NATA LIGHTING CO.,LTD
www.nata.cn
Email:info@nata.cn
Tel:+86 0750-377 0000(10 lines) Fax:+86 0750-377 1111
Address:380JinOu Road,Gaoxin Zone,Jiang Men City,Guangdong,China

## Nata

LumCAT: 1535-E
Luminaire: 92.70.046.00
Report No: NT2017083005
Test No: GC2017083005
LampCAT: CREE CXA1512
Lamp flux(lm): 945.0
Number of Lamps: 1
Length(mm): 25
Phm Type: C

Voltage(V): 0.0000
Current(A): 0.0000
Power (W): 0.0000
PF: 0.0000
Ballast type: DC
Width(mm): 25
Height(mm): 0

## Photometric Results

Lumens(lm): 773.89
Efficiency(%): 81.89%
Lumens(lm)/Power(W): 0.00
Central intensity(cd): 1241.797
Maximum intensity(cd): 1241.797
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=41.3
[C90/270]Total=41.3
Field angle(10%Imax): [C0/180]Total=80.3
[C90/270]Total=80.3
Maximum s/h(1/2): C0_180=0.65 C90_270=0.65
Maximum s/h(1/4): C0_180=0.70 C90_270=0.70
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 81.89%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.375%

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 0.0 | 1241.797 | 0.000 | 0 | .000% | .000% |
| 2.0 | 1233.263 | 4.737 | 4.737 | .501% | .612% |
| 4.0 | 1205.529 | 13.996 | 18.733 | 1.481% | 2.421% |
| 6.0 | 1159.928 | 22.607 | 41.34 | 2.392% | 5.342% |
| 8.0 | 1100.880 | 30.213 | 71.553 | 3.197% | 9.246% |
| 10.0 | 1035.466 | 36.647 | 108.2 | 3.878% | 13.981% |
| 12.0 | 966.446 | 41.887 | 150.087 | 4.432% | 19.394% |
| 14.0 | 887.895 | 45.742 | 195.829 | 4.840% | 25.304% |
| 16.0 | 805.193 | 48.052 | 243.881 | 5.085% | 31.514% |
| 18.0 | 725.478 | 49.074 | 292.955 | 5.193% | 37.855% |
| 20.0 | 645.667 | 48.951 | 341.906 | 5.180% | 44.180% |
| 22.0 | 571.513 | 47.832 | 389.738 | 5.062% | 50.361% |
| 24.0 | 503.477 | 46.059 | 435.797 | 4.874% | 56.312% |
| 26.0 | 438.676 | 43.662 | 479.459 | 4.620% | 61.954% |
| 28.0 | 380.605 | 40.786 | 520.246 | 4.316% | 67.225% |
| 30.0 | 331.543 | 37.860 | 558.105 | 4.006% | 72.117% |
| 32.0 | 288.344 | 35.010 | 593.115 | 3.705% | 76.641% |
| 34.0 | 240.562 | 31.588 | 624.703 | 3.343% | 80.722% |
| 36.0 | 202.676 | 27.878 | 652.581 | 2.950% | 84.325% |
| 38.0 | 162.052 | 24.070 | 676.651 | 2.547% | 87.435% |
| 40.0 | 126.348 | 19.902 | 696.553 | 2.106% | 90.006% |
| 42.0 | 93.589 | 15.823 | 712.375 | 1.674% | 92.051% |
| 44.0 | 64.595 | 11.830 | 724.205 | 1.252% | 93.580% |
| 46.0 | 41.857 | 8.254 | 732.459 | .873% | 94.646% |
| 48.0 | 26.998 | 5.522 | 737.981 | .584% | 95.360% |
| 50.0 | 19.194 | 3.823 | 741.804 | .405% | 95.854% |
| 52.0 | 15.560 | 2.962 | 744.766 | .313% | 96.236% |
| 54.0 | 13.255 | 2.524 | 747.289 | .267% | 96.562% |
| 56.0 | 11.706 | 2.242 | 749.532 | .237% | 96.852% |
| 58.0 | 10.860 | 2.075 | 751.607 | .220% | 97.120% |
| 60.0 | 10.103 | 1.970 | 753.577 | .209% | 97.375% |
| 62.0 | 9.442 | 1.875 | 755.452 | .198% | 97.617% |
| 64.0 | 8.850 | 1.787 | 757.239 | .189% | 97.848% |
| 66.0 | 8.327 | 1.707 | 758.946 | .181% | 98.069% |
| 68.0 | 7.818 | 1.630 | 760.576 | .172% | 98.279% |
| 70.0 | 7.371 | 1.555 | 762.131 | .165% | 98.480% |
| 72.0 | 6.951 | 1.485 | 763.616 | .157% | 98.672% |
| 74.0 | 6.607 | 1.422 | 765.037 | .150% | 98.856% |

## Zonal flux distribution table



| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 76.0 | 6.283 | 1.365 | 766.403 | .144% | 99.032% |
| 78.0 | 5.987 | 1.311 | 767.714 | .139% | 99.202% |
| 80.0 | 5.664 | 1.254 | 768.968 | .133% | 99.364% |
| 82.0 | 5.361 | 1.194 | 770.162 | .126% | 99.518% |
| 84.0 | 5.058 | 1.134 | 771.296 | .120% | 99.665% |
| 86.0 | 4.480 | 1.042 | 772.338 | .110% | 99.799% |
| 88.0 | 3.290 | 0.851 | 773.189 | .090% | 99.909% |
| 90.0 | 3.124 | 0.703 | 773.892 | .074% | 100.000% |

