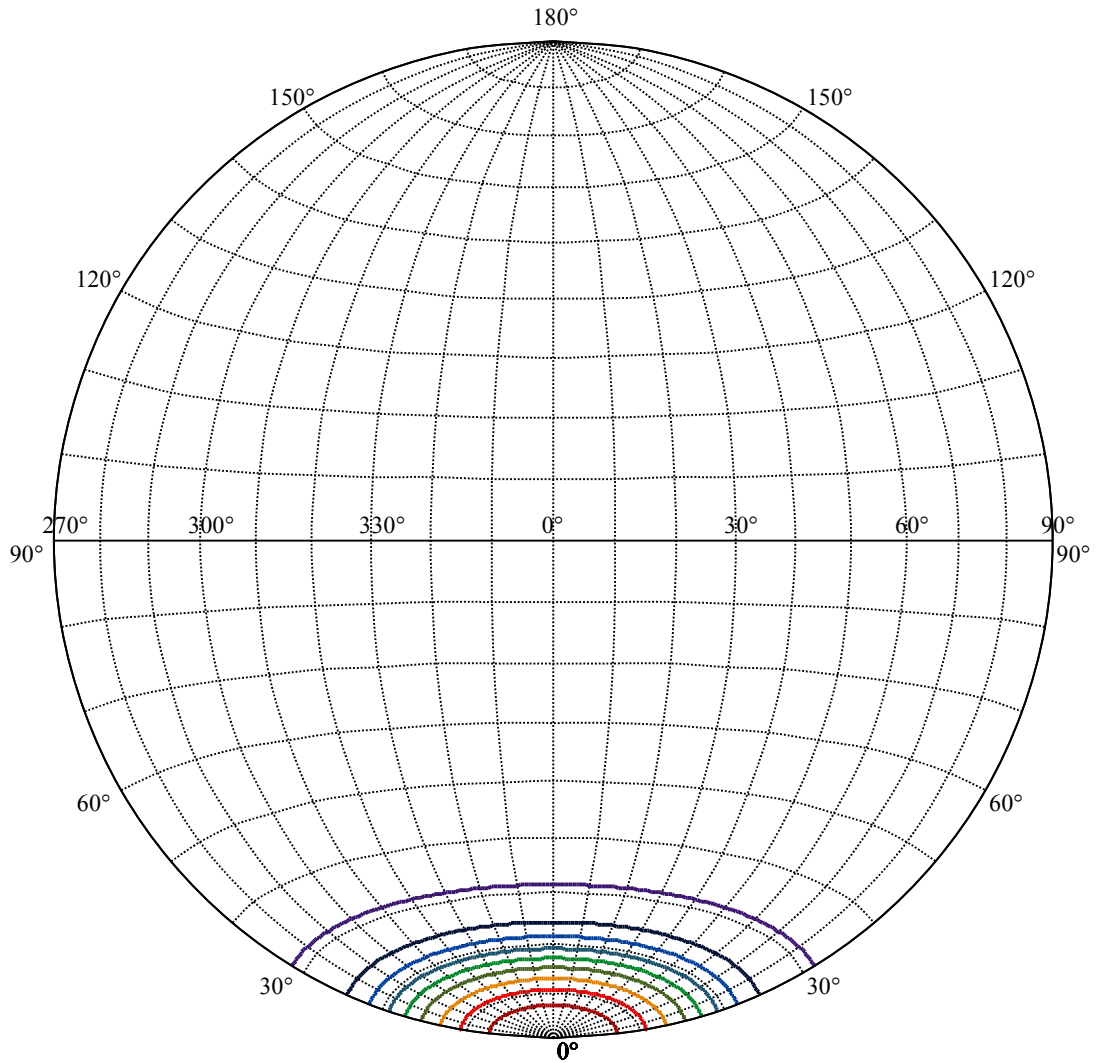
Field angle(10%Imax):C0/180Left:31.5 Right:31.5
:C90/270Left:31.5 Right:31.5

Beam Angle(50%Imax):C0/180Left:17.3 Right:17.3
:C90/270Left:17.3 Right:17.3





| | |
|-------------------|---|
| (10%Imax) 275.695 | — |
| (20%Imax) 551.39 | — |
| (30%Imax) 827.085 | — |
| (40%Imax) 1102.78 | — |
| (50%Imax) 1378.47 | — |
| (60%Imax) 1654.17 | — |
| (70%Imax) 1929.86 | — |
| (80%Imax) 2205.56 | — |
| (90%Imax) 2481.25 | — |



