NATA LIGHTING CO.,LTD
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Tel:0750-377 0000(10 lines) Fax:0750-377 1111
Address:380JinOu Road,Gaoxin Zone,Jiang Men City,Guangdong,China

## Nata

LumCAT: 1709-M
Luminaire: 92.70.127.00
Report No: NT2017091501
Test No: GC2017081405
LampCAT: CREE CXA1512
Lamp flux(lm): 1330.0
Number of Lamps: 1
Length(mm): 47
Phm Type: C

Voltage(V): 37.4000
Current(A): 0.3000
Power (W): 11.2200
PF: 0.0000
Ballast type: DC
Width(mm): 47
Height(mm): 0

## Photometric Results

Lumens(lm): 1221.06
Efficiency(%): 91.81%
Lumens(lm)/Power(W): 108.83
Central intensity(cd): 5147.355
Maximum intensity(cd): 5147.355
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=16.6
[C90/270]Total=16.6
Field angle(10%Imax): [C0/180]Total=49.9
[C90/270]Total=49.9
Maximum s/h(1/2): C0_180=0.28 C90_270=0.28
Maximum s/h(1/4): C0_180=0.31 C90_270=0.31
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.81%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.753%

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 0.0 | 5147.356 | 0.000 | 0 | .000% | .000% |
| 1.0 | 5106.660 | 4.906 | 4.906 | .369% | .402% |
| 2.0 | 4937.966 | 14.417 | 19.323 | 1.084% | 1.583% |
| 3.0 | 4701.865 | 23.055 | 42.379 | 1.733% | 3.471% |
| 4.0 | 4402.459 | 30.475 | 72.854 | 2.291% | 5.966% |
| 5.0 | 3981.455 | 36.067 | 108.921 | 2.712% | 8.920% |
| 6.0 | 3541.668 | 39.536 | 148.457 | 2.973% | 12.158% |
| 7.0 | 3127.481 | 41.395 | 189.852 | 3.112% | 15.548% |
| 8.0 | 2687.624 | 41.618 | 231.47 | 3.129% | 18.956% |
| 9.0 | 2317.959 | 40.568 | 272.037 | 3.050% | 22.279% |
| 10.0 | 1980.780 | 38.902 | 310.939 | 2.925% | 25.465% |
| 11.0 | 1659.739 | 36.376 | 347.316 | 2.735% | 28.444% |
| 12.0 | 1453.474 | 34.032 | 381.347 | 2.559% | 31.231% |
| 13.0 | 1243.118 | 32.002 | 413.349 | 2.406% | 33.852% |
| 14.0 | 1081.624 | 29.756 | 443.106 | 2.237% | 36.289% |
| 15.0 | 977.534 | 28.269 | 471.375 | 2.125% | 38.604% |
| 16.0 | 886.516 | 27.314 | 498.688 | 2.054% | 40.841% |
| 17.0 | 803.352 | 26.316 | 525.004 | 1.979% | 42.996% |
| 18.0 | 745.147 | 25.531 | 550.535 | 1.920% | 45.087% |
| 19.0 | 698.560 | 25.118 | 575.653 | 1.889% | 47.144% |
| 20.0 | 654.463 | 24.764 | 600.417 | 1.862% | 49.172% |
| 21.0 | 619.361 | 24.460 | 624.877 | 1.839% | 51.175% |
| 22.0 | 589.239 | 24.287 | 649.164 | 1.826% | 53.164% |
| 23.0 | 560.683 | 24.128 | 673.293 | 1.814% | 55.140% |
| 24.0 | 534.589 | 23.947 | 697.239 | 1.800% | 57.101% |
| 25.0 | 513.226 | 23.825 | 721.064 | 1.791% | 59.052% |
| 26.0 | 493.859 | 23.772 | 744.837 | 1.787% | 60.999% |
| 27.0 | 477.268 | 23.759 | 768.596 | 1.786% | 62.945% |
| 28.0 | 462.861 | 23.802 | 792.398 | 1.790% | 64.894% |
| 29.0 | 450.235 | 23.889 | 816.287 | 1.796% | 66.851% |
| 30.0 | 440.399 | 24.047 | 840.334 | 1.808% | 68.820% |
| 31.0 | 430.980 | 24.249 | 864.583 | 1.823% | 70.806% |
| 32.0 | 422.361 | 24.447 | 889.03 | 1.838% | 72.808% |
| 33.0 | 414.730 | 24.661 | 913.691 | 1.854% | 74.828% |
| 34.0 | 407.481 | 24.883 | 938.574 | 1.871% | 76.865% |
| 35.0 | 399.516 | 25.062 | 963.636 | 1.884% | 78.918% |
| 36.0 | 391.815 | 25.196 | 988.832 | 1.894% | 80.981% |
| 37.0 | 382.459 | 25.252 | 1014.085 | 1.899% | 83.049% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 38.0 | 368.560 | 25.068 | 1039.153 | 1.885% | 85.102% |
| 39.0 | 346.967 | 24.423 | 1063.576 | 1.836% | 87.102% |
| 40.0 | 327.016 | 23.506 | 1087.082 | 1.767% | 89.028% |
| 41.0 | 292.199 | 22.050 | 1109.132 | 1.658% | 90.833% |
| 42.0 | 251.128 | 19.740 | 1128.872 | 1.484% | 92.450% |
| 43.0 | 213.027 | 17.194 | 1146.065 | 1.293% | 93.858% |
| 44.0 | 177.876 | 14.754 | 1160.819 | 1.109% | 95.066% |
| 45.0 | 134.816 | 12.017 | 1172.836 | .904% | 96.050% |
| 46.0 | 98.371 | 9.119 | 1181.956 | .686% | 96.797% |
| 47.0 | 68.862 | 6.651 | 1188.607 | .500% | 97.342% |
| 48.0 | 44.820 | 4.596 | 1193.203 | .346% | 97.718% |
| 49.0 | 29.488 | 3.052 | 1196.254 | .229% | 97.968% |
| 50.0 | 18.901 | 2.018 | 1198.272 | .152% | 98.133% |
| 51.0 | 13.384 | 1.366 | 1199.638 | .103% | 98.245% |
| 52.0 | 10.929 | 1.043 | 1200.681 | .078% | 98.331% |
| 53.0 | 9.315 | 0.881 | 1201.562 | .066% | 98.403% |
| 54.0 | 7.903 | 0.759 | 1202.32 | .057% | 98.465% |
| 55.0 | 7.075 | 0.669 | 1202.989 | .050% | 98.520% |
| 56.0 | 6.518 | 0.614 | 1203.603 | .046% | 98.570% |
| 57.0 | 6.163 | 0.580 | 1204.183 | .044% | 98.618% |
| 58.0 | 5.955 | 0.560 | 1204.743 | .042% | 98.663% |
| 59.0 | 5.809 | 0.550 | 1205.293 | .041% | 98.709% |
| 60.0 | 5.690 | 0.543 | 1205.837 | .041% | 98.753% |
| 61.0 | 5.586 | 0.538 | 1206.375 | .040% | 98.797% |
| 62.0 | 5.461 | 0.532 | 1206.907 | .040% | 98.841% |
| 63.0 | 5.322 | 0.524 | 1207.431 | .039% | 98.884% |
| 64.0 | 5.210 | 0.517 | 1207.948 | .039% | 98.926% |
| 65.0 | 5.141 | 0.512 | 1208.46 | .039% | 98.968% |
| 66.0 | 5.078 | 0.510 | 1208.97 | .038% | 99.010% |
| 67.0 | 5.043 | 0.509 | 1209.479 | .038% | 99.051% |
| 68.0 | 4.995 | 0.509 | 1209.988 | .038% | 99.093% |
| 69.0 | 4.932 | 0.506 | 1210.494 | .038% | 99.134% |
| 70.0 | 4.897 | 0.505 | 1210.999 | .038% | 99.176% |
| 71.0 | 4.863 | 0.504 | 1211.503 | .038% | 99.217% |
| 72.0 | 4.835 | 0.504 | 1212.008 | .038% | 99.258% |
| 73.0 | 4.800 | 0.504 | 1212.512 | .038% | 99.300% |
| 74.0 | 4.779 | 0.504 | 1213.015 | .038% | 99.341% |
| 75.0 | 4.751 | 0.504 | 1213.519 | .038% | 99.382% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 76.0 | 4.723 | 0.503 | 1214.022 | .038% | 99.423% |
| 77.0 | 4.710 | 0.503 | 1214.525 | .038% | 99.465% |
| 78.0 | 4.716 | 0.505 | 1215.029 | .038% | 99.506% |
| 79.0 | 4.682 | 0.505 | 1215.534 | .038% | 99.547% |
| 80.0 | 4.647 | 0.503 | 1216.037 | .038% | 99.588% |
| 81.0 | 4.647 | 0.503 | 1216.54 | .038% | 99.630% |
| 82.0 | 4.668 | 0.505 | 1217.045 | .038% | 99.671% |
| 83.0 | 4.619 | 0.505 | 1217.55 | .038% | 99.712% |
| 84.0 | 4.626 | 0.504 | 1218.053 | .038% | 99.754% |
| 85.0 | 4.619 | 0.505 | 1218.558 | .038% | 99.795% |
| 86.0 | 4.598 | 0.504 | 1219.062 | .038% | 99.836% |
| 87.0 | 4.563 | 0.501 | 1219.563 | .038% | 99.877% |
| 88.0 | 4.577 | 0.501 | 1220.064 | .038% | 99.918% |
| 89.0 | 4.556 | 0.501 | 1220.564 | .038% | 99.959% |
| 90.0 | 4.536 | 0.499 | 1221.063 | .037% | 100.000% |