## Zonal flux distribution table



ZONAL LUMEN SUMMARY

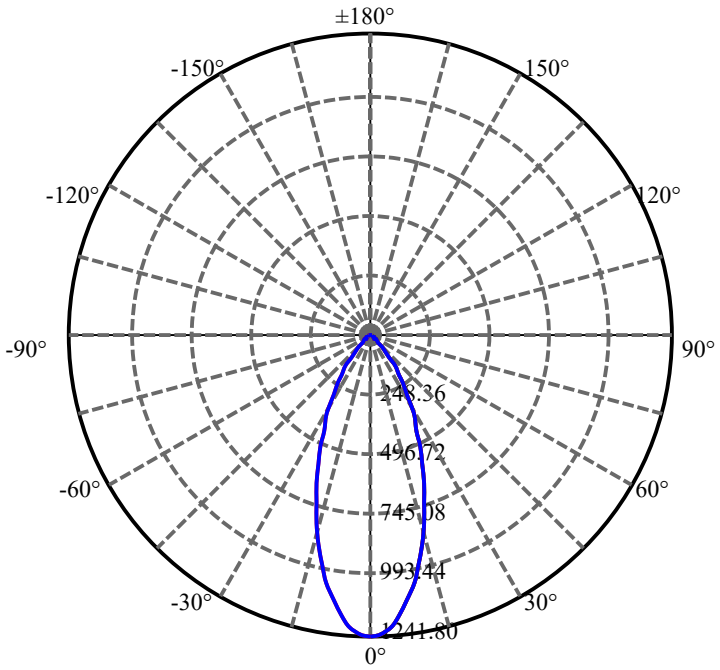
| Zone | Lumens | %Lamp | %Fixt |
|---|---|---|---|
| 0-30 | 558.11 | 59.06% | 72.12% |
| 0-40 | 696.55 | 73.71% | 90.01% |
| 0-60 | 753.58 | 79.74% | 97.37% |
| 0-90 | 773.19 | 81.82% | 99.91% |
| 0-120 | 773.19 | 81.82% | 99.91% |
| 0-180 | 773.89 | 81.89% | 100.00% |
| 60-90 | 21.58 | 2.28% | 2.79% |
| 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% |
| 0-33.65 | 619.11 | 65.51% | 80.00% |

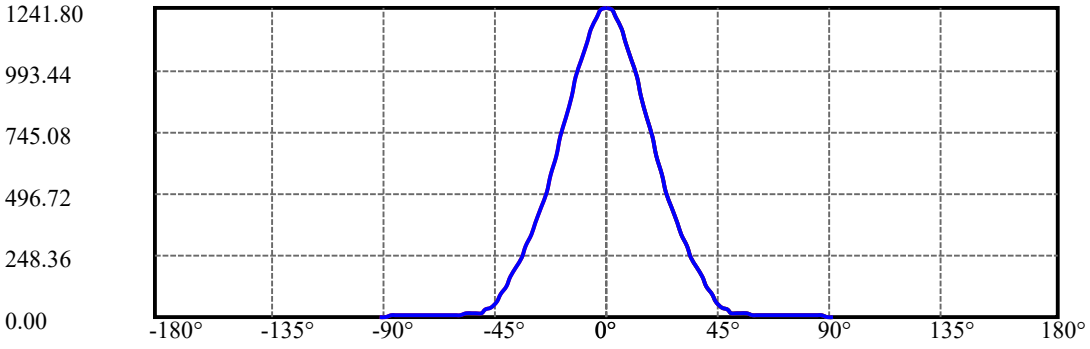
ZONAL LUMEN SUMMARY

| | |
|---|---|
| 0-10 | 108.20 |
| 10-20 | 233.71 |
| 20-30 | 216.20 |
| 30-40 | 138.45 |
| 40-50 | 45.25 |
| 50-60 | 11.77 |
| 60-70 | 8.55 |
| 70-80 | 6.84 |
| 80-90 | 4.22 |
| 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:

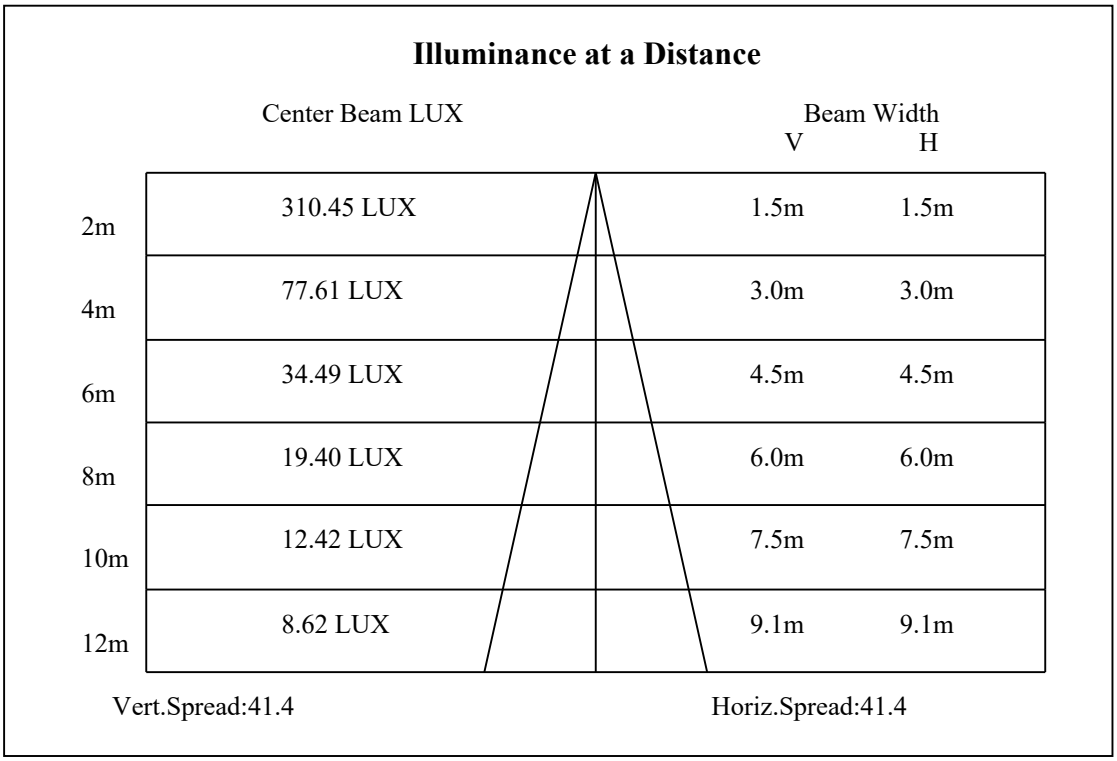
Field angle(10%Imax):C0/180Left:40.1 Right:40.1
:C90/270Left:40.1 Right:40.1