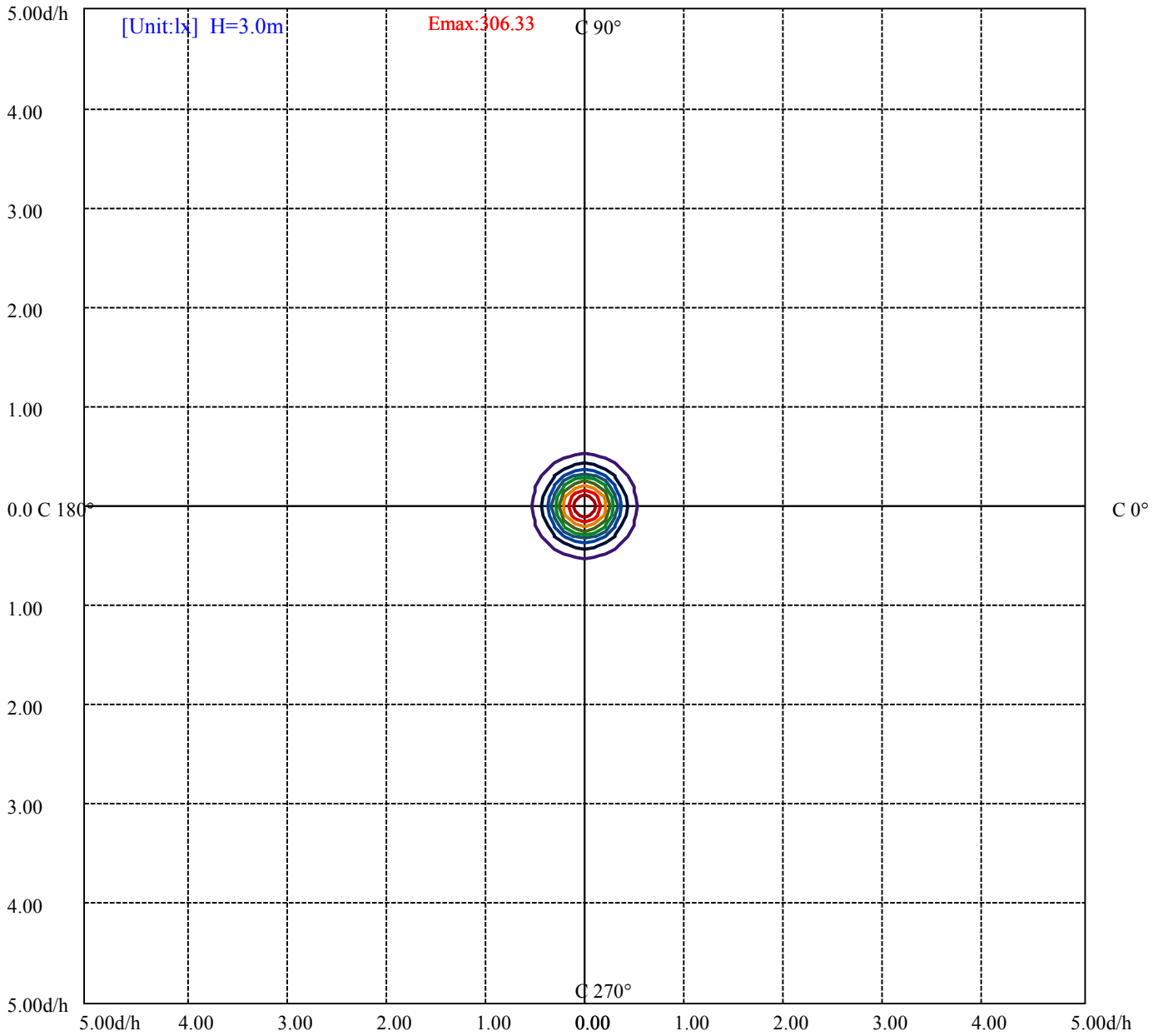
House

[Unit:cd]