## Zonal flux distribution table



ZONAL LUMEN SUMMARY

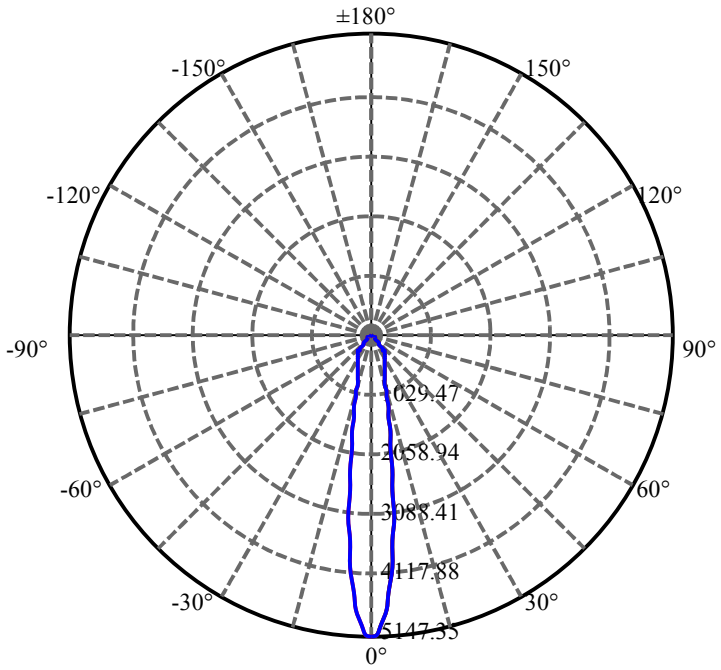
| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-30 | 840.33 | 63.18% | 68.82% |
| 0-40 | 1087.08 | 81.74% | 89.03% |
| 0-60 | 1205.84 | 90.66% | 98.75% |
| 0-90 | 1220.56 | 91.77% | 99.96% |
| 0-120 | 1220.56 | 91.77% | 99.96% |
| 0-180 | 1221.06 | 91.81% | 100.00% |
| 60-90 | 15.27 | 1.15% | 1.25% |
| 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% |
| 0-35.52 | 976.85 | 73.45% | 80.00% |

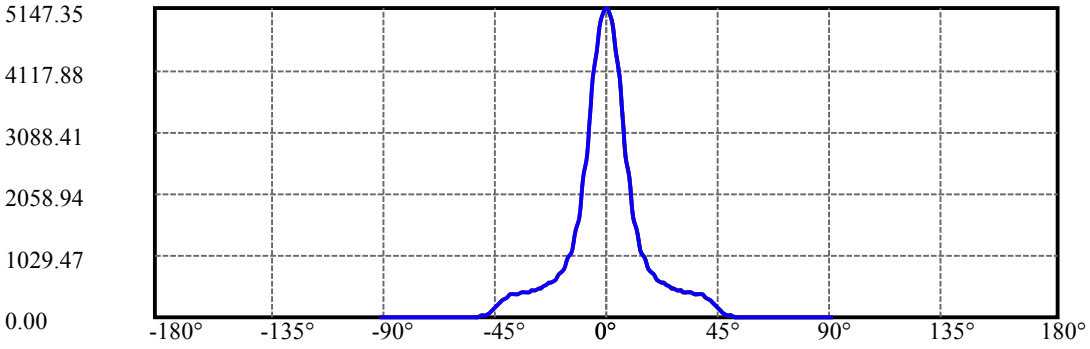
ZONAL LUMEN SUMMARY

| | |
|---|---|
| 0-10 | 310.94 |
| 10-20 | 289.48 |
| 20-30 | 239.92 |
| 30-40 | 246.75 |
| 40-50 | 111.19 |
| 50-60 | 7.56 |
| 60-70 | 5.16 |
| 70-80 | 5.04 |
| 80-90 | 4.53 |
| 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 |

Light Distribution Curve [Unit:cd]






C0(Max):

C0/C180:

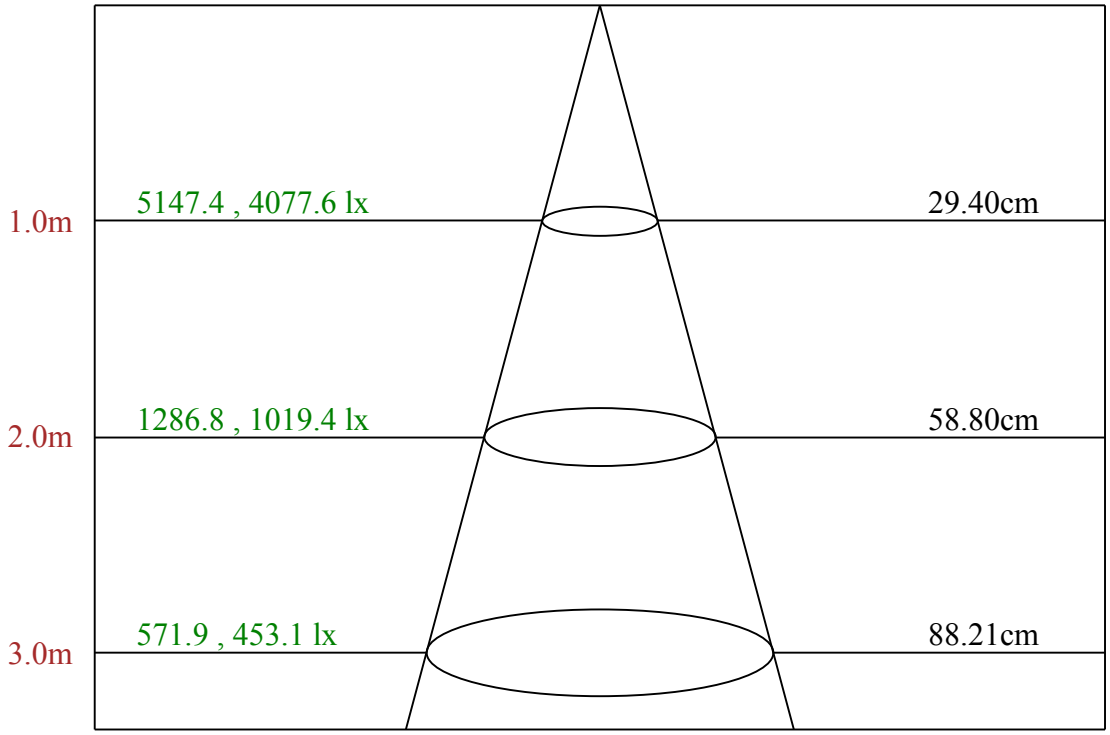
C90/C270:

Field angle(10%Imax):C0/180Left:24.9 Right:24.9
:C90/270Left:24.9 Right:24.9

Beam Angle(50%Imax):C0/180Left:8.3 Right:8.3
:C90/270Left:8.3 Right:8.3

Lux distance Curve



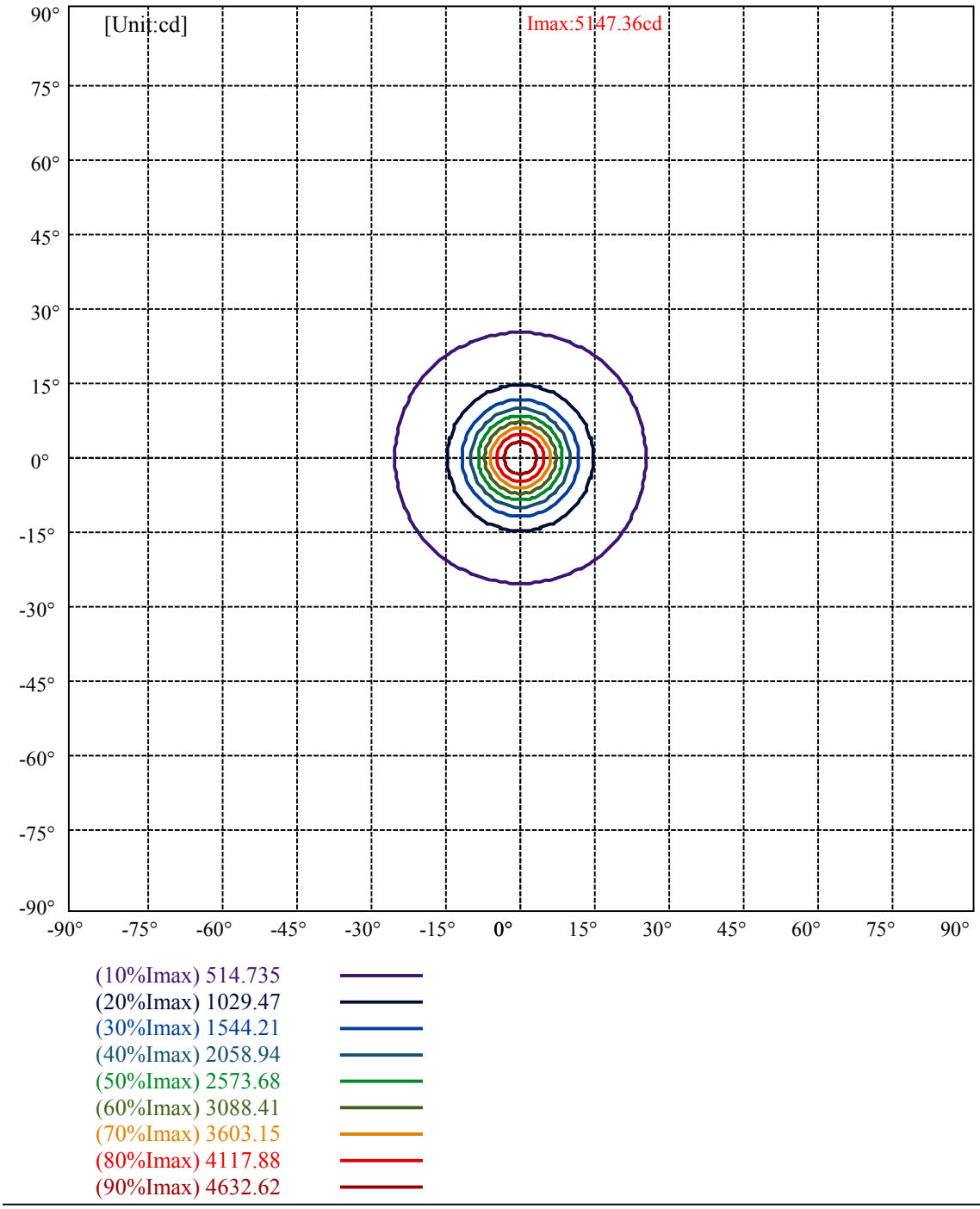



Max , Ave

Beam angle of C0 plane 16.73

ISO-Intensity(V-H)