Beam Angle(50%Imax):C0/180Left:20.7 Right:20.7
:C90/270Left:20.7 Right:20.7

| | | |
|---|---|---|
| Equipment: GMS1980 | Date: 2017/8/30 | Operator: NT07 |
| Temperature(°C): 25.0 | Humidity(%): 60.0% | Distance(m): 7.42 |

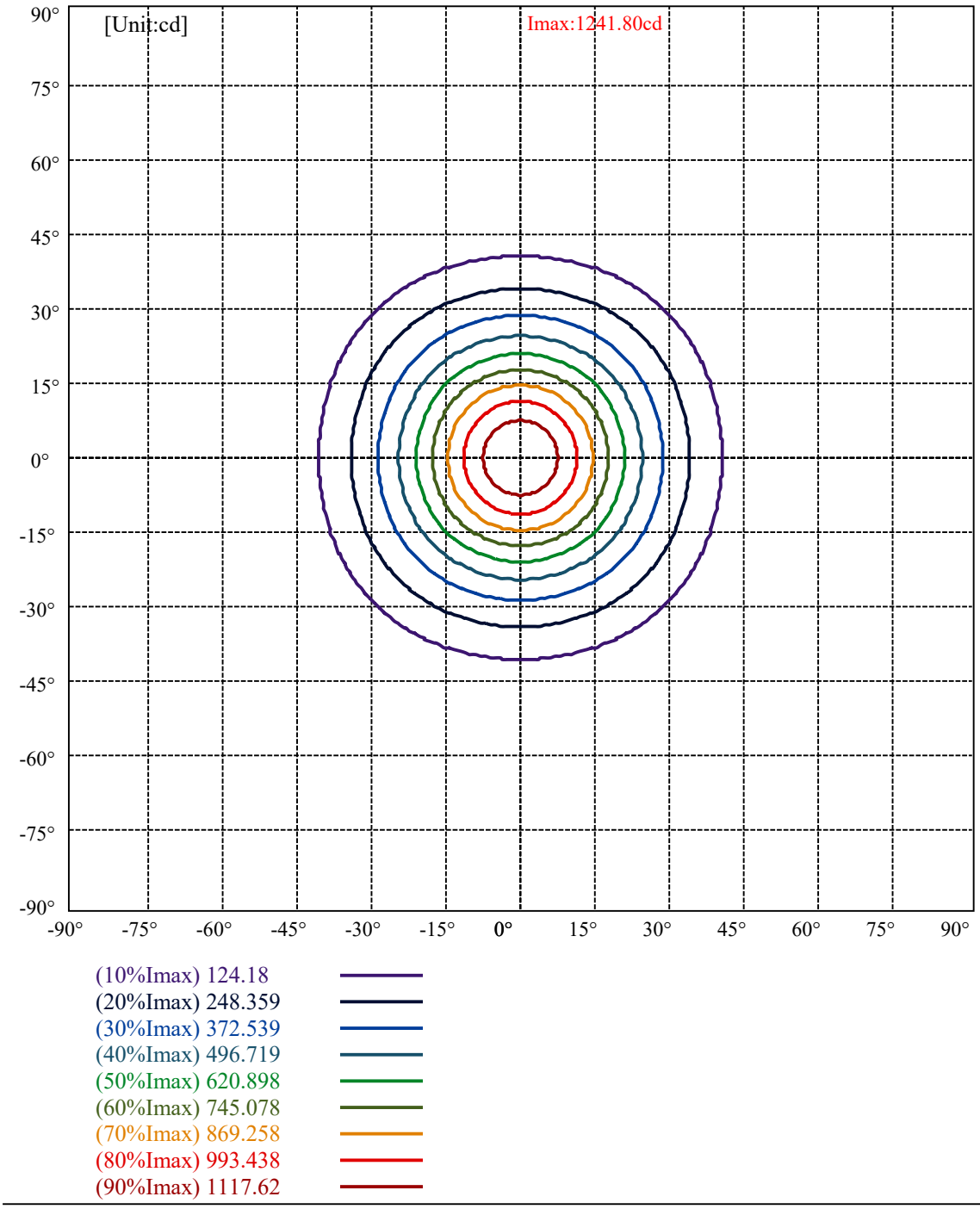
Lux distance Curve





ISO-Intensity(V-H)