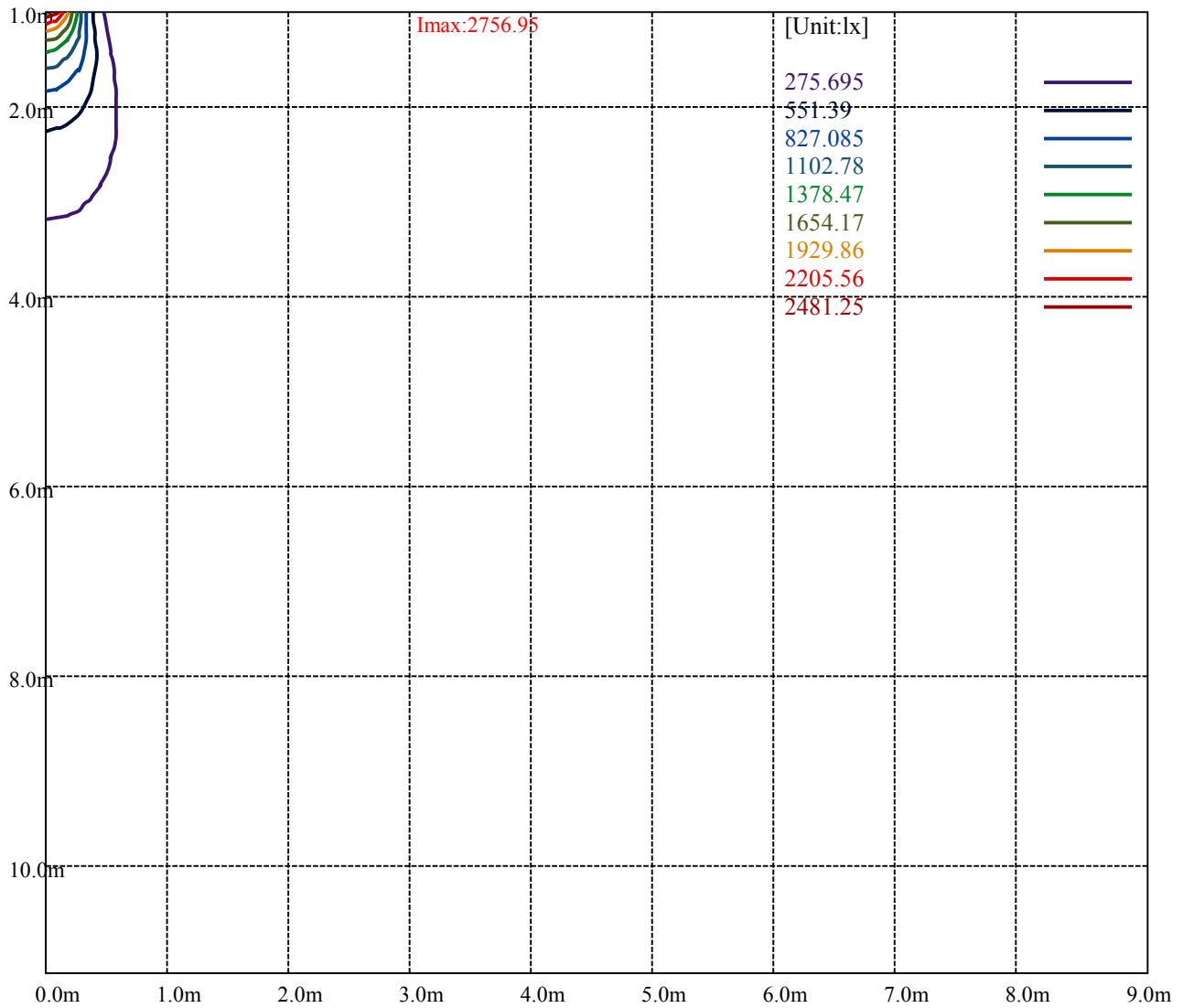
Road

Imax:2756.95

| | |
|-------------------|---|
| (10%Imax) 275.695 | — |
| (20%Imax) 551.39 | — |
| (30%Imax) 827.085 | — |
| (40%Imax) 1102.78 | — |
| (50%Imax) 1378.47 | — |
| (60%Imax) 1654.17 | — |
| (70%Imax) 1929.86 | — |
| (80%Imax) 2205.56 | — |
| (90%Imax) 2481.25 | — |



- (10%Emax) 30.63278
- (20%Emax) 61.26544
- (30%Emax) 91.89822
- (40%Emax) 122.5311
- (50%Emax) 153.1633
- (60%Emax) 183.7967
- (70%Emax) 214.4289
- (80%Emax) 245.0622
- (90%Emax) 275.6945