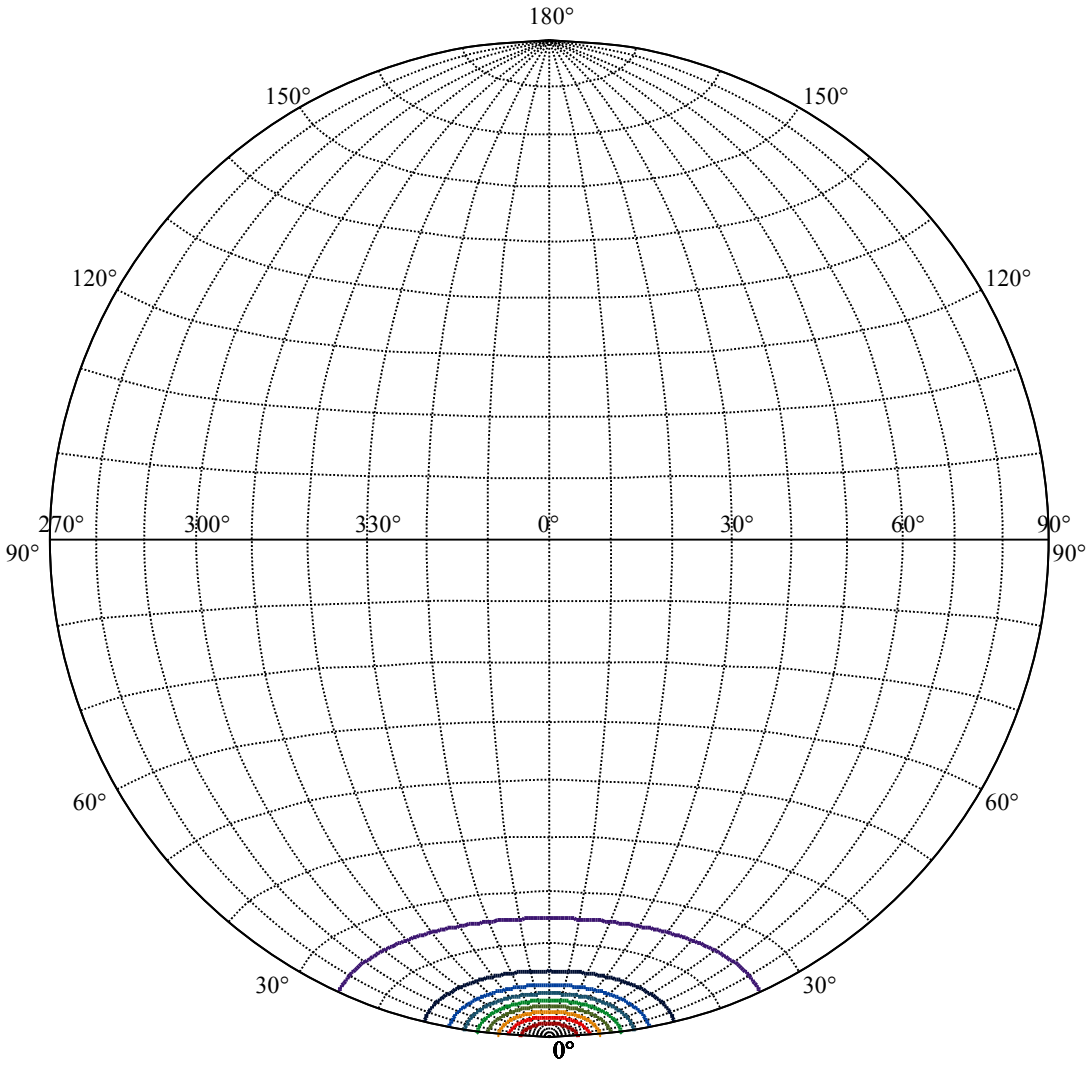

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/14
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.46

ISO candela diagram on circular web






House [Unit:cd] Road

Imax:5147.36

(10%Imax) 514.735
(20%Imax) 1029.47
(30%Imax) 1544.21
(40%Imax) 2058.94
(50%Imax) 2573.68
(60%Imax) 3088.41
(70%Imax) 3603.15
(80%Imax) 4117.88
(90%Imax) 4632.62

Equipment: GMS1980
Temperature(°C): 25.0

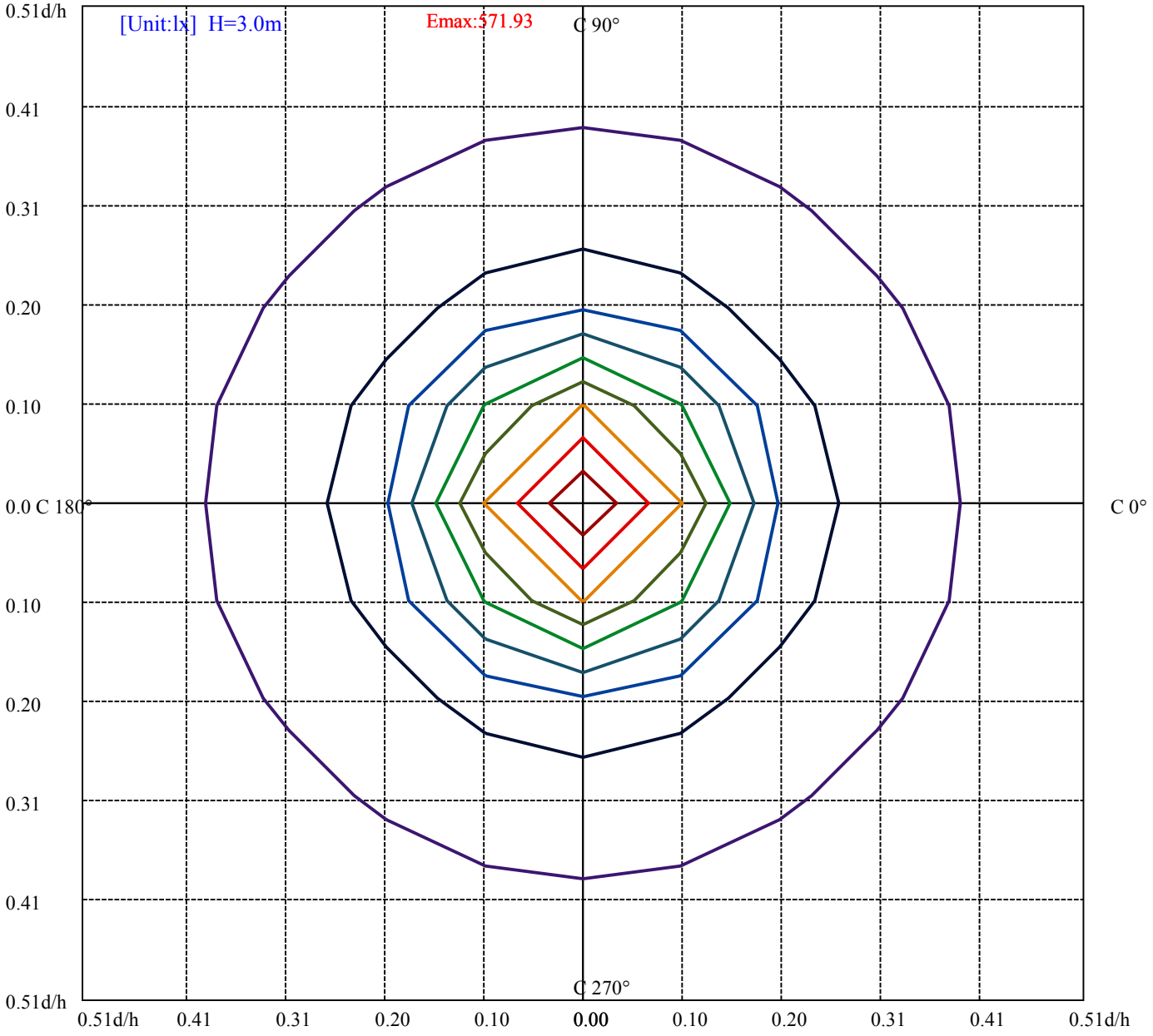
Date: 2017/8/14
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.46