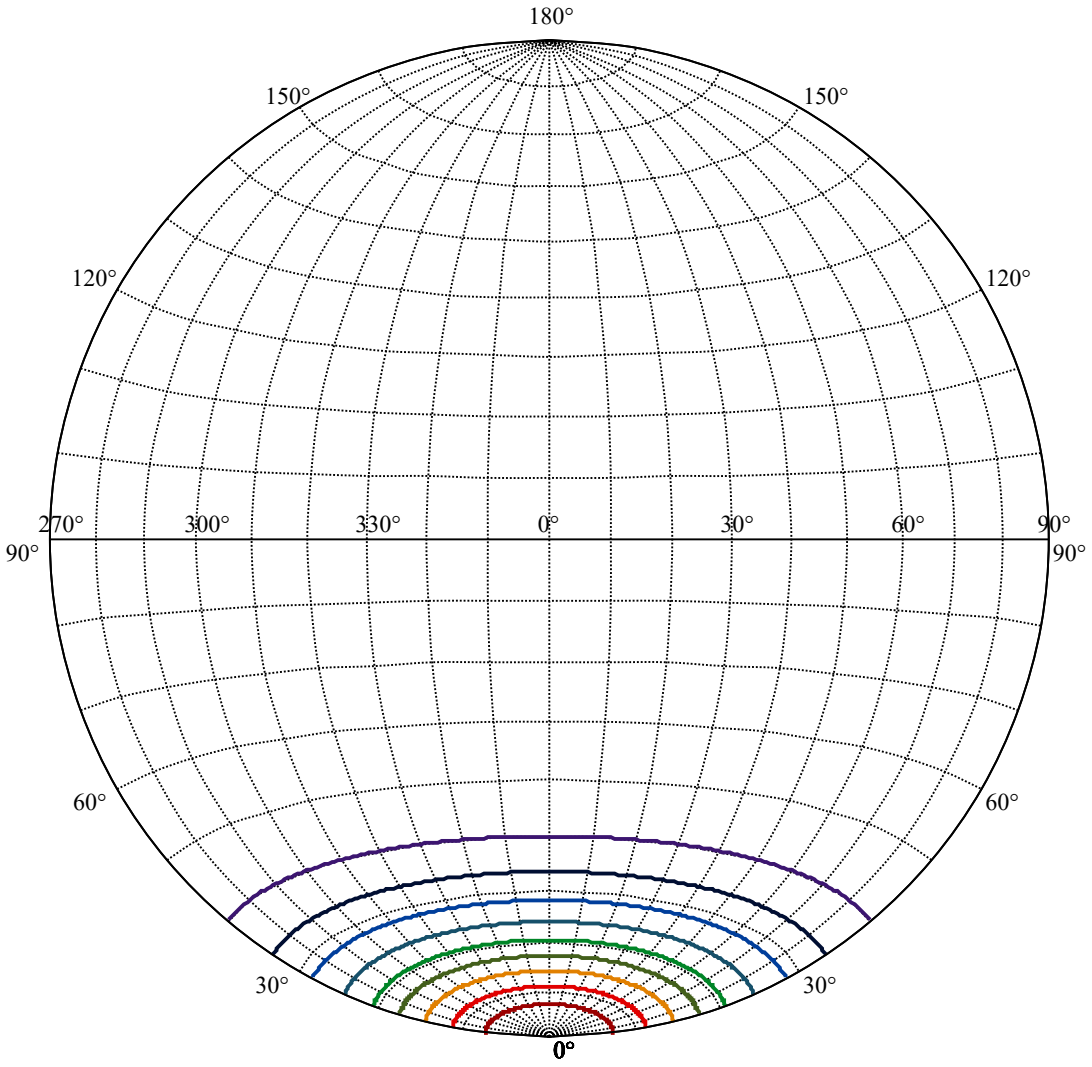

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/30
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web






House [Unit:cd] Road

Imax:1241.80

(10%Imax) 124.18
(20%Imax) 248.359
(30%Imax) 372.539
(40%Imax) 496.719
(50%Imax) 620.898
(60%Imax) 745.078
(70%Imax) 869.258
(80%Imax) 993.438
(90%Imax) 1117.62

Equipment: GMS1980
Temperature(°C): 25.0

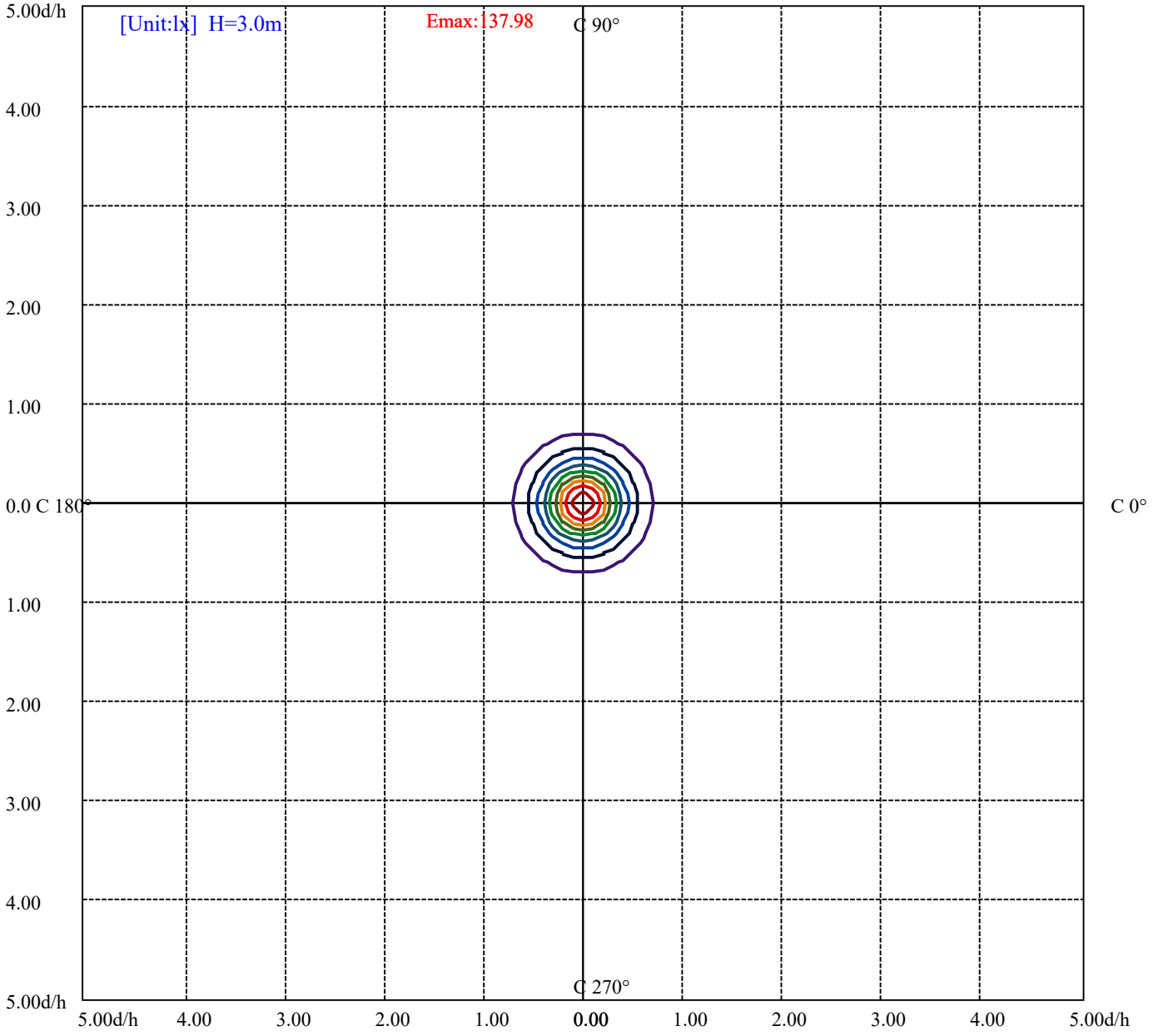
Date: 2017/8/30
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Nata 1535-E