Luminance Table

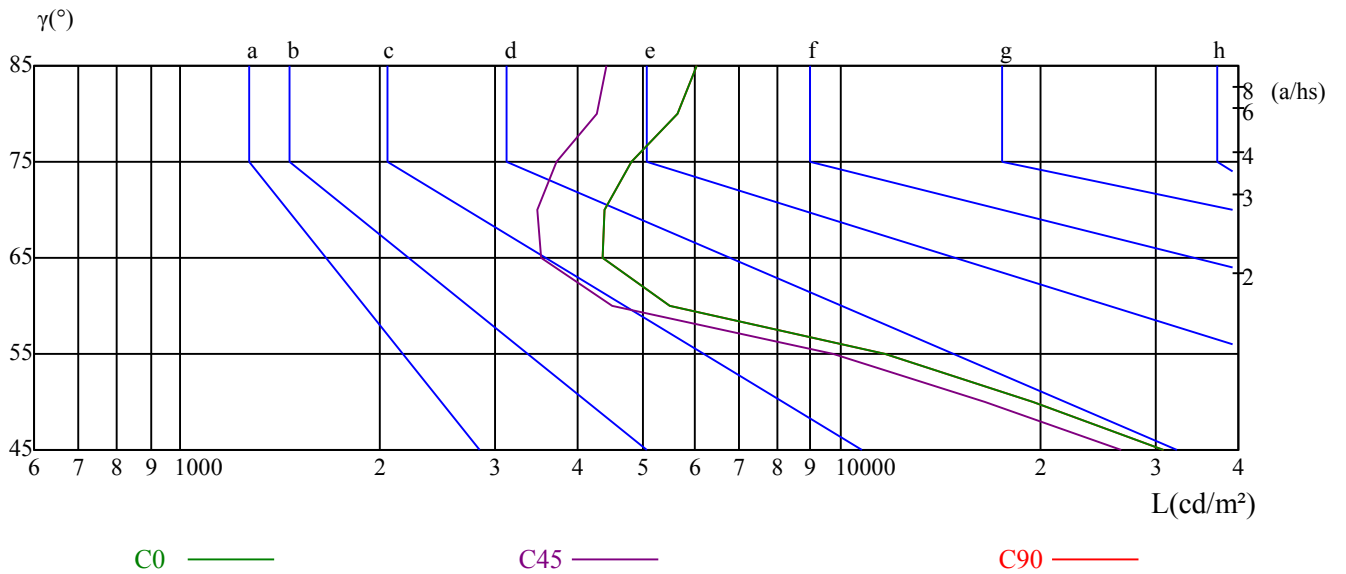
| γ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|----------|-------|-------|-------|------|------|------|------|------|------|
| C0 | 30866 | 19471 | 11699 | 5498 | 4354 | 4401 | 4812 | 5652 | 6038 |
| C45 | 26528 | 16485 | 9752 | 4508 | 3507 | 3477 | 3720 | 4263 | 4423 |
| C90 | 30866 | 19471 | 11699 | 5498 | 4354 | 4401 | 4812 | 5652 | 6038 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|------------|------------|---------|------------|------------|---------|------------|------------|---------|
| 10443 | 10443 | 10443 | 16525 | 16525 | 16525 | 51050 | 51050 | 51050 |