Nata 1709-M

ISO illuminance diagram





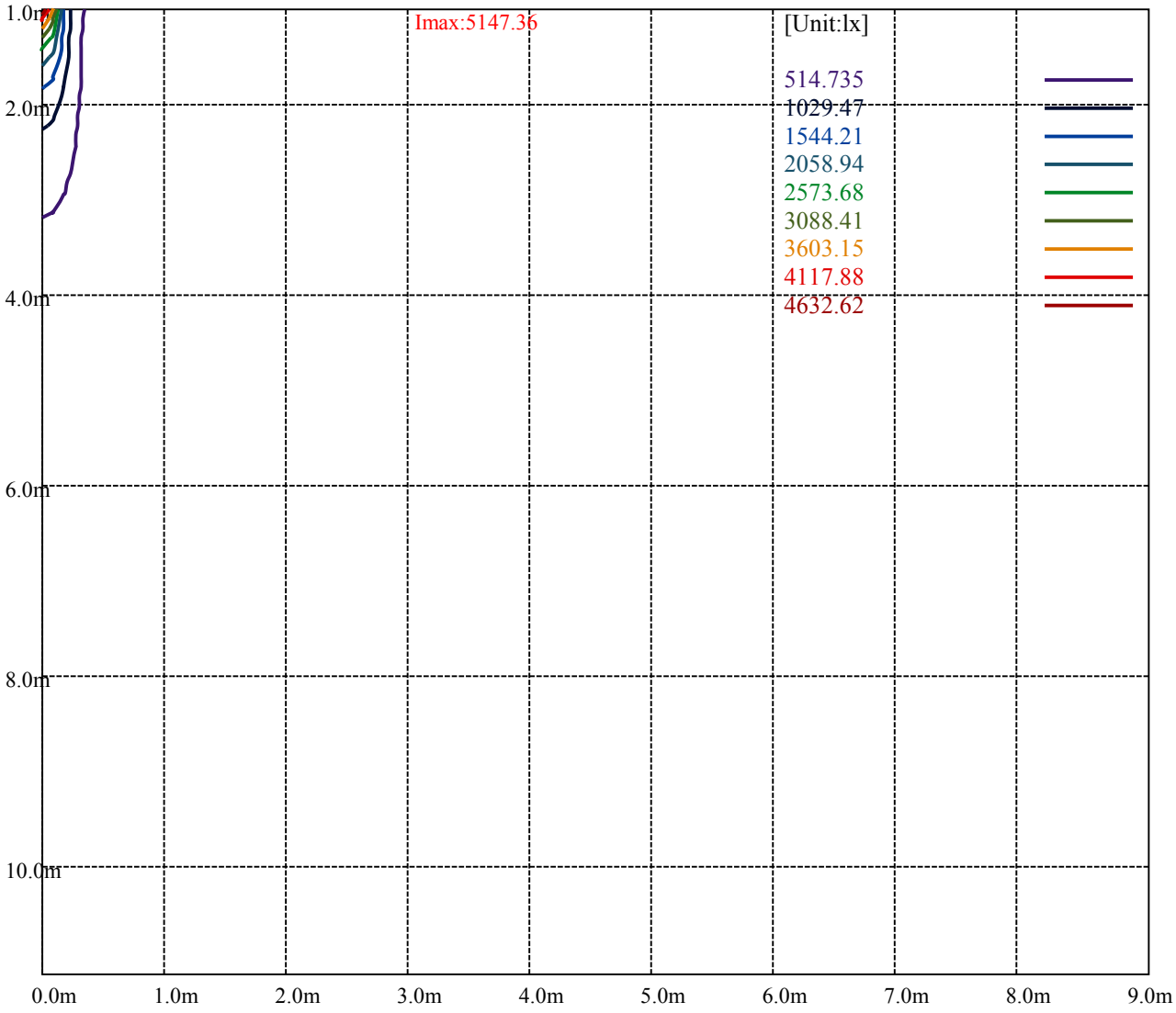

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/14
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.46

## Space ISO Lux diagram






Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/14
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.46

Nata 1709-M

## Luminance Limitting Curve(no luminous side)



Luminance Table

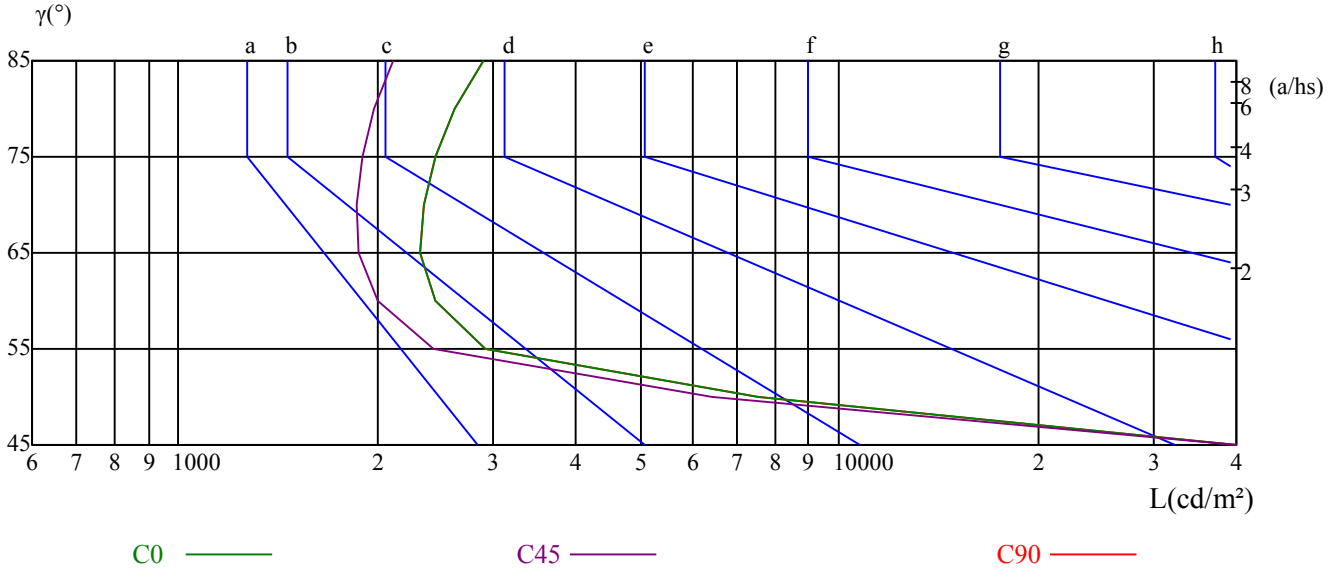
| γ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|
| C0 | 52683 | 7560 | 2921 | 2447 | 2325 | 2354 | 2457 | 2622 | 2892 |
| C45 | 45362 | 6413 | 2439 | 2010 | 1876 | 1863 | 1902 | 1980 | 2120 |
| C90 | 52683 | 7560 | 2921 | 2447 | 2325 | 2354 | 2457 | 2622 | 2892 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|---|---|---|---|---|---|---|---|---|
| 5507 | 5507 | 5507 | 8310 | 8310 | 8310 | 23992 | 23992 | 23992 |