ISO illuminance diagram



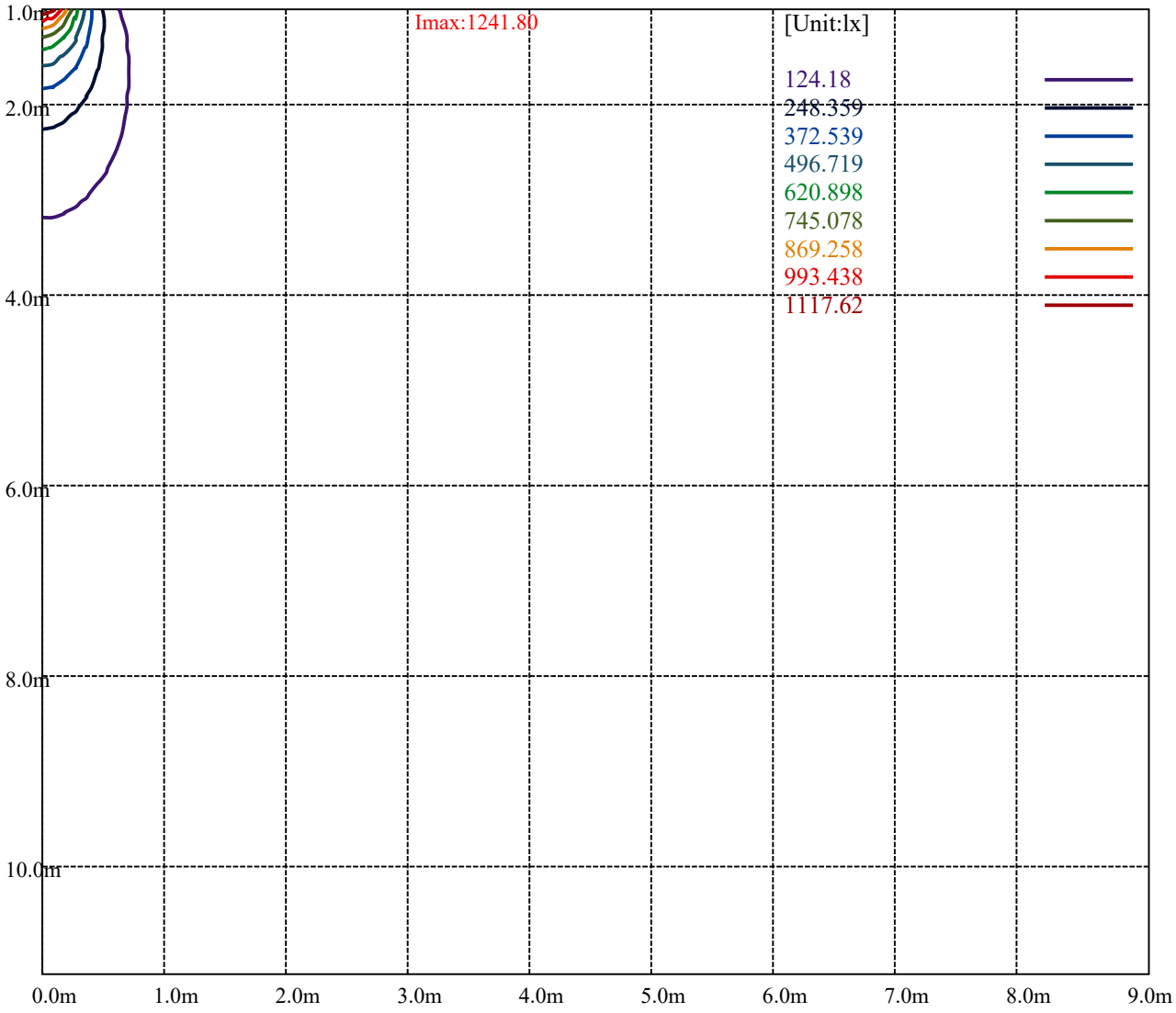



(10%Emax) 13.79778
(20%Emax) 27.59544
(30%Emax) 41.39322
(40%Emax) 55.191
(50%Emax) 68.98867
(60%Emax) 82.78645
(70%Emax) 96.58411
(80%Emax) 110.3819
(90%Emax) 124.18

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2017/8/30
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

## Space ISO Lux diagram






Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/30
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Nata 1535-E