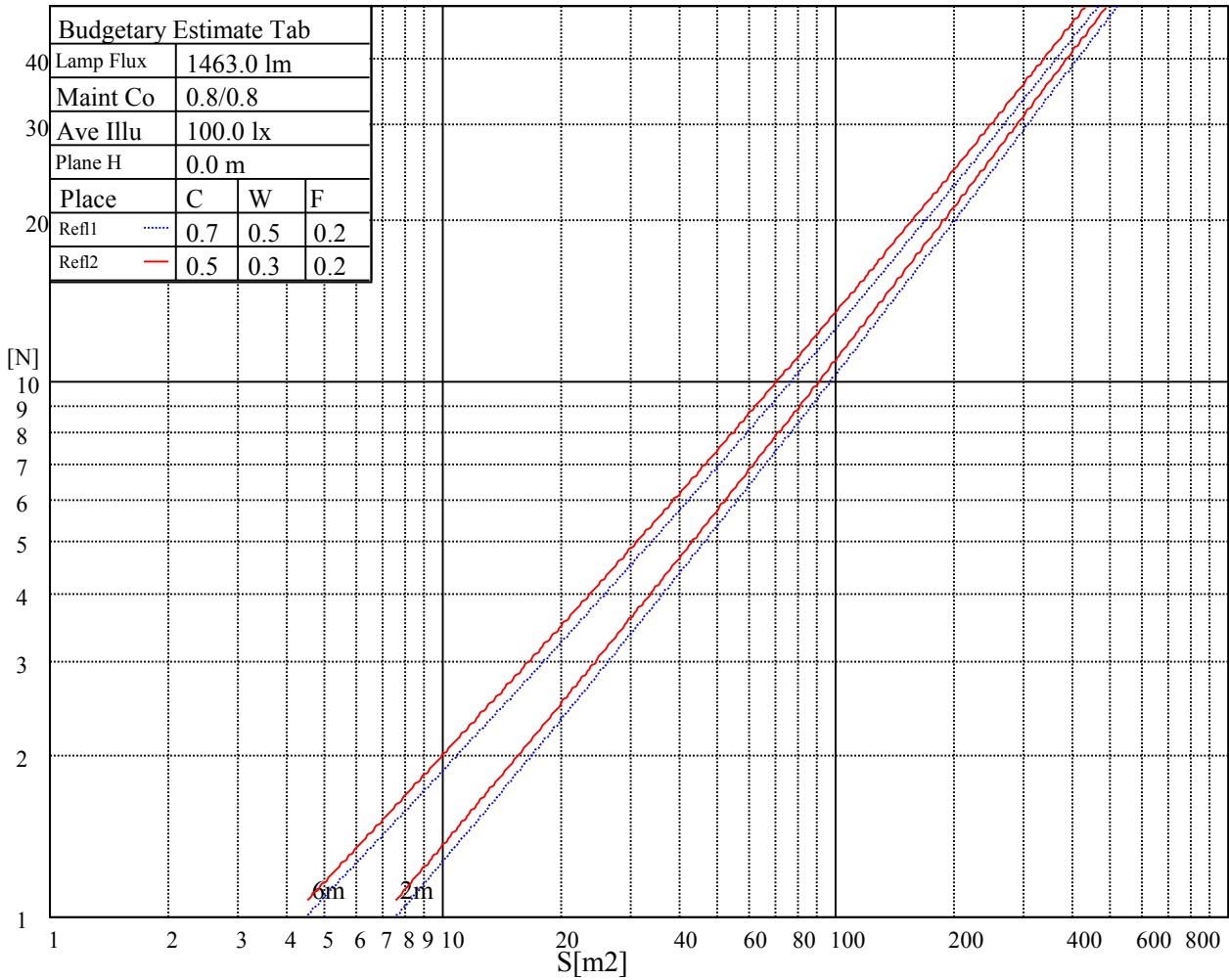
Glare Table

| Glare | Quality | Service Values Illuminance(lx) | | | | | | | |
|-------|---------|--------------------------------|------|------|-------|-------|-------|-------|-------|
| 1.15 | A | 2000 | 1000 | 500 | <=300 | | | | |
| 1.5 | B | | 2000 | 1000 | 500 | <=300 | | | |
| 1.85 | C | | | 2000 | 1000 | 500 | <=300 | | |
| 2.2 | D | | | | 2000 | 1000 | 500 | <=300 | |
| 2.55 | E | | | | | 2000 | 1000 | 500 | <=300 |
| | | a | b | c | d | e | f | g | h |