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 Limitting Curve



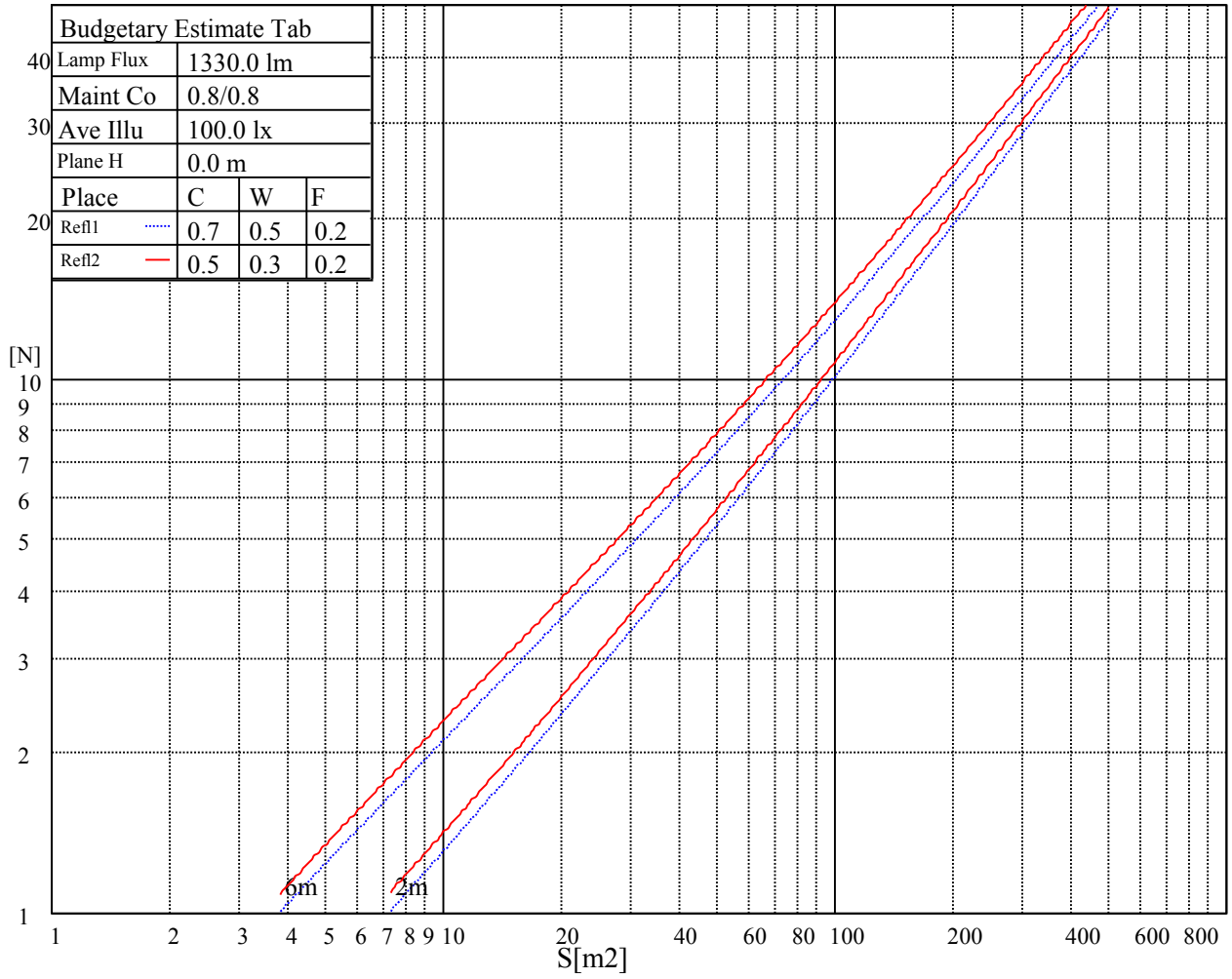

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/14
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.46

## Budgetary Estimate Table






Equipment: GMS1980 Date: 2017/8/14 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.46

## Utilization factor table for indoor luminaire



| 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 | COEFFCIENTS OF UTILIZATION RHOFC=20 CU | | | | | | | | | | | | | | | |
| 0 | 1.09 | 1.09 | 1.09 | 1.07 | 1.07 | 1.07 | 1.02 | 1.02 | 1.02 | 0.98 | 0.98 | 0.98 | 0.94 | 0.94 | 0.94 | 0.92 |
| 1 | 1.02 | 1.00 | 0.98 | 1.00 | 0.98 | 0.96 | 0.96 | 0.95 | 0.93 | 0.93 | 0.92 | 0.90 | 0.90 | 0.89 | 0.88 | 0.86 |
| 2 | 0.95 | 0.92 | 0.89 | 0.94 | 0.90 | 0.88 | 0.91 | 0.88 | 0.86 | 0.88 | 0.86 | 0.84 | 0.86 | 0.84 | 0.82 | 0.81 |
| 3 | 0.89 | 0.85 | 0.82 | 0.88 | 0.84 | 0.81 | 0.86 | 0.82 | 0.80 | 0.84 | 0.81 | 0.78 | 0.82 | 0.79 | 0.77 | 0.76 |
| 4 | 0.84 | 0.79 | 0.76 | 0.83 | 0.79 | 0.75 | 0.81 | 0.77 | 0.74 | 0.79 | 0.76 | 0.74 | 0.78 | 0.75 | 0.73 | 0.71 |
| 5 | 0.79 | 0.74 | 0.71 | 0.79 | 0.74 | 0.70 | 0.77 | 0.73 | 0.70 | 0.75 | 0.72 | 0.69 | 0.74 | 0.71 | 0.69 | 0.67 |
| 6 | 0.75 | 0.70 | 0.66 | 0.75 | 0.70 | 0.66 | 0.73 | 0.69 | 0.66 | 0.72 | 0.68 | 0.65 | 0.71 | 0.67 | 0.65 | 0.64 |
| 7 | 0.71 | 0.66 | 0.63 | 0.71 | 0.66 | 0.63 | 0.70 | 0.65 | 0.62 | 0.69 | 0.65 | 0.62 | 0.68 | 0.64 | 0.62 | 0.60 |
| 8 | 0.68 | 0.63 | 0.59 | 0.68 | 0.63 | 0.59 | 0.67 | 0.62 | 0.59 | 0.66 | 0.62 | 0.59 | 0.65 | 0.61 | 0.59 | 0.57 |
| 9 | 0.65 | 0.60 | 0.57 | 0.64 | 0.60 | 0.57 | 0.64 | 0.59 | 0.56 | 0.63 | 0.59 | 0.56 | 0.62 | 0.59 | 0.56 | 0.55 |
| 10 | 0.62 | 0.57 | 0.54 | 0.62 | 0.57 | 0.54 | 0.61 | 0.57 | 0.54 | 0.60 | 0.56 | 0.54 | 0.60 | 0.56 | 0.54 | 0.52 |