## Luminance Limitting Curve(no luminous side)



Luminance Table

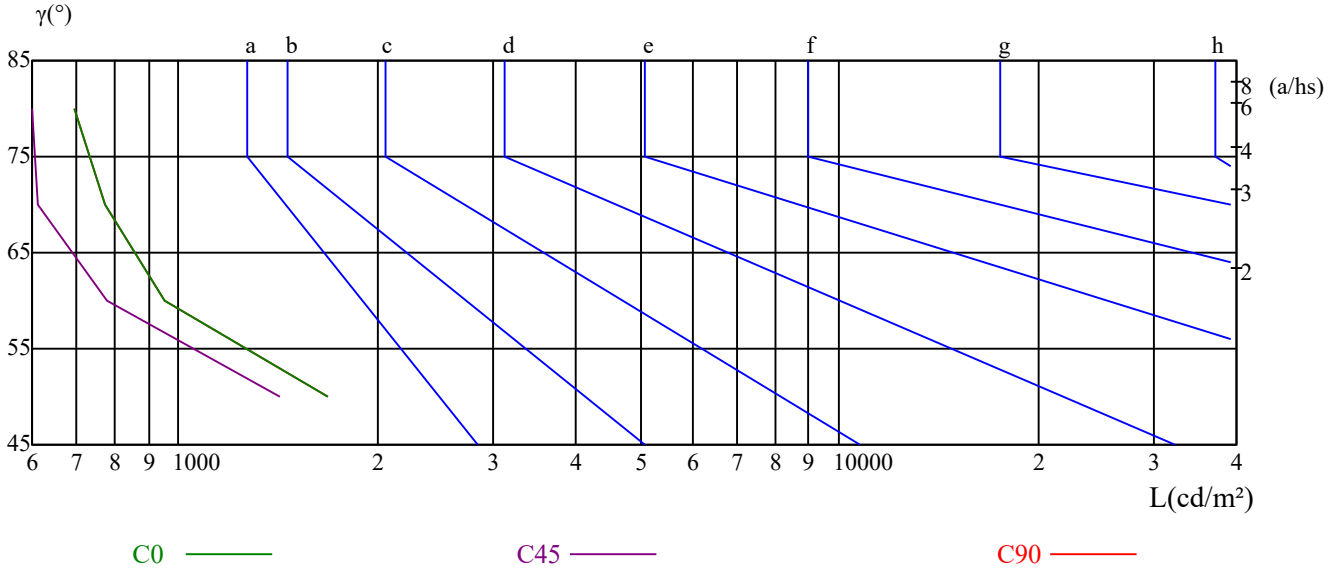
| γ | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|
| C0 | 0 | 1683 | 0 | 950 | 0 | 774 | 0 | 696 | 0 |
| C45 | 0 | 1425 | 0 | 779 | 0 | 611 | 0 | 525 | 0 |
| C90 | 0 | 1683 | 0 | 950 | 0 | 774 | 0 | 696 | 0 |

| L(Hor)(65) | L(Ver)(65) | L45(65) | L(Hor)(75) | L(Ver)(75) | L45(75) | L(Hor)(85) | L(Ver)(85) | L45(85) |
|---|---|---|---|---|---|---|---|---|
| 80122 | 80122 | 80122 | 111567 | 111567 | 111567 | 358104 | 358104 | 358104 |