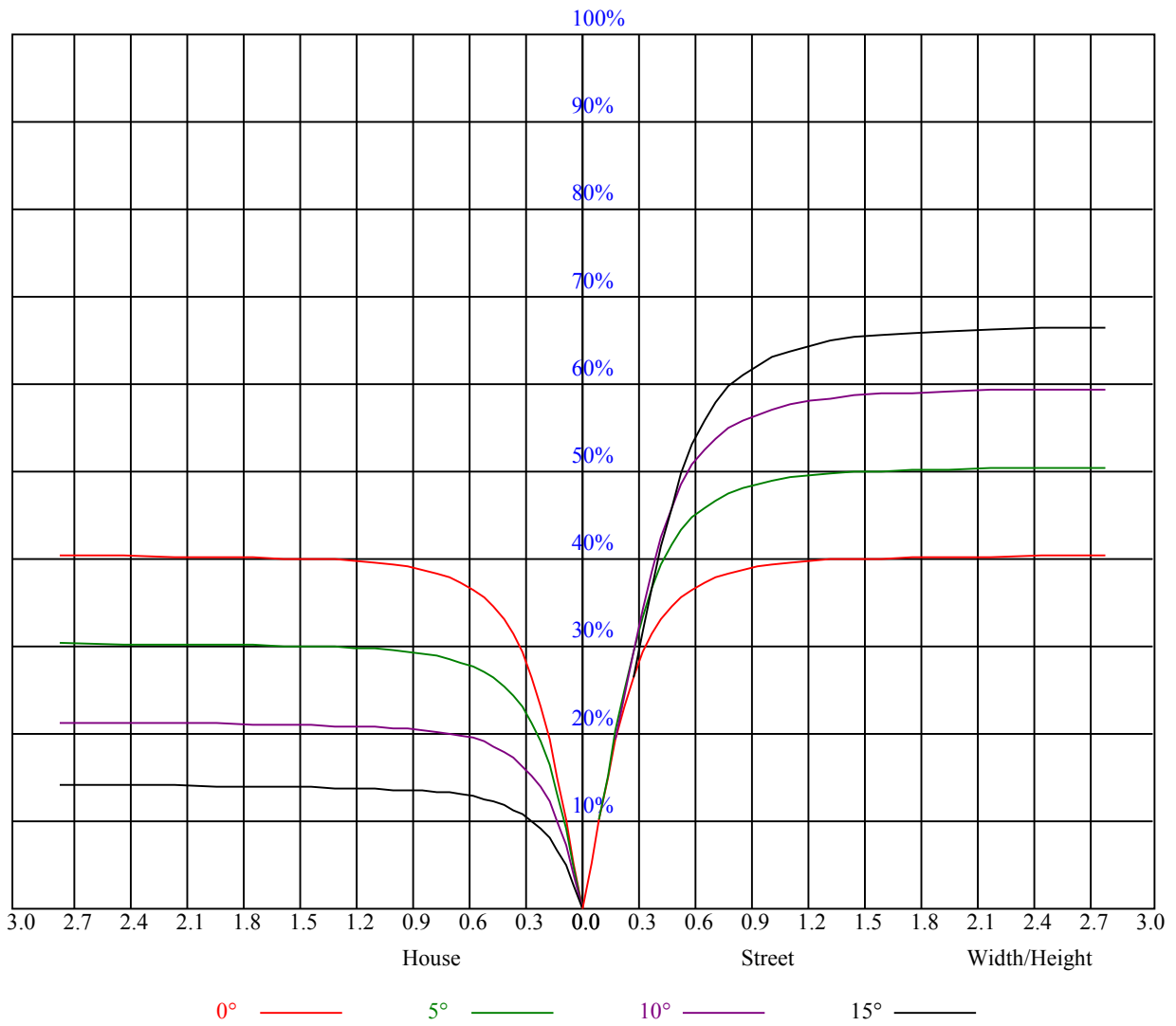
Luminance Limiting Curve



| Illumination assessment according UGR | | | | | | | | | | | |
|---|----------|------------------|-------|-------|-------|----------|----------------|-------|-------|-------|-------|
| Rf of Ceiling | 70 | 70 | 50 | 50 | 30 | 70 | 70 | 50 | 50 | 30 | |
| Rf of Wall | 50 | 30 | 50 | 30 | 30 | 50 | 30 | 50 | 30 | 30 | |
| Rf of Floor | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | |
| Room dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X | Y | | | | | | | | | | |
| 2H | 2H | 12.03 | 13.05 | 12.40 | 13.36 | 13.68 | 12.26 | 13.28 | 12.62 | 13.59 | 13.90 |
| | 3H | 12.58 | 13.48 | 12.97 | 13.82 | 14.18 | 12.89 | 13.79 | 13.28 | 14.13 | 14.49 |
| | 4H | 13.08 | 13.91 | 13.48 | 14.26 | 14.65 | 13.46 | 14.29 | 13.86 | 14.64 | 15.03 |
| | 6H | 13.89 | 14.65 | 14.31 | 15.03 | 15.42 | 14.29 | 15.06 | 14.71 | 15.43 | 15.83 |
| | 8H | 14.38 | 15.09 | 14.81 | 15.49 | 15.90 | 14.75 | 15.47 | 15.19 | 15.86 | 16.27 |
| | 12H | 15.18 | 15.87 | 15.61 | 16.25 | 16.68 | 15.47 | 16.15 | 15.90 | 16.54 | 16.97 |
| 4H | 2H | 11.96 | 12.80 | 12.37 | 13.15 | 13.54 | 12.17 | 13.01 | 12.58 | 13.36 | 13.75 |
| | 3H | 12.77 | 13.46 | 13.19 | 13.86 | 14.27 | 13.06 | 13.75 | 13.48 | 14.16 | 14.56 |
| | 4H | 13.48 | 14.09 | 13.91 | 14.51 | 14.96 | 13.84 | 14.45 | 14.28 | 14.87 | 15.32 |
| | 6H | 14.36 | 14.89 | 14.83 | 15.34 | 15.81 | 14.74 | 15.26 | 15.21 | 15.71 | 16.19 |
| | 8H | 15.04 | 15.53 | 15.52 | 15.98 | 16.45 | 15.38 | 15.87 | 15.85 | 16.32 | 16.79 |
| | 12H | 15.96 | 16.38 | 16.45 | 16.87 | 17.35 | 16.20 | 16.63 | 16.69 | 17.12 | 17.59 |
| 8H | 4H | 13.71 | 14.20 | 14.19 | 14.65 | 15.13 | 14.03 | 14.52 | 14.51 | 14.97 | 15.45 |
| | 6H | 14.88 | 15.27 | 15.39 | 15.77 | 16.26 | 15.20 | 15.60 | 15.71 | 16.10 | 16.58 |
| | 8H | 15.72 | 16.07 | 16.25 | 16.59 | 17.09 | 16.00 | 16.35 | 16.53 | 16.87 | 17.37 |
| | 12H | 16.78 | 17.09 | 17.30 | 17.58 | 18.16 | 16.98 | 17.28 | 17.50 | 17.78 | 18.36 |
| 12H | 4H | 13.77 | 14.20 | 14.26 | 14.68 | 15.16 | 14.08 | 14.50 | 14.57 | 14.99 | 15.47 |