Intensity data(cd)



| C/γ(°) | 0.0 | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 5287.46 | 5201.76 | 4954.11 | 4659.71 | 4276.27 | 3772.07 | 3256.73 | 2832.11 | 2411.38 |
| 45.0 | 5051.50 | 4796.61 | 4331.92 | 3891.72 | 3435.37 | 2893.33 | 2489.85 | 2136.46 | 1796.99 |
| 90.0 | 5041.48 | 4827.22 | 4428.20 | 4025.28 | 3587.30 | 3098.68 | 2642.89 | 2280.60 | 1916.64 |
| 135.0 | 5208.99 | 5164.47 | 5009.76 | 4776.58 | 4461.03 | 4019.16 | 3518.29 | 3090.89 | 2656.81 |
| 180.0 | 5287.46 | 5310.28 | 5218.45 | 5049.27 | 4787.71 | 4323.57 | 3881.70 | 3416.45 | 2873.85 |
| 225.0 | 5051.50 | 5230.14 | 5326.97 | 5303.04 | 5221.79 | 5017.55 | 4716.47 | 4281.28 | 3783.20 |
| 270.0 | 5041.48 | 5174.49 | 5220.12 | 5164.47 | 5021.44 | 4754.32 | 4355.29 | 3933.46 | 3442.61 |
| 315.0 | 5208.99 | 5148.33 | 5014.21 | 4744.86 | 4428.75 | 3972.97 | 3472.10 | 3048.59 | 2619.52 |
| 360.0 | 5287.46 | 5201.76 | 4954.11 | 4659.71 | 4276.27 | 3772.07 | 3256.73 | 2832.11 | 2411.38 |

| C/γ(°) | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 2030.73 | 1733.55 | 1458.63 | 1268.86 | 1107.47 | 982.81 | 897.66 | 830.32 | 759.64 |
| 45.0 | 1513.72 | 1305.03 | 1130.28 | 1011.75 | 909.35 | 833.66 | 777.45 | 720.69 | 674.50 |
| 90.0 | 1644.50 | 1392.40 | 1097.45 | 1066.23 | 956.15 | 859.21 | 804.94 | 748.90 | 686.07 |
| 135.0 | 2256.12 | 1937.79 | 1622.80 | 1401.31 | 1204.30 | 1054.60 | 952.20 | 870.95 | 789.14 |
| 180.0 | 2529.37 | 2136.46 | 1754.14 | 1530.98 | 1305.03 | 1078.25 | 1006.51 | 912.57 | 829.32 |
| 225.0 | 3331.86 | 2848.81 | 2417.51 | 2077.47 | 1773.62 | 1460.85 | 1264.40 | 1094.67 | 974.63 |
| 270.0 | 2971.24 | 2585.57 | 2190.45 | 1883.81 | 1582.17 | 1336.75 | 1169.80 | 1045.14 | 924.93 |
| 315.0 | 2266.13 | 1906.62 | 1606.66 | 1387.39 | 1106.85 | 1046.86 | 947.30 | 868.89 | 788.58 |
| 360.0 | 2030.73 | 1733.55 | 1458.63 | 1268.86 | 1107.47 | 982.81 | 897.66 | 830.32 | 759.64 |

| C/γ(°) | 18.0 | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 | 25.0 | 26.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 710.11 | 670.05 | 629.42 | 601.04 | 573.77 | 547.61 | 522.01 | 501.98 | 484.73 |
| 45.0 | 638.88 | 608.27 | 574.32 | 551.51 | 525.35 | 500.31 | 484.73 | 473.60 | 462.46 |
| 90.0 | 653.07 | 622.52 | 590.91 | 561.97 | 536.93 | 511.38 | 490.62 | 476.27 | 464.64 |
| 135.0 | 735.16 | 688.41 | 639.44 | 609.39 | 577.66 | 548.72 | 522.01 | 499.75 | 478.05 |
| 180.0 | 761.81 | 709.61 | 668.71 | 628.03 | 594.47 | 570.60 | 541.10 | 517.56 | 496.47 |
| 225.0 | 875.29 | 806.22 | 744.84 | 693.36 | 655.02 | 618.96 | 590.41 | 558.91 | 534.26 |
| 270.0 | 848.69 | 788.58 | 729.59 | 686.18 | 653.91 | 617.73 | 587.12 | 560.41 | 533.14 |
| 315.0 | 738.16 | 694.81 | 658.47 | 623.41 | 596.81 | 570.15 | 538.71 | 517.34 | 497.14 |
| 360.0 | 710.11 | 670.05 | 629.42 | 601.04 | 573.77 | 547.61 | 522.01 | 501.98 | 484.73 |

| C/γ(°) | 27.0 | 28.0 | 29.0 | 30.0 | 31.0 | 32.0 | 33.0 | 34.0 | 35.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 473.60 | 460.24 | 450.78 | 442.99 | 434.64 | 427.96 | 421.28 | 414.05 | 405.70 |
| 45.0 | 450.78 | 442.43 | 434.64 | 426.85 | 419.06 | 411.82 | 402.92 | 396.80 | 389.56 |
| 90.0 | 452.00 | 442.76 | 432.58 | 424.29 | 416.72 | 407.70 | 401.41 | 393.35 | 385.44 |
| 135.0 | 463.02 | 450.78 | 439.09 | 429.63 | 419.61 | 411.82 | 402.92 | 396.80 | 389.00 |
| 180.0 | 477.66 | 460.96 | 449.00 | 437.87 | 428.85 | 420.45 | 413.32 | 405.31 | 398.97 |
| 225.0 | 513.05 | 492.57 | 471.65 | 459.68 | 447.55 | 436.42 | 428.80 | 421.45 | 411.77 |
| 270.0 | 508.10 | 486.95 | 469.70 | 457.46 | 444.66 | 435.75 | 427.96 | 420.17 | 411.27 |
| 315.0 | 479.94 | 466.19 | 454.45 | 444.43 | 436.75 | 426.96 | 419.22 | 411.93 | 404.42 |
| 360.0 | 473.60 | 460.24 | 450.78 | 442.99 | 434.64 | 427.96 | 421.28 | 414.05 | 405.70 |

| C/γ(°) | 36.0 | 37.0 | 38.0 | 39.0 | 40.0 | 41.0 | 42.0 | 43.0 | 44.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 398.47 | 392.90 | 378.43 | 348.38 | 317.77 | 284.94 | 231.12 | 193.11 | 149.26 |
| 45.0 | 377.87 | 357.28 | 325.01 | 287.72 | 283.27 | 208.97 | 158.66 | 120.37 | 85.43 |
| 90.0 | 377.82 | 363.46 | 339.20 | 301.41 | 264.90 | 227.67 | 183.21 | 140.74 | 99.12 |
| 135.0 | 382.88 | 375.65 | 366.19 | 348.38 | 322.22 | 284.94 | 241.86 | 203.96 | 166.51 |
| 180.0 | 390.67 | 384.05 | 376.76 | 365.96 | 344.98 | 318.22 | 277.92 | 238.75 | 197.45 |
| 225.0 | 406.15 | 398.80 | 391.56 | 383.22 | 376.98 | 363.52 | 340.31 | 306.47 | 267.18 |
| 270.0 | 404.59 | 398.47 | 391.23 | 382.88 | 375.09 | 351.72 | 320.00 | 287.16 | 283.27 |
| 315.0 | 396.07 | 389.06 | 380.10 | 357.78 | 330.90 | 297.62 | 255.94 | 213.65 | 174.80 |
| 360.0 | 398.47 | 392.90 | 378.43 | 348.38 | 317.77 | 284.94 | 231.12 | 193.11 | 149.26 |