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



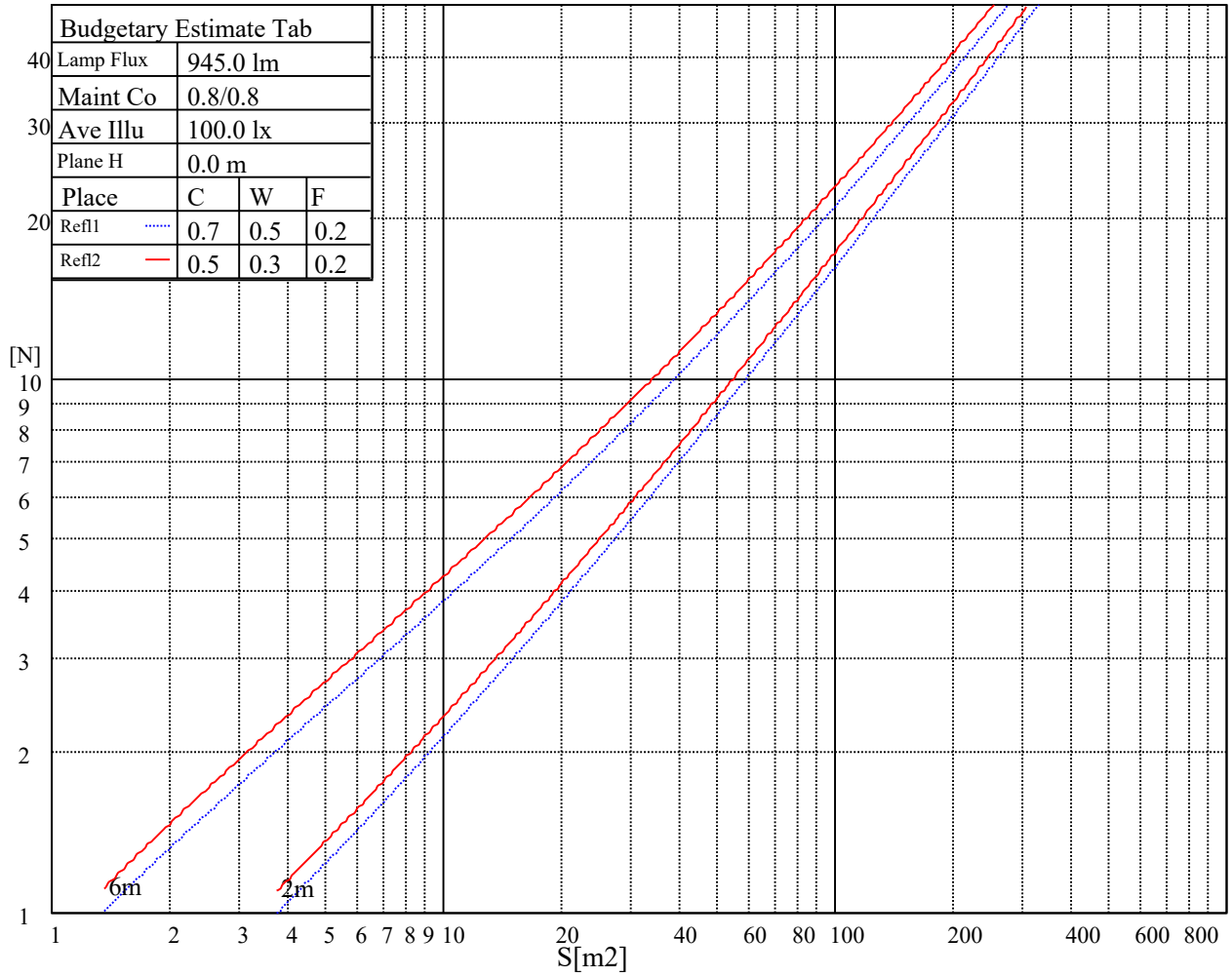

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/8/30
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

## Budgetary Estimate Table






Equipment: GMS1980 Date: 2017/8/30 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

## 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 | 0.97 | 0.97 | 0.97 | 0.95 | 0.95 | 0.95 | 0.91 | 0.91 | 0.91 | 0.87 | 0.87 | 0.87 | 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 | 0.78 | 0.76 |
| 2 | 0.84 | 0.81 | 0.78 | 0.83 | 0.80 | 0.77 | 0.80 | 0.77 | 0.75 | 0.78 | 0.75 | 0.74 | 0.75 | 0.74 | 0.72 | 0.71 |
| 3 | 0.78 | 0.74 | 0.71 | 0.77 | 0.74 | 0.71 | 0.75 | 0.72 | 0.69 | 0.73 | 0.71 | 0.68 | 0.71 | 0.69 | 0.67 | 0.66 |
| 4 | 0.73 | 0.69 | 0.66 | 0.73 | 0.68 | 0.65 | 0.71 | 0.67 | 0.64 | 0.69 | 0.66 | 0.64 | 0.68 | 0.65 | 0.63 | 0.62 |
| 5 | 0.69 | 0.64 | 0.61 | 0.68 | 0.64 | 0.61 | 0.67 | 0.63 | 0.60 | 0.65 | 0.62 | 0.59 | 0.64 | 0.61 | 0.59 | 0.58 |
| 6 | 0.65 | 0.60 | 0.57 | 0.64 | 0.60 | 0.57 | 0.63 | 0.59 | 0.56 | 0.62 | 0.58 | 0.56 | 0.61 | 0.58 | 0.55 | 0.54 |
| 7 | 0.61 | 0.57 | 0.53 | 0.61 | 0.56 | 0.53 | 0.60 | 0.56 | 0.53 | 0.59 | 0.55 | 0.52 | 0.58 | 0.55 | 0.52 | 0.51 |
| 8 | 0.58 | 0.53 | 0.50 | 0.58 | 0.53 | 0.50 | 0.57 | 0.53 | 0.50 | 0.56 | 0.52 | 0.50 | 0.55 | 0.52 | 0.49 | 0.48 |
| 9 | 0.55 | 0.50 | 0.47 | 0.55 | 0.50 | 0.47 | 0.54 | 0.50 | 0.47 | 0.53 | 0.50 | 0.47 | 0.53 | 0.49 | 0.47 | 0.46 |
| 10 | 0.52 | 0.48 | 0.45 | 0.52 | 0.48 | 0.45 | 0.51 | 0.47 | 0.45 | 0.51 | 0.47 | 0.44 | 0.50 | 0.47 | 0.44 | 0.43 |

Intensity data(cd)



| C/γ(°) | 0.0 | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 1239.32 | 1232.71 | 1199.68 | 1154.53 | 1097.82 | 1027.90 | 960.73 | 878.15 | 779.05 |
| 45.0 | 1245.93 | 1224.45 | 1180.96 | 1122.60 | 1059.84 | 981.66 | 907.88 | 823.09 | 737.76 |
| 90.0 | 1239.32 | 1212.34 | 1169.40 | 1095.84 | 1035.39 | 956.60 | 875.34 | 802.45 | 720.19 |
| 135.0 | 1242.07 | 1226.11 | 1195.27 | 1142.97 | 1086.26 | 1012.49 | 943.12 | 862.73 | 776.30 |
| 180.0 | 1240.42 | 1231.61 | 1205.18 | 1168.30 | 1098.04 | 1041.83 | 974.33 | 895.38 | 821.00 |
| 225.0 | 1245.93 | 1251.43 | 1238.22 | 1206.84 | 1165.54 | 1095.46 | 1031.04 | 960.35 | 885.58 |
| 270.0 | 1239.32 | 1246.48 | 1240.97 | 1215.09 | 1169.40 | 1114.89 | 1053.78 | 977.80 | 896.87 |
| 315.0 | 1242.07 | 1240.97 | 1214.54 | 1173.25 | 1094.74 | 1052.90 | 985.34 | 903.20 | 824.80 |
| 360.0 | 1239.32 | 1232.71 | 1199.68 | 1154.53 | 1097.82 | 1027.90 | 960.73 | 878.15 | 779.05 |