| | 6H | 15.33 | 15.37 | 15.55 | 15.84 | 16.39 | 15.64 | 15.67 | 15.86 | 16.15 | 16.69 |
| | 8H | 15.95 | 16.25 | 16.47 | 16.75 | 17.33 | 16.21 | 16.51 | 16.73 | 17.01 | 17.59 |
| Variation with the observer position at spacings: | | | | | | | | | | | |
| S = 1.0H | 2.5/-3.3 | | | | | 2.5/-3.3 | | | | | |
| S = 1.5H | 4.2/-3.6 | | | | | 4.2/-3.6 | | | | | |
| S = 2.0H | 5.7/-3.0 | | | | | 5.7/-3.0 | | | | | |
| Standard tables: | BK3 | | | | | BK3 | | | | | |
| Uncorrected UGR | 0.6 | | | | | 0.6 | | | | | |



| RHOCC | 80 | | | 70 | | | 50 | | | 30 | | | 10 | | | 0 |
|-------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| RHOW | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | COEFFICIENTS OF UTILIZATION RHOFC=20 CU | | | | | | | | | | | | | | | |
| 0 | 0.98 | 0.98 | 0.98 | 0.96 | 0.96 | 0.96 | 0.91 | 0.91 | 0.91 | 0.88 | 0.88 | 0.88 | 0.84 | 0.84 | 0.84 | 0.82 |
| 1 | 0.90 | 0.88 | 0.86 | 0.89 | 0.87 | 0.85 | 0.85 | 0.84 | 0.82 | 0.82 | 0.81 | 0.80 | 0.79 | 0.78 | 0.77 | 0.76 |
| 2 | 0.85 | 0.82 | 0.79 | 0.84 | 0.81 | 0.78 | 0.81 | 0.79 | 0.77 | 0.79 | 0.77 | 0.75 | 0.76 | 0.75 | 0.73 | 0.72 |
| 3 | 0.81 | 0.77 | 0.74 | 0.79 | 0.76 | 0.73 | 0.77 | 0.74 | 0.72 | 0.75 | 0.73 | 0.71 | 0.74 | 0.71 | 0.70 | 0.69 |
| 4 | 0.77 | 0.72 | 0.69 | 0.76 | 0.72 | 0.69 | 0.74 | 0.71 | 0.68 | 0.72 | 0.70 | 0.67 | 0.71 | 0.69 | 0.67 | 0.65 |
| 5 | 0.73 | 0.69 | 0.66 | 0.72 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.70 | 0.67 | 0.64 | 0.68 | 0.66 | 0.64 | 0.63 |
| 6 | 0.70 | 0.66 | 0.63 | 0.69 | 0.65 | 0.62 | 0.68 | 0.65 | 0.62 | 0.67 | 0.64 | 0.62 | 0.66 | 0.63 | 0.61 | 0.60 |
| 7 | 0.67 | 0.63 | 0.60 | 0.67 | 0.63 | 0.60 | 0.66 | 0.62 | 0.59 | 0.65 | 0.61 | 0.59 | 0.64 | 0.61 | 0.59 | 0.58 |
| 8 | 0.64 | 0.60 | 0.57 | 0.64 | 0.60 | 0.57 | 0.63 | 0.60 | 0.57 | 0.62 | 0.59 | 0.57 | 0.62 | 0.59 | 0.57 | 0.56 |
| 9 | 0.62 | 0.58 | 0.55 | 0.62 | 0.58 | 0.55 | 0.61 | 0.58 | 0.55 | 0.60 | 0.57 | 0.55 | 0.60 | 0.57 | 0.55 | 0.54 |
| 10 | 0.60 | 0.56 | 0.53 | 0.60 | 0.56 | 0.53 | 0.59 | 0.56 | 0.53 | 0.58 | 0.55 | 0.53 | 0.58 | 0.55 | 0.53 | 0.52 |



Intensity data(cd)

| | | | | | | | | | |
|-----------------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| C/ γ (°) | 0.0 | 5.0 | 10.0 | 15.0 | 20.0 | 25.0 | 30.0 | 35.0 | 40.0 |
| 0.0 | 2747.31 | 2718.13 | 2408.72 | 1876.87 | 1167.20 | 561.58 | 349.06 | 227.16 | 144.03 |
| 45.0 | 2753.37 | 2633.90 | 2299.16 | 1748.04 | 1030.66 | 517.53 | 317.68 | 201.78 | 128.45 |
| 90.0 | 2752.82 | 2588.20 | 2175.83 | 1599.39 | 876.83 | 443.86 | 286.13 | 188.46 | 113.80 |
| 135.0 | 2774.29 | 2608.02 | 2235.29 | 1642.88 | 958.53 | 467.43 | 292.90 | 195.34 | 124.98 |
| 180.0 | 2747.31 | 2576.09 | 2114.17 | 1451.84 | 754.44 | 401.09 | 257.61 | 170.78 | 109.12 |
| 225.0 | 2753.37 | 2654.82 | 2249.60 | 1613.70 | 878.87 | 440.89 | 279.08 | 180.36 | 111.43 |
| 270.0 | 2752.82 | 2756.12 | 2488.55 | 1899.45 | 1152.33 | 572.59 | 345.75 | 223.36 | 143.31 |
| 315.0 | 2774.29 | 2746.76 | 2409.82 | 1800.89 | 1087.25 | 534.49 | 338.27 | 225.79 | 141.94 |
| 360.0 | 2747.31 | 2718.13 | 2408.72 | 1876.87 | 1167.20 | 561.58 | 349.06 | 227.16 | 144.03 |
| C/ γ (°) | 45.0 | 50.0 | 55.0 | 60.0 | 65.0 | 70.0 | 75.0 | 80.0 | 85.0 |
| 0.0 | 90.73 | 54.01 | 31.77 | 15.47 | 10.08 | 9.25 | 9.19 | 9.74 | 9.14 |
| 45.0 | 74.55 | 44.54 | 26.92 | 13.43 | 9.63 | 8.70 | 8.64 | 9.80 | 9.74 |
| 90.0 | 67.11 | 43.16 | 24.89 | 10.35 | 8.59 | 8.37 | 8.53 | 9.36 | 9.58 |
| 135.0 | 75.48 | 48.84 | 27.03 | 10.85 | 8.64 | 8.75 | 9.03 | 9.08 | 8.59 |
| 180.0 | 66.40 | 41.46 | 24.72 | 11.84 | 10.08 | 9.80 | 10.46 | 11.23 | 9.86 |
| 225.0 | 67.50 | 41.13 | 23.67 | 11.78 | 9.08 | 8.31 | 8.26 | 8.59 | 8.09 |
| 270.0 | 84.62 | 50.82 | 30.94 | 13.60 | 9.14 | 8.59 | 8.70 | 10.41 | 9.91 |
| 315.0 | 84.02 | 52.58 | 29.46 | 11.78 | 9.47 | 9.36 | 9.58 | 9.86 | 10.41 |
| 360.0 | 90.73 | 54.01 | 31.77 | 15.47 | 10.08 | 9.25 | 9.19 | 9.74 | 9.14 |
| C/ γ (°) | 90.0 | | | | | | | | |
| 0.0 | 5.07 | | | | | | | | |
| 45.0 | 4.84 | | | | | | | | |
| 90.0 | 4.90 | | | | | | | | |
| 135.0 | 4.90 | | | | | | | | |
| 180.0 | 4.90 | | | | | | | | |
| 225.0 | 4.84 | | | | | | | | |
| 270.0 | 5.07 | | | | | | | | |
| 315.0 | 5.18 | | | | | | | | |
| 360.0 | 5.07 | | | | | | | | |