Intensity data(cd)



| C/γ(°) | 45.0 | 46.0 | 47.0 | 48.0 | 49.0 | 50.0 | 51.0 | 52.0 | 53.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 114.20 | 73.85 | 44.08 | 25.66 | 16.47 | 13.80 | 11.46 | 9.18 | 7.29 |
| 45.0 | 48.75 | 28.99 | 17.36 | 14.30 | 12.08 | 9.85 | 7.74 | 6.96 | 6.57 |
| 90.0 | 68.06 | 39.18 | 22.93 | 15.36 | 13.47 | 10.96 | 8.57 | 7.29 | 6.96 |
| 135.0 | 125.44 | 86.54 | 57.43 | 32.56 | 19.53 | 14.80 | 12.47 | 10.02 | 7.96 |
| 180.0 | 156.77 | 115.09 | 79.30 | 47.69 | 28.27 | 16.64 | 14.19 | 12.19 | 10.02 |
| 225.0 | 228.39 | 189.66 | 140.24 | 104.18 | 71.01 | 37.68 | 22.09 | 16.03 | 14.19 |
| 270.0 | 204.91 | 162.34 | 129.61 | 85.59 | 55.21 | 32.00 | 17.47 | 15.08 | 12.86 |
| 315.0 | 132.01 | 91.32 | 59.94 | 33.22 | 19.87 | 15.47 | 13.08 | 10.69 | 8.68 |
| 360.0 | 114.20 | 73.85 | 44.08 | 25.66 | 16.47 | 13.80 | 11.46 | 9.18 | 7.29 |

| C/γ(°) | 54.0 | 55.0 | 56.0 | 57.0 | 58.0 | 59.0 | 60.0 | 61.0 | 62.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 6.79 | 6.46 | 6.34 | 6.23 | 6.12 | 5.95 | 5.68 | 5.57 | 5.51 |
| 45.0 | 6.40 | 6.34 | 6.23 | 6.07 | 5.90 | 5.79 | 5.68 | 5.62 | 5.40 |
| 90.0 | 6.73 | 6.07 | 5.95 | 5.90 | 5.79 | 5.79 | 5.68 | 5.57 | 5.45 |
| 135.0 | 6.79 | 6.23 | 6.07 | 5.84 | 5.73 | 5.68 | 5.62 | 5.51 | 5.40 |
| 180.0 | 8.01 | 7.46 | 6.34 | 5.73 | 5.62 | 5.51 | 5.40 | 5.34 | 5.23 |
| 225.0 | 11.41 | 9.24 | 7.51 | 7.12 | 6.34 | 5.90 | 5.79 | 5.62 | 5.45 |
| 270.0 | 9.68 | 7.68 | 6.73 | 6.29 | 6.12 | 6.01 | 5.90 | 5.79 | 5.68 |
| 315.0 | 7.40 | 7.12 | 6.96 | 6.12 | 6.01 | 5.84 | 5.79 | 5.68 | 5.57 |
| 360.0 | 6.79 | 6.46 | 6.34 | 6.23 | 6.12 | 5.95 | 5.68 | 5.57 | 5.51 |

| C/γ(°) | 63.0 | 64.0 | 65.0 | 66.0 | 67.0 | 68.0 | 69.0 | 70.0 | 71.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 5.45 | 5.18 | 5.06 | 5.01 | 4.95 | 5.01 | 4.95 | 4.90 | 4.84 |
| 45.0 | 5.12 | 5.01 | 4.95 | 4.95 | 4.95 | 4.90 | 4.84 | 4.84 | 4.73 |
| 90.0 | 5.06 | 5.12 | 5.06 | 5.01 | 5.01 | 4.95 | 4.84 | 4.79 | 4.79 |
| 135.0 | 5.34 | 5.18 | 5.12 | 4.95 | 4.95 | 4.90 | 4.90 | 4.90 | 4.90 |
| 180.0 | 5.23 | 5.18 | 5.06 | 5.01 | 4.95 | 4.90 | 4.90 | 4.90 | 4.84 |
| 225.0 | 5.40 | 5.29 | 5.29 | 5.23 | 5.18 | 5.12 | 5.01 | 4.95 | 4.90 |
| 270.0 | 5.57 | 5.40 | 5.34 | 5.29 | 5.23 | 5.18 | 5.06 | 5.01 | 5.01 |
| 315.0 | 5.40 | 5.34 | 5.23 | 5.18 | 5.12 | 5.01 | 4.95 | 4.90 | 4.90 |
| 360.0 | 5.45 | 5.18 | 5.06 | 5.01 | 4.95 | 5.01 | 4.95 | 4.90 | 4.84 |

| C/γ(°) | 72.0 | 73.0 | 74.0 | 75.0 | 76.0 | 77.0 | 78.0 | 79.0 | 80.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 4.79 | 4.79 | 4.73 | 4.73 | 4.73 | 4.73 | 4.67 | 4.67 | 4.67 |
| 45.0 | 4.79 | 4.73 | 4.73 | 4.67 | 4.62 | 4.62 | 4.73 | 4.67 | 4.67 |
| 90.0 | 4.79 | 4.79 | 4.79 | 4.73 | 4.67 | 4.67 | 4.62 | 4.67 | 4.62 |
| 135.0 | 4.79 | 4.73 | 4.73 | 4.79 | 4.73 | 4.73 | 4.67 | 4.62 | 4.56 |
| 180.0 | 4.73 | 4.73 | 4.67 | 4.73 | 4.73 | 4.67 | 4.67 | 4.62 | 4.56 |
| 225.0 | 4.90 | 4.84 | 4.84 | 4.79 | 4.79 | 4.73 | 4.79 | 4.73 | 4.67 |
| 270.0 | 5.01 | 4.95 | 4.95 | 4.84 | 4.79 | 4.79 | 4.84 | 4.79 | 4.73 |
| 315.0 | 4.90 | 4.84 | 4.79 | 4.73 | 4.73 | 4.73 | 4.73 | 4.67 | 4.67 |
| 360.0 | 4.79 | 4.79 | 4.73 | 4.73 | 4.73 | 4.73 | 4.67 | 4.67 | 4.67 |

| C/γ(°) | 81.0 | 82.0 | 83.0 | 84.0 | 85.0 | 86.0 | 87.0 | 88.0 | 89.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 4.67 | 4.67 | 4.67 | 4.67 | 4.62 | 4.67 | 4.56 | 4.51 | 4.51 |
| 45.0 | 4.62 | 4.62 | 4.62 | 4.67 | 4.62 | 4.56 | 4.56 | 4.51 | 4.56 |
| 90.0 | 4.67 | 4.67 | 4.62 | 4.62 | 4.62 | 4.56 | 4.56 | 4.62 | 4.56 |
| 135.0 | 4.62 | 4.67 | 4.56 | 4.56 | 4.56 | 4.56 | 4.51 | 4.62 | 4.56 |
| 180.0 | 4.62 | 4.62 | 4.56 | 4.56 | 4.56 | 4.56 | 4.56 | 4.51 | 4.51 |
| 225.0 | 4.62 | 4.67 | 4.62 | 4.62 | 4.62 | 4.56 | 4.56 | 4.62 | 4.62 |
| 270.0 | 4.73 | 4.73 | 4.67 | 4.67 | 4.73 | 4.67 | 4.62 | 4.62 | 4.56 |
| 315.0 | 4.62 | 4.67 | 4.62 | 4.62 | 4.62 | 4.62 | 4.56 | 4.62 | 4.56 |
| 360.0 | 4.67 | 4.67 | 4.67 | 4.67 | 4.62 | 4.67 | 4.56 | 4.51 | 4.51 |

Intensity data(cd)



| C/γ(°) | 90.0 |
|---|---|
| 0.0 | 4.51 |
| 45.0 | 4.56 |
| 90.0 | 4.56 |
| 135.0 | 4.56 |
| 180.0 | 4.45 |
| 225.0 | 4.56 |
| 270.0 | 4.56 |
| 315.0 | 4.51 |
| 360.0 | 4.51 |