| C/γ(°) | 18.0 | 20.0 | 22.0 | 24.0 | 26.0 | 28.0 | 30.0 | 32.0 | 34.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 689.31 | 601.22 | 531.84 | 467.98 | 395.30 | 333.64 | 290.15 | 238.67 | 198.42 |
| 45.0 | 668.38 | 587.45 | 524.14 | 458.07 | 406.32 | 357.32 | 309.97 | 279.69 | 217.47 |
| 90.0 | 634.58 | 567.58 | 494.35 | 430.82 | 380.49 | 333.20 | 284.59 | 241.92 | 200.96 |
| 135.0 | 704.72 | 619.94 | 548.91 | 480.09 | 416.23 | 360.62 | 311.62 | 279.14 | 216.48 |
| 180.0 | 741.33 | 663.10 | 585.03 | 515.44 | 447.22 | 385.50 | 341.96 | 294.28 | 252.71 |
| 225.0 | 802.67 | 728.67 | 651.10 | 580.51 | 511.42 | 451.96 | 397.89 | 350.98 | 302.70 |
| 270.0 | 822.54 | 737.21 | 657.92 | 584.70 | 513.13 | 444.86 | 393.10 | 346.30 | 302.26 |
| 315.0 | 740.29 | 660.18 | 578.81 | 510.21 | 439.30 | 377.74 | 323.07 | 275.78 | 233.49 |
| 360.0 | 689.31 | 601.22 | 531.84 | 467.98 | 395.30 | 333.64 | 290.15 | 238.67 | 198.42 |

| C/γ(°) | 36.0 | 38.0 | 40.0 | 42.0 | 44.0 | 46.0 | 48.0 | 50.0 | 52.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 165.88 | 129.93 | 100.42 | 74.16 | 50.27 | 30.83 | 21.14 | 16.68 | 13.10 |
| 45.0 | 178.00 | 137.48 | 103.07 | 68.05 | 41.90 | 24.67 | 17.89 | 15.20 | 13.10 |
| 90.0 | 160.60 | 125.53 | 90.90 | 63.20 | 37.33 | 22.74 | 17.40 | 14.53 | 12.83 |
| 135.0 | 178.49 | 140.56 | 106.70 | 76.25 | 52.25 | 32.37 | 22.57 | 18.00 | 14.70 |
| 180.0 | 212.96 | 177.78 | 139.68 | 106.92 | 72.40 | 44.21 | 26.48 | 18.77 | 15.69 |
| 225.0 | 253.92 | 213.29 | 170.12 | 129.88 | 95.41 | 62.93 | 34.80 | 21.25 | 16.41 |
| 270.0 | 278.03 | 215.33 | 180.81 | 140.28 | 104.88 | 72.89 | 44.27 | 25.93 | 19.77 |
| 315.0 | 193.52 | 156.53 | 119.09 | 89.96 | 62.32 | 44.21 | 31.44 | 23.18 | 18.88 |
| 360.0 | 165.88 | 129.93 | 100.42 | 74.16 | 50.27 | 30.83 | 21.14 | 16.68 | 13.10 |

| C/γ(°) | 54.0 | 56.0 | 58.0 | 60.0 | 62.0 | 64.0 | 66.0 | 68.0 | 70.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 11.84 | 10.85 | 10.13 | 9.52 | 8.81 | 8.15 | 7.76 | 7.32 | 6.94 |
| 45.0 | 12.06 | 11.01 | 10.35 | 9.58 | 8.97 | 8.48 | 7.98 | 7.60 | 7.32 |
| 90.0 | 11.84 | 11.01 | 10.19 | 9.58 | 8.97 | 8.42 | 7.98 | 7.54 | 7.05 |
| 135.0 | 12.99 | 11.95 | 11.12 | 10.19 | 9.63 | 9.03 | 8.42 | 7.65 | 7.10 |
| 180.0 | 12.66 | 11.78 | 10.90 | 10.24 | 9.47 | 8.97 | 8.48 | 8.04 | 7.60 |
| 225.0 | 12.77 | 11.23 | 10.68 | 10.08 | 9.52 | 8.97 | 8.37 | 7.82 | 7.32 |
| 270.0 | 16.30 | 12.28 | 11.51 | 10.68 | 10.08 | 9.41 | 8.81 | 8.31 | 7.82 |
| 315.0 | 15.58 | 13.54 | 12.00 | 10.96 | 10.08 | 9.36 | 8.81 | 8.26 | 7.82 |
| 360.0 | 11.84 | 10.85 | 10.13 | 9.52 | 8.81 | 8.15 | 7.76 | 7.32 | 6.94 |

| C/γ(°) | 72.0 | 74.0 | 76.0 | 78.0 | 80.0 | 82.0 | 84.0 | 86.0 | 88.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 6.50 | 6.22 | 5.95 | 5.67 | 5.29 | 5.01 | 4.73 | 4.40 | 3.14 |
| 45.0 | 6.94 | 6.61 | 6.28 | 5.84 | 5.51 | 5.18 | 4.90 | 4.51 | 3.03 |
| 90.0 | 6.83 | 6.44 | 6.06 | 5.78 | 5.45 | 5.18 | 4.84 | 4.51 | 3.03 |
| 135.0 | 6.50 | 6.17 | 5.89 | 5.73 | 5.40 | 5.01 | 4.73 | 4.46 | 3.08 |
| 180.0 | 7.27 | 6.94 | 6.61 | 6.39 | 6.00 | 5.84 | 5.51 | 3.74 | 3.47 |
| 225.0 | 6.88 | 6.61 | 6.33 | 6.06 | 5.84 | 5.56 | 5.29 | 4.51 | 3.58 |
| 270.0 | 7.32 | 7.05 | 6.72 | 6.39 | 6.17 | 5.78 | 5.56 | 5.18 | 3.69 |
| 315.0 | 7.38 | 6.83 | 6.44 | 6.06 | 5.67 | 5.34 | 4.90 | 4.51 | 3.30 |
| 360.0 | 6.50 | 6.22 | 5.95 | 5.67 | 5.29 | 5.01 | 4.73 | 4.40 | 3.14 |

Intensity data(cd)



| C/γ(°) | 90.0 |
|---|---|
| 0.0 | 2.97 |
| 45.0 | 3.03 |
| 90.0 | 3.03 |
| 135.0 | 3.03 |
| 180.0 | 3.08 |
| 225.0 | 3.30 |
| 270.0 | 3.41 |
| 315.0 | 3.14 |
| 360.0 | 2.97